TM 5-2350-262-20-2*

TECHNICAL MANUAL

UNIT MAINTENANCE MANUAL

VOLUME 2 OF 3

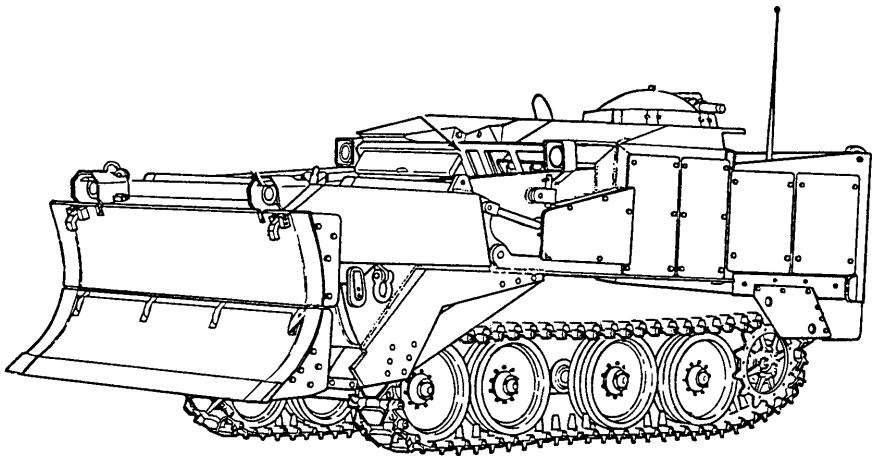


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ARMORED COMBAT EARTHMOVER (ACE), M9 (NSN 2350-00-808-7100)

* This manual supersedes TM 5-2350-262-20-2, dated 1 November 1990, and all related changes.

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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CHANGE

NO. 3

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UNIT MAINTENANCE MANUAL
ARMORED COMBAT EARTHMOVER
(ACE), M9
(NSN 2350-00-808-7100)

TM 5-2350-262-20-2, 3 January, 1997 is changed as follows:

1. Remove old pages and insert new pages as indicated below.
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Remove Pages	**Insert Pages**
Cover	Cover
Change 2 List of Effective Pages	Change 3 List of Effective Pages
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INDEX 1 through INDEX 10	INDEX 1 through INDEX 10
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Back Cover	Back Cover

By Order of the Secretary of the Army:

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JOEL B. HUDSON
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CHANGE

NO. 2

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UNIT MAINTENANCE MANUAL
ARMORED COMBAT EARTHMOVER
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(NSN 2350-00-808-7100)

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1. Remove old pages and insert new pages as indicated below.
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3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration.

Remove Pages	Insert Pages	Remove pages	Insert pages
g (h Blank)	g (h Blank)		
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	(H-3 and H-4 Deleted)		
INDEX 1 thru INDEX 10 (Blank)	INDEX 1 thru INDEX 10		

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TM 5-2350-262-20-2
C-1

CHANGE

NO. 1

HEADQUARTERS
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UNIT MAINTENANCE MANUAL

ARMORED COMBAT EARTHMOVER

(ACE), M9

(NSN 2350-00-808-7100)

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1. Remove old pages and insert new pages as indicated below.
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3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration.

Remove pages	Insert pages
c and d	c and d
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A1 through A3 (A4 blank)	A1 through A3 (A4 blank)		
B-3 through B-22	B-3 through B-22		

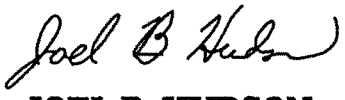
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By Order of the Secretary of the Army:

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General, United States Army
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JOEL B. HUDSON
Administrative Assistant to the
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WARNING

CARBON MONOXIDE POISONING CAN BE DEADLY

CARBON MONOXIDE IS A COLORLESS, ODORLESS, DEADLY POISONOUS GAS WHICH, WHEN BREATHED, DEPRIVES THE BODY OF OXYGEN AND CAUSES SUFFOCATION. EXPOSURE TO AIR CONTAMINATED WITH CARBON MONOXIDE PRODUCES SYMPTOMS OF HEADACHE, DIZZINESS, LOSS OF MUSCULAR CONTROL, APPARENT DROWSINESS, AND COMA. PERMANENT BRAIN DAMAGE OR DEATH CAN RESULT FROM SEVERE EXPOSURE.

CARBON MONOXIDE OCCURS IN THE EXHAUST FUMES OF FUEL-BURNING HEATERS AND INTERNAL COMBUSTION ENGINES AND BECOMES DANGEROUSLY CONCENTRATED UNDER CONDITIONS OF INADEQUATE VENTILATION. THE FOLLOWING PRECAUTIONS MUST BE OBSERVED TO ENSURE THE SAFETY OF PERSONNEL WHENEVER THE PERSONNEL HEATER, MAIN, OR AUXILIARY ENGINE OF ANY VEHICLE IS OPERATED FOR MAINTENANCE PURPOSES OR TACTICAL USE.

1. DO NOT operate heater or engine of vehicle in an enclosed area unless it is ADEQUATELY VENTILATED.
2. DO NOT idle engine for long periods without maintaining ADEQUATE VENTILATION in personnel compartments.
3. DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
4. BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either are present, IMMEDIATELY VENTILATE personnel compartments. If symptoms persist, remove affected personnel from vehicle and treat as follows: expose to fresh air; keep warm; DO NOT PERMIT PHYSICAL EXERCISE; if necessary, administer artificial respiration.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS ADEQUATE VENTILATION.

WARNING

- Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.
- Do not stand or work in bowl area unless ejector lock is engaged. Do not stand in bowl to observe roller guide travel. Failure to comply may result in severe injury to personnel.
- Do not work under vehicle unless hull is blocked and apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.

WARNING - CONTINUED

- Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.
- Block track or roadwheels when parking brake is released or when steer unit brake levers are disconnected, or when track is disconnected. Vehicle can roll causing damage to equipment, severe injury, or death to personnel.
- The NBC system of the M9 ACE will not protect against carbon monoxide. Failure to take necessary precautions may result in severe injury to personnel or death.
- The NBC protection filters use a type of carbon that contains Chromium VI. This is a known carcinogen; do not inhale or swallow. Damaged or unusable filters are classified as hazardous waste.
  - Do not throw away damaged or unusable filters as trash.
  - Turn in damaged or unusable filters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).

  Filters are completely safe to handle and use if they are not damaged in such a way that carbon leaks from them. If carbon does leak, use protection such as a dust respirator to cover nose and mouth and put carbon in a container such as a self-sealing plastic bag; turn it in to the hazardous waste management office or DRMO. Disposal of hazardous waste is restricted by law. Violation is subject to criminal penalties.
- If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.
- DS2 is combustible. DS2 can also severely burn the skin, cause blindness, or deteriorate the battle dress and chemical protective overgarments. Do not use DS2 near an open flame, in confined spaces, or allow it to touch skin or clothing. Personnel handling DS2 must wear protective clothing and eye protection.
- Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.
- Prolonged breathing of fuel vapors can be fatal. If eyes or skin become irritated by fuel, flush with water.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.
- Radiator and related components may be very hot. Do not work on cooling system until it is cool. Failure to comply may result in severe injury to personnel.

WARNING - CONTINUED

- Under no circumstances should any cover or grille leading to the engine compartment be opened when a fire exists. Failure to comply may result in severe injury to personnel.
- Remove all jewelry, dog tags, bracelets, etc. If jewelry or disconnected battery ground cable contacts positive battery terminal, a direct short will result, causing instant heating of tools, tool damage, battery damage, or battery explosion. Failure to comply may result in severe injury to personnel.
- Do not smoke, have open flames, or make sparks around batteries. Failure to comply may result in severe injury to personnel.
- Electrolyte is extremely harmful. Always wear goggles and rubber gloves when performing battery maintenance. Failure to comply may result in severe injury to personnel.
- Always wear leather gloves when handling wire rope. Never allow wire rope to run through hands. Failure to comply may result in severe injury to personnel.
- Stand clear of wire rope. Should wire rope break or snap loose, severe injury or death to personnel may result.
- Wear safety goggles when using hammer with driftpin or track pin. Failure to comply may result in injury to personnel.
- Engine speed must be at least 1,000 rpm for bilge pump to discharge water. Failure to comply may result in damage to equipment or injury to personnel.
- Antenna adds an extra 9-1/2 ft (2.9 m) to the vehicle clearance. Always check the area to be worked in for powerlines, their height, and power poles or towers. Do not stop your vehicle under powerlines. If you are not sure the antenna will clear a powerline, stop before you get too close to the powerline and either tie down the antenna or remove antenna sections to make sure you can proceed safely. Failure to comply may result in damage to equipment or injury to personnel.
- Compressed air can injure you and others. Do not aim compressed air hoses at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles.
- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.
- Transmission shifting lines are pressurized. Do not disconnect lines, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off. Failure to comply may result in severe injury to personnel.

WARNING - CONTINUED

- Driver's hatch assembly weighs 900 lb (409 kg); hatch cover weighs 200 lb (91 kg). Do not put hands or feet under hatch assembly while lifting. Ensure all lifting devices and workstands can support at least 900 lb (409 kg). Failure to comply may result in severe injury or death to personnel.
- Dozer blade weighs 585 lb (265 kg). Ensure it is securely supported before removing outer pivot pins. Failure to comply may result in severe injury to personnel.
- Ejector assembly weighs 500 lb (227 kg). Keep feet and hands from under ejector assembly while lifting or moving. Failure to comply may result in severe injury or death to personnel.
- Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder before disconnecting or removing. Failure to comply may result in severe injury to personnel.
- Support hatch cover while removing springs. Hatch cover weighs 200 lb (91 kg) and can cause serious injury if dropped on hands, arms, or feet.
- Support apron cylinder while removing or installing. Apron cylinder weighs 85 lb (39 kg) and can cause serious injury if dropped on hands or feet.
- Use caution when lifting batteries. Each battery weighs 72 lb (33 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Ensure feet are firmly planted on a level surface and use a helper when removing track retainers or armor plate. Some armor plates weigh 50 lb (23 kg). Track retainers weigh 60 lb (27 kg). Failure to comply may result in severe injury to personnel.
- Support radio box during removal so it will not drop. Radio box weighs over 50 lb (23 kg) and can injure personnel if dropped.
- Do not work on smoke grenade launcher system unless smoke grenades are removed from dischargers (TM 5-2350-262-10) and negative battery cables have been disconnected. Failure to comply may result in severe injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.
- Do not lift apron and dozer assembly with dozer blade attached unless dozer lockpins are installed. Failure to comply may result in severe injury or death to personnel.
- Do not work on heater system unless engine coolant is cool. Hot engine coolant can cause serious burns.
- Wear face shield or goggles for eye protection when removing, cleaning, or installing seal. Failure to comply may result in injury to personnel.
- Do not stand between ejector and ejector cylinder while performing ejector leak checks. Failure to comply may result in severe injury to personnel.

WARNING - CONTINUED

- Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in severe injury to personnel.
- Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.
- Air system must be pressurized and parking brake engaged during reverse pressure tests. Failure to comply may result in damage to equipment and injury to personnel.
- Do not stand directly behind vehicle or directly in front of vehicle when positioning jack stands. Failure to comply may result in severe injury or death to personnel.
- Before performing any hydraulic troubleshooting in the bowl, move the ejector forward and disable it by disconnecting the ejector cylinder or by engaging the ejector lock. Failure to comply may result in severe injury to personnel.
- Hot coolant can cause severe burns. Do not open radiator cap access cover or remove cap until coolant gauge reads in bottom one-quarter of green zone. Failure to comply may result in severe injury to personnel.
- Do not use inclinometer as a step. Failure to comply may result in damage to equipment and injury to personnel.
- Hull access covers may be heavier than they appear due to accumulation of fluid and dirt. Take extra precautions when removing access covers. Failure to comply may result in injury to personnel.
- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.
- Do not disconnect accelerator and throttle linkage without disconnecting return springs first. Failure to comply may result in damage to equipment or injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Keep hands from ejector cylinder when hydraulically moving cylinder to align eye of cylinder for installation. Failure to comply may result in severe injury to personnel.
- Do not work under vehicle or on track retainers unless hull is blocked or vehicle has settled on bump stops. Failure to comply may result in severe injury or death to personnel.
- Vehicle brakes will not hold vehicle when track is disconnected. Block roadwheels before working on vehicle when track is disconnected. Failure to comply may result in damage to equipment and severe injury or death to personnel.

WARNING - CONTINUED

- If winch operates erratically, appropriate troubleshooting steps and repairs should be performed immediately. Failure to comply may result in damage to equipment or severe injury to personnel.
- Keep hands and tools away from moving parts. Failure to comply may result in injury to personnel.
- Do not touch coils on condenser. Coils may become hot enough to burn you. Failure to comply may result in injury to personnel.
- MCS unit will not filter out carbon monoxide. If using vehicle exhaust as a warm air supply, do not breathe outlet air. Run unit for at least 15 minutes after vehicle exhaust has been stopped to clear system. Failure to comply may result in severe injury or death to personnel.
- Ensure hydraulic pressure is relieved after ejector cylinder is pushed forward. Pressure may build up and cause the ejector to retract. Failure to comply may result in severe injury to personnel.
- Transmission lines contain hot oil under pressure when hot. Do not disconnect hoses, tubes, or fittings unless oil is cool and pressure has been relieved. Failure to comply may result in severe injury to personnel.
- Hot exhaust system can cause serious burns. Do not work on or near hot exhaust system components unless exhaust system is cool. Failure to comply may result in injury to personnel.
- Ensure stop is in locked position to prevent any movement of ejector control valve plunger, or ejector can move. Failure to comply may result in severe injury to personnel.
- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends. Failure to comply may result in severe injury to personnel.
- Do not breathe nitrogen gas. Failure to comply may result in death to personnel.
- Hot hydraulic oil can cause serious burn. Pump and fittings must be cool to touch before working on hydraulic system. Failure to comply may result in severe injury to personnel.
- Ethyl ether is highly combustible. Do not work on start-aid system in presence of sparks or open flame. Failure to comply may result in severe injury to personnel.
- Parts inside shell can fly out if not held securely during disassembly. Failure to comply may result in injury to personnel.
- Do not adjust fan belt tension with vehicle engine running. Fan blades can strike hands or tools. Failure to comply may result in damage to equipment or injury to personnel.
- Spring is under tension. Relieve tension slowly. Failure to comply may result in injury to personnel.

WARNING - CONTINUED

- Hot oil can cause serious burns. Ensure transfer case is cool before disconnecting any tubes or hoses. Failure to comply may result in severe injury to personnel.
- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool. Failure to comply may result in severe injury to personnel.
- Do not operate parking brake lever when personnel are working on parking brake linkage or bracket. Failure to comply may result in severe injury to personnel.
- Wear face shield or goggles for eye protection when using wire brush. Failure to comply may result in injury to personnel.
- Semi-automatic track adjuster assembly is heavy. Support semi-automatic track adjuster assembly before disconnecting or removing. Failure to comply may result in severe injury to personnel.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: The portion of text or illustration effected by the updates is indicated by a vertical line in the outer margin of the page. Updates to wiring diagrams are indicated by shaded areas.

Dates of issue for original and updated pages/work packages are:

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Change 2 ..2 .. 30 JUN 99
Change 3 ..3.. 27 MAR 00

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 44 AND TOTAL NUMBER OF WORK PACKAGES IS 698 CONSISTING OF THE FOLLOWING:

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TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *3 January 1997*

UNIT MAINTENANCE MANUAL

ARMORED COMBAT EARTHMOVER (ACE), M9
(NSN 2350-00-808-7100)

VOLUME 2 OF 3

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028-2 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is http://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the ADPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax, or email your letter, DA Form 2028, or DA Form 2028-2 direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. The email address is amsta-ac-nml@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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This manual is published in three volumes. TM 5-2350-262-20-1 contains Chapter 1 through Chapter 4, Section X. TM 5-2350-262-20-2 contains Chapter 4, Section XI through XXII and Appendixes A through H. TM 5-2350-262-20-3 contains hydraulic system principles operation and hydraulic system troubleshooting. This manual contains a table of contents, a group index, list of tasks, appendixes, and an alphabetical index covering three volumes.

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Deleted

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Winch Shift Control Lever Adjustment 4-894.8
Winch Shift Control Cable Replacement 4-894.10
Winch Shift Control Assembly Replacement and Repair 4-894.13
Winch Motor Replacement 4-894.15
Winch Wire Rope Assembly Replacement and Repair 4-894.17

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MCS NBC Filter Housing Replacement 4-899
MCS Refrigerant Line Shield Replacement 4-901
MCS Condenser Fan Replacement 4-903
MCS Gear Belt Replacement 4-905
MCS Intake Assembly Replacement 4-907
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MCS Interface Plate Replacement 4-917
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MCS EMI Filter Box Replacement and Repair 4-922
MCS EMI Filter Box Wiring Harness and Circuit Breaker Replacement 4-926
MCS NBC Filter Switch Replacement 4-930
MCS Air Hoses Replacement 4-932
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MCS Compressor Motor Replacement 4-939
MCS Main Wiring Harness Replacement 4-941
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Preparation for Transport 4-964

END OF VOLUME 2

Section XI. GROUP AQ, HYDRAULIC CONTROL INSTALLATION

TASK	PAGE
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HYDRAULIC CONTROL LEVERS AND LINKAGE ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 11 Appendix D
Sealing Compound Primer	Item 13 Appendix D

Parts:

Cotter Pin (AR)

Parts Reference:

TM 5-2350-262-24P	Group AQ

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

TM 5-2350-262-20-1	Preliminary Trouble-shooting Procedures
TM 5-2350-262-20-3	All Hydraulic Control Lever Functions are Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Ensure stop is in locked position to prevent any movement of ejector control valve plunger. Ejector can move if plunger is moved.
- Do not stand or work in bowl area unless ejector lock is engaged.

ADJUSTMENT

Note

All control rods are adjusted the same way. Illustrations on this page are typical for all control rods and control levers.

A Note position of control valve plunger (1) when control lever (2) is in neutral (off) position.

WARNING

- Ensure stop is in locked position to prevent any movement of ejector control valve plunger. Ejector can move if plunger is moved. Failure to comply may result in severe injury to personnel.
- Do not stand or work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Note

- Normal control valve plunger travel is 9/32 in. (7.1 mm) from neutral position. BILGE PUMP control lever and SPRUNG/ UNSPRUNG control lever move in only one direction.
- Adjust ejector control handle so as to be centered in stop.

B Move control lever (2) in both directions until control valve plunger (1) bottoms out. If control lever (2) moves more than 2 in. (5 cm), adjust linkage as follows:

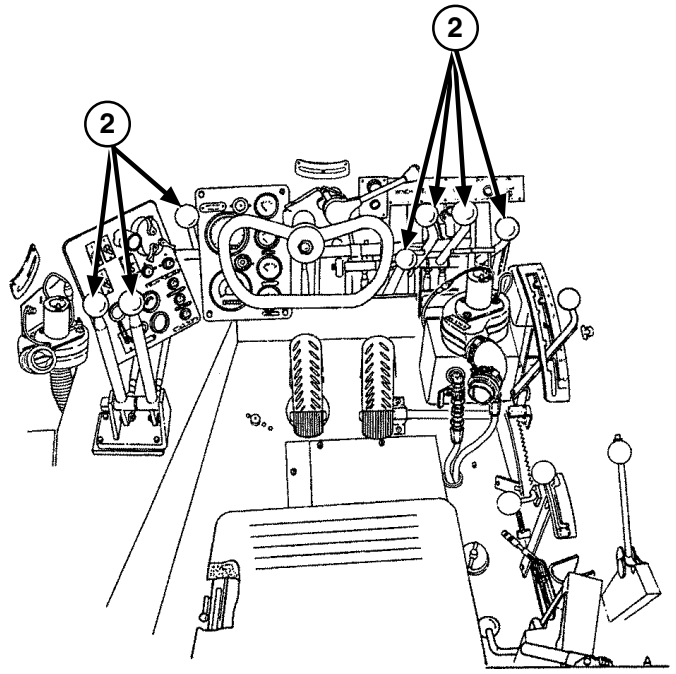
C Remove cotter pin (3), straight pin (4), and clevis (5) from control valve plunger (1). Discard cotter pin (3).

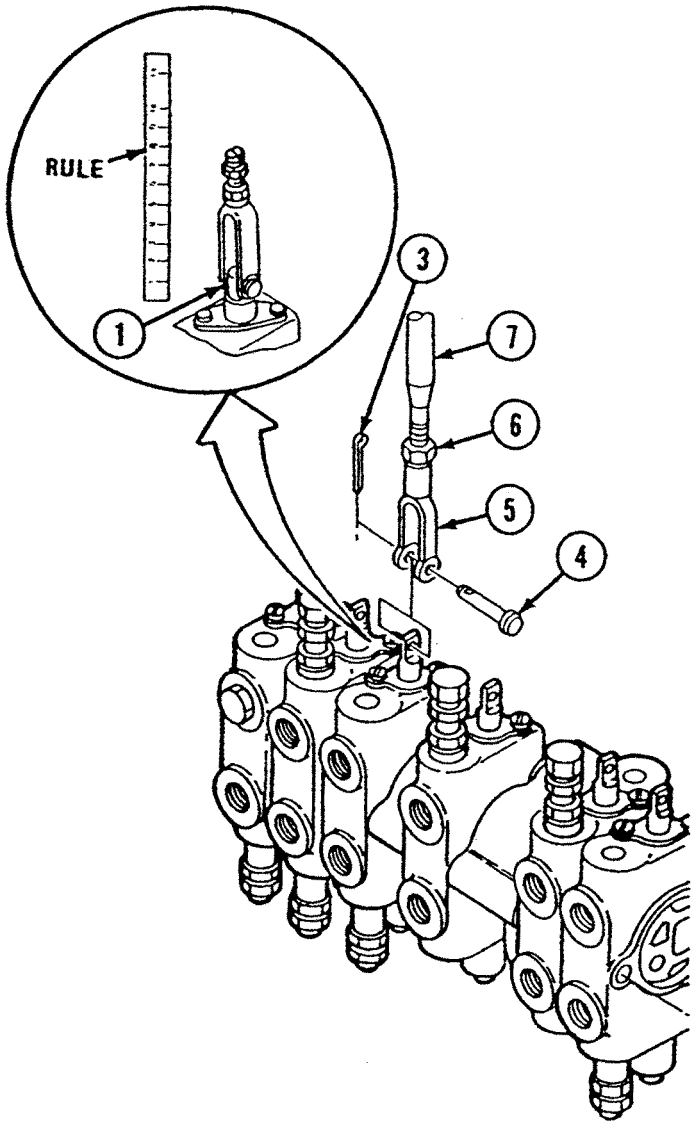
D Loosen jamnut (6). Turn clevis (5) clockwise to shorten rod (7); counterclockwise to lengthen rod (7).

E Coat threads of rod (7) with sealing compound primer and sealing compound, and tighten jamnut (6) against clevis (5).

F Connect clevis (5) to control valve plunger (1) with straight pin (4) and cotter pin (3).

FOLLOW-ON TASK:
Retract ejector (TM 5-2350-262-10).





SEMI-AUTOMATIC TRACK ADJUSTER HYDRAULIC CONTROL SWITCHES ADJUSTMENT (NEW PRODUCTION)

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanics Automotive

Parts Reference:

TM 5-2350-262-24P Group AQ

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

TM 5-2350-262-20-1	Preliminary Trouble-shooting Procedures
TM 5-2350-262-20-1	Track (Left or Right) Will Not Tighten or Loosen, Semi-Automatic Track Adjuster (Electrical) (NEW PRODUCTION)

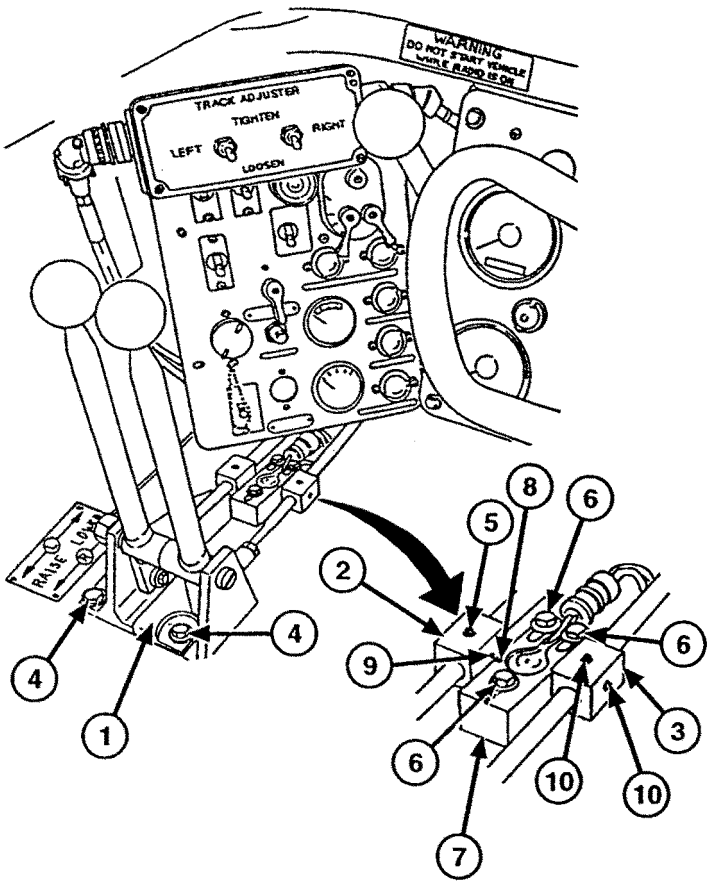
Equipment Condition:

Reference	Condition Description
Page 4-399	Adjust Hydraulic Control Linkages

ADJUSTMENT

NOTE

Ensure bell crank levers are in neutral position. Correct adjustment, i.e. spacing, alignment etc., between track control switch and track operator switches is critical to proper operation of semi-automatic track adjusting system.



A Adjust track control base (1) laterally to equalize gap between track operator switches (2) and (3). Tighten four self-locking screws (4) ensuring gap is maintained.

B Loosen two set screws (5) on left track operator switch (2) and three screws (6) on track control switch (7).

C Correctly position alignment mark (8) on track control switch (7) with alignment mark (9) on track operator switch (2).

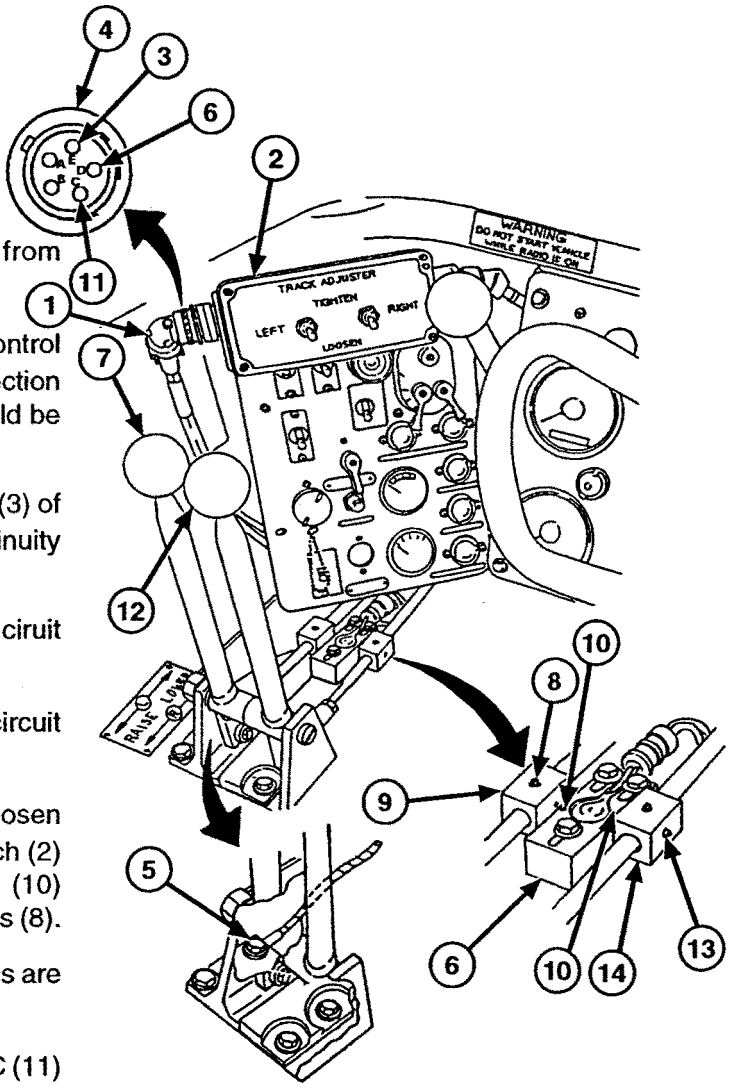
D While ensuring correct gap and alignment of marks are maintained, tighten three screws (6) and two set screws (5).

E Loosen two set screws (10) on right track operator switch (3). Align mark on right operator switch (3) with alignment mark on track control switch (7).

F While ensuring correct gap and alignment of marks are maintained, tighten two set screws (10).

NOTE

Use the following steps to check operation of the left and right track operator switches.



G Remove track control wiring harness (1) from suspension control electrical box (2).

H Check continuity from socket E (3) of track control wiring harness connector (4) to ground connection (5) at left front bracket screw. Continuity should be indicated.

I Check continuity from socket D (6) to socket E (3) of track control wiring harness connector (4), continuity should be indicated.

J Push left bell crank lever (7) forward, an open ciruit should be indicated.

K Pull left bell crank lever (7) rearward, an open circuit should be indicated.

L If the previous readings were not obtained loosen two set screws (8) on left operator control switch (2) and rotate slightly ensuring alignment marks (10) and gap are maintained. Tighten two set screws (8).

M Perform I, J, K and L above until proper readings are obtained.

N Check continuity from socket E (3) and socket C (11) of track control wiring harness conector (4), continuity should be indicated.

O Push right bell crank lever (12) forward, an open circuit should be indicated.

P Pull right bell crank lever (12) rearward, an open circuit should be indicated.

Q If the readings in M, N and O above were not obtained loosen two set screws (13) on right operator control switch (14) and rotate slightly ensuring alignment marks (10) and gap are maintained. Tighten two set screws (13).

R Perform N, O, P and Q above until proper readings are obtained.

NOTE

If proper reading during continuity checks cannot be obtained troubleshoot I.A.W. TM 9-2350-262-20-1.

S Install track control wiring harness (1) on suspension control electrical box (2).

HYDRAULIC CONTROL LEVERS, BELLCRANKS, AND LINKAGE REPLACEMENT AND REPAIR (OLD PRODUCTION)

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D
Sealing Compound Primer	Item 13 Appendix D
Solid Film Lubricant	Item 24 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Cotter Pin (18)

Pin (3)

Self-locking Screw (17)

Locknut (4)

Parts Reference:

TM 5-2350-262-24P Group AQ

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

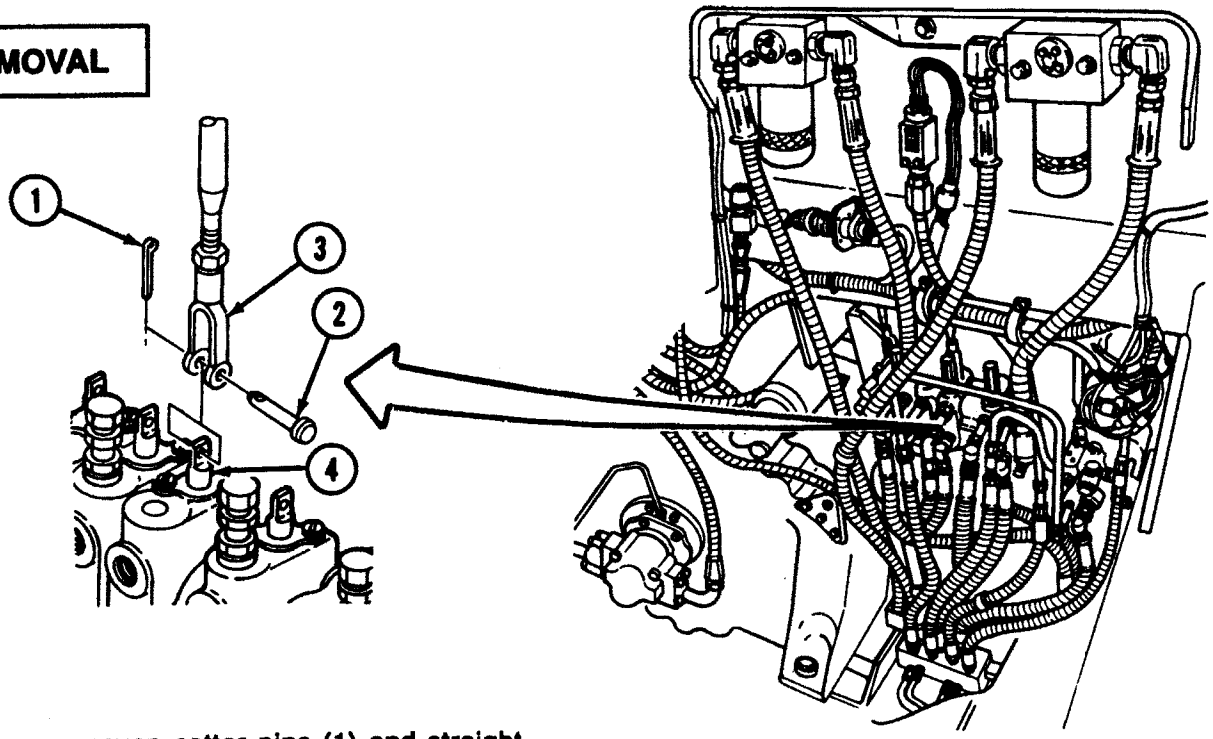
Troubleshooting Reference:

Page 3-181	All Hydraulic Control Lever Functions are Inoperative

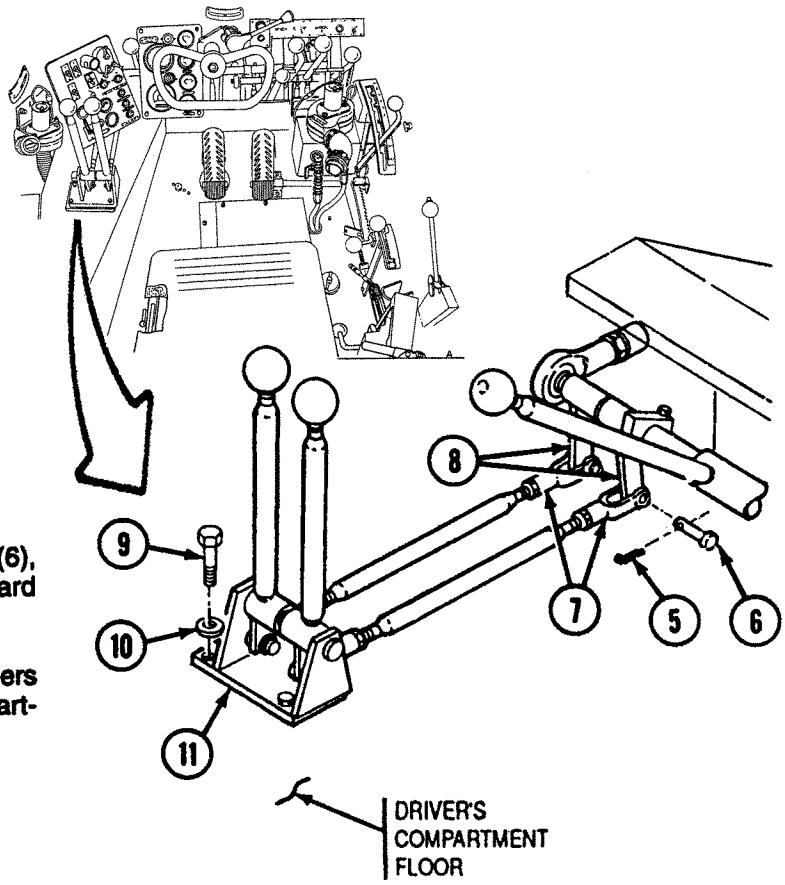
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 2-27	Hydraulic Pressure Relieved

REMOVAL

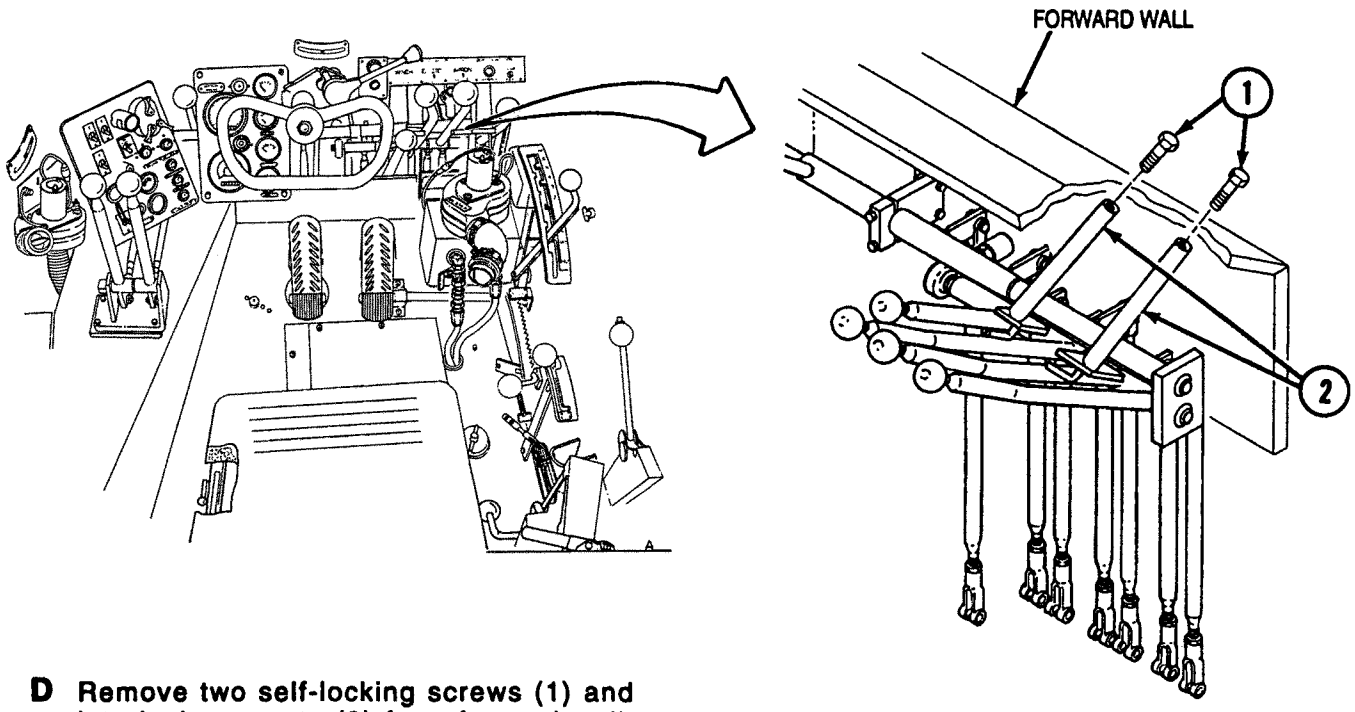


A Remove seven cotter pins (1) and straight pins (2) from seven clevises (3). Disconnect clevises (3) from control valve plungers (4). Discard cotter pins (1).

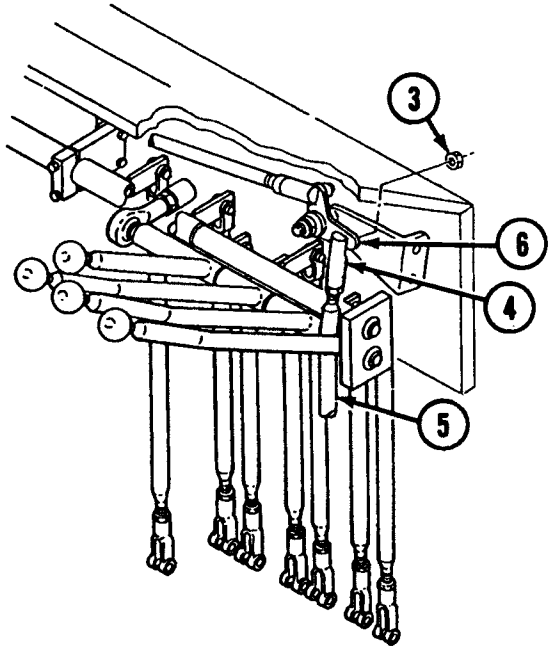


B Remove two cotter pins (5), straight pins (6), and clevises (7) from bellcranks (8). Discard cotter pins (5).

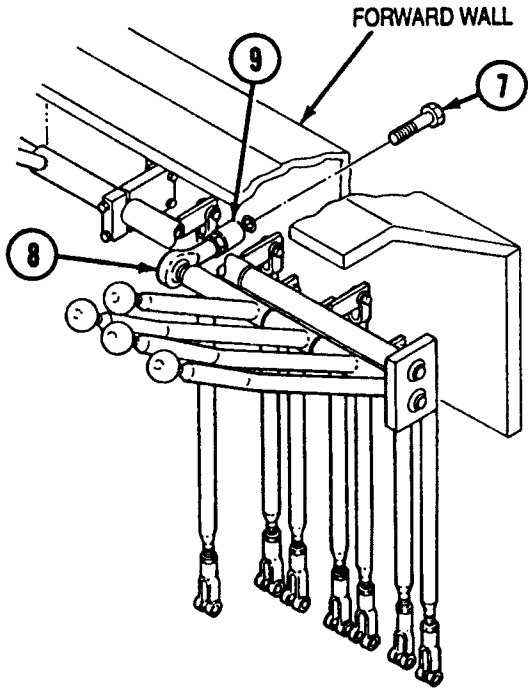
C Remove four self-locking screws (9), washers (10), and bracket (11) from driver's compartment floor. Discard self-locking screws (9).



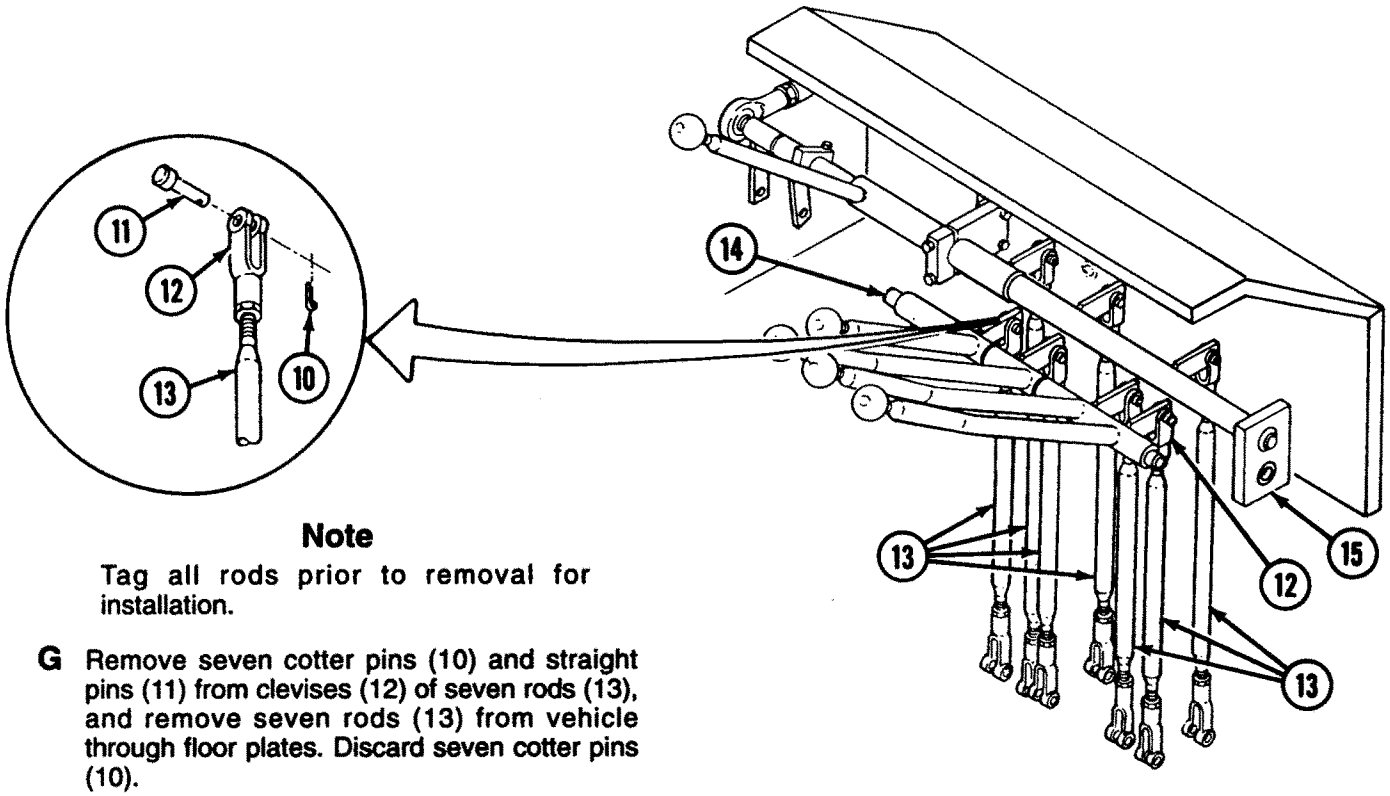
D Remove two self-locking screws (1) and interlock supports (2) from forward wall. Discard self-locking screws (1).



E Remove locknut (3) from steering control ball joint (4), and disconnect steering control rod (5) from steering control bellcrank (6). Discard locknut (3).



F Remove self-locking screw (7), bearing (8), and spacer (9) from forward wall. Discard self-locking screw (7).

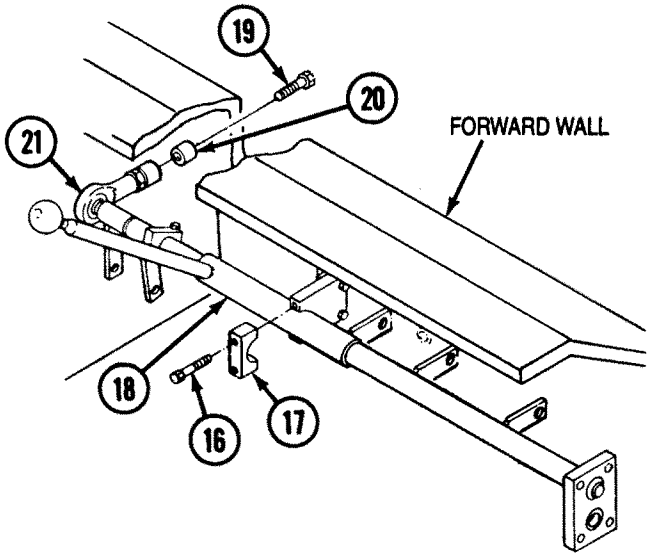


Note

Tag all rods prior to removal for installation.

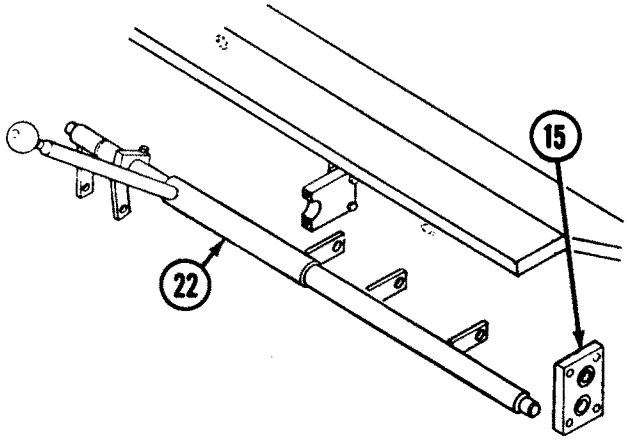
G Remove seven cotter pins (10) and straight pins (11) from clevises (12) of seven rods (13), and remove seven rods (13) from vehicle through floor plates. Discard seven cotter pins (10).

H Remove shaft and bellcranks (14) from bracket (15).



I Remove two self-locking screws (16) and clamp (17) from bellcrank (18). Discard self-locking screws (16).

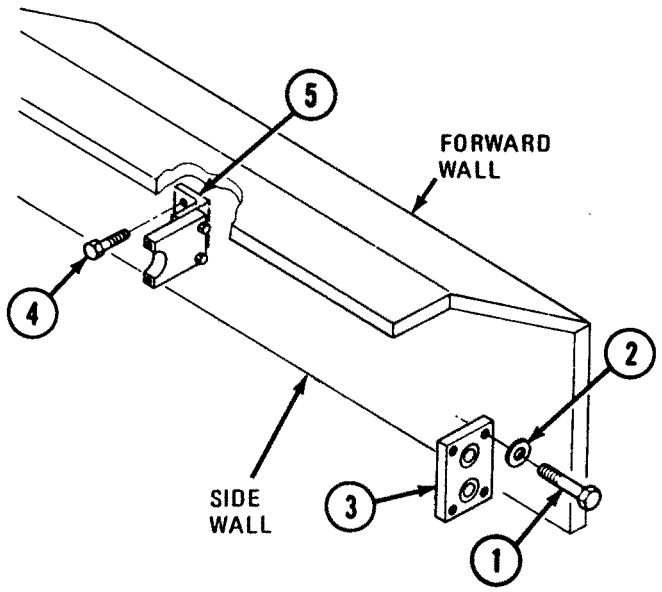
J Remove self-locking screw (19), spacer (20), and bearing (21) from forward wall. Discard self-locking screw (19).



CAUTION

Ensure hydraulic controls do not hang up on electrical leads. If necessary, disconnect electrical leads. Failure to comply may result in damage to equipment.

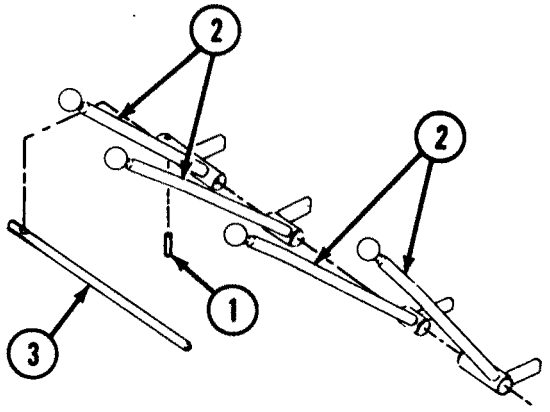
K Remove shaft and bellcranks (22) from bracket (15).



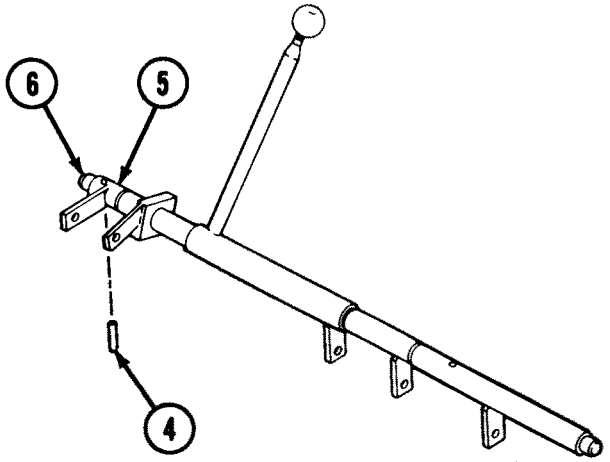
L Remove four self-locking screws (1), washers (2), and bracket (3) from side wall. Discard self-locking screws (1).

M Remove two self-locking screws (4) and angle bracket (5) from forward wall. Discard self-locking screws (4).

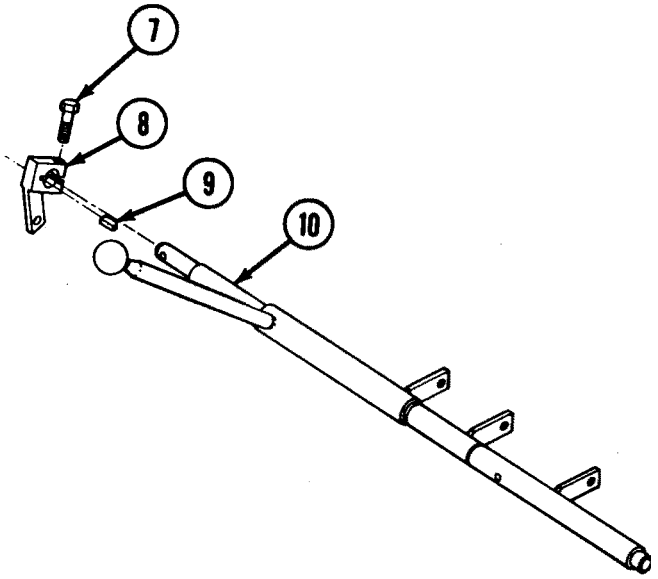
DISASSEMBLY



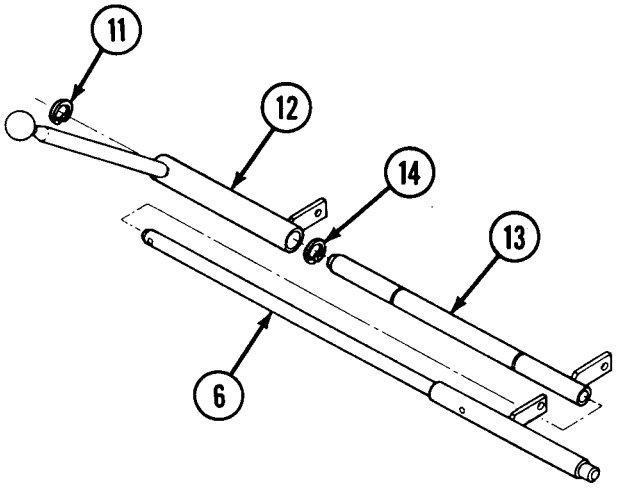
A Using hammer and punch, drive pin (1) from end of bellcrank lever (2) and shaft (3). Remove four bellcrank levers (2) from shaft (3). Discard pin (1).



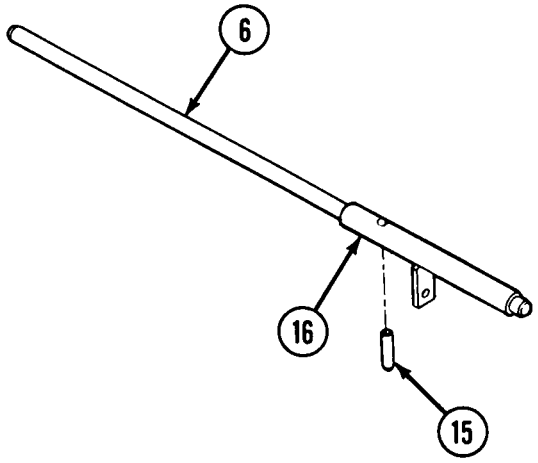
B Using hammer and punch, drive out pin (4) and remove bellcrank (5) from shaft (6). Discard pin (4).



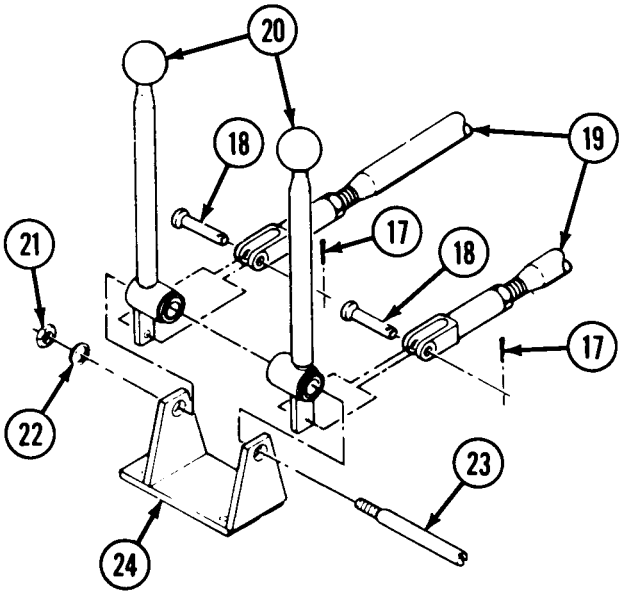
C Remove self-locking screw (7) from bellcrank (8), and remove bellcrank (8) and key (9) from bellcrank (10). Discard self-locking screw (7).



D Remove retaining ring (11) and bellcrank lever (12) from bellcrank (13), and remove retaining ring (14) and bellcrank (13) from shaft (6).

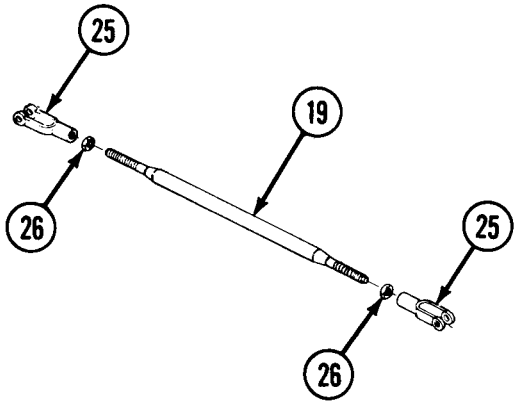


E Using hammer and punch, drive out pin (15) and remove bellcrank (16) from shaft (6). Discard pin (15).



F Remove two cotter pins (17), straight pins (18), and control rods (19) from bellcrank levers (20). Discard cotter pins (17).

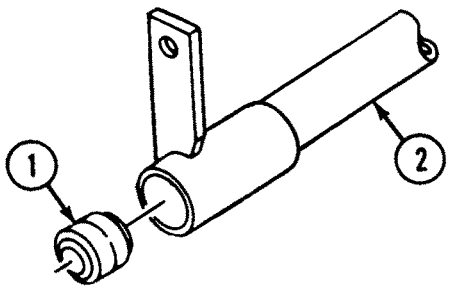
G Remove locknut (21), washer (22), shaft (23), and two bellcrank levers (20) from bracket (24). Discard locknut (21).



Note

- All nine control rods are disassembled the same way.
- Mark location of each clevis on control rods, and count out number of turns during removal for installation.

H Remove two clevises (25) and jamnuts (26) from control rod (19).



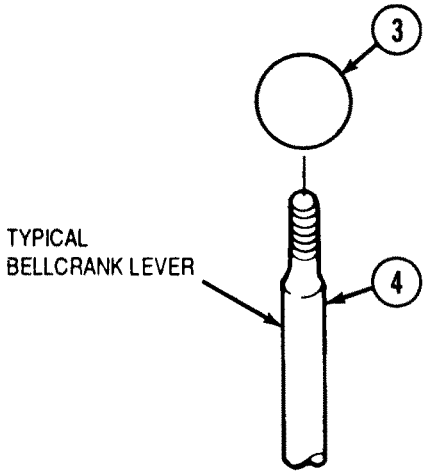
CAUTION

Bearings may become damaged during removal. Do not remove bearings unless inspection requires replacement. Failure to comply may result in damage to equipment.

Note

Bearings are removed from all bellcranks and bellcrank levers the same way.

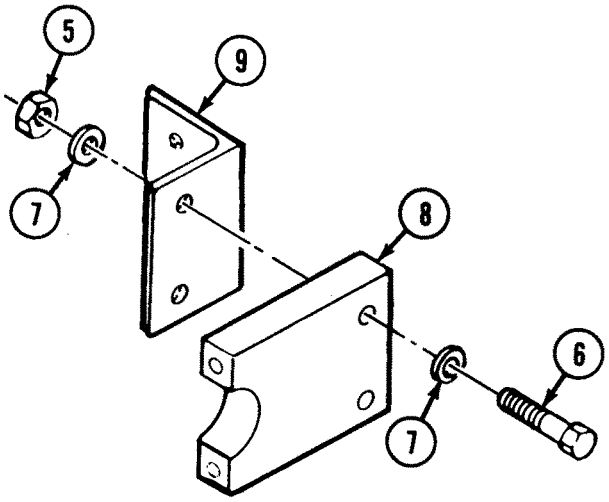
I Remove bearing (1) from bellcrank (2).



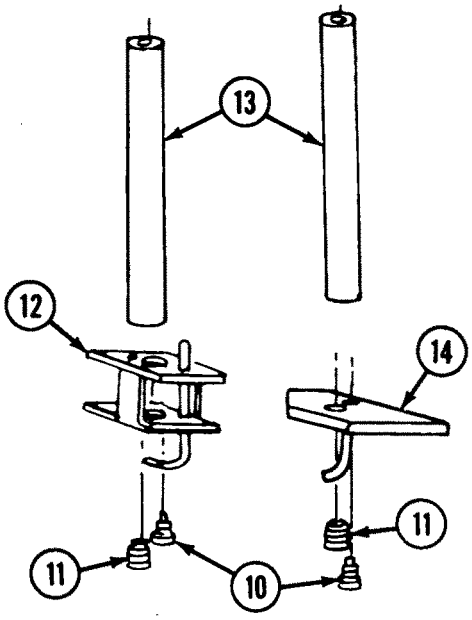
Note

Knobs are removed from all bellcrank levers the same way.

J Turn knob (3) counterclockwise and remove from bellcrank levers (4).



K Remove two locknuts (5), screws (6), four washers (7), and clamp (8) from angle bracket (9). Discard locknuts (5).



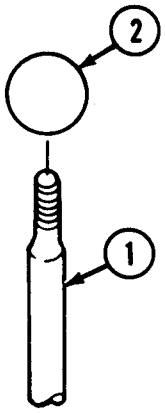
L Remove shoulder screw (10), ball plunger (11), and ejector stop (12) from interlock support (13).

M Remove shoulder screw (10), ball plunger (11), and apron stop (14) from interlock support (13).

REPAIR

Repair hydraulic control levers and linkage by replacing unserviceable parts and by using general repair methods (p 2-29).

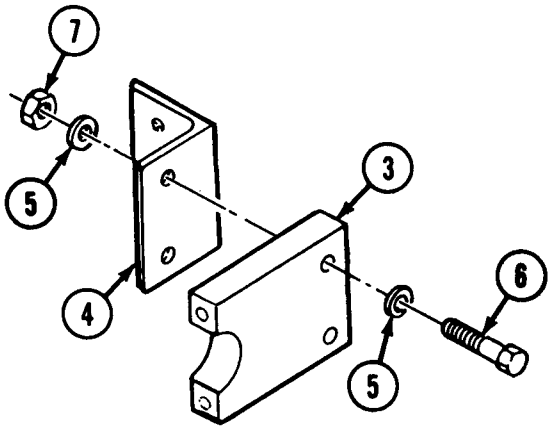
ASSEMBLY



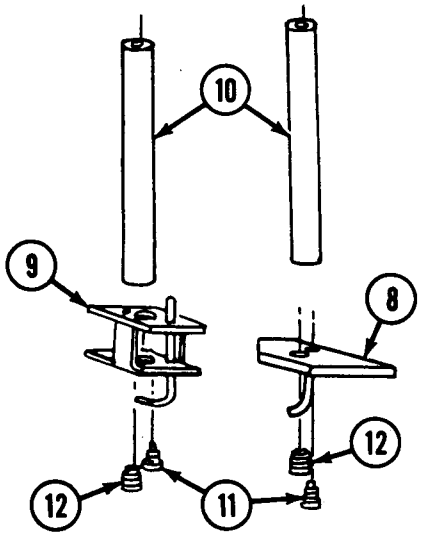
Note

Installation of knobs on bellcrank levers is the same for all bellcrank levers.

A Coat threads of bellcrank lever (1) with sealing compound primer and sealing compound, and install knob (2) on bellcrank lever (1).



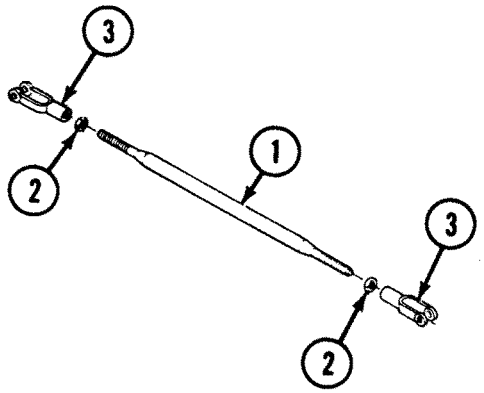
B Install clamp (3) on angle bracket (4) with four washers (5), two screws (6), and locknuts (7).



Note

Apply lubricating oil to threads of screws prior to installation.

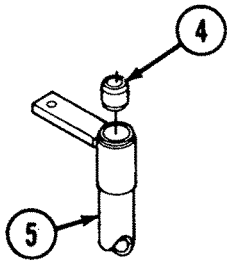
C Install apron stop (8) and ejector stop (9) on interlock supports (10) with two shoulder screws (11). Install ball plungers (12) on apron stop (8) and ejector stop (9). Tighten screws to 10-12 lb-ft (14-16 N·m).



Note

All nine control rods are assembled the same way.

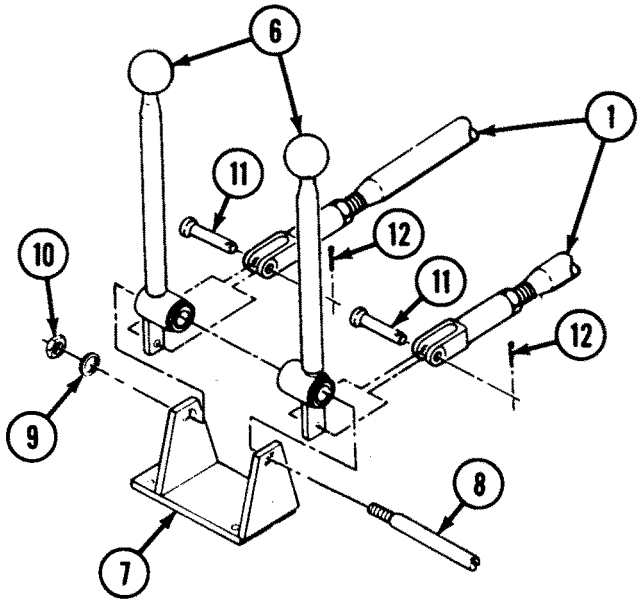
D Coat threads of control rod (1) with sealing compound primer and sealing compound, and install two jamnuts (2) and clevises (3) on control rod (1).



Note

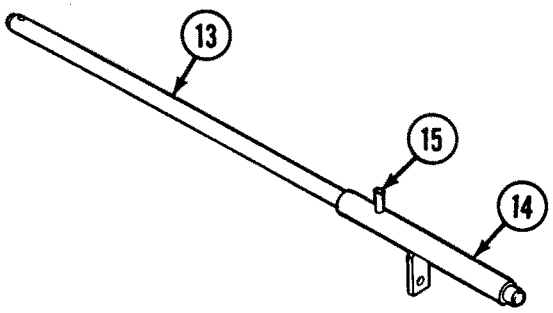
Bearings will extend 0.031-in. (0.787-mm) out of bellcranks and bellcrank levers when fully seated.

E Using a soft-nosed hammer or hammer and wood block, install bearing (4) on bellcrank (5).



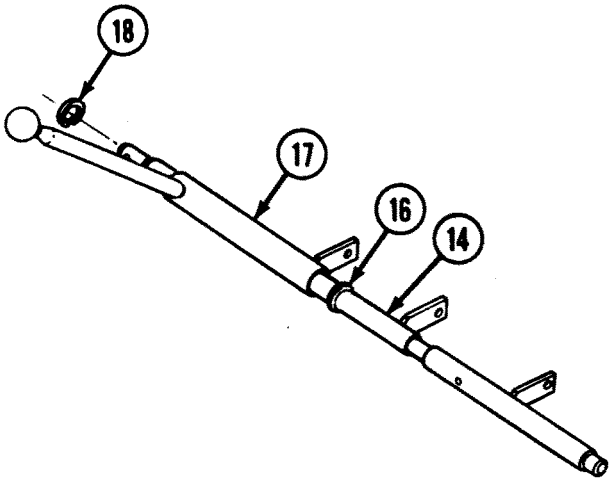
F Install two bellcrank levers (6) on bracket (7) with shaft (8), washer (9), and locknut (10).

G Install two control rods (1) on bellcrank levers (6) with straight pins (11) and cotter pins (12).

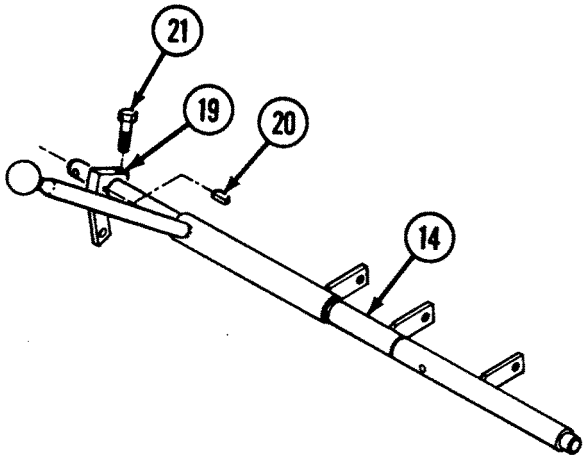


H Coat shaft (13) with solid film lubricant.

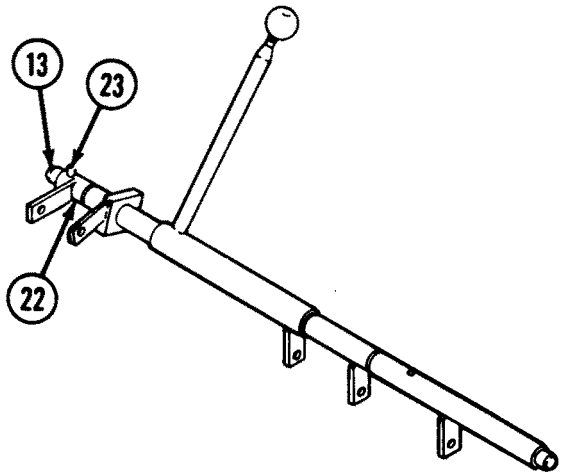
I Install bellcrank (14) on shaft (13) with pin (15).



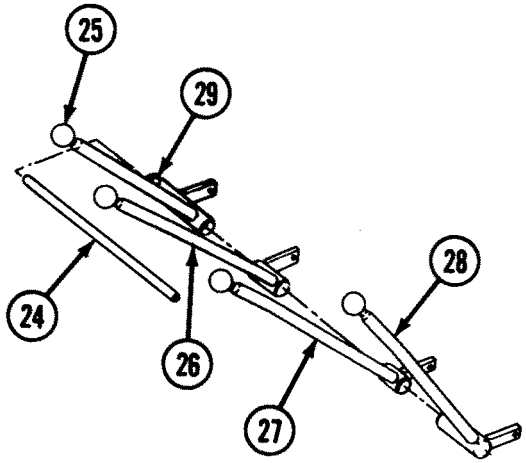
J Install retaining ring (16) on bellcrank (14), slide bellcrank (17) over bellcrank (14), and install retaining ring (18) on bellcrank (14).



K Install bellcrank (19) and key (20) on bellcrank (14) with self-locking screw (21).



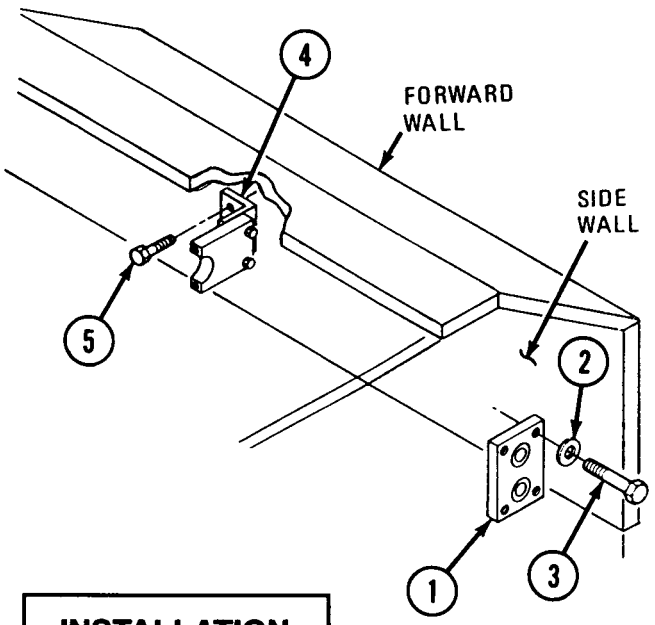
L Install bellcrank (22) on shaft (13) with pin (23).



M Coat shaft (24) with solid film lubricant.

N Install bellcrank levers (25), (26), (27), and (28) on shaft (24).

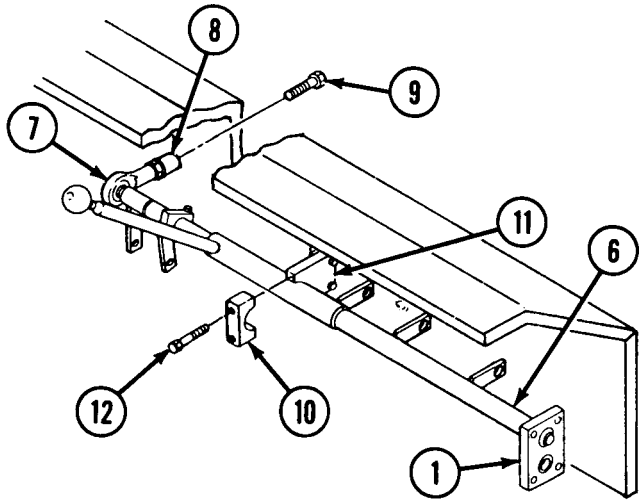
O Install pin (29) on bellcrank lever (25) and shaft (24).



INSTALLATION

A Install bracket (1) on side wall with four washers (2) and self-locking screws (3).

B Install angle bracket (4), on forward wall with two self-locking screws (5).

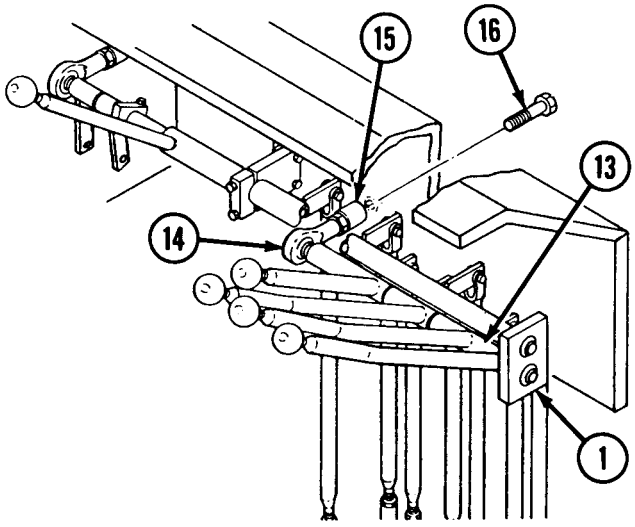


Note

Hold bearing at right angle to shaft when tightening self-locking screw.

C Place one end of shaft (6) in bracket (1), and install bearing (7) on other end of shaft (6) and forward wall with spacer (8) and self-locking screw (9).

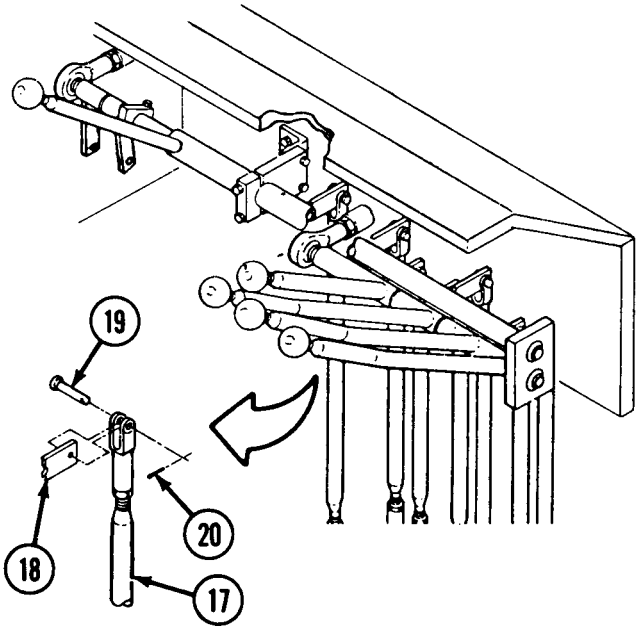
D Install clamp (10) on clamp (11) with two self-locking screws (12). Tighten self-locking screws (12) to 19-24 lb-ft (26-33 N·m).



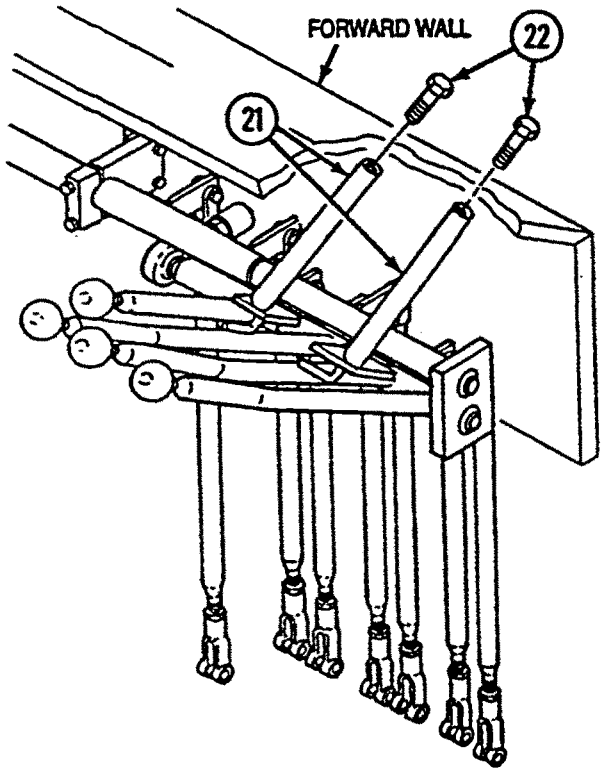
Note

Hold bearing at right angle to shaft when tightening self-locking screw.

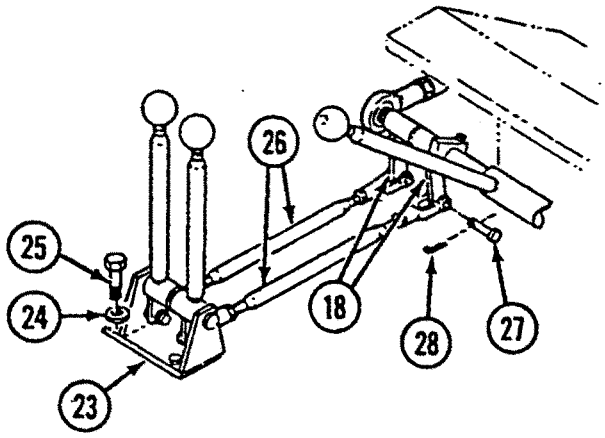
E Place one end of shaft (13) in bracket (1), and install bearing (14) on other end of shaft (13) and forward wall with spacer (15) and self-locking screw (16).



F Position seven control rods (17) up through floor plate, and install control rods (17) on bellcrank levers (18) with straight pins (19) and cotter pins (20).

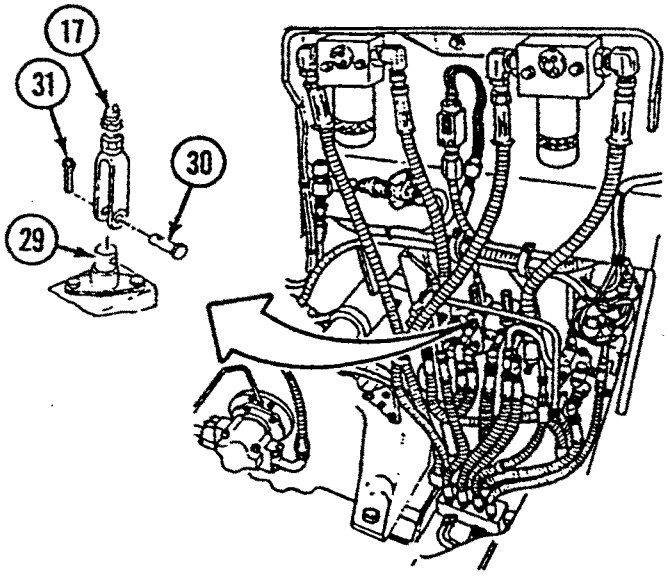


G Install two interlock supports (21) on forward wall with two self-locking screws (22).



H Install bracket (23) on driver's compartment floor with four washers (24) and self-locking screws (25).

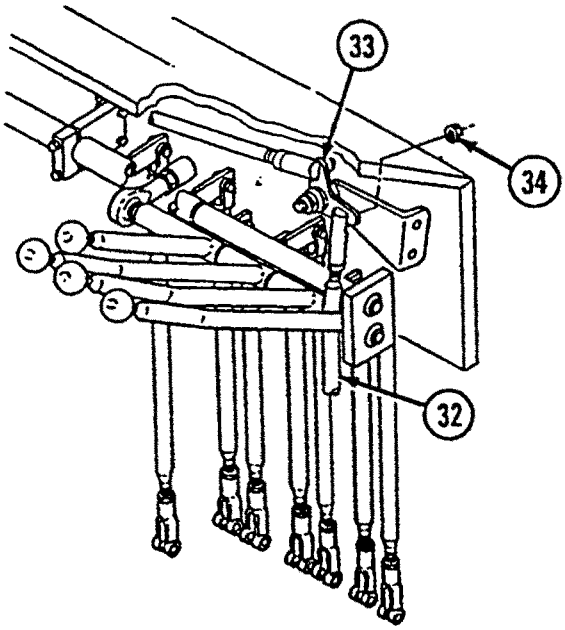
I Connect two suspension control rods (26) to bellcrank levers (18) with straight pins (27) and cotter pins (28).



Note

Do not bend cotter pins until after linkage adjustment is completed.

J Connect seven control rods (17) to control valve plungers (29) with straight pins (30) and cotter pins (31).



K Connect steering control ball joint (32) to steering control bellcrank (33) with locknut (34).

FOLLOW-ON TASKS:

- Adjust hydraulic control linkages (p 4-399).
- Retract ejector (TM 5-2350-262-10).

HYDRAULIC CONTROL LEVERS, BELLCRANKS, AND LINKAGE REPLACEMENT AND REPAIR (NEW PRODUCTION)

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D
Sealing Compound Primer	Item 13 Appendix D
Solid Film Lubricant	Item 24 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Cotter Pin (18)

Pin (3)

Self-locking Screw (17)

Locknut (4)

Parts Reference:

TM 5-2350-262-24P	Group AQ

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

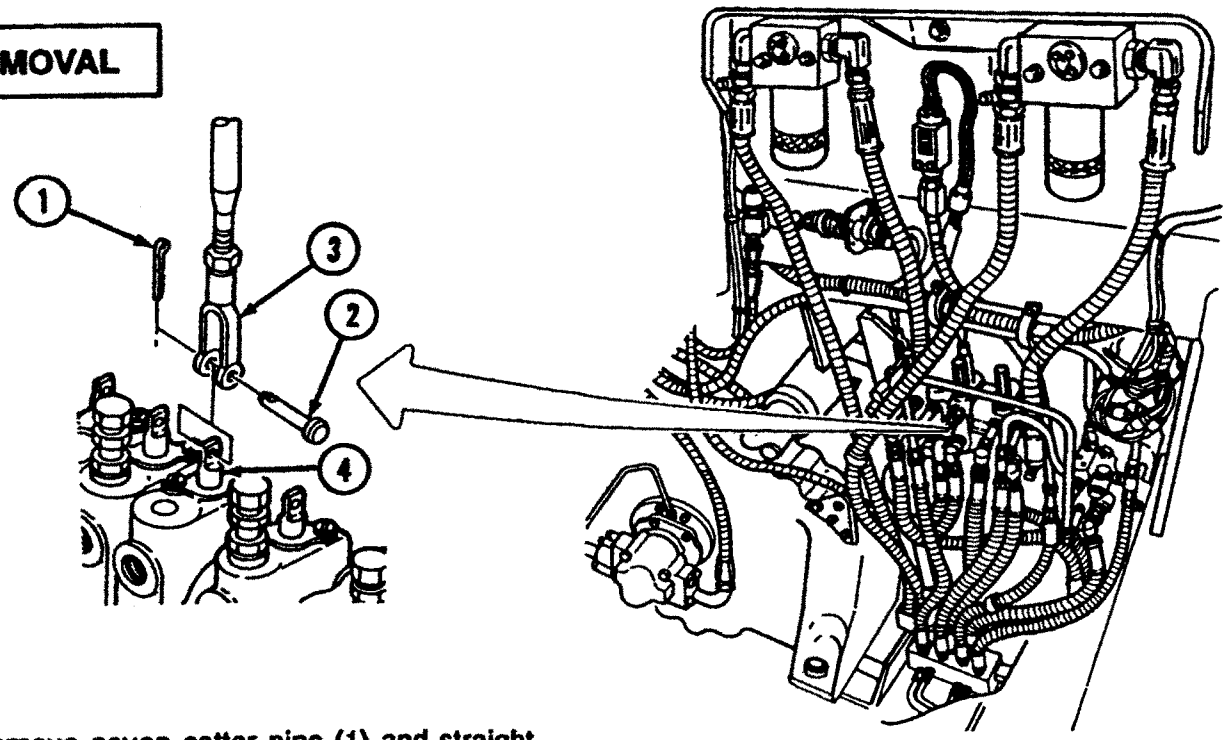
Troubleshooting Reference:

TM 5-2350-262-20-1	All Hydraulic Control Lever Functions are Inoperative

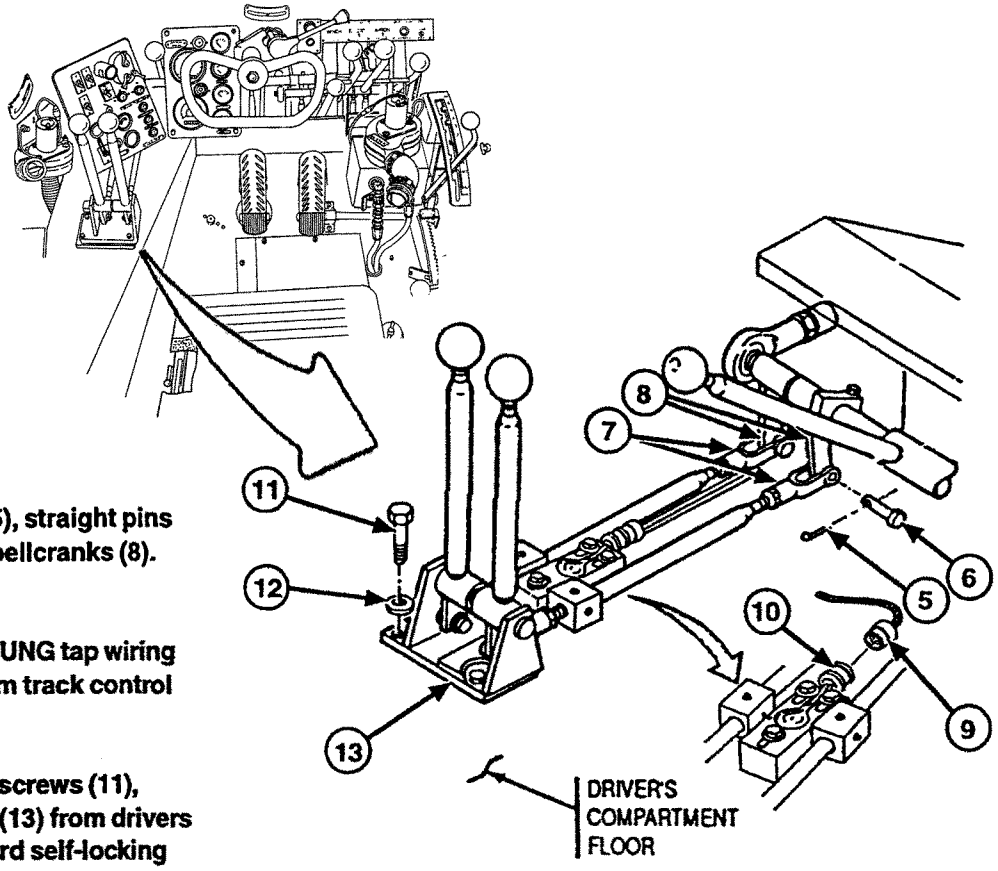
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 2-27	Hydraulic Pressure Relieved

REMOVAL



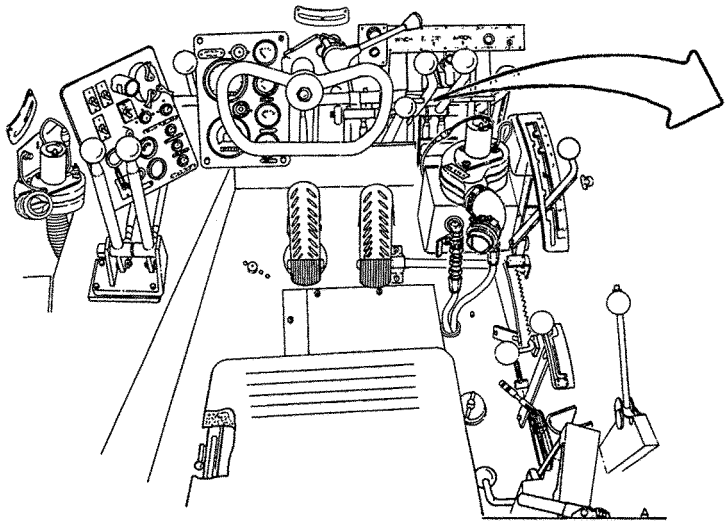
A Remove seven cotter pins (1) and straight pins (2) from seven clevises (3). Disconnect clevises (3) from control valve plungers (4). Discard cotter pins (1).

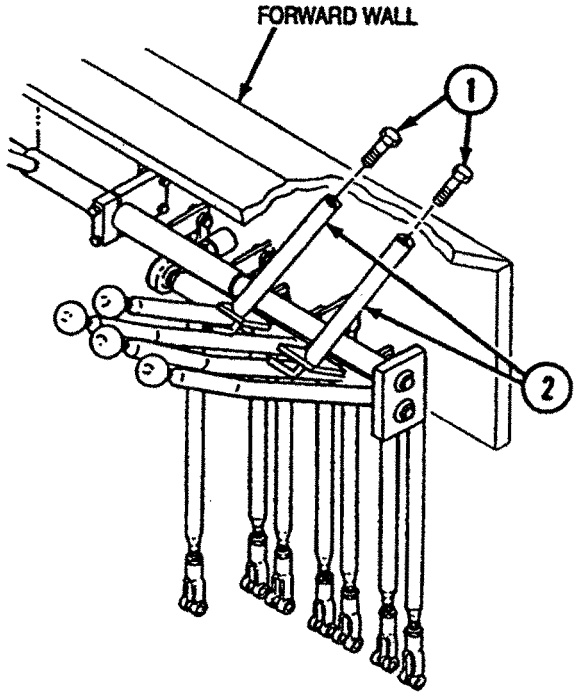


B Remove two cotter pins (5), straight pins (6), and clevises (7) from bellcranks (8). Discard cotter pins (5).

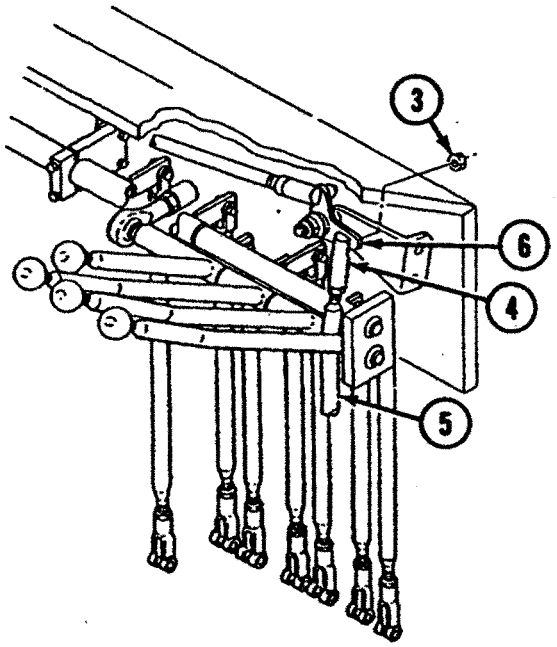
C Remove SPRUNG/UNSPRUNG tap wiring harness connector (9) from track control switch connector (10).

D Remove four self-locking screws (11), washers (12) and bracket (13) from drivers compartment floor. Discard self-locking screws (11).

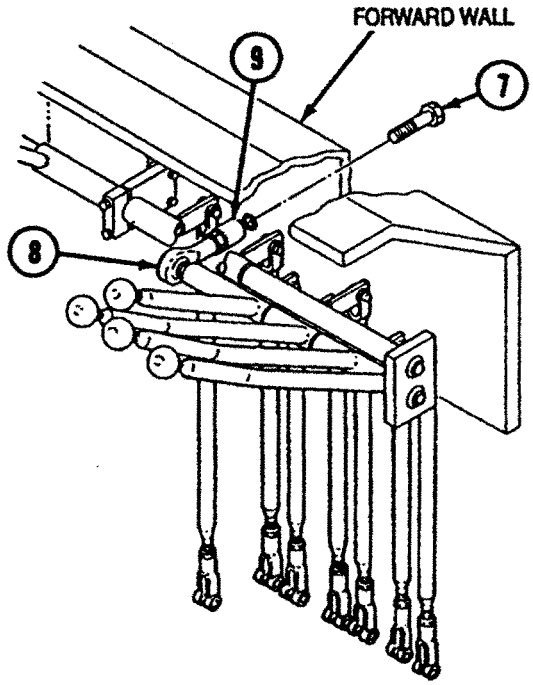




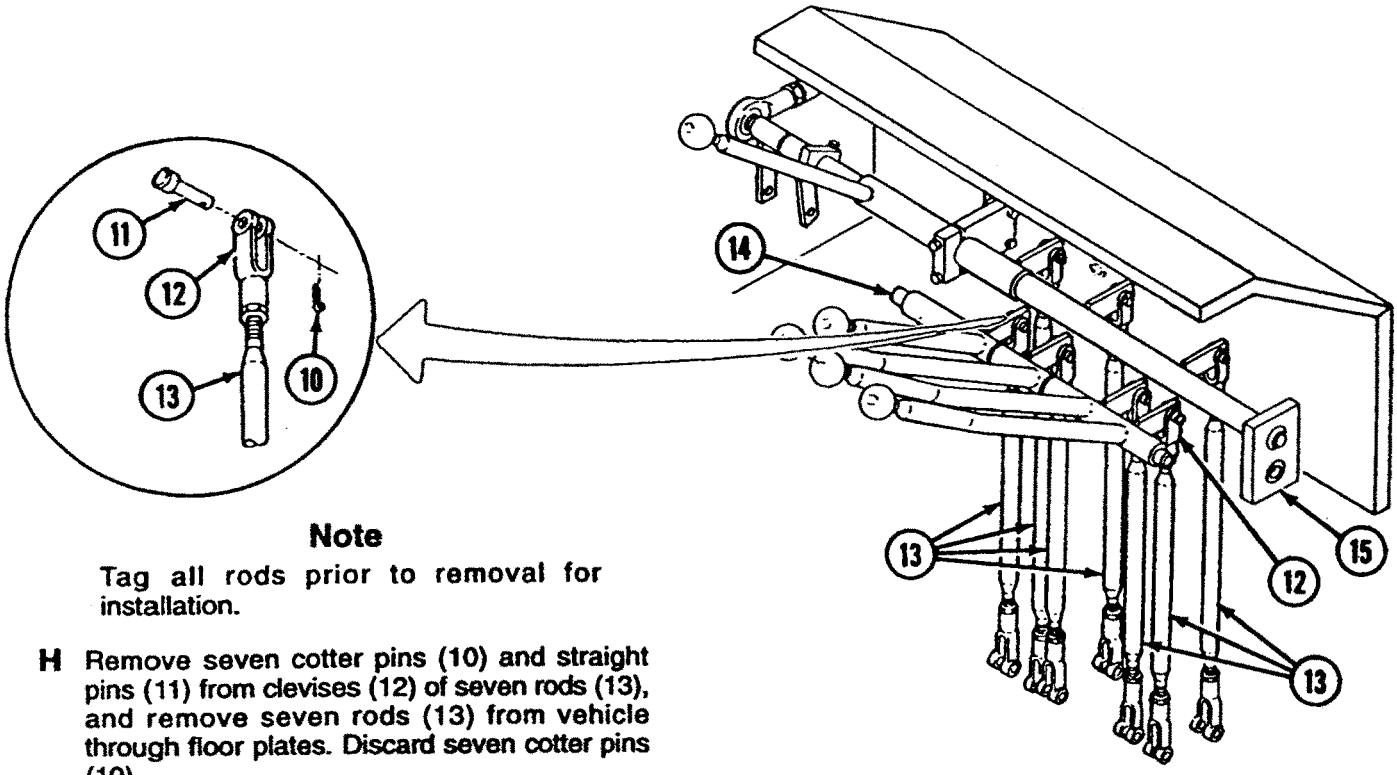
E Remove two self-locking screws (1) and interlock supports (2) from forward wall. Discard self-locking screws (1).



F Remove locknut (3) from steering control ball joint (4), and disconnect steering control rod (5) from steering control bellcrank (6). Discard locknut (3).



G Remove self-locking screw (7), bearing (8), and spacer (9) from forward wall. Discard self-locking screw (7).

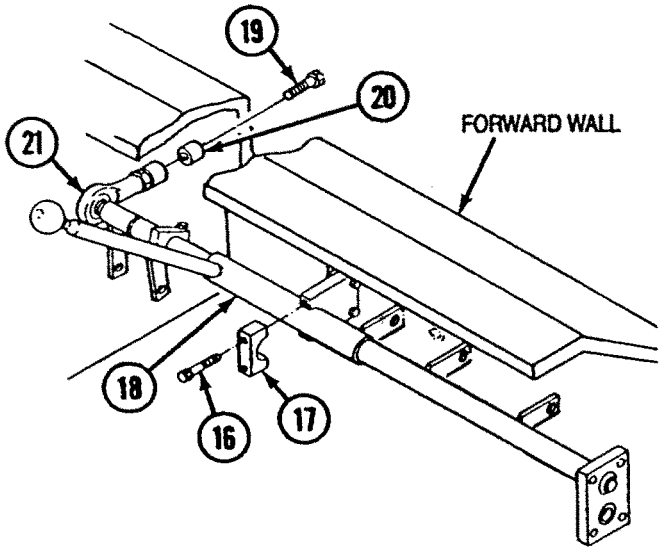


Note

Tag all rods prior to removal for installation.

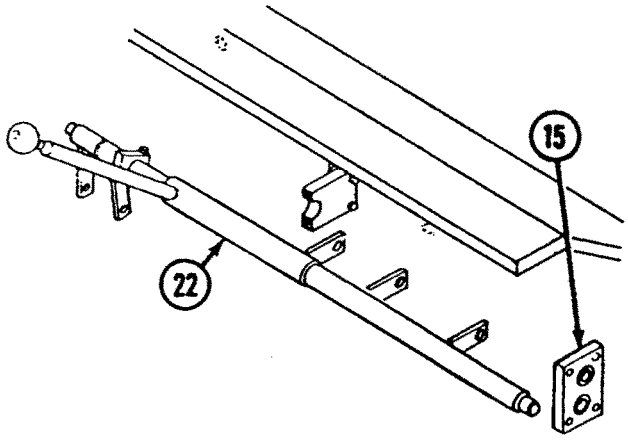
H Remove seven cotter pins (10) and straight pins (11) from clevises (12) of seven rods (13), and remove seven rods (13) from vehicle through floor plates. Discard seven cotter pins (10).

I Remove shaft and bellcranks (14) from bracket (15).



J Remove two self-locking screws (16) and clamp (17) from bellcrank (18). Discard self-locking screws (16).

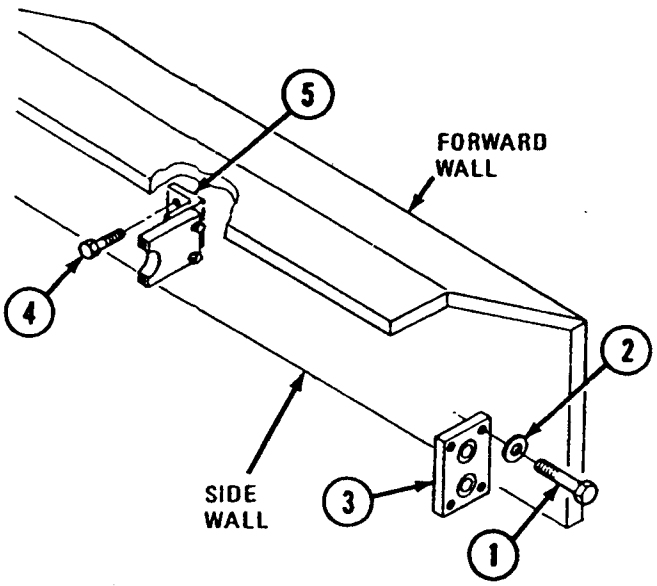
K Remove self-locking screw (19), spacer (20), and bearing (21) from forward wall. Discard self-locking screw (19).



CAUTION

Ensure hydraulic controls do not hang up on electrical leads. If necessary, disconnect electrical leads. Failure to comply may result in damage to equipment.

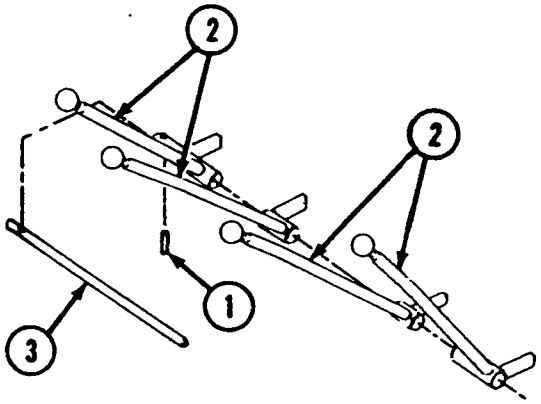
L Remove shaft and bellcranks (22) from bracket (15).



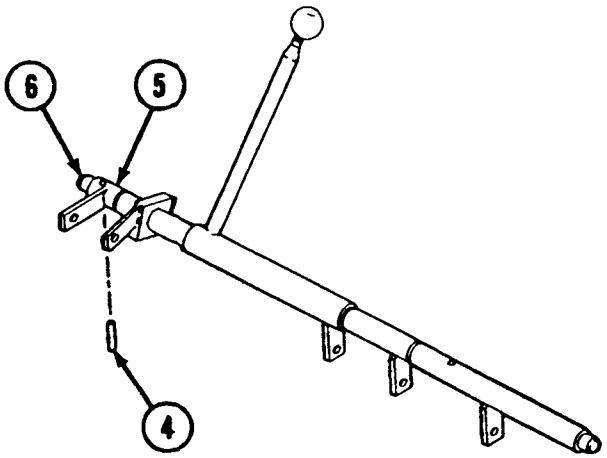
M Remove four self-locking screws (1), washers (2), and bracket (3) from side wall. Discard self-locking screws (1).

N Remove two self-locking screws (4) and angle bracket (5) from forward wall. Discard self-locking screws (4).

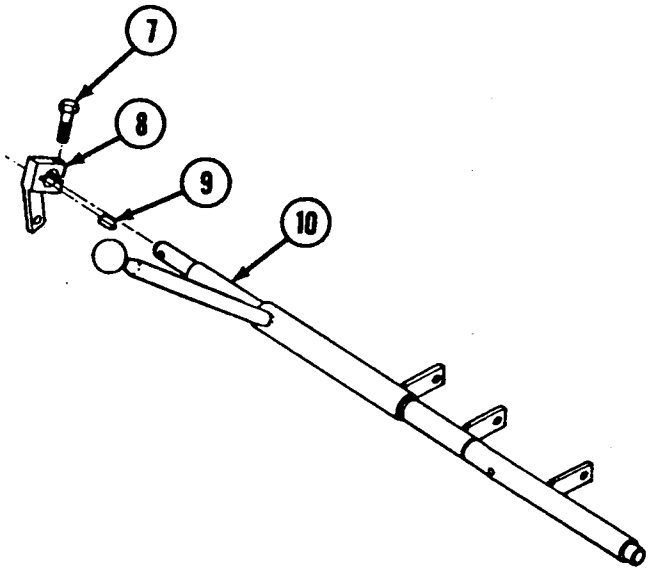
DISASSEMBLY



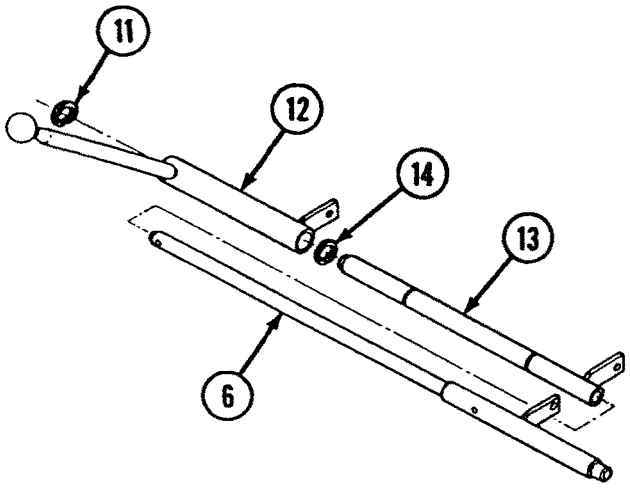
A Using hammer and punch, drive pin (1) from end of bellcrank lever (2) and shaft (3). Remove four bellcrank levers (2) from shaft (3). Discard pin (1).



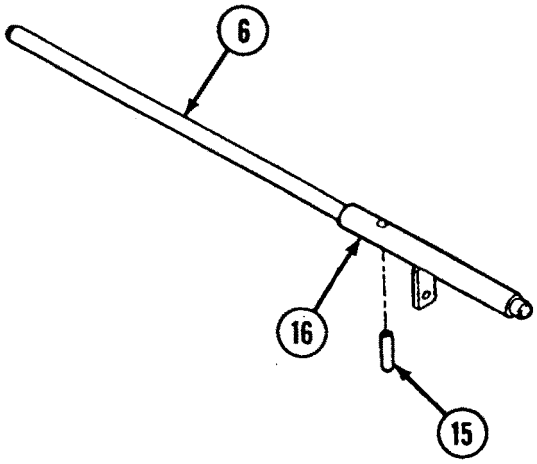
B Using hammer and punch, drive out pin (4) and remove bellcrank (5) from shaft (6). Discard pin (4).



C Remove self-locking screw (7) from bellcrank (8), and remove bellcrank (8) and key (9) from bellcrank (10). Discard self-locking screw (7).



D Remove retaining ring (11) and bellcrank lever (12) from bellcrank (13), and remove retaining ring (14) and bellcrank (13) from shaft (6).



E Using hammer and punch, drive out pin (15) and remove bellcrank (16) from shaft (6). Discard pin (15).

Note

Mark location of track operator switches on control rods during removal to aid in installation.

F Remove two cotter pins (17), straight pins (18), and control rods (19) from bellcrank levers (20). Discard cotter pins (17).

G Remove two clevises (21) and jamnuts (22) from control rods (19).

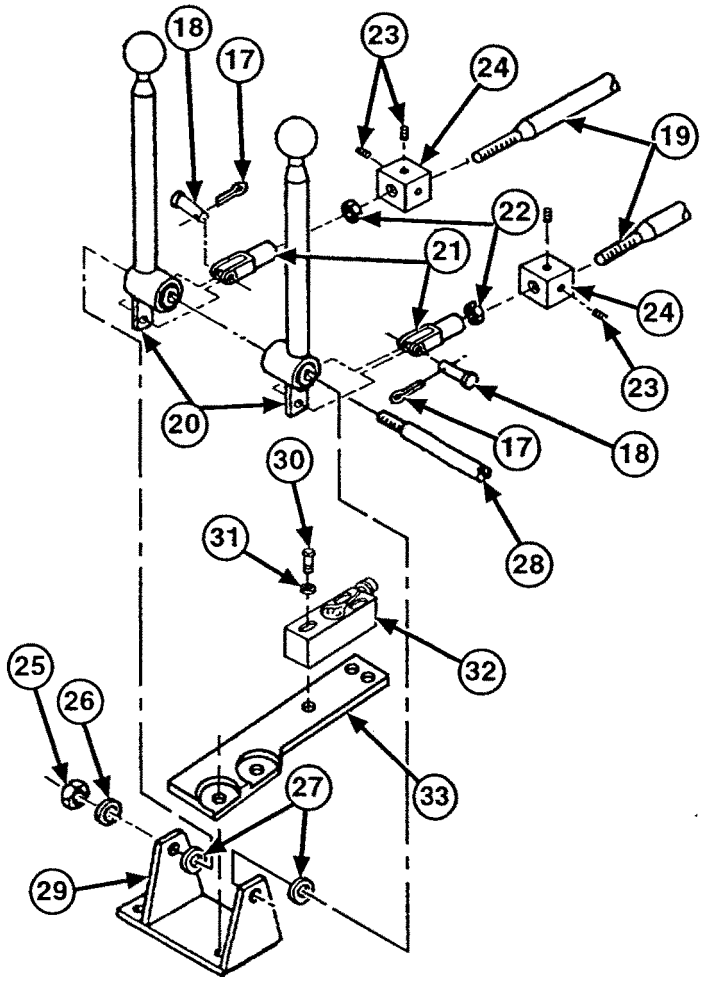
H Loosen four setscrews (23), and slide two track operator switches (24) from the end of control rods (19).

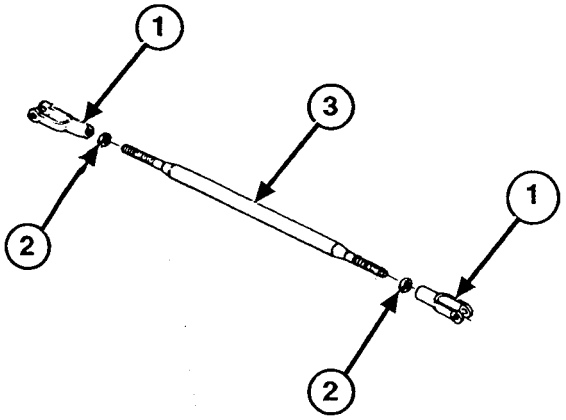
Note

Washer(s) (27) are used as spacers and may or may not be present.

I Remove locknut (25), washer (26), washer(s) (27), shaft (28) and two bellcrank levers (20) from bracket (29). Discard locknut 25.

J Remove three screws (30), three flat washers (31), and track control switch (32) from track control base (33).

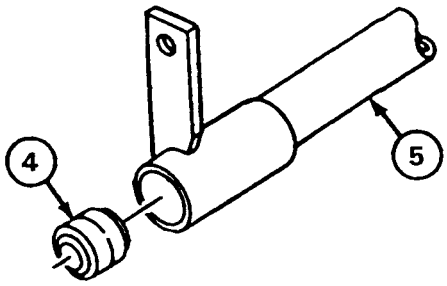




Note

- The remaining control rods are disassembled the same way.
- Mark location of each clevis on control rods, and count out number of turns during removal for installation.

K Remove two clevises (1) and jamnuts (2) from control rod (3).



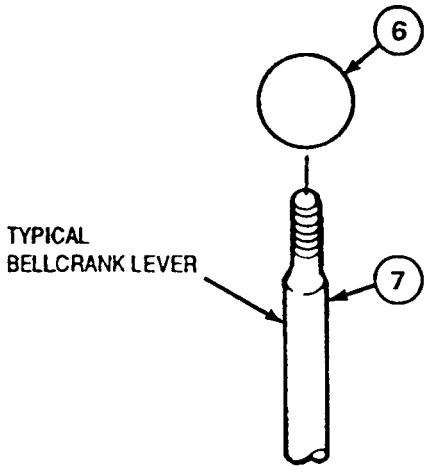
CAUTION

Bearings may become damaged during removal. Do not remove bearings unless inspection requires replacement. Failure to comply may result in damage to equipment.

Note

Bearings are removed from all bellcranks and bellcrank levers the same way.

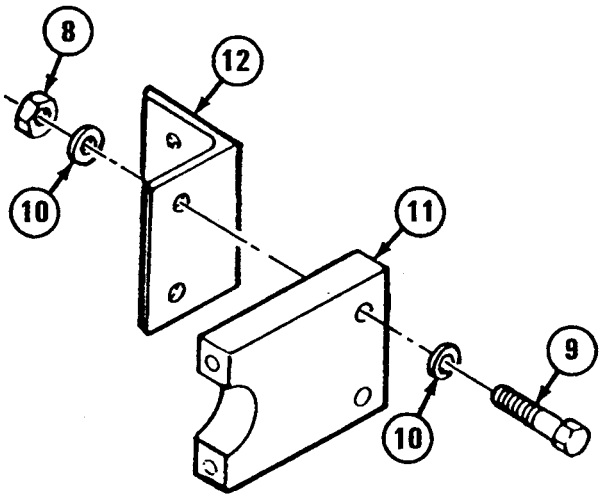
L Remove bearing (4) from bellcrank (5).



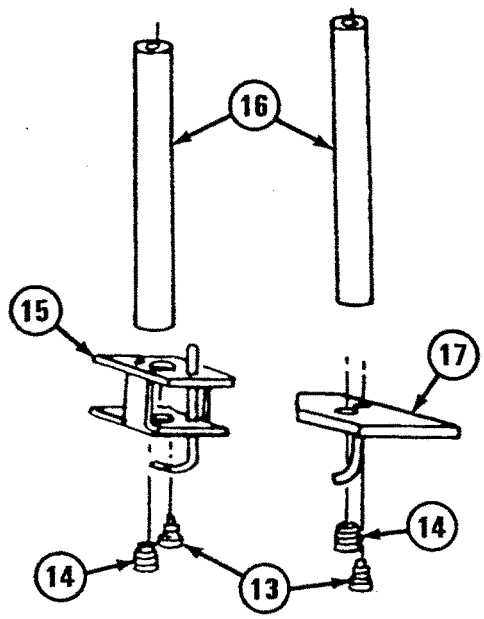
Note

Knobs are removed from all bellcrank levers the same way.

M Turn knob (6) counterclockwise and remove from bellcrank levers (7).



N Remove two locknuts (8), screws (9), four washers (10), and clamp (11) from angle bracket (12). Discard locknuts (8).



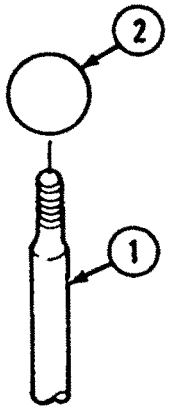
O Remove shoulder screw (13), ball plunger (14), and ejector stop (15) from interlock support (16).

P Remove shoulder screw (13), ball plunger (14), and apron stop (17) from interlock support (16).

REPAIR

Repair hydraulic control levers and linkage by replacing unserviceable parts and by using general repair methods (p 2-29).

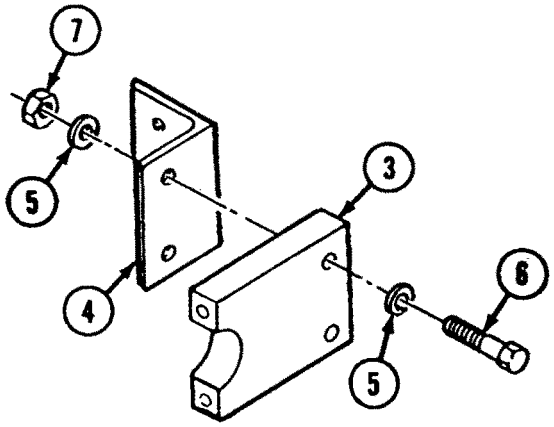
ASSEMBLY



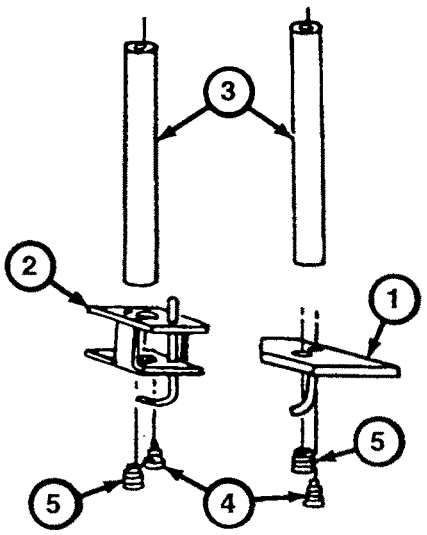
Note

Installation of knobs on bellcrank levers is the same for all bellcrank levers.

A Coat threads of bellcrank lever (1) with sealing compound primer and sealing compound, and install knob (2) on bellcrank lever (1).



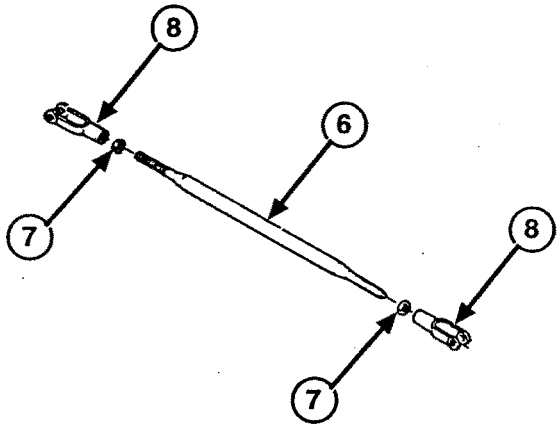
B Install clamp (3) on angle bracket (4) with four washers (5), two screws (6), and locknuts (7).



Note

Apply lubricating oil to threads of screws prior to installation.

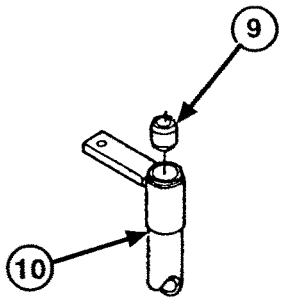
C Install apron stop (1) and ejector stop (2) on interlock supports (3) with two shoulder screws (4). Install ball plungers (5) on apron stop (1) and ejector stop (2). Tighten screws to 10-12 lb-ft (14-16 N-m).



Note

All nine control rods are assembled the same way.

D Coat threads of control rod (6) with sealing compound primer and sealing compound, and install two jamnuts (7) and clevises (8) on control rod (6).



Note

Bearings will extend 0.031-in. (0.787-mm) out of bellcranks and bellcrank levers when fully seated.

E Using a soft-nosed hammer or hammer and wood block, install bearing (9) on bellcrank (10).

F Install track control switch (11) flush with track control base (12) using three flat washers (13) and three screws (14). Position track control base (12) between bracket (15).

G Install track operator switches (16) by sliding them onto the end of the control rods (17) in approximate positions they were in during disassembly. Snug four setscrews (18).

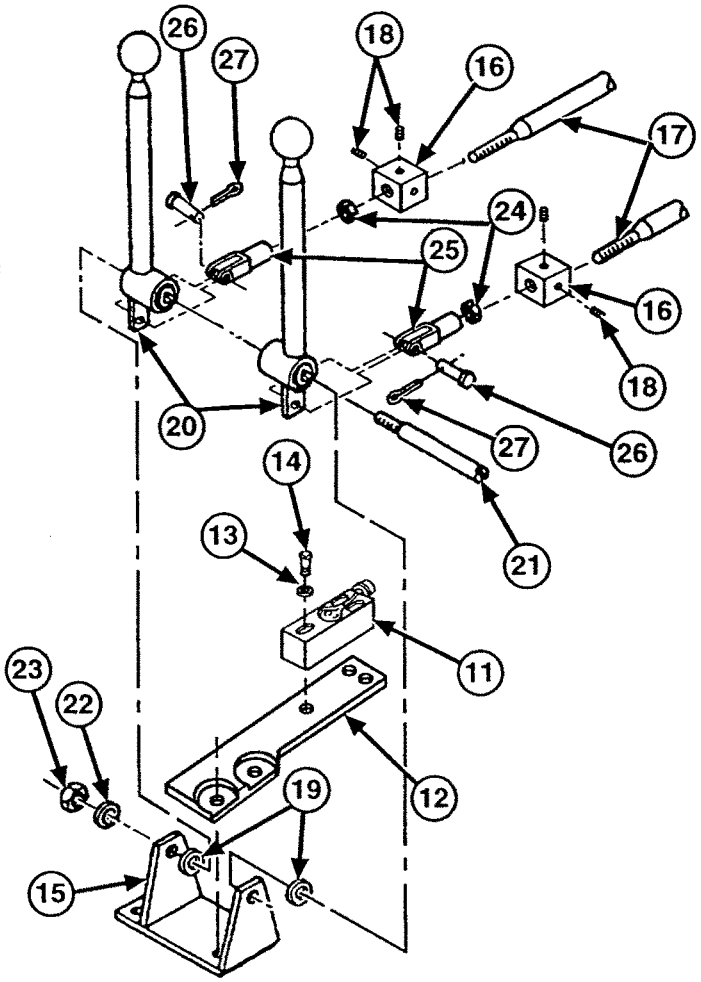
Note

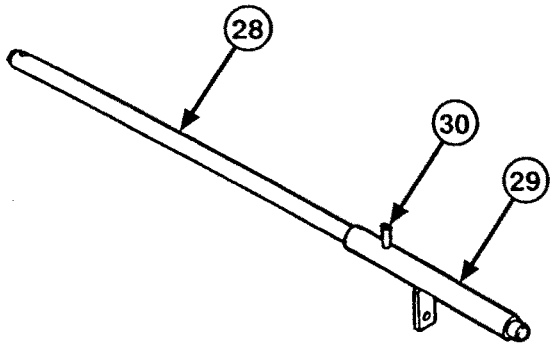
- Washer(s) (19) are used as spacers and may or may not be present.
- Spacer washers are used as required to remove lateral slack between bellcrank levers (20) and bracket (15).

H Install two bellcrank levers (20) on bracket (15) using shaft (21), washer(s) (19), washer (22) and new locknut (23).

I Install two jamnuts (24), and two clevises (25) on control rods (17).

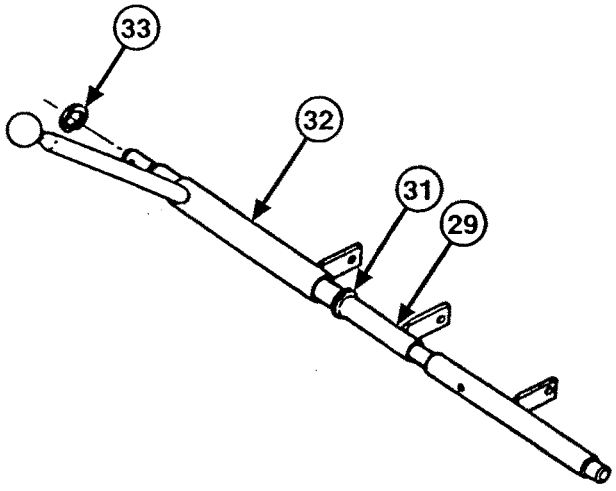
J Install control rods (17) on bellcrank levers (20), using two straight pins (26) and two new cotter pins (27).



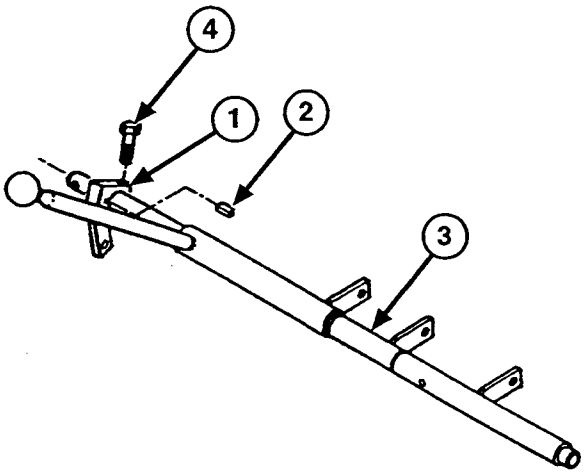


K Coat shaft (28) with solid film lubricant.

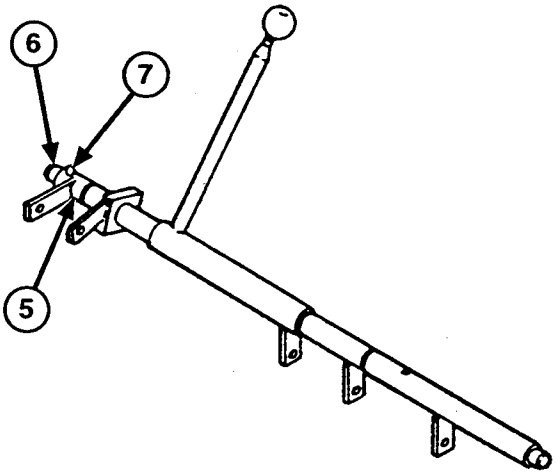
L Install bellcrank (29) on shaft (28) with pin (30).



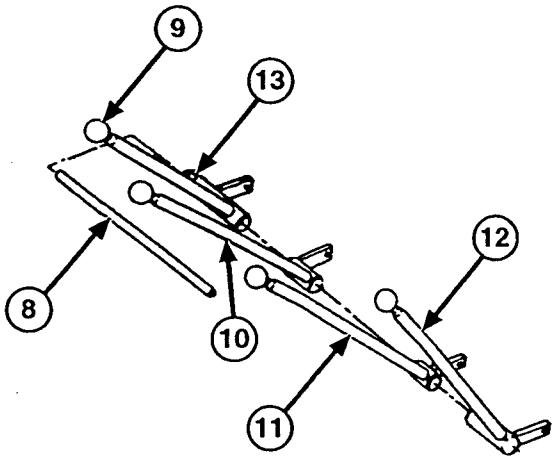
M Install retaining ring (31) on bellcrank (29), slide bellcrank (32) over bellcrank (29), and install retaining ring (33) on bellcrank (29).



N Install bellcrank (1) and key (2) on bellcrank (3) with new self-locking screw (4).



O Install bellcrank (5) on shaft (6) with pin (7).

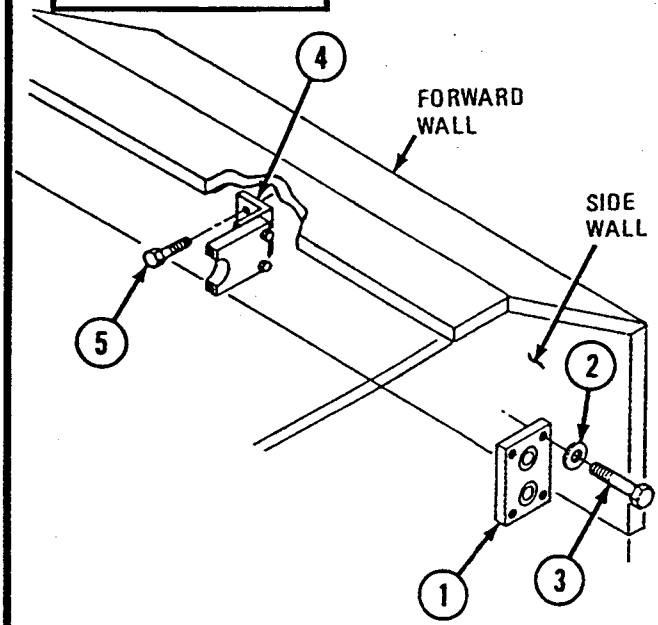


P Coat shaft (8) with solid film lubricant.

Q Install bellcrank levers (9), (10), (11), and (12) on shaft (8).

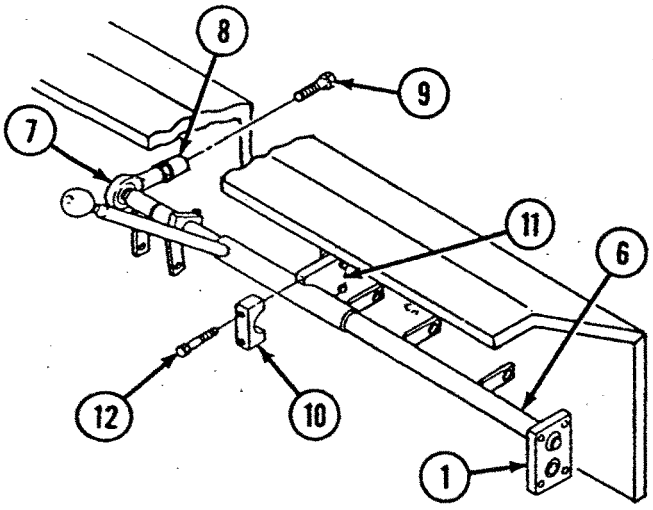
R Install pin (13) on bellcrank lever (9) and shaft (8).

INSTALLATION



A Install bracket (1) on side wall with four washers (2) and self-locking screws (3).

B Install angle bracket (4), on forward wall with two self-locking screws (5).

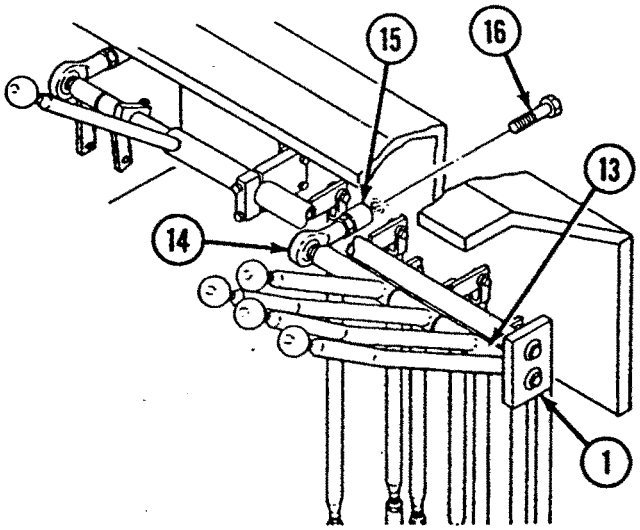


Note

Hold bearing at right angle to shaft when tightening self-locking screw.

C Place one end of shaft (6) in bracket (1), and install bearing (7) on other end of shaft (6) and forward wall with spacer (8) and new self-locking screw (9).

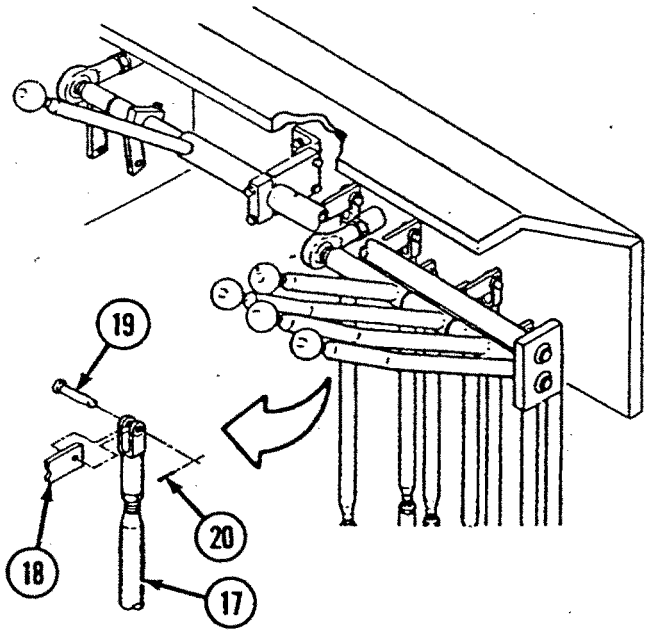
D Install clamp (10) on clamp (11) with two new self-locking screws (12). Tighten self-locking screws (12) to 19-24 lb-ft (26-33 N•m).



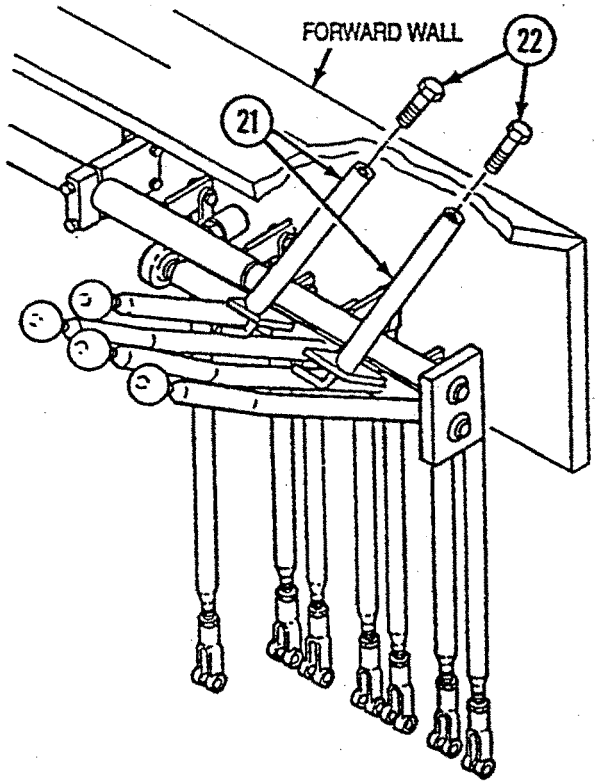
Note

Hold bearing at right angle to shaft when tightening self-locking screw.

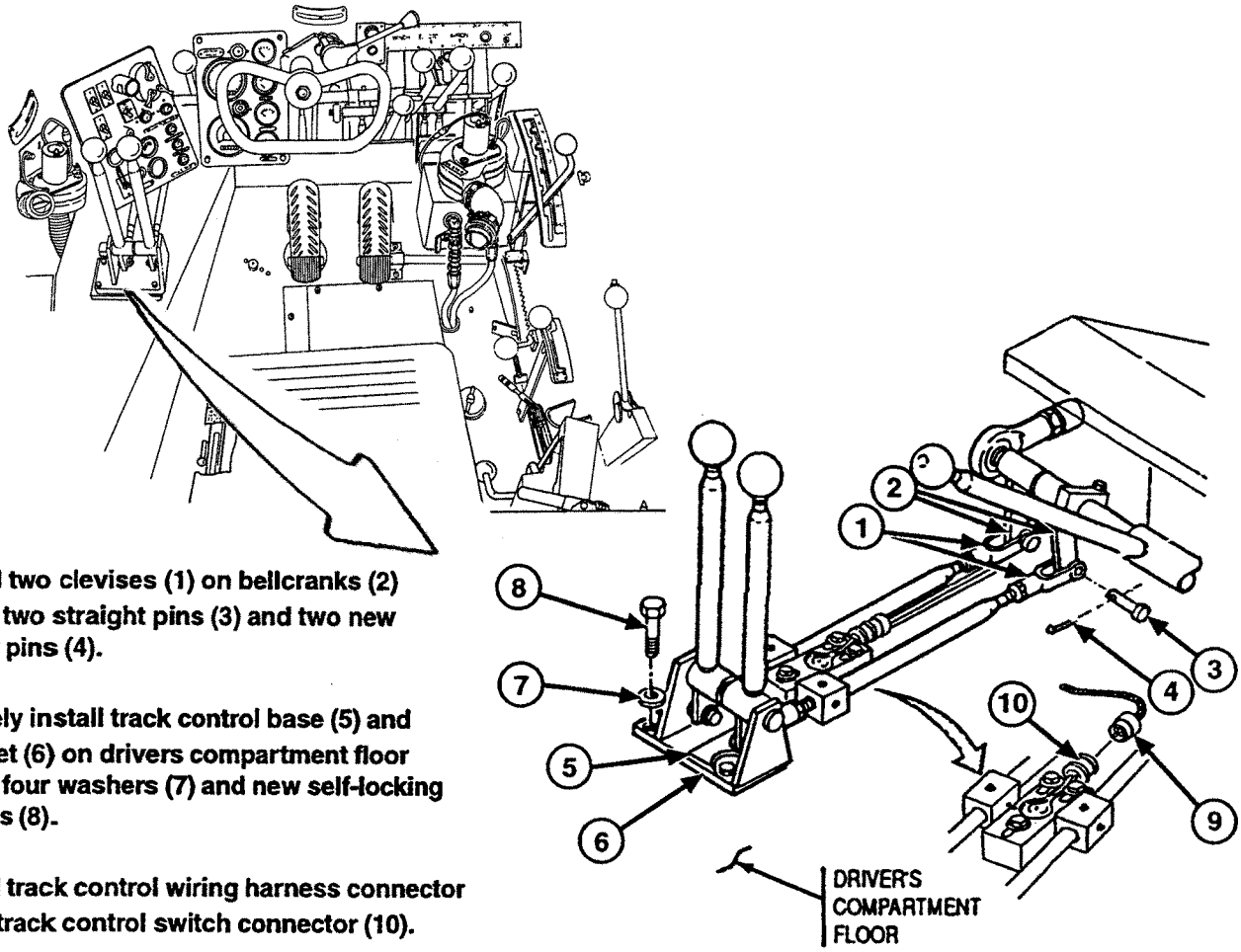
E Place one end of shaft (13) in bracket (1), and install bearing (14) on other end of shaft (13) and forward wall with spacer (15) and new self-locking screw (16).



F Position seven control rods (17) up through floor plate, and install control rods (17) on bellcrank levers (18) with straight pins (19) and new cotter pins (20).



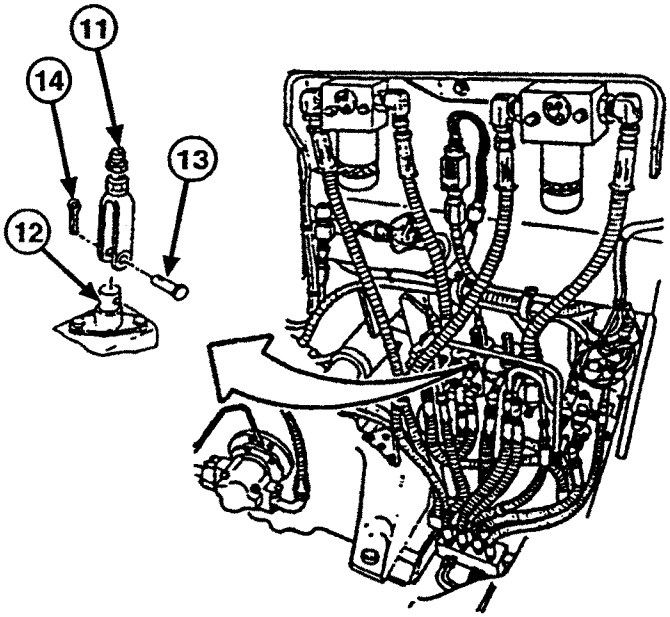
G Install two interlock supports (21) on forward wall with two new self-locking screws (22).



H Install two clevises (1) on bellcranks (2) using two straight pins (3) and two new cotter pins (4).

I Loosely install track control base (5) and bracket (6) on drivers compartment floor using four washers (7) and new self-locking screws (8).

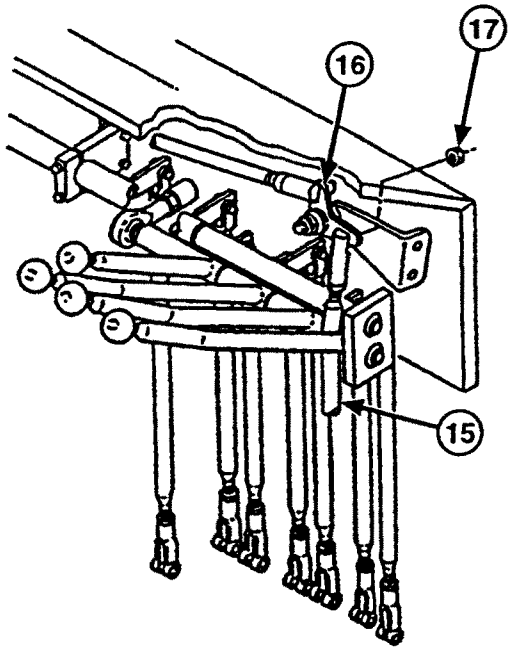
J Install track control wiring harness connector (9) to track control switch connector (10).



Note

Do not bend cotter pins until after linkage adjustment is completed.

K Connect seven control rods (11) to control valve plungers (12) with straight pins (12) and new cotter pins (14).



L Connect steering control ball joint (15) to steering control bellcrank (16) with new locknut (17).

FOLLOW-ON TASKS:

- Adjust hydraulic control linkages (p 4-399).
- Adjust semi-automatic track adjuster hydraulic control switches adjustment (NEW PRODUCTION) (p 4-399.1).

Section XII. GROUP AR, HYDRAULIC INSTALLATION

TASK	PAGE
Apron Cylinder to Inner Bowl Hydraulic Tubes Replacement	4-428
Apron Lower Relief Valve (20) Adjustment	4-526
Apron Relief Valve (19) Adjustment	4-523
Bilge Pump Relief Valve (24) Adjustment	4-502
Compensating Hydraulic Pump Replacement	4-490
Compensating Hydraulic Pump Testing and Adjustment	4-486
Directional Control Valve Bank Replacement	4-497
Elector Relief Valve (21) Adjustment	4-505
Hydraulic Front Manifolds and Fittings Replacement	4-451
Hydraulic High-Pressure Filter and Element Replacement	4-475
Hydraulic Hose Assembly Replacement	4-413
Hydraulic Intermediate Manifolds and Fittings Replacement	4-453
Hydraulic Suspension Tubes, Fittings, and Pressure Relief Valve Replacement	4-441
Hydraulic Return Hoses Replacement	4-420
Hydraulic Return Line Filter Element Replacement (NEW PRODUCTION)	4-480.1
Hydraulic Return Line Filter Element Replacement (OLD PRODUCTION)	4-478
Hydraulic Return LIne Filter Replacement (NEW PRODUCTION)	4-483.1
Hydraulic Return Line Filter Replacement (OLD PRODUCTION)	4-481
Hydraulic Suspension Hose Assembly Replacement	4-416
Hydraulic Tank Dipstick and Strainer Filter Replacement	4-484
Hydraulic Tank Drain and Fill	4-412.1
Hydraulic Tube Assembly Replacement	4-425
Inner Bowl Apron Hydraulic Cylinder Tubes Replacement	4-432
Left Pump Line Relief Valve (13L) Adjustment	4-520
Left Suspension Raise Relief Valve (3L) Adjustment	4-514
Main Hydraulic Accumulator Charge and Gauge Assembly Replacement and Repair	4-472
Main Hydraulic Accumulator Charging	4-466
Main Hydraulic Accumulator and Bracket Replacement	4-470
Main Supply Hydraulic Tube Assembly Replacement	4-436
Manifold Drain Valves Replacement	4-461
Right Pump Line Relief Valve (13R) Adjustment	4-517
Right Suspension Raise Relief Valve (3R) Replacement	4-511
SPRUNG/UNSPRUNG Valve Replacement	4-529
Suspension Relief Valve Adjustment	4-445
Suspension Relief Valve Replacement	4-449
Winch Relief Valve (C2) Adjustment	4-508

HYDRAULIC TANK DRAIN AND FILL

This task covers:

a. Draining

b. Filling

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 2-27	Hull Raised and Blocked
Page 3-82	Hydraulic Pressure Relieved
Page 4-379	Hull Protective Plates Removed

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

DRAINING

WARNING

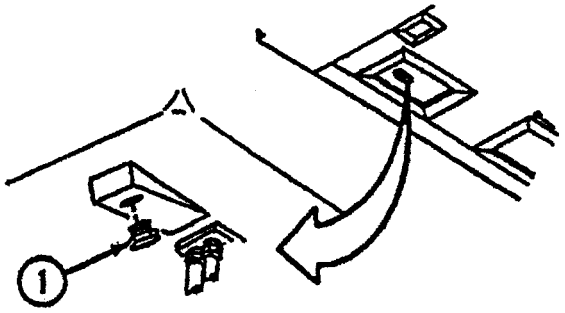
High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Failure to comply may result in severe injury to personnel.

Note

Hydraulic tank capacity is 108 qt (102.2 L).

A Retract ejector (TM 5-2350-262-10).

B Remove plug (1) and drain oil into suitable container. Remove hydraulic tank gauge (2) to speed oil flow.



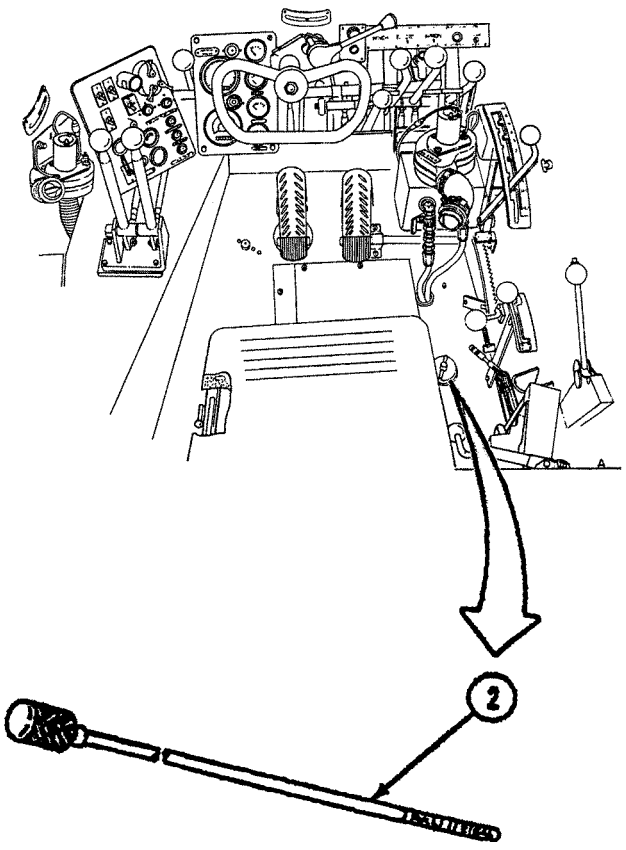
FILLING

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel

A After draining, clean plug (1) in drycleaning solvent (SD-3) and install.

B Fill hydraulic tank with OE/HDO or OEA, until gauge (2) indicates FULL. Install hydraulic tank gauge (2).



FOLLOW-ON TASKS:

- Install hull protective plates (p 4-379).
- Service Hydraulic Tank (TM 5-2350-262-10).
- Remove Blocks, lower hull (p 2-27).

HYDRAULIC HOSE ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Tiedown Strap(s)	Item 32 Appendix D

Parts:

Self-locking Screw (AR)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting References:

TM 5-2350-262-20-3	All Hydraulic Functions Inoperative

Equipment Condition:

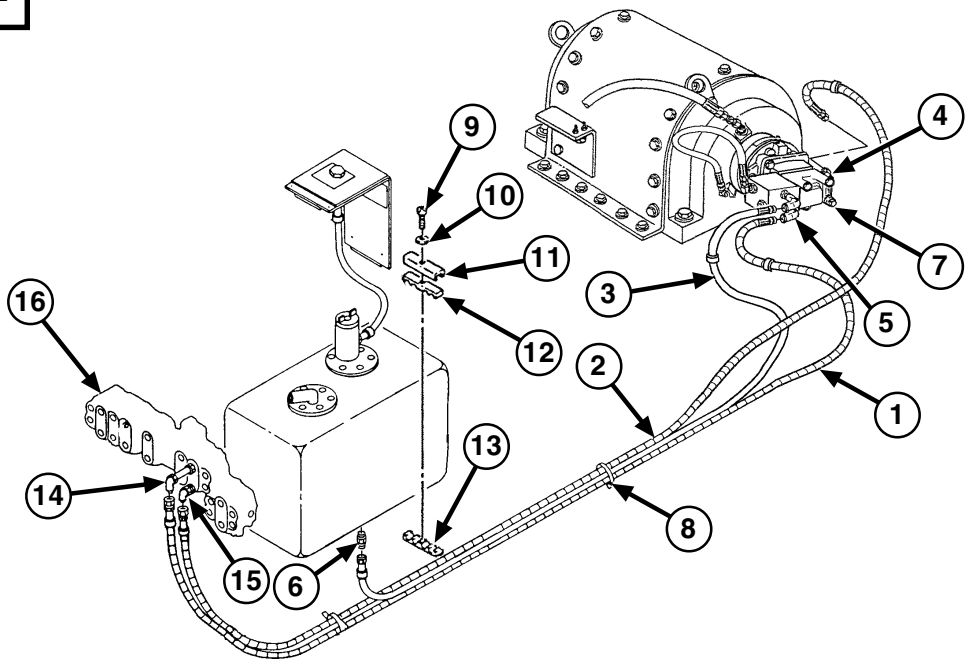
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved
Page 4-380	Rear Floor Plates Removed
Page 4-375	Hull Access Covers Removed

General Safety Instructions:

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.

REMOVAL



WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

- All hydraulic hose assemblies are replaced the same way. This task covers replacement of a typical hydraulic hose assembly.
- Number of tiedown straps and clamps may vary for each hose assembly.
- Use two wrenches when disconnecting hoses from fittings.
- Have suitable container ready to catch hydraulic oil.

A Disconnect hoses (1), (2) and (3) from elbows (4), (5) and adapter (6) at winch motor (7).

B Remove tiedown straps (8) from hoses (1), (2) and (3). Discard tiedown straps (8).

Note

Three hydraulic hose assemblies run through clamp. Note location of each hose assembly in clamp prior to removal for installation.

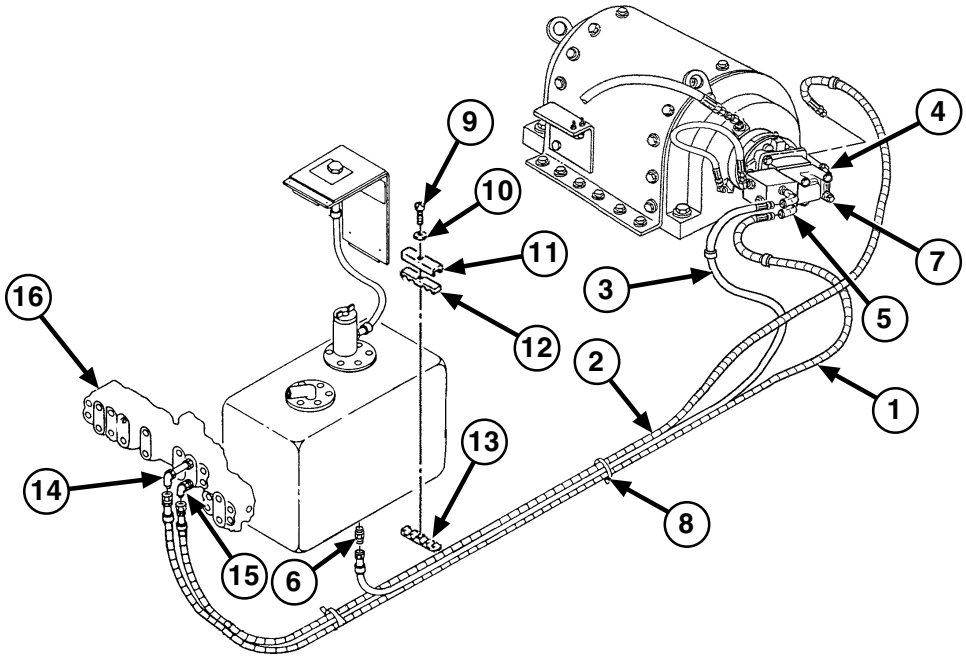
C Remove self-locking screw (9), washer (10), retaining strap (11), and hose bracket (12) from bracket (13). Discard self-locking screw (9).

D Remove hoses (1) and (2) from elbows (14) and (15) at directional control valve bank (16).

INSTALLATION

Note

- Refer to hose and tube marker band identification (p 3-101) for specific hose routing.
- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully servicable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, and packings for servicablity before installation.
- Use two wrenches to connect hoses to fittings.



A Route hoses (1), (2) and (3) in appropriate locations for installation.

B Install hoses (1) and (2) on elbows (14) and (15) at directional control valve bank (16).

C Connect hoses (1) and (2) to elbows (4) and (5) at winch motor (7).

D Connect hose (3) to elbow (5) at hydraulic motor and adapter (6) at bottom of hydraulic reservoir.

E Secure hoses (1), (2) and (3) to bracket (11) with hose bracket (12), retain strap (13), washer (10), and new self-locking screw (9).

F Secure hoses (1), (2) and (3) with tiedown straps (8).

FOLLOW-ON TASKS:

- Install rear floor plates (p 4-360).
- Install hull access covers (p 4-375).
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

HYDRAULIC SUSPENSION HOSE ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387
Plug, Hydraulic Tank	5120-01-222-7934

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D
Tiedown Strap(s)	Item 32 Appendix D

Parts:

Packing (AR)

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10
TM 5-2350-262-20-3

Troubleshooting References:

TM 5-2350-262-20-3	Apron, Bilge Pump and Left-Hand Wheel Control Inoperative
TM 5-2350-262-20-3	Winch and Right Hand Wheel Control Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved
Page 4-375	Hull Access Covers Removed

General Safety Instructions:

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.

REMOVAL

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least four minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.

A Remove dipstick (1), hydraulic tank cap (2), and filter (3) from filler neck (4).

B Install hydraulic tank plug and hydraulic tank cap (2) on filler neck (4).

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

- All hydraulic hoses, tubes, and fittings are replaced the same way. This task covers replacement of a typical hydraulic suspension hose.
- Use two wrenches when disconnecting hydraulic hoses from fittings.
- Have suitable container ready to catch hydraulic oil.

C Disconnect hose (5) from elbow (6).

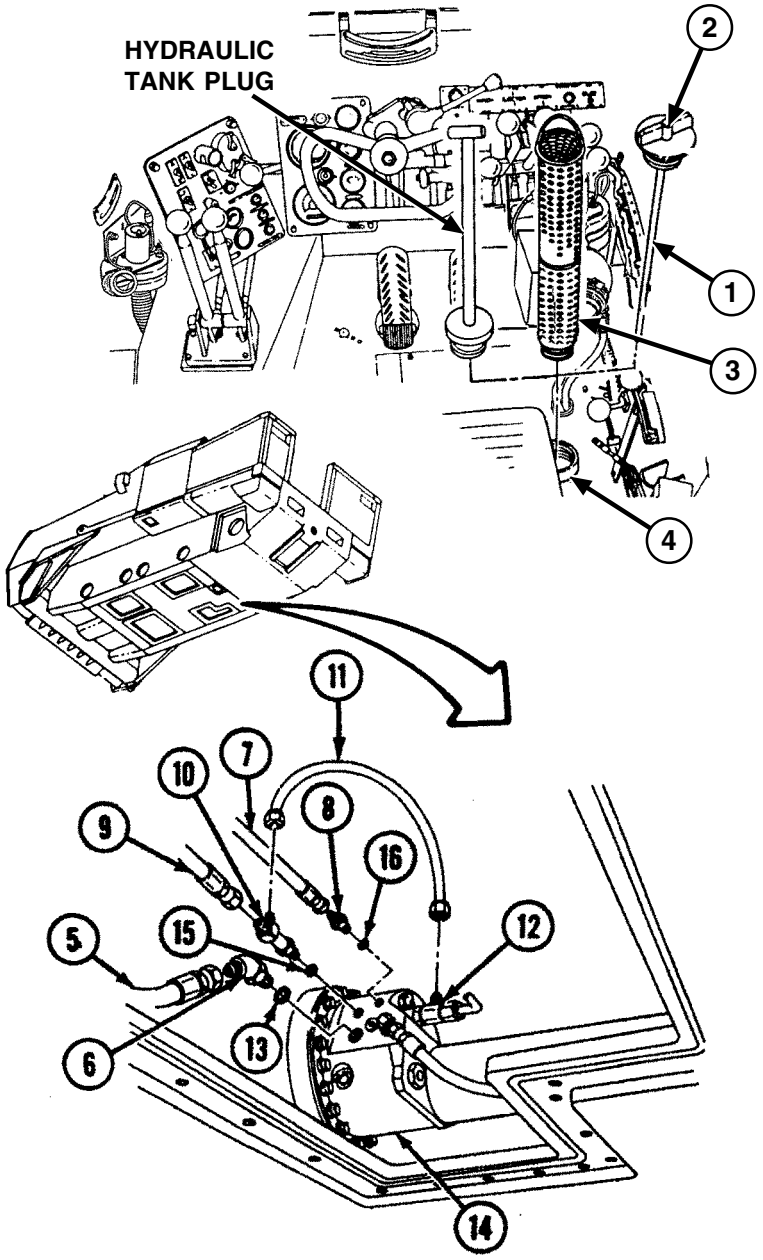
D Disconnect hose (7) from adapter (8).

E Disconnect hose (9) from tee (10).

CAUTION

Do not bend tubes. Remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.

F Remove tube (11) from tees (10) and (12).



RIGHT REAR NO. 4 ROTARY ACTUATOR SHOWN

Note

Removal of tee and elbow from right rear No. 4 rotary actuator requires alternate turning until removed.

G Remove elbow (6) and packing (13) from right rear No. 4 rotary actuator (14). Discard packing (13).

H Remove tee (10) and packing (15) from right rear No. 4 rotary actuator (14). Discard packing (15).

I Remove adapter (8) and packing (16) from right rear No. 4 rotary actuator (14). Discard packing (16).

Note

Note location of tiedown straps prior to removal for installation.

J Remove tiedown straps (1) from hoses (2), (3), and (4). Discard tiedown straps (1).

K Remove hose (2) from adapter (5).

L Remove hose (3) from elbow (6).

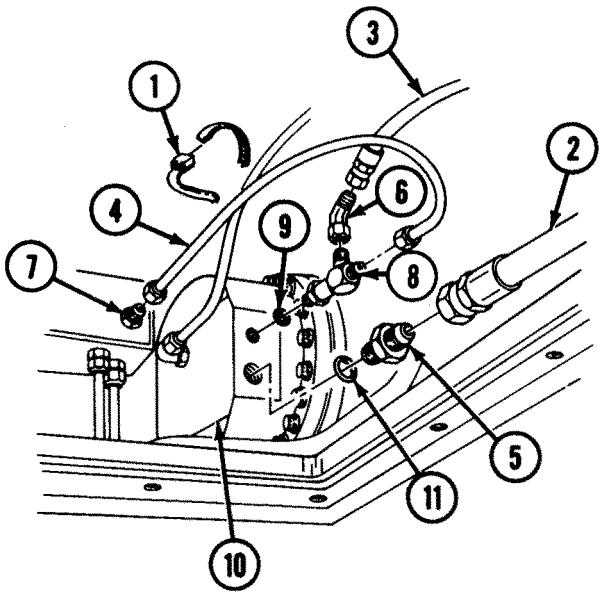
CAUTION

Do not bend tubes. If necessary, remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.

M Remove tube (4) from adapter (7) and tee (8).

N Remove elbow (6), tee (8), and packing (9) from right rear No. 3 intermediate rotary actuator (10). Discard packing (9).

O Remove adapter (5) and packing (11) from right rear No. 3 intermediate rotary actuator (10). Discard packing (11).



RIGHT REAR NO. 3 INTERMEDIATE ROTARY ACTUATOR SHOWN

INSTALLATION

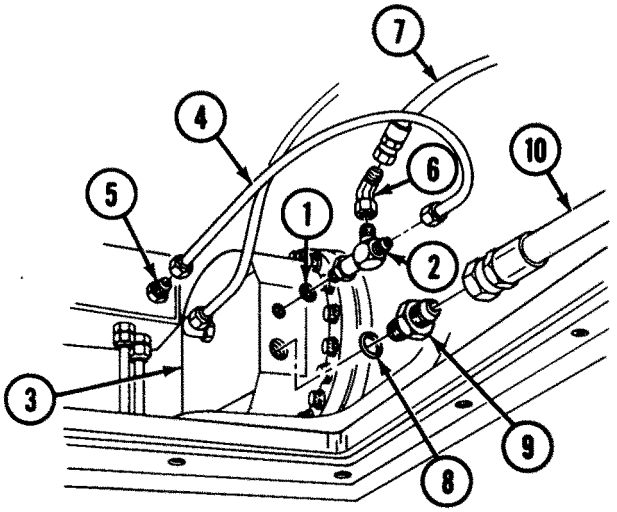
Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, and packings for serviceability before installation.
- Apply lubricating oil to packings prior to installation.
- Use two wrenches to connect lines to fittings.

A Install packing (1) on tee (2), and install tee (2) on right rear No. 3 intermediate rotary actuator (3).

B Install tube (4) on adapter (5) and tee (2).

C Install elbow (6) and hose (7) on tee (2).



RIGHT REAR NO. 3 INTERMEDIATE ROTARY ACTUATOR SHOWN

D Install packing (8) on adapter (9), and install adapter (9) on right rear No. 3 intermediate rotary actuator (3).

E Connect hose assembly (10) to adapter (9).

Note

Installation of tee and elbow on right rear No. 4 rotary actuator requires alternate turning until fittings are tight.

F Install packing (11) on tee (12), and install tee (12) on right rear No. 4 rotary actuator (13).

G Install packing (14) on elbow (15), and install elbow (15) on right rear No. 4 rotary actuator (13).

H Install tube (16) on tees (12) and (17).

I Connect hose (18) to tee (12).

J Connect hose (19) to elbow (15).

K Install packing (20) on adapter (21), and install adapter (21) on right rear No. 4 rotary actuator (13).

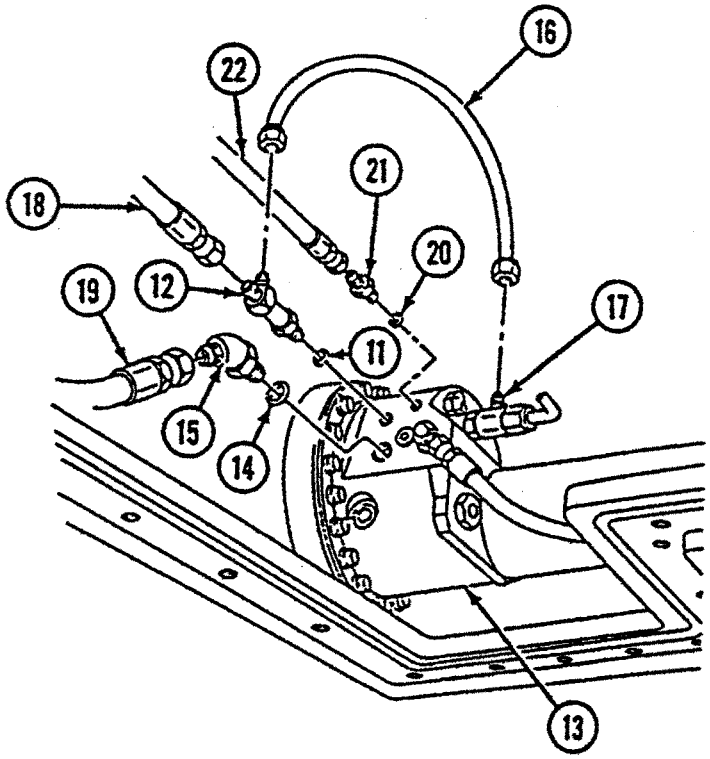
L Connect hose (22) to adapter (21).

M Remove hydraulic tank cap (23) and hydraulic tank plug from hydraulic tank filler neck (24).

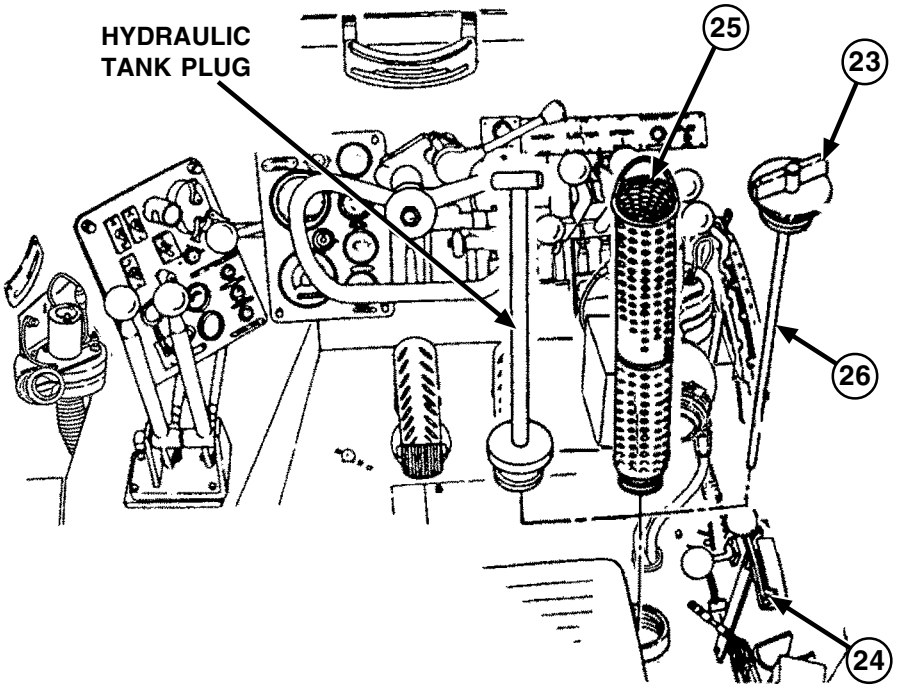
N Install filter (25), cap (23), and dipstick (26) on filler neck (24).

FOLLOW-ON TASKS:

- Install hull access covers (p 4-375).
- Service hydraulic tank (TM 5-2350-262-10).



RIGHT REAR NO. 4 ROTARY ACTUATOR SHOWN



HYDRAULIC RETURN HOSES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 24 Appendix D
Tiedown Strap(s)	Item 30 Appendix D

Parts:

Packing (4)

Self-locking Screw

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Hydraulic Reservoir Drained
Page 4-360	Rear Floor Panels Removed
Page 4-375	Hull Access Covers Removed

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not dis-connect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

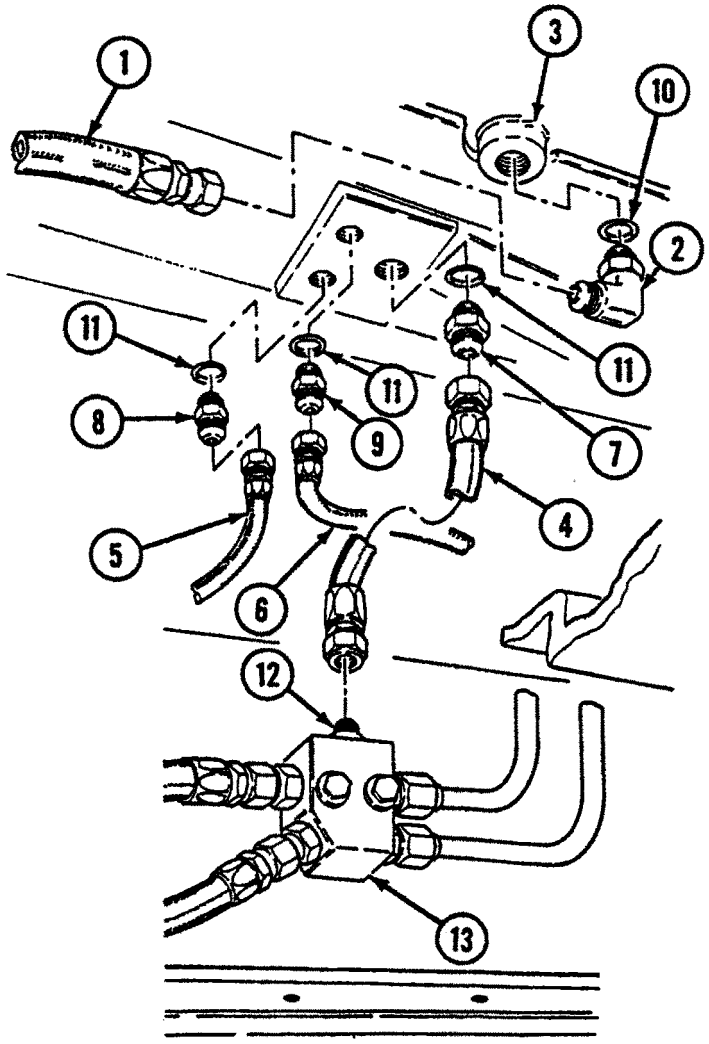
REMOVAL

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.



Note

- Although the Bilge Pump is considered Not Mission Essential and will no longer be supported with spare and repair parts, this task contains maintenance procedures For Your Information Only. See TB 43-001-62-7 (dated Oct 98) for Instructions to Isolate and Disconnect a Non-Functional Bilge Pump.
- Have suitable container ready to catch hydraulic oil.
- Use two wrenches when disconnecting hoses from fittings.

A Disconnect hose (1) from elbow (2) of hydraulic reservoir (3).

B Disconnect hoses (4), (5), and (6) from adapters (7), (8), and (9) of hydraulic reservoir (3).

C Remove elbow (2) and packing (10) from hydraulic reservoir (3). Discard packing (10).

D Remove adapters (7), (8), and (9) and three packings (11) from hydraulic reservoir (3). Discard packings (11).

E Remove hose (4) from adapter (12) at left side manifold (13).

Note

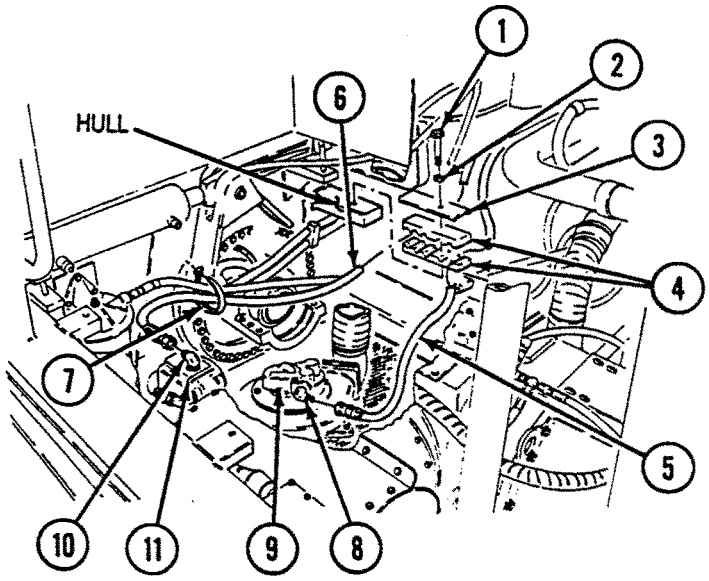
Note location of each hose prior to removal for installation

F Remove self-locking screw (1), washer (2), retaining strap (3), and two hose brackets (4) from hoses (5) and (6) and hull. Discard self-locking screw (1).

G Remove tiedown straps (7) from hoses (5) and (6).

H From rear of vehicle, remove hose (5) from elbow (8) at bilge pump (9).

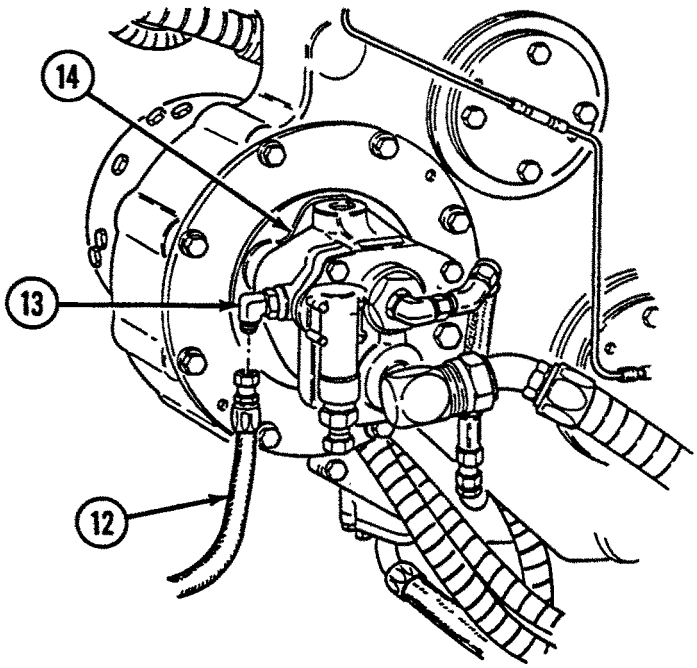
I Remove hose (6) from elbow (10) at winch motor (11).



WARNING

Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

J Remove hose (12) from elbow (13) at compensating hydraulic pump (14).



INSTALLATION

Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, hoses, and packings for serviceability before installation.
- Use two wrenches when connecting hoses to fittings.
- Apply lubricating oil to packings prior to installation.

A Install packing (1) on elbow (2), and install three packings (3) on adapters (4), (5), and (6).

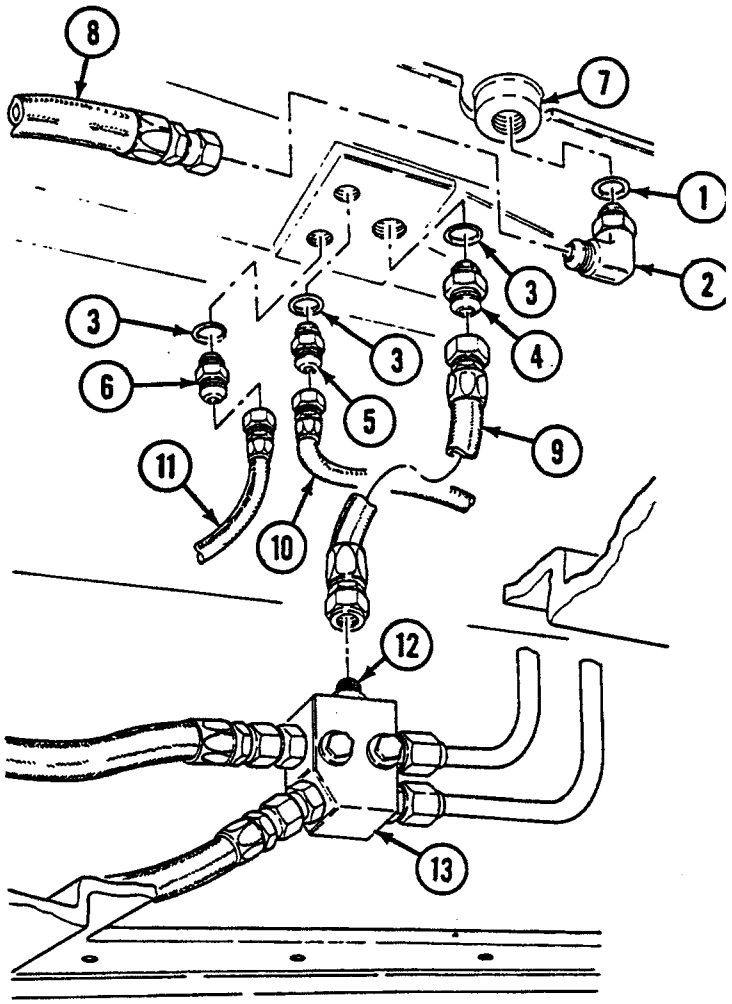
B Install elbow (2) and adapters (4), (5), and (6) on hydraulic reservoir (7).

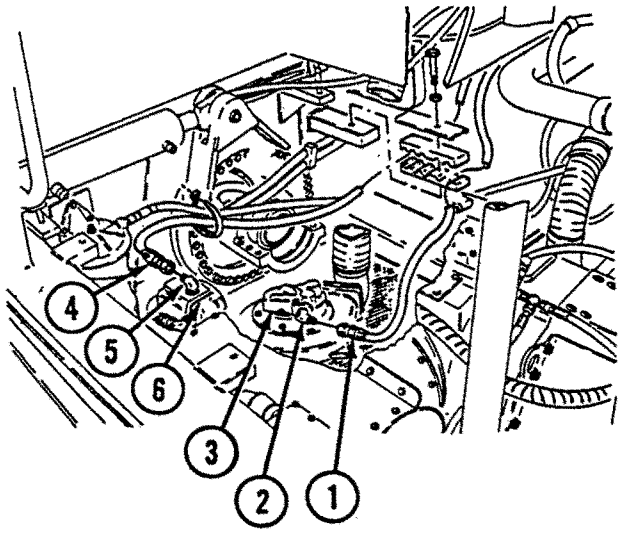
C Install HYDR TANK-7P hose end (8) on elbow (2) at hydraulic reservoir (7).

D Install HYDR TANK-7B hose end (9) on adapter (4) at hydraulic reservoir (7).

E Install HYDR TANK-7V hose end (10) on adapter (5) at hydraulic reservoir (7).

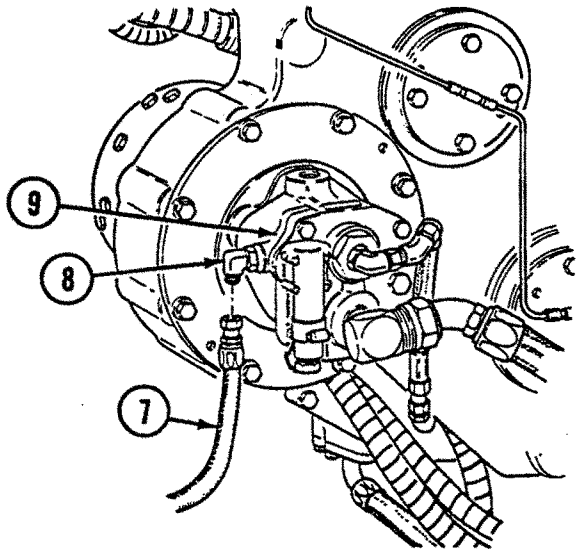
F Install HYDR TANK-7W hose end (11) on adapter (6) at hydraulic reservoir (7), and connect LH CKT-7B MANF hose end (9) to adapter (12) at left side manifold (13).





G From rear of vehicle, connect BILGE PUMP-7P hose end (1) to elbow (2) at bilge pump (3).

H Connect WINCH DRAIN-7W hose end (4) to elbow (5) at winch motor (6).



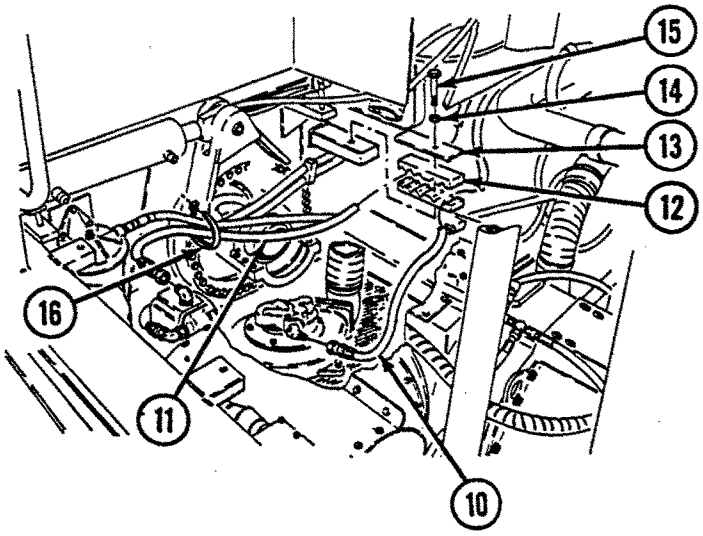
I Connect SPNSN PUMP DRAIN-7V hose end (7) to elbow (8) at compensating hydraulic pump (9).

J Secure hoses (10) and (11) to hull with two hose brackets (12), retaining strap (13), washer (14), and self-locking screw (15).

K Secure hoses (10) and (11) with tiedown straps (16).

FOLLOW-ON TASKS:

- Install hull access covers (p 4-378).
- Install rear floor panels (p 4-361).
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).



HYDRAULIC TUBE ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot 5120-01-302-4387

Parts:

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	All Hydraulic Functions Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved
Page 4-375	Hull Access Covers Removed

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not dis-connect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

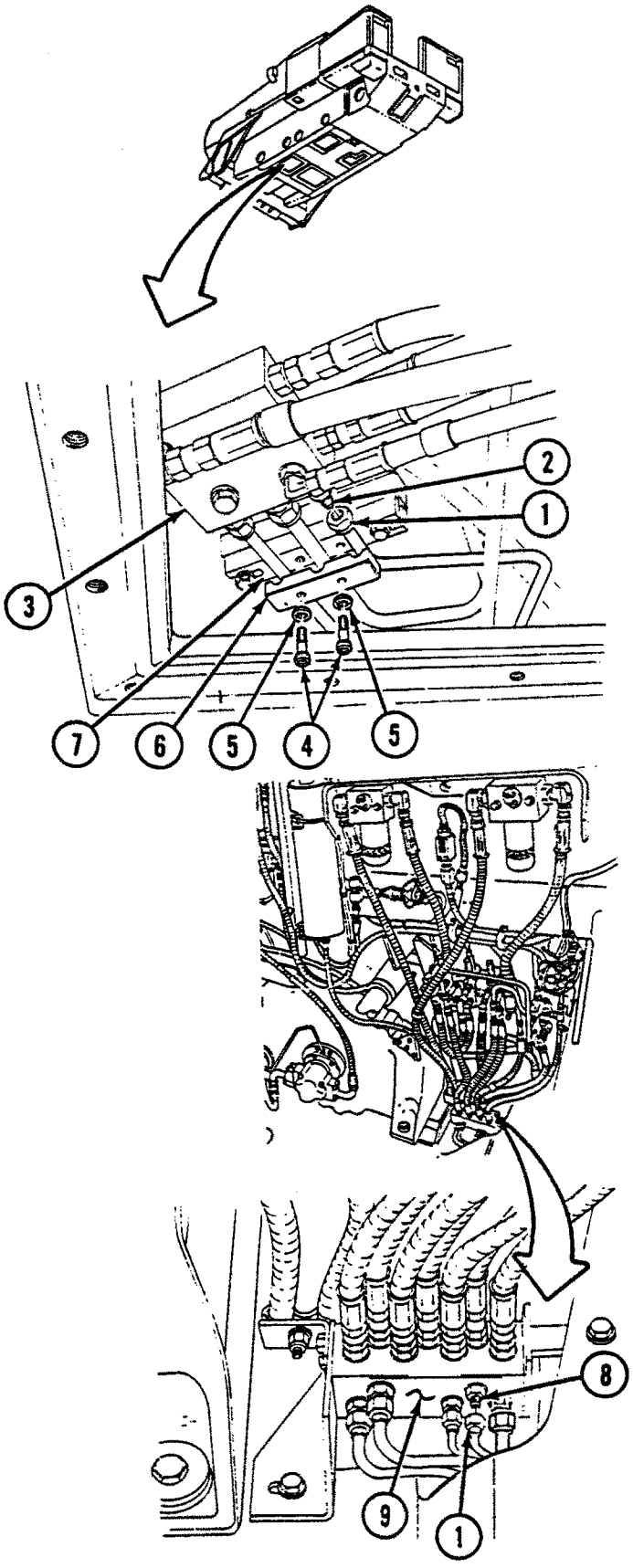
Note

- Use two wrenches when disconnecting hydraulic tube assemblies from fittings.
- If more than one tube assembly is replaced, tag ports prior to removing tubes for installation.
- All hydraulic tube assemblies are replaced the same way. This procedure shows replacement of tube assembly to manifold.
- Do not remove adapters from manifold.
- Have suitable container ready to catch hydraulic oil.

A From underneath vehicle, disconnect tube (1) from adapter (2) at manifold (3).

B Remove two self-locking screws (4), washers (5), and retaining strap (6) from tube (1) and bracket (7). Discard self-locking screws (4).

C In bowl area of vehicle, remove tube (1) from adapter (8) at manifold (9).



INSTALLATION

Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, tubes, and packings for serviceability before installation.
- Use two wrenches to connect hydraulic tube assemblies to fittings.

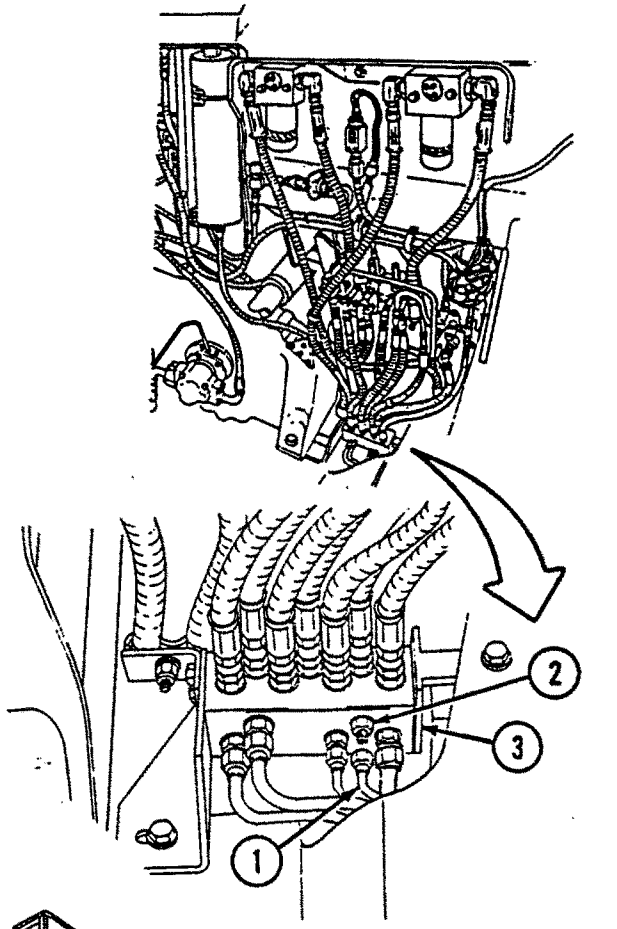
A In bowl area of vehicle, route tube (1), and install tube (1) on adapter (2) at manifold (3).

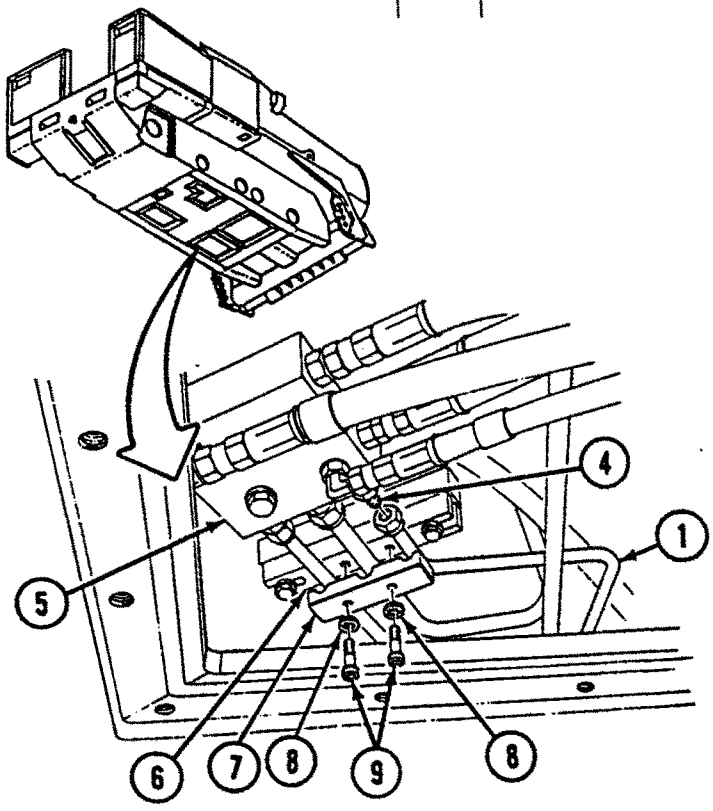
B From underneath vehicle, connect tube (1) to adapter (4) at manifold (5).

C Secure tube (1) to bracket (6) with retaining strap (7), two washers (8), and self-locking screws (9).

FOLLOW-ON TASKS:

- Install hull access covers (p 4-375).
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).





APRON CYLINDER TO INNER BOWL HYDRAULIC TUBES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs — Item 7 Appendix D

Parts:

Locknut (2)
Lockwasher (2)
Packing (2)
Self-locking Screw (12)

Parts Reference:

TM 5-2350-262-24P — Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10
TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3 — Apron Will Not Raise

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 2-27	Hull Blocked
Page 3-82	Hydraulic Pressure Relieved
Page 4-40	Armor Plate 1R Removed
Page 4-105	Driver's Instrument Panel Removed
Page 4-244.2	Driver's Ventilation Fan Removed

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

- Apron hydraulic tube replacement is the same for left and right sides. Right side is shown here. Left side access is through driver's compartment.
- Use two wrenches when disconnecting hydraulic tube assemblies from fittings.
- Have suitable container ready to catch hydraulic oil.

A From outside of vehicle, disconnect two hoses (1) from elbows (2), and remove packings (3) from elbows (2). Discard packings (3).

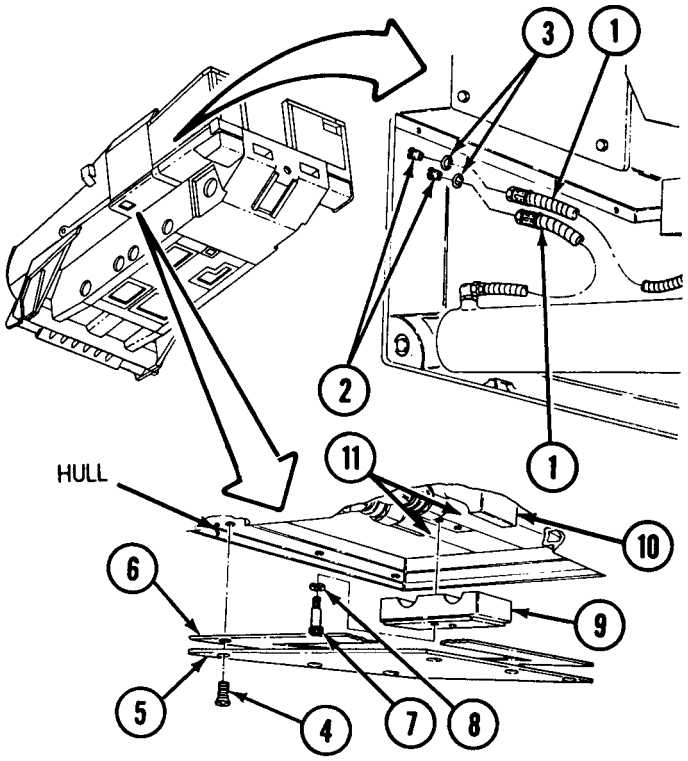
Note

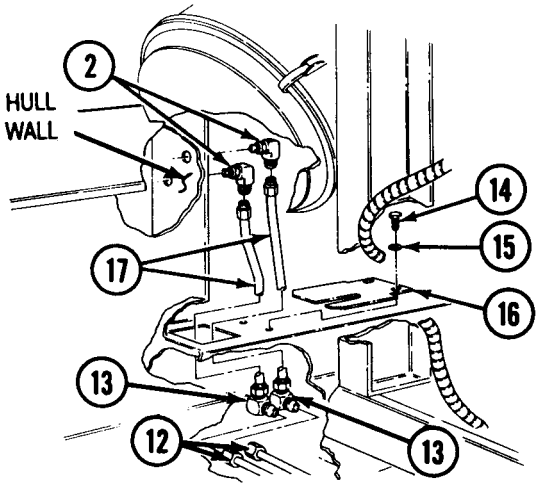
Remove gasket from plate only if damaged. Refer to hull access covers replacement and repair (p 4-375).

B Remove six self-locking screws (4), plate (5), and gasket (6) from hull. Discard self-locking screws (4).

C Remove two screws (7), lockwashers (8), and clamp (9) from bracket (10) and two tubes (11). Discard lockwashers (8).

D Disconnect two tubes (12) from elbows (13).





E In engine compartment, remove two self-locking screws (14), washers (15), and plate (16) from hull. Discard self-locking screws (14).

CAUTION

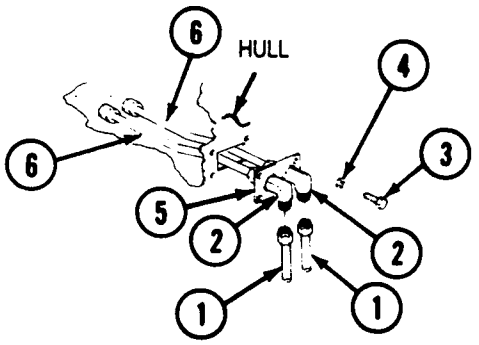
Do not bend tubes. If necessary, remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.

F Remove two tubes (17) from elbows (2), and remove two elbows (2) from hull wall.

G Remove two elbows (13) from tubes (17).

H In bowl area, disconnect two tubes (1) from elbows (2).

I Remove four self-locking screws (3), washers (4), and plate (5) from hull. Discard self-locking screws (3).



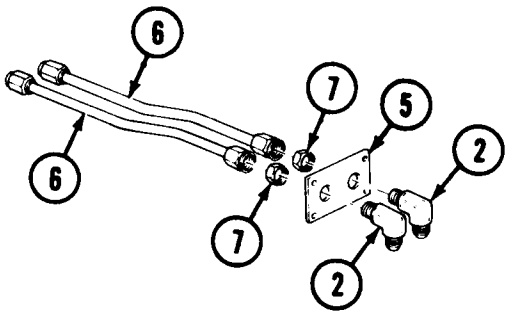
CAUTION

Do not bend tubes. If necessary, remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.

Note

Note position of tubes and elbows prior to removal from plate.

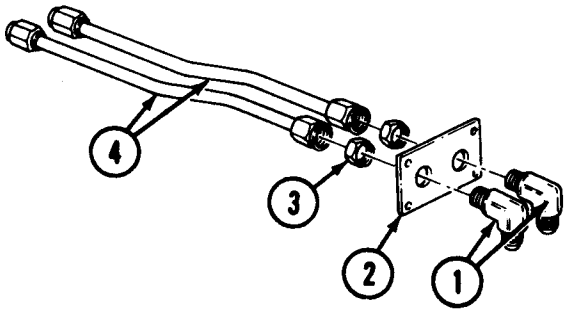
J Remove two tubes (6) from elbows (2), and remove two locknuts (7) and elbows (2) from plate (5). Discard locknuts (7).



INSTALLATION

Note

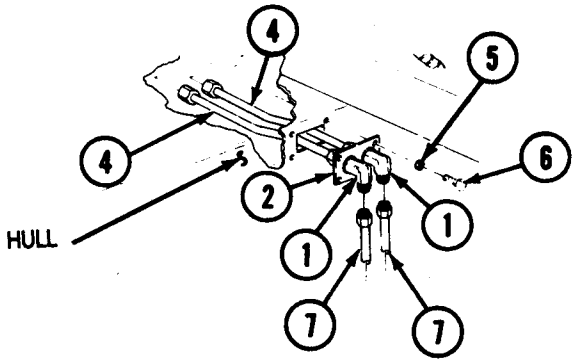
- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, tubes, and packings for serviceability before installation
- Use two wrenches when connecting hydraulic tube assemblies to fittings.
- Refer to hydraulic schematic in TM 5-2350-262-20-3 while connecting hydraulic tube assemblies to ensure proper installation.

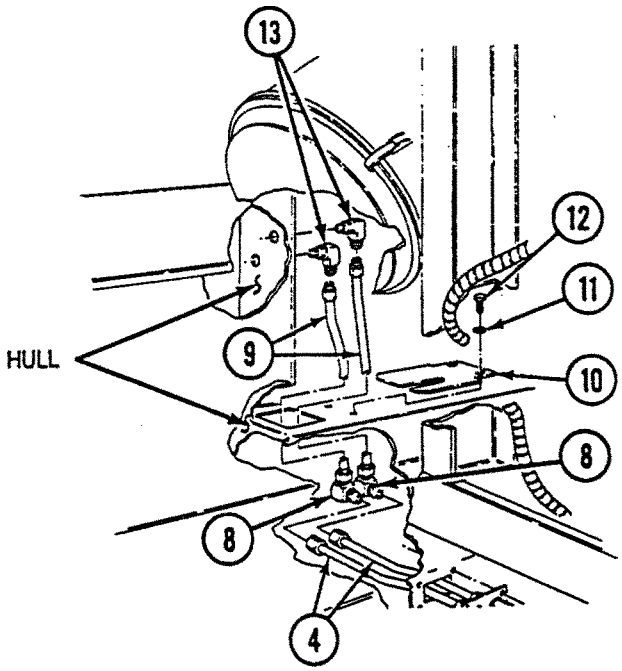


A Install two elbows (1) on plate (2) with locknuts (3), and install two tubes (4) on elbows (1).

B Install plate (2) on hull with four washers (5) and self-locking screws (6).

C Connect two tubes (7) to elbows (1).



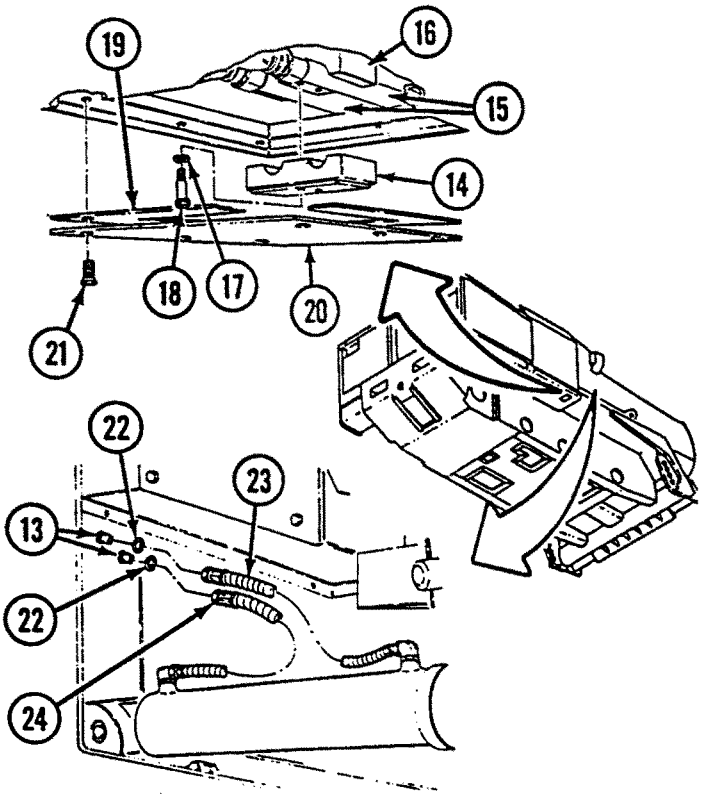


D Install two elbows (8) on tubes (9).

E Connect two tubes (4) to elbows (8).

F Install plate (10) on hull with two washers (11) and self-locking screws (12). Tighten self-locking screws (12) to 6-8 lb-ft (8-11 N·m).

G Install two elbows (13) on hull, and connect two tubes (9) to elbows (13).



H Install clamp (14) on two tubes (15) and bracket (16) with two lockwashers (17) and screws (18).

I Install gasket (19) and plate (20) on hull with six self-locking screws (21). Tighten self-locking screws (21) to 9-11 lb-ft (12-15 N·m).

J Install two packings (22) on elbows (13).

K Connect circuit 20 hose (23) and circuit 19 hose (24) to elbows (13).

FOLLOW-ON TASKS:

- Install driver's ventilation fan (p 4-244.2).
- Install driver's instrument panel (p 4-105).
- Install armor plate 1R (p 4-40).
- Close engine intake grilles (TM 5-2350-262-10).
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

INNER BOWL APRON HYDRAULIC CYLINDER TUBES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Socket Wrench Socket Set	5120-01-195-0640
Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D

Parts:

Locknut (4)

Lockwasher (10)

Self-locking Screws (12)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	Apron Will Not Raise

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slip-pery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

Note

Remove gasket from plate only if damaged. Refer to Hull Access Covers Replacement and Repair (p 4-375).

A Remove six self-locking screws (1), plate (2), and gasket (3) from hull. Discard self-locking screws (1).

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

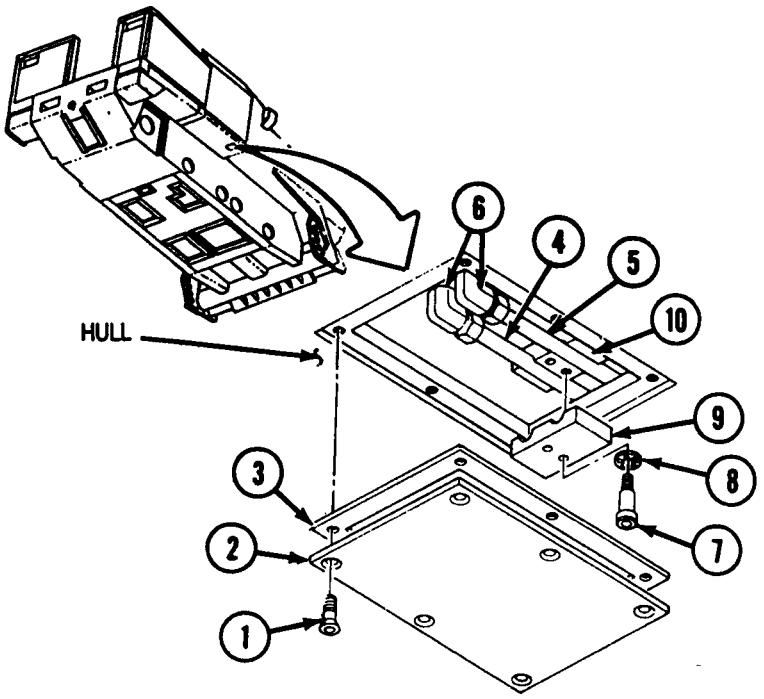
Note

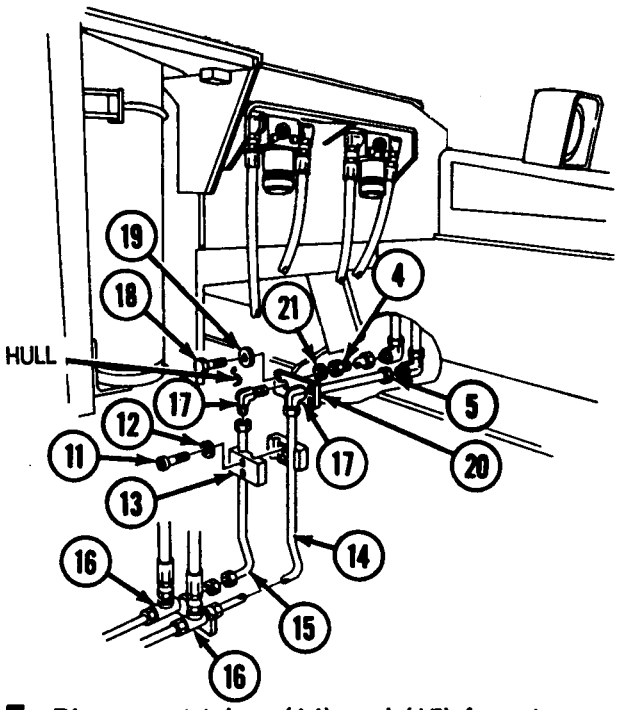
- Use two wrenches when disconnecting hydraulic tube assemblies from fittings.
- Have suitable container ready to catch hydraulic oil.

B Disconnect tubes (4) and (5) from elbows (6).

C Remove two screws (7), lockwashers (8), and clamp (9) from tubes (4) and (5) and bracket (10). Discard lockwashers (8).

D Remove two screws (11), lockwashers (12), and clamp (13) from tubes (14) and (15). Discard lockwashers (12).





E Disconnect tubes (14) and (15) from tees (16), and remove tubes (14) and (15) from elbows (17).

F Remove four self-locking screws (18), washers (19), and plate (20) from hull. Discard self-locking screws (18).

G Remove tubes (4) and (5) from elbows (17), and remove two locknuts (21) and elbows (17) from plate (20). Discard locknuts (21).

H Disconnect tubes (1) and (2) from tees (3).

I Remove two locknuts (4) from tees (3), and remove tees (3) from hoses (5) and (6) and bracket (7). Discard locknuts (4).

Note

Six tube assemblies are secured by retaining straps.

J Remove four screws (8), lockwashers (9), and two retaining straps (10) from hull wall. Discard lockwashers (9).

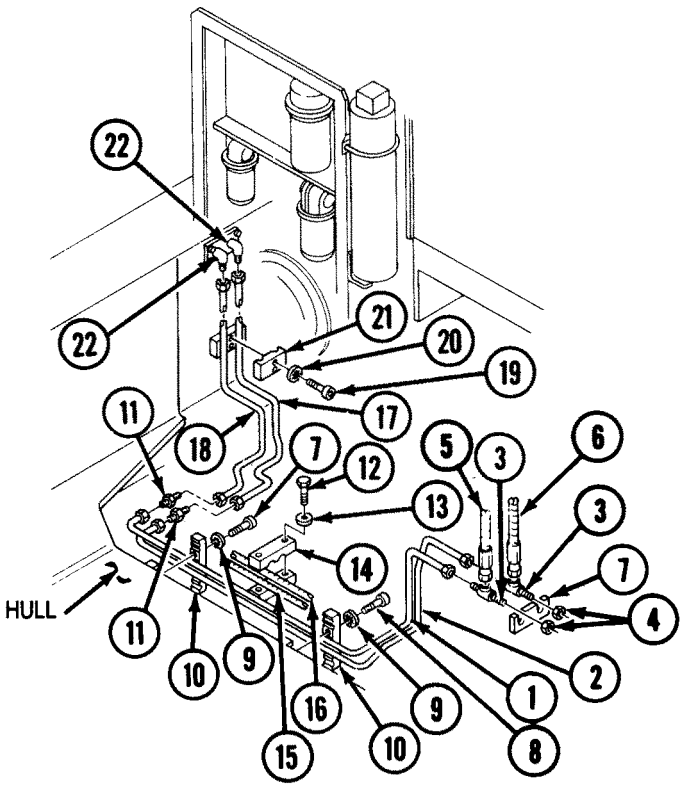
K Disconnect tubes (1) and (2) from nipples (11).

L Remove two self-locking screws (12), washers (13), and clamp (14) securing hoses (15) and (16). Pull back hoses (15) and (16), and remove tubes (1) and (2). Discard self-locking screws (12).

M Remove two nipples (11) from tubes (17) and (18).

N Remove two screws (19), lockwashers (20), and clamp (21) from hull wall. Discard lockwashers (20).

O Remove tubes (17) and (18) from two elbows (22).



INSTALLATION

Note

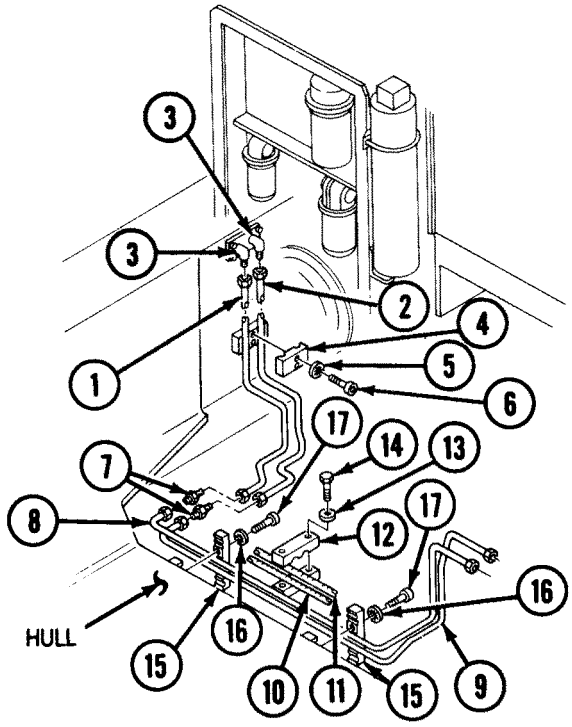
- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, tubes, and packings for serviceability before installation.
- Use two wrenches when connecting hydraulic tube assemblies to fittings.
- Do not tighten fittings on tubes until all tube assemblies are installed.

A Install two tubes (1) and (2) on elbows (3).

B Install clamp (4) on hull wall with two lockwashers (5) and screws (6).

C Install two nipples (7) on tubes (1) and (2).

D Position tubes (8) and (9) in bowl area, and install two hoses (10) and (11) on hull wall with clamp (12), two washers (13), and self-locking screws (14).



E Connect tubes (8) and (9) to two nipples (7).

F Install two retaining straps (15) on hull wall with four lockwashers (16) and screws (17).

G Install two elbows (18) on plate (19) with locknuts (20), and install tubes (21) and (22) on elbows (18).

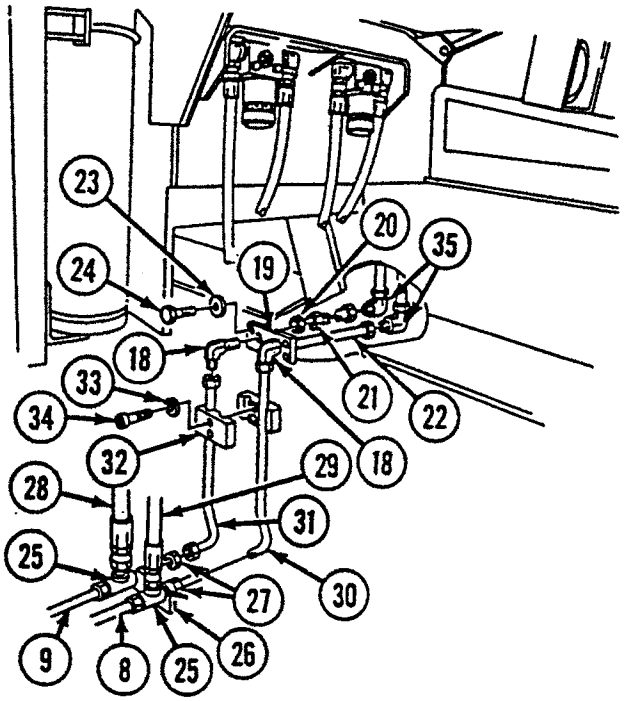
H Install plate (19) on hull with four washers (23) and self-locking screws (24).

I Install two tees (25) on bracket (26) with two locknuts (27), and connect tubes (8) and (9) and hoses (28) and (29) to tees (25).

J Install tubes (30) and (31) on elbows (18) and tees (25).

K Secure tubes (30) and (31) with clamp (32), two lockwashers (33), and screws (34).

L Connect tubes (21) and (22) to elbows (35).

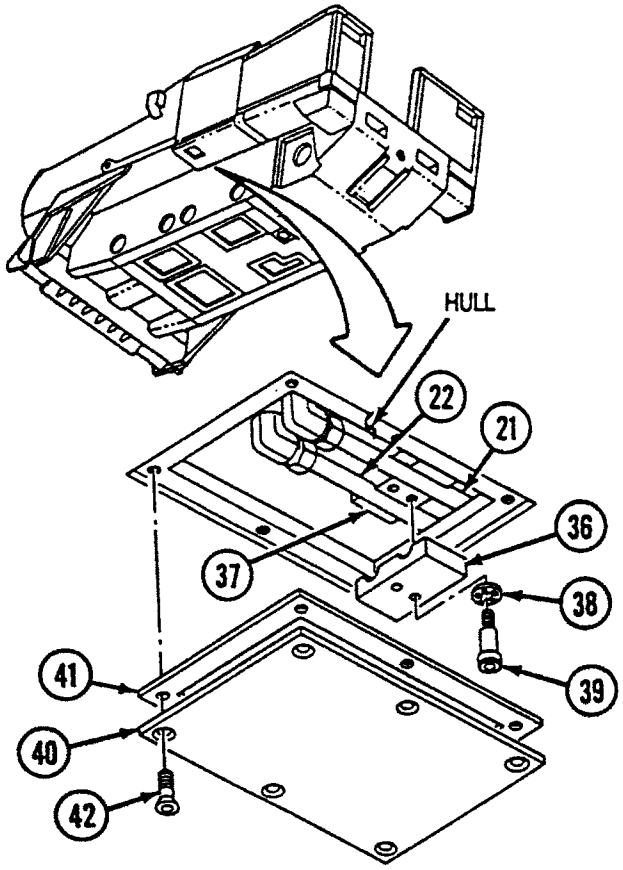


M Install clamp (36) on tubes (21) and (22) and bracket (37) with two lockwashers (38) and screws (39).

N Install plate (40) and gasket (41) on hull with six self-locking screws (42). Tighten self-locking screws (42) to 9-11 lb-ft (12-15 N·m).

FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).



MAIN SUPPLY HYDRAULIC TUBE ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Plug, Hydraulic Tank	5120-01-222-7934
Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Packing (2)

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 3-82	Hydraulic Pressure Relieved
Page 4-358	Driver's Compartment Floor Plate Removed
Page 4-375	Hull Access Covers Removed
Page 4-649	Radiator Removed

General Safety Instructions:

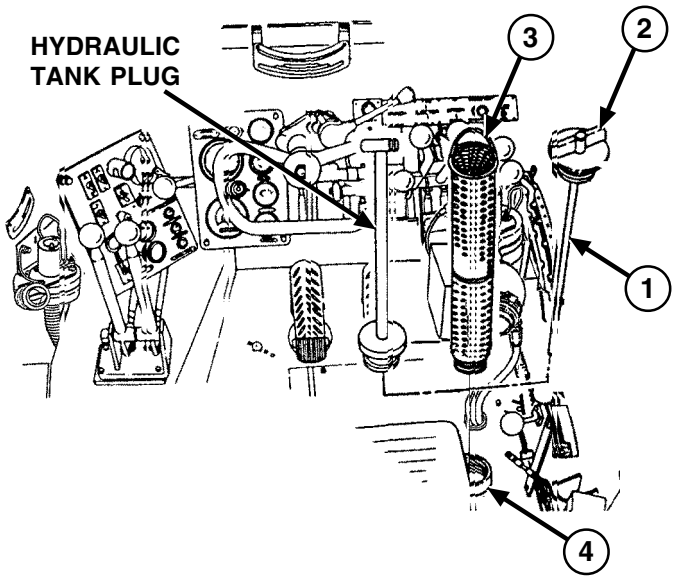
WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when enter-ing or working in bowl area. Wipe up any spilled oil immediately.

REMOVAL

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.



A Remove dipstick (1), hydraulic tank cap (2), and filter (3) from filler neck (4).

B Install hydraulic tank plug and hydraulic tank cap (2) on filler neck (4).

WARNING

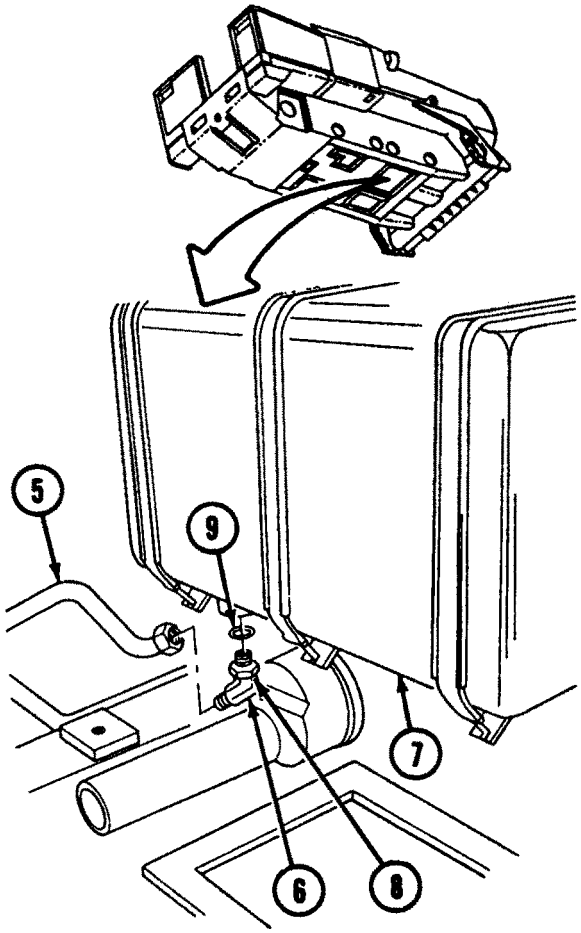
Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch hydraulic oil.



C Disconnect tube (5) from elbow (6) at hydraulic reservoir (7).

D Loosen jamnut (8), and remove elbow (6) and packing (9) from hydraulic reservoir (7). Discard packing (9).

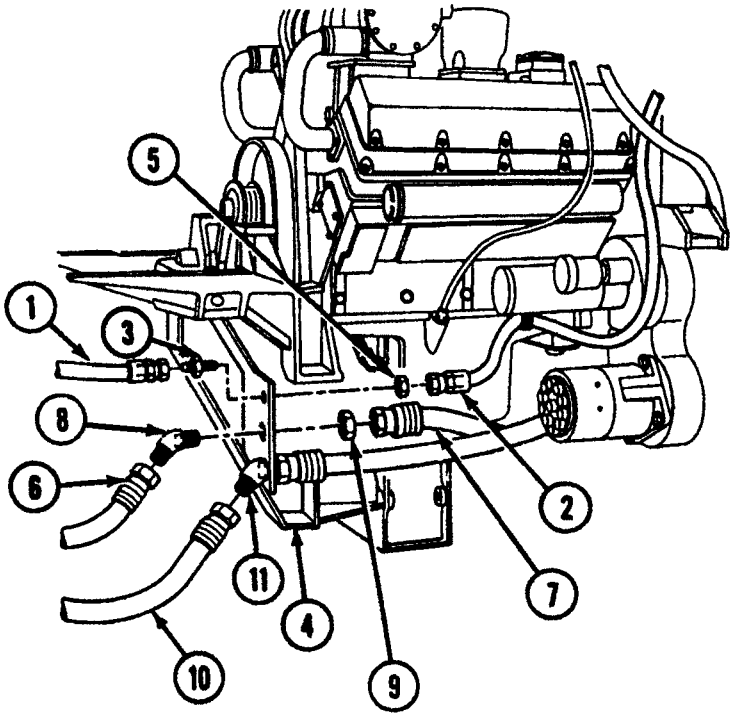
E Disconnect hoses (1) and (2) from nipple (3) at engine bracket (4).

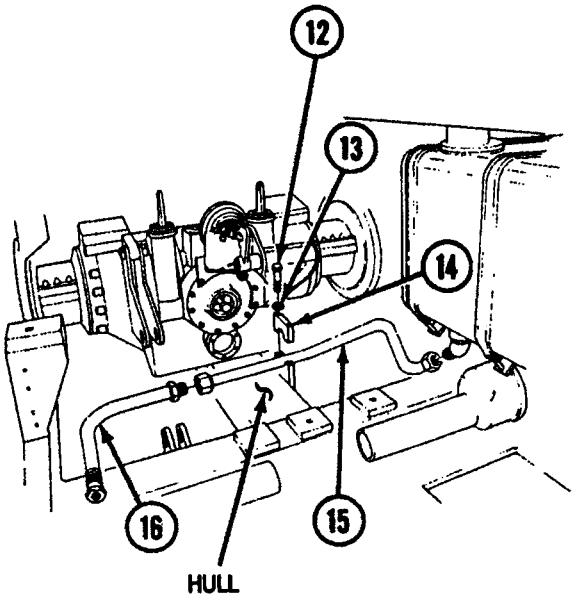
F Remove nut (5) and nipple (3) from engine bracket (4).

G Disconnect hoses (6) and (7) from elbow (8) at engine bracket (4).

H Remove nut (9) and elbow (8) from engine bracket (4).

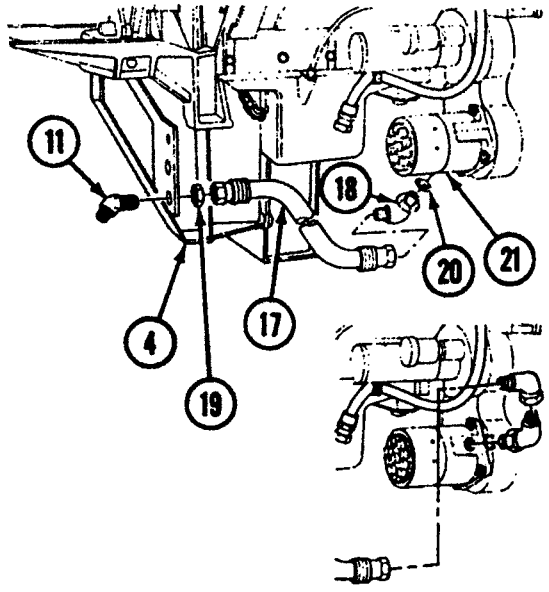
I Disconnect hose (10) from elbow (11) at engine bracket (4).





J Remove two self-locking screws (12), washers (13), bracket (14), and tube (15) from hull. Discard self-locking screws (12).

K Disconnect tube (15) from hose (16).



L Remove hose (17) from elbows (11) and (18).

M Remove nut (19) and elbow (11) from engine bracket (4).

Note

The hydraulic pump is rotated and utilizes two 90° elbows and a longer hose on some vehicles.

N Remove elbow (18) and packing (20) from hydraulic pump (21). Discard packing (20).

INSTALLATION

Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, tubes, and packings for serviceability before installation.
- Apply lubricating oil to packings prior to installation.

A Install elbow (1) on engine bracket (2) with nut (3).

Note

The hydraulic pump is rotated and utilizes two 90° elbows and a longer hose on some vehicles.

B Install packing (4) and elbow (5) on hydraulic pump (6).

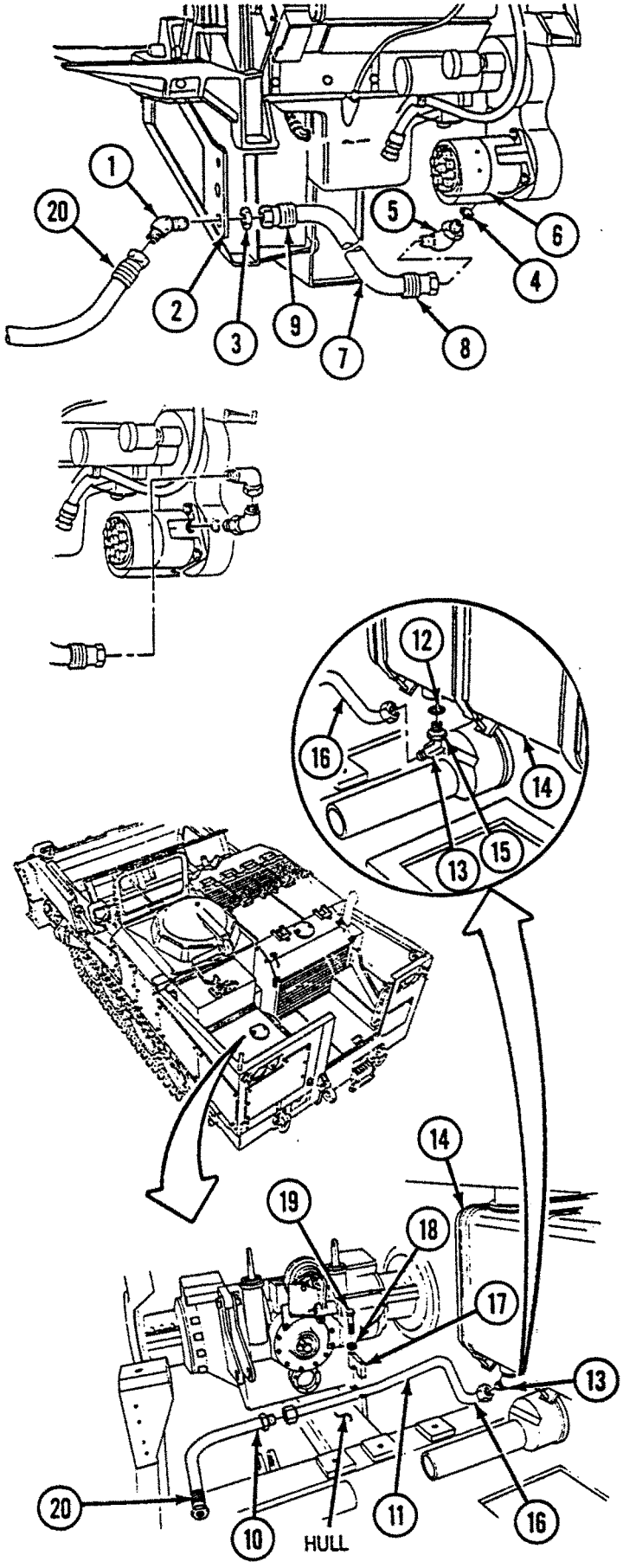
C Install hose (7) on elbows (5) and (1) with PUMP 13 hose end (8) on elbow (5) and RH BOT BHD FTG-13 hose end (9) on elbow (1).

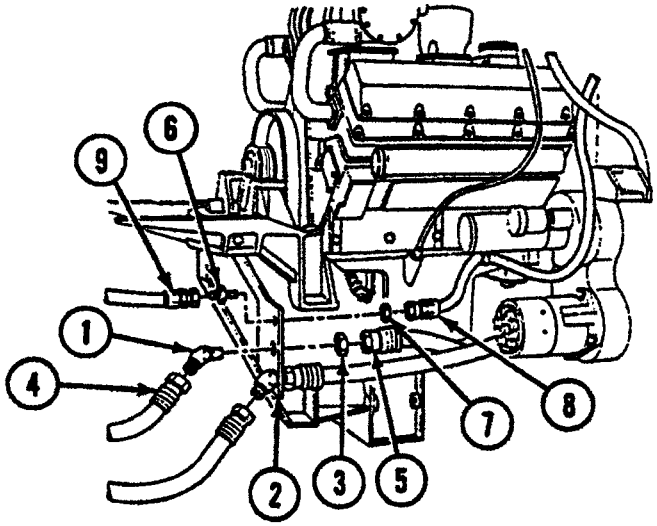
D Connect PUMP SUCT TUBE-13 hose end (10) to tube (11).

E Install packing (12) and elbow (13) on hydraulic reservoir (14). Do not tighten jamnut (15) of elbow (13).

F Connect HYDR TANK-13 tube end (16) of tube (11) to elbow (13), and secure tube (11) to hull with bracket (17), two washers (18), and self-locking screws (19). Tighten jamnut (15) against hydraulic reservoir (14).

G Connect RH BOT BHD FTG-13 hose end (20) to elbow (1) at engine bracket (2).



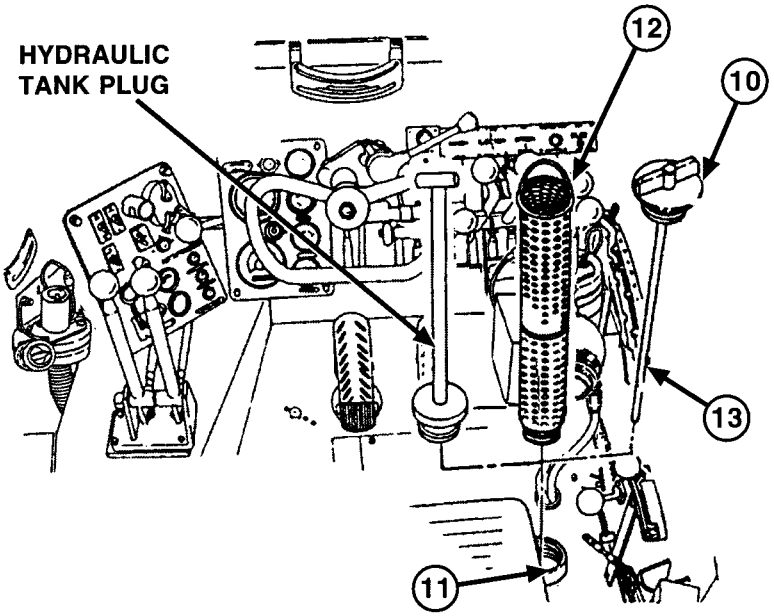


H Install elbow (1) on engine bracket (2) with nut (3).

I Connect RH MID BHD FTG-3S hose ends (4) and (5) to elbow (1).

J Install nipple (6) on engine bracket (2) with nut (7).

K Connect RH TOP BHD FTG-2S hose ends (8) and (9) to nipple (6).



L Remove hydraulic tank cap (10) and hydraulic tank plug from hydraulic tank filler neck (11).

M Install filter (12), cap (10), and dipstick (13) on filler neck (11).

FOLLOW-ON TASKS:

- Install radiator (p 4-649).
- Install hull access covers (p 4-375).
- Install driver's compartment floor plate (p 4-358).
- Service hydraulic tank (TM 5-2350-262-10).

HYDRAULIC SUSPENSION TUBES, FITTINGS, AND PRESSURE RELIEF VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Packing (AR)

Lockwasher (AR)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10
TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	Apron, Bilge Pump and Left-Hand Wheel Control Inoperative
TM 5-2350-262-20-3	Winch and Right-Hand Wheel Cotrol Inoperative

Equipment Condition:

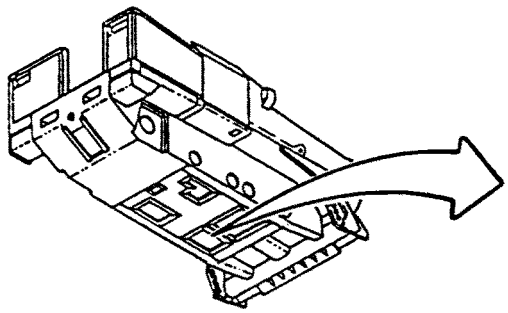
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved
Page 4-375	Hull Access Covers Removed

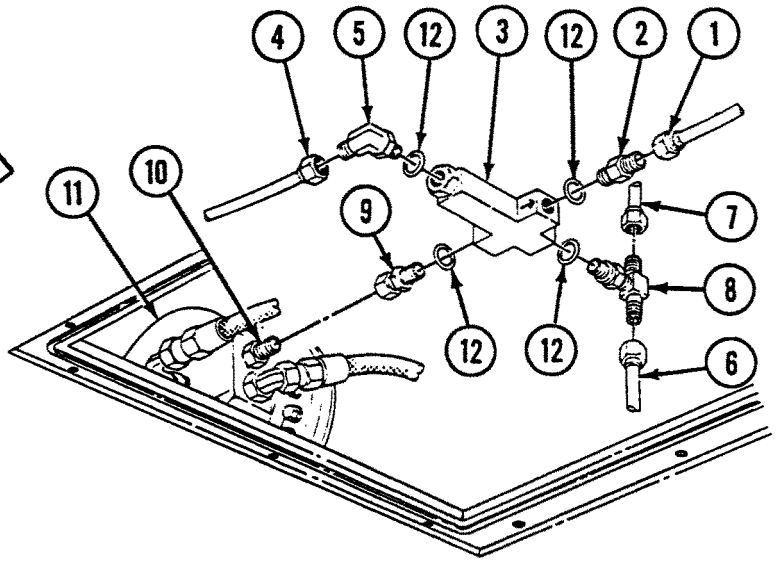
General Safety Instructions:

WARNING

High pressure is present in the M9 hydraulic system. Do not dis-connect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.

REMOVAL





LEFT FRONT INTERMEDIATE NO. 2 ROTARY ACTUATOR

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

- All hydraulic tubes and fittings are replaced the same way. The following steps show replacement of a typical hydraulic line.
- Use two wrenches when disconnecting hydraulic lines from fittings.
- Have suitable container ready to catch hydraulic oil.

A Disconnect tube (1) from adapter (2) at relief valve (3).

B Disconnect tube (4) from elbow (5) at relief valve (3).

C Disconnect tubes (6) and (7) from tee (8) at relief valve (3).

Note

If necessary, rotate elbow on actuator for clearance when removing relief valve.

D Disconnect union (9) from adapter (10) at left front intermediate No. 2 rotary actuator (11), and remove relief valve (3).

Note

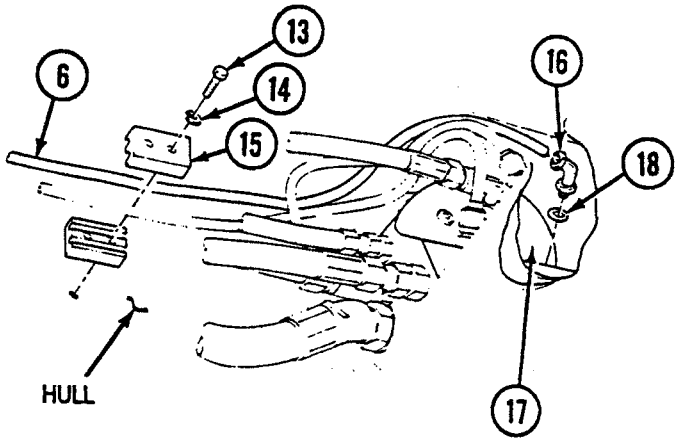
If replacing with new relief valve, perform step E.

E Remove adapter (2), elbow (5), tee (8), union (9), and four packings (12) from relief valve (3). Discard packings (12).

F Remove two screws (13), lockwashers (14), and clamp (15) from tube (6) and hull. Discard lockwashers (14).

G Remove tube (6) from elbow (16) at left front No. 1 rotary actuator (17).

H Remove elbow (16) and packing (18) from left front No. 1 rotary actuator (17). Discard packing (18).



LEFT FRONT NO. 1 ROTARY ACTUATOR

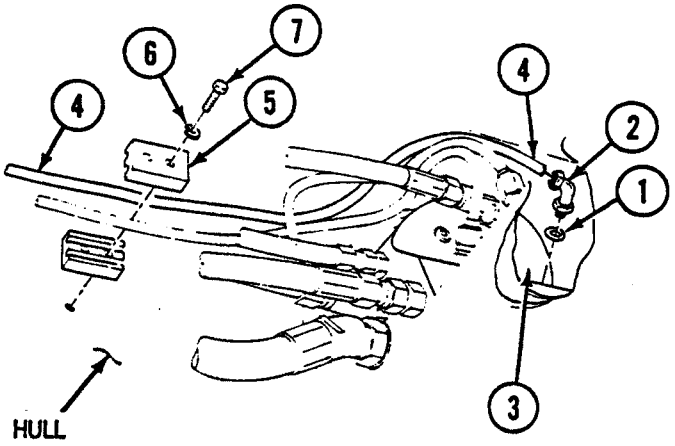
INSTALLATION

Note

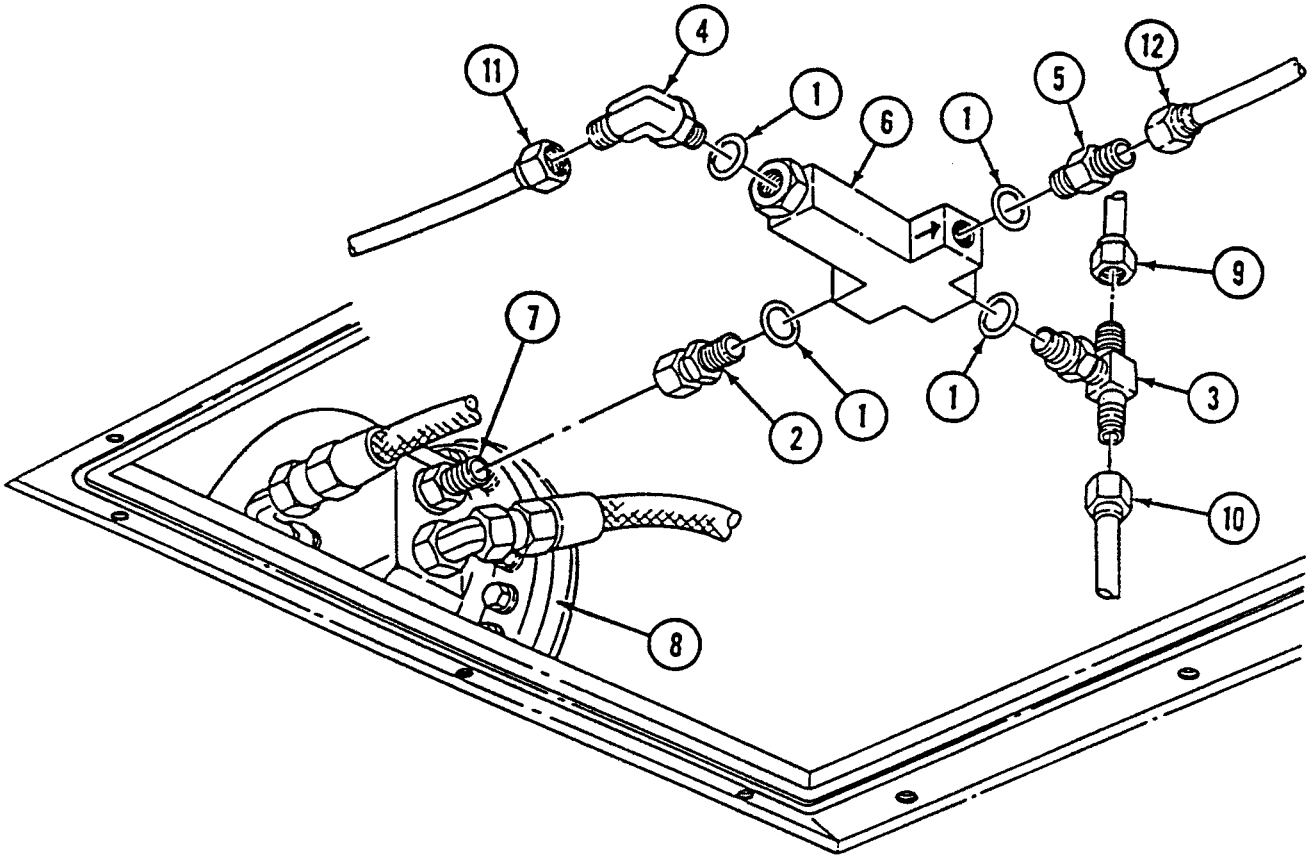
- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, tubes, and packings for serviceability before installation.
- Use two wrenches when connecting hydraulic lines to fittings.
- Apply lubricating oil to packings prior to installation.

A Install packing (1) on elbow (2), and install elbow (2) on left front No. 1 rotary actuator (3).

B Install tube (4) on elbow (2) at left front No. 1 rotary actuator (3), and secure tube (4) to hull with clamp (5), two lockwashers (6), and screws (7).



LEFT FRONT NO. 1 ROTARY ACTUATOR



LEFT FRONT INTERMEDIATE NO. 2 ROTARY ACTUATOR

Note

If installing new relief valve, perform step C.

C Install four packings (1) on union (2), tee (3), elbow (4), and adapter (5), and install union (2), tee (3), elbow (4), and adapter (5) on relief valve (6).

Note

Install relief valve with arrow pointing toward front of vehicle.

D Install relief valve (6) by connecting union (2) to adapter (7) at left front intermediate No. 2 rotary actuator (8).

E Connect tubes (9) and (10) to tee (3).

F Connect tube (11) to elbow (4).

G Connect tube (12) to adapter (5).

FOLLOW-ON TASKS:

- Install hull access covers (p 4-375).
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

SUSPENSION RELIEF VALVE ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Suspension Does Not Raise Vehicle in SPRUNG Mode
TM 5-2350-262-20-3	Hydraulic Oil Overheats

Equipment Condition:

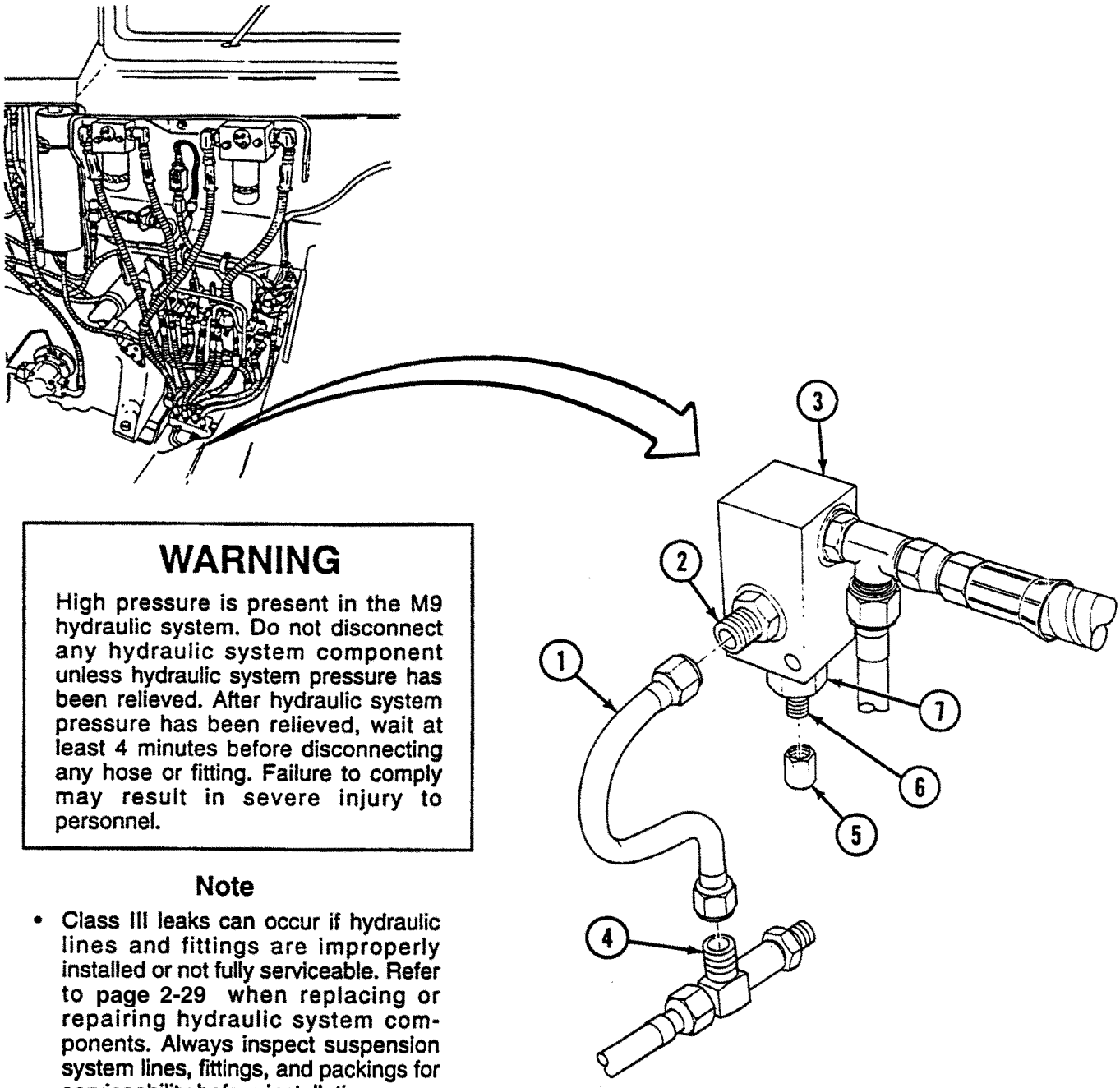
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.

ADJUSTMENT



WARNING

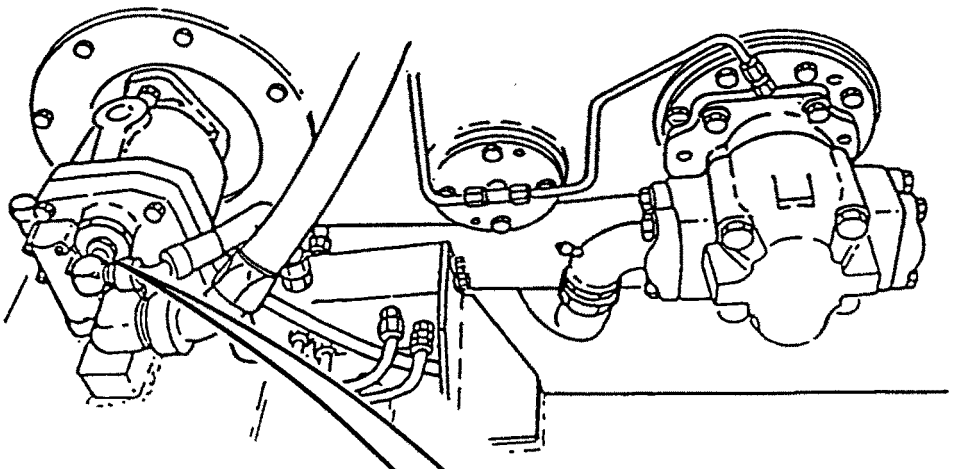
High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.

Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, and packings for serviceability before installation.
- Have suitable container ready to catch hydraulic oil.

A If necessary, connect tube assembly (1) to adapter (2) on relief valve (3) and to tee (4).

B Remove cap (5) from relief valve adjusting shaft (6) and loosen jamnut (7).



C Disconnect fitting (8) from elbow (9) at compensating pump (10).

D Install 12258880 tee (11) on elbow (9), and connect 4730-01-305-5796 adapter (12), transducer (13), and fitting (8) to tee (11).

E Connect W4 cable (14) to transducer (13) and VTM (15).

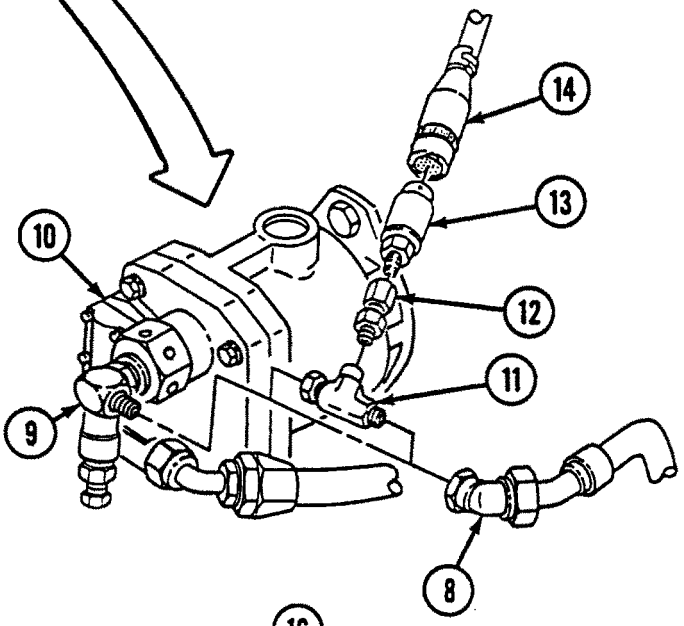
F Connect W1 cable (16) to VTM (15) and receptacle (17) of STE/ICE-R interface resistor box (18).

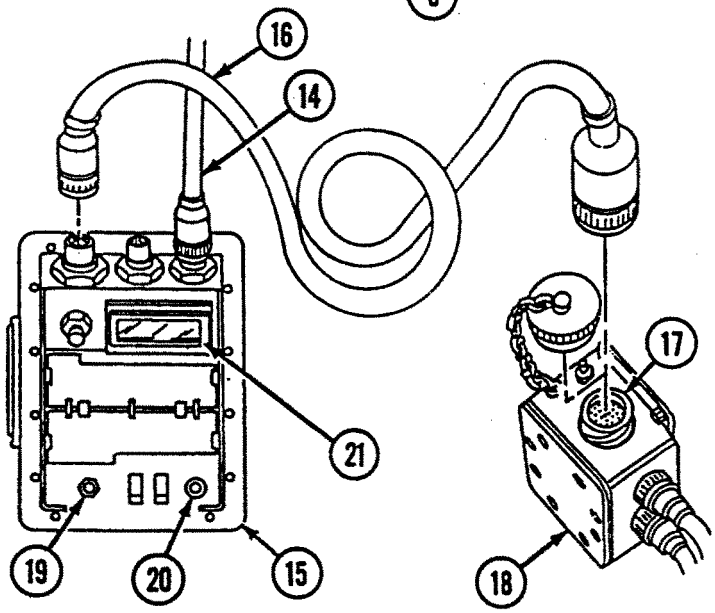
G Push ON/OFF button (19) of VTM (15), and perform confidence test (p 3-18).

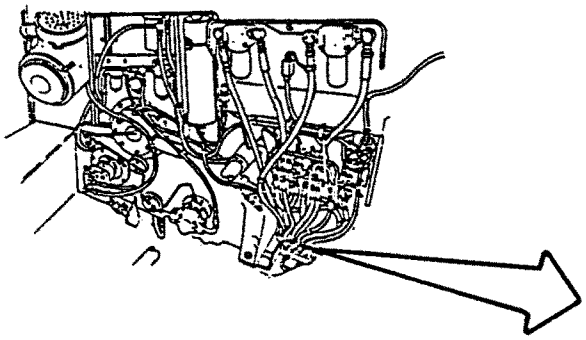
H Dial in Test 51 on VTM (15) and press and hold TEST button (20) until "CAL" appears on display (21), then release button (20). Value on display (21) should be between +450 and -450. If the value on the display (21) is not within the offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

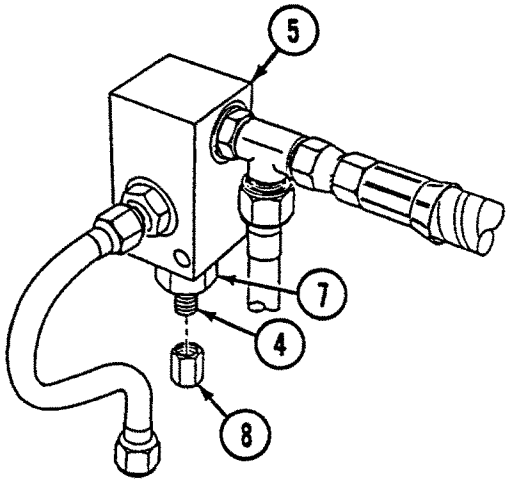
I Start vehicle engine (TM 5-2350-262-10).

J Dial 01 into VTM (15), and press TEST button (20). When "CON" appears on display (17) release button (20). Dial in Test 51 again on VTM (15). Press TEST button (20) again. Pressure in psi and rpm should appear alternately on display (21).







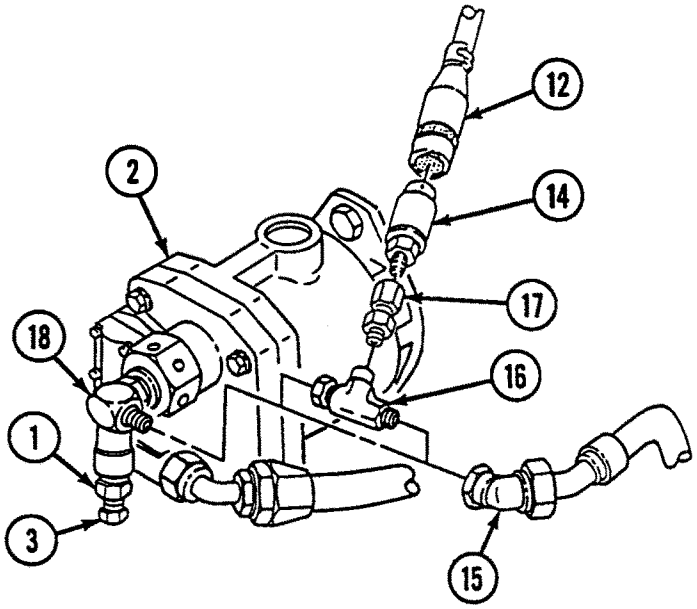


K Loosen jamnut (1) on compensating pump (2) and adjust output pressure to its maximum by turning adjusting nut (3) clockwise to its limit.

L Turn shaft (4) of valve (5) until VTM (6) indicates 3,700-3,800 psi (25,512-26,201 kPa) at 750-850 rpm. Tighten jamnut (7) on relief valve (5), and install cap (8) onshaft (4).

M Adjust compensating pump (2) output to 2,800-2,900 psi (19,306-19,996 kPa) by turning adjusting nut (3) counterclockwise. Tighten jamnut (1).

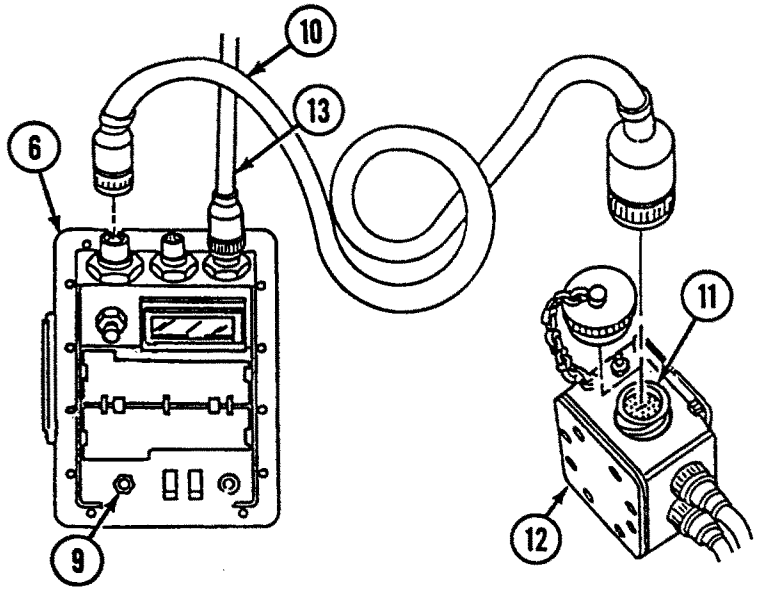
N Stop engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 3-82). Pull ON/OFF button (9) of VTM (6). Disconnect W1 cable (10) from VTM (6) and DCA receptacle (11) of STE/ICE-R interface resistor box (12). Disconnect W4 cable (13) from transducer (14) and VTM (6).



WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Failure to comply may result in severe injury to personnel.

O Disconnect fitting (15) from tee (16) and remove transducer (14), adapter (17), and tee (16) from elbow (18) of compensating pump (2). Connect fitting (15) to elbow (18).



FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

SUSPENSION RELIEF VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Packing (AR)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	Suspension Does Not Raise Vehicle in SPRUNG Mode
TM 5-2350-262-20-3	Hydraulic Oil Overheats

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.

REMOVAL

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Failure to comply may result in severy injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contami-nation of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch hydraulic oil.

A Disconnect hose (1) and tube (2) from tee (3) at relief valve (4).

B Disconnect tube (5) from adapter (6), and remove relief valve (4) from vehicle.

Note

If replacing with new relief valve, perform step C.

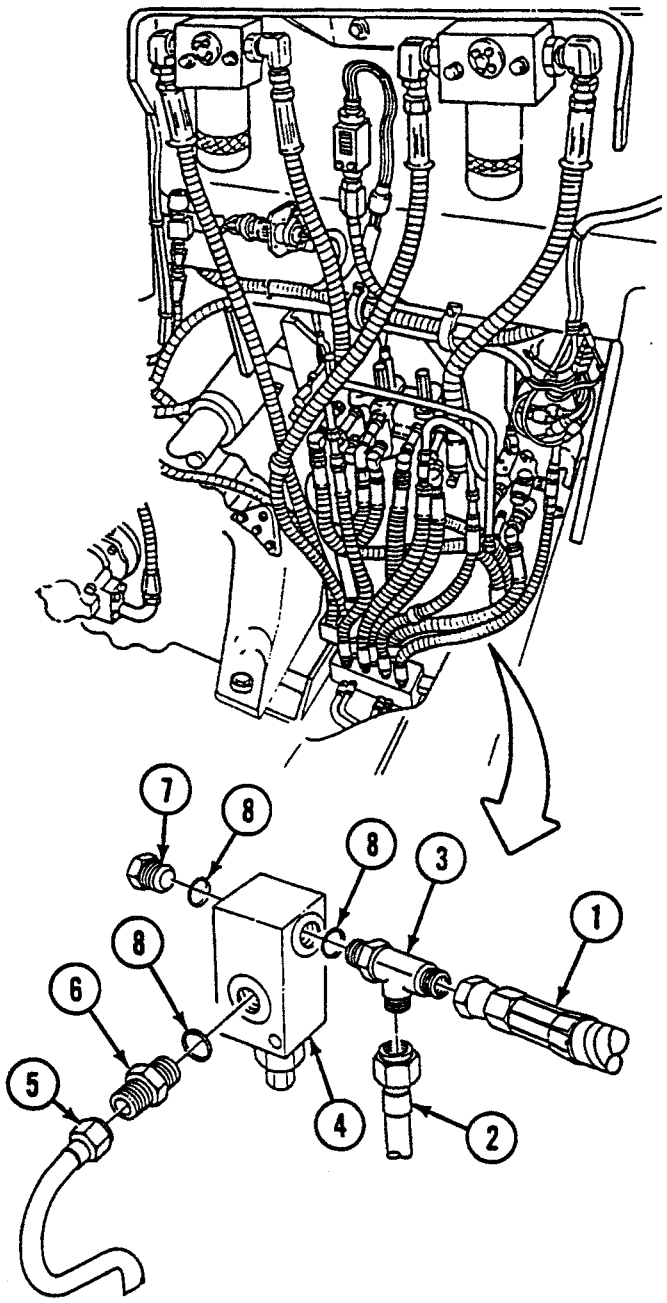
C Remove tee (3), adapter (6), plug (7), and three packings (8) from relief valve (4). Discard packings (8).

INSTALLATION

Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect suspension system lines, fittings, and packings for serviceability before installation.
- If installing new relief valve, perform step A.
- Apply lubricating oil to packings prior to installation.

A Install packing (8) on plug (7), adapter (6), and tee (3), and install plug (7), adapter (6), and tee (3) on relief valve (4).



B Position relief valve (4) in vehicle and connect (RELIEF VLV 7) tube (5) to adapter (6) and. (RLF VLV-9 TEE) hose (1) and (RELIEF VLV-9 TEE) tube (2) to tee (3).

FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Adjust suspension relief valve (p 4-445).
- Retract ejector (TM 5-2350-262-10).

HYDRAULIC FRONT MANIFOLDS AND FITTINGS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Packing (8)

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	All Hydraulic Functions Inoperative

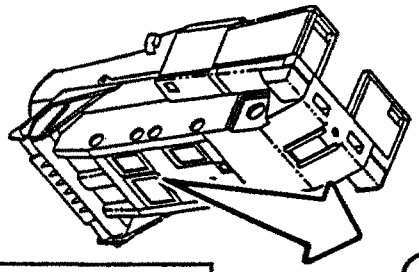
Equipment Condition:

Reference	Condition Description
Page 3-82	Hydraulic Pressure Relieved
Page 4-375	Front Hull Access Covers Removed

General Safety Instructions:

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.



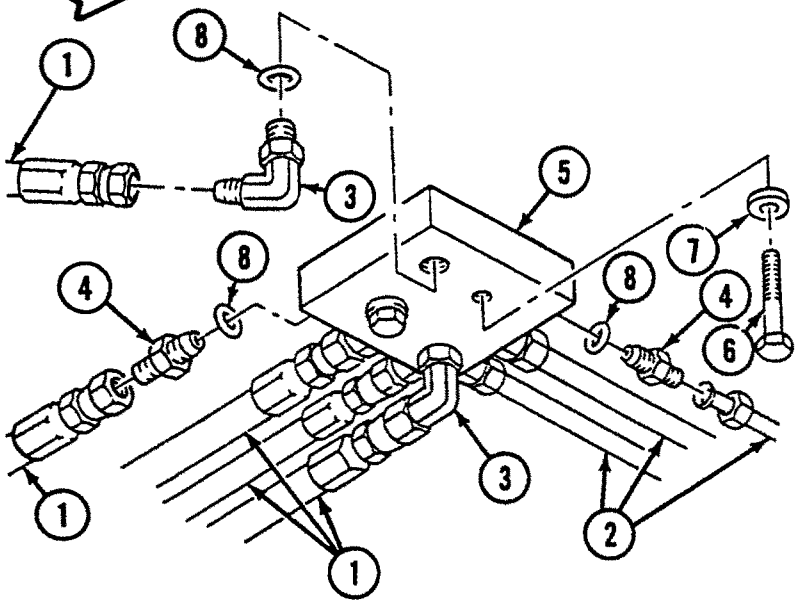
REMOVAL

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contami-nation of hydraulic oil. Failure to comply may result in damage to equipment.



Note

- Both front manifolds are replaced the same way. This procedure covers the right side.
- Tag hoses prior to removal for installation.
- Have suitable container ready to catch hydraulic oil.
- Use two wrenches to disconnect or connect hydraulic lines from or to fittings.

A Disconnect five hoses (1) and three tubes (2) from two elbows (3) and six adapters (4) at manifold (5).

B Remove two self-locking screws (6), washers (7), and manifold (5) from vehicle. Discard self-locking screws (6).

Note

Note location of elbows and fittings prior to removal for installation.

C Remove six adapters (4) and two elbows (3) from manifold (5).

D Remove eight packings (8) from six adapters (4) and two elbows (3). Discard packings (8).

INSTALLATION

Note

- **Class III leaks can occur if hydraulic fittings and lines are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect hydraulic system lines, fittings, and packings for serviceability before installation.**
- Apply lubricating oil to packings prior to installation.

A Install eight packings (8) on six adapters (4) and two elbows (3), and install adapters (4) and elbows (3) on manifold (5).

B Install manifold (5) on vehicle with two washers (7) and self-locking screws (6).

C Connect five hoses (1) to two elbows (3) and three adapters (4). Connect three tubes (2) to adapters (4).

FOLLOW-ON TASKS:

- Install front hull access covers (p 4-375).
- Service hydraulic tank (TM 5-2350-262-10).

HYDRAULIC INTERMEDIATE MANIFOLDS AND FITTINGS REPLACEMENT

This task covers:

a. Removal (Left Side)
Installation (Left Side)

b. Removal (Right Side)
Installation (Right Side)

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D
Tiedown Strap(s)	Item 32 Appendix D

Parts:

Lockwasher (4)

Packing (34)

Self-locking Screw (12)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	All Hydraulic Functions Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved
Page 4-375	Hull Access Covers Removed

General Safety Instructions:

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.

REMOVAL (LEFT SIDE)

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all port and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

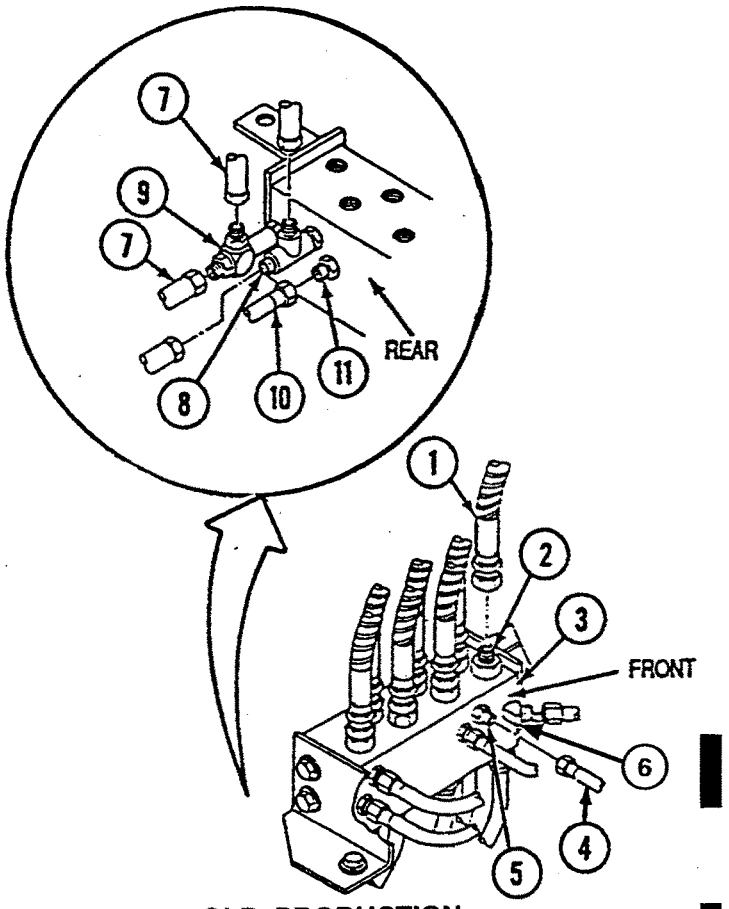
Note

- Use two wrenches when disconnecting hydraulic lines from fittings.
- Tag all hoses and tubes prior to removal, for installation.
- On NEW PRODUCTION, left main manifold ports TOP 7 and TOP 9 are equipped with additional elbow, reducer and tees.

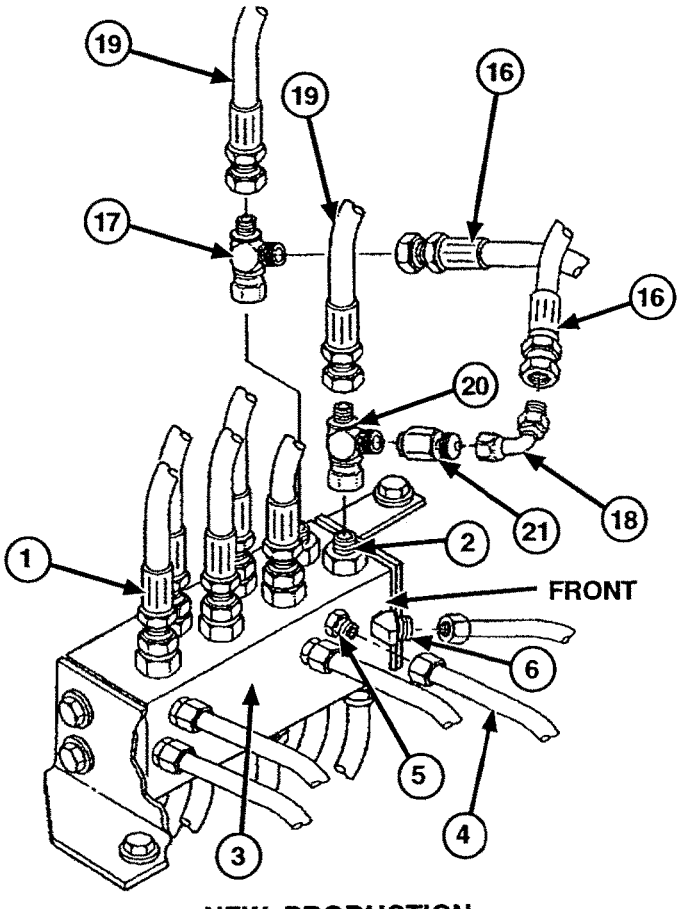
A On OLD PRODUCTION vehicles in bowl area, disconnect seven valve bank hoses (1) from adapters (2) at manifold (3).

A.1 On NEW PRODUCTION vehicles in bowl area, disconnect five valve bank hoses (1) from adapters (2).

A.2 On NEW PRODUCTION vehicles, disconnect two semi-automatic track adjuster hoses (16) from tee (17) and elbow (18).



OLD PRODUCTION



NEW PRODUCTION

A.3 On NEW PRODUCTION vehicles, disconnect two valve bank hoses (19) from tee (17) and tee (20).

A.4 On NEW PRODUCTION vehicles, remove reducer (21) from tee (20).

A.5 On NEW PRODUCTION vehicles, remove tee (17) and tee (20) from adapters (2).

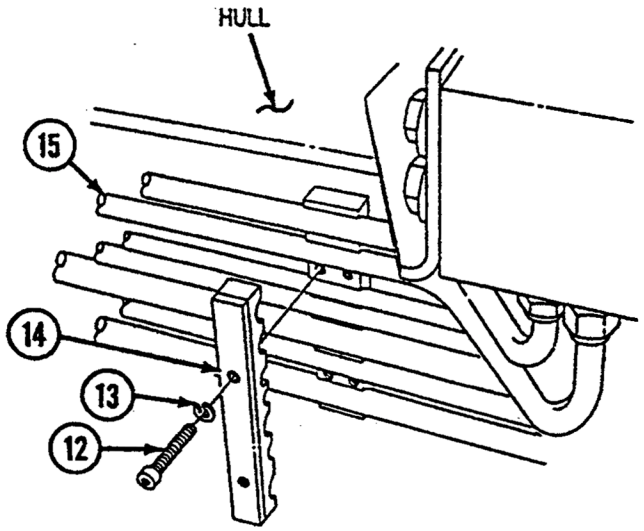
B Disconnect five tubes (4) from four adapters (5) and elbow (6) at front of manifold (3).

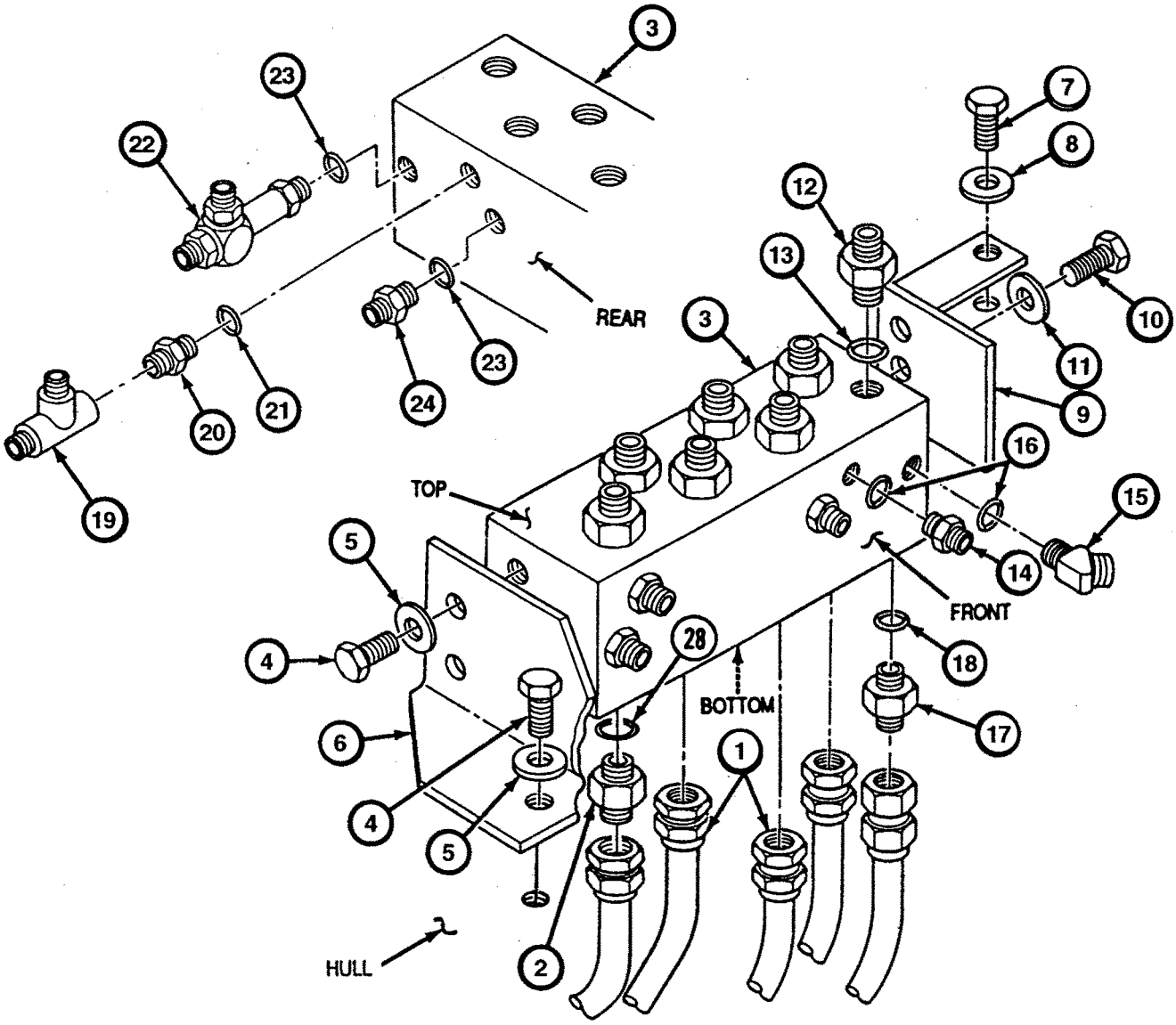
C From hull access opening, disconnect four tubes (7) from tee (8), and fitting (9) at rear of manifold (3). Disconnect hose (10) from adapter (11).

CAUTION

Do not bend tubes. If necessary, remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.

D From hull access opening, remove two screws (12), lockwashers (13), and retaining strap (14) from five tubes (15) and hull. Discard lockwashers (13).





E From hull access opening, disconnect five tubes (1) from five adapters (2) at bottom of manifold (3).

F Remove three self locking screws (4), washers (5), and bracket (6) from manifold (3) and hull. Discard self locking screws (4).

G Remove self locking screw (7), and washer (8), from bracket (9) and hull. Discard self locking screw (7).

H Remove two self locking screws (10), washers (11) and bracket (9) from manifold (3). Discard self locking screws (10).

I Remove seven adapters (12) and packings (13) from top of manifold (3). Discard packings (13).

J Remove four adapters (14), elbow (15), and five packings (16) from front of manifold (3). Discard packings (16).

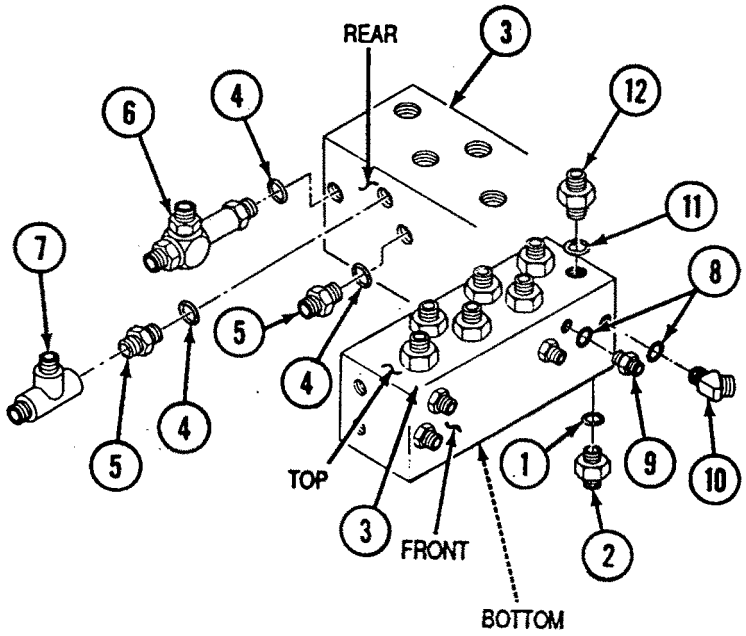
K Remove five adapters (17) and packings (18) from bottom of manifold (3). Discard packings (18).

L Remove tee (19), adapter (20), packing (21), fitting (22), packing (23), adapter (24), and packing (23) from rear of manifold (3). Discard packings (23).

INSTALLATION (LEFT SIDE)

Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to TM 5-2350-262-20-1 when replacing or repairing hydraulic system components. Always inspect system lines, fittings, and packings for serviceability before installation.
- Do not tighten fittings until alignment with tube is checked.
- Use two wrenches when connecting hydraulic lines to fittings.
- Apply lubricating oil to packings prior to installation.



A Install five new packings (1) on five adapters (2), and install adapters (2) on bottom of manifold (3).

B Install three new packings (4) on two adapters (5) and fitting (6), and install adapters (5), fitting (6), and tee (7) on rear of manifold (3).

C Install five new packings (8) on four adapters (9) and elbow (10), and install adapters (9) and elbow (10) on front of manifold (3).

D Install seven new packings (11) on seven adapters (12), and install adapters (12) on top of manifold (3).

E Install left bracket (1) on manifold (2) with two washers (3) and new self locking screws (4).

F Install right bracket (5) on manifold (2) with two washers (6) and new self locking screws (7).

G Install manifold (2) on hull with two washers (8) and new self locking screws (9). Do not tighten self locking screws (9).

H Connect five tubes (10) to four adapters (11) and elbow (12) at front of manifold (2).

I Connect five tubes (13) to five adapters (14) at bottom of manifold (2).

J Connect four tubes (15) to tee (16) and fitting (17).

K Connect hose (18) to adapter (19) at rear of manifold (2).

L On OLD PRODUCTION, connect seven hoses (20) to seven adapters (21) at top of manifold (2). Tighten self locking screws (9).

Note

On NEW PRODUCTION vehicles, left main manifold ports TOP 7 and TOP 9 are equipped with additional elbow, reducer and tees.

L.1 On NEW PRODUCTION vehicles, install tee (22) and tee (23) on adapters (21).

L.2 On NEW PRODUCTION, install reducer (24) on tee (23).

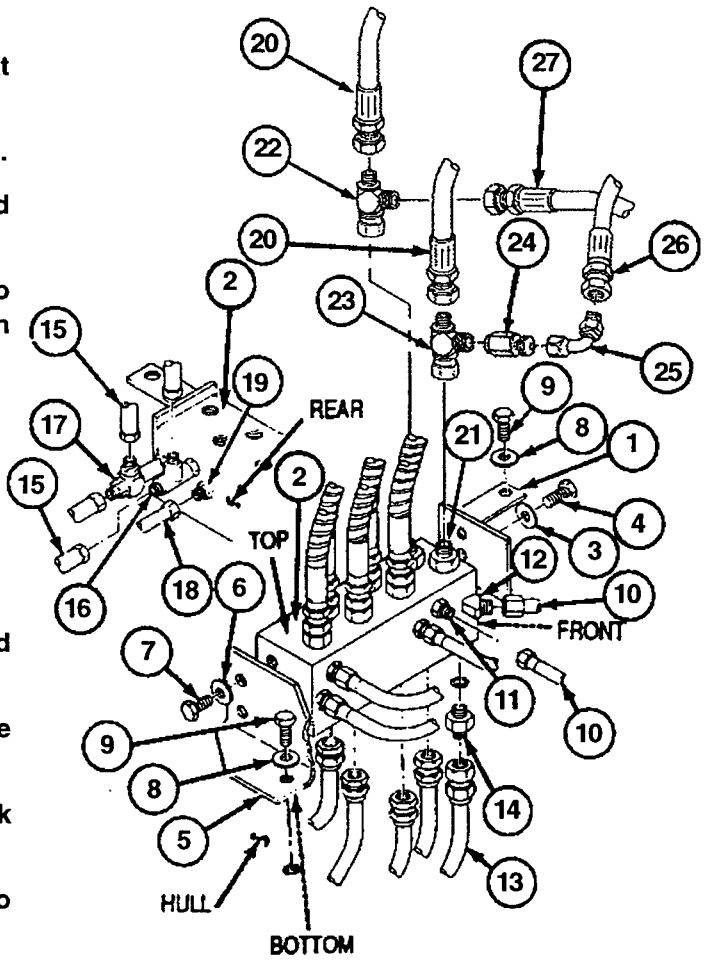
L.3 On NEW PRODUCTION, connect two valve bank hoses (20) on top of tee (22) and tee (23).

L.4 On NEW PRODUCTION, connect elbow (25) to reducer (24).

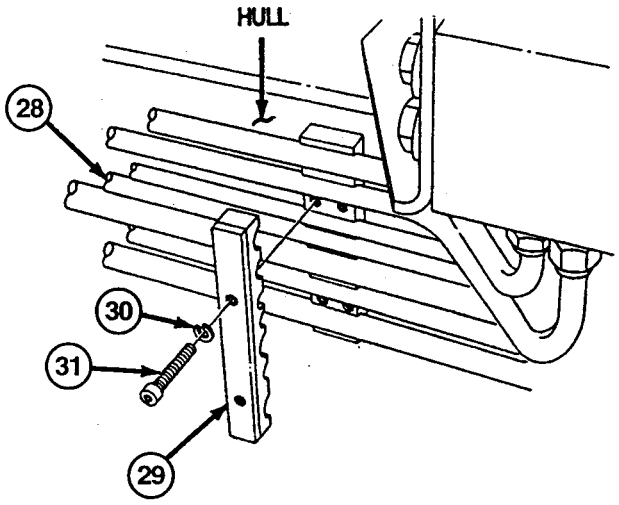
L.5 On NEW PRODUCTION, connect semi-automatic track adjuster hose (26) to elbow (25).

L.6 On NEW PRODUCTION, connect semi-automatic track adjuster hose (27) to tee (22).

L.7 On NEW PRODUCTION, connect five remaining hoses (20) to remaining adapters (21) on top of manifold (2).



M From hull access opening, secure seven tubes (28) to hull with retaining strap (29), two new lockwashers (30), and screws (31).



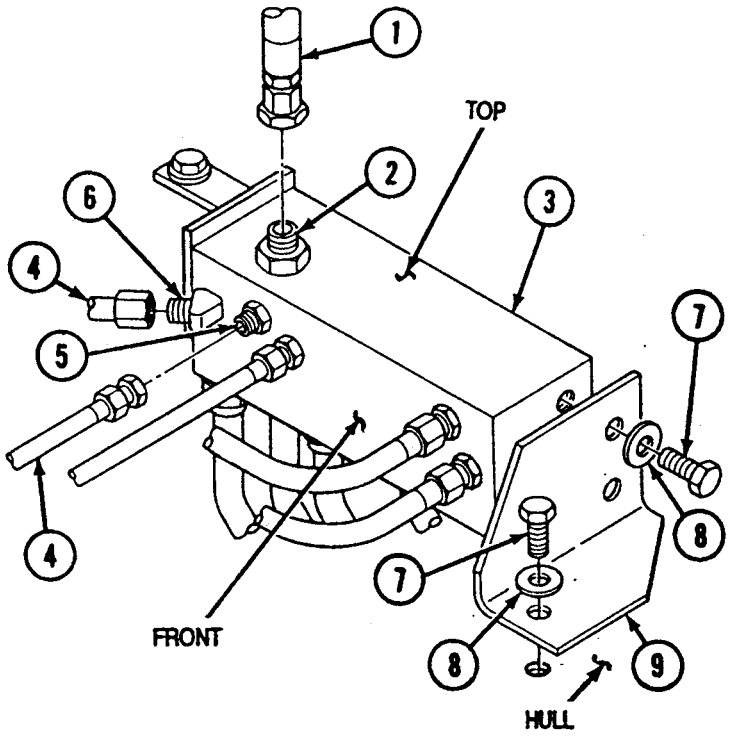
REMOVAL (RIGHT SIDE)

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all port and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.



Note

- Use two wrenches when disconnecting hydraulic lines from fittings.
- Tag all hoses and tubes prior to removal, for installation.
- Have suitable container ready to catch hydraulic oil.

A In bowl area, disconnect hose (1) from adapter (2) at top of manifold (3).

B Disconnect five tubes (4) from four adapters (5) and elbow (6) at front of manifold (3).

C Remove three self-locking screws (7), washers (8), and bracket (9) from manifold (3) and hull. Discard self-locking screws (7).

CAUTION

Do not bend tubes. If necessary, remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.

D From hull access opening, remove two screws (1), lockwashers (2), and retaining strap (3) securing seven tubes (4) to hull. Discard lockwashers (2).

E Disconnect five tubes (5) from five adapters (6) at bottom of manifold (7).

F Disconnect two hoses (8) and tube (9) from three adapters (10) at rear of manifold (7).

G Remove self-locking screw (11), washer (12), and manifold (7) from right bracket (13) and hull. Discard self-locking screw (11).

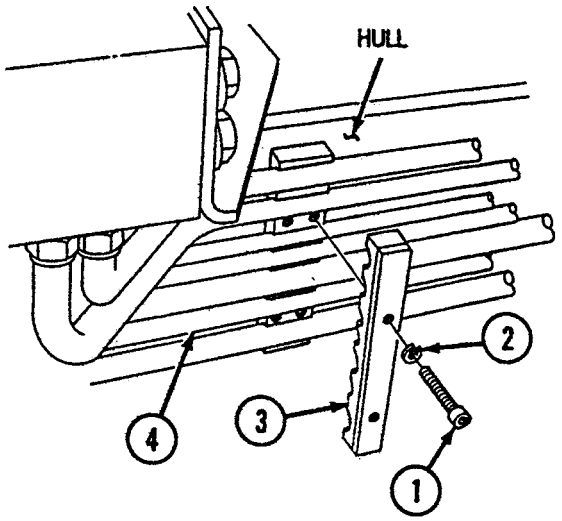
H Remove two self-locking screws (14), washers (15), and right bracket (13) from manifold (7). Discard self-locking screws (14).

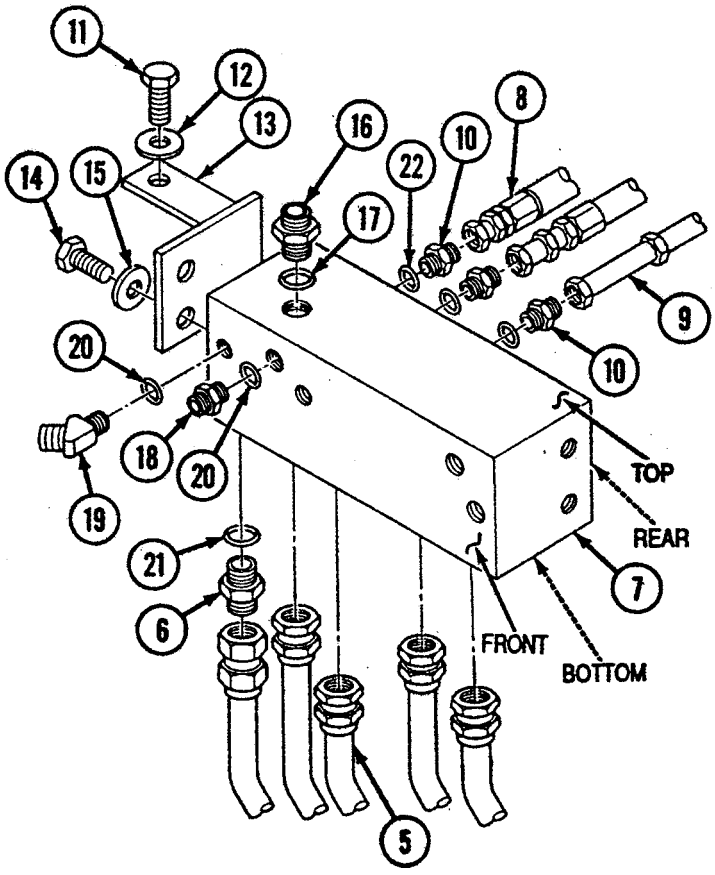
I Remove check valve (16) and packing (17) from top of manifold (7). Discard packing (17).

J Remove four adapters (18), elbow (19), and five packings (20) from front of manifold (7). Discard packings (20).

K Remove five adapters (6) and packings (21) from bottom of manifold (7). Discard packings (21).

L Remove three adapters (10) and packings (22) from rear of manifold (7). Discard packings (22).

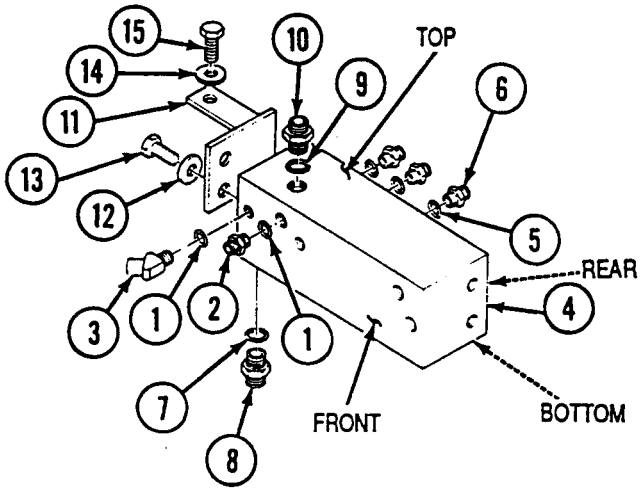


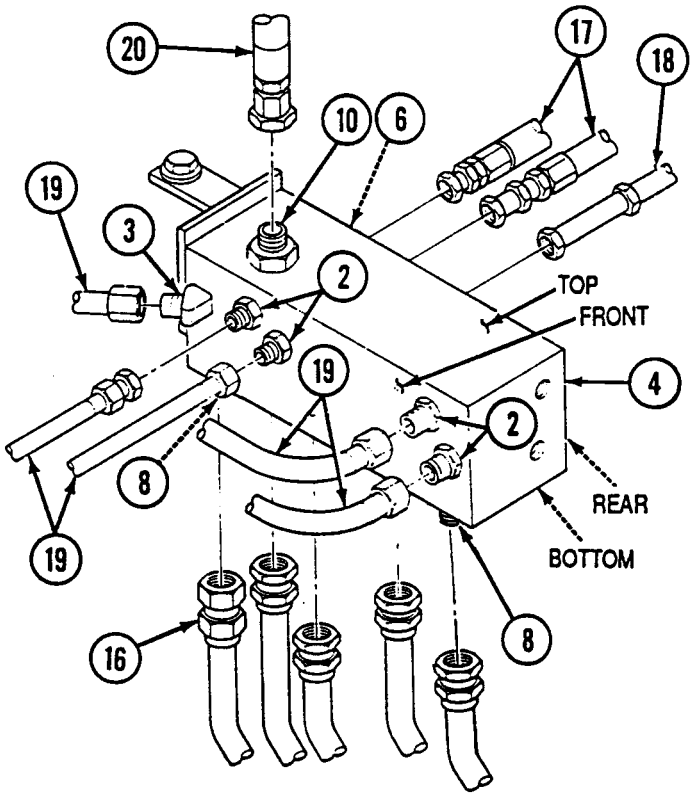


INSTALLATION (RIGHT SIDE)

Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect system lines, fittings, and packings for serviceability before installation.
- Do not tighten fittings until alignment with tube is checked.
- Use two wrenches when connecting hydraulic lines to fittings.
- Apply lubricating oil to packings prior to installation.





A Install five packings (1) on four adapters (2) and elbow (3), and install adapters (2) and elbow (3) on front of manifold (4).

B Install three packings (5) on adapters (6), and install adapters (6) on rear of manifold (4).

C Install five packings (7) on adapters (8), and install adapters (8) on bottom of manifold (4).

D Install packing (9) on check valve (10), and install check valve (10) on top of manifold (4).

E Install right bracket (11) on manifold (4) with two washers (12) and self-locking screws (13).

F Install manifold (4) on hull with washer (14) and self-locking screw (15). Do not tighten self-locking screw (15).

G Connect five tubes (16) to adapters (8) at bottom of manifold (4).

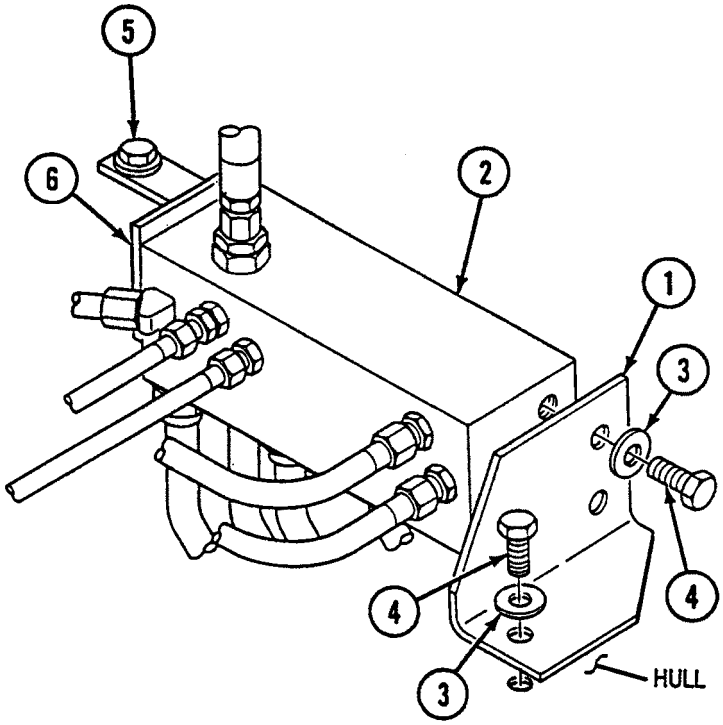
H Connect two hoses (17) and tube (18) to three adapters (6) at rear of manifold (4).

I Connect five tubes (19) to four adapters (2) and elbow (3) at front of manifold (4).

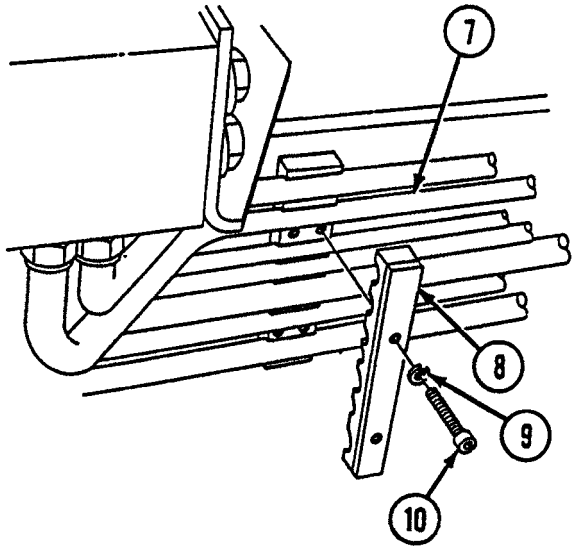
J Connect hose (20) to check valve (10) at top of manifold (4).

K Install bracket (1) on manifold (2) and hull with three washers (3) and self-locking screws (4).

L Tighten self-locking screw (5) securing right bracket (6) to hull.



M Secure seven tubes (7) to hull with retaining strap (8), two lockwashers (9), and screws (10).



FOLLOW-ON TASKS:

- Install hull access covers (p 4-375).
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

MANIFOLD DRAIN VALVES REPLACEMENT

This task covers:

a. Removal (Left Side)
b. Disassembly
c. Assembly
d. Installation (Left Side)
e. Removal (Right Side)
f. Disassembly
g. Assembly
h. Installation (Right Side)

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Packing (10)

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 3-82	Hydraulic Pressure Relieved
Page 4-375	Hull Access Covers Removed

General Safety Instructions:

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.

REMOVAL (LEFT SIDE)

WARNING

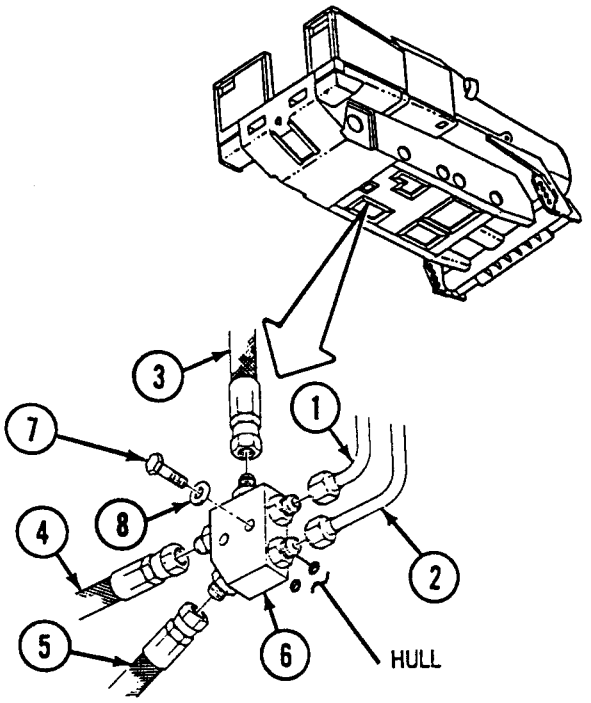
High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to equipment.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch hydraulic oil.



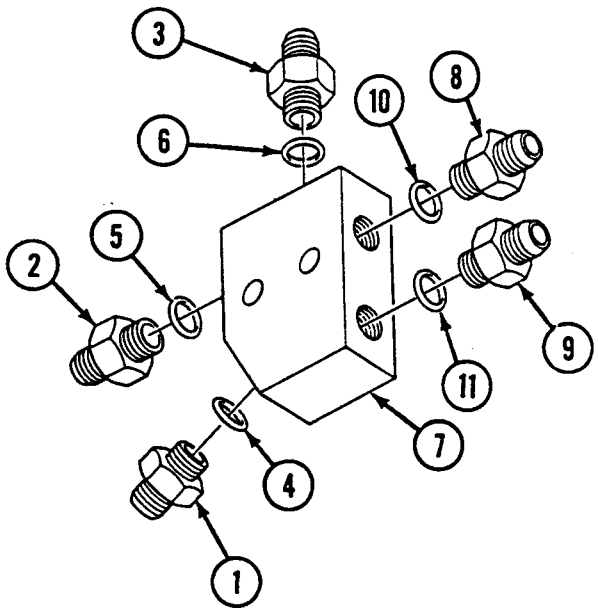
A Disconnect tubes (1) and (2) and hoses (3), (4), and (5) from valve (6).

B Remove two self-locking screws (7), washers (8), and valve (6) from hull. Discard self-locking screws (7).

DISASSEMBLY

A Remove adapters (1), (2), and (3) and packings (4), (5), and (6) from valve (7). Discard packings (4), (5), and (6).

B Remove adapters (8) and (9) and packings (10) and (11) from valve (7). Discard packings (10) and (11).



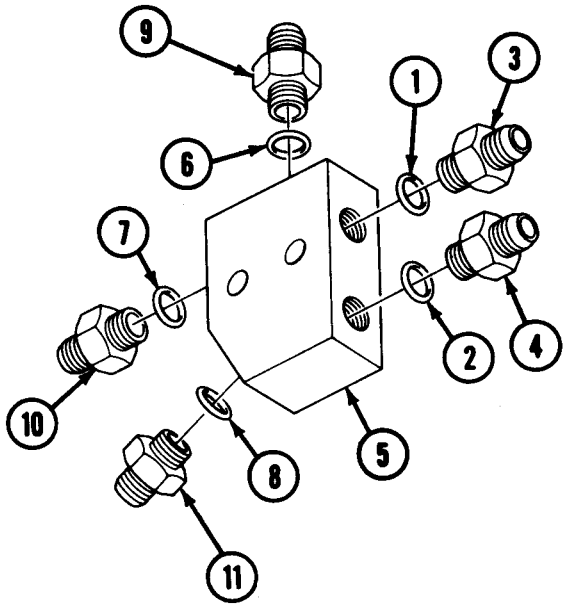
ASSEMBLY

Note

Apply lubricating oil to packings prior to installation.

A Install packings (1) and (2) on adapters (3) and (4), and install adapters (3) and (4) on valve (5).

B Install packings (6), (7), and (8) on adapters (9), (10), and (11), and install adapters (9), (10), and (11) on valve (5).



INSTALLATION (LEFT SIDE)

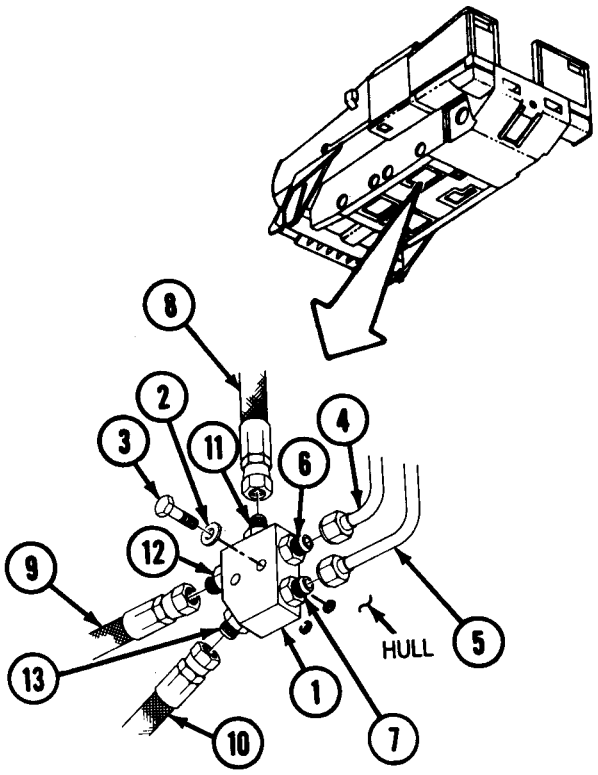
Note

Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect lines, fittings, tubes, and packings for serviceability before installation.

A Install valve (1) on hull with two washers (2) and self-locking screws (3).

B Connect LH CKT tubes (4) and (5) to adapters (6) and (7) at valve (1).

C Connect LH CKT-7B MANF hoses (8), (9), and (10) to adapters (11), (12), and (13) at valve (1).



REMOVAL (RIGHT SIDE)

WARNING

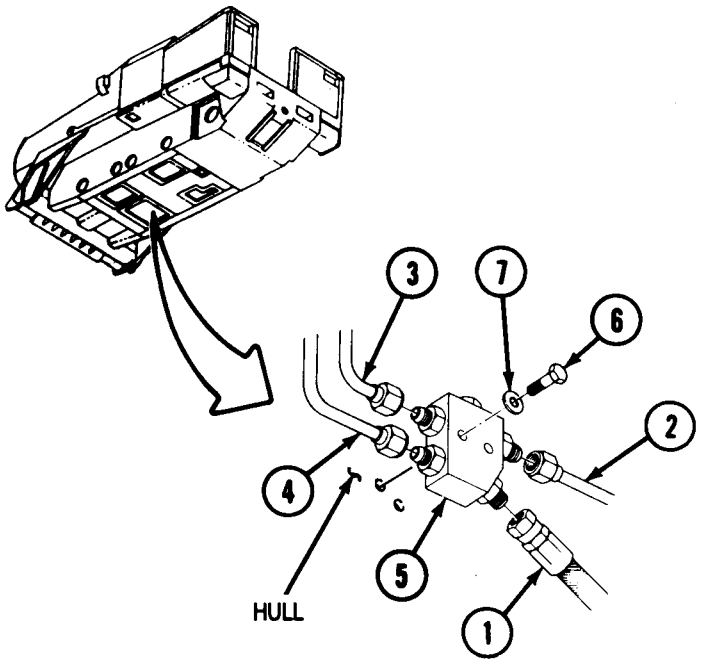
High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch hydraulic oil.



A Disconnect hose (1) and tubes (2), (3), and (4) from valve (5).

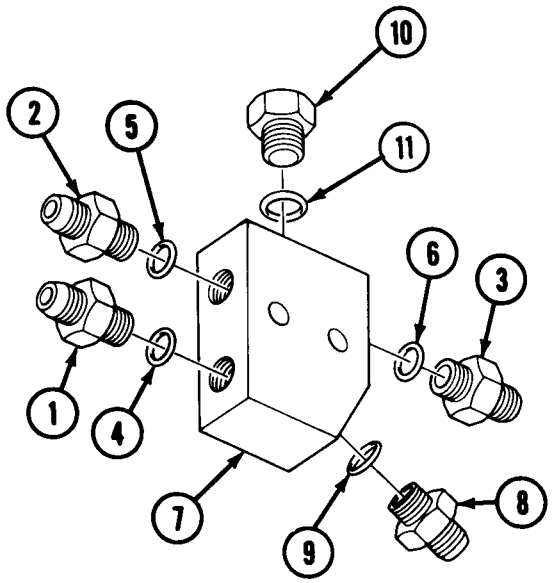
B Remove two self-locking screws (6), washers (7), and valve (5) from hull. Discard self-locking screws (6).

DISASSEMBLY

A Remove adapters (1), (2), and (3) and packings (4), (5), and (6) from valve (7). Discard packings (4), (5), and (6).

B Remove adapter (8) and packing (9) from valve (7). Discard packing (9).

C Remove plug (10) and packing (11) from valve (7). Discard packing (11).



ASSEMBLY

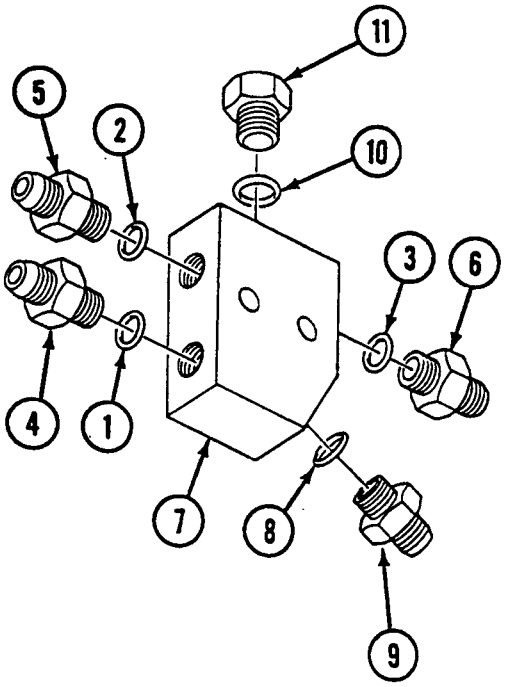
Note

Apply lubricating oil to packings prior to installation.

A Install packings (1), (2), and (3) on adapters (4), (5), and (6), and install adapters (4), (5), and (6) on valve (7).

B Install packing (8) on adapter (9), and install adapter (9) on valve (7).

C Install packing (10) on plug (11), and install plug (11) on valve (7).



INSTALLATION (RIGHT SIDE)

Note

Class III leaks can occur if hydraulic lines and fittings are improperly installed, or not fully serviceable. Refer to page 2-29 when replacing or repairing hydraulic system components. Always inspect lines, fittings, tubes, and packings for serviceability before installation.

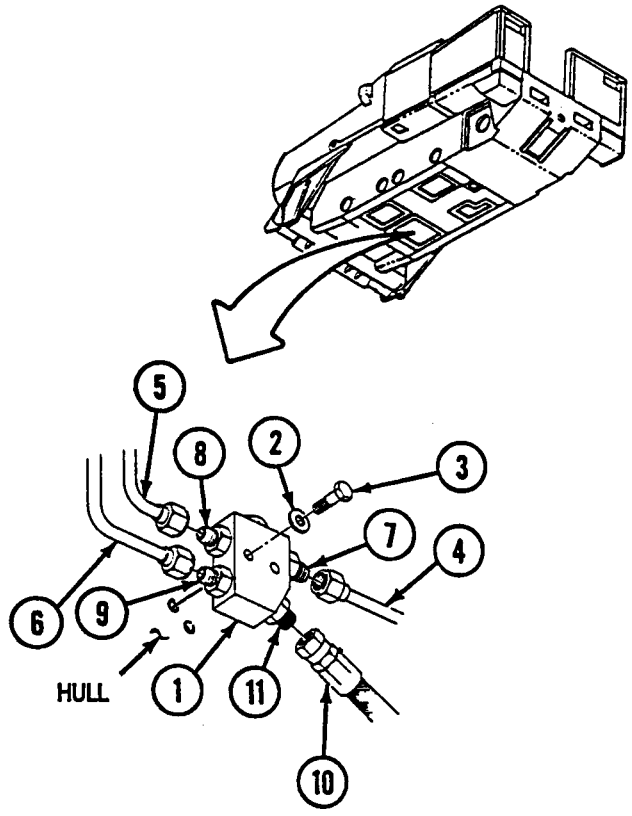
A Install valve (1) on hull with two washers (2) and self-locking screws (3).

B Connect RH CKT-7B MANF tubes (4), (5), and (6) to adapters (7), (8), and (9) at valve (1).

C Connect RH CKT-7B MANF hose (10) to adapter (11) at valve (1).

FOLLOW-ON TASKS:

- Install hull access covers (p 4-375).
- Service hydraulic tank (TM 5-2350-262-10).



MAIN HYDRAULIC ACCUMULATOR CHARGING

This task covers:

Charging

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Charging Device	4940-01-046-7109
Kit, STE/ICE-R	4910-01-222-6589
Transducer	6685-01-193-1733

Materials:

Nitrogen, Technical	Item 25 Appendix D

Parts:

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 9-4910-571-12&P

Troubleshooting Reference:

Page 3-87	Main Hydraulic Pump Efficiency Test
Page 3-115	Hydraulic Circuit Efficiency Test

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles and Covers Opened
Page 2-27	Hydraulic Pressure Relieved
Page 4-335	Cowling Removed

General Safety Instructions:

WARNING

- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends.
- Do not breathe nitrogen gas.

CHARGING

WARNING

- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends. Failure to comply may result in severe injury to personnel.
- Do not breathe nitrogen gas. Failure to comply may result in death to personnel.

Note

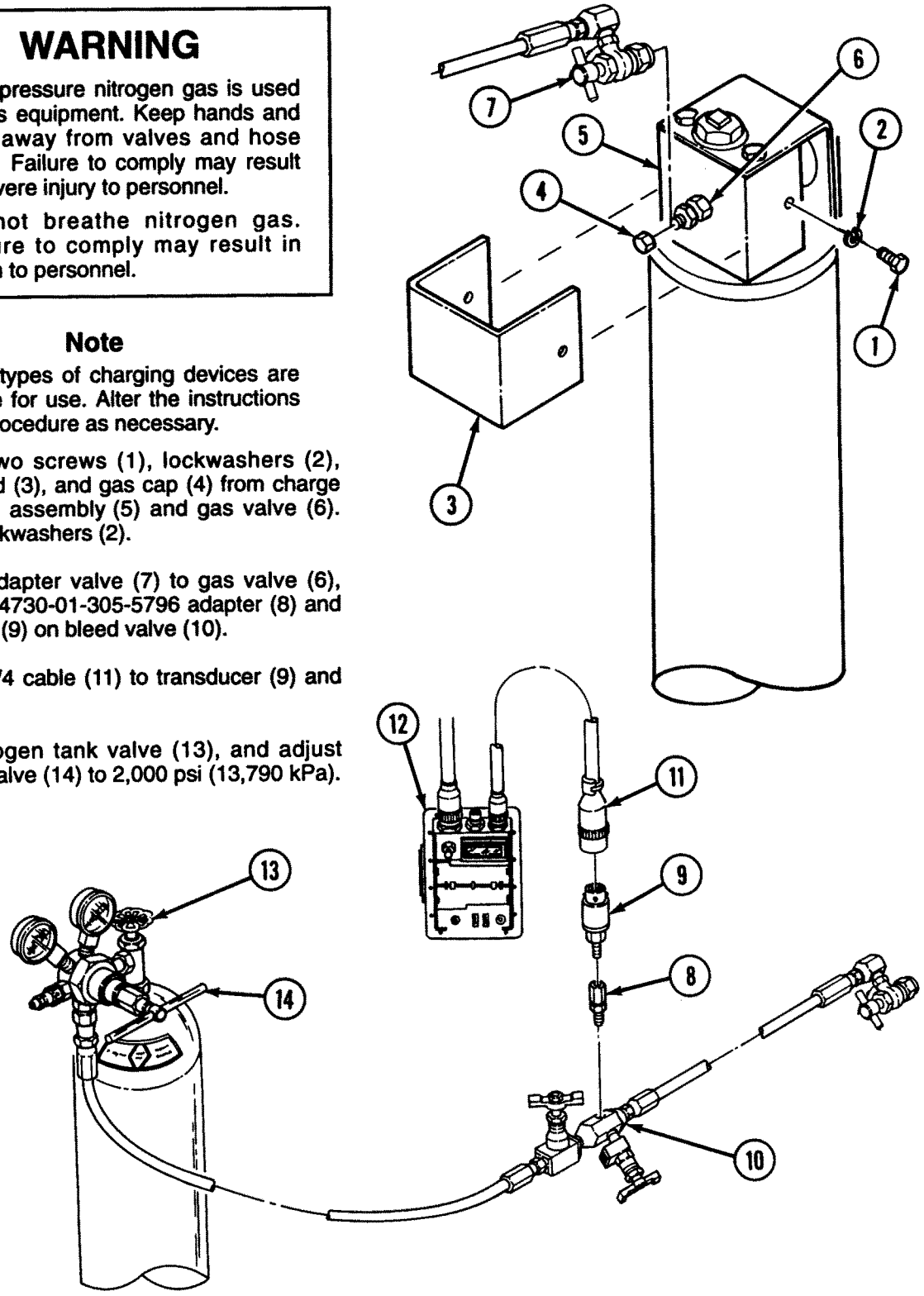
Several types of charging devices are available for use. Alter the instructions in this procedure as necessary.

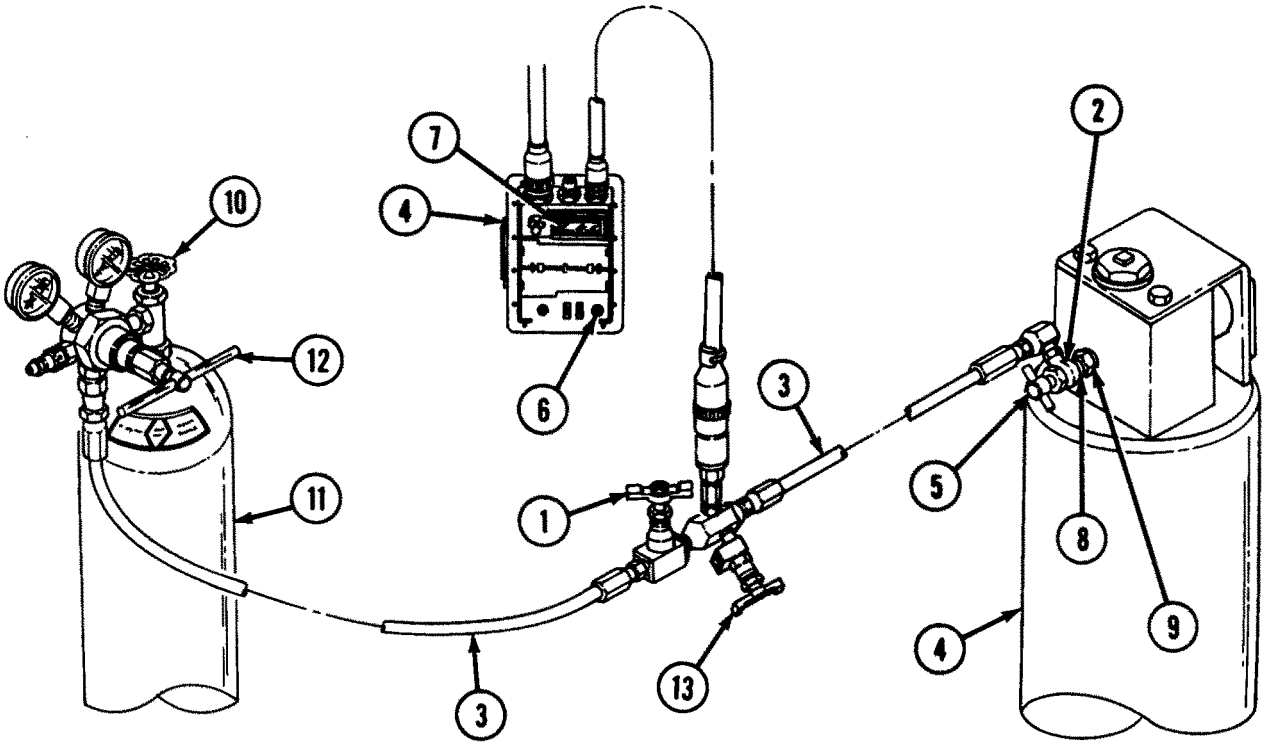
A Remove two screws (1), lockwashers (2), valve guard (3), and gas cap (4) from charge and gauge assembly (5) and gas valve (6). Discard lockwashers (2).

B Connect adapter valve (7) to gas valve (6), and install 4730-01-305-5796 adapter (8) and transducer (9) on bleed valve (10).

C Connect W4 cable (11) to transducer (9) and VTM (12).

D Open nitrogen tank valve (13), and adjust regulator valve (14) to 2,000 psi (13,790 kPa).





E Open shutoff valve (1), loosen adapter valve assembly (2), and allow nitrogen gas to escape for about 10 seconds to bleed air and moisture from charge hoses (3). Tighten adapter valve assembly (2).

F Run confidence test (p 3-18) for VTM (4).

G Ensure VTM (4) reads 2,000 psi (13,790 kPa) and close shutoff valve (1). Open adapter valve (5).

H Dial in Test 51 on VTM (4). Press and hold TEST button (6) on VTM (4) until "CAL" appears on display (7). Release button (6). Value that appears on display (7) should be between +450 and -450. If value on display (7) is not within offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

Note

Accumulator gas valve is fully open after approximately 2-1/2 turns.

I Loosen nut (8), opening gas valve (9), and slightly open shutoff valve (1). Refer to appendix H for proper charge.

J Tighten nut (8), closing gas valve (9). Close tank valve (10) of nitrogen tank (11), and release tension on regulator valve (12). Bleed charge hose (3) by opening bleed valve (13).

K Disconnect adapter valve (5) from gas valve (9), and install gas cap (14) on gas valve (9).

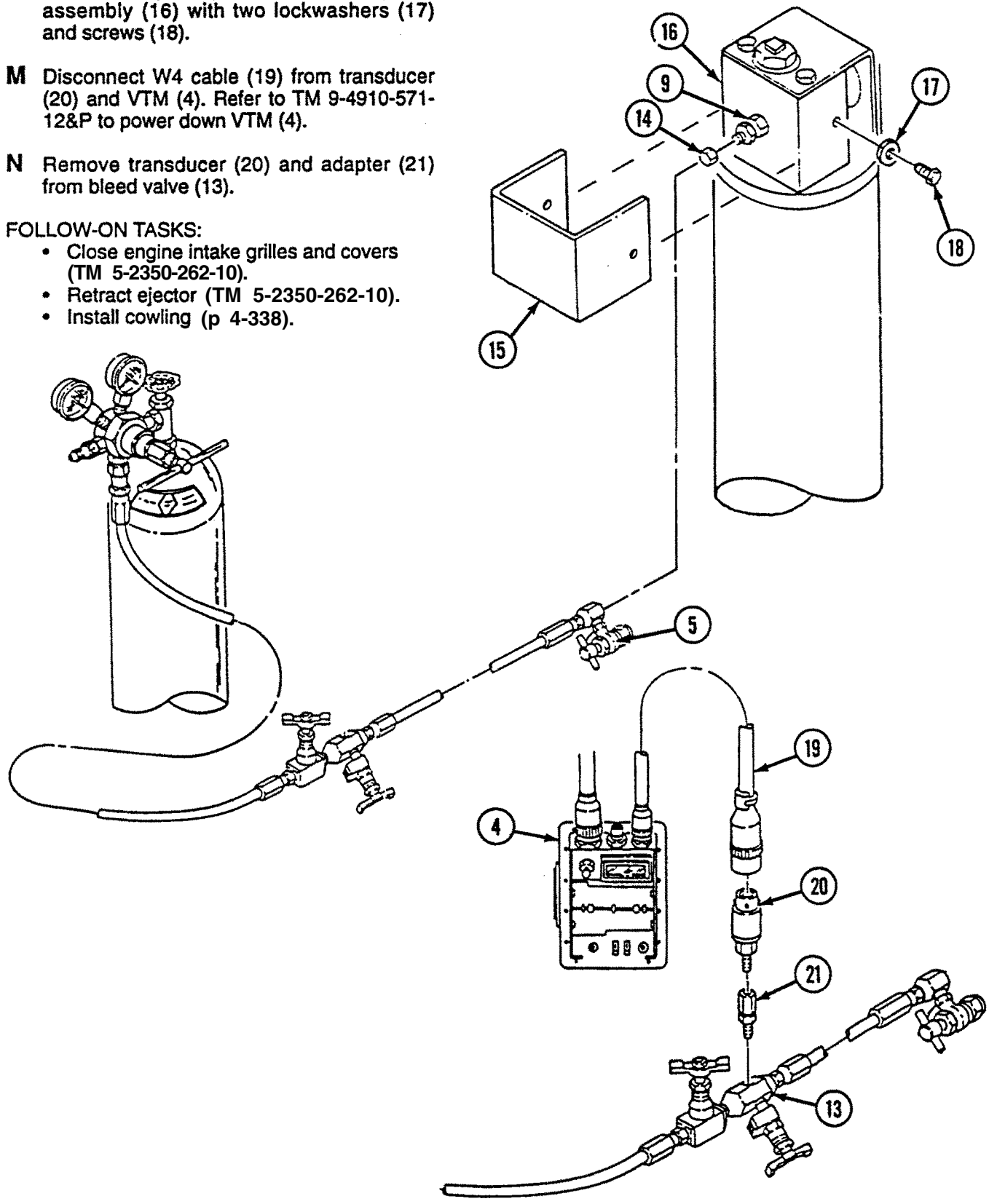
L Install valve guard (15) on charge and gauge assembly (16) with two lockwashers (17) and screws (18).

M Disconnect W4 cable (19) from transducer (20) and VTM (4). Refer to TM 9-4910-571-12&P to power down VTM (4).

N Remove transducer (20) and adapter (21) from bleed valve (13).

FOLLOW-ON TASKS:

- Close engine intake grilles and covers (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).
- Install cowling (p 4-338).



MAIN HYDRAULIC ACCUMULATOR AND BRACKET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Packing (2)

Locknut (6)

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-472	Main Hydraulic Accumulator Charge and Gauge Assembly Removed

REMOVAL

Note

Have suitable container ready to catch hydraulic oil.

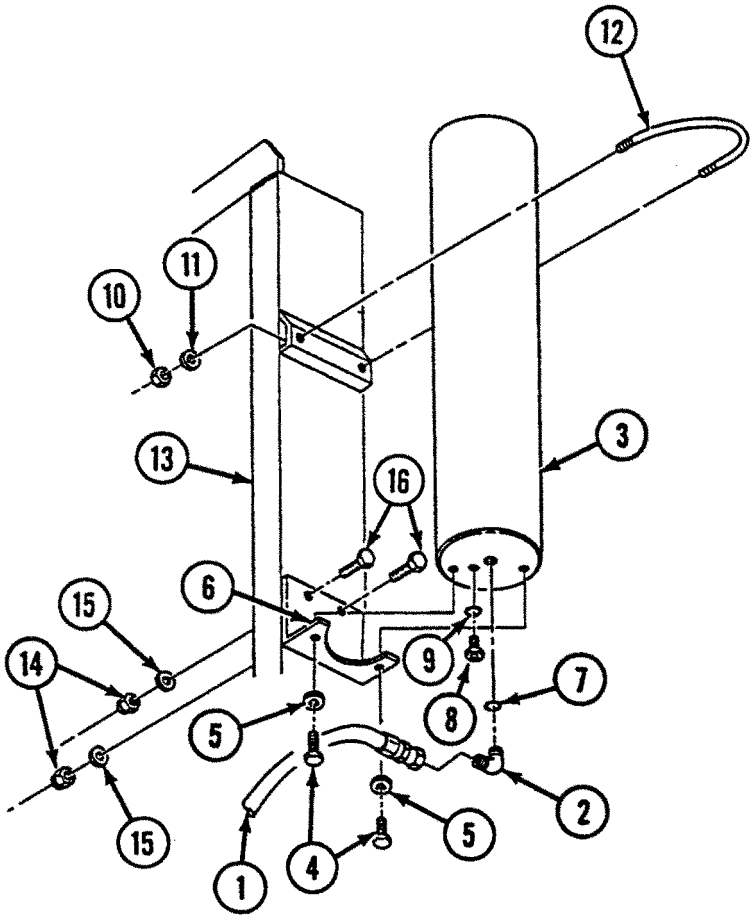
A Disconnect hose (1) from elbow (2) at accumulator (3), and drain hydraulic oil, up to 2.5 gal. (9.5 L). Cap hose.

B Remove two self-locking screws (4) and washers (5) from accumulator (3) and bracket (6). Discard self-locking screws (4).

C Remove elbow (2), packing (7), plug (8), and packing (9) from accumulator (3). Discard packings (7) and (9).

D Remove two locknuts (10), washers (11), U-bolt (12), and accumulator (3) from support (13). Discard locknuts (10).

E Remove four locknuts (14), washers (15), screws (16), and bracket (6) from support (13). Discard locknuts (14).



INSTALLATION

A Install bracket (6) on support (13) with four screws (16), washers (15), and locknuts (14).

B Install U-bolt (12) on accumulator (3) and support (13) with two washers (11) and locknuts (10).

C Install accumulator (3) on bracket (6) with two washers (5) and self-locking screws (4).

D Install packing (9), plug (8), packing (7), and elbow (2) on accumulator (3).

E Connect ACCUMULATOR-9 hose (1) to elbow (2).

FOLLOW-ON TASKS:

- Install main hydraulic accumulator charge and gauge assembly (p 4-472).
- Charge accumulator (p 4-466).
- Fill hydraulic tank (p 4-412.1).
- Retract ejector (TM 5-2350-262-10).

MAIN HYDRAULIC ACCUMULATOR CHARGE AND GAUGE ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Retainer (2)

Packing (5)

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 2-27	Hydraulic Pressure Relieved
Page 4-335	Cowling Removed

General Safety Instructions:

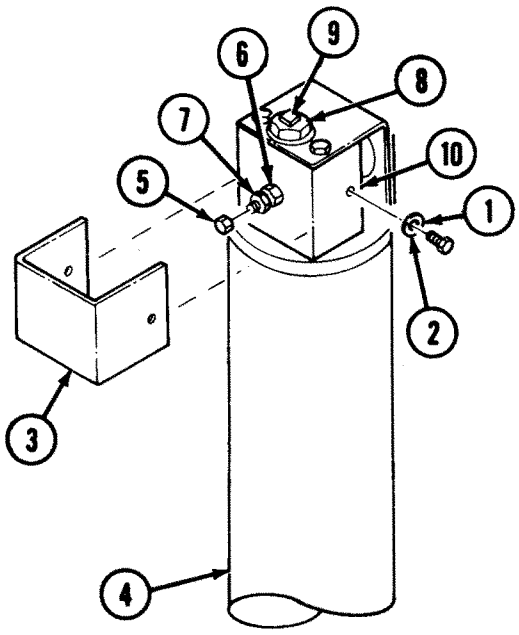
WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting.
- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from gas valve.
- Do not breathe nitrogen gas.

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends. Failure to comply may result in severe injury to personnel.
- Do not breathe nitrogen gas. Failure to comply may result in death to personnel.



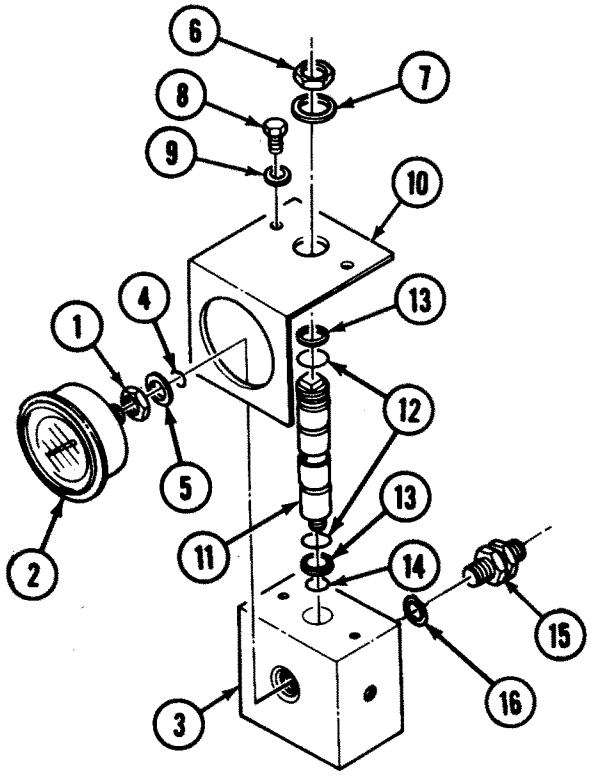
A Remove two screws (1), lockwashers (2), and valve guard (3) from accumulator (4). Discard lockwashers (2).

B Remove gas cap (5) from gas valve (6).

C Slowly loosen nut (7) on gas valve (6) to bleed off all nitrogen pressure.

D Loosen nut (8) and unscrew shaft (9) to remove charge and gauge assembly (10) from accumulator (4).

DISASSEMBLY



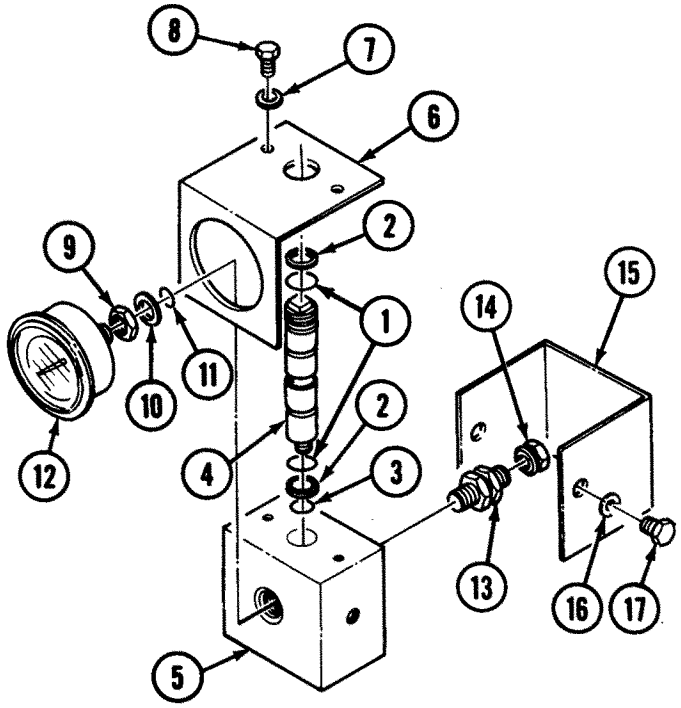
A Loosen jamnut (1) and remove gauge (2) from manifold (3). Remove packing (4), washer (5), and jamnut (1) from gauge (2). Discard packing (4).

B Remove nut (6), washer (7), two screws (8), lockwashers (9), and frame (10) from manifold (3). Discard lockwashers (9).

C Remove shaft (11) from manifold (3), and remove two packings (12), retainers (13), and packing (14) from shaft (11). Discard packings (12) and (14) and retainers (13).

D Remove gas valve (15) and packing (16) from manifold (3). Discard packing (16).

ASSEMBLY



A Install two packings (1), retainers (2), and packing (3) on shaft (4), and install shaft (4) on manifold (5).

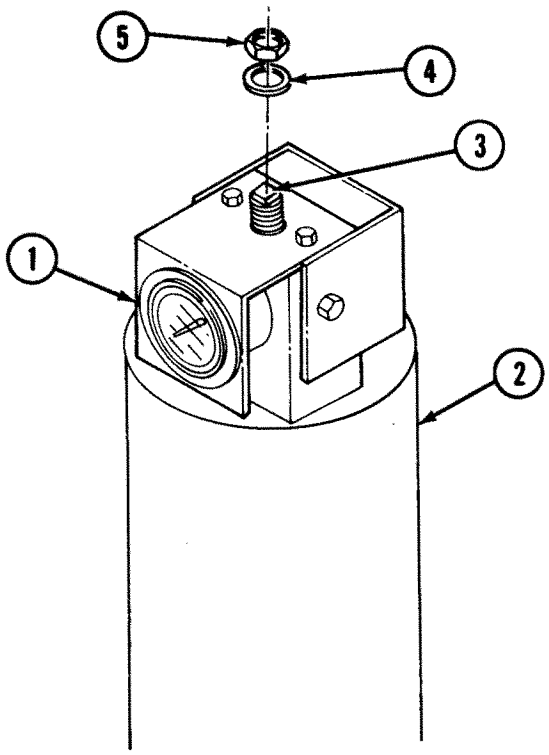
B Install frame (6) on manifold (5) with two lockwashers (7) and screws (8).

C Install jamnut (9), washer (10), and packing (11) on gauge (12), and install gauge (12) on manifold (5). Tighten jamnut (9).

D Install packing (13), gas valve (14), and cap (15) on manifold (5).

E Install valve guard (16) on manifold (5) with two lockwashers (17) and screws (18).

INSTALLATION



A Install charge and gauge assembly (1) on accumulator (2) by tightening shaft (3). Ensure gauge (1) faces driver's compartment.

B Secure charge and gauge assembly (1) to accumulator (2) with washer (4) and nut (5).

FOLLOW-ON TASKS:

- Charge accumulator with nitrogen (p 4-467).
- Install cowling (p 4-338).

HYDRAULIC HIGH-PRESSURE FILTER AND ELEMENT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Adapter, Socket Wrench	5120-00-240-8702
Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Sealing Compound	Item 12 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts:

Parts Kit 5705135

Self-locking Screw (5)

Self-locking nut (2)

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-79	Preliminary Trouble-shooting Procedures

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 3-82	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- **High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.**
- **Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.**
- **Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.**
- **Do not work in bowl area unless ejector lock is engaged.**

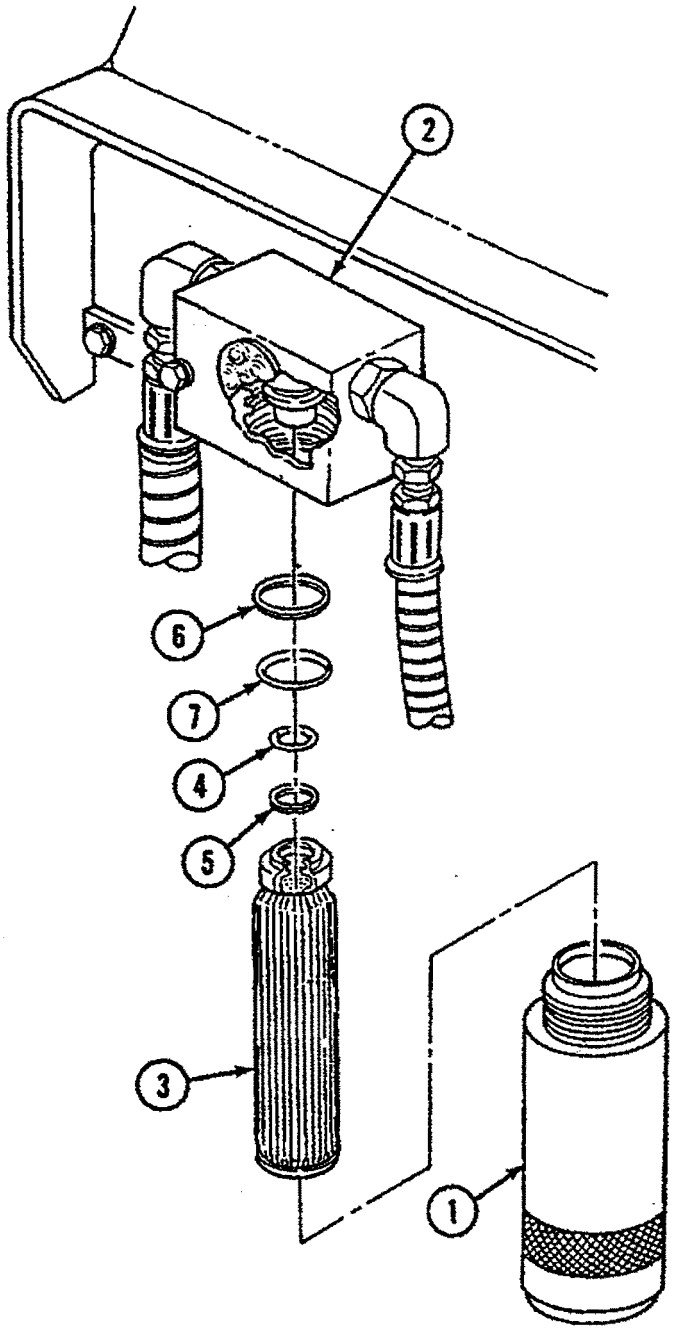
REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.



Note

- Have suitable container ready to catch oil.
- NEW PRODUCTION vehicles are equipped with three high pressure filter assemblies.

A Remove filter bowl (1) from filter head (2), and drain oil, about 1 pt (473 ml). Clean filter bowl (1) with drycleaning solvent and allow to air dry.

B Remove filter element (3) from filter head (2), and remove packing (4) and packing retainer (5) from filter element (3). Discard filter element (3), packing (4), and packing retainer (5).

C Remove packing (6) and packing retainer (7) from filter head (2). Discard packing (6) and packing retainer (7).

D Remove three self locking screws (8), washers (9), and filter guard (10) from driver's compartment wall. Discard self-locking screws (8).

E On OLD PRODUCTION, disconnect hoses (11) and (12) from elbows (13) at filter head (2).

E.1 On NEW PRODUCTION, disconnect hose (12) from elbow (13) at filter head (2).

E.2 Disconnect hose (11) from hydraulic test point fitting (13.1) and disconnect hydraulic test point (13.1) from elbow (13) at filter head (2).

F Remove two elbows (13) and packings (14) from filter head (2). Discard packings (14).

G On OLD PRODUCTION, remove two self-locking screws (15), washers (16), and filter head (2) from driver's (left side) compartment wall. Discard self-locking screws (15).

G.1 On NEW PRODUCTION, remove two self-locking nuts (16.1), two screws (15), two washers (16), and filter head (2) from driver's (right side) compartment wall.

INSTALLATION

A On OLD PRODUCTION, coat threads of two self-locking screws (15) with sealing compound, and install filter head (2) on driver's (left side) compartment wall with two washers (16) and self-locking screws (15). Tighten screws (15) 25-30 lb-ft (34-41 N•m).

A.1 On NEW PRODUCTION, install filter head (2) on driver's (right side) compartment wall with two washers (16), two screws (15), and two new self-locking nuts (16.1). Tighten self-locking nuts (16.1) to 25-30 lb-ft (34-41 N•m).

B On OLD PRODUCTION, install two packings (14) and elbows (13) on filter head (2), and connect hoses (11) and (12) to elbows (13).

B.1 On NEW PRODUCTION, install two packings (14), and elbows (13) on filter head (2) and install hydraulic test point fitting (13.1) to inlet port elbow.

B.2 Connect hose (11) to hydraulic test point fitting (13.1) and connect hose (12) to elbow (13).

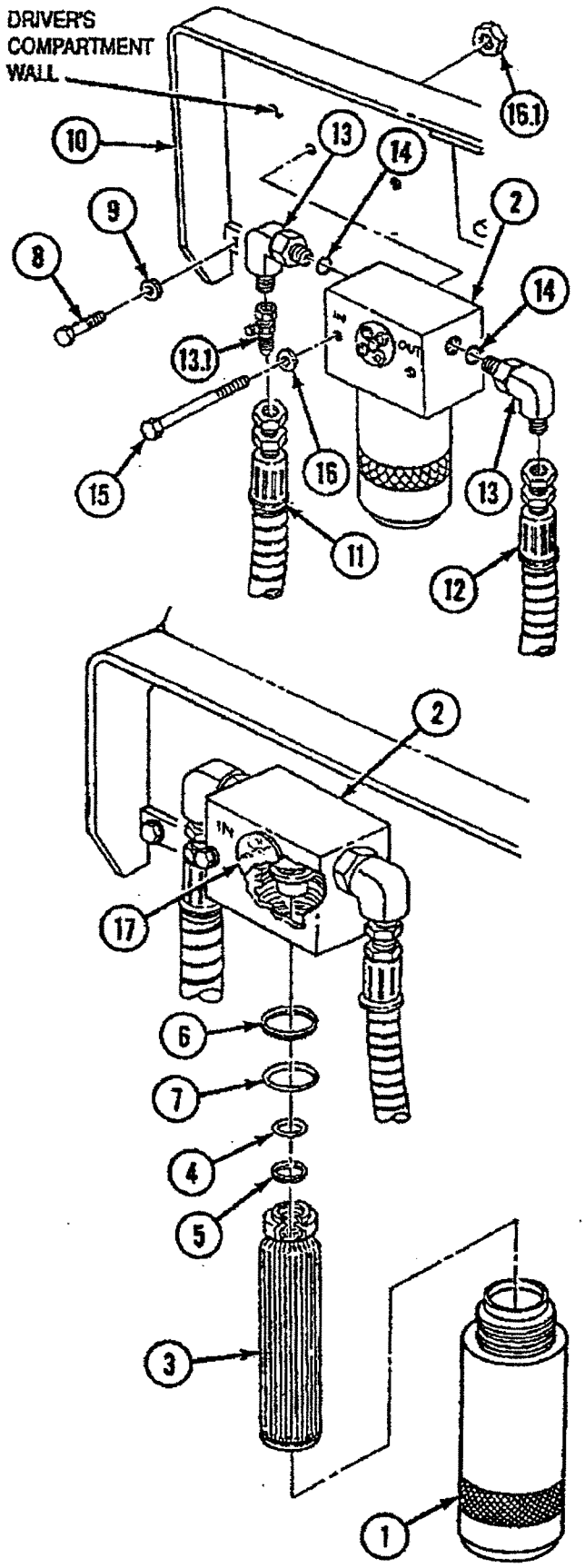
C Install filter guard (10) on driver's compartment wall with three washers (9) and self-locking screws (8).

D Install packing retainer (7) and packing (6) on filter head (2).

E Install packing retainer (5) and packing (4) on filter element (3), and install filter element (3) on filter head (2).

F Install filter bowl (1) on filter head (2) and hand tighten filter bowl (1). Start vehicle engine (TM 5-2350-262-10) and run at idle (750 to 850 rpm) for one minute to purge air from system. Tighten filter bowl (1) to 20-30 lb-ft (27-41 N•m). Check filter bowl (1) for leaks.

G Manually reset differential pressure indicator (17).



FOLLOW-ON TASKS:

Retract ejector **(TM 5-2350-262-10).**

Service hydraulic tank **(TM 5-2350-262-10).**

HYDRAULIC RETURN LINE FILTER ELEMENT REPLACEMENT (OLD PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts:

Element (1)

Gasket (3)

Parts Kit 4330-01-189-9817

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

TM 5-2350-262-20-3

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 2-27	Hydraulic Pressure Relieved

General Safety Instructions:

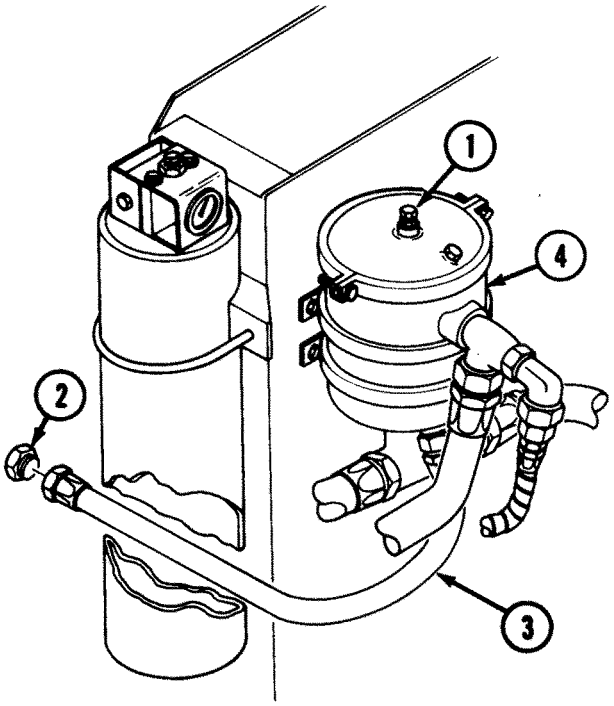
WARNING

- **High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.**
- **Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.**
- **Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.**

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel.



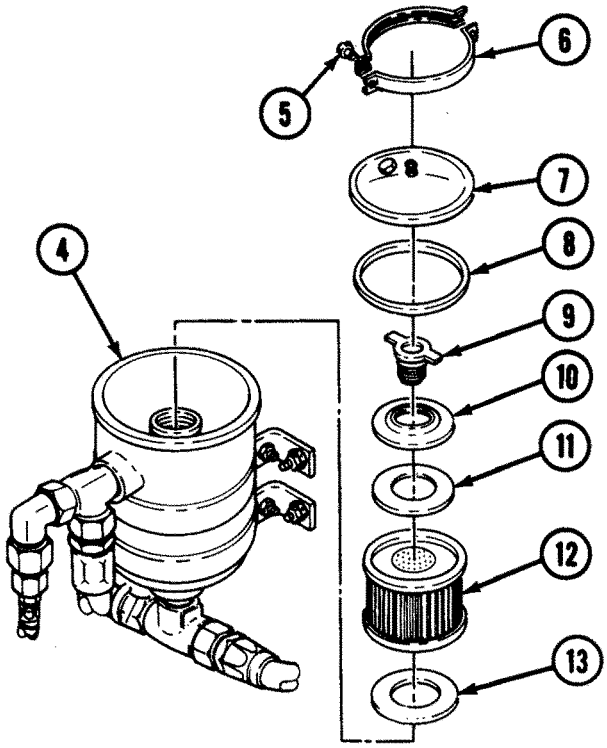
Note

Have suitable container ready to catch oil.

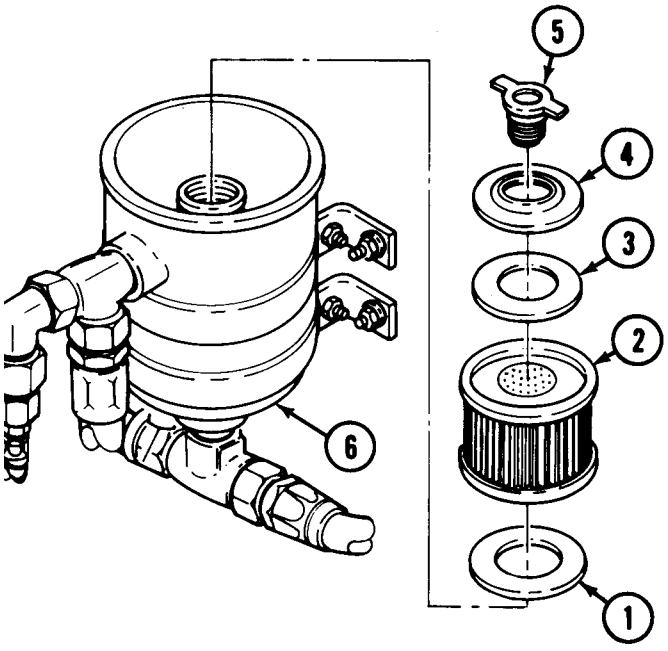
A Open vent valve (1) and remove plug (2) from drain hose (3). Allow filter bowl (4) to drain, and wipe plug (2) clean with drycleaning solvent. Install plug (2).

B Loosen screws (5) and remove clamp (6), cover (7), and gasket (8) from filter bowl (4). Discard gasket (8).

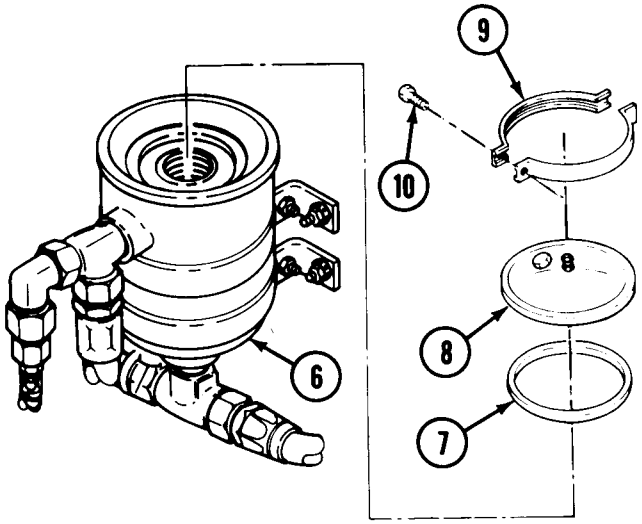
C Remove retainer (9), end guide (10), gasket (11), element (12), and gasket (13) from filter bowl (4). Discard element (12) and gaskets (11) and (13). Clean inside of filter bowl (4) with drycleaning solvent and clean rags.



INSTALLATION



A Install gasket (1), element (2), gasket (3), end guide (4), and retainer (5) in filter bowl (6).

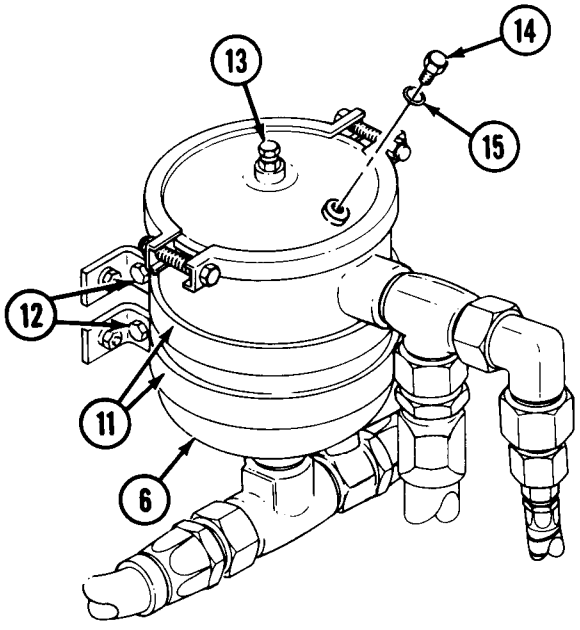


B Install gasket (7), cover (8), and clamp (9) on filter bowl (6) and tighten two screws (10).

C If loose, tighten filter mounting clamps (11) by tightening screws (12).

D Open vent valve (13), remove plug (14), gasket (15), and add about 2-qt (1.9-L) of oil to filter bowl (6). Discard gasket (15). Install gasket (15) and plug (14), and close vent valve (13).

E Start vehicle engine (TM 5-2350-262-10) and run at idle (750 to 850 rpm). Open vent valve (13) and leave open until oil begins to run out of vent valve (13). Close vent valve (13) and run engine for one more minute to bleed air from system.



FOLLOW-ON TASKS:

- Close engine intake grilles (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

HYDRAULIC RETURN LINE FILTER ELEMENT REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanics: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts:

Element (3)

O-ring (3)

Retainer (3)

Parts Kit 4330-01-189-9817

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

TM 5-2350-262-20-3

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles Opened
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury or death to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel.

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury or death to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel.

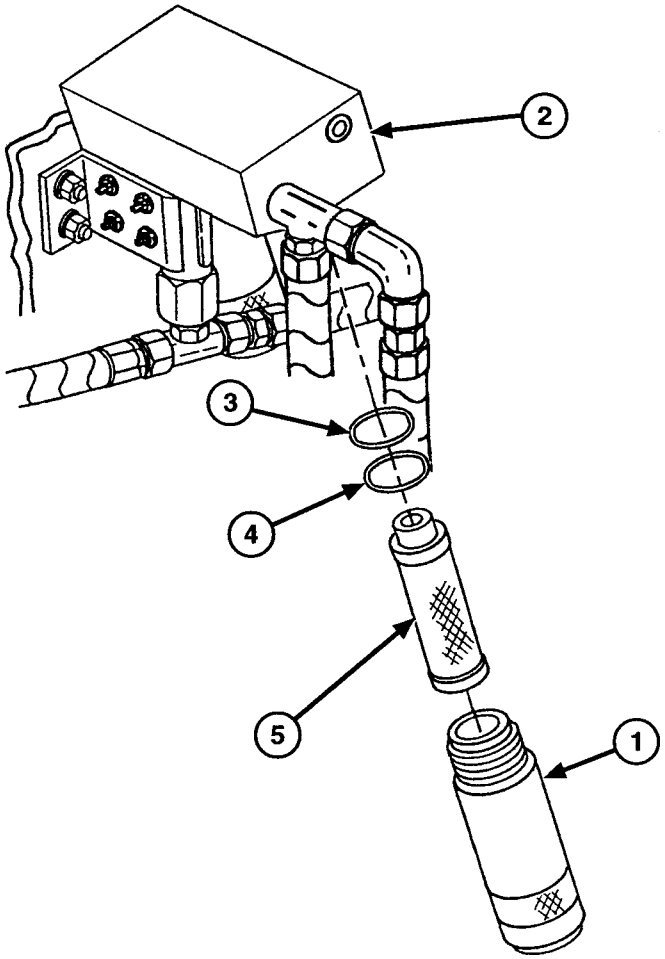
NOTE

Have suitable container ready to catch oil.

A Remove three filter bowls (1) from machined head (2) and drain oil, about 1pt (473ml).

B Remove three filter elements (5) from machined head (2). Discard three filter elements.

C Remove three o-rings (3) and three retainers (4) from machined head (2). Clean three filter bowls (1) with drycleaning solvent and allow to air dry. Discard o-rings (3) and retainers (4).



INSTALLATION

NOTE

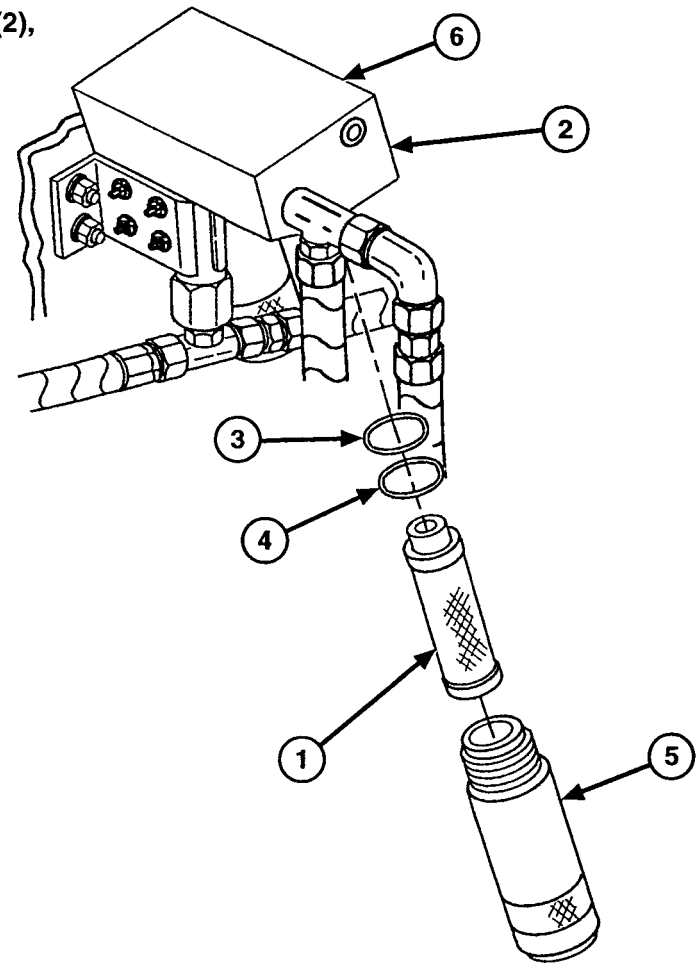
Ensure filter bowls are completely dry prior to installion.

A Install three new o-rings (3) and three new retainers (4) on machined head (2).

B Install three new filter elements (1) on machined head (2).

C Install three filter bowls (5) on machined head (2), and check for leaks.

D Manually reset filter indicator (6).



FOLLOW-ON TASKS:

- Close engine intake grilles (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).
- Service hydraulic tank (TM 5-2350-262-10).

HYDRAULIC RETURN LINE FILTER REPLACEMENT (OLD PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Locknut (4)

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-79	Preliminary Troubleshooting Procedures

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles Opened
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

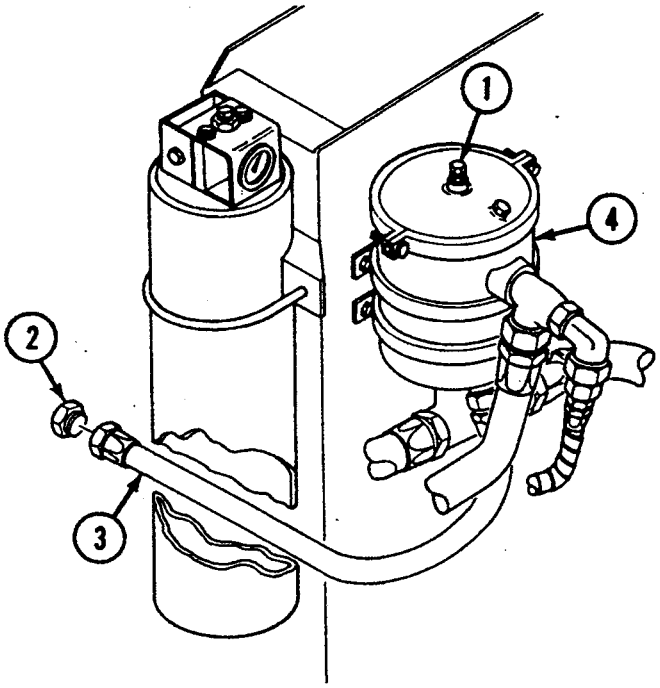
WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

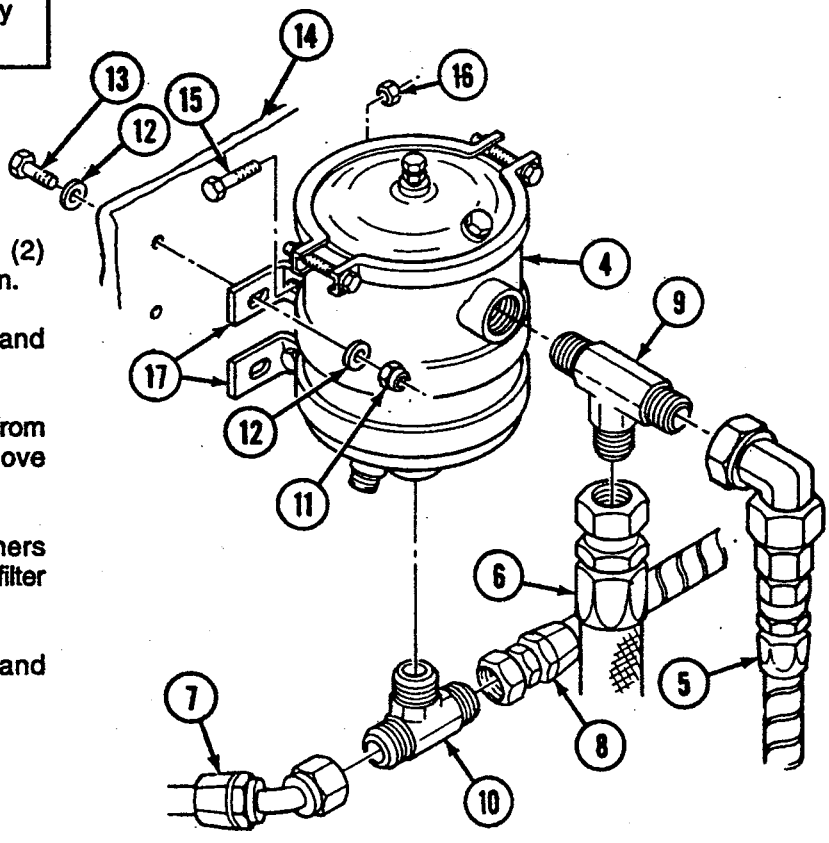


CAUTION

Cap or plug all ports and ends of hoses to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch oil.



A Open vent valve (1) and remove plug (2) from drain hose (3). Allow filter (4) to drain.

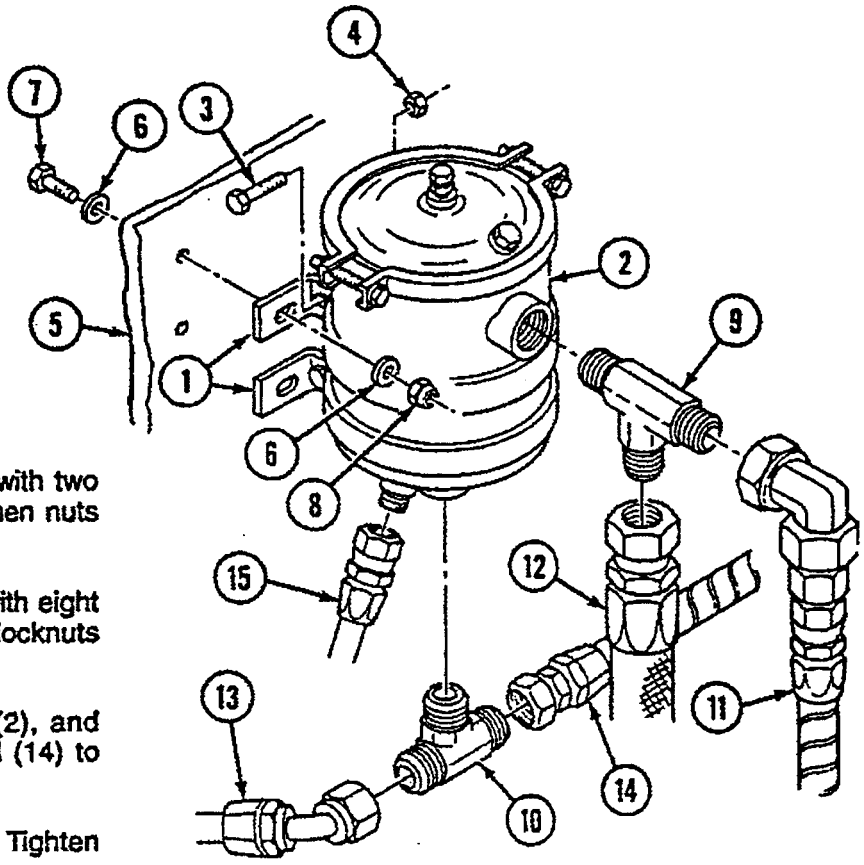
B Remove drain hose (3) from filter (4) and install plug (2) on drain hose (3).

C Disconnect hoses (5), (6), (7), and (8) from tees (9) and (10) of filter (4), and remove tees (9) and (10) from filter (4).

D Remove four locknuts (11), eight washers (12), four screws (13), and filter (4) from filter support (14). Discard locknuts (11).

E Remove two screws (15), nuts (16), and brackets (17) from filter (4).

INSTALLATION



A Install two brackets (1) on filter (2) with two screws (3) and nuts (4). Do not tighen nuts (4).

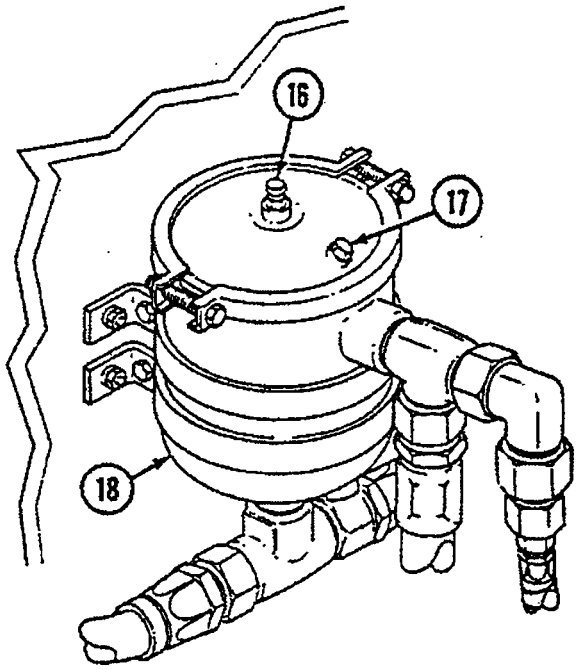
B Install filter (2) on filter support (5) with eight washers (6), four screws (7), and locknuts (8).

C Install tees (9) and (10) on filter (2), and connect hoses (11), (12), (13), and (14) to tees (9) and (10).

D Install drain hose (15) on filter (2). Tighten two nuts (4).

E Open vent valve (16) and remove plug (17). Add oil, about 1 qt (946 ml), if element is not replaced; about 2 qt (1.9 L), if element is replaced, until filter bowl (18) is completely full. Install plug (17) and close vent valve (16).

F Start vehicle engine (TM 5-2350-262-10) and run at idle (750 to 850 rpm). Open vent valve (16) and leave open until oil begins to run out of valve (16). Close vent valve (16) and run engine for one more minute to purge air from system. Check all connections to filter for leaks.



FOLLOW-ON TASKS:

- Close engine intake grilles (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

HYDRAULIC RETURN LINE FILTER REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanics: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Lubricating Oil	Item 26 Appendix D
Caps and Plugs	Item 7 Appendix D

Parts:

Nut, Self-locking (4)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

TM 5-2350-262-20-3	Preliminary Troubleshooting Procedures

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles Opened
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

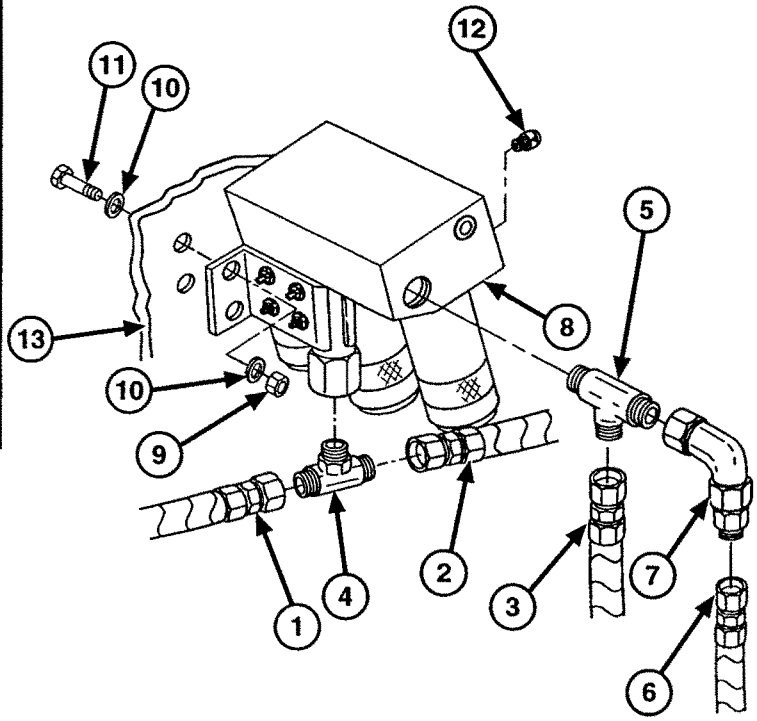
WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.



CAUTION

Cap or plug all port ends of hoses to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

NOTE

Have suitable container ready to catch oil.

A Remove hoses (1), (2), and (3) from tees (4) and (5).

B Remove hose (6) from reducer and elbow assembly (7).

C Remove reducer and elbow assembly (7) from tee (5).

D Remove tees (4) and (5) from hydraulic return line filter assembly (8).

E If damaged or leaking, remove filter warning indicator (12) from hydraulic return line filter (8).

F Remove four self-locking nuts (9), eight washers (10), and four screws (11) from hull (13). Discard four self-locking nuts (9).

INSTALLATION

A Install hydraulic return line filter assembly (1) on hull (2) using four screws (3), eight washers (4), and four new self-locking nuts (5).

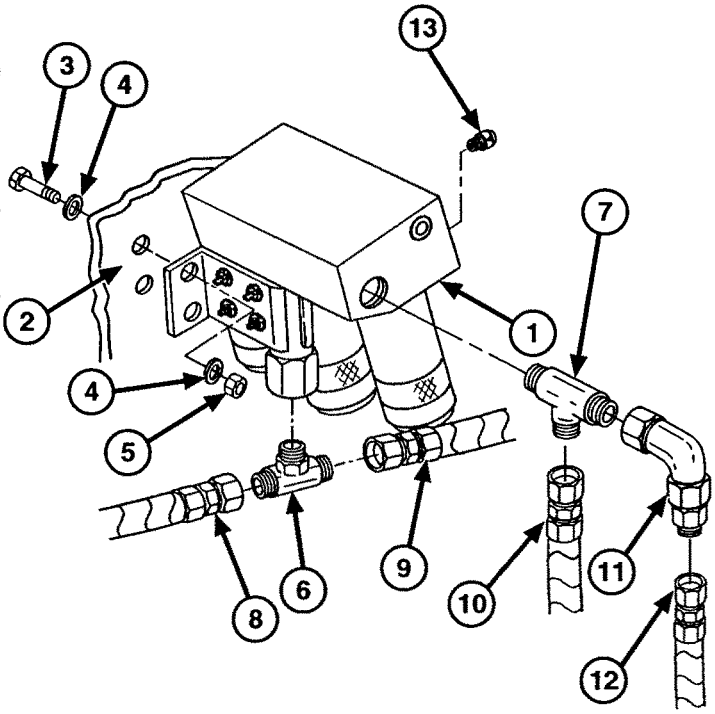
B Install tee (6) and tee (7) on hydraulic return line filter assembly (1).

C Install hoses (8), (9), and (10) on tees (6) and (7).

D Install reducer and elbow assembly (11) on tee (7).

E Install hose (12) on reducer and elbow assembly (11).

F If removed, install filter warning indicator (13) on hydraulic return line filter assembly (1).



FOLLOW-ON TASKS:

- Close engine intake grilles (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).
- Service hydraulic tank (TM 5-2350-262-10).

HYDRAULIC TANK DIPSTICK AND STRAINER FILTER REPLACEMENT

This task covers:

a. Removal

b. Cleaning

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Drycleaning Solvent	Item 31 Appendix D

Parts:

Packing (3)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	All Hydraulic Functions are Inoperative
TM 5-2350-262-20-3	Hydraulic Oil Overheats

Equipment Condition:

Reference	Condition Description
TM 5-250-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

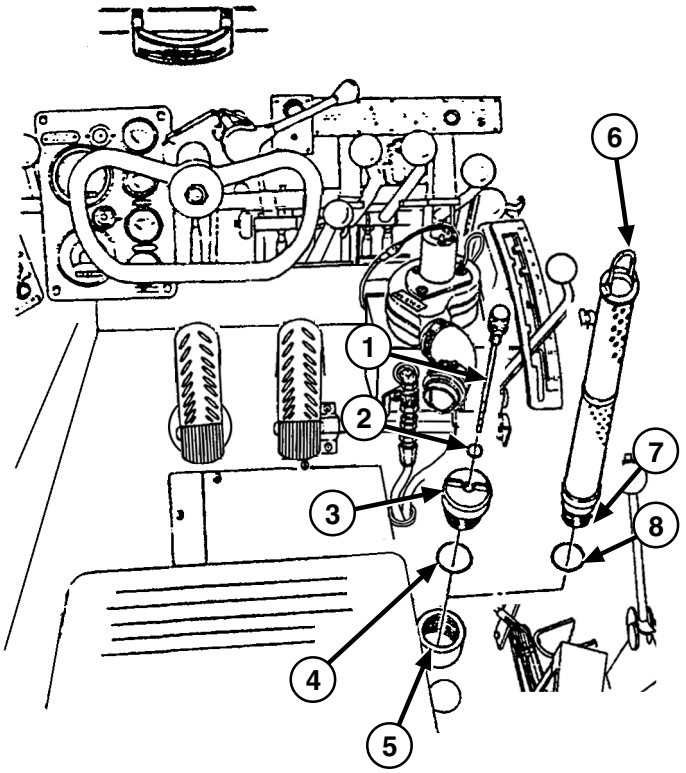
WARNING

- **High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.**
- **Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel.**

REMOVAL

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.

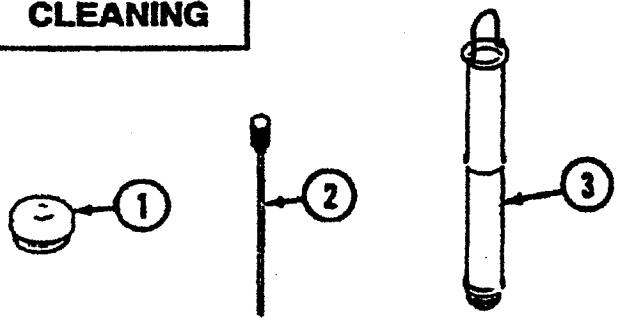


A Remove dipstick (1) and packing (2) from cap (3). Remove cap (3) and packing (4) from filler neck (5). Discard packings (2) and (4).

B Twist handle (6) while pulling up, and remove filter (7) from filler neck (5).

C Remove packing (8) from end cap of filter (7). Discard packing (8).

CLEANING

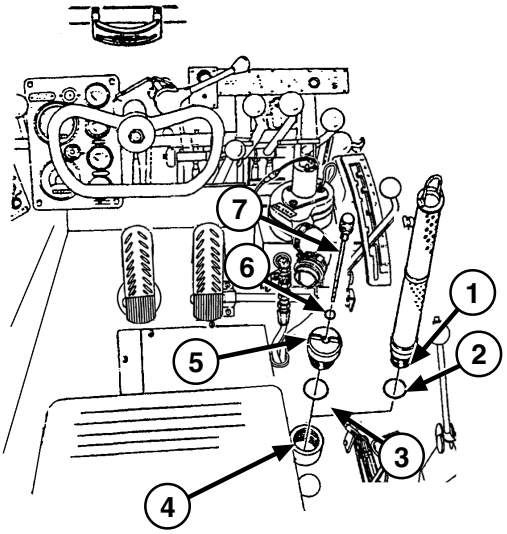


WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel.

Clean cap (1), dipstick (2), and filter (3) with drycleaning solvent. Allow parts to air dry.

INSTALLATION



A Install packing (1) on end cap of filter (2), and install filter (2) in filler neck (3).

B Install packing (4) and cap (5) on filler neck (3). Install packing (6) and dipstick (7) in cap (5).

COMPENSATING HYDRAULIC PUMP TESTING AND ADJUSTMENT

This task covers:

a. Testing

b. Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Parts Reference:

TM 5-2350-262-24P Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 9-4910-571-12&P

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	Suspension Does Not Raise Vehicle In SPRUNG Mode

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles Opened

General Safety Instructions:

WARNING

- **High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.**
- **Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.**
- **Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.**

TESTING

A Check pressure in main hydraulic accumulator (TM 5-2350-262-10) to ensure pressure is in operating range. Charge if necessary (p 4-466).

B Start vehicle engine (TM 5-2350-262-10) and run at idle speed (750 to 850 rpm) until engine water temperature reaches 170ÞF (77ÞC).

C Idle engine (750 to 850 rpm) and check hydraulic compensating pump output pressure at gauge (1). Normal pressure is 2,800-2,900 psi (19,306-19,996 kPa). Stop vehicle engine (TM 5-2350-262-10). If pressure is not within this range, proceed to step D.

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure is relieved. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

D Relieve hydraulic pressure (p 3-82).

E Disconnect hose (2) from check valve (3).

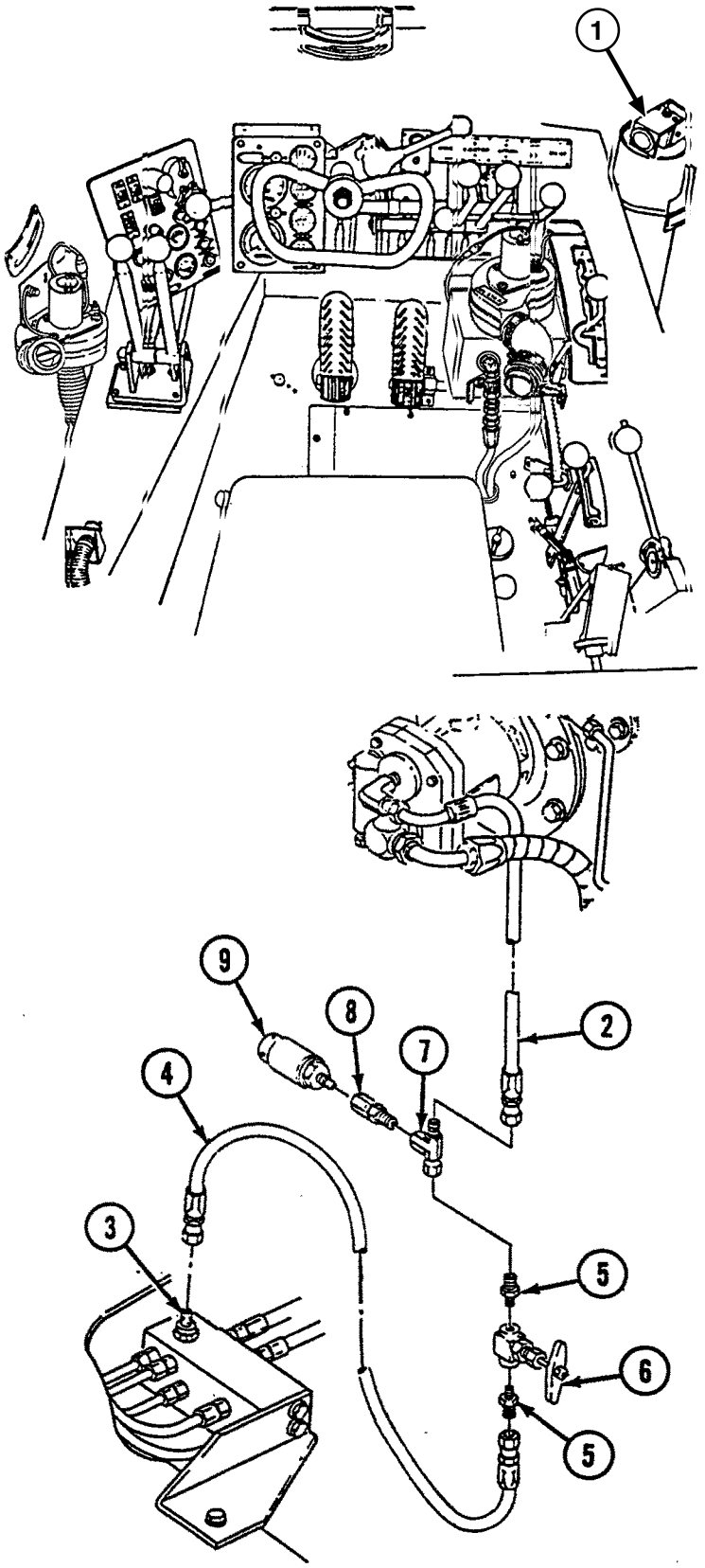
F Connect 12355352 hose (4) to check valve (3).

Note

Use 4730-01-305-5796 adapter to connect 10,000 psi (68,950 kPa) trans-ducer to tee.

G Install two MS51500A8-4 adapters (5), 10-F0-1-3T globe valve (6), 12258880 tee (7), adapter (8), and transducer (9) on hose (4).

H Connect hose (2) to tee (7). Close globe valve (6).



I Connect W1 cable (1) to VTM (2) and DCA receptacle (3) of STE/ICE-R interface resistor box (4). Connect W4 cable (5) to VTM (2) and transducer (6).

J Push ON/OFF button (7) on VTM (2), and perform confidence test (p 3-18).

K Dial in Test 51 on VTM (2). Press and hold TEST button (8) on VTM (2) until "CAL" appears on display (9). Release button (8). Value that appears on display (9) should be between +450 and -450. If value is not within the offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

L Start vehicle engine (TM 5-2350-262-10).

M Dial in 01 on VTM (2). Press and hold TEST button (8) on VTM (2) until "CON" appears on display (9). Release button (8). Dial in Test 51 on VTM (2). Press and release TEST button (8). VTM (2) should now alternately display pressure and rpm.

N If pump (10) does not build up and maintain at least 2,800 psi (19,306 kPa) at 750 to 850 rpm, adjust pump (10) (p 4-489). If pump (10) cannot be adjusted, replace pump (10) (p 4-491). If pump (10) builds up and maintains at least 2,800 psi (19,306 kPa) at 750 to 850 rpm, go to step O.

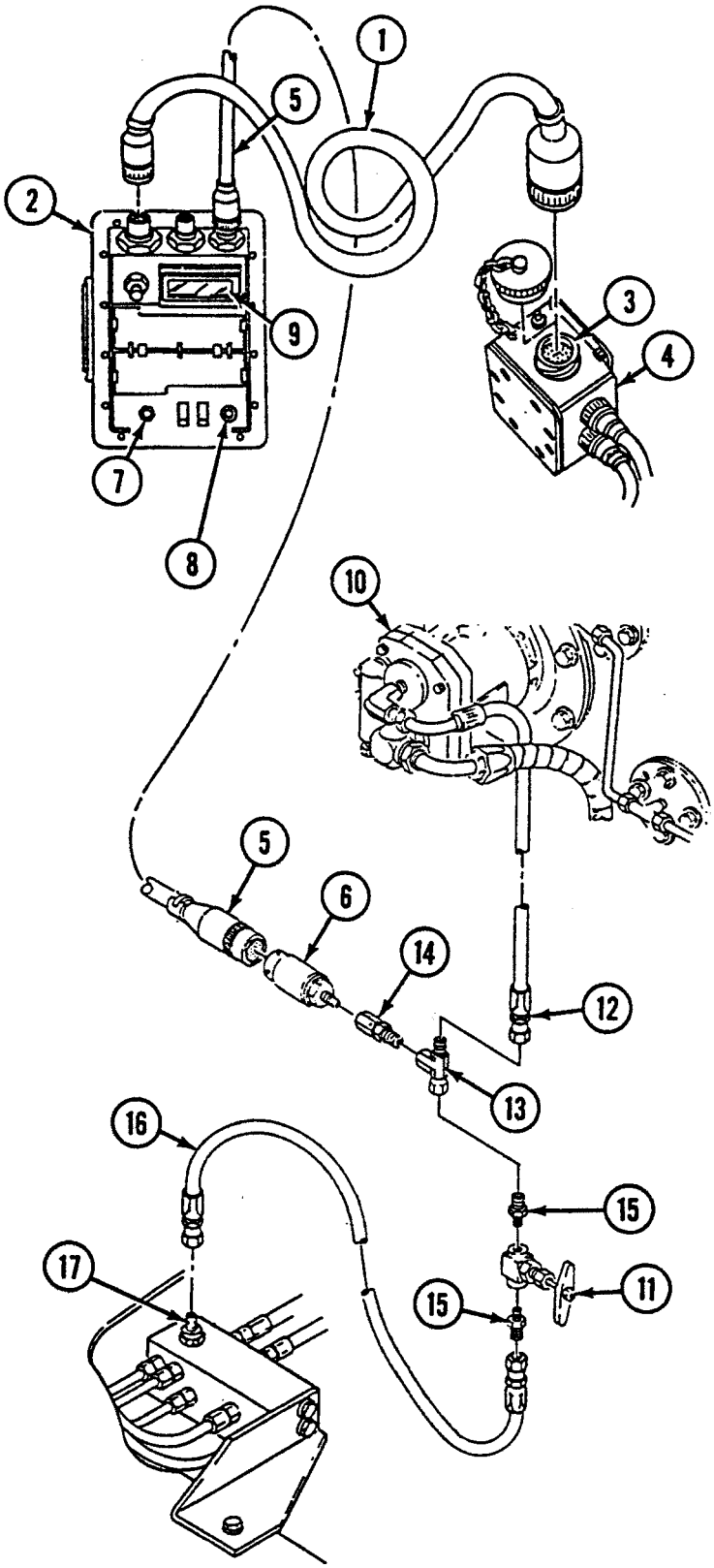
O Stop vehicle engine (TM 5-2350-262-10), open globe valve (11), and relieve hydraulic pressure (p 2-27).

P Pull ON/OFF button (7) on VTM (2). Disconnect W4 cable (5) from VTM (2) and transducer (6). Disconnect W1 cable (1) from VTM (2) and DCA receptacle (3) of STE/ICE-R interface resistor box (4).

Q Disconnect hose (12) from tee (13).

R Remove transducer (6), adapter (14), tee (13), two adapters (15), globe valve (11), and hose (16) from check valve (17).

S Connect hose (12) to check valve (17).



ADJUSTMENT

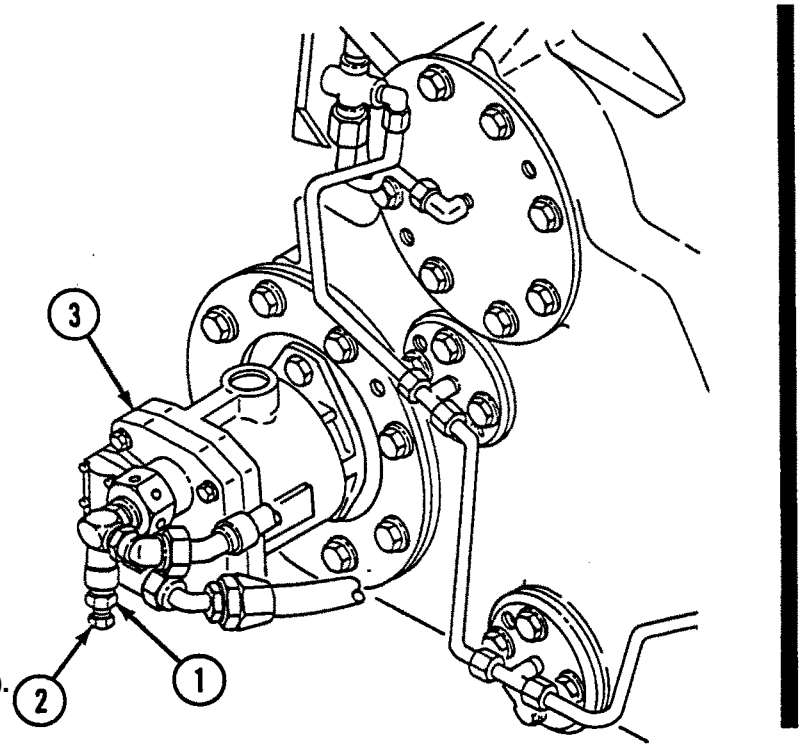
WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure is relieved. Failure to comply may result in severe injury to personnel.

A Loosen jamnut (1) and turn adjusting nut (2) to adjust pump (3) output to 2,800-2,900 psi (19,306-19,996 kPa) at 750-850 rpm.

B When pump (3) output is correct, tighten jamnut (1).

C If pump can not be adjusted, refer to step N of hydraulic compensating pump test (p 4-488).



FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Close engine intake grilles (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

COMPENSATING HYDRAULIC PUMP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0650 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 2, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Socket Set, Socket Wrench	5120-00-195-0640

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 27 Appendix D

Parts:

Gasket (1)

Packing (4)

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- Hot hydraulic oil can cause serious burns. Pump and fittings must be cool to touch before working on hydraulic system.
- Spilled hydraulic oil is very slip-pery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- High pressure is present in the M9 hydraulic system. Do not dis-connect any hydraulic system com-ponent unless hydraulic system pressure is relieved.
- Do not work in bowl area unless ejector lock is engaged.

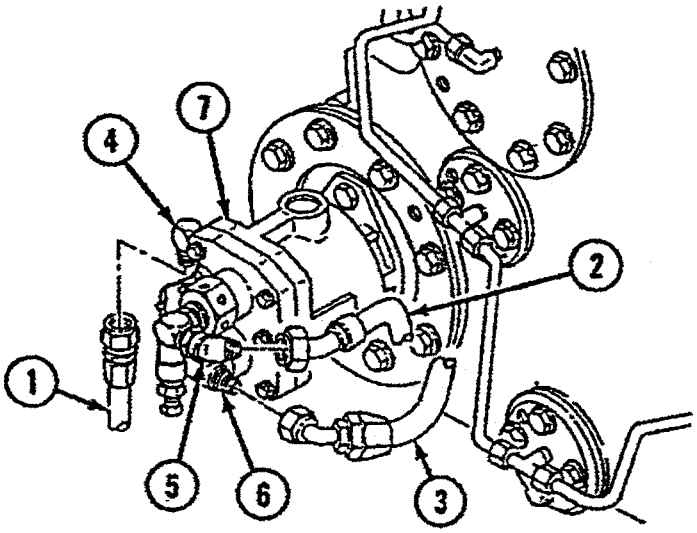
REMOVAL

WARNING

- Hot hydraulic oil can cause serious burns. Pump and fittings must be cool to touch before working on hydraulic system. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- High pressure is present in the MS hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure is relieved. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Note

Have suitable container ready to catch oil.



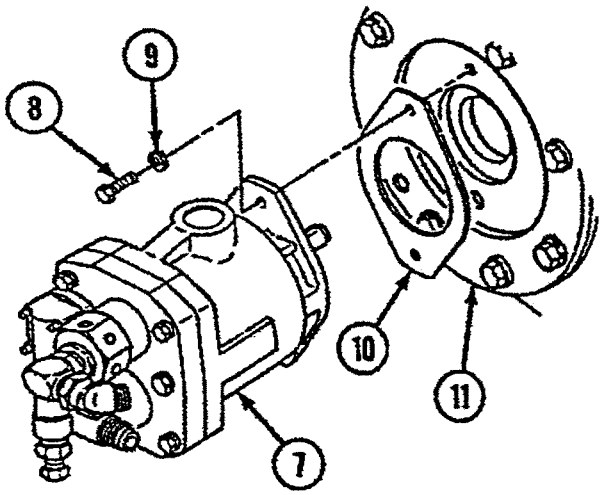
CAUTION

Cap or plug all ports and ends of hoses to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

On NEW PRODUCTION, hose (2), hose (3), elbow (5), and elbow (6) are rotated 180°.

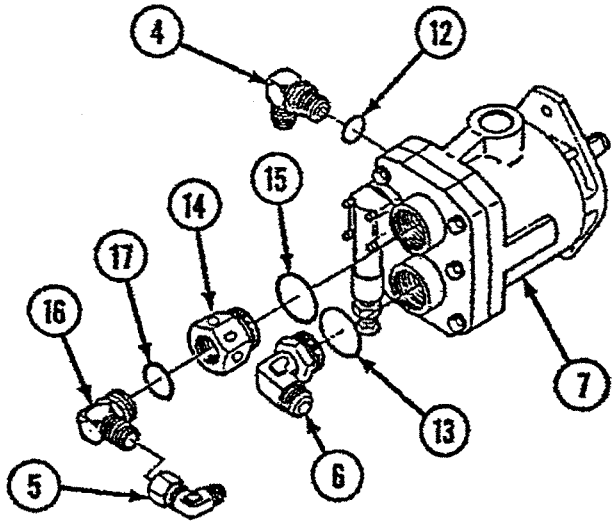
A Disconnect SPNSN PUMP DRAIN-7V hose (1) from elbow (4), SPNSN PUMP - 9 hose (2) from elbow (5) and SPNSN PUMP - 7 hose (3) from elbow (6).



Note

Due to pump shaft orientation when vehicle engine was shut off, key could be pointing downward into hull. Use care so not to loose key when removing compensating pump.

B Remove two self-locking screws (8), washers (9), pump (7), and gasket (10) from transfer case (11). Discard self-locking screws (8) and gasket (10).

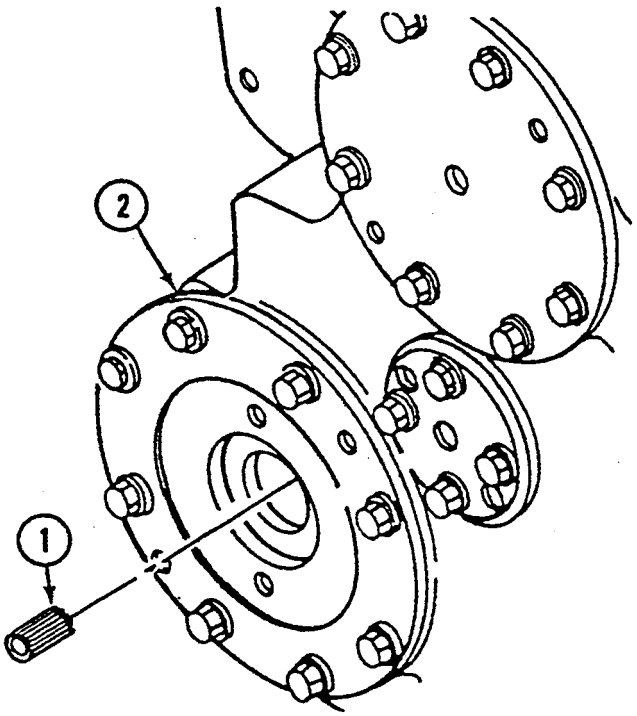


Note

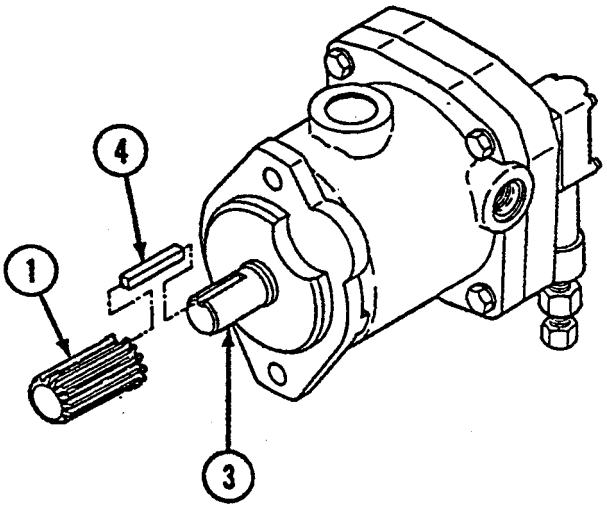
On NEW PRODUCTION, elbow (5),elbow (6), and elbow (16) are rotated 180°.

C Remove elbows (4) and (6) and packings (12) and (13) from pump (7). Discard packings (12) and (13).

D Remove elbow (5), reducer (14), packing (15), elbow (16), and packing (17) from pump (7). Discard packings (15) and (17).



E Remove spline adapter (1) from transfer case (2) or pump shaft (3).



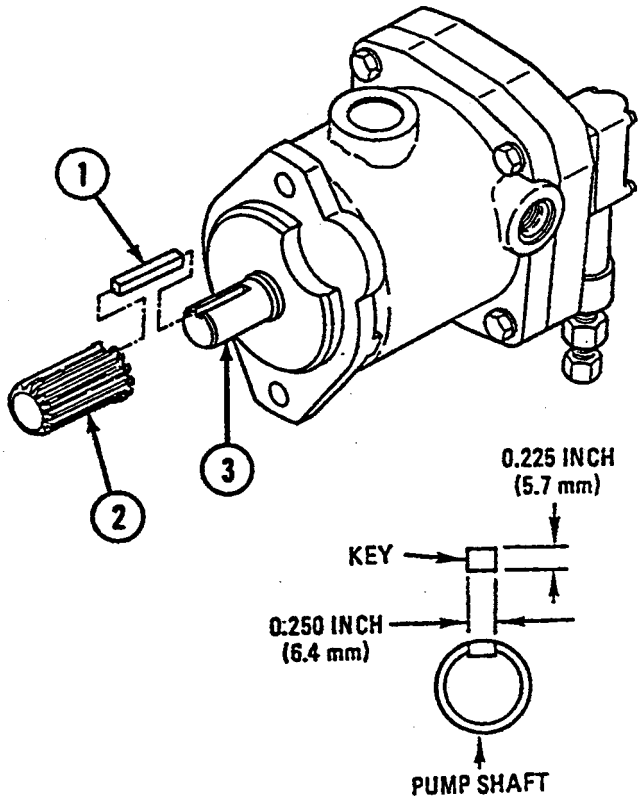
F Remove key (4) from pump shaft (3) or transfer case. Discard key (4).

INSTALLATION

Note

New pumps are delivered with a 0.250 x 0.250 in. (6.4 x 6.4 mm) key installed on shaft. Discard this key and use a 0.250 x 0.225 x 1.25 in. (6.4 x 5.7 x 31.8 mm) key, P/N 13214E2780 (NSN 5315-01-194-9347).

A Install key (1) and spline adapter (2) on pump shaft (3).

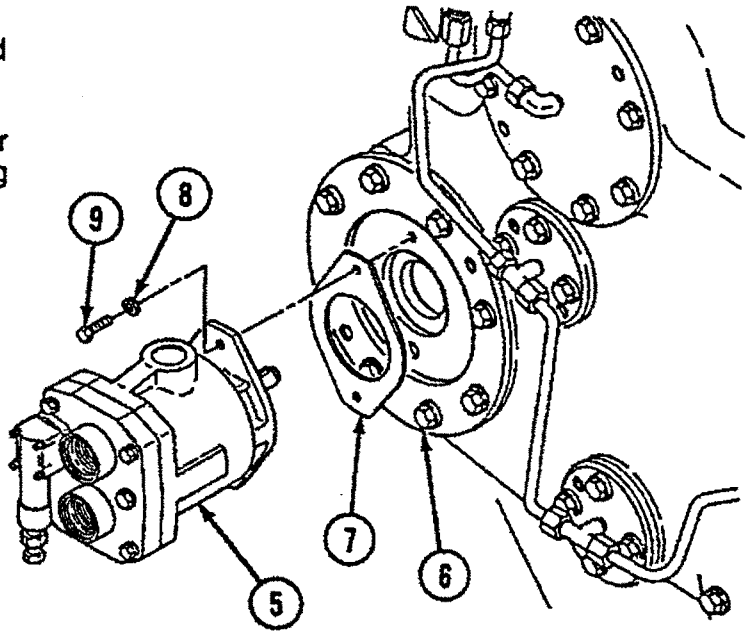


Note

Apply lubricating oil to threads of screws prior to installation.

B Clean mounting surfaces of pump (5) and transfer case (6).

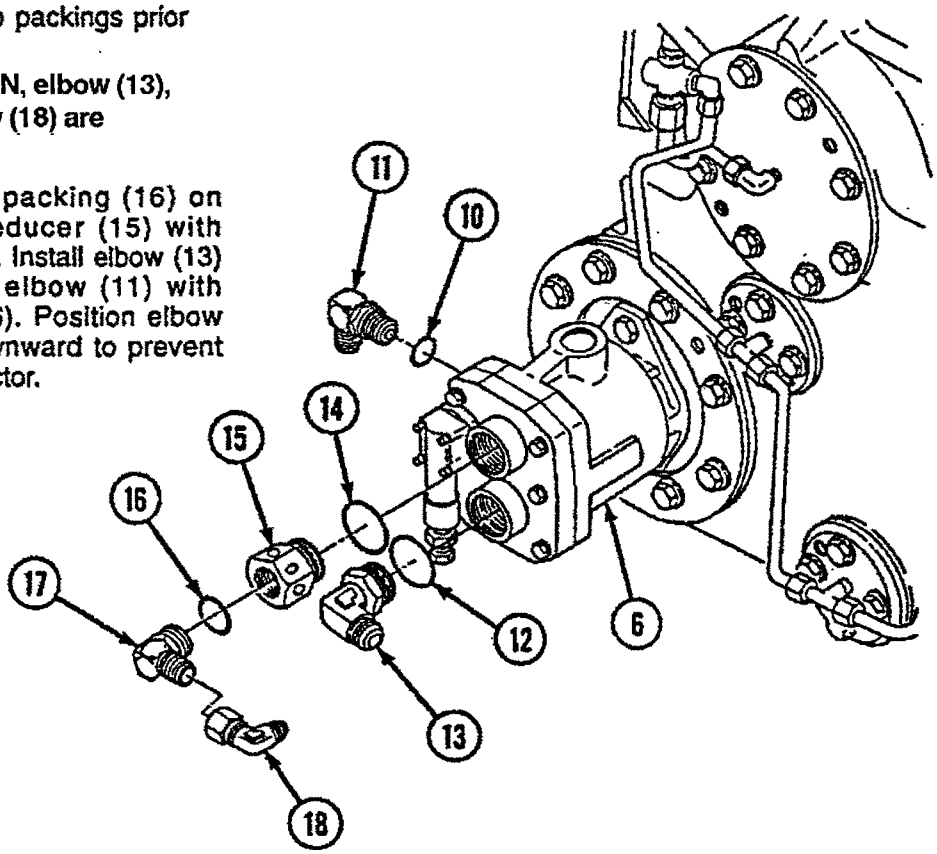
C Install gasket (7) and pump (5) on transfer case (6) with washer (8) and self-locking screws (9).

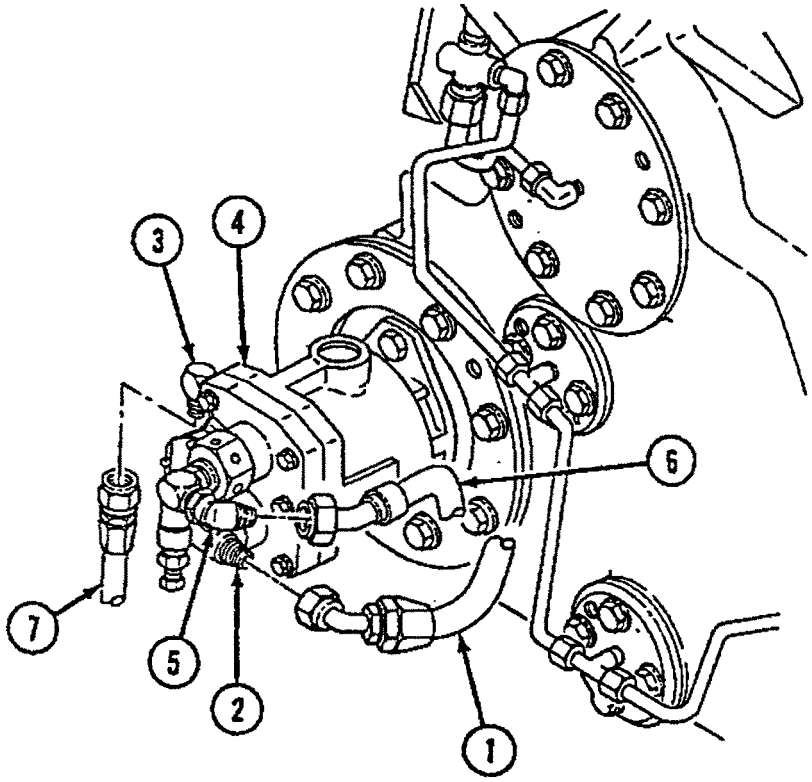


Note

- Apply lubricating oil to packings prior to installation.
- On NEW PRODUCTION, elbow (13), elbow (17), and elbow (18) are rotated 180°.

D Install elbow (17) with packing (16) on reducer (15). Install reducer (15) with packing (14) on pump (6). Install elbow (13) with packing (12) and elbow (11) with packing (10) on pump (6). Position elbow (13) pointing slightly downward to prevent hose interference with ejector.





Note

On NEW PRODUCTION, hose (2), hose (3), elbow (5), and elbow (6) are rotated 180°.

E Connect SPNSN PUMP-7 hose (1) to elbow (2).

CAUTION

Ensure pump is primed with hydraulic oil. Failure to comply may result in damage to equipment.

F Turn elbow (3) until pointing up. Fill pump (4) with hydraulic oil through elbow (3) until oil overflows from elbow (5).

G Turn elbow (3) until pointing down.

H Connect SPNSN PUMP-9 hose (6) to elbow (5) and SPNSN PUMP DRAIN-7V hose (7) to elbow (3).

FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Test and/or adjust compensating pump (p 4-487).
- Retract ejector (TM 5-2350-262-10).

DIRECTIONAL CONTROL VALVE BANK REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 27 Appendix D

Parts:

Cotter Pin (6)

Locknut (4)

Packing (15)

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	All Hydraulic Functions inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not dis-connect any hydraulic system component unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

REMOVAL

WARNING

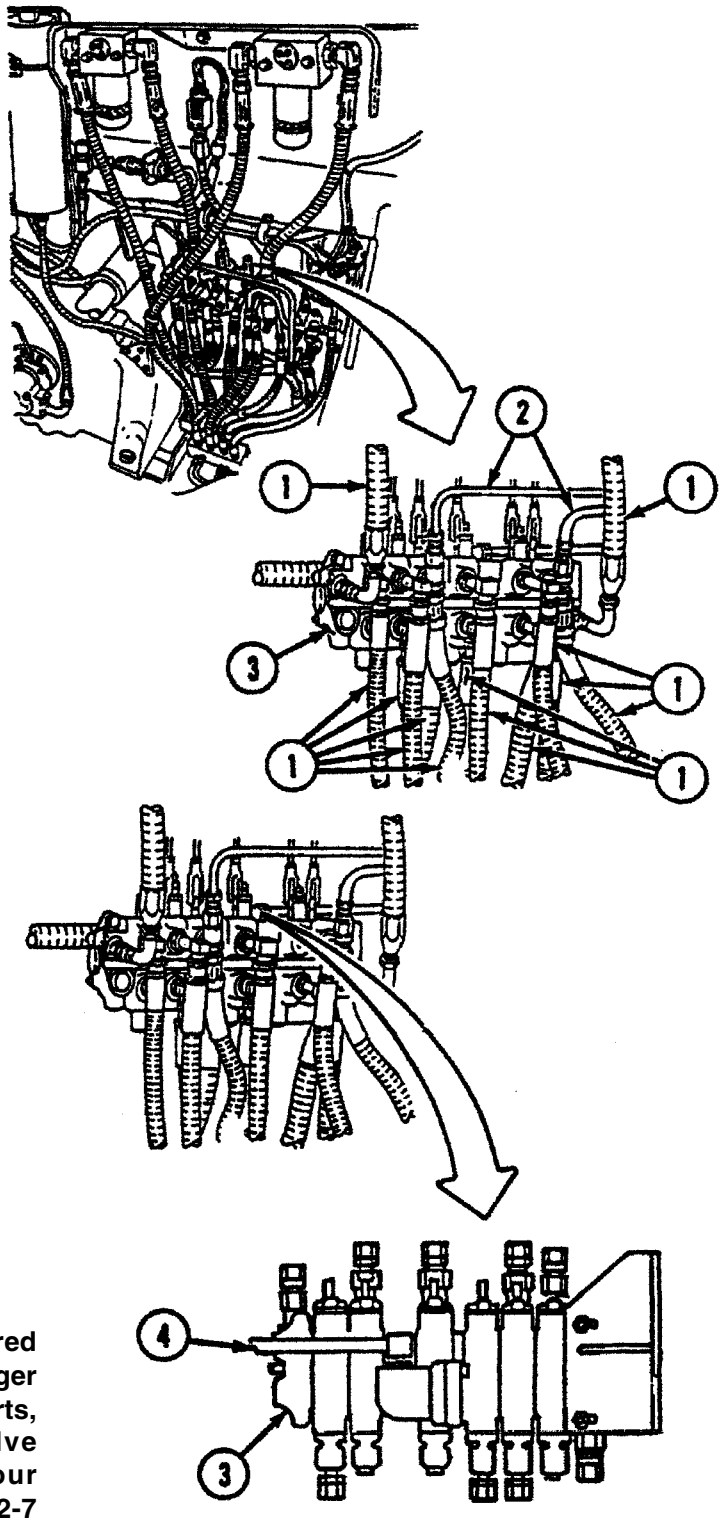
- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

- Do not bend tubes. If necessary, remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.
- Cover hose ends to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

- Although the Bilge Pump is considered Not Mission Essential and will no longer be supported with spare and repair parts, this task contains Control Valve maintenance procedures For Your Information Only. See TB 43-0001-62-7 (dated Oct 98) for Instructions to Isolate and Disconnect a Non-Functional Bilge Pump.
- Tag all hoses prior to removal for installation.
- Have a suitable container ready to catch oil.



A Disconnect thirteen hoses (1) and two tubes (2) from directional control valve bank (3). Drain oil from hoses (1) and tubes (2).

B Disconnect tube (4) from rear of directional control valve bank (3).

C Remove six cotter pins (5), straight pins (6), and hydraulic control rods (7) from plungers (8). Discard cotter pins (5).

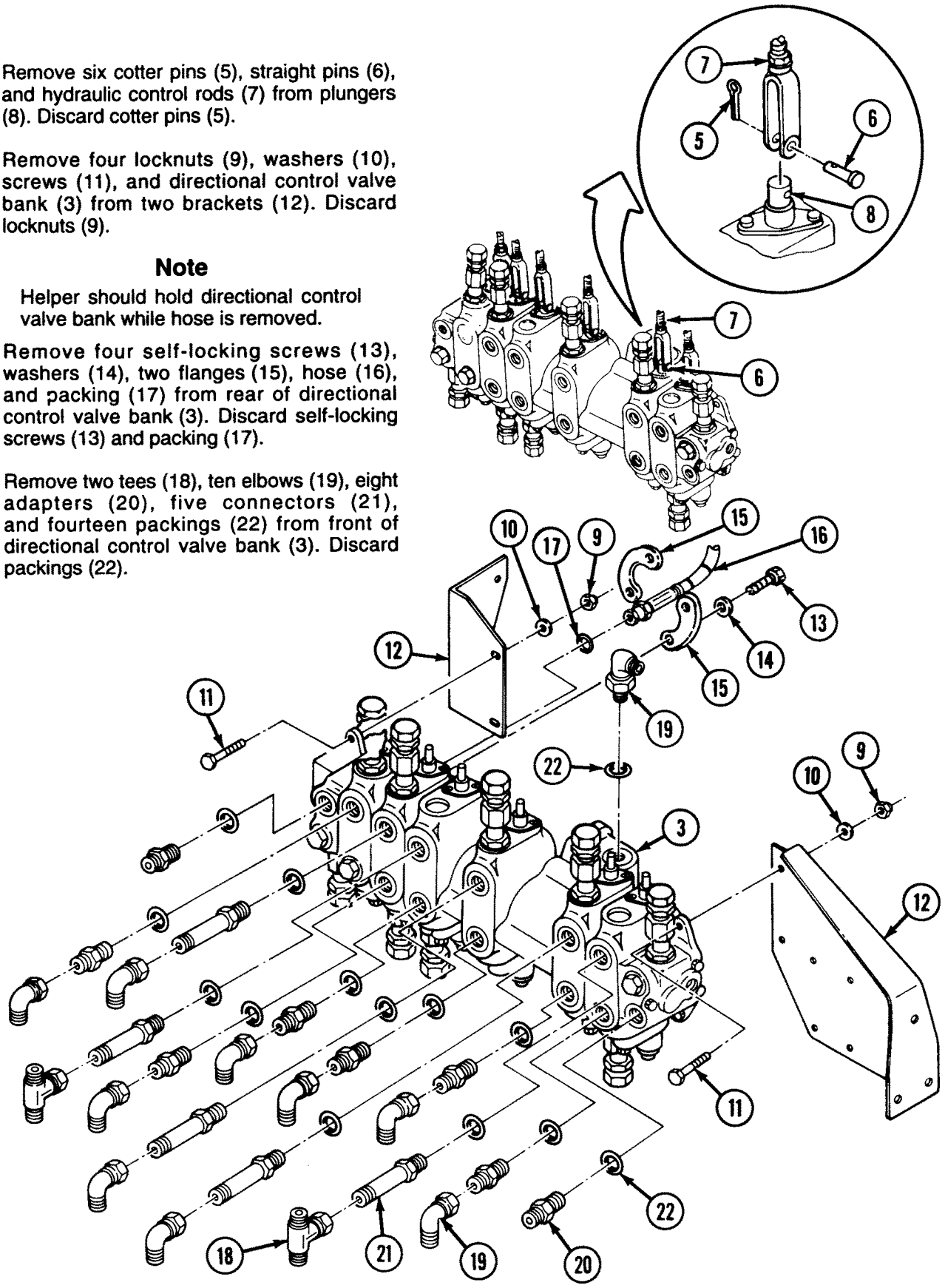
D Remove four locknuts (9), washers (10), screws (11), and directional control valve bank (3) from two brackets (12). Discard locknuts (9).

Note

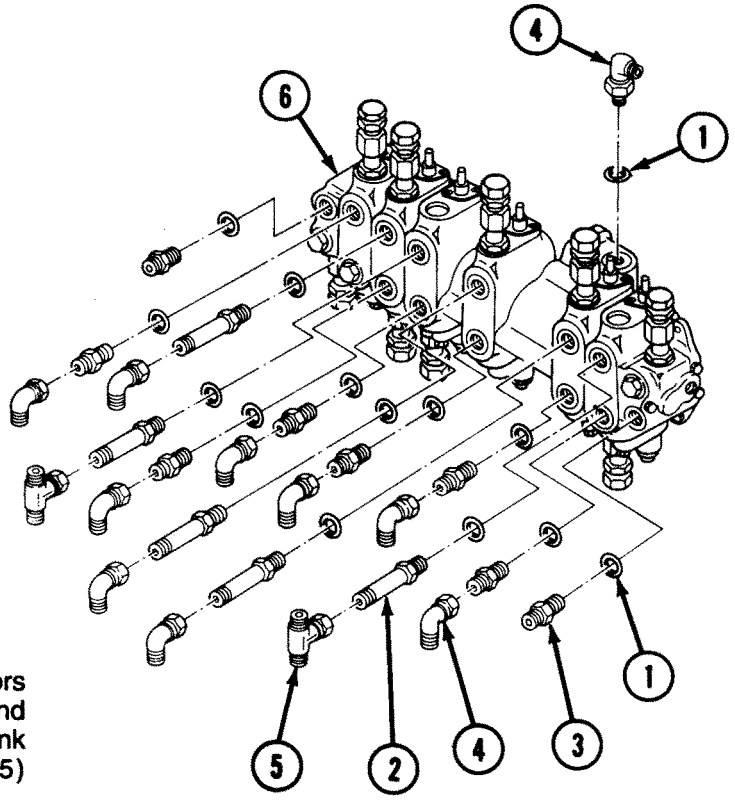
Helper should hold directional control valve bank while hose is removed.

E Remove four self-locking screws (13), washers (14), two flanges (15), hose (16), and packing (17) from rear of directional control valve bank (3). Discard self-locking screws (13) and packing (17).

F Remove two tees (18), ten elbows (19), eight adapters (20), five connectors (21), and fourteen packings (22) from front of directional control valve bank (3). Discard packings (22).



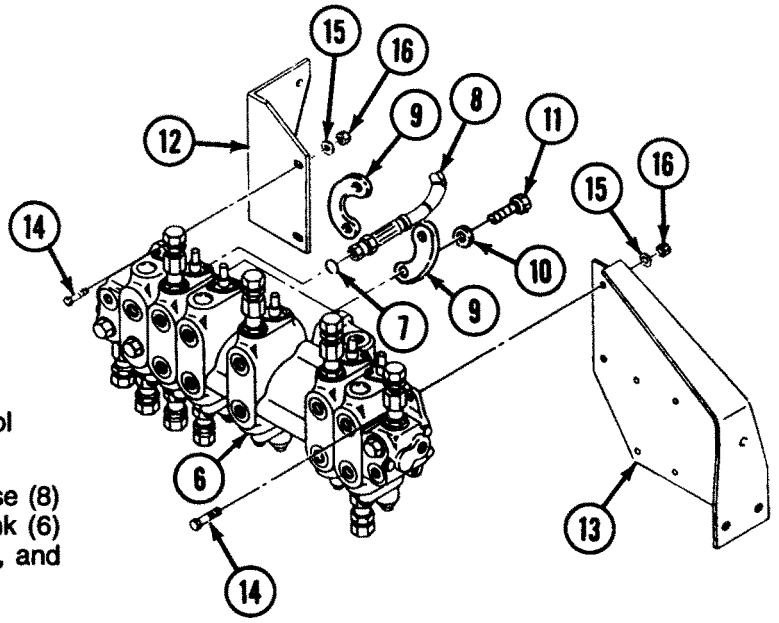
INSTALLATION



Note

- Hydraulic lines and fittings can leak if not properly installed or tightened. Observe correct installation and tightening procedures (p 2-35). Discard any packings that are cut or nicked. Discard any fittings that have damaged threads or seats.
- Apply lubricating oil to threads of screws, fittings, and all packings prior to installation.

A Install fourteen packings (1), five connectors (2), eight adapters (3), ten elbows (4), and two tees (5) on directional control valve bank (6). Line up elbows (4) and tees (5) vertically, and tighten all fittings.

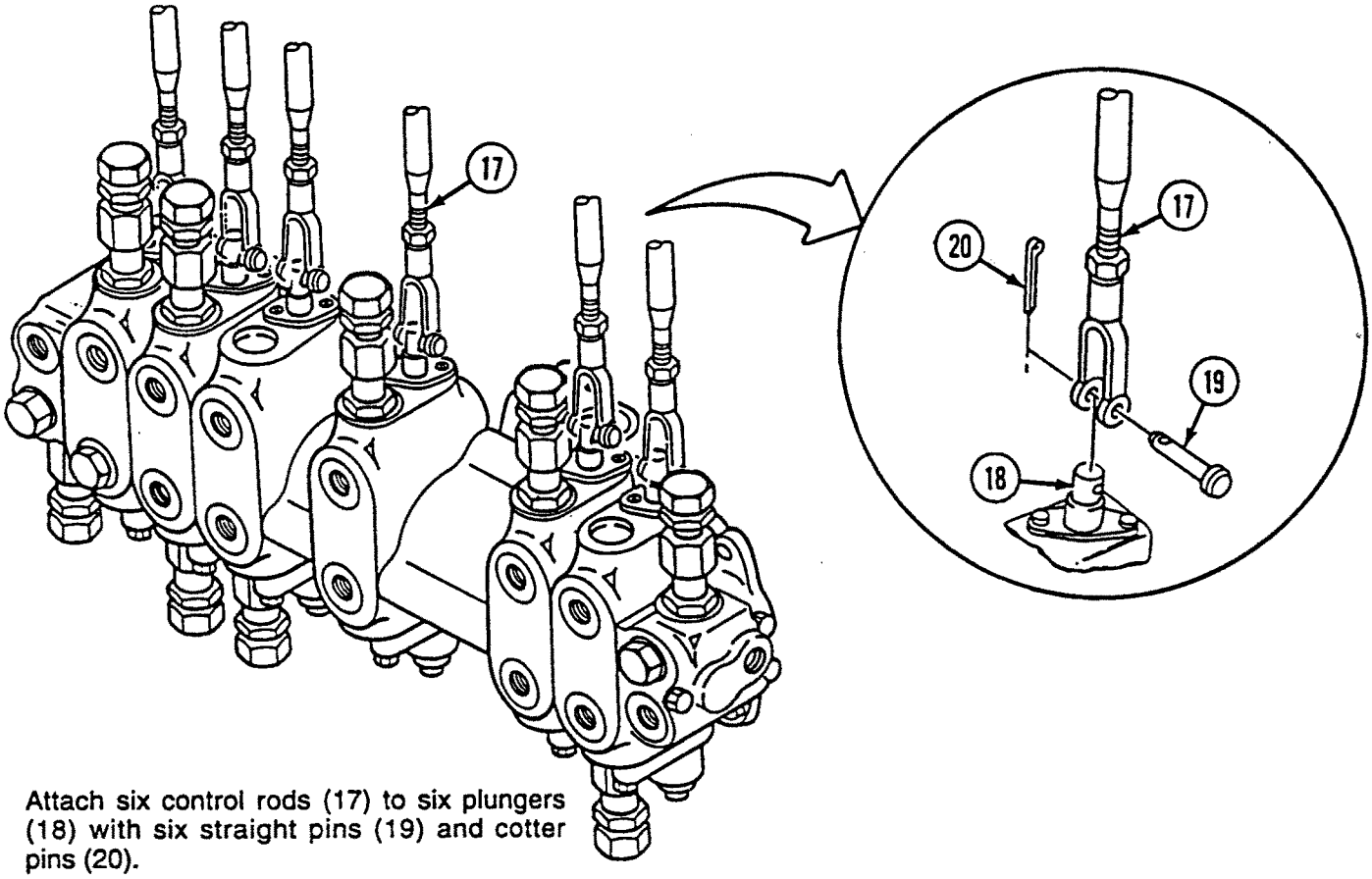


Note

Helper should hold directional control valve bank while hose is installed.

B Install packing (7) and CONT VLV-7 hose (8) on rear of directional control valve bank (6) with two flanges (9), four washers (10), and self-locking screws (11).

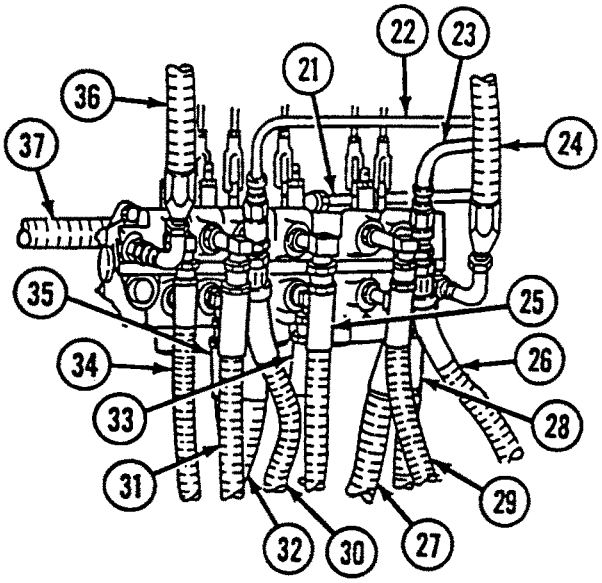
C Install directional control valve bank (6) on brackets (12) and (13) with four screws (14), washers (15), and locknuts (16). Tighten screws (16) to 39-41 lb-ft (53-56 N·m).



D Attach six control rods (17) to six plungers (18) with six straight pins (19) and cotter pins (20).

E Connect tubes and hoses as follows:

NO.	PORT	MARKER BAND
Tubes:		
21	7	CONT VLV-7
22	17L	CONT VLV-17L TEE
23	17R	CONT VLV-17R TEE
Hoses:		
24	13L	CONT VLV-13L
25	21	CONT VLV-21
26	17R	CONT VLV-17R TEE
27	C1	CONT VLV-C1
28	3R	CONT VLV-3R
29	C2	CONT VLV-C2
30	17L	CONT VLV-17L TEE
31	19	CONT VLV-19
32	3L	CONT VLV-3L
33	24	CONT VLV-24
34	22	CONT VLV-22
35	20	CONT VLV-20
36	13R	CONT VLV-13R
37	7	CONT VLV-7



FOLLOW-ON TASKS:

- Adjust hydraulic control levers and linkages (p 4-398).
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

BILGE PUMP RELIEF VALVE (24) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Bilge Pump Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not discon-nect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cover ports and hose or tube ends to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

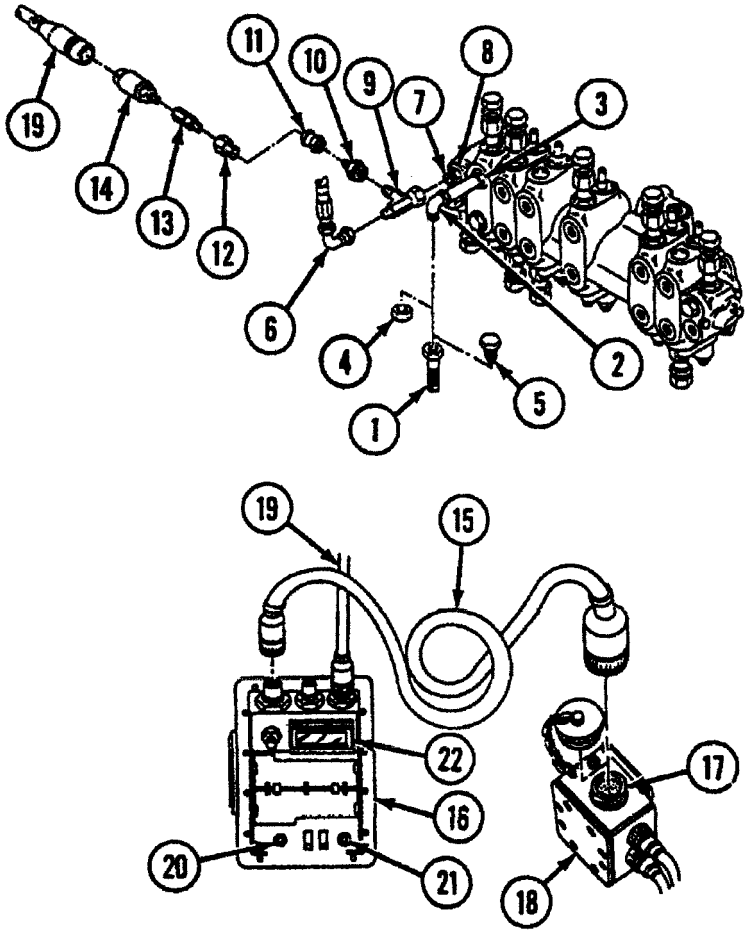
- Although the Bilge Pump is considered Not Mission Essential and will no longer be supported with spare and repair parts, this task is provided For Your Information Only. See TB 43-0001-62-7 (dated Oct 98) for Instructions to Isolate and Disconnect a Non-Functional Bilge Pump.
- Have suitable container ready to catch oil.

A Disconnect CONT VLV-24 hose (1) from elbow (2) at 24 port (3).

B Install MS51532-B8 cap (4) on elbow (2) and MS51518-B8 plug (5) on hose (1).

C Disconnect CONT VLV-13R hose (6) from adapter (7) at 13R port (8).

D Install 203102-12-12S tee (9), 221501-12-8S reducer (10), 2242-8-8S adapter (11), 2081-8-4S bushing (12), 4-4F6BX-S adapter (13), and transducer (14) on adapter (7). Connect CONT VLV-13R hose (6) to tee (9).



E Connect W1 cable (15) to VTM (16) and to DCA receptacle (17) of STE/ICE-R Interface resistor box (18).

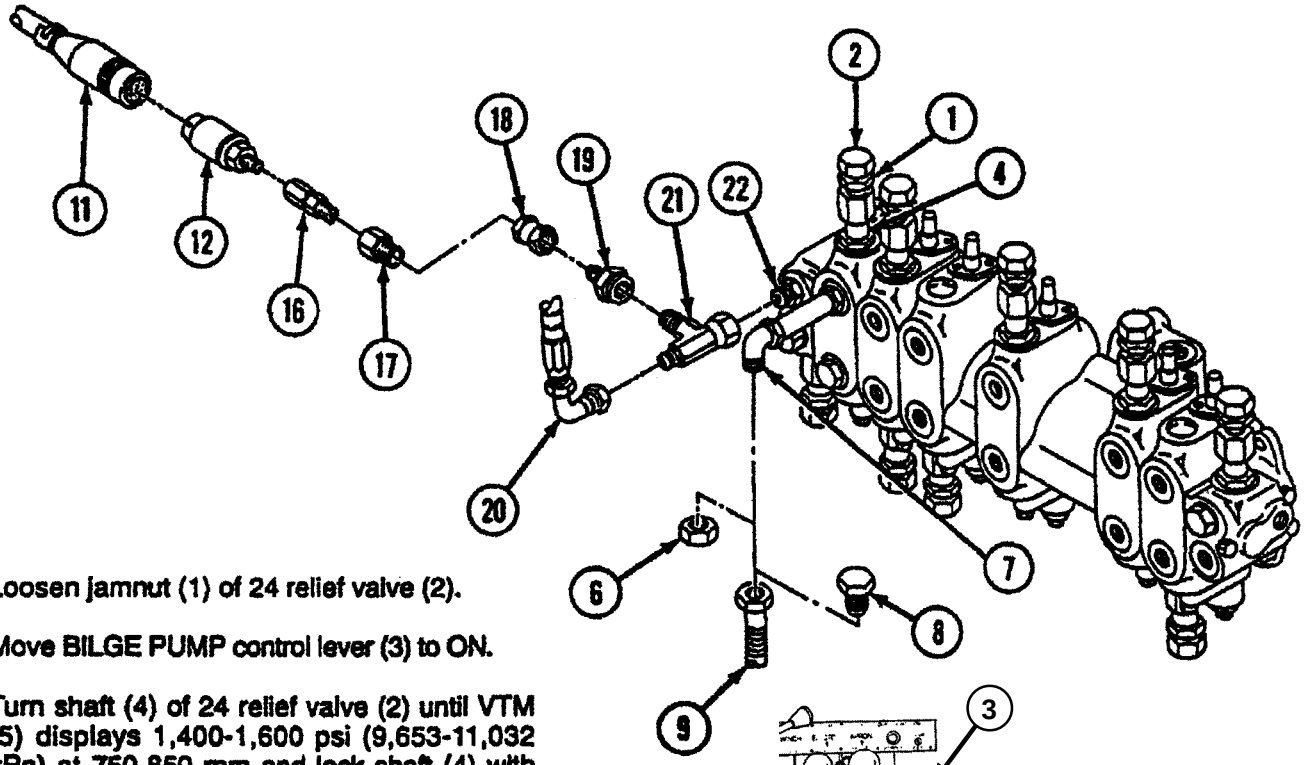
F Connect W4 cable (19) to VTM (16) and to transducer (14).

G Push ON/OFF button (20) on VTM (16) and perform confidence test (p 3-18).

H Dial in Test 51 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CAL" appears on display (22). Release TEST button (21). Value that appears on display (22) should be between +450 and -450. If the value on display (22) is not within offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

I Start vehicle engine (TM 5-2350-262-10). and pressurize hydraulic system.

J Dial in 01 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CON" appears on display (22). Release TEST button (21). Dial in TEST 51 on VTM (16). Press and release TEST button (21). VTM (16) should now alternately display pressure and rpm.



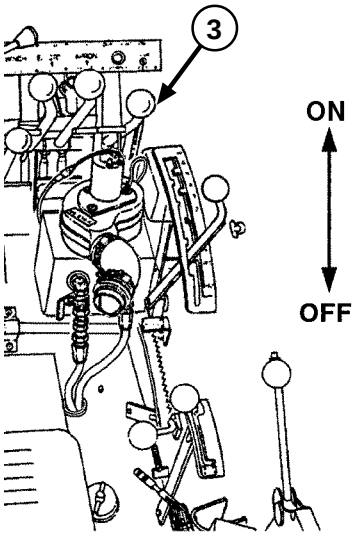
K Loosen jamnut (1) of 24 relief valve (2).

L Move BILGE PUMP control lever (3) to ON.

M Turn shaft (4) of 24 relief valve (2) until VTM (5) displays 1,400-1,600 psi (9,653-11,032 kPa) at 750-850 rpm and lock shaft (4) with jamnut (1).

N Move BILGE PUMP control lever (3) to OFF, stop vehicle engine (TM 5-2350-262-10), and relieve hydraulic pressure (p 2-27).

O Remove cap (6) from elbow (7) of 24 relief valve (2). Remove plug (8) from hose (9) and connect CONT VLV-24 hose (9) to elbow (7) of 24 relief valve (2).

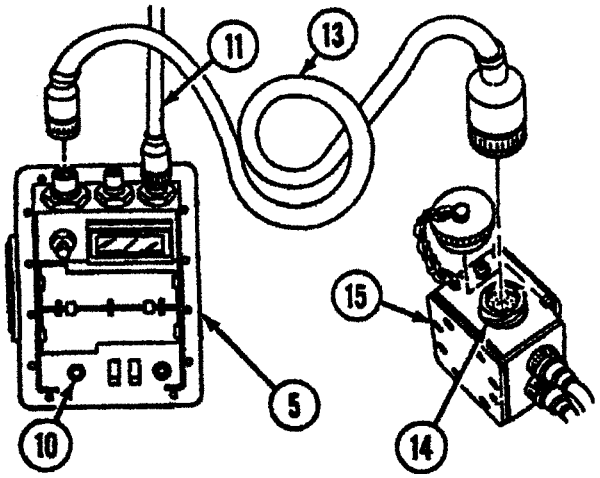


Note

Do not perform steps P and Q if relief valve 13R, 3L, 19, or 20 require adjusting.

P Pull ON/OFF button (10) on VTM (5). Disconnect W4 cable (11) from transducer (12) and VTM (5). Disconnect W1 cable (13) from VTM (5) and DCA receptacle (14) of STE/ICE-R interface resistor box (15).

Q Remove transducer (12), adapter (16), bushing (17), adapter (18), reducer (19), hose (20), and tee (21) from adapter (22). Connect CONT VLV-13R hose (20) to adapter (22).



FOLLOW-ON TASKS:
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

EJECTOR RELIEF VALVE (21) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Ejector Creeps
TM 5-2350-262-20-3	Ejector Does Not Extend or Retract

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not discon-nect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cover ports and hose or tube ends to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch oil.

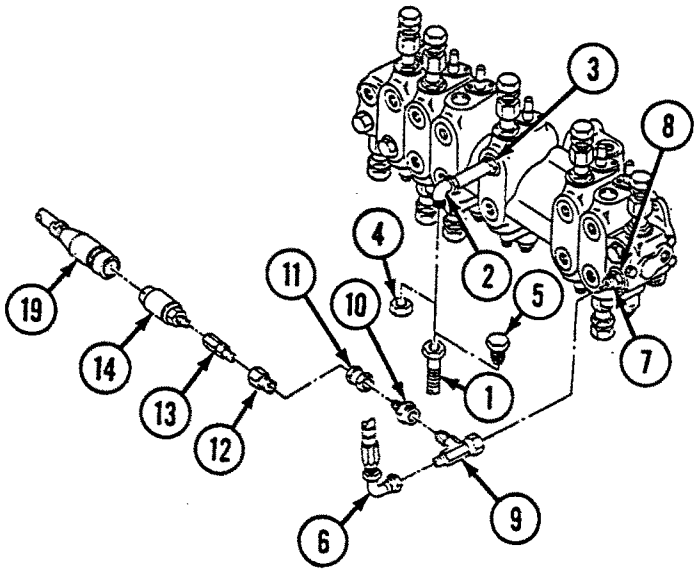
A Disconnect CONT VLV-21 hose (1) from elbow (2) at 21 port (3).

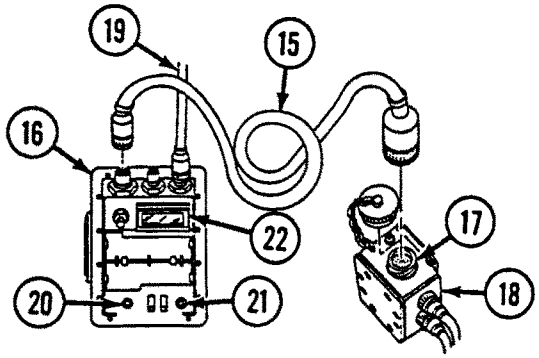
B Install MS51532-B8 cap (4) on elbow (2) and MS51518-B8 plug (5) on hose (1).

C Disconnect CONT VLV-13L hose (6) from adapter (7) at 13L port (8).

D Install 203102-12-12S tee (9), 221501-12-8S reducer (10), 2242-8-8S adapter (11), 2081-8-4S bushing (12), 4-4F6BX-S adapter (13), and transducer (14) on adapter (7). Connect CONT VLV-13L hose (6) to tee (9).

E Connect W1 cable (15) to VTM (16) and to DCA receptacle (17) of STE/ICE-R interface resistor box (18).





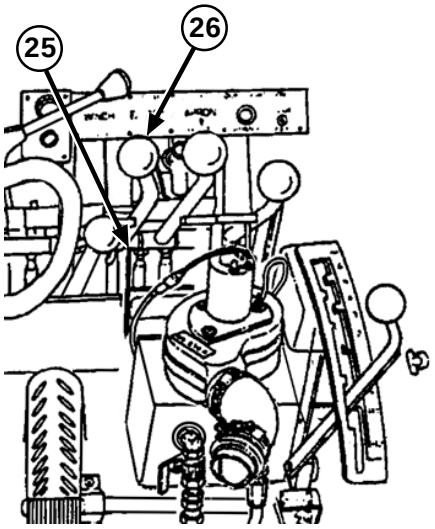
F Connect W4 cable (19) to VTM (16) and to transducer (14).

G Push ON/OFF button (20) on VTM (16) and perform confidence test (p 3-18).

H Dial in Test 51 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CAL" appears on display (22). Release TEST button (21). Value that appears on display (22) should be between +450 and -450. If the value on display (22) is not within offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

I Start vehicle engine (TM 5-2350-262-10) and pressurize hydraulic system.

J Dial in 01 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CON" appears on display (22). Release TEST button (21). Dial in Test 51 on VTM (16). Press and release TEST button (21). VTM (16) should now alternately display pressure and rpm.



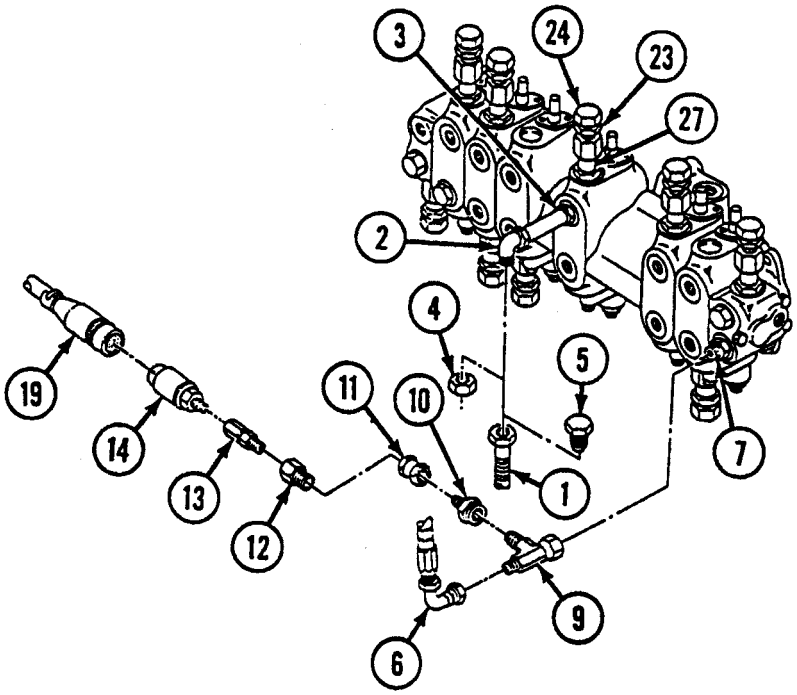
K Loosen jamnut (23) on 21 relief valve (24).

L Release ejector control stop (25) and move EJECTOR control lever (26) to FWD position and hold.

M Turn shaft (27) of 21 relief valve (24) until VTM (16) displays 1,950 to 2,050 psi (13,445 to 14,135 kPa) at 750 to 850 rpm and lock shaft (27) with jamnut (23).

N Release EJECTOR control lever (26) and lock in position with ejector control stop (25). Stop vehicle engine ((TM 5-2350-262-10) and relieve hydraulic pressure ((p 2-27).

O Remove cap (4) from elbow (2) at 21 port (3) and plug (5) from hose (1). Connect CONT VLV-21 hose (1) to elbow (2).

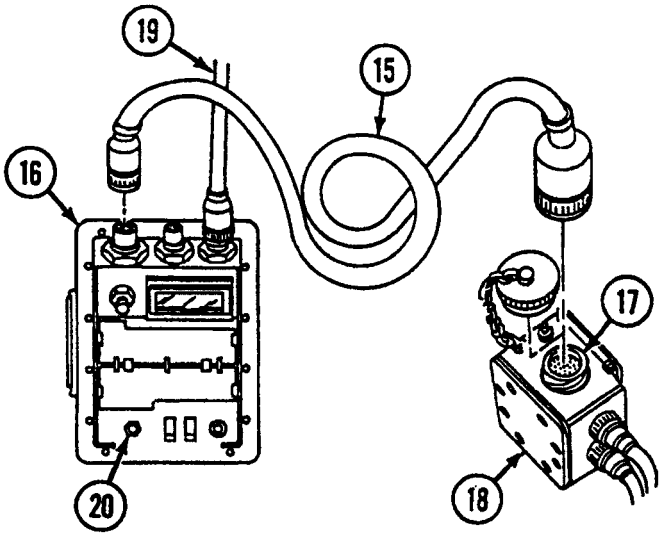


Note

Do not perform steps P and Q if relief valves 13L, 3R, and C2 require adjustment.

P Pull ON/OFF button (20) on VTM (16). Disconnect W1 cable (15) from VTM (16) and DCA receptacle (17) of STE/ICE-R interface resistor box (18). Disconnect W4 cable (19) from VTM (16) and transducer (14).

Q Remove transducer (14), adapter (13), bushing (12), adapter (11), reducer (10), hose (6), and tee (9) from adapter (7). Connect CONT VLV-13L hose (6) to adapter (7).



FOLLOW-ON TASKS:

- Service hydraulic tank ((TM 5-2350-262-10).
- Retract ejector ((TM 5-2350-262-10).

WINCH RELIEF VALVE (C2) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Winch Will Not Pull Rated Load

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Severe injury to personnel may result.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have drainage container ready to catch oil.

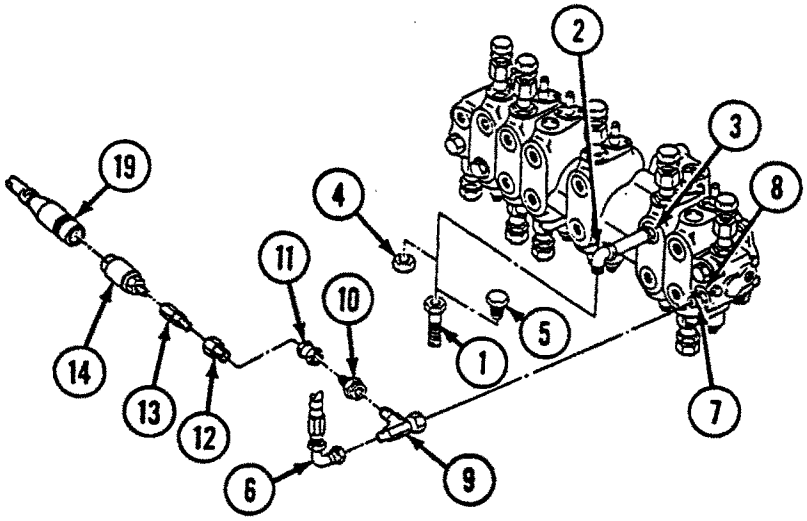
A Disconnect CONT VLV-C2 hose (1) from elbow (2) at C2 port (3).

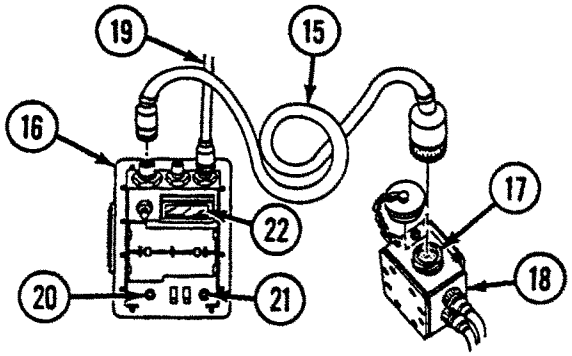
B Install MS51532-B8 cap (4) on elbow (2) and MS51518-B8 plug (5) on hose (1).

C Disconnect CONT VLV-13L hose (6) from adapter (7) at 13L port (8).

D Install 203102-12-12S tee (9), 221501-12-8S reducer (10), 2242-8-8S adapter (11), 2081-8-4S bushing (12), 4-4F6BX-S adapter (13), and transducer (14) on adapter (7). Connect CONT VLV-13L hose (6) to tee (9).

E Connect W1 cable (15) to VTM (16) and to DCA receptacle (17) of STE/ICE-R interface resistor box (18).





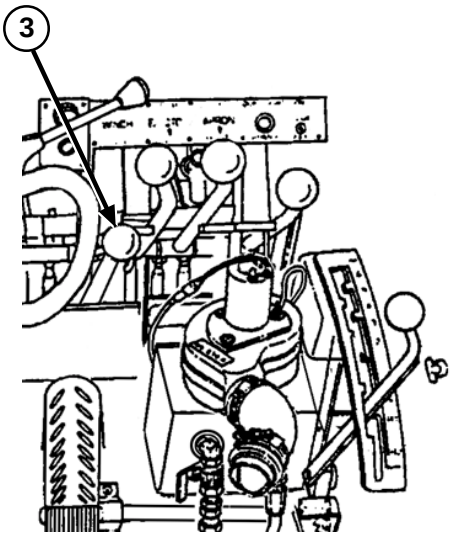
F Connect W4 cable (19) to VTM (16) and to transducer (14).

G Push ON/OFF button (20) on VTM (16) and perform confidence test (p 3-18).

H Dial in Test 51 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CAL" appears on display (22). Release TEST button (21). Value that appears on display (22) should be between +450 and -450. If the value on display (22) is not within the offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

I Start vehicle engine (TM 5-2350-262-10) and pressurize hydraulic system.

J Dial in 01 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CON" appears on display (22). Release TEST button (21). Dial in Test 51 on VTM (16). Press and release TEST button (21). VTM (16) should now alternately display pressure and rpm.



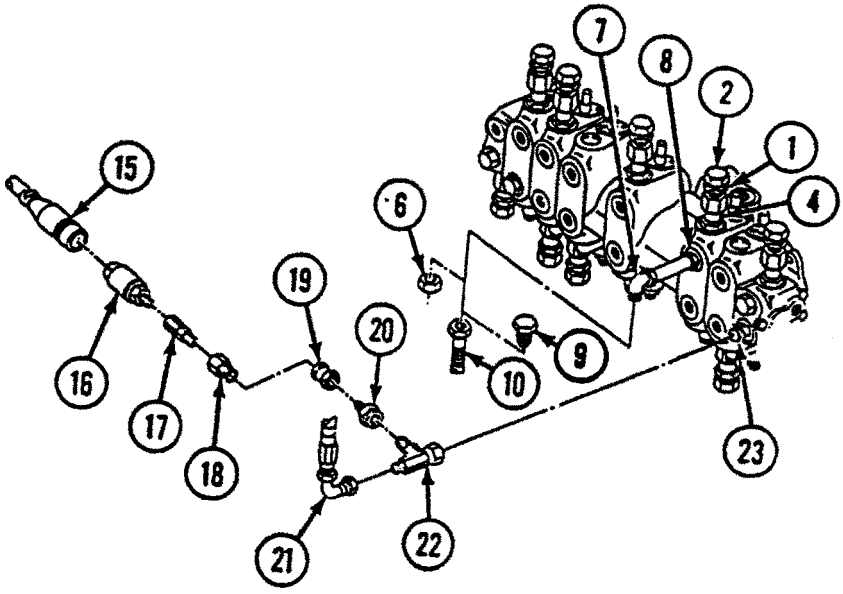
K Loosen jamnut (1) on C2 relief valve (2).

L Move WINCH control lever (3) forward to IN and hold.

M Turn shaft (4) of C2 relief valve (2) until VTM (5) displays 1,950 to 2,050 psi (13,445 to 14,135 kPa) at 750 to 850 rpm for the 25,000 lb (11,350 kg) winch and 2,450 to 2,550 psi (16,873 to 17,582 kPa) at 750 to 850 rpm for the 35,000 lb (15,890 kg) winch and lock shaft (4) with jamnut (1).

N Release WINCH control lever (3), stop vehicle engine (TM 5-2350-262-10), and relieve hydraulic pressure (p 3-82).

O Remove cap (6) from elbow (7) at C2 port (8). Remove plug (9) from hose (10). Connect CONT VLV-C2 hose (10) to elbow (7).

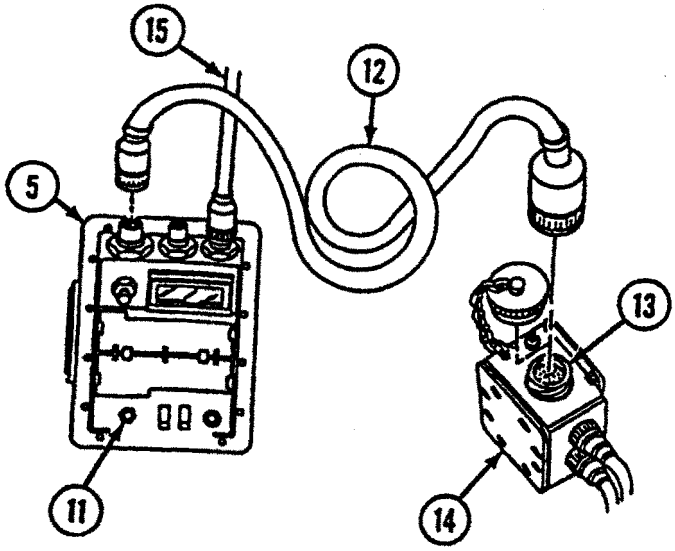


Note

Do not perform steps P and Q if relief valves 13L, 3R or 21 require adjustment.

P Pull ON/OFF button (11) of VTM (5). Disconnect W1 cable (12) from VTM (5) and DCA receptacle (13) of STE/ICE-R interface resistor box (14). Disconnect W4 cable (15) from VTM (5) and transducer (16).

Q Remove transducer (16), adapter (17), bushing (18), adapter (19), reducer (20), hose (21), and tee (22) from adapter (23). Connect CONT VLV-13L hose (21) to adapter (23).



FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

RIGHT SUSPENSION RAISE RELIEF VALVE (3R) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Front Corner (Left or Right) Raises in SPRUNG, But Not UNSPRUNG Mode
TM 5-2350-262-20-3	Hydraulic Oil Overheats
TM 5-2350-262-20-3	Suspension Does Not Raise Vehicle In SPRUNG Mode

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not discon-nect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cover ports and hose or tube ends to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch oil.

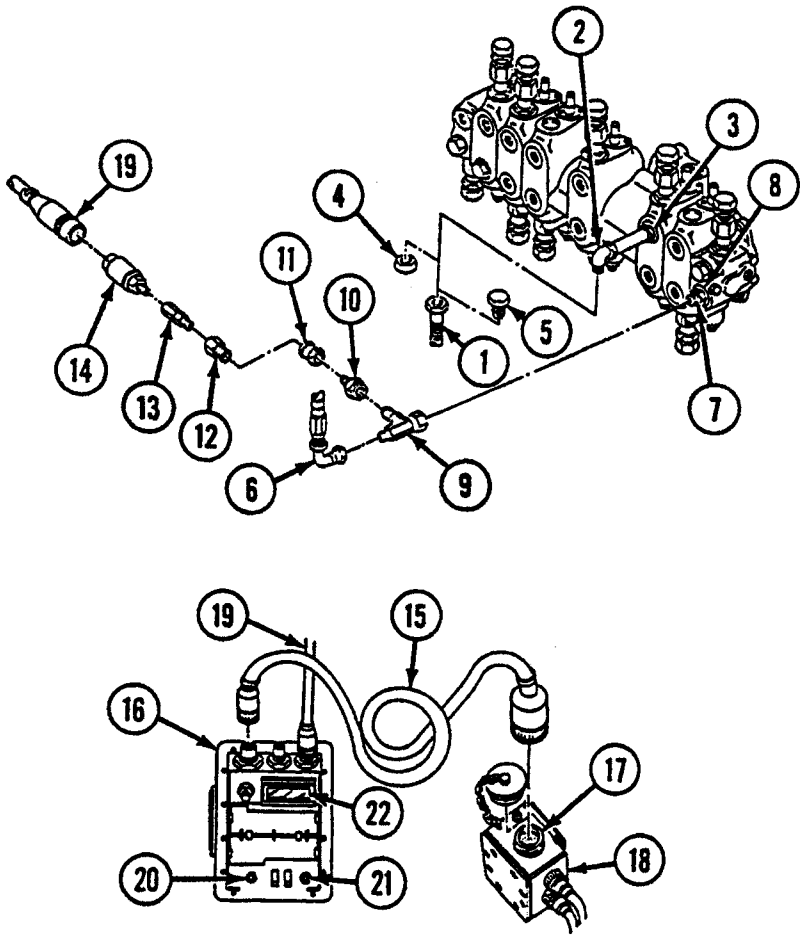
A Disconnect CONT VLV-3R hose (1) from elbow (2) at 3R port (3).

B Install MS51532-B8 cap (4) on elbow (2) and MS51518-B8 plug (5) on hose (1).

C Disconnect CONT VLV-13L hose (6) from adapter (7) at 13L port (8).

D Install 203102-12-12S tee (9), 221501-12-8S reducer (10), 2242-8-8S adapter (11), 2081-8-4S bushing (12), 4-4F6BX-S adapter (13), and transducer (14) on adapter (7). Connect CONT VLV-13L hose (6) to tee (9).

E Connect W1 cable (15) to VTM (16) and to DCA receptacle (17) of STE/ICE-R interface resistor box (18).



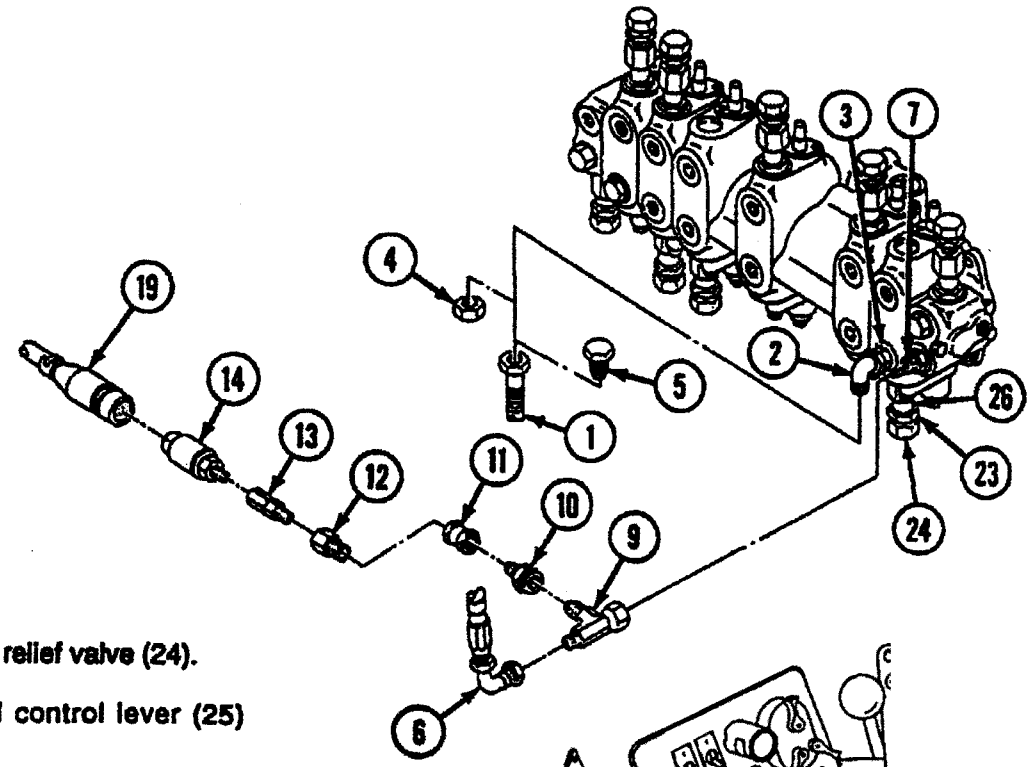
F Connect W4 cable (19) to VTM (16) and to transducer (14).

G Push ON/OFF button (20) on VTM (16) and perform confidence test (p 3-18).

H Dial in Test 51 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CAL" appears on display (22). Release TEST button (21). Value that appears on display (22) should be between +450 and -450. If the value on display (22) is not within the offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

I Start vehicle engine (TM 5-2350-262-10). and pressurize hydraulic system.

J Dial in 01 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CON" appears on display (22). Release TEST button (21). Dial in Test 51 on VTM (16). Press and release TEST button (21). VTM (16) should now alternately display pressure and rpm.



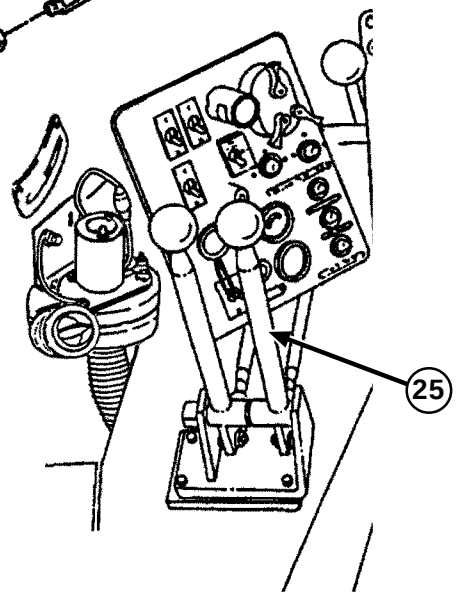
K Loosen jamnut (23) on 3R relief valve (24).

L Move RH SUSPENSION control lever (25) back to RAISE and hold.

M Turn shaft (26) of 3R relief valve (24) until VTM (16) displays 3,400 to 3,600 psi (23,443 to 24,822 kPa) at 750 to 850 rpm and lock shaft (26) with jamnut (23).

N Release RH SUSPENSION control lever (25), stop vehicle engine (TM 5-2350-262-10), and relieve hydraulic pressure (p 2-27).

O Remove cap (4) from elbow (2) at 3R port (3). Remove plug (5) from hose (1). Connect CONT VLV-3R hose (1) to elbow (2).

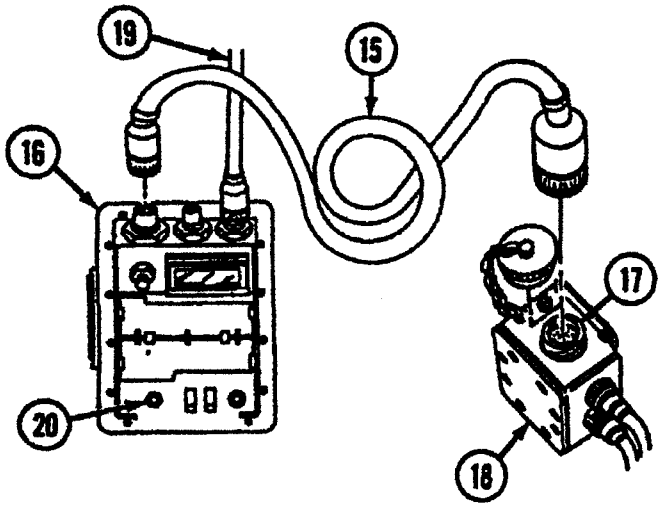


Note

Do not perform steps P and Q if relief valves 13L, 12, or C2 require adjustment.

P Pull ON/OFF button (20) of VTM (16). Disconnect W1 cable (15) from VTM (16) and DCA receptacle (17) of STE/ICE-R interface resistor box (18). Disconnect W4 cable (19) from VTM (16) and transducer (14).

Q Remove transducer (14), adapter (13), bushing (12), adapter (11), reducer (10), hose (6), and tee (9) from adapter (7). Connect CONT VLV-13L hose (6) to adapter (7).



FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

LEFT SUSPENSION RAISE RELIEF VALVE (3L) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Front Corner (Left or Right) Raises in SPRUNG, But Not UNSPRUNG Mode
TM 5-2350-262-20-3	Hydraulic Oil Overheats
TM 5-2350-262-20-3	Suspension Does Not Raise Vehicle in SPRUNG Mode

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not discon-nect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cover ports and hose or tube ends to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch oil.

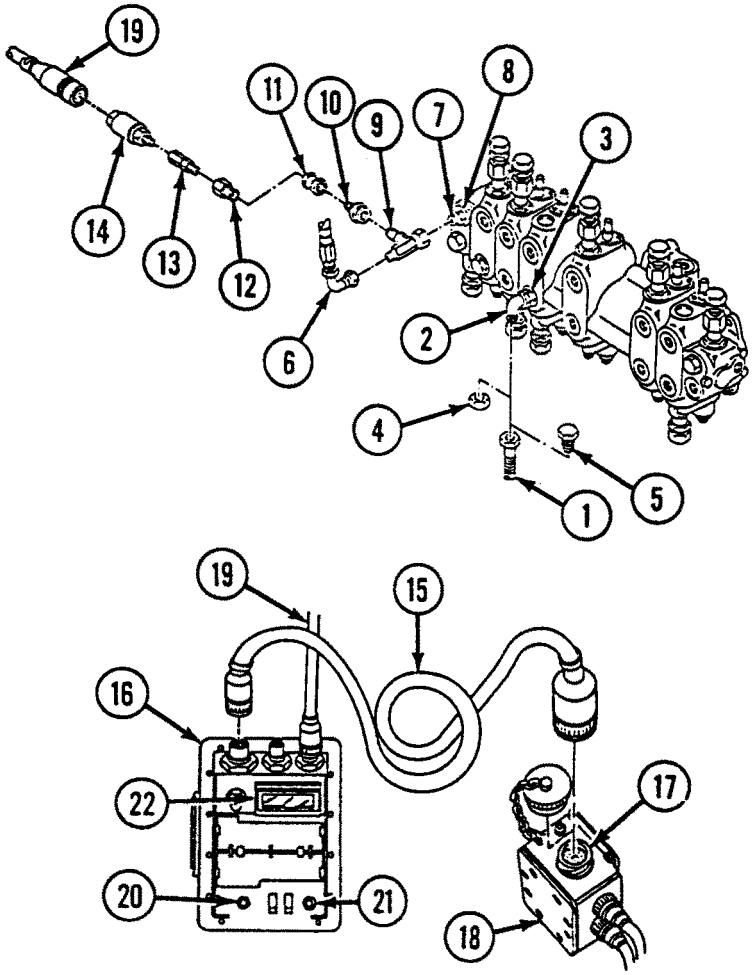
A Disconnect CONT VLV-3L hose (1) from elbow (2) at 3L port (3).

B Install MS51532-B8 cap (4) on elbow (2) and MS51518-B8 plug (5) on hose (1).

C Disconnect CONT VLV-13R hose (6) from adapter (7) at 13R port (8).

D Install 203102-12-12S tee (9), 221501-12-8S reducer (10), 2242-8-8S adapter (11), 2081-8-4S bushing (12), 4-4F6BX-S adapter (13), and transducer (14) on adapter (7). Connect CONT VLV-13R hose (6) to tee (9).

E Connect W1 cable (15) to VTM (16) and to DCA receptacle (17) of STE/ICE-R interface resistor box (18).



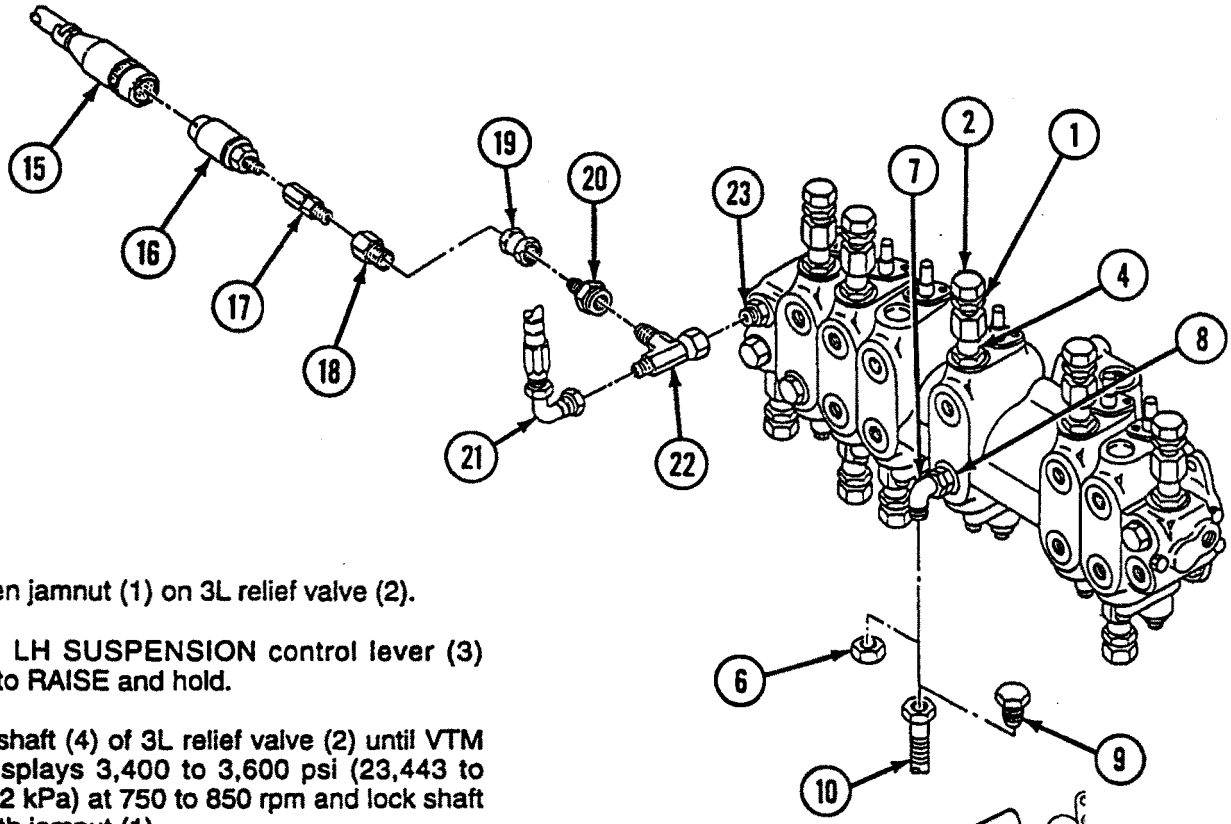
F Connect W4 cable (19) to VTM (16) and to transducer (14).

G Push ON/OFF button (20) on VTM (16) and perform confidence test (p 3-18).

H Dial in Test 51 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CAL" appears on display (22). Release TEST button (21). Value that appears on display (22) should be between +450 and -450. If the value on display (22) is not within the offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

I Start vehicle engine (TM 5-2350-262-10) and pressurize hydraulic system.

J Dial in 01 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CON" appears on display (22). Release TEST button (21). Dial in Test 51 on VTM (16). Press and release TEST button (21). VTM (16) should now alternately display pressure and rpm.



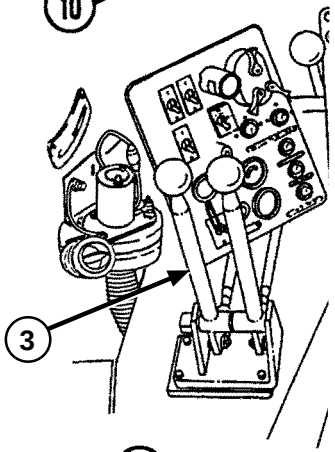
K Loosen jamnut (1) on 3L relief valve (2).

L Move LH SUSPENSION control lever (3) back to RAISE and hold.

M Turn shaft (4) of 3L relief valve (2) until VTM (5) displays 3,400 to 3,600 psi (23,443 to 24,822 kPa) at 750 to 850 rpm and lock shaft (4) with jamnut (1).

N Release LH SUSPENSION control lever (3), stop vehicle engine (TM 5-2350-262-10), and relieve hydraulic pressure (p 2-27).

O Remove cap (6) from elbow (7) at 3L port (8). Remove plug (9) from hose (10). Connect CONT VLV-3L hose (10) to elbow (7).

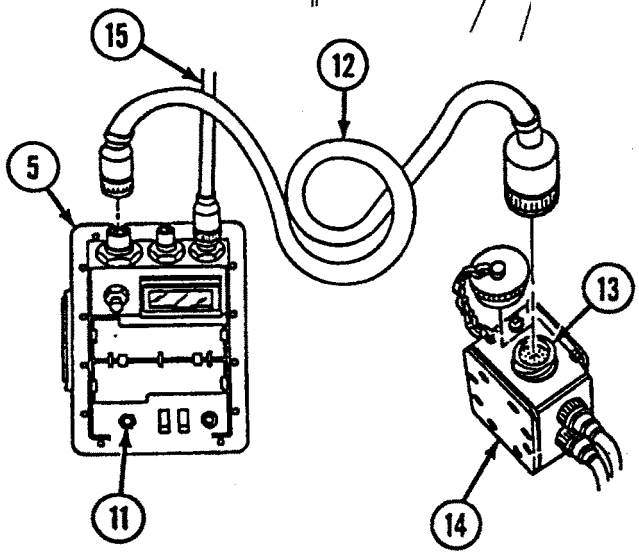


Note

Do not perform steps P and Q if relief valves 13R, 24, 19, or 20 require adjustment.

P Pull ON/OFF button (11) of VTM (5). Disconnect W1 cable (12) from VTM (5) and DCA receptacle (13) of STE/ICE-R interface resistor box (14). Disconnect W4 cable (15) from VTM (5) and transducer (16).

Q Remove transducer (16), adapter (17), bushing (18), adapter (19), reducer (20), hose (21), and tee (22) from adapter (23). Connect CONT VLV-13R hose (21) to adapter (23).



FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

RIGHT PUMP LINE RELIEF VALVE (13R) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Apron, Bilge Pump and Left-Hand Wheel Control Inoperative
TM 5-2350-262-20-3	Apron Will Not Raise
TM 5-2350-262-20-3	Bilge Pump Inoperative

Troubleshooting Reference (Continued):

TM 5-2350-262-20-3	Ejector Creeps
TM 5-2350-262-20-3	Ejector Does Not Extend or Retract
TM 5-2350-262-20-3	Front Corner (Left or Right) Raises in SPRUNG, But Not UNSPRUNG Mode
TM 5-2350-262-20-3	Hydraulic Oil Overheats
TM 5-2350-262-20-3	Suspension Does Not Raise Vehicle in SPRUNG Mode

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and hose and tube ends to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch oil.

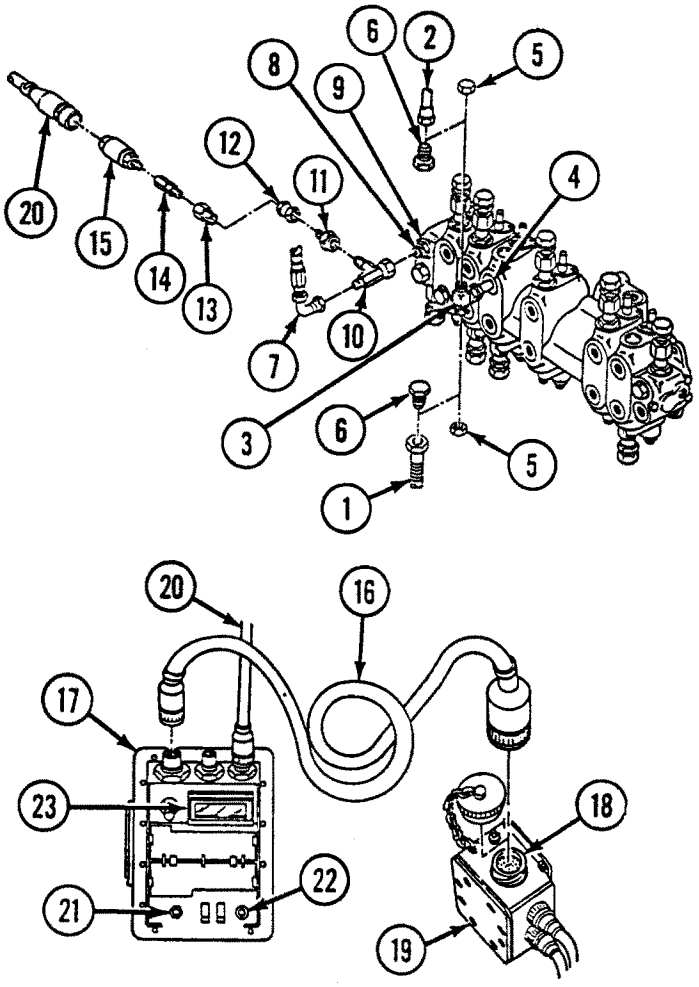
A Disconnect CONT VLV-17L TEE hose (1) and CONT VLV-17L TEE tube (2) from tee (3) at 17L port (4).

B Install two MS51532-B8 caps (5) on tee (3) and MS51518-B8 plugs (6) on hose (1) and tube (2).

C Disconnect CONT VLV-13R hose (7) from adapter (8) at 13R port (9).

D Install 203102-12-12S tee (10), 221501-12-8S reducer (11), 2242-8-8S adapter (12), 2081-8-4S bushing (13), 4-4F6BX-S adapter (14), and transducer (15) on adapter (8). Connect CONT VLV-13R hose (7) to tee (10).

E Connect W1 cable (16) to VTM (17) and to DCA receptacle (18) of STE/ICE-R interface resistor box (19).



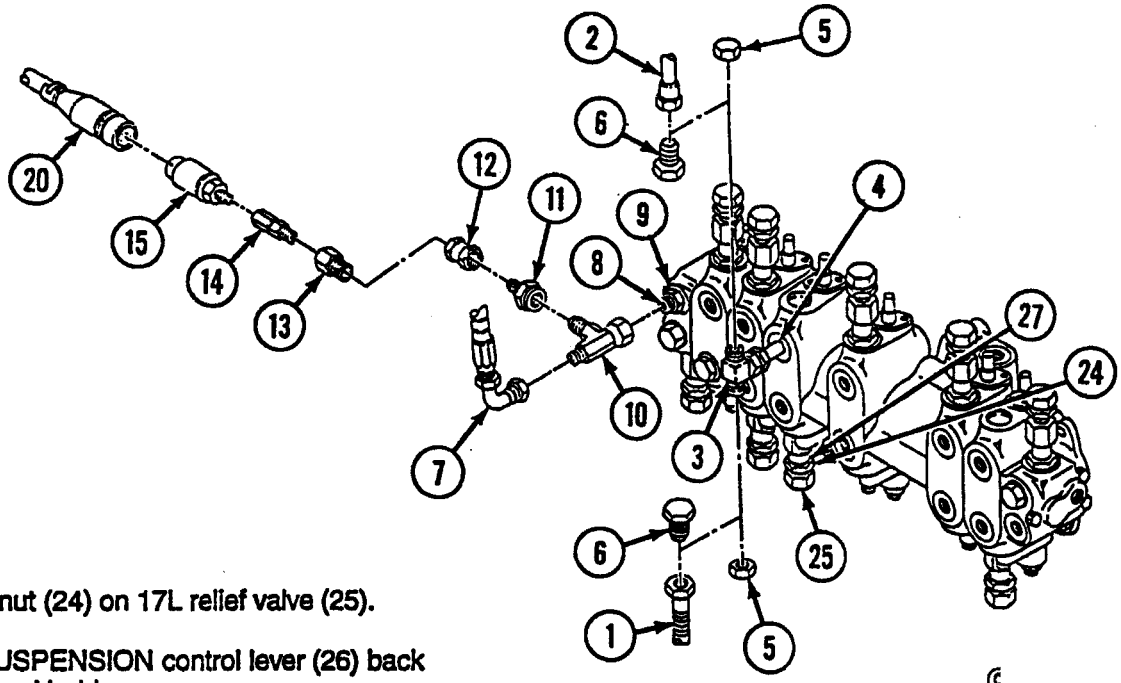
F Connect W4 cable (20) to VTM (17) and to transducer (15).

G Push ON/OFF button (21) on VTM (17) and perform confidence test (p 3-18).

H Dial in Test 51 on VTM (17). Press and hold TEST button (22) on VTM (17) until "CAL" appears on display (23). Release TEST button (22). Value that appears on display (23) should be between +450 and -450. If the value on display (23) is not within the offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

I Start vehicle engine (TM 5-2350-262-10). and pressurize hydraulic system.

J Dial in 01 on VTM (17). Press and hold TEST button (22) on VTM (17) until "CON" appears on display (23). Release TEST button (22). Dial in Test 51 on VTM (17). Press and release TEST button (22). VTM (17) should now alternately display pressure and rpm.



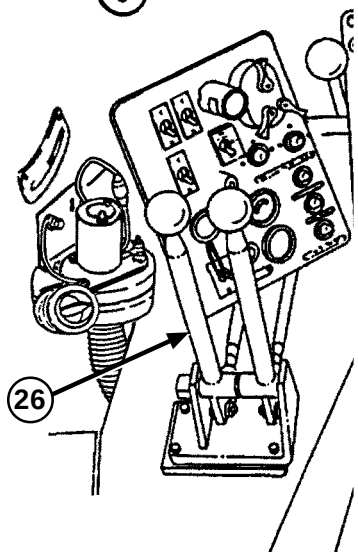
K Loosen jamnut (24) on 17L relief valve (25).

L Move LH SUSPENSION control lever (26) back to LOWER and hold.

M Turn shaft (27) of 17L relief valve (25) until VTM (17) displays 3,950 to 4,050 psi (27,235 to 27,925 kPa) at 750 to 850 rpm and lock shaft (27) with jamnut (24).

N Release LH SUSPENSION control lever (26), stop vehicle engine (TM 5-2350-262-10), and relieve hydraulic pressure (p 3-82).

O Remove two caps (5) from tee (3) at 17L port (4). Remove plug (6) from hose (1) and tube (2). Connect CONT VLV-17L TEE hose (1) and CONT VLV-17L TEE tube (2) to tee (3).

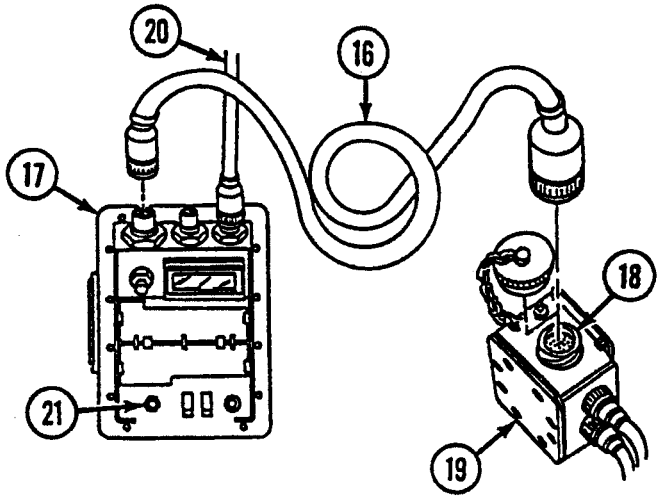


Note

Do not perform steps P and Q if relief valves 3L, 19, 20, or 24 require adjustment.

P Pull ON/OFF button (21) of VTM (17). Disconnect W1 cable (16) from VTM (17) and DCA receptacle (18) of STE/ICE-R interface resistor box (19). Disconnect W4 cable (20) from VTM (17) and transducer (15).

Q Remove transducer (15), adapter (14), bushing (13), adapter (12), reducer (11), hose (7), and tee (10) from adapter (8). Connect CONT VLV-13R hose (7) to adapter (8).



FOLLOW-ON TASKS:
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

LEFT PUMP LINE RELIEF VALVE (13L) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Ejector Does Not Extend or Retract
TM 5-2350-262-20-3	Front Corner (Left or Right) Raises in SPRUNG, But Not UNSPRUNG Mode
TM 5-2350-262-20-3	Front Corner (Left or Right) Raises in UNSPRUNG But Not in SPRUNG

Troubleshooting Reference (Continued):

TM 5-2350-262-20-3	Hydraulic Oil Overheats
TM 5-2350-262-20-3	Suspension Does Not Raise Vehicle in SPRUNG Mode
TM 5-2350-262-20-3	Winch and Right-Hand Wheel Control Inoperative
TM 5-2350-262-20-3	Winch Will Not Pull Rated Load

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not discon-nect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

Have suitable container ready to catch oil.

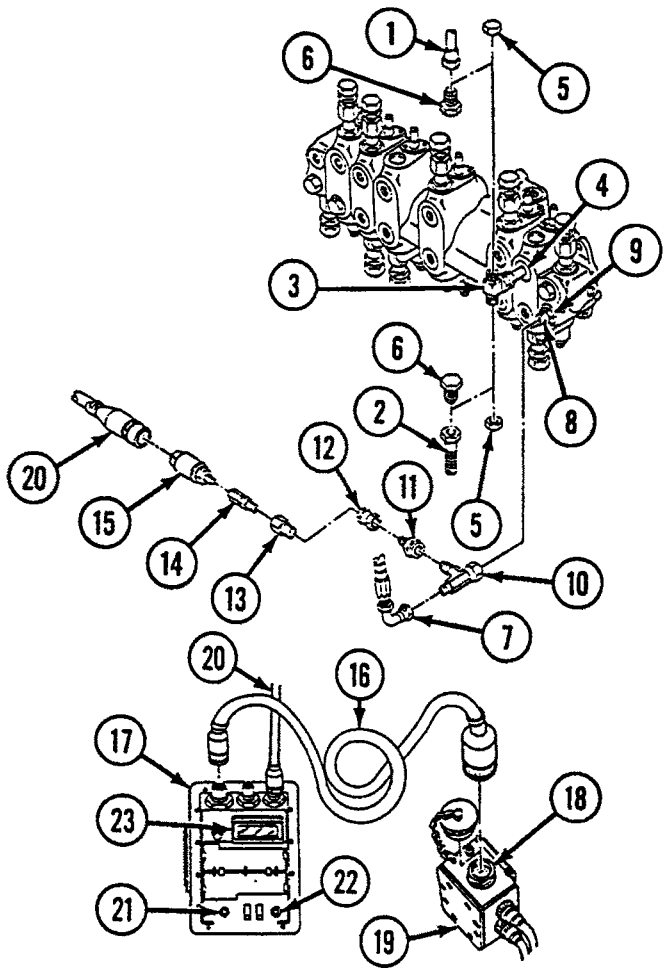
A Disconnect CONT VLV-17R TEE tube (1) and CONT VLV-17R TEE hose (2) from tee (3) at 17R port (4).

B Install two MS51532-B8 caps (5) on tee (3) and MS51518-B8 plugs (6) on tube (1) and hose (2).

C Disconnect CONT VLV-13L hose (7) from adapter (8) at 13L port (9).

D Install 203102-12-12S tee (10), 221501-12-8S reducer (11), 2242-8-8S adapter (12), 2081-8-4S bushing (13), 4-4F6BX-S adapter (14), and transducer (15) on adapter (8). Connect CONT VLV-13L hose (7) to tee (10).

E Connect W1 cable (16) to VTM (17) and to DCA receptacle (18) of STE/ICE-R interface resistor box (19).



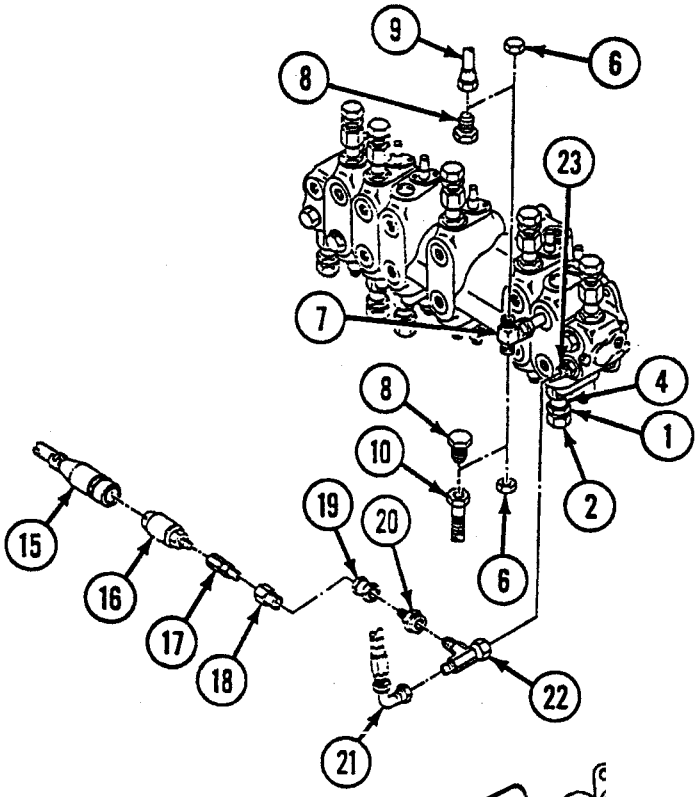
F Connect W4 cable (20) to VTM (17) and to transducer (15).

G Push ON/OFF button (21) on VTM (17) and perform confidence test (p 3-18).

H Dial in Test 51 on VTM (17). Press and hold TEST button (22) on VTM (17) until "CAL" appears on display (23). Release TEST button (22). Value that appears on display (23) should be between +450 and -450. If the value on display (23) is not within the offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

I Start vehicle engine (TM 5-2350-262-10) and pressurize hydraulic system.

J Dial in 01 on VTM (17). Press and hold TEST button (22) on VTM (17) until "CON" appears on display (23). Release TEST button (22). Dial in Test 51 on VTM (17). Press and release TEST button (22). VTM (17) should now alternately display pressure and rpm.



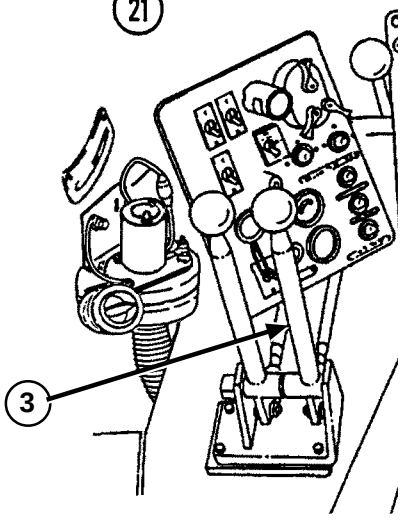
K Loosen jamnut (1) of 13L relief valve (2).

L Move RH SUSPENSION control lever (3) back to LOWER and hold.

M Turn shaft (4) of 13L relief valve (2) until VTM (5) displays 3,950 to 4,050 psi (27,235 to 27,925 kPa) at 750 to 850 rpm and lock shaft (4) with jamnut (1).

N Release RH SUSPENSION control lever (3), stop vehicle engine (TM 5-2350-262-10), and relieve hydraulic pressure (p 2-27).

O Remove two caps (6) from tee (7) and remove plug (8) from tube (9) and hose (10). Connect CONT VLV-17R TEE tube (9) and CONT VLV-17R TEE hose (10) to tee (7).

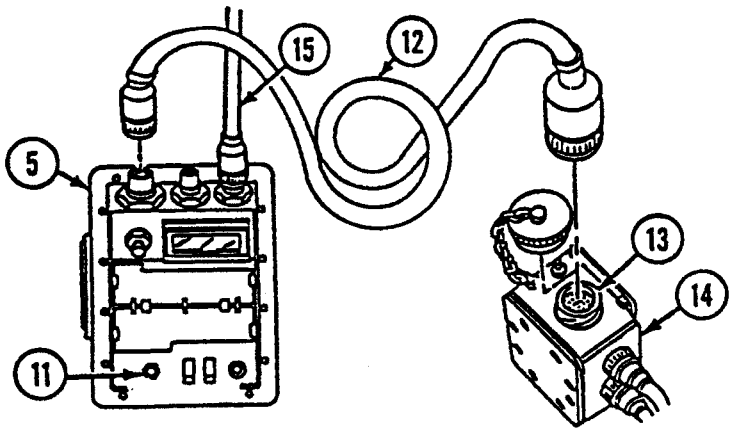


Note

Do not perform steps P and Q if relief valves 3R, C2, or 21 require adjustment.

P Pull ON/OFF button (11) of VTM (5). Disconnect W1 cable (12) from VTM (5) and DCA receptacle (13) of STE/ICE-R interface resistor box (14). Disconnect W4 cable (15) from VTM (5) and transducer (16).

Q Remove transducer (16), adapter (17), bushing (18), adapter (19), reducer (20), hose (21), and tee (22) from adapter (23). Connect CONT VLV-13L hose (21) to adapter (23).



FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

APRON RAISE RELIEF VALVE (19) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Apron Will Not Raise
TM 5-2350-262-20-3	Ejector Does Not Extend or Retract

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not discon-nect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

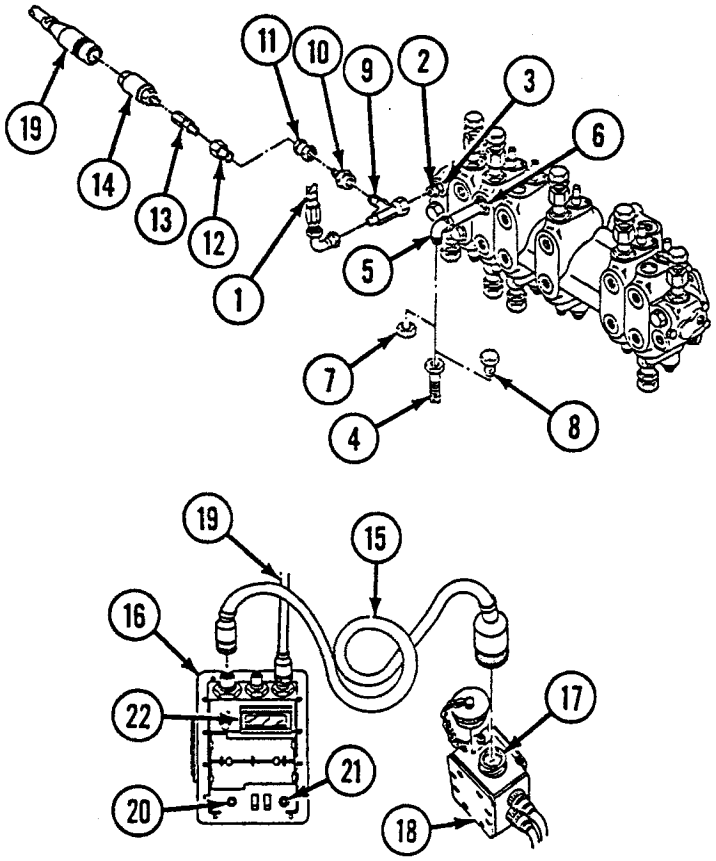
Have suitable container ready to catch oil.

A Disconnect CONT VLV-13R hose (1) from adapter (2) at 13R port (3).

B Disconnect CONT VLV-19 hose (4) from elbow (5) at port 19 (6), install MS51532-B8 cap (7) on elbow (5) and MS51518-B8 plug (8) on hose (4).

C Install 203102-12-12S tee (9), 221501-12-8S reducer (10), 2242-8-8S adapter (11), 2081-8-4S bushing (12), 4-4F6BX-S adapter (13), and transducer (14) on adapter (2). Connect CONT VLV-13R hose (1) to tee (9).

D Connect W1 cable (15) to VTM (16) and to DCA receptacle (17) of STE/ICE-R interface resistor box (18).



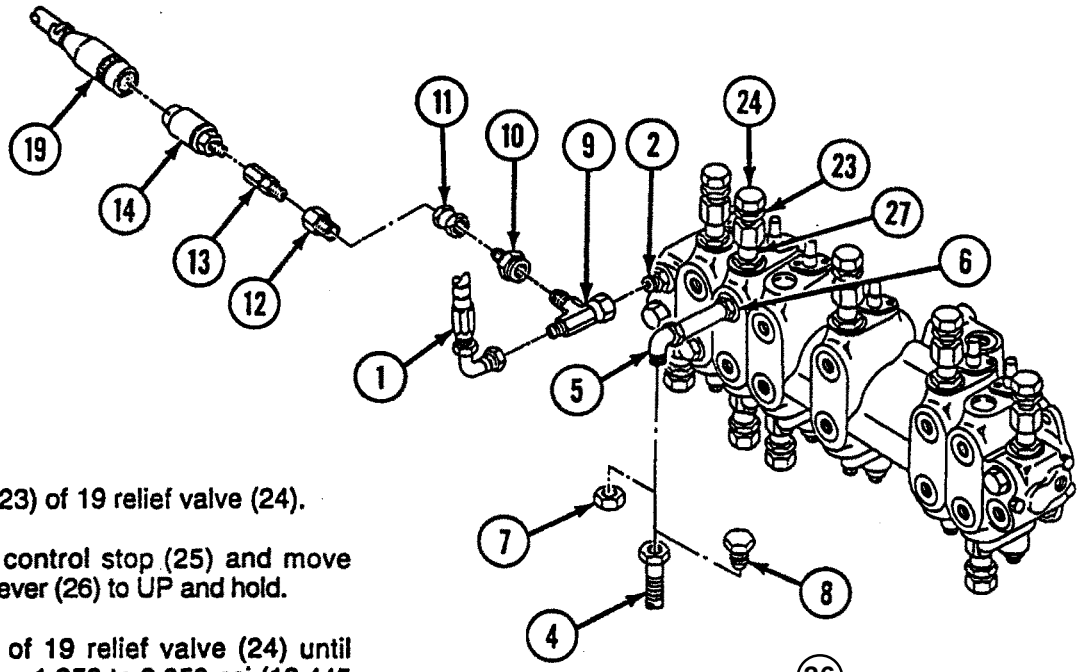
E Connect W4 cable (19) to VTM (16) and to transducer (14).

F Push ON/OFF button (20) on VTM (16) and perform confidence test (p 3-18).

G Dial in Test 51 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CAL" appears on display (22). Release TEST button (21). Value that appears on display (22) should be between +450 and -450. If the value on display (22) is not within offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

H Start vehicle engine (TM 5-2350-262-10) and pressurize hydraulic system.

I Dial in 01 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CON" appears on display (22). Release TEST button (21). Dial in TEST 51 on VTM (16). Press and release TEST button (21). VTM (16) should now alternately display pressure and rpm.



J Loosen jamnut (23) of 19 relief valve (24).

K Release apron control stop (25) and move APRON control lever (26) to UP and hold.

L Turn shaft (27) of 19 relief valve (24) until VTM (16) displays 1,950 to 2,050 psi (13,445 to 14,135 kPa) at 750 to 850 rpm and lock shaft (27) with jamnut (23).

M Release APRON control lever (26) and lock in position with apron control stop (25). Stop vehicle engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 2-27).

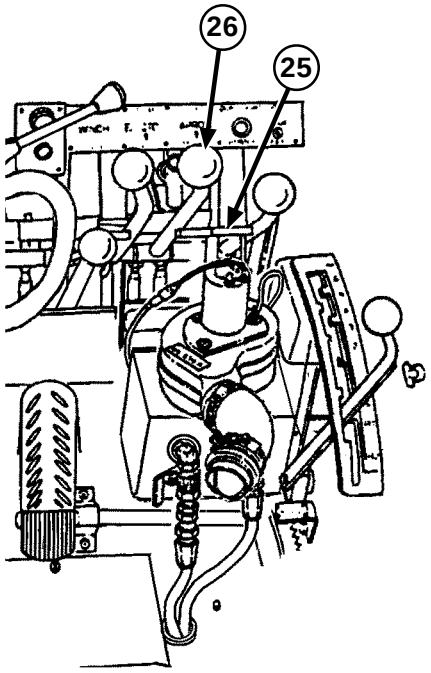
N Remove cap (7) from elbow (5) at 19 port (6) and remove plug (8) from hose (4). Connect CONT VLV-19 hose (4) to elbow (5).

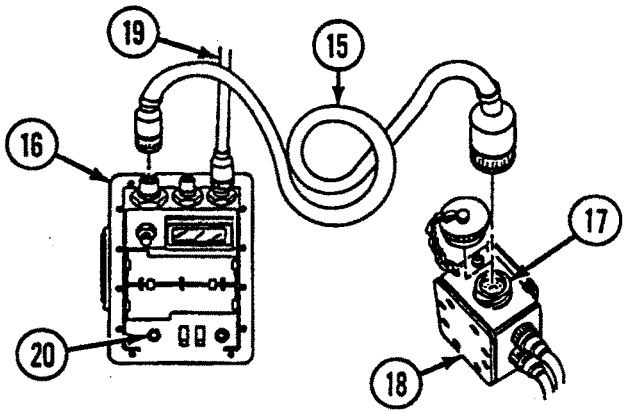
Note

Do not perform steps O and P if relief valve 3L, 13R, 20, or 24 require adjustment.

O Pull ON/OFF button (20) of VTM (16). Disconnect W1 cable (15) from VTM (16) and DCA receptacle (17) of STE/ICE-R interface resistor box (18). Disconnect W4 cable (19) from VTM (16) and transducer (14).

P Remove transducer (14), adapter (13), bushing (12), adapter (11), reducer (10), hose (1), and tee (9) from adapter (2). Connect CONT VLV-13R hose (1) to adapter (2).





FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

APRON LOWER RELIEF VALVE (20) ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

6685-01-193-1733 Transducer

Special Tools:

Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Caps and Plugs	Item 7 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

TM 9-4910-571-12&P

Troubleshooting Reference:

TM 5-2350-262-20-3	Apron Will Not Raise
TM 5-2350-262-20-3	Ejector Creeps

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not discon-nect any hydraulic system com-ponent unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or work-ing in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

ADJUSTMENT

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

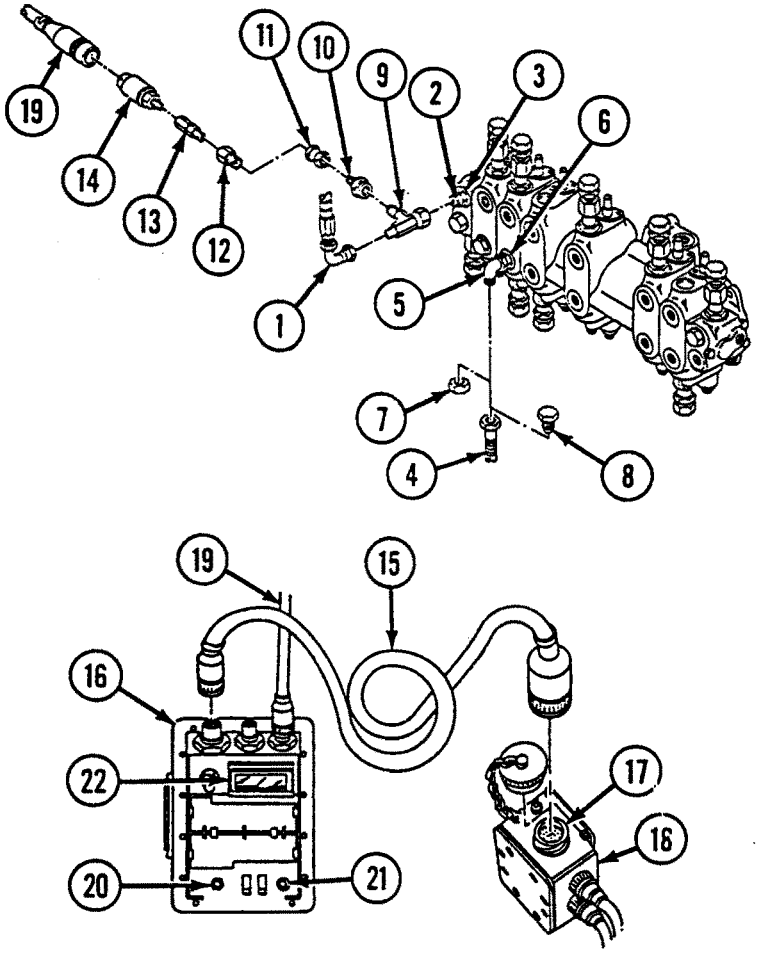
Have suitable container ready to catch oil.

A Disconnect CONT VLV-13R hose (1) from adapter (2) at 13R port (3).

B Disconnect CONT VLV-20 hose (4) from elbow (5) at 20 port (6), install MS51532-B8 cap (7) on elbow (5) and MS51518-B8 plug (8) on hose (4).

C Install 203102-12-12S tee (9), 221501-12-8S reducer (10), 2242-8-8S adapter (11), 2081-8-4S bushing (12), 4-4F6BX-S adapter (13), and transducer (14) on adapter (2). Connect CONT VLV-13R hose (1) to tee (9).

D Connect W1 cable (15) to VTM (16) and to DCA receptacle (17) of STE/ICE-R interface resistor box (18).



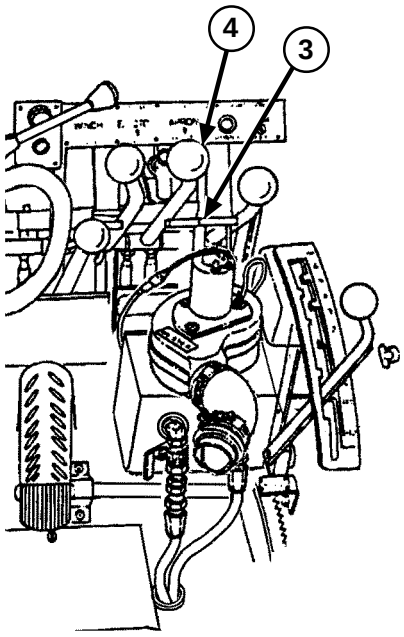
E Connect W4 cable (19) to VTM (16) and to transducer (14).

F Push ON/OFF button (20) on VTM (16) and perform confidence test (p 3-18).

G Dial in Test 51 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CAL" appears on display (22). Release TEST button (21). Value that appears on display (22) should be between +450 and -450. If the value on display (22) is not within offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

H Start vehicle engine (TM 5-2350-262-10) and pressurize hydraulic system.

I Dial in 01 on VTM (16). Press and hold TEST button (21) on VTM (16) until "CON" appears on display (22). Release TEST button (21). Dial in TEST 51 on VTM (16). Press and release TEST button (21). VTM (16) should now alternately display pressure and rpm.



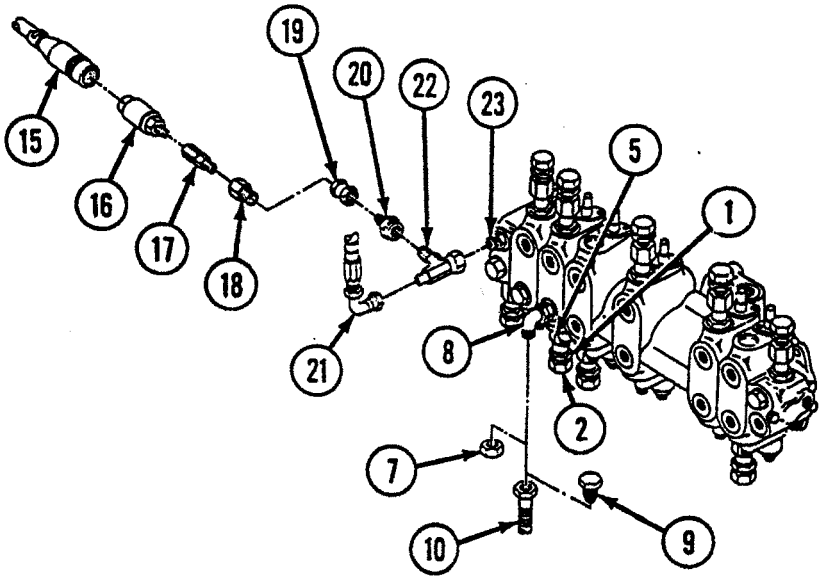
J Loosen jamnut (1) of 20 relief valve (2).

K Release apron control stop (3) and move APRON control lever (4) to UP and hold.

L Turn shaft (5) of 20 relief valve (2) until VTM (6) displays 1,950 to 2,050 psi (13,445 to 14,135 kPa) at 750 to 850 rpm and lock shaft (5) with jamnut (1).

M Release APRON control lever (4) and lock in position with apron control stop (3). Stop vehicle engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 2-27).

N Remove cap (7) from elbow (8) of 20 relief valve (2). Remove plug (9) from hose (10). Connect CONT VLV-20 hose (10) to elbow (8).

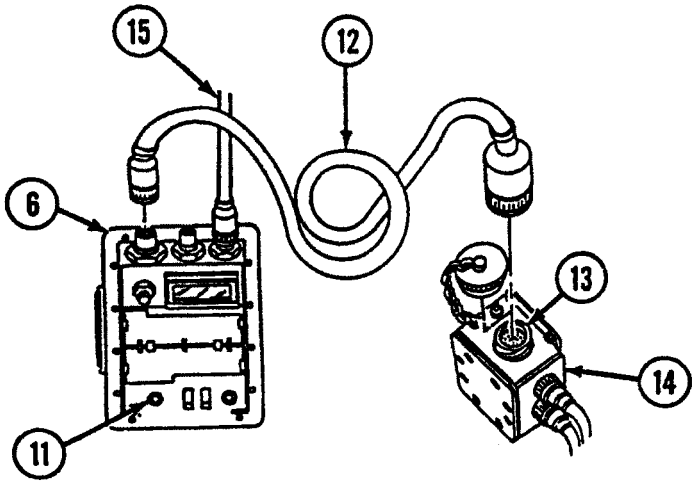


Note

Do not perform steps O and P if relief valves 3L, 13R, 19, or 24 require adjustment.

O Pull ON/OFF button (11) of VTM (6). Disconnect W1 cable (12) from VTM (6) and DCA receptacle (13) of STE/ICE-R interface resistor box (14). Disconnect W4 cable (15) from VTM (6) and transducer (16).

P Remove transducer (16), adapter (17), bushing (18), adapter (19), reducer (20), hose (21), and tee (22) from adapter (23). Connect CONT VLV-13R hose (21) to adapter (23).



FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

SPRUNG/UNSPRUNG VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Locknut (4)

Packing (5)

Cotter Pin

Parts Reference:

TM 5-2350-262-24P	Group AR

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	Front Corner (Left or Right) Raises in UNSPRUNG, But Not in SPRUNG
TM 5-2350-262-20-3	Hydraulic Oil Overheats
TM 5-2350-262-20-3	Suspension Does Not Raise Vehicle in SPRUNG Mode

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-20-1	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- High pressure is present in the M9 hydraulic system. Do not dis-connect any hydraulic system component unless hydraulic system pressure has been relieved.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

- Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.
- Do not bend tubes. If necessary, remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.

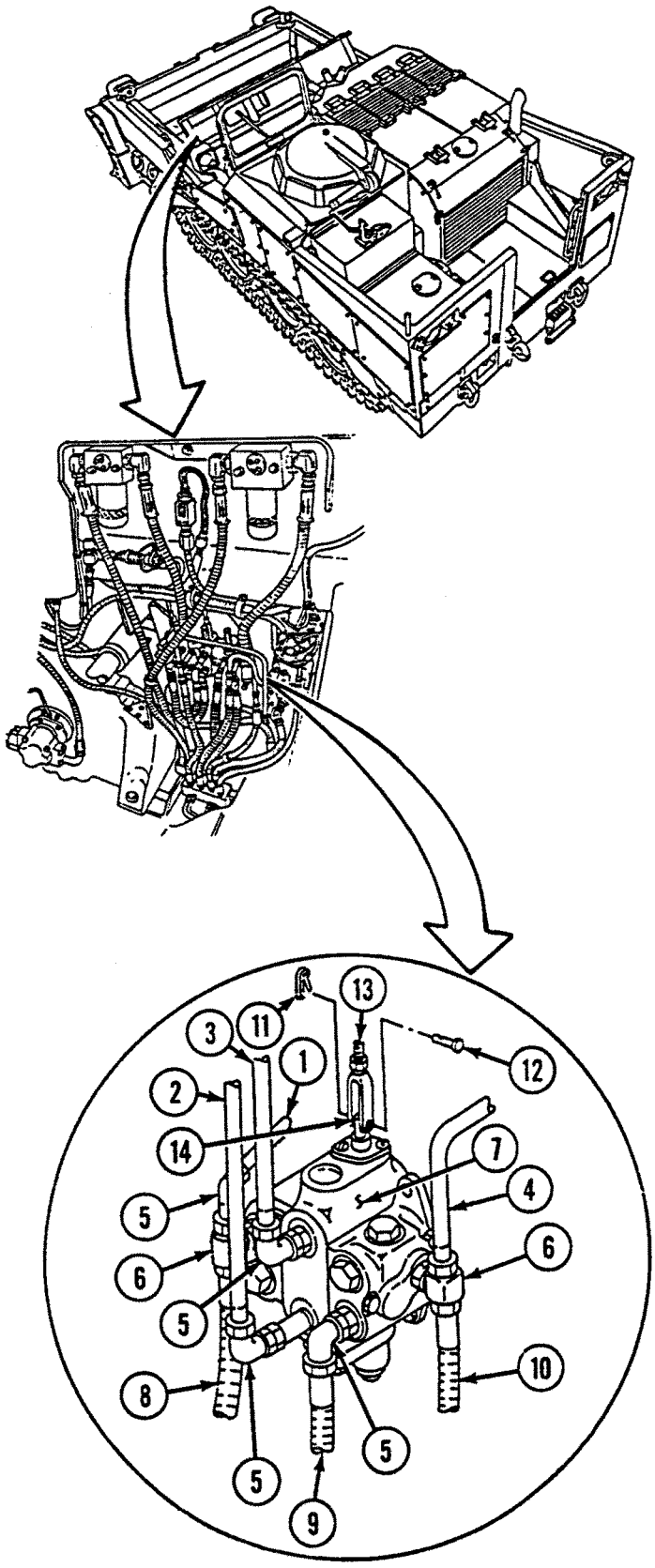
Note

Have suitable container ready to catch oil.

A Disconnect hose (1) and tubes (2), (3), and (4) from three elbows (5) and tee (6) at SPRUNG/UNSPRUNG valve (7).

B Disconnect hoses (8), (9), and (10) from elbow (5) and two tees (6) at SPRUNG/ UNSPRUNG valve (7).

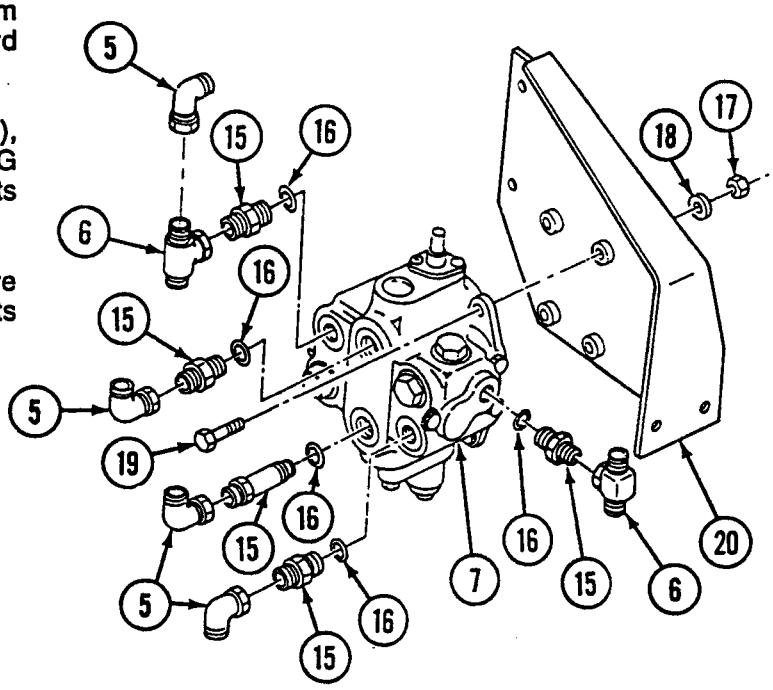
C Remove cotter pin (11), straight pin (12), and clevis (13) from plunger (14). Discard cotter pin (11).



D Remove two tees (6), four elbows (5), five adapters (15), and packings (16) from SPRUNG/UNSPRUNG valve (7). Discard packings (16).

E Remove four locknuts (17), washers (18), screws (19), and SPRUNG/UNSPRUNG valve (7) from bracket (20). Discard locknuts (17).

F Drain oil from SPRUNG/UNSPRUNG valve (7) and install protective plugs on open ports of SPRUNG/UNSPRUNG valve (7).



INSTALLATION

Note

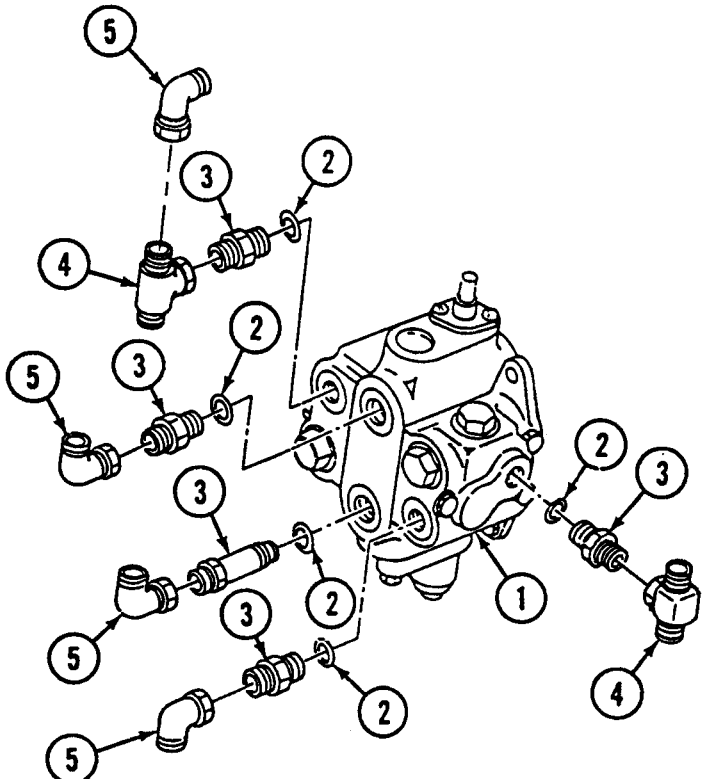
- Apply lubricating oil to packings prior to installation.
- Hydraulic lines and fittings can leak if not properly installed or tightened. Observe correct installation and tightening procedures (p 2-35). Discard any packings that are cut or nicked. Discard any fittings that have damaged threads or seats.

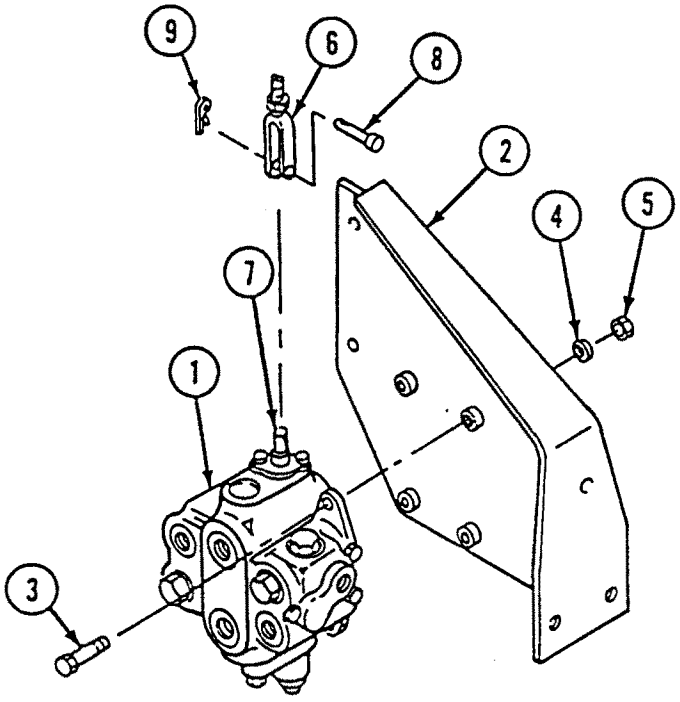
A Remove protective plugs from ports of SPRUNG/UNSPRUNG valve (1).

Note

Ensure elbows and tees align with hose and tubes to be connected before tightening to specified torque.

B Install five packings (2), adapters (3), two tees (4), and four elbows (5) on SPRUNG/UNSPRUNG valve (1). Tighten tees (4) and elbows (5) to 37-41 lb-ft (50-56 N·m).





Note

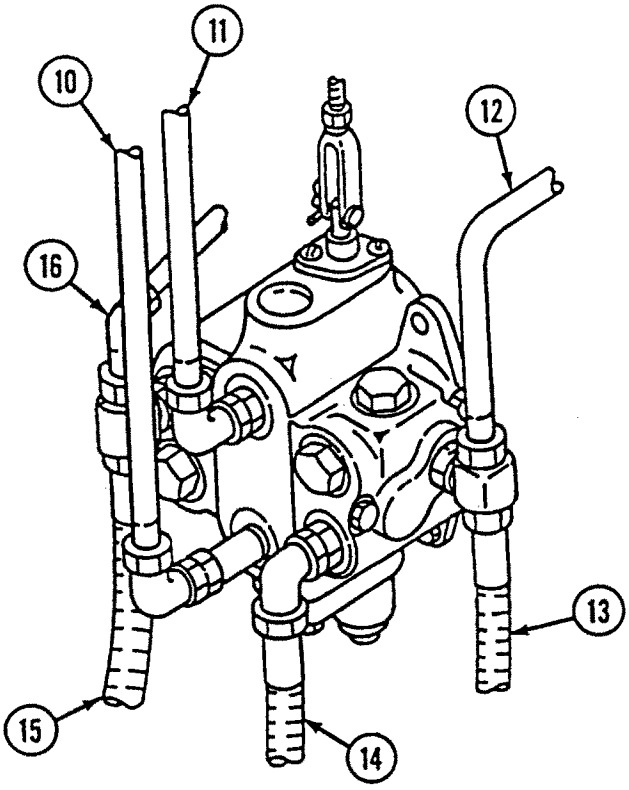
Apply lubricating oil to threads of screws prior to installation.

C Install SPRUNG/UNSPRUNG valve (1) on bracket (2) with four screws (3), washers (4), and locknuts (5).

D Connect clevis (6) to plunger (7) with straight pin (8) and cotter pin (9).

E Connect tubes and hoses as follows:

NO.	PORT	MARKER BAND
Tubes:		
10	17L	SPR-UNSPR VLV-17L
11	17R	SPR-UNSPR VLV-17R
12	7	SPR-UNSPR VLV-7 TEE
Hoses:		
13	7	SPR-UNSPR VLV-7 TEE
14	9	SPR-UNSPR VLV-9
15	11	SPR-UNSPR VLV-11 TEE
16	11	SPR-UNSPR VLV-11 TEE



FOLLOW-ON TASKS:

- Service hydraulic tank (TM 5-2350-262-10).
- Adjust SPRUNG/UNSPRUNG hydraulic control lever (p 4-398).
- Retract ejector (TM 5-2350-262-10).

Section XIII. GROUP AU, POWERTRAIN INSTALLATION

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Cooling System Service	4-646
Cooling System Tubes, Hoses, Clamps, and Fittings Replacement	4-581
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Deleted	
Drive Sprocket and Hub Replacement	4-758.1
Engine Oil Cooler Bypass Tube Replacement	4-571
Engine Crankcase Drain and Fill	4-570.1
Engine Oil Filter Assembly Replacement and Repair	4-626
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TASK **PAGE**

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Water Pump/Alternator Belt and Tensioner Replacement 4-596
Water Pump Replacement 4-598

ALTERNATOR AND REGULATOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Strap Wrench 5120-01-334-9858

Parts:

Locknut (7)

Lockwasher (25)

Parts Reference:

TM5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-299	BATTERY-GENERATOR Gauge Indicates Low or No Voltage When Engine is Running

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Removed
Page 4-587	Transmission Oil Cooler Removed
Page 4-597	Water Pump/ Alternator Belts and Tensioner Removed
Page 4-555	Support Rods Removed

REMOVAL

Note

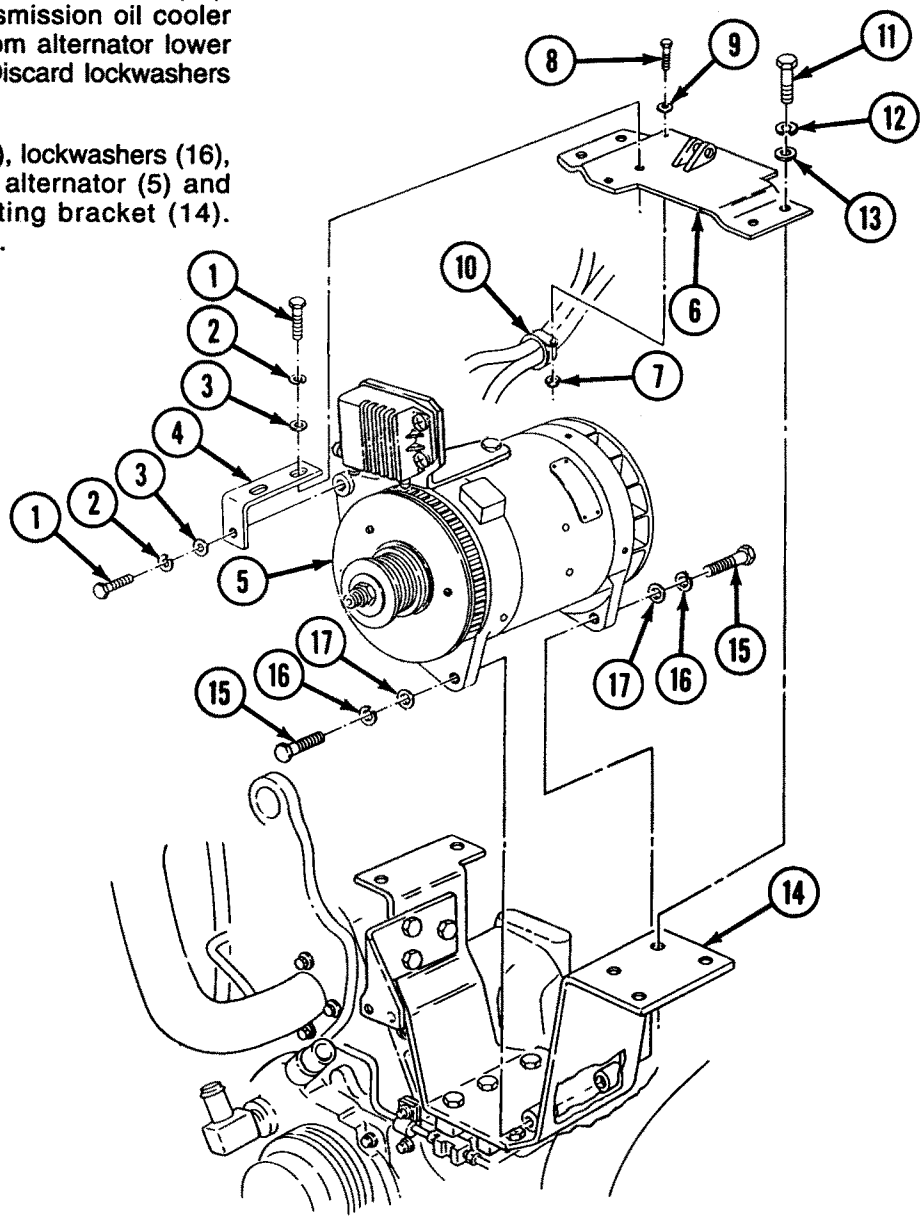
Tag all electrical leads prior to removal for installation.

A Remove three screws (1), lockwashers (2), washers (3), and alternator upper mounting bracket (4) from alternator (5) and transmission oil cooler mounting bracket (6). Discard lockwashers (2).

B Remove locknut (7), screw (8), and washer (9) from clamp (10) and oil cooler mounting bracket (6). Discard locknut (7).

C Remove two screws (11), lockwashers (12), washers (13), and transmission oil cooler mounting bracket (6) from alternator lower mounting bracket (14). Discard lockwashers (12).

D Remove two screws (15), lockwashers (16), and washers (17) from alternator (5) and alternator lower mounting bracket (14). Discard lockwashers (16).

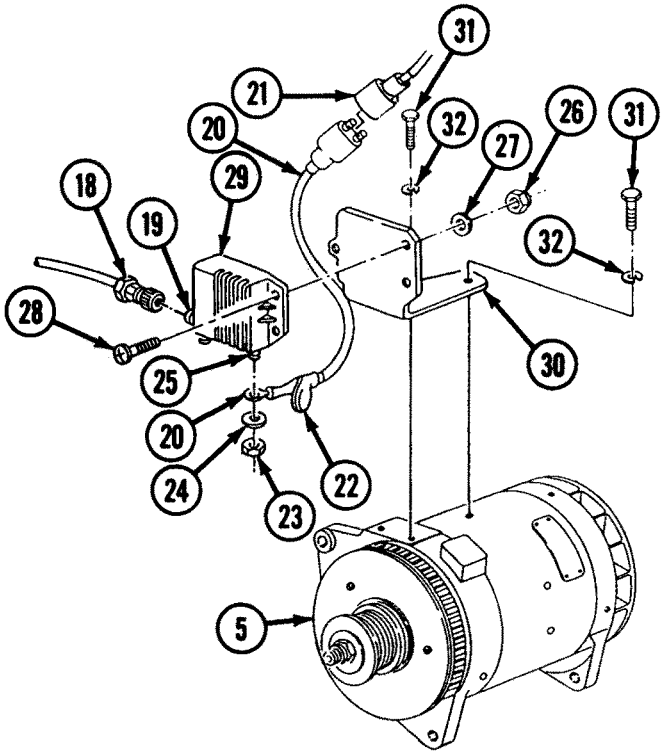


E Disconnect electrical connector (18) from regulator receptacle (19).

F Disconnect electrical lead (20) from connector (21), slide boot (22) back from nut (23), and remove nut (23), washer (24), and electrical lead (20) from regulator terminal (25).

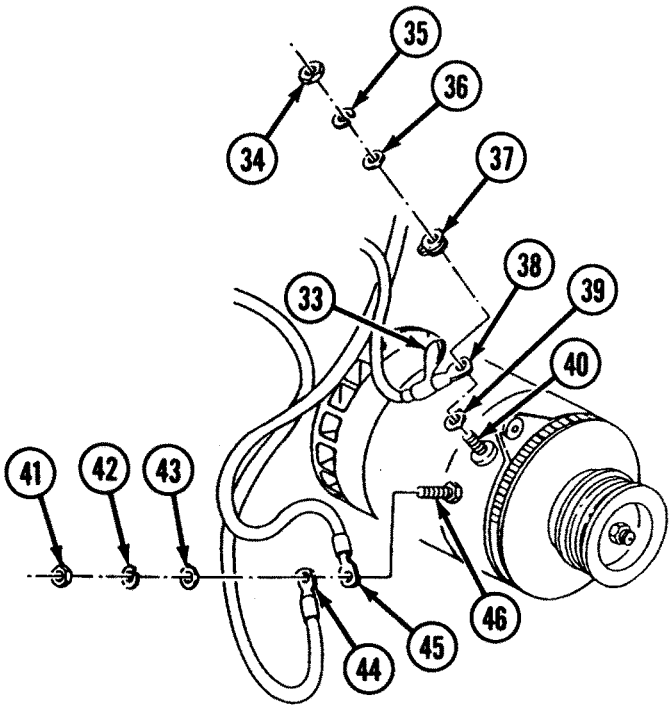
G Remove three locknuts (26), washers (27), screws (28), and regulator (29) from regulator mounting bracket (30). Discard locknuts (26).

H Remove three screws (31), lockwashers (32), and regulator mounting bracket (30) from alternator (5). Discard lockwashers (32).



I Slide boot (33) back from nut (34), and remove nut (34), lockwasher (35), washer (36), fuselink (37), positive lead (38), and washer (39) from alternator positive terminal (40). Discard lockwasher (35).

J Remove nut (41), lockwasher (42), washer (43), ground wire (44), and alternator ground lead (45) from alternator ground terminal (46). Discard lockwasher (42).



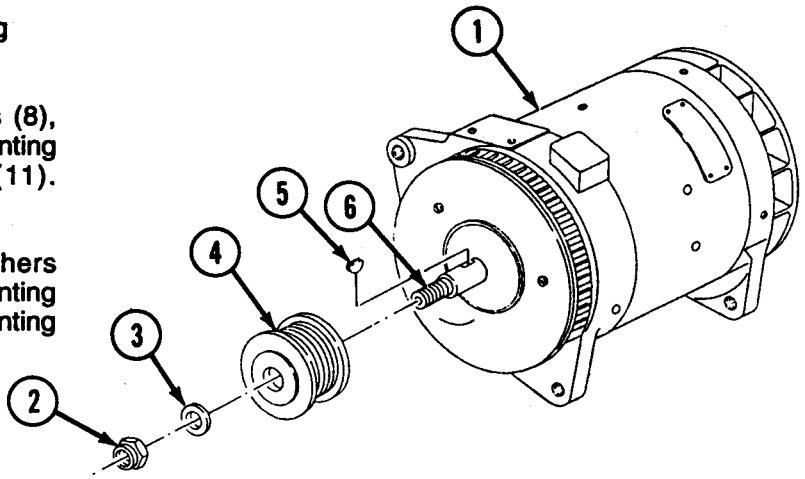
K Remove alternator (1) from vehicle, and using strap wrench, remove nut (2), washer (3), pulley (4), and woodruff key (5) from alternator shaft (6).

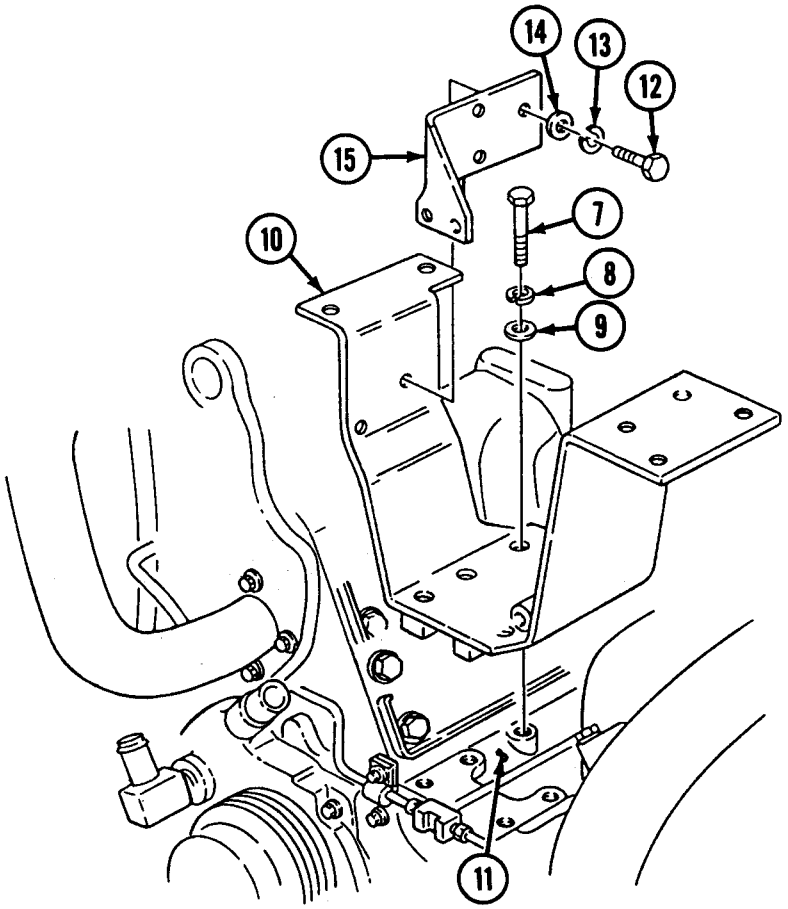
Note

If replacing alternator lower mounting bracket, perform steps L and M.

L Remove six screws (7), lockwashers (8), washers (9), and alternator lower mounting bracket (10) from cylinder block (11). Discard lockwashers (8).

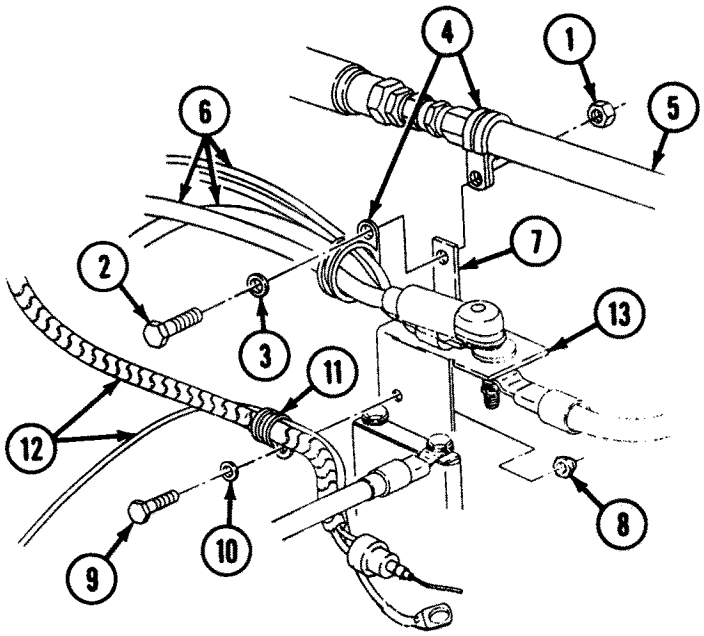
M Remove three screws (12), lockwashers (13), washers (14), and tensioner mounting bracket (15) from alternator lower mounting bracket (10). Discard lockwashers (13).

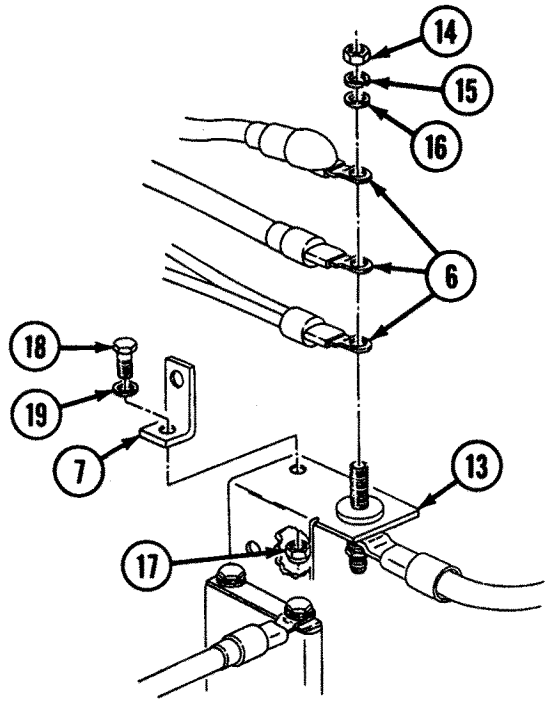




N Remove locknut (16), screw (17), washer (18), and two clamps (19) securing fuel supply hose (20) and three leads (21) to bracket (22). Discard locknut (16).

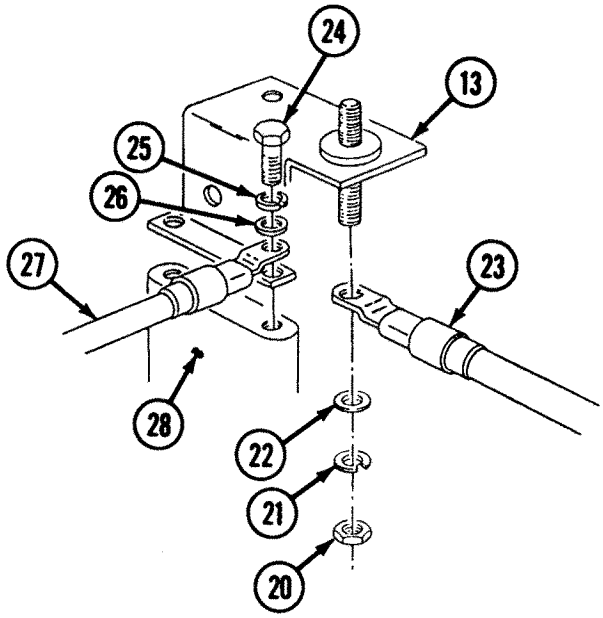
O Remove locknut (23), screw (24), washer (25), and clamp (26) securing two leads (27) to terminal bracket (28). Discard locknut (23).





P Remove nut (29), lockwasher (30), washer (31), and three leads (21) from terminal bracket (28). Discard lockwasher (30).

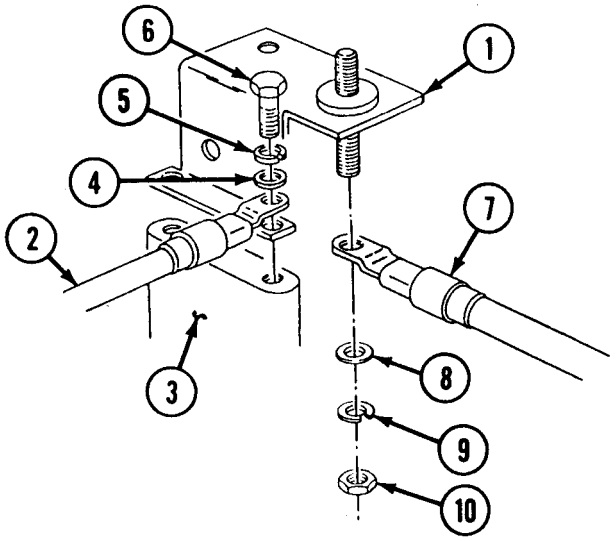
Q Remove locknut (32), screw (33), washer (34), and bracket (22) from terminal bracket (28). Discard locknut (32).



R Remove nut (35), lockwasher (36), washer (37), and lead (38) from terminal bracket (28). Discard lockwasher (36).

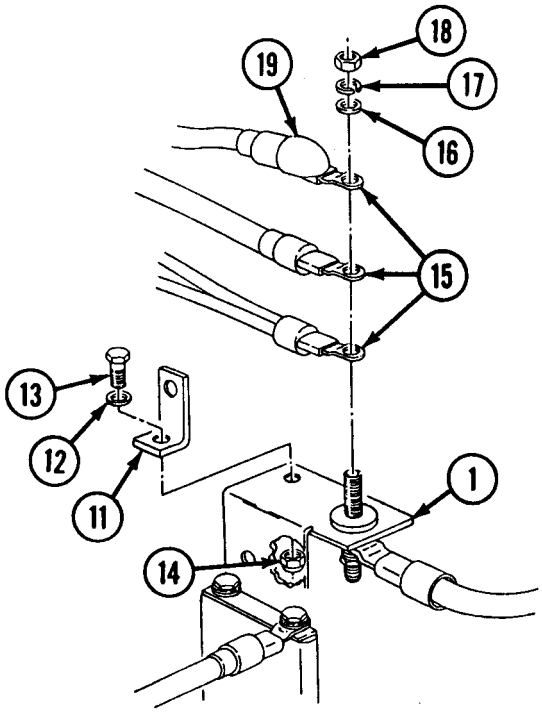
S Remove two screws (39), lockwashers (40), washers (41), lead (42), and terminal bracket (28) from intake manifold (43). Discard lockwashers (40).

INSTALLATION



A Install terminal bracket (1) and ground 3 lead (2) on intake manifold (3) with two washers (4), lockwashers (5), and screws (6).

B Connect 2 lead (7) to lower lug of terminal bracket (1) with washer (8), lockwasher (9), and nut (10).

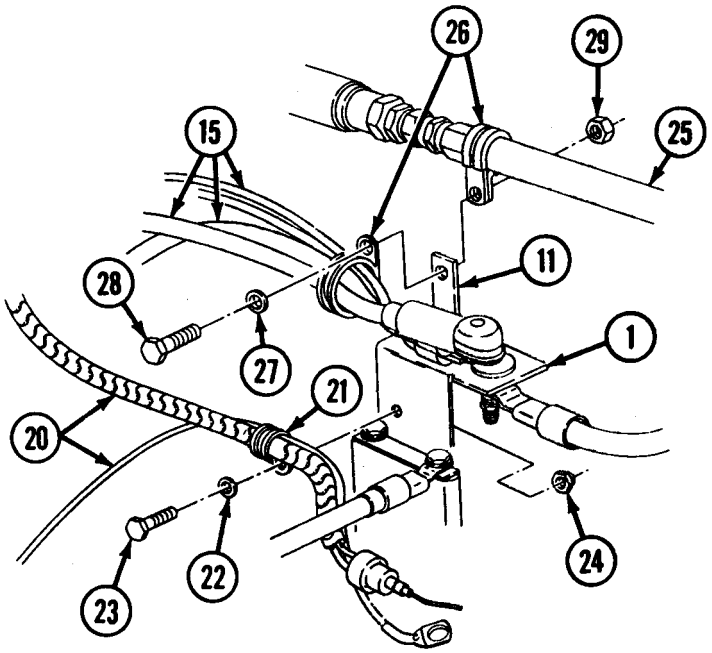


C Install bracket (11) on terminal bracket (1) with washer (12), screw (13), and locknut (14).

D Connect 770N/10/14D, 371, and 2A leads (15) to upper lug of terminal bracket (1) with washer (16), lockwasher (17), and nut (18). Slide boot (19) over nut (18).

E Secure 568/770Q and 770P leads (20) to terminal bracket (1) with clamp (21), washer (22), screw (23), and locknut (24).

F Secure fuel supply hose (25) and three leads (15) to bracket (11) with two clamps (26), washer (27), screw (28), and locknut (29).



Note

If replacing alternator lower mounting bracket, perform steps G and H.

G Install tensioner mounting bracket (30) on alternator lower mounting bracket (31) with three washers (32), lockwashers (33), and screws (34).

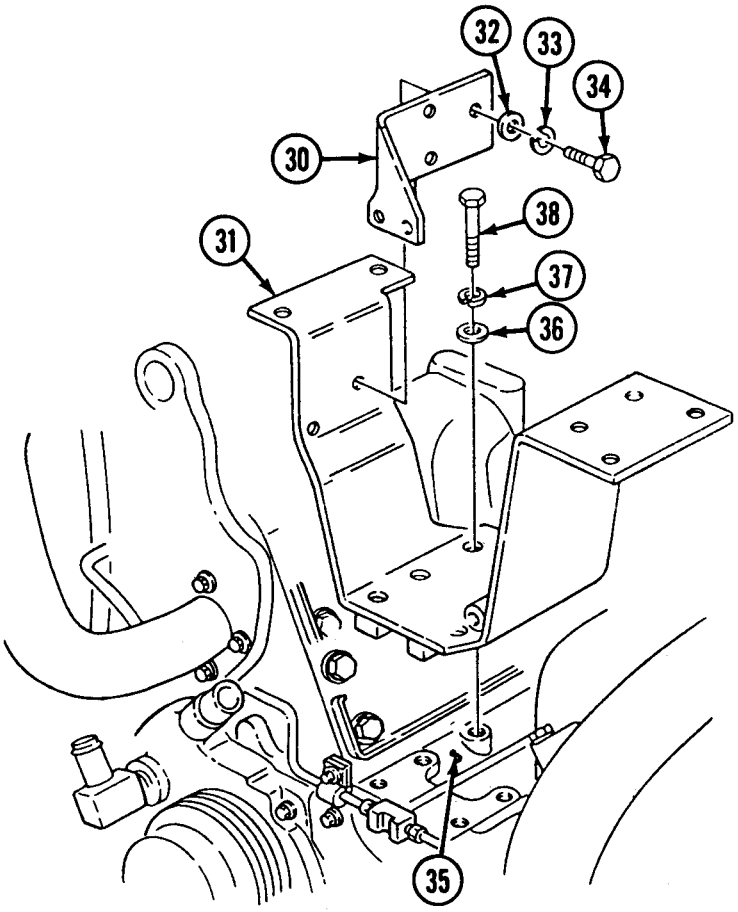
H Install alternator lower mounting bracket (31) on cylinder block (35) with six washers (36), lockwashers (37), and screws (38). Tighten screws (38) to 40 lb-ft (54 N·m).

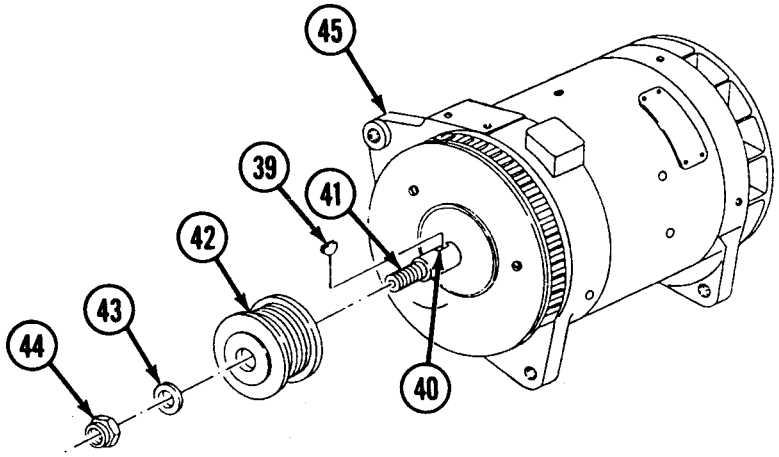
CAUTION

When tightening shaft nut against pulley, the pulley is to be held to prevent shaft rotation. Do not hold fan or nut. Failure to comply may result in damage to fan blades or shaft.

I Install woodruff key (39) on keyway (40) of alternator shaft (41), and install pulley (42) on alternator shaft (41) with washer (43) and nut (44). Using strap wrench, tighten nut (44) to 90-100 lb-ft (122-136 N·m).

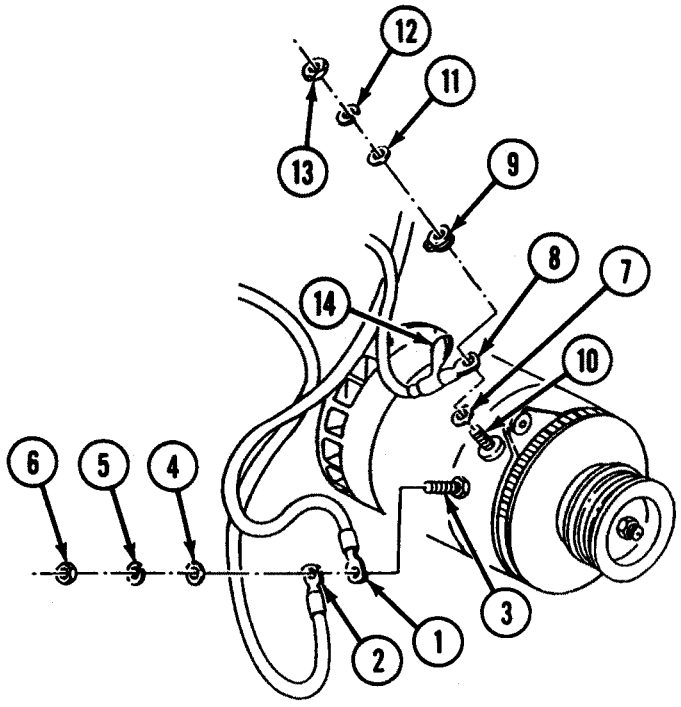
J Position alternator (45) on alternator lower mounting bracket (31).





K Connect #3 alternator ground lead (1) and 770P ground wire (2) to alternator ground terminal (3) with washer (4), lockwasher (5), and nut (6). Tighten nut (6) to 8-12 lb-ft (11-16 N·m).

L Install washer (7), #2 positive lead (8), and fuselink (9) on alternator positive terminal (10) with washer (11), lockwasher (12), and nut (13). Tighten nut (13) to 23-27 lb-in. (31-37 N·m). Slide boot (14) over nut (13).



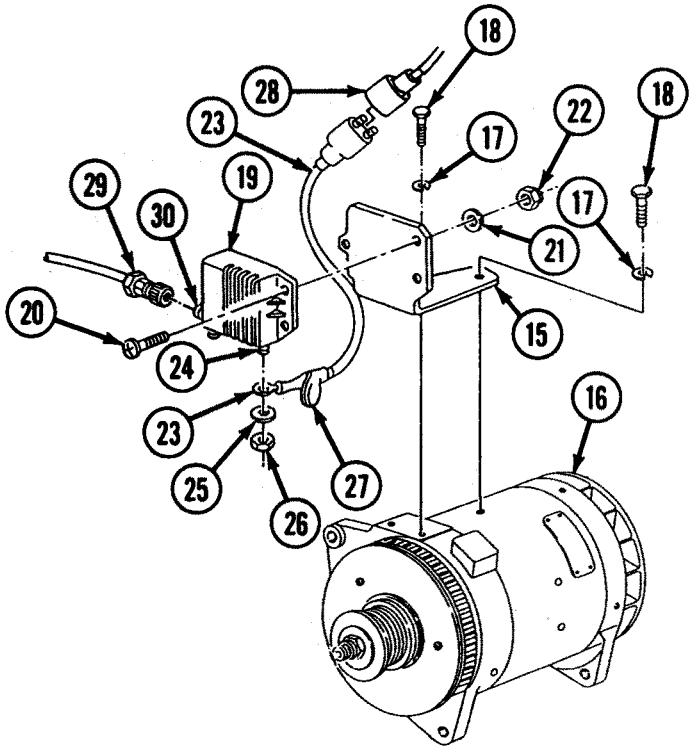
M Install regulator mounting bracket (15) on alternator (16) with three lockwashers (17) and screws (18).

N Install regulator (19) on regulator mounting bracket (15) with three screws (20), washers (21), and locknuts (22).

O Install 568/770Q electrical lead (23) on regulator field terminal (red) (24) with washer (25) and nut (26). Slide boot (27) over nut (26).

P Connect 568/770Q electrical lead (23) to connector (28).

Q Connect electrical connector (29) to regulator receptacle (30).



R Install alternator (16) on alternator lower mounting bracket (31) with two washers (32), lockwashers (33), and screws (34). Do not tighten screws (34).

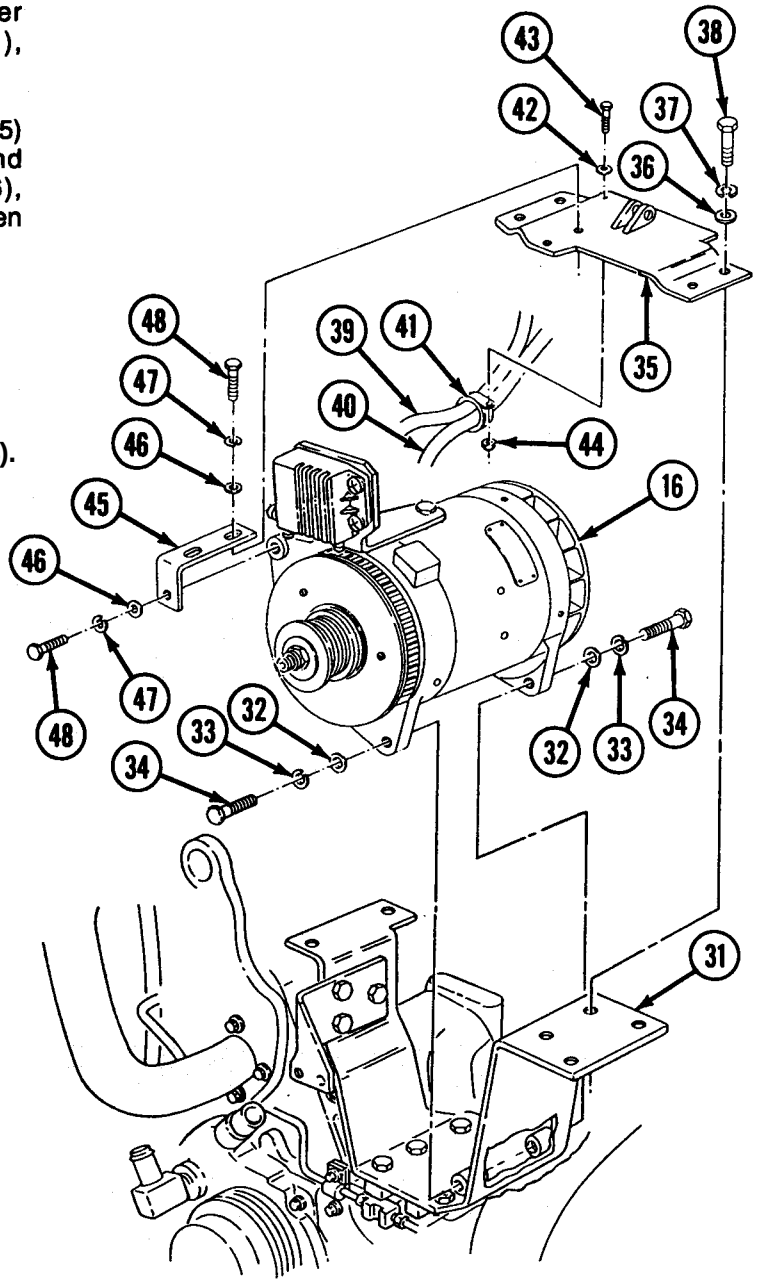
S Install transmission oil cooler mounting bracket (35) on alternator lower mounting bracket (31) with two washers (36), lockwashers (37), and screws (38).

T Secure leads (39) and (40) to oil cooler mounting bracket (35) with clamp (41), washer (42), screw (43), and locknut (44).

U Install alternator upper mounting bracket (45) on oil cooler mounting bracket (35) and alternator (16) with three washers (46), lockwashers (47), and screws (48). Tighten two screws (48).

FOLLOW-ON TASKS:

- Install support rods (p 4-556).
- Install transmission oil cooler (p 4-593).
- Install water pump/alternator belt and tensioner (p 4-597).
- Connect negative battery cables (p 4-84).



STARTER MOTOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Gasket

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference

Page 3-128	Engine Will Not Crank

Equipment Condition:

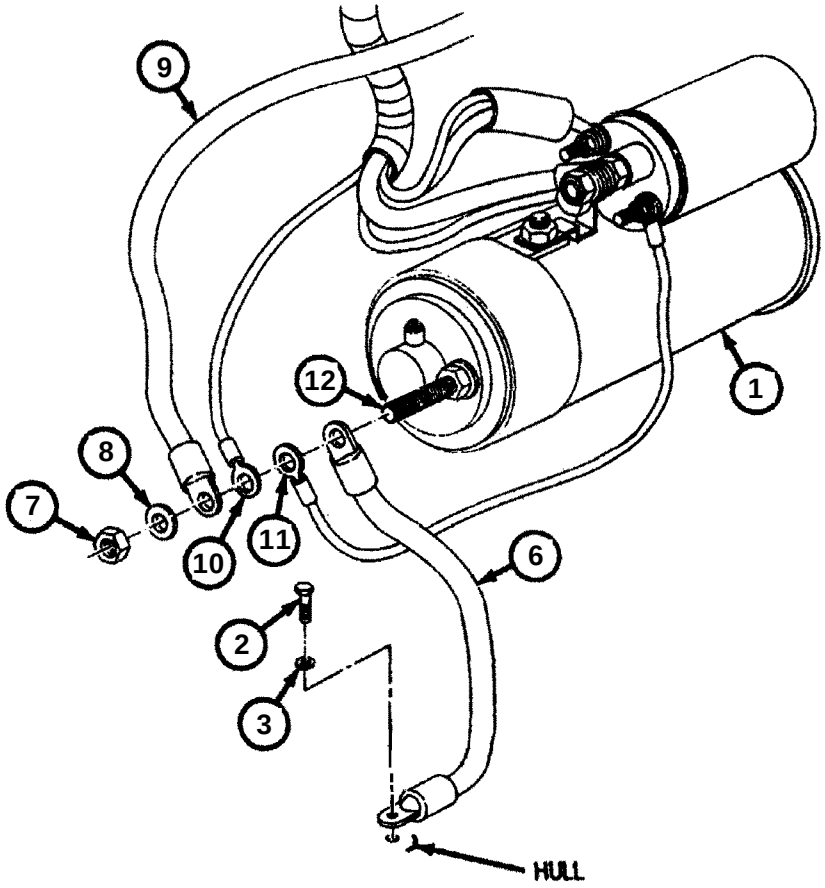
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles and Covers Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Hot engine and engine components can cause severe burns.

REMOVAL



WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.

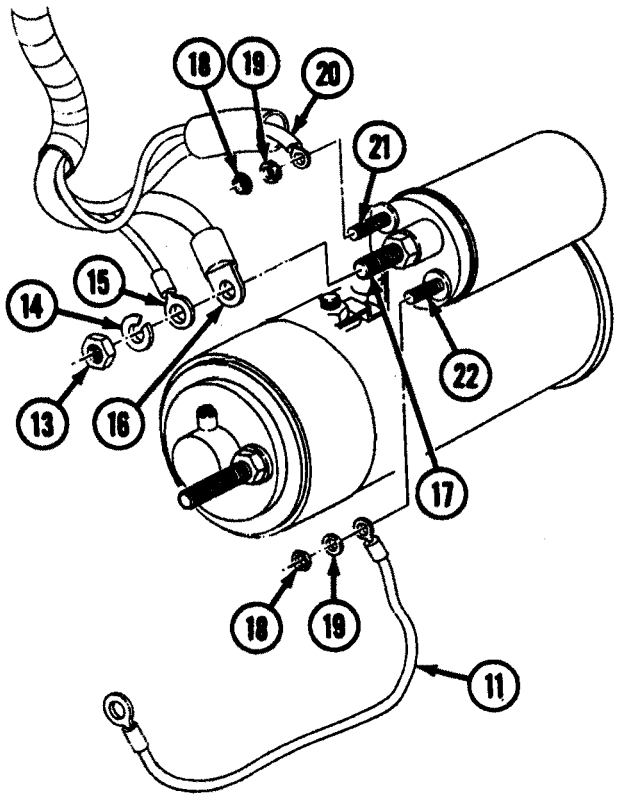
Note

- **Access to starter motor and starter motor electrical leads is through right side of engine compartment and through bowl area, near filter support.**
- **Tag electrical leads prior to removal for installation.**

A **Tie a rope or sling securely around starter motor (1). Route free end of rope or sling to top of engine compartment.**

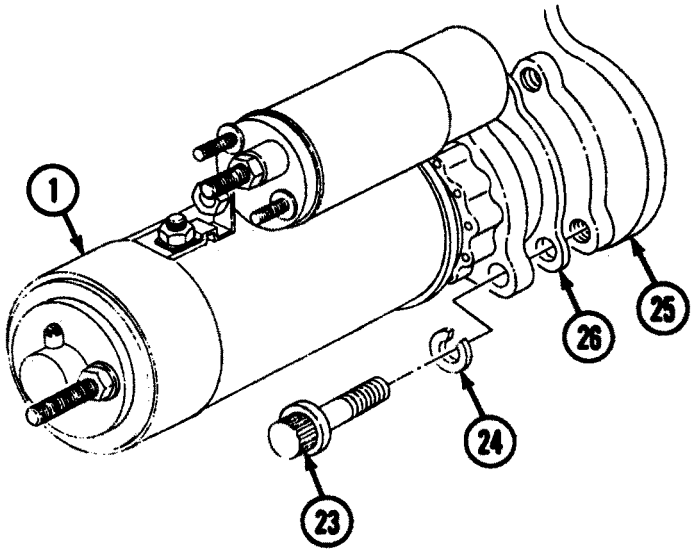
B Remove screw (2), washer (3), and ground wire (6) from hull.

C **Remove nut (7), washer (8), four ground wires (9), (10), (11), and (6) from ground terminal stud (12).**



D Remove nut (13), lockwasher (14), and leads (15) and (16), from terminal stud (17). Discard lockwasher (14).

E Remove two nuts (18), washers (19), lead (20), and ground lead (11) from terminal studs (21) and (22).



F Remove three screws (23) and lockwashers (24) from flywheel housing (25). Discard lockwashers (24).

Note

Helper will assist with steps G and H.

G Carefully remove starter motor (1) and gasket (26) from flywheel housing (25). Discard gasket (26).

H Using rope or sling to support starter motor (1), move starter motor (1) between exhaust manifold and hull, forward into bowl area.

INSTALLATION

A Install gasket (1) on starter motor mounting flange (2).

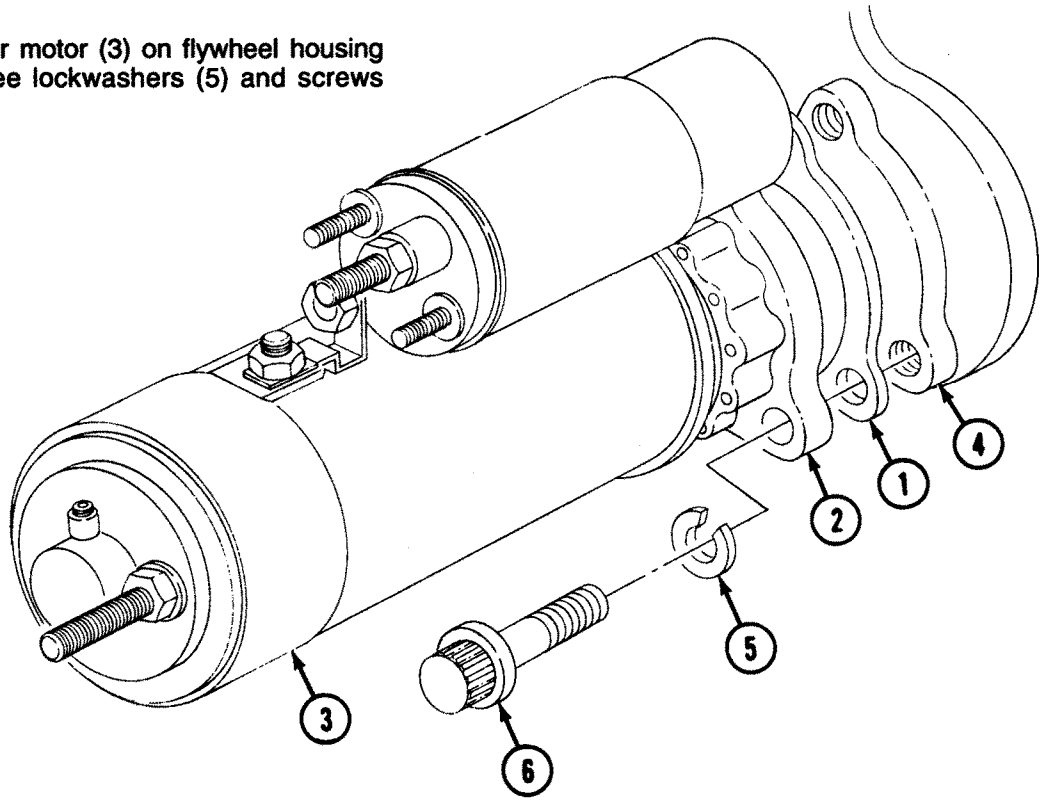
Note

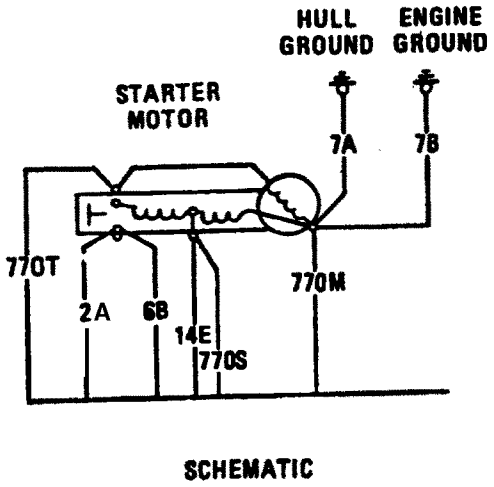
Helper will assist with steps B through D.

B Tie a rope or sling securely around starter motor (3) and place starter motor (3) on right sponson in bowl. Route rope or sling to top of engine compartment.

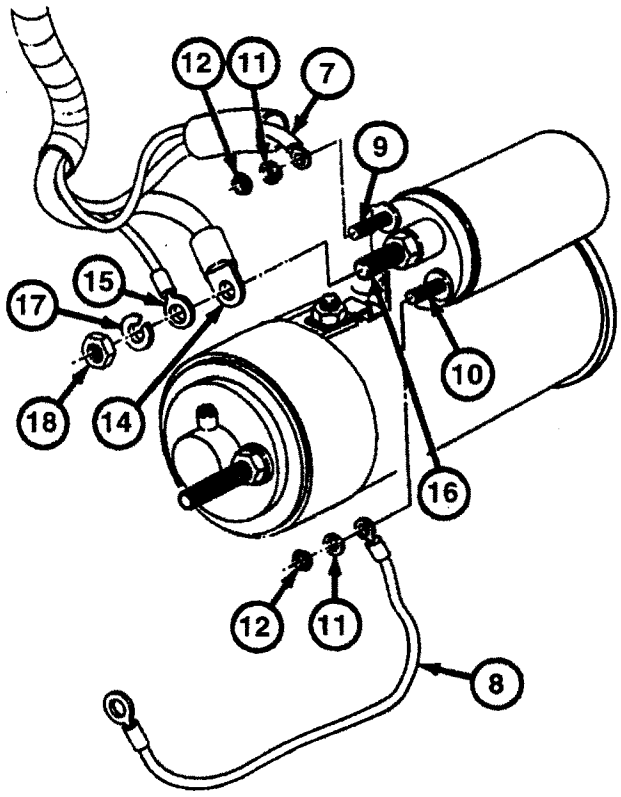
C Use rope or sling to help lift starter motor (3) into position on flywheel housing (4) by routing starter motor (3) between exhaust manifold and hull.

D Install starter motor (3) on flywheel housing (4) with three lockwashers (5) and screws (6).



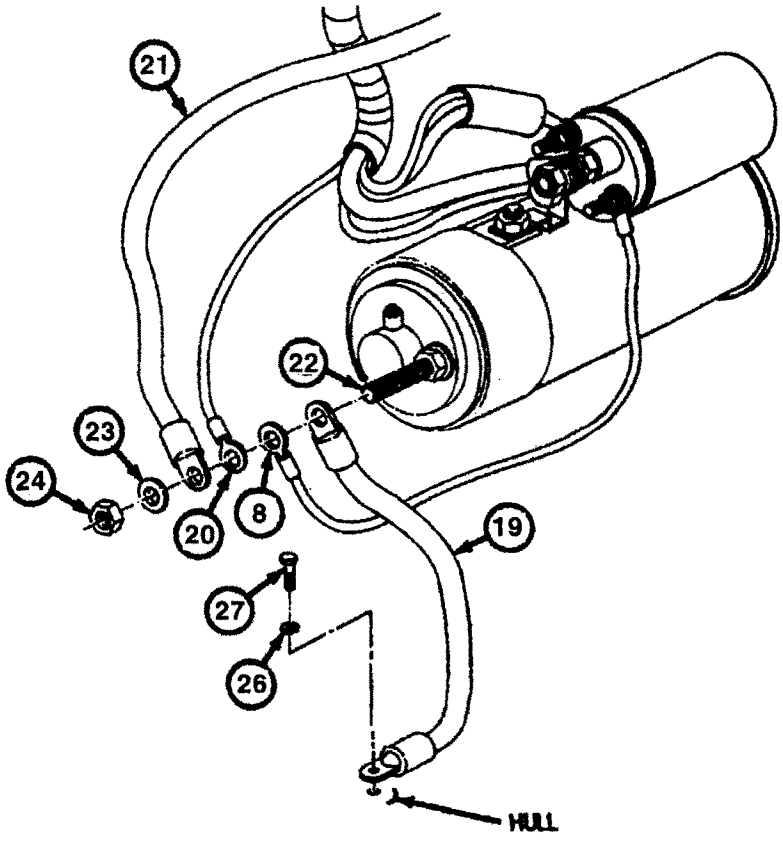


SCHEMATIC



E Connect 14E and 770S lead (7) and ground lead (8) to terminal studs (9) and (10) with two washers (11) and nuts (12).

F Connect circuit 6B lead (14), and 770T lead (15) to terminal stud (16) with lockwasher (17) and nut (18).



G Connect circuit 7A ground wire (19), ground wire (8), circuit 770M ground wire (20), and circuit 7B ground wire (21) to starter negative terminal (22) with washer (23) and nut (24).

H Install 7A ground lead (19) to hull with washer (26) and screw (27).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close engine intake grilles and covers (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

SUPPORT RODS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut

Self-locking Screw (3)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

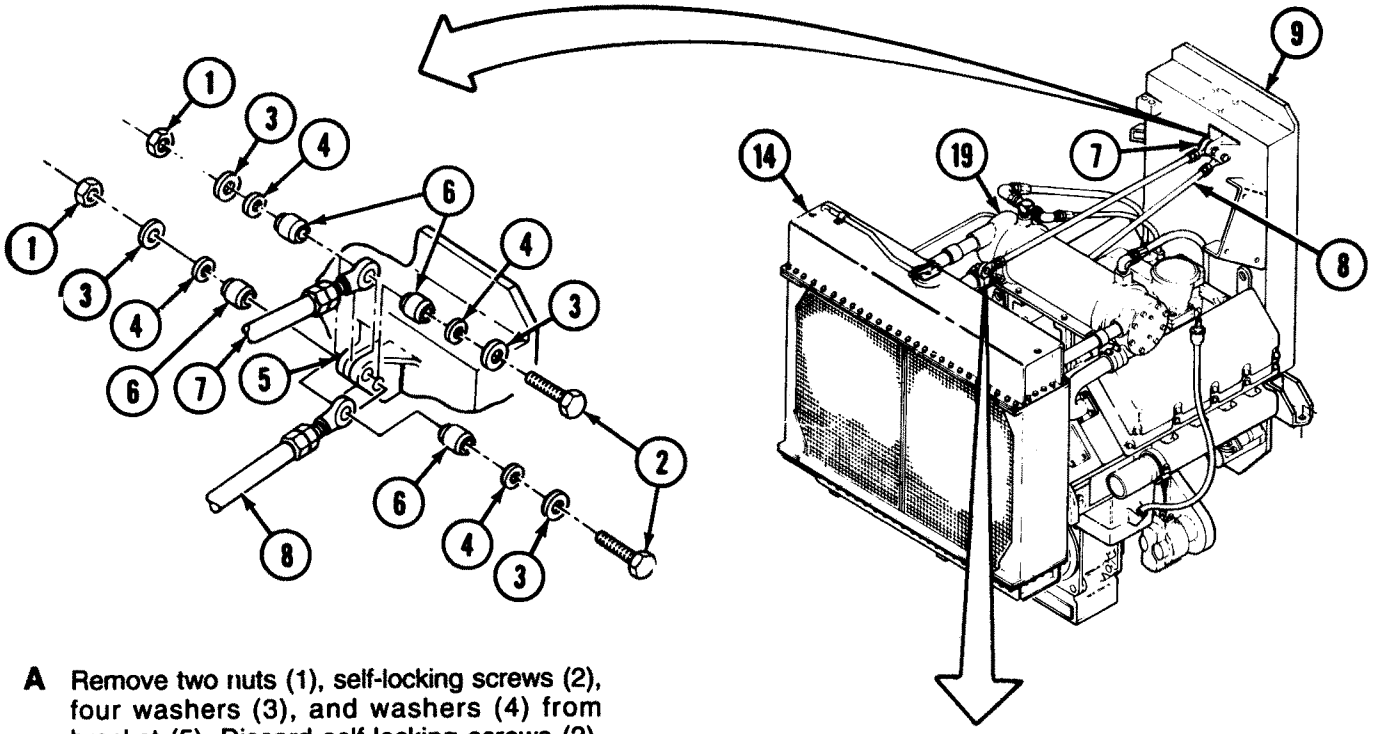
Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Covers Opened

REMOVAL



A Remove two nuts (1), self-locking screws (2), four washers (3), and washers (4) from bracket (5). Discard self-locking screws (2). Remove sleeve bushings (6), if damaged.

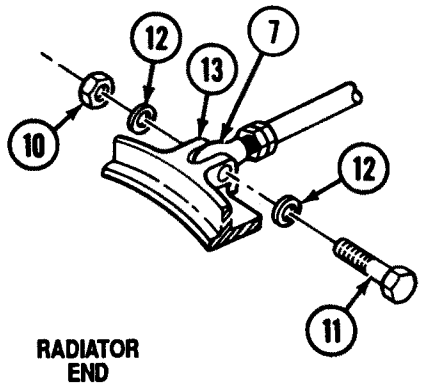
B Push ends of radiator support rod (7) and filter support rod (8) out of bracket (5) on filter support (9).

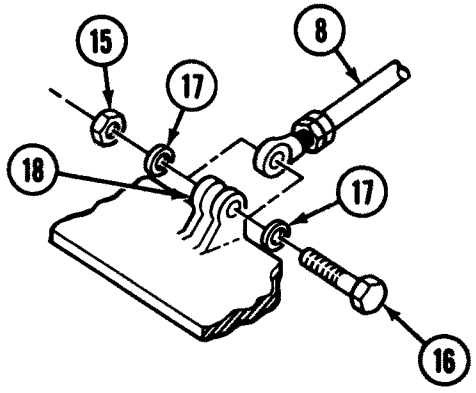
C Remove locknut (10), screw (11), and two washers (12) from bracket (13). Discard locknut (10).

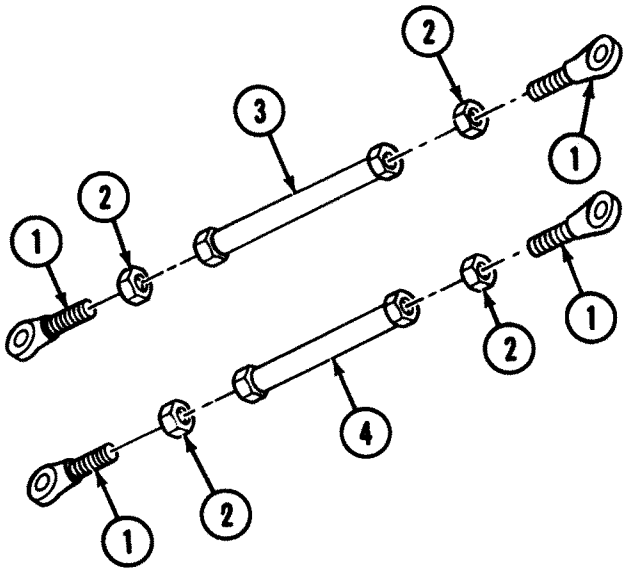
D Remove radiator support rod (7) from bracket (13) at radiator (14).

E Remove nut (15), self-locking screw (16), and two washers (17) from bracket (18). Discard self-locking screw (16).

F Remove filter support rod (8) from bracket (18) at transmission oil cooler (19).

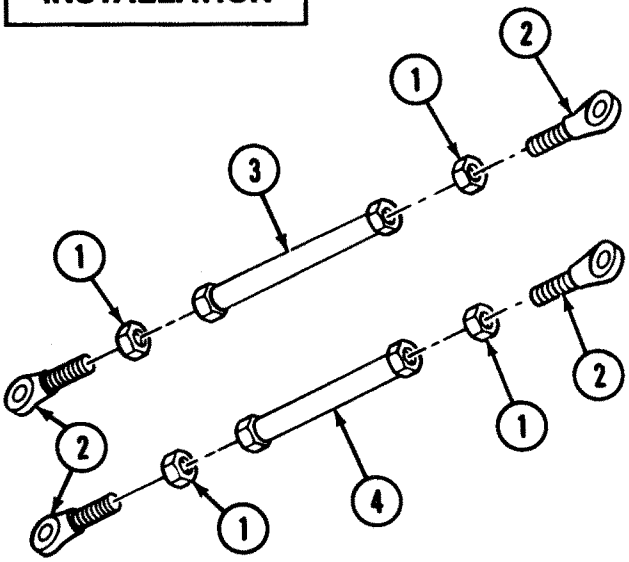






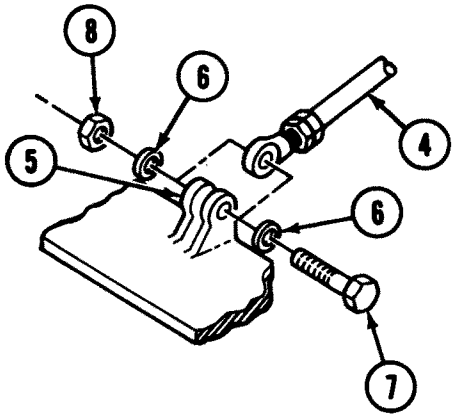
G Remove two rod bearings (1) and jamnuts (2) from each rod (3) and (4).

INSTALLATION

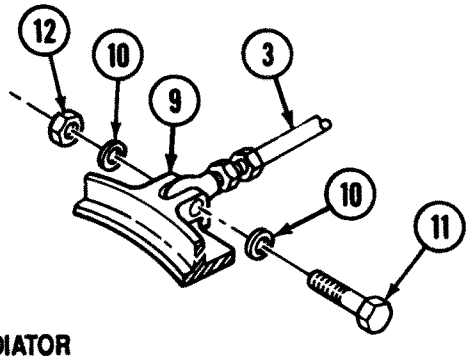


A Install four jamnuts (1) on rod bearings (2), and advance jamnuts (1) to ends of threads.

B Install two rod bearings (2) on radiator support rod (3) and filter support rod (4).

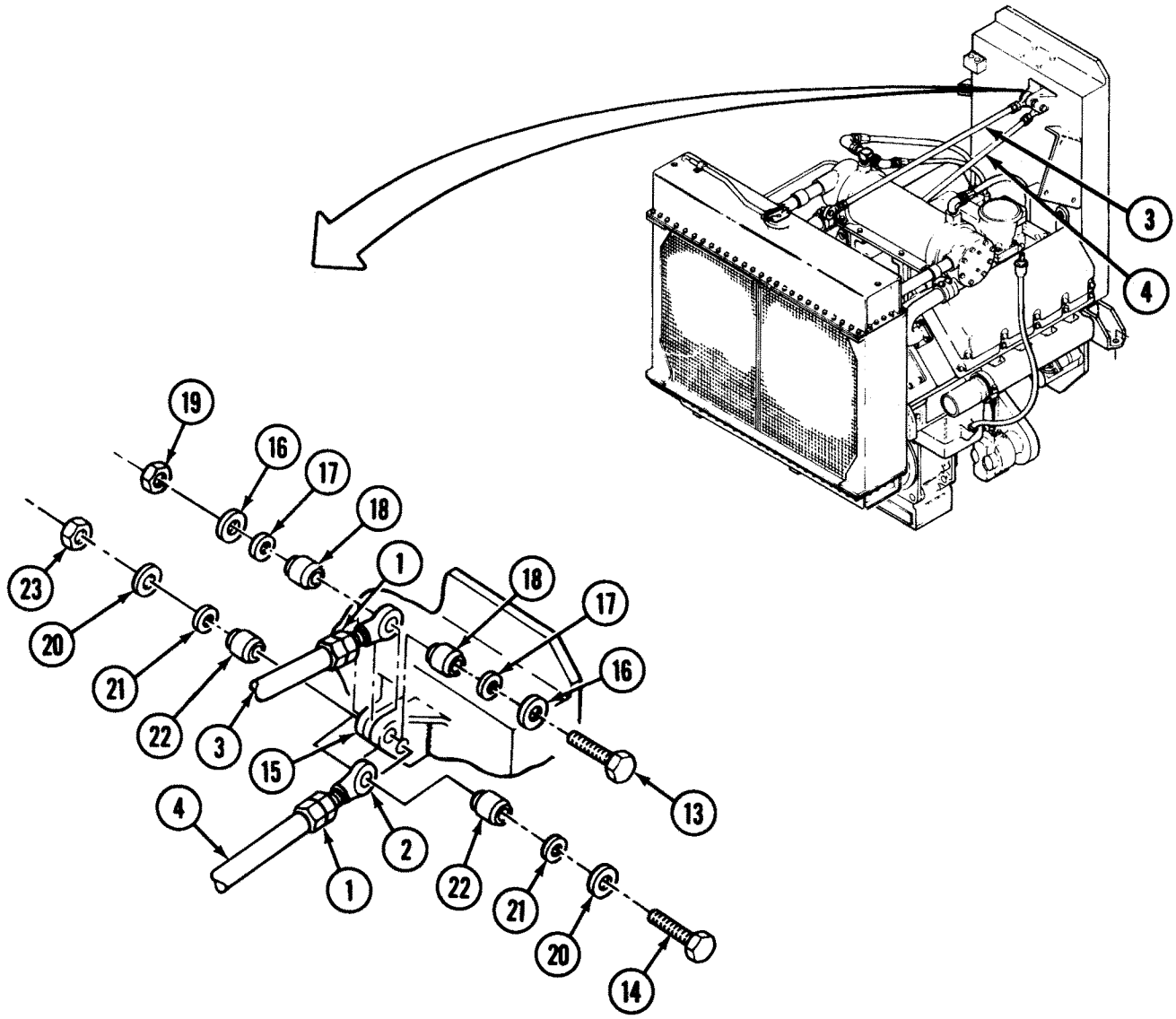


C Install filter support rod (4) on bracket (5) with two washers (6), self-locking screw (7), and nut (8). Tighten nut (8) to 50-55 lb-ft (68-75 N·m).



RADIATOR END

D Install radiator support rod (3) on bracket (9) with two washers (10), screw (11), and locknut (12). Tighten locknut (12) to 20-25 lb-ft (27-34 N·m).



E Turn rod bearings (2) to adjust lengths of rods (3) and (4) until self-locking screws (13) and (14) can be easily inserted through holes in bracket (15) and rod bearings (2) without interference.

F Install radiator support rod (3) on bracket (15) with self-locking screw (13), two washers (16) and (17), sleeve bushings (18) (if removed), and nut (19). Tighten nut (19) to 50-55 lb-ft (68-75 N·m).

G Install filler support rod (4) on bracket (15) with self-locking screw (14), two washers (20) and (21), sleeve bushings (22) (if removed), and nut (23). Tighten nut (23) to 50-55 lb-ft (68-75 N·m).

H Tighten jamnuts (1) of rod bearings (2) against each end of rods (3) and (4).

FOLLOW-ON TASK:
Close engine intake grilles and covers (TM 5-2350-262-10).

FUEL SHUTDOWN VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Socket Wrench Socket Set 5120-01-195-0640

Parts:

Gasket

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-140 No Fuel

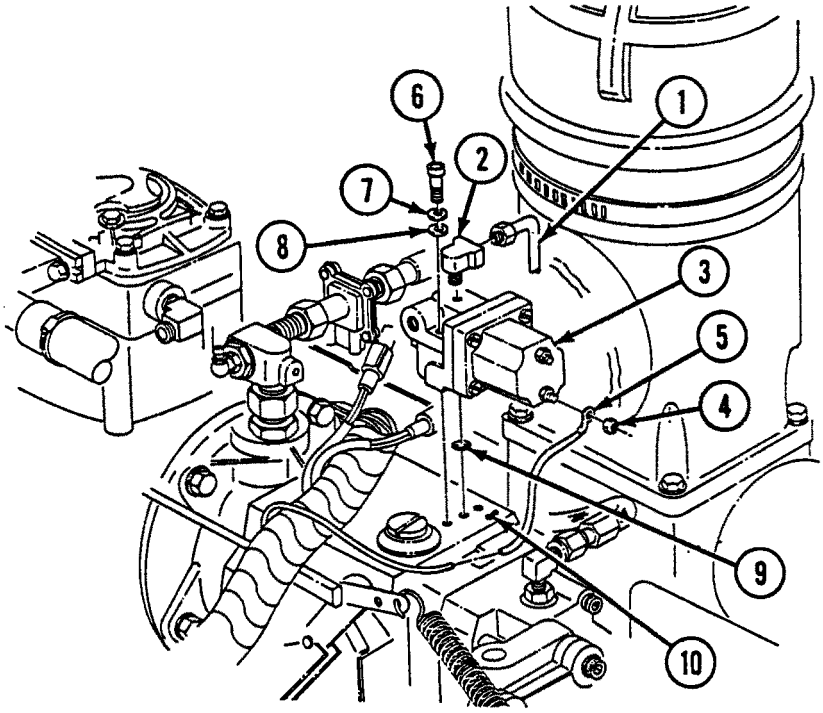
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.



WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

REMOVAL

A Disconnect tube(1) from elbow (2), and remove elbow (2) from fuel shutdown valve (3).

B Remove nut (4) and electrical lead (5) from bottom post of fuel shutdown valve (3).

C Remove two screws (6), lockwashers (7), washers (8), fuel shutdown valve (3), and gasket (9) from fuel pump (10). Discard lockwashers (7) and gasket (9).

INSTALLATION

A Install gasket (9) and fuel shutdown valve (3) on fuel pump (10) with two washers (8), lockwashers (7), and screws (6).

B Connect 54A electrical lead (5) to bottom post of fuel shutdown valve (3) with nut (4).

C Install elbow (2) on fuel shutdown valve (3), and connect tube (1) to elbow (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close engine intake grilles (TM 5-2350-262-10).

POWER PACKAGE EXTERNAL OIL LINES AND FITTINGS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (5)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Note

Oil line removed determines equipment condition performed.

Reference	Condition Description
TM 5-2350-262-10	Engine Oil Drained
Page 4-290	Ejector Hydraulic Cylinder Removed if Necessary
Page 4-339	Engine Intake Grilles and Covers Removed if Necessary
Page 4-358	Driver's Compartment Floor Plate Removed if Necessary
Page 4-375	Hull Access Cover Removed if Necessary

REMOVAL

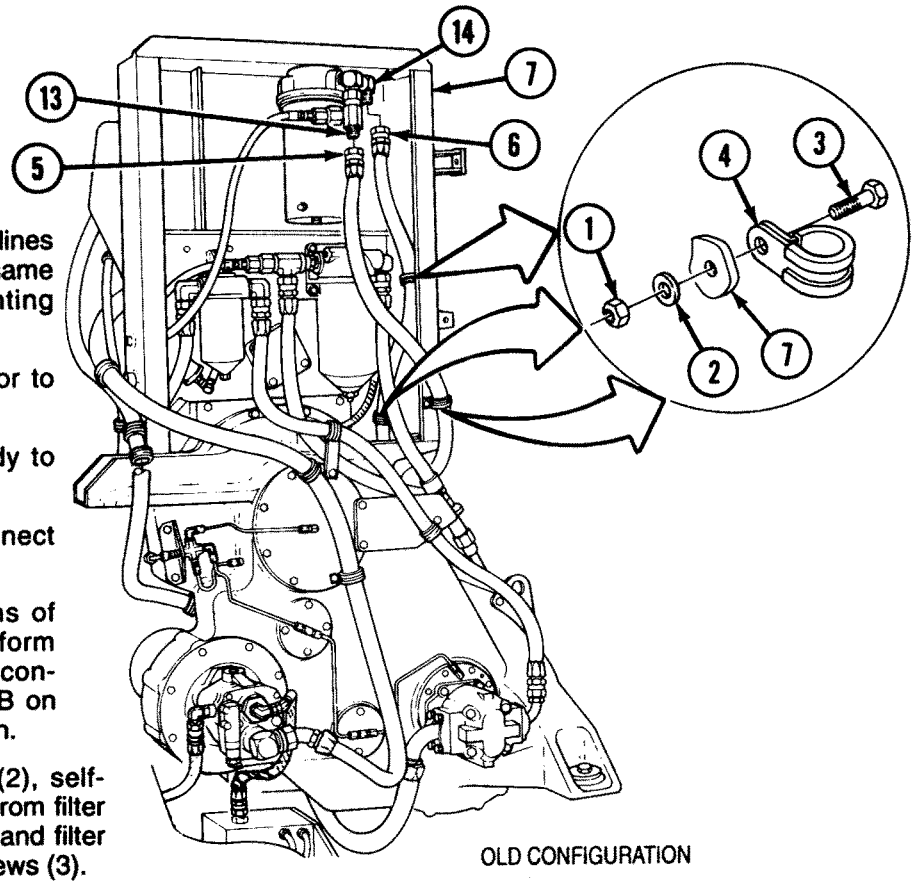
Note

- All power package external oil lines and fittings are replaced the same way. The number and mounting configuration of clamps vary.
- Tag all hoses and fittings prior to removal for installation.
- Have suitable container ready to catch engine oil.
- Use two wrenches to disconnect oil lines from fittings.
- There are two configurations of engine oil hose routing. Perform step A on vehicles with old configuration, and perform step B on vehicles with new configuration.

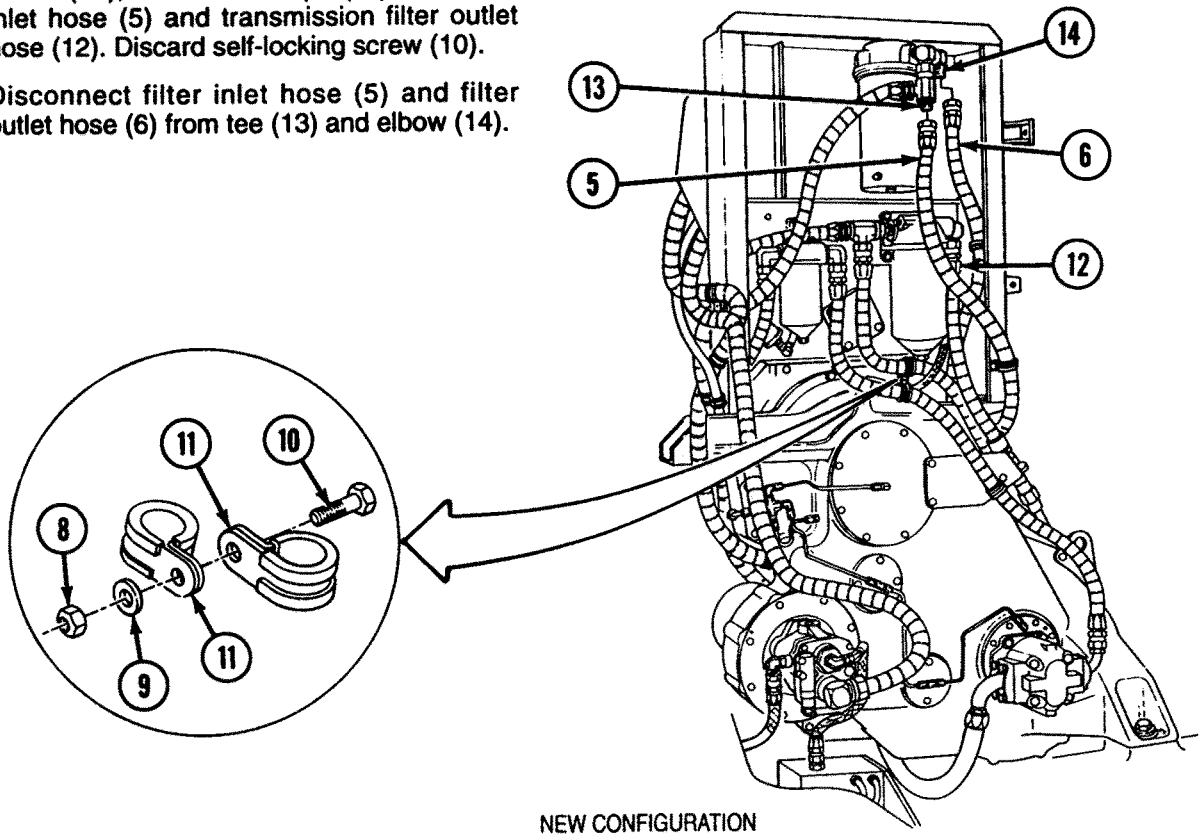
A Remove three nuts (1), washers (2), self-locking screws (3), and clamps (4) from filter inlet hose (5), filter outlet hose (6), and filter support (7). Discard self-locking screws (3).

B Remove nut (8), washer (9), self-locking screw (10), and two clamps (11) from filter inlet hose (5) and transmission filter outlet hose (12). Discard self-locking screw (10).

C Disconnect filter inlet hose (5) and filter outlet hose (6) from tee (13) and elbow (14).



OLD CONFIGURATION



NEW CONFIGURATION

Note

There are two configurations of engine oil hose routing. Perform steps D and E on vehicles with old configuration. Perform steps F through H on vehicles with new configuration.

D Remove engine oil drain hose (1) and adapter (2) from bracket (3) and engine oil pan (4).

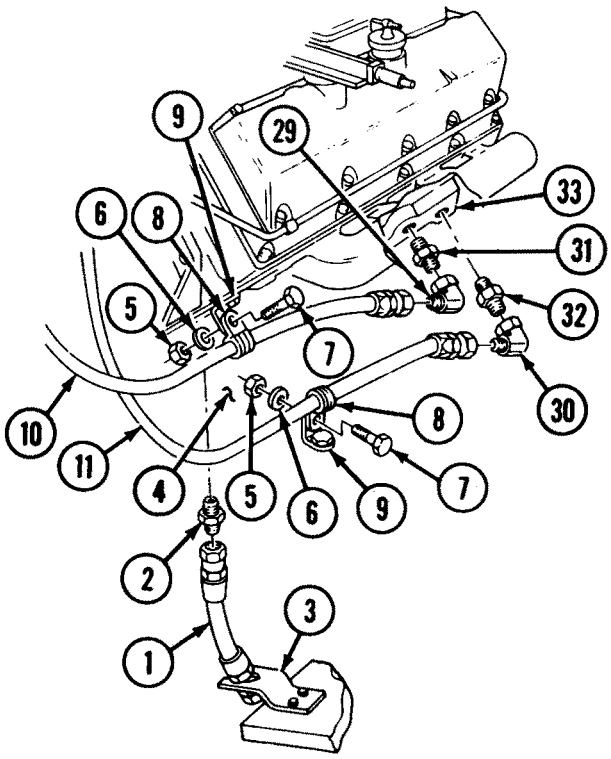
E Remove two nuts (5), washers (6), self-locking screws (7), and clamps (8) from two brackets (9), filter inlet hose (10), and filter outlet hose (11).

F Remove engine oil drain hose (12) and adapter (13) from scavenger pump hose (14) and engine oil pan (4), and remove nut (15), washer (16), screw (17), hook (18), and clamp (19) from hose (12).

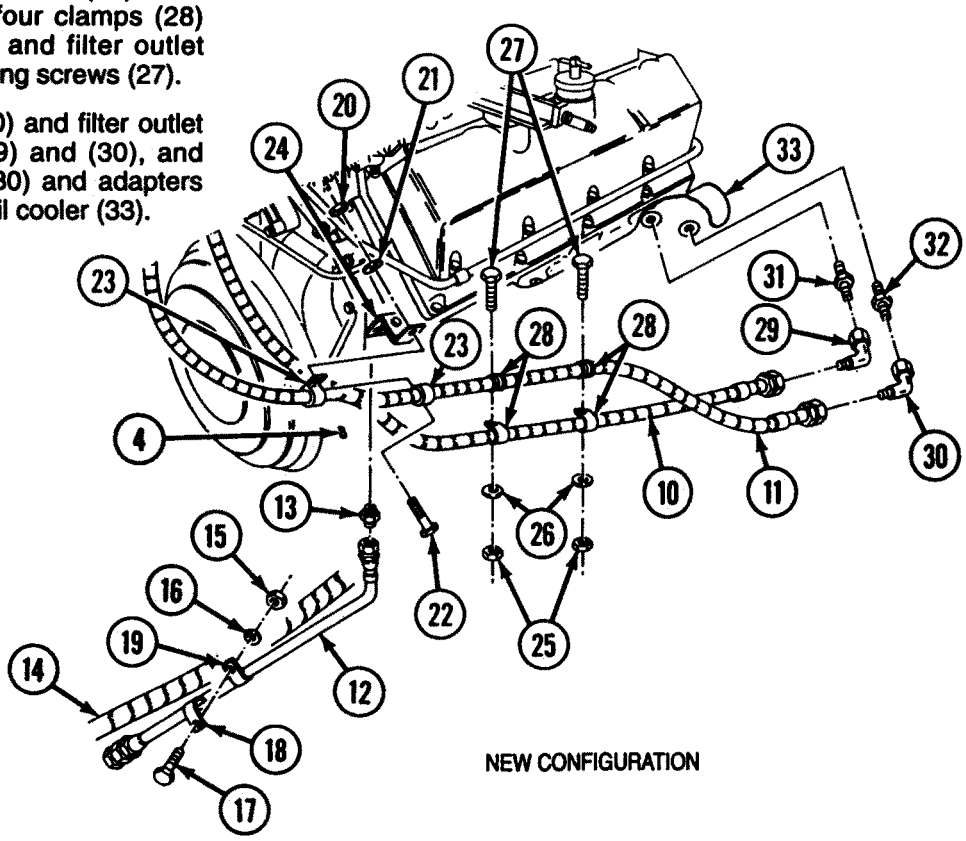
G Remove nut (20), washer (21), self-locking screw (22), and two clamps (23) from bracket (24), filter inlet hose (10), and filter outlet hose (11). Discard self-locking screw (22).

H Remove two nuts (25), washers (26), self-locking screws (27), and four clamps (28) from filter inlet hose (10) and filter outlet hose (11). Discard self-locking screws (27).

I Remove filter inlet hose (10) and filter outlet hose (11) from elbows (29) and (30), and remove elbows (29) and (30) and adapters (31) and (32) from engine oil cooler (33).



OLD CONFIGURATION



NEW CONFIGURATION

INSTALLATION

CAUTION

After installation, check to ensure hoses do not touch exhaust manifold. Failure to comply may result in damage to equipment.

Note

Use two wrenches to connect oil lines to fittings.

A Install adapters (1) and (2) on engine oil cooler (3), connect elbows (4) and (5) to adapters (1) and (2), and install 1E filter inlet hose (6) and 2E filter outlet hose (7) on elbows (4) and (5).

Note

Perform steps B and C on vehicles with old configuration, and perform steps D through G on vehicles with new configuration.

B Install two clamps (8) on filter inlet hose (6), filter outlet hose (7), and brackets (9) with two self-locking screws (10), washers (11), and nuts (12). Tighten nuts (12) to 30-34 lb-ft (41-46 N·m).

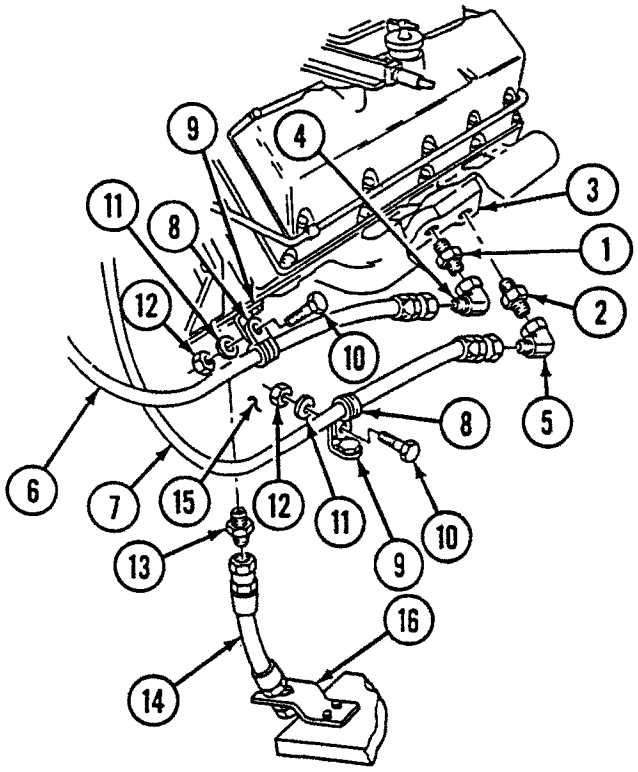
C Install adapter (13) and engine oil drain hose (14) on engine oil pan (15). Secure hose (14) to bracket (16).

D Install four clamps (17) on filter inlet hose (6) and filter outlet hose (7) with two self-locking screws (18), washers (19), and nuts (20). Tighten nuts (20) to 30-34 lb-ft (41-46 N·m)

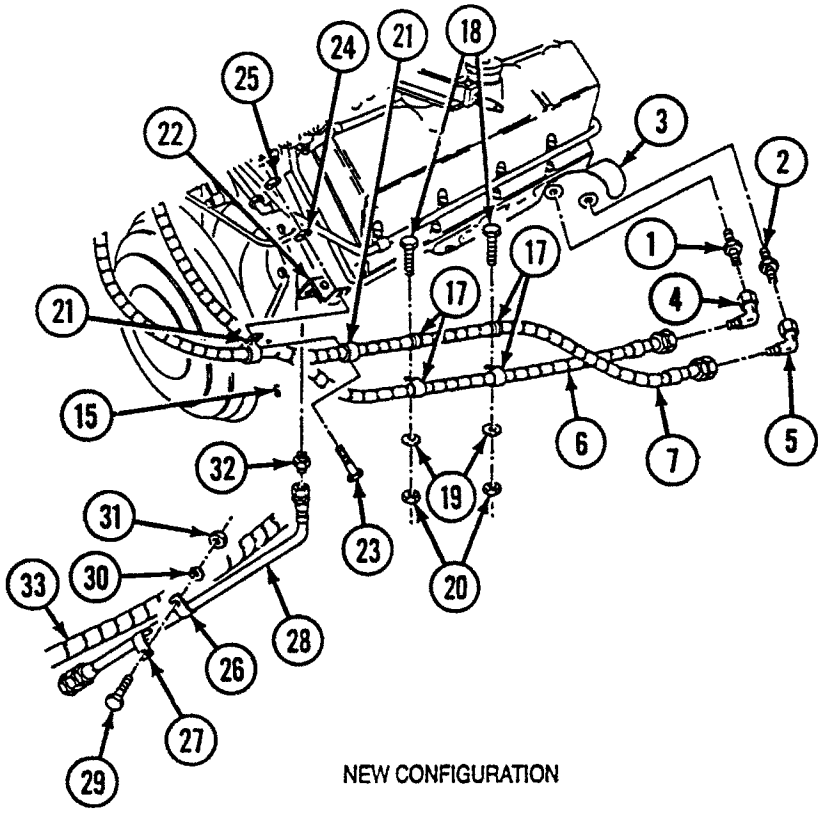
E Install two clamps (21) on filter inlet hose (6), filter outlet hose (7), and bracket (22) with self-locking screw (23), washer (24), and nut (25). Tighten nut (25) to 30-34 lb-ft (41-46 N·m).

F Install clamp (26) and hook (27) on engine oil drain hose (28) with screw (29), washer (30), and nut (31).

G Install adapter (32) and engine oil drain hose (28) on engine oil pan (15). Secure hose (28) to scavenger pump hose (33) with hook (27).



OLD CONFIGURATION



NEW CONFIGURATION

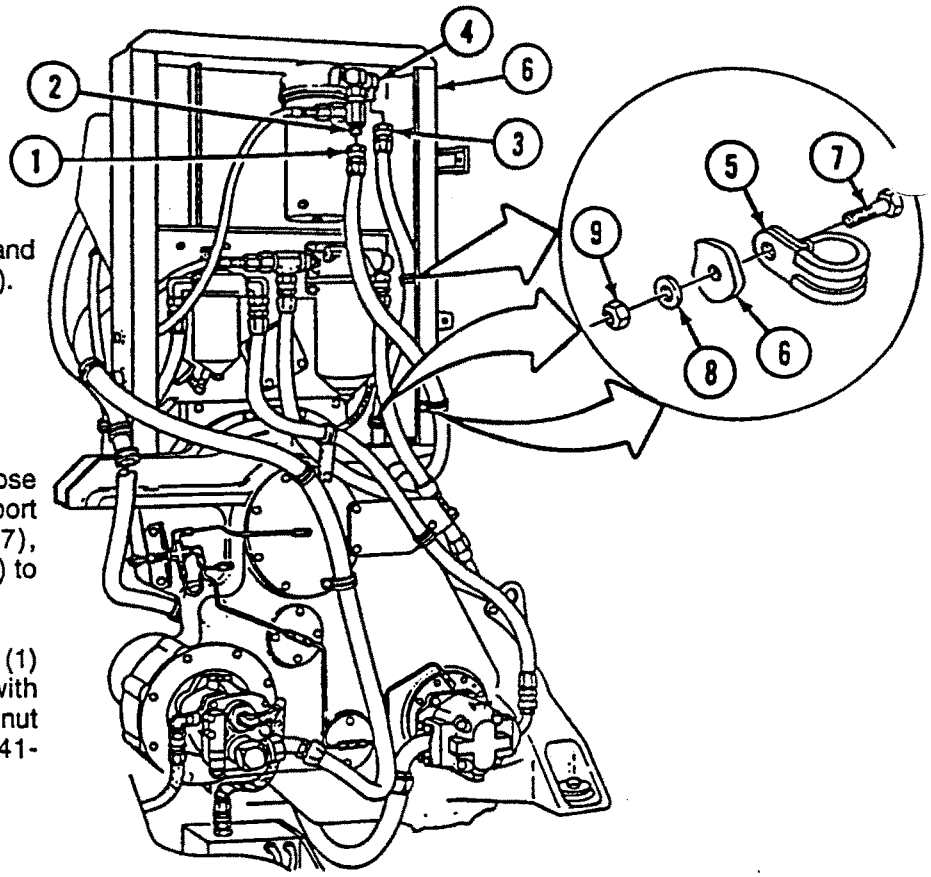
H Connect 1E filter inlet hose (1) to tee (2), and connect 2E filter outlet hose (3) to elbow (4).

Note

Perform step I on vehicles with old configuration, and perform step J on vehicles with new configuration.

I Install three clamps (5) on 1E filter inlet hose (1), 2E filter outlet hose (3), and filter support (6) with three self-locking screws (7), washers (8), and nuts (9). Tighten nuts (9) to 30-34 lb-ft (41-46 N·m).

J Install two clamps (10) on filter inlet hose (1) and 2T transmission outlet hose (11) with self-locking screw (12), washer (13), and nut (14). Tighten nut (14) to 30-34 lb-ft (41-46 N·m).



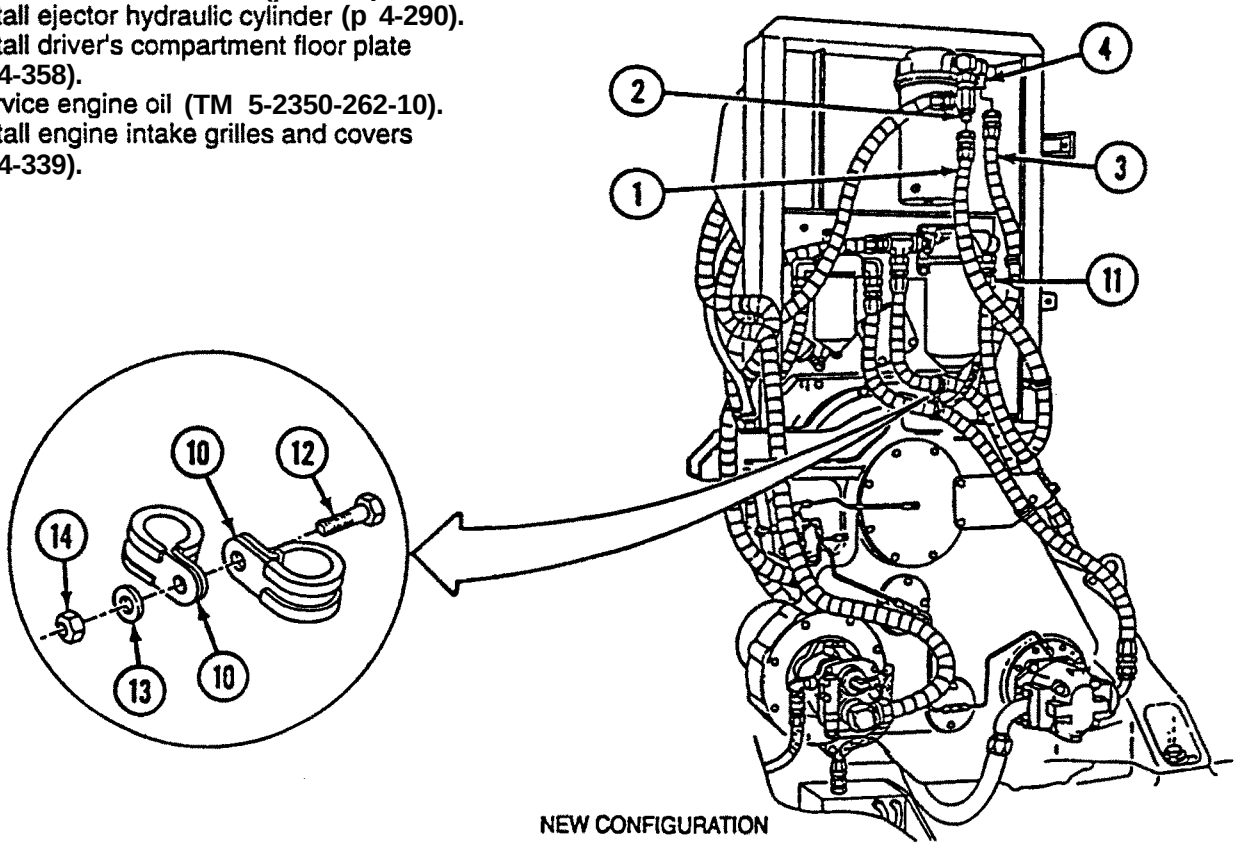
OLD CONFIGURATION

FOLLOW-ON TASKS:

Note

Oil line removed determines follow-on tasks.

- Install hull access covers (p 4-375).
- Install ejector hydraulic cylinder (p 4-290).
- Install driver's compartment floor plate (p 4-358).
- Service engine oil (TM 5-2350-262-10).
- Install engine intake grilles and covers (p 4-339).



NEW CONFIGURATION

TRANSMISSION OIL LINES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Self-locking Screw (12)

Packing

Tiedown Strap

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

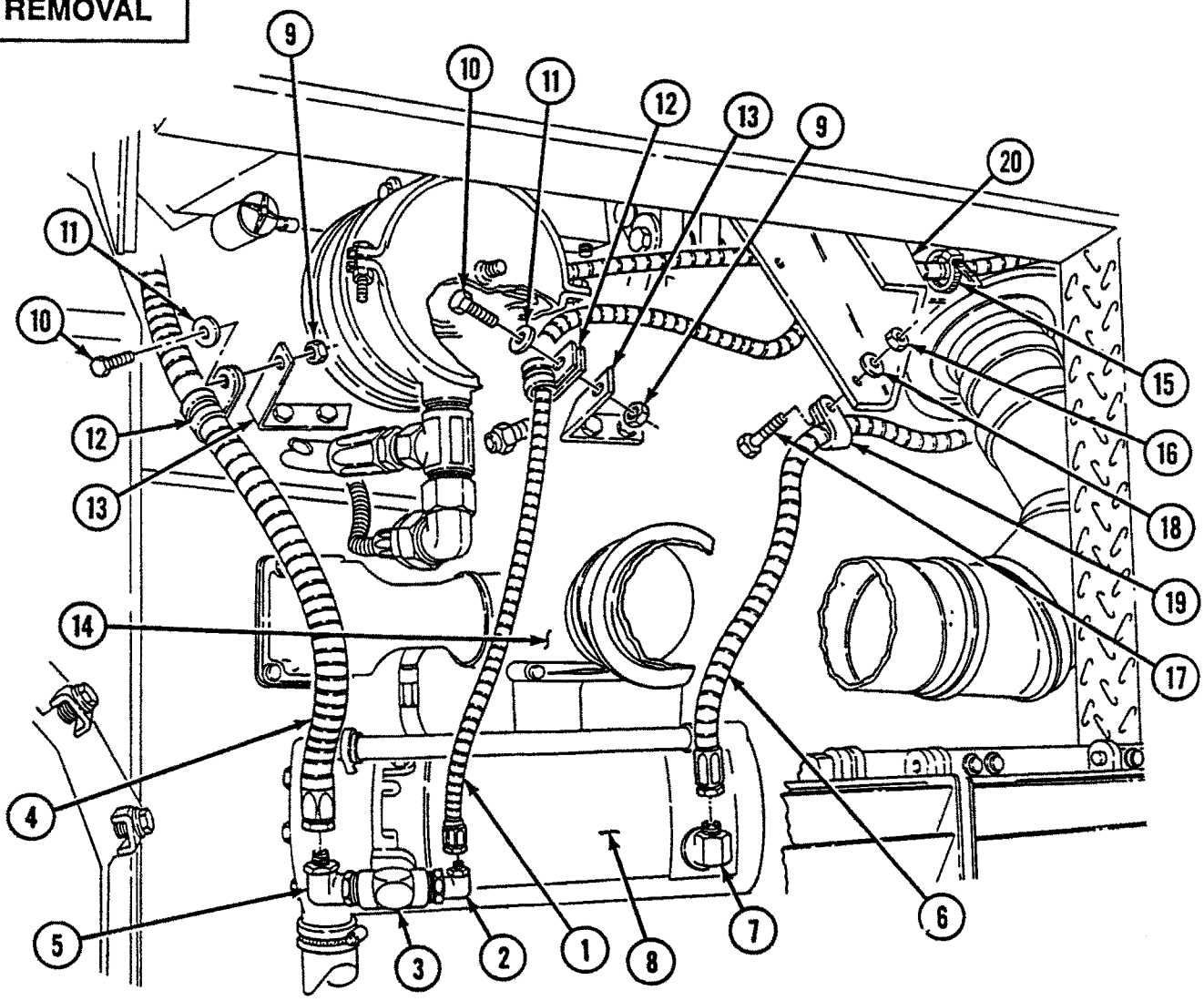
Equipment Condition:

Note

Transmission line removed determines equipment condition performed.

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Transmission Oil Drained
Page 4-290	Ejector Hydraulic Cylinder Removed if Necessary
Page 4-339	Engine Intake Grilles and Covers Removed if Necessary
Page 4-375	Hull Access Cover Removed if Necessary

REMOVAL



Note

- Replacement of all transmission lines is the same. The number of clamps vary.
- Use two wrenches to disconnect oil lines from fittings.
- Cap or plug hoses and fittings when removing hoses.
- Tag all hoses prior to removal for installation.

A Disconnect hose (1) from elbow (2) at tee (3).

B Disconnect hose (4) from elbow (5) at tee (3).

C Disconnect hose (6) from elbow (7) at transmission oil cooler (8).

D Remove two nuts (9), self-locking screws (10), washers (11), and clamps (12) securing hoses (1) and (4) to brackets (13) on engine intake manifold (14). Discard self-locking screws (10).

E Remove tiedown strap (15) from hoses (1) and (6). Discard tiedown strap (15).

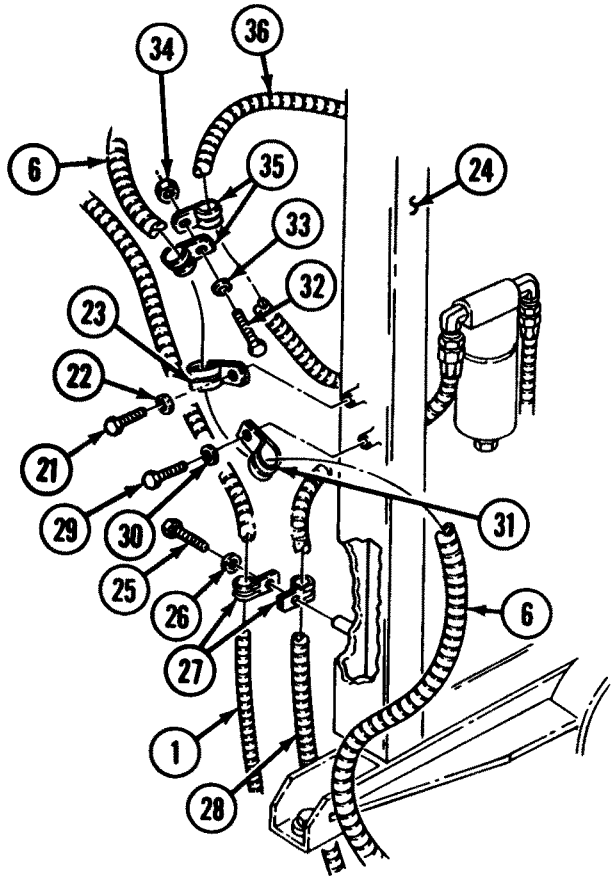
F Remove nut (16), self-locking screw (17), washer (18), and clamp (19) securing hose (6) to air filter support bracket (20). Discard self-locking screw (17).

G Remove self-locking screw (21), washer (22), and clamp (23) securing hose (6) to filter support (24). Discard self-locking screw (21).

H Remove self-locking screw (25), washer (26), and two clamps (27) securing hoses (1) and (28) to filter support (24). Discard self-locking screw (25).

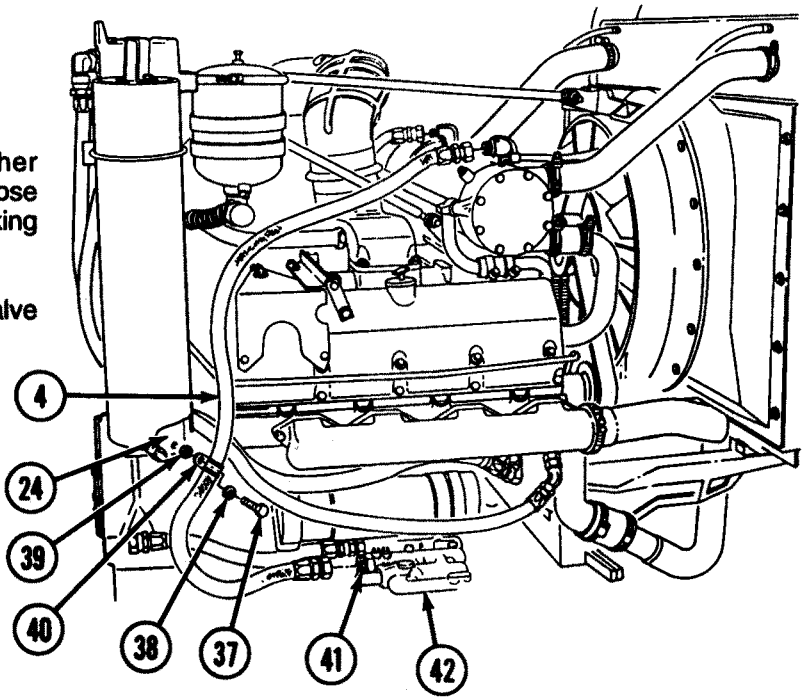
I Remove self-locking screw (29), washer (30), and clamp (31) securing hose (6) to filter support (24). Discard self-locking screw (29).

J Remove self-locking screw (32), washer (33), nut (34), and two clamps (35) from hoses (6) and (36). Discard self-locking screw (32).



K Remove self-locking screw (37), washer (38), nut (39), and clamp (40) securing hose (4) to filter support (24). Discard self-locking screw (37).

L Remove hose (4) from adapter (41) at valve body (42).

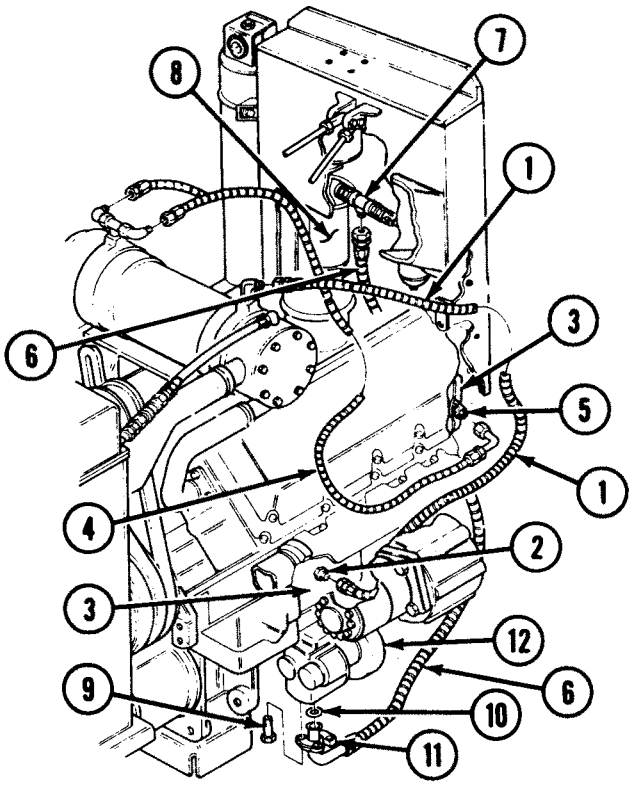


M Remove hose (1) from adapter (2) at transmission housing (3).

N Remove hose (4) from adapter (5) at transmission housing (3).

O Disconnect hose (6) from tee (7) at transmission oil filter (8).

P Remove four self-locking screws (9), packing (10), two swivel pipe flange fittings (11), and hose (6) from charging pump (12). Discard self-locking screw (9) and packing (10).



INSTALLATION

Note

- Transmission oil lines and fittings can leak if not properly installed or tightened. Observe correct installation and tightening procedures (p 2-29). Replace fittings having damaged threads or nicked seats.
- Apply lubricating oil to packings and threads of fittings prior to installation.

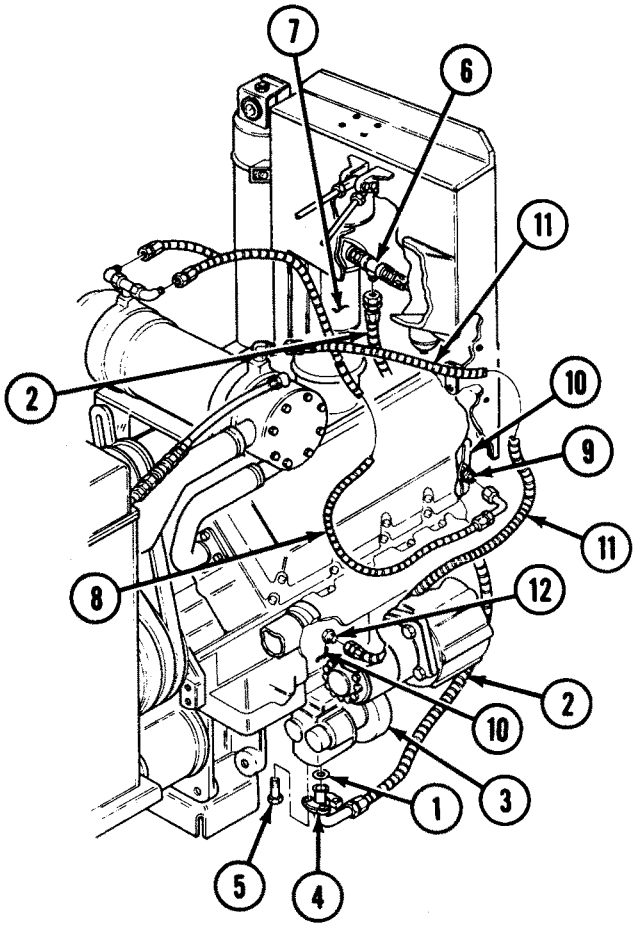
A Install packing (1) on XMSN FIL-IN-1T hose (2).

B Install XMSN FIL-IN-1T hose (2) on charging pump (3) with two swivel pipe flange fittings (4) and four self-locking screws (5). Tighten self-locking screws (5) to 22-25 lb-ft (30-34 N·m).

C Connect XMSN FIL-IN-1T hose (2) to tee (6) at transmission oil filter (7).

D Install LH OIL CIR 3C hose (8) to adapter (9) at transmission housing (10).

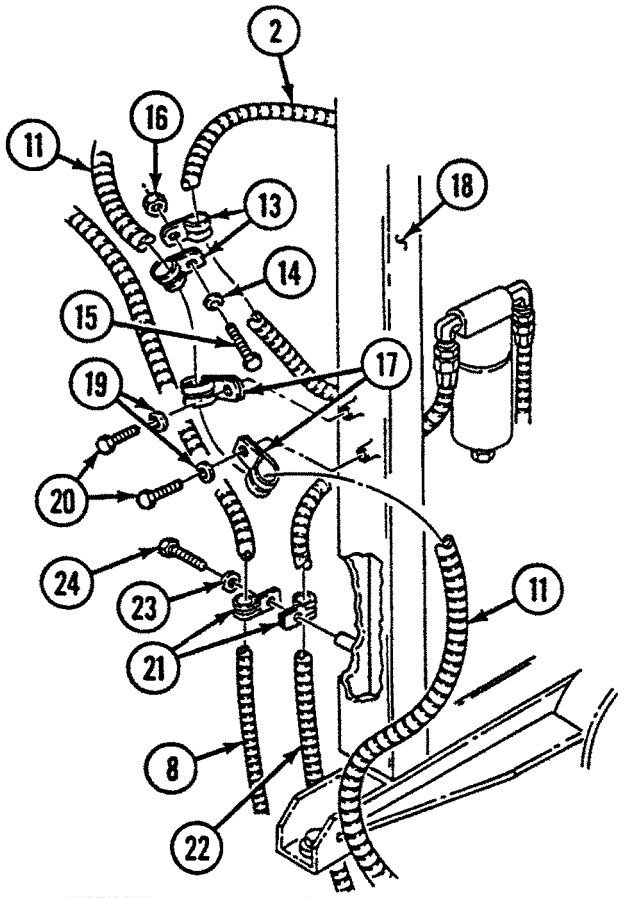
E Install RH OIL CLR 2C hose (11) on adapter (12) at transmission housing (10).



F Install two clamps (13) on hoses (2) and (11) with washer (14), self-locking screw (15), and nut (16). Tighten nut (16) to 30-34 lb-ft (41-46 N·m).

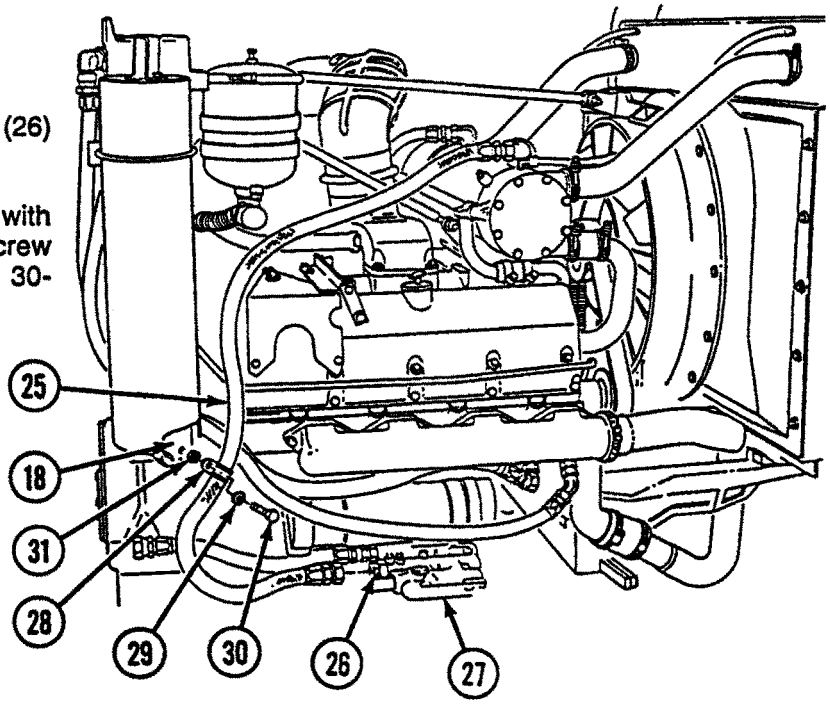
G Install two clamps (17) on hose (11) and filter support (18) with two washers (19) and self-locking screws (20). Tighten self-locking screws (20) to 30-34 lb-ft (41-46 N·m).

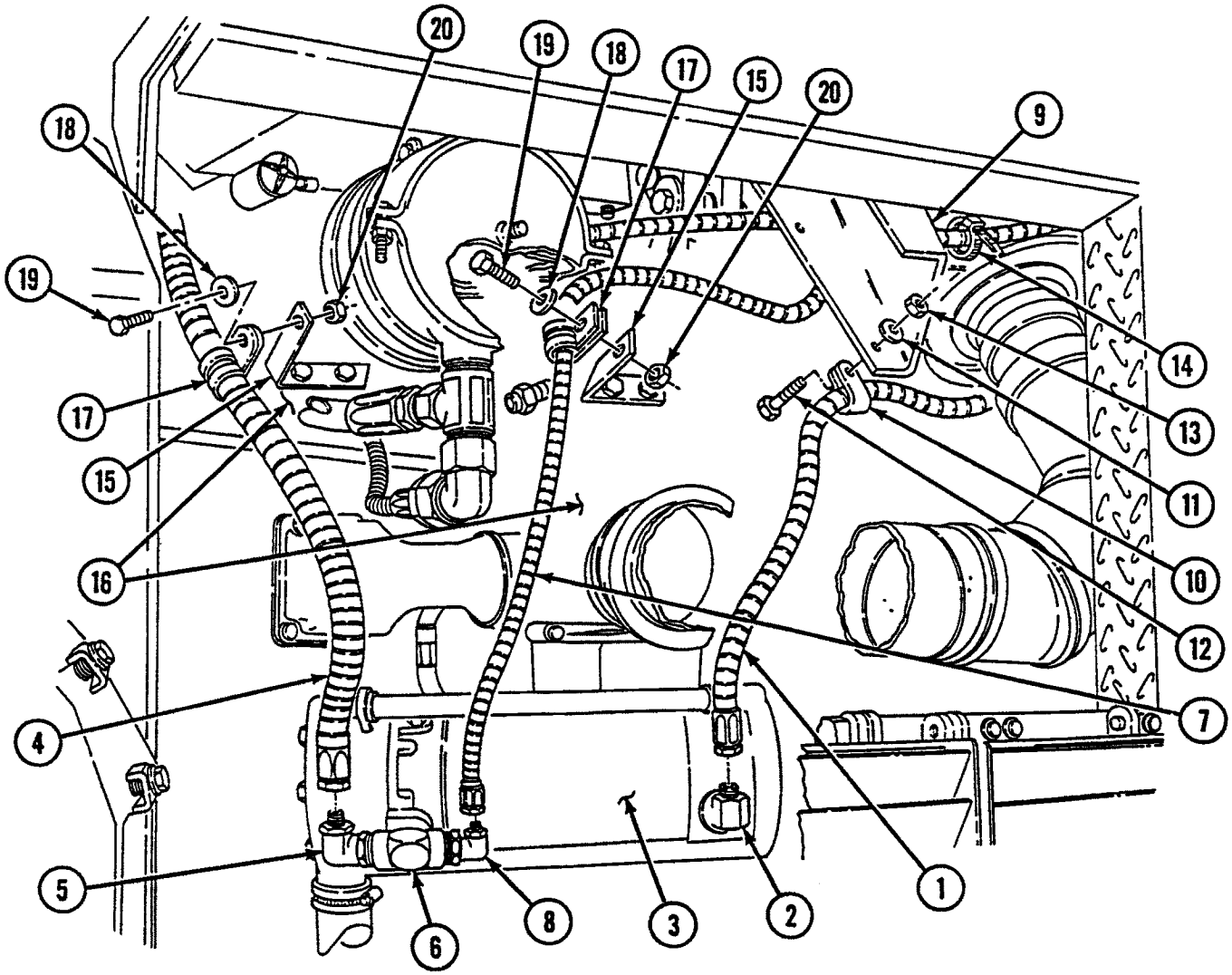
H Install two clamps (21) on hoses (8) and (22) and filter support (18) with washer (23) and self-locking screw (24). Tighten self-locking screw (24) to 30-34 lb-ft (41-46 N·m).



I Install LH CLR 1C hose (25) on adapter (26) at valve body (27).

J Secure hose (25) to filter support (18) with clamp (28), washer (29), self-locking screw (30), and nut (31). Tighten nut (31) to 30-34 lb-ft (41-46 N·m).





K Connect RH OIL CLR C2 hose (1) to elbow (2) at transmission oil cooler (3).

L Connect LH CLR 1C hose (4) to elbow (5) at tee (6).

M Connect LH OIL CLR 3C hose (7) to elbow (8) at tee (6).

N Secure hose (1) to air filter support (9) with clamp (10), washer (11), self-locking screw (12), and nut (13). Tighten nut (13) to 22-25 lb-ft (30-34 N·m).

O Install tiedown (14) on hoses (1) and (7).

P Secure hoses (4) and (7) to brackets (15) on engine intake manifold (16) with two clamps (17), washers (18), self-locking screws (19), and nuts (20). Tighten nuts (20) to 22-25 lb-ft (30-34 N·m).

FOLLOW-ON TASKS:

Note

Transmission line removed determines follow-on tasks.

- Install ejector hydraulic cylinder (p 4-290).
- Service transmission (TM 5-2350-262-10).
- Install hull access cover (p 4-375).
- Install engine intake grilles (p 4-339).
- Retract ejector (TM 5-2350-262-10).

ENGINE CRANKCASE DRAIN AND FILL

This task covers:

a. Draining

b. Filling

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 3-82	Hydraulic Pressure Relieved
Page 4-379	Engine protective plate removed

General Safety Instructions:

WARNING

- Hot engine and engine components can cause severe burns.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

DRAINING

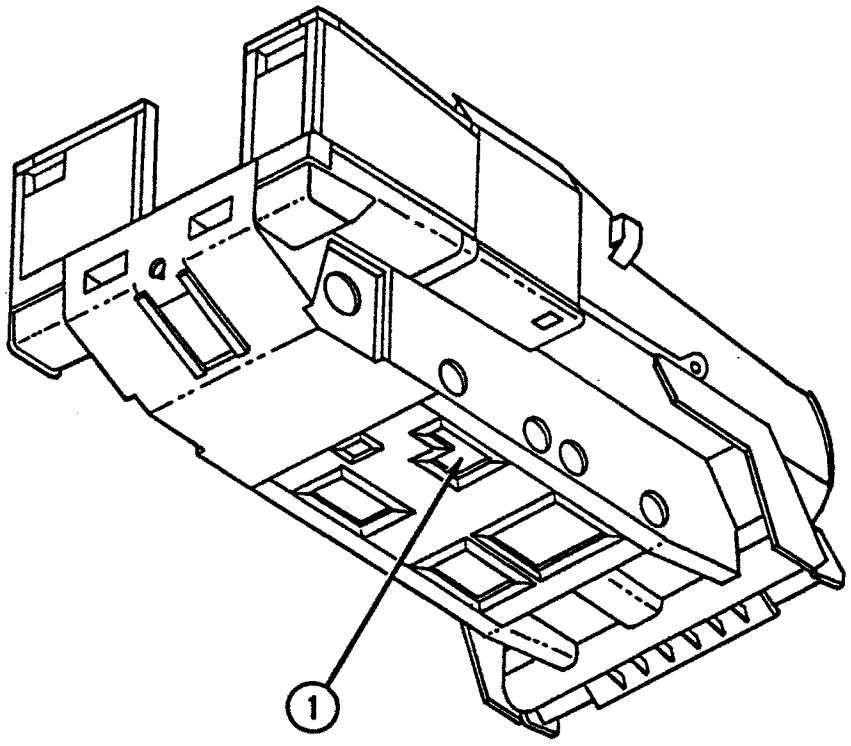
WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel
- Do not work under vehicle unless hull is blocked. Failure to comply may result in severe injury to personnel.
- Hot oil can cause serious injuries. Avoid splashing or spilling oil during draining. Failure to comply may result in injury to personnel.

Note

- Engine crankcase refill capacity is 22 qt (20.8 L). With filter change, add 4 additional qt (3.8 L).
- Drain oil only when hot.
- Drain when notified by the Army Oil Analysis Program (AOAP) laboratory.

A Remove hull plate (1).



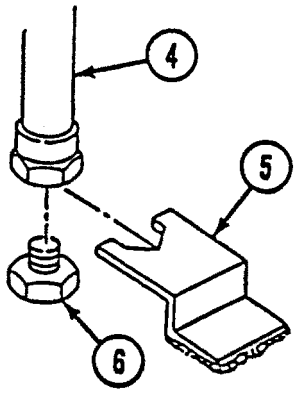
Note

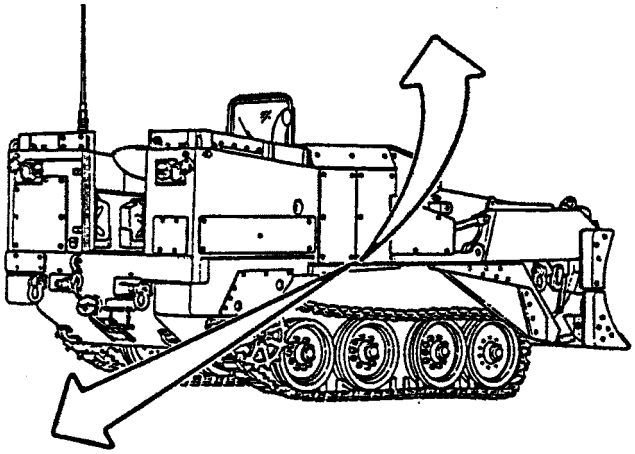
Perform step B if lengthened engine oil drain hose is being used; step C when old engine oil drain hose is used.

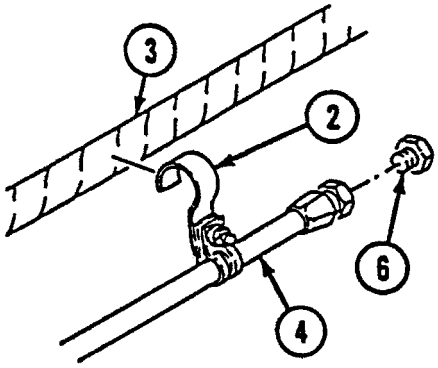
B Remove hook (2) from scavenger pump hose (3).

C Remove engine oil drain hose (4) from bracket (5).

D Remove drainplug (6) from engine oil drain hose (4), and drain oil into suitable container.







FILLING

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel.

A Clean drainplug (6) in drycleaning solvent (SD-3) and install.

Note

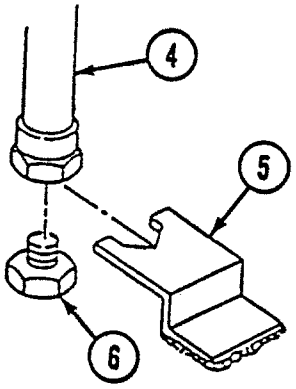
Perform step B if lengthened engine oil drain hose is being used; step C if old engine oil drain hose is used.

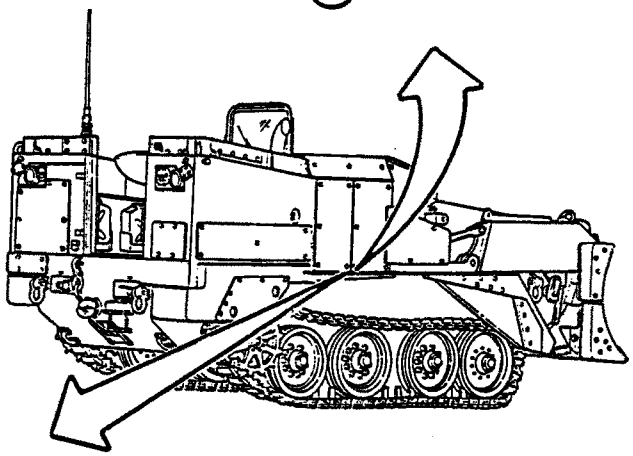
B Install hose (4) on scavenger pump hose (3) with hook (2).

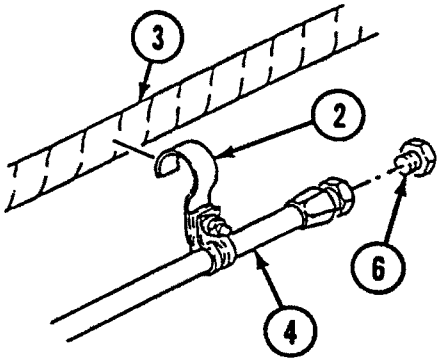
C Install engine oil drain hose (4) on bracket (5).

D Replace engine oil filter element. (p 4-624).

E Fill engine crankcase with 26 qt (24.6 L) OE/HDO or OEA.







FOLLOW-ON TASKS:
- Start engine and check for leaks.
- Stop engine and check oil level.

ENGINE OIL COOLER BYPASS TUBE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Open End	5120-01-301-5783
Vehicle Stand	2590-01-228-5802

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Locknut

Packing

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Two Construction Equipment Repairers 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

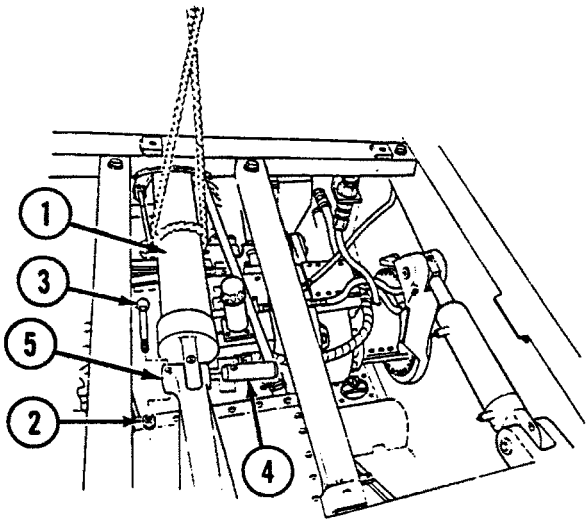
Equipment Condition:

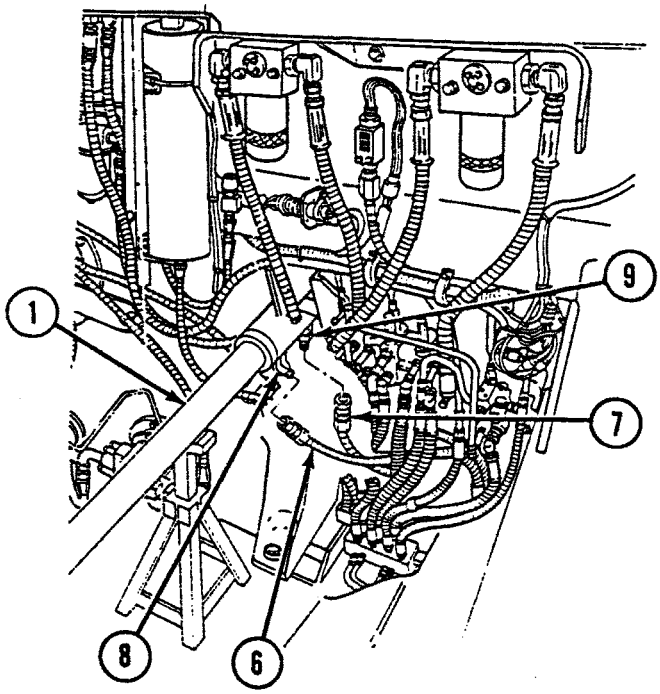
Reference	Condition Description
TM 5-2350-262-10	Ejector Extended
TM 5-2350-262-10	Engine Oil Drained
Page 3-82	Hydraulic Pressure Relieved
Page 4-358	Driver's Compartment Floor Plate Removed

General Safety Instructions:

WARNING

- Ejector cylinder weighs 325 lb (147 kg). Support ejector cylinder with blocks or straps before disconnecting or removing.
- Ensure hydraulic pressure is relieved after pushing ejector forward. Pressure may build up and cause ejector to retract.
- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.





REMOVAL

WARNING

Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder with blocks or straps before disconnecting or removing. Failure to comply may result in severe injury to personnel.

CAUTION

Ejector cylinder can damage engine and transmission hoses if weight of cylinder is supported by hoses. Keep ejector cylinder steady while moving it. Failure to comply may result in damage to equipment.

Note

Support ejector cylinder in bowl with vehicle stand and above steer unit mode control and steer levers with wood blocks placed on steer unit valve body.

A Support rear end of ejector cylinder (1) with rope, and remove locknut (2), screw (3), and pin (4) from ejector cylinder (1) and bracket (5). Discard locknut (2).

WARNING

- Ensure hydraulic pressure is relieved after ejector cylinder is pushed forward. Pressure may build up and cause the ejector to retract. Failure to comply may result in severe injury to personnel.
- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of oil. Failure to comply may result in damage to equipment.

B Push ejector cylinder (1) far enough forward to gain access to hoses (6) and (7).

Note

Have suitable container ready to catch hydraulic oil.

C Disconnect hoses (6) and (7) from elbow (8) and nipple (9) and drain oil from ejector cylinder (1) and hoses (6) and (7).

D Move ejector cylinder (1) forward to clear brackets of engine oil cooler (10), and support ejector cylinder (1) with vehicle stand.

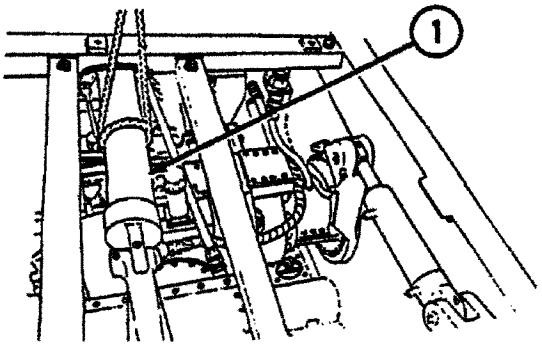
Note

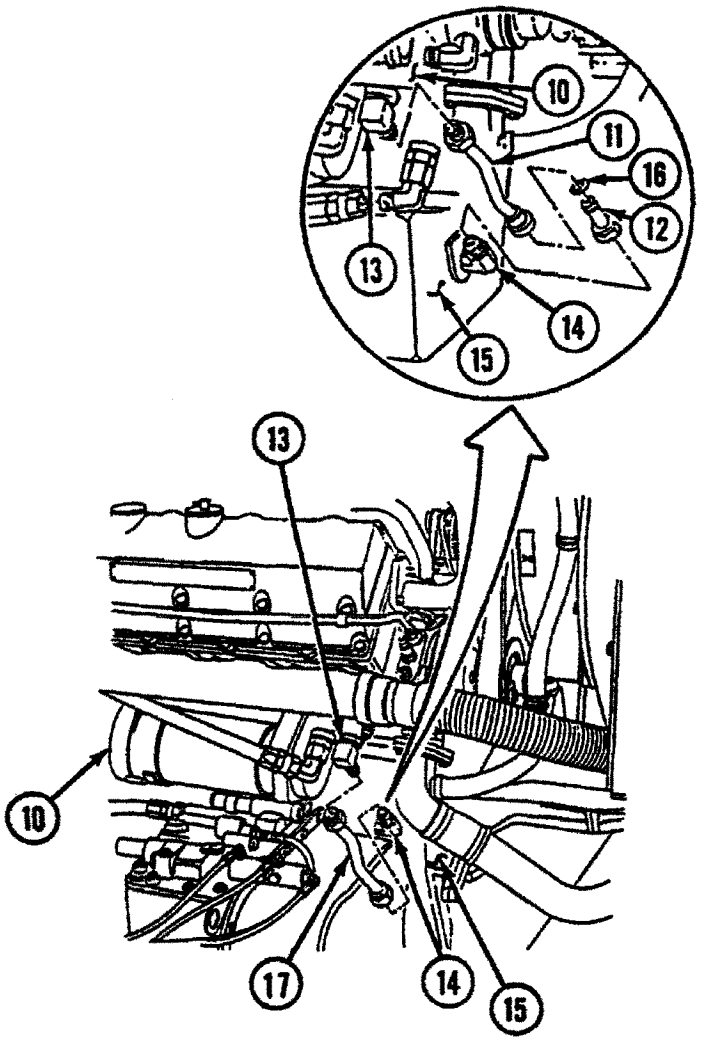
Perform steps E and F on vehicles equipped with two-piece bypass tube.

E Disconnect tubes (11) and (12) from elbows (13) and (14) at engine oil cooler (10) and engine oil pan (15). Compress tubes (11) and (12) together and remove from elbows (13) and (14).

F Remove tube (12) from tube (11), and remove packing (16) from tube (12). Discard packing (16).

G Remove hose (17) from elbows (13) and (14) at engine oil cooler (10) and engine oil pan (15).





INSTALLATION

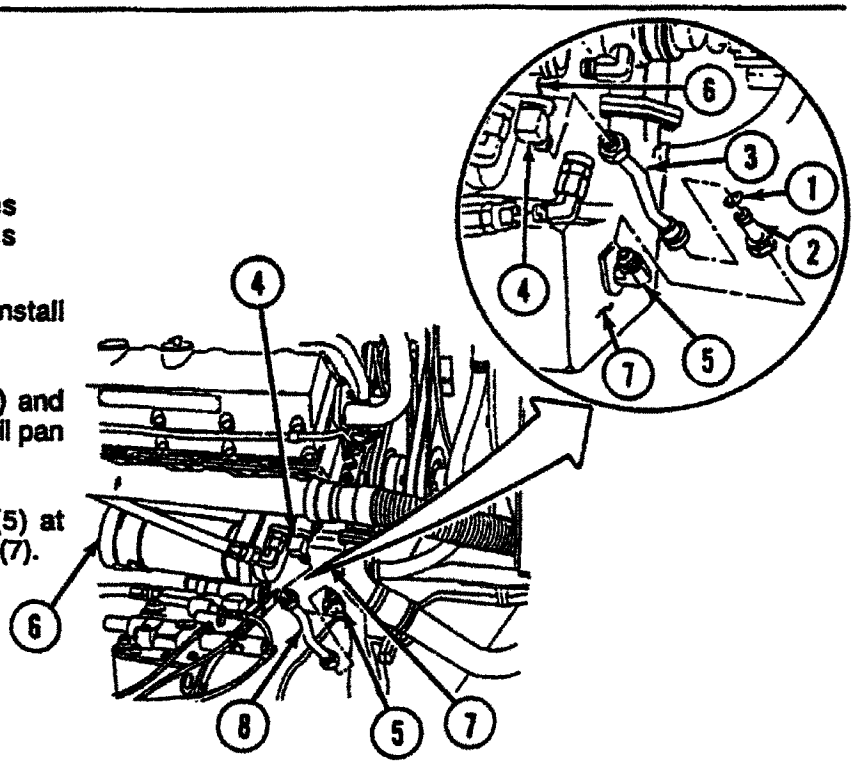
Note

Perform steps A and B on vehicles equipped with two-piece bypass tube.

A Install packing (1) on tube (2), and install tube (2) on tube (3).

B Install tubes (3) and (2) on elbows (4) and (5) at engine oil cooler (6) and engine oil pan (7).

C Install hose (8) on elbows (4) and (5) at engine oil cooler (6) and engine oil pan (7).



WARNING

Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder with blocks or straps before connecting or installing. Failure to comply may result in severe injury to personnel.

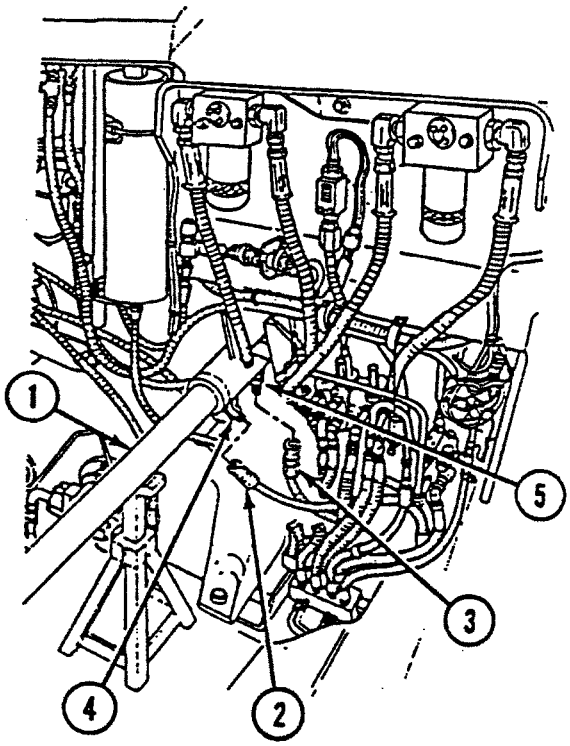
Note

Support ejector cylinder on steer unit valve body with wood blocks. Ensure cylinder does not rest on steer unit mode control and steer levers.

D Remove vehicle stand from bowl, and push ejector cylinder (1) back until hoses (2) and (3) reach ports of ejector cylinder (1).

E Connect EJCYL 22 hose (2) to elbow (4).

F Connect EJCYL 21 hose (3) to nipple (5).

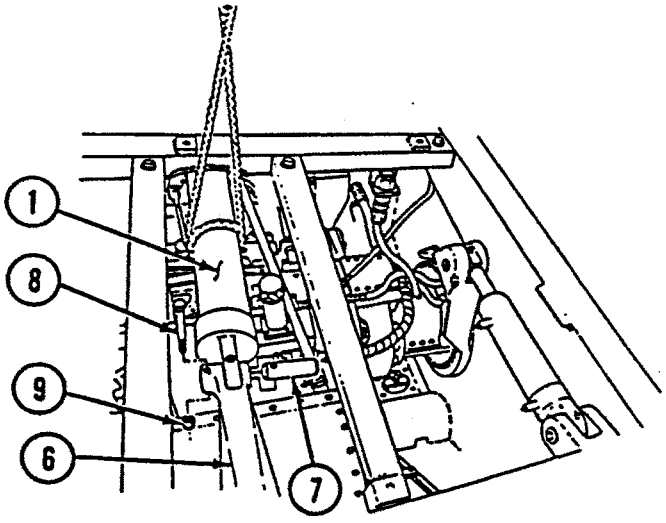


CAUTION

Ejector cylinder can damage engine and transmission hoses if weight of cylinder is supported by hoses. Keep ejector cylinder steady while moving it. Failure to comply may result in damage to equipment.

G Slowly move ejector cylinder (1) back until ejector cylinder (1) aligns with bracket (6).

H Connect ejector cylinder (1) to bracket (6) with pin (7), screw (8), and locknut (9).



FOLLOW-ON TASKS:

- Install driver's compartment floor plate (p 4-358).
- Service hydraulic tank (TM 5-2350-262-10).
- Service engine oil (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

OIL ANALYSIS SAMPLING MANIFOLD REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 3-82	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.
- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.

REMOVAL

WARNING

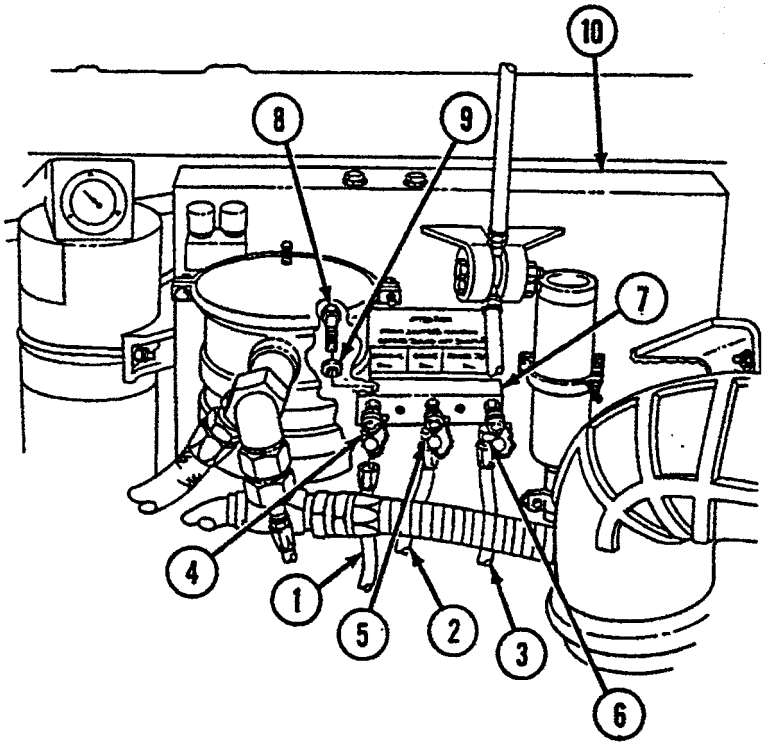
- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.
- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.

Note

NEW PRODUCTION vehicles have the oil analysis sampling manifold mounted on a bracket just forward of the right hand compartment wall.

A Disconnect hoses (1), (2), and (3) from adapters (4), (5), and (6) at oil sampling manifold (7).

B Remove two self-locking screws (8), washers (9), and oil sampling manifold (7) from filter support (10). Discard self-locking screws (8).



OLD PRODUCTION SHOWN

INSTALLATION

A Install oil sampling manifold (7) on filter support (10) with two washers (9) and self-locking screws (8).

B Connect HYDR SMPLG VLV-7 hose (1), ENG SMPLG VLV-1E hose (2), and PWR TN SMPLG VLV-1T hose (3) to adapters (4), (5), and (6). Tighten hoses (1), (2), and (3) to 12-13 lb-ft (16-18 N·m).

FOLLOW-ON TASKS:

- Service engine, transmission, and hydraulic tank (TM 5-2350-262-10).
- Close engine intake grilles (TM 5-2350-262-10).

TRANSMISSION DRAIN HOSE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Packing

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

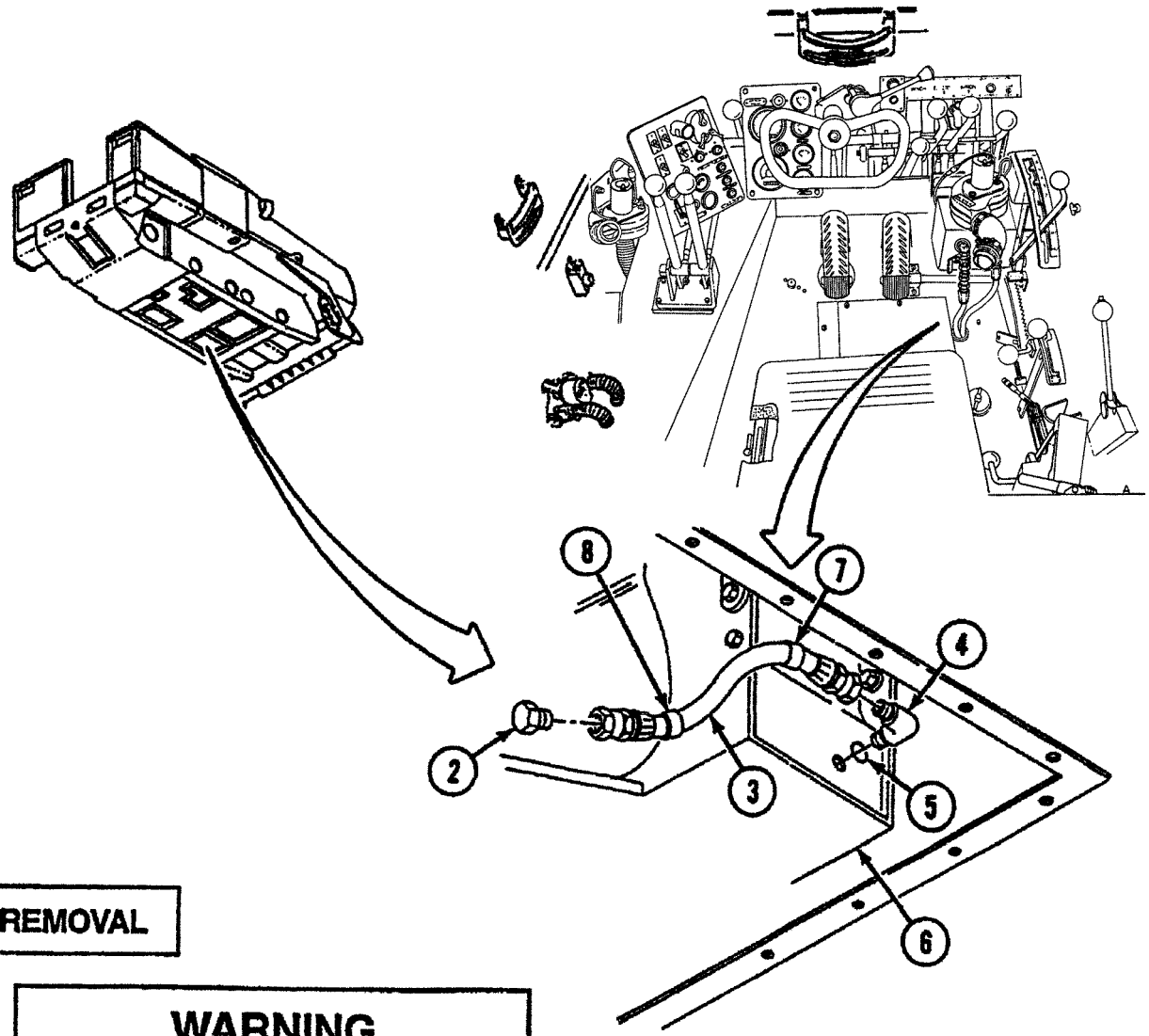
Equipment Condition:

Reference	Condition Description
Page 4-375	Left Front Hull Access Cover Removed

General Safety Instructions:

WARNING

Transmission lines contain hot oil under pressure when hot. Do not disconnect hoses, tubes, or fittings unless oil is cool and pressure has been relieved.



REMOVAL

WARNING

Transmission lines contain hot oil under pressure when hot. Do not disconnect hoses, tubes, or fittings unless oil is cool and pressure has been relieved. Failure to comply may result in severe injury to personnel.

A With transmission cool, move transmission shift lever (1) through all positions several times to relieve oil pressure.

Note

Have suitable container ready to catch transmission oil.

B Remove plug (2) from hose (3), and drain transmission oil.

C Remove hose (3), elbow (4), and packing (5) from transmission (6). Discard packing (5).

INSTALLATION

Note

Improperly installed hoses and fittings can cause Class III leaks. Refer to general hydraulic system repair methods (p 2-29) when connecting hoses and fittings.

A Install packing (5), elbow (4), and XMSN SUMP end (7) of hose (3) on transmission (6).

B Install plug (2) on DRAIN end (8) of hose (3).

FOLLOW-ON TASKS:

- Service transmission (TM 5-2350-262-10).
- Install left front hull access cover (p 4-375).

ENGINE OIL LEVEL INDICATOR AND TUBE ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

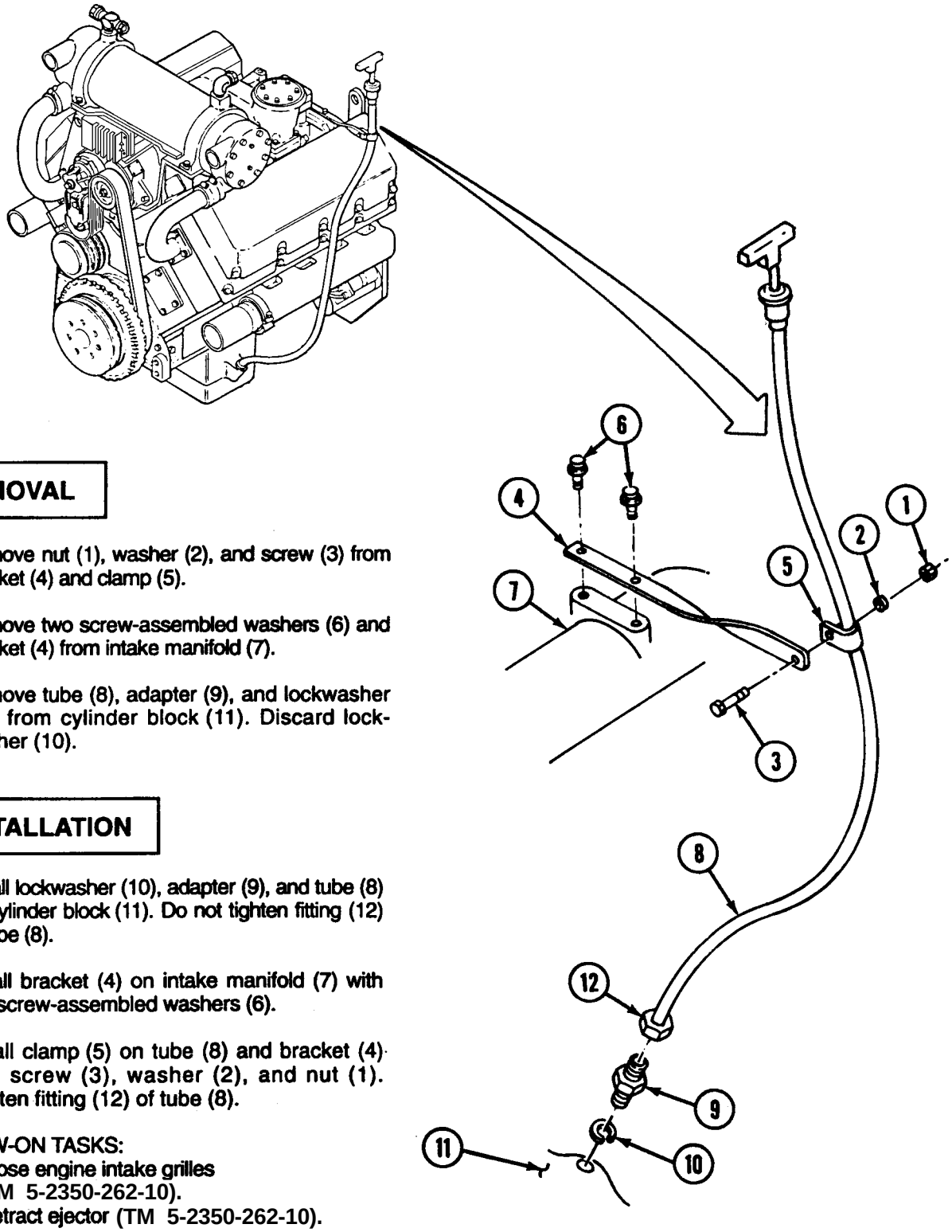
Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
TM 5-2350-262-10	Ejector Extended



REMOVAL

A Remove nut (1), washer (2), and screw (3) from bracket (4) and clamp (5).

B Remove two screw-assembled washers (6) and bracket (4) from intake manifold (7).

C Remove tube (8), adapter (9), and lockwasher (10) from cylinder block (11). Discard lockwasher (10).

INSTALLATION

A Install lockwasher (10), adapter (9), and tube (8) on cylinder block (11). Do not tighten fitting (12) of tube (8).

B Install bracket (4) on intake manifold (7) with two screw-assembled washers (6).

D Install clamp (5) on tube (8) and bracket (4) with screw (3), washer (2), and nut (1). Tighten fitting (12) of tube (8).

FOLLOW-ON TASKS:

- Close engine intake grilles (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

COOLING SYSTEM TUBES, HOSES, CLAMPS, AND FITTINGS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (2)

Gasket

Self-locking Screw (5)

Materials:

Antiseizing (Teflon) Tape	Item 33 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-150	Engine Overheats

Equipment Condition:

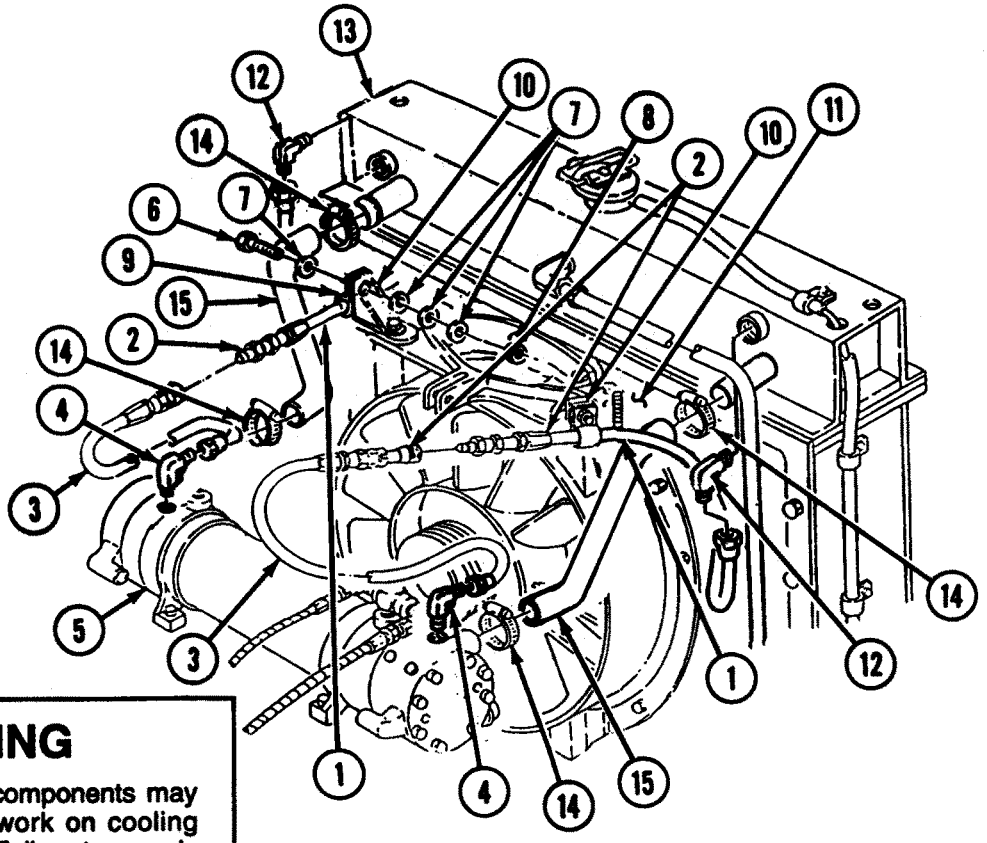
Reference	Condition Description
TM 5-2350-262-10	Engine Covers Opened
Page 4-340	Engine Exhaust Grilles Removed
Page 4-647	Cooling System Drained

General Safety Instructions:

WARNING

Radiator and related components may be very hot. Do not work on cooling system until it is cool.

REMOVAL



WARNING

Radiator and related components may be very hot. Do not work on cooling system until it is cool. Failure to comply may result in severe injury to personnel.

Note

If quick-disconnect is not operating properly, refer to p 2-34 for general repair methods.

A Disconnect two hoses (1) at quick-disconnect fittings (2), and remove two hoses (3) from elbows (4) at transmission oil cooler (5).

B Remove two screws (6), eight washers (7), two locknuts (8), and clamps (9) from two hoses (1) and brackets (10) at fan housing (11). Discard locknuts (8).

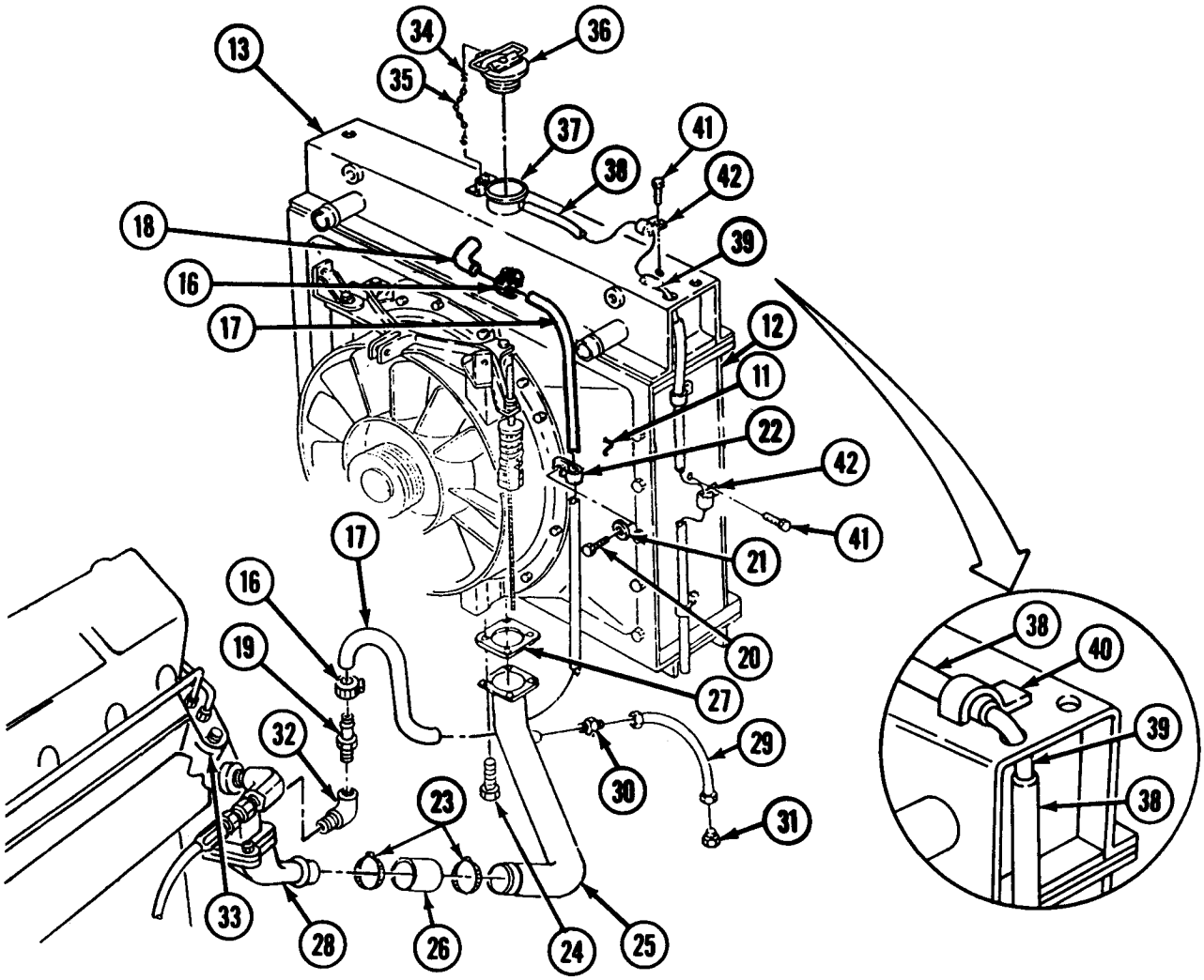
C Remove two hoses (1) from elbows (12) at radiator (13).

Note

Some configurations of the M9 ACE have wire reinforced radiator hoses, and other configurations have preformed radiator hoses. Wire reinforced radiator hoses are shown.

D Loosen four clamps (14) and remove two hoses (15) from transmission oil cooler (5) and radiator (13).

E Remove two elbows (4) and (12) from transmission oil cooler (5) and radiator (13).



F Loosen two clamps (16), and disconnect hose (17) from elbow (18) and adapter (19).

G Remove self-locking screw (20), washer (21), clamp (22), and hose (17) from fan housing (11). Discard self-locking screw (20).

H Loosen two clamps (23), and remove four self-locking screws (24) from tube (25). Discard self-locking screws (24).

I Remove tube (25), hose (26), gasket (27), and two clamps (23) from radiator (13) and water pump outlet (28). Discard gasket (27).

J Remove hose (29) and adapter (30) from tube (25). Remove plug (31) from hose (29).

K Remove adapter (19) and elbow (32) from water pump (33).

L Remove two hooks (34), chain (35), and radiator cap (36) from radiator filler neck (37).

M Disconnect hose (38) from radiator filler neck (37), and remove tube (39) from hose (38).

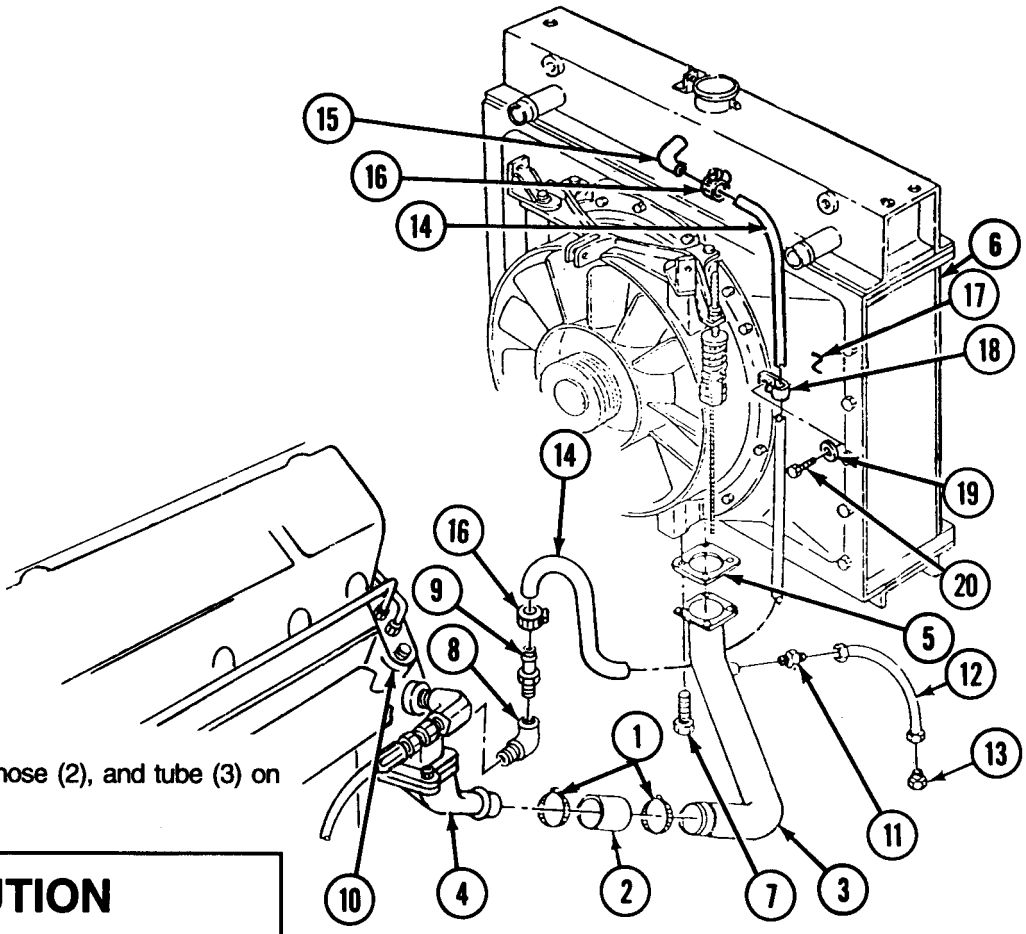
Note

Perform step N on vehicles with clamps spot-welded to radiator.

N Carefully bend up ends of four clamps (40) 1/4-in. (6.4-mm), and remove hose (38) from radiator (13).

O Remove four screws (41), clamps (42), and hose (38) from radiator (13).

INSTALLATION



A Install two clamps (1), hose (2), and tube (3) on water pump outlet (4).

CAUTION

- Cooling system will leak unless all old gasket material is removed from tube and radiator mating surfaces.
- When installing screws, ensure screws are the proper length. If screws are too long, they will puncture radiator.

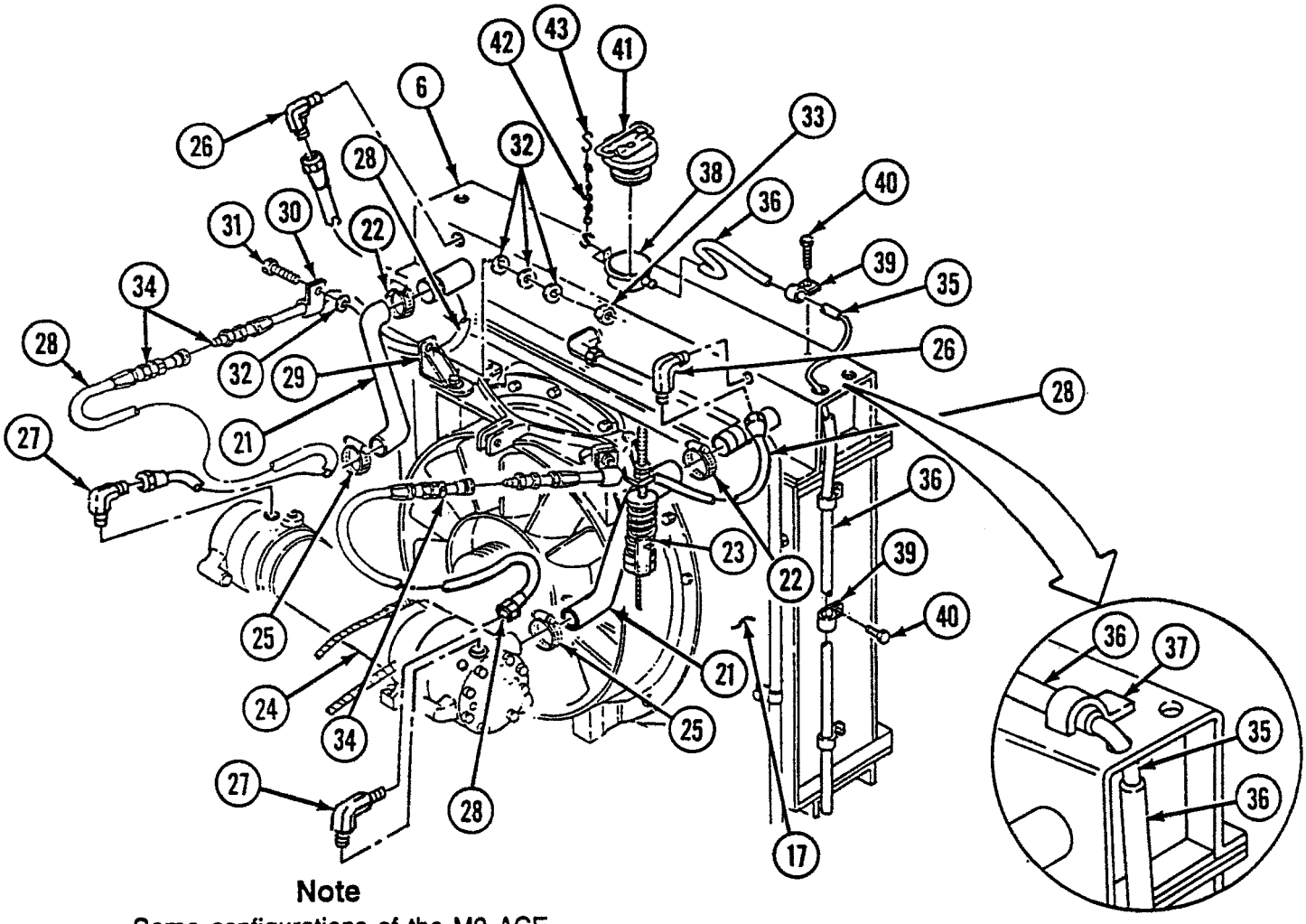
B Install gasket (5) and tube (3) on radiator (6) with four self-locking screws (7).

C Apply teflon tape to threads of elbow (8) and adapter (9), and install elbow (8) and adapter (9) on water pump (10).

D Install adapter (11), hose (12), and plug (13) on tube (3).

E Install hose (14) on adapter (9) and elbow (15) with two clamps (16).

F Secure hose (14) to fan housing (17) with clamp (18), washer (19), and self-locking screw (20). Tighten self-locking screw (20) to 12-15 lb-ft (16-20 N·m).



Note

Some configurations of the M9 ACE have wire reinforced radiator hoses, and other configurations have preformed radiator hoses. Wire reinforced radiator hoses are shown.

G Install two hoses (21) on radiator (6) with two clamps (22). Route left-hand side hose (21) around fan tensioner assembly (23). Do not kink hoses (21).

H Connect two hoses (21) to transmission oil cooler (24) with two clamps (25).

I Install two elbows (26) and (27) on radiator (6) and transmission oil cooler (24), and connect two hoses (28) to elbows (26) and (27).

J Secure two hoses (28) to two brackets (29) at fan housing (17) with two clamps (30), screws (31), eight washers (32), and two locknuts (33).

K Connect two hoses (28) at quick-disconnect fittings (34).

Note

Perform steps L and M on vehicles with clamps spot-welded to radiator.

L Install tube (35) on hose (36), and route hose (36) through radiator (6) and four clamps (37).

M Connect hose (36) to radiator filler neck (38), and bend down four clamps (37).

N Install tube (35) on two hoses (36).

O Secure hose (36) to radiator (6) with four clamps (39) and screws (40).

P Install radiator cap (41), chain (42), and two hooks (43) on radiator filler neck (38).

FOLLOW-ON TASKS:

- Fill cooling system (p 4-648).
- Close engine covers (TM 5-2350-262-10).
- Install engine exhaust grilles (p 4-344).

TRANSMISSION OIL COOLER REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Sealing Compound	Item 15 Appendix D

Parts:

Gasket (5)

Seal (2)

Locknut

Lockwasher (28)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-150	Engine Overheats

Equipment Condition:

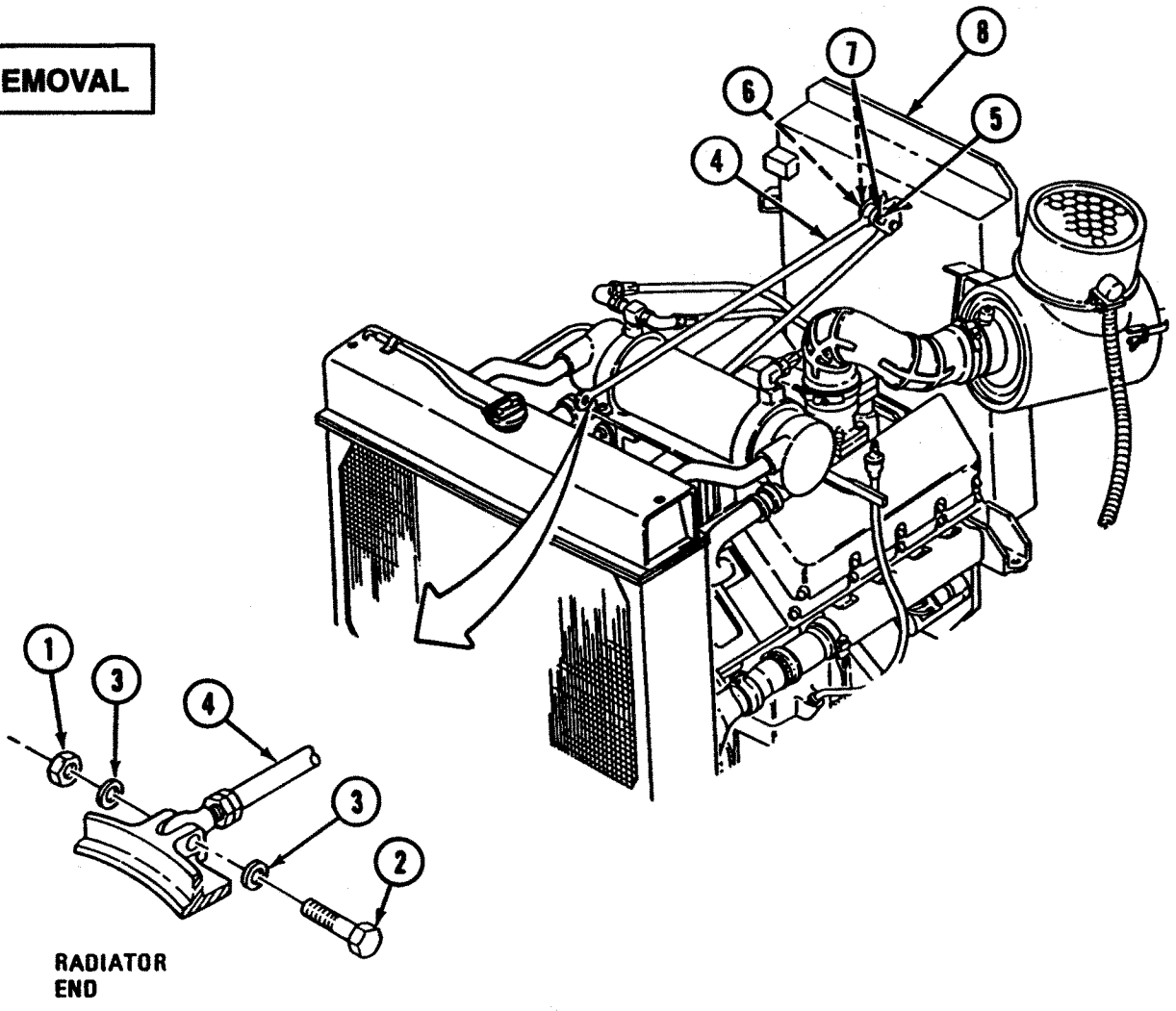
Reference	Condition Description
Page 4-339	Engine Intake Grilles and Covers Removed
Page 4-646	Cooling System Drained

General Safety Instructions:

WARNING

Hot oil and coolant can cause serious burns. Ensure transmission oil and engine coolant are cool before working on transmission oil cooler and engine cooling systems.

REMOVAL



WARNING

Hot oil and coolant can cause serious burns. Ensure transmission oil and engine coolant are cool before working on transmission oil cooler and engine cooling systems. Failure to comply may result in severe injury to personnel.

CAUTION

Cover all oil ports and ends of oil hoses and tubes when oil hoses or tubes are disconnected or removed to prevent contamination. Failure to comply may result in damage to equipment.

Note

- Tag all lines and fittings prior to removal for installation.
- Drain oil and coolant into suitable containers when hoses and tubes are disconnected or removed.

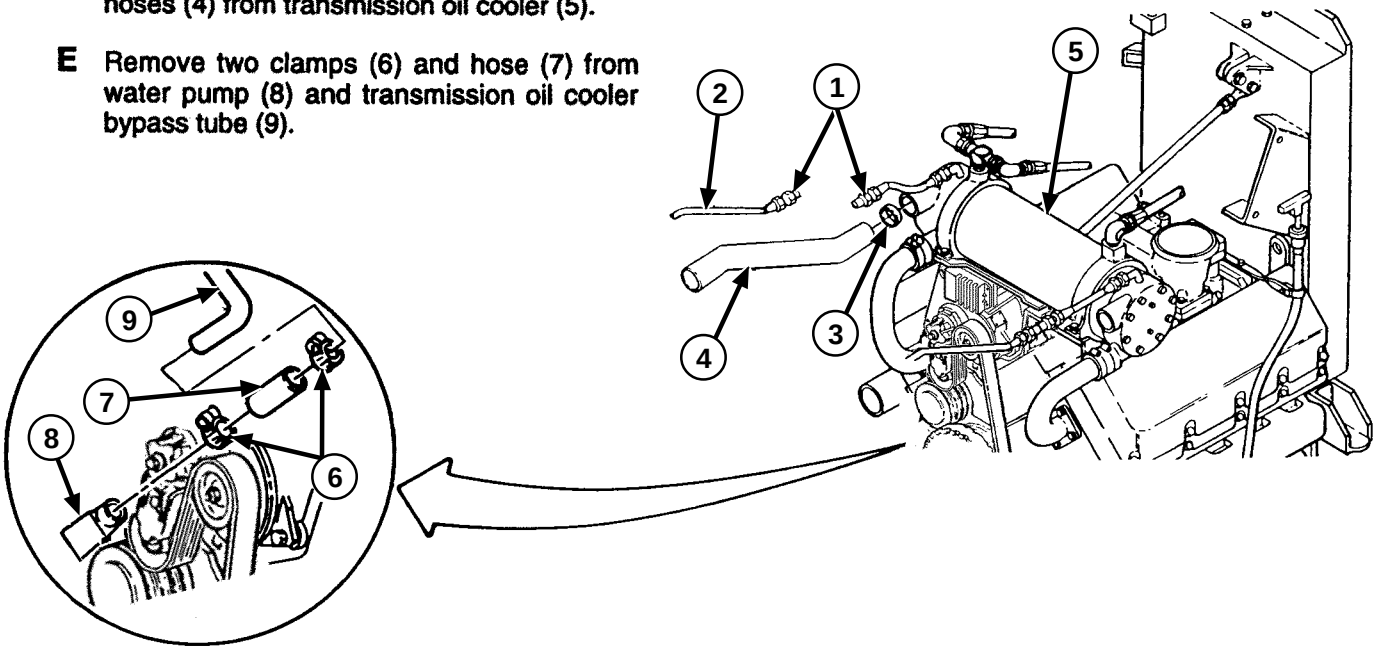
A Remove locknut (1), screw (2), and two washers (3) from radiator end of rod (4). Discard locknut (2).

B Remove nut (5), screw (6), two washers (7), and rod (4) from filter support (8).

C Align arrows on two quick-disconnects (1), and disconnect two hoses (2) at quick-disconnects (1).

D Loosen two clamps (3), and disconnect two hoses (4) from transmission oil cooler (5).

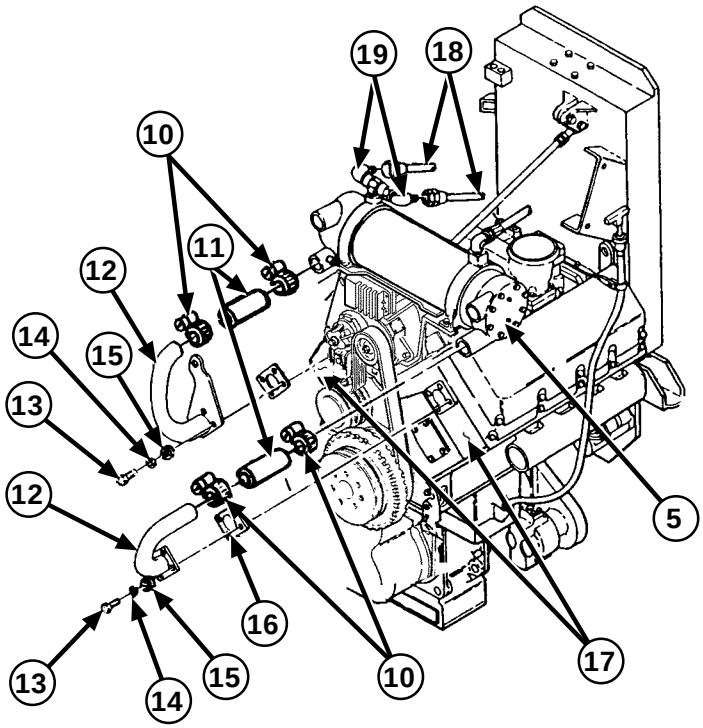
E Remove two clamps (6) and hose (7) from water pump (8) and transmission oil cooler bypass tube (9).



F Loosen four clamps (10) securing two hoses (11) to coolant tubes (12) and oil cooler (5).

G Remove eight screws (13), lockwashers (14), washers (15), two coolant tubes (12), gaskets (16), hoses (11), and four clamps (10) from oil cooler (5) and cylinder heads (17). Discard lockwashers (14) and gaskets (16).

H Disconnect two hoses (18) from elbows (19) at oil cooler (5).

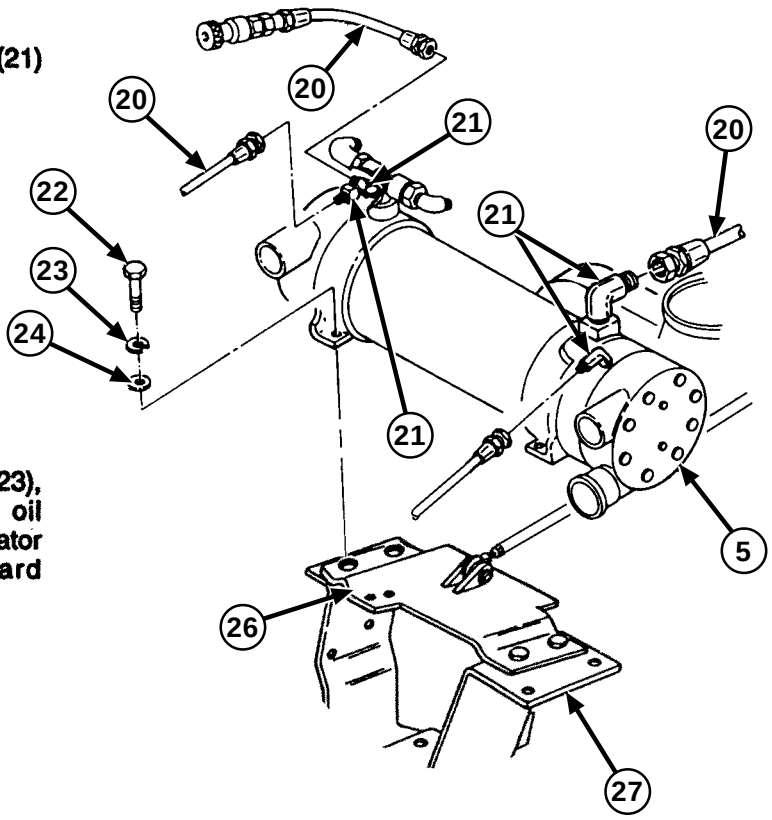


I Disconnect four hoses (20) from elbows (21) on oil cooler (5).

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J Deleted

K Remove four screws (22), lockwashers (23), washers (24), and oil cooler (5) from oil cooler mounting bracket (26) and alternator lower mounting bracket (27). Discard lockwashers (23).



DISASSEMBLY

A Remove two elbows (1) and adapter (2) from tee (3).

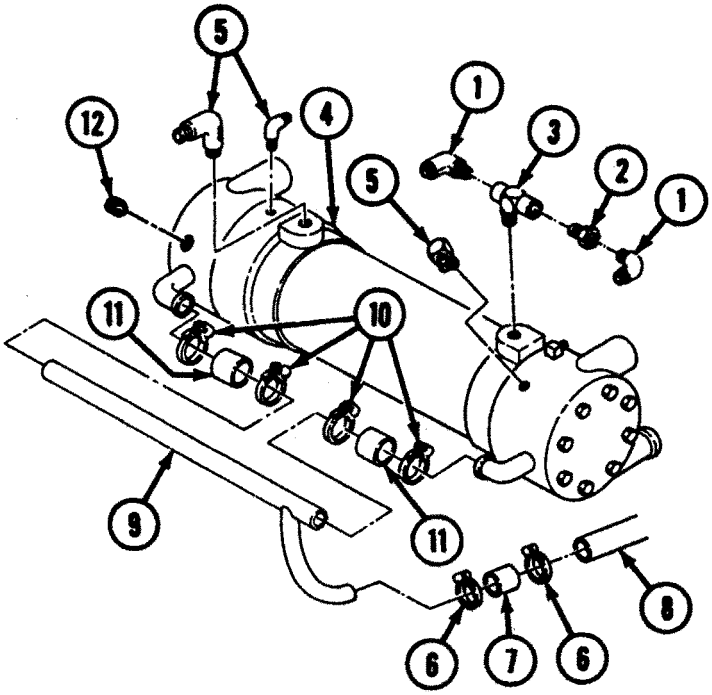
B Remove tee (3) from oil cooler (4).

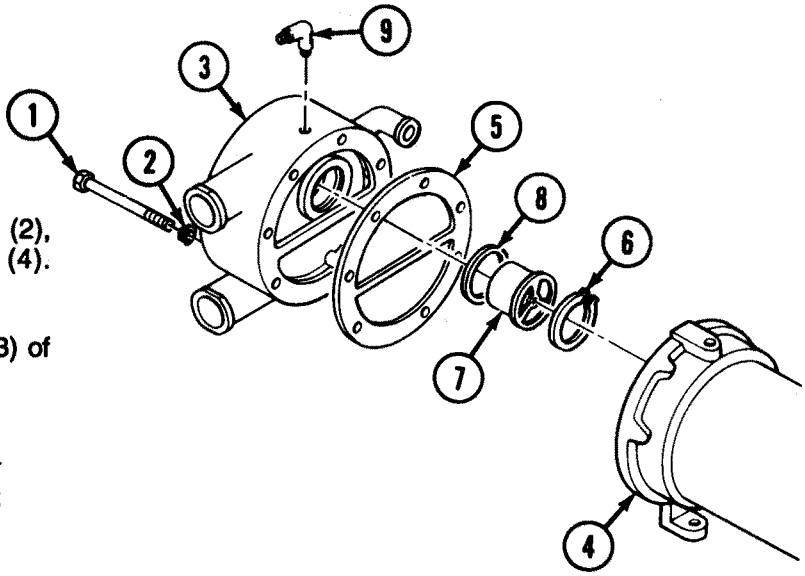
C Remove three elbows (5) from oil cooler (4).

D Remove two clamps (6), hose (7), and transmission oil cooler bypass tube (8) from coolant bypass tube (9).

E Loosen four clamps (10) and remove two hoses (11) and coolant bypass tube (9) from oil cooler (4). Replace hoses (11) if damaged.

F Remove six pipe plugs (12) from oil cooler (4).





G Remove eight screws (1), lockwashers (2), and right housing (3) from oil cooler (4). Discard lockwashers (2).

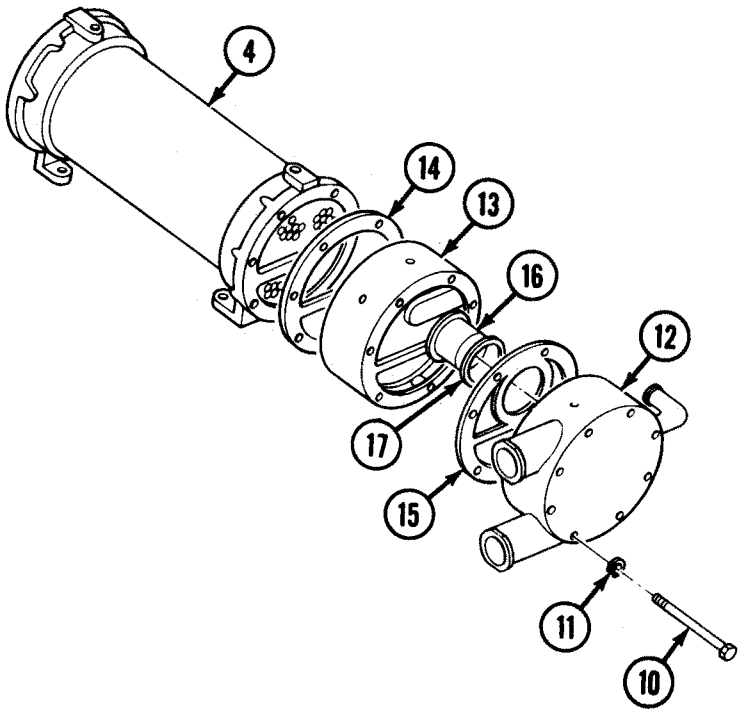
H Remove gasket (5) from right housing (3) of oil cooler (4). Discard gasket (5).

Note

- It may be necessary to use a prybar to remove thermostat seal from right housing.
- Work through water ports of housing to push out thermostat.

I Remove retaining ring (6), thermostat (7), and seal (8) from right housing (3). Discard seal (8).

J Remove elbow (9) from right housing (3).



K Remove eight screws (10), lockwashers (11), and left housing (12) from cover (13) and oil cooler (4). Discard lockwashers (11).

Note

Remove cover and gasket only if inspection reveals need for replacement.

L Remove cover (13) and gasket (14) from oil cooler (4). Discard gasket (14).

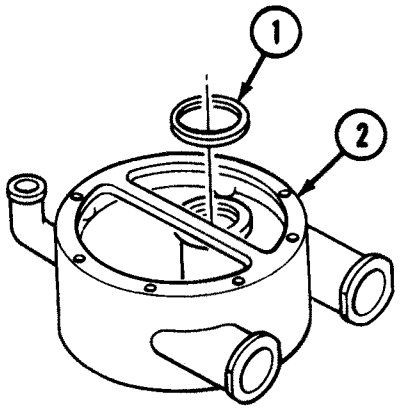
M Remove gasket (15) from left housing (12) and cover (13). Discard gasket (15).

Note

- It may be necessary to use a prybar to remove thermostat seal from left housing.
- Work through water ports of housing to push out thermostat.

N Remove thermostat (16) and thermostat seal (17) from left housing (12). Discard seal (17).

ASSEMBLY



A Position thermostat seal (1), lip down, in left housing (2).

B Using wood dowel of the same diameter as seal (1), tap seal (1) until seated in left housing (2).

C Install thermostat (3) on left housing (2).

Note

Ensure mating surfaces are clean before installing gasket.

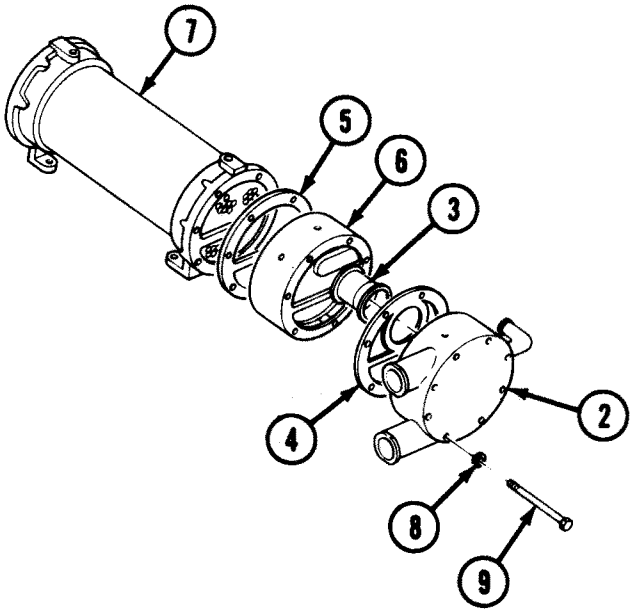
D Install gasket (4) on left housing (2). Align screw holes.

Note

- Perform step E only if cover was removed.
- Oil cooler should be in a vertical position to perform steps E through F.

E Install gasket (5) on cover (6), and position cover (6) and gasket (5) on oil cooler (7) with screw holes aligned.

F Install left housing (2) on cover (6) and oil cooler (7) with eight lockwashers (8) and screws (9). Tighten screws (9) finger tight.



G Position thermostat seal (1), lip down, in right housing (2).

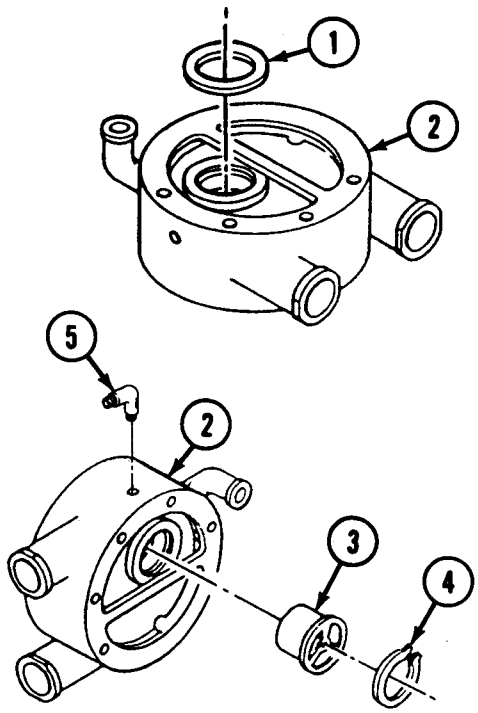
H Using wood dowel of same diameter as seal (1), tap seal (1) until seated in right housing (2).

I Install thermostat (3) on right housing (2) and secure with retaining ring (4).

CAUTION

Do not apply sealing compound to first threads of fittings. Failure to comply may result in damage to equipment.

J Coat threads of elbow (5) with sealing compound, and install elbow (5) on right housing (2).



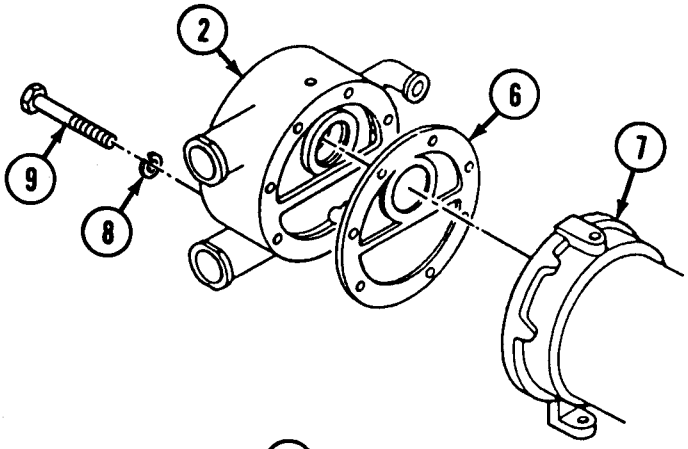
Note

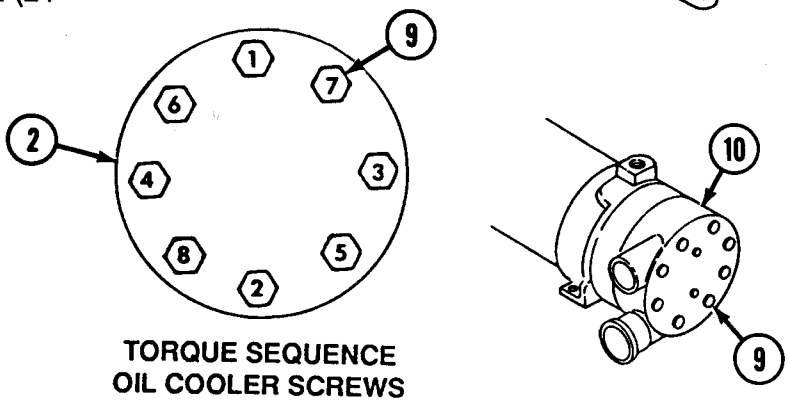
Ensure mating surfaces are clean before installing gasket.

K Install gasket (6) on right housing (2). Align screw holes.

L Install right housing (2) on oil cooler (7) with eight lockwashers (8) and screws (9). Tighten screws (9) finger tight.

M Refering to torque sequence, alternately tighten sixteen screws (9) at right housing (2) and left housing (10) to 18-20 lb-ft (24-27 N·m).





TORQUE SEQUENCE
OIL COOLER SCREWS
18-20 LB-FT (24-27 N·m).

N Install hose (11) on coolant bypass tube (12) and oil cooler bypass tube (13) with two clamps (14).

O Install coolant bypass tube (12) and two hoses (15) on oil cooler (7) with four clamps (16).

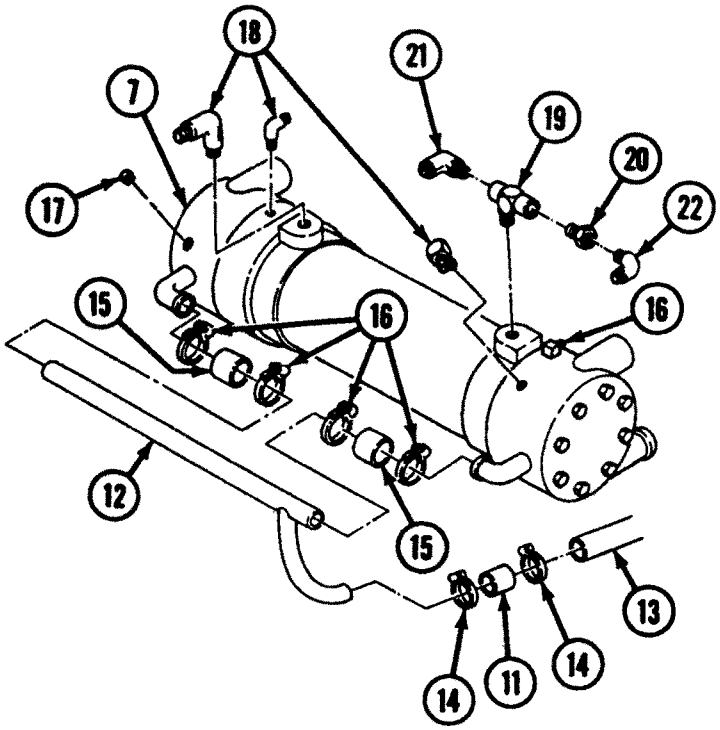
CAUTION

Do not apply sealing compound to first threads of fittings. Failure to comply may result in damage to equipment.

P Coat threads of six pipe plugs (17) with sealing compound, and install pipe plugs (17) on oil cooler (7).

Q Coat threads of three elbows (18) with sealing compound, and install elbows (18) on oil cooler (7).

R Coat pipe threads of tee (19), adapter (20), and elbows (21) and (22) with sealing compound, and install tee (19), adapter (20), and elbows (21) and (22) on oil cooler (7).



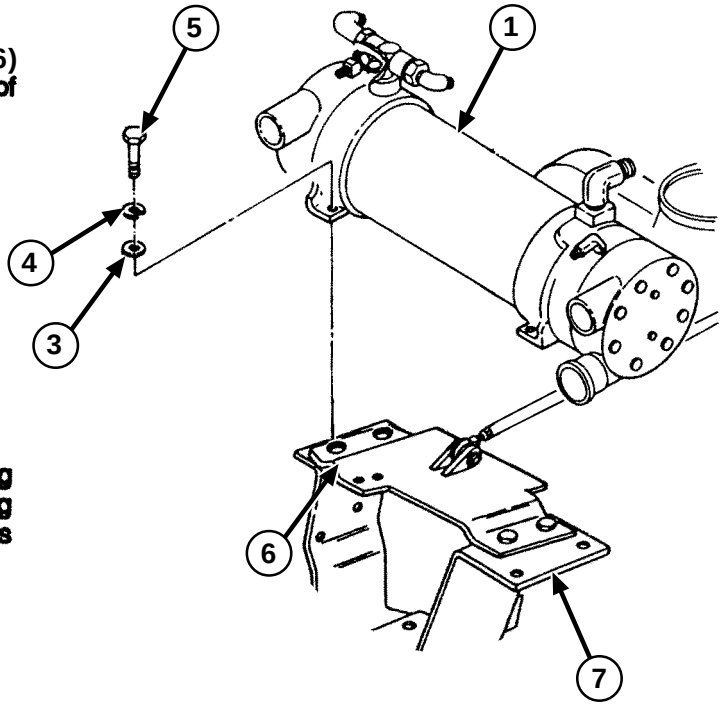
INSTALLATION

A Position oil cooler (1) on alternator bracket (6) with large ports of oil cooler (1) facing rear of vehicle.

Deleted

B Deleted

C Secure oil cooler (1) to oil cooler mounting bracket (6) and alternator lower mounting bracket (7) with four washers (3), lockwashers (4), and screws (5).



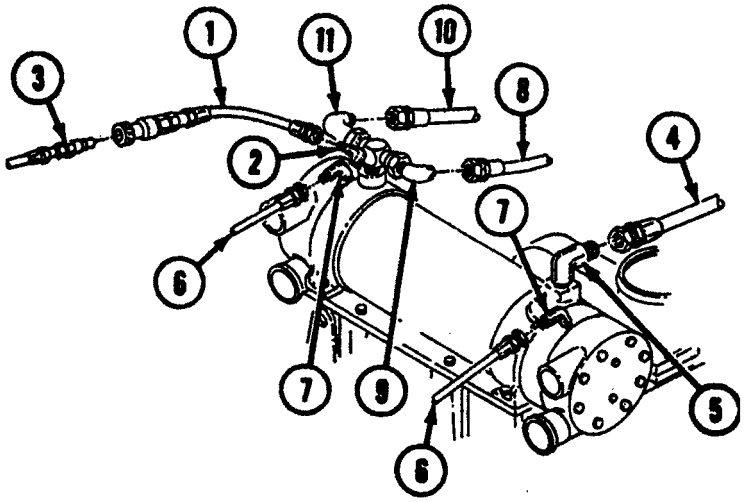
D Connect heater hose (1) to elbow (2). Align arrows on quick-disconnect (3), and connect heater hose (1) at quick-disconnect (3).

E Connect RH OIL CLR-2C hose (4) to elbow (5).

F Connect two OIL COOLER hoses (6) to elbows (7).

G Connect LH OIL CLR-3C hose (8) to elbow (9).

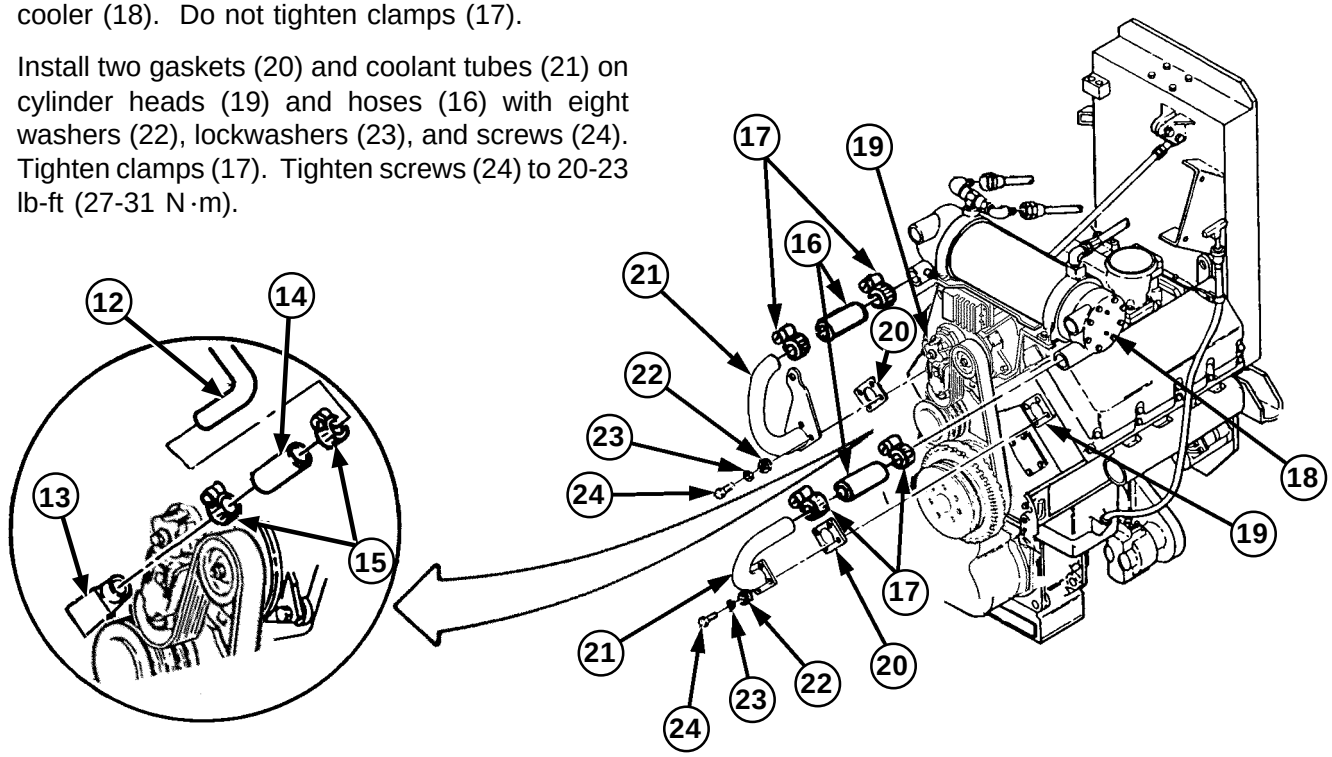
H Connect LH OIL CLR-1 hose (10) to elbow (11).



I Connect oil cooler bypass tube (12) to water pump (13) with hose (14) and two clamps (15).

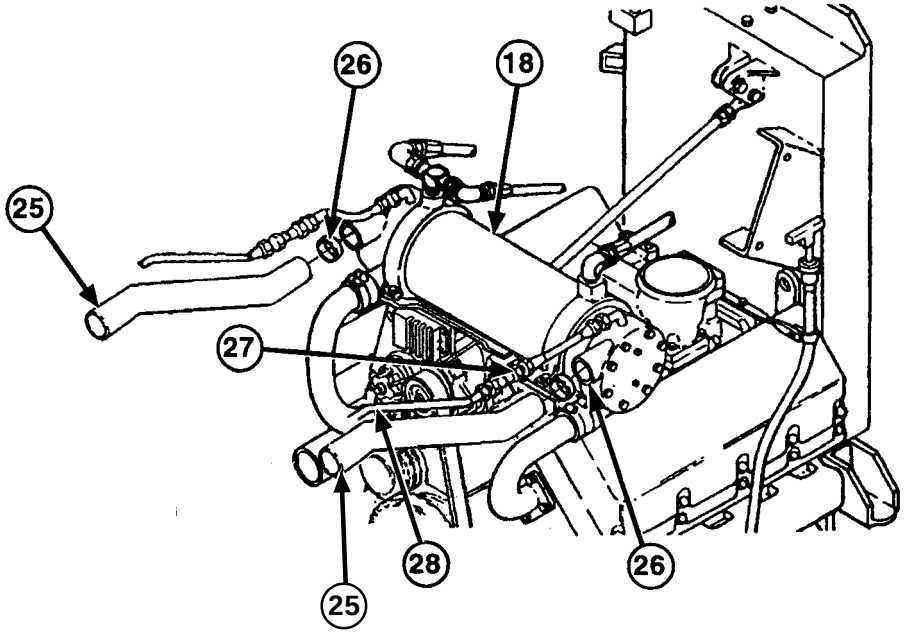
J Install two hoses (16) and four clamps (17) on oil cooler (18). Do not tighten clamps (17).

K Install two gaskets (20) and coolant tubes (21) on cylinder heads (19) and hoses (16) with eight washers (22), lockwashers (23), and screws (24). Tighten clamps (17). Tighten screws (24) to 20-23 lb-ft (27-31 N·m).



L Connect two radiator hoses (25) to oil cooler (18) with two clamps (26).

M Align arrows on quick-disconnect (27), and connect hose (28) to quick-disconnect (27).

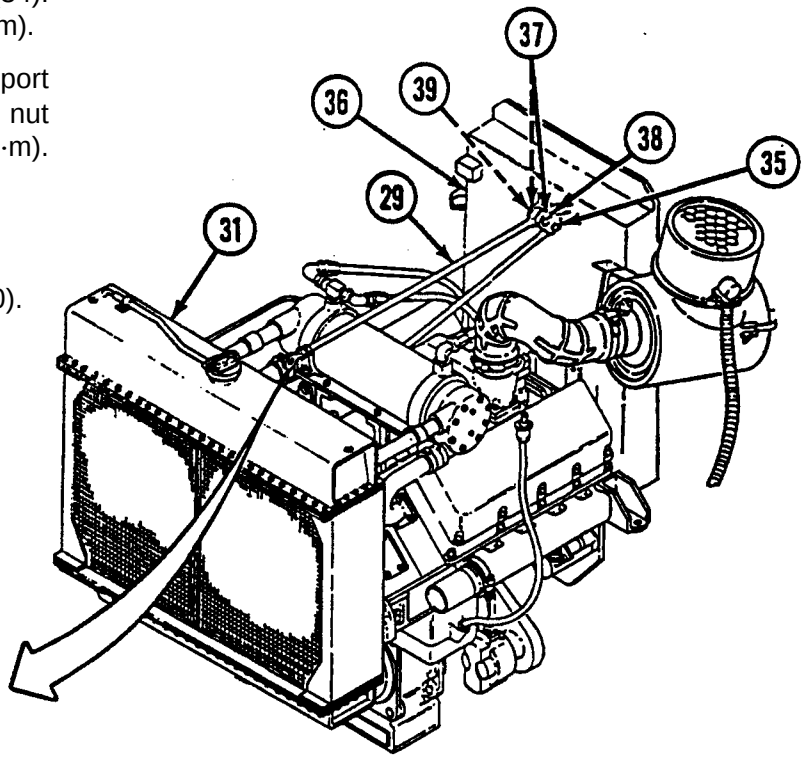


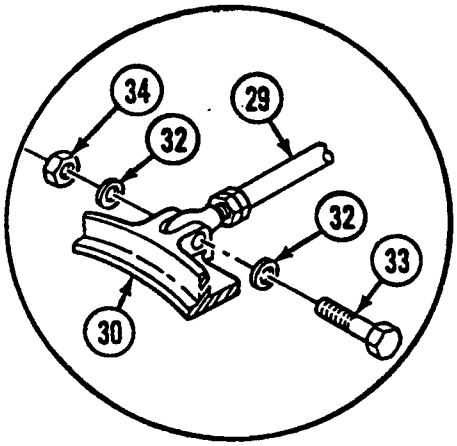
N Install rod (29) on bracket (30) of radiator (31) with two washers (32), screw (33), and locknut (34). Tighten locknut (34) to 20-25 lb-ft (27-34 N·m).

O Connect rod (29) to bracket (35) of filter support (36) with two washers (37), screw (38), and nut (39). Tighten nut (39) to 50-55 lb ft (68-75 N·m).

FOLLOW-ON TASKS:

- Fill cooling system (p 4-646).
- Service transmission (TM 5-2350-262-10).
- Install engine intake grilles and covers (p 4-399).





WATER PUMP/ALTERNATOR BELT AND TENSIONER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference

Page 3-150	Engine Overheats
Page 3-299	BATTERY-GENERATOR Gauge Indicates Low or No Voltage When Engine is Running

Equipment Condition:

Reference	Condition Description
Page 4-633	Fan Belt Removed

REMOVAL

Deleted

A Deleted

B Deleted

C Using 1/2-in. (13-mm) drive breaker bar, pull back tensioner (7), and slip belt (8) off alternator pulley (9). Release tensioner (7).

D Remove belt (8) from water pump pulley (10) and crankshaft pulley (11).

E Remove screw-assembled washer (12) and tensioner (7) from tensioner mounting bracket (13).

INSTALLATION

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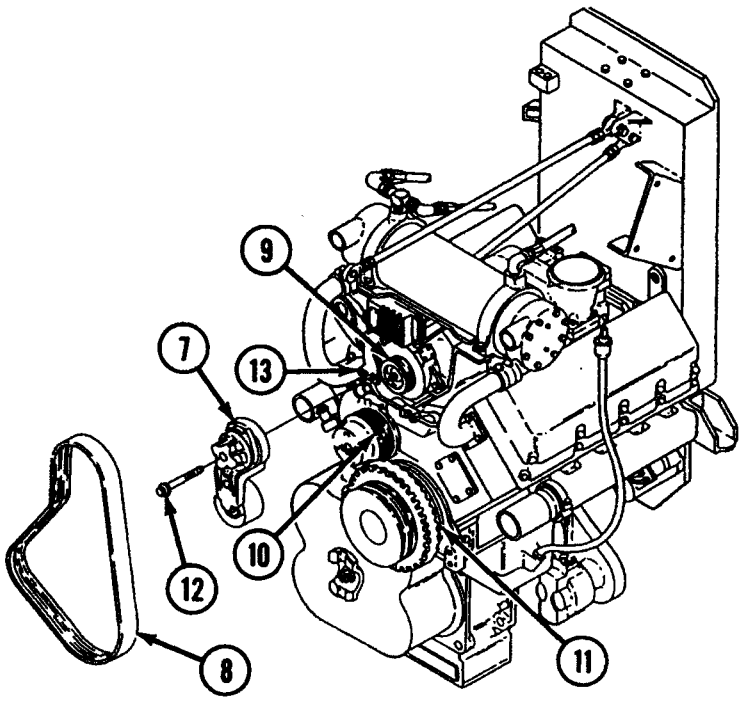
A Deleted

B Deleted

C Deleted

D Deleted

E Install tensioner (7) on tensioner mounting bracket (13) with screw-assembled washer (12). Tighten screw-assembled washer (12) 30-32 lb-ft (41-43 N-m).



F Position belt (8) around crankshaft pulley (11) and water pump pulley (10).

G Using 1/2-in. (13-mm) drive breaker bar, pull back tensioner (7), and slide belt (8) over alternator pulley (9). Release tensioner (7).

FOLLOW-ON TASK:
Install fan belt (p 4-633).

WATER PUMP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 15 Appendix D
Antiseizing (Teflon) Tape	Item 33 Appendix D

Parts:

Gasket (2)

Lockwasher (13)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Two Construction Equipment Repairers 62B10

Equipment Condition:

Reference	Condition Description
Page 4-597	Water Pump/ Alternator Belt Removed
Page 4-641	Fan Belt Tensioner Pulley Assembly Removed
Page 4-650	Radiator Removed

REMOVAL

Note

- Helper will assist with steps A and B.
- Mark location of pulleys with end of crankshaft prior to removal for installation.

A Install 3/4-in. (19-mm) breaker bar and 3-in. (8-cm) extension on square hole of pulley (1).

CAUTION

Engine is designed to rotate clockwise (facing vibration damper). Do not allow engine to rotate counterclockwise. Failure to comply may result in damage to equipment.

Note

Pulley must be rotated to gain access to mounting screws.

B While mechanic holds breaker bar to keep pulley (1) from rotating, remove seven screws (2), lockwashers (3), pulley (1), vibration damper (4), and pulley (5) from crankshaft (6). Discard lockwashers (3).

C Remove hose (7) and two clamps (8) from elbow (9).

D Loosen two screws (10) at elbow (9) and water pump (11).

E Disconnect lead (12) from engine water temperature transmitter (13). Remove transmitter (13) from water pump (11).

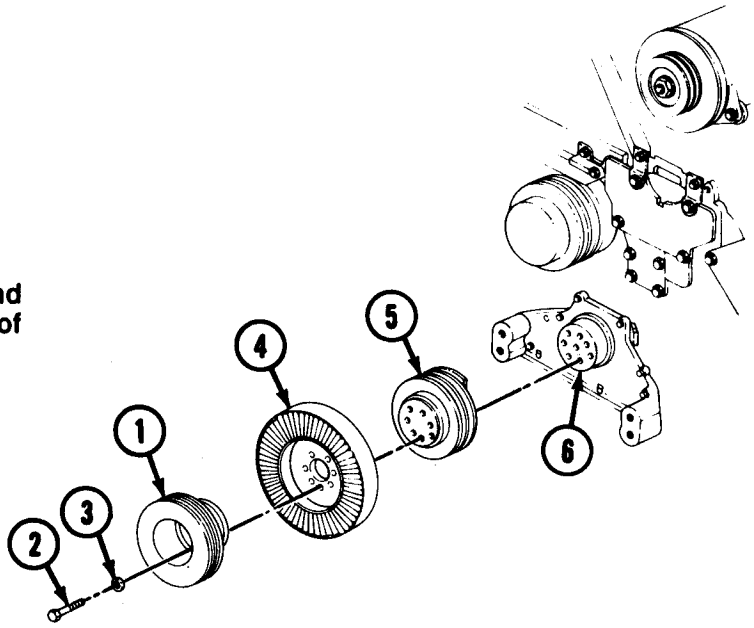
F Remove screw (14), washer (15), and clamp (16) securing compressor coolant tube (17) to cylinder head (18).

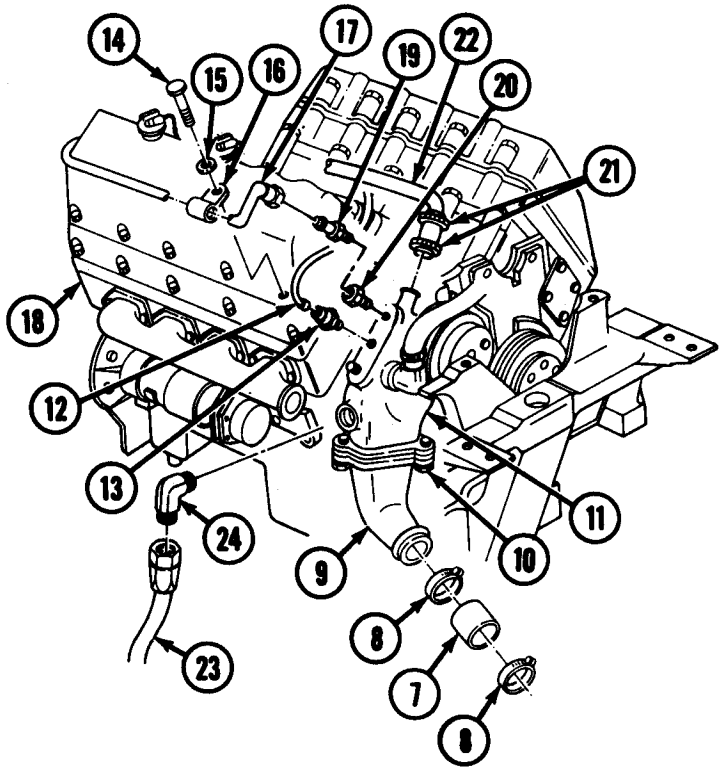
G Disconnect coolant tube (17) from adapter (19) of water pump (11).

H Remove adapter (19) and bushing (20) from water pump (11).

I Loosen two clamps (21) and disconnect transmission oil cooler bypass tube (22) from water pump (11).

J Disconnect heater hose (23) from elbow (24), and remove elbow (24) from water pump (11).





K Remove adapter (1) and elbow (2) from water pump (3).

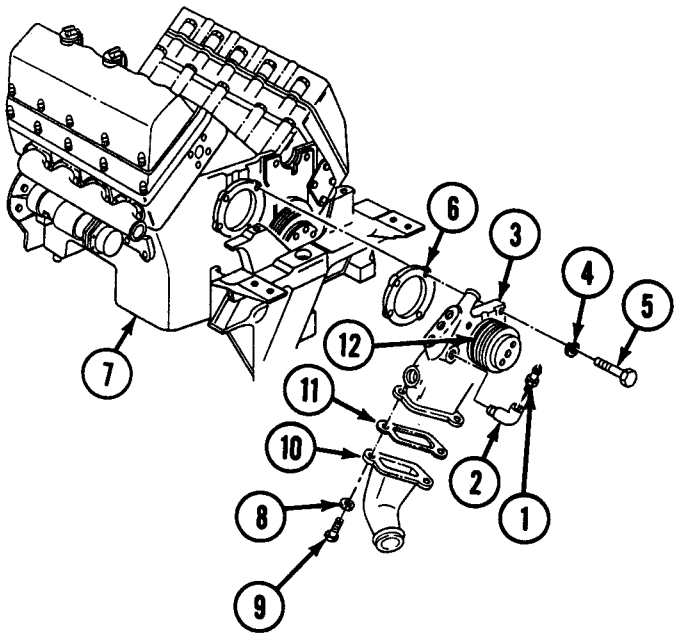
Note

Note length and location of screws during removal for installation.

L Remove four lockwashers (4), screws (5), water pump (3), and gasket (6) from cylinder block (7). Discard lockwashers (4) and gasket (6).

M Remove two lockwashers (8), screws (9), elbow (10), and gasket (11) from water pump (3). Discard lockwashers (9) and gasket (11).

N Using puller, remove pulley (12) from water pump (3).



INSTALLATION

CAUTION

Cooling system can leak unless all old gasket material is removed from mating surfaces.

Note

- Perform step A if new water pump is installed.
- Deleted

A Using arbor press, install pulley (1) on water pump (2).

B Install gasket (3) and elbow (4) on water pump (2) with two lockwashers (5) and screws (6). Tighten screws (6) to 25-30 lb-ft (34-41 N·m).

C Install water pump (2) and gasket (7) on cylinder block (8) with four lockwashers (9) and screws (10).

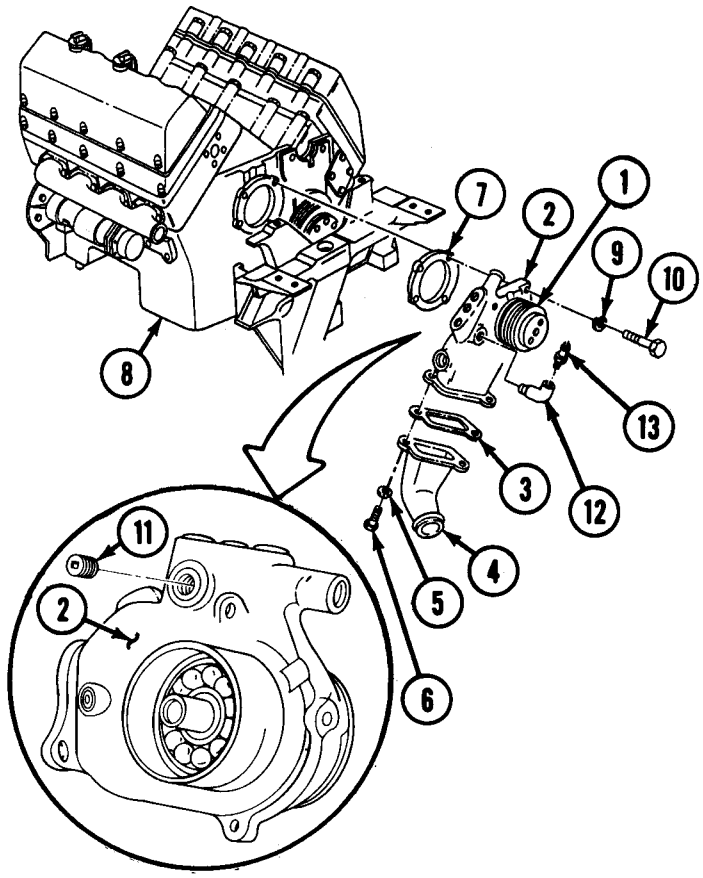
Note

Perform step D if new water pump is installed.

D Remove pipe plug (11) from water pump (2).

E Apply teflon tape to pipe threads of elbow (12), and install elbow (12) and adapter (13) on water pump (2).

F Tighten screws (10) to 30-35 lb-ft (41-47 N·m).



G Connect transmission oil cooler bypass tube (14) to water pump (2) with two clamps (15).

H Install bushing (16) and adapter (17) on water pump (2).

I Connect compressor coolant tube (18) to water pump (2).

J Secure coolant tube (18) to cylinder head (19) with clamp (20), washer (21), and screw (22).

K Install engine water temperature transmitter (23) on water pump (2). Connect lead (24) to transmitter (23).

CAUTION

Do not apply sealing compound to first threads of fitting. Failure to comply may result in damage to equipment.

L Apply sealing compound to threads of elbow (25), and install elbow (25) on water pump (2). Connect heater hose (26) to elbow (25).

M Install hose (27) on elbow (3) with two clamps (28).

Note

- Holes will only align in one position.
- Deleted

N Install pulley (29), vibration damper (30), and pulley (31) on crankshaft (32) with seven lockwashers (33) and screws (34).

Note

Helper will assist with steps O and P.

O Install 3/4-in. (19-mm) breaker bar and 3-in. (8-cm) extension on square hole of pulley (31).

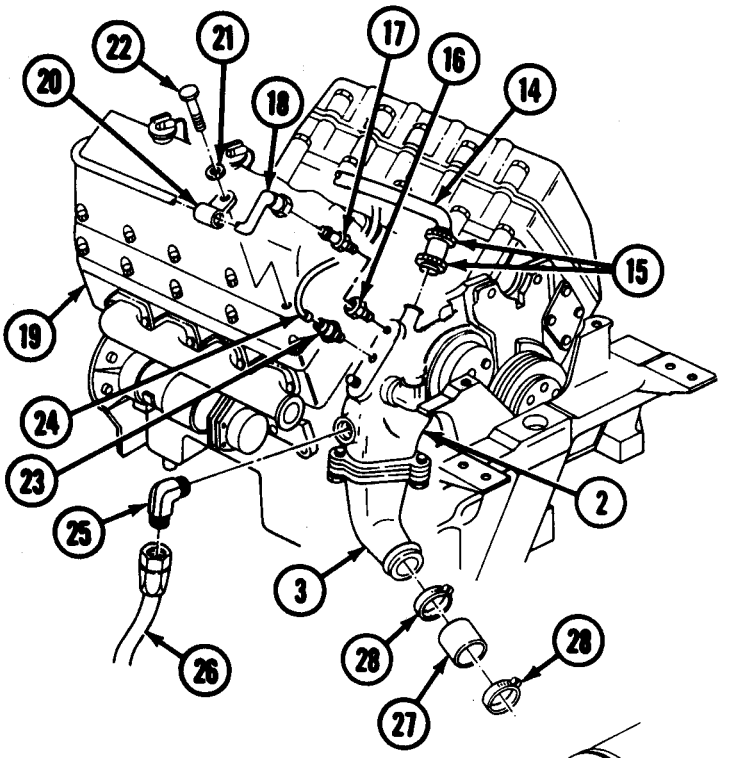
CAUTION

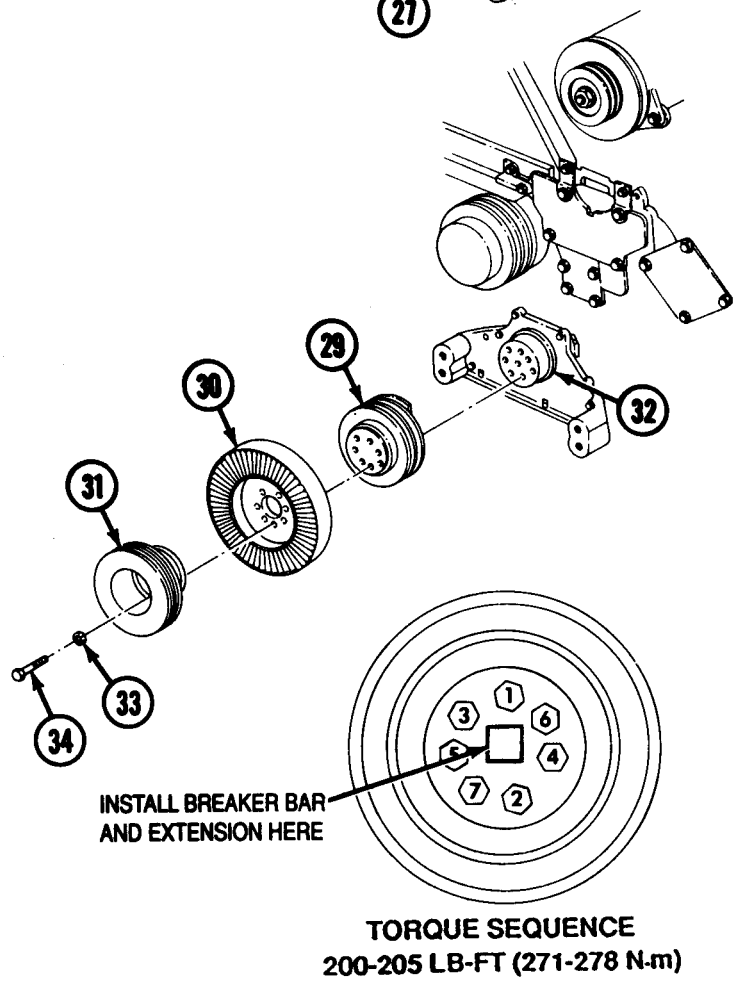
Engine is designed to rotate clockwise (facing vibration damper). Do not allow engine to rotate counterclockwise. Failure to comply may result in damage to equipment.

P While mechanic holds breaker bar to keep pulley (31) from rotating, refer to torque sequence and tighten screws (34) to 200-205 lb-ft (271-278 N·m).

FOLLOW-ON TASKS:

- Install radiator (p 4-652).
- Install fan belt tensioner pulley assembly (p 4-643).
- Install water pump/alternator belt (p 4-597).





TORQUE SEQUENCE
200-205 LB-FT (271-278 N·m)

ROCKER ARM COVER AND GASKET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Gasket (2)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-7	Throttle Linkage Bracket Removed (Left Cover Removal)
Page 4-580	Oil Level Indicator Bracket Removed (Right Cover Removal)

REMOVAL

Note

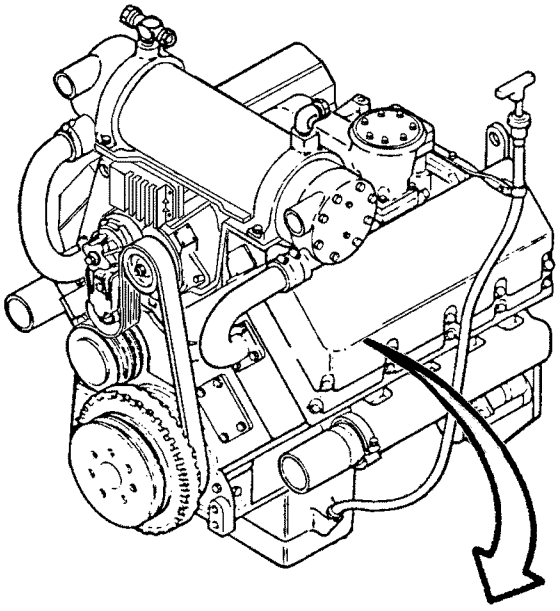
Both covers are removed the same way. Right side cover is shown. Access to right side cover is easier if engine air cleaner is removed (p 4-605).

A Remove five screw-assembled washers (1), four screw-assembled washers (2), nine washers (3), and cover (4) from housing (5).

B Remove gasket (6) from cover (4) or housing (5). Discard gasket (6).

C Remove five screw-assembled washers (7), washers (8), and housing (5) from cylinder head (9).

D Remove gasket (10) from housing (5) or cylinder head (9). Discard gasket (10).



INSTALLATION

CAUTION

Gaskets will leak unless all old gasket material is removed from mating surfaces of cover, housing, and cylinder head before installing new gaskets. Failure to comply may result in damage to equipment.

Note

Both covers are installed the same way. Right side cover is shown.

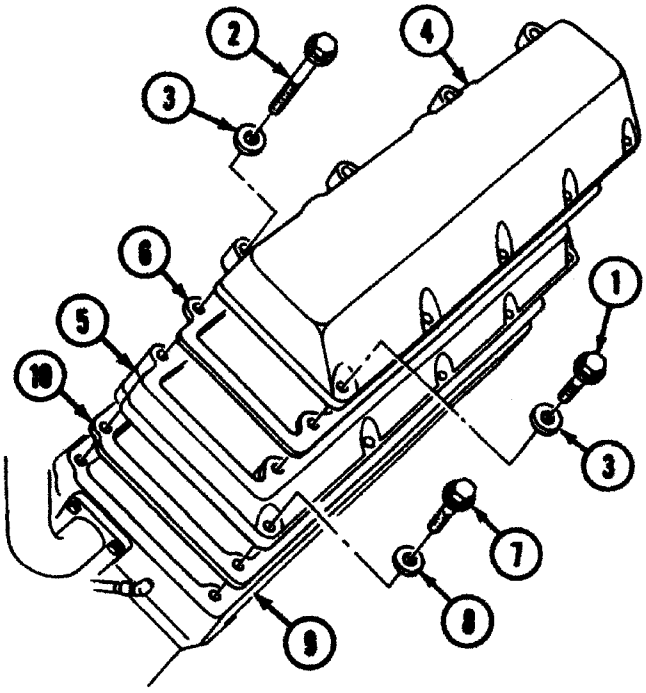
A Install gasket (10) and housing (5) on cylinder head (9) with five washers (8) and screw-assembled washers (7). Do not tighten screw-assembled washers (7).

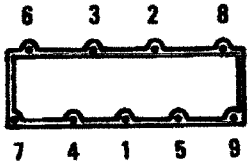
B Install gasket (6) and cover (4) on housing (5) with nine washers (3), five screw-assembled washers (1), and four screw-assembled washers (2).

C Refering to torque sequence, tighten five screw-assembled washers (1) and four screw-assembled washers (2) to 18-20 lb-ft (24-27 N·m). Tighten five screw-assembled washers (7) to 30-35 lb-ft (41-47 N·m).

FOLLOW-ON TASKS:

- Install oil level indicator bracket (right cover) (p 4-580).
- Install throttle linkage bracket (left cover (p 4-11).





TORQUE SEQUENCE

AIR CLEANER REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Clamp

Lockwasher (2)

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

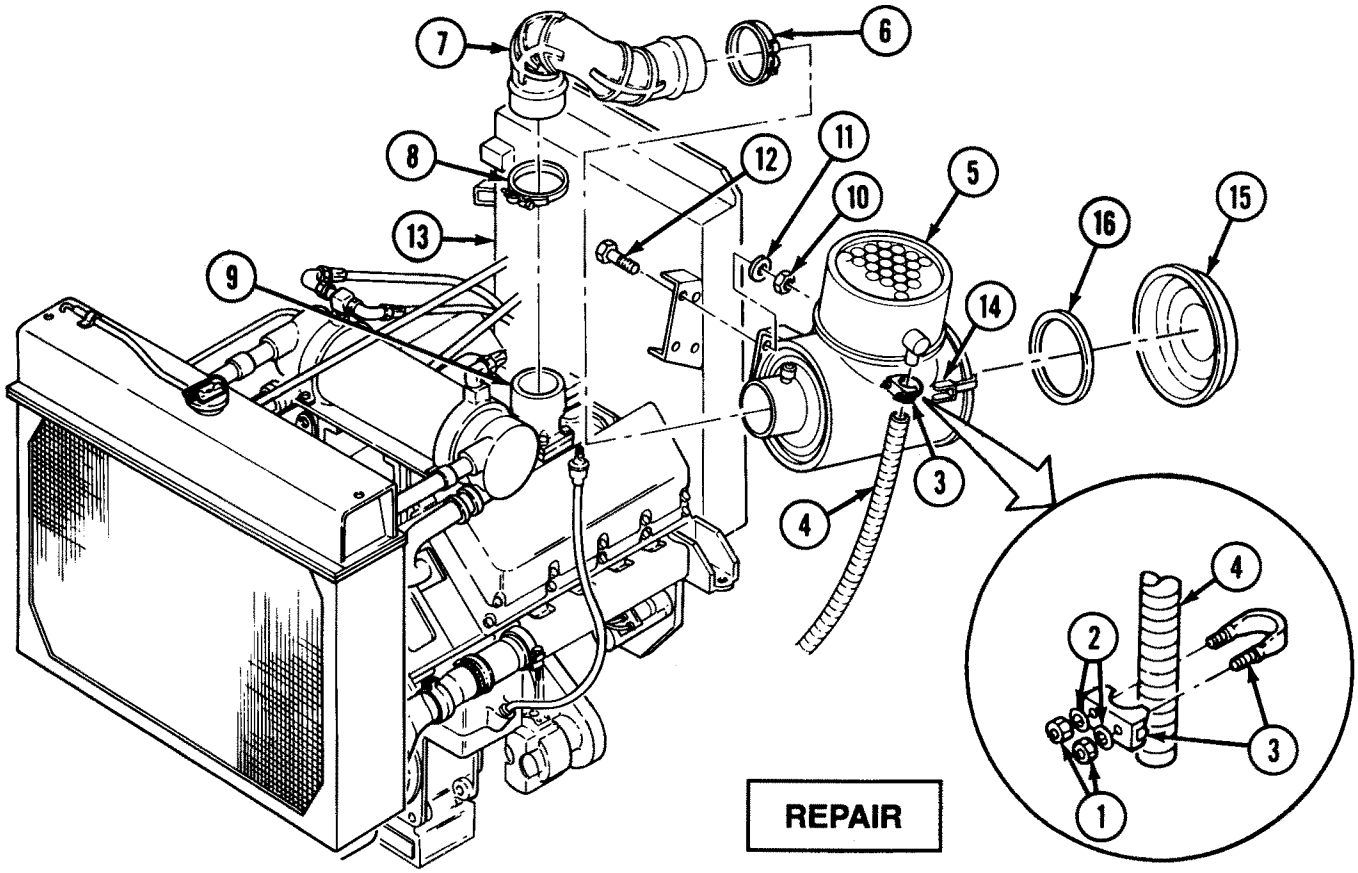
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened

General Safety Instructions:

WARNING

If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment.



WARNING

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

REMOVAL

A Remove two nuts (1), lockwashers (2), clamp (3), and flexible air hose (4) from air cleaner (5). Discard nuts (1), lockwashers (2), and clamp (3).

B Remove clamp (6) and disconnect air intake hose (7) from filter (5).

C Remove clamp (8) and remove air intake hose (7) from intake manifold (9).

D Remove four nuts (10), washers (11), self-locking screws (12), and air cleaner (5) from support (13). Discard self-locking screws (12).

REPAIR

A Loosen three latches (14) and remove cover (15). If damaged, remove gasket (16) and install new gasket (16) with silver side facing out. Install cover (15) and secure with three latches (14).

B Replace any unserviceable parts.

C Refer to TM 5-2350-262-10 for element replacement.

INSTALLATION

A Install air cleaner (5) on support (13) with four washers (11), self-locking screws (12), and nuts (10).

B Install air intake hose (7) and clamps (6) and (8) on intake manifold (9) and air cleaner (5). Secure by tightening clamps (6) and (8).

C Connect flexible air hose (4) to air cleaner (5), and secure air hose (4) with clamp (3), two lockwashers (2), and nuts (1). Tighten nuts (1) to 15-20 lb-ft (20-27 N•m).

FOLLOW-ON TASK:
Close engine intake grilles (TM 5-2350-262-10).

MUFFLER SHIELDS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D

Parts:

Self-locking Screw (5)

Locknut (4)

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Battery Box Top Deflector Removed

General Safety Instructions:

WARNING

Hot exhaust system can cause serious burns. Do not work on or near hot exhaust system components unless exhaust system is cool.

REMOVAL

WARNING

Hot exhaust system can cause serious burns. Do not work on or near hot exhaust system components unless exhaust system is cool. Failure to comply may result in injury to personnel.

A Remove two self-locking screws (1) and latch (2) from radiator side plate (3). Discard self-locking screws (1).

B Remove two locknuts (4), washers (5), screws (6), and latch (7) from bracket (8). Discard locknuts (4).

C Loosen two screws (9), and remove exhaust stack (10) and pipe clamp (11) from muffler (12).

D Remove three self-locking screws (13), washers (14), and muffler shields (15) and (16) from brackets (17). Discard self-locking screws (13).

E Remove two locknuts (18), washers (19), screws (20), and bracket (8) from muffler shield (16). Discard locknuts (18).

INSTALLATION

A Install bracket (8) on muffler shield (16) with two screws (20), washers (19), and locknuts (18).

Note

Apply lubrication oil to threads of screws prior to installation.

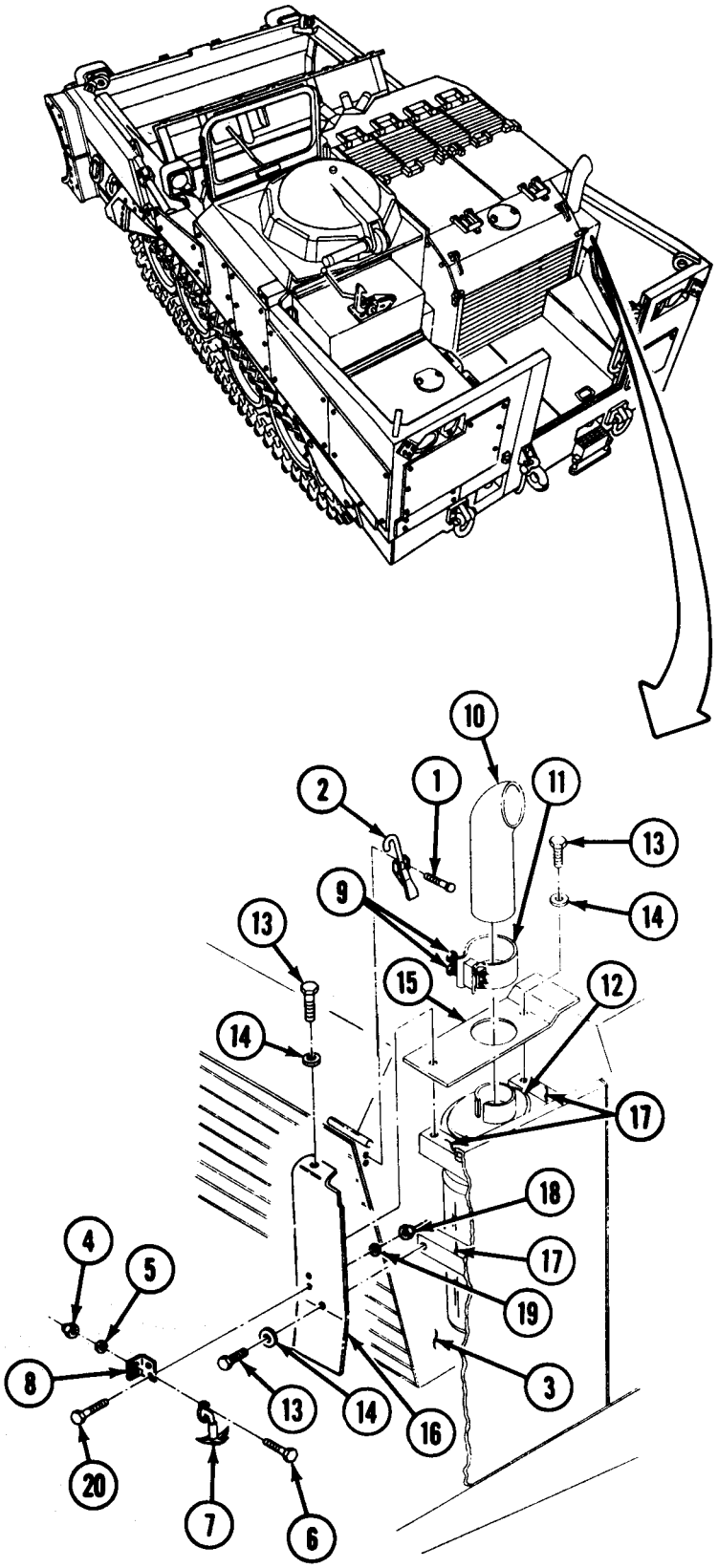
B Install muffler shields (15) and (16) on brackets (17) with three washers (14) and self-locking screws (13). Tighten self-locking screws (13) to 106-133 lb-in. (12-15 N·m).

C Install pipe clamp (11) and exhaust stack (10) on muffler (12). Tighten two screws (9) to 50-60 lb-ft (68-81 N·m).

D Install latch (7) on bracket (8) with two screws (6), washers (5), and locknuts (4).

E Install latch (2) on radiator side plate (3) with two self-locking screws (1).

FOLLOW-ON TASK:
Install battery box top deflector (TM 5-2350-262-10).



MUFFLER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Clamp

Lockwasher (6)

Nut (2)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-327	Radiator and Engine Compartment Armor Shroud Removed
Page 4-607	Muffler Shields Removed

General Safety Instructions:

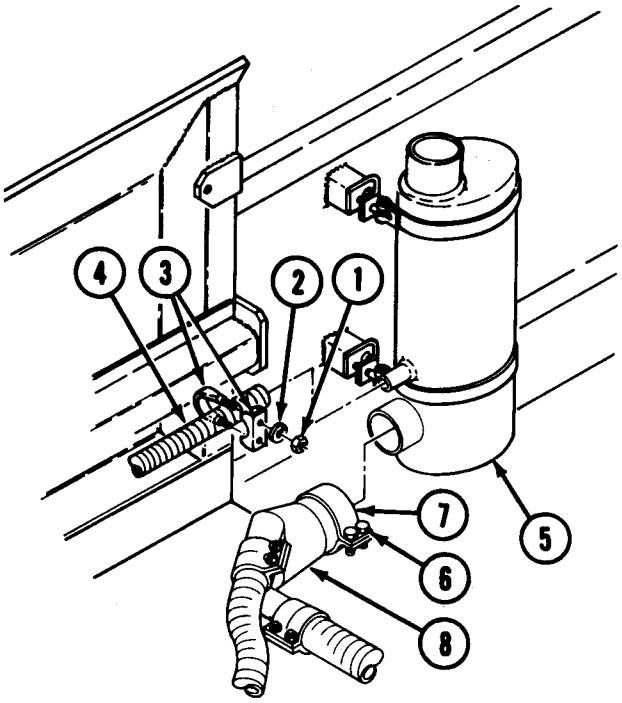
WARNING

Hot exhaust system can cause serious burns. Do not work on or near hot exhaust system components unless exhaust system is cool.

REMOVAL

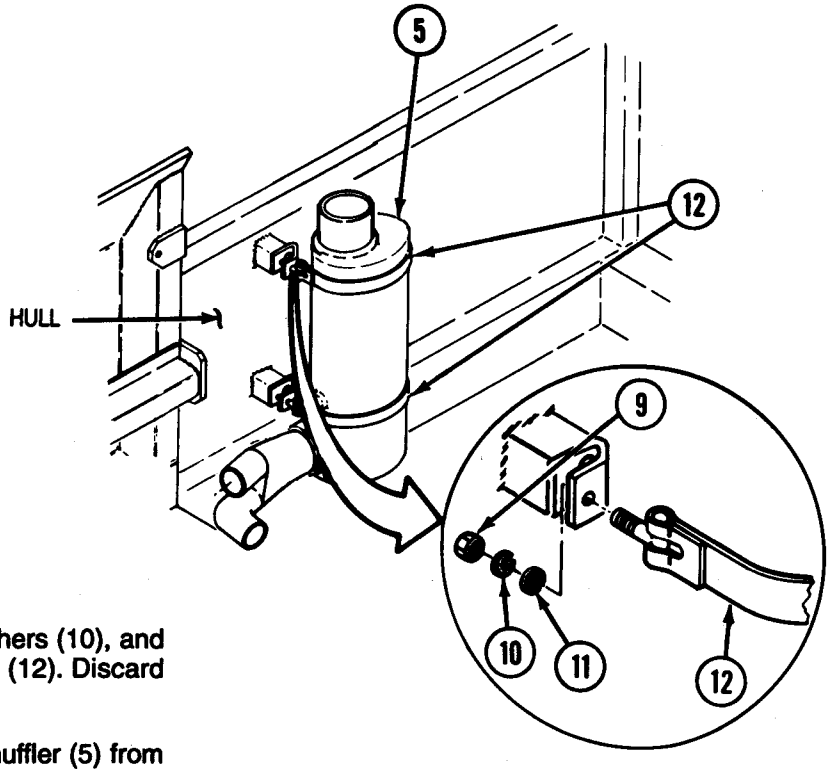
WARNING

Hot exhaust system can cause serious burns. Do not work on or near hot exhaust system components unless exhaust system is cool. Failure to comply may result in injury to personnel.



A Remove two nuts (1), lockwashers (2), and clamp (3) from hose (4) and disconnect hose (4) from muffler (5). Discard nuts (1), lockwashers (2), and clamp (3).

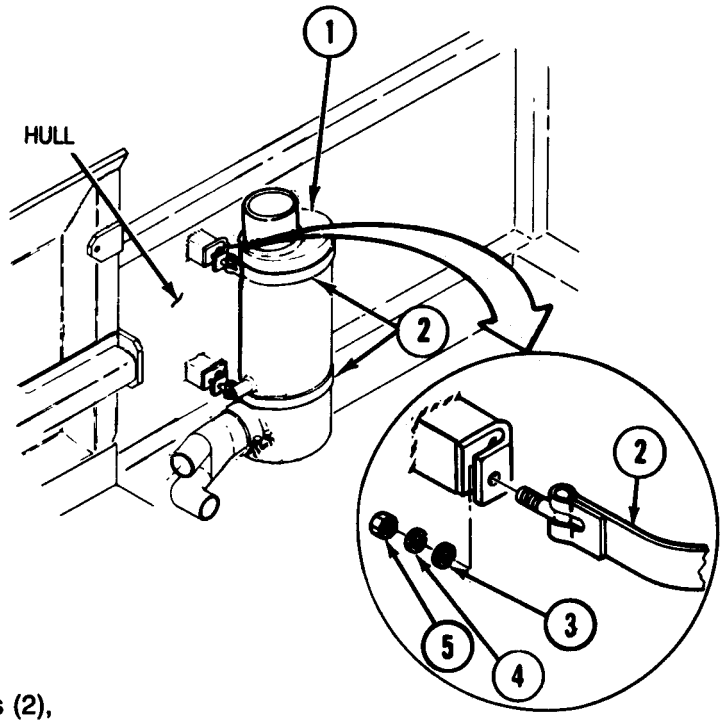
B Loosen two screws (6) on clamp (7), and disconnect collector (8) from muffler (5).



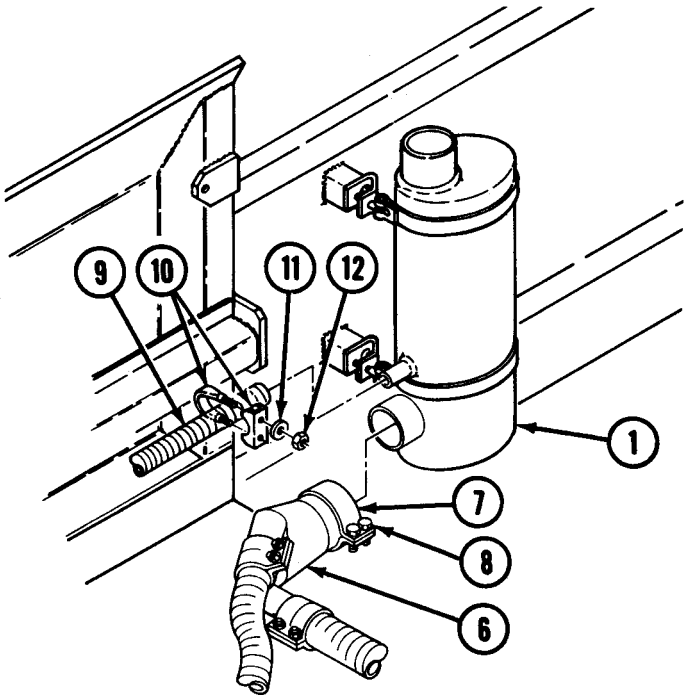
C Remove four nuts (9), lockwashers (10), and washers (11) from two straps (12). Discard lockwashers (10).

D Remove two straps (12) and muffler (5) from hull.

INSTALLATION



A Install muffler (1) on hull with two straps (2), four washers (3), lockwashers (4), and nuts (5).



B Connect collector (6) to muffler (1) with clamp (7). Tighten two screws (8) to 50-60 lb-ft (68-81 N·m).

C Connect upper hose (9) to muffler (1) with clamp (10), two lockwashers (11), and nuts (12). Tighten nuts (12) to 15-20 lb-ft (20-27 N·m).

FOLLOW-ON TASKS:

- Install muffler shields (p 4-607).
- Install radiator and engine compartment armor shroud (p 4-332).

EXHAUST PIPES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Clamp (2)

Lockwasher (4)

Nut (4)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

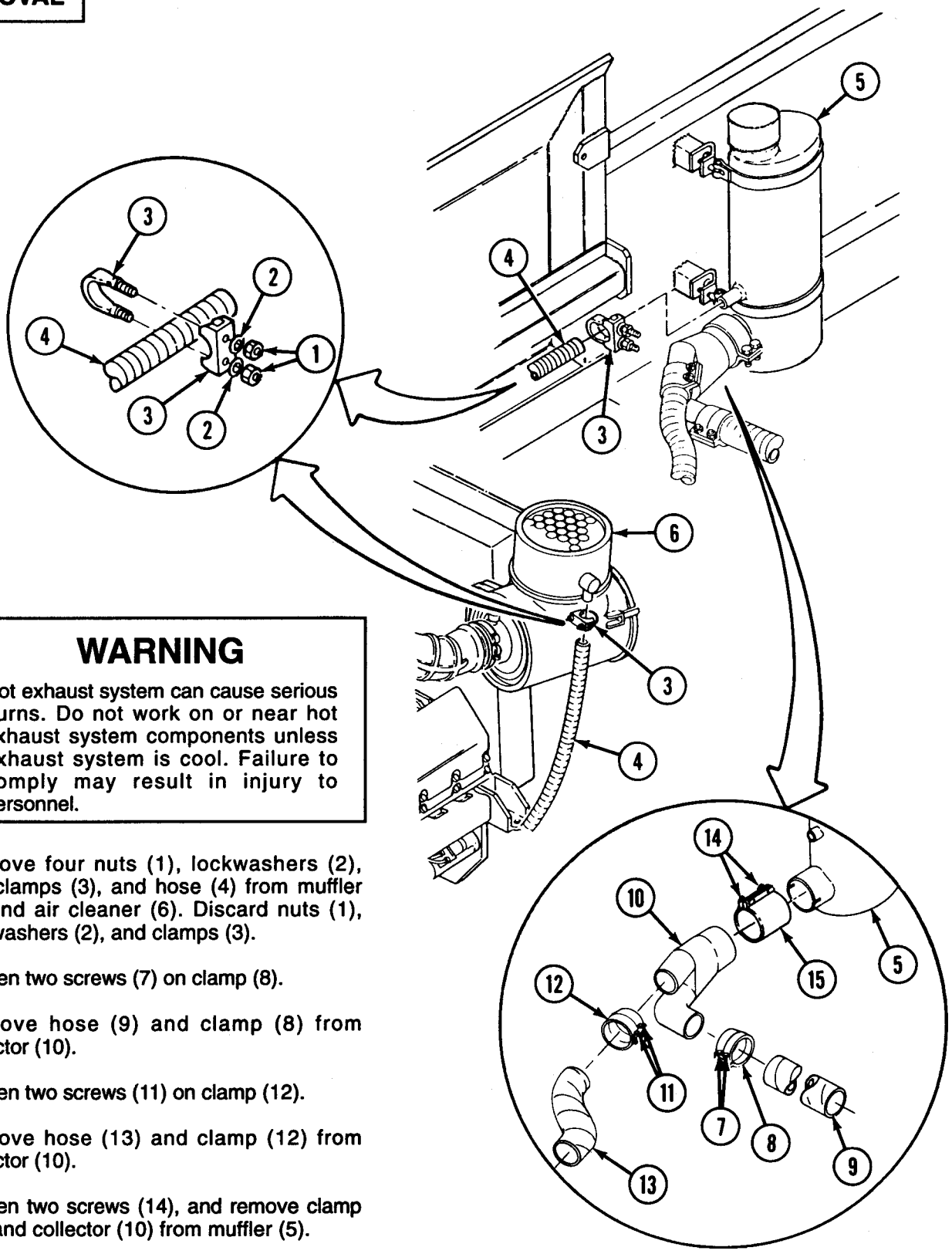
Reference	Condition Description
TM 5-2350-262-10	Engine Covers Opened
Page 4-650	Radiator Removed

General Safety Instructions:

WARNING

Hot exhaust system can cause serious burns. Do not work on or near hot exhaust system components unless exhaust system is cool.

REMOVAL



WARNING

Hot exhaust system can cause serious burns. Do not work on or near hot exhaust system components unless exhaust system is cool. Failure to comply may result in injury to personnel.

A Remove four nuts (1), lockwashers (2), two clamps (3), and hose (4) from muffler (5) and air cleaner (6). Discard nuts (1), lockwashers (2), and clamps (3).

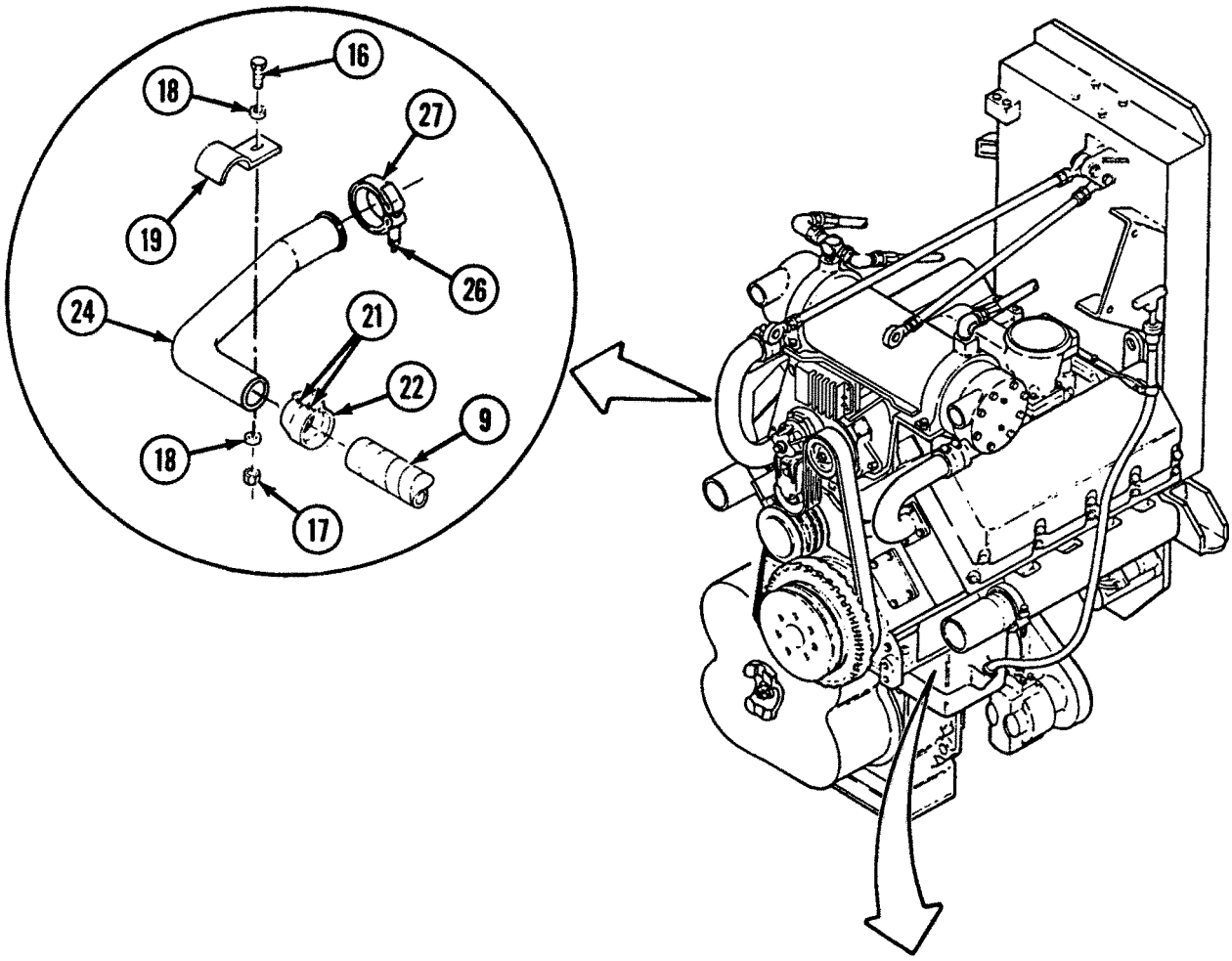
B Loosen two screws (7) on clamp (8).

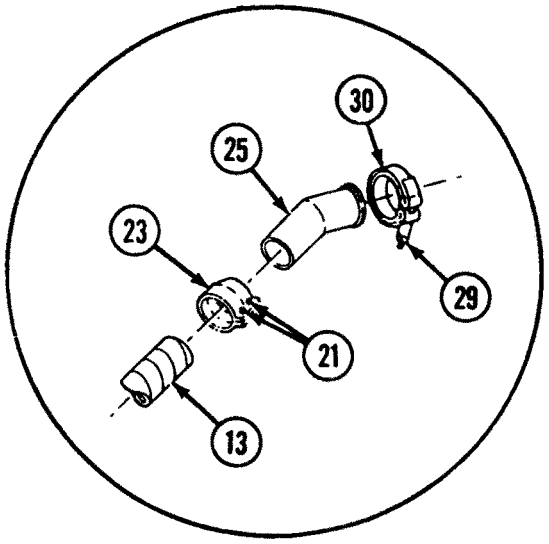
C Remove hose (9) and clamp (8) from collector (10).

D Loosen two screws (11) on clamp (12).

E Remove hose (13) and clamp (12) from collector (10).

F Loosen two screws (14), and remove clamp (15) and collector (10) from muffler (5).





G Remove screw (16), nut (17), two washers (18), and clamp (19) from radiator mount (20).

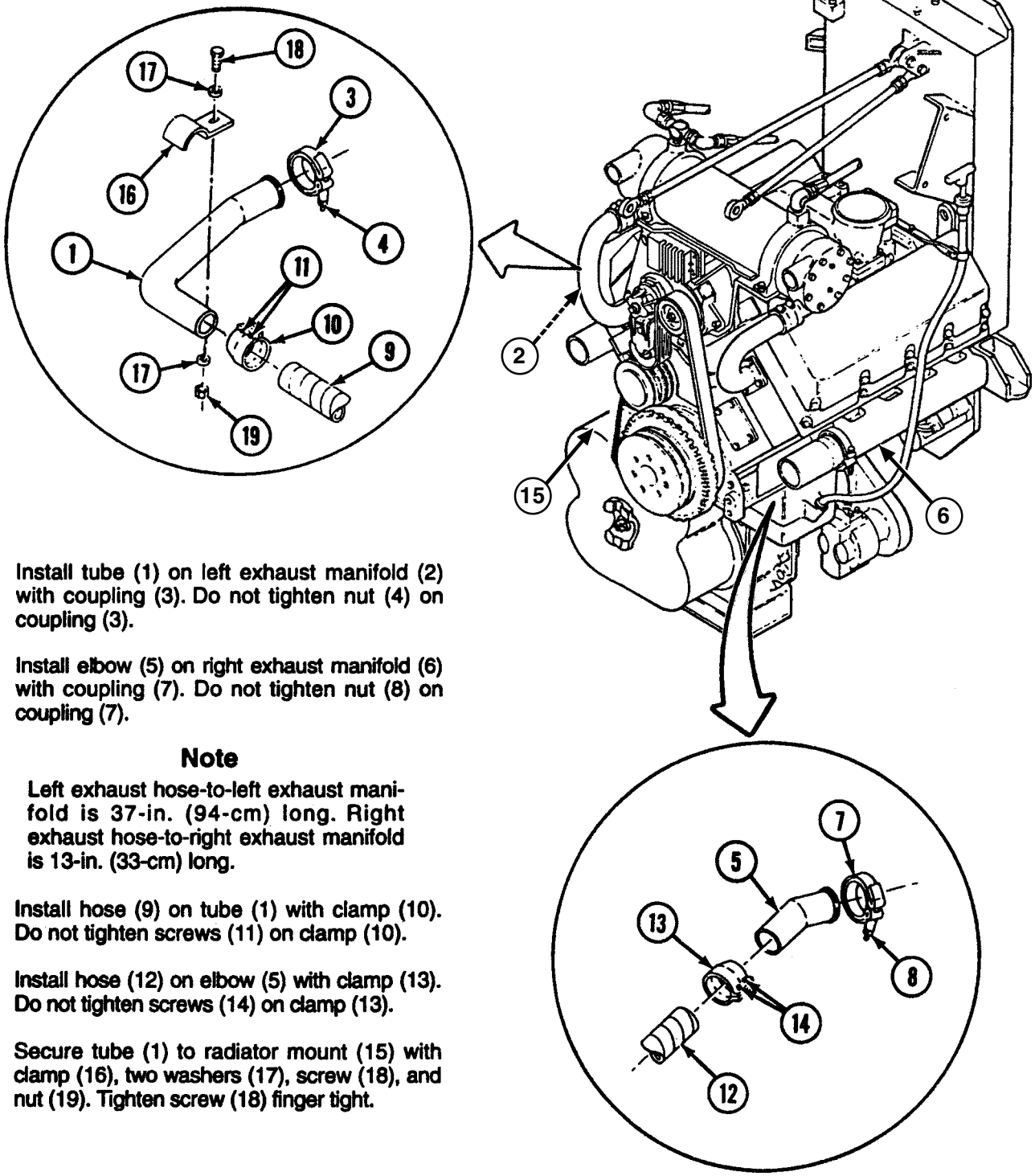
H Loosen four screws (21) on clamps (22) and (23).

I Remove clamps (22) and (23) and hoses (9) and (13) from tube (24) and elbow (25).

J Loosen nut (26) on coupling (27) and remove coupling (27) and tube (24) from left exhaust manifold (28).

K Loosen nut (29) on coupling (30) and remove coupling (30) and elbow (25) from right exhaust manifold (31).

INSTALLATION



A Install tube (1) on left exhaust manifold (2) with coupling (3). Do not tighten nut (4) on coupling (3).

B Install elbow (5) on right exhaust manifold (6) with coupling (7). Do not tighten nut (8) on coupling (7).

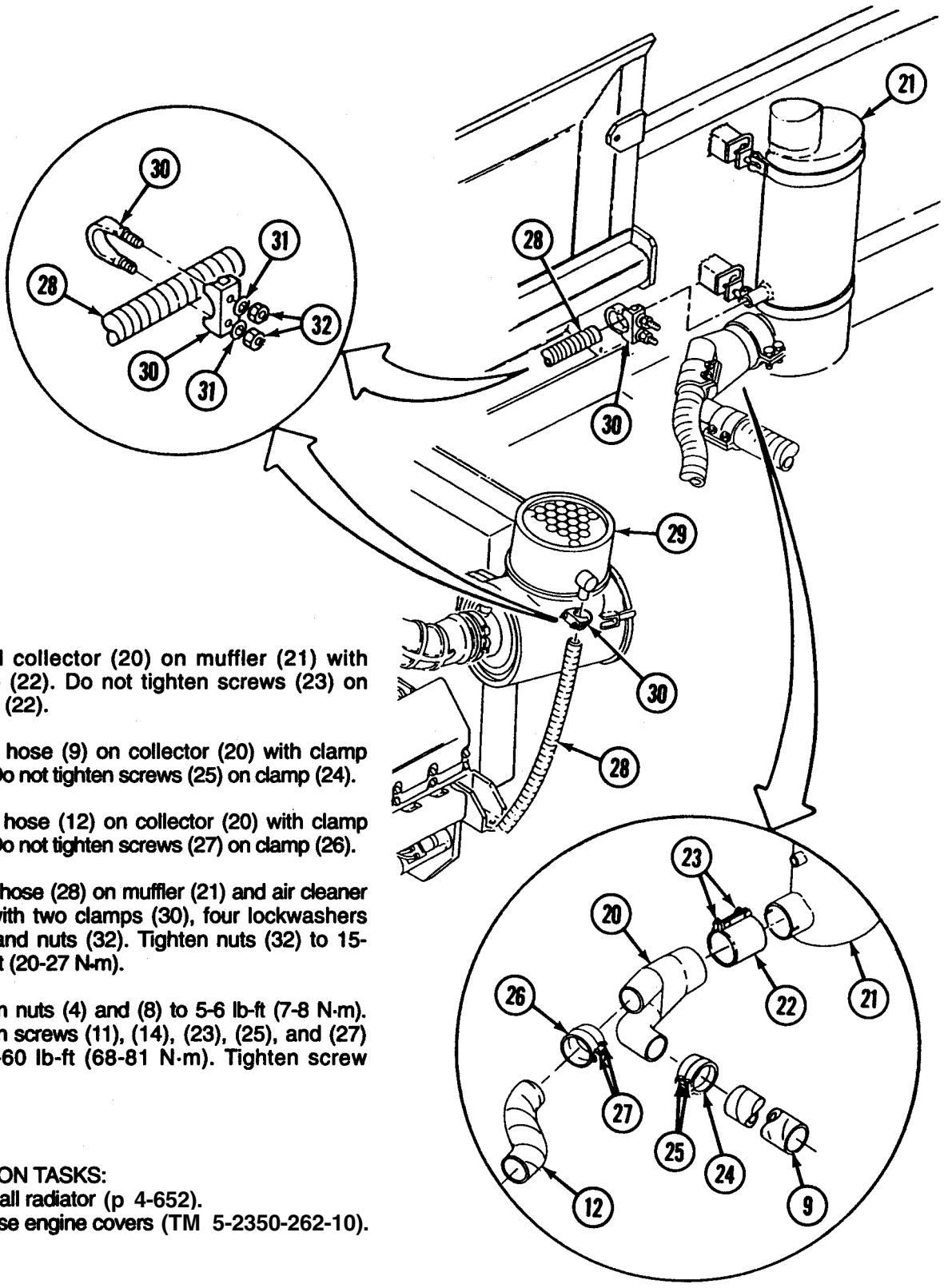
Note

Left exhaust hose-to-left exhaust manifold is 37-in. (94-cm) long. Right exhaust hose-to-right exhaust manifold is 13-in. (33-cm) long.

C Install hose (9) on tube (1) with clamp (10). Do not tighten screws (11) on clamp (10).

D Install hose (12) on elbow (5) with clamp (13). Do not tighten screws (14) on clamp (13).

E Secure tube (1) to radiator mount (15) with clamp (16), two washers (17), screw (18), and nut (19). Tighten screw (18) finger tight.



F Install collector (20) on muffler (21) with clamp (22). Do not tighten screws (23) on clamp (22).

G Install hose (9) on collector (20) with clamp (24). Do not tighten screws (25) on clamp (24).

H Install hose (12) on collector (20) with clamp (26). Do not tighten screws (27) on clamp (26).

I Install hose (28) on muffler (21) and air cleaner (29) with two clamps (30), four lockwashers (31), and nuts (32). Tighten nuts (32) to 15-20 lb-ft (20-27 N·m).

J Tighten nuts (4) and (8) to 5-6 lb-ft (7-8 N·m). Tighten screws (11), (14), (23), (25), and (27) to 50-60 lb-ft (68-81 N·m). Tighten screw (18).

FOLLOW-ON TASKS:

- Install radiator (p 4-652).
- Close engine covers (TM 5-2350-262-10).

START-AID VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-155	Start-Aid Valve Does Not Operate

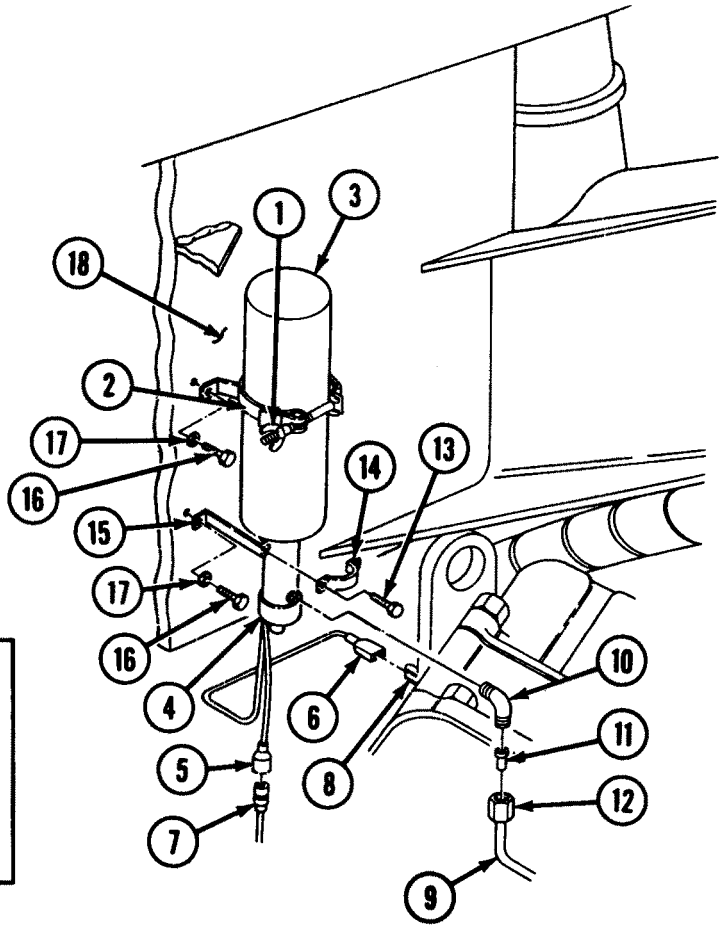
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Ethyl ether is highly combustible. Do not work on start-aid system in presence of sparks or open flame.



WARNING

Ethyl ether is highly combustible. Do not work on start-aid system in presence of sparks or open flame. Failure to comply may result in severe injury to personnel.

REMOVAL

A Loosen thumbscrew (1) and clamp (2), and remove cartridge (3) from start-aid valve (4) and clamp (2).

B Disconnect electrical leads (5) and (6) from lead (7) and switch (8).

Note

Remove sleeve and nut from tubing only if damaged.

C Disconnect tube (9) from elbow (10), and remove sleeve (11) and nut (12) from tube (9).

D Remove elbow (10) from start-aid valve (4).

E Remove two screws (13), clamp (14), and start-aid valve (4) from bracket (15).

F Remove four self-locking screws (16), washers (17), clamp (2), and bracket (15) from filter support (18). Discard self-locking screws (16).

INSTALLATION

A Install bracket (15) and clamp (2) on filter support (18) with four washers (17) and self-locking screws (16).

B Install start-aid valve (4) on bracket (15) with clamp (14) and two screws (13).

C Install elbow (10) on start-aid valve (4).

D Install sleeve (11) and nut (12) on tube (9), and connect tube (9) to elbow (10).

E Connect electrical leads (5) and (6) to lead (7) and switch (8).

F Install cartridge (3) on start-aid valve (4), and secure cartridge (3) with clamp (2) by tightening thumbscrew (1).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close engine intake grilles (TM 5-2350-262-10).

START-AID CARTRIDGE, NOZZLE, AND ATOMIZER REPLACEMENT

This task covers:

a. Cylinder Removal
b. Cylinder Installation
c. Nozzle Removal
d. Nozzle Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Ethyl ether is highly combustible. Do not work on start-aid system in presence of sparks or open flame.

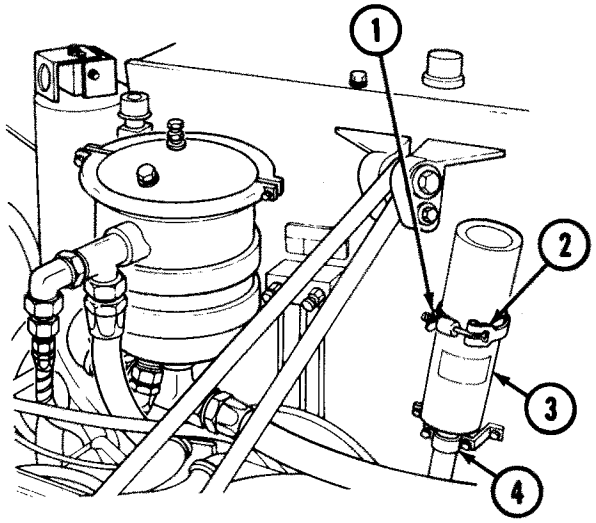
WARNING

Ethyl ether is highly combustible. Do not work on start-aid system in presence of sparks or open flame. Failure to comply may result in severe injury to personnel.

CYLINDER REMOVAL

A Loosen thumbscrew (1) and open clamp (2).

B Remove spent cartridge (3) from start-aid valve (4).



CYLINDER INSTALLATION

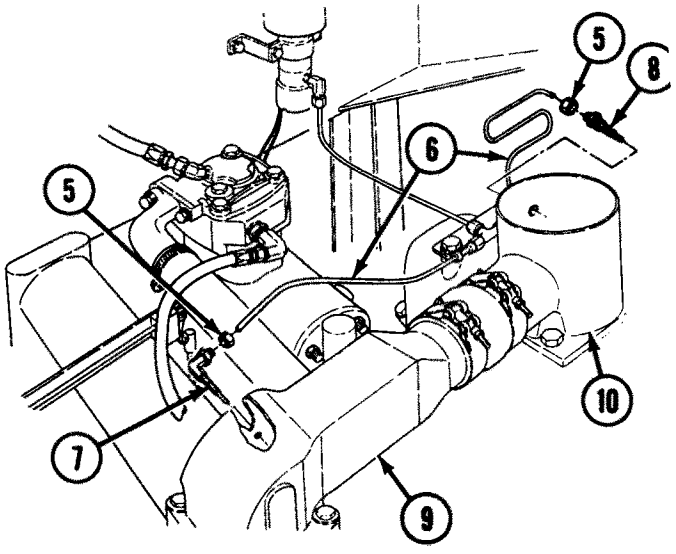
A Install cartridge (3) on start-aid valve (4).

B Close clamp (2) and tighten thumbscrew (1).

NOZZLE REMOVAL

A Remove two nuts (5) and disconnect tubes (6) from nozzle (7) and atomizer (8).

B Remove nozzle (7) and atomizer (8) from engine intake air connector (9) and intake connector (10).



NOZZLE INSTALLATION

A Install nozzle (7) and atomizer (8) on engine intake air connector (9) and intake connector (10).

B Connect two tubes (6) to nozzle (7) and atomizer (8) with nuts (5).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close engine intake grilles (TM 5-2350-262-10).

START-AID TUBES AND FITTINGS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Sleeve (6)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

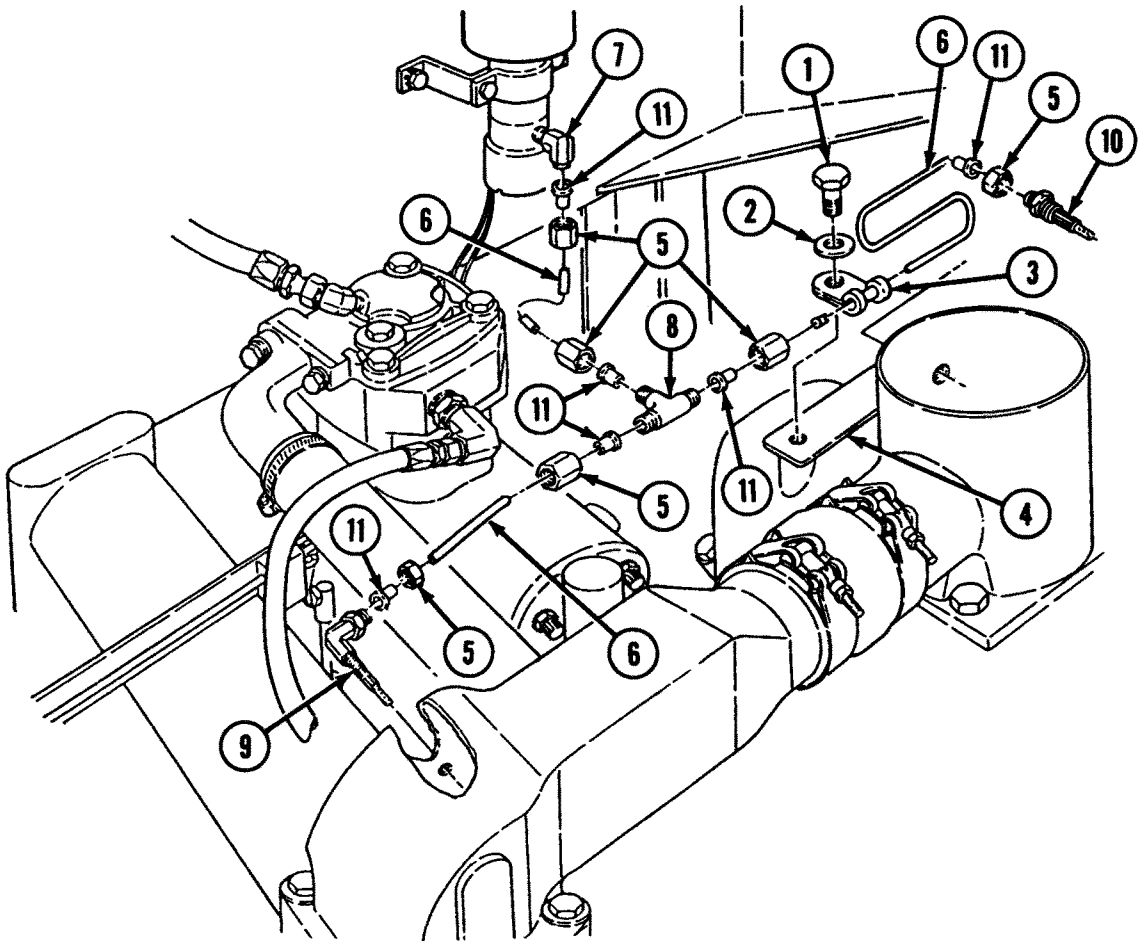
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Ethyl ether is highly combustible. Do not work on start-aid system in presence of sparks or open flame.



REMOVAL

WARNING

Ethyl ether is highly combustible. Do not work on start-aid system in presence of sparks or open flame. Failure to comply may result in severe injury to personnel.

A Remove screw (1) and washer (2) securing clamp (3) to intake manifold (4).

B Loosen six nuts (5), and remove three tubes (6) from elbow (7), tee (8), nozzle (9), and atomizer (10).

C Remove six sleeves (11), nuts (5), and clamp (3) from three tubes (6). Discard sleeves (11).

INSTALLATION

A Install clamp (3) on tube (6) to be connected to atomizer (10), and install six nuts (5) and sleeves (11) on three tubes (6).

B Install three tubes (6) on elbow (7), tee (8), nozzle (9), and atomizer (10).

C Secure tube (6) to intake manifold (4) with clamp (3), washer (2), and screw (1).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close engine intake grilles (TM 5-2350-262-10).

START-AID THERMOSTAT SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-155	Start-Aid Valve Does Not Operate

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-84	Negative Battery Cable Disconnected
Page 4-647	Cooling System Drained

REMOVAL

A Disconnect electrical lead (1) and ground lead (2) from start-aid thermostat switch (3) at engine rear lifting bracket (4).

B Remove start-aid thermostat switch (3) from cylinder head (5).

C Inspect ground lead (2). If damaged, remove screw (6), lockwasher (7), washer (8), and ground lead (2) from cylinder head (5) and engine rear lifting bracket (4).

INSTALLATION

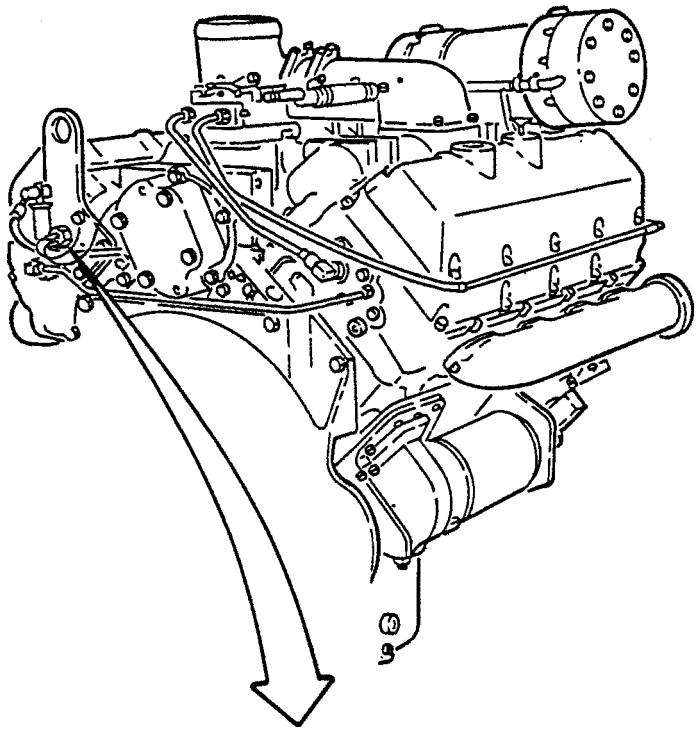
A If removed, install ground lead (2) on engine rear lifting bracket (4) and cylinder head (5) with washer (8), lockwasher (7), and screw (6).

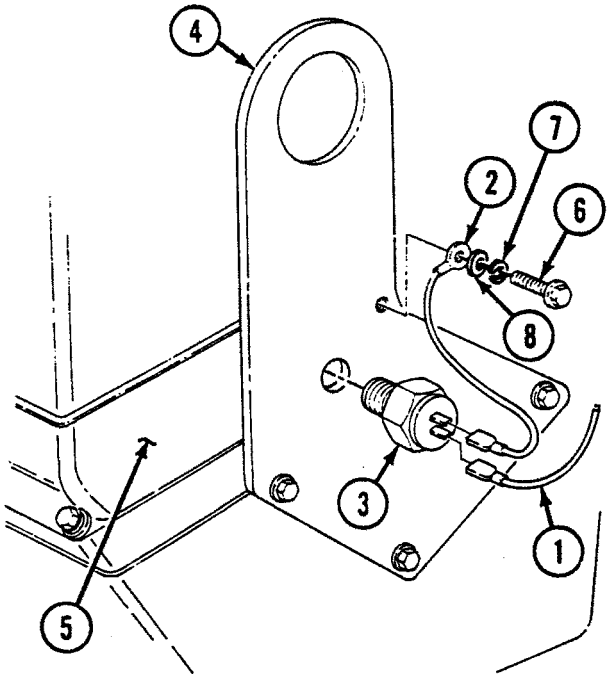
B Install start-aid thermostat switch (3) on cylinder head (5).

C Connect electrical lead (1) and ground lead (2) to start-aid thermostat switch (3).

FOLLOW-ON TASKS:

- Fill cooling system (p 4-648).
- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).





ENGINE OIL FILTER ELEMENT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Parts Kit 2940-01-182-9042

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

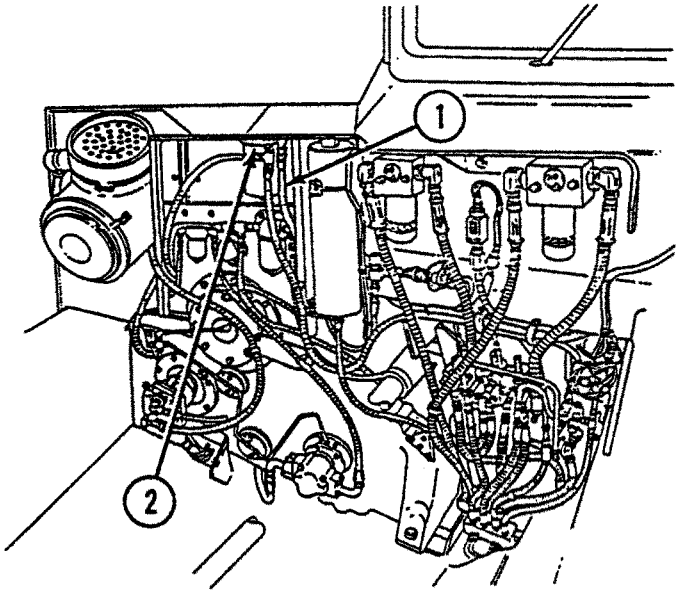
WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

REMOVAL

WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine components unless engine is cool. Failure to comply may result in injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.



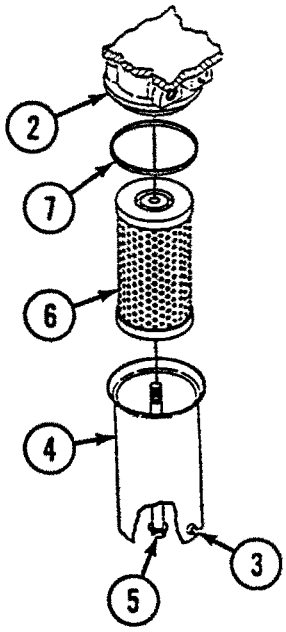
Note

Have a suitable container with at least 1 gal. (3.8 L) capacity ready to catch engine oil.

A Disconnect hose (1) from filter head (2) to gain access to plug (3), remove plug (3) from shell (4), and drain oil.

B Install plug (3) on shell (4), and connect hose (1) to filter head (2).

C Loosen shell retaining screw (5), and remove shell (4), element (6), and gasket (7) from filter head (2). Discard element (6) and gasket (7).



INSTALLATION

WARNING

Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

A Install gasket (7), element (6), and shell (4) on filter head (2) with shell retaining screw (5).

B Tighten shell retaining screw (5) to 25-35 lb-ft (34-47 N·m).

C Start engine (TM 5-2350-262-10) and check for leaks. Stop engine.

FOLLOW-ON TASKS:

- Check engine oil level (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

ENGINE OIL FILTER ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D

Parts:

Parts Kit	2940-01-182-9042
Seal	
Self-locking Screw (4)	

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Oil Filter Drained

General Safety Instructions:

WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up spilled oil immediately.
- Parts inside shell can fly out if not held securely during disassembly.

REMOVAL

WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of oil. Failure to comply may result in damage to equipment.

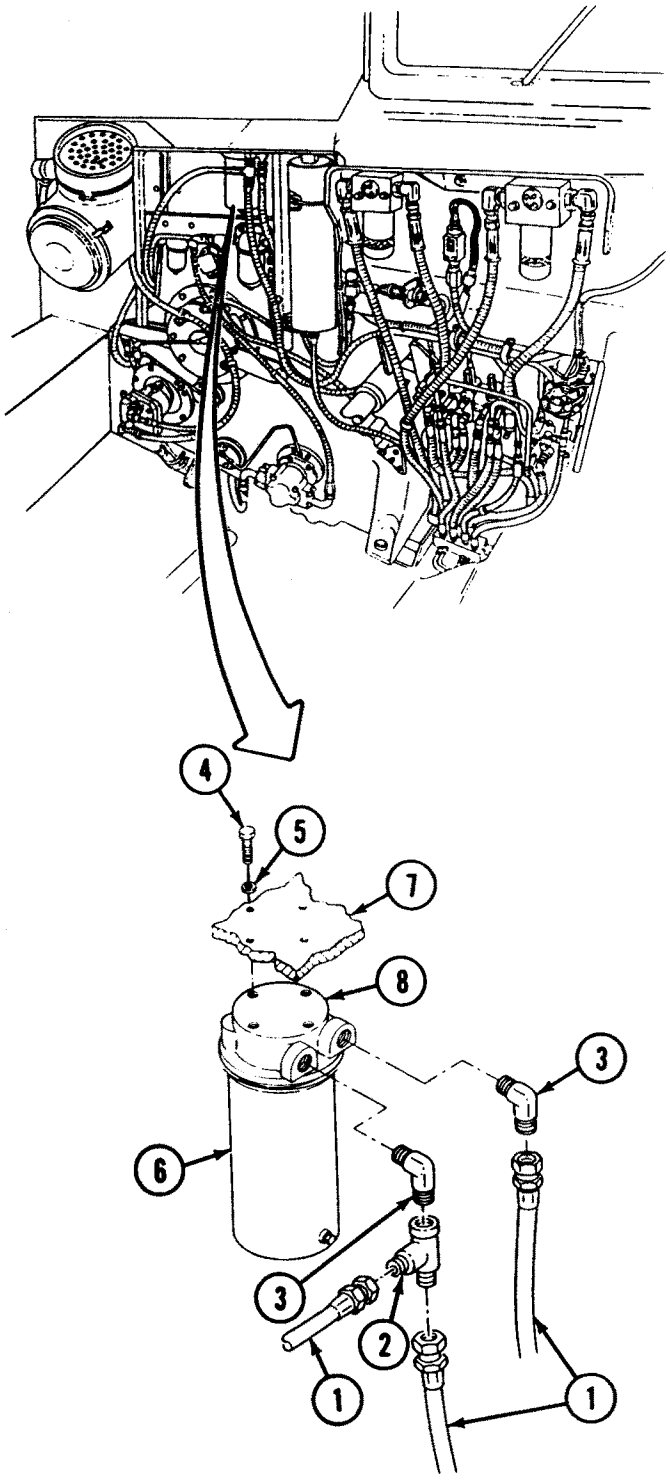
Note

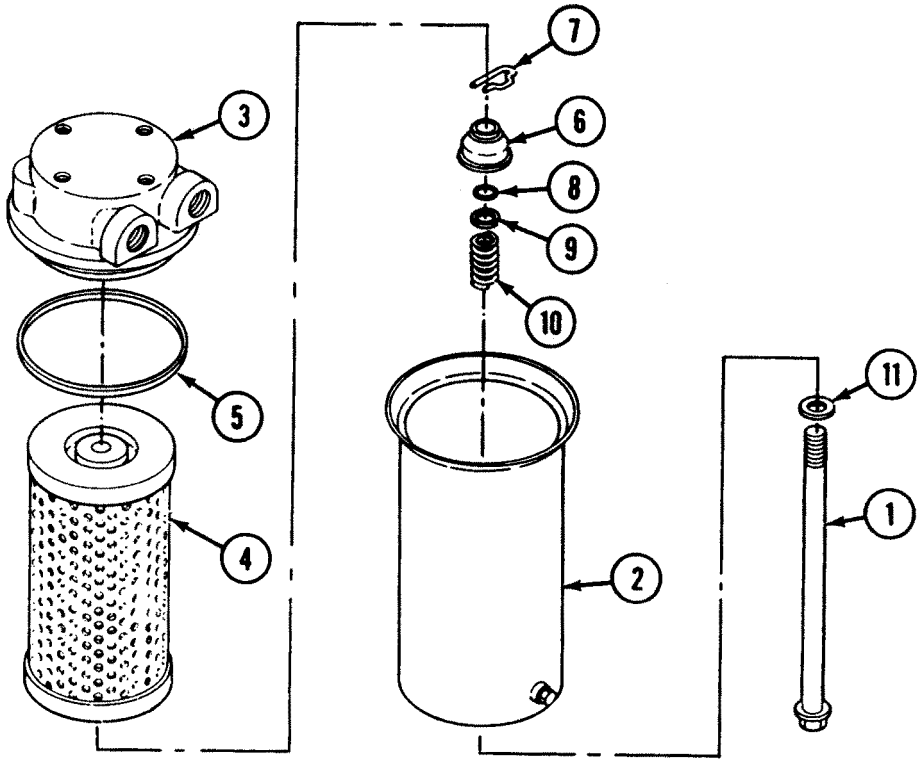
Have suitable container ready to catch engine oil.

A Disconnect three hoses (1) from tee (2) and elbow (3), and drain oil.

B Remove four self-locking screws (4), washers (5), and oil filter assembly (6) from filter support (7). Discard self-locking screws (4).

C Remove tee (2) and two elbows (3) from filter head (8). Remove tee (2) from elbow (3).





DISASSEMBLY

A Loosen retaining screw (1), and remove shell (2) from filter head (3).

B Remove element (4) and gasket (5) from shell (2). Discard gasket (5) and element (4).

WARNING

Parts inside shell can fly out if not held securely during disassembly. Failure to comply may result in injury to personnel.

C Depress support (6), and remove pin (7) from retaining screw (1).

D Slowly release pressure on support (6), and remove support (6), seal (8), washer (9), and spring (10) from retaining screw (1). Discard seal (8).

E Remove retaining screw (1) and washer (11) from shell (2).

ASSEMBLY

A Place washer (11) on retaining screw (1), and insert retaining screw (1) through bottom of shell (2).

B Install spring (10), washer (9), seal (8), and support (6) on retaining screw (1).

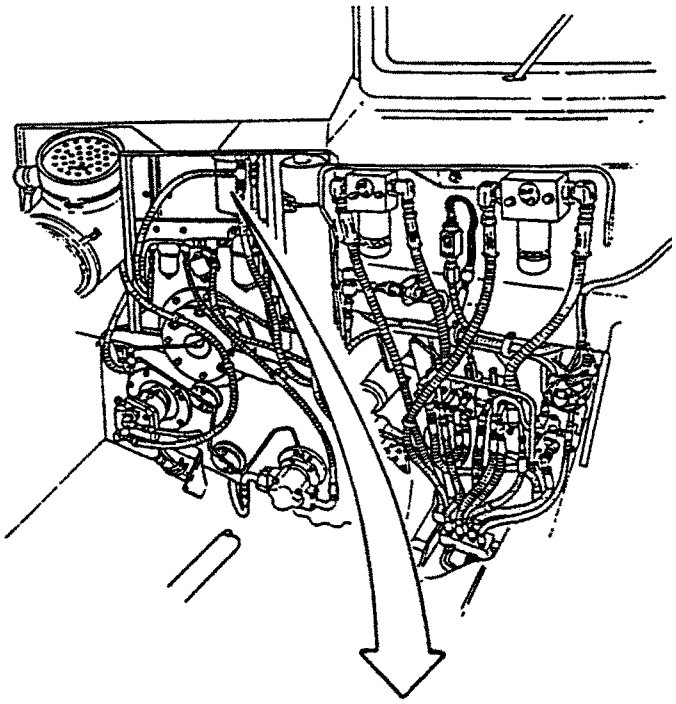
C Depress support (6) to compress spring (10), and install pin (7) on retaining screw (1).

D Install gasket (5), element (4), and shell (2) on filter head (3), and tighten retaining screw (1) to 25-35 lb-ft (34-47 N·m).

INSTALLATION

WARNING

Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.



A Install two elbows (1) on filter head (2).

B Install filter head (2) on filter support (3) with four washers (4) and self-locking screws (5).

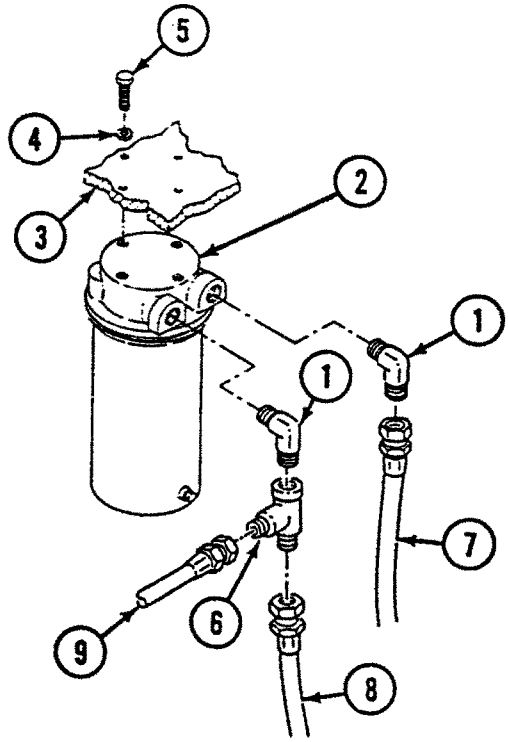
C Install tee (6) on elbow (1) at INLET side of filter head (2).

D Connect ENG FLTR-OUT-2E hose (7) to elbow (1).

E Connect ENG FLTR-IN-1E hose (8) to tee (6).

F Connect ENG SMPLG VLV-1E hose (9) to tee (6).

G Start engine (TM 5-2350-262-10) and check for leaks. Stop engine.



FOLLOW-ON TASKS:

- Check engine oil level (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

FAN BELT TENSIONER ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-150 Engine Overheats

Equipment Condition:

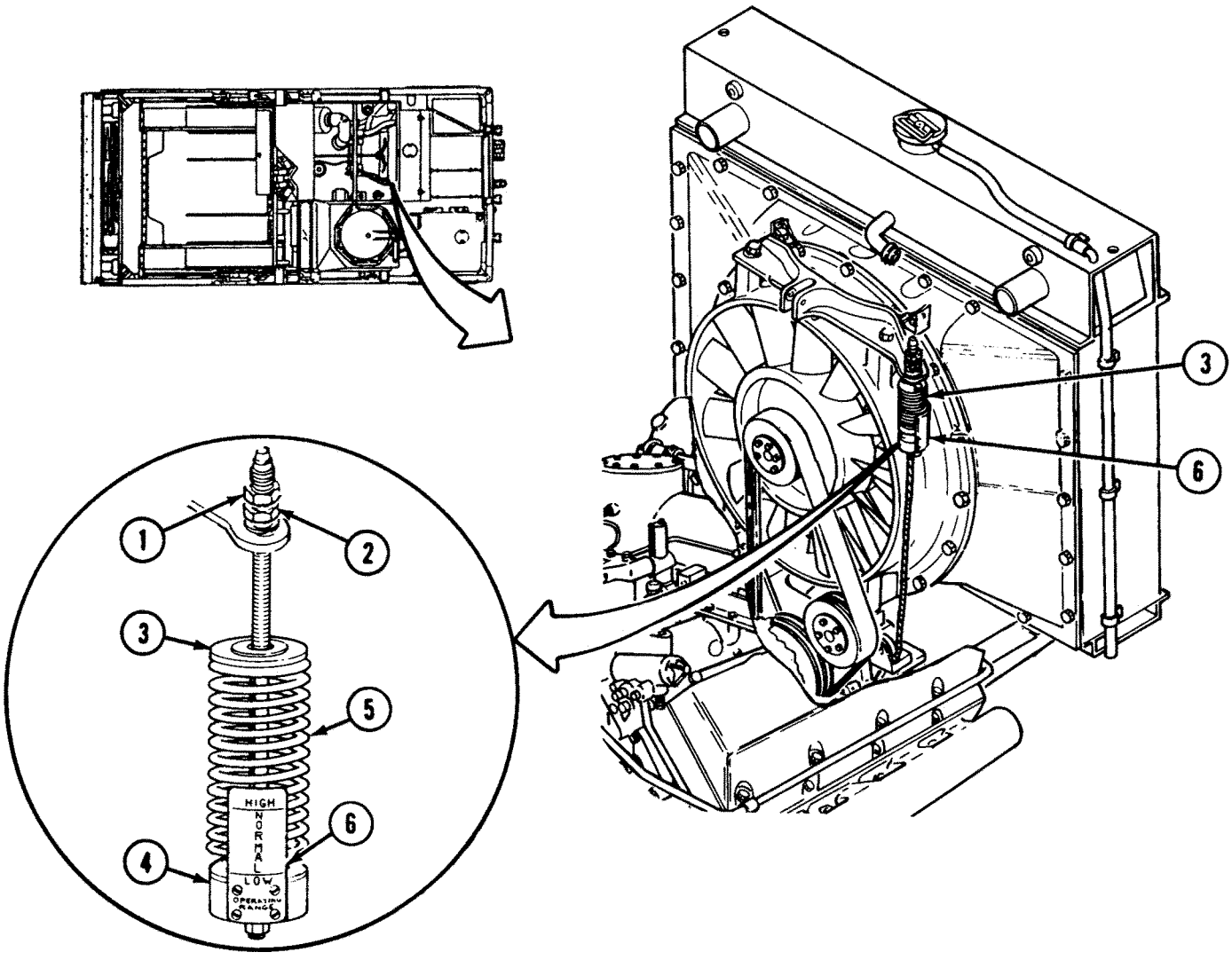
Reference	Condition Description
TM 5-2350-262-10	Engine Covers Opened

General Safety Instructions:

WARNING

Do not adjust fan belt tension with vehicle engine running. Fan blades can strike hands and tools.

ADJUSTMENT



WARNING

Do not adjust fan belt tension with vehicle engine running. Fan blades can strike hands or tools. Failure to comply may result in damage to equipment and injury to personnel.

A Loosen jamnut (1), and turn nut (2) of tensioner (3) as required, until gap between tensioner bottom (4) and spring (5) is in the NORMAL range of tension gauge (6).

B Lock nut (2) by tightening jamnut (1).

FOLLOW-ON TASK:
Close engine covers (TM 5-2350-262-10).

FAN BELT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-150 Engine Overheats

Equipment Condition:

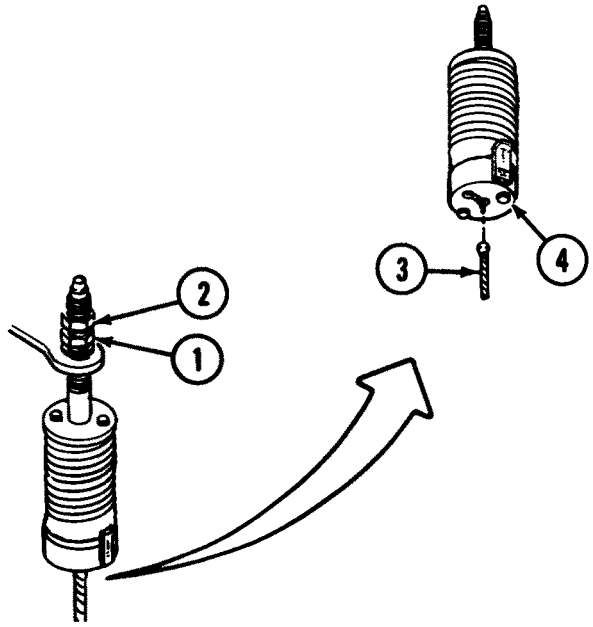
Reference	Condition Description
TM 5-2350-262-10	Engine Covers Opened

REMOVAL

A Loosen jamnut (1) and nut (2) until tension of fan belt adjusting cable (3) is sufficiently loose.

B Slide upper end of fan belt adjusting cable (3) out of slot of tensioner coupling plate (4) and move fan belt adjusting cable (3) away from belt (5).

C Remove belt (5) from three pulleys (6).



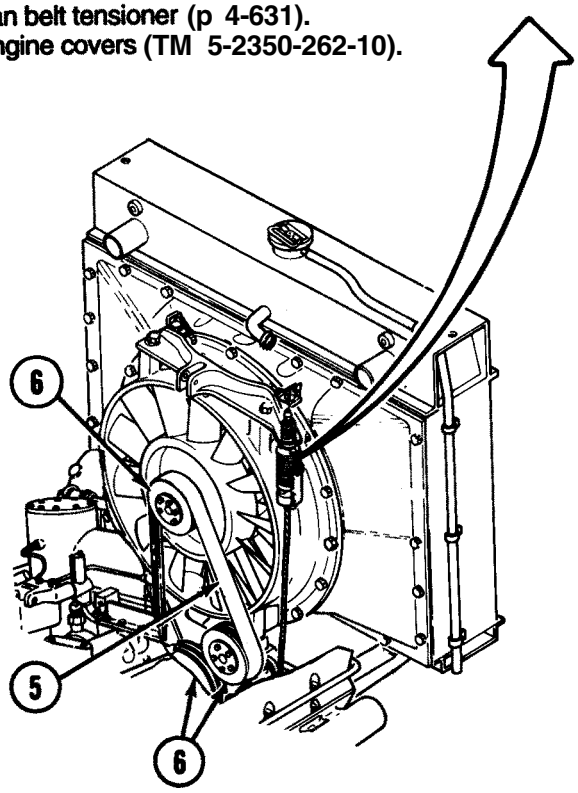
INSTALLATION

A Install belt (5) on three pulleys (6).

B Slide upper end of fan belt adjusting cable (3) into slot of tensioner coupling plate (4).

FOLLOW-ON TASKS:

- Adjust fan belt tensioner (p 4-631).
- Close engine covers (TM 5-2350-262-10).



COOLING SYSTEM FAN ASSEMBLY AND SHROUD REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387
Eyebolt (2)	5306-00-050-0347

Parts:

Self-locking Screw (44)

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Two Construction Equipment Repairers 62B10

Troubleshooting Reference:

Page 3-150	Engine Overheats

Equipment Condition:

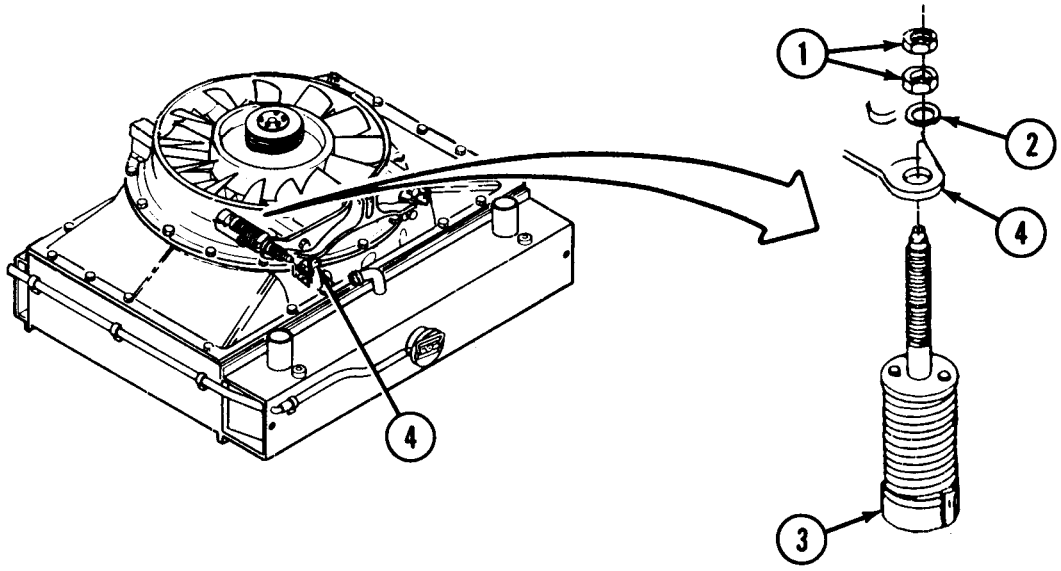
Reference	Condition Description
Page 4-650	Radiator Removed

General Safety Instructions:

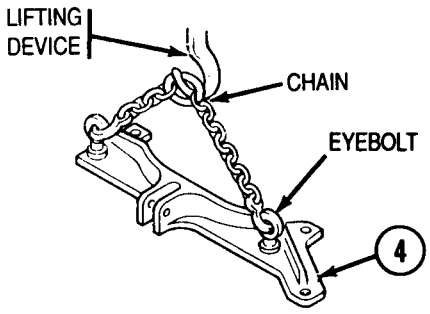
WARNING

- Lifting device must have a weight capacity greater than 100 lb (45 kg).
- Personnel must stand clear during lifting operations.

REMOVAL



A Remove two jamnuts (1), washer (2), and tensioner (3) from fan bracket (4).

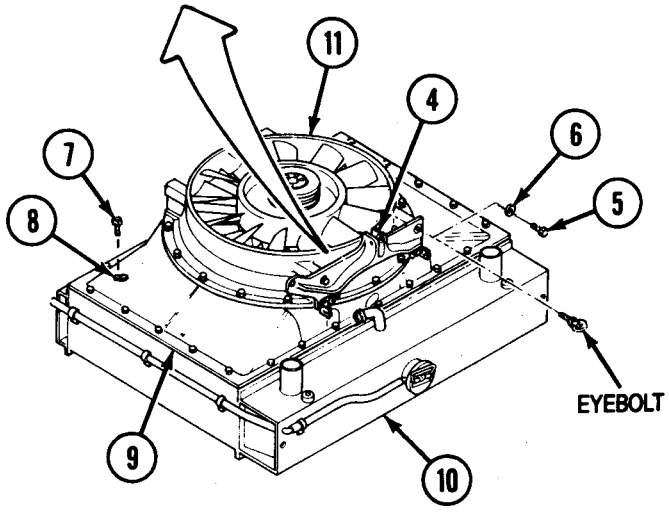


B Remove self-locking screw (5) and washer (6) from each side of fan bracket (4). Discard self-locking screws (5).

C Remove twenty-four self-locking screws (7) and washers (8) from shroud (9) and radiator (10). Discard self-locking screws (7).

WARNING

- Lifting device must have a weight capacity greater than 100 lb (45 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.



D Install two eyebolts, chain, and lifting device on fan bracket (4), and remove fan assembly (11) from radiator (10).

E Remove lifting device, chain, and two eyebolts from fan bracket (1).

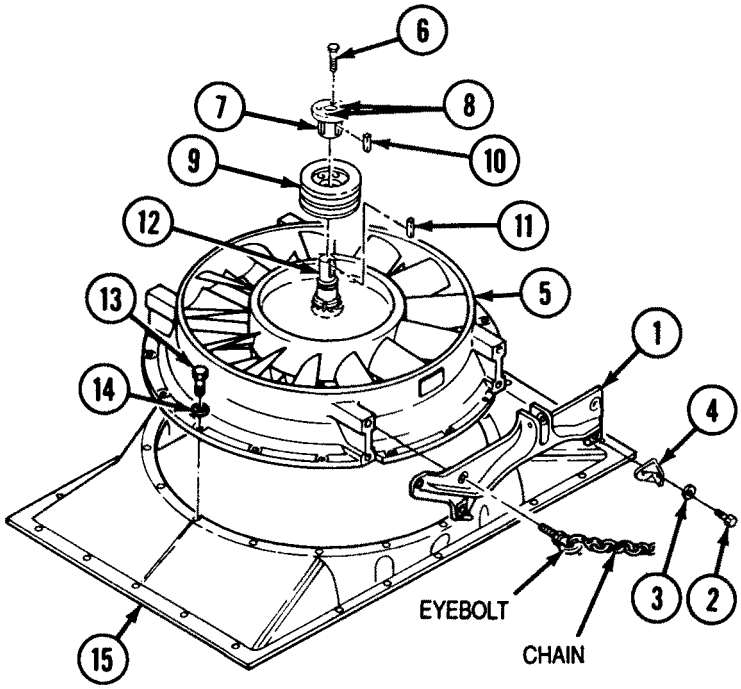
F Remove two self-locking screws (2), washers (3), brackets (4), and fan bracket (1) from fan housing (5). Discard self-locking screws (2).

G Remove three screws (6) from bushing (7). Install two screws (6) on jacking holes (8) of bushing (7), and remove bushing (7) from pulley (9) by alternately tightening screws (6).

H Remove key (10) and two screws (6) from bushing (7).

I Remove pulley (9) and key (11) from fan shaft (12).

J Remove sixteen self-locking screws (13), washers (14), and fan housing (5) from shroud (15). Discard self-locking screws (13).



INSTALLATION

A Install fan housing (1) on shroud (2) with sixteen washers (3) and self-locking screws (4). Tighten self-locking screws (4) to 12-15 lb-ft (16-20 N·m).

B Install key (5) and pulley (6) on fan shaft (7).

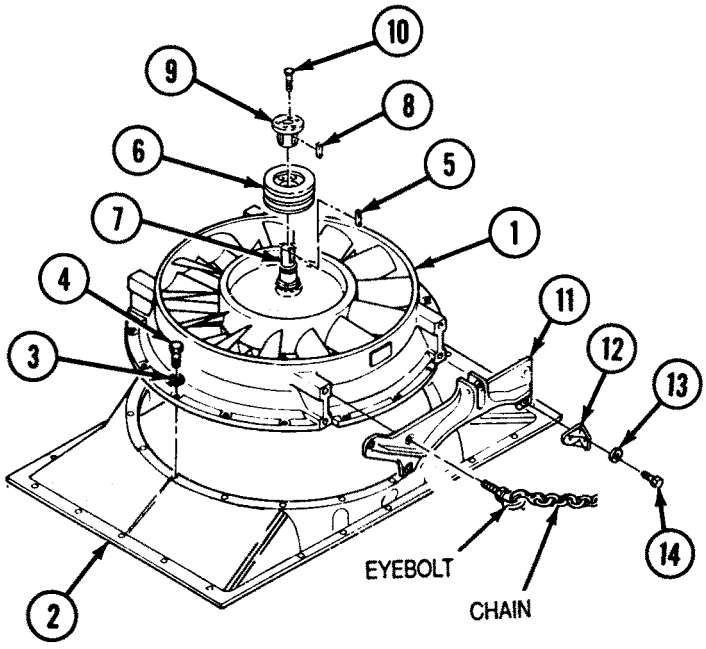
C Install key (8) and bushing (9) on pulley (6) with three screws (10).

D Install fan bracket (11) and two brackets (12) on fan housing (1) with two washers (13) and self-locking screws (14). Tighten self-locking screws (14) to 30-35 lb-ft (41-47 N·m).

WARNING

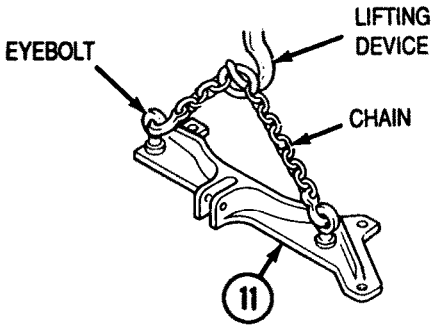
Lifting device must have a weight capacity greater than 100 lb (45 kg). Failure to comply may result in damage to equipment or injury to personnel.

E Install two eyebolts, chain, and lifting device on fan bracket (11) and fan housing (1).



WARNING

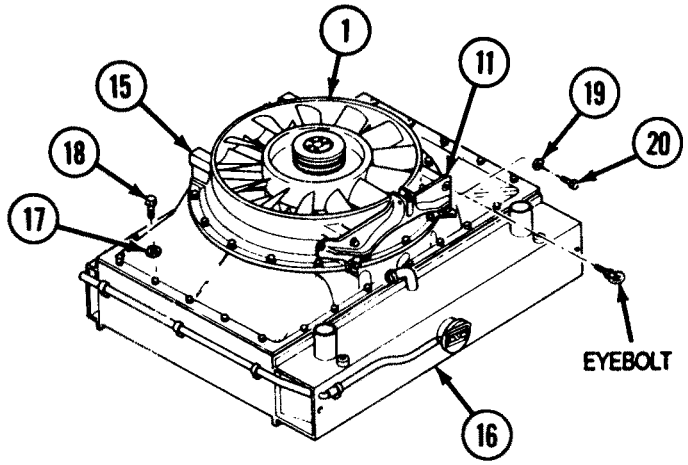
- Lifting device must have a weight capacity greater than 100 lb (45 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

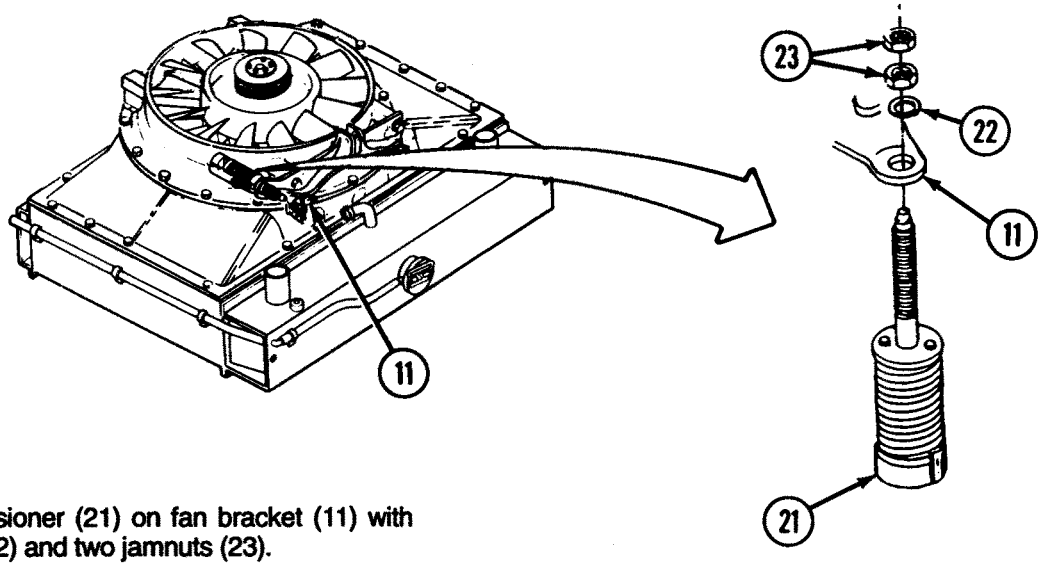


F Using lifting device, place fan assembly (15) on radiator (16) and secure with twenty-four washers (17) and self-locking screws (18). Tighten self-locking screws (18) to 12-15 lb-ft (16-20 N·m).

G Remove lifting device, chain, and two eyebolts from fan housing (1) and fan bracket (11).

H Install washer (19) and self-locking screw (20) on each side of fan bracket (11). Tighten self-locking screws (20) to 30-35 lb-ft (41-47 N·m).





I Install tensioner (21) on fan bracket (11) with washer (22) and two jamnuts (23).

FOLLOW-ON TASK:
Install radiator (p 4-652).

FAN BELT ADJUSTING CABLE AND TENSIONER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Cotter Pin

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-150 Engine Overheats

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Covers Opened

General Safety Instructions:

WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.

REMOVAL

WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in severe injury to personnel.

A Loosen jamnut (1) and nut (2) until tension of fan belt adjusting cable (3) is sufficiently loose.

B Slide upper end of fan belt adjusting cable (3) out of slot on tensioner coupling plate (4).

C Remove cotter pin (5), straight pin (6), and pulley (7) from bracket (8). Discard cotter pin (5).

D Remove lower end of fan belt adjusting cable (3) from slot of arm (9), and remove cable (3) from vehicle.

E Remove jamnut (1), nut (2), washer (10), and fan tensioner (11) from fan bracket (12).

INSTALLATION

A Install fan tensioner (11) on fan bracket (12) with washer (10), nut (2), and jamnut (1). Do not tighten nut (2) and jamnut (1).

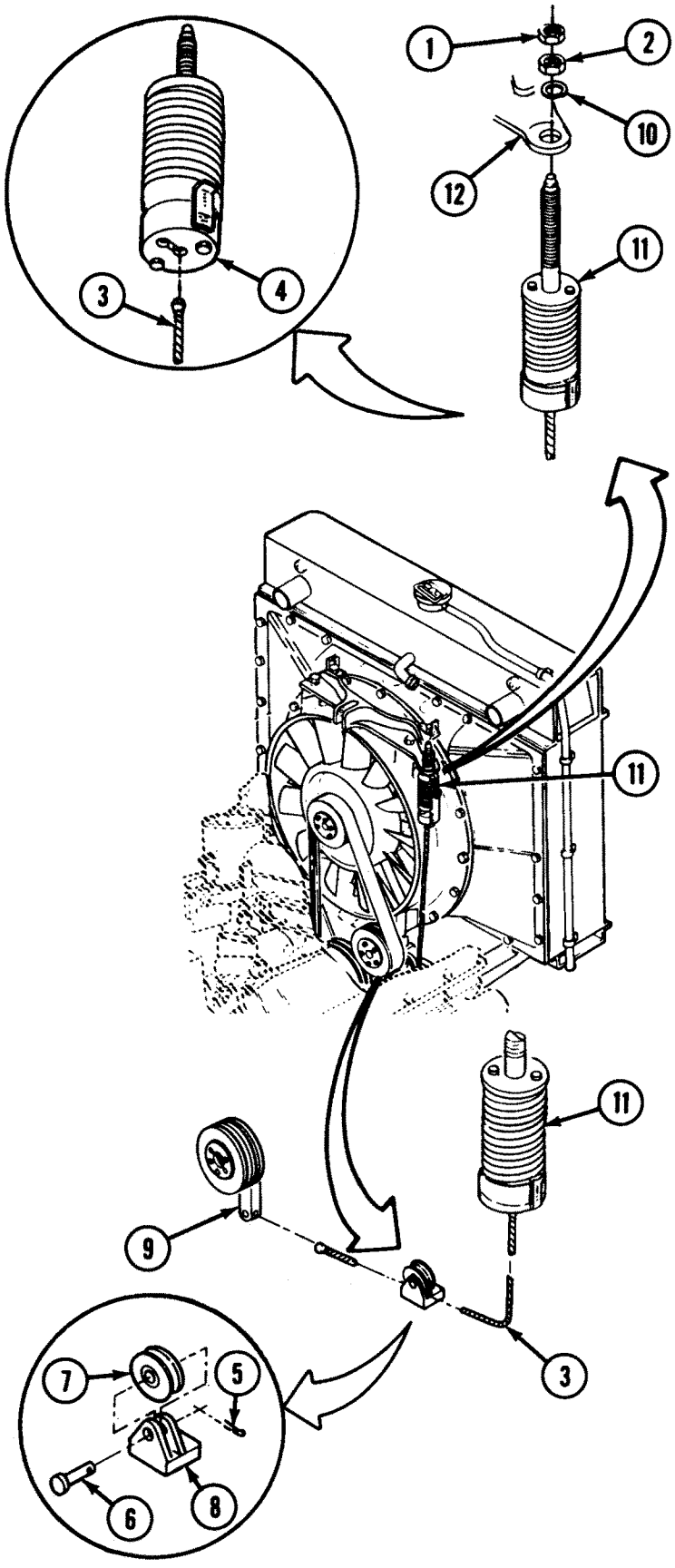
B Install one end of fan belt adjusting cable (3) on slot of arm (9).

C Route fan belt adjusting cable (3) through bracket (8), and install pulley (7) on bracket (8) with straight pin (6) and cotter pin (5). Ensure fan belt adjusting cable (3) is in groove of pulley (7).

D Install upper end of fan belt adjusting cable (3) on slot of tensioner coupling plate (4).

FOLLOW-ON TASKS:

- Adjust fan belt tensioner (p 4-631).
- Close engine covers (TM 5-2350-262-10).



FAN BELT TENSIONER PULLEY ASSEMBLY REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher

Cotter Pin

Pin

Bushing (2)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

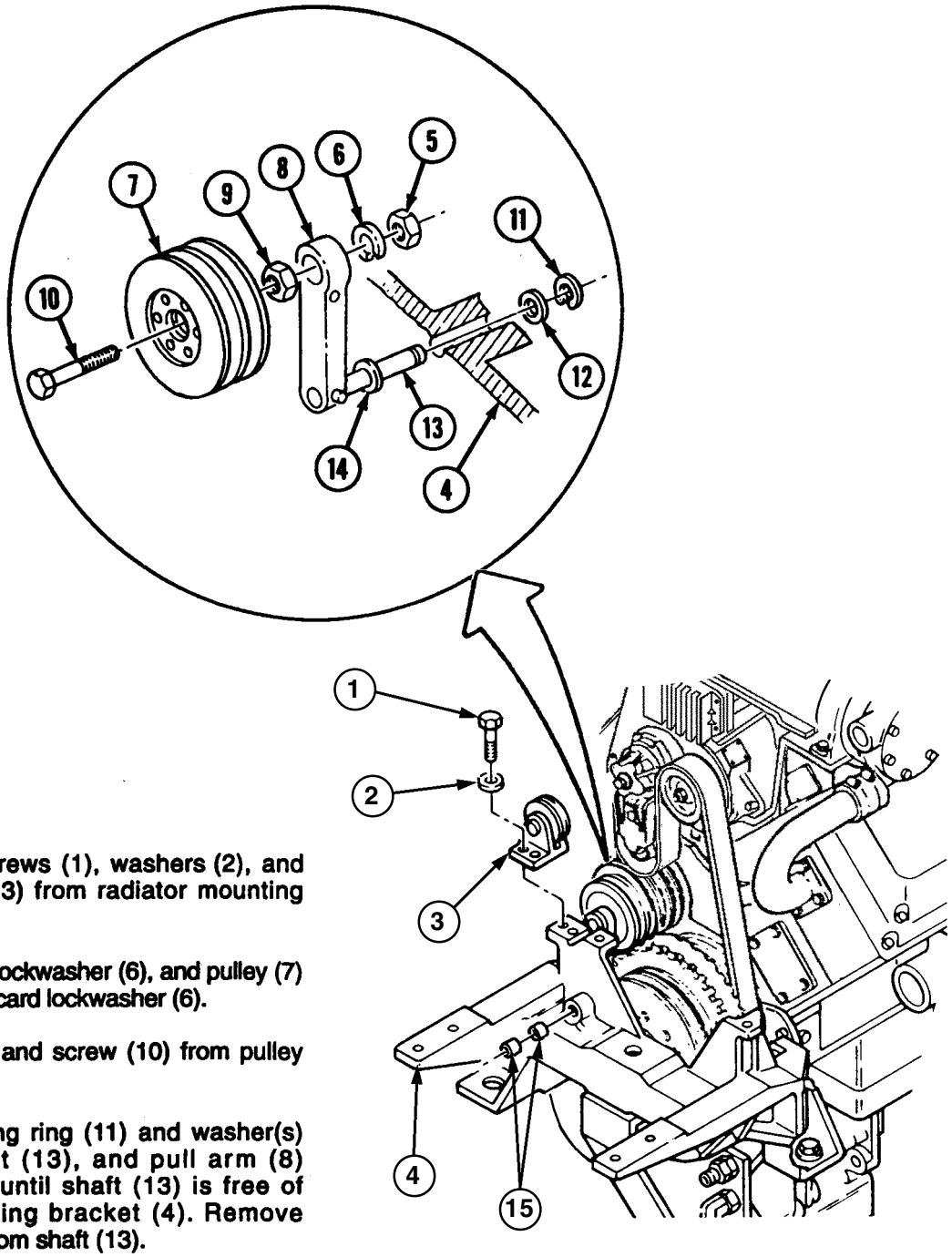
Troubleshooting Reference:

Page 3-150 Engine Overheats

Equipment Condition:

Reference	Condition Description
Page 4-639	Fan Belt Adjusting Cable and Tensioner Removed
Page 4-650	Radiator Removed

REMOVAL



A Remove two screws (1), washers (2), and pulley bracket (3) from radiator mounting bracket (4).

B Remove nut (5), lockwasher (6), and pulley (7) from arm (8). Discard lockwasher (6).

C Remove nut (9) and screw (10) from pulley (7).

D Remove retaining ring (11) and washer(s) (12) from shaft (13), and pull arm (8) toward engine until shaft (13) is free of radiator mounting bracket (4). Remove washer(s) (14) from shaft (13).

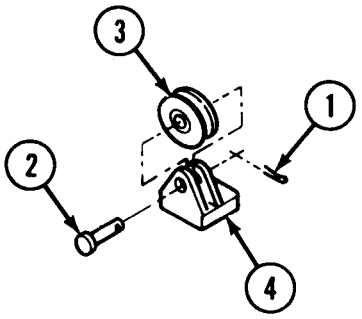
E Using puller or brass drift and hammer, remove two bushings (15) from radiator mounting bracket (4). Discard bushings (15).

DISASSEMBLY

A Remove cotter pin (1), straight pin (2), and pulley (3) from bracket (4). Discard cotter pin (1).

B Using punch and hammer, remove pin (5) from arm (6) and shaft (7), and remove shaft (7) from arm (6). Discard pin (5).

C Remove six screws (8) and bushing (9) from pulley (10).

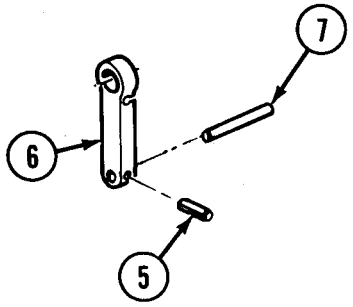


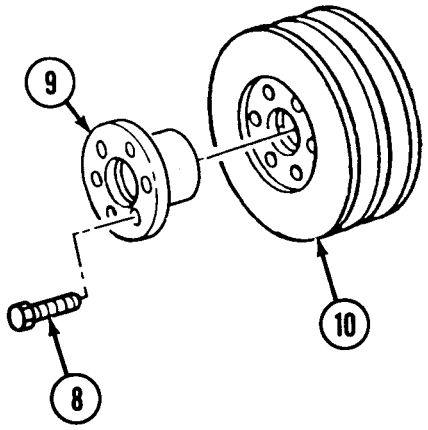
ASSEMBLY

A Install bushing (9) on pulley (10) with six screws (8). Tighten screws (8) to 14 lb-ft (19 N·m).

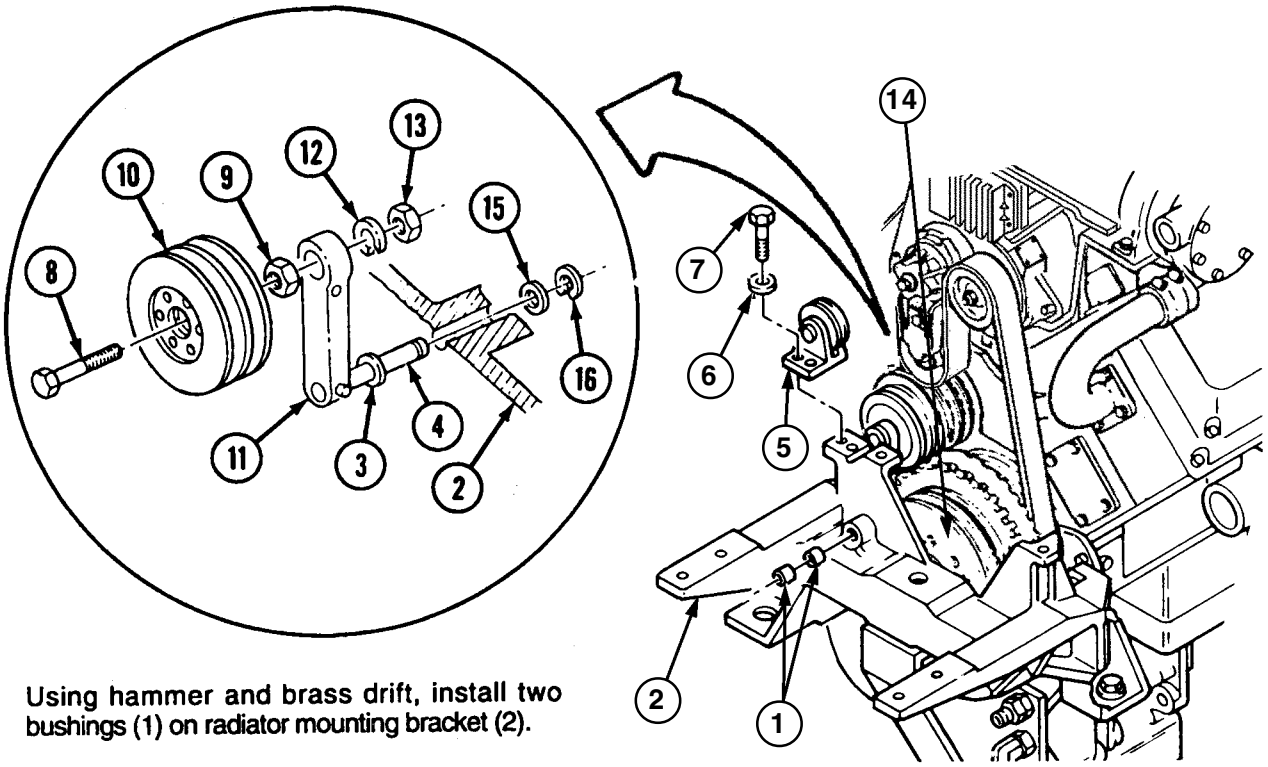
B Install shaft (7) on arm (6) with pin (5).

C Install pulley (3) on bracket (4) with straight pin (2) and cotter pin (1).





INSTALLATION



A Using hammer and brass drift, install two bushings (1) on radiator mounting bracket (2).

CAUTION

Ensure washer is installed in location specified in step B. Failure to comply may result in damage to equipment.

Note

Quantity of washers may vary. Grooves of tensioner pulley and crankshaft pulley are aligned during installation by adding or removing washers.

B Install washer (3) on shaft (4), and install shaft (4) on radiator mounting bracket (2).

C Install pulley bracket (5) on radiator mounting bracket (2) with two washers (6) and screws (7).

D Install screw (8) and nut (9) on pulley (10). Tighten nut (9) to 27-31 lb-ft (37-42 N·m).

E Install pulley (10) on arm (11) with lockwasher (12) and nut (13). Do not tighten nut (13).

Note

Tensioner pulley may have to be removed before shaft can be removed to add washers.

F Check alignment of pulley (10) and pulley (14). If pulley (10) and pulley (14) are not aligned, install additional washer(s) (3) on shaft (4) as necessary.

G Tighten nut (13) to 40-50 lb-ft (54-68 N·m).

H Install washer(s) (15) and retaining ring (16) on shaft (4). Add washer(s) (15) as necessary to eliminate excessive endshake between arm (11) and retaining ring (16) in radiator mounting bracket (2).

FOLLOW-ON TASKS:

- Install radiator (p 4-652).
- Install fan belt adjusting cable and tensioner (p 4-639).
- Adjust fan belt tensioner (p 4-631).

FAN BELT TENSIONER ASSEMBLY REPAIR

This task covers:

a. Disassembly

b. Assembly

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-150	Engine Overheats

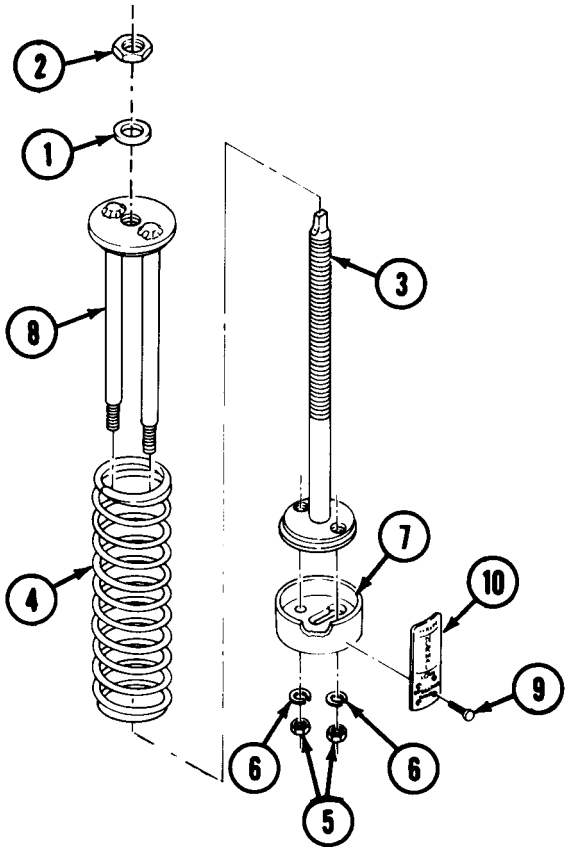
Equipment Condition:

Reference	Condition Description
Page 4-639	Fan Belt Tensioner Assembly Removed

General Safety Instructions:

WARNING

Spring is under tension. Relieve tension slowly.



DISASSEMBLY

A Install washer (1) and nut (2) (part of fan tensioner assembly mounting hardware) on threads of lower retainer (3) until spring (4) is fully compressed.

WARNING

Spring is under tension. Relieve tension slowly. Failure to comply may result in injury to personnel.

B Remove two nuts (5), lockwashers (6), and plate (7) from lower retainer (3). Discard lockwashers (6).

C Remove nut (2), washer (1), upper retainer (8), and spring (4) from lower retainer (3).

D Remove four screws (9) and plate (10) from plate (7).

ASSEMBLY

A Install plate (10) on plate (7) with four screws (9).

B Position spring (4) on lower retainer (3), and install upper retainer (8) on spring (4) and lower retainer (3) with washer (1) and nut (2).

C Slowly compress spring (4) by tightening nut (2) until threaded ends of upper retainer (8) are through holes in plate (7).

D Install two lockwashers (6) and nuts (5) on upper retainer (8). Remove nut (2) and washer (1) from lower retainer (3).

FOLLOW-ON TASK:
Install fan belt tensioner assembly (p 4-639).

COOLING SYSTEM SERVICE

This task covers:

a. Draining

b. Filling

c. Cold Weather Service

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Antifreeze	Item 6 Appendix D

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 750-254

Equipment Condition:

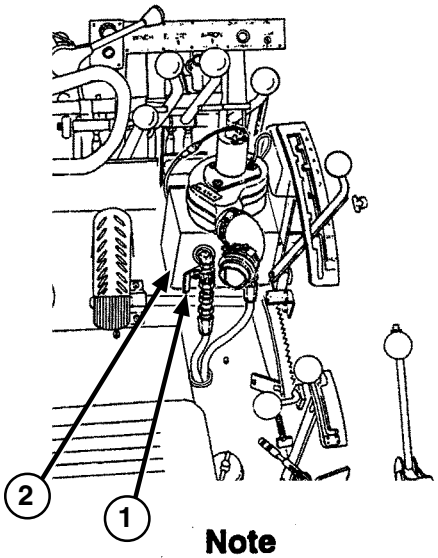
Reference	Condition Description
Page 4-340	Engine Intake Grilles Removed
Page 4-361	Rear Floor Plates Removed

General Safety Instructions:

WARNING

Radiator and related components may be very hot. Do not work on cooling system unless it is cool.

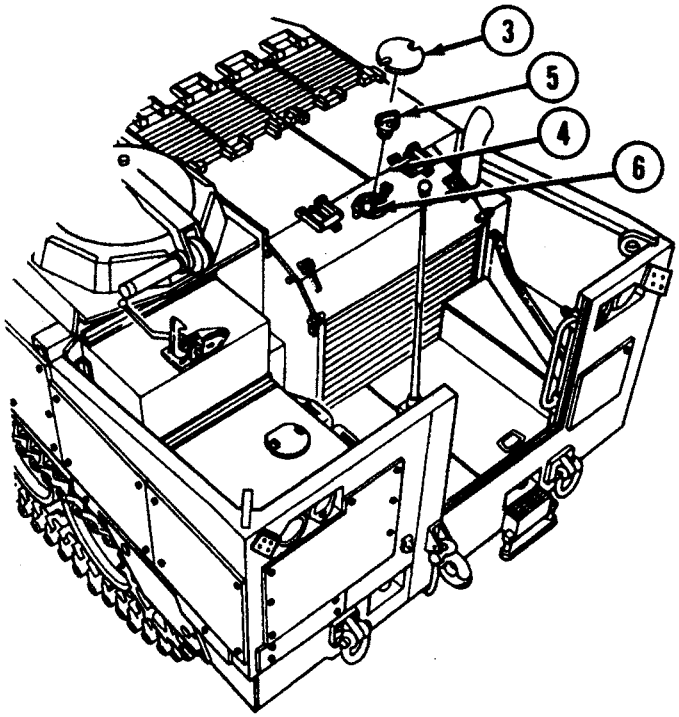
DRAINING



Note

It is not necessary to drain cylinder block when radiator is drained. Drain cylinder block only when flushing coolant.

A Open control valve (1) of driver's heater (2).



B Remove plate (3) from armor shroud (4).

C Remove radiator cap (5) from radiator (6).

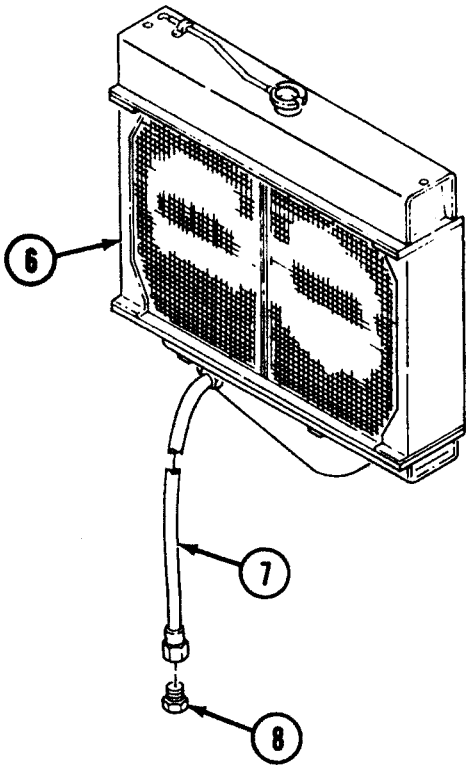
WARNING

Radiator and related components may be very hot. Do not work on cooling system unless it is cool. Failure to comply may result in severe injury to personnel.

Note

- Have suitable containers ready to catch coolant.
- Because of space limitations under vehicle, it is necessary to use smaller containers and empty them several times during the draining operation.

D Route drain hose (7) out rear of vehicle. Remove plug (8) and drain coolant into suitable containers. When radiator (6) is empty, install plug (8) on hose (7) and stow hose (7).



E Open cylinder block drain valve (1) on left side of engine, and drain coolant.

CAUTION

If vehicle is to be left unattended with radiator drained, put warning tag in driver's compartment to prevent operation of vehicle without coolant. Failure to comply may result in damage to equipment.

F Open drain valve (2) on engine oil cooler (3), and drain coolant.

G After engine is drained, close drain valves (1) and (2).

FILLING

A Ensure cylinder block drain valves (1) and (2) are closed tightly.

B Ensure radiator drain hose plug (4) is installed tightly, and driver's heater control valve (5) is open.

C Add coolant to radiator (6). Bring level to bottom of tube in filler opening (7). Install and tighten cap (8).

D Start engine (TM 5-2350-262-10) and run for at least 5 minutes to eliminate any air pockets. Check coolant level and add coolant as required.

FOLLOW-ON TASKS:
- Install rear floor plates (p 4-631).
- Install engine intake grilles (p 4-344).

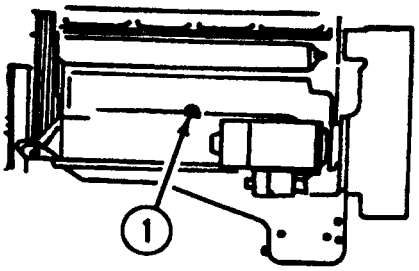
COLD WEATHER SERVICE

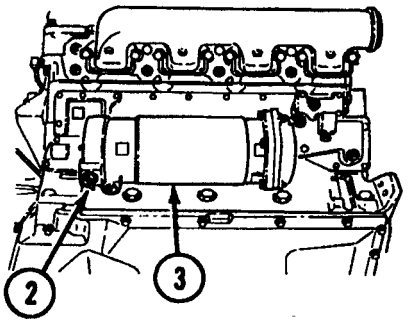
Note

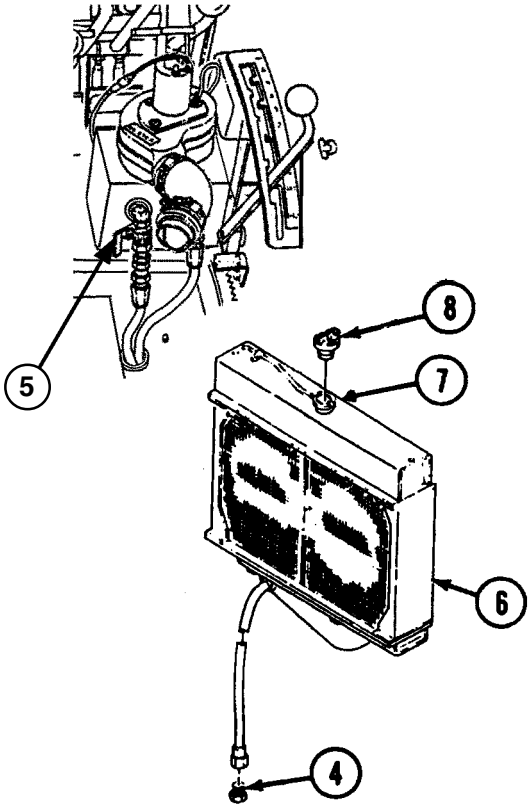
For operation in temperatures below freezing, use the recommended amount of antifreeze compound and water in coolant system in accordance with TM 750-254.

A Drain old coolant from cooling system (p 4-647).

B Prior to adding water and antifreeze compound, flush coolant system with fresh water.







Note

If water and antifreeze compound are added separately, pour calculated amount of antifreeze into radiator first, then add clean water until level is approximately 3/4 in. (19 mm) above radiator baffles.

C Fill cooling system with proper coolant mixture (p 4-648).

RADIATOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Special Tools:

Eyebolt (2) 5306-00-050-0347

Parts:

Locknut (5)

Self-locking Screw

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Troubleshooting Reference:

Page 3-150 Engine Overheats

Equipment Condition:

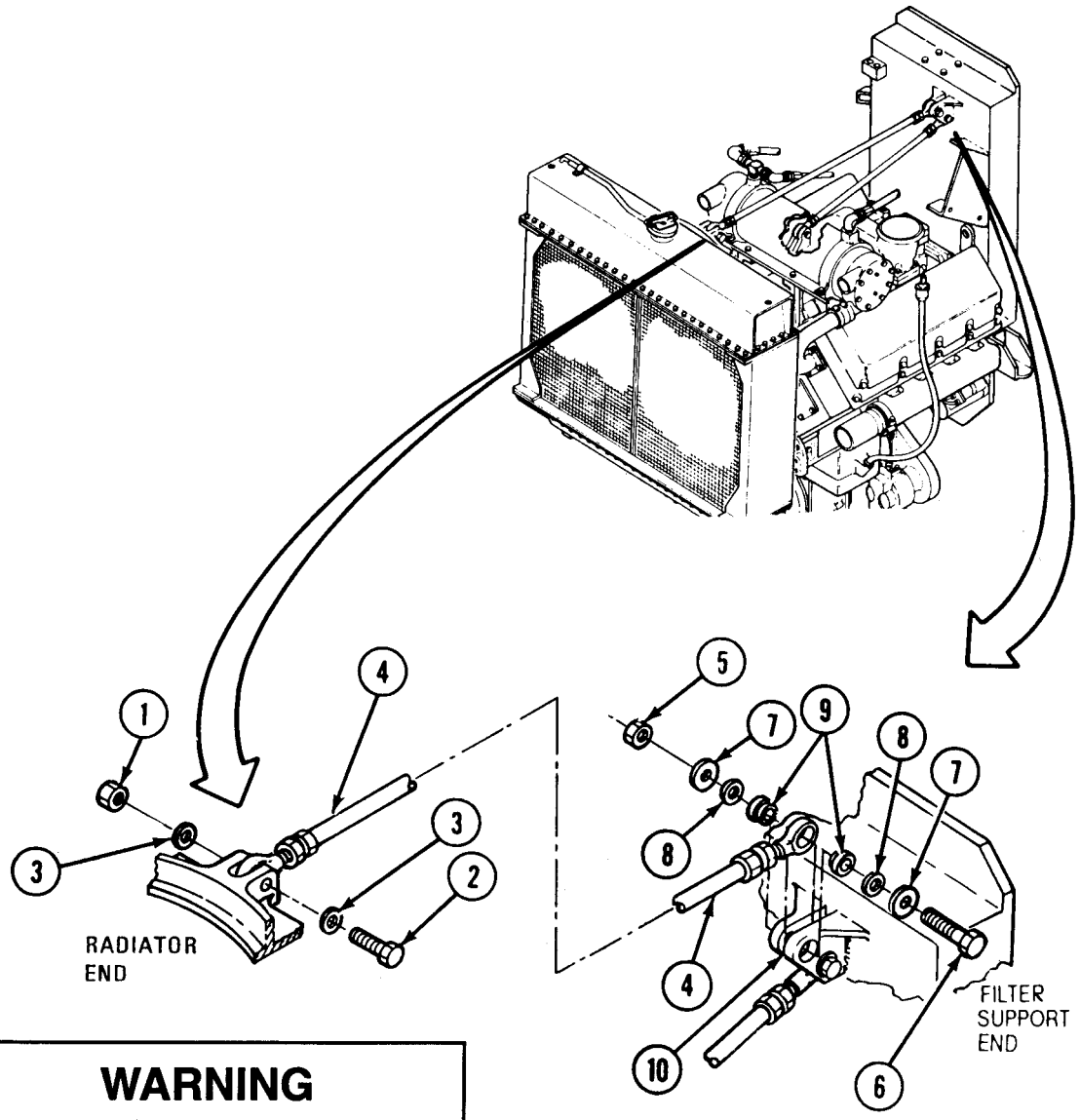
Reference	Condition Description
Page 4-327	Radiator and Engine Compartment Armor Shroud Removed
Page 4-356	Rear Floor Plate Supports Removed
Page 4-582	Cooling System Tubes, Hoses, and Clamps Removed
Page 4-633	Fan Belt Removed

General Safety Instructions:

WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.
- Lifting device must have a weight capacity greater than 498 lb (236 kg).
- Personnel must stand clear during lifting operations.

REMOVAL



WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.

Note

If necessary, loosen jamnut at rod to remove screw.

A Remove locknut (1), screw (2), and two washers (3) from radiator end of rod (4). Discard locknut (1).

B Remove nut (5), self-locking screw (6), two washers (7), washers (8), and bushings (9) from rod mounting bracket (10) and filter support end of rod (4). Remove rod (4) from engine compartment. Discard self-locking screw (6).

C Disengage fan belt adjusting cable (11) from fan belt tensioner (12).

D Install two eyebolts in holes (13) at top of radiator (14).

E Connect chain and lifting device to two eyebolts and raise lifting device enough to take slack out of chain.

F Remove four locknuts (15) and washers (16) from studs (17) at bottom of radiator (14). Discard locknuts (15).

G Remove two screws (18) and washers (19) from mounts (20) at bottom of fan assembly (21).

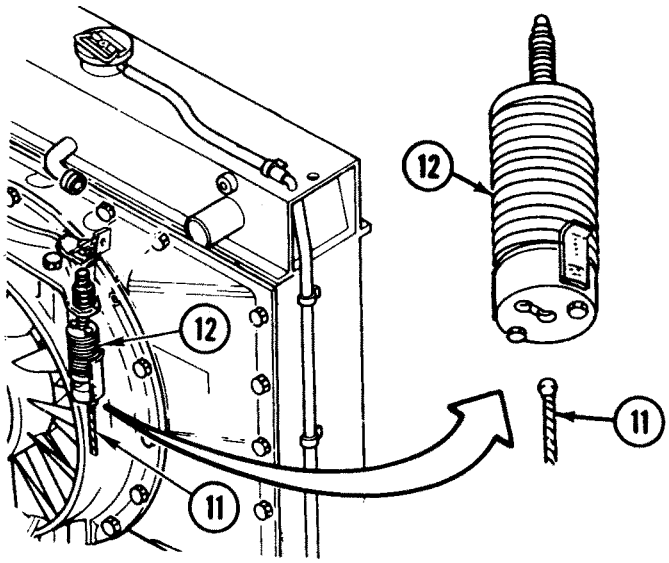
WARNING

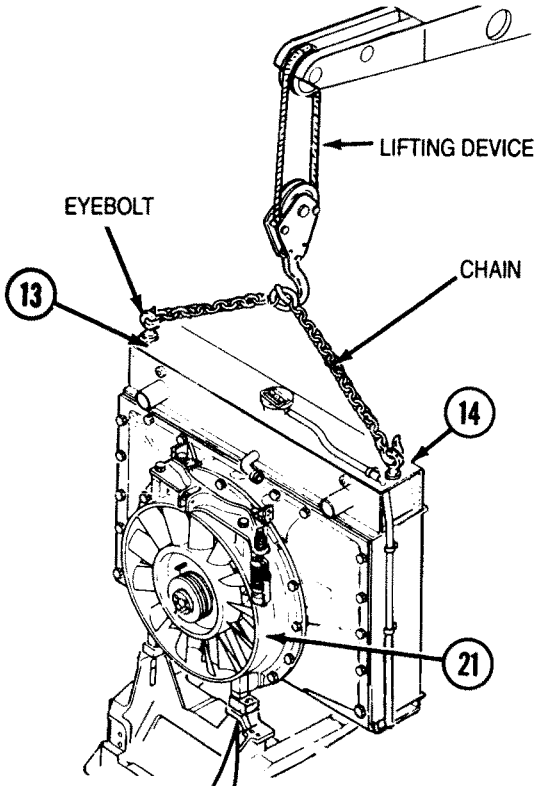
- Lifting device must have a weight capacity greater than 498 lb (236 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.

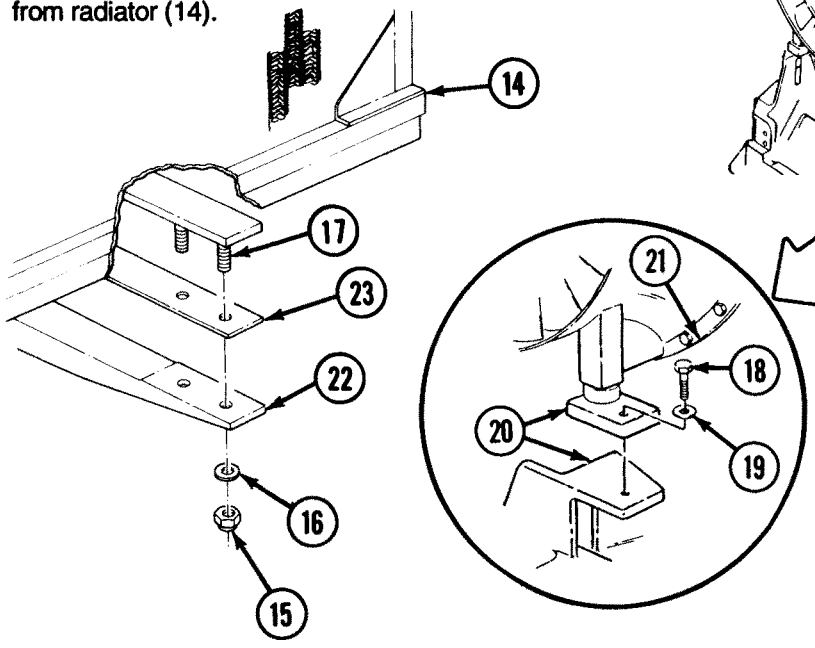
H Using lifting device, remove radiator (14) from radiator support bracket (22), and remove radiator (14) from vehicle.

I Remove two cushioning pads (23) from under radiator (14).

J Remove lifting device, chain, and two eyebolts from radiator (14).







INSTALLATION

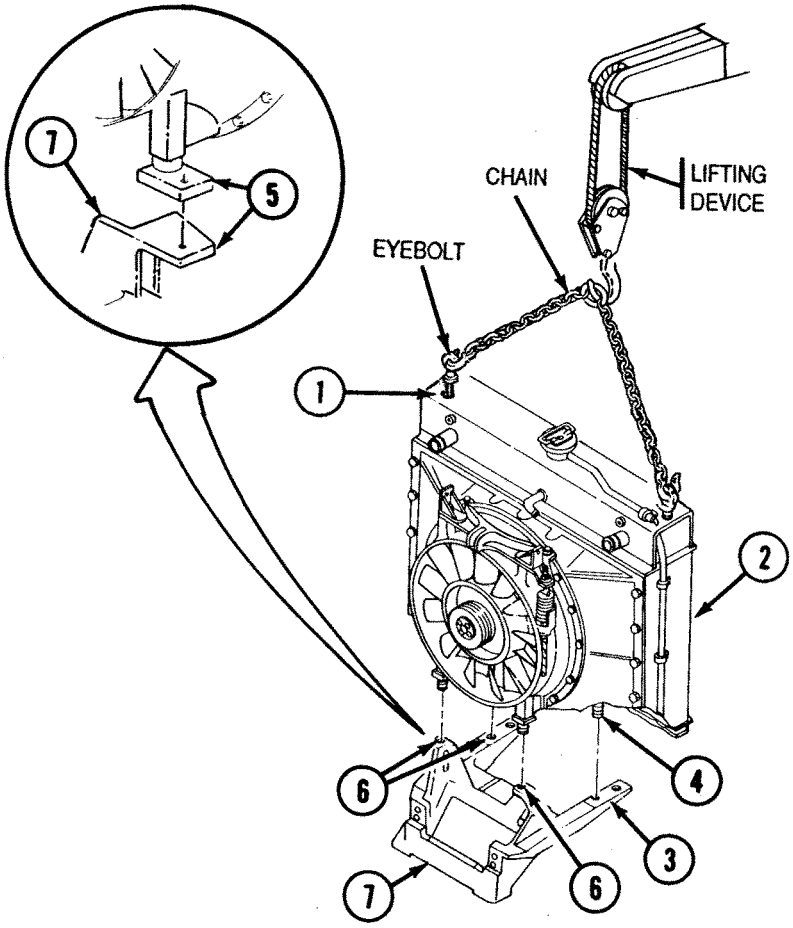
A Install two eyebolts in holes (1) at top of radiator (2).

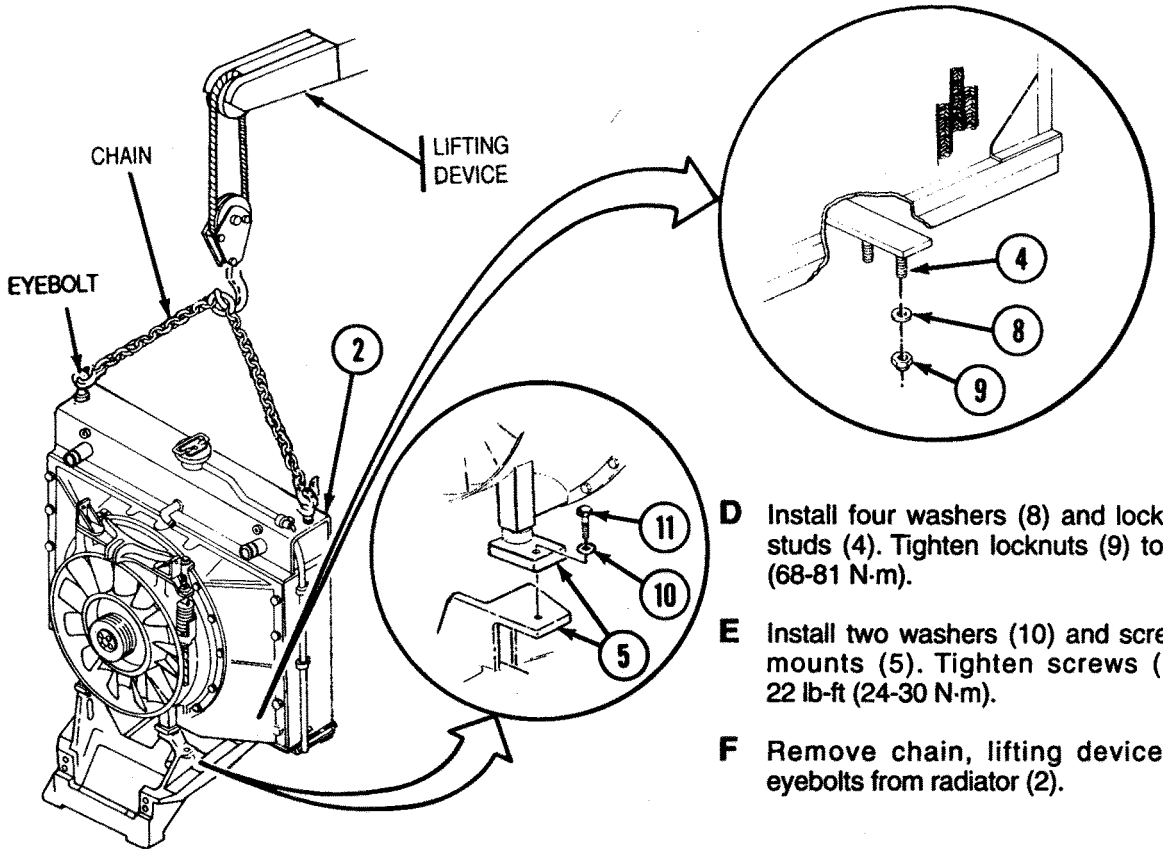
B Install chain on two eyebolts and lifting device.

WARNING

- Lifting device must have a weight capacity greater than 498 lb (236 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.

C Install two cushioning pads (3) on radiator (2) and lower radiator (2) into vehicle. Ensure four studs (4), cushioning pads (3), and two mounts (5) align with mounting holes (6) of radiator mounting bracket (7).

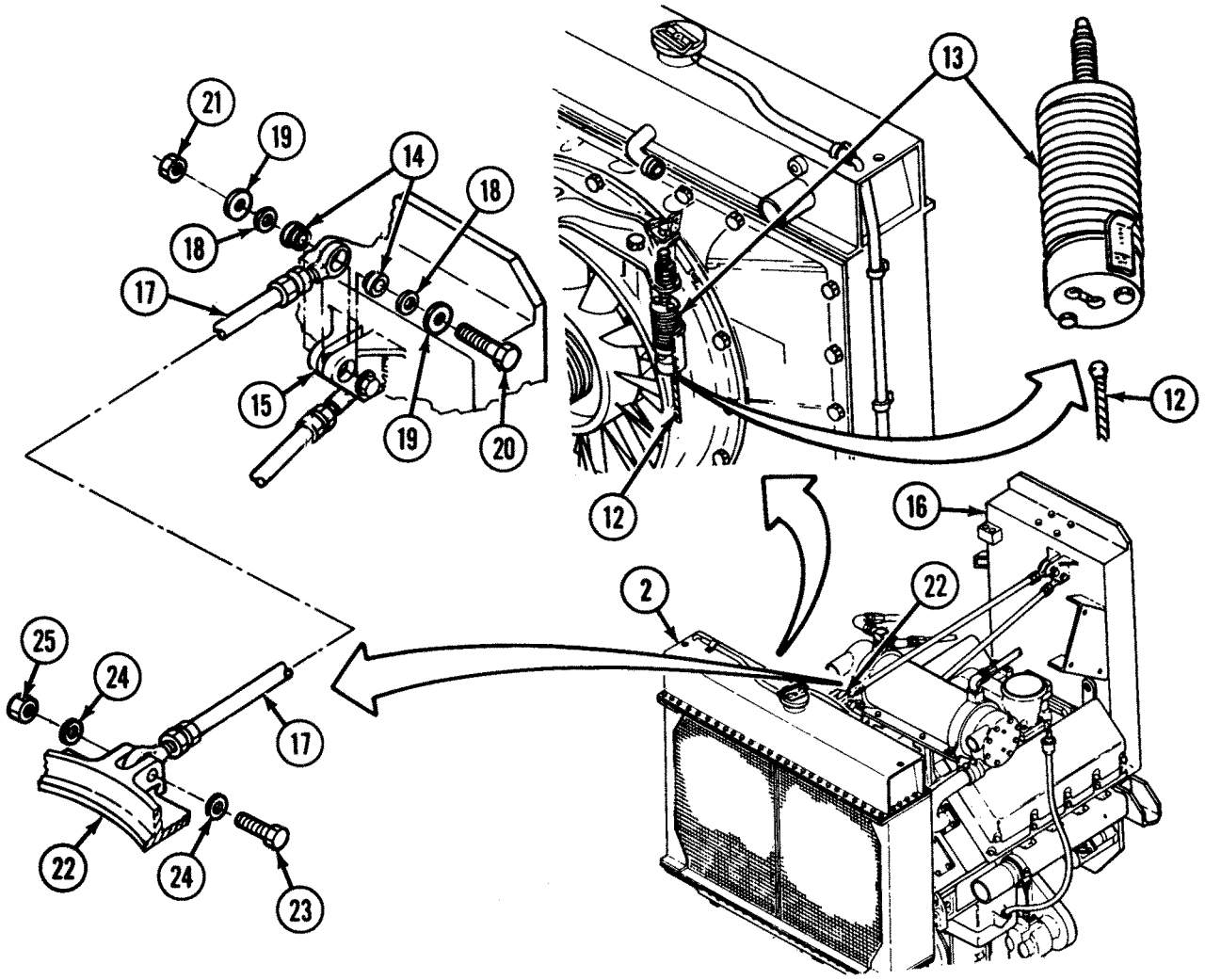




D Install four washers (8) and locknuts (9) on studs (4). Tighten locknuts (9) to 50-60 lb-ft (68-81 N·m).

E Install two washers (10) and screws (11) on mounts (5). Tighten screws (11) to 18-22 lb-ft (24-30 N·m).

F Remove chain, lifting device, and two eyebolts from radiator (2).



G Connect fan belt adjusting cable (12) to fan belt tensioner (13).

H Install two bushings (14) on rod mounting bracket (15) of filter support (16).

I Install rod (17) on rod mounting bracket (15) with two washers (18), washers (19), self-locking screw (20), and nut (21). Tighten nut (21) to 50-55 lb-ft (68-75 N·m).

J Install rod (17) on bracket (22) of radiator (2) with screw (23), two washers (24), and locknut (25). Tighten locknut (25) to 20-25 lb-ft (27-34 N·m).

FOLLOW-ON TASKS:

- Install fan belt (p 4-633).
- Install cooling system tubes, hoses, and clamps (p 4-584).
- Install radiator and engine compartment armor shroud (p 4-332).
- Install rear floor plate supports (p 4-357).

RADIATOR SIDE SEALS REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Drycleaning Solvent	Item 31 Appendix D
Hook Tape (Velcro)	Appendix E

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

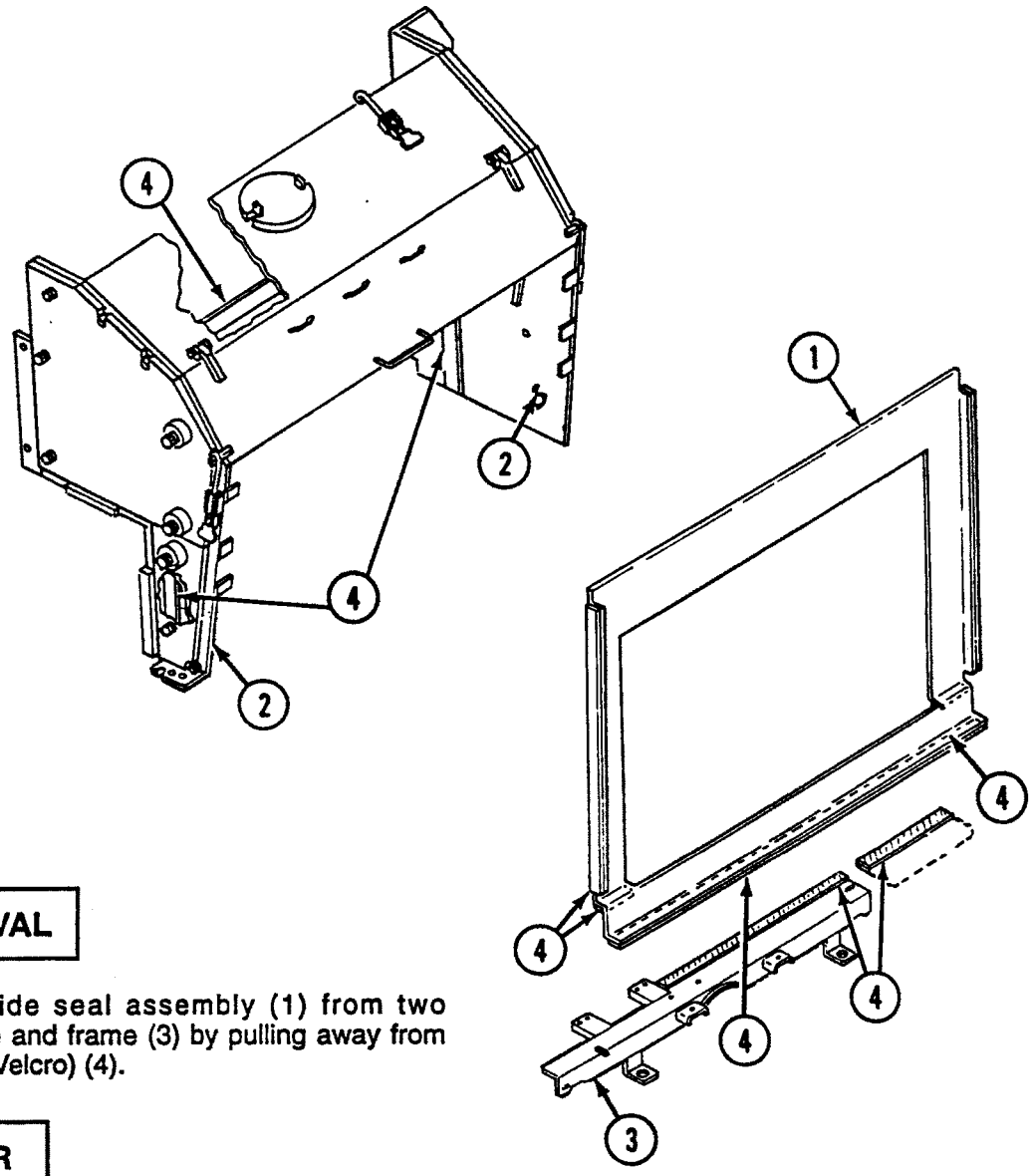
Equipment Condition:

Reference	Condition Description
Page 4-340	Engine Exhaust Grilles Removed

General Safety Instructions:

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.



REMOVAL

Remove side seal assembly (1) from two brackets (2) and frame (3) by pulling away from hook tape (Velcro) (4).

REPAIR

A Remove old hook tape (Velcro) (4) by scraping and brushing.

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in injury to personnel or damage to equipment.

B Clean hook tape (Velcro) mounting areas with brush, drycleaning solvent, and clean

C Cut hook tape (Velcro) (4) to correct length (Appendix E), peel backing off, and press in place.

INSTALLATION

Install side seal assembly (1) on frame (3) and two brackets (2) by pressing hook tape (Velcro) (4) together.

FOLLOW-ON TASK:
Install engine exhaust grilles (p 4-344).

TRANSFER CASE LINES, FITTINGS, AND BREATHER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

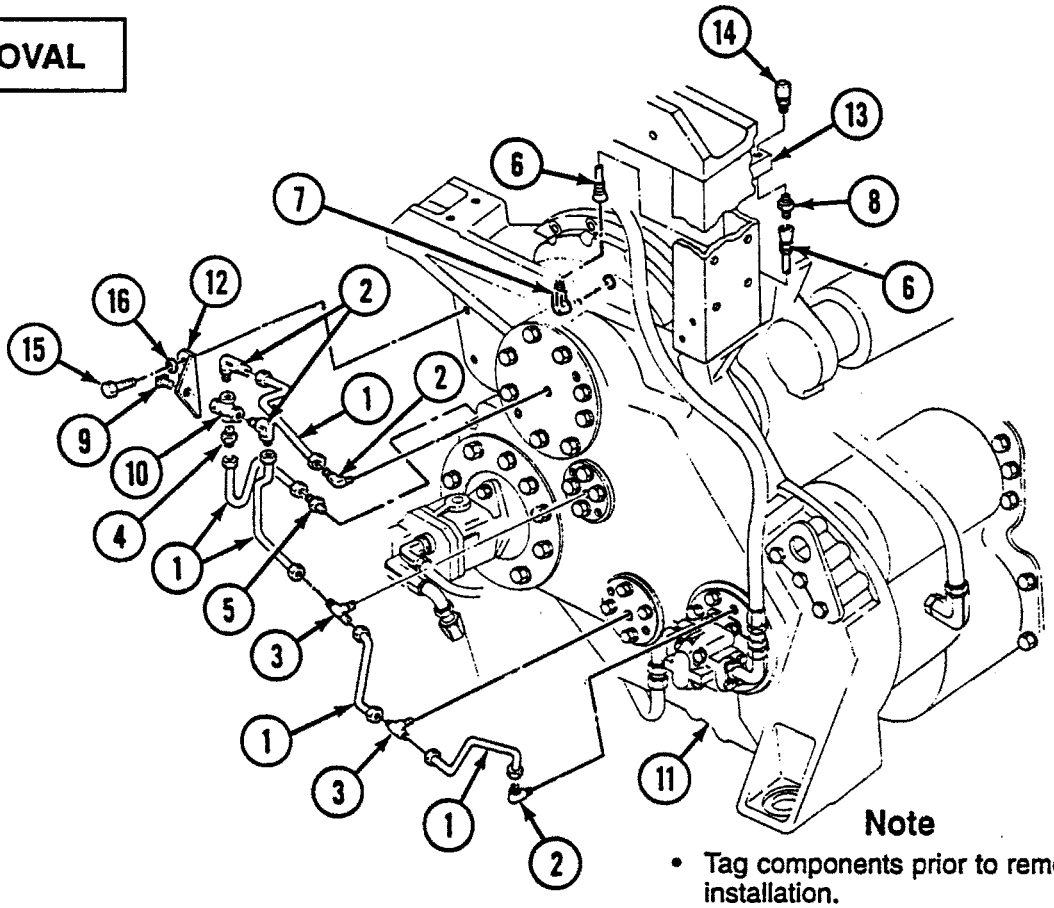
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Hot oil can cause serious burns. Ensure transfer case is cool before disconnecting any tubes or hoses.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

REMOVAL



Note

- Tag components prior to removal for installation.
- Have suitable container ready to catch oil from tubes, hoses, and transfer case ports.

WARNING

- Hot oil can cause serious burns. Ensure transfer case is cool before disconnecting any tubes or hoses. Failure to comply may result in severe injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of oil. Failure to comply may result in damage to equipment.

A Remove five tubes (1) from four elbows (2), two tees (3), adapter (4), and restrictor (5).

Note

There are two configurations of breather hose routing. Breather hose connected to adapter is shown.

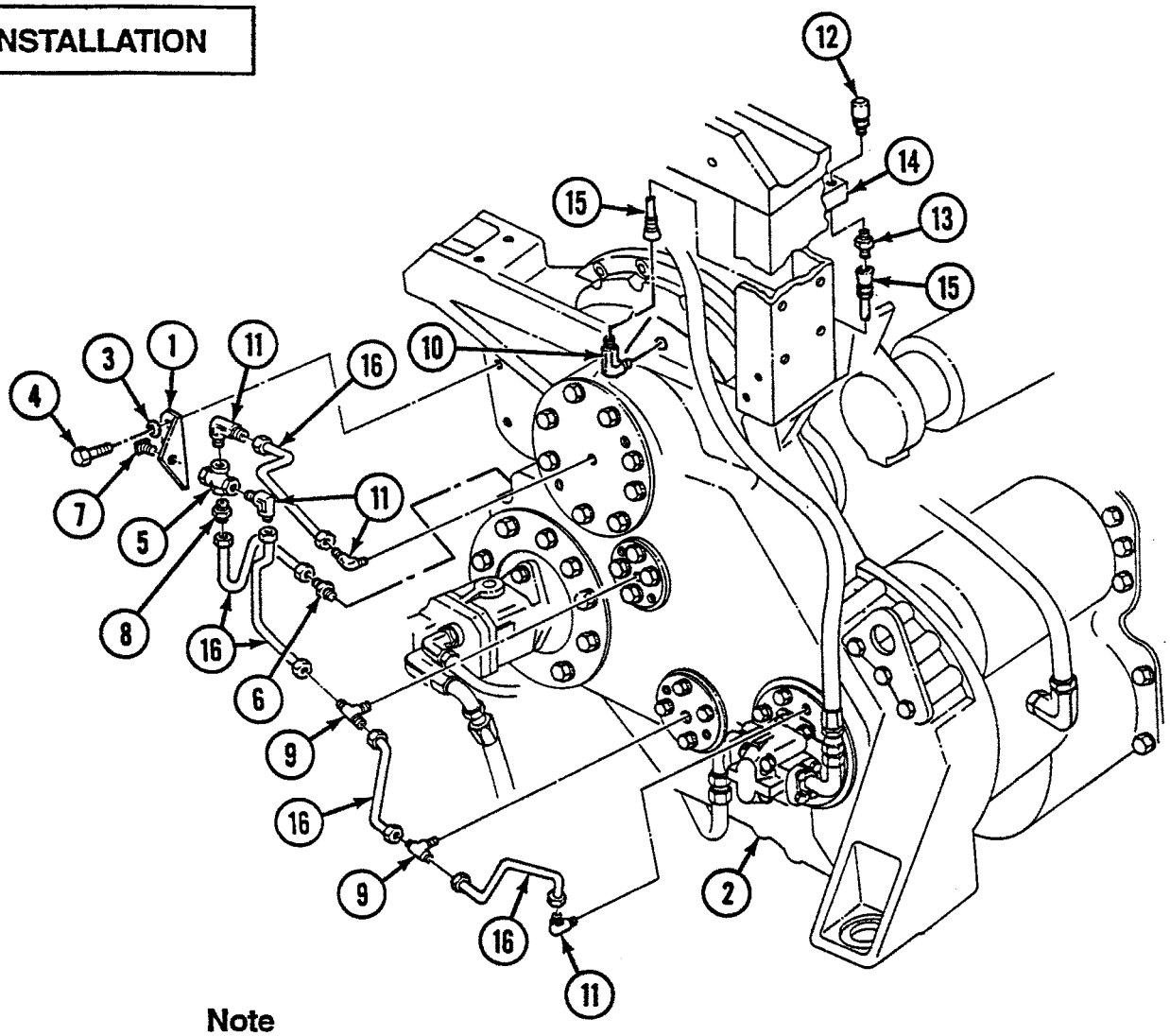
B Remove breather hose (6) from elbow (7) and adapter (8).

C Remove four elbows (2), elbow (7), two tees (3), adapter (4), bushing (9), restrictor (5), and cross (10) from transfer case (11) and bracket (12). Remove adapter (8) from filter support (13).

D Remove breather (14) from filter support (13).

E Remove two self-locking screws (15), washers (16), and bracket (12) from transfer case (11). Discard self-locking screws (15).

INSTALLATION



Note

- Oil lines and fittings will leak if not properly installed. See page 2-29 for correct method of installing flareless fittings.
- Apply lubricating oil to threads of screws prior to installation.

A Install bracket (1) on transfer case (2) with two washers (3) and self-locking screws (4). Tighten self-locking screws (4) to 58-62 lb-ft (79-84 N·m).

B Install cross (5), restrictor (6), bushing (7), adapter (8), two tees (9), elbow (10), and four elbows (11) on transfer case (2) and bracket (1).

C Install breather (12) and adapter (13) on filter support (14).

Note

There are two configurations of breather hose routing. Breather hose connected to adapter is shown.

D Install breather hose (15) on adapter (13) and elbow (10).

E Install five tubes (16) on four elbows (11), two tees (9), adapter (8), and restrictor (6).

FOLLOW-ON TASKS:

- Service transmission (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

SCAVENGER PUMP FILTER ELEMENT REPLACEMENT

This task covers:

a. Removal
b. Cleaning
c. Inspection
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Parts Kit	2940-01-298-3981

Materials:

Drycleaning Solvent	Item 31 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Drycleaning solvent is flammable and will not be used near an open flame. Use only in well-ventilated areas. A fire extinguisher will be kept nearby when the solvent is used.
- Do not work in bowl area unless ejector lock is engaged.

REMOVAL

WARNING

- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool. Failure to comply may result in severe injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Note

Have suitable container with at least 1-gal. (3.8-L) capacity ready to catch oil.

A Loosen nut (1), and drain oil from filter assembly (2).

B Remove nut (1), seal (3), shell (4), and gasket (5) from filter head (6). Discard gasket (5) and seal (3).

C Remove two nuts (7) and filter element (8) from outlet tube (9).

CLEANING

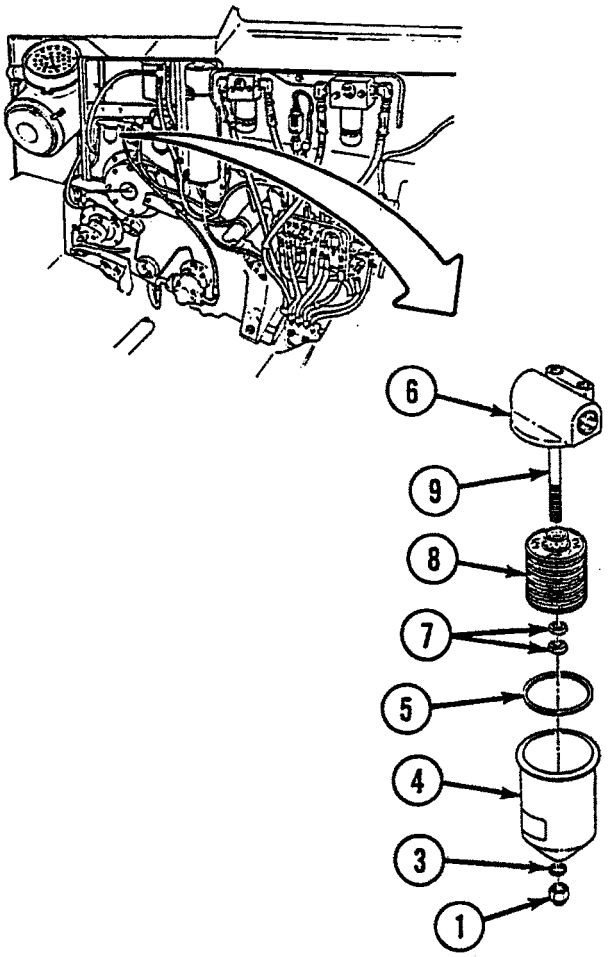
WARNING

Drycleaning solvent is flammable and will not be used near an open flame. Use only in well-ventilated areas. A fire extinguisher will be kept nearby when the solvent is used. Failure to comply may result in severe injury to personnel.

Clean filter element (8) and shell (4) with drycleaning solvent. Allow parts to air dry.

INSPECTION

Inspect filter element (8) for rips, cracks, or clogged areas. If filter element (8) is ripped or cracked, or clogs cannot be cleaned out, replace element (8).



INSTALLATION

WARNING

Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

A Install filter element (8) on outlet tube (9) with two nuts (7).

B Install gasket (5) and shell (4) on filter head (6) with seal (3) and nut (1).

C Start engine (TM 5-2350-262-10) and check for oil leaks at filter base (6).

FOLLOW-ON TASKS:

- Service transmission (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

SCAVENGER PUMP FILTER ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 15 Appendix D

Parts:

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

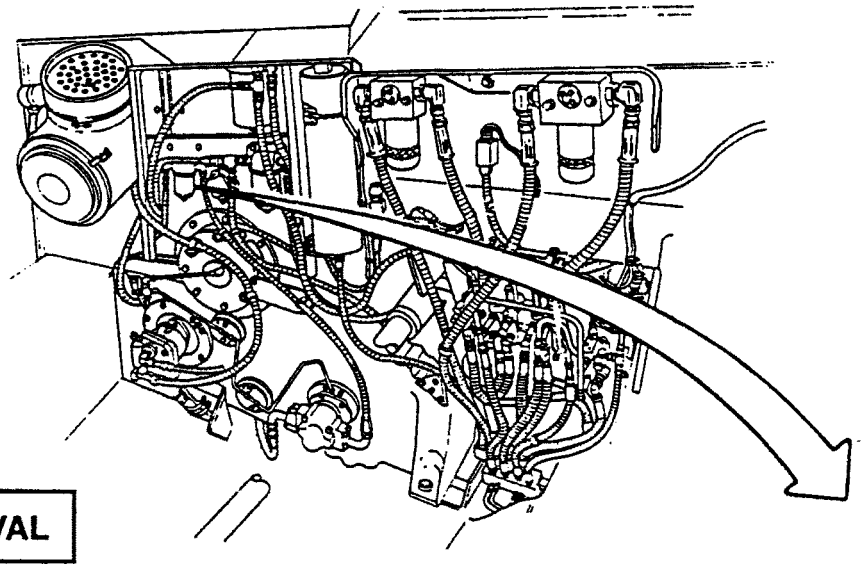
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.



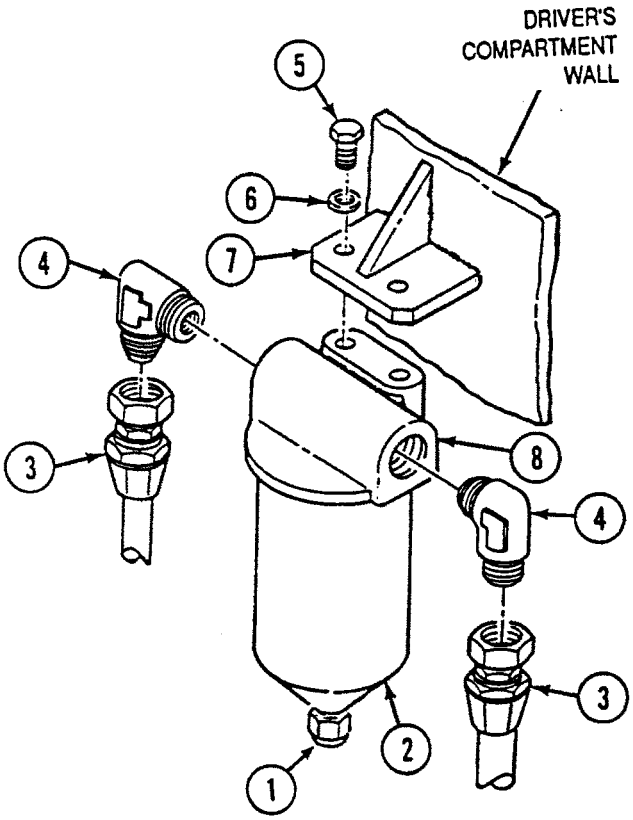
REMOVAL

WARNING

- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool. Failure to comply may result in severe injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Note

Have suitable container with at least 1-gal. (3.8-L) capacity ready to catch oil.

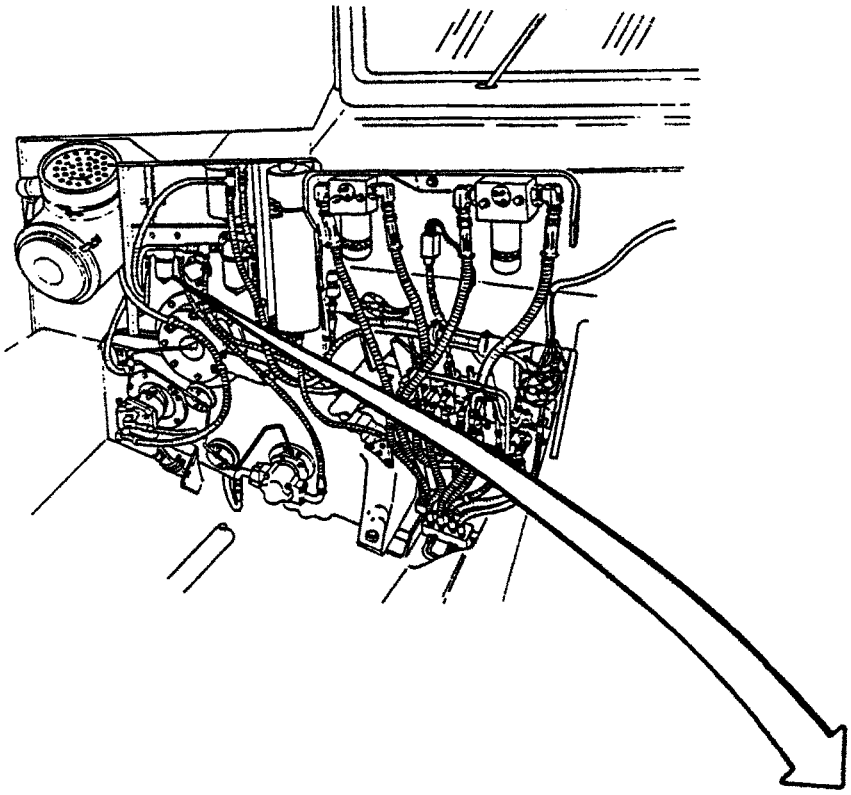


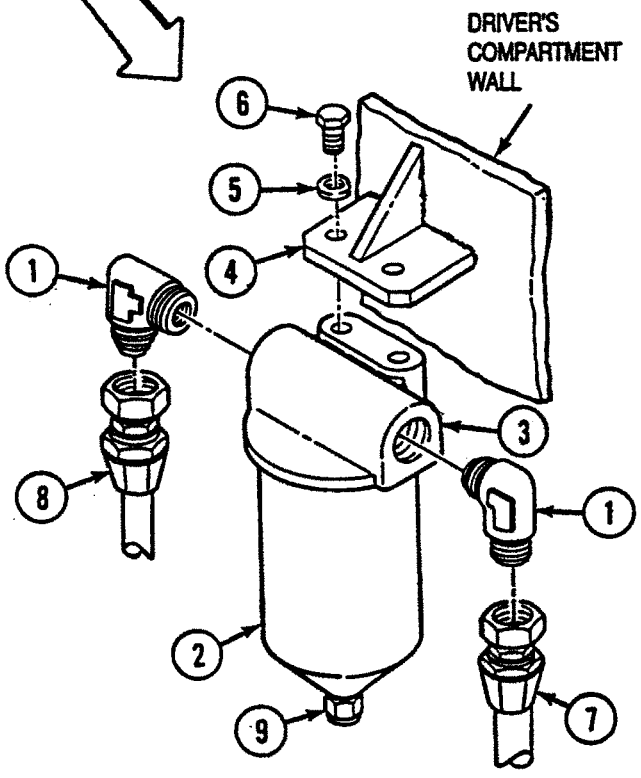
A Loosen nut (1) and drain oil from filter assembly (2).

B Disconnect two hoses (3) from elbows (4), and drain oil from hoses (3).

C Remove two self-locking screws (5), washers (6), and filter assembly (2) from bracket (7). Discard self-locking screws (5).

D Place filter assembly (2) in vise, and remove two elbows (4) from filter head (8).





INSTALLATION

A Coat threads of two elbows (1) with sealing compound, place filter assembly (2) in vise, and install two elbows (1) on filter head (3).

B Install filter assembly (2) on bracket (4) with two washers (5) and self-locking screws (6).

C Connect SCAV FLTR IN-1P hose (7) to elbow (1) on inlet side of filter head (3).

D Connect SCAV FLTR IN-2S hose (8) to elbow (1) on outlet side of filter head (3).

E Tighten nut (9) on filter assembly (2).

FOLLOW-ON TASKS:

- Service transmission (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

TRANSFER CASE INPUT GEAR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Jacking Screws (2)

Materials:

Grease, Molybdenum Disulfide	Item 21 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Packing

Self-locking Screw (8)

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-5	STE/ICE-R Tests

Equipment Condition:

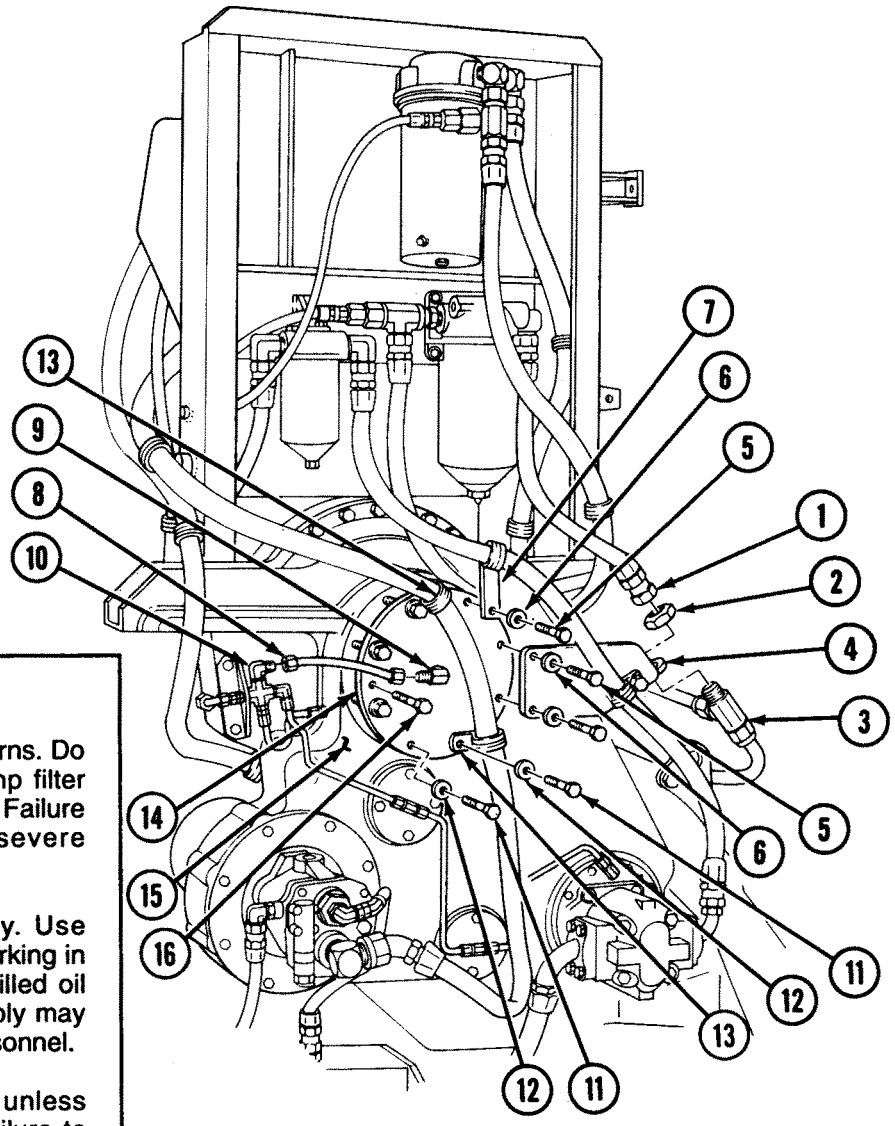
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

REMOVAL



WARNING

- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool. Failure to comply may result in severe injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Note

Have suitable container ready to catch hydraulic oil.

A Disconnect hose (1) and nut (2) from tee (3) and rear of bracket (4).

Note

There are two configurations of hose routing, location of clamps, and use of bracket. Hoses secured to input gear cap is shown.

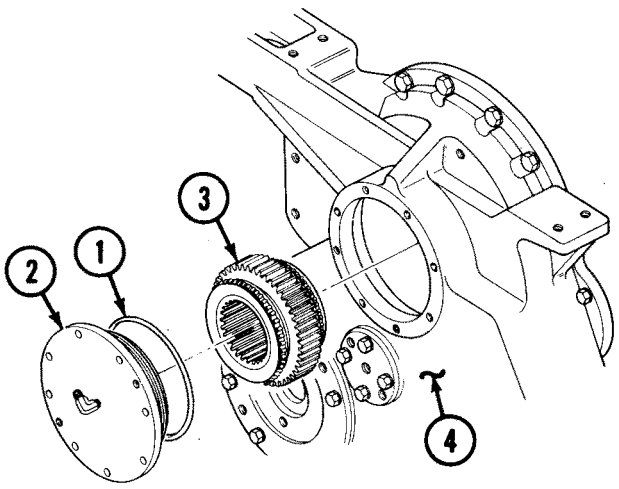
B Remove three self-locking screws (5) and washers (6), and move brackets (4) and (7) out of the way. Discard self-locking screws (5).

C Remove tube (8) from elbows (9) and (10).

D Remove five self-locking screws (11) and washers (12) from two clamps (13), cap (14), and transfer case (15). Discard self-locking screws (11).

E Install two jacking screws (16) (.4375-14-UNC x 1.25-in. min) on threaded holes of cap (14), turn jacking screws (16) clockwise, and remove cap (14) from transfer case (15). Remove jacking screws (16).

F Remove packing (1) from cap (2). Discard packing (1).



CAUTION

Components of bearing assemblies must always stay together and are not to be used with components of other bearing assemblies. Failure to comply may result in damage to equipment.

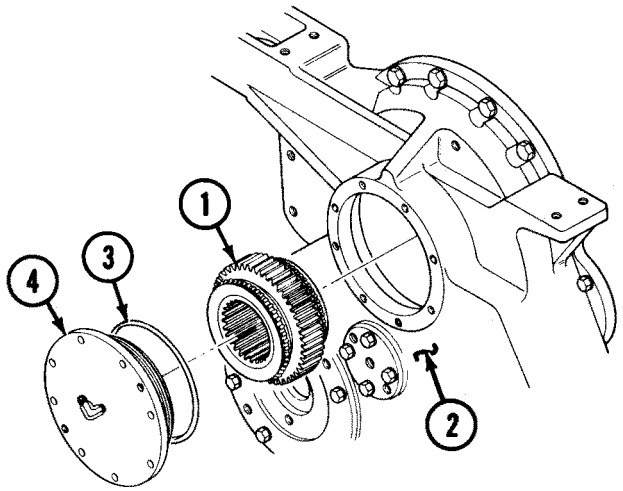
Note

Tag or mark fore and aft faces of input gear at time of removal.

G Remove input gear (3) from transfer case (4).

INSTALLATION

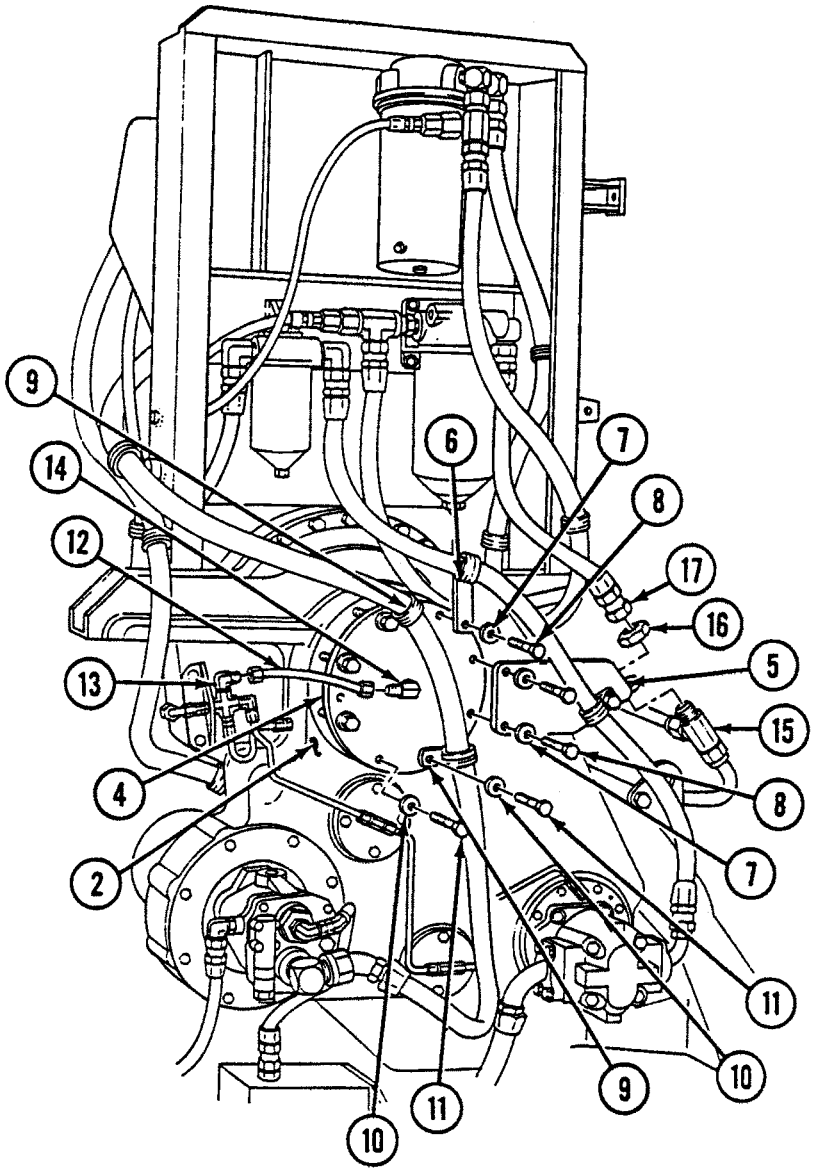
A Install input gear (1) on transfer case (2). Ensure fore and aft faces of input gear (1) are aligned correctly.



Note

Apply lubricating oil to packing prior to installation.

B Install packing (3) on cap (4).



C Coat all mating surfaces of transfer case (2) and cap (4) with molybdenum disulfide grease, and install cap (4) on transfer case (2).

Note

- There are two configurations of hose routing, location of clamps, and use of bracket. Hoses secured to input gear cap is shown.
- Apply lubricating oil to threads of screws prior to installation.

D Install brackets (5) and (6) on cap (4) with three washers (7) and self-locking screws (8).

E Install two clamps (9), five washers (10), and self-locking screws (11) on transfer case (2) and cap (4).

F Tighten self-locking screws (8) and (11) to 58-62 lb-ft (79-84 N·m).

G Install tube (12) on elbows (13) and (14).

H Install tee (15) on bracket (5) with nut (16).

I Connect BHD TEE-1S/2T hose (17) to tee (15).

FOLLOW-ON TASK:
Retract ejector (TM 5-2350-262-10).

SCAVENGER PUMP REPLACEMENT

This task covers:

a. Removal

b. Installation

c. Test

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs — Item 7 **Appendix D**

Parts:

Packing (2)

Gasket

Self-locking Screw (12)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

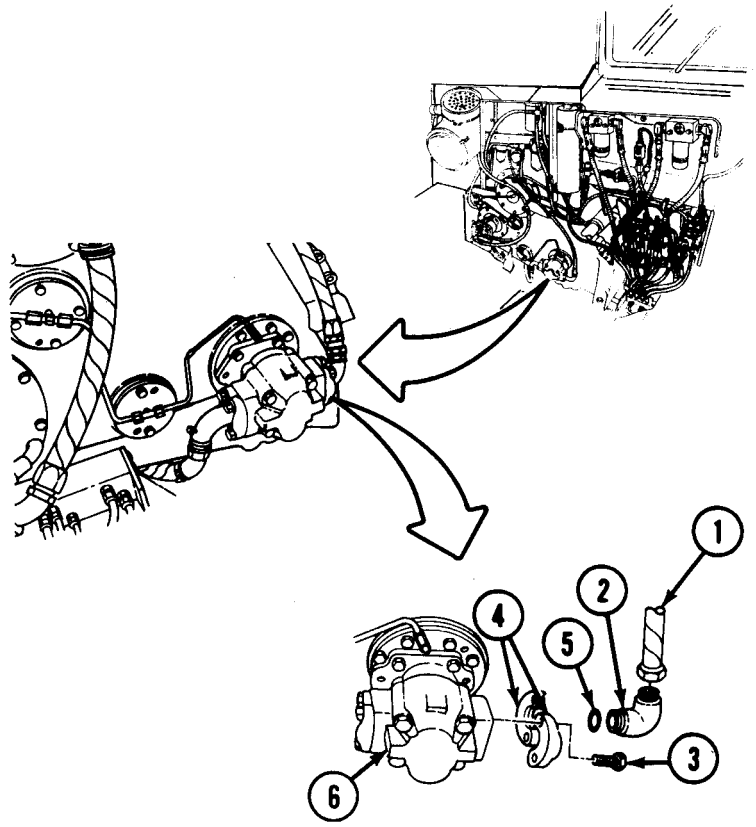
REMOVAL

WARNING

- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool. Failure to comply may result in severe injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of oil. Failure to comply may result in damage to equipment.

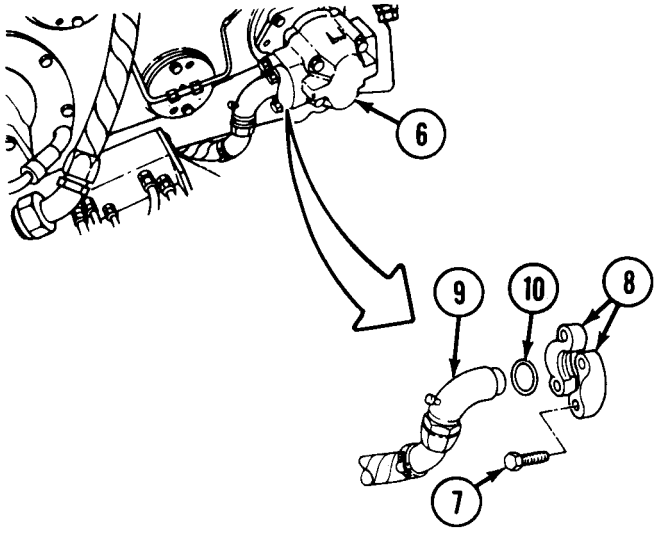


Note

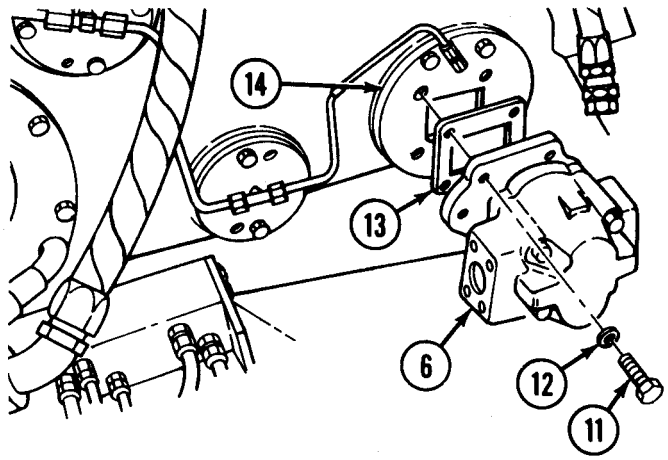
Have suitable container ready to catch oil.

A Disconnect hose (1) from elbow (2), and drain oil.

B Remove four self-locking screws (3), two clamp halves (4), elbow (2), and packing (5) from pump (6). Discard self-locking screws (3) and packing (5).

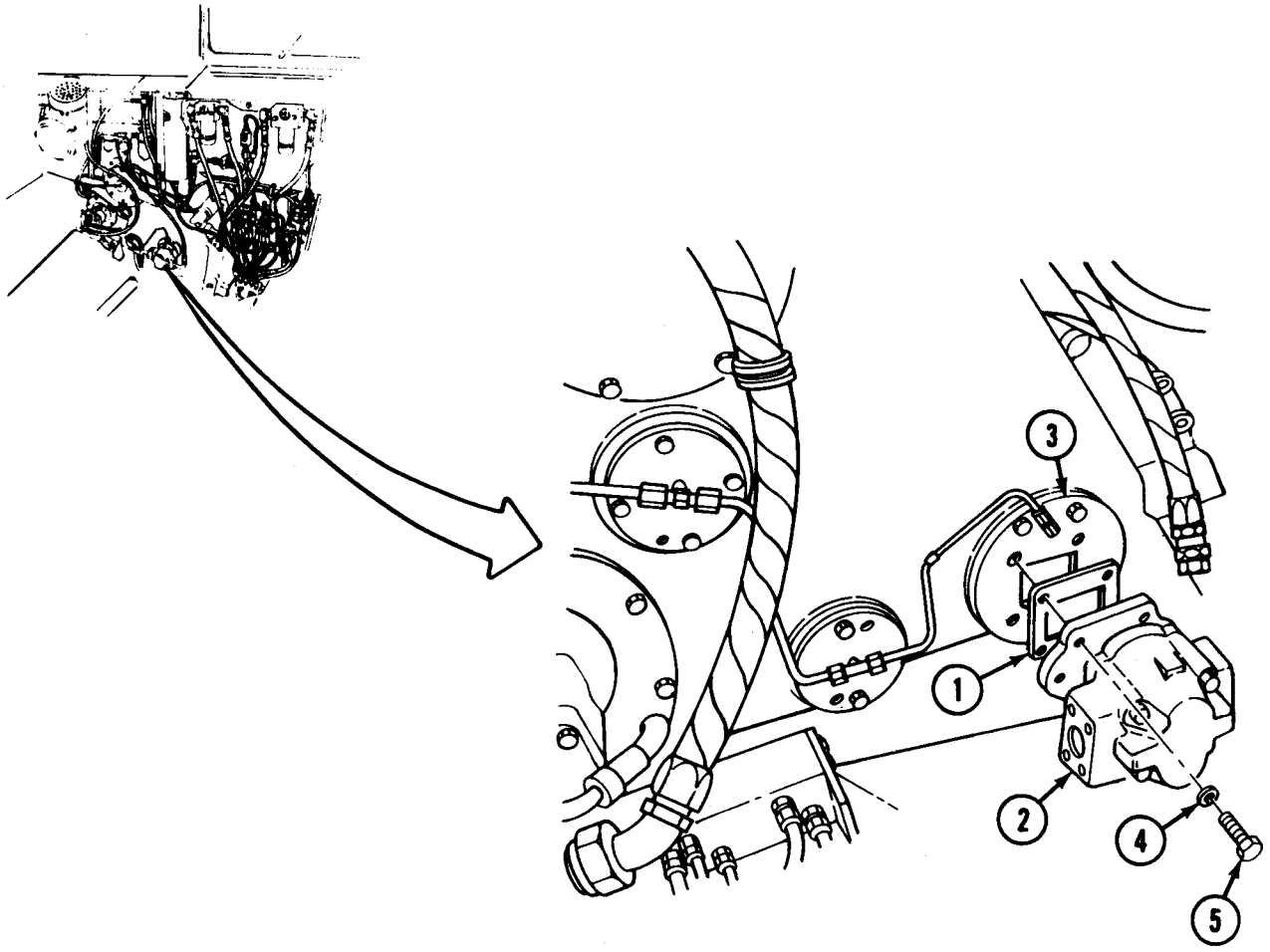


C Remove four self-locking screws (7), two clamp halves (8), hose assembly (9), and packing (10) from pump (6), and drain oil. Discard self-locking screws (7) and packing (10).



D Remove four self-locking screws (11), washers (12), pump (6), and gasket (13) from transfer case housing (14). Discard self-locking screws (11) and gasket (13).

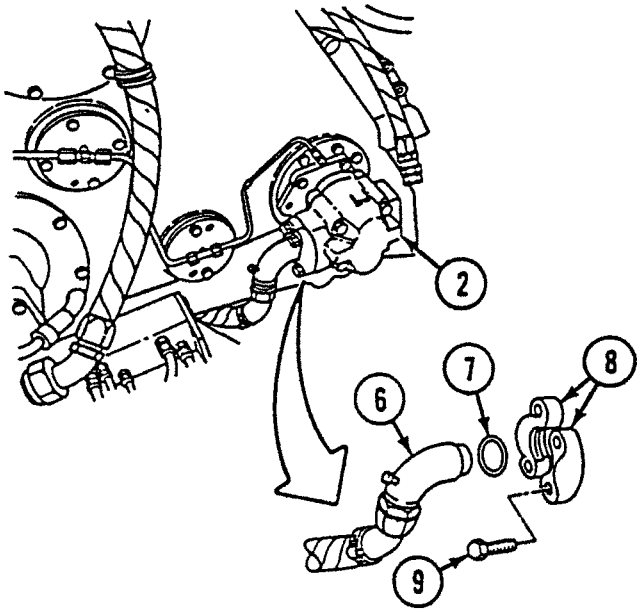
INSTALLATION



Note

- Scavenger pump and transfer case mating surfaces must be free of old gasket material and dirt prior to scavenger pump installation.
- Oil lines and fittings can leak if not correctly installed. Refer to page 2-29 for correct method to install flanged fittings.

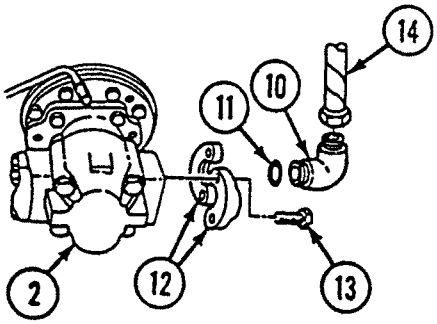
A Install gasket (1) and pump (2) on transfer case housing (3) with four washers (4) and self-locking screws (5). Tighten self-locking screws (5) to 22-25 lb-ft (30-34 N·m).



Note

Ensure hose assembly does not contact or rub on floor of hull.

B Connect SCAV PUMP-IN-2P hose assembly (6) on pump (2) with packing (7), two clamp halves (8), and four self-locking screws (9). Tighten self-locking screws (9) to 25-28 lb-ft (34-38 N·m).



C Install elbow (10) on pump (2) with packing (11), two clamp halves (12), and four self-locking screws (13). Tighten self-locking screws (13) to 30-35 lb-ft (41-48 N·m).

D Connect SCAV PMP-OUT-1P hose (14) to elbow (10).

TEST

A Check oil level to ensure oil level is within operating range on steer unit gauge (TM 5-2350-262-10).

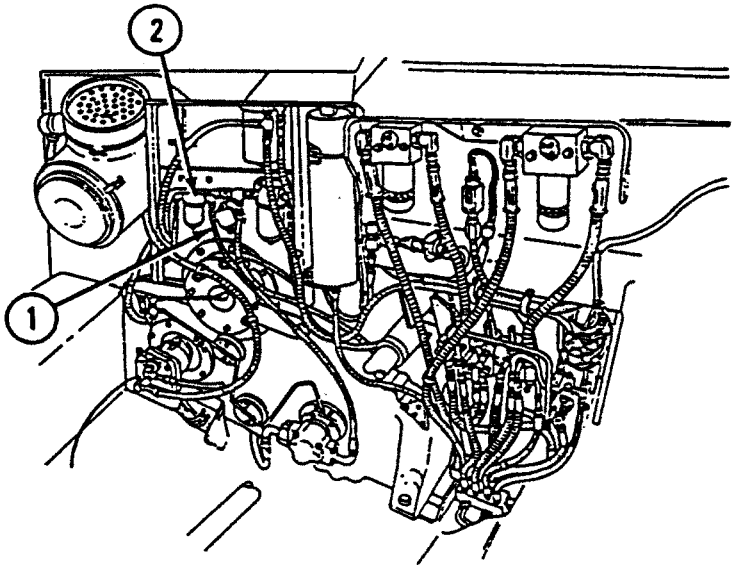
Note

Have suitable container ready to catch oil.

B Disconnect SCAV FLTR IN-1P hose (1) from filter head (2).

C Start engine (TM 5-2350-262-10) and run for a maximum of 10 seconds to verify oil flow from hose (1). Shut off engine (TM 5-2350-262-10).

D Connect SCAV FLTR IN-1P hose (1) to filter head (2), and add oil to steer unit (TM 5-2350-262-10).



FOLLOW-ON TASK:
Retract ejector (TM 5-2350-262-10).

TRANSMISSION SHIFT CONTROL VALVE HOSES AND FITTINGS REPLACEMENT

This task covers:

a. Removal

b. Inspection

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Sealing Compound	Item 14 Appendix D

Parts:

Lockwasher (9)

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-340	Engine Intake Grilles and Covers Removed
Page 4-356	Rear Floor Plate Supports Removed
Page 4-650	Radiator Removed

General Safety Instructions:

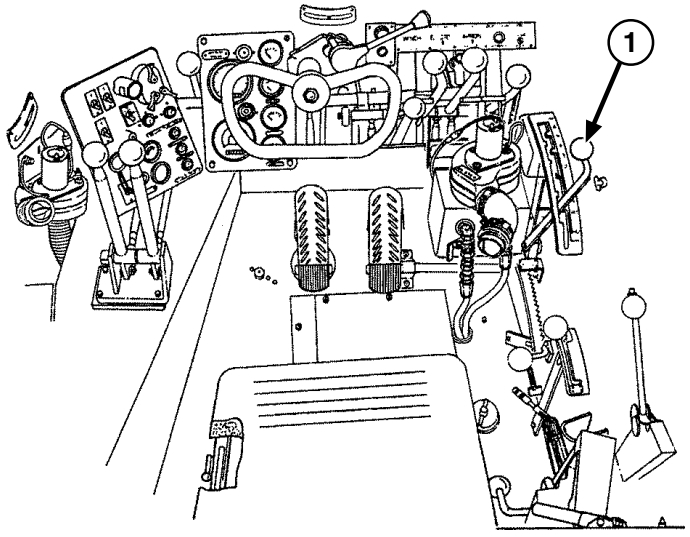
WARNING

Transmission hoses are pressurized. Do not disconnect hoses, fittings, or accumulator unless transmission shift control valve pressure has been relieved.

REMOVAL

WARNING

Transmission hoses are pressurized. Do not disconnect hoses, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off. Failure to comply may result in severe injury to personnel.



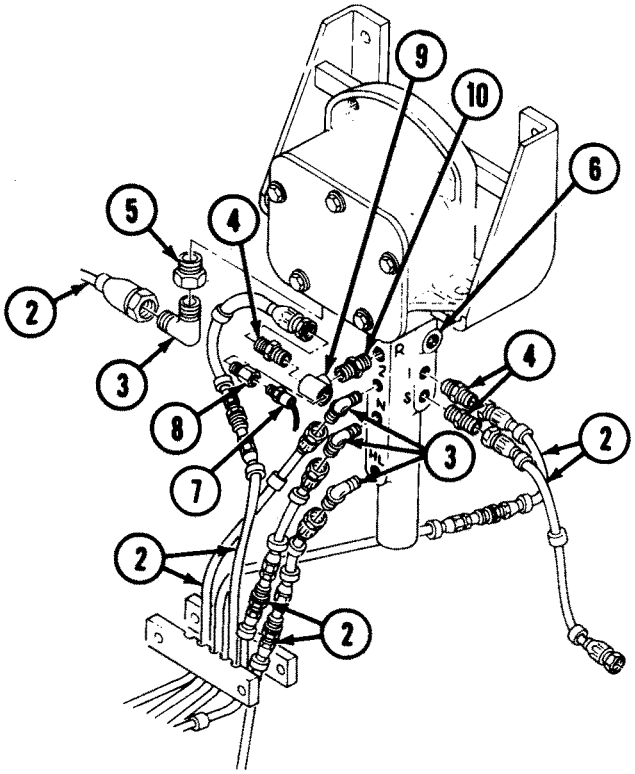
A With engine off, relieve transmission shift control pressure by moving shift lever (1) through all gear ranges several times.

CAUTION

Cover all ports to prevent contamination. Failure to comply may result in damage to equipment.

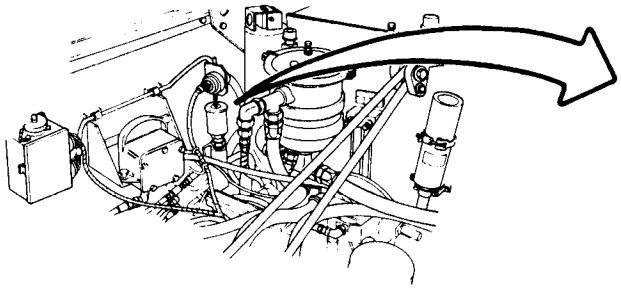
Note

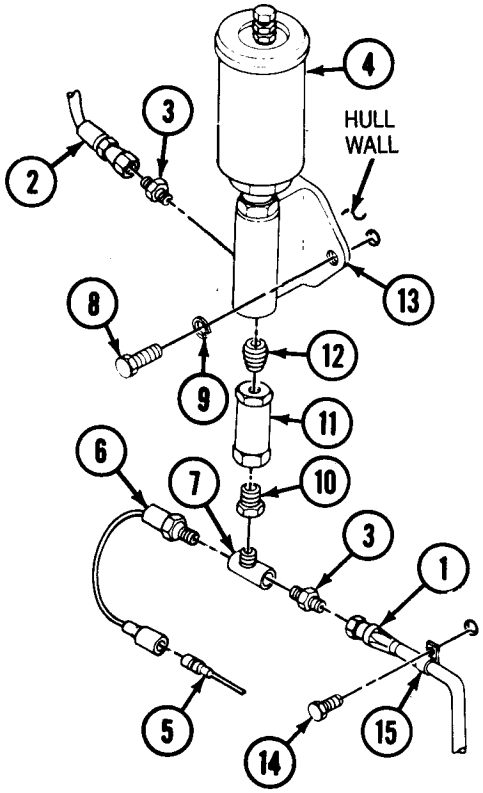
- Tag all hoses prior to removal for installation.
- Have suitable container ready to catch oil.
- Use two wrenches to remove transmission lines.
- There are two configurations of the shift control valve hoses. For vehicles No. 1 to 213, four quick-disconnects are above clamp. Vehicles No. 214 and above have five quick-disconnects above clamp.



B Disconnect seven hoses (2) from four elbows (3) and three adapters (4). Remove four elbows (3), bushing (5), and three adapters (4) from shift control (6).

C Disconnect pressure switch (7) from wiring harness, and remove pressure switch (7), reducer (8), tee (9), and adapter (10) from shift control (6).





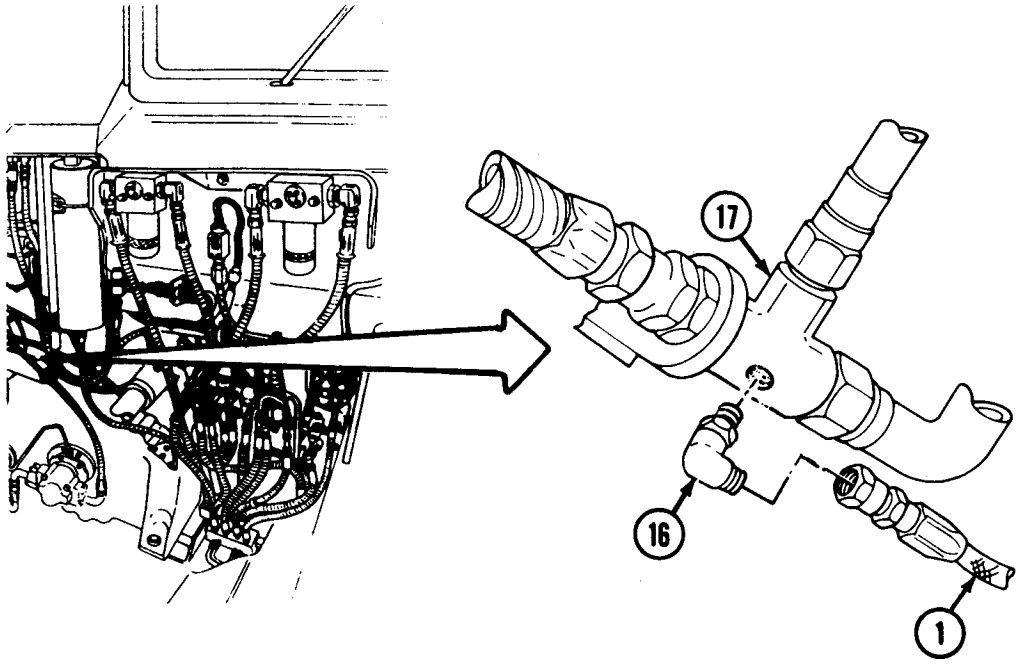
D Disconnect hoses (1) and (2) from two adapters (3). Remove two adapters (3) from shift accumulator (4).

E Disconnect wiring harness lead (5) from pressure switch (6), and remove pressure switch (6) from tee (7).

F Remove three screws (8), lockwashers (9), and shift accumulator (4) from hull wall. Discard lockwashers (9).

G Remove tee (7), bushing (10), check valve (11), and nipple (12) from bracket (13).

H Remove screw (14) and clamp (15) securing hose (1) to hull wall.



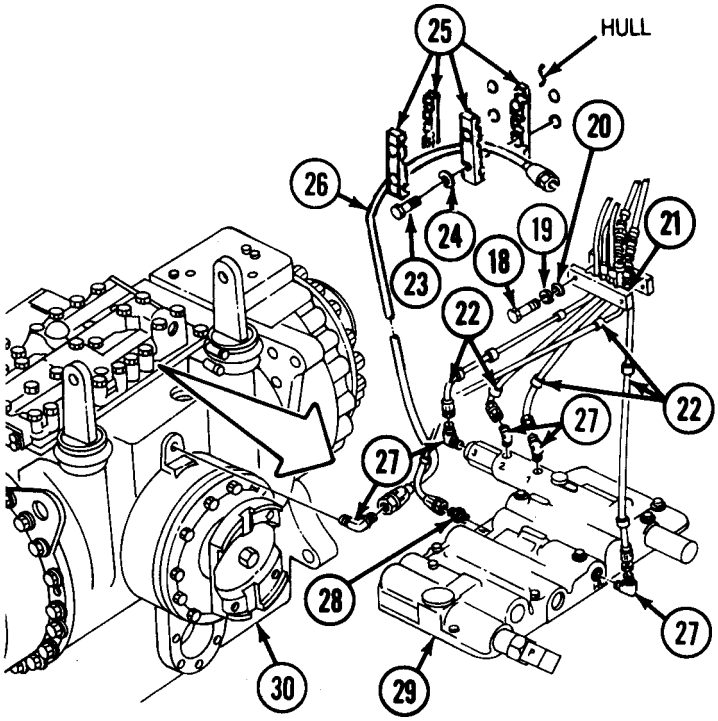
I Disconnect hose (1) from elbow (16), and remove elbow (16) from tee (17).

J In engine compartment, remove two self-locking screws (18), lockwashers (19), washers (20), and clamp (21) securing five hoses (22) to hull. Discard self-locking screws (18) and lockwashers (19).

K Remove four screws (23), lockwashers (24), and two clamps (25) securing hose (26) to hull. Discard lockwashers (24).

L Remove five hoses (22) and hose (26) from five elbows (27) and adapter (28) at transmission (29) and steer unit (30).

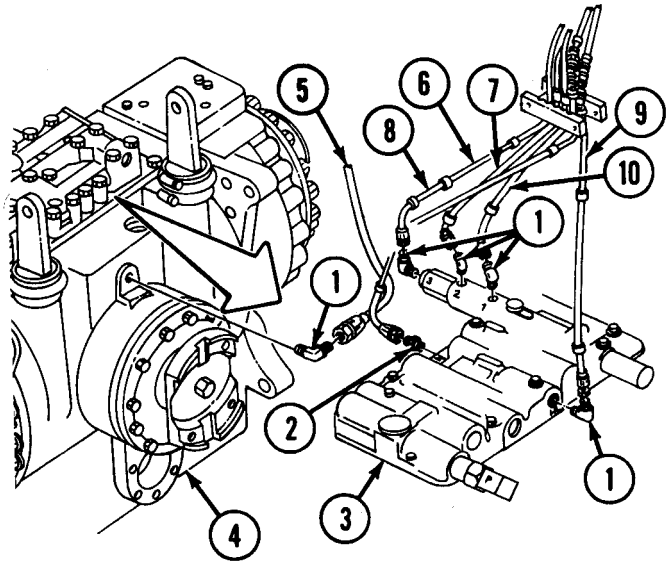
M Remove five elbows (27) and adapter (28) from transmission (29) and steer unit (30).



INSPECTION

Inspect elbows, adapters, bushings, tees, reducer, and hose fittings for damaged threads and seats. Replace damaged parts.

INSTALLATION

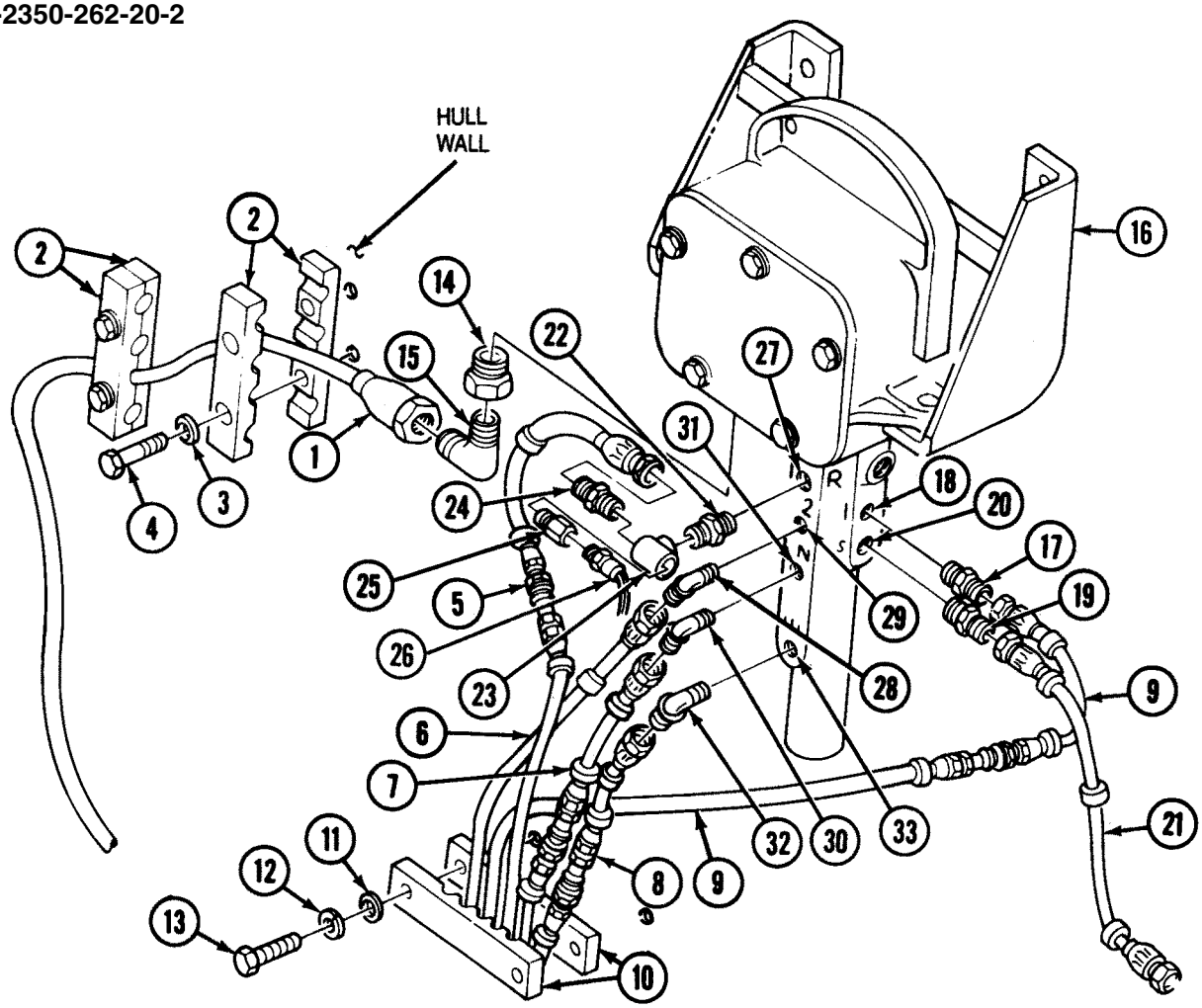


CAUTION

Ensure shift control valve hoses are connected to the correct ports before starting engine. Refer to hose identification bands. Failure to comply may result in damage to equipment.

A Install five elbows (1) and adapter (2) on transmission (3) and steer unit (4).

B Connect six hoses (5), (6), (7), (8), (9), and (10) to five elbows (1) and adapter (2) at transmission (3) and steer unit (4).



C Secure hose (1) to hull wall with two clamps (2), four lockwashers (3), and screws (4). Do not tighten screws (4).

Note

There are two configurations of the shift control valve hoses. For vehicles No. 1 to 213, four quick-disconnects are above clamp. Vehicles No. 214 and above have five quick-disconnects above clamp.

D Secure hoses (5), (6), (7), (8), and (9) to hull wall with clamp (10), two washers (11), lockwashers (12), and self-locking screws (13). Do not tighten self-locking screws (13).

E Install bushing (14) and elbow (15) on shift control (16). Connect XMSN CONT VALVE-D hose (1) to elbow (15).

F Install adapter (17) on port 1 (18) of shift control (16). Connect VALVE 1 hose (9) to adapter (17).

G Install adapter (19) on port S (20) of shift control (16). Connect XMSN CONT VALVE-S hose (21) to adapter (19).

H Install adapter (22), tee (23), adapter (24), reducer (25), and reverse alarm pressure switch (26) on port R (27) of shift control (16). Connect VALVE R hose (5) to adapter (24).

I Connect pressure switch (26) to wiring harness.

Note

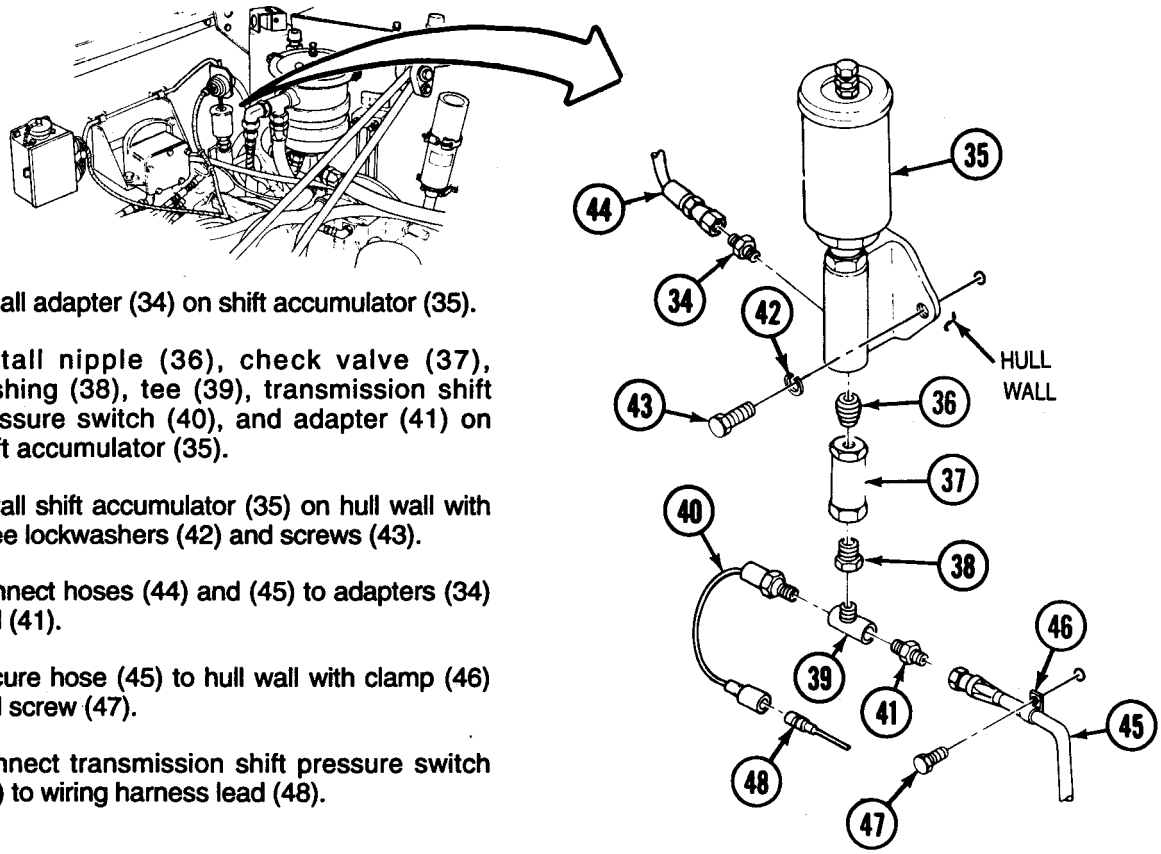
- Install elbows pointing downward at approximately the 7 o'clock position.
- Apply sealing compound to threads of elbows at installation.

J Install elbow (28) on port 2 (29) of shift control (16). Connect VALVE 2 hose (6) to elbow (28).

K Install elbow (30) on port N (31) of shift control (16). Connect VALVE N hose (7) to elbow (30).

L Install elbow (32) on port HL (33) of shift control (16). Connect VALVE HL hose (8) to elbow (32).

M Tighten four clamp screws (4) and two self-locking screws (13).



N Install adapter (34) on shift accumulator (35).

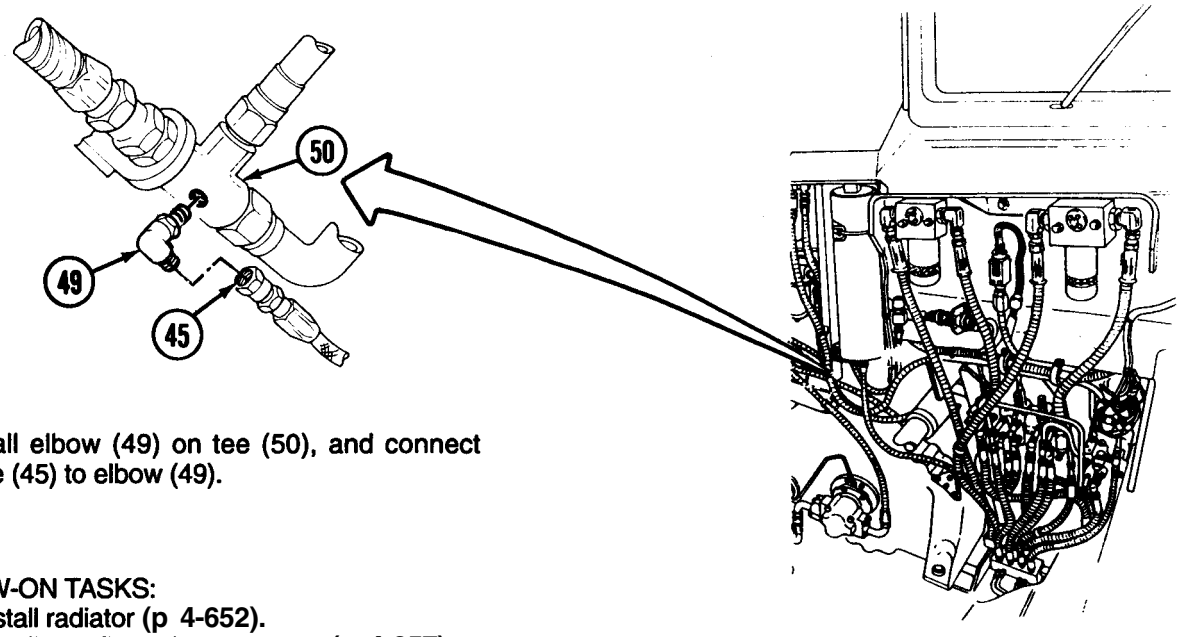
O Install nipple (36), check valve (37), bushing (38), tee (39), transmission shift pressure switch (40), and adapter (41) on shift accumulator (35).

P Install shift accumulator (35) on hull wall with three lockwashers (42) and screws (43).

Q Connect hoses (44) and (45) to adapters (34) and (41).

R Secure hose (45) to hull wall with clamp (46) and screw (47).

S Connect transmission shift pressure switch (40) to wiring harness lead (48).



T Install elbow (49) on tee (50), and connect hose (45) to elbow (49).

FOLLOW-ON TASKS:

- Install radiator (p 4-652).
- Install rear floor plate supports (p 4-357).
- Install engine intake covers and grilles (p 4-344).
- Retract ejector (TM 5-2350-262-10).

TRANSMISSION SHIFT ACCUMULATOR CHARGING

This task covers:

Charging

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Charging Device	4933-01-046-7109
Bushing, Pipe	4730-00-873-0110
Kit, Hydraulic Troubleshooting	2590-01-216-8646
Kit, STE/ICE-R	4910-01-222-6589

Parts:

Lockwasher (2)

Materials:

Nitrogen, Technical	Item 25 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 9-4910-571-12&P

Troubleshooting Reference:

Page 3-320	Low Transmission Pressure Indicator Stays Lit When Vehicle is Running

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Covers Opened

General Safety Instructions:

WARNING

- Transmission hoses are pressurized. Do not disconnect hoses, fittings, or accumulator unless transmission shift control valve pressure has been relieved.
- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends.
- Do not breathe nitrogen gas.

CHARGING

WARNING

- Transmission hoses are pressurized. Do not disconnect hoses, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off. Failure to comply may result in severe injury to personnel.
- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends. Failure to comply may result in serious injury to personnel.
- Do not breathe nitrogen gas. Failure to comply may result in death to personnel.

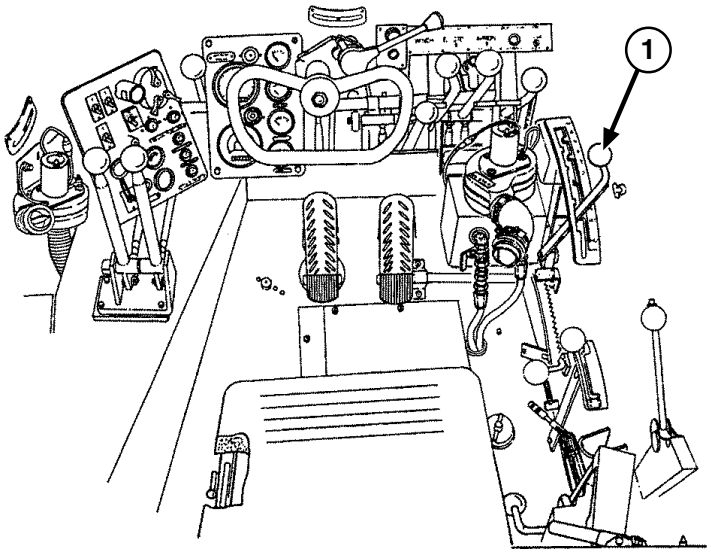
Note

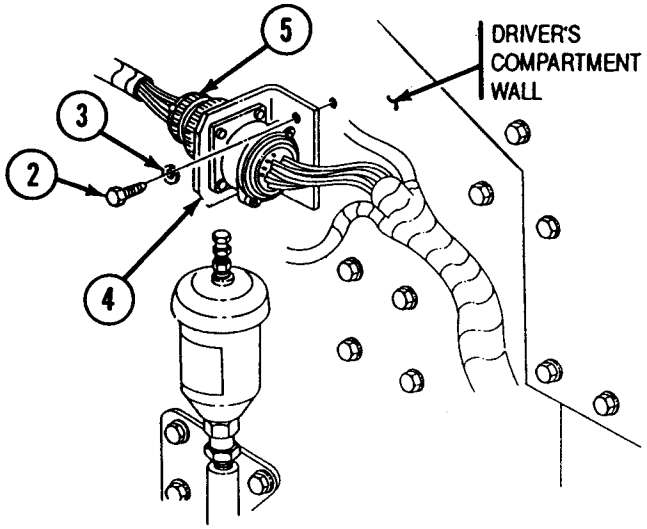
Several types of charging devices are available for use. Alter the instructions in this procedure as necessary.

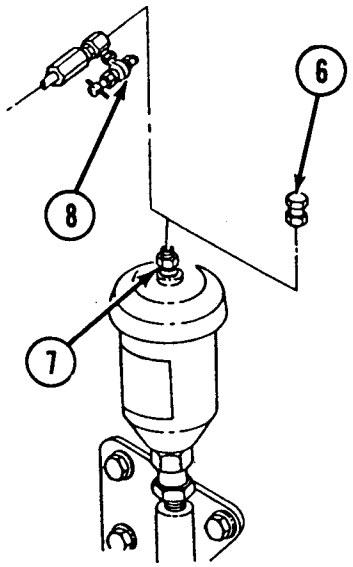
A Move transmission shift lever (1) through all gear ranges several times to relieve shifting pressure.

B Remove two screws (2) and lockwashers (3) from electrical bracket (4), and move wiring harness (5) away from driver's compartment wall. Discard lockwashers (3).

C Remove cap (6) from accumulator charging valve (7), and connect adapter valve (8) to accumulator charging valve (7).







D Install adapter (1) and 0-1,000 psi (0-6,895 kPa) transducer (2) on bleed valve (3).

E Connect W1 cable (4) to VTM (5) and DCA receptacle (6) of STE/ICE-R interface resistor box (7). Connect W4 cable (8) to VTM (5) and transducer (2).

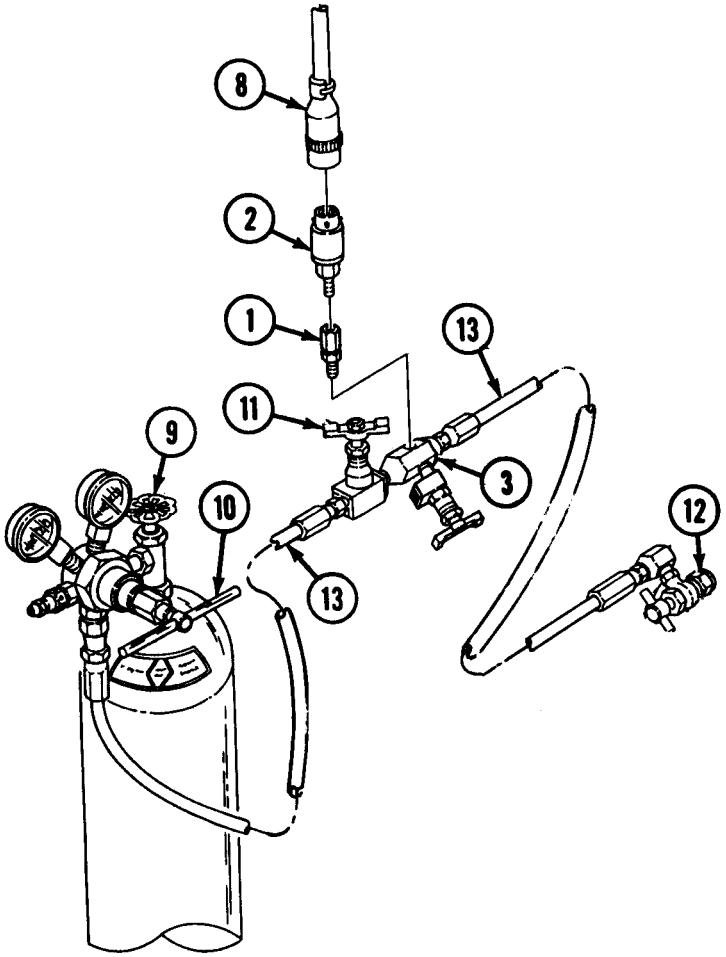
F Open nitrogen tank valve (9), and adjust regulator valve (10) to 150 psi (1,034 kPa).

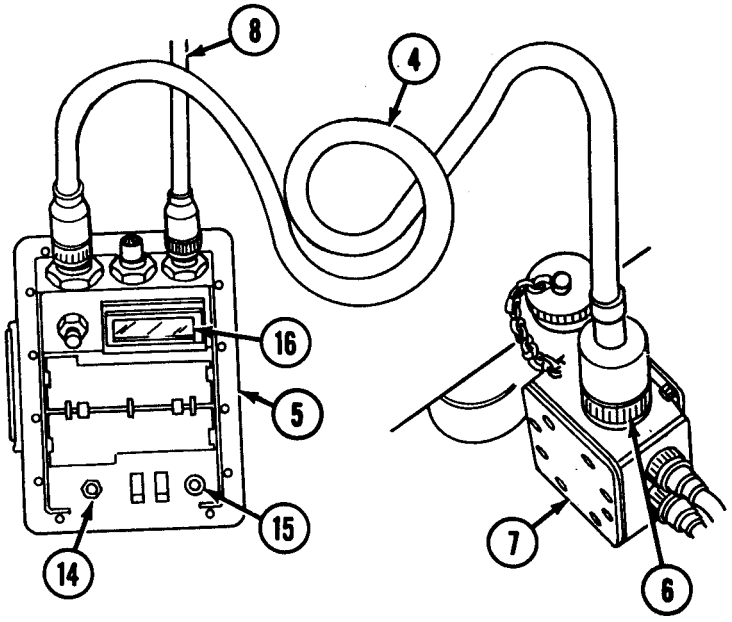
G Open shutoff valve (11), loosen adapter valve (12), and allow nitrogen gas to escape for about 10 seconds to bleed air and moisture from two charge hoses (13). Tighten adapter valve (12).

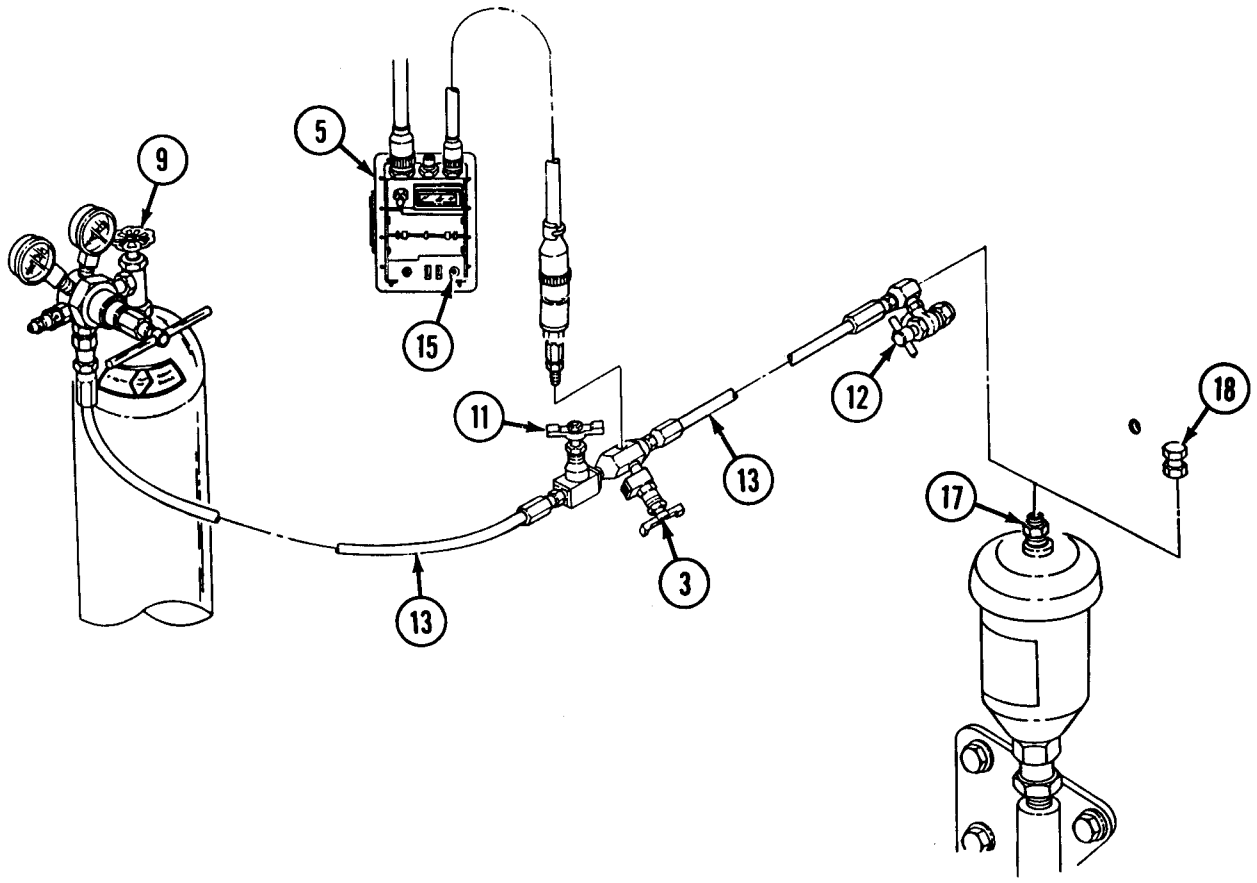
H Push ON/OFF button (14) and run confidence test (p 3-18) for VTM (5).

I Ensure VTM (5) reads 150 psi (1,034 kPa), and close shutoff valve (11).

J Dial in Test 50 on VTM (5). Press and hold TEST button (15) on VTM (5) until "CAL" appears on display (16). Release button (15). Value that appears on display (16) should be between +150 and -150. If value on display (16) is not within offset, refer to TM 9-4910-571-12&P for fault isolation procedures.







Note

Normal accumulator charging pressure is between 80 and 120 psi (552 and 827 kPa).

K Open accumulator charging valve (17).

L Open adapter valve (12), and press and release TEST button (15) again. VTM (5) should now display transmission shift accumulator system pressure.

M Charge system by slowly opening shutoff valve (11) until VTM (5) reads between 80-120 psi (552-827 kPa). Close charging valve (17), adapter valve (12), shutoff valve (11), and nitrogen tank valve (9).

N Open bleed valve (3) and shutoff valve (11), and bleed nitrogen gas from two charge hoses (13). Close bleed valve (3) and shutoff valve (11).

O Disconnect adapter valve (12) from accumulator charging valve (17), and install cap (18) on accumulator charging valve (17).

CAUTION

Ensure regulator handle is backed out to release tension on diaphragm. Failure to comply may result in damage to equipment.

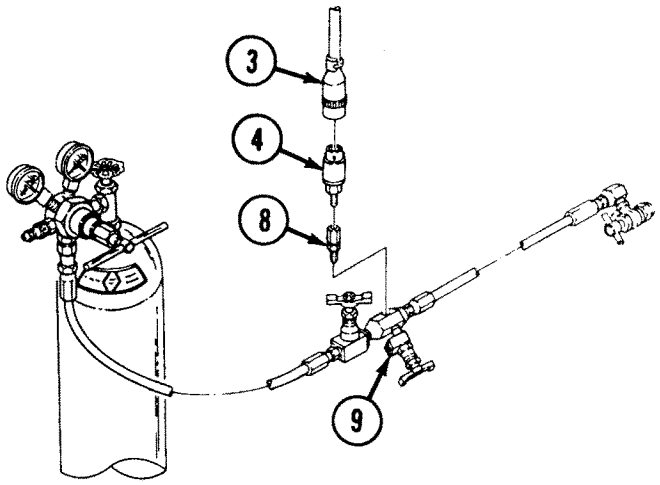
P Push ON/OFF button (1) on VTM (2). Disconnect W4 cable (3) from transducer (4) and VTM (2).

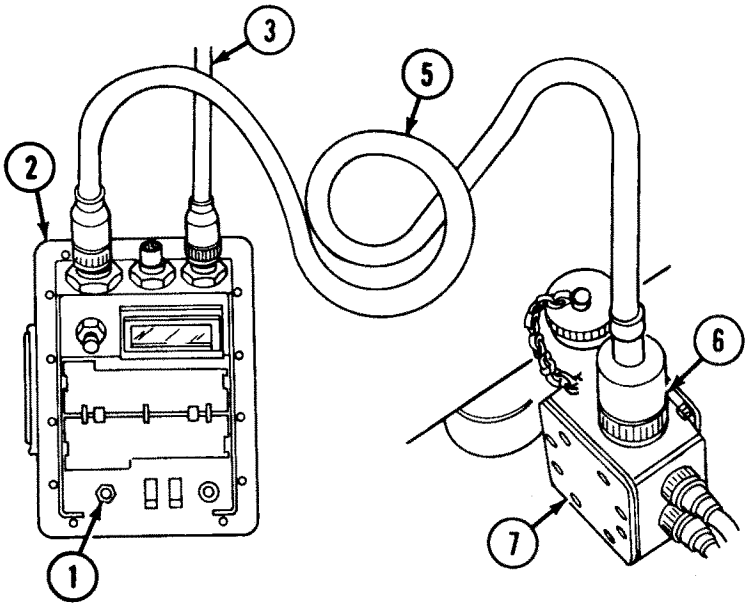
Q Disconnect W1 cable (5) from VTM (2) and DCA receptacle (6) of STE/ICE-R interface resistor box (7).

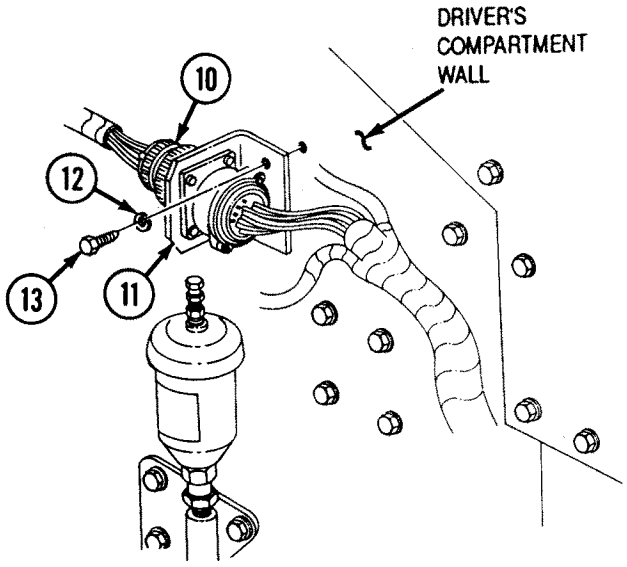
R Remove transducer (4) and adapter (8) from bleed valve (9).

S Secure wiring harness (10) by installing electrical bracket (11) on driver's compartment wall with two lockwashers (12) and screws (13).

FOLLOW-ON TASK:
Close engine intake grilles and covers (TM 5-2350-262-10).







TRANSMISSION SHIFT ACCUMULATOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

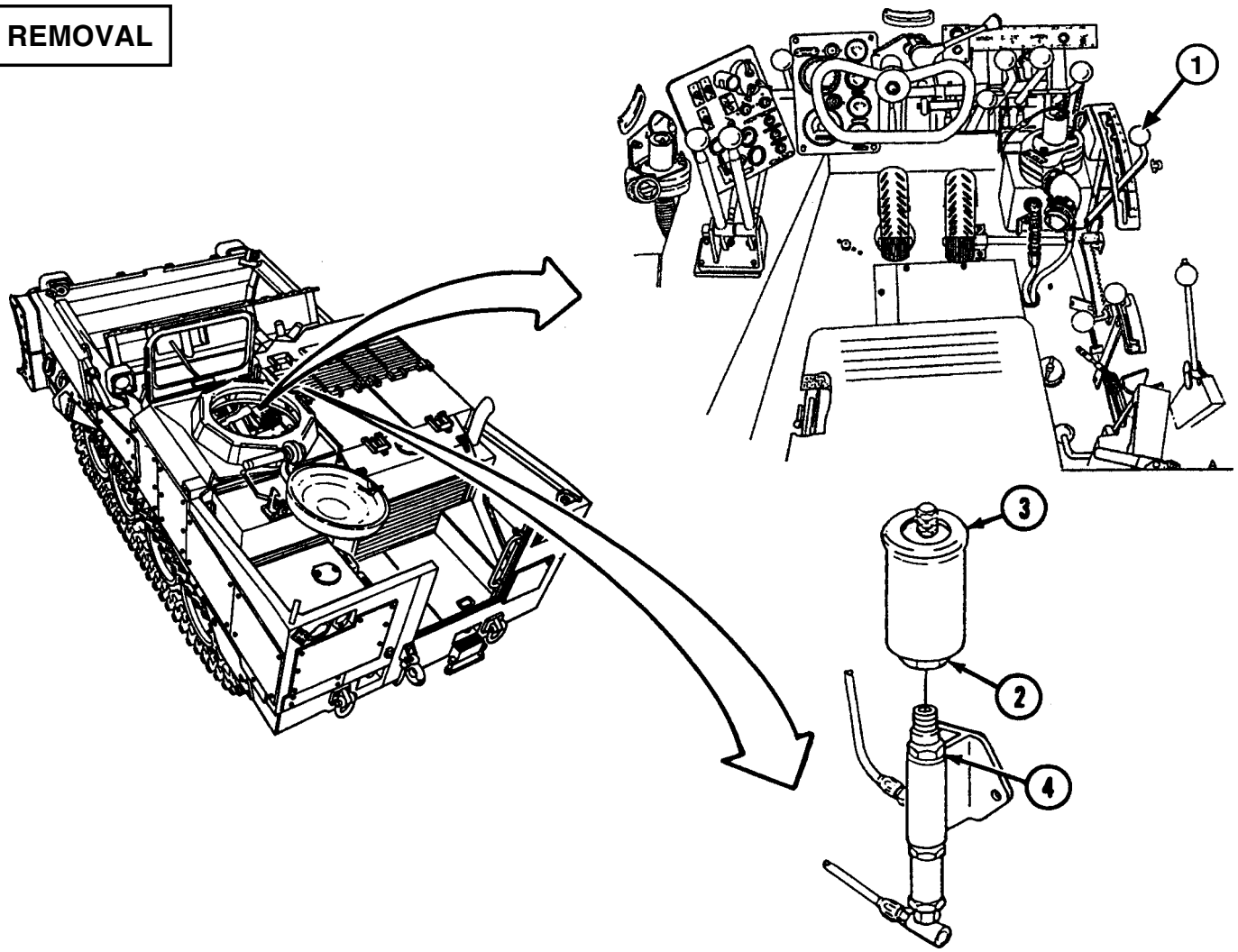
Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Covers Opened

General Safety Instructions:

WARNING

Transmission hoses are pressurized. Do not disconnect hoses, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off.

REMOVAL



WARNING

Transmission hoses are pressurized. Do not disconnect hoses, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off. Failure to comply may result in severe injury to personnel.

A **Stop engine (TM 5-2350-262-10). Relieve transmission shifting pressure by moving transmission shift lever (1) through shift ranges several times.**

B **Turn hex wrenching surface (2) of shift accumulator (3) counterclockwise, and remove shift accumulator (3) from adapter (4).**

INSTALLATION

A Apply sealing compound, P/N 569-31 to adapter threads (4).

B Install shift accumulator (3) on adapter (4), and tighten by turning wrenching surface (2) clockwise.

NOTE

Allow sealing compound to dry 24 hours prior to charging.

FOLLOW-ON TASKS:

- Charge shift accumulator (p 4-678).
- Close engine intake grilles and covers (TM 5-2350-262-10).

HYDRAULIC SHIFT CONTROL VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 **Appendix D**
Sealing Compound	Item 14 **Appendix D**
Silicone Compound	Item 16 **Appendix D**

Parts:

Cotter Pin

Lockwasher (2)

Locknut (3)

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 4-140	Reverse Alarm Pressure Switch Removed
Page 4-339	Engine Intake Grilles and Covers Removed
Page 4-693	Neutral Start Switch Removed

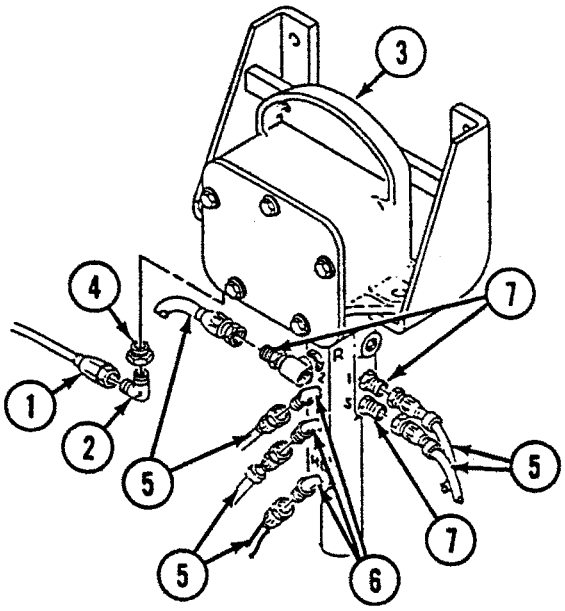
REMOVAL

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination. Failure to comply may result in damage to equipment.

Note

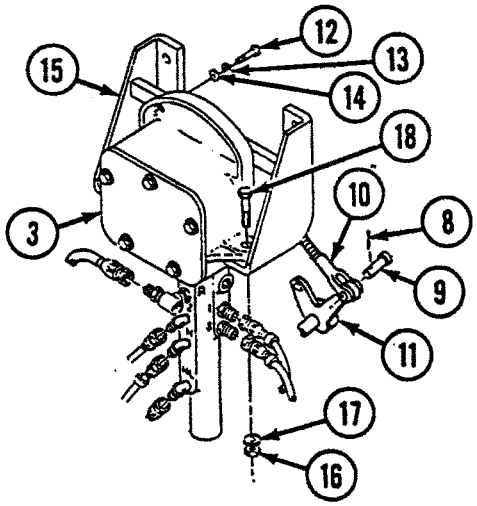
- Tag hoses prior to removal for installation.
- Have suitable container ready to catch oil.



A Disconnect hose (1) from elbow (2) at valve (3), and drain oil.

B Remove elbow (2) and bushing (4) from valve (3).

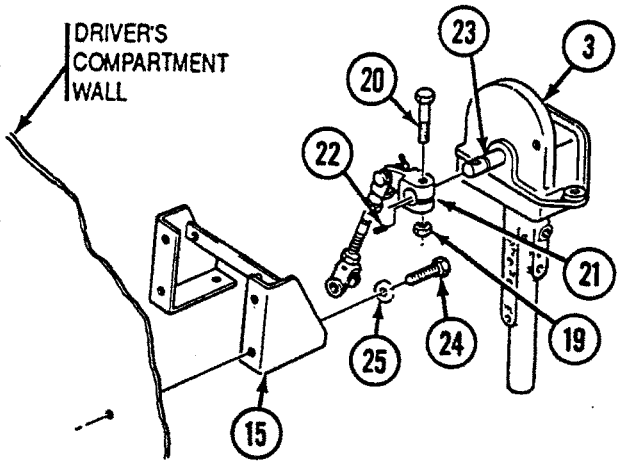
C Disconnect six hoses (5) from three elbows (6) and adapters (7).



D Remove cotter pin (8), straight pin (9), and clevis (10) from bellcrank (11). Discard cotter pin (8).

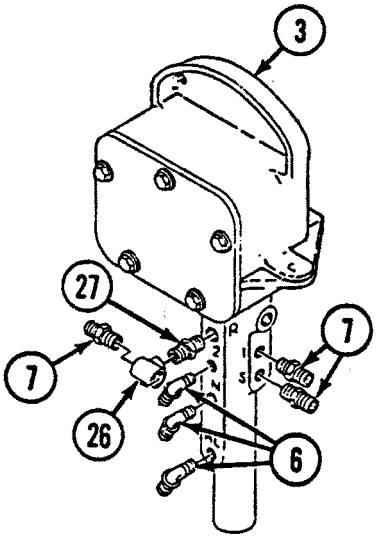
E Remove two screws (12), lockwashers (13), and washers (14) from valve (3) and bracket (15). Discard lockwashers (13).

F Remove two locknuts (16), washers (17), screws (18), and valve (3) from bracket (15). Discard locknuts (16).



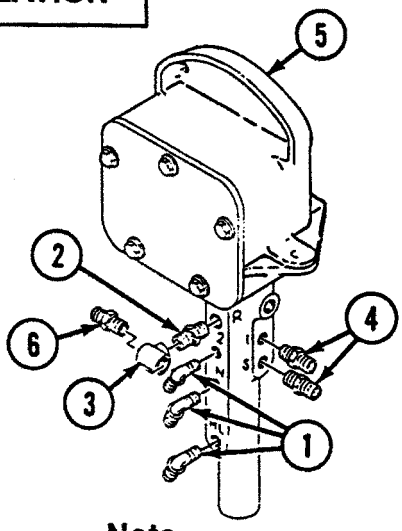
G Remove locknut (19), screw (20), lever (21), and key (22) from valve shaft (23). Discard locknut (19).

H Remove four self-locking screws (24), washers (25), and bracket (15) from driver's compartment wall. Discard self-locking screws (24).



I Remove three elbows (6), tee (26), adapter (27), and three adapters (7) from valve (3).

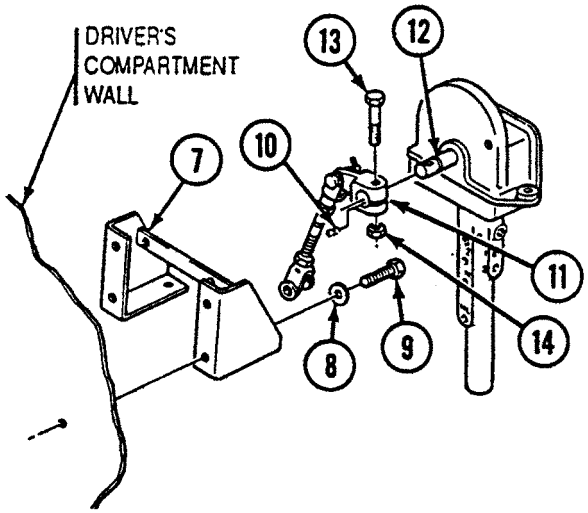
INSTALLATION



Note

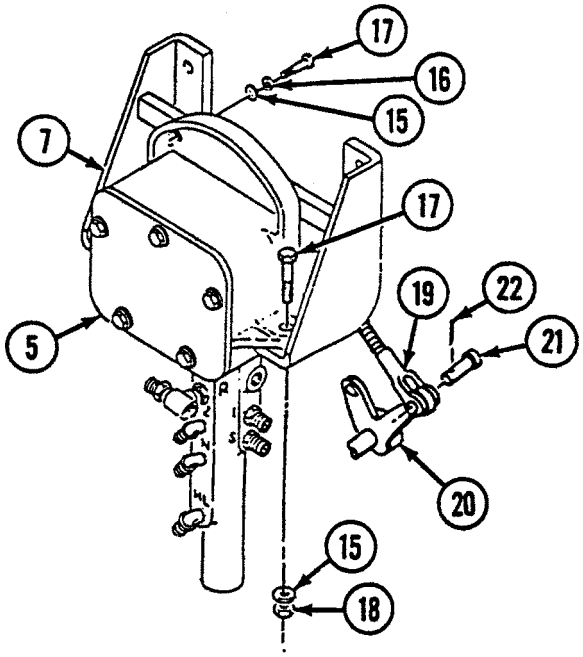
Install elbows pointing downward at approximately the 7 o'clock position.

A Apply sealing compound to threads of three elbows (1), adapter (2), tee (3), and two adapters (4), and install three elbows (1), adapter (2), tee (3), and two adapters (4) on valve (5). Install adapter (6) on tee (3).



B Install bracket (7) on driver's compartment wall with four washers (8) and self-locking screws (9).

C Install key (10) and lever (11) on valve shaft (12) with screw (13) and locknut (14).



D Install valve (5) on bracket (7) with four washers (15), two lockwashers (16), four screws (17), and two locknuts (18).

E Connect clevis (19) to bellcrank (20) with straight pin (21) and cotter pin (22).

F Connect VALVE HL hose (1) to elbow (2) at port HL.

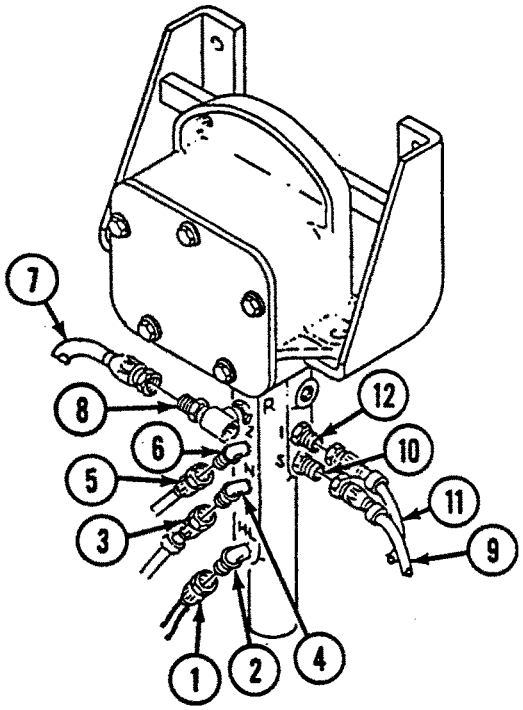
G Connect VALVE N hose (3) to elbow (4) at port N.

H Connect VALVE 2 hose (5) to elbow (6) at port 2.

I Connect VALVE R hose (7) to adapter (8) at port R.

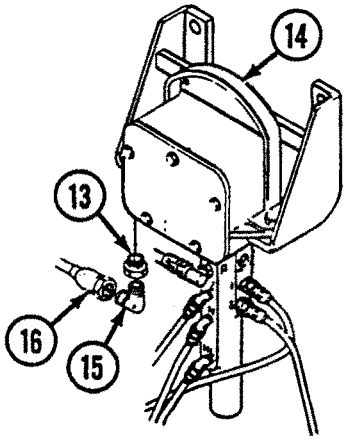
J Connect XMSN CONT VALVE-S hose (9) to adapter (10) at port S.

K Connect VALVE 1 hose (11) to adapter (12) at port 1.



L Install bushing (13) on valve (14), and install elbow (15) on bushing (13).

M Connect XMSN CONT VALVE-D hose (16) to elbow (15).



FOLLOW-ON TASKS:

- Install neutral start switch (p 4-693).
- Service transmission (TM 5-2350-262-10).
- Install reverse alarm pressure switch (p 4-141).
- Charge transmission shift accumulator (p 4-678).
- Adjust CB/GS steer selector lever and linkage (p 4-716).
- Adjust transmission shift linkage (p 4-689).
- Install engine intake covers and grilles (p 4-339).

TRANSMISSION SHIFT LEVER AND LINKAGE REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation
f. Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D
Sealing Compound Primer	Item 13 Appendix D

Parts:

Cotter Pin (2)

Lockwasher (2)

Locknut (3)

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P Group AU

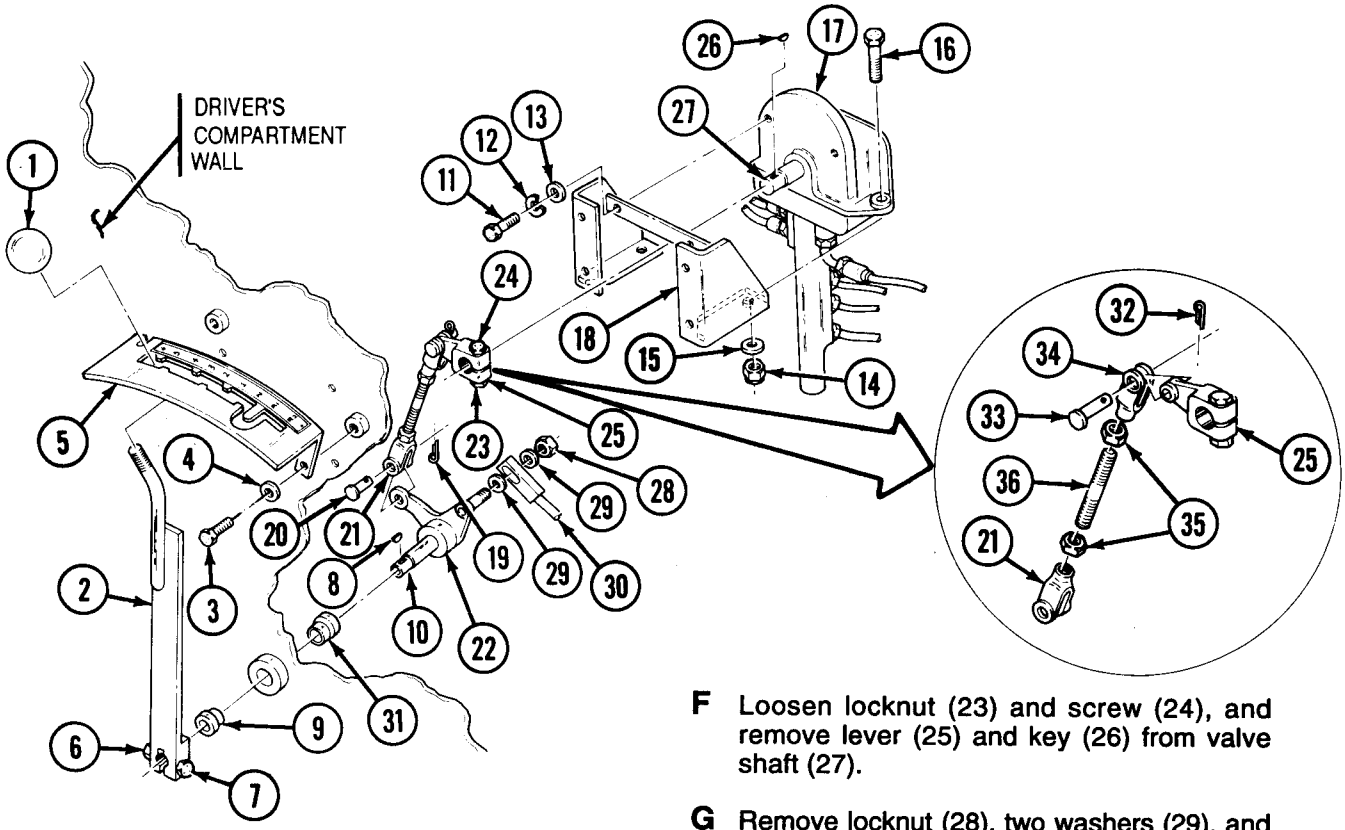
Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Equipment Condition:

Reference	Condition Description
Page 4-340	Engine Intake Grilles and Covers Removed



REMOVAL

A Remove knob (1) from shift lever (2), and clean sealing compound from threads of knob (1) and shift lever (2).

B Remove two self-locking screws (3), washers (4), and shift lever guide (5) from driver's compartment wall. Discard self-locking screws (3).

C Loosen locknut (6) and screw (7), and remove shift lever (2), key (8), and flanged bearing (9) from bellcrank shaft (10).

D Remove two screws (11), lockwashers (12), washers (13), locknuts (14), washers (15), and screws (16) securing valve (17) to bracket (18). Discard lock-washers (12) and locknuts (14).

E Remove cotter pin (19), pin (20), clevis (21), and valve (17) from bellcrank (22) and bracket (18). Discard cotter pin (19).

F Loosen locknut (23) and screw (24), and remove lever (25) and key (26) from valve shaft (27).

G Remove locknut (28), two washers (29), and CB/GS steer selector rod (30) from bellcrank (22). Discard locknut (28).

H Remove bellcrank (22) and flanged bearing (31) from driver's compartment wall.

DISASSEMBLY

A Remove cotter pin (32), pin (33), and lever (25) from clevis (34). Discard cotter pin (32).

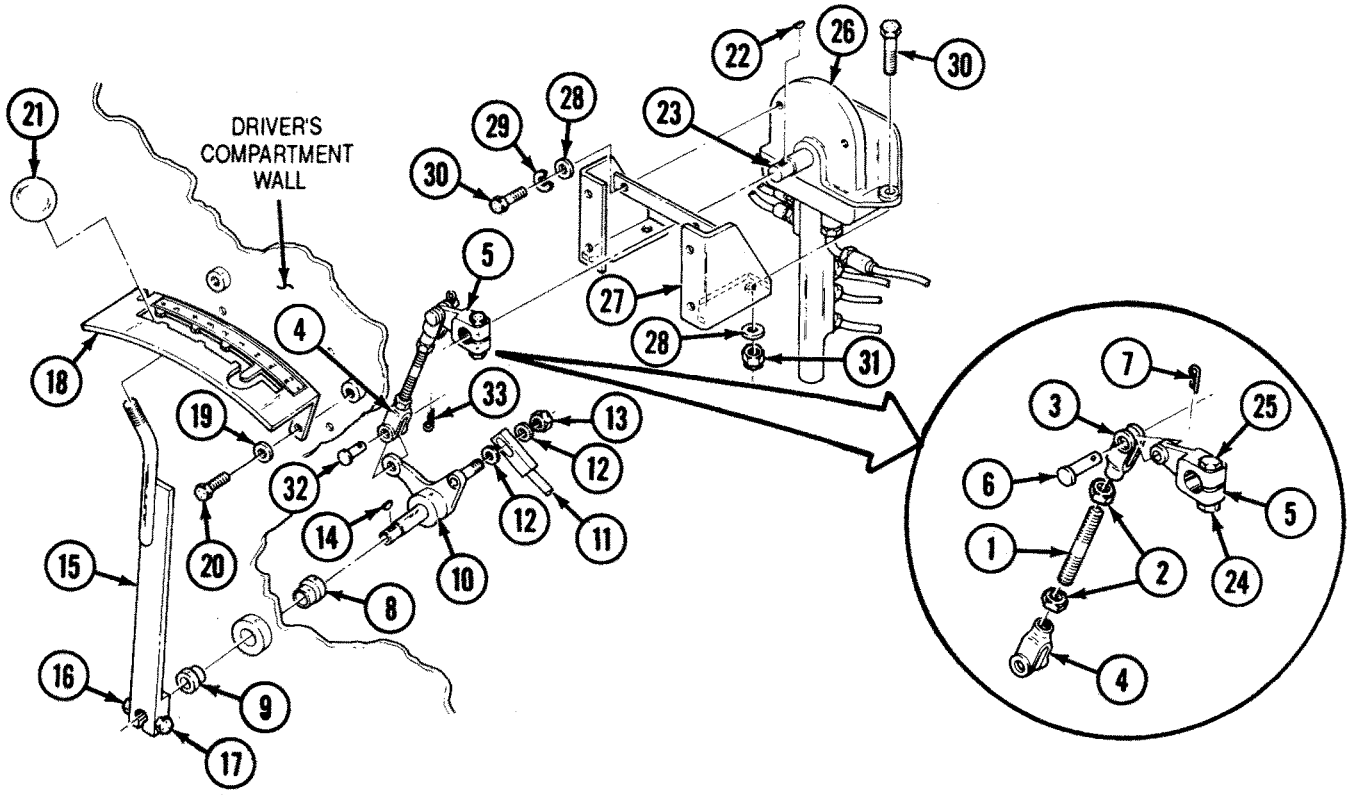
Note

Count out number of turns for each clevis during removal for installation.

B Loosen two jamnuts (35), remove clevises (34) and (21) from rod (36), and remove two jamnuts (35) from rod (36).

REPAIR

Repair transmission shift lever and linkage using general repair methods (p 2-25) and by replacing unserviceable parts.



ASSEMBLY

A Coat threads of rod (1) with sealing compound primer and sealing compound, and install jamnut (2) on each end of rod (1).

B Install clevises (3) and (4) on rod (1), counting number of turns as noted, and finger tighten jamnuts (2).

C Install lever (5) on clevis (3) with pin (6) and cotter pin (7).

INSTALLATION

A Install two flanged bearings (8) and (9) and bellcrank (10) on driver's compartment wall.

B Install CB/GS steer selector rod (11) on bellcrank (10) with two washers (12) and locknut (13).

C Install key (14) and shift lever (15) on bellcrank shaft (10), and tighten locknut (16) and screw (17).

D Install shift lever guide (18) on driver's compartment wall with two washers (19) and self-locking screws (20).

E Coat threads of shift lever (15) with sealing compound primer and sealing compound, and install knob (21) on shift lever (15).

F Move shift lever (15) all the way forward to sixth gear position.

G Install key (22) and lever (5) on valve shaft (23), and tighten locknut (24) and screw (25).

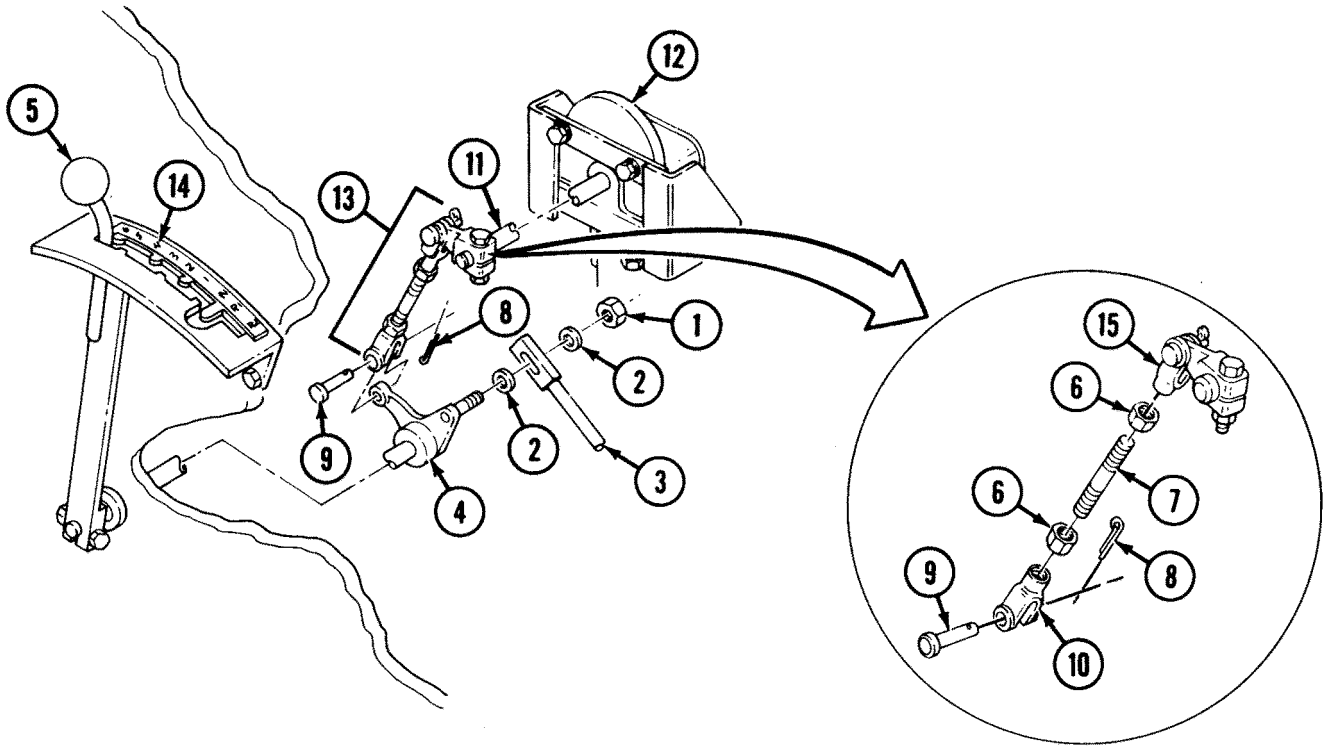
H Install control valve (26) on bracket (27) with four washers (28), two lockwashers (29), four screws (30), and two locknuts (31).

I Position valve shaft (23) in sixth forward gear detent (fully counterclockwise as viewed from driver's compartment).

J Connect clevis (4) to bellcrank (10) with pin (32) and cotter pin (33). Tighten two jamnuts (2).

K Move shift lever (15) back and forth to ensure control valve (26) and shift lever (15) travel through gears (from 6 to R2) without binding.

ADJUSTMENT



A Remove locknut (1), two washers (2), and CB/GS steer selector rod (3) from bellcrank (4). Discard locknut (1).

B Move shift lever (5) all the way forward to sixth gear position.

C Loosen two jamnuts (6) on rod (7).

D Remove cotter pin (8), pin (9), and clevis (10) from bellcrank (4). Discard cotter pin (8).

E Ensure valve shaft (11) is in sixth forward gear detent (fully counterclockwise as viewed from driver's compartment).

F Without moving either valve shaft (11) of control valve (12) or bellcrank (4), shorten or lengthen shift linkage (13) by turning clevis (10) and rod (7) until holes of clevis (10) and bellcrank (4) are aligned. Slide pin (9) through holes of clevis (10) and bellcrank (4).

G Move shift lever (5) back and forth to ensure control valve (12) and shift lever (5) travel through gears (from 6 to R2) without binding. Ensure shift lever (5) aligns with marks on shift lever guide (14).

H If binding occurs, remove pin (9) from holes of clevis (10) and bellcrank (4), and repeat adjustment steps E through G.

I Connect clevis (10) to bellcrank (4) with pin (9) and cotter pin (8). Tighten two jamnuts (6) against clevises (10) and (15).

J If no binding occurs, connect CB/GS steer selector rod (3) to bellcrank (4) with two washers (2) and locknut (1).

FOLLOW-ON TASKS:

- Adjust CB/GS steer selector linkage (p 4-722).
- Install engine intake grilles and covers (p 4-344).

NEUTRAL START SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-128 Engine Will Not Crank

Reference:

TM 5-2350-262-10

TM 11-6625-3052-14

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened

General Safety Instructions:

WARNING

Transmission hoses are pressurized. Do not disconnect hoses, fittings, or accumulator unless transmission shift control pressure has been relieved.

REMOVAL

WARNING

Transmission hoses are pressurized. Do not disconnect hoses, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off. Failure to comply may result in severe injury to personnel.

A With engine off, operate transmission shift lever (1) several times through all ranges to relieve hydraulic pressure in the transmission shift control valve (2).

B Disconnect two electrical leads (3) from leads (4).

CAUTION

Cover port of shift control valve so ball will not fall out. Failure to comply may result in damage to equipment.

Note

Number of shims may vary. Count number of shims during removal for installation.

C Turn neutral start switch (5) counterclockwise, and remove switch (5) and shims (6) from transmission shift control valve (2). Ensure ball (7) does not fall out.

INSTALLATION

Note

If replacing switch with new neutral start switch, perform step A.

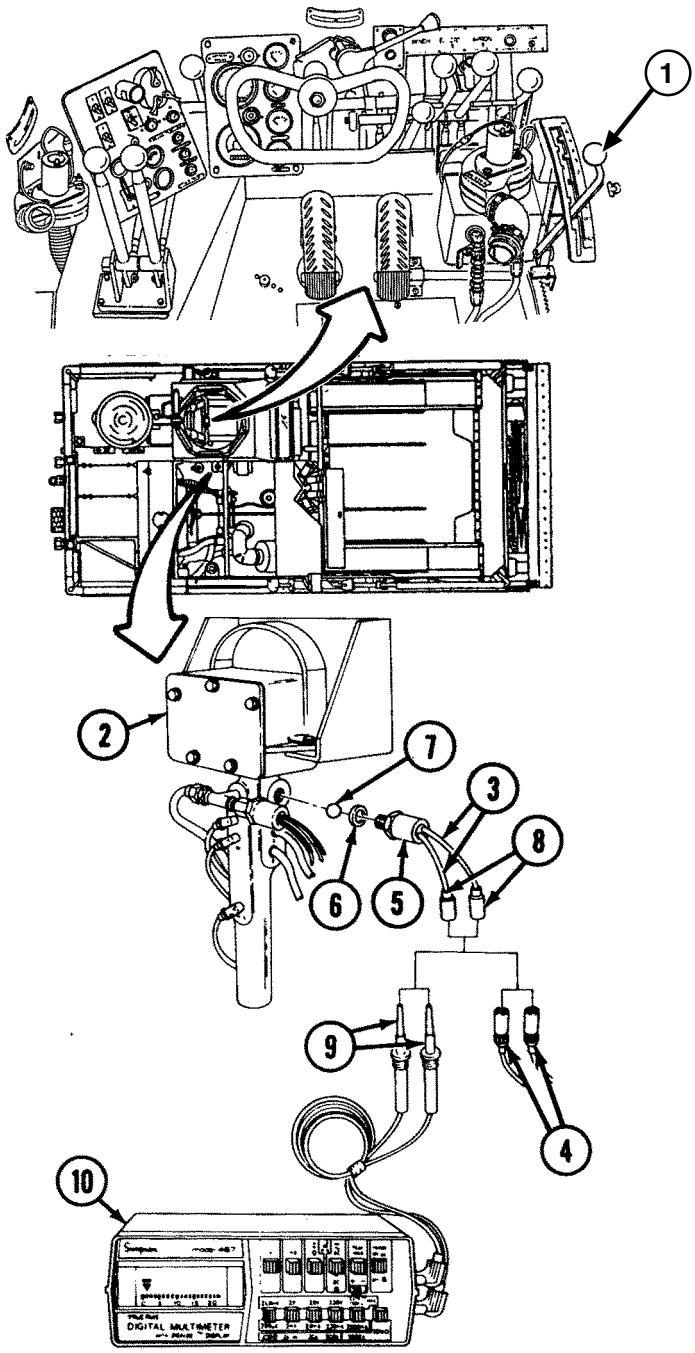
A Install two connectors (8) on electrical leads (3) of neutral start switch (5).

B Install shims (6) and neutral start switch (5) on transmission shift control valve (2).

Note

If switch cannot be adjusted with shims to show continuity, try another switch. If problem persists, notify direct support maintenance.

C With shift lever (1) in neutral, connect probes (9) of multimeter (10) to connectors (8), and perform continuity check (TM 11-6625-3052-14). If multimeter (10) does not indicate continuity, add one or more shims (6) until continuity is indicated.



D Check continuity by moving shift lever (1) out of neutral and into any forward or reverse range. Continuity should be broken when transmission is in gear. If multimeter still indicates continuity, remove one or more shims (6) until continuity is not indicated. Disconnect multimeter.

E Connect two electrical leads (3) to leads (4).

FOLLOW-ON TASKS:

- Charge transmission shift accumulator (p 4-679).
- Close engine intake grilles (TM 5-2350-262-10).

TRANSMISSION OIL FILTER ELEMENT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Parts Kit 2520-01-182-9043

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

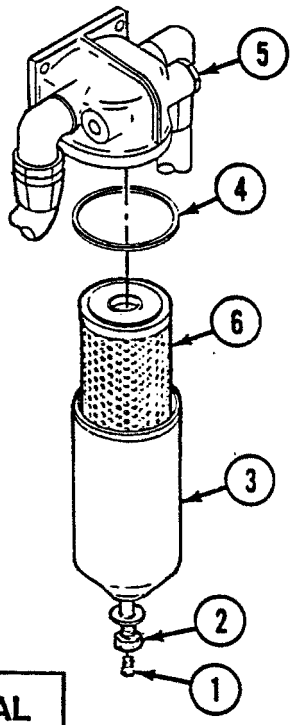
Equipment Condition:

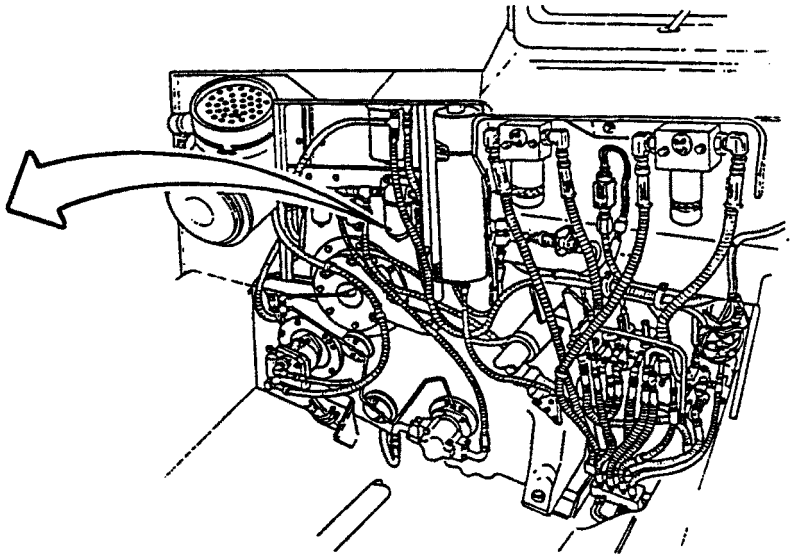
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Transmission lines contain hot oil under pressure when hot.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.





REMOVAL

WARNING

- Transmission lines contain hot oil under pressure when hot. Do not disconnect hoses, lines, or fittings unless oil is cool and pressure has been relieved. Failure to comply may result in severe injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Note

Have suitable container ready to catch oil.

A Remove plug (1) from screw (2), and drain oil from shell (3).

B Remove screw (2), shell (3), and gasket (4) from filter head (5). Remove element (6) from shell (3). Discard element (6) and gasket (4).

INSTALLATION

WARNING

Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

Note

The transmission oil filter element parts kit contains more gaskets than are required. Note the size and shape of the gasket removed, and use only the same size and type from the parts kit.

A Install element (6) in shell (3), and install gasket (4) and shell (3) on filter head (5) with screw (2). Tighten screw (2) to 50-60 lb-ft (68-81 N·m).

B Install plug (1) on screw (2).

C Start engine (TM 5-2350-262-10) and check for leaks. Stop engine.

FOLLOW-ON TASKS:

- Check transmission oil level (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

TRANSMISSION OIL FILTER ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Parts Kit 2520-01-182-9043

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Transmission lines contain hot oil under pressure when hot.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.
- Do not work in bowl area unless ejector lock is engaged.

REMOVAL

WARNING

- Transmission lines contain hot oil under pressure when hot. Do not disconnect hoses, lines, or fittings unless oil is cool and pressure has been relieved. Failure to comply may result in severe injury to personnel.
- Spilled oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Note

Have suitable container ready to catch oil.

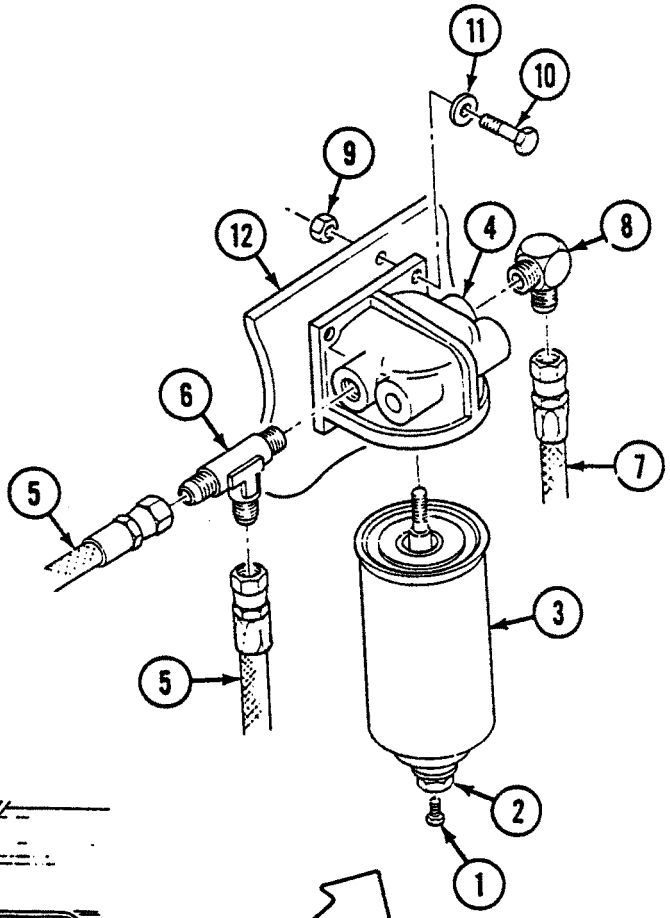
A Remove plug (1) from screw (2), and drain oil from shell (3).

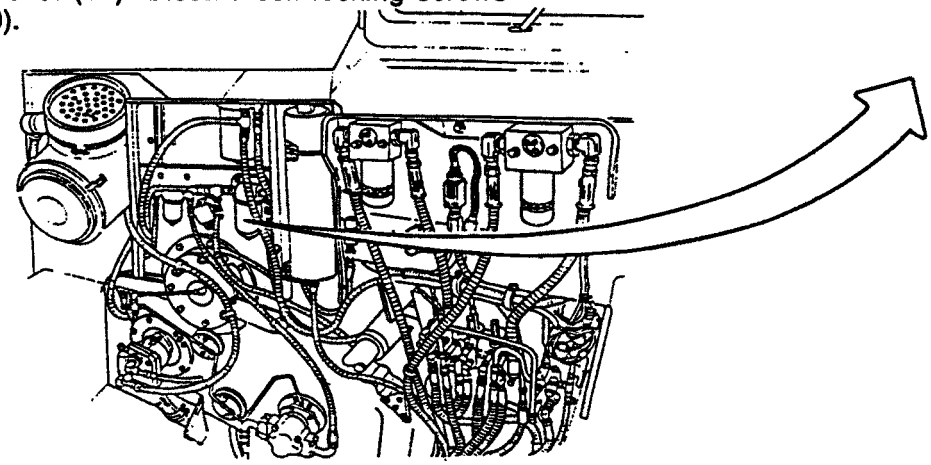
B Remove screw (2) and shell (3) from filter head (4).

C Disconnect two hoses (5) from tee (6) at filter head (4).

D Disconnect hose (7) from elbow (8), and remove elbow (8) and tee (6) from filter head (4).

E Remove four nuts (9), self-locking screws (10), washers (11), and filter head (4) from bracket (12). Discard self-locking screws (10).





DISASSEMBLY

A Remove element (1) and gasket (2) from shell (3). Discard element (1) and gasket (2).

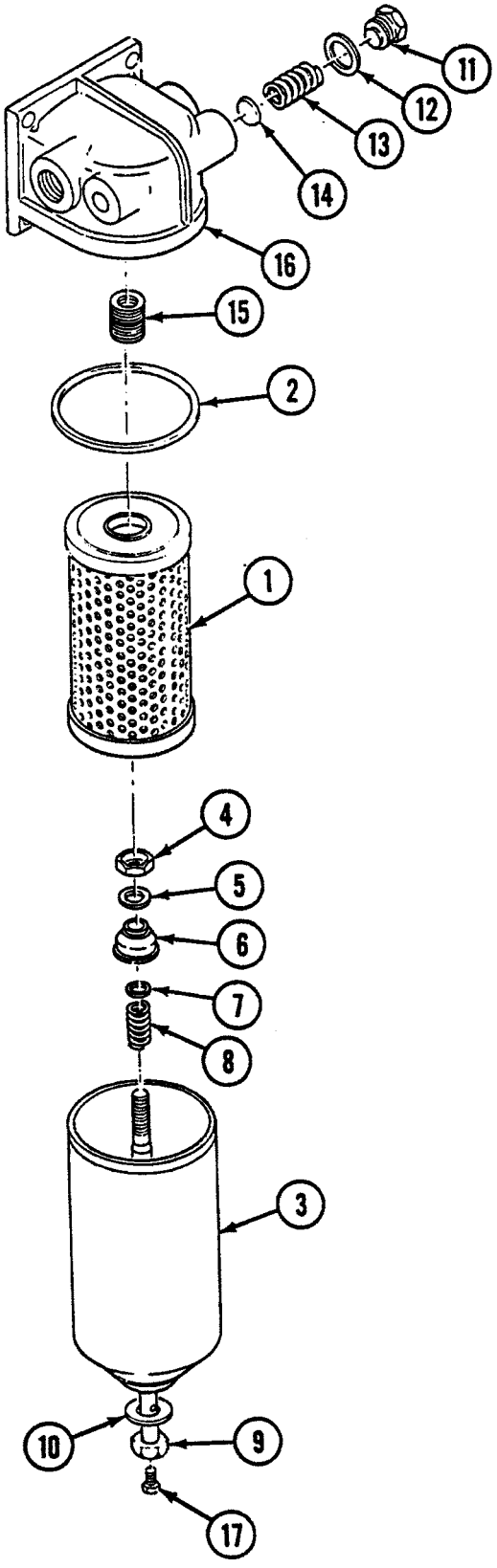
B Remove nut (4), packing (5), retainer (6), spacer (7), and spring (8) from screw (9). Discard packing (5).

C Remove screw (9) and washer (10) from shell (3). Discard washer (10).

Note

Do not remove insert from filter head unless damaged.

D Remove plug (11), gasket (12), spring (13), disk (14), and insert (15) from filter head (16). Discard gasket (12).



ASSEMBLY

Note

The transmission oil filter element parts kit contains more gaskets than are required. Note the size and shape of the gasket removed, and use only the same size and type from the parts kit.

A Install insert (15), disk (14), spring (13), gasket (12), and plug (11) on filter head (16).

B Install plug (17) and washer (10) on screw (9), and install screw (9) on shell (3).

C Install spring (8), spacer (7), retainer (6), and packing (5) on screw (9) with nut (4).

D Install element (1) and gasket (2) in shell (3).

INSTALLATION

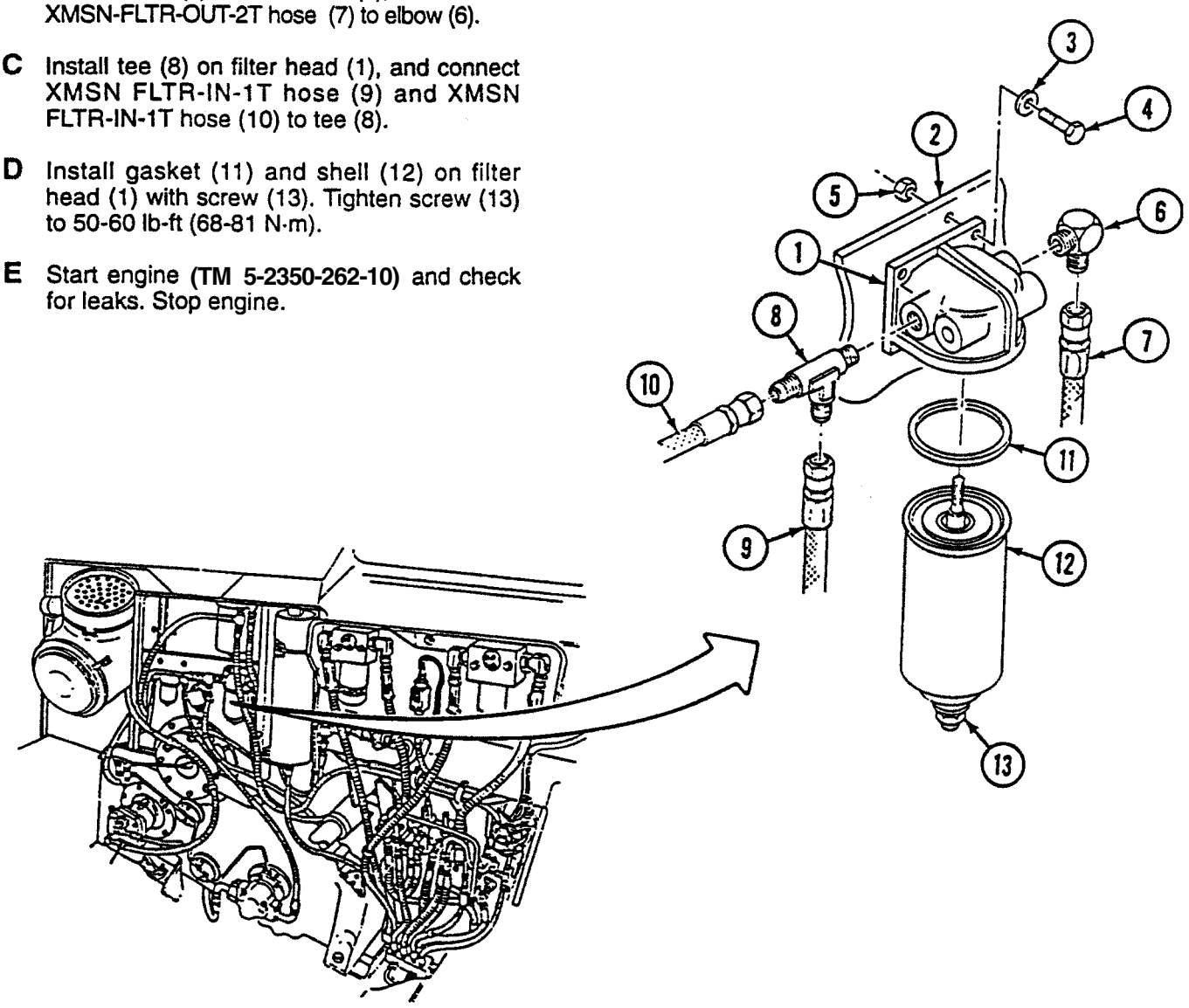
A Install filter head (1) on bracket (2) with four washers (3), self-locking screws (4), and nuts (5).

B Install elbow (6) on filter head (1), and connect XMSN-FLTR-OUT-2T hose (7) to elbow (6).

C Install tee (8) on filter head (1), and connect XMSN FLTR-IN-1T hose (9) and XMSN FLTR-IN-1T hose (10) to tee (8).

D Install gasket (11) and shell (12) on filter head (1) with screw (13). Tighten screw (13) to 50-60 lb-ft (68-81 N·m).

E Start engine (TM 5-2350-262-10) and check for leaks. Stop engine.



FOLLOW-ON TASKS:

- Check transmission oil level (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

TRANSMISSION OUTPUT SHAFT FLANGE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-743	Driveshaft Removed

REMOVAL

Note

To prevent output shaft from turning, place crowbar between two driveshaft mounting screws.

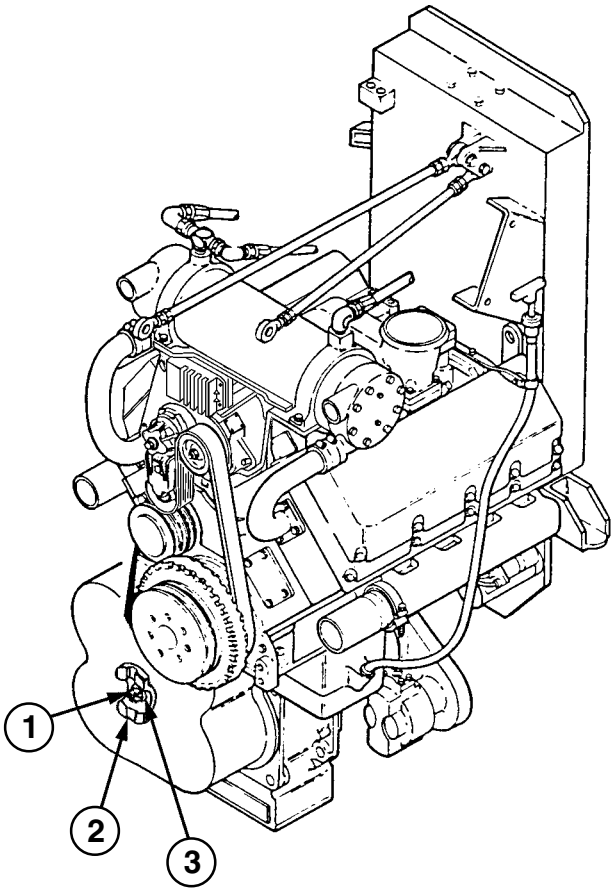
Remove locknut (1) and flange (2) from output shaft (3). Discard locknut (1).

INSTALLATION

A Install flange (2) on output shaft (3) with locknut (1).

B Tighten locknut (1) to 200-250 lb-ft (271-339 N·m).

FOLLOW-ON TASK:
Install driveshaft (p 4-745).



STEERING WHEEL AND LINKAGE ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D
Sealing Compound Primer	Item 13 Appendix D

Parts:

Locknut

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-159	Vehicle is Difficult to Steer

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-361	Rear Floor Plates Removed

General Safety Instructions:

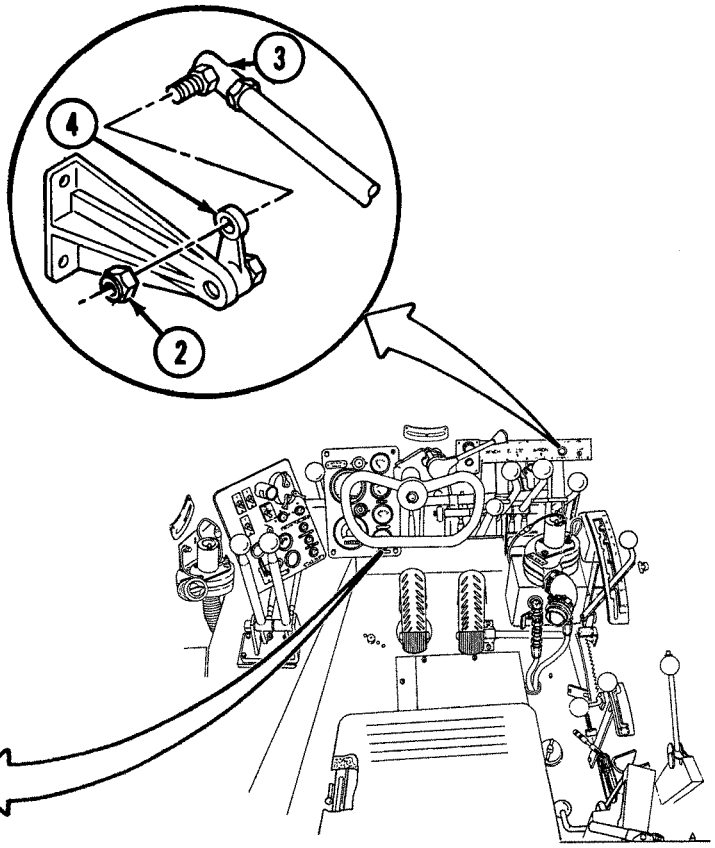
WARNING

Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged.

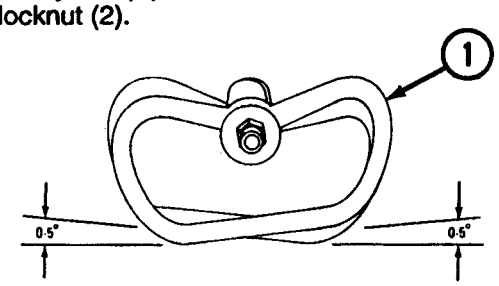
ADJUSTMENT

WARNING

Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.



A Turn steering wheel (1) left and right, and allow it to return to neutral position (within 0 to 5 degrees). If steering wheel (1) does not return centered at neutral position, remove locknut (2) from ball joint (3), and disconnect ball joint (3) from bellcrank (4). Discard locknut (2).

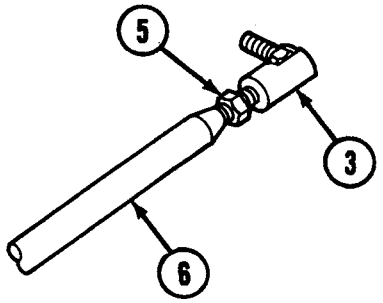


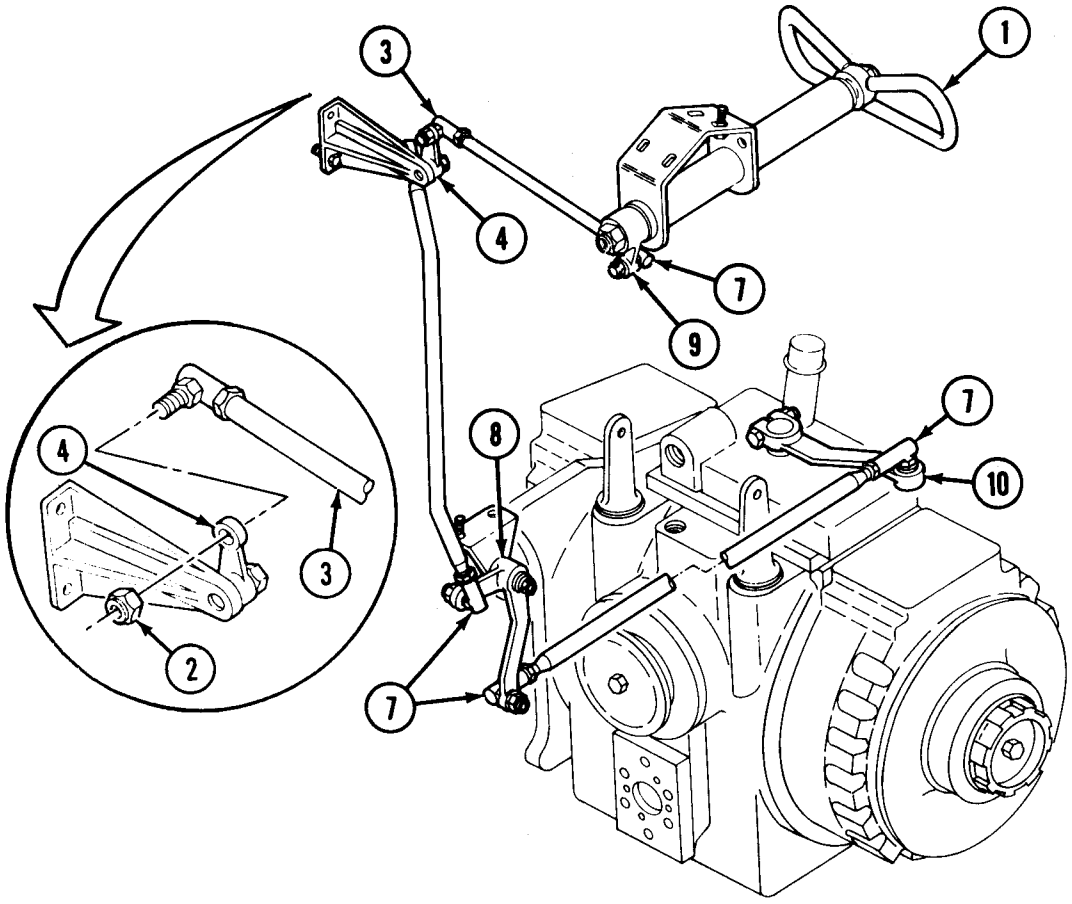
Note

Lengthening rod will cause wheel to dip to the right. Shortening rod will cause wheel to dip to the left.

B Loosen jamnut (5) at rod end (6), and turn ball joint (3) clockwise to shorten rod length, or counterclockwise to lengthen rod length.

C Coat threads of rod end (6) with sealing compound primer and sealing compound, and tighten jamnut (5) against ball joint (3).





D Coat threads of ball joint (3) with sealing compound primer and sealing compound, and connect ball joint (3) to bellcrank (4) with locknut (2).

E If steering wheel (1) does not center, repeat steps A through D with other ball joints (7) at bellcranks (4) and (8) and levers (9) and (10), as necessary, until steering wheel (1) centers at neutral position.

FOLLOW-ON TASKS:

- Install rear floor plates (p 4-361).
- Retract ejector (TM 5-2350-262-10).

STEERING WHEEL AND LINKAGE REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Inspection
d. Assembly
e. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D
Sealing Compound Primer	Item 13 Appendix D

Parts:

Locknut (10)

Lockwasher

Self-locking Screw (8)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-159	Vehicle is Difficult to Steer

Equipment Condition:

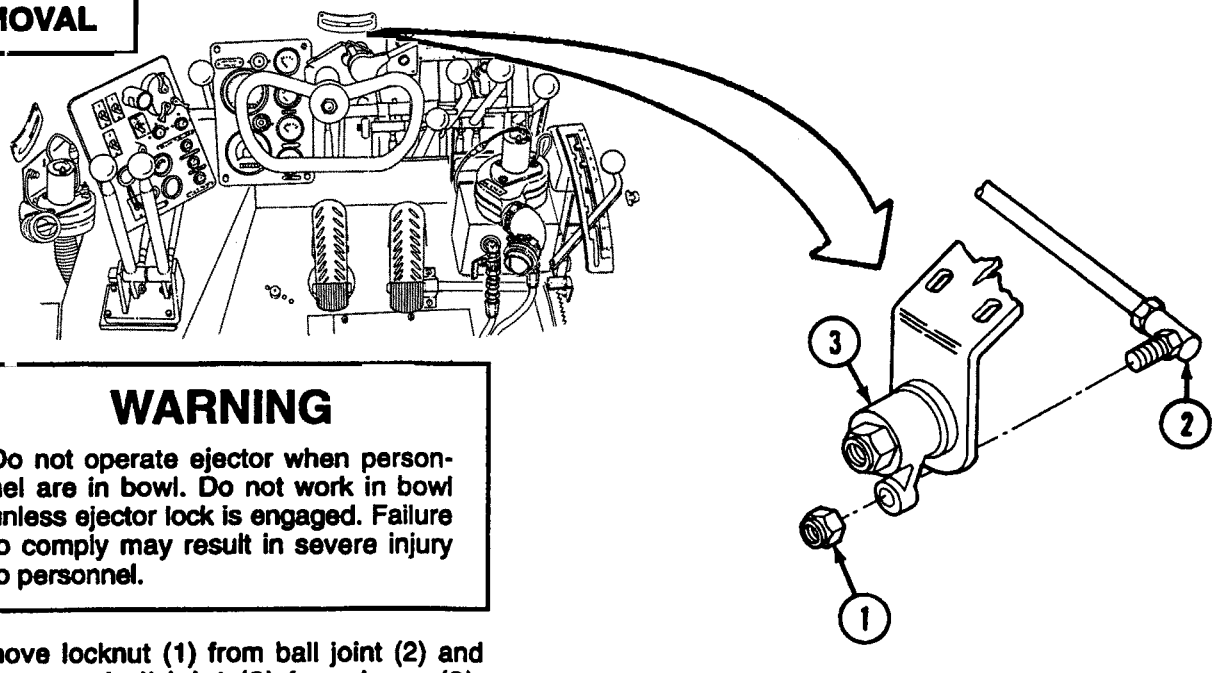
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-38	Trailer Brake Valve Removed
Page 4-361	Rear Floor Plates Removed

General Safety Instructions:

WARNING

Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged.

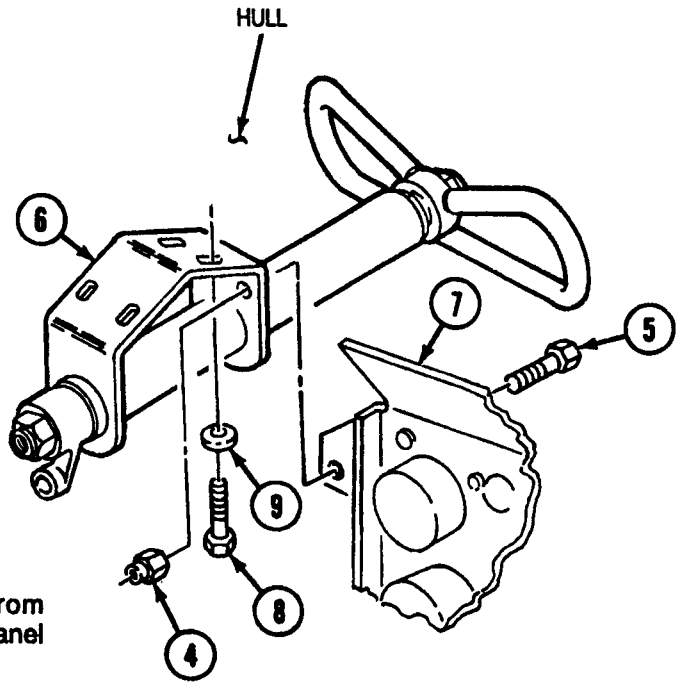
REMOVAL



WARNING

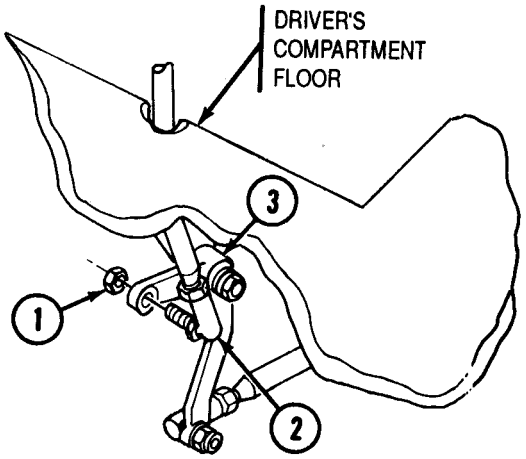
Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

A Remove locknut (1) from ball joint (2) and disconnect ball joint (2) from lever (3). Discard locknut (1).

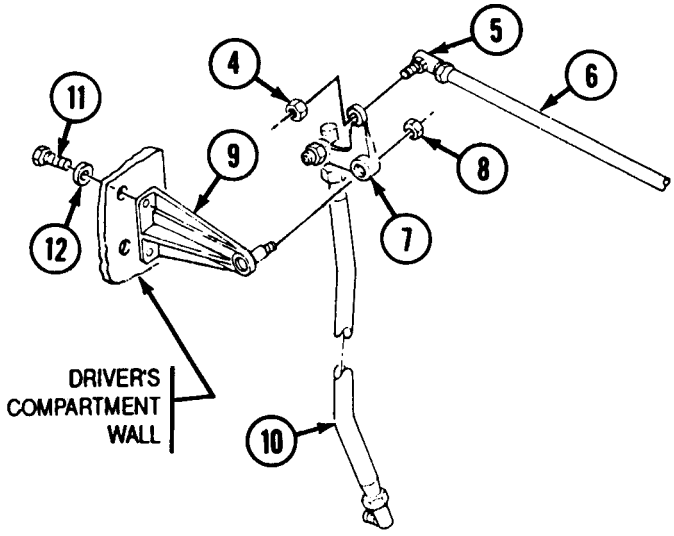


B Remove locknut (4) and screw (5) from steering column bracket (6) and gauge panel bracket (7). Discard locknut (4).

C Remove four self-locking screws (8), washers (9), and steering column bracket (6) from hull. Discard self-locking screws (8).



D From under driver's compartment floor, remove locknut (1) from ball joint (2), and disconnect ball joint (2) from bellcrank (3). Discard locknut (1).



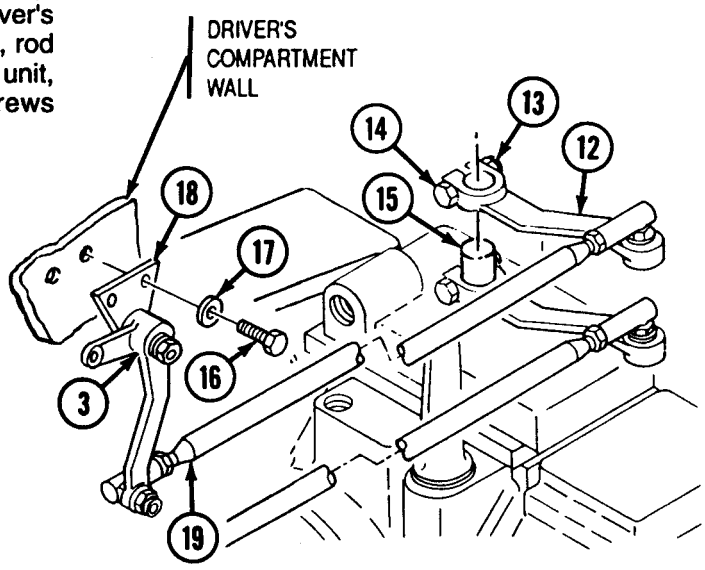
E Remove locknut (4) from ball joint (5), and remove rod (6) from bellcrank (7). Discard locknut (4).

F Remove locknut (8) from bracket (9), and remove bellcrank (7) and rod (10) from bracket (9). Discard locknut (8).

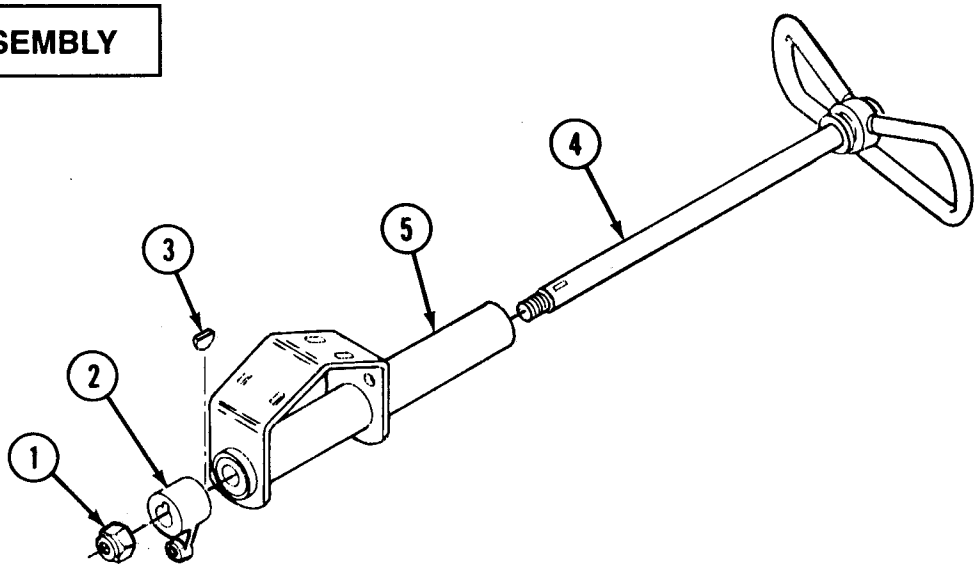
G Remove two self-locking screws (11), washers (12), and bracket (9) from driver's compartment wall. Discard self-locking screws (11).

H Loosen locknut (13) and screw (14), and remove lever (12) from steer unit shaft (15).

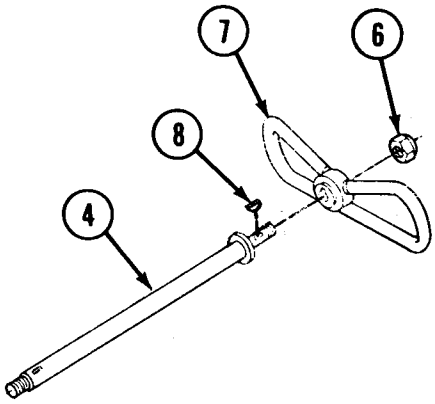
I Remove two self-locking screws (16), washers (17), and bracket (18) from driver's compartment wall. Remove bracket (18), rod (19), bellcrank (3), and lever (12) as a unit, through bowl. Discard self-locking screws (16).



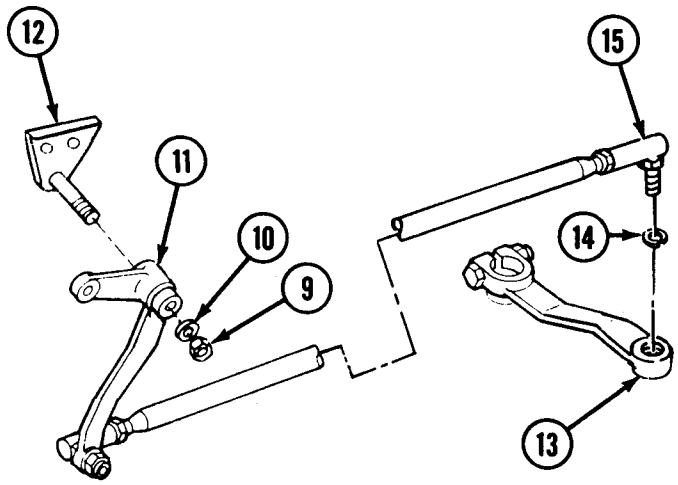
DISASSEMBLY



A Remove locknut (1), lever (2), and key (3) from steering shaft (4), and remove steering shaft (4) from steering column (5). Discard locknut (1).

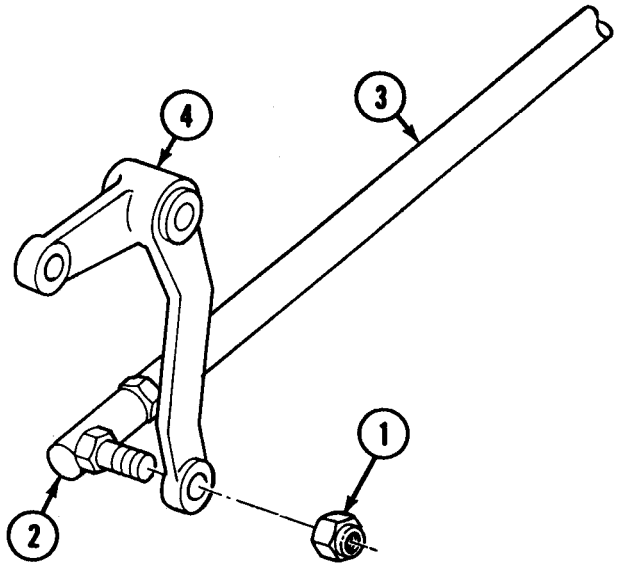


B Remove locknut (6), steering wheel (7), and key (8) from steering shaft (4). Discard locknut (6).

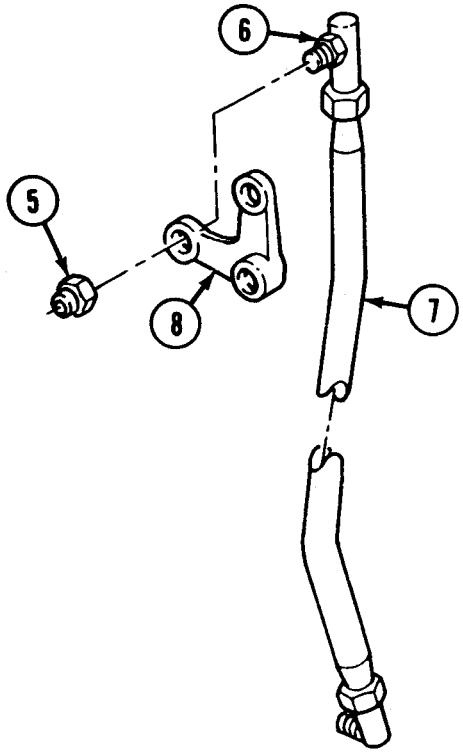


C Remove locknut (9), washer (10), and bell-crank (11) from bracket (12). Discard locknut (9).

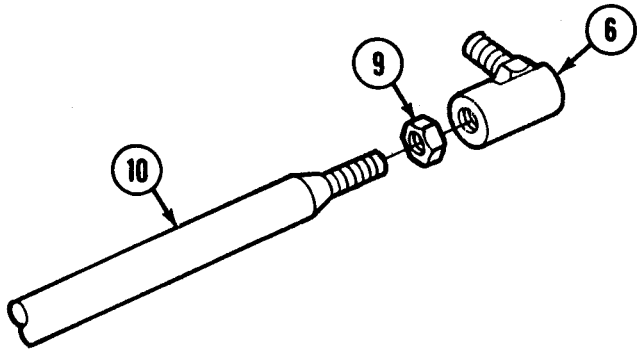
D Remove lever (13) and lockwasher (14) from ball joint (15). Discard lockwasher (14).



E Remove locknut (1) from ball joint (2), and remove rod (3) from bellcrank (4). Discard locknut (1).



F Remove locknut (5) from ball joint (6), and remove rod (7) from bellcrank (8). Discard locknut (5).

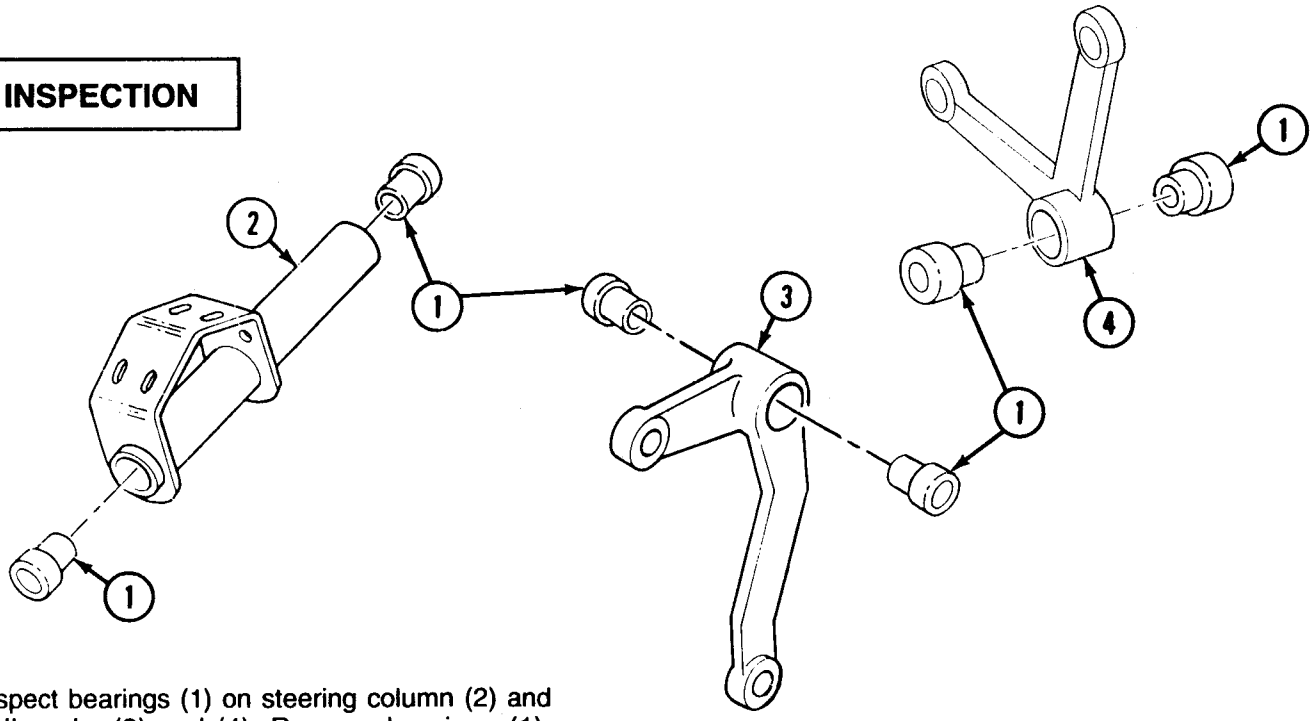


Note

Mark position of ball joints, and count out number of turns during removal for installation.

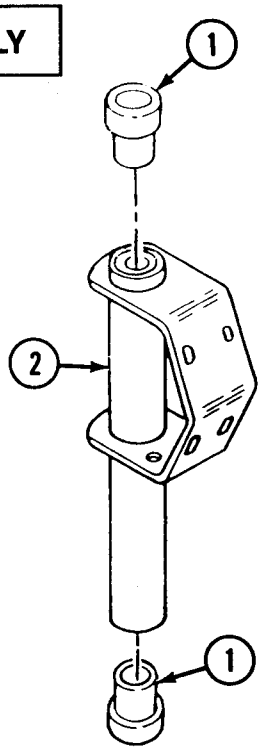
G Loosen six jamnuts (9), and remove six ball joints (6) and jamnuts (9) from rods (10).

INSPECTION

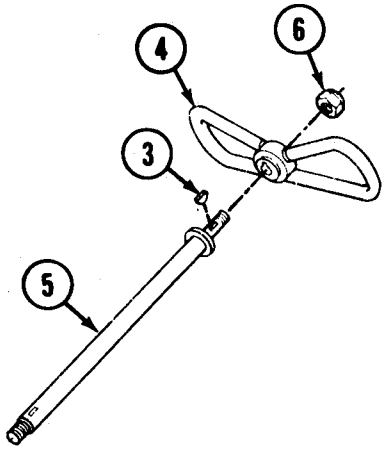


Inspect bearings (1) on steering column (2) and bellcranks (3) and (4). Remove bearings (1), only if damaged, by driving out with hammer and drift.

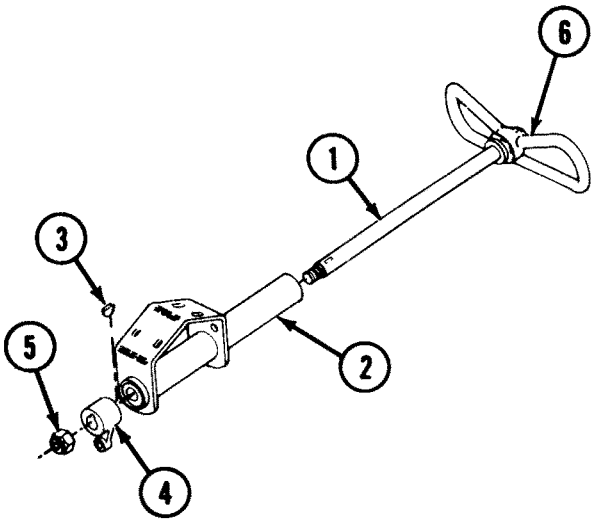
ASSEMBLY



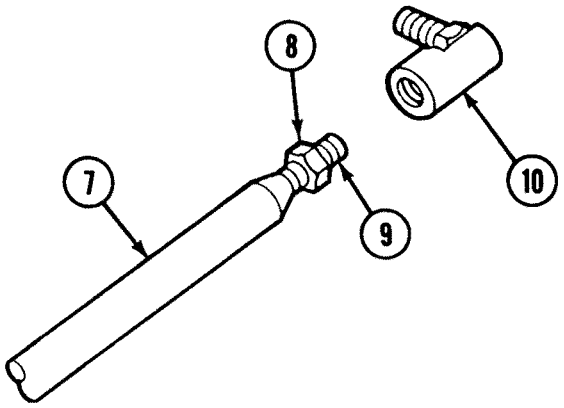
A If removed, install two bearings (1) on steering column (2) using a wood block and hammer.



B Install key (3) and steering wheel (4) on steering shaft (5) with locknut (6).

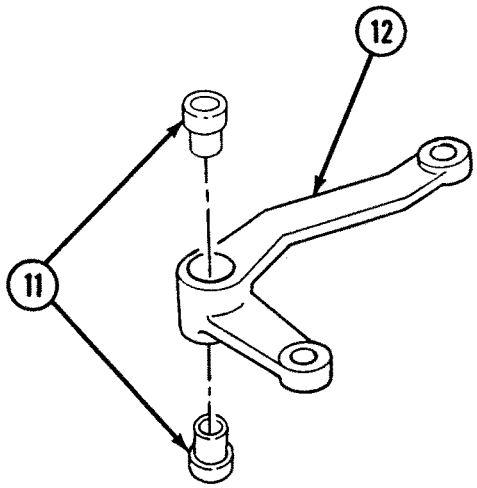


C Install steering shaft (1) on steering column (2) with key (3), lever (4), and locknut (5). Tighten locknut (5) until steering wheel (6) will not turn on steering column (2), then back off locknut (5) 1/4 turn.

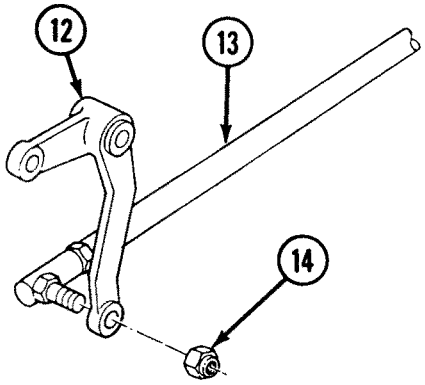


D Coat threads of rods (7) with sealing compound primer and sealing compound, and install six jamnuts (8) on rod ends (9).

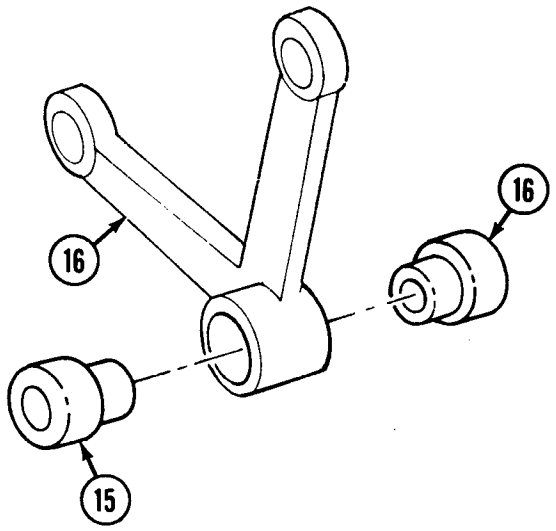
E Install six ball joints (10) on rod ends (9) until aligned with marked position.



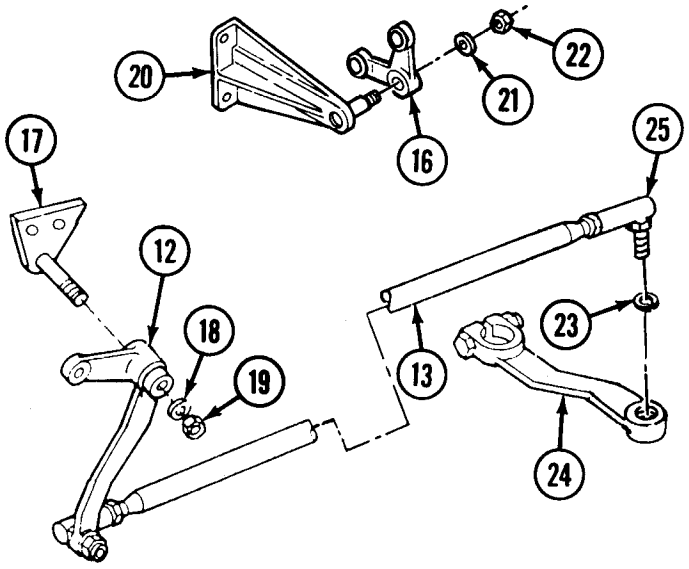
F If removed, install two bearings (11) on lower bellcrank (12) using hammer and wood block.



G Install rod (13) on bellcrank (12) with locknut (14).



H If removed, install two bearings (15) on bellcrank (16) using hammer and wood block.

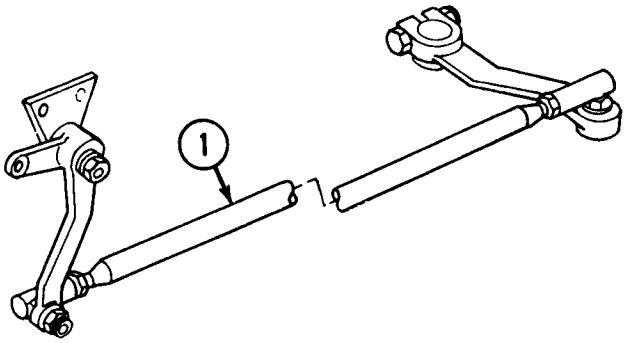


I Install bellcrank (12) on bracket (17) with washer (18) and locknut (19).

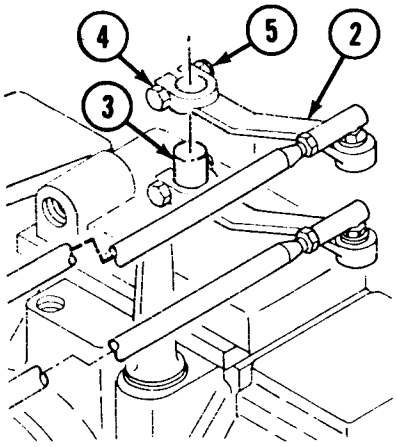
J Install bellcrank (16) on bracket (20) with washer (21) and locknut (22).

K Install lockwasher (23) and lever (24) on ball joint (25) of rod (13).

INSTALLATION



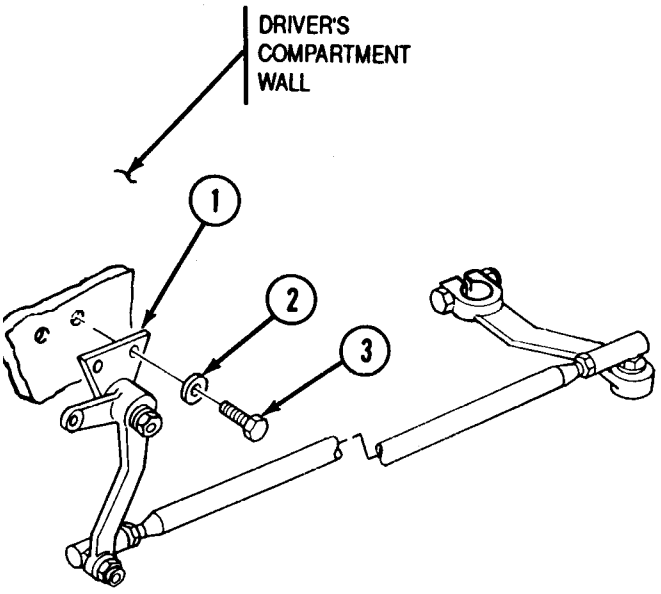
A Position bellcrank and rod assembly (1) through bowl area to steer unit.



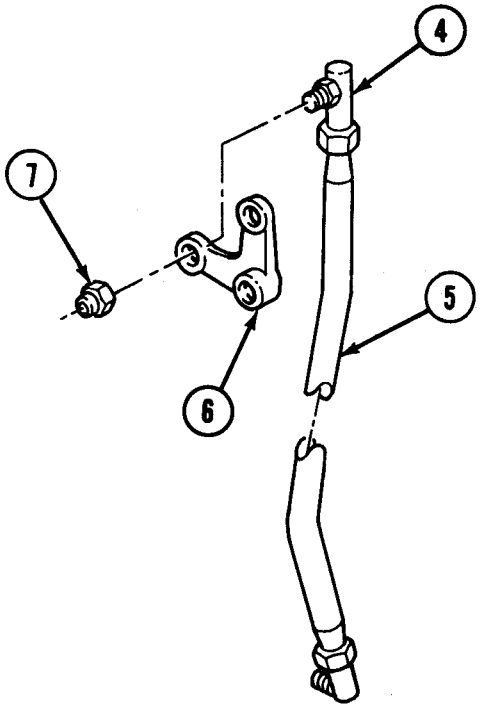
CAUTION

Do not force lever on steer unit shaft. Align blind splines during installation. Failure to comply may result in damage to equipment.

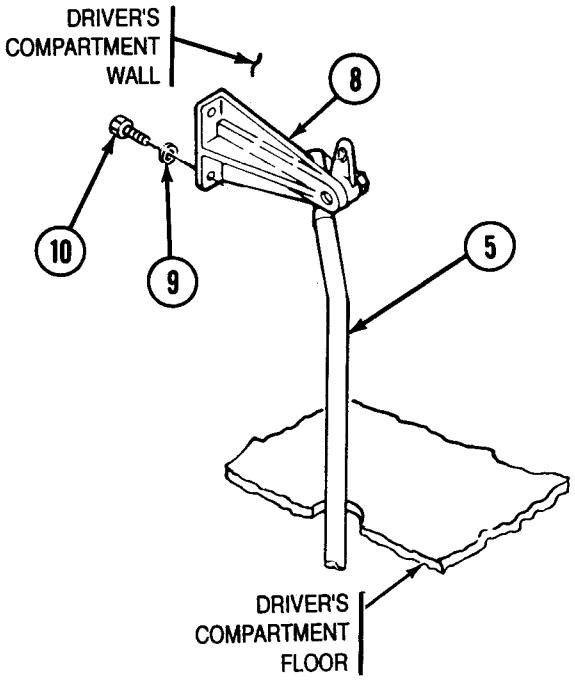
B Install lever (2) on steer unit shaft (3), and tighten screw (4) and locknut (5).



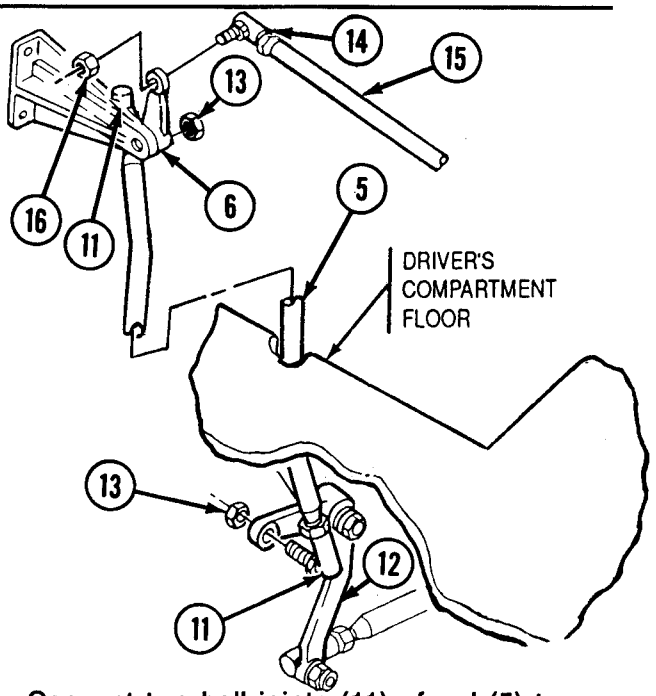
C From inside bowl, install bracket (1) on driver's compartment wall with two washers (2) and self-locking screws (3).



D Install ball joint (4) of rod (5) on bellcrank (6) with locknut (7).

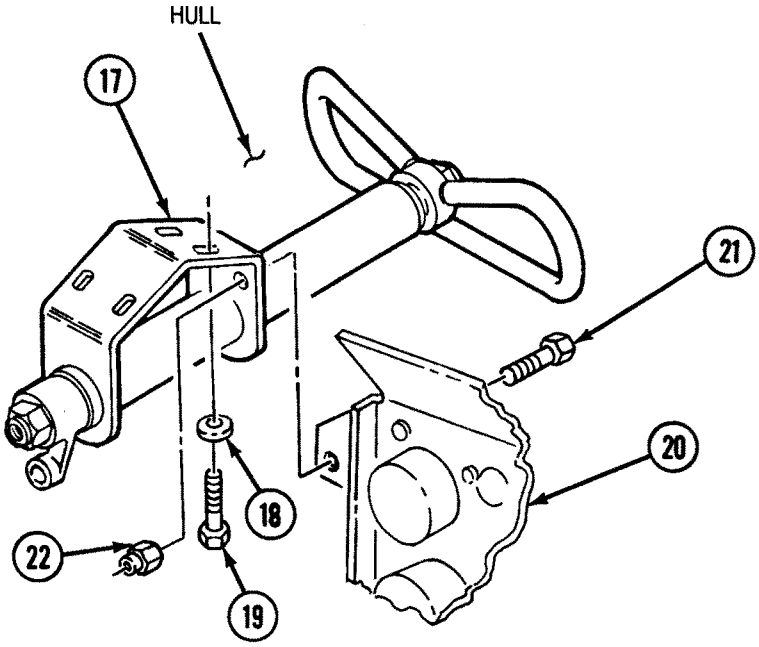


E Position rod (5) through driver's compartment floor, and install bracket (8) on driver's compartment wall with two washers (9) and self-locking screws (10).



F Connect two ball joints (11) of rod (5) to bellcrank (12) and bellcrank (6) with two locknuts (13).

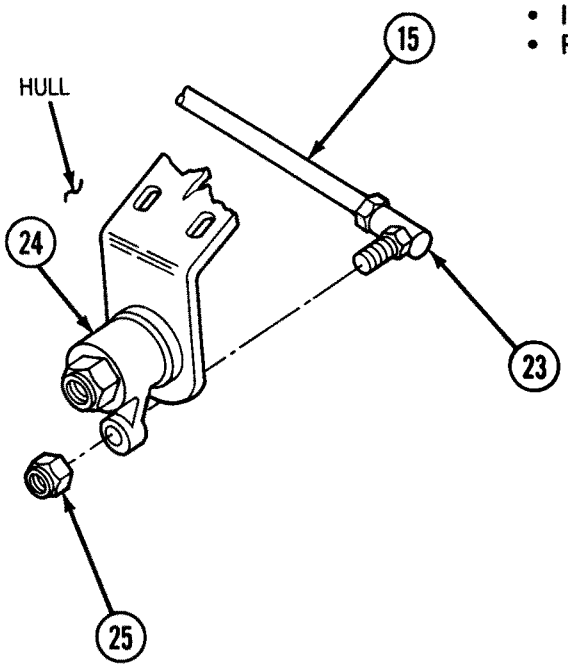
G Install ball joint (14) of rod (15) on bellcrank (6) with locknut (16).



H Install steering column bracket (17) on hull with four washers (18) and self-locking screws (19).

I Install steering column bracket (17) on gauge panel bracket (20) with screw (21) and locknut (22).

J Connect ball joint (23) of rod (15) to lever (24) with locknut (25).



FOLLOW-ON TASKS:

- Adjust steering wheel and linkage (p 4-704).
- Install trailer brake valve (p 4-38).
- Install rear floor plates (p 4-361).
- Retract ejector (TM 5-2350-262-10).

CB/GS STEER SELECTOR LEVER AND LINKAGE REPLACEMENT AND ADJUSTMENT

This task covers:

a. Removal

b. Installation

c. Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D
Sealing Compound Primer	Item 13 Appendix D

Parts:

Locknut (3)

Lockwasher

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P	Group AU

Reference:

TM 5-2350-262-10

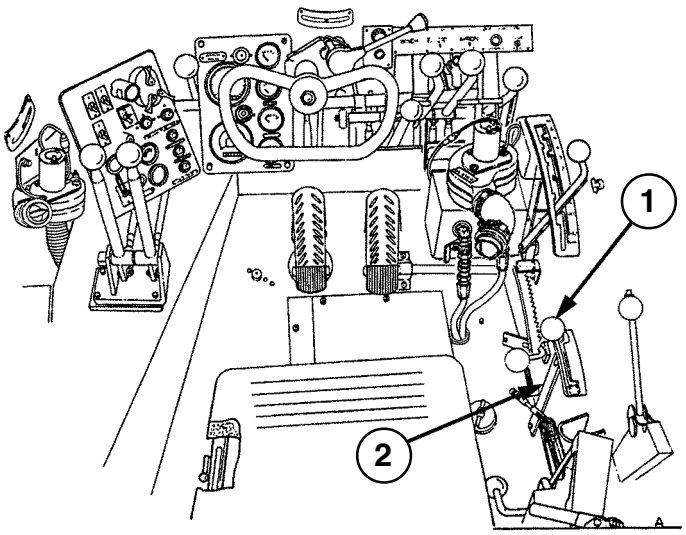
Personnel Required:

Construction Equipment Repairer 62B10

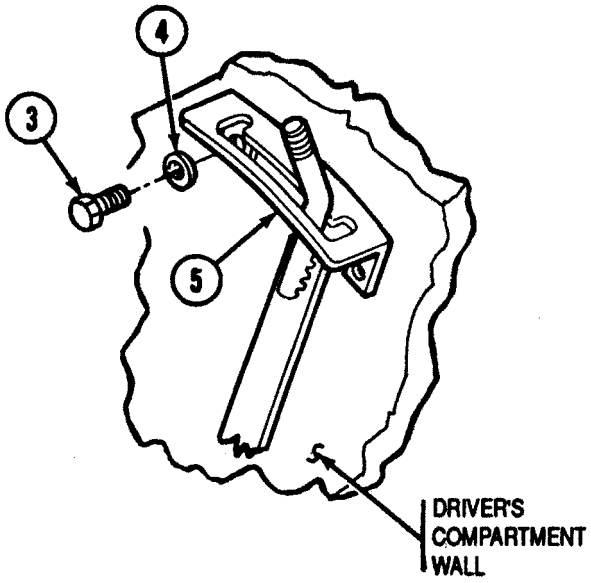
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Covers Open
Page 4-361	Rear Floor Plates Removed
Page 4-356	Rear Floor Plates Supports Removed

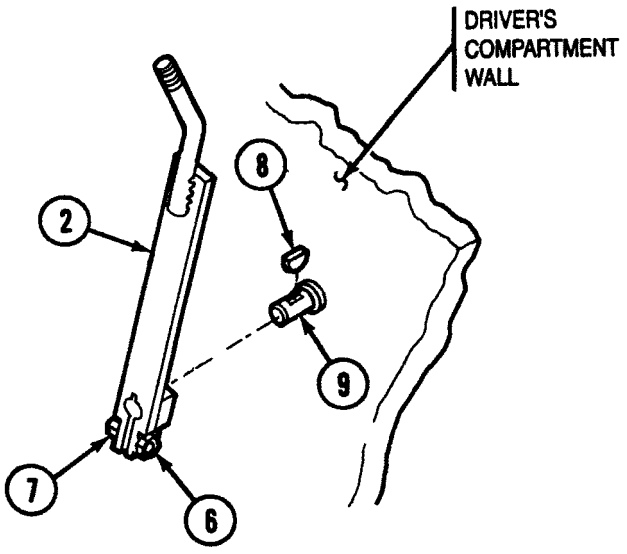
REMOVAL



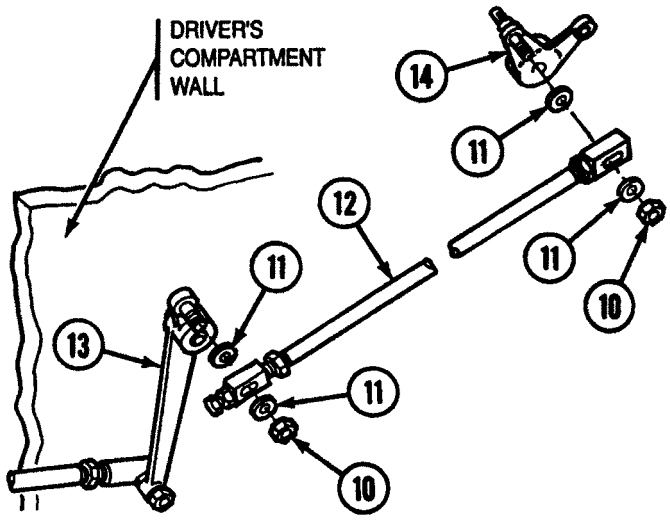
A Remove knob (1) from steer selector lever (2).



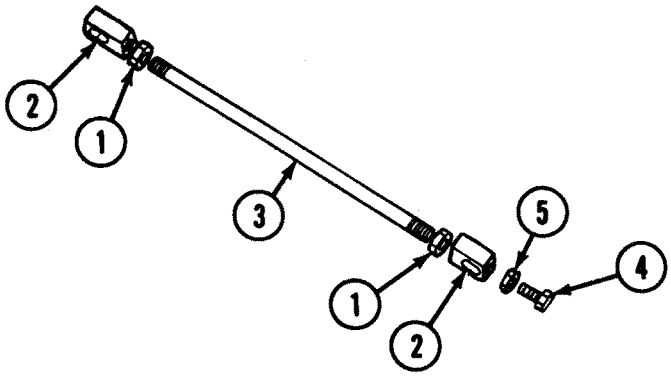
B Remove two self-locking screws (3), washers (4), and shift plate (5) from driver's compartment wall. Discard self-locking screws (3).



C Loosen locknut (6) and screw (7), and remove lever (2) and woodruff key (8) from shaft (9).



D Remove two locknuts (10), four washers (11), and rod (12) from bellcranks (13) and (14). Discard locknuts (10).

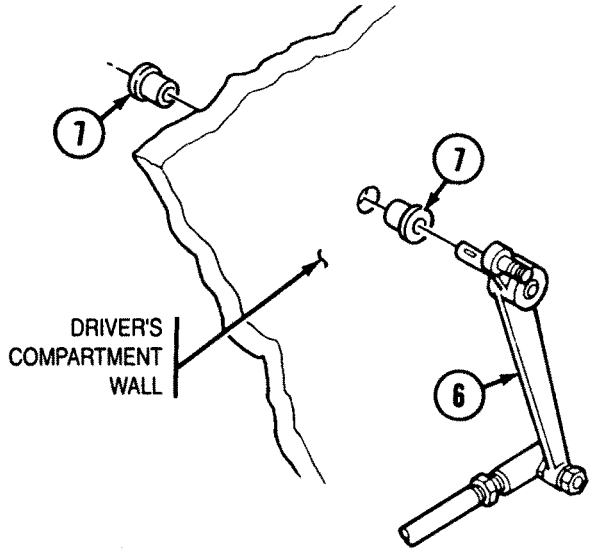


Note

Mark position of rod ends, and count out number of turns during removal for installation.

E Loosen two jamnuts (1), and remove rod ends (2) and jamnuts (1) from rod (3).

F Remove screw (4) and jamnut (5) from rod end (2).

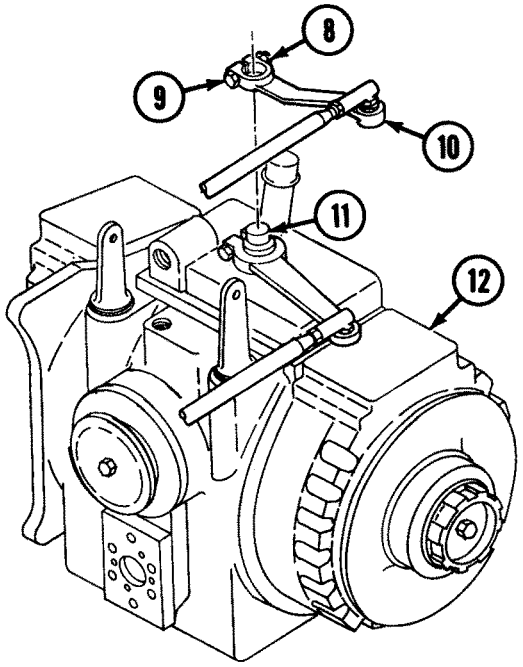


Note

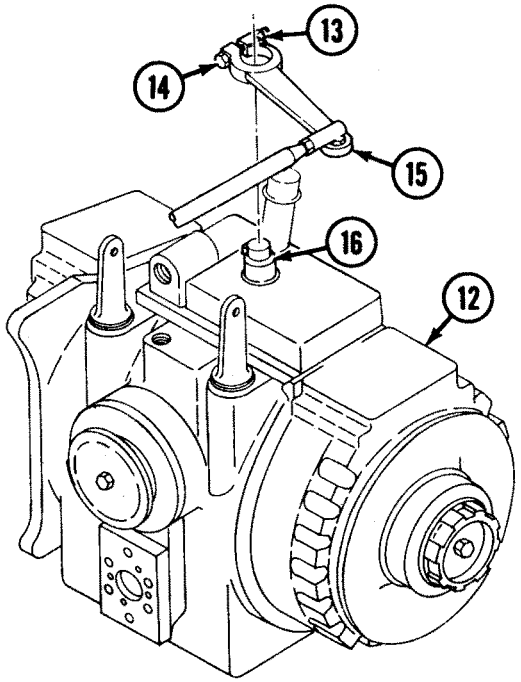
Remove flanged bearings only if damaged.

G Remove bellcrank (6) from two flanged bearings (7) at driver's compartment wall.

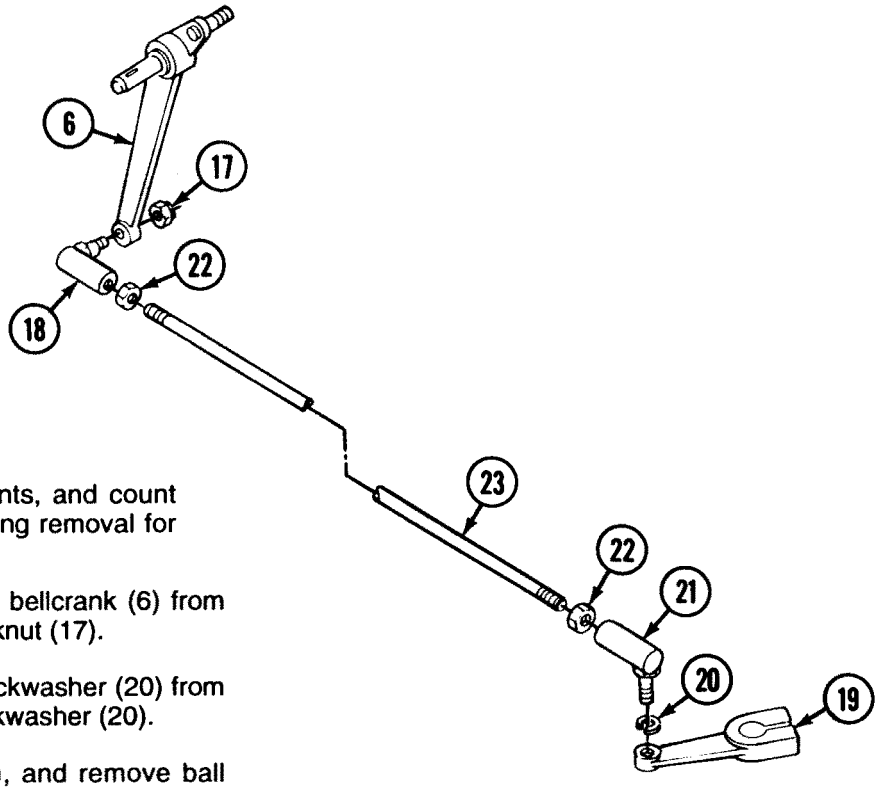
H Remove two flanged bearings (7) from driver's compartment wall.



I Loosen locknut (8) and screw (9), and remove lever (10) from shaft (11) of steer unit (12).



J Loosen locknut (13) and screw (14), and remove lever (15) from shaft (16) of steer unit (12). Remove steer selector linkage from vehicle.



Note

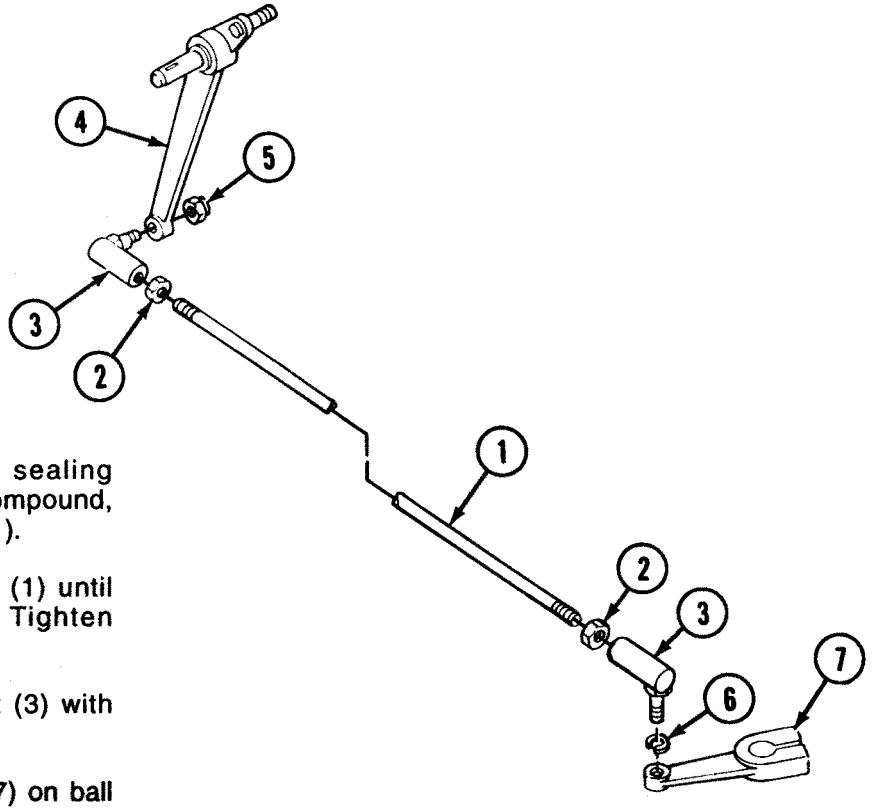
Mark position of ball joints, and count out number of turns during removal for installation.

K Remove locknut (17) and bellcrank (6) from ball joint (18). Discard locknut (17).

L Remove lever (19) and lockwasher (20) from ball joint (21). Discard lockwasher (20).

M Loosen two jamnuts (22), and remove ball joints (18) and (21) and jamnuts (22) from rod (23).

INSTALLATION

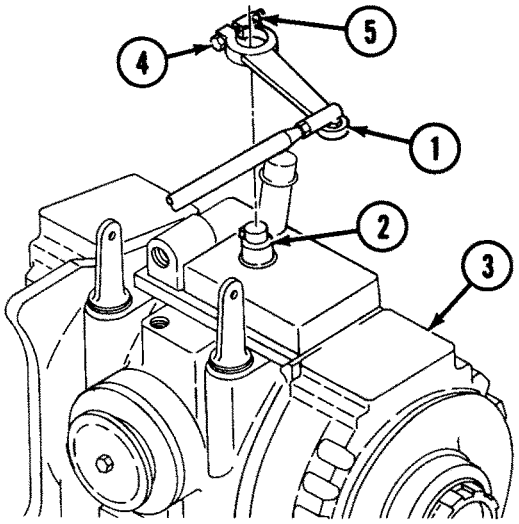


A Coat threads of rod (1) with sealing compound primer and sealing compound, and install two jamnuts (2) on rod (1).

B Install two ball joints (3) on rod (1) until aligned with marked position. Tighten jamnuts (2).

C Install bellcrank (4) on ball joint (3) with locknut (5).

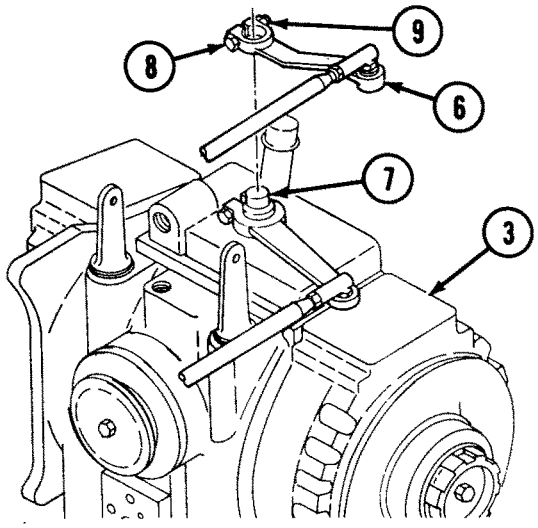
D Install lockwasher (6) and lever (7) on ball joint (3).



CAUTION

Do not force lever on steer unit shaft. Align blind splines during installation. Failure to comply may result in damage to equipment.

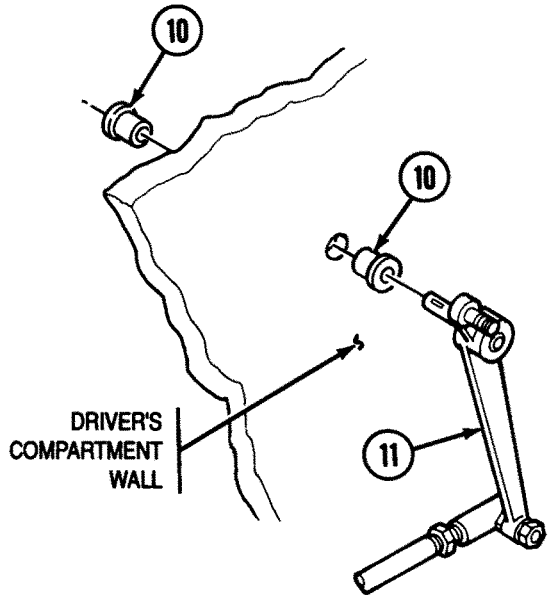
E Install lever (1) on shaft (2) of steer unit (3), and tighten screw (4) and locknut (5).



CAUTION

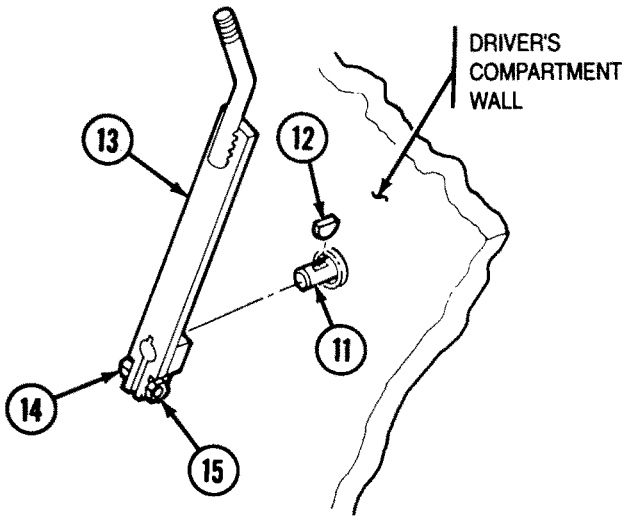
Do not force lever on steer unit shaft. Align blind splines during installation. Failure to comply may result in damage to equipment.

F Install lever (6) on shaft (7) of steer unit (3), and tighten screw (8) and locknut (9).



G If removed, install two flanged bearings (10) on driver's compartment wall.

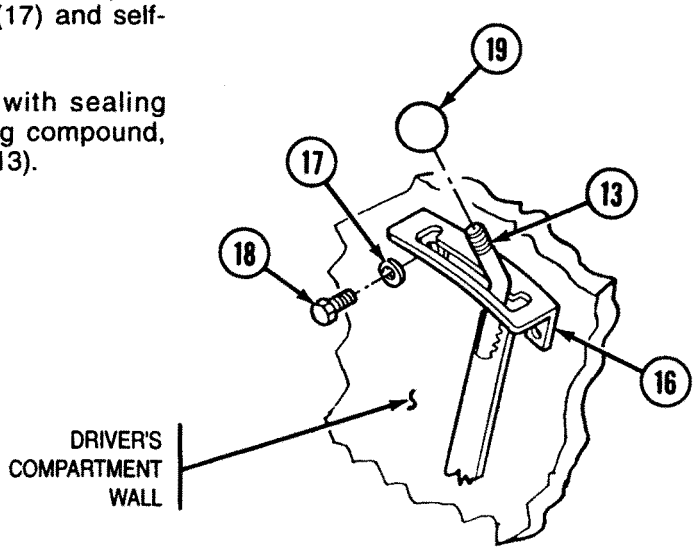
H Install bellcrank (11) on two flanged bearings (10).

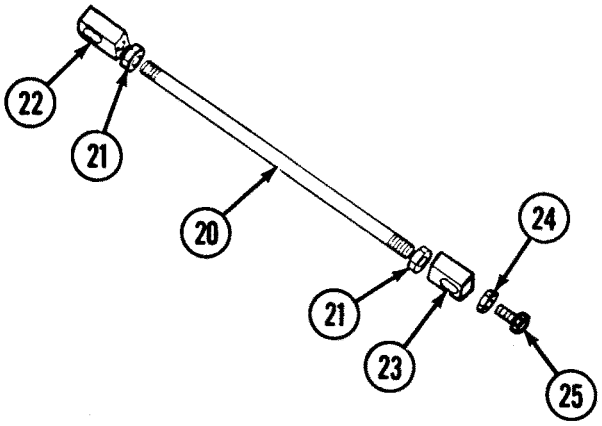


I Install woodruff key (12) and lever (13) on shaft of bellcrank (11), and tighten screw (14) and locknut (15).

J Install shift plate (16) on driver's compartment wall with two washers (17) and self-locking screws (18).

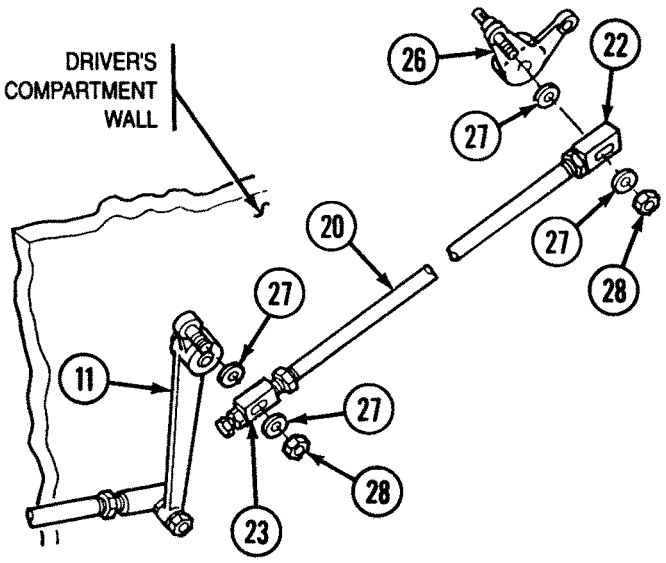
K Coat threads of lever (13) with sealing compound primer and sealing compound, and install knob (19) on lever (13).





L Coat threads of rod (20) with sealing compound primer and sealing compound, and install two jamnuts (21) and rod ends (22) and (23) on rod (20) until aligned with marked position. Tighten jamnuts (21).

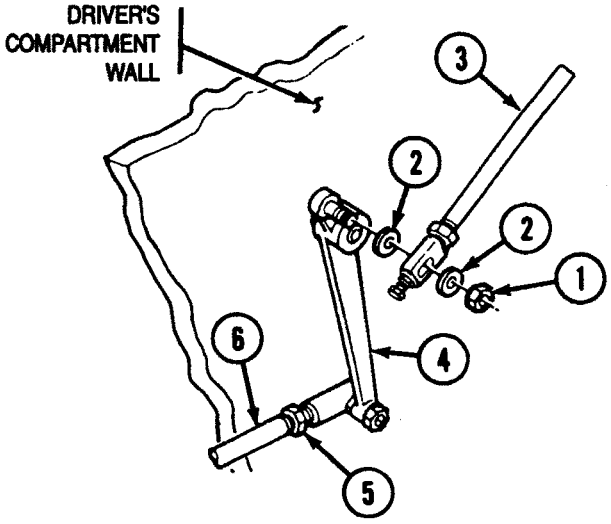
M Install jamnut (24) and screw (25) on rod end (23). Do not tighten jamnut (24) or screw (25).



N Install rod (20) by connecting rod ends (22) and (23) to bellcranks (26) and (11) with four washers (27) and two locknuts (28).

O Perform linkage adjustment (p 4-722).

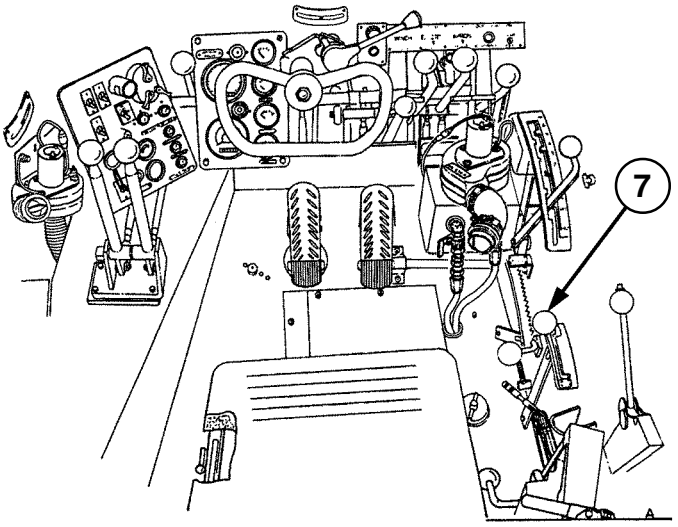
ADJUSTMENT



A Adjust transmission shift linkage (p 4-692).

B Remove locknut (1), two washers (2), and rod (3) from bellcrank (4). Discard locknut (1).

C Loosen jamnut (5) at rod (6).



D Move CB/GS steer selector lever (7) to CB position, and hold lever (7) in this position.

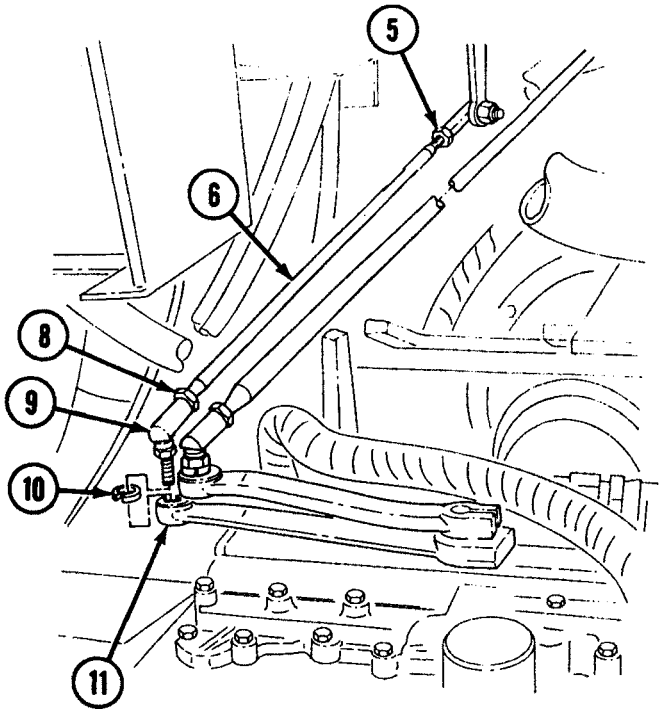
E Loosen jamnut (8) at rod (6), and remove ball joint (9) and lockwasher (10) from lever (11). Discard lockwasher (10).

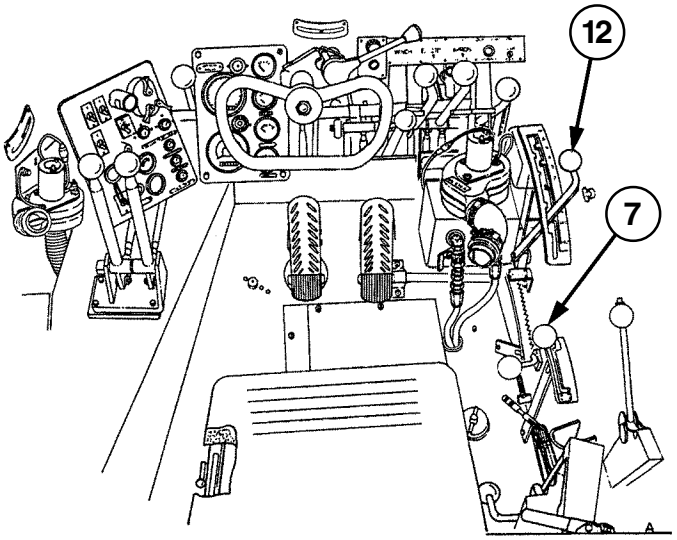
F Ensure lever (11) is toward front of steer unit in CB position.

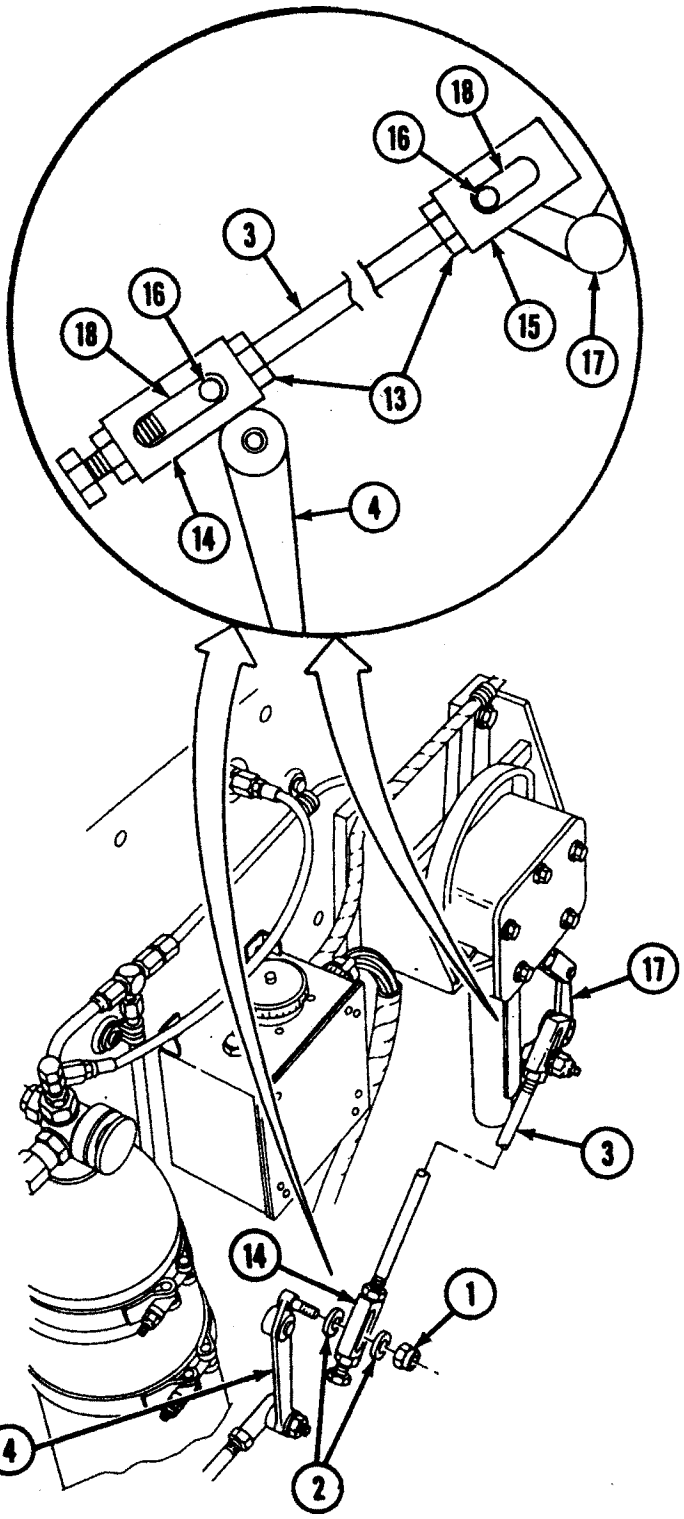
G Coat threads of rod (6) and ball joint (9) with sealing compound primer and sealing compound, and adjust ball joint (9), as necessary, to center with hole of lever (11).

H If necessary, center rod (6) so equal amounts of threads are exposed on ends of rod (6).

I Install lockwasher (10) and ball joint (9) on lever (11), and tighten jamnuts (8) and (5).







Note

Steps J through M cover adjustment of GS to CB change when shifted from neutral to R1 position.

J Place transmission shift lever (12) in neutral position and CB/GS steer selector lever (7) in GS (front) position. Hold CB/GS steer selector lever (7) in GS position.

K Loosen two jamnuts (13) at rod (3), and adjust rod ends (14) and (15) so pins (16) of bellcranks (4) and (17) contact the innermost ends of slots (18).

L Install rod end (14) on bellcrank (4) with two washers (2) and locknut (1).

M Coat threads of rod (3) with sealing compound pirmer and sealing compound, and tighten jamnuts (13) against rod ends (14) and (15).

Note

Steps N through U cover adjustment of CB to GS change, when transmission shift lever is shifted from 4th to 5th gear.

N Place CB/GS steer selector lever (1) in CB position. Hold lever (1) in CB position.

O Place transmission shift lever (2) in 4th gear position.

P Loosen jamnut (3) and back off to head of adjusting screw (4). Turn adjusting screw (4) clockwise until thread end (5) touches pin (6) of bellcrank (7).

Q Tighten jamnut (3) against rod end (8).

R Ensure that when transmission shift lever (2) is moved to 5th gear position, CB/GS steer selector lever (1) moves forward to GS position.

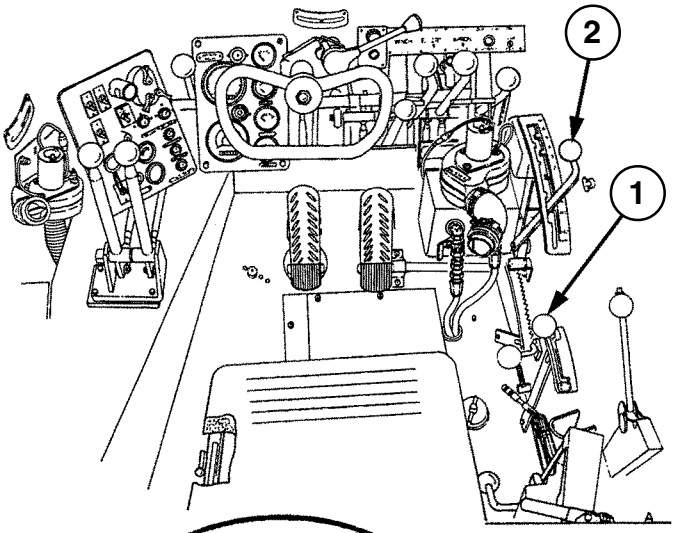
S Ensure that transmission shift lever (2) will shift from 5th to 6th gear when CB/GS steer selector lever (1) is in GS position.

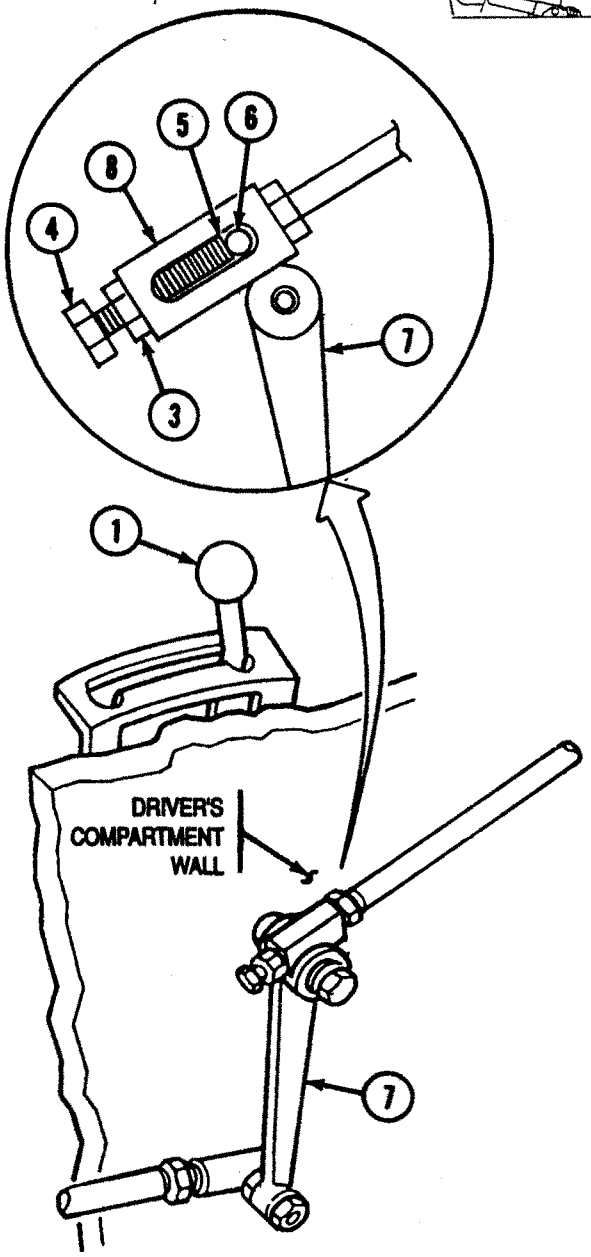
T Ensure that when transmission shift lever (2) is moved from neutral to R1, CB/GS steer selector lever (1) moves rearward to CB position.

U If CB/GS steer selector lever (1) does not move from CB to GS when transmission shift lever (2) is moved to 5th gear, or if transmission shift lever (2) cannot be shifted from 5th to 6th gear, or if CB/GS steer selector lever (1) does not move to CB when transmission shift lever (2) is moved from neutral to R1, repeat adjustment procedure.

FOLLOW-ON TASKS:

- Install rear floor plates supports (p 4-357).
- Install rear floor plates (p 4-361).
- Close engine intake grilles and covers (TM 5-2350-262-10).





STEER UNIT AND WINCH LINES, FITTINGS, AND BREATHERS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Lockwasher (3)

Packing (3)

Self-locking Screw (6)

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Steer Unit Drained
Page 4-649	Radiator Removed

General Safety Instructions:

WARNING

Hot hydraulic oil can cause serious burns. Pump and fittings must be cool to touch before working on hydraulic system.

REMOVAL

WARNING

Hot hydraulic oil can cause serious burns. Pump and fittings must be cool to touch before working on hydraulic system. Failure to comply may result in severe injury to personnel.

CAUTION

Cover ends of hoses and steer unit ports to prevent contamination of oil. Failure to comply may result in damage to equipment.

Note

- There are two configurations of breather hoses. Perform steps A through D on vehicles with steer unit and winch vented together, and perform steps E through L on vehicles with steer unit and winch vented separately.
- Have suitable container ready to catch hydraulic oil.

A Disconnect hoses (1), (2), (3), and (4) from elbow (5), tee (6), and adapter (7).

B Remove elbow (5), tee (6), adapter (7), cross (8), nipple (9), and bushing (10) from steer unit valve body (11).

C Remove hose (2) from elbow (12), and remove elbow (12) from final drive track adjusting flange (13).

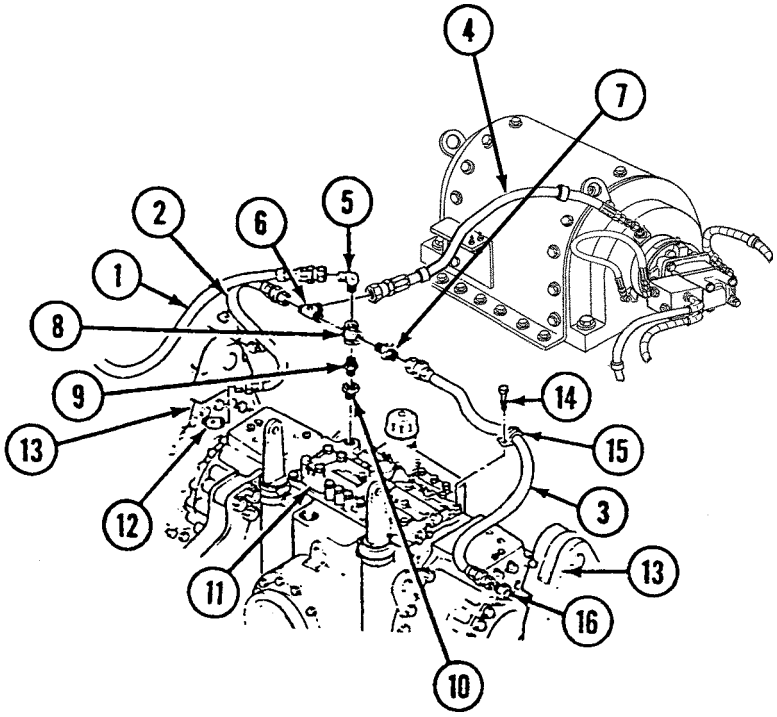
D Remove screw (14) and clamp (15) from steer unit valve body (11) and hose (3), and remove hose (3) and adapter (16) from final drive track adjusting flange (13).

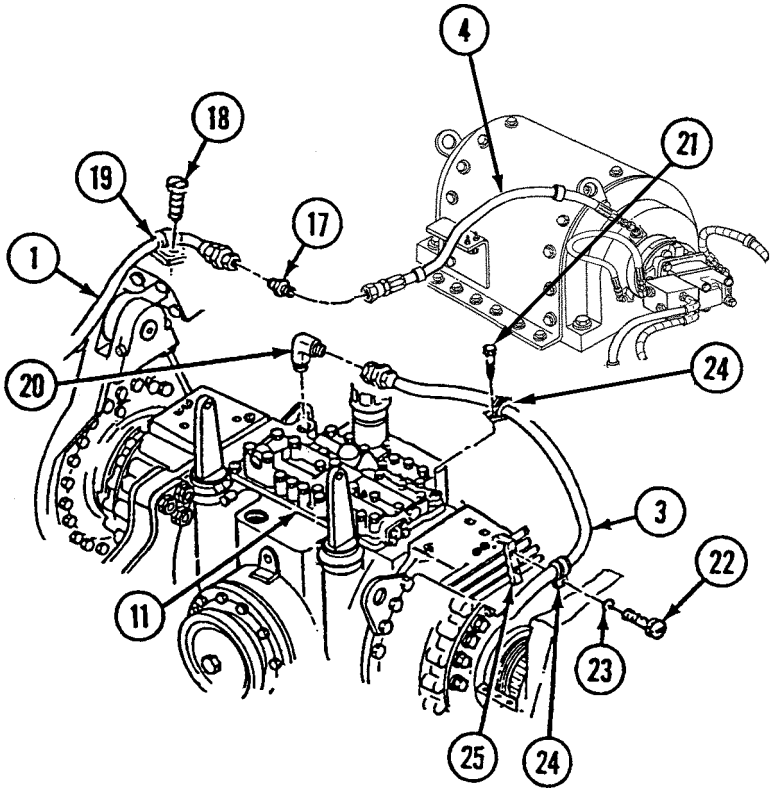
E Disconnect hoses (1) and (4) from union (17).

F Remove screw (18) and clamp (19) from hose (1) and steer unit valve body (11).

G Disconnect hose (3) from elbow (20), and remove elbow (20) from steer unit valve body (11).

H Remove screws (21) and (22), lockwasher (23), and two clamps (24) from steer unit valve body (11), half block clamp (25), and hose (3). Discard lockwasher (23).

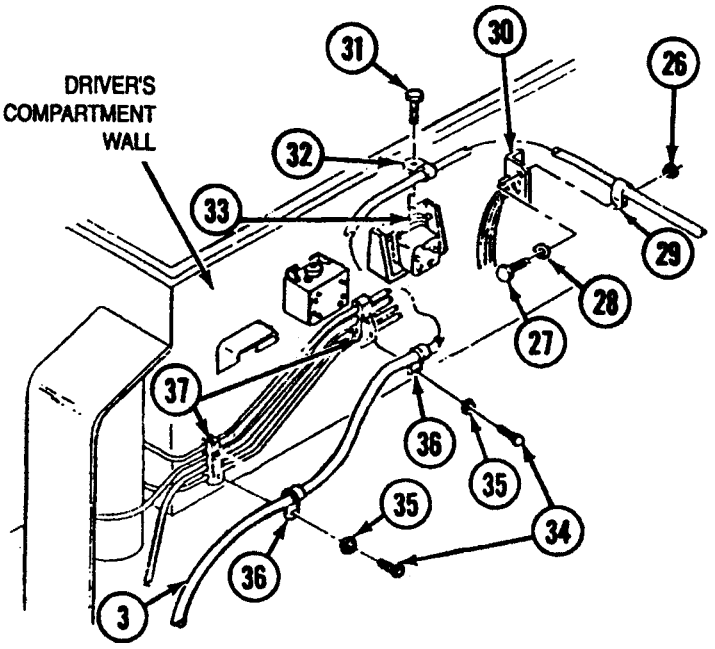


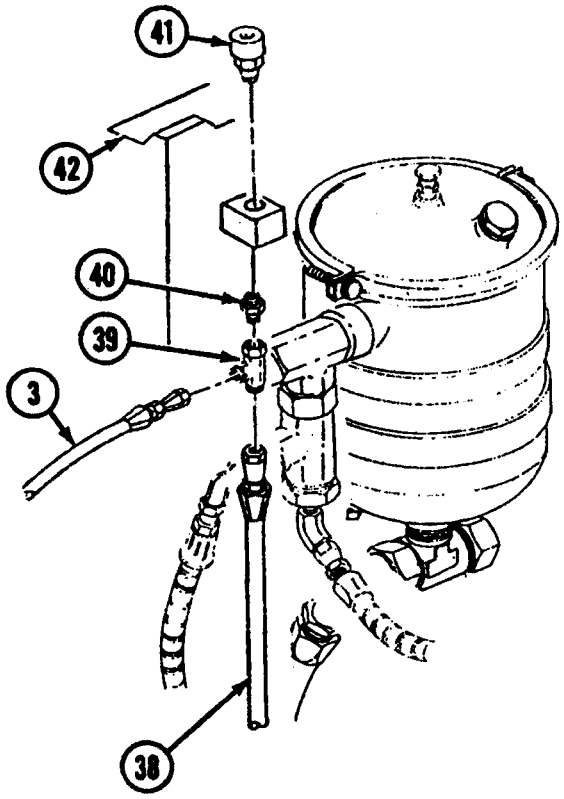


I Remove nut (26), self-locking screw (27), washer (28), and clamp (29) from wiring harness bracket (30) and hose (3). Discard self-locking screw (27).

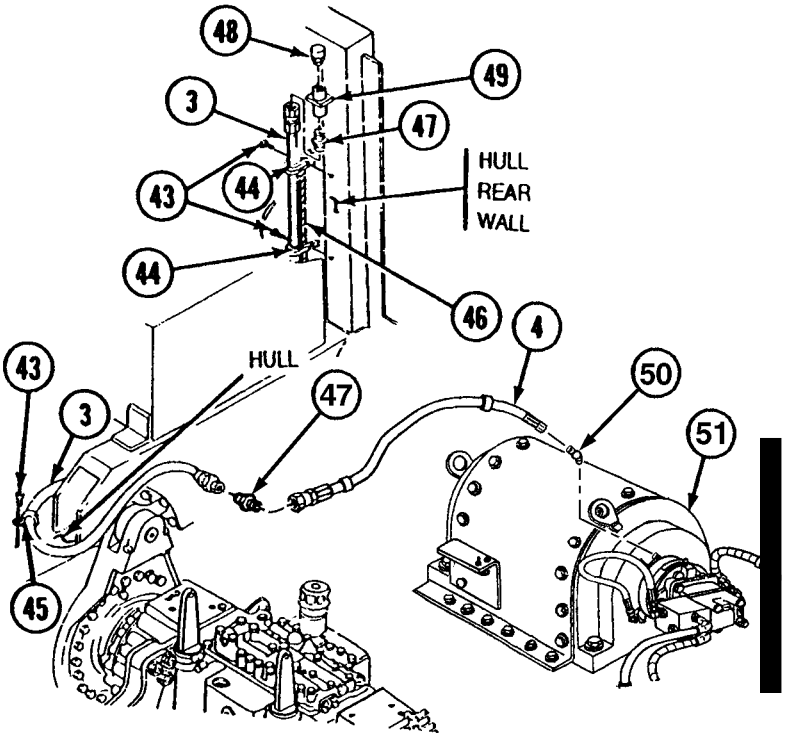
J Remove self-locking screw (31) and clamp (32) from transmission shift control valve bracket (33) and hose (3). Discard self-locking screw (31).

K Remove two screws (34), lockwashers (35), and clamps (36) from half block clamps (37) and hose (3). Discard lockwashers (35).





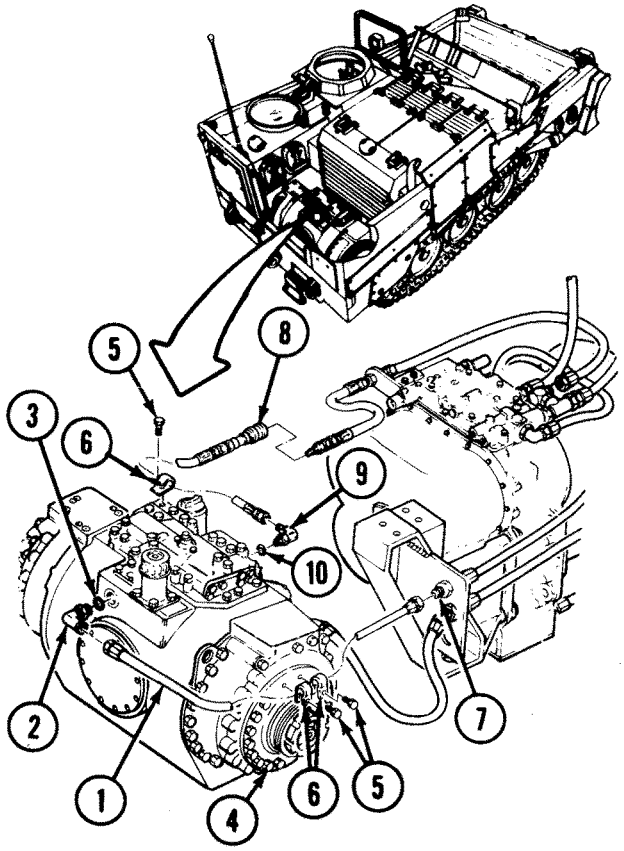
L Disconnect hoses (3) and (38) from tee (39), and remove tee (39), adapter (40), and breather (41) from filter support (42). Remove hose (3) from vehicle.



M Remove three screws (43), two clamps (44), and clamp (45) from hull rear wall, hose (3), wiring harness (46), and hull.

N Remove hose (3), adapter (47), and breather (48) from connector (49).

O Remove hose (4) from elbow (50), and elbow (50) from steer unit (51).

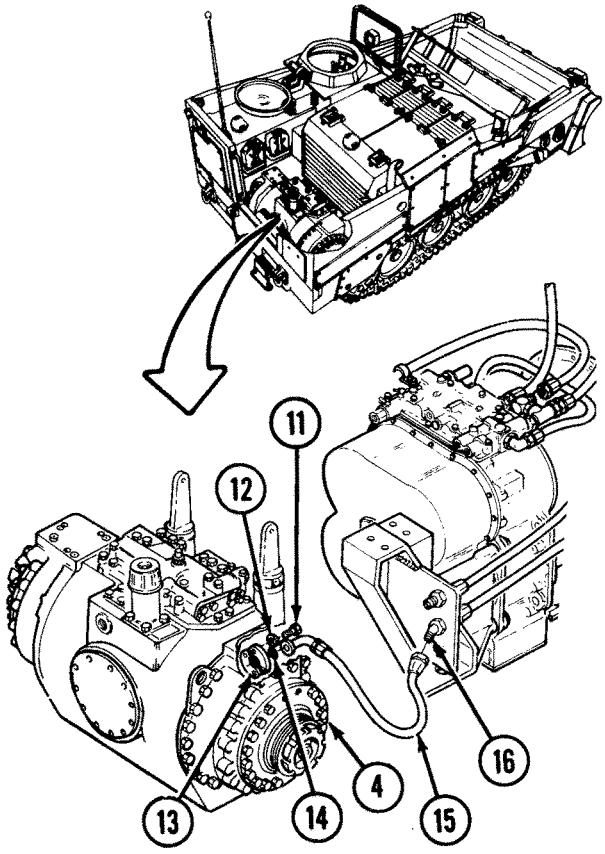


P Disconnect hose (1) from elbow (2), and remove elbow (2) and packing (3) from steer unit (4). Discard packing (3).

Q Remove three screws (5) and clamps (6) from hose (1) and steer unit (4).

R Remove hose (1) from adapter (7).

S Disconnect hose (8) at quick-disconnect, and remove hose (8) from elbow (9). Remove elbow (9) and packing (10) from steer unit (4). Discard packing (10).



T Remove four self-locking screws (11), washers (12), two fittings (13), packing (14), and hose (15) from steer unit (4). Discard self-locking screws (11) and packing (14).

U Remove hose (15) from elbow (16).

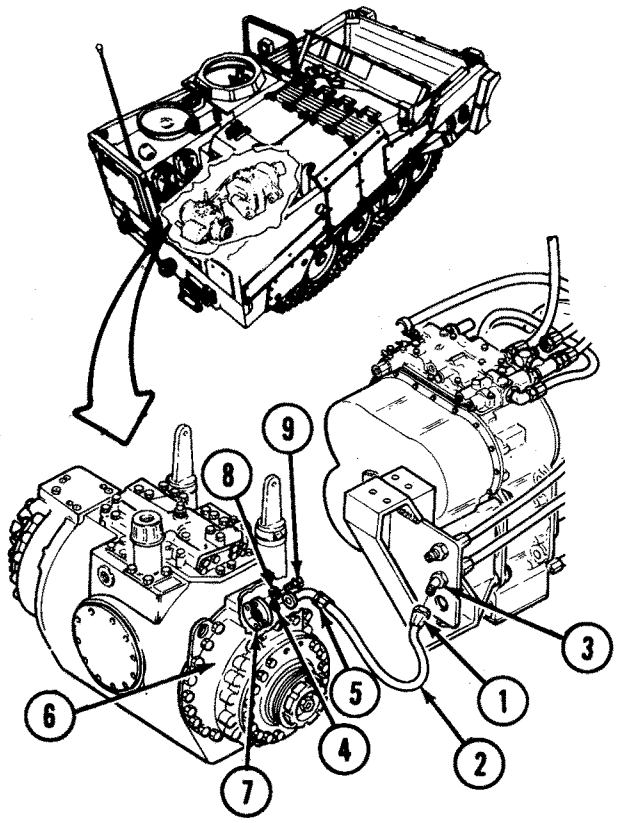
INSTALLATION

A Connect RH MID BHD FTG-3S hose end (1) of hose (2) to elbow (3).

Note

Apply lubricating oil to packings prior to installation.

B Install packing (4) and STEER UNIT BOT-3S hose end (5) of hose (2) on steer unit (6) with two fittings (7), four washers (8), and self-locking screws (9).



Note

Apply lubricating oil to packings prior to installation.

C Install packing (10) and elbow (11) on steer unit (6), and connect STEER UNIT FRONT-1S hose end (12) of hose (13) to elbow (11).

D Install clamp (14) and screw (15) on hose (13) and steer unit (6). Tighten screw (15) to 20-23 lb-ft (27-31 N·m).

E Connect QDISC-1S hose end (16) of hose (13) at quick-disconnect (17).

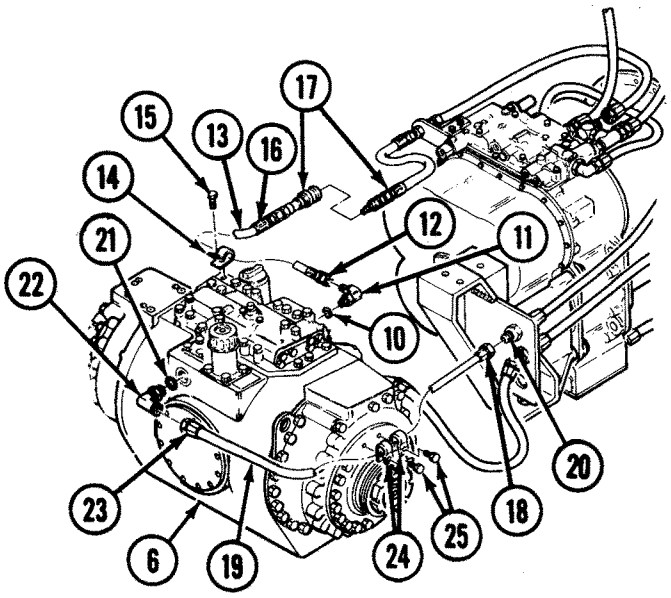
F Connect RH TOP BHD FTG-2S hose end (18) of hose (19) to adapter (20).

Note

Apply lubricating oil to packings prior to installation.

G Install packing (21) and elbow (22) on steer unit (6), and connect STEER UNIT REAR-2S hose end (23) of hose (19) to elbow (22).

H Install two clamps (24) on hose (19) and steer unit (6) with two screws (25). Tighten two screws (25) to 42-50 lb-ft (57-68 N·m).



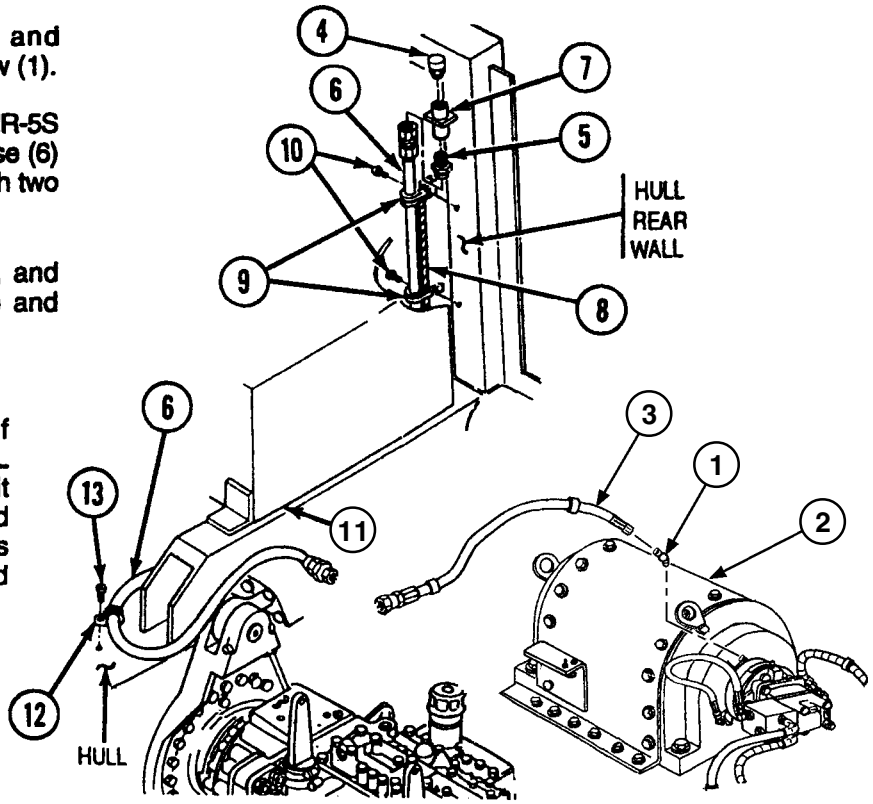
I Install elbow (1) on steer unit (2), and connect WINCH VENT hose (3) to elbow (1).

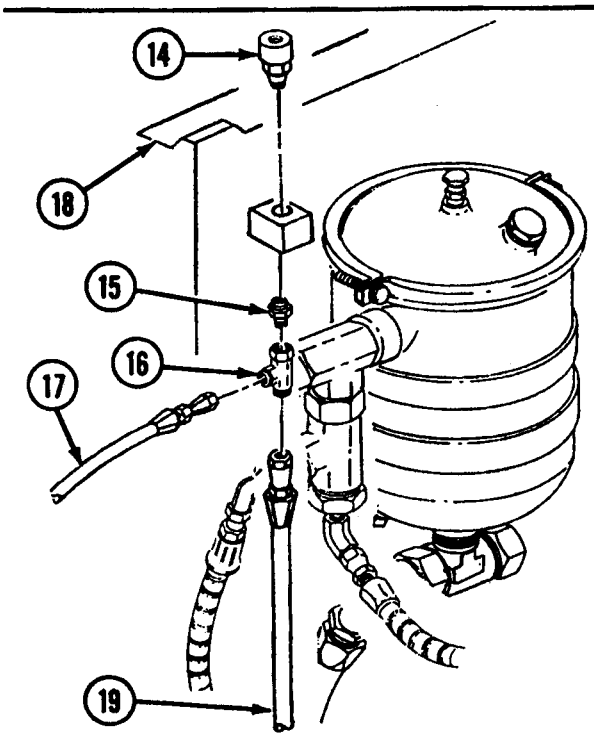
J Install breather (4), adapter (5), and BRTHR-5S hose (6) on connector (7), and secure hose (6) and wiring harness (8) to hull rear wall with two clamps (9) and screws (10).

K Route hose (6) under battery box (11), and secure hose (6) to hull with clamp (12) and screw (13).

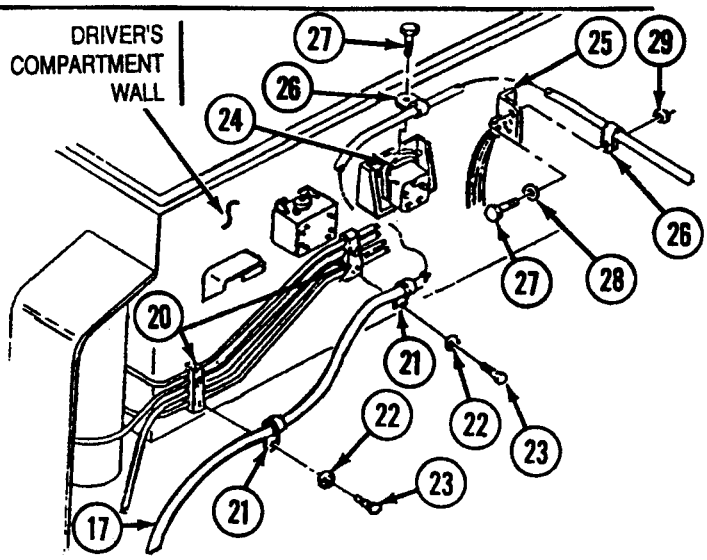
Note

There are two configurations of breather hoses. Perform steps L through Q on vehicles with steer unit and winch vented separately, and perform steps R through W on vehicles with steer unit and winch vented together.





L Install breather (14), adapter (15), tee (16), and hose (17) on filter support (18). Connect hose (19) to tee (16).



M Route hose (17) along driver's compartment wall, and secure hose (17) to two half block clamps (20) with clamps (21), lockwashers (22), and screws (23).

N Secure hose (17) to transmission shift control valve bracket (24) and wiring harness bracket (25) with two clamps (26), self-locking screws (27), washer (28), and nut (29).

O Install elbow (30) on steer unit valve body (31), and connect hose (17) to elbow (30).

P Secure hose (17) to steer unit valve body (31) and half block clamp (32) with two clamps (33), lockwasher (34), and screws (35) and (36).

Q Connect BRTHR-5S hose (6) to WINCH VENT hose (3) with union (37), and secure hose (6) to steer unit valve body (31) with clamp (38) and screw (39).

R Install adapter (40) and LH FINAL DR VENT-6S hose (41) on final driver track adjusting flange (42).

S Install elbow (43) and RH FINAL DR VENT-7S hose (44) on final drive track adjusting flange (42).

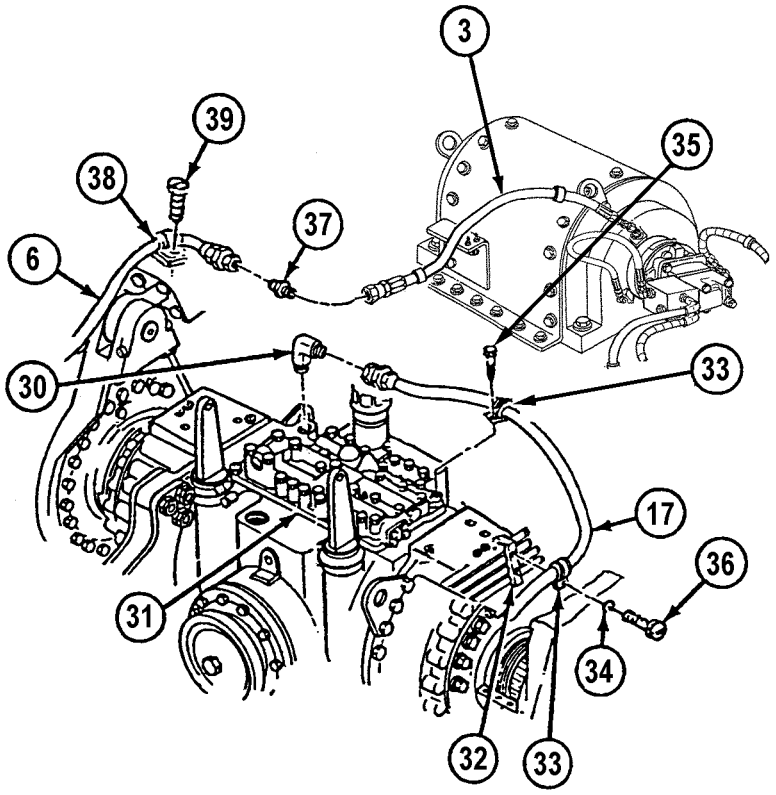
T Install bushing (45), nipple (46), cross (47), adapter (48), tee (49), and elbow (50) on steer unit valve body (31).

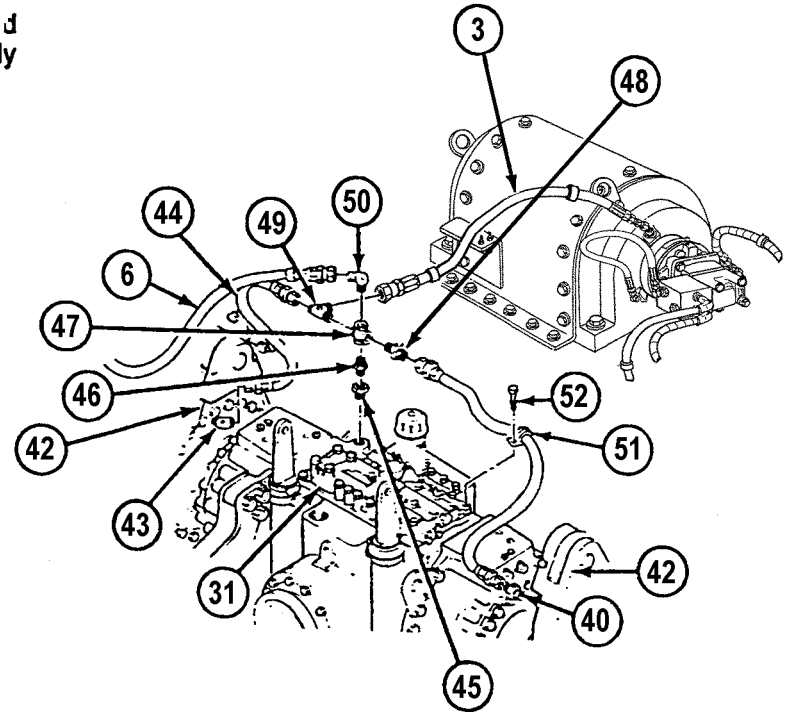
U Connect hoses (44) and (3) to tee (49).

V Connect hose (6) to elbow (50).

W Connect hose (41) to adapter (48), and secure hose (41) to steer unit valve body (31) with clamp (51) and screw (52).

FOLLOW-ON TASKS:
- Service steer unit (TM 5-2350-262-10).
- Install radiator (p 4-649).





STEER UNIT TORQUE LINK REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device and Suitable Chain

Materials:

Sealing Compound	Item 10 Appendix D
Sealing Compound Primer	Item 13 Appendix D

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

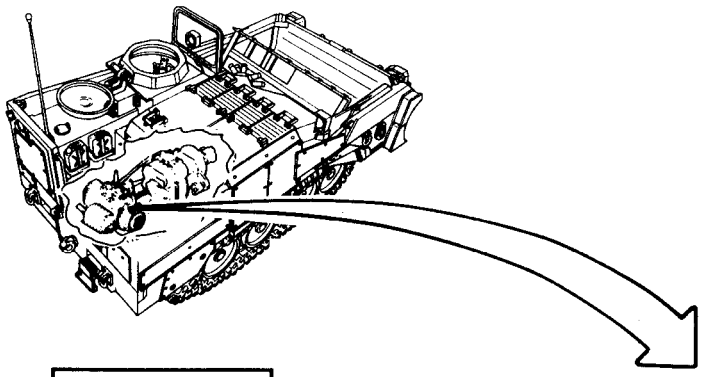
Equipment Condition:

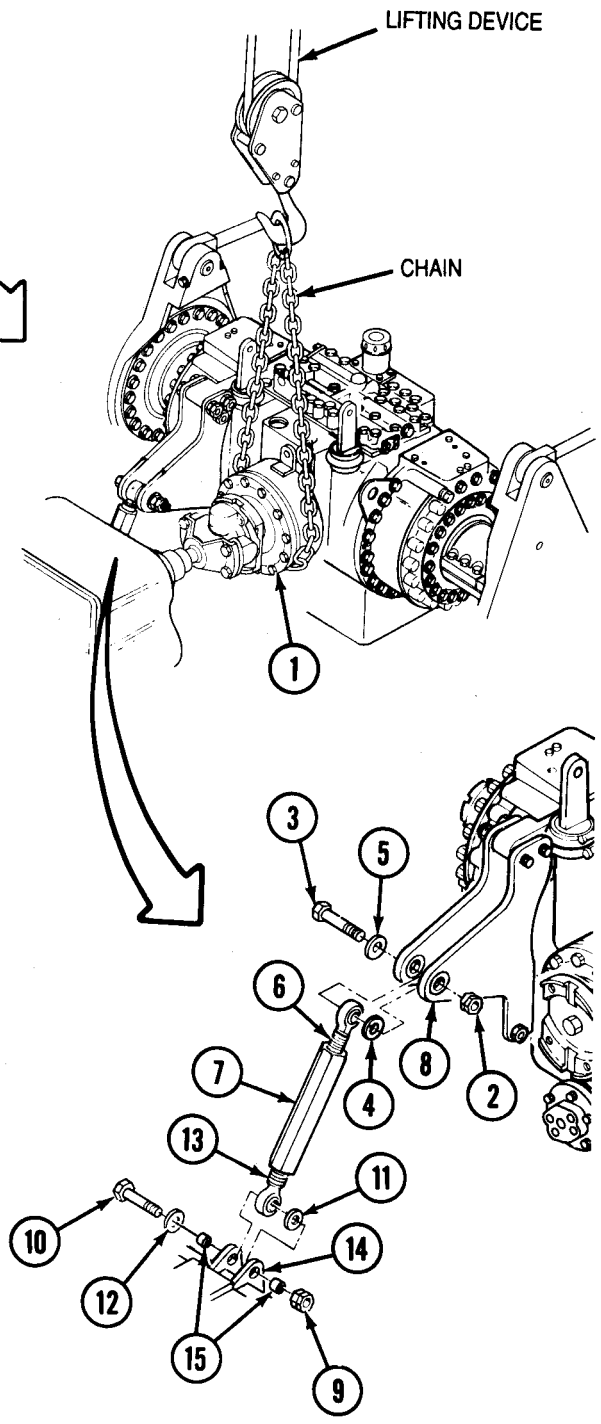
Reference	Condition Description
Page 4-55	Brake Linkage and Bracket Removed

General Safety Instructions:

WARNING

Lifting device must have a weight capacity greater than 1,316 lb (598 kg).





REMOVAL

WARNING

Lifting device must have a weight capacity greater than 1,316 lb (598 kg). Failure to comply may result in damage to equipment or injury to personnel.

A Position chain under steer unit input flange housing (1), and connect chain to lifting device.

CAUTION

Do not lift up on steer unit more than necessary to install torque link. Failure to comply may result in damage to equipment.

B Lift up on steer unit input flange housing (1), and remove nut (2), screw (3), spacer (4), washer (5), and rod bearing (6) of torque link (7) from steer unit bracket (8).

C Relieve tension on chain, and remove lifting device and chain from steer unit input flange housing (1).

D Remove nut (9), screw (10), spacer (11), washer (12), and rod bearing (13) of torque link (7) from hull bracket (14).

REPAIR

A Remove and replace rod bearings (6) and (13) from torque link (7), if worn or damaged.

B If bushings (15) are worn or damaged, remove and replace bushings (15) from steer unit bracket (8) and hull bracket (14) using hammer and drift.

INSTALLATION

A Temporarily install rod bearing (1) of torque link (2) on hull bracket (3) with screw (4) and nut (5). Do not tighten nut (5) at this time.

B Using straight edge or rod, check alignment of driveshaft (6) between steer unit (7) and transmission (8). If driveshaft (6) is in a straight line, go to step F.

WARNING

Lifting device must have a weight capacity greater than 1,316 lb (598 kg). Failure to comply may result in damage to equipment or injury to personnel.

C If steer unit (7) and transmission (8) are not aligned, position chain around steer unit input flange housing (9) and connect chain to lifting device.

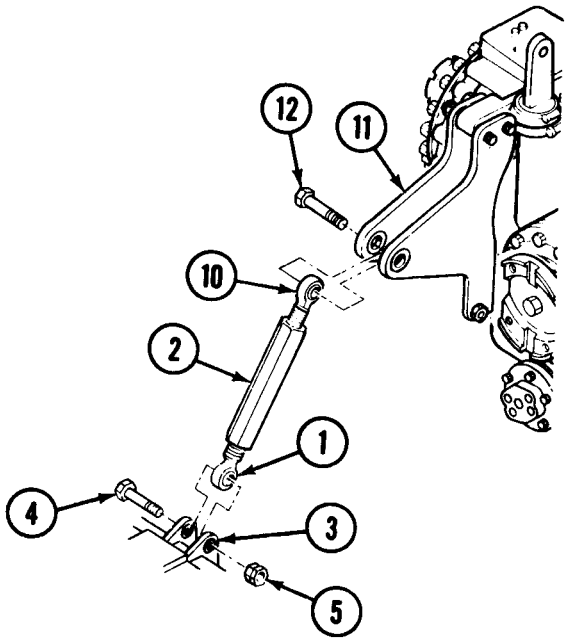
CAUTION

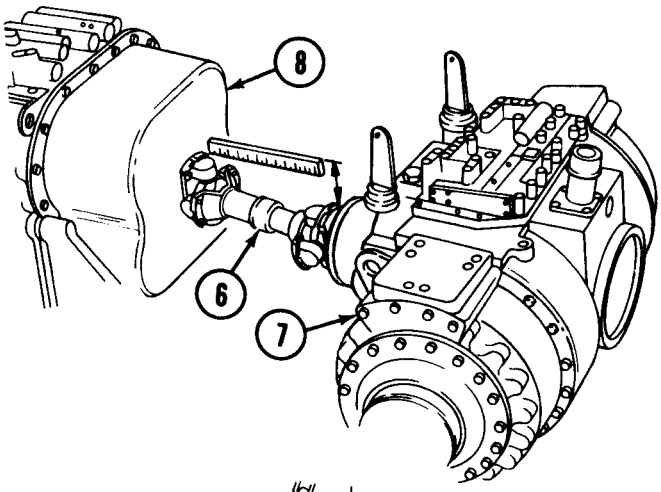
Do not lift up on steer unit more than necessary to install torque link. Failure to comply may result in damage to equipment.

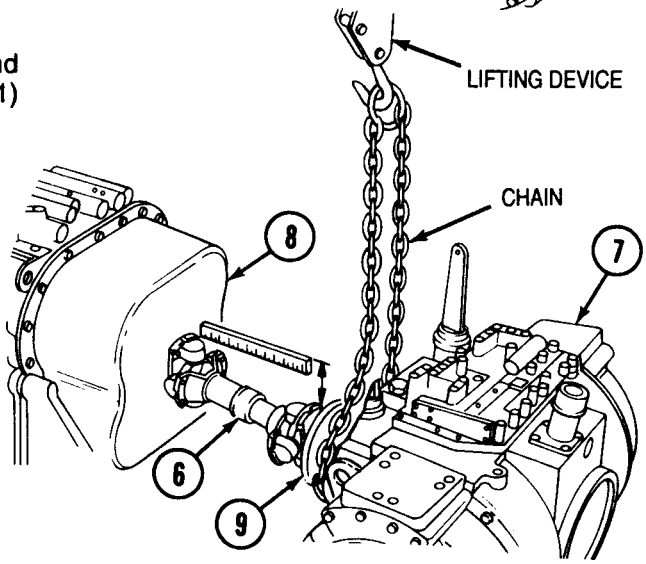
D Lift up on steer unit input flange housing (9) until driveshaft (6) is in a straight line.

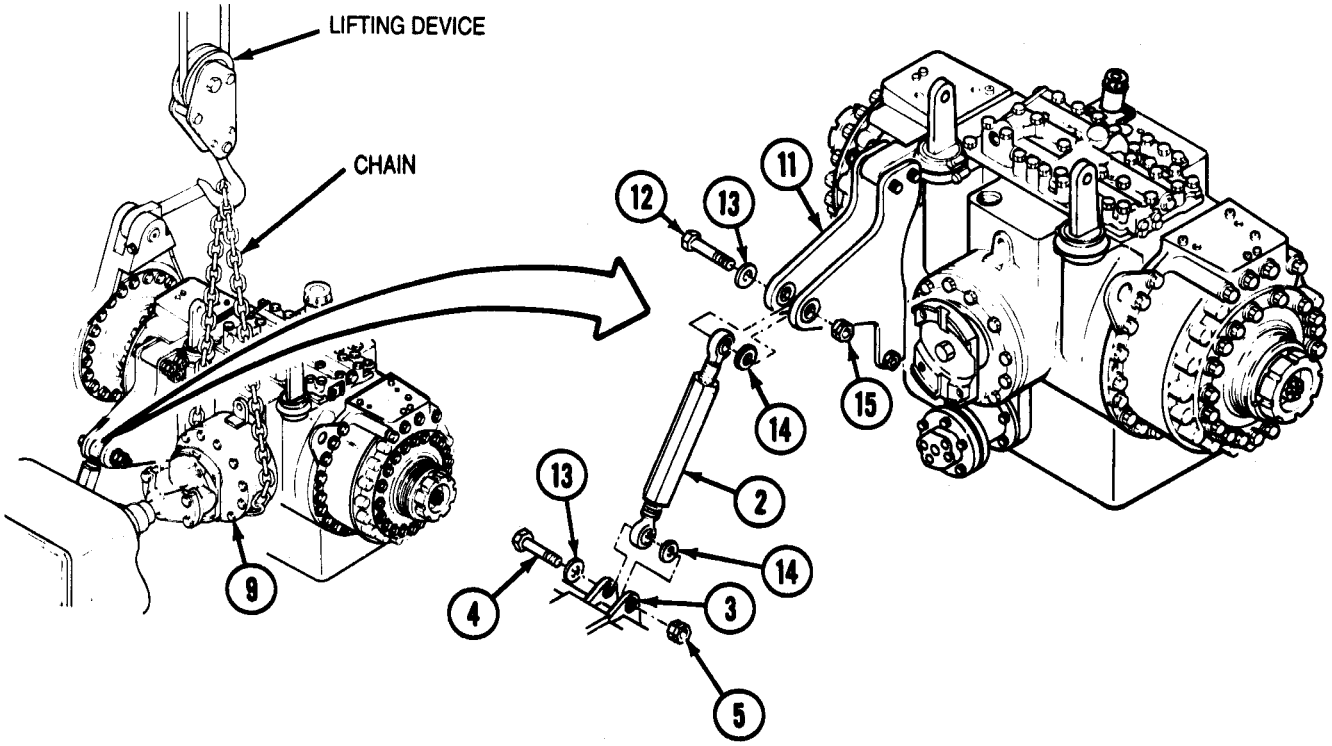
E Turn torque link (2) until upper rod bearing (10) can be installed on steer unit bracket (11) with screw (12).

F Remove nut (5), screws (4) and (12), and torque link (2) from steer unit bracket (11) and hull bracket (3).









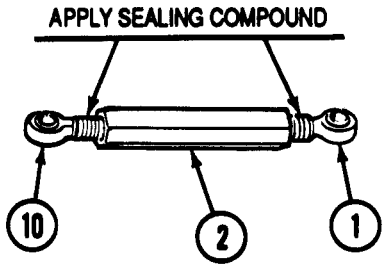
G Coat threads of rod bearings (1) and (10) with sealing compound primer and sealing compound.

CAUTION

Ensure spacers are installed on same side of brackets and rod ends. Failure to comply may result in damage to equipment.

Note

Screws are grade 8, 7/8-UNF threads.



H Install torque link (2) on steer unit bracket (11) and hull bracket (3) with two washers (13), spacers (14), screws (4) and (12), and nuts (5) and (15). Tighten nuts (5) and (15) to 100-120 lb-ft (136-163 N·m).

I Remove lifting device and chain from steer unit input flange housing (9).

FOLLOW-ON TASK:
Install brake linkage and bracket (p 4-57).

STEER UNIT OIL LEVEL GAUGE ROD AND OIL FILLER NECK REPLACEMENT

This task covers:

a. Removal

b. Cleaning

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Drycleaning Solvent	Item 31 Appendix D

Parts:

Gasket

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

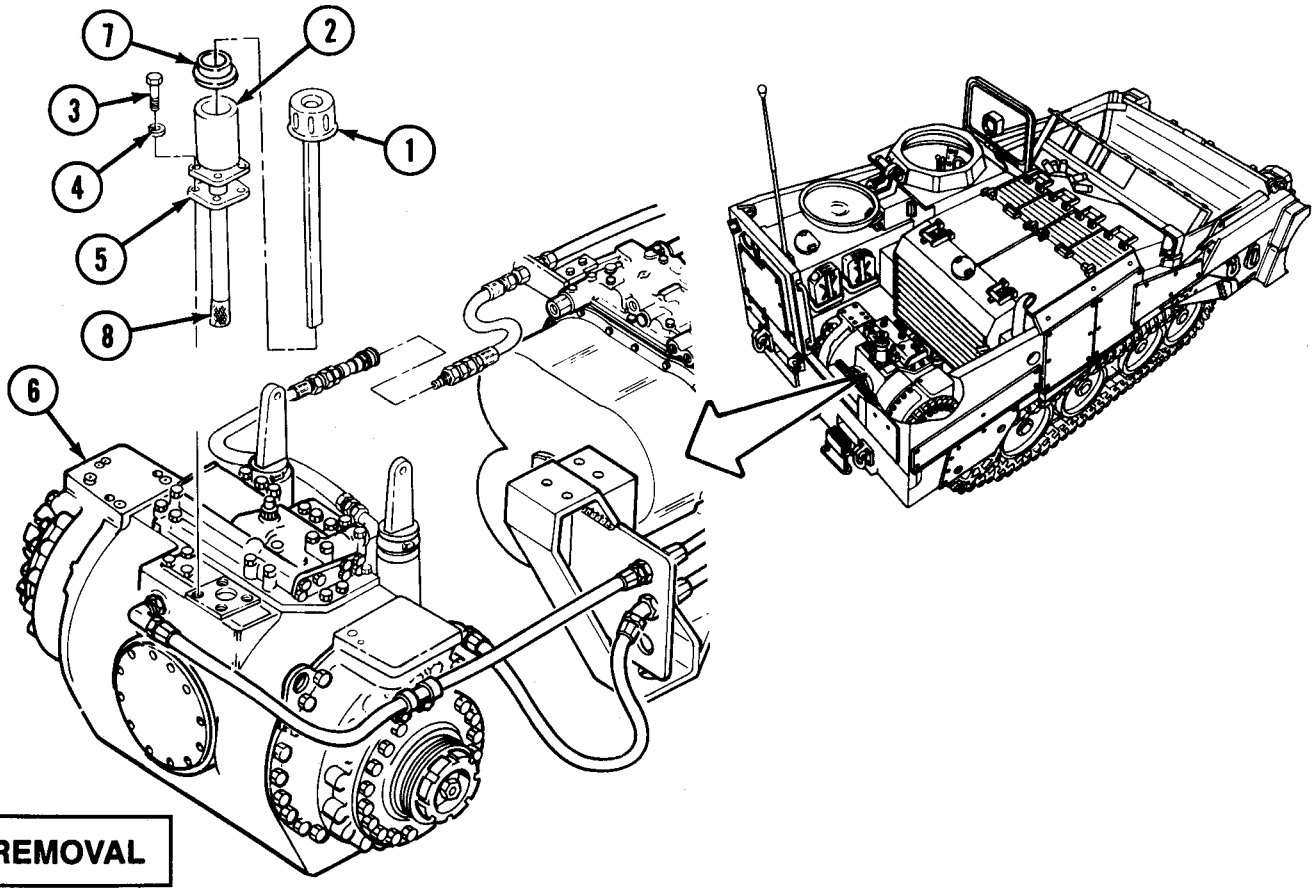
Equipment Condition:

Reference	Condition Description
Page 4-361	Rear Floor Plates Removed

General Safety Instructions:

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.



REMOVAL

A Remove liquid level gauge rod (1) from oil filler neck (2).

B Remove four screws (3), lockwashers (4), filler neck (2), and gasket (5) from steer unit (6). Discard gasket (5) and lockwashers (4).

C Remove gasket (7) from filler neck (2) and replace if damaged.

CLEANING

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.

Clean screen (8) at bottom of filler neck (2) with drycleaning solvent. Allow to air dry.

INSTALLATION

A Install gasket (7) on filler neck (2).

B Install gasket (5) and filler neck (2) on steer unit (6) with four lockwashers (4) and screws (3).

C Install liquid level gauge rod (1) on filler neck (2).

FOLLOW-ON TASK:
Install rear floor plates (p 4-361).

STEER UNIT BRAKE LEVER ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Cotter Pin (2)

Parts Reference:

TM 5-2350-262-24P	Group AF Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-161	Brakes Weak or Inoperative
Page 3-170	Brakes Pull to One Side

Reference:

TM 5-2350-262-10

Equipment Condition:

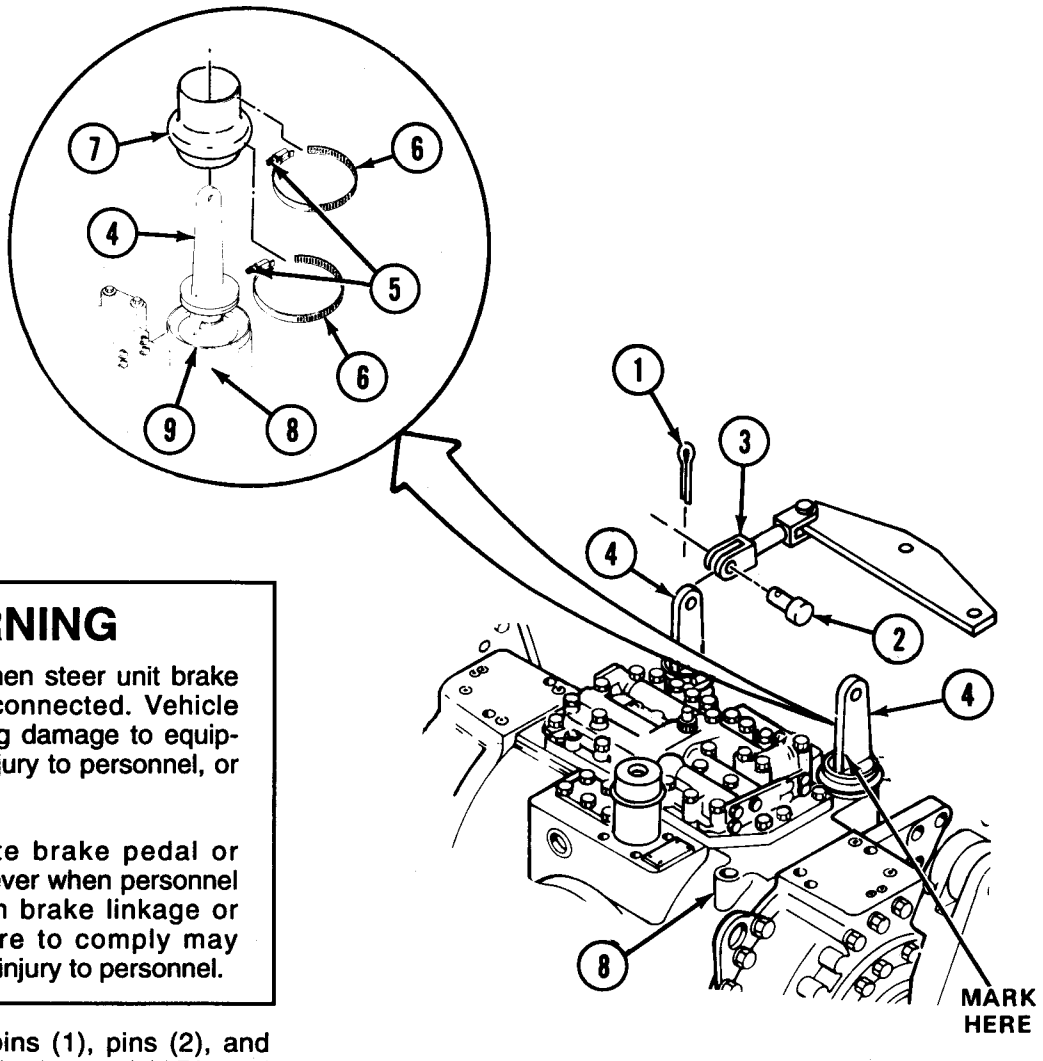
Reference	Condition Description
TM 5-2350-262-10	Parking Brake Released
Page 4-356	Rear Floor Plates Supports Removed

General Safety Instructions:

WARNING

- Block tracks when steer unit brake levers are disconnected.
- Do not operate brake pedal or parking brake lever when personnel are working on brake linkage or bracket.

ADJUSTMENT



WARNING

- Block tracks when steer unit brake levers are disconnected. Vehicle can roll, causing damage to equipment, severe injury to personnel, or death.
- Do not operate brake pedal or parking brake lever when personnel are working on brake linkage or bracket. Failure to comply may result in severe injury to personnel.

A Remove two cotter pins (1), pins (2), and clevises (3) from brake levers (4). Discard cotter pins (1).

B Mark rear face of both brake levers (4) as reference points.

C Loosen four screws (5), and remove four clamps (6) and two boots (7) from brake levers (4) and steer unit (8).

CAUTION

- Ensure each brake lever turns at least ten full turns before bottoming out, on brakes will be out of adjustment.
- Ensure threaded bushing does not turn when brake lever turns. Failure to comply may result in damage to equipment.

D Turn each brake lever (4) clockwise ten turns or more until it bottoms out.

E Turn each brake lever (4) 9-3/4 to 10-1/4 full turns counterclockwise to position brake levers (4). Ensure threaded bushing (9) does not turn.

F Install two boots (7) on brake levers (4) and steer unit (8) with four clamps (6). Position four screws (5) on inboard side of brake levers (4), and tighten screws (5).

Note

Ensure straight pins are installed with heads facing in to prevent interference with ejector cylinder.

G Connect two clevises (3) to brake levers (4) with pins (2).

H Secure two pins (2) with cotter pins (1).

FOLLOW-ON TASKS:

- Install rear floor plates supports (p 4-357).
- Set parking brake (TM 5-2350-262-10).

STEER UNIT BRAKE LEVER BOOT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Cotter Pin (2)

Materials:

Grease, GAA	Item 19 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AF Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Parking Brake Released
Page 4-356	Rear Floor Plates Supports Removed

General Safety Instructions:

WARNING

Block tracks when steer unit brake levers are disconnected.

REMOVAL

WARNING

Block tracks when steer unit brake levers are disconnected. Vehicle can roll, causing damage to equipment, severe injury to personnel, or death.

A Remove two cotter pins (1), straight pins (2), and clevises (3) from brake levers (4). Discard cotter pins (1).

B Loosen four screws (5), and remove four clamps (6) and two boots (7) from brake levers (4) and steer unit (8).

INSTALLATION

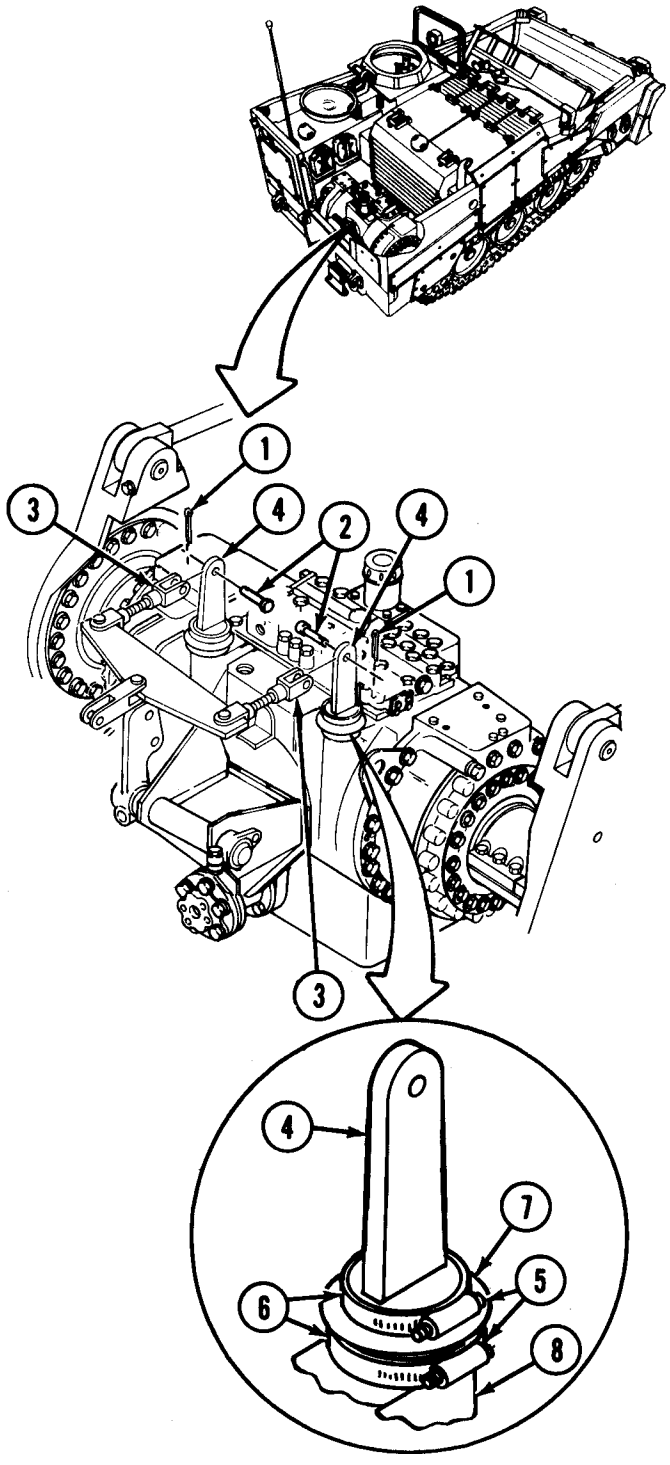
A Pack two boots (7) with grease, and install two boots (7) on brake levers (4) and steer unit (8).

B Install four clamps (6) on two boots (7). Position four screws (5) on inboard side of brake levers (4), and tighten screws (5).

Note

Ensure straight pins are installed with heads facing in to prevent interference with ejector cylinder.

C Connect two clevises (3) to brake levers (4) with two straight pins (2) and cotter pins (1).



FOLLOW-ON TASKS:

- Install rear floor plates supports (p 4-357).
- Set parking brake (TM 5-2350-262-10).

DRIVESHAFT REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Cleaning
d. Inspection
e. Assembly
f. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Grease	Item 19 Appendix D
Molybdenum Disulfide Grease	Item 21 Appendix D
Fibrous Rope	Item 29 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts:

Packing, Felt

Self-locking Screw (8)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Equipment Condition:

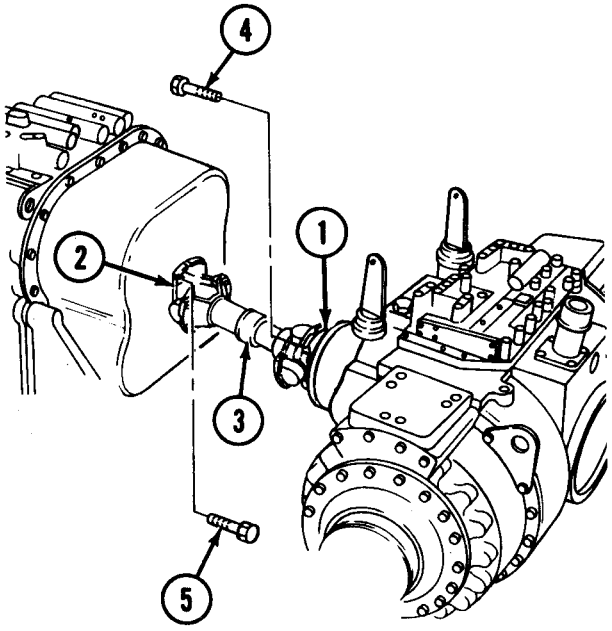
Reference	Condition Description
Page 4-25	Air Reservoir Removed
Page 4-356	Rear Floor Plates Supports Removed
Page 4-650	Radiator Removed

General Safety Instructions:

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

REMOVAL



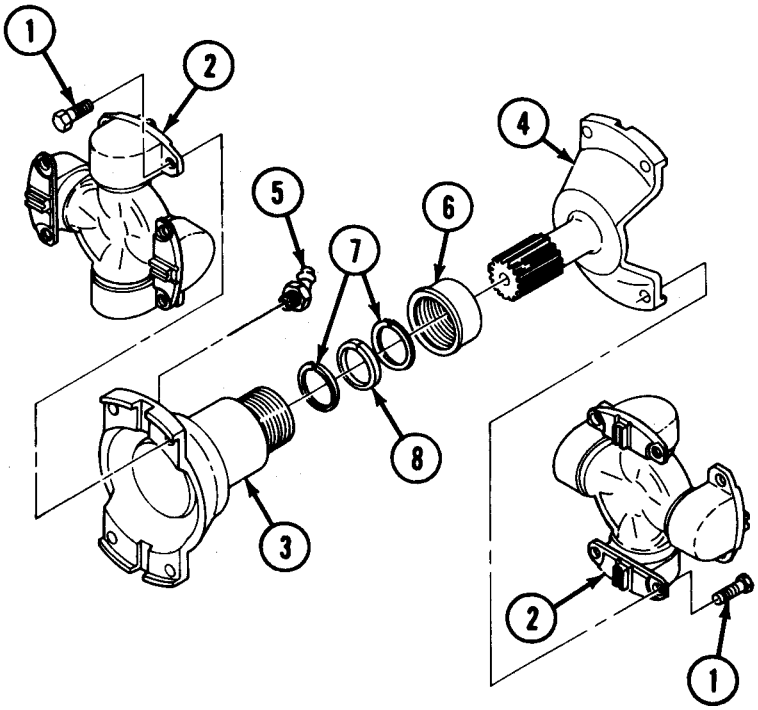
A Place crowbar through steer unit input shaft flange (1) or transmission output shaft flange (2) to prevent driveshaft (3) from turning, and remove four self-locking screws (4) from steer unit input shaft flange (1). Discard self-locking screws (4).

B Support driveshaft (3) with rope or suitable lifting device.

C Remove four self-locking screws (5) from transmission output shaft flange (2). Discard self-locking screws (5).

D Collapse driveshaft (3) slightly, and remove driveshaft (3) from vehicle. Remove rope or lifting device.

DISASSEMBLY



A Place driveshaft assembly in suitable vise, and remove eight screws (1) and two U-joints (2) from driveshaft yokes (3) and (4). Remove driveshaft assembly from vise.

B Remove lubrication fitting (5) from yoke (3).

C Remove packing nut (6) from driveshaft yoke (3), and separate driveshaft yokes (3) and (4).

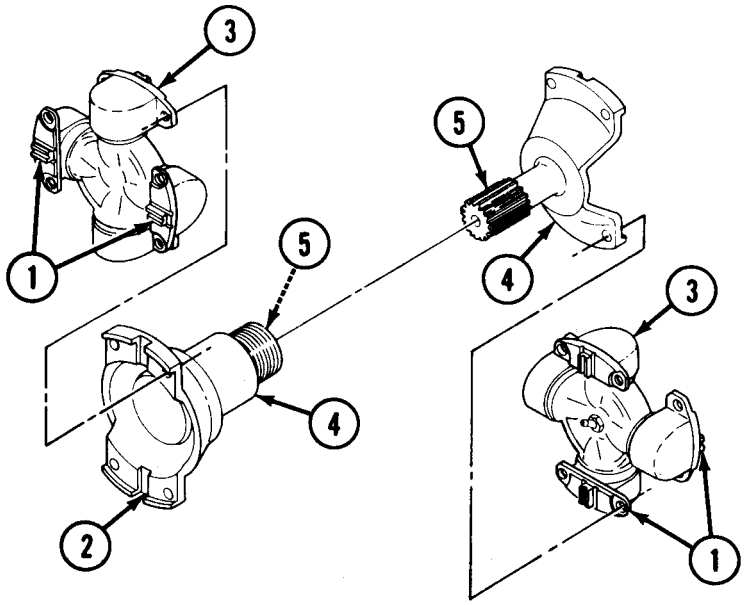
D Remove two split washers (7) and felt packing (8) from packing nut (6). Discard felt packing (8).

CLEANING

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.

Using drycleaning solvent, clean all metal parts.



INSPECTION

A Inspect eight keys (1) and four keyways (2) of two U-joints (3) and driveshaft yokes (4) for burrs, cracks, or other damage. Replace damaged U-joints (3) and yokes (4).

B Inspect splines (5) for damage. Replace yokes (4) if splines (5) are damaged.

ASSEMBLY

A Install felt packing (1) and two split washers (2) on packing nut (3). Coat splines (4) with grease.

B Install packing nut (3) on driveshaft yoke (5), and install driveshaft yoke (6) on driveshaft yoke (5) with packing nut (3). Tighten packing nut (3) hand-tight.

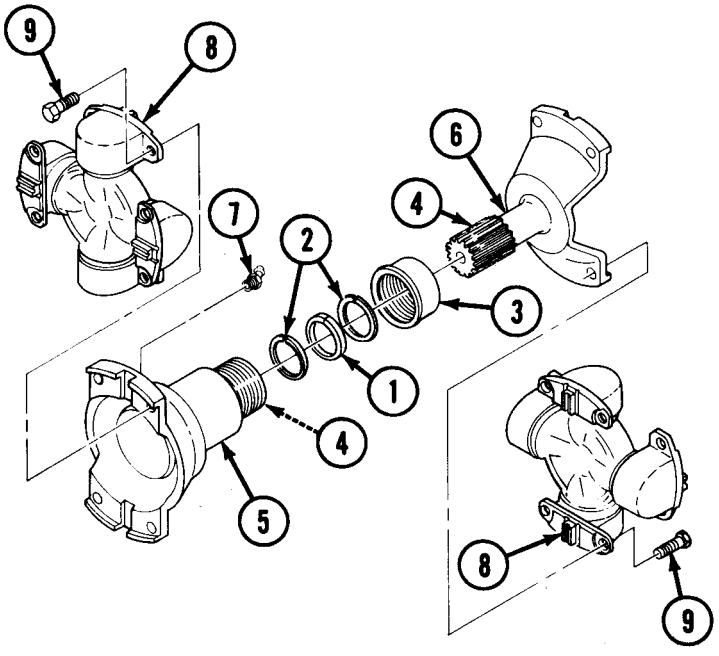
C Install lubrication fitting (7) on driveshaft yoke (5).

Note

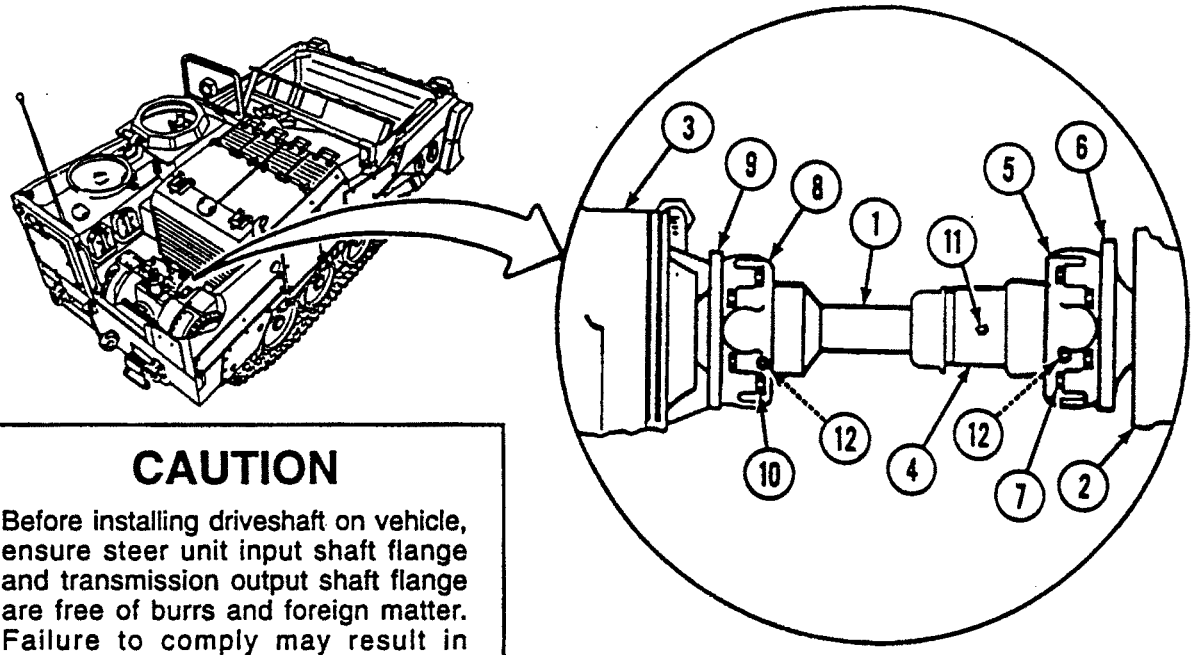
Yokes and keyways must align with each other. Grease fittings must be oriented in the same direction on inside of spiders.

D Place driveshaft assembly in suitable vise, and install two U-joints (8) on driveshaft yokes (5) and (6) with eight screws (9). Tighten eight screws (9) to 90-95 lb-ft (122-129 N·m).

F Remove driveshaft assembly from vise.



INSTALLATION



CAUTION

Before installing driveshaft on vehicle, ensure steer unit input shaft flange and transmission output shaft flange are free of burrs and foreign matter. Failure to comply may result in damage to equipment.

Note

Yokes and keyways must align with each other.

A Support driveshaft (1) with rope or suitable lifting device.

B Position driveshaft (1) in vehicle between transmission (2) and steer unit (3), with larger driveshaft yoke (4) closest to transmission.

CAUTION

Do not seat driveshaft spiders on flanges by tightening eight screws. Seat spiders only with a soft-faced hammer, soft drift, or wood block. Failure to comply may result in damage to equipment.

C Seat U-joint (5) on transmission output flange (6) with soft-nosed hammer, brass drift, or wood block, and install four self-locking screws (7) on U-joint (5) and transmission output flange (6).

D Seat driveshaft U-joint (8) on steer unit input shaft flange (9) with soft-nosed hammer, brass drift, or wood block, and install four self-locking screws (10) on U-joint (8) and steer unit input shaft flange (9).

E Remove rope or holding device from driveshaft (1).

Note

- Driveshaft will have to be rotated to gain access to screws during tightening.
- To prevent driveshaft from turning while tightening screws, place crowbar through steer unit input shaft flange or transmission output shaft flange.

F Tighten screws (7) and (10) to 90-95 lb-ft (122-129 N·m).

G Apply molybdenum disulfide grease to lubrication fitting (11).

Note

4-701 There are two configurations of U-joints. The new configuration is a lube for life U-joint. Perform step H for the old configuration.

H Apply grease to two lubrication fittings (12).

FOLLOW-ON TASKS:

- Install air reservoir (p 4-26).
- Install rear floor plates supports (p 4-357).
- Install radiator (p 4-652).

FINAL DRIVES DRAIN AND FILL

This task covers:

a. Draining

b. Filling

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-355	Rear Floor Plate Supports Removed

General Safety Instructions:

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or severe injury to personnel.

DRAINING

Note

- This procedure is the same for both sides. The left side is shown.
- Drain oil only when hot.

A Remove drainplug (1) and drain final drive oil into suitable container.

B After draining, clean drainplug (1) in drycleaning solvent (SD-3) and install.

C Tighten drainplug (1) to 75-83 lb-ft (102-113 N·m).

FILLING

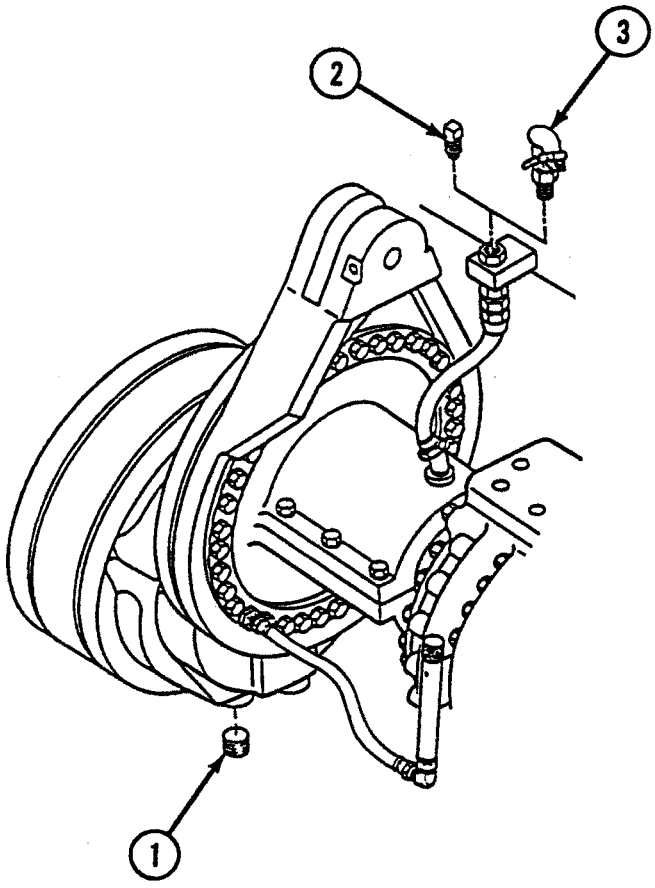
Note

- This procedure is the same for both sides. The left side is shown.
- Perform steps A and B for old breather hose. Perform step C for new breather hose.

A Remove oil fill plug (2) and fill with 2 gal. (7.6 L) of GO-80/90.

B Clean fill plug (2) in drycleaning solvent (SD-3), wipe dry, and install.

C Open filler cap (3) and fill with 2 gal. (7.6 L) of GO-80/90. Close filler cap (3).



FOLLOW-ON TASK:
Replace rear floor plates supports (p 4-355).

FINAL DRIVE LINES, FITTINGS, AND BREATHERS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Wrench Set, Crowfoot	5120-01-302-4387

Materials:

Caps and Plugs	Item 7 Appendix D

Parts:

Locknut (2)

Parts Reference:

TM 5-2350-62-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 3-82	Hydraulic Pressure Relieved
Page 4-360	Rear Floor Plates Removed

REMOVAL

CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of oil. Failure to comply may result in damage to equipment.

Note

Perform steps A through C on vehicles equipped with final drive breather hoses vented in line with steer unit.

A Disconnect hose (1) from two adapters (2), and remove two adapters (2) from tee (3) and final drive housing (4).

B Remove screw (5), clamp (6), and hose (1) from steer unit valve body (7).

C Remove hose (8) from tee (9) and elbow (10), and remove elbow (10) from final drive housing (4).

Note

The new final drive breather configuration has a 45° elbow added to the left breather/filler hose connector.

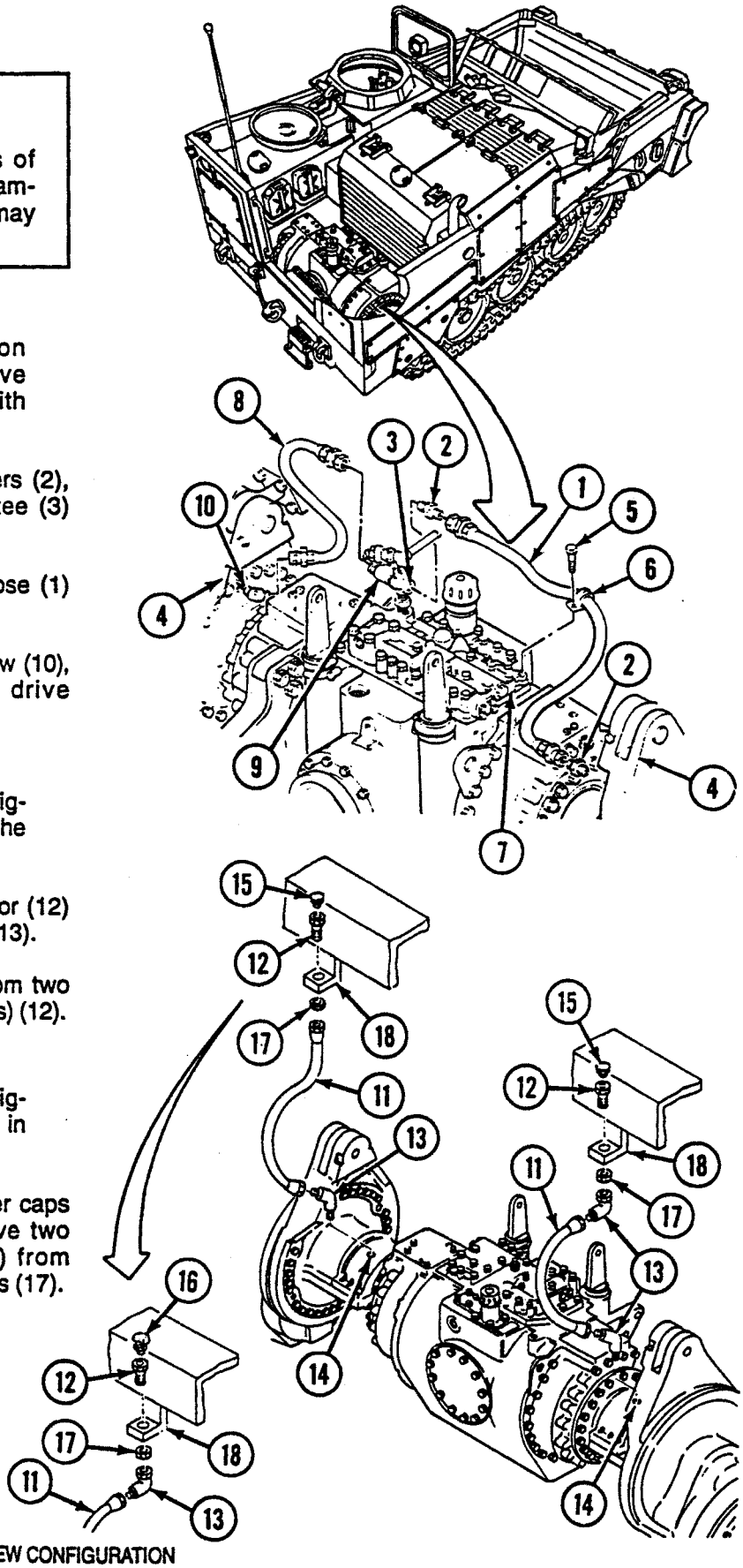
D Remove two hoses (11) from connector (12) and three elbows (13) or four elbows (13).

E Remove three or four elbows (13) from two final drive cap ports (14) and connector(s) (12).

Note

The new final drive breather configuration has two vented filler caps in place of plugs.

F Remove two plugs (15) or vented filler caps (16) from connectors (12), and remove two locknuts (17) and connectors (12) from support brackets (18). Discard locknuts (17).



NEW CONFIGURATION

INSTALLATION

Note

The new final drive breather configuration has two vented filler caps in place of plugs.

A Install two connectors (1) on support brackets (2) with two locknuts (3), and install two plugs (4) or vented filler caps (5) on connectors (1).

Note

The new final drive breather configuration has a 45° elbow added to the left breather/filler hose connector.

B Install three or four elbows (6) on two final drive cap ports (7) and connector(s) (1).

C Install hose (8) (upper end marked LH FLOOR-4S; lower end marked LH FINAL DR FILLER-4S) on connector (1) and elbow (6) or two elbows (6), and install hose (9) (upper end marked RH FLOOR-8S; lower end marked RH FINAL DR FILLER-8S) on two elbows (6).

Note

Perform steps D through F on vehicles equipped with final drive breather hoses vented in line with steer unit.

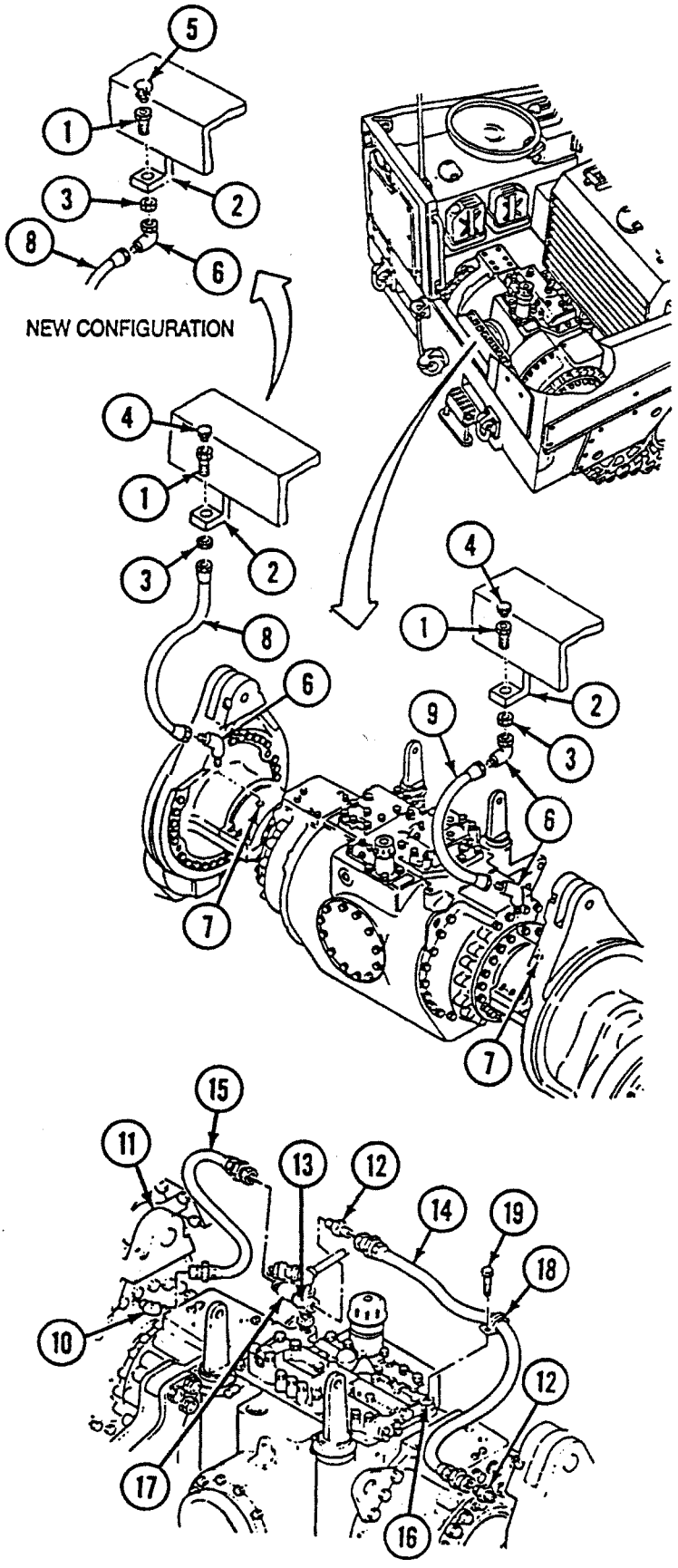
D Install elbow (10) on track adjusting flange (11), and install two adapters (12) on track adjusting flange (11) and tee (13).

E Install hose (14) (left end marked LH FINAL DR VENT-6S: right end marked XCONN-5S/6S/7S) on adapters (12), and install hose (15) (left end marked XCONN-5S/6S/7S; right end marked RH FINAL DR VENT-7S) on elbow (10) and tee (16).

F Secure hose (14) to steer unit valve body (17) with clamp (18) and screw (19).

FOLLOW-ON TASKS:

- Service final drives (TM 5-2350-262-10).
- Install rear floor plates (p 4-360).



FINAL DRIVE DIPSTICK REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

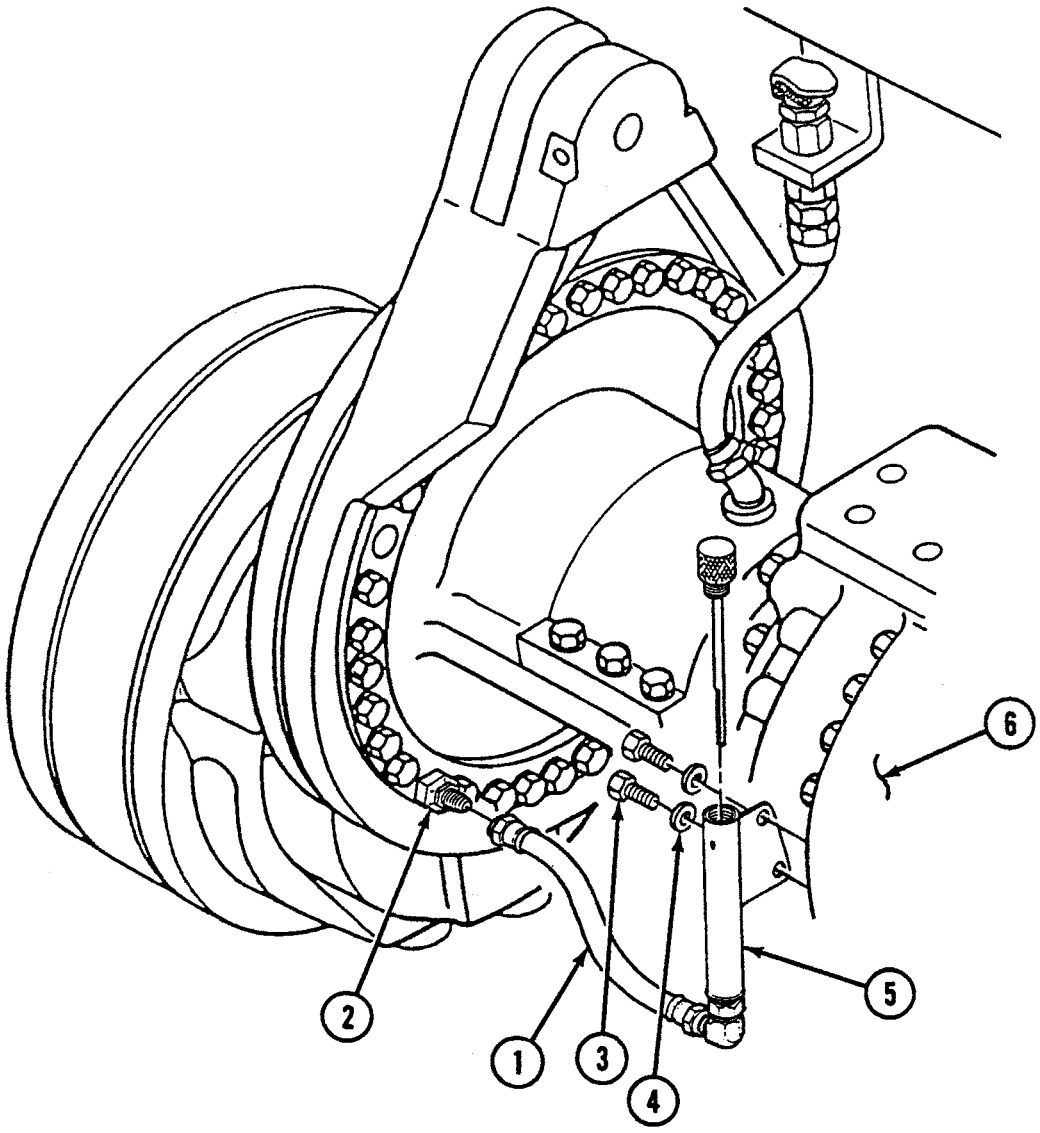
Construction Equipment Repairer 62B10

Reference

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 4-355	Rear Floor Plate Supports Removed



REMOVAL

Note

- Replacement of final drive dipstick is the same for both sides. The left side is shown.
- Have suitable container ready to catch oil.

A Disconnect hose (1) from oil level screw (2) and cap oil level screw (2).

B Remove two capscrews (3), washers (4), and dipstick housing (5) from steer unit cover (6).

INSTALLATION

A Install dipstick housing (5) on steer unit cover (6) with two washers (4) and capscrews (3).

B Connect hose (1) on oil level screw (2).

FOLLOW-ON TASKS:

- Add oil to final drive (TM 5-2350-262-10).
- Install rear floor plate supports (p 4-355).

FINAL DRIVES DISCONNECT AND CONNECT

This task covers:

a. Disconnect

b. Connect

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Spacer	5365-01-186-8009
Spanner Wrench	5120-01-229-9134

Materials:

Adhesive	Item 4 Appendix D
Adhesive Sealant	Item 5 Appendix D
Caps and Plugs	Item 7 Appendix D

Parts:

Self-locking Screw (12)

Parts Reference:

TM 5-2350-262-24P Group AU

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-360	Rear Floor Plates Removed
Page 4-355	Rear Floor Plates Supports Removed
Page 4-748.1	Final Drive Dipstick Removed

General Safety Instructions:

WARNING

Block track or roadwheels before disconnecting final drives.

DISCONNECT

WARNING

Block track or roadwheels before disconnecting final drives. Vehicle can roll, causing damage to equipment, severe injury to personnel, or death.

CAUTION

- Drivetrain components can be damaged if the final drive input shafts are not disconnected from steer unit before towing vehicle.
- Cap or plug all ports and ends of hoses and tubes to prevent contamination of oil. Failure to comply may result in damage to equipment.

Note

- Both final drive input shafts are disconnected the same way. The right side is shown here.
- If disconnecting the left final drive input shaft, the new final drive breather configuration has a 45° elbow added to the left breather/ filler hose connector.

A Remove right final drive fill hose (1) from elbows (2) and (3).

Note

Perform step B on vehicles equipped with final drive breather hoses vented in line with steer unit.

B Disconnect final drive breather hose (4) from elbow (5), and remove elbow (5) from final drive housing (6).

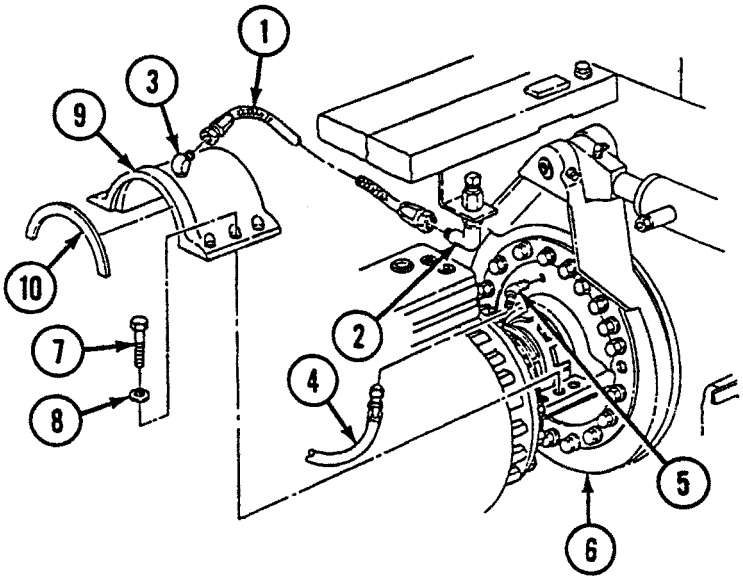
C Remove six self-locking screws (7), washers (8), final drive saddle cap (9), and gasket (10) from final drive housing (6).

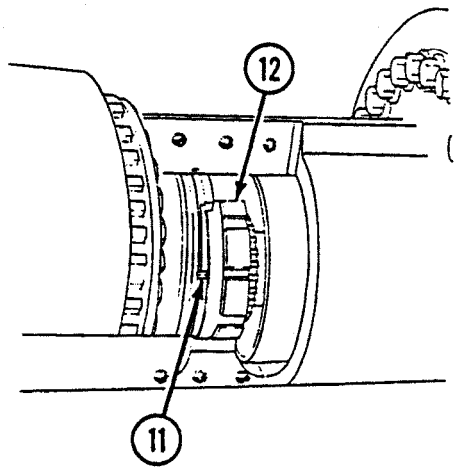
D Using screwdriver, bend up corners (11) of nut (12).

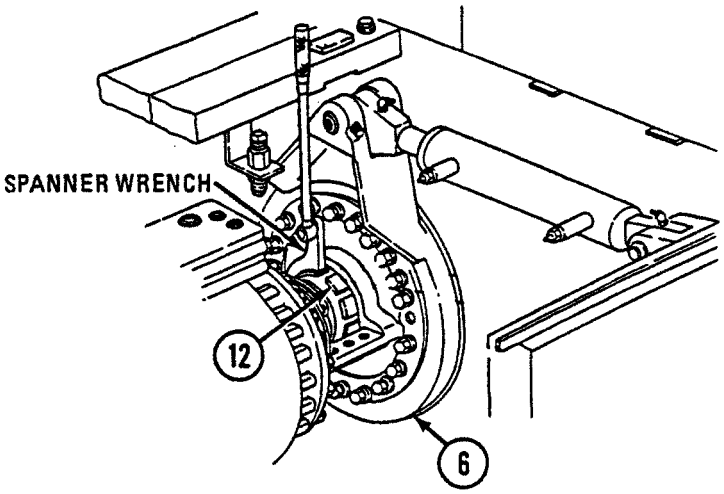
Note

If nut on final drive input shaft is damaged, notify direct support maintenance.

E Using spanner wrench, loosen nut (12), and slide nut (12) toward final drive housing (6).







F Separate final drive input shaft (13) from steer unit coupling (14).

Note

Perform steps G and H only if towing vehicle.

G Install spacer (15) on final drive housing (6) to keep final drive input shaft (13) from hitting steer unit components when towing vehicle.

CAUTION

Surfaces of final drive saddle caps and flange must be clean and free of paint and dirt. Failure to comply may result in damage to equipment.

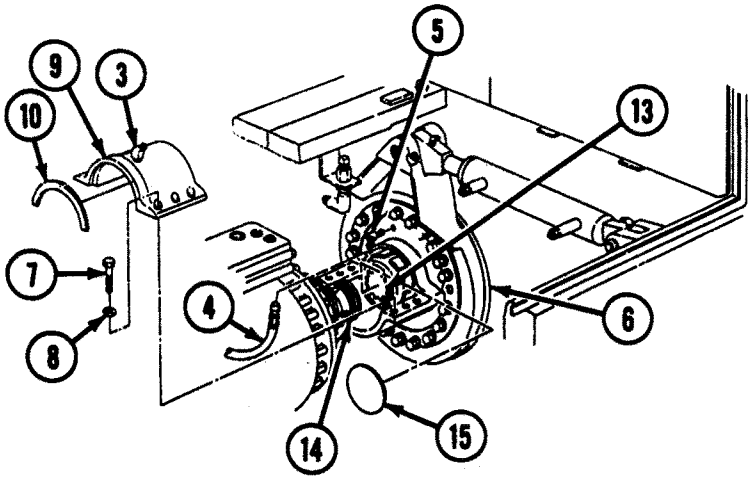
H Install final drive saddle cap (9) and gasket (10) on final drive housing (6) with six washers (8) and self-locking screws (7).

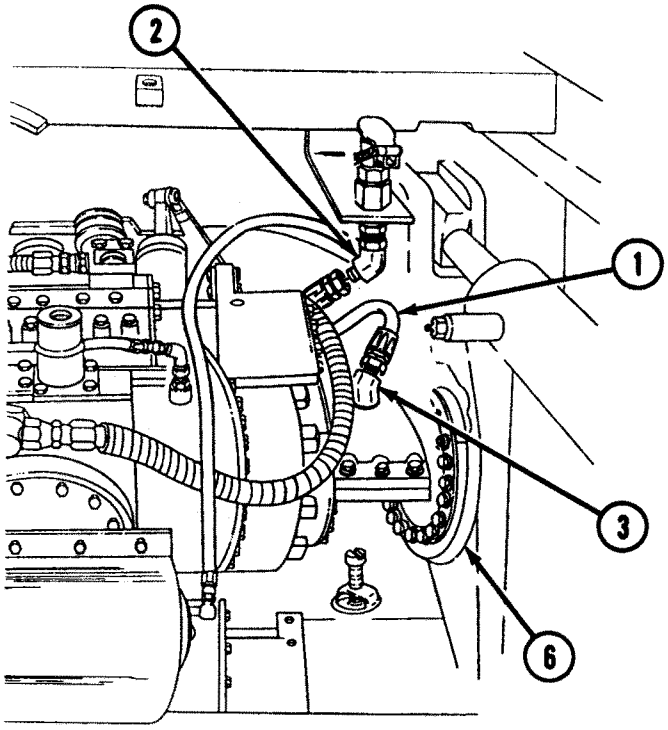
Note

Perform step I on vehicles equipped with final drive breather hoses vented in line with steer unit, and perform step J on vehicles with vented filler caps in place of plugs.

I Install cap on elbow (3), install elbow (5) on final drive housing (6), and connect final drive breather hose (4) to elbow (5).

J Install final drive breather/filler hose (1) on elbows (2) and (3).





CONNECT

Note

- Both final drive input shafts are connected the same way. The right side is shown here.
- If plates were installed on final drive housings for towing vehicle, perform steps A through C for each side.
- Perform step A on vehicles with vented filler caps in place of plugs, and perform step B on vehicles equipped with final drive breather hoses vented in line with steer unit.

A Remove final drive breather/filler hose (1) from elbows (2) and (3).

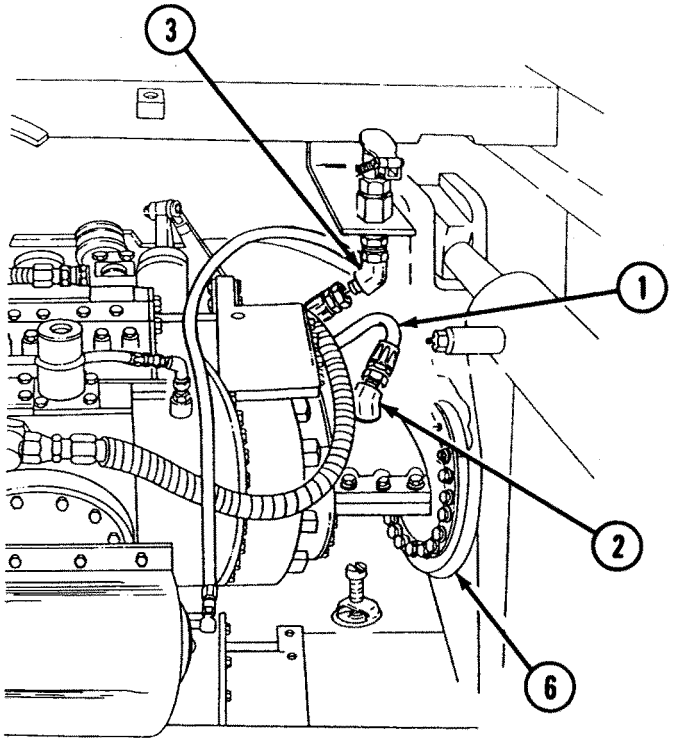
B Disconnect final drive breather hose (4) from elbow (5), remove elbow (5) from final drive housing (6), and remove cap from elbow (2).

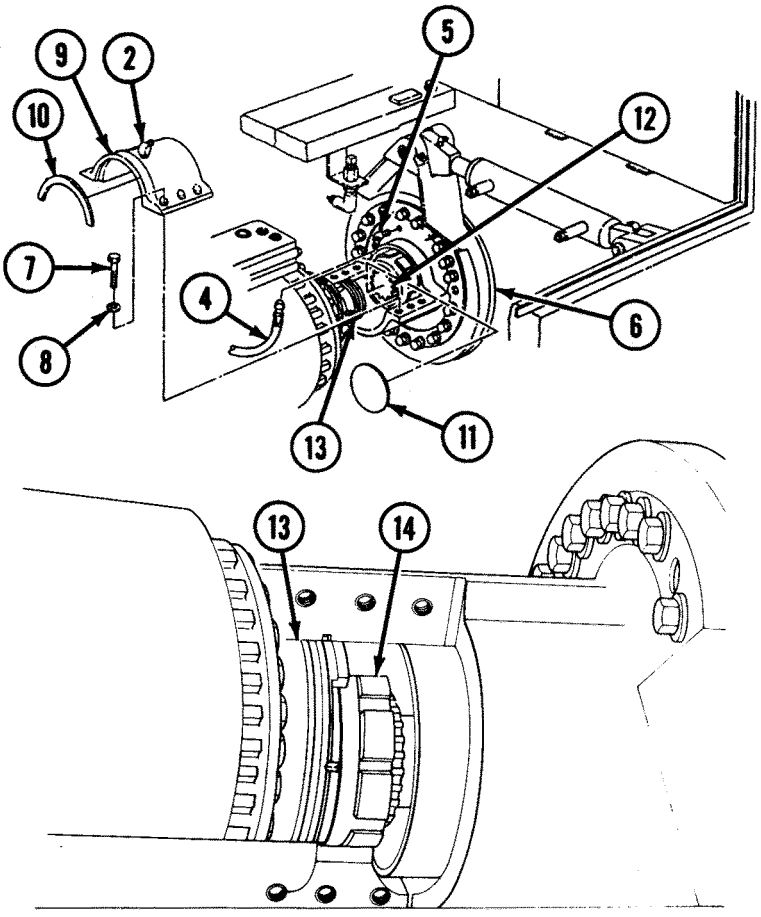
C Remove six self-locking screws (7), washers (8), final drive saddle cap (9), gasket (10), and spacer (11) from final drive housing (6). Discard self-locking screws (7).

Note

It may be necessary to use a mirror and to rotate driveshaft when aligning input shaft and steer unit coupling.

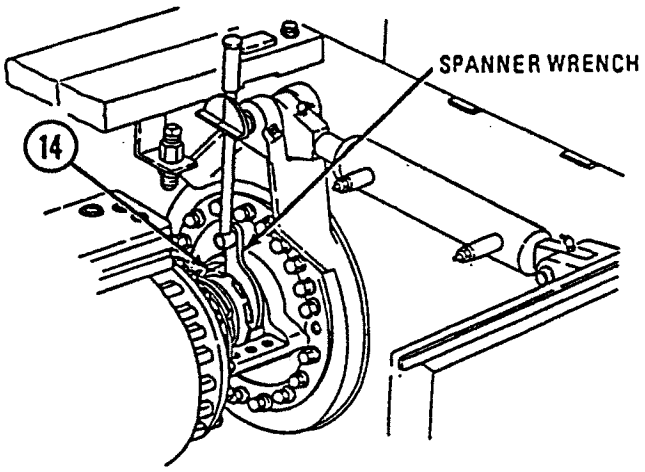
D Using large slip-joint pliers, slide final drive input shaft (12) out of final drive housing (6), engage final drive input shaft (12) with steer unit coupling (13), and slide nut (14) over steer unit coupling (13).





E Using spanner wrench oriented vertically, tighten nut (14) to 54-80 lb-ft (73-109 N•m).

F Using a punch, drive edge of nut (14) into at least two grooves of steer unit coupling (13).

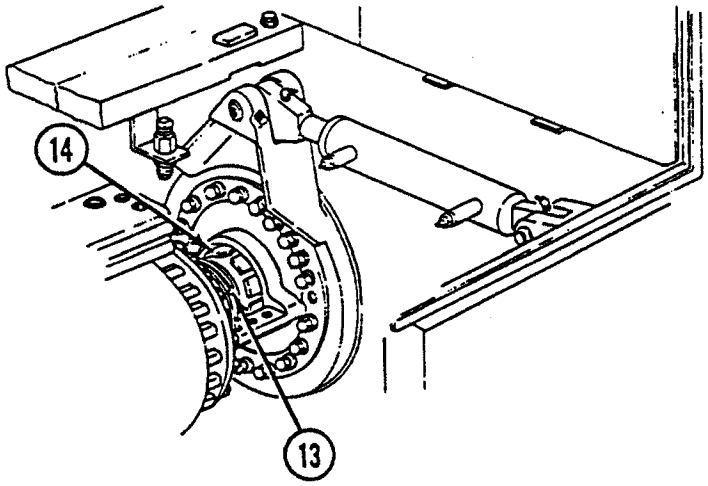


CAUTION

Surfaces of final drive caps and flange must be clean and free of paint and dirt. Failure to comply may result in damage to equipment.

G Install gasket (10) on final drive saddle cap (9) using adhesive.

H Coat final drive saddle cap (9) mounting surfaces with sealant adhesive, and install saddle cap (9) on final drive housing (6) with six washers (8) and self-locking screws (7). Tighten self-locking screws (7) to 40-60 lb-ft (54-81 N•m).



Note

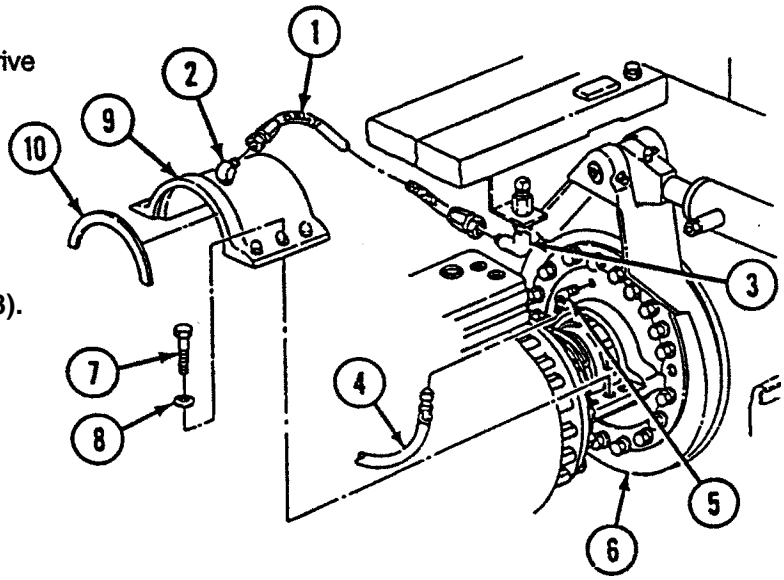
Perform step I on vehicles equipped with final drive breather hoses vented in line with steer unit.

I Install elbow (5) on final drive housing (6), and connect final drive breather hose (4) to elbow (5).

Note

The new final drive breather configuration has a 45° elbow added to the left breather/filler hose connector.

J Connect RH FINAL DR FILLER-8S final drive fill hose (1) to elbows (2) and (3).



FOLLOW-ON TASKS:

- Check fluid level of both final drives (TM 5-2350-262-10).
- Install rear floor plates supports (p 4-358).

DRIVE SPROCKET AND HUB REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Antiseize Compound	8030-00-753-4953
Lubricating Oil	Item 26 Appendix D

Parts:

Self-locking Screw (26)

Locknut (20)

Parts Reference:

TM 5-2350-262-24P Group AU

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Troubleshooting Reference:

Page 4-171	Vehicle Throws Track

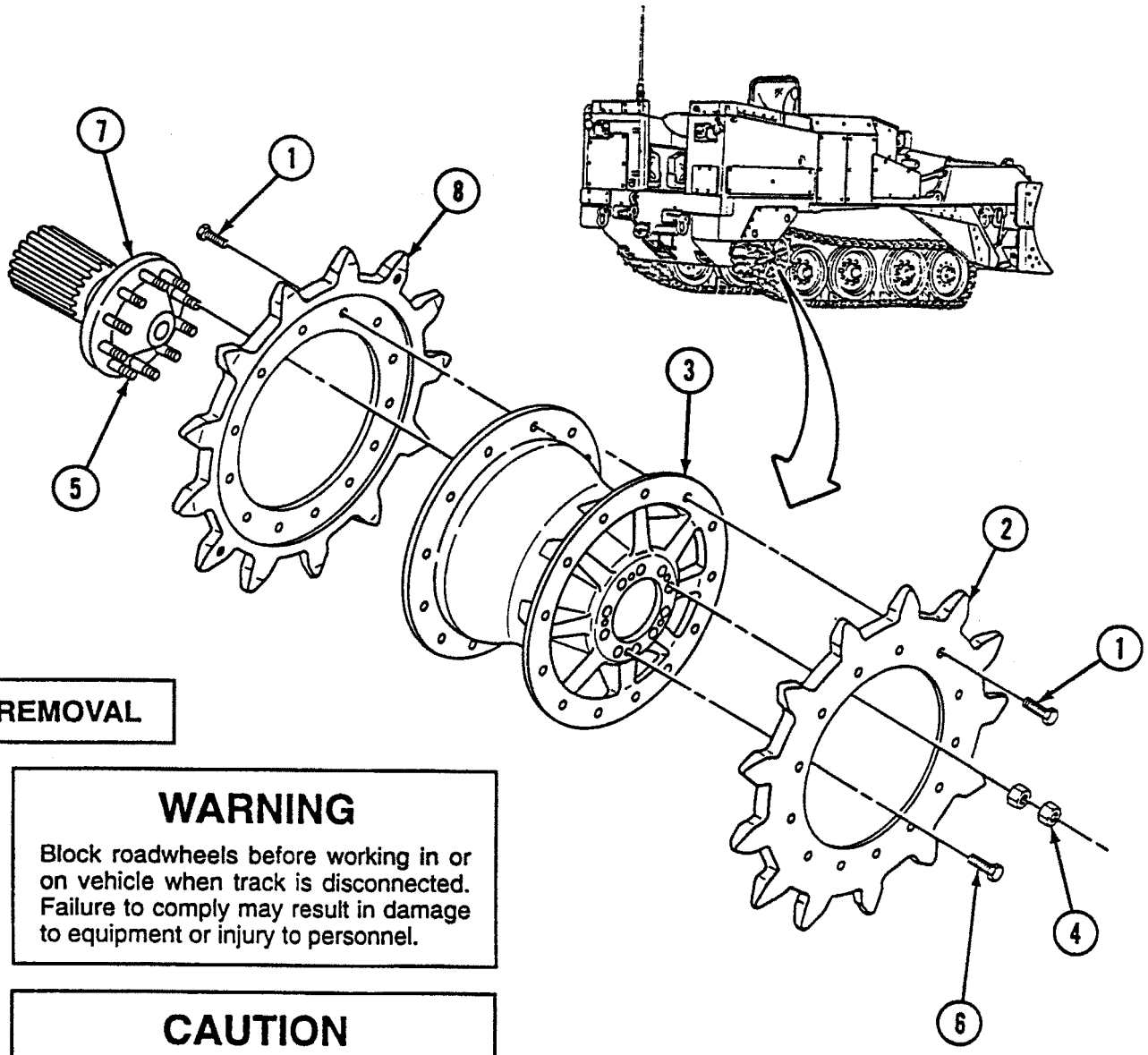
Equipment Condition:

Reference	Condition Description
Page 4-363	Track Retainer Removed
Page 4-783	Track Disconnected

General Safety Instructions:

WARNING

Block roadwheels before working in or on vehicle when track is removed or disconnected.



REMOVAL

WARNING

Block roadwheels before working in or on vehicle when track is disconnected. Failure to comply may result in damage to equipment or injury to personnel.

CAUTION

Vehicle can throw track if sprocket is worn excessively. Refer toTM 5-2350-262-10 for sprocket wear data. Failure to comply may result in damage to equipment.

Note

Drive sprocket and hub replacement is the same for both sides. The right drive sprocket is shown.

A Remove thirteen self-locking screws (1) from outer sprocket (2), and remove outer sprocket (2) from hub (3) by tapping with a hammer and wood block on the back side of the outer sprocket (2) until loose. Retain five capscrews (1) for jacking screws. Discard the rest.

B Remove twenty locknuts (4) from studs (5). Discard locknuts (4).

C Install five jacking screws (6) on hub (3).

Note

Refer to page F-4 for torque sequence before tightening jacking screws.

D Alternately tighten five jacking screws (6) until hub (3) loosens from final drive (7). Remove hub (3) from final drive (7). Remove five jacking screws (6) from hub (3) and discard jacking screws (6).

E Place hub (3) and inner sprocket (8) on solid surface with inner sprocket (8) facing up, remove thirteen self-locking screws (1) from inner sprocket (8), and remove inner sprocket (8) from hub (3) by tapping with a hammer and wood block on the under side of inner sprocket (8) until loose. Discard self-locking screws (1).

INSTALLATION

CAUTION

Ensure mating surfaces of hub, sprockets,and final drive are free of paint, dirt, and foreign matter before assembly. Failure to comply may result in damage to equipment.

Note

Refer to page F-4 for torque sequence before tightening self-locking screws and locknuts.

A Place hub (3) on solid surface with inner side facing up.

B Coat threads of thirteen self-locking screws (1) with lubricating oil, and install inner sprocket (8) with thirteen self-locking screws (1). Tighten to 240-270 lb-ft (325-366 N·m).

Note

Ensure visual alignment holes on final drive shaft and hub are aligned prior to installation.

C Coat outer edge of final drive (7) with antiseize compound, and install hub (3) and inner sprocket (8) on final drive (7).

D Coat final drive studs (5) with lubricating oil, and install ten locknuts (4) on final drive studs (5). Tighten to 240-270 lb-ft (325-366 N·m).

E Install an additional ten locknuts (4) on final drive studs. Tighten to 50-70 lb-ft (68-95 N·m).

F Coat threads of thirteen self-locking screws (1) with lubricating oil, and install outer sprocket (2) on hub (3) with thirteen self-locking screws (1). Tighten to 240-270 lb-ft (325-366 N·m)

FOLLOW-ON TASKS:

- Connect track (p 4-784).
- Install track retainers (p 4-363).

NO. 1 ROADWHEEL REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Roadwheel Jack	2590-01-224-9241
Track Connecting Fixture (2)	5120-00-605-3926
Driftpin	2530-01-075-8292

Materials:

Grease	Item 19 Appendix D
Lubricating Oil	Item 26 Appendix D
Rope, Fibrous	Item 29 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-171	Vehicle Throws Track

Equipment Condition:

Reference	Condition Description
TM 5-2360-252-10	Engine Running

General Safety Conditions:

WARNING

- When using hammer with driftpin or track pin, wear goggles.
- Do not place hands or arms under suspension or track components when vehicle is moving. Stand clear of vehicle while jack is being raised or lowered.
- Block roadwheels before working on vehicle when track is removed or disconnected.

REMOVAL

A Drive vehicle onto hard, level surface.

B Place vehicle in UNSPRUNG mode and lower dozer blade (1) until it touches ground. Raise front roadwheel (2) as high as possible. If dozer blade (1) is no longer touching ground, adjust track tension (TM 5-2350-262-10). Place transmission in neutral, and shift to SPRUNG mode.

C Stop vehicle engine (TM 5-2350-0262-10). Do not set parking brake. Relieve hydraulic pressure (p 2-27). Allow vehicle to settle five minutes, then relieve hydraulic pressure again (p 2-27) to release any residual pressure.

D Loosen ten locknuts (3) on roadwheel (2).

Note

- Remove only one track assembly at a time (to keep vehicle driveable) when removing track.
- Disconnect track at front of vehicle about midway between the ground and No. 1 roadwheel.
- It may be necessary to chisel out area around locknut prior to removal.

E Remove locknut (3) and washer (4) from outer end of one track pin (5). Retain locknut (3) for installation.

WARNING

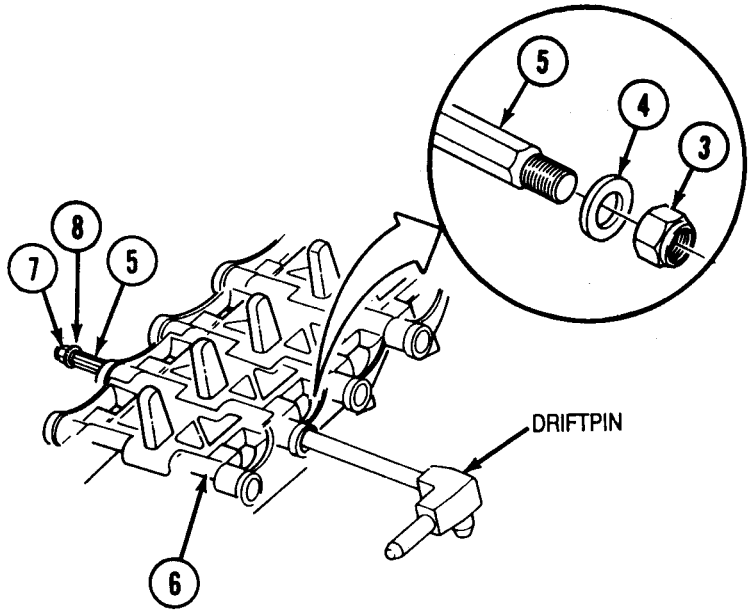
When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in severe injury to personnel.

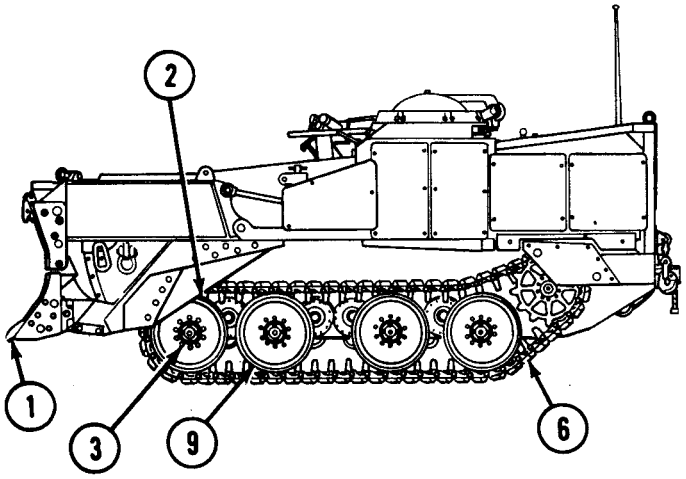
Note

If track pin binds, it is most likely bent. Use cutting torch outfit to cut track.

F Using driftpin and hammer, drive track pin (5) out of ends of track (6). Remove driftpin from ends of track (6). Using hammer and crowbar, separate ends of track (6).

G Remove locknut (7) and washer (8) from track pin (5).



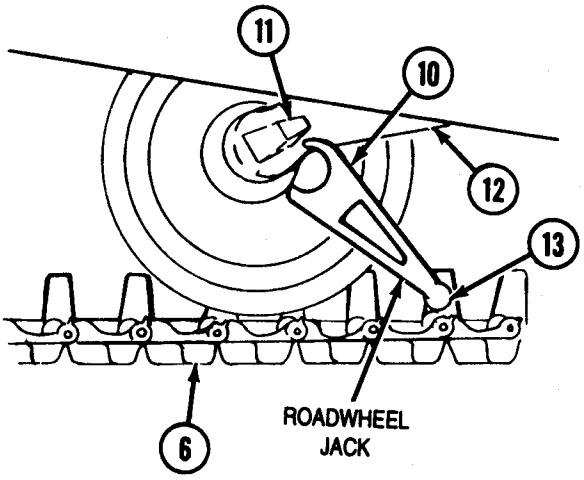


Note

Place vehicle CB/GS steer selector in CB mode when backing track to top of No. 2 roadwheel.

H Have vehicle operator start vehicle (TM 5-2350-262-10) and back track (6) to top of No. 2 roadwheel (9). This can be accomplished by turning the steering wheel in the opposite direction of disconnected track to lock the opposite track. Place vehicle in reverse and slowly back off disconnected track.

I Place roadwheel jack, with long ear of jaw (10) on top, on block (11) of roadwheel arm (12). Rest round end (13) of roadwheel jack on track (6).



WARNING

Do not place hands or arms under suspension or track components when vehicle is moving. Stand clear of vehicle while jack is being raised. Failure to comply may result in severe injury to personnel.

J To set roadwheel jack, slowly drive vehicle rearward until lower end of roadwheel jack seats in sprocket guide hole of track (6).

WARNING

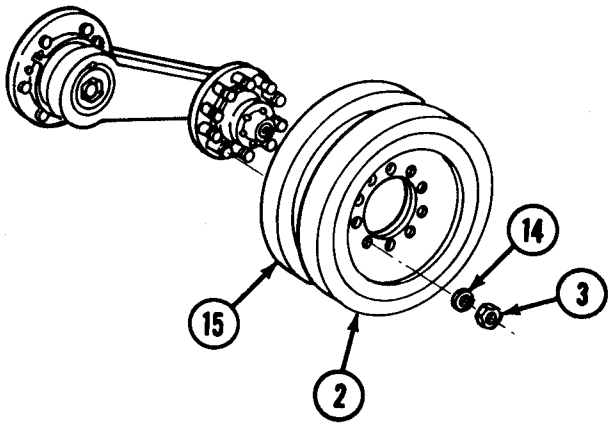
Block roadwheels before working on vehicle when track is removed or disconnected. Vehicle can roll, causing severe injury to personnel, death, or damage to equipment.

CAUTION

Ensure roadwheel jack is positioned tightly against roadwheel arm. Failure to comply may result in damage to hull.

K To raise front roadwheel (2), continue driving vehicle rearward until roadwheel arm is at its highest position. Shut off engine and set parking brake (TM 5-2350-262-10). Relieve hydraulic pressure (p 2-27). Block track on opposite side of vehicle (p 2-28).

L Remove ten locknuts (3), washers (14), front outer roadwheel (2), and front inner roadwheel (15).



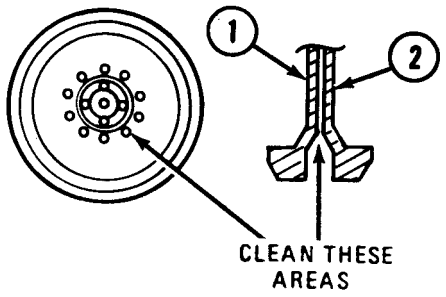
INSTALLATION

WARNING

Block roadwheels before working on vehicle when track is removed or disconnected. Vehicle can roll, causing severe injury to personnel, death, or damage to equipment.

CAUTION

Roadwheels can loosen if mating surfaces on inner and outer roadwheels are not clean and free of paint. Failure to comply may result in damage to equipment.

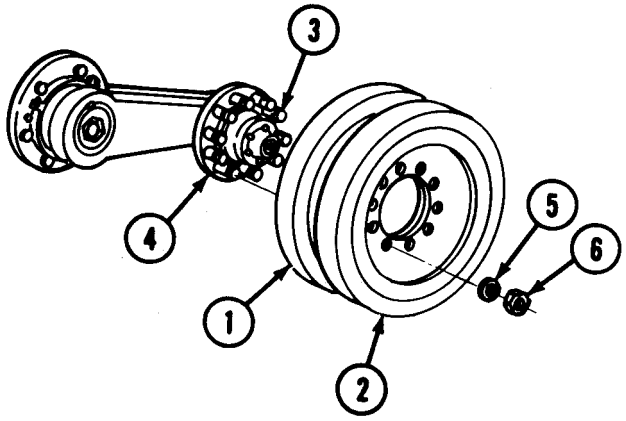


A Block roadwheels (p 2-28).

B Thoroughly clean mating surfaces of front inner roadwheel (1) and front outer roadwheel (2).

C Coat threads of roadwheel arm hub studs (3) with lubricating oil.

D Install front inner roadwheel (1) on roadwheel hub (4), then install front outer roadwheel (2).

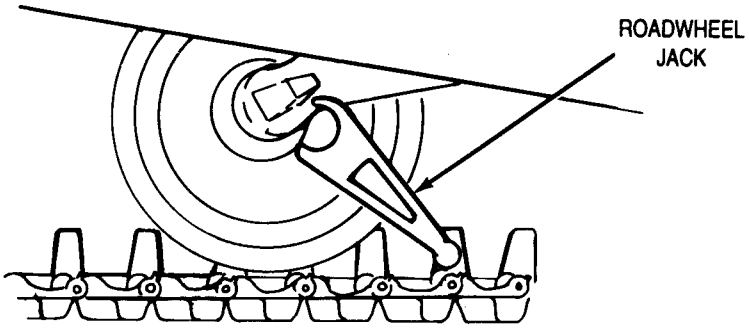


CAUTION

Roadwheel locknuts can loosen if area around holes is not clean. Clean area around holes of roadwheels before installing locknuts. Ensure no dirt or paint is under locknuts or on inside mating surfaces of roadwheels. Failure to comply may result in damage to equipment.

E Install ten washers (5) and locknuts (6) on studs (3) of roadwheel hub (4). Ensure there is no space between inner and outer roadwheel mating surfaces. Tighten locknuts (6) until they touch front outer roadwheel (2).

F Remove blocks from roadwheels (p 2-28).



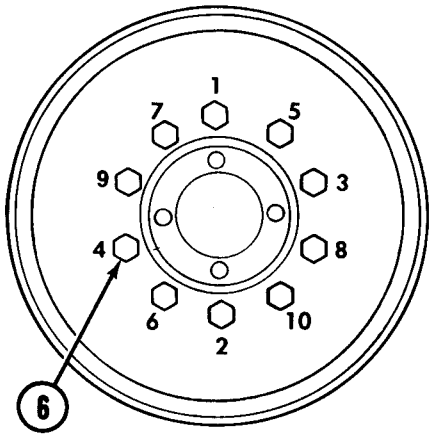
WARNING

Do not place hands or arms under suspension or track components when vehicle is moving. Stand clear of vehicle while jack is being lowered. Failure to comply may result in severe injury to personnel.

G Start vehicle (TM 5-2350-262-10), and drive forward until roadwheel jack is loose.

H Stop engine and set parking brake (TM 5-2350-262-10). Relieve hydraulic pressure (p 2-27). Remove roadwheel jack.

I Refer to the torque sequence illustration and alternately tighten locknuts (6) to 240-270 lb-ft (325-366 N·m).



TORQUE SEQUENCE
FOR ROADWHEEL NUTS

Note

Do not turn off vehicle engine when connecting track. Vehicle will settle taking up some slack in track.

J Start vehicle engine and release parking brake (TM 5-2350-262-10). Drive vehicle forward, guiding the track (1) carefully over the roadwheels until the track is over No. 1 roadwheel (2) and in very close relation to the other end of the track (1). Block track (1) (p 2-28).

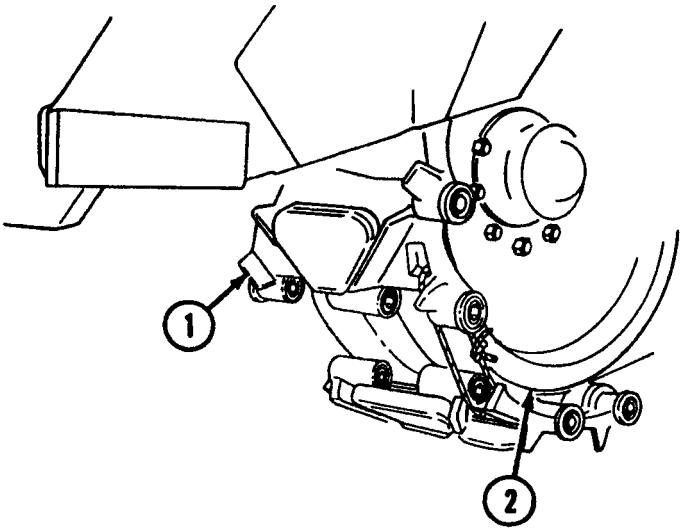
K Tie ends of track (1) with rope, and pull ends of track (1) together as close as possible.

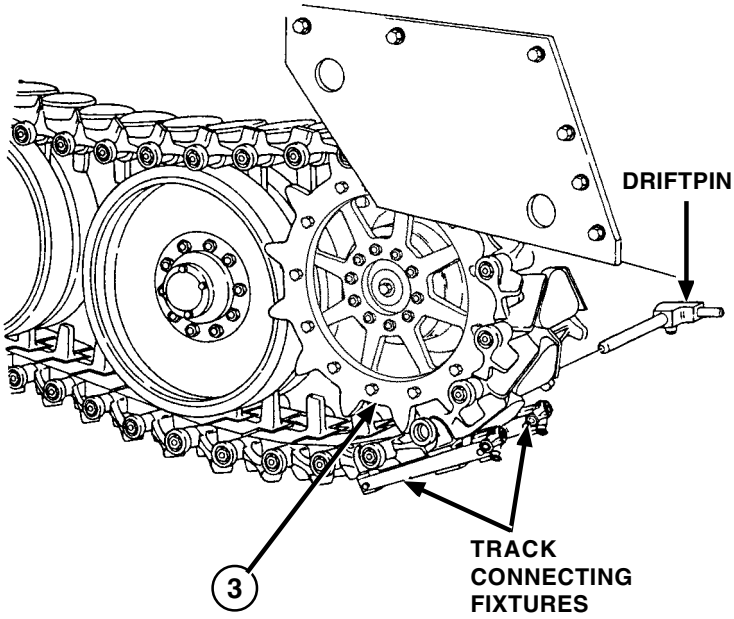
L Unblock track (1) (p 2-28). Drive the vehicle rearward until both ends of the track (1) are midway between the ground and drive sprocket (3). Block track (1) (p 2-28).

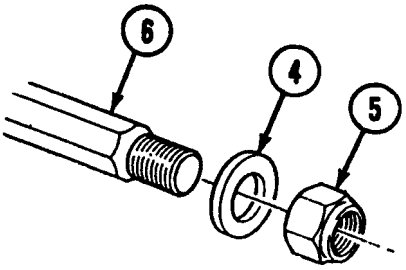
M Position two track connecting fixtures to ends of track (1). Ensure fixtures do not bind rope holding ends of track (1).

N Tighten track connecting fixtures until ends of track (1) mesh. Insert driftpin through holes in ends of tracks (1). Remove rope.

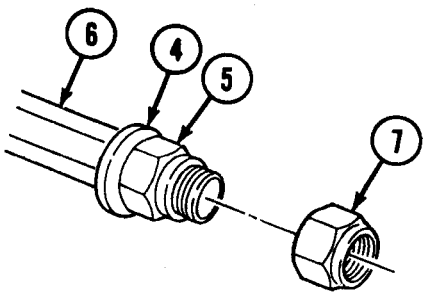
O Install washer (4) and locknut (5) on track pin (6). Tighten locknut (5) to end of threads.







P Install locknut (7), retained from removal, on track pin (6).



WARNING

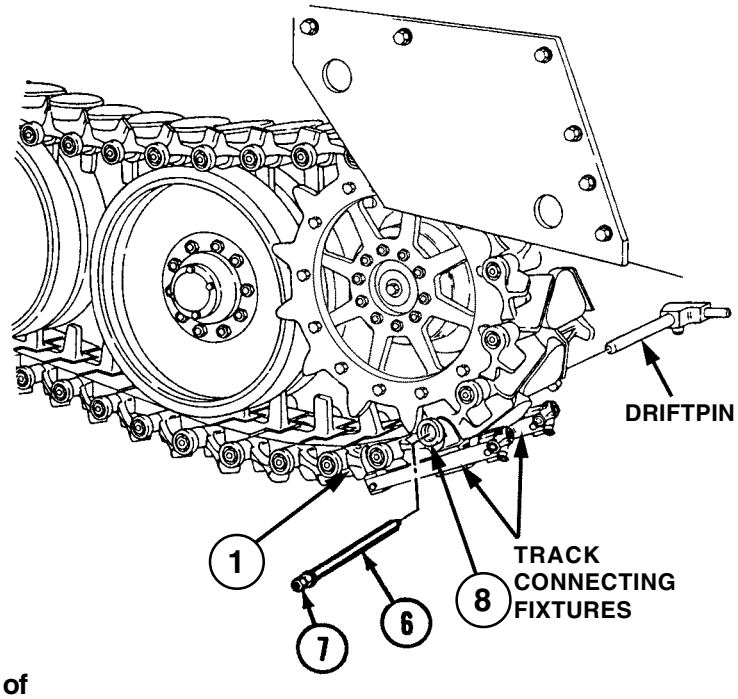
When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in severe injury to personnel.

CAUTION

If pin binds, bushings are not properly aligned. Remove pin, and tighten or loosen track connecting fixtures as necessary until bushings are aligned. Failure to comply may result in damage to track shoe bushings.

Note

Track pin may have to be turned slightly during installation with 15-inch adjustable wrench to align pin with track shoe bushings.



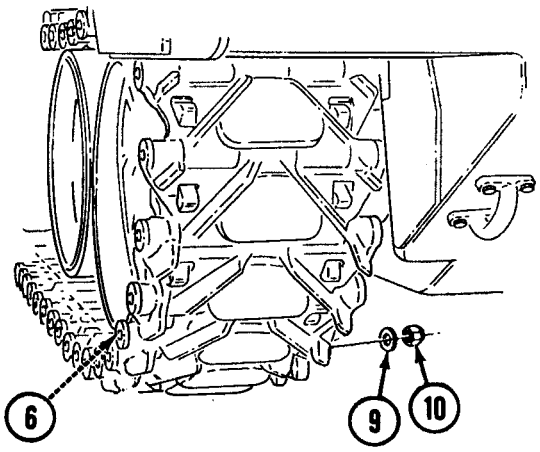
Q Using hammer and 15-inch adjustable wrench, install track pin (6) on tracks (1) by driving out driftpin with track pin (6).

R Remove and discard locknut (7), retained from removal.

S Loosen locknut (5) three turns. Drive track pin (6) into track shoe (8) until washer (4) is flush against track shoe (8).

T Remove two track connecting fixtures and rope from track (1).

U Install washer (9) and locknut (10) on hull end of track pin (6). Stop vehicle engine (TM 5-2350-262-10) and relieve hydraulic pressure.



CAUTION

At least 1/16 in. (1.6 mm) of thread of track pins must extend through new locknuts. Failure to comply may result in damage to track pins and locknuts.

V Tighten locknuts (5) and (10) to 120-160 lb-ft (163-217 N·m).

FOLLOW-ON TASK:
Adjust track tension (TM 5-2350-262-10).

NO. 1 OUTER ROADWHEEL REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Vehicle Stands (2)	2590-01-228-5802

Materials:

Lubricating Oil	Item 26 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

References:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-171	Vehicle Throws Track

Equipment Condition:

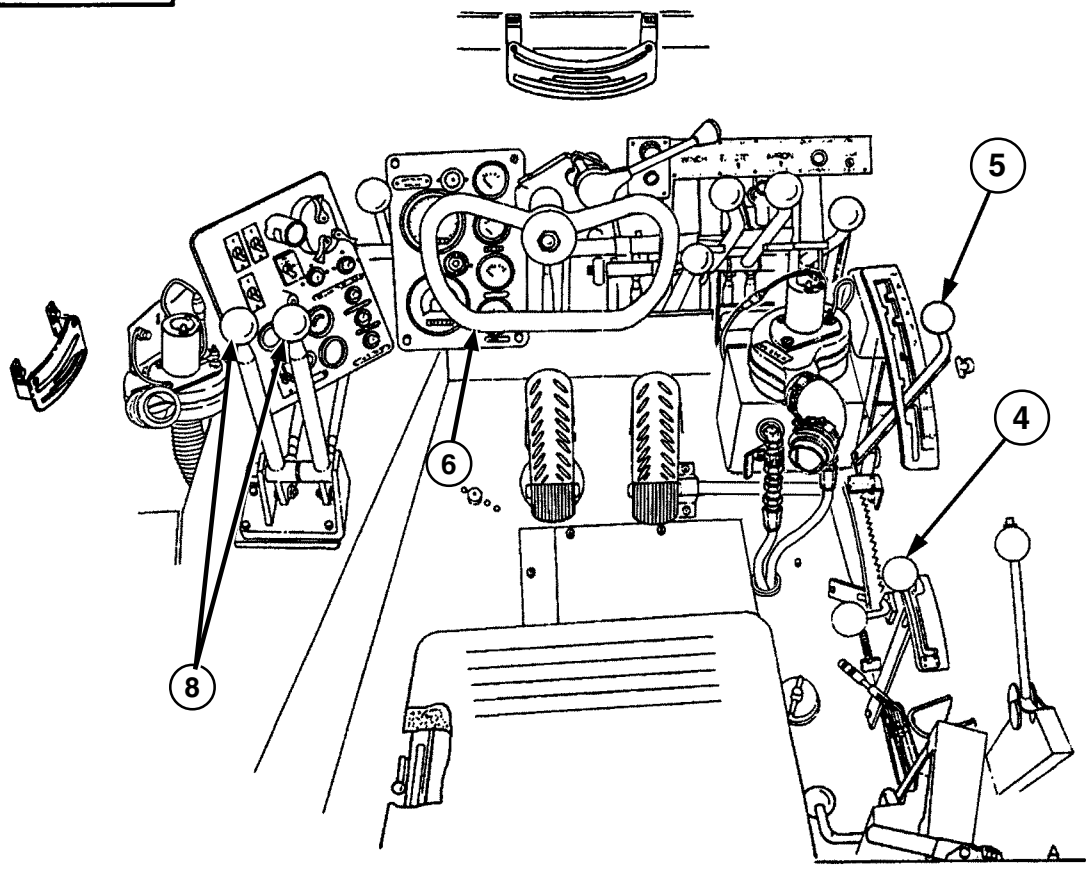
Reference	Condition Description
TM 5-2350-262-10	Track Tension Relieved
TM 5-2350-262-10	Engine Running, Suspension in SPRUNG Mode

General Safety Instructions:

WARNING

When using hammer with driftpin or track pin, wear goggles.

REMOVAL



Note

- Replacement of No. 1 outer roadwheel is the same for both sides. The right side is shown here.
- Relieve track tension on side of vehicle where roadwheel will be replaced.
- Assistant will help with steps B, C, D, E, G, H, and J.

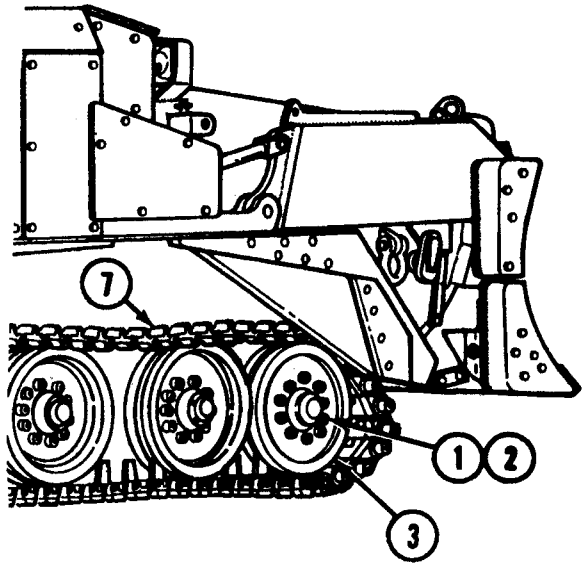
A Loosen ten locknuts (1) and washers (2) on No. 1 outer roadwheel (3).

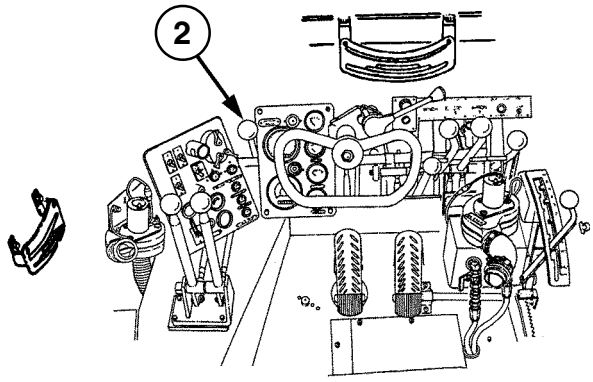
B Place CB/GS steering selector (4) in CB mode and transmission shift selector (5) in 1.

C Turn steering wheel (6) to the left and hold.

D Accelerate slowly. This will advance loose track (7) until "bow" appears around No. 1 outer roadwheel (3).

E Move suspension control levers (8) to raise front of vehicle.





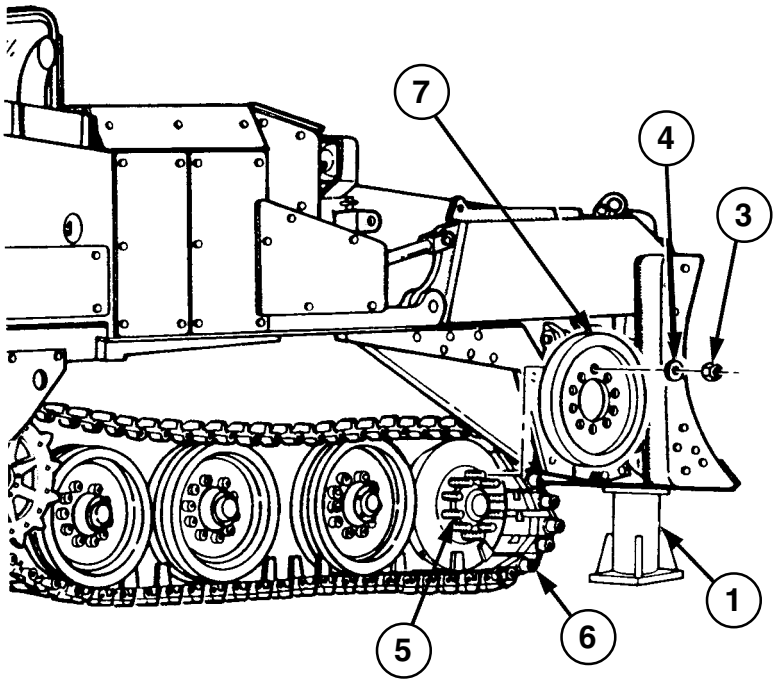
F Place vehicle stands (1) under front corners of vehicle.

G Move SPRUNG/UNSPRUNG lever (2) to UNSPRUNG, and lower front of vehicle onto vehicle stand (1).

H Stop vehicle (TM 5-2350-262-10), and relieve hydraulic pressure (p 2-27).

I Remove ten locknuts (3) and washers (4) from roadwheel arm hub studs (5).

J Using crowbar, lift track (6) off outer roadwheel (7), and remove No. 1 outer roadwheel (7) from roadwheel arm hub studs (5).



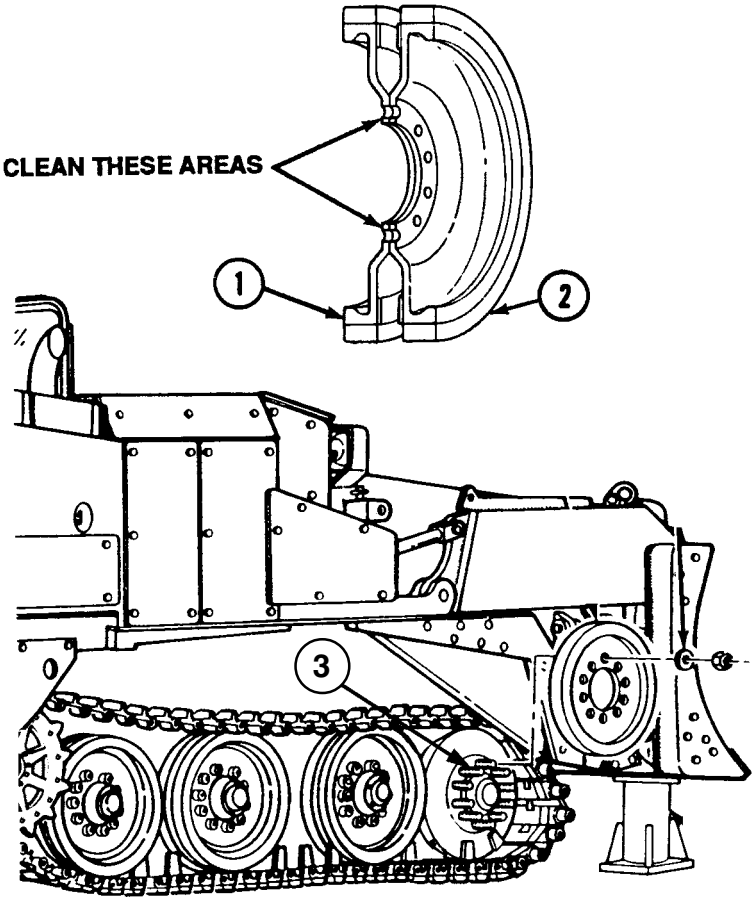
INSTALLATION

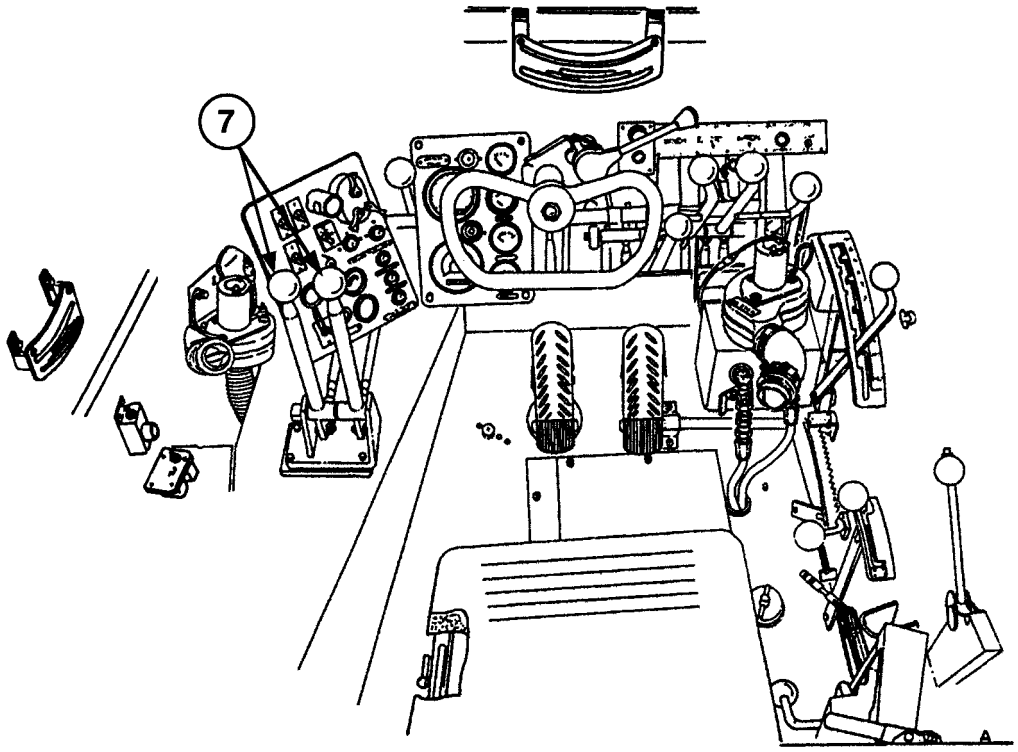
CAUTION

Roadwheels can loosen unless mating surfaces on inner and outer roadwheels are clean and free of dirt. Clean mating surfaces thoroughly. Failure to comply may result in damage to equipment.

A Thoroughly clean mating surfaces of inner roadwheel (1) and outer roadwheel (2).

B Coat roadwheel arm hub studs (3) with lubricating oil.





Note

Assistant will help with step C.

C Using crowbar, lift track (4), and install outer roadwheel (2) on roadwheel arm hub studs (3) with ten washers (5) and locknuts (6).

D Alternately tighten locknuts (5) until there is no space between mating surfaces of inner roadwheel (1) and outer roadwheel (2).

E Start vehicle engine (TM 5-2350-262-10) to pressurize hydraulic system.

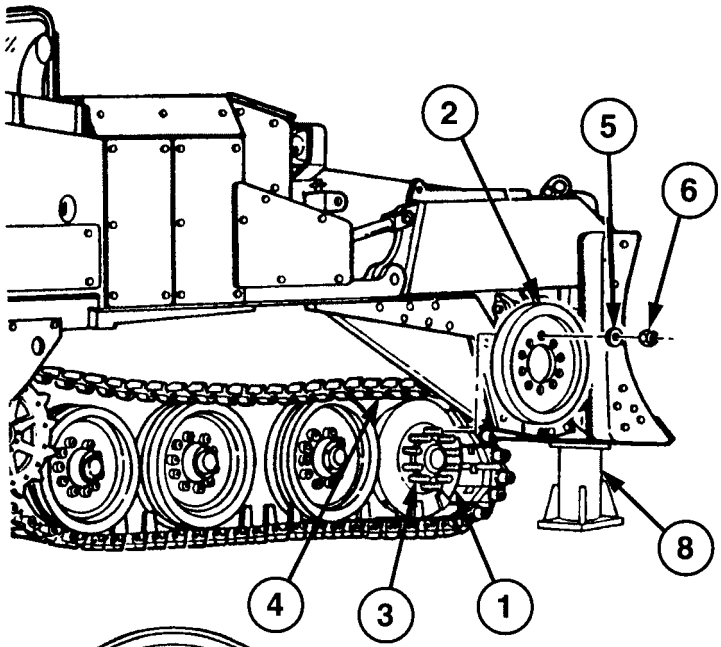
F Move suspension control levers (7) to raise front of vehicle.

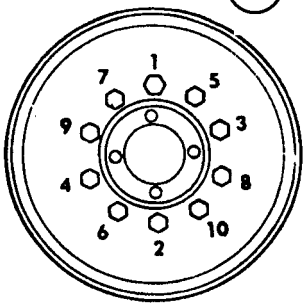
G Remove vehicle stands (8) from under vehicle.

H Stop vehicle engine (TM 5-2350-262-10), and relieve hydraulic pressure

I Refer to the torque sequence illustration and alternately tighten locknuts (5) to 240-270 lb-ft (325-366 N·m).

FOLLOW-ON TASK:
Adjust track tension (TM 5-2350-262-10)





TORQUE SEQUENCE FOR ROADWHEEL NUTS

NO. 2, 3, AND 4 ROADWHEELS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

4940-00-294-9518 Shop Equipment, Contact Maintenance, Truck Mounted

Lifting Device

Special Tools:

Roadwheel Jack	2590-01-224-9241

Materials:

Lubricating Oil	Item 26 **Appendix D**

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-171	Vehicle Throws Track

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Running and Suspension in SPRUNG Mode

General Safety Conditions:

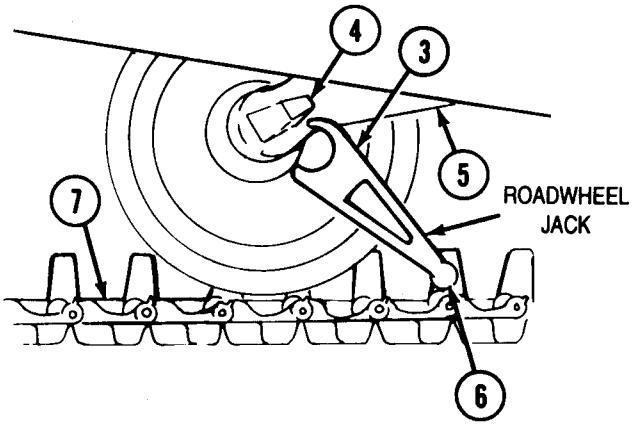
WARNING

Do not place hands or arms under suspension or track components when vehicle is moving. Stand clear of vehicle while jack is being raised or lowered.

REMOVAL

A Loosen ten locknuts (1) on roadwheel (2).

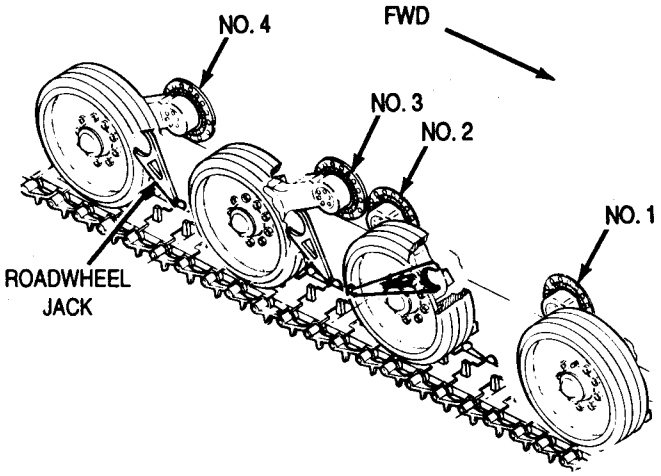
B Place roadwheel jack, with long ear of jaw (3) on top, on block (4) at end of roadwheel arm (5). Let round end (6) of roadwheel jack rest on track (7).



WARNING

Do not place hands or arms under suspension or track components when vehicle is moving. Stand clear of vehicle while jack is being raised. Failure to comply may result in severe injury to personnel.

C Set roadwheel jack by slowly driving vehicle rearward (for No. 2 wheel) or forward (for No. 3 and No. 4 wheels) until lower end of roadwheel jack seats in sprocket guide hole of track (7).



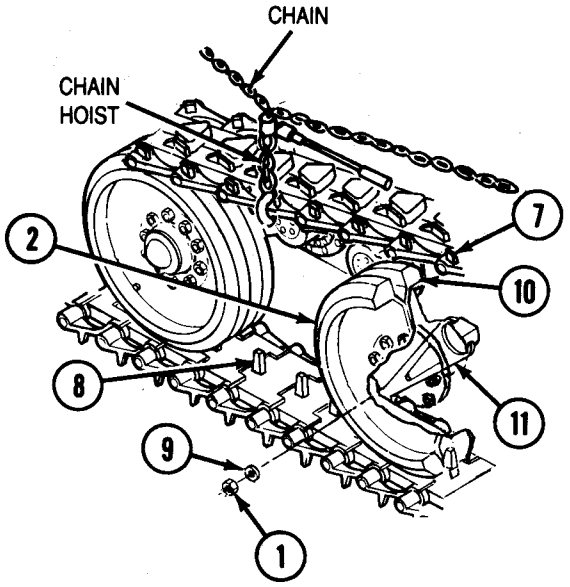
CAUTION

Ensure roadwheel jack is positioned tightly against roadwheel arm. Do not allow roadwheel jack to lean inboard. Failure to comply may result in damage to hull.

D Raise outer roadwheel (2) by driving vehicle in same direction as in step C, until roadwheel arm (5) is at its highest position. Shut off engine, set brake, and relieve hydraulic pressure (p 2-27).

E Position chain about 14 in. (36 cm) above track (7). Connect chain to front or rear lifting eyes, ejector lifting eye, or other available attaching point on vehicle.

F Place chain hoist between chain and track (7), and raise track (7) enough to enable roadwheel (2) to clear track guides (8).



Note

Use crowbar to aid lifting of track over roadwheel No. 4.

G Remove ten locknuts (1), washers (9), outer roadwheel (2), and inner roadwheel (10) from roadwheel hub (11).

INSTALLATION

CAUTION

Roadwheels can loosen and become damaged unless mating surfaces on inner and outer roadwheels are clean and free of paint before installation. Failure to comply may result in damage to equipment.

A Thoroughly clean mating surfaces of inner roadwheel (1) and outer roadwheel (2).

B Coat threads of roadwheel arm hub studs (3) with lubricating oil, and install inner roadwheel (1) and outer roadwheel (2) on roadwheel hub (4).

CAUTION

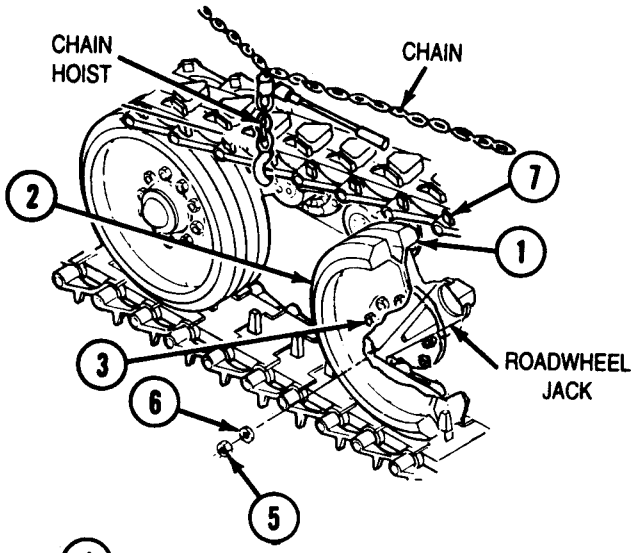
Roadwheel nuts can loosen if area around holes is not clean. Clean area around holes of roadwheels before installing nuts. Ensure no dirt or paint is under nuts or on inside mating surfaces of roadwheels. Failure to comply may result in damage to equipment.

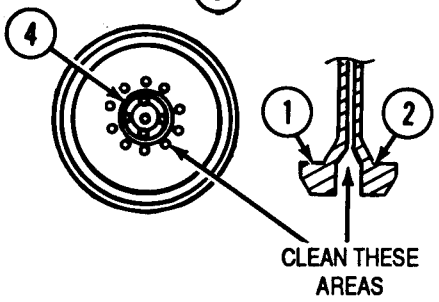
C Install ten washers (5) and locknuts (6) on roadwheel arm hub studs (3). Ensure there is no space between inner and outer roadwheel mating surfaces. Alternately tighten locknuts (6) until they touch outer roadwheel (2).

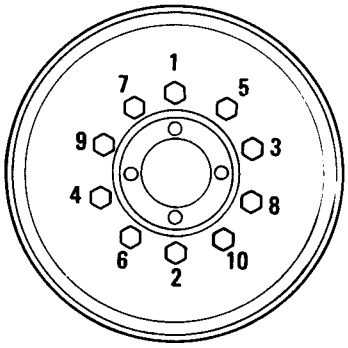
D Lower track (7) onto roadwheel, and remove chain hoist and chain from vehicle.

WARNING

Do not place hands or arms under suspension or track components when vehicle is moving. Stand clear of vehicle while jack is being lowered. Failure to comply may result in severe injury to personnel.







TORQUE SEQUENCE FOR ROADWHEEL NUTS

E Slowly drive vehicle forward or rearward as necessary until roadwheel jack is loose.

F Stop engine, set parking brake (TM 5-2350-262-10), relieve hydraulic pressure (p 2-27), then remove roadwheel jack.

G Refer to the torque sequence illustration and alternately tighten locknuts (6) to 240-270 lb-ft (325-366 N·m).

ROADWHEEL HUB REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Cleaning
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Seal Inserter	5120-01-227-7044
Replacer	5120-01-222-7939
Bearing Replacer	5120-01-222-7938
Spanner Wrench	5120-01-086-1602

Materials:

Grease	Item 19 Appendix D
Lubricating Oil	Item 26 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts:

Gasket

Cotter Pin

Seal

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 9-214

Equipment Condition:

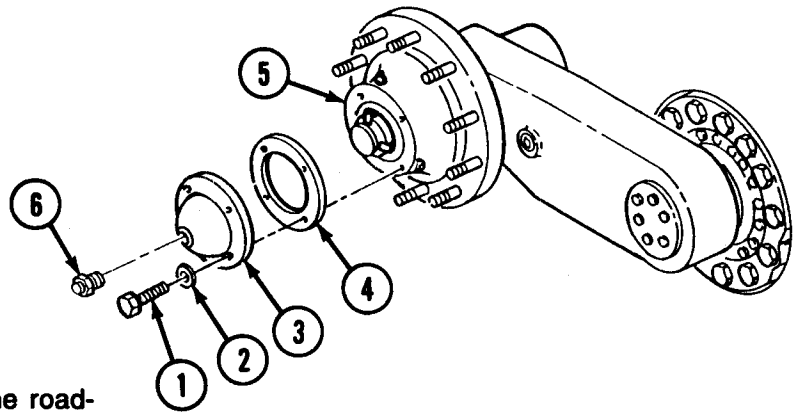
Reference	Condition Description
Page 4-760 or 4-771	Roadwheel Removed

General Safety Instructions:

WARNING

- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.
- Compressed air can injure you and others. Do not aim compressed air hoses at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles.

REMOVAL

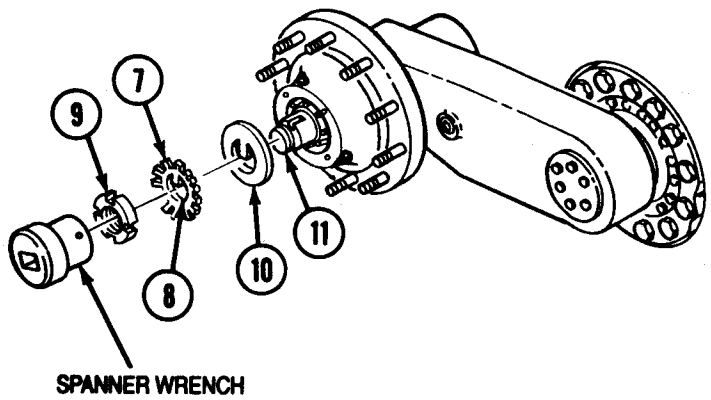


Note

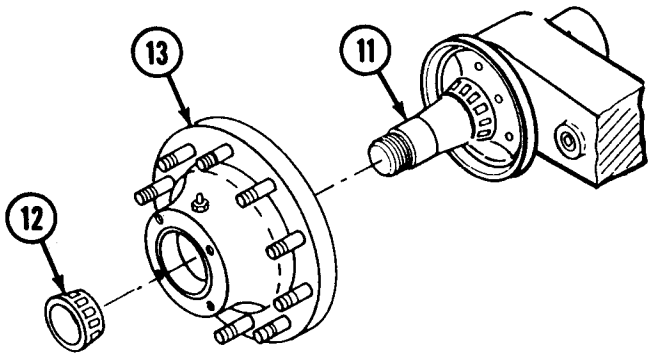
There are two configurations of the roadwheel arm assembly. For new roadwheel arm assembly, perform steps A through D; for old roadwheel arm assembly, perform steps E through G.

A Remove four self-locking screws (1), washers (2), cap (3), and gasket (4) from hub (5). Discard self-locking screws (1) and gasket (4).

B Inspect relief valve (6) on cap (3). If damaged, remove relief valve (6) from cap (3).



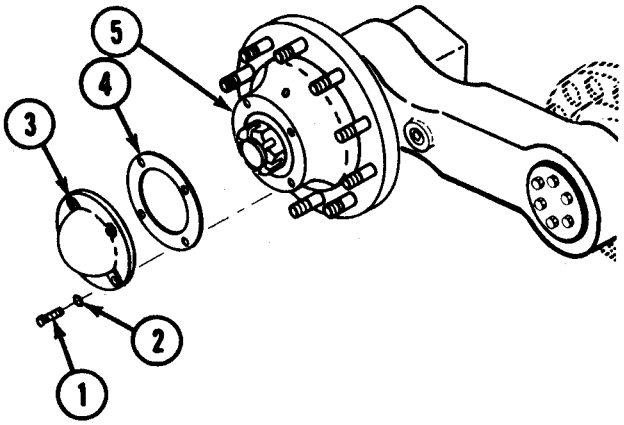
C Bend tabs (7) of washer (8) away from nut (9) and, using spanner wrench, remove nut (9), and washers (8) and (10) from roadwheel spindle (11).



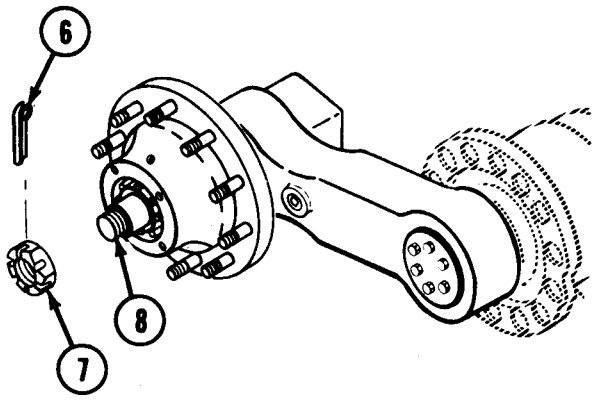
CAUTION

Ensure bearing cone does not fall on ground when removing hub. Failure to comply may result in damage to equipment.

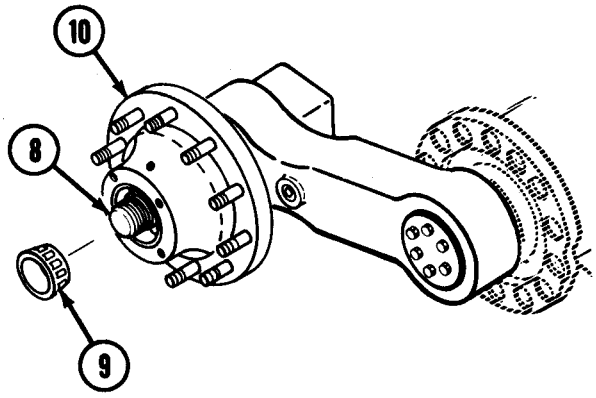
D Remove outer bearing cone (12) and hub (13) from roadwheel spindle (11).



E Remove four self-locking screws (1), washers (2), cap (3), and gasket (4) from hub (5). Discard self-locking screws (1) and gasket (4).



F Remove cotter pin (6) and nut (7) from roadwheel spindle (8). Discard cotter pin (6).

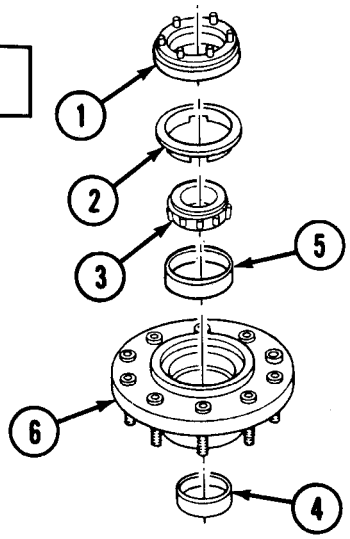


CAUTION

Ensure bearing cone does not fall on ground when removing hub. Failure to comply may result in damage to equipment.

G Remove outer bearing cone (9) and hub (10) from roadwheel spindle (8).

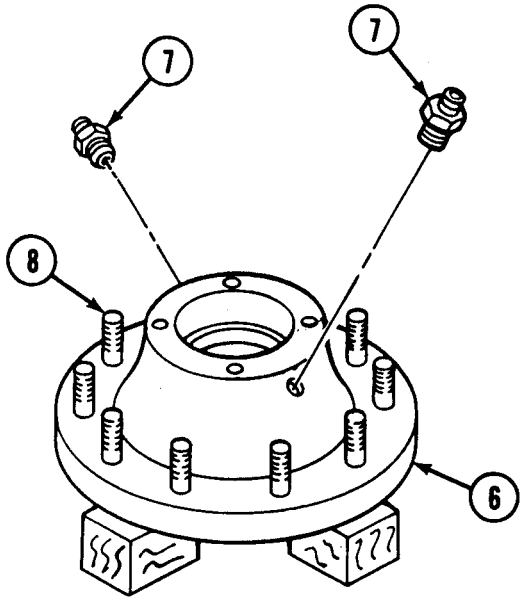
DISASSEMBLY



Note

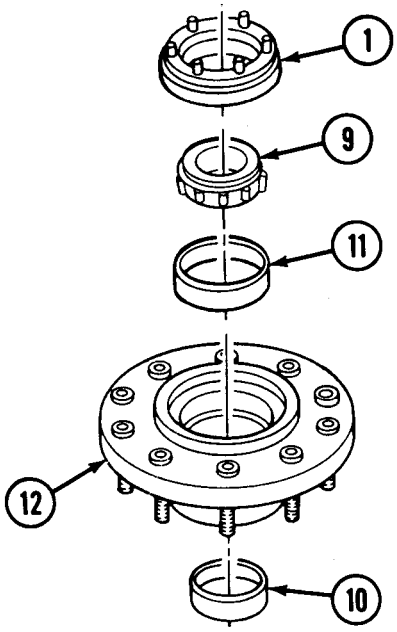
There are two configurations of the roadwheel hub assembly. For new roadwheel hub assembly, perform steps A through C; for old roadwheel hub assembly, perform steps D through F.

A Remove seal (1), spacer ring (2), inner bearing cone (3), outer bearing cup (4), and inner bearing cup (5) from hub (6). Discard seal (1).

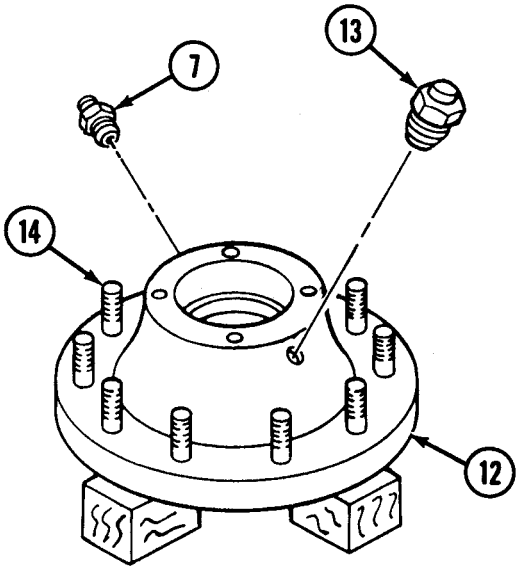


B Remove two lubrication fittings (7) from hub (6).

C If damaged, remove studs (8) with hammer and blocks.



D Remove seal (1), inner bearing cone (9), outer bearing cup (10), and inner bearing cup (11) from hub (12). Discard seal (1).



E Remove lubrication fitting (7) and relief valve (13) from hub (12).

F If damaged, remove studs (14) with hammer and blocks.

CLEANING

WARNING

- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in injury to personnel or damage to equipment.
- Compressed air can injure you and others. Do not point compressed air hoses at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles.

CAUTION

Do not spin bearings with compressed air. Failure to comply may result in damage to equipment.

Clean all parts with drycleaning solvent and dry with low-pressure compressed air. Clean bearings in accordance with TM 9-214.

ASSEMBLY

Note

There are two configurations of the roadwheel hub assembly. For new roadwheel hub assembly, perform steps A through E; for old roadwheel hub assembly, perform steps F through J.

A If removed, carefully install stud(s) (1) on hub (2) with hammer and blocks.

B Using replacer, install inner bearing cup (3) on hub (2). Turn hub (2) over, and using replacer, install outer bearing cup (4) on hub (2).

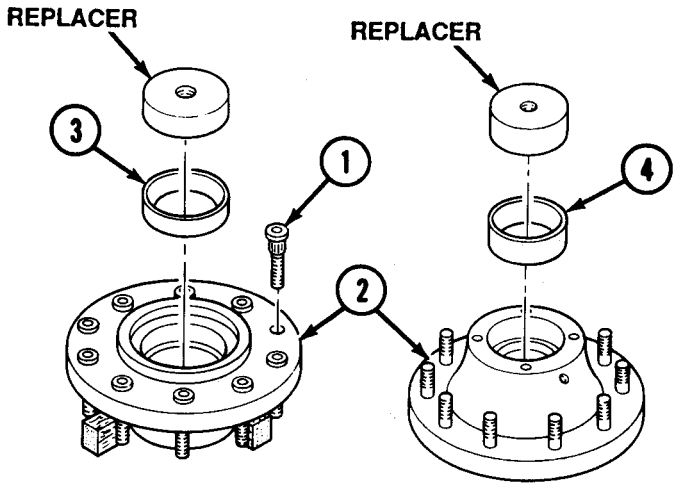
C Pack inner bearing cone (5) with grease, and place inner bearing cone (5) on inner bearing cup (3).

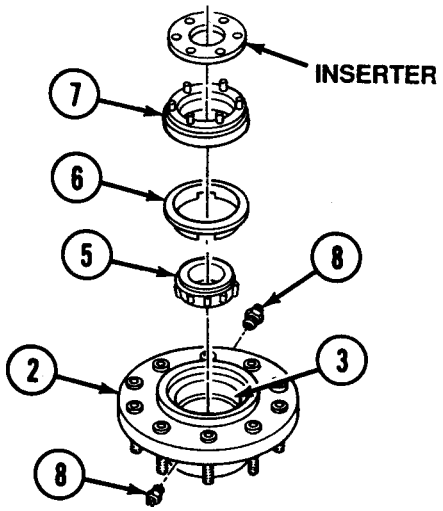
Note

- If available, use arbor press and inserter to install seal. If arbor press is not available, use inserter and puller kit to draw seal into hub.
- Grooved side of spacer should be installed facing hub.
- Apply lubricating oil to seal and spacer ring prior to installation.

D Using inserter, press spacer ring (6) and seal (7) on hub (2).

E Install two lubrication fittings (8) on hub (2). Tighten lubrication fittings (8) to 7-8 lb-ft (10-11 N•m).

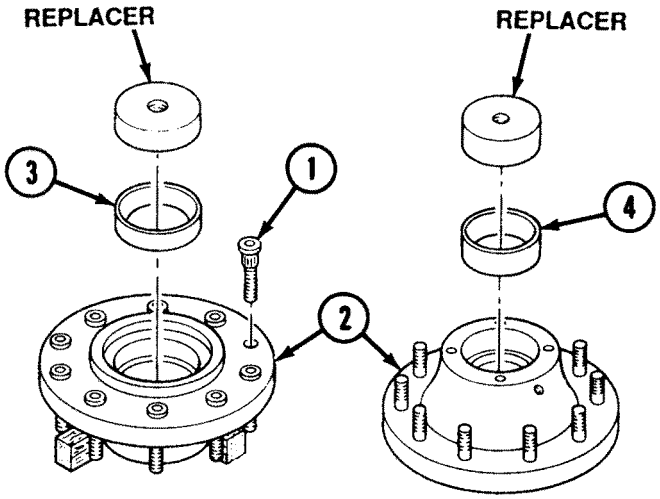




F If removed, carefully install stud(s) (1) on hub (2) with hammer and blocks.

G Using replacer, install inner bearing cup (3) on hub (2). Turn hub (2) over, and using replacer, install outer bearing cup (4) on hub (2).

H Pack inner bearing cone (5) with grease, and place inner bearing cone (5) on inner bearing cup (3).



Note

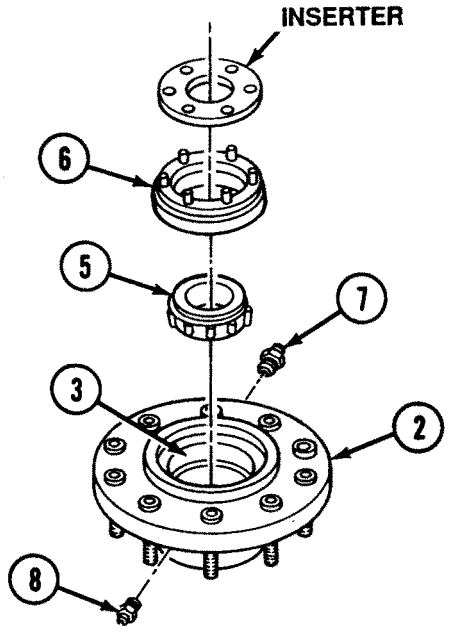
- If available, use arbor press and inserter to install seal. If arbor press is not available, use inserter and puller kit to draw seal into hub.
- Apply lubricating oil to seal prior to installation.

I Using inserter, press seal (6) on hub (2).

Note

Lubrication fitting and relief valve may be installed in either of the 1/8 in. (3.2 mm) diameter holes.

J Install lubrication fitting (7) and relief valve (8) on hub (2). Tighten lubrication fitting (7) and relief valve (8) to 7-8 lb-ft (10-11 N•m).



INSTALLATION

Note

There are two configurations of the roadwheel arm assembly. For new roadwheel arm assembly, perform steps A through I; for old roadwheel arm assembly, perform steps J through Q.

A Install hub (1) on roadwheel spindle (2) with pins (3) of seal (4) aligned with holes (5) in roadwheel arm (6).

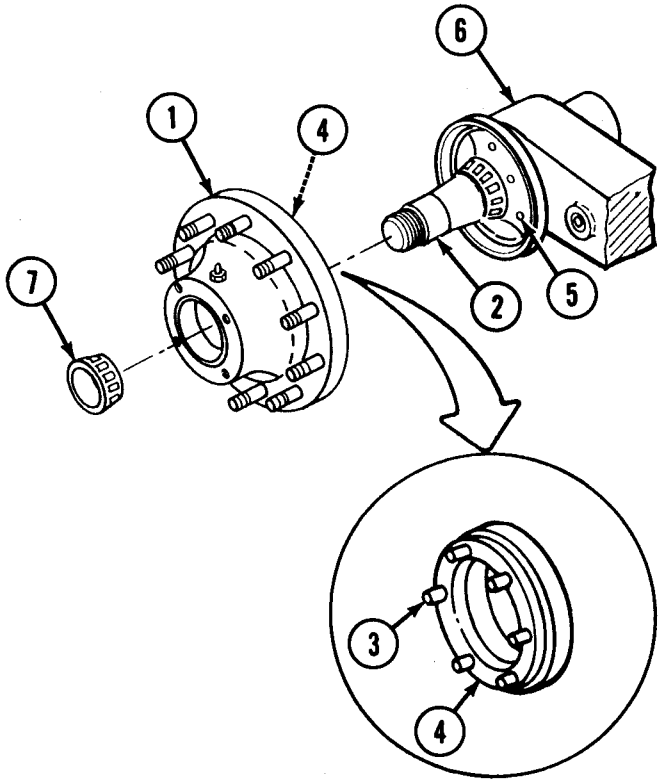
B Pack outer bearing cone (7) with grease, and install outer bearing cone (7) on roadwheel spindle (2).

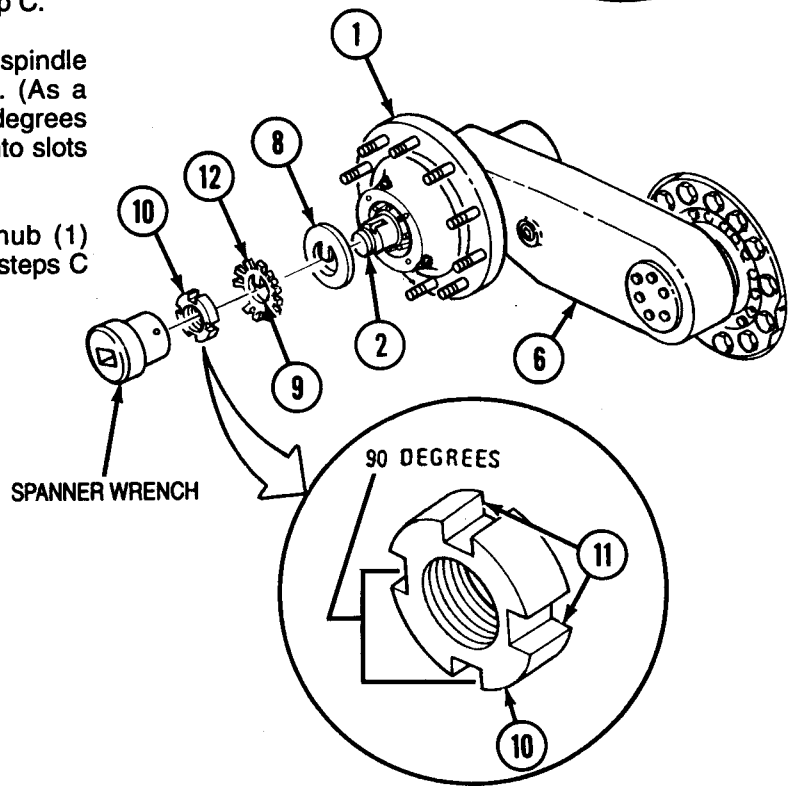
C Install washers (8) and (9), and nut (10) on roadwheel spindle (2) of roadwheel arm (6), and turn nut (10) by hand until tight. Using spanner wrench, tighten nut (10) to 150 lb-ft (203 N•m) while rotating hub (1) in both directions.

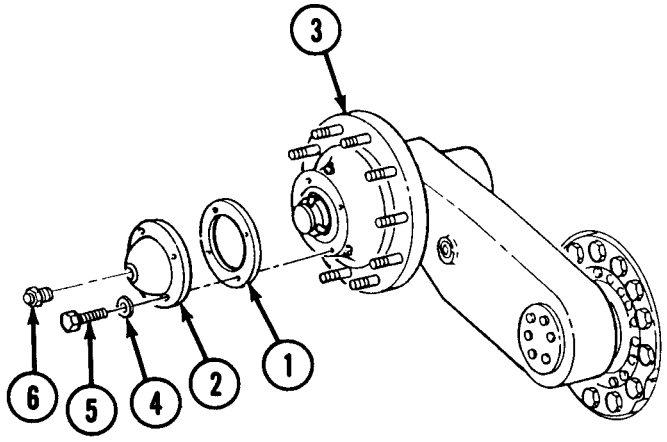
D Using spanner wrench, back off nut (10), then tighten nut (10) to 75 lb-ft (102 N•m) while rotating hub (1) in both directions as in step C.

E Mark position of nut (10) on roadwheel spindle (2), then back nut (10) off 30 degrees. (As a reference, slots (11) of nut (10) are 90 degrees apart.) Bend tabs (12) of washer (9) up into slots (11) of nut.

F Check ease of rotation of hub (1). If hub (1) cannot be rotated with one finger, repeat steps C through E.





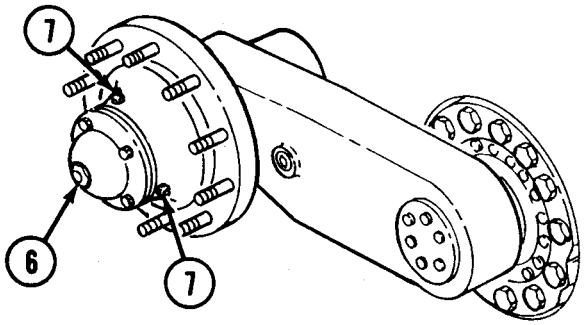


Note

Apply lubricating oil to threads of screws prior to installation.

G Install gasket (1) and cap (2) on hub (3) with four washers (4) and self-locking screws (5). Tighten screws (5) to 39-41 lb-ft (53-56 N•m).

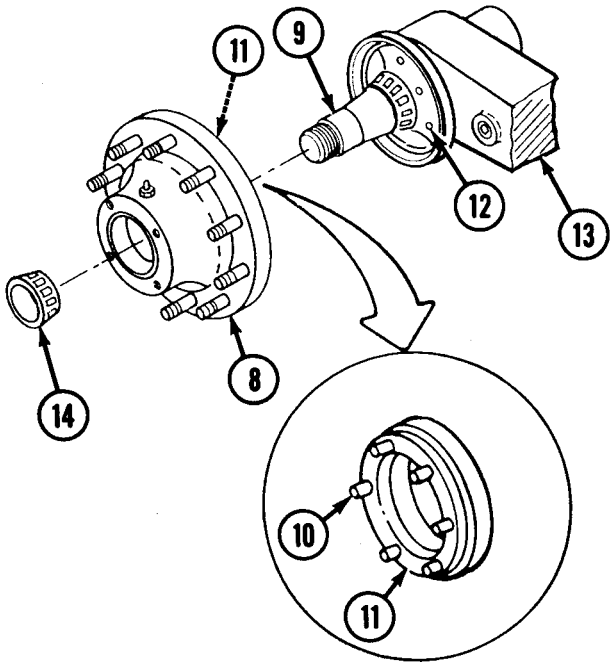
H If removed, install relief valve (6) on cap (2). Tighten relief valve (6) to 7-8 lb-ft (10-11 N•m).



I Apply grease to two lubrication fittings (7) until grease can be seen coming out of relief valve (6).

J Install hub (8) on roadwheel spindle (9), with pins (10) of seal (11) aligned with holes (12) of roadwheel arm (13).

K Pack outer bearing cone (14) with grease, and install outer bearing cone (14) on roadwheel spindle (9).

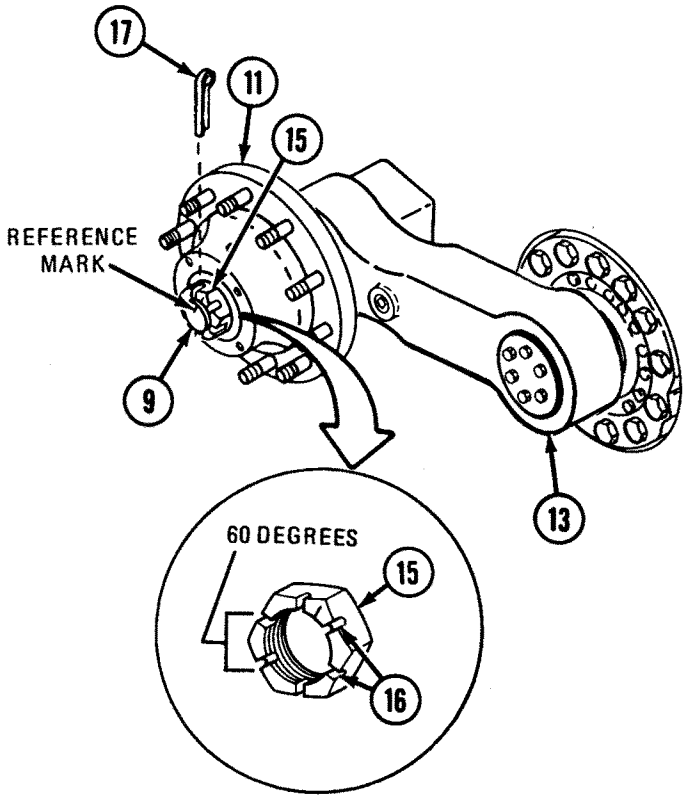


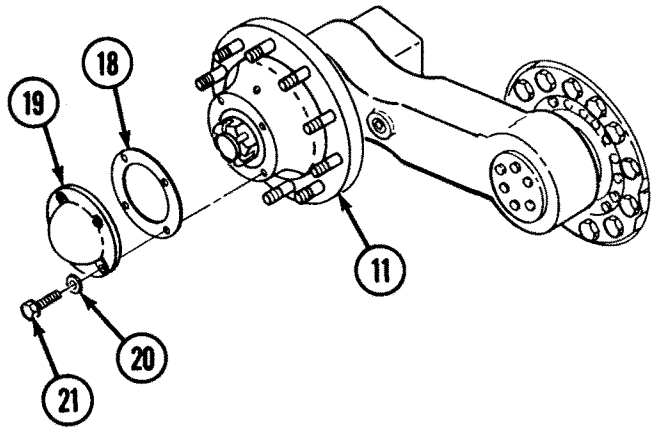
L Install nut (15) on roadwheel spindle (9) of roadwheel arm (13), and turn nut (15) by hand until tight.

M Tighten nut (15) to 150 lb-ft (203 N•m) while rotating hub (11) in both directions. Back off nut (15), then tighten nut (15) to 75 lb-ft (102 N•m) while rotating hub (11) in both directions.

N Mark position of nut (15) on roadwheel spindle (9), then back nut (15) off 30 degrees. (As a reference, slots (16) of nut (15) are 60 degrees apart.) Install cotter pin (17).

O Check ease of rotation of hub (11). If hub (11) cannot be rotated with one finger, repeat steps L through N.

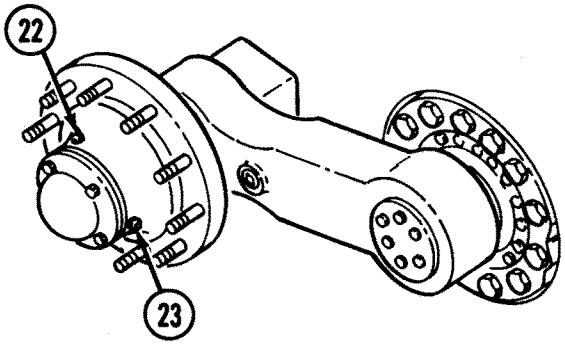




Note

Apply lubricating oil to threads of screws prior to installation.

P Install gasket (18) and cap (19) on hub (11) with four washers (20) and self-locking screws (21). Tighten self-locking screws (21) to 39-41 lb-ft (53-56 N•m).



Q Grease lubrication fitting (22) until grease can be seen coming out of relief valve (23).

FOLLOW-ON TASK:
Install roadwheel (p 4-762 or 4-772).

TRACK REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

4940-00-294-9518 Shop Equipment, Contact Maintenance, Truck Mounted

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Track Connecting Fixture (2)	5120-00-605-3926
Driftpin	2530-01-075-8292

Materials:

Grease	Item 19 Appendix D
Fibrous Rope	Item 29 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Running

General Safety Conditions:

WARNING

- When using hammer with driftpin or track pin, wear goggles.
- Do not put hands or arms between track and drive sprockets, or track and roadwheels, while vehicle is moving.
- Block roadwheels before working on vehicle when track is removed or disconnected.

REMOVAL

Note

- Remove only one track assembly at a time (to keep vehicle driveable) when removing track.
- Disconnect track at rear of vehicle about midway between No. 4 roadwheel and sprocket, and block roadwheels (p 2-28) on opposite side of vehicle.
- It may be necessary to chisel out area around locknut for removal.

A Drive vehicle onto hard, level surface.

B Place vehicle in UNSPRUNG mode and lower dozer blade (1) until it touches ground. Raise front roadwheel (2) as high as possible. If dozer blade (1) is no longer touching ground, then adjust track tension (TM 5-2350-262-10). Place transmission in neutral.

C Stop vehicle engine (TM 5-2350-262-10). Do not set parking brake. Relieve hydraulic pressure (p 2-27). Allow vehicle to settle for five minutes, then relieve hydraulic pressure again (p 2-27) to release any residual pressure.

D Remove locknut (3) and washer (4) from outer end of one track pin (5).

WARNING

When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in severe injury to personnel.

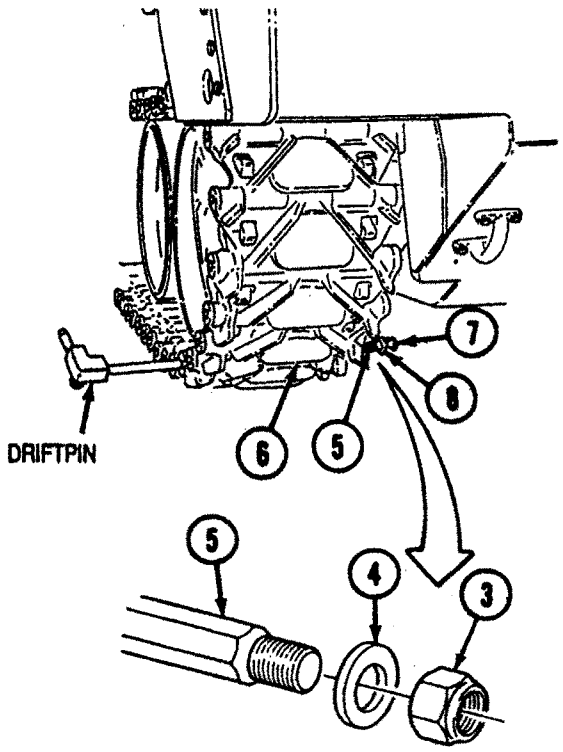
Note

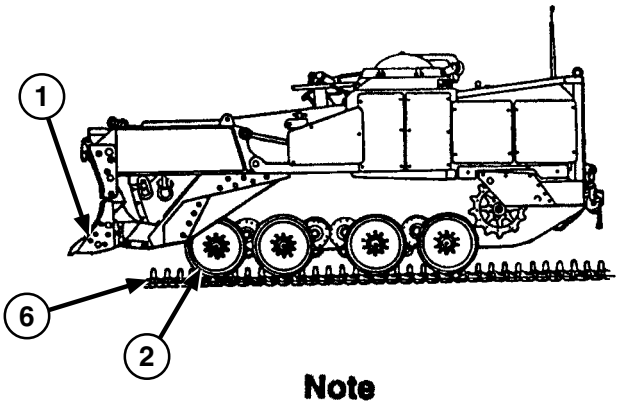
If track pin binds, it is most likely bent. Use cutting torch outfit to cut track pin.

E Using driftpin and hammer, drive track pin (5) out of ends of track (6). Remove driftpin from ends of track (6).

F Remove locknut (7) and washer (8) from track pin (5).

G Using hammer and crowbar, separate ends of track (6).





Note

Vehicle can be driven off track in CB mode, or winch may be used to pull vehicle off track. Refer to TM 5-2350-262-10.

WARNING

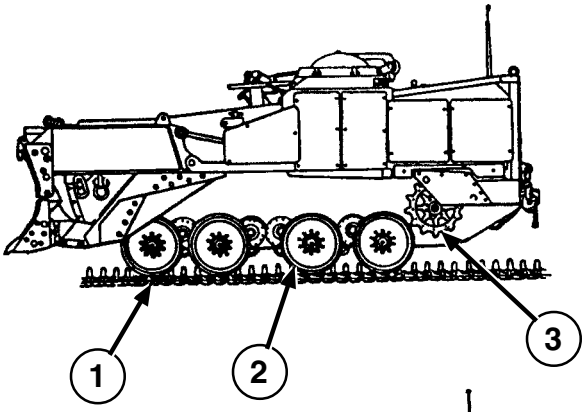
Do not put hands or arms between track and drive sprockets or track and roadwheels while vehicle is moving. Failure to comply may result in severe injury to personnel.

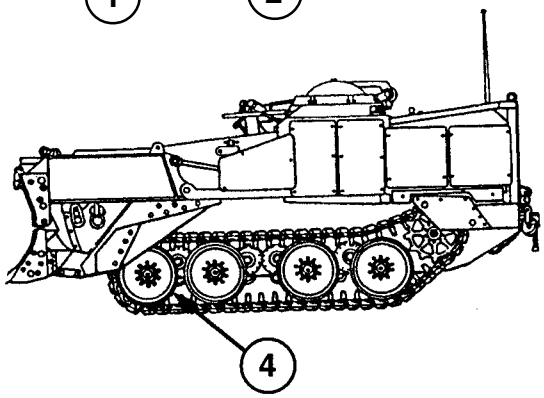
H Unblock roadwheels (p 2-28), and slowly drive vehicle forward until roadwheels are off track (6). Block roadwheels (p 2-28).

INSTALLATION

WARNING

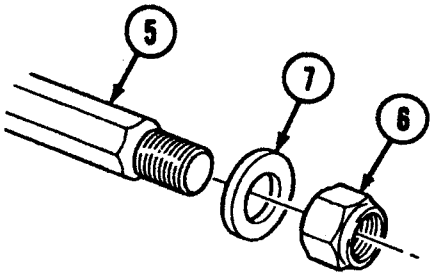
- Do not put hands or arms between track and drive sprockets, or track and roadwheels, while vehicle is moving. Failure to comply may result in severe injury to personnel.
- Block roadwheels before working on vehicle when track is removed or disconnected. Failure to comply may result in severe injury to personnel.





A Drive vehicle onto track in CB mode. Refer to TM 5-2350-262-10.

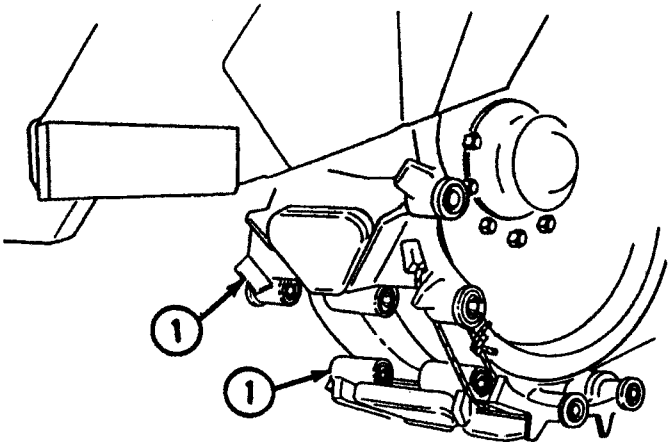
B Remove blocks from roadwheels (p 2-28). Position track (1) ahead and in a line with roadwheels, and drive vehicle forward while guiding track (1) under roadwheels. Continue driving vehicle until track (1) extends behind No. 4 roadwheel (rear roadwheel) (2) enough to reach over drive sprocket (3).



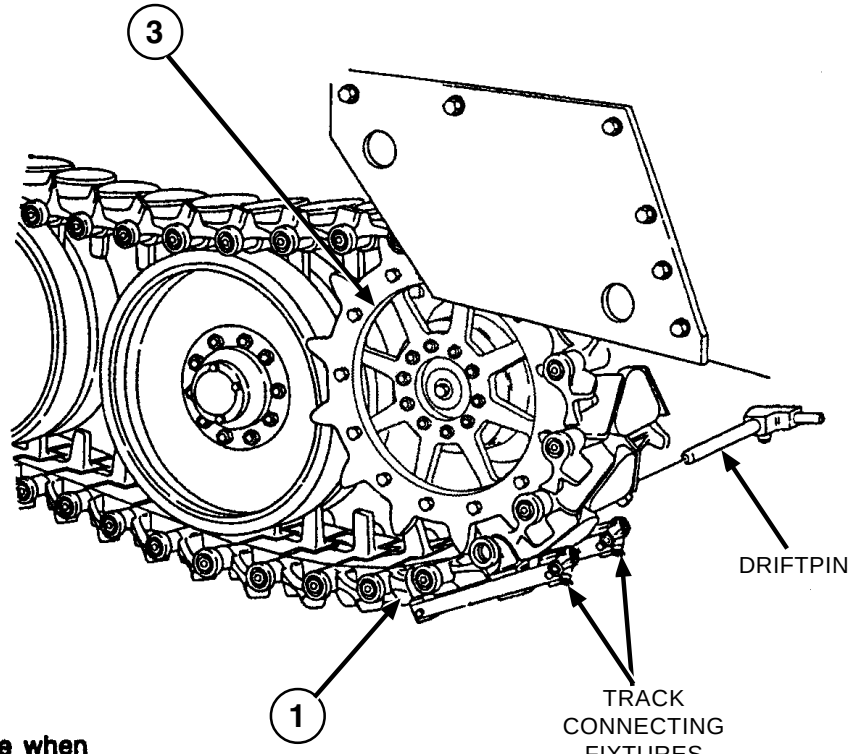
C Connect track (1) to sprocket (3) and continue driving vehicle and guiding track (1) until track (1) extends over No. 1 roadwheel (4).

D Coat track pin (5) and face (washer side) of new locknut (6) with grease.

E Install washer (7) and new locknut (6) on track pin (5). Tighten locknut (6) to end of threads.



F Tie ends of track (1) together with rope, and pull ends of track (1) together as close as possible.



Note

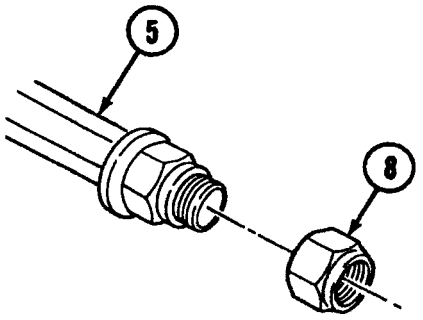
Do not shut off vehicle engine when connecting track. Vehicle will settle, taking up some slack in track.

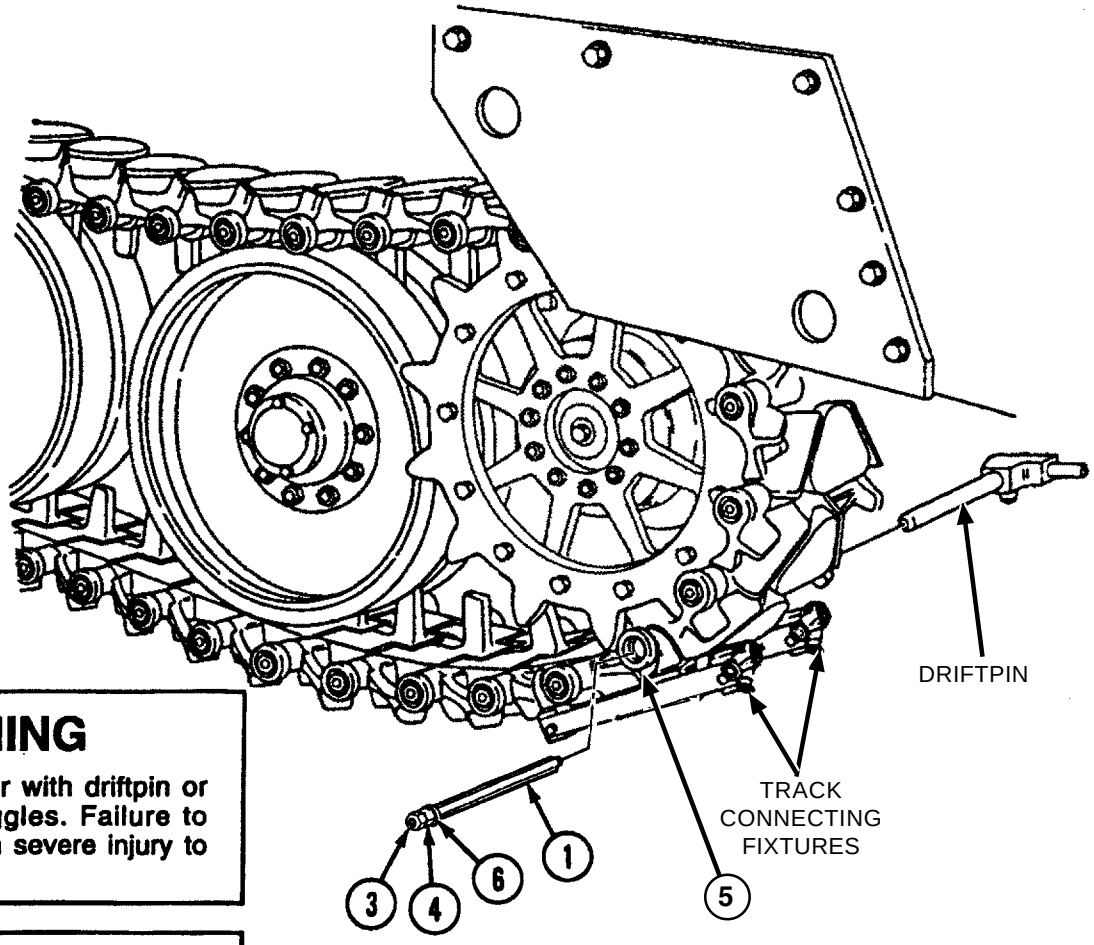
G **Drive vehicle backward until track connection is midway between ground and drive sprocket (3). Block track (1)** (p 2-28).

H **Position two track connecting fixtures on ends of track (1). Ensure fixtures do not bind rope holding ends of track (1).**

I **Tighten track connecting fixtures until ends of track (1) mesh. Insert driftpin through holes in ends of track (1).**

J **Install locknut (8) on track pin (5).**





WARNING

When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in severe injury to personnel.

CAUTION

If pin binds, bushings are not properly aligned. Remove pin, and tighten or loosen track connecting fixtures as necessary until bushings are aligned. Failure to comply may result in damage to equipment.

Note

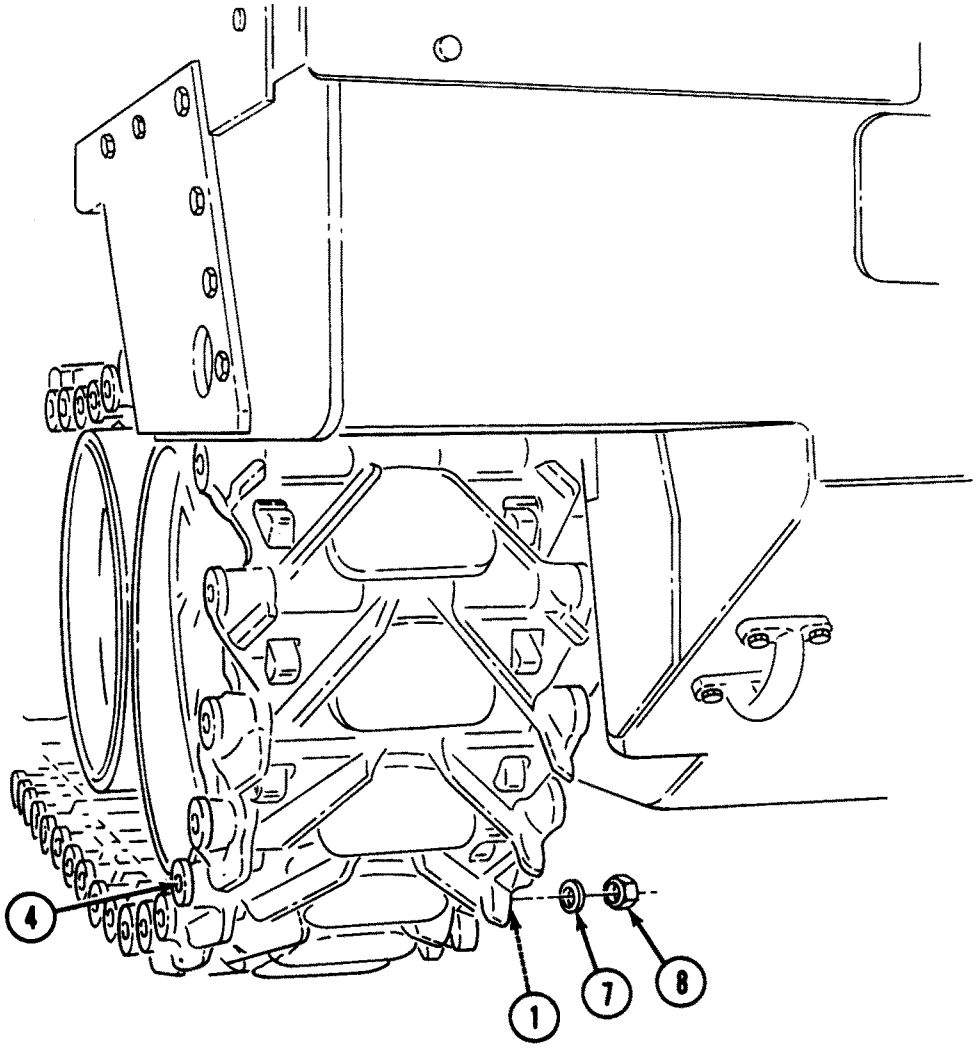
Track pin may have to be turned slightly during installation with 15-inch adjustable wrench to align pin with track shoe bushings.

K Using hammer and 15-inch adjustable wrench, install track pin (1) on tracks (2) by driving out driftpin with track pin (1).

L Remove locknut (3) from track pin (1).

M Loosen locknut (4) three turns. Drive track pin (1) into track shoe (5) until washer (6) is flush against track shoe (5).

N Remove two track connecting fixtures and rope from tracks (2).



O Install washer (7) and locknut (8) on hull side of track pin (1). Stop vehicle engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 2-27).

CAUTION

At least 1/16 in. (1.6 mm) of thread on track pin must extend through locknut. Failure to comply may result in damage to track pin and locknut.

P Tighten locknuts (4) and (8) to 120-160 lb-ft (163-217 N·m)

FOLLOW-ON TASK:
Adjust track tension (TM 5-2350-262-10).

TRACK SHOE AND PAD REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0653 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Supplemental No. 1, Less Power

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

4940-00-294-9518 Shop Equipment, Contact Maintenance, Truck Mounted

Special Tools:

Driftpin	2530-01-075-8292
Track Connecting Fixture (2)	5120-00-605-3926

Materials:

Grease	Item 19 Appendix D
Fibrous Rope	Item 29 Appendix D

Parts Reference:

TM 5-2350-262-24P Group AU

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Running

General Safety Conditions:

WARNING

- Do not work under vehicle unless hull is blocked and apron lockpins are installed.
- When using hammer with driftpin or track pin, wear goggles.

REMOVAL

Note

If removing track pad only, refer to step K. Track shoe does not have to be removed.

WARNING

Do not work under vehicle unless hull is blocked and apron lockpins are installed. Failure to comply may result in severe injury to personnel.

A Drive vehicle onto level ground, and position damaged track shoe (1) to be replaced midway between drive sprocket (2) and ground. Place transmission in neutral.

B Place vehicle in UNSPRUNG mode and lower front of vehicle until dozer blade touches ground. Raise front roadwheel as high as possible. If dozer blade is no longer touching ground, adjust track tension (TM 5-2350-262-10).

C Stop vehicle engine (TM 5-2350-262-10). Do not set parking brake. Relieve hydraulic pressure (p 2-27). Allow vehicle to settle five minutes, then relieve hydraulic pressure again (p 2-27) to release any residual pressure.

D Block track or roadwheels (p2-28) on side opposite that of damaged track shoe (1).

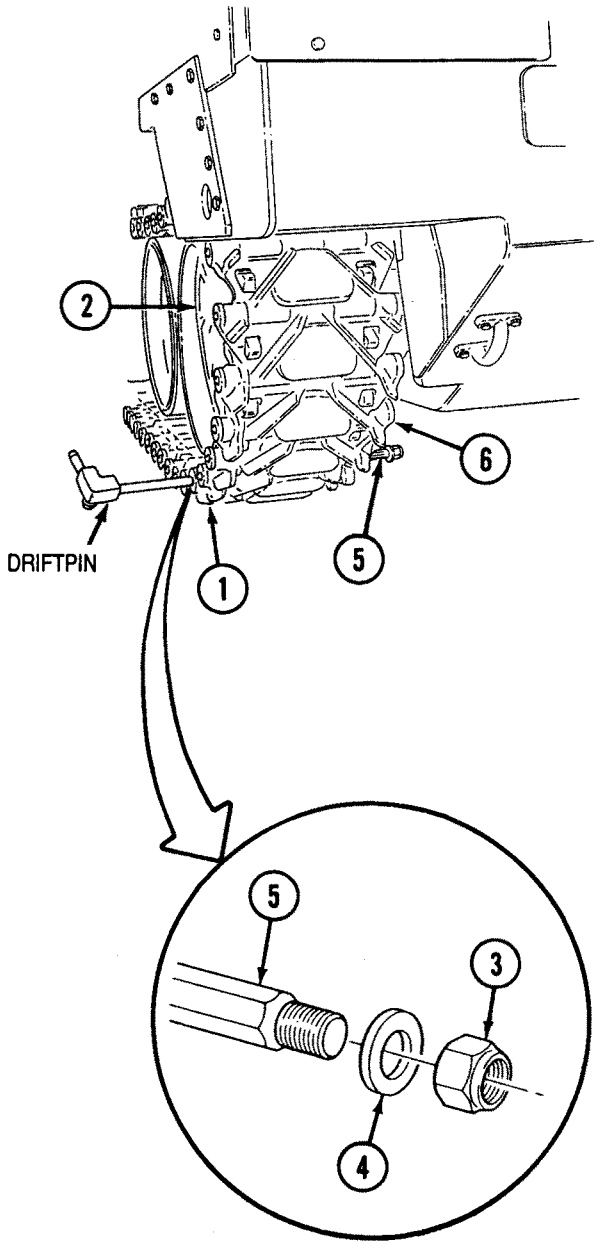
Note

- Disconnect track at rear of vehicle about midway between No. 4 roadwheel and sprocket.
- It may be necessary to chisel out area around locknut for removal.

E Remove locknut (3) and washer (4) from outer end of track pin (5) of damaged shoe (1).

WARNING

When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in injury to personnel.

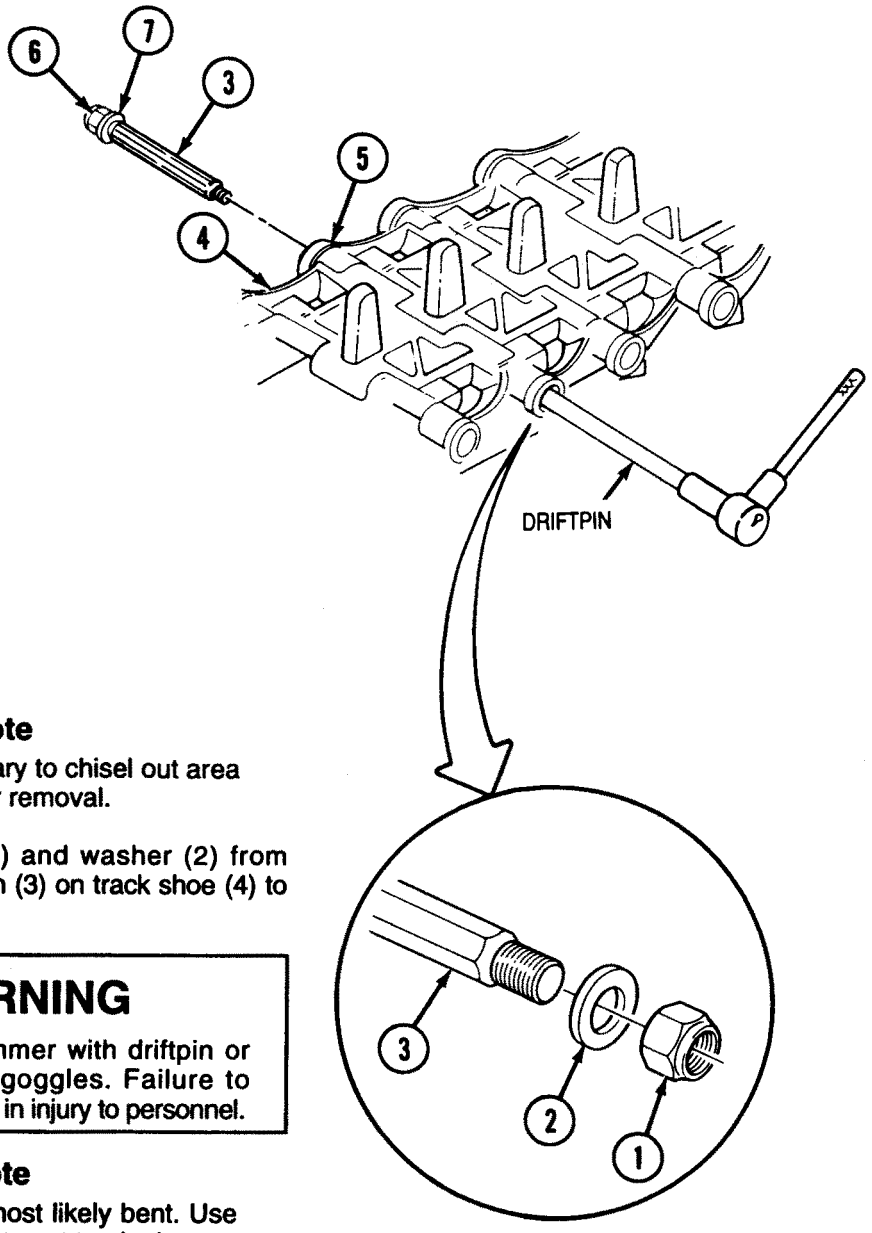


Note

If track pin binds, it is most likely bent. Use cutting torch to cut track pin.

F Using driftpin and hammer, drive track pin (5) out of ends of track (6). Remove driftpin from ends of track (6).

G Using hammer and crowbar, separate ends of track (6).



Note

It may be necessary to chisel out area around locknut for removal.

H Remove locknut (1) and washer (2) from outer end of track pin (3) on track shoe (4) to be removed.

WARNING

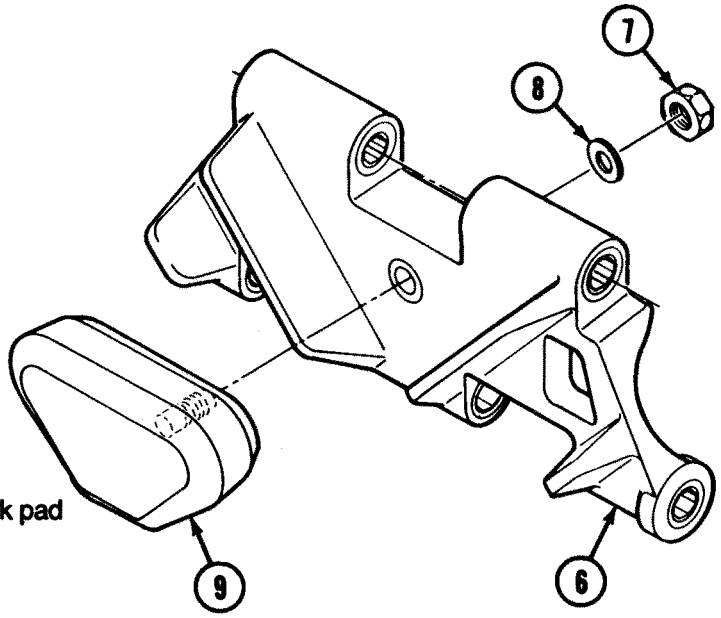
When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in injury to personnel.

Note

If pin binds, it is most likely bent. Use cutting torch outfit to cut track pin.

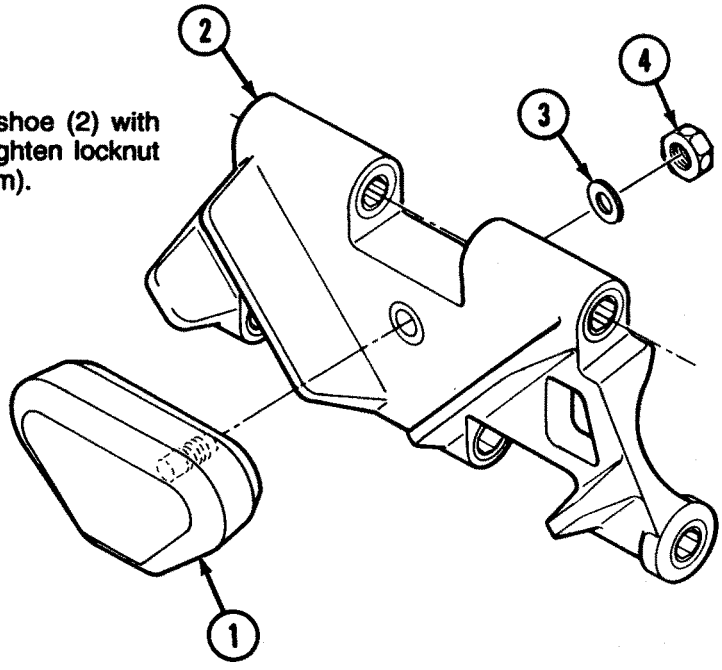
I Using driftpin and hammer, drive track pin (3) out of track (5) and track shoe (4). Remove driftpin and damaged track shoe (4) from track (5).

J Remove locknut (6) and washer (7) from ends of two track pins (3).



K Remove locknut (7), washer (8), and track pad (9) from track shoe (6).

INSTALLATION



A Install track pad (1) on track shoe (2) with washer (3) and locknut (4). Tighten locknut (4) to 240-270 lb-ft (325-366 N·m).

WARNING

Do not work under vehicle unless hull is blocked and apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.

Note

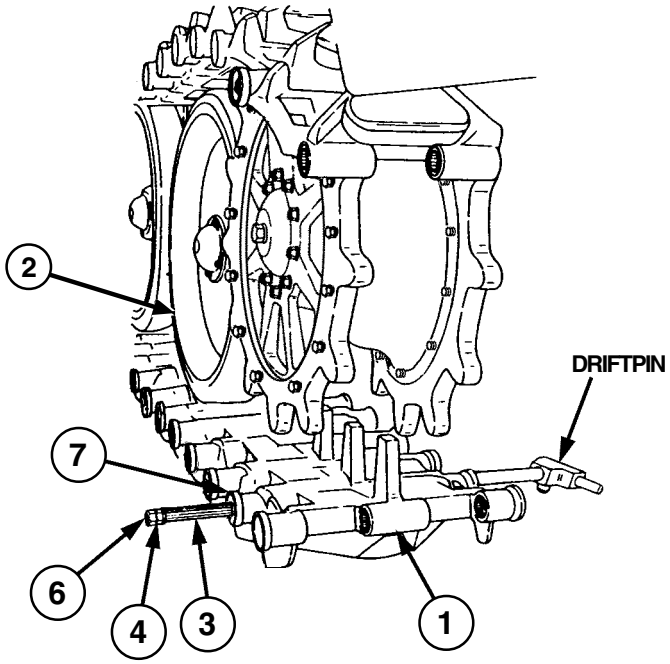
Perform Steps B through J if track shoe(s) were removed.

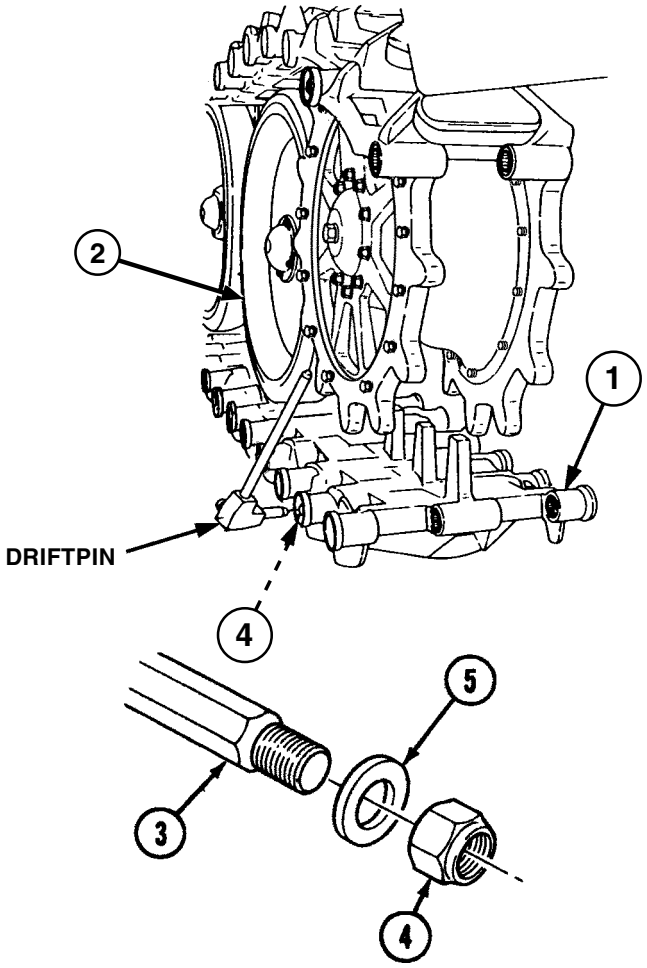
B Position vehicle so replacement track shoe (1) can be placed on ground behind No. 4 roadwheel (2).

C Coat threads of two track pins (3) and face (washer side) of four locknuts (4) with grease.

D Install washer (5) and locknut (4) on two track pins (3), and tighten locknuts (4) to end of threads.

E Install locknut (6) on track pin (3).





F Position replacement track shoe (1) on end of track (7) and align with driftpin.

WARNING

When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in injury to personnel.

Note

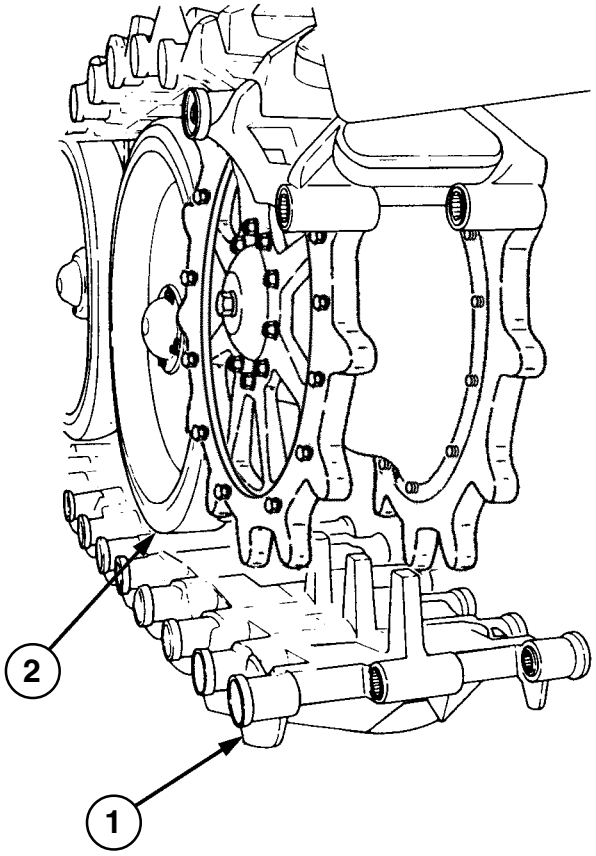
Track pin may have to be turned slightly during installation with 15-inch adjustable wrench to align track pin with bushings.

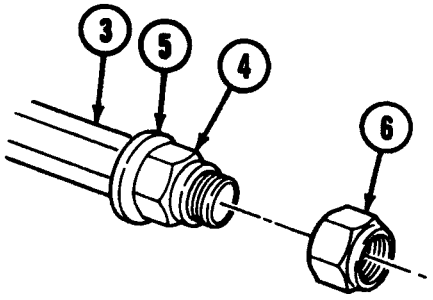
G Using hammer and 15-inch adjustable wrench, install track pin (3) on track (7) and track shoe (1) by driving out driftpin with track pin (3).

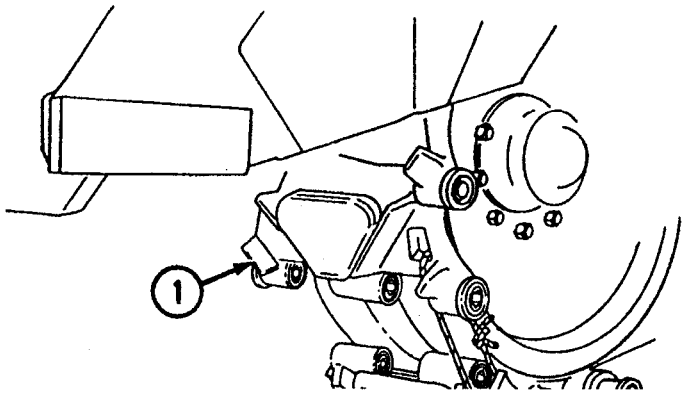
H Remove locknut (6) from track pin (3).

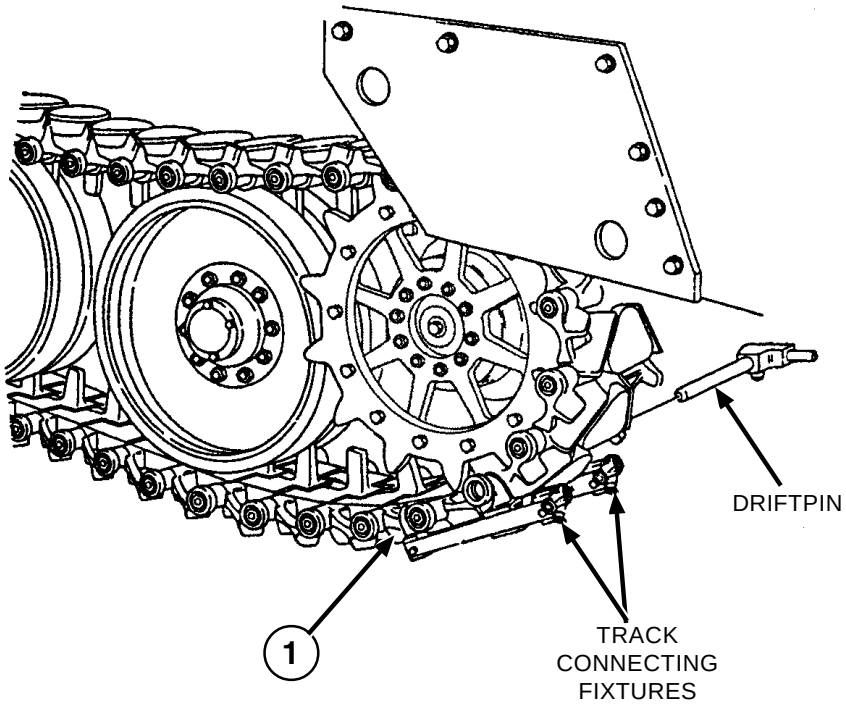
I Loosen locknut (4) three turns. Using driftpin and hammer, drive track pin (3) into track shoe (1) until washer (5) is flush against track shoe (1).

J Install washer (5) and locknut (4) on hull side of track pin (3).









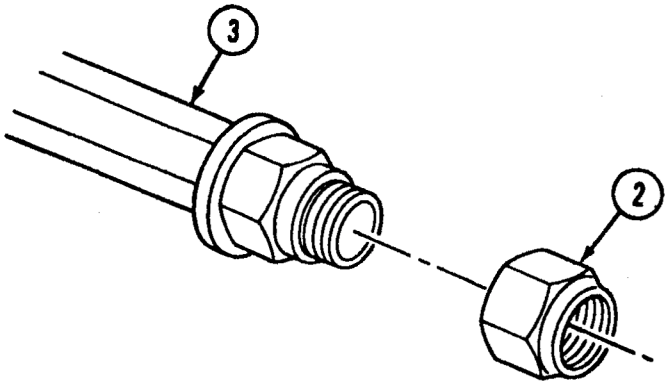
Note

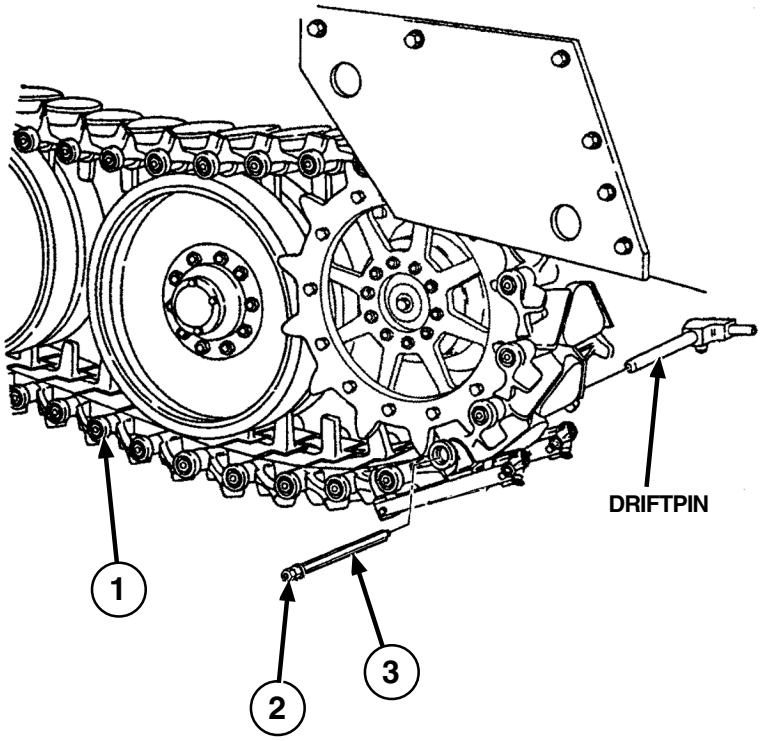
Do not shut off vehicle engine when connecting track. Vehicle will settle, taking up some slack in track.

K **Start vehicle engine (TM 5-2350-262-10), and tie ends of track (1) together with rope. Pull ends of track (1) together as close as possible.**

L **Position two track connecting fixtures on ends of track (1). Ensure fixtures do not bind rope holding ends of track (1).**

M **Tighten track connecting fixtures until ends of track (1) mesh. Drive driftpin through holes in ends of track (1).**





N Install locknut (2) on track pin (3).

WARNING

When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in injury to personnel.

CAUTION

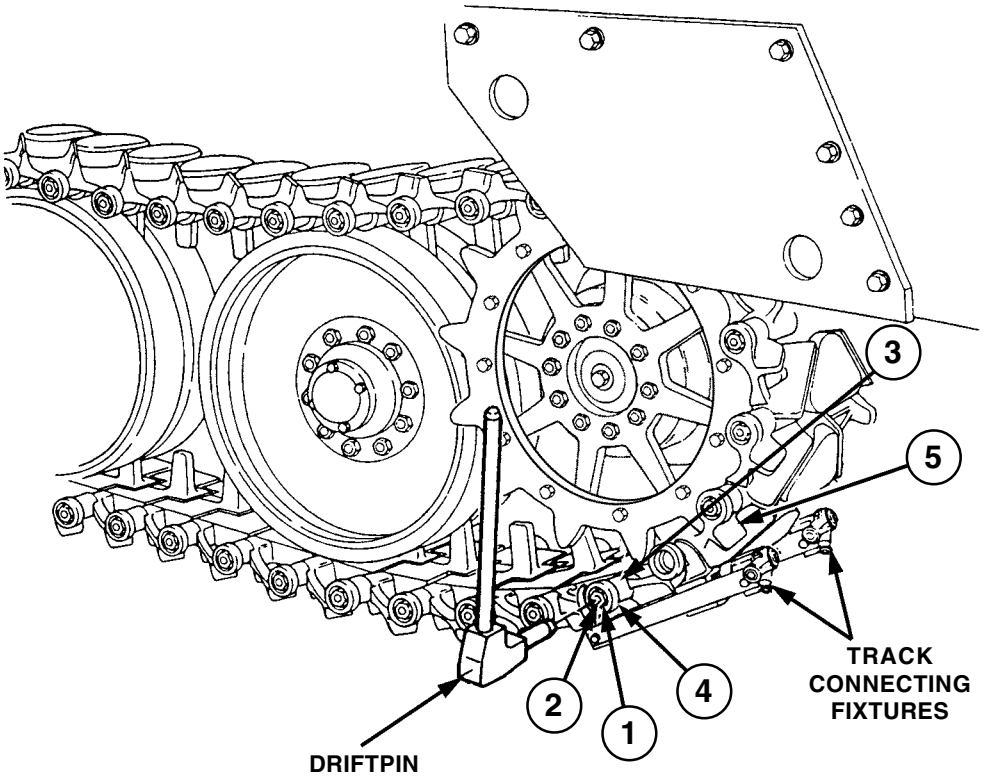
If pin binds, bushings are not properly aligned. Remove pin, and tighten or loosen track connecting fixtures as necessary until bushings are aligned. Failure to comply may result in damage to equipment.

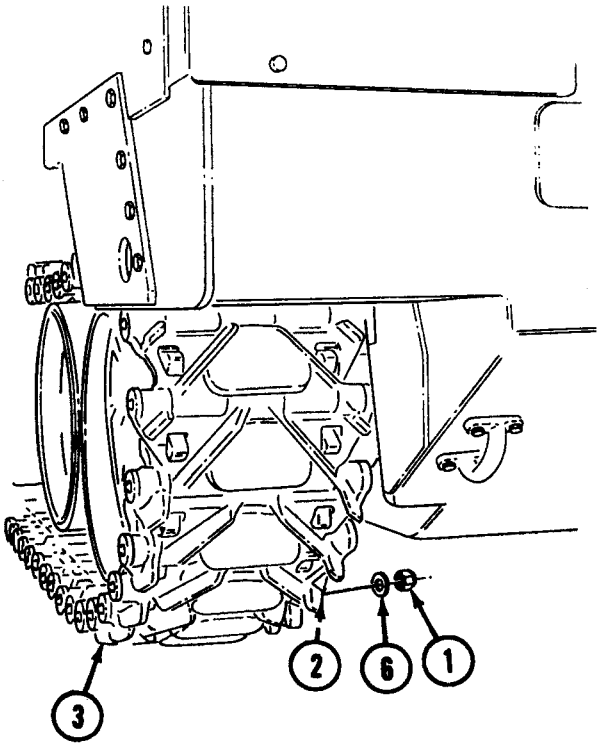
Note

Track pin may have to be turned slightly during installation with 15-inch adjustable wrench to align pin with track shoe bushings.

O Using hammer and 15-inch adjustable wrench, install track pin (3) on tracks (1) by driving out drift pin with track pin (3).

P Remove locknut (2) from track pin (3).





Q Loosen locknut (1) three turns. Drive track pin (2) into track shoe (3) until washer (4) is flush against track shoe (3).

R Remove two track connecting fixtures and rope from tracks (5).

S Install washer (6) and locknut (1) on hull side of track pin (2). Stop vehicle engine (TM 5-2350-262-10).

CAUTION

At least 1/16 in. (1.6 mm) of thread on track pins must extend through locknuts. Failure to comply will result in damage to track pins and nuts.

T Tighten four locknuts (1) to 120-160 lb-ft (163-217 N-m).

FOLLOW-ON TASK:
Adjust track tension (TM 5-2350-262-10).

Section XIV. GROUP AV, AIR PURIFIER INSTALLATION

TASK **PAGE**

Air Purifier Electrical Components Replacement 4-806
Air Purifier Hoses Replacement 4-804
Air Purifier Service and Replacement 4-802
Driver's Compartment Mounting Bracket Replacement 4-809
NBC Air Heater Replacement 4-798
NBC Frame Assembly Replacement 4-800

NBC AIR HEATER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AV

Personnel Required:

Quarter Master and Chemical Equipment Repairer 63J10

Reference:

TM 3-4240-276-30&P

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

Note

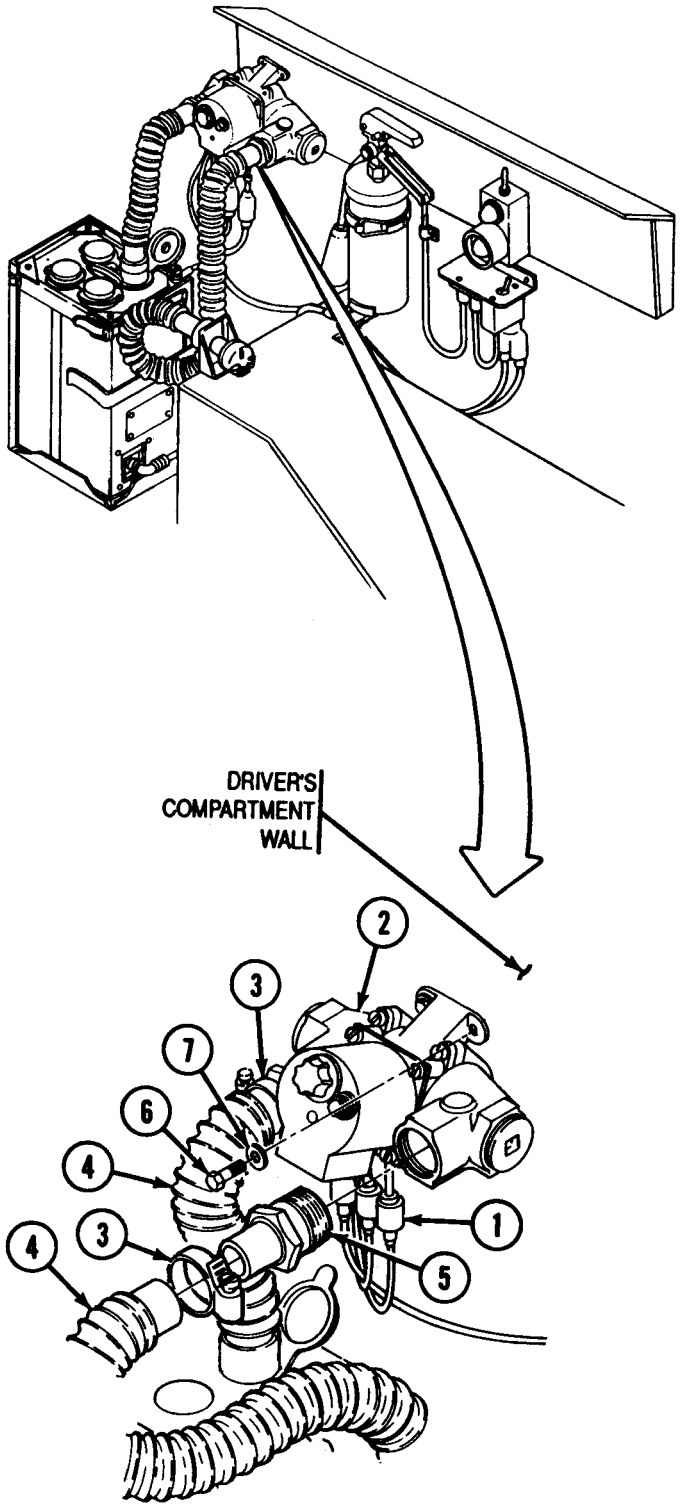
- Tag electrical leads prior to removal for installation.
- For repair of heater, see TM 3-4240-276-30&P.

A Disconnect three electrical leads (1) from air heater (2).

B Loosen two clamps (3), and disconnect two hoses (4) from air heater (2).

C Remove two adapters (5) from air heater (2).

D Remove four self-locking screws (6), washers (7), and air heater (2) from driver's compartment wall. Discard self-locking screws (6).



INSTALLATION

A Install air heater (2) on driver's compartment wall with four washers (7) and self-locking screws (6).

B Install two adapters (5) on air heater (2).

C Connect two hoses (4) to adapters (5), and tighten two clamps (3).

D Connect three electrical leads (1) to air heater (2).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

NBC FRAME ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (4)

Parts Reference:

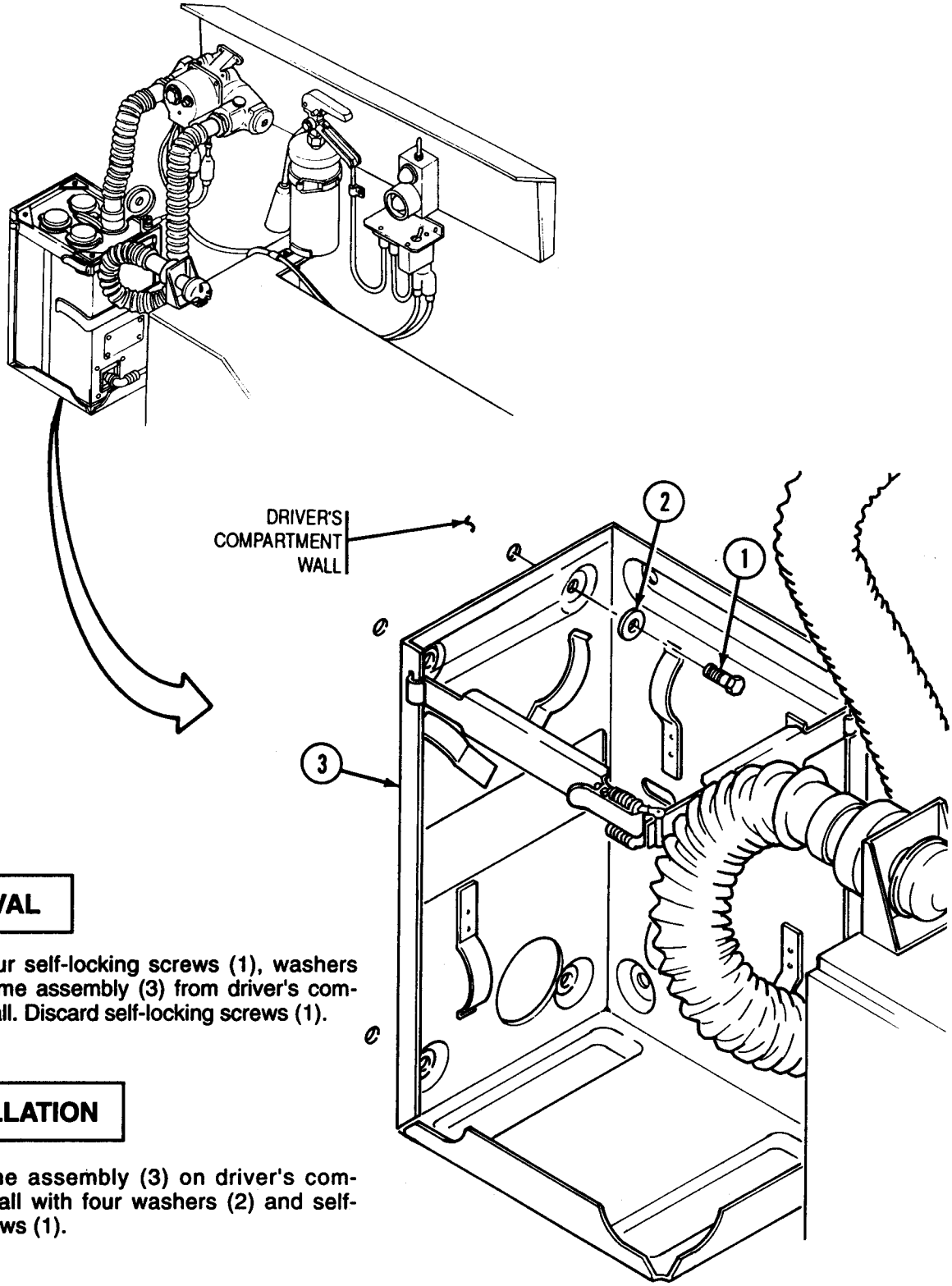
TM 5-2350-262-24P Group AV

Personnel Required:

Quarter Master and Chemical Equipment Repairer 63J10

Equipment Condition:

Reference	Condition Description
Page 4-803	Air Purifier Removed



REMOVAL

Remove four self-locking screws (1), washers (2), and frame assembly (3) from driver's compartment wall. Discard self-locking screws (1).

INSTALLATION

Install frame assembly (3) on driver's compartment wall with four washers (2) and self-locking screws (1).

FOLLOW-ON TASK:
Install air purifier (p 4-803).

AIR PURIFIER SERVICE AND REPLACEMENT

This task covers:

a. Removal

b. Service

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Filter, Gas

Filter, Particulate

Parts Reference:

TM 5-2350-262-24P Group AV

Personnel Required:

Quarter Master and Chemical Equipment Repairer 63J10

Reference:

FM 3-4

FM 3-5

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

- The NBC protection filters use a type of carbon that contains chromium VI. This is a known carcinogen if inhaled or swallowed. Damaged or unusable filters are classified as hazardous waste.
  - Do not throw away damaged or unusable filters as trash.
  - Turn in damaged or unusable filters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).

  Filters are safe to handle only if they are not damaged and leaking carbon. If there is a carbon leak, use protection (such as a dust respirator to cover nose and mouth), put carbon in container (such as self-sealing plastic bag), and turn in to hazardous waste management office or DRMO.

  Disposal of hazardous waste is restricted by law. Violation is subject to criminal penalties.
- NBC contaminated filters can only be handled and disposed of by trained personnel. Personnel must use protective clothing (FM 3-4) and follow appropriate decontamination procedures (FM 3-5). Follow unit SOP for final disposal of contaminated filters.

REMOVAL

A Disconnect hose (1) from port (2), and cover port (2) with cap (3).

B Remove screw (4), washer (5), and ground wire (6) from cover (7).

C Disconnect electrical connector (8) from air purifier (9).

D Release holddown latch (10) and remove air purifier (9) from frame assembly (11).

SERVICE

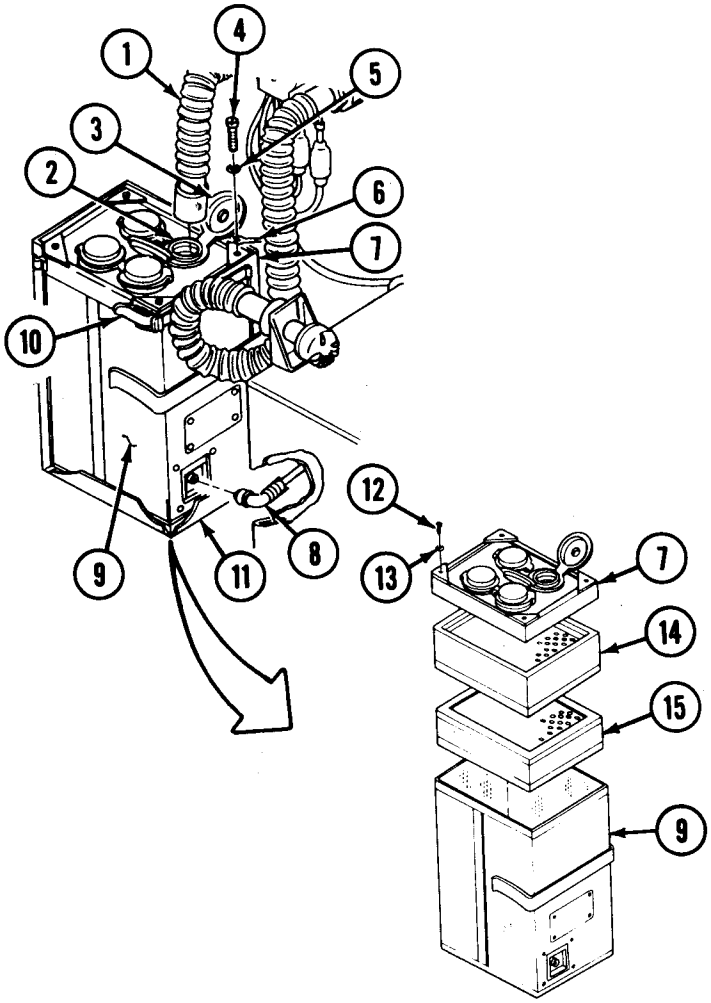
A Remove three screws (12), washers (13), and cover (7) from air purifier (9).

WARNING

- The NBC protection filters use a type of carbon that contains chromium VI. This is a known carcinogen if inhaled or swallowed. Damaged or unusable filters are classified as hazardous waste.
  - Do not throw away damaged or unusable filters as trash.
  - Turn in damaged or unusable filters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).

  Filters are safe to handle only if they are not damaged and leaking carbon. If there is a carbon leak, use protection (such as a dust respirator to cover nose and mouth), put carbon in container (such as self-sealing plastic bag), and turn in to hazardous waste management office or DRMO.

  Disposal of hazardous waste is restricted by law. Violation is subject to criminal penalties.
- NBC contaminated filters can only be handled and disposed of by trained personnel. Personnel must use protective clothing (FM 3-4) and follow appropriate decontamination procedures (FM 3-5). Follow unit SOP for final disposal of contaminated filters. Failure to comply may result in severe injury to personnel or death.



B Remove gas filter (14) and particulate filter (15) from air purifier (9). Discard filters (14) and (15).

C Install replacement particulate filter (15) and gas filter (14) on air purifier (9).

D Install cover (7) on air purifier (9) with three washers (13) and screws (12).

INSTALLATION

A Install air purifier (9) on frame assembly (11) and close holddown latch (10).

B Connect electrical connector (8) to air purifier (9).

C Install ground wire (6) on air purifier (9) with washer (5) and screw (4).

D Disconnect cap (3) from port (2), and connect hose (1) to air purifier (9).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

AIR PURIFIER HOSES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

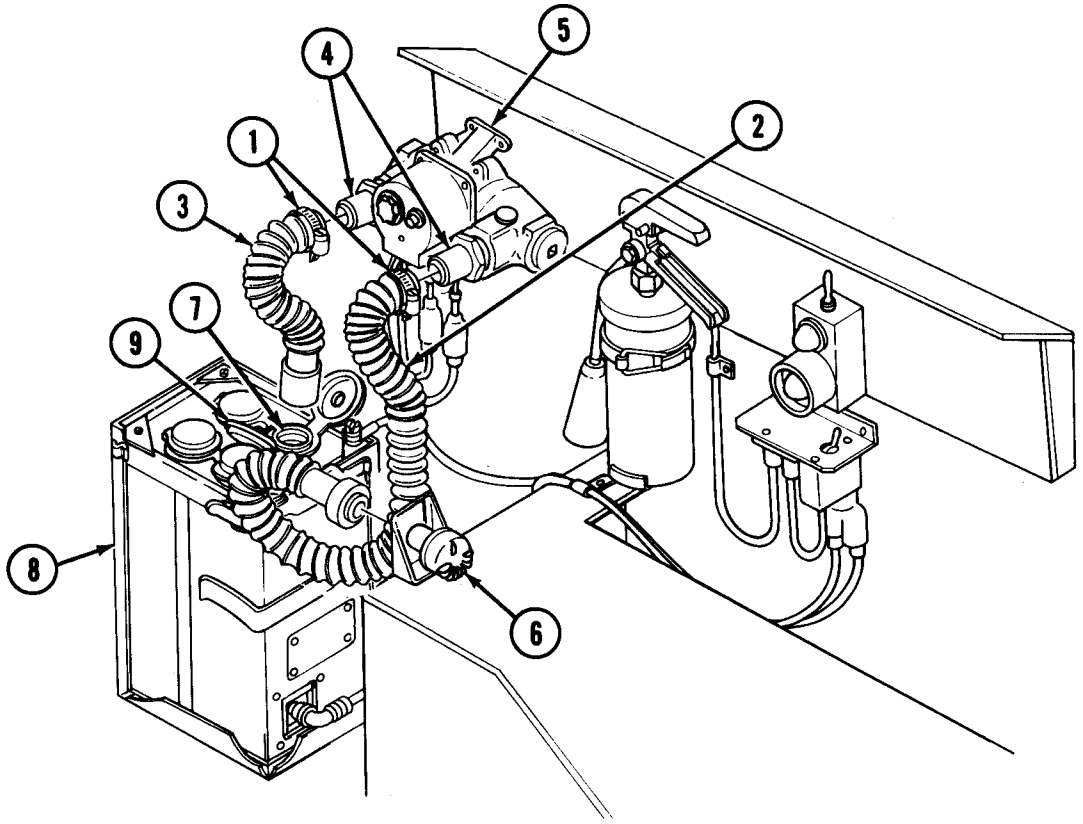
5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Personnel Required:

Quarter Master and Chemical Equipment Repairer 63J10

Parts Reference:

TM 5-2350-262-24P Group AV



REMOVAL

A Loosen two clamps (1), and disconnect hoses (2) and (3) from two adapters (4) on NBC air heater (5).

B Remove hose (2) from connector (6).

C Remove hose (3) from port (7) of air purifier (8), and connect cap (9) to port (7).

INSTALLATION

A Disconnect cap (9) from port (7) of air purifier (8), and install hose (3) on port (7).

B Install hose (2) on connector (6).

C Connect hose (2) and hose (3) to two adapters (4) on NBC air heater (5), and tighten two clamps (1).

AIR PURIFIER ELECTRICAL COMPONENTS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (3)

Parts Reference:

TM 5-2350-262-24P Group AV

Materials:

Emery Cloth Item 8 Appendix D

Personnel Required:

Quarter Master and Chemical Equipment Repairer 63J10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

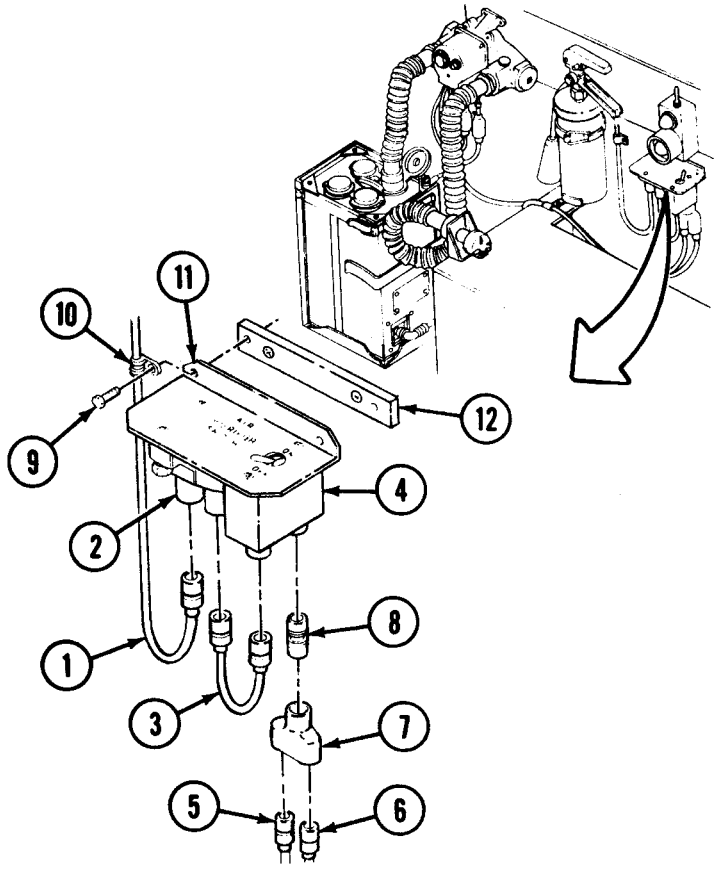
Note

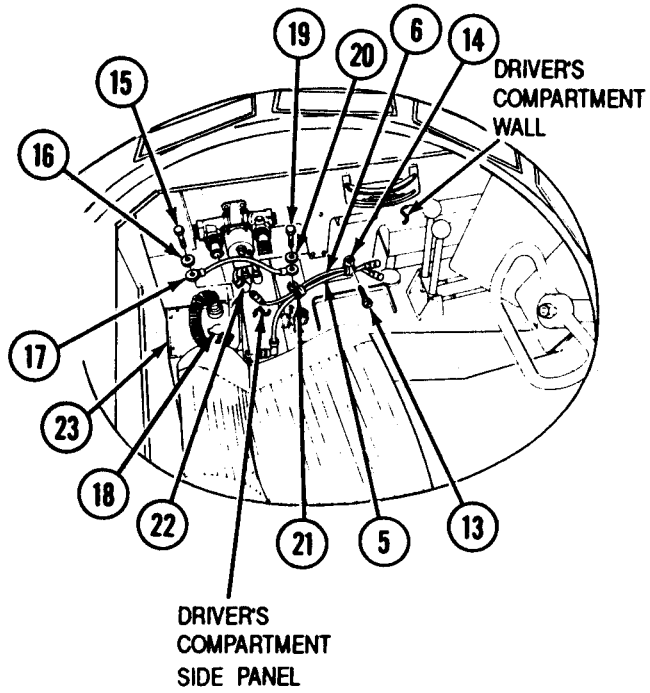
Tag electrical leads prior to removal for installation.

A Disconnect lead (1) from circuit breaker (2), and remove lead (3) from circuit breaker (2) and switch (4).

B Disconnect leads (5) and (6) from adapter (7), and remove adapter (7) and connector (8) from switch (4).

C Remove two self-locking screws (9), clamp (10), and panel (11) from mounting bracket (12). Discard self-locking screws (9).





D Remove screw (13) and clamp (14) from driver's compartment wall and leads (5) and (6).

E Remove screw (15), washer (16), and ground wire (17) from air purifier cover (18).

F Remove self-locking screw (19), washers (20), clamp (21), and ground wire (17) from leads (5) and (6). Discard self-locking screw (19).

G Remove lead (6) from air heater lead (22).

H Disconnect lead (5) from air purifier (23).

INSTALLATION

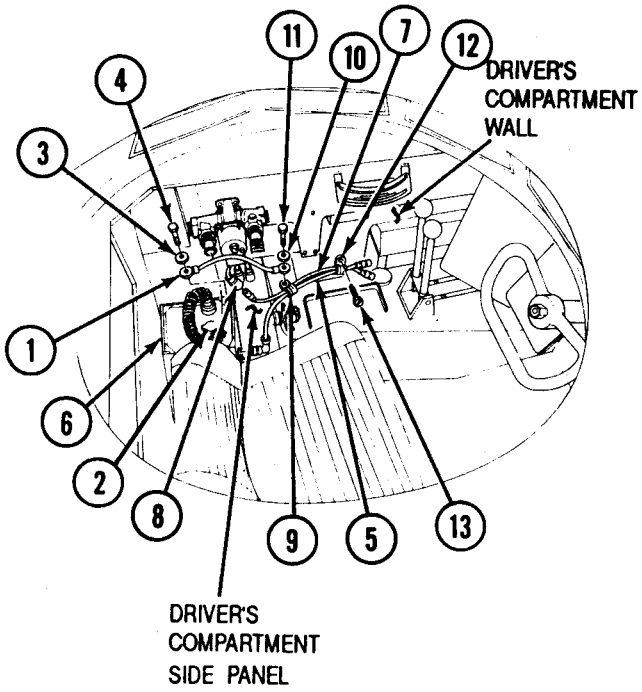
A Clean terminals of ground wire (1) and mating surface of air purifier cover (2) with emery cloth until metal is clean and free of paint. Install ground wire (1) on air purifier cover (2) with washer (3) and screw (4).

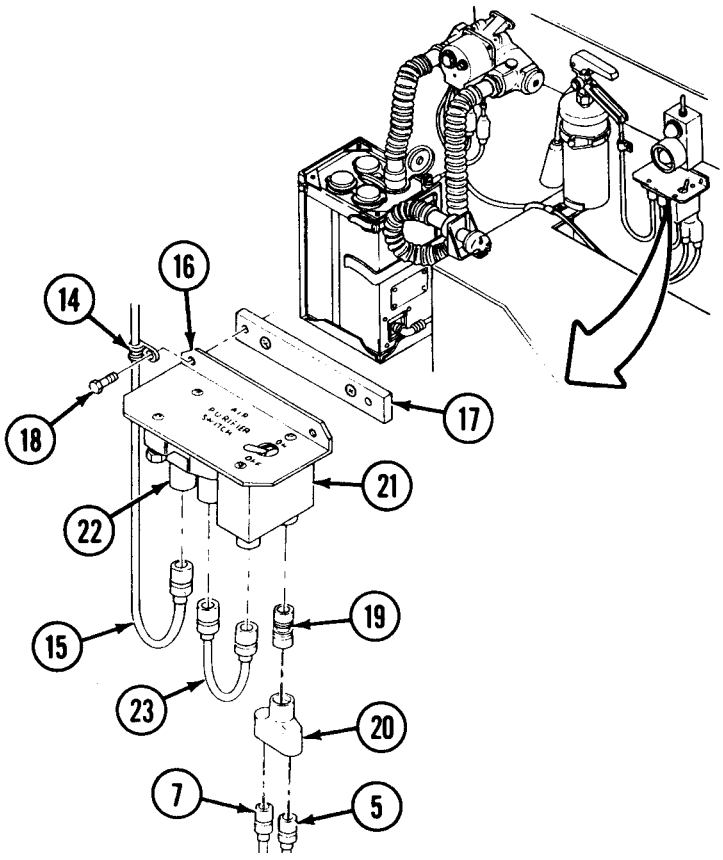
B Install lead (5) on air purifier (6).

C Install lead (7) on air heater lead (8).

D Install clamp (9) and ground wire (1) on leads (5) and (7) and driver's compartment side panel with washer (10) and self-locking screw (11).

E Install clamp (12) on leads (5) and (7) and driver's compartment wall with screw (13).





G Install clamp (14) on lead (15), and install panel (16) and clamp (14) on mounting bracket (17) with two self-locking screws (18).

H Install connector (19) and adapter (20) on switch (21), and connect leads (5) and (7) to connector (20).

I Connect lead (15) to circuit breaker (22), and install lead (23) on circuit breaker (22) and switch (21).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

DRIVER'S COMPARTMENT MOUNTING BRACKET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanics: Automotive

Parts:

Self-locking Screw (5)

Parts Reference:

TM 5-2350-262-24P Group AV

Personnel Required:

Construction Equipment Repairer 62B10

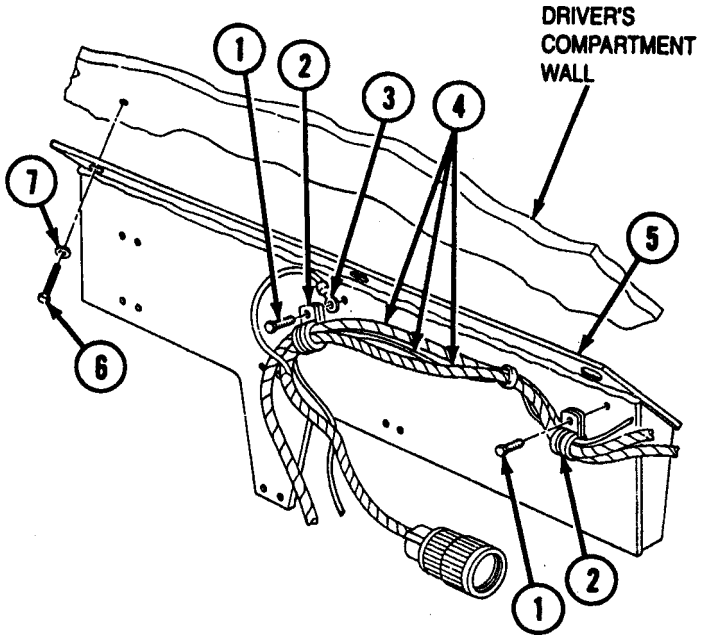
Equipment Condition:

Reference	Condition Description
Page 4-799	NBC Air Heater Removed
Page 4-213	Portable Dry Powder Fire Extinguisher Bracket Removed
Page 4-163	Smoke Grenade Arming-Firing Unit Removed

REMOVAL

A Remove two self-locking screws (1) and clamps (2), securing ground wire (3) and three leads (4) to mounting bracket (5). Discard self-locking screws (1).

B Remove three self-locking screws (6), washers (7), and mounting bracket (5) from driver's compartment wall. Discard self-locking screws (6).



INSTALLATION

A Install mounting bracket (5) on driver's compartment wall with three washers (7) and self-locking screws (6).

B Secure three leads (4) and ground lead (3) to mounting bracket (5) with two clamps (2) and self-locking screws (1).

FOLLOW-ON TASKS:

- Install smoke grenade arming-firing unit (p 4-163).
- Install portable dry powder fire extinguisher Bracket (p 4-213).
- Install NBC air heater (p 4-799).

Section XV. GROUP AW, RADIO EQUIPMENT INSTALLATION

TASK	PAGE
Radio Equipment Box Replacement	4-815
Radio Power Harness Replacement and Repair	4-812

RADIO POWER HARNESS REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (7)

Self-locking Screw (4)

Parts Reference:

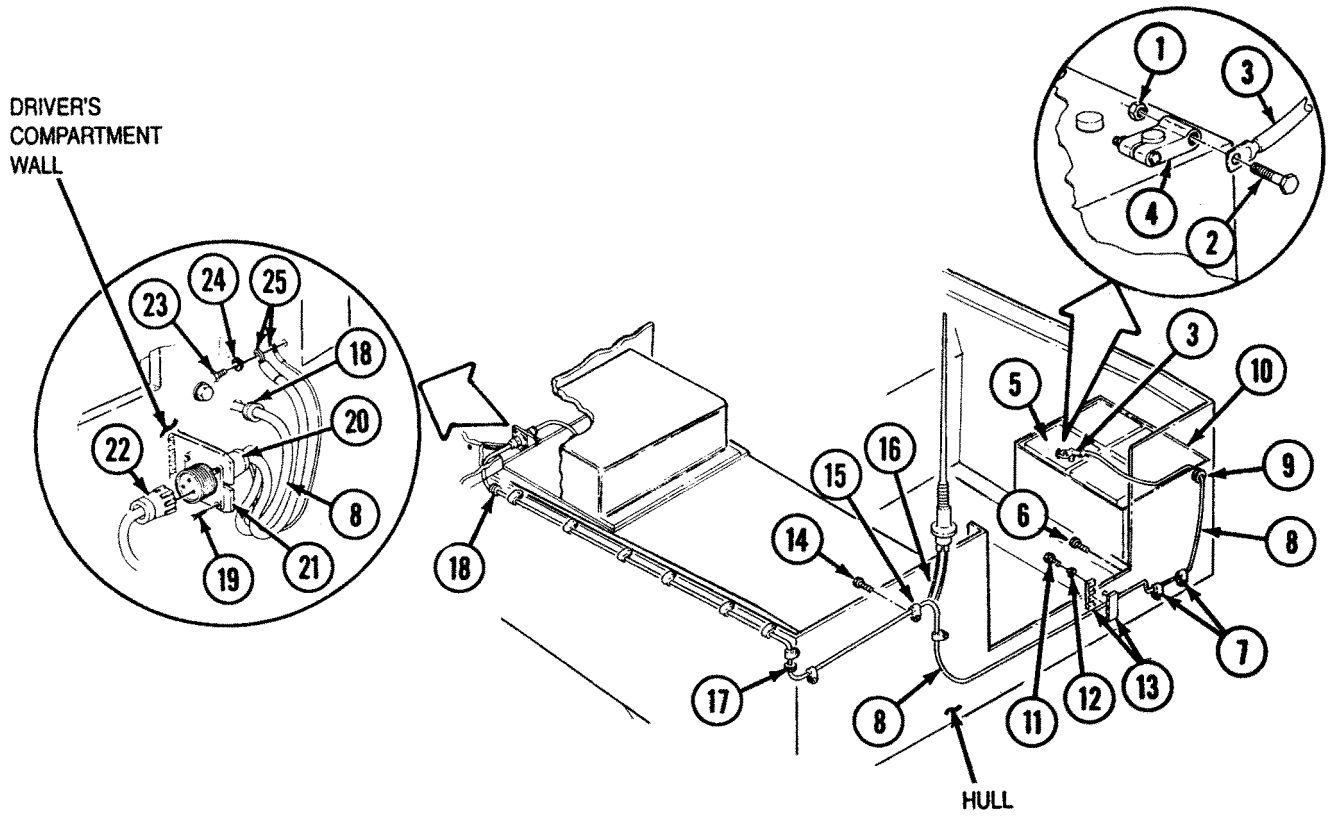
TM 5-2350-262-24P Group AW

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected
Page 4-361	Rear Floor Plates Removed



REMOVAL

A Remove nut (1), screw (2), and radio power harness lead (3) from positive terminal clamp (4) of battery (5). Tie wire or cord to end of radio power harness lead (3).

B Remove two screws (6) and clamps (7) securing radio power harness (8) to hull. Pull radio power harness (8) through grommet (9) in battery box (10).

Note

Clamps also hold fuel and air lines and electrical harnesses. Note location of lines and harnesses prior to removal for installation.

C Remove six screws (11), lockwashers (12), and three clamp halves (13) securing radio power harness (8) to hull. Discard lockwashers (12).

Note

Clamps also hold antenna harness.

D Remove ten screws (14) and loop clamps (15) from radio power harness (8) and antenna harness (16). Remove grommet (17) only if damaged.

E Remove grommet (18) from driver's compartment wall, and pull radio power harness (8) through driver's compartment wall.

F Remove four self-locking screws (19) securing terminal (20) to bracket (21). Discard self-locking screws (19).

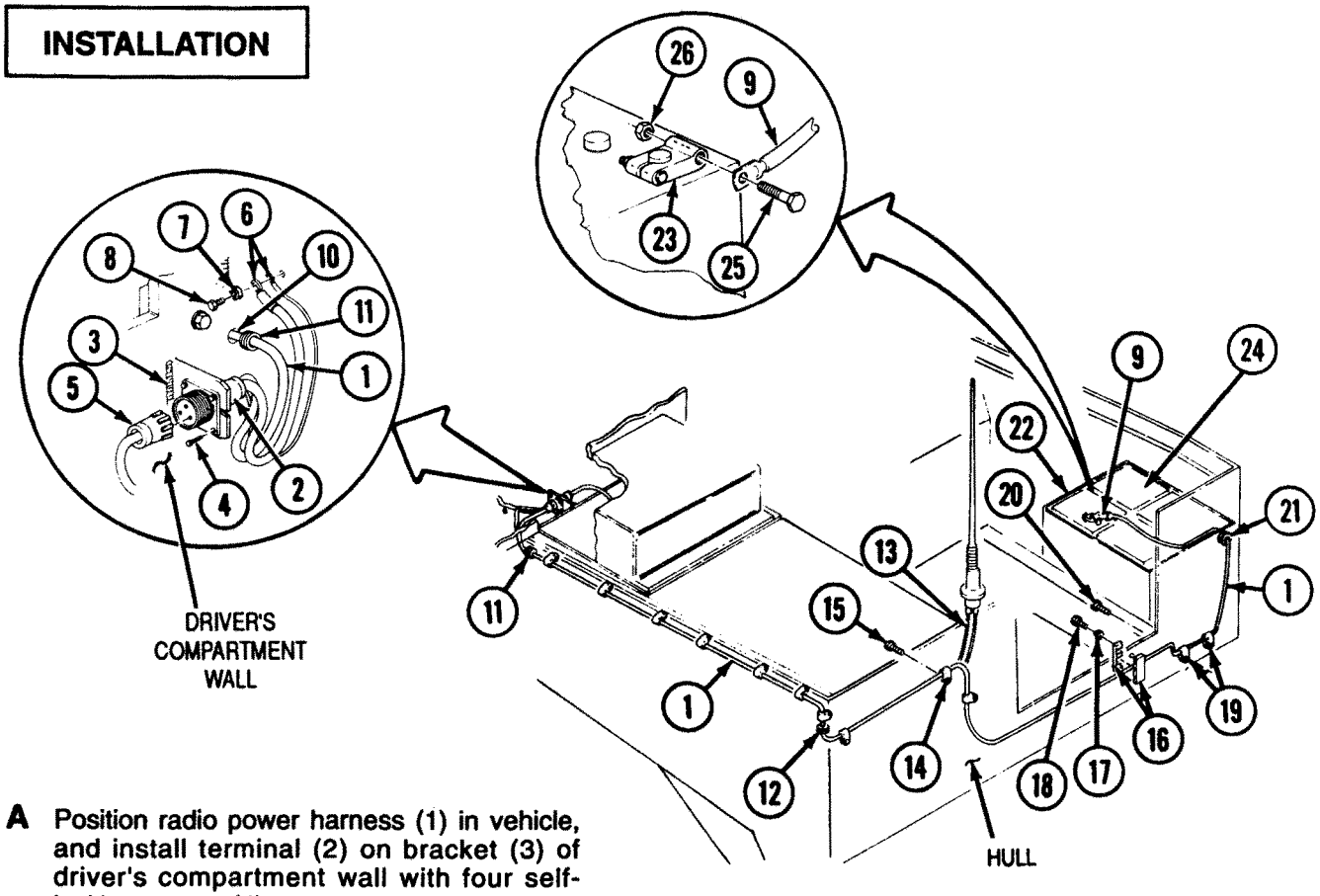
G Disconnect connector (22) from terminal (20).

H Remove screw (23), lockwasher (24), and two ground wires (25) from driver's compartment wall. Remove radio power harness (8) from vehicle. Discard lockwasher (24).

REPAIR

Refer to wiring harness and cable repair (p 3-1) to repair the radio power harness.

INSTALLATION



A Position radio power harness (1) in vehicle, and install terminal (2) on bracket (3) of driver's compartment wall with four self-locking screws (4).

B Connect connector (5) to terminal (2).

C Connect two ground wires (6) to driver's compartment wall with lockwasher (7) and screw (8).

D Pull radio power harness 48 lead (9) through hole (10) in driver's compartment wall, and install grommet (11) on radio power harness (1) and driver's compartment wall.

Note

Clamps also hold antenna harness.

F Install grommet (12) on radio power harness (1), if removed.

G Secure radio power harness (1) and antenna harness (13) to hull with ten clamps (14) and screws (15).

Note

- Clamps also hold fuel lines, air lines, and electrical harnesses.
- Do not tighten clamps until after radio power harness is connected to battery terminal.

H Route radio power harness (1) through third slot in clamp halves (16), and install clamp halves (16) on hull with six lockwashers (17) and screws (18).

I Secure radio power harness (1) to hull with two clamps (19) and screws (20). Route radio power harness (1) through grommet (21) of battery box (22).

J Connect radio power harness 48 lead (9) to positive terminal clamp (23) of battery (24) with screw (25) and nut (26).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Install rear floor plates (p 4-361).

RADIO EQUIPMENT BOX REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Special Tools:

Eyebolt (2) 5306-00-050-0347

Parts:

Locknut (4)

Self-locking Screw (25)

Materials:

Lubricating Oil Item 26 Appendix D

Parts Reference:

TM 5-2350-262-24P Group AW

Reference:

TM 5-2350-262-10

SB-11-131-2

TM 11-5820-498-12

TM 11-5820-890-10-HR

Personnel Required:

Two Construction Equipment Repairers 62B10

Equipment Condition:

Reference	Condition Description
TM 11-5820-498-12	Radio and Radio Mount Removed
Page 4-83	Negative Battery Cables Disconnected
Page 4-213	Portable Dry Powder Fire Extinguisher Bracket Removed
Page 4-318	Hatch Cover Holddown Latch Removed
Page 4-912	MCS Unit Removed (If Equipped)

General Safety Instructions:

WARNING

- **Radio box weighs over 165 lb (75kg) and can injure personnel if it is dropped.**
- **Personnel must stand clear during lifting operations.**

REMOVAL

Note

Radio equipment is special government furnished equipment and is not to be removed by 62B10.

A Open driver's hatch cover (1) to full open position (TM 5-2320-262-10).

Note

- Helper will assist from inside driver's compartment with Steps B through F.
- Perform step B if vehicle is MCS prepped.

B Remove locknut (2), washer (3), screw (4), and washer (5) securing bracket (6) and armor plate (7) to hull. Discard locknut (2).

C Remove two locknuts (2), washers (3), screws (4), and washers (5) securing bracket (8) and armor plate (9) to hull. Discard locknuts (2).

D Remove two locknuts (10), washers (11), screws (12), and washers (13) securing bracket (14) to hull. Discard locknuts (10).

Note

Perform step E if vehicle is MCS prepped.

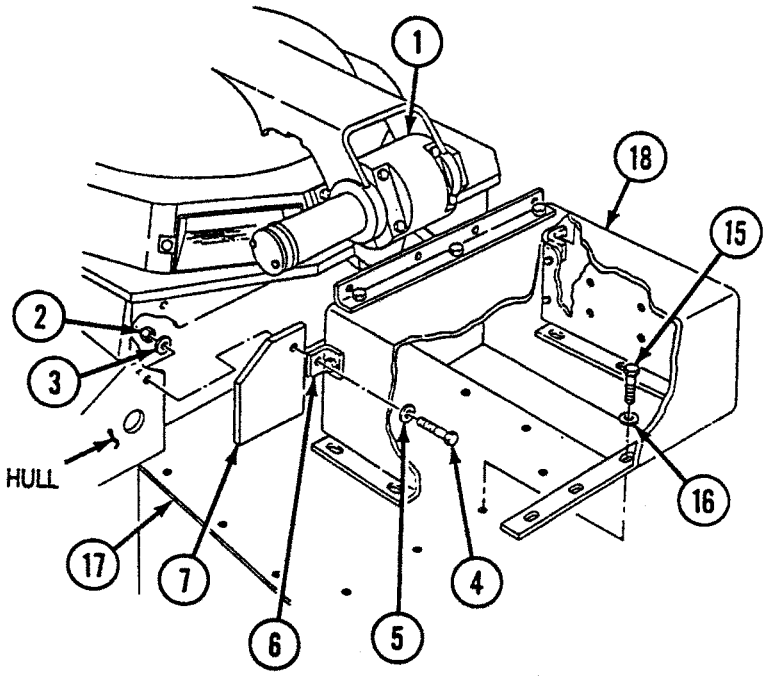
E Remove four self-locking screws (15) and washers (16) from fuel tank armor plate (17) and radio equipment box (18). Discard self-locking screws (15).

F Remove three self-locking screws (19) and washers (20) from fuel tank armor plate (17) and radio equipment box (18). Discard self-locking screws (19).

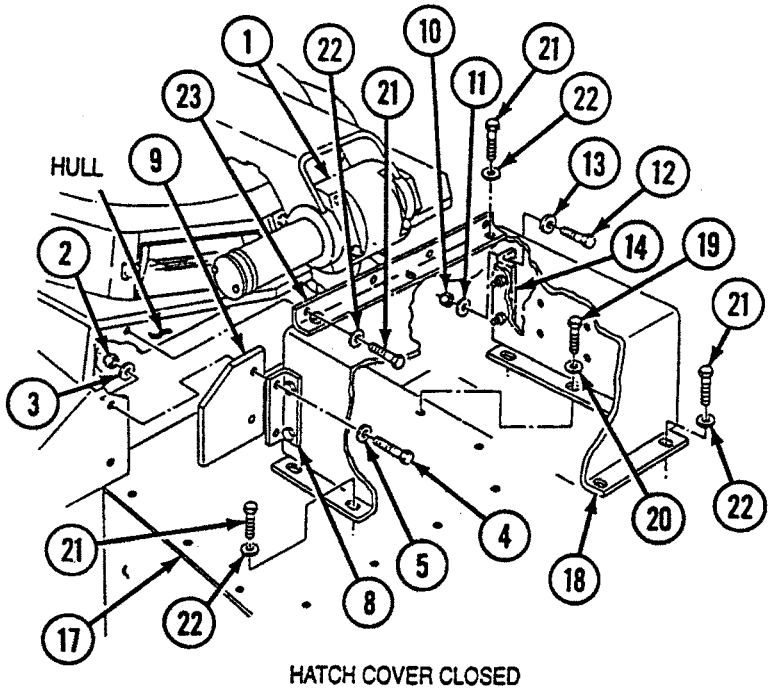
G Close driver's hatch cover (1) (TM 5-2350-262-10).

H Remove fourteen self-locking screws (21) washers (22), and bracket (23) from fuel tank armor plate (17), radio equipment box (18), and hull. Discard self-locking screws (21).

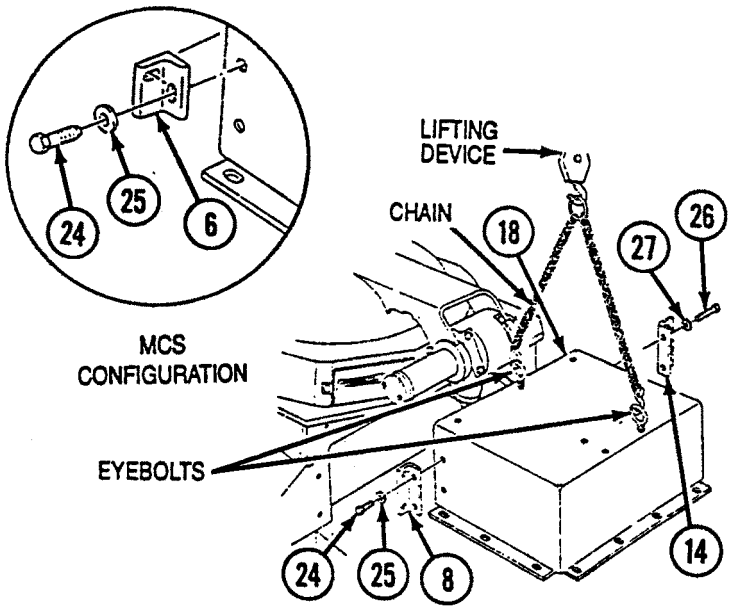
I Slide radio equipment box (18) toward rear of vehicle, and remove armor plate (7) or (9).



HATCH COVER CLOSED
FOR ART CLARITY



HATCH COVER CLOSED
FOR ART CLARITY



WARNING

- Radio box weights over 165 lb (75 kg) and can injure personnel if dropped. Support radio box during removal so it will not drop. Failure to comply may result in injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

Note

Perform step J if vehicle is MCS prepped.

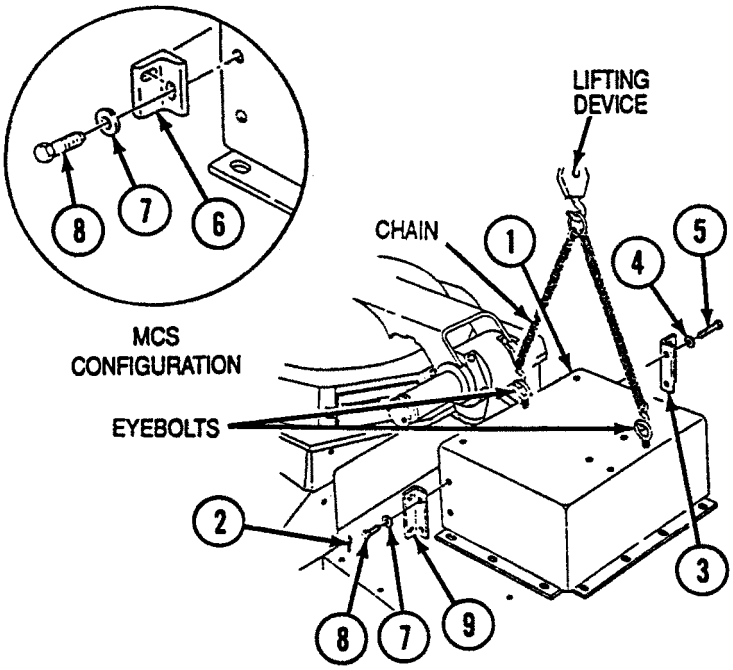
J Remove self-locking screw (24), washer (25), and bracket (6) from radio equipment box (18). Discard self-locking screw (24).

K Remove two self-locking screws (24), washers (25), and bracket (8) from radio equipment box (18). Discard self-locking screws (24).

L Remove two self-locking screws (26), washers (27), and bracket (14) from radio equipment box (18). Discard self-locking screws (26).

M Install two eyebolts on radio equipment box (18), connect chain and lifting device to eyebolts, and slowly remove radio equipment box (18) from vehicle.

INSTALLATION



WARNING

- Radio box weights over 165 lb (75 kg) and can injure personnel if dropped. Support radio box during removal so it will not drop. Failure to comply may result in injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

A Install two eyebolts on radio equipment box (1), connect chain and lifting device to eyebolts, and slowly position radio equipment box (1) on fuel tank armor plate (2). Remove lifting device, chain, and eyebolts.

Note

- Apply lubricating oil to threads of screws prior to installation.
- Do not tighten screws until all screws are installed and radio equipment box is aligned.

B Install bracket (3) on radio equipment box (1) with two washers (4) and self-locking screws (5).

Note

Perform steps C and E if vehicle is MCS prepped.

C Install bracket (6) on radio equipment box (1) with washer (7) and self-locking screw (8).

D Install bracket (9) on radio equipment box (1) with two washers (7) and self-locking screws (8).

E Position armor plate (1) and radio equipment box (2) against hull.

F Position armor plate (3) and radio equipment box (2) against hull.

G Install bracket (4), fourteen washers (5), and self-locking screws (6) on radio equipment box (2), fuel tank armor plate (7), and hull.

H Open driver's hatch cover (8) to full open position (TM 5-2350-262-10).

Note

Helper will assist from inside driver's compartment with steps I through N.

I Install three washers (9) and self-locking screws (10) on radio equipment box (2) and fuel tank armor plate (7).

Note

Perform step J if vehicle is MCS prepped.

J Install four washers (11) and self-locking screws (12) on radio equipment box (2) and fuel tank armor plate (7).

K Install two washers (13), screws (14), washers (15), and locknuts (16) on bracket (17) and hull.

Note

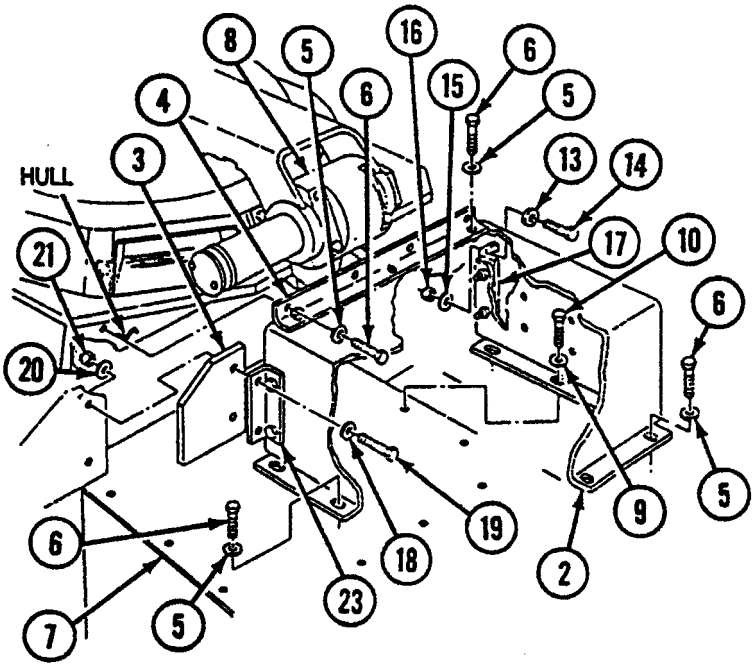
Perform step L if vehicle is MCS prepped.

L Install washer (18), screw (19), washer (20), and locknut (21) on bracket (22), armor plate (1), and hull.

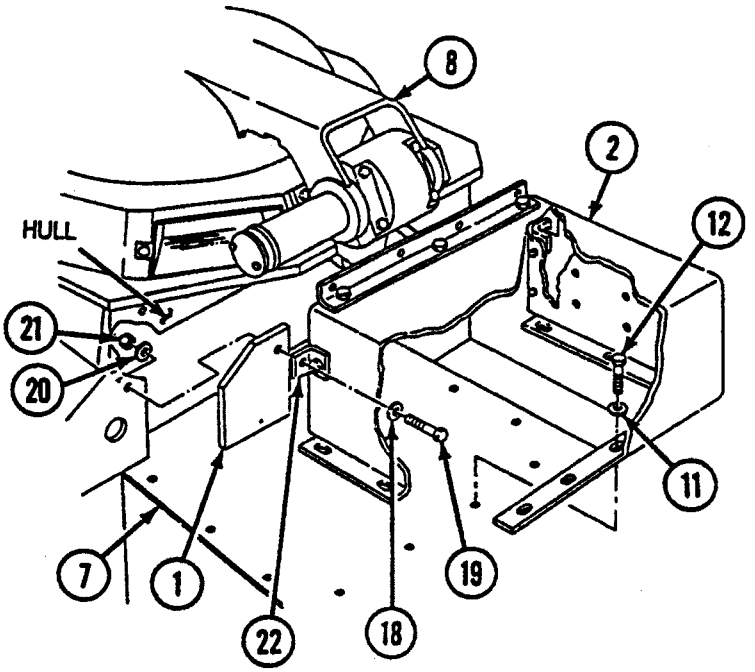
M Install two washers (18), screws (19), washers (20), and locknuts (21) on bracket (23), armor plate (2), and hull.

N Tighten all screws and locknuts to 32-36 lb-ft (43-49 N·m).

O Close driver's hatch cover (8) (TM 5-2350-262-10).



HATCH COVER CLOSED
FOR ART CLARITY



HATCH COVER CLOSED
FOR ART CLARITY

FOLLOW-ON TASKS:

- Install MCS unit (if equipped) (p 4-912).
- Install hatch over holddown latch (p 4-318).
- Connect negative battery cables (p 4-83).
- Install portable dry powder fire extinguisher bracke (p 4-213).
- Install radio and radio mount (SB 11-131-2 or TM 11-5820-498-12).

Section XVI. GROUP AX, SEAT INSTALLATION

TASK **PAGE**

Seat Assembly Replacement and Repair 4-822
Seatbelt Assembly Replacement 4-820

SEATBELT ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (2)

Parts Reference:

TM 5-2350-262-24P Group AX

Personnel Required:

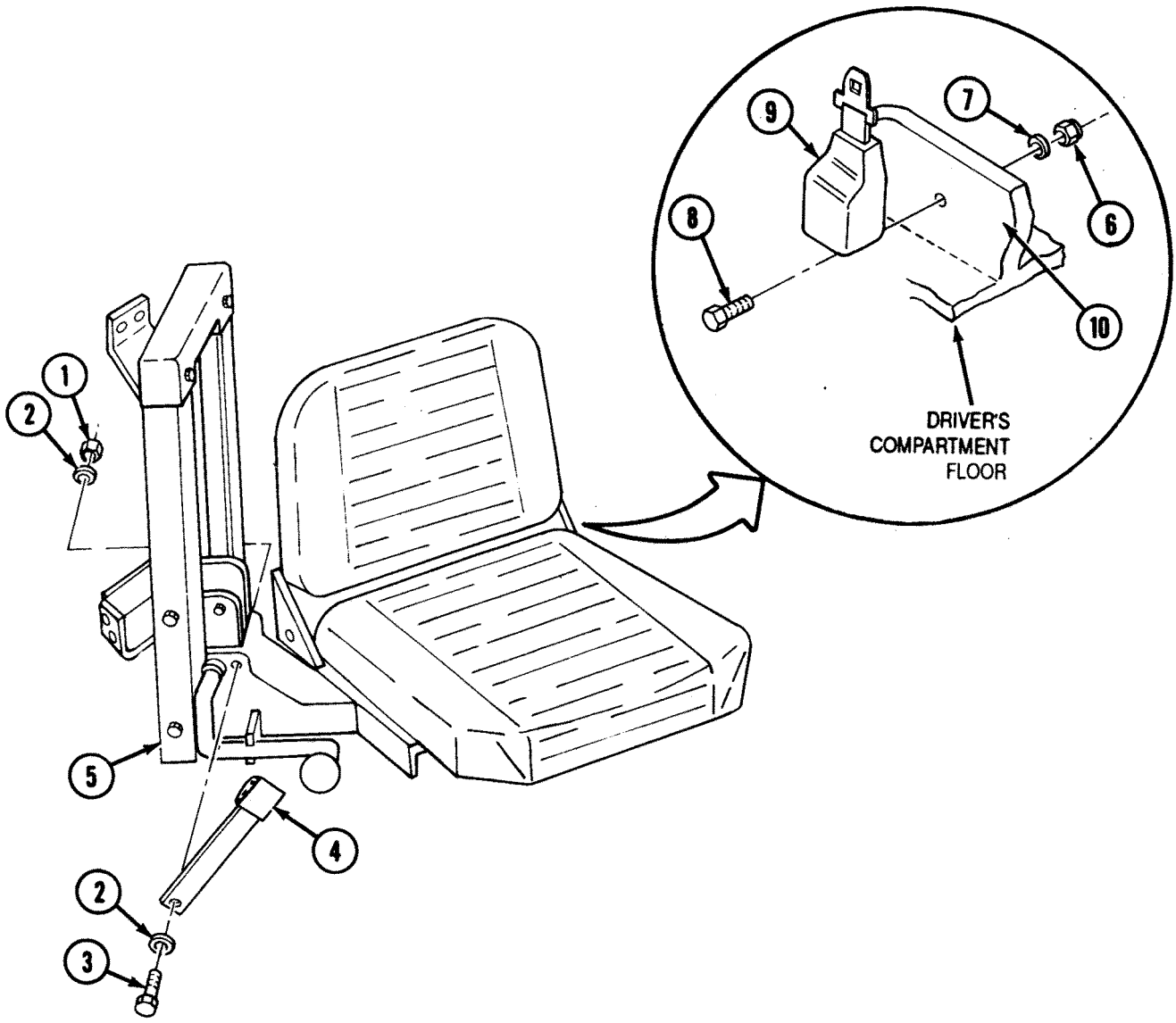
Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Driver's Hatch Cover in Stowed Position



REMOVAL

Note

Seatbelt assembly is made up of seatbelt buckle and retractor.

A Remove locknut (1), washer (2), screw (3), washer (2), and seatbelt buckle (4) from seat post (5). Discard locknut (1).

B Remove locknut (6), washer (7), screw (8), and retractor (9) from bracket (10) on driver's compartment floor. Discard locknut (6).

INSTALLATION

A Install retractor (9) on bracket (10) of driver's compartment floor with screw (8), washer (7), and locknut (6).

B Install seatbelt buckle (4) on seat post (5) with washer (2), screw (3), washer (2), and locknut (1). Tighten locknut (1) until snug, then loosen until seatbelt buckle (4) can swing freely.

SEAT ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Solid Film Lubricant	Item 24 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Cotter Pin

Locknut (12)

Spring Pin (4)

Self-locking Screw (5)

Parts Reference:

TM 5-2350-262-24P Group AX

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

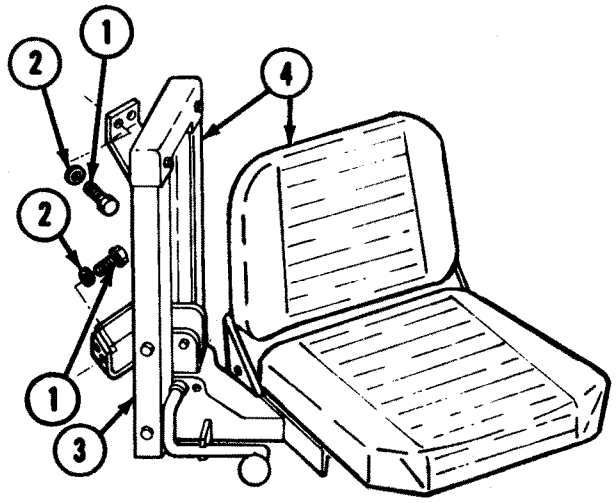
Reference	Condition Description
Page 4-821	Seatbelt Removed

General Safety Instructions:

WARNING

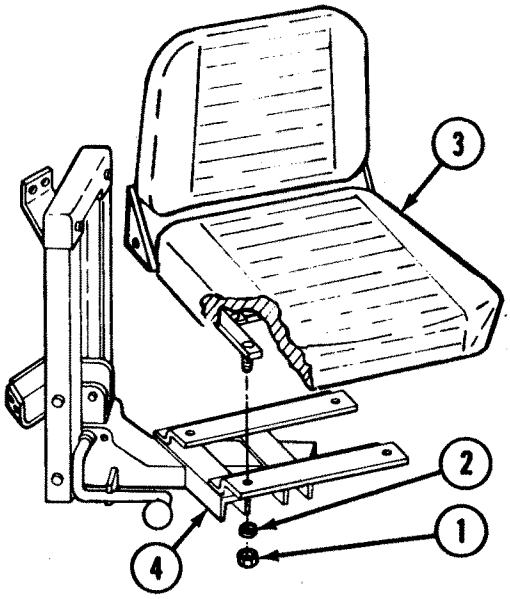
Seat support is spring loaded to raise when adjusting lever is operated. Keep hands and fingers out of seat post area when operating adjusting lever.

REMOVAL

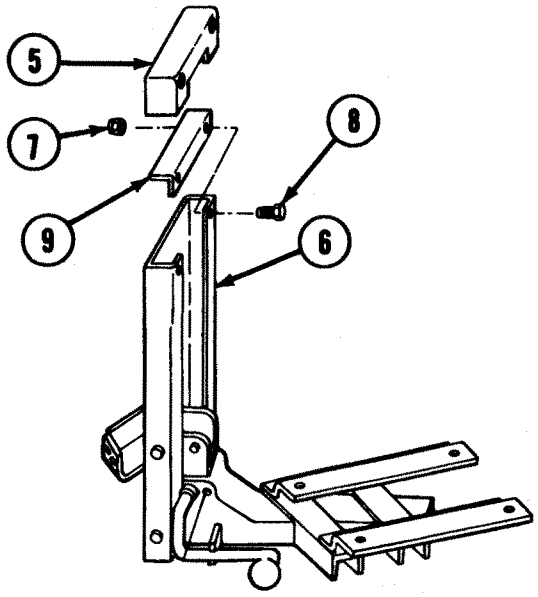


Remove four self-locking screws (1) and washers (2) from seat post (3), and lift seat assembly (4) out of vehicle. Discard self-locking screws (1).

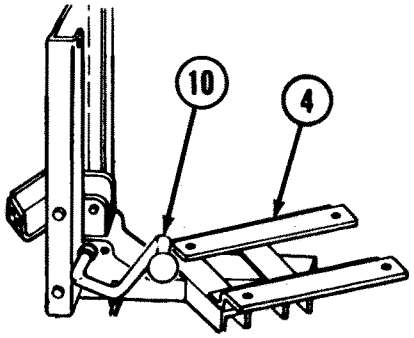
DISASSEMBLY



A Remove four locknuts (1), washers (2), and seat (3) from seat support (4). Discard locknuts (1).



B Pull seat post cover (5) off seat post (6), and remove two locknuts (7), screws (8), and seat post stiffener (9) from seat post (6). Discard locknuts (7).



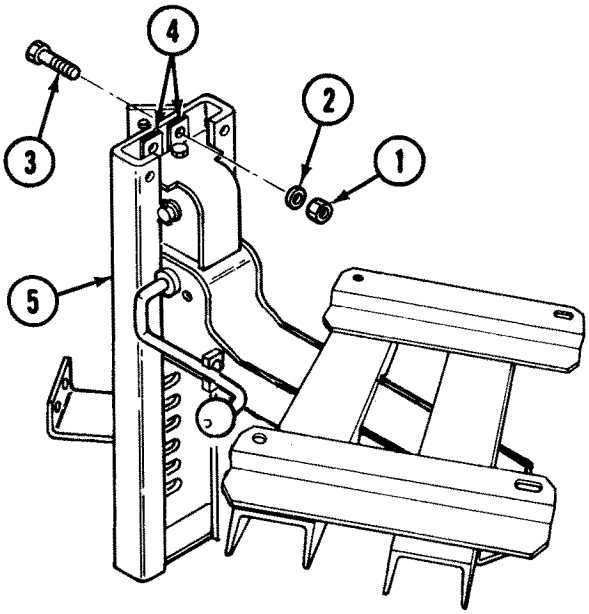
WARNING

Seat support is spring loaded to raise when adjusting lever is operated. Keep hands and fingers out of seat post area when operating adjusting lever. Failure to comply may result in injury to personnel.

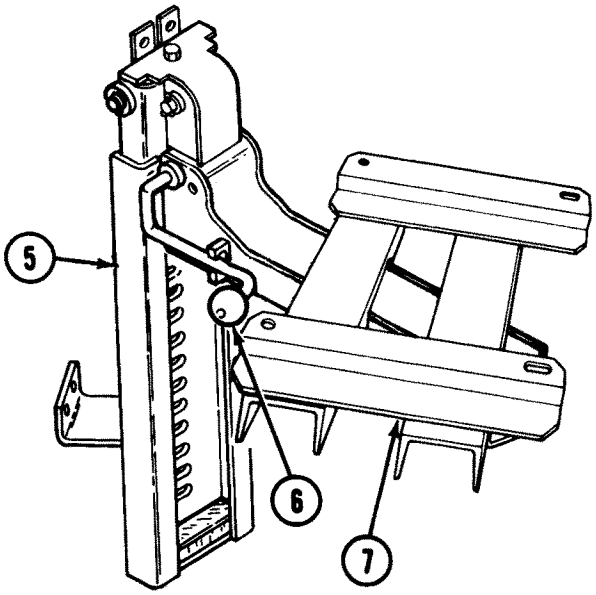
Note

Helper should hold down seat support while spring tension is relieved.

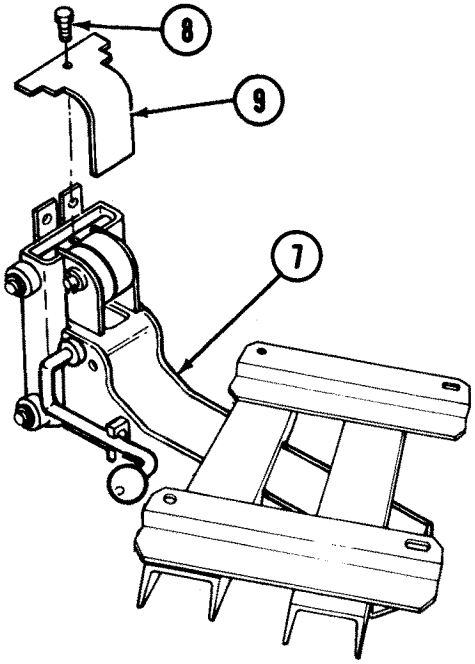
C Pull seat adjusting lever (10) up, and raise seat support (4) to highest position to relieve spring tension.



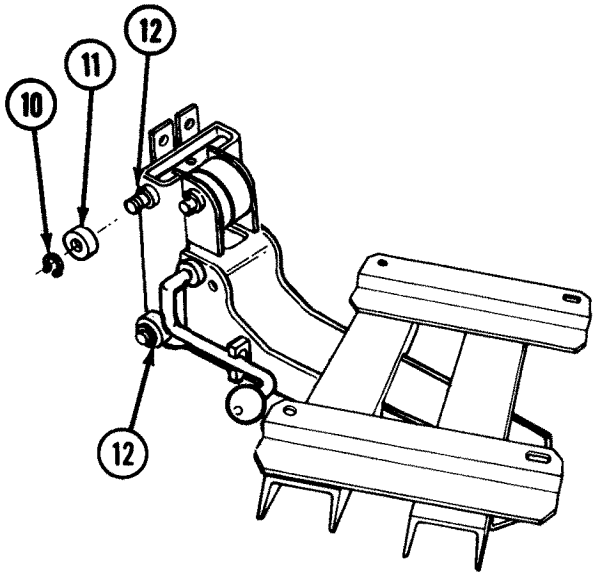
D Remove two locknuts (1), washers (2), and screws (3) from two springs (4) and seat post (5). Discard locknuts (1).



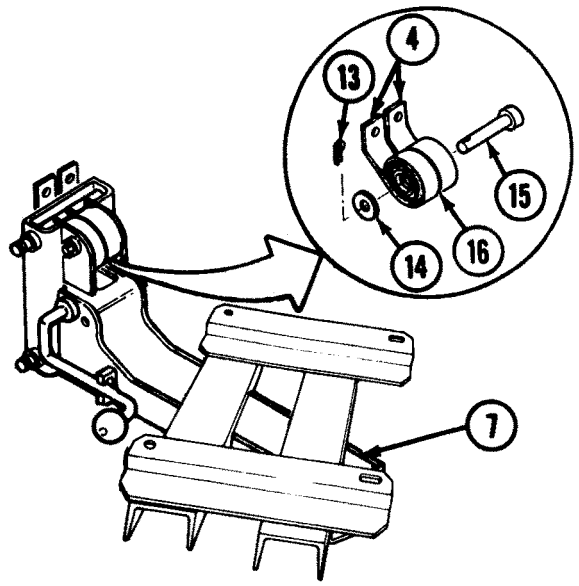
E Pull up on adjusting lever (6) and pull seat support (7) out of seat post (5).



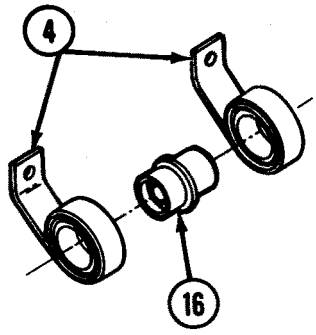
F Remove self-locking screw (8) and access cover (9) from seat support (7). Discard self-locking screw (8).



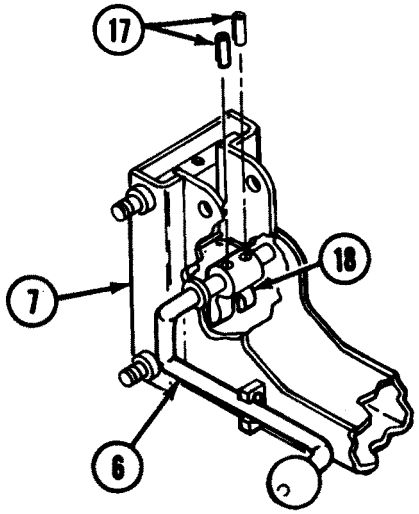
G Remove four retaining rings (10) and rollers (11) from shafts (12).



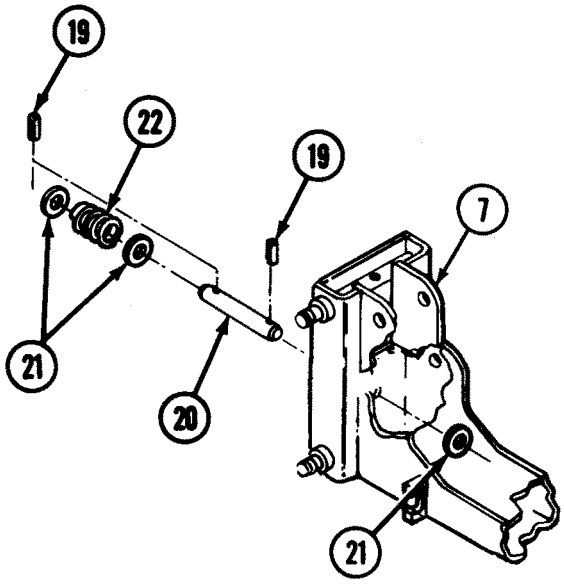
H Remove cotter pin (13), washer (14), and pin (15) from seat support (7). Lift out spring spool (16) with two springs (4) attached. Discard cotter pin (13).



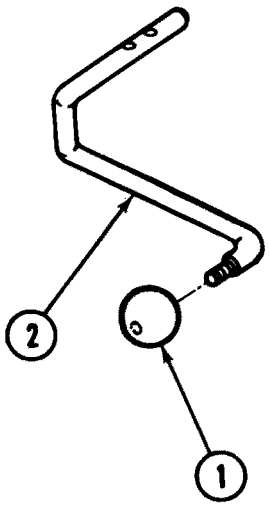
I Remove two springs (4) from spring spool (16).



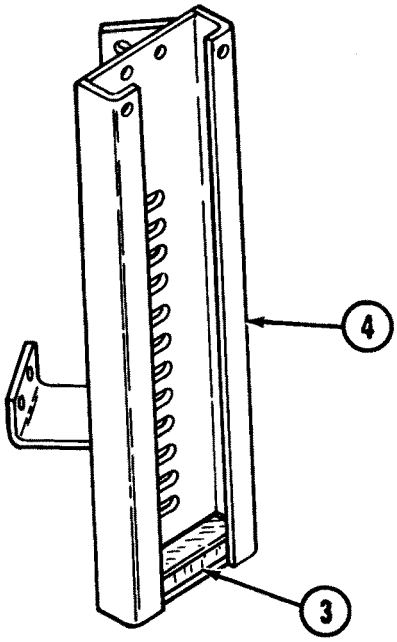
J Drive out two spring pins (17) from pin cam (18), and remove adjusting lever (6) and pin cam (18) from seat support (7). Discard two spring pins (17).



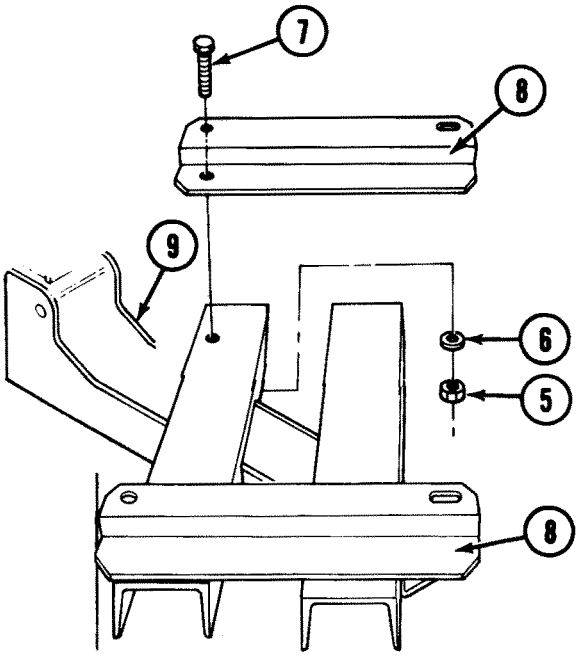
K Drive out two spring pins (19) from seat lockpin (20). Remove seat lockpin (20), three washers (21), and spring (22) from seat support (7). Discard two spring pins (19).



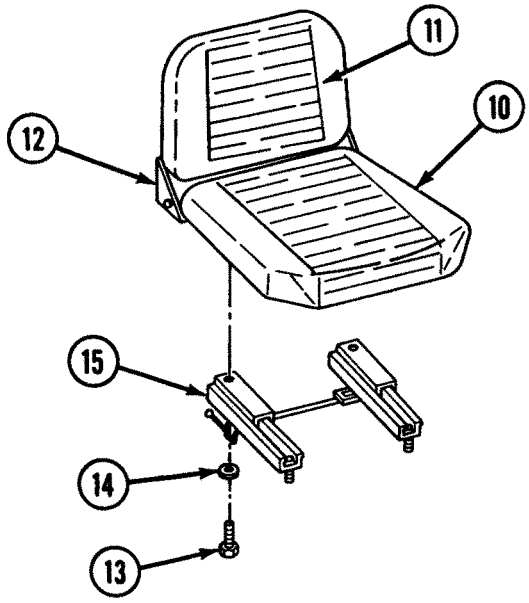
L Remove knob (1) from adjusting lever (2).



M Remove stop pad (3) from seat post (4).



N Remove four locknuts (5), washers (6), screws (7), and two crossbars (8) from seat support (9). Discard locknuts (5).

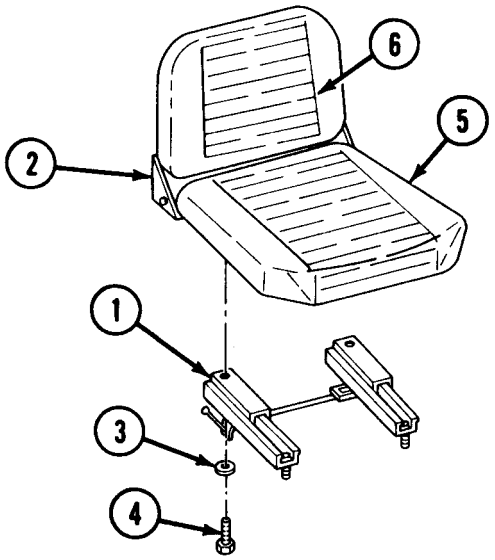


O Remove seat cushion (10) and back cushion (11) from seat frame (12), and remove four screws (13), washers (14), and slide rail (15) from seat frame (12).

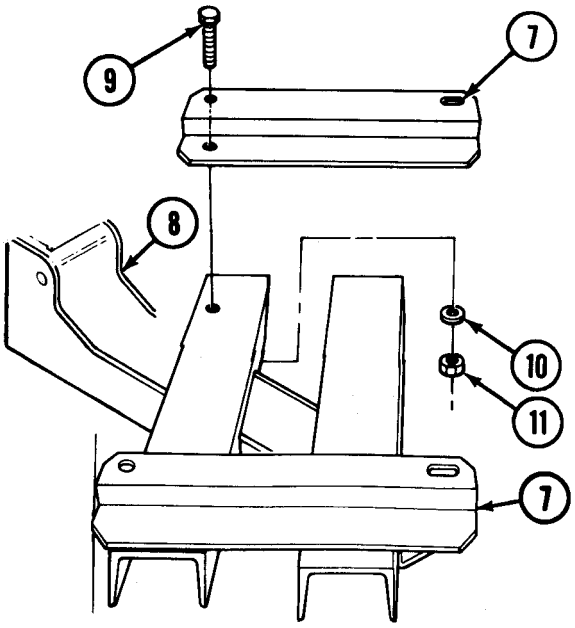
REPAIR

Use general repair methods (p 2-25) or replace unserviceable parts.

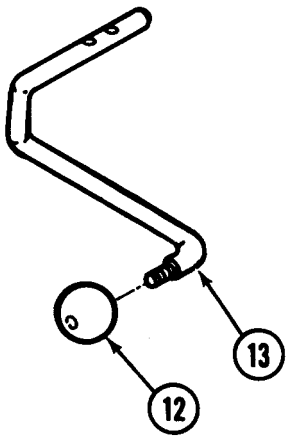
ASSEMBLY



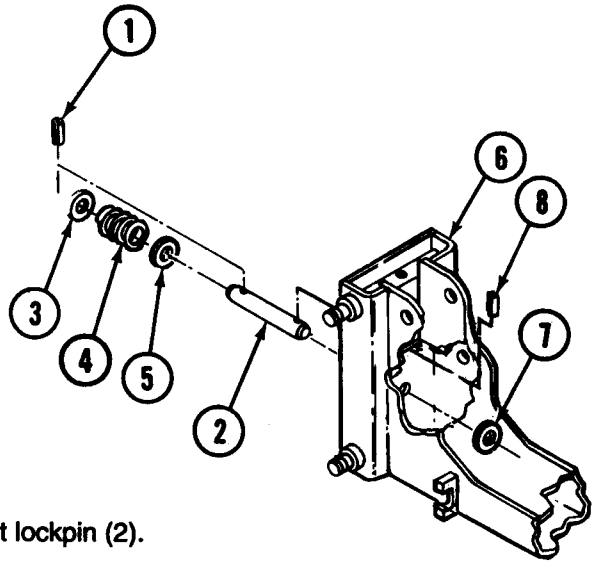
A Install slide rail (1) on seat frame (2) with four washers (3) and screws (4), and install seat cushion (5) and back cushion (6) on seat frame (2).



B Install two crossbars (7) on seat support (8) with four screws (9), washers (10), and locknuts (11).



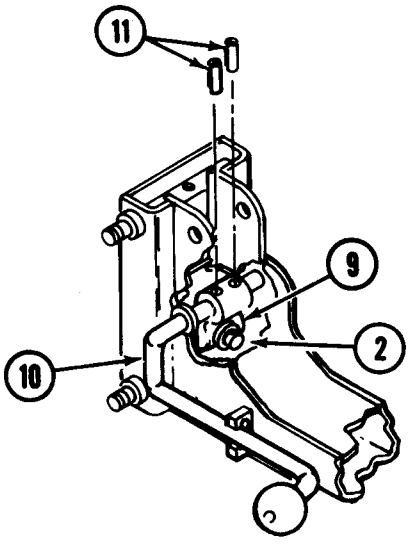
C Install knob (12) on adjusting lever (13).



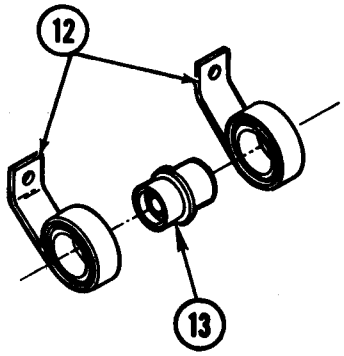
D Install spring pin (1) on seat lockpin (2).

E Install washer (3), spring (4), and washer (5) on seat lockpin (2).

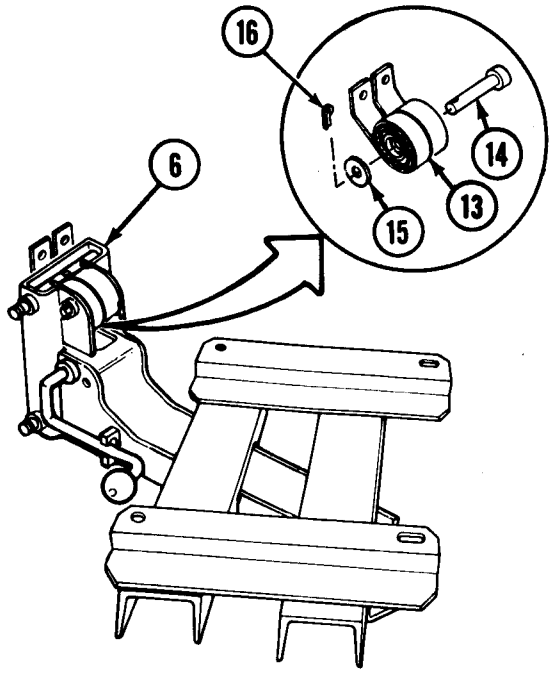
F Push seat lockpin (2) through back side of seat support (6), and install washer (7) and spring pin (8) on seat lockpin (2).



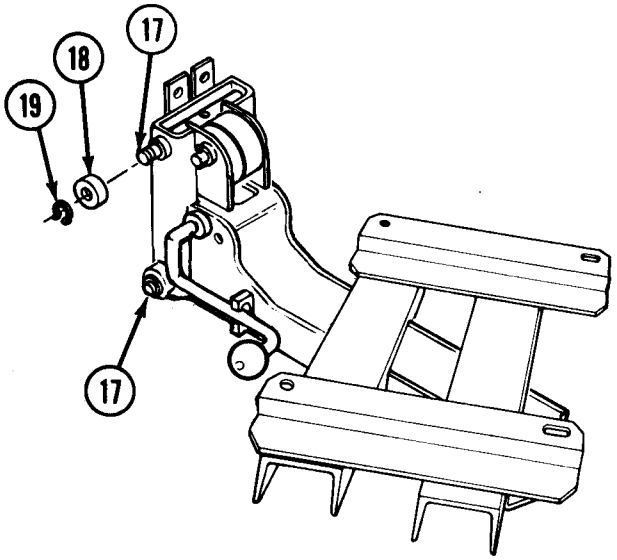
G Install pin cam (9) on seat lockpin (2) with adjusting lever (10) and two spring pins (11).



H Coat two springs (12) with lubricating oil, and install springs (12) on spring spool (13).

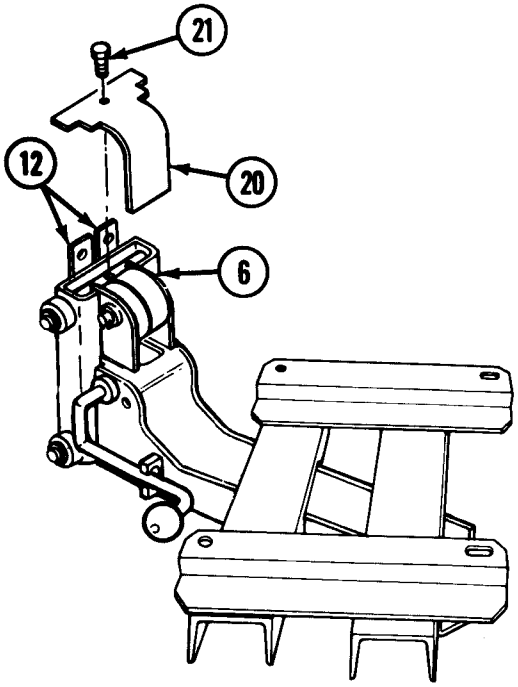


I Install spring spool (13) on seat support (6) with pin (14), washer (15), and cotter pin (16).

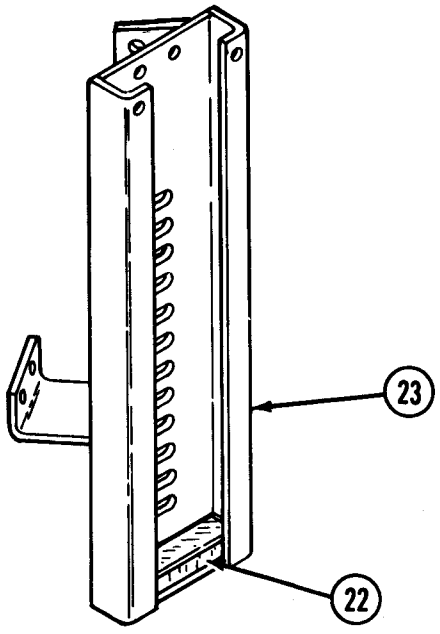


J Coat ends of four shafts (17) with solid film lubricant.

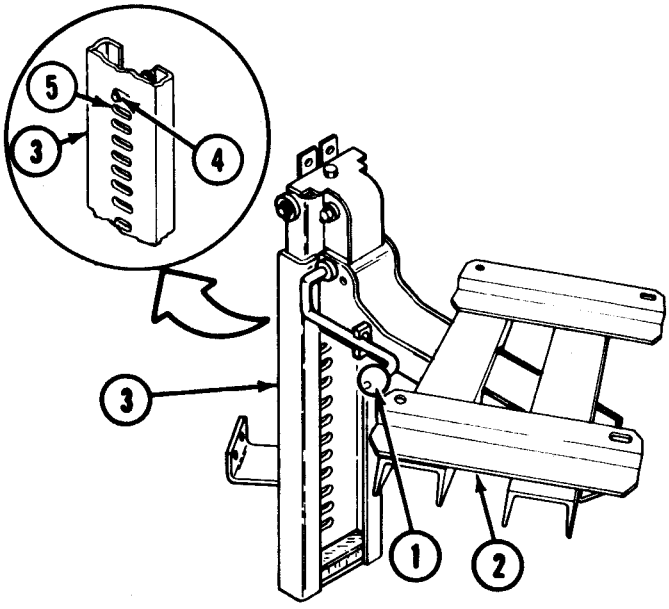
K Install four rollers (18) on shafts (17) with retaining rings (19).



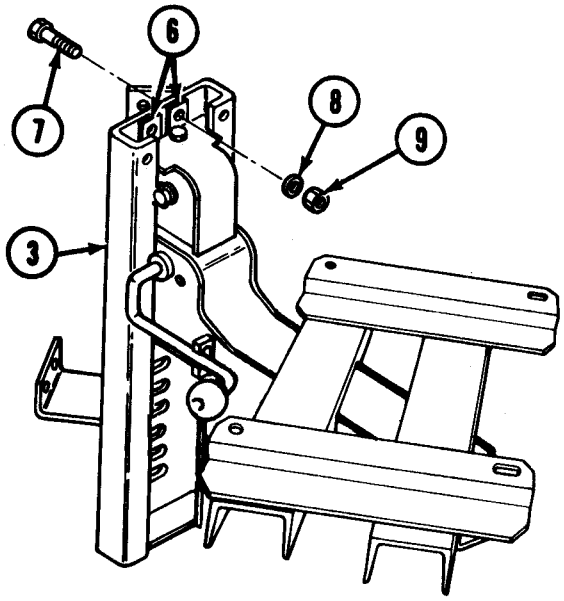
L With ends of two springs (12) facing up, install access cover (20) on seat support (6) with self-locking screw (21).



M Install stop pad (22) on seat post (23).



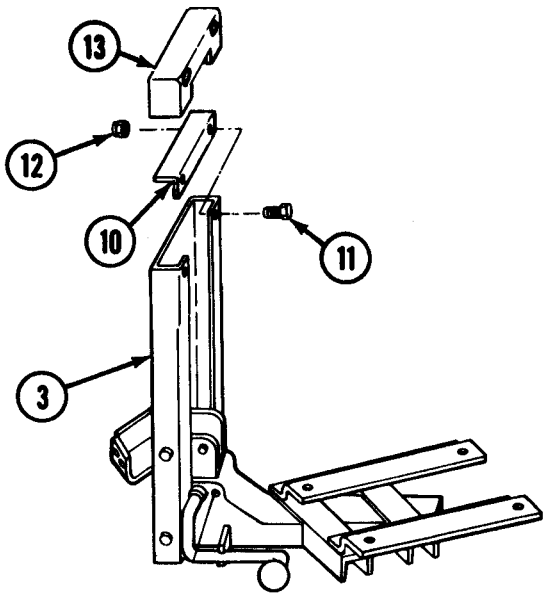
N Pull up on adjusting lever (1) and install seat support (2) on seat post (3). Release adjusting lever (1) with seat lockpin (4) engaged in adjustment holes (5) of seat post (3).



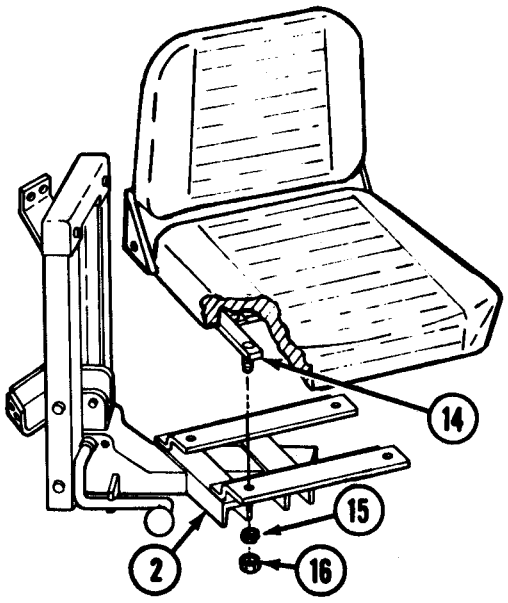
Note

Seat support must be in position shown when installing two springs.

O Connect ends of two springs (6) to seat post (3) with screws (7), washers (8), and locknuts (9).



P Install seat post stiffener (10) on seat post (3) with two screws (11) and locknuts (12). Install seat post cover (13) on top of seat post (3).

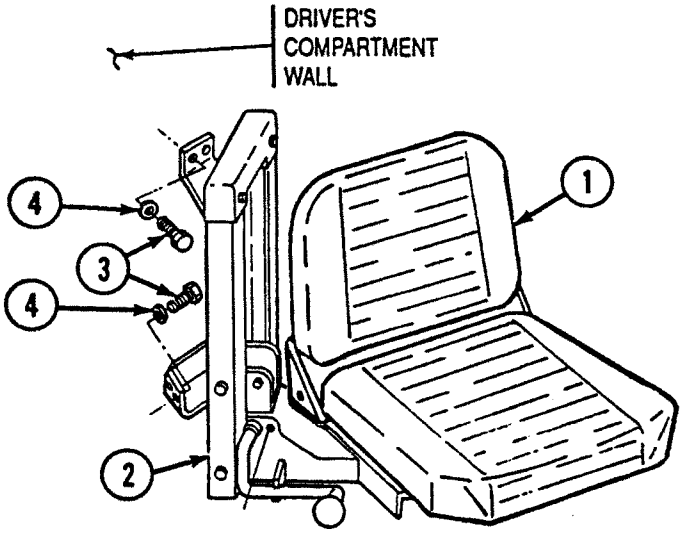


Q Install slide rail (14) on seat support (2) with four washers (15) and locknuts (16).

INSTALLATION

Lower seat assembly (1) into driver's compartment, and install seat post (2) on driver's compartment wall with four self-locking screws (3) and washers (4).

FOLLOW-ON TASK:
Install seatbelt (p 4-821).



Section XVII. GROUP AZ, SPLASH INSTALLATION

TASK **PAGE**

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Section XVIII. GROUP A2, STOWAGE INSTALLATION

TASK **PAGE**

Goggles Case Stowage Straps Replacement 4-840
Smoke Grenade Stowage Boxes Replacement 4-842

GOGGLES CASE STOWAGE STRAPS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

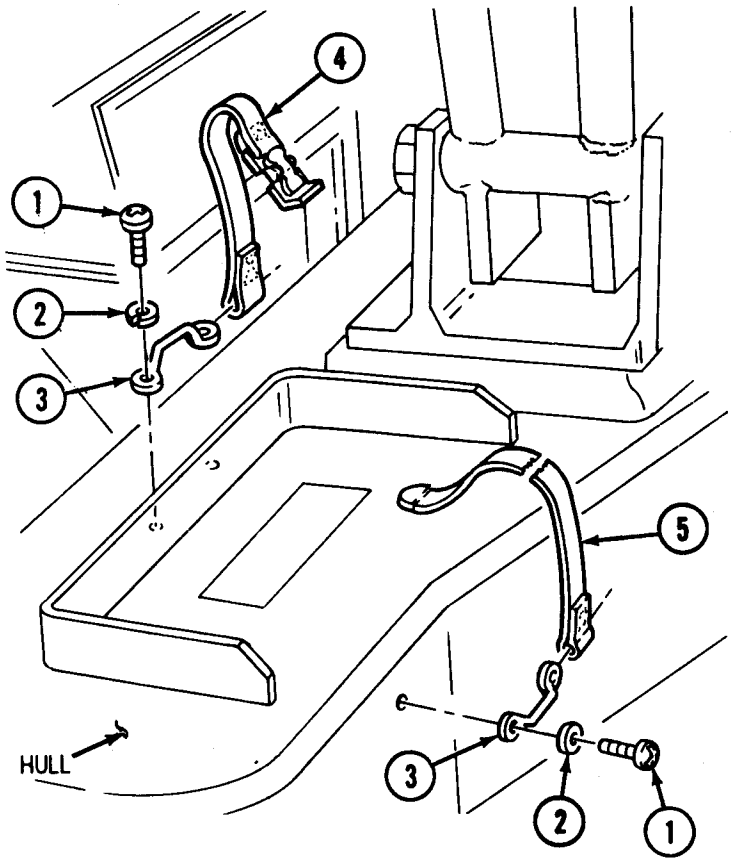
Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group A2

Personnel Required:

Construction Equipment Repairer 62B10



REMOVAL

Remove four screws (1), lockwashers (2), two loops (3), and straps (4) and (5) from hull. Discard lockwashers (2).

INSTALLATION

Install straps (4) and (5) on hull with two loops (3), four lockwashers (2), and screws (1).

SMOKE GRENADE STOWAGE BOXES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Parts:

Self-locking Screw (8)

Parts Reference:

TM 5-2350-262-24P — Group A2

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
	Note For vehicles with rear floor plate support mounted stowage boxes.
Page 4-361	Rear Floor Plates Removed

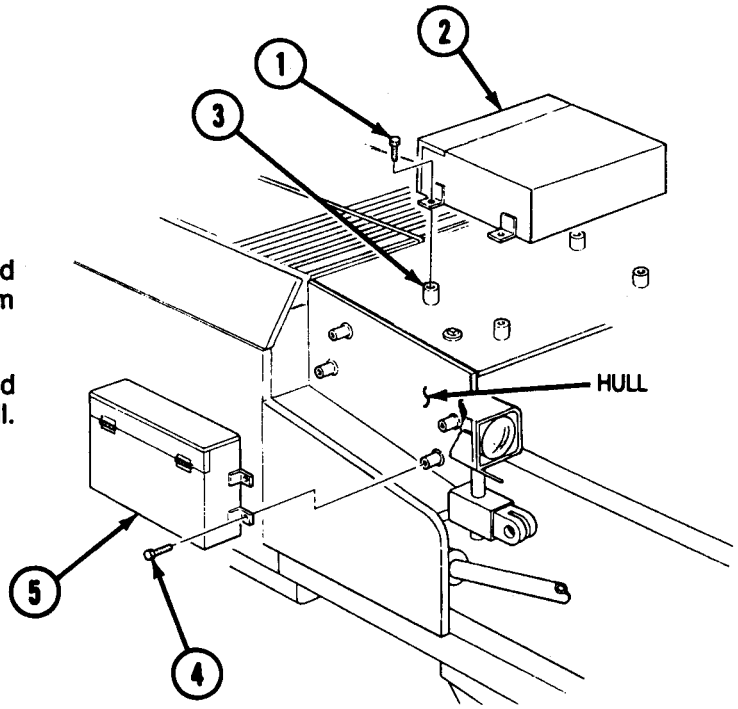
REMOVAL

Note

For vehicles with cowling and armor plate mounted stowage boxes, perform steps A and B.

A Remove four self-locking screws (1) and smoke grenade stowage box (2) from cowling (3). Discard self-locking screws (1).

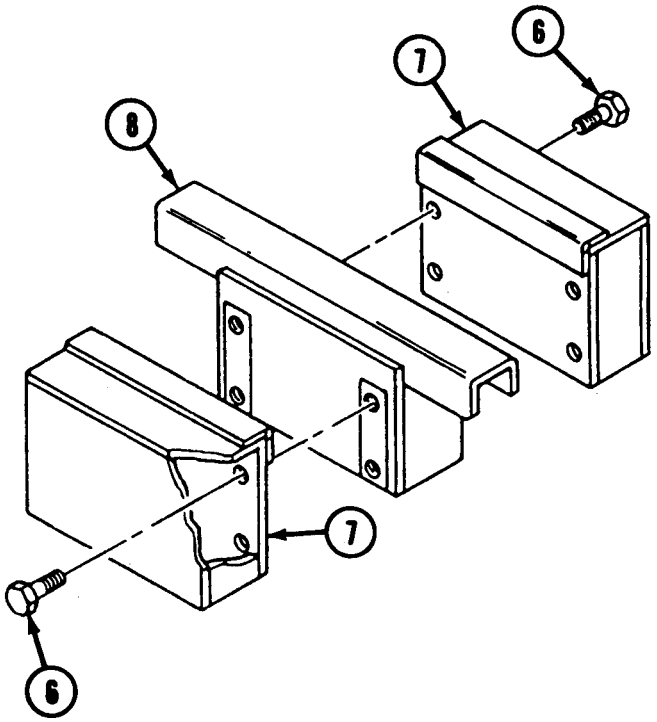
B Remove four self-locking screws (4) and smoke grenade stowage box (5) from hull. Discard self-locking screws (4).



Note

For vehicles with rear floor plate support mounted stowage boxes, perform step C.

C Remove eight self-locking screws (6) and two smoke grenade stowage boxes (7) from rear floor plate support (8). Discard self-locking screws (6).



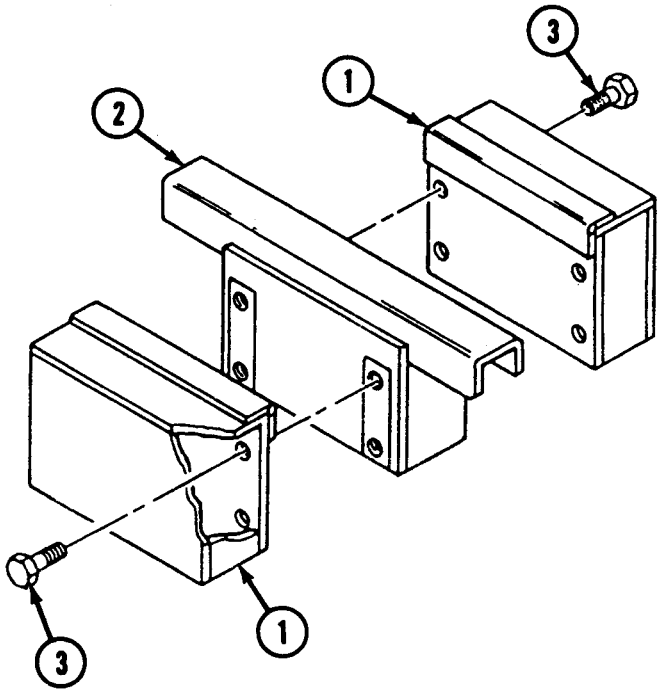
INSTALLATION

Note

- For vehicles with rear floor support mounted stowage boxes, perform steps A and B.
- Coat threads of screws with lubricating oil prior to installation.

A Install two smoke grenade stowage boxes (1) on rear floor plate support (2) with eight self-locking screws (3). Tighten self-locking screws (3) to 32-34 lb-ft (43-46 N·m).

B Install rear floor plates (p 4-361).

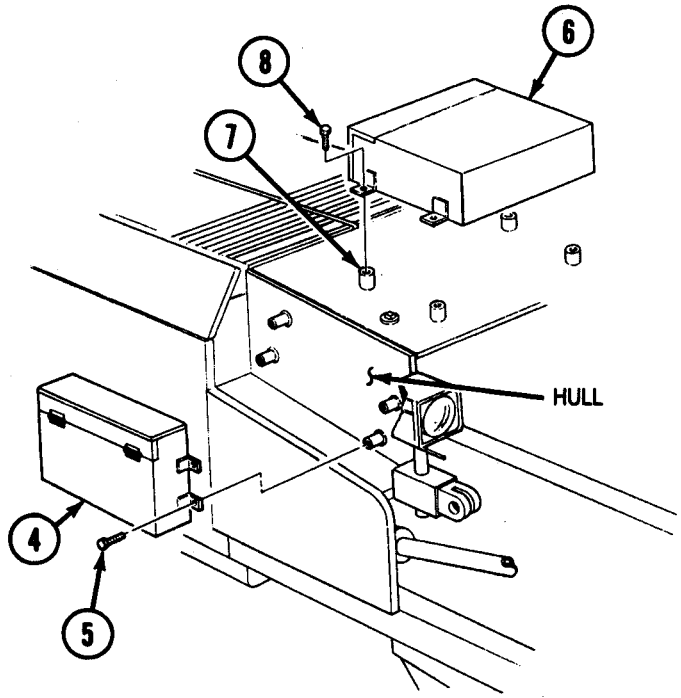


Note

For vehicles with cowling and armor plate mounted stowage boxes, perform steps C and D.

C Install smoke grenade stowage box (4) on hull with four self-locking screws (5). Tighten self-locking screws (5) to 32-34 lb-ft (43-46 N·m).

D Install smoke grenade stowage box (6) on cowling (7) with four self-locking screws (8). Tighten self-locking screws (8) to 32-34 lb-ft (43-46 N·m).



Section XVIX. GROUP A3, SUSPENSION INSTALLATION

TASK	PAGE
Actuator Accumulator Charging, Testing, and Repair	4-846
Front Bump Stop Assembly and Cylinder Replacement	4-870
Roadwheel Arm and Seal Replacement	4-853
Track Adjusting Cylinder Replacement (NEW PRODUCTION)	4-869.1
Track Adjusting Cylinder Replacement (OLD PRODUCTION)	4-865
Semi-Automatic Track Adjuster Assembly Replacement and Repair (NEW PRODUCTION)	4-869.6

ACTUATOR ACCUMULATOR CHARGING, TESTING, AND REPAIR

This task covers:

a. Charging

b. Testing

c. Repair

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Charging Device	4940-01-046-7109
Kit, STE/ICE-R	4910-01-222-6589

Materials:

Nitrogen, Technical	Item 25 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group A3

Troubleshooting Reference

TM 5-2350-262-20-3

Personnel Required:

Two Construction Equipment Repairers 62B10

Equipment Condition:

Reference	Condition Description
Page 2-27	Hull Blocked
Page 3-82	Hydraulic Pressure Relieved
Page 4-375	Hull Access Covers Removed (As Necessary)

General Safety Instructions:

WARNING

- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends.
- Do not breathe nitrogen gas.
- Accumulator may contain high-pressure nitrogen. Relieve all gas pressure before disassembly.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

CHARGING

Note

Charging, testing and repair procedures are the same for Greer (P/N 800107) and York (P/N 08 60166 001) accumulators.

WARNING

- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends. Failure to comply may result in severe injury to personnel.
- Do not breathe nitrogen gas. Failure to comply may result in death to personnel.

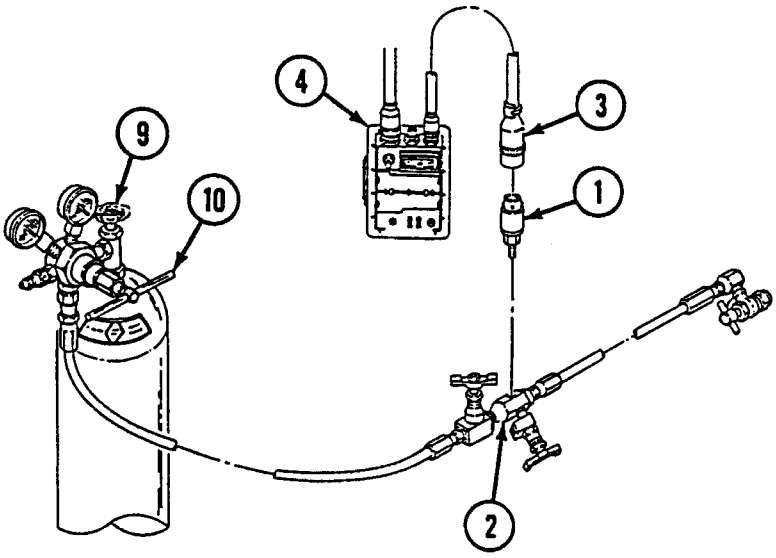
Note

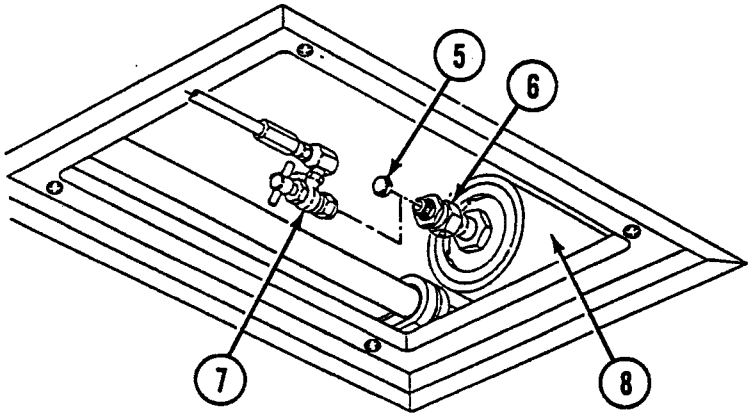
Several types of charging devices are available for use. Alter the instructions in this procedure as necessary.

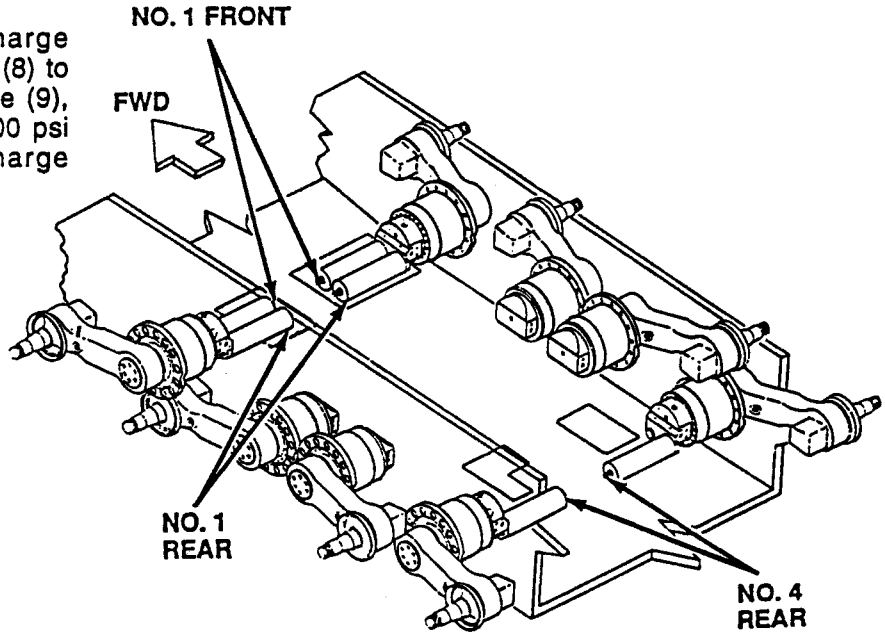
A Install transducer (1) on bleed valve (2), and connect W4 cable (3) to transducer (1) and VTM (4).

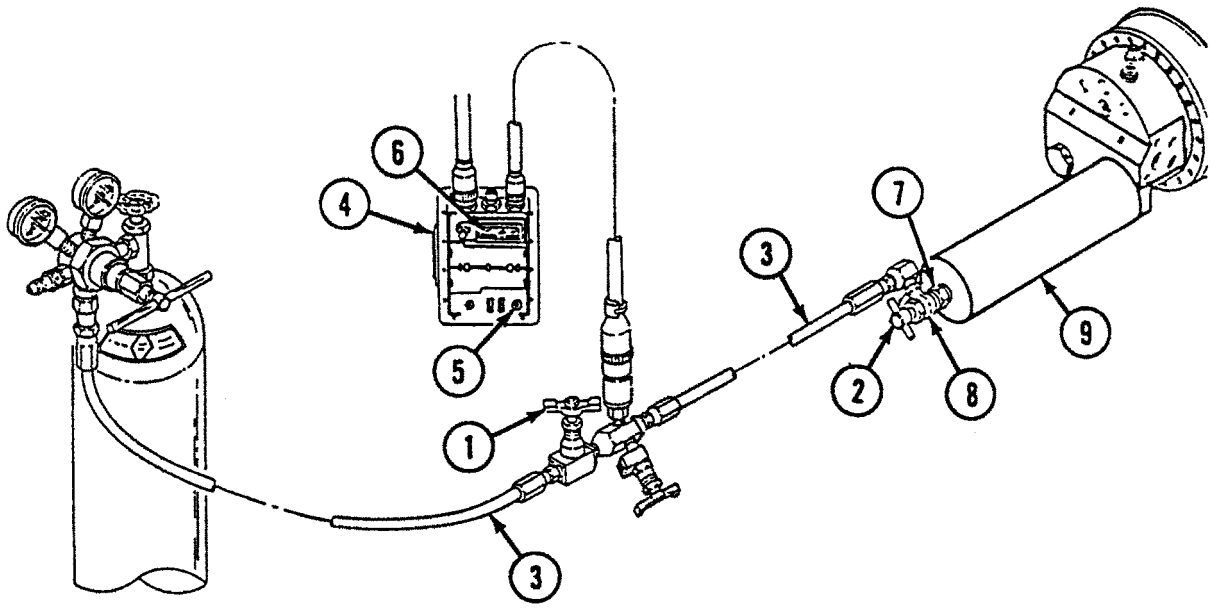
B Remove cap (5) from charging valve (6), and connect adapter valve (7) to charging valve (6).

C Using Appendix H, select the charge pressure for the actuator accumulator (8) to be charged. Open nitrogen tank valve (9), and adjust regulator valve (10) to 100 psi (690 kPa) above the selected charge pressure.









D Open shutoff valve (1) and adapter valve (2), loosen stem of adapter valve (2), and allow nitrogen gas to escape for about 10 seconds to bleed air and moisture from charge hoses (3). Tighten adapter valve (2).

E Run confidence test (p 3-18) for VTM (4).

F Ensure VTM (4) reads the selected charge pressure plus 100 psi (690 kPa), and close shutoff valve (1).

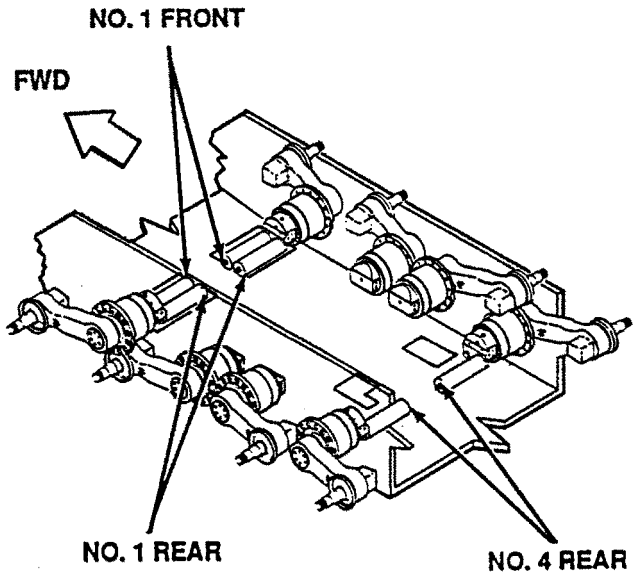
G Dial in Test 50 on VTM (4). Press and hold TEST button (5) on VTM (4) until "CAL" appears on display (6). Release button (5). Value that appears on display (6) should be between +450 and -450. If value on display is not within offset, refer to TM 9-4910-571-12&P for fault isolation procedures.

Note

Accumulator charging valve is fully open after approximately 2-1/2 turns.

H Open charging valve (7) by slowly turning nut (8) counterclockwise. Slightly open shutoff valve (1) until VTM (4) indicates the selected charge pressure for the actuator accumulator (9) in service. See Appendix H for proper charge for actuator accumulators, No. 1 front, No. 1 rear, and No. 4 rear.

I Tighten nut (8), closing charging valve (7), close shutoff valve (1) and stem of adapter valve (2). If TESTING is to be performed, record pressure reading on display (6) and proceed to TESTING (p. 4-849). If TESTING will not be performed, go to step J.



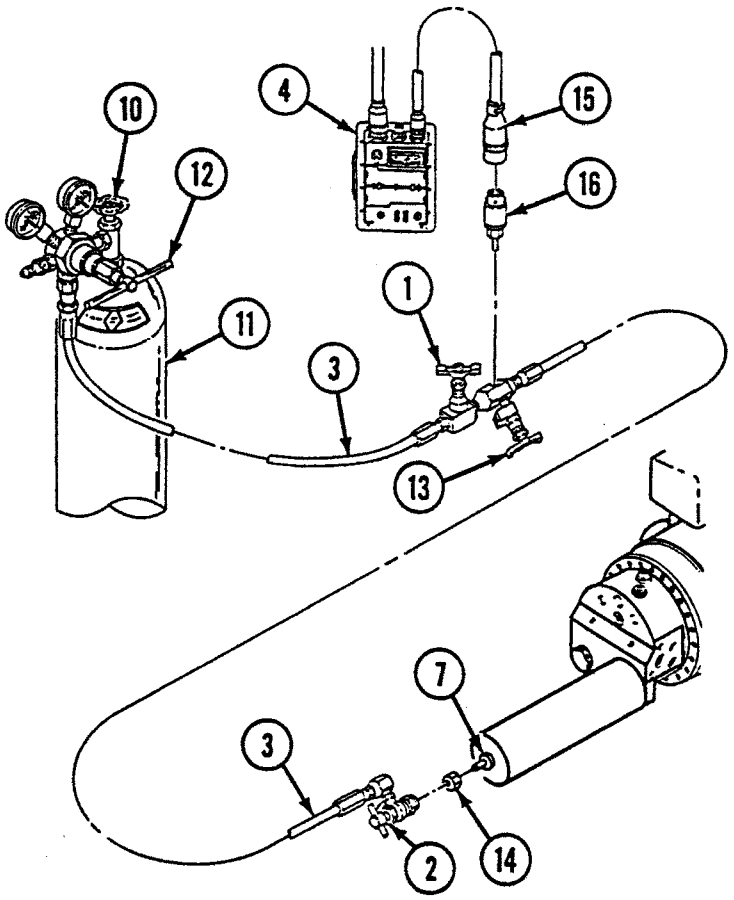
CAUTION

Ensure regulator valve is fully backed out to relieve tension on diaphragm. Failure to comply may result in damage to equipment.

J Close nitrogen tank valve (10) on nitrogen tank (11), and release tension on regulator valve (12). Bleed charge hose (3) by opening bleed valve (13) and shutoff valve (1).

K Disconnect adapter valve (2) from charging valve (7), and install cap (14) on charging valve (7).

L Remove W4 cable (15) and transducer (16) from VTM (4) and bleed valve (13).

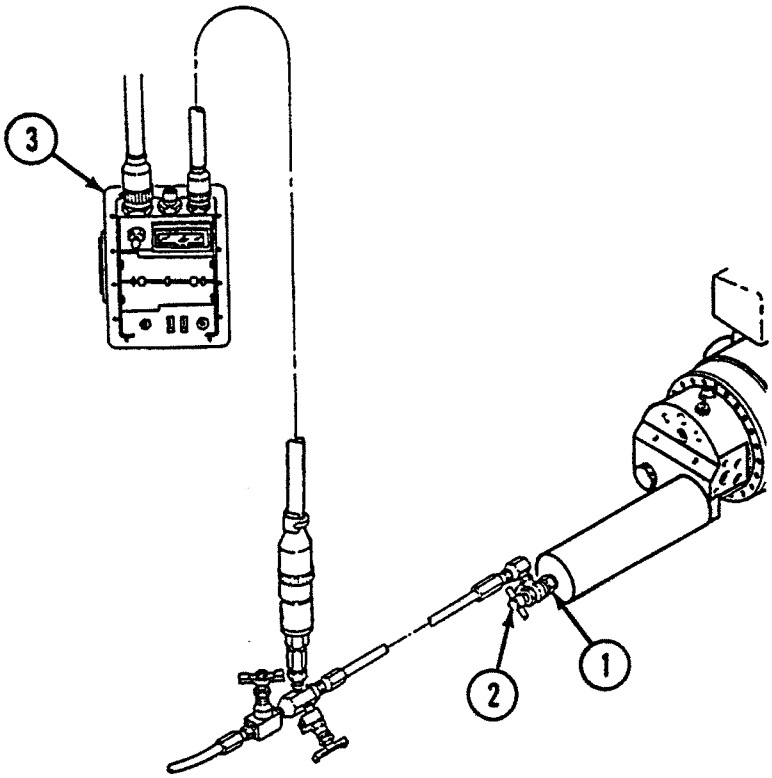


TESTING

WARNING

High-pressure nitrogen gas is used in this equipment. Keep face and hands away from valves and hose ends. Failure to comply may result in serious injury to personnel.

Perform steps A through I of CHARGING task (p 4-847). Wait fifteen minutes and open charging valve (1) and adapter valve (2). If pressure at VTM (3) is lower than previously recorded after CHARGING, proceed to REPAIR. If pressure at VTM (3) is the same as previously recorded, perform steps J through L of CHARGING.



REPAIR

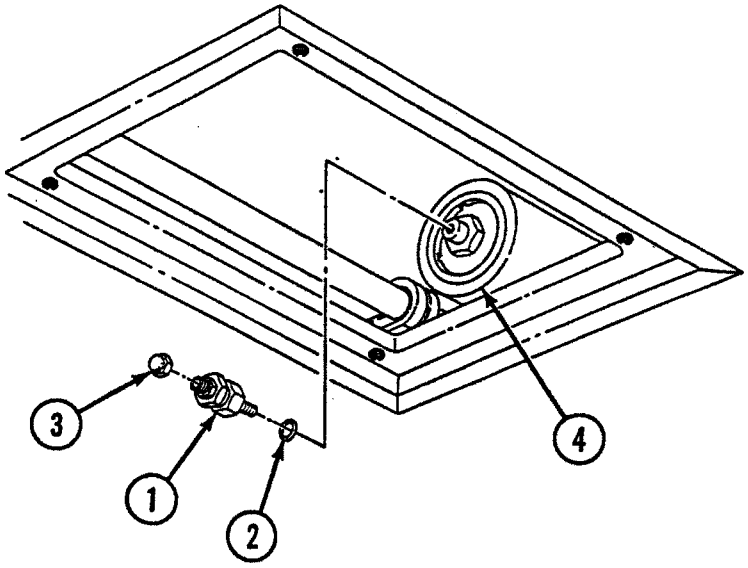
Note

Coat packing with lubricating oil prior to installation.

A If pressure at VTM was lower than previously recorded after charging, remove and replace charging valve (1) and preformed packing (2).

WARNING

- Accumulator may contain high pressure nitrogen. Relieve all gas pressure before disassembly. Failure to comply may result in injury to personnel.
- Do not breathe nitrogen gas. Failure to comply may result in death to personnel.



B Remove cap (3) from valve (1).

C Slowly turn nut of charging valve (1) counterclockwise to release gas from actuator accumulator (4).

D Remove charging valve (1) and packing (2) from actuator accumulator (4). Discard packing (2).

E Install packing (2) on charging valve (1).

F Install packing (2) and charging valve (1) on actuator accumulator (4).

G Repeat charging and testing procedures.

H If accumulator still does not maintain pressure notify Direct Support.

ROADWHEEL ARM AND SEAL REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

4940-00-294-9518 Shop Equipment, Contact Maintenance, Truck Mounted

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Metal Pad	5365-01-230-0200
Track Connecting Fixture (2)	5120-00-605-3926
Driftpin	2530-01-075-8292

Materials:

Sealing Compound	Item 10 Appendix D
Sealing Compound Primer	Item 13 Appendix D
Grease	Item 19 Appendix D
Lubricating Oil	Item 26 Appendix D
Petrolatum, Technical	Item 28 Appendix D
Rope, Fibrous	Item 29 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts:

Parts Kit	2530-01-183-2645
Self-locking Screw (6)	

Parts Reference:

TM 5-2350-262-24P Group A3

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Track Tension Relieved

General Safety Instructions:

WARNING

- Block track or roadwheels before working on vehicle.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.
- When using hammer with driftpin or track pin, wear safety goggles.

REMOVAL

Note

Perform steps I through K to remove No. 1 roadwheel, and perform steps L through Q to remove the other roadwheels. Steps R through V cover all roadwheel arms.

A Drive vehicle onto hard level surface.

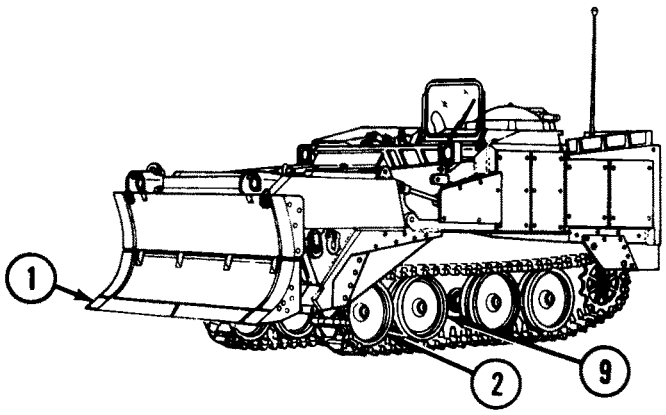
B Place vehicle in UNSPRUNG mode, and lower dozer blade (1) until it touches ground. Raise No. 1 roadwheel (2) as high as possible. If dozer blade (1) is no longer touching ground, adjust track tension (TM 5-2350-262-10). Place transmission in neutral.

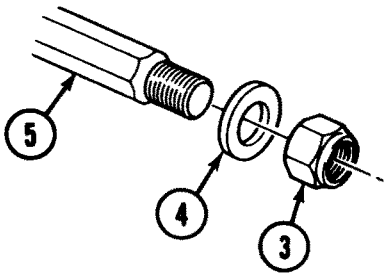
C Stop vehicle engine (TM 5-2350-262-10). Do not set parking brake. Relieve hydraulic pressure (p 2-27). Allow vehicle to settle for five minutes, then relieve hydraulic pressure again (p 2-27) to release any residual pressure.

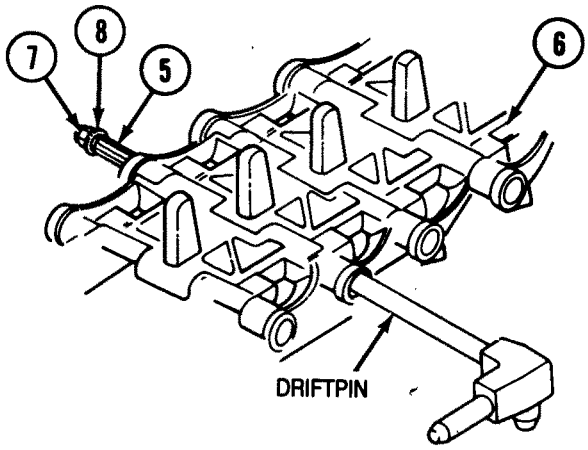
Note

- It may be necessary to chisel out area around locknut for removal.
- Disconnect track at front of vehicle about midway between ground and horizontal center of No. 1 roadwheel.

D Remove locknut (3) and washer (4) from outer end of one track pin (5). Retain locknut (3) for installation.







WARNING

When using hammer with driftpin or track pin, wear goggles. Failure to comply may result in severe injury to personnel.

Note

If track pin binds and does not move, it is most likely bent. Use cutting torch outfit to cut track pin.

E Using driftpin and hammer, drive track pin (5) out of ends of track (6).

F Remove locknut (7) and washer (8) from track pin (5).

G Separate track (6), using hammer and crowbar.

H Have operator place vehicle CB/GS steer selector in CB and start vehicle engine (TM 5-2350-262-10). Back loose end of the track (6) off No. 1 roadwheel (2) by placing transmission in reverse, turning steering wheel in opposite direction of disconnected track, and slowly backing end of disconnected track to top of No. 2 roadwheel (9). Stop vehicle engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 2-27).

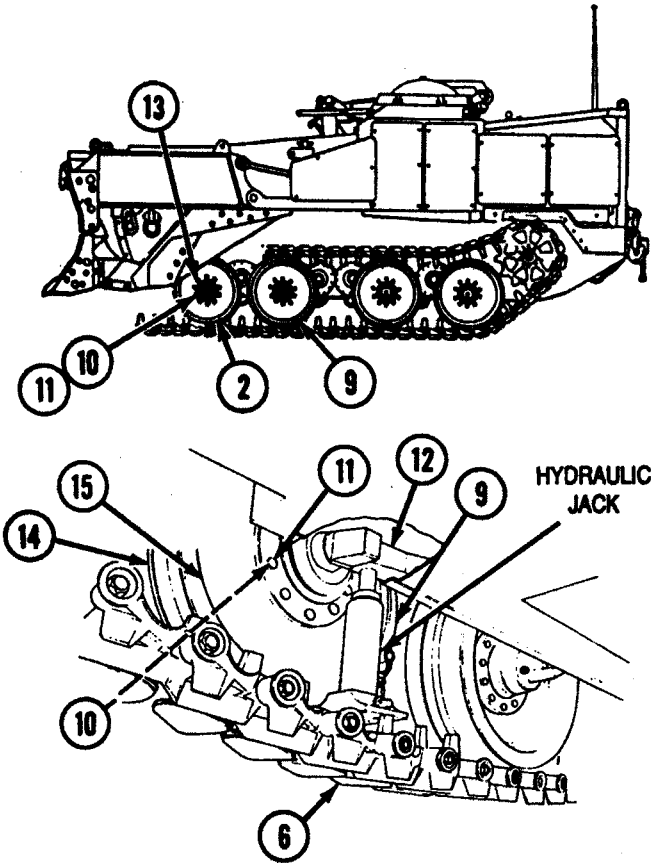
I Loosen ten locknuts (10) on studs (11) of No. 1 roadwheel (2)

CAUTION

Place SPRUNG/UNSPRUNG lever between positions. Failure to comply may result in damage to actuators.

J Place hydraulic jack behind roadwheel arm (12), and raise roadwheel arm (12) until No. 1 roadwheel (2) clears center guides of track (6).

K Remove ten locknuts (10), washers (13), outer roadwheel (14), and inner roadwheel (15) from studs (11).



L Loosen ten locknuts (16) on studs (17) of roadwheel (18).

CAUTION

Place SPRUNG/UNSPRUNG lever between positions. Failure to comply may result in damage to equipment.

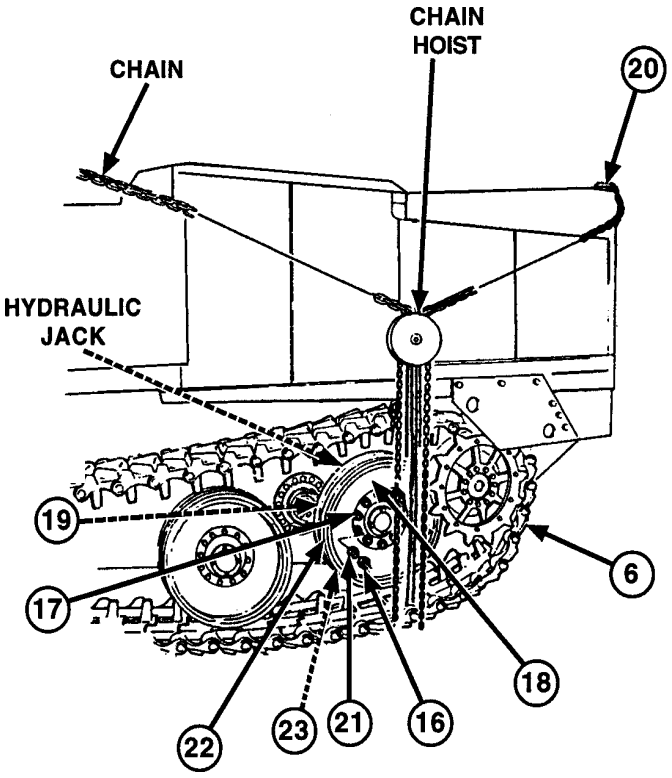
M Place hydraulic jack behind roadwheel arm (19) and raise roadwheel arm (19) until roadwheel (18) clears center guides of track (6).

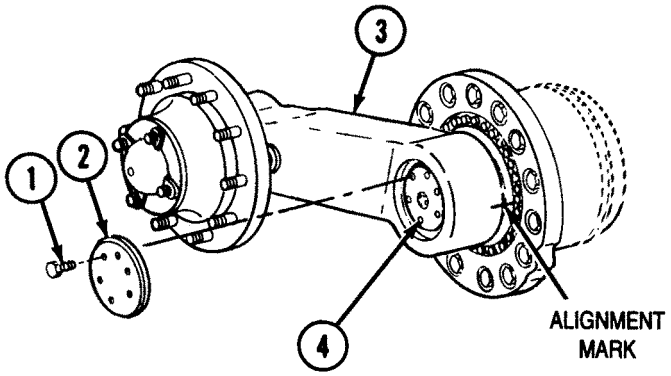
N Connect chain and chain hoist to rear lifting eye shackle (20), top of ejector or other suitable location, and to track (6).

O Raise track (6) until center guides of track (6) clear roadwheel (18).

P Remove ten locknuts (16), washers (21), outer roadwheel (22), and inner roadwheel (23) from studs (17).

Q Remove hydraulic jack from roadwheel arm (19).

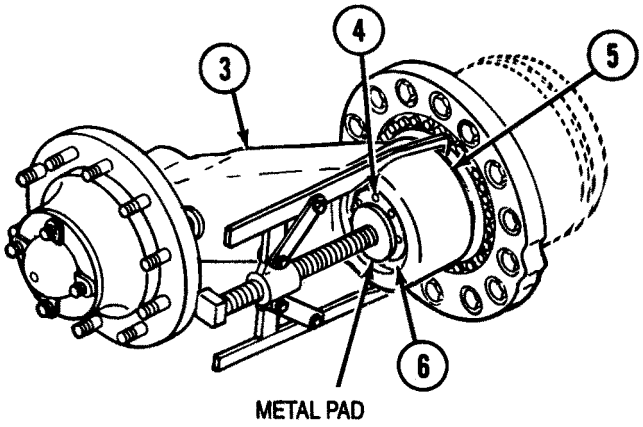




Note

- Perform steps R through V to remove all roadwheel arms and seals.
- If same roadwheel arm will be installed, mark its position on actuator with chalk.

R Remove six self-locking screws (1) and retainer (2) securing roadwheel arm (3) to rotary actuator wingshaft (4). Discard self-locking screws (1).

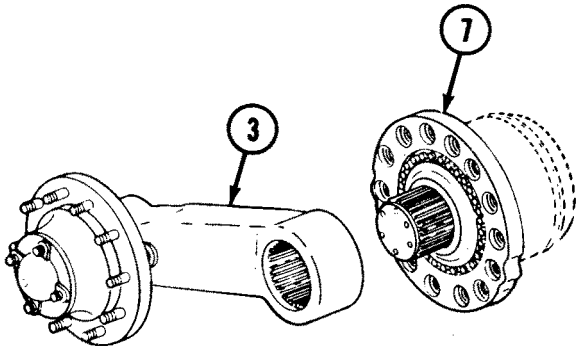


CAUTION

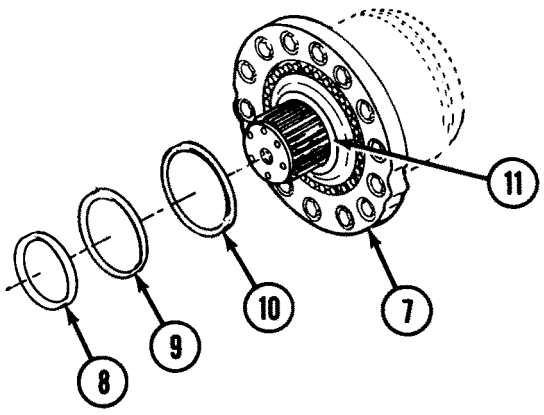
Ensure that metal pad does not cover tapered ring. Failure to comply may result in damage to equipment.

S Place metal pad between puller and end of rotary actuator wingshaft (4), and install puller on slots (5) of roadwheel arm (3).

T Loosen roadwheel arm (3) enough to remove tapered ring (6). Replace tapered ring (6) if damaged.



U While operator supports roadwheel arm (3), using puller, remove roadwheel arm (3) from rotary actuator (7).



Note

Have container ready to catch oil draining from rotary actuator.

V Remove packing (8), backup ring (9), and seal (10) from cavity (11) of rotary actuator (7). Discard packing (8).

INSTALLATION

WARNING

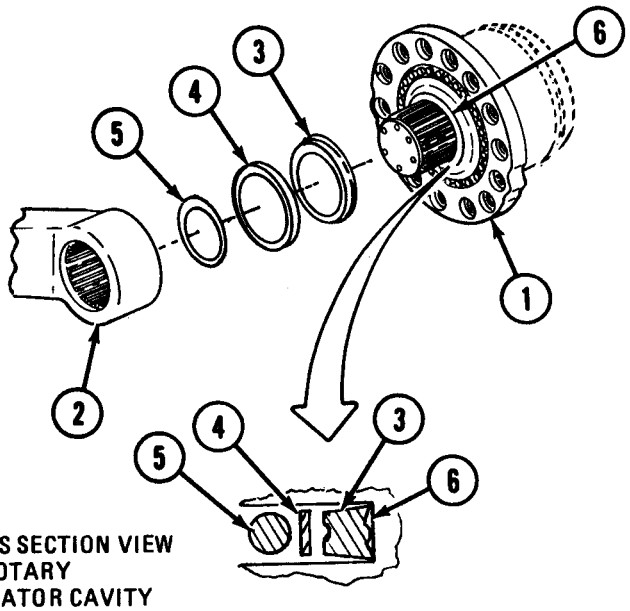
Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.

CAUTION

Ensure cavity and seal mating surfaces are clean. Failure to comply may result in damage to packing and seal.

A Using drycleaning solvent and brush, clean cavity of rotary actuator (1) and mating surface of roadwheel arm (2).

B Coat seal (3), backup ring (4), and packing (5) with petrolatum.

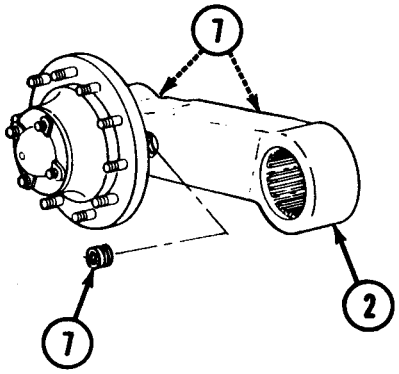


CROSS SECTION VIEW OF ROTARY ACTUATOR CAVITY

Note

Large end of seal with inserted O-ring goes in first.

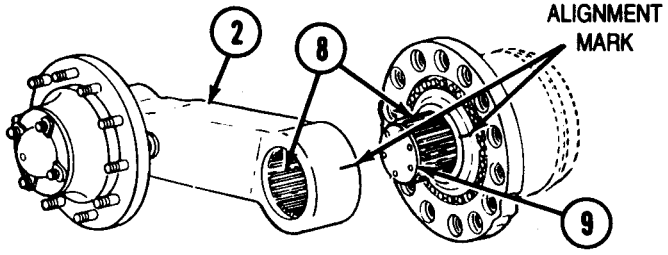
C Install seal (3), backup ring (4), and packing (5) in cavity (6) of rotary actuator (1).



Note

Perform step D only if plugs are missing.

D Coat three plugs (7) with sealing compound primer and sealing compound, and install three plugs (7) on roadwheel arm (2). Tighten to 75 - 83 lb-ft (102 - 113 N·m).

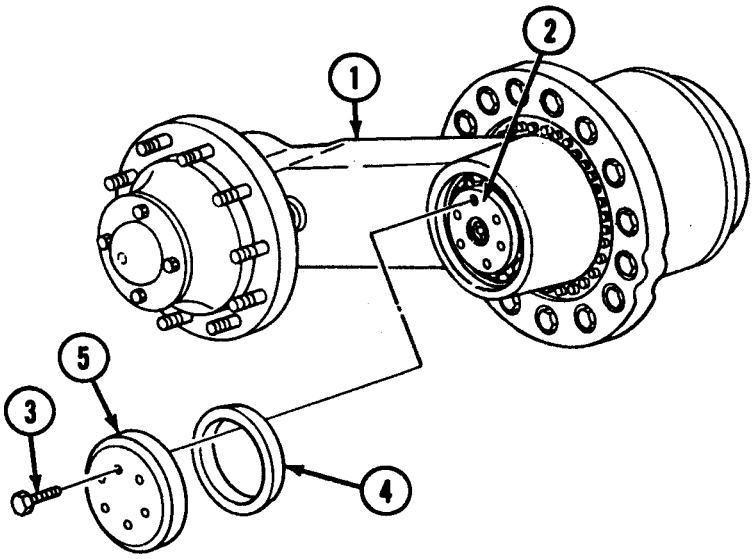


CAUTION

Splines must be properly aligned on roadwheel arm and actuator. Failure to comply may result in damage to equipment.

E Coat splines (8) of wingshaft (9) and roadwheel arm (2) with grease.

F Lift roadwheel arm (2) into position, and align splines (8) of wingshaft (9) and roadwheel arm (2) with alignment mark.



CAUTION

Do not strike roadwheel arm directly with hammer. Failure to comply may result in damage to equipment.

G Using wood block, install roadwheel arm (1) on wingshaft (2).

CAUTION

Ensure only new self-locking screws are used when installing roadwheel arm. Failure to comply may result in damage to equipment.

H Coat threads of six self-locking screws (3) with lubricating oil.

CAUTION

Retainer mounting screws can loosen if screws are not tightened at least two times. Failure to comply may result in wingshaft seal oil leaks.

Note

Refer to appendix F for proper torque sequence.

I Install tapered ring (4), retainer (5), and six self-locking screws (3) on roadwheel arm (1). Tighten six self-locking screws (3) to 98-106 lb-ft (133-144 N·m).

J Wait at least fifteen minutes, then loosen and tighten six self-locking screws (3) to 98-106 lb-ft (133-144 N·m).

Note

Perform steps K through U to install roadwheels No. 2, 3, and 4. Perform steps V through AO to install roadwheel No. 1

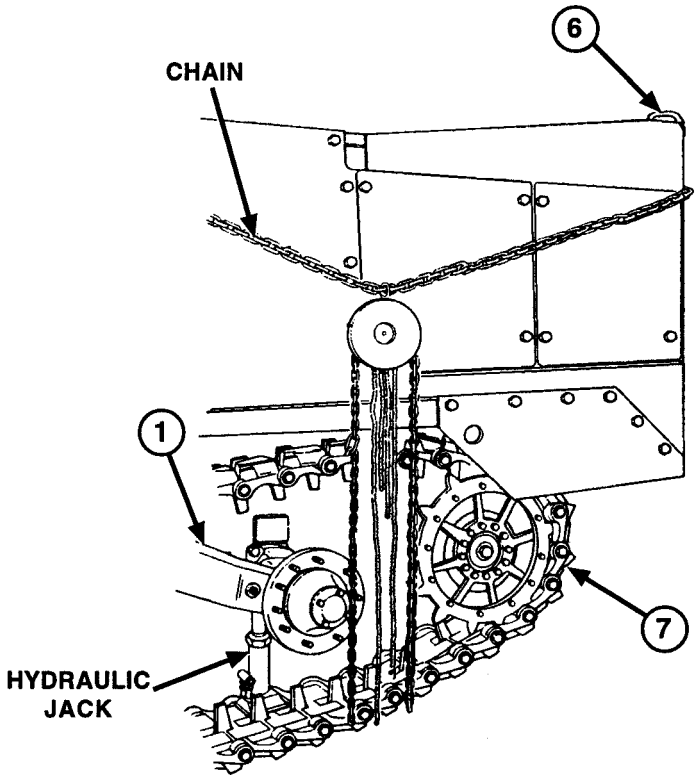
K Connect chain and chain hoist to rear lifting eye shackle (6) and top of ejector or other suitable location. Connect chain hoist to track (7).

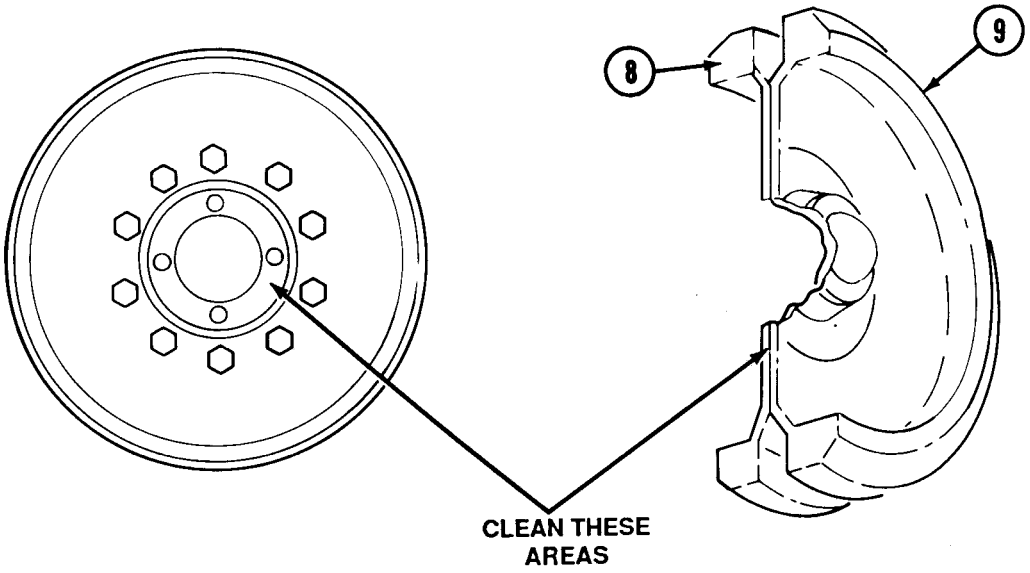
L Using chain hoist, raise track (7) to gain clearance for installation of roadwheel.

CAUTION

Place SPRUNG/UNSPRUNG lever between positions. Failure to comply may result in damage to actuators.

M Position hydraulic jack behind road wheel arm (1), and raise roadwheel arm (1).





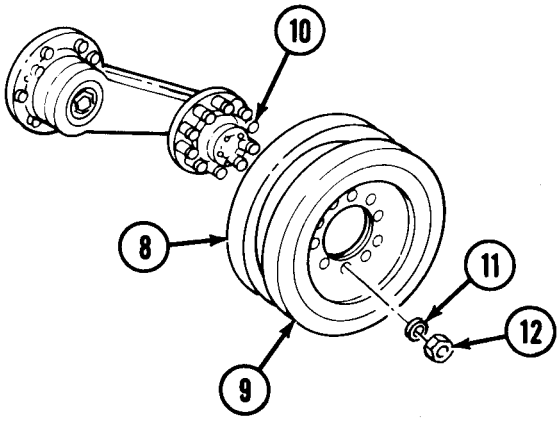
CAUTION

Clean mating surfaces between inner and outer roadwheel. Ensure area is free of paint. Failure to comply may result in damage to equipment.

N Thoroughly clean mating surfaces of inner roadwheel (8) and outer roadwheel (9).

O Coat threads of roadwheel arm studs (10) with lubricating oil.

P Install inner roadwheel (8) and outer roadwheel (9) on roadwheel arm studs (10).



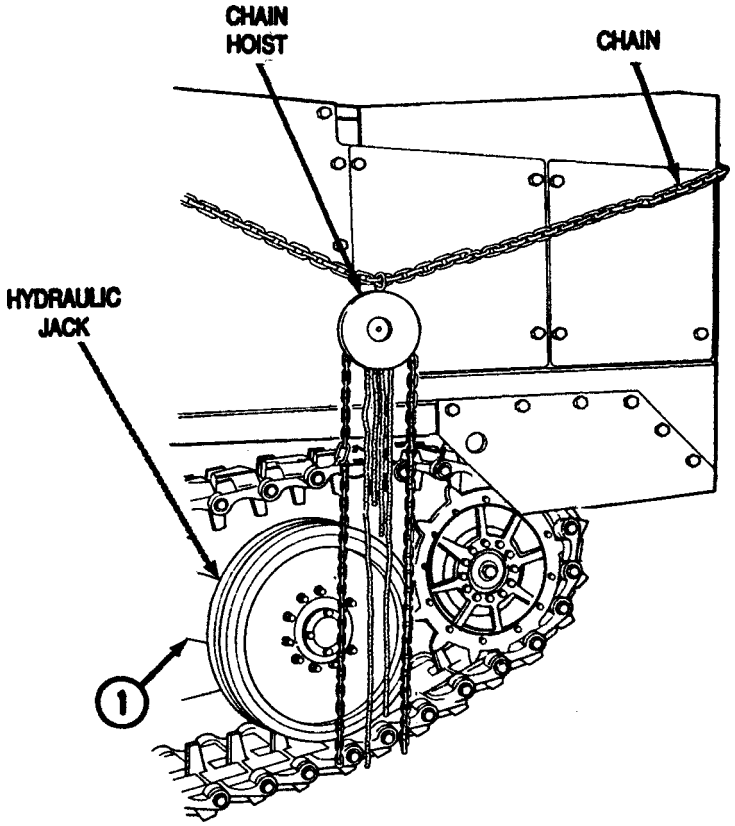
CAUTION

Clean area around holes of roadwheels prior to installing locknuts. Failure to comply may result in damage to equipment.

Q Install ten washers (11) and locknuts (12) on roadwheel arm studs (10). Ensure there is no space between inner roadwheel (8) and outer roadwheel (9). Tighten locknuts (12) until they touch outer roadwheel (9).

R Lower roadwheel arm (1) and remove hydraulic jack, chain hoist, and chain from vehicle.

S Start vehicle engine (TM 5-2350-262-10), and place suspension control lever in SPRUNG mode. Stop vehicle engine.

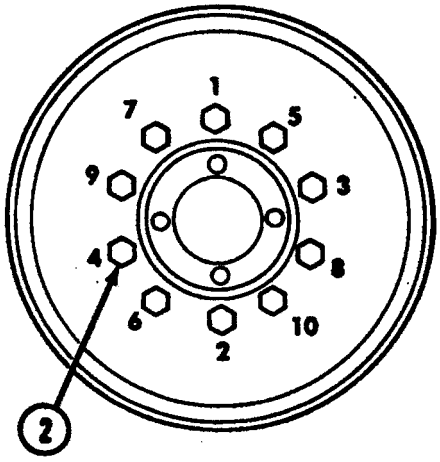


T Referring to torque sequence, tighten lock-nuts (2) to 190 lb-ft (258 N·m).

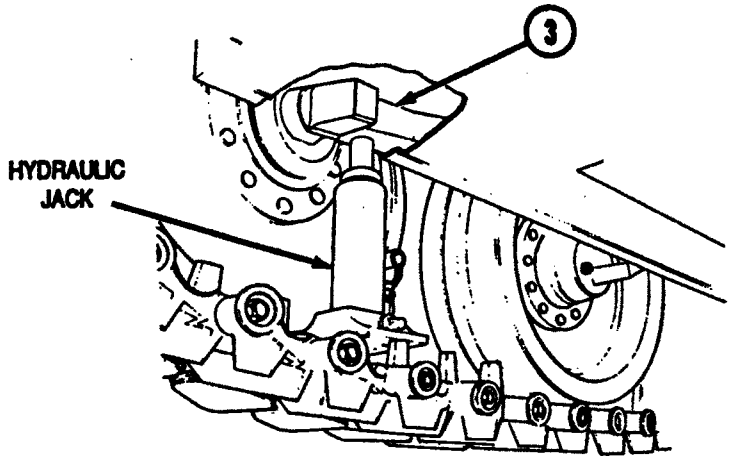
CAUTION

Place SPRUNG/UNSPRUNG lever between positions. Failure to comply may result in damage to actuators.

U Position hydraulic jack under No. 1 roadwheel arm (3), and raise No. 1 roadwheel arm (3) to gain clearance for installation of roadwheel.



TORQUE SEQUENCE FOR ROADWHEELS



CAUTION

Clean mating surfaces between inner and outer roadwheel. Ensure area is free of paint. Failure to comply may result in damage to equipment.

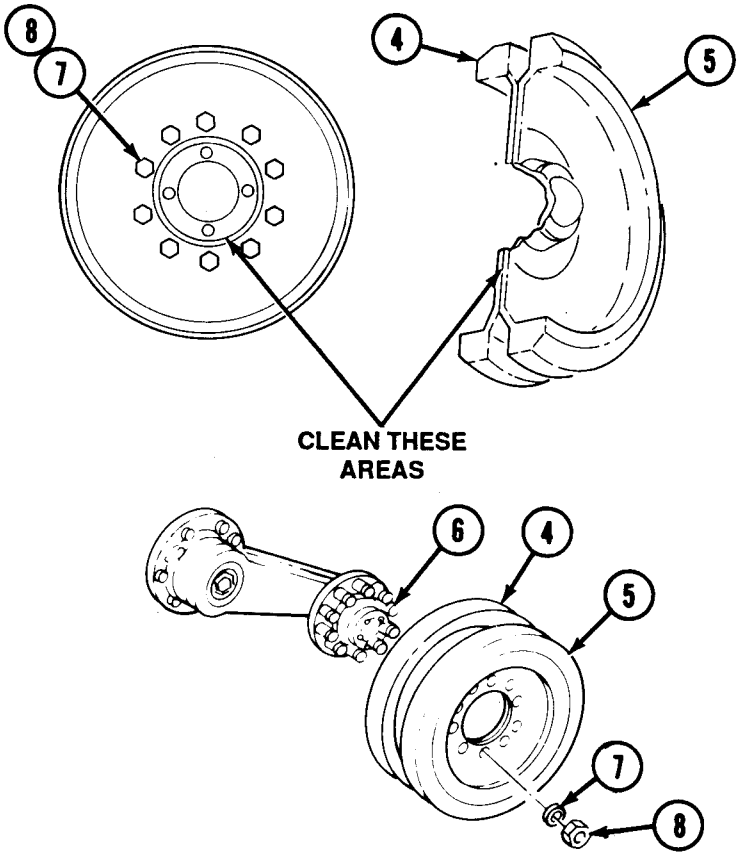
V Thoroughly clean mating surfaces of inner roadwheel (4) and outer roadwheel (5).

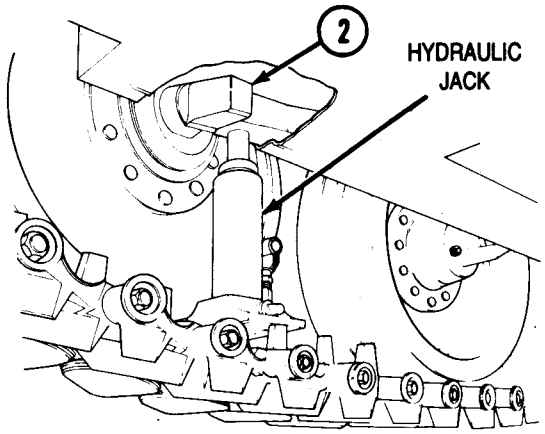
CAUTION

Clean area around holes of roadwheels prior to installing locknuts. Failure to comply may result in damage to equipment

W Coat threads of roadwheel arm studs (6) with lubricating oil.

X Install inner roadwheel (4), outer roadwheel (5), ten washers (7), and locknuts (8) on roadwheel arm studs (6). Ensure there is no space between inner roadwheel (4) and outer roadwheel (5). Tighten locknuts (8) until they touch outer roadwheel (5).

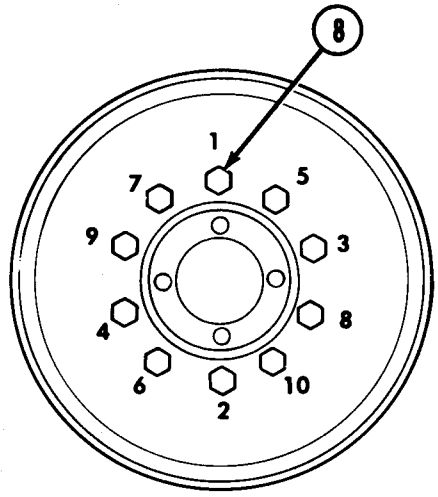




Y Lower roadwheel arm (2), and remove hydraulic jack.

Z Start vehicle engine (TM 5-2350-262-10), and place suspension control lever in SPRUNG mode. Stop vehicle engine.

AA Refer to torque sequence to tighten locknuts (8) to 190 lb-ft (258 N-m).



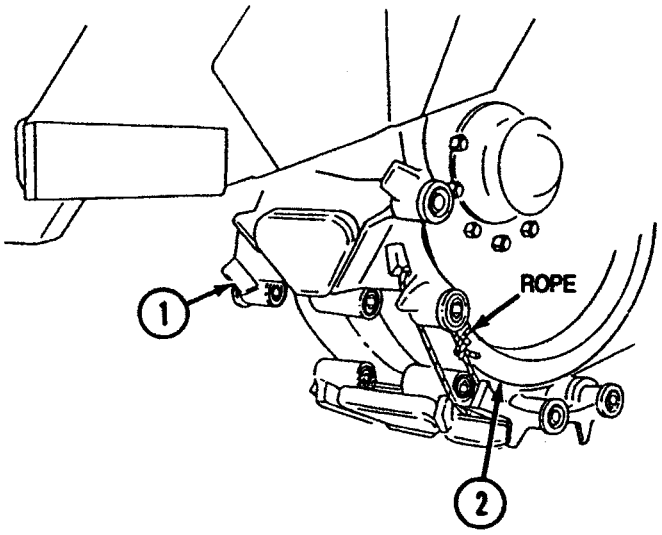
TORQUE SEQUENCE

Note

Keep vehicle engine running. Settling vehicle will take up some slack in track.

AB Start vehicle engine (TM 5-2350-262-10), and place steer selector in CB mode. Advance track (1) over No. 1 roadwheel (2) by turning steering wheel in opposite direction of disconnected track. Shift transmission to first gear, and slowly advance end of track (1) over No. 1 roadwheel (2) until track (1) is over No. 1 roadwheel (2), and in very close relation to other end track (1). Block track (1) (p 2-28).

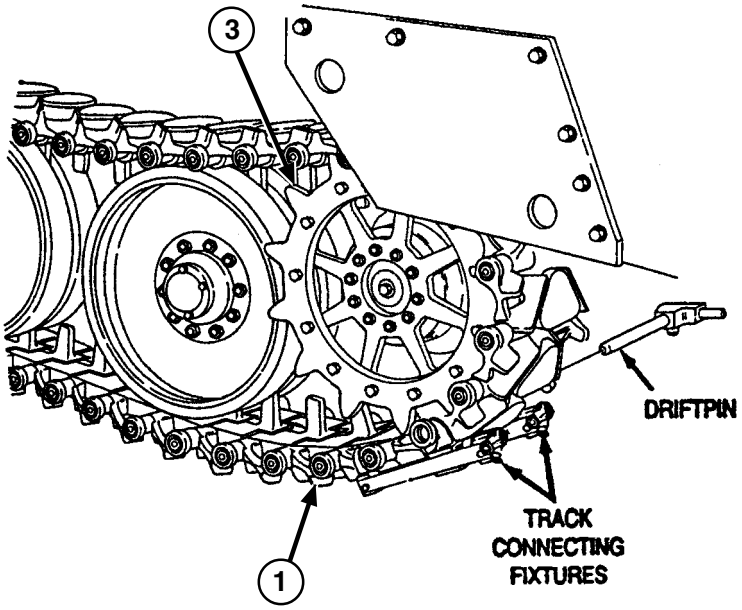
AC Tie both ends of track (1) together with a section of rope. Pull ends of track (1) together as close as possible.

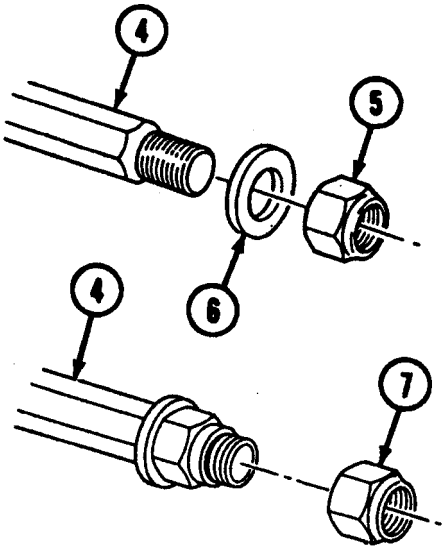


AD Unblock track (p 2-28). Drive vehicle rearward until both ends of track (1) are midway between ground and drive sprocket (3).

AE Connect two track connecting fixtures to ends of track (1). Remove rope

AF Tighten track connecting fixtures until ends of track (1) mesh. Insert driftpin to connect track (1).





AG Coat threads of track pin (4) and face (washer side) of two locknuts (5) with grease.

AH Install washer (6) and locknut (5) on track pin (4). Tighten locknut (5) to end of threads.

AI Install locknut (7), retained from removal, on track pin (4).

WARNING

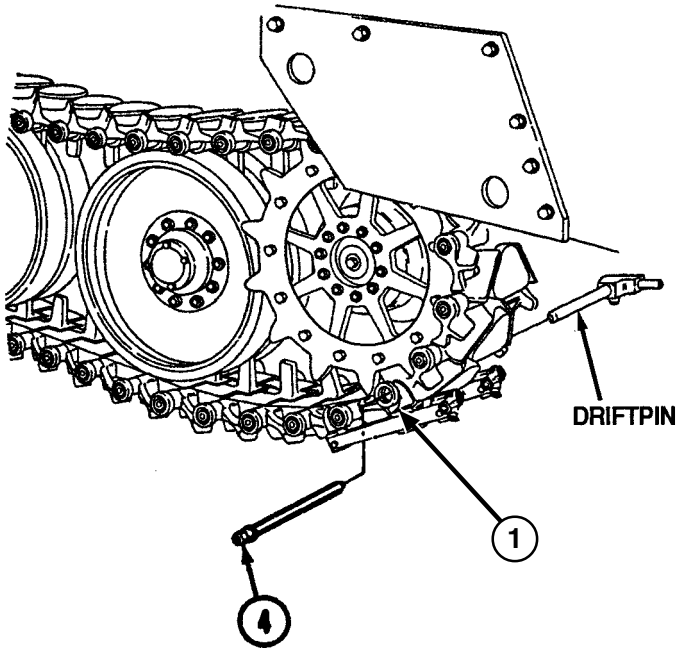
When using hammer with driftpin or track pin, wear safety goggles. Failure to comply may result in injury to personnel.

CAUTION

If pin binds, bushings are not properly aligned. Remove pin and tighten or loosen track connecting fixtures as necessary until bushings are aligned. Failure to comply may result in damage to track shoe bushings.

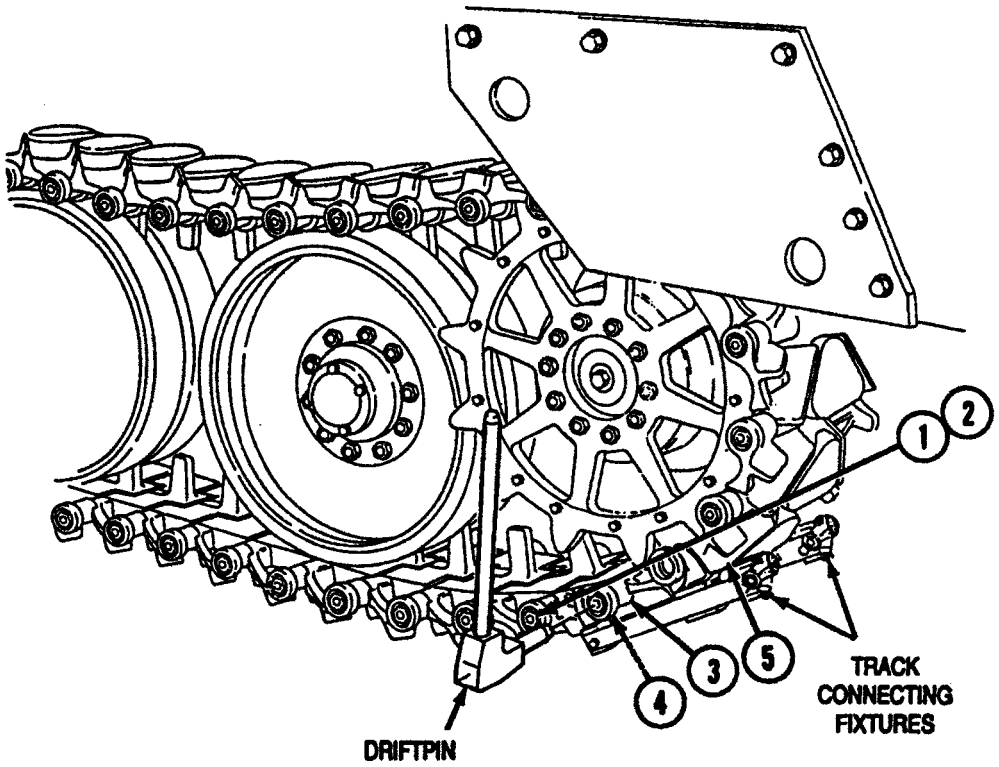
Note

Track pin may have to be turned slightly with 15-inch adjustable wrench during installation to align pin with track shoe bushings.



AJ Using hammer and 15-inch adjustable wrench, install track pin (4) on track (1) by driving out driftpin with track pin (4).

AK Remove and discard locknut (7), retained from removal.



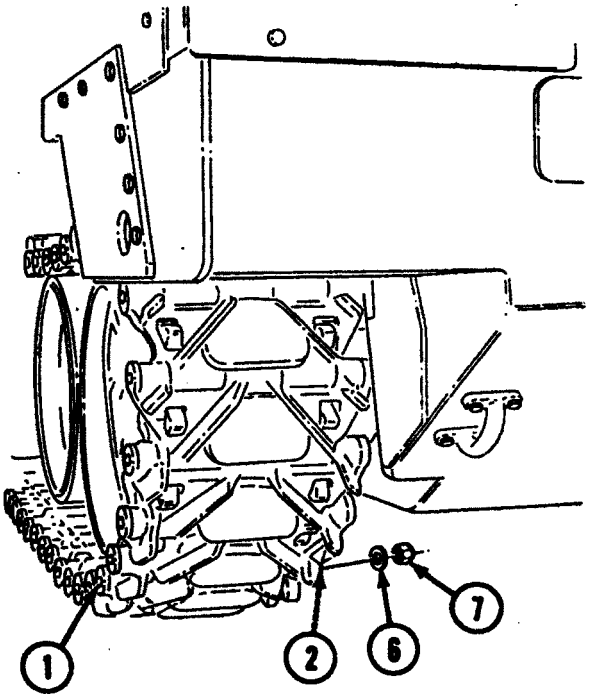
AL Loosen locknut (1) three turns. Drive track pin (2) into track shoe (3) until washer (4) is flush against track shoe (3).

AM Remove two track connecting fixtures form track (5).

AN Install washer (6) and locknut (7) on hull end of track pin (2). Stop vehicle engine (TM 5-2350-262-10), and relieve hydraulic pressure (TM 5-2350-262-20-1).

CAUTION

At least 1/16 in. (1.6 mm) of thread on track pin must extend through locknut. Failure to comply may result in damage to track pin and locknuts.



AO Tighten locknuts (1) and (7) to 120-160 lb-ft (163-217 N·m).

FOLLOW-ON TASK:

Adjust track tension (TM 5-2350-262-10).

TRACK ADJUSTING CYLINDER REPLACEMENT (OLD PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Grease	Item 19 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Locknut (5)

Parts Reference:

TM 5-2350-262-24P	Group AM Group A3

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

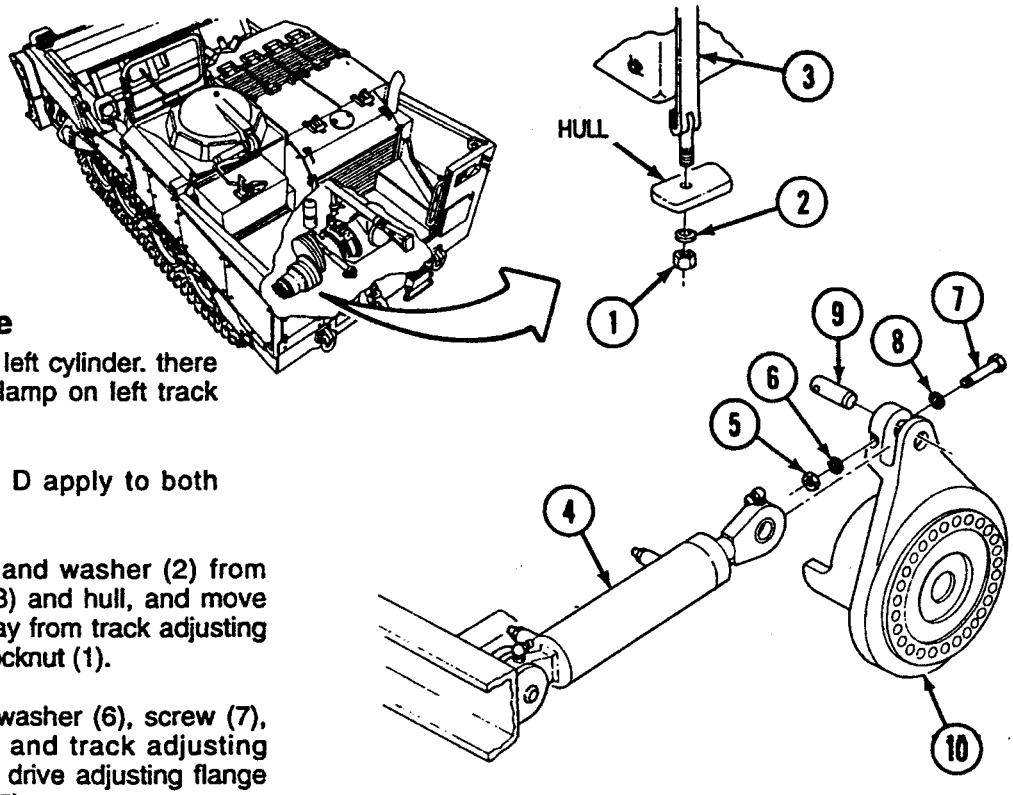
Troubleshooting Reference:

Page 3-171	Vehicle Throws Track

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Track Tension Relieved
Page 4-361	Rear Floor Plates Removed

REMOVAL

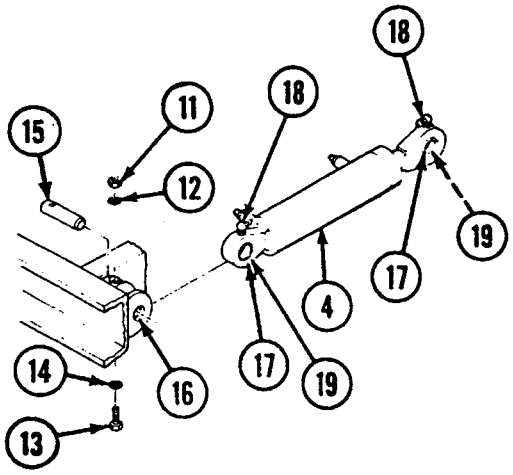


Note

- Step A applies to left cylinder. there is an additional clamp on left track adjusting cylinder.
- Steps B through D apply to both cylinders.

A Remove locknut (1) and washer (2) from rear fuel tank strap (3) and hull, and move fuel tank strap (3) away from track adjusting cylinder (4). Discard locknut (1).

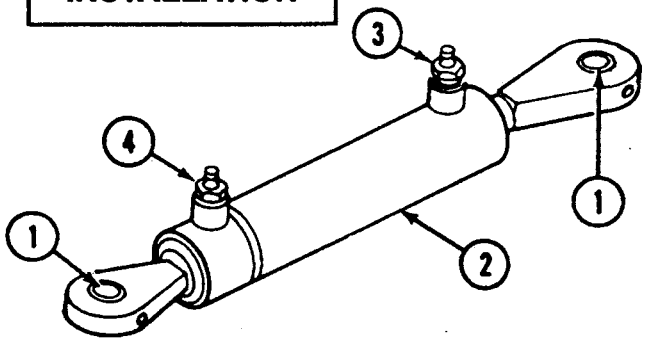
B Remove locknut (5), washer (6), screw (7), washer (8), pin (9), and track adjusting cylinder (4) from final drive adjusting flange (10). Discard locknut (5).



C Remove locknut (11), washer (12), screw (13), washer (14), pin (15), and track adjusting cylinder (4) from hull mounting bracket (16). Discard locknut (11).

D If damaged, remove two bearings (17), lubrication fittings (18), and plugs (19).

INSTALLATION



CAUTION

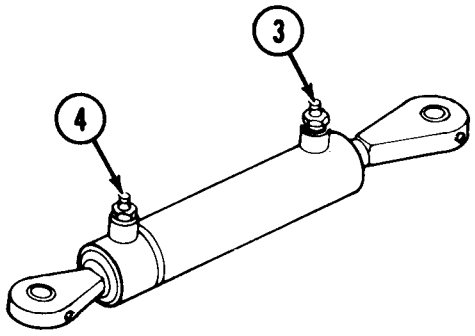
If installing new cylinder, remove fill valves and drain oil from cylinder into suitable container. Failure to comply may result in damage to cylinder.

A If removed, install two bearings (1) on ends of track adjusting cylinder (2).

B Place track adjusting cylinder (2) in horizontal position with fill valves (3) and (4) facing up. Loosen forward fill valve (3) one turn, and connect grease gun to rear fill valve (4).

CAUTION

Be sure no air is trapped in either end of track adjusting cylinders. Entrapped air permits cylinders to oscillate. Failure to comply may result in rapid wear and damage to bushings between final drives and hull.



Note

Have rag or container ready to catch grease forced from forward fill valve.

C Pump grease gun until all air is forced from forward fill valve (3). Tighten forward fill valve (3), and remove grease gun from rear fill valve (4). Repeat for rear fill valve (4).

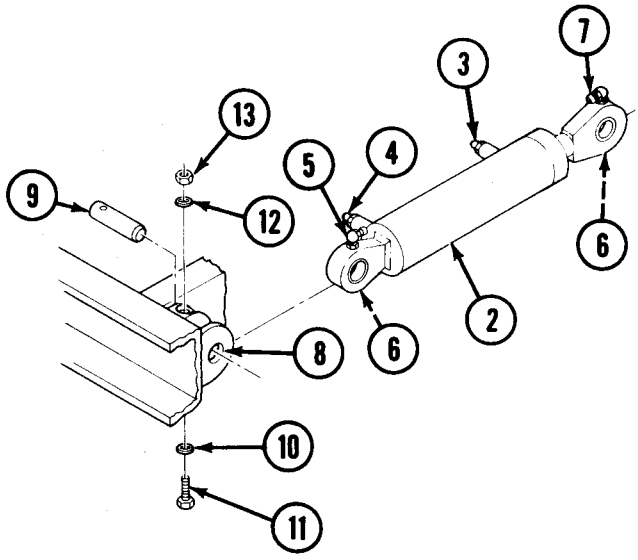
D Install grease fitting (5) and plug (6) on fixed end of track adjusting cylinder (2) so that lubrication fitting (5) faces forward when fill valves (3) and (4) face inboard.

E Install plug (6) and grease fitting (7) on rod end of track adjusting cylinder (2) so that lubrication fitting (7) faces rearward.

Note

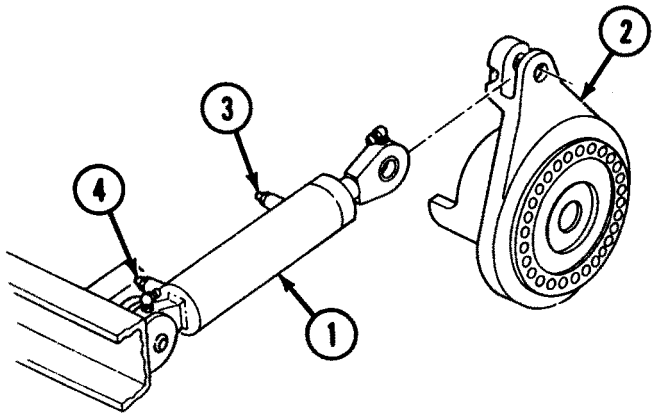
- Coat threads of screw and nut with lubricating oil prior to installation.
- Screw must be inserted from bottom when connecting fixed end of cylinder to hull.

F With lubrication fitting (5) pointing up, connect fixed end of track adjusting cylinder (2) to hull mounting bracket (8) with pin (9), washer (10), screw (11), washers (12), and locknut (13).



G Align rod end of track adjusting cylinder (1) with final drive adjusting flange (2).

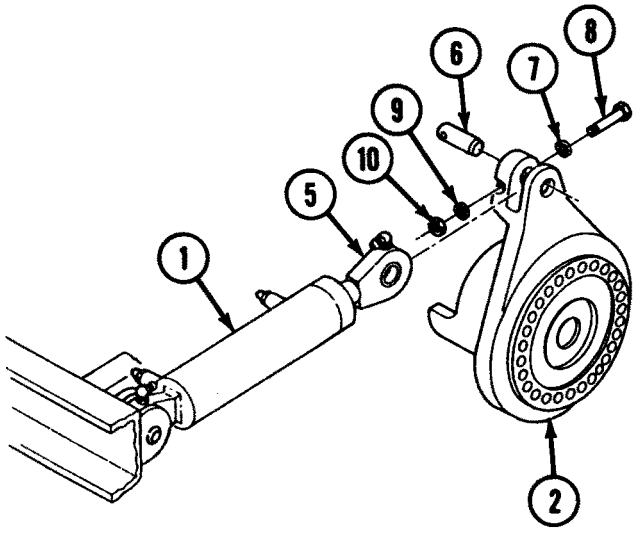
- To extend rod, loosen forward fill valve (3) one turn and apply grease to rear fill valve (4) until rod end and final drive flange (2) align.
- To retract rod, loosen rear fill valve (4) one turn and apply grease to forward fill valve (3) until rod end and final drive flange (2) align.
- Tighten fill valve (3) or (4), and wipe up any spilled oil or grease.

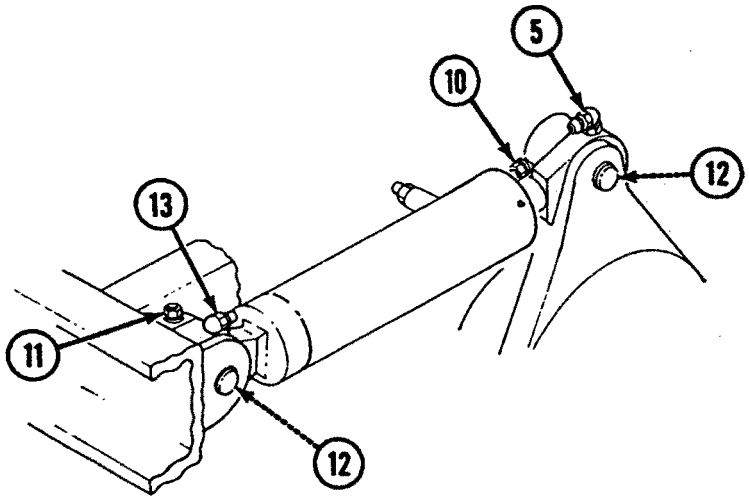


Note

- There is an additional clamp on left track adjusting cylinder.
- Coat threads of screw and nut with lubricating oil prior to installation.

H Connect rod end (5) of track adjusting cylinder (1) to final drive adjusting flange (2) with pin (6), washer (7), screw (8), washer (9), and locknut (10).





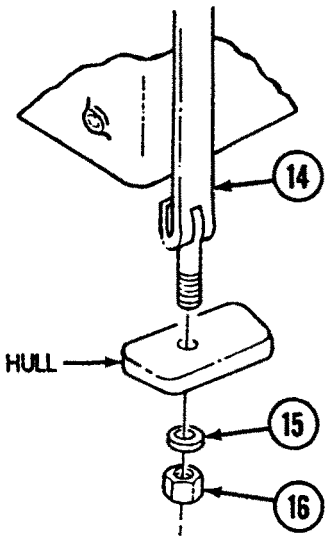
I Tighten locknuts (10) and (11) to 29 - 31 lb-ft (39 - 42 N-m).

J Lubricate bearings (12) with grease at lubrication fittings (5) and (13).

Note

Perform step K if left cylinder was removed.

K Connect rear fuel tank strap (14) to hull with washer (15) and locknut (16).



FOLLOW-ON TASKS:

- Adjust track tension (TM 5-2350-262-10).
- Install rear floor plates (p 4-361).

TRACK ADJUSTING CYLINDER REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Grease	Item 19 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts :

O-rings (2)

Locknuts (5)

Parts Reference:

TM 5-2350-262-24P	Group AM
TM 5-2350-262-20-1	Group AR
TM 5-2350-262-20-1	Group A3

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting References:

Page 3-171	Vehicle Throws Track
TM 5-2350-262-20-3	

Equipment Condition:

Reference	Condition Description
• TM 5-2350-262-10	Track Tension Relieved
• TM 5-2350-262-20-1	Hydraulic Pressure Relieved
• Page 4-361	Rear Floor Plates Removed

General Safety Instructions:

WARNING

- **High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply ay result in sever injury to personnel.**
- **Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.**
- **Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.**

REMOVAL

WARNING

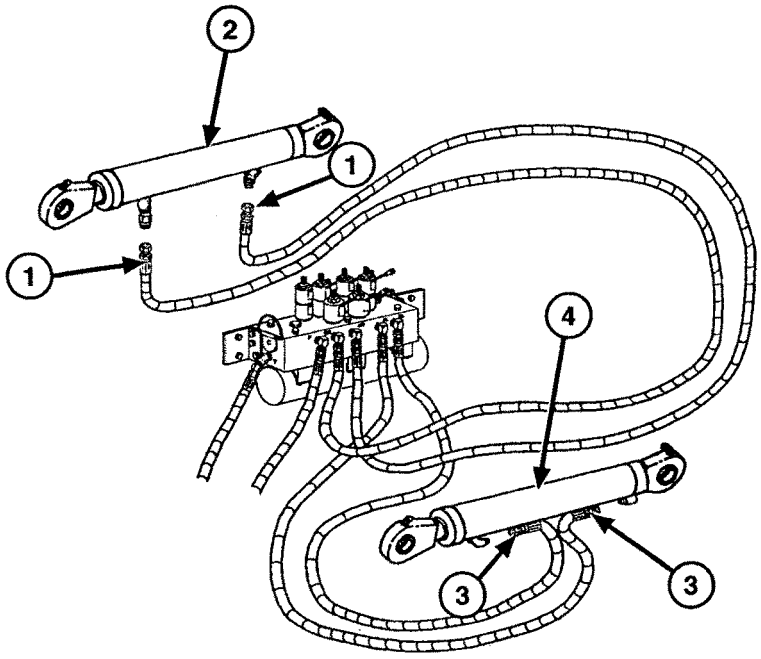
- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.
- Do not work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

CAUTION

Cover ports and hose or tube ends to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

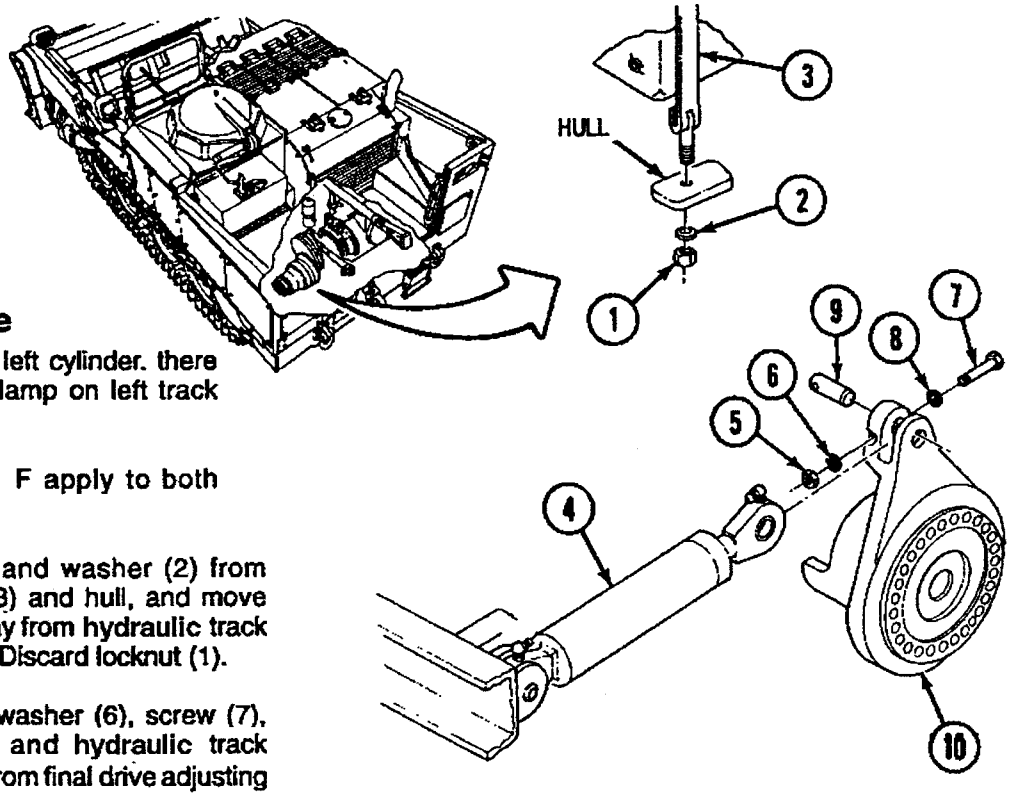
Note

Have suitable container ready to catch oil.



A Remove two hoses (1) from right side hydraulic track adjusting cylinder (2).

B Remove two hoses (3) from left side hydraulic track adjusting cylinder (4).

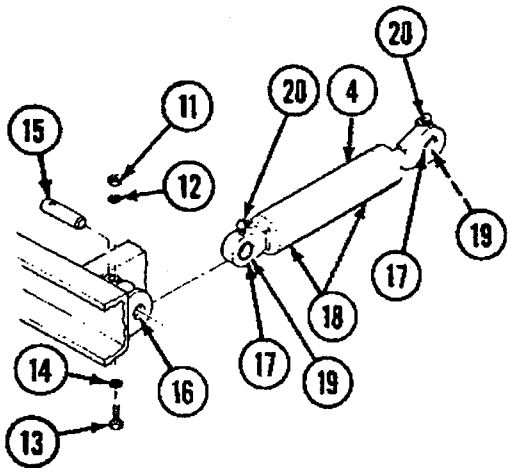


Note

- Step C applies to left cylinder. there is an additional clamp on left track adjusting cylinder.
- Steps D through F apply to both cylinders.

C Remove locknut (1) and washer (2) from rear fuel tank strap (3) and hull, and move fuel tank strap (3) away from hydraulic track adjusting cylinder (4). Discard locknut (1).

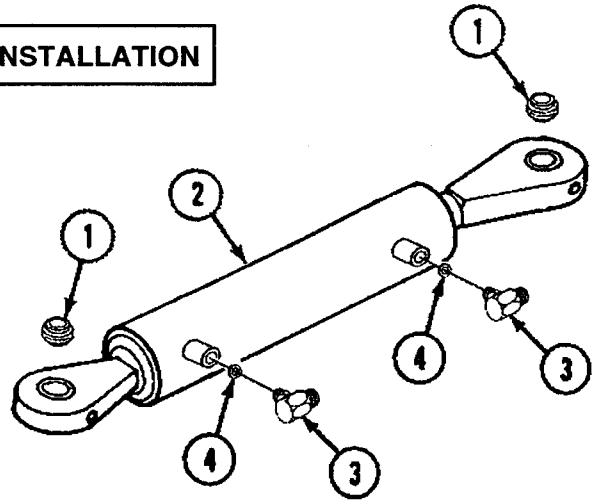
D Remove locknut (5), washer (6), screw (7), washer (8), pin (9), and hydraulic track adjusting cylinder (4), from final drive adjusting flange (10). Discard locknut (5).



E Remove locknut (11), washer (12), screw (13), washer (14), pin (15), and hydraulic track adjusting cylinder (4) from hull mounting bracket (16). Discard locknut (11).

F If damaged, remove two bearings (17). Remove two hydraulic elbows and O-rings (18) from bottom of hydraulic track adjusting cylinder. Discard o-rings (18). Remove two plugs (19) and lubrication fittings (20) from hydraulic cylinder.

INSTALLATION



CAUTION

If installing new cylinder, drain oil from cylinder into suitable container. Failure to comply may result in damage to cylinder.

A If damaged, install two new bearings (1) on ends of hydraulic track adjusting cylinder (2).

B If damaged, install two hydraulic elbows (3) and two new o-rings (4).

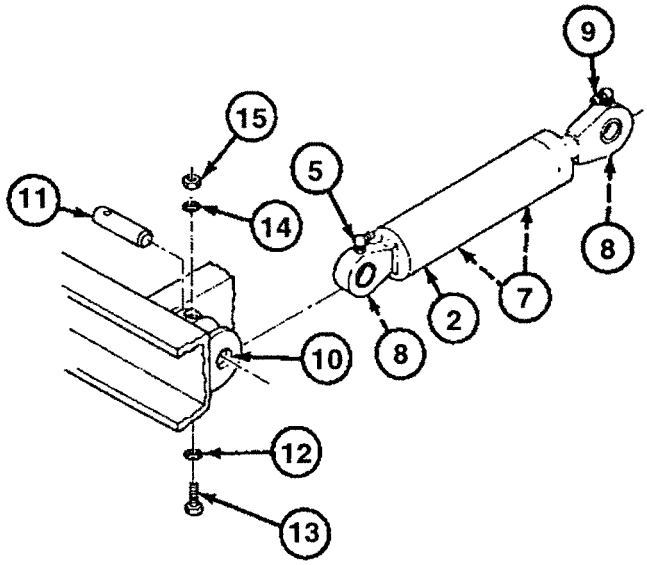
C Install lubrication fitting (5) and plug (8) on fixed end of hydraulic track adjusting cylinder (2) so that lubrication fitting (5) faces forward and hydraulic elbows (7) face downward.

D Install plug (8) and lubrication fitting (9) on rod end of hydraulic track adjusting cylinder (2) so that lubrication fitting (9) faces rearward.

Note

- Coat threads of screw and nut with lubricating oil prior to installation.
- Screw must be inserted from bottom when connecting fixed end of cylinder to hull.

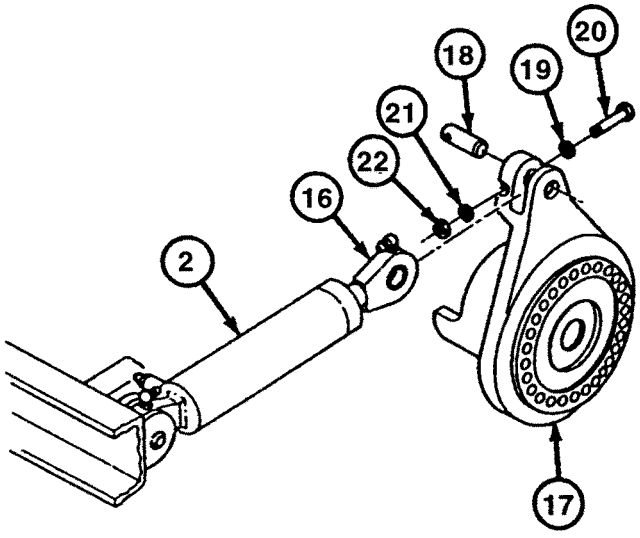
E With lubrication fitting (5) pointing up, connect fixed end of hydraulic track adjusting cylinder (2) to hull mounting bracket (10) with pin (11), washer (12), screw (13), washer (14), and new locknut (15).

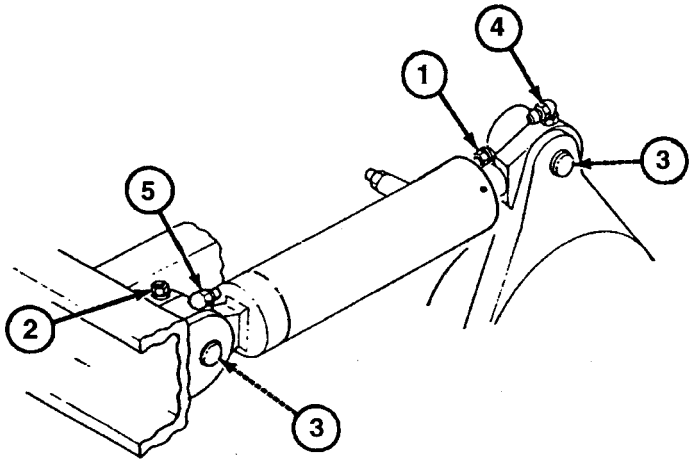


Note

- There is an additional clamp on left hydraulic track adjusting cylinder.
- Coat threads of screw and nut with lubricating oil prior to installation.

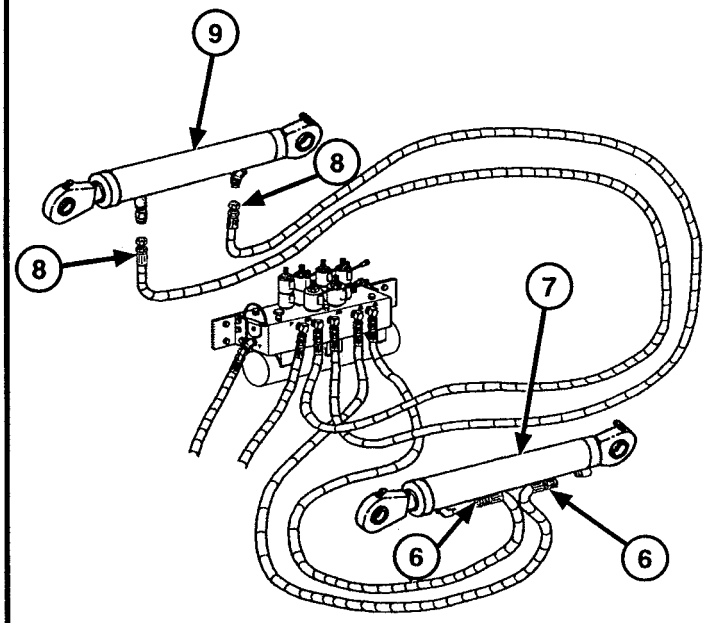
F Connect rod end (16) of hydraulic track adjusting cylinder (2) to final drive adjusting flange (17) with pin (18), washer (19), screw (20), washer (21), and new locknut (22).





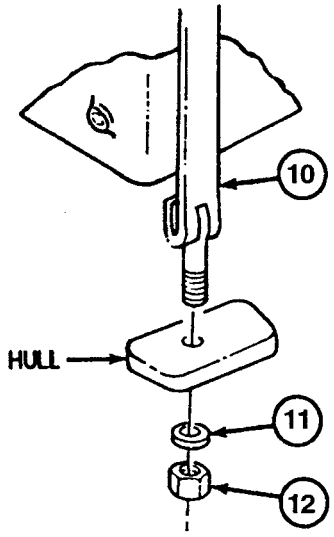
G Tighten locknuts (1) and (2) to 19-31 lb-ft (39-42 N•m).

H Lubricate bearings (3) with grease at lubrication fittings (4) and (5).



I Install two hoses (6) on left side hydraulic track adjusting cylinder (7).

J Install two hoses (8) on right side hydraulic track adjusting cylinder (9).



Note

Perform step K if left cylinder was removed

K Connect rear fuel tank strap (10) to hull with washer (11) and locknut (12).

FOLLOW-ON TASKS:

- Adjust track tension (TM 5-2350-262-10).
- Install rear floor plates (p 4-361).
- Check hydraulic fluid level (TM 5-2350-262-10).

SEMI-AUTOMATIC TRACK ADJUSTER ASSEMBLY REPLACEMENT AND REPAIR (NEW PRODUCTION)

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanics: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D
Caps and Plugs	Item 7 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts :

Machine Plug (1)	5365-01-217-4133
O-Ring (4)	5331-01-090-5695
O-Ring (4)	5331-01-090-2741
O-Ring (2)	5331-00-808-0794
Seal Kit (2)	
Seal Kit (4)	

Personnel Required:

Construction Equipment Repairer 62B30

Reference:

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Right, Center, and Left Rear Floor Plates Removed
TM 5-2350-262-20-1	Hydraulic System Pressure Relieved

General Safety Instructions:

WARNING

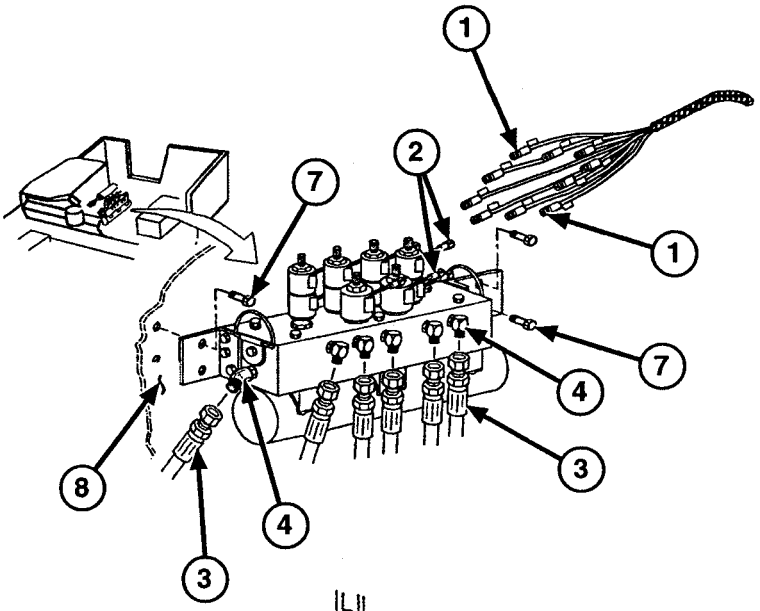
- **High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply ay result in sever injury to personnel.**
- **Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.**
- **Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.**

REMOVAL

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.
- Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately.

A Remove ten track adjuster main wiring harness connectors (1) from ten coil connectors (2).



CAUTION

Cap or plug all ports and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

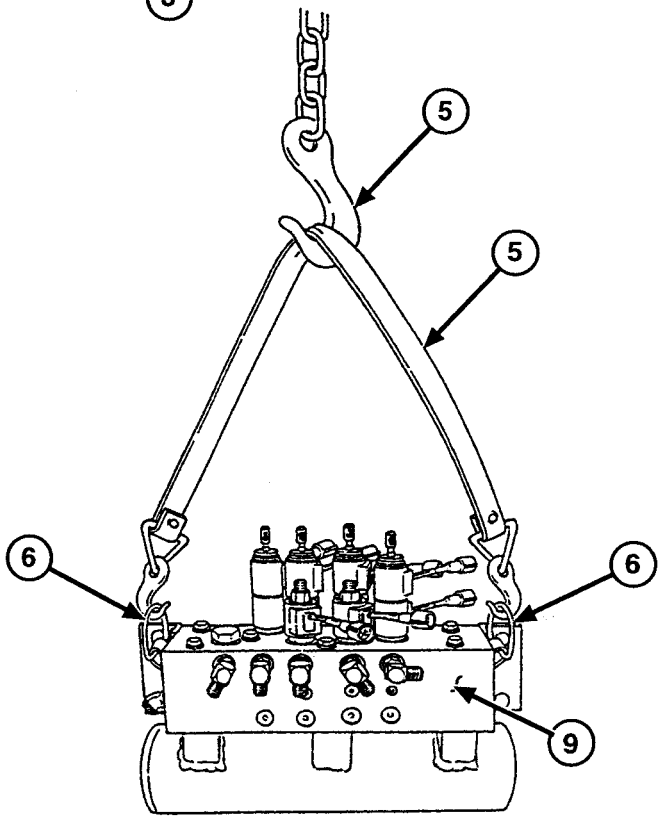
Note

- Use two wrenches when disconnecting hydraulic hoses and fittings.
- Have suitable container ready to catch hydraulic oil.

B Disconnect six hoses (3) from six elbows (4).

WARNING

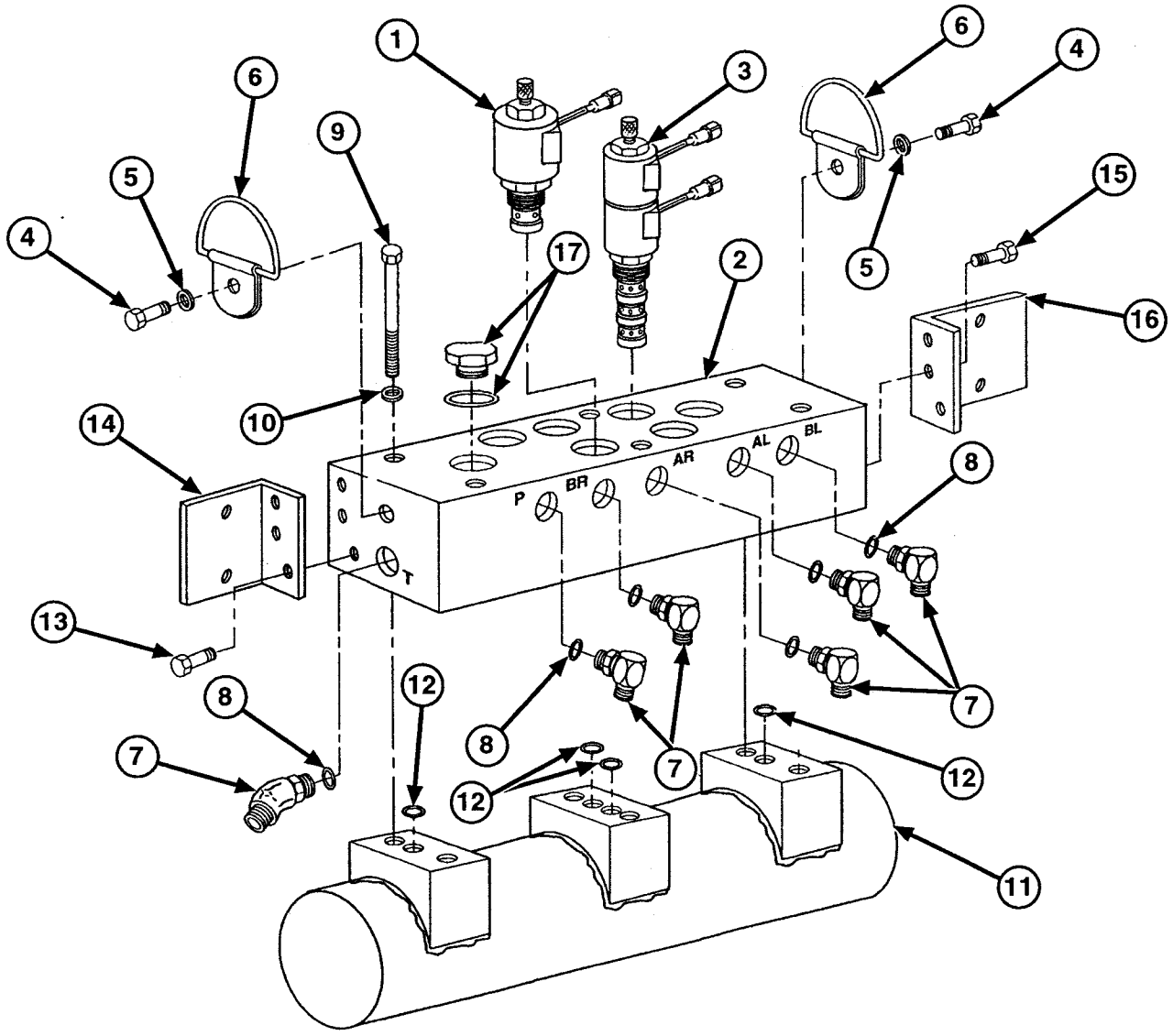
Semi-automatic track adjuster assembly is heavy. Support semi-automatic track adjuster assembly before disconnecting or removing. Failure to comply may result in severe injury to personnel.



C Attach suitable lifting device (5) to 2 tiedowns (6) on track adjuster assembly (9).

D Remove 4 screws (7) from hull (8) and lift track adjuster assembly (9) from vehicle.

DISASSEMBLY



A Remove two poppet valve assemblies (1) from hydraulic manifold (2).

B Remove four spool valve assemblies (3) from hydraulic manifold (2).

C Remove two screws (4), two washers (5), and two tiedowns (6) from hydraulic manifold (2).

D Remove six elbows (7) and six o-rings (8) from manifold assembly (2). Discard six o-rings (8).

E Remove six screws (9) and six washers (10) from hydraulic manifold (2).

F Separate cylinder assembly (11) and four o-rings (12) from manifold assembly (2). Discard o-rings (12).

G Remove three screws (13) and front bracket (14) from hydraulic manifold (2).

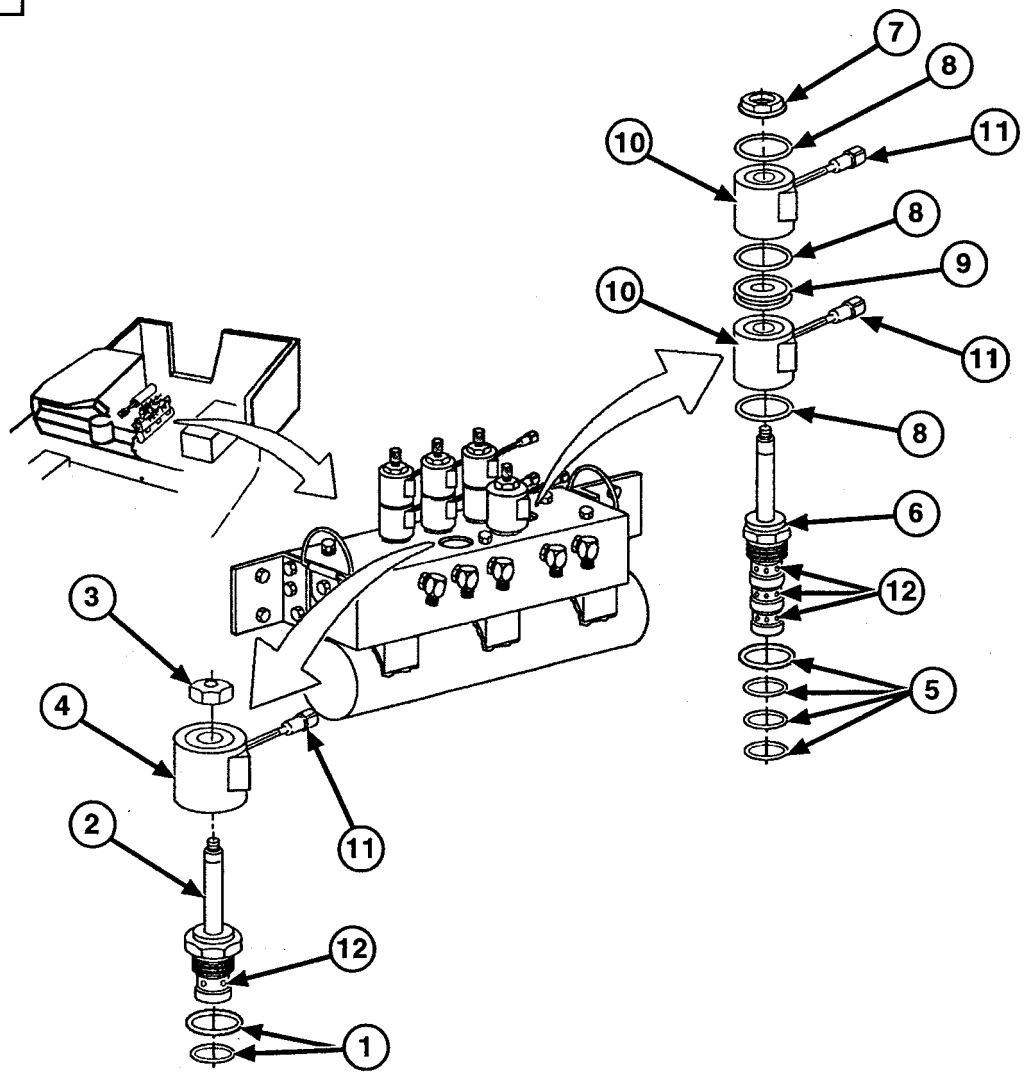
H Remove three screws (15) and rear bracket (16) from hydraulic manifold (2).

Note

Do not remove machine plug and o-ring unless evidence of leaking fluid around machine plug was evident.

I Remove machine plug and o-ring (17) from hydraulic manifold (2). Discard machine plug and o-ring (17).

REPAIR



A Remove two o-rings (1) from poppet valve assembly (2). Discard two o-rings (1).

B Remove nut (3) and coil (4) from poppet valve assembly (2).

C Remove four o-rings (5) from spool valve assembly (6). Discard four o-rings (5).

WARNING

Drycleaning solvent is flammable and will not be used near open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

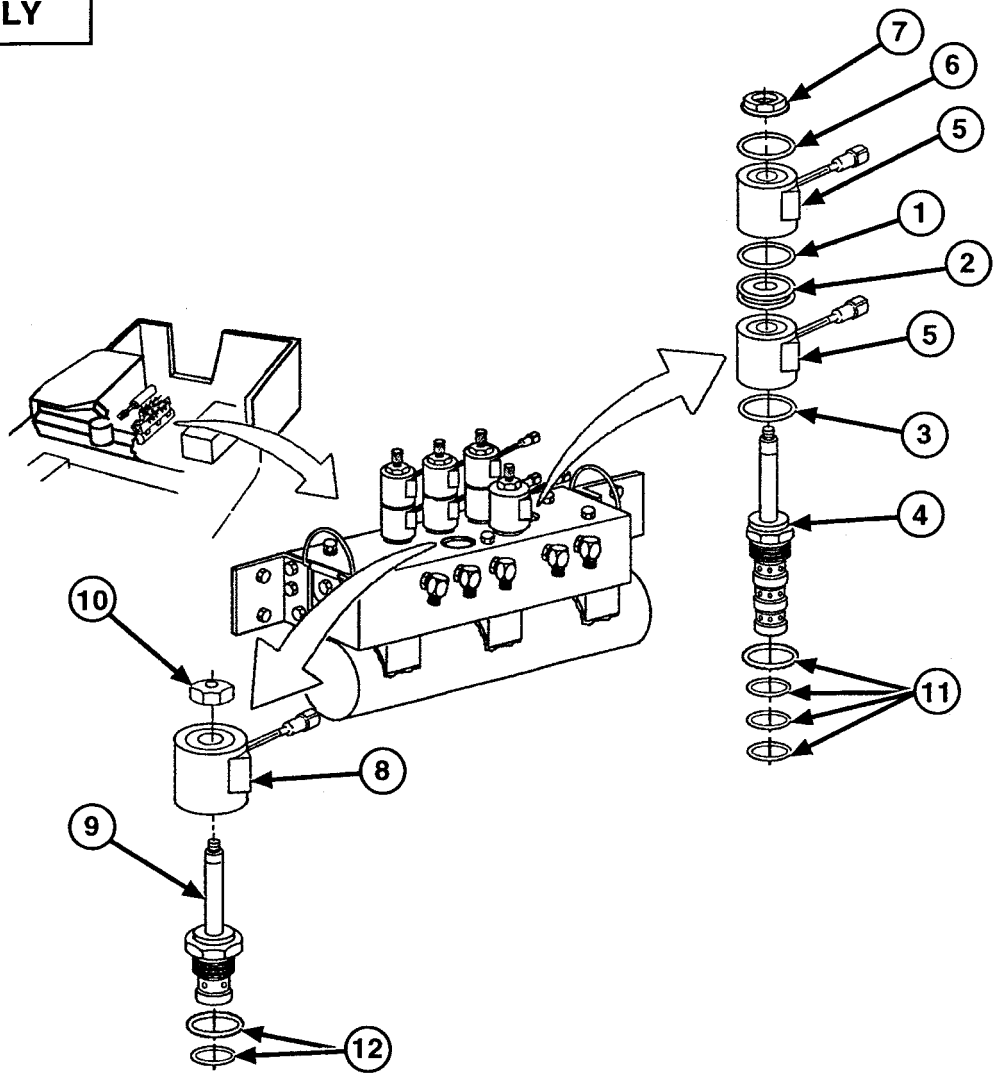
D Remove nut (7), three o-rings (8), coil retainer/spacer (9), and two coils (10) from spool valve (6). Retain three o-rings (8) and o-ring retainer/spacer (9) for future use.

E Inspect coils (4) and (10) for cracks or discoloring due to heat.

F Inspect coil connectors, pins, and sockets (11) for evidence of corrosion, bent/broken pins, cracked connector housing, socket discoloration from electrical arc. Replace coils that may be defective.

G Inspect spool and poppet valve orifices for dirt or plugging by foreign substances. Clean valves with drycleaning solvent and clean rags.

ASSEMBLY



Note

- Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to TM 5-2350-262-20-1 when replacing or repairing hydraulic system components. Always inspect hoses, fittings and o-rings for serviceability before installation.
- Apply lubricating oil to o-rings prior to installation.
- If spool or poppet valves were not disassembled in REPAIR, go to J.

A Install o-ring (1) to exterior of coil retainer/spacer (2).

B Install o-ring (3) on spool valve (4).

C Install spool valve coil (5) on spool valve (4).

D Install assembled coil retainer/spacer (2) on spool valve (4) on top of coil (5).

E Install second spool valve coil (5) on top of coil retainer/spacer (2) on spool valve (4).

F Install o-ring (6) on top of spool valve coil (5).

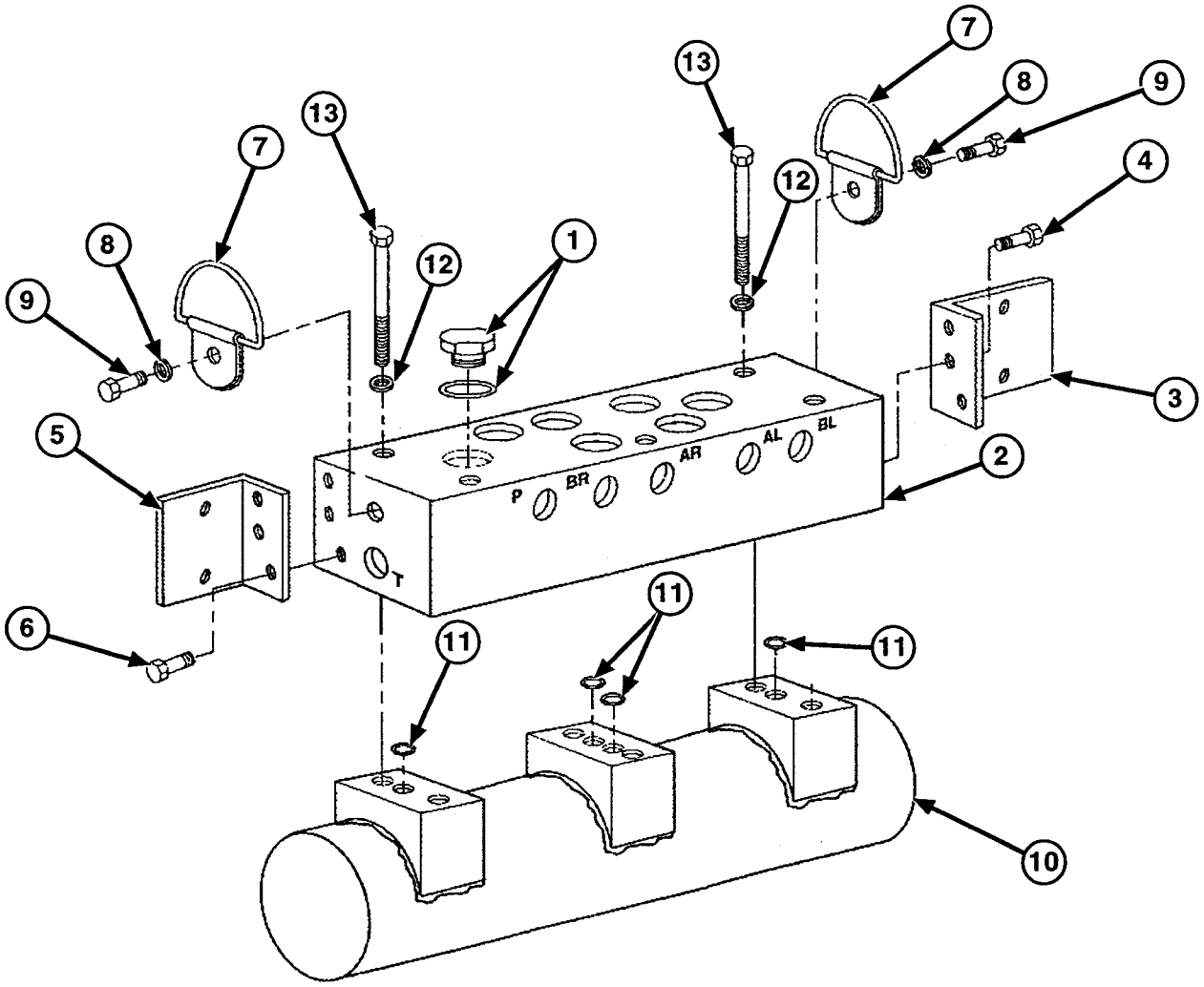
G Install nut (7) on spool valve and tighten to 5 ft-lbs (6.8 N•m).

H Install poppet valve coil (8) on poppet valve (9).

I Install nut (10) on poppet valve (9) and torque to 5 ft.-lb. (6.8 N•m).

J Install four new o-rings (11) on base of spool valve (4).

K Install two new o-rings (12) on base of poppet valve (9).



Note

If machine plug and o-ring were removed during DISASSEMBLY, perform step L. If not, go to step M.

L Install new machine plug and o-ring (1) in hydraulic manifold (2).

Note

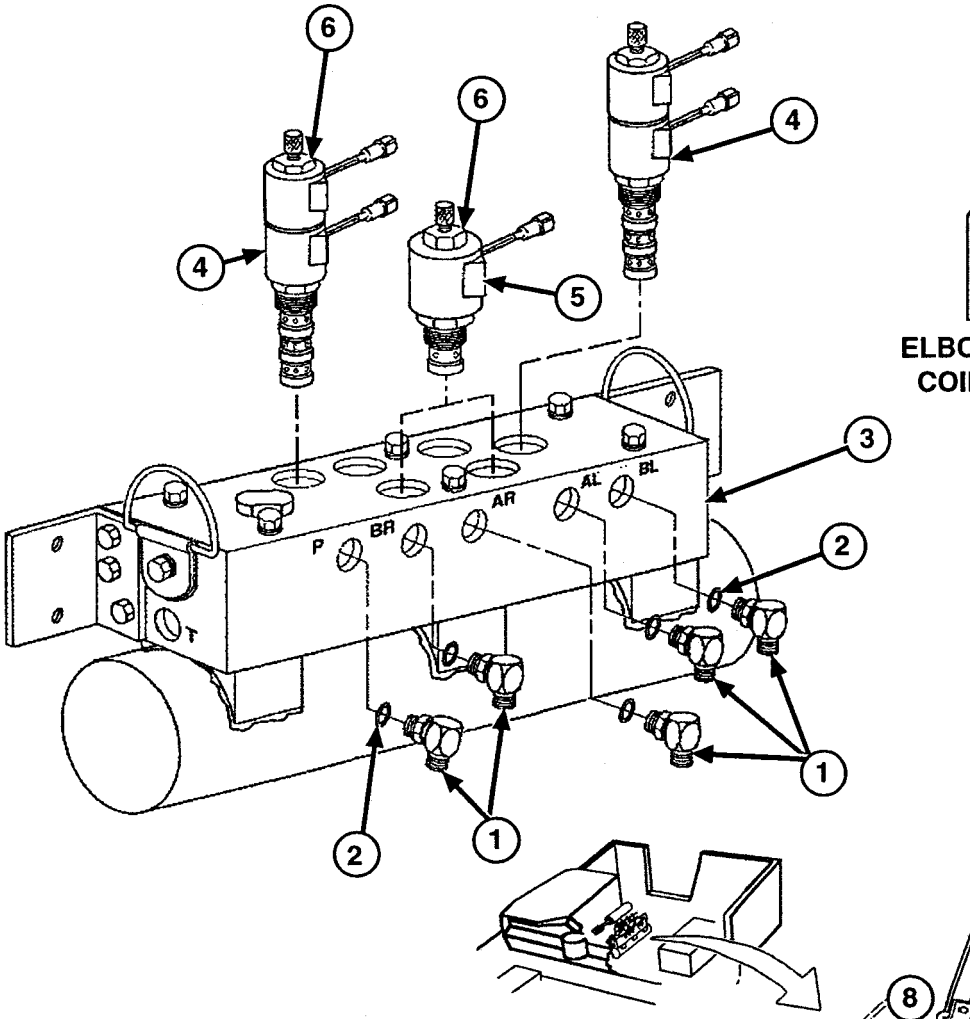
The top screw for the rear bracket will be installed in step Y.

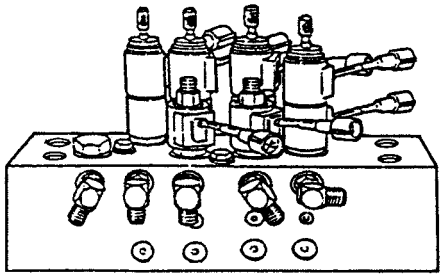
M Install rear bracket (3) on hydraulic manifold (2) with two screws (4) in the lower holes on rear bracket (3) and torque to 45-50 lb.-ft. (61 to 67.8 N•m).

N Install front bracket (5) on hydraulic manifold (2) with three screws (6) and torque to 45-50 lb.-ft. (61-67.8 N•m).

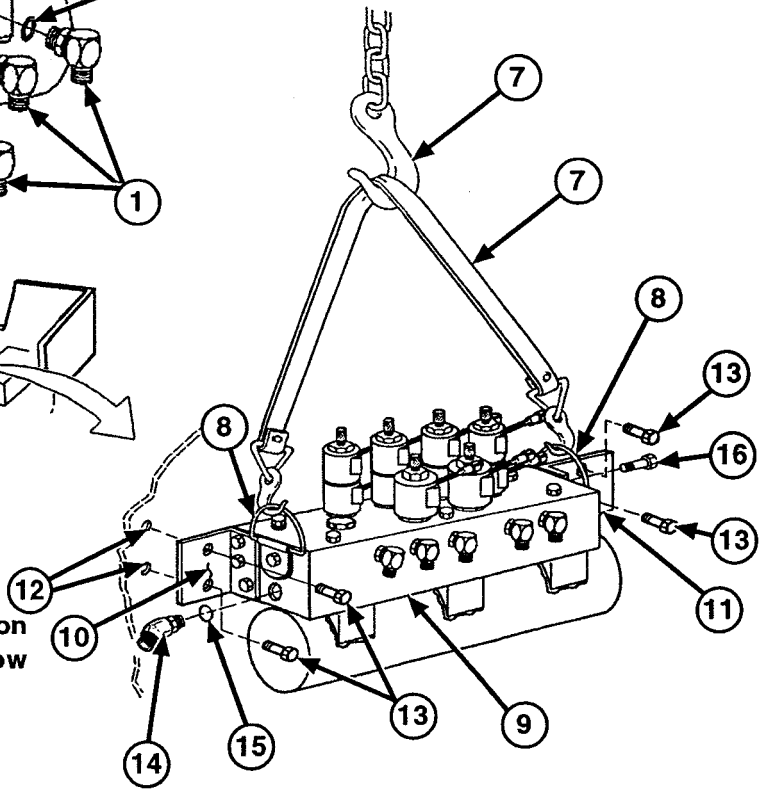
O Install two tiedowns (7) and two washers (8) using two screws (9). Torque screws (9) to 45-50 lb.-ft. (61 to 67.8 N•m).

P Install cylinder assembly (10) to base of hydraulic manifold (2) using four new o-rings (11), six washers (12) and six screws (13). Torque screw (13) to 35 lb.-ft. (47.5 N•m).





ELBOW INSTALLATION ORIENTATION/ COIL CONNECTOR(S) ORIENTATION



Note

Do not install elbow and o-ring in port T of hydraulic manifold. Install in Step X below (front).

Q Install five elbows (1) and five new o-rings (2) on hydraulic manifold (3). See above for elbow orientation prior to tightening.

Note

After tightening spool and poppet valves, ensure coil connectors are oriented to rear of vehicle (see above).

R Install four spool valves (4) on hydraulic manifold (3). Torque nut on base of spool valves (4) to 27 lb.-ft. (36.6 N•m).

S Install two poppet valves (5) on hydraulic manifold (3). Torque nut on base of poppet valves (5) to 27 lb.-ft. (36.6 N•m).

T If coil connectors do not point to rear of vehicle, loosen nuts (6), respectively, and rotate coils to proper position(s). Torque nuts to 5 lb.-ft. (6.8 N•m).

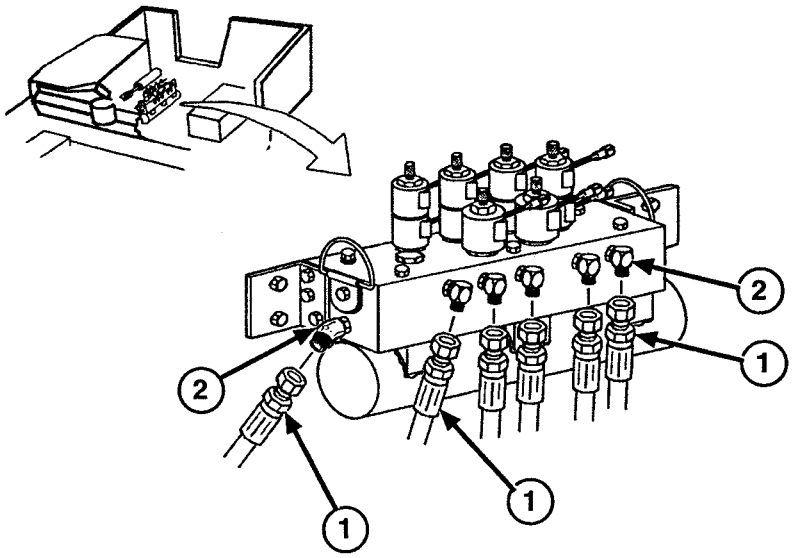
U Attach suitable lifting device (7) to two tiedowns (8) on track adjuster assembly (9).

V Lift the track adjuster assembly (9) into position and align front bracket (10) and rear bracket (11) with holes in hull (12).

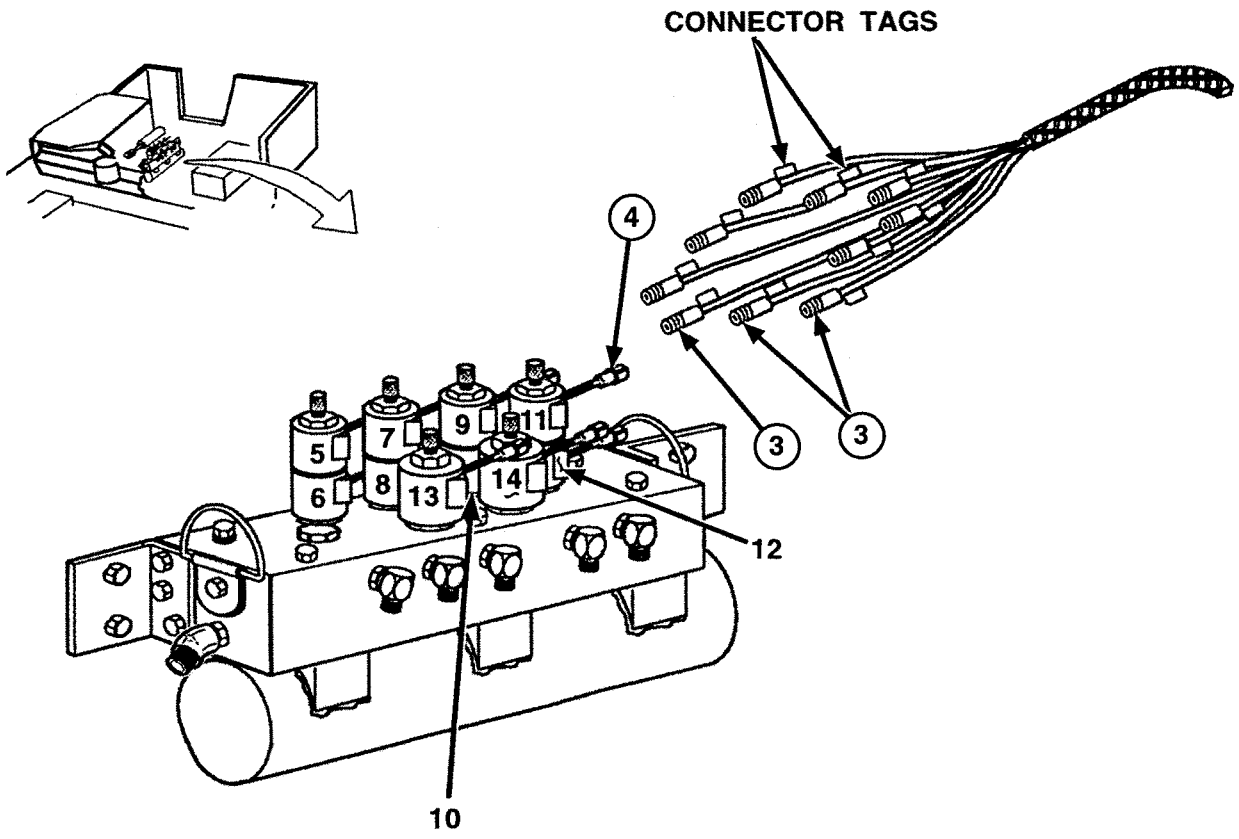
W Install track adjuster using four screws (13). Torque to 65-70 lb.-ft. (88.1-95 N•m) and remove lifting device (7).

X Install elbow (14) oriented downward and new o-ring (15) into port T on track adjuster assembly (9).

Y Install screw (16) into hole of rear bracket (4). Torque screw (16) to 45-50 lb.-ft. (61-67.8 N•m).



Z Install six hoses (1) to elbows (2).



Note

- The track adjuster main wiring harness connectors are tagged to indicate to which coil each connector is attached.
- Use Table 1 to identify matching wiring harness connectors and coil connectors.

COIL CONNECTORS		WIRING HARNESS CONNECTORS
Z1	UPPER (5)	Z1U
Z1	LOWER (6)	Z1L
Z2	UPPER (7)	Z2U
Z2	LOWER (8)	Z2L
Z3	UPPER (9)	Z3U
Z3	LOWER (10)	Z3L
Z4	UPPER (11)	Z4U
Z4	LOWER (12)	Z4L
X1	(13)	X1
X2	(14)	X2

AA Using Table 1, install track adjuster main wiring harness connectors (3) to appropriate coil connectors (4).

FOLLOW-ON TASKS:

- Right, center, and left rear floor plates installed (TM 5-2350-262-10).
- Service hydraulic tank (TM 5-2350-262-10).

FRONT BUMP STOP ASSEMBLY AND CYLINDER REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Packing (2)

Cotter Pin (2)

Parts Reference:

TM 5-2350-262-24P Group A3

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-219	Front Suspension Raise/Lower Does Not Operate in UNSPRUNG

Troubleshooting Reference:

Page 3-233	Suspension Will Not Raise Vehicle in SPRUNG, or Raise Rear in UNSPRUNG
Page 3-263	Bump Stops Do not Operate

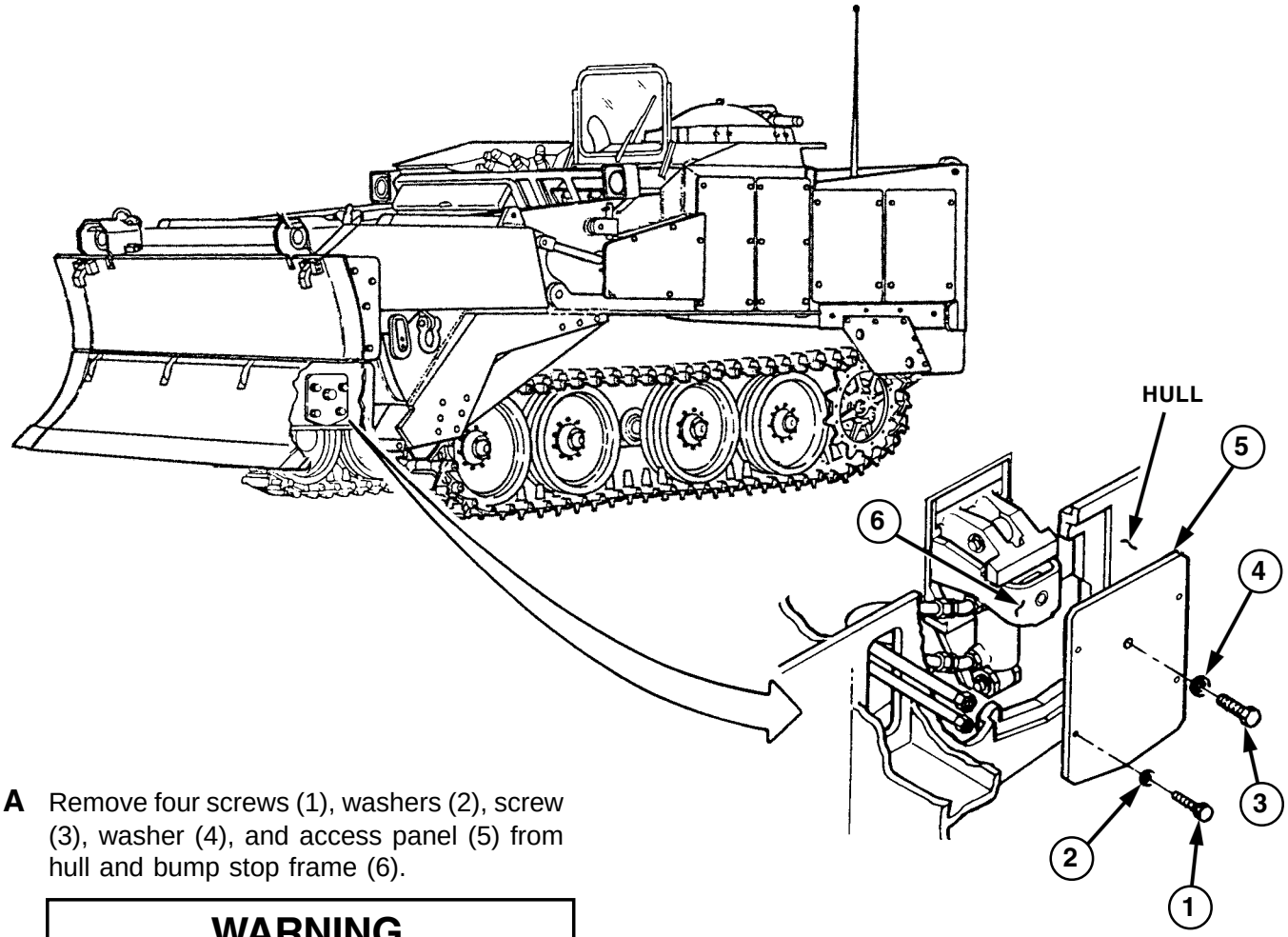
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Front of Vehicle Raised to Highest Position
TM 5-2350-262-10	Suspension in SPRUNG Mode
Page 2-27	Hull Blocked
Page 2-27	Hydraulic Pressure Relieved

General Safety Instructions:

WARNING

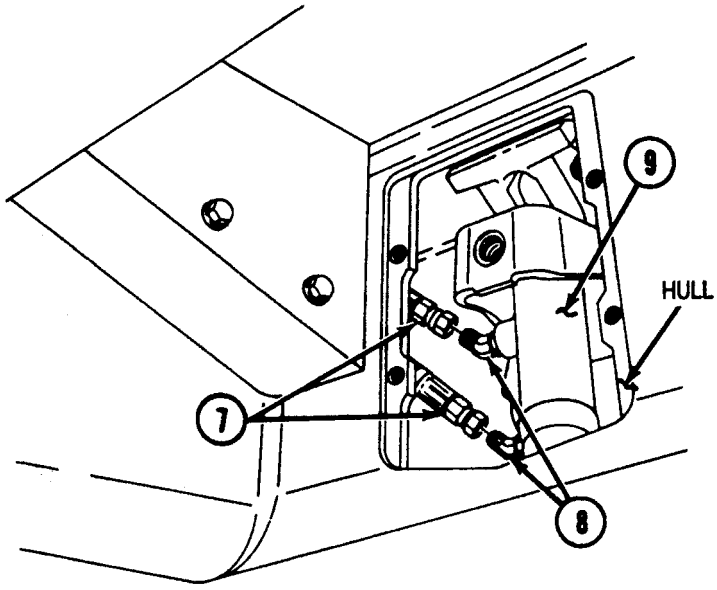
High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.



A Remove four screws (1), washers (2), screw (3), washer (4), and access panel (5) from hull and bump stop frame (6).

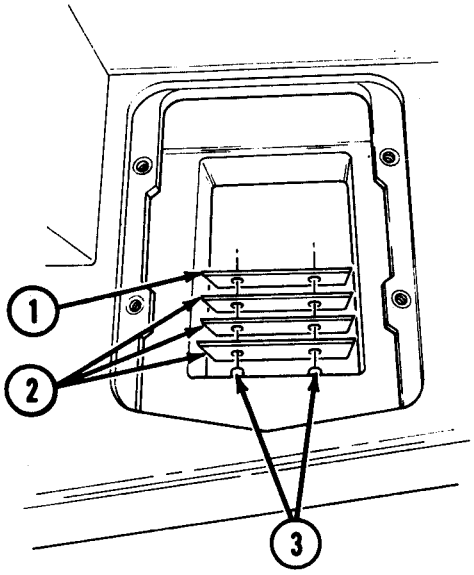
WARNING

High pressure is present in the hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.

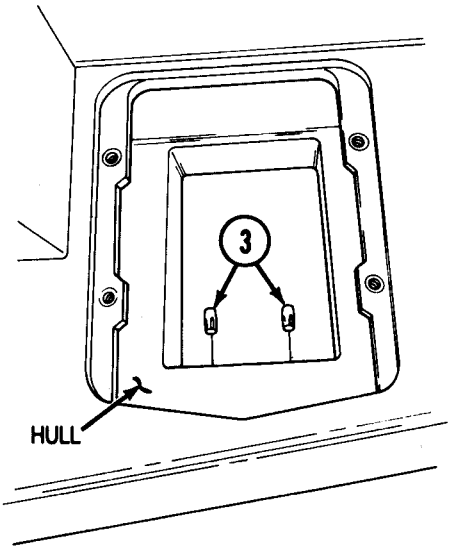


B Disconnect two hoses (7) from elbows (8) at bump stop assembly (9). Plug hose (7) and cap elbow (8) openings.

C Lift bump stop assembly (9) off seat of hull, and remove bump stop assembly (9) through access hole

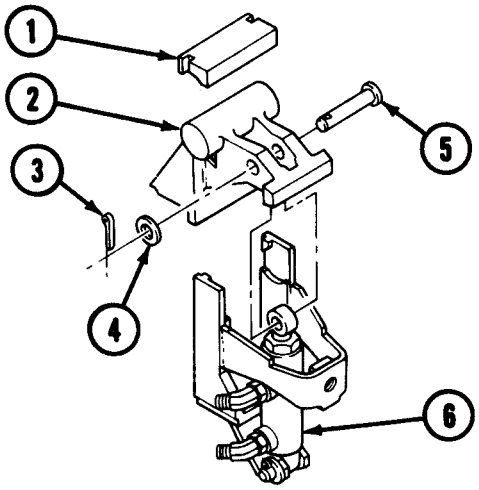


D Remove shim plate (1) and shim(s) (2) from two pins (3). Note size and number of shim(s) (2) for installation.

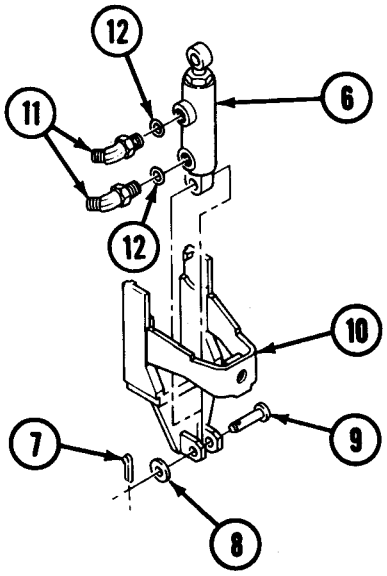


E Pins (3) should extend 0.220 to 0.234 in. (5.588 to 5.944 mm) out of hull. Remove two pins (3) and replace if loose or worn.

DISASSEMBLY



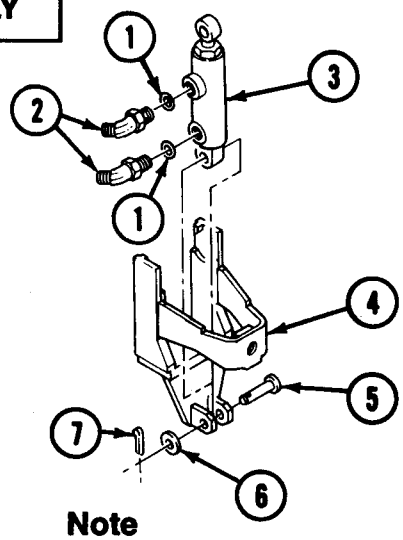
A Lift anvil (1) off stop (2), and remove cotter pin (3), washer (4), straight pin (5), and stop (2) from cylinder (6). Discard cotter pin (3).



B Remove cotter pin (7), washer (8), straight pin (9), and cylinder (6) from frame (10). Discard cotter pin (7).

C Remove two elbows (11) and packings (12) from cylinder (6). Discard packings (12).

ASSEMBLY

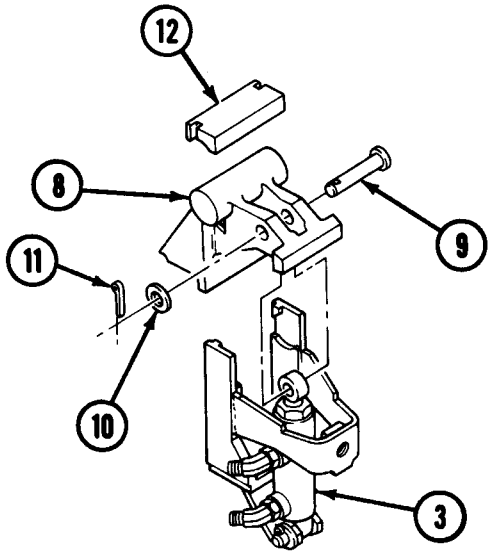


Note

Do not bend cotter pin until after bump stop assembly is installed on vehicle.

A Install two packings (1) and elbows (2) on cylinder (3).

B Install cylinder (3) on frame (4) with straight pin (5), washer (6), and cotter pin (7).

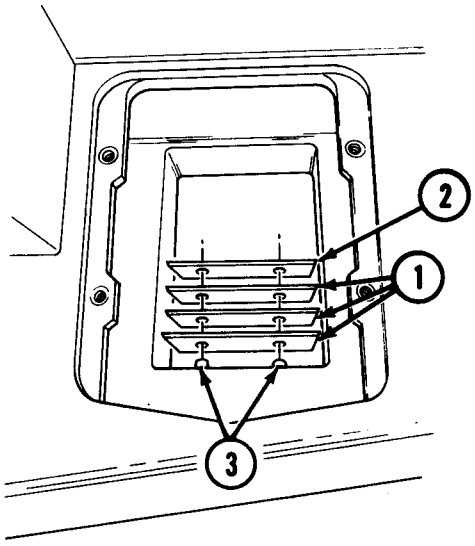


Note

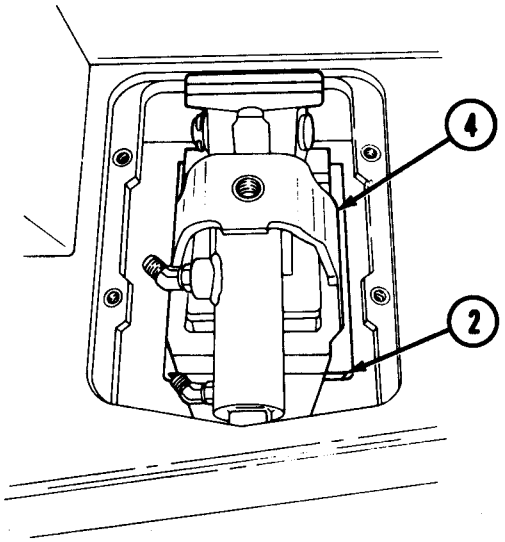
Do not bend cotter pin until after bump stop assembly is installed on vehicle.

C Install stop (8) on cylinder (3) with straight pin (9), washer (10), and cotter pin (11). Set anvil (12) on stop (8).

INSTALLATION



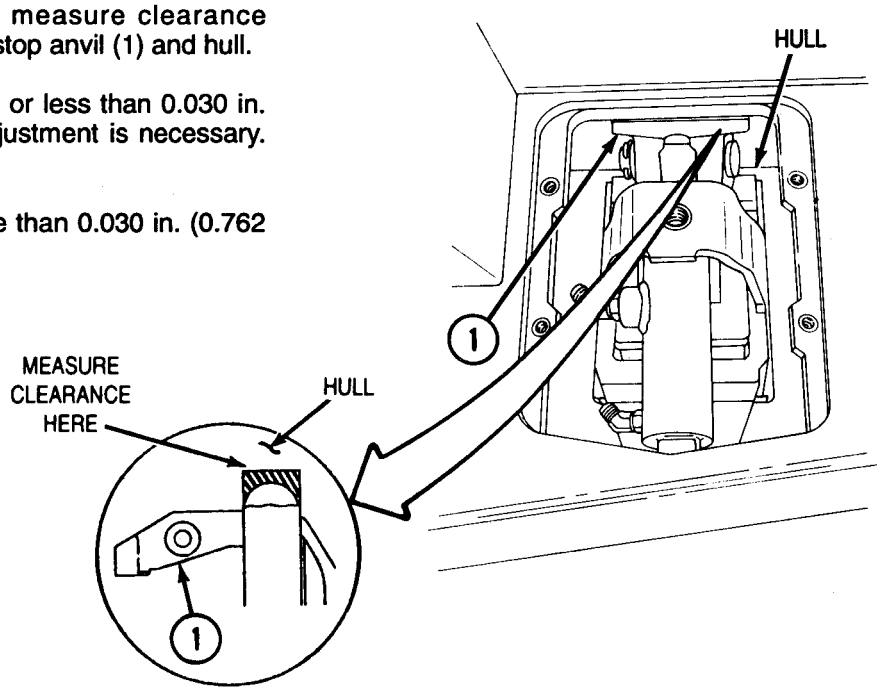
A Install shim(s) (1) and shim plate (2) on two pins (3). Refer to notes made during removal for size and number of shim(s) (1).



B Install bump stop assembly (4) on shim plate (2).

C Using feeler gauge, measure clearance between top of bump stop anvil (1) and hull.

- If clearance is zero or less than 0.030 in. (0.762 mm), no adjustment is necessary. Go to step E.
- If clearance is more than 0.030 in. (0.762 mm), go to step D.



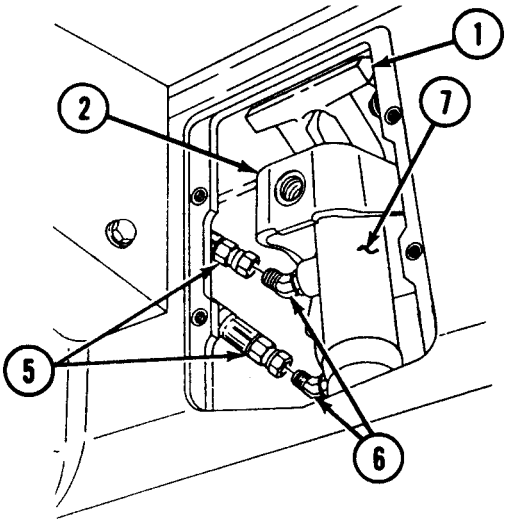
Note

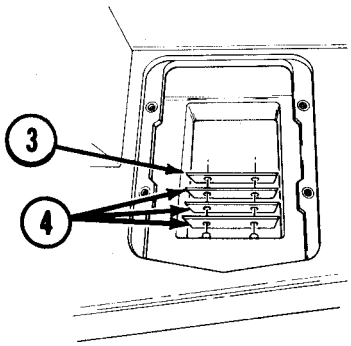
Shims are available in four sizes. Use any combination of shims to obtain required clearance between bump stop anvil and hull.

Shim	Thickness
13214E2679-1	0.015 in. (0.381 mm)
13214E2679-2	0.030 in. (0.762 mm)
13214E2679-3	0.060 in. (1.524 mm)
13214E2679-4	0.120 in. (3.048 mm)

D Lift bump stop assembly (2) off shim plate (3) and remove shim plate (3). Remove/add shim (s) (4) and recheck clearance as in step C. When clearance between top of bump stop anvil (1) and hull is less than 0.030 in. (0.762 mm), go to step E.

E Connect two hoses (5) at elbows (6) on bump stop assembly (7).

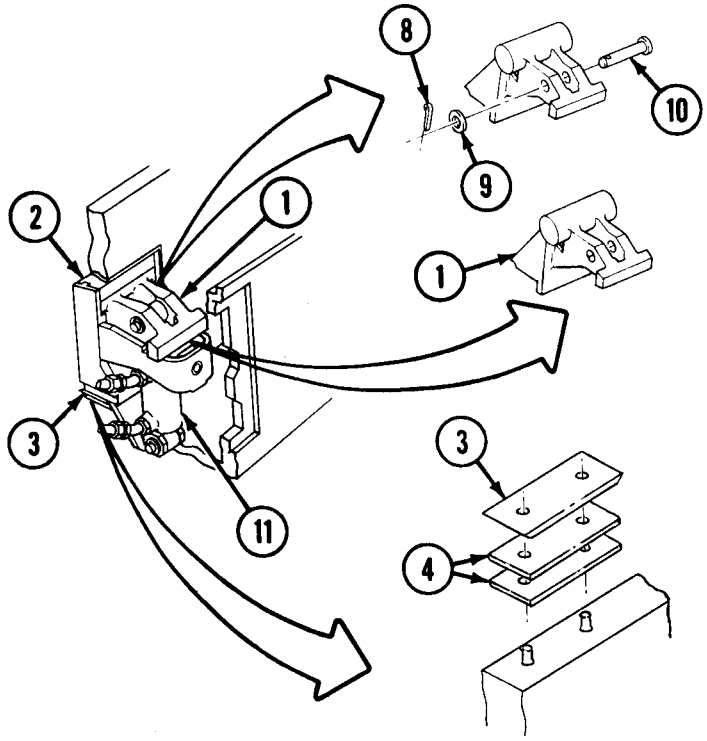




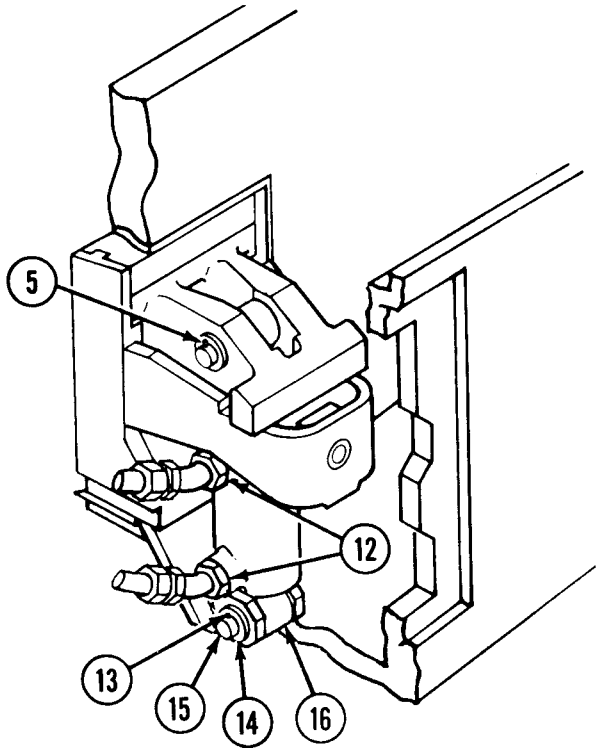
F If stop (1) does not move freely in both directions, remove cotter pin (8), washer (9), and straight pin (10) from stop (1).

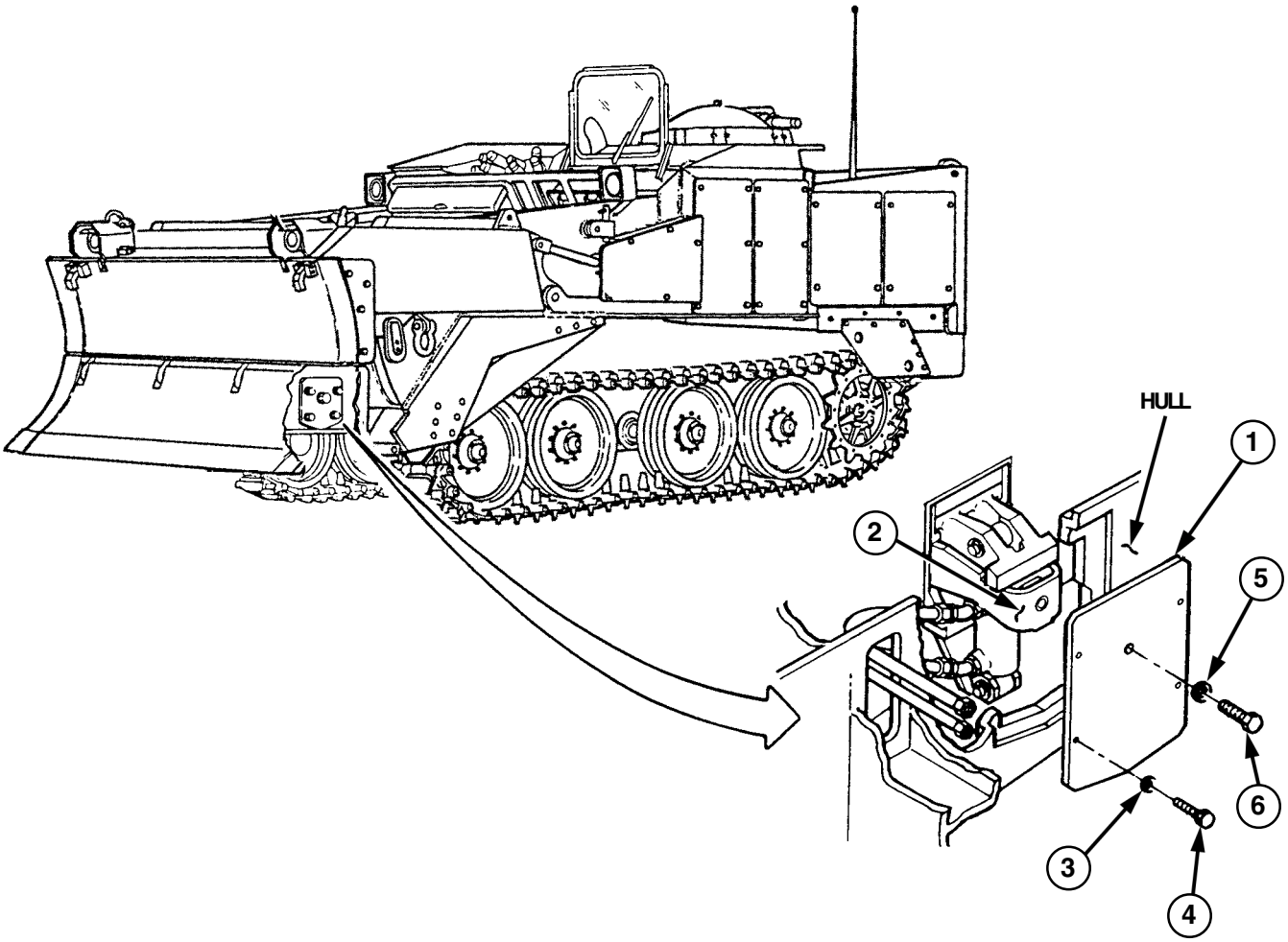
G Move stop (1) up and down to simulate action of bump stop under normal conditions. If stop (1) moves freely in both directions, install straight pin (10), washer (9), and cotter pin (8) on stop (1) and cylinder (11), then go to step I.

H If stop (1) does not move freely, lift bump stop assembly (2) off shim plate (3) and remove shim plate (3). Remove shim(s) (4). Install shim plate (3), bump stop assembly (2), and check clearance as in step C. Continue removing shim(s) (4) and checking clearance until clearance is less than 0.030 in. (0.762 mm), then go to step I.



I Check cylinder ports (12) for proper positioning. If ports do not face rear of vehicle, remove cotter pin (13), washer (14), and straight pin (15) from stop (1). Turn cylinder rod (16) 180 degrees and install straight pin (15), washer (14), and cotter pin (13) on stop (1). Bend cotter pins (8) and (13) at this time.





Note

Apply lubricating oil to threads of screws prior to installation.

J Install access cover (1) on hull and bump stop frame (2) with four washers (3), screws (4), washer (5), and screw (6).

K Tighten four screws (4) to 14-20 lb-ft (19-27 N·m), and tighten screw (6) to 150-160 lb-ft (203-217 N·m).

FOLLOW-ON TASK:

Unblock hull (p 2-27).

Section XX. GROUP A5, WINCH INSTALLATION

TASK **PAGE**

Deleted

Winch Assembly Replacement 4-894.2
Winch Motor Replacement 4-894.15
Winch Shift Control Assembly Replacement and Repair 4-894.13
Winch Shift Control Cable Replacement 4-894.10
Winch Shift Control Lever Adjustment 4-894.8
Winch Wire Rope Assembly Replacement and Repair 4-894.17

WINCH ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Took Kit, General Mechanic's: Automotive

Lifting Device

Chain

Materials:

Caps and Plugs	Item 7 Appendix D
Sealing Compound	Item 14 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts :

Cotter Pin (2)

Lockwasher (16)

Parts Reference:

TM 5-2350-262-24P	Group A5

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

TM 5-2350-262-20-3	Winch Will Not Pull Rated Load

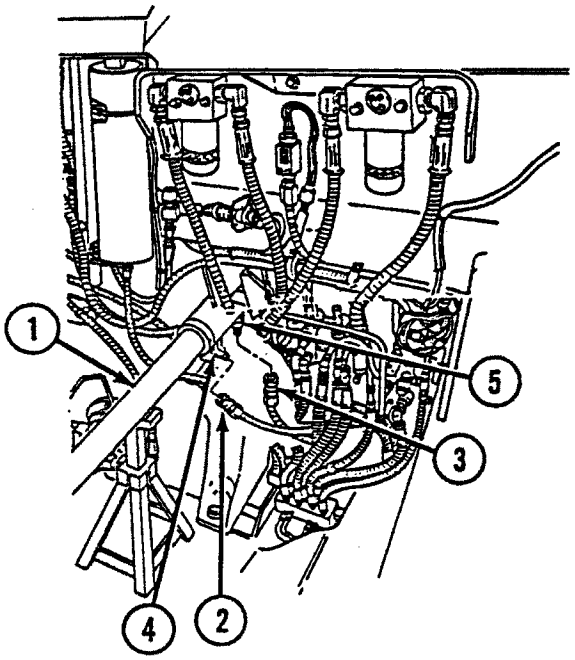
Equipment Condition:

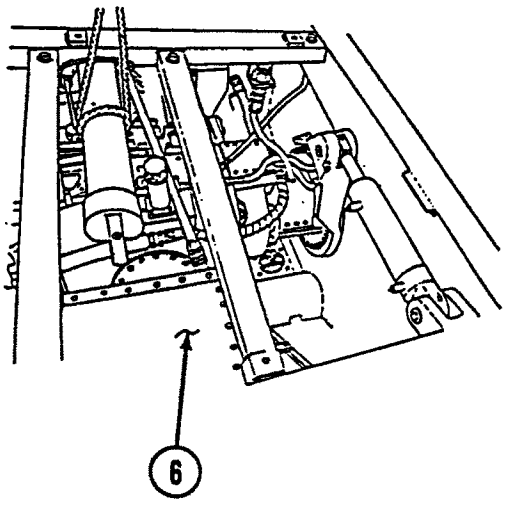
Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-296	Ejector Cylinder Bracket Removed
Page 4-355 and 4-360	Rear Floor Plates and Supports Removed

General Safety Instructions:

WARNING

- **Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder with blocks or straps while it is being moved. Do not put hands or feet under ejector cylinder while it is being moved.**
- **Hot engine and engine components can cause serious burns. Do not work in engine compartment or on engine components until engine is cool.**
- **Ensure hydraulic pressure is relieved after ejector is pushed forward. Pressure may build up and cause the ejector to retract.**
- **Always wear leather gloves when handing wire rope. Never allow wire rope to run through hands.**
- **Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.**
- **Lifting device must have a weight capacity greater than 550 lb (250 kg).**
- **Personnel must stand clear during lifting operations.**





REMOVAL

WARNING

Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder with blocks or straps while it is being moved. Do not put hands or feet under ejector cylinder while it is being moved. Failure to comply may result in severe injury to personnel.

CAUTION

Ejector cylinder can damage engine and transmission hoses if it moves up or down. Keep ejector cylinder supported while moving. Failure to comply may result in damage to equipment.

Note

Support ejector cylinder in bowl with jack stand and rope.

A Push ejector cylinder (1) far enough forward to gain access to hoses (2) and (3).

WARNING

- Hot engine and engine components can cause serious burns. Do not work in engine compartment or on engine components until engine is cool. Severe injury to personnel may result.
- Ensure hydraulic pressure is relieved after ejector is pushed forward. Pressure may build up and cause the ejector to retract. Failure to comply may result in injury to personnel, or death.

CAUTION

Cap or plug all ports and ends of hoses and fittings to prevent contam-ination of hydraulic system. Failure to comply may result in damage to equipment.

Note

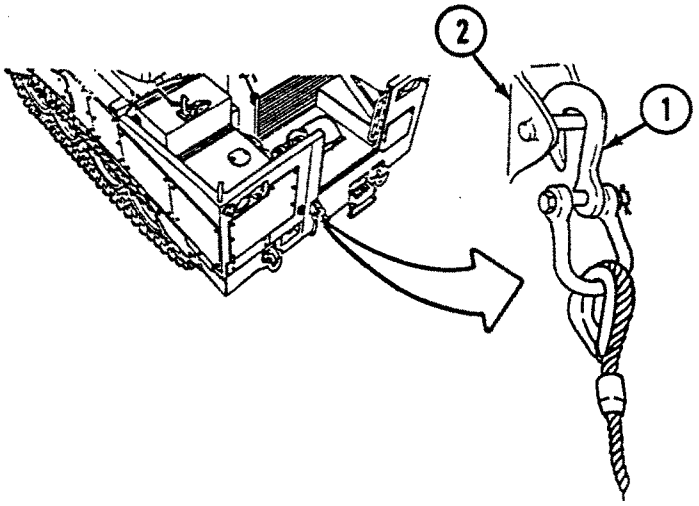
- Tag all hoses prior to removal for identification at installation.
- Have suitable container ready to catch oil.

B Disconnect EJCYL 22 hose (2) from elbow (4) and EJCYL 21 hose (3) from nipple (5) at ejector cylinder (1). Drain oil from hoses (2) and (3) into a suitable container.

C Continue to move ejector cylinder (1) forward until clear of winch assembly (6). Support ejector cylinder (1) with jackstand.

WARNING

Always wear leather gloves when handling wire rope. Never allow wire rope to run through hands. Failure to comply may result in severe injury to personnel.



D Disconnect hook (1) from bracket (2).

Note

- Have suitable container ready to catch oil.
- Plug and cap all lines and fittings during disassembly.

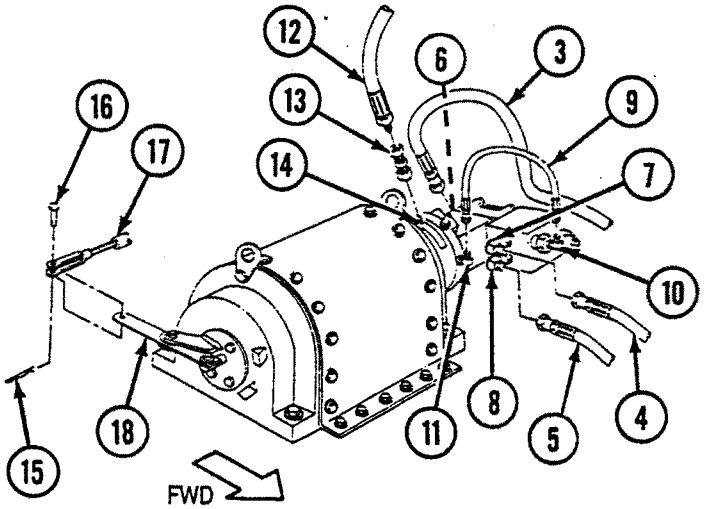
E Disconnect WINCH DRAIN-7W hose (3) from elbow (6), WINCH-C1 (REAR) hose (4) from elbow (7) and WINCH-C2 (FWD) hose (5) from elbow (8). Disconnect both ends of hose (9) from elbows (10) and (11).

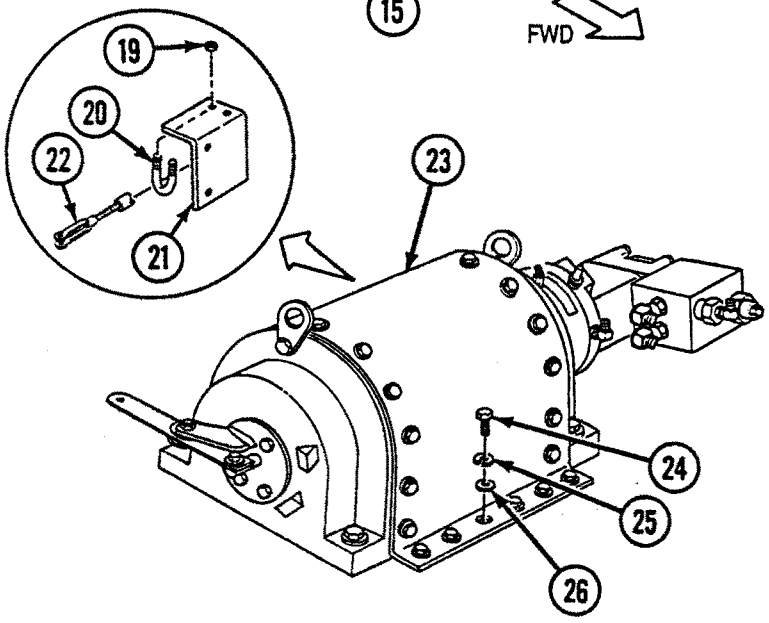
F Remove vent hose (12) from adapter (13) and adapter (13) from elbow (14).

G Remove cotter pin (15), clevis pin (16), and shift control cable (17) from lever (18). Discard cotter pin (15).

H Remove two nuts (19) from clamp (20) on cable mount (21). Move cable (22) away from winch (23).

I Remove twelve mounting screws (24), lockwashers (25), and washers (26) from winch (23). Discard lockwashers (25).





J Connect chain to lifting eyes (1) of winch (2) and lifting device.

K Remove four corner screws (3) and lockwashers (4) from winch (2). Discard lockwashers (4).

WARNING

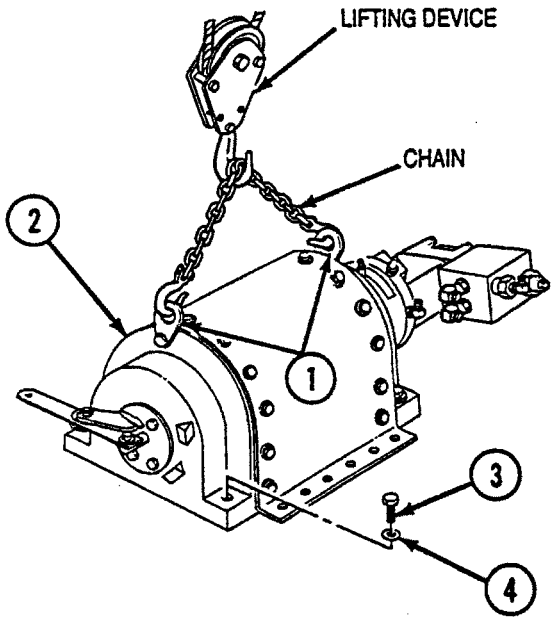
Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury or death to personnel.

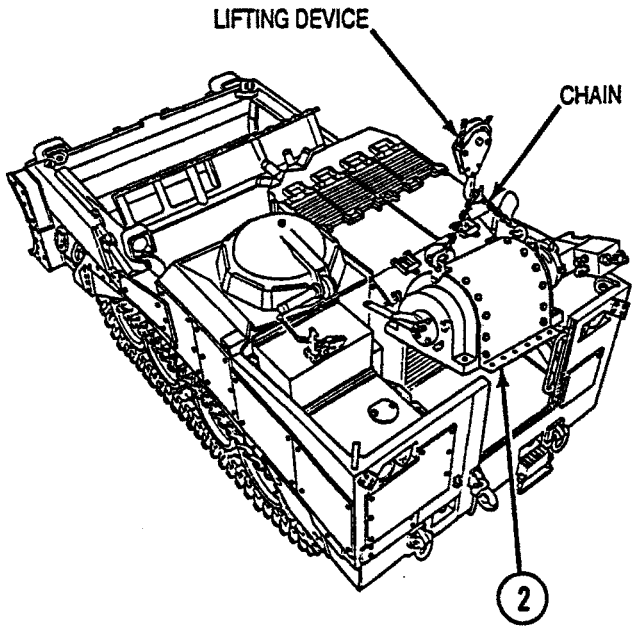
Note

Ensure wire rope assembly is not connected to vehicle.

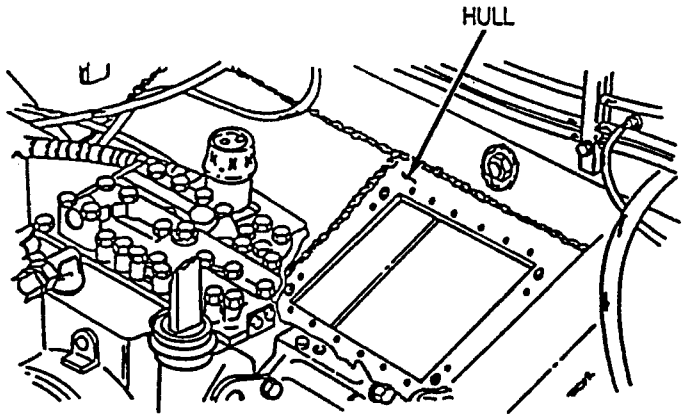
L Lift winch (2) out of vehicle, and place on supports to prevent damage to wire rope.

M Remove chain and lifting device from winch (2).





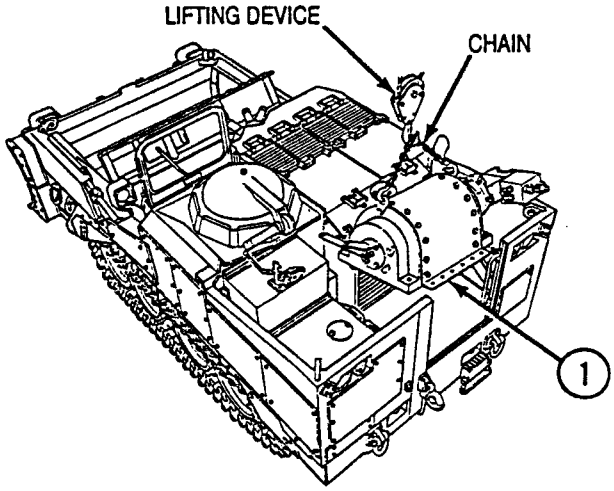
INSTALLATION



WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply will result in damage to equipment or injury to personnel.

A Clean winch mounting surfaces of hull with drycleaning solvent.

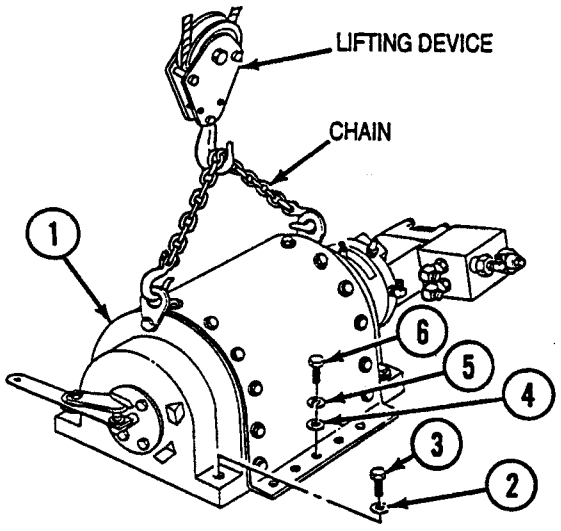


WARNING

Lifting device must have a weight capacity greater than 550 lb (250 kg). Failure to comply may result in damage to equipment or injury to personnel.

B Connect chain and lifting device to winch (1), and lift winch (1) over vehicle.

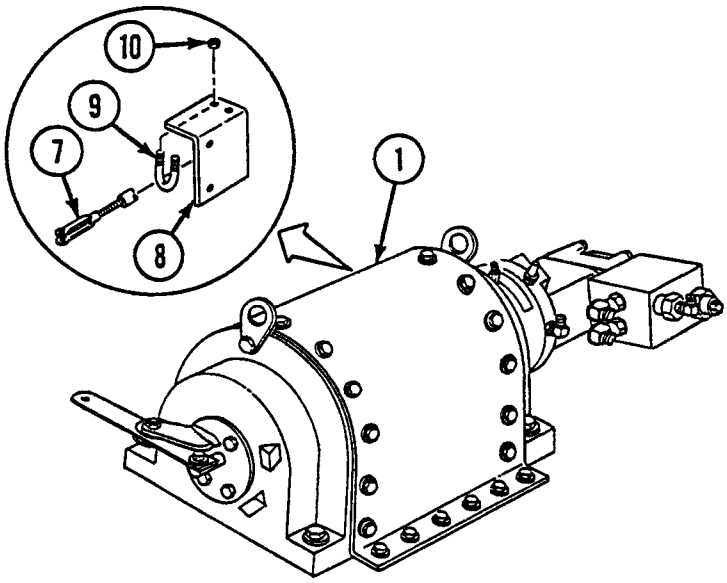
C Lower winch (1) on to hull. Keep winch (1) secured with chain until mounting screws are installed.



D Install four lockwashers (2) and screws (3) on winch (1).

E Install twelve washers (4), lockwashers (5), and screws (6) on winch (1).

F Tighten screws (3) to 251-261 lb-ft (340-354 N·m)



G Remove chain and lifting device from winch (1).

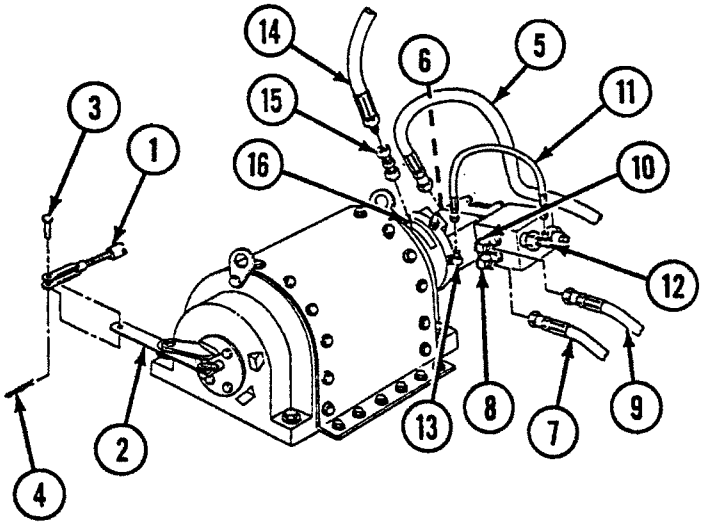
H Move shift control cable (7) to installed position on cable mount (8) and secure with clamp (9) and two nuts (10).

I Install shift control cable (1) on control lever (2) and secure with clevis pin (3) and new cotter pin (4).

J Connect WINCH DRAIN-7W hose (5) to elbow (6), WINCH-C2 (FWD) hose (7) to elbow (8) and WINCH-C1 (REAR) hose (9) to elbow (10).

K Connect bypass hose (11) to elbows (12) and (13). Connect vent hose (14) to adapter (15) on elbow (16).

L Connect hook (17) to bracket (18).



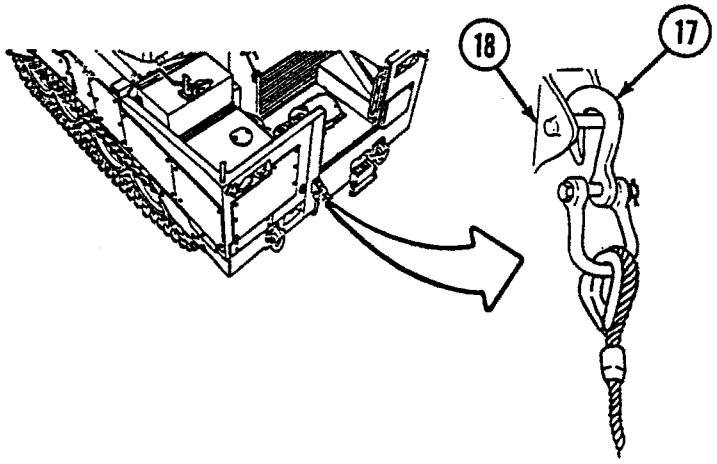
WARNING

Ejector cylinder weighs 325 lb (147 kg). Support ejector cylinder with blocks or straps while it is being moved. Do not put hands or feet under ejector cylinder while it is being moved. Failure to comply may result in severe injury to personnel.

M Carefully push ejector assembly back until ejector cylinder hoses (19) and (20) reach ejector cylinder (21).

N Connect EJCYL 22 hose (19) to elbow (22).

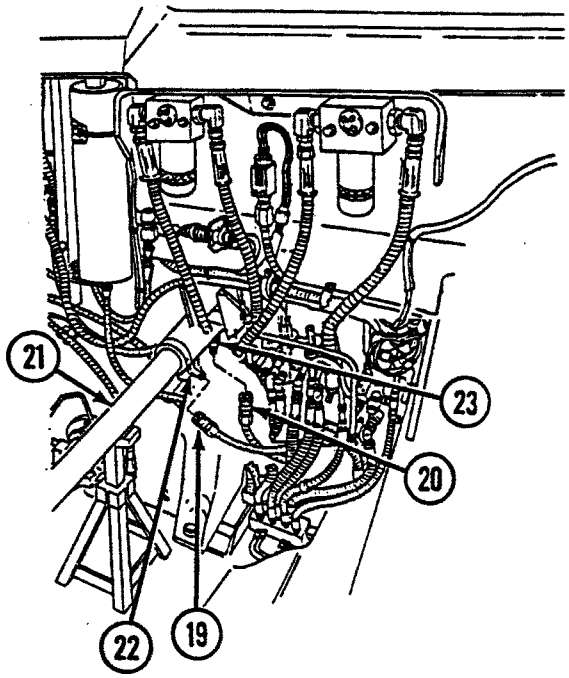
O Connect EJCYL 21 hose (20) to nipple (23).



CAUTION

Ejector cylinder can damage engine and transmission hoses if it moves up or down. Keep ejector cylinder steady while moving it. Failure to comply may result in damage to equipment.

P Slowly move ejector cylinder (21) back to original position, and inspect engine and transmission hoses for damage.



FOLLOW-ON TASKS:

- Install ejector cylinder bracket (p 4-296).
- Adjust winch shift control lever (p 4-894.8).
- Install rear floor plate supports (p 4-355).
- Service hydraulic tank (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

WINCH SHIFT CONTROL LEVER ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Cotter Pin (1)

Parts Reference :

TM 5-2350-262-24P Group A5

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3	Winch Will Not Pull Rated Load

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Winch Shift Control in N (Neutral)
Page 4-360	Rear Floor Plates Removed

ADJUSTMENT

A Set control lever (1) in NEUTRAL detent (2).

B Have assistant move lever (3) from side to side and measure for proper shift rod (4) NEUTRAL position; shift rod (4) must move at least 0.10 in. (2.54 mm) in either direction without engaging LOW or HIGH gear. Total NEUTRAL zone travel is 0.34 in. (8.64 mm). Go to step C if shift rod (4) NEUTRAL travel is not within limits.

C Remove cotter pin (5) and clevis pin (6) from clevis (7) and control lever (8). Discard cotter pin (5).

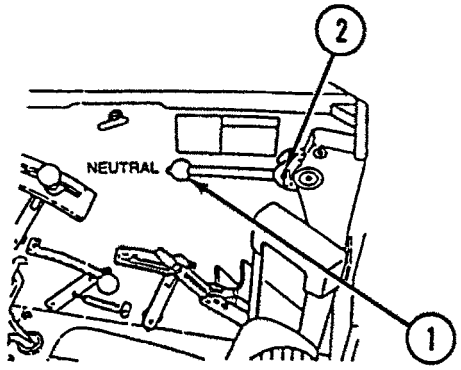
D Pull shift control cable (9) out as far as possible. This is the end of travel in high-gear position.

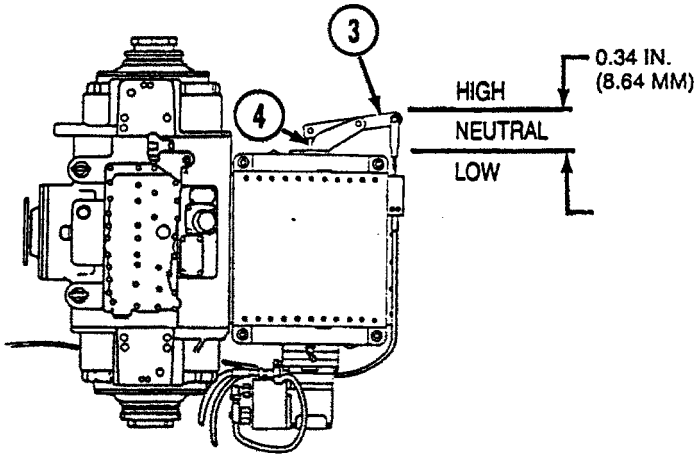
E Push shift control cable back in 1.22 in. (30.99 mm) to locate center of NEUTRAL position.

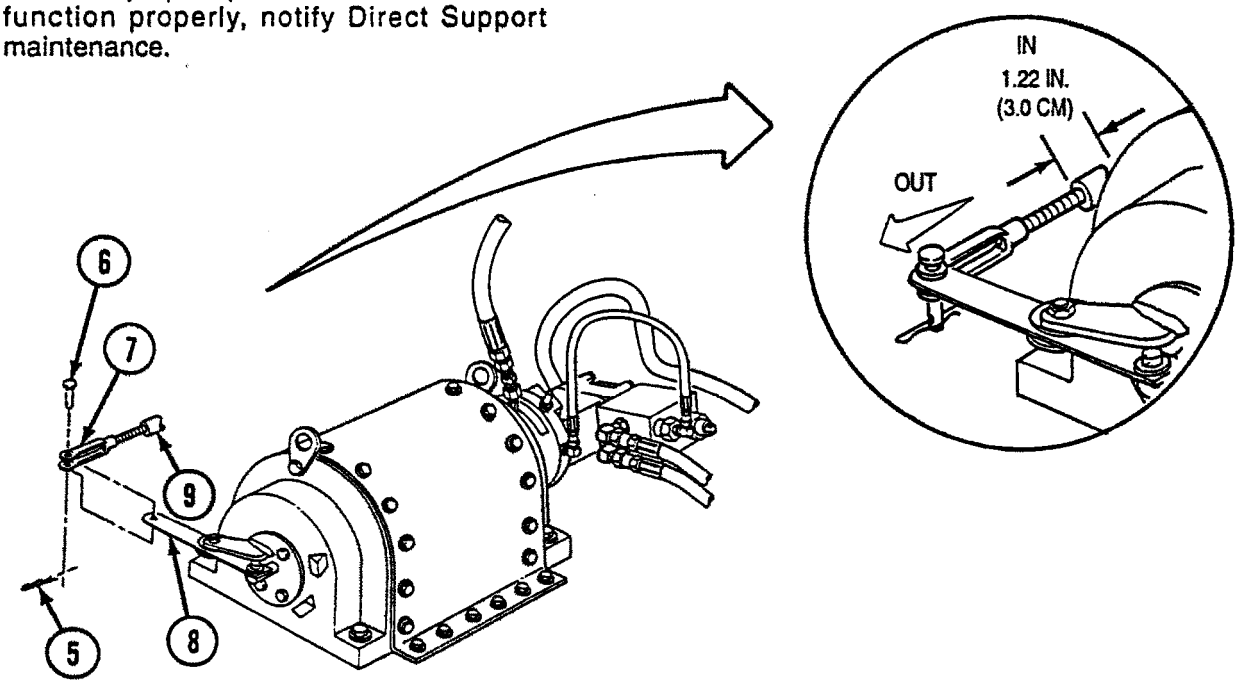
F Adjustment can be made by turning clevis (7) clockwise for NEUTRAL position out; counterclockwise for NEUTRAL position in.

G Install clevis (7) on control lever (8) with clevis pin (6) and new cotter pin (5). Verify shift control cable (9) is within NEUTRAL travel limits.

H Operate winch (TM 5-2350-262-10) and check for proper operation. If winch does not function properly, notify Direct Support maintenance.







WINCH SHIFT CONTROL CABLE REPLACEMENT

This task covers:

a. Removal
b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Cotter Pin (1)

Lockwasher (2)

Parts Reference :

TM 5-2350-262-24P Group A5

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

TM 5-2350-262-20-3	Winch Will Not Pull Rated Load

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Driver's Hatch Cover in Stowed Position
Page 4-360	Rear Floor Plates Removed

REMOVAL

A Remove cotter pin (1), clevis pin (2), and shift control cable (3) from lever (4).

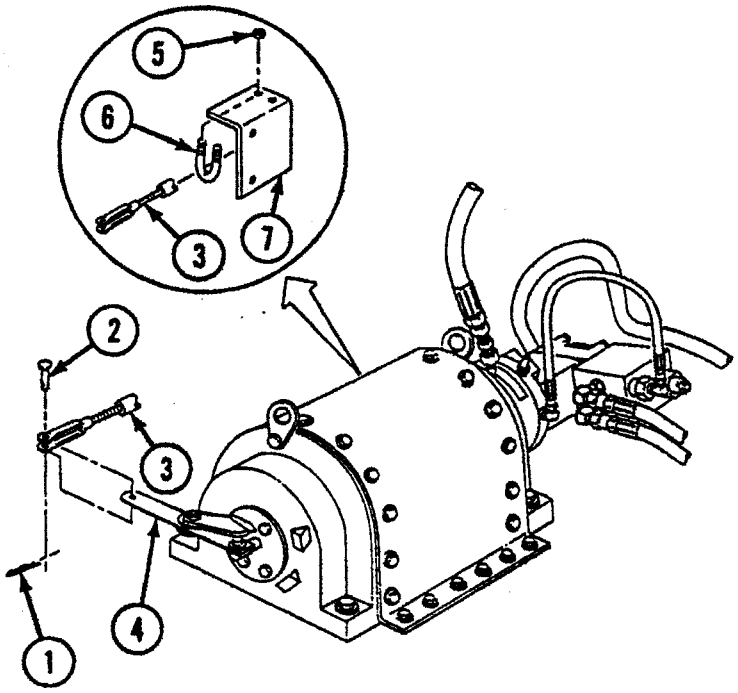
B Remove two nuts (5) from clamp (6) on cable mount (7). Move shift control cable (3) away from winch.

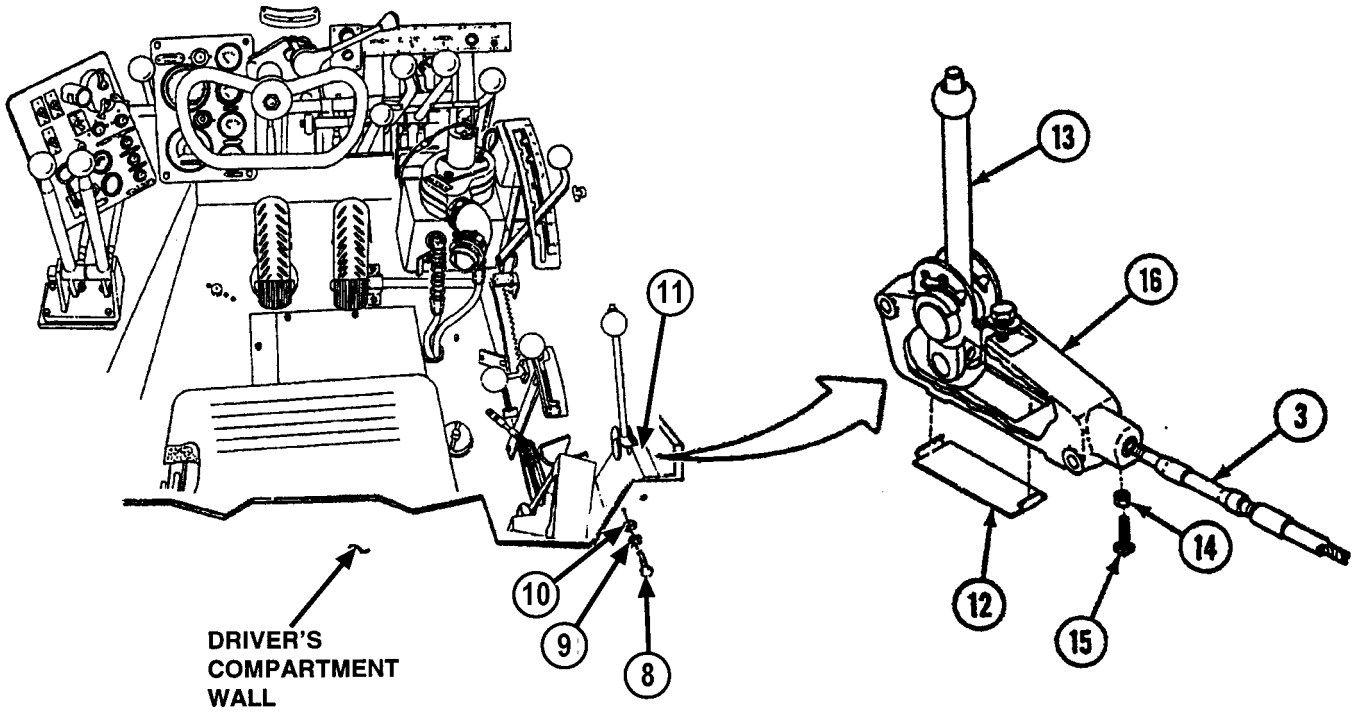
C Remove two screws (8), lockwashers (9), washers (10), and shift control assembly (11) from driver's compartment wall. Discard lockwashers (9).

D Remove access cover (12) from shift control assembly (16)

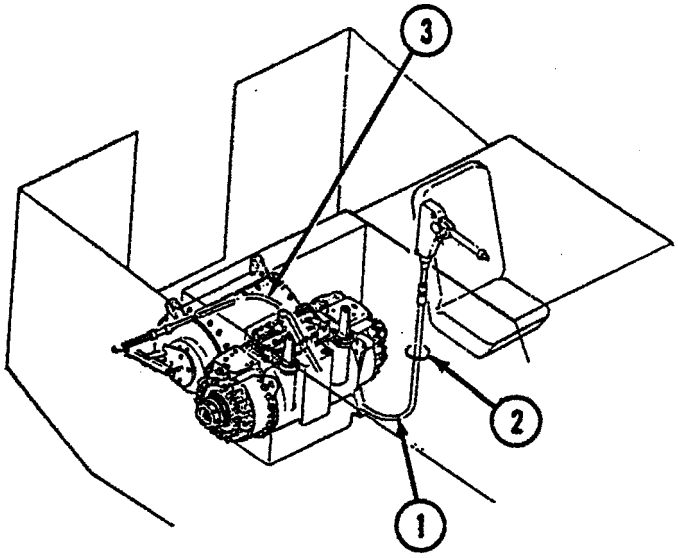
E Place shift control lever (13) in N (neutral), and loosen jamnut (14) and setscrew (15).

F Turn shift control assembly (16) counterclockwise and remove from shift control cable (3).

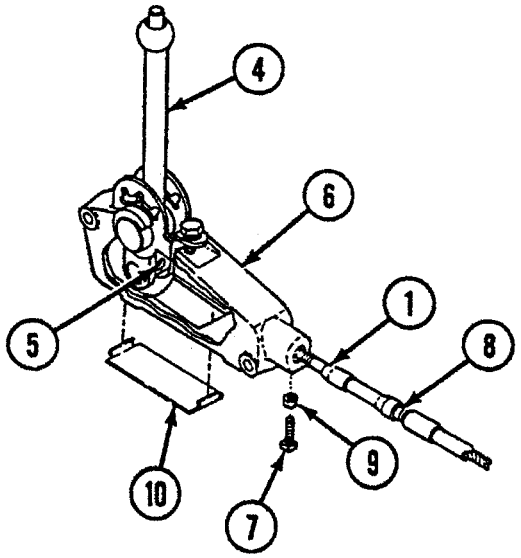




INSTALLATION

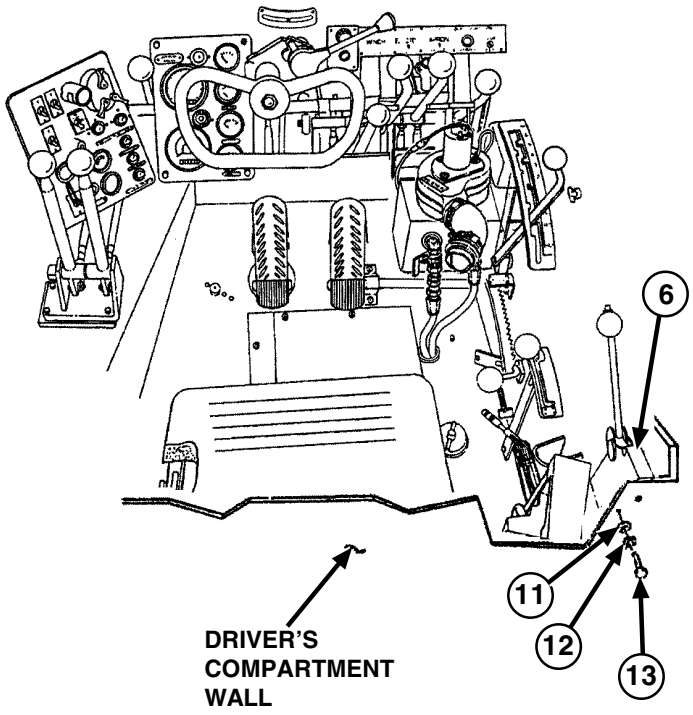


A Install shift control cable (1) on vehicle by routing cable through hole (2) in floor of driver's compartment, along left side of winch (3), and across back of winch (3)

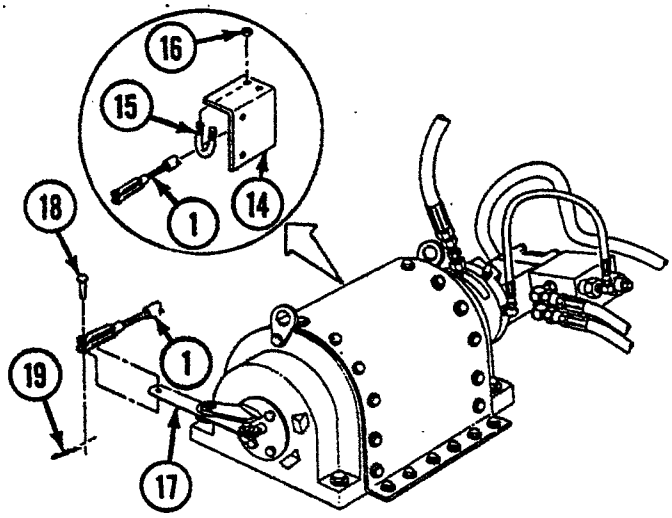


B Place shift control lever (4) in N (neutral), and insert end of shift control cable (1) into pin (5) of shift control assembly (6). Turn shift control assembly (6) clockwise until cable (1) is tight.

C Lock shift control cable (1) in place by tightening setscrew (7) down on cable groove (8). Lock setscrew (7) by tightening jamnut (9). Install access cover (10).



D Install shift control assembly (6) on driver's compartment wall with two washers (11), lockwashers (12), and screws (13).



E Move shift control cable (1) to installed position on cable mount (14) and secure with clamp (15) and two nuts (16).

F Assemble shift control cable (1) to control lever (17) and secure with clevis pin (18) and cotter pin (19).

FOLLOW-ON TASKS:

- Adjust winch shift control lever (p 4-894.8).
- Install rear floor plates (p 4-360).

WINCH SHIFT CONTROL ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Inspection
c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (2)

Parts Reference :

TM 5-2350-262-24P Group A5

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

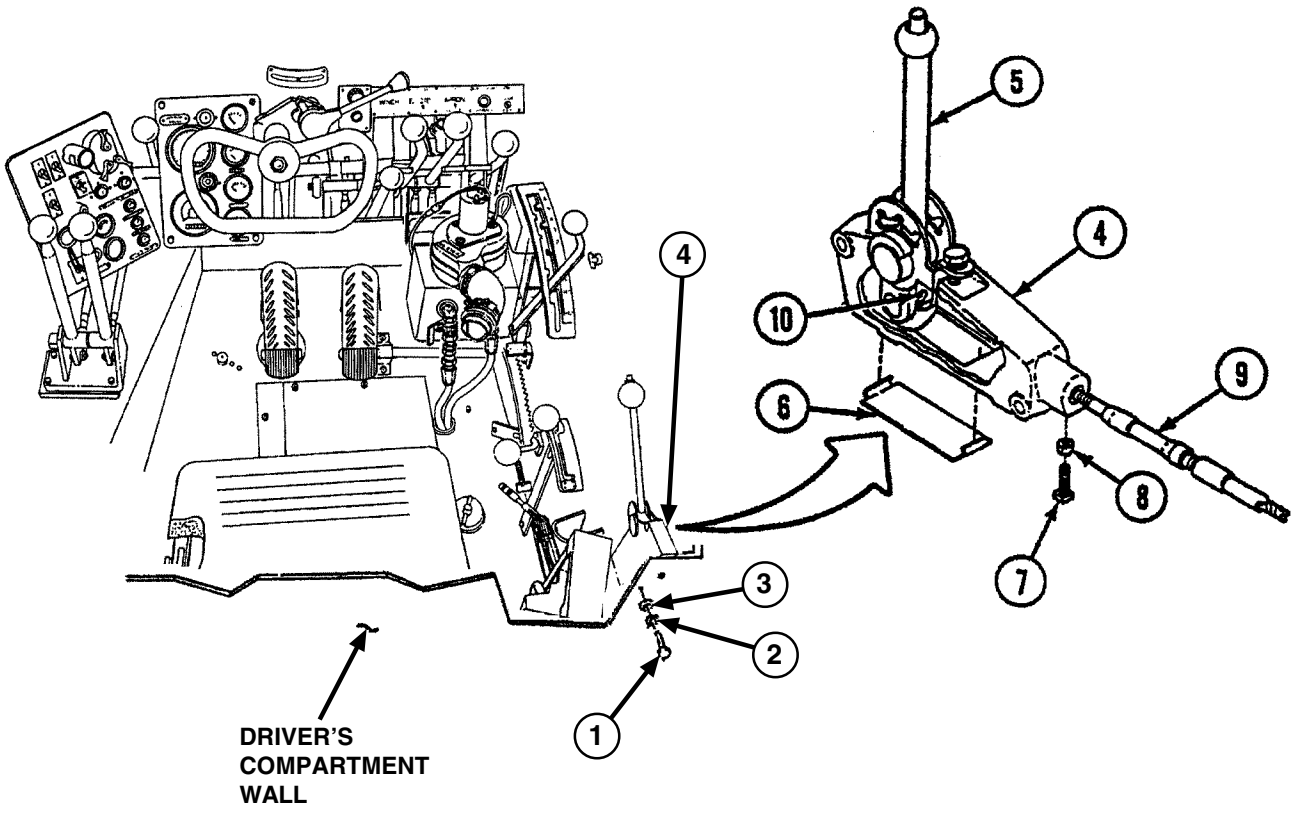
TM 5-2350-262-10

Troubleshooting Reference:

TM 5-2350-262-20-3	Winch Will Not Pull Rated Load

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Driver's Hatch Cover in Stowed Position



REMOVAL

A Remove two screws (1), lockwashers (2), and washers (3) from shift control assembly (4), and move shift control assembly (4) away from driver's compartment wall. Place shift control lever (5) in N (neutral). Discard lockwashers (2).

B Remove access cover (6).

C Loosen jamnut (8) and setscew (7), and turn shift control assembly (4) counter-clockwise until shift control cable (9) is free.

INSPECTION

Inspect plastic boot on shift control cable (9) for cuts, breaks, or deterioration. Replace shift control cable (9) (p 4-894.10) if boot is damaged.

INSTALLATION

A Insert threaded end of shift control cable (9) into shift control assembly (4). Turn shift control assembly (4) clockwise to secure shift control cable (9) to pin (10) inside shift control assembly (4).

B Lock shift control cable (9) in place by tightening setscrew (8) in cable groove (10). Lock setscrew (7) by tightening jamnut (8).

C Install access cover (6).

D Install shift control assembly (4) to driver's compartment wail with two washers (3), lockwashers (2), and screws (1).

FOLLOW-ON TASK:

Adjust winch shift control lever (p 4-894.8).

WINCH MOTOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs — Item 7 Appendix D

Parts:

Gasket

Packing (1)

Parts Reference :

TM 5-2350-262-24P — Group A5

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

TM 5-2350-262-20-3 — Winch Will Not Pull Rated Load

Equipment Condition:

Reference	Condition Description
Page 4-360	Rear Floor Plates Removed
Page 4-355	Rear Floor Plates Supports Removed

REMOVAL

CAUTION

Cap or plug all ports and ends of hoses and fittings to prevent contamination of hydraulic system. Failure to comply may result in damage to equipment.

A Disconnect bypass hose (1) from elbows (2) and (3).

B Disconnect WINCH-C1 (REAR) upper hose (4) from elbow (5), WINCH-C2 (FWD) lower hose (6) from elbow (7), and WINCH DRAIN-7W hose (8) from elbow (9).

C Remove two screws (10) and winch motor assembly (11) from WINCH 12.

D Remove two thrust washers (13) and packing (14) from winch motor assembly (11). Discard packing (14).

INSTALLATION

A Install packing (14) on winch motor assembly (11).

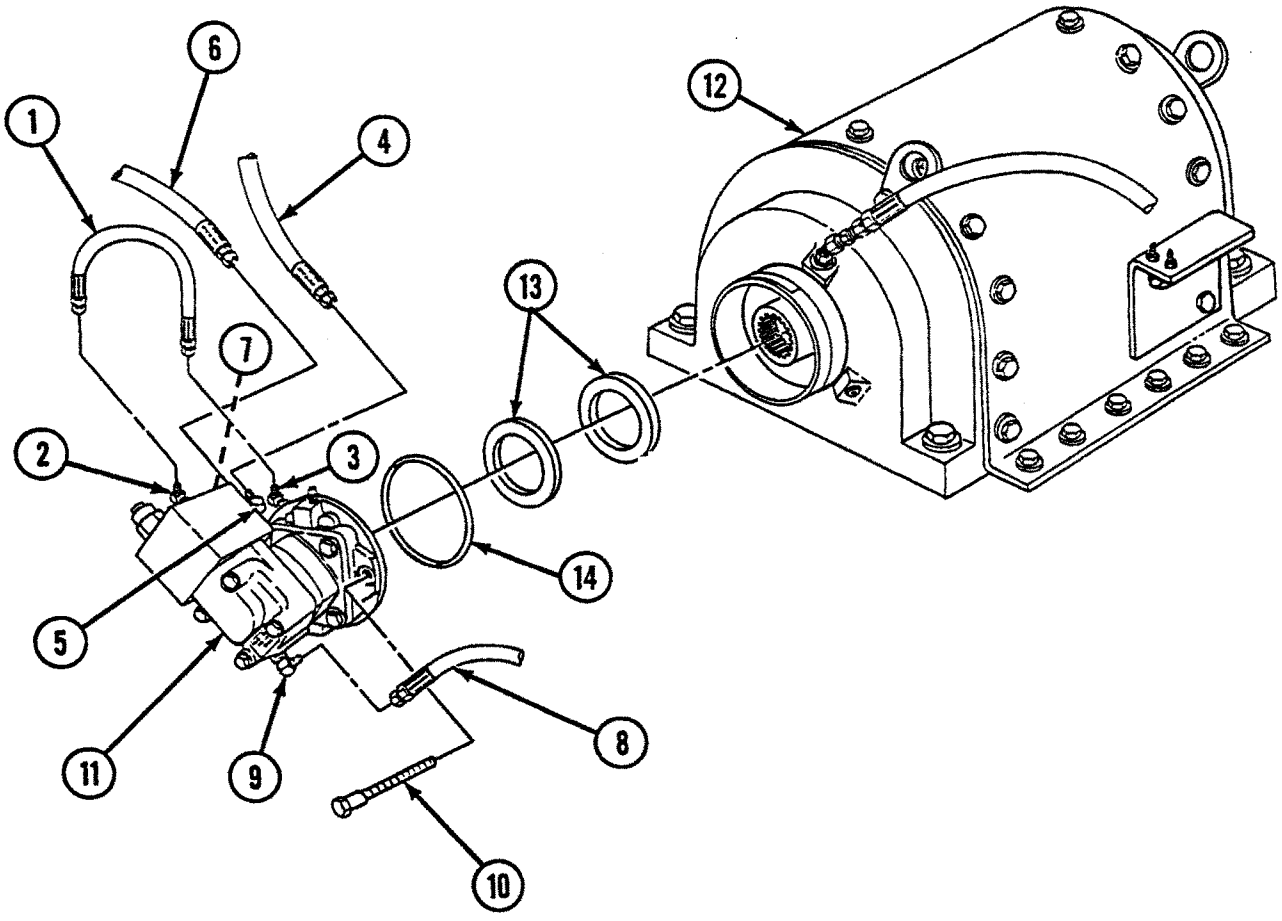
B Lubricate two thrust washers (13) with hydraulic oil and install on winch motor assembly (11). Align center holes on thrust washers (12).

C Install winch motor assembly (11) on winch (12) with two screws (10). Tighten screws (10) 21-24 lb-ft (28-33 N-m).

D Connect WINCH DRAIN-7W hose (8) to elbow (9), WINCH-C2 (FWD) lower hose (6) to elbow (7) at port VB, and WINCH-C1 (REAR) upper hose (4) to elbow (5) at port VA.

E Connect bypass hose (1) to elbows (2) and (3).

FOLLOW-ON TASKS:
Install rear floor plate supports (p 4-355).
Install rear floor plates (p 4-360).



WINCH WIRE ROPE ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Inspection
d. Repair
e. Assembly
f. Lubrication
g. Installation

INITIAL SETUP

Tools:

4910-00-754-0650 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 2, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Non-electrical Wire	Item 35 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group A5

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

FM 5-125

General Safety Instructions:

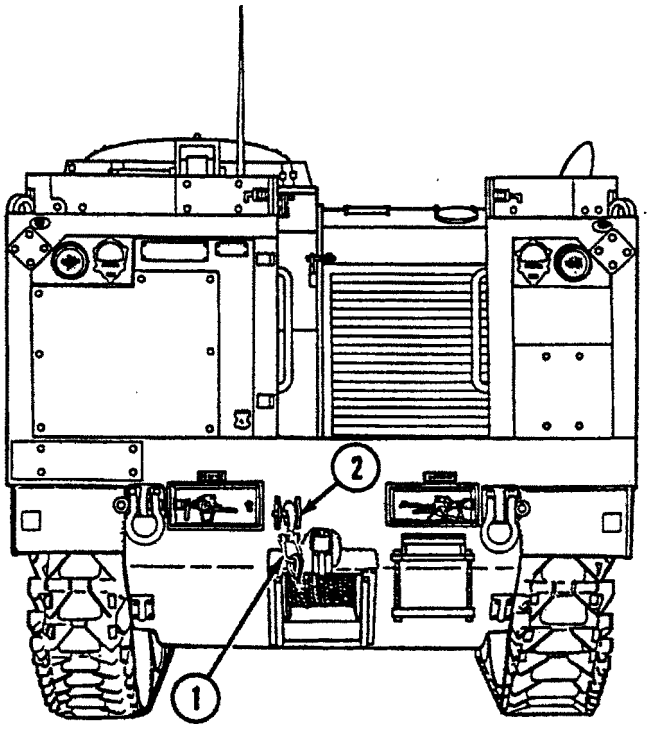
WARNING

Always wear leather gloves when handling wire rope assembly. Never allow wire rope to run through hands.

REMOVAL

WARNING

Always wear leather gloves when handling wire rope assembly. Never allow wire rope to tun through hands. Failure to comply may result in severe injury to personnel.



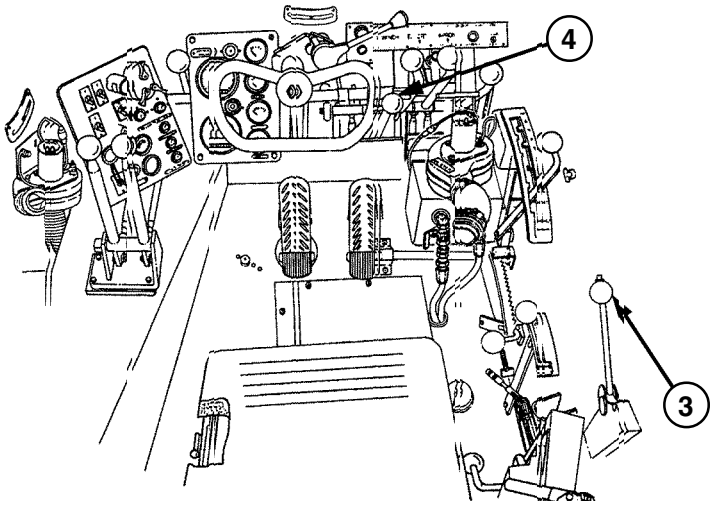
A Start vehicle engine (TM 5-2350-262-10) and relieve tension on wire rope.

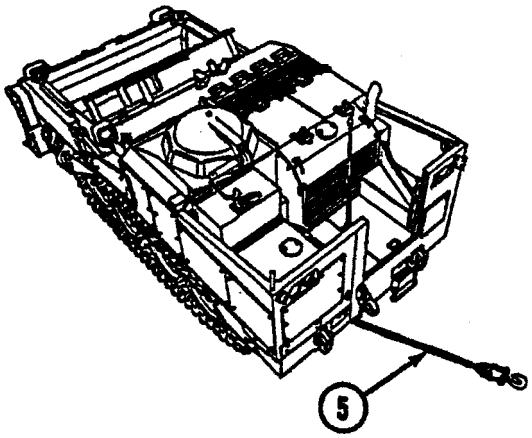
B Disconnect hook (1) from bracket (2) at rear of vehicle.

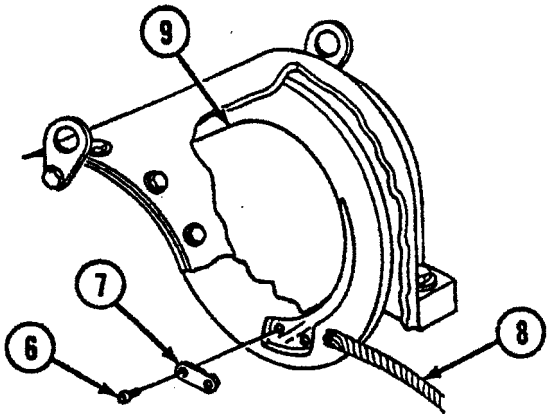
C Place control lever (3) in HIGH. Move and hold shift lever (4) to OUT, and pull wire rope assembly (5) from winch drum.

D Release shift lever (4), and shut off vehicle engine (TM 5-2350-262-10).

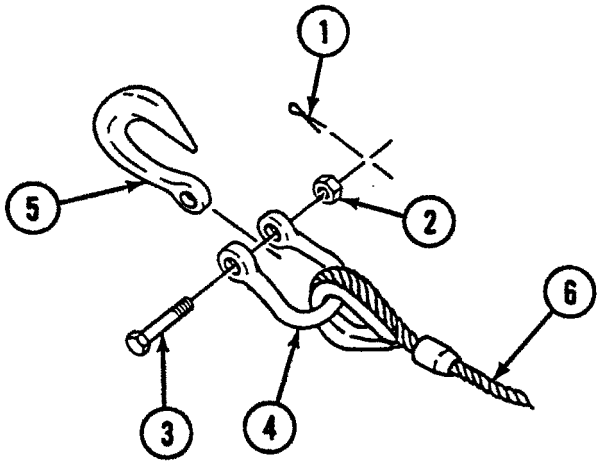
E Remove two screws (6), retainer (7), and wire rope assembly (8) from winch drum (9).







DISASSEMBLY



Remove cotter pin (1), nut (2), and pin (3) from shackle (4), and remove hook (5) and shackle (4) from wire rope assembly (6).

INSPECTION

WARNING

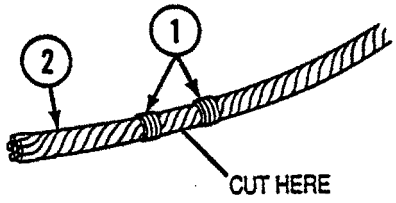
Always wear leather gloves when handling wire rope assembly. Never allow wire rope to run through hands. Failure to comply may result in severe injury to personnel.

A Inspect entire length wire rope assembly for frayed or broken strands, pinched or kinked sections, corrosion and rust. If repair is necessary and remaining wire rope length is over 150 ft (45.8 m), refer to wire rope repair. If wire rope is under 150 ft (45.8 m), replace.

B Refer to FM 5-125 for additional inspection details.

REPAIR

A Wrap seizing (1) around area of wire rope (2) to be cut. Cut wire rope to remove frays, bends, broken strands, kinks, or wear spots if remaining wire rope (2) length will still be over 150 ft (45.8 m).

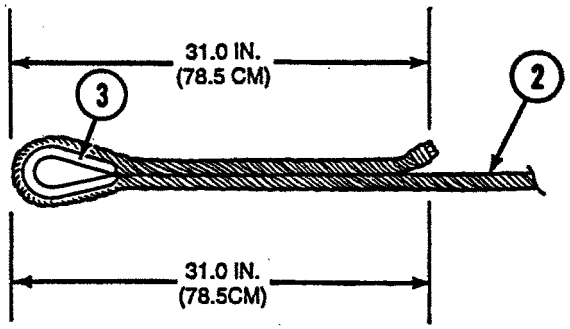


B Discard end of wire rope to which thimble is swaged.

Note

Allow no less than 62 in. (157 cm) of wire rope to repair wire rope with a new thimble and clips.

C Measure 62 in. (157 cm) from cut end of wire rope (2) and wrap wire rope (2) around thimble (3).

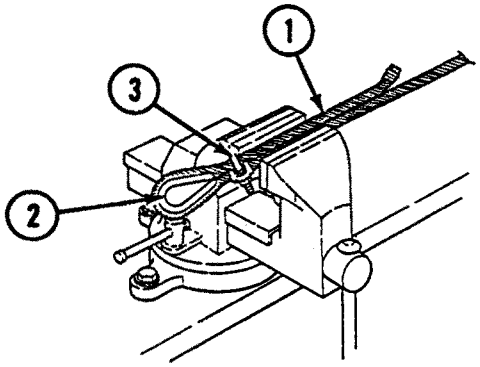


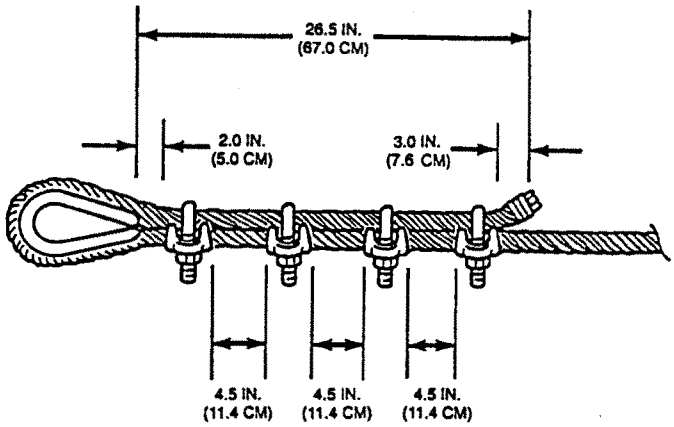
D Place wire rope (1) with thimble (2) in vise and secure wire rope (1) tight around thimble (2).

E Attach wire rope clip (3) 2.0 in. (5.0 cm) from thimble (2). Refer to dimensions as shown.

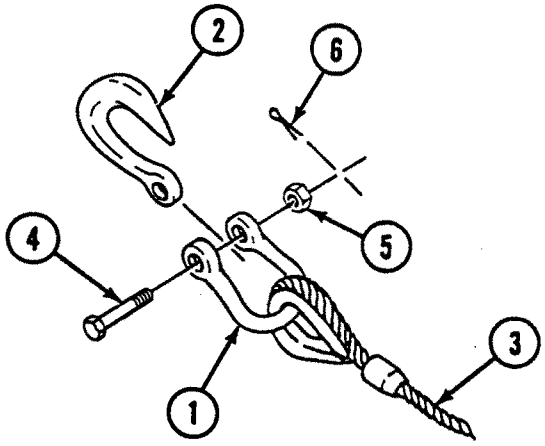
F Attach three more wire rope clips (3) to wire rope 4.5 in. (11.4 cm) apart from base to base. Tighten nuts on wire rope clips to 100 lb-ft (136 N·m).

G Length of dead end of wire rope (1) must be 3.0 in. (7.6 cm) from base of last wire rope clip (3).





ASSEMBLY



A Install shackle (1) and hook (2) on wire rope assembly (3) with pin (4), nut (5), and cotter pin (6).

LUBRICATION

A Always clean wire rope before lubrication. Refer to FM 5-125.

B Lubricate wire rope assembly before installation. Refer to TM 5-2350-262-10.

INSTALLATION

A Start vehicle engine (TM 5-2350-262-10) and rotate winch drum (1). Have assistant observe when wire rope retainer area (2) is in the 7 o'clock position. Stop vehicle engine (TM 5-2350-262-10).

B Loosely install retainer (3) with two screws (4).

C Slide wire rope (5) under retainer (3) and tighten screws (4).

CAUTION

When paying in wire rope, if wire rope has been repaired with wire rope clips, use care so as not to damage winch housing or wire rope on drum.

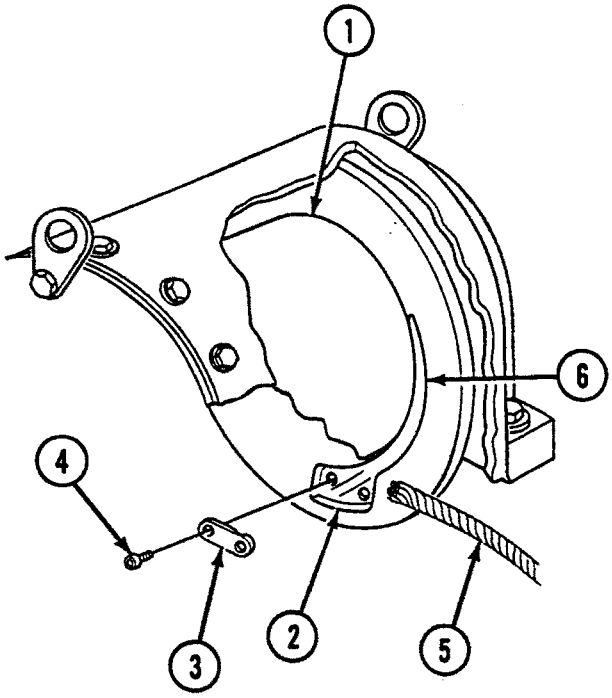
Note

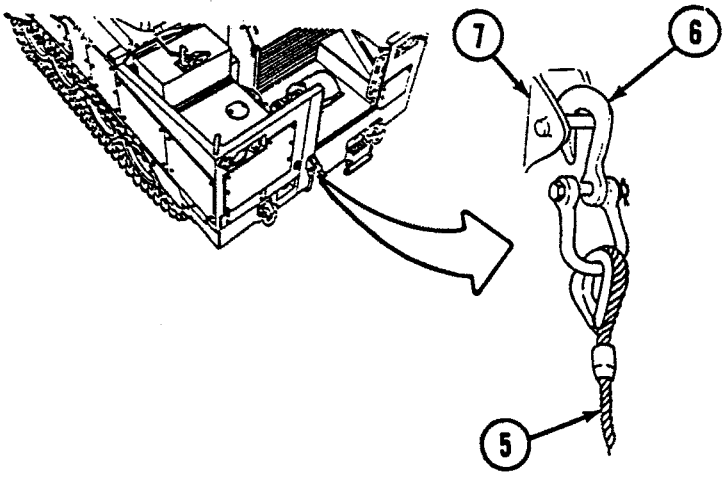
Wire rope must have adequate tension and level winding while paying in so all of wire rope will fit on winch drum.

D Start vehicle engine and pay in wire rope (5) (TM 5-2350-262-10), ensuring wire rope (5) is in groove (6) on side of drum (1).

E After paying in wire rope (5), attach hook (6) to bracket (7) on rear of vehicle. Apply light tension to wire rope (5).

F Stop vehicle engine (TM 5-2350-262-10).





Section XXI. GROUP A6, SPECIAL PURPOSE KITS INSTALLATION

MICROCLIMATIC COOLING SYSTEM (MCS) TASKS PAGE

MCS Air Hoses Replacement 4-932
MCS Armor Enclosure and Harness Shield Replacement 4-912
MCS Compressor Motor Replacement 4-939
MCS Condenser Fan Replacement 4-903
MCS Control Box Replacement and Repair 4-934
MCS Delta Pressure Switch Replacement 4-948
MCS Dump Valve Replacement 4-953
MCS Electrical Housing Replacement 4-919
MCS EMI Filter Box Replacement and Repair 4-922
MCS EMI Filter Box Wiring Harness and Circuit Breaker Replacement 4-926
MCS Evaporator Fan Replacement 4-955
MCS Gear Belt Replacement 4-905
MCS Heater Assembly Replacement 4-951
MCS Intake Assembly Replacement 4-907
MCS Interface Plate Replacement 4-917
MCS Main Air Inlet Filter and Plenum Replacement 4-909
MCS Main Wiring Harness Replacement 4-941
MCS NBC Filter Housing Replacement 4-899
MCS NBC Filter Replacement 4-897
MCS NBC Filter Switch Replacement 4-930
MCS Protective Shield Replacement 4-918.1
MCS Refrigerant Line Shield Replacement 4-901
MCS Secondary Wiring Harness Replacement 4-946
MCS Unit Replacement 4-915

OTHER SPECIAL PURPOSE KITS TASKS PAGE

Convoy Warning Light Kit Replacement and Repair 4-961
Ripper Blade Replacement 4-957
Winch Cover Kit Replacement 4-962

MCS NBC FILTER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Reference:

FM 3-4

FM 3-5

Personnel Required:

Quartermaster and Chemical Equipment Repairer 63J10

Troubleshooting Reference:

Page 4-357	No Air Flow in Any Temperature Setting (MCS)
Page 4-357	Fault Indicator Light Stays Lit (MCS)
Page 4-358	Decreased Air Flow During Operation (MCS)

Equipment Condition:

Reference	Condition Description
Page 4-913	MCS Armor Enclosure Removed

General Safety Instructions:

WARNING

- NBC protection filters use a type of carbon that contains chromium VI. This is a known carcinogen. Damaged or unusable filters are classified as hazardous waste.
  - Do not throw away damaged or unusable filters as trash.
  - Turn in damaged or unusable filters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).

  Filters are completely safe to handle and use if they are not damaged in such a way that carbon leaks from them. If carbon does leak, use protection such as a dust respirator to cover nose and mouth and put carbon in container such as self-sealing plastic bag; turn in to hazardous waste management office or DRMO.

  Disposal of hazardous waste is restricted by law. Violation is subject to criminal penalties.
- NBC contaminated filters can only be handled and disposed of by trained personnel. Personnel must use protective clothing (FM 3-4) and follow appropriate decontamination procedures (FM 3-5). Follow unit SOP for final disposal of contaminated filters.

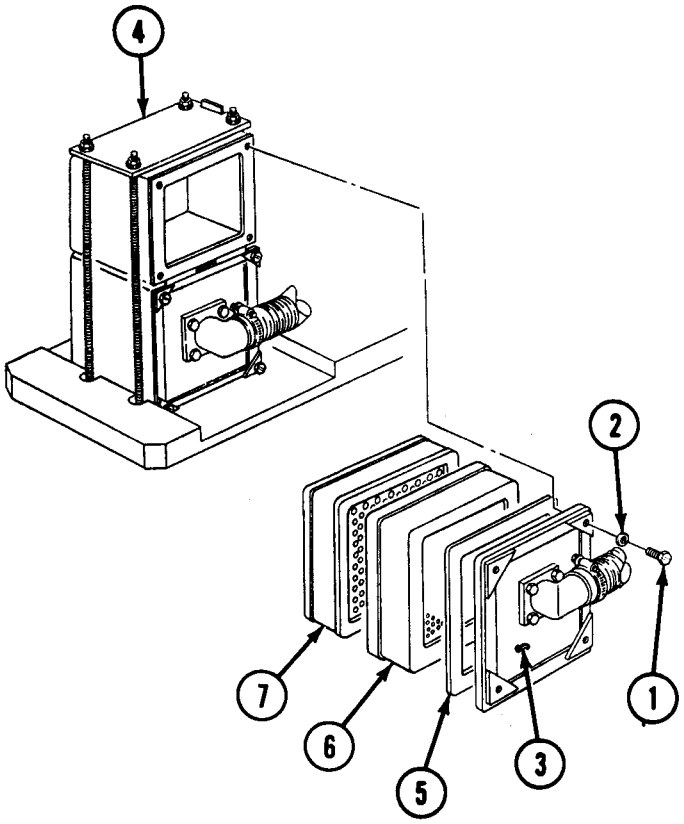
REMOVAL

WARNING

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  - Do not throw away damaged or unusable filters as trash.
  - Turn in damaged or unusable filters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).

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- NBC contaminated filters can only be handled and disposed of by trained personnel. Personnel must use protective clothing (FM 3-4) and follow appropriate decontamination procedures (FM 3-5). Follow unit SOP for final disposal of contaminated filters. Failure to do this may result in severe injury to personnel or death.



Note

Upper and lower filters are removed and installed the same way. This task covers the upper filters.

A Remove four screws (1), washers (2), and cover (3) from NBC filter housing (4).

B Inspect seal (5) on cover (3) and replace if damaged.

C Remove gas filter (6) and NBC filter (7) from NBC housing (4). Dispose of filters (6) and (7).

INSTALLATION

A Install NBC filter (7) and gas filter (6) in NBC housing (4).

B Install cover (3) on NBC housing (4) with four washers (2) and screws (1).

FOLLOW-ON TASK:
Install MCS armor enclosure (p 4-914).

MCS NBC FILTER HOUSING REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (12)

Pad (AR)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Quartermaster and Chemical Equipment Repairer 63J10

Equipment Condition:

Reference	Condition Description
Page 4-918.1	MCS Protective Shield Removed
Page 4-930	MCS NBC Filter Switches Removed

REMOVAL

Note

Hoses and elbows on each side of NBC filter housing are removed the same way.

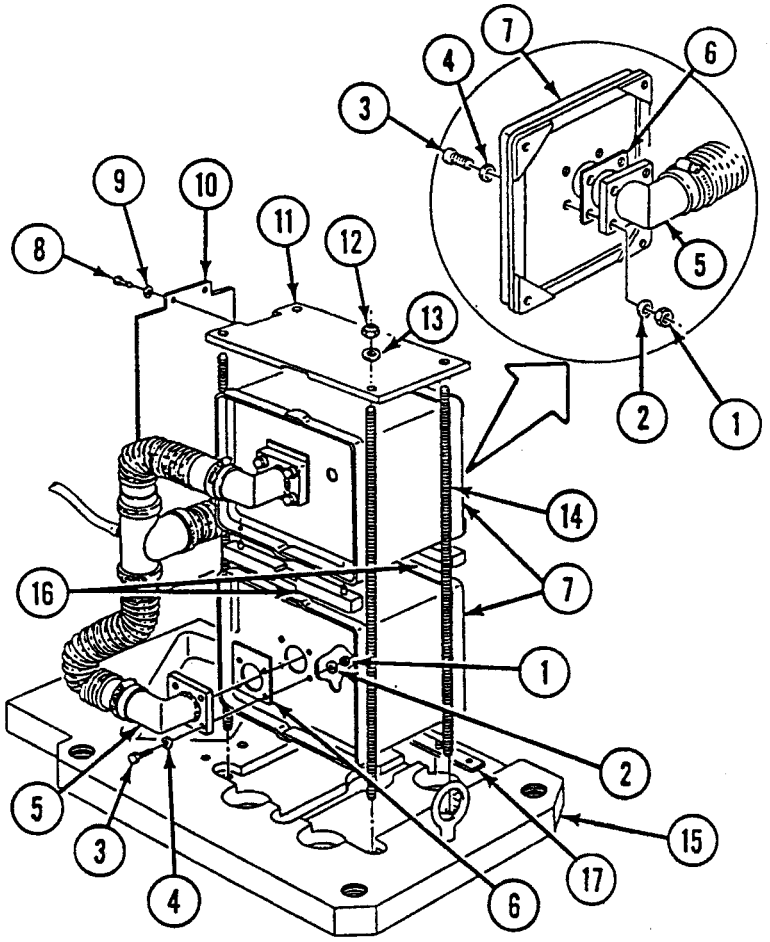
A Remove eight locknuts (1), washers (2), screws (3), washers (4), two elbows (5), and two pads (6) from NBC filter housings (7). Inspect pads (6) and replace if damaged. Discard locknuts (1).

B Remove two screws (8) and washers (9) securing heater bracket (10) to push plate (11).

C Remove four locknuts (12), washers (13), and push plate (11) from four threaded rods (14). Discard locknuts (12).

D Inspect threaded rods (14) for damage and remove from base (15) if necessary.

E Remove two NBC filter housings (7), two spacers (16), and retaining plate (17) from base (15).



INSTALLATION

A Install retaining plate (1), two spacers (2), and NBC filter housings (3) on base (4).

B If removed, install threaded rods (5) on base (4).

C Install push plate (6) on threaded rods (5) with four washers (7) and locknuts (8).

D Secure heater bracket (9) to push plate (6) with two washers (10) and screws (11).

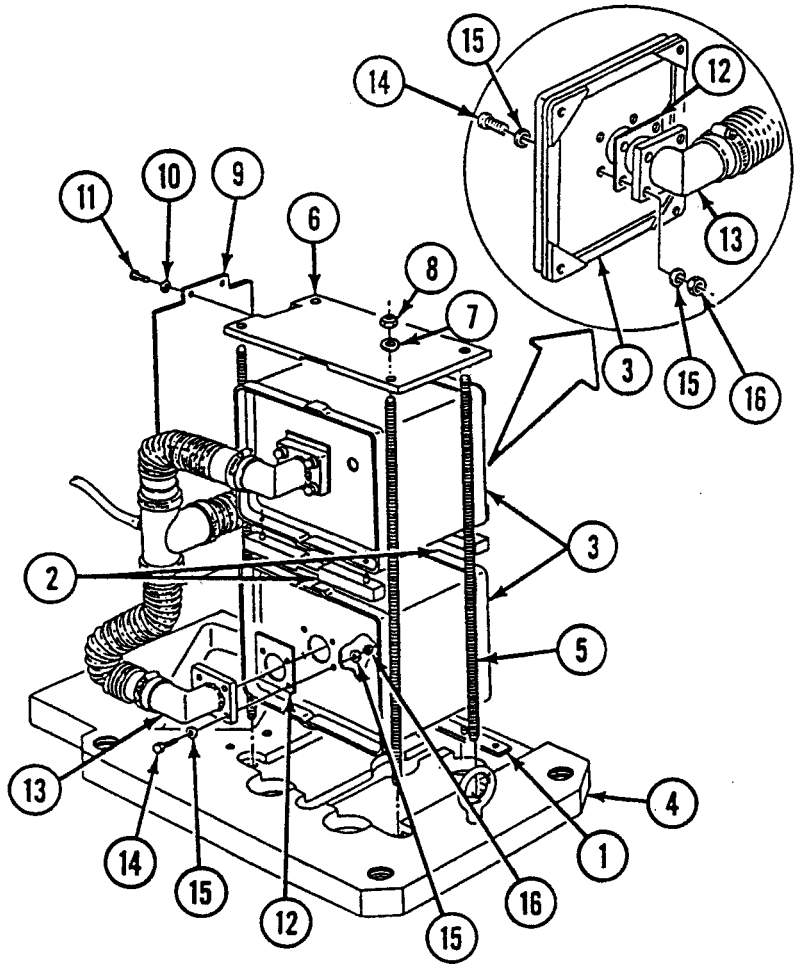
Note

Hoses and elbows on each side of NBC filter housing are installed the same way.

E Install two pads (12) and elbows (13) on NBC filter housings (3) with eight screws (14), sixteen washers (15), and eight locknuts (16). Tighten screws (14) to 20-25 lb-in. (2-3 N·m).

FOLLOW-ON TASK:

- Install NBC filter switches (p 4-930).
- Install MCS protective shield (p 418.1).



MCS REFRIGERANT LINE SHIELD REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (3)

Locknut (1)

Parts Reference:

TM 5-2350-262-24P Group A6

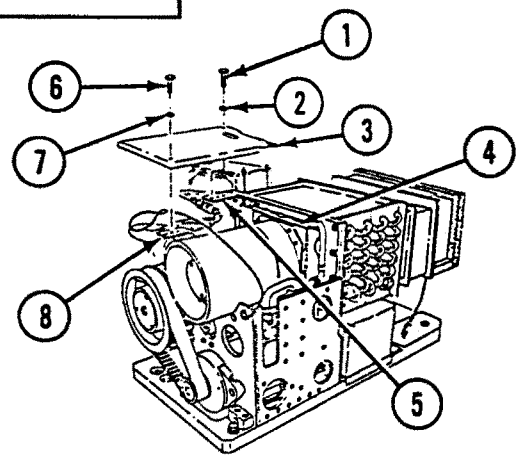
Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

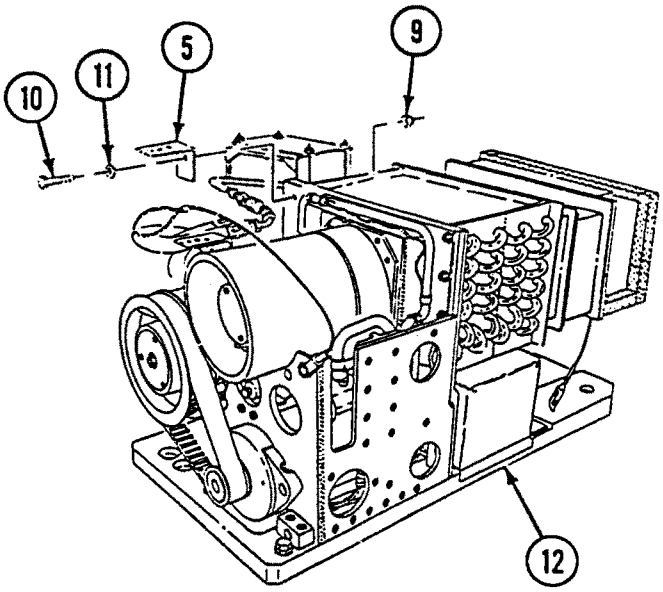
Reference	Condition Description
Page 4-918.1	MCS Protective Shield Removed

REMOVAL



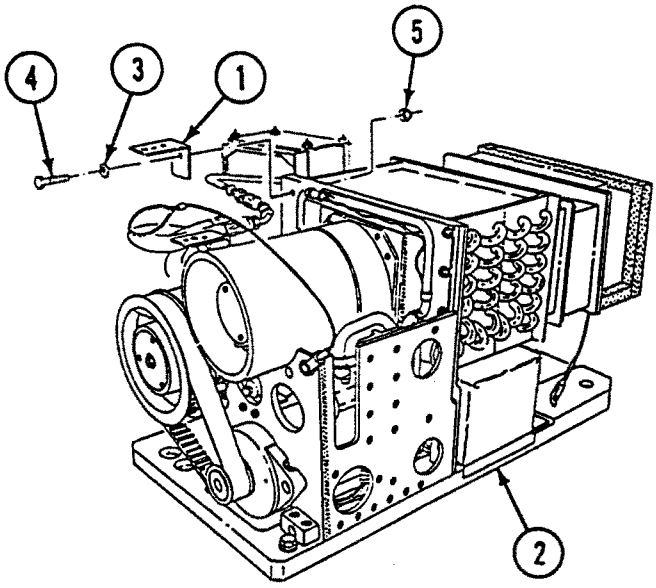
A Remove two self-locking screws (1) and washers (2) securing refrigerant line shield (3) to plenum (4) and mounting bracket (5). Discard self-locking screws (1).

B Remove self-locking screw (6), washer (7), and shield (3) from condenser shield bracket (8). Discard self-locking screw (6).

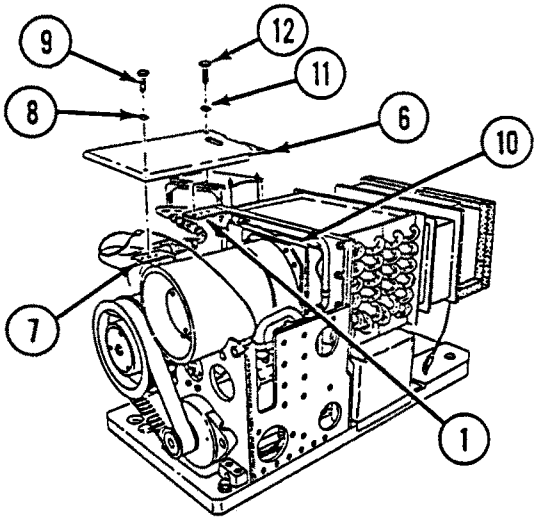


C Remove locknut (9), screw (10), washer (11), and mounting bracket (5) from MCS unit (12). Discard locknut (9).

INSTALLATION



A Install mounting bracket (1) on MCS unit (2) with washer (3), screw (4), and locknut (5). Tighten screw (4) to 15.5-17.5 lb-in. (1.75-2 N-m).



B Install refrigerant line shield (6) on condenser shield bracket (7) with washer (8) and self-locking screw (9). Do not tighten screw (9).

C Install shield (6) on mounting bracket (1) and plenum (10) with two washers (11) and self-locking screws (12). Tighten screws (9) and (12) to 20-29 lb-in. (2-3 N-m).

FOLLOW-ON TASK:
Install MCS protective shield (p 4-918.1).

MCS CONDENSER FAN REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

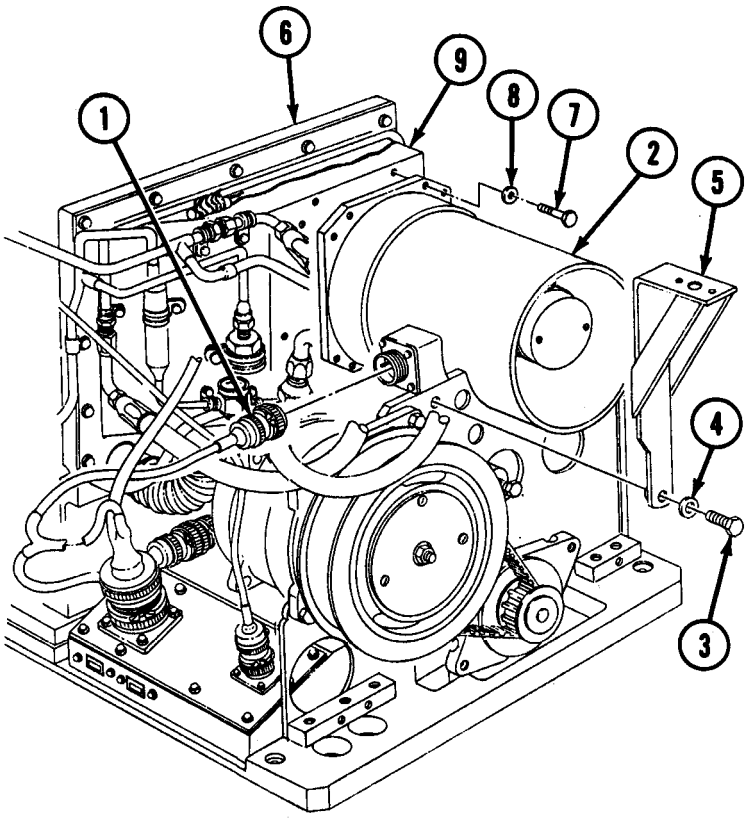
Reference	Condition Description
Page 4-916	MCS Unit Removed
Page 4-902	MCS Refrigerant Line Shield Removed

REMOVAL

A Disconnect electrical connector (1) from condenser fan (2).

B Remove screw (3), washer (4), and compressor shield bracket (5) from MCS unit (6).

C Remove eight screws (7), washers (8), and condenser fan (2) from plenum (9) and MCS unit (6).



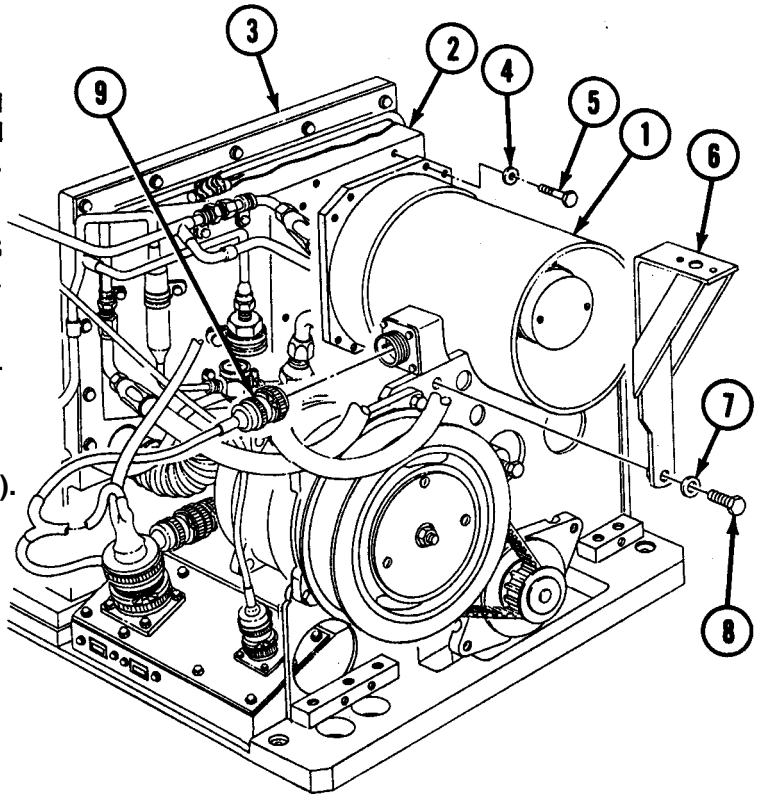
INSTALLATION

A Install condenser fan (1) on plenum (2) and MCS unit (3) with eight washers (4) and screws (5). Tighten screws (5) to 20-29 lb-in. (2-3 N·m).

B Install compressor shield bracket (6) on MCS unit (3) with washer (7) and screw (8). Tighten screw (8) to 20-29 lb-in. (2-3 N·m).

C Connect electrical connector (9) to condenser fan (1).

FOLLOW-ON TASKS:
- Install MCS refrigerant line shield (p 4-902).
- Install MCS unit (p 4-916).



MCS GEAR BELT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

TM 5-2350-262-20-1

Equipment Condition:

Reference	Condition Description
Page 4-916	MCS Unit Removed
Page 4-902	MCS Refrigerant Line Shield Removed

General Safety Instructions:

WARNING

MCS unit weighs 144 lb (65 kg). Be careful when tipping unit on its side.

REMOVAL

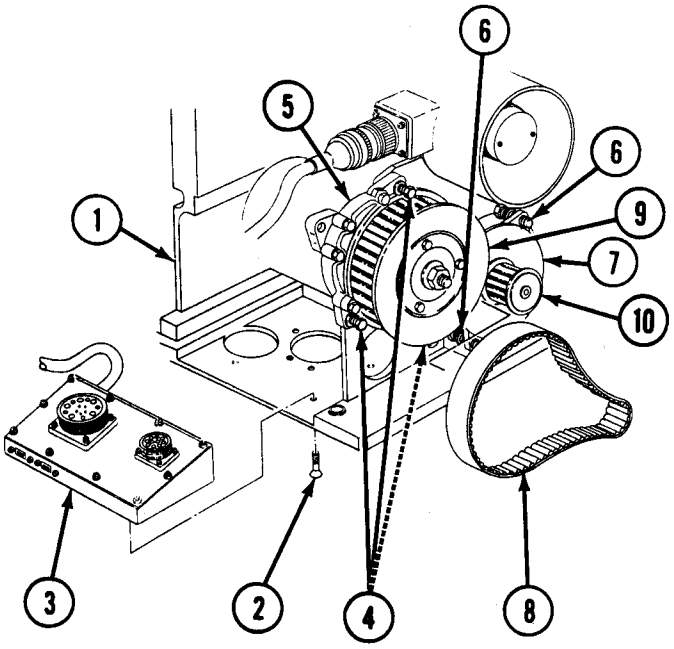
WARNING

MCS unit weighs 144 lb (65 kg). Be careful when tipping unit on its side. Failure to comply may result in injury to personnel.

A Tip MCS unit (1) on its side and remove six screws (2) and pull electrical housing (3) away from MCS unit (1).

B Loosen three screws (4) on compressor motor (5) and five screws (6) on compressor (7).

C Rotate compressor (7) and compressor motor (5) together and remove gear belt (8) from compressor pulley (9) and compressor motor pulley (10). Inspect gear belt (8) and replace gear belt (8) if damaged.



INSTALLATION

A Position gear belt (1) on compressor pulley (2) and compressor motor pulley (3).

B Tighten five screws (4) on compressor (5) to 75-100 lb-in. (9-11 N•m).

C Rotate compressor motor (6) back and away from compressor (5) to tighten gear belt (1).

Note

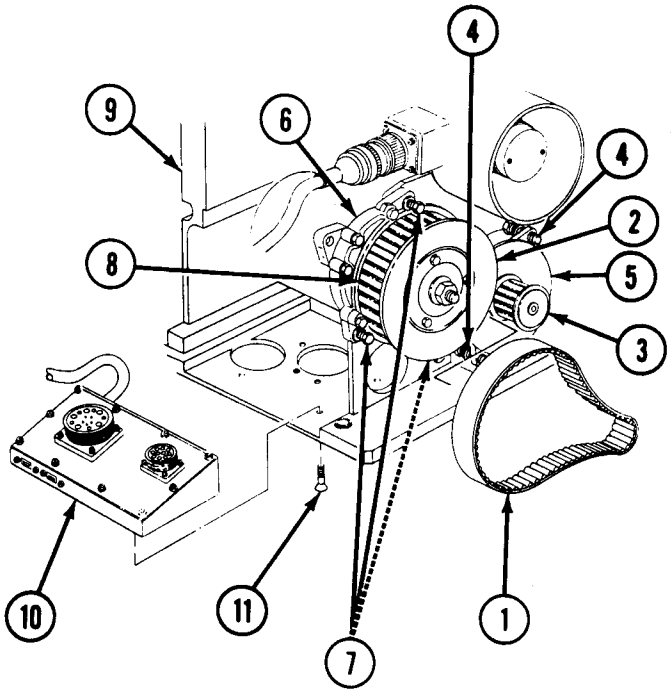
Belt tension does not require specific tightening as long as belt engages pulley drive teeth.

D While maintaining tension on gear belt (1), tighten three screws (7) on compressor motor (6) to 460-480 lb-in. (52-54 N•m). Ensure belt (1) engages compressor pulley drive teeth (8).

E Tip MCS unit (9) on its side and install electrical housing (10) with six screws (11). Tighten screws (11) to 20-29 lb-in. (2-3 N•m).

FOLLOW-ON TASKS:

- Install MCS unit **(p 4-916).**
- Install MCS refrigerant line shield **(p 4-902).**



MCS INTAKE ASSEMBLY REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (10)

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-918	MCS Interface Plate Removed

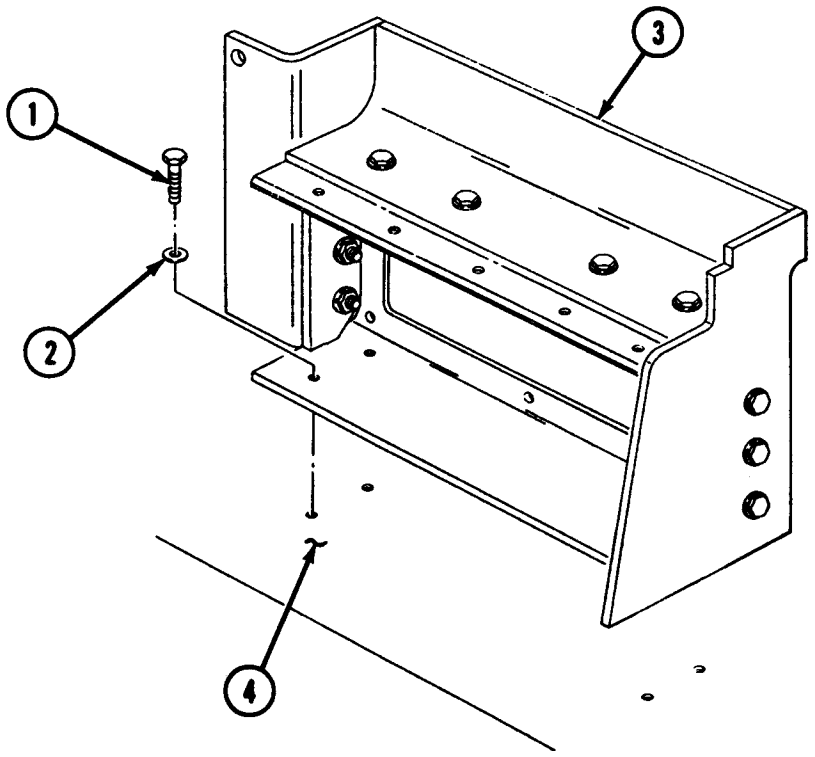
REMOVAL

Remove four self-locking screws (1), washers (2), and intake assembly (3) from fuel tank armor plate (4). Discard self-locking screws (1).

INSTALLATION

Install intake assembly (3) on fuel tank armor plate (4) with four washers (2) and self-locking screws (1).

FOLLOW-ON TASK:
Install interface plate (p 4-918).



MCS MAIN AIR INLET FILTER AND PLENUM REPLACEMENT

This task covers:

a. Removal
b. Cleaning
c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Adhesive — Item 3 Appendix D

Parts:

Locknut (30)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TB SIG-222

Equipment Condition:

Reference	Condition Description
Page 4-913	MCS Armor Enclosure Removed

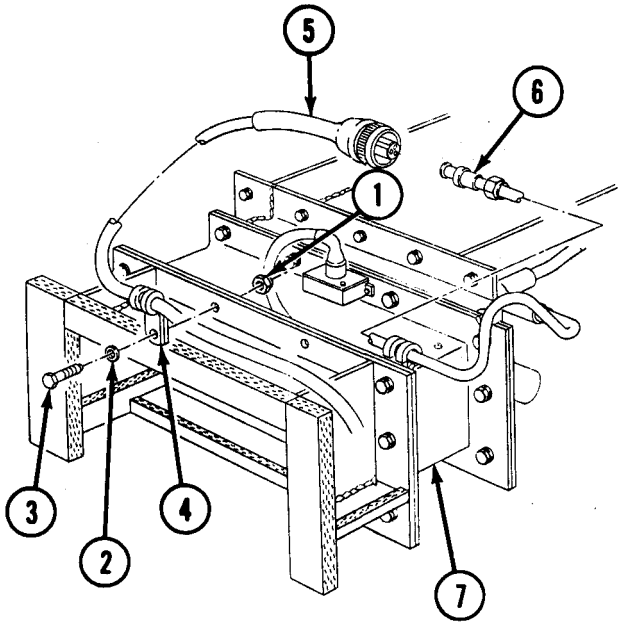
General Safety Instructions:

WARNING

Compressed air can injure you and others. Do not aim compressed air hose at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles.

REMOVAL

A Remove three locknuts (1), washers (2), screws (3), clamps (4), hose (5), and tube (6) from main air inlet filter (7).



Note

It may be necessary to scrape foam insulation from mounting bracket to gain access to screws.

B Remove four locknuts (8), washers (9), screws (10), and mounting bracket (11) from filter (7). Discard locknuts (8).

C Remove six locknuts (12), washers (13), screws (14), and filter adapter (15) from filter (7). Discard locknuts (12).

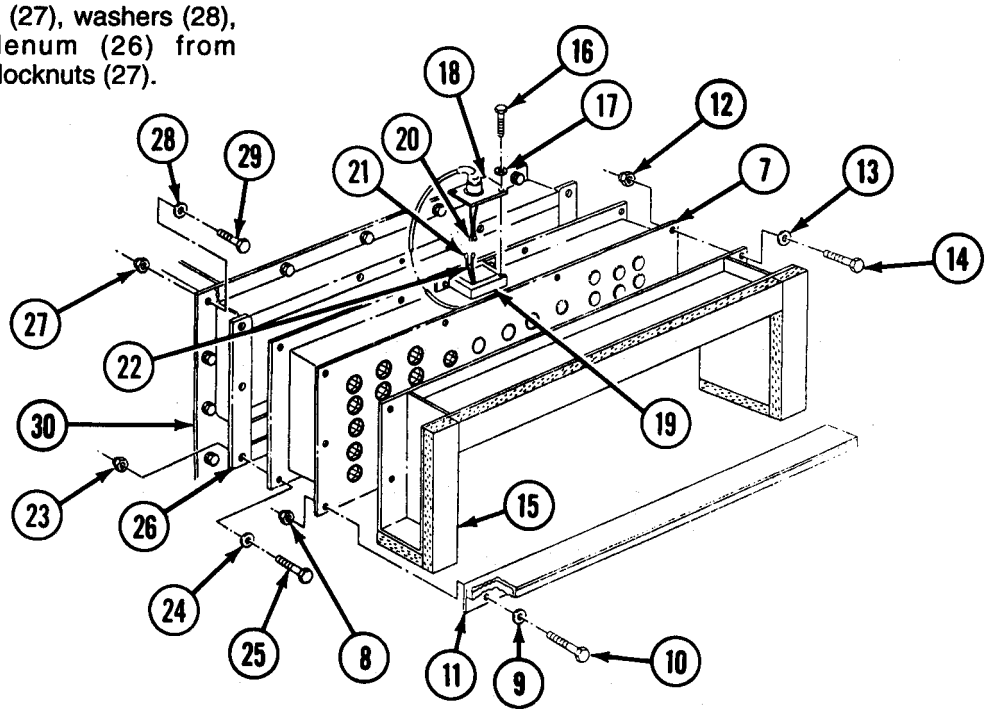
D Remove two screws (16) and washers (17) securing cover (18) to junction box (19).

E Disconnect two connectors (20) from connectors (21) and remove cover (18) from junction box (19).

F Cut two low temperature switch leads (22).

G Remove six locknuts (23), nine washers (24), screws (25), and filter (7) from plenum (26). Discard locknuts (23).

H Remove eleven locknuts (27), washers (28), screws (29), and plenum (26) from condenser (30). Discard locknuts (27).



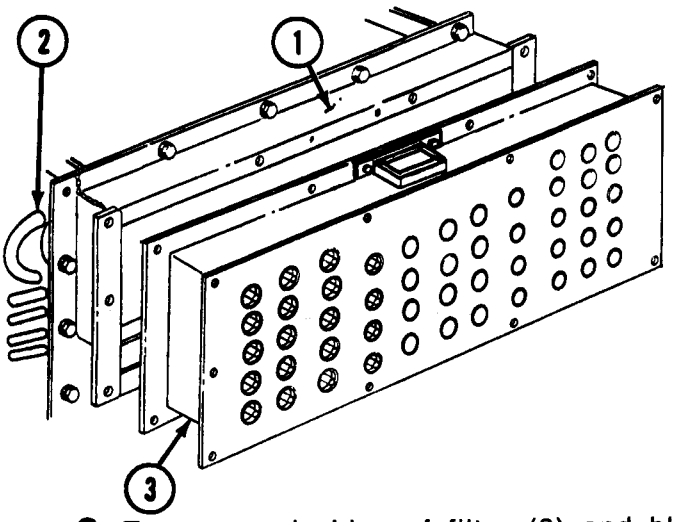
CLEANING

WARNING

Compressed air can injure you and others. Do not aim compressed air hose at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles. Failure to comply may result in severe injury to personnel.

A Use compressed air to blow debris from plenum (1) and condenser fins (2).

B Blow compressed air through main air inlet filter (3).



C Tap top and sides of filter (3) and blow compressed air from rear of filter (3) to front.

INSTALLATION

A Apply adhesive to edges of condenser (1) and install plenum (2) on condenser (1) with eleven washers (3), screws (4), and locknuts (5). Tighten screws (4) to 15.5-17.5 lb-in. (1.75-2 N•m).

B Install main air inlet filter (6) on plenum (2) with nine washers (7), screws (8), and six locknuts (9). Tighten screws (8) to 20-29 lb-in. (2-3 N•m).

C Route two low temperature switch leads (10) through filter (6) and junction box (11). Solder two leads (10) to connectors (12) (refer to TB SIG-222).

D Connect two connectors (12) to connectors (13) on cover (14).

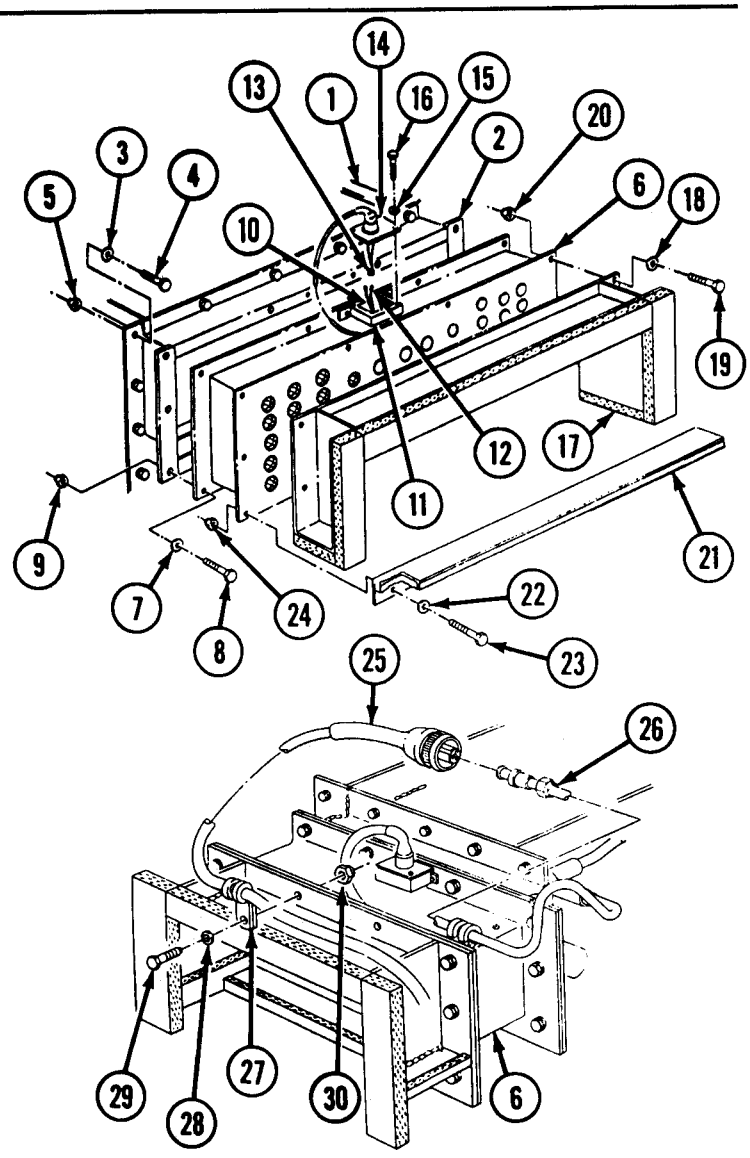
E Install cover (14) on junction box (11) with two washers (15) and screws (16).

F Secure filter adapter (17) to filter (6) with six washers (18), screws (19), and locknuts (20). Tighten screws (19) to 20-29 lb-in. (2-3 N•m).

G Install mounting bracket (21) on filter (6) with four washers (22), screws (23), and locknuts (24). Tighten screws (23) to 20-29 lb-in. (2-3 N•m).

H Install hose (25) and tube (26) on filter (6) with three clamps (27), washers (28), screws (29) and locknuts (30).

FOLLOW-ON TASK:
Install MCS armor enclosure (p 4-914).



MCS ARMOR ENCLOSURE AND HARNESS SHIELD REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Parts:

Lockwasher (6)

Self-locking Screw (14)

Parts Reference:

TM 5-2350-262-24P Group A6

Materials:

Lubricating Oil Item 26 Appendix D

Personnel Required:

Two Construction Equipment Repairers 62B10

Troubleshooting Reference:

Page 3-346	No Air Flow from MCS Unit
Page 3-350	Same Air Temperature Flows in "Cool" and "Vent" Modes (MCS)
Page 3-352	Minimal Temperature Difference in Air Flow from "Heat" and "Vent" Modes (MCS)
Page 3-357	Fault Indicator Light Stays Lit (MCS)
Page 3-358	Decreased Air Flow During Operation (MCS)
Page 3-359	Excessive Hot Air Flow During Operation (MCS)

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

- Lifting device must have a weight capacity greater than 230 lb (104 kg).
- Personnel must stand clear during lifting operations.

REMOVAL

A Remove five screws (1), lockwashers (2), washers (3), screen (4), and shield (5) from intake assembly (6). Discard lockwashers (2).

B Remove three self-locking screws (7), washers (8), and harness shield (9) from radio box (10). Discard self-locking screws (7).

C Disconnect wiring harness connectors P4 (11) and P2 (12) from electrical connectors J4 (13) and J2 (14). Loosen clamp (15), and disconnect air hose (16) from tube (17).

D Remove screw (18), lockwasher (19), and washer (20) securing intake assembly (6) to armor enclosure (21). Discard lockwasher (19).

Note

Exhaust cover hardware may vary due to vendor specifications.

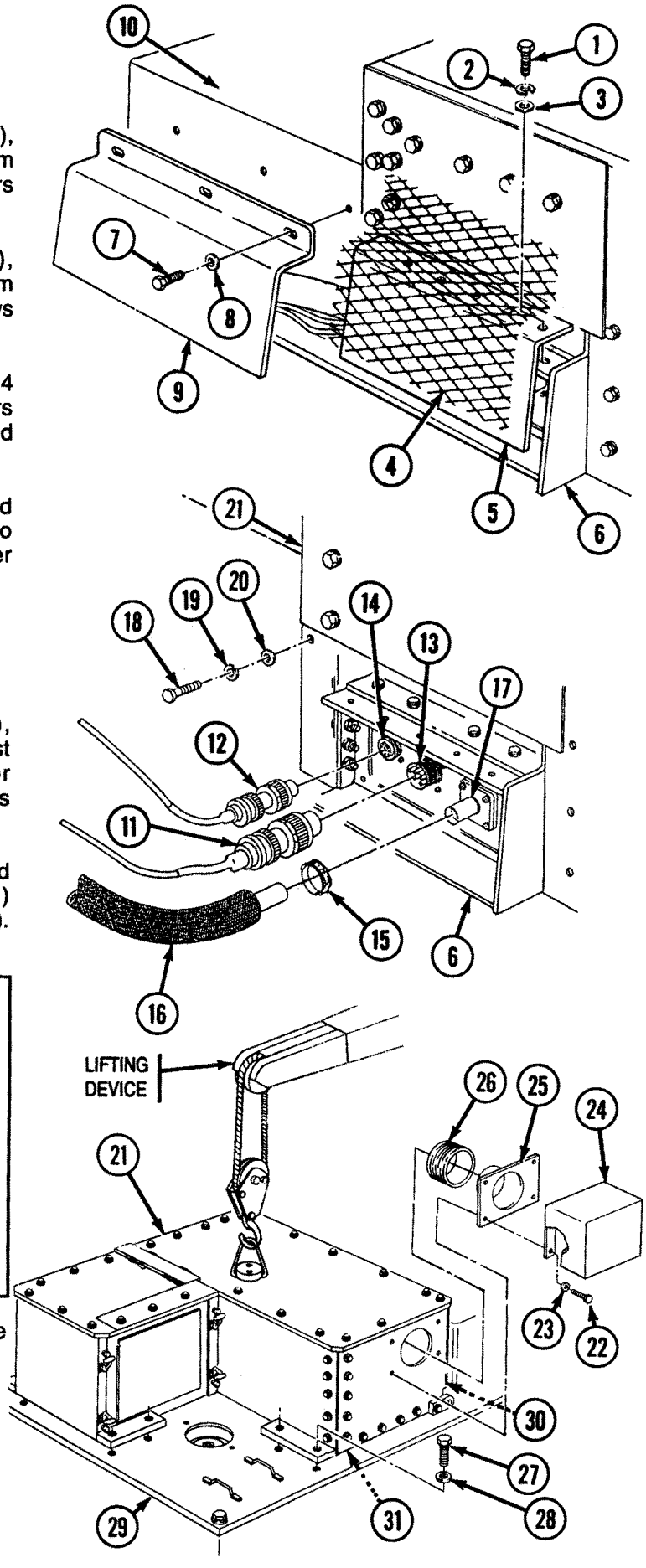
E Remove four self-locking screws (22), washers (23), exhaust cover (24), exhaust flange (25), and hose (26) from armor enclosure (21). Discard self-locking screws (22).

F Remove seven self-locking screws (27) and washers (28) securing armor enclosure (21) to fuel tank armor cover (29) and block (30). Discard self-locking screws (27).

WARNING

- Lifting device must have a weight capacity greater than 230 lb (104 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.

G Using lifting device, carefully lift and remove armor enclosure (21) from MCS unit (31).



INSTALLATION

WARNING

- Lifting device must have a weight capacity greater than 230 lb (104 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.

Note

Apply lubricating oil to threads of all screws prior to installation.

A Using lifting device, position armor enclosure (1) over MCS unit (2).

B Install armor enclosure (1) on fuel tank armor cover (3) and block (4) with seven washers (5) and self-locking screws (6). Do not tighten self-locking screws (6).

C Secure intake assembly (7) to armor enclosure (1) with washer (8), lockwasher (9), and screw (10).

Note

Exhaust cover hardware may vary due to vendor specifications.

D Install hose (11), exhaust flange (12), and exhaust cover (13) on armor enclosure (1) with four washers (14) and self-locking screws (15). Do not tighten self-locking screws (15).

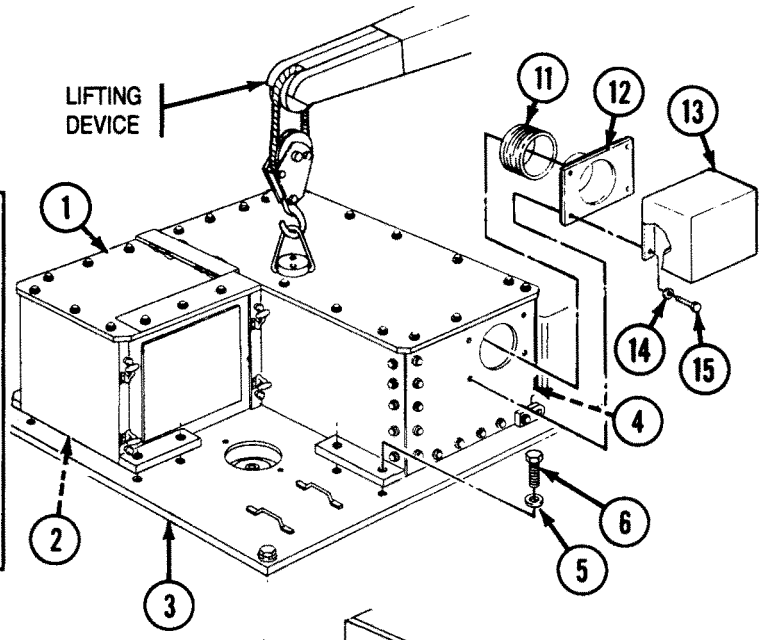
E Connect air hose (16) to tube (17) with clamp (18). Connect wiring harness connectors P4 (19) and P2 (20) to electrical connectors J4 (21) and J2 (22).

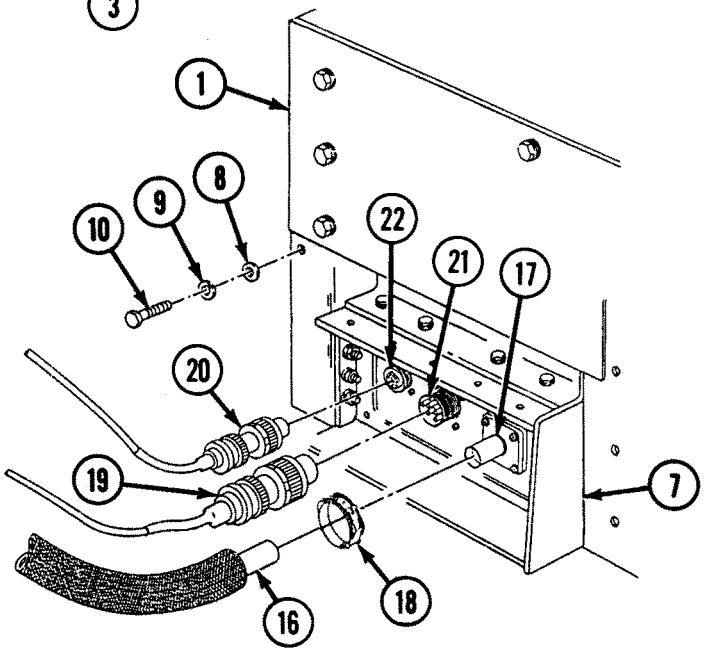
F Install harness shield (23) on radio box (24) with three washers (25) and self-locking screws (26). Do not tighten self-locking screws (26).

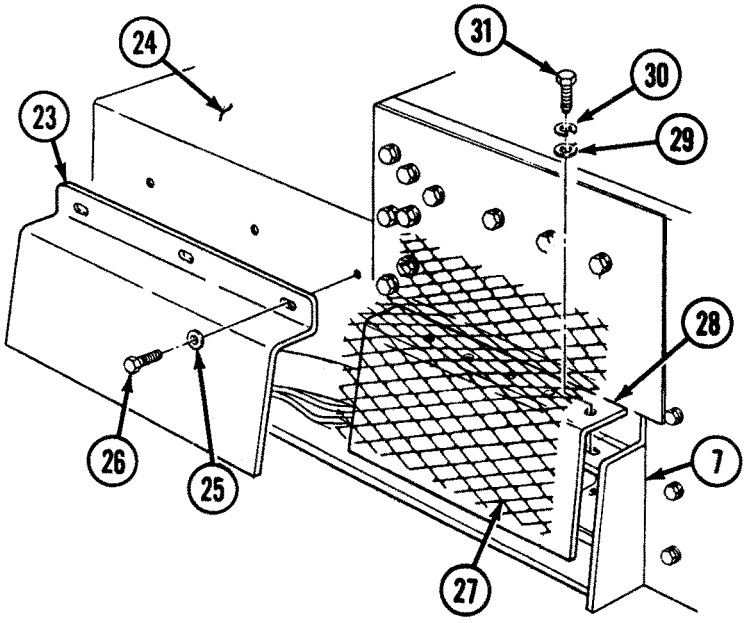
G Install screen (27) and shield (28) on intake assembly (7) with five washers (29), lockwashers (30), and screws (31). Do not tighten screws (31).

H Tighten self-locking screws (6), (15), and (26) to 80-90 lb-ft (108-123 N·m). Tighten screws (31) to 18-20 lb-ft (24-28 N·m).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).







MCS UNIT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Chain and Lifting Device

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected
Page 4-913	MCS Armor Enclosure Removed

General Safety Instructions:

WARNING

- Lifting device must have a weight capacity greater than 144 lb (65 kg).
- Personnel must stand clear during lifting operations.

REMOVAL

A Remove six screws (1) and interface plate (2) from intake assembly (3).

B Remove seven screws (4) and washers (5) from MCS unit (6).

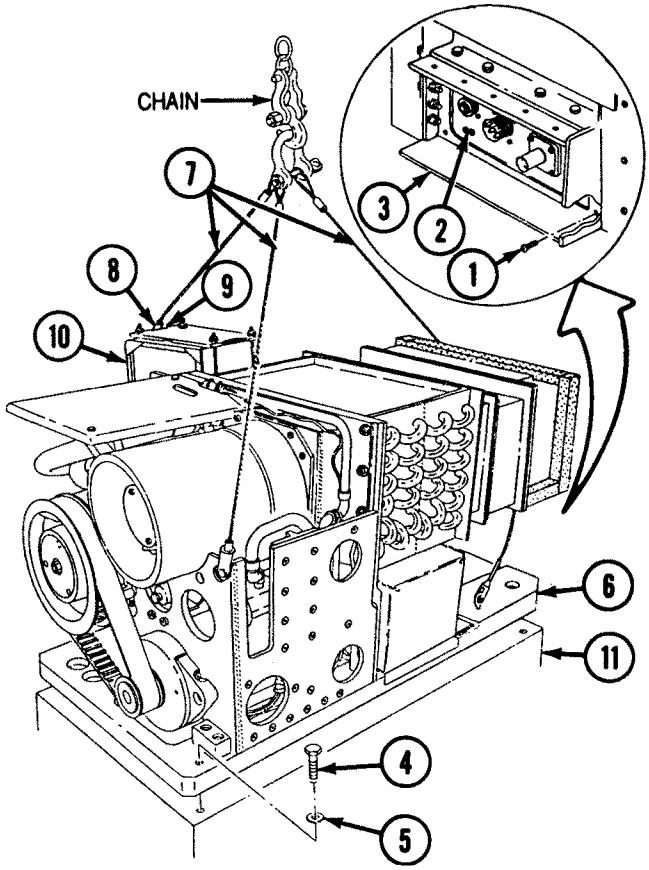
WARNING

- Lifting device must have a weight capacity greater than 144 lb (65 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.

CAUTION

Ensure cable is in slot prior to lifting MCS unit. Failure to comply may result in damage to equipment.

C Connect chain and lifting device to three cables (7). Position cable end (8) in slot (9) of NBC housing (10), and carefully lift MCS unit (6) off fuel tank armor cover (11).



INSTALLATION

WARNING

- Lifting device must have a weight capacity greater than 144 lb (65 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.

CAUTION

Ensure cable is in slot prior to lifting MCS unit. Failure to comply may result in damage to equipment.

A Connect chain and lifting device to three cables (7). Position cable end (8) in slot (9) of NBC housing (10), and carefully lift MCS unit (6) into position over fuel tank armor cover (11).

B Install MCS unit (6) on fuel tank armor cover (11) with seven washers (5) and screws (4). Remove chain and lifting device.

C Install interface plate (2) on intake assembly (3) with six screws (1).

FOLLOW-ON TASKS:

- Install MCS armor enclosure (p 4-914).
- Connect negative battery cables (p 4-84).

MCS INTERFACE PLATE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (12)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

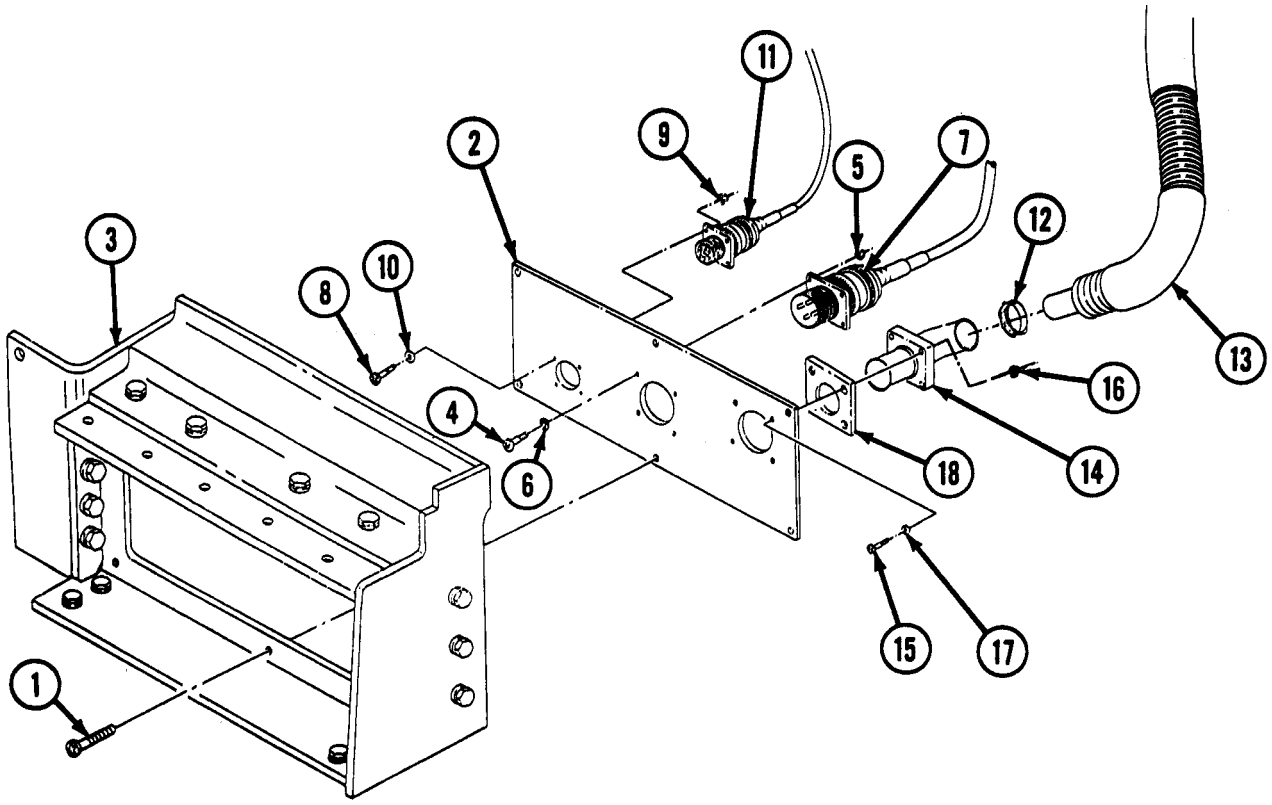
Quartermaster and Chemical Equipment Repairer 63J10

Troubleshooting Reference:

TM 5-2350-262-20-1

Equipment Condition:

Reference	Condition Description
Page 4-913	MCS Armor Enclosure Removed



REMOVAL

A Remove six screws (1) and interface plate (2) from intake assembly (3).

B Remove four screws (4), locknuts (5), washers (6), and J4 electrical connector (7) from interface plate (2). Discard locknuts (5).

C Remove four screws (8), locknuts (9), washers (10), and J2 electrical connector (11) from interface plate (2). Discard locknuts (9).

D Loosen hose clamp (12) and remove air hose (13) from tube (14).

E Remove four screws (15), locknuts (16), washers (17), insulator (18), and tube (14) from interface plate (2). Remove interface plate (2). Discard locknuts (16).

INSTALLATION

A Install insulator (18) and tube (14) on interface plate (2) with four washers (17), screws (15), and locknuts (16).

B Install air hose (13) on tube (14) and tighten hose clamp (12).

C Install J2 electrical connector (11) on interface plate (2) with four washers (10), screws (8), and locknuts (9).

D Install J4 electrical connector (7) on interface plate (2) with four washers (6), screws (4), and locknuts (5).

E Install interface plate (2) on intake assembly (3) with six screws (1).

FOLLOW-ON TASK:
Install MCS armor enclosure (p 4-914).

MCS PROTECTIVE SHIELD REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0705 Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Basic, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-912	MCS Armor Enclosure Removed

REMOVAL

A Remove locknut (1), washer (2) and threaded rod (3) from NBC filter box.

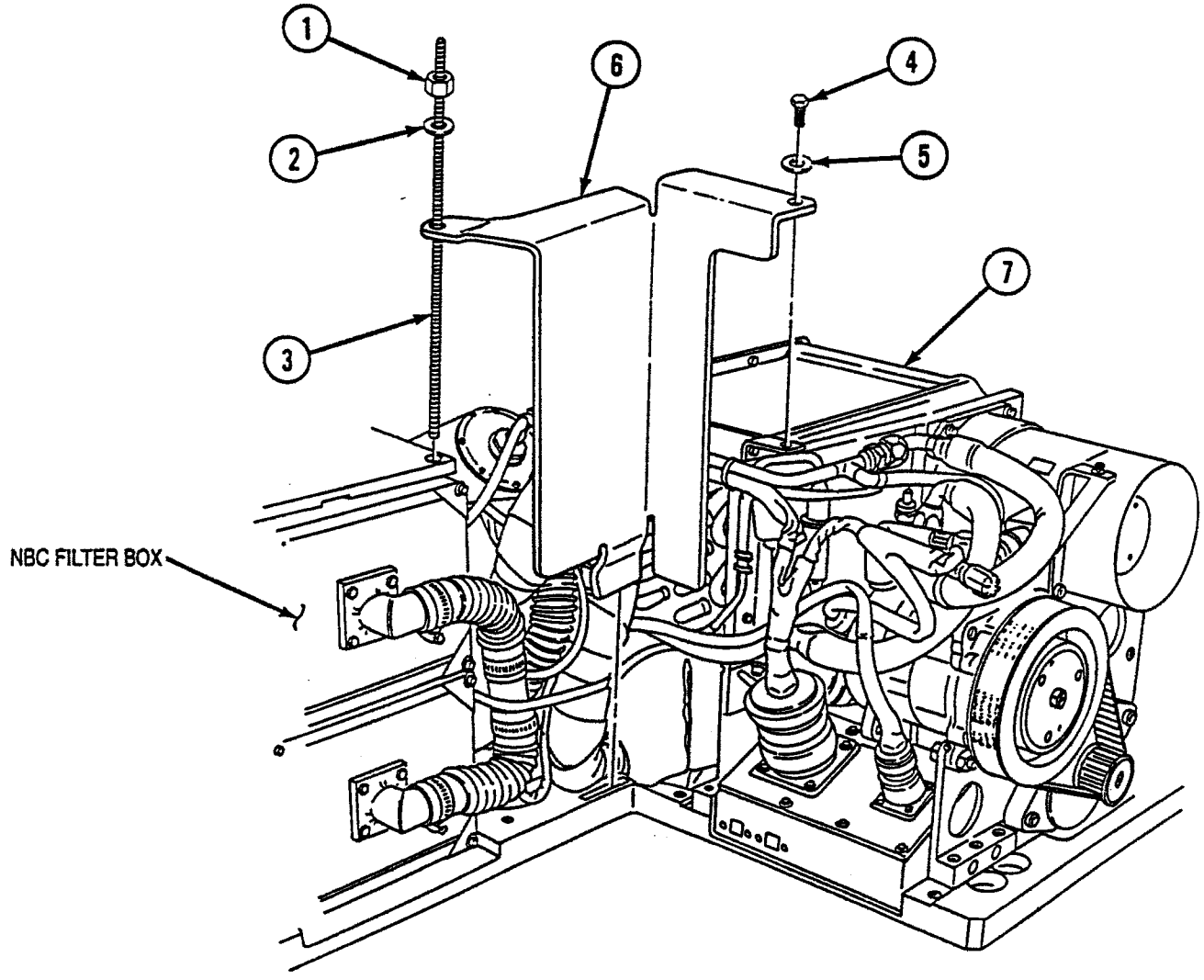
B Remove self-locking screw (4), washer (5) and protective shield (6) from MCS unit (7). Discard self-locking screw (4).

INSTALLATION

A Install protective shield (6) on MCS unit (7) with washer (5) and self-locking screw (4).

B Install threaded rod (3), washer (2), and locknut (1) on NBC filter box.

FOLLOW-ON TASK
Install MCS armor enclosure (p 4-914).



MCS ELECTRICAL HOUSING REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0705 Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Basic, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (4)

Tiedown Strap (AR)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Fuel and Electrical Repairer 63G10

Reference:

TB SIG-222

Equipment Condition:

Reference	Condition Description
Page 4-915	MCS Unit Removed

General Safety Instructions:

WARNING

MCS unit weighs 144 lb (65 kg). Be careful when tipping the unit on its side.

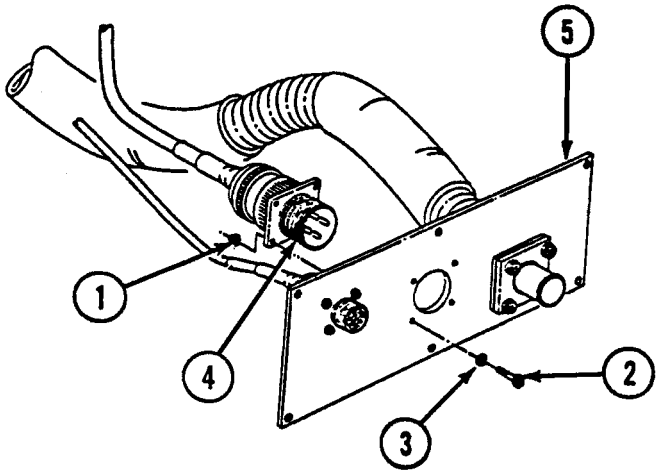
REMOVAL

Note

Remove and discard tiedown straps as necessary.

A Remove four locknuts (1), screws (2), washers (3), and electrical housing connector J4 (4) from interface plate (5). Discard locknut (1).

B Disconnect main wiring harness connector P6 (6) from connector J6 (7) and secondary wiring harness connector P5 (8) from connector J5 (9) on electrical housing (10).



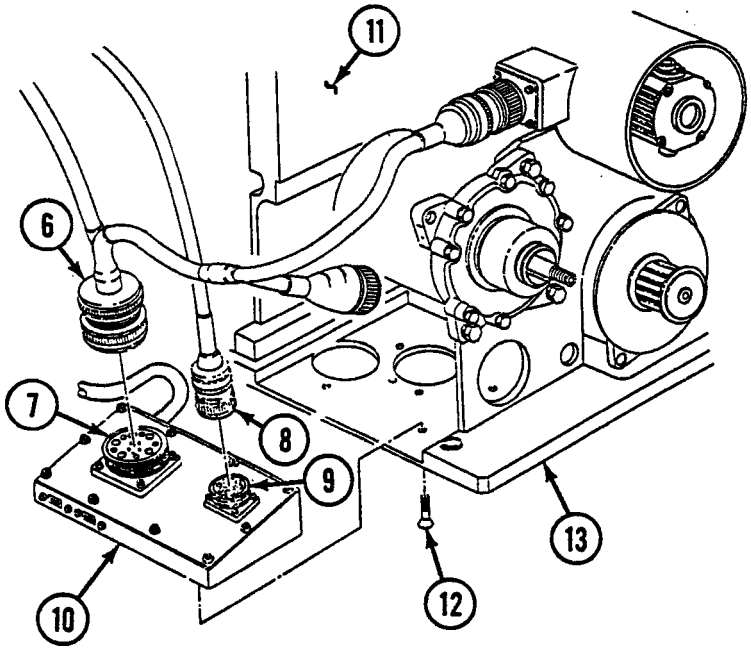
WARNING

MCS unit weighs 144 lb (65 kg). Be careful when tipping the unit on its side. Failure to comply may result in severe injury to personnel.

C Tip MCS unit (11) on its side to gain access to mounting screws (12) on electrical housing (10).

D Remove six mounting screws (12) from electrical housing (10).

E Set MCS unit (11) down on its base (13) and remove electrical housing (10) from base (13) of MCS unit (11).



INSTALLATION

WARNING

MCS unit weighs 144 lb (65 kg). Be careful when tipping the unit on its side. Failure to comply may result in severe injury to personnel.

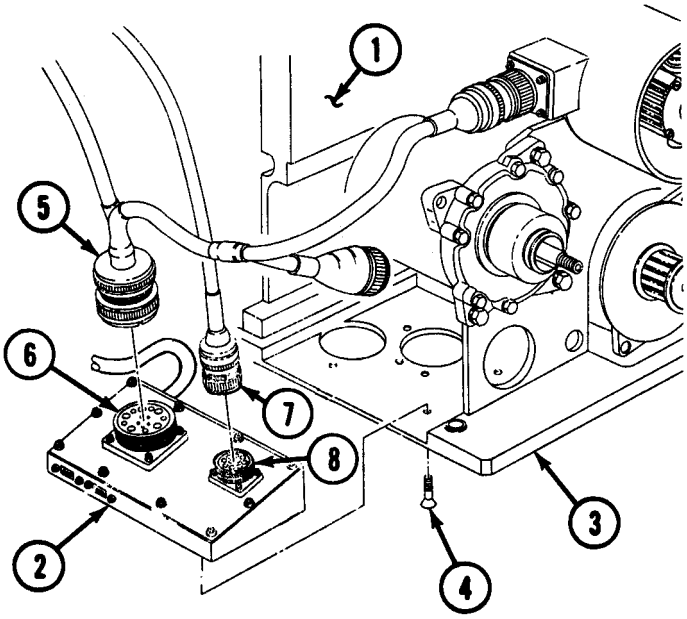
A Tip MCS unit (1) on its side and install electrical housing (2) on MCS unit base (3) with six screws (4). Tighten screws (4) to 20-29 lb-in. (2-3 N·m)

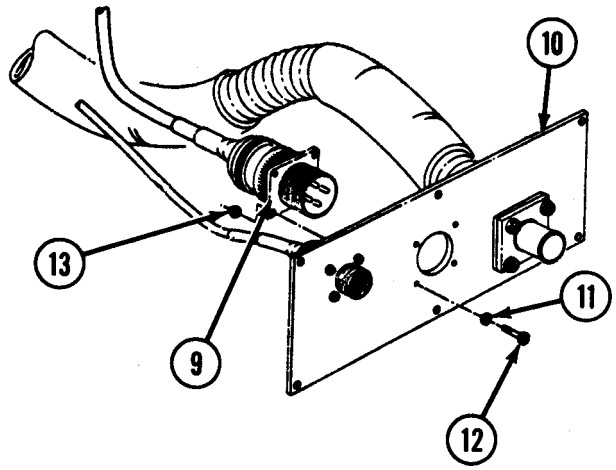
B Set MCS unit (1) down on its base (3).

C Connect main wiring harness connector P6 (5) to connector J6 (67) and secondary wiring harness connector P5 (7) to connector J5 (8) on electrical housing (2).

D Install electrical housing connector J4 (9) on interface plate (10) with four washers (11), screws (12), and locknuts (13).

FOLLOW-ON TASK:
Install MCS unit (p 4-916).





MCS EMI FILTER BOX REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (8)

Lockwasher (9)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-346	No Air Flow From MCS Unit

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

A Remove four screws (1), lockwashers (2), washers (3), and guard (4) from cover (5). Discard lockwashers (2).

Note

- Tag leads prior to removal for installation.
- Hardware is provisioned with EMI filter box.

B Remove two locknuts (6), washers (7), and lead 372 (8) from two filter terminals (9).

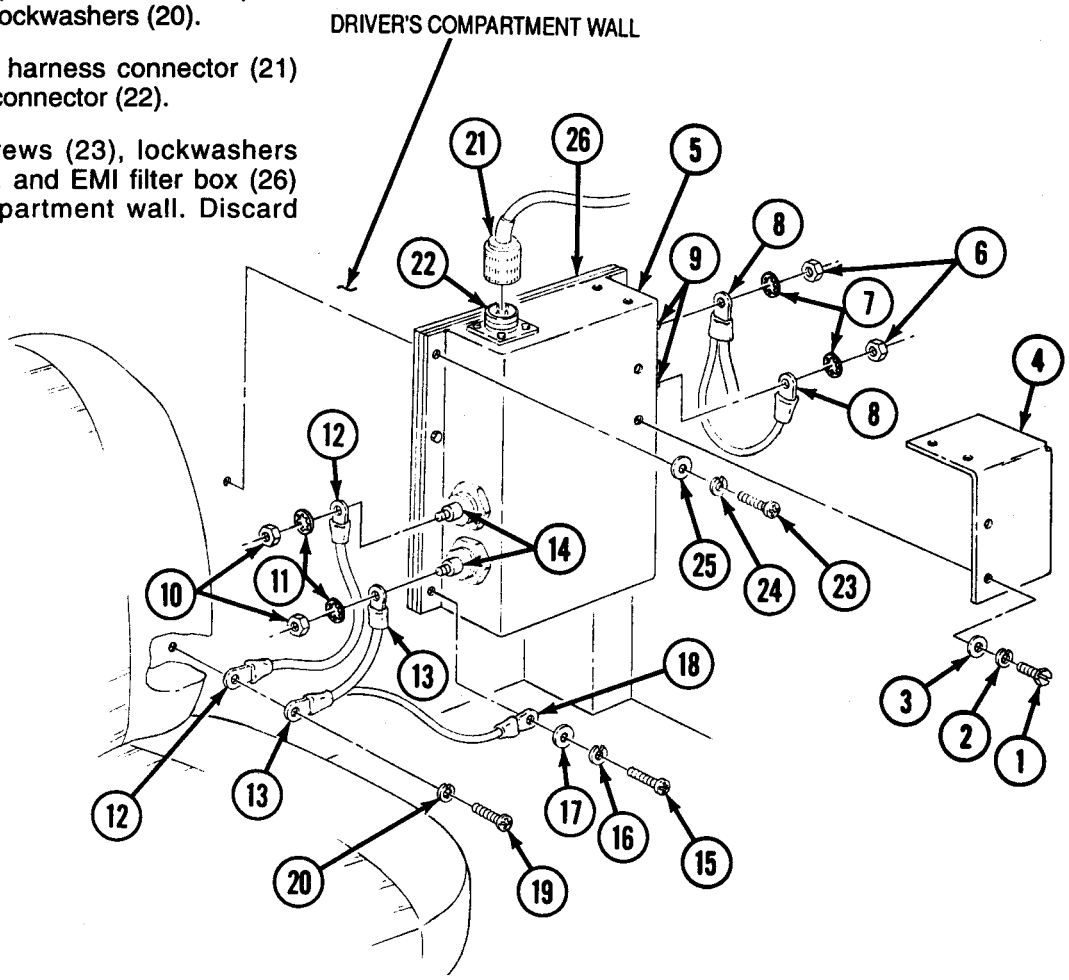
C Remove two locknuts (10), washers (11), and leads 378 (12) and 379 (13) from two filter terminals (14).

D Remove screw (15), lockwasher (16), washer (17), and ground lead 375 (18) from cover (5). Discard lockwasher (16).

E Remove screw (19), lockwasher (20), and leads (12) and (13) from driver's compartment wall. Discard lockwashers (20).

F Disconnect control harness connector (21) from EMI filter box connector (22).

G Remove three screws (23), lockwashers (24), washers (25), and EMI filter box (26) from driver's compartment wall. Discard lockwashers (24).



DISASSEMBLY

A Remove two screws (1) from base plate (2) and cover (3).

B Remove four locknuts (4), washers (5), screws (6), gasket (7), and base plate (2) from cover (3). Inspect gasket (7), and replace if damaged. Discard locknuts (5).

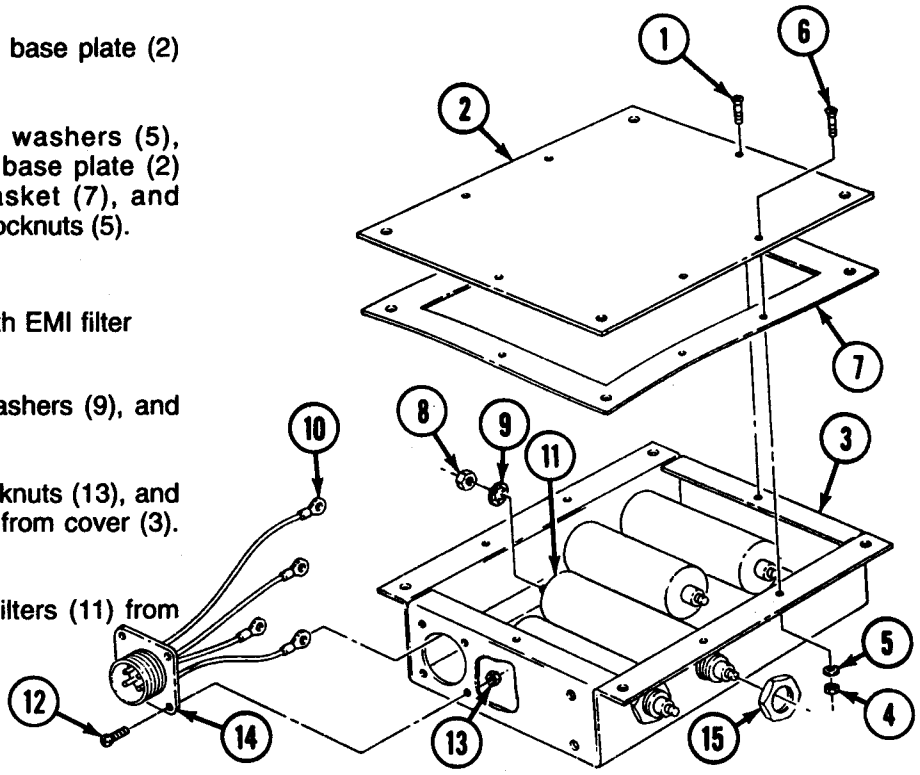
Note

Hardware is provisioned with EMI filter box.

C Remove four nuts (8), lockwashers (9), and leads (10) from filters (11).

D Remove four screws (12), locknuts (13), and EMI filter box connector (14) from cover (3). Discard locknuts (13).

E Remove four nuts (15) and filters (11) from cover (3).



ASSEMBLY

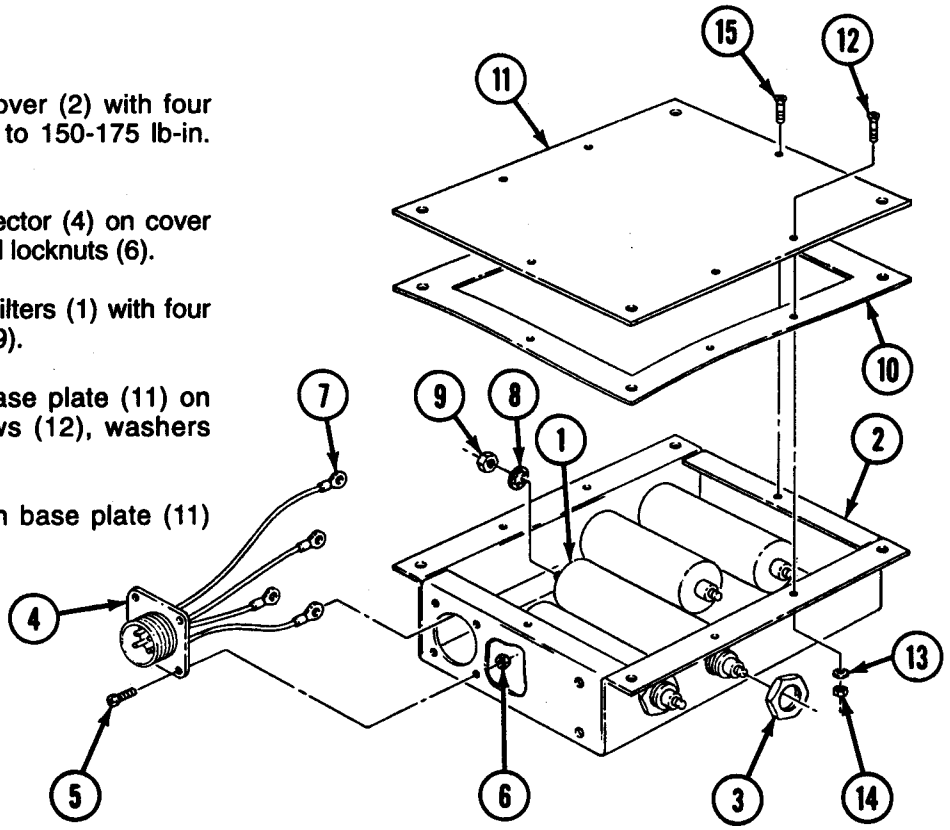
A Install four filters (1) in cover (2) with four nuts (3). Tighten nuts (3) to 150-175 lb-in. (17-20 N-m).

B Install EMI filter box connector (4) on cover (2) with four screws (5) and locknuts (6).

C Connect four leads (7) to filters (1) with four lockwashers (8) and nuts (9).

D Install gasket (10) and base plate (11) on cover (2) with four screws (12), washers (13), and locknuts (14).

E Install two screws (15) on base plate (11) and cover (2).



INSTALLATION

A Install EMI filter box (1) on driver's compartment wall with three washers (2), lockwashers (3), and screws (4).

B Connect control harness connector (5) to EMI filter box connector (6).

C Install leads 378 (7) and 379 (8) on driver's compartment wall with lockwasher (9) and screw (10).

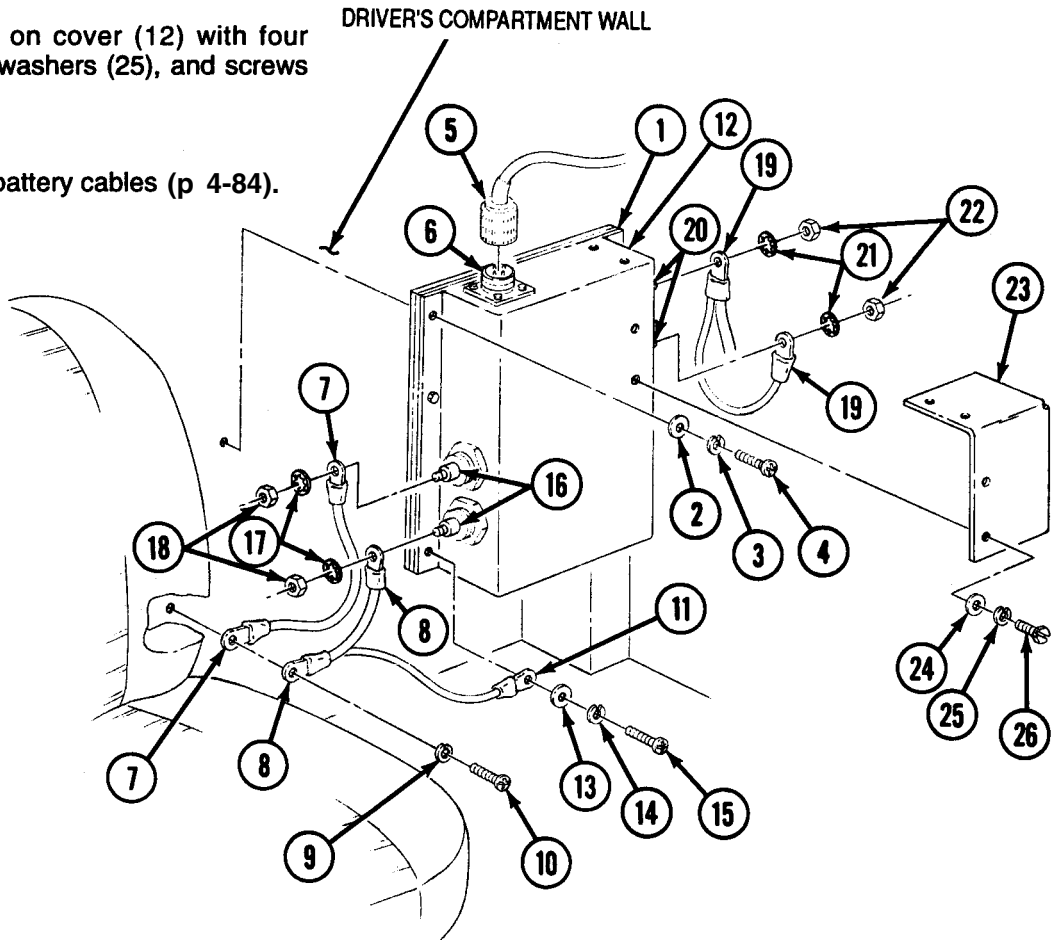
D Install ground lead 375 (11) on cover (12) with washer (13), lockwasher (14), and screw (15).

E Install two leads (7) and (8) on filter terminals (16) with two washers (17) and nuts (18).

F Install lead 372 (19) on two filter terminals (20) with two washers (21) and locknuts (22).

G Install guard (23) on cover (12) with four washers (24), lockwashers (25), and screws (26).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).



MCS EMI FILTER BOX WIRING HARNESS AND CIRCUIT BREAKER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (7)

Self-Locking Screw (2)

Tiedown Strap (AR)

Parts Reference:

TM 5-2350-262-24P Group A6

Reference:

TM 5-2350-262-10

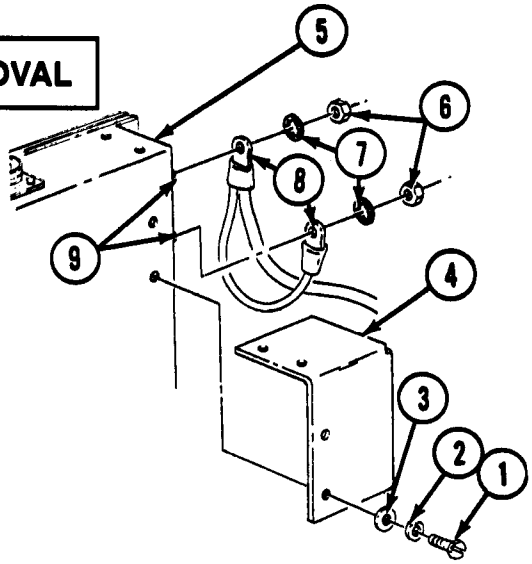
Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-84	Negative Battery Cables Disconnected
Page 4-213	Portable Dry Powder Fire Extinguisher Removed

REMOVAL

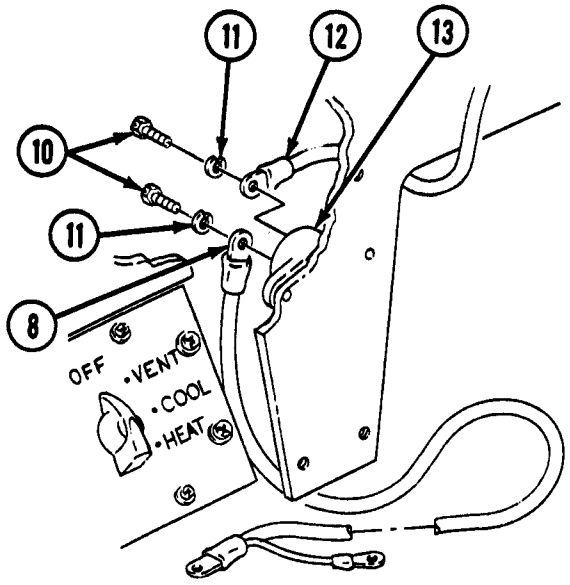


A Remove four screws (1), lockwashers (2), washers (3), and guard (4) from EMI filter box (5). Discard lockwashers (2).

Note

Hardware is provisioned with EMI filter box.

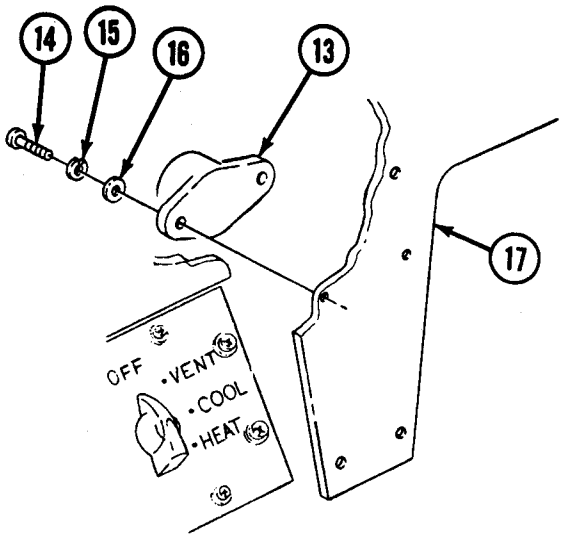
B Remove two nuts (6), washers (7), and lead 372 (8) from two terminals (9) on EMI filter box (5).



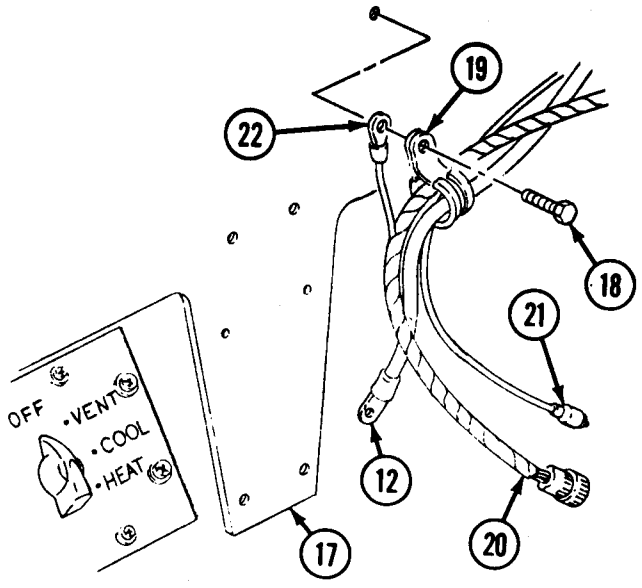
Note

Hardware is provisioned with circuit breaker.

C Remove two screws (10), lockwashers (11), and leads 372 (8) and 371 (12) from circuit breaker (13). Remove lead 372 (8) from vehicle.



D Remove two screws (14), lockwashers (15), washers (16), and circuit breaker (13) from mounting bracket (17). Discard lockwashers (15).



E Remove two self-locking screws (18) and clamps (19) securing leads 371 (12), 139A (20), 10 (21), and 139B (22) to mounting bracket (17). Discard self-locking screws (18).

F From inside bowl, pull lead 371 (1) through hole in front of driver's compartment.

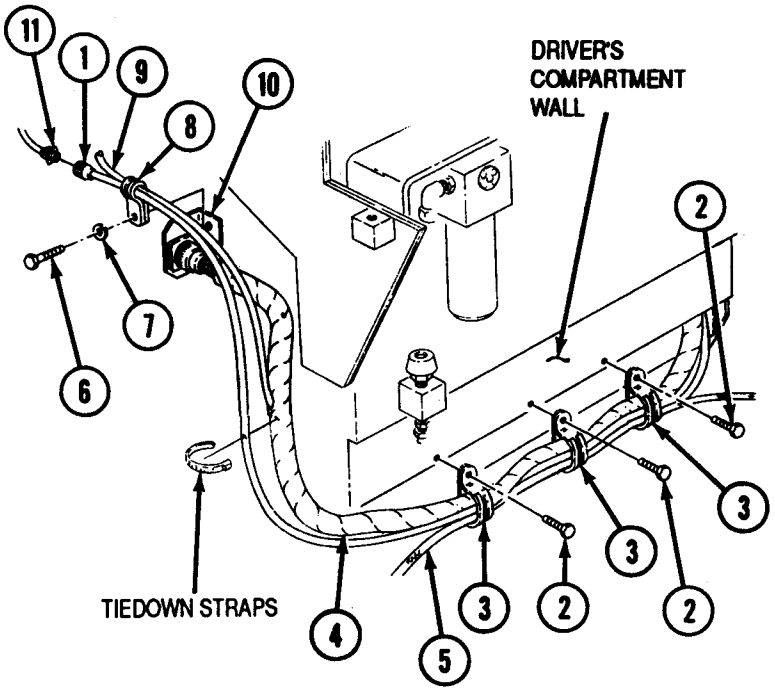
Note

Remove and discard tiedown straps as necessary.

G Remove three screws (2) and clamps (3) securing lead 371 (1), control wiring harness (4), and air hose (5) to outside of driver's compartment wall.

H Remove screw (6), lockwasher (7), and clamp (8) securing lead 371 (1) and control wiring harness lead (9) to mounting bracket (10). Discard lockwasher (7).

I Disconnect lead 371 (1) from connector (11). Remove lead 371 (1) from vehicle.



INSTALLATION

Note

Secure leads with tiedown straps as necessary.

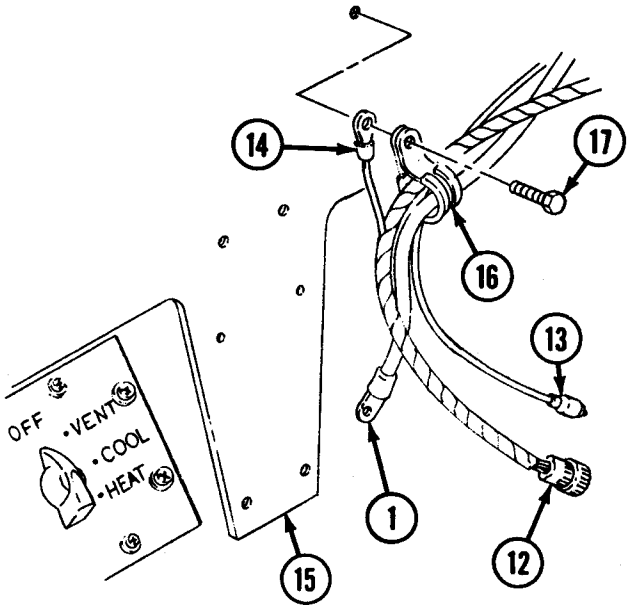
A Connect lead 371 (1) to connector (11).

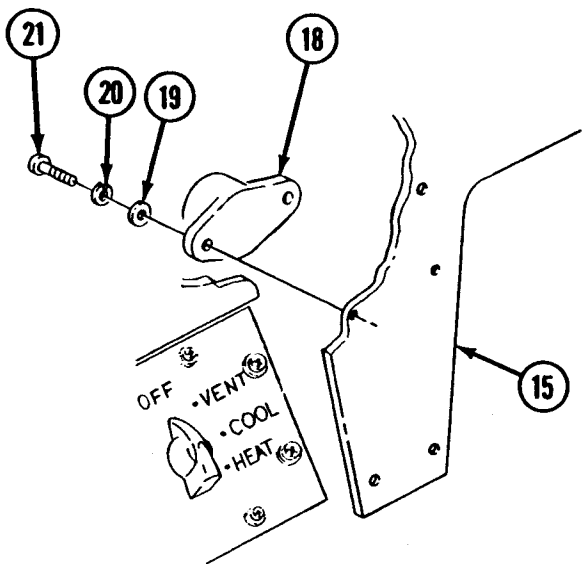
B Secure lead 371 (1) and control wiring harness lead (9) to mounting bracket (10) with clamp (8), lockwasher (7), and screw (6).

C Secure lead 371 (1), control wiring harness (4), and air hose (5) to outside of driver's compartment wall with three clamps (3) and screws (2).

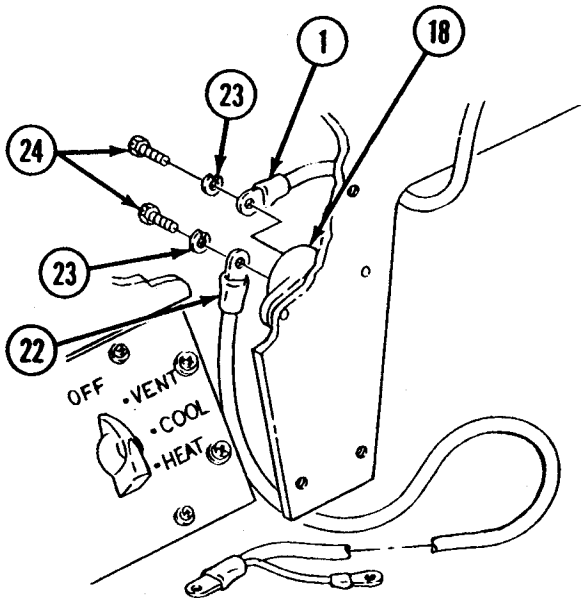
D Route lead 371 (1) through hole in front of driver's compartment.

E Secure leads 371 (1), 139A (12), 10 (13), and 139B (14) to mounting bracket (15) with two clamps (16) and self-locking screws (17).

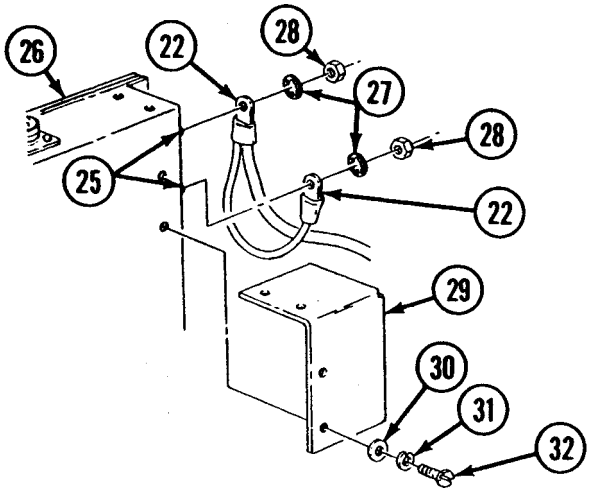




F Install circuit breaker (18) on mounting bracket (15) with two washers (19), lockwashers (20), and screws (21).



G Install leads 371 (1) and 372 (22) on circuit breaker (18) with two lockwashers (23) and screws (24).



H Secure lead 372 (22) to two terminals (25) on EMI filter box (26) with two washers (27) and nuts (28).

I Install guard (29) on EMI filter box (26) with four washers (30), lockwashers (31), and screws (32).

FOLLOW-ON TASKS:

Install portable dry powder fire extinguisher (p 4-213)
Connect negative battery cables (p 4-84).
Retract ejector (TM 5-2350-262-10).

MCS NBC FILTER SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Personnel Required:

Quartermaster and Chemical Equipment Repairer 63J10

Parts:

Lockwasher (6)

Parts Reference:

TM 5-2350-262-24P Group A6

Troubleshooting Reference:

Page 3-346	No Air Flow From MCS Unit
Page 3-357	Fault Indicator Light Stays Lit (MCS)

Equipment Condition:

Reference	Condition Description
Page 4-913	MCS Armor Enclosure Removed

REMOVAL

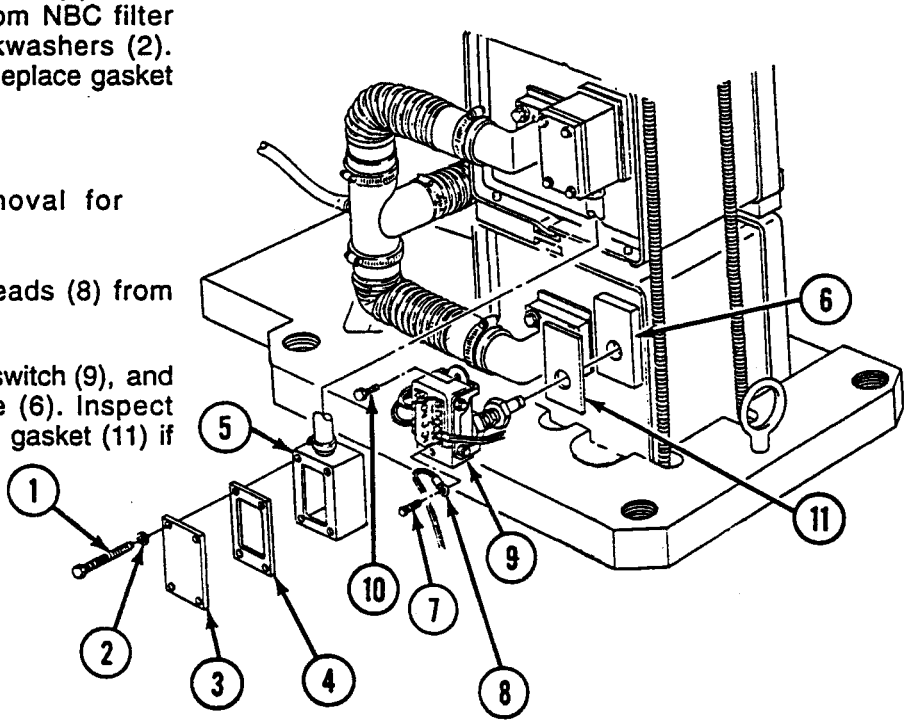
A Remove four screws (1), lockwashers (2), cover (3), gasket (4), and box (5) from NBC filter housing base (6). Discard lockwashers (2). Inspect gasket (6) for damage. Replace gasket (6) if necessary.

Note

Tag all leads prior to removal for installation.

B Remove four screws (7) and leads (8) from NBC filter switch (9).

C Remove two screws (10), filter switch (9), and gasket (11) from housing base (6). Inspect gasket (11) for damage. Replace gasket (11) if necessary.



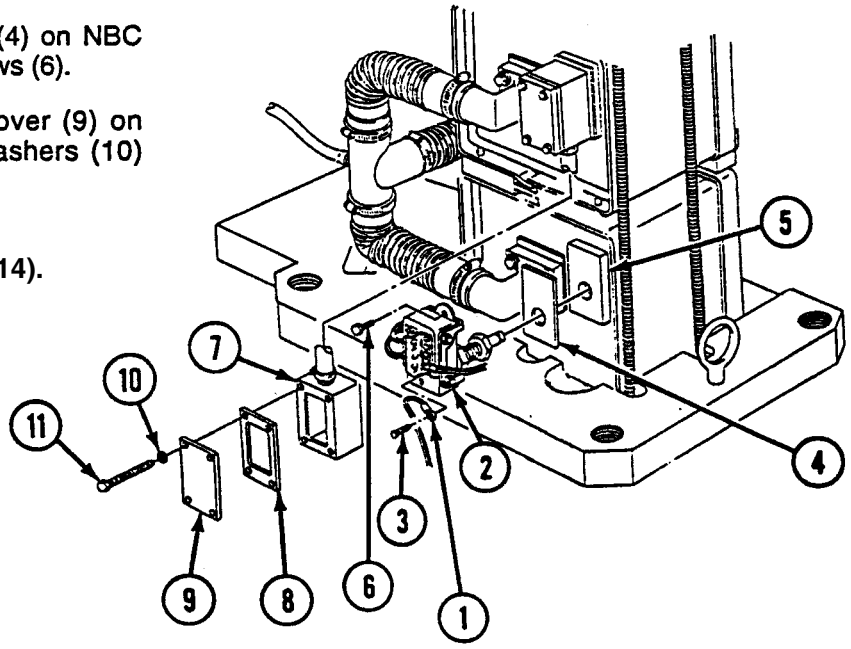
INSTALLATION

A Connect four leads (1) to NBC filter switch (2) with four screws (3).

B Install filter switch (2) and gasket (4) on NBC filter housing base (5) with two screws (6).

C Install box (7), gasket (8), and cover (9) on housing base (5) with four lockwashers (10) and screws (11).

FOLLOW-ON TASK:
Install MCS armor enclosure (p 4-914).



MCS AIR HOSES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Personnel Required:

Quartermaster and Chemical Equipment Repairer 63J10

Equipment Condition:

Reference	Condition Description
Page 4-918.1	MCS Protective Shield Removed

REMOVAL

Note

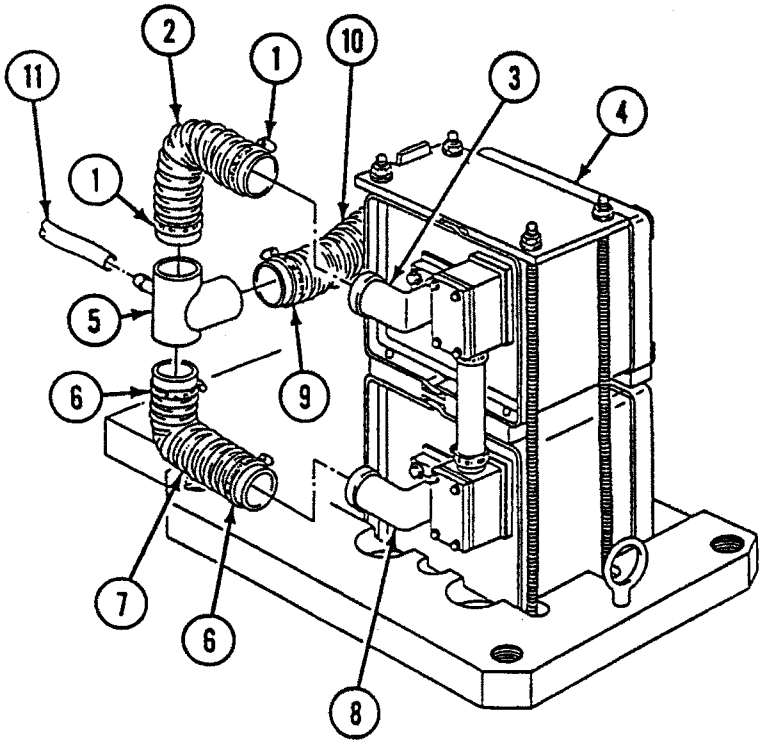
Hoses on the MCS unit are removed the same way. This procedure shows removal of the air inlet hoses.

A Loosen two clamps (1) and disconnect upper air inlet hose (2) from elbow (3) on MCS filter housing (4) and tee (5).

B Loosen two clamps (6) and disconnect lower air inlet hose (7) from elbow (8) on MCS filter housing (4) and tee (5).

C Loosen clamp (9) and disconnect evaporator inlet hose (10) from tee (5).

D Disconnect evaporation tube (11) from tee (5).



INSTALLATION

A Connect evaporation tube (1) to tee (2).

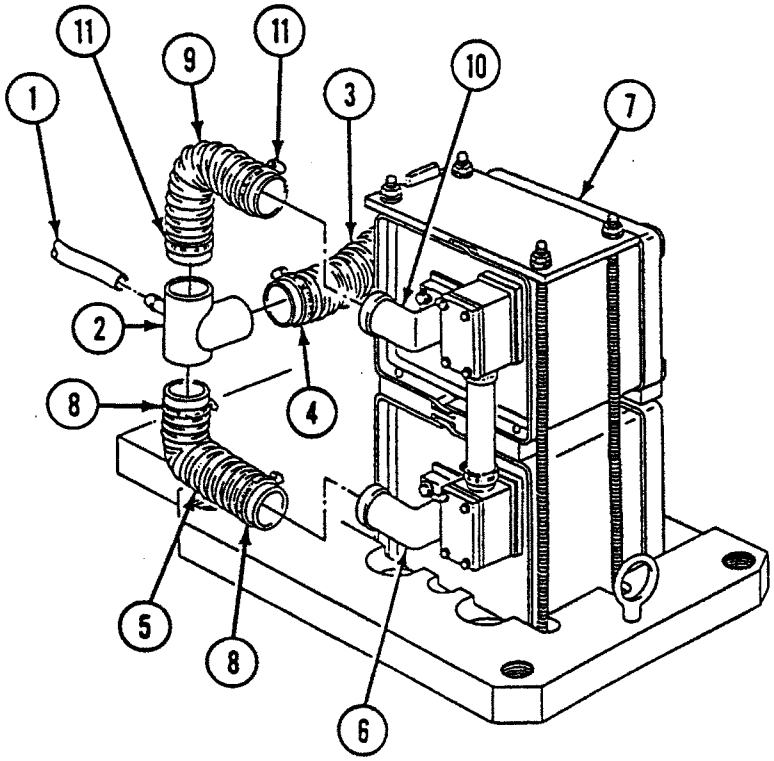
B Connect evaporator inlet hose (3) to tee (2) and tighten clamp (4).

C Connect lower air inlet hose (5) to elbow (6) on MCS filter housing (7) and tee (2) and tighten two clamps (8).

D Connect upper air inlet hose (9) to elbow (10) on MCS filter housing (7) and tee (2) and tighten two clamps (11).

FOLLOW-ON TASK:

Install MCS protective shield (p 4-918.1).



MCS CONTROL BOX REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (12)

Lockwasher (7)

Tiedown Strap (AR)

Parts Reference:

TM 5-2350-262-24P

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-346	No Air Flow from MCS Unit
Page 3-352	Minimal Temperature Difference in Air Flow from "Heat" and "Vent" Modes (MCS)

Equipment Condition:

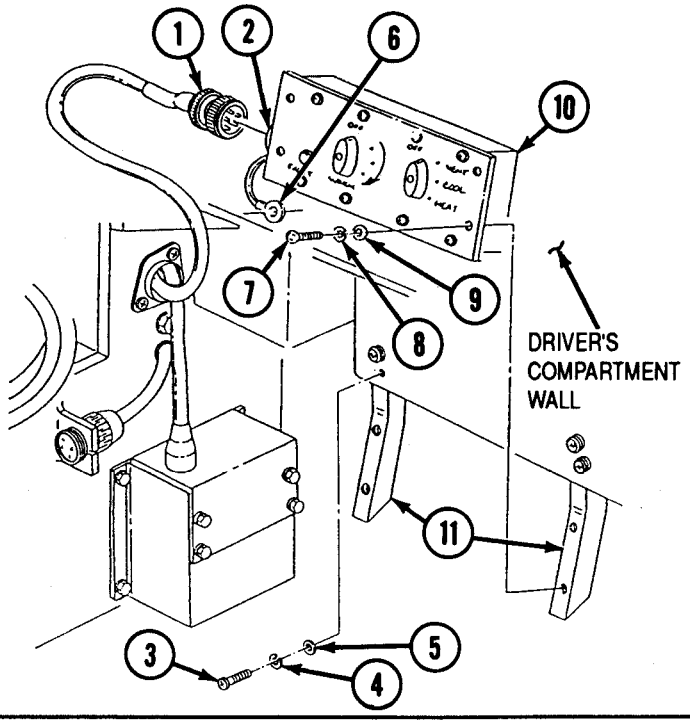
Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

A Remove connector (1) from control box connector (2).

B Remove screw (3), lockwasher (4), washer (5), and ground lead (6) from driver's compartment wall. Discard lockwasher (4).

C Remove four screws (7), lockwashers (8), and washers (9) securing control box assembly (10) to driver's compartment brackets (11). Discard lockwashers (8).



DISASSEMBLY

Note

Remove and discard tiedown straps as necessary.

A Remove two screws (1), lockwashers (2), and handles (3) and (4) from temperature control switch (5) and mode select switch (6). Discard lockwashers (2).

Note

Lockwashers are provisioned with switches.

B Remove two nuts (7) and lockwashers (8) from temperature control switch (5) and mode select switch (6).

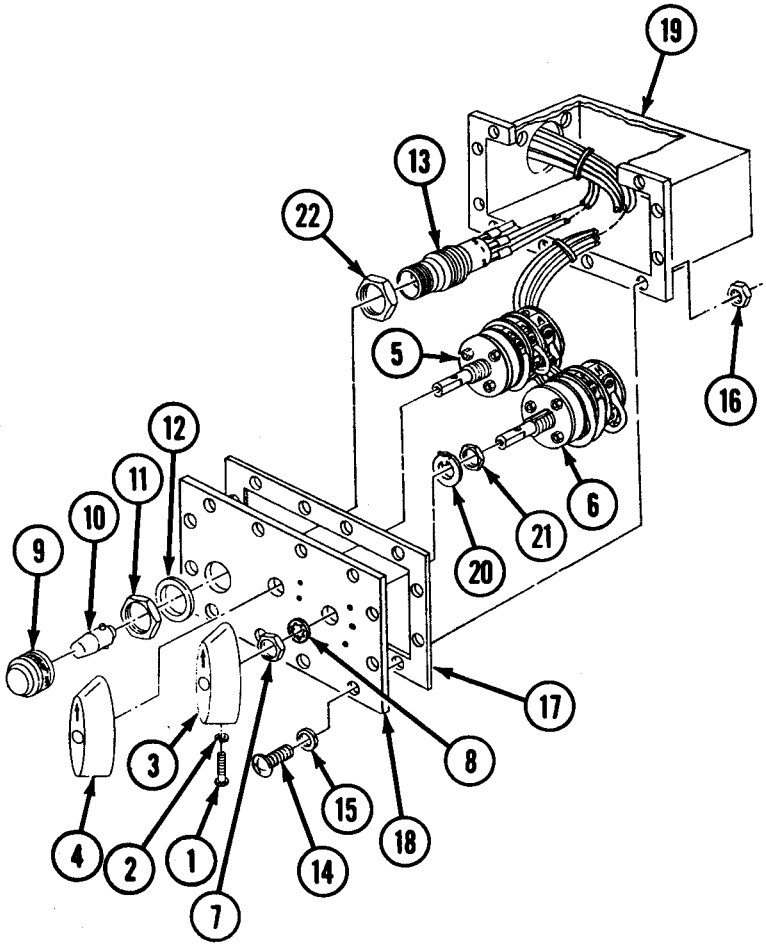
C Remove fault indicator lens (9) and light (10).

D Remove nut (11) and washer (12) from fault indicator light base (13).

E Remove eight screws (14), washers (15), locknuts (16), gasket (17), and control box faceplate (18) from control box housing (19). Discard locknuts (16).

F Remove two key washers (20) and nuts (21) from temperature control switch (5) and mode select switch (6).

G Remove nut (22) from fault indicator light base (13).



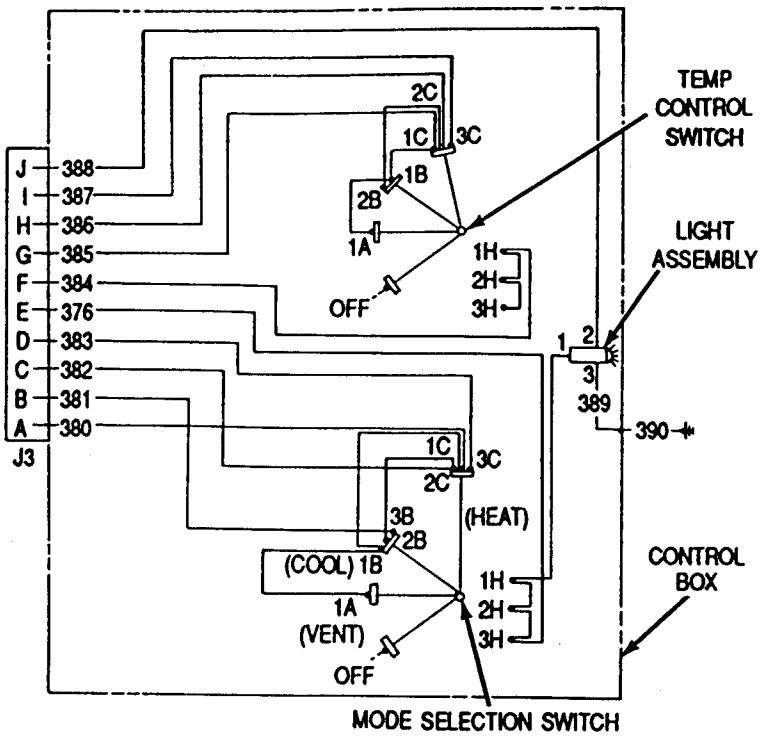
Note

Tag all leads prior to removal for installation.

H Refer to switch lead chart for lead removal.

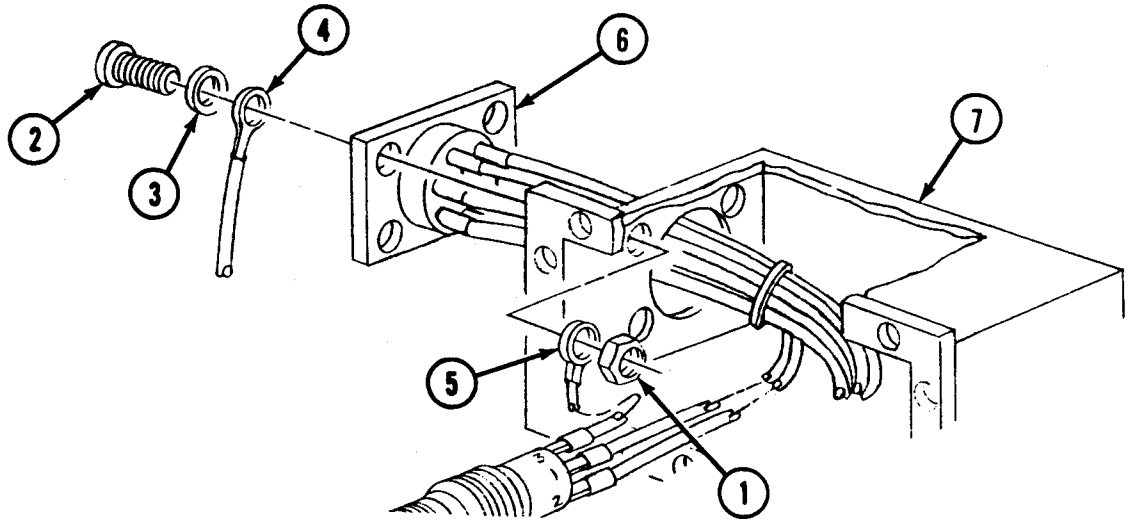
SWITCH POSITION			
	Section 1	**Section 2**	**Section 3**
LEAD A	380/J3A 385/J3G		
LEAD B	380/J3A 385/J3G	382/J3C 386/J3H	381/J3B
LEAD C	380/J3A 385/J3G	382/J3C 386/J3H	383/J3D 387/J3I
LEAD D			
LEAD E			
LEAD F			
LEAD G			
LEAD H	376/J3E 384/J3F	376/J3E 384/J3F	376/J3E 384/J3F

SWITCH LEAD CHART



WIRING DIAGRAM

I Remove four locknuts (1), screws (2), washers (3), lead 390 (4), and 389 (5) from receptacle connector (6) and control box housing (7). Discard locknuts (1).

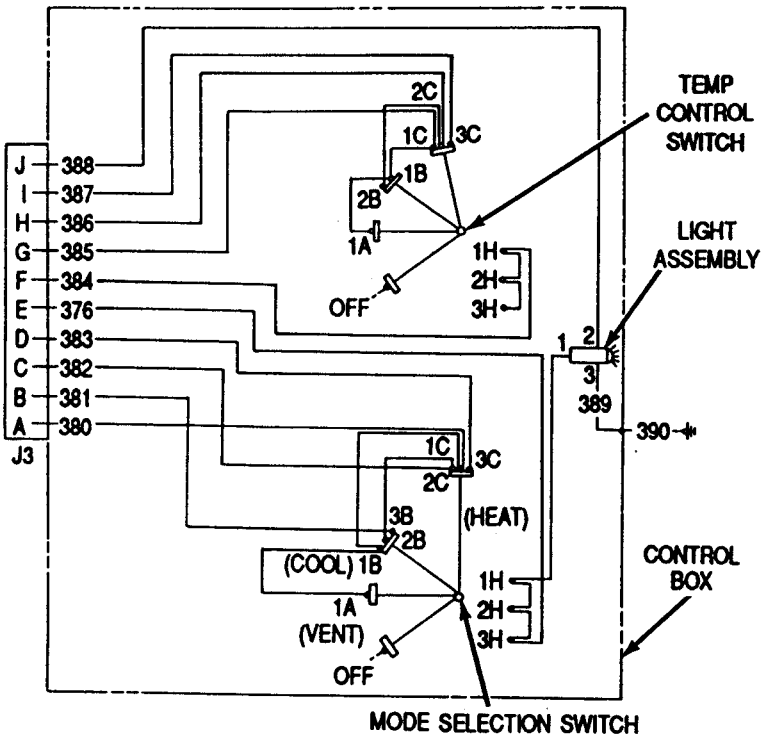


ASSEMBLY

A Refer to switch lead chart for lead connections.

SWITCH POSITION			
	Section 1	Section 2	Section 3
LEAD A	380/J3A 385/J3G		
LEAD B	380/J3A 385/J3G	382/J3C 386/J3H	381/J3B
LEAD C	380/J3A 385/J3G	382/J3C 386/J3H	383/J3D 387/J3I
LEAD D			
LEAD E			
LEAD F			
LEAD G			
LEAD H	376/J3E 384/J3F	376/J3E 384/J3F	376/J3E 384/J3F

SWITCH LEAD CHART

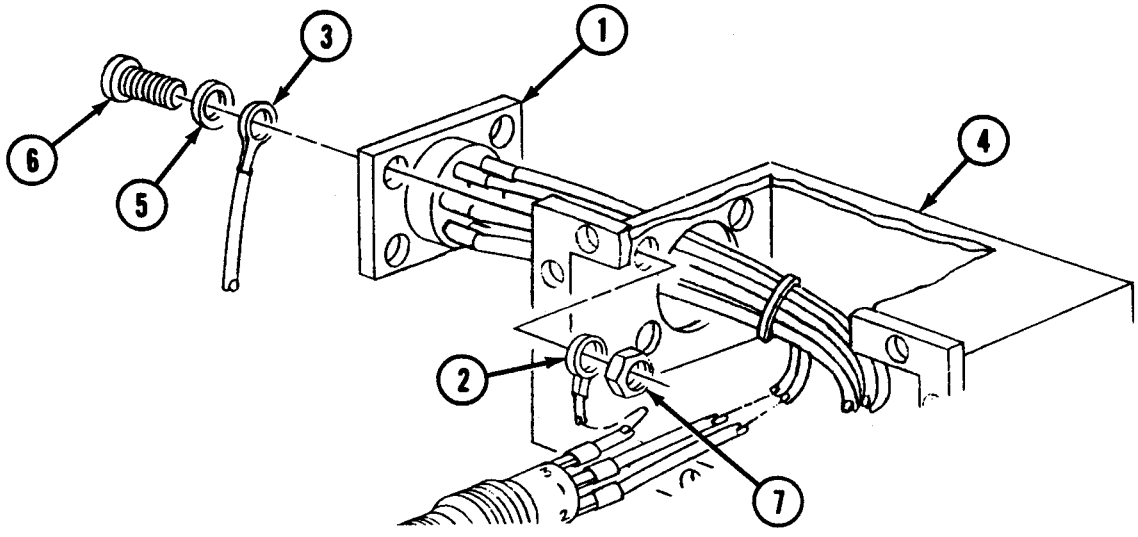


WIRING DIAGRAM

Note

Install tiedown straps as necessay.

B Install receptacle connector (1) and two leads 389 (2) and 390 (3) on control box housing (4) with four washers (5), screws (6), and locknuts (7).



C Install nut (1) on fault indicator light base (2), and fit base (2) through faceplate (3).

D Secure fault indicator light base (2) to faceplate (3) with washer (4) and nut (5).

E Install fault light (6) and lens (7) on base (2).

F Install two nuts (8) and key washers (9) on temperature control switch (10) and mode select switch (11).

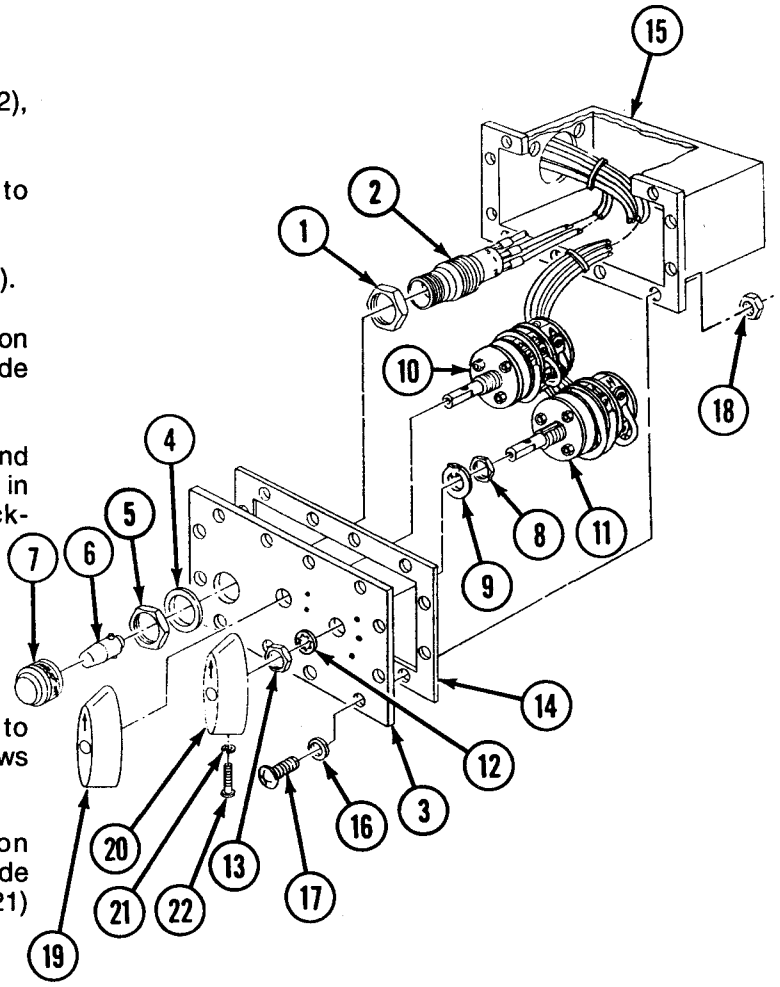
G Install temperature control switch (10) and mode select switch (11) through openings in faceplate (3) and secure with two lockwashers (12) and nuts (13).

Note

Inspect gasket for damage. If damaged, replace.

H Secure faceplate (3) and gasket (14) to housing (15) with eight washers (16), screws (17), and locknuts (18).

I Install two handles (19) and (20) on temperature control switch (10) and mode select switch (11) with two lockwashers (21) and screws (22).



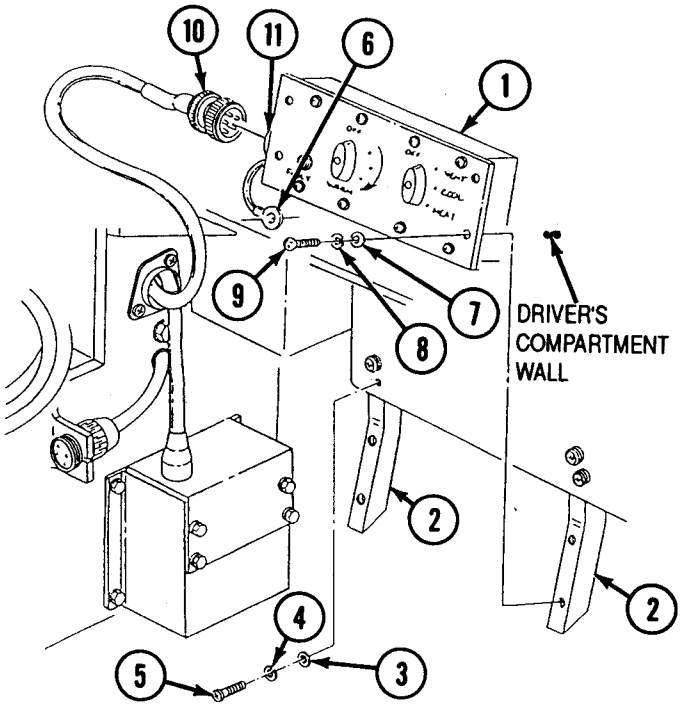
INSTALLATION

A Install control box assembly (1) on driver's compartment brackets (2) with four washers (3), lockwashers (4), and screws (5).

B Install ground lead (6) on driver's compartment wall with washer (7), lockwasher (8), and screw (9).

C Install connector (10) on control box connector (11).

FOLLOW-ON TASK:
Connect negative battery cables **(p 4-84).**



MCS COMPRESSOR MOTOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Utilities Equipment Repairer 52C10

Troubleshooting Reference:

TM 5-2350-262-20-1

Equipment Condition:

Reference	Condition Description
Page 4-906	Gear Belt Removed

General Safety Instructions:

WARNING

MCS unit weighs over 144 lb (65 kg). Use caution when tipping unit on its side.

REMOVAL

A Remove screw (1), lockwasher (2), and washer (3) securing mounting bracket (4) to MCS unit base (5). Discard lockwasher (2).

B Disconnect electrical connector P8 (6) from compressor motor connector (7).

C Remove three screws (8) and washers (9) securing compressor motor mounting brackets (10) to MCS unit (11).

D Loosen setscrew (12), and remove compressor motor pulley (13) and key (14) from shaft (15).

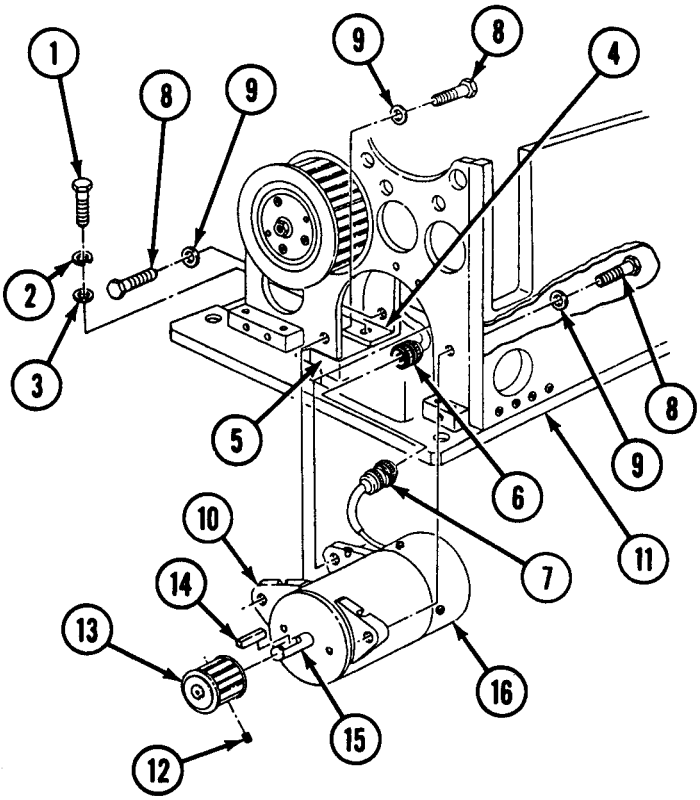
WARNING

MCS unit weighs over 144 lb (65 kg). Use caution when tipping unit on its side. Failure to comply may result in severe injury to personnel.

Note

Position MCS unit on its side for compressor motor removal.

E Remove compressor motor (16) by maneuvering it through opening in MCS unit base (5).



F Set MCS unit (11) on base (5).

INSTALLATION

WARNING

MCS unit weighs over 144 lb (65 kg). Use caution when tipping unit on its side. Failure to comply may result in severe injury to personnel.

Note

Position MCS unit on its side for compressor motor installation.

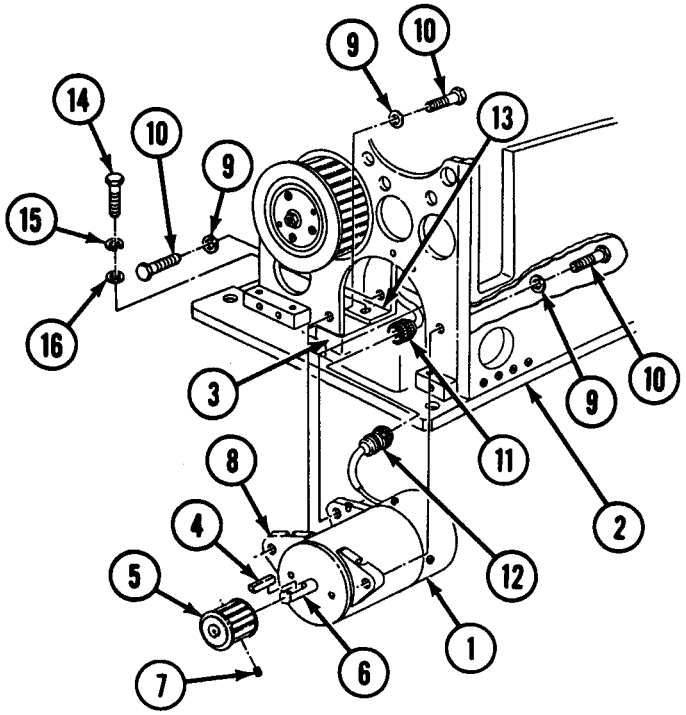
A Install compressor motor (1) on MCS unit (2) through opening in MCS unit base (3).

B Set MCS unit (2) on base (3).

C Install key (4) and compressor motor pulley (5) on compressor motor shaft (6) and tighten setscrew (7).

D Secure three compressor motor mounting brackets (8) to MCS unit (2) with three washers (9) and screws (10). Tighten screws (10) to 460-480 lb-in. (52-54 N·m).

E Connect electrical connector P8 (11) to compressor motor connector (12).



F Secure mounting bracket (13) to base (3) with screw (14), lockwasher (15), and washer (16).

FOLLOW-ON TASK:
Install gear belt (p 4-906).

MCS MAIN WIRING HARNESS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

Materials:

Adhesive	Item 1 Appendix D

Parts:

Locknut

Tiedown Strap (AR)

Parts Reference:

TM 5-2350-262-24P	Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-20-1

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected
Page 4-916	MCS Unit Removed
Page 4-901	MCS Refrigerator Line Shield Removed

REMOVAL

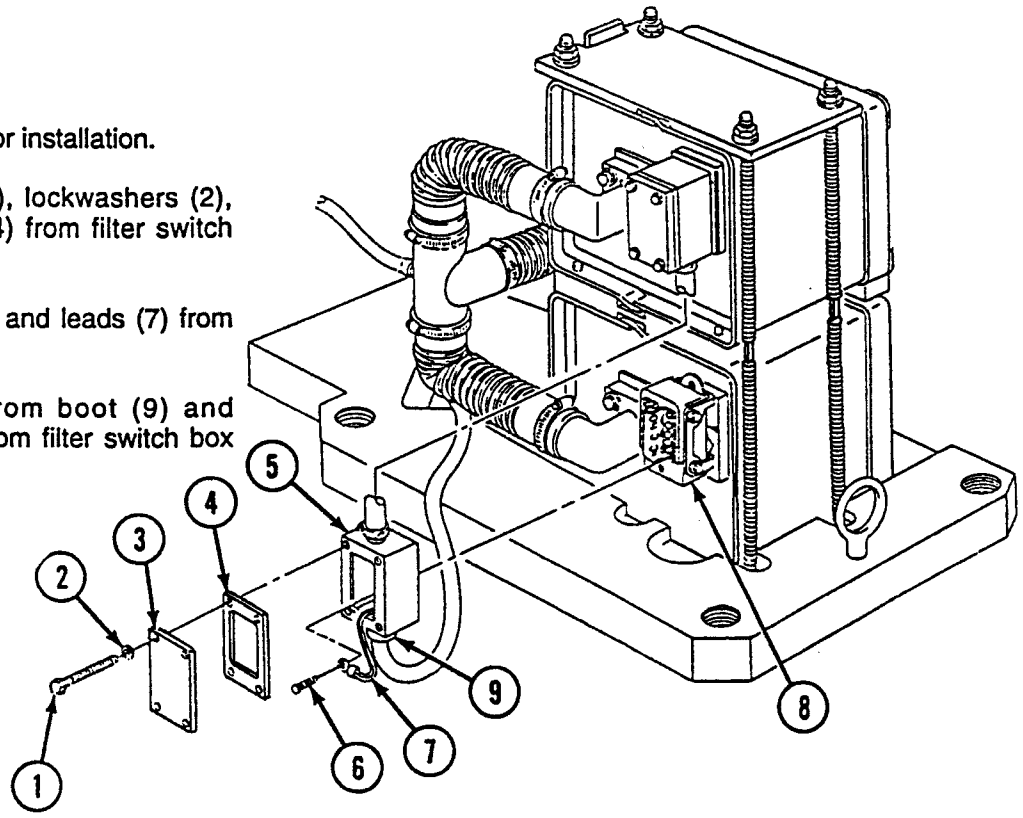
Note

Retain lockwashers for installation.

A Remove four screws (1), lockwashers (2), cover (3), and gasket (4) from filter switch box (5).

B Remove four screws (6) and leads (7) from NBC filter switch (8).

C Cut away adhesive from boot (9) and remove four leads (7) from filter switch box (5).



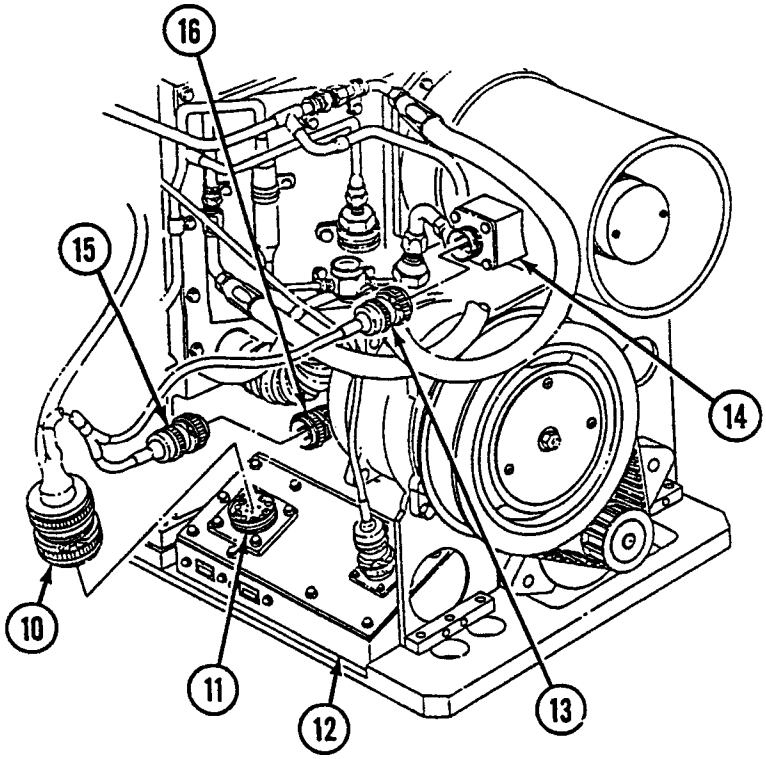
Note

Remove tiedown straps as necessary.

D Disconnect main wiring harness connector P6 (10) from connector J6 (11) on electrical housing (12).

E Disconnect electrical connector P9 (13) from condenser fan (14).

F Disconnect electrical connector P8 (15) from compressor motor lead (16).



G Disconnect electrical connector P17 (17) from high-pressure switch (18).

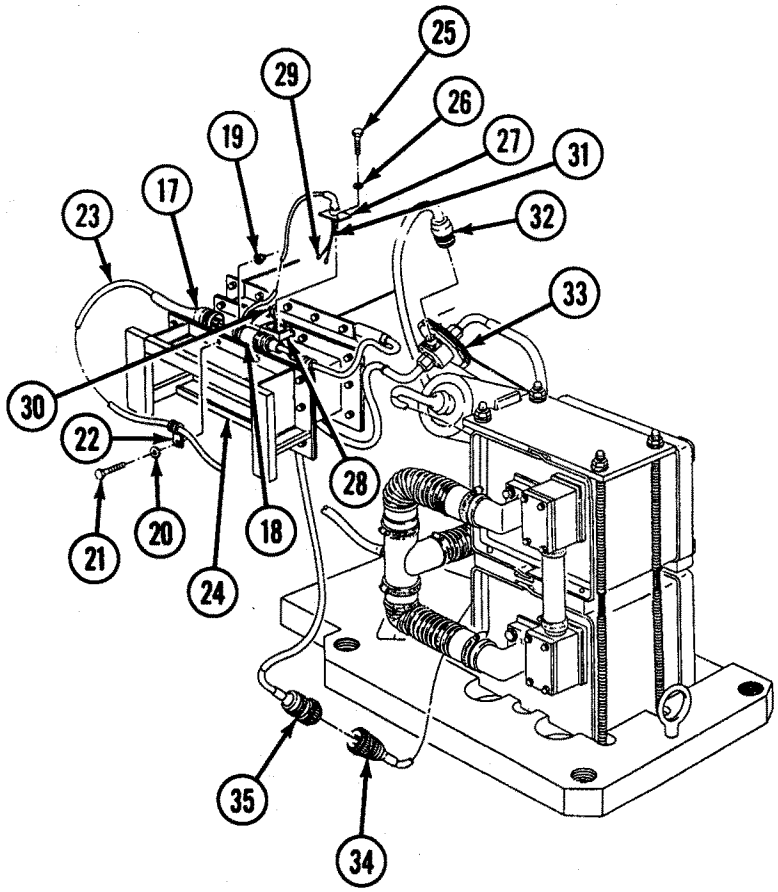
H Remove locknut (19), washer (20), screw (21), and clamp (22) securing harness lead (23) to main air inlet filter (24). Discard locknut (19).

I Remove two screws (25) and washers (26) securing cover (27) to junction box (28).

J Lift cover (27) and disconnect two electrical connectors (29) from low temperature switch connectors (30). Remove cover (27) with connector leads (31) attached.

K Disconnect electrical connector P14 (32) from delta pressure switch (33).

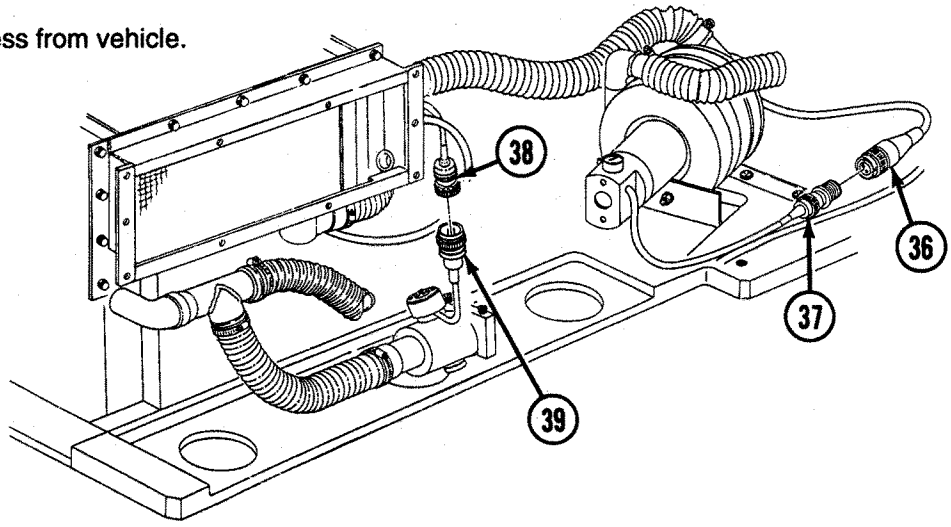
L Disconnect heater electrical connector P18 (34) from main wiring harness connector (35).



M Disconnect electrical connector P10 (36) from evaporator fan lead (37).

N Disconnect electrical connector P19 (38) from dump valve lead (39).

O Remove main wiring harness from vehicle.



INSTALLATION

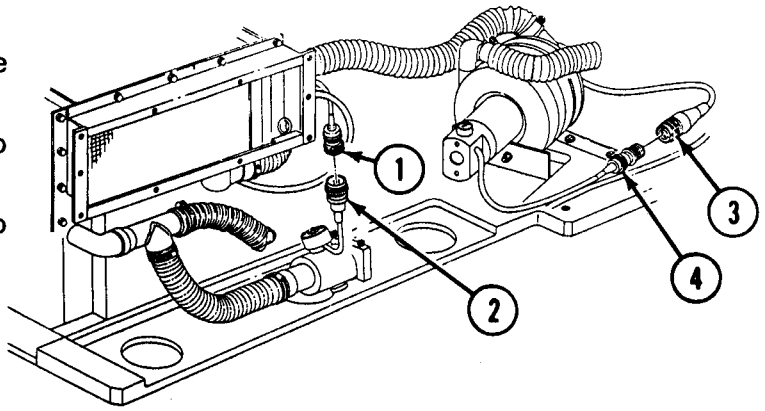
Note

Install tiedown straps as necessary.

A Position main wiring harness in approximate location on MCS unit.

B Connect electrical connector P19 (1) to dump valve lead (2).

C Connect electrical connector P10 (3) to evaporator fan lead (4).



D Connect two electrical connectors (5) to low temperature switch connectors (6).

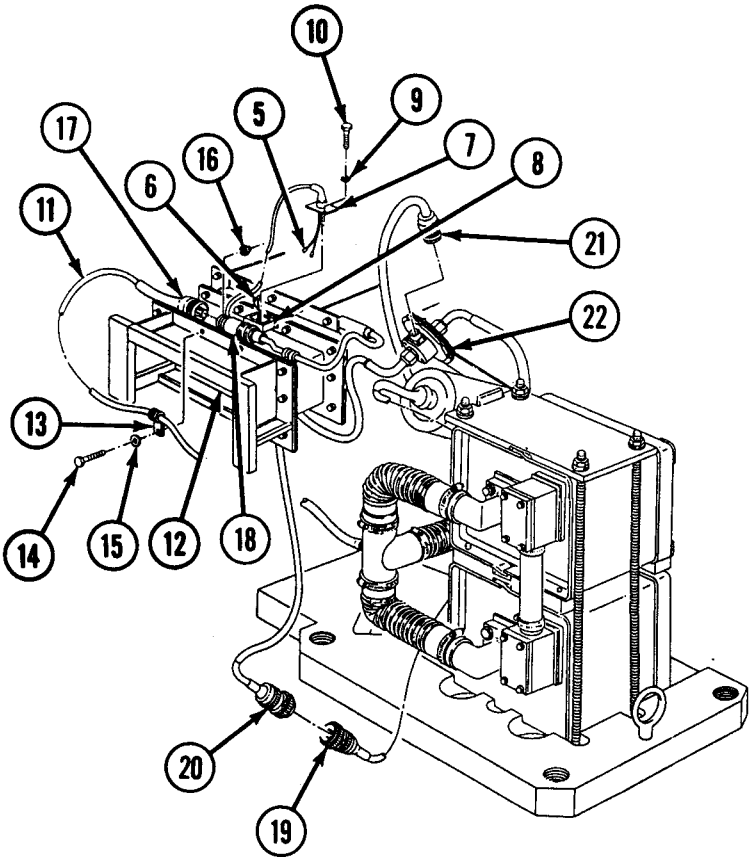
E Install cover (7) on junction box (8) with two washers (9) and screws (10).

F Secure harness lead (11) to main air inlet filter (12) with clamp (13), screw (14), washer (15), and locknut (16).

G Connect electrical connector P17 (17) to high-pressure switch (18).

H Connect heater electrical connector P18 (19) to main wiring harness connector (20).

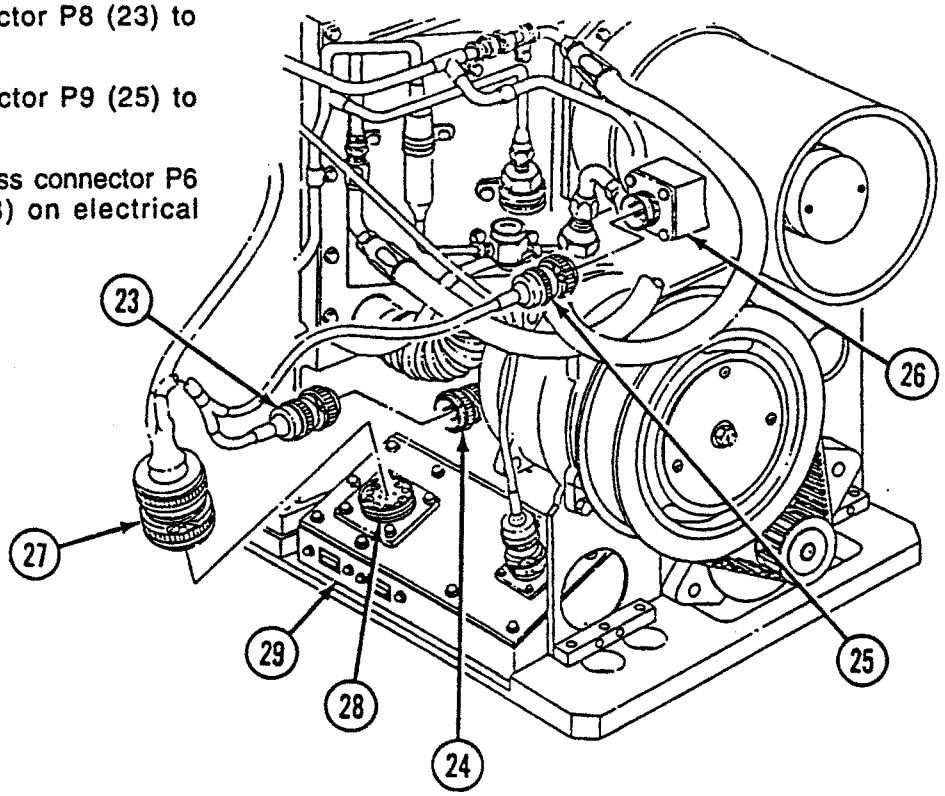
I Connect electrical connector P14 (21) to delta pressure switch (22).



J Connect electrical connector P8 (23) to compressor motor lead (24).

K Connect electrical connector P9 (25) to condenser fan (26).

L Connect main wiring harness connector P6 (27) to connector J6 (28) on electrical housing (29).



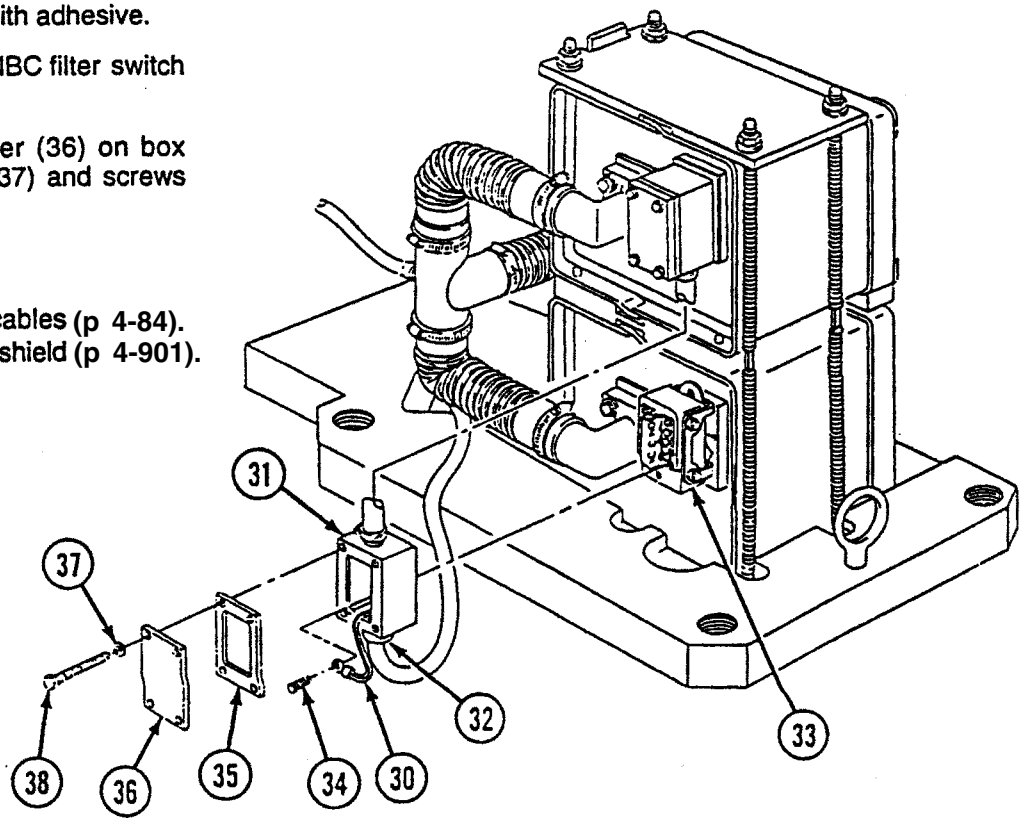
M Insert four leads (30) into NBC filter switch box (31) and seal boot (32) with adhesive.

N Connect four leads (30) to NBC filter switch (33) with four screws (34).

O Install gasket (35) and cover (36) on box (31) with four lockwashers (37) and screws (38).

FOLLOW-ON TASKS:

- Install MCS unit (p 4-916).
- Connect negative battery cables (p 4-84).
- Install MCS refrigerant line shield (p 4-901).



MCS SECONDARY WIRING HARNESS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (4)

Tiedown Strap (AR)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Utilities Equipment Repairer 52C10

Equipment Condition:

Reference	Condition Description
Page 4-916	MCS Unit Removed

General Safety Instructions:

WARNING

MCS unit weighs 144 lb (65 kg). Use caution when tipping the unit on its side.

REMOVAL

WARNING

MCS unit weighs 144 lb (65 kg). Use caution when tipping the unit on its side. Failure to comply may result in severe injury to personnel.

A Tip MCS unit (1) on its side and remove four screws (2) securing evaporator fan (3) to base (4).

Note

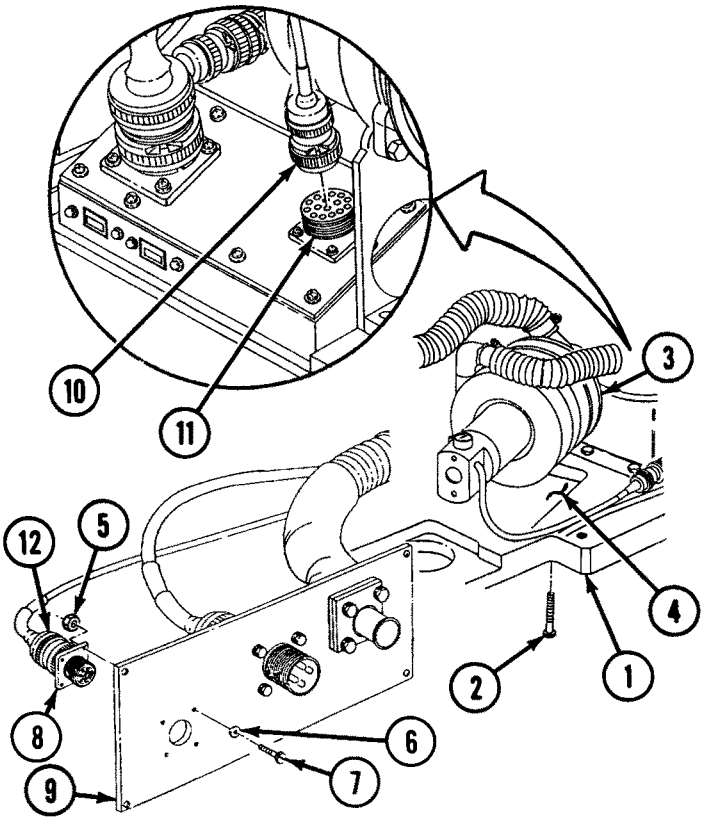
Remove tiedown straps as necessary.

B Remove four locknuts (5), washers (6), screws (7), and secondary wiring harness connector J2 (8) from interface plate (9). Discard locknuts (5).

C Disconnect secondary wiring harness connector P5 (10) from electrical housing connector J5 (11).

D Maneuver evaporator fan (3) out of way and pull connector (10) through MCS unit (1).

E Remove secondary wiring harness (12) from MCS unit (1).



INSTALLATION

A Maneuver evaporator fan (1) out of way and route secondary wiring harness connector P5 (2) through MCS unit (3).

B Connect connector (2) to electrical housing connector J5 (4).

Note

Install tiedown straps as necessary.

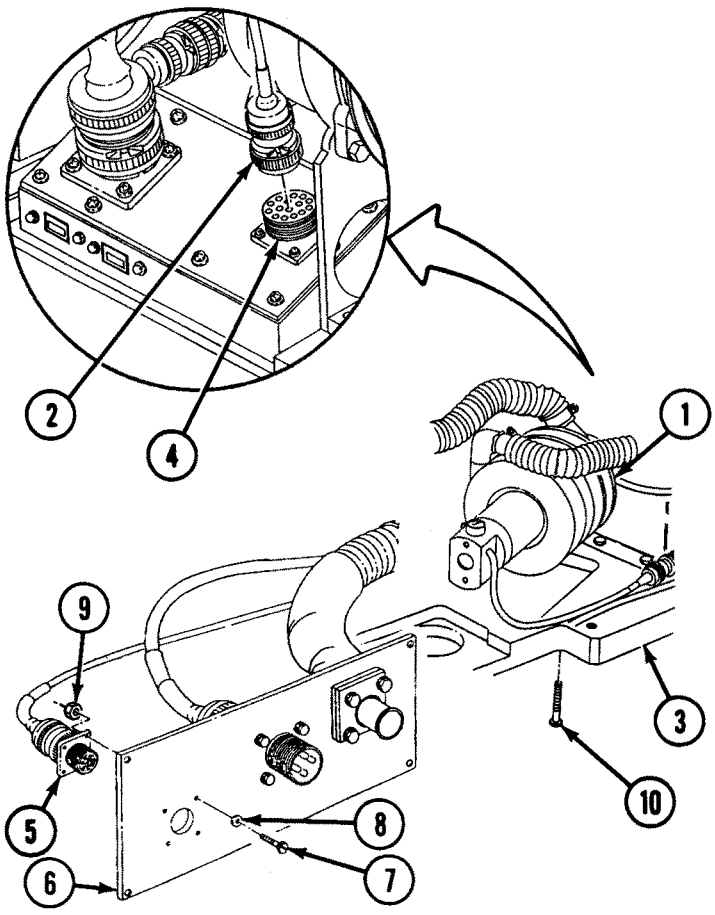
C Install secondary wiring harness connector J2 (5) on interface plate (6) with four screws (7), washers (8), and locknuts (9). Tighten screws (7) to 3.5-4.6 lb-in. (.4-.5 N·m).

WARNING

MCS unit weighs 144 lb (65 kg). Use caution when tipping the unit on its side. Failure to comply may result in severe injury to personnel.

D Tip MCS unit (3) on its side and secure evaporator fan (1) to MCS unit (3) with four screws (10). Tighten screws (10) to 50-60 lb-in. (6-7 N·m).

FOLLOW-ON TASK:
Install MCS unit **(p 4-916).**



MCS DELTA PRESSURE SWITCH REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut (2)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-900	NBC Filter Housing Removed

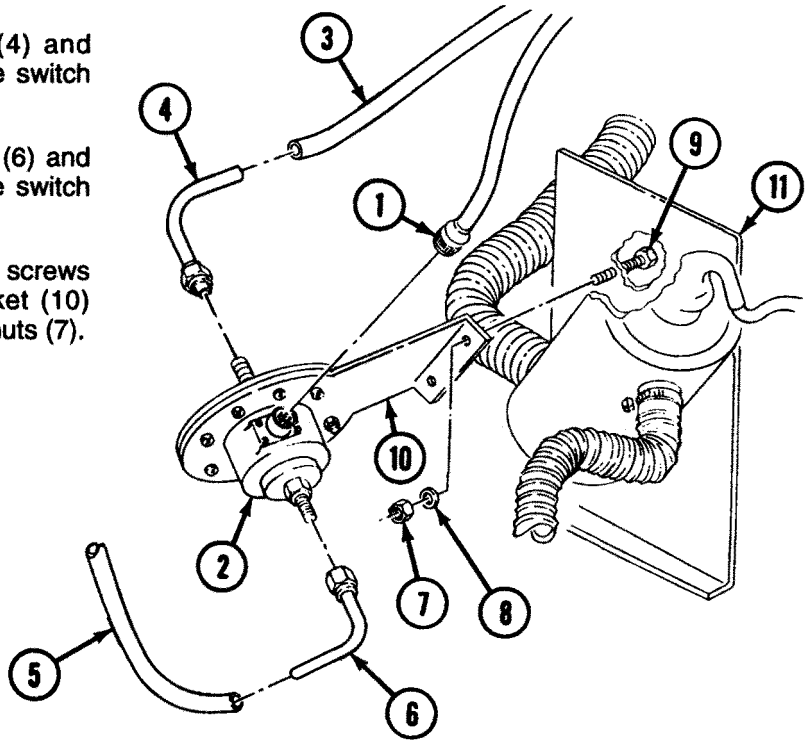
REMOVAL

A Disconnect electrical connector (1) from delta pressure switch (2).

B Remove top hose (3) from elbow (4) and remove elbow (4) from delta pressure switch (2).

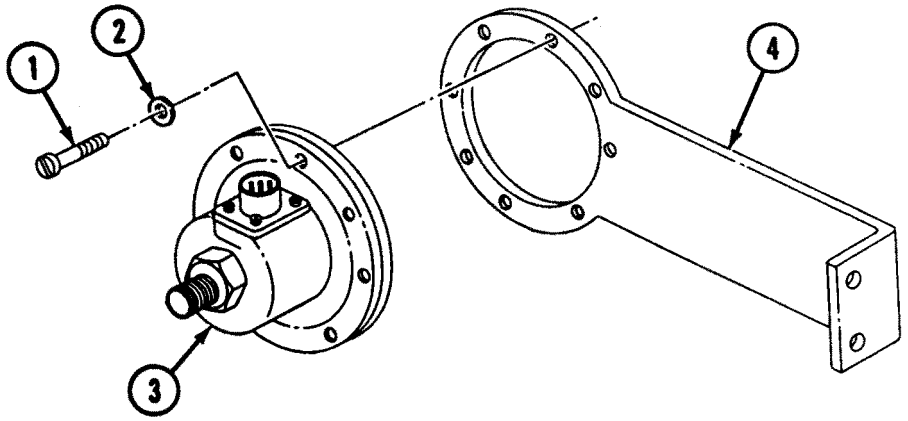
C Remove bottom hose (5) from elbow (6) and remove elbow (6) from delta pressure switch (2).

D Remove two locknuts (7), washers (8), screws (9), and delta pressure switch bracket (10) from heater bracket (11). Discard locknuts (7).



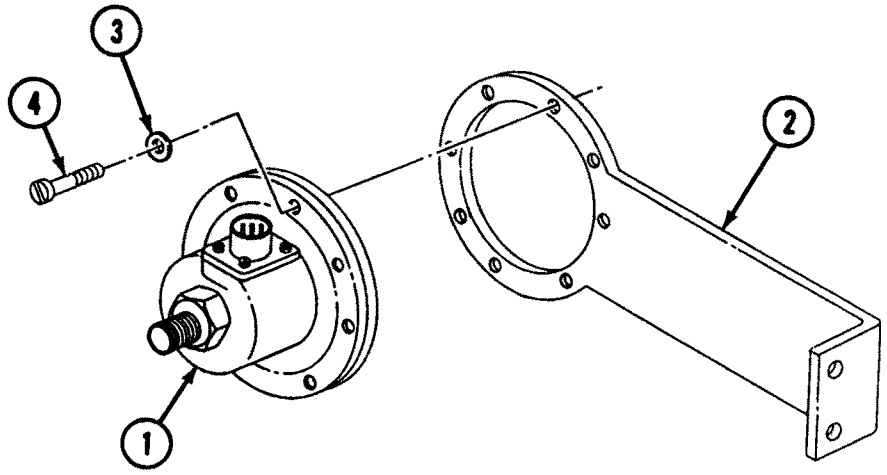
DISASSEMBLY

Remove eight screws (1), washers (2), and delta pressure switch (3) from delta pressure switch bracket (4).



ASSEMBLY

Install delta pressure switch (1) on delta pressure switch bracket (2) with eight washers (3) and screws (4).



INSTALLATION

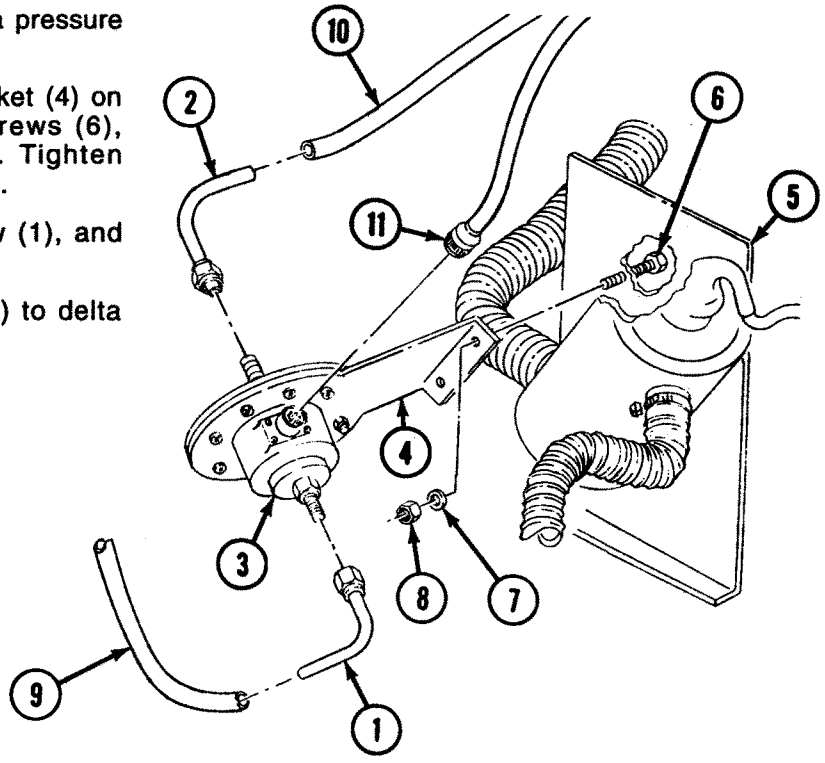
A Install elbows (1) and (2) on delta pressure switch (3).

B Install delta pressure switch bracket (4) on heater bracket (5) with two screws (6), washers (7), and locknuts (8). Tighten locknuts (8) to 20-29 lb-in. (2-3 N·m).

C Install bottom hose (9) on elbow (1), and install top hose (10) on elbow (2).

D Connect electrical connector (11) to delta pressure switch (3).

FOLLOW-ON TASK:
Install NBC filter housing (p 4-900).



MCS HEATER ASSEMBLY REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-764-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's Automotive

Materials:

Adhesive	Item 1 Appendix D
Insulation	Item 22 Appendix D

Parts:

Tiedown Strap (AR)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-918.1	MCS Protective Shield Removed.

REMOVAL

Note

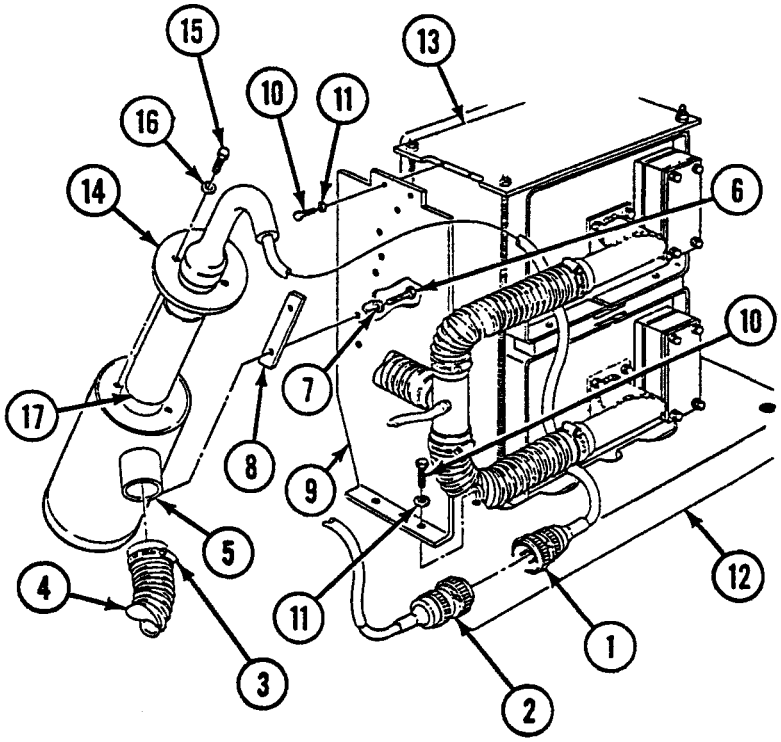
Remove tiedown straps as necessary.

A Disconnect heater electrical connector (1) from main wiring harness (2).

B Loosen clamp (3) and remove air supply hose (4) from port of heater assembly (5).

C Remove two screws (6), washers (7), insulator strip (8), and heater assembly (5) from heater bracket (9).

D Remove four screws (10), washers (11), and heater bracket (9) from MCS unit (12) and push plate (13).



DISASSEMBLY

Peel insulation off lid (14) and remove screw (15), washer (16), lid (14), and heater core (17) from heater assembly (5).

ASSEMBLY

A Install heater core (1) and lid (2) on heater assembly (3) with washer (4) and screw (5).

B Secure insulation to lid (2) with adhesive. Seal all edges with adhesive.

INSTALLATION

A Install heater bracket (6) on MCS unit (7) and push plate (8) with four washers (9) and screws (10). Tighten screws (10) to 20-29 lb-in. (2-3 N·m).

B Install insulator strip (11) and heater assembly (3) on heater bracket (6) with two washers (12) and screws (13). Tighten screws (13) to 20-29 lb-in. (2-3 N·m).

Note

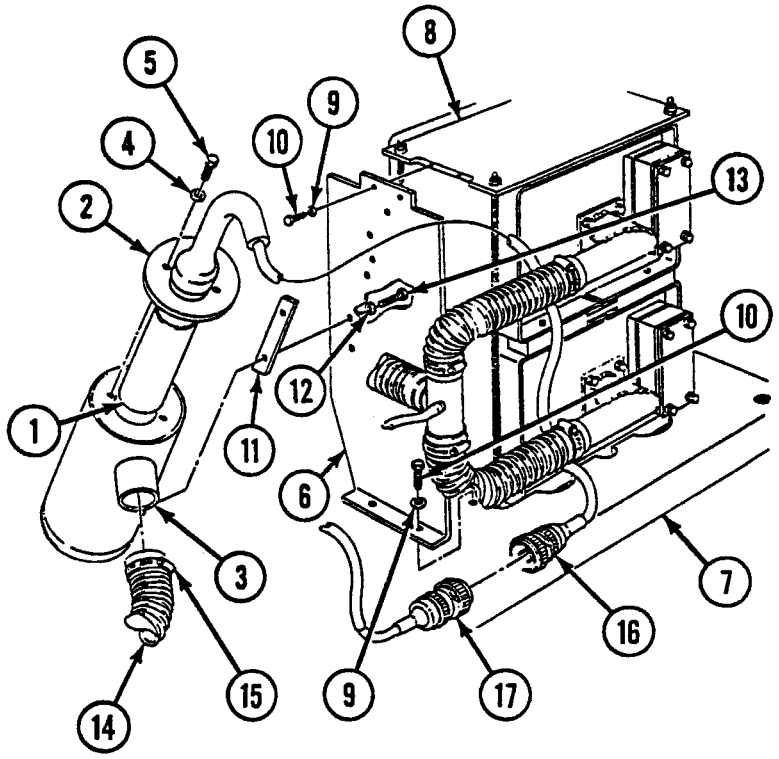
Install tiedown straps as necessary.

C Connect air supply hose (14) to bottom port of heater assembly (3) and secure with clamp (15).

D Connect heater electrical connector (16) to main wiring harness (17).

FOLLOW-ON TASK:

- Install MCS protective shield (p 918.1).



MCS DUMP VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Tiedown Strap (AR)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Quartermaster and Chemical Equipment Repairer 63J10

Equipment Condition:

Reference	Condition Description
Page 4-918	Interface Plate Removed

REMOVAL

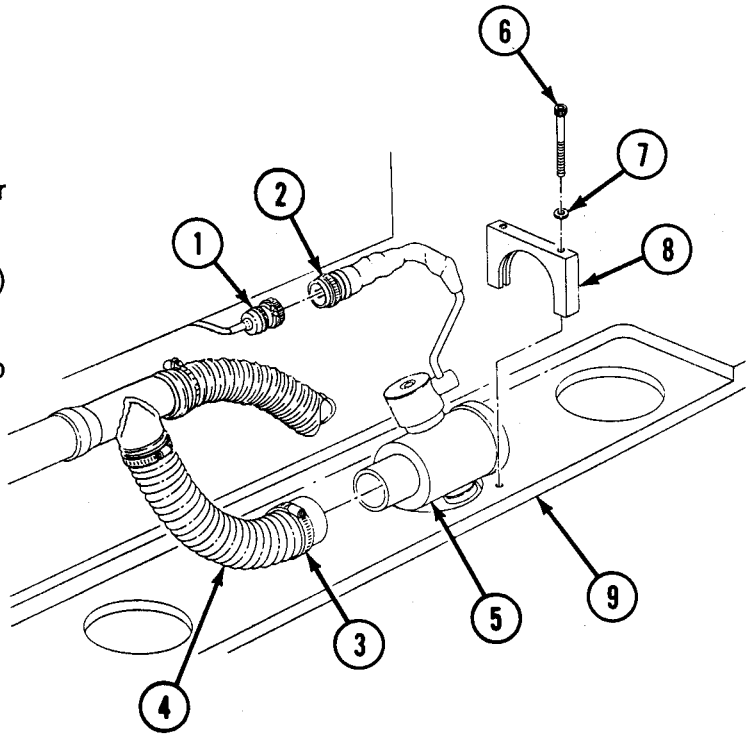
Note

Remove tiedown straps as necessary.

A Disconnect main wiring harness connector P19 (1) from dump valve connector (2).

B Loosen clamp (3) and disconnect hose (4) from dump valve (5).

C Remove two screws (6), washers (7), clamp (8), and dump valve (5) from base (9).



INSTALLATION

Note

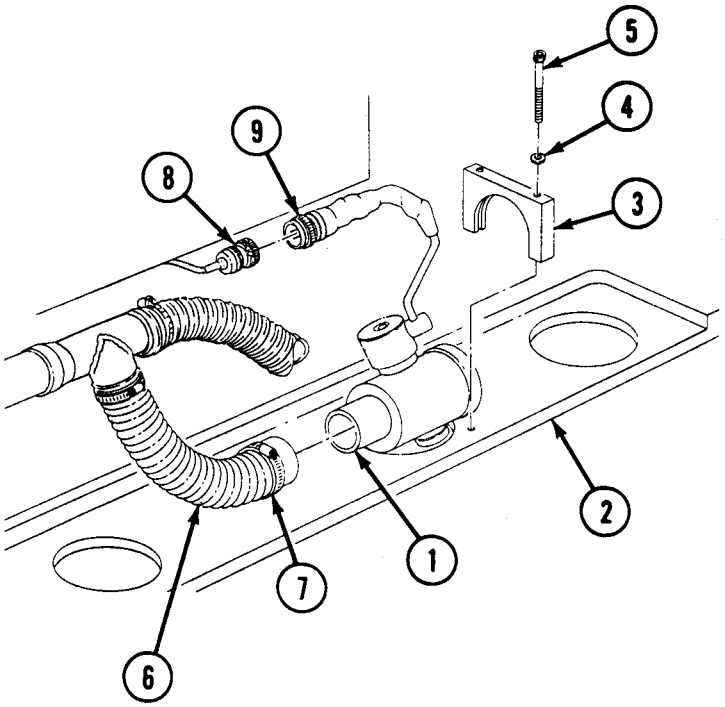
Install tiedown straps as necessary.

A Install dump valve (1) on base (2) with clamp (3), two washers (4), and screws (5). Do not tighten screws (5).

B Connect hose (6) to dump valve (1) and tighten clamp (7). Tighten two screws (5) to 20-29 lb-in. (2-3 N·m).

C Connect main wiring harness connector P19 (8) to dump valve connector (9).

FOLLOW-ON TASK:
Install interface plate (p 4-918).



MCS EVAPORATOR FAN REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Tiedown Strap (AR)

Parts Reference:

TM 5-1250-262-24P Group A6

Personnel Required:

Utilities Equipment Repairer 52C10

Equipment Condition:

Reference	Condition Description
Page 4-916	MCS Unit Removed

General Safety Instructions:

WARNING

MCS unit weighs 144 lb (65 kg). Use caution when tipping unit on its side.

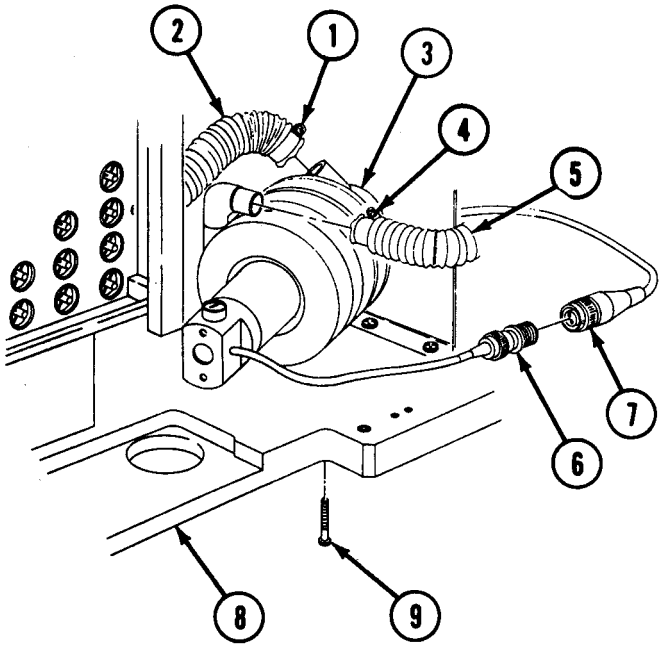
REMOVAL

WARNING

MCS unit weighs 144 lb (65 kg). Use caution when tipping the unit on its side. Failure to comply may result in severe injury to personnel.

Note

Remove tiedown straps as necessary.



A Loosen clamp (1) and disconnect evaporator inlet hose (2) from evaporator fan (3).

B Loosen clamp (4) and disconnect evaporator outlet hose (5) from evaporator fan (3).

C Disconnect evaporator fan electrical connector (6) from main wiring harness (7).

D Turn MCS unit (8) on its side and remove four screws (9) securing evaporator fan (3) to MCS unit (8).

E Set MCS unit (8) upright and remove evaporator fan (3).

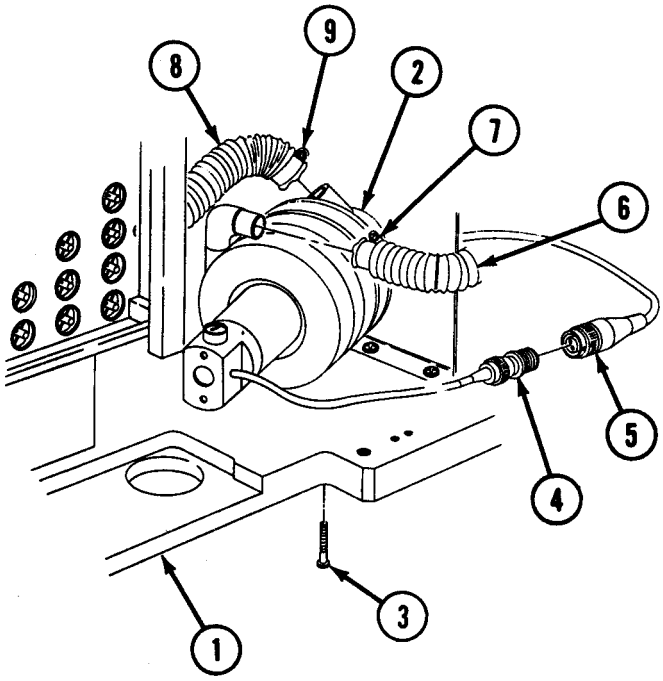
INSTALLATION

WARNING

MCS unit weighs 144 lb (65 kg). Use caution when tipping the unit on its side. Failure to comply may result in severe injury to personnel.

Note

Install tiedown straps as necessary.



A Turn MCS unit (1) on its side and install evaporator fan (2) on MCS unit (1) with four screws (3). Tighten screws (3) to 50-60 lb-in. (6-7 N-m).

B Connect evaporator fan electrical connector (4) to main wiring harness (5).

C Connect evaporator outlet hose (6) to evaporator fan (2) and tighten clamp (7).

D Connect evaporator inlet hose (8) to evaporator fan (2) and tighten clamp (9).

FOLLOW-ON TASK:
Install MCS unit (p 4-916)

RIPPER BLADE REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Parts:

Flex Pin (AR)

Parts Reference:

TM 5-2350-262-24P Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewmen 12F10

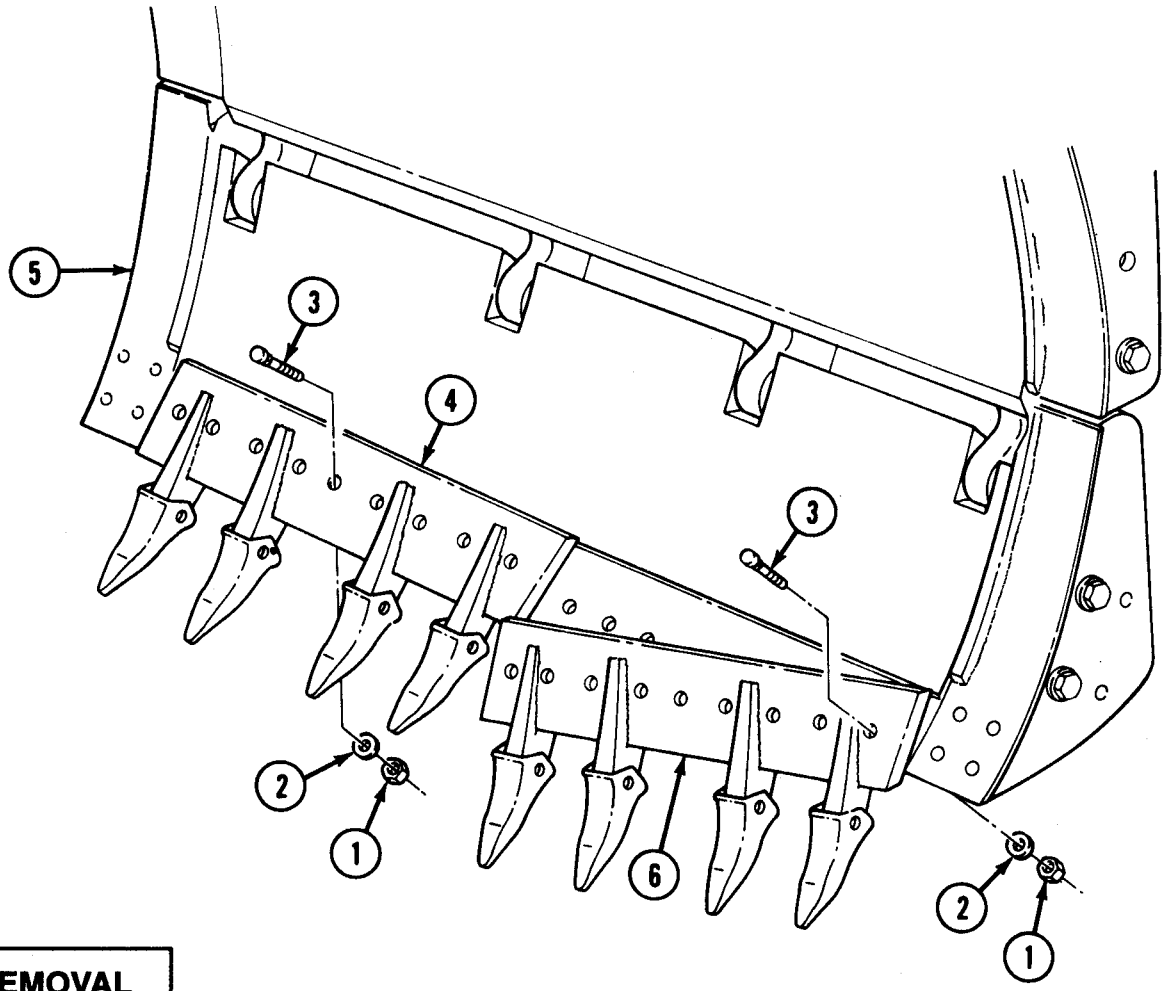
Equipment Condition:

Reference	Condition Description
Page 2-27	Front of Vehicle Raised and Blocked

General Safety Instructions:

WARNING

- Ripper blade assemblies weigh about 175 lbs (79 kg) each. Use caution when removing and installing ripper blade.
- Ripper blade teeth are blunt. Keep feet from under teeth while removing ripper blade teeth.



REMOVAL

WARNING

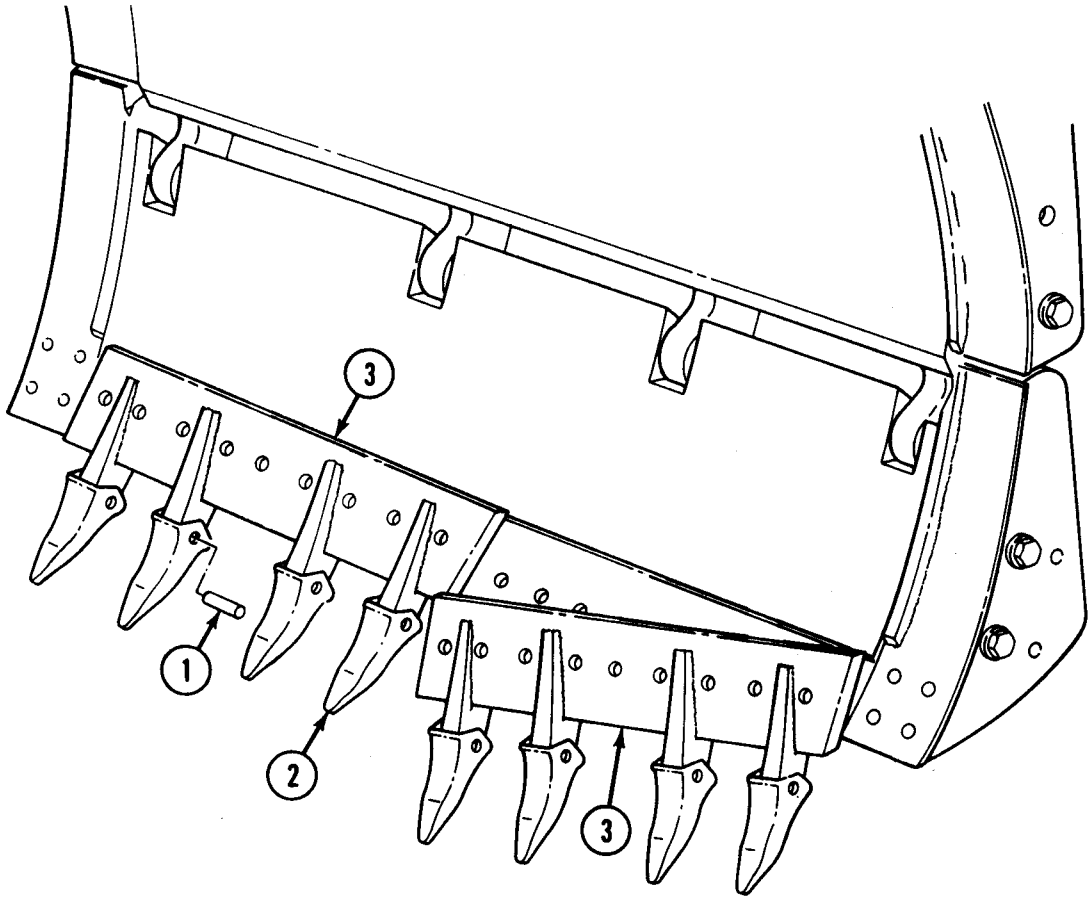
Ripper blade assemblies weigh about 175 lbs (79 kg) each. Use caution when removing ripper blade. Failure to comply may result in severe injury to personnel.

Note

- If tooth replacement is necessary, perform disassembly (p 4-899) while ripper blade is on vehicle.
- Assistant will help with steps A and B.

A Remove nine nuts (1), washers (2), screws (3), and ripper blade (4) from right side of dozer blade (5).

B Remove nine nuts (1), washers (2), screws (3), and ripper blade (6) from left side of dozer blade (5).



DISASSEMBLY

WARNING

Ripper blade teeth are blunt. Keep feet from under teeth while removing ripper blade teeth. Failure to comply may result in severe injury to personnel.

Note

Inspect flex pins for damage. If damaged, replace.

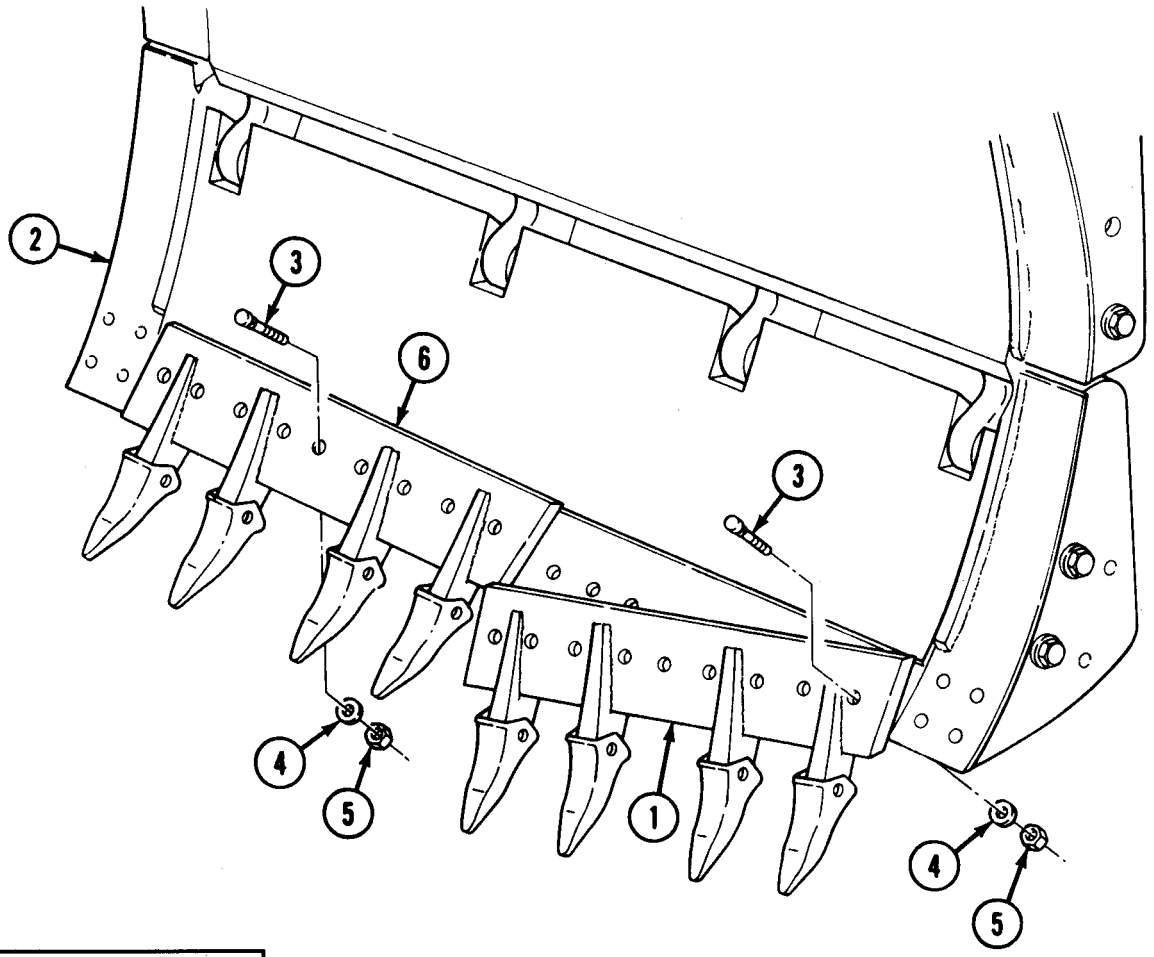
Using hammer and steel drift, remove eight flex pins (1) and teeth (2) from ripper blades (3).

ASSEMBLY

Note

Is may be necessary to compress flex pins with a "vise-grip" to start flex pins in holes.

Using hammer and steel drift, install eight teeth (2) on ripper blades (3) with flex pins (1).



INSTALLATION

WARNING

Ripper blade assemblies weigh about 175 lbs (79 kg). Use caution when installing ripper blades. Failure to comply may result in severe injury to personnel.

Note

- Apply lubricating oil to threads of screws prior to installation.
- Assistant will help with steps A and B.

A Install ripper blade (1) on left side of dozer blade (2) with nine screws (3), washers (4), and nuts (5). Tighten nuts (5) to 226-294 lb-ft (306-399 N·m).

B Install ripper blade (6) on right side of dozer blade (2) with nine screws (3), washers (4), and nuts (5). Tighten nuts (5) to 226-294 lb-ft (307-399 N·m).

FOLLOW-ON TASK:
Unblock and lower front of vehicle (p 2-27).

CONVOY WARNING LIGHT KIT REPLACEMENT AND REPAIR

Install warning light kit in general accordance with TB 9-2590-510-23, Installation Instructions of Rotating Amber Warning Light Kit, NSN 2590-01-107-9696.

WINCH COVER KIT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Parts Kit	5705833

Parts Reference:

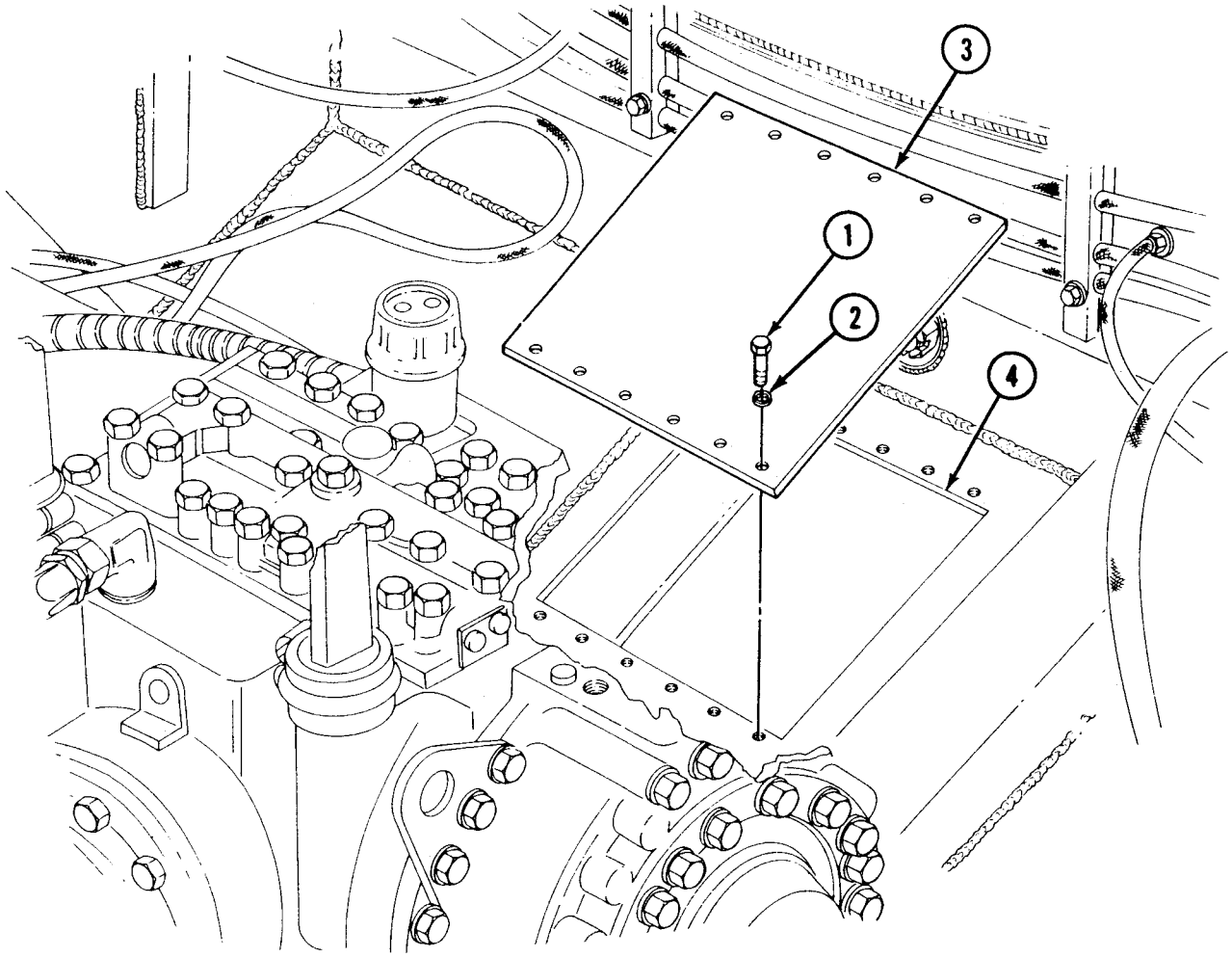
TM 5-2350-262-24P	Group A6

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-894.2	Winch Assembly Removed



REMOVAL

Remove twelve screws (1), washers (2), and cover (3) from winch mounting surface (4). Discard screws (1) and washers (2).

INSTALLATION

Install cover (3) on winch mounting surface (4) with twelve new washers (2) and screws (1).

FOLLOW-ON TASK:

Install winch assembly (p 4-894.2).

Section XXII. PREPARATION FOR TRANSPORT

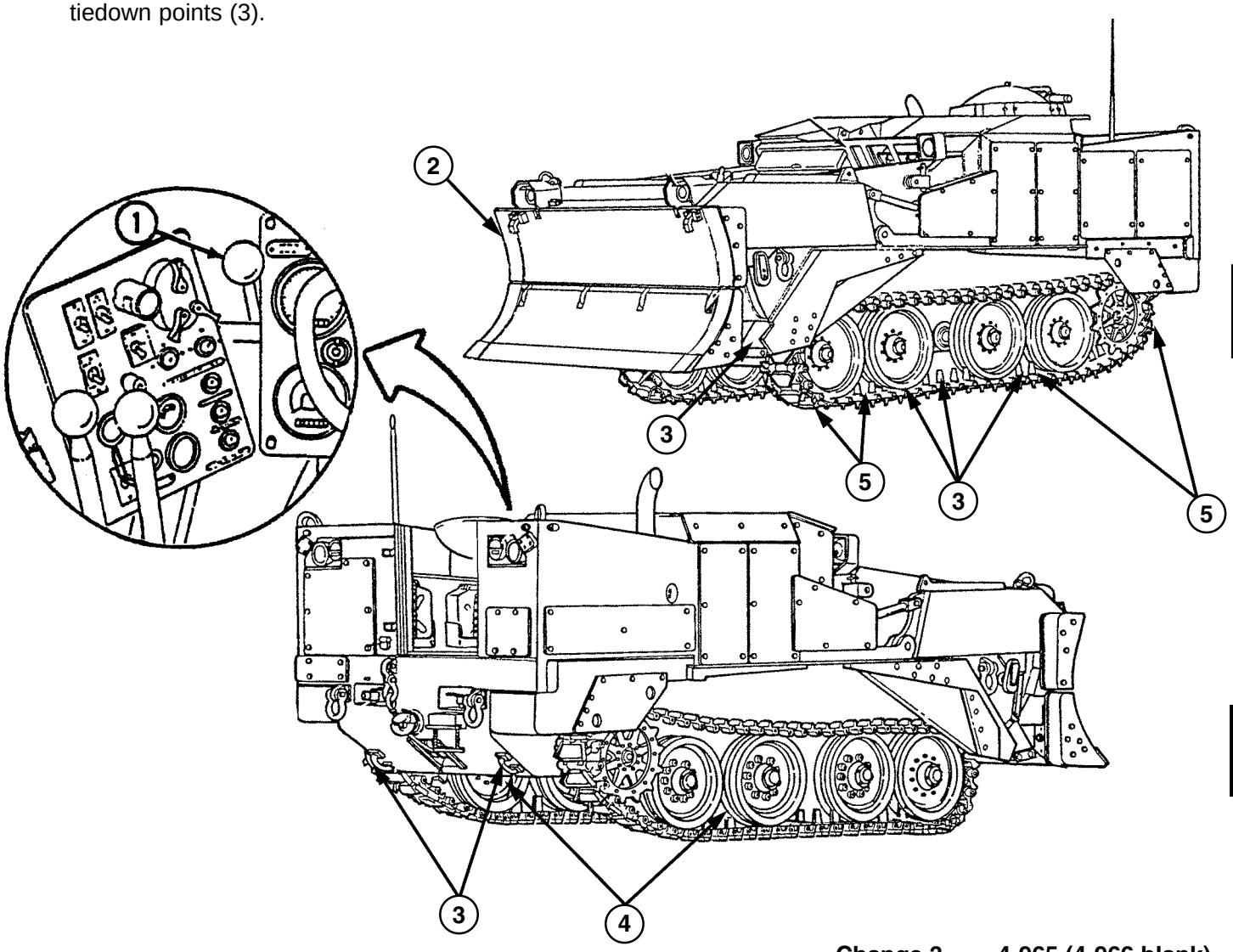
OVERVIEW

This section lists the tasks that must be performed to prepare the M9 for transport by any means other than C-130 or C-141 aircraft. Use the references provided for each task required. If the M9 is to be transported by C-130 or C-141 air craft, refer to TM 55-2350-262-14.

PREPARATION FOR NORMAL TRANSPORT

Perform the following tasks if the M9 will be transported by any means other than C-130 or C-141 aircraft. If the M9 is to be transported by C-130 or C-141 aircraft, refer to TM 55-2350-262-14, Chapter 4.

- Remove apron and dozer extensions (p 4-260) and stow in bowl.
- Remove and stow antenna (TM 11-5820-401-10-1).
- Install lower apron lockpins (TM 5-2350-262-10).
- Start vehicle engine (TM 5-2350-262-10).
- Load vehicle onto transporting vehicle (TM 55-2350-262-14, Chapters 5 through 7).
- Vehicle will be shipped with SPRUNG/UNSPRUNG lever (1) in UNSPRUNG position. Lower apron (2) (TM 5-2350-262-10) until it touches transporting vehicle platform.
- Shut off vehicle engine (TM 5-2350-262-10). Relieve hydraulic pressure (p 3-82). Leave SPRUNG/ UNSPRUNG control lever (1) in UNSPRUNG position.
- Close and secure operator's hatch cover (TM 5-2350-262-10).
- Take measurements from tiedown points (3) to transporting vehicle platform. Measure again after 10 minutes to ensure that all hydraulic fluid has leaked from rear actuators to main hydraulic tank.
- Inspect vehicle to ensure that it rests on rear bump stops (4). Install blocks (5) and attach tiedowns at tiedown points (3).



APPENDIX A
REFERENCES

A-1. SCOPE

This appendix lists Army regulations, forms, field manuals, technical manuals, and other publications referenced in the three volumes of this manual and which apply to unit maintenance of the M9 ACE.

A-2. ARMY REGULATIONS

Reporting of Transportation Discrepancies in Shipments	AR 55-38
Department of the Army Information Security Program Regulation	AR 380-5

A-3. DEPARTMENT OF THE ARMY PAMPHLETS

Consolidated Index of Army Publications and Forms	DA Pam 25-30
The Army Maintenance Management System (TAMMS)	DA Pam 738-750
U.S. Army Equipment Index of Modification Work Orders	DA Pam 750-10

A-4. FORMS

U.S. Army Accident Investigation Report	DA Form 285
Equipment Operator's Qualifications Record (Except Aircraft)	DA Form 348
Recommended Changes to Publications and Blank Forms	DA Form 2028
Recommended Changes to Equipment Technical Manuals	DA Form 2028-2
Organizational Control Record for Equipment	DA Form 2401
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Maintenance Request	DA Form 2407
Preventive Maintenance Schedule and Record	DD Form 314
Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines	DD Form 1397
DOD Fire Incident Report	DD Form 2324
U.S. Government Motor Vehicle Operator's Identification Card	OF Form 346
Operator's Report on Motor Vehicle Accident	SF Form 91
Transportation Discrepancy Report	SF Form 361
Report of Discrepancy (ROD)	SF Form 364
Product Quality Deficiency Report (7540-00-105-0078)	SF Form 368

A-5. FIELD MANUALS

NBC Contamination Avoidance	FM 3-3
NBC Protection	FM 3-4
NBC Decontamination	FM 3-5
Field Behavior of NBC Agents (Including Smoke and Incendiaries)	FM 3-6
Camouflage	FM 5-20
Vehicle Recovery Operations	FM 20-22
First Aid for Soldiers	FM 21-11
Visual Signals	FM 21-60
Basic Cold Weather Manual	FM 31-70
Northern Operations	FM 31-71
Desert Operations	FM 90-3
Mountain Operations (How to Fight)	FM 90-6
Rigging	FM 5-125

A-6. TECHNICAL BULLETINS

Occupational and Environmental Health: Hearing Conservation ..... TB MED 501
Solder and Soldering ..... TB SIG 222
Installation Instructions of Rotating Amber Warning Light Kit ..... TB 9-2590-510-23
Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment, and Materiels Handling Equipment ..... TB 43-0209
Maintenance in the Desert ..... TB 43-0239
Warranty Technical Bulletin for M9 ACE ..... TB 5-2350-262-15
Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems ..... TB 750-651

A-7. TECHNICAL MANUALS

Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists: Decontaminating Apparatus, Portable DS2, 1-1/2 Quart, ABC M11 (4230-00-720-1618) ..... TM 3-4230-204-12&P
Operator's Manual: Mask, Chemical-Biological, Aircraft, ABC-M24 and Accesssories; Mask, Chemical-Biological, Tank M25A1 and Accessories ..... TM 3-4240-280-10
Operator's Manual: Training Set, Chemical Agent Identification: Simulants, M72A2 (6910-01-043-2090) ..... TM 3-6910-227-10
Operator's Manual for Armored Combat Earthmover (ACE), M9 (2350-00-808-7100) ..... TM 5-2350-262-10
Hand Receipt Manual Covering End Item/Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) for Armored Combat Earthmover (ACE), M9 (2350-00-808-7100) ..... TM 5-2350-262-10-HR
Unit Maintenance Repair Parts and Special Tools Lists for Armored Combat Earthmover (ACE), M9 (2350-00-808-7100) ..... TM 5-2350-262-24P
Operator's and Organizational and Direct Support Maintenance Manual Including Repair Parts and Special tools List for Recharger, Fire Extinguisher, Monobromotrifluoromethane, Skid Mounted, Electric Motor Driven Model RHA-101-M, Part No. 350501, S/N 3505-368 (4210-01-176-3517) ..... TM 5-4210-218-13&P
Organizational Maintenance Manual Including Repair Parts and Special Tools List for Launcher, Grenade, Smoke: Screening, RP, M243 (1040-01-059-0560), M257 (1040-01-070-1213), and M259 (1040-01-107-7051) ..... TM 9-1040-267-20&P
Inspection, Care, and Maintenance of Antifriction Bearings ..... TM 9-214
Operator's Manual for Welding Theory and Application ..... TM 9-237
Organizational, Direct Support, and General Support Maintenance Manual: Standards for Inspection and Classification of Tracks, Track Components, and Solid Rubber Tires (FSC 2530) ..... TM 9-2530-200-24
Operator and Organizational Maintenance Manual, Including Repair Parts and Special Tools List, Simplified Test Equipment for Internal Combustion Engines (STE-ICE) (4910-00-124-2554) ..... TM 9-4910-571-12&P
Operator's, Organizational, Direct Support, and General Support Maintenance Manual for Lead-Acid Storage Batteries; 4HN, 24V, (6140-00-069-3528) MS75047-1; 2HN, 12V (6140-00-057-2553) MS35000-1; 6TN,12V (6140-00-057-2554) MS35000-3 ..... TM 9-6140-200-14
Operator's Manual for Radio Sets AN/VRC (5820-00-223-7412), AN/VRC-43 (5820-00-223-7415), AN/VRC-44 (5820-00-223-7417), AN/VRC-45 (5820-00-223-7418), AN/VRC-46 (5820-00-223-7433, AN/VRC-47 (5820-00-223-7434), AN/VRC-48 (5820-00-223-7435), and AN/VRC-49 (5820-00-223-7437; (Used Without Intercom Systems) [EE150-JA-OP1-101-E154; to 31R2-2VRC-191] ..... TM 11-5820-401-10-1
Operator's Manual for SINCGARS Radio, AN/VRC-87 ..... TM 11-5820-890-10-3

A-7. TECHNICAL MANUALS - CONTINUED

Hand Receipt Manual Covering End Item/Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) for SINCGARS Radio, AN/VRC-87 ..... TM 11-5820-890-10-HR
Operator's and Organizational Maintenance Manual: Radio Sets, AN/VRC-53 (5820-00-223-7467), AN/VRC-64 (5820-00-223-7475), AN/GRC-125 (5820-00-223-7411), and AN/GRC-160 (5820-00-223-7473) and Amplifier-Power Supply Groups, OA-3633/GRC and OA-3633A/GRC (5820-00-973-3383) ..... TM 11-5820-498-12
Organizational Maintenance Repair Parts and Special Tools List for Radio Sets, AN/VRC-53 (5820--00-223-7467), AN/VRC-64 (5820-00-223-7475), AN/VRC-125 (5820-00-223-7411), AN/GRC-160 (5820-00-223-7473) and Amplifier, Power Supply Groups, OA-3633/GRC and OA-3633A/GRC (Parts List for OA-3633/GRC and OA-3633A/GRC (5820-00-973-3383) Only) ..... TM 11-5820-498-20P
Organizational Maintenance Manual: Night Vision Goggles, AN/PVS-5 and AN/PVS-5A (5855-00-150-1820) ..... TM 11-5855-238-20
Organizational, Direct Support, and General Support Maintenance Manual, Including Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools), Night Vision Goggles AN/PVS-5 and AN/PVS-5A (5855-00-150-1820) ..... TM 11-5855-238-24&P
Operator's, Organizational, Direct Support, and General Support Maintenance Manual, Multimeter, Digital AN/PSM-45 (6625-01-139-2512) ..... TM 11-6625-3052-14
Army Equipment Data Sheets: Chemical Defense Equipment (Reprinted with Basic INCL-1) ..... TM 43-0001-26-1
Painting Instructions for Field Use ..... TM 43-0139
Transportability Guidance, Armored Combat Earthmover (ACE), M9 (2350-00-808-7100) ..... TM 55-2350-262-14
Cooling Systems: Tactical Vehicles ..... TM 750-254
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use ..... TM 750-244-6

A-8. OTHER PUBLICATIONS

Army Medical Department Expendable/Durable Items ..... CTA 8-100
Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items) ..... CTA 50-970
Catalog of Audiovisual Productions, Army Productions, Volume 1 (PA) ..... DOD 5040.2-C-1
Vehicular Radio Sets and Authorized Installation ..... SB 11-131-2

APPENDIX B
MAINTENANCE ALLOCATION CHART
FOR
M9, ARMORED COMBAT EARTHMOVER (ACE)

Section I. INTRODUCTION

SCOPE

GENERAL. This Maintenance Allocation Chart designates responsibility for performance of maintenance repair functions at specified maintenance levels.

a. Section I is a general explanation and definition of terms.

b. Section II shows the maintenance level responsible and estimated work measurement time for specific functions.

c. Section III lists common tool sets and the special tools, test, and support equipment required for each maintenance function shown in Section II.

d. Section IV lists the remarks referenced in Section II.

Section II. MAINTENANCE ALLOCATION CHART

B-1. EXPLANATION OF COLUMNS

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun 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.

d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the level of maintenance is authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or level of the tasks within the listed maintenance function varies at different maintenance levels, appropriate "work time" figures will be shown for each level. The number of man-hours specified by 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, troubleshooting 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 chart. This figure does not include any time for performance of preliminary tasks listed elsewhere in the MAC, e.g., removal of engine under repair of fuel pump when the engine is listed separately in the MAC. The symbol designations for the various maintenance categories remains as follows:

Section II. MAINTENANCE ALLOCATION CHART – CONTINUED

C — Operator/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 functions.

f. Column 6, Remarks. Column 6 references any amplifying remarks.

B-2. MAINTENANCE FUNCTIONS DEFINITIONS

a. Inspect. To closely and critically examine (e.g., sight, sound, or feel) an item to detect errors, flaws, wear, etc., and to determine its condition and serviceability by comparing its physical mechanical/electrical characteristics within established standards.

b. Test. To verify serviceability and detect incipient failure by measuring the mechanical 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 (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

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

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

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic 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. Install. The act of emplacing, seating, or fixing into position any item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. The act of substituting a serviceable part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (components or assembly), end item, or system.

Section II. MAINTENANCE ALLOCATION CHART – CONTINUED

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is a high 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 equipments/components.

GROUP	COMPONENT/ASSEMBLY	PAGE
A	Vehicle	B-4
AA	Accelerator Installation	B-4
AB	Air System Installation	B-4
AD	Armor Installation	B-4
AF	Brake Control Installation	B-4
AG	Deleted	
AJ	Electrical Installation	B-5
AL	Fire Extinguisher Installation	B-6
AM	Fuel System Installation	B-6
AN	Heater and Ventilation Installation	B-7
AP	Hull Assembly	B-7
AQ	Hydraulic Control Installation	B-9
AR	Hydraulic System Installation	B-9
AU	Powertrain Installation	B-10
AUA2	Engine, Diesel	B-13
AV	Air Purifier Installation	B-16
AW	Radio Equipment Installation	B-16
AX	Seat Installation	B-16
AZ	Deleted	
A2	Stowage Installation	B-16
A3	Suspension Installation	B-16
A5	Winch Installation	B-18
A6	Special Purpose Kits	B-18

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
A	Vehicle	Inspect	0.3	1.9					A-A, C-A, J-A, Z-D
		Service	0.5	1.0	0.5			1-6, 9-11, 17, 20, 21, 22, 23, 26, 32, 45, 53, 60	
		Overhaul					300		
	Final Drives (Emergency Towing)	Disconnect	2.2					10, 13, 26, 28, 29	Z-O
		Reconnect		1.9				34, 45, 54	
AA	Accelerator Installation								
	Accelerator and Throttle Linkage	Adjust		0.3				54	
		Remove/Repl		1.4				34, 54	
		Repair		1.4				34, 54	
AB	Air System Installation								
	Governor Assy.	Adjust		1.2				34, 38, 44, 54	
		Remove/Repl		0.8				54	
	Lines and Fittings	Remove/Repl		1.0				54	
	Air Reservoir	Remove/Repl		0.8				54	
	Brake Chamber	Adjust		0.4				34, 54	
		Remove/Repl		1.0				34, 54	
	Service Brake Valve	Remove/Repl		1.7				54	
AD	Armor Installation								
	Exterior Armor Plate	Remove/Repl	0.4	1.0				6, 18, 26, 27, 34, 54	B-C
AF	Brake Control Installation								
	Parking Brake Lever and Cable	Adjust	0.1	0.2				54	Z-B
		Remove/Repl		1.8				34, 54	
	Brake Linkage and Bracket	Remove/Repl		0.4				34, 54	
AG	Deleted								

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AG	Deleted								
AJ	Electrical Instl.	Test		0.6				34, 54	
	STE/ICE-R Shunt	Remove/Repl		0.4				54	
	Master Relay	Remove/Repl		0.2				54	
	Tach. Sender and Adpt.	Remove/Repl		0.2				54	
	Speedometer Sender and Adpt.	Remove/Repl		0.2				34, 54	
	Low Air Pressure Warning Switch	Remove/Repl		0.2				54	
	Launcher, Smoke Grenade	Remove/Repl		0.3				54	
		Repair		0.3				54	E-A
	Wiring Harness	Remove/Repl		0.2				54	Z-Z
	Arm/Fire Unit	Repair		0.7				34, 54	K-I, Z-Z
	Wiring Harness, Discharger	Remove/Repl		0.2				54	Z-Z
		Repair		0.4				34, 54	K-I, Z-Z
	Battery	Service		0.5				34, 54	Z-H
		Remove/Repl		0.7				34, 54	
	Battery Cables	Remove/Repl		0.8				54	
	Battery Box and Deflectors	Remove/Repl		0.4				54	
	Starter Relay	Remove/Repl		0.2				54	
	Box, STE/ICE-R	Test		0.5				34, 43, 52, 54	
		Remove/Repl		0.5				54	
		Repair			1.0			34, 54, 61	
	Floodlight	Test		0.6				34, 54	
		Remove/Repl		0.3				54	
		Repair		0.3				34, 54	
	Headlight & Base Assy.	Test		0.4				34, 54	
		Remove/Repl		0.2				54	
		Repair		2.0	2.0			34, 54	
	Domelight Assy.	Test		0.2				34, 54	
		Remove/Repl		0.2				54	
		Repair		2.0				34, 54	
	Panel, Driver's Instrument	Remove/Repl		1.0				54	
		Repair		1.7				34, 54	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AJ	Electrical Instl. (Cont'd)								
	Panel, Gauge, Assy.	Remove/Repl		1.1				54	
		Repair		1.1				34, 54	
	Wiring Harness, Control	Test		1.0				34, 43, 54	
		Remove/Repl			2.0			54, 96	
		Repair		0.5	2.0			34, 54, 61, 95	K-I
	Wiring Harness, Battery Relay	Test		1.0				34, 43, 54	
		Remove/Repl			3.0			54, 96	
		Repair		0.5	1.0			34, 54, 95	K-I
	Wiring Harness, Engine	Test		1.0				34, 43, 54	
		Remove/Repl			2.0			54, 95, 96	
		Repair		0.5	2.0			34, 54, 95	K-I
	Wiring Harness, Ventilation Fan (Low and High)	Test		1.0				34, 54	
		Remove/Repl		0.4				54	
		Repair		0.3				34, 54	K-I
	Wiring Harness, Rear	Test		1.0				34, 54	
		Remove/Repl			2.0			54, 96, 97	
		Repair		0.5	2.0			34, 54, 95	K-I
	Wiring Harness, Hull	Test		1.0				34, 54	
		Remove/Repl			2.5			54, 96, 97	
		Repair		1.0	2.0			35, 54, 95	K-I
	Semi-Automatic Track Adjusting System (NEW PRODUCTION)	Test		1.0				34, 54	
		Remove/Repl		4.0				54	
AL	Fire Extinguisher Instl.								
	Tubes, Hose, and Fittings	Remove/Repl		0.7				54	
		Repair		1.2				54	
	Fixed Fire Extinguisher Control Valve and Cylinder	Service			1.5			59	Z-Q
		Remove/Repl		0.1				34, 54	
		Repair			0.2			54, 96, 97	
		Recharge			0.2			34, 54, 59	
AM	Fuel System Instl.								
	Hose Replacement	Remove/Repl		0.6				34, 54	
	Fuel/Water Separator	Service	0.3	0.3				34, 54	B-A, X-X
		Remove/Repl		0.2				54	
	Tank, Fuel	Remove/Repl		2.2				34, 52, 54	Z-E
		Repair			2.0			54, 96, 97	Z-A
AN	Heater and Ventilation Instl.								
	Ventilation Fan, Driver's	Remove/Repl		1.0				54	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AN	Heater and Ventilation Instl. (Cont'd)								
	Ventilation Fan Motor Blower Assembly	Remove/Repl		1.0				54	
	Heater Assembly	Remove/Repl		1.3				34, 54	
AP	Hull Assembly								
	Track Retainer Support	Inspect	0.2	0.2				24, 54	
		Remove/Repl			4.0			96, 98	I-I
		Repair		0.8	0.4			34, 54, 63, 82, 96, 130	Z-G, Z-E
	Apron Dozer Assy.	Remove/Repl		1.2				30, 34, 54	I-I
		Repair		0.4		10.0		34, 54, 96, 130	
	Track Wear Plates	Remove/Repl		1.3				34, 52, 54	
	Track Retainer/Stiffener	Remove/Repl		1.0				34, 54	
	Hull Drain Valve	Remove/Repl		0.2				34, 52, 54	
	Hull Access Covers and Protective Plates	Remove/Repl		2.0				34, 44, 54	
	Hull Access Cover Seals (OLD PRODUCTION)	Remove/Repl		0.5				54	
	Dozer Blade	Inspect	0.1					34, 54	
		Service	0.2					34, 54	
		Remove/Repl		0.8				34, 54	Z-E
		Repair		0.6	2.0			34, 54	I-I, Z-L
	Dozer Cutting Edges	Remove/Repl		0.7				34, 54	
	Covers, Hull Access	Remove/Repl		0.3				34, 44, 47, 54	
		Repair		0.5				34, 54	I-I, Z-A

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
AP	Hull Assembly (Cont'd)								
	Hatch, Driver's	Adjust		0.5				34, 54	Z-Z
		Inspect	0.1						
		Lubricate	0.1					22	
		Remove/Repl		1.2				30, 34, 39, 40, 54	Z-E
		Repair		4.8				34, 39, 40, 52, 54	Z-A
	Inclinometers	Remove/Repl		0.6				54	
		Adjust		0.3				54	
	Engine Intake and Exhaust Grilles and Access Covers	Remove/Repl		0.6				34, 54	
	Scraper Edge	Adjust		0.5				34, 54	
		Inspect	0.2					24	
		Remove/Repl		0.6				34, 54	
	Pump, Bilge Assy.	Inspect	0.1						A-A, A-B
		Remove/Repl		2.0				54, 96, 97	
		Repair			0.5			54, 96, 97	
	Motor, Bilge Pump	Remove/Repl			0.2			54, 95	
		Repair			1.0			54, 95	
	Cylinder Assy., Apron	Remove/Repl		2.0				34, 54	Z-G
		Repair			3.3			34, 54, 57, 74, 96	Z-L
	Cylinder Assy., Ejector	Remove/Repl		1.7				34, 54	Z-E, Z-G
		Repair			1.0	4.0		34, 54, 75, 85, 96	Z-L
	Ejector Assy.	Adjust		0.4				34, 54	
		Inspect	0.2					24	
		Service		0.2				22	
		Remove/Repl		1.0				34, 54	Z-E
		Repair		1.1	10.0			34, 54,	Z-Z, I-I
	Wear Plates	Adjust		0.2				34, 54	
		Inspect	0.2					24	
		Remove/Repl		1.0				34, 54	
	Pintle Hook	Remove/Repl		0.8				34, 54	
		Repair		1.0				54	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AQ	Hydraulic Control Instl.	Adjust		0.3				34, 54	
	Hyd. Control Levers and Linkage	(OLD PRODUCTION)							
		Adjust		1.0				34, 54	
		(NEW PRODUCTION)							
		Remove/Repl		1.0				34, 54	
		Repair		0.4				34, 54	
	Bellcrank Assemblies	Remove/Repl		0.5				34, 54	
		Repair		0.5				34, 54	
AR	Hydraulic System	Test		0.6				36, 38, 54, 57	
		Adjust		0.2				38, 54, 56	
		Service	0.2	1.0				38, 45, 55, 56	
	Hydraulic Manifolds	Remove/Repl		3.0				34, 54, 56	
	Relief Valve, Suspension	Adjust		0.4				34, 38, 43, 54, 55, 57	
		Remove/Repl		0.5				34, 54, 57	
	Accumulator, Hyd., Main	Inspect	0.1						
		Service		0.2				36, 38, 42, 54	N-C
		Remove/Repl		0.4				34, 54	
		Repair			1.5			34, 54, 82, 84, 96	Z-Z
	Charge/Gauge Assy., Accumulator	Remove/Repl		0.9				54	
		Repair		1.0				34, 54	
	Filter, Fluid, Pressure	Service		0.5				34, 54	
		Remove/Repl		0.8				34, 54	
	Filter, Hyd., Return	Service		0.5				34, 54	
		Remove/Repl		0.8				54	
	Pump, Hyd., Compensating	Test		0.5				34, 38, 43, 54, 55, 57	
		Adjust		0.5				34, 38, 43, 54, 55	Z-Z
		Remove/Repl		0.5				33, 35, 54	
	Pump, Main Hyd.	Test		0.5				34, 38, 43, 44, 54, 55, 57	
		Remove/Repl			0.8			54, 96, 97	B-B
		Overhaul					9.5	34, 54, 130	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AR	Hydraulic System (Cont'd)								
	Tank, Oil, Hydraulic	Inspect		0.5					
		Service		0.5				34, 54	
		Remove/Repl			6.0			54, 96, 97	
		Repair		0.6	3.0			54, 97, 98	Z-Z
	Valve, Directional Control	Test		1.0				34, 38, 43, 54, 55, 57	
		Adjust		0.4				34, 38, 43, 54, 55, 57	
		Remove/Repl		2.0				34, 54	
		Repair			2.0			54, 95	
	Valve, Sprung/Unsprung	Test		1.0				34, 35, 43, 54, 55, 57	
		Adjust		0.4				34, 38, 43, 54, 55, 57	
		Remove/Repl		1.0				34, 54	
	Hydraulic Hoses	Remove/Repl		0.7				34, 54, 56, 57	
	Hydraulic Tubes and Fittings	Remove/Repl		0.7				34, 54, 56, 57	
AU	Powertrain Instl.								
	Exhaust System	Inspect		0.1					
		Remove/Repl		3.0				34, 54	
		Repair		2.4				34, 54	Z-Z
	Final Drive Assy.	Service		0.5				34, 54	A-C
		Remove/Repl		1.2	6.0			2, 13, 28, 54, 86, 96, 97	Z-E, Z-Z
		Repair			0.4			54, 96, 97	
		Overhaul					8.5	34, 54	
	Flange Assy., Track Adjusting	Remove/Repl			0.6			54, 96, 97	
		Repair			0.6			54	
	Torque Link	Remove/Repl		0.2				34, 54	Z-E
		Repair		0.4				54	
	Power Package Assy.	Remove/Repl			4.0			44, 54, 76, 85, 96, 97	B-B, Z-E

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AU	Powertrain Instl. (Cont'd)								
	External Oil Lines and Fittings	Remove/Repl		0.8				34, 54	
		Repair		0.7				54	
	Fan Idler Bushing, Pulley	Remove/Repl		0.2				34, 54	
		Repair		0.2				34, 54	
	Fan Assy., Vaneaxial	Inspect		0.1					
		Remove/Repl		1.4				34, 39, 54	Z-E
		Repair			3.0			54, 96, 97	
	Assy., Air Filter	Inspect	0.2						
		Service	0.3	0.3				54	C-B
		Remove/Repl		0.2				54	
		Repair		0.2				54	
	Filter, Scavenger	Service		0.3				54	
		Remove/Repl		0.3				54	
		Repair		0.5				54	
	Filter, Engine Oil, Assy.	Service		0.5				34, 54	
		Remove/Repl		0.5				34, 54	
		Repair		0.2				54	
	Filter, Transmission Oil, Assy.	Service		0.3				48, 54	
		Remove/Repl		0.3				54	
		Repair		0.3				54	
	Pump, Scavenger, Hydraulic	Test		0.6				54	
		Remove/Repl		0.5				34, 54	
		Repair			2.5			54, 77, 81, 96, 97	
	Radiator	Test			0.2			54, 95, 96	
		Inspect	0.2						
		Service	0.2	1.0				34, 54	X-Y
		Remove/Repl		2.3				30, 34, 39, 54	Z-E
		Repair		0.2	0.2			34, 39, 54,	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AU	Powertrain Instl. (Cont'd)								
	Tensioner Assy., Fan	Adjust		1.0				54	
		Remove/Repl		0.6				30, 54	Z-Z
		Repair		0.5				54	Z-Z
	Fan Belt	Remove/Repl		0.7				54	
	Transfer Case Assy.	Remove/Repl			2.0			54, 85, 96, 97	
		Repair		0.5	2.0			34, 54, 96	B-B, Z-E, Z-Z
		Overhaul					13.5	34, 54, 130	
	Transmission, Hydraulic	Remove/Repl			1.2			54, 96, 97	B-B, Z-E Z-Z
		Repair			0.5			54, 96, 97	
		Overhaul					23.3	34, 54, 130	
	Transmission Shift Lever and Linkage	Service		0.2				42, 54	
		Adjust		0.3				54	
		Repair		1.5				34, 54	
	Valve Control, Hyd. Shift (Transmission)	Remove/Repl		1.0				34, 54	
		Repair		0.1	2.5			54, 96, 97	Z-Z
	Transmission Oil Lines	Remove/Repl		0.7				34, 54	
	Transmission Charging Pump	Remove/Repl			0.4			54, 96	
		Repair			0.3			54, 96	
	Drive Shaft Assy.	Inspect		0.2					Z-D
		Remove/Repl		1.0				34, 54	
		Repair		0.7				34, 54	
	Steer Unit Assy.	Adjust		0.5	1.0			54, 96	
		Remove/Repl		0.8	4.0			54, 96	Z-Z, Z-E
		Service	0.2						
		Repair		0.7	1.0			34, 54,	Z-Z
		Overhaul					38.0	34, 54, 130, 133	
	Alternator	Test			0.5			34, 43, 54, 100.2	
		Remove/Repl		1.0				34,54, 100.1	
		Repair			1.5			34, 54, 61	E-D

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AU	Powertrain Instl. (Cont'd)								
	Water Pump/Alternator Belt and Tensioner	Remove/Repl		1.0				34, 54	
	Steering Control	Adjust		0.3				54	
	Bracket and Linkage	Remove/Repl		0.8				34, 54	
		Repair		1.5				34, 54	
	Track Assembly	Remove/Repl		5.0				9, 25, 28, 31, 32	Z-C
		Repair		0.6				9, 25, 31 32, 54	
		Overhaul					12.0		
	Roadwheel	Remove/Repl		0.8				31, 34, 51 54	
		Overhaul					10.0		
AUA2	Engine, Diesel	Test		0.5	2.0			23, 43, 54, 87	
		Service		2.0				34, 54	
		Adjust			0.5			54, 91, 96	Z-Z
		Remove/Repl			4.9			33, 34, 47, 54, 76, 85, 96, 97	Z-E
		Repair		0.5	2.0	7.0		33, 34, 54, 88, 95, 97, 123, 125	Z-Z
		Overhaul					67.6	34, 54, 130	
	Connecting Rod	Remove/Repl				4.0		54, 70, 88, 96-98, 116, 128, 130, 131	F-H
		Repair				6.0		54, 70, 88, 116, 128 130, 131	F-H
	Piston	Remove/Repl				2.0		54, 70, 88, 93, 96, 98, 130	F-H
		Repair				1.0		54, 70, 88, 96-98, 116, 128, 130, 131	F-H

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AUA2	Engine Diesel (Cont'd)								
	Head Assy., Cylinder	Adjust			1.0			54, 96, 97	
		Inspect			1.0			54, 96	
		Remove/Repl			1.0			54, 70, 73, 88, 93, 96, 97	Z-E
		Repair			3.0	8.0		54, 73, 88, 93, 96, 97, 102, 104-115, 117, 118, 120-122, 124-126, 127, 128	C-I
	Block Assy., Cylinder	Inspect				0.4		96, 130	
		Remove/Repl				0.4		54, 70, 88, 96, 97, 101, 123, 130	F-H
		Repair				3.2		54, 70, 88, 94, 95, 116, 128, 130	F-H
	Crankshaft	Remove/Repl				8.0		54, 94-98, 130	F-H
		Repair					9.0	34, 54	F-H
	Flywheel Assy.	Remove/Repl			1.0			54, 70, 71, 88, 96, 97	F-H
		Repair			9.0			54, 70, 88, 96, 97	E-H, F-H
	Shaft Assy., Rocker Arm	Adjust			1.0			54, 90, 96	
		Remove/Repl			0.1			54, 96, 97 125	
		Repair			0.1			54, 70, 88, 96, 97	
	Pump, Oil	Remove/Repl			1.0			54, 96, 97	
		Repair				3.0		54, 70, 88, 96, 97, 119, 129	
	Pan, Oil	Remove/Repl			1.0			54, 70, 88, 96, 97	F-H
		Repair			2.5			54, 96, 97	F-H

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AUA2	Engine Diesel (Cont'd)								
	Engine Oil Cooler	Remove/Repl			1.5			54, 70, 88, 96, 97	F-H
		Repair			2.0			54, 96, 97	
	Injector	Test					0.5	34, 54	
		Adjust			0.7			43, 54, 57, 70, 88, 90, 91, 96, 97	
		Remove/Repl			0.7			54, 70, 88, 90, 96, 97	
		Repair					3.0	34, 54	
	Fuel Pump Assy.	Test					0.3	34, 54	
		Calibrate					1.0	34, 54	
		Remove/Repl			0.8			54, 70, 88, 95-97	
		Repair					3.9	34, 54, 103	
	Coolant Pump Assy.	Inspect							
		Remove/Repl		1.0				34, 54	
		Repair			1.0			54, 67, 68, 69, 72,89, 92, 94, 96 97	
	Transmission Oil Cooler Assy.	Remove/Repl		1.5				34, 54	
		Repair		2.0				34, 54	
	Air Compressor	Inspect			0.2				
		Remove/Repl			1.8			54, 70, 88 96, 97	
		Repair				4.5		54, 65, 96 97, 130 131	
	Gear Assy., Barring (Air Compressor)	Remove/Repl			1.0			54, 96,	
		Repair			0.2			54, 76, 96, 97	
	Support Assy. (Air Compressor)	Remove/Repl			0.2			54, 96, 97	
		Repair			0.2			54, 96, 97	
	Starter Assy.	Test		0.2				34, 43, 54	E-E
		Remove/Repl		1.5				34, 54	
		Repair			2.6			54, 95, 96	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
AV	Air Purifier Assy.	Remove/Repl		1.3				54	
		Repair		0.7				54	E-O
AW	Radio Installation								
	Radio Box	Inspect	0.1						E-F
		Remove/Repl		0.7				34, 54	E-F
		Repair		0.3				34, 54	
AX	Seat Installation								
	Driver's Seat Instl.	Remove/Repl		0.3				34, 54	
		Repair		1.4				34, 54	Z-F
AZ	Deleted								
A2	Stowage Installation	Inspect	0.1						
	Goggles Case	Remove/Repl		0.4				54	
A3	Suspension Installation								
	Drive Sprockets	Remove/Repl		1.2				34, 54	Z-E
		Service		1.0				54	
	Accumulator, Hydraulic Actuator	Test		0.6				34, 36, 38, 54	
		Service		0.5				34, 36, 38, 54	
		Remove/Repl		1.3	0.7			34, 54, 96, 97	
	Roadwheel Arm and Seal	Remove/Repl		1.6				34, 54	
		Repair		1.9				34, 54	
	Roadwheel Hub	Remove/Repl		1.4				34, 51, 54	
		Repair		.3				34, 46, 50, 54	
	Front Bump Stop Assy.	Remove/Repl		1.0				34, 54	
		Repair		0.6	0.9			34, 54, 62 96, 97	Z-Z
	Track Adjusting Cylinder	Remove/Repl		1.5				34, 54	
		Repair		0.5	1.0			34, 54, 74 96, 97	Z-Z
	Semi-Automatic Track Adjuster Assembly	Test		1.0				34, 54	
		Remove/Repl		1.5				54	
		Repair		2.0				54	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
A3	Suspension Installation (Cont'd)								
	Actuator, No. 1 and 4 (Corner)	Remove/Repl			4.0			37, 41, 52, 54, 56, 57, 79, 82, 83, 86, 96	ZE
		Repair			1.0			54,78,82, 83, 86, 96 97	H-C, Z-Z
		Overhaul					9.0	34, 54, 130	
	Actuator, No. 2 and No. 3 (Intermediate)	Remove/Repl			2.0			41, 52, 54, 56, 57, 82, 86, 96	Z-E
		Repair			1.0			54, 78, 82,	H-C,Z-Z
		Overhaul					9.0	34, 54, 130	
A5	Winch Installation								
	Winch Assembly	Service		0.2				54	Q-A,A-C
		Adjust		0.5				54	
		Remove/Repl		0.5				34, 54	Z-E
		Repair		2.0				54	
	Shift Control Assy., Winch	Service		0.4				34,54	
		Remove/Repl		0.5				34, 54	
		Repair		0.5	0.5			17,54,96	
	Wire Rope	Service	0.5					34, 54	
		Remove/Repl		1.2				34, 54	
		Repair		1.0				34, 54	
	Motor, Winch	Remove/Repl		1.0				34, 54	
A6	Special Purpose Kits								
	Winch Cover Kit	Remove/Repl		0.3				54	
	Warning Light Kit	Remove/Repl		0.6				54	
		Repair		0.2				34, 54, 95	K-1
	Ripper Blade Assy. Kit	Remove/Repl		1.2				34, 54	
		Repair		0.2				54	
	Micro-Climatic Cooling System (MCS)								
	MCS Armor Enclosure	Remove/Repl		0.4				34, 54	
		Repair		0.2				54	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
A6	Special Purpose Kits (Cont'd)								
	MCS Unit	Service		0.3	0.7			54, 66	N-D
		Test	0.2	0.3	0.5			54, 66	
		Inspection		0.2	0.6			54, 66	
		Remove/Repl		0.3				54	N-E
	NBC Filter	Test	0.1						
		Remove/Repl		0.3				54	D-A
	Condenser Fan	Remove/Repl		1.1				54	
	Compressor Assy.	Remove/Repl			1.3			34, 54, 66	N-D
		Repair			0.6			34, 54	
	Compressor Motor Assy.	Remove/Repl		3.6				54, 66	
		Repair		0.3				34, 54	
	Gear Belt	Inspect		0.1				54	
		Remove/Repl		1.2					
	Evaporator Fan	Remove/Repl		2.6				34, 54	
	Heater Assy.	Remove/Repl		1.9				54	
		Repair		1.1				34, 54	
	Electrical Housing	Remove/Repl		0.6				34, 54	
		Repair			3.2			54, 95	Q-A, K-I
	Armor Intake Assy. and Shields	Remove/Repl		0.2				34, 54	
	Refrigerant Line Shield	Remove/Repl		0.1				54	
	Interface Plate	Remove/Repl		0.4				54	
	Air Hoses	Remove/Repl		2.8				54	
	Control Box Elect.	Inspect		0.2				34, 54	
		Remove/Repl		0.3					K-I
		Repair		2.2				34, 54, 95	

Section II. MAINTENANCE ALLOCATION CHART (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
A6	Special Purpose Kits (Cont'd)								
	EMI Filter Box	Inspect		0.2				34, 54	
		Remove/Repl		0.3					
		Repair		2.5				34, 54	
	Wiring Harness, Main and Secondary	Inspect		1.8				34, 54	K-I
		Remove/Repl		4.1				34, 54	
		Repair		0.4				34, 54	
	Circuit Breaker	Remove/Repl		0.5				34	
	NBC Filter Switch	Remove/Repl		2.9				34, 54	
	Main Air Inlet and Plenum	Remove/Repl		0.8				34	
	Low Temperature Switch	Remove/Repl			2.6			34	
	Dump Valve	Remove/Repl		0.3				34	
	NBC Filter Housing	Remove/Repl		2.7				34, 54	
	Expansion Housing	Remove/Repl			6.9			34, 54, 66	N-D
	Rupture Disc	Remove/Repl			1.6			34, 54, 66	N-D
	Bypass Valve	Remove/Repl			6.1			34, 54, 66	N-D
	Delta Pressure Switch	Remove/Repl		2.1				34, 54, 66	
	Filter Dryer	Remove/Repl			2.2			34, 54, 66	N-D
	High Pressure Switch	Remove/Repl			1.7			34, 54, 66	N-D
	Refrigerant Hose	Remove/repl			1.3			34, 54, 66	N-D
	Sight Glass	Remove/Repl			3.2			34, 54, 66	N-D
	Protective Shield	Remove/Repl			0.1			54	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	C	Pliers, Slip Joint	5120-00-223-7396	GGG-P-471
2	C	Punch	5120-00-293-3509	41P3185
3	C	Screwdriver, Cross Tip	5120-00-234-8912	GGG-S-121
4	C	Wrench, Comb. 3/4 in.	5120-00-228-9510	G243079-11
5	C	Handle, S Wr. 3/4 in.	5120-00-221-7959	H377
6	C	Socket 3/4 in.	5120-00-242-3349	SD-1224
7	C	Wrench, Comb. 11/16 in.	5120-00-228-9509	1165
8	C	Screwdriver, Flat Tip	5120-00-278-1283	11655777-11
9	C	Handle, S Wr. 1/2 in.	5120-00-236-7590	11655786-1
10	C	Ext. Socket 10 in.	5120-00-227-8074	11655788-1
11	C	Wrench, Comb. 7/8 in.	5120-00-228-9512	1167
12	Deleted			
13	C	Socket 5/8 in.	5120-00-189-7946	11677025-2
14	C	Hammer	5120-00-061-8543	11677028
15	C	Wrench, Comb. 15/16	5120-00-228-9513	1168
16	C	Wrench, Comb. 1 in.	5120-00-228-9514	1170
17	C	Wrench, Comb. 1-1/4 in.	5120-00-228-9517	41W867-165
18	C	Socket 1-1/8 in.	5120-00-239-0021	1818
19	C	Crowbar	5120-00-224-1390	1833244
20	C	Wrench, Adjustable	5120-00-449-8083	5385A14
21	C	Socket 1-1/2 in.	5120-00-293-0094	5548
22	C	Lubricating Gun	4930-00-253-2478	M3859/1-14
23	C	Wrench, Adjustable	5120-00-423-6728	6187328
24	C	Rule, Steel	5210-00-182-9656	7305-006
25	C	Hammer, Hand Sledge	5120-00-265-7462	84H
26	C	Handle, Ratchet	5120-00-230-6385	8528574
27	C, F, H	Pin, Shoulder	5315-01-186-7991	12332340
28	C, F, H	Wrench, Spanner	5120-01-229-9134	12355454
29	C, F, H	Spacer Plate	5365-01-186-8009	13211E8658
30	C, F, H	Chain Assembly	4010-01-185-0406	13211E9331
31	C, F, H	Driftpin, Track	2530-01-075-8292	2590157
32	C, F, H	Fixture, Track	5120-00-605-3926	8741739
33	O	Shop Equipment #1 Suppl.	4910-00-754-0653	SC4910-95CLA73

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
34	O	Shop Equipment #1 Common	4910-00-754-0654	SC4910-95CLA74
35	O	Shop Equipment #2 Common	4910-00-754-0650	SC4910-95CLA72
36	O, F, H	Bushing, Pipe	4730-00-873-0110	C3109X6X2
37	O, F, H	Adapter, Socket Wrench	5120-00-240-8702	GAX-1
38	O, F, H	Tester, Hydraulic	4940-00-595-5720	GS5
39	O, F, H	Bolt, Eye	5306-00-050-0347	MS51937-5
40	O, F, H	Bolt, Eye	5306-00-017-6143	MS51937-7
41	F, H	Screw, Cap Hexagon	5305-00-071-2074	MS90728-118
42	O, F, H	Accumulator, Charging	4933-01-046-7109	12252157
43	O, F, H	STE/ICE-R Set	4910-01-222-6589	12259266
44	O, F, H	Stand, Vehicle	2590-01-228-5802	12355345
45	O, F, H	Pad, Metal	5365-01-230-0200	12355436
46	O, F, H	Inserter, Seal	5120-01-227-7044	12355437
47	O, F, H	Socket, Square Plug	5120-01-227-8480	12355451
48	O, F, H	Plug, Hydraulic Tank	5120-01-222-7934	12355501
49	O, F, H	Inserter, Bearing	5120-01-222-7938	12355511-4
50	O, F, H	Replacer	5120-01-222-7939	12355511-5
51	O, F, H	Jack, Roadwheel	2590-01-224-9241	12355582
52	O, F, H	Socket Set, Socket Wrench	5120-01-195-0640	208FA
53	O, F, H	Shop Equip., Con. Main	4940-00-294-9518	SC4940-97CLE05
54	O, F, H	Tool Kit, General Mech.	5180-00-177-7033	SC5180-90-CL-N26
55	O, F, H	Parts Kit, Hydraulic	2590-01-216-8646	5705562
56	O, F, H	Wrench Set, Open End	5120-01-301-5783	5705565
57	O, F, H	Wrench Set, Crowfoot	5120-01-302-4387	5705566
58	O, F, H	Wrench, Spanner	5120-01-086-1602	12282495
59	F	Recharger, Fire	4210-01-176-3511	350501-1
60	F	Shop Equip. Mech. She.	4940-00-209-6227	SC4940-95CLA52
61	F	Shop Equip. Fuel & Ele.	4940-00-209-6228	SC4940-95CLA53

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
62	F, H	Wrench, Spanner	5120-01-335-0709	APS357
63	F, H	Drill Set, Twist	5133-01-247-4746	DBC229
64	Deleted			
65	F, H	Tool Kit, Screw Thread	5180-00-157-1105	K4-621-621L
66	F, H	Tool Kit, Service Refrigeration Unit	5180-00-596-1474	SC5180-9-CL-N18
67	F, H	Mandrel	5120-01-164-3265	ST-1105
68	F, H	Water Pump, Seal	4910-01-097-6988	ST-1159
69	F, H	Driver Seal, WP	5120-01-128-2671	ST-1161
70	F, H	Mandrel, Bearing	4910-01-097-6986	ST-658
71	F, H	Adapter Plate	4910-01-128-2681	ST1329
72	F, H	Mechanical Puller	5120-00-499-1489	ST647
73	F, H	Mechanical Puller	5120-00-999-1504	ST709
74	F, H	Cyl. Hd. Lift Fixture	4910-00-977-7489	ST862
75	F, H	Wrench, Spanner	5120-00-157-2133	0-474
76	F, H	Wrench, Spanner	5120-00-880-4264	11602326
77	F, H	Pin, Guide	5315-01-229-9007	12355438
78	F, H	Driver	5120-01-227-7042	12355441
79	F, H	Wrench, Crowfoot	5120-01-228-3162	12355452
80	Deleted			
81	F, H	Driver	5120-01-222-7930	12355515
82	F, H	Pin, Straight, Threaded	5315-01-229-9703	12355519
83	F, H	Wrench, Cam, Adj.	5120-01-222-7933	12355536
84	F, H	Wrench, Spanner	5120-01-229-9135	12355559
85	F, H	Sling, Power Pack	5120-01-222-7932	12379498
86	F, H	Sling	5120-01-222-7931	13214E1988
87	F, H	Telescopic Gage	5120-01-241-5011	229A
88	F, H	Maintenance Stand	4910-00-977-7506	3375193
89	F, H	Bearing Driver	5120-01-128-2782	3375318
90	F, H	Injector Adj. Kit	4910-00-548-7984	3375842
91	F, H	Adj. Tool, Fuel Pump	4910-00-150-5805	3375981
92	F, H	Seal Driver	5120-01-217-8264	3376091
93	F, H	Puller, Injector	5120-00-116-7604	3376872
94	F, H	Oil Seal Replacer	5120-01-187-0384	3377269

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
95	F, H	Tool Kit, Fuel & Elec.	4910-00-754-0655	SC4910-95CLA50
96	F, H	Shop Equip., Field Basic	4910-00-754-0705	SC4910-95CLA31
97	F, H	Shop Equip., FM Suppl. #1	4910-00-754-0706	SC4910-95CLA62
98	F, H	Shop Equip., FM Suppl. #2	4910-00-754-0707	SC4910-95CLA63
99	F, H	Fuel & Elec., FM Basic	4910-00-754-0714	SC4910-95CLA01
100	Deleted			
100.1	F, H	Wrench, Spanner	5120-01-334-9858	YA862
100.2	F, H	Test Stand, Automotive Generator	4910-01-417-1870	DFP-354
101	H	V-Blocks	3460-00-913-8526	AA51150-TY2STASZI
102	H	Gauge, Fillet	5120-00-273-9867	10539031-1-TY7CLISTA
103	H	Plate, Surface	5220-00-293-3556	10539031
104	H	Mag. Crack Detector	5120-01-128-2676	ST-1166
105	H	Hand Reamer	5110-01-141-6140	ST-1188
106	H	Driver, Mandrel	5120-00-981-3108	ST-1227
107	H	Tester, Valve Vacuum	4910-01-128-2691	ST-1257-A
108	H	Valve Seat Extractor	5120-01-128-2679	ST-1279
109	H	Valve Insert Kit	4910-00-345-3708	ST-257
110	H	Valve Guide Arbor S	3460-00-999-1173	ST-663
111	H	Eccentrimeter	5120-01-171-3910	ST-685-4
112	H	Valve Guide Driver	4910-00-150-5843	ST-1122
113	H	Driver Assembly	4910-00-150-5844	ST-1124
114	H	Valve Extractor	4910-00-150-5848	ST-1134
115	H	Holding Tool, Inject.	5120-00-104-1795	ST-1179
116	H	Driver, Cylinder	5120-00-999-1206	ST-1229
117	H	Cutter, Injector	4910-00-981-3105	ST-438
118	H	C/Balance Cutter SE	5133-00-999-1208	ST-662
119	H	Spacer, Sleeve	5365-00-951-0775	ST-722
120	H	Brush, Fuel Passage	7920-00-168-3244	ST-876
121	H	Expander, Injector	3441-00-922-6699	ST-880

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
122	H	Crosshead Guide Spacer	5120-01-128-2684	3375092
123	H	Oil Seal Puller/Ins.	5120-01-128-2867	3375111
124	H	Plate Fuel Pump	4910-00-977-7505	3375133
125	H	Bushing Driver Camshaft	4910-01-142-7387	3375861
126	H	Valve Hd. Check Tool	4910-01-128-2689	3375933
127	H	Gauge, Protrusion	5120-01-157-3091	3376220
128	H	Clamp, Cyl. Line	5120-00-104-1816	3376669
129	H	Locating Mandrel	4910-01-149-1302	3377255
130	H	Shop Equip., Gen. Purp.	4940-00-287-4894	SC4940-97CLE03
131	H	Micrometer, Inside	5120-00-567-9545	599-281-20
132	H	Extractor, Sleeve	5120-00-113-5271	6038
133	H	Clamp, Synchro	5340-01-331-1523	12379458

Section IV. MAINTENANCE ALLOCATION CHART
M9, ARMORED COMBAT EARTHMOVER (ACE)

REFERENCE CODE	REMARKS
A-A	Inspect for leaks, unusual noises
A-B	Check for proper operation
A-C	Check lubrication level, fill as required
B-A	Inspect for leaks
B-B	Requires complete powerpack (engine, transmission, and transfer case) removal
B-C	Limited to removing armor plates for swimming
C-A	Inspect for cracks, leaks, warpage
C-B	Inspect service indicator
C-I	Grind valves
D-A	Damaged or unusable filters are classified as hazardous waste
E-A	Refer to TM 9-1040-267-20&P for additional information
E-D	Refer to TM 9-4910-485-12 or TM 9-4910-663-12 for additional information
E-E	Refer to TM 9-2920-248-35 for additional information
E-F	Refer to SB 11-131-2 and TM 11-5820-890-10-3 for additional information
E-H	Replace ring gear
E-O	Refer to TM 43-0001-26-1 for additional information
F-H	Requires removal of engine
H-C	Replace plug "O" ring and outer seal only
I-I	Repair by straightening, welding, and/or soldering
J-A	Inspect for loose connections, frayed, or broken wires
K-I	Organizational limited to taping, splicing, and replacement of non-pin connectors
N-C	Requires charging (N2 nitrogen)
N-D	Requires charging with refrigerant R134a
Q-A	Inspect for frayed, broken strands
X-X	Crew limited to draining condensation
X-Y	Crew limited to filling radiator with coolant
Z-A	Repair by welding, or bonding of rubber pads
Z-B	Operator adjustment limited to hand lever
Z-C	Time is based on changing one individual track link
Z-D	Inspect for cracks, unusual noises, loose or missing hardware
Z-E	Lift capability required
Z-F	Mend tears or re-cover
Z-G	Clean shaft and apply light coat of OE/HDO-10 lubricating oil
Z-H	Refer to TM 9-6140-200-14 for additional information
Z-L	Limited to removal and replacement of bearing and grease fitting at O level
Z-O	Limited to field at C level
Z-Q	Charge with Halon or dry powder. Refer to TM 5-4210-218-13&P
Z-Z	Limited to replacement of authorized components and adjustment

APPENDIX C
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

SCOPE

Repair parts, special tools, and support equipment are issued for maintaining the vehicle. Tools and equipment should not be used for purposes other than those prescribed. When not in use, they should be properly stowed.

COMMON TOOLS AND EQUIPMENT

Standard and commonly used tools and equipment that have general application to this material are authorized for issue by tables of allowances and modified tables of organization and equipment. Refer to the tables applicable to your unit for common tools and equipment.

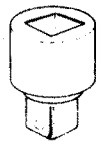
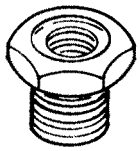
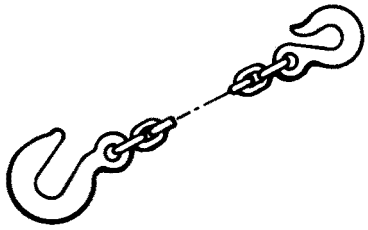
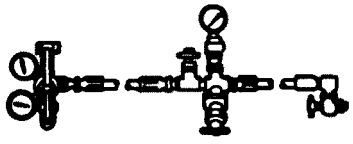
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools and equipment necessary to perform the maintenance described in this manual are listed for your information. Special tools and support equipment are listed in TM 5-2350-262-24P, which is the authority for requisitioning replacement parts.

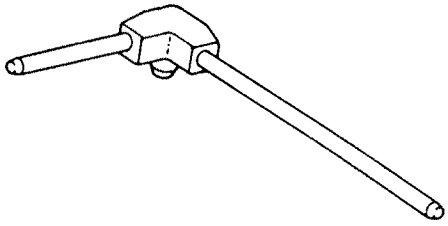
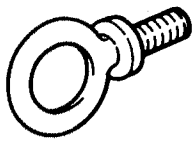
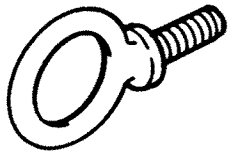
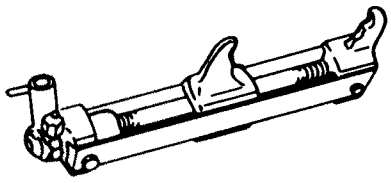
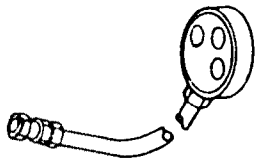
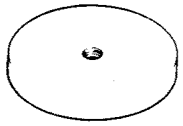
REPAIR PARTS

Repair parts are issued for the replacement of parts that have become worn, broken, or otherwise unserviceable. Repair parts are listed in TM 5-2350-262-24P, which is the authority for requisitioning replacements.

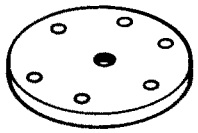
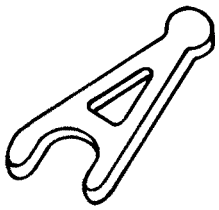
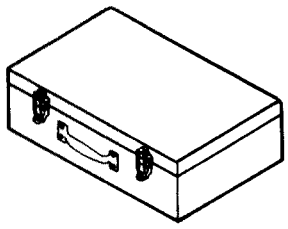
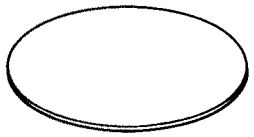
APPENDIX C
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT – CONTINUED

ITEM	NUMBER	USE
 ADAPTER, SOCKET WRENCH	5120-00-240-8702 (GAX-1)	For use with crowfoot wrenches
 ARMOR ALIGNMENT PIN	5315-01-186-7991 (12332340)	To remove and install armor plates
 BUSHING, PIPE	4730-00-873-0110 (C3109X6X2)	To adapt gauge, 4940-00-595-5720 to charging device, 4933-01-046-7109
 CHAIN ASSEMBLY	4010-01-185-0406 (13211E9331)	For folding dozer blade, and miscellaneous cargo loading
 CHARGING DEVICE	4940-01-046-7109 (12252157)	For charging accumulators

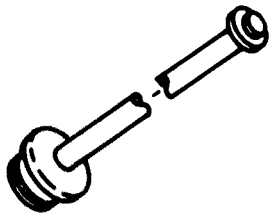
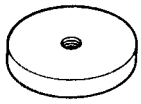
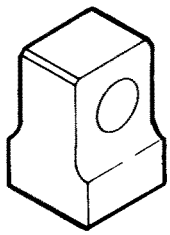
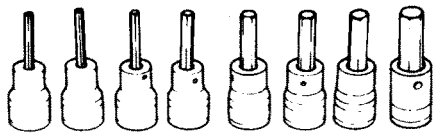
APPENDIX C
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT – CONTINUED

ITEM	NUMBER	USE
 DRIFTPIN	2530-01-075-8292 (2590157)	To remove and install track shoes and track
 EYEBOLT	5306-00-050-0347 (MS51937-5)	To remove and install fuel tank armor, radiator shroud, radiator, cowling, driver's hatch assembly, radio box, and dozer blade
 EYEBOLT	5306-00-017-6143 (MS51937-7)	To remove and install driver's hatch assembly
 FIXTURE, TRACK CONNECTING	5120-00-605-3926 (8741739)	To remove and install track shoes and track
 HYDRAULIC TESTER (GAUGE)	4940-00-595-5720 (GS-5)	For charging accumulators
 REPLACER, BEARING	5120-01-222-7938 (12355511-4)	To install roadwheel hub bearing cup

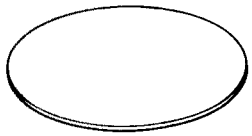
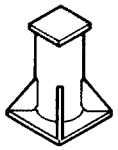
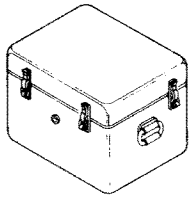
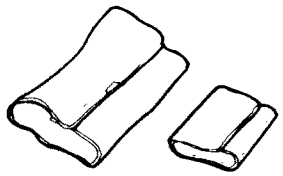
APPENDIX C
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT – CONTINUED

ITEM	NUMBER	USE
 INSERTER, SEAL	5120-01-227-7044 (12355437)	To install roadwheel hub seal
 JACK, ROADWHEEL	2590-01-224-9241 (12355582)	To remove roadwheels
 PARTS KIT	2590-01-216-8646 (5705562)	For troubleshooting hydraulic system
 METAL PAD	5365-01-230-0200 (12355436)	To remove roadwheel arm

APPENDIX C
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT – CONTINUED

ITEM	NUMBER	USE
 PLUG, HYDRAULIC TANK	5120-01-222-7934 (12355501)	To plug hydraulic tank outlet to prevent drainage when hydraulic lines are disconnected
 REPLACER	5120-01-222-7939 (12355511-5)	To install roadwheel hub bearing cup
Deleted		
 SOCKET, SQUARE PLUG	5120-01-227-8480 (12355451)	To remove hull access plug
 SOCKET SET, SOCKET WRENCH	5120-01-195-0640 (208FA)	To tighten screws on track wear plate and compensating pump compensator screws

APPENDIX C
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT – CONTINUED

ITEM	NUMBER	USE
 SPACER	5365-01-186-8009 (13211E8658)	For recovery operations
 STAND, VEHICLE	2590-01-228-5802 (12355345)	To support hull during maintenance
 STE/ICE-R	4910-01-222-6589 (2389409)	For electrical and engine trouble-shooting
 WRENCH SET, OPEN END	5120-01-301-5783 (5705565)	To disconnect and connect various oil lines
 WRENCH SET, CROWFOOT	5120-01-302-4387 (5705566)	To disconnect and connect miscellaneous hydraulic lines
 WRENCH, SPANNER	5120-01-229-9134 (12355454)	To disconnect and connect final drives

APPENDIX C
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT – CONTINUED

ITEM	NUMBER	USE
 WRENCH, SPANNER	5120-01-086-1602 (12282495)	To remove and install roadwheel hubs
 WRENCH, STRAP	5120-01-334-9858 (YA826)	For alternator pulley replacement

APPENDIX D
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

D-1. SCOPE

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the M9 vehicle. This listing is for informational purposes and is not authority to requistion 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.

D-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 sealing compound, item 9, App. D").

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

(enter as applicable)

C – Operator/Crew
O – Unit Maintenance
F – Direct Support Maintenance
H – General Support Maintenance

c. Column (3) National Stock Number (NSN). This is the NSN 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 Commercial and Government Entity code (CAGEC) is in parentheses followed by the part number.

e. Column (5) Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, lb, qt). Requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST — Cont'd

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	O		ADHESIVE: epoxy plastic MIL-A-8623	
		8040-01-036-3771	4 Ounce Kit	OZ
2	O		ADHESIVE: epoxy resin (81348) MMM-A-1617	
		8040-00-152-0063	2.5 Ounce Can	OZ
		8040-00-152-0067	6 Ounce Can	OZ
3	O		ADHESIVE: flexible 12370874	
		8040-01-375-0484	Kit	EA
4	O		ADHESIVE: sealant multi-purpose sealant (80244) MIL-A-46106	
		8040-00-843-0802	3 Ounce Tube	OZ
5	O		ADHESIVE: sealant, silicone, type 1, black (80244) MIL-A-46106	
		8040-00-851-0211	5 Ounce Kit	OZ
		8040-00-865-8991	12 Ounce Kit	OZ
6	C		ANTIFREEZE: permanent, glycol, inhibited MIL-A-46153	
		6850-00-181-7929	1 Gallon Bottle	GAL.
7	O		CAPS AND PLUGS: Cap, protective dust (96906) MS90376-8Y	
		5340-00-324-9158	0.413 ID, 0.438 OD	EA
			(96906) MS90376-8R	
		5340-00-208-1989	0.480 ID, 0.540 OD	EA
			(96906) MS90736-10Y	
		5340-00-449-4491	0.530 ID, 0.595 OD	EA
			(96906) MS90376-10R	
		5340-00-211-8188	0.605 ID, 0.665 OD	EA
			(96906) MS90376-12R	
		5340-00-213-8881	0.720 ID, 0.775 OD	EA

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST — Cont'd

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
7	O		CAPS AND PLUGS — Continued	
		5340-00-481-8934	(96906) MS90376-14Y 0.785 ID, 0.845 OD	EA
		5340-00-493-5835	(96906) MS90376-14R 0.850 ID, 0.905 OD	EA
		5340-00-496-5832	(96906) MS90376-16Y 0.893 ID, 0.963 OD	EA
		5340-00-200-5904	(96906) MS90376-16R 0.973 ID, 1.035 OD	EA
		5340-00-171-2436	(96906) MS90376-18Y 1.078 ID, 1.085 OD	EA
		5340-00-193-0783	(96906) MS90376-18R 1.093 ID, 1.155 OD	EA
		5340-00-051-0029	(96906) MS90376-20Y 1.150 ID, 1.215 OD	EA
		5340-00-213-8893	(96906) MS90376-20R 1.231 ID, 1.301 OD	EA
		5340-00-191-4898	(96906) MS90376-24Y 1.390 ID, 1.460 OD	EA
		5340-00-889-8677	(96906) MS90376-24R 1.463 ID, 1.533 OD	EA
		5340-00-804-1228	(81349) M5501/1-5 0.500-20-THD. 0.438 DIA.	EA
		5340-00-292-3292	(81349) M5501/1-6 0.5625-18 THD. 0.500 DIA.	EA
		5340-00-828-8802	(81349) M5501/1-8 0.750-16 THD. 0.675 DIA.	EA
		5340-00-804-1245	(81349) M5501/1-16 1.3125-12 THD. 1.219 DIA.	EA

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST — Cont'd

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
7	O		CAPS AND PLUGS — Continued	
			(81349) M5501/2-4	
		5340-00-804-1238	0.4375-20 THD. 0.660 DIA.	EA
			(81349) M5501/2-6	
		5340-00-804-1243	0.5625-18 THD. 0.800 DIA.	EA
			(81349) M5501/2-8	
		5340-00-804-1241	0.750-16 THD. 1.00 DIA.	EA
			(81349) M5501/2-12	
		5340-01-138-2169	1.0625-12 THD. 1.28 DIA.	EA
			(81349) M5501/2-16	
		5340-00-804-1222	1.3125-12 THD. 1.53 DIA.	EA
			(81349) M5501/2-24	
		5340-01-120-9526	1.875-12 THD. 2.23 DIA.	EA
8	O		CLOTH, ABRASIVE: emery	
			(81348) P-C-1673	
		5350-00-584-4654	50 Sheet Pack	EA
9	O		COMPOUND, DECK COVERING: non-slip, type III, gray	
			(80244) MIL-D-23003	
		5610-00-857-4391	1 Kit	EA
10	O		COMPOUND: sealing, grade B thread-locker	
			(81349) MIL-S-22473	
		8030-00-058-5398	2 cc Tube	CC
11	O		COMPOUND: sealing, grade C or CV	
			(81349) MIL-S-22473	
		8030-00-823-7917	150 cc bottle	CC
		8030-00-964-7537	250 cc bottle, grade C	CC
		8030-00-081-2330	150 cc bottle, grade CV	CC

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST — Cont'd

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
12	O		COMPOUND: sealing, grade K, type 1, course thread-locker MIL-S-46163	
		8030-00-148-9833	10 cc Bottle	CC
		8030-01-158-6070	50 cc Bottle	CC
13	O		COMPOUND: sealing, primer grade T (05972) MIL-S-22473	
		8030-00-082-2508	4 Ounce Bottle	CC
14	O		COMPOUND: sealing, with brush (81349) MIL-S-45180	
		8030-00-252-3391	11 Ounce Tube	OZ
15	O		COMPOUND: sealing, with Teflon pipe sealant (05972) 59231	
		8030-01-054-0740	50 cc Tube	CC
16	O		COMPOUND: silicone MIL-S-8660	
		6850-00-177-5094	2 Ounce Tube	OZ
17	O		COMPOUND: thread-locking, type 1, grade L MIL-S-46163	
		8030-01-063-7510	50 cc Bottle	CC
18	C		FUEL, AVIATION TURBINE: JP8 NATO F-34 (MIL-T-83133)	
		9130-01-305-5597	Gallon	GAL.
19	O		GREASE: automotive and artillery (GAA), (81349) MIL-G-10924	
		9150-00-065-0029	2.25 Ounce Tube	OZ
		9150-00-935-1017	14 Ounce Cartridge	OZ
		9150-00-190-0904	1.75 Pound Can	LB
		9150-00-190-0905	6.5 Pound Can	LB
		9150-00-190-0907	35 Pound Can	LB

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST — Cont'd

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
20	O		GREASE: aircraft MIL-L-4343	
		9150-00-273-8633	8 Ounce Tube	OZ
21	O		GREASE: molybdenum disulfide MIL-G-21164	
		9150-00-935-4018	14 Ounce Tube	OZ
		9150-00-754-2595	1.75 Pound Can	LB
		9150-00-223-4004	6.5 Pound Can	LB
		9150-00-965-2003	35 Pound Can	LB
22	O		INSULATION: type 2FMSSZO, 3/4-inch thick MIL-P-15280	
		5640-01-282-5760	Sheet	EA
23	O		LUBRICANT: cleaner and preservative for weapons MIL-L-63460	
		9150-01-079-6124	4 Ounce Bottle	OZ
		9150-01-054-6453	16 Ounce Bottle	PT
		9150-01-053-6688	1 Gallon Can	GAL.
24	O		LUBRICANT, SOLID: film, air cured, corrosion inhibiting MIL-L-46147	
		9150-00-142-9361	1 Gallon Can	GAL.
25	O		NITROGEN: technical BB-N-411	
		6830-00-764-8964	380 Cubic Feet	EA
26	O		OIL, LUBRICATING: internal combustion engine (81349) MIL-L-2104	
		9150-00-189-6727	1 Quart Can OE/HDO 10	QT
		9150-00-186-6668	5 Gallon Carton	GAL.
		9150-00-191-2772	55 Gallon Drum	GAL.
		9150-00-186-6681	1 Quart Can OE/HDO 30	QT
		9150-00-186-9858	5 Gallon Carton	GAL.
		9150-00-189-6729	55 Gallon Drum	GAL.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST — Cont'd

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
27	O		OIL, LUBRICATING, GENERAL PURPOSE: preservative PL-medium (81249) MIL-L-3150	
		9150-00-231-2361	1 Quart Can	QT
		9150-00-231-2356	5 Gallon Can	GAL.
28	O		PETROLATUM, TECHNICAL: (81348) VV-P-236	
		9150-00-250-0931	8 Ounce Tube	OZ
		9150-00-530-7368	120 Pound Drum	LB
29	O		ROPE, FIBROUS: MIL-R-30500	
		4020-00-659-8923	50 Foot Roll	FT
		4020-00-630-4875	600 Foot Roll	FT
30	O		SODIUM BICARBONATE: technical baking soda (81348) 0-S-576	
		6810-00-264-6618	1 Pound Container	LB
31	O		SOLVENT, DRYCLEANING: liquid white, 140 degree flashpoint (SD3) (81348) P-D-680	
		6850-01-377-1960	4 Ounce Can	OZ
		6850-01-377-1808	1 Quart Can	QT
		6850-01-377-1809	1 Gallon Can	GAL.
32	O		STRAP: tiedown electrical	
		5975-00-074-2072	Bundle MS3367-1-9	BDL
		5975-00-451-5001	Bundle MS3367-3-9	BDL
33	O		TAPE: antiseizing, polytetrofluoruethylene (81349) MIL-T-27730 1/2 in. (1.2 cm) wide	
		8030-00-889-3535	1 Roll – 260 Inches	EA

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST — Cont'd

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
34	O	5970-00-644-2636	TAPE: electrical HH-1-595 1 Roll – 108 Feet	FT
35	O	9505-00-293-4208	WIRE: non-electrical MS20995C-32 1 Roll	LB
36	O	8030-00-753-4953	COMPOUND: antiseize, MICA and oil base (81349) MIL-A-13881 1 Pound Can	LB
37	O	8030-00-339-0310	Sealing Compound: Loctite 569 (05972) 569-31 50 cc bottle	CC

APPENDIX E
ILLUSTRATED LIST OF MANUFACTURED ITEMS

SCOPE

This appendix includes complete instructions for making items authorized to be manufactured at unit maintenance.

A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

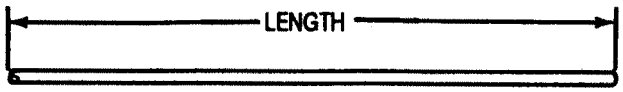
All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

Part Number	Item Description	Figure Number
MS20995C32AR	Wire, Nonelectrical	E-1
MS51062-1 Note 36 Trade 1	Chain	E-2
MS521301A230030	Hose, Nonmetallic	E-3
MS521301A230054	Hose, Nonmetallic	E-3
M13486/1-AR	Wire, Electrical	E-4
M13486/1-3AR	Wire, Electrical	E-4
M13486/1-5AR	Wire, Electrical	E-4
M13486/1-7AR	Wire, Electrical	E-4
M13486/1-9AR	Wire, Electrical	E-4
M13486/2-2AR	Wire, Electrical	E-5
M13486/10-1AR	Wire, Electrical	E-6
M23053/1-101-0AR	Insulation Sleeving	E-7
M23053/1-102-0AR	Insulation Sleeving	E-7
M23053/1-103-0AR	Insulation Sleeving	E-7
M23053/1-201-0AR	Insulation Sleeving	E-7
M23053/5-103-9AR	Insulation Sleeving	E-7
M23053/5-108-0AR	Insulation Sleeving	E-7
M62217/I-8-19	Hose, Nonmetallic	E-8
M62217/I-8-39	Hose, Nonmetallic	E-8
M62217/1-16-4	Hose, Nonmetallic	E-9
M62217/1-16-15	Hose, Nonmetalllic	E-9
M62217/1-36-4	Hose, Nonmetallic	E-9
M62217/1-44-6	Hose, Nonmetallic	E-9
M62217/3-E-R26	Hose, Nonmetallic	E-10
RRC-271	Chain, Weldless	E-11
12332526	Hose, Metallic	E-12
12334680	Hinge Assembly	E-13
12335306	Hinge	E-14
12352561	Hinge	E-15

SCOPE - CONTINUED

Part Number	Item Description	Figure Number
12355368-1	Tape, Hook	E-16
12355368-2	Tape, Hook	E-16
12355368-3	Tape, Hook	E-16
12355368-4	Tape, Hook	E-16
12355369-1	Tape, Hook	E-17
12355369-2	Tape, Hook	E-17
12355369-4	Tape, Hook	E-17
12362200-1	Rope	E18
13204E2894-1	Seal	E-19
13204E2894-2	Seal	E-19
13204E2894-3	Seal	E-19

Figure E-1



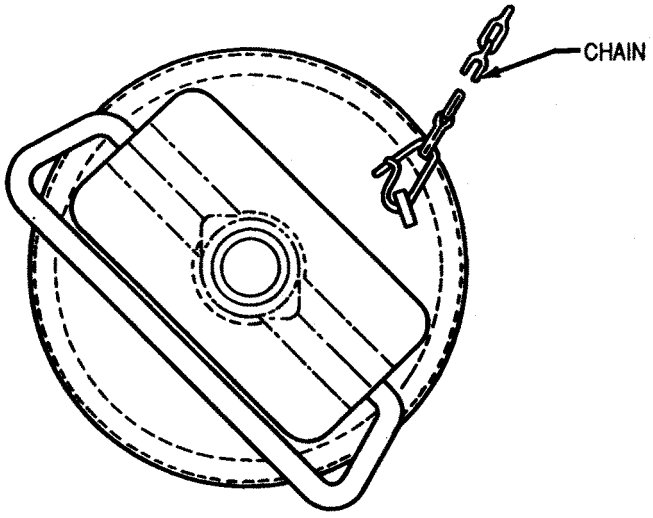
MAKE FROM:

MS20995C32 Wire, Safety or Lock

Length: As Required

MS20995C32AR **WIRE, NONELECTRICAL**

Figure E-2



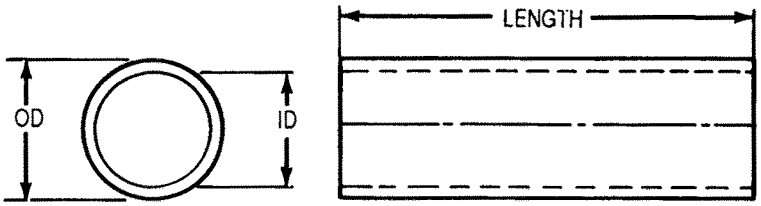
MAKE FROM:

RRC271 Chain, Weldless, Type 2, Class 6, .028 in. (.711 mm) thick

Length: 10 in. (25.4 cm), ± .25 in. (.64 cm)

MS51062-1 Note 36, Trade 1 **CHAIN**

Figure E-3



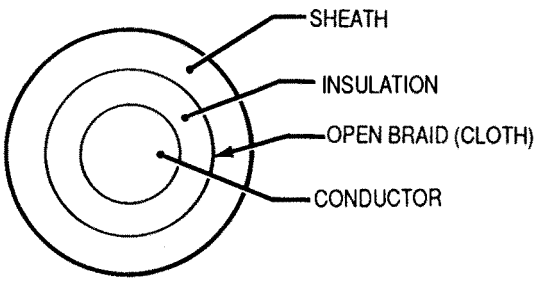
MAKE FROM:

MS53130 Hose, Nonmetallic, Straight, Engine Coolant, Type 1, Grade A, Class 2

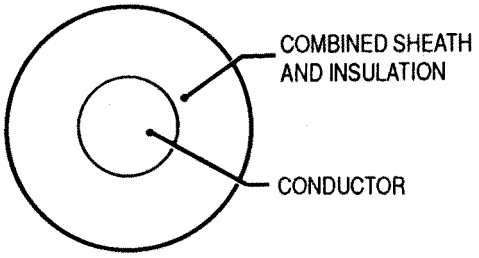
Part Number	Length
MS521301A230030	3 in. (7.6 cm)
MS521301A230054	5.5 in. (14 cm)

MS521301A230030
MS521301A230054 **HOSE, NONMETALLIC**

Figure 4



(FIGURE 1)



(FIGURE 2)
OPTIONAL CONSTRUCTION

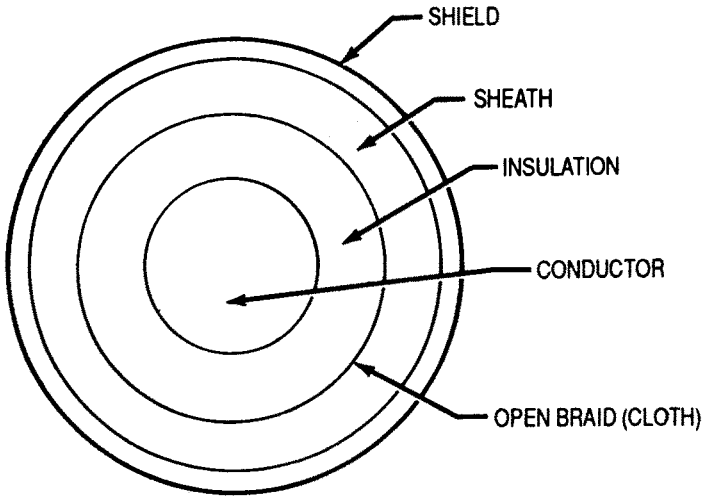
MAKE FROM:

M13486/1 Cable, Special Purpose, Electrical; Low Tension, Heavy-Duty, Single-Conductor, Unshielded

Part Number	Conductor Size	Length
M13486/1-1AR	20	As Required
M13486/1-3AR	16	As Required
M13486/1-5AR	14	As Required
M13486/1-7AR	12	As Required
M13486/1-9AR	8	As Required

M13486/1 **WIRE, ELECTRICAL**

Figure E-5



MAKE FROM:

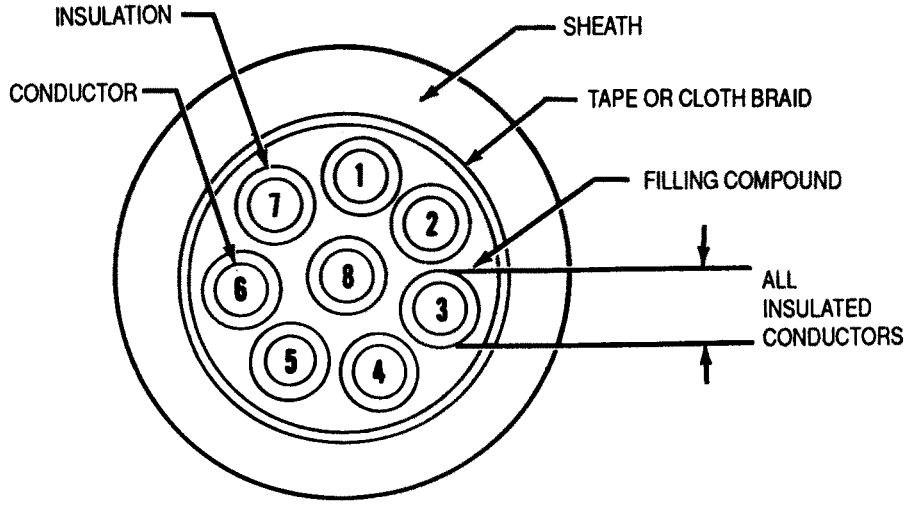
M13486/2 Cable, Special Purpose, Electrical; Low Tension, Heavy-Duty, Single-Conductor, Shielded

Conductor Size: 16

Length: As Required

M13486/2-2AR **WIRE, ELECTRICAL**

Figure E-6



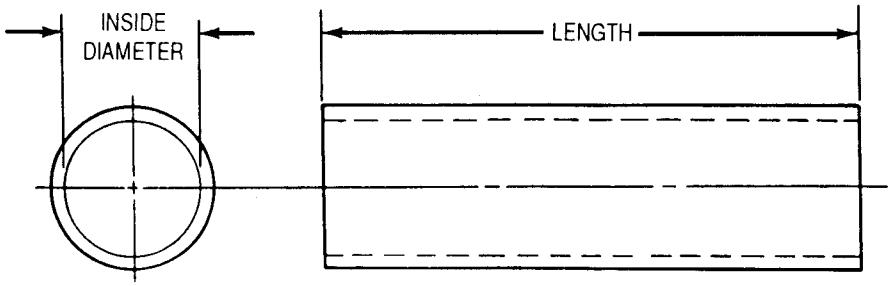
MAKE FROM:

M13486/10-1 Cable, Special Purpose, Electrical; Low Tension, Heavy-Duty, Multiple-Conductors, Unshielded

Length: As Required

M13486/10-1AR **WIRE, ELECTRICAL**

Figure E-7



Part Number	Minimum ID	Color	Length
M23053/1-101-0AR	.250 in. (6.4 mm)	Black	As Required
M23053/1-102-0AR	.375 in. (9.5 mm)	Black	As Required
M23053/1-103-0AR	.500 in. (12.7 mm)	Black	As Required
M23053/1-201-0AR	.250 in. (6.4 mm)	Black	As Required
M23053/5-103-9AR	.093 in. (2.36 mm)	White	As Required
M23053/5-108-0AR	.500 in. (12.7 mm)	Black	As Required

MAKE FROM:

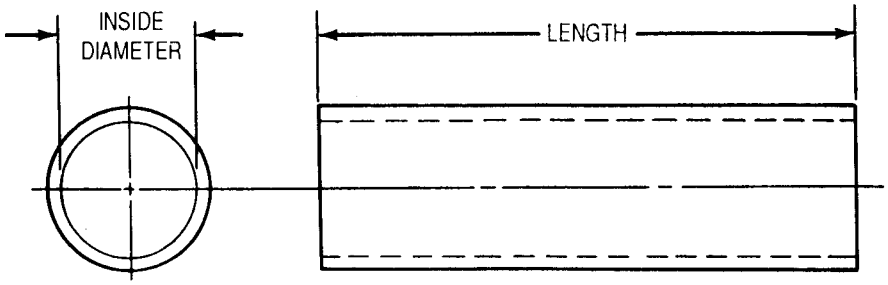
M23053/1 Insulation Sleeving, Electrical, Heat Shrinkable, Polychloroprene, Flexible, Class 1 or Class 2

OR

M23053/5 Insulation Sleeving, Electrical, Heat Shrinkable, Polyolefin, Flexible, Cross Linked

M23053/1
M23053/5 **INSULATION SLEEVING**

Figure E-8



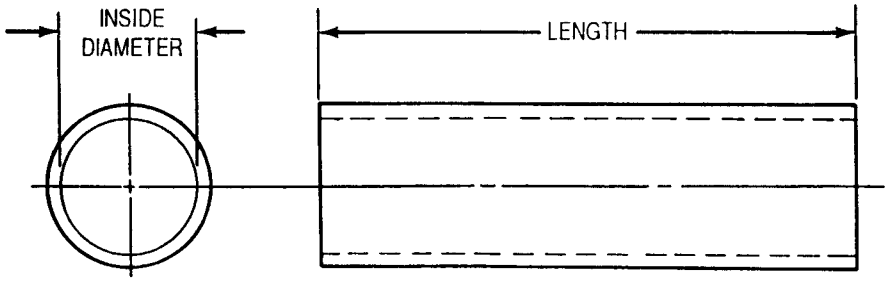
Part Number	Inside Diameter	Length
M62217/I-8-19	.500 in. (12.7 mm)	19 in. (48 cm)
M62217/I-8-39	.500 in. (12.7 mm)	39 in. (99 cm)

MAKE FROM:

M62217/I Hose, Nonmetallic, Straight, Silicone, Polyester Reinforced

M62217/I-8 **HOSE, NONMETALLIC**

Figure E-9



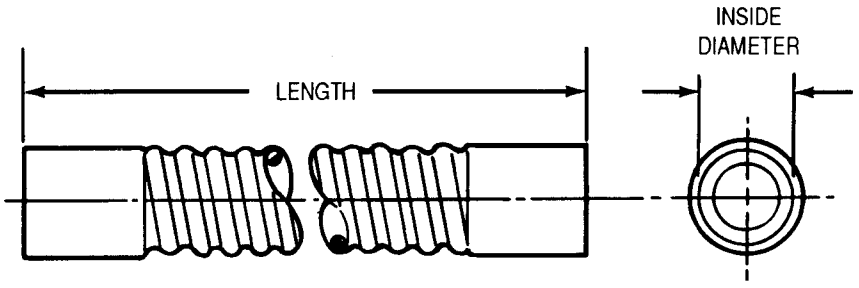
MAKE FROM:

M62217/1 Hose, Nonmetallic, Straight, Silicone, Polyester Reinforced

Part Number	Inside Diameter	Length
M62217/1-16-4	1 in. (2.54 cm)	4 in. (10 cm)
M62217/1-16-15	1 in. (2.54 cm)	15 in. (38 cm)
M62217/1-36-4	2.25 in. (5.72 cm)	4 in. (10 cm)
M62217/1-44-6	2.75 in. (6.98 cm)	6 in. (15 cm)

M62217/1 **HOSE, NONMETALLIC**

Figure E-10



MAKE FROM:

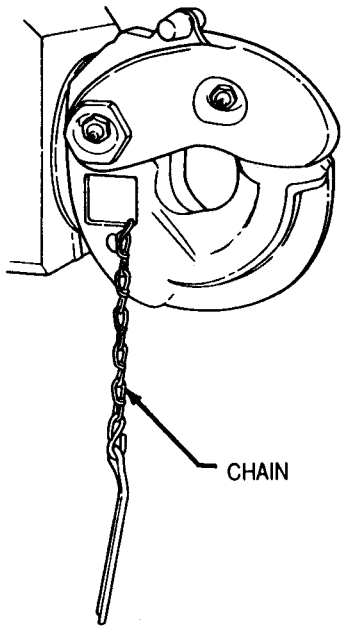
M62217/3 Hose, Preformed; Flexible, Silicone, Polyester and Wire Reinforced

Inner Diameter:
2.25 in. (5.72 cm)

Length:
26 in. (66 cm)

M62217/3-E-R26 **HOSE, NONMETALLIC**

Figure E-11



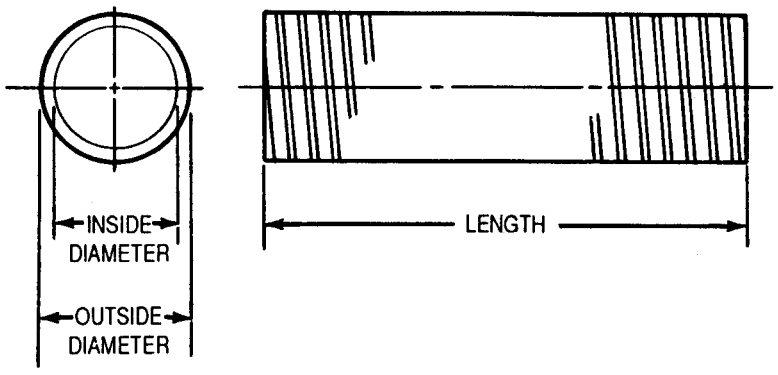
MAKE FROM:

RRC-271 Chain, Weldless, Type 2, Class 2, Zinc and Chromate Plated

Length: As Required

RRC-271 **CHAIN, WELDLESS**

Figure E-12



MAKE FROM:

Fed Spec WW-H-1053, Class S, Type 1, Composition C

Remove all burrs and sharp edges.

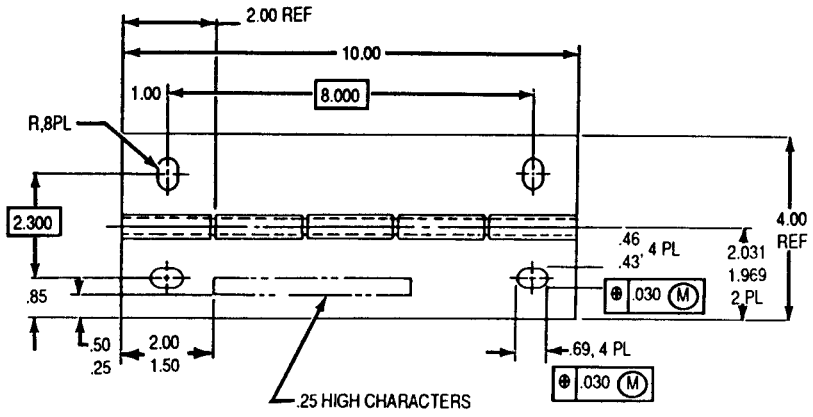
Inner Diameter:
1.25 in. (3.18 cm)

Outside Diameter:
1.38 in. (3.51 cm)

Length: 72 in. (183 cm)
± .25 in. (.64 cm)

12332526 **HOSE, METALLIC**

Figure E-13



All dimensions are in inches

MAKE FROM:

MS35831-6A Hinge, Butt, Continuous, (Piano) .125 Thickness .375 Pin Dia, 84 in. (213 cm), Aluminum Leaf and Pin.

Remove all burrs and sharp edges.

Clean and treat, Class 1A, Spec MIL-C-5541

Prime with MIL-P-23377 Epoxy, 1.0 to 1.5 mils thick.

Paint with MIL-C-46168, Polyurethane, Forest Green.

Hinge Assembly must rotate before and after painting.

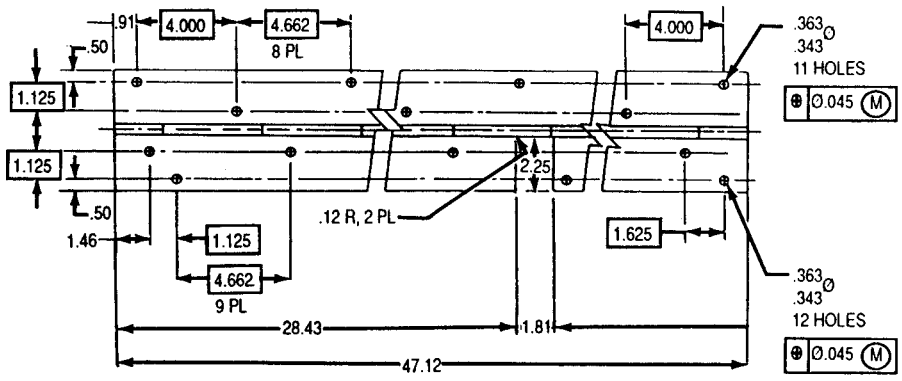
Stake pin to hinge at one end, .5 in. (1.3 cm) from end.

Cut at leaf joint.

Apply per MIL-STD-130: 19207-12334680

12334680 **HINGE ASSEMBLY**

Figure E-14



All dimensions are in inches

MAKE FROM:

MS35830-14DF Hinge, Butt, Continuous, (Piano) .090 Thickness .250, .375 Pin Dia, Carbon Steel with Protective Finish

Remove all burrs and sharp edges.

Treat Type I or III, Spec TT-C-490

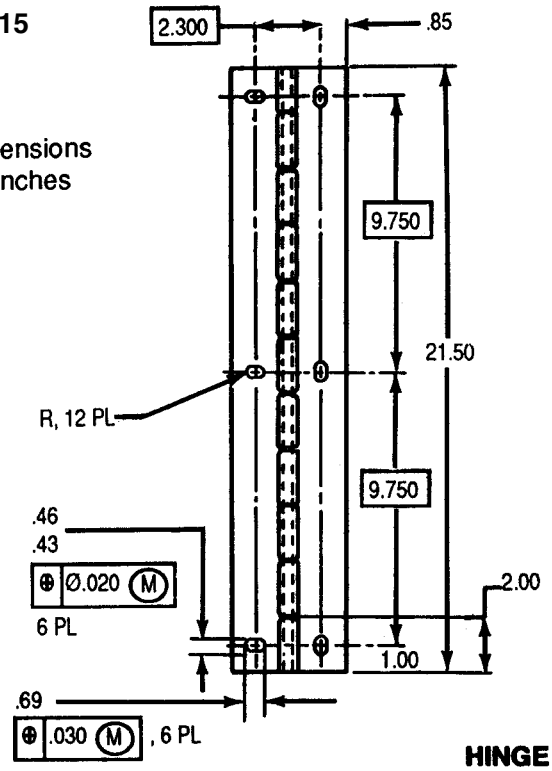
Prime with MIL-P-52192 Epoxy, 1.0 to 1.5 mils thick.

Paint with MIL-C-46168, Polyurethane, Forest Green.

Apply per MIL-STD-130: 19207-12335306.

12335306 **HINGE**

Figure E-15



12352561

HINGE

MAKE FROM:

MS35831-6A Hinge, Butt, Continuous, (Piano) .125 Thickness .375 Pin Dia, 84 in. (213 cm), Aluminum Leaf and Pin.

Remove all burrs and sharp edges.

Clean and treat, Class 1A, Spec MIL-C-5541

Prime with MIL-P-23377 Epoxy, .6 to .9 mils thick.

Paint with MIL-C-46168, Polyurethane, Forest Green.

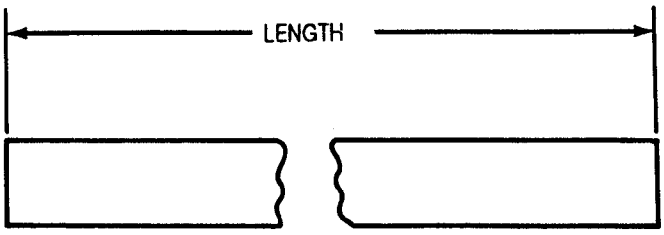
Hinge must rotate before and after priming.

Stake pin to hinge at one end, .5 in. (1.3 cm) from end.

Cut one end at leaf joint.

Apply per MIL-STD-130: 19207-12352561

Figure E-16



MAKE FROM:

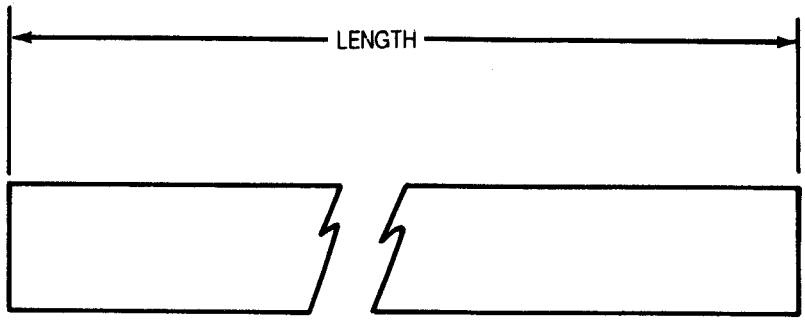
MIL-F-21840 Fastener Tape, Hook, Synthetic Adhesive Backing for Metal,Type 1A, Class 1, Color Green OG 106, 1 in. Wide

Part Number	Length
12355368-1	13.75 in. (34.92 cm)
12355368-2	29.00 in. (73.66 cm)
12355368-3	36.75 in. (93.34 cm)
12355368-4	37.47 in. (95.17 cm)

12355368

TAPE, HOOK

Figure E-17



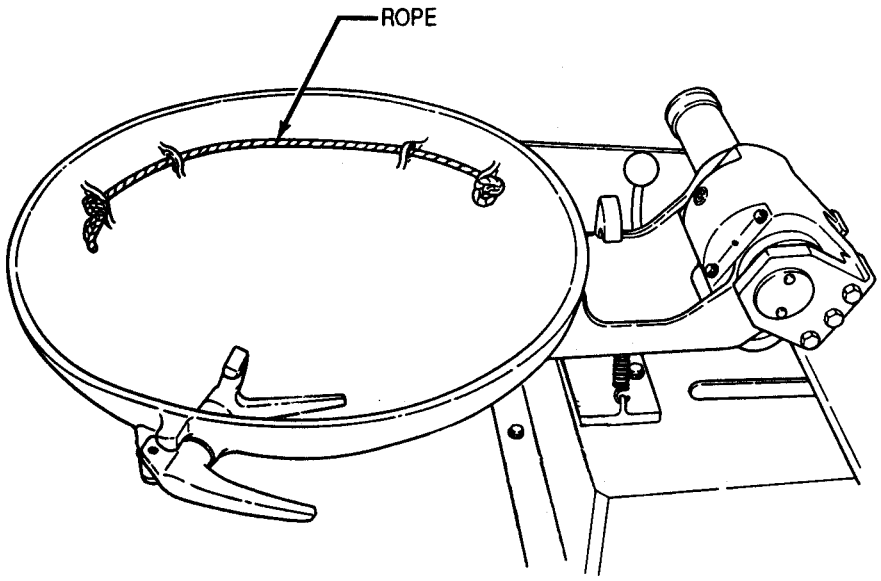
MAKE FROM:

MIL-F-21840 Fastener Tape, Hook, Synthetic Adhesive Backing for Metal, Type IA, Class 1, Color Green OG 106, 1.5 in. Wide

Part Number	Length
12355369-1	13.75 in. (34.92 cm)
12355369-2	29.00 in. (73.66 cm)
12355369-3	36.75 in. (93.32 cm)
12355369-4	37.47 in. (95.17 cm)

12355369 **TAPE, HOOK**

Figure E-18



MAKE FROM:

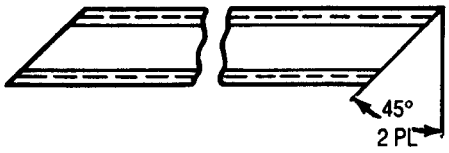
MIL-R-24049 Rope, Polypropylene, Type Optional, 500 in. (1270 cm).

Rope ends will be secured with figure eight knots and heat sealed.

Length: As Required

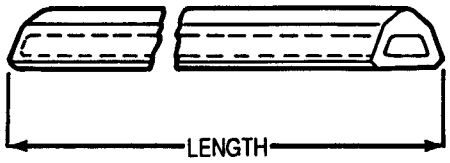
12362200-1 **ROPE**

Figure E-19



MAKE FROM:

M2BC714C20E14E34 Rubber, ASTM D2000



Part Number	Length
13204E2894-1	104 in. (264 cm)
13204E2894-2	79 in. (201 cm)
13204E2894-3	74 in. (188 cm)

13204E2894 **SEAL**

APPENDIX F
TORQUE LIMITS

SCOPE

This appendix provides general torque limits for screws and nuts used on the M9 vehicle. Special torque limits are indicated in the maintenance procedures for applicable components. General torque limits in this appendix shall be used when special torque limits are not indicated in the maintenance procedures.

TORQUE LIMITS

Table 1 lists dry torque limits. Dry torque limits are used on screws that have not had lubricants applied to the threads. Table 2 lists wet torque limits. Wet torque limits are used on screws that have had lubricants applied to the threads. Unless the maintenance procedure indicates otherwise, lubricate threads of screws with oil (OE/HDO-10 or OEA).

When tightening screws to torque limits of 30 lb-ft (41 N-m) and above, use the torque sequence for the component specified in the maintenance procedures or the general circular or straight sequences shown on page F-4. Tighten screws to 70 percent of their final value, then repeat the pattern until the final value is reached.

HOW TO USE TORQUE LIMIT TABLES

A Measure the diameter of the screw being installed.

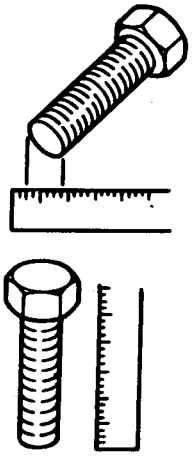
B Count the number of threads in 1 in. (2.5 cm) of screw length.

C Under the SIZE heading in tables 1 or 2, look down the left-hand column to find the diameter of the screw being installed, measure in step A. There are usually two listings.

D In the right-hand column under SIZE heading, find the number of threads per inch counted in step B.

E To find the grade of screw being installed, match the markings on the head of the screw being installed with the correct picture in SCREW MARKINGS on tables 1 and 2.

F Look down the SAE GRADE column in the TORQUE column in tables 1 or 2 to find the correct torque limit for the screw being installed.





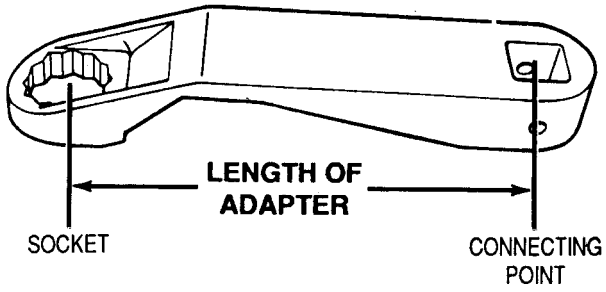
GRADE 5

HOW ADAPTERS AFFECT TORQUE LIMITS

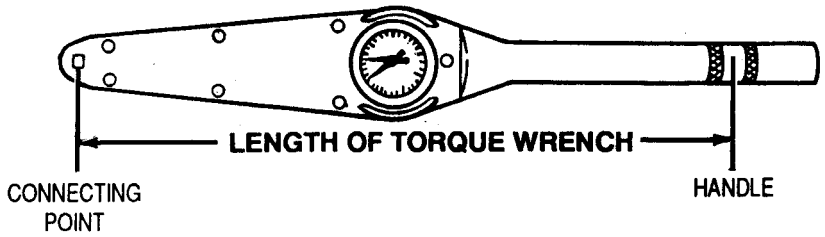
Torque wrenches have built-in devices (i.e. dials or clicks) which indicate to a mechanic when the desired torque limit has been reached. However, when adapters or extensions are used on the torque wrench that increase the length of the wrench, the torque applied will be greater than the dial reading, or preset torque limit.

Some quick mathmatics will help the mechanic decide what the dial reading or preset torque limit should be to obtain the desired torque limit when an adapter or extension is used.

First, measure the length of the extension from the center of the connecting point with the torque wrench to the center of the socket.



Then, measure the length of the torque wrench. Measure the wrench from the center of the handle to the center of the connecting point with the socket or adapter.



Calculate what the dial indicator or clicker setting should be using the following formula:

$$\text{Dial Indicator or Clicker Setting} = \frac{\text{Torque Wrench Length x Torque Desired}}{\text{Torque Wrench Length + Extension Length}}$$

HOW ADAPTERS AFFECT TORQUE LIMITS — CONTINUED

For example:

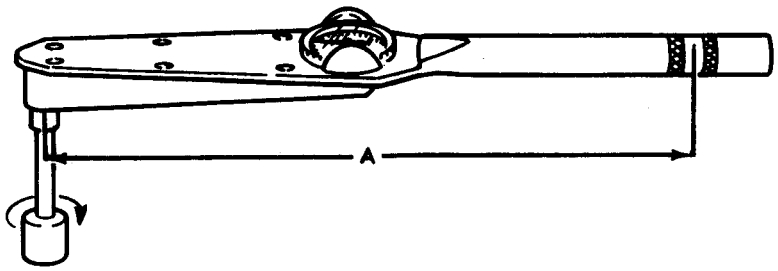
A 6-inch extension is used on 18-inch torque wrench. The torque desired on the screw is 300 lb-ft (407 N·m). Using the formula, the dial indicator reading or clicker setting can be determined.

$$\frac{18 \times 300}{18 + 6} = \frac{5400}{24} = 225 \text{ lb-ft } (305 \text{ N·m})$$

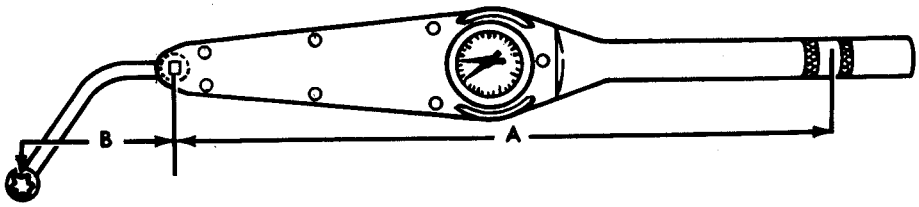
Therefore, a dial indicator reading of 225 lb-ft (305 N·m), or a clicker setting of the same level will result in the desired torque of 300 lb-ft (407 N·m) being applied.

In most cases, adapters that add 1 in. (2.5 cm) or less to the torque wrench length do not require recalculating torque. Only if the desired torque has an exceedingly tight tolerance should the new torque be calculated.

Be careful when deciding the length of the adapter.



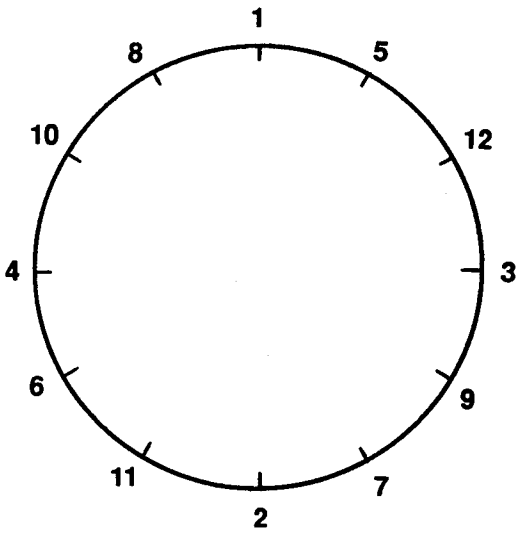
In the example above, the extension will not affect the torque reading.



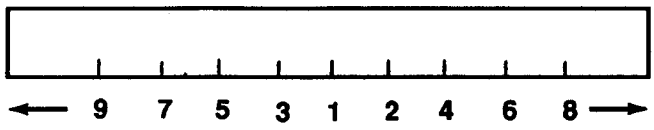
In the example above, the adapter will affect the torque. But use only the distance the wrench is extended by the adapter (B), not the actual length of the adapter, when calculating the new torque.

TORQUE SEQUENCE

If the maintenance procedures of chapter 4 do not specify a torque pattern or progressive torque sequence, use the following illustrations.



CIRCULAR TORQUE PATTERN



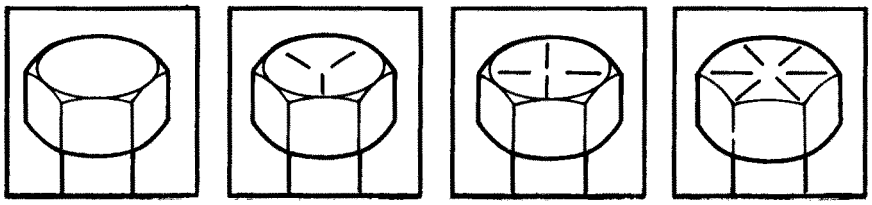
STRAIGHT TORQUE PATTERN

Table 1. Torque Limits for Dry Fasteners

SCREW MARKINGS



Manufacturer's marks may vary. These are all SAE Grade 5 (3-line).



SAE GRADE 2 | SAE GRADE 5 | SAE GRADE 6 OR 7 | SAE GRADE 8

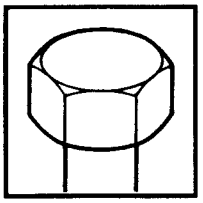
SIZE			TORQUE							
			SAE GRADE 2		SAE GRADE 5		SAE GRADE 6 OR 7		SAE GRADE 8	
DIAMETER (IN.)	THREADS PER INCH	(MILLIMETERS)	LB-FT	N•m	LB-FT	N•m	LB-FT	N•m	LB-FT	N•m
1/4	20	6.35	5	7	8	11	10	14	12	16
1/4	28		6	9	10	14	12	16	14	19
5/16	18	7.94	11	15	17	23	21	28	25	34
5/16	24		12	16	19	26	24	33	25	34
3/8	16	9.53	20	27	30	41	40	54	45	61
3/8	24		23	31	35	47	45	61	50	65
7/16	14	11.11	30	41	50	68	60	81	70	95
7/16	20		35	47	55	73	70	95	80	108
1/2	13	12.70	50	68	75	102	95	129	110	149
1/2	20		55	75	90	122	100	136	120	163
9/16	12	14.29	65	88	110	149	135	183	150	203
9/16	18		75	102	120	163	150	203	170	231
5/8	11	15.58	90	122	150	203	190	238	220	298
5/8	18		100	136	180	244	210	285	240	325
3/4	10	19.05	110	149	260	353	320	434	380	515
3/4	16		125	169	300	407	360	488	420	597
7/8	9	22.23	140	190	400	542	520	705	600	814
7/8	14		155	210	440	597	580	786	660	895
1	8	25.40	220	298	580	786	800	1085	900	1220
1	12		240	325	640	868	860	1166	1000	1356
1-1/8	7	28.58	300	407	800	1085	1120	1519	1280	1736
1-1/8	12		340	461	880	1193	1260	1709	1440	1953
1-1/4	7	31.75	420	570	1120	1519	1580	2142	1820	2468
1-1/4	12		460	624	1240	1681	1760	2387	2000	2712
1-3/8	6	34.93	560	759	1470	1980	2080	2820	2380	3227
1-3/8	12		640	868	1680	2278	2380	3227	2720	3688
1-1/2	6	38.10	740	1003	1940	2631	2780	3770	3160	4285
1-1/2	12		840	1139	2200	2983	3100	4204	3560	4827

Table 2. Torque Limits for Wet Fasteners

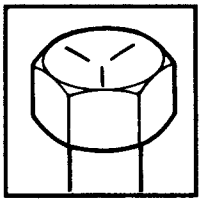
SCREW MARKINGS



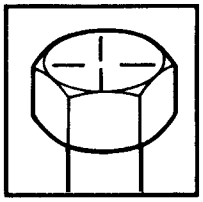
Manufacturer's marks may vary. These are all SAE Grade 5 (3-line).



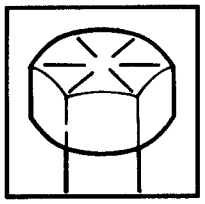
SAE GRADE 2



SAE GRADE 5



SAE GRADE 6 OR 7



SAE GRADE 8

SIZE			TORQUE							
			SAE GRADE 2		SAE GRADE 5		SAE GRADE 6 OR 7		SAE GRADE 8	
DIAMETER (IN.)	THREADS PER INCH	(MILLIMETERS)	LB-FT	N•m	LB-FT	N•m	LB-FT	N•m	LB-FT	N•m
1/4	20	6.35	4	6	6	8	8	11	9	12
1/4	28		5	7	7	9	9	12	10	14
5/16	18	7.94	8	11	13	18	16	22	18	24
5/16	24		9	12	14	19	18	24	20	28
3/8	16	9.53	15	20	23	31	30	41	35	47
3/8	24		17	23	25	34	30	41	35	47
7/16	14	11.11	24	33	35	47	45	61	55	75
7/16	20		25	34	40	54	50	63	60	81
1/2	13	12.70	35	47	55	75	70	95	80	108
1/2	20		40	54	65	88	80	108	90	123
9/16	12	14.29	50	68	80	108	100	136	110	149
9/16	18		55	75	90	122	110	149	130	170
5/8	11	15.88	70	95	110	149	140	190	170	231
5/8	18		80	108	130	176	160	217	180	243
3/4	10	19.05	90	122	200	271	240	325	280	378
3/4	16		100	136	220	298	280	380	320	434
7/8	9	22.23	110	149	300	407	400	542	460	624
7/8	14		120	163	320	434	440	597	500	678
1	8	25.40	160	217	440	597	600	814	680	922
1	12		170	231	480	651	660	895	740	1003
1-1/8	7	25.58	220	298	600	814	840	1139	960	1302
1-1/8	12		260	353	660	893	940	1275	1080	1464
1-1/4	7	31.75	320	434	840	1139	1100	1492	1360	1844
1-1/4	12		360	488	920	1248	1320	1790	1500	2034
1-3/8	6	34.93	420	570	1103	1492	1560	2115	1780	2414
1-3/8	12		460	624	1260	1709	1780	2414	2040	2760
1-1/2	6	38.10	560	760	1460	1980	2080	2820	2360	3288
1-1/2	12		620	841	1640	2224	2320	3146	2660	3607

APPENDIX G
SCHEMATIC DIAGRAMS

SCOPE

This appendix contains the following schematics for the M9 ACE:

Deleted
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Control Wiring Harness FP-7
Deleted
Engine Wiring Harness FP-11
Battery Box Wiring Harness FP-13
Rear Wiring Harness FP-15
MCS Electrical Schematic FP-17

APPENDIX H
CHARGING LIMITS

SCOPE

This appendix contains charging limits for the M9 main hydraulic and actuator accumulators. Charging limits are based on ambient air temperatures at time of charging.

MAIN HYDRAULIC ACCUMULATOR TEMPERATURE/PRESSURE TABLE

AMBIENT TEMP AT TIME OF CHARGING		CHARGING PRESSURE	
deg F	deg C	psi (±25)	kPa (±170)
110	43	1935	13342
100	38	1900	13100
90	32	1865	12859
80	27	1835	12652
70	21	1800	12411
60	16	1765	12170
50	10	1730	11928
40	4	1695	11687
30	-1	1665	11480
20	-7	1630	11239
10	-12	1595	10998
0	-18	1560	10756
-10	-23	1530	10549
-20	-29	1495	10308

ACTUATOR ACCUMULATOR TEMPERATURE/PRESSURE TABLE			
AMBIENT TEMP AT TIME OF CHARGING		CHARGING PRESSURE	
deg F	deg C	psi (±25)	kPa (±170)
110	43	915	6309
100	38	900	6205
90	32	885	6102
80	27	865	5964
70	21	850	5861
60	16	835	5757
50	10	820	5654
40	4	805	5550
30	-1	785	5413
20	-7	770	5309
10	-12	755	5206
0	-18	740	5102
-10	-23	720	4964
-20	-29	705	4861

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By Order of the Secretary of the Army:

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3-227			

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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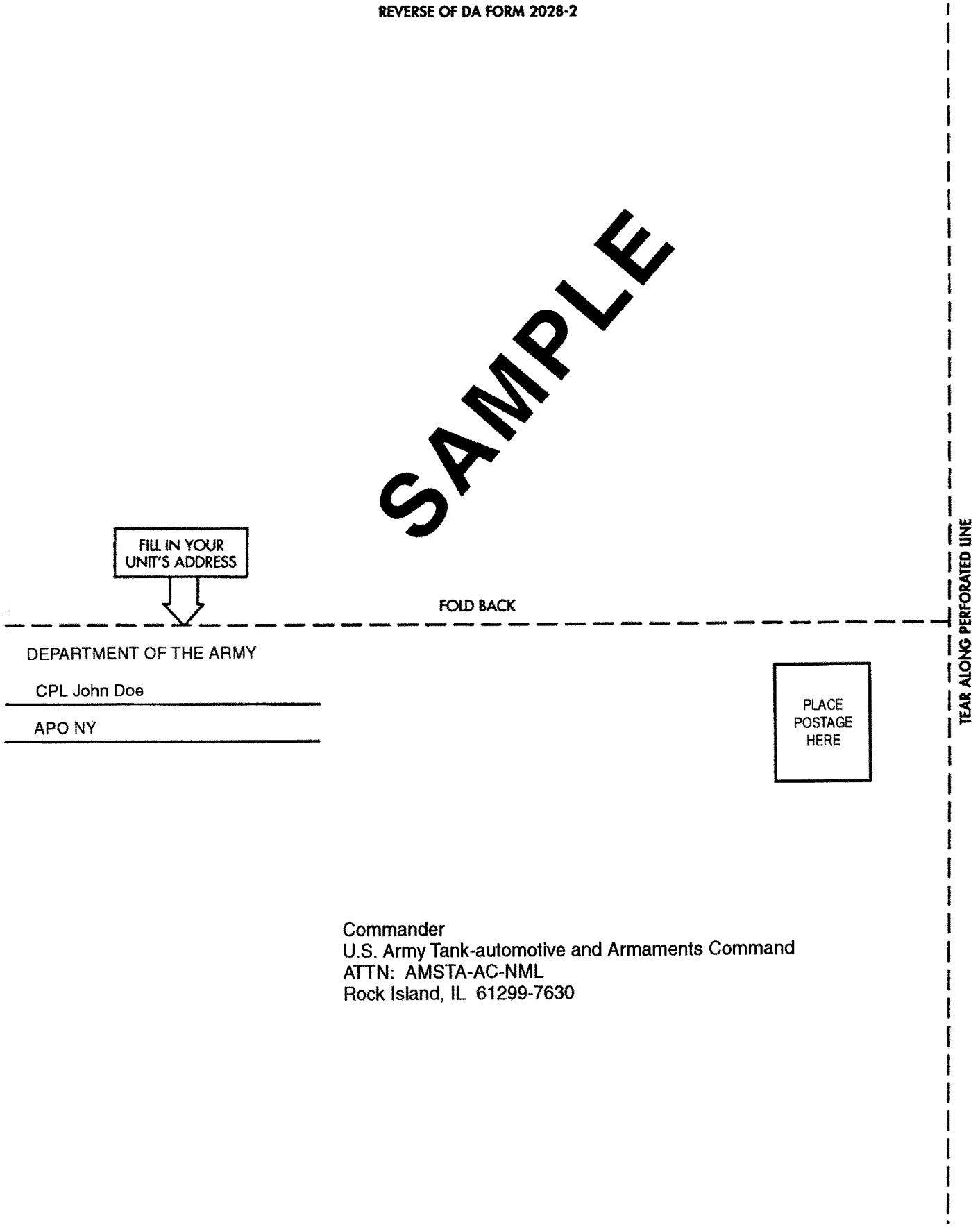
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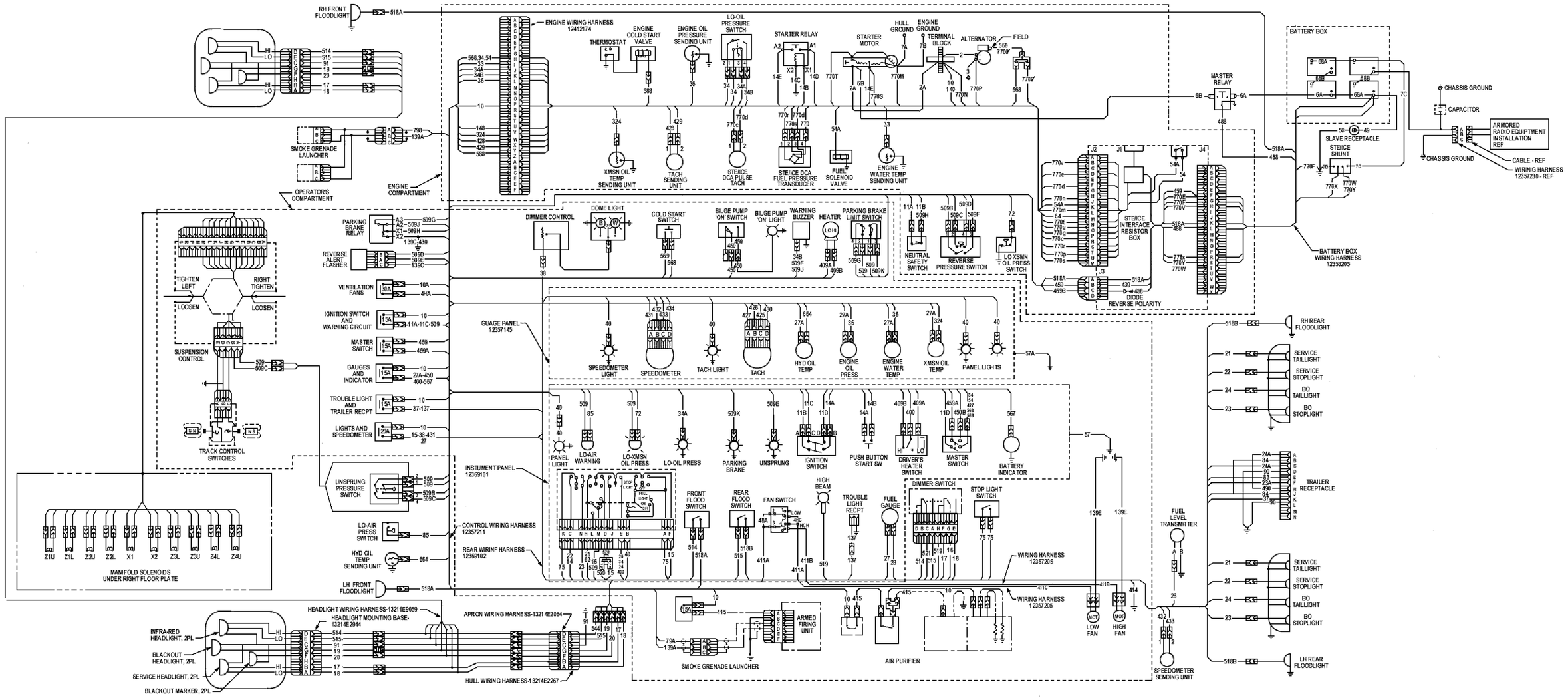
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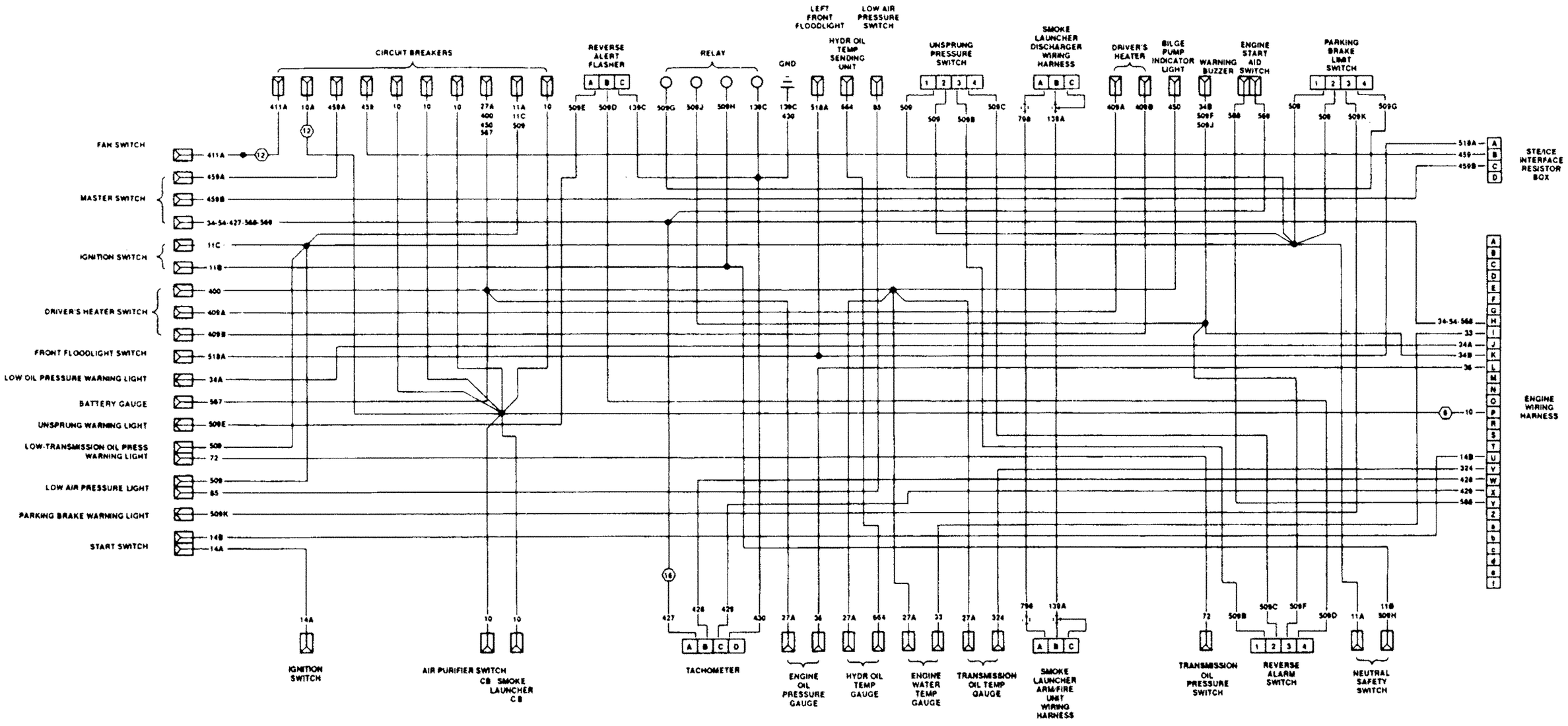
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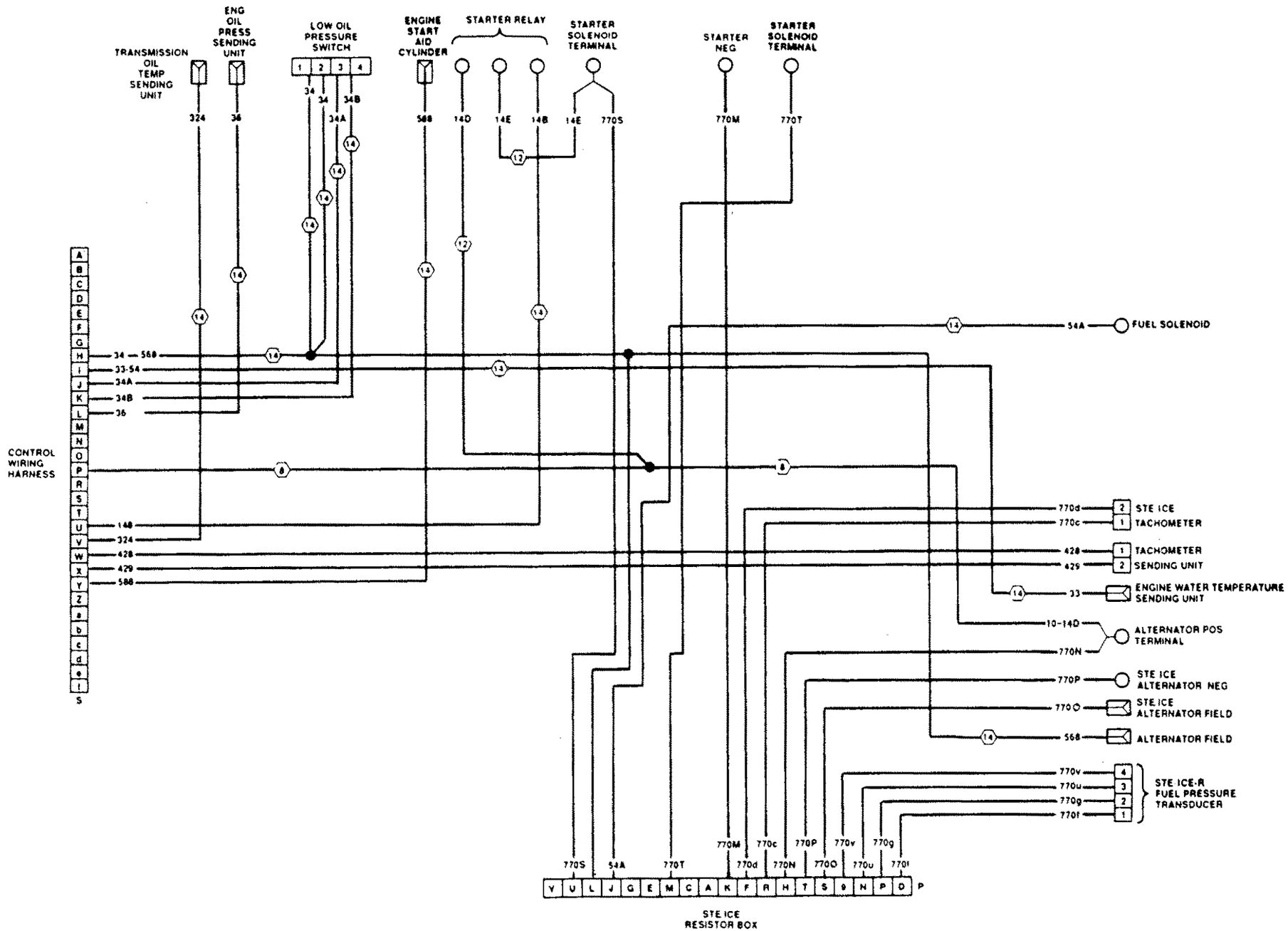
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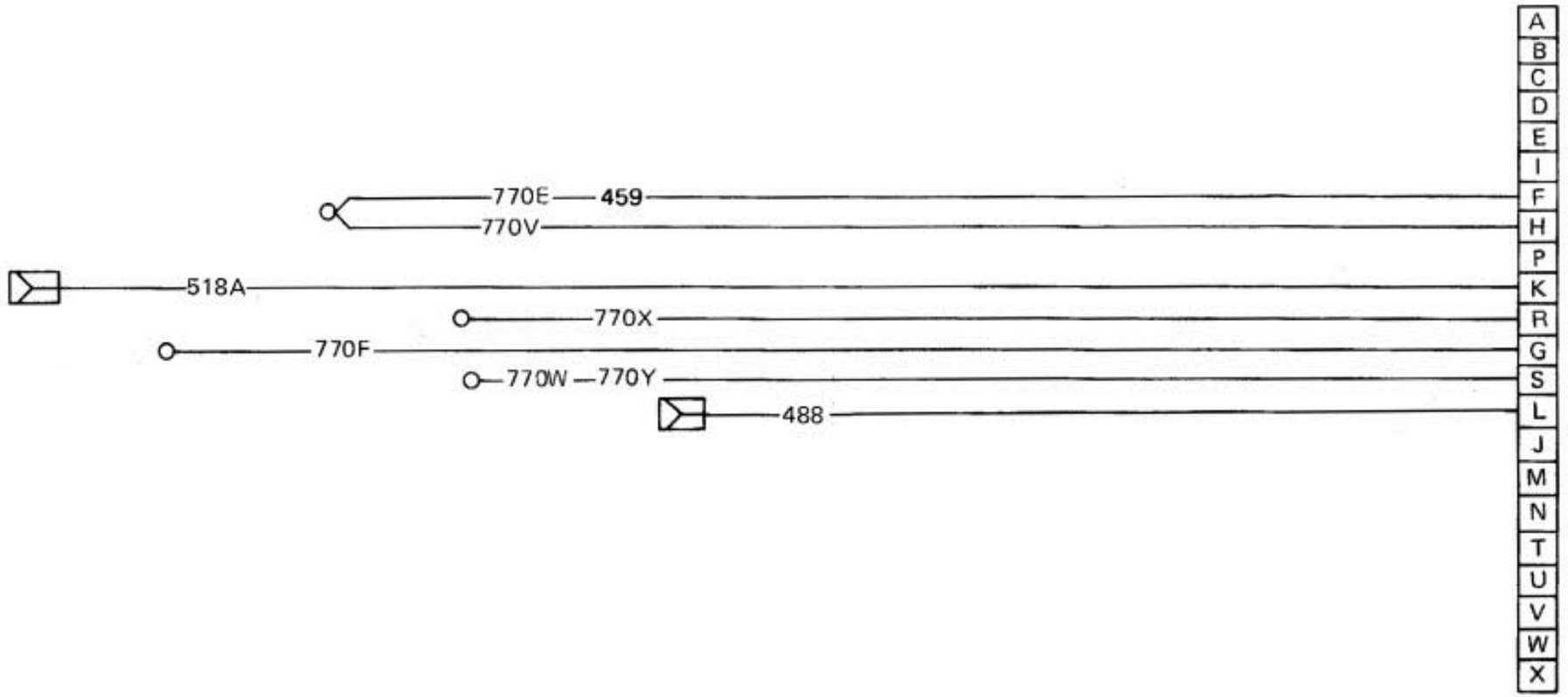
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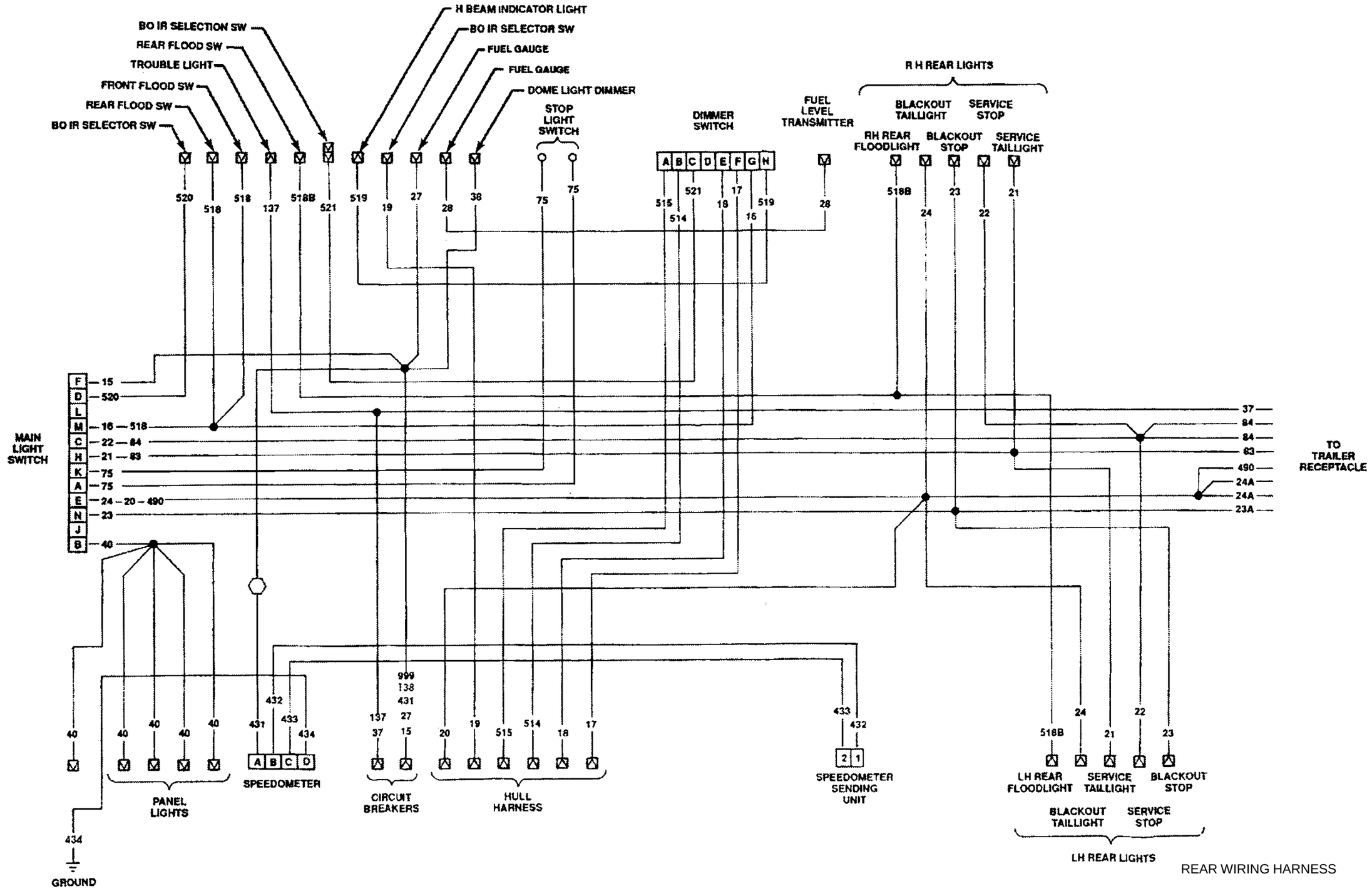
CONTROL WIRING HARNESS


CIRCUIT BREAKERS
411A
10A
458A
458B
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10
10
27A 400 430 567
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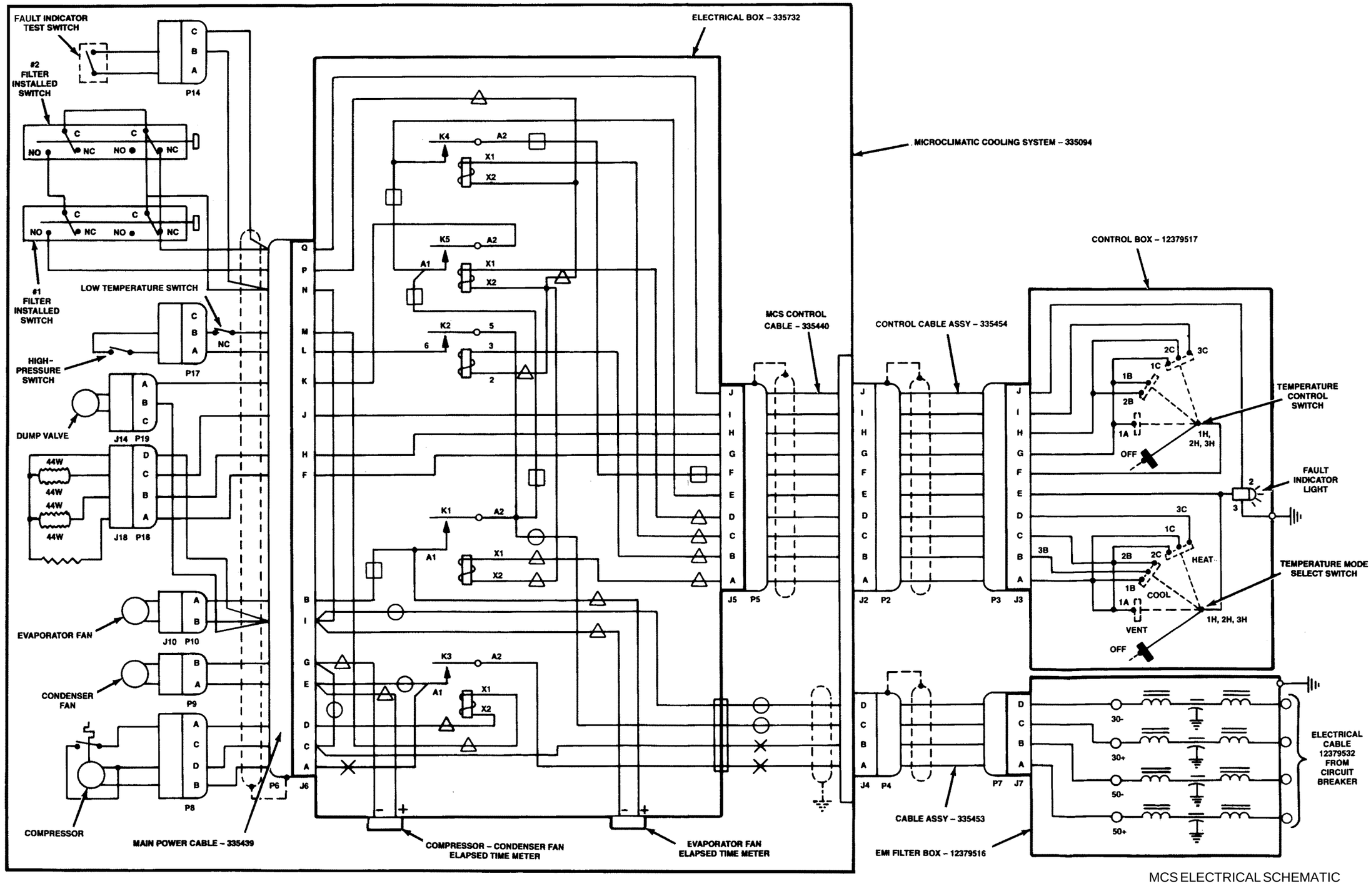

TRANSMISSION OIL TEMP SENDING UNIT
ENG OIL PRESS SENDING UNIT
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STARTER SOLENOID TERMINAL
STARTER NEG
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770M
770d
770c
770N
770P
770O
770v
770u
770g
770f
STE ICE RESISTOR BOX



BATTERY BOX WIRING HARNESS



REAR WIRING HARNESS



MCS ELECTRICAL SCHEMATIC

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE
1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches
1 Kilometer = 1,000 Meters = 0.621 Miles

WEIGHTS
1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces
1 Kilogram = 1,000 Grams = 2.2 Lb
1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE
1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Lilter = 1,000 Millimeters = 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 = 1,000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE
5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 °C + 32 = °F

APPROXIMATE CONVERSION FACTORS

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

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton•Meters	Pound-Feet	0.738
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621

