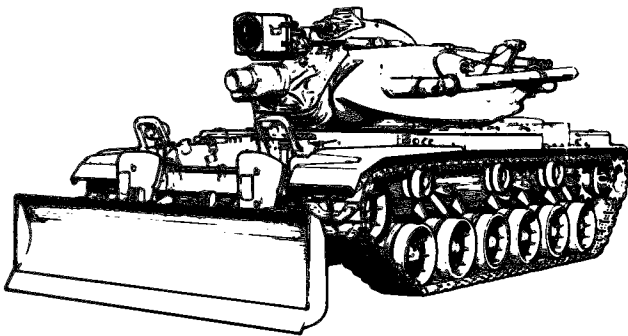


## TECHNICAL MANUAL

### ORGANIZATIONAL MAINTENANCE VOLUME 5 OF 5 CHAPTERS 16 THRU 23



### COMBAT ENGINEER VEHICLE, FULL-TRACKED, M728 2350-00-795-1797 (HULL)

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This copy is a reprint which includes current pages from Change 1.

WARNING

The following summary list is adapted from the warnings within this volume. However, all warnings should be observed as noted in the text.

Hold up rear drain valve seat when removing last screw attaching valve seat to hull floor. Valve seat is heavy and can cause injury if it falls.

Hold up front drain valve cage assembly when removing last screw attaching cage to hull. Valve assembly may fall and cause injury if cage is not held up.

Two persons are required to displace ammunition rack and replace brackets to keep ammunition rack from falling and causing injury to personnel.

Make sure that MASTER BATTERY and TURRET POWER switches are OFF after any turret operation to avoid personal injury.

Pull driver's seat dumping handle before removing retaining plate at base of driver's seat support to relieve pressure on spring.

Use extreme care when removing or compressing driver's seat support spring, as loose parts may fly around.

Handle charged fire extinguisher cylinders with care. Do not jar or subject cylinders to temperature above 140 degrees F (60 degrees C).

Driver's hatch weighs approximately 130 pounds. Do not try to lift it alone.

The unit commander or senior officer in charge of maintenance personnel assigned to remove and dispose of contaminated gas filters must prescribe necessary protective clothing to be worn when replacing gas particulate filters. He must also prescribe necessary safety measures to be performed before new gas filters are installed.

Contaminated gas particulate filters must be handled in accordance with FM 21-40 and must be disposed of by trained personnel.

Cleaning agent specified is flammable. Use only in well ventilated areas. Keep away from flames, sparks, or heat. Do not smoke while using. Prevent contact with eyes, mouth, and/or skin. Wear rubber gloves when performing cleaning procedures.

Compressed air used for cleaning purposes will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.)

CHANGE  
NO. 4

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington D.C., 8 November 1993

TECHNICAL MANUAL  
ORGANIZATIONAL MAINTENANCE  
VOLUME 5 OF 5  
CHAPTERS 16 THRU 23  
COMBAT ENGINEER VEHICLE,  
FULL-TRACKED, M728  
2350-00-795-1797  
(HULL)

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19-1 and 19-2	19-1 and 19-2
19-23 and 19-24	19-23/(19-24 blank)
19-25 thru 19-31/(19-32 blank)	None
21-36.1 and 21-36.2	21-36.1 and 21-36.2
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21-57 thru 21-60	21-57 thru 21-60
21-65 and 21-66	21-65 and 21-66
(21-66.1 blank)/21-66.2	(21-66.1 blank)/21-66.2
21-66.7 and 21-66.8	21-66.7 and 21-66.8
21-81 and 21-82	21-81 and 21-82

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Remove Pages

22-1 and 22-2  
A-1 and A-2  
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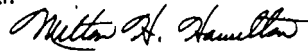
Insert Pages

22-1 and 22-2  
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*General, United States Army*  
*Chief of Staff*

Official:



MILTON H. HAMILTON  
*Administrative Assistant to the  
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Change  
No. 3

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington D.C., 30 April 1991

UNIT MAINTENANCE

COMBAT ENGINEER VEHICLE  
FULL TRACKED, M728  
NSN 2350-00-795-1797  
HULL

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21-53 and 21-54	21-53 and 21-54
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21-66.7 and 21-66.8	21-66.7 and 21-66.8
21-81 and 21-82	21-81 and 21-82
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HEADQUARTERS  
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## ORGANIZATIONAL MAINTENANCE

COMBAT ENGINEER VEHICLE  
FULL TRACKED, M728  
NSN (2350-00-795-1797)  
(HULL)

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I-1 thru I-8  
None  
I-17 thru I-20  
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I-29 thru I-32  
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Blank DA Forms 2028-2  
None

## Insert Pages

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I-29 thru I-31/(I-32 blank)  
I-33 and I-34  
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FO-3

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CHANGE NO. 1

C1

*HEADQUARTERS  
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**ORGANIZATIONAL MAINTENANCE  
COMBAT ENGINEER VEHICLE  
FULL TRACKED, M728  
NSN (2350-00-795-1797)  
(HULL)**

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4. When an entire section is changed or added, a vertical bar is placed next to the section title only.

Remove Pages	Insert Pages
i and ii	i and ii
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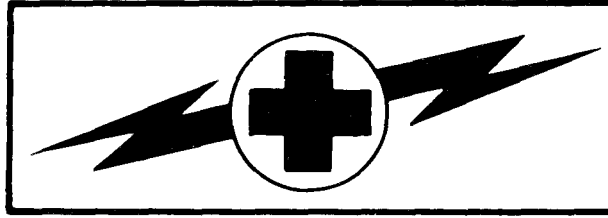
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**WARNING**

**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/or 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 make sure of the safety of personnel whenever the personnel heater, main or auxiliary engine of any vehicle is operated for maintenance purposes or tactical use.

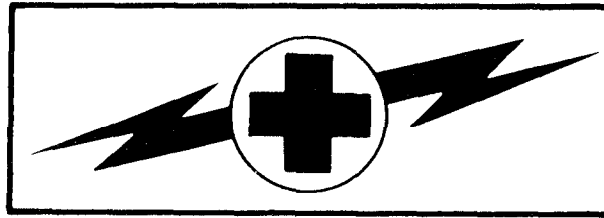
1. **DO NOT** operate heater or engine of vehicle in an enclosed area unless the area is **ADEQUATELY VENTILATED**.
2. **DO NOT** idle engine for long periods without maintaining **ADEQUATE VENTILATION** in personnel compartments.
3. **DO NOT** drive any vehicle with inspection plates, cover plates, 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**.

**THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS ADEQUATE VENTILATION.**

For artificial respiration, refer to FM 21-11.

TA141012

**WARNING**



**WARNING**

**HIGH VOLTAGE**

Used in the operation of this equipment

**DEATH ON CONTACT**

May result if personnel fail to observe safety precautions.

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When a technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the master battery switch and battery ground straps should be either turned off or disconnected before beginning work on the equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

Before you work around tracked vehicles, remove rings, bracelets, and wristwatches. These items may be caught on projections and cause injury or may be shorted across an electrical circuit and cause severe burns and electrical shock.

For artificial respiration, refer to FM 21-11.



Technical Manual  
 No. 9-2350-222-20-1

HEADQUARTERS  
 DEPARTMENT OF THE ARMY  
 Washington, D.C., 20 February 1981

ORGANIZATIONAL MAINTENANCE  
 COMBAT ENGINEER VEHICLE  
 FULL TRACKED, M728  
 NSN (2350-00-795-1797)  
 (HULL)

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

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

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\*This manual, together with TM 9-2350-222-20-1-1, 20 February 1981, TM 9-2350-222-20-1-2, 20 February 1981, TM 9-2350-222-20-1-3, 20 February 1981, and TM 9-2350-222-20-1-4, 20 February 1981, supersedes TM 9-2350-222-20, 27 September 1965, including all changes.

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

VOLUME 4

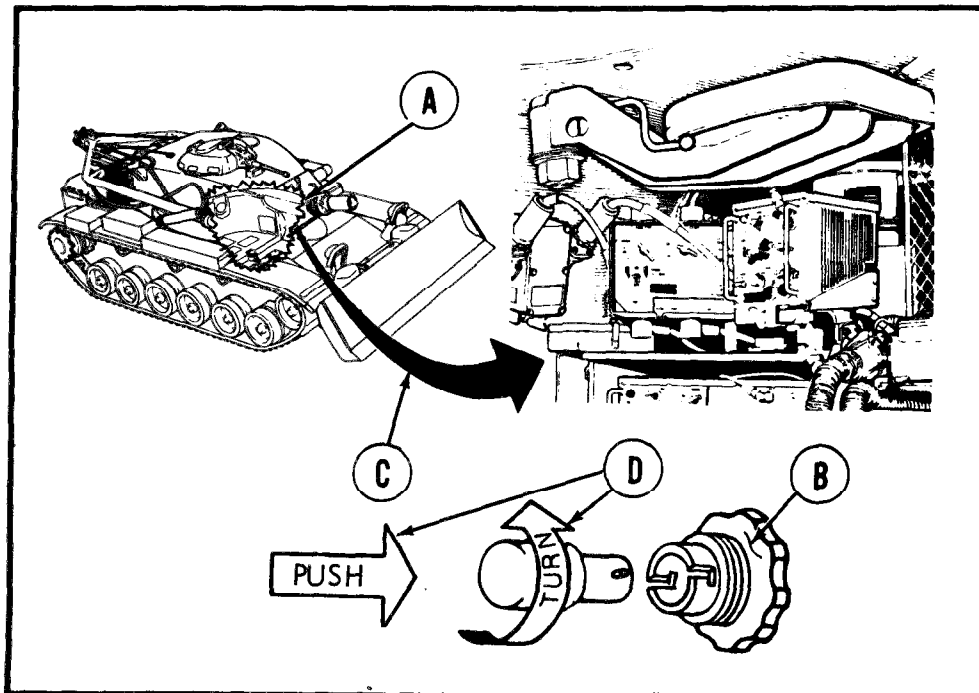
CHAPTER 10. ELECTRICAL SYSTEM MAINTENANCE. . . . . 10-1  
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VOLUME 5

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**HOW TO USE THIS MANUAL:**

- This manual is divided into chapters.
- Chapters are by functional group code and are presented in same order as the RPSTL (Repair Parts and Special Tool List).
- Procedure indexes are on procedures that are four pages or more, and indicate how the procedure is set up, i.e., disassembly, removal, cleaning and inspection, etc.
- All references within this technical manual refer to page numbers.
- Steps are numbered and are to be performed in that order.
- Be sure to read all NOTES, WARNINGS, AND CAUTIONS.
- Locator views are included wherever necessary. These will help you locate the item for which the procedure is referencing.
- Jagged circle (  ) on locator (A) indicates a cutout and means the item is inside the vehicle.
- A (  ) symbol represents the outside surface (B) of a piece of equipment that cannot be shown in its entirety.
- Callouts are shown by a circle with a letter inside.
- Locator arrows (C) are black and mechanical motion arrows (D) are white.
- Broken leader arrow (  ) indicates the item is either inside or under the vehicle and cannot be seen.



TA141014

**HOW TO USE THIS MANUAL - Continued**

- Certain sections of the manual have detailed 'how to use' instructions at the beginning of the section - for example troubleshooting.
- A maintenance information index is located in back of this manual. It is set up in alphabetical order and maintenance function, for example, disassemble, clean, inspect, repair, remove, install, assemble, and test.
- An illustrated list of manufactured items, or better known as fabricated tools, is located in back of this manual. It is nothing more than direction on how to fabricate tools that are listed throughout the manual.

## CHAPTER 16

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Rear Fender (Left and Right) Stowage Box Repair	16-188
Rear Fender (Left and Right) Stowage Box Cover Repair	16-189

TOWING PINTLE REPAIR (Sheet 1 of 5)

PROCEDURE INDEX

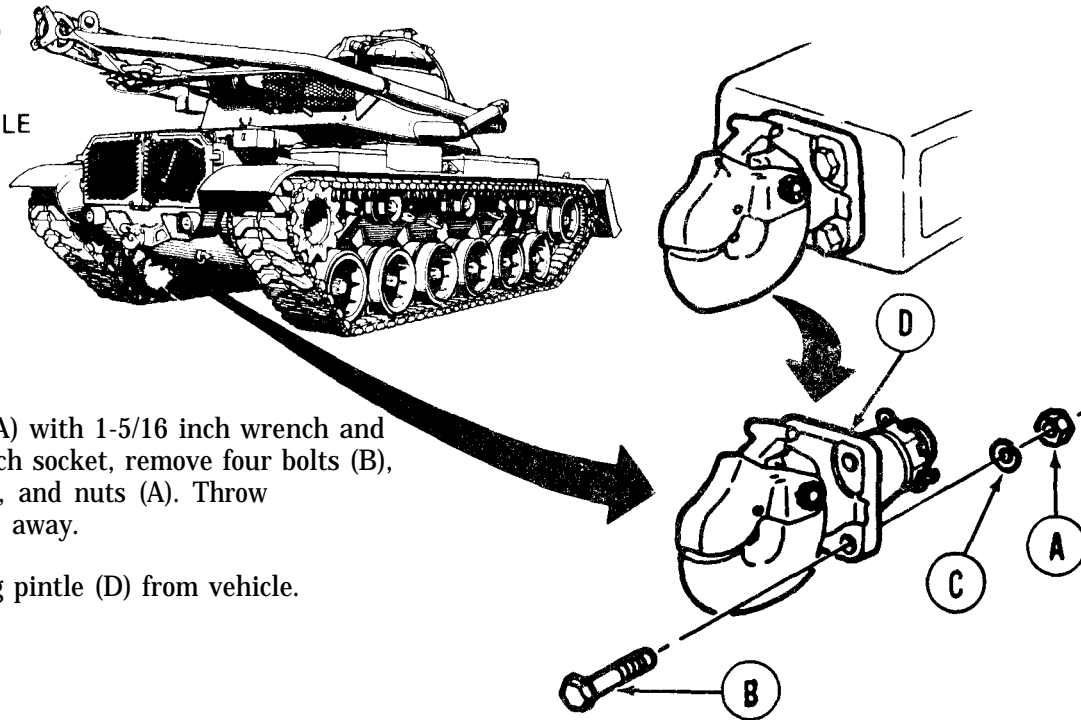
PROCEDURE	PAGE
Removal	16-4
Disassembly	16-5
Cleaning and Inspection	16-6
Assembly	16-6
Installation	16-8

TOOLS: 1-5/16 in. open end wrench  
 Hammer  
 Long round nose pliers  
 Flat-tip screwdriver  
 Center punch  
 3/8 in. drive punch  
 59-62 in. pinchpoint crowbar  
 3-1/4 in. socket with 1 in. drive  
 Ratchet with 1 in. drive  
 1-1/2 in. socket with 3/4 in. drive  
 1-5/16 in. socket with 3/4 in. drive  
 8 in. extension with 3/4 in. drive  
 Ratchet with 3/4 in. drive  
 1-1/2 in. open end wrench

SUPPLIES: Dry cleaning solvent (Item 54, Appendix D)  
 Cotter pins (MS24665-359) (2 required)  
 Lockwasher (MS35338-52) (4 required)

PERSONNEL: Two

REAR OF VEHICLE



REMOVAL:

1. Holding nuts (A) with 1-5/16 inch wrench and using 1-5/16 inch socket, remove four bolts (B), lockwashers (C), and nuts (A). Throw lockwashers (C) away.
2. Remove towing pintle (D) from vehicle.

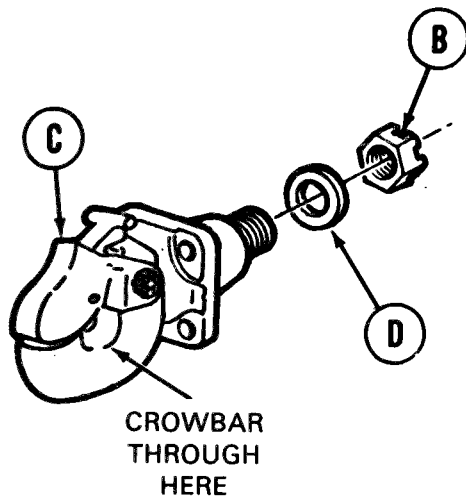
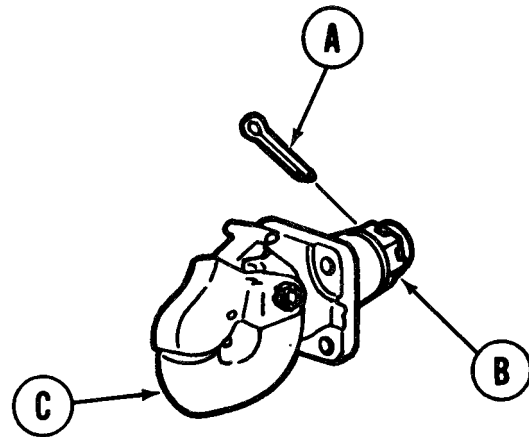
Go onto Sheet 2



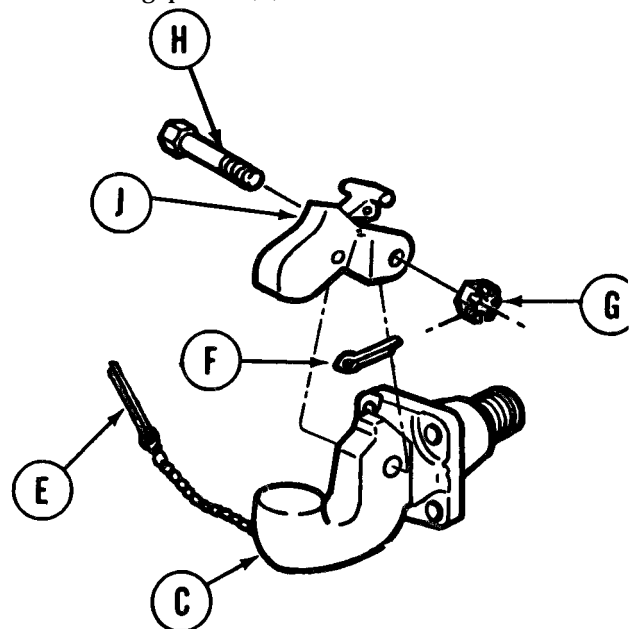
## TOWING PINTLE REPAIR (Sheet 2 of 5)

## DISASSEMBLY:

- Using pliers and hammer, remove cotter pin (A) from nut (B) at rear of towing pintle (C). Throw cotter pin away.
- Place crowbar through hole of towing pintle (C).



- With one person holding crowbar, second person, using 3-1/4 inch socket, remove nut (B) and flat washer (D).
- Pull cotter pin (E) that is hooked to chain out of towing pintle (C).



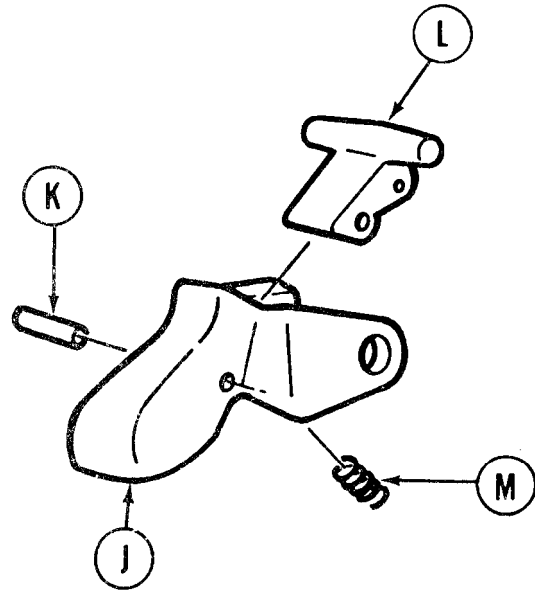
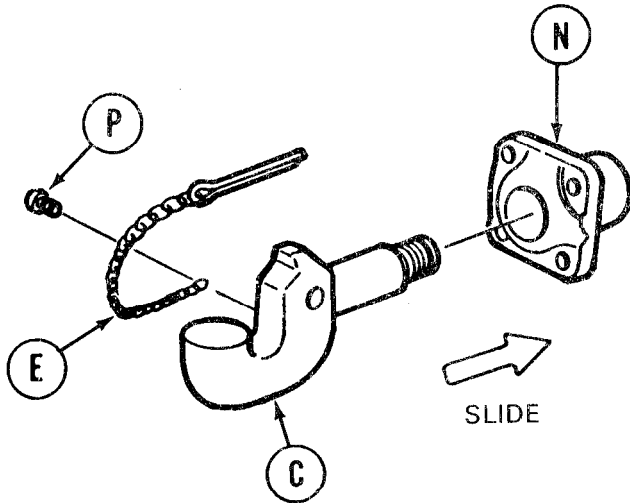
- Using pliers, remove cotter pin (F). Throw cotter pin away.
- Place 1-1/2 inch wrench on nut (G).
- Using 1-1/2 inch socket, remove nut (G) and bolt (H) securing latch (J) to towing pintle (C).
- Remove latch (J).

Go on to Sheet 3

TA140617

**TOWING PINTLE REPAIR (Sheet 3 of 5)**

9. Using hammer and 3/8 inch punch, remove staked pin (K) securing latch (L) to latch (J).
10. Remove latch (L) and spring (M) from latch (J) housing.



11. Slide sleeve assembly (N) off towing pintle (C).
12. Using screwdriver, remove screw (P) and chain and cotter pin (E) from towing pintle (C).

**CLEANING AND INSPECTION:**

1. Inspect nuts and pintle for excessive wear or stripping of threads. Replace as required.
2. Remove any deformed metal from around cavity from which pin was removed.

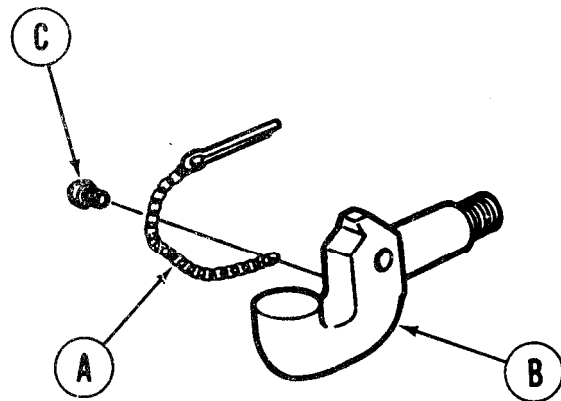
**WARNING**

**Compressed air used for cleaning purposes will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.)**

3. Wash lock cavity with dry cleaning solvent (Item 54, Appendix D) and dry with low-pressure compressed air.

**ASSEMBLY:**

1. Place chain and cotter pin (A) in installation position on towing pintle (B).
2. Using screwdriver, install screw (C) securing chain and cotter pin to pintle (B).

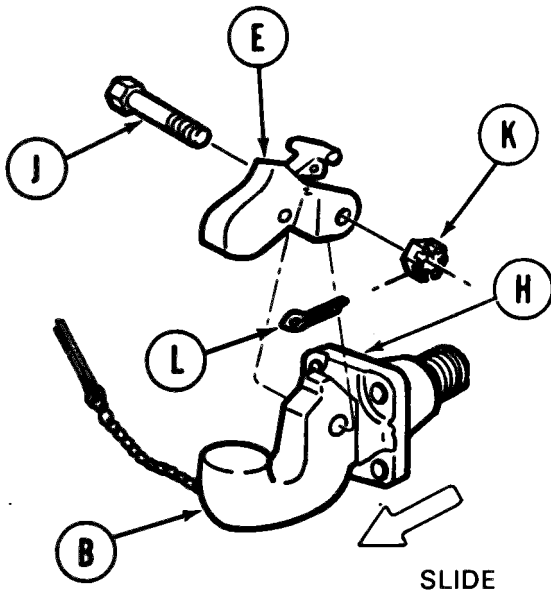
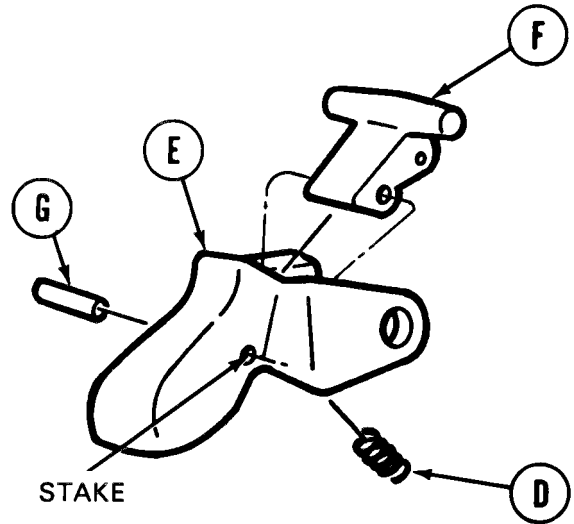


Go on to Sheet 4

TA140618

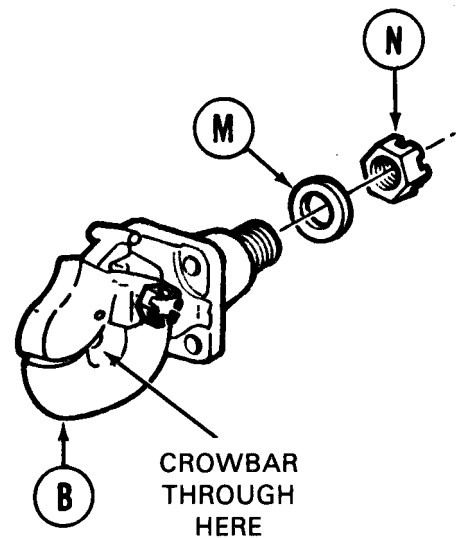
**TOWING PINTLE REPAIR (Sheet 4 of 5)**

3. Place spring (D) in installation position in latch (E).
4. Place latch (F) in installation position in latch (E).
5. Using hammer, install pin (G) securing latch (F) to latch (E).
6. Using hammer and center punch, stake pin (G) in four places to latch (E).
7. Slide sleeve (H) onto pintle (B).



8. Place latch (E) in installation position on pintle (B).
9. Install bolt (J) through latch (E) and pintle (B). Install nut (K) on bolt (J).
10. Using 1-1/2 inch socket and 1-1/2 inch wrench, tighten bolt (J) and nut (K).
11. Aline hole in bolt (J) with slot in nut (K).
12. Using pliers, install new cotter pin (L) through nut (K) and bolt (J).

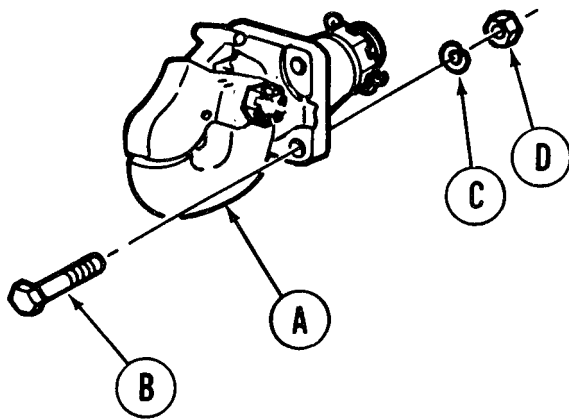
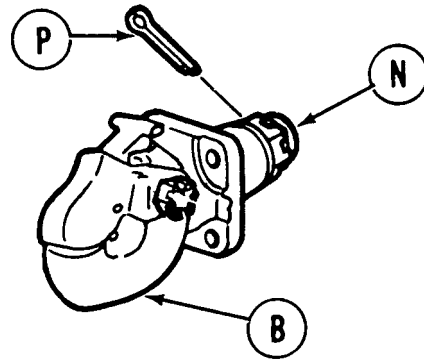
13. Place flat washer (M) and nut (N) on towing pintle (B).
14. Place crowbar through hole in towing pintle (B).
15. Using 3-1/4 inch socket, tighten nut (N), while other person holds crowbar.



TA140619

**TOWING PINTLE REPAIR (Sheet 5 of 5)**

16. Aline hole in pintle (B) with slot on nut (N).
17. Using pliers, install new cotter pin (P) through nut (N) and pintle (B).
18. Using pliers, bend ends of cotter pin (P) to secure cotter pin in place.



**INSTALLATION:**

1. Install towing pintle (A) in vehicle mounting brackets.
2. Install four bolts (B), new lockwashers (C), and nuts (D).
3. Place 1-5/16 inch wrench on four nuts (D).
4. Using 1-5/16 inch socket, tighten four bolts (B).

End of Task

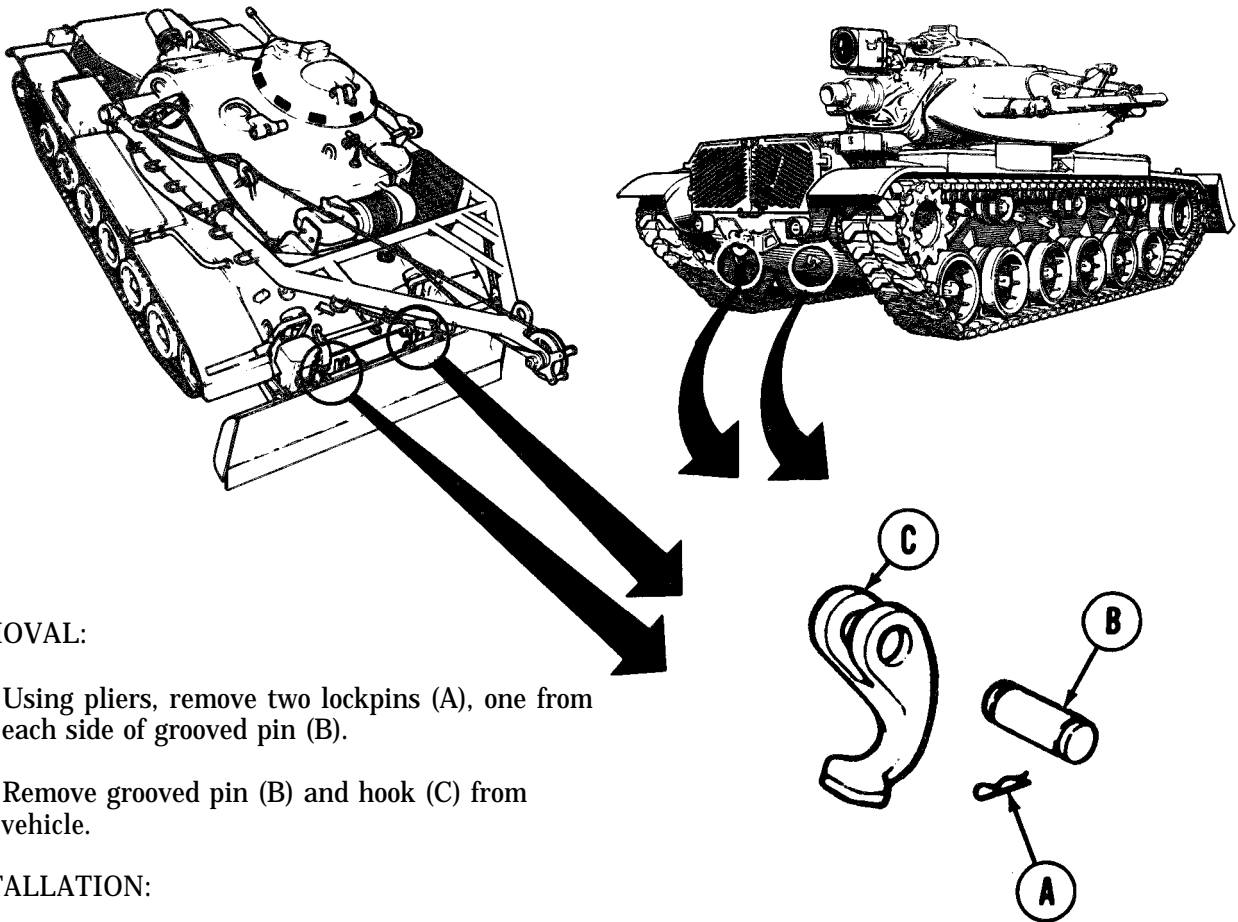
TA140620

**TOW CABLE HOOK REPLACEMENT (Sheet 1 of 1)**

TOOLS: Long round nose pliers

**NOTE**

**Four hooks are issued with vehicle. They are placed at front and rear.**



**REMOVAL:**

1. Using pliers, remove two lockpins (A), one from each side of grooved pin (B).
2. Remove grooved pin (B) and hook (C) from vehicle.

**INSTALLATION:**

1. Place hook (C) in position on vehicle.
2. Place grooved pin (B) in position in hook.
3. Using pliers, install two lockpins (A).

End of Task

TA140621

INTAKE GRILLE DOOR NO. 1 (LEFT AND RIGHT) REPLACEMENT (Sheet 1 of 1)

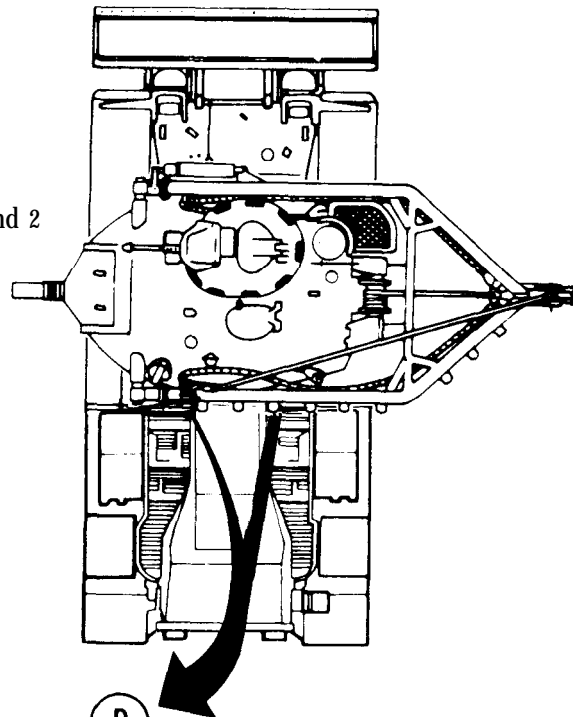
TOOLS: 3/4 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

SUPPLIES: Lockwasher (MS35338-67)

PERSONNEL: Two

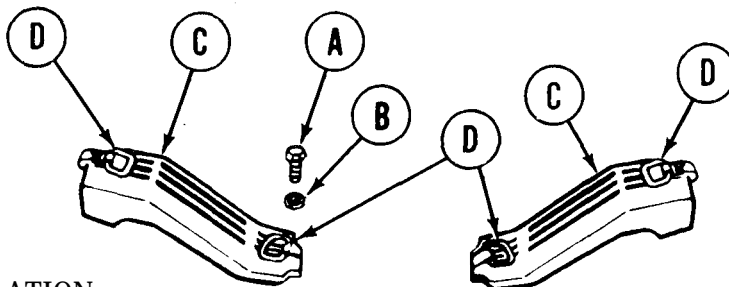
REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Open Nos. 5, 4, 3, and 2  
intake grille doors  
(TM 9-2350-222-10)



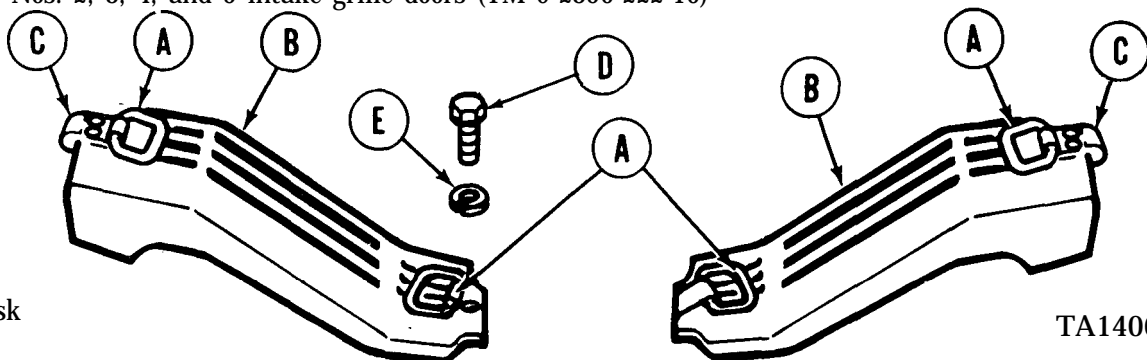
REMOVAL:

1. Using socket, remove screw (A) and lockwasher (B) from doors (C). Throw lockwasher (B) away.
2. Using handles (D), lift door (C) until door (C) disengages from vehicle.
3. Using second person, remove door (C) from vehicle.



INSTALLATION:

1. With two persons using handles (A), lift door (B) above vehicle and slowly lower, making sure bracket (C) fits into slot in vehicle before lowering door (B) to closed position.
2. Using socket, install screw (D) and new lockwasher (E) into door (B) securing door (B) to vehicle.
3. Close Nos. 2, 3, 4, and 5 intake grille doors (TM 9-2350-222-10)



End of Task

TA140622

**INTAKE GRILLE DOOR NO. 2 (LEFT AND RIGHT) REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** 1-1/8 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

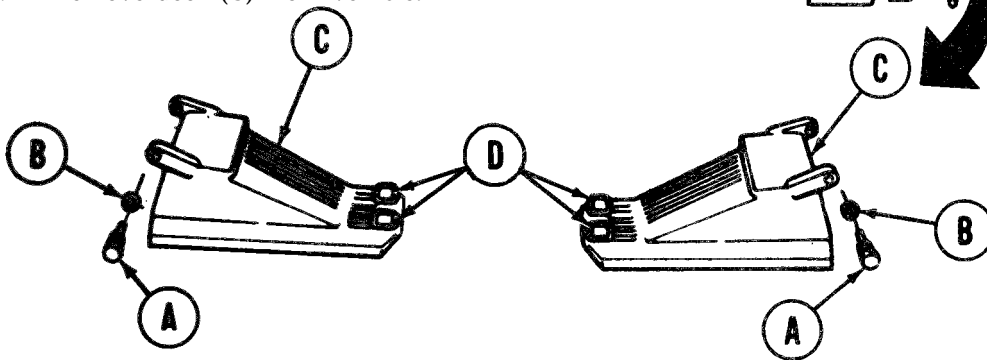
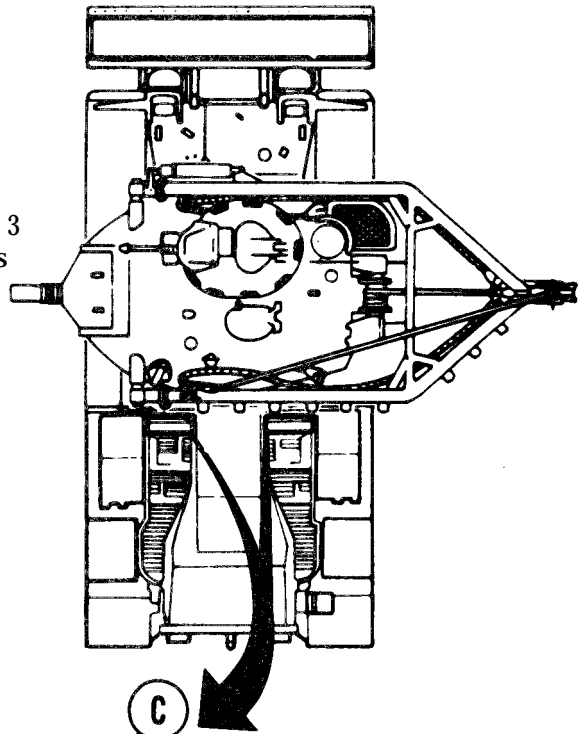
**SUPPLIES:** Lockwashers (MS35338-70) (4 required)

**PERSONNEL:** Two

**PRELIMINARY PROCEDURE:** Open Nos. 5, 4, and 3 intake grille doors (page 16-21, steps 1 and 2)

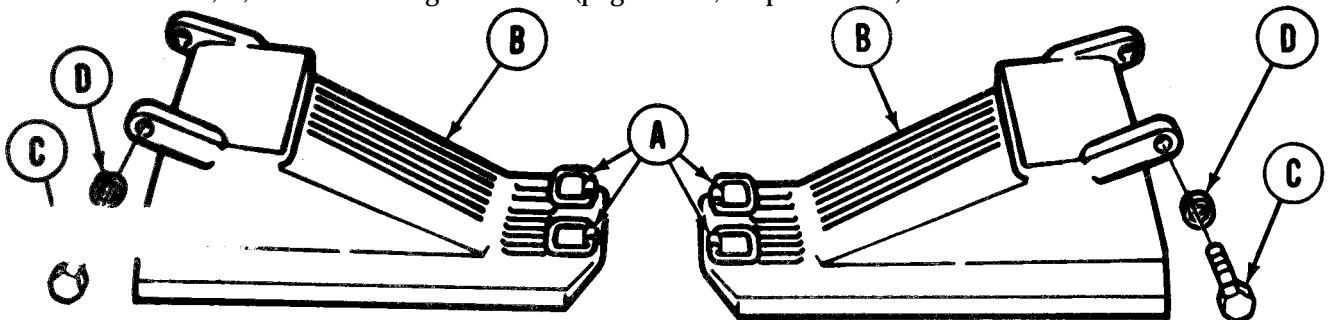
**REMOVAL:**

1. Using socket, remove four screws (A) and lockwashers (B). Throw lockwashers (B) away.
2. Using second person, lift door (C) with handles (D) straight up.
3. Remove door (C) from vehicle.



**INSTALLATION:**

1. With two persons using handles (A), lift door (B) above vehicle and slowly lower into place. Make sure holes in door hinge (B) align with holes in vehicle.
2. Using screws (C) and new lockwashers (D), secure doors (B) to vehicle. Use socket to tighten screws.
3. Close Nos. 3, 4, and 5 intake grille doors (page 16-24, steps 8 and 9).



End of Task

TA253543

### INTAKE GRILLE DOOR NO. 3 (LEFT AND RIGHT) REPLACEMENT (Sheet 1 of 2)

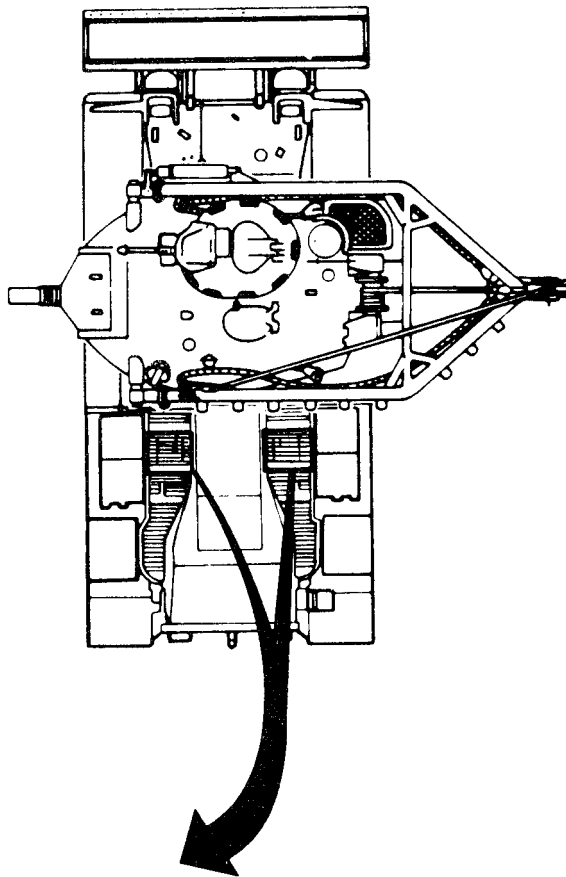
TOOLS: Long round nose pliers

■ SUPPLIES: Cotter pins (MS24665-355) (2 required)

PERSONNEL: Two

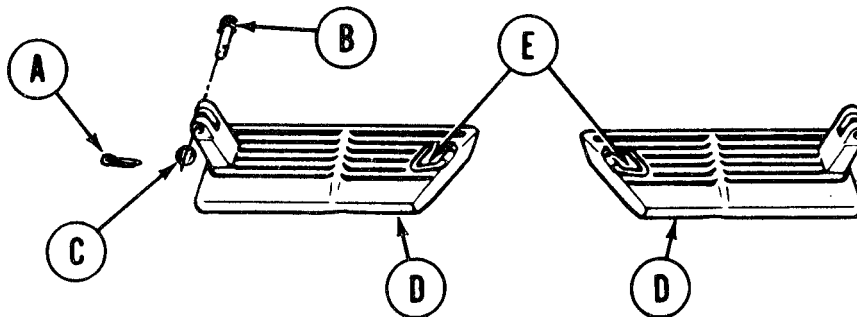
#### PRELIMINARY PROCEDURE:

Open Nos. 5 and 4 intake grille doors (page 16-21, steps 1 and 2)



#### REMOVAL:

1. Using pliers, remove cotter pin (A) from pin (B) and throw cotter pin (A) away. Remove pin (B) and washer (C) from door (D).
2. Using second person, lift door (D) with handle (E) straight up.



3. Remove door (D) from vehicle.

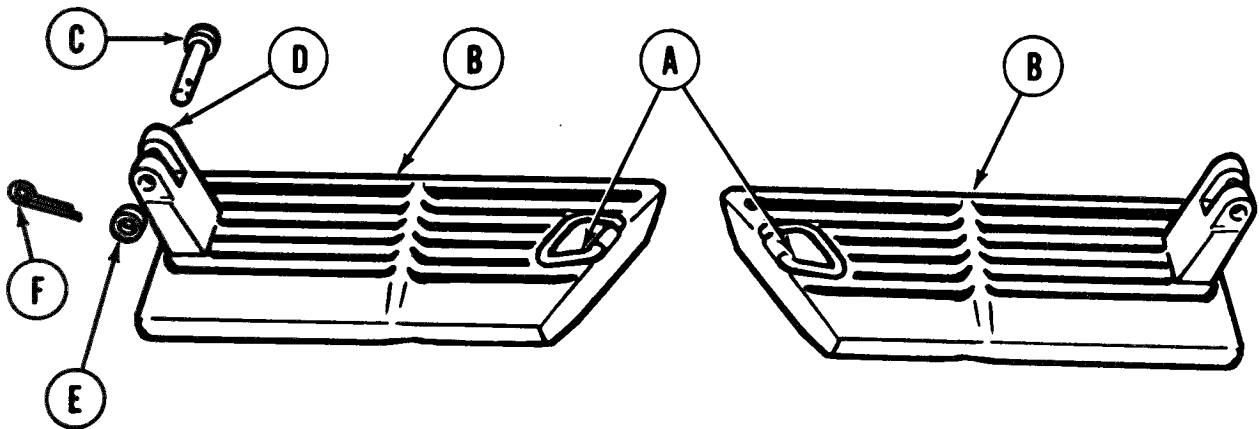
Go on to Sheet 2

TA253544



**INTAKE GRILLE DOOR NO. 3 (LEFT AND RIGHT) REPLACEMENT (Sheet 2 of 2)****INSTALLATION:**

1. With two persons using handle (A), lift door (B) above vehicle and slowly lower into place. Make sure hinge on door (B) aligns with holes in vehicle.
2. Insert pin (C) through holes (D). Install washer (E) onto pin (C). Push new cotter pin (F) through hole in pin (C).
3. Using pliers, spread each side of cotter pin (F) so that it cannot be removed from pin (C).
4. Close Nos. 4 and 5 intake grille doors (TM 9-2350-222-10).



End of Task

TA140625

### INTAKE GRILLE DOOR NO. 4 (LEFT AND RIGHT) REPLACEMENT (Sheet 1 of 1)

TOOLS: 1-1/8 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

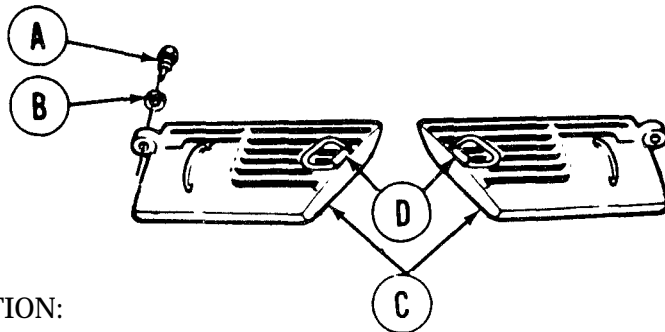
■ SUPPLIES: Lockwasher (MS35338-70) (2 required)

PERSONNEL: Two

PRELIMINARY PROCEDURE: Open No. 5 intake grille door (page 16-21, steps 1 and 2)

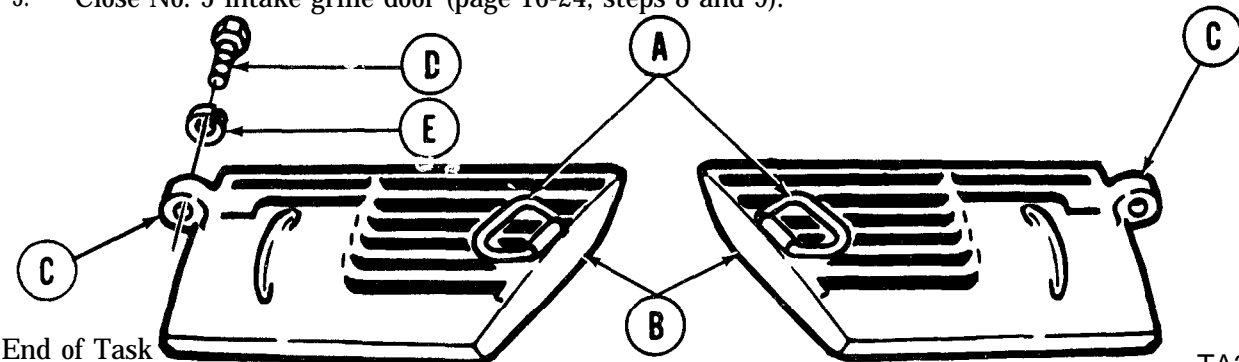
#### REMOVAL:

1. Using socket, remove screw (A) and lockwasher (B) from door (C). Throw lockwasher (B) away.
2. Using second person, lift door (C) with handles (D) straight up.
3. Remove door (C) from vehicle.



#### INSTALLATION:

1. With two persons using handles (A), lift door (B) above vehicle and slowly lower into place. Make sure hinge hole (C) in door (B) aligns with hole in vehicle.
2. Using screw (D) and new lockwasher (E), secure door (B) to vehicle. Use socket to tighten screw (D).
3. Close No. 5 intake grille door (page 16-24, steps 8 and 9).



TA253546

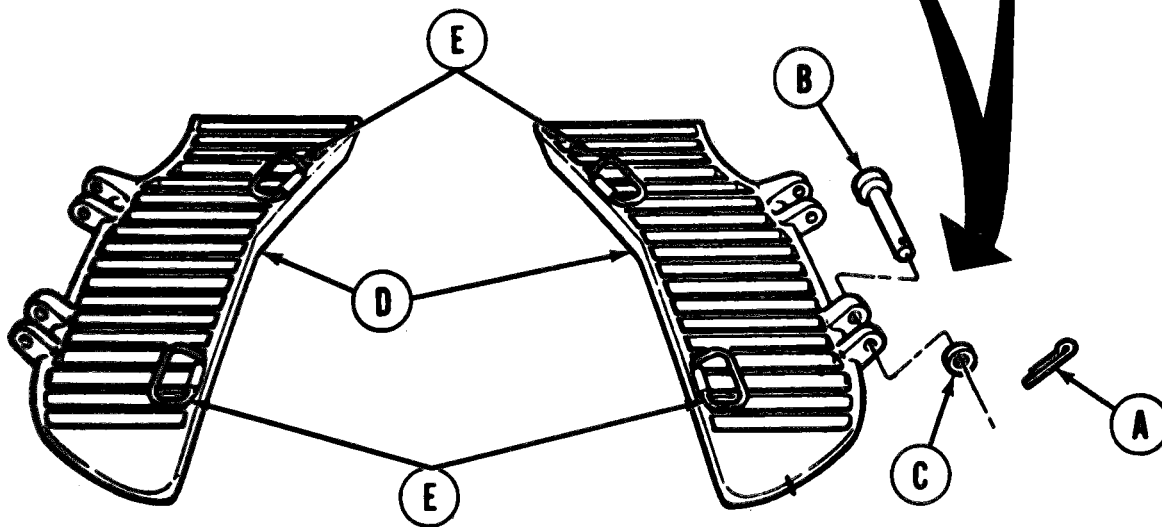
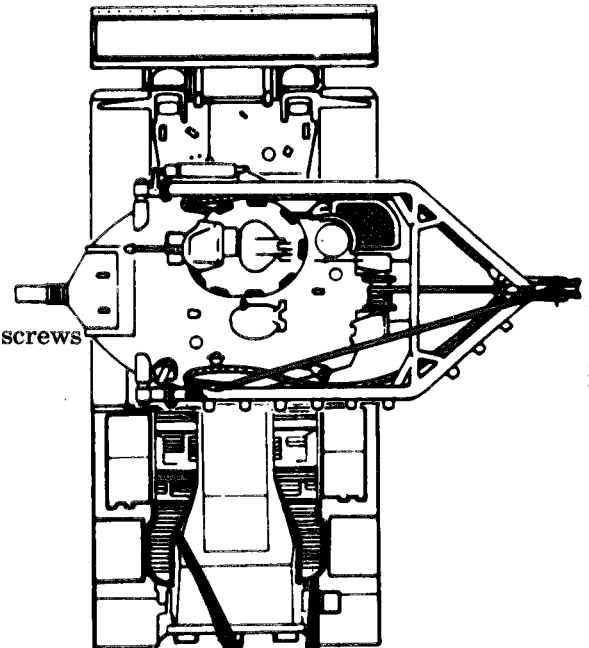
**INTAKE GRILLE DOOR NO. 5 (LEFT AND RIGHT) REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** Long round nose pliers

**PERSONNEL:** Two

**SUPPLIES:** Cotter pins (MS24665-355) (4 required)

**PRELIMINARY PROCEDURE:** Loosen grille door lock screws  
(page 16-21, step 1)



**REMOVAL:**

1. Using pliers, remove four cotter pins (A) from four pins (B). Throw cotter pins (A) away.
2. Remove pins (B) and washers (C).
3. Using second person, lift door (D) with handles (E) straight up.
4. Remove door (D) from vehicle.

Go on to Sheet 2

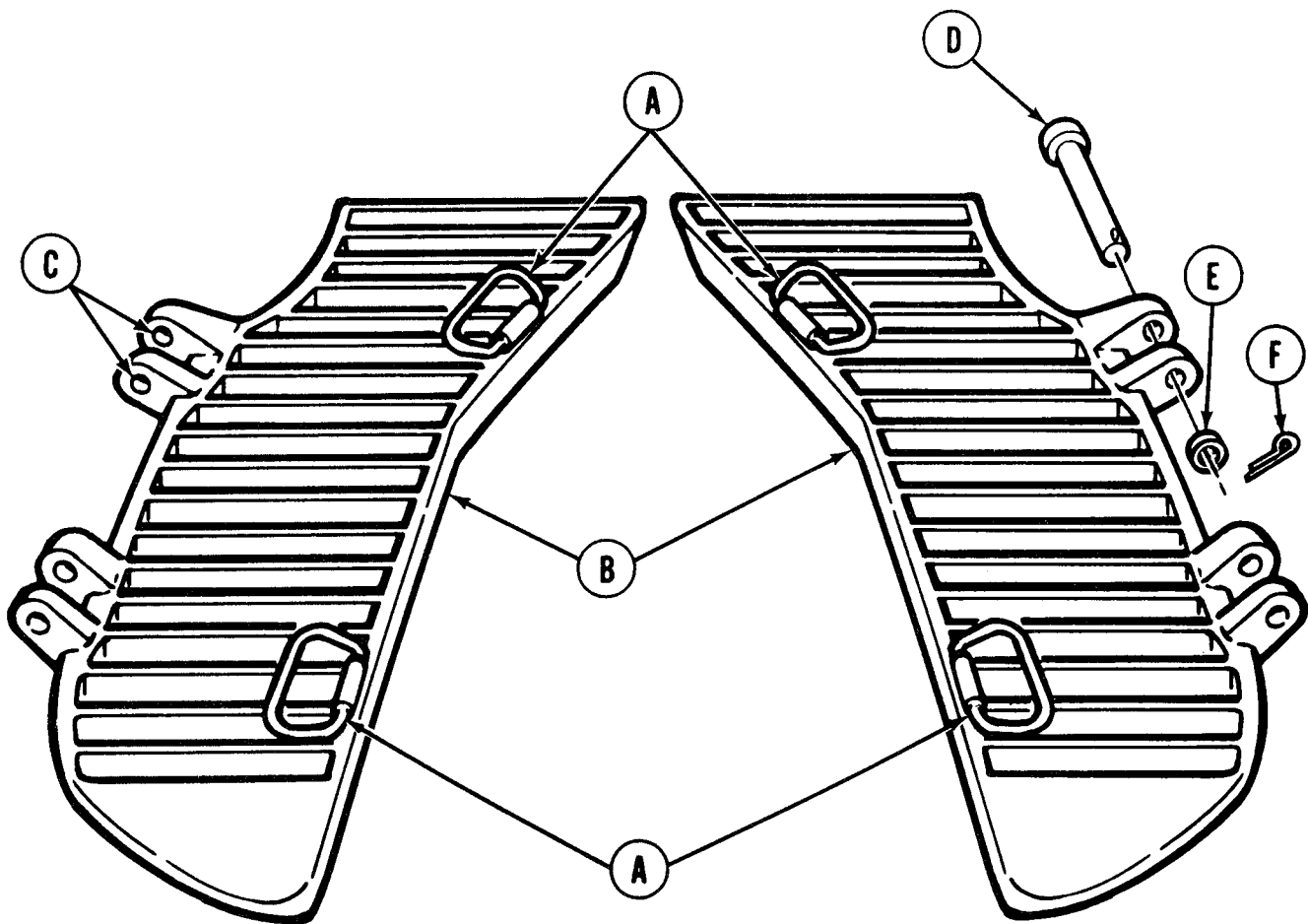
TA253547

Change 1 16-15

## INTAKE GRILLE DOOR NO. 5 (LEFT AND RIGHT) REPLACEMENT (Sheet 2 of 2)

### INSTALLATION:

1. With two persons using handles (A), raise door (B) over vehicle and slowly lower into place. Make sure hinge holes (C) align with holes in vehicle.
2. Insert four pins (D) through hinge holes (C) and holes in vehicle. Install washers (E) onto pins (D). Install four new cotter pins (F) through holes in pins (D).
3. Using pliers, spread each side of pin (F) so that pin (F) cannot be removed from pin (D).
4. Tighten grille door lock screw (page 16-24, step 9).



End of Task

TA253548

EXHAUST DOORS REPLACEMENT (Sheet 1 of 4)

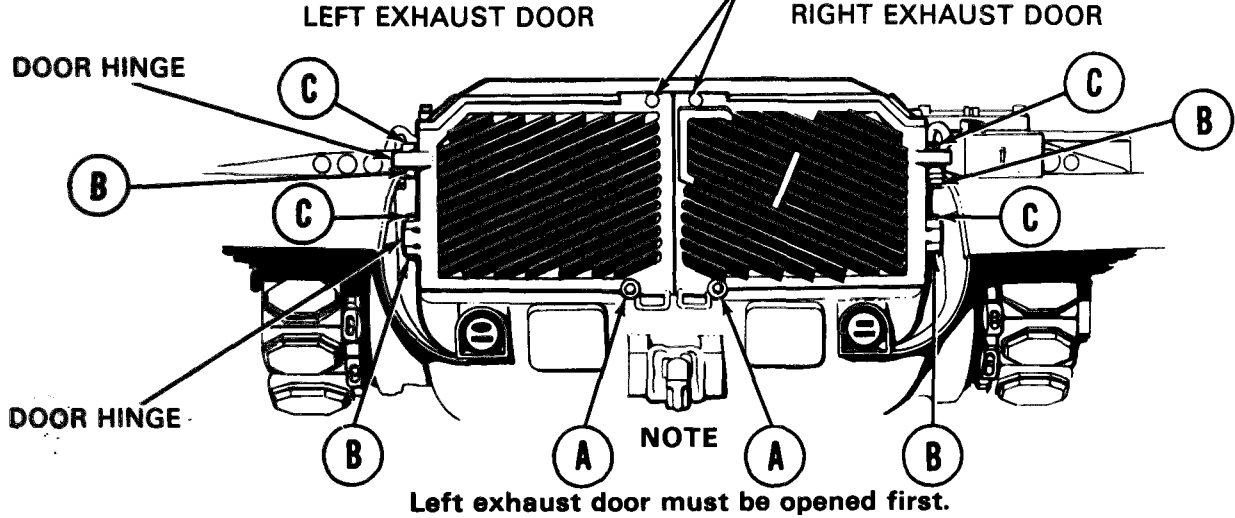
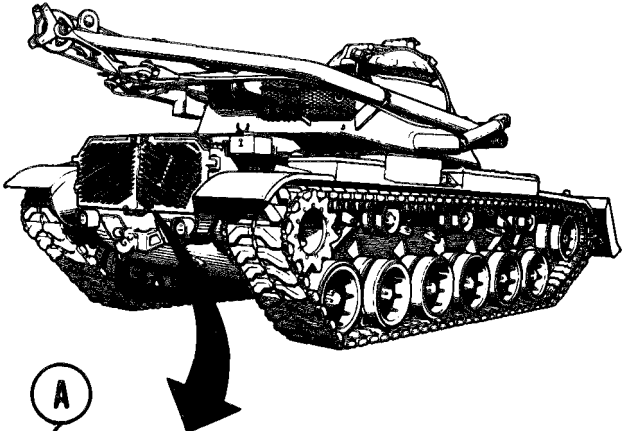
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-17
Installation	16-19

TOOLS: 1-1/8 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 5 in. extension with 1/2 in. drive  
 Ball peen hammer  
 Long round nose pliers  
 Pinch bar  
 Drift punch  
 Hoist (capable of lifting 1 ton)  
 Sling

SUPPLIES: Cotter pins (MS24665-355) (2 required)  
 Lockwashers (MS35335-35) (22 required)

PERSONNEL: Three



REMOVAL:

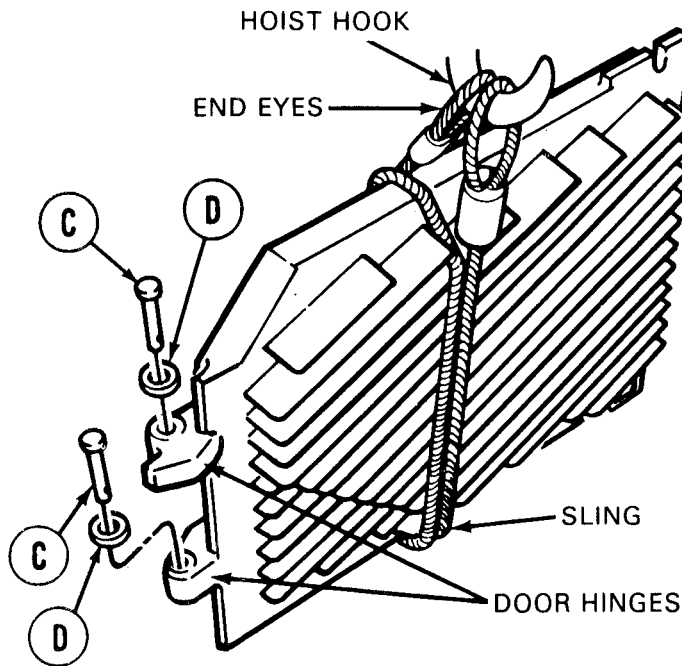
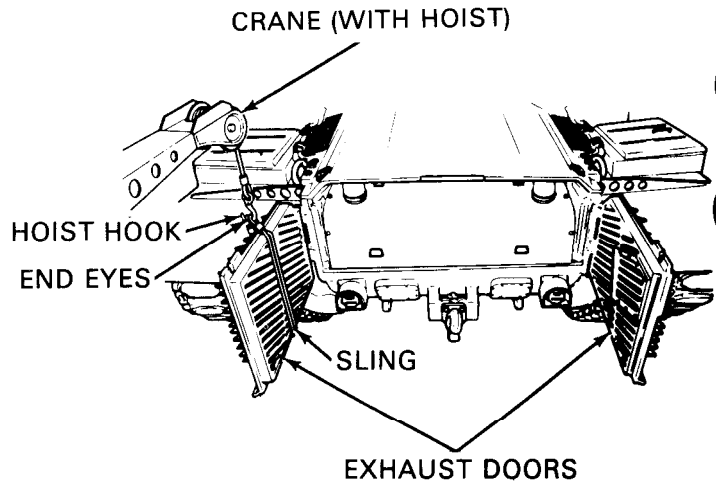
- Using 1-1/8 inch socket, remove four screw assemblies (A).
- Using pliers, remove two cotter pins (B) securing headed pins (C) in door hinges. Throw cotter pins away.

Go on to Sheet 2

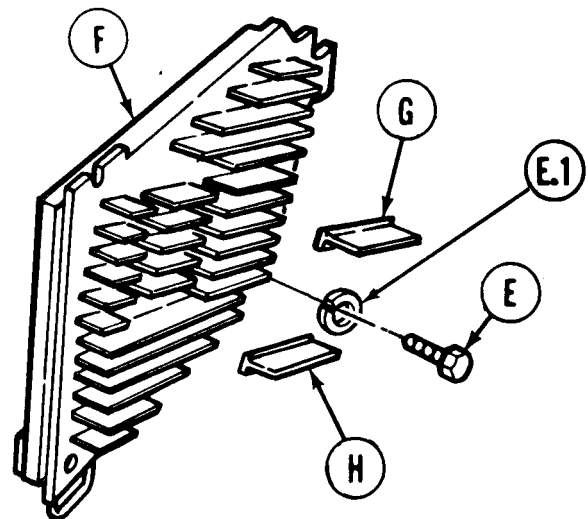
TA253549

**EXHAUST DOORS REPLACEMENT (Sheet 2 of 4)**

3. Position crane with hoist to rear of vehicle.
4. Wrap sling around door. Put two end eyes of sling over hoist hook.
5. Using hoist, tighten sling around door.
6. Using hammer and drift punch, drive two pins (C) out of hinges.



7. Remove two pins (C) and washers (D).
8. Using pinch bar, pry door away from hull mounting place.
9. Using hoist and sling, move door to clean working area.
10. Using 9/16 inch socket, remove 22 screws (E) and lockwashers (E1) securing deflectors (G and H) to right side door (F) only. Throw lockwashers away.
11. Remove two deflectors (G) and (H) from right side door only.



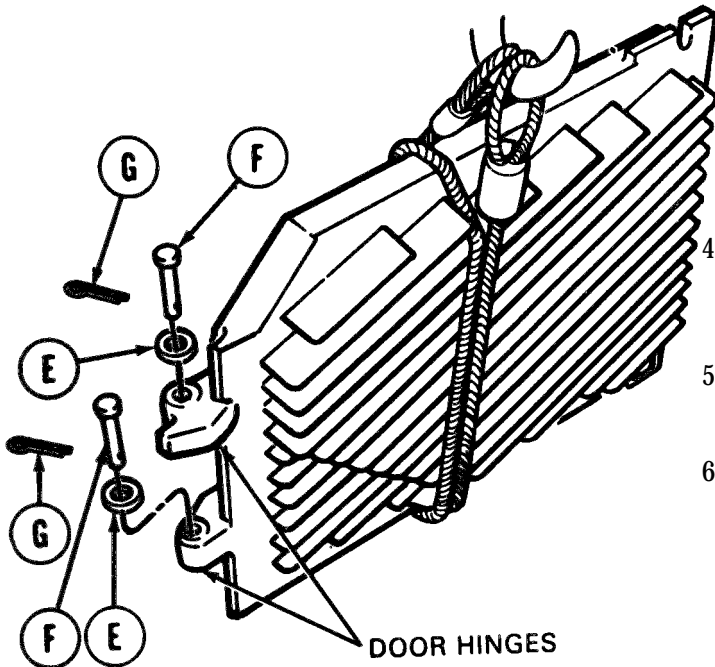
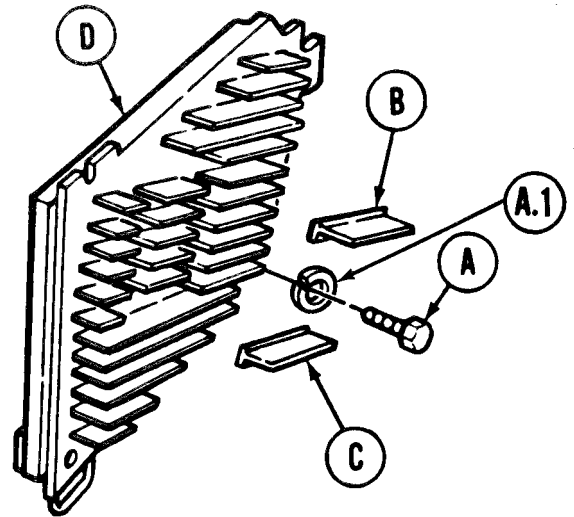
Go on to Sheet 3

TA253550

**EXHAUST DOORS REPLACEMENT (Sheet 3 of 4)**

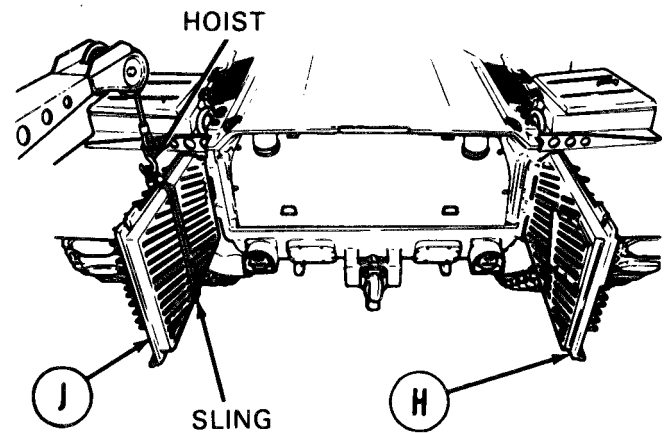
**INSTALLATION:**

1. Install 22 new lockwashers (A.1) and screws (A) to secure two deflectors (B) and (C) mounted on right side exhaust door (D).
2. Using sling with hoist, lift door to mounting position at rear of hull.
3. With second person, mount door to two hinges.



4. Install washers (E) (as many washers as necessary to aline door screw holes to hull mating holes).
5. Using ball peen hammer, drive two headed straight pins (F) into two door hinges.
6. Using ball peen hammer with pliers, install two new cotter pins (G) through straight pins (F).

7. Remove sling.
8. Close exhaust door (H).
9. Close exhaust door (J).



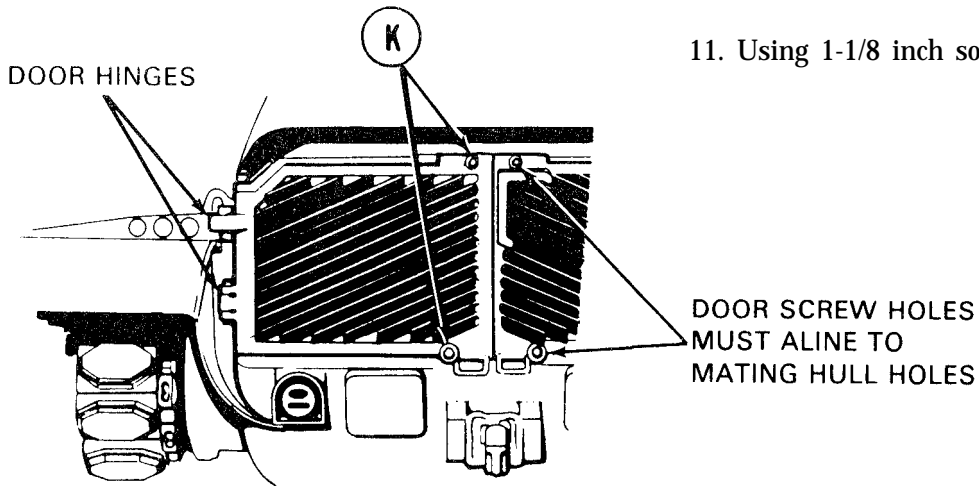
Go on to sheet 4

TA253551

EXHAUST DOORS REPLACEMENT (Sheet 4 of 4)

10. Install four screw assemblies (K) to secure doors to rear of hull.

11. Using 1-1/8 inch socket, tighten screws (K).



End of Task

TA140632



**TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 1 of 9)**

SUBTASK INDEX

PROCEDURE	PAGE
Top Deck Replacement	16-21
Top Deck Door Panels Replacement	16-25
Top Deck Insulator Panel Replacement	16-26

Top Deck Replacement (Sheet 1 of 4)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-21
Installation	16-23

**TOOLS:** Socket handle (breaker bar) with 3/4 in. drive  
 1-1/2 in. socket with 3/4 in. drive  
 Ratchet with 3/4 in. drive  
 15/16 in. open end wrench  
 1-1/8 in. socket with 3/4 in. drive  
 15/16 in. socket with 3/4 in. drive  
 1-1/8 in. open end wrench  
 Hoist (capable of lifting 3,000 pounds)

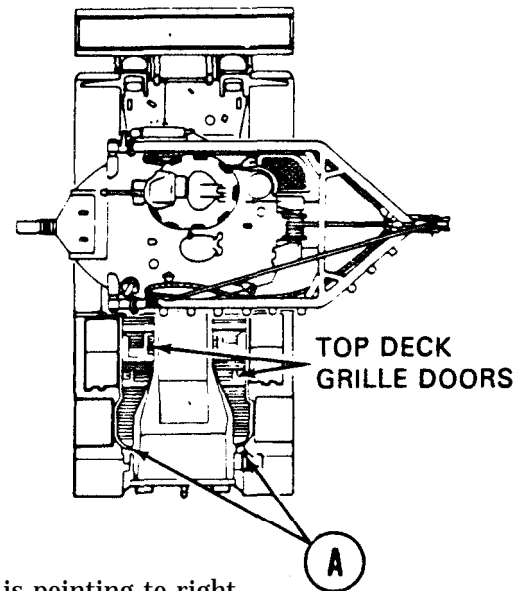
**SUPPLIES:** Lockwashers (MS35338-72) (6 required)  
 Lockwashers (MS 35338-67) (2 required)

**SPECIAL TOOLS:** Sling (Item 31, Chapter 3, Section I)

**PERSONNEL:** Three

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURES:** Traverse turret so gun tube is pointing to right or left side (TM 9-2350-222-10)  
 Remove external handset box (page 16-193) (Early model only)



**REMOVAL:**

- Using 15/16 inch socket, loosen screw (A) (both sides) so top deck grille doors can be opened.

Go on to Sheet 2

TA253552

TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 2 of 9)

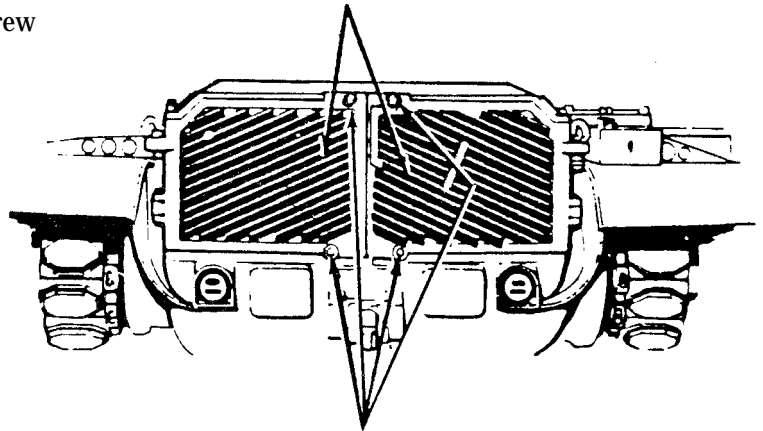
Top Deck Replacement (Sheet 2 of 4)

2. Open eight top deck grille doors (four each side).
3. Using 1-1/8 inch socket, remove four screw assemblies securing rear grille doors to hull.
4. Open rear exhaust grille doors.

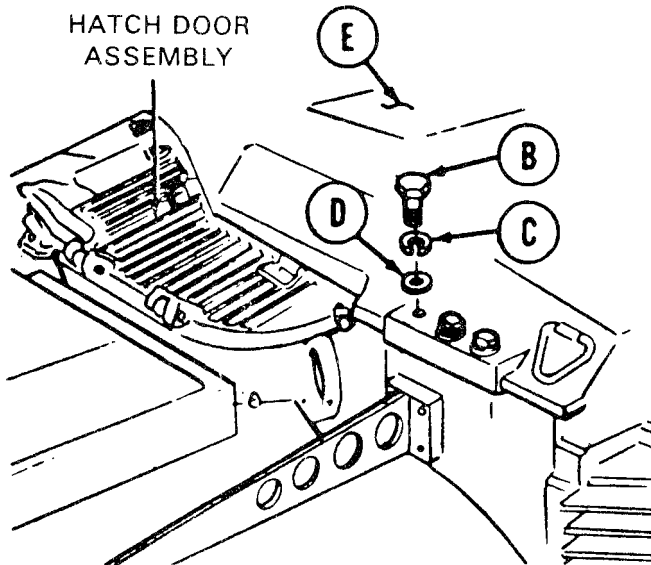
**NOTE**

It may be necessary to use breaker bar to remove screws (B).

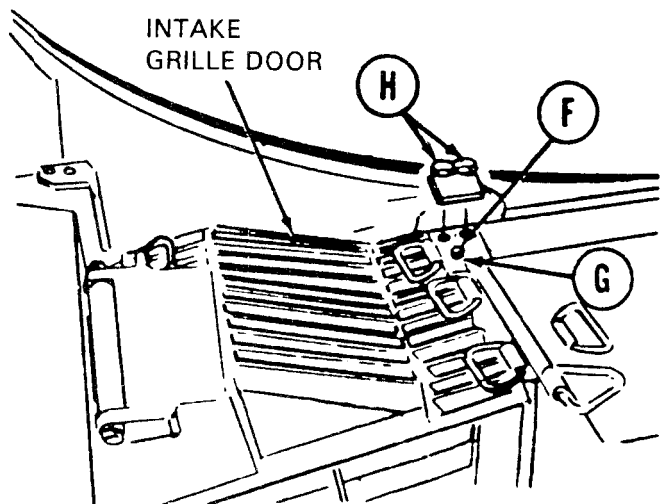
REAR EXHAUST GRILLE DOORS



SCREW ASSEMBLY



5. Using 1-1/2 inch socket, remove three screws (B), lockwashers (C), and washers (D) from each side, securing top deck (E) to hull. Throw lockwashers (C) away.



6. Using 5/8 inch socket, remove two screws (F) and lockwashers (G) securing two intake grille doors to top deck. Throw lockwashers (G) away. Remove doors.
7. Traverse turret to gain access to bolts (H) (TM 9-2350-222-10). Using 1-1/8 inch wrench, loosen four bolts (H) securing top deck to hull (two each side).

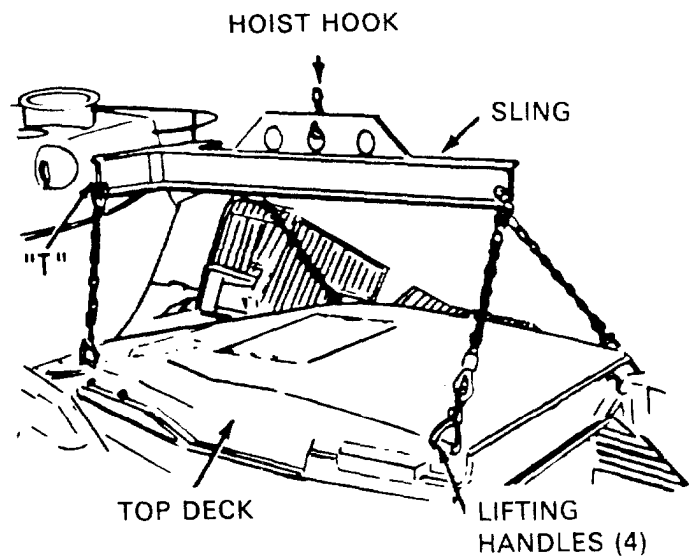
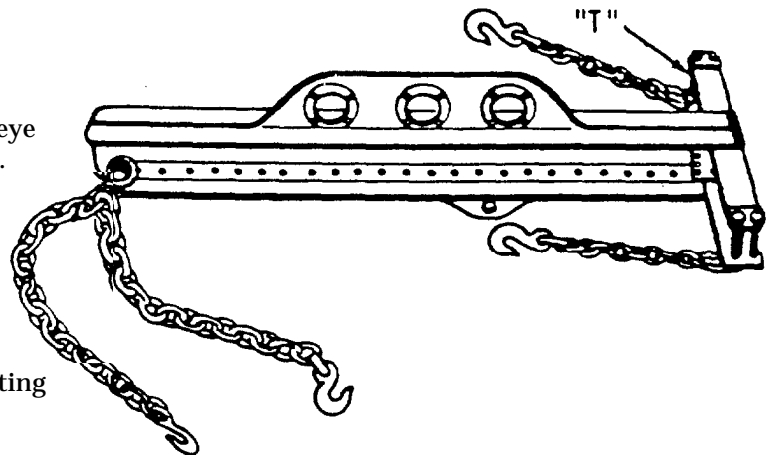
Go on to Sheet 3

TA253553

TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 3 of 9)

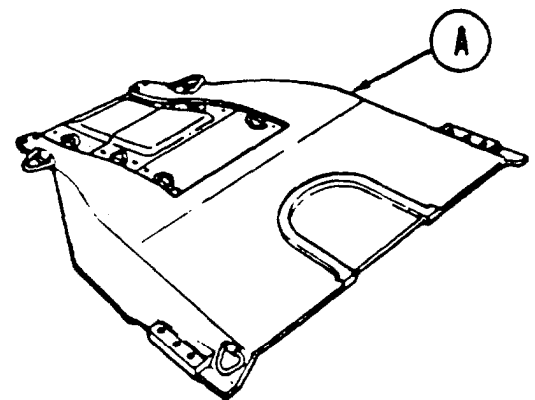
Top Deck Replacement (Sheet 3 of 4)

8. Install lifting hook of hoist to middle eye of sling (Item 31, Chapter 3, Section I).
9. Using hoist, position sling with its "T" toward front of vehicle.
10. Guide sling over top deck.
11. Connect four hooks of sling to four lifting handles of top deck.
12. Lift top deck off vehicle. Put top deck down in working area.



INSTALLATION:

1. Using hoist with sling (Item 31, Chapter 3, Section I), lift top deck (A) into position over powerplant. "T" of sling should be toward front of vehicle.
2. Lower top deck into mounting position.



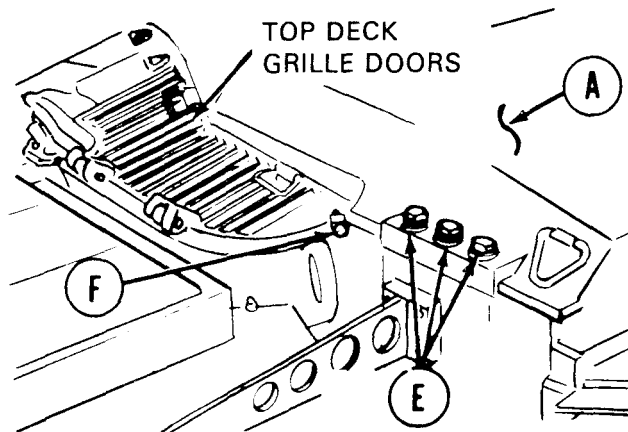
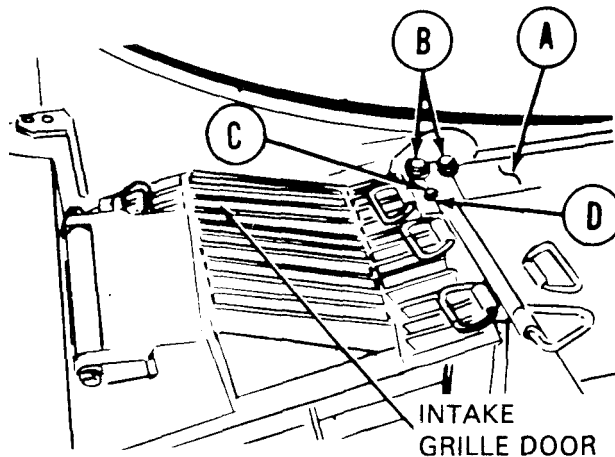
Go on to Sheet 4

TA253554

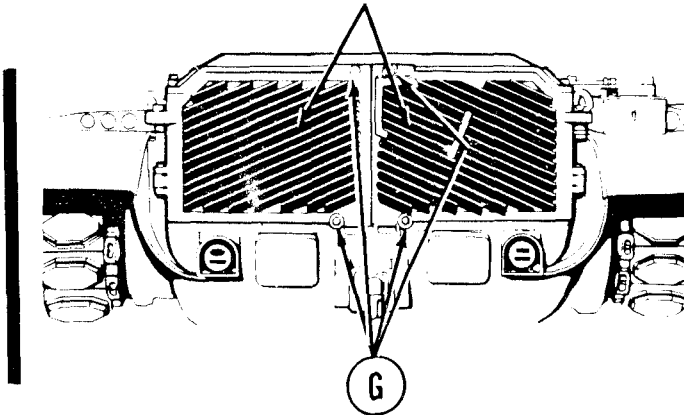
TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 4 of 9)

Top Deck Replacement (Sheet 4 of 4)

3. Using 1-1/8 inch wrench, tighten four bolts (B) (two each side) securing top deck (A) to front frame.
4. Mount two intake grille doors (one each side of top deck).
5. Using 5/8 inch socket, install two screws (C) and new lockwashers (D) (one each side) securing two intake grille doors to top deck.
6. Install three screws, new lockwashers, and washers (E) on each side.
7. Using 1-1/2 inch socket, tighten six screws (E).
8. Close top deck grille doors (four each side).
9. Using 15/16 inch socket, tighten two locking screws (F).



EXHAUST GRILLE DOOR



10. Close two exhaust grille doors. Using 1-1/8 inch socket, tighten four screw assemblies (G) to secure doors.
11. Install external handset box (page 16-194) (Early model only).

End of Task

TA253555

**TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 5 of 9)**

**Top Deck Door Panels Replacement (Sheet 1 of 1)**

**TOOLS:** 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Hinged socket wrench handle with 1/2 in. drive (breaker bar)

**SUPPLIES:** Lockwashers (MS35338-65) (12 required)

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Traverse turret so gun tube is pointing to right or left side  
 (TM 9-2350-222-10)

**NOTE**

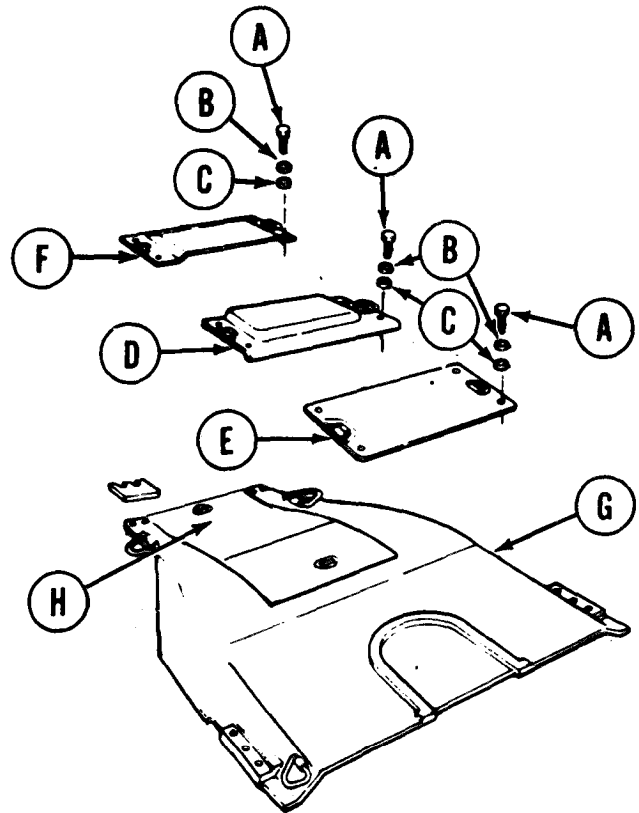
These door panels may be removed from top deck either with top deck on or off vehicle.

**NOTE**

It may be necessary to use breaker bar to remove screws.

**REMOVAL:**

1. Using socket, remove four screws (A), lockwashers (B), and washers (C) securing engine cover (D). Throw lockwashers (B) away. Remove door (D).
2. Repeat step 1 to remove engine door (E) and engine door (F) from top deck (G).
3. Remove aluminum access cover panel (H), which is under three top deck panels (D), (E), and (F).



**INSTALLATION:**

1. Position access cover panel (H).
2. Install rear door (E), front door (F), and engine cover (D).
3. Install 12 screws (A), new lockwashers (B), and washers (C). Using socket, tighten screws (A).

End of Task

TA140637

TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 6 of 9)

Top Deck Insulator Panel Replacement (Sheet 1 of 4)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-26
Installation	16-27

TOOLS: Ratchet with 1/2 in. drive  
 7/16 in. socket with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 Drift pin  
 Hoist (capable of lifting 3,000 pounds)

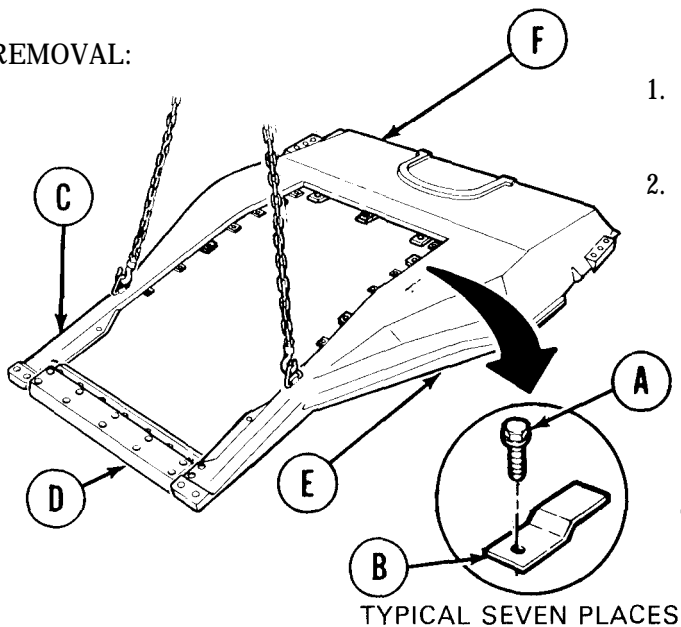
SPECIAL TOOLS: Sling (Item 31, Chapter 3, Section I)

SUPPLIES: Lockwashers (MS35338-65) (32 required)

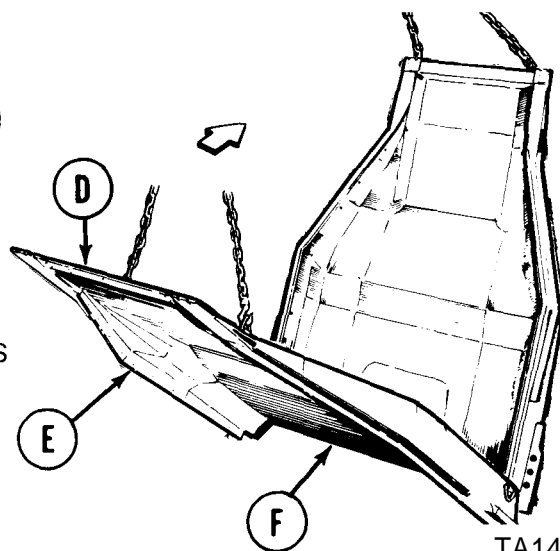
PERSONNEL: Two

PRELIMINARY PROCEDURES: Remove top deck (page 16-21)  
 Remove top deck door panels (page 16-25)

REMOVAL:



1. Using 7/16 inch socket, remove seven screws (A) and tabs (B) from aluminum frame (C).
2. Fasten two hoist chains to end (D) of top deck (E).



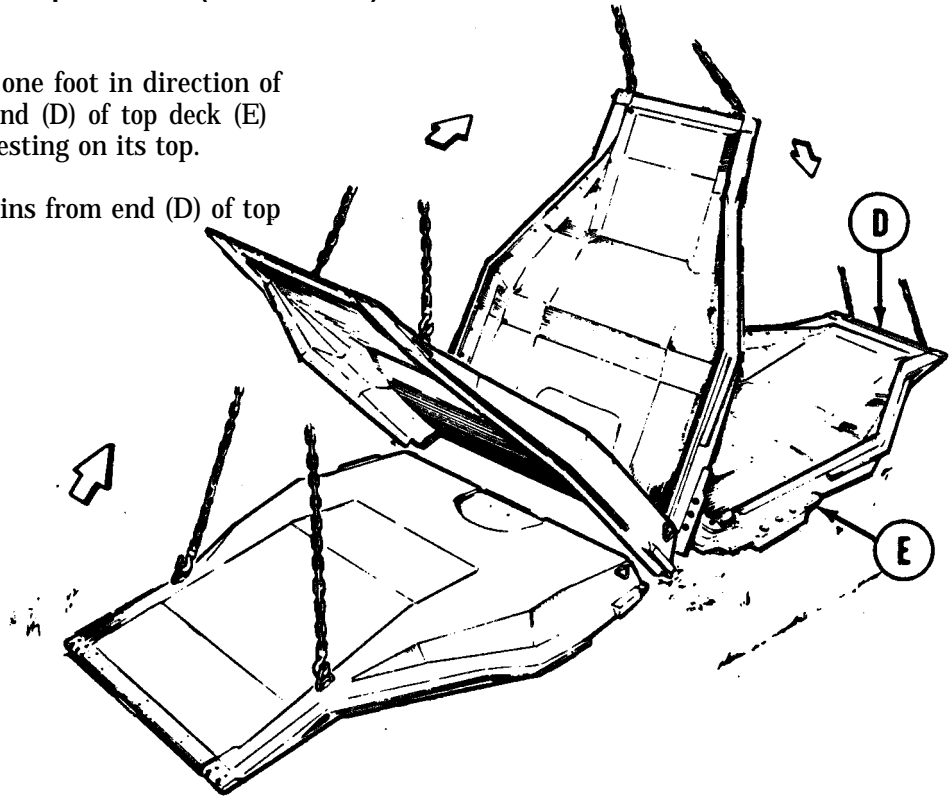
3. Using hoist, raise end (D) of top deck (E) until top deck (E) is standing on end (F).

Go on to Sheet 2

TA140638

**TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 7 of 9)****Top Deck Insulator Panel Replacement (Sheet 2 of 4)**

4. Swinging hoist about one foot in direction of arrows, slowly lower end (D) of top deck (E) until top deck (E) is resting on its top.
5. Remove two hoist chains from end (D) of top deck (E).



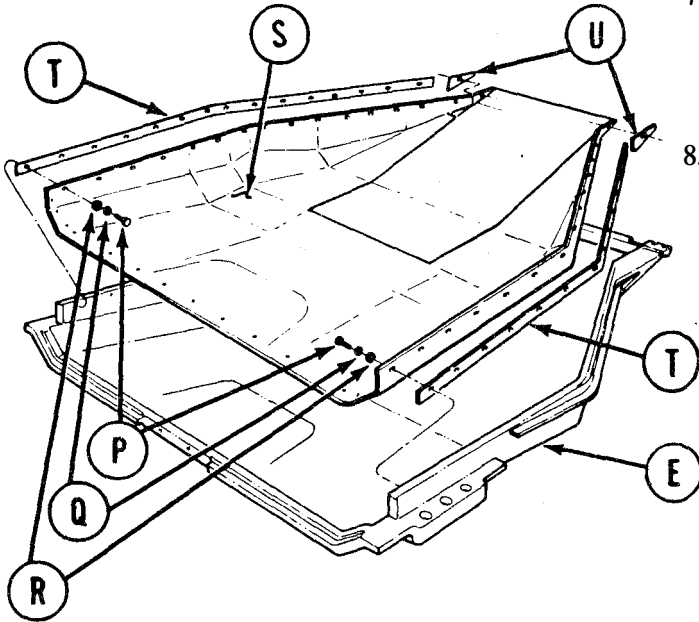
Go on to Sheet 3

TA140639

Change 3 16-27

TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 8 of 9)

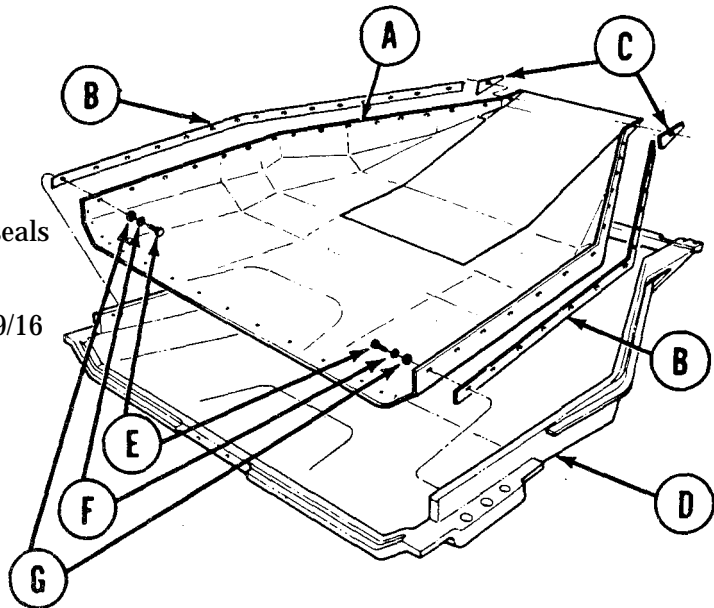
Top Deck Insulator Panel Replacement (Sheet 3 of 4)



7. Using 9/16 inch socket, remove 32 screws (P), lockwashers (Q), and washers (R) holding insulator panel (S) to top deck (E). Throw lockwashers (Q) away.
8. Manually remove insulator panel (S) and seals (T) and (U) from top deck (E).

INSTALLATION:

1. Manually position insulator panel (A) and seals (B) and (C) into top deck (D).
2. Using drift pin to line up screw holes, use 9/16 inch socket to install 32 screws (E), new lockwashers (F), and washers (G) to hold insulator panel (A) to top deck (D).



Go on to Sheet 4

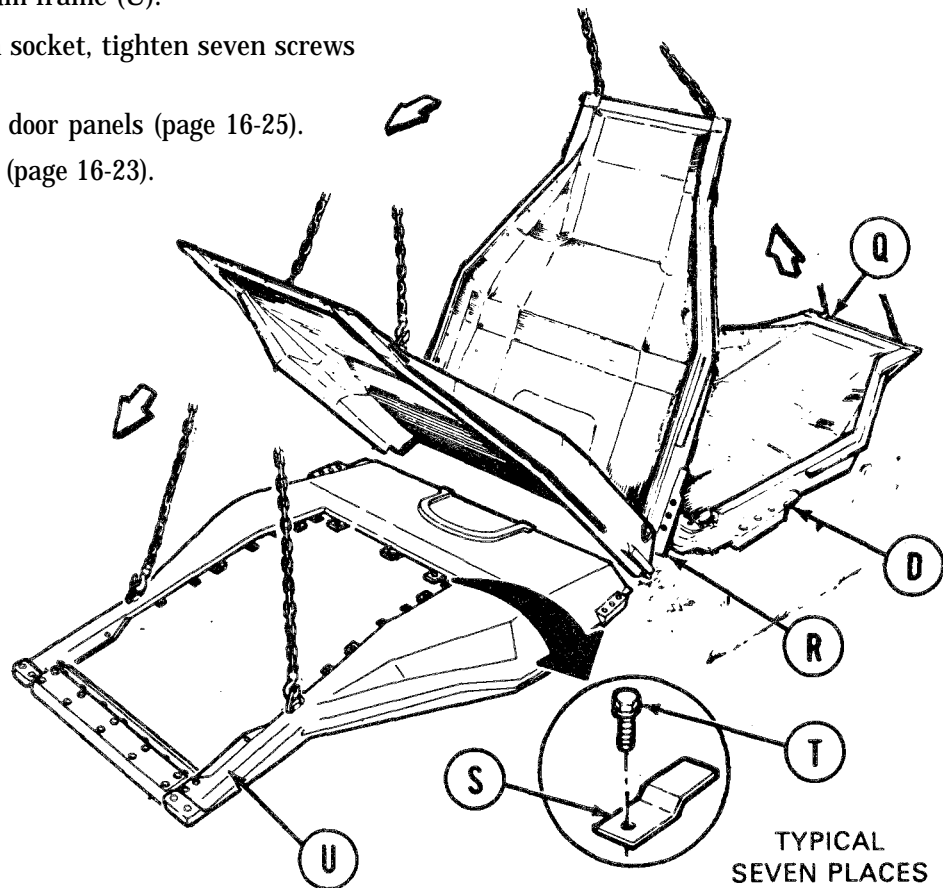
TA140640



TOP DECK FRAME ASSEMBLY REPLACEMENT (Sheet 9 of 9)

Top Deck Insulator Panel Replacement (Sheet 4 of 4)

4. Fasten two hoist chains to end (Q) of top deck (D).
5. Using hoist, raise end (Q) of top deck (D) until top deck (D) is standing on end (R).
6. Swinging hoist about one foot in direction of arrows, slowly lower end (Q) of top deck (D) until top deck (D) is resting with insulator panel facing down.
7. Remove two hoist chains from end (Q) of top deck (D).
8. Position seven tabs (S) on aluminum frame with holes alined.
9. Manually start seven screws (T) through tabs (S) into aluminum frame (U).
10. Using 7/16 inch socket, tighten seven screws (T).
11. Install top deck door panels (page 16-25).
12. Install top deck (page 16-23).



End of Task

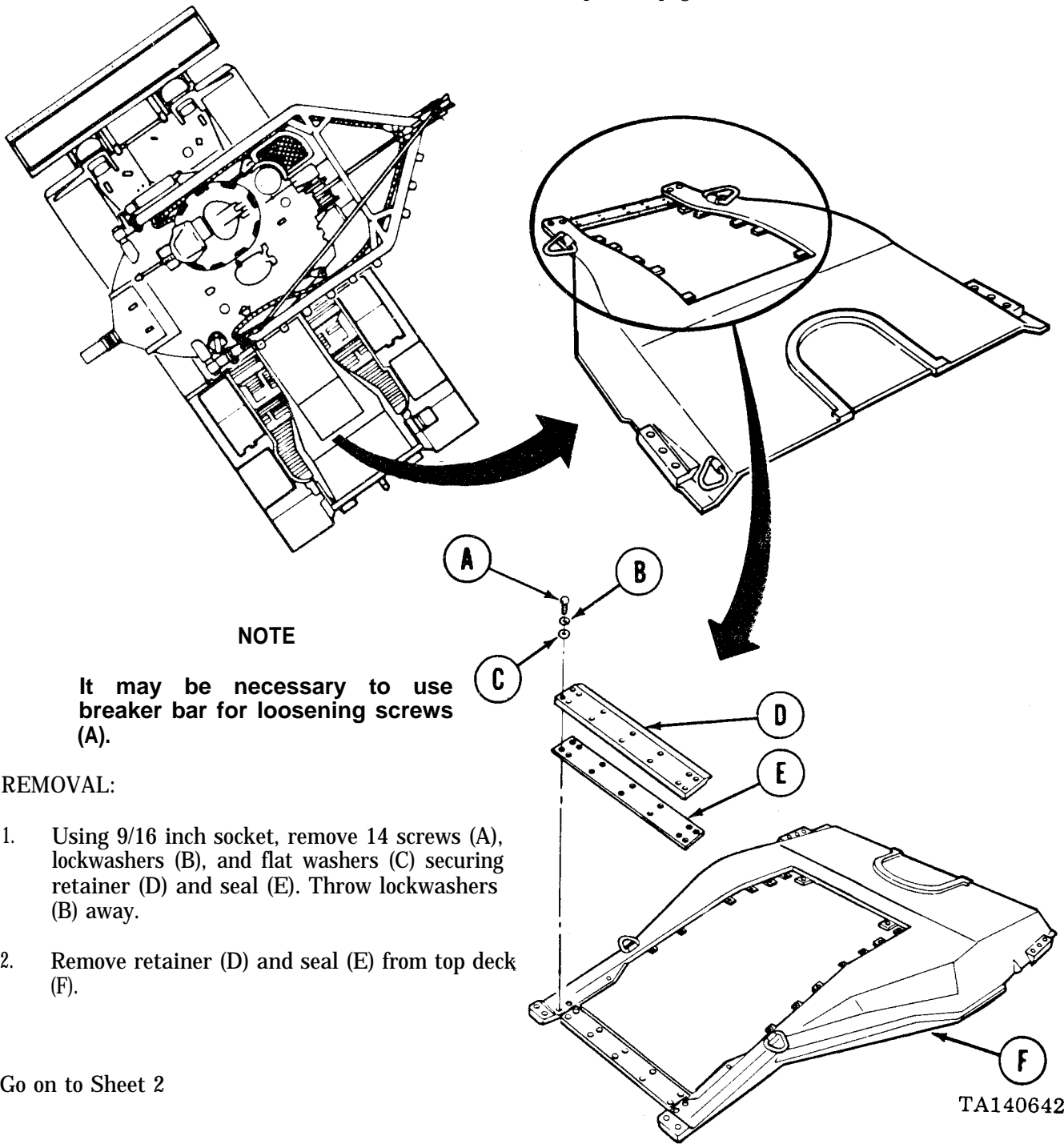
TA140641

### ENGINE ACCESS PANEL SEAL REPLACEMENT (Sheet 1 of 3)

**TOOLS:** Hinged socket wrench handle with 1/2 in. drive (breaker bar)  
7/16 in. socket with 1/2 in. drive  
9/16 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive  
5 in. extension with 1/2 in. drive

**SUPPLIES:** Lockwashers (MS35338-65) (14 required)

**PRELIMINARY PROCEDURE:** Remove top deck door panels (page 16-25)



**NOTE**

It may be necessary to use breaker bar for loosening screws (A).

**REMOVAL:**

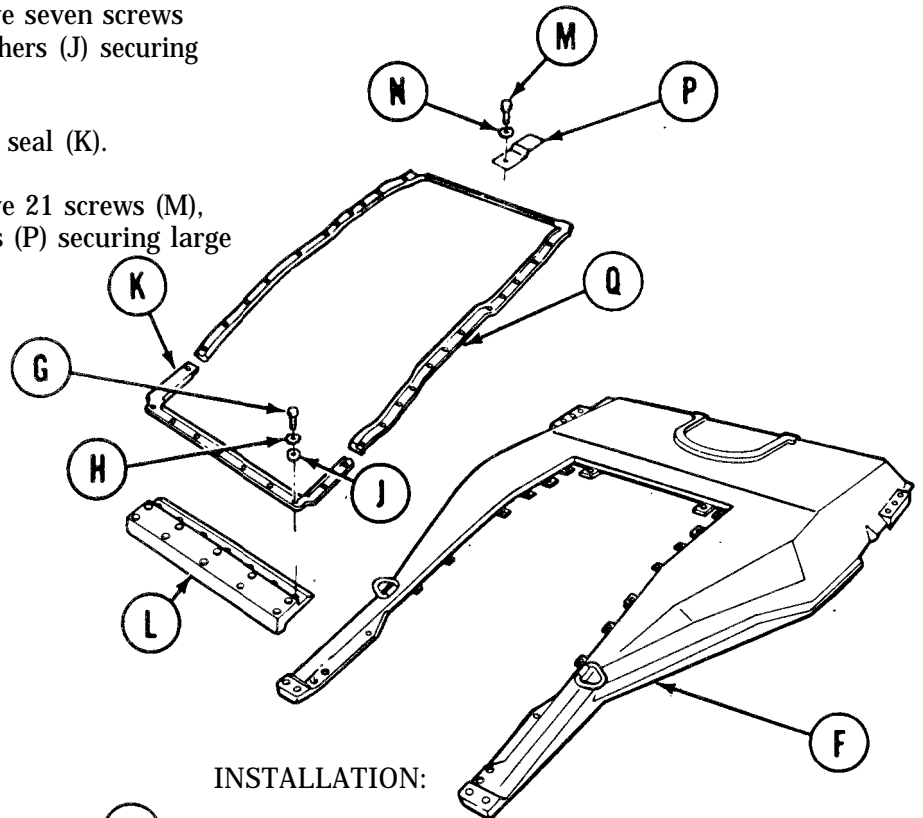
1. Using 9/16 inch socket, remove 14 screws (A), lockwashers (B), and flat washers (C) securing retainer (D) and seal (E). Throw lockwashers (B) away.
2. Remove retainer (D) and seal (E) from top deck (F).

Go on to Sheet 2

TA140642

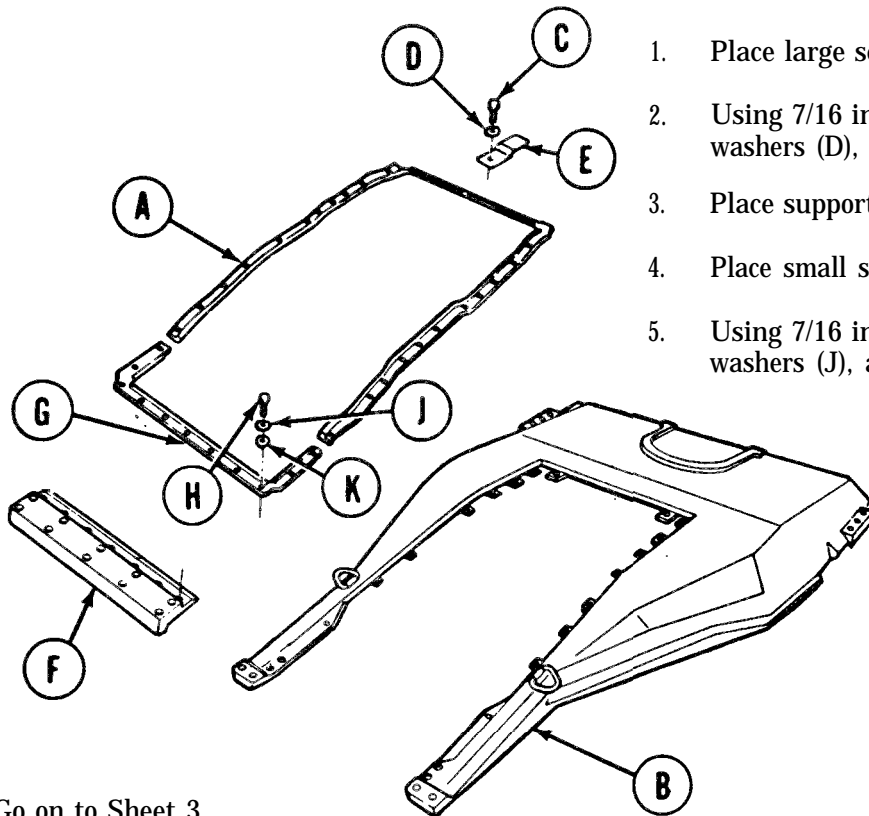
**ENGINE ACCESS PANEL SEAL REPLACEMENT (Sheet 2 of 3)**

3. Using 7/16 inch socket, remove seven screws (G), washers (H), and flat washers (J) securing small seal (K) to support (L).
4. Remove support (L) and small seal (K).
5. Using 7/16 inch socket, remove 21 screws (M), washers (N), and seven straps (P) securing large seal (Q) to top deck (F).
6. Remove large seal (Q).



**INSTALLATION:**

1. Place large seal (A) in position on top deck (B).
2. Using 7/16 inch socket, install 21 screws (C), washers (D), and seven straps (E).
3. Place support (F) in position on top deck (B).
4. Place small seal (G) on support (F).
5. Using 7/16 inch socket, install 7 screws (H), washers (J), and flat washers (K).

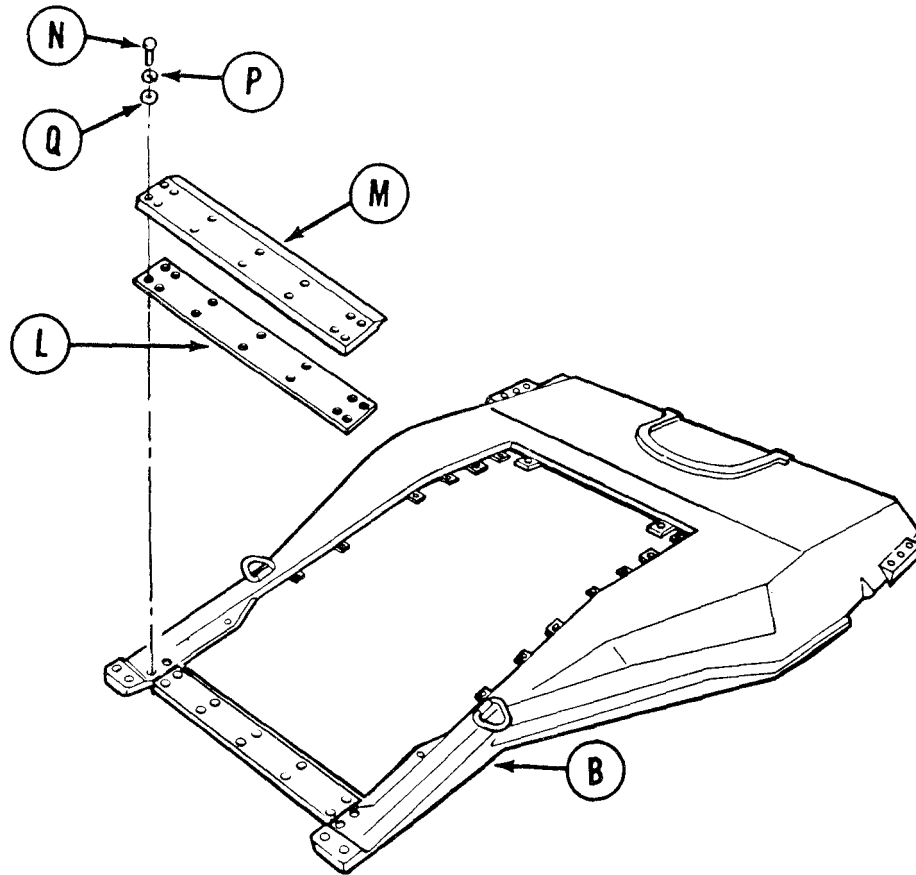


Go on to Sheet 3

TA140643

**ENGINE ACCESS PANEL SEAL REPLACEMENT (Sheet 3 of 3)**

6. Place seal (L) and retainer (M) in position on top deck (B).
7. Using 9/16 inch socket, install 14 screws (N), new lockwashers (P), and flat washers (Q).
- 7.1. Install aluminum access cover panel (page 16-25).



8. Install top deck door panels (page 16-25).

End of Task

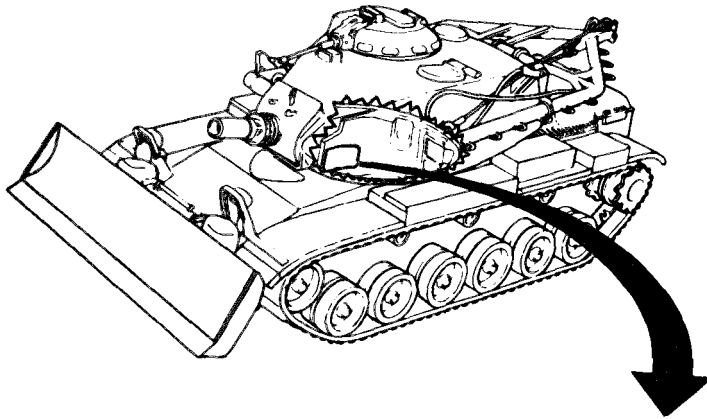
TA140644

**BULKHEAD ACCESS COVER REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** Flat-tip screwdriver  
 5 in. extension with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Putty knife

**SUPPLIES:** Gasket (8762244) Dry cleaning solvent (Item 54, Appendix D)  
 Lockwashers (MS35338-65) (12 required) Rags (Item 65, Appendix D)  
 Adhesive (Item 4, Appendix D)

**REFERENCE:** TM 9-2350-222-10

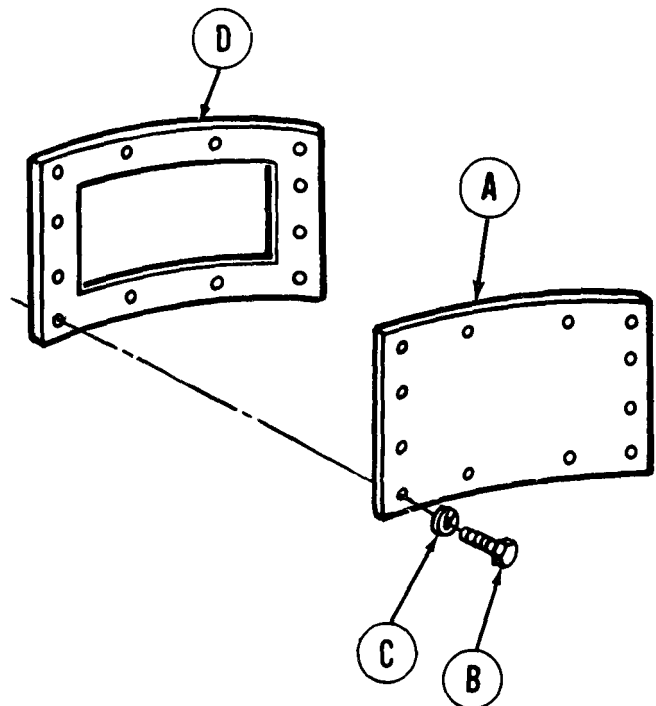


**REMOVAL:**

**NOTE**

**There are two bulkhead access covers directly opposite each other.**

1. Traverse turret to gain access to access cover (A) (TM 9-2350-222-10).
2. Using socket, remove 12 screws (B) and lockwashers (C) securing cover (A) and gasket (D). Throw lockwashers (C) away.
3. Using flat-tip screwdriver, remove cover (A) and gasket (D). Throw gasket away.
4. Using putty knife, rags, and dry cleaning solvent (Item 54, Appendix D) remove any old gasket material from cover and mating surface on hull.



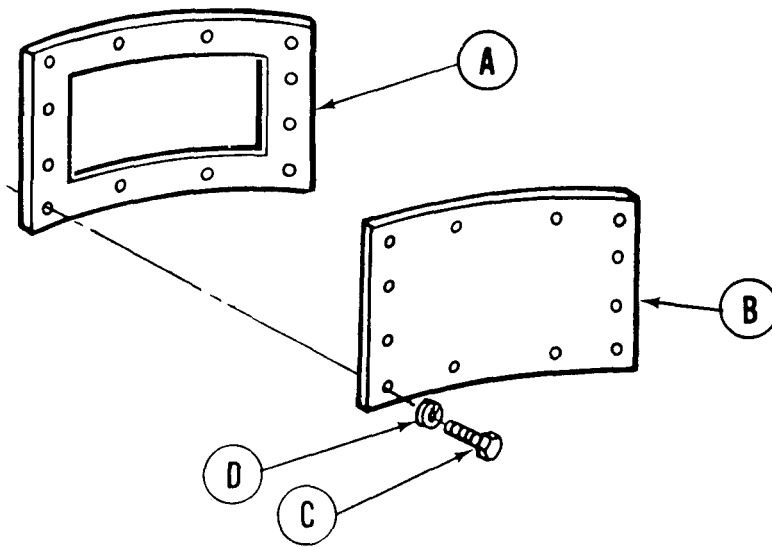
Go on to Sheet 2

TA253556

**BULKHEAD ACCESS COVER REPLACEMENT (Sheet 2 of 2)**

INSTALLATION:

1. Apply adhesive (Item 4, Appendix D) to new gasket (A) and mating surface of cover (B).
2. Place access cover (B) and gasket (A) in position.
3. Using socket, install 12 screws (C) and new lockwashers (D) securing cover (B) to vehicle.



End of Task

TA253557

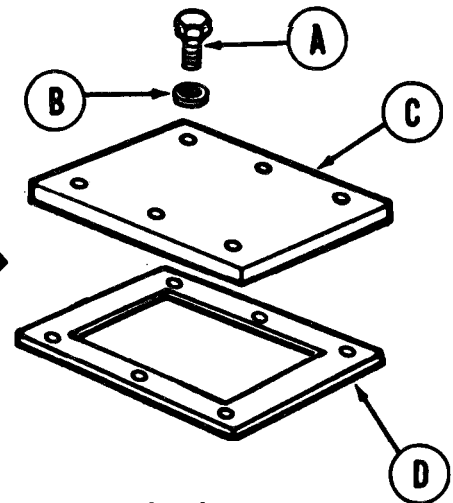
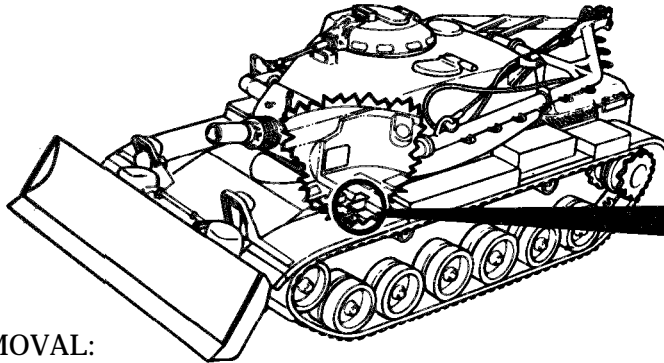
**SLIPRING BOX ACCESS COVER REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 5 in. extension with 1/2 in. drive  
 Putty knife

**SUPPLIES:** Gasket (8721804)  
 Lockwasher (MS35338-65) (6 required)  
 Adhesive (Item 4, Appendix D)

Dry cleaning solvent (Item 54, Appendix D)  
 Rags (Item 65, Appendix D)

**REMOVAL:**

**NOTE**

**Slipring must be removed by organizational turret mechanic before slipring box access cover can be removed.**

1. Using socket, reach through slipring cavity, remove six screws (A) and lockwashers (B) securing cover (C) and gasket (D). Throw lockwashers (B) away.
2. Remove cover (C) and gasket (D). Throw gasket (D) away.
3. Using putty knife, rags, and dry cleaning solvent (Item 54, Appendix D) remove any old gasket material from cover and mating surface of hull.

**INSTALLATION:**

1. Apply adhesive (Item 4, Appendix D) to new gasket (D) and position gasket on cover (C).
2. Place cover (C) and new gasket (D) in position.
8. Using socket, install six screws (A) and new lockwashers (B).

**NOTE**

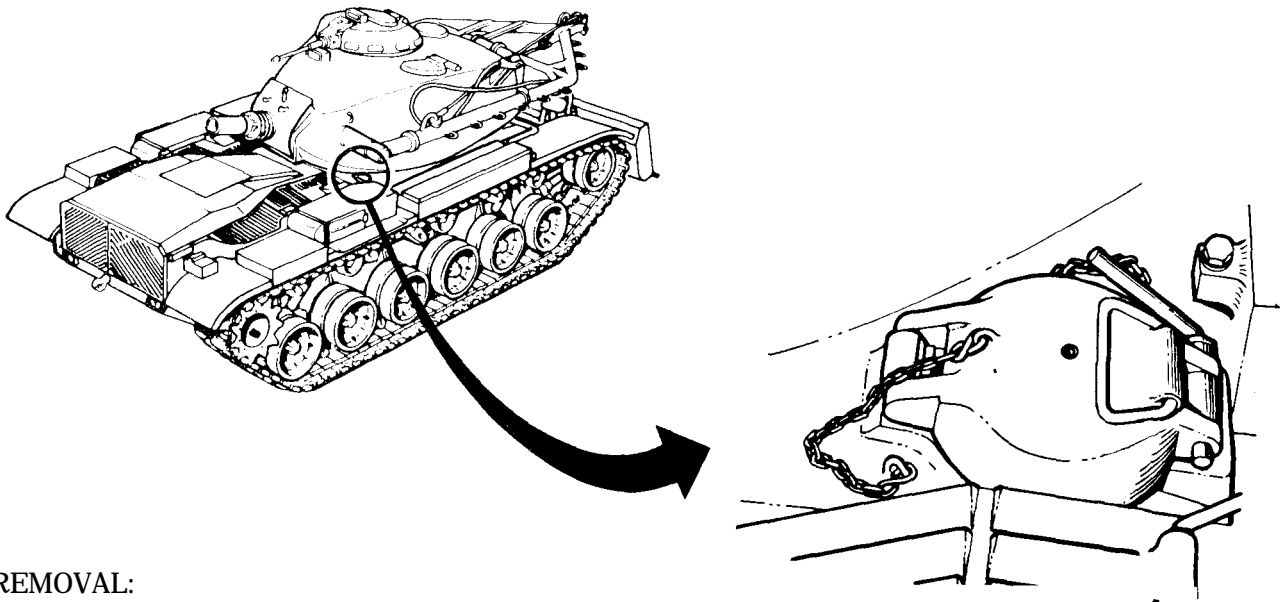
**Slipring must be replaced by organizational turret mechanic after slipring box access cover is installed.**

End of Task

TA253558

FUEL FILLER COVER ASSEMBLY REPLACEMENT (Sheet 1 of 1)

TOOLS: Slip joint pliers

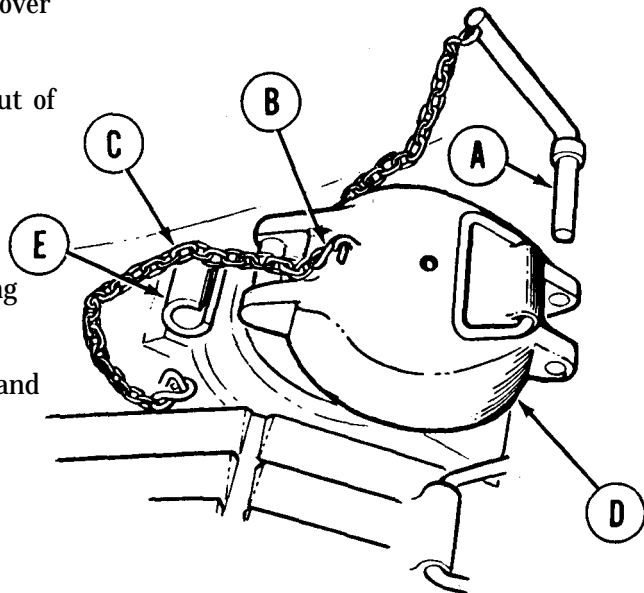


REMOVAL:

1. Remove handle (A) by pulling out.
2. Using pliers, bend hook (B) back.
3. Remove hook (B) and chain (C) from filler cover (D).
4. Remove filler cover (D) by pulling up and out of mounting (E).

INSTALLATION:

1. Place filler cover (D) in position on mounting (E).
2. Using pliers, install hook (B) and chain (C) and on filler cover (D).
3. Install handle (A) through filler cover (D) securing cover in locked position.



End of Task

TA140648



**BULKHEAD FLOOR ACCESS COVER REPLACEMENT (Sheet 1 of 1)**

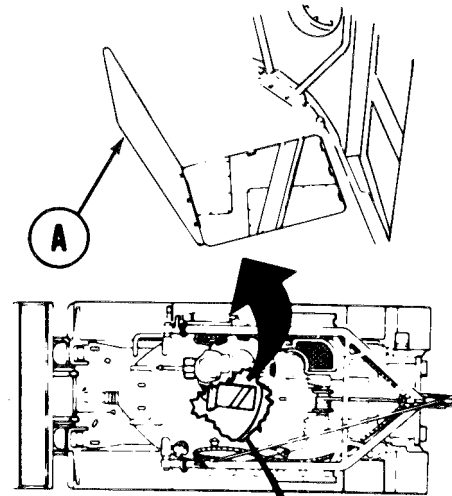
**TOOLS:** 8 in. cross-tip screwdriver  
6 in. cross-tip offset screwdriver  
Putty knife

**SUPPLIES:** Gasket (10864181)  
Penetrating oil (Item 42, Appendix D)  
Adhesive (Item 4, Appendix D)  
Rags (Item 65, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)

**REFERENCE:** TM 9-2350-222-10

**REMOVAL:**

1. Open turret platform access door (A) (TM 9-2350-222-10).
2. Traverse turret to expose desired bulkhead floor access cover (B) (TM 9-2350-222-10).

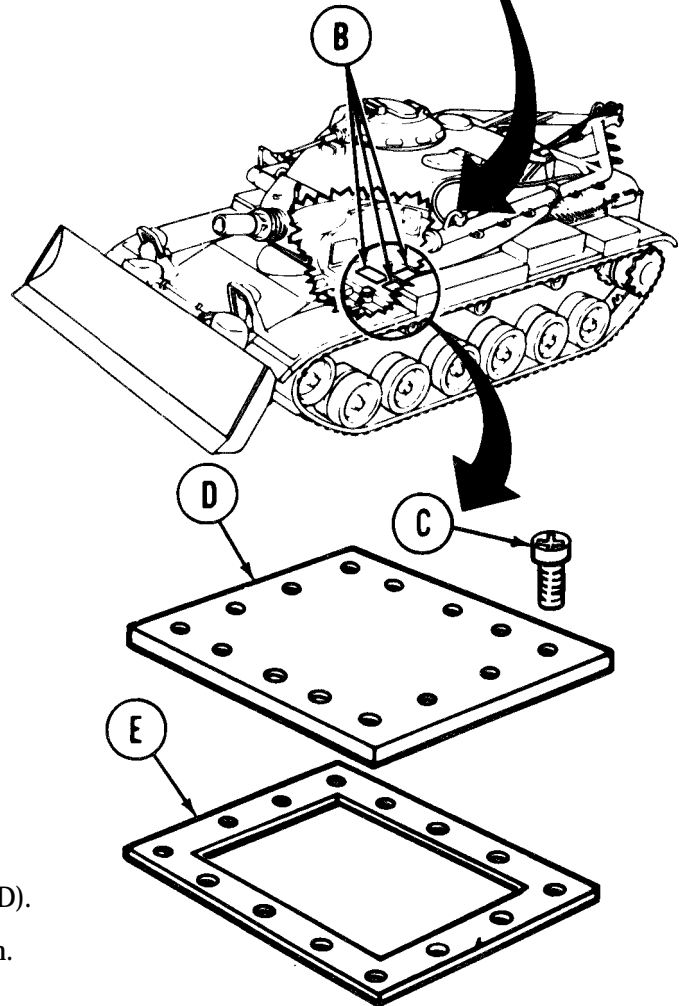


**NOTE**  
It may be necessary to use penetrating oil (Item 42, Appendix D) before step 3 can be done.

**NOTE**  
It may be necessary to use offset screwdriver to remove screws located under turret floor.

3. Using screwdriver, remove 14 screws (C) securing access cover (D) to vehicle.

**NOTE**  
If screws will not come out, notify support maintenance for turret removal.



4. Remove cover (D) and gasket (E). Throw gasket (E) away.
5. Using putty knife, rags, and dry cleaning solvent (Item 54, Appendix D), remove any old gasket material from cover and mating surface on hull.

**INSTALLATION:**

1. Apply adhesive (Item 4, Appendix D) to new gasket (E) and position gasket on cover (D).
2. Place new gasket (E) and cover (D) in position.
3. Using screwdriver, install 14 screws (C).
4. Close turret platform access cover (A) (TM 9-2350-222-10).

TA253559

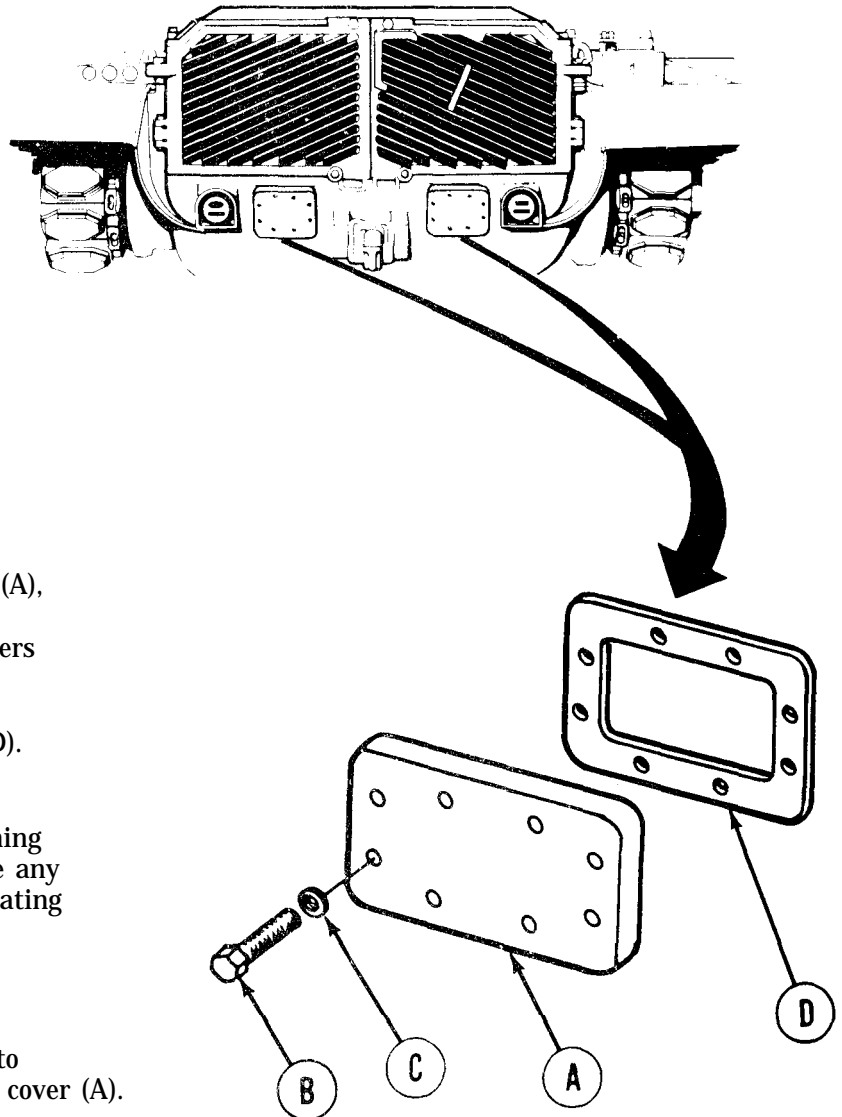
End of Task

## REAR TRANSMISSION ACCESS COVER REPLACEMENT (Sheet 1 of 1)

**TOOLS:** Putty knife  
9/16 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

**SUPPLIES:** Adhesive (Item 4, Appendix D)  
Gasket (8364452)  
Lockwasher (MS35338-46) (8 required)  
Dry cleaning solvent (Item 54, Appendix D)  
Rags (Item 65, Appendix D)

**PERSONNEL:** Two



### REMOVAL:

1. With one person holding access cover (A), second person, using 9/16 inch socket, remove eight screws (B) and lockwashers (C). Throw lockwashers (C) away.
2. Remove access cover (A) and gasket (D). Throw gasket away.
3. Using putty knife, rags, and dry cleaning solvent (Item 54, Appendix D), remove any old gasket material from cover and mating surface on hull.

### INSTALLATION:

1. Apply adhesive (Item 4, Appendix D) to new gasket (D) and position gasket on cover (A).
2. With one person holding cover (A) and gasket (D) in position, second person, using socket, install eight screws (B) and new lockwashers (C).

End of Task

TA253560

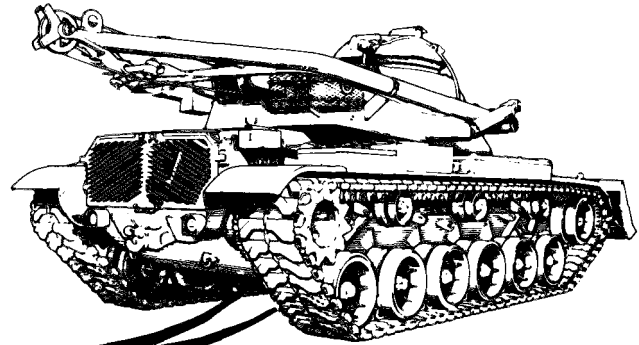
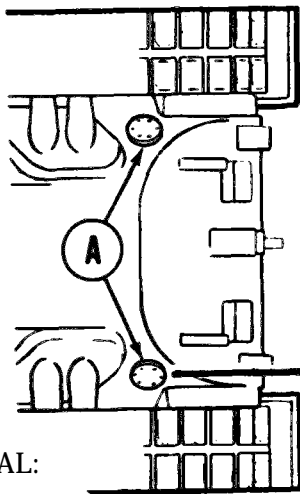
## TRANSMISSION DRAIN ACCESS COVER REPLACEMENT (Sheet 1 of 1)

TOOLS: Putty knife  
 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive

SUPPLIES: Adhesive (Item 4, Appendix D)  
 Gasket (10863983)  
 Lockwasher (MS35338-65) (6 required)

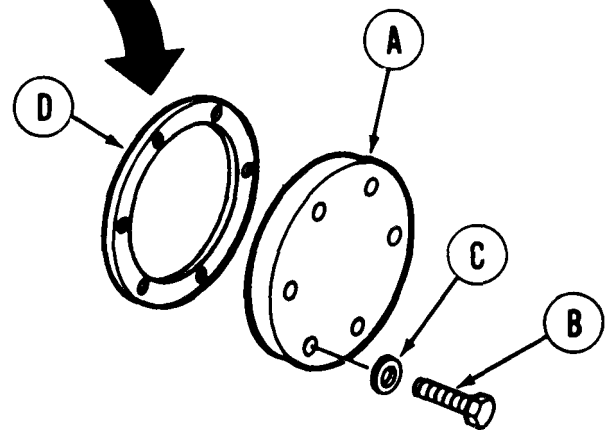
Dry cleaning solvent (Item 54, Appendix D)  
 Rags (Item 65, Appendix D)

PERSONNEL: Two



## REMOVAL:

1. Two persons crawl under rear of vehicle and locate transmission access cover (A).
2. With one person holding access cover (A), second person, using socket, remove six screws (B) and lockwashers (C). Throw lockwashers (C) away.
3. Remove access cover (A) and gasket (D). Throw gasket away.
4. Using putty knife, rags, and dry cleaning solvent (Item 54, Appendix D), remove any old gasket material from cover and mating surface on hull.



## INSTALLATION:

1. Apply adhesive (Item 4, Appendix D) to new gasket (D) and position onto access cover (A).
2. With one person holding access cover (A) and gasket (D) in position, second person, using socket, install six screws (B) and new lockwashers (C) securing access cover (A) to vehicle.

End of Task

TA253561

UPPER ENGINE ACCESS COVER REPLACEMENT (Sheet 1 of 1)

**TOOLS:** Putty knife  
 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive

**SUPPLIES:** Adhesive (Item 4, Appendix D)  
 Gasket (11591160)  
 Lockwashers (MS35338-65) (10 required)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Rags (Item 65, Appendix D)

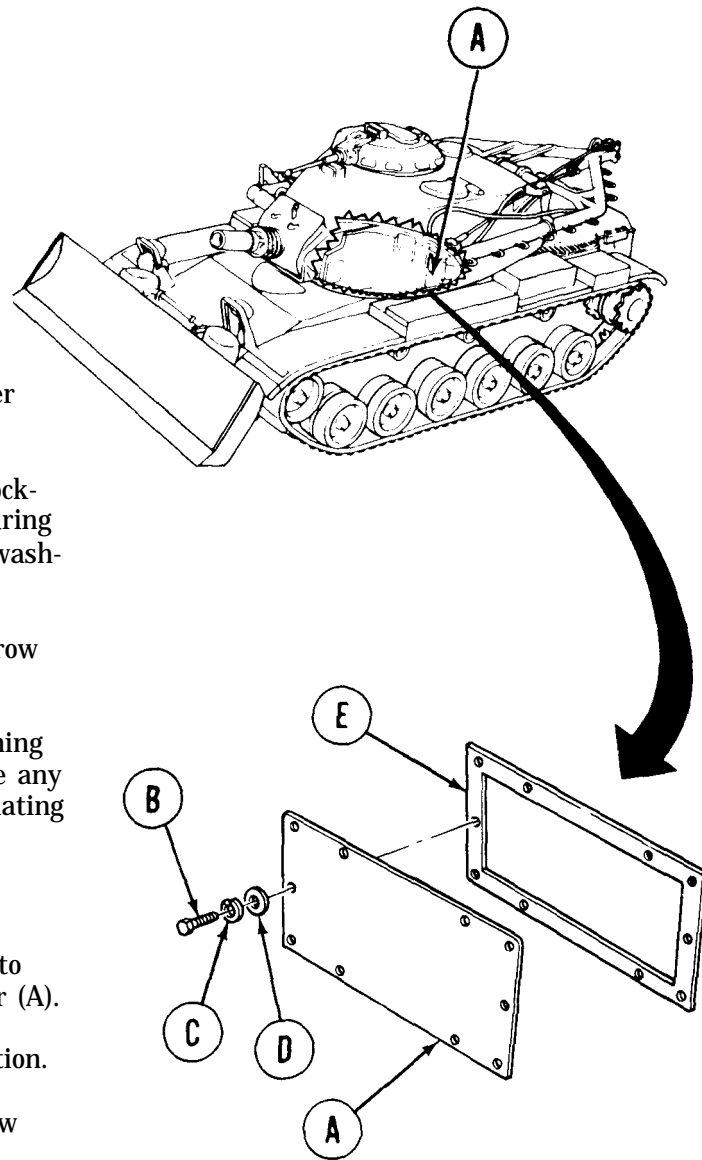
**REFERENCE:** TM 9-2350-222-10

**REMOVAL:**

1. Traverse turret to gain access to upper access cover (A) (TM 9-2350-222-10).
2. Using socket, remove 10 screws (B), lockwashers (C), and flat washers (D) securing cover (A) and gasket (E). Throw lockwashers (C) away.
3. Remove cover (A) and gasket (E). Throw gasket away.
4. Using putty knife, rags, and dry cleaning solvent (Item 54, Appendix D), remove any old gasket material from cover and mating surface on hull.

**INSTALLATION:**

1. Apply adhesive (Item 4, Appendix D) to new gasket (E) and position onto cover (A).
2. Place cover (A) and gasket (E) in position.
3. Using socket, install 10 screws (B), new lockwashers (C), and flat washers (D).



End of Task

TA25356

**LOWER ENGINE ACCESS COVER REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** Ratchet with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 Putty knife  
 5 in. extension with 1/2 in. drive

**SUPPLIES:** Gasket (11591161)                      Dry cleaning solvent (Item 54, Appendix D)  
 Adhesive (Item 4, Appendix D)                  Rags (Item 65, Appendix D)  
 Small brush  
 Lockwasher (MS35335-35) (3 required)

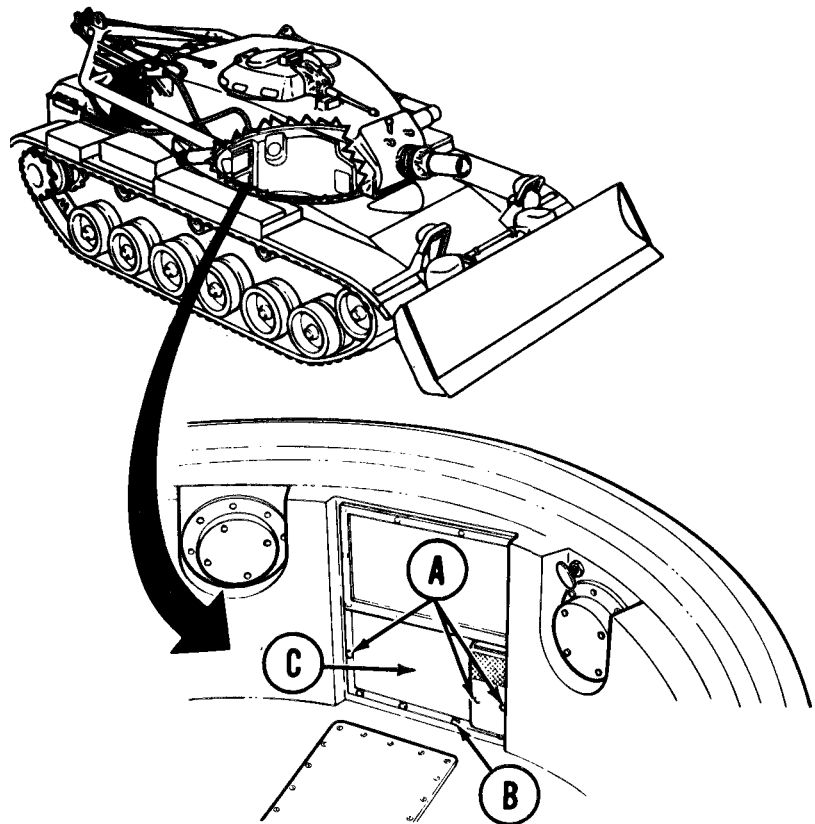
**PRELIMINARY PROCEDURE:** Remove upper engine access cover (page 16-40)

**REMOVAL:**

1. Using socket, remove three screws, lockwashers, and washers (A). Throw lockwashers away.
2. Using socket, loosen four screws (B). Do not remove four screws (B).

**NOTE**

If lower engine access cover (C) sticks to bulkhead, it may be loosened by reaching through upper engine access and applying pressure to cover from behind.



3. Manually lift lower engine access cover up and away from bulkhead.

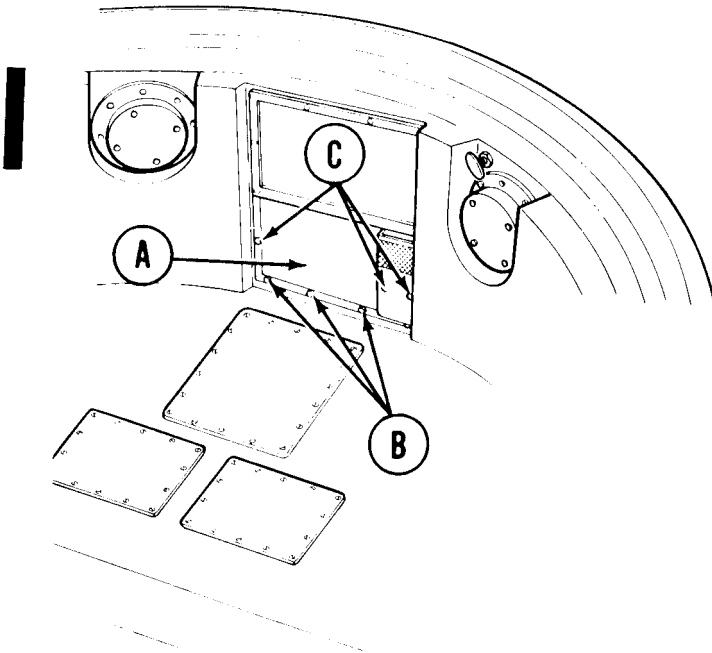
Go on to Sheet 2

TA253563

## LOWER ENGINE ACCESS COVER REPLACEMENT (Sheet 2 of 2)

### INSTALLATION:

1. Check lower engine access cover gasket for serviceability. If gasket must be replaced, but sticks to cover (A) or bulkhead, using putty knife, rags, and dry cleaning solvent (Item 54, Appendix D) remove gasket.
2. If old gasket is not serviceable and is removed, using brush, apply adhesive to one side of new gasket.
3. Stick new gasket into position on back of cover (A).
4. Using brush, apply adhesive to bulkhead side of new gasket.



5. Position cover (A) onto bulkhead.
6. Using socket, tighten four screws (B).

7. Using socket, install three screws, new lockwashers, and washers (C).
8. Install engine upper access cover (page 16-40).

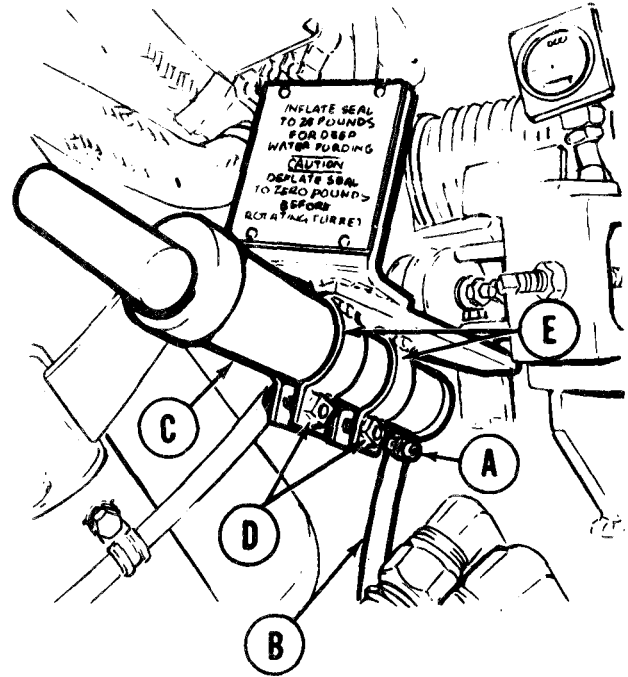
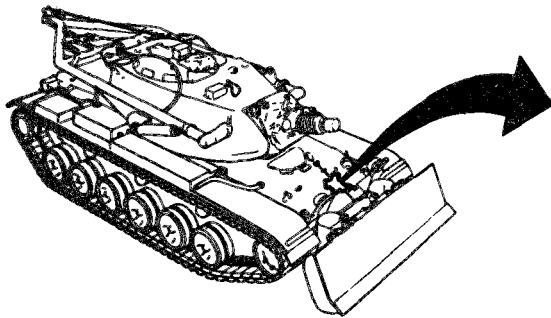
End of Task

TA253564

## TURRET INFLATABLE SEAL PUMP REPLACEMENT (Sheet 1 of 2)

TOOLS: 7/16 in. combination box and open end wrench  
 Flat-tip screwdriver  
 Ball peen hammer

### REMOVAL:



1. Using screwdriver, loosen clamp (A).
2. Remove hose (B) from pump (C).
3. Using wrench, remove two screws and washers (D) securing pump (C) in clamps (E).
4. Remove pump (C) from clamps (E).

Go on to Sheet 2

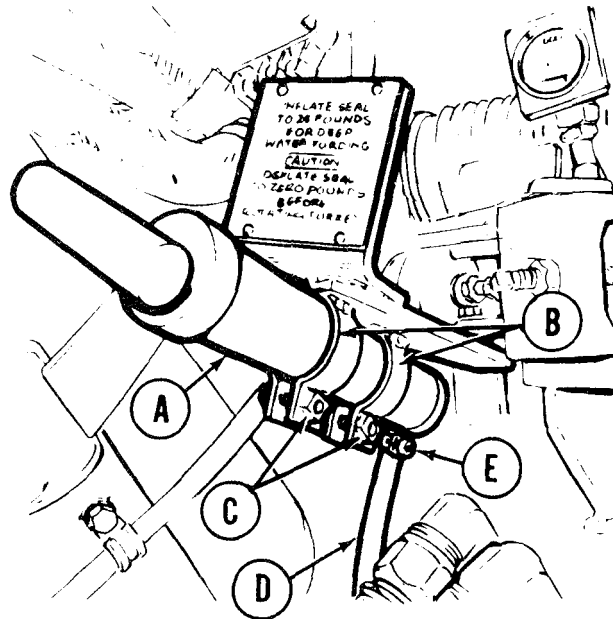
TA140655

TURRET INFLATABLE SEAL PUMP REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

NOTE

Install pump (A) with outlet port facing down.



1. Install pump (A) into clamps (B) with the outlet port facing down.
2. Using wrench, install and secure two screws and washers (C) to secure pump (A) in clamps (B).
3. Install hose (D) onto outlet port of pump (A).
4. Using screwdriver, slide clamp (E) up over hose (D) and outlet port of pump (A) and secure clamp (E).

End of Task

TA140656



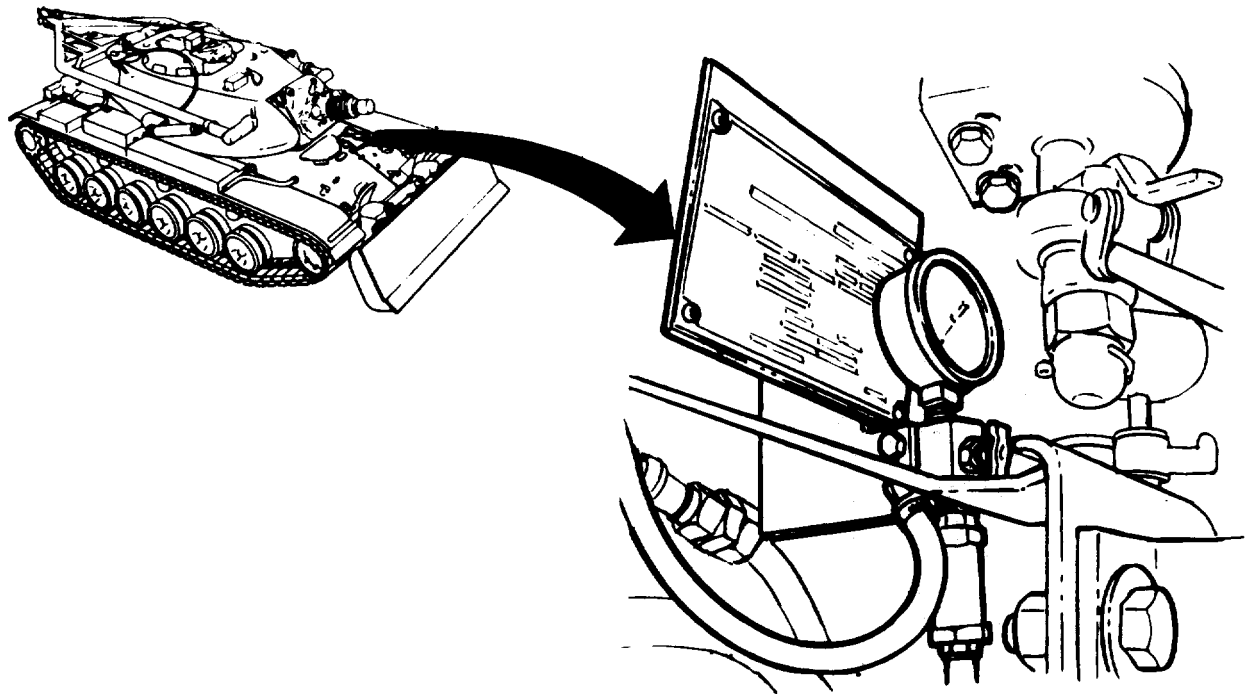
**TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 1 of 10)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-46
Installation	16-50
Test	16-54

TOOLS: 7/16 in. combination box and open end wrench  
 9/16 in. combination box and open end wrench  
 1-1/16 in. open end wrench  
 Flat-tip screwdriver  
 Vise

SUPPLIES: Preformed packing (MS29512-04) (2 required)

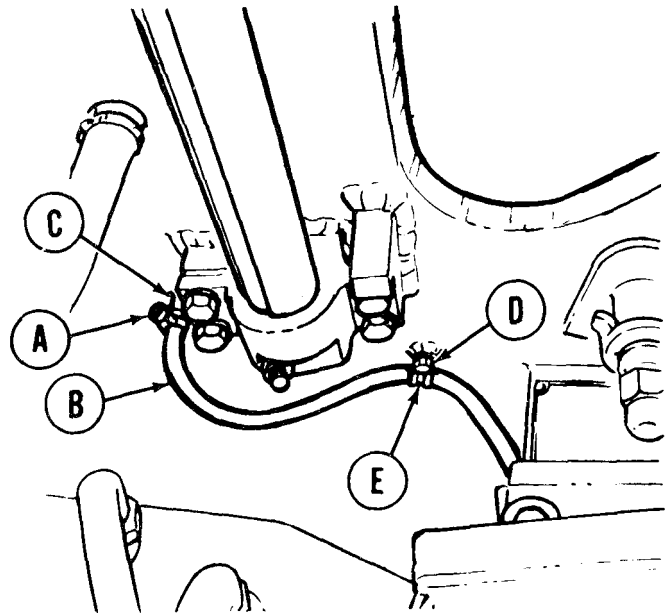


Go on to Sheet 2

**TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 2 of 10)**

**REMOVAL:**

1. Using screwdriver, loosen clamp (A) securing hose (B) to turret seal stem (C).
2. Using 7/16 inch wrench, remove screw and lockwasher (D) securing clamp (E).

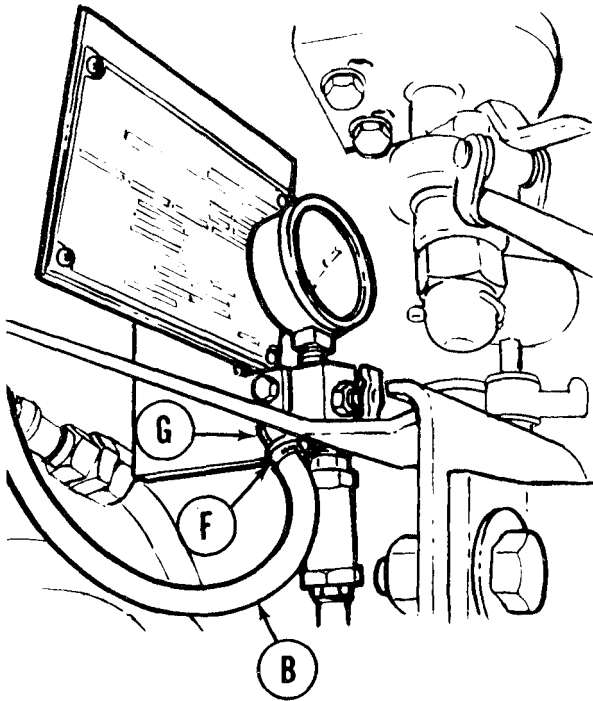


3. Using screwdriver, loosen clamp (F) securing hose (B) to elbow (G).

**CAUTION**

**Carefully remove hose (B) from turret seal stem, to prevent damaging stem.**

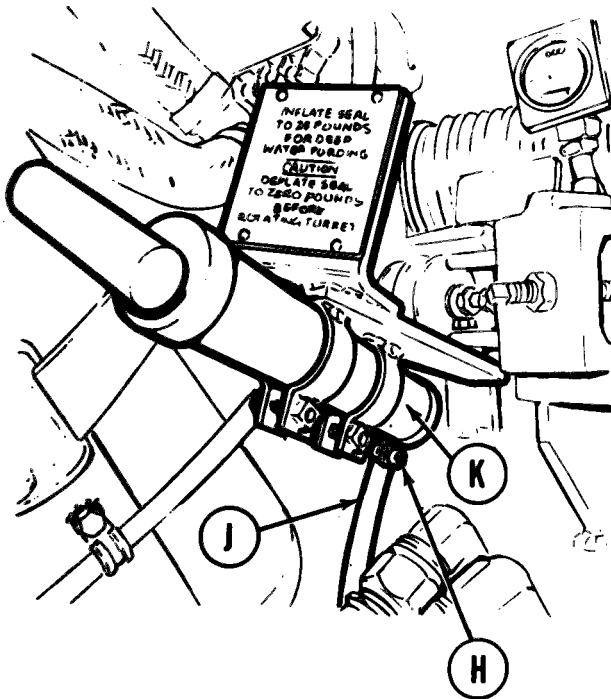
4. Remove hose (B) from turret seal stem (C) and elbow (G).
5. Remove hose (B) with clamps (A), (E), and (F).
6. Remove clamps (A), (E), and (F) from hose (B).



Go on to Sheet 3

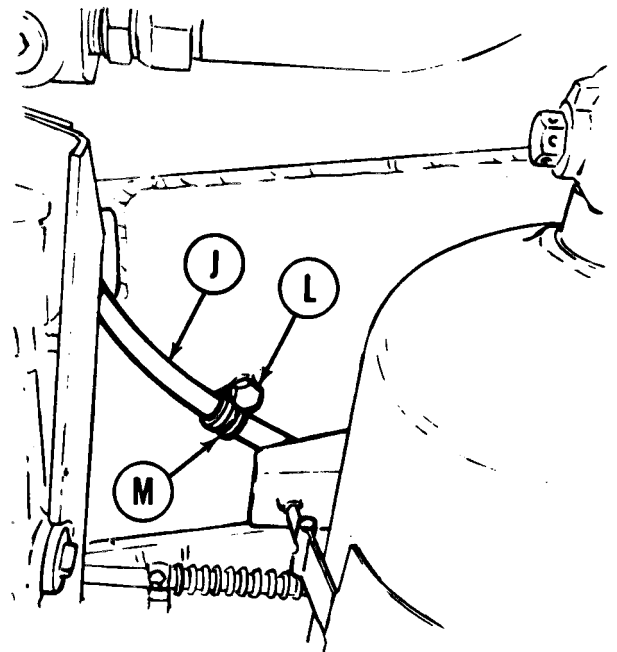
TA140658

TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 3 of 10)



7. Using screwdriver, loosen clamp (H) securing hose (J) to pump (K).
8. Remove hose (J) from pump (K).
9. Remove clamp (H) from hose.

10. Using 7/16 inch wrench, remove screw and washer (L) securing clamp (M) to hydraulic reservoir.
11. Remove clamp (M) from hose (J).

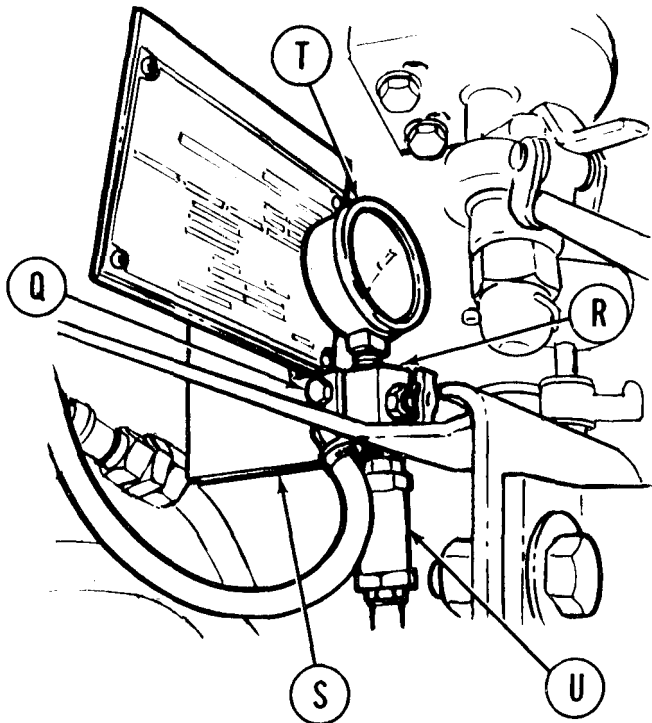
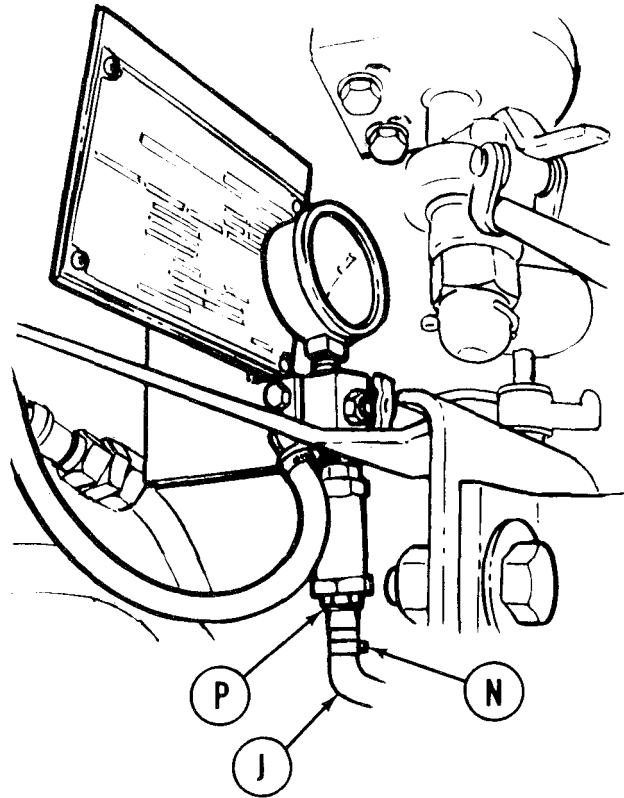


Go on to Sheet 4

TA140659

TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 4 of 10)

- 12. Using screwdriver, loosen clamp (N) securing hose (J) to connector (P).
- 13. Remove hose (J).
- 14. Remove clamp (N) from hose (J).



- 15. Using 7/16 inch wrench, remove two screws and lockwashers (Q) securing manifold (R) to bracket (S).
- 16. Remove gage (T), manifold (R), check valve (U), and attached components as a unit.

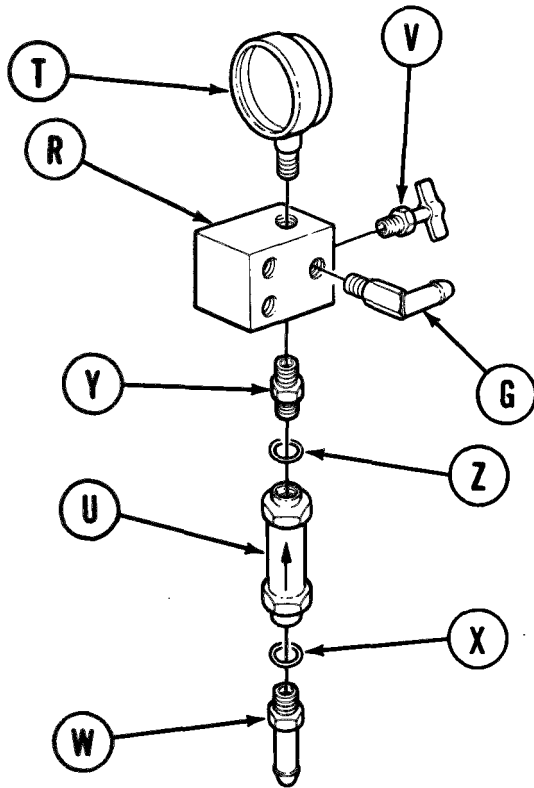
Go on to Sheet 5

TA140660

TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 5 of 10)

NOTE

Perform the following steps with unit in vise.



17. Using 9/16 inch wrench, remove gage (T).
18. Using 7/16 inch wrench, remove drain cock (V).
19. Using 7/16 inch wrench, remove elbow (G).
20. Using 1-1/16 inch wrench to hold bottom of check valve (U), use 9/16 inch wrench and remove connector (W) and preformed packing (X). Throw preformed packing (X) away.

21. Using 9/16 inch wrench to hold adapter (Y), use 1-1/16 inch wrench on top of check valve (U) and remove check valve and preformed packing (Z). Throw preformed packing (Z) away.
22. Using 9/16 inch wrench, remove adapter (Y) from manifold (R).
23. Remove manifold (R) from vise.

Go on to Sheet 6

TA140661

**TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 6 of 10)**

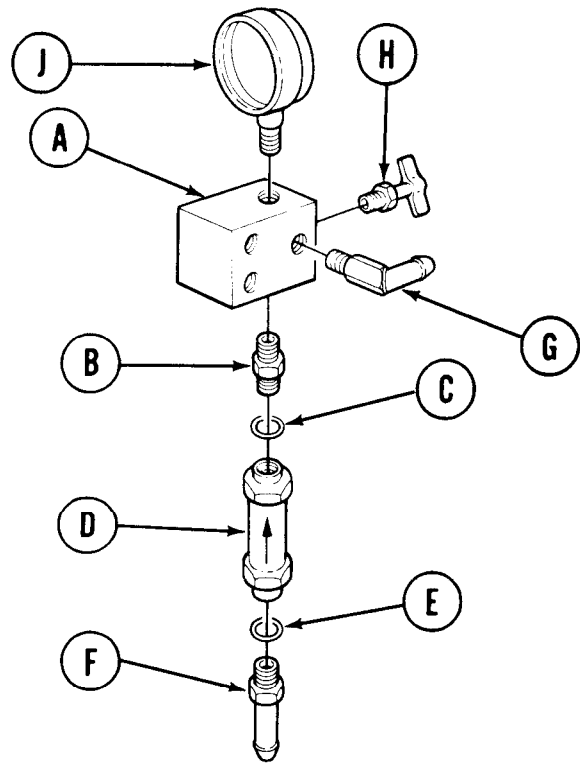
**INSTALLATION:**

1. Install manifold (A) in vise.
2. Using 9/16 inch wrench, install adapter (B) into manifold (A).
3. Install new preformed packing (C) onto adapter (B).

**NOTE**

**Install check valve (D) with arrow pointing toward manifold (A).**

4. Using 1-1/16 inch wrench, install and tighten check valve (D) onto adapter (B).
5. Install preformed packing (E) onto connector (F).
6. Using 9/16 inch wrench, install connector (F) with preformed packing (E) into check valve (D).
7. Using 7/16 inch wrench, install elbow (G) into manifold (A).
8. Using 7/16 inch wrench, install drain cock (H) into manifold (A).



**NOTE**

**Position pressure gage (J) indicator face to face with drain cock (H).**

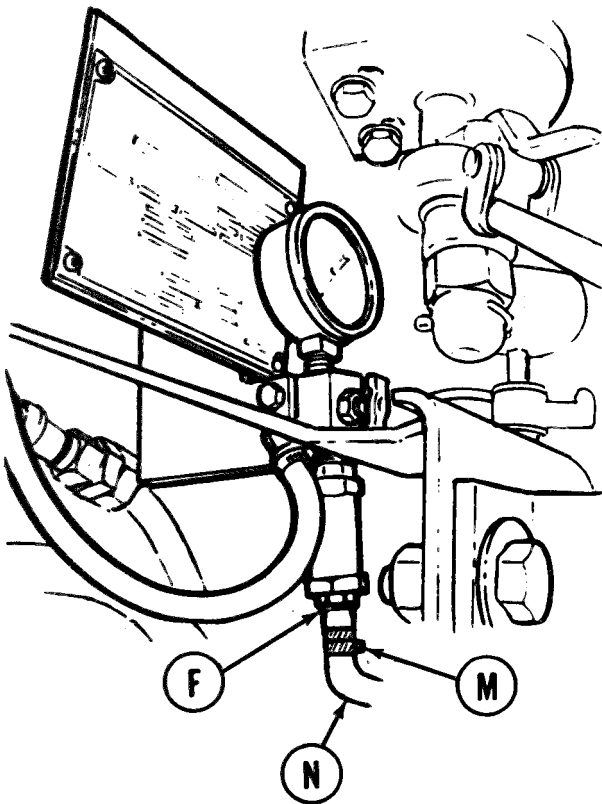
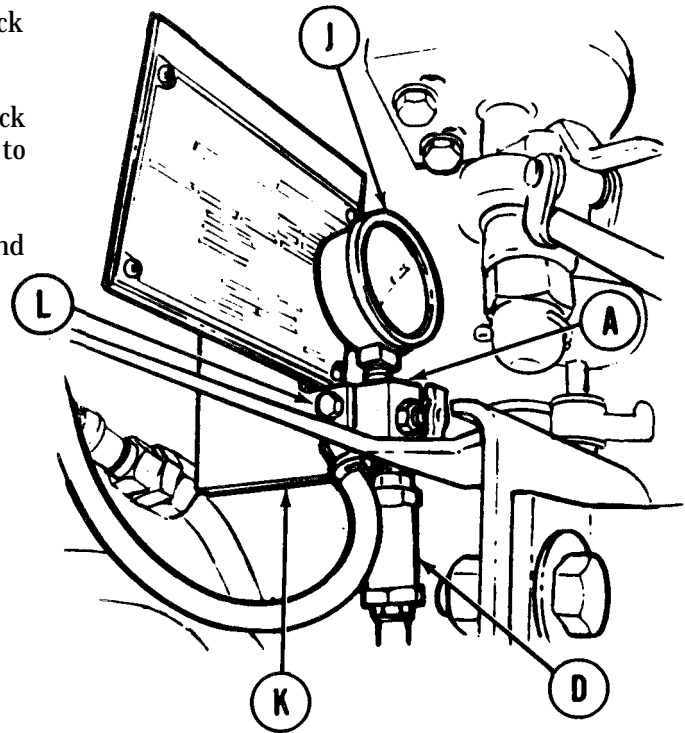
9. Install pressure gage (J) into manifold (A) and tighten with 9/16 inch wrench.

Go on to Sheet 7

TA140662

**TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 7 of 10)**

10. Remove assembled gage (J), manifold (A), check valve (D), and attached components from vise.
11. Position assembled gage (J), manifold (A), check valve (D), and attached components as a unit to bracket (K).
12. Using 7/16 inch wrench, install two screws and lockwashers (L) to secure manifold (A) to bracket (K).



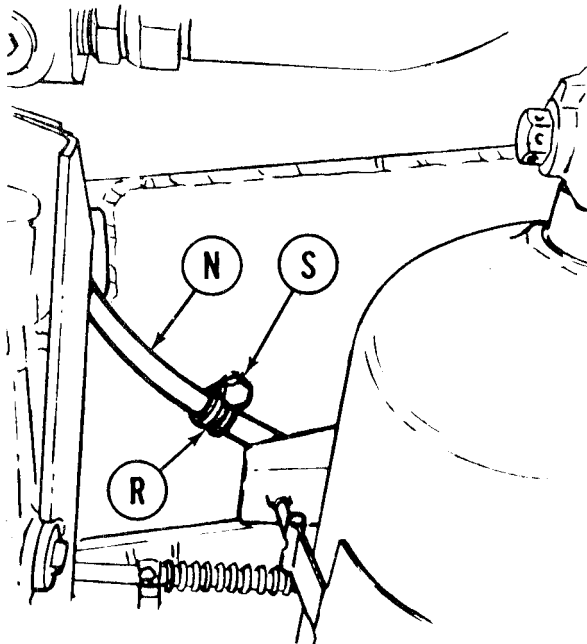
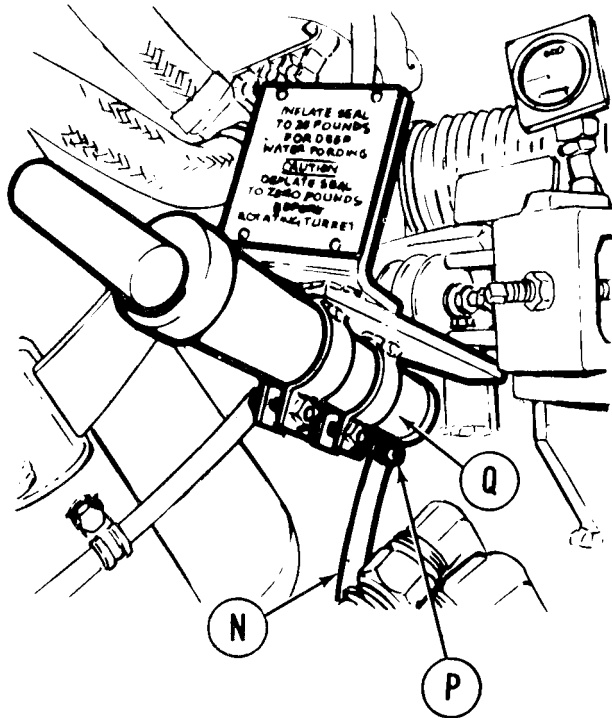
13. Install clamp (M) onto hose (N).
14. Install hose (N) onto connector (F) and slide clamp (M) over hose and connector.
15. Using screwdriver, tighten clamp (M).

Go on to Sheet 8

TA140663

TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 8 of 10)

16. Route hose (N) along side of hydraulic reservoir and under fire extinguisher to pump (Q).
17. Install clamp (P) onto hose (N).
18. Install hose (N) onto pump (Q) nipple and slide clamp (P) over hose (N) and pump (Q) nipple.
19. Using screwdriver, tighten clamp (P).



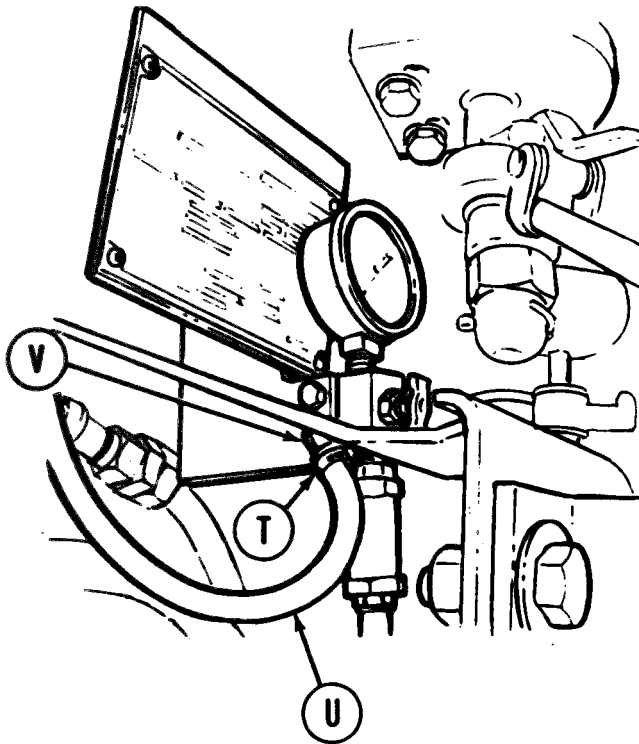
20. Position clamp (R) onto hose (N).
21. Using 7/16 inch wrench, install and secure screw and washer (S) securing clamp (R).

Go on to Sheet 9

TA140664

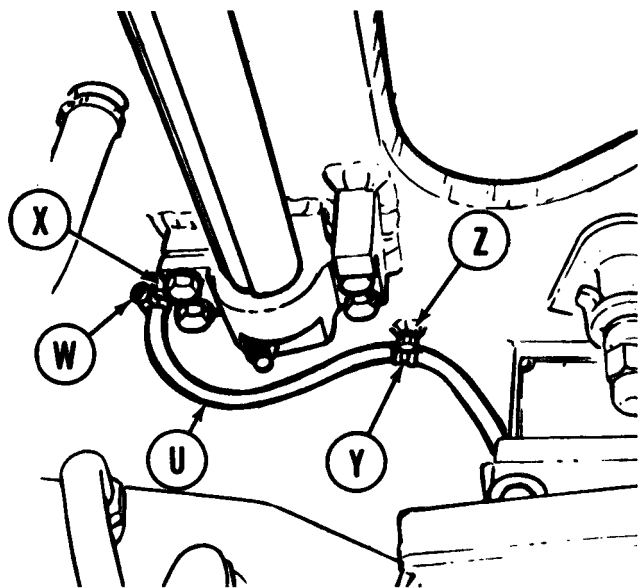


TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 9 of 10)



22. Install clamp (T) onto hose (U).
23. Install hose (U) onto elbow (V) and slide clamp (T) over hose (U) and elbow (V).
24. Using screwdriver, tighten clamp (T).

25. Install clamp (W) onto hose (U).
26. Install hose (U) onto turret seal stem (X) and slide clamp (W) over hose and stem.
27. Using screwdriver, tighten clamp (W).
28. Position clamp (Y) onto hose.
29. Using 7/16 inch wrench, install and tighten screw and washer (Z) securing clamp (Y) to hull.



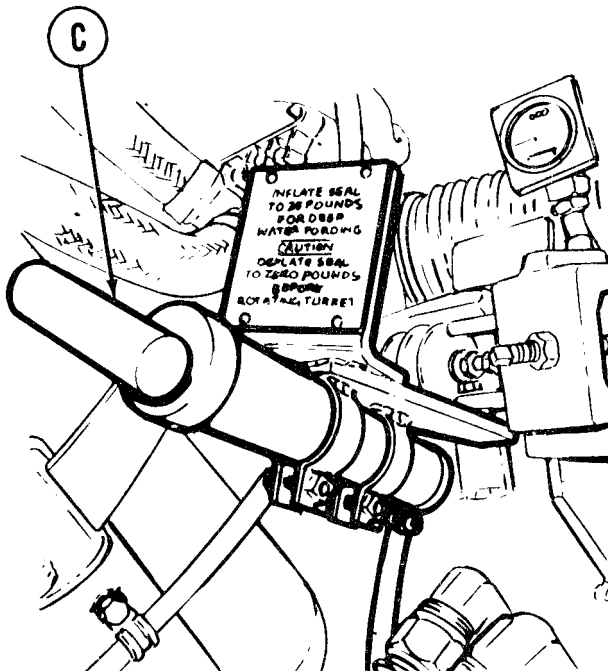
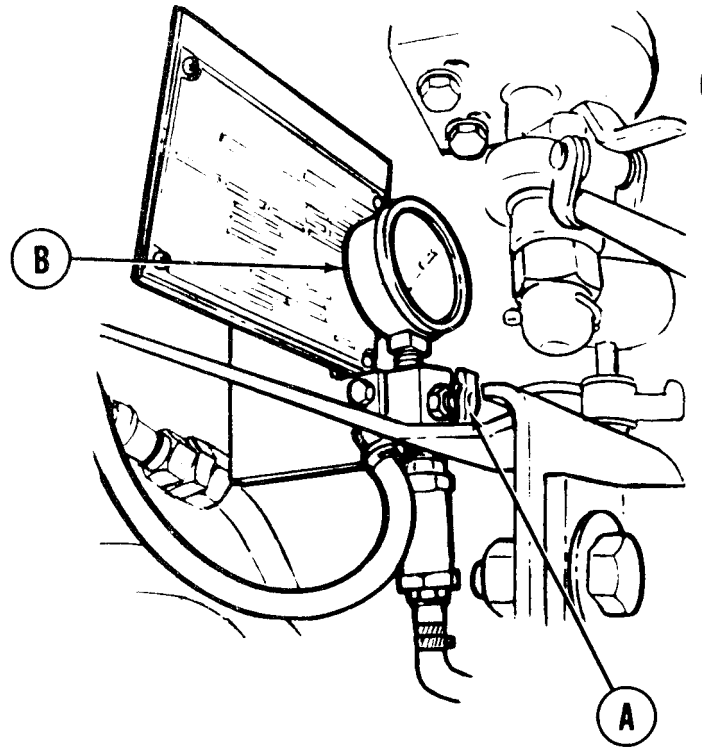
Go on to sheet 10

TA140665

**TURRET INFLATABLE SEAL MANIFOLD, GAGE, AND RELATED PARTS REPLACEMENT (Sheet 10 of 10)**

**TEST:**

1. Make sure drain cock (A) is closed (turned completely clockwise).



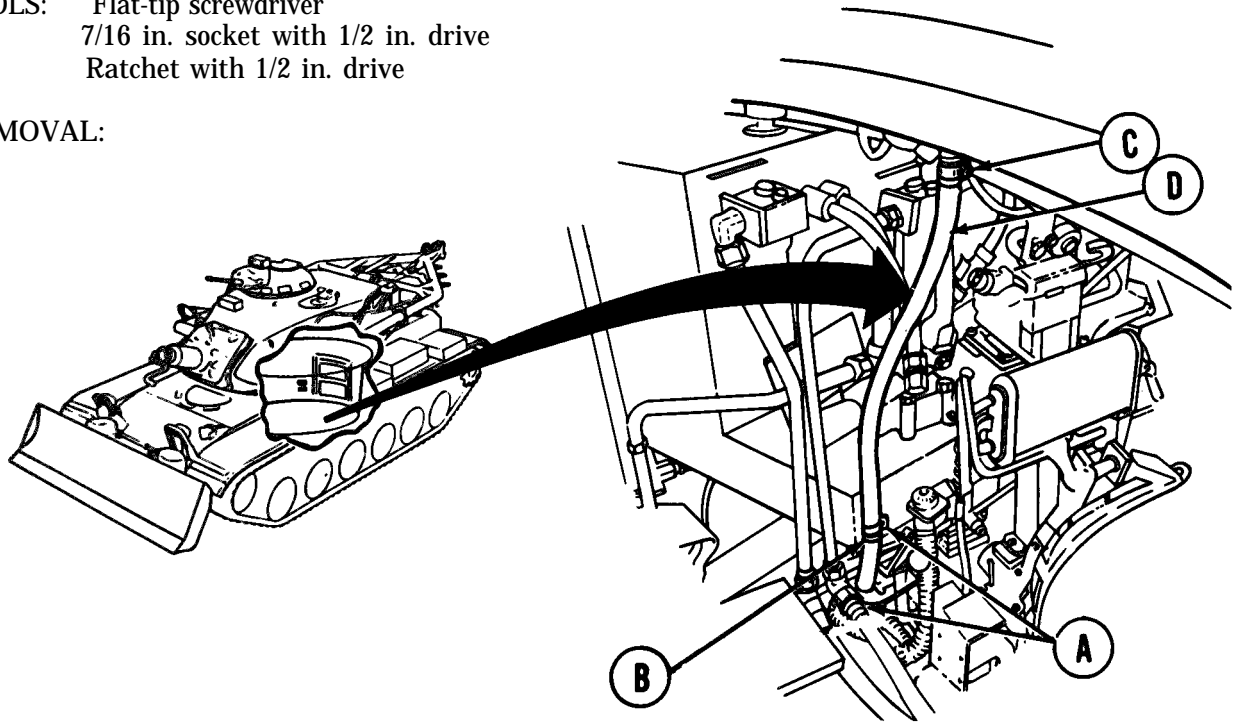
2. While observing pressure gage (B), operate pump (C) and inflate turret seal to 25 psi.
3. If after 4 hours there is more than 1 psi pressure drop, refer to troubleshooting (page 4-977).
4. Release pressure from turret seal by opening drain cock (A) (turned completely counterclockwise).

End of Task

TA140666

**TURRET RACE DRAIN HOSE REPLACEMENT (Sheet 1 of 1)**

TOOLS: Flat-tip screwdriver  
 7/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive

**REMOVAL:**

1. Using socket, remove two screws and washers (A) securing hose clamps (B).
2. Using screwdriver, loosen clamp (C) securing hose (D) to turret race drain tube and remove hose (D).
3. Remove clamps (B) and (C) from hose (D). Throw hose (D) away.

**INSTALLATION:**

1. Install clamp (C) onto hose (D).
2. Install hose (D) onto turret race drain tube.
3. Slide clamp (C) up over hose (D) and drain tube and, using screwdriver, tighten clamp (C).
4. Install two clamps (B) onto hose (D).
5. Using socket, install and tighten two screws and washers (A) to secure clamps (B).

End of Task

TA140667

## TURRET SEAL INSTRUCTION PLATE REPLACEMENT (Sheet 1 of 1)

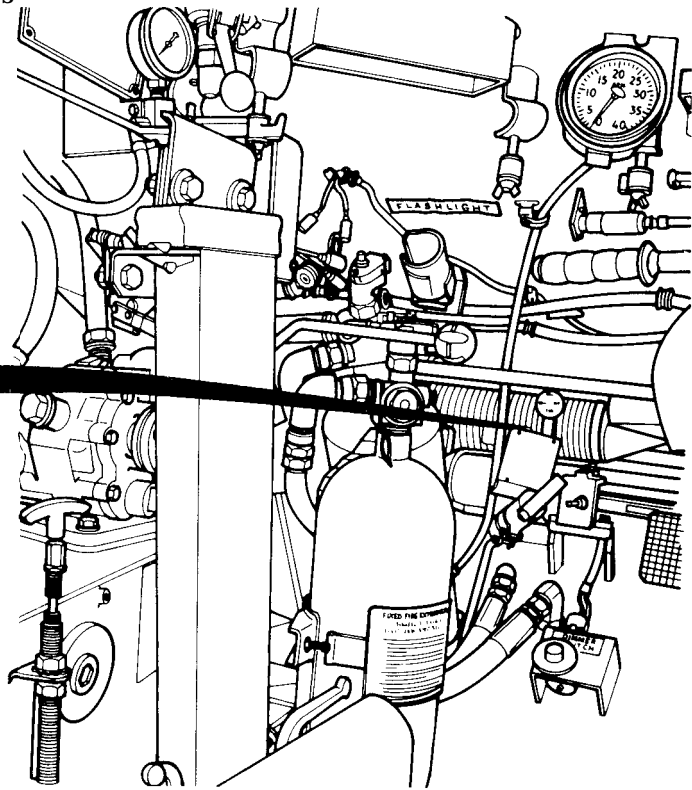
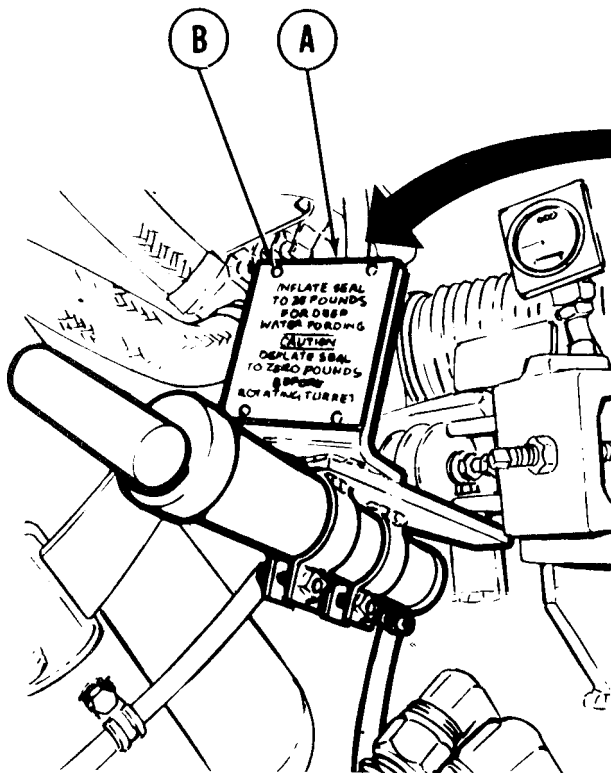
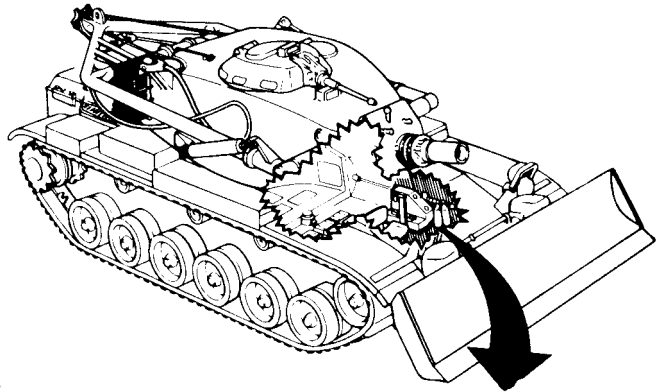
TOOLS: Ball peen hammer  
Flat-tip screwdriver

SUPPLIES: Drive screws (MS21318-21) (4 required)

REFERENCE: TM 9-2350-222-10

### REMOVAL:

1. From driver's station, using screwdriver, pry off seal instruction plate (A) and four drive screws (B).
2. Throw plate (A) and screws (B) away.



### INSTALLATION:

1. Position new plate (A).
2. Using hammer, install four new drive screws (B) securing plate (A) to ammunition rack mount near fire extinguisher instruction plate.

End of Task

TA140668

**OUTRIGGER SUPPORT NO. 3 (LEFT AND RIGHT) REPLACEMENT (Sheet 1 of 4)**

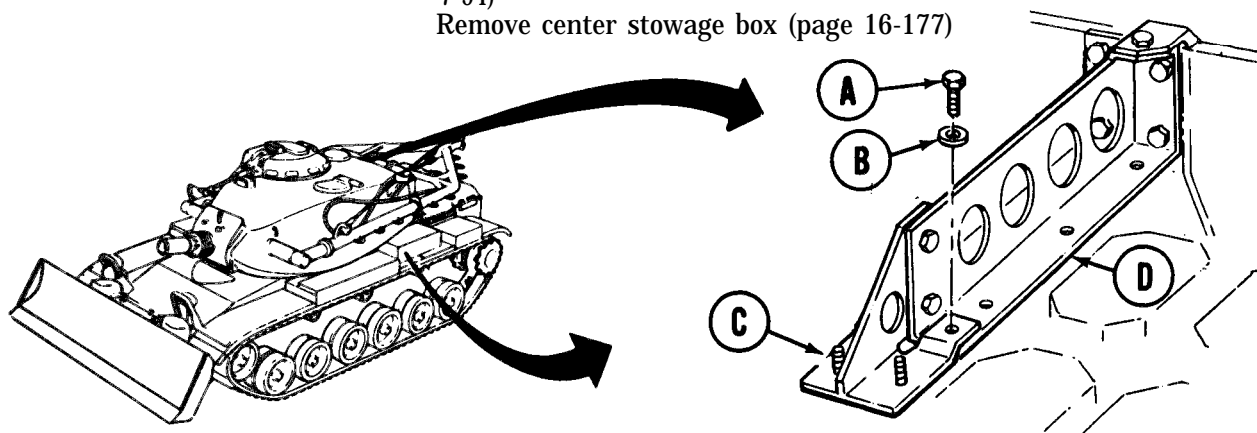
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-57
Cleaning and Inspection	16-59
Installation	16-59

**TOOLS:** 9/16 in. socket with 1/2 in. drive  
 3/4 in. socket with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 1-1/8 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Hinged handle with 1/2 in. drive  
 Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)

**SUPPLIES:** Lockwasher (MS35338-51) (4 required)  
 Locking compound (Item 15, Appendix D)

**PRELIMINARY PROCEDURES:** Remove fender extension (page 16-72)  
 Remove air cleaner (side loading, page 7-88, or top loading, page 7-94)  
 Remove center stowage box (page 16-177)



**REMOVAL:**

**NOTE**

**Left No. 3 outrigger support is shown, right No. 3 outrigger support replacement is similar.**

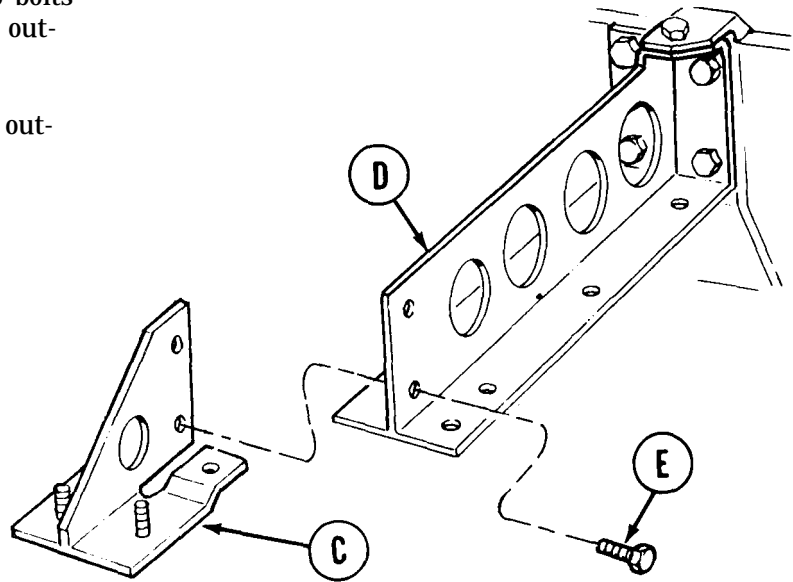
- Using 9/16 inch socket, remove screw (A) and flat washer (B) holding extension mounting bracket (C) to bottom flange of No. 3 outrigger support (D).

Go on to Sheet 2

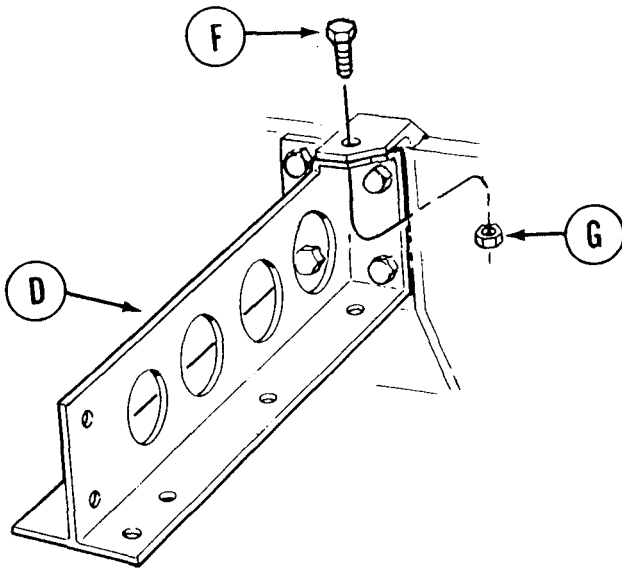
TA253565

**OUTRIGGER SUPPORT NO. 3 (LEFT AND RIGHT) REPLACEMENT (Sheet 2 of 4)**

2. Using 9/16 inch socket, remove two bolts (E) holding extension bracket (C) to outrigger (D).
3. Remove extension bracket (C) from outrigger (D).

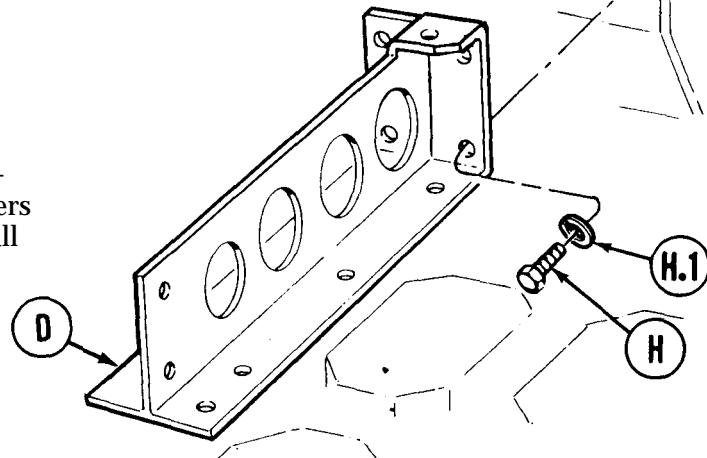


4. Using 3/4 inch socket and 3/4 inch wrench, remove one screw (F) and nut (G) holding top flange of outrigger (D) to hull support.



HULL SUPPORT

5. Using 1-1/8 inch socket and hinged handle, remove four bolts (H) and lockwashers (H.1, if used) holding outrigger (D) to hull support. Throw lockwashers away.
6. Remove outrigger (D).



Go on to Sheet 3

TA253567

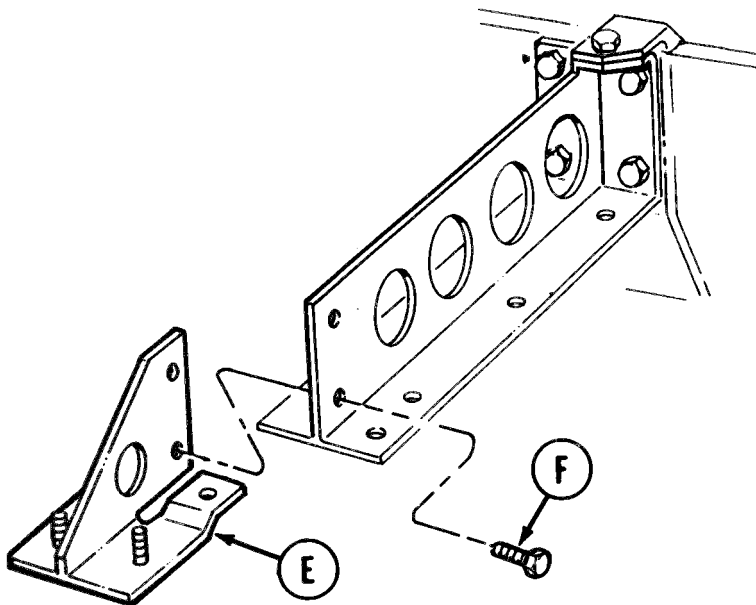
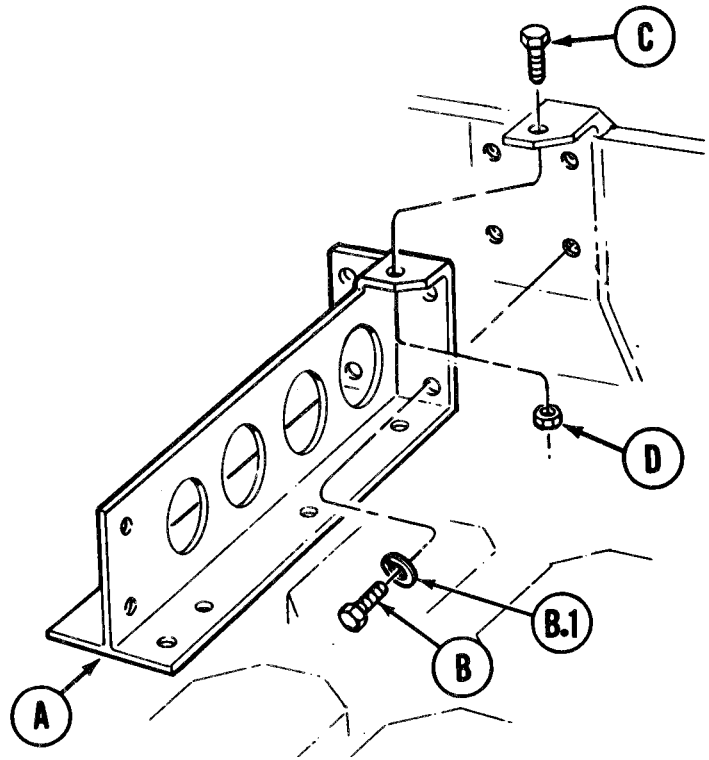
**OUTRIGGER SUPPORT NO. 3 (LEFT AND RIGHT) REPLACEMENT (Sheet 3 of 4)**

**CLEANING AND INSPECTION:**

1. Inspect extension bracket for damage and cracks. Replace if defective.
2. Inspect threaded holes and studs for thread damage. Replace or repair if defective.

**INSTALLATION:**

1. Using 1-1/8 inch socket, install No. 3 outrigger (A) to hull support with four screws (B) and new lockwashers (B.1). Using torque wrench and 1-1/8 inch socket, tighten screw 125-130 lb-ft (169-176 N-m).
2. Using 3/4 inch socket and 3/4 inch wrench, install screw (C) and nut (D).



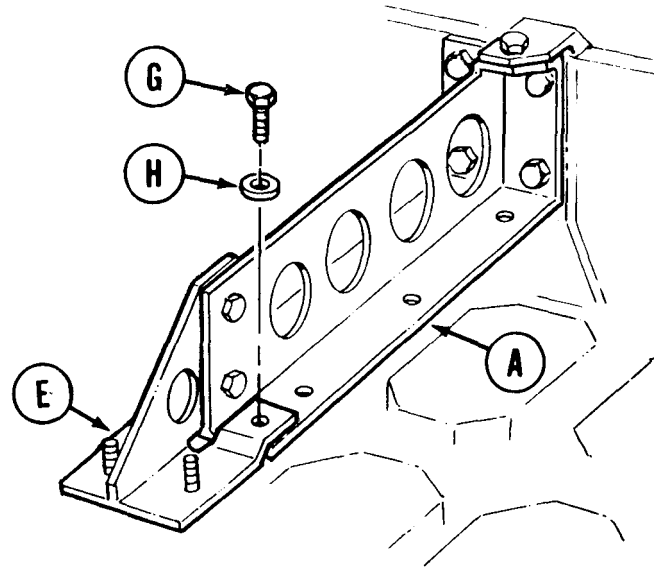
3. Using 3/4 inch socket, install extension bracket (E) to outrigger (A) with two screws (F).

Go on to Sheet 4

TA253566

**OUTRIGGER SUPPORT NO. 3 (LEFT AND RIGHT) REPLACEMENT (Sheet 4 of 4)**

- 3.1. Apply locking compound (Item 15, Appendix D) to threads of screw (G).
4. Using 9/16 inch socket, install screw (G) and flat washer (H) to secure extension bracket (E) to bottom flange of outrigger (A). Using torque wrench and 9/16 inch socket, tighten screw (G) 22-30 lb-ft (33-40 N·m).
5. Install center stowage box (page 16-178).
6. Install air cleaner (side loading, page 7-90, or top loading, page 7-97).
7. Install fender extension (page 16-74).



End of Task



OUTRIGGER SUPPORT NO. 4 (LEFT AND RIGHT) REPLACEMENT (Sheet 1 of 4)

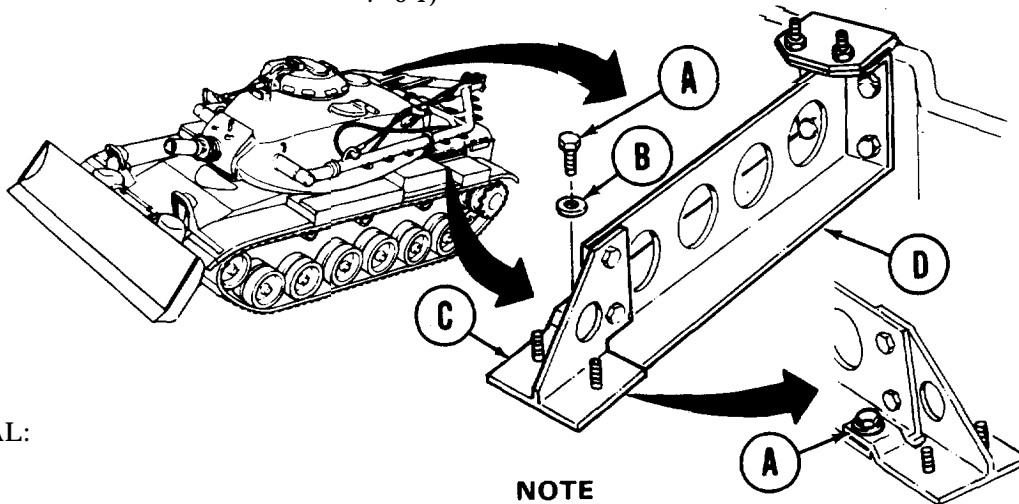
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-61
Cleaning and Inspection	16-63
Installation	16-63

**TOOLS:** Ratchet with 1/2 in. drive  
 1-1/8 in. socket with 1/2 in. drive  
 Hinged handle with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 3/4 in. socket with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)

**SUPPLIES:** Lockwashers (MS35338-81) (4 required)  
 Locking compound (Item 15, Appendix D)

**PRELIMINARY PROCEDURES:** Remove rear fender stowage box (page 16-185)  
 Remove fender extension (page 16-72)  
 Remove air cleaner (side loading, page 7-88, or top loading, page 7-94)



**REMOVAL:**

**NOTE**  
 Left No. 4 outrigger support is shown; right No. 4 outrigger support replacement is similar.

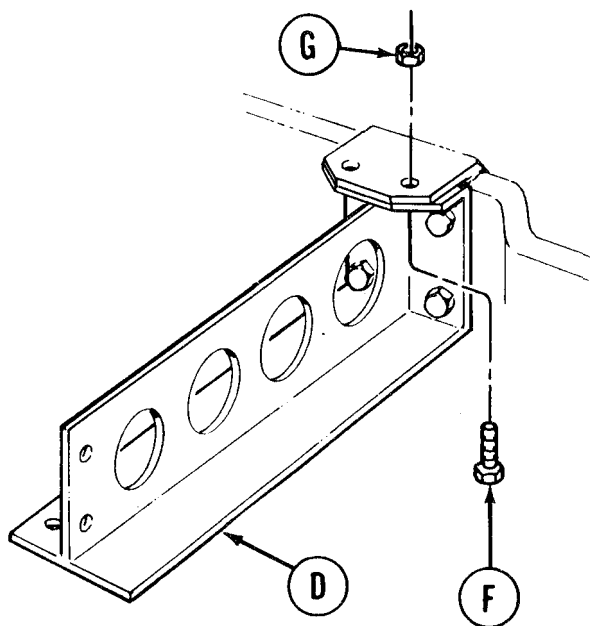
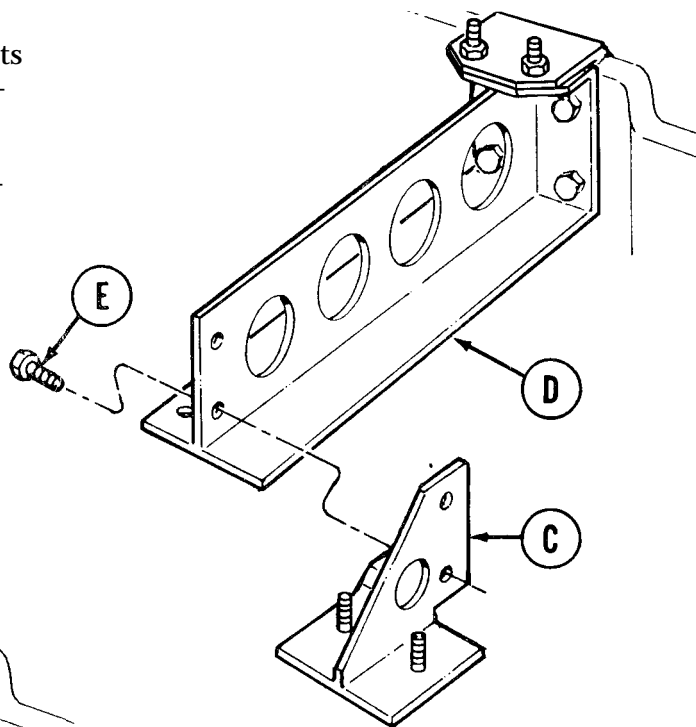
- Using 9/16 inch socket, remove screw (A) and flat washer (B) holding extension bracket (C) to bottom flange of No. 4 outrigger support (D).

Go on to Sheet 2

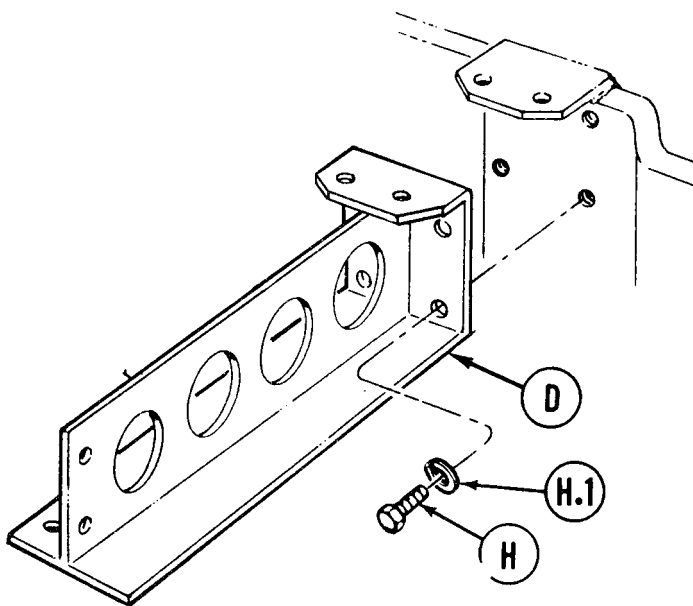
TA253569

OUTRIGGER SUPPORT NO. 4 (LEFT AND RIGHT) REPLACEMENT (Sheet 2 of 4)

2. Using 9/16 inch socket, remove two bolts (E) holding extension bracket (C) to outrigger (D).
3. Remove extension bracket (C) from outrigger (D).



4. Using 3/4 inch socket and 3/4 inch wrench, remove two screws (F) and nuts (G) holding top flange of outrigger (D) to hull support.



5. Using 1-1/8 inch socket and hinged handle, remove four screws (H) and lockwashers (H.1, if used) holding outrigger (D) to hull support. Throw lockwashers away.
6. Remove outrigger (D).

Go on to Sheet 3

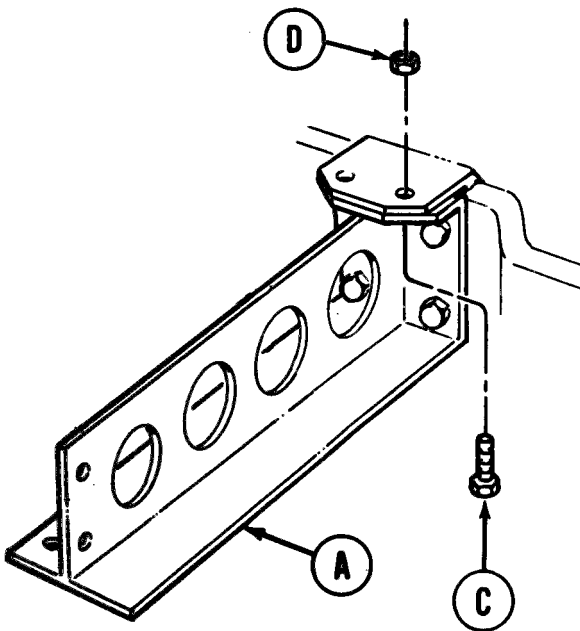
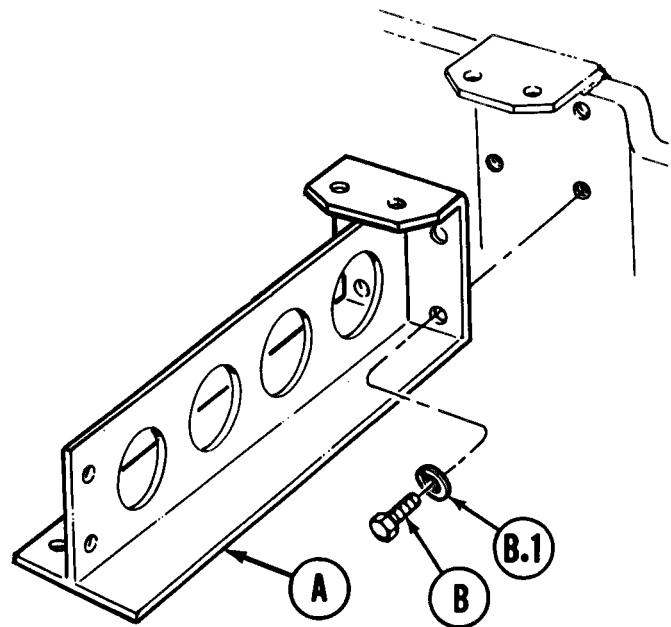
TA25357

**OUTRIGGER SUPPORT NO. 4 (LEFT AND RIGHT) REPLACEMENT (Sheet 3 of 4)****CLEANING AND INSPECTION:**

1. Inspect extension bracket and outrigger for damage and cracks. Replace if defective.
2. Inspect threaded holes and studs for thread damage. Replace or repair if defective.

**INSTALLATION:**

1. Using 1-1/8 inch socket, install No. 3 outrigger (A) to hull support with four screws (B) and new lockwasher (B.1). Using torque wrench and 1-1/8 inch socket, tighten screw 125-130 lb-ft (169-176 N·m).



2. Using 3/4 inch socket and 3/4 inch wrench, secure top flange of outrigger (A) to top of hull support with two screws (C) and nuts (D).

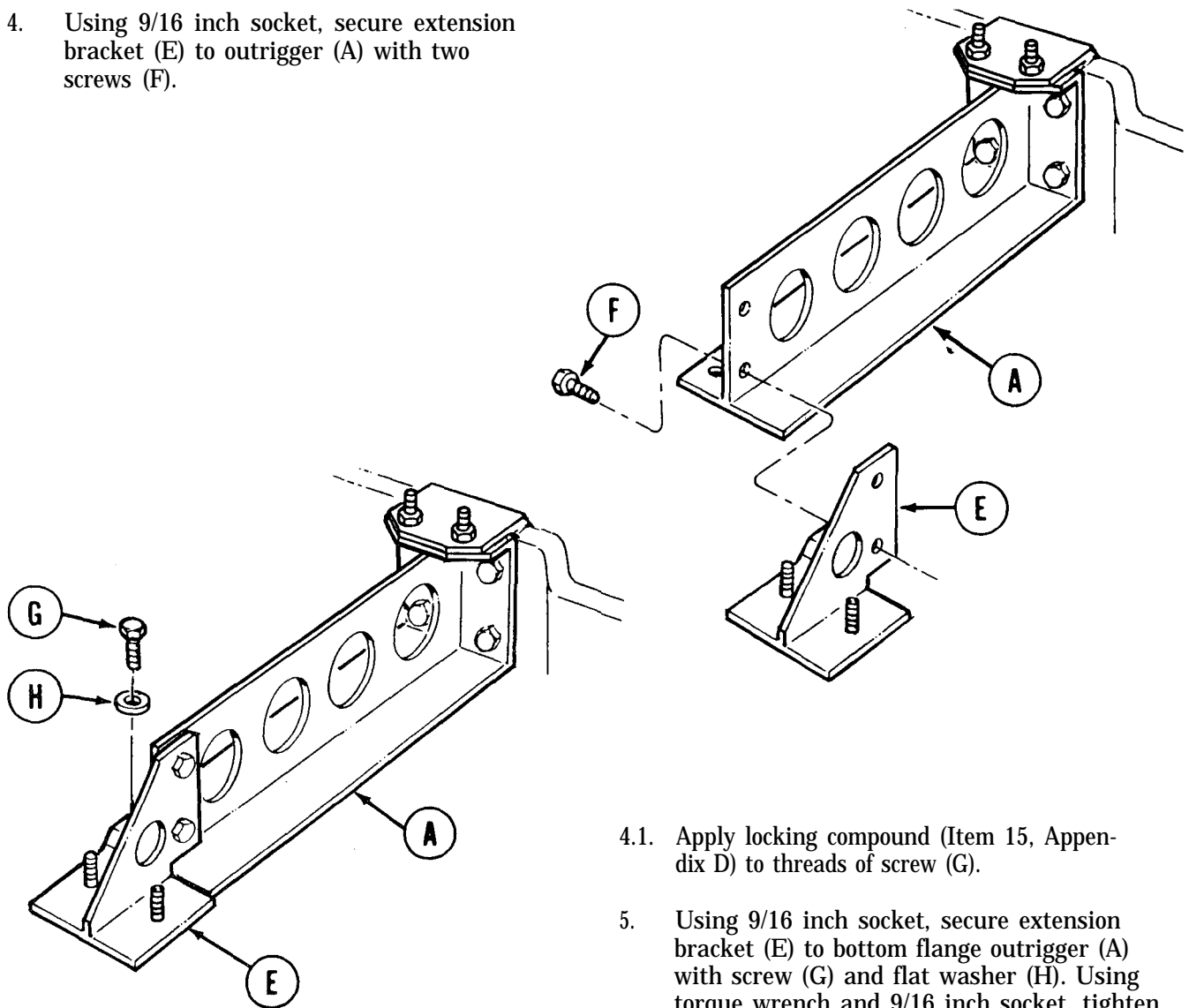
Go on to Sheet 4

TA253571

**Change 1 16-63**

OUTRIGGER SUPPORT NO. 4 (LEFT AND RIGHT) REPLACEMENT (Sheet 4 of 4)

3. Install extension bracket (E) to outrigger (A).
4. Using 9/16 inch socket, secure extension bracket (E) to outrigger (A) with two screws (F).



- 4.1. Apply locking compound (Item 15, Appendix D) to threads of screw (G).
5. Using 9/16 inch socket, secure extension bracket (E) to bottom flange outrigger (A) with screw (G) and flat washer (H). Using torque wrench and 9/16 inch socket, tighten screw (G) 22-30 lb-ft (33-40 N·m).

6. Install air cleaner (side loading, page 7-90, or top loading, page 7-97).
7. Install fender extension (page 16-74).
8. Install rear fender stowage box (page 16-186).

End of Task

TA25357

**FRONT FENDERS, HEADLIGHT GUARDS, AND OUTRIGGERS REPLACEMENT (Sheet 1 of 7)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-65
Installation	16-69

- TOOLS:**
- Ratchet with 1/2 in. drive
  - 7/16 in. socket with 1/2 in. drive
  - 7/16 in. combination box and open end wrench
  - 9/16 in. socket with 1/2 in. drive
  - 9/16 in. combination box and open end wrench
  - 3/4 in. socket with 1/2 in. drive
  - 3/4 in. combination box and open end wrench
  - 1-1/8 in. socket with 3/4 in. drive
  - Ratchet with 3/4 in. drive
  - Torque wrench with 3/4 in. drive (0-600 lb-ft) (0-813 N·m)

- SUPPLIES:**
- Lockwasher (MS35338-48) (2 required)
  - Lockwasher (MS35338-44) (13 required)
  - Lockwasher (MS35338-51) (8 required)
  - Self-locking nut (MS51988-7) (10 required)

- PRELIMINARY PROCEDURES:**
- Remove personnel heater exhaust tube (right fender only) (page 19-5)
  - Remove center stowage box (page 16-177)

**REMOVAL:**

**NOTE**

**Right front fender, headlight guard, and outriggers shown.  
Left front fender removal is similar.**

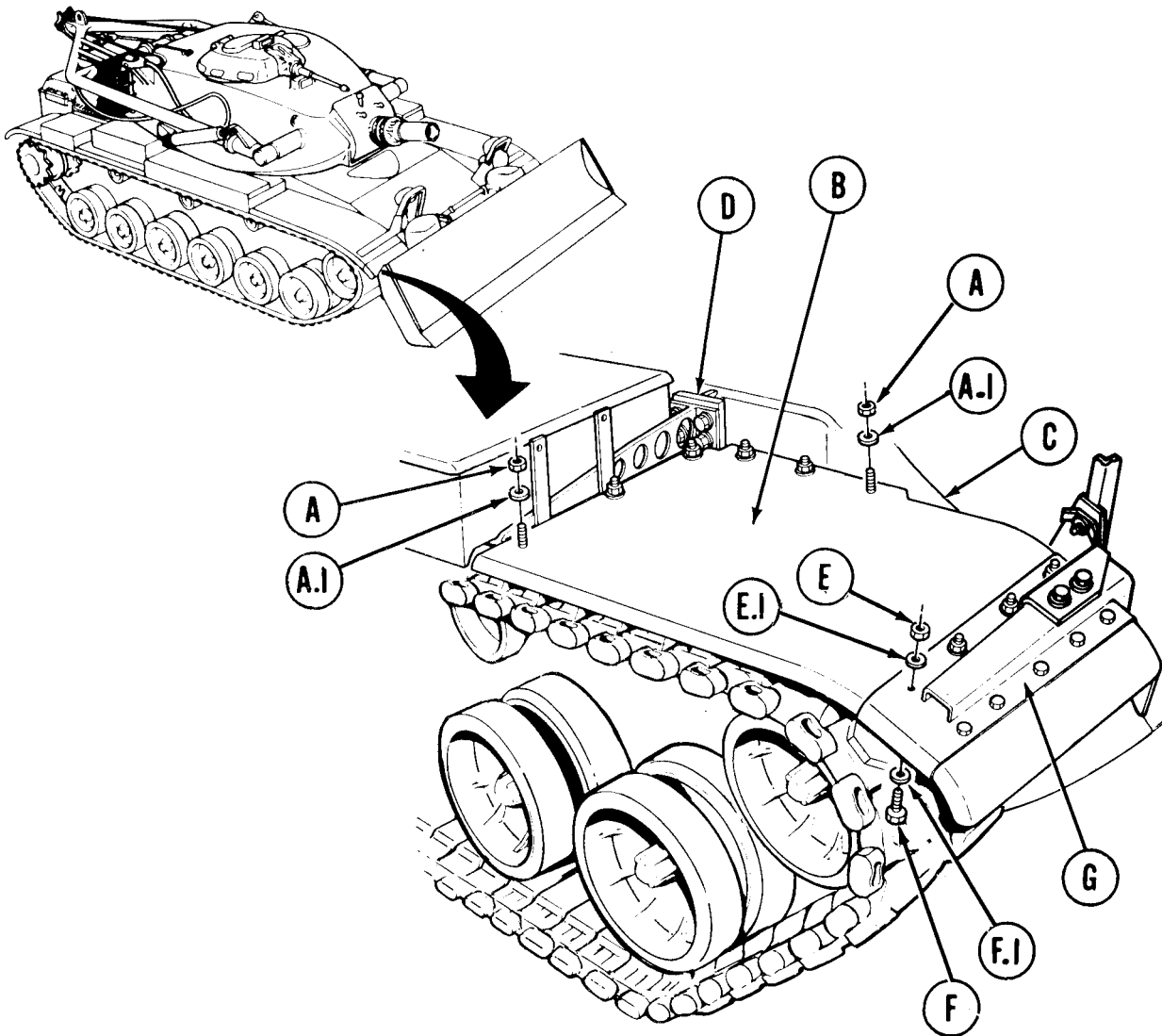
## FRONT FENDERS, HEADLIGHT GUARDS, AND OUTRIGGERS REPLACEMENT (Sheet 2 of 7)

1. Using 9/16 inch socket, remove six self-locking nuts (A) and washers (A.I) holding fender (B) to hull (C) and outrigger No. 2 (D). Throw self-locking nuts away.
2. Using 9/16 inch socket on four self-locking nuts (E) and 9/16 inch wrench on four screws (F) hidden under outrigger No. 1 (G), remove four screws (F) and washers (F.I) and nuts (E) and washers (E.I). Throw self-locking nuts away.

### NOTE

Use second person if necessary.

3. Remove front fender (B) from outrigger No. 1 (G).

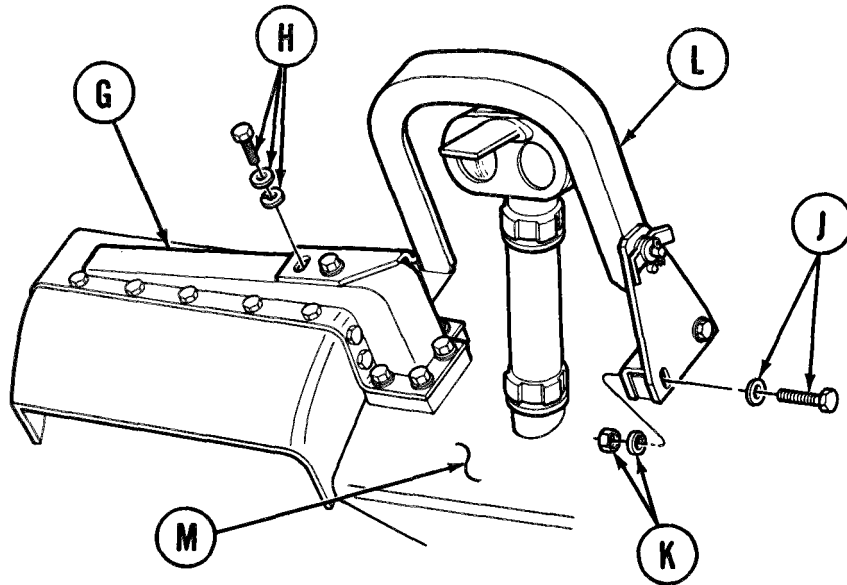


Go on to Sheet 3

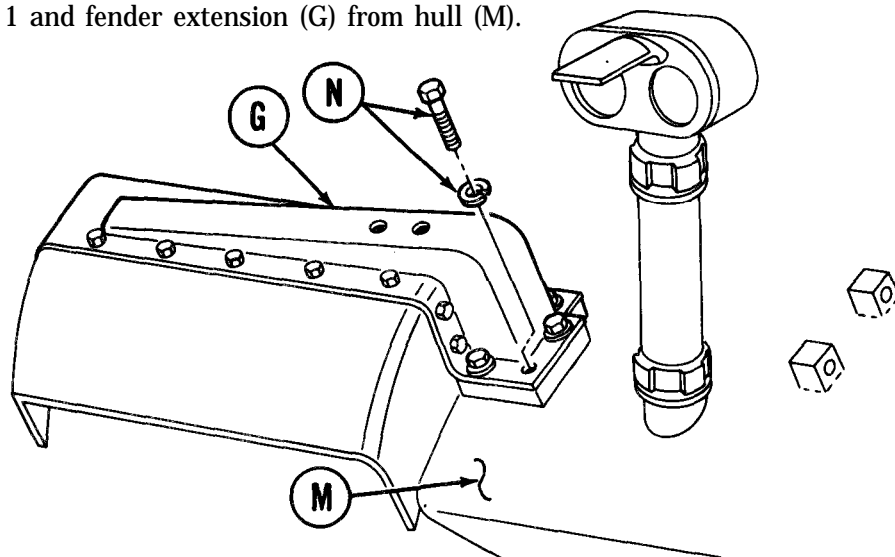
TA14067

FRONT FENDERS, HEADLIGHT GUARDS, AND OUTRIGGERS REPLACEMENT (Sheet 3 of 7)

4. Using 9/16 inch socket, remove two screws and four washers (H) holding headlight guard to outrigger No. 1 (G).
5. Using 3/4 inch socket on screws (J) and 3/4 inch wrench on nuts (K), remove two screws, four washers (J) and two nuts and lockwashers (K) holding headlight guard (L) to hull (M). Throw lockwashers (K) away.
6. Remove headlight guard (L).



7. Using 1-1/8 inch socket, remove four screws and lockwashers (N) holding outrigger No. 1 (G) to hull (M). Throw lockwashers away.
8. Remove outrigger No. 1 and fender extension (G) from hull (M).

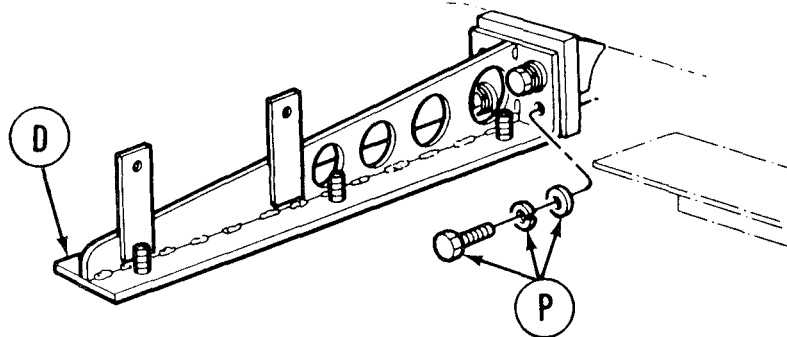


Go on to Sheet 4

TA253574

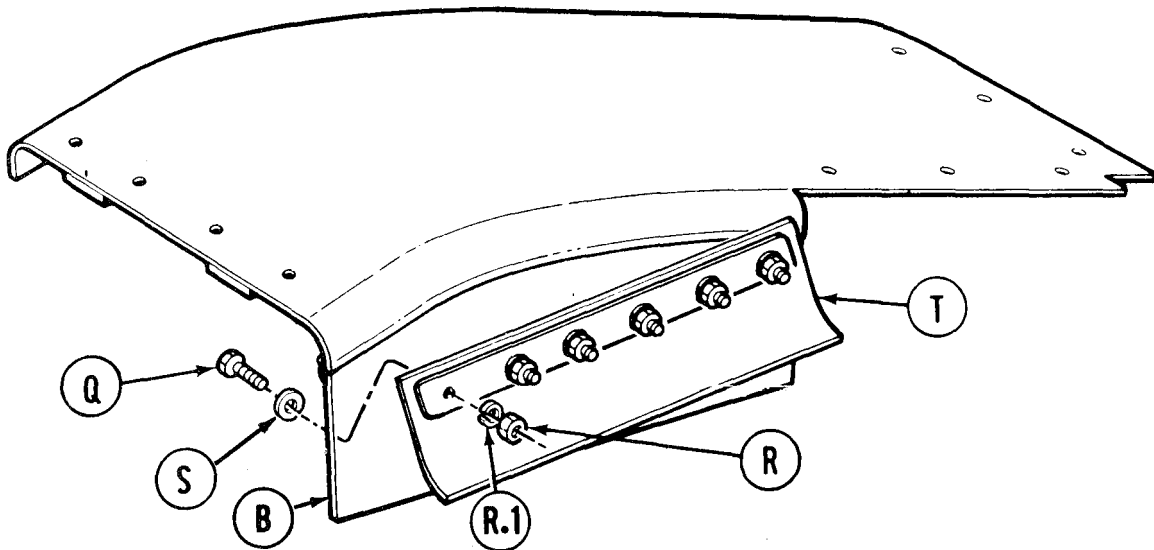
FRONT FENDERS, HEADLIGHT GUARDS, AND OUTRIGGERS REPLACEMENT (Sheet 4 of 7)

9. Using 1-1/8 inch socket, remove four screws, lockwashers, and flat washers (P) holding outrigger No. 2 (D) to hull. Remove outrigger No. 2 (D). Throw lockwashers away.



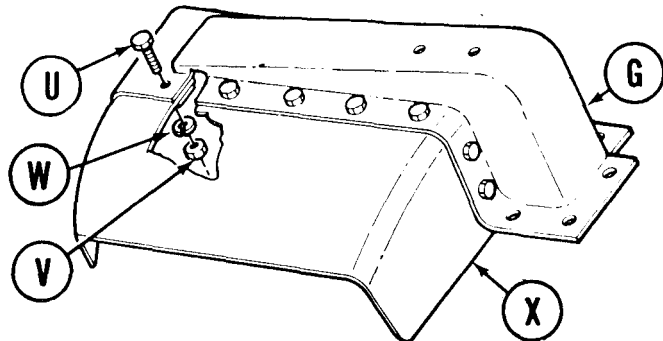
10. Using 7/16 inch socket on six screws (Q) and 7/16 inch wrench on nuts (R), remove six screws (Q), flat washers (S), lockwashers (R1), and nuts (R) holding filler and strap (T) to fender (B). Throw lockwashers away.

11. Remove filler and strap (T) from fender (B).



12. Using 7/16 inch socket on seven screws (U) and 7/16 inch wrench on nut (V), remove screws (U), lockwashers (W), and nuts (V) holding fender extension (X) to outrigger No. 1 (G). Throw lockwasher away.

13. Remove fender extension (X) from outrigger No. 1 (G). Remove retainer and spacer (hidden).



Go on to Sheet 5

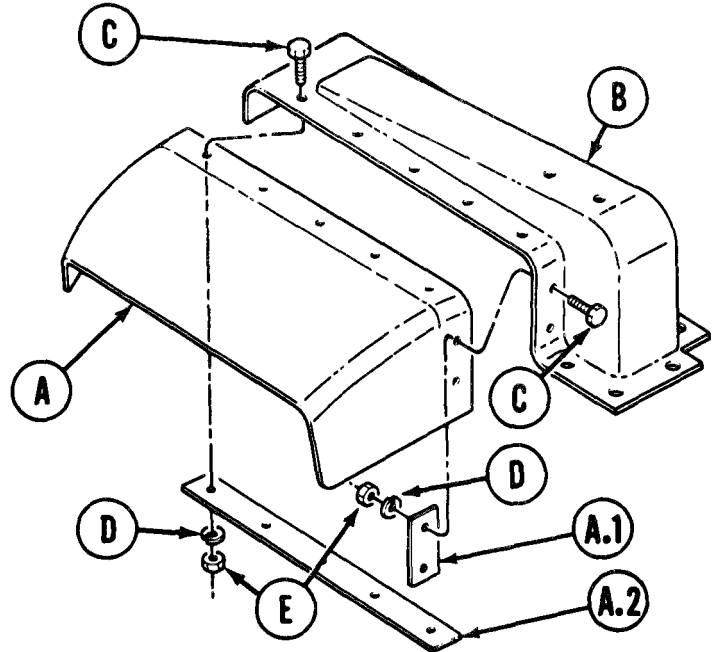
TA253575



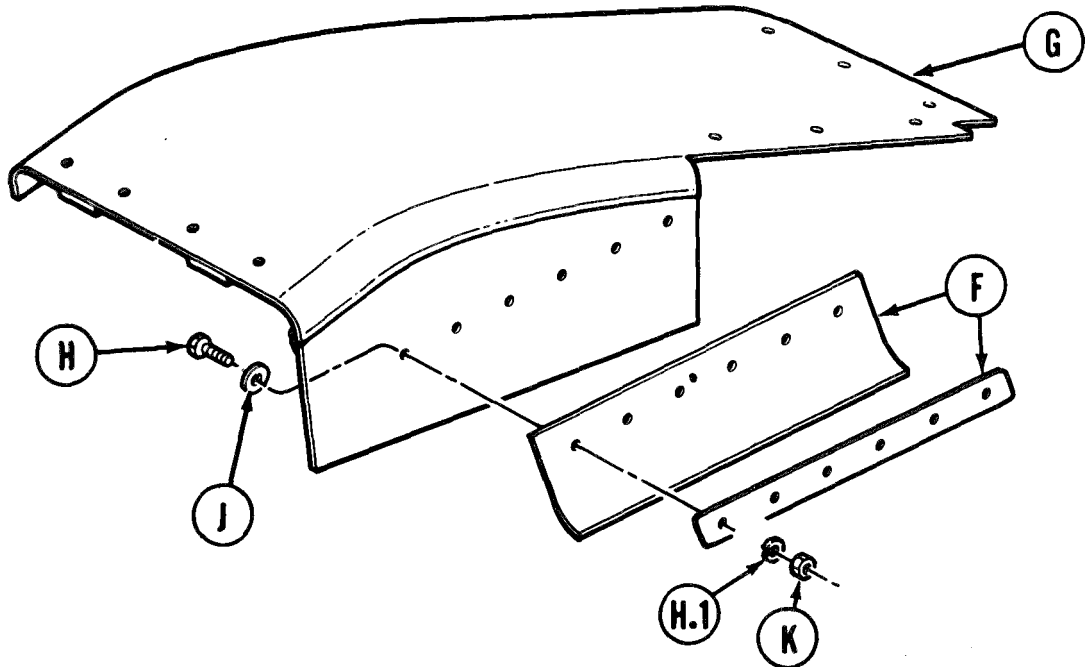
**FRONT FENDERS, HEADLIGHT GUARDS, AND OUTRIGGERS REPLACEMENT (Sheet 5 of 7)**

**INSTALLATION:**

1. Install fender extension (A), spacer (A.1) and retainer (A.2) onto outrigger No. 1 (B) using seven screws (C), new lockwashers (D), and nuts (E).
2. Using 7/16 inch socket on seven screws (C) and 7/16 inch wrench on nuts (E), tighten screws (C) and nuts (E).



3. Install filler and strap (F) to fender (G) using six screws (H), flat washers (J), new lockwashers (H.1), and nuts (K).
4. Using 7/16 inch socket on screws (H) and 7/16 inch wrench on nuts (K), tighten screws (H) and nuts (K).

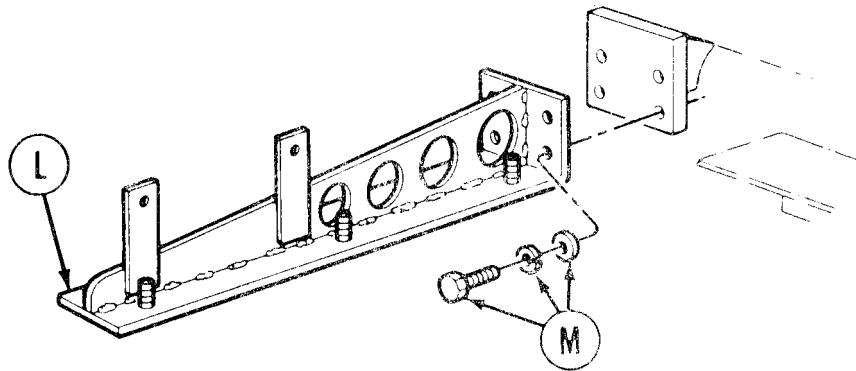


Go on to Sheet 6

TA253576

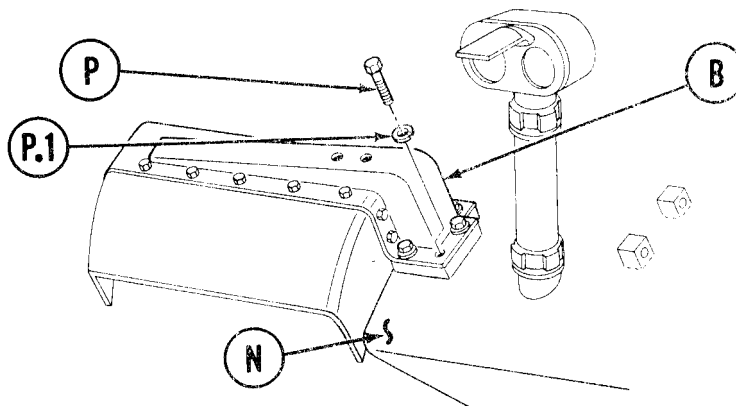
FRONT FENDERS, HEADLIGHT GUARDS, AND OUTRIGGERS REPLACEMENT (Sheet 6 of 7)

5. Using 1-1/8 inch socket, install outrigger No. 2 (L) to hull using four screws, new lockwashers and washers (M). Using torque wrench and 1-1/8 inch socket, tighten screws to 125-130 lb-ft (169-176 N-m).



6. Position outrigger No. 1 and fender extension (B) to hull.

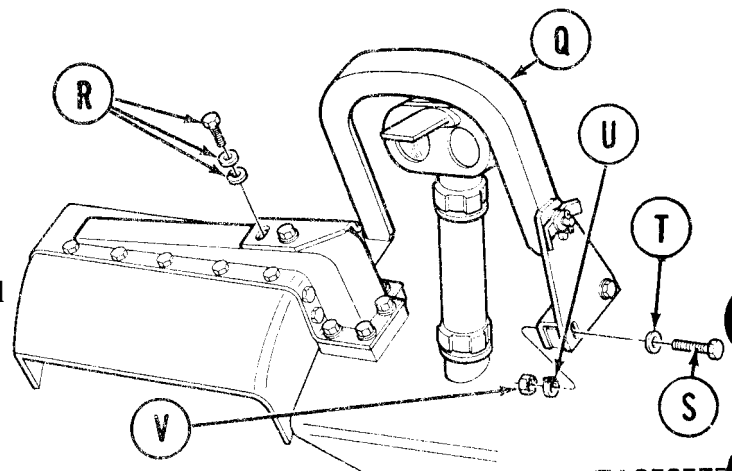
- 6.1. Using 1-1/8 inch socket, install outrigger No. 1 (B) to hull (N) using four screws (P) and new lockwashers (P.1).



7. Install headlight guard (Q) to hull using two screws and four washers (R).

8. Install headlight guard (Q) to hull using two screws (S), four flat washers (T), new lockwashers (U), and nuts (V).

9. Using 9/16 inch socket on screws (R) and 3/4 inch socket and 3/4 inch wrench on screws (S) and nuts (V), tighten screws and nuts.



Go on to Sheet 7

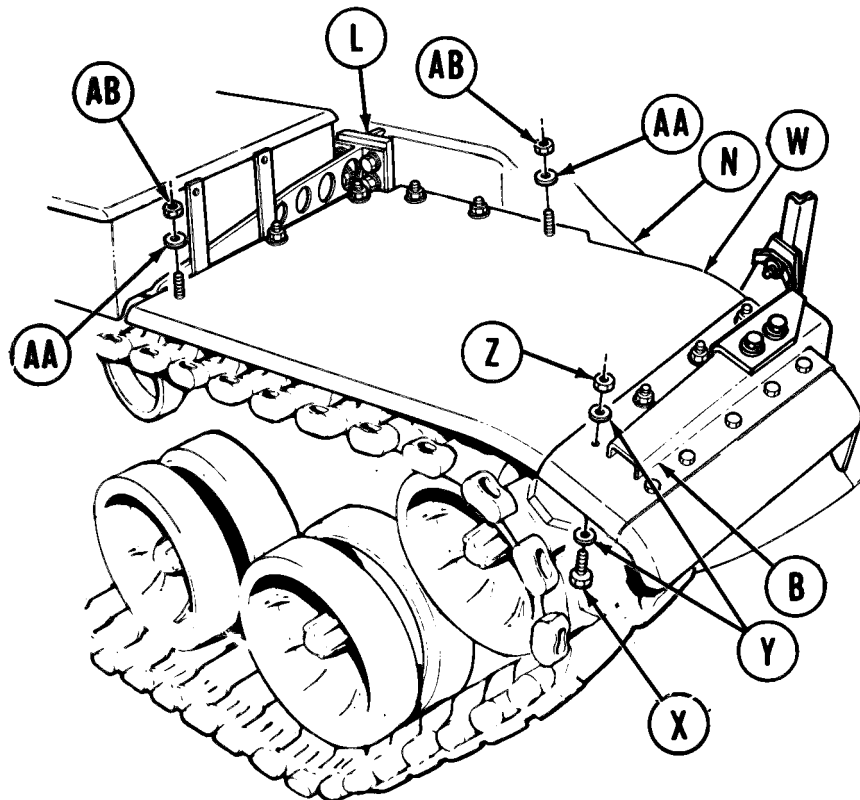
TA253577

## FRONT FENDERS, HEADLIGHT GUARDS, AND OUTRIGGERS REPLACEMENT (Sheet 7 of 7)

### NOTE

Use second person if necessary.

10. Install fender (W) to outrigger No. 1 (B) using four screws (X), washers (Y), and new self-locking nuts (Z).
11. Using 9/16 inch socket on screws (X) and 9/16 inch wrench on nuts (Z), tighten screws and nuts.
12. Install six washers (AA) and new self-locking nuts (AB) to secure fender (W) to hull (N) and outrigger No. 2 (L).
13. Using 9/16 inch socket on nuts (AB), tighten nuts.
14. Install exhaust tube (page 19-6).
15. Install center stowage box (page 16-178).



End of Task

TA253578

Change 1 16-71

**HEADLIGHT GUARD ASSEMBLY REPAIR (Sheet 1 of 1)**

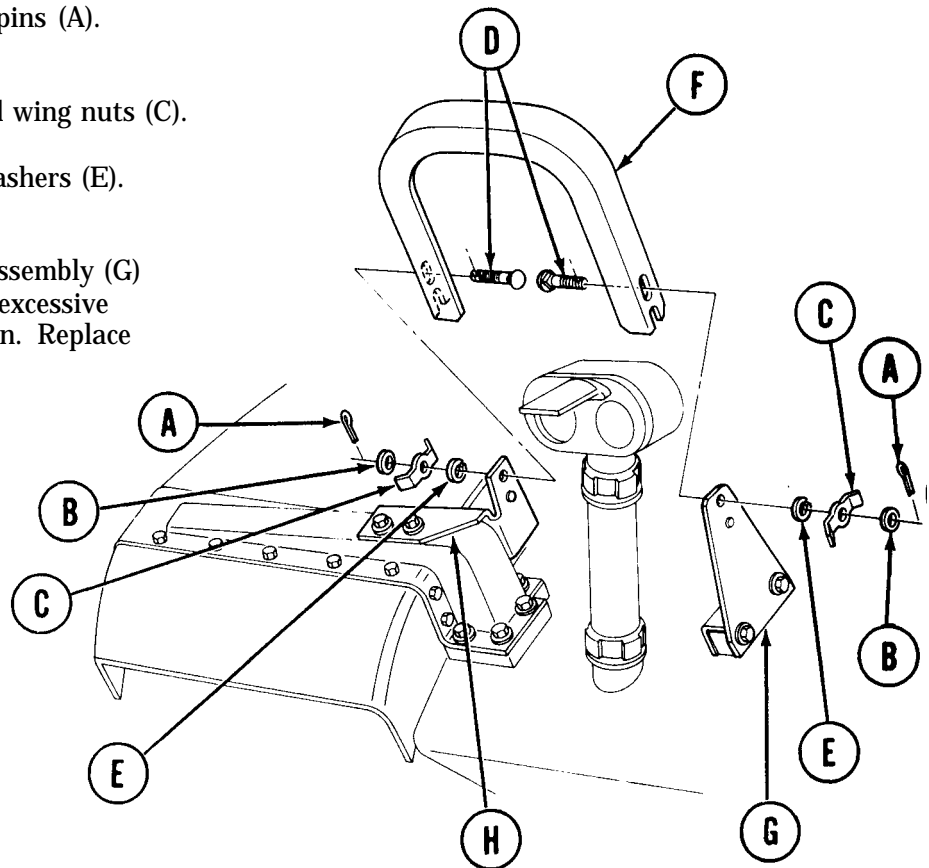
TOOL: Long round nose pliers

SUPPLIES: Cotter pin (MS24665-285) (2 required)  
 Lockwasher (MS35338-46) (2 required)

PRELIMINARY PROCEDURES: Remove headlight guard assembly (page 16-67, steps 4, 5, and 6).

**DISASSEMBLY:**

1. Using pliers, remove cotter pins (A).  
 Throw cotter pins away.
2. Remove flat washers (B) and wing nuts (C).
3. Remove bolts (D) and lockwashers (E).  
 Throw lockwashers away.
4. Inspect guard (F), support assembly (G) and support (H) for cracks, excessive bends, or excessive corrosion. Replace parts as necessary.



**ASSEMBLY:**

1. Position guard (F) to support (H) and support assembly (G).
2. Install bolts (D), flat washers (B), new lockwashers (E), and wing nuts (C) to secure guard to supports.
3. Using pliers, install new cotter pins (A) through bolts (D).
4. Install headlight guard assembly (pages 16-70, steps 7, 8, and 9).

End of Task

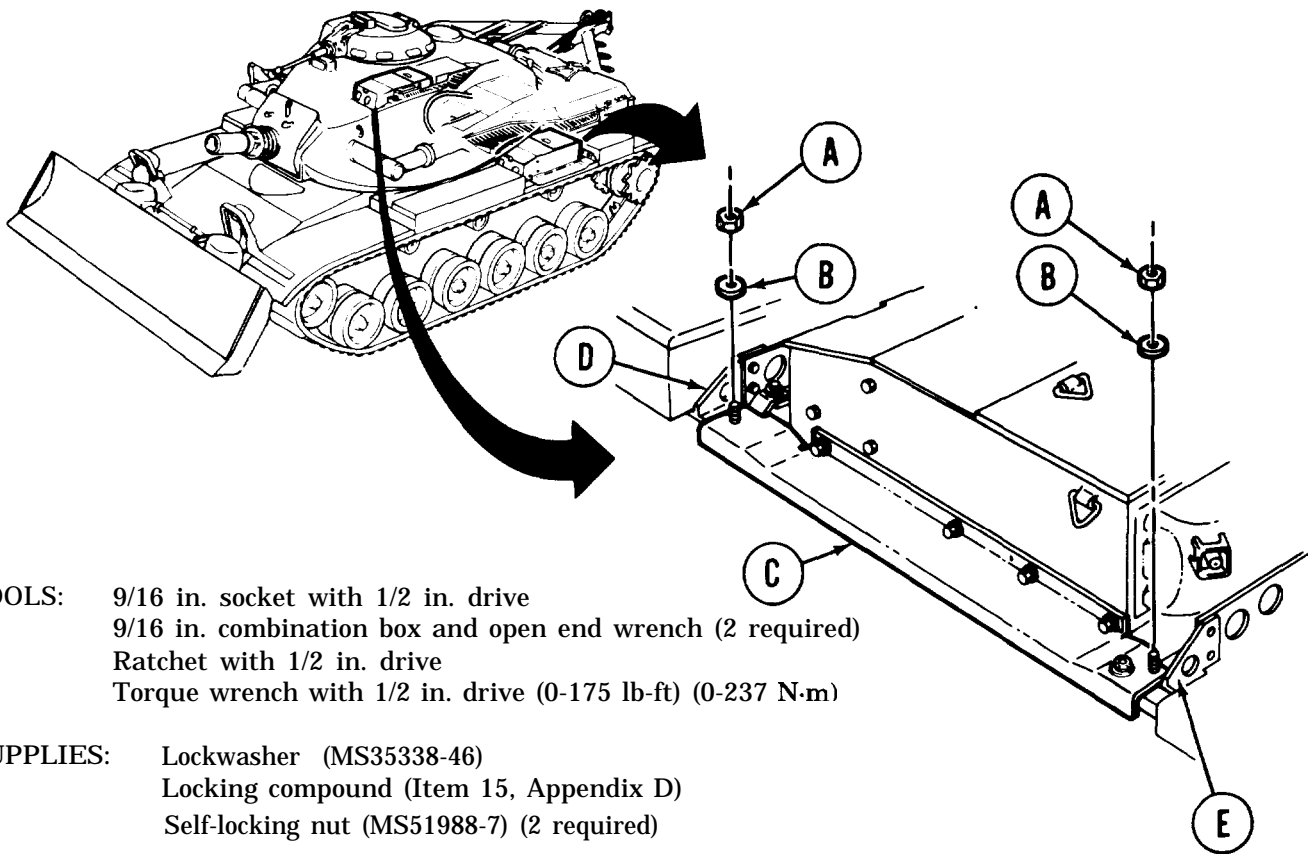
■ TA253579



FENDER EXTENSION (LEFT AND RIGHT) REPLACEMENT (Sheet 1 of 4)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-72.2
Inspection	16-73
Installation	16-74



**TOOLS:** 9/16 in. socket with 1/2 in. drive  
 9/16 in. combination box and open end wrench (2 required)  
 Ratchet with 1/2 in. drive  
 Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N.m)

**SUPPLIES:** Lockwasher (MS35338-46)  
 Locking compound (Item 15, Appendix D)  
 Self-locking nut (MS51988-7) (2 required)

**REMOVAL:**

**NOTE**

**Left fender extension is shown. Removal is similar for right fender extensions.**

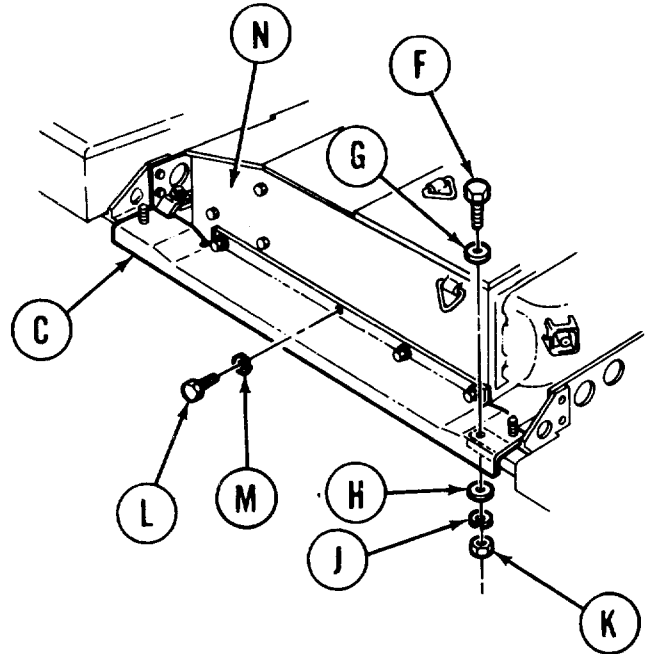
- Using socket, remove two self-locking nuts (A) and flange nuts (B) holding fender extension (C) to front bracket (D) and rear bracket (E). Throw self-locking nuts away.

Go on to Sheet 2

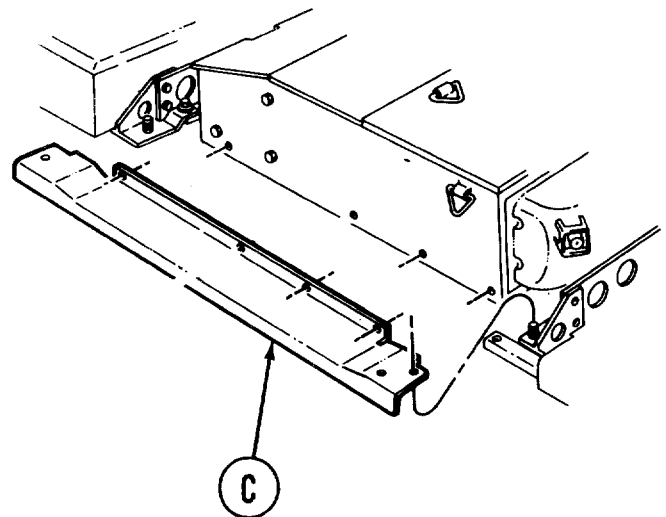
TA253771

## FENDER EXTENSION (LEFT AND RIGHT) REPLACEMENT (Sheet 2 of 4)

2. Using two wrenches, remove screw (F), washers (G) and (H), lock washer (J), and nut (K). Throw lockwasher away.
3. Using wrench, remove four screws (L) and washers (M) securing fender extension (C) to air cleaner (N).



4. Remove fender extension (C) by lifting it up and away from vehicle.



## INSPECTION:

Replace missing or damaged hardware as required.

Go on to Sheet 3

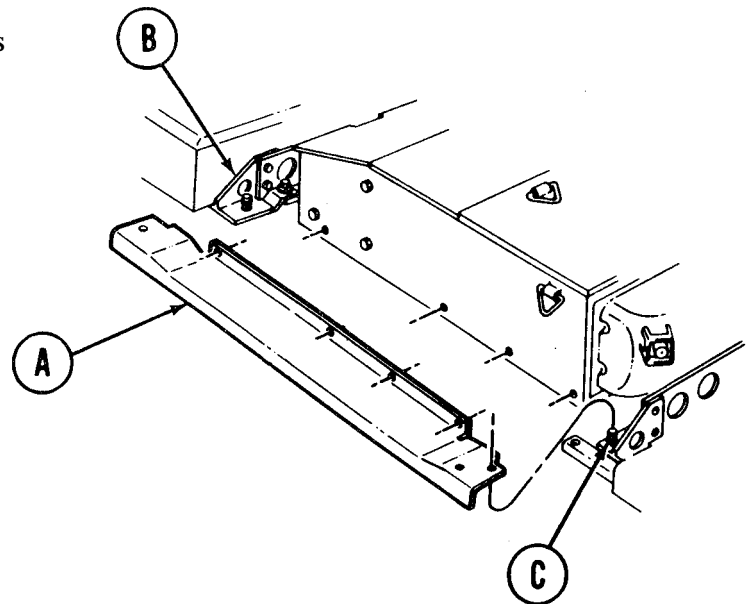
TA253580

Change 1 16-73

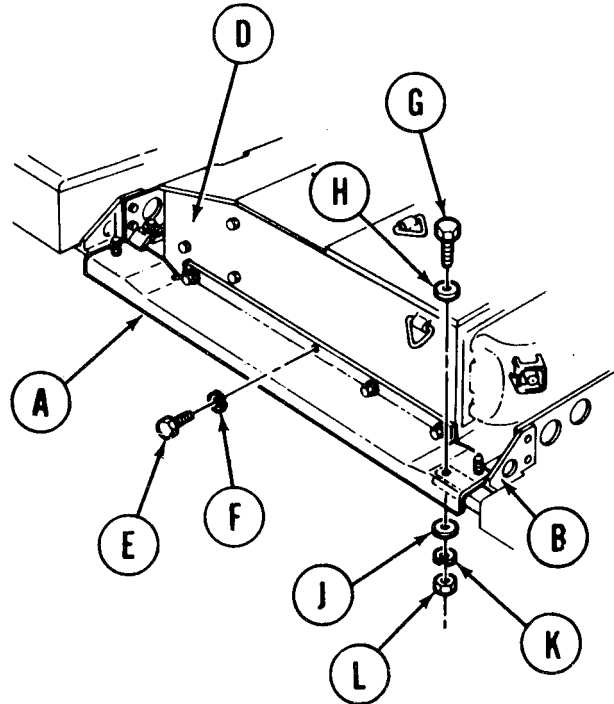
FENDER EXTENSION (LEFT AND RIGHT) REPLACEMENT (Sheet 3 of 4)

INSTALLATION:

1. Install fender extension (A) so that it aligns on brackets (B) and studs (C).



- 1.1. Apply locking compound (Item 15, Appendix D) to threads of screw (E).
2. Using wrench, secure fender extension (A) to air cleaner (D) with four screws (E) and washers (F).
- 2.1. Using torque wrench with socket, tighten screws (E) 22 to 30 lb-ft (33-40 N·m).
3. Using two wrenches, install screw (G) and flat washer (H) to hold fender extension (A) to rear bracket (B).
4. Secure bracket (B) and fender extension (A) with flat washer (J), new lockwasher (K), and nut (L).



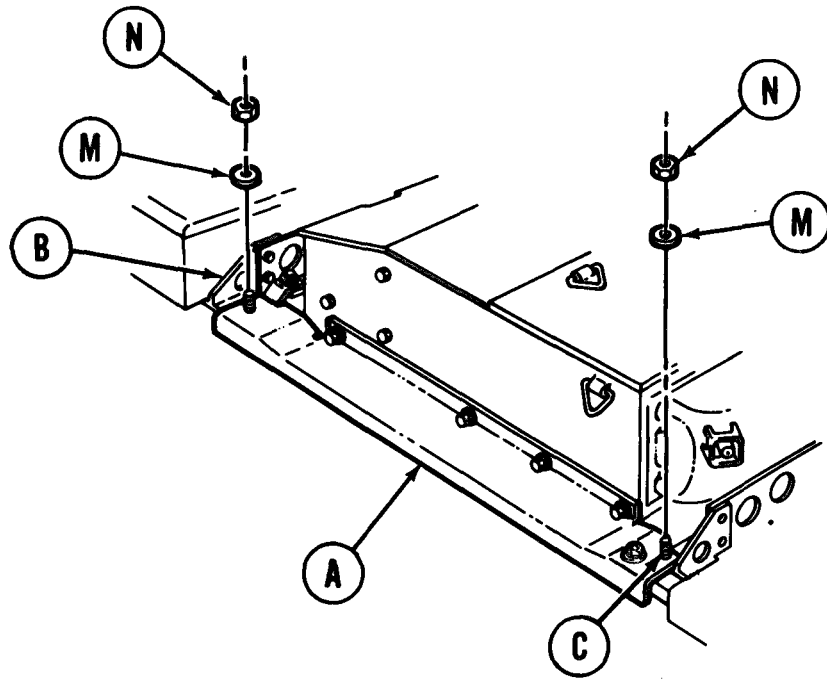
Go on to Sheet 4

TA253581



**FENDER EXTENSION (LEFT AND RIGHT) REPLACEMENT (Sheet 4 of 4)**

- Using wrench, secure fender extension (A) to front and rear brackets (B) studs (C) with flat washer (M) and new self-locking nuts (N).



End of Task

TA253582

Change 1 16-75

FENDER AND SHIELD (REAR) REPLACEMENT (Sheet 1 of 7)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-76
Installation	16-79

- **TOOLS:** 1-1/8 in. socket with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 7/16 in. socket with 1/2 in. drive  
 9/16 in. combination box and open end wrench  
 7/16 in. combination box and open end wrench  
 5 in. extension with 1/2 in. drive  
 1/2 in. combination box and open end wrench  
 Pry bar

- **SUPPLIES:** Plates (8705499) (as required)  
 Lockwasher (MS35338-51) (4 required)  
 Lockwasher (MS35338-46) (5 required)  
 Lockwasher (MS35338-44) (3 required)  
 Self-locking nut (MS51988-7) (7 required)

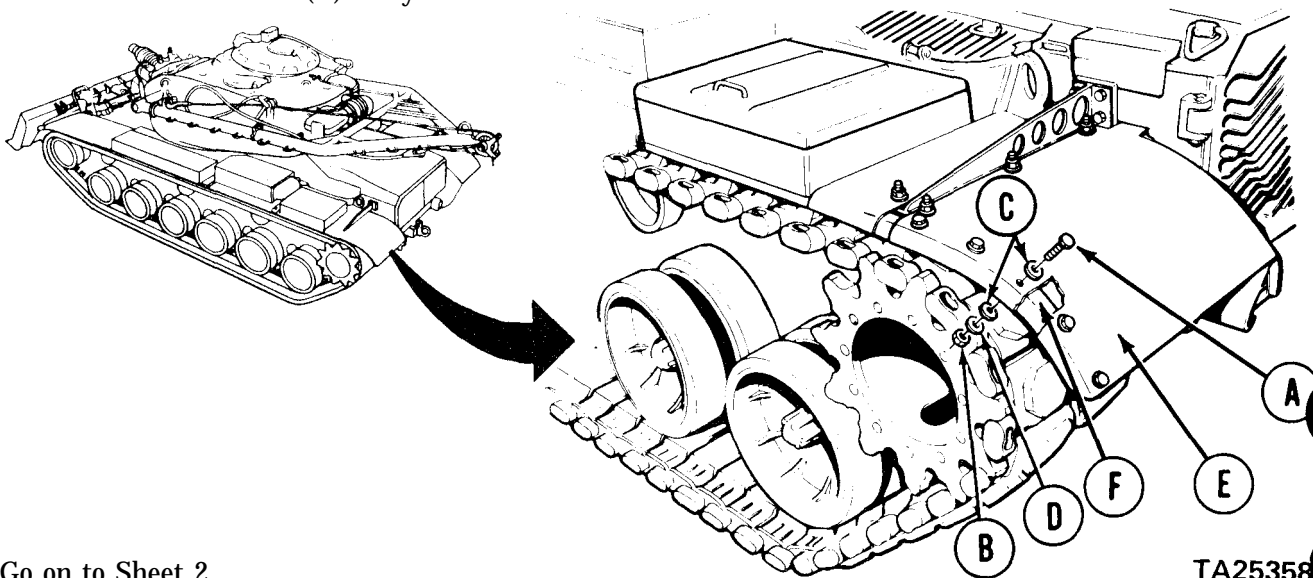
**PRELIMINARY PROCEDURES:** Remove external handset box (page 16-193)  
 Remove external handset box support (page 16-201)

**REMOVAL**

**NOTE**

Left rear fender and shield shown. Right rear removal is similar.

1. Using 9/16 inch socket on five screws (A) and 9/16 inch wrench on nuts (B), remove five screws (A), ten flat washers (C), five lockwashers (D), and nuts (B) holding fender (E) to angle (F) (hidden). Throw lockwashers (D) away.



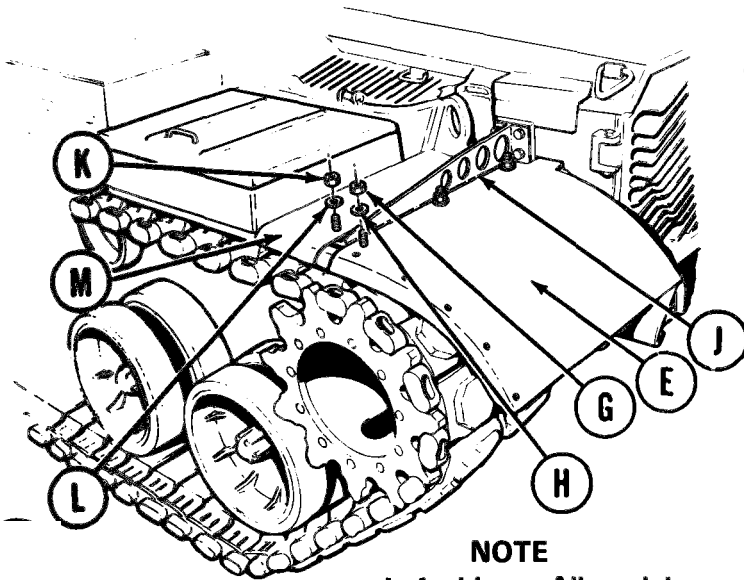
Go on to Sheet 2

TA25358

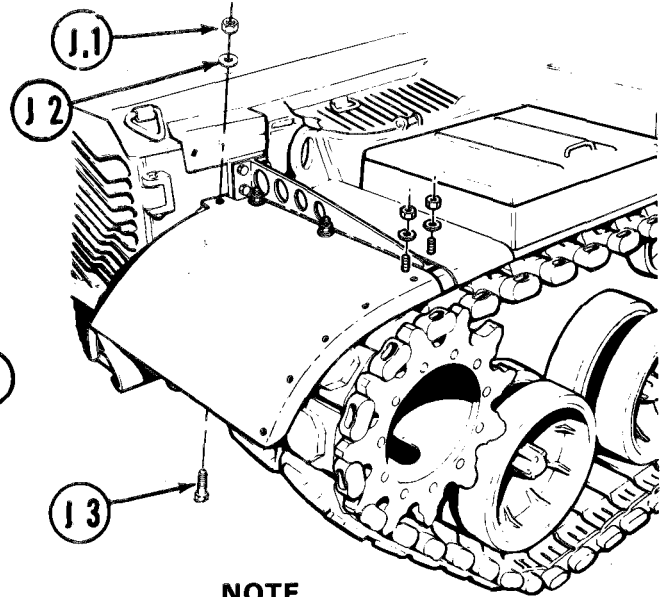
FENDER AND SHIELD (REAR) REPLACEMENT (Sheet 2 of 7)

2. Using 9/16 inch socket, remove three nuts (G) and flat washers (H) holding fender (E) to outrigger No. 5 (J).

2.1 If right rear fender is being removed, use 9/16 inch socket and 9/16 inch wrench. Remove self locking nut (J.1) washer (J.2) and screw (J.3). Throw self locking nut away.



**NOTE**  
Left side All models



**NOTE**  
Right side only Early Model.

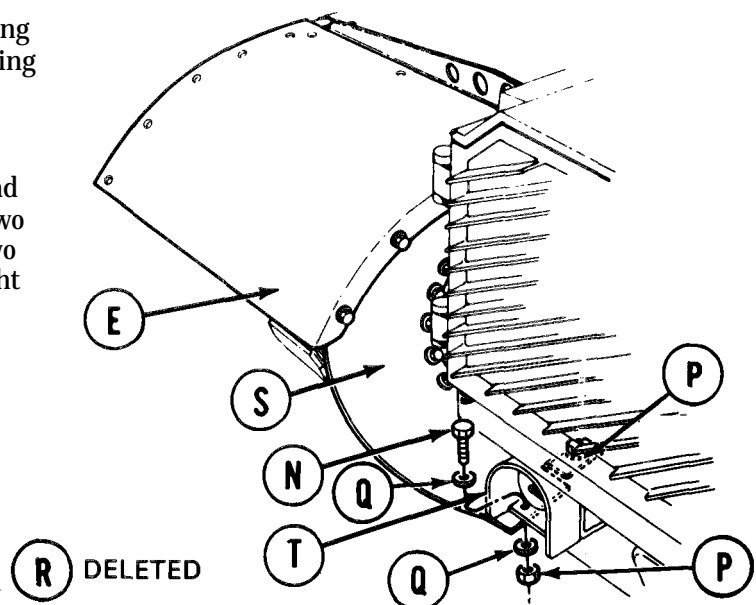
**NOTE**

Plates may exist between stowage box base plate and outrigger to shim possible gaps. Remove and retain plates to shim gaps during later installation.

3. Using 9/16 inch socket, remove remaining three nuts (K) and flat washers (L) holding outrigger No. 5 (J) to stowage box base plate (M).

4. Using 9/16 inch socket on screws (N) and 9/16 inch wrench on nuts (P), remove two screws (N), four flat washers (Q), and two nuts (P). Remove shield (S) from taillight bracket (T).

5. Remove fender (E) and shield (S) from vehicle.

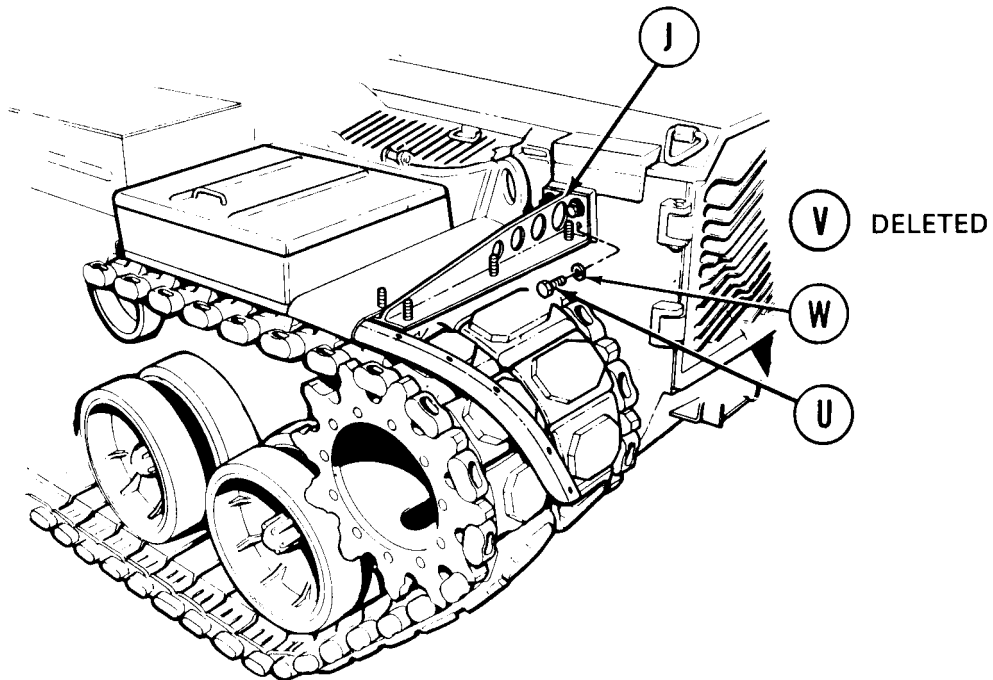


Go on to Sheet 3

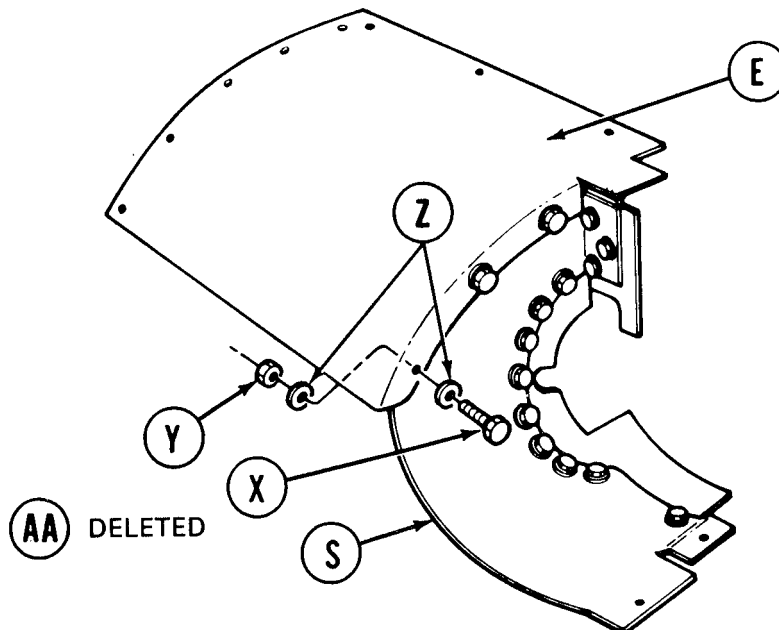
TA253584

FENDER AND SHIELD (REAR) REPLACEMENT (Sheet 3 of 7)

- Using 1-1/8 inch socket, remove four screws (U) and lockwashers (W) holding outrigger No. 5 (J) to vehicle. Remove outrigger No. 5 (J). Throw lockwashers away.



- Using 9/16 inch socket on screw (X) and 9/16 inch wrench on nut (Y), remove three screws (X), six flat washers (Z), and self locking nuts (Y) holding shield (S) to fender (E). Remove shield (S) from fender (E). Throw self locking nuts away.

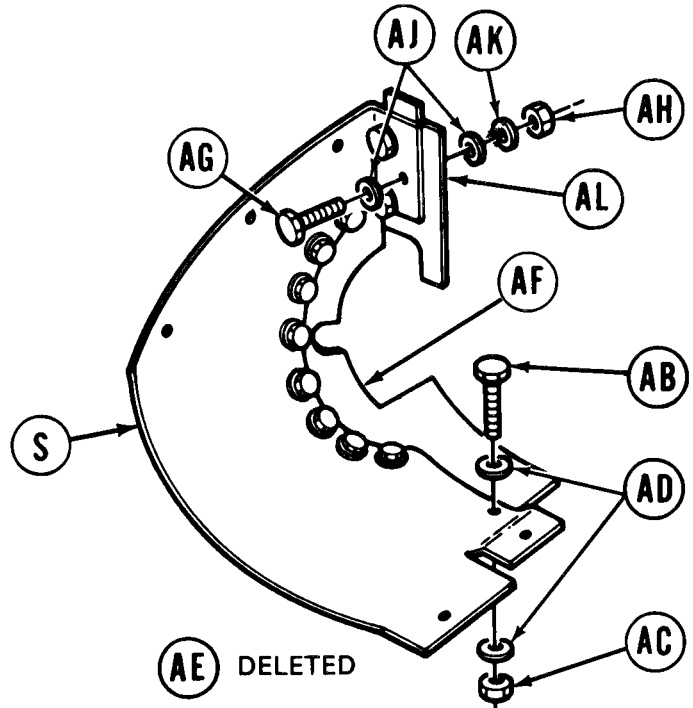


Go on to Sheet 4

TA253585

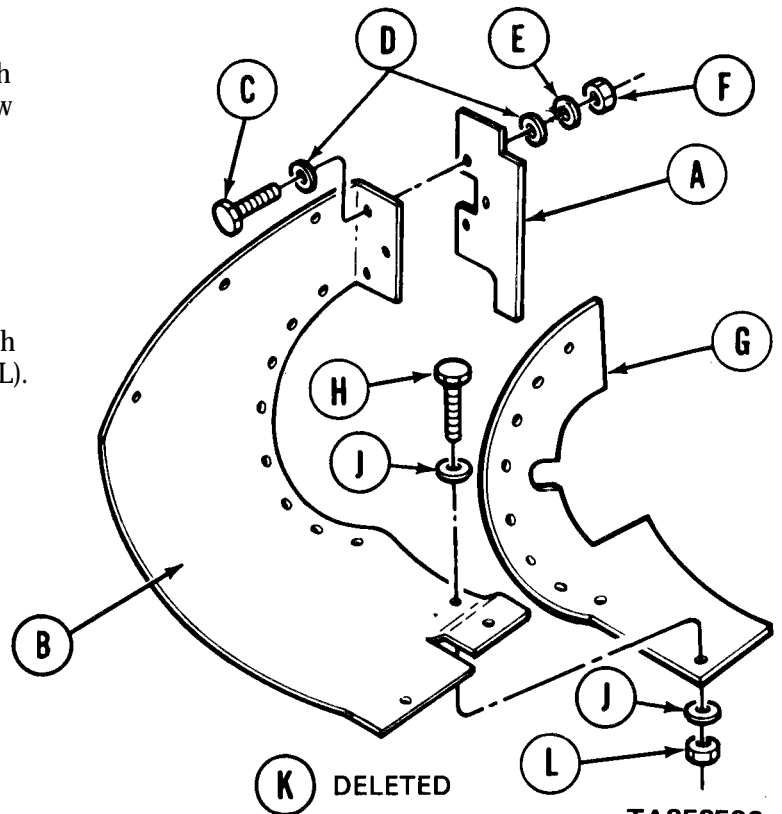
**FENDER AND SHIELD (REAR) REPLACEMENT (Sheet 4 of 7)**

8. Using 7/16 inch socket on screw (AB) and 7/16 inch wrench on nut (AC), remove nine screws (AB), 18 washers (AD), and nine nuts (AC) holding pad (AF) to shield (S). Remove pad (AF) from shield (S).
9. Using 7/16 inch socket on screw (AG) and 7/16 inch wrench on nut (AH), remove three screws (AG), six washers (AJ), three lockwashers (AK), and three nuts (AH) securing pad (AL) to shield (S). Remove pad (AL) from shield (S). Throw lockwashers away.



**INSTALLATION:**

1. Install pad (A) to shield (B) and secure with three screws (C), six washers (D), three new lockwashers (E), and three nuts (F).
2. Using 7/16 inch socket and 7/16 inch wrench, tighten three screws (C) and nuts (F).
3. Install pad (G) to shield (B) and secure with nine screws (H), 18 washers (J), and nuts (L).
4. Using 7/16 inch socket and 7/16 inch wrench, tighten screws (H) and nuts (L).

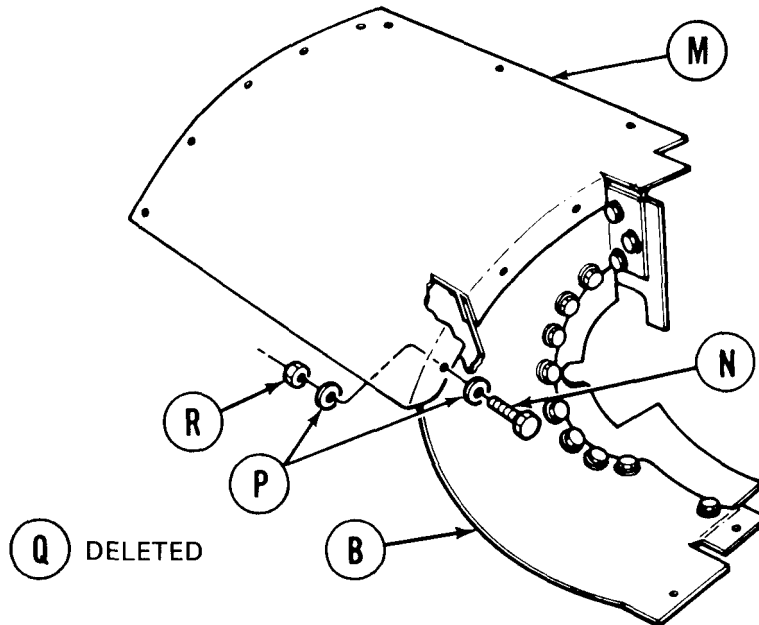


Go on to Sheet 5

TA253586

FENDER AND SHIELD (REAR) REPLACEMENT (Sheet 5 of 7)

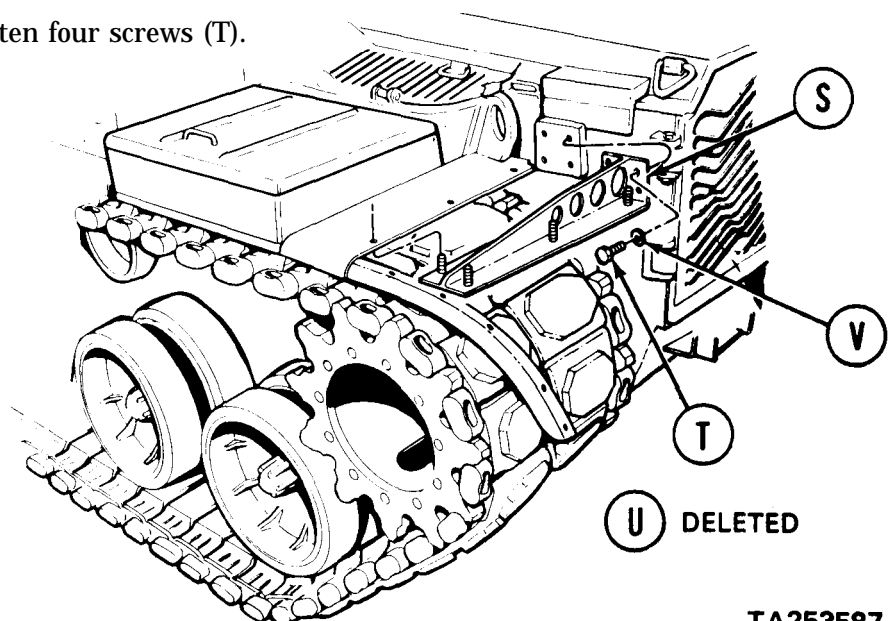
5. Install shield (B) to fender (M) and secure with three screws (N), six washers (P), and three new self-locking nuts (R).
6. Using 9/16 inch socket on screw (N) and 9/16 inch wrench on nut (R), tighten screw (N) and nut (R).



NOTE

If gap between storage box base plate and outrigger exists, shim gap with up to three plates.

7. Install outrigger No. 5 (S) using four screws (T) and new lockwashers (V).
8. Using 1-1/8 inch wrench, tighten four screws (T).



Go on to Sheet 6

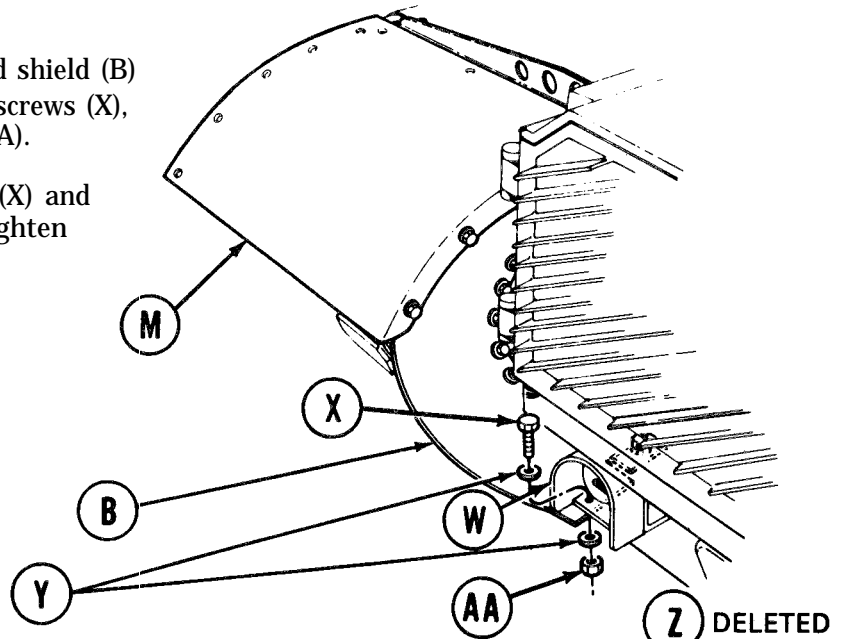
TA253587

**FENDER AND SHIELD (REAR) REPLACEMENT (Sheet 6 of 7)**

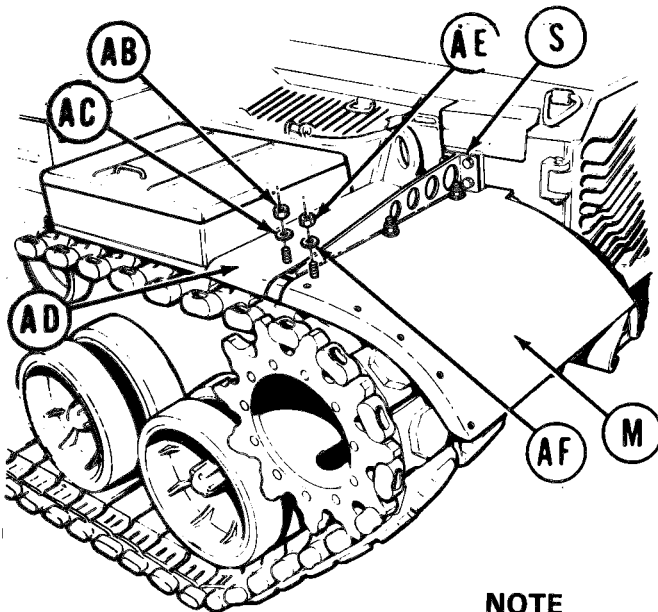
**NOTE**

You may need to aline holes in fender(M) with taillight bracket (W) using a pry bar.

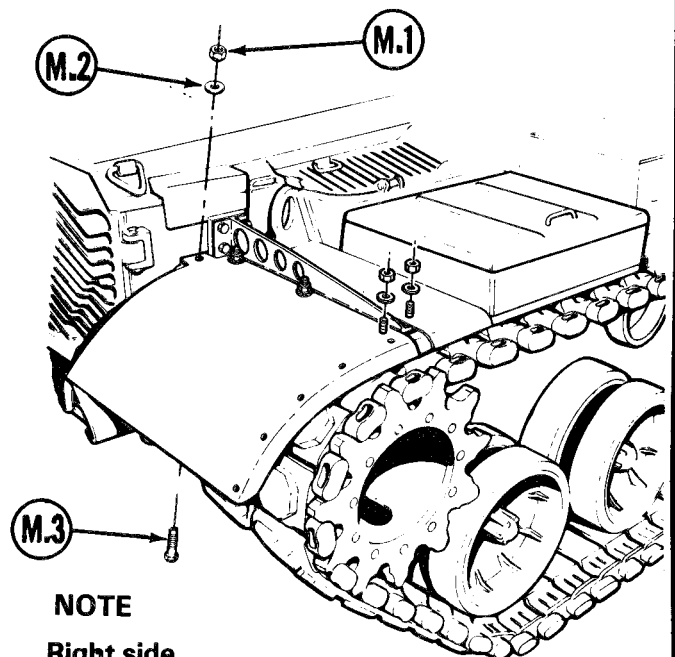
9. Position and secure fender (M) and shield (B) to taillight bracket (W) using two screws (X), four flat washers (Y), and nuts (AA).
10. Using 9/16 inch socket on screws (X) and 9/16 inch wrench on nuts (AA), tighten screws (X) and nuts (AA).



11. Using 9/16 inch socket, install three nuts (AB) and flat washers (AC) to secure outrigger No. 5 storage box base plate (AD).
12. Using 9/16 inch socket, install three nuts (AE) and flat washers (AF) to secure fender (M) to outrigger No. 5 (S).
- 12.1. If right fender was removed, use 9/16 inch socket and 9/16 inch wrench to install new self-locking nut



**NOTE**  
Left side  
All models



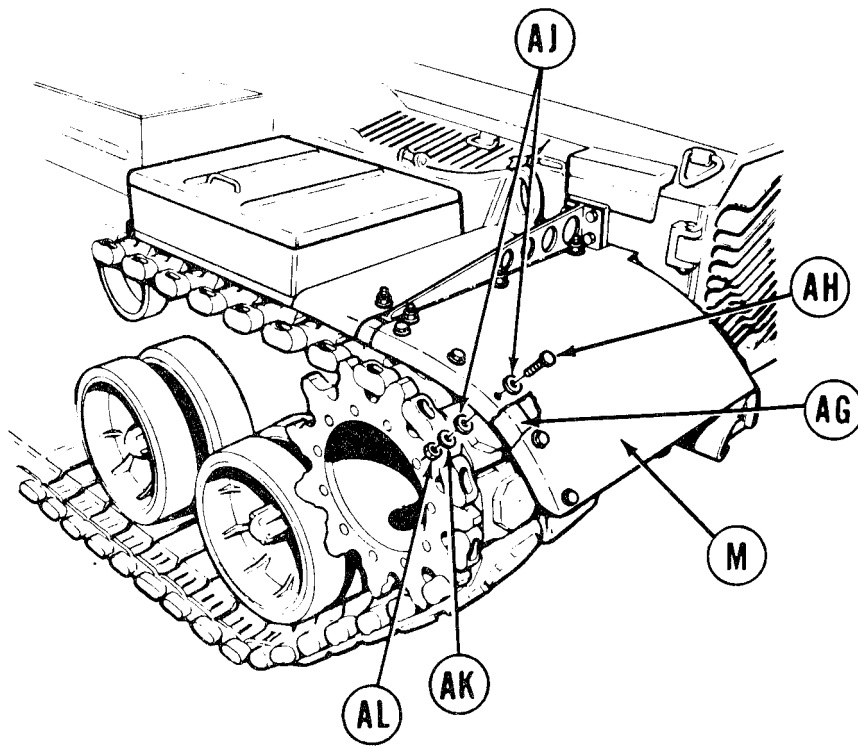
**NOTE**  
Right side  
Early models

Go on to Sheet 7

TA253588

FENDER AND SHIELD (REAR) REPLACEMENT (Sheet 7 of 7)

13. Install fender (M) to angle bracket (AG) hidden using five screws (AH), ten flat washers (AJ), five new lockwashers (AK), and nuts (AL).
14. Using 9/16 inch socket on screw (AH) and 9/16 inch wrench on nut (AL), tighten screw (AH) and nut (AL).
15. Install external handset box support (page 16-202).
16. Install external handset box (page 16-194).



End of Task

TA253589



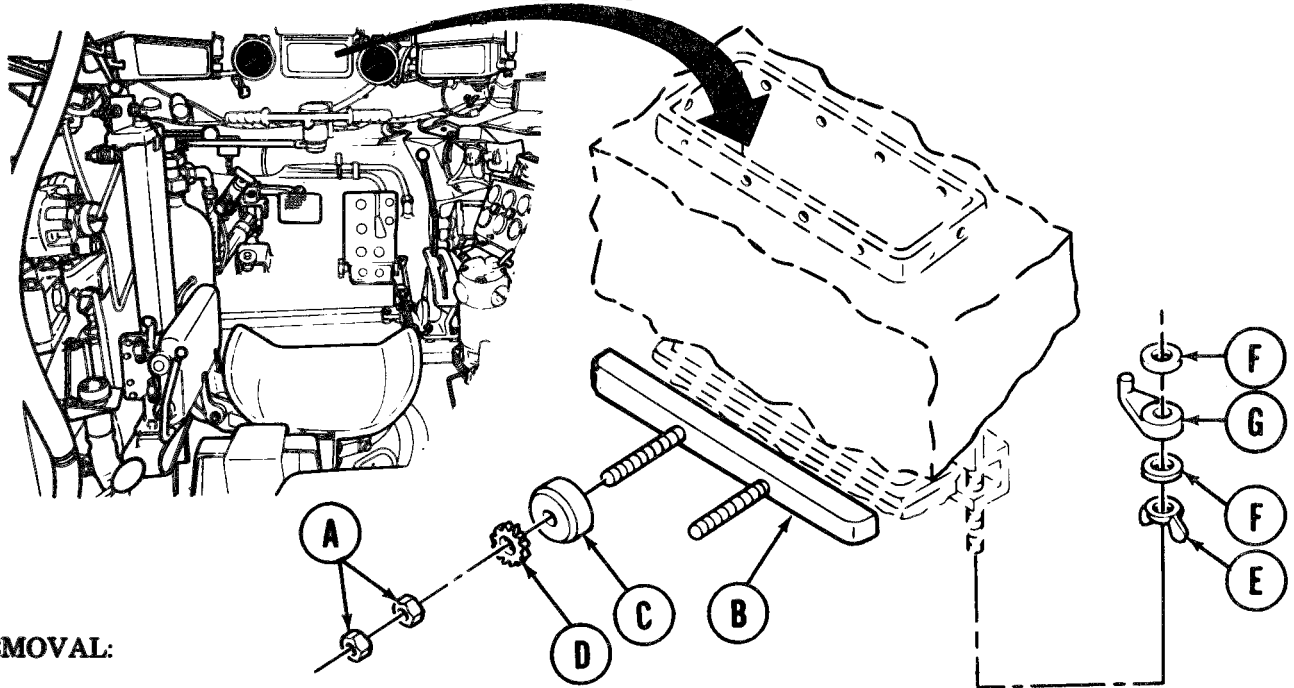
**M27 DRIVER'S PERISCOPE RETAINING HARDWARE REPLACEMENT (Sheet 1 of 1)**

**TOOL:** 9/16 in. combination box and open end wrench (2 required)

**SUPPLIES:** Lockwashers (MS35335-35) (2 required)

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove M27 periscope (if installed) (TM 9-2350-222-10)

**REMOVAL:**

1. Using two wrenches, remove four nuts (A).
2. Remove retainer (B), nuts (C), and two lockwashers (D). Throw lockwashers away.
3. Using fingers, remove two wing nuts (E), washers (F), and two retainers (G).
4. Inspect all parts for damaged threads, cracks, or excessive corrosion. Replace parts as necessary.

**INSTALLATION:**

1. Using fingers, install four washers (F), two retainers(G), and two wing nuts(E).
2. Install nuts (C) and new lockwashers (D) onto retainer (B).
3. Install retainer (B) through support block and install four nuts (A).
4. Install M27 periscope as required (TM 9-2350-222-10).

**End of Task**

**TA253590**



**M27 DRIVER'S PERISCOPE COVER ASSEMBLY REPLACEMENT (Sheet 1 of 4)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-83
Cleaning and Inspection	16-84
Installation	16-85

**TOOLS:** 1/8 in. dia. straight drive pin punch  
 Slip joint pliers  
 Putty knife  
 Wire brush  
 Hammer

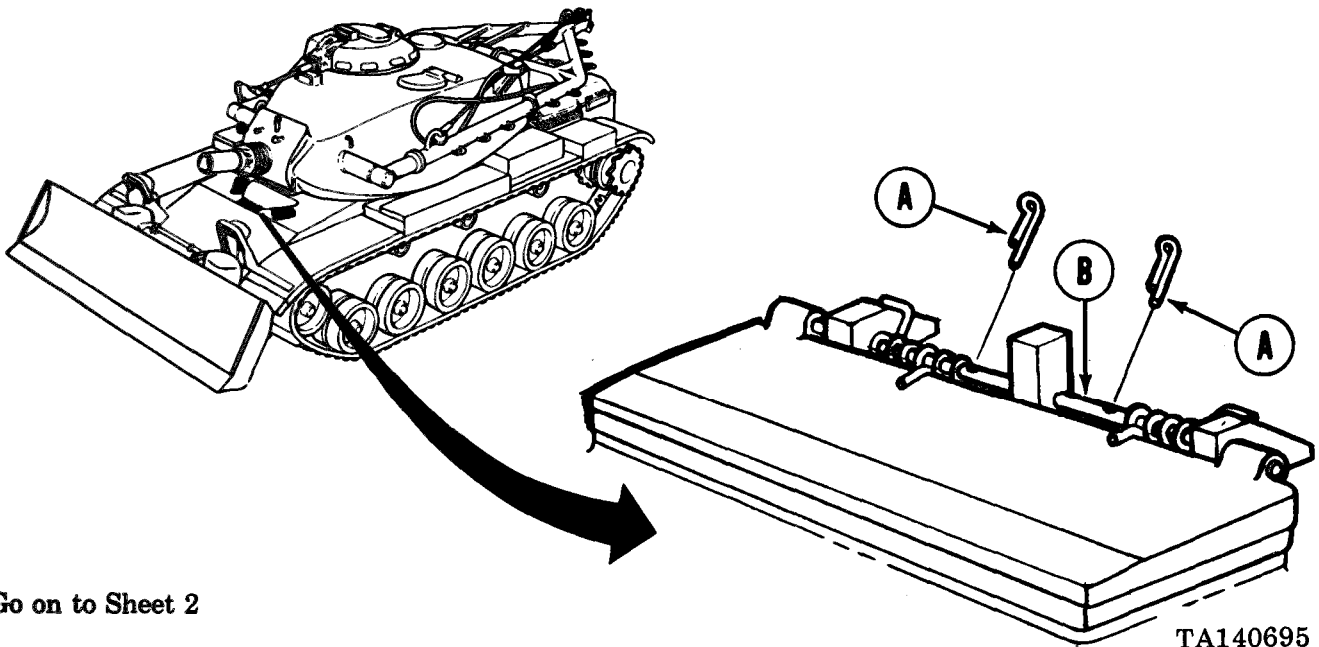
**SUPPLIES:** Adhesive (Item 4, Appendix D)  
 Springs (8693685 and 8693686)  
 Cotter pins (MS24665-132) (2 required)  
 Watch

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove M27 periscope (TM 9-2350-222-10)

**REMOVAL:**

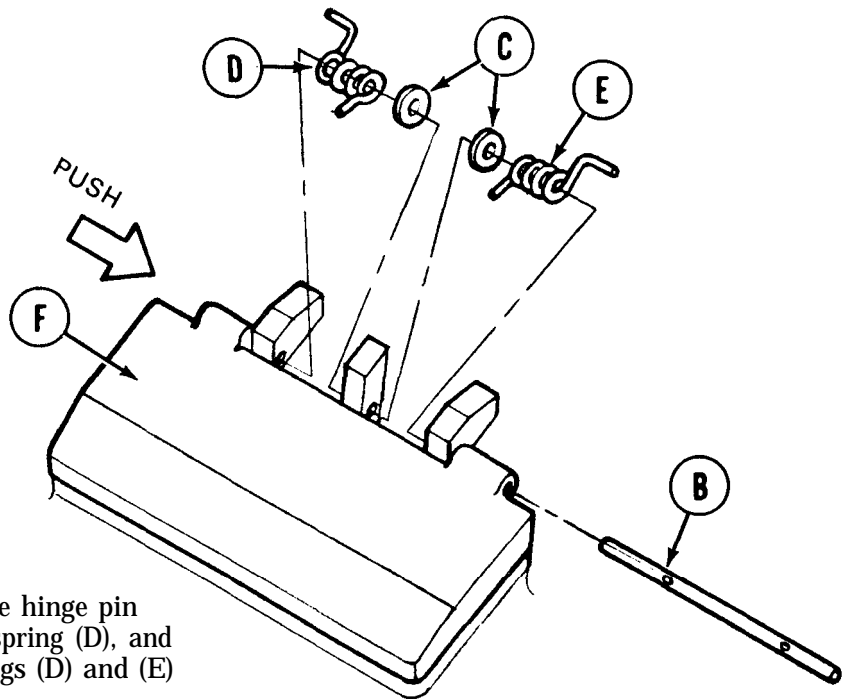
- Using pliers, remove two cotter pins (A) from hinge pin (B). Throw cotter pins away.



Go on to Sheet 2

TA140695

M27 DRIVER'S PERISCOPE COVER ASSEMBLY REPLACEMENT (Sheet 2 of 4)

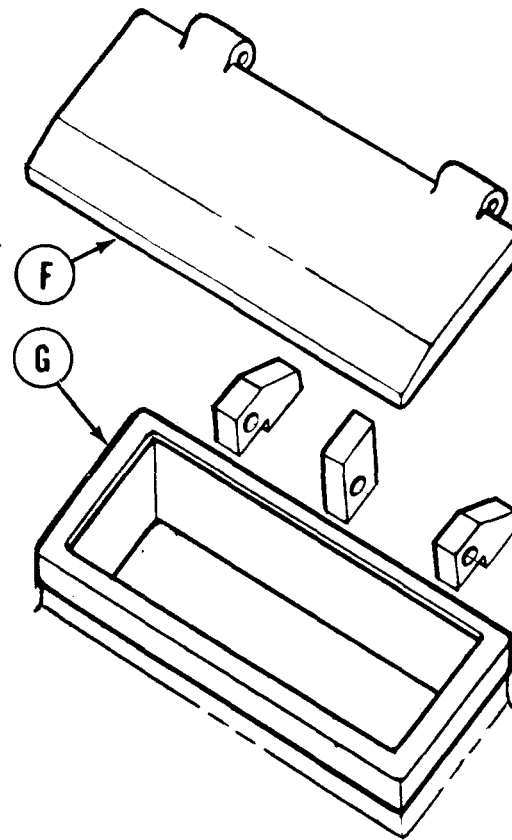


2. Using hammer and punch, remove hinge pin (B), two washers (C), right hinge spring (D), and left hinge spring (E). Throw springs (D) and (E) away.

3. Remove periscope cover (F).

CLEANING AND INSPECTION:

1. Check seal (G) for cracks, tears, or worn places. Replace if defective.
2. Replace missing or damaged parts.

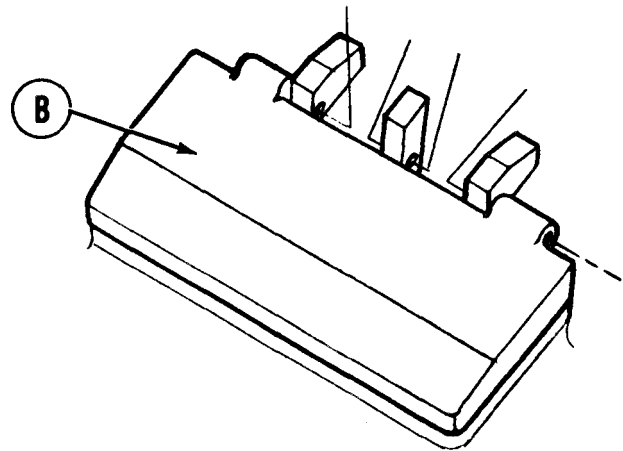
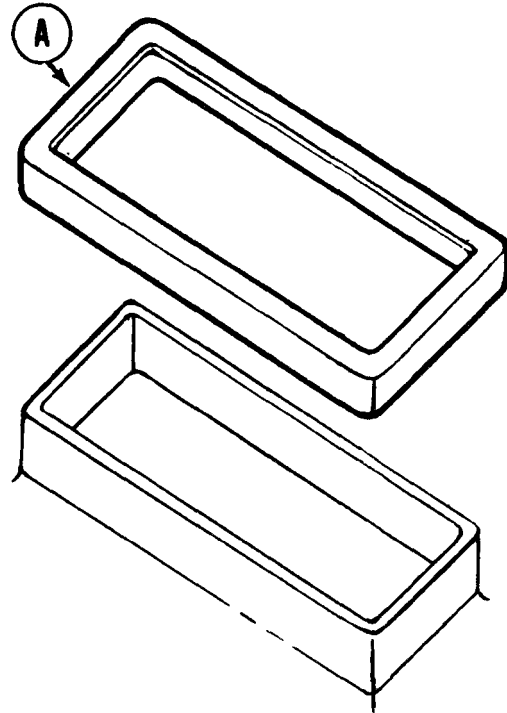


Go on to Sheet 3

TA140696

**M27 DRIVER'S PERISCOPE COVER ASSEMBLY REPLACEMENT (Sheet 3 of 4)****INSTALLATION:**

1. If seal replacement is required, use putty knife and wire brush to clean old seal and adhesive off periscope opening.
2. Apply adhesive (Item 4, Appendix D) to periscope opening and bottom of new seal (A).
3. As required, apply new seal (A) to periscope opening, press together tightly, and let adhesive dry for 30 minutes.
4. Place periscope cover (B) over opening and aline hinge pin holes.



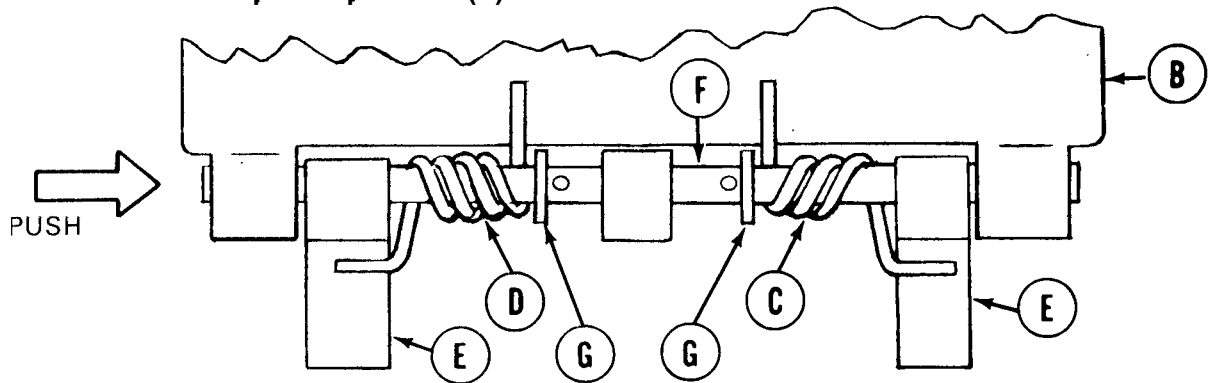
Go on to Sheet 4

TA140697

M27 DRIVER'S PERISCOPE COVER ASSEMBLY REPLACEMENT (Sheet 4 of 4)

NOTE

Make sure that outer tail of new springs (C) and (D) rests on hull hinge blocks (E) and that inner tail of springs (C) and (D) rests on periscope cover (B).

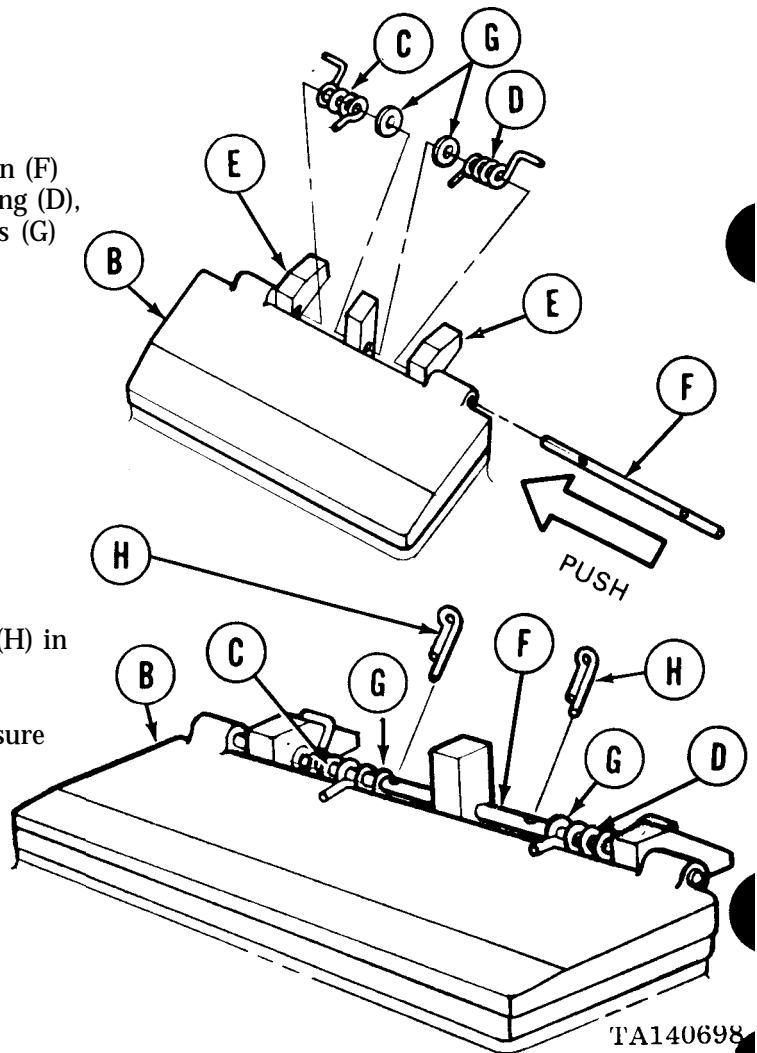


- Using hammer and punch, drive hinge pin (F) through pin holes and place new left spring (D), new right spring (C), and two flat washers (G) on hinge pin (F).

NOTE

Make sure that each flat washer (G) is between a cotter pin (H) and a spring (C) and (D).

- Using pliers, install two new cotter pins (H) in hinge pin (F).
- Open and close periscope cover to make sure that springs will close periscope cover.
- Install M27 periscope (TM 9-2350-222-10).



End of Task

TA140698

**M27 DRIVER'S PERISCOPE COVER ASSEMBLY REPAIR (Sheet 1 of 1)**

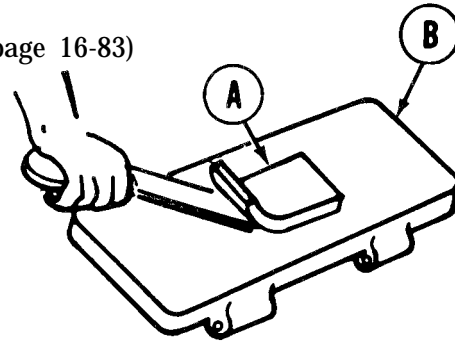
**TOOLS:** Putty knife  
Wire brush

**SUPPLIES:** Pad (8386867)  
Adhesive (Item 3, Appendix D)  
Watch

**PRELIMINARY PROCEDURE:** Remove cover assembly (page 16-83)

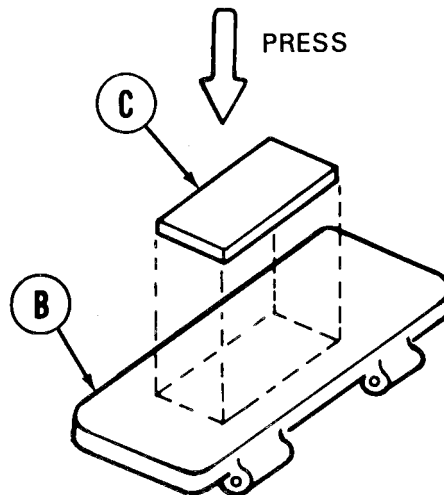
**DISASSEMBLY:**

1. Using putty knife, remove old pad (A) from bottom of cover (B).



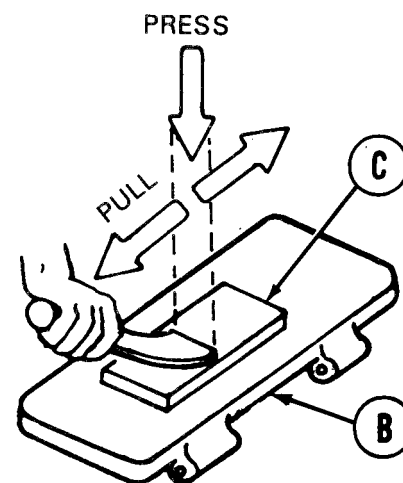
**CLEANING AND INSPECTION:**

1. Using wire brush, clean old cement off cover (B).
2. Inspect cover (B) for cracks or damage. Replace if defective.



**ASSEMBLY:**

1. Apply adhesive. (Item 3, Appendix D) to bottom of cover (B) and new pad (C).
2. Place new pad (C) on cover (B) and press together tightly.
3. Remove air bubbles between cover (B) and pad (C) by pressing blade of putty knife down and pulling it across pad (C) from center to ends.
4. Let adhesive cure for 30 minutes.
5. Install cover assembly (page 16-85).



End of Task

TA140699

**DRIVER'S HATCH TORSION BAR ANCHOR ADJUSTMENT (Sheet 1 of 6)**

TOOLS: 3/4 in. combination box and open end wrench  
1 in. socket with 3/4 in. drive  
7/8 in. socket with 3/4 in. drive  
9/16 in. combination box and open end wrench

Drop light  
3/4 in. socket with 1/2 in. drive  
2 in. extension with 1/2 in. drive  
8 in. extension with 3/4 in. drive  
Ratchet with 1/2 in. drive  
Hinged socket wrench handle with 3/4 in. drive  
Pull scale

SPECIAL TOOLS: Hatch torque adapter (Item 36, Chapter 3, Section I)

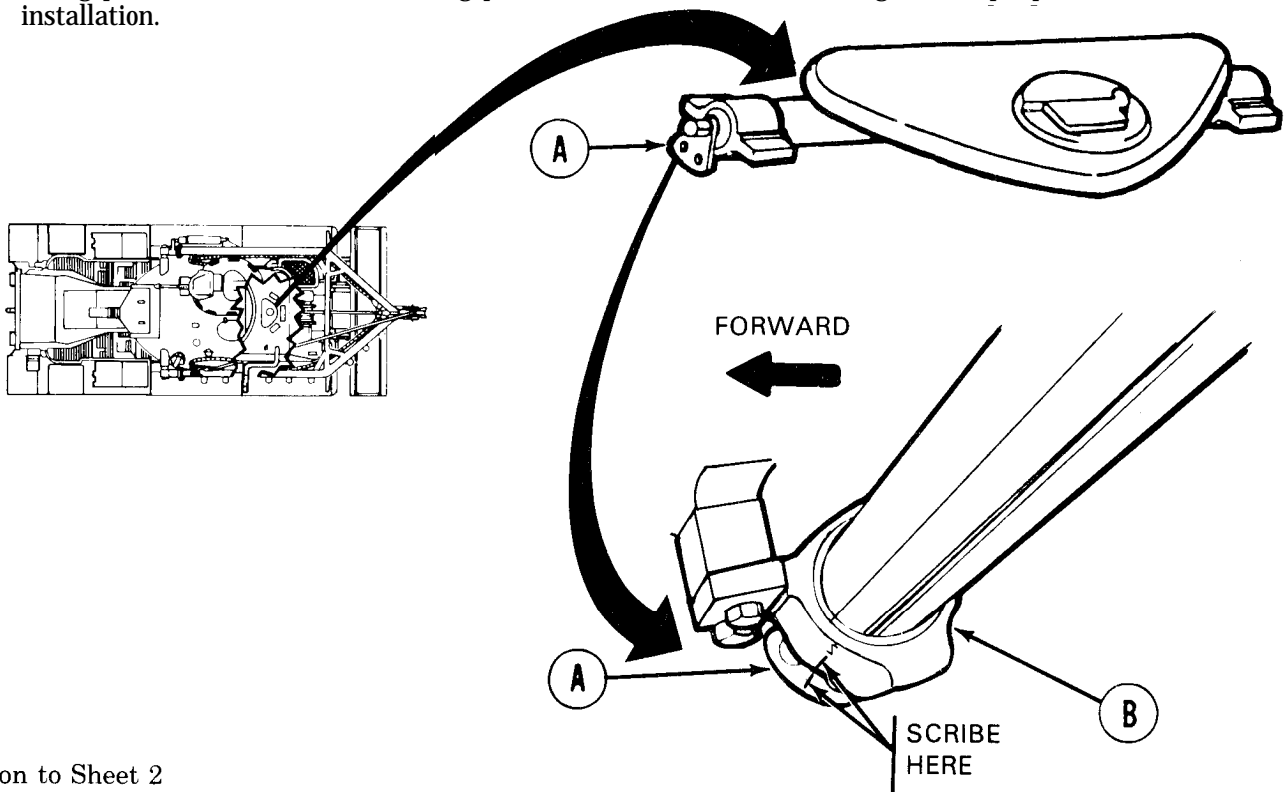
SUPPLIES: Pencil  
Pipe extension 24 in. long  
Lockwasher

PERSONNEL: Two

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Lock driver's hatch (TM 9-2350-222-10)  
Position gun tube over rear deck; engage turret lock  
ADJUSTMENT: (TM 9-2350-222-10).

1. Locate one person in driver's station, other person in turret.
2. Using pencil, scribe a mark showing position of anchor (A) to housing (B) for purpose of installation.

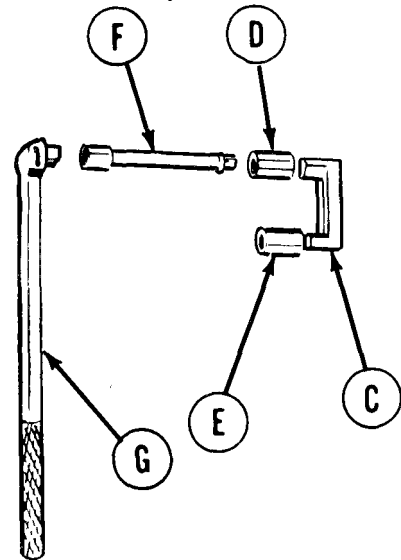


Go on to Sheet 2

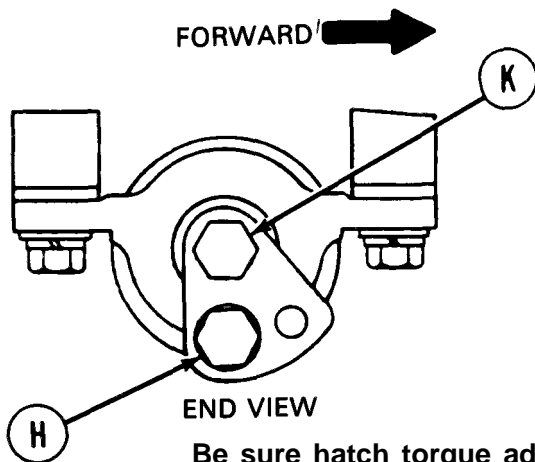


**DRIVER'S HATCH TORSION BAR ANCHOR ADJUSTMENT (Sheet 2 of 6)**

3. Assemble hatch torque adapter (C) by placing 1 inch socket (D) and 7/8 inch socket (E) on torque adapter.
4. Place 8 inch extension (F) in 1 inch socket (D).
5. Place hinged handle (G) in extension (F).



6. Using 3/4 inch wrench, loosen screw and lockwasher (H) from right end housing out about 1/8 inch.



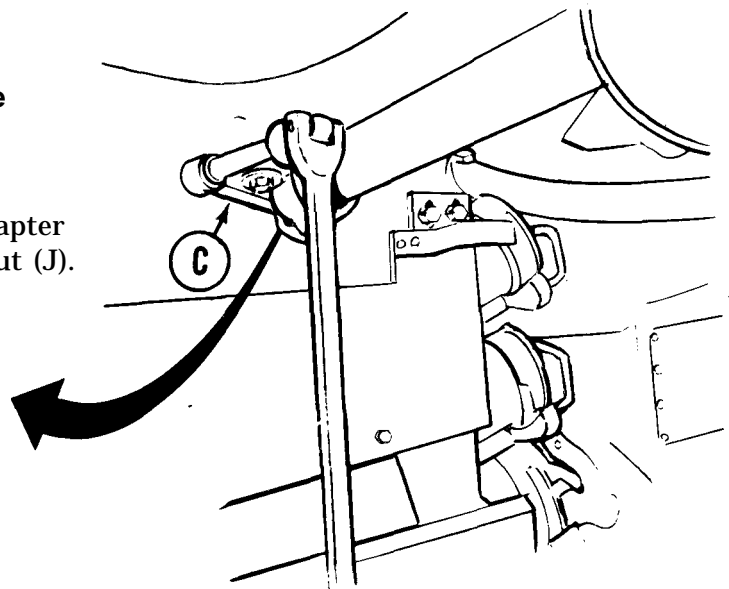
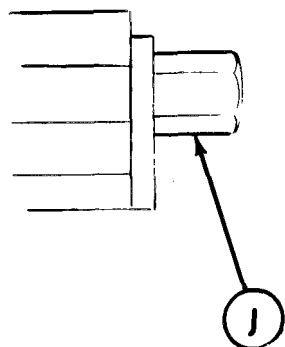
**NOTE**

Be sure hatch torque adapter (C) in step 7 is positioned as shown. Proper positioning of torque adapter is necessary to prevent jamming against ammunition racks.

**NOTE**

It may be necessary to use pipe extension.

7. Position assembled hatch torque adapter (C) with 7/8 inch socket on anchor nut (J).



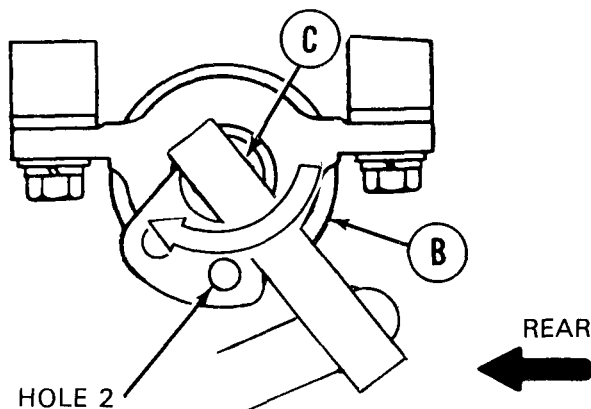
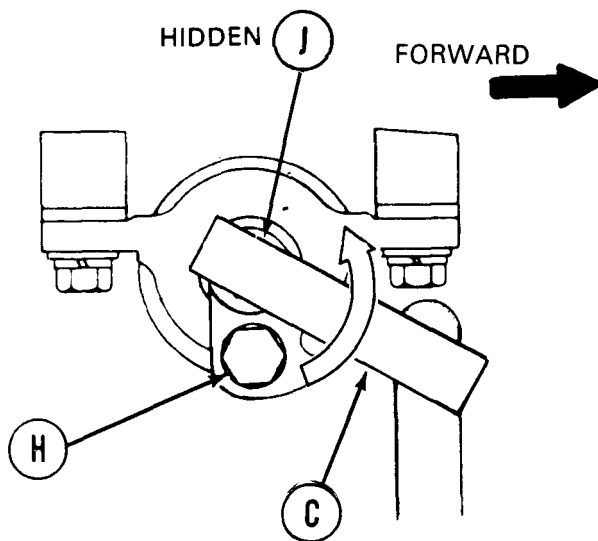
Go on to Sheet 3

DRIVER'S HATCH TORSION BAR ANCHOR ADJUSTMENT (Sheet 3 of 6)

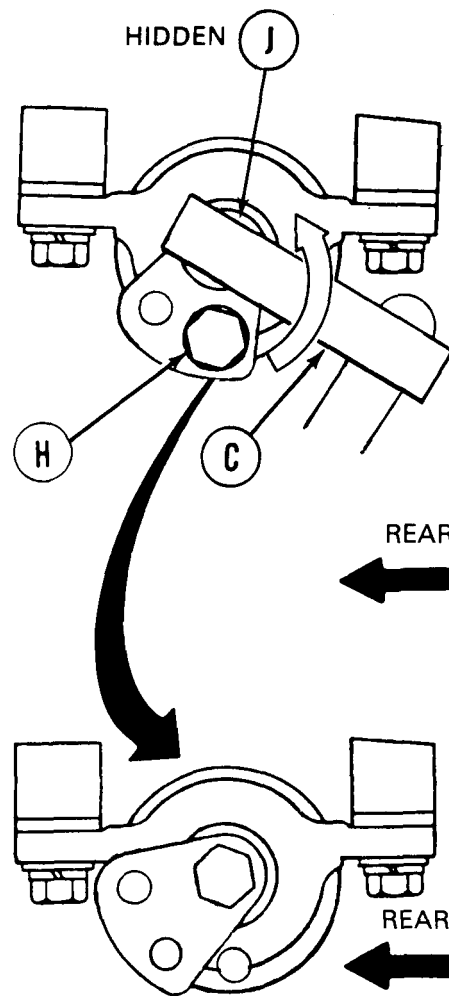
**WARNING**

When screw (H) is removed in step 9, there will be a sudden backward pull on hatch torque adapter of 206 lb-ft (279 N.m). Care must be taken not to let wrench slip from hands or injury to personnel could result.

8. Using hatch torque adapter (C), apply forward pressure on anchor nut (J).
9. Person in turret, using 3/4 inch wrench, remove screw and lockwasher (H).



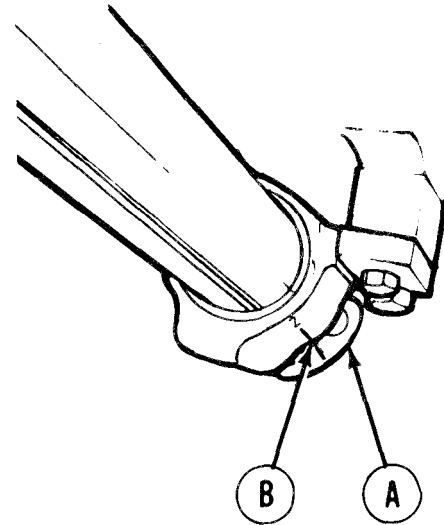
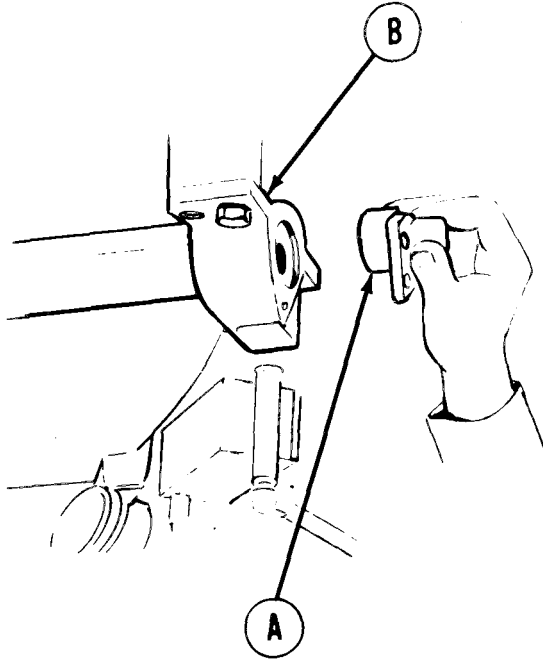
10. Let hatch torque adapter (C) move to rear approximately 1/8 of a turn or until hole 2 is alined with hole in end housing (B).
11. Person in turret, using 3/4 inch wrench, install screw and lockwasher (H) in second hole.
12. Reposition hatch torque adapter (C). Apply forward pressure on anchor nut (J).
13. Person in turret, using 3/4 inch wrench, remove screw and lockwasher (H). Throw lockwasher away.
14. Let hatch torque adapter (C) move to rear until all torque has been released (approximately another 1/8 of a turn).
15. Remove hatch torque adapter (C).



Go on to Sheet 4

**DRIVER'S HATCH TORSION BAR ANCHOR ADJUSTMENT (Sheet 4 of 6)**

16. Using pencil, make second mark, showing anchor (A) to housing (B) position, for purpose of installation without adjustment.



17. Remove anchor (A) from right end of housing (B).

**NOTE**

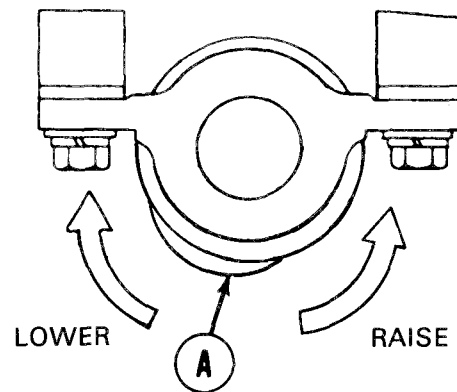
All rotations of anchor are viewed from driver's seat.

**NOTE**

If you need to raise hatch, go to step 18, then to step 20. If you need to lower hatch, go to step 19.

18. To raise hatch, rotate anchor (A) one spline tooth to right on torsion bar. Go to step 20.

19. To lower hatch, move anchor (A) to left spline tooth on torsion bar.

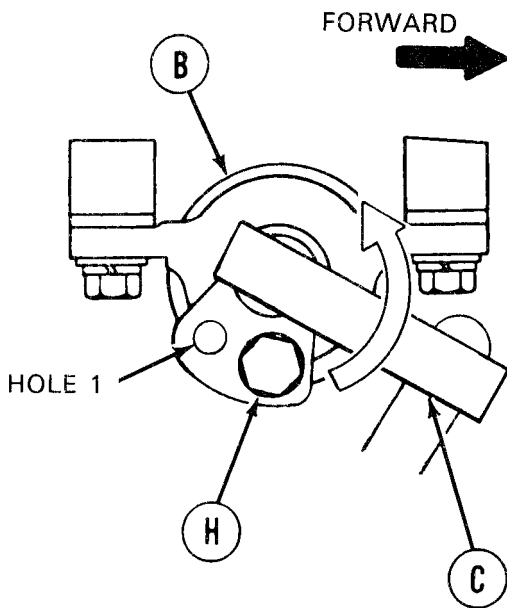
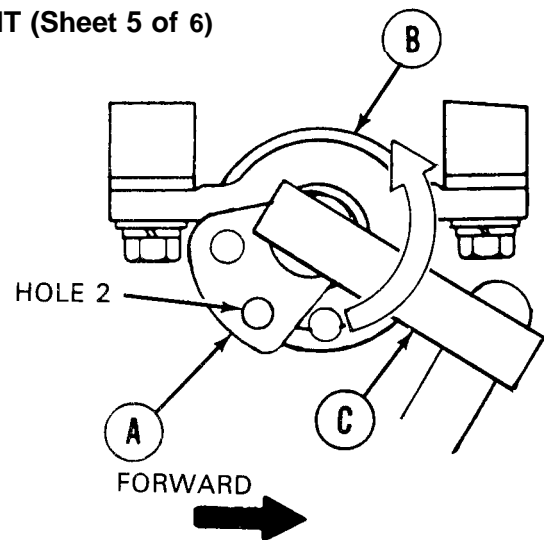


Go on to Sheet 5

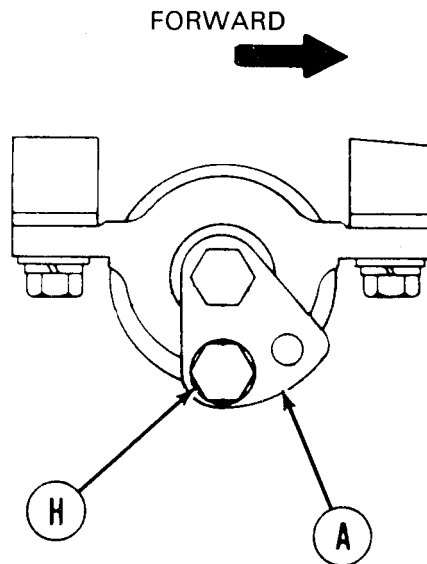
TA140703

DRIVER'S HATCH TORSION BAR ANCHOR ADJUSTMENT (Sheet 5 of 6)

- 20. Place hatch torque adapter (C) on anchor nut.
- 21. Person in driver's station, apply forward pressure on adapter (C).
- 22. Person in turret, using 3/4 inch wrench, install screw (H) when hole 2 is aligned with hole in end housing (B).



- 23. Reposition hatch torque adapter (C) and apply forward pressure.
- 24. Person in turret, using 3/4 inch wrench, remove screw (H).
- 25. Person in driver's station, apply enough forward pressure to align hole 1 with hole in end housing (B), thus aligning scribe mark made in step 2.

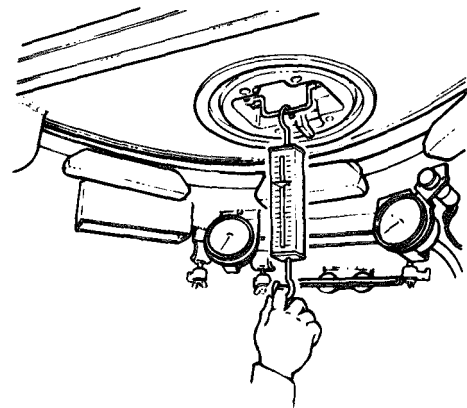
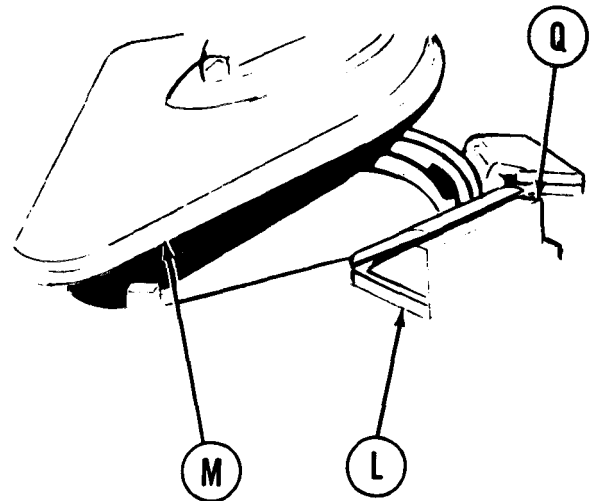


- 26. Person in turret, using 3/4 inch wrench, install screw and new lockwasher (H) securing anchor (A) in position.
- 27. Remove hatch torque adapter (C).

Go on to Sheet 6

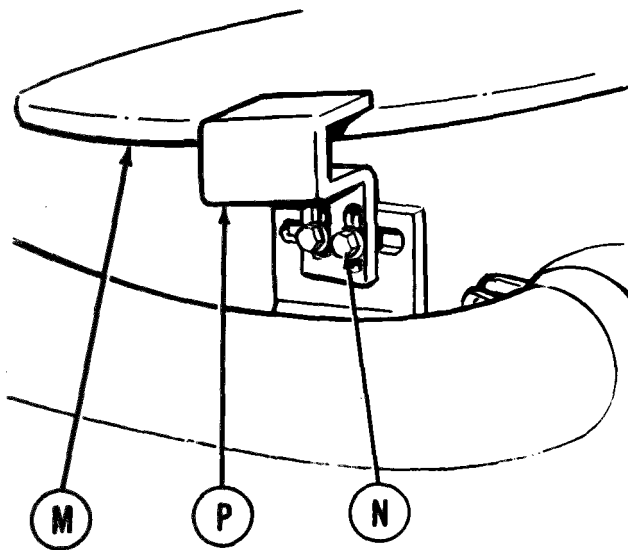
**DRIVER'S HATCH TORSION BAR ANCHOR ADJUSTMENT (Sheet 6 of 6)**

28. Install M27 periscope in right periscope cavity (L) (TM 9-2350-222-10).
29. Open driver's hatch (M) and check for clearance between hatch (M) and periscope (Q).
30. Attach pull scale to driver's hatch periscope handle as shown and pull down. If load pounds required to close hatch exceeds 50 pounds, repeat the adjustment from step 2 until 50 pounds or less is achieved, and proceed to step 31.



**NOTE**

If torsion bar is adjusted but hatch still needs to be lowered or raised, use setscrew adjustment (page 16-94).



31. Using 9/16 inch wrench, loosen two screws (N) on support bracket (P) outside of vehicle.
32. Adjust support bracket (P) centering driver's hatch (M) in support (P).
33. Using 9/16 inch wrench, tighten two screws (N).

End of Task

TA140705

## DRIVER'S HATCH SETSCREW ADJUSTMENT (Sheet 1 of 2)

TOOLS: Ratchet with 1/2 in. drive  
3/4 in. combination box and open end wrench  
9/16 in. combination box and open end wrench  
Offset, flat-tip screwdriver  
9/16 in. socket with 1/2 in. drive  
5 in. extension with 1/2 in. drive

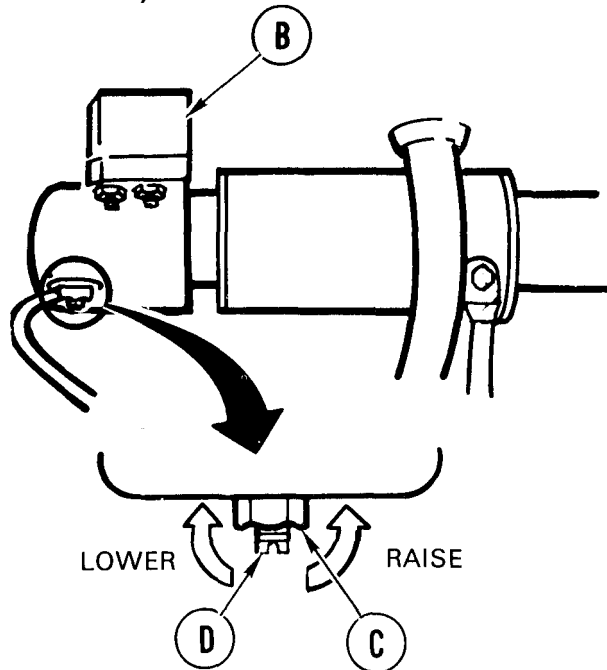
REFERENCE: TM 9-2350-222-10

### ADJUSTMENT:

1. Open driver's hatch (A).
2. Traverse turret placing gun tube over right or left center stowage box (TM 9-2350-222-10).

### NOTE

If proper adjustment cannot be made, refer to driver's hatch torsion bar adjustment (page 16-88).

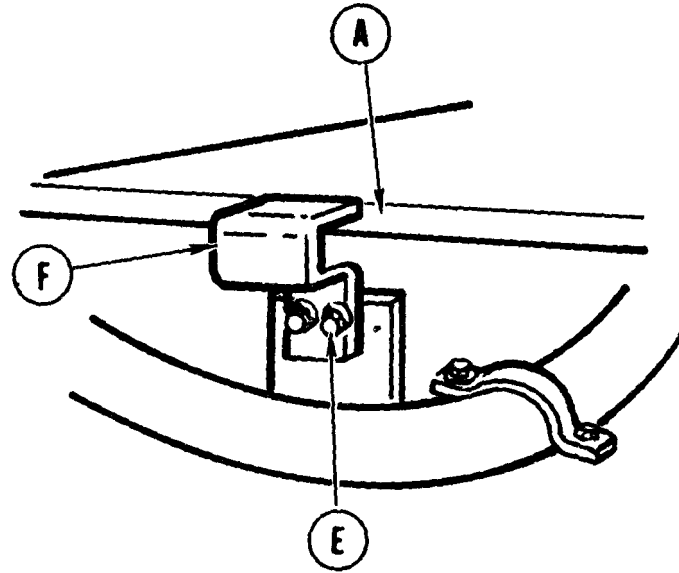


3. Locate left driver's hatch support housing (B).
4. Using 3/4 inch wrench, loosen jamnut (C).
5. Using screwdriver, turn setscrew (D) to right to raise hatch, or to left to lower hatch.
6. Slide driver's hatch all the way to left to make sure that it clears mounted M27 periscope.
7. Using 3/4 inch wrench, tighten jamnut (C).
8. Slide driver's hatch all the way to the right.

Go on to Sheet 2

TA140706

DRIVER'S HATCH SETSCREW ADJUSTMENT (Sheet 2 of 2)



9. Locate driver's hatch stowage bracket (E) on outside of vehicle.
10. Using 9/16 inch wrench and socket, loosen two screws (E) on stowage bracket (F).
11. Adjust driver's hatch stowage bracket (F) until driver's hatch (A) is centered in bracket.
12. Using 9/16 inch wrench and socket, tighten two screws (E).

End of Task

TA140707

DRIVER'S HATCH COVER ASSEMBLY REPLACEMENT (Sheet 1 of 4)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-97
Installation	16-99

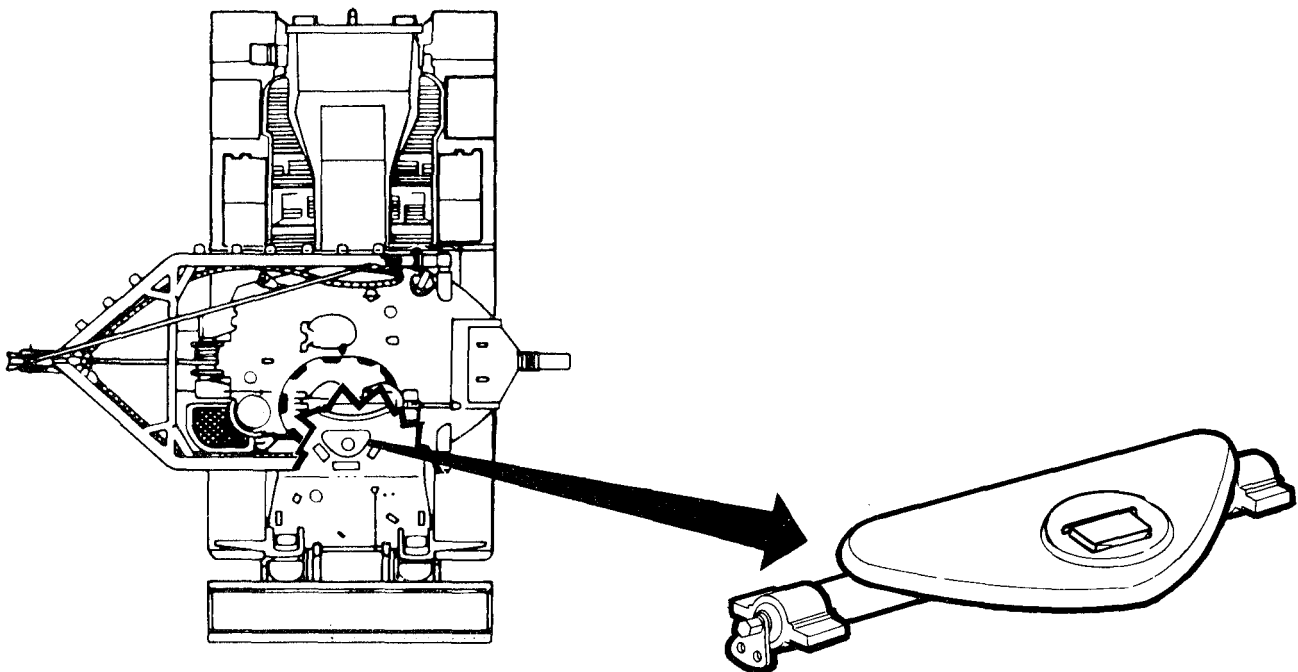
TOOLS: 3/4 in. socket with 1/2 in. drive  
Offset, flat-tip screwdriver  
3/4 in. combination box and open end wrench  
Ratchet with 1/2 in. drive  
3 in. extension with 1/2 in. drive

SUPPLIES: Rags (Item 65, Appendix D)  
Lockwasher (MS35338-67) (8 required)

PERSONNEL: Three

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURES: Close driver's hatch cover (TM 9-2350-222-10)  
Unwind torque on torsion bar (page 16-88, steps 1 thru 16)  
Traverse turret to place gun tube over right or left fender (TM 9-2350-222-10)



Go on to Sheet 2

TA140708



**DRIVER'S HATCH COVER ASSEMBLY REPLACEMENT (Sheet 2 of 4)**

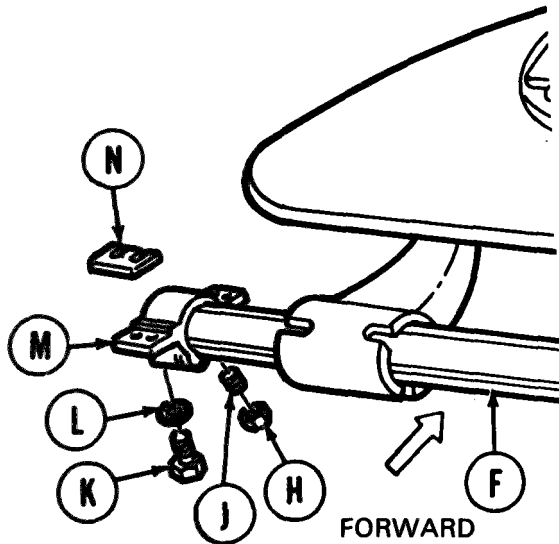
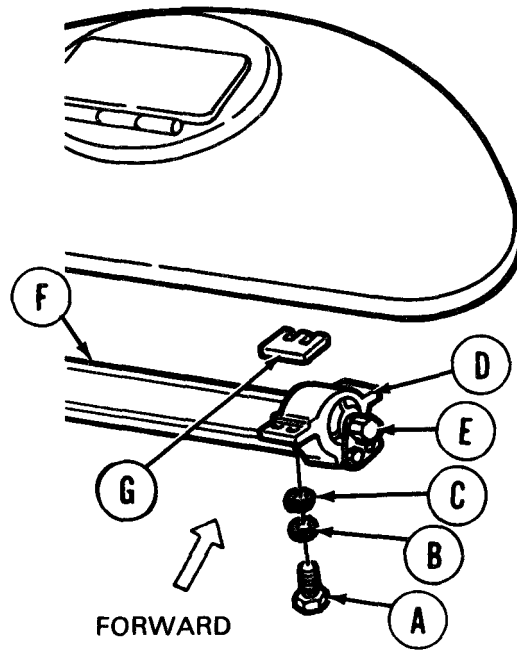
**REMOVAL:**

1. Using wrench, remove four screws (A), lockwashers (B), and flat washers (C) securing right end housing (D) to hull roof. Throw lockwashers away.
2. Remove end housing (D) and anchor (E) from driver's hatch shaft (F).

**NOTE**

**Shims (G) are located between right end housing and hull roof mounting brackets.**

3. Tag shims (G) RH to make sure they are returned to proper position.



4. Using wrench, loosen nut (H).
5. Using screwdriver, loosen setscrew (J) and nut (H).
6. Using wrench, remove four screws (K) and lockwashers (L) securing left end housing (M) to hull roof. Throw lockwashers away.

7. Remove left end housing (M) from driver's hatch shaft (F).

**NOTE**

**Shims (N) are located between left end housing and hull roof mounting bracket.**

8. Tag shims (N) LH to make sure they are returned to proper position.

Go on to Sheet 3

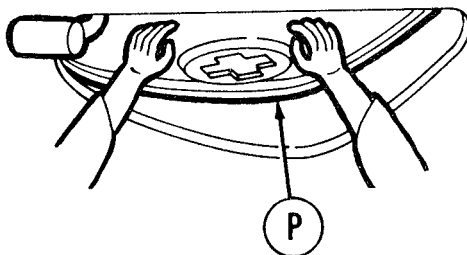
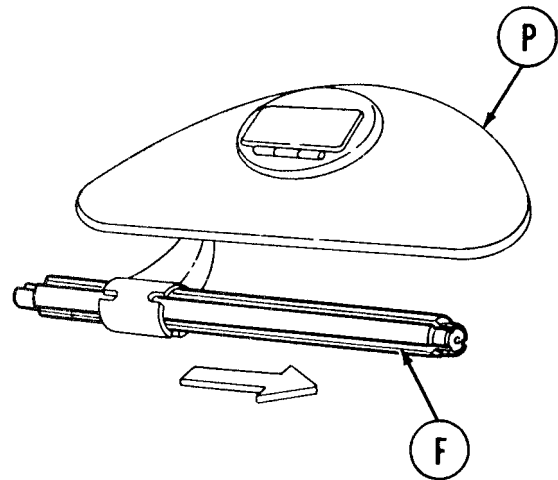
TA140709

DRIVER'S HATCH COVER ASSEMBLY REPLACEMENT (Sheet 3 of 4)

9. Remove driver's hatch shaft (F) by moving to right until shaft (F) clears hatch (P).

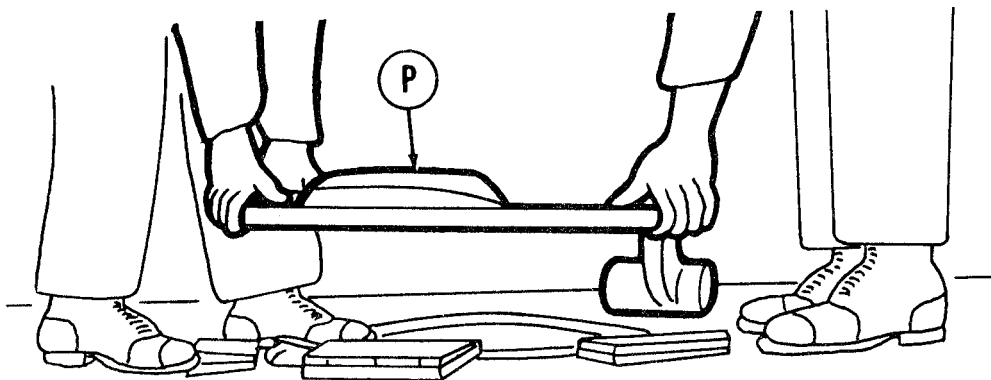
**WARNING**

Hatch weighs approximately 130 pounds. DO NOT TRY TO LIFT IT ALONE.



10. Position two persons on outside of vehicle, one on each side of hatch (P).
11. Push up on driver's hatch cover (P) until two persons can grasp hatch cover.

12. Using two persons, remove hatch cover (P) from vehicle.



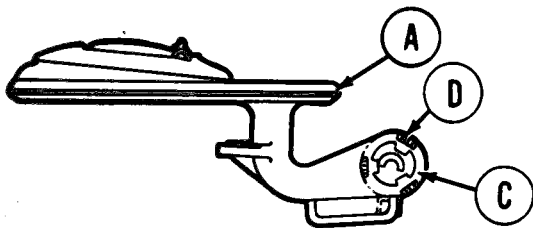
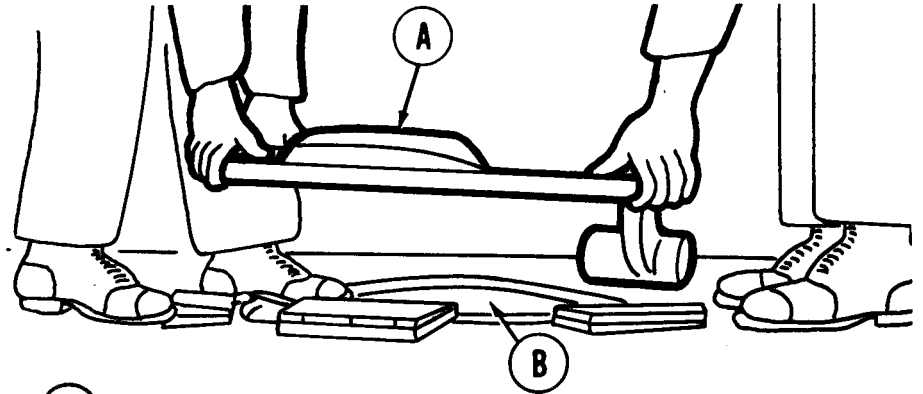
Go on to Sheet 4

TA140719

**DRIVER'S HATCH COVER ASSEMBLY REPLACEMENT (Sheet 4 of 4)**

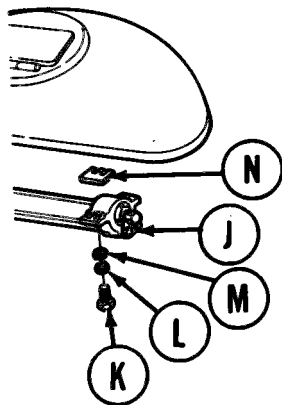
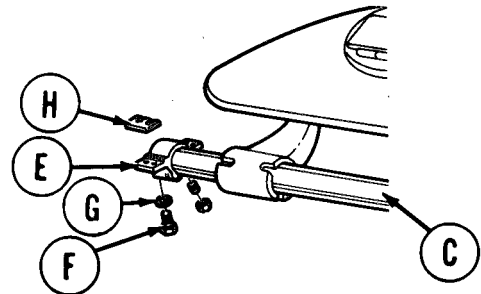
**INSTALLATION:**

1. Using rag, clean both hull and hatch cover sealing surfaces.
2. Using two persons, place driver's hatch cover (A) in position over hatch opening (B).



3. Lower hatch cover (A) until driver's hatch shaft (C) can be installed through driver's hatch mechanism (D).
4. Place hatch cover (A) in closed position, but do not lock.

5. Place left end housing (E) in position on end of driver's hatch shaft (C).
6. Using fingers, install four screws (F) and new lockwashers (G). Do not tighten.
7. Using shims (H), shim gap between hull roof and left end housing (E).



8. Place right end housing (J) in position on driver's hatch shaft (C).
9. Using fingers, install four screws (K); new lockwashers (L), and flat washers (M). Do not tighten.
10. Using shims (N), shim gap between hull roof and mounting bracket of right end housing (J).
11. Using wrench, tighten four screws on right end housing, then left end housing.

12. Wind torque on torsion bar (page 16-91, steps 18 thru 27).
13. Perform torsion bar adjustment (page 16-88).
14. Perform setscrew adjustment (page 16-94).

**End of Task**

TA140711

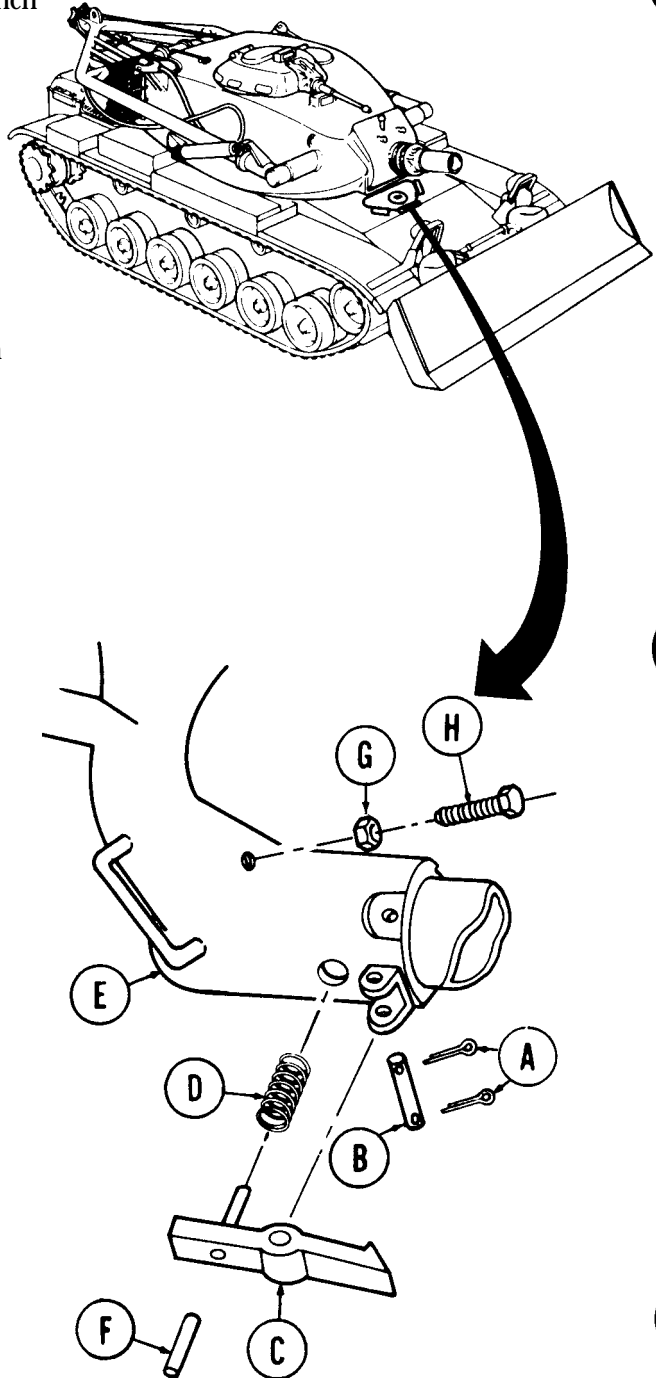
DRIVER'S HATCH LATCH (HOLD OPEN) AND STOP REPLACEMENT (Sheet 1 of 2)

TOOLS: Long round nose pliers  
 3/4 in. combination box and open end wrench  
 1/8 in. punch  
 Flat-tip screwdriver  
 1/2 in. combination box and open end wrench  
 Hammer  
 vise

SUPPLIES: Cotter pins (MS24665-132) (2 required)

REMOVAL:

1. Using screwdriver and pliers, remove cotter pins (A). Throw cotter pins away.
2. Using pliers, remove pin (B) while holding latch assembly (C).
3. Remove latch assembly (C) and spring (D) from hatch (E).
4. Using punch and hammer, drive pin (F) out of latch (C). If necessary, use vise.
5. Using 3/4 inch wrench, loosen nut (G) and, using 1/2 inch wrench, remove setscrew (H).
6. Remove nut (G) from setscrew (H).



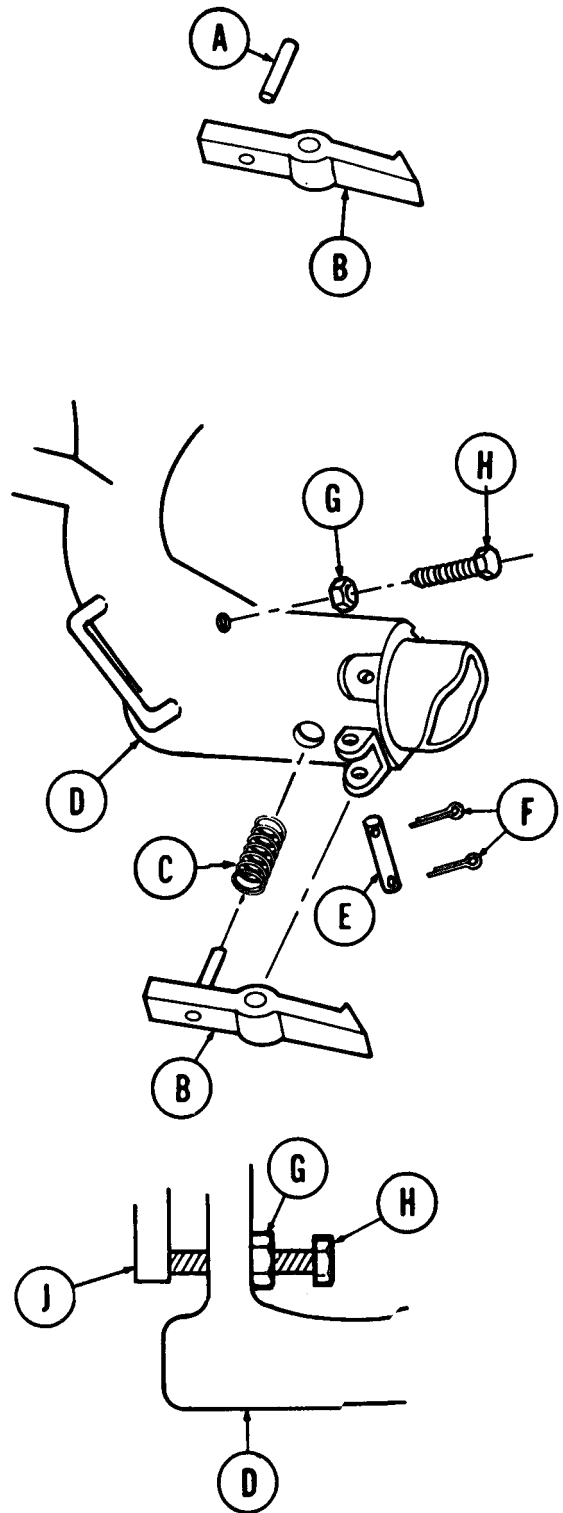
Go on to Sheet 2

TA140712

**DRIVER'S HATCH LATCH (HOLD OPEN) AND STOP REPLACEMENT (Sheet 2 of 2)**

INSTALLATION:

1. Using hammer, drive pin (A) into hole in latch (B).
2. Position latch assembly (B) and spring (C) between mounting ears of hatch (D) and insert pin (E).
3. Retain pin (E) with two new cotter pins (F). Spread legs of cotter pins.
4. Thread nut (G) onto setscrew (H) and, using 1/2 inch wrench, run setscrew (H) through hatch (D).



5. Carefully move hatch (D) to closed position.
6. Using 1/2 inch wrench, tighten setscrew (H) until it contacts block (J).
7. **Using 1/2 inch** wrench, hold setscrew (H) in position and, using 3/4 inch wrench, tighten nut (G) to secure setscrew (H).

End of Task

TA140713

**DRIVER'S HATCH ROLLERS AND WIPERS REPAIR (Sheet 1 of 3)**

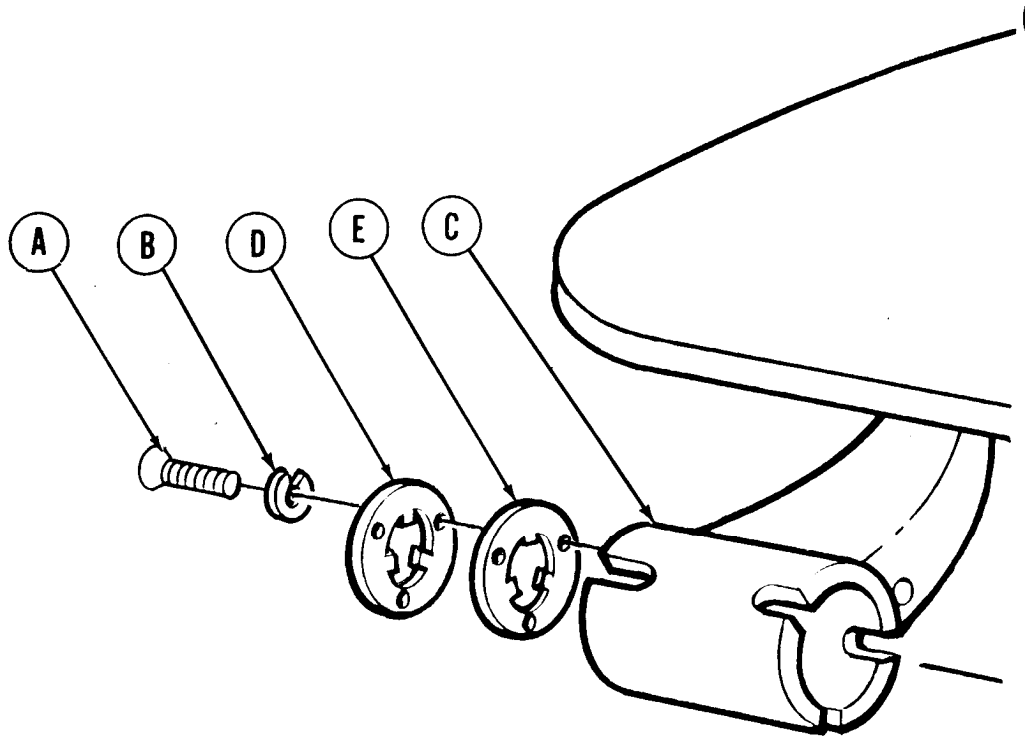
TOOLS: 1/2 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive  
Flat-tip offset screwdriver  
Flat-tip screwdriver

SUPPLIES: Crocus cloth (Item 14, Appendix D)  
Steel wool (Item 55, Appendix D)  
Lockwasher (MS35338-43) (6 required)  
Lockwasher (MS35338-45) (6 required)

PRELIMINARY PROCEDURE: Remove driver's hatch cover (page 16-97)

DISASSEMBLY:

1. Using flat-tip screwdriver, loosen and remove three screws (A) and three lockwashers (B) from each end of hatch cover arm (C). Throw lockwashers away.
2. Remove one retainer (D) and one wiper (E) from each end of hatch cover arm (C).



Go on to Sheet 2

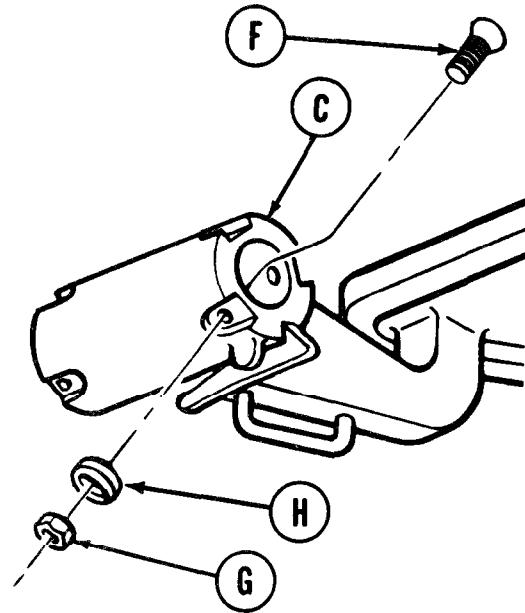
TA140714

**DRIVER'S HATCH ROLLERS AND WIPERS REPAIR (Sheet 2 of 3)**

3. Insert offset screwdriver in open ends of hatch cover arm (C) and hold screwdriver into grooved head of rollers (F).
4. Using 1/2 inch socket, remove three nuts (G) and lockwashers (H) from each end of arm (C). Throw lockwashers away.
5. Remove offset screwdriver and remove three rollers (F) from each end of arm (C).

**CLEANING AND INSPECTION:**

1. Visually inspect parts for damage or wear. All damaged or worn parts must be replaced.
2. Visually inspect parts for corrosion. Corroded parts which cannot be cleaned with crocus cloth (Item 14, Appendix D) or steel wool (Item 55, Appendix D) must be replaced.



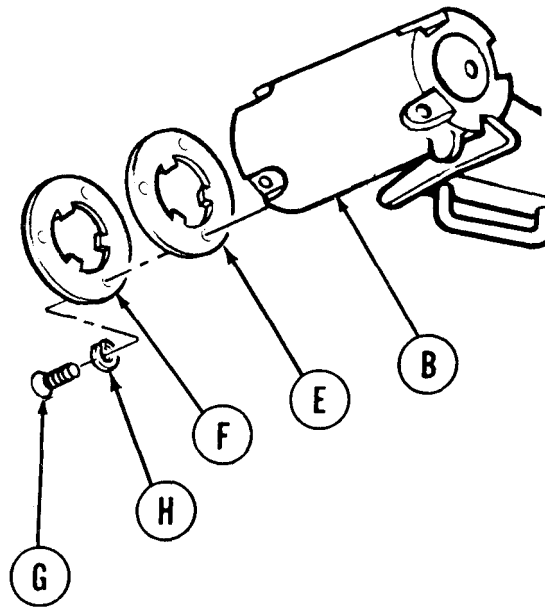
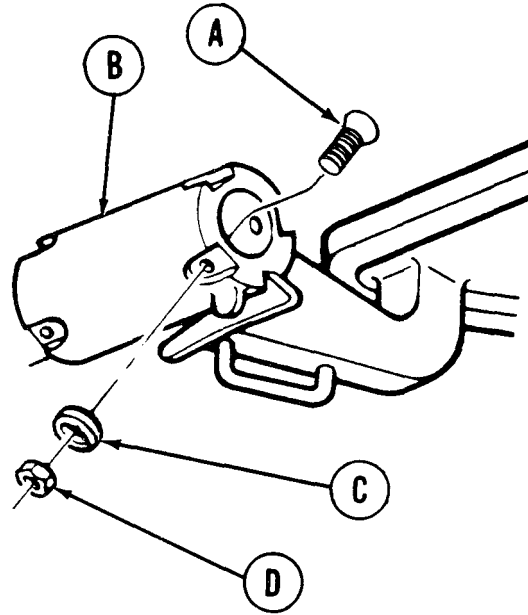
**Go on to Sheet 3**

TA140715

DRIVER'S HATCH ROLLERS AND WIPERS REPAIR (Sheet 3 of 3)

ASSEMBLY:

1. Place three rollers (A) in openings on inside of arm (B) at each end.
2. Attach three new lockwashers (C) and three nuts (D) to threaded ends of rollers (A) extending through openings at each end of arm (B).
3. Insert offset screwdriver in open ends of arm (B) and hold screwdriver to grooved head of rollers (A).
4. Using 1/2 inch socket, tighten three nuts (D) at each end of arm (B).
5. Insert one wiper (E) with one retainer (F) in each end of arm (B).
6. Position wipers (E) with retainers (F) to align with screw mounting holes at each end of arm (B).
7. Using flat-tip screwdriver, install and tighten three screws (G) with new lockwashers (H).
8. Install driver's hatch cover (page 16-99).



End of Task

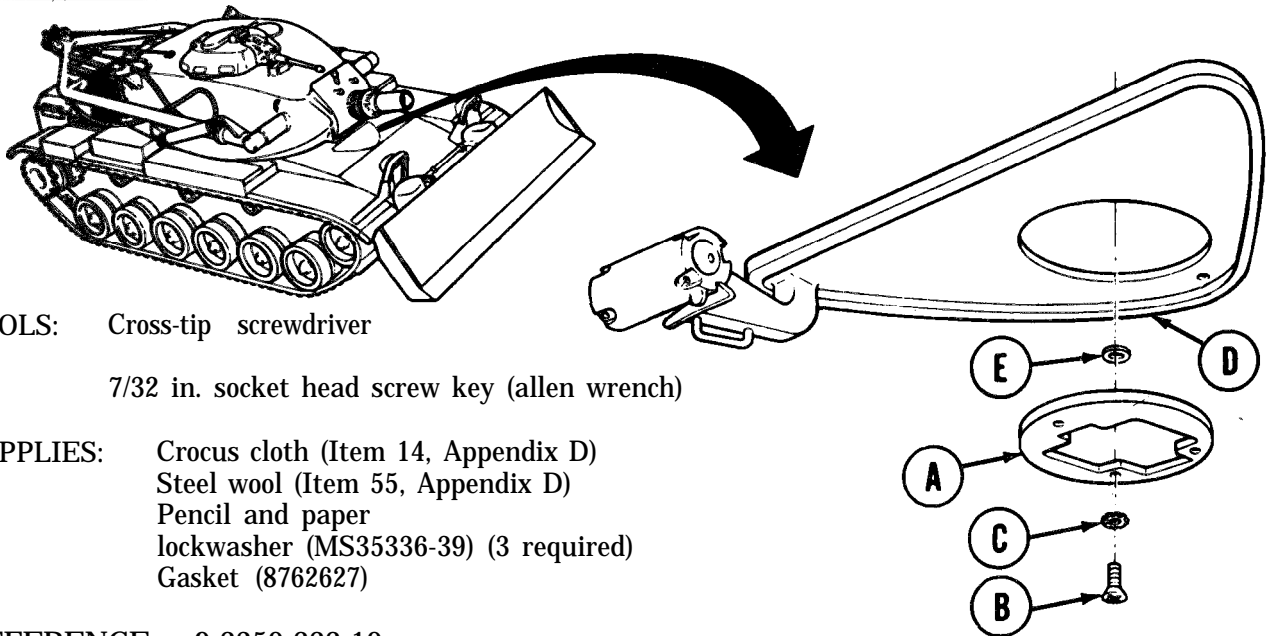
TA140716



## DRIVER'S HATCH MOUNT AND GASKET (M24 IR PERISCOPE) REPAIR (Sheet 1 of 5)

## PROCEDURE INDEX

PROCEDURE	PAGE
Dissassembly	16-105
Cleaning and Inspection	16-107
Assembly	16-107



TOOLS: Cross-tip screwdriver

7/32 in. socket head screw key (allen wrench)

SUPPLIES: Crocus cloth (Item 14, Appendix D)  
Steel wool (Item 55, Appendix D)  
Pencil and paper  
lockwasher (MS35336-39) (3 required)  
Gasket (8762627)

REFERENCE: 9-2350-222-10

PRELIMINARY PROCEDURE: Close driver's hatch (TM 9-2350-222-10)

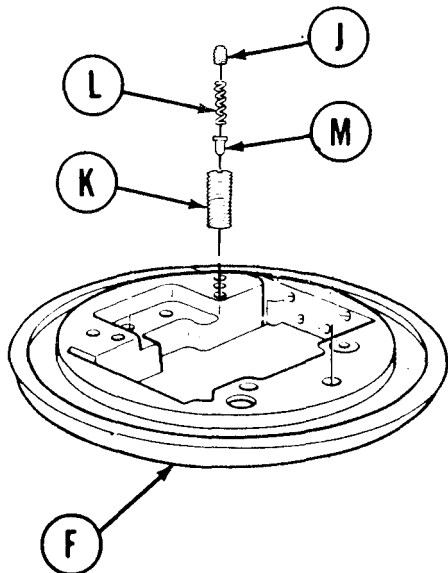
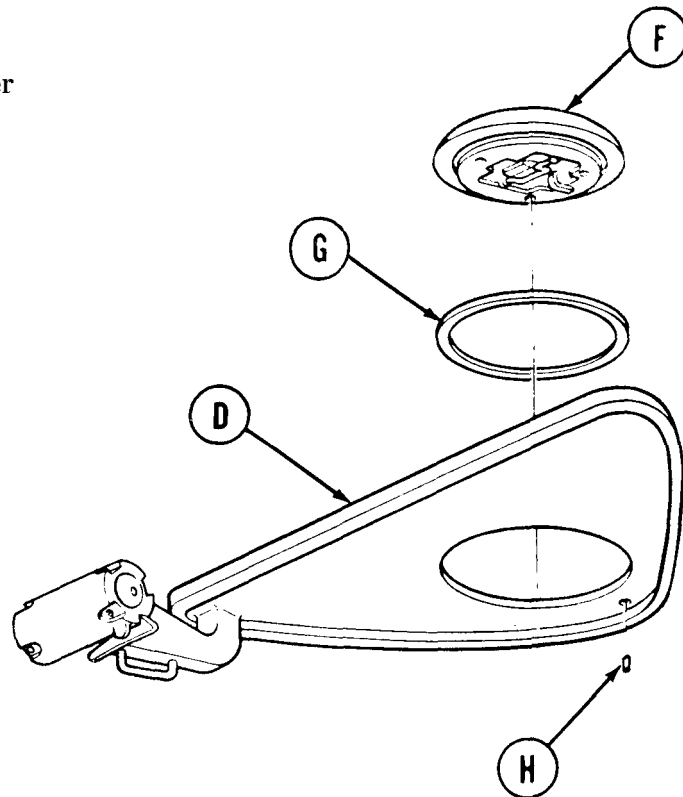
1. Firmly support mounting plate (A) in position with one hand.
2. With other hand, use screwdriver to remove three screws (B) and three lockwashers (C) from lower side of plate (A). Throw lockwashers away.
3. with both hands firmly supporting mounting plate (A), lower mounting plate from hatch cover (D).
4. Remove shims (E) from upper side of plate (A). Note number of shims positioned at each location for reassembly purposes.

Go on to Sheet :

TA253591

■ DRIVER'S HATCH MOUNT AND GASKET (M24 IR PERISCOPE) REPAIR (Sheet 2 of 5)

5. Push up mount (F) and separate from hatch cover (D). Place mount on top of hatch cover.
6. Remove gasket (G) from top of hatch cover (D). Throw gasket away.
7. Using hammer and punch, remove one mounting plate alining pin (H) from base of hatch cover (D).



8. Remove mount (F) from vehicle.
9. Using allen wrench, remove two screws (J).
10. Using screwdriver, remove two friction catches (K), springs (L), and plungers (M) from mount (F) side.
11. Remove springs (L) and plungers (M) from friction catches (K).

Go on to Sheet 3

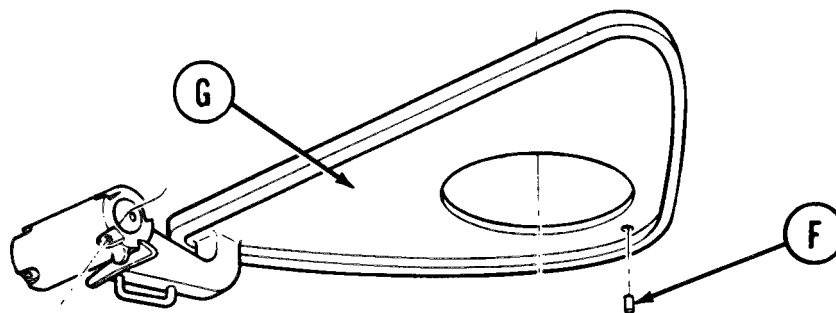
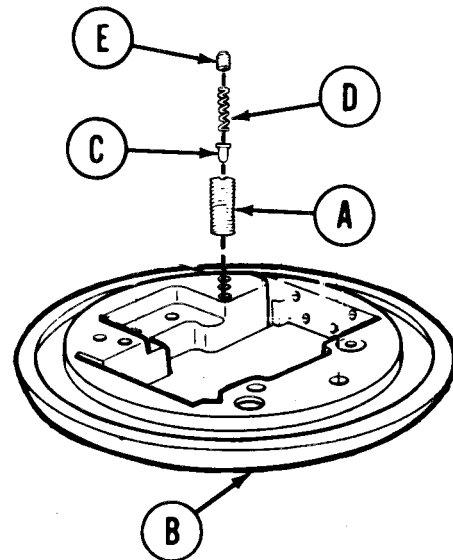
TA253592

**DRIVER'S HATCH MOUNT AND GASKET (M24 IR PERISCOPE) REPAIR (Sheet 3 of 5)****CLEANING AND INSPECTION:**

1. Visually inspect all parts for damage or wear. All damaged or worn parts must be replaced.
2. Visually inspect all parts for corrosion. Corroded metallic parts which cannot be cleaned with crocus cloth (Item 14, Appendix D) or steel wool (Item 55, Appendix D) must be replaced.

**ASSEMBLY:**

1. Using screwdriver, install two friction catches (A) into mount (B).
2. Install plungers (C) and springs (D) into two friction catches (A).
3. Using allen wrench, install screws (E) into friction catches (A).
4. Using hammer, drive alining pin (F) into place on underside of hatch cover (G).



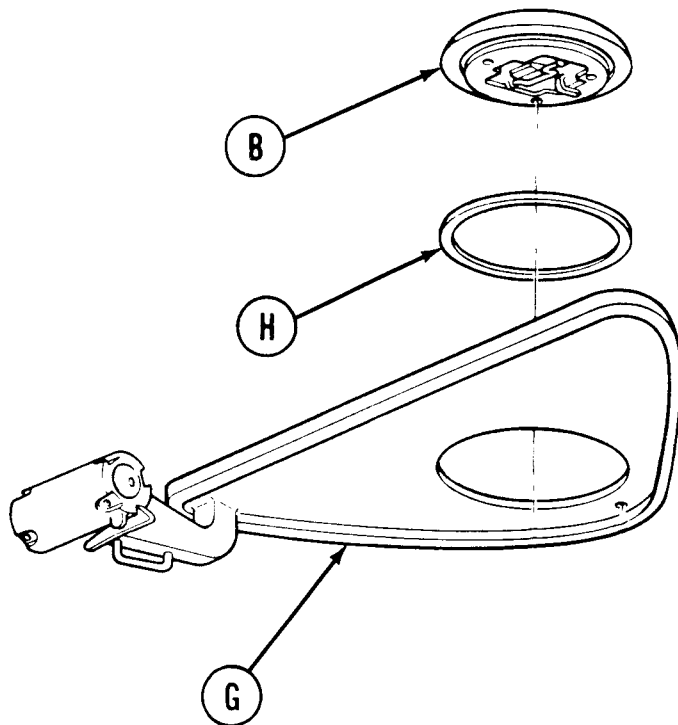
Go on to Sheet 4

TA253593

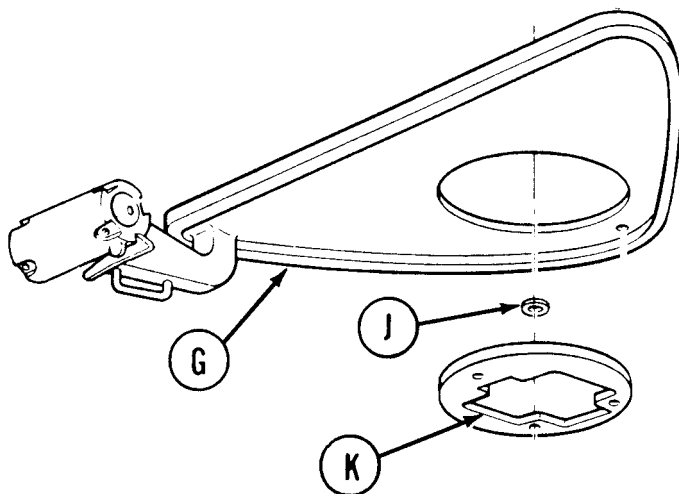
Change 1 16-107

■ DRIVER'S HATCH MOUNT AND GASKET (M24 IR PERISCOPE) REPAIR (Sheet 4 of 5)

5. Place new gasket (H) on hatch cover (G) at mount opening.
6. Place mount (B) on gasket (H) as positioned on hatch cover (G).



7. Position shims (J) on top of plate (K) in exact order as removed.
8. Raise plate (K) with shims (J) to align plate to mount (B).

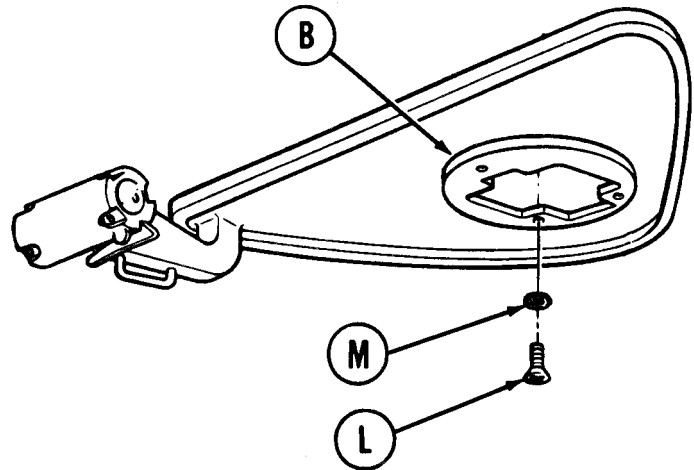


Go on to Sheet 5

TA253594

**DRIVER'S HATCH MOUNT AND GASKET (M24 IR PERISCOPE) REPAIR (Sheet 5 of 5)**

9. Hold plate (B) in aligned position and install three screws (L) and new lockwashers (M) to mount.
10. Using screwdriver, thighten screws (L).



**End of Task**

**DRIVER'S HATCH MOUNT LID REPLACEMENT (M24 IR PERISCOPE) (Sheet 1 of 3)**

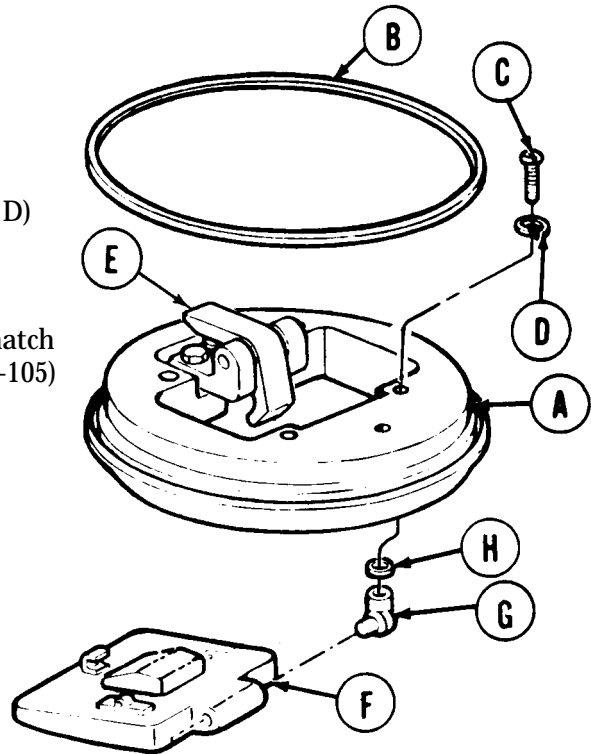
**TOOLS:** Cross-tip screwdriver  
Putty knife

**SUPPLIES:** Pencil  
Paper  
Adhesive (Item 2, Appendix D)  
Crocus cloth (Item 14, Appendix D)  
Steel wool (Item 55, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)  
Lockwashers (MS35336-38) (2 required)  
Lid seal (8697985)

**PRELIMINARY PROCEDURE:** Remove driver's hatch mount (page 16-105)

**REMOVAL:**

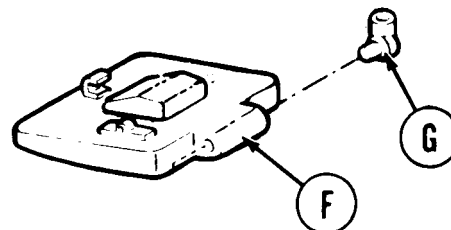
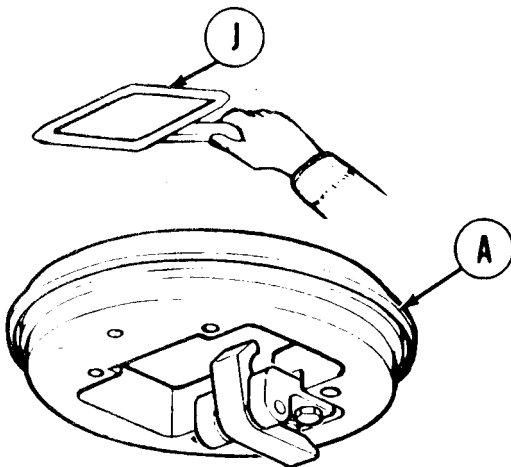
1. Position mount (A) bottom side up on bench.
2. Remove seal (B).
3. Using screwdriver, remove two screws (C) and lockwashers (D) from mount (A). Throw lockwashers (D) away.
4. Press latch (E) to free lid (F).
5. Position mount (A) top side up on bench.



**NOTE**

**Note quantity and location of spacers removed at disassembly for correct lid alignment at reassembly.**

6. Remove lid (F), two hinges (G), and spacers (H) from mount (A).
7. Separate two hinges (G) from lid (F).
8. Using putty knife, remove lid seal (J). Throw seal away.



Go on to Sheet 2

TA253596

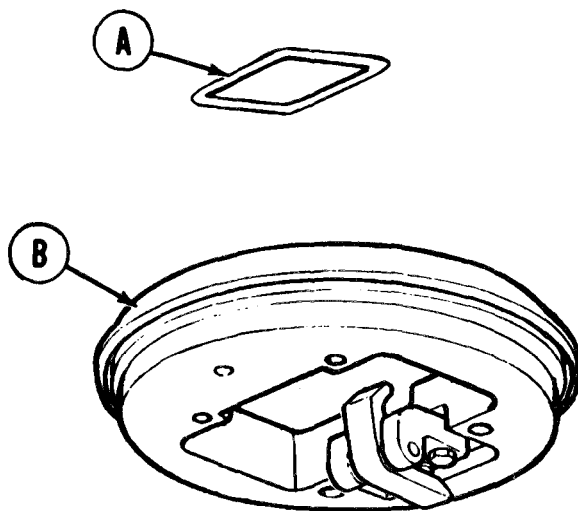
**DRIVER'S HATCH MOUNT LID REPLACEMENT (M24 IR PERISCOPE) (Sheet 2 of 3)****CLEANING AND INSPECTION:**

1. Visually inspect all parts for cracks. All cracked parts must be replaced.
2. Visually inspect all parts for mechanical damage or wear. All damaged or worn parts must be replaced.
3. Visually inspect all parts for corrosion. Corroded parts which cannot be cleaned with crocus cloth (Item 14, Appendix D) or steel wool (Item 55, Appendix D) must be replaced.
4. Using putty knife, remove paint and other debris from lid seal mounting surface.
5. Clean mounting surface with clean cloth soaked in dry cleaning solvent (Item 54, Appendix D).

**INSTALLATION:****NOTE**

**Minimum room temperature for bonding is 65°F. Do not use tape to hold parts in place.**

1. Apply thin coat of adhesive (Item 2, Appendix D) to lid seal groove.
2. Allow adhesive to set for 15 minutes.
3. Join new lid seal (A) to groove in mount (B).



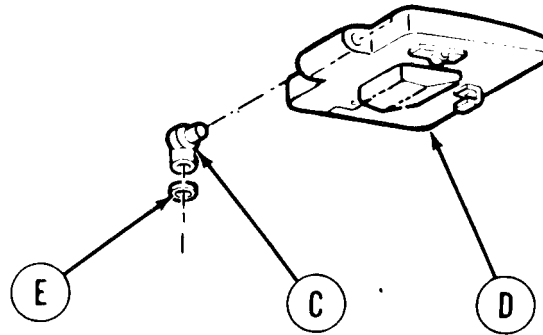
**Go on to Sheet 3**

**TA253597**

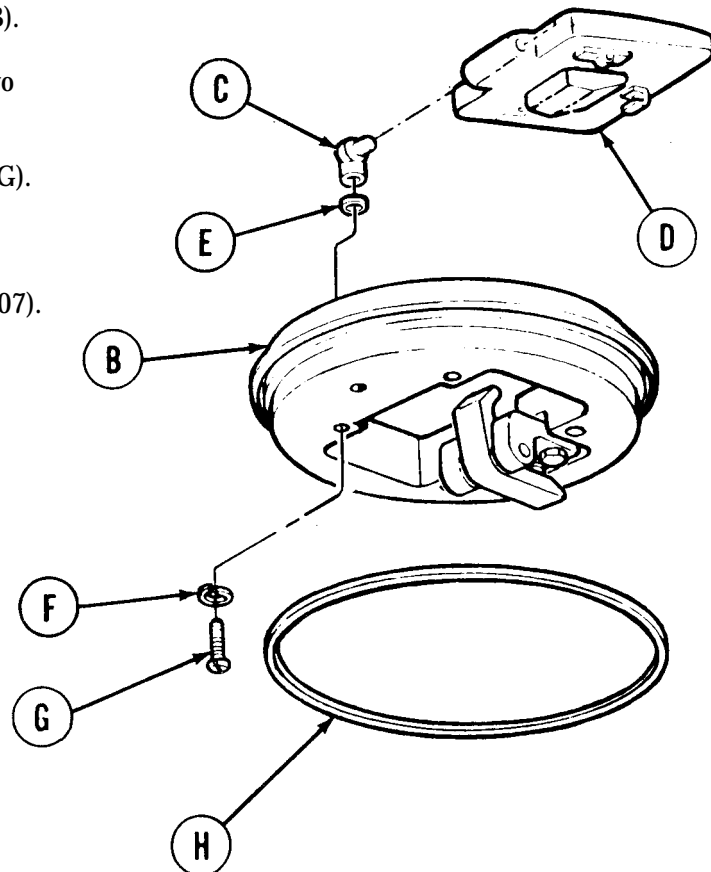
**Change 1 16-111**

**DRIVER'S HATCH MOUNT LID REPLACEMENT (M24 IR PERISCOPE) (Sheet 3 of 3)**

4. Position two hinges (C) into lid (D).
5. Position spacers (E) on mount in same order as at disassembly.



6. Position lid (D) with attached hinges (C) and spacers (E) on top side of mount (B).
7. Place two new lockwashers (F) onto two screws (G).
8. Using screwdriver, install two screws (G).
9. Press seal (H) in groove of mount (B).
10. Install driver's hatch mount (page 16-107).



End of Task

TA253598



**DRIVER'S HATCH MOUNT LID ASSEMBLY REPAIR (M24 IR PERISCOPE) (Sheet 1 of 3)**

**TOOLS:** 1/2 in. portable electric drill  
 Cross-tip screwdriver  
 vise  
 Welding equipment  
 1/2 in. drill bit  
 Electric grinder

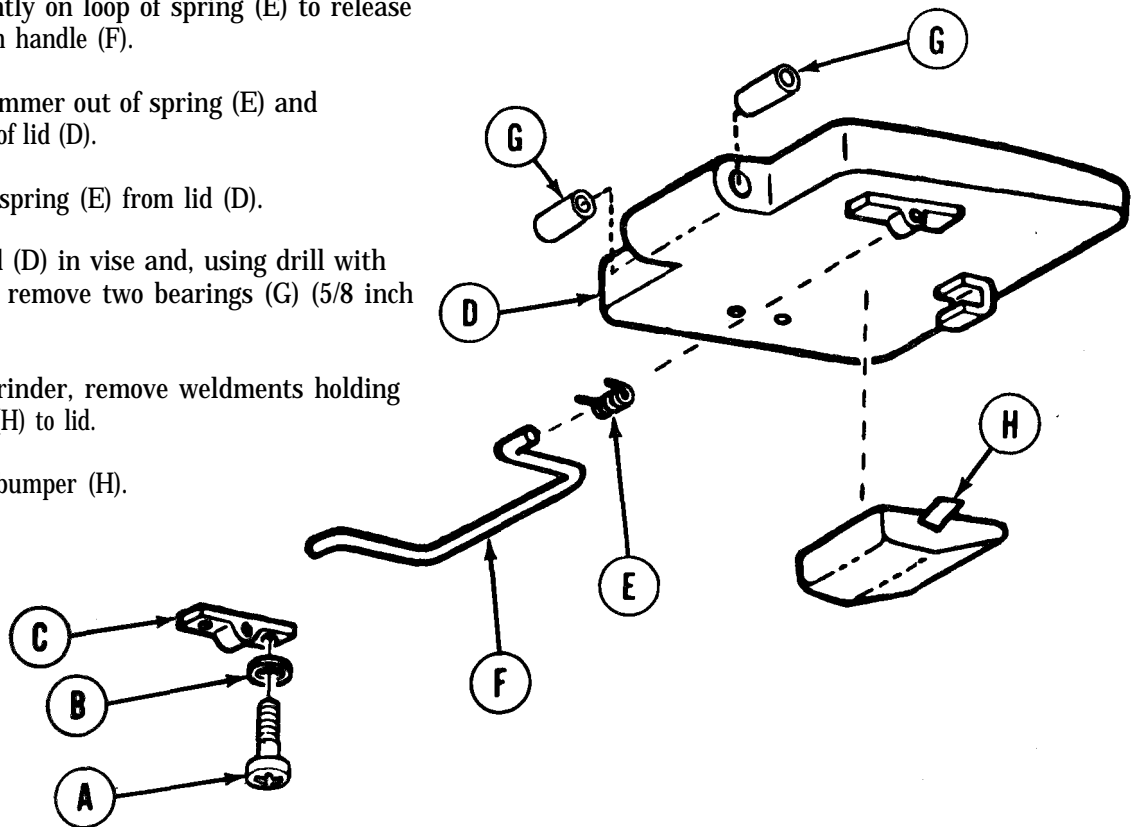
**SUPPLIES:** Dry cleaning solvent (Item 54, Appendix D)  
 Steel wool (Item 55, Appendix D)  
 Asbestos (Item 9, Appendix D)  
 Water  
 Lockwasher (MS35335-33) (2 required)

**REFERENCE:** TM 9-237

**PRELIMINARY PROCEDURE:** Remove lid assembly from mount (page 16-110)

**DISASSEMBLY:**

1. Using screwdriver, remove two screws (A), lockwashers (B), and strap (C) from lid (D). Throw lockwashers away.
2. Pull lightly on loop of spring (E) to release loop from handle (F).
3. Slide hammer out of spring (E) and retainer of lid (D).
4. Remove spring (E) from lid (D).
5. Place lid (D) in vise and, using drill with drill bit, remove two bearings (G) (5/8 inch deep).
6. Using grinder, remove weldments holding bumper (H) to lid.
7. Remove bumper (H).



Go on to Sheet 2

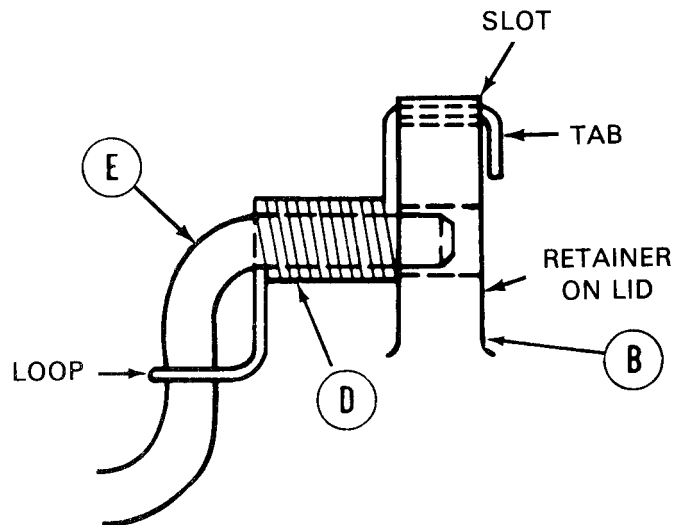
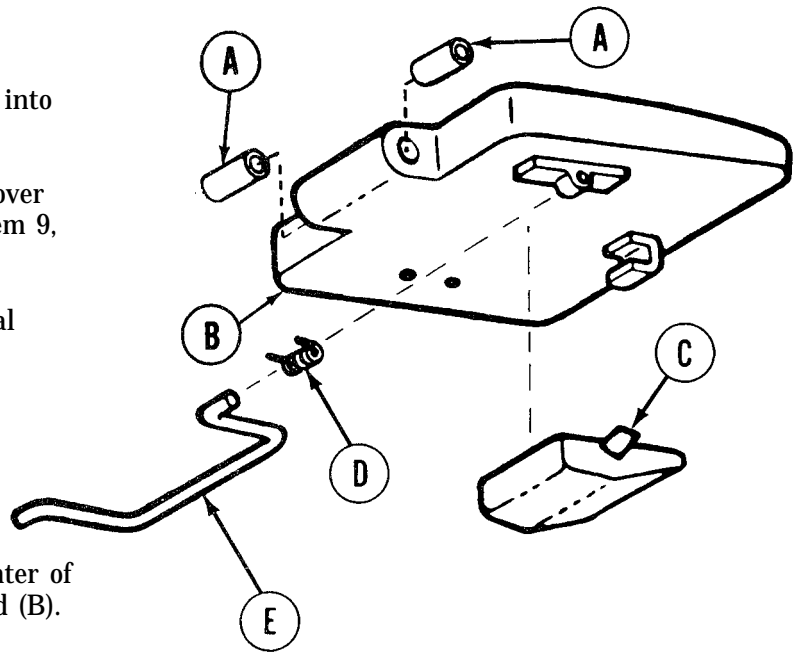
TA253599

**DRIVER'S HATCH MOUNT LID ASSEMBLY REPAIR (M24 IR PERISCOPE) (Sheet 2 of 3)**

**CLEANING AND INSPECTION:**

1. Clean all parts using dry cleaning solvent (Item 54, Appendix D) and steel wool (Item 55, Appendix D).
2. Inspect all parts for damage or wear. Replace all unserviceable parts.

1. Using vise, squeeze two bearings (A) into lid (B).
2. Position bumper (C) on lid (B) and cover rubber portion with wet asbestos (Item 9, Appendix D).
3. Using welding equipment, weld metal tongs of bumper (C) to lid (B).
4. Remove asbestos from bumper (C).
5. Position tab of spring (D) in slot of retainer of lid (B).
6. Insert end of handle (E) through center of spring (D) into hole in retainer on lid (B).
7. Pull loop end of spring (D) beyond handle (E) and release spring over handle to allow spring to hold handle against lid (B).

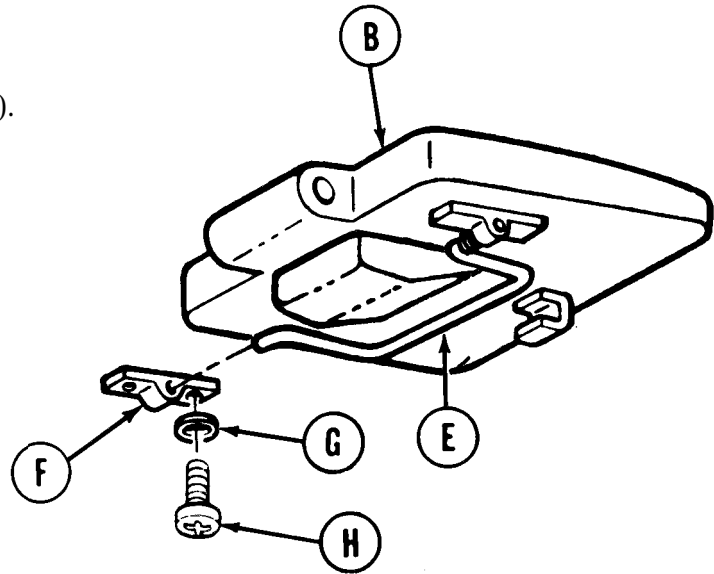


Go on to Sheet 3

TA253600

## DRIVER'S HATCH MOUNT LID ASSEMBLY REPAIR (M24 IR PERISCOPE) (Sheet 3 of 3)

8. Position other end of handle (E) in recess of lid (B).
9. Position strap (F) on lid (B).
10. Place two new lockwashers (G) on two screws (H).
11. Using screwdriver, install two screws (H).
12. Install lid assembly (page 16-111).



**End of Task**

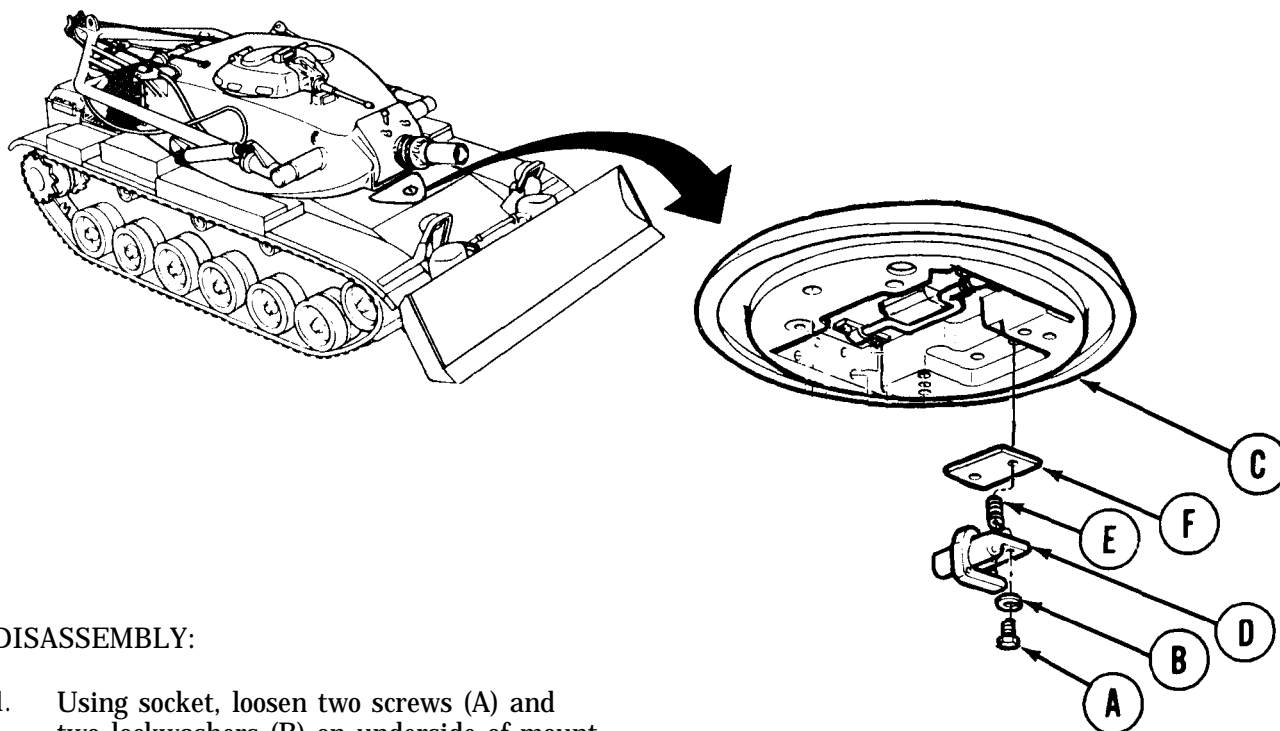
■ DRIVER'S HATCH MOUNT LID LATCH REPAIR (M24 IR PERISCOPE) (Sheet 1 of 2)

TOOLS: 6 in. extension with 1/2 in. drive  
7/16 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

SUPPLIES: Crocus cloth (Item 14, Appendix D)  
Steel wool (Item 55, Appendix D)  
Lockwasher (MS35338-46) (2 required)

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Close driver's hatch (TM 9-2350-222-10)



DISASSEMBLY:

1. Using socket, loosen two screws (A) and two lockwashers (B) on underside of mount (C) at latch (D).
2. Supporting latch (D) with one hand, remove two screws (A) and two lockwashers (B). Throw lockwashers away.
3. Lower latch (D) from mount (C) together with latch spring (E) and spacer shim (F).
4. With latch (D) removed from mount (C), separate latch from shim (F) and remove spring (E).

Go on to Sheet 2

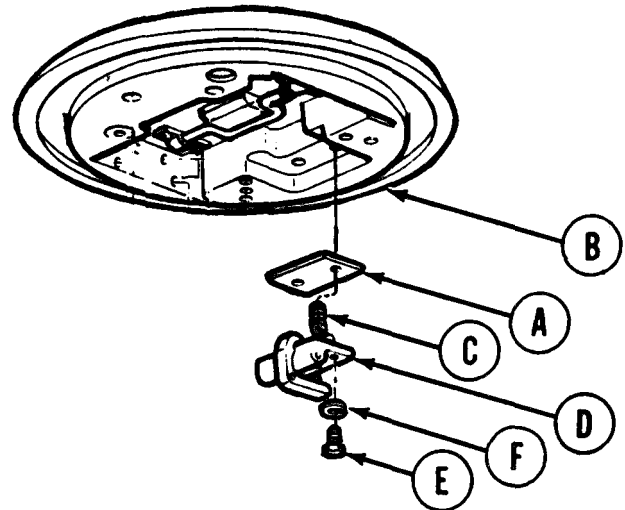
TA253602

**DRIVER'S HATCH MOUNT LID LATCH REPAIR (M24 IR PERISCOPE) (Sheet 2 of 2)****CLEANING AND INSPECTION:**

1. Visually inspect all parts for damage or wear. All damaged or worn parts must be replaced.
2. Visually inspect all parts for corrosion. All corroded parts which cannot be cleaned with crocus cloth (Item 14, Appendix D) or steel wool (Item 55, Appendix D) must be replaced.

**ASSEMBLY:**

1. Position and hold spacer shim (A) to underside of mount (B).
2. Install spring (C) in seat on latch (D).
3. Place latch (D) and spring (C) in position against shim (A).
4. Position latch (D) in line with screw attaching holes and hold in place.
5. Manually install two screws (E) with two new lockwashers (F) through latch (D) and shim (A) into mount (B).
6. Using soket, tighten screws (E).



End of Task

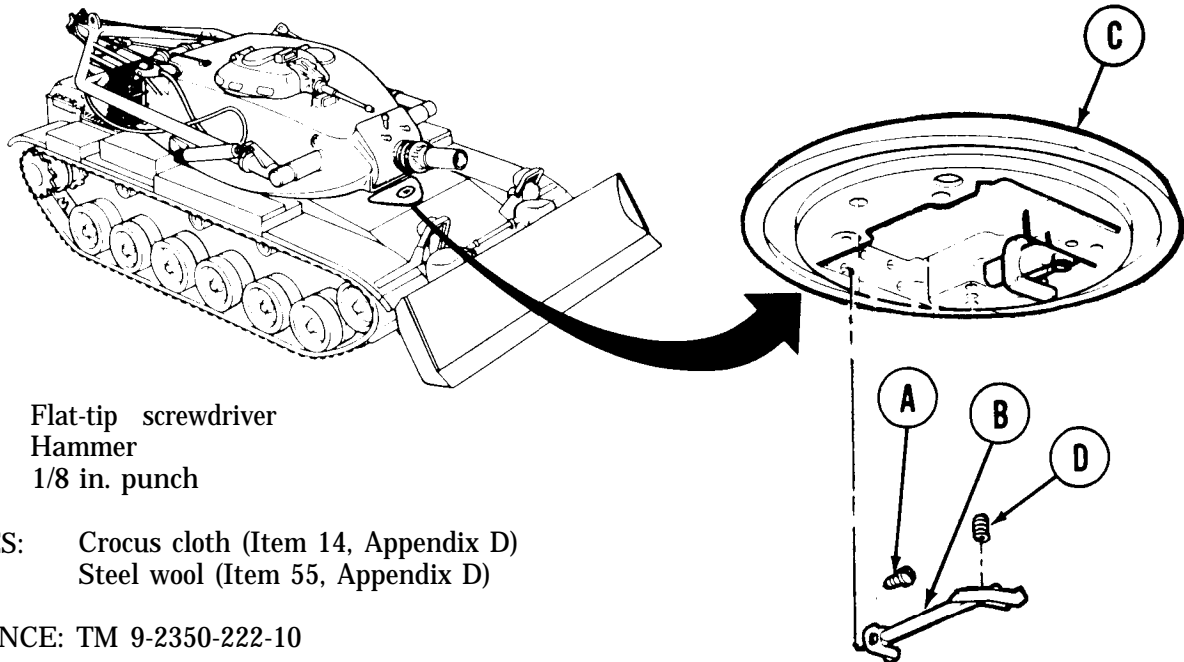
TA253603

Change 116-117

**DRIVER'S HATCH MOUNT PERISCOPE RETAINER REPAIR (M24 IR PERISCOPE) (Sheet 1 of 4)**

PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	16-118
Cleaning and Inspection	16-119
Assembly	16-120



**TOOLS:** Flat-tip screwdriver  
 Hammer  
 1/8 in. punch

**SUPPLIES:** Crocus cloth (Item 14, Appendix D)  
 Steel wool (Item 55, Appendix D)

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Disassemble driver's hatch mount (page 16-105)  
 Remove driver's hatch mount lid (page 16-110)

**DISASSEMBLY:**

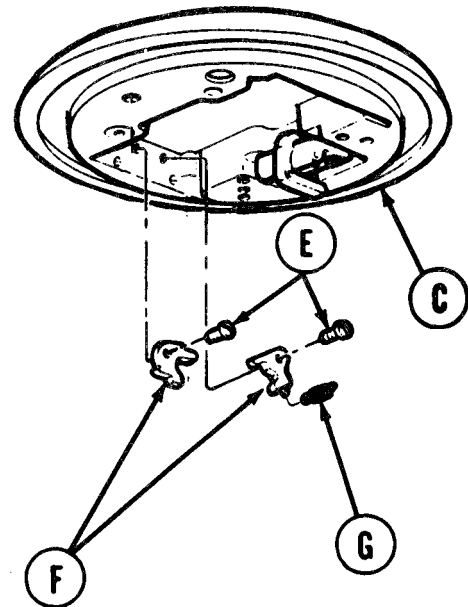
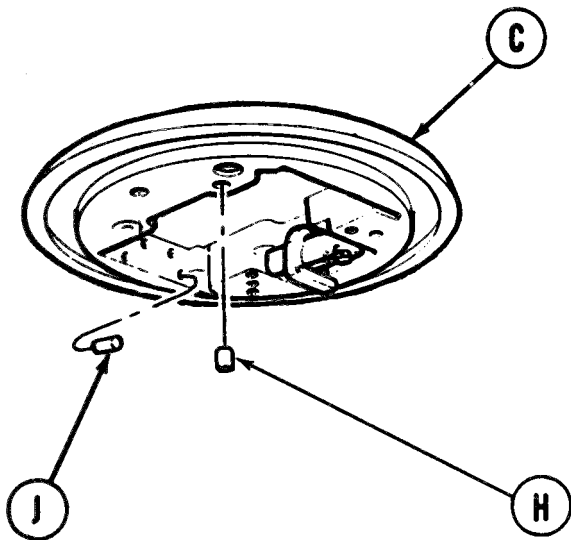
1. Using screwdriver, remove two screws (A) securing latch (B) while holding it to mount (C).
2. Remove latch (B) together with two springs (D).

Go on to Sheet 2

TA253604

**DRIVER'S HATCH MOUNT PERISCOPE RETAINER REPAIR (M24 IR PERISCOPE) (Sheet 2 of 4)**

3. Using screwdriver, remove four shoulder screws (E).
4. Remove retainers (F) together with two extension springs (G) from mount (C).
5. Using hammer and punch, remove two pins (H) and grooved pins (J) from mount (C).


**CLEANING AND INSPECTION:**

1. Visually inspect all parts for damage or wear. All damaged or worn parts must be replaced.
2. Visually inspect parts for corrosion. AU corroded parts which cannot be cleaned with crocus cloth (Item 14, Appendix D) or steel wool (Item 55, Appendix D) must be replaced.

**Go on to Sheet 3**

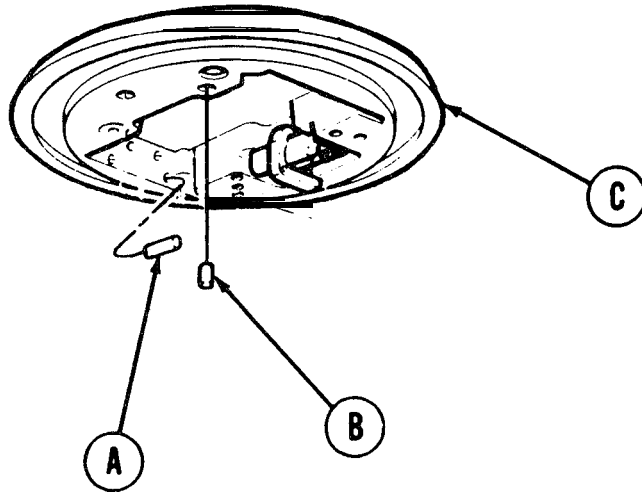
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**Change 1 16-119**

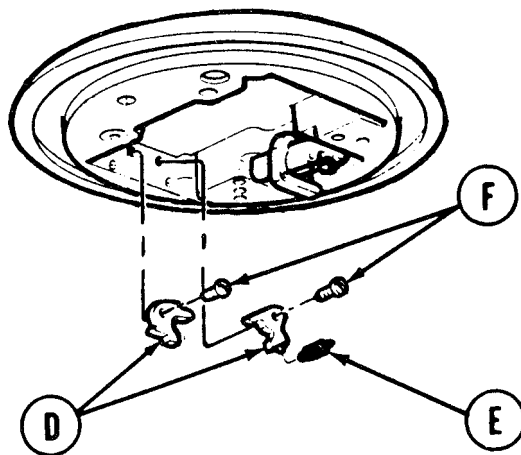
■ DRIVER'S HATCH MOUNT PERISCOPE RETAINER REPAIR (M24 IR PERISCOPE) (Sheet 3 of 4)

ASSEMBLY:

1. Using hammer and punch, install two grooved pins (A) and two pins (B) into mount (C).



2. Position four retainers (D) and one extension spring (E) for each two retainers (D).



3. Install each of the four retainers (D) with a shoulder screw (F).

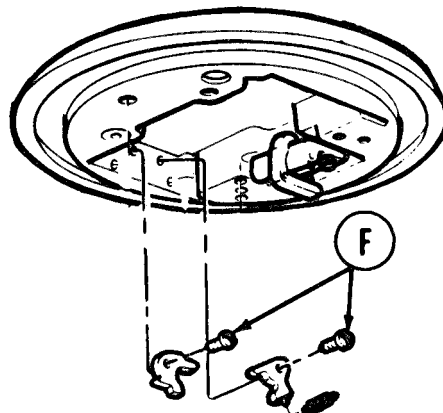
Go on to Sheet 4

TA253606

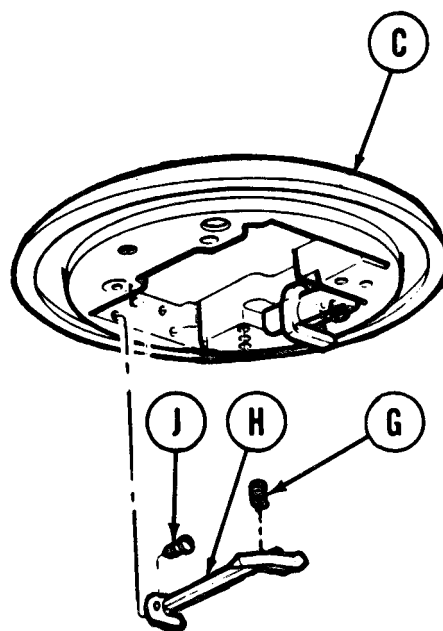


## DRIVER'S HATCH MOUNT PERISCOPE RETAINER REPAIR (M24 IR PERISCOPE) (Sheet 4 of 4)

4. Using screwdriver, tighten four screws (F).
5. Using both hands, install two latch compression springs (G) in latch (H).
6. Position latch (H) with springs on mount (C) and attach two screws (J) through latch (H) into mount (C).



7. Using screwdriver, tighten two screws (J).
8. Install driver's hatch mount lid (page 16-111).
9. Install driver's hatch mount (page 16-107).



End of Task

TA253607

Change 1 16-121

**DRIVER'S HATCH DOOR ASSEMBLY AND SEALS (PASSIVE NIGHT VISION) REPAIR**  
 (Sheet 1 of 5)

PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	16-122
Cleaning and Inspection	16-122.1
Assembly	16-122.2

**TOOLS:** Flat-tip screwdriver  
 1/8 in. drive punch  
 3/4 in. drive punch  
 Putty knife  
 Hammer  
 Retaining ring pliers

**SUPPLIES:** Seal (12270537)  
 Adhesive (Item 4, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Rags (Item 65, Appendix D)  
 Shims (12252026-1) (as required)  
 Steel wool (Item 55, Appendix D)  
 Bushing brass (12270543)  
 Bushing brass (12270544)

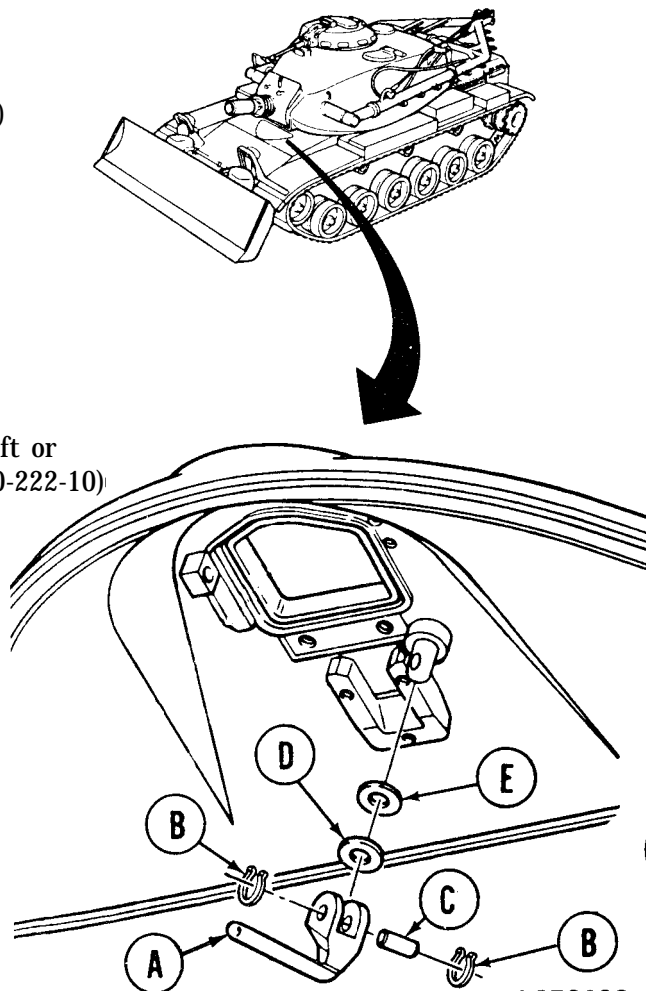
**REFERENCE:** TM 9-2350-222-10

**PERSONNEL:** Two

**PRELIMINARY PROCEDURE:** Rotate turret over left or right side (TM 9-2350-222-10)

**DISASSEMBLY:**

1. Move handle (A) to unlocked position (pull down).
2. Using retaining ring pliers, remove retaining rings (B).
3. Using 1/8 inch punch and hammer, drive out and remove pin (C).
4. Remove handle (A), washer (D), and shim(s) (E).



Go on to Sheet 2

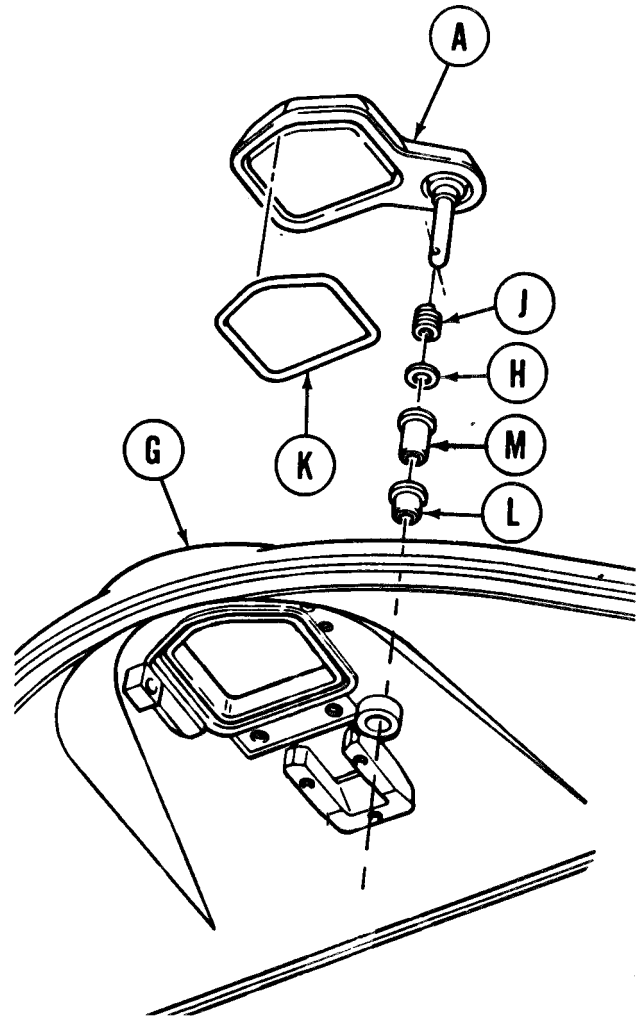
TA253608

## DRIVER'S HATCH DOOR ASSEMBLY AND SEALS (PASSIVE NIGHT VISION) REPAIR (Sheet 2 of 5)

5. Slide door assembly (A) from hatch cover (G) and spring (J) and remove onewasher (H).
6. Remove seal (K) from grooves in door assembly (A). Use flat-tip screwdriver, if necessary. Throw seal away.
7. Using 3/4 inch punch and hammer, drive out bushings (L) and (M) from hatch cover (G). Throw bushings away.

### CLEANING AND INSPECTION

1. Clean all parts and bushing hole in hatch of any foreign matter with dry cleaning solvent (Item 54, Appendix D).
2. Clean seal grooves of door assembly (A) with dry cleaning solvent. Use screwdriver to remove old adhesive, if necessary.
3. Visually inspect all parts for cracks, damage, and corrosion. Replace any defective parts.
4. Corroded metallic parts which cannot be cleaned with steel wool (Item 55, Appendix D) shall be replaced.



Go on to Sheet 3

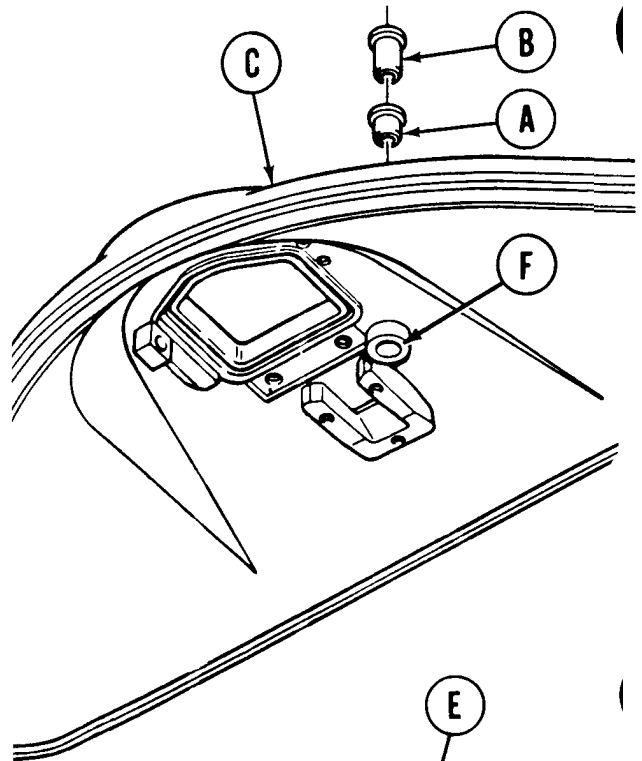
TA253609

Change 1 16-122.1

DRIVER'S HATCH DOOR ASSEMBLY AND SEALS (PASSIVE NIGHT VISION) REPAIR  
 (Sheet 3 of 5)

ASSEMBLY:

1. Insert new bushings (A) and (B) into hole (F) until its flange is seated in hatch cover (C).

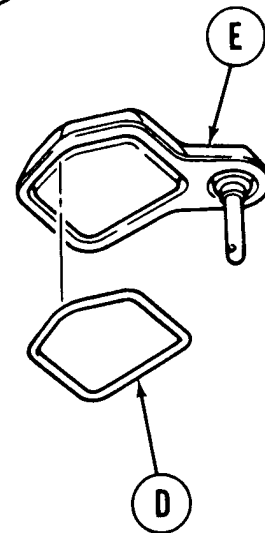


2. Using putty knife, apply thin coat of adhesive (Item 4, Appendix D) on seal (D) grooves of door assembly (E).

**NOTE**

**Use care to keep adhesive in groove only. Wait until adhesive is tacky before installing new packing (see instructions on container).**

3. Lay new seal (D) into grooves carefully without stretching or compressing it.
4. Remove any excess adhesive on or near seal (D) with dry cleaning solvent (Item 54, Appendix D).



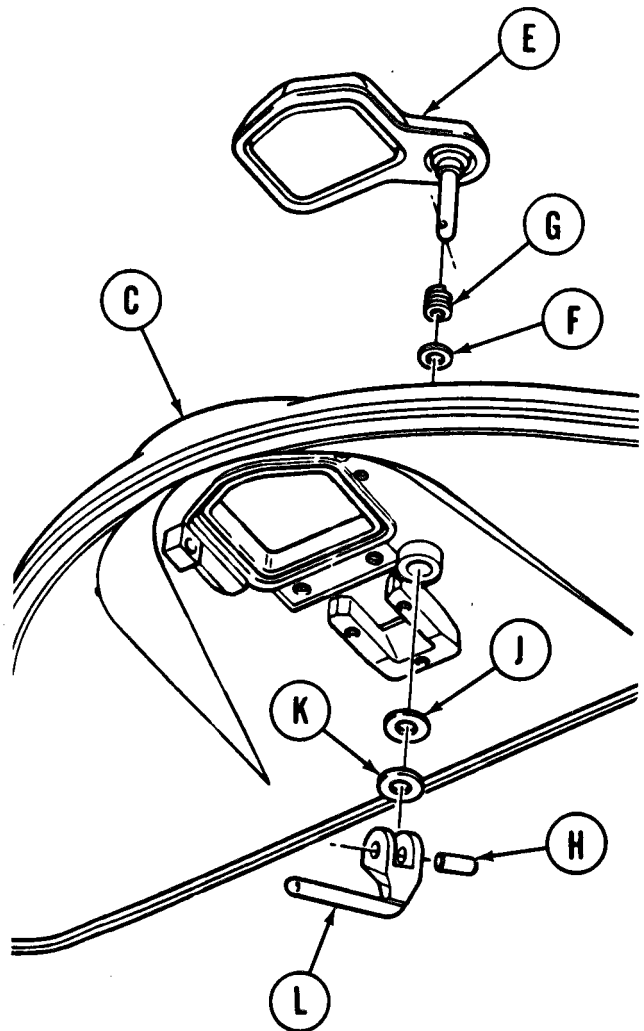
## DRIVER'S HATCH DOOR ASSEMBLY AND SEALS (PASSIVE NIGHT VISION) REPAIR (Sheet 4 of 5)

5. Place washer (F) and spring (G) into bushing in hatch cover (C).
6. Carefully insert shaft of door assembly (E) through spring (G), washer (F), and bushings in hatch (C).
7. Push door assembly (E) down to seat all components.

### NOTE

Drive pin (H) in only far enough to retain assembled parts.

8. Place shim(s) (J), washer (K), and handle (L) on shaft of door assembly (E). Retain temporarily with pin (H).



Go on to Sheet 5

TA253611

Change 1 16-122.3

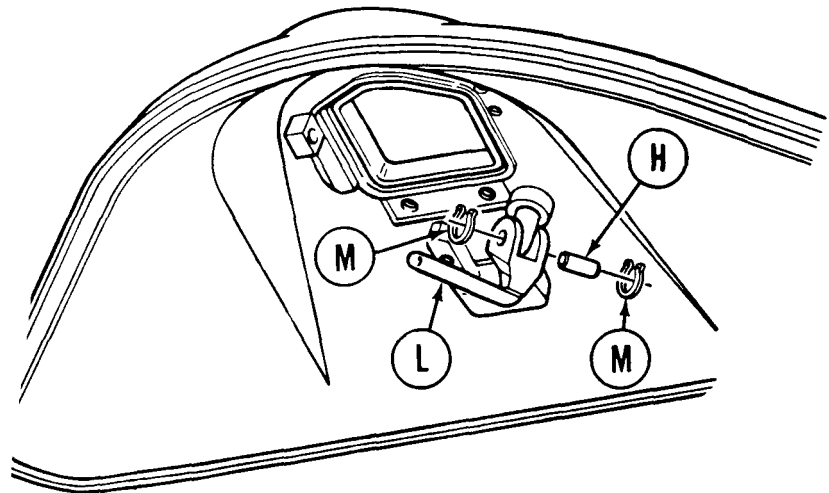
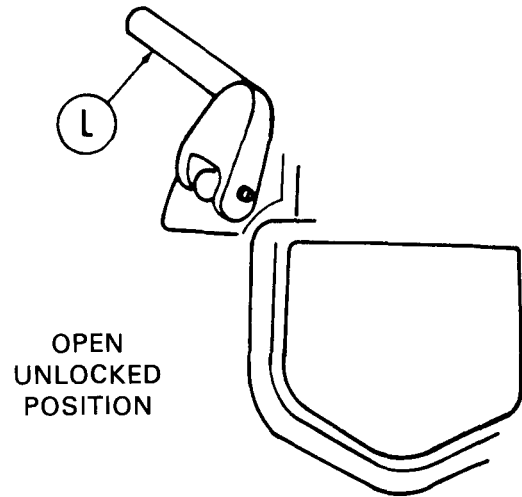
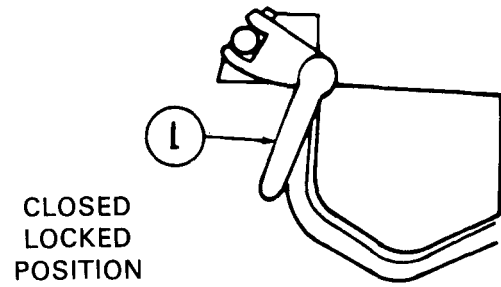
**DRIVER'S HATCH DOOR ASSEMBLY AND SEALS (PASSIVE NIGHT VISION) REPAIR**  
(Sheet 5 of 5)

9. Move handle (L) through its various positions to check proper operation.
10. Move handle (L) to locked position and make sure that door seal is seated all around and that handle (L) is retained firmly in locked position.

**NOTE**

If requirements of step 11 are not met, shims (J) may be added. They are approximately 1/32 inch thick.

11. Drive pin (H) all the way into handle (L) and, using retaining ring pliers, install rings (M) into grooves of pin (H).



End of Task

TA25361

**DRIVER'S HATCH HANDLE AND SEAL (PASSIVE NIGHT VISION) REPAIR (Sheet 1 fo 2)**

TOOLS: Cross-tip screwdriver

Putty knife

SUPPLIES: Packing (MS29513-251)  
Adhesive (Item 4, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)  
Steel wool (Item 55, Appendix D)

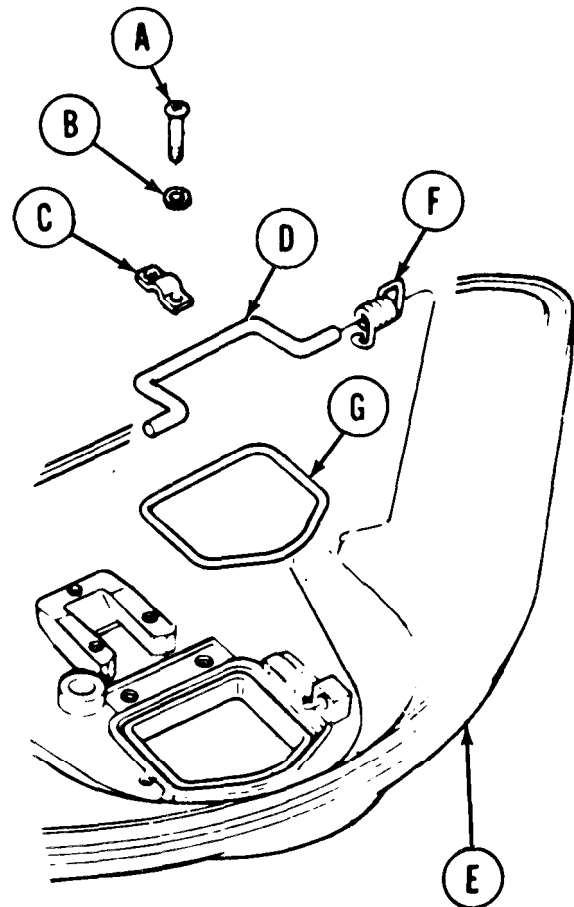
**DISASSEMBLY:**

1. Using cross-tip screwdriver, remove two screws (A) and washers (B).
2. Remove strap (C) and slide handle (D) out of recess in retainer of cover (E) with spring (F).
3. Slide sprig (F) from handle (D).
4. Using flat-tip screwdriver, remove packing (G) from groove in cover (E). Throw packing away.

**CLEANING AND INSPECTION:**

Remove old adhesive and other dirt with dry cleaning solvent (Item 54, Appendix D). Steel wool (Item 55, Appendix D) may be used for difficult areas.

2. all parts for damage and wear.  
Replace defective parts.



Go on to sheet 2

TA253613

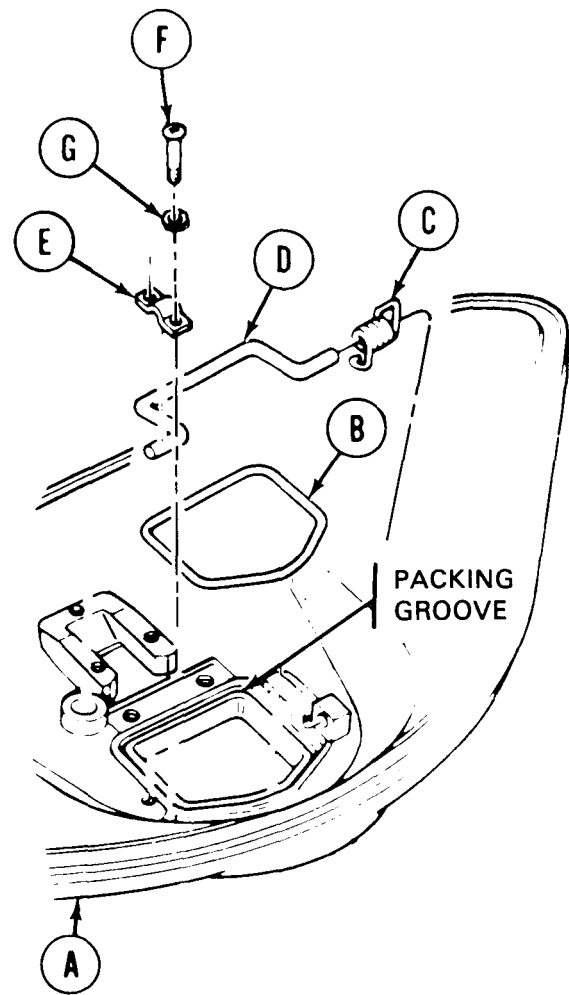
DRIVER'S HATCH HANDLE AND SEAL (PASSIVE NIGHT VISION) REPAIR (Sheet 2 of 2)

ASSEMBLY:

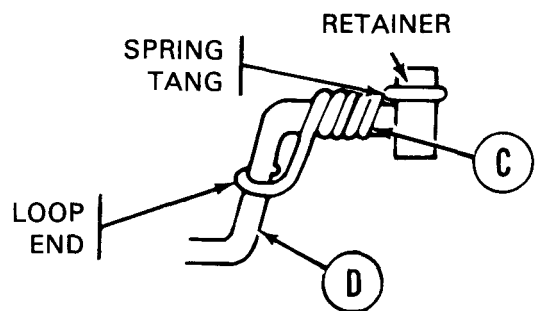
- Using putty knife, apply thin layer of adhesive (Item 4, Appendix D) in packing groove of cover (A).

NOTE

Use care to keep adhesive in groove only. Wait until adhesive is tacky before installing new packing (see instructions on container).



- Lay new packing (B) into groove carefully without stretching or compressing it.
- Remove any excess adhesive on or around packing with dry cleaning solvent (Item 54, Appendix D).
- Slip spring (C) loop end first over end of handle (D).
- Wind spring about 1/4 turn and insert end of handle (D) in retainer on cover with tang of spring (C) over retainer.
- Holding handle in place, position strap (E) and using cross-tip screwdriver, install two screws (F) and washers (G).



End of Task

TA253614



**DRIVER'S HATCH NIGHT VIEWER LATCH REPLACEMENT (Sheet 1 of 6)**

PROCEDURE INDEX

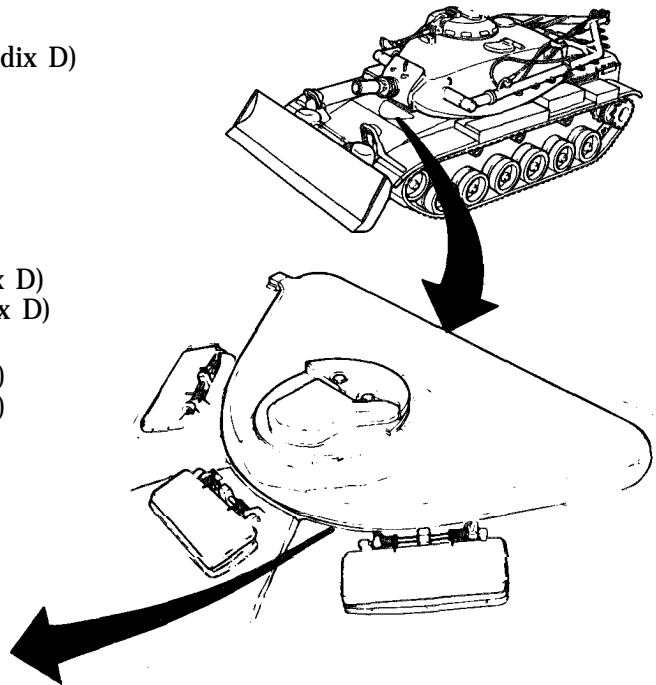
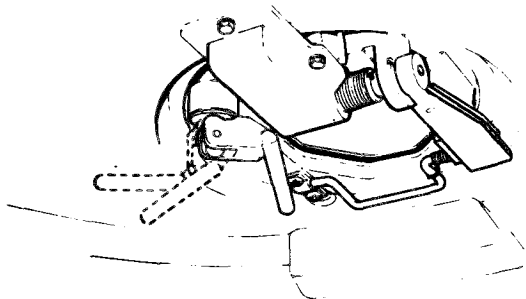
PROCEDURE	PAGE
Removal	16-122.7
Cleaning and Inspection	16-122.9
Installation	16-122.9

- TOOLS:**
- Ratchet with 1/2 in. drive
  - 3/4 in. socket with 1/2 in. drive
  - 7/16 in. socket with 1/2 in. drive
  - Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)
  - Cross-tip screwdriver
  - Spring scale
  - Putty knife
  - 1/2 in. combination box and open end wrench
  - Flat-tip screwdriver
  - 3 in. extension with 1/2 in. drive

- SUPPLIES:**
- Dry cleaning solvent (Item 54, Appendix D)
  - Adhesive (Item 4, Appendix D)
  - Sealant (Item 5, Appendix D)
  - Gasket (12252288)
  - Gasket (12252082) (2 required)
  - Gasket (12252083)
  - Steel wool (Item 55, Appendix D)
  - Sealing compound (Item 31, Appendix D)
  - Locking compound (Item 17, Appendix D)
  - Pad (12252055)
  - Lockwasher (MS35338-44) (3 required)
  - Lockwasher (MS35338-48) (2 required)

**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10



Go on to Sheet 2

TA253615

DRIVER'S HATCH NIGHT VIEWER LATCH REPLACEMENT (Sheet 2 of 6)

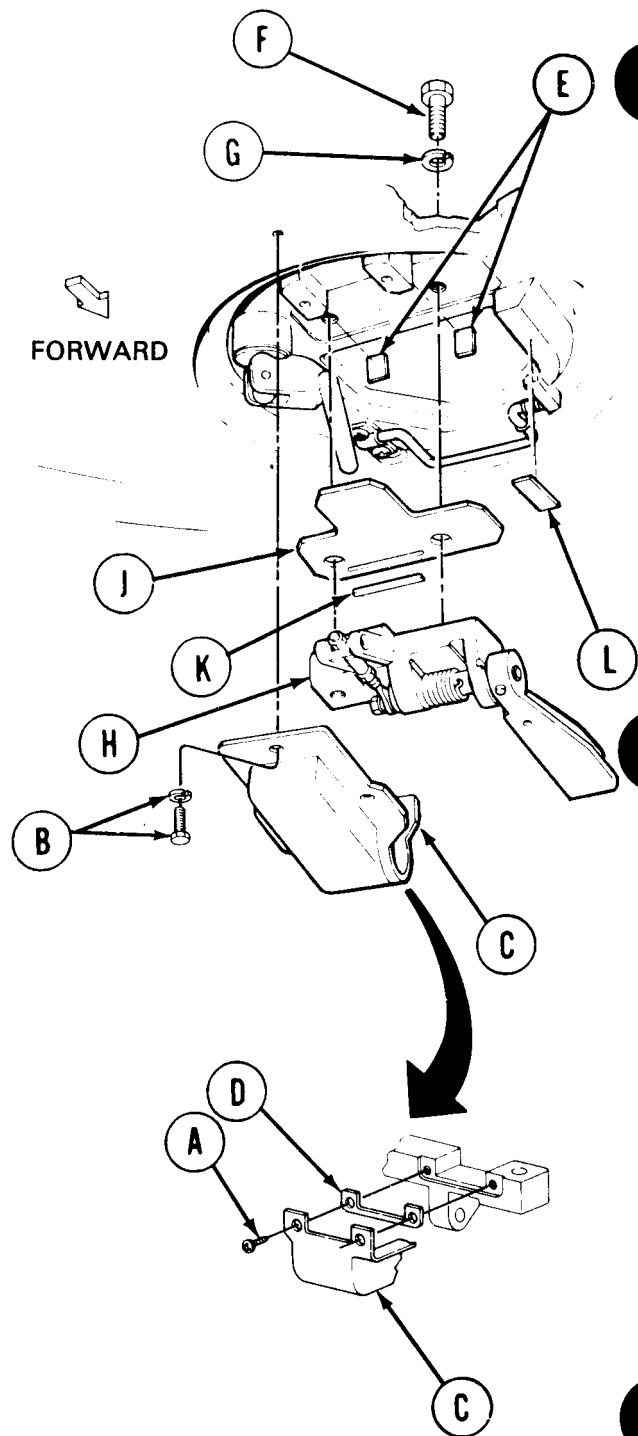
REMOVAL:

1. Position driver's hatch in closed but not latched position with night viewer latch in latched position.
2. Using cross-tip screwdriver, remove two screws (A).
3. Using 7/16 inch socket, remove three screws and lockwashers (B). Throw lockwashers away.
4. Using flat-tip screwdriver, carefully pry up around edges of cover (C). Remove dust cover.
5. Using flat-tip screwdriver, remove gasket (D) and gaskets (E) from cover (C). Throw gaskets away.

NOTE

Before performing step 6, get another person to hold inside components upon removal of screws (F).

6. Using 3/4 inch socket, remove two screws (F) and lockwashers (G). Throw lockwashers away.
7. Remove latch mechanism (H) and plate (J).
8. Using flat-tip screwdriver, remove gasket (K) and pad (L). Throw gasket and pad away.



Go on to Sheet 3

TA2536

**DRIVER'S HATCH NIGHT VIEWER LATCH REPLACEMENT (Sheet 3 of 6)**

**CLEANING AND INSPECTION:**

1. Using putty knife and steel wool (Item 55, Appendix D), remove old sealant and adhesive from hatch and all parts.
2. Using dry cleaning solvent (Item 54, Appendix D) and rags, remove retaining debris and dirt.
3. Inspect all parts for damage or wear. Replace defective parts.

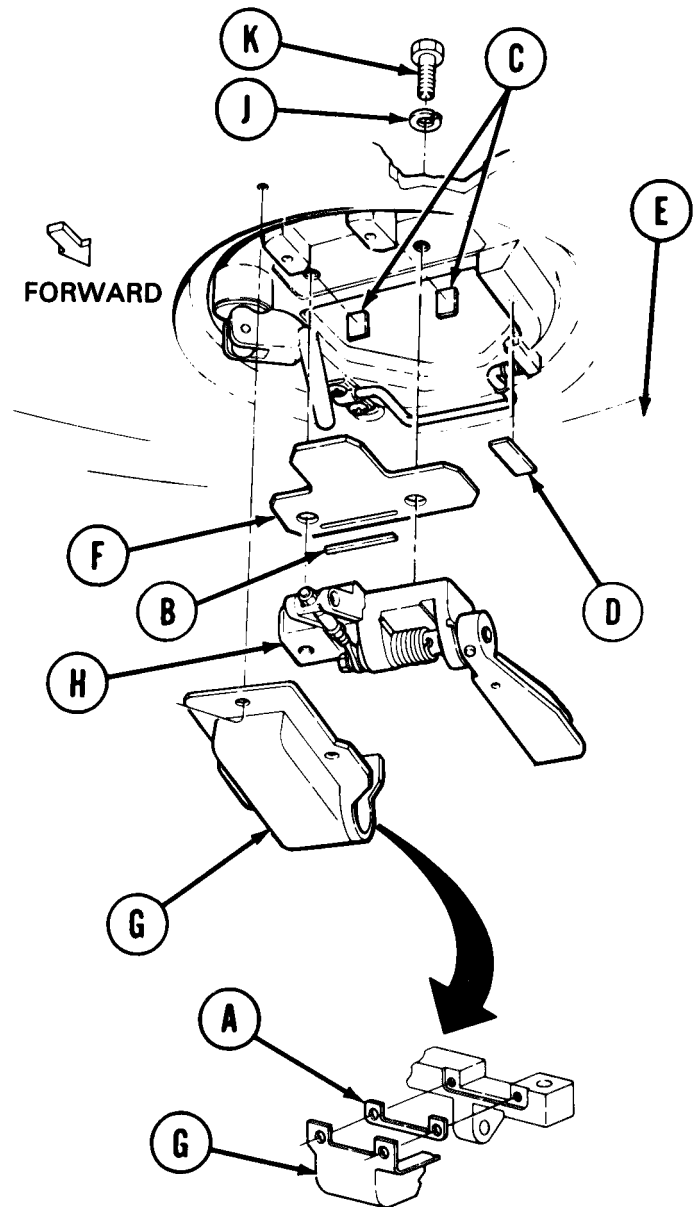
**INSTALLATION:**

1. With putty knife, apply adhesive (Item 4, Appendix D) to one side of new gaskets (A), (B), (C), and (D). Apply adhesive to mating surfaces on hatch (E), plate (F), and cover (G).
2. When adhesive is tacky, align and apply new gaskets (A), (B), (C), and new pad (D).

**NOTE**

Before performing step 4, get another person to help align holes in plate (F) and latch mechanism (H) with holes in hatch (E).

3. Place new lockwashers (J) on two screws (K) and apply sealing compound to screw threads.
4. Using fingers, start screws (K) through hatch (E) into latch mechanism (H).
5. Using 3/4 inch socket and torque wrench, tighten two screws (K) to 95-125 lb-ft (128-169 N·m).



Go on to sheet 4

TA253617

DRIVER'S HATCH NIGHT VIEWER LATCH REPLACEMENT (Sheet 4 of 6)

**NOTE**

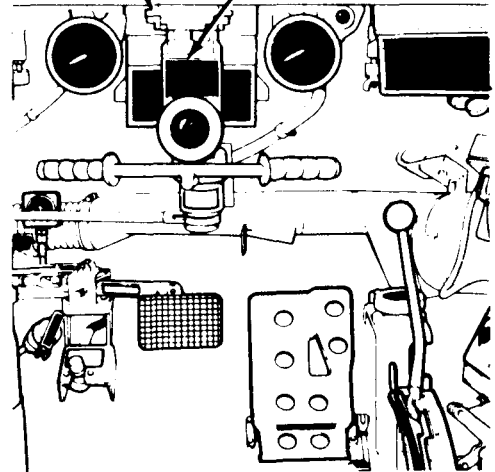
Prior to installation of cover, perform adjustment steps 6 thru 13.

**CAUTION**

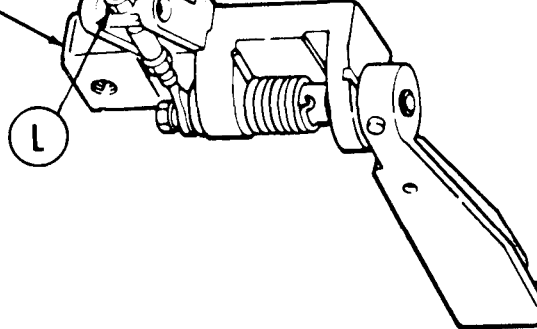
Keep night viewer switch in OFF position and covers on lenses. Do not expose night viewer to any bright light (spotlights, flares, full moon, sun, etc.).

6. Install night viewer in driver's hatch (TM 9-2350-222-10).
7. Check that latch assembly secures night viewer with no looseness with handle in latched position.
8. If adjustment is necessary, remove night viewer and perform steps 9 thru 11.
9. Using 1/2 inch wrench, loosen end nut (L).

LATCH ASSEMBLY | NIGHT VIEWER



LATCH ASSY.



Go on to Sheet 5

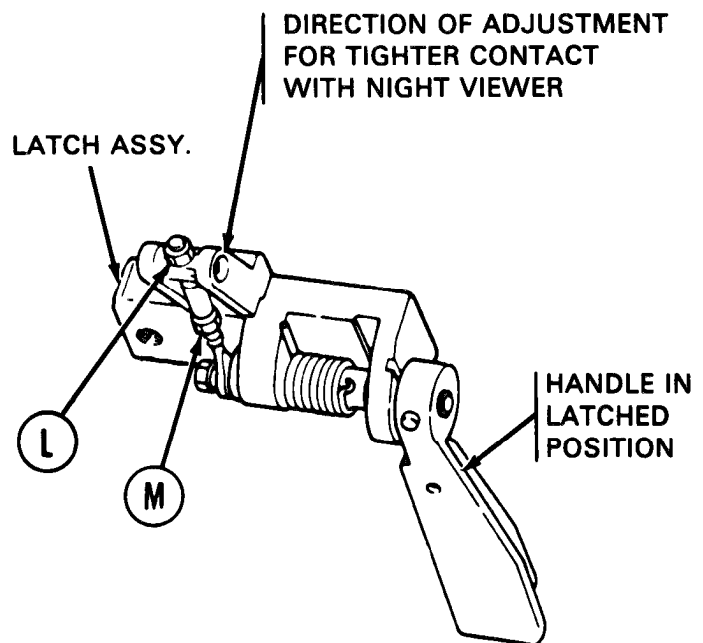
TA253618

**DRIVER'S HATCH NIGHT VIEWER LATCH REPLACEMENT (Sheet 5 of 6)**

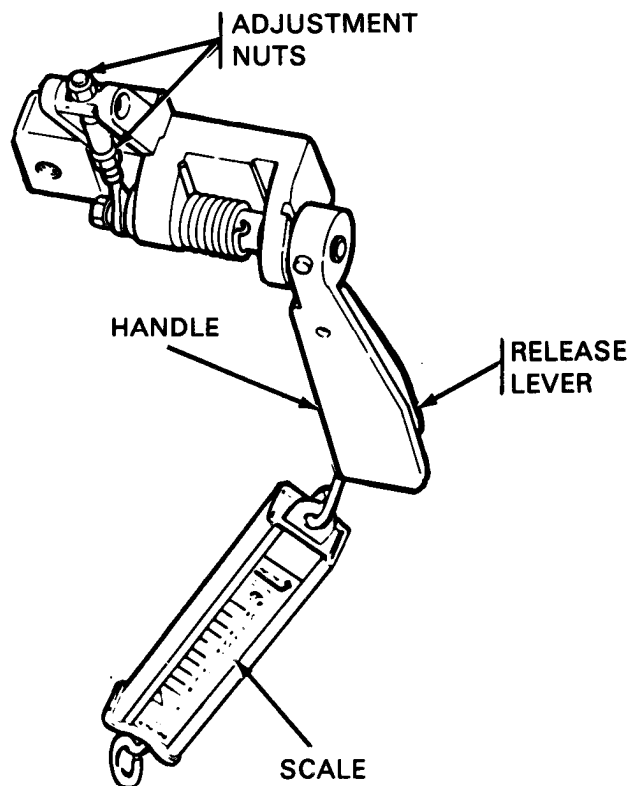
10. For tighter latch assembly contact with night viewer, back off (toward clevis) nut (M) about two threads, using 1/2 inch wrench.
11. Using 1/2 inch wrench, tighten nut (L).
12. Perform steps 6, and 7. If more adjustment is necessary, do steps 9 thru 11 again until you have a satisfactory fit.

**CAUTION**

Have another person support night viewer and push release lever while performing the following step.

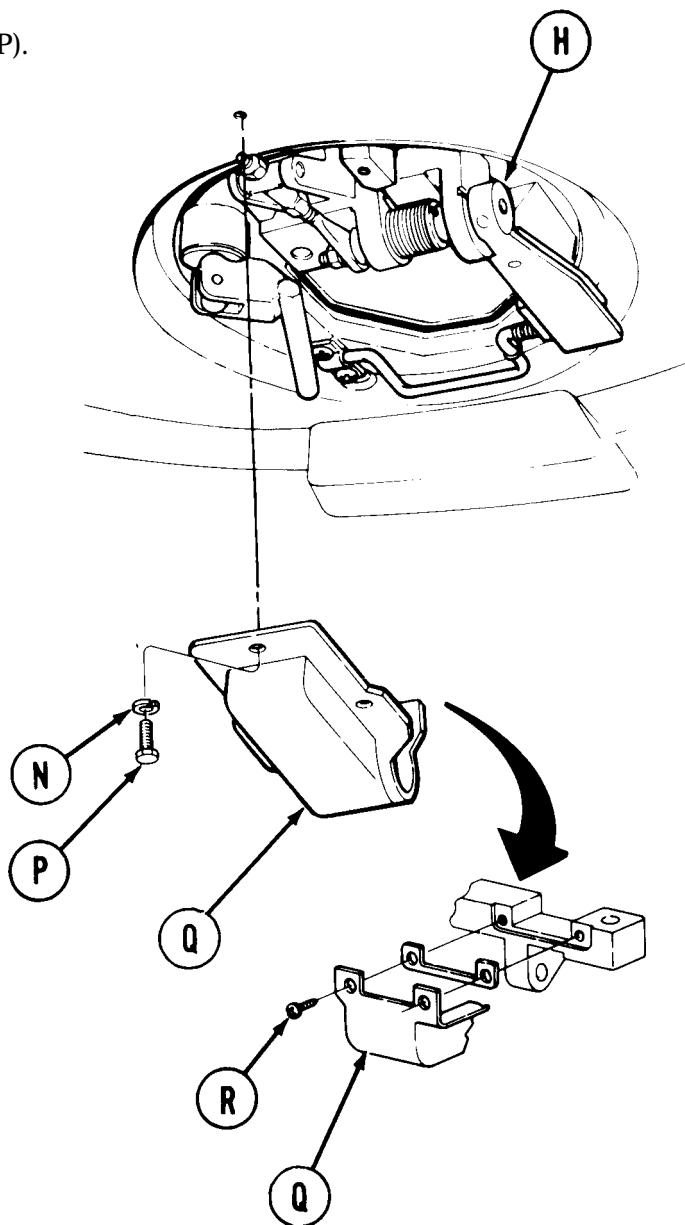


13. Attach scale to end of latch handle and measure force to begin movement of handle. It should be 9.5 to 15.5 pounds.
14. If forces to begin movement of handle is less than 9.5 pounds or more than 15.5 pounds, replace spring (page 16-131.15).



DRIVER'S HATCH NIGHT VIEWER LATCH REPLACEMENT (Sheet 6 of 6)

15. Remove night viewer (TM 9-2350-222-10).
16. Place new lockwashers (N) on three screws (P).
17. Using putty knife, apply sealant (Item 5, Appendix D) to mating surfaces of cover (Q). Do not get sealant on gaskets.
18. Apply thread locking compound (Item 17, Appendix D) to threads of two screws (R).
19. Aline holes in cover (Q) with those of latch (H) and with fingers, start two screws (R) and three screws (P).
20. Using cross-tip screwdriver, tighten two screws (R).
21. Using 7/16 inch socket, tighten three screws (P).
22. With rag and dry cleaning solvent (Item 54, Appendix D), remove all excess adhesive and sealant from area.



End of Task

DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 1 of 10)

PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	16-122.13
Cleaning and Inspection	16-122.17
Assembly	16-122.17

TOOLS: 7/16 in. combination box and open end wrench  
 3/16 in. drive punch  
 1/8 in. drive punch  
 Flat-tip screwdriver  
 1/2 in. combination box and open end wrench  
 1/2 in. socket with 1/2 in. drive  
 Soft-jawed (padded) vise  
 3/32 in. alining pin  
 Hammer  
 Long round nose pliers  
 1/4 in. drill bit  
 Thickness gage  
 Ratchet with 1/2 in. drive  
 Knife

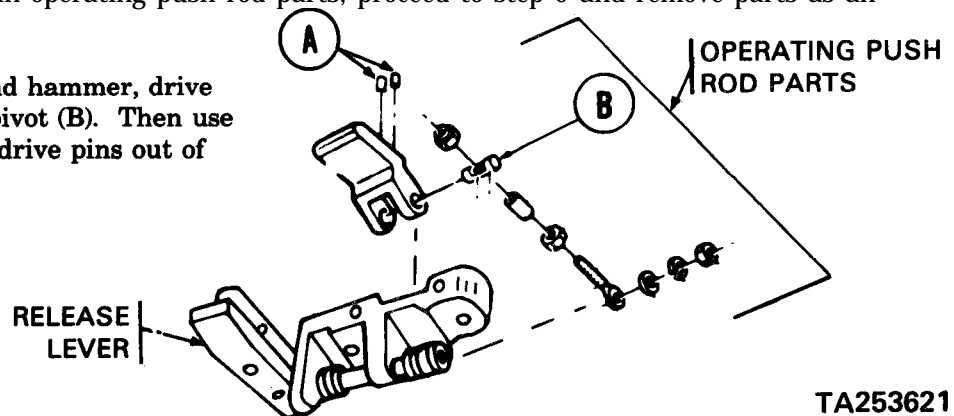
SUPPLIES: Dry cleaning solvent (Item 54, Appendix D)  
 Rags (Item 65, Appendix D)  
 Shims  
 Pencils  
 Cotter pin  
 Teflon washer (12252050)  
 Lockwasher (MS35338-139)

PERSONNEL: Two

PRELIMINARY PROCEDURE Remove night viewer latch (page 16-122.7)

DISASSEMBLY:

- Carefully press release lever and allow mechanism to unwind about one-half turn to latched position.
- If faulty part is not within operating push rod parts, proceed to step 9 and remove parts as an assembly.
- Using 1/8 inch punch and hammer, drive two pins (A) flush with pivot (B). Then use 3/32 inch alining pin to drive pins out of pivot (B).



Go on to Sheet 2

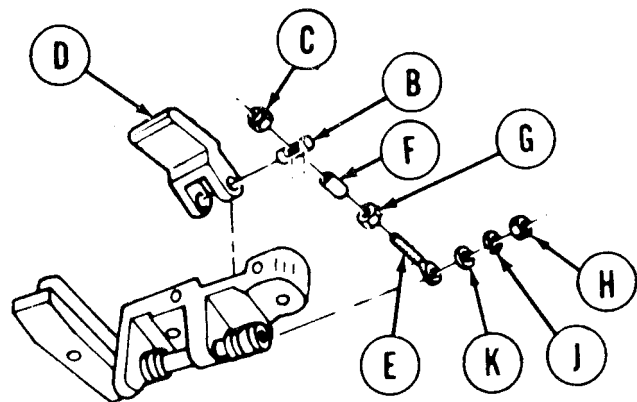
TA253621

DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 2 of 10)

4. Using socket, remove nut (C).

5. Slide plunger (D) with pivot (B) off rod (E).

6. Remove pivot (B) from plunger (D).



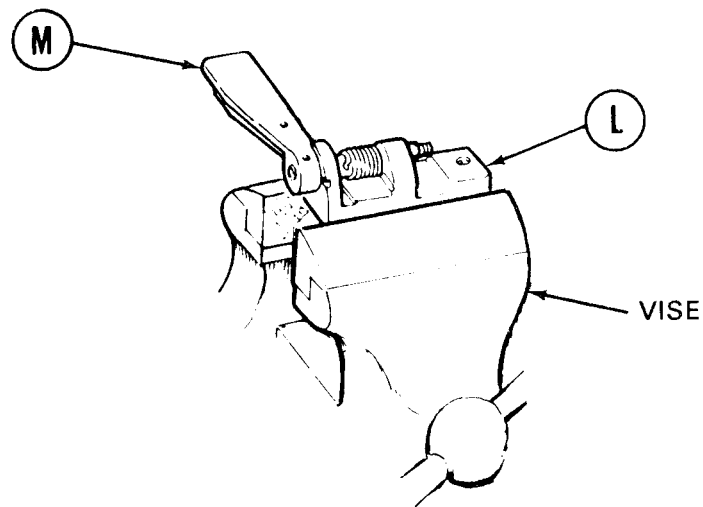
7. Slip sleeve (F) off rod (E).

8. Using 1/2 inch wrench, remove nut (G).

9. Using 7/16 inch wrench, remove nut (H), lockwasher (J), flat washer (K), and rod (E). Throw lockwasher away.

NOTE

Put support (L) in vise with handle (M) and support positioned as shown.



Go on to Sheet 3

TA253622

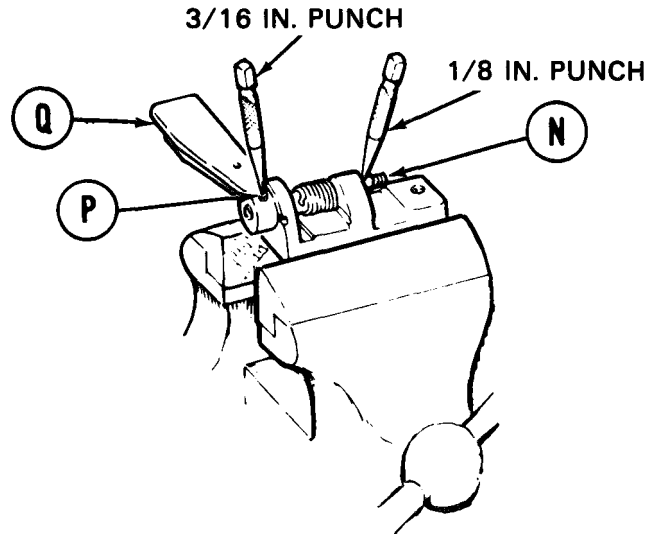


DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 3 of 10)

NOTE

Insert 1/8 inch punch in tooling hole in flange of shaft (N). Push back on punch against spring pressure to aid in removal of pin (P). Have one person hold punch while another person does Step 10.

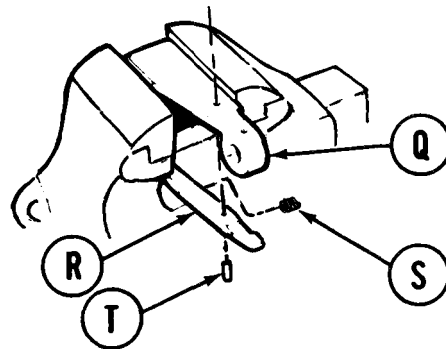
10. Using 3/16 inch punch and hammer, drive pin (P) out of handle (Q).
11. Using hand, work handle (Q) off shaft (N).
12. Carefully relieve pressure of spring by allowing 1/8 inch punch to come toward you about 1/4 turn.



NOTE

If handle (Q), lever (R), and spring (S) were operating well, you need not disassemble them. Proceed to step 15.

13. Place lever (R) in vise and, using 1/8 inch punch and hammer, drive pin out of lever (R), being careful not to loosen spring (S).
14. Remove lever (R), spring (S), and handle (Q).

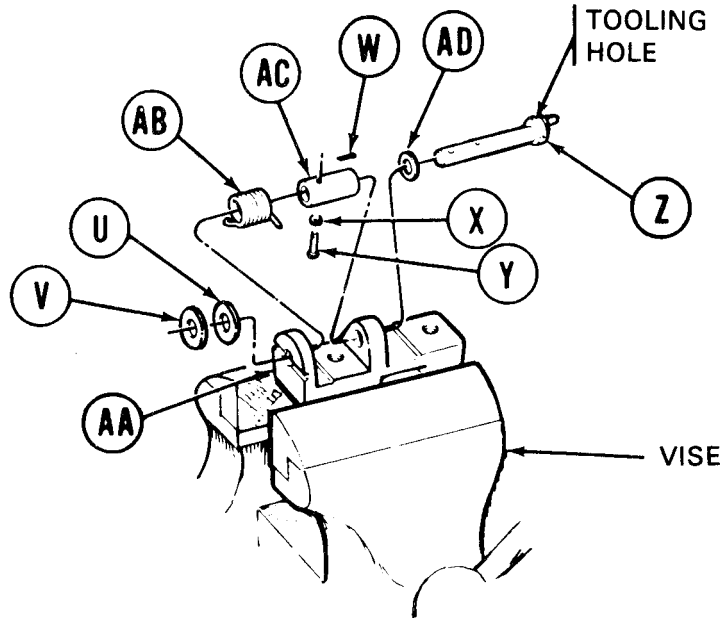


Go on to Sheet 4

TA253623

DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 4 of 10)

15. Using fingers, remove teflon washer (U) and spacer (V).



16. Using screwdriver and pliers, remove cotter pin (W). Throw cotter pin away. Remove washer (X) and pin (Y).
17. Slide shaft (Z) from holes in support (AA). Remove spring (AB), sleeve (AC), and teflon washer (AD) from shaft (Z). Throw teflon washer away.
18. Remove support (AA) from vise.

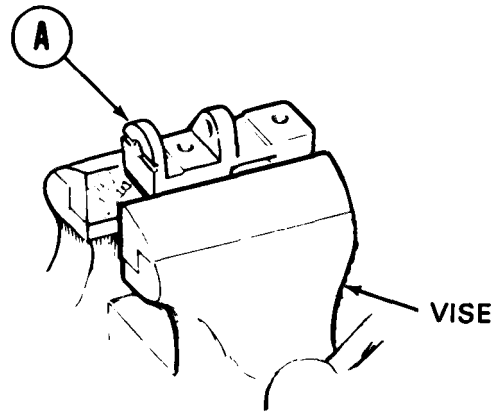
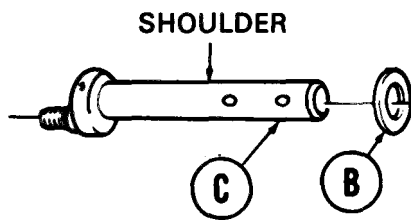
**DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 5 of 10)**

**CLEANING AND INSPECTION:**

1. Using dry cleaning solvent (Item 54, Appendix D) and rags, remove debris and dirt from all parts.
2. Inspect all parts for damage or wear. Replace defective parts.

**ASSEMBLY:**

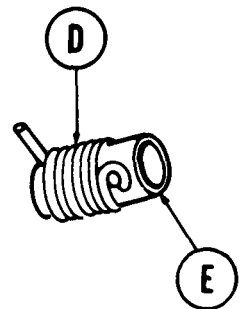
1. Secure support (A) in vise.
2. Using fingers, place new teflon washer (B) on shaft (C).



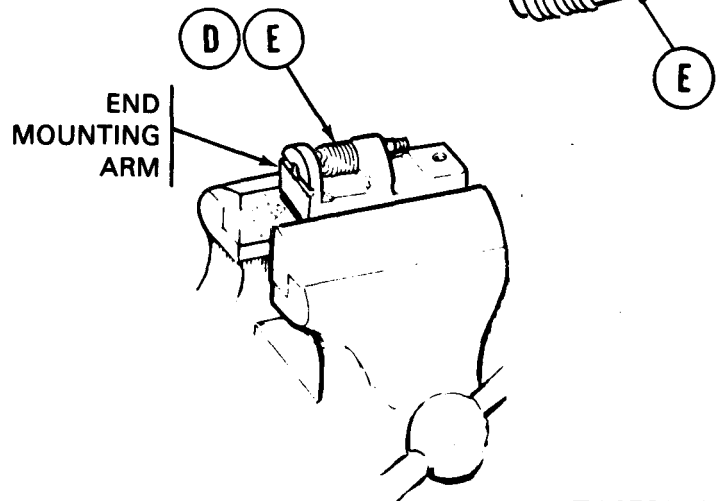
**NOTE**

Using knife, remove sharp edge (chamfer) of teflon washer (B) at hole. If it does not fit flush against shoulder of shaft (C), remove washer, reverse it, and reinstall.

3. Place spring (D) on sleeve (E) with loop of spring over hole in sleeve.



4. Position assembled spring (D) and sleeve (E) between mounting arms of support (A), with loop end of spring nearest end mounting arm.

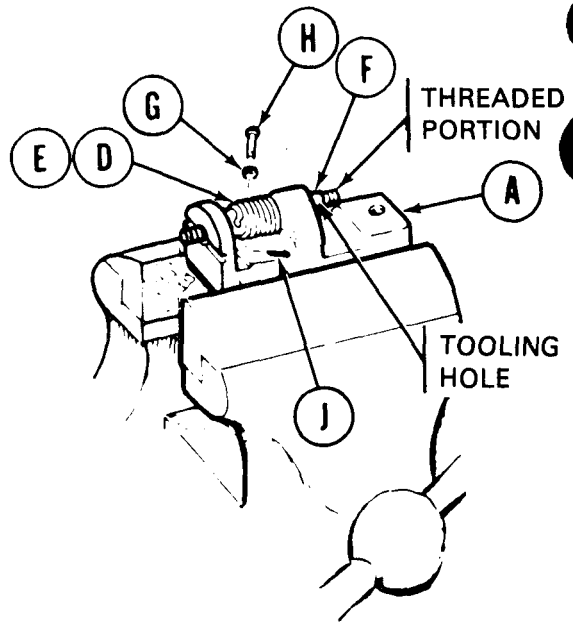


Go on to Sheet 6

TA253625

**DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 6 of 10)**

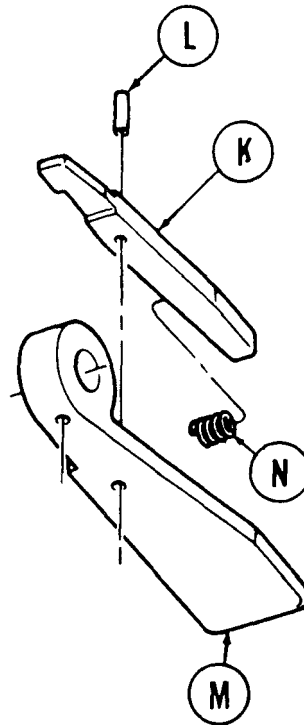
5. Insert shaft (F) with offset threaded portion in down position (nearest support (A) and tooling hole facing you).
6. Line up loop of spring (D) with holes of sleeve (E) and shaft (F).
7. Place washer (G) on pin (H) and insert pin from the back side.
8. Insert new cotter pin (J) through hole in pin (H).
9. Using screwdriver and pliers, bend legs of cotter pin (J).



**NOTE**

**If handle was not disassembled, go to step 13.**

10. Place lever (K) on bench and, using hammer, drive pin (L) partly through lever.
11. Place handle (M) on bench and position spring (N) in recess of handle and lever (K).
12. Using hammer, drive pin (L) through lever (K) and handle (M).



Go on to Sheet 7

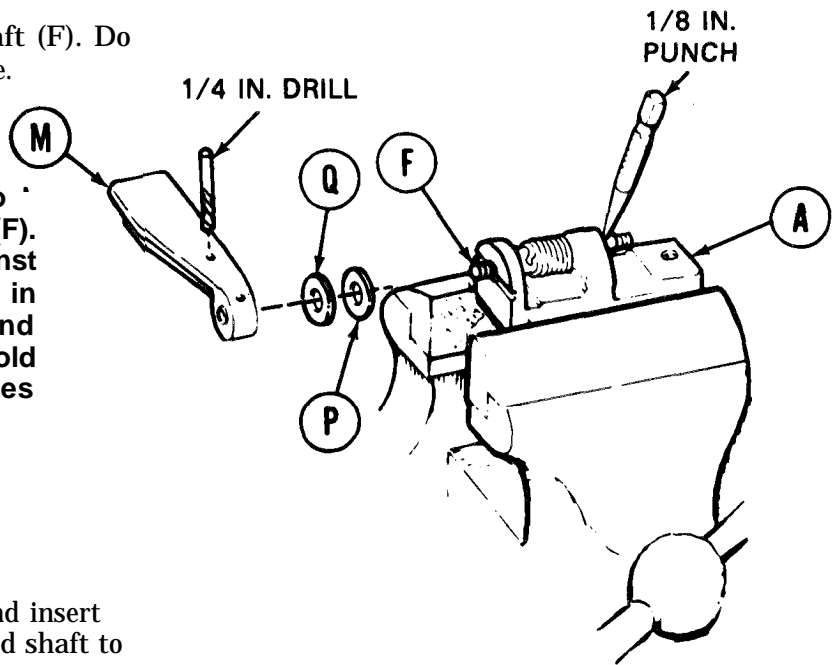
TA25362

DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 7 of 10)

13. Place teflon washer (P) on shaft (F). Do **not install** spacer (Q) at this time.

**NOTE**

Insert 1/8 inch punch in to ing hole in flange of shaft (F). Push back on punch against spring pressure until hole in and of shaft (F) is up and down. Have one person hold punch whiie another does step 14.

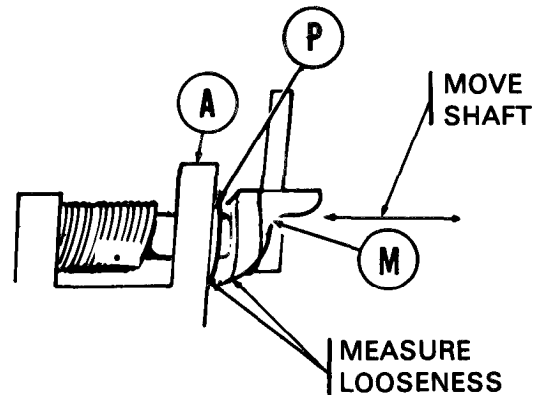


14. Place handle (M) on shaft (F), and insert 1/4 inch drill through handle and shaft to temporarily retain handle.

15. Move shaft back and forth. Using feeler gage, measure maximum looseness between handle (M) and teflon washer (P). **Record distance.**

**NOTE**

Spacer is 0.094 inch thick, and each lamination is 0.002 inch thick.



16. Peel off laminations of spacer (Q) to provide a looseness (step 15) of between 0.005 inch and 0.040

**NOTE**

Material thickness which must be removed from 0.094 inch stock spacer is found by subtracting required spacer size from 0.094 inch. Required spacer is found by:

- A. Measuring space between teflon washer (P) and handle (M).
- B. Subtracting 0.018 inch from space measured between teflon washer (P) and handle (M).

Go on to Sheet 8

TA253627

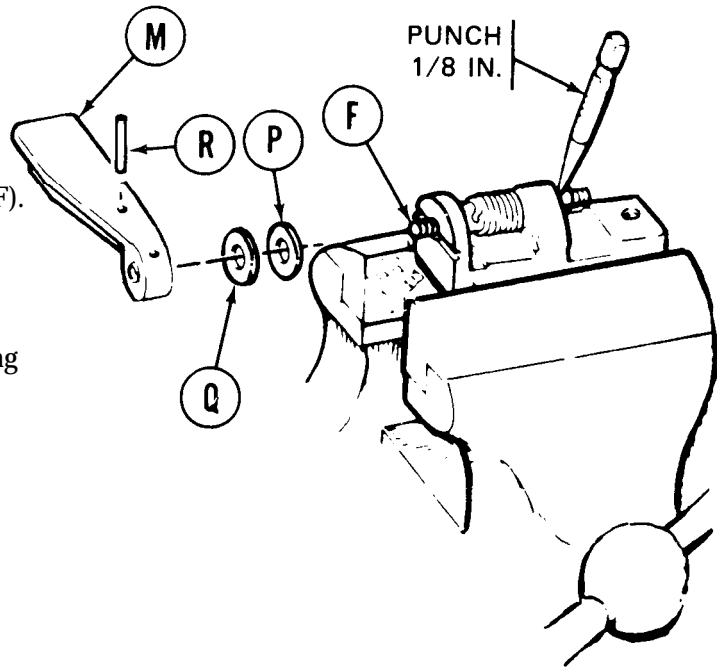
**DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 8 of 10)**

17. With one person relieving load with punch, remove drill bit and handle (M).

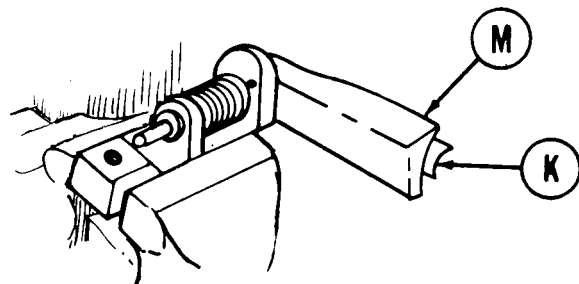
18. Place spacer (Q) and handle (M) on shaft (F).

19. Using hammer, drive pin (R) into retaining hole of handle (M) and shaft (F).

20. Remove punch.



21. Release lever (K) and push handle (M) forward 1/2 turn to locked position. Release and return to position shown.



**NOTE**

**Handle should lock in both forward and aft positions and should not bind during movement.**

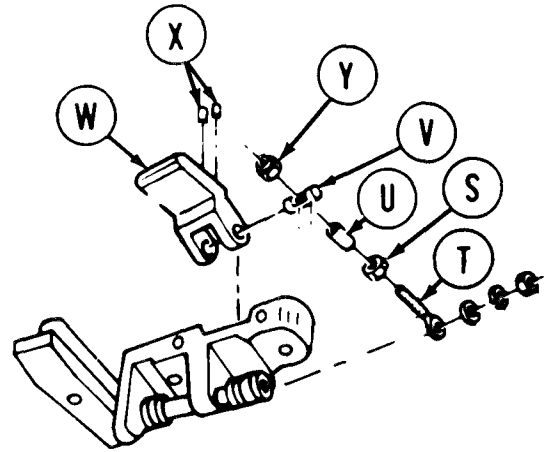
22. Remove assembled parts from vise.

Go on to Sheet 9

TA253628

## DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 9 of 10)

23. If operating push rod parts were not disassembled, proceed to step 29.
24. Start nut (S) onto rod (T) with locking collar first. Run it on to about 1/4 inch of end of threads. Use 1/2 inch wrench if locking collar is tight. Use vise if necessary.
25. Place sleeve (U) on rod (T).



26. Insert pivot (V) in plunger (W). Using hammer, drive in two pins (X) through pivot (V).

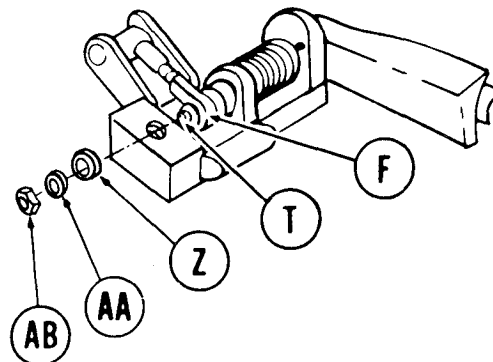
**NOTE**

**Position pins (X) through pivot (V) so that they each stick through pivot equally on both sides.**

27. Pivot (V) has flat faces on two surfaces. Rotate pivot so smaller flat face is facing sleeve (U). Slide pivot on rod (T).
28. Using socket, install nut (Y) while holding nut (S) with 1/2 inch wrench.

DRIVER'S HATCH NIGHT VIEWER LATCH REPAIR (Sheet 10 of 10)

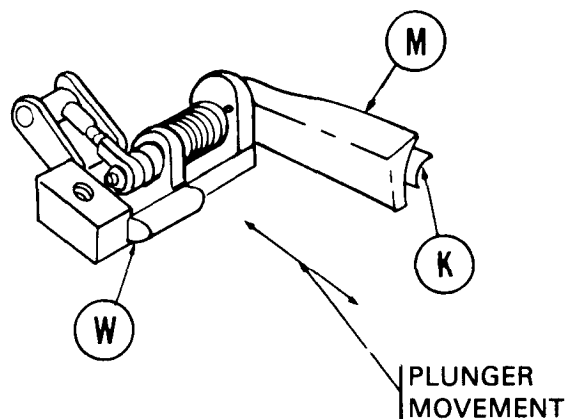
29. Position assembled parts as shown with rod (T) over threaded portion of shaft (F).



30. Place flat washer (Z), new lockwasher (AA), and nut (AB) on shaft (F).

31. Using 7/16 inch wrench, tighten nut (AB).

32. Hold night viewer latch firmly on a flat surface. Release lever (K) and turn handle (M) forward 1/2 turn to locked position. Release and return to position shown.



**NOTE**

Handle should lock in both forward and rear positions and plunger (W) should not bind during movement.

33. Install night viewer latch (page 16-122.9).





**DRIVER'S HATCH SEAL REPLACEMENT (Sheet 1 of 2)**

TOOLS: Putty knife  
Wire brush

SUPPLIES: Seal (10924125)  
Adhesive (Item 2, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)  
Rags (Item 65, Appendix D)

REFERENCE: TM 9-2350-222-10

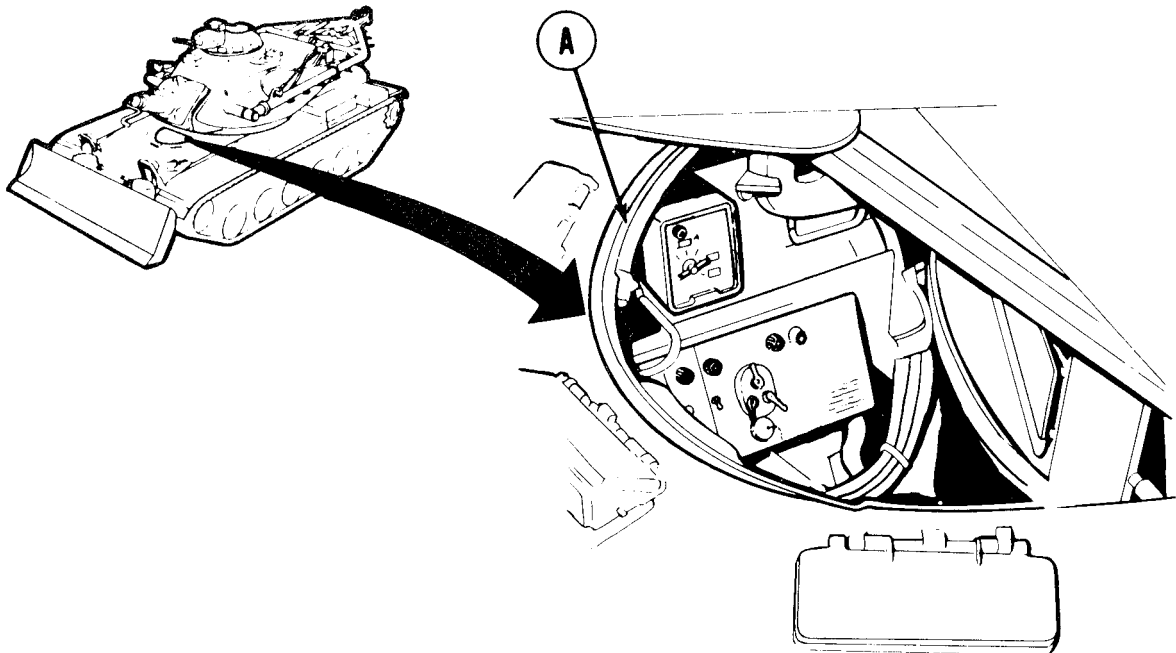
PRELIMINARY PROCEDURE: Open driver's hatch (TM 9-2350-222-10)

**REMOVAL:**

1. Using putty knife, pry out seal.

**CLEANING:**

1. Using putty knife and wire brush, scrape old seal and adhesive from seal mounting groove.



Go on to Sheet 2

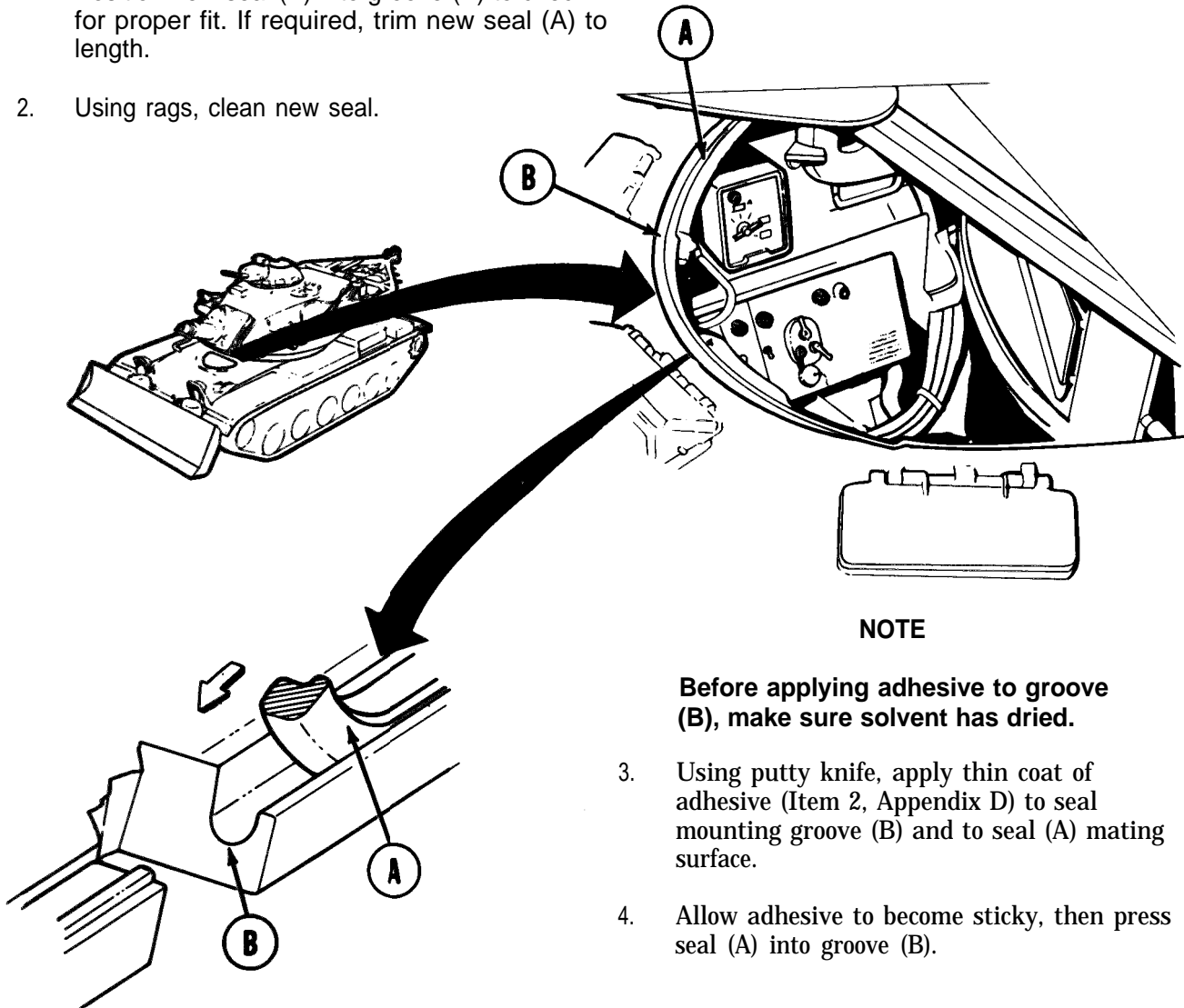
TA253631

**DRIVER'S HATCH SEAL REPLACEMENT (Sheet 2 of 2)**

- Using dry cleaning solvent (Rem 54, Appendix D) and rags, remove remaining debris and dirt.

**INSTALLATION:**

- Position new seal (A) into groove (B) to check for proper fit. If required, trim new seal (A) to length.
- Using rags, clean new seal.



- Using rag moistened with dry cleaning solvent (Item 54, Appendix D), remove excess adhesive on or near seal (A).
- Close driver's hatch (TM 9-2350-222-10).

End of Task

TA140735

**DRIVER'S HATCH SUPPORT BRACKET REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** 9/16 in. combination box and open end wrench  
 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 3 in. extension with 1/2 in. drive

**SUPPLIES:** Lockwasher (MS35338-65) (2 required)

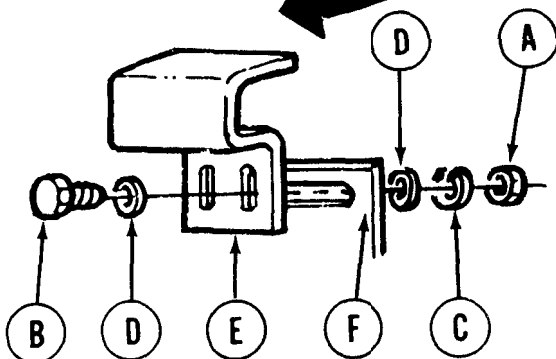
**REMOVAL:**

- Using wrench on nut (A) and socket on bolts (B), remove two nuts (A), two lockwashers (C), four flat washers (D), and two bolts (B). Throw lockwashers away.

**NOTE**

If there are shims between bracket (E) and plate (F), retain them for installation.

- Remove bracket (E).



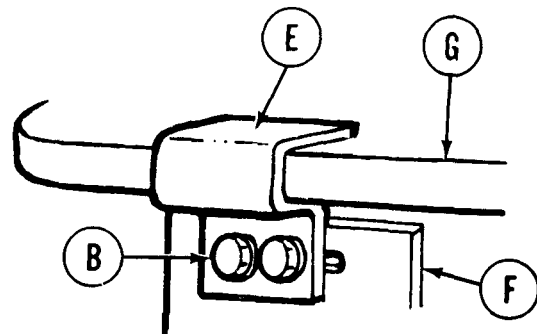
**INSTALLATION:**

- Place washer (D) on each bolt (B).

**NOTE**

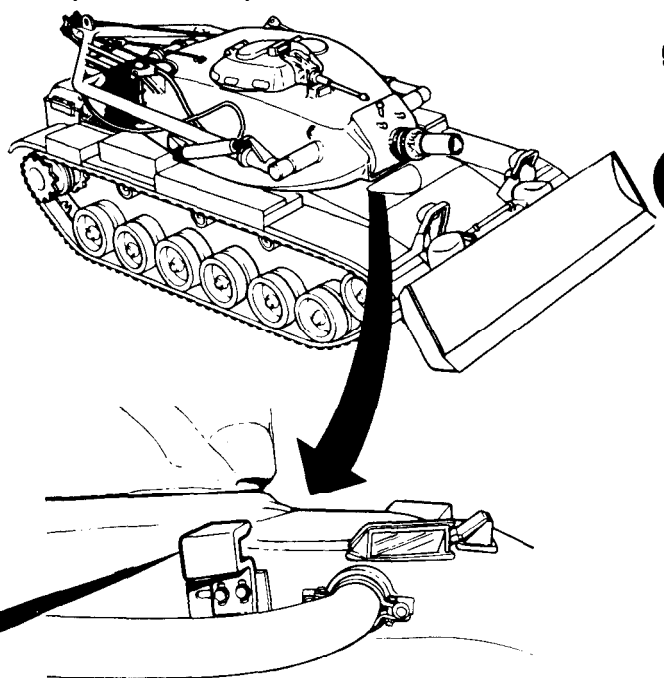
If there were shims between bracket (E) and plate (F), install in position.

- Aline bracket (E) holes with plate (F) holes and insert two bolts (B).
- Place flat washer (D) and new lockwasher (C) on each bolt (B) and secure with nut (A). Finger tighten.
- Open driver's hatch cover (G).
- Move bracket (E) on welded plate (F) until driver's hatch cover (G) rests securely in bracket (E).
- Using wrench on nut and socket on bolts (B), tighten two bolts.



End of Task

TA140736



**DRIVER'S HATCH LOCKING MECHANISM REPLACEMENT (Sheet 1 of 7)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-126
Installation	16-129

TOOLS: Slip joint pliers  
 1-1/8 in. open end wrench  
 9/16 in. combination box and open end wrench  
 Hammer  
 Vice  
 Punch

SUPPLIES: Cotter pins (MS24665-295) (3 required)  
 Pencil  
 Tags  
 Lockwashers (MS35338-65) (2 required)

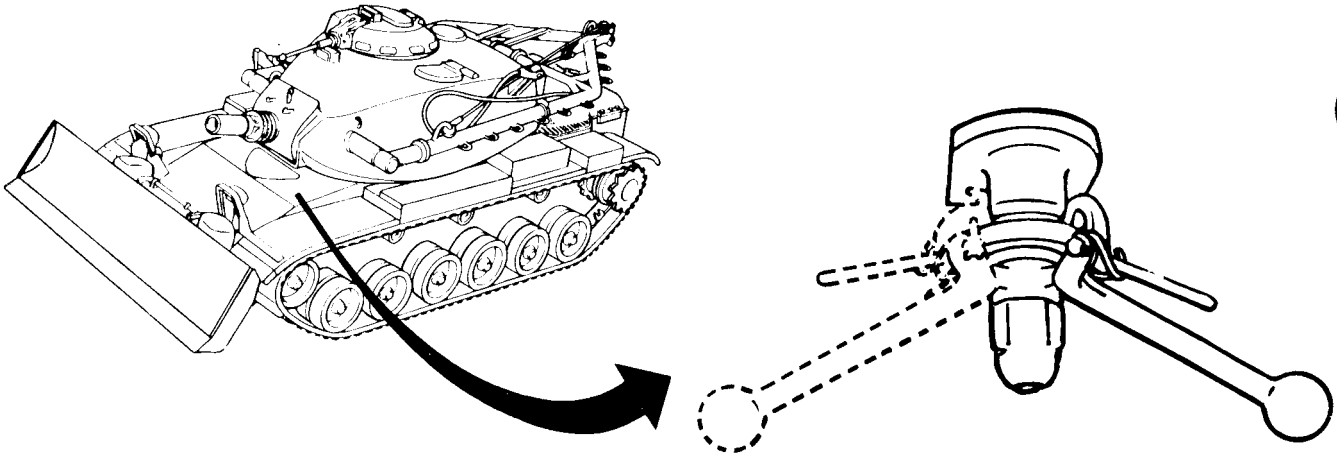
REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Open driver's hatch (TM 9-2350-222-10)

Go on to Sheet 2

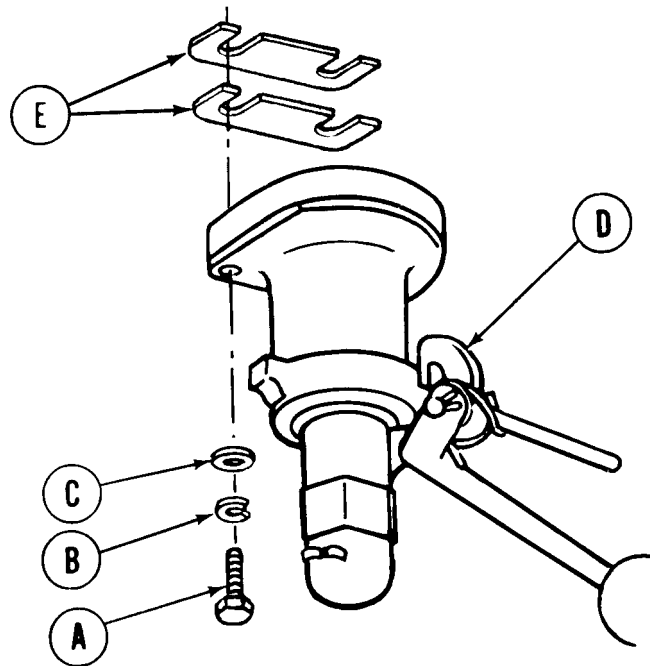
TA140737

**DRIVER'S HATCH LOCKING MECHANISM REPLACEMENT (Sheet 2 of 7)**



**REMOVAL:**

1. Place hatch locking mechanism in unlocked position with control handle all the way to the front.



**NOTE**

Plate spacers are to be tagged as originally installed and must be reinstalled in same manner.

2. Using 9/16 inch wrench, remove two screws (A), lockwashers (B), and washers (C) from lock mounting. Throw lockwashers away.
3. Remove locking mechanism (D) and plate spacer (E) from mounting.

Go on to Sheet 3

TA140738

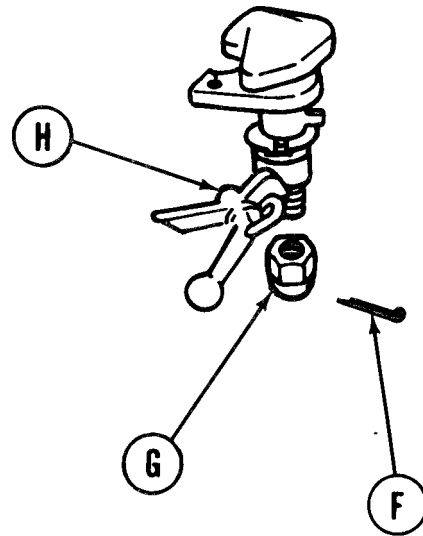
**DRIVER'S HATCH LOCKING MECHANISM REPLACEMENT (Sheet 3 of 7)**

4. Secure mechanism in vise and, using pliers, remove cotter pin (F) from nut (G). Throw cotter pin away.
5. Using 1-1/8 inch wrench, remove nut (G) securing dog assembly (H).

**NOTE**

It may be necessary to use hammer to remove dog assembly (H).

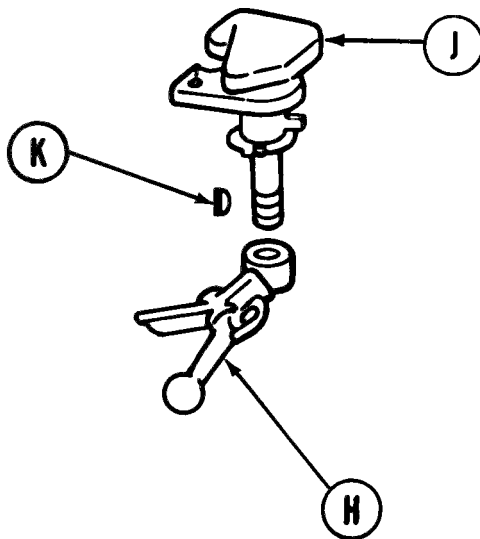
6. Remove dog assembly (H) from pawl (J).



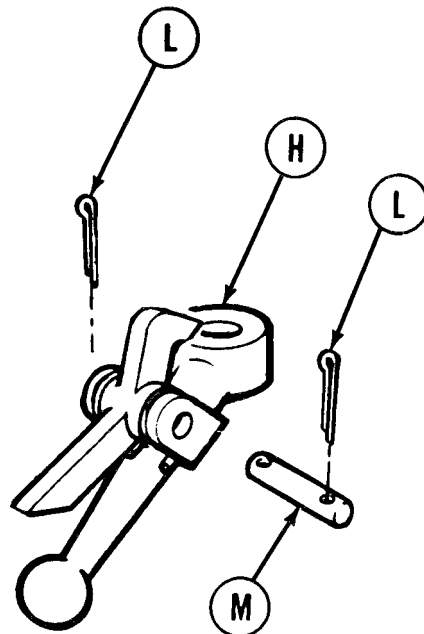
**NOTE**

It may be necessary to use hammer and punch to remove woodruff key (K).

7. Remove woodruff key (K).



8. Using pliers, remove two cotter pins (L) from straight pin (M). Throw cotter pins away.
9. Remove pin (M) from dog assembly (H).

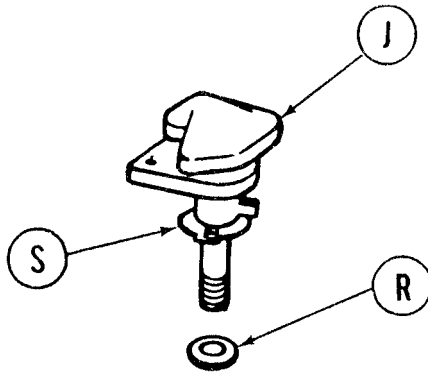
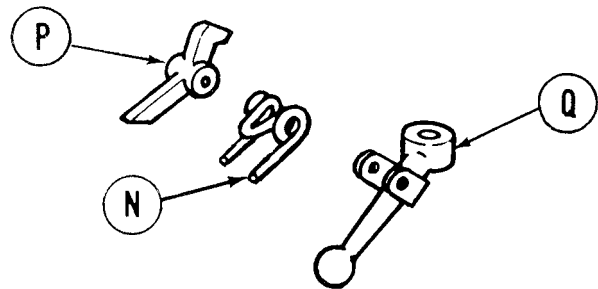


Go on to Sheet 4

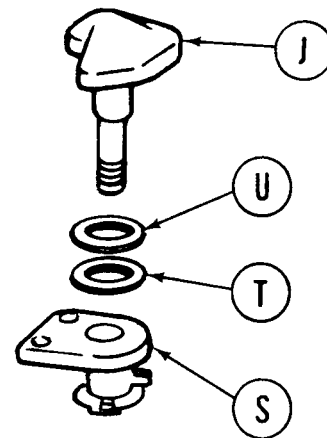
TA140739

**DRIVER'S HATCH LOCKING MECHANISM REPLACEMENT (Sheet 4 of 7)**

10. Remove spring (N) and lever (P) from dog (Q).



11. Release flat washer (R) from threaded end of pawl (J).



12. Using hammer, lightly tap end of pawl (J).  
Separate lock (S) from pawl.

13. Remove flat washer (T) and spring washer (U)  
from pawl (J).

Go on to Sheet 5

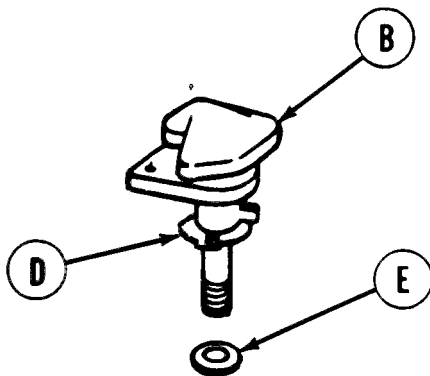
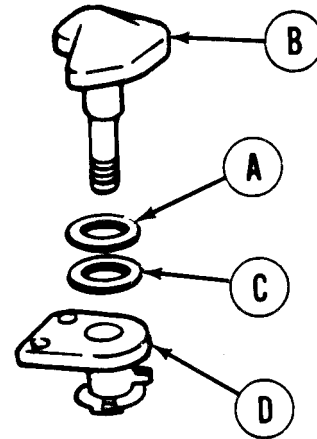
TA140740



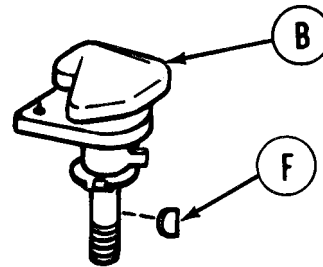
**DRIVER'S HATCH LOCKING MECHANISM REPLACEMENT (Sheet 5 of 7)**

**INSTALLATION:**

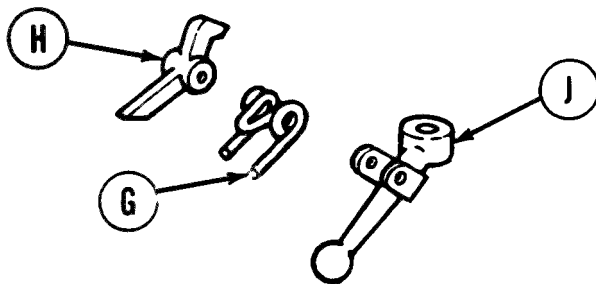
1. Install spring washer (A) on pawl (B).
2. Install flat washer (C) on pawl (B).
3. Place lock (D) on threaded end of pawl (B).
4. Using hammer, seat lock (D) on pawl (B).
5. Place flat washer (E) on threaded end of pawl (B) and seat washer against lock (D).



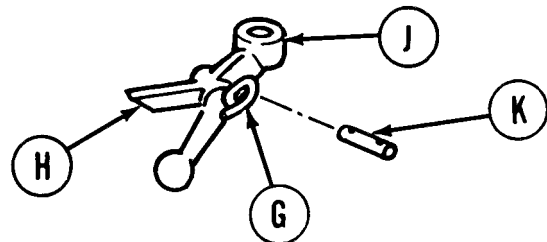
6. Using hammer, seat woodruff key (F) in groove on pawl (B).
7. Position spring (G) on lever (H).



8. Position lever (H) and spring (G) on dog (J) with tabs of spring (G) between lever (H) and dog (J).



9. Using hammer, tap straight pin (K) through bracket on dog (J), spring (G), and lever (H).

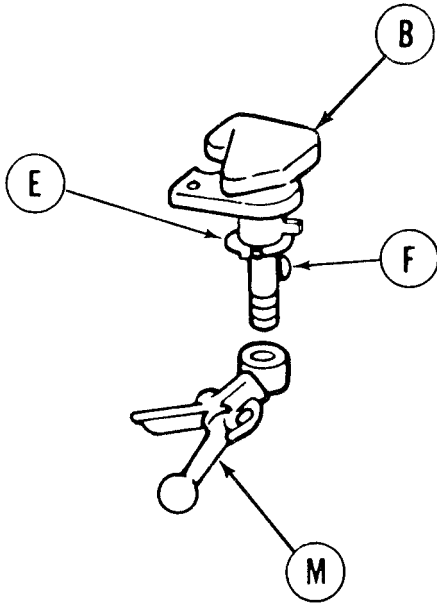
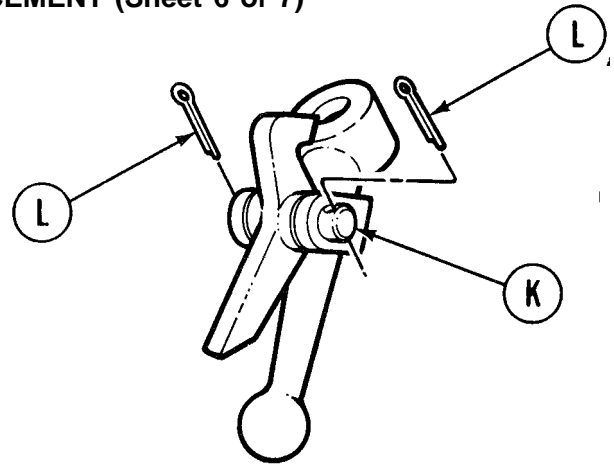


Go on to Sheet 6

TA140741

DRIVER'S HATCH LOCKING MECHANISM REPLACEMENT (Sheet 6 of 7)

10. Using hammer, tap one new cotter pin (L) into each end of straight pin (K) and secure cotter pins.

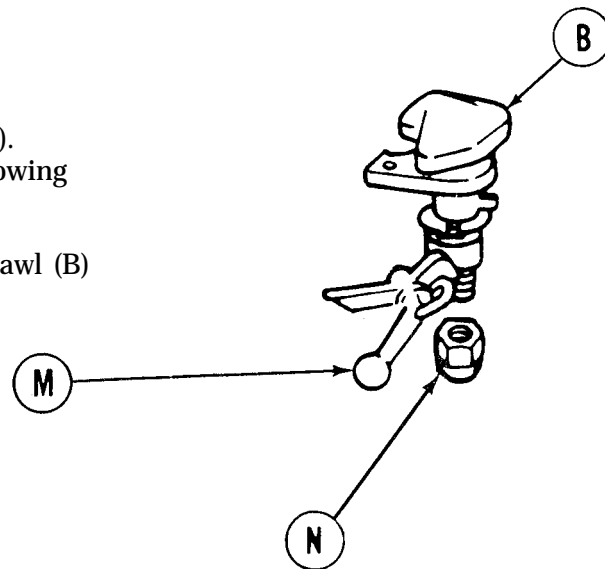


11. Place dog assembly (M) on threaded end of pawl (B). Aline lever to key (F).

12. Using hammer, tap dog assembly (M) on pawl (B) to seat dog assembly (M) against washer (E).

13. Using fingers, install nut (N) on pawl (B). Tighten nut with 1-1/8 inch wrench, allowing dog assembly (M) to turn freely.

14. Adjust tightened nut (N) on threads of pawl (B) to aline hole in nut with hole in pawl.

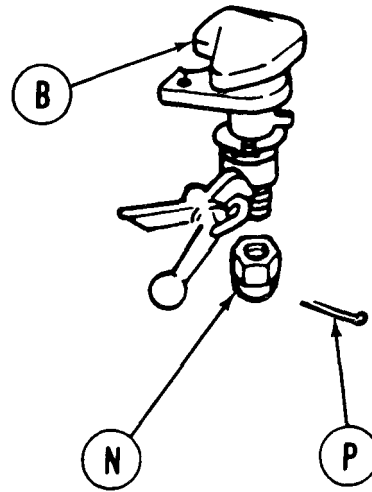
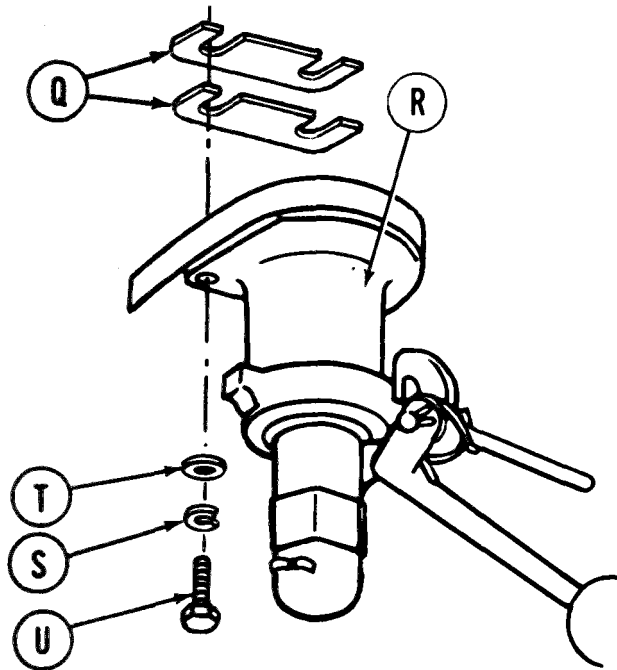


Go on to Sheet 7

TA140742

**DRIVER'S HATCH LOCKING MECHANISM REPLACEMENT (Sheet 7 of 7)**

15. Using hammer, tap new cotter pin (P) into hole in nut (N), through pawl (B) and secure.
16. Position plate spacers (Q) on locking mechanism (R).



17. Aline screw holes in locking mechanism (R) and plate spacers (Q) with holes in mounting bracket.

18. Place new lockwashers (S) and flat washers (T) on two screws and insert screws (U) through locking mechanism (R), spacers (Q), and into bracket.
19. Using 9/16 inch wrench, tighten screws (U).
20. Perform operational check of locking mechanism.
21. Close driver's hatch (TM 9-2350-222-10).

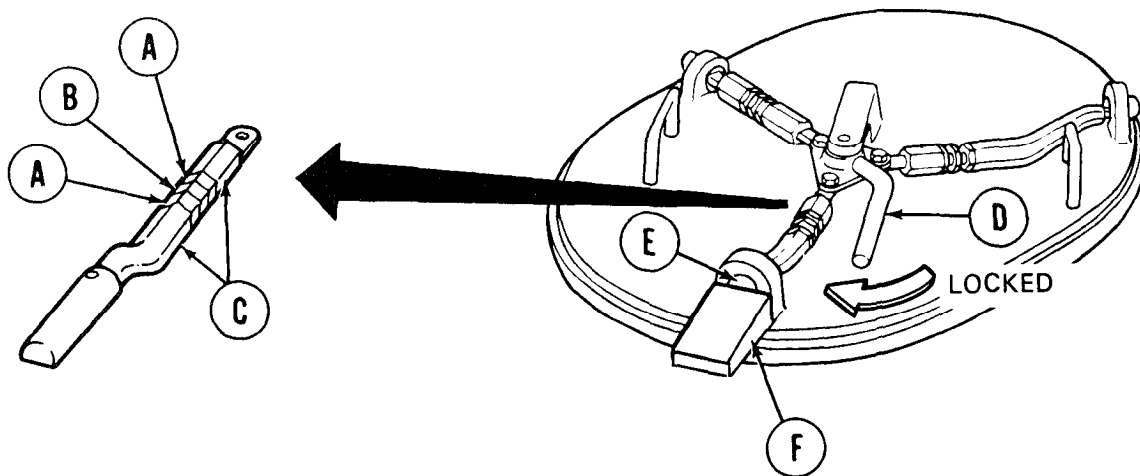
**End of Task**

TA140743

**DRIVER'S ESCAPE HATCH ADJUSTMENT (Sheet 1 of 1)**

TOOLS: 3/4 in. combination box and open wrench (2 required)  
Hydraulic jack  
Steel rule

1. Using jack, position escape hatch on vehicle so that it is seated.
2. Using wrench, loosen six jamnuts (A).
3. Using wrench, adjust three studs (B) until they are screwed completely into connectors (C).
4. Place hatch lever (D) in locked position.
5. Using wrench, adjust three studs (B) until they just start to get tight.
6. Make sure that bolts (E) are extended over escape hatch lock pads (F) by at least 3/8 inch and there is no space between bolts (E) and pads (F). If there is space between bolts (E) and pads (F), repeat step 5. If bolts (E) do not extend over pads (F) by at least 3/8 inch, reseal escape hatch on vehicle and repeat complete adjustment.
7. Using wrench to hold studs (B) and another wrench on jamnuts (A), tighten jamnuts (A).
8. Using heel of foot, move hatch lever (D) to unlocked position. If hatch lever (D) cannot be moved to unlocked position, repeat adjustment procedure.
9. Place hatch lever (D) in locked position.
10. Remove jack.



End of Task

TA140744

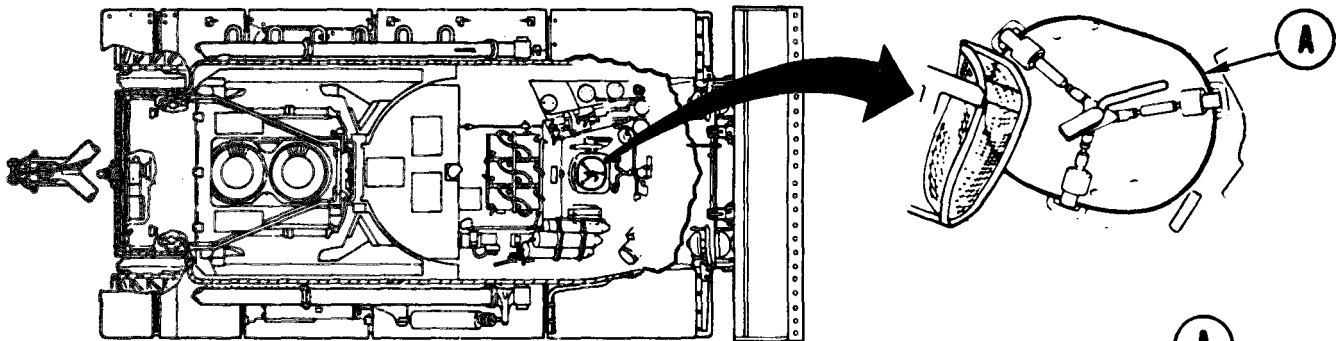
**DRIVER'S ESCAPE HATCH REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** Crowbar  
1/2 ton chain hoist

**SUPPLIES:** Tarpaulin  
Paulin strap

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove driver's seat backrest (TM 9-2350-222-10)  
Dump driver's seat (TM 9-2350-222-10)

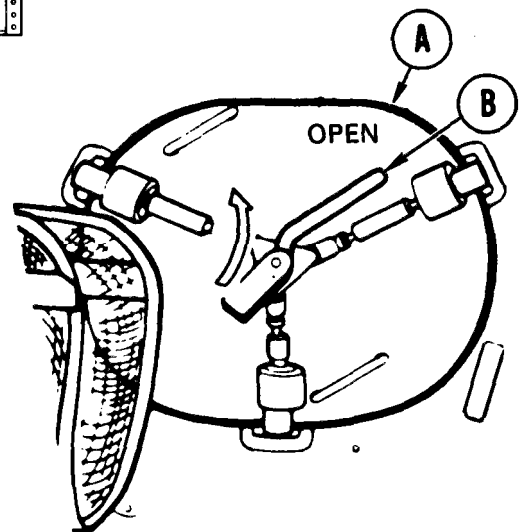


**WARNING**

**Do not stand on hatch.**

**REMOVAL:**

1. Place fold tarpaulin under driver's escape hatch (A) beneath vehicle.
2. Bump driver's escape handle (B) to the left with heel of foot. Hatch will drop out of vehicle.



Go on to Sheet 2

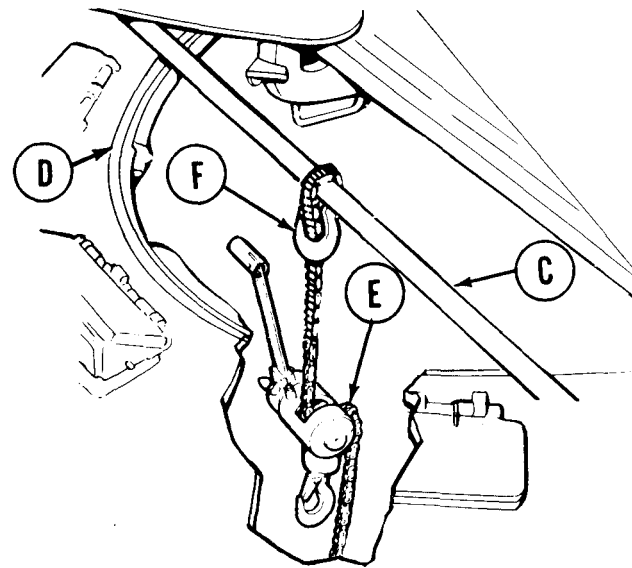
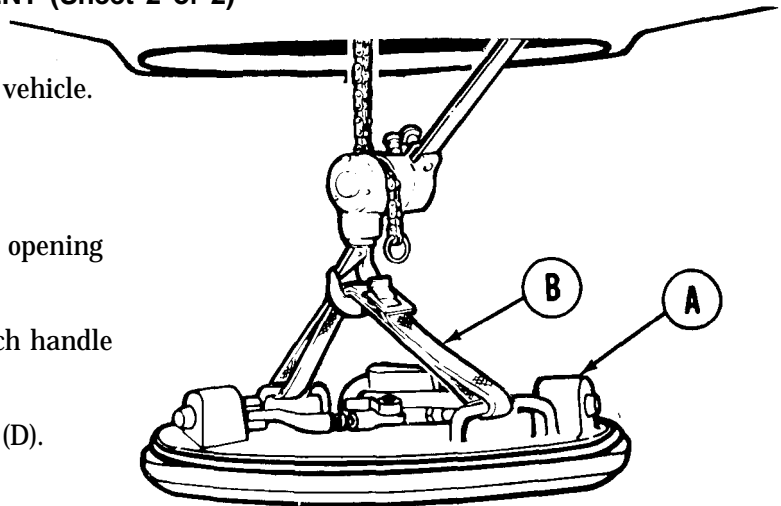
TA140745

DRIVER'S ESCAPE HATCH REPLACEMENT (Sheet 2 of 2)

- Slide driver's escape hatch from under vehicle.

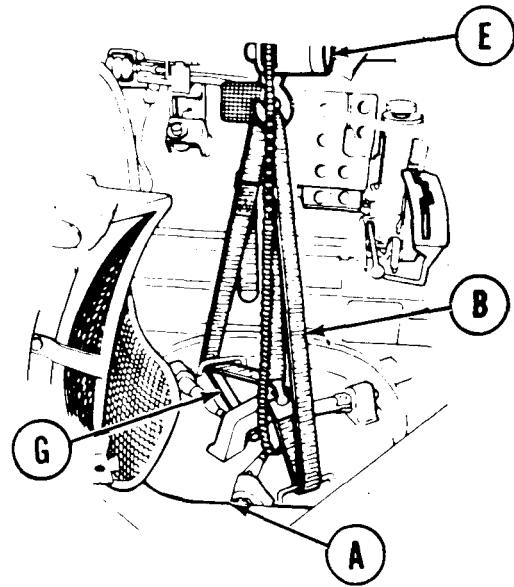
INSTALLATION:

- Place hatch cover (A) in position below opening of vehicle.
- Loop and buckle paulin strap (B) in each handle of hatch cover (A).
- Place crowbar (C) across driver's hatch (D).



- Attach chain hoist (E) around crowbar (C), securing chain with hook end (F).
- Attach paulin straps (B) to lower hook on chain hoist (E).

- Raise hatch cover (A) and guide slowly into position.
- Move hatch lever (G) to the right and lock hatch (A) when in position.
- Remove chain hoist, paulin strap, and crowbar.
- Return seat to horizontal position (TM 9-2350-222-10).
- Install driver's seat backrest (TM 9-2350-222-10).
- Stow tools and supplies.



End of Task

TA140746

**DRIVER'S ESCAPE HATCH REPAIR (Sheet 1 of 5)**

PROCEDURE INDEX

	PAGE
	16-135
Cleaning and Inspection	16-137
Assembly	16-137

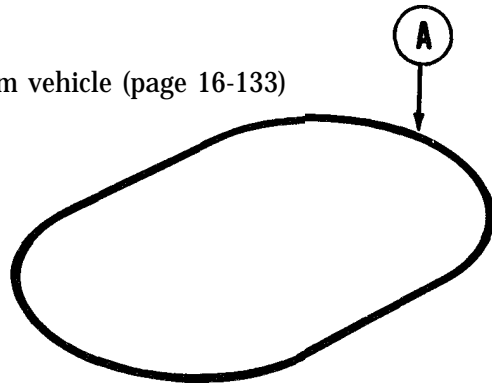
**TOOLS:** 3/16 in. socket head screw key (allen wrench)  
 3/4 in. combination box and open end wrench  
 5/8 in. combination box and open end wrench  
 12 oz. hammer  
 Center punch  
 1/8 in. drive punch  
 Putty knife  
 10 in. adjustable wrench

**SUPPLIES:** Dry cleaning solvent (Item 54, Appendix D)  
 Silicone compound (Item 32, Appendix D)  
 Rags (Item 65, Appendix D)

**PRELIMINARY PROCEDURE:** Remove escape hatch from vehicle (page 16-133)

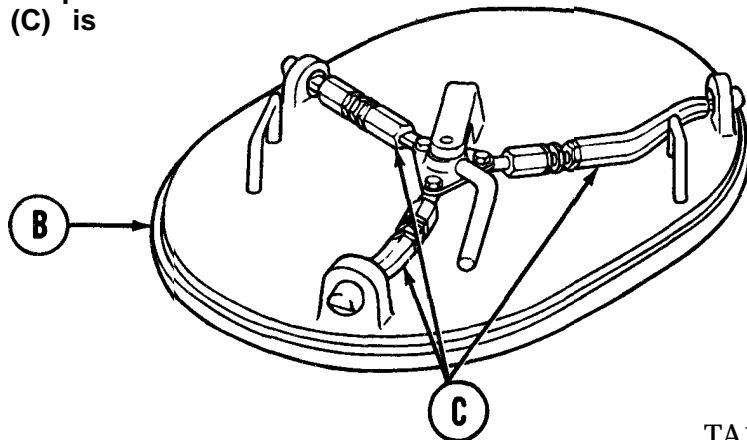
**DISASSEMBLY:**

- Using putty knife, remove seal (A) from escape hatch (B).



**NOTE**

Repair of three driver's escape hatch linkage assemblies (C) is identical.

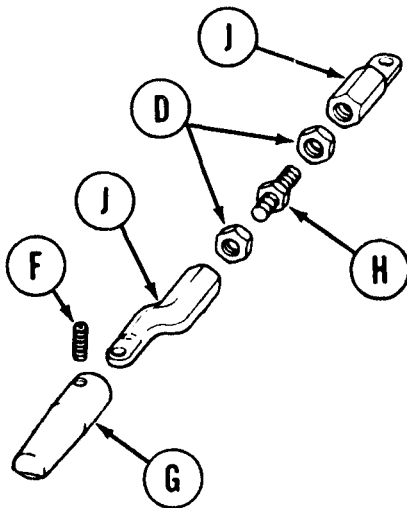
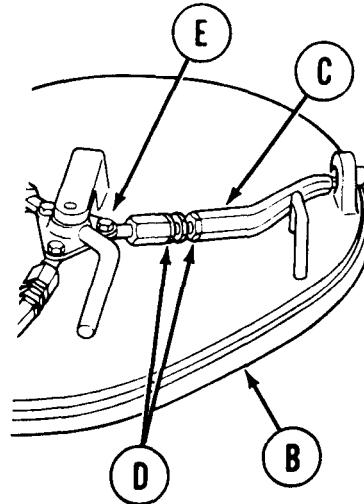


Go on to Sheet 2

TA140747

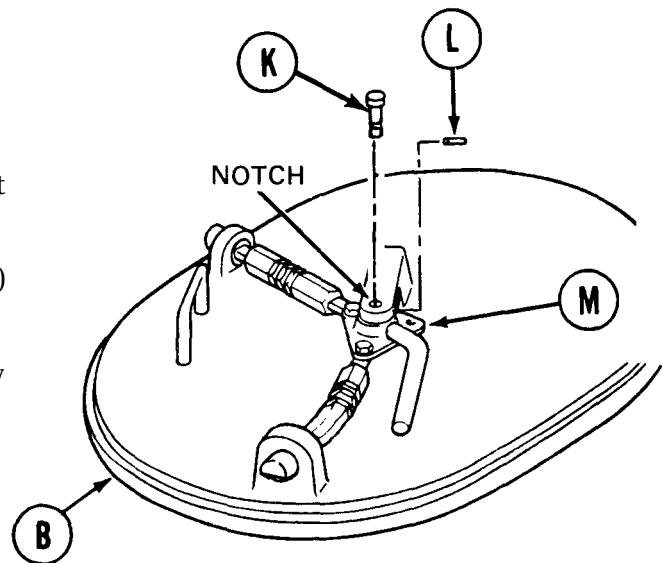
DRIVER'S ESCAPE HATCH REPAIR (Sheet 2 of 5)

2. Using adjusting wrench to hold linkage (C), use 3/4 inch wrench and loosen two jamnuts (D).
3. Using 5/8 inch wrench, remove screw (E) securing linkage (C) to cover (B).
4. Remove linkage (C) from cover (B).



5. Using allen wrench, remove screw (F) securing allen surface bolt (G) to linkage.
6. Remove surface bolt (G).
7. Using 3/4 inch wrench, remove two end connectors (J) and jamnuts (D) from stud (H).

8. Using hammer and punch, make a notch on grooved pin (K) and on cover (B) for alinement purposes during installation.
9. Using hammer and punch, drive spring pin (L) from handle assembly (M). Do not remove.
10. Remove grooved pin (K) from handle assembly (M) by pushing up from bottom.



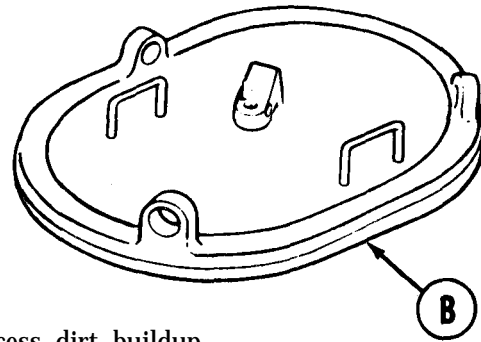
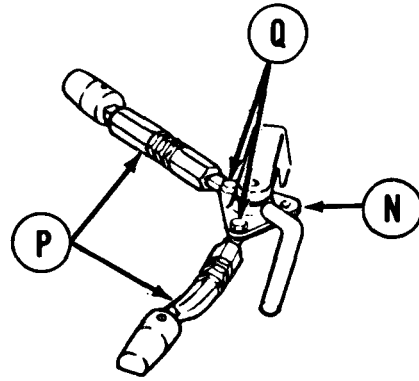
Go on to Sheet 3

TA140748



**DRIVER'S ESCAPE HATCH REPAIR (Sheet 3 of 5)**

1. Remove handle (N) assembly and two linkages (P) from cover (B).
2. Using 5/8 inch wrench, remove two screws (Q) separating handle assembly from two linkages.

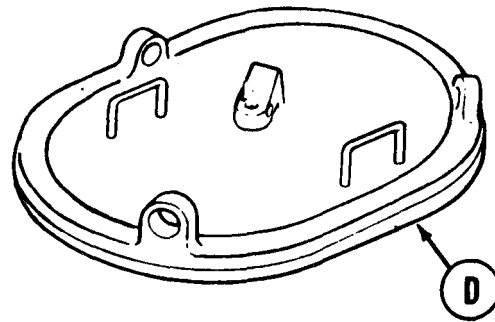
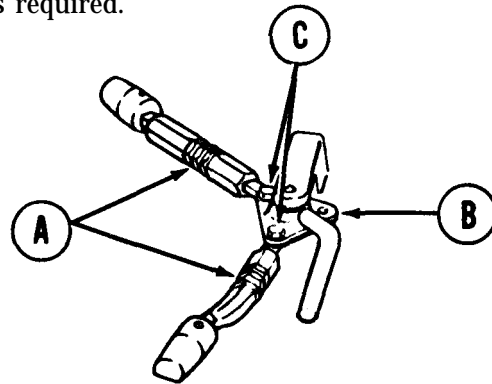


**CLEANING AND INSPECTION:**

1. Using rags, clean surface bolts and linkages of any excess dirt buildup.
2. Clean seal groove and seal with dry cleaning solvent (Item 54, Appendix D) and coat with silicone compound (Item 32, Appendix D).
3. Inspect all components for damage or wear. Replace as required.

**ASSEMBLY:**

1. Place two linkages (A) in position on handle assembly (B).
2. Using 5/8 inch wrench, install two screws (C) securing linkages (A) to handle assembly (B).
3. Place linkages and handle assembly (A) and (B) in position on access cover (D).

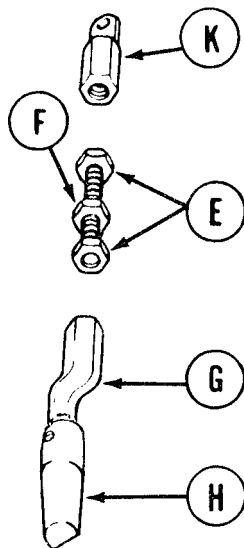
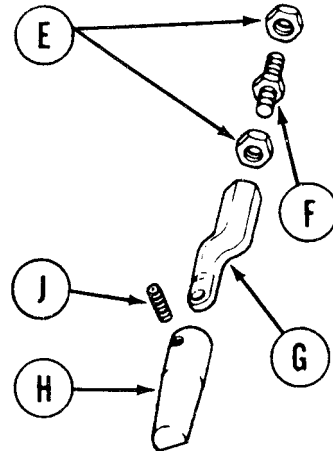


Go on to Sheet 4

TA140749

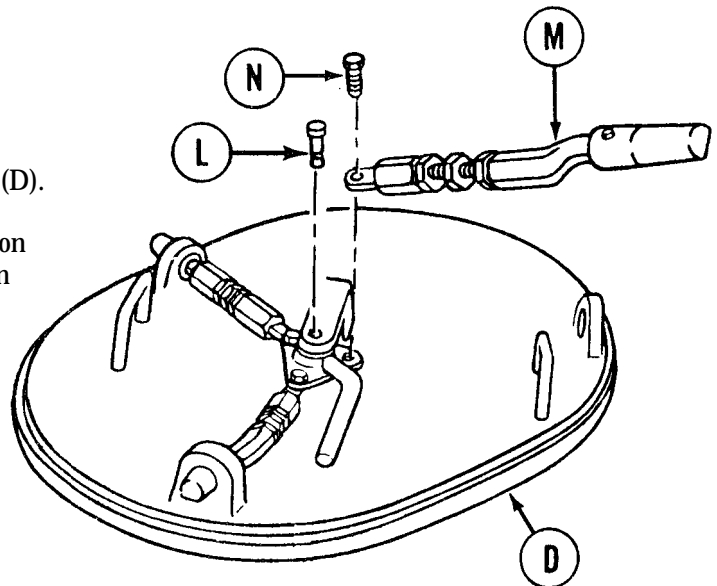
DRIVER'S ESCAPE HATCH REPAIR (Sheet 4 of 5)

4. Place two jamnuts (E) on stud (F).
5. Place end connector (G) into surface bolt (H).
6. Using allen wrench, install screw (J) in surface bolt (H) securing end connector (G).



7. Place end connector and surface bolt (G) and (H) on one of studs (F).
8. Place end connector (K) on other end of stud (F).
9. Using 3/4 inch wrench, tighten jamnuts (E) up against both end connectors (G) and (K).

10. Install grooved pin (L) in position on cover (D).
11. Place complete linkage assembly (M) in position on cover (D), notch on surface bolt (H) in down position.
12. Using 5/8 inch wrench, install screw (N) securing linkage (M) to cover (D).

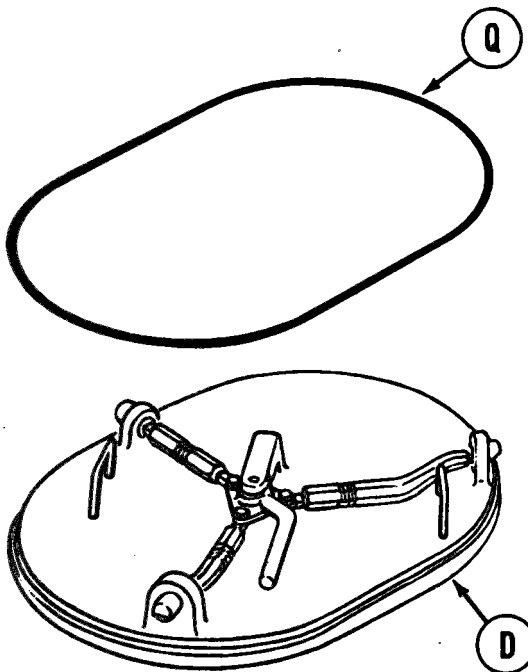
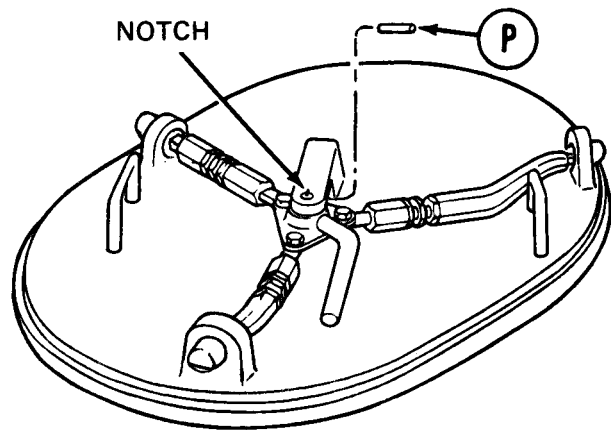


Go on to Sheet 5

TA14075

**DRIVER'S ESCAPE HATCH REPAIR (Sheet 5 of 5)**

13. Aline the two notches made during disassembly.
14. Using hammer and punch, install spring pin (P).



15. Make sure seal (Q) and seal groove have silicone compound applied.
16. Install seal (Q) on cover (D).
17. Install driver's escape hatch in vehicle (page 16-134).

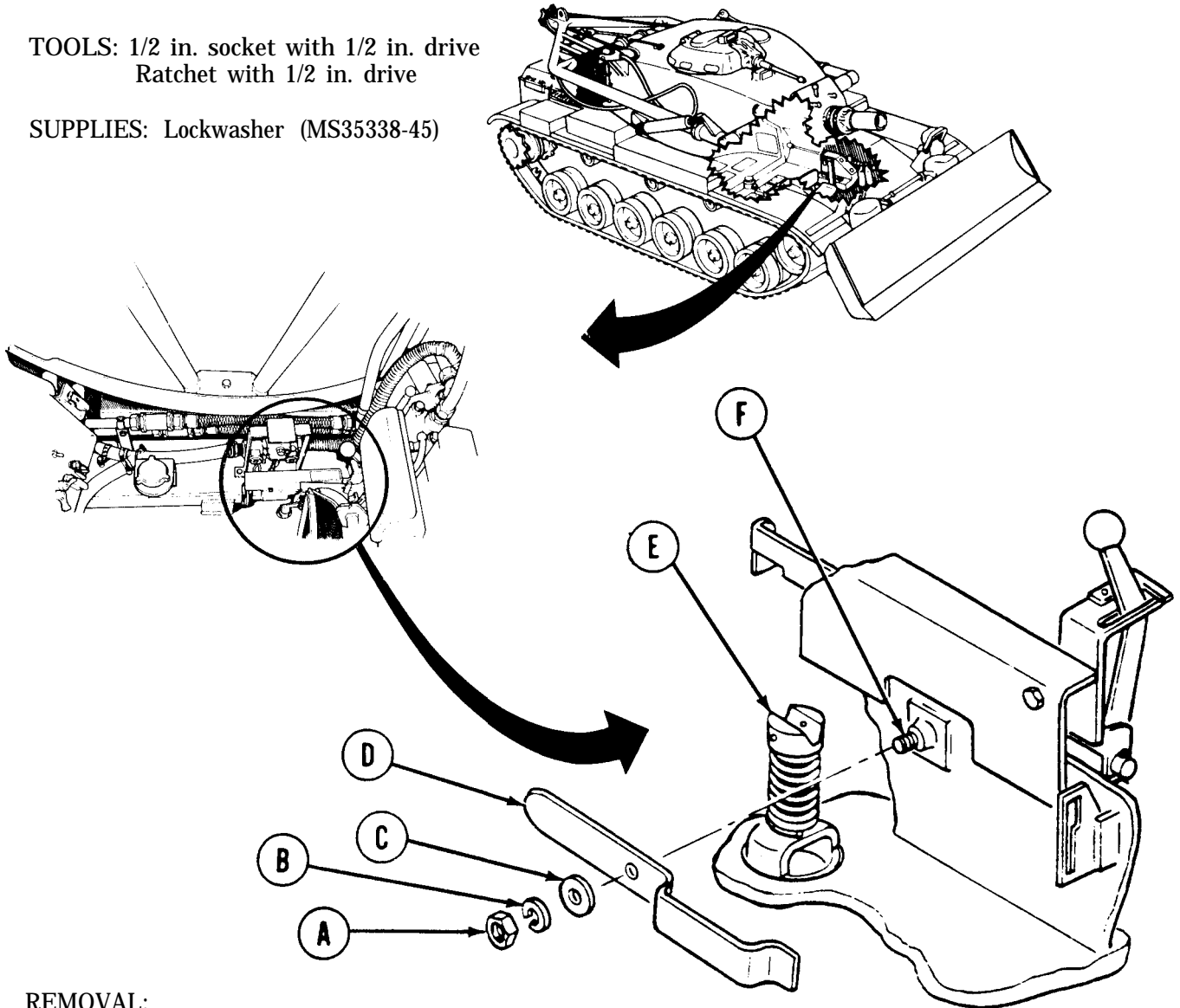
**End of Task**

TA140751

FRONT DRAIN VALVE CONTROL LEVER REPLACEMENT (Sheet 1 of 1)

TOOLS: 1/2 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

SUPPLIES: Lockwasher (MS35338-45)



REMOVAL:

Using socket, remove nut (A), lockwasher (B), flat washer (C), and lever (D) from stud (F). Push down on knob (E) to remove lever (D). Throw lockwasher away.

INSTALLATION:

1. Put lever (D) on stud (F) and in groove on knob (E). Push down on knob (E) to install lever (D).
2. Using socket, install flat washer (C), new lockwasher (B), and nut (A) on stud (F).
3. Operate front drain valve and make sure valve opens and closes smoothly. If lever does not operate smoothly, loosen nut (A) slightly and operate valve again.

End of Task

TA140752

FRONT DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 1 of 5)

PROCEDURE INDEX

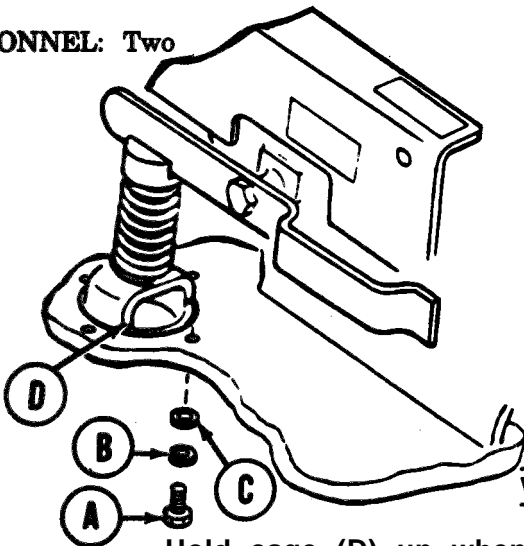
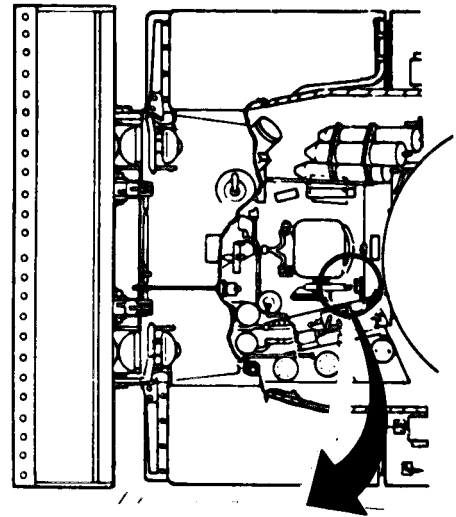
PROCEDURE	PAGE
Removal	16-141
Cleaning and Inspection	16-143
Installation	16-143

**TOOLS:** Prybar  
 1/2 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Hand hammer  
 1/8 in. drive pin punch  
 Torque wrench with 1/2 in. drive  
 (0-175 lb ft) (0-237N·m)

Flat-tip screwdriver (2 required)  
 6 or 12 in. ruler  
 Putty knife  
 Slip joint pliers  
 Vice

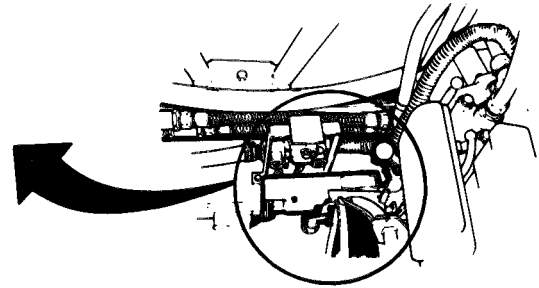
**SUPPLIES:** Gasket (10663544)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Rags (Item 65, Appendix D)  
 Lockwasher (MS35338-64) (4 required)  
 Locking compound (Item 16, Appendix D)

**PERSONNEL:** Two



**WARNING**

Hold cage (D) up when removing last screw (A). Valve assembly may fall and cause injury.



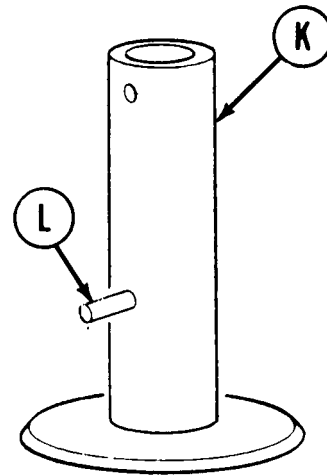
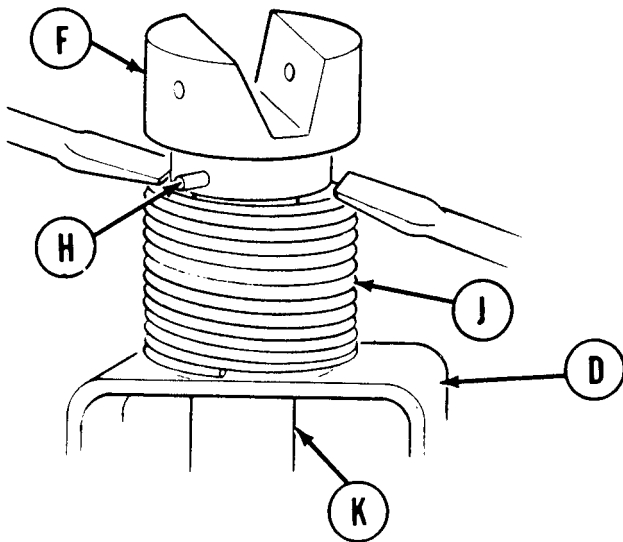
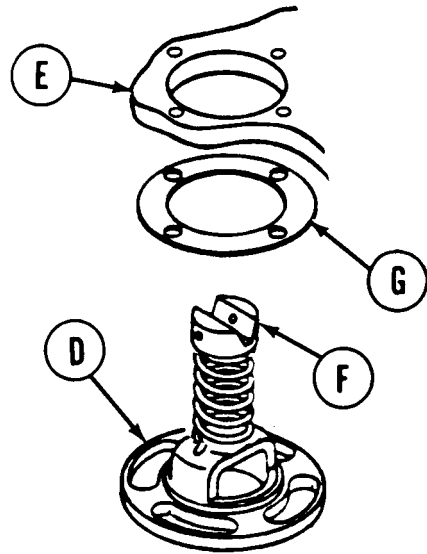
1. From underside of vehicle, using socket, remove four screws (A), lockwashers (3), and flat washers (C) from cage (D). Throw lockwashers away.

Go on to Sheet 2

TA253632

FRONT DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 2 of 5)

2. Using prybar, pry cage (D) from bottom of hull (E). If cage (D) will not come off, hit knob (F) with hammer until cage (D) comes out.
3. Using putty knife, scrape gasket (G) from cage (D) and hull (E).
4. Clamp cage (D) in vise.
5. Using hammer and punch, drive pin (H) out of hole in knob (F), while second person holds spring (J) down using two screwdrivers. Throw pin (H) away if damaged.
6. Remove knob (F), spring (J), and valve (K) from cage (D).
7. With valve (K) in vise, using hammer and punch, drive pin (L) out of hole in valve (K). Throw pin (L) away if damaged.



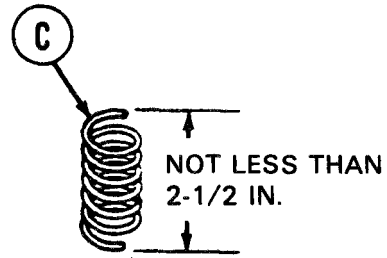
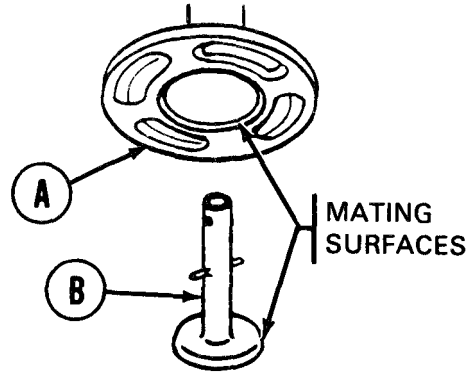
Go on to Sheet 3

TA140751

**FRONT DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 3 of 5)**

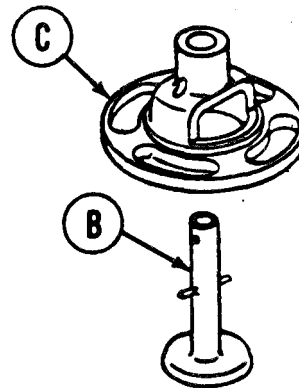
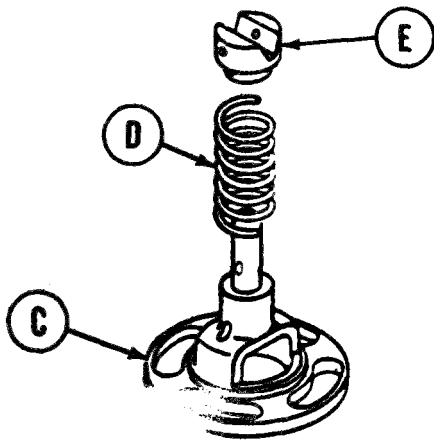
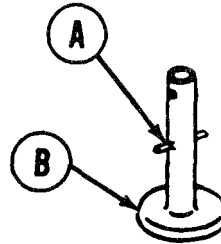
**CLEENING AND INSPECTION:**

1. Clean all parts using dry cleaning solvent (Item 54, Appendix D) and clean rags.
2. Inspect all parts for cracks, corrosion, damage, or other defects. Replace defective parts.
3. Inspect mating surface of cage (A) and valve (B) for cracks, corrosion, damage, or other defects. Replace cage (A) or valve (B) if defective.
4. Measure length of spring (C). If spring length is less than 2-1/2 inches, replace spring.



**INSTALLATION:**

1. Using pliers, start pin (A) in lower hole in valve (B).
2. With valve (B) in vise, drive pin (A) in hole until pin (A) sticks out an equal amount on both sides of valve (B).
3. Push valve (B) up through cage (C) and turn valve (B) until valve (B) fits all the way up in cage (C).
4. With cage (C) in vise, hold valve (B) in place and install spring (D) and knob (E) on cage (C).

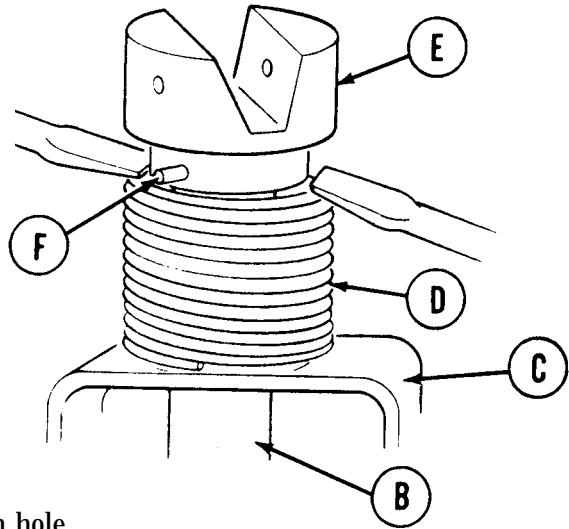


Go on to Sheet 4

TA140755

**FRONT DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 4 of 5)**

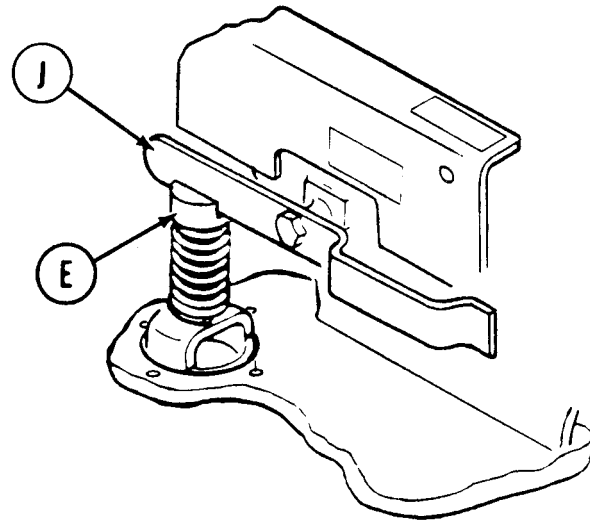
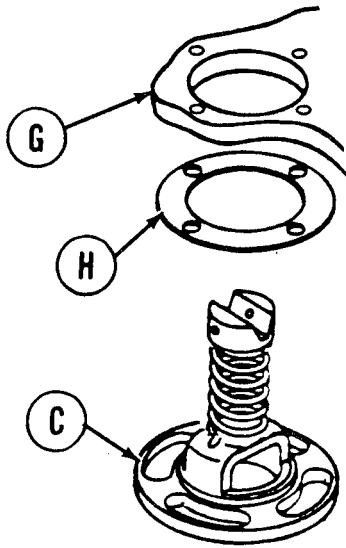
- Using punch, line up hole in knob (E) and hole in valve (B) while second person holds down spring (D), using two screwdrivers.



- Using pliers, start pin (F) in hole in knob (E).
- Using hammer and punch, drive pin (F) all the way in hole.

**NOTE**

**Make sure lever (J) fits in center of groove in knob (E) when holes are lined up.**



- Line up holes in cage (C), new gasket (H), and hull (G).

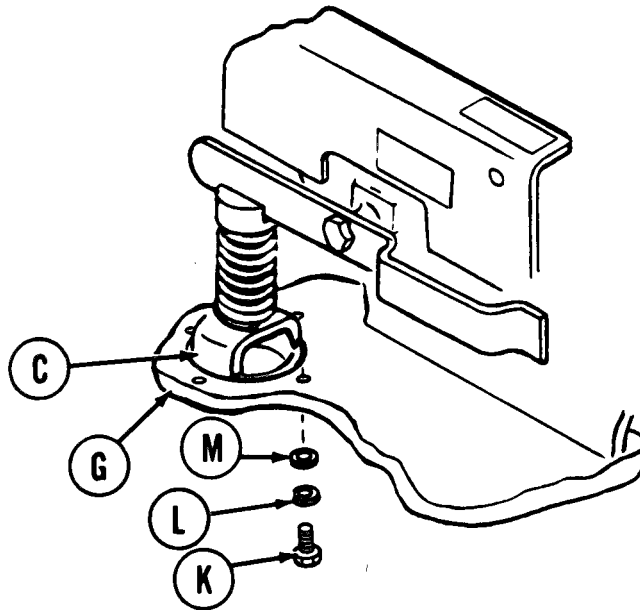
Go on to Sheet 5

TA140756



**FRONT DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 5 of 5)**

- 9 . Apply locking compound (Item 16, Appendix D) to threads of screws (K) prior to installation.
10. Using socket, install four screws (K), new lockwashers (L), and flat washers (M) in holes in cage (C) and hull (G).
11. Using torque wrench and socket, tighten screws (K) 5 to 10 lb-ft (6-13 N·m).
12. Check front drain valve for proper operation.



End of Task

TA253633

Change 1 16-145

REAR DRAIN VALVE CONTROL LEVER ASSEMBLY REPLACEMENT (Sheet 1 of 4)

PROCEDURE INDEX

	PAGE
Removal	16-147
Cleaning and Inspection	16-148
Installation	16-148

TOOLS: Slip joint pliers

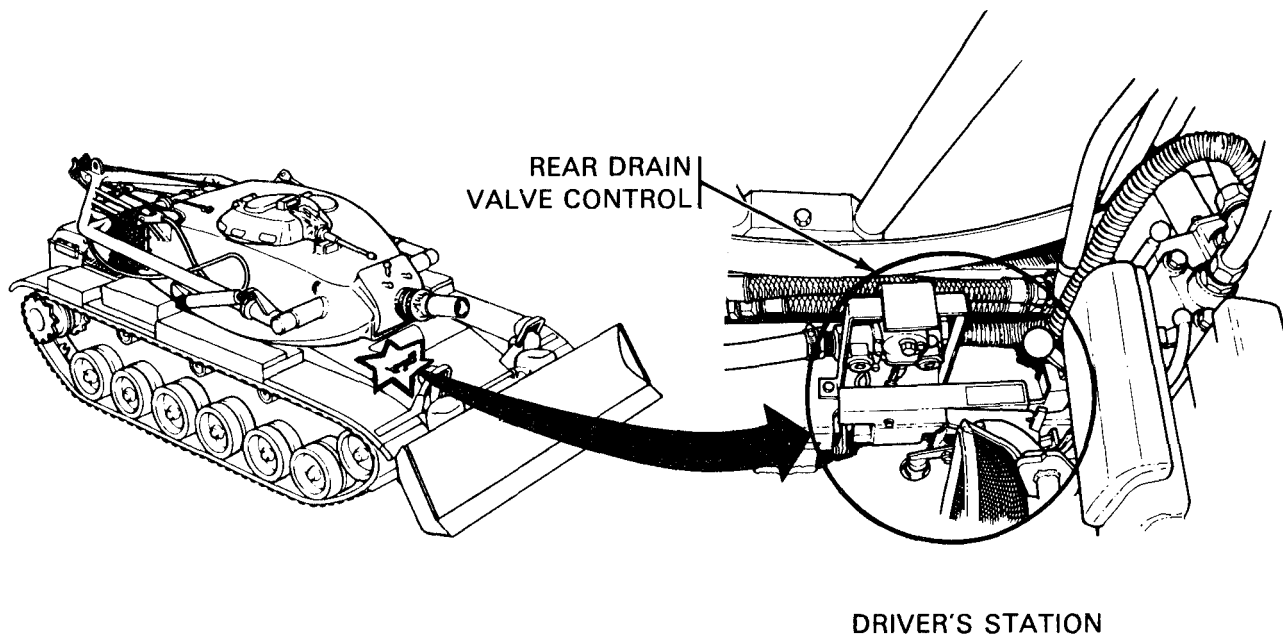
- Hammer
- 1/8 in. drive pin punch
- 5/16 in. combination box and open end wrench
- 7/16 in. combination box and open end wrench
- 1/2 in. drive pin punch
- Vise

SUPPLIES: Cotter pin (MS24665-283)

- Dry cleaning solvent (Item 54, Appendix D)
- Rags (Item 65, Appendix D)
- Lockwasher (MS35338-63) (2 required)
- Lockwasher (MS35333-39) (2 required)

REFERENCE: TM 9-2350-222-10

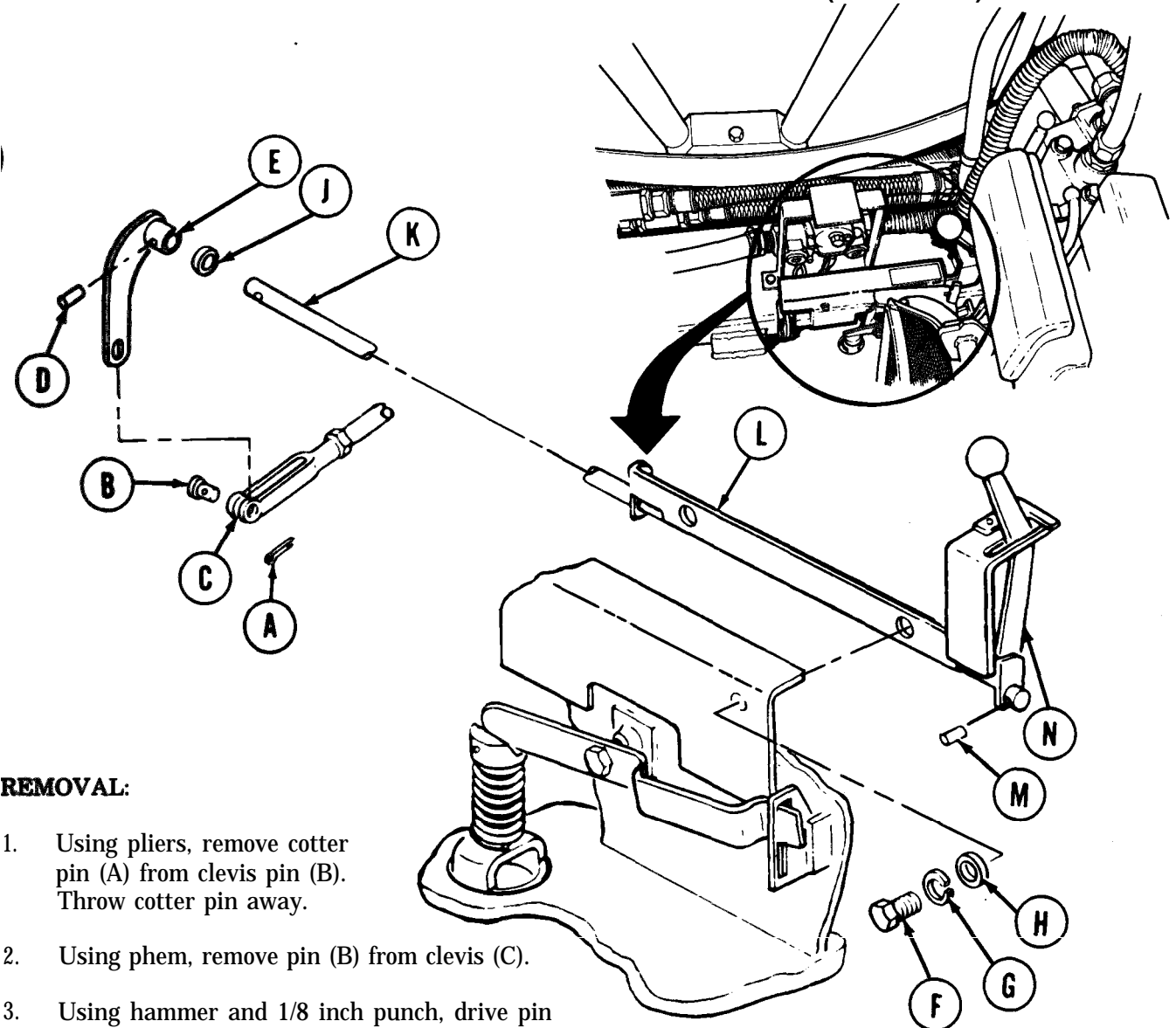
PRELIMINARY PROCEDURES: Dump driver's seat (TM 9-2350-222-10)



Go on to Sheet 2

TA140758

REAR DRAIN VALVE CONTROL LEVER ASSEMBLY REPLACEMENT (Sheet 2 of 4)



**REMOVAL:**

1. Using pliers, remove cotter pin (A) from clevis pin (B). Throw cotter pin away.
2. Using phem, remove pin (B) from clevis (C).
3. Using hammer and 1/8 inch punch, drive pin (D) out of lever (E).
4. Using 7/16 inch wrench, remove two screws (F), lockwashers (G), and flat washers (H). Throw lockwashers away.

**NOTE**

**It may be necessary to tap lever (E) with hammer for removal.**

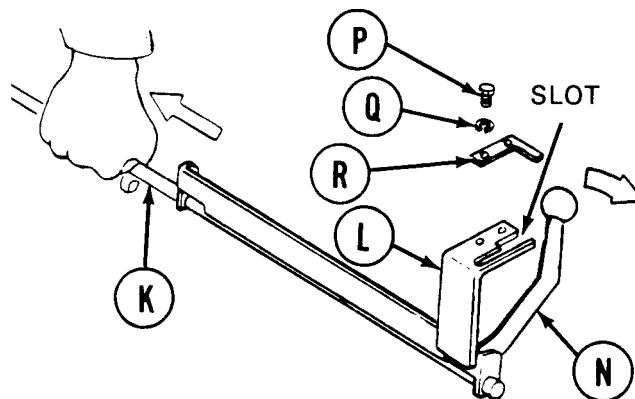
5. Remove lever (E) and washer (J) from shaft (K).
6. Remove bracket (L) from vehicle.
7. Secure bracket (L) in vise.
8. Using hammer and 1/8 inch punch, drive pin (M) out of control lever (N).

Go on to Sheet 3

TA140759

REAR DRAIN VALVE CONTROL LEVER ASSEMBLY REPLACEMENT (Sheet 3 of 4)

9. Using 5/16 inch wrench, remove two screws (P) and lockwashers (Q). Remove lever stop (R). Throw lockwashers away.
10. Pull control lever (N) out of slot in bracket (L).
11. Pull shaft (K) and control lever (N) out of bracket (L).
12. Secure lever (N) in vise and using hammer and 1/2 inch punch, drive shaft (K) from lever (N).

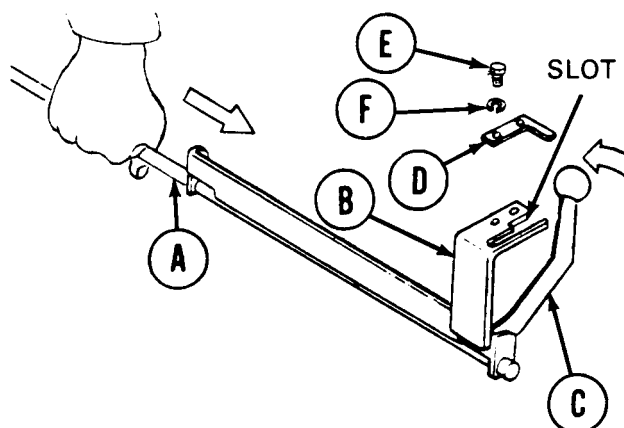


CLEANING AND INSPECTION:

1. Using dry cleaning solvent (Item 54, Appendix D) and rags, clean all parts.
2. Inspect parts for bends, cracks, or other defects. Replace defective parts.

INSTALLATION:

1. Push shaft (A) through holes in bracket (B) and hole in control lever (C). Make sure control lever (C) is not installed backwards.
2. Push control lever (C) in slot in bracket (B).
3. Line up holes in lever stop (D) and holes in bracket (B).
4. Install two screws (E) and new lockwashers (F) attaching lever stop (D) to bracket (B).

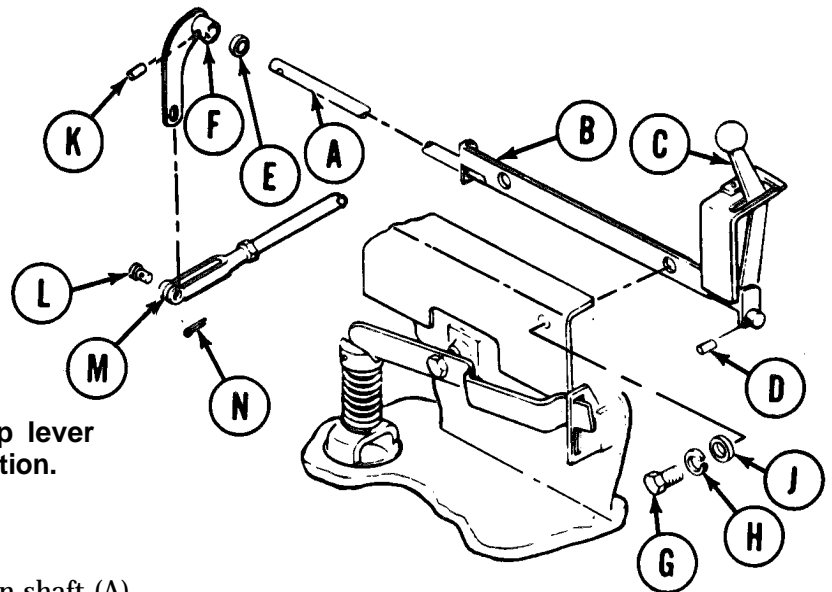


Go on to Sheet 4

TA140760,

## REAR DRAIN VALVE CONTROL LEVER ASSEMBLY REPLACEMENT (Sheet 4 of 4)

5. Clamp bracket (B) in vise.
6. Using 1/8 inch punch and pliers, line up hole in shaft (A) with hole in control lever (C).
7. Using pliers, start pin (D) in hole in control lever (C).
8. Using hammer and 1/8 inch punch, drive pin (D) all the way in hole.
9. Position bracket (B) in vehicle.

**NOTE**

It may be necessary to tap lever (F) with hammer for installation.

10. Install washer (E) and lever (F) on shaft (A).
11. Using wrench, install two screws (G), new lockwashers (H), and flat washers (J) attaching bracket (B) to vehicle.
12. Using 1/8 inch punch, line up hole in shaft (A) with hole in lever (F).
13. Using pliers, start pin (K) in hole in lever (F).
14. Using hammer and 1/8 inch punch, drive pin (K) all the way in hole.
15. Install clevis pin (L) through hole in clevis (M) and hole in lever (F).
16. Install new cotter pin (N) in clevis pin (L).
17. Operate rear drain valve and make sure valve opens and closes smoothly. If valve does not open and close properly, check for things in the way and for missing parts. Clear things in the way and install missing parts.
18. Place driver's seat to normal position (TM 9-2350-222-10).

End of Task

TA140761

**REAR DRAIN VALVE REAR ROD, COUPLING, AND CLEVIS REPLACEMENT**  
 (Sheet 1 of 6)

PROCEDURE INDEX

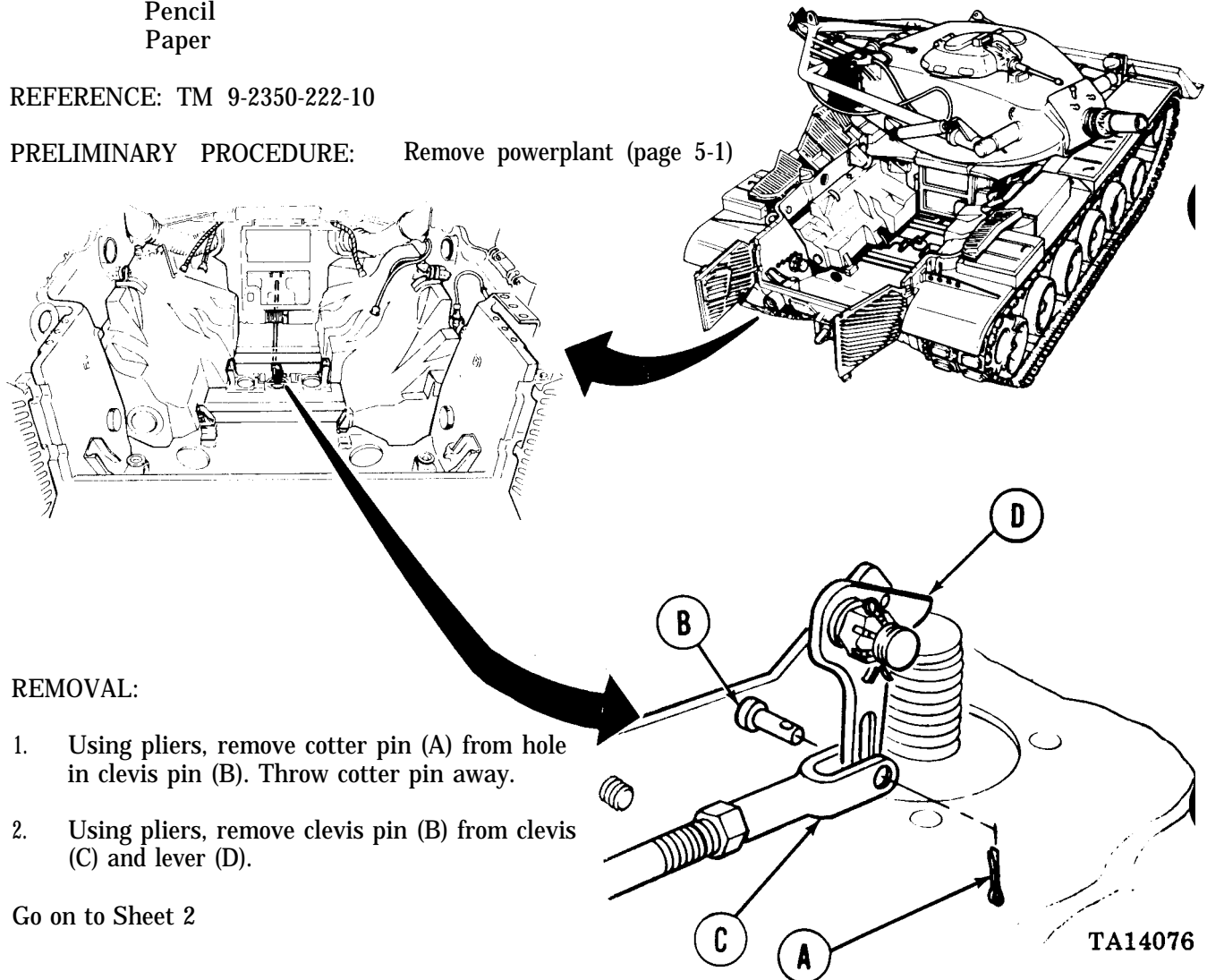
PROCEDURE	PAGE
Removal	16-150
Installation	16-153

**TOOLS:** Slip joint pliers  
 6 in. steel rule  
 9/16 in. combination box and open end wrench (2 required)  
 10 in. pipe wrench

**SUPPLIES:** Cotter pin (MS24665-283)  
 Pencil  
 Paper

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove powerplant (page 5-1)



**REMOVAL:**

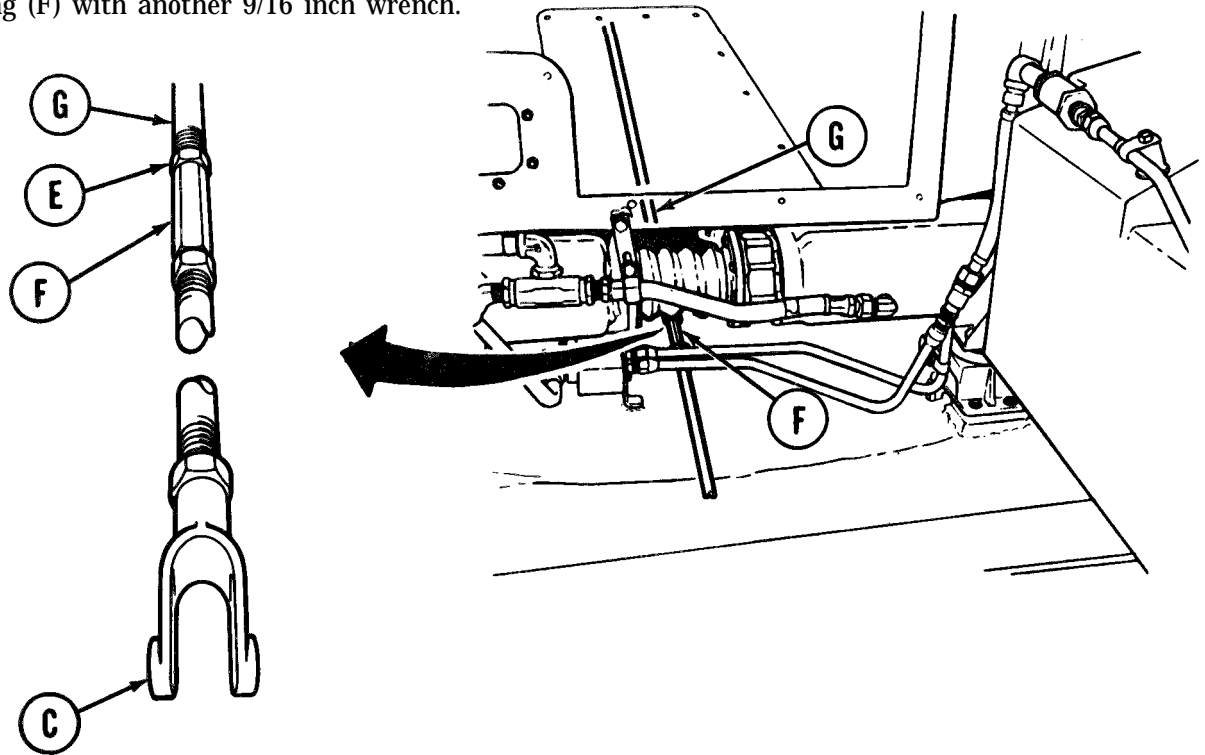
- Using pliers, remove cotter pin (A) from hole in clevis pin (B). Throw cotter pin away.
- Using pliers, remove clevis pin (B) from clevis (C) and lever (D).

Go on to Sheet 2

TA14076

## REAR DRAIN VALVE REAR ROD, COUPLING, AND CLEVIS REPLACEMENT (Sheet 2 of 6)

- Using 9/16 inch wrench, loosen coupling jamnut (E) from coupling (F) while holding coupling (F) with another 9/16 inch wrench.



### NOTE

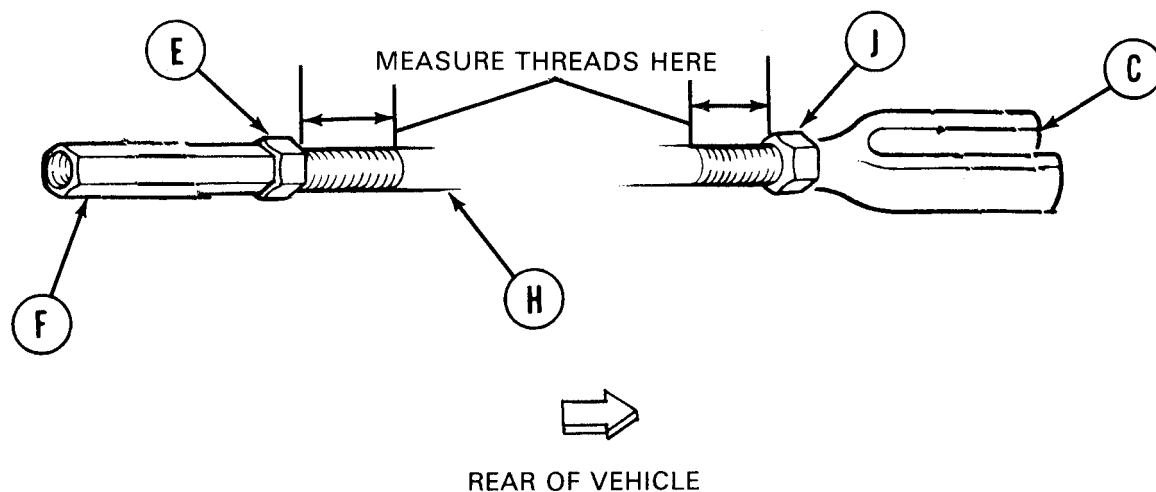
Be sure to count and write down number of turns needed to unscrew coupling (F) from rear intermediate rod (G).

- Turn clevis (C) until coupling (F) unscrews from rear intermediate rod (G).

Go on to Sheet 3

TA140763

REAR DRAIN VALVE REAR ROD, COUPLING, AND CLEVIS REPLACEMENT  
(Sheet 3 of 6)



5. Measure and record length of threads on both ends of rod (H).
6. Using 9/16 inch wrench, loosen coupling jamnut (E) while holding coupling (F) with another 9/16 inch wrench.
7. Using 9/16 inch wrench, loosen clevis jamnut (J) while holding clevis (C) with pliers.
8. Using pliers, if necessary, remove clevis (C), clevis jamnut (J), coupling (F), and coupling jamnut (E) from rod (H).
9. Remove parts from vehicle.

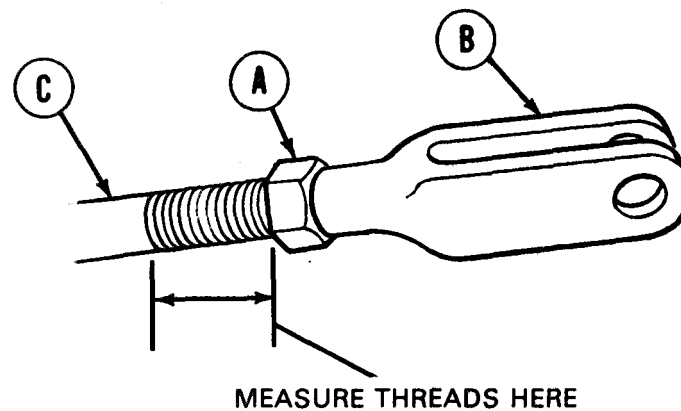
Go on to Sheet 4

TA140764



**REAR DRAIN VALVE REAR ROD, COUPLING, AND CLEVIS REPLACEMENT  
(Sheet 4 of 6)****INSTALLATION:**

1. Install clevis jamnut (A) and clevis (B) on either end of rod (C).
2. Adjust clevis (B) and clevis jamnut (A) until original length of threads can be measured on rod (C) with clevis jamnut (A) finger tightened against clevis (B) (page 16-152, step 5).
3. Using wrench, tighten clevis jamnut (A) against clevis (B), while holding clevis (B) with pliers.

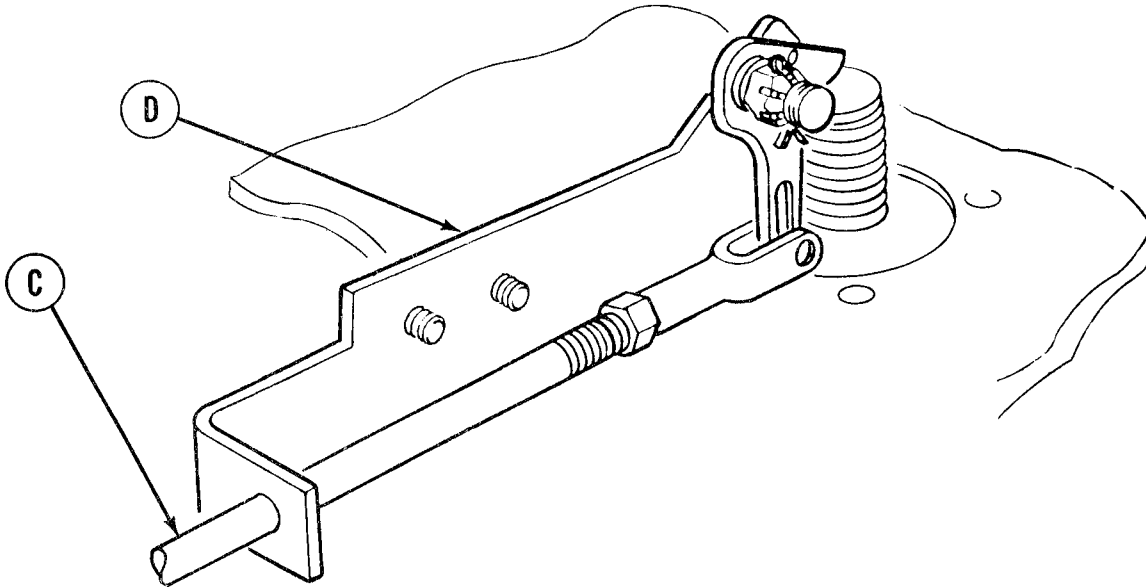


Go on to Sheet 5

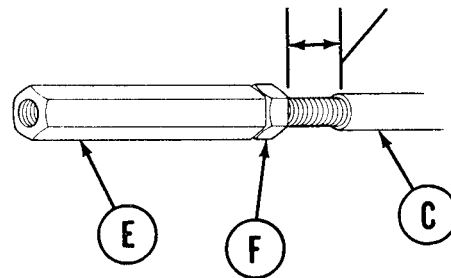
TA140765

**REAR DRAIN VALVE REAR ROD, COUPLING, AND CLEVIS REPLACEMENT**  
 (Sheet 5 of 6)

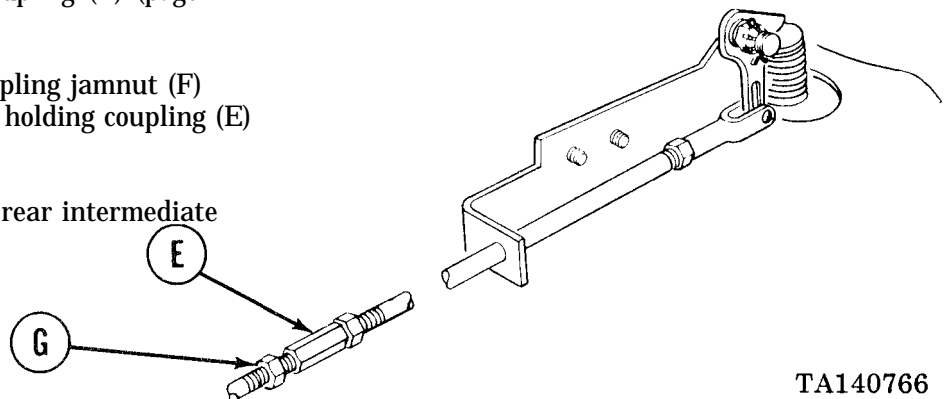
- Put end of rod (C) through hole in bracket (D).



MEASURE THREADS HERE



- Install coupling (E) and coupling jamnut (F) on end of rod (C).
- Adjust coupling (E) and coupling jamnut (F) until original length of threads can be measured on rod (C) with coupling jamnut (F) finger tightened against coupling (E) (page 16-152, step 5).
- Using wrench, tighten coupling jamnut (F) against coupling (E) while holding coupling (E) with another wrench.
- Line up coupling (E) with rear intermediate control rod (G).

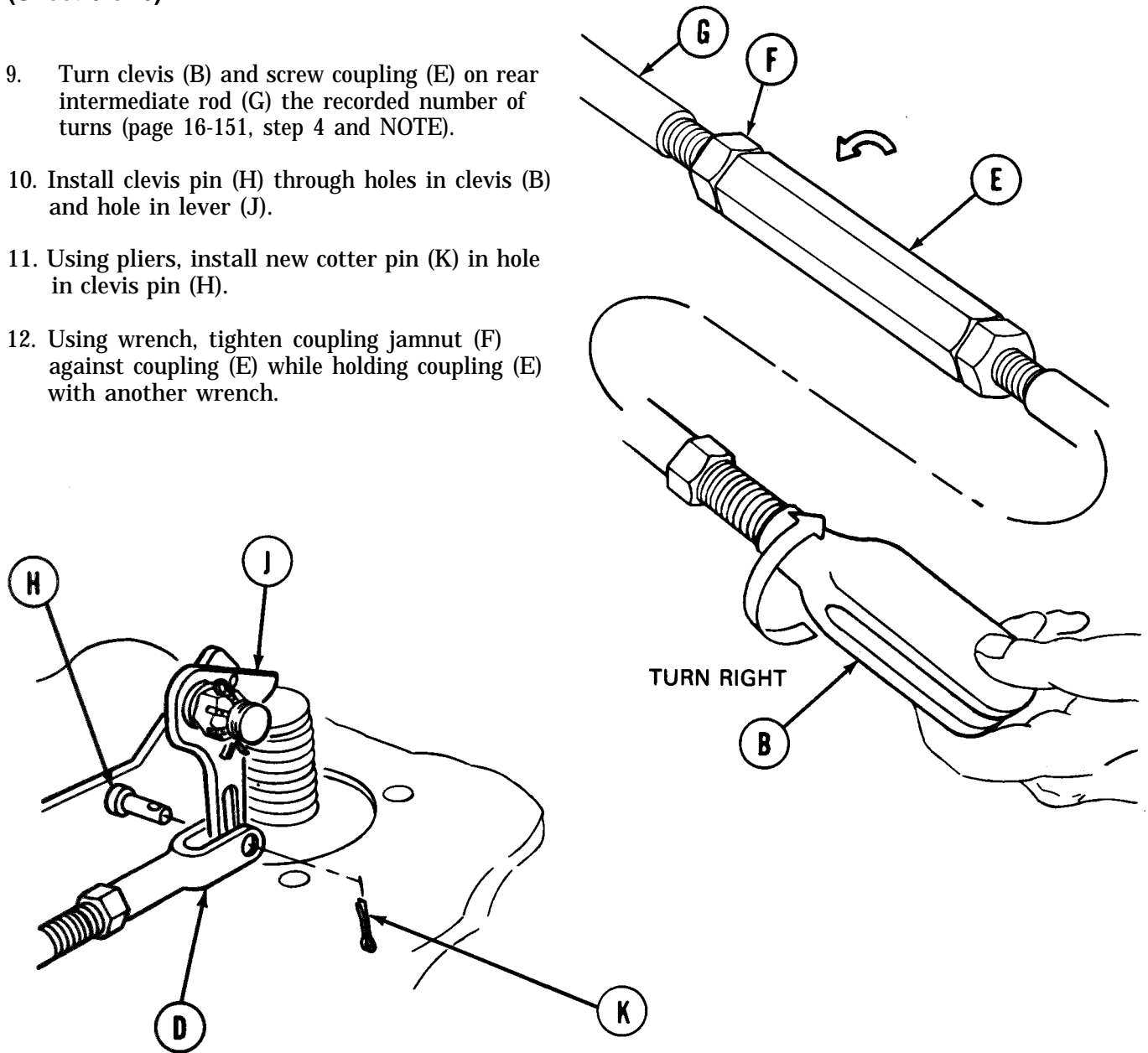


Go on to Sheet 6

TA140766

## REAR DRAIN VALVE REAR ROD, COUPLING, AND CLEVIS REPLACEMENT (Sheet 6 of 6)

9. Turn clevis (B) and screw coupling (E) on rear intermediate rod (G) the recorded number of turns (page 16-151, step 4 and NOTE).
10. Install clevis pin (H) through holes in clevis (B) and hole in lever (J).
11. Using pliers, install new cotter pin (K) in hole in clevis pin (H).
12. Using wrench, tighten coupling jamnut (F) against coupling (E) while holding coupling (E) with another wrench.



### NOTE

If valve does not operate properly, check linkage for obstructions and adjust linkage, if necessary.

13. Operate valve to make sure rear drain valve opens and closes smoothly (TM 9-2350-222-10).
14. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).

End of Task

TA140767

REAR DRAIN VALVE ACTUATING LEVER REPLACEMENT (Sheet 1 of 4)

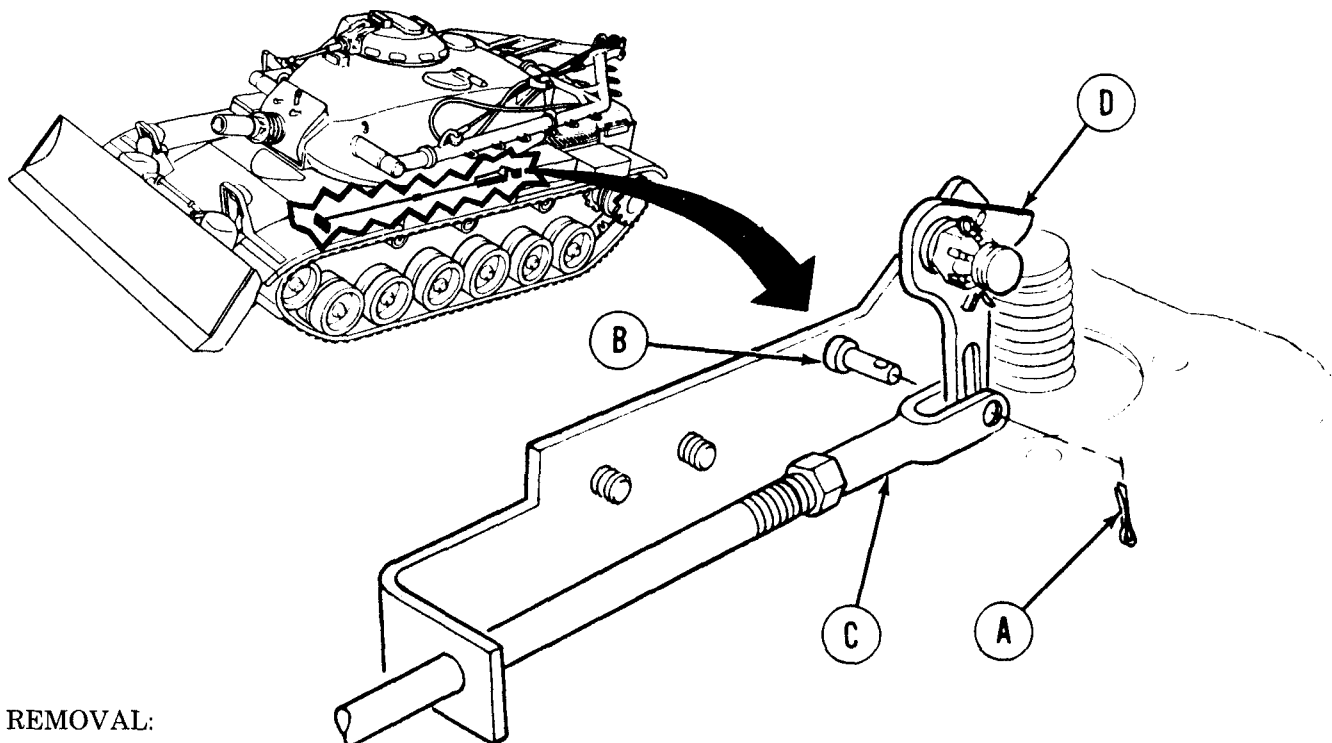
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-156
Installation	16-158

TOOLS: 7/16 in. combination box and open end wrench  
 Slip joint pliers  
 1/2 in. combination box and open end wrench

SUPPLIES: Cotter pin (MS24665-283)  
 Cotter pin (MS24665-208)

PRELIMINARY PROCEDURE: Remove powerplant (page 5-1)



REMOVAL:

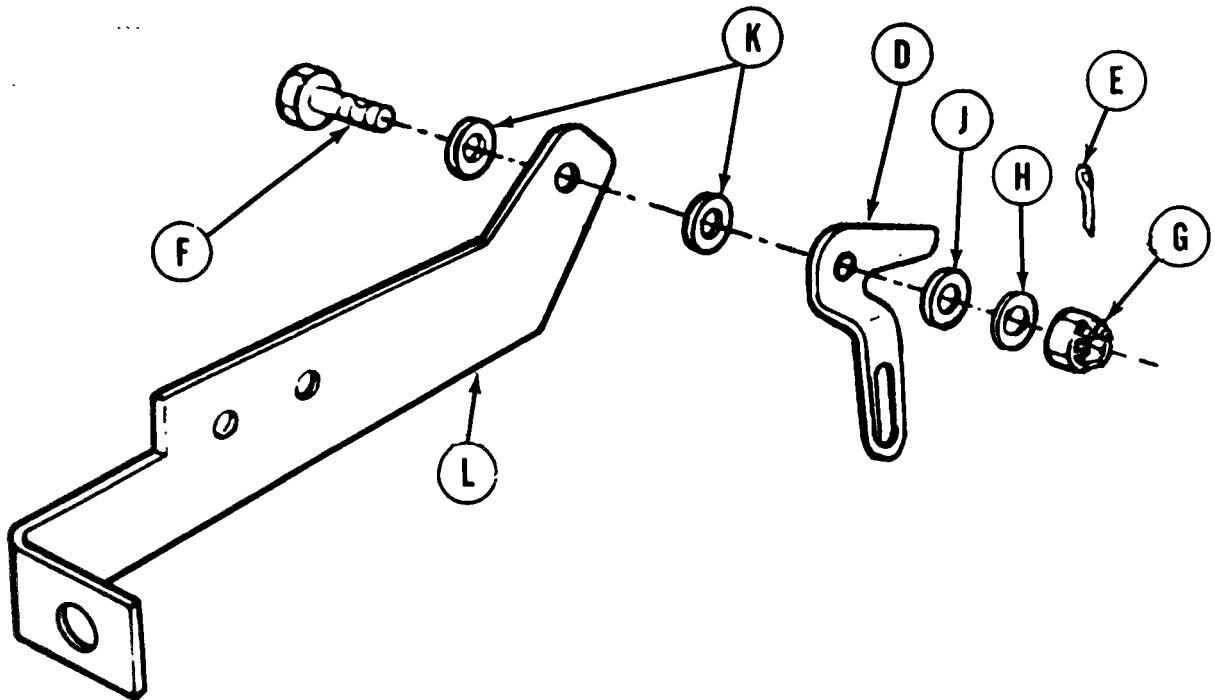
1. Using pliers, remove cotter pin (A) from clevis pin (B). Throw cotter pin away.
2. Using pliers, pull clevis pin (B) out of holes in clevis (C) and hole in lever (D).

Go on to Sheet 2

TA140768

**REAR DRAIN VALVE ACTUATING LEVER REPLACEMENT (Sheet 2 of 4)**

- Using pliers, remove cotter pin (E) from bolt (F). Throw cotter pin away.
- Using 7/16 inch wrench on nut (G) and 1/2 inch wrench on bolt (F), remove nut (G), flat washer (H), shim (J), lever (D), two flat washers (K), and bolt (F) from bracket (L).



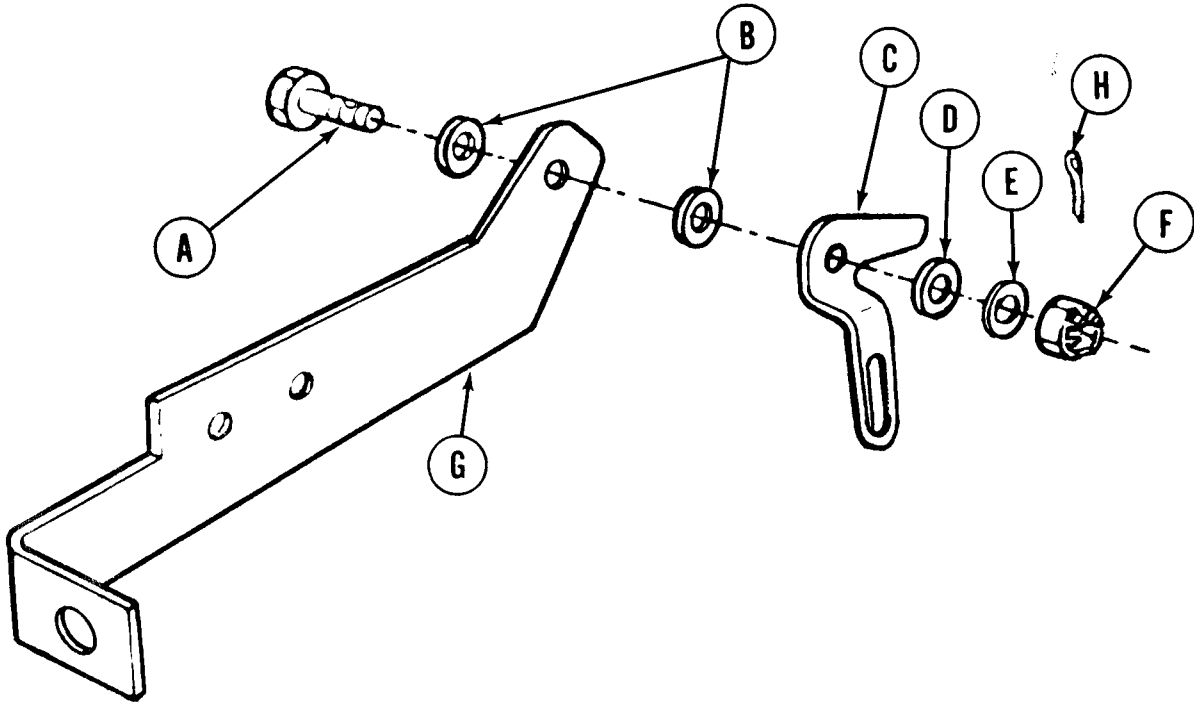
Go on to Sheet 3

TA140769

REAR DRAIN VALVE ACTUATING LEVER REPLACEMENT (Sheet 3 of 4)

INSTALLATION:

1. Install bolt (A), two flat washers (B), lever (C), shim (D), flat washer (E), and nut (F) on bracket (G).

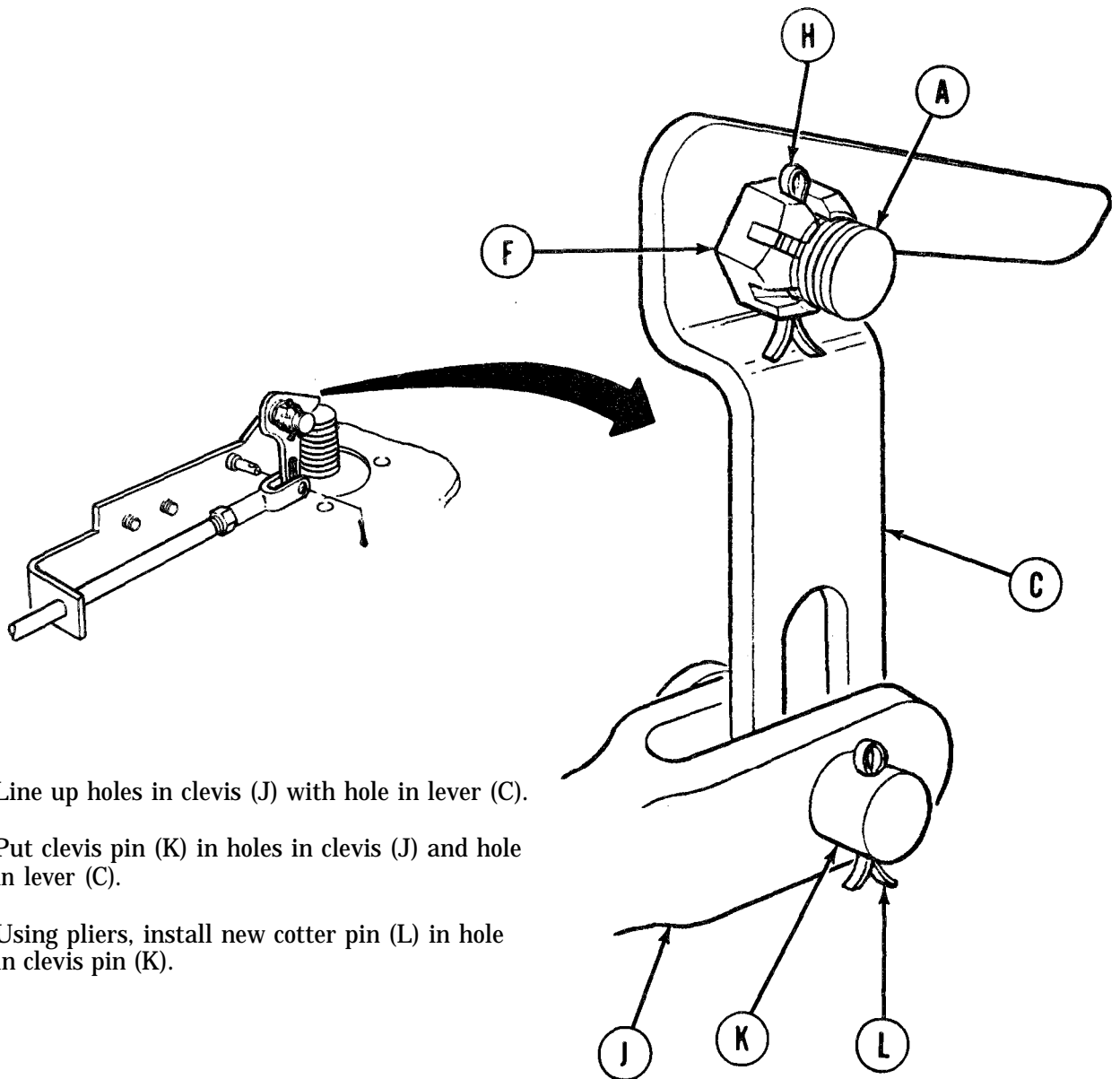


2. Finger tighten nut (F) on bolt (A).
3. Line up hole in bolt (A) with slot in nut (F).
4. Using pliers, install new cotter pin (H) in bolt (A).

Go on to Sheet 4

TA140770

## REAR DRAIN VALVE ACTUATING LEVER REPLACEMENT (Sheet 4 of 4)



5. Line up holes in clevis (J) with hole in lever (C).
6. Put clevis pin (K) in holes in clevis (J) and hole in lever (C).
7. Using pliers, install new cotter pin (L) in hole in clevis pin (K).

8. Operate rear drain valve and make sure drain valve opens and closes smoothly.

9. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).

End of Task

TA140771

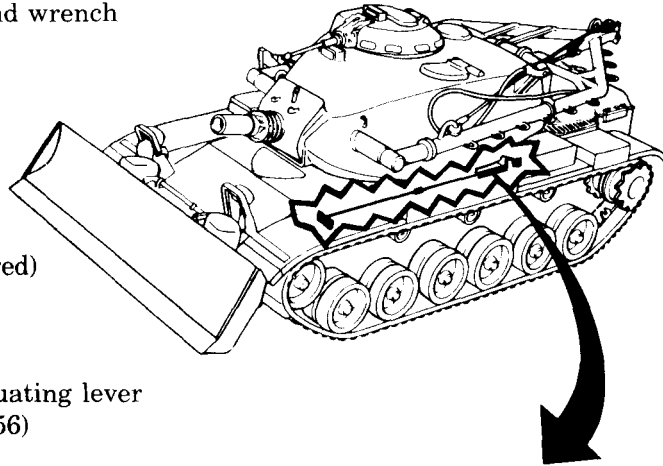
**REAR DRAIN VALVE MOUNTING BRACKETS REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** 9/16 in. combination box and open end wrench  
Slip joint pliers  
Ratchet with 1/2 in. drive  
9/16 in. socket with 1/2 in. drive  
10 in. pipe wrench

**SUPPLIES:** Pencil  
Paper  
Lockwasher (MS35338-65) (4 required)

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove actuating lever  
(page 16-156)



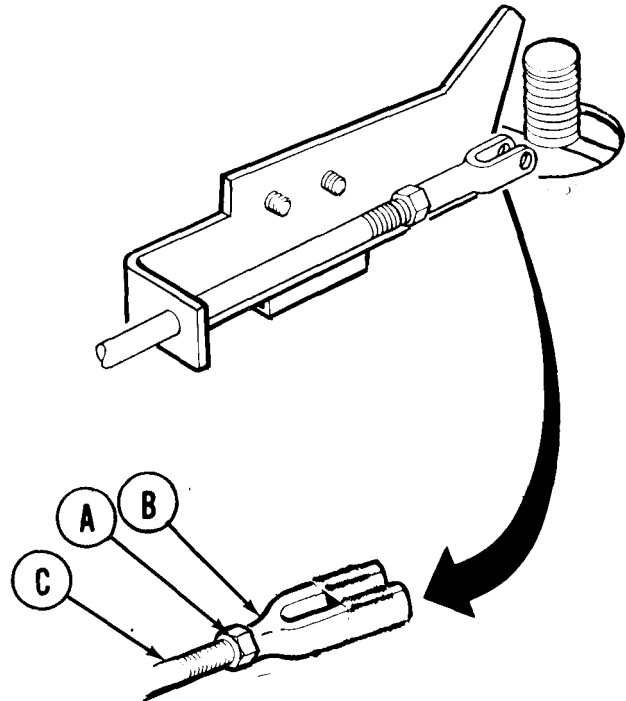
**REMOVAL:**

1. Using wrench, loosen jamnut (A) while holding clevis (B) with pliers.

**NOTE**

Count and write down number of turns needed to unscrew clevis (B) from rod (C).

2. Unscrew clevis (B) and jamnut (A) from rod (C) while holding rod (C) with 10 inch pipe wrench.



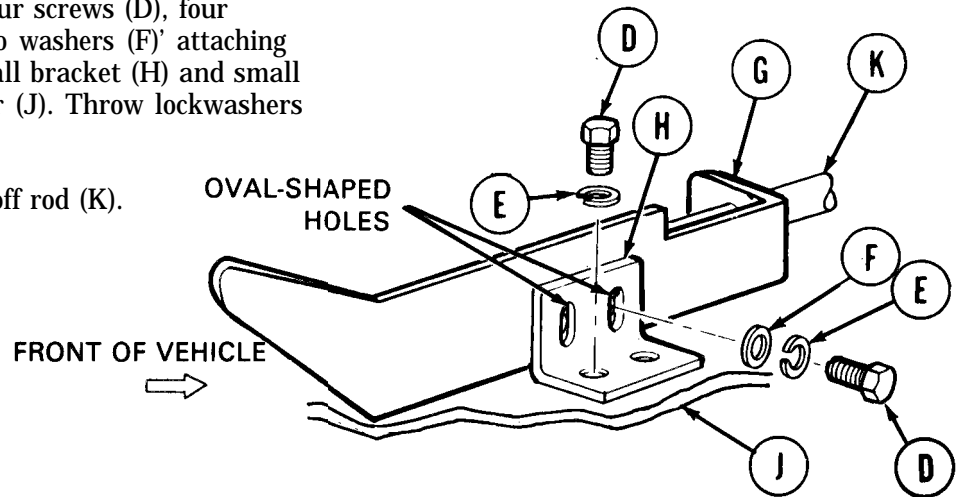
Go on to Sheet 2

TA140772



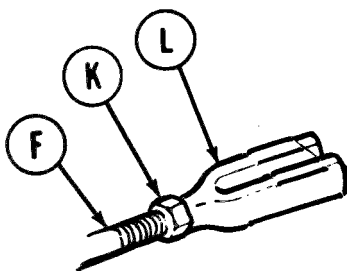
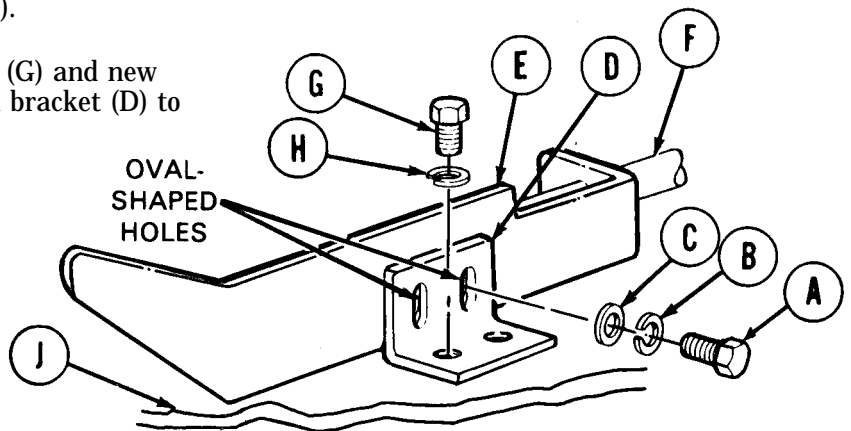
REAR DRAIN VALVE MOUNTING BRACKETS REPLACEMENT (Sheet 2 of 2)

3. Using socket, remove four screws (D), four lockwashers (E), and two washers (F) attaching large bracket (G) to small bracket (H) and small bracket (H) to hull floor (J). Throw lockwashers away.
4. Slide large bracket (G) off rod (K).



**INSTALLATION:**

1. Using socket, install two screws (A), new lockwashers (B), and flat washers (C) through oval-shaped holes in small bracket (D) into holes in large bracket (E).
2. Slide large bracket (E) on rod (F).
3. Using socket, install two screws (G) and new lockwashers (H) attaching small bracket (D) to hull floor (J).



4. Using 9/16 inch wrench, if necessary, screw jamnut (K) all the way on rod (F).
5. Screw clevis (L) on rod (F) the recorded number of turns (page 16-160, NOTE).
6. Using 9/16 inch wrench, tighten jamnut (K) against clevis (L) while holding clevis (L) with pliers.
7. Install actuating lever (page 16-158).

End of Task

TA140773

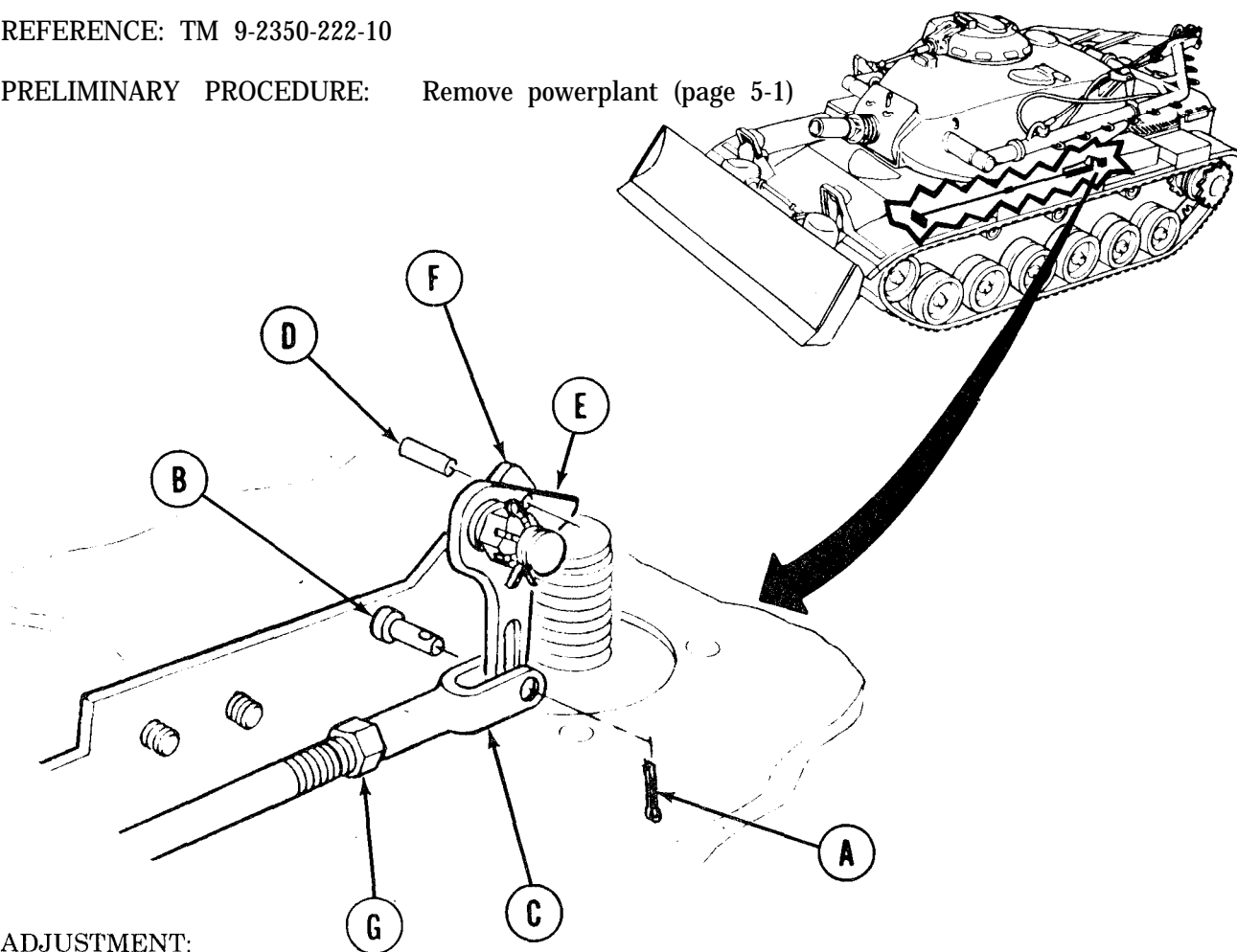
## REAR DRAIN VALVE LINKAGE ADJUSTMENT (Sheet 1 of 7)

TOOLS: 9/16 in. combination box and open end wrench (2 required)  
Slip joint pliers  
Flat-tip screwdriver  
1/8 in. dia. alinement pin (2 in. long)  
6 or 12 in. steel ruler

SUPPLIES: Cotter pin (MS24665-283)

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Remove powerplant (page 5-1)



### ADJUSTMENT:

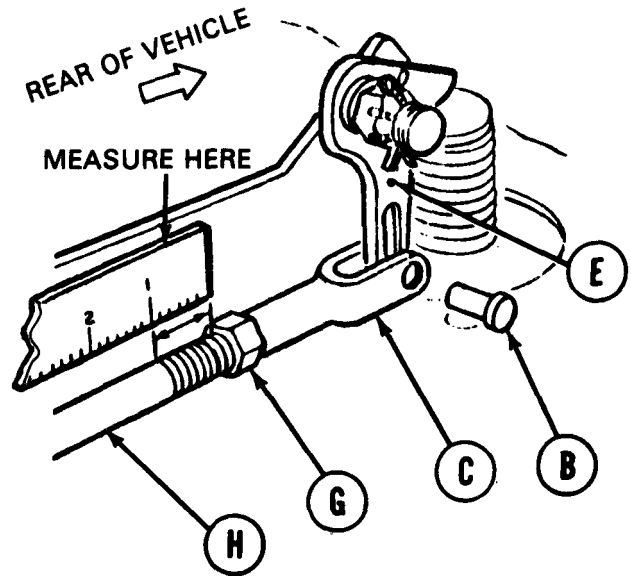
1. Using pliers, remove cotter pin (A) from clevis pin (B). Throw cotter pin (A) away.
2. Pull clevis pin (B) out of holes in clevis (C).
3. Put alinement pin (D) through hole in lever (E) and hole in bracket (F).
4. Using wrench, loosen jamnut (G) all the way while holding clevis (C) with pliers.

Go on to Sheet 2

TA14077

**REAR DRAIN VALVE LINKAGE ADJUSTMENT (Sheet 2 of 7)**

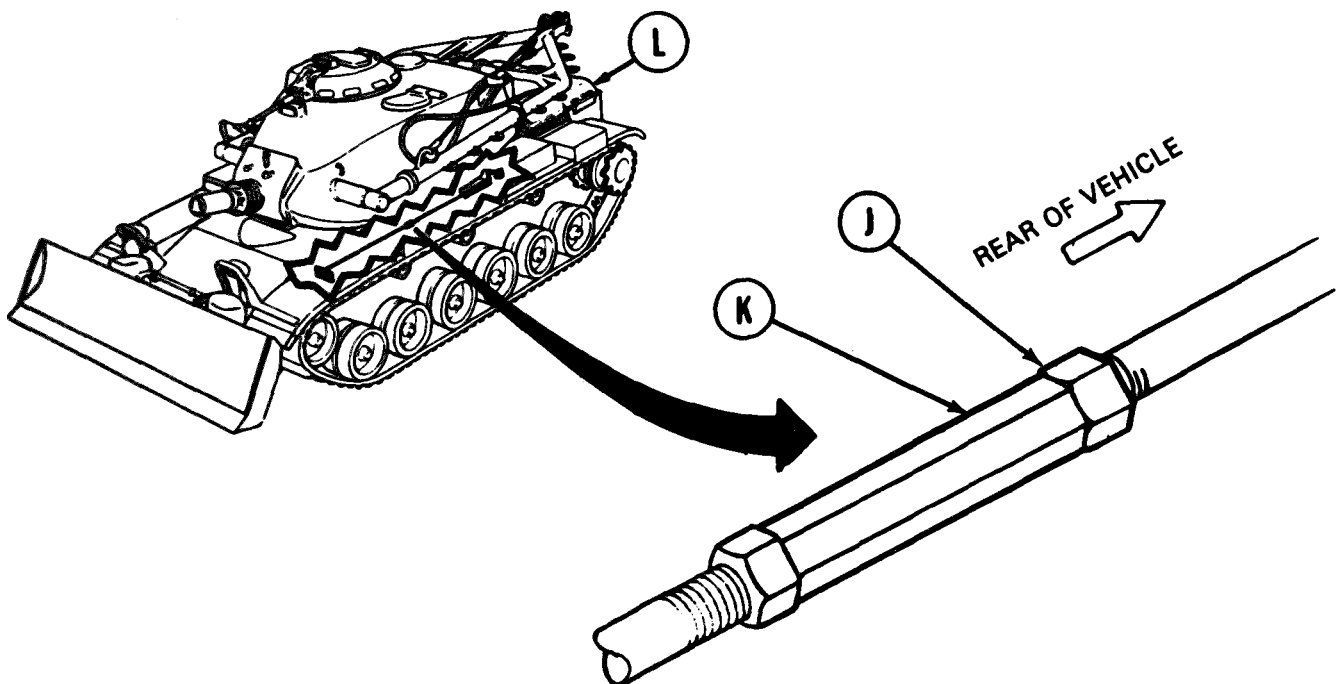
5. Adjust clevis (C) until holes in clevis and hole in lever (E) can be lined up using clevis pin (B).
6. Using fingers, tighten jamnut (G) against clevis (c).
7. Measure threads on rod (H):
  - If threads measure one inch or less, go to step 14.
  - If threads are more than one inch, go to step 8.



**NOTE**

**Coupling jamnut (J) can be reached from engine compartment (L). Open or close rear drain valve, if necessary, to put wrench on coupling jamnut (J).**

8. Using wrench, been coupling jamnut (J) all the way while holding coupling (K) with wrench.



**Go on to Sheet 3**

TA140775

REAR DRAIN VALVE LINKAGE ADJUSTMENT (Sheet 3 of 7)

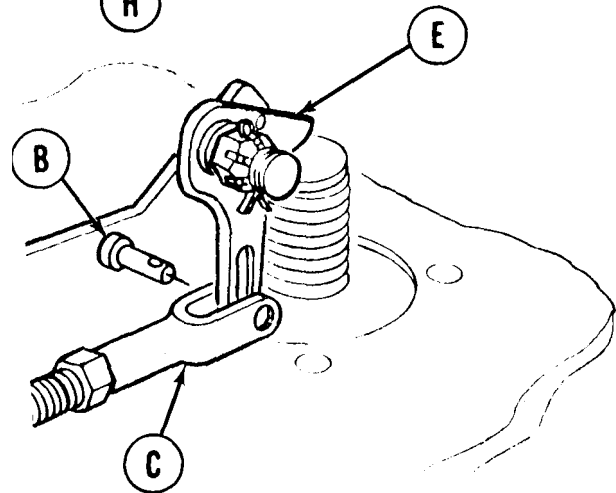
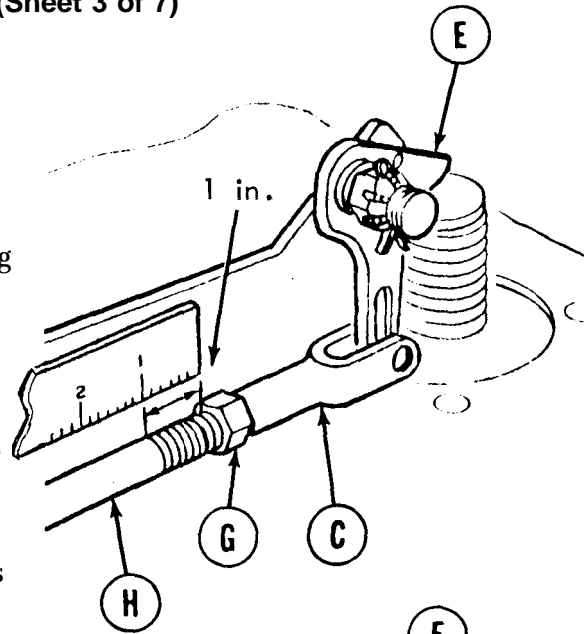
9. Adjust clevis (C) and jamnut (G) until one inch of threads can be measured on rod (H).

10. Using wrench, tighten jamnut (G) while holding clevis (C) with pliers.

11. Turn rod (H) until holes in clevis (C) and hole in lever (E) can be lined up using clevis pin (B).

12. Using fingers, push clevis pin (B) through holes in clevis (C) and hole in lever (E).

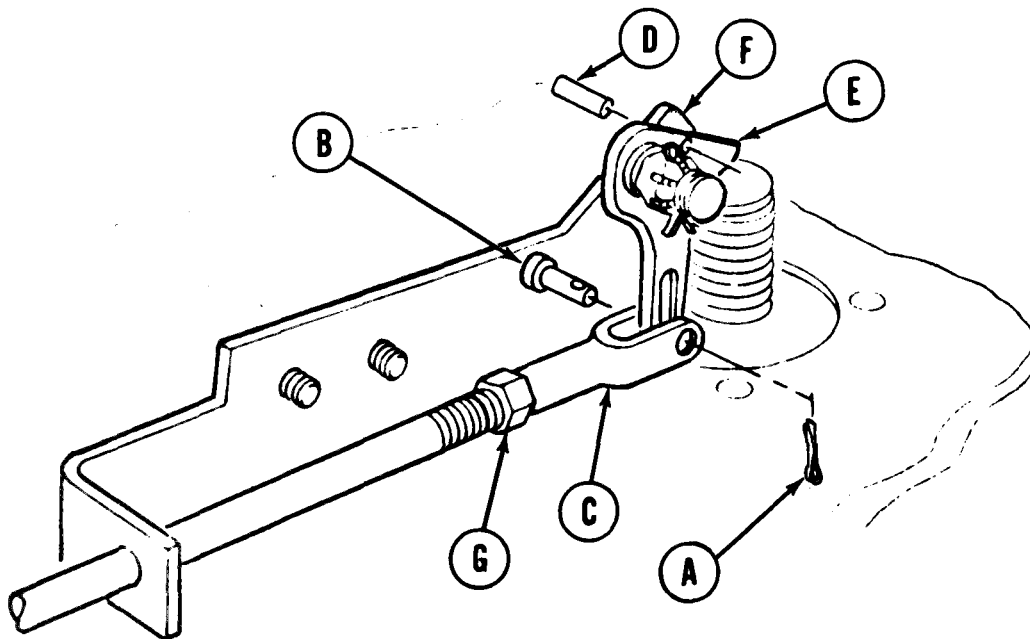
13. Using wrench, tighten rear coupling jamnut (J) while holding coupling (K) with wrench.



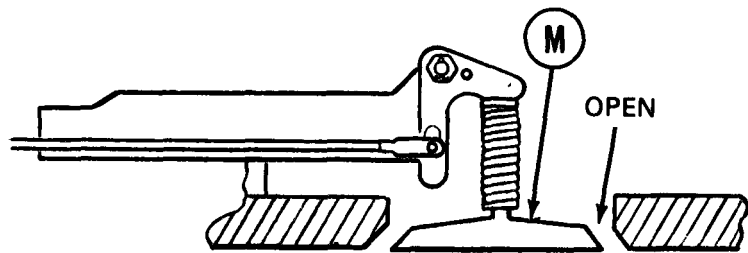
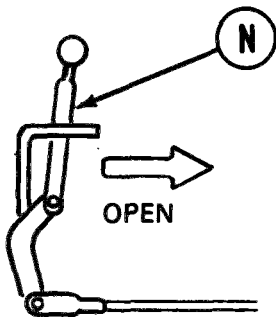
Go on to Sheet 4

TA140776

REAR DRAIN VALVE LINKAGE ADJUSTMENT (Sheet 4 of 7)



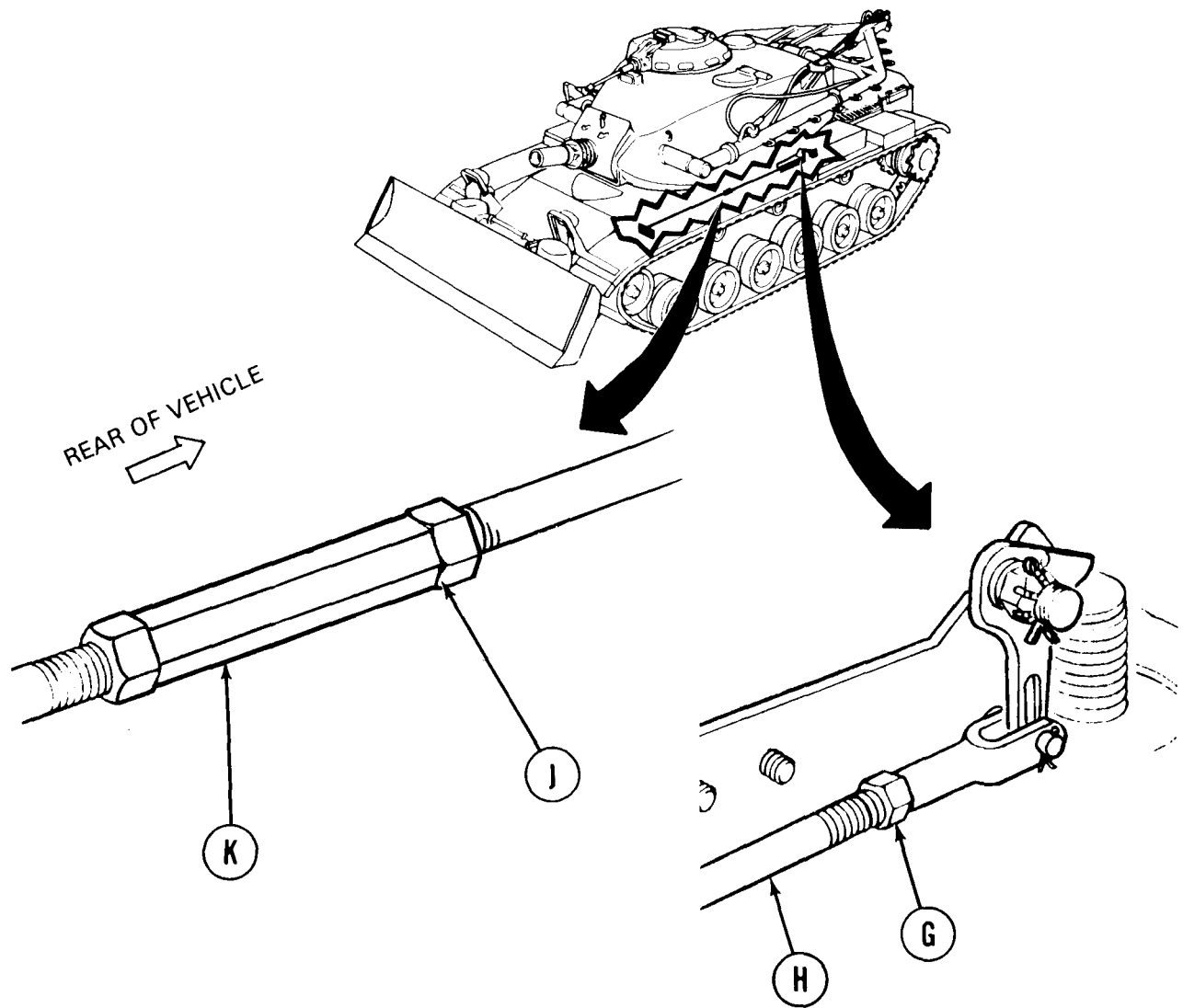
14. If clean pin (B) was not installed in clevis (C) in step 12, use fingers and install clevis pin (B) in holes in clevis (C) and hole in lever (E).
15. Use pliers, install new cotter pin (A) in clevis pin (B).
16. Pull alignment pin (D) out of hole in lever (E) and hole in bracket (F).
17. If clevis jamnut (G) was not tightened against clevis (C) in step 10, use wrench and tighten jamnut (G) while holding clevis (C) with pliers.
18. Make sure drain valve (M) opens when control lever (N) is in open position (TM 9-2350-222-10).
  - If valve (M) does not open, perform steps 19 thru 30.
  - If valve (M) opens, go to step 31 (page 16-168).



Go on to sheet 5

TA140777

REAR DRAIN VALVE LINKAGE ADJUSTMENT (Sheet 5 of 7)



19. Close rear drain valve (TM 9-2350-222-10).

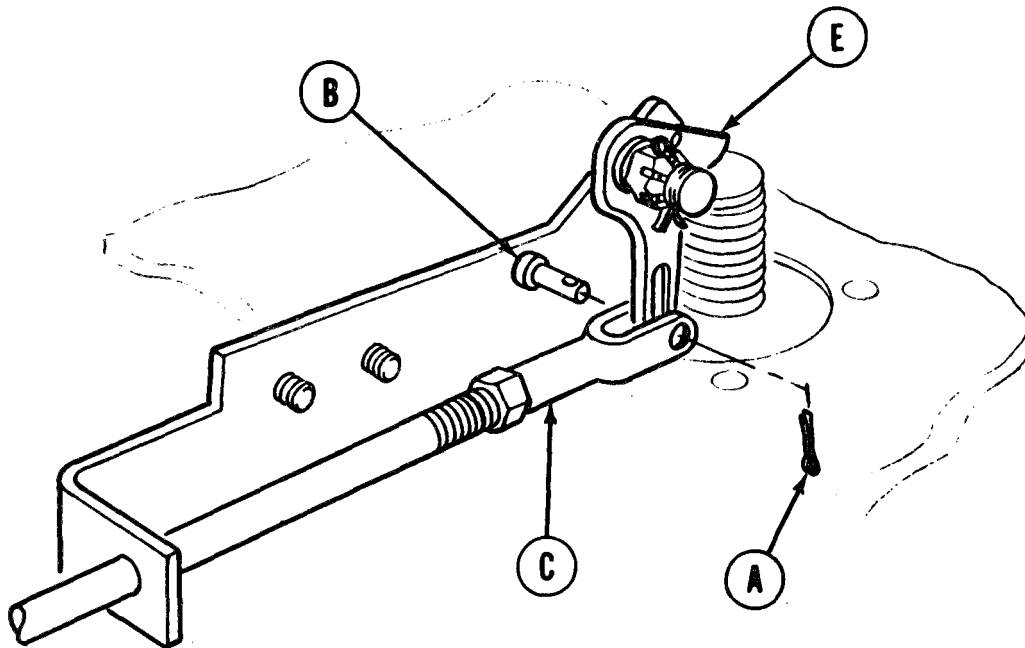
20. Using wrench, loosen rear coupling jamnut (J) all the way while holding coupling (K) with wrench.

21. Using wrench, loosen clevis jamnut (G) all the way while holding rod (H) with pliers.

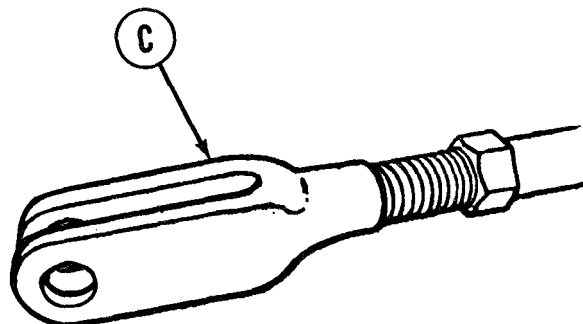
Go on to Sheet 6

TA140778

## REAR DRAIN VALVE LINKAGE ADJUSTMENT (Sheet 6 of 7)



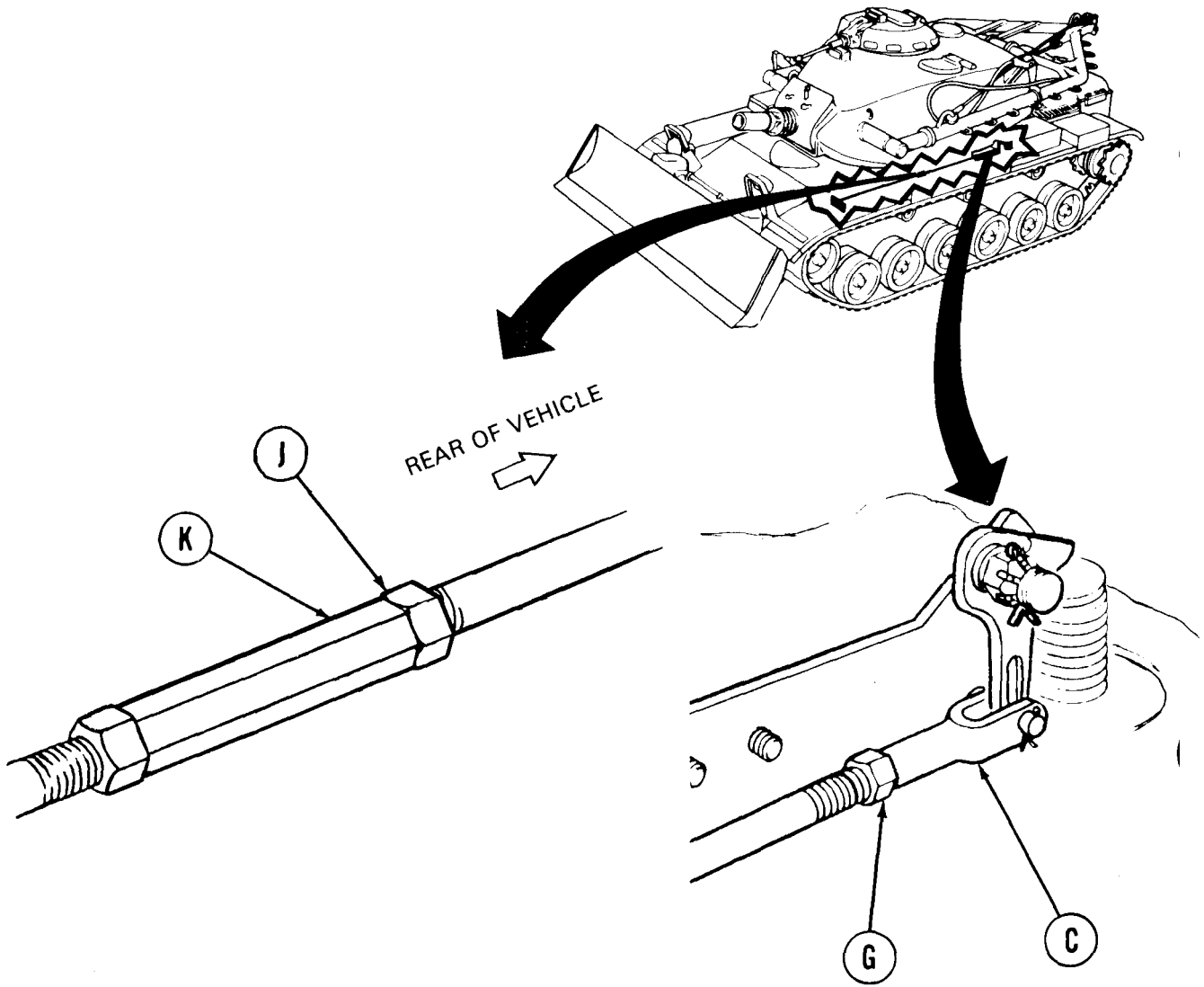
22. Using pliers, remove cotter pin (A) from clevis pin (C). Throw cotter pin (A) away.
23. Using fingers, pull clevis pin (B) from clevis (C).
24. Hold clevis (C) and turn clockwise five complete turns.
25. Line up holes in clevis (C) with hole in lever (E).
26. Using fingers, push clevis pin (B) through holes in clevis (C) and hole in lever (E).
27. Using pliers, install new cotter pin (A) in hole in clevis pin (B).



Go on to Sheet 7

TA140779

REAR DRAIN VALVE LINKAGE ADJUSTMENT (Sheet 7 of 7)



28. Using wrench, tighten rear coupling jamnut (J) while holding coupling (K) with wrench.
29. Using wrench, tighten clevis jamnut (G) while holding clevis (C) with pliers.
30. Make sure drain valve opens when control lever is in open position (step 18).
  - If drain valve does not open, repeat steps 19 thru 30.
  - If drain valve opens, go to step 31.
31. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).

End of Task

TA140780



## REAR DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 1 of 6)

## PROCEDURE INDEX

PROCEDURE	PAGE
Removal	16-170
Cleaning and Inspection	16-172
Installation	16-173

## TOOLS: Slip joint pliers

Ratchet with 1/2 in. drive

3/4 in. socket with 1/2 in. drive

Hammer

1/8 in. drive pin punch

6 in. steel rule

Putty knife

Flat-tip screwdriver (2 required)

## SUPPLIES: Dry cleaning solvent (item 54, Appendix D)

Gasket (10887680)

Rags (Item 65, Appendix D)

Block of wood, approx. 2 in. x 4 in. x 6 in.

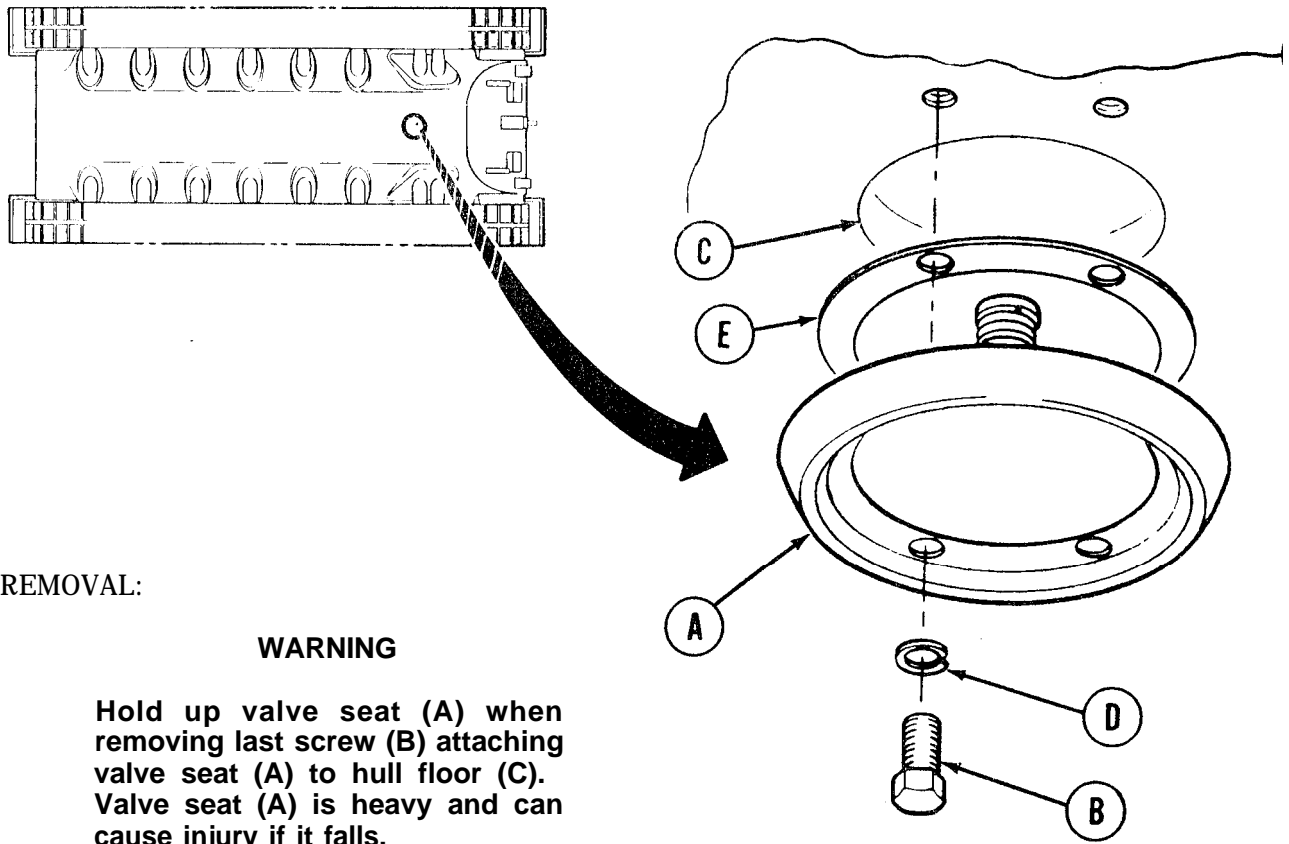
Lockwasher (MS35338-67) (4 required)

## PERSONNEL: Two

Go on to Sheet 2

TA140781

REAR DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 2 of 6)



REMOVAL:

**WARNING**

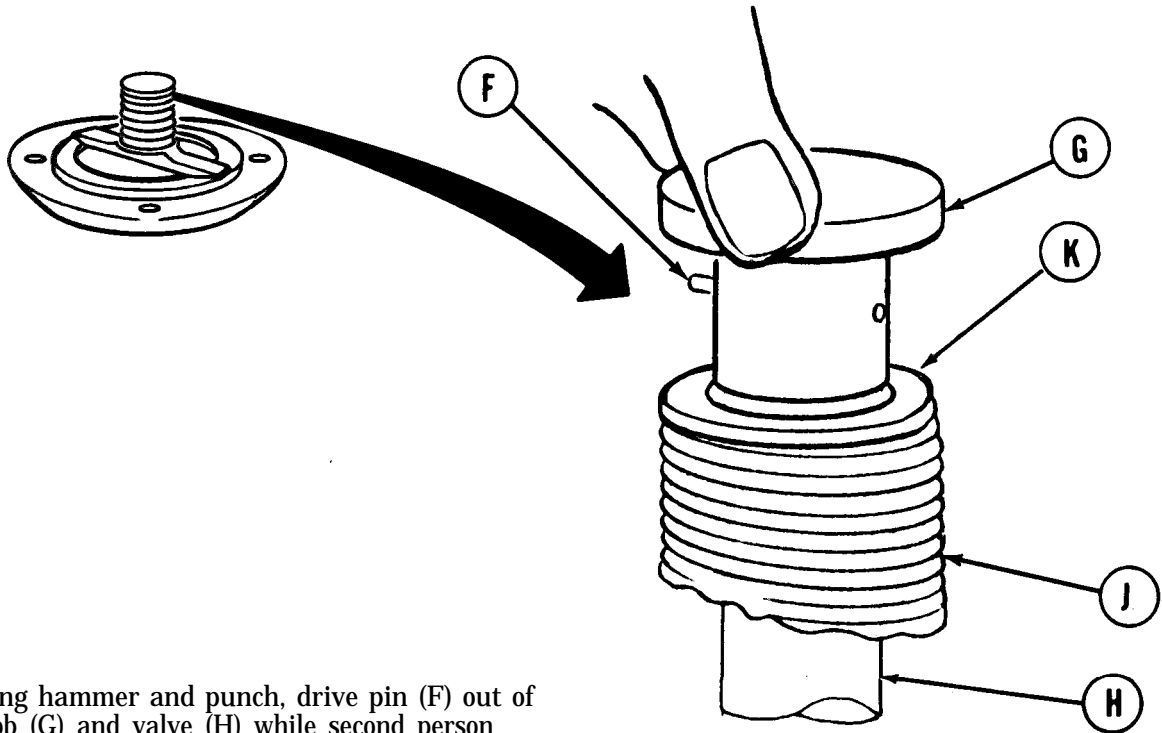
Hold up valve seat (A) when removing last screw (B) attaching valve seat (A) to hull floor (C). Valve seat (A) is heavy and can cause injury if it falls.

1. Using socket, remove four screws (B) and lockwashers (D) holding valve seat (A) and gasket (E) to hull floor (C). Throw lockwashers away.
2. While holding valve seat (A), use screwdriver and pry valve seat (A) from hull floor (C).
3. Using putty knife, scrape gasket (E) from hull floor (C) and valve seat (A).

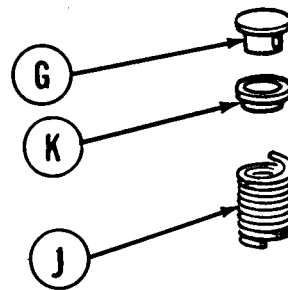
Go on to Sheet 3

TA14078

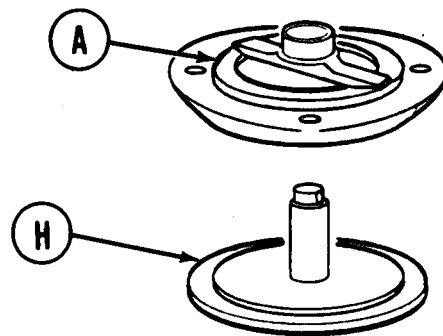
REAR DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 3 of 6)



- Using hammer and punch, drive pin (F) out of Knob (G) and valve (H) while second person holds down spring (J) and ferrule (K) using two screwdrivers.



- Remove knob (G), ferrule (K), spring (J), and valve (H) from valve seat (A).



Go on to Sheet 4

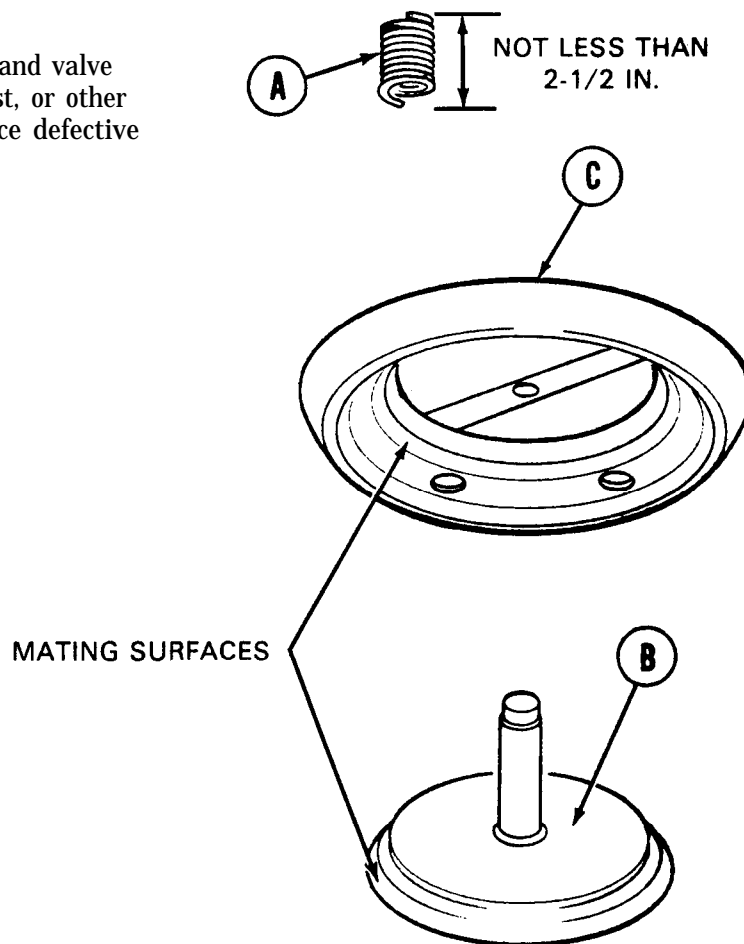
TA140783

REAR DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 4 of 6)

CLEANING AND INSPECTION:

1. Using dry cleaning solvent (Item 54, Appendix D) and clean rags, clean all parts.
2. Inspect removed parts for cracks, nicks, burrs, or other defects. Replace defective parts.
3. Measure length of spring (A). If spring (A) measures less than 2-1/2 inches, replace spring (A).

4. Inspect mating surface of valve (B) and valve seat (C) for nicks, cracks, burrs, rust, or other defects. If defects are found, replace defective part.



Go on to Sheet 5

TA140784

**REAR DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 5 of 6)**

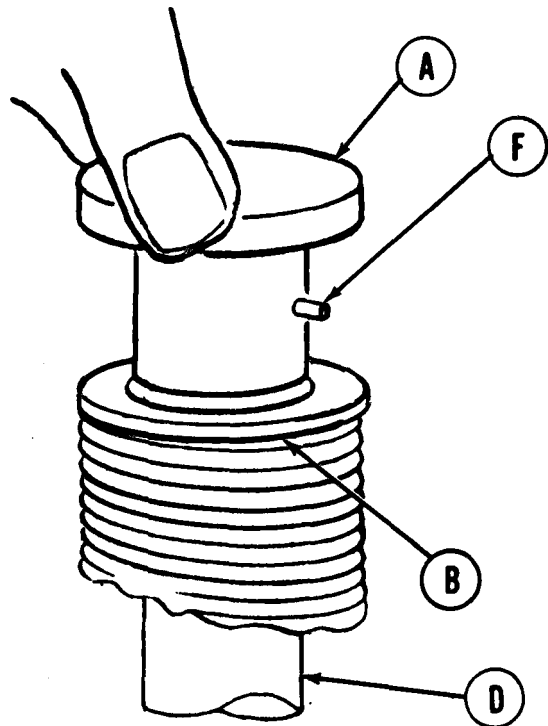
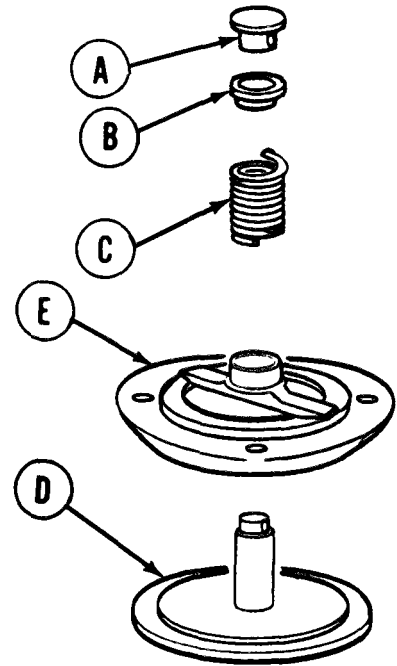
**INSTALLATION:**

1. Assemble knob (A), ferrule (B), spring (C), and valve (D) on valve seat (E).

**NOTE**

**Use block of wood to support valve (D) in the closed position.**

2. With second person pressing down on ferrule (B) with two screwdrivers, use punch to line up hole in knob (A) and hole in valve (D).
3. Using pliers, start pin (F) in hole in knob (A).
4. Using hammer and punch, drive pin (F) all the way in hole.

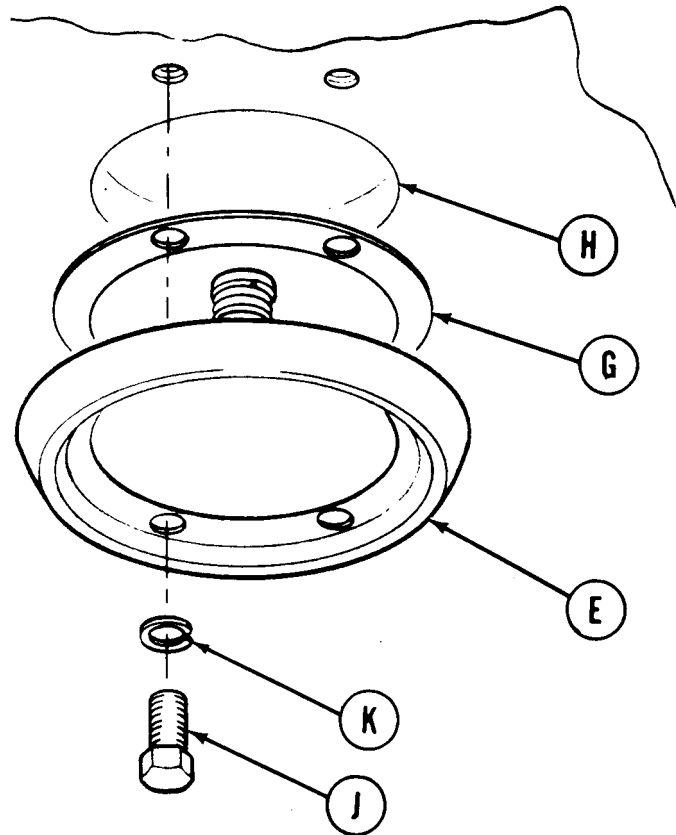


**Go on to Sheet 6**

TA140785

REAR DRAIN VALVE ASSEMBLY REPLACEMENT (Sheet 6 of 6)

5. Line up four holes in valve seat (E), new gasket (G), and hull floor (H) under vehicle.
6. Using socket, install four screws (J) and new lockwashers (K) holding valve seat (E) and gasket (G) to hull floor (H).
7. Operate rear drain valve to make sure valve opens and closes smoothly. If valve does not open or close properly, remove, inspect, and install valve assembly again.



End of Task

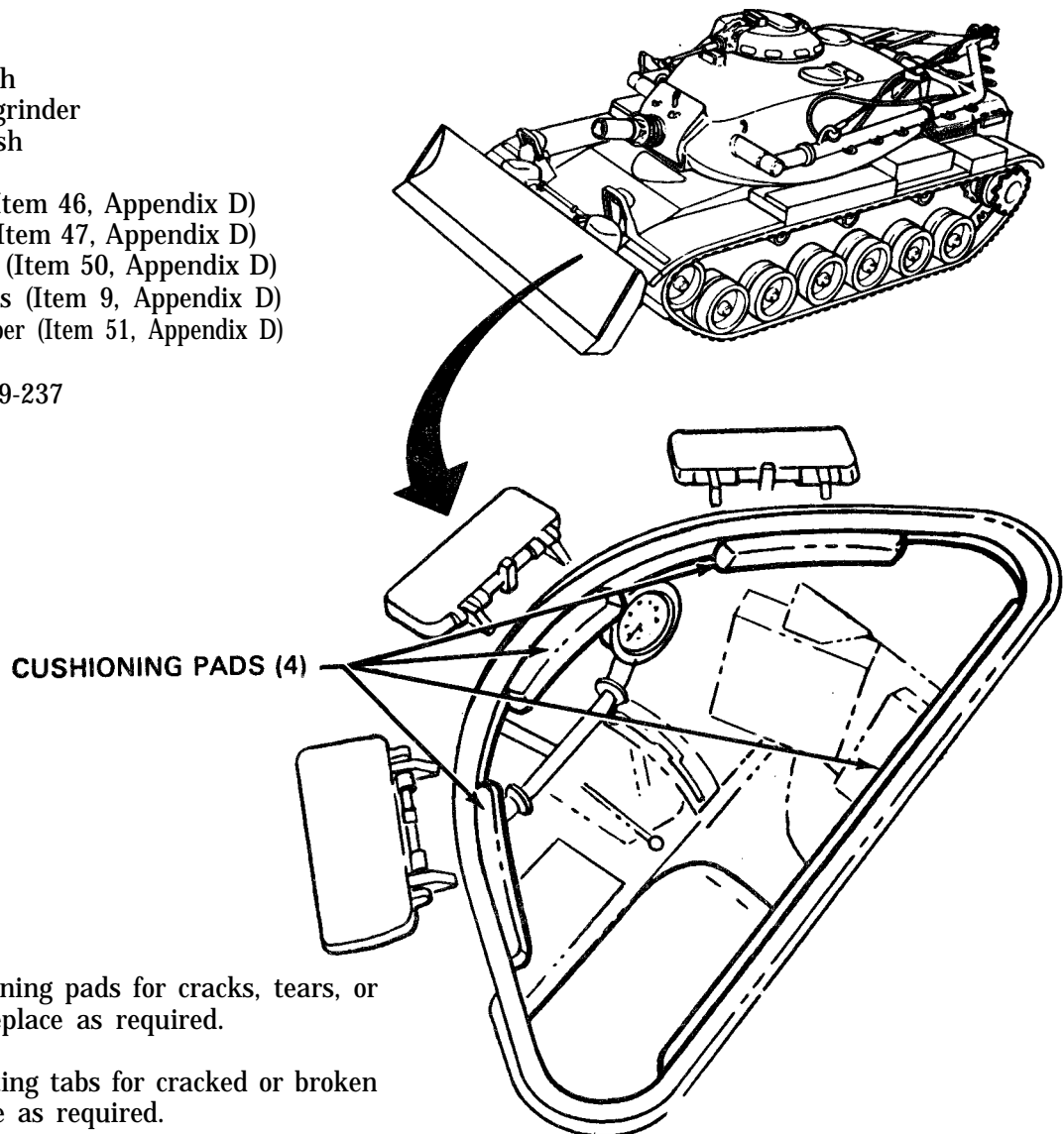
TA140786

**DRIVER'S HATCH CUSHIONING PAD REPLACEMENT (Sheet 1 of 2)**

TOOLS: Wire brush  
 Portable grinder  
 Paint brush

SUPPLIES: Paint (Item 46, Appendix D)  
 Paint (Item 47, Appendix D)  
 Primer (Item 50, Appendix D)  
 Asbestos (Item 9, Appendix D)  
 Sandpaper (Item 51, Appendix D)

REFERENCE: TM 9-237

**INSPECTION:**

1. Inspect cushioning pads for cracks, tears, or separation. Replace as required.
2. Inspect mounting tabs for cracked or broken welds. Replace as required.

**REMOVAL:**

Use grinder and grind off old weld holding defective pad.

**INSTALLATION:**

1. Using grinder and sandpaper (Item 51, Appendix D), prepare hull surface for welding (TM 9-237).
2. Cover cushion and surrounding area of new pad with piece of wet asbestos (Item 9, Appendix D).
3. Fasten new pad in same position as old one.

Go on to Sheet 2

TA140787

**DRIVER'S HATCH CUSHIONING PAD REPLACEMENT (Sheet 2 of 2)**

4. Weld ends of new pad to hull. Remove asbestos (TM 9-237).

**NOTE**

**After welding procedures have been performed, complete the following steps.**

5. Using wire brush, clean all welded areas.
6. Using primer paint (Item 50, Appendix D) and brush, prime all welded areas to be painted, inside and out.
7. Using forest green paint (Item 46, Appendix D) and brush, paint all exposed outside areas of vehicle which were affected by welding.
8. Using white paint (Item 47, Appendix D) and brush, paint all exposed inside areas which were affected by welding.

End of Task

TA140788

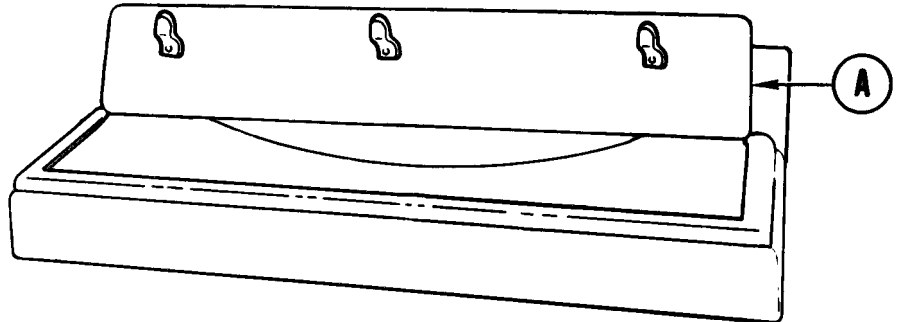
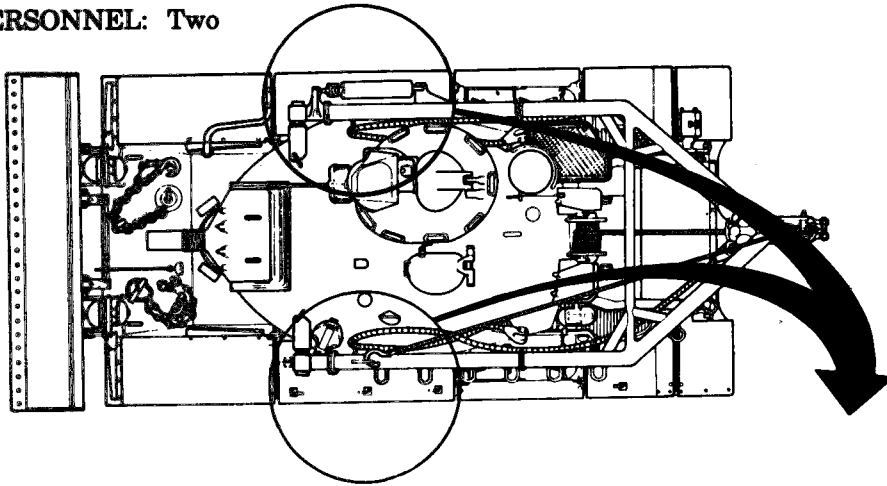


**FRONT FENDER (CENTER, LEFT AND RIGHT) STOWAGE BOX REPLACEMENT (Sheet 1 of 3)**

**TOOLS:** 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 9/16 in. combination box and open end wrench

**SUPPLIES:** Locknuts (MS51988-7) (8 required)  
 Plates (8705499) (as required)

**PERSONNEL:** Two

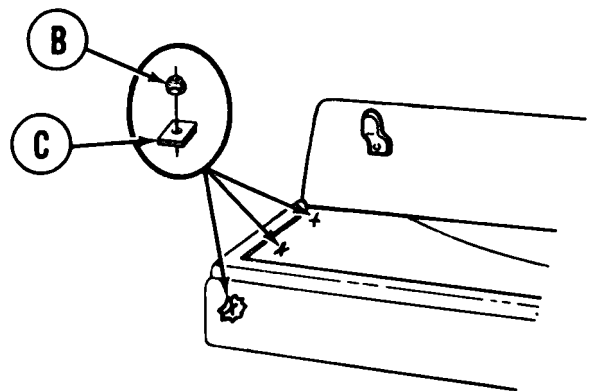


**REMOVAL:**

**NOTE**

**Left and right storage boxes are removed in a similar manner.**

1. Open storage box door (A).
2. Using wrench, remove three locknuts (B) and plate spacers (C). Throw locknuts away.

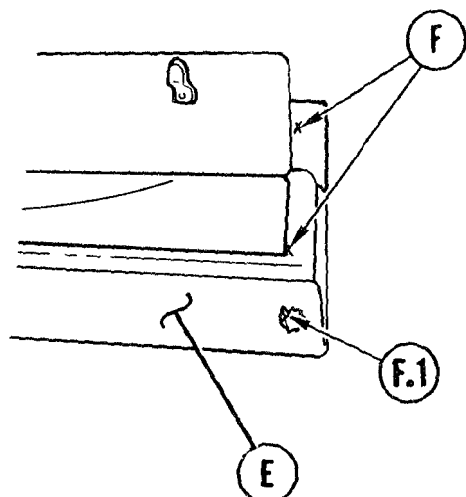
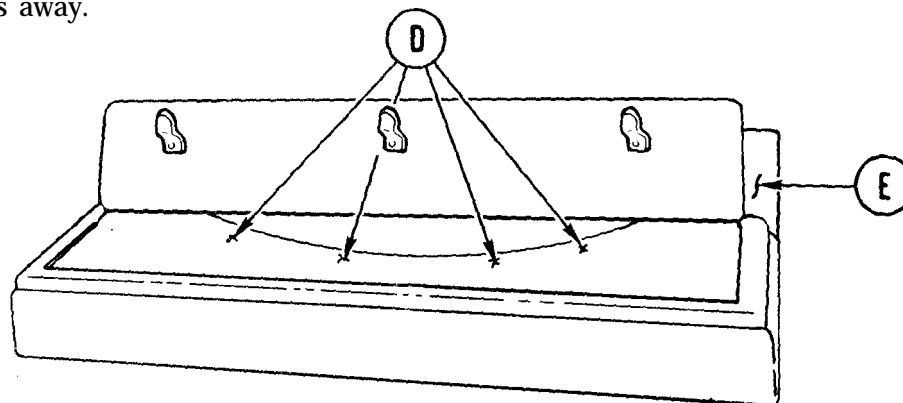


Go on to Sheet 2

TA253634

FRONT FENDER (CENTER, LEFT AND RIGHT) STOWAGE BOX REPLACEMENT (Sheet 2 of 3)

- Using socket, remove four locknuts and washers (D) securing stowage box (E) to vehicle. Throw locknuts away.



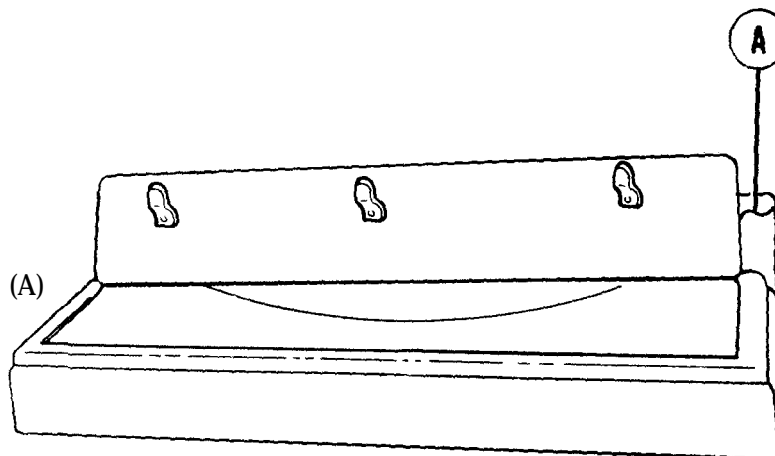
- Using wrench, remove two bolts and plates (F).
- Using socket, remove one locknut and plate (F.1). Throw locknut away.
- Using two persons, remove stowage box (E) from vehicle.

INSTALLATION:

NOTE

If gap between stowage box base plate and outriggers exists, shim gap with up to three plates.

- Using two persons, place stowage box (A) in position on vehicle.

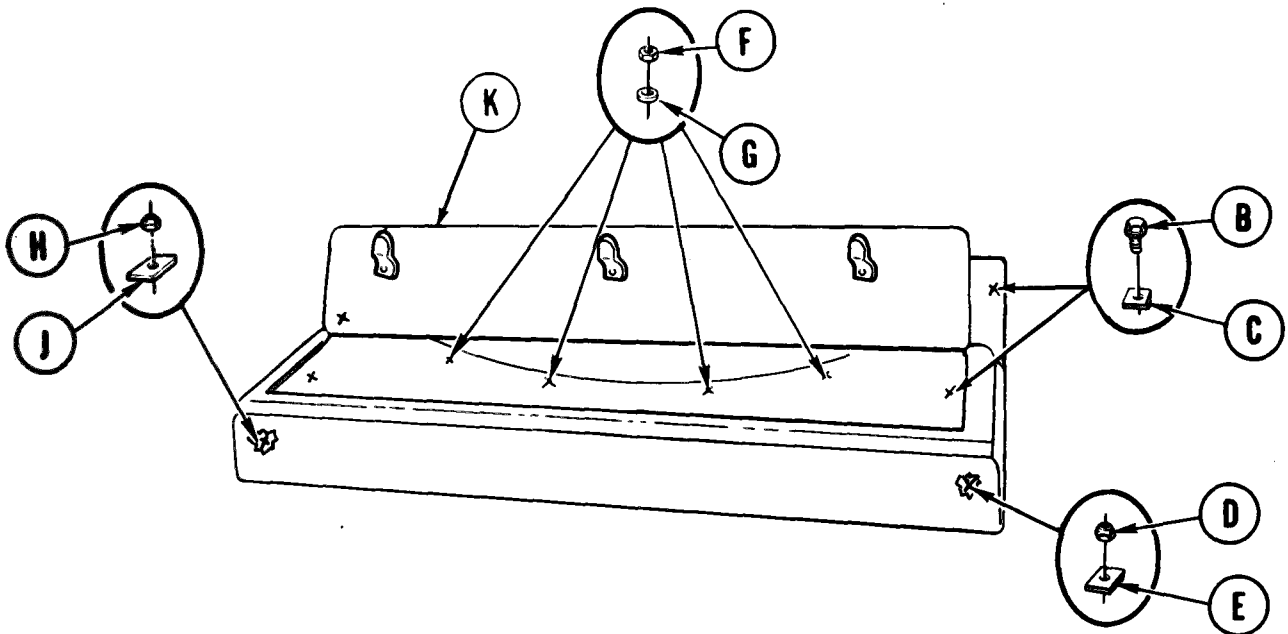


Go on to Sheet 3

TA253635

## FRONT FENDER (CENTER, LEFT AND RIGHT) STOWAGE BOX REPLACEMENT (Sheet 3 of 3)

2. Using wrench, install bolts (B) and plate spacers (C).
3. Using socket, install one new locknut (D) and plate spacer (E).



4. Using socket, install four new locknuts (F) and flat washers (G).
5. Using socket, install three new locknuts (H) and plate spacers (J).
6. Close stowage box cover (K).

**End of Task**

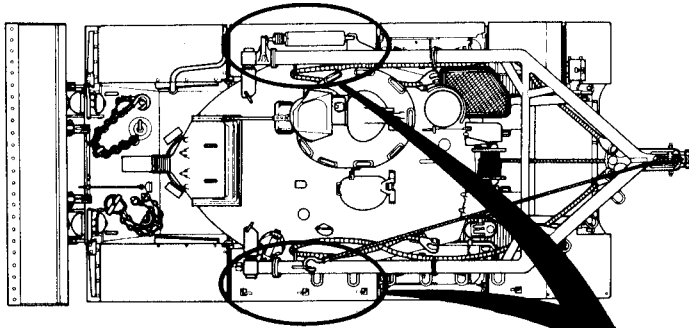
TA253637

**Change 1 16-179**

## FRONT FENDER (CENTER LEFT AND RIGHT) STOWAGE BOX REPAIR (Sheet 1 of 1)

**TOOLS:** 3/8 in. open end wrench  
7/16 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

**SUPPLIES:** Lockwashers (MS35335-33) (6 required)

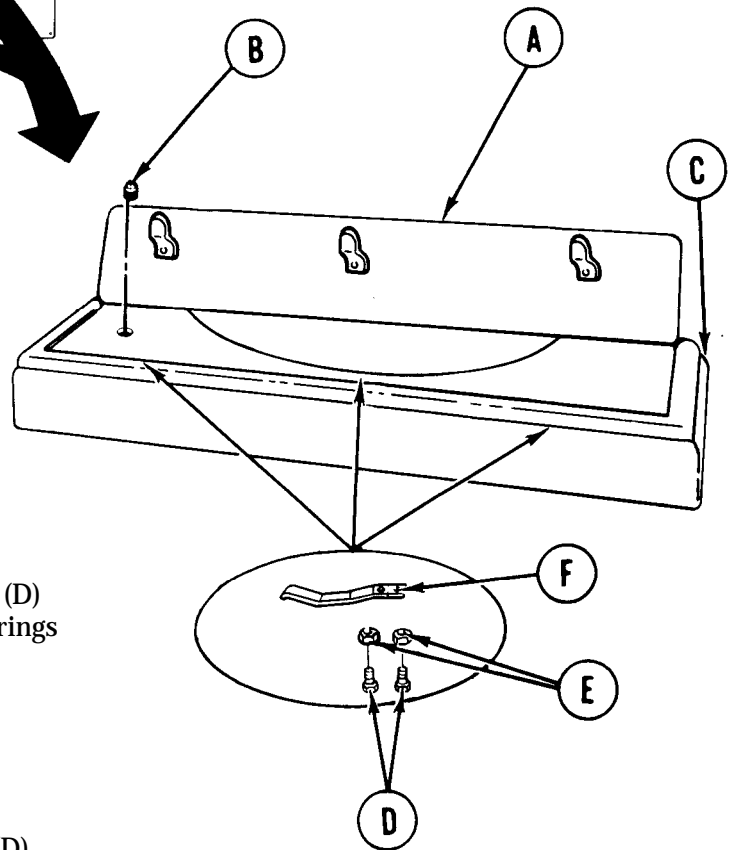


### NOTE

Repair of left and right stowage boxes is the same.

### DISASSEMBLY:

1. Open stowage box door (A).
2. Using 3/8 inch open end wrench, remove drain plug (B) from bottom of stowage box (C).
3. Using 7/16 inch socket, remove six screws (D) and lockwashers (E) securing three leaf springs (F) to front lip of stowage box (C). Throw lockwashers away.



### ASSEMBLY:

1. Using 7/16 inch socket, install six screws (D) and new lockwashers (E) to secure three leaf springs (F) to front lip of stowage box (C).
2. Using 3/8 inch open end wrench, install drain plug (B).
3. Close stowage box door (A).

End of Task

TA253638

**FRONT FENDER (CENTER, LEFT AND RIGHT) STOWAGE BOX COVER REPAIR  
(Sheet 1 of 4)**

PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	16-181
Cleaning and Inspection	16-183
Assembly	16-183

**TOOLS:** 9/16 in. combination box and open end wrench  
 11/16 in. combination box and open end wrench  
 Long round nose pliers  
 Putty knife  
 Blacksmith's anvil  
 Electric drill and drill set  
 2 lb. hammer  
 1/8 in. punch  
 1/4 in. punch

**SUPPLIES:** Adhesive (Item 2, Appendix D)  
 Pads (11659769) (2 required)  
 Rivets (MS20470AD6-8) (as required)  
 Cotter pin (MS24665-285) (6 required)  
 Lockwasher (MS35338-46) (12 required)  
 Shim (10905163) (as required)

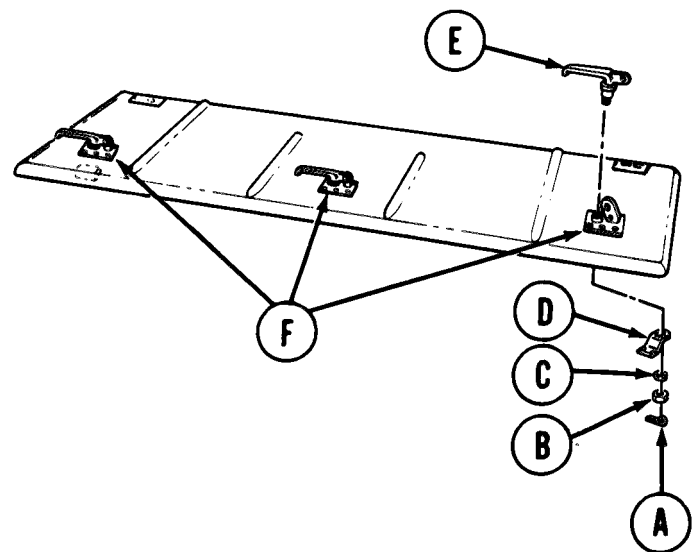
**PRELIMINARY PROCEDURE:** Remove stowage box from vehicle (page 16-177)

**DISASSEMBLY:**

**NOTE**

**Repair of right and left stowage boxes is the same.  
 Repair of all three stowage box handles is the same.**

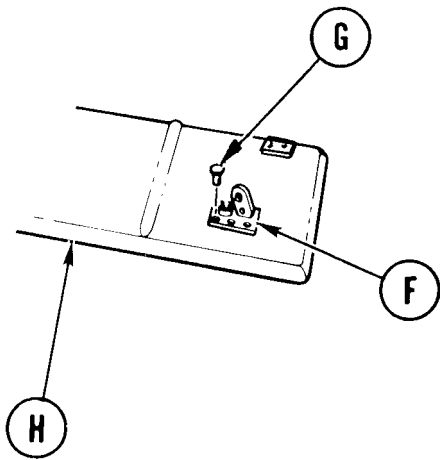
- Using pliers, remove cotter pin (A) from handle assembly. Throw cotter pin away.
- Using 9/16 inch wrench, remove nut (B), flat washer (C) and tongue (D) from handle (E).
- Remove handle (E) from lock (F).



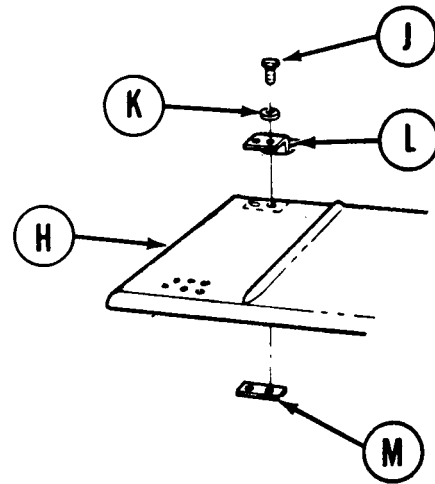
**Go on to Sheet 2**

TA253636

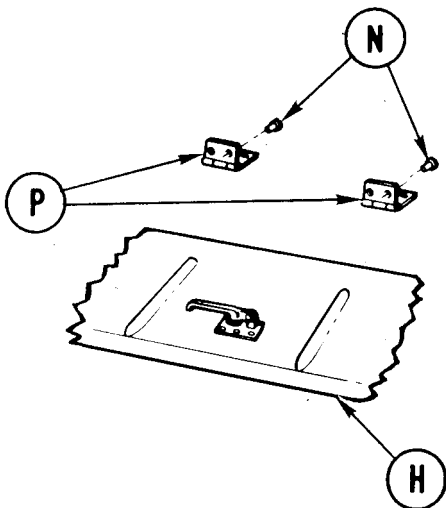
**FRONT FENDER (CENTER, LEFT AND RIGHT) STOWAGE BOX COVER REPAIR**  
(Sheet 2 of 4)



- Using electric drill, drill set, 1/8 in. punch, and hammer, remove six rivets (G) from lock (F).
- Remove lock (F) from stowage box cover (H).



- Using 9/16 inch wrench, remove twelve screws (J) and lockwashers (K) from four hinges (L) and six tapping plates (M). Throw lockwashers away.
- Remove stowage box cover (H) from stowage box.



- Using electric drill, drill set, 1/4 in. punch, and hammer, remove four rivets (N) from two middle hinges (P).
- Remove two hinges (P) from stowage box cover (H).

Go on to Sheet 3

**TA140794**

**FRONT FENDER (CENTER, LEFT AND RIGHT) STOWAGE BOX COVER REPAIR  
(Sheet 3 of 4)**

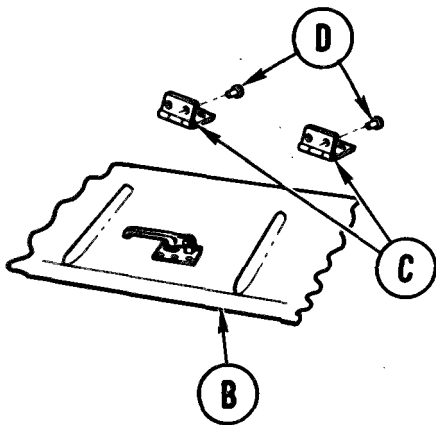
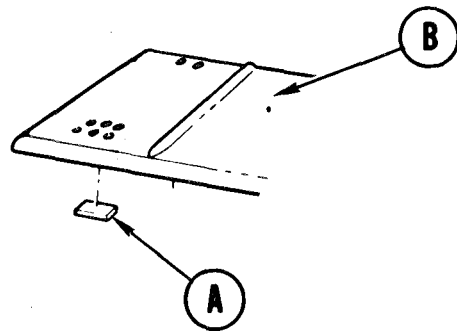
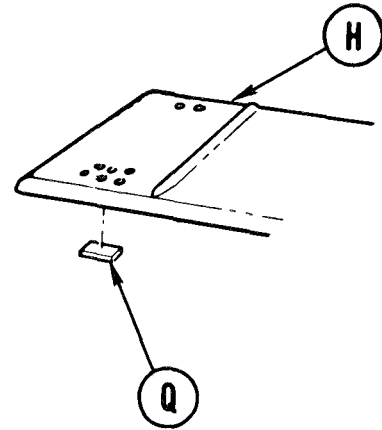
10. Using putty knife, remove two pads (Q) from bottom side of stowage box cover (H). Throw pads away.
11. Restore stowage box cover to serviceable condition by removing dents and straightening to original shape.

**CLEANING AND INSPECTION:**

Visually inspect for worn or damaged components and replace as required.

**ASSEMBLY:**

1. Apply adhesive (Item 2, Appendix D) to two new pads (A).
2. Install two new pads (A) to bottom of stowage box cover (B).



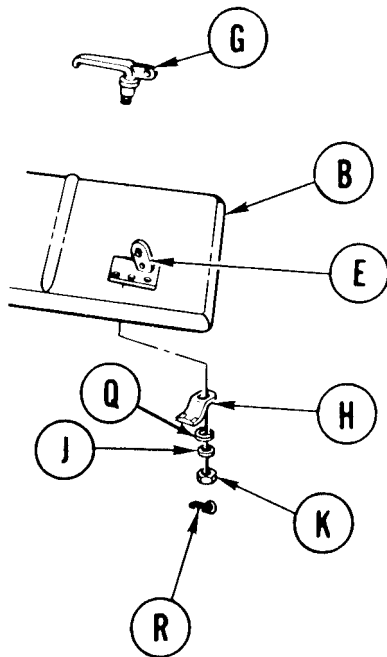
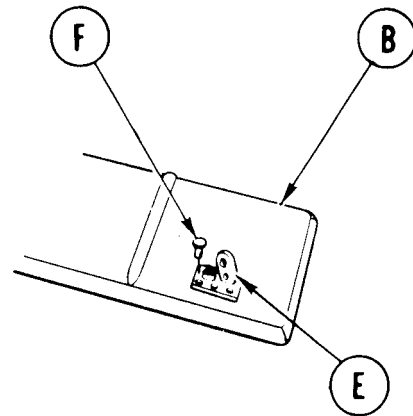
3. Place two middle hinges (C) in position on stowage box cover (B).
4. Using blacksmith's anvil and hammer, install four new rivets (D).

Go on to Sheet 4

TA140795

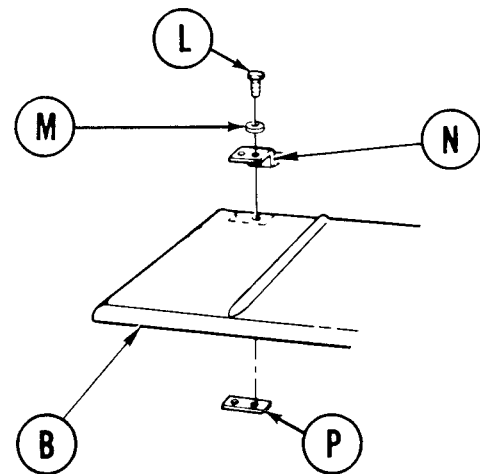
**FRONT FENDER (CENTER, LEFT AND RIGHT) STOWAGE BOX COVER REPAIR  
(Sheet 4 of 4)**

5. Place lock (E) in position on stowage cover (B).
6. Using blacksmith's anvil and hammer, install six new rivets (F).



7. Place handle (G) in position on lock (E).
8. Place tongue (H), lockwasher (J), and nut (K) on handle (G).
9. Place stowage box cover (B) in position on stowage box.
10. Using 9/16 inch wrench, install twelve screws (L) and new lockwashers (M) securing four hinges (N) and six tapping plates (P) to cover (B).
11. Close cover (B) and check for positive locking of latch assemblies. Add shims (Q) as necessary to assure positive locking.

12. Using 9/16 inch wrench, tighten nut (K) until hole in handle (G) aligns with grooves in nut.
13. Using pliers, install new cotter pin (R).
14. Install stowage box on vehicle (page 16-178).



End of Task

TA253639



**REAR FENDER (LEFT AND RIGHT) STORAGE BOX REPLACEMENT (Sheet 1 of 3)**

**TOOLS:** 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 9/16 in. combination box and open end wrench

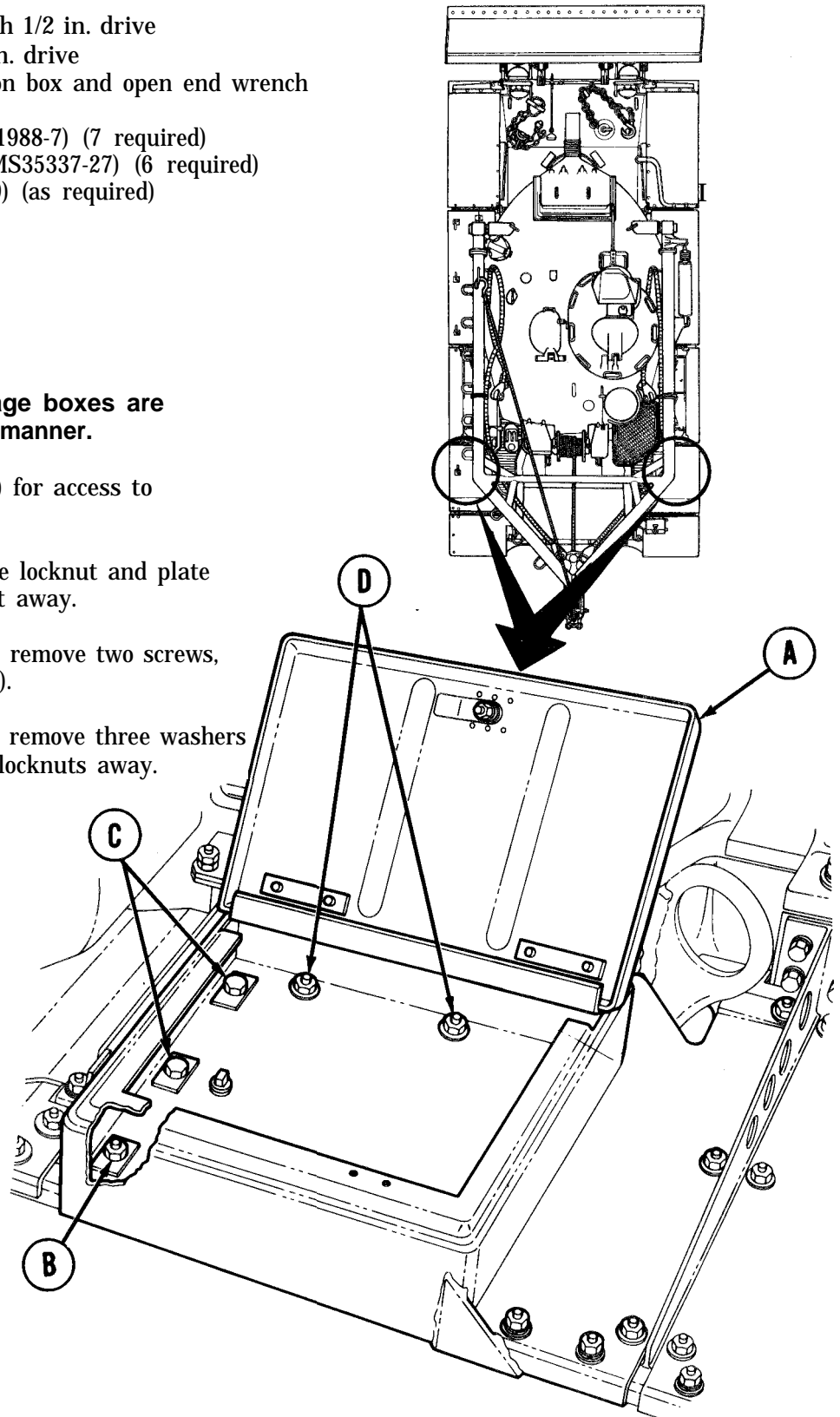
**SUPPLIES:** Locknuts (MS51988-7) (7 required)  
 Lockwashers (MS35337-27) (6 required)  
 Plates (8705499) (as required)

**REMOVAL:**

**NOTE**

**Left and right storage boxes are removed in a similar manner.**

1. Open storage box door (A) for access to hold-down screws.
2. Using wrench, remove one locknut and plate spacer (B). Throw locknut away.
3. Using wrench and socket, remove two screws, nuts, and plate spacers (C).
4. Using wrench and socket, remove three washers and locknuts (D). Throw locknuts away.



Go on to Sheet 2

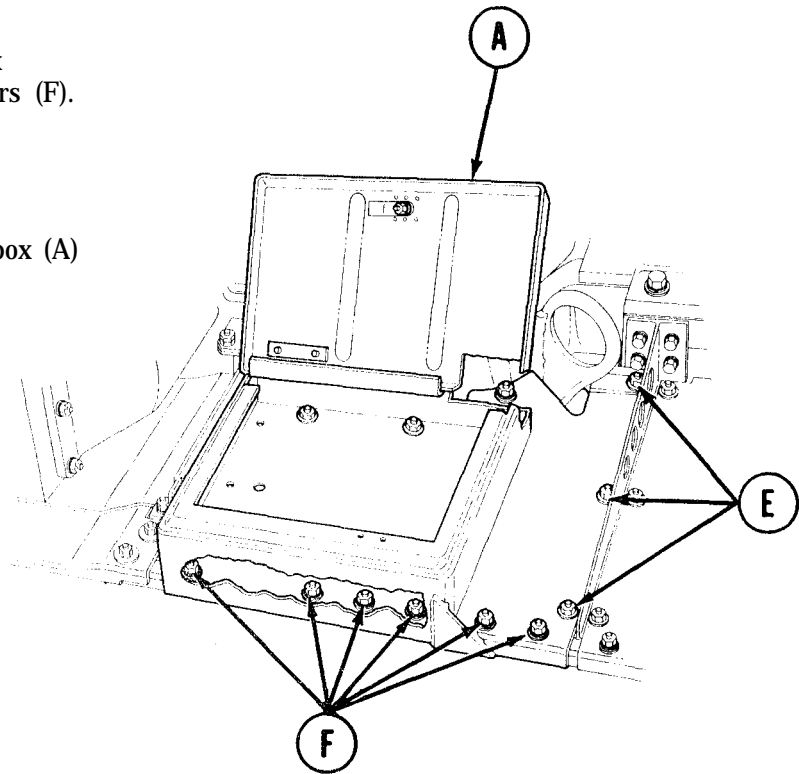
TA253640

REAR FENDER (LEFT AND RIGHT) STOWAGE BOX REPLACEMENT (Sheet 2 of 3)

**NOTE**

Plates may exist between stowage box base plate and outrigger to shim possible gaps. Retain plates to shim gaps during later installation.

5. Using socket, remove three locknuts and washers (E). Throw locknuts away.
6. Using wrench and socket, remove six screws, nuts, washers, and lockwashers (F). Throw lockwashers away.
7. Using two persons, remove stowage box (A) from vehicle.



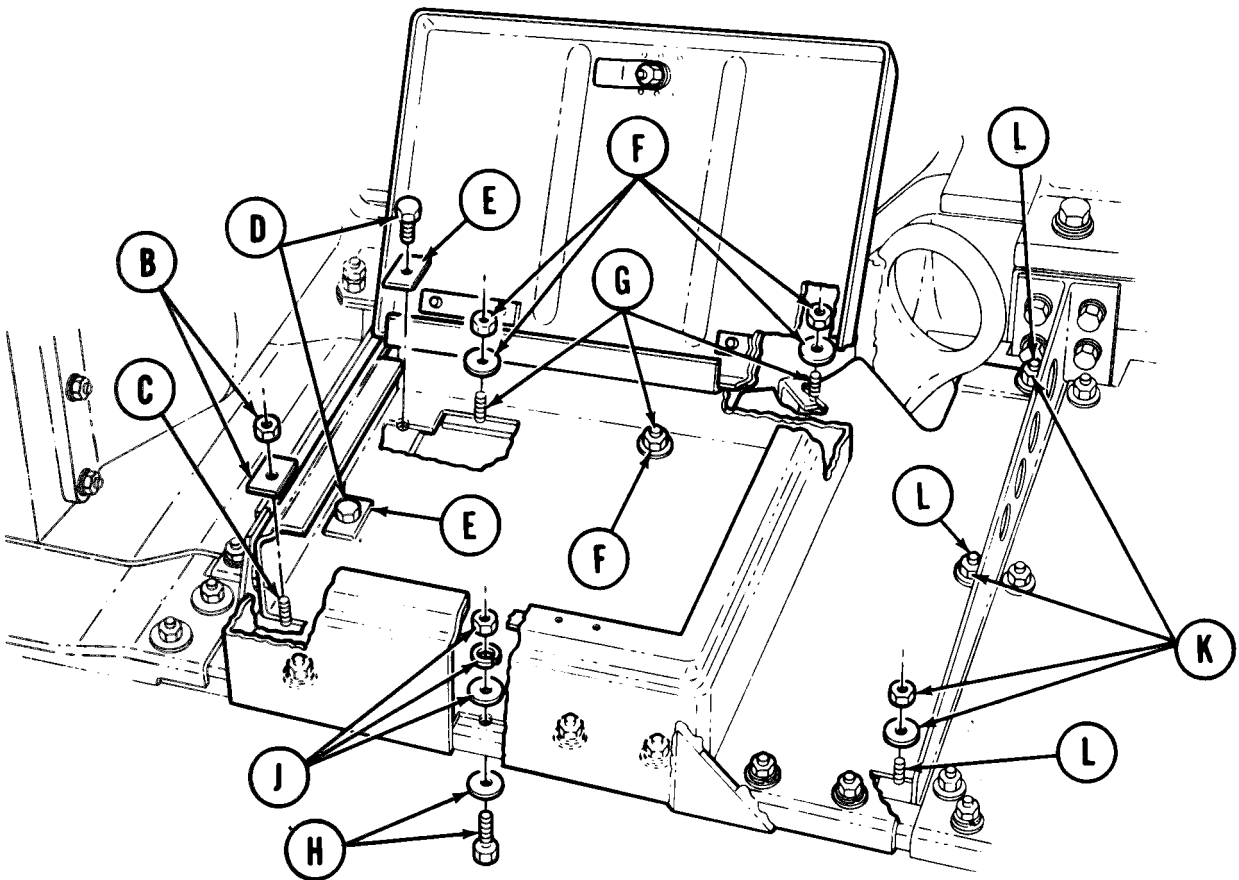
**INSTALLATION:**

**NOTE**

If gap between stowage box base plate and outrigger exists shim gap with up to three plates.

1. Using two persons, place stowage box (A) in position on vehicle.

## REAR FENDER (LEFT AND RIGHT) STOWAGE BOX REPLACEMENT (Sheet 3 of 3)



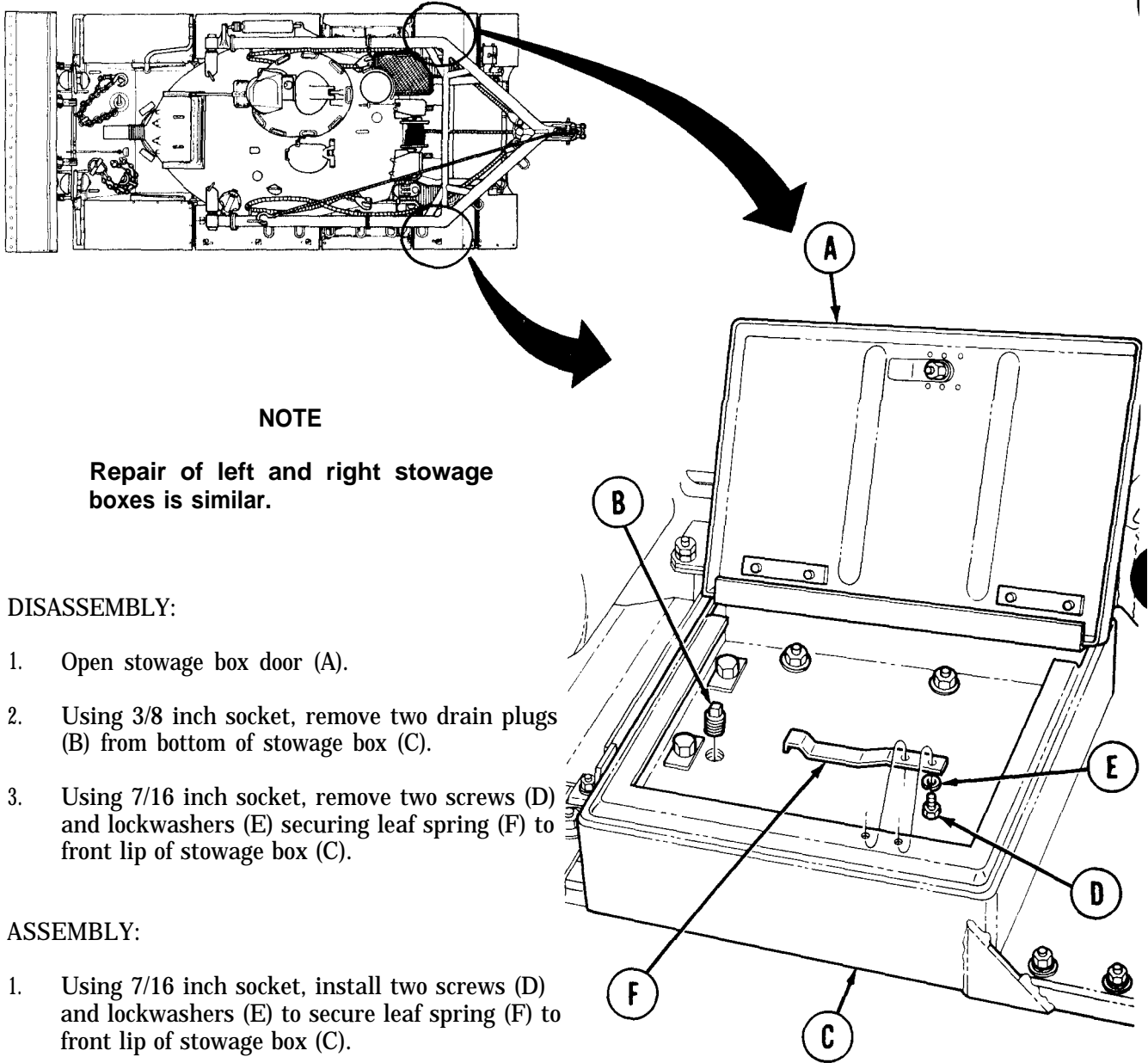
2. Using fliers, install plate and new locknut (B) on stud (C).
3. Using fingers, install two screws (D) and two plates (E).
4. Using fingers, install three washers and new locknuts (F) on three studs (G).
5. Using fingers, install six screws and washers (H) and six washers, new lockwashers, and nuts (J).
6. Using fingers, install three washers and new locknuts (K) on studs (L).
7. Using socket, tighten seven locknuts (B), (F), and (K) on seven studs (C), (G), and (L).
8. Using wrench and socket, tighten eight remaining screws and nuts.
9. Close stowage box cover.

End of Task

TA140799

## REAR FENDER (LEFT AND RIGHT) STORAGE BOX REPAIR (Sheet 1 of 1)

TOOLS: 3/8 in. socket with 1/2 in. drive  
7/16 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive



### NOTE

Repair of left and right storage boxes is similar.

### DISASSEMBLY:

1. Open storage box door (A).
2. Using 3/8 inch socket, remove two drain plugs (B) from bottom of storage box (C).
3. Using 7/16 inch socket, remove two screws (D) and lockwashers (E) securing leaf spring (F) to front lip of storage box (C).

### ASSEMBLY:

1. Using 7/16 inch socket, install two screws (D) and lockwashers (E) to secure leaf spring (F) to front lip of storage box (C).
2. Using 3/8 inch socket, install two drain plugs (B).
3. Close storage box door (A).

End of Task

TA140800

REAR FENDER (LEFT AND RIGHT) STOWAGE BOX COVER REPAIR (Sheet 1 of 4)

PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	16-189
Cleaning and Inspection	16-190
Assembly	16-191

TOOLS: 11/16 in. combination box and open end wrench  
 Lag round nose pliers  
 Putty knife  
 Blachmith's anvil  
 9/16 in. combination box and open end wrench  
 2 lb. hammer  
 1/8 in. punch  
 Electric drill and drill set

SUPPLIES: Adhesive (Item 2, Appendix D)  
 Cotter pin (MS24665-285)  
 Rivets (MS20470-AD6-8 (6 required)  
 Lockwasher (MS35338-46)(8 required)  
 Shim 10905163) (As required)  
 Pads (11659769) (2 required)

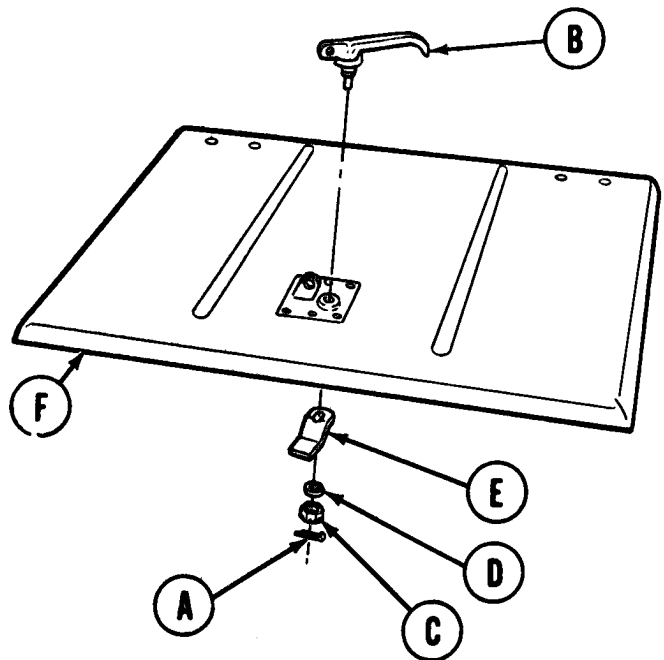
PRELIMINARY PROCEDURE: Remove stowage box from vehicle (page 16-185)

DISASSEMBLY:

**NOTE**

**Repair of both left and right covers is identical.**

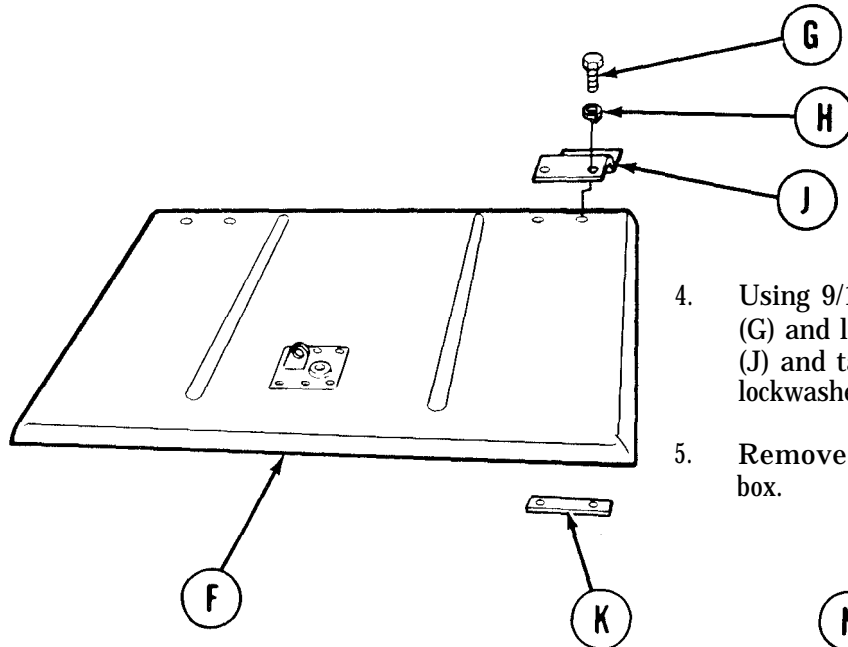
- Using pliers, remove cotter pin (A.) from handle (B). Throw cotter pin away.
- Using 9/16 inch wrench, remove nut (C), washer (D), and tongue (E).
- Remove handle (B) from stowage box cover (F).



Go on to Sheet 2

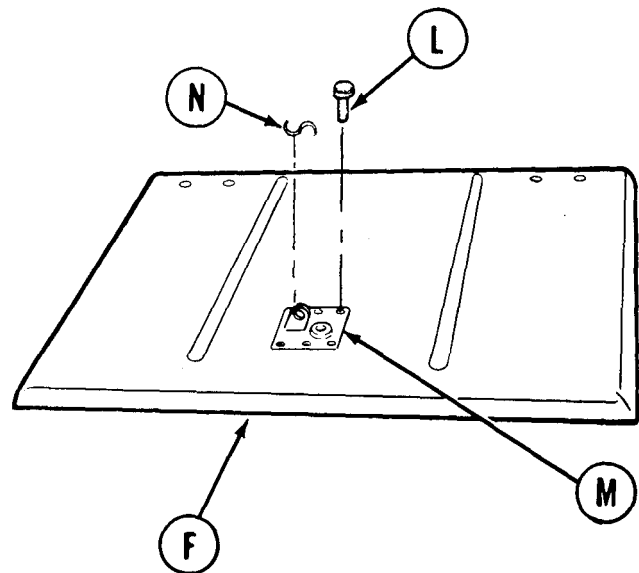
TA253642

REAR FENDER (LEFT AND RIGHT) STOWAGE BOX COVER REPAIR (Sheet 2 of 4)

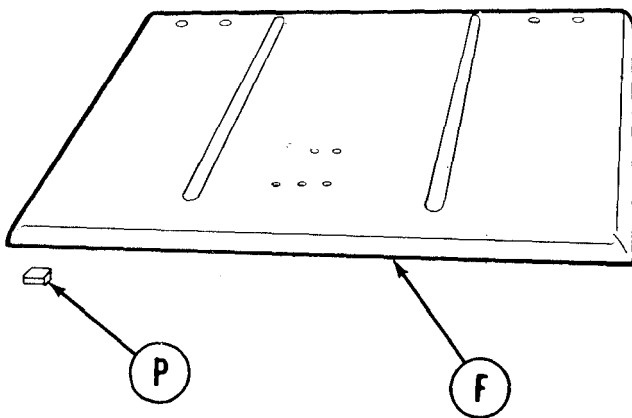


4. Using 9/16 inch wrench, remove eight screws (G) and lockwashers (H) securing two hinges (J) and tapping plates (K) to cover (F). Throw lockwashers away.
5. Remove storage box (F) from storage box.

6. Using electric drill, hammer, and 1/8 in. punch, remove six rivets (L) from lock (M).
7. Remove lock (M) from cover (F).
8. Using pliers, remove S-hook (N) from lock (M).



9. Using putty knife, remove two pads (P) from bottom of cover (F).



CLEANING AND INSPECTION:

1. Restore rear storage box cover to serviceable condition by removing dents and straightening to original shape.

Go on to Sheet 3

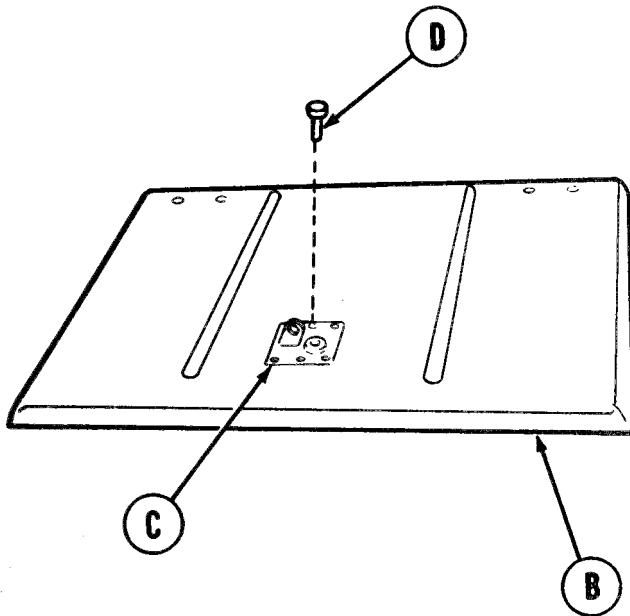
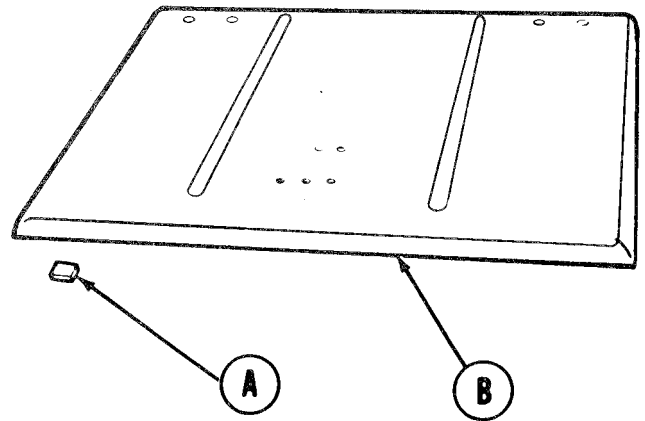
TA140802

REAR FENDER (LEFT AND RIGHT) STOWAGE BOX COVER REPAIR (Sheet 3 of 4)

2. Visually inspect worn or damaged components. Replace as required.

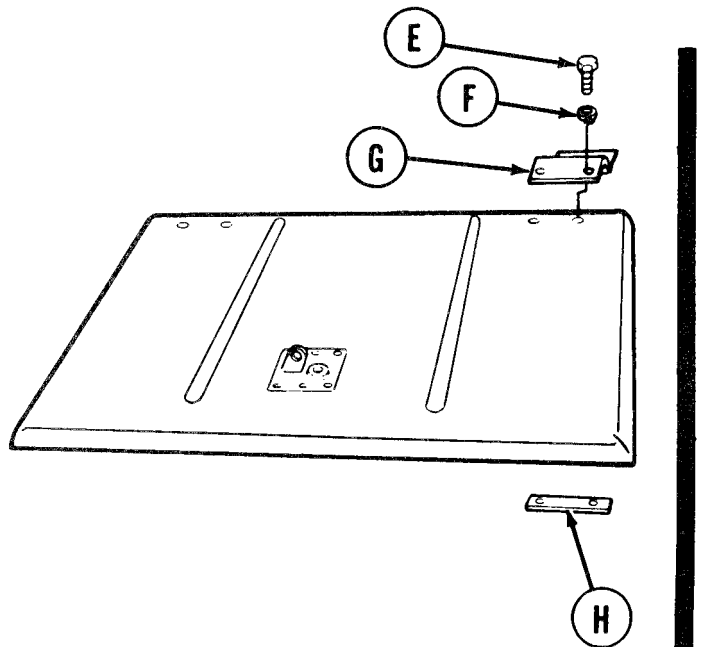
ASSEMBLY:

1. Apply adhesive (Item 2, Appendix D) to two pads (A).
2. Install two pads (A) to bottom side of stowage box cover (B).



3. Place lock (C) in position on stowage box cover (B).
4. Using blacksmith's anvil and hammer, install six rivets (D).

5. Place stowage box cover (B) in position on storage box.
6. Using 9/16 inch wrench, install eight screws (E) and lockwashers (F) securing two hinges (G) and tapping plates (H).

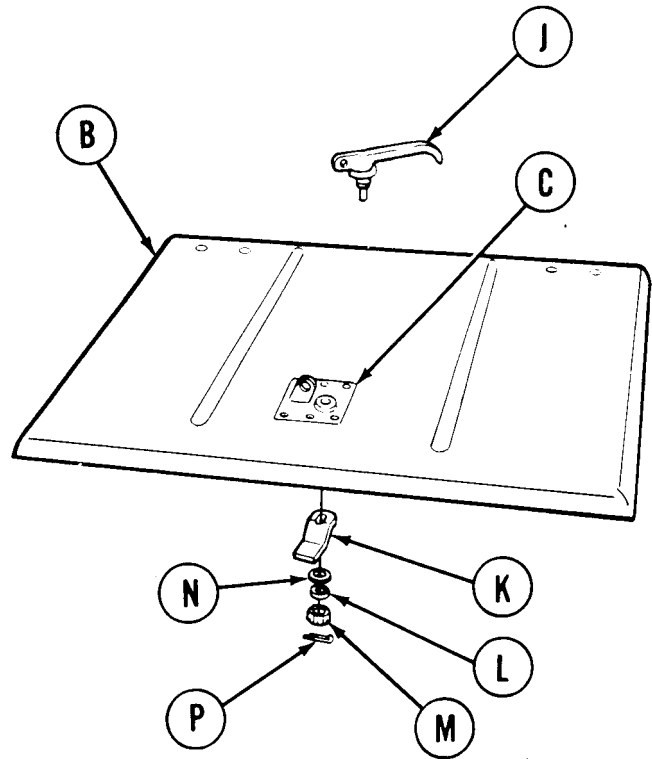


Go on to Sheet 4

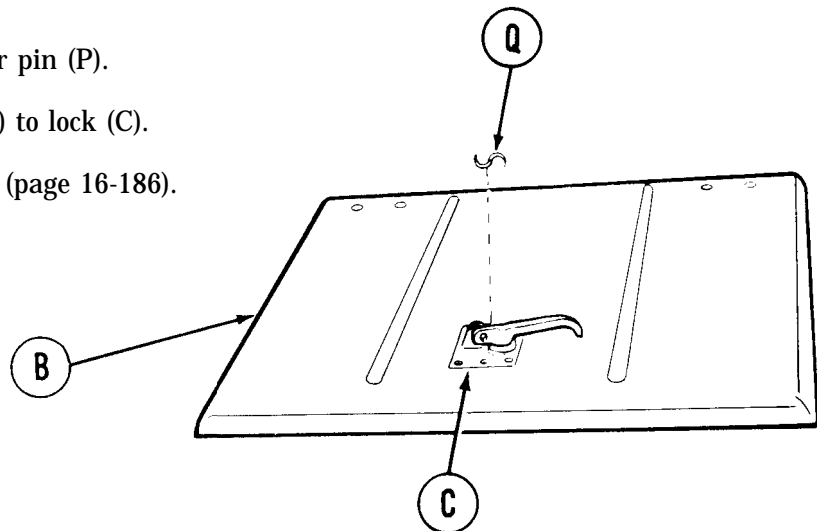
TA253643

REAR FENDER (LEFT AND RIGHT) STOWAGE BOX COVER REPAIR (Sheet 4 of 4)

7. Place handle (J) in position on lock (C).
8. Install tongue (K), washer (L), and nut (M) on handle (J).
9. Close cover (B) and check for positive locking of latch assembly. Add shims (N) as necessary to assure positive locking.
10. Using 9/16 inch socket, tighten nut (M) until hole in handle (J) shaft aligns with slot on nut (M).



11. Using pliers, install new cotter pin (P).
12. Using pliers, install S-hook (Q) to lock (C).
13. Install stowage box on vehicle (page 16-186).



End of Task

TA253644



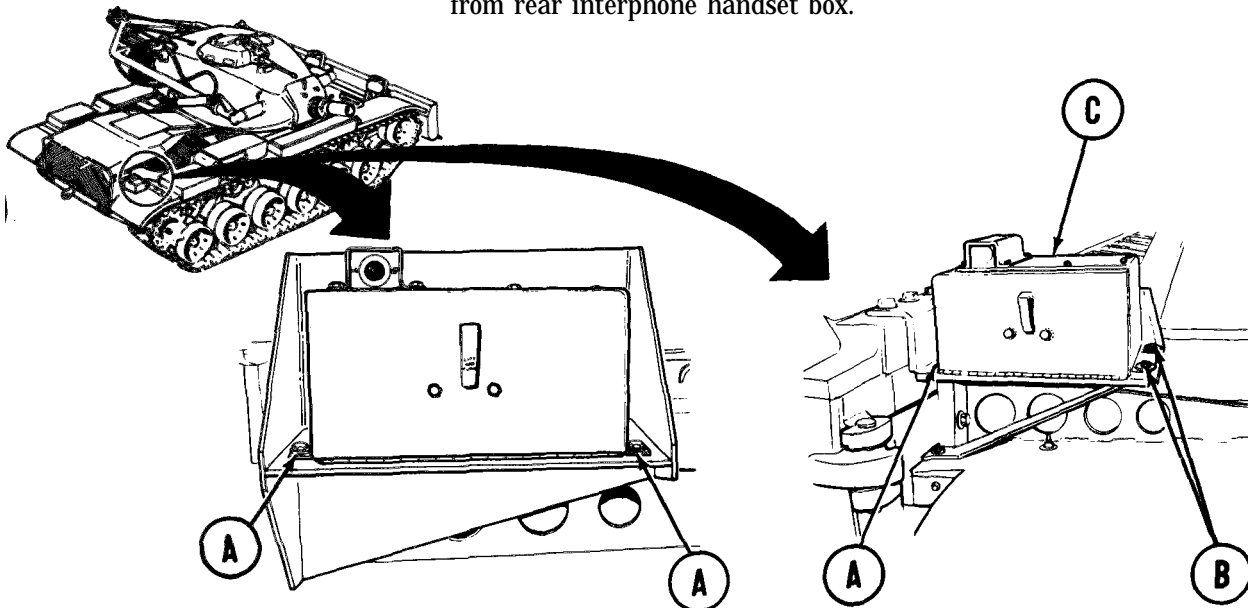
## EXTERNAL HANDSET BOX REPLACEMENT (Sheet 1 of 4)

TOOLS: Screwdriver, flat tip  
 Slip joint pliers  
 Hinged handle with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 9/16 in. combination box and open end wrench  
 11/32 in. socket with 1/4 in. drive  
 2-1/4 in. extension with 1/4 in. drive  
 Ratchet with 1/4 in. drive

SUPPLIES: Lockwasher MS35338-46 (2 required)  
 Lockwasher MS35338-42 (4 required)  
 Locknut MS51988-7 (4 required)  
 Gasket MS51007-8

REFERENCE: TM 11-5820-401-12

PRELIMINARY PROCEDURE: Have communications personnel remove interphone set from rear interphone handset box.



LATE MODEL MOUNTING BRACKET EARLY MODEL MOUNTING BRACKET

## REMOVAL:

(On Early Model Mounting Support)

- Using 9/16 inch socket and 9/16 inch wrench, remove two screws, flat washers, and locknuts (A), and two screws and lockwashers (B) securing handset box (C) to support. Throw locknuts and lockwashers away.

Go on to Sheet 2

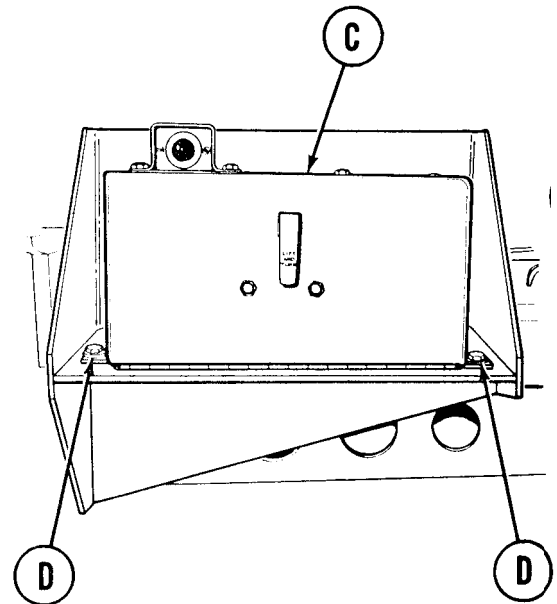
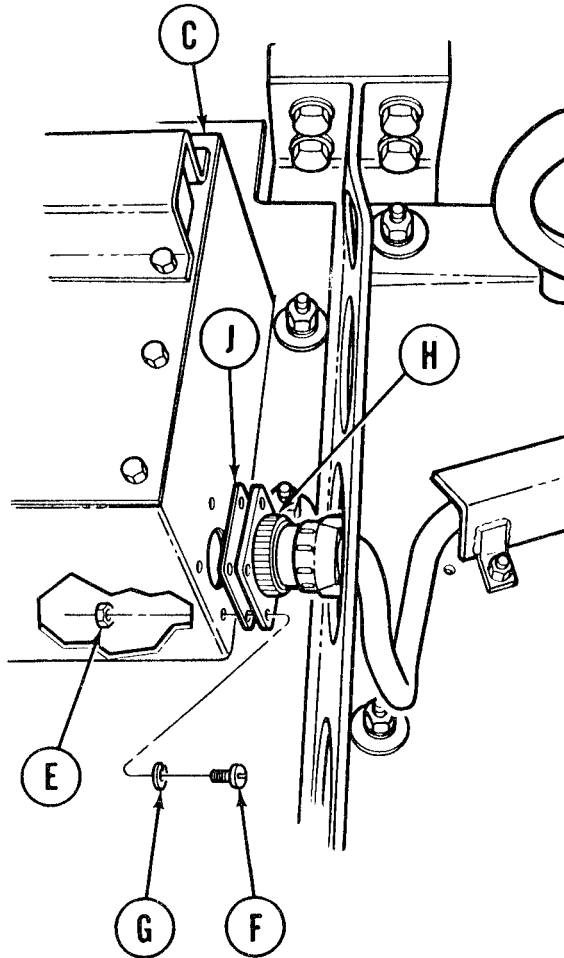
TA253645

Change 1 16-193

EXTERNAL HANDSET BOX REPLACEMENT (Sheet 2 of 4)

(On Late Model Mounting Bracket)

1. Using 9/16 inch socket and 9/16 inch wrench, remove four screws and locknuts (D) securing handset box (C) to bracket. Throw locknuts away.



LATE MODEL MOUNTING BRACKET

2. Using 11/32 inch socket to hold nut (E), use screwdriver and remove four screws (F), lockwashers (G) and nuts (E) securing cable connector (A) to handset box (C). Throw lockwashers away.
3. Remove cable connector (H) and gasket (J) from handset box. Throw gasket away.
4. Remove handset box (C) from support or bracket.

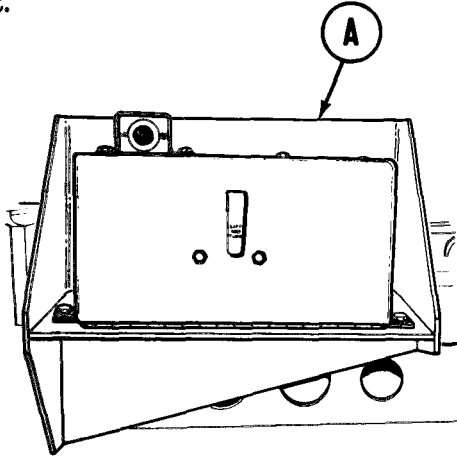
Go on to Sheet 3

TA253649

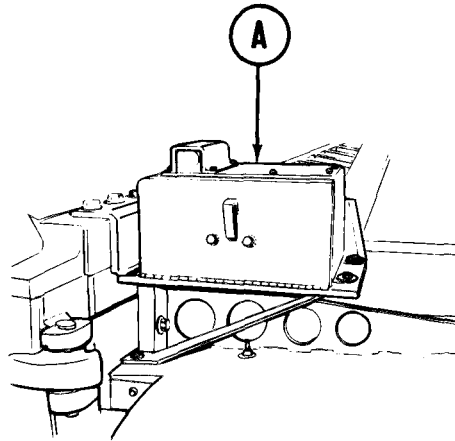
EXTERNAL HANDSET BOX REPLACEMENT (Sheet 3 of 4)

INSTALLATION:

1. Position handset box (A) onto support or bracket.

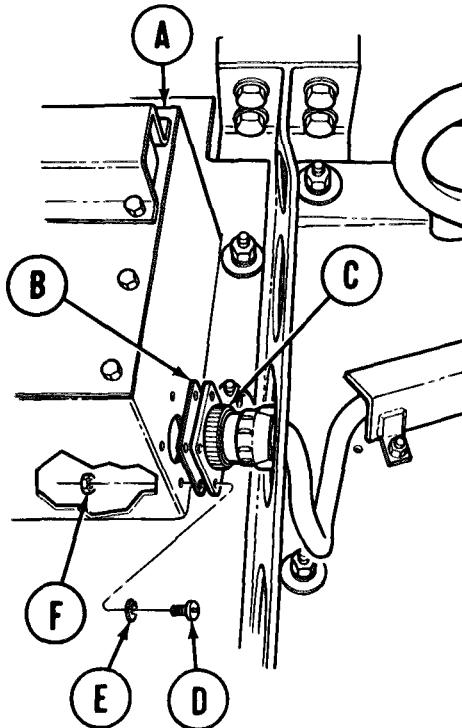


LATE MODEL MOUNTING BRACKET



EARLY MODEL MOUNTING BRACKET

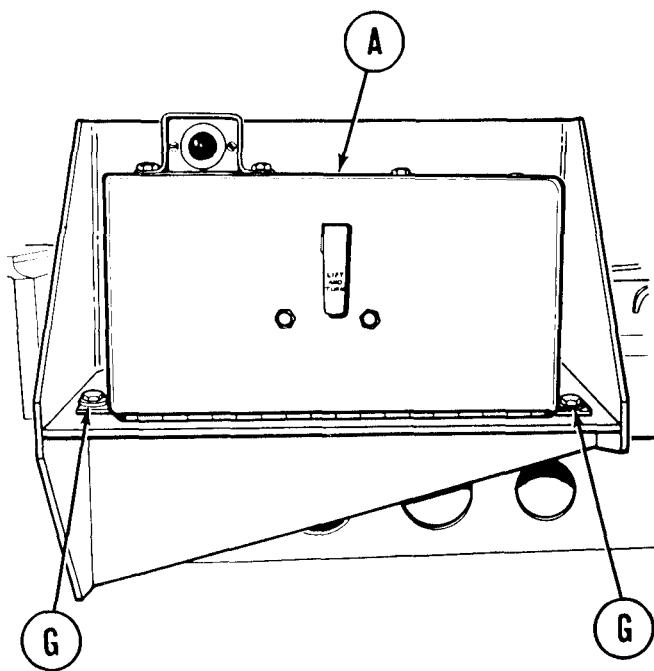
2. Install new gasket (B) onto cable connector (C).
3. Insert cable connector (C) into handset box (A).
4. Using screwdriver and 11/32 socket, install four screws (D), new lockwashers (E) and nuts (F) to secure cable connector (C) to handset box (A).



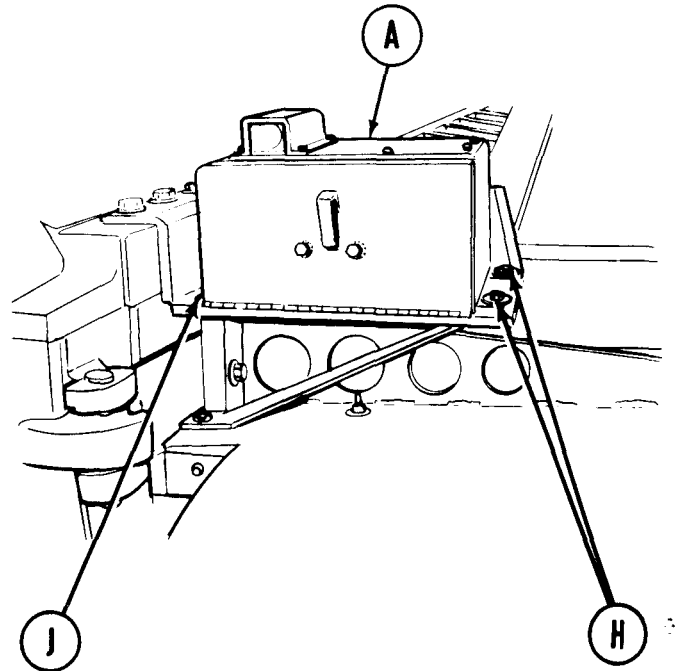
Go on to Sheet 4

TA253647

EXTERNAL HANDSET BOX REPLACEMENT (Sheet 4 of 4)



LATE MODEL MOUNTING BRACKET



EARLY MODEL MOUNTING BRACKET

(On Late Model Mounting Bracket)

5. Aline holes of mounting tabs on handset box (A) with holes in bracket. Using 9/16 inch socket and 9/16 inch wrench, install four screws and new locknuts (G) to secure handset box to bracket.

(On Early Model Mounting Support)

5. Aline holes of mounting tabs on handset box (A) with holes in support. Using 9/16 inch socket and 9/16 inch wrench, install two screws, flatwashers and new locknuts (H), and two screws and new lockwashers (J) to secure handset box (A) to support.
6. Have communication personnel install interphone set.
7. Check intercom for proper operation (TM 11-5820-401-12).

End of Task

## EXTERNAL HANDSET BOX ASSEMBLY AND LIGHT ASSEMBLY REPAIR (Sheet 1 of 6)

## PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	16-195
Cleaning and Inspection	16-197
Assembly	16-198

TOOLS: 1/2 in. combination box and open end wrench (2 required)  
 11/32 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench  
 7/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Flat-tip screwdriver with 1/4 in. blade  
 Brush  
 Putty knife

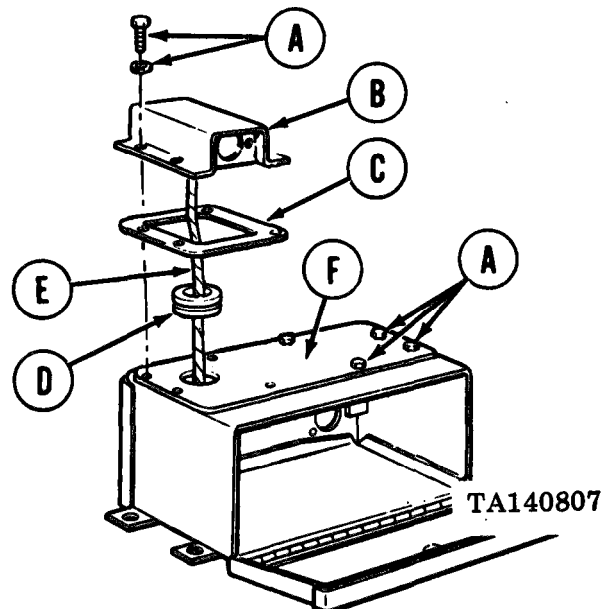
SUPPLIES: Crocus cloth (Item 14, Appendix D)  
 Silicone compound (Item 32, Appendix D)  
 Rubber adhesive (Item 4, Appendix D)  
 Dry cleaning solvent (Rem 54, Appendix D)  
 Lockwasher (MS35338-44) (8 required)  
 Lockwasher (MS35333-38) (2 required)  
 Gasket (10915319)  
 Liquid detergent (Item 33, Appendix D)

REFERENCE: TM 11-5820-401-12

PRELIMINARY PROCEDURES: Remove intercom and handset (TM 11-5820-401-12)  
 Remove external handset box (page 16-193)

## DISASSEMBLY:

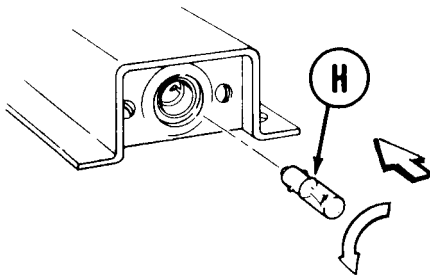
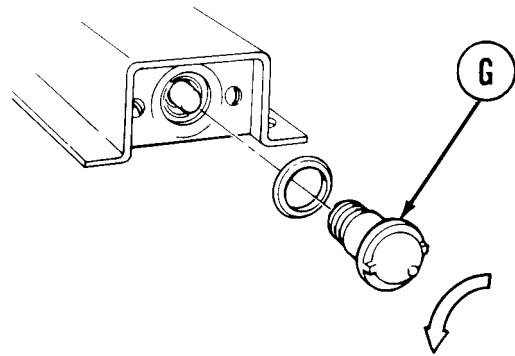
- Using socket, remove eight screws and lockwashers (A). Throw lockwashers away.
- Remove light assembly (B), gasket (C), grommet (D) and wiring harness (E). Throw gasket away.
- Remove box cover plate and gasket (F).



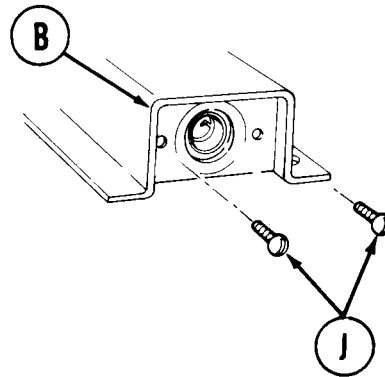
Go on to Sheet 2

EXTERNAL HANDSET BOX ASSEMBLY AND LIGHT ASSEMBLY REPAIR (Sheet 2 of 6)

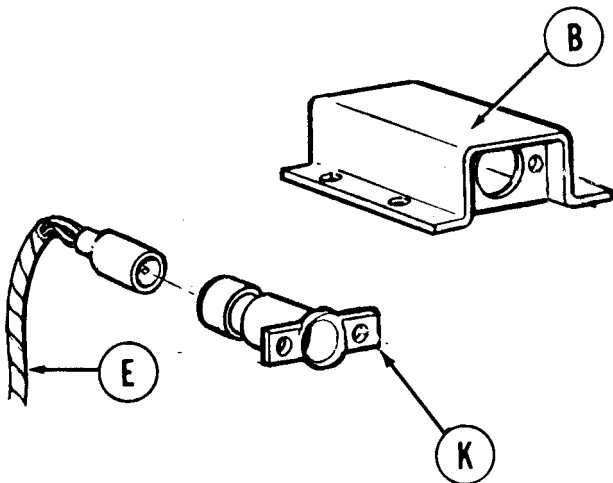
4. Using fingers, remove lens (G) and grommet by turning lens counterclockwise.



5. Remove bulb (H) by pushing in and turning counterclockwise.



6. Using screwdriver, remove two screws (J) from light assembly (B).



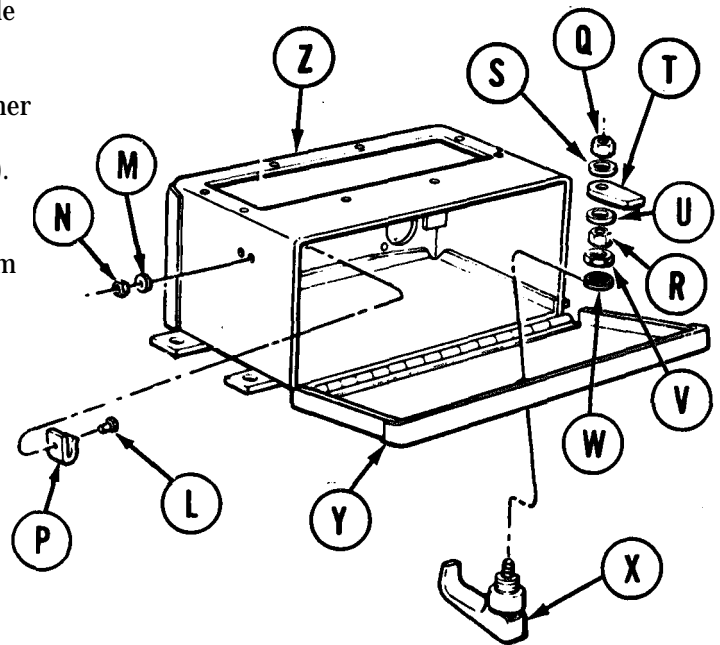
7. Remove socket assembly (K) from housing of light assembly (B) and disconnect wiring harness (E).

Go on to Sheet 3

TA140808

## EXTERNAL HANDSET BOX ASSEMBLY AND LIGHT ASSEMBLY REPAIR (Sheet 3 of 6)

8. Using screwdriver and 11/32 inch wrench, remove two screws (L), lockwashers (M), and nuts (N) to remove spring clip (P) from inside box. Throw lockwashers away.
9. Using 1/2 inch wrench on nut (Q) and another 1/2 inch wrench on nut (R), remove nut (Q), washer (S), pawl (T), washer (U), and nut (R).
10. Using 3/4 inch wrench, remove nut (V) and washer (W). Remove latch assembly (X) from box cover (Y).



## NOTE

**Box cover (Y) is part of box assembly (Z) and cannot be removed.**

## CLEANING AND INSPECTION:

1. Using dry cleaning solvent (Item 54, Appendix D), clean box, light assembly housing, cover plate, and latch assembly.
2. Using crocus cloth (Item 14, Appendix D), clean light socket contacts and wiring harness contacts.

Go on to Sheet 4

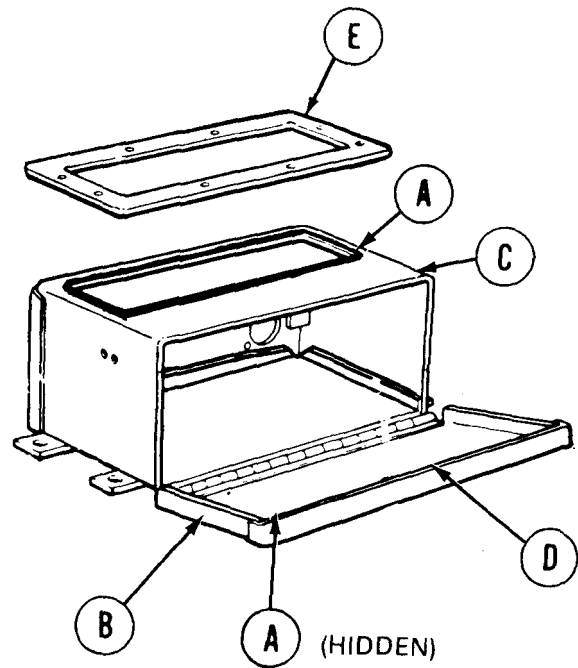
TA140809

EXTERNAL HANDSET BOX ASSEMBLY AND LIGHT ASSEMBLY REPAIR (Sheet 4 of 6)

3. Using detergent (Item 33, Appendix D) and water, clean light assembly lens.
4. Using putty knife, remove old rubber adhesive from box cover and cover assembly.
5. Check all screws, washers, and nuts for serviceability.
6. Check grommets and gasket for cracks and wear.
7. Check latch assembly for damage.
8. Check handset box, box cover, cover plate, and light assembly housing for damage.
9. Check light socket assembly, wiring harness, bulb, and lens for damage.
10. Check latch assembly and spring clip for damage.
11. Replace parts as needed.

ASSEMBLY:

1. Using putty knife, apply rubber adhesive (A) (Item 4, Appendix D) to handset box cover (B) and seal area on top of handset box (C).
2. Let adhesive dry until tacky and install cover seal (D) in box cover (B) and new gasket (E) on box top (C).



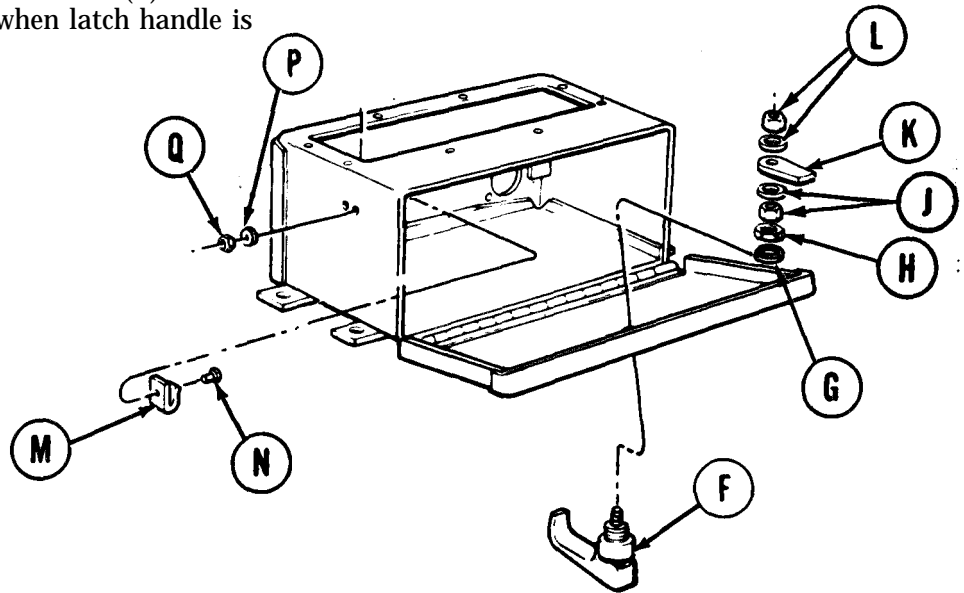
Go on to Sheet 5

TA140810



EXTERNAL HANDSET BOX ASSEMBLY AND LIGHT ASSEMBLY REPAIR (Sheet 5 of 6)

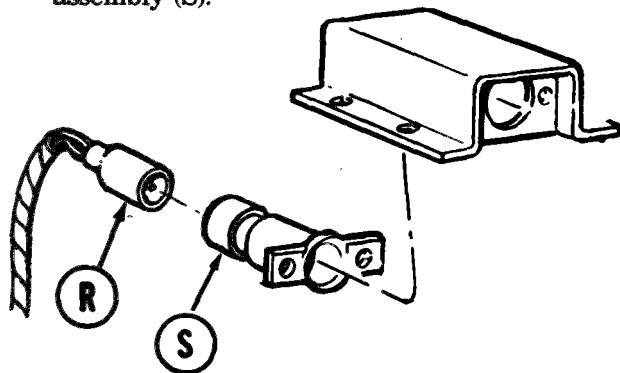
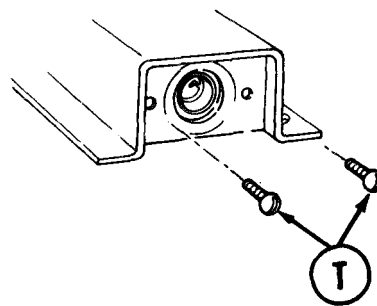
5. Using 3/4 inch wrench, install latch assembly (F) and secure with washer (G) and nut (H).
6. Using 1/2 inch wrench, install nut and washer (J), pawl (K), and nut and washer (L). Make sure pawl (K) points up when latch handle is down.



NOTE

It may be necessary to adjust latch in order to lock door. Latch may be adjusted by loosening and repositioning nuts (L) and (J) until latch will lock to catch on box.

7. Using 11/32 inch wrench and screwdriver, install spring clip (M) inside box with two screws (N), lockwashers (P), and nuts (Q).
8. Apply silicone compound (Item 32, Appendix D) to wiring harness (R) and connect to socket assembly (S).



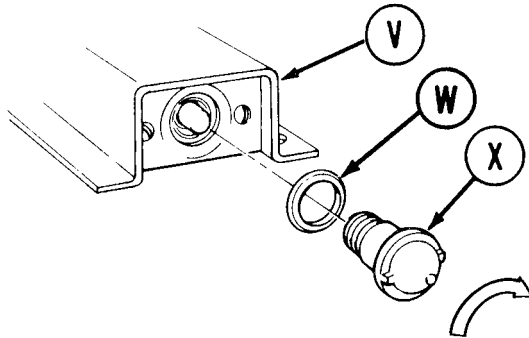
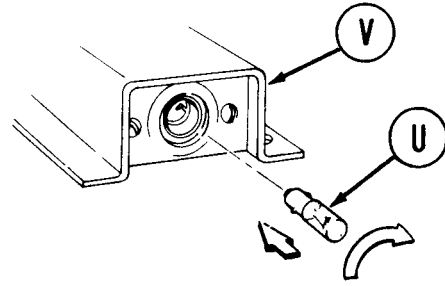
9. Using screwdriver, install socket assembly (S) with two screws (T).

Go on to Sheet 6

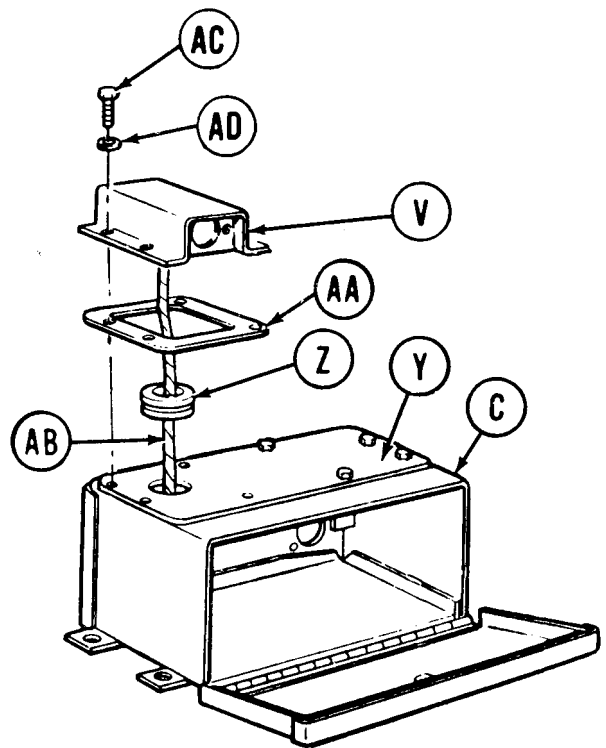
TA140811

EXTERNAL HANDSET BOX ASSEMBLY AND LIGHT ASSEMBLY REPAIR (Sheet 6 of 6)

10. Install bulb (U) in light assembly (V).
11. Place grommet (W) on lens (X). Install lens (X) in light assembly (V) and tighten finger tight.



12. Position box cover plate (Y) on handset box (C) with screw holes alined.
13. Install grommet (Z) in box cover plate (Y).
14. Using brush, apply rubber adhesive (Item 4, Appendix D) to mating surfaces of light assembly (V) and box cover plate.
15. When adhesive becomes tacky, position gasket (AA) on box cover plate (Y) with holes alined.
16. Thread wiring harness (AB) through grommet (Z) and position light assembly (V) on top of box cover plate (Y).
17. Secure cover plate and light assembly (V) with eight screws (AC) and new lockwashers (AD).
18. Install handset box assembly (page 16-194).
19. Install intercom and handset (TM 11-5820-401-12).



End of Task

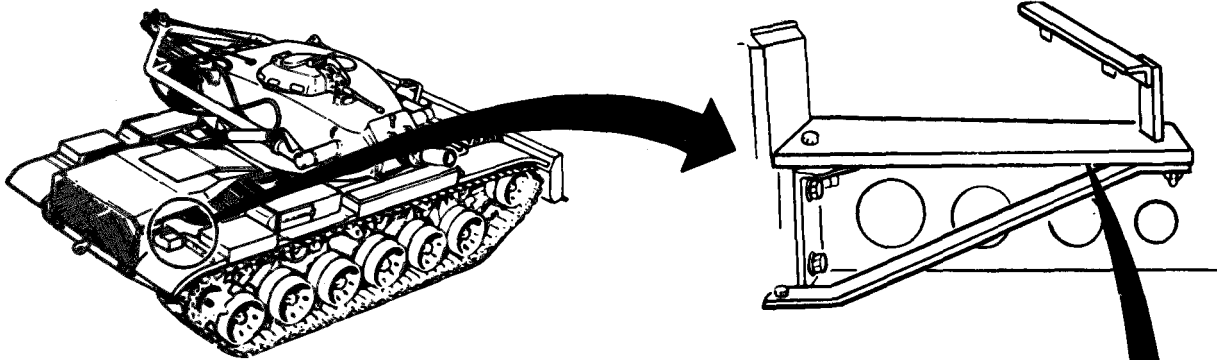
TA140812

**EXTERNAL HANDSET BOX SUPPORT REPLACEMENT (EARLY MODEL) (Sheet 1 of 2)**

**TOOLS:** 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Ratchet with 3/4 in. drive  
 1-1/2 in. socket with 3/4 in. drive  
 9/16 in. combination box and open end wrench  
 3-1/4 in. extension with 3/4 in. drive

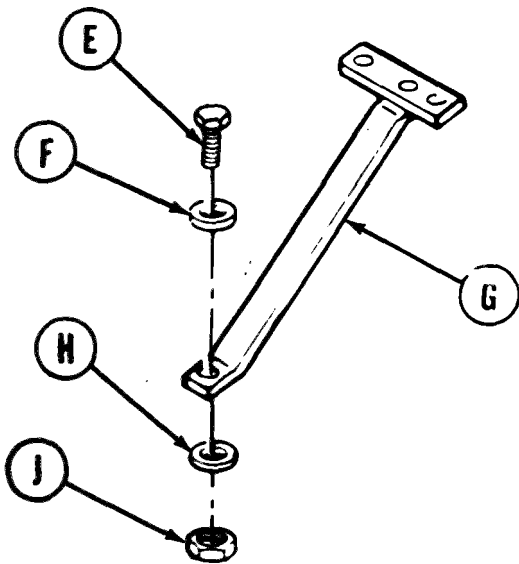
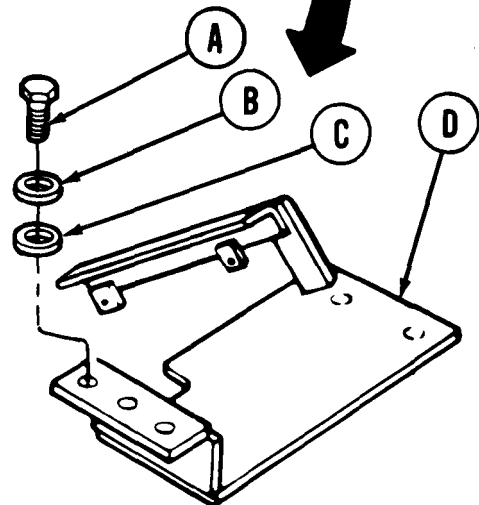
**SUPPLIES:** Lockwasher (MS35338-72) (3 required)

**PRELIMINARY PROCEDURES:** Remove external handset box (page 16-193)  
 Remove cable assembly from bracket (page 10-385)



**REMOVAL:**

1. Using 1-1/2 inch socket, remove three screws (A), lockwashers (B), and flat washers (C). Throw lockwashers away.
2. Remove handset support (D).



3. Using 9/16 inch wrench and 9/16 inch socket, remove screw (E) and flat washer (F).
4. Remove support (G), flat washer (H), and nut (J).

Go on to Sheet 2

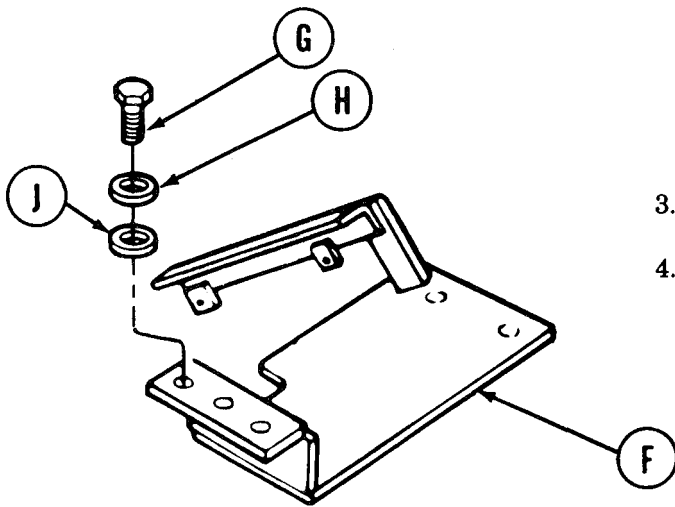
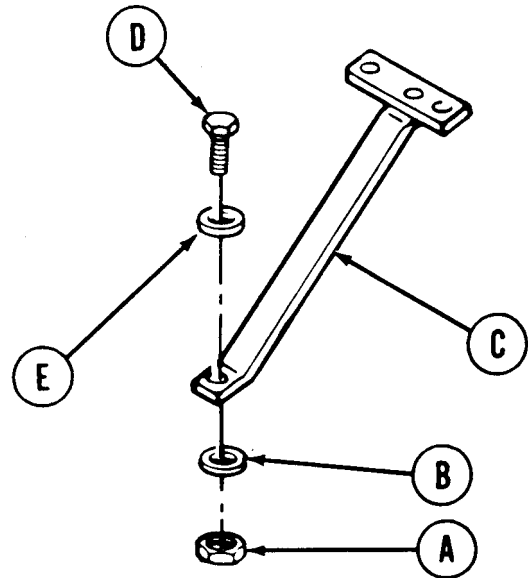
TA253649

Change 1 16-201

**EXTERNAL HANDSET BOX SUPPORT REPLACEMENT (EARLY MODEL) (Sheet 2 of 2)**

INSTALLATION:

1. Place nut (A), flat washer (B), and support (C) in position on vehicle.
2. Using 9/16 inch wrench and 9/16 inch socket, install screw (D) and flat washer (E) securing bracket (C) to vehicle.



3. Place support (F) in position on vehicle.
4. Using 1-1/2 inch socket, install three screws (G), new lockwashers (H), and flat washers (J) securing support (F) to vehicle.

5. Install handset box (page 16-194).
6. Install cable assembly to bracket (page 10-387).

End of Task

TA2536

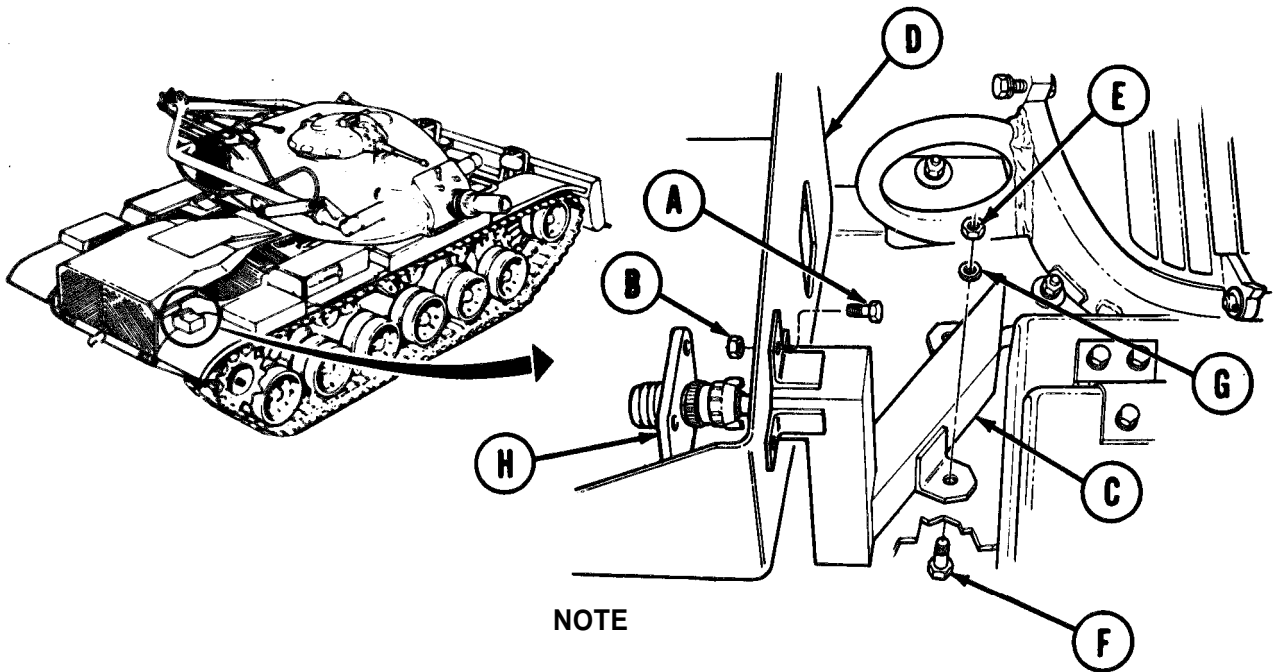
## HANDSET BOX BRACKET OR CABLE GUARD REPLACEMENT (LATE MODEL) (Sheet 1 of 3)

**TOOLS.** 1-1/8 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 10 in. extension with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 9/16 in. combination box and open end wrench (2 required)  
 Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)  
 5 in. extension with 1/2 in. drive

**SUPPLIES:** Nut, self-locking (MS51988-7) (5 required)

**PERSONNEL:** Two

**PRELIMINARY PROCEDURE:** Remove external handset box (page 16-193)

**NOTE**

If replacing cable guard only, perform steps (1 through 3).

**REMOVAL:**

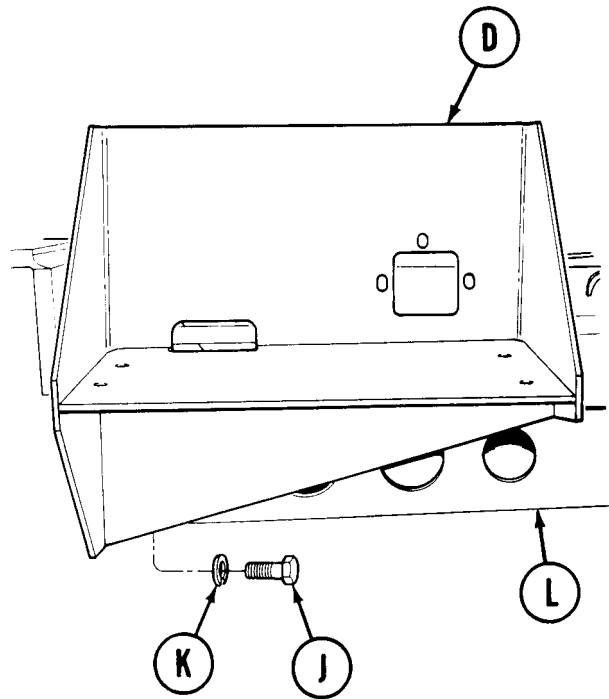
1. Using 9/16 inch wrenches, and 9/16 inch socket remove three screws (A) and self-locking nute (B) securing guard (C) to bracket (D). Throw self-locking nuts away.
2. Using 9/16 inch wrench to hold nut (E), use 9/16 inch socket and remove two screws (F), washere (G), and self-locking nuts (E) securing guard (C) to fender. Throw self-locking nuts away.
3. Remove guard (C) from fender.
4. Remove cable assembly (H) from bracket (D).

Go on to Sheet 2

TA253651

**HANDSET BOX BRACKET OR CABLE GUARD REPLACEMENT (LATE MODEL) (Sheet 2 of 3)**

5. Using 1-1/8 inch socket, remove three screws (J) and lockwashers (K) securing bracket (D) and outrigger (L). Throw lockwashers away.
6. Remove bracket (D) off outrigger (L).

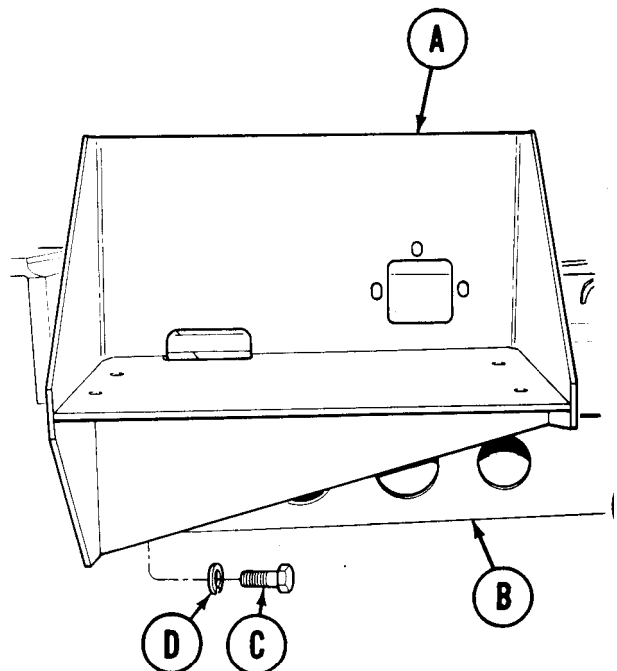


**INSTALLATION:**

**NOTE**

**If installing cable guard only, perform steps 5 through 8.**

1. Position bracket (A) over outrigger (B).
2. Using fingers, install three screws (C) and new lockwashers (D) to secure outrigger (B) and bracket (A).
3. Using torque wrench and 1-1/8 inch socket, tighten screws (C) 125-130 lb-ft (169-176 N·m).

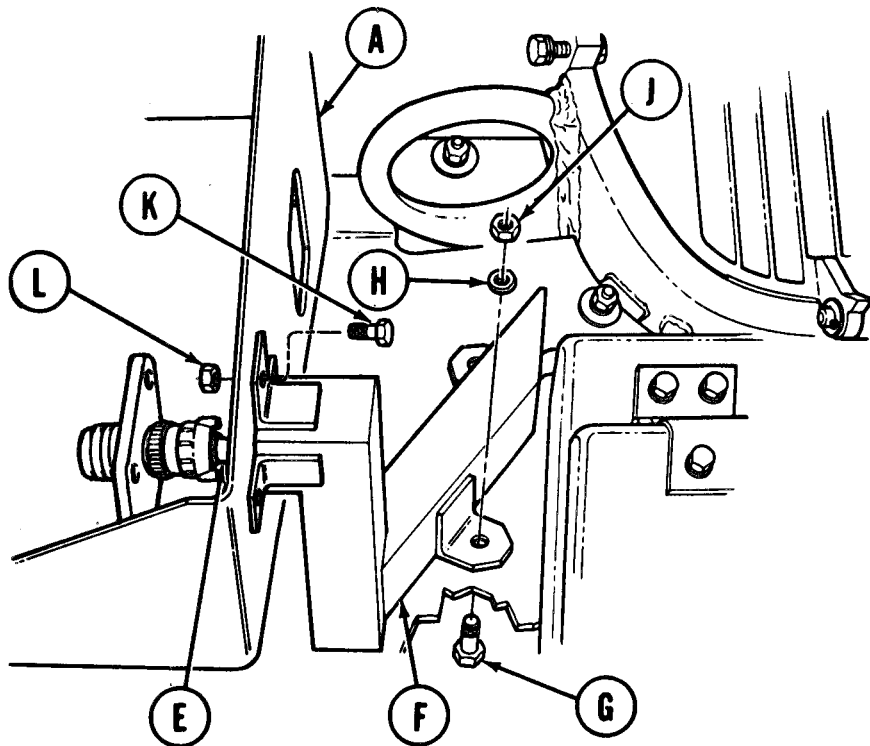


Go on to Sheet 3

TA253652

## HANDSET BOX BRACKET OR CABLE GUARD REPLACEMENT (LATE MODEL) (Sheet 3 of 3)

4. Position cable assembly (E) through opening in bracket (A).
5. Position guard (F) over cable assembly (E) and to bracket (A).
6. Install two screws (G) from underside of fender, through guard (F) and install flat washers (H) and new self-locking nuts (J) onto screws. Use 9/16 inch socket and 9/16 inch wrench and tighten screw (G) and nut (J).
7. Using 9/16 inch wrench, and 9/16 inch socket install and tighten three screws (K) and new self-locking nuts (L) to secure guard (F) to bracket (A).
8. Install handset box (pages 10-194).



End of Task

TA253653





## CHAPTER 17

## INTERIOR HULL MAINTENANCE INDEX

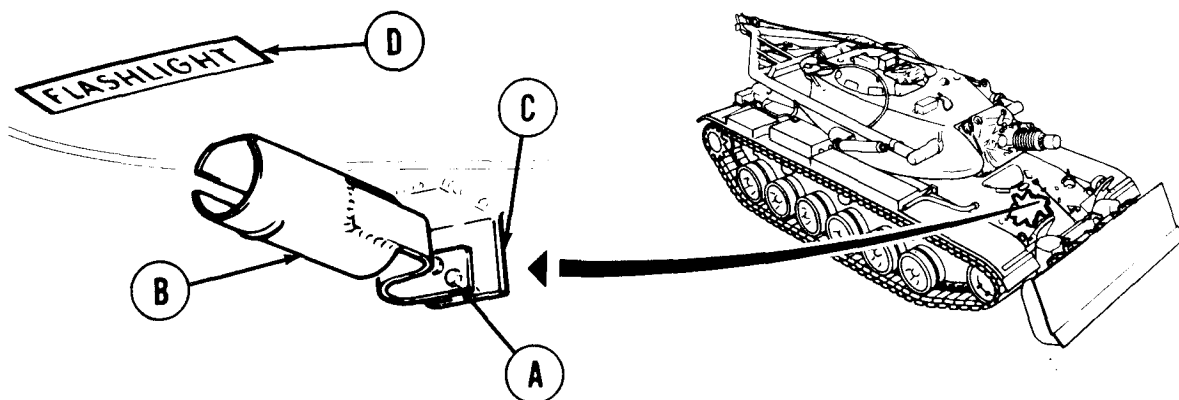
PROCEDURE	PAGE
Flashlight Holder Assembly Replacement	17-2
Ammunition Rack Tube Pad Replacement	17-3
Telephone Stowage Hook Replacement	17-4
Machine Gun Stowage Bracket Replacement	17-5
Chain Stowage Handle Replacement	17-6
Ammunition Rack Displacement	17-7
Ammunition Rack Handle Assembly Repair and Replacement	17-10
Plate and Fray Platform Replacement	17-13
Canteen Stowage Bracket Replacement	17-15
Driver's Instruction Plate Replacement	17-16
Driver's Periscope Box Assembly Replacement	17-17
Driver's Periscope Box Assembly Repair	17-19
Driver's Seat Support and Adjusting Assembly Replacement	17-21
Driver's Seat Adjusting Assembly Repair	17-23
Driver's Seat Support and Housing Assembly Repair	17-33
Upper Seat Support Bracket Replacement	17-40
Driver's Seat and Backrest Replacement	17-41
Driver's Seat Backrest Assembly Repair	17-44
Driver's Seat Repair	17-46

## FLASHLIGHT HOLDER ASSEMBLY REPLACEMENT (Sheet 1 of 1)

TOOLS: 5/16 in. combination box and open end wrench  
3/8 in. combination box and open end wrench

SUPPLIES: Lockwasher (MS35335-32) (2 required)

### REMOVAL:



1. Using 3/8 inch and 5/16 inch wrenches, remove two screws, lockwashers, and nuts (A) securing flashlight holder (B) to welded bracket (C). Throw lockwashers away.
2. Remove flashlight holder (B).
3. Replace decal (D) if required.

### INSTALLATION:

1. Position flashlight holder (B) to bracket (C).
2. Using 3/8 inch and 5/16 inch wrenches, install and secure two screws, new lockwashers, and nuts (A) to secure flashlight holder (B) to bracket (C).

End of Task

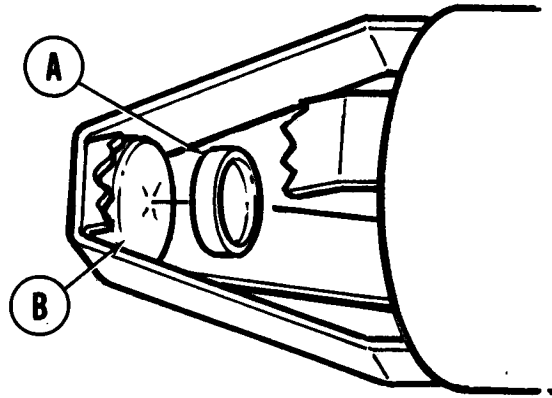
TA253654

**AMMUNITION RACK TUBE PAD REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** Putty knife

**SUPPLIES:** Adhesive (Item 69, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)  
Rags (Item 65, Appendix D)

**PRELIMINARY PROCEDURES:** Remove plate and tray platform (page 17-13)  
Remove master control panel plate assembly (page 10-153)

**REMOVAL:**

Using putty knife, dry cleaning solvent (Item 54, Appendix D), and rags, remove pad (A) from cup (B) in end of ammunition rack tube.

**CLEANING:**

Using dry cleaning solvent and rags, remove old adhesive from ammunition rack tube.

**INSTALLATION:**

1. Using adhesive (Item 69, Appendix D), bond pad (A) to cup (B) in end of ammunition rack tube.
2. Install master control panel plate assembly (page 10-157).
3. Install plate and tray platform (page 17-14).

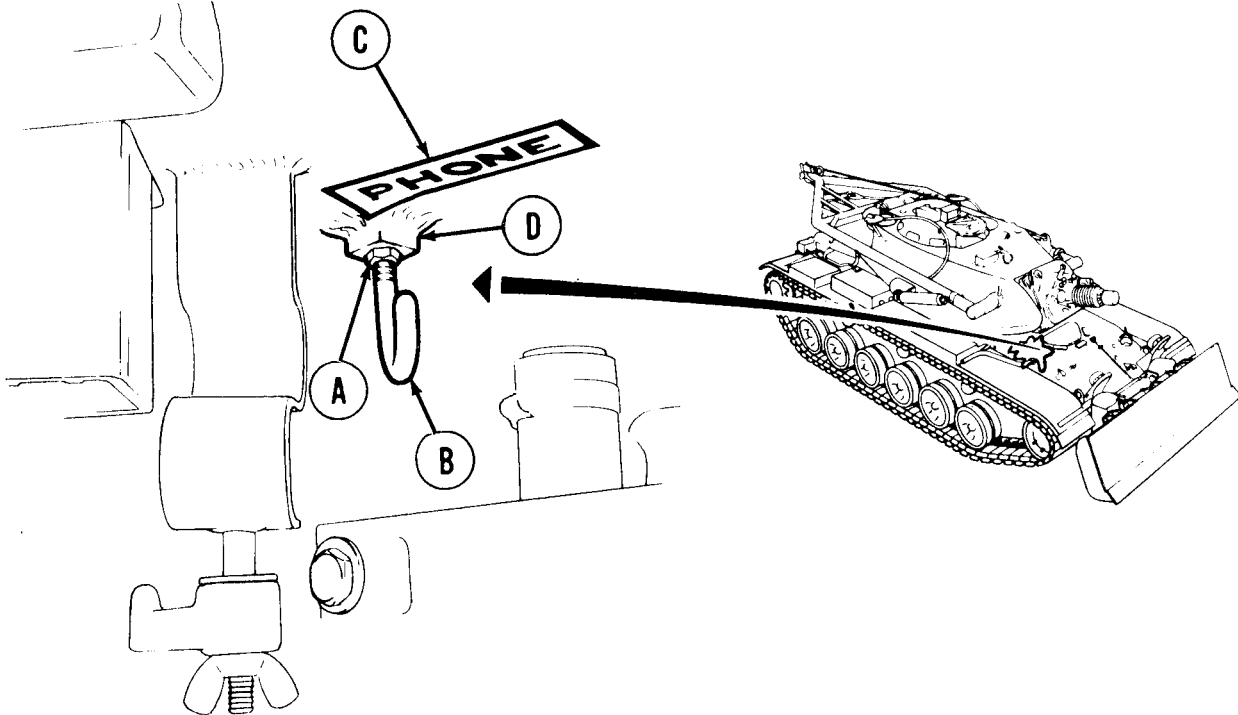
End of Task

TA139204

TELEPHONE STOWAGE HOOK REPLACEMENT (Sheet 1 of 1)

TOOLS: 7/16 in. combination box and open end wrench  
Slip joint pliers

REMOVAL:



1. Using 7/16 inch wrench, loosen nut (A).
2. Using slip joint pliers, remove stowage hook (B).
3. Remove nut (A) from stowage hook (B).
4. Replace decal (C) if required.

INSTALLATION:

1. Thread nut (A) onto stowage hook (B).
2. Screw stowage hook (B) into spacer (D) welded to hull.
3. Adjust stowage hook (B) to face toward yourself.
4. Using slip joint pliers to hold stowage hook (B), use 7/16 inch wrench and tighten nut (A) to secure stowage hook (B).

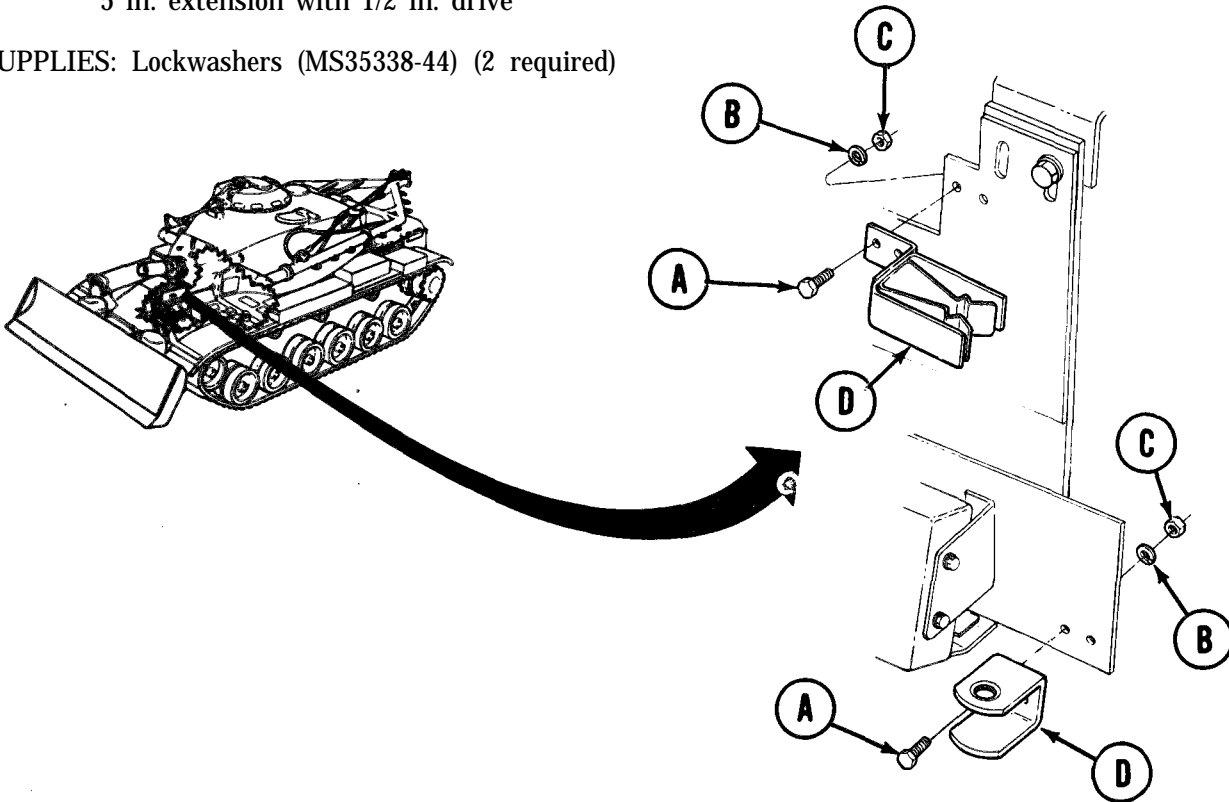
End of Task

TA139205

**MACHINE GUN STOWAGE BRACKET REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** 7/16 in. combination box and open end wrench  
 7/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 5 in. extension with 1/2 in. drive

**SUPPLIES:** Lockwashers (MS35338-44) (2 required)

**NOTE**

There are two machine gun stowage brackets. Replacement procedures are identical.

**REMOVAL:**

1. Using socket and wrench, remove two screws (A), lockwashers (B), and nuts (C) from machine gun stowage bracket (D). Throw lockwashers (B) away.
2. Remove machine gun stowage bracket (D).

**INSTALLATION:**

1. Place machine gun stowage bracket (D) in position.
2. Using socket and wrench, install two screws (A), new lockwashers (B), and nuts (C).

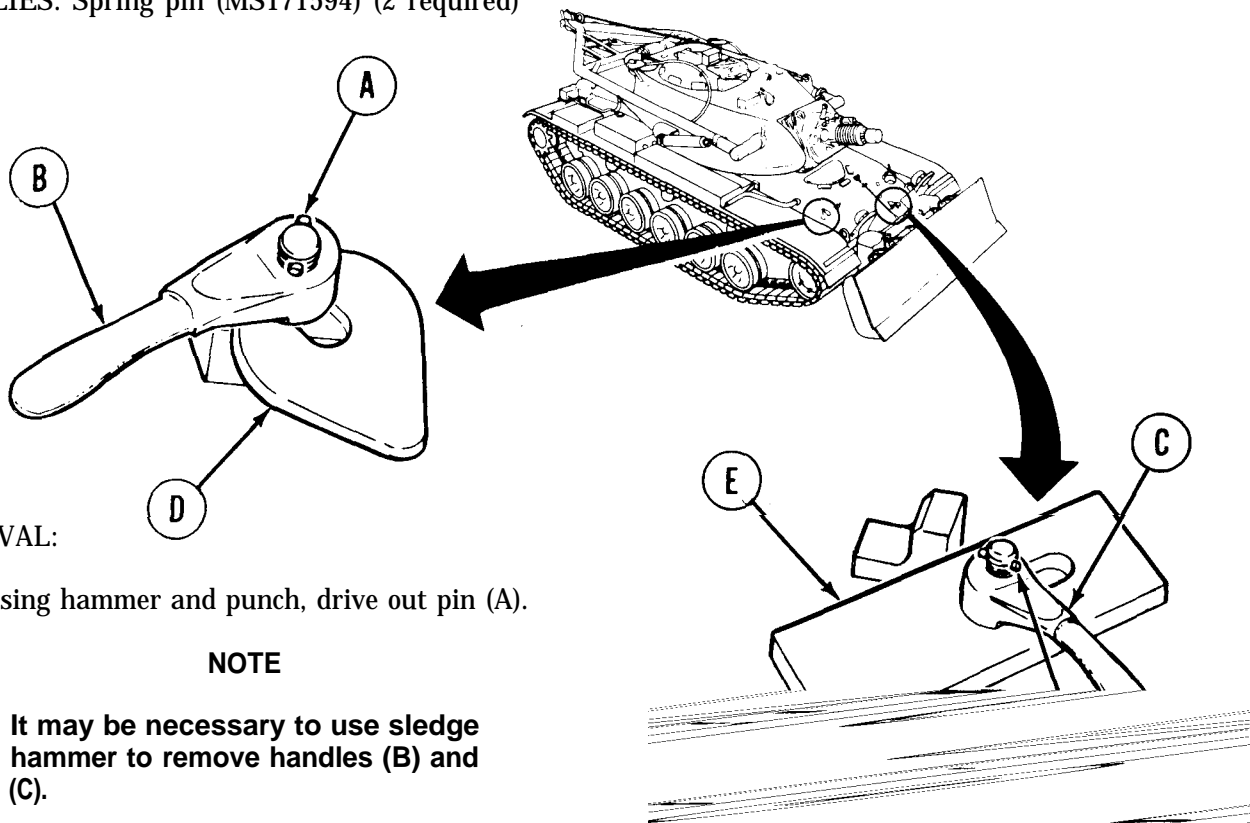
End of Task

TA139206

CHAIN STOWAGE HANDLE REPLACEMENT (Sheet 1 of 1)

TOOLS: Sledge hammer  
1 lb. ball peen hammer  
1/8 in. diameter drive pin punch  
Slip joint pliers

SUPPLIES: Spring pin (MS171594) (2 required)



REMOVAL:

1. Using hammer and punch, drive out pin (A).

NOTE

It may be necessary to use sledge hammer to remove handles (B) and (C).

2. Screw handle (B) or (C) off studs.
3. Remove clamp (D) or (E).

INSTALLATION:

1. Position clamp (D) or (E).
2. Install handle (B) or (C) onto studs.
3. Screw handle (B) or (C) down on studs to expose spring pin mounting hole.
4. Using pliers, install spring pin (A).
5. Using hammer, position pin (A) to stick out evenly on both sides of stud.

End of Task

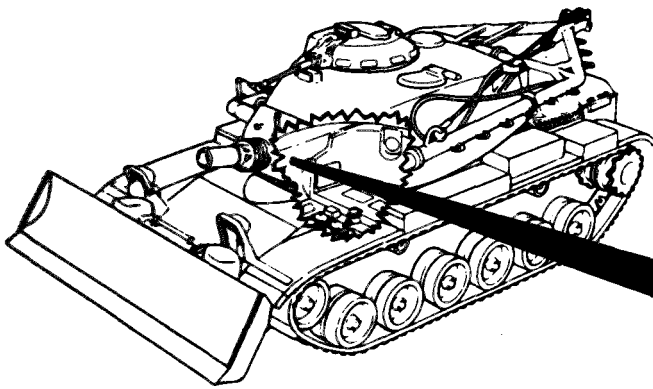
**AMMUNITION RACK DISPLACEMENT (Sheet 1 of 3)**

**TOOLS:** Ratchet with 1/2 in. drive (2 required)  
 3/4 in. socket with 1/2 in. drive (2 required)  
 5 in. extension with 1/2 in. drive  
 10 in. extension with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 Pinch bar  
 1/2 in. socket head screw key

**REFERENCES:** TM 9-2350-222-10  
 TM 9-2350-222-20-2

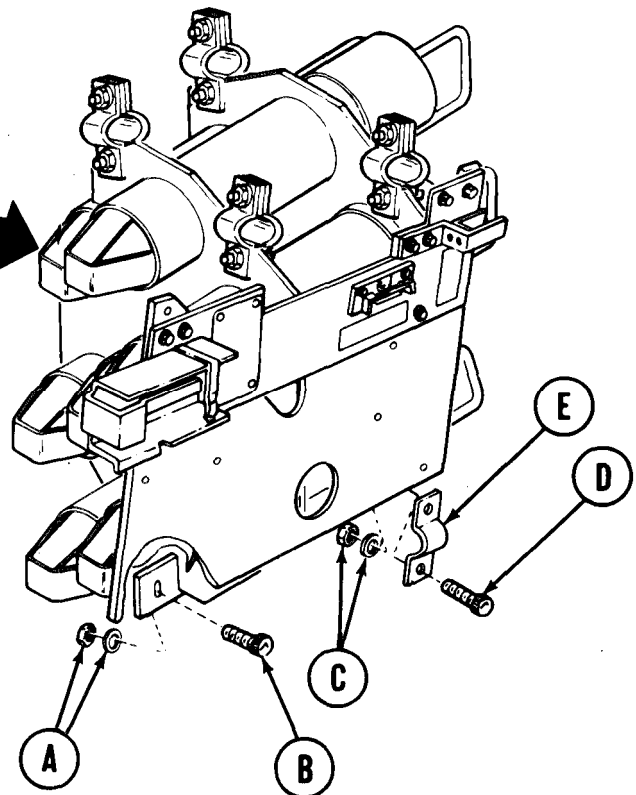
**PERSONNEL:** Two

**PRELIMINARY PROCEDURES:** Remove plate and tray platform (page 17-13)  
 If ammunition rack must be displaced into turret:  
 Traverse main gun over rear of vehicle (TM 9-2350-222-10)  
 Remove portable fire extinguisher mounting bracket  
 (TM 9-2350-222-20-2)  
 Remove turret traverse lock (TM 9-2350-222-20-2)  
 Remove driver's seat and backrest (page 17-42)  
 Remove master control panel mounting plate (page 10-153)



**NOTE**

Some ammunition racks may have socket head screws instead of 3/4 inch screws. If your ammunition rack does have socket head screws, use socket head screw key to remove and install screws.



**REMOVAL:**

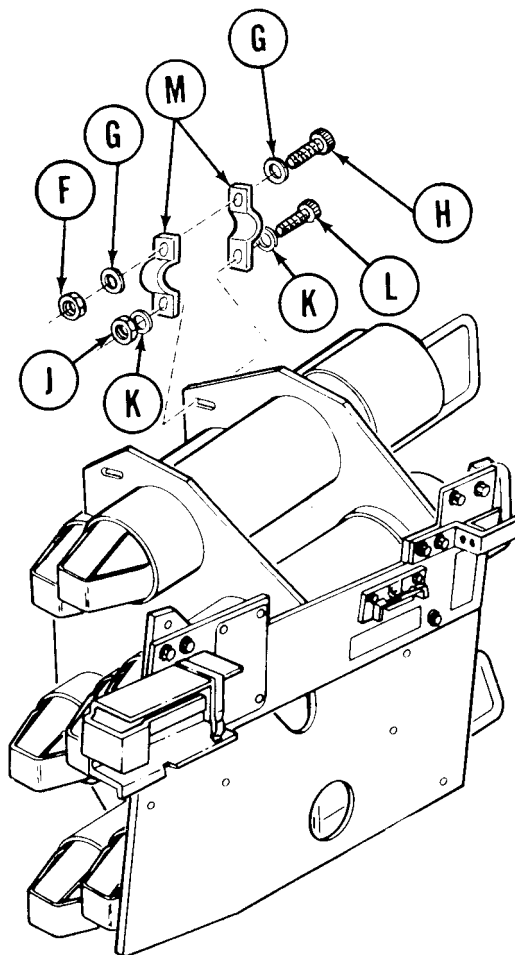
1. Using socket and 3/4 inch wrench, remove nut and washer (A).
2. Remove screw (B).
3. Using socket with 5 inch extension and 3/4 inch wrench, remove two nuts and two washers (C).
4. Remove two screws (D) and clamp (E).

TA139208

Go on to Sheet 2

AMMUNITION RACK DISPLACEMENT (Sheet 2 of 3)

5. Using pinch bar, one person should slightly raise and steady ammunition rack while other person removes top clamps.
6. Using socket with 5 inch extension and 3/4 inch wrench, remove four nuts (F), eight washers (G), and four screws (H).
7. Using socket with 10 inch extension and another socket with 5 inch extension, remove four nuts (J), eight washers (K), four screws (L), and eight clamps (M).
8. Using two persons, displace ammunition rack to area desired.



Go on to Sheet 3

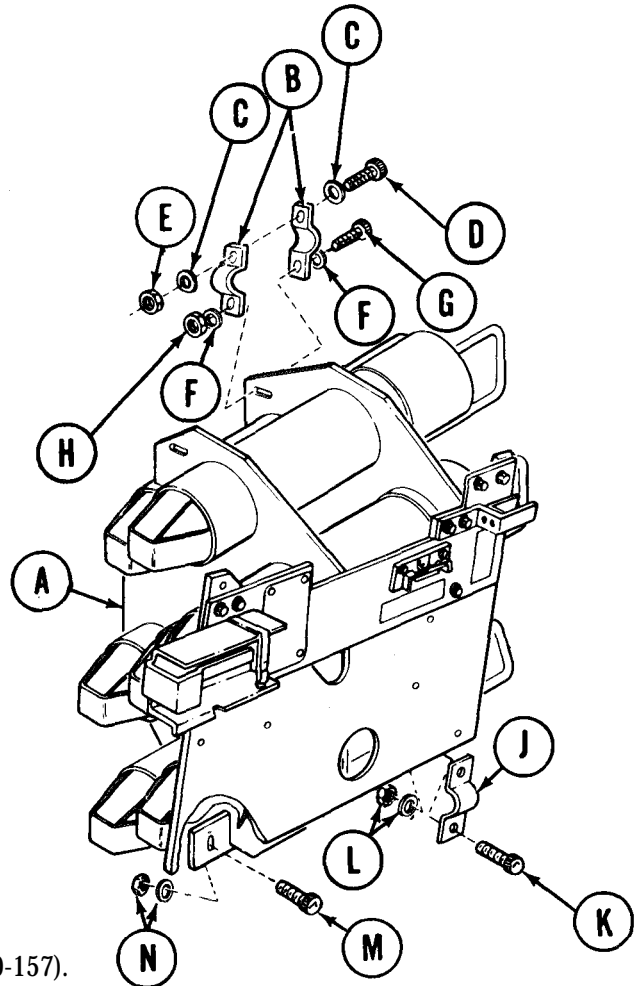
TA139209



## AMMUNITION RACK DISPLACEMENT (Sheet 3 of 3)

### INSTALLATION:

1. Using two persons, place ammunition rack (A) into position.
2. Using pinch bar, one person should slightly raise and steady ammunition rack while other person installs clamps.
3. Install eight clamps (B), eight washers (C), four screws (D), and four nuts (E). Do not tighten nuts (E).
4. Install eight washers (F), four screws (G), and four nuts (H). Do not tighten nuts (H).
5. Install clamp (J), two screws (K) and two washers and two nuts (L).
6. Install screw (M) and washers and nut (N).
7. Using socket and 3/4 inch wrench, tighten screws (K) and (M).
8. Using socket with 10 inch extension and another socket with 5 inch extension, tighten four screws (G).
9. Using socket with 5 inch extension and 3/4 inch wrench, tighten four screws (D).
10. Install master control panel mounting plate (page 10-157).
11. Install plate and tray platform (page 17-14).
12. Install turret traverse lock (TM 9-2350-222-20-2).
13. Install portable fire extinguisher mounting bracket (TM 9-2350-222-20-2).
14. Install driver's seat and backrest (page 17-43).



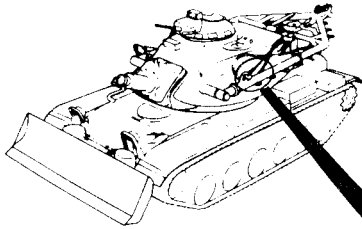
End of Task

TA139210

AMMUNITION RACK HANDLE ASSEMBLY REPAIR AND REPLACEMENT (Sheet 1 of 3)

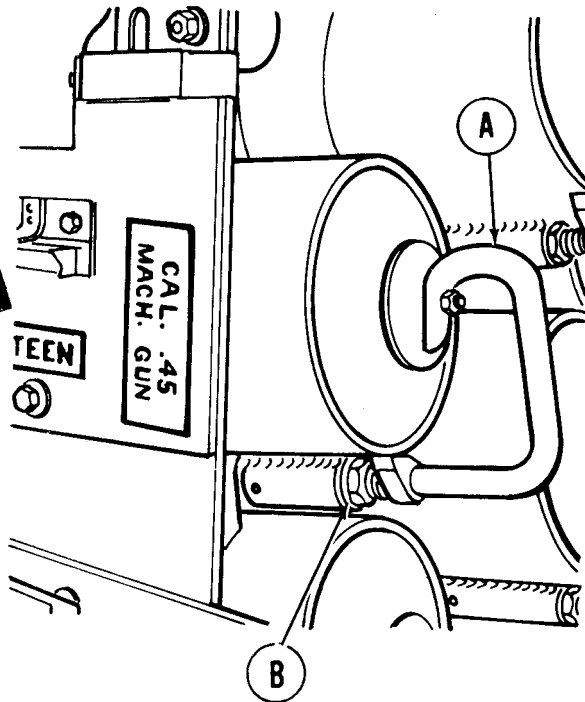
TOOLS: 1 in. combination box and open end wrench  
1/8 in. drive punch  
Hammer  
Flat-tip screwdriver  
1/2 in. combination box and open end wrench

SUPPLIES: Pin (10940728)



REMOVAL:

1. Push in and turn handle (A) counterclockwise to release handle.
2. Using 1 inch wrench, back out nut (B).
3. Remove handle assembly (A) from tube.

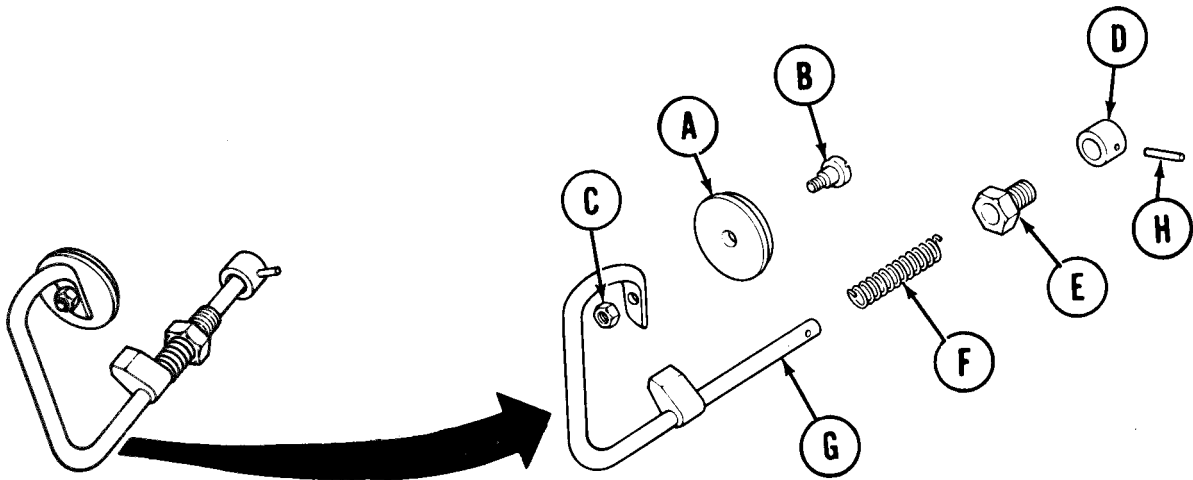


Go on to Sheet 2

TA139211

## AMMUNITION RACK HANDLE ASSEMBLY REPAIR AND REPLACEMENT (Sheet 2 of 3)

## INSPECTION AND REPAIR:



1. Inspect pad (A). If damaged, using flat-tip screwdriver and 1/2 inch wrench, remove screw (B) and nut (C).
2. Inspect sleeve (D), nut (E), spring (F), handle (G), and pin (H) for damage. Replace items as necessary.
3. Using punch and hammer, drive out pin (H) and remove sleeve (D), nut (E), and spring (F).
4. Install spring (F), nut (E), and sleeve (D) onto handle (G).
5. Using hammer, install pin (H) through sleeve (D) and handle (G) until pin is flush with surface of sleeve.

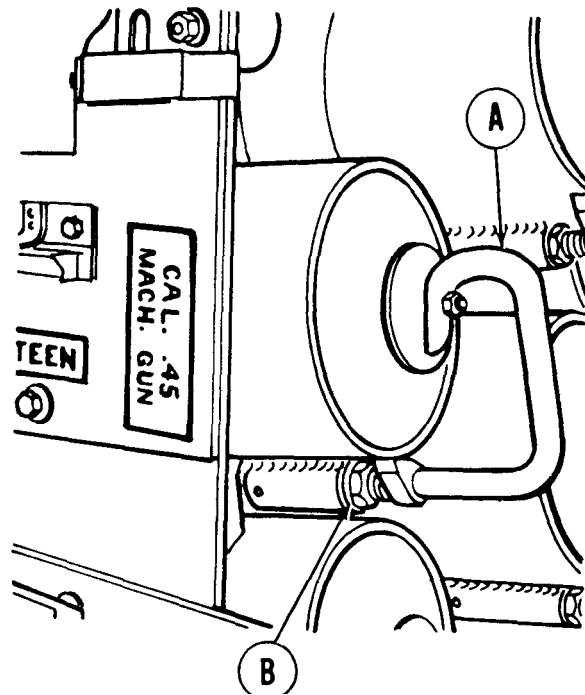
Go on to Sheet 3

TA139212

AMMUNITION RACK HANDLE ASSEMBLY REPAIR AND REPLACEMENT (Sheet 3 of 3)

INSTALLATION:

1. Install handle assembly (A) to tube.
2. Using 1 inch wrench, position and tighten nut (B) to secure handle assembly (A) to tube.
3. Push in and turn handle (A) clockwise to lock it in place.



End of Task

TA139213

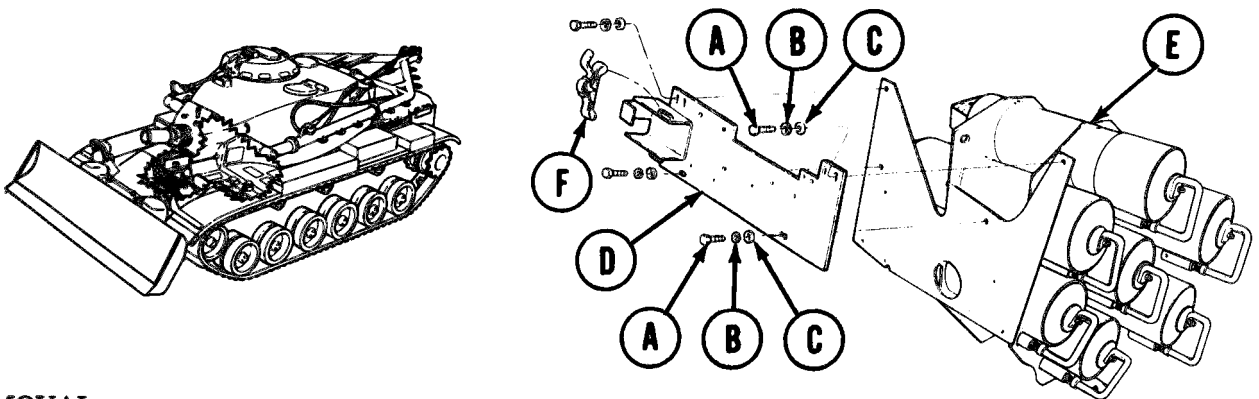
**PLATE AND TRAY PLATFORM REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** Ratchet with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 3/4 in. socket with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 9/16 in. combination box and open end wrench

**SPPLIES:** Lockwasher (MS35338-46) (2 required)  
 Lockwasher (MS35338-44) (4 required)

**REFERENCES:** TM 11-5820-401-12

**PRELIMINARY PROCEDURE:** Remove driver's intercom box (TM 11-5820-401-12)

**REMOVAL:**

1. Using 3/4 inch socket on four screws (A), remove four screws (A), washers (B), and lockwashers (C) holding plate and tray (D) to ammo rack (E). Throw lockwashers away.
2. Remove plate and tray (D) from ammo rack (E).
3. Remove strap (F) from plate and tray (D).
4. Remove driver's instruction plate (page 17-16).
5. Remove canteen stowage bracket (page 17-15).
6. Remove machine gun stowage bracket (page 17-5).

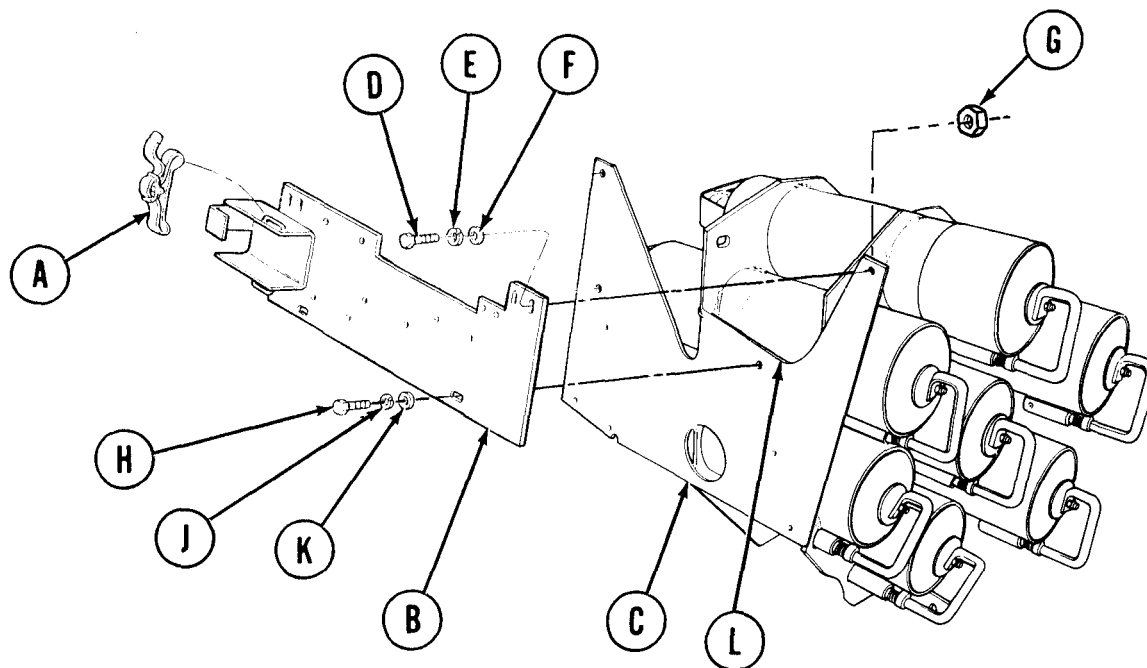
Go on to Sheet 2

TA139214

PLATE AND TRAY PLATFORM REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

1. Install canteen stowage bracket (page 17-15).
2. Install driver's instruction plate (page 17-16).
3. Install strap (A) to plate and tray (B).
4. Install machine gun stowage bracket (page 17-5).



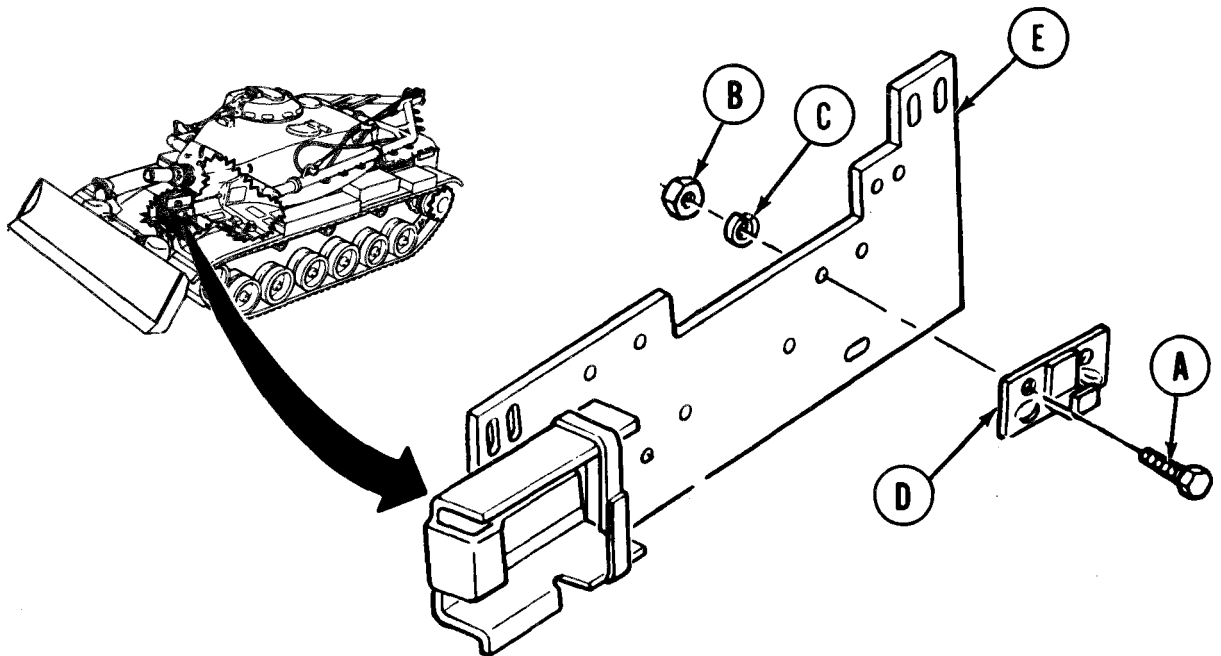
5. Install plate and tray (B) to ammo rack (C) using four screws (D), washers (E), new lockwashers (F), and nuts (G). Install two lower screws (H), new lockwashers (J), and washers (K) on nut (L) brazed to rack.
6. Using 3/4 inch socket on screws (D) and 3/4 inch wrench on nuts (G), tighten screws (D) and nuts (G).
7. Install driver's intercom box (TM 11-5820-401-12).

End of Task

TA139215

**CANTEEN STOWAGE BRACKET REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** Ratchet with 1/2 in. drive  
 7/16 in. socket with 1/2 in. drive  
 7/16 in. combination box and open end wrench

**REMOVAL:**

1. Using socket on screw (A) and wrench on nut (B), remove two screws (A), nuts (B), and washers (C) holding canteen bracket (D) to plate and tray platform (E).
2. Remove canteen bracket (D) from plate and tray platform (E).

**INSTALLATION:**

1. Install canteen bracket (D) to plate and tray platform (E) using two screws (A), washers (C), and nuts (B).
2. Using socket on screws (A) and wrench on nuts (B), tighten screws (A) and nuts (B).

End of Task

TA139216

**DRIVER'S INSTRUCTION PLATE REPLACEMENT (Sheet 1 of 1)**

TOOLS: 1 lb. hammer  
1/8 in. drift punch  
Vise

SUPPLIES: Round head drive screws (MS21318-23) 4 required)

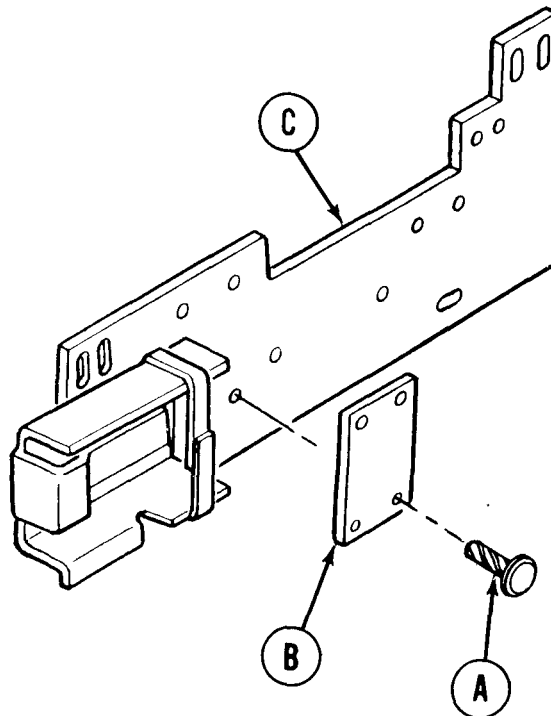
PRELIMINARY PROCEDURE: Remove plate and tray platform (page 17-13)

**REMOVAL:**

1. Secure bracket in vise and, using hammer and drift punch from the rear, remove four round head drive screws (A) holding instruction plate (B) to bracket (C). Throw screws away.
2. Remove instruction plate (B) from bracket (C).

**INSTALLATION:**

1. Using hammer, install instruction plate (B) to bracket (C), with four new round head drive screws (A).
2. Remove bracket (C) from vise. Install plate and tray platform to ammunition rack (page 17-14).



End of Task

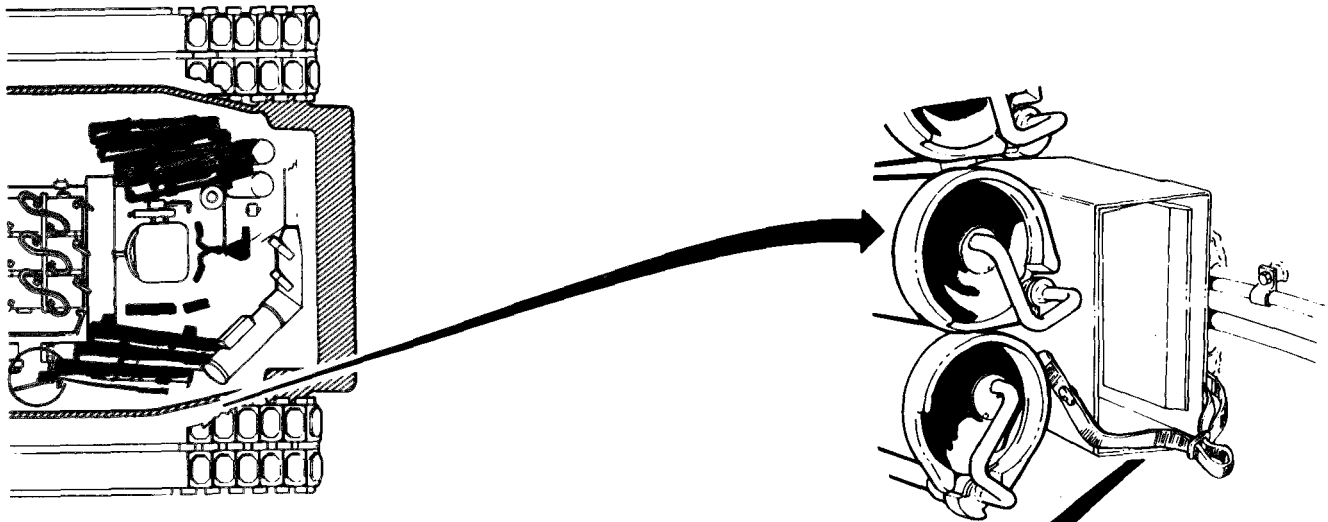
TA139217



**DRIVER'S PERISCOPE BOX ASSEMBLY REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 5 in. extension with 1/2 in. drive  
 9/16 in. combination box and open end wrench

**SUPPLIES:** Lockwasher (MS35338-46) (4 required)



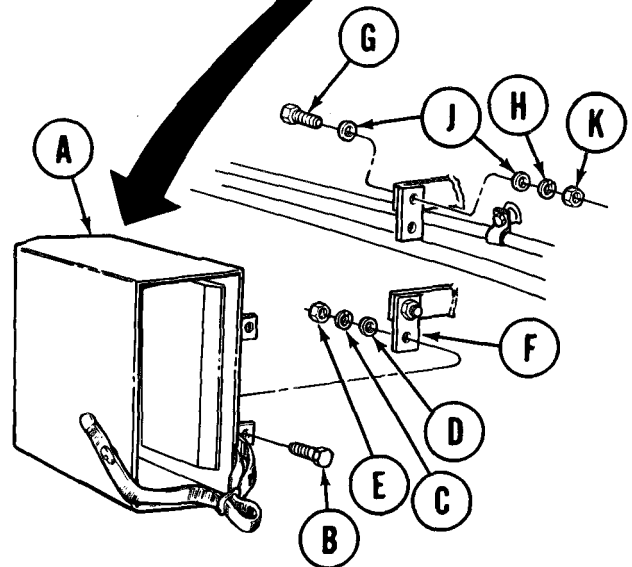
**REMOVAL:**

1. Unsnap strap and remove periscope from periscope box (A).
2. Using socket and wrench, remove two screws (B), lockwashers (C), four flat washers (D), and two nuts (E) securing periscope box (A) to hull mounting brackets (F). Throw lockwashers away.
3. Remove periscope box (A) from mounting brackets.

**NOTE**

**If replacing mounting brackets, go to step 4.**

4. Using ratchet and wrench, remove two screws (G), two lockwashers (H), four flatwashers (J), and two nuts (K) securing mounting brackets to hull mounts.



**Go on to Sheet 2**

TA139218

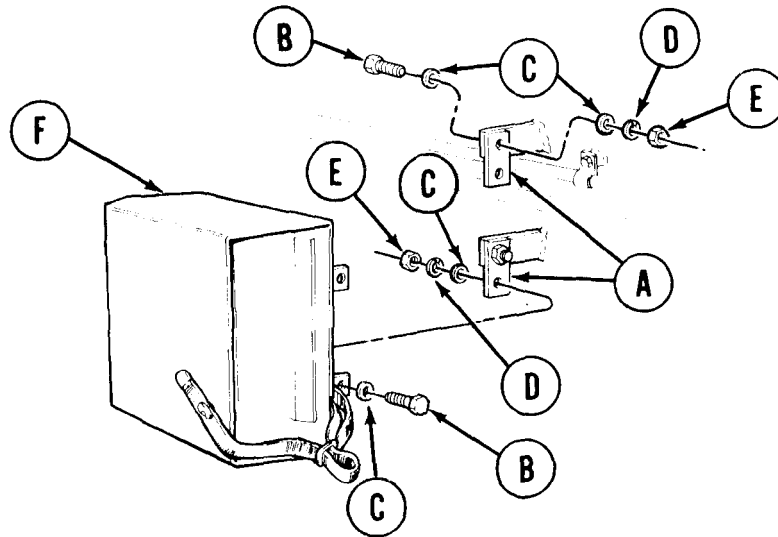
DRIVER'S PERISCOPE BOX ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

NOTE

If mounting brackets (A) were not removed, go to step 2.

1. Install two mounting brackets (A) on hull mounts using screws (B), four flat washers (C), two new lockwashers (D), and two nuts (E).
2. Attach periscope box (F) to mounting brackets (A) with two screws (B), four flat washers (C), two new lockwashers (D), and two nuts as shown.
3. Using socket and wrench, position periscope box and tighten screws (B).



End of Task

TA139219

**DRIVER'S PERISCOPE BOX ASSEMBLY REPAIR (Sheet 1 of 2)**

**TOOLS:** Hammer  
 Vice  
 Slip joint pliers

Electric drill  
 3/16 in. drill bit  
 Alinement punch

**SUPPLIES:** Clean rags  
 Dry cleaning solvent (Item 54, Appendix D)  
 Adhesive (Item 2, Appendix D)  
 Small brush

Pad (7992275)  
 Pad (7992276)  
 Pad (7992277) (2 required)  
 Pad (7364662) (2 required)  
 Stud (MS27977-8)

**PERSONNEL:** Two

**PRELIMINARY PROCEDURE:** Remove periscope box (page 17-17)

**DISASSEMBLY:**

1. Remove strap (A) from box (B).
2. Using hands, pull unserviceable pads (C), (D), (E), (F), (G), and (H), as necessary, from inside of box (B).

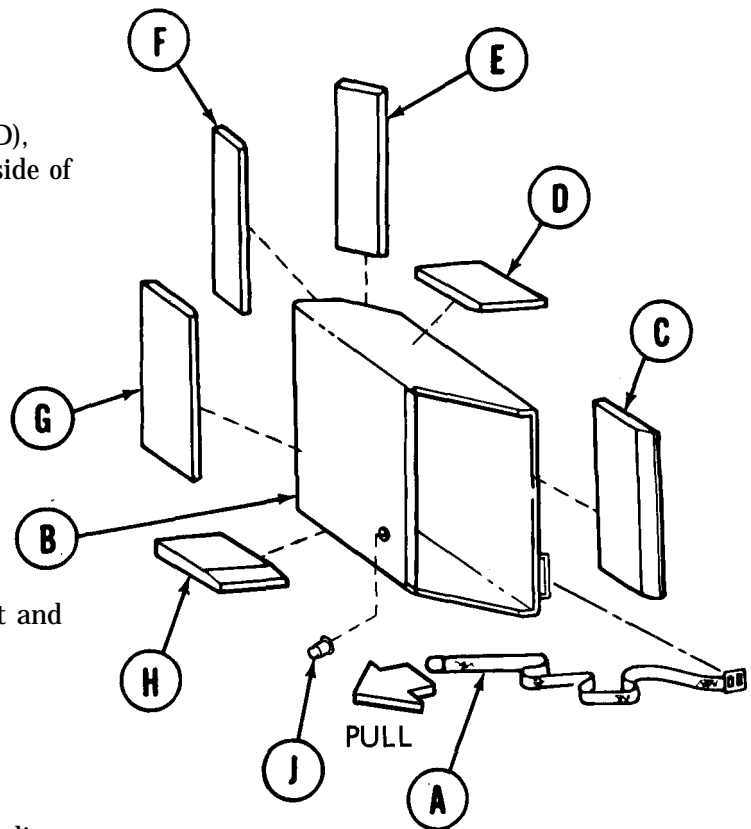
**NOTE**

**Pad (G) must be removed before stud (J) can be replaced.**

**NOTE**

**If stud (J) is broken off and cannot be removed using pliers, use drill to remove stud (J).**

3. Using pliers, remove stud (J) by pulling out and moving back and forth.



**CLEANING AND INSPECTION:**

1. Using dry cleaning solvent (Item 54, Appendix D) and rags, wipe inside of box (B) clean, as necessary.
2. Make sure areas inside box (B), where pads are to be installed, are dry.

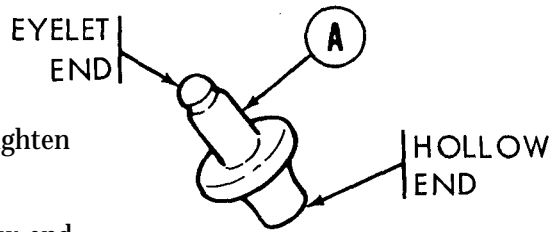
Go on to Sheet 2

TA139220

DRIVER'S PERISCOPE BOX ASSEMBLY REPAIR (Sheet 2 of 2)

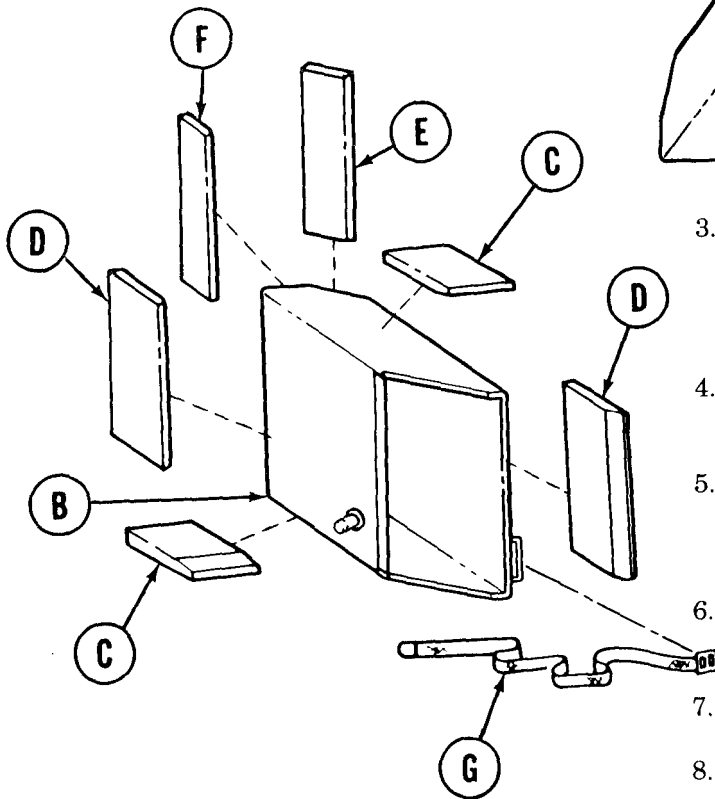
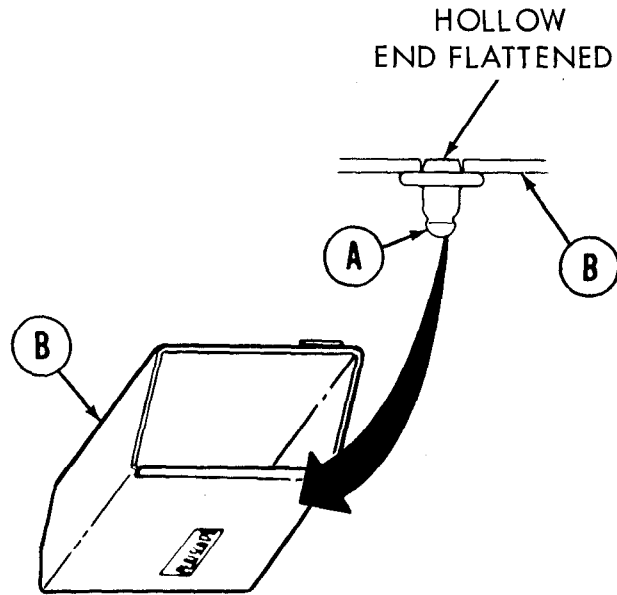
ASSEMBLY:

1. Place eyelet end of stud (A) into vise. Tighten vise to secure stud (A).
2. Position box (B) on stud (A) so that hollow end of stud is inside box. Hold box (B) in this position.



NOTE

Stud (A) cannot be completely flattened with stud in one position. After part of stud (A) has been flattened, box (B) must be moved in clockwise or counterclockwise direction before rest of stud can be flattened.



3. While one person holds box in position, other person using hammer and punch, tap hollow end of stud (A) until stud is flattened inside box (B).
4. Remove box (B) with stud (A) installed from vise.
5. Using brush, apply adhesive (Item 2, Appendix D) to surface of pads to be installed.
6. install new pads (C), (D), (E), and (F) in same location where old pads were installed.
7. Install strap (G) to box (B).
8. Install box (B) to vehicle (page 17-18).

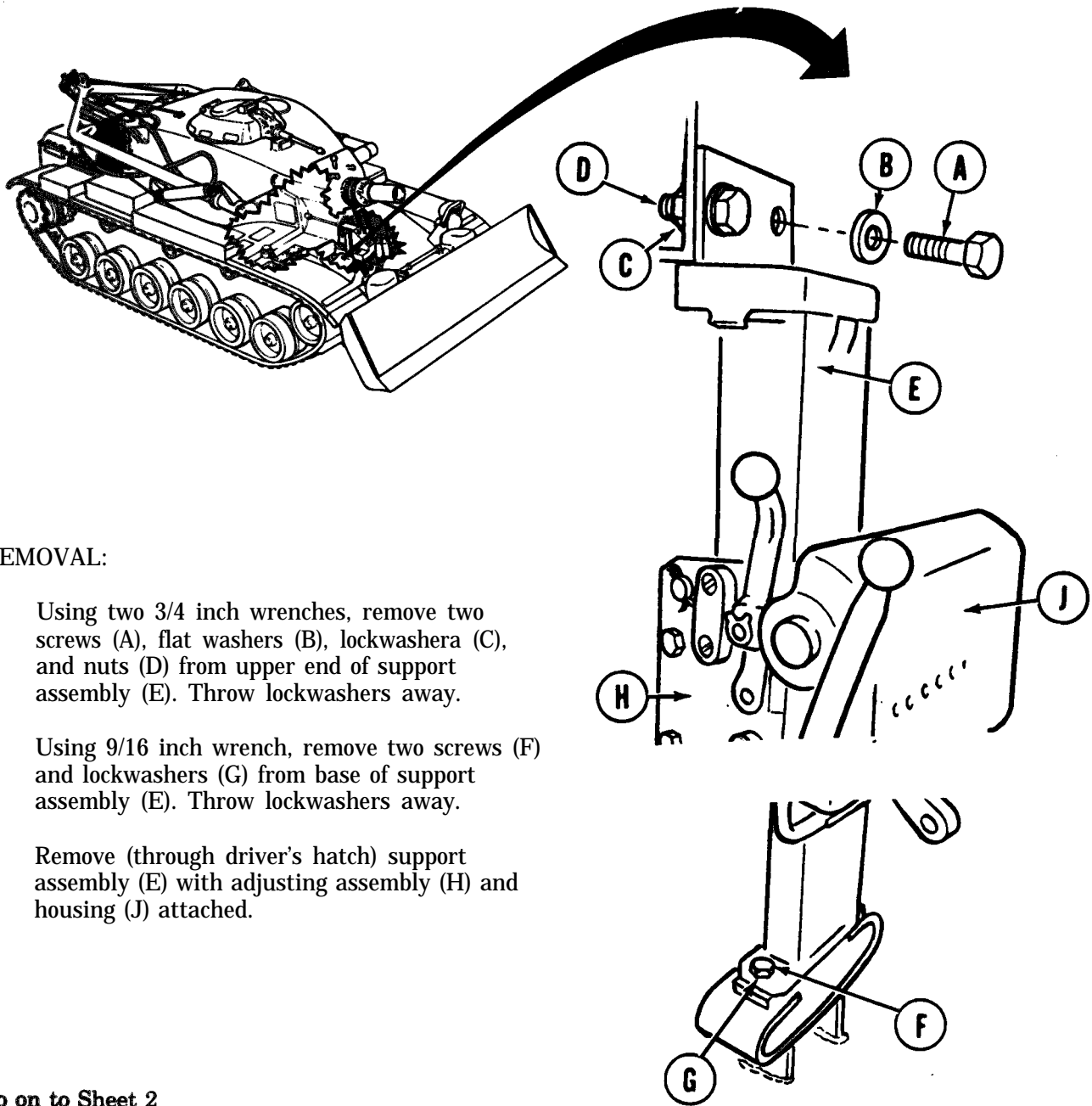
End of Task

## DRIVER'S SEAT SUPPORT AND ADJUSTING ASSEMBLY REPLACEMENT (Sheet 1 of 2)

TOOLS: 3/4 in. combination box and open end wrenches (2 required)  
 9/16 in. combination box and open end wrench

SUPPLIES: Lockwasher (MS35338-46) (2 required)  
 Lockwasher (MS35338-48) (2 required)

PRELIMINARY PROCEDURE: Remove driver's seat and backrest (page 17-41)



## REMOVAL:

1. Using two 3/4 inch wrenches, remove two screws (A), flat washers (B), lockwashers (C), and nuts (D) from upper end of support assembly (E). Throw lockwashers away.
2. Using 9/16 inch wrench, remove two screws (F) and lockwashers (G) from base of support assembly (E). Throw lockwashers away.
3. Remove (through driver's hatch) support assembly (E) with adjusting assembly (H) and housing (J) attached.

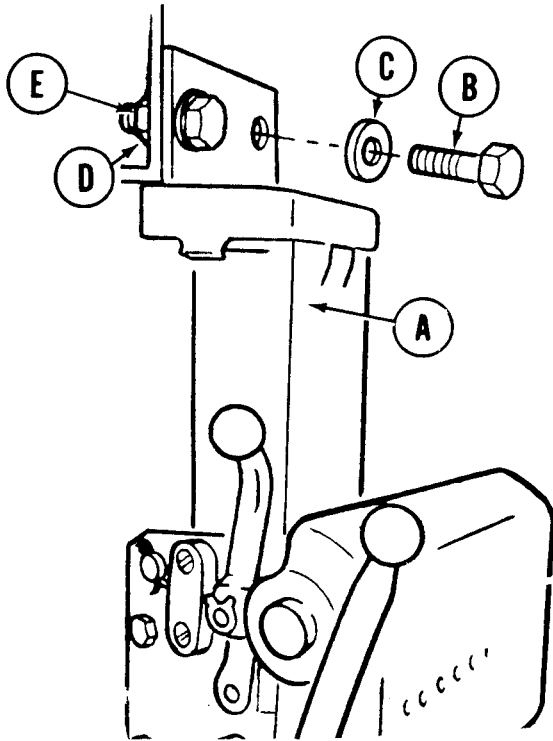
Go on to Sheet 2

TA139222

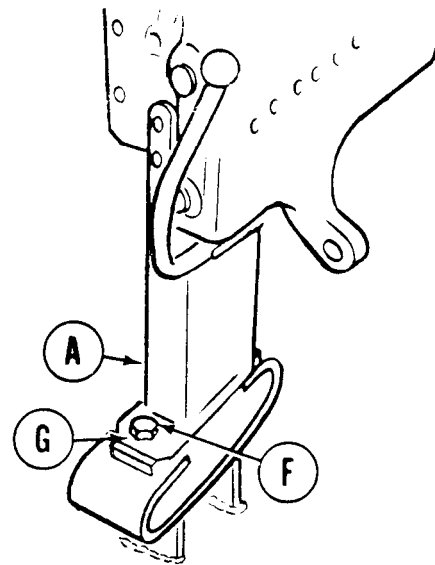
DRIVER'S SEAT SUPPORT AND ADJUSTING ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

1. Position support assembly (A) to hull with top and bottom mounting holes alined.
2. Using two 3/4 inch wrenches, install two screws (B), flat washers (C), new lockwashers (D), and nuts (E) through top of support assembly and hull mounting bracket.



3. Using 9/16 inch wrench, install two screws (F) and new lockwashers (G) through base of support assembly (A) and hull mounting bracket.
4. Install driver's seat and backrest (page 17-43).



End of Task

TA13922

## DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 1 of 10)

## PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	17-24
Cleaning and Inspection	17-27
Assembly	17-27

TOOLS: Slip joint pliers  
 1/2 in. combination box and open end wrench  
 9/16 in. combination box and open end wrenches (2 required)  
 Flat-tip screwdriver  
 1/8 in. drive pin punch  
 Hammer  
 Cold chisel 1/2 in.  
 3/8 in. drive pin punch  
 Vise  
 3/4 in. brass drive punch  
 File

SUPPLIES: Dry cleaning solvent (Item 54, Appendix D)  
 Rags (Item 65, Appendix D)  
 Cotter pins (112726) (3 required)  
 Retaining clip ('X' washer) (7404724) (2 required)  
 Pin (7404619)  
 Pin, grooved (MS35677-24) (2 required)  
 Bearing (7404617)  
 Seal (7404618)  
 Masking tape (Item 57, Appendix D)  
 Pencil  
 Lockwasher (MS35338-45)  
 Lockwasher (MS35338-44) (8 required)  
 Lockwasher (MS35338-46)

PRELIMINARY PROCEDURE: Remove adjusting assembly (page 17-21)

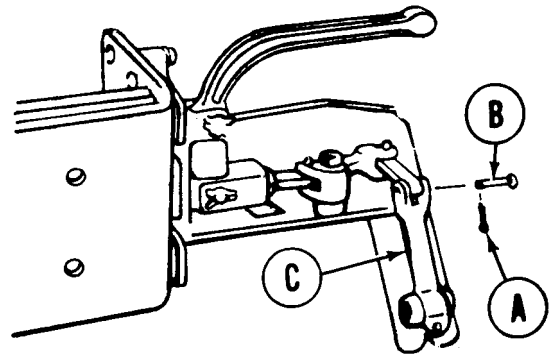
Go on to Sheet 2

TA139224

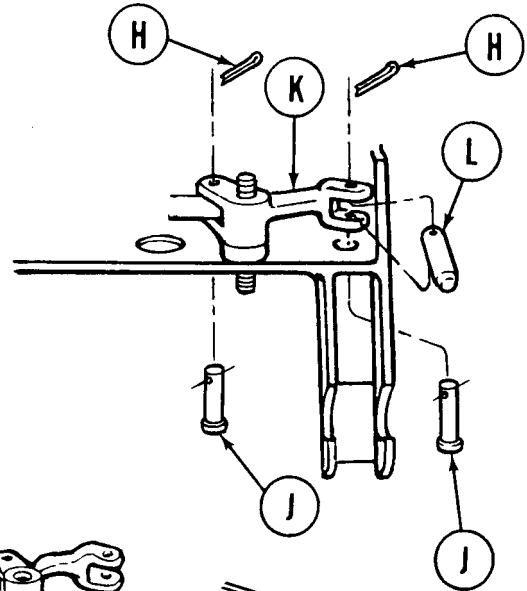
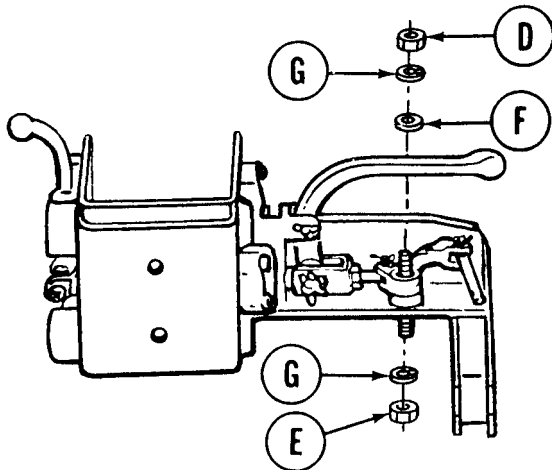
DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 2 of 10)

DISASSEMBLY:

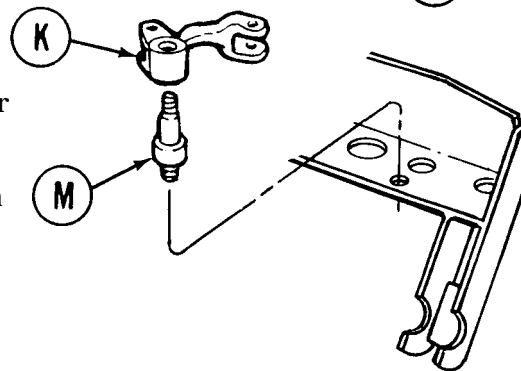
1. Using pliers, remove cotter pin (A) from pin (B). Throw cotter pin away.
2. Using pliers, remove pin (B) from lever (C).
3. Remove lever (C).



4. Using 1/2 inch wrench on nut (D) and 9/16 inch wrench on nut (E), remove nuts (D) and (E), washer (F), and two lockwashers (G) by turning nut (D) counterclockwise and nut (E) clockwise. Throw lockwashers away.



5. Using pliers, remove two cotter pins (H) from straight pins (J) in bellcrank (K). Throw cotter pins away.
6. Using pliers, remove two straight pins (J) from bellcrank (K).
7. Remove pin (L) from bellcrank (K). Remove bellcrank (K) and shouldered stud (M).

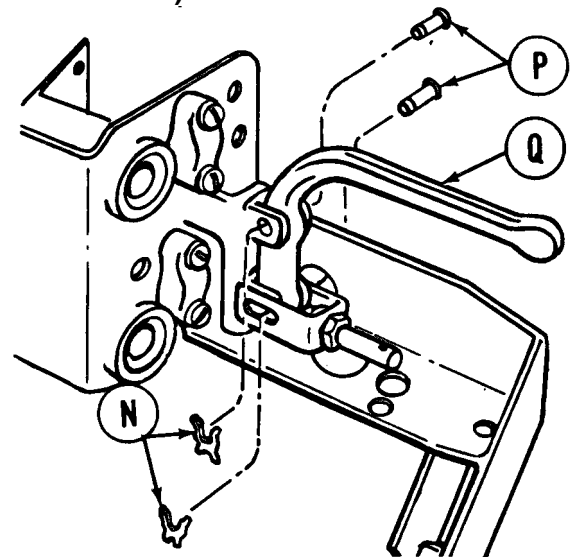


Go on to Sheet 3



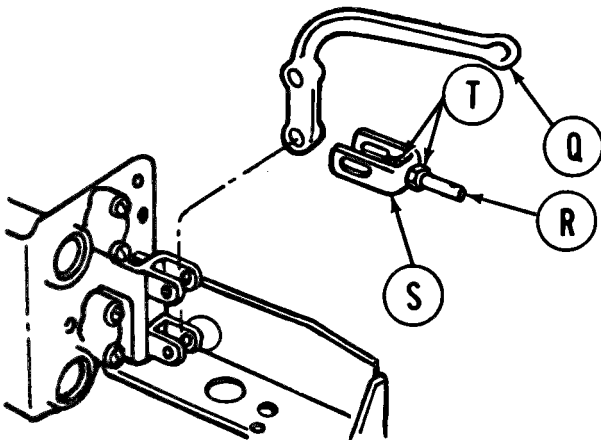
**DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 3 of 10)**

8. Using pliers, remove two washers (N).
9. Using pliers, remove two pins (P) from handle (Q).
10. Remove handle (Q).
11. Remove link (R) and clevis (S).
12. Using two 9/16 inch wrenches, remove nuts (T) from link (R) and clevis (S).

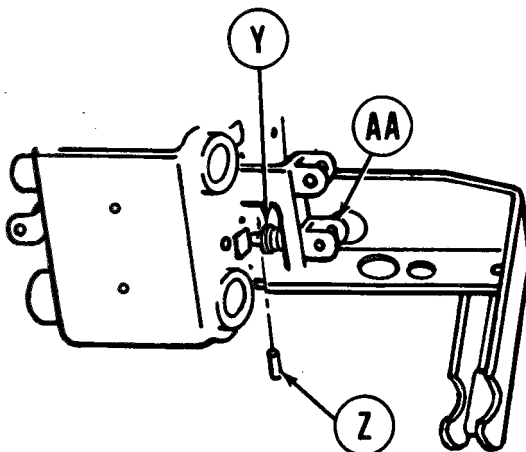
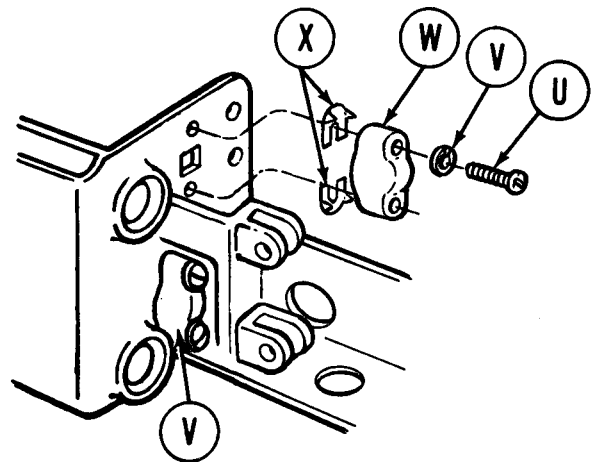


**NOTE**

Use pencil and masking tape (Item 57, Appendix D) to tag shims (X) and housing assemblies (W) as they are removed to make sure they are replaced in the exact location during installation.



13. Using flat-tip screwdriver, remove eight screws (U), eight lockwashers (V), four housing assemblies (W), and shims (X). Throw lockwashers away.



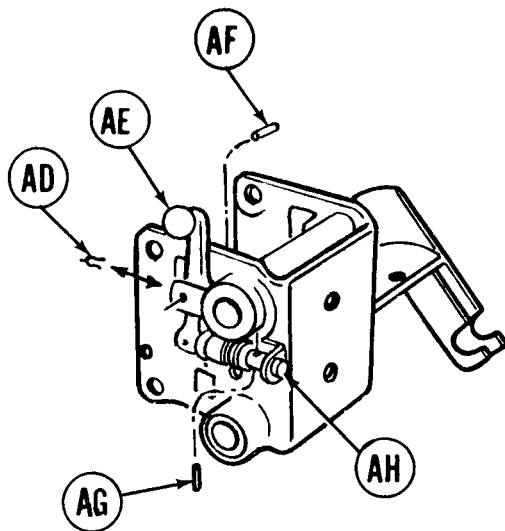
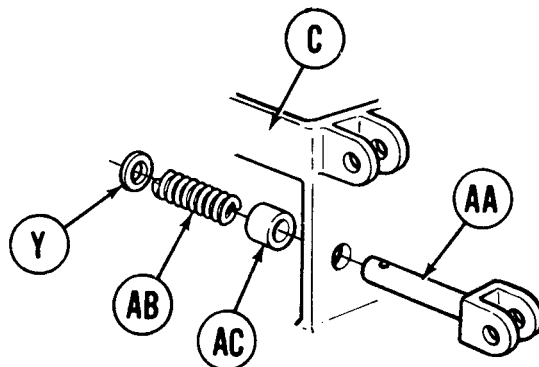
14. Using flat-tip screwdriver, carefully pry washer (Y) away from bracket. Using 1/8 inch punch and pliers, remove pin (Z) from adjusting pin (AA).

Go on to Sheet 4

TA139226

DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 4 of 10)

15. Remove washer (Y), spring (AB), and sleeve (AC) from adjusting pin (AA) by slowly pulling adjusting pin (AA) from bracket (C).

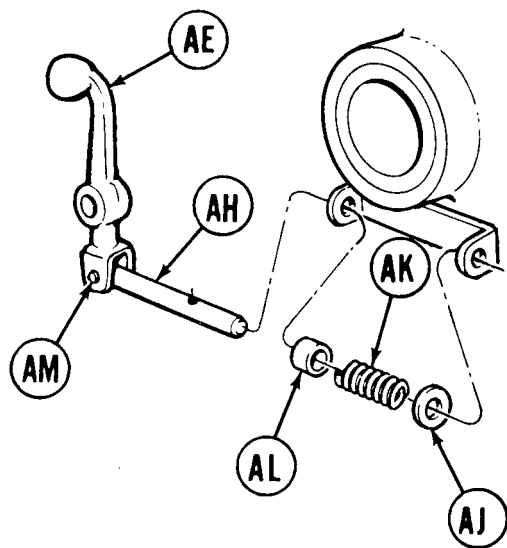


16. Using pliers, remove clip (AD) from lever (AE) and grooved pin (AF).
17. Using hammer and 1/8 inch punch, remove grooved pin (AF).
18. Using hammer and 1/8 inch punch, remove grooved pin (AG) from headless pin (AH).

19. Remove lever (AE) and headless pin (AH) as a unit.

20. Remove washer (AJ), spring (AK) and sleeve (AL).

21. Using hammer and 1/8 inch punch, remove pin (AM) from lever (AE).

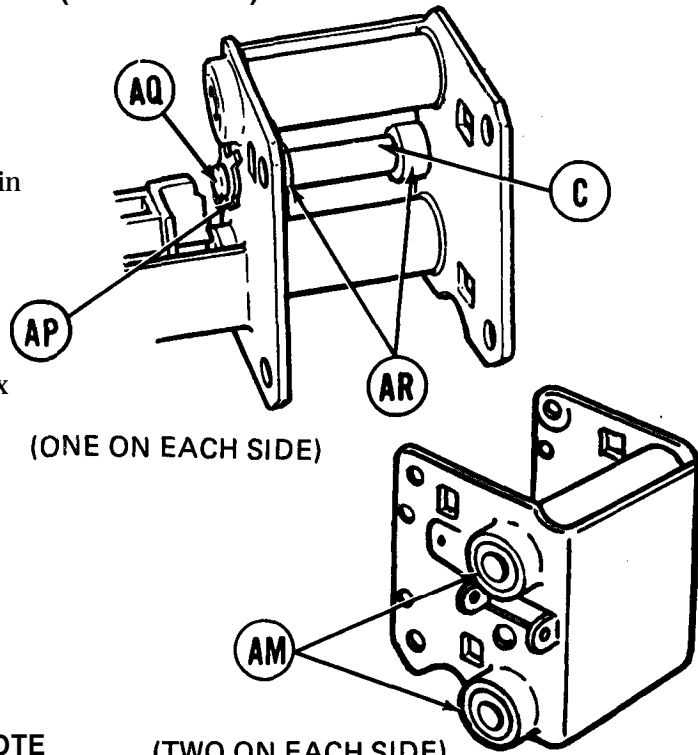


Go on to Sheet 5

TA139227

**DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 5 of 10)**

22. Using pliers, remove two clips (AP) from pin (AQ).
23. Using hammer and 3/8 inch punch, remove pin (AQ) and bearings (AR) from housing (C).



**CLEANING AND INSPECTION:**

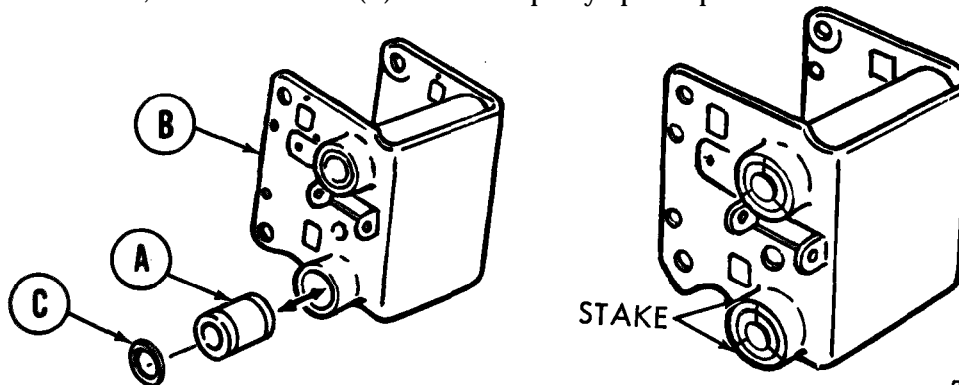
1. Using dry cleaning solvent (Item 54, Appendix D) and rags, clean all parts.
2. Inspect all parts for damage or wear.
3. Inspect four shaft bearings (AM) in adjusting assembly. Replace if required.
4. Replace all damaged or worn parts.

**NOTE** (TWO ON EACH SIDE)

**If bearings (A) are to be replaced, perform steps 1 thru 5 for each bearing and seal. If bearing replacement is not required, proceed to step 6.**

**ASSEMBLY:**

1. Using file, remove retaining stake marks from bracket (B).
2. Using hammer and 3/8 inch punch, drive bearing (A) and seal (C) from bracket (B).
3. Using vise, press new bearing (A) into bracket (B), and recess with 3/4 inch brass drift to allow fit of seal (C).
4. Using 3/4 inch brass punch, install seal (C).
5. Using hammer and chisel, stake each seal (C) at three equally spaced points.

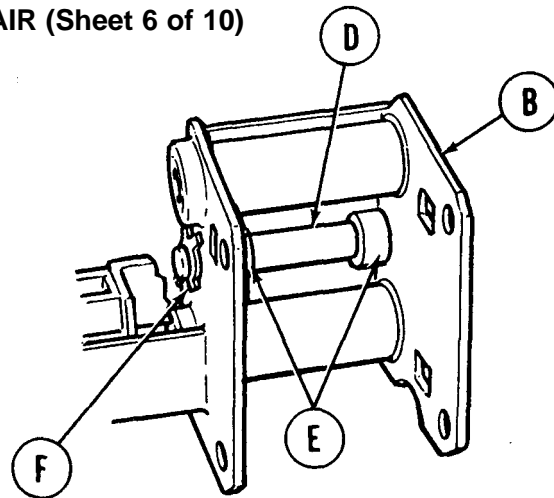


**Go on to Sheet 6**

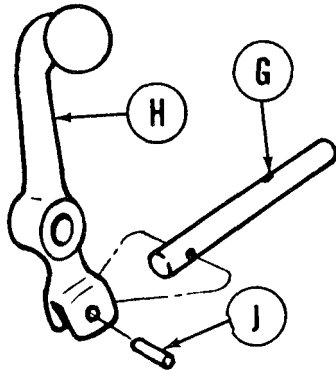
**TA139228**

DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 6 of 10)

6. Using hammer, install pin (D) and bearings (E) into bracket (B).
7. Using pliers, install two clips (F) on pin (D).

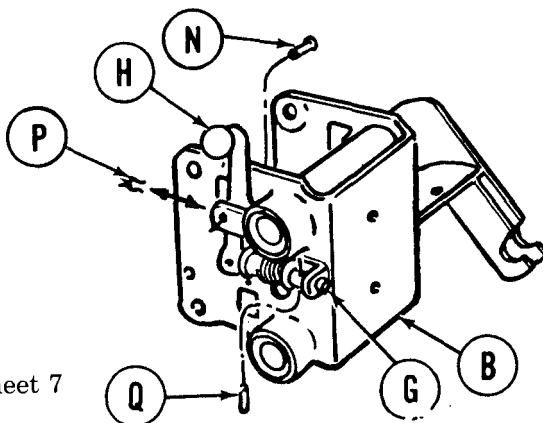
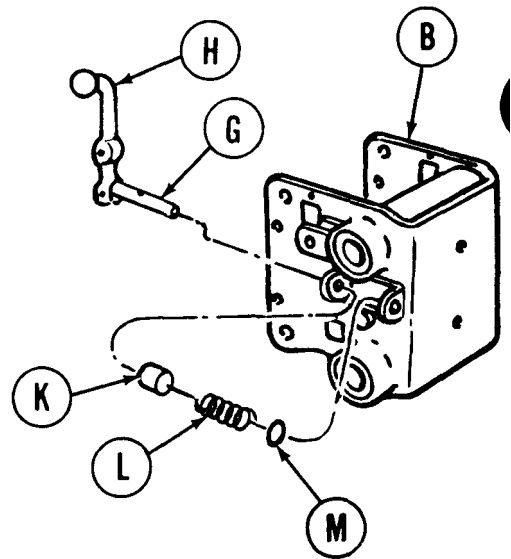


(ONE ON EACH SIDE)



8. Position headless pin (G) in lever (H) with holes aligned.
9. Using hammer, install pin (J) through lever (H) and pin (G).

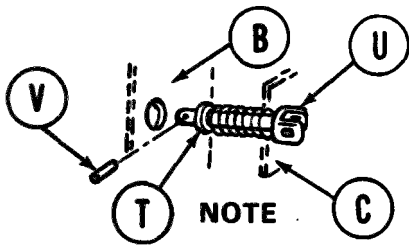
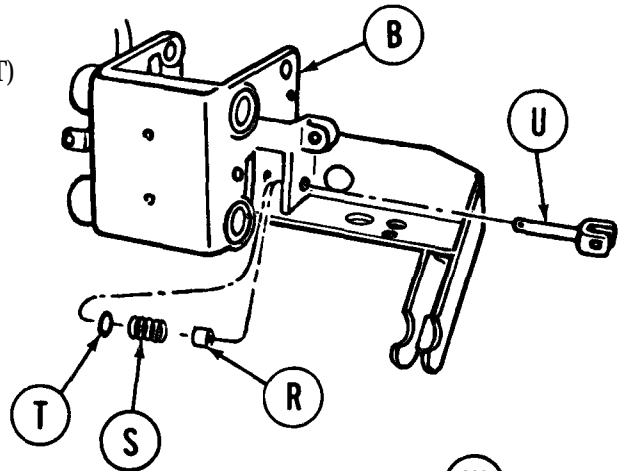
10. Position sleeve (K), spring (L) and washer (M) on bracket (B) as shown.
11. Position lever (H) and assembled parts (G), (H), and (J) on bracket (B) with all holes aligned.
12. Install lever assembly through ears on bracket (B) while keeping sleeve (K), spring (L), and washer (M) between ears of bracket (B) and install pin (N).
13. Using pliers, install clip (P) on pin (N).
14. Using hammer and punch, install pin (Q) in pin (G).



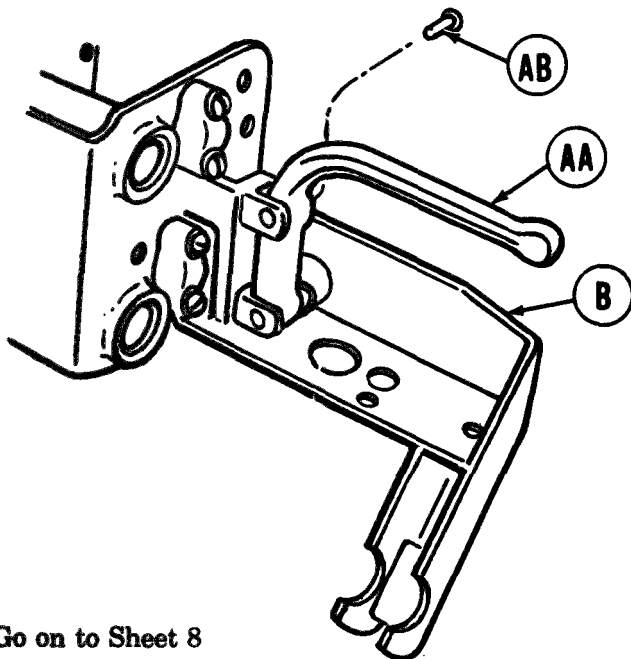
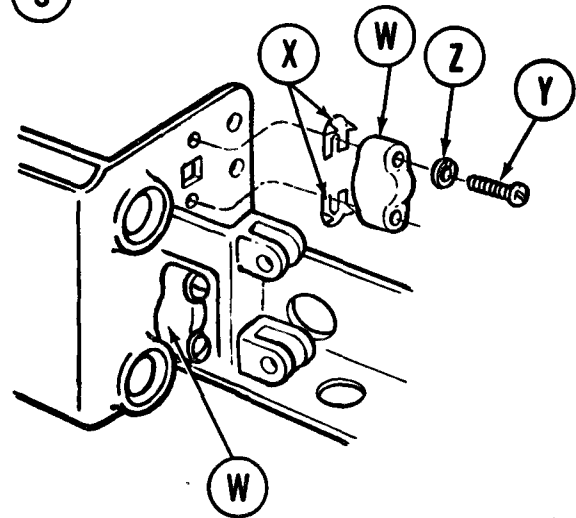
Go on to Sheet 7

**DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 7 of 10)**

15. Assemble sleeve (R), spring (S), and washer (T) on bracket (B).
16. Push adjusting pin (U) through bracket (B), sleeve (R), spring (S), and washer (T).
17. Using screwdriver, pry washer (T) away from bracket (B) far enough to install pin (V) in adjusting pin (U) behind washer (T).



18. Position housing assemblies (W) bracket (B) with holes and shims (X) aligned.
19. Install screws (Y) thru new lockwashers (Z), housing assemblies (W), and shims (X) into bracket (B) and tighten with screwdriver.



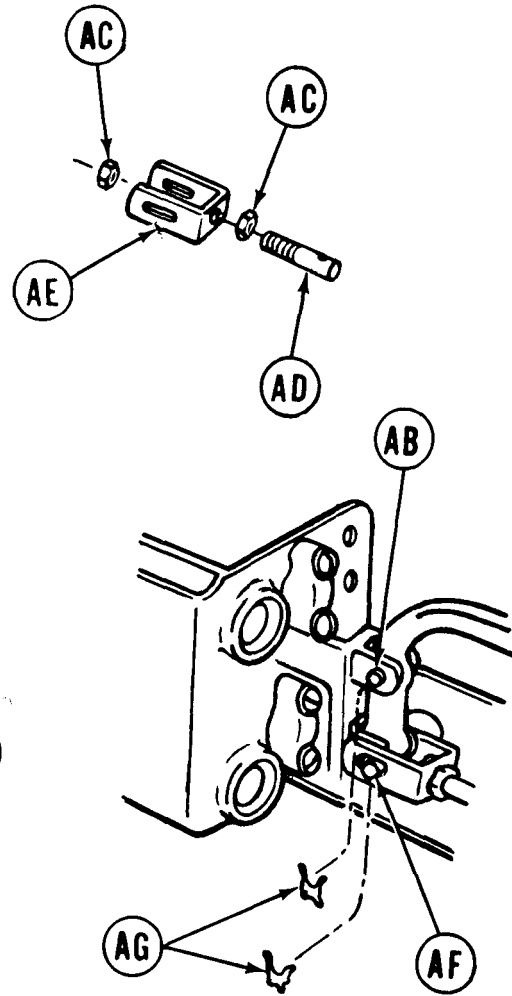
20. Position handle (AA) on bracket (B) with upper hole in handle (AA) aligned with hole in bracket (B).
21. Using hammer, install pin (AB) through bracket (B) and handle (AA).

Go on to Sheet 8

TA139230

DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 8 of 10)

- 22. Install one nut (AC) finger tight on link (AD) and position link (AD) in clevis (AE) and install other nut (AC) finger tight.
- 23. Position link (AD) and clevis (AE) over lower hole of handle (AA).
- 24. Using hammer, install pin (AF) through clevis (AE) and handle (AA).



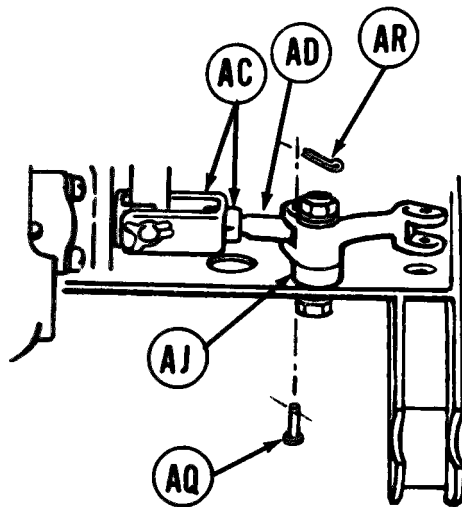
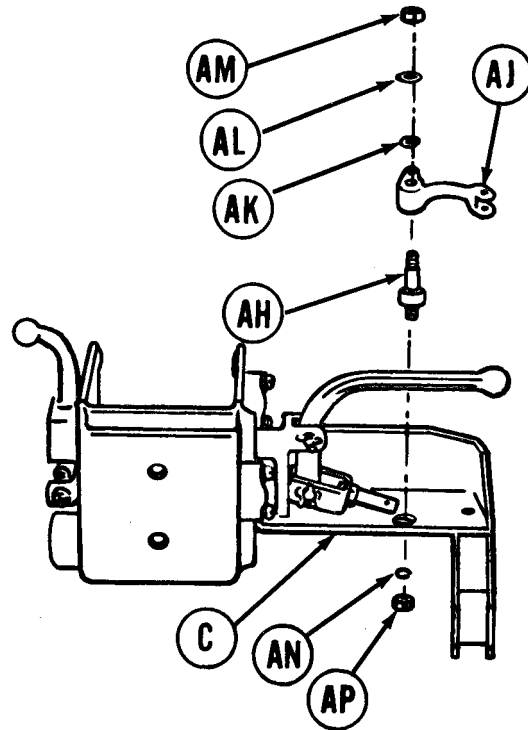
- 25. Using pliers, install two new washers (AC) on pins (AB) and (AF).

Go on to Sheet 9

TA139231

DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 9 of 10)

26. Position stud (AH) in bracket (C) with holes aligned.
27. Position bellcrank (AJ) on stud (AH).
28. Position flat washer (AK), new lockwasher (AL), and nut (AM) on top of stud (AH).
29. Tighten nut (AM) finger tight.
30. Position new lockwasher (AN) and nut (AP) in bottom of stud (AH).
31. Install nut (AP) finger tight.



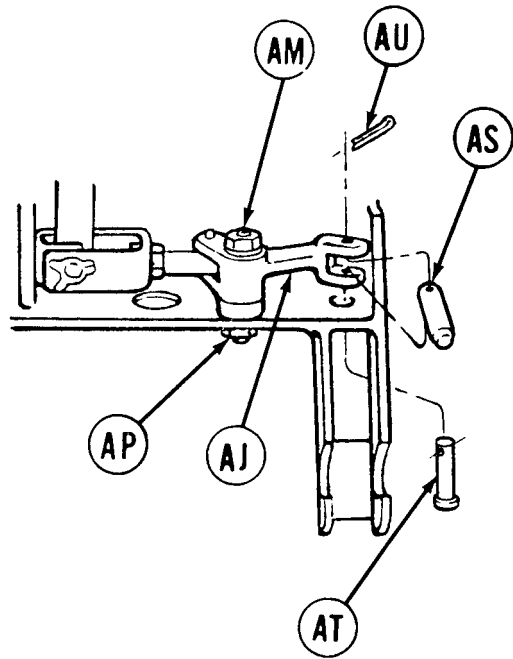
32. Using fingers, adjust length of link (AD) by turning nuts (AC) until hole in link (AD) aligns with hole in bellcrank (AJ).
33. Using hammer and punch, install pin (AQ) through hole in bellcrank (AJ) and link (AD).
34. Using pliers, install new cotter pin (AR) in pin (AQ).
35. Using one 9/16 inch wrench, tighten two nuts (AC).

Go on to Sheet 10

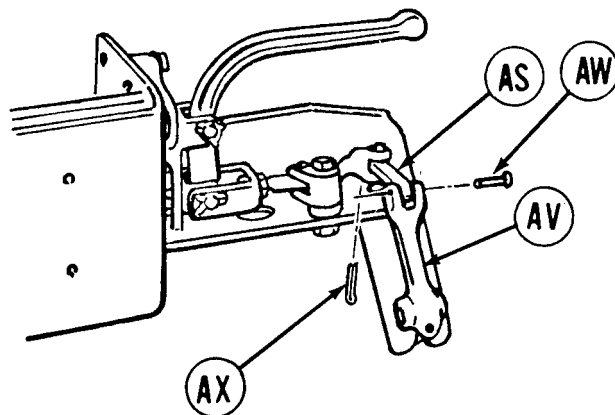
TA139232

DRIVER'S SEAT ADJUSTING ASSEMBLY REPAIR (Sheet 10 of 10)

- 36. Using 1/2 inch wrench on nut (AM) and 9/16 inch wrench on nut (AP), tighten both nuts.
- 37. Position straight pin (AS) to bellcrank (AJ) with holes alined.
- 38. Using hammer and punch, install headed pin (AT) through bellcrank (AJ) and straight pin (AS).
- 39. Using pliers, install new cotter pin (AU) in headed pin (AT).



- 40. Position lever (AV) to straight pin (AS) with holes alined.
- 41. Using hammer, install headed pin (AW) through lever (AV) and straight pin (AS).
- 42. Using pliers, install new cotter pin (AX) in headed pin (AW).
- 43. Check all handles and levers for free movement.
- 44. Install adjusting assembly in vehicle (page 17-22).



End of Task

TA139233,



## DRIVER'S SEAT SUPPORT AND HOUSING ASSEMBLY REPAIR (Sheet 1 of 7)

## PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	17-34
Cleaning and Inspection	17-36
Repair	17-36
Assembly	17-37

TOOLS: Slip joint pliers  
 1/2 in. combination box and open end wrenches (2 required)  
 Hammer  
 Drive punch  
 Retaining ring pliers  
 Cross-tip screwdriver

SUPPLIES: Pin (MS35674-40)  
 Pin (MS35674-41)  
 Retaining Rings (7404670) (4 required)  
 Clips (7404671) (6 required)  
 Lockwasher (MS35338-44) (4 required)  
 Rags (Item 65, Appendix D)  
 Dry Cleaning Solvent (Item 54, Appendix D)

PRELIMINARY PROCEDURE: Remove adjusting assembly from vehicle (page 17-21)

Go on to Sheet 2

TA139234

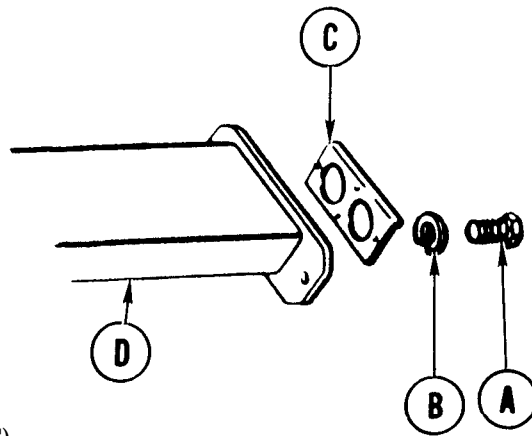
DRIVER'S SEAT SUPPORT AND HOUSING ASSEMBLY REPAIR (Sheet 2 of 7)

DISASSEMBLY:

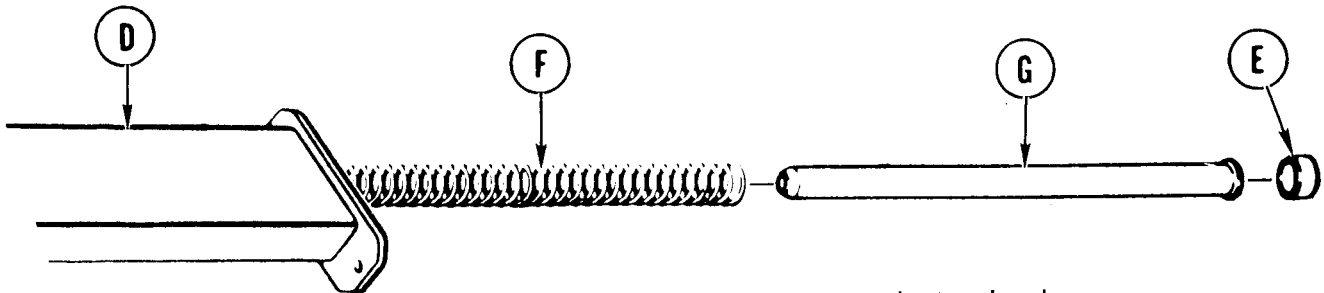
**WARNING**

**Pull dumping handle before removing retaining plate to relieve pressure on spring.**

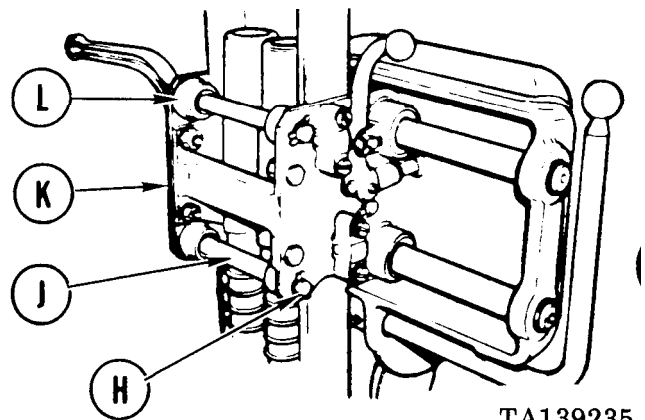
- Using screwdriver, remove four screws (A) and lockwashers (B) from retaining plate (C) at base of support (D). Throw lockwashers away.



- Remove retaining plate (C).
- Using fingers, remove two retainers (E), springs (F), and guides (G) from support (D).



- Using slip joint pliers, remove four clips (H) from ends of two shafts (J) in adjusting assembly (K).
- Remove two shafts (J) and four rollers (L) from adjusting assembly (K).

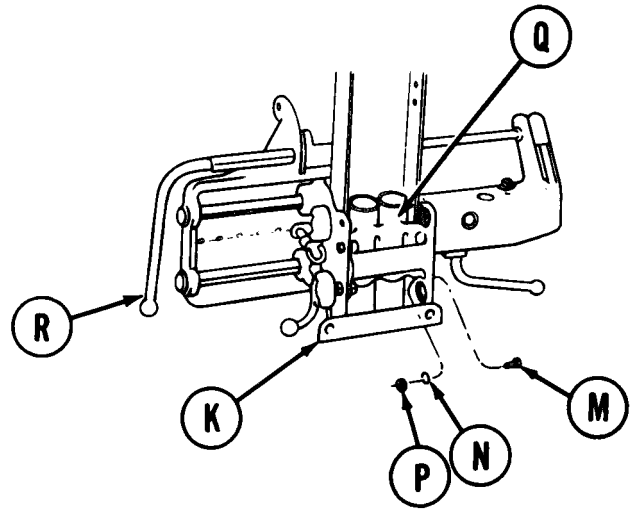


Go on to Sheet 3

TA139235

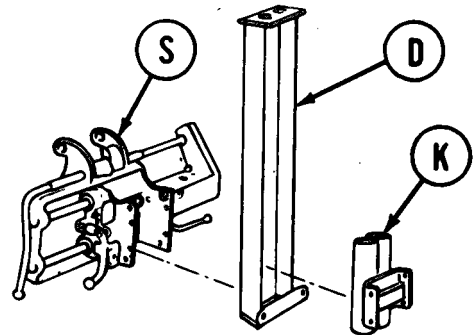
**DRIVER'S SEAT SUPPORT AND HOUSING ASSEMBLY REPAIR (Sheet 3 of 7)**

6. Using two 1/2 inch wrenches, remove four screws (M), washers (N), and nuts (P) holding retainer assembly (Q) to adjusting assembly (K).

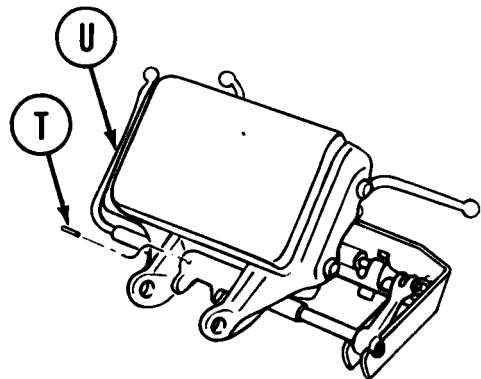


7. Pull lever (R) to release retainer assembly (K).

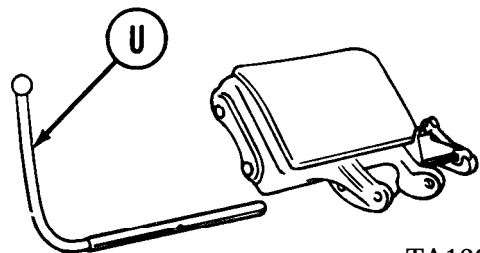
8. Remove retainer assembly (K) and housing (S) from support (D).



9. Using hammer and punch, remove pin (T) in lever (U).



10. Remove lever (U).

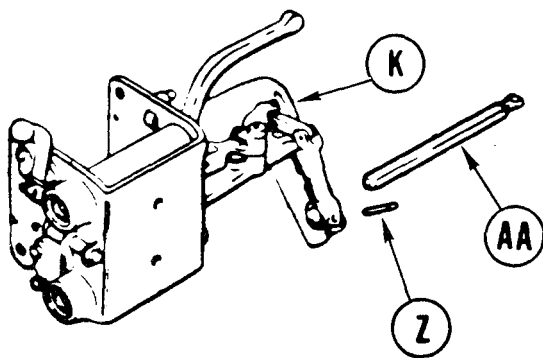
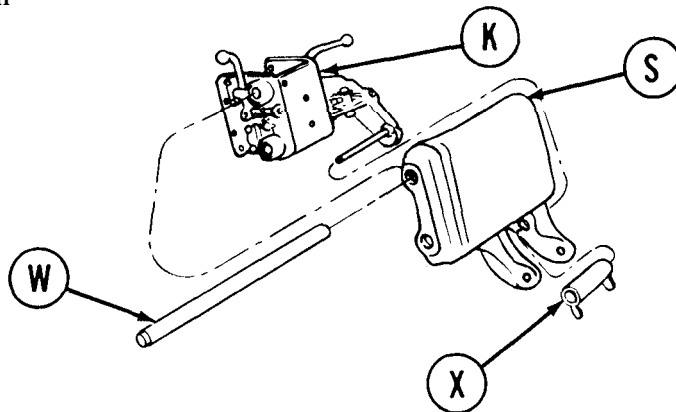
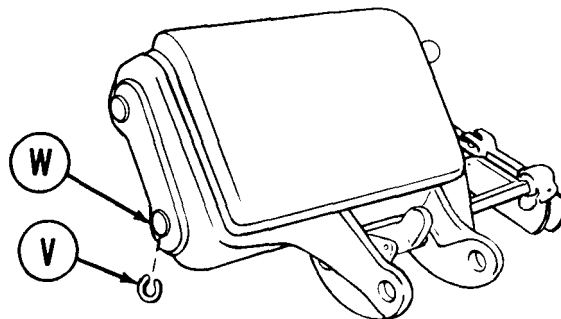


Go on to Sheet 4

TA139236

**DRIVER'S SEAT SUPPORT AND HOUSING ASSEMBLY REPAIR (Sheet 4 of 7)**

11. Using retaining ring pliers, remove four retaining rings (V) from each end of two adjusting shafts (W).
12. Remove two adjusting shafts (W).
13. Remove adjusting assembly (K), housing (S), and trip lever (X).
14. Using hammer and punch, remove pin (Z) from shaft (AA) in adjusting assembly (K).
15. Remove shaft (AA).



**CLEANING AND INSPECTION:**

1. Clean all parts using dry cleaning solvent (Item 54, Appendix D) and clean rags.
2. Inspect all parts for damage or wear. Replace if required.

**REPAIR:**

Repair adjusting assembly and support assembly by replacing worn or damaged parts.

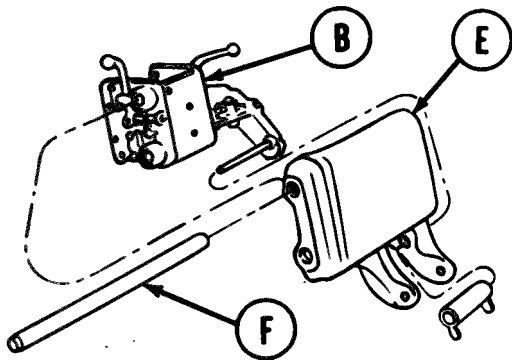
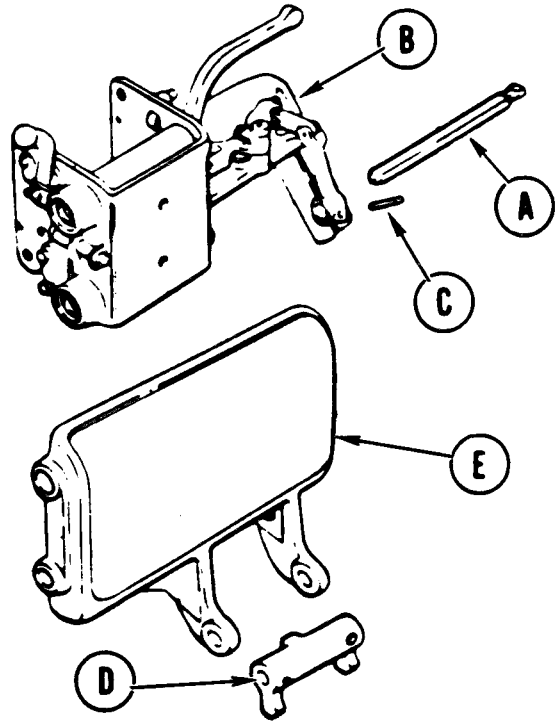
Go on to Sheet 5

TA139237

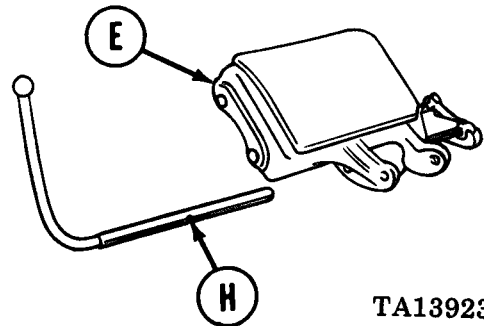
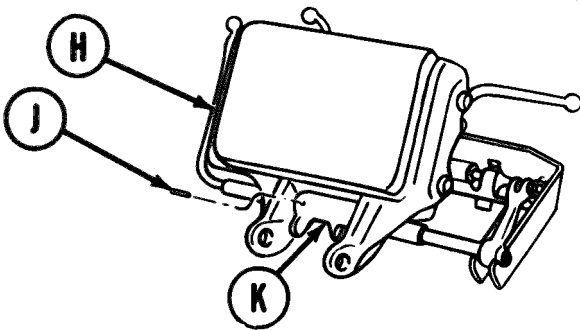
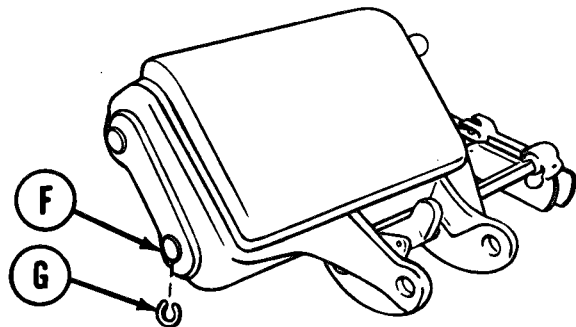
**DRIVER'S SEAT SUPPORT AND HOUSING ASSEMBLY REPAIR (Sheet 5 of 7)**

**ASSEMBLY:**

1. Position shaft (A) in adjusting assembly (B) with pin holes alined.
2. Using hammer and punch, install pin (C) through assembly (B) and shaft (A).
3. Position trip lever (D) in housing (E).
4. Position adjusting assembly (B) to housing (E).



5. Install two shafts (F) through housing (E) and adjusting assembly (B).
6. Using retaining ring pliers, install four retaining rings (G) on ends of two shafts (F).
7. Position shaft of lever (H) through holes in housing (E) and trip lever with holes alined.
8. Using hammer, install pin (J) through trip lever (K) and lever (H).

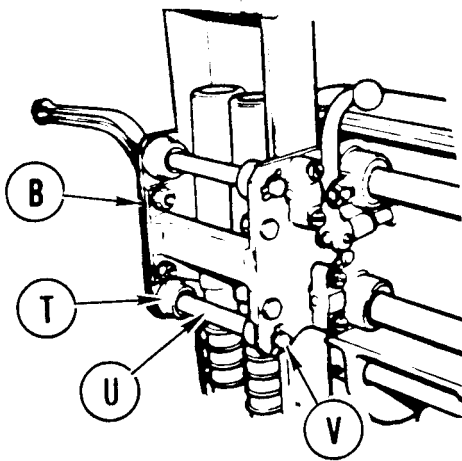
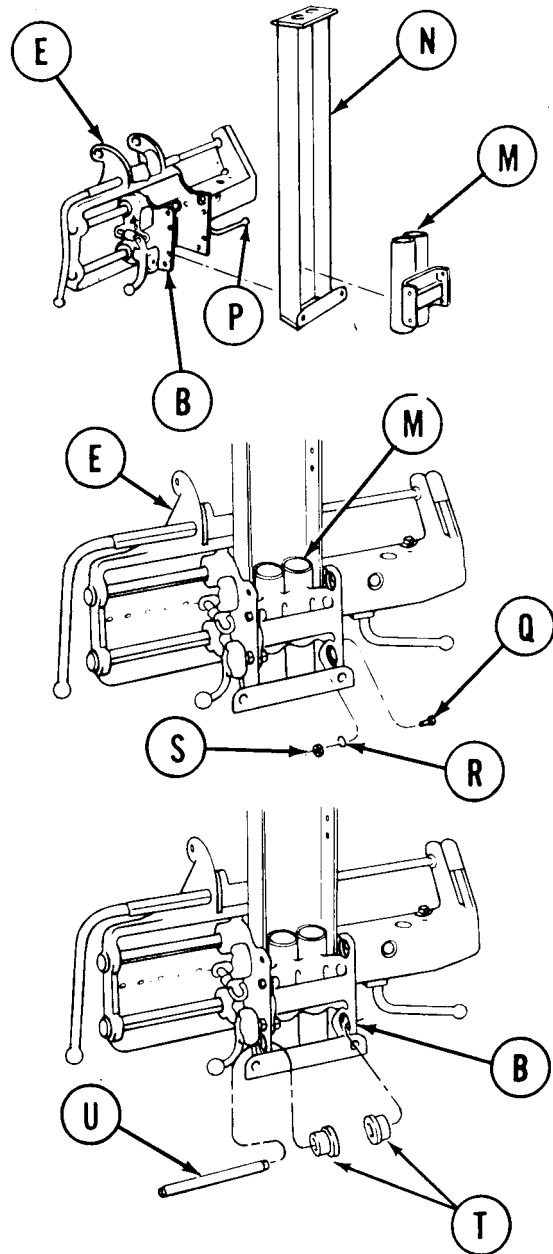


Go on to Sheet 6

TA139238

DRIVER'S SEAT SUPPORT AND HOUSING ASSEMBLY REPAIR (Sheet 6 of 7)

9. Position retainer assembly (M), adjusting assembly (B) and housing (E) on support assembly (N).
10. Move lever (P) on adjusting assembly (B) to engage adjusting assembly (B) with support assembly (N).
11. Using two 1/2 inch wrenches, install four screws (Q), washers (R), and nuts (S) into housing assembly (E), adjusting assembly (B) and retainer (M).
12. Position four rollers (T) on two shafts (U) on adjusting assembly (B).
13. Using slip joint pliers, install four clips (V) in grooves of three shafts (U) to retain rollers (T).

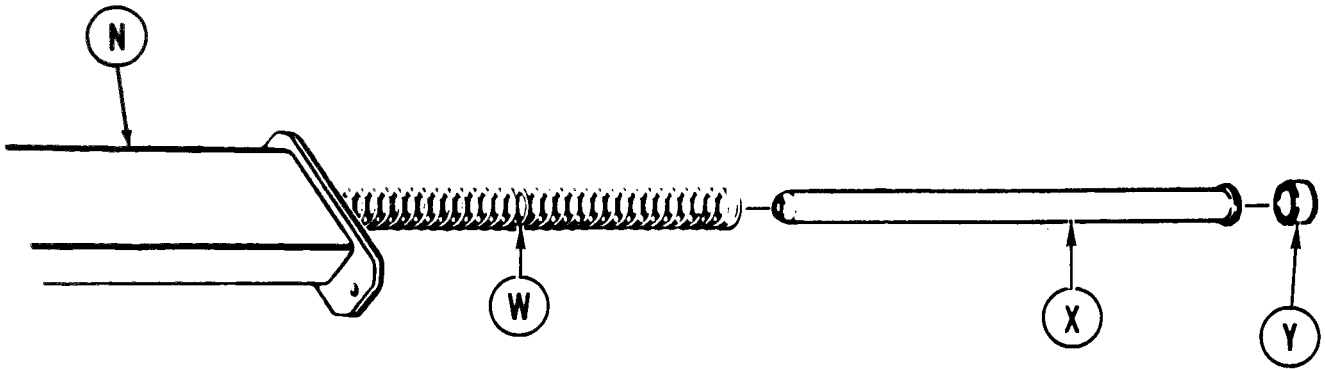


Go on to Sheet 7

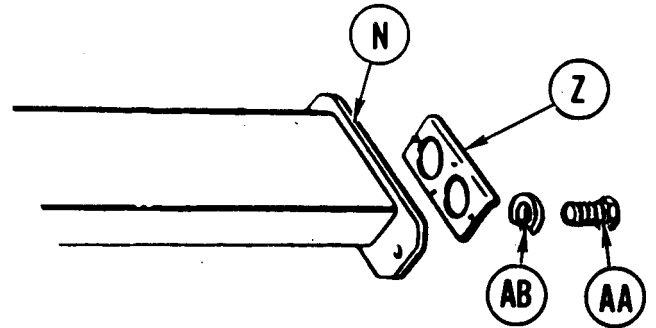
TA139239

**DRIVER'S SEAT SUPPORT AND HOUSING ASSEMBLY REPAIR (Sheet 7 of 7)**

14. Position two springs (W), guides (X), and retainers (Y) in support assembly (N).



15. Position plate (Z) on support (N) with holes alined.
16. Using screwdriver, install four screws (AA) and new lockwashers (AB) into plate (Z) and support (N).
17. Install adjusting assembly in vehicle (page 17-22).



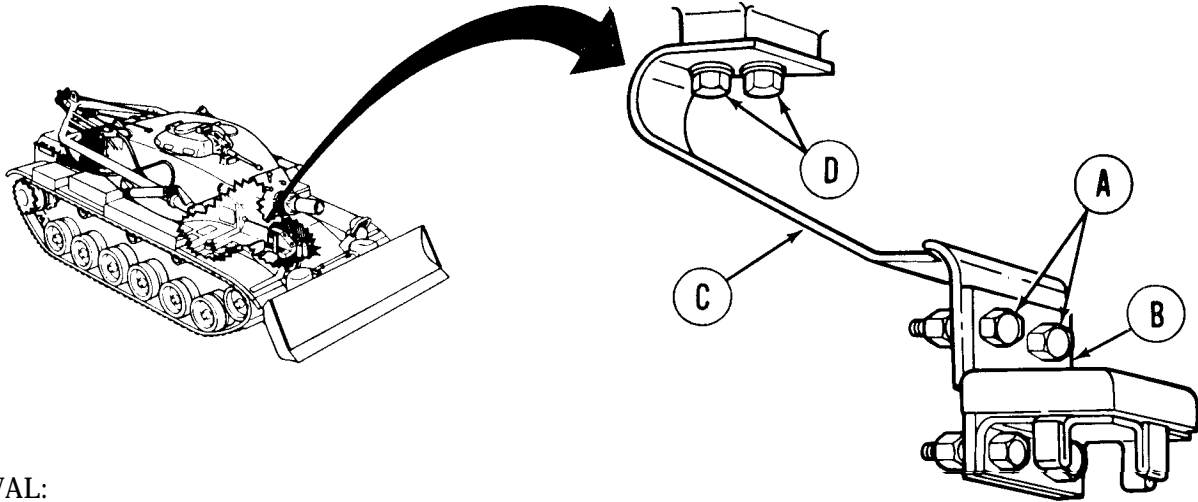
End of Task

TA139240

UPPER SEAT SUPPORT BRACKET REPLACEMENT (Sheet 1 of 1)

TOOLS: 3/4 in. combination box and open end wrench  
3/4 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

SUPPLIES: Lockwasher (MS35338-48) (4 required)



REMOVAL:

1. Using wrench and socket, remove two nuts, lockwashers, flat washers, and screws (A) securing seat bracket (B) to upper seat support bracket (C). Throw lockwashers away.
2. Using wrench, remove two screws, lockwashers, and flat washers (D) securing upper seat support bracket (C) and turret seal inflating manifold bracket (E) to hull roof. Throw lockwashers away.
3. Position turret seal inflating manifold bracket (E) aside and remove upper seat support bracket (C).

INSTALLATION:

1. Position upper seat support bracket (C) and seal inflating manifold bracket (E) to hull roof and seat bracket (B).
2. Using fingers, loosely install two screws, new lockwashers, and flat washers (D) to secure upper seat bracket (C) and turret seal inflating manifold bracket (E) to hull roof.
3. Using fingers, install two screws, new lockwashers, flat washers, and nuts (A) to secure upper seat bracket (C) to seat bracket (B).
4. Using wrench and socket, tighten two screws (D) and two screws and nuts (A).

End of Task

TA139241

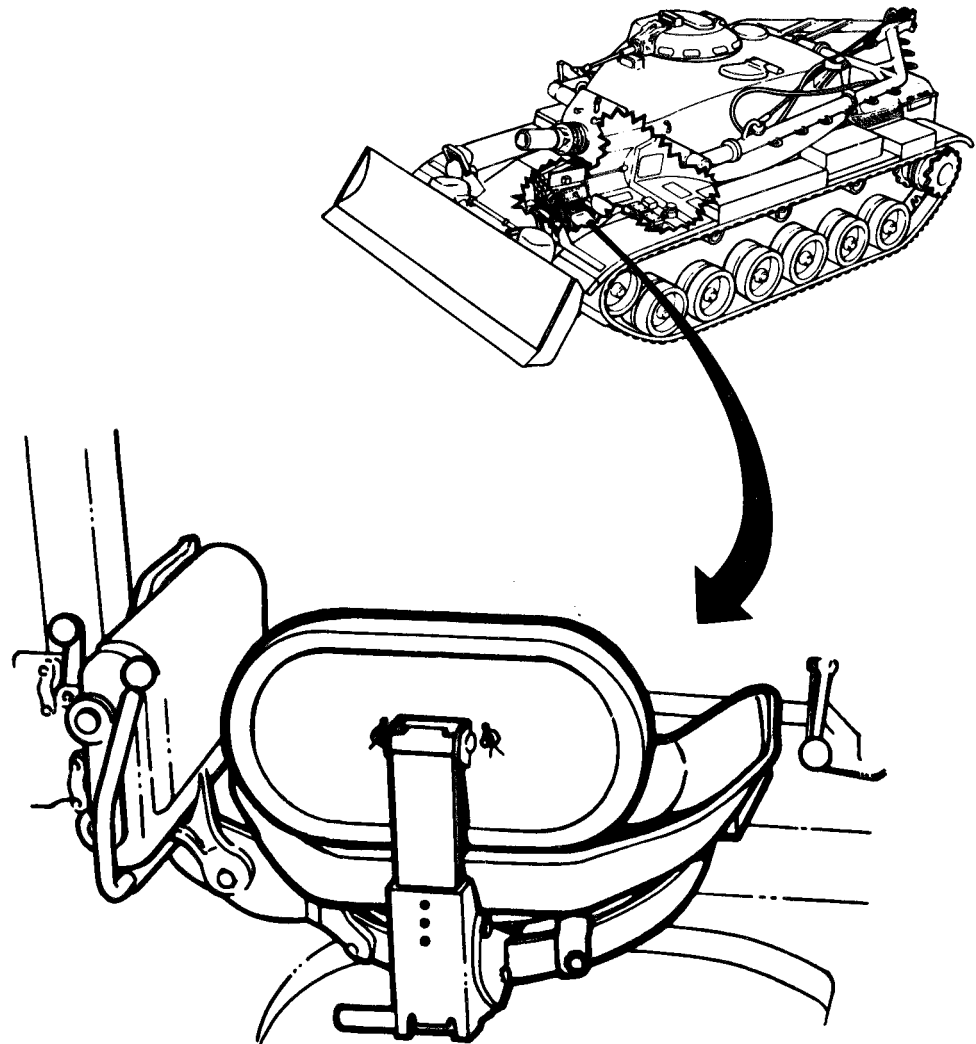


**DRIVER'S SEAT AND BACKREST REPLACEMENT (Sheet 1 of 3)**

TOOLS: 1/2 in. drive pin punch  
Retaining ring pliers  
Slip joint pliers  
Hammer

SUPPLIES: Split washer (7404672)

REFERENCE: TM 9-2350-222-10



Go on to Sheet 2

TA139242

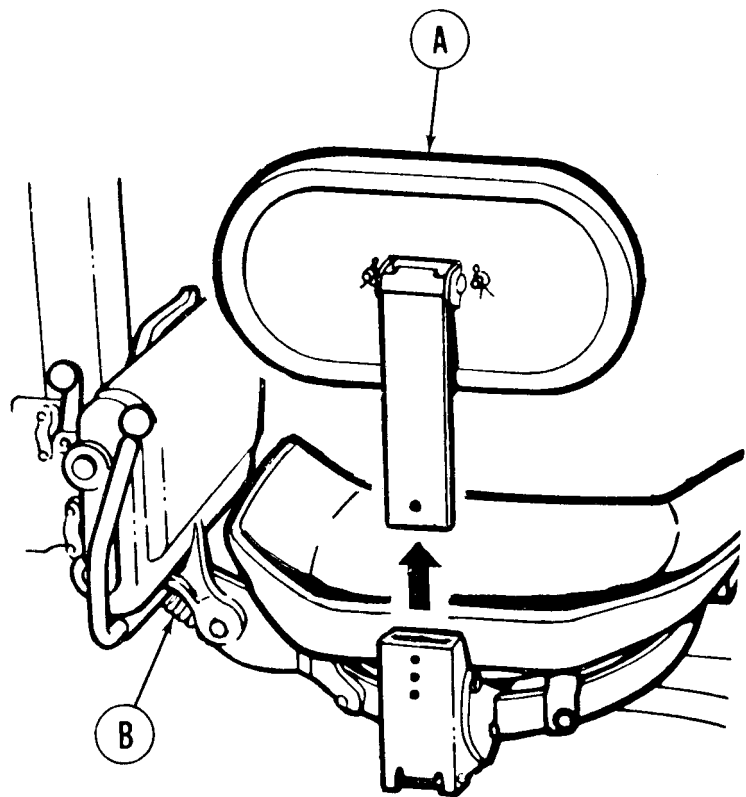
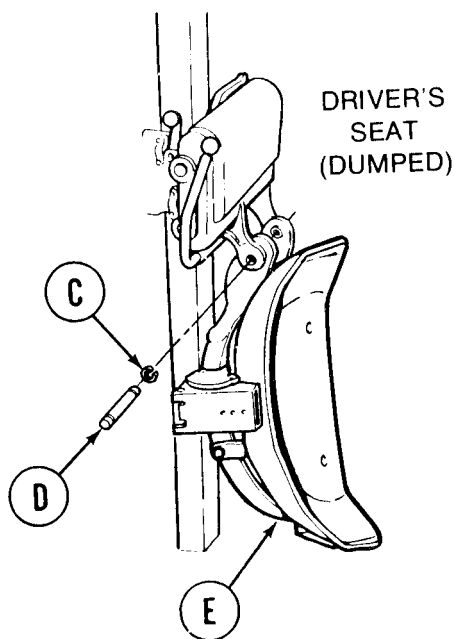
DRIVER'S SEAT AND BACKREST REPLACEMENT (Sheet 2 of 3)

REMOVAL:

1. Remove back assembly (A).
2. Using slip joint pliers, remove spring (B).
3. Using retaining ring pliers, remove split washer (C) from forward end of rod (D). Throw washer away.
4. Dump driver's seat (TM 9-2350-222-10).
5. Using hammer and drive punch, drive rod (D) toward rear of vehicle until clear of seat assembly (E).
6. Remove seat assembly (E).

INSPECTION:

1. Inspect all parts for damage or wear.
2. Replace parts as required.
3. Clean and lube parts as required.



Go on to Sheet 3

TA139243

## DRIVER'S SEAT AND BACKREST REPLACEMENT (Sheet 3 of 3)

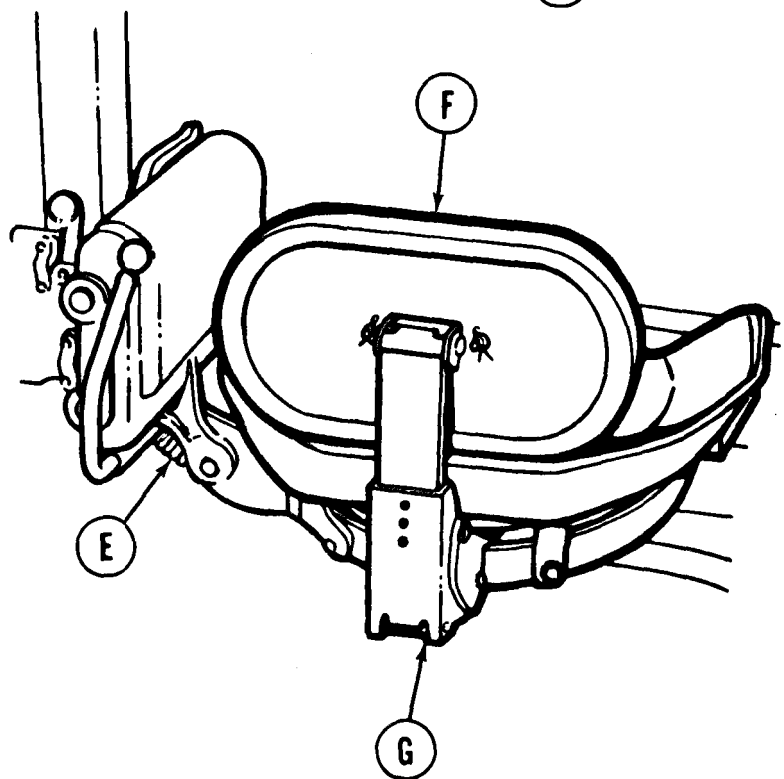
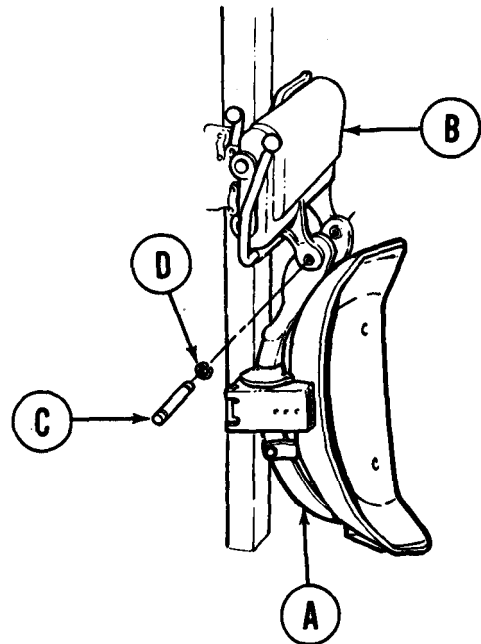
## INSTALLATION:

1. Position seat assembly (A) on housing (B).

**NOTE**

**Make sure hole in seat assembly and housing are aligned.**

2. Using hammer and drive pin, install rod (C).
3. Using retaining ring pliers, install new split washer (D).
4. Reposition driver's seat (TM 9-2350-222-10).
5. Using slip joint pliers, install spring (E).
6. Position backrest assembly (F) in bracket (G).



End of Task

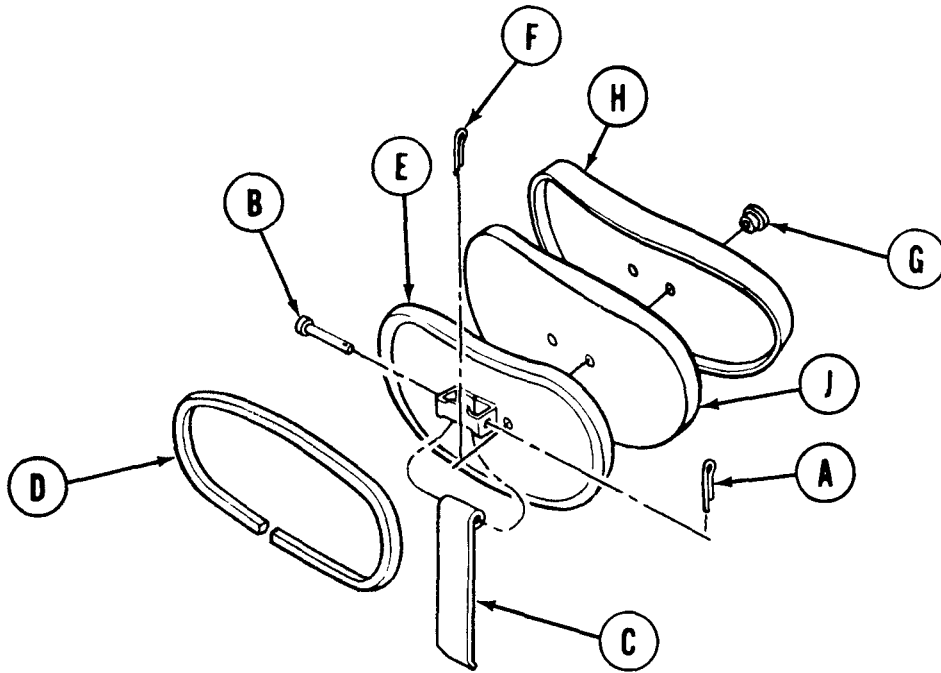
TA139244

DRIVER'S SEAT BACKREST ASSEMBLY REPAIR (Sheet 1 of 2)

TOOLS: Slip joint pliers  
Hammer  
1/8 in. drive pin punch

SUPPLIES: Cotter pins (MS24665-353) (3 required)

PRELIMINARY PROCEDURE: Remove seat back assembly (page 17-41)



DISASSEMBLY:

1. Using pliers, remove cotter pin (A) from headed pin (B). Throw cotter pin away.
2. Using hammer and punch, remove headed pin (B).
3. Remove spring assembly (C).
4. Using fingers, lift backrest seal (D) from frame (E).
5. Using pliers, remove two cotter pins (F). Throw cotter pins away.
6. Remove two sleeves (G).
7. Remove cover (H) and pad (J) from frame (E).

Go on to Sheet 2

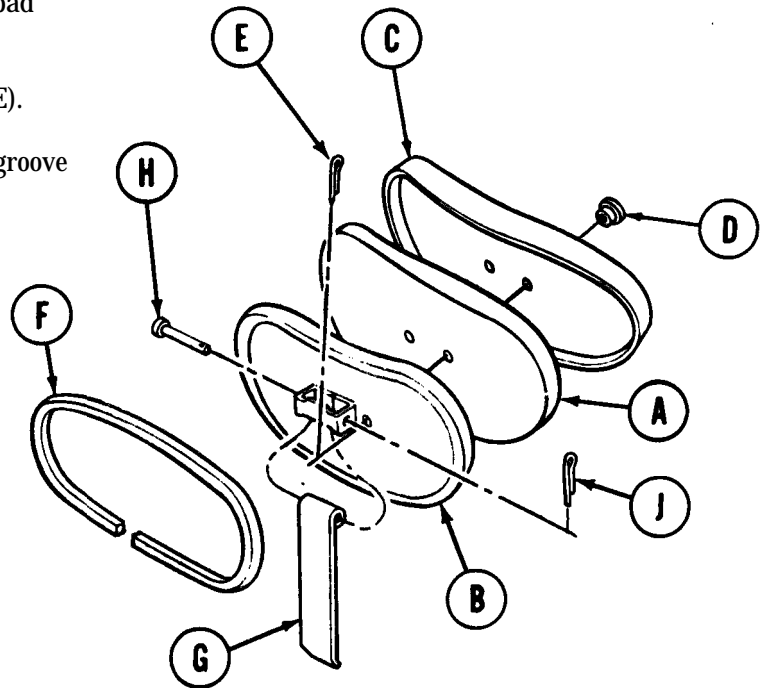
TA139245

**DRIVER'S SEAT BACKREST ASSEMBLY REPAIR (Sheet 2 of 2)****INSPECTION:**

1. Inspect all parts for wear and damage.
2. Replace all worn or damaged parts.

**ASSEMBLY:**

1. Position pad (A) on frame (B).
2. Position cover (C) over pad (A) and frame (B).
3. Install two sleeves (D) through cover (C), pad (A), and frame (B).
4. Using pliers, install two new cotter pins (E).
5. Using fingers, push backrest seal (F) into groove in frame (B).
6. Position spring assembly (G) in frame (B).
7. Using hammer, install headed pin (H).
8. Using pliers, install new cotter pin (J).
9. Install seat and backrest (page 17-43).



End of Task

TA139246

PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	17-46
Inspection	17-47
Assembly	17-47

TOOLS: 9/16 in. combination box and open end wrench  
 Slip joint pliers  
 Flat-tip screwdriver  
 Vise  
 Diagonal cutting pliers  
 Ratchet with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive

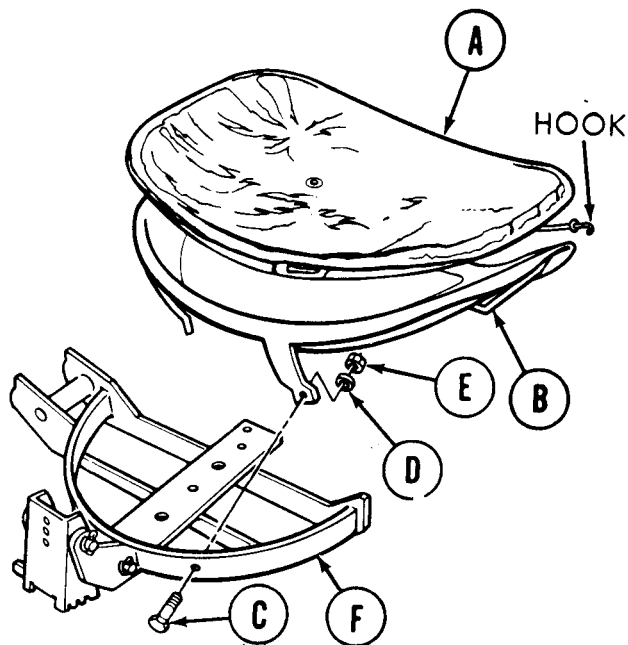
SUPPLIES: Cotter pins (MS24665-283) (3 required)  
 Wire (Item 59, Appendix D)

PERSONNEL: Two

PRELIMINARY PROCEDURE: Remove driver's seat assembly (page 17-41)

DISASSEMBLY:

- Using fingers, remove hooks on cushion (A) from eyes on cushion (A).
- Remove cushion (A) from seat (B).
- Using wrench and socket, remove four screws (C), washers (D), and nuts (E).
- Remove seat support (F) from seat (B).



Go on to Sheet 2

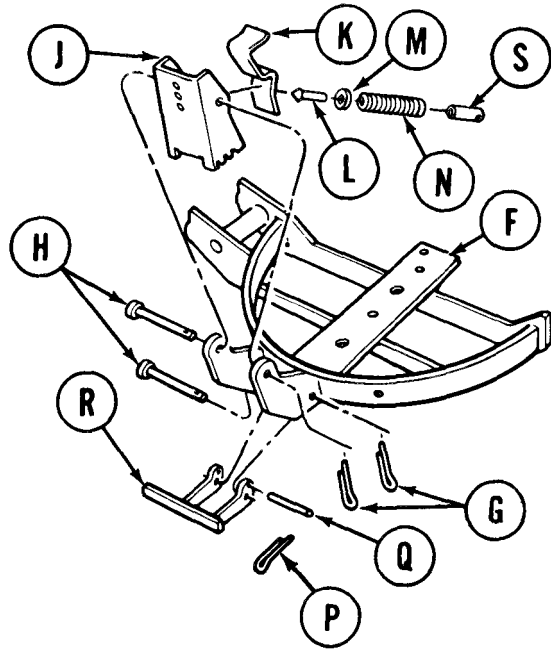
TA139247

DRIVER'S SEAT REPAIR (Sheet 2 of 5)

**WARNING**

Exercise care when removing pin, because of spring tension.

5. Using pliers, remove two cotter pins (G) from two straight pins (H). Remove two straight pins (H). Throw cotter pins away.
6. Remove bracket (J), lever (K), pin (L), flat washer (M), and spring (N).
7. Using pliers, remove cotter pin (P) from pin (Q).
8. Remove pin (Q), lever assembly (R), and tube (S) from seat support (F).

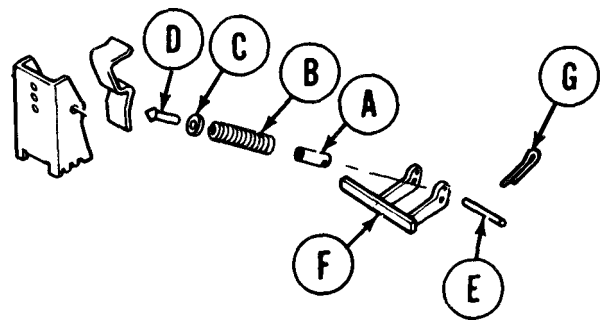


INSPECTION:

1. Inspect all parts for wear or damage.
2. Replace all worn or damaged parts.

ASSEMBLY:

1. Aline tube (A), spring (B), washer (C), and pin (D).
2. Install pin (E) through lever assembly (F) and tube (A).
3. Using pliers, install new cotter pin (G) in pin (E).

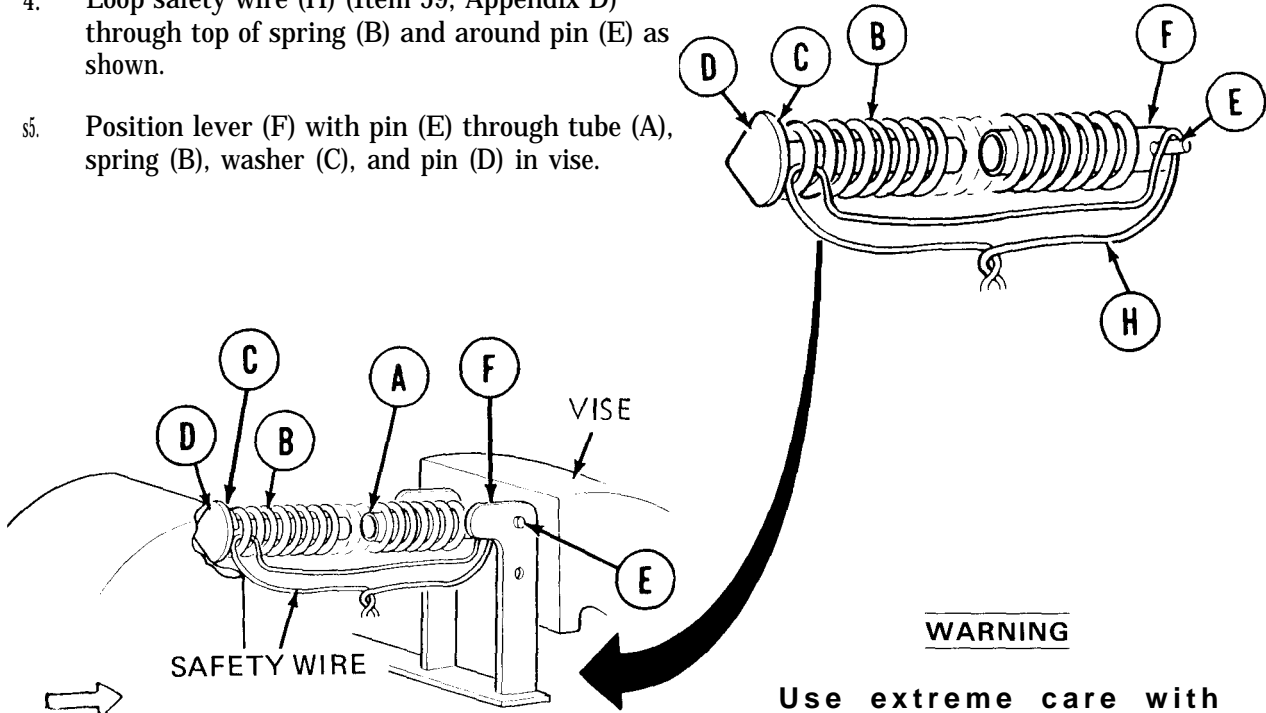


Go on to Sheet 3

TA139248

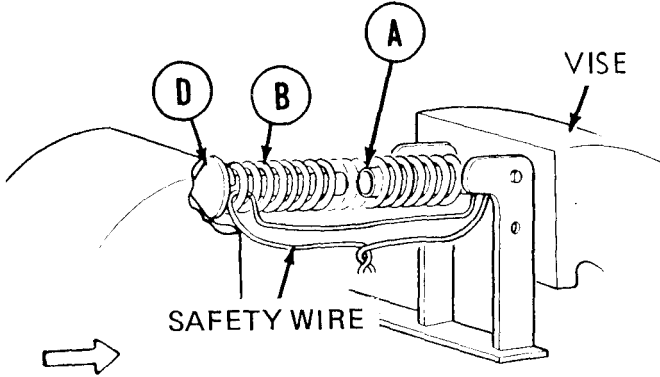
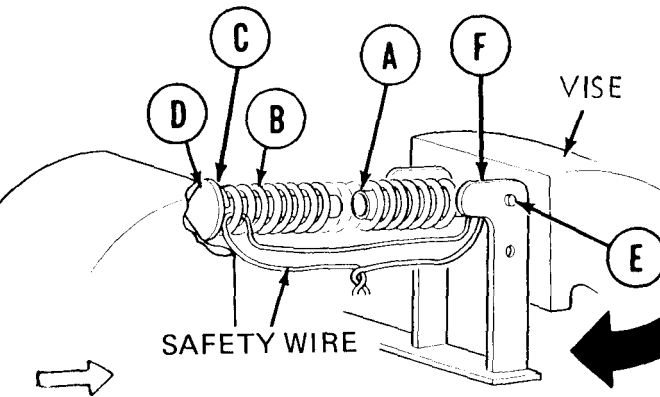
DRIVER'S SEAT REPAIR (Sheet 3 of 5)

4. Loop safety wire (H) (Item 59, Appendix D) through top of spring (B) and around pin (E) as shown.
5. Position lever (F) with pin (E) through tube (A), spring (B), washer (C), and pin (D) in vise.

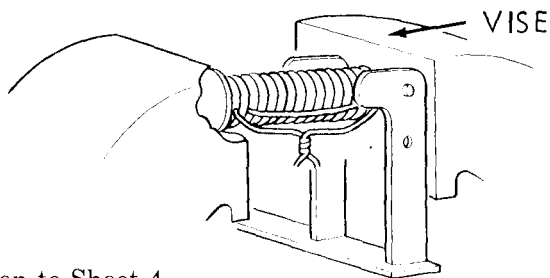


**WARNING**

Use extreme care with compressing spring, as loose parts may fly out of vise.



6. Use second person to slowly and carefully close vise while keeping pin (D) in line with tube (A).
7. When spring (B) is fully compressed in vise, use pliers to lock safety wire to hold spring in compressed position.

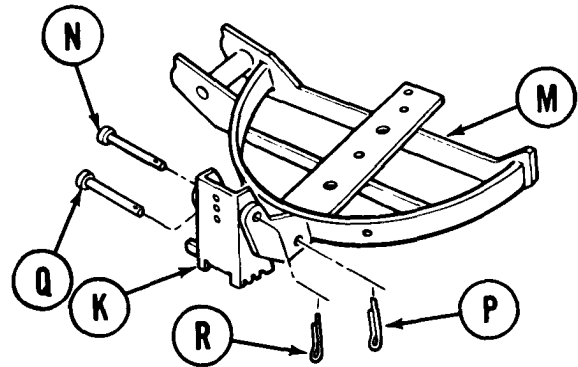
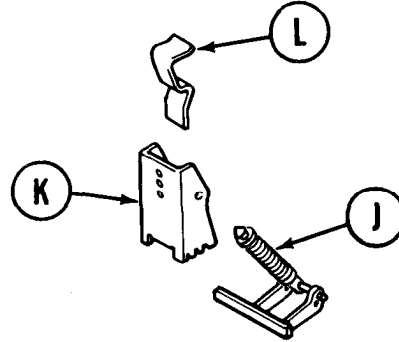


Go on to Sheet 4



**DRIVER'S SEAT REPAIR (Sheet 4 of 5)**

8. Position tube assembly (J) in bracket (K).
9. Position lever (L) in bracket (K).
10. Position lever (L) and bracket (M) to seat support (K) with holes alined.
11. Slowly and carefully install pin (N) through bracket (K) and seat support. (M).
12. Using pliers, install new cotter pin (P) in pin (N).
13. Place pin (Q) through bracket (K).
14. Intall new cotter pin (R) through pin (Q).
15. Using cutting pliers, cut safety wire holding spring assembly (J) compressed and remove wire.

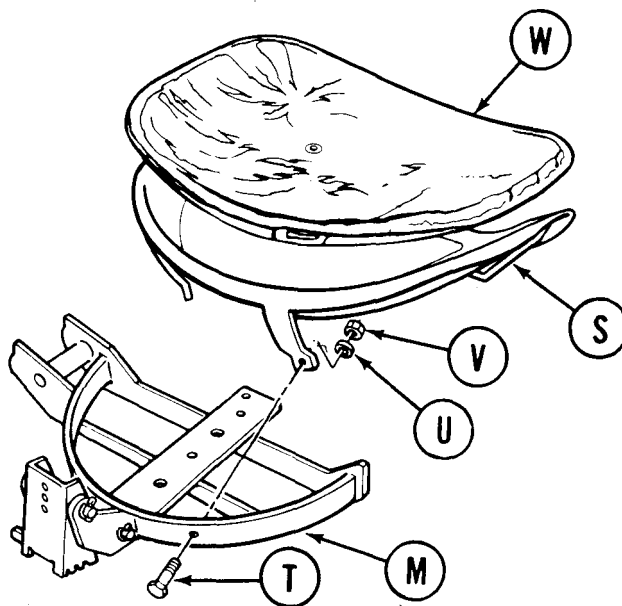


Go on to Sheet 5

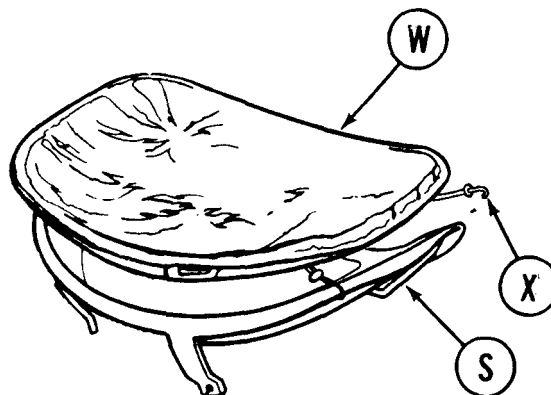
TA139250

DRIVER'S SEAT REPAIR (Sheet 5 of 5)

16. Position seat (S) on seat support (M) with holes aligned.
17. Using wrench and socket, install six screws (T), washers (U), and nuts (V) through seat support (M) and seat (S).
18. Position cushion (W) on seat (S).



19. Using fingers, place two hooks (X) on cushion (W) through holes in seat (S).
20. Install seat and backrest (page 17-43).



End of Task

TA139251

**CHAPTER 18**  
**HYDRAULIC SYSTEM INDEX**

PROCEDURE	PAGE
Emergency Lift Cables Replacement	18-3
Moldboard Cutting Edge Replacement	18-6
Bulldozer Blade Assembly Replacement	18-9
Moldboard locking Hooks and Shaft Replacement	18-20
Linear Actuating (Ram) Cylinder and Guards Replacement	18-26
Bulldozer Actuating Cylinder Tube Replacement	18-34
Hydraulic Reservoir Breather Filter Replacement	18-39
Hydraulic Reservoir Filler Cap Replacement	18-40
Hydraulic Reservoir Mounting Bracket Replacement	18-41
Hydraulic Reservoir Fluid Level Gage Replacement	18-43
Hydraulic Reservoir Access Plug Replacement	18-44
Hydraulic Pump Valve and Associated Lines Replacement	18-45
Hydraulic Reservoir Line Fluid Filter Replacement	18-56
Hydraulic Reservoir Line Fluid Filter Element Replacement	18-64
Rear Fluid Filter Tube Assembly Replacement	18-67
Hydraulic Selector Control Valve Replacement	18-70
Hydraulic Suction Line Shutoff Valve Replacement	18-78
Hydraulic Reservoir Winch Drain Tube Assembly Replacement	18-84
Hydraulic Reservoir to Slip Ring Tube Assembly Replacement	18-88
Hydraulic Reservoir Suction Hose Assembly Replacement	18-91
Hydraulic Pump Discharge Tube Assembly Replacement	18-96

TA141103

**TM 9-2350-222-20-1-5**

PROCEDURE	PAGE
Right Angle Drive, Clutch, and Pump Replacement	18-100
Right Angle Drive Replacement	18-108
Rotary Pump and Suction Hose Replacement	18-113
Pump Mounting Bracket Replacement	18-117
Magnetic Clutch and Housing Replacement	18-118

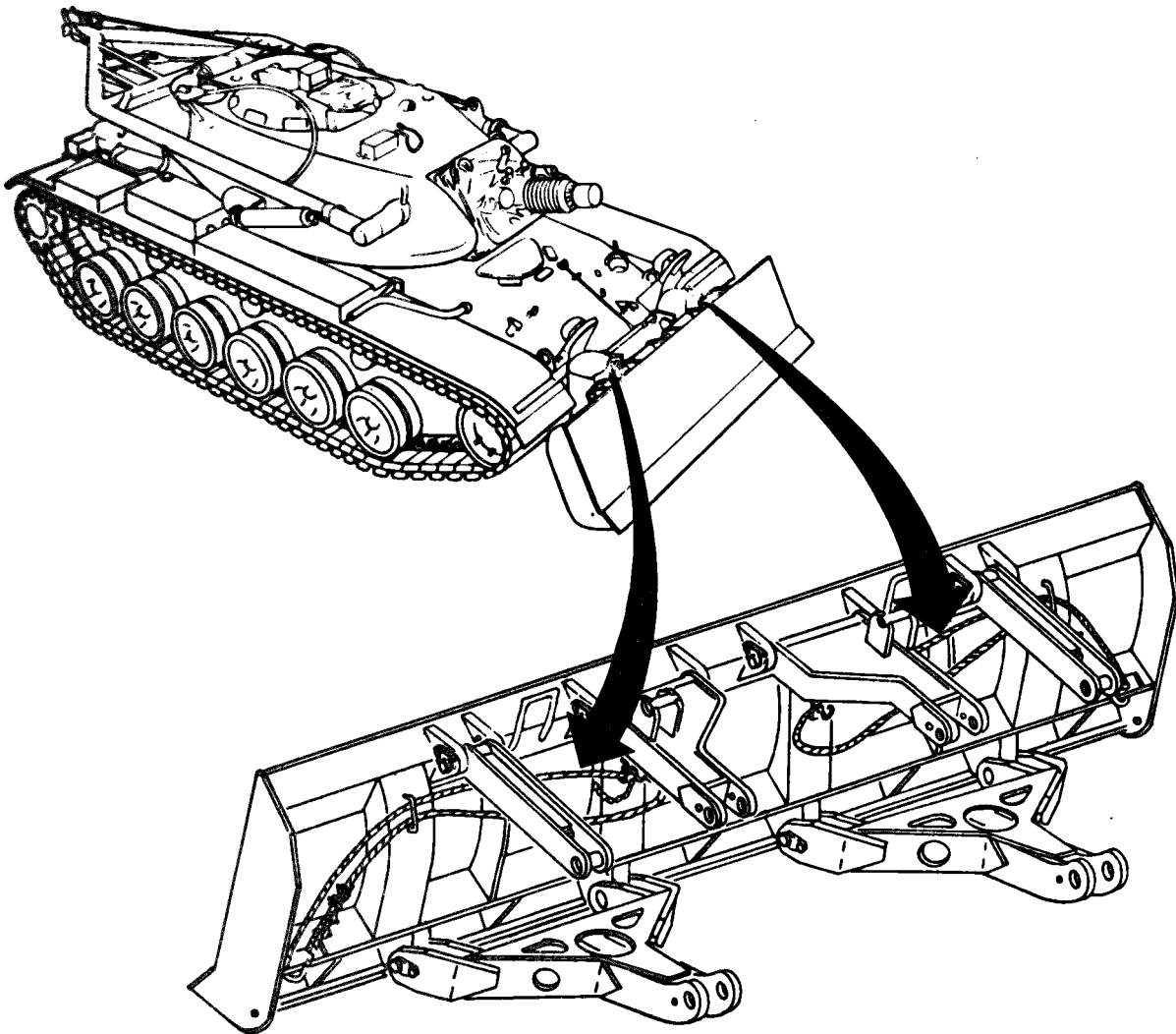
**EMERGENCY LIFT CABLES REPLACEMENT (Sheet 1 of 3)**

**TOOLS:** Wire brush  
15/16 in. socket with 1/2 in. drive  
Hinged socket wrench handle with 1/2 in. drive  
9/16 in. combination box and open end wrench  
Measuring tape  
Ratchet with 1/2 in. drive

**SUPPLIES:** Dry cleaning solvent (Rem 54, Appendix D)  
Corrosion preventive compound (Item 67, Appendix D)

**REFERENCES:** TM 9-2350-222-10  
LO 9-2350-222-12

**PRELIMINARY PROCEDURES:** Lower moldboard to ground (TM 9-2350-222-10)



**Go on to Sheet 2**

TA141105

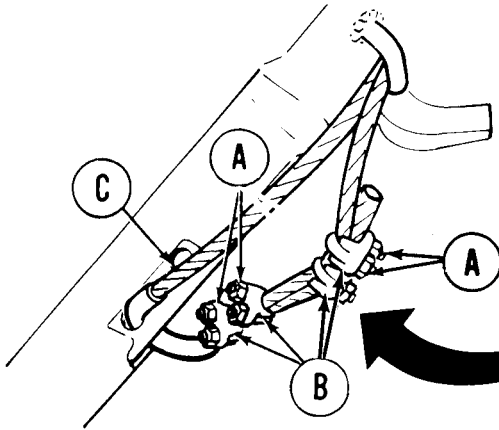
EMERGENCY LIFT CABLES REPLACEMENT (Sheet 2 of 3)

REMOVAL:

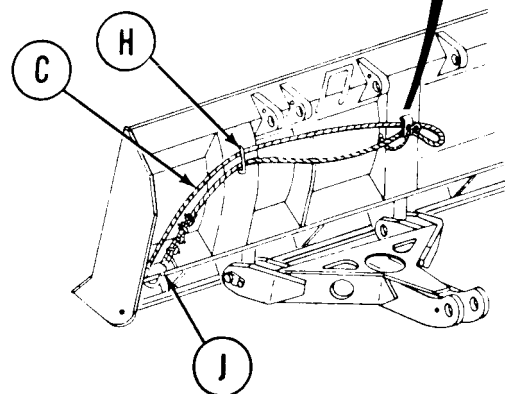
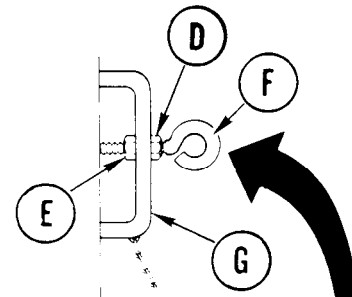
NOTE

Right and left cables are removed the same way.

1. Using socket, remove eight nuts (A) from four clamps (B).
2. Remove clamps (B) from cable (C).



3. Using wrench, loosen nut (D).
4. Using wrench, loosen nut (E) about five full turns.
5. Turn eyebolt (F) out of moldboard and remove clamp (G) from moldboard and cable (C).
6. Pull cable (C) through lifting handle (H) and out of hole in moldboard rib (J), and remove cable from moldboard.



Go on to Sheet 3

TA14110

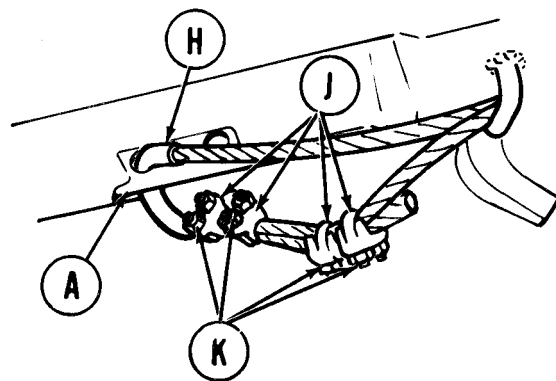
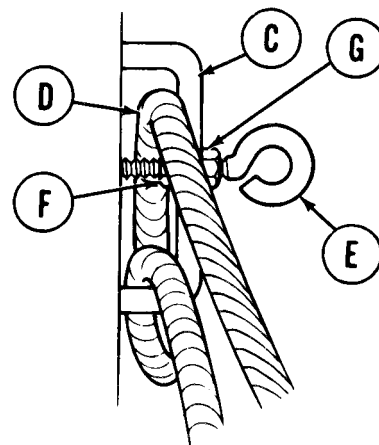
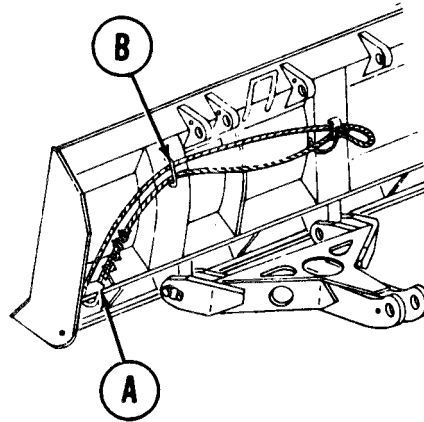
**EMERGENCY LIFT CABLES REPLACEMENT (Sheet 3 of 3)**

**CLEANING AND INSPECTION:**

1. Clean cable (LO 9-2350-222-12).
2. Inspect for defects in cable.
3. Replace defective cable.

**INSTALLATION:**

1. Put cable end through hole in moldboard rib (A) and lifting handle (B) as shown.
2. Position clamp (C) over cable (D) as shown.
3. Install clamp (C) with eyebolt (E) onto moldboard.
4. Using wrench, tighten nut (F) against clamp (C).
5. Using wrench, tighten nut (G) against clamp (C).
6. Position metal tube (H) in rib (A) as shown.
7. Using tape to measure, overlap ends of cable about 14-1/2 inches.
8. Install four clamps (J) onto cable. Position clamps about 2 inches apart. Install clamps as show.
9. Using socket, tighten eight nuts (K) on four clamps (J).



End of Task

TA141107

**MOLDBOARD CUTTING EDGE REPLACEMENT (Sheet 1 of 3)**

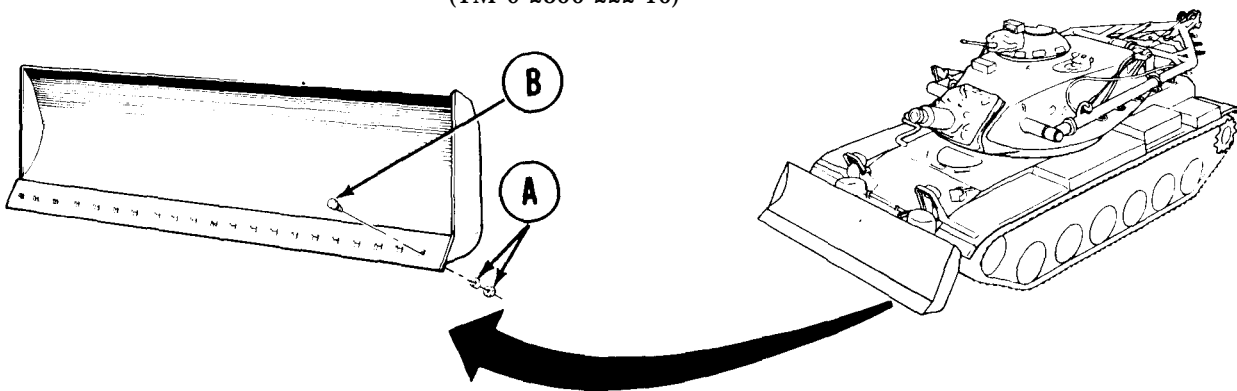
**TOOLS:** 1-1 /8 in. socket with 1 in. drive  
Hinged socket wrench handle with 1 in. drive (breaker bar)  
Ball peen hammer  
3/4 in. straight drive pin punch  
10 lb. sledge hammer  
Cold chisel

**SUPPLIES:** Wooden blocks (6 in. x 6 in. x 12 in.) (2 required)  
Lockwashers (MS35338-51) (24 required)

**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURES:** Raise and secure moldboard in stowed position  
(TM 9-2350-222-10)



**WARNING**

**Cutting edge is heavy and may cause injury if dropped.**

**REMOVAL:**

**NOTE**

**Support cutting edge by leaving bolt in each end and center until others have been removed.**

1. Using hammer and chisel, remove dirt from around nuts.
2. Using socket, remove 21 nuts and lockwashers (A). Throw lockwashers away.
3. Using hammer and punch, drive out 21 bolts (B).

Go on to Sheet 2

TA14110



## MOLDBOARD CUTTING EDGE REPLACEMENT (Sheet 2 of 3)

### NOTE

If nuts or bolts are damaged or rusted in place, it may be necessary to remove by cutting out with cutting torch. Use all other methods available to attempt removal before using torch.

- Using socket, remove three nuts and lockwashers (C). Throw lockwashers away.

### WARNING

Cutting edge may be loose on moldboard at this point. Use caution when removing last three bolts. Have all personnel stand clear of cutting edge.

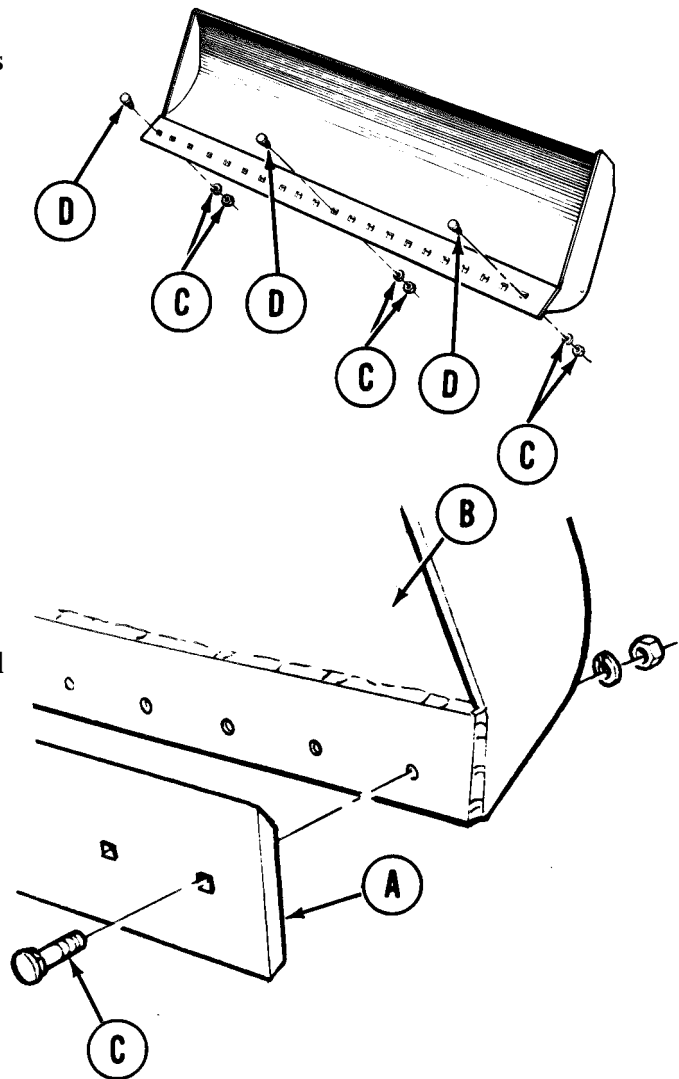
- Using hammer and punch, drive out three bolts (D). Remove center bolt first, then end bolts.
- Using sledge hammer, rap cutting edge sharply until it falls off. Make sure personnel stand clear.

### INSPECTION:

- Check for damaged cutting edge and damaged nuts and bolts.
- Replace damaged parts.

### INSTALLATION:

- Lower moldboard to about 6-8 inches from ground and block in position. Set blocks behind edge of moldboard.
- Lift cutting edge (A) onto moldboard (B). Position cutting edge (A) with beveled side onto moldboard (B).
- Install three bolts (C) into each end and center of cutting edge (A) and moldboard (B) as shown.
- By hand, install three nuts and new lockwashers (D) onto three bolts (C).

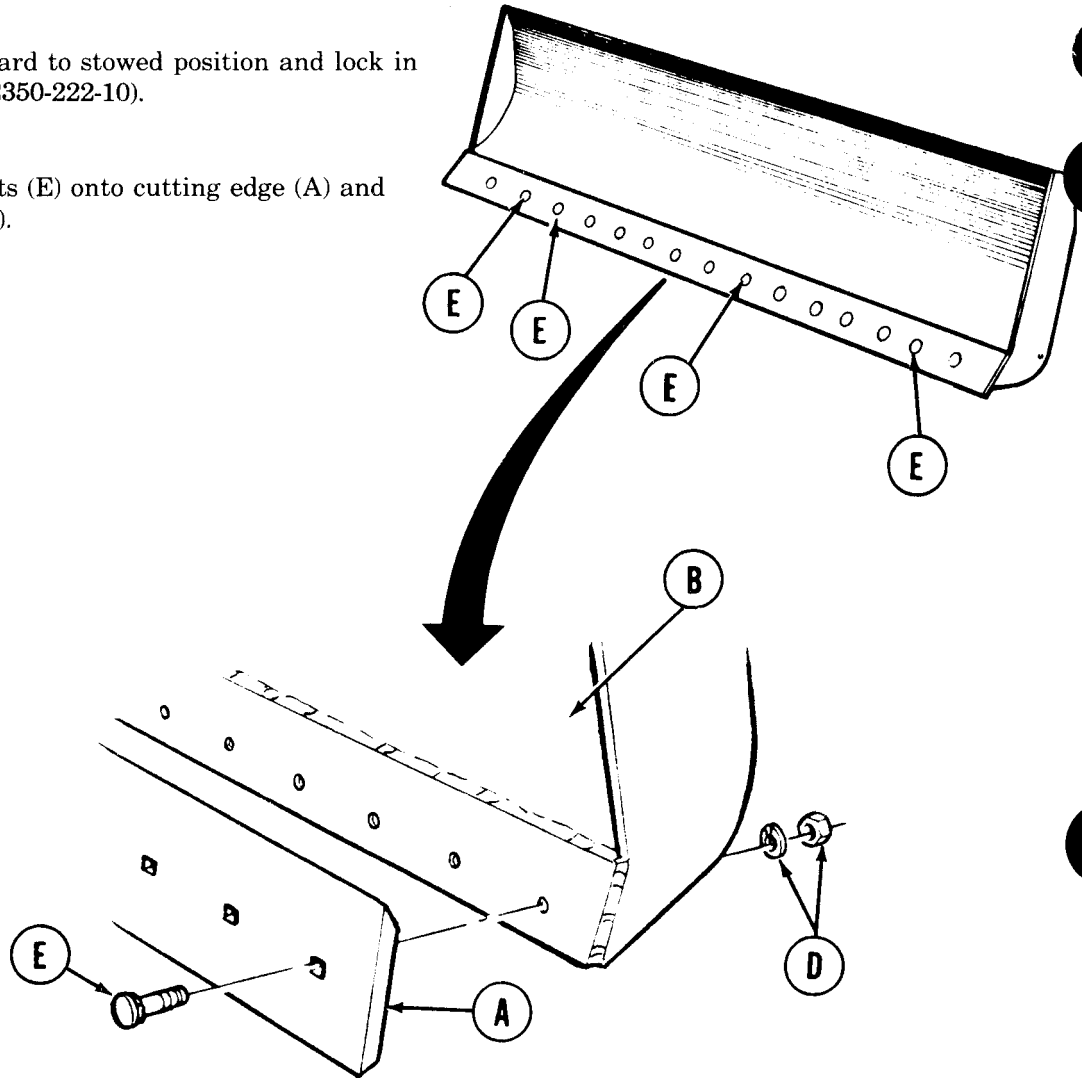


Go on to Sheet 3

TA141109

**MOLDBOARD CUTTING EDGE REPLACEMENT (Sheet 3 of 3)**

5. Raise moldboard to stowed position and lock in place (TM 9-2350-222-10).
6. Install 21 bolts (E) onto cutting edge (A) and moldboard (B).



7. Using socket, install 21 new lockwashers and nuts (D) onto bolts (E) and tighten all nuts (D).

End of Task

TA14111

**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 1 of 11)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	18-10
<b>Installation</b>	18-14

**TOOLS:** Crowbar  
 15/16 in. socket with 3/4 in. drive  
 1-1/2 in. socket with 3/4 in. drive  
 1-1/2 in. socket with 3/4 in. drive  
 Hinged socket wrench handle (breaker bar) with 3/4 in. drive  
 12 ton jack  
 1 in. dia. brass punch  
 10 lb. sledge hammer  
 Handle extension (cheater bar)  
 Ratchet with 3/4 in. drive  
 15/16 in. combination box and open end wrench

**SUPPLIES:** Lockwashers (MS35338-53) (4 required)  
 Lockwashers (MS35335-39) (14 required)

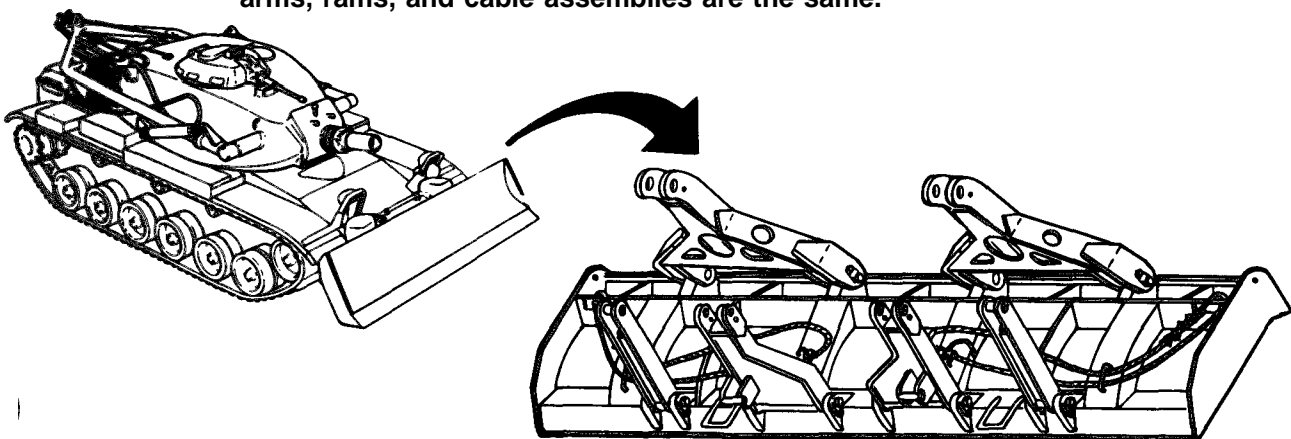
**PERSONNEL:** Three

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURES:** Park vehicle on level ground and set parking brake  
 (TM 9-2350-222-10)  
 Remove moldboard cutting edge (page 18-6)

**NOTE**

Replacement procedures for both right and left pushbeams, arms, rams, and cable assemblies are the same.



Go on to Sheet 2

TA141111

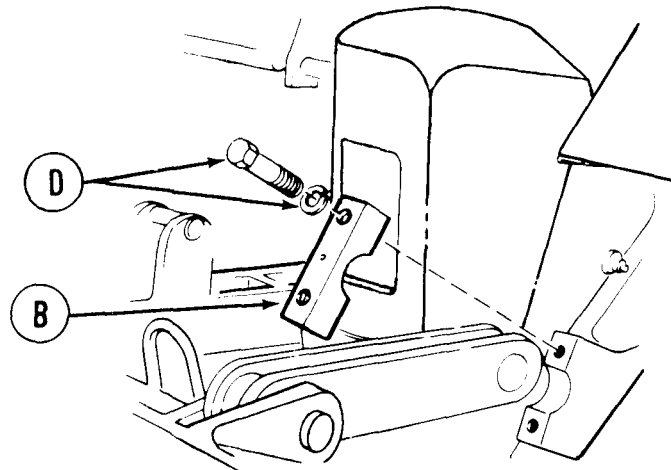
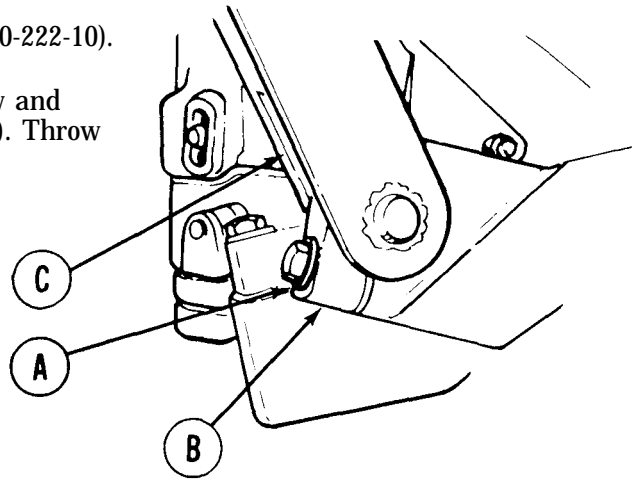
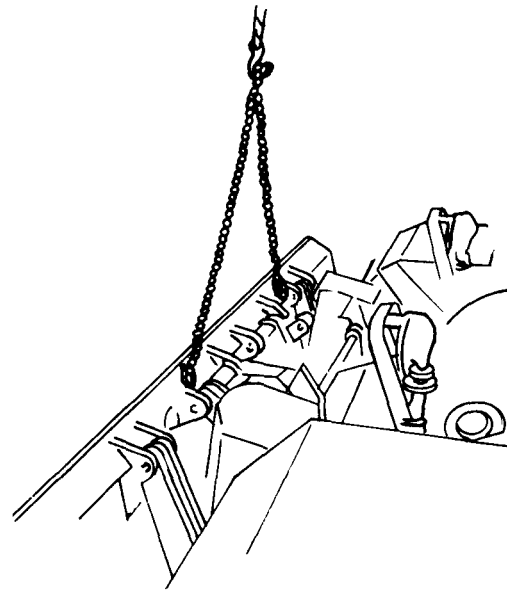
BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 2 of 11)

REMOVAL:

NOTE

If hydraulic system is not operating, place selector control valve in 'FLOAT' position.

1. Attach hoisting device to lifting eyes on top edge of moldboard (TM 9-2350-222-10).
2. Raise moldboard to stowed position and lock (TM 9-2350-222-10).
3. Using 1-1/2 inch socket, remove screw and lockwasher (A) from retaining cap (B) on outer tilt arms (C). Throw lockwasher away.
4. Lower moldboard to ground (TM 9-2350-222-10).
5. Using 1-1/2 inch socket, remove screw and lockwasher (D) from retaining cap (B). Throw lockwasher away.
6. Remove retaining cap (B).



Go on to Sheet 3

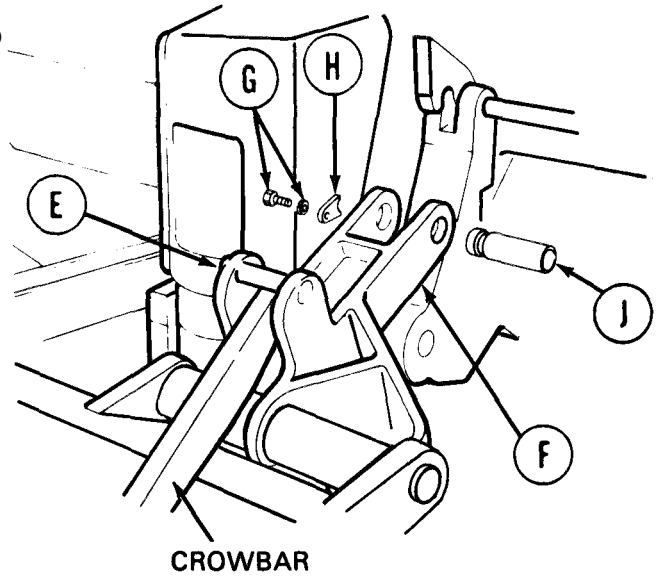
TA14111

**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 3 of 11)**

7. locking bracket (E) as shown and use as lever to support weight of inner tilt arms (F).
8. Using 15/16 inch socket, remove screw and lockwasher (G) and take off lock (H). Throw lockwasher away.

**NOTE**

**It may be necessary to use sledge hammer and punch to remove pins.**



9. Remove pin (J).
10. Release leverage on crowbar and lower tilt arms (F) to rest on rear of moldboard.
11. Tilt moldboard face toward ground and lower to maximum tilt position. Moldboard face will not be fully on ground.
12. Using 15/16 inch socket and 15/16 inch wrench, remove screw and lockwasher (K) and take off lock (L). Throw lockwasher away.

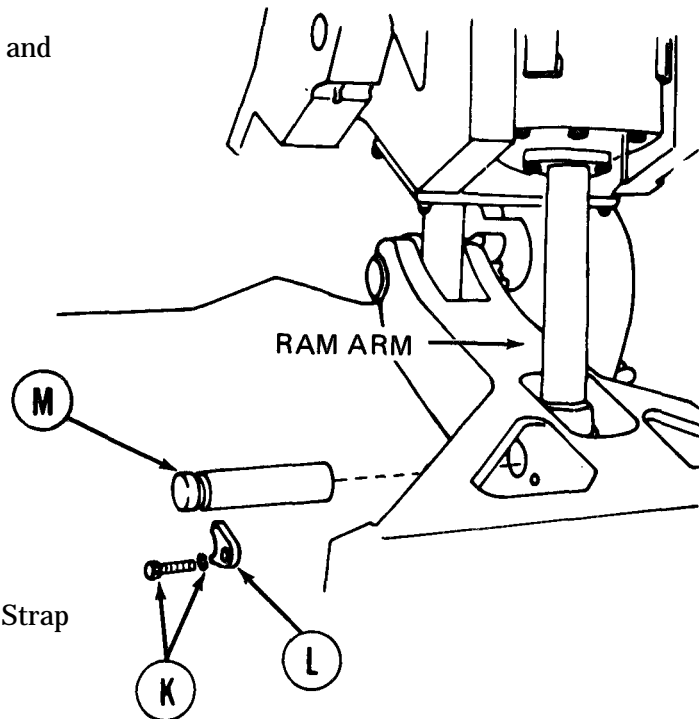
**NOTE**

**Apply lift with hoist as necessary to remove pins.**

13. Remove ram arm pivot pins (M).

**NOTE**

**If hydraulic system is not operating, use jack to raise ram arms.**



14. Raise ram arms to clear pushbeam wells. Strap or tie ram arms in raised position.

**Go on to Sheet 4**

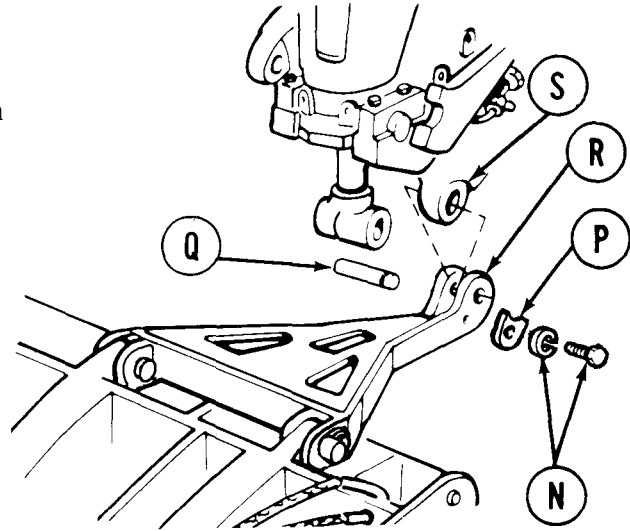
TA141113

**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 4 of 11)**

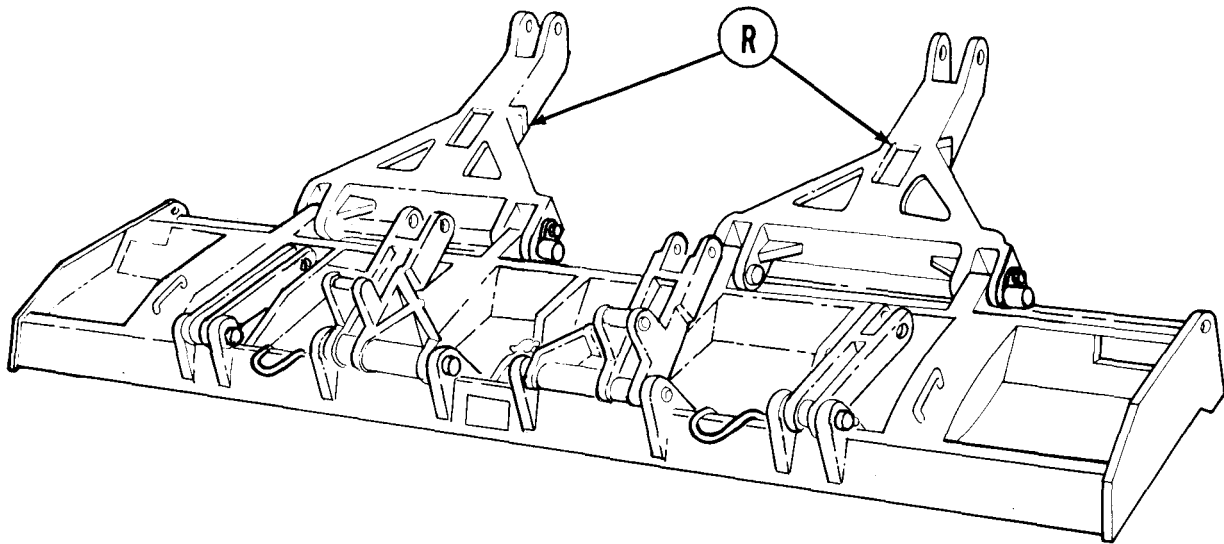
15. Using 15/16 inch wrench, remove screw and lockwasher (N) and take off lock (P). Throw lockwasher away.
16. Remove pin (Q) and lower pushbeams (R) from brackets (S).
17. Lower moldboard face fully onto ground.

**NOTE**

**If vehicle is not operating, move moldboard away from vehicle.**



18. Disconnect hoisting device.
19. Back vehicle away from moldboard (TM 9-2350-222-10). (See NOTE above).



Go on to Sheet 5

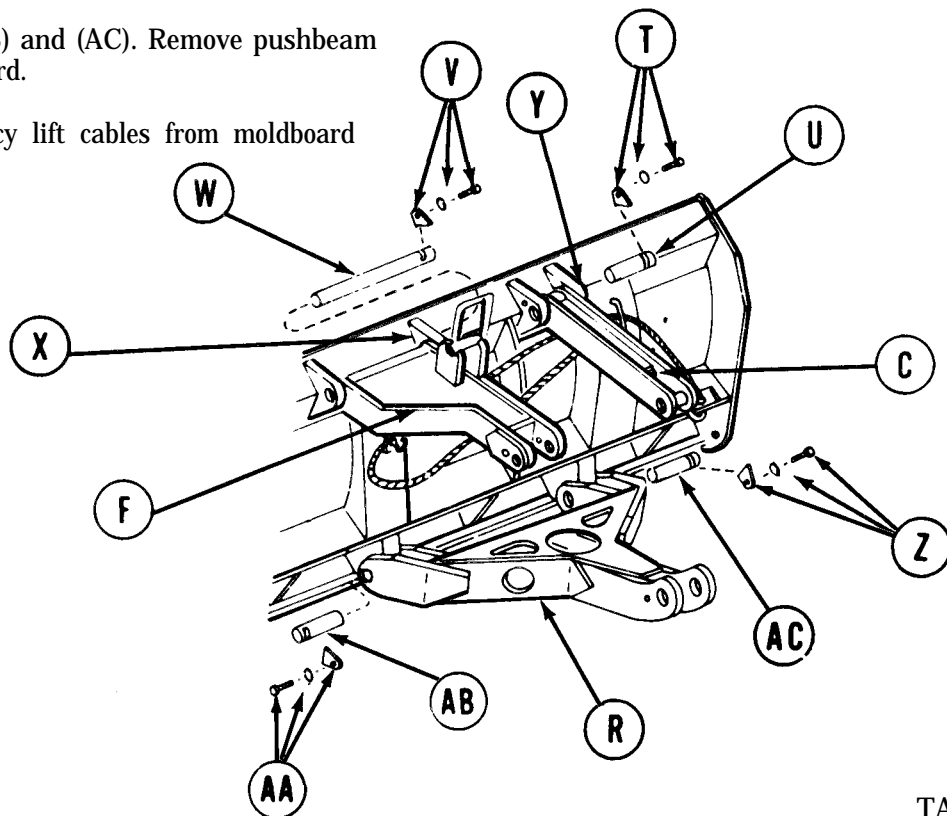
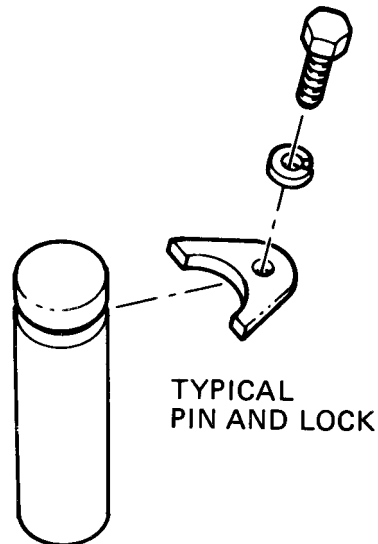
TA141114

**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 5 of 11)**

**NOTE**

**Outer tilt arms must be removed before inner tilt arm pin can be taken off.**

20. Using 15/16 inch socket, remove screw, lockwasher, and lock (T). Throw lockwasher away.
21. Remove pin (U) and remove outer tilt arm (C) from moldboard.
22. Using 15/16 inch socket, remove screw, lockwasher, and lock (V). Throw lockwasher away.
23. Slide pin (W) out of brackets (X), through brackets (Y), and off moldboard. Remove inner tilt arm (F) from moldboard.
24. Using 15/16 inch socket, remove screws, lockwashers, and locks (Z) and (AA). Throw lockwashers away.
25. Remove pins (AB) and (AC). Remove pushbeam (R) from moldboard.
26. Remove emergency lift cables from moldboard (page 18-4).



Go on to Sheet 6

TA141115

**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 6 of 11)**

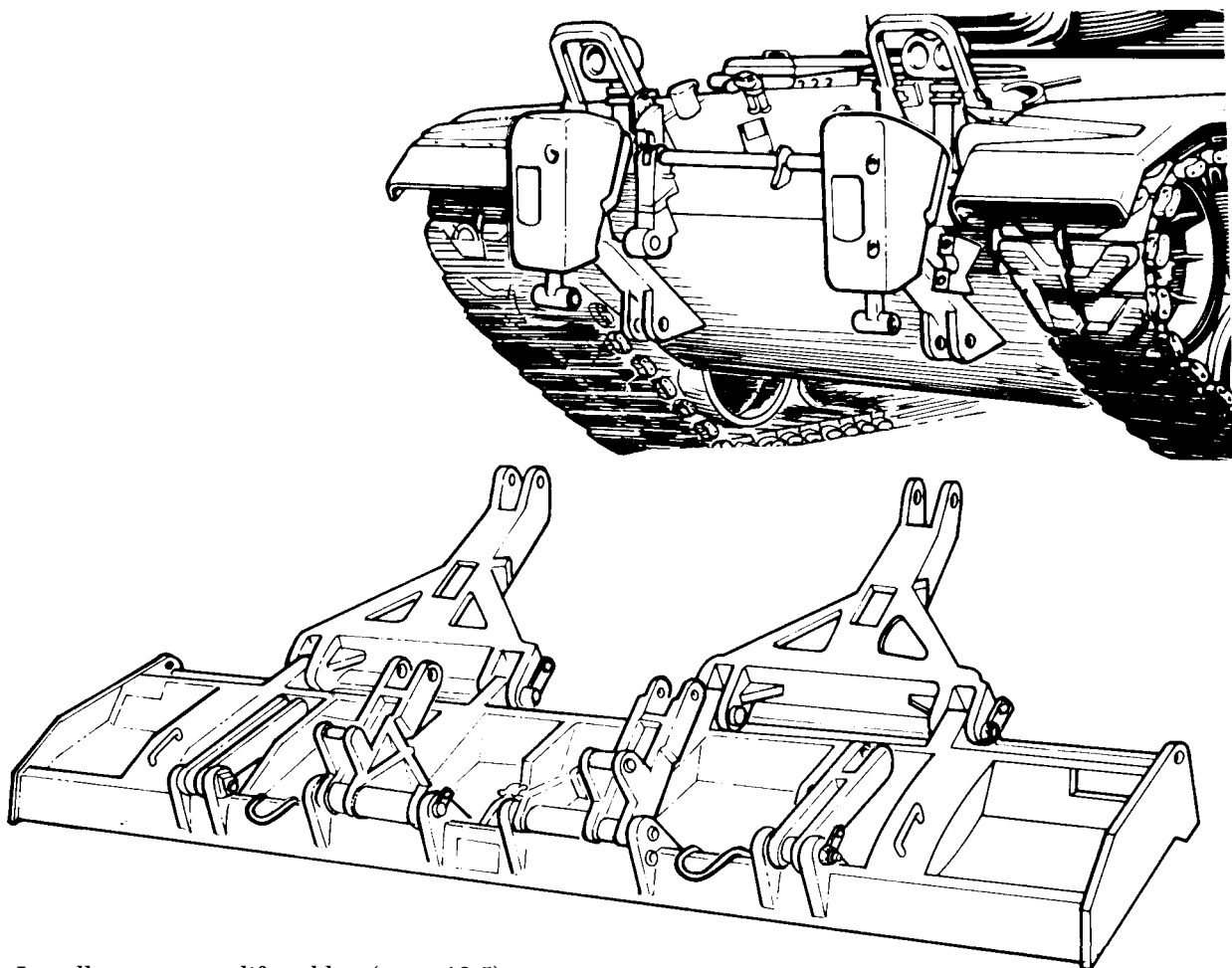
**INSPECTION:**

1. Check for defective parts.
2. Replace defective parts.

**INSTALLATION:**

**NOTE**

**Position moldboard face down in front of vehicle on level ground. Line up moldboard with vehicle.**



1. Install emergency lift cables (page 18-5).

Go on to Sheet 7

TA14111



**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 7 of 11)**

**NOTE**

Installation of screws, new lockwashers, locks, and pins is shown. Make sure pins are installed so locks can be inserted into slot.

**NOTE**

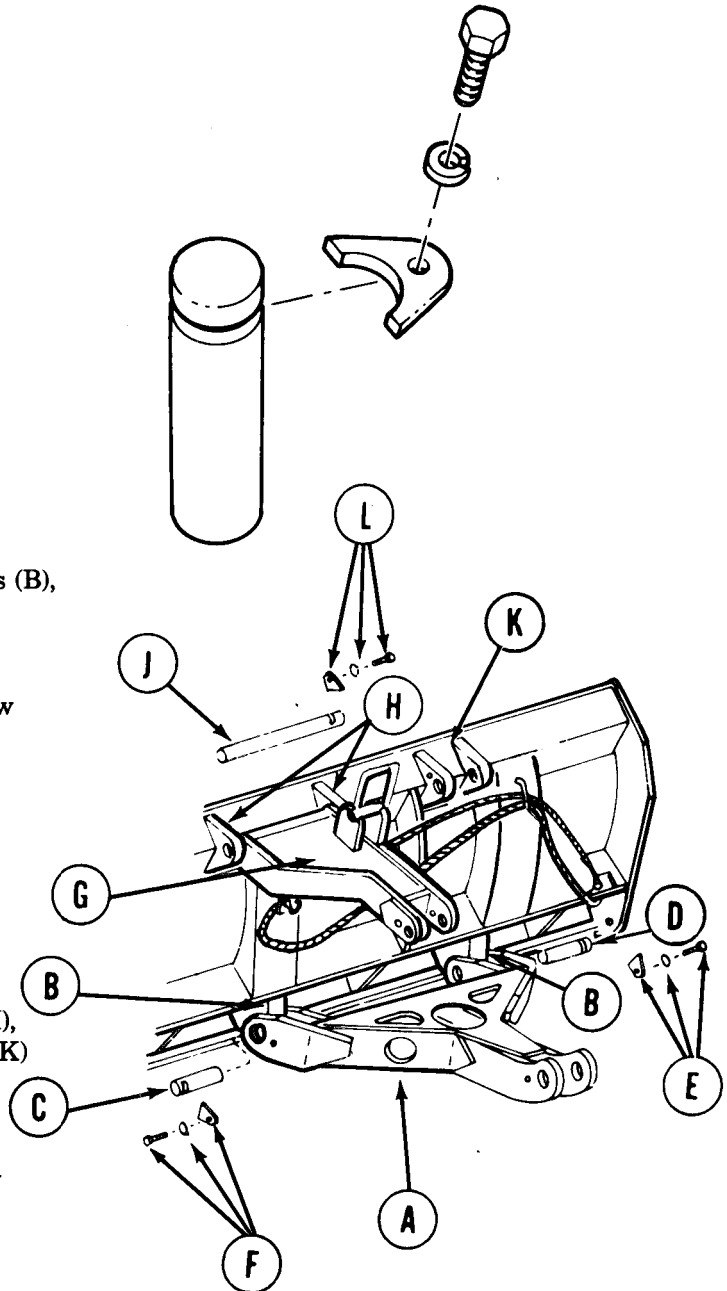
It may be necessary to drive pins into arms and rams with sledge hammer and punch.

2. Lifting front of pushbeam (A) onto brackets (B), install pins (C) and (D).
3. Using 15/16 inch socket, install screws, new lockwashers, and locks (E) and (F).

**NOTE**

Inner tilt arms must be installed before outer tilt arms.

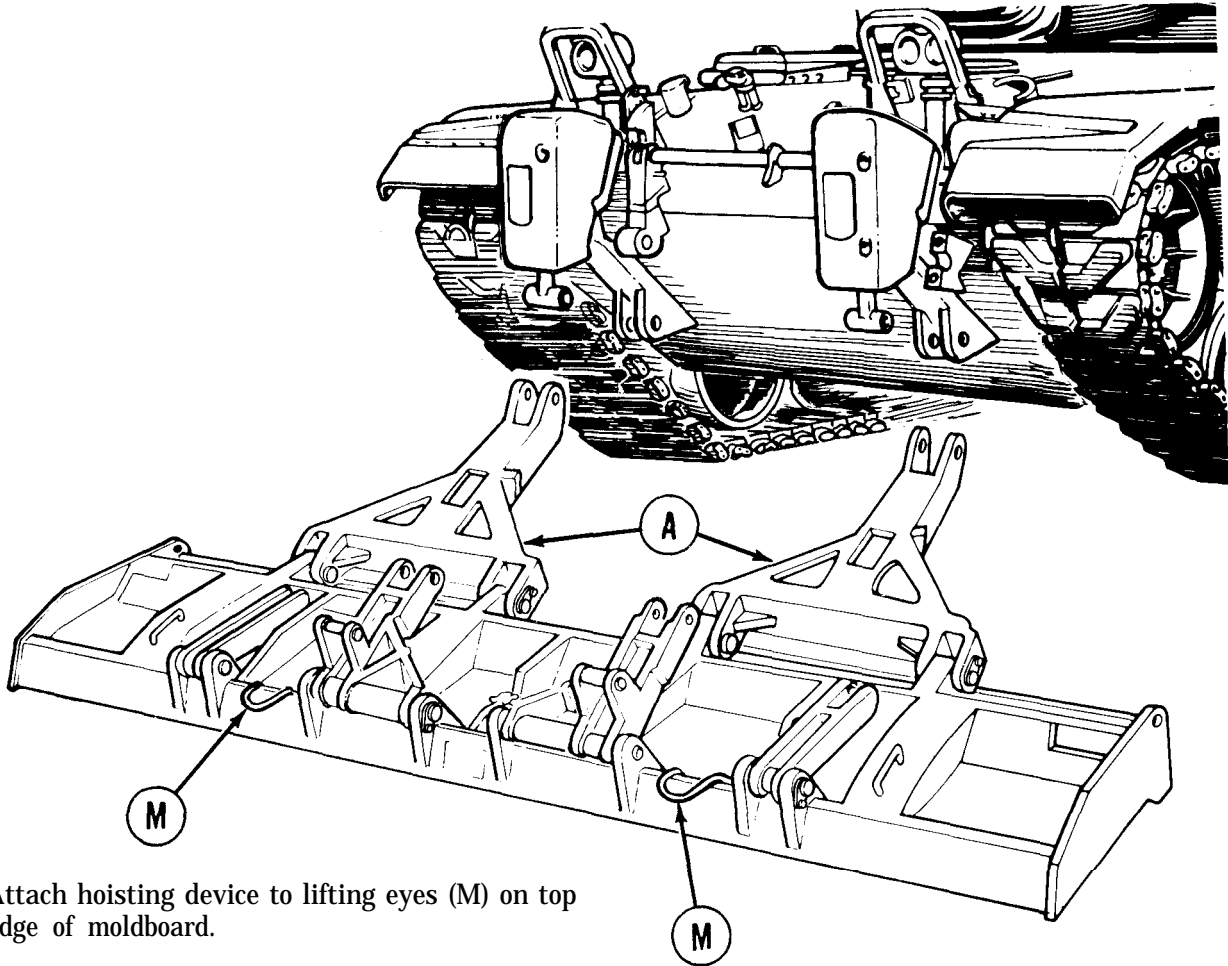
4. Lifting inner tilt arms (G) onto brackets (H), install pins (J) by sliding through bracket (K) into bracket (H).
5. Using 15/16 inch socket, install screw, new lockwasher, and lock (L).



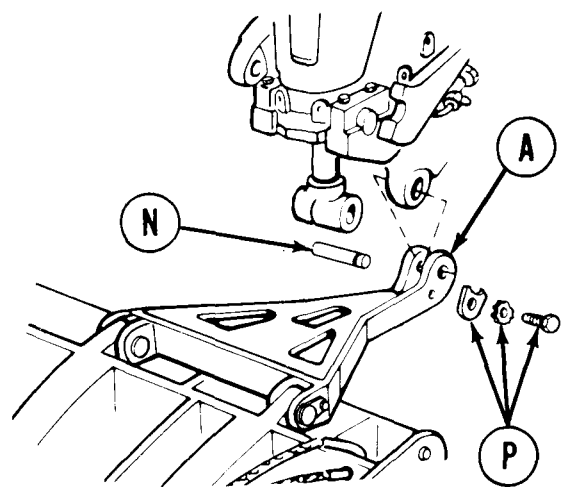
Go on to Sheet 8

TA141117

BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 8 of 11)



6. Attach hoisting device to lifting eyes (M) on top edge of moldboard.
7. Extend pushbeams (A) toward vehicle.
8. Using hoisting device, lift moldboard until ends of pushbeams (A) are at same height from ground as mounting brackets on hull.
9. Lifting moldboard, slowly move moldboard toward vehicle. Using personnel, move moldboard from side to side until pushbeams (A) are set onto brackets.
10. Install pin (N) into pushbeam (A) and bracket. Apply lift and side to side movement as necessary.
11. Using 15/16 inch socket, install lock, new lockwasher, and screw (P).



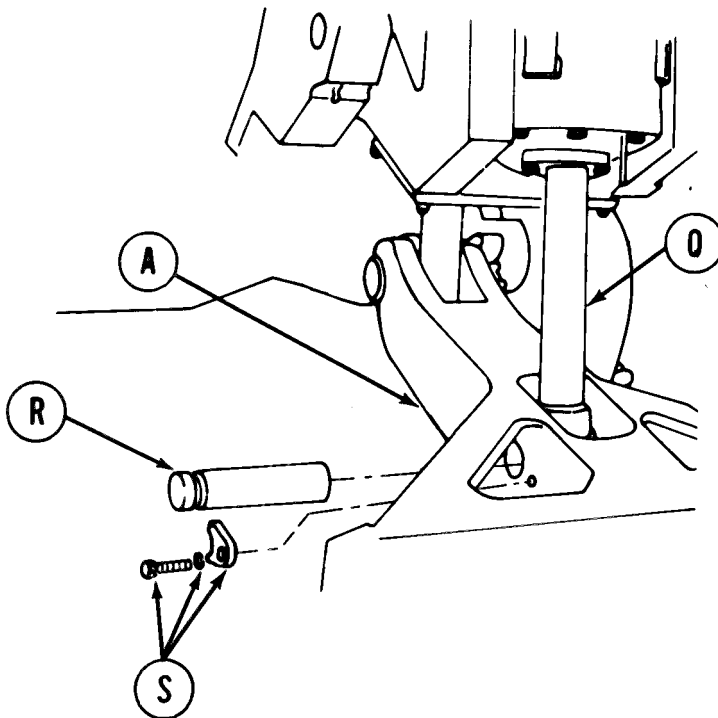
Go on to Sheet 9

TA14111

**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 9 of 11)****NOTE**

If hydraulic system is not operating, lift moldboard until ram arms are alined with pushbeams. After installing pins, lower moldboard to ground.

12. Unfasten bands or straps on ram arms (Q) and lower ram arms (TM 9-2350-222-10).
13. Aline ram arms (Q) with pushbeam (A) and install pivot pin (R) into pushbeam (A) and ram arm (Q).
14. Using 15/16 inch socket and 15/16 inch wrench, install screw, new lockwasher, and lock (S) into pushbeam (A) and pin (R).

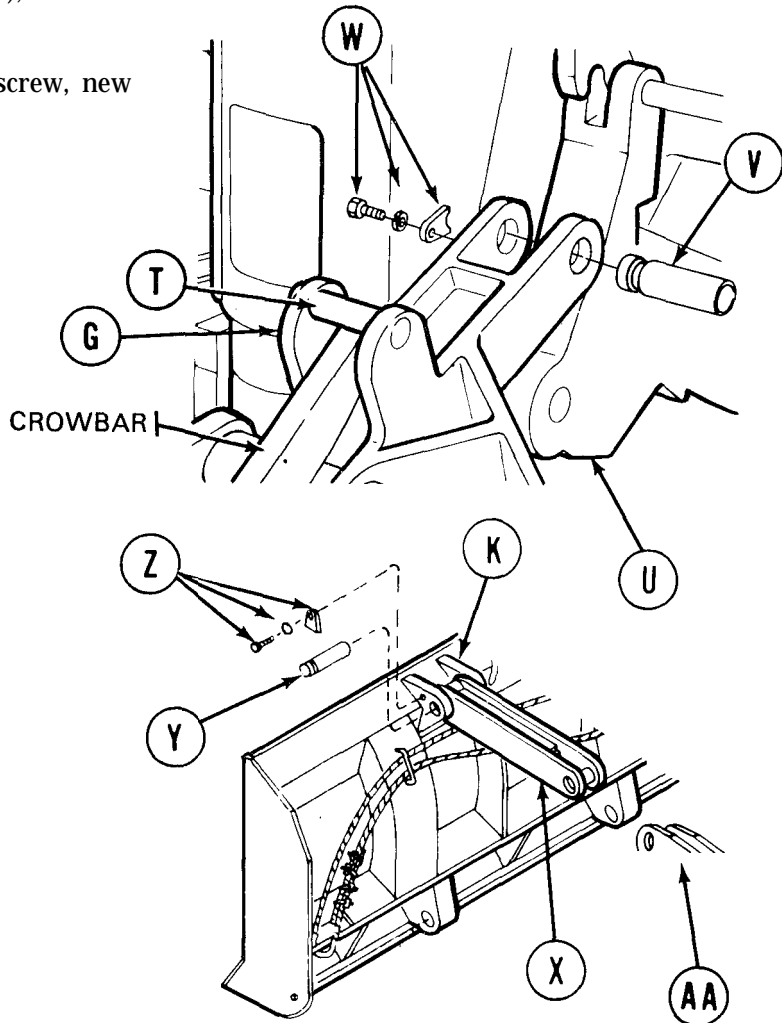
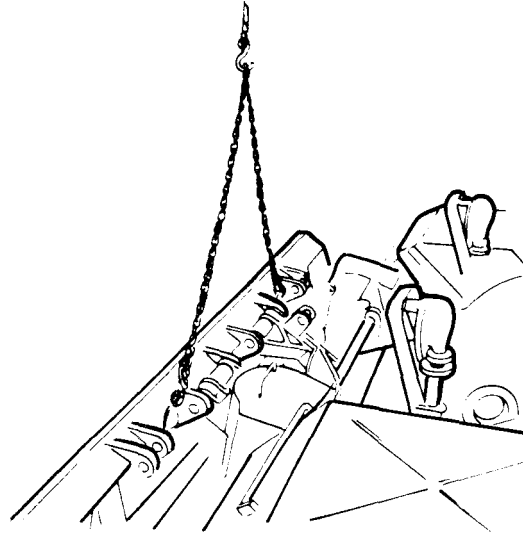


Go on to Sheet 10

TA141119

**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 10 of 11)**

15. Raise moldboard into vertical position using hoisting device.
16. Insert crowbar from front of moldboard into locking bracket (T) as shown.
17. Using crowbar, lift inner tilt arm (G) onto mounting bracket (U).
18. Install pin (V) into tilt arm (G) and bracket (U).
19. Using 15/ 16 inch socket, install lock, new lockwasher, and screw (W) onto tilt arm (G) and pin (V).
20. Position outer tilt arms (X) onto mounting bracket (AA), then onto bracket (K), and install pin (Y).
21. Using 15/16 inch socket, install screw, new lockwasher, and lock (Z).

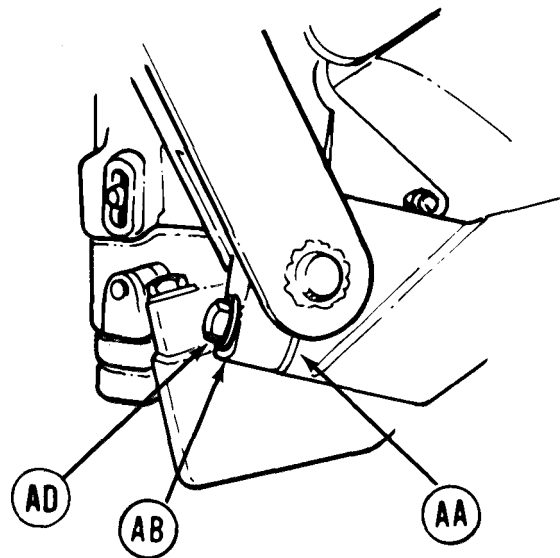
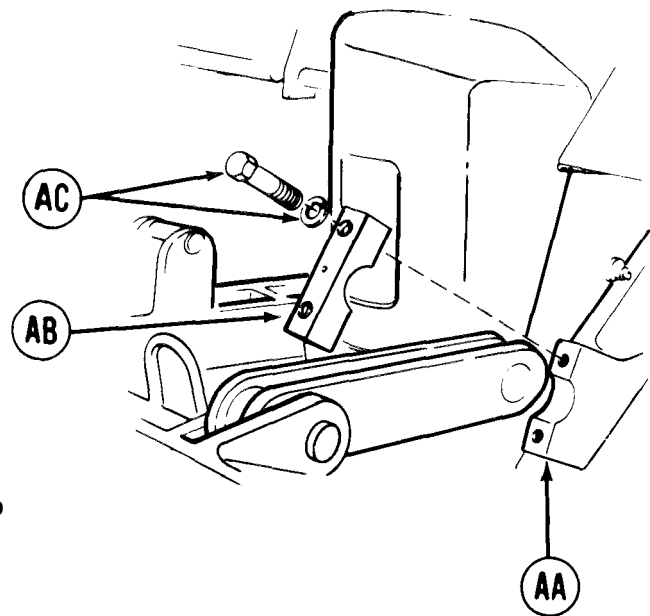


Go on to Sheet 11

TA141120

**BULLDOZER BLADE ASSEMBLY REPLACEMENT (Sheet 11 of 11)**

22. Install retaining cap (AB) over tilt arm pivot and onto bracket (AA).
23. Manually, install screw and new lockwasher (AC) into retaining cap (AB) and bracket (AA).
24. Using hoisting device, raise moldboard into stowed position and lock (TM 9-2350-222-10).
25. Using 1-1/2 inch socket, install screw and new lockwasher (AD) into retaining cap (AB) and bracket (AA).
26. Remove hoisting device from moldboard (TM 9-2350-222-10).
27. Lower moldboard to ground (TM 9-2350-222-10).
28. Using 1-1/2 inch socket, tighten screw (AC) into retaining cap (AB) and bracket (AA).



End of Task

TA141121

MOLDBOARD LOCKING HOOKS AND SHAFT REPLACEMENT (Sheet 1 of 6)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	18-21
Inspection	18-23
Installation	18-24

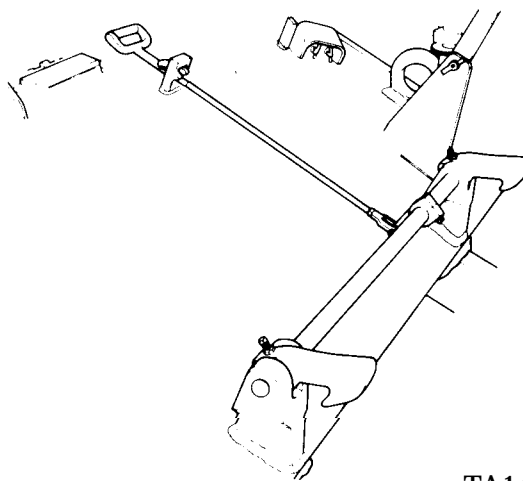
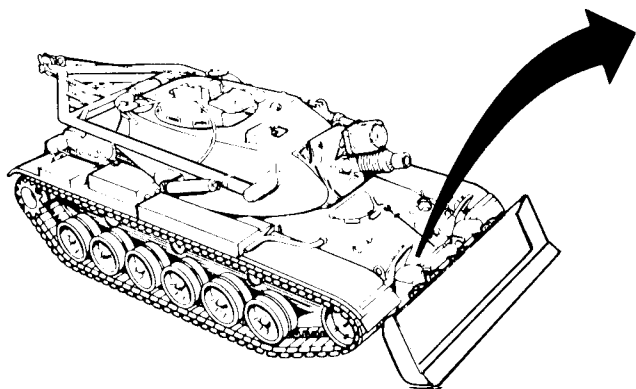
TOOLS: 12 in. adjustable wrench  
 1/2 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench  
 Diagonal cutting pliers  
 Sledge hammer  
 Brass drift, 1 in. dia., 10 in. lg.  
 1/8 in. drive punch

SUPPLIES: Cotter pin (MS24665-353)  
 Sandpaper (Item 51, Appendix D)  
 Paper  
 Pencil  
 Lockwasher (MS35338-48)

REFERENCE: TM 9-2350-222-10

PERSONNEL: Two

PRELIMINARY PROCEDURES: Lower moldboard to ground (TM 9-2350-222-10)  
 Remove guards from right and left hydraulic ram cylinders (page 18-26)  
 Remove left front fender support assembly (page 16-65)



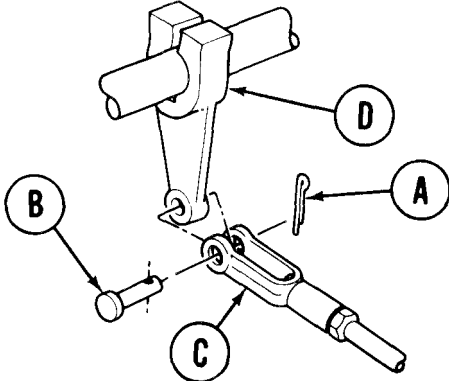
Go on to Sheet 2

TA141122

MOLDBOARD LOCKING HOOKS AND SHAFT REPLACEMENT (Sheet 2 of 6)

REMOVAL:

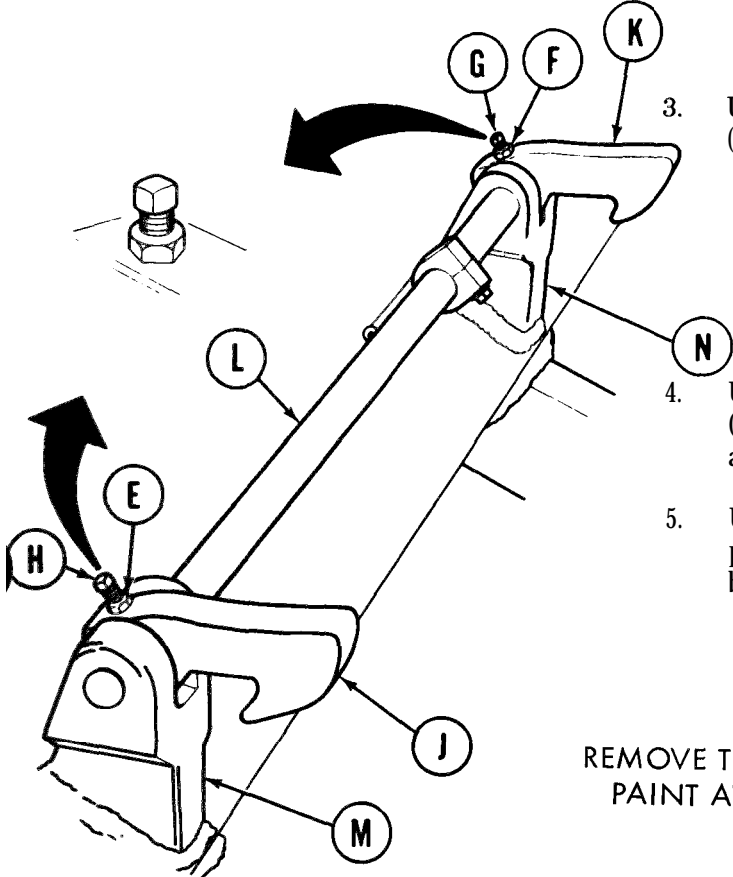
- 1. Using pliers, remove cotter pin (A) from pin (B). Throw cotter pin away.
- 2. Remove pin (B) from clevis (C) and arm (D).



3. Using 3/4 inch wrench, loosen nuts (E) and (F).

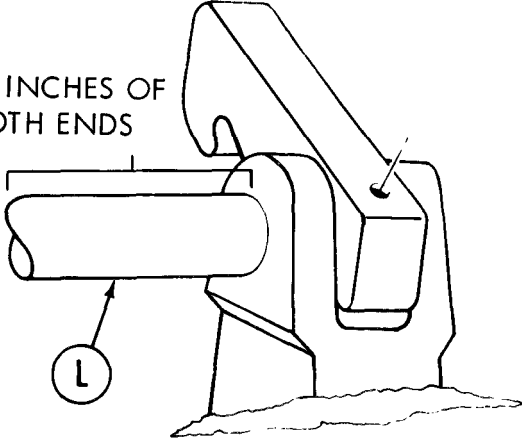
NOTE

It may be necessary to use adjustable wrench to remove bolts (G) and (H).



- 4. Using 1/2 inch wrench, remove bolts (G) and (H) from hooks (J) and (K). Remove nuts (E) and (F) from bolts (G) and (H).
- 5. Using sandpaper, remove about two inches of paint from shaft (L) next to mounting brackets (M) and (N).

REMOVE TWO INCHES OF PAINT AT BOTH ENDS



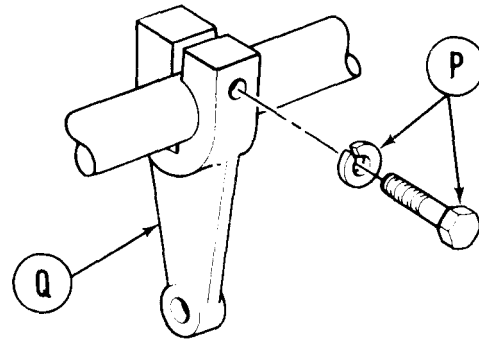
- 6. While one person holds brass drift, other person using hammer, drive shaft (L) out of mounting bracket (N).
- 7. Remove hook (K) from bracket (N).

Go on to Sheet 3

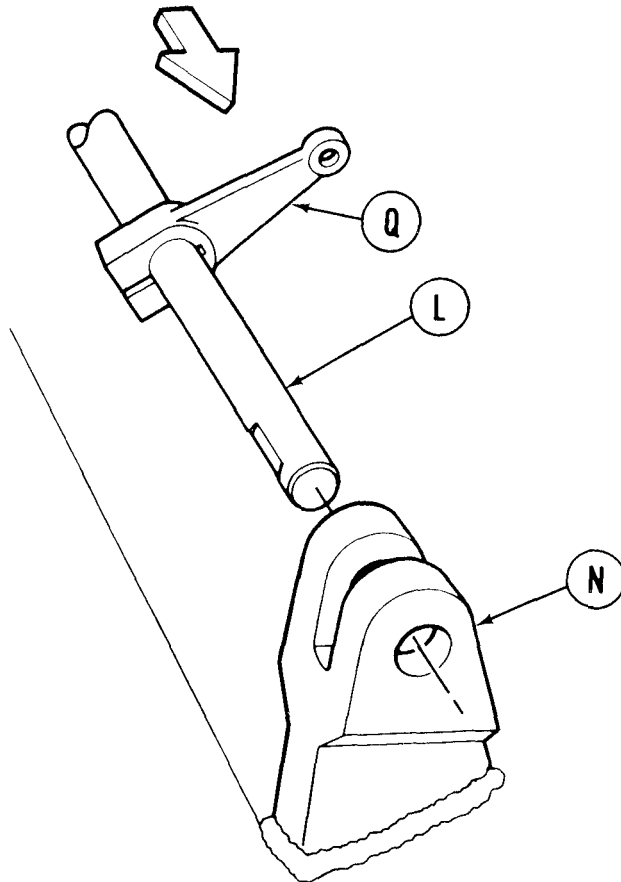
TA141123

MOLDBOARD LOCKING HOOKS AND SHAFT REPLACEMENT (Sheet 3 of 6)

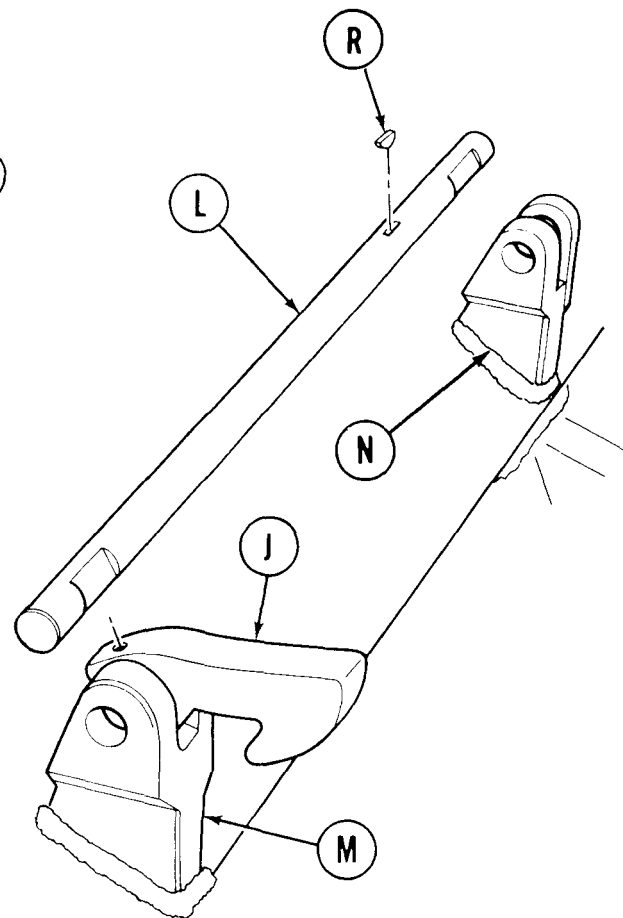
8. Using 3/4 inch wrench, remove screw and lockwasher (P) from arm (Q). Throw lockwasher away.
9. Using hammer, remove arm (Q) from shaft (L) by driving arm (Q) towards bracket (N).



10. Using punch and hammer, remove woodruff key (R) from shaft (L).



11. While one person holds brass drift, other person using hammer, drive shaft (L) out of bracket (M) and remove hook (J).
12. Slide shaft (L) out of bracket (N) and remove from vehicle.



Go on to Sheet 4

TA141124



## MOLDBOARD LOCKING HOOKS AND SHAFT REPLACEMENT (Sheet 4 of 6)

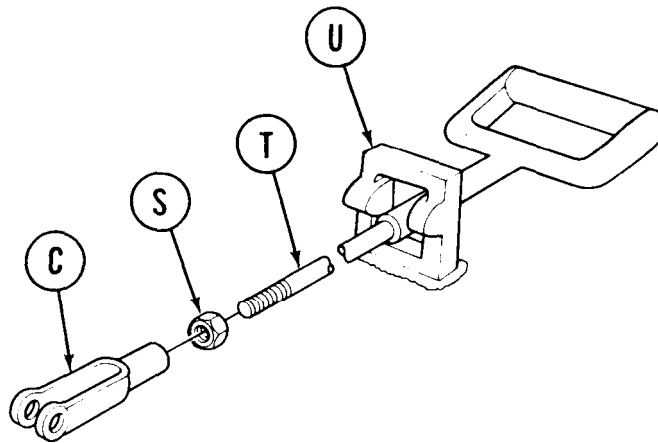
## NOTE

Count and write down the number of turns required to remove clevis (C).

13. Using 3/4 inch wrench on nut (S) and using adjustable wrench on clevis (C), loosen nut (S) and remove clevis (C) from handle (T).
14. Using 3/4 inch wrench on nut (S), remove nut (S) from handle (T).
15. Remove handle from bracket (U).

## INSPECTION:

1. Check for damaged or defective parts.
2. Replace damaged or defective parts.



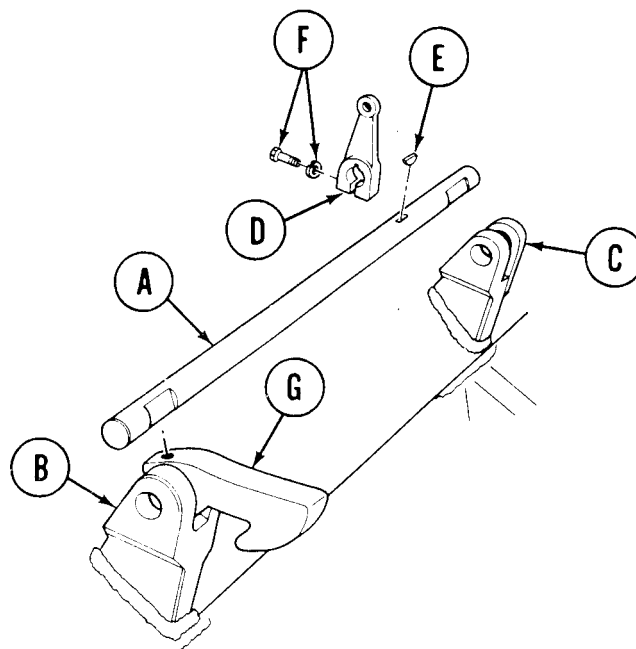
Go on to Sheet 5

TA141125

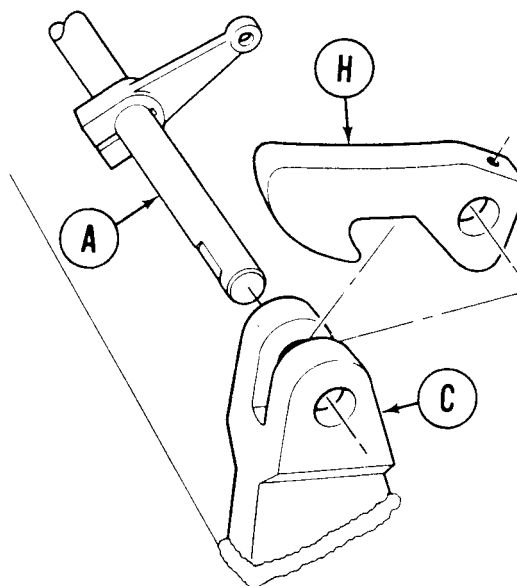
**MOLDBOARD LOCKING HOOKS AND SHAFT REPLACEMENT (Sheet 5 of 6)**

**INSTALLATION:**

1. Install shaft (A) into brackets (B) and (C). Push shaft through bracket (C) while leaving in bracket (B).
2. Using hammer, install arm (D) onto shaft (A) up to groove in shaft (A).
3. Install woodruff key (E) into groove in shaft (A).
4. Install arm (D) over woodruff key (E).
5. Install screw and new lockwasher (F) onto arm (D).
6. Using 3/4 inch wrench, tighten screw (F).
7. Using hammer and brass drift, drive shaft (A) out of bracket (B) into bracket (C).
8. Place hook (G) into bracket (B) as shown and push shaft (A) through bracket (B) and hook (G). Make sure flat end of shaft (A) is in top position.



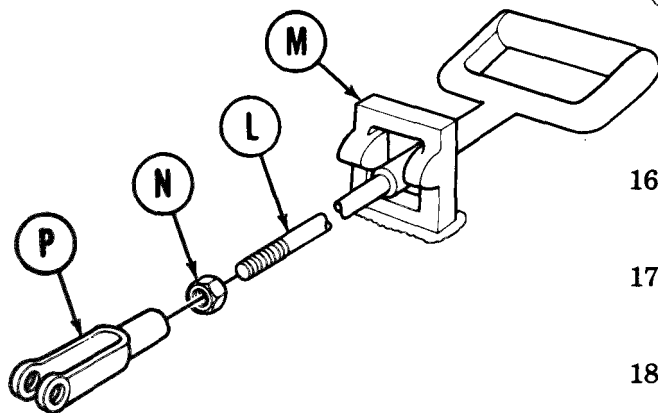
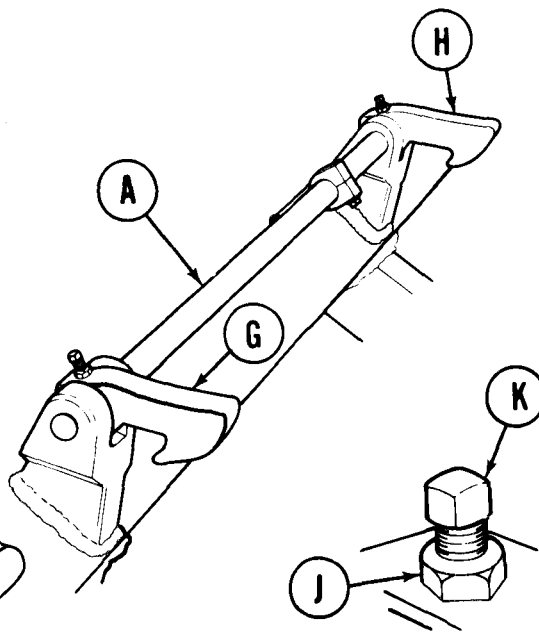
9. Using hammer and brass drift, drive shaft (A) out of bracket (C).
10. Install hook (H) into bracket (C) as shown.
11. Using hammer on brass drift, drive shaft (A) back into bracket (C) and through hook (H). Make sure flat end of shaft is in up position.



Go on to Sheet 6

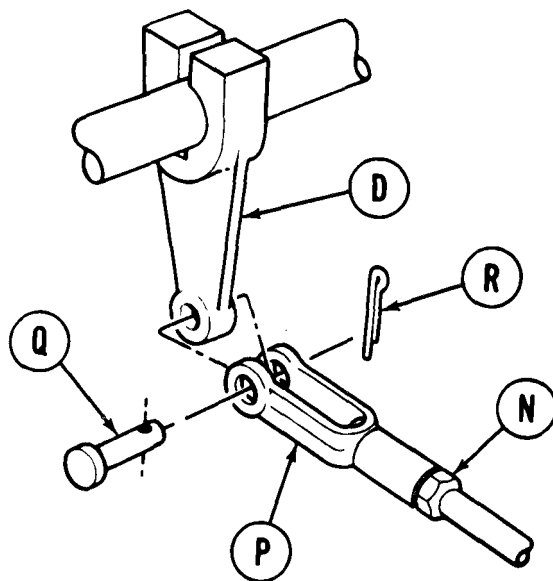
## MOLDBOARD LOCKING HOOKS AND SHAFT REPLACEMENT (Sheet 6 of 6)

12. Install nut (J) onto bolt (K).
13. Install bolt (K) and nut (J) into holes on hooks (G) and (H) as shown.
14. Using 1/2 inch wrench, tighten bolt (K) into hooks (G) and (H). Using 3/4 inch wrench, back off nut (J) as much as needed to make sure bolt (K) is tight on shaft (A).
15. Using 3/4 inch wrench, tighten nut (J).



16. Install handle (L) through bracket (M) in 'locked' position as shown (bottom slot).
17. Using 3/4 inch wrench, install nut (N) onto handle (L).
18. Start clevis (P) onto handle (L) by hand.
19. Using adjustable wrench, turn clevis (P) onto handle (L) until the number of turns that were recorded during removal is obtained.

20. Install clevis (P) onto arm (D) with pin (Q).
21. Install new cotter pin (R) into pin (Q) and using pliers, bend ends of cotter pin over onto pin (Q).
22. Using 3/4 inch wrench on nut (N), tighten nut (N) onto clevis (P).
23. Install guards on hydraulic ram cylinders (page 18-30).
24. Install left front fender support assembly (page 16-69).



End of Task

TA141127

LINEAR ACTUATING (RAM) CYLINDER AND GUARDS REPLACEMENT (Sheet 1 of 8)

PROCEDURE INDEX

PROCEDURE	
Removal	18-26
Cleaning and Inspection	18-29
Installation	18-30

TOOLS: 3/4 in. socket with 1/2 in. drive  
 15/16 in. socket with 1/2 in. drive  
 1-1/2 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 10 in. extension with 1/2 in. drive  
 10 in. adjustable wrench  
 10 in. pipe wrench  
 11/ 16 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench  
 1-1/4 in. combination box and open end wrench  
 1-3/8 in. combination box and open end wrench  
 Lifting device (200 pound capacity)  
 Lifting sling

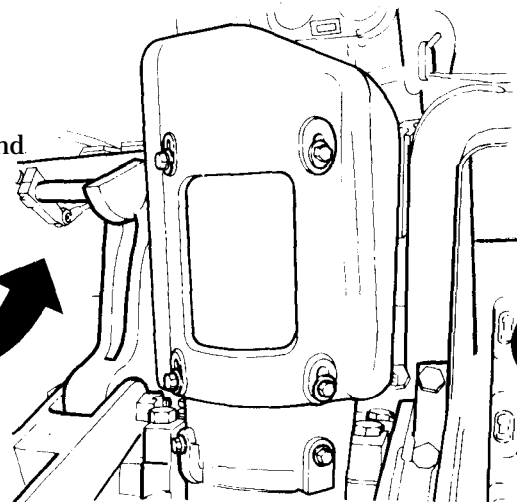
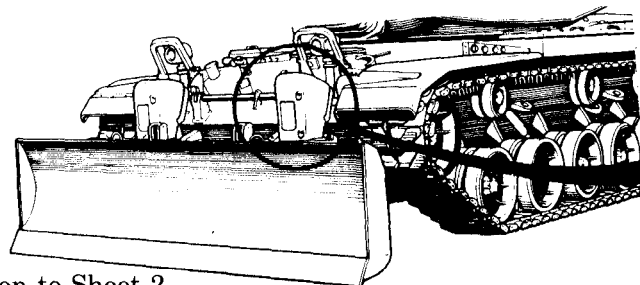
SUPPLIES: Container to catch fluid  
 Plastic pipe plugs  
 Plastic caps  
 Sealing tape (Item 68, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)

Preformed packing (MS28778-12)  
 Lockwasher (MS35335-39)  
 Lockwasher (MS35338-48) (8 required)  
 Lockwasher (MS35338-53) (4 required)  
 Lockwasher (MS35340-48) (4 required)  
 Lockwasher (MS35340-50) (2 required)

PERSONNEL: Two

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Lower moldboard to ground (TM 9-2350-222-10)



Go on to Sheet 2

TA253655

**LINEAR ACTUATING (RAM) CYLINDER AND GUARDS REPLACEMENT (Sheet 2 of 8)**

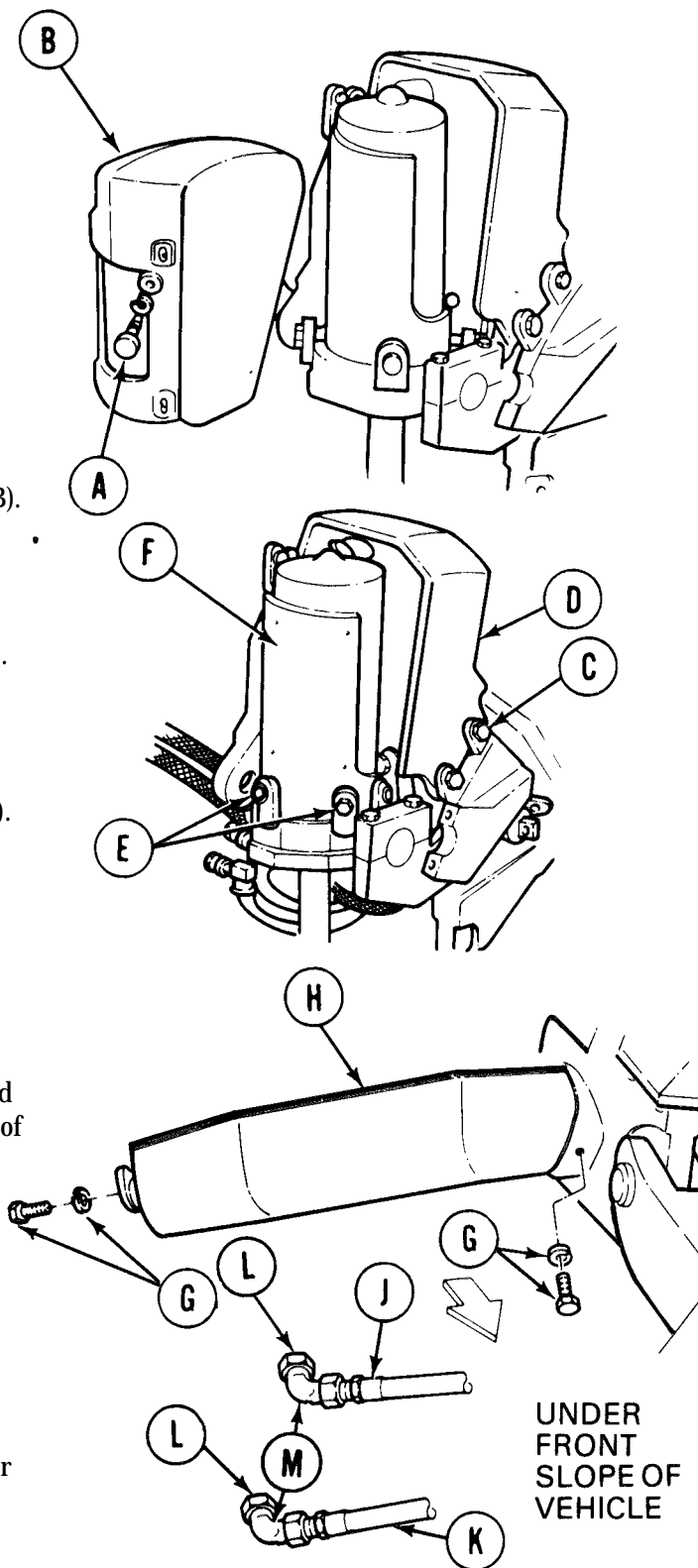
**NOTE**

This task is for left cylinder and guards. The procedure for right cylinder and guards is the same.

**WARNING**

Guards are heavy. Use care when removing.

1. Using 3/4 inch socket, remove four screws, lockwashers, washers (A), and outer guard (B). Throw lockwashers away.
2. Using 3/4 inch wrench, remove four screws, lockwashers, washer (C), and inner guard (D). Throw lockwashers away.
3. Using 3/4 inch socket, remove four screws, lockwashers, washers (E), and front guard (F). Throw lockwashers away.
4. Using 15/16 inch socket, remove two screws, lockwashers (G), and cover (H). Throw lockwashers away.
5. Place container under hose assemblies (J) and (K) to catch fluid (at the hull disconnect end of hose).
6. Using 1-1/4 inch wrench, disconnect nuts on end of hose assemblies (J) and (K) and allow fluid to drain.
7. Using 1-3/8 inch wrench, loosen two nuts (L) and using adjustable wrench on elbows (M), remove two elbows, nuts, and packings (under nuts). Throw packings away.
8. Remove container and throw away fluid.

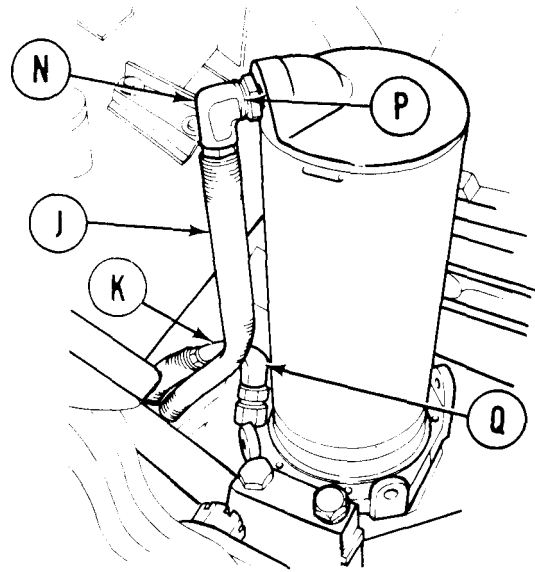


Go on to Sheet 3

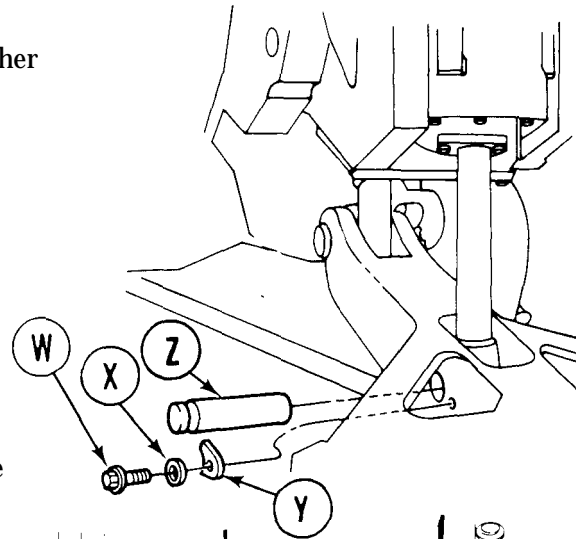
TA141129

**LINEAR ACTUATING (RAM) CYLINDER AND GUARDS REPLACEMENT (Sheet 3 of 8)**

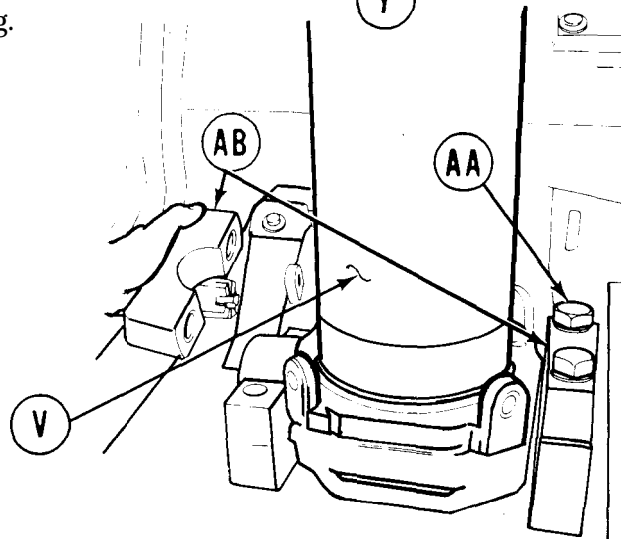
9. Using 1-1/4 inch wrench on nut of hose assembly (J) and 11/16 inch wrench on nut of adapter (N), remove hose assembly and install plastic plug and cap to prevent entry of dirt.
10. Using 11/16 inch wrench, remove adapter (N).
11. Using 1-1/2 inch wrench, remove bushing (P).
12. Using 1-1/4 inch wrench on nut of hose assembly (K) and 11/16 inch wrench on nut of elbow (Q), remove hose assembly and install plastic plug and cap to prevent entry of dirt.



13. Using 15/16 inch socket, remove screw (W), lockwasher (X), and lock (Y). Throw lockwasher away.
14. Pull out and remove pin (Z) from rod and pushbeam.
15. Using 1-1/2 inch socket, remove four bolts, lockwashers (AA), and two caps (AB). Throw lockwashers away.



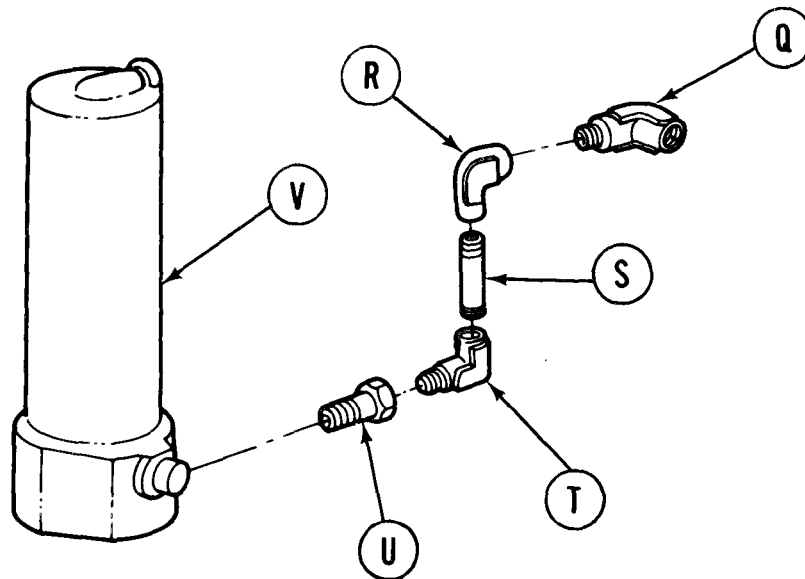
16. Attach sling and, using lifting device, remove cylinder (V) from vehicle and place on work bench. Remove lifting device and sling.



Go on to Sheet 4

TA14113

## LINEAR ACTUATING (RAM) CYLINDER AND GUARDS REPLACEMENT (Sheet 4 of 8)



17. Using 11/16 inch wrench, remove elbow (Q).
18. Using adjustable wrench, remove elbow (R).
19. Using pipe wrench, remove nipple (S).
20. Using adjustable wrench, remove elbow (T).
21. Using 1-1/2 inch wrench, remove bushing (U) from cylinder (V) and insert plastic plugs in both top and bottom ports of cylinder to prevent entry of dirt.

### CLEANING AND INSPECTION:

1. Clean all metallic parts in dry cleaning solvent (Item 54, Appendix D).
2. Inspect all parts for damage or wear.
3. Replace all unserviceable parts.

Go on to Sheet 5

TA141131

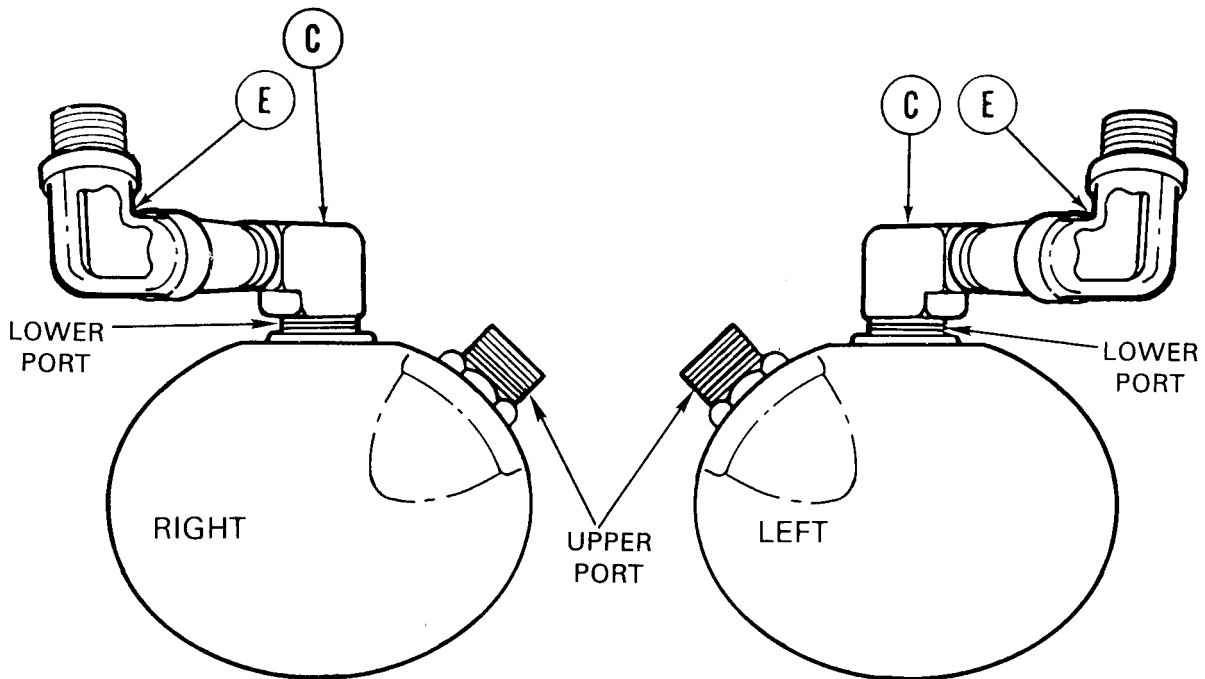
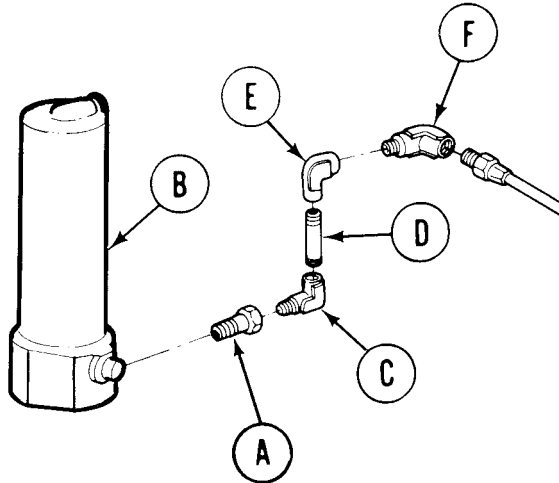
LINEAR ACTUATING (RAM) CYLINDER AND GUARDS REPLACEMENT (Sheet 5 of 8)

NOTE

Apply sealing tape (Item 68, Appendix D) to male threads of bushings, elbows, and nipples before assembling. Leave first two threads uncovered.

INSTALLATION:

1. Using 1-1/2 inch wrench, install bushing (A) in lower port of cylinder (B).
2. Using hands, install elbow (C) with female part facing up.
3. Using pipe wrench, install nipple (D) into elbow (c).
4. Using adjustable wrench, install elbow (E).
5. Using adjustable wrench, tighten elbow (C), nipple (D), and elbow (E) in position as shown above.
6. Using 11/16 inch wrench, install elbow (F) with elbow positioned as shown above.



VIEW OF RIGHT AND LEFT RAM CYLINDERS AS SEEN FROM ABOVE.

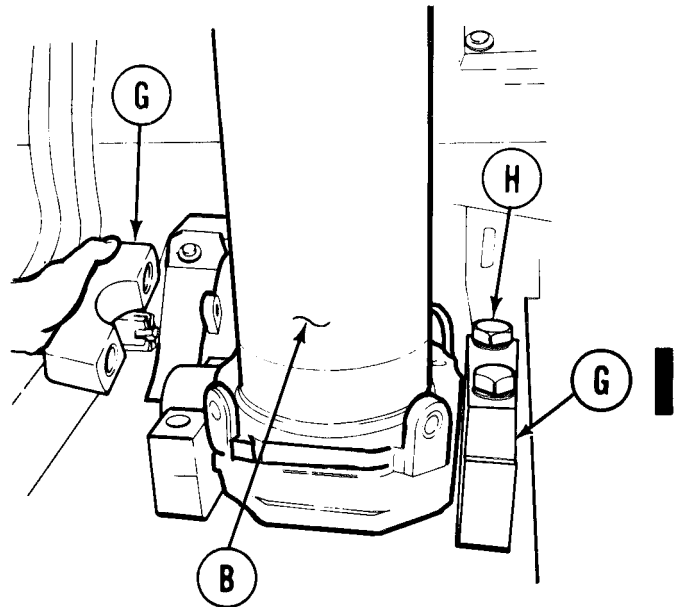
Go on to Sheet 6

TA141132



**LINEAR ACTUATING (RAM) CYLINDER AND GUARDS REPLACEMENT (Sheet 6 of 8)**

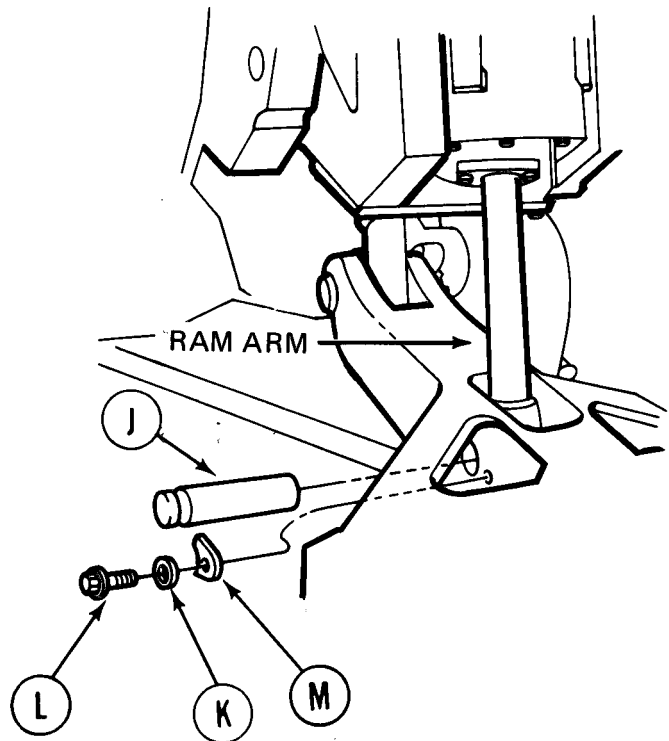
7. Attach sling and, using lifting device, position cylinder (B) with trunnions over trunnion brackets.
8. Aline two caps (G) over cylinder trunnion.
9. Using 1-1/2 inch socket, install four screws and new lockwashers (H).
10. Pull or push ram arm up or down and aline with pushbeam, then insert pin (J) (with locking groove facing forward).



11. Place new lockwasher (K) on screw (L).
12. Position lock (M) on pushbeam and pin (J). Using 15/16 inch socket, install screw (L).

13. Remove plastic plug from lower fluid port of cylinder.

14. Remove sling and lifting device.

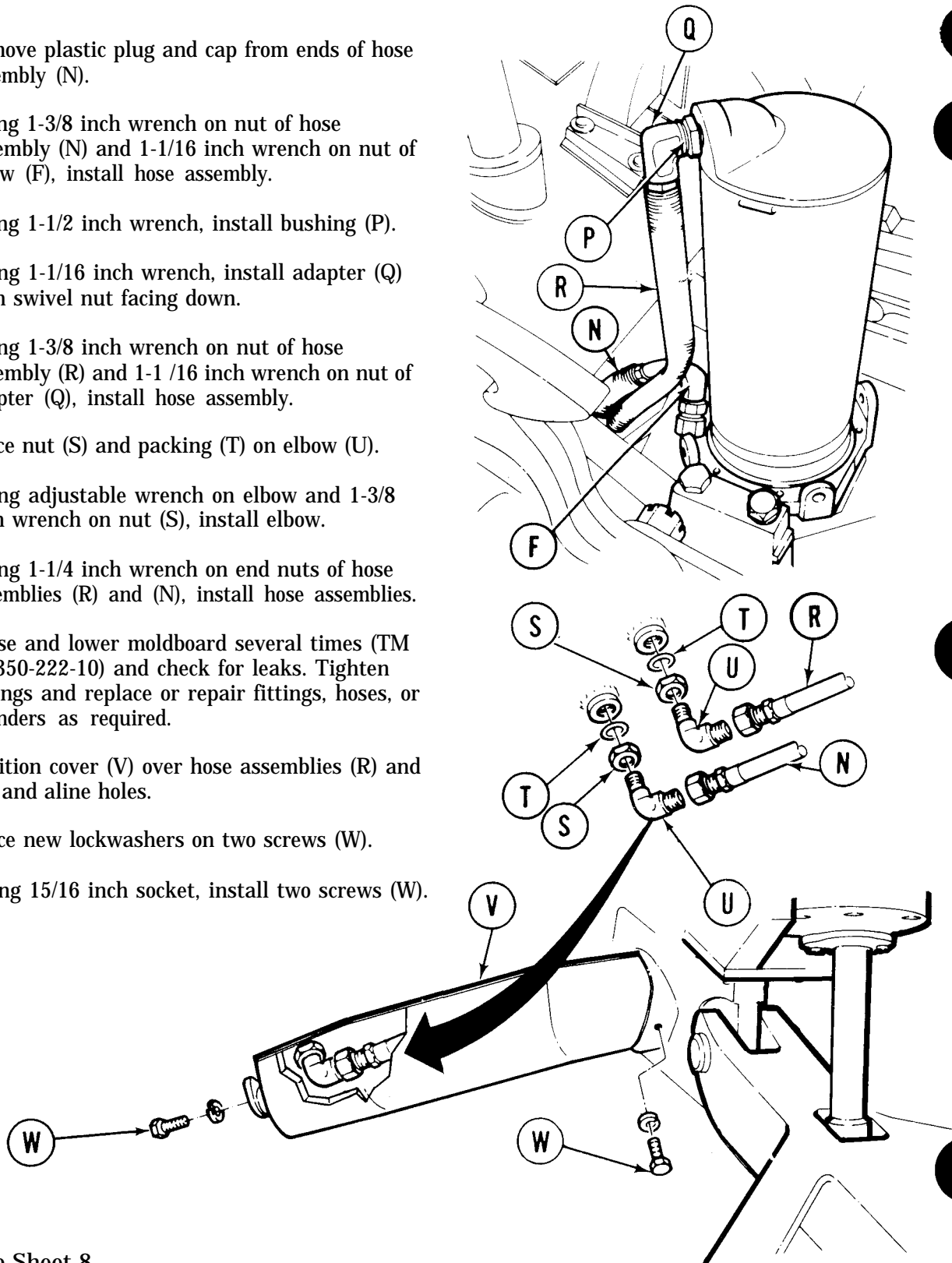


Go on to Sheet 7

TA253656

LINEAR ACTUATING (RAM) CYLINDER AND GUARDS REPLACEMENT (Sheet 7 of 8)

15. Remove plastic plug and cap from ends of hose assembly (N).
16. Using 1-3/8 inch wrench on nut of hose assembly (N) and 1-1/16 inch wrench on nut of elbow (F), install hose assembly.
17. Using 1-1/2 inch wrench, install bushing (P).
18. Using 1-1/16 inch wrench, install adapter (Q) with swivel nut facing down.
19. Using 1-3/8 inch wrench on nut of hose assembly (R) and 1-1/16 inch wrench on nut of adapter (Q), install hose assembly.
20. Place nut (S) and packing (T) on elbow (U).
21. Using adjustable wrench on elbow and 1-3/8 inch wrench on nut (S), install elbow.
22. Using 1-1/4 inch wrench on end nuts of hose assemblies (R) and (N), install hose assemblies.
23. Raise and lower moldboard several times (TM 9-2350-222-10) and check for leaks. Tighten fittings and replace or repair fittings, hoses, or cylinders as required.
24. Position cover (V) over hose assemblies (R) and (N) and aline holes.
25. Place new lockwashers on two screws (W).
26. Using 15/16 inch socket, install two screws (W).



Go on to Sheet 8

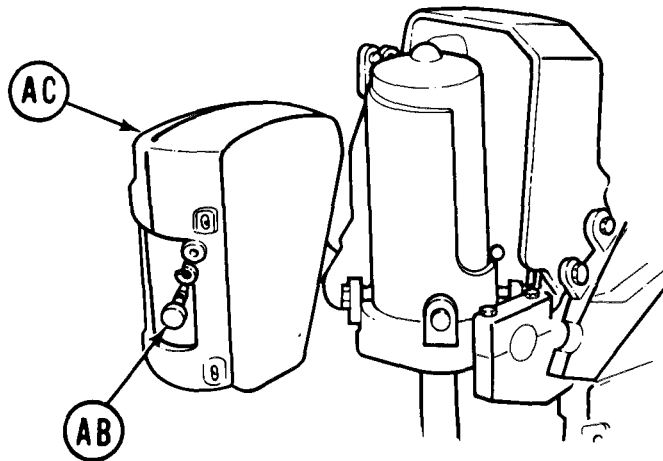
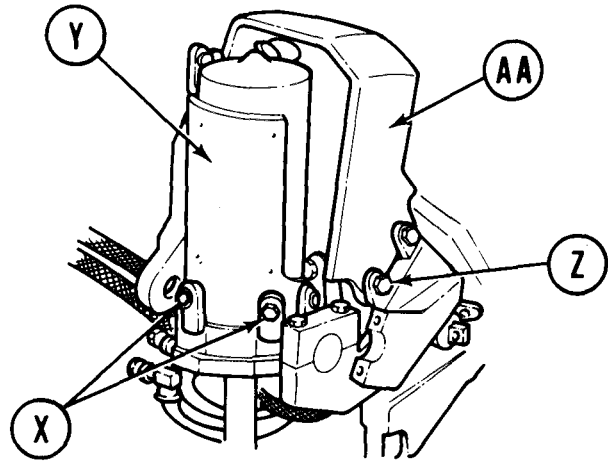
TA14113

## LINEAR ACTUATING (RAM) CYLINDER AND GUARDS REPLACEMENT (Sheet 8 of 8)

### WARNING

The guards are heavy. Use care in installing them.

27. Place new lockwashers on four screws (X).
28. Position front guard (Y) and, using 3/4 inch socket, install four screws (X).
29. Place new lockwashers on four screws (Z).
30. Position inner guard (AA) and, using 3/4 inch wrench, install four screws (Z).
31. Place new lockwashers and washers on four screws (AB).
32. Position outer guard (AC) and, using 3/4 inch socket, install four screws (AB).



End of Task

TA141135

**BULLDOZER ACTUATING CYLINDER TUBE REPLACEMENT (Sheet 1 of 5)**

PROCEDURE INDEX

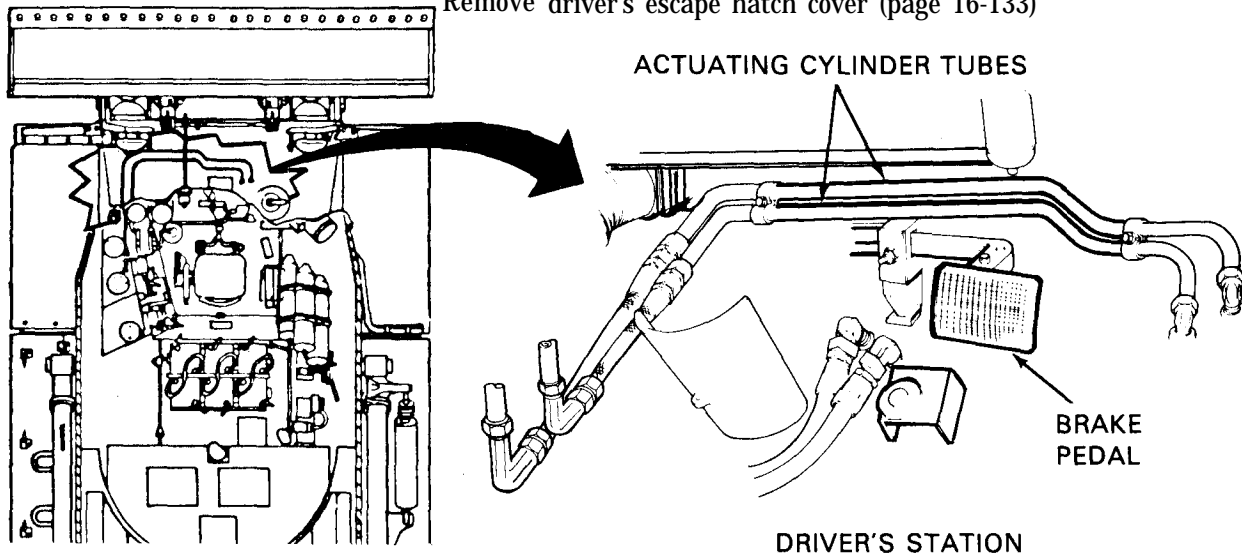
PROCEDURE	PAGE
Removal	18-35
Cleaning and Inspection	18-36
Installation	18-37

TOOLS: 1-5/8 in. open end wrench  
 1-1/2 in. open end wrench  
 Ratchet with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive

SUPPLIES: Rags (Item 65, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Preformed packing (MS28778-16)  
 Engine oil (Item 43, Appendix D)  
 Sealing tape (Item 68, Appendix D)  
 Lockwasher (MS35338-27) (2 required)

REFERENCES: TM 9-2350-222-10  
 LO 9-2350-222-12

PRELIMINARY PROCEDURES: Remove fire extinguisher cylinders (page 21-49)  
 Remove or displace air duct heater hose (page 19-7)  
 Remove accelerator pedal (page 7-446)  
 Remove driver's escape hatch cover (page 16-133)



Go on to Sheet 2

TA14113

**BULLDOZER ACTUATING CYLINDER TUBE REPLACEMENT (Sheet 2 of 5)**

**REMOVAL:**

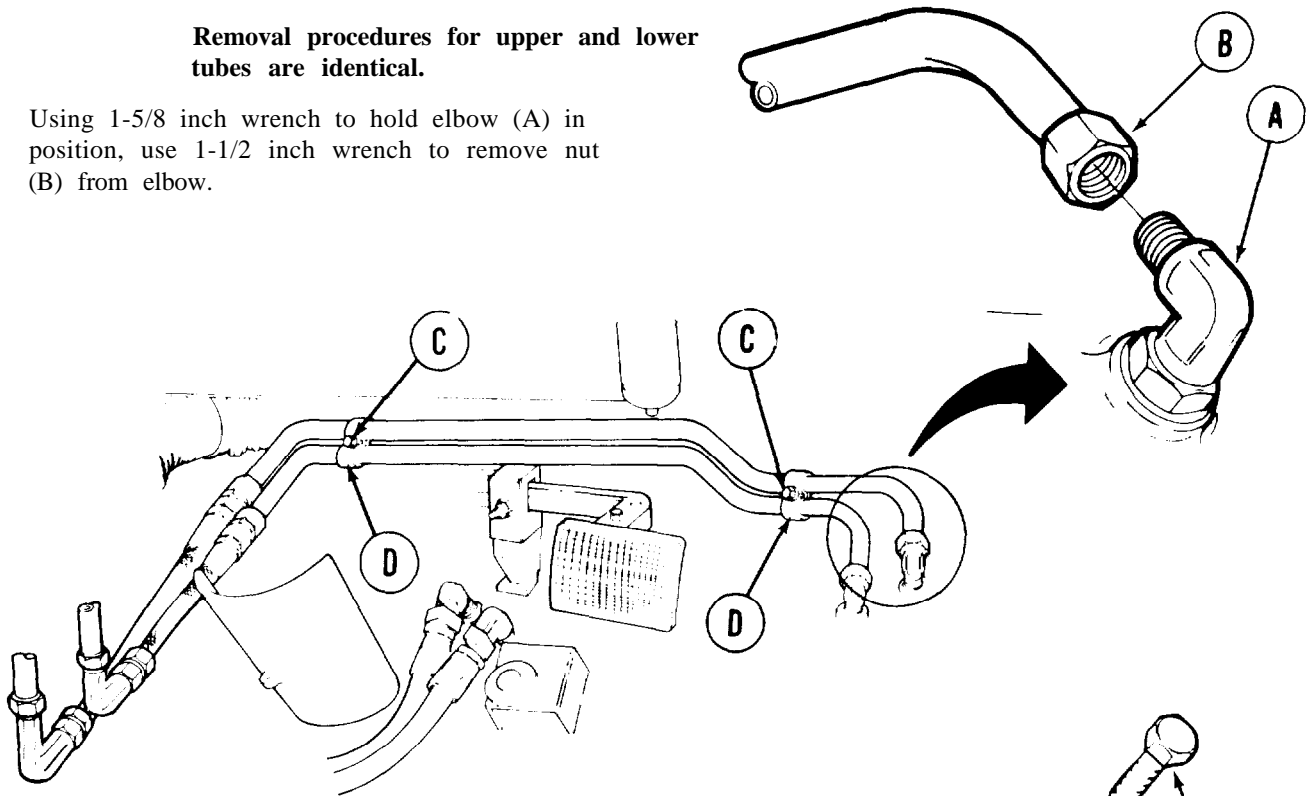
**NOTE**

This procedure is for right cylinder tubes only. See page 18-47 (steps 15 thru 20) for left cylinder tubes.

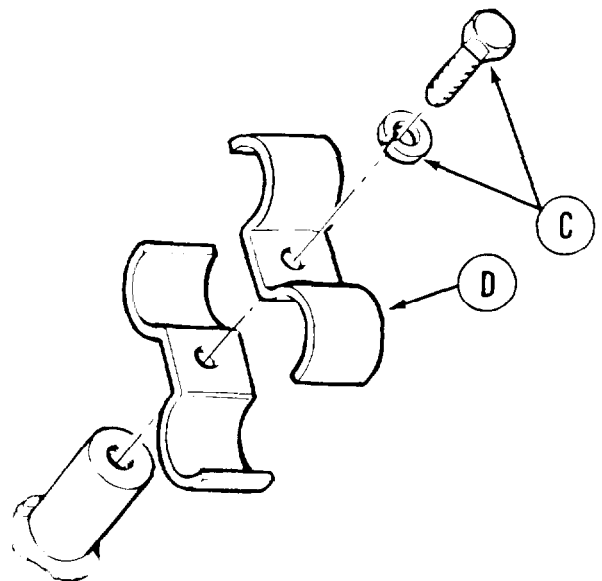
**NOTE**

Removal procedures for upper and lower tubes are identical.

- Using 1-5/8 inch wrench to hold elbow (A) in position, use 1-1/2 inch wrench to remove nut (B) from elbow.



- Using 9/16 inch socket, remove screws and lockwashers (C) and take off clamps (D). Throw lockwashers away.

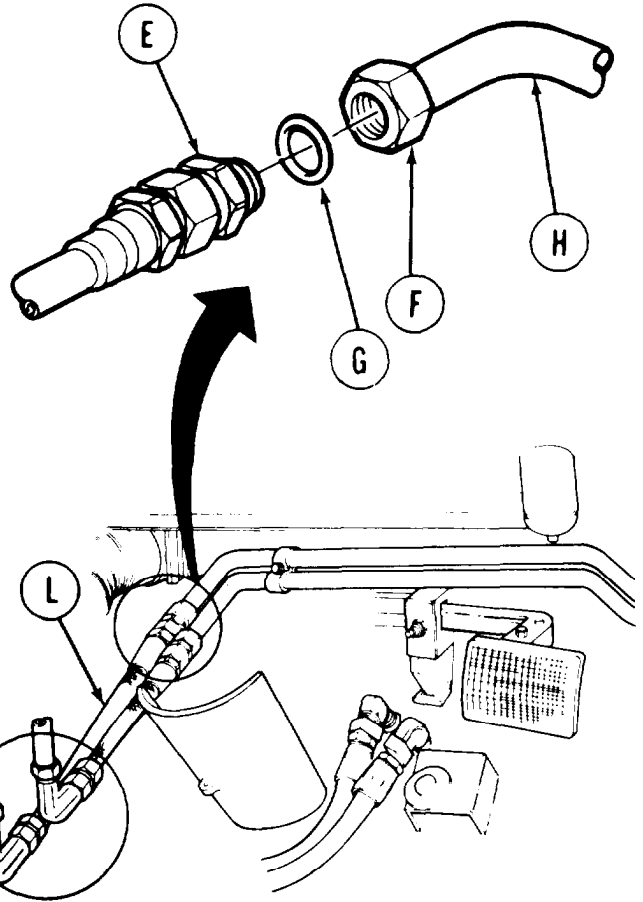


Go on to Sheet 3

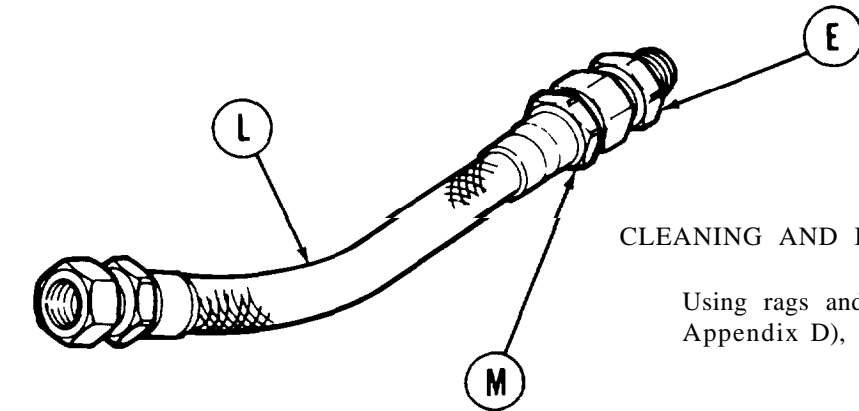
TA141137

**BULLDOZER ACTUATING CYLINDER TUBE REPLACEMENT (Sheet 3 of 5)**

3. Using 1-5/8 inch wrench to hold union (E), use 1-1/2 inch wrench to remove nut (F) from union (E). Throw away packings (G). Remove tube (H) from driver's compartment.
4. Using 1-1/2 inch wrench, remove nut (J) from elbow (K). Remove hose assembly (L) from driver's compartment.



5. Using 1-1/2 inch wrench to hold nut (M), use 1-5/8 inch wrench to remove union (E) from hose assembly (L).



**CLEANING AND INSPECTION:**

Using rags and dry cleaning solvent (Item 54, Appendix D), clean unions, sleeves, and

2. Check for damaged threads.
3. Replace damaged parts.

Go on to Sheet 4

TA141138

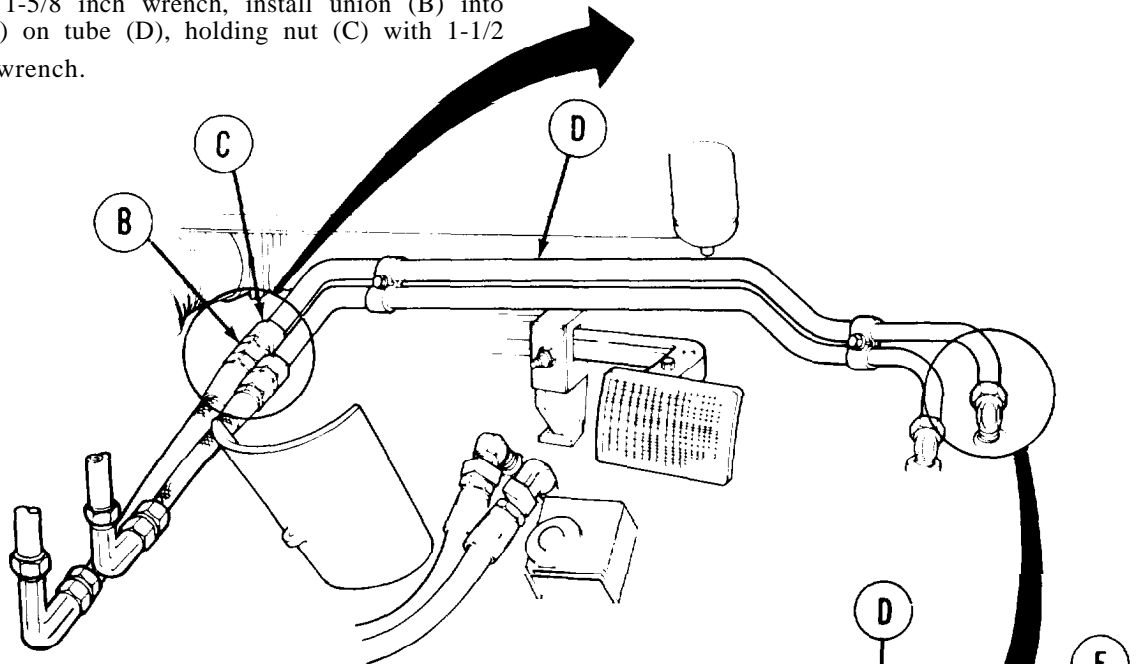
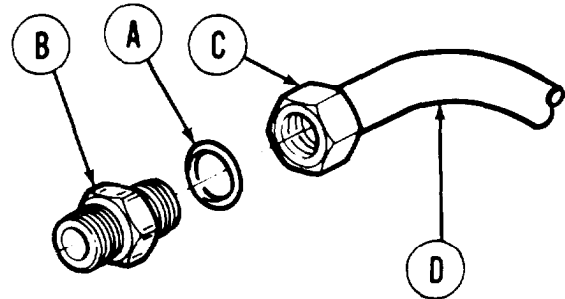
**BULLDOZER ACTUATING CYLINDER TUBE REPLACEMENT (Sheet 4 of 5)**

**NOTE**

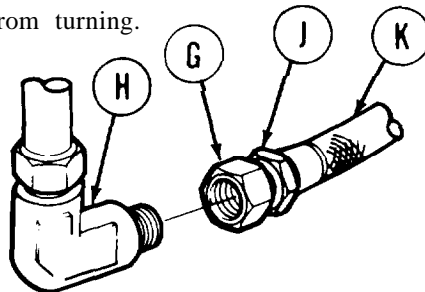
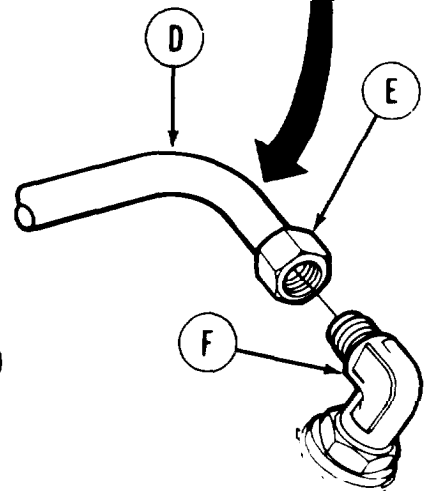
Apply sealing tape (Item 68, appendix D) to male threads of unions and elbows before installing. Leave first two threads uncovered.

**INSTALLATION:**

1. Install new packing (A) onto union (B).
2. Using 1-5/8 inch wrench, install union (B) into nut (C) on tube (D), holding nut (C) with 1-1/2 inch wrench.



3. Using 1-1/2 inch wrench, install nut (E) on tube (D) onto elbow (F), using 1-5/8 inch wrench to hold elbow (F) in position.
4. Using 1-1/2 inch wrench, install nut (G) onto elbow (H), using 1-5/8 inch wrench on hose fitting (J) to keep hose (K) from turning.

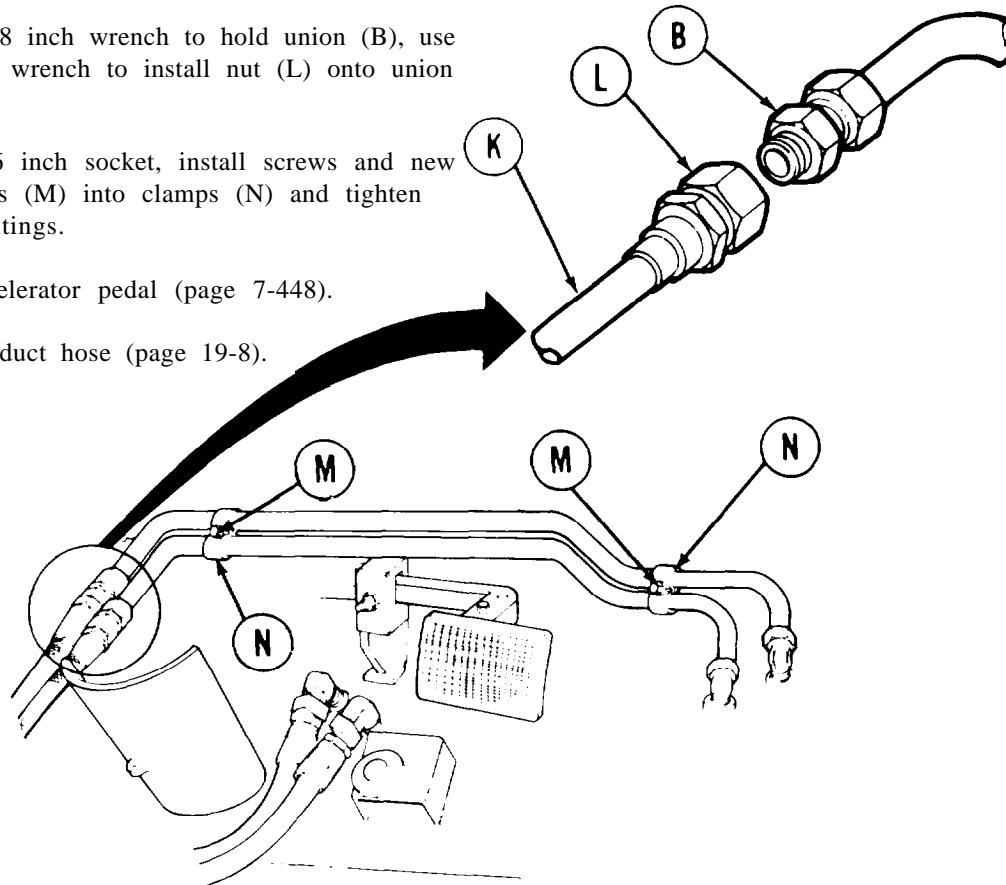


Go on to Sheet 5

TA141139

**BULLDOZER ACTUATING CYLINDER TUBE REPLACEMENT (Sheet 5 of 5)**

5. Using 1-5/8 inch wrench to hold union (B), use 1-1/2 inch wrench to install nut (L) onto union (B).
6. Using 9/16 inch socket, install screws and new lockwashers (M) into clamps (N) and tighten into mountings.
7. Install accelerator pedal (page 7-448).
8. Install air duct hose (page 19-8).



9. Install fire extinguisher cylinders (page 21-50).
10. Install driver's escape hatch (page 16-134).
11. Refill hydraulic reservoir with oil (Item 43, Appendix D) and check for leaks (LO 9-2350-222-12).

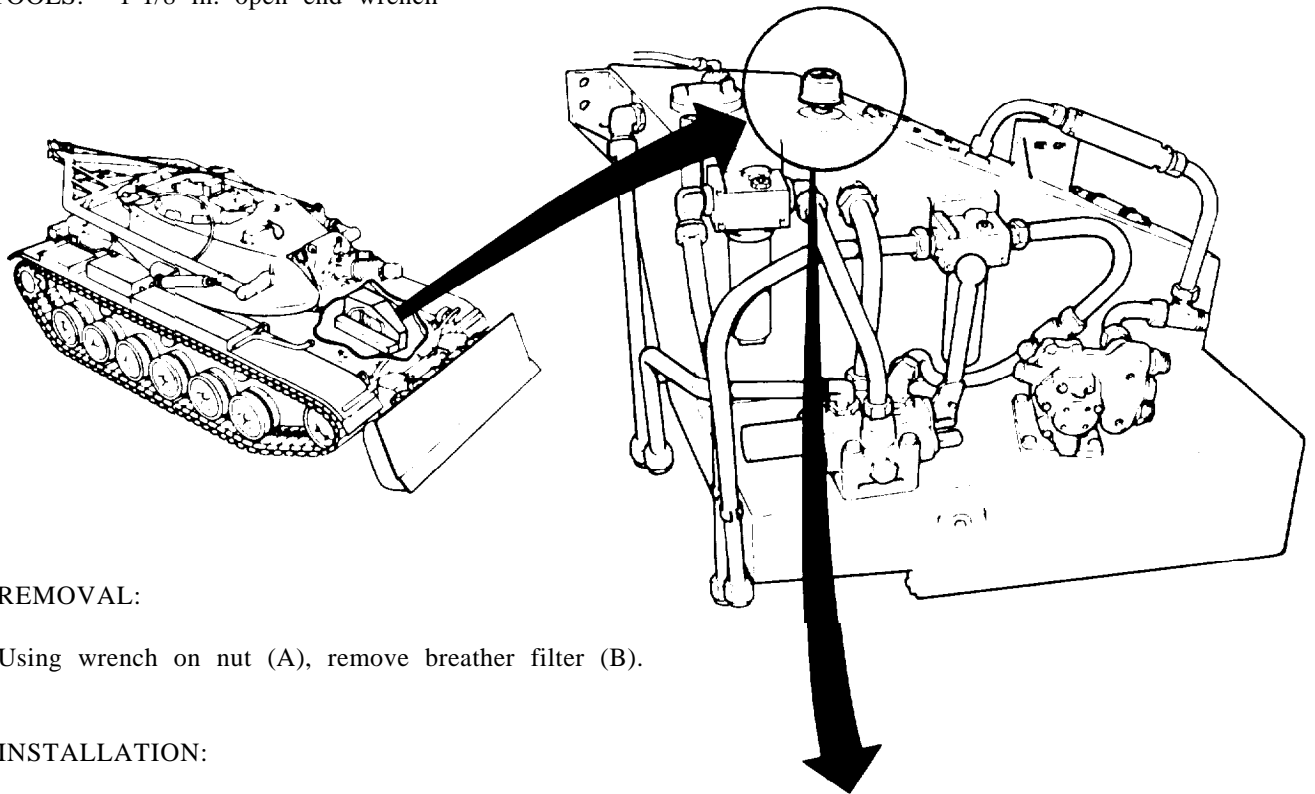
End of Task

TA141140



**HYDRAULIC RESERVOIR BREATHER FILTER REPLACEMENT (Sheet 1 of 1)**

TOOLS: 1-1/8 in. open end wrench

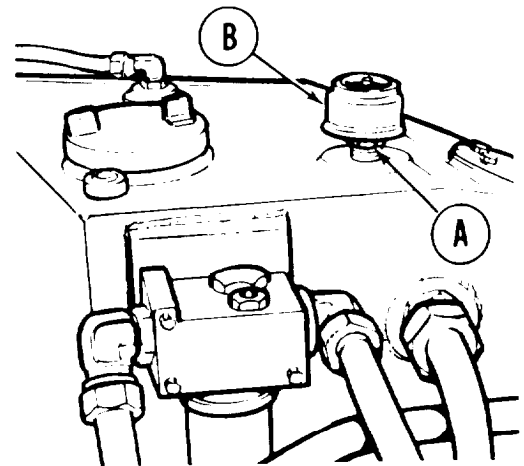


**REMOVAL:**

Using wrench on nut (A), remove breather filter (B).

**INSTALLATION:**

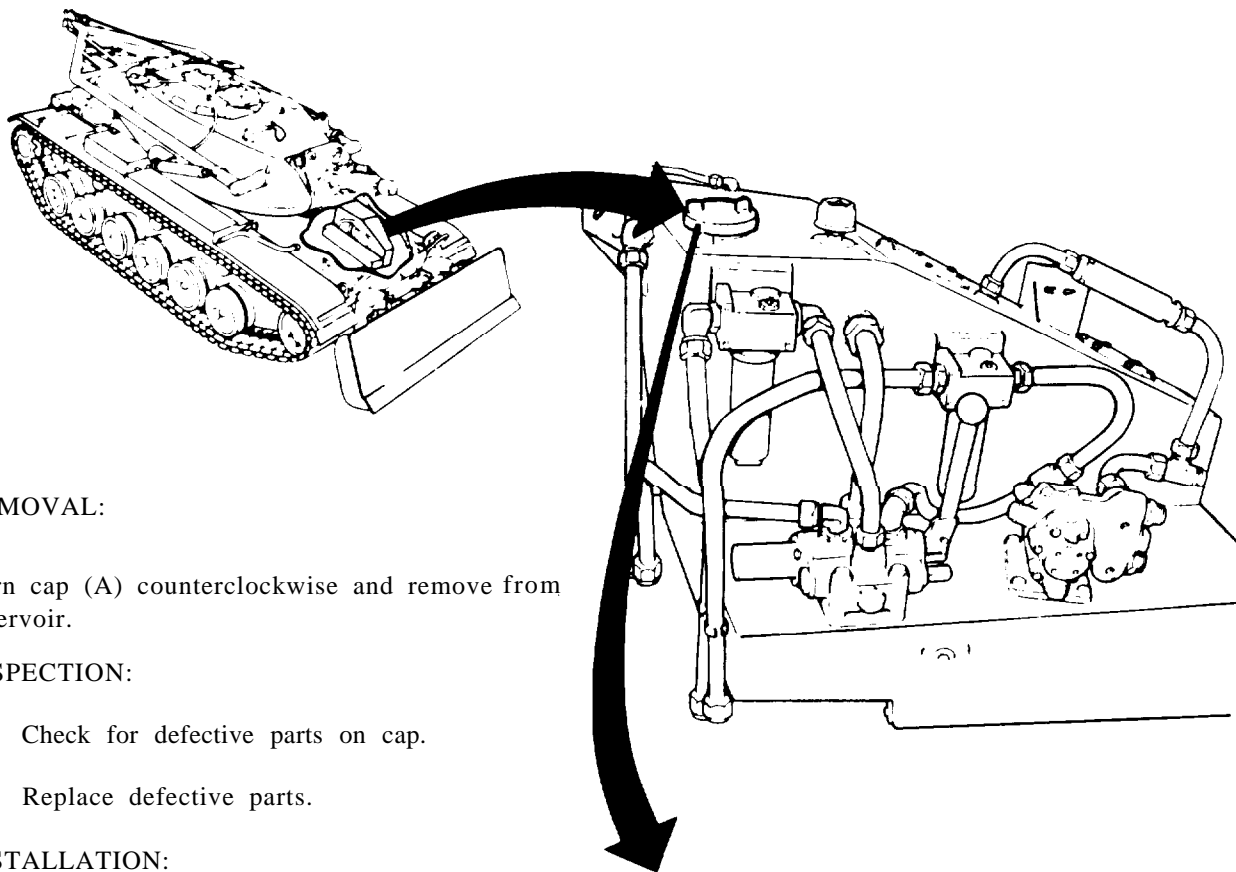
Using wrench on nut (A), install breather filter (B) as shown.



End of Task

TA141141

HYDRAULIC RESERVOIR FILLER CAP REPLACEMENT (Sheet 1 of 1)



REMOVAL:

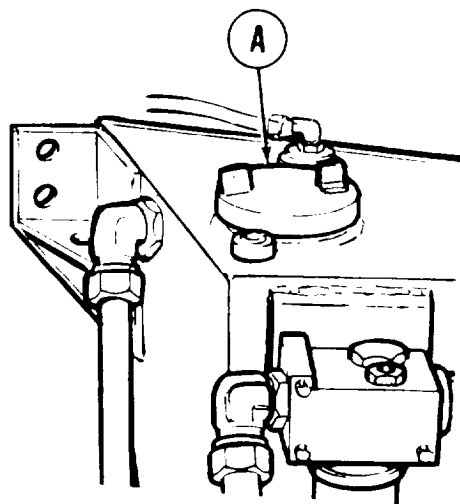
Turn cap (A) counterclockwise and remove from reservoir.

INSPECTION:

1. Check for defective parts on cap.
2. Replace defective parts.

INSTALLATION:

Install cap (A) onto reservoir connection by turning clockwise until cap is sealed.



End of Task

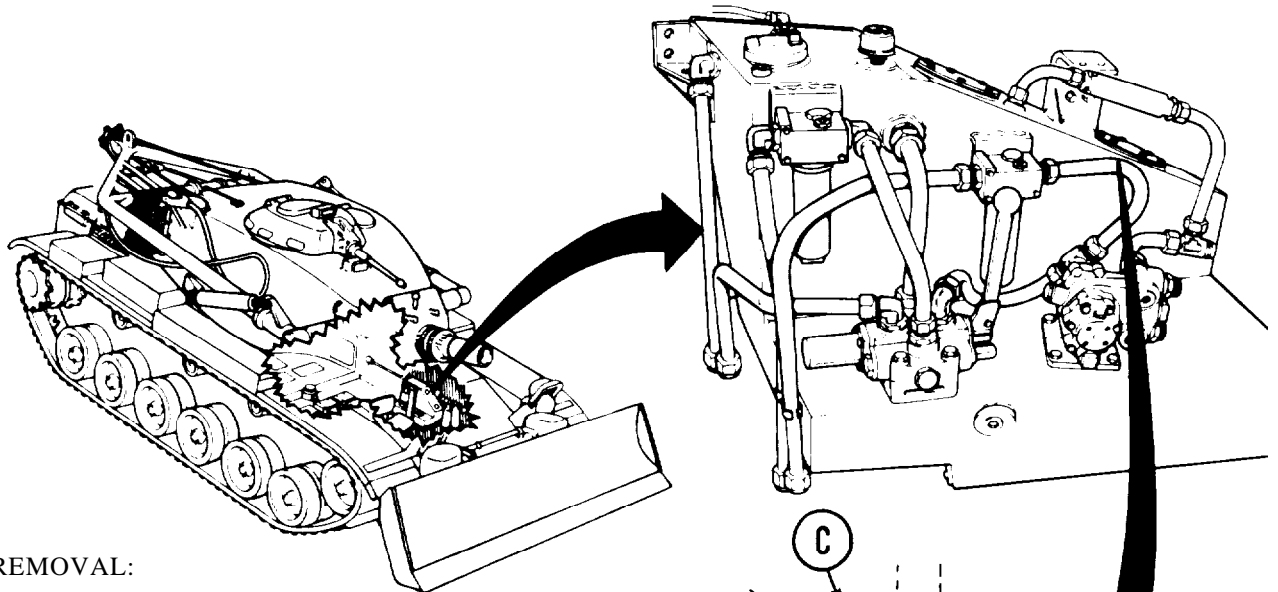
TA141142

**HYDRAULIC RESERVOIR MOUNTING BRACKET REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** Ratchet with 1/2 in. drive  
 3/4 in. socket with 1/2 in. drive  
 10 in. extension with 1/2 in. drive  
 3/4 in. combination box and open end wrench

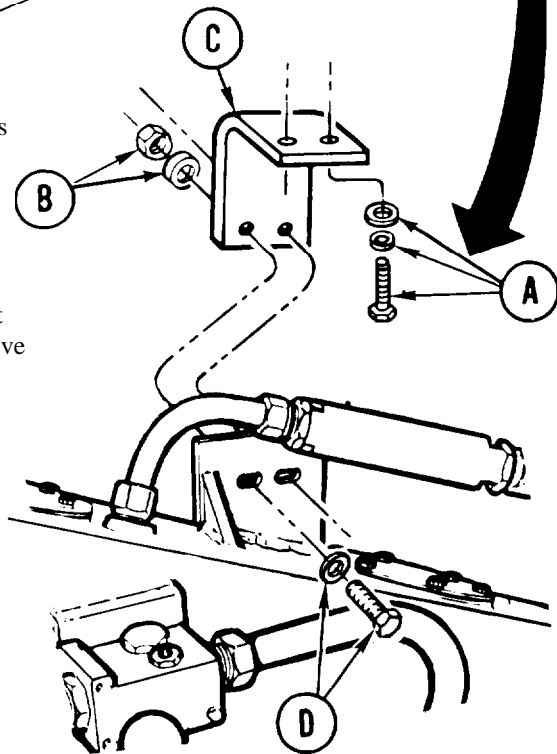
**SUPPLIES:** Lockwashers (MS35338-48) (2 required)

**PRELIMINARY PROCEDURES:** Remove driver's seat assembly (page 17-41)  
 Remove escape hatch (page 16-133)



**REMOVAL:**

1. Using socket, remove two screws, lockwashers and flat washers (A) from hull mount. Throw lockwashers away.
2. Using wrench on two nuts (B) behind bracket (C), and using socket on two screws (D), remove two nuts and washers (B) (hidden) and two screws and washers (D).
3. Remove bracket (C) from vehicle.



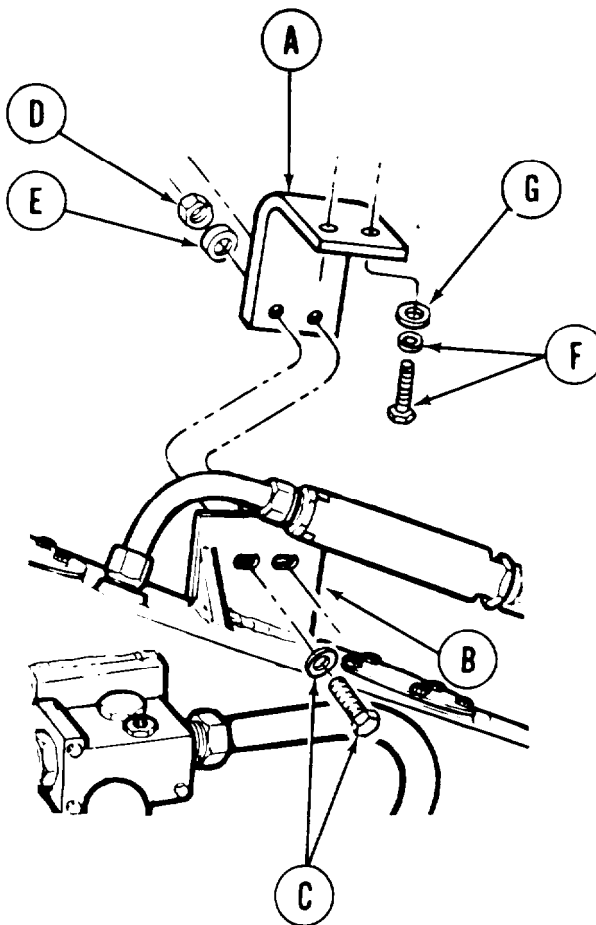
Go on to Sheet 2

TA141143

HYDRAULIC RESERVOIR MOUNTING BRACKET REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

1. Position bracket (A) onto reservoir bracket (B).
2. By hand, install two screws and two washers (C) through reservoir bracket (B) and mounting bracket (A).
3. Using wrench and socket, install two nuts (D) and two washers (E) onto two screws and two washers (C).
4. Using socket, install two screws and new lockwashers (F) and two washers (G) through mounting bracket (A) into hull.
5. Install driver's seat assembly (page 17-43).
6. Install driver's escape hatch (page 16-134).



End of Task

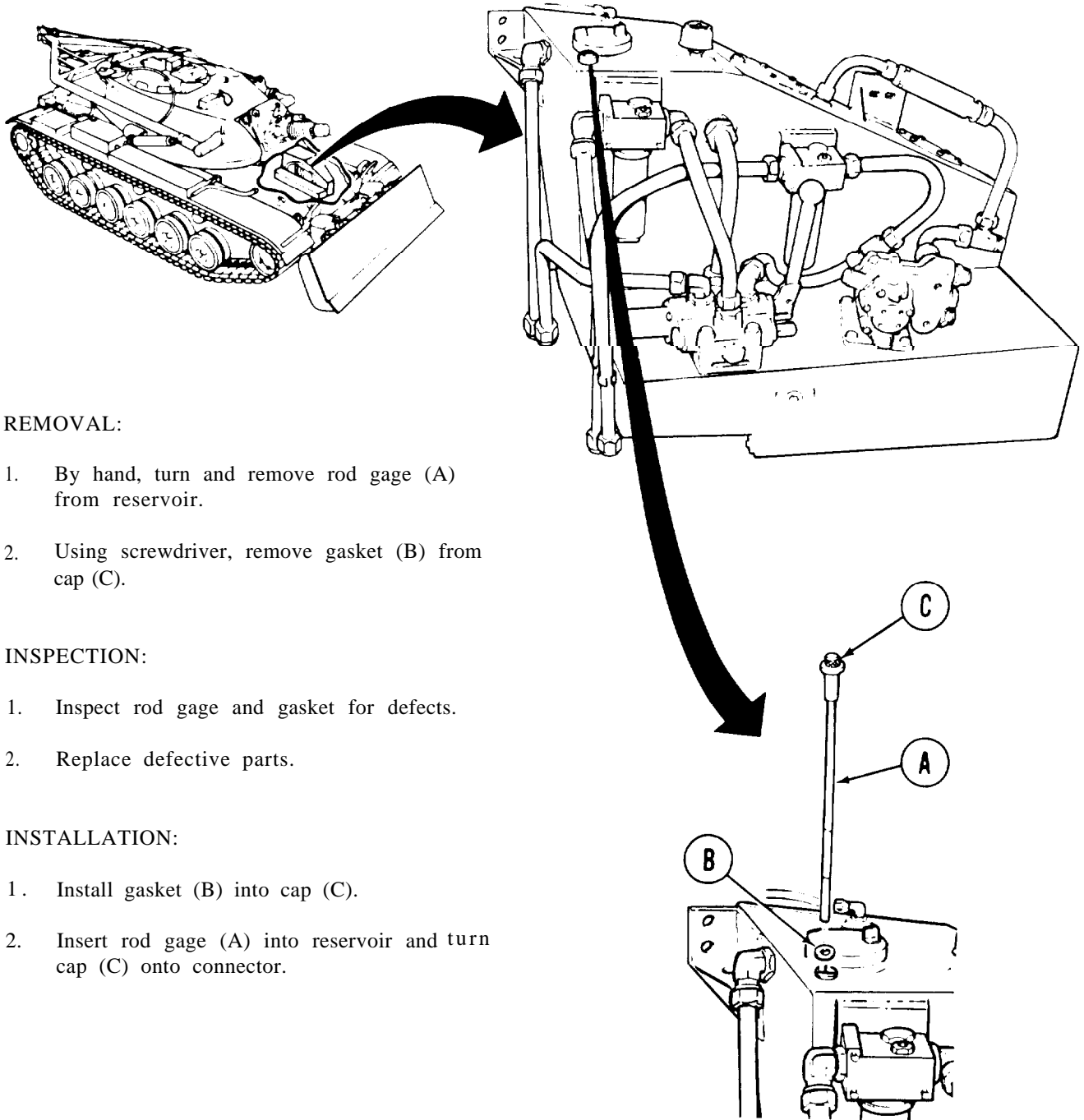
TA141144

**HYDRAULIC RESERVOIR FLUID LEVEL GAGE REPLACEMENT (Sheet 1 of 1)**

TOOLS: Flat-tip screwdriver

SUPPLIES: Gasket

PRELIMINARY PROCEDURE: Traverse turret to gain access (TM 9-2350-222-10)



**REMOVAL:**

1. By hand, turn and remove rod gage (A) from reservoir.
2. Using screwdriver, remove gasket (B) from cap (C).

**INSPECTION:**

1. Inspect rod gage and gasket for defects.
2. Replace defective parts.

**INSTALLATION:**

1. Install gasket (B) into cap (C).
2. Insert rod gage (A) into reservoir and turn cap (C) onto connector.

End of Task

TA141145

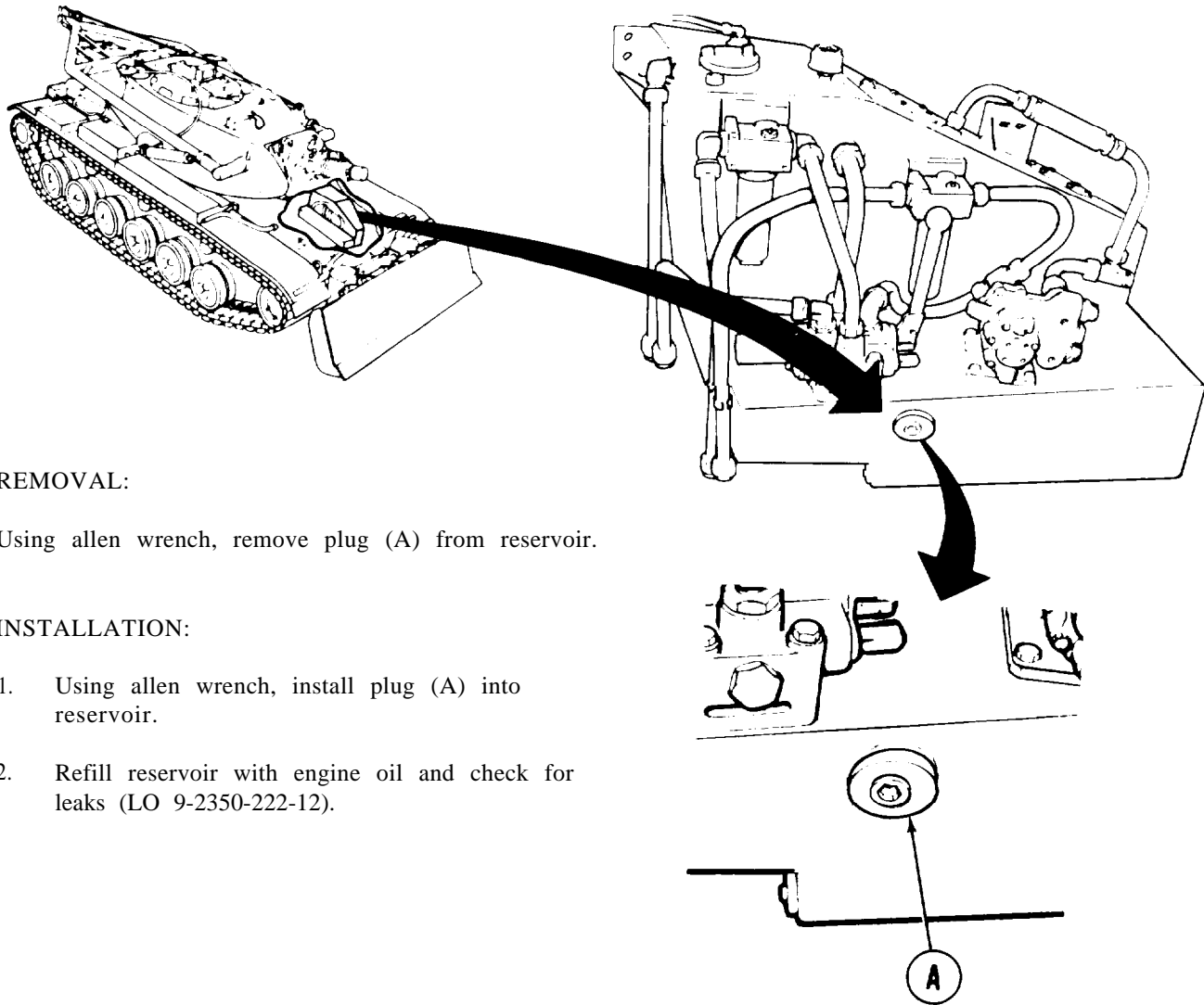
**HYDRAULIC RESERVOIR ACCESS PLUG REPLACEMENT (Sheet 1 of 1)**

TOOLS: 5/8 in. socket head screw key (allen wrench)

SUPPLIES: Engine oil (Item 43, Appendix D)

REFERENCE: LO 9-2350-222-12

PRELIMINARY PROCEDURE: Drain hydraulic reservoir (LO 9-2350-222-12)



**REMOVAL:**

Using allen wrench, remove plug (A) from reservoir.

**INSTALLATION:**

1. Using allen wrench, install plug (A) into reservoir.
2. Refill reservoir with engine oil and check for leaks (LO 9-2350-222-12).

End of Task

TA141146

HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 1 of 11)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	18-46
Cleaning and Inspection	18-50
Installation	18-50

TOOLS: 1-1/4 in. open end wrench  
 3/4 in. combination box and open end wrench  
 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 1-5/8 in. open end wrench  
 1-1/2 in. open end wrench  
 15 in. Adjustable automotive wrench

5/8 in. socket head key (allen wrench)  
 Ball peen hammer  
 Cold chisel  
 1/4 in. electric drill  
 3/32 in. twist drill  
 1-7/16 in. open end wrench

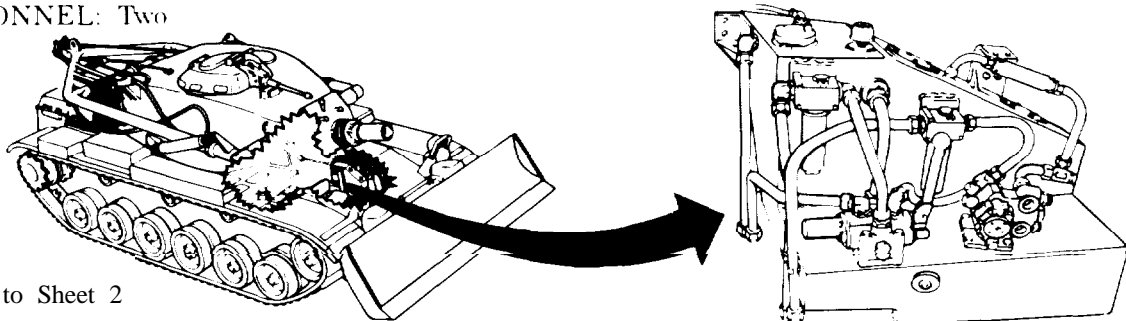
SUPPLIES: Adhesive (Item 2, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Tape (Item 67, Appendix D)  
 Paper tags  
 Drive screws (MS21318-8) (4 required)  
 Lockwasher (MS35338-27) (2 required)

Pencil  
 Rags (Item 65, Appendix D)  
 Preformed packing (MS28775-228)  
 Preformed packing (MS38778-12) (3 required)  
 Lockwasher (MS35338-25) (2 required)  
 Lockwasher (MS35338-29) (4 required)

REFERENCES: LO 9-2350-222-12  
 TM 9-2350-222-10

PRELIMINARY PROCEDURES: Remove bulldozer actuating cylinder tubes (page 18-35)  
 Remove three fire extinguisher cylinders and lines (page 21-49)  
 Drain hydraulic reservoir (LO 9-2350-222-12)  
 Remove driver's seat assembly (page 17-41)

PERSONNEL: Two



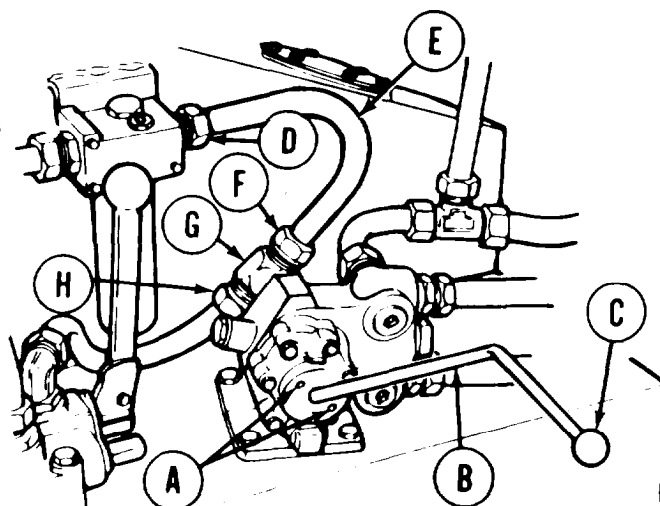
Go on to Sheet 2

TA141147

**HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 2 of 11)**

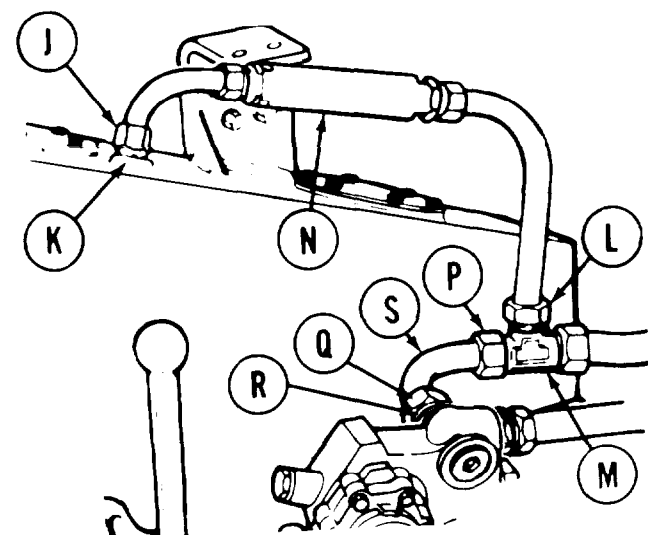
**REMOVAL:**

1. Using 9/16 inch socket, remove two screws lockwashers (A) and take off handle assembly (B). Throw lockwashers away.
2. Remove knob (C) from handle (B).
3. Using 1-1/2 inch wrench, remove nut (D) on tube (E).
4. Using 1-1/2 inch wrench, remove nut (F) from tee (G).
5. Using 1-1/2 inch wrench, remove nut (H) from tee (G).

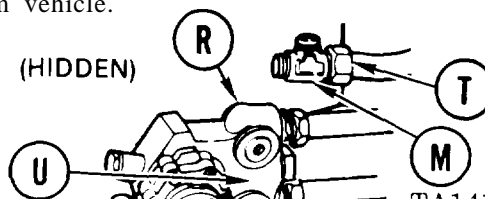


**NOTE**

**It may be necessary to loosen mounting screws on base of valve to allow movement of valve in order to remove tubes.**



6. Remove tube (E) from vehicle.
7. Using automotive wrench, remove tee (G).
8. Using 1-1/4 inch wrench, remove nut (J) from adapter (K).
9. Using 1-1/2 inch wrench, remove nut (L) from tee (M) and remove valve and tube assembly (N) from vehicle.
10. Using 1-7/16 inch wrench, remove adapter and packing (K) from reservoir and throw packing away.
11. Using automotive wrench to hold tee (M), use 1-1/2 inch wrench to remove nut (P) from tee (M).
12. Using 1-7/16 inch wrench to hold adapter (R), use 1-1/2 inch wrench to remove nut (Q) from adapter (R). Remove tube assembly (S) from vehicle.
13. Using 1-1/2 inch wrench on nut (T) and using automotive wrench to hold tee (M), remove nut (T) from tee (M). Remove tee (M) from vehicle.
14. Using 1-7/16 inch wrench, remove adapter (R) from valve (U).



TA141148

Go on to Sheet 3



**HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 3 of 11)**

15. Using 9/16 inch socket, remove screw and lockwasher (V) and remove clamp (W). Make sure both parts of clamp are removed. Throw lockwasher away.
16. Using 1-1/2 inch wrench on nut (X), remove nut (X) from elbow (Y).
17. Using 1-1/2 inch wrench on nut (Z), remove nut (Z) from elbow (AA).

**NOTE**

**Tag tube and hose assemblies (AD) and (AG) during removal to help in later installation.**

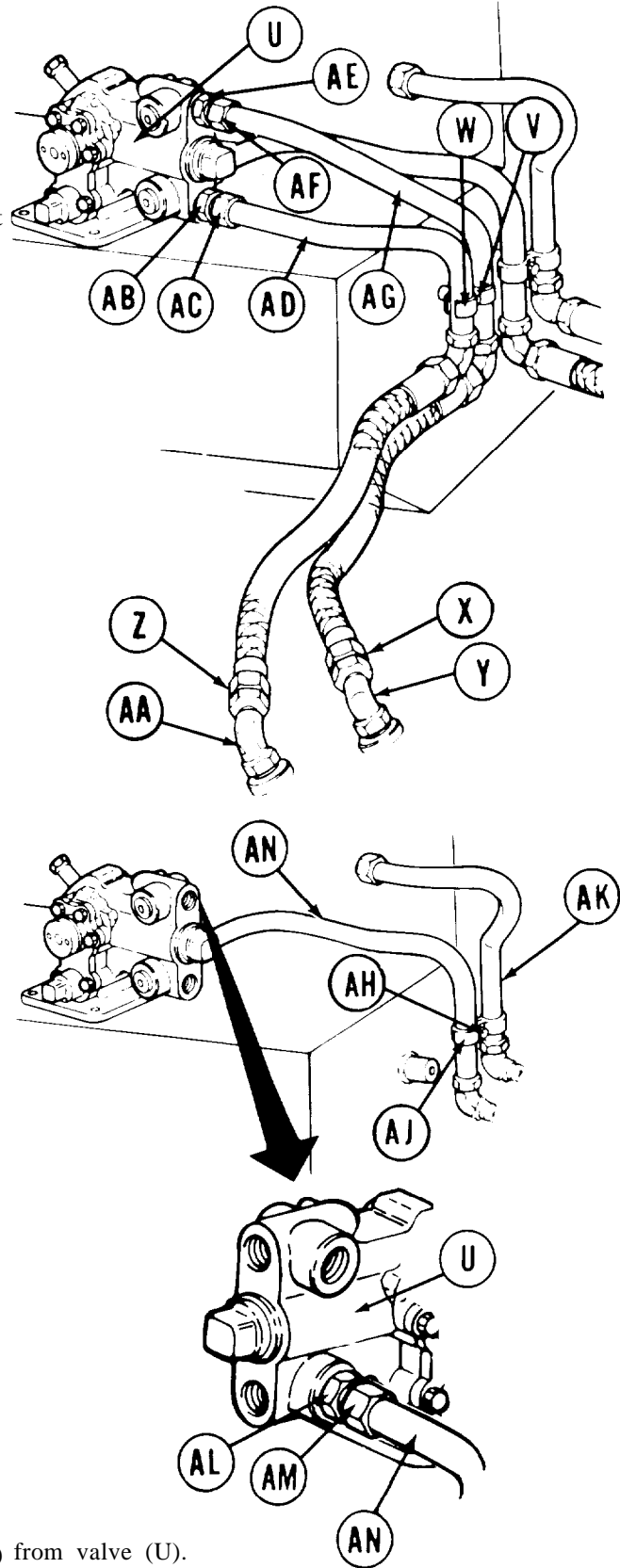
18. Using 1-7/16 inch wrench to hold adapter (AB), and using 1-1/2 inch wrench on nut (AC), remove nut (AC) from adapter (AB). Remove tube assembly and hose assembly (AD) from vehicle.
19. Using 1-7/16 inch wrench, remove adapter (AB) from valve (U).
20. Using 1-7/16 inch wrench to hold adapter (AE), and using 1-1/2 inch wrench on nut (AF), remove nut (AF) from adapter (AE). Remove tube assembly and hose assembly (AG) from vehicle.
21. Using 1-7/16 inch wrench, remove adapter (AE) from valve (U).

**NOTE**

**Tag tubes (AK) and (AN) during removal to help in later installation.**

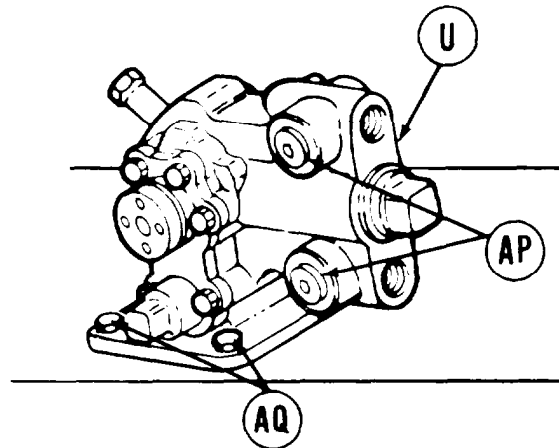
22. Using 9/16 inch socket, remove screw and lockwasher (AH), take off clamp (AJ) and tube (AK), and make sure both parts of clamp are removed.
23. Using 1-7/16 inch wrench to hold adapter (AL) and 1-1/2 inch wrench on nut (AM) remove tube (AN).
24. Using 1-7/16 inch wrench, remove adapter (AL) from valve (U).

Go on to Sheet 4



**HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 4 of 11)**

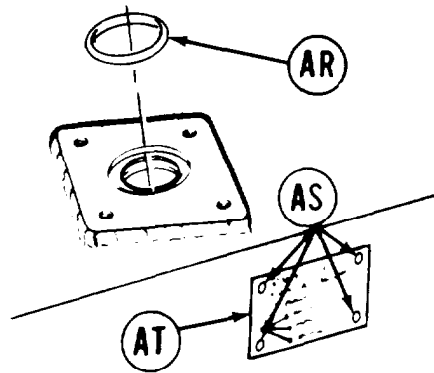
25. Using allen wrench, remove two plugs (AP) from valve (U).
26. Using 3/4 inch wrench, remove four screws and lockwashers (AQ) securing valve (U) to reservoir. Throw lockwashers away.
27. Remove valve (U) from reservoir.
28. Remove preformed packing (AR) from reservoir and throw away.



**NOTE**

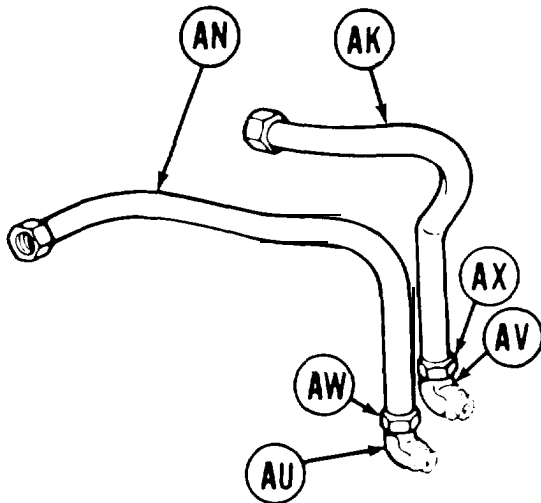
**Only do step 29 if plate (AT) is to be replaced.**

29. Using hammer and chisel, pry out four drive screws (AS) and remove plate (AT).



**CAUTION**

**Heads of drive screws may be broken off during removal. Use drill to drill out screw shafts. Be careful not to drill through reservoir wall.**

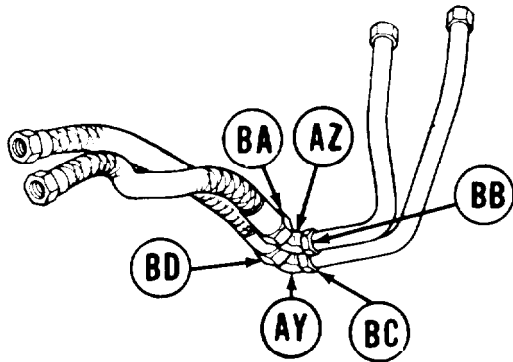


30. Holding elbows (AU) then (AV) in vise, and using 1-1/2 inch wrench on nuts (AW) and (AX), remove tubes (AK) and (AN) from elbows.

Go on to Sheet 5

TA141150

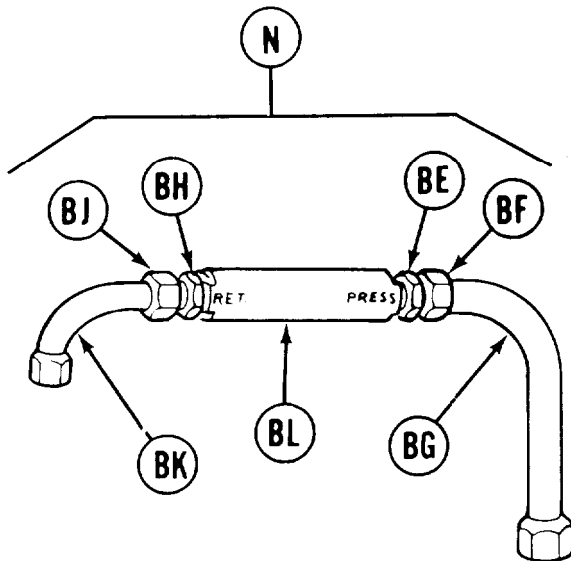
HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 5 of 11)



31. Holding elbows (AY) then (AZ) in vise, and using 1-1/2 inch wrench on nuts (BA), (BB), (BC), and (BD), remove tubes and hoses from elbow.

NOTE

Steps 32 through 34 are procedures for disassembly of valve and tube assembly (N) removed in step 9.



NOTE

Tag tube (BG) and reducer (BE) with tag labeled PRESS. Tag tube (BK) and union (BH) with tag labeled RET during removal, to help during installation.

32. Using 1-5/8 inch wrench to hold reducer (BE), and using 1-1/2 inch wrench, remove nut (BF) securing tube assembly (BG) to reducer (BE).
33. Using 1-7/16 inch wrench to hold union (BH) and using 1-1/4 inch wrench, remove nut (BJ) securing tube assembly (BK) to adapter (BH).
34. Using vise to hold valve (BL), and using automotive wrench, remove reducer (BE) and union (BH) from valve (BL).
35. Remove and throw away preformed packing from reducer (BE) and union (BH).

Go on to Sheet 6

TA141151

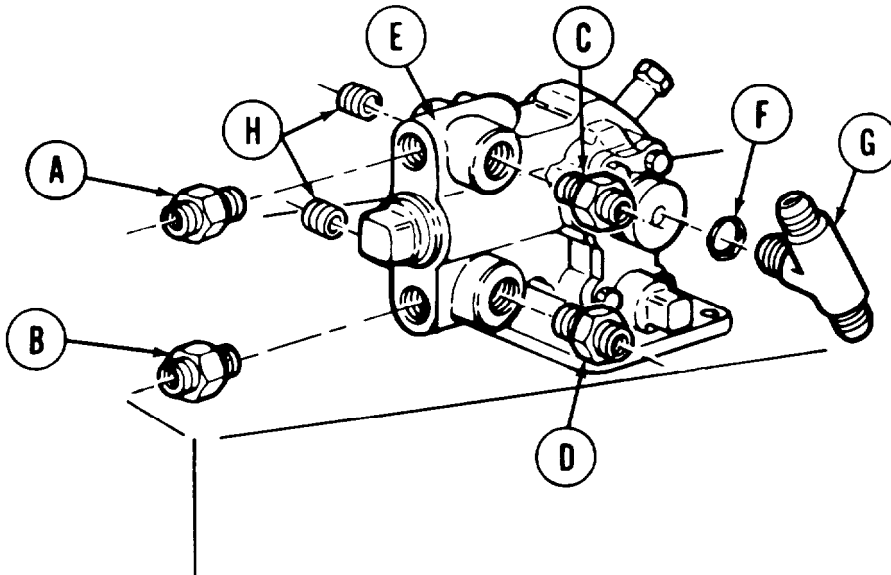
**HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 6 of 11)**

**CLEANING AND INSPECTION:**

1. Using rags and dry cleaning solvent (Item 54, Appendix D), wipe clean all tubes and fitting.
2. Look for defective parts.
3. Replace defective parts.

**INSTALLATION:**

1. Wrap all male pipe threads, except first two threads, with tape (Item 67, Appendix D) prior to installation.
2. Using automotive wrench, install adapters (A), (B), (C), and (D) into valve (E).
3. Install seal (F) onto tee (G) and manually install tee (G) into valve (E).
4. Using allen wrench, install two plugs (H) into valve (E).

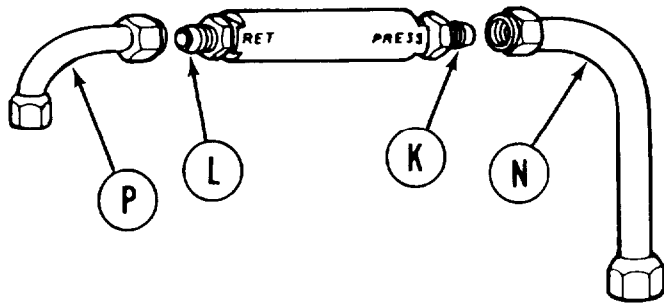
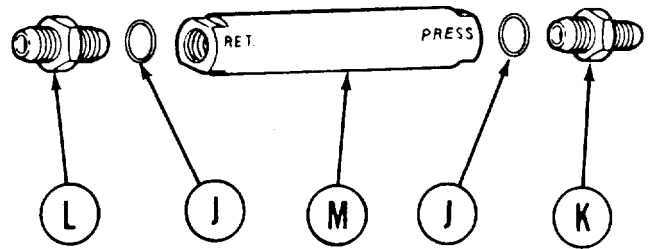


Go on to Sheet 7

TA141152

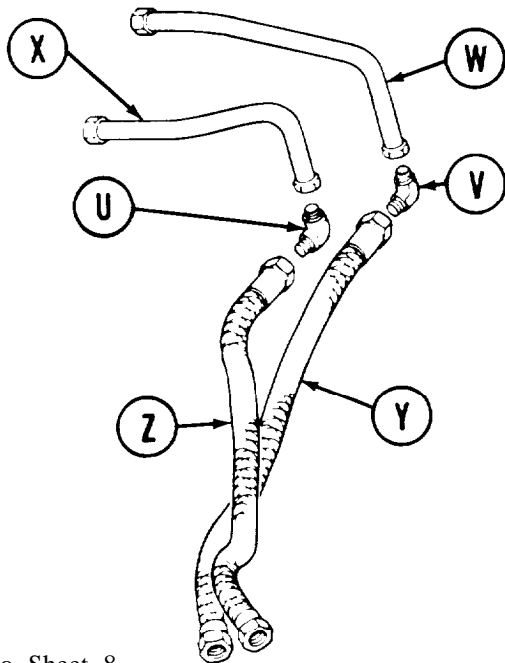
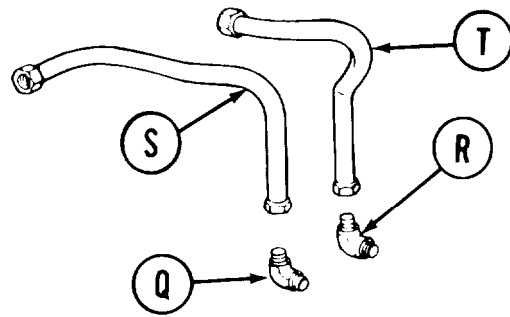
**HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 7 of 11)**

5. Install new packing (J) onto reducer (K) and union (L).
6. Using vise to hold valve (M), and using 1-5/8 inch wrench on reducer (K), install reducer (K) into end of valve (M) marked 'PRESS.'
7. Using vise to hold valve (M), and using automotive wrench on union (L), install union (L) into end of valve marked 'RET.'



8. Connect nut on tube (N) onto reducer (K). Do not tighten at this time.
9. Connect nut on tube (P) onto union (L). Do not tighten at this time.

10. Using vise to hold elbows (Q) or (R), connect tube assembly (S) or (T) to elbow.



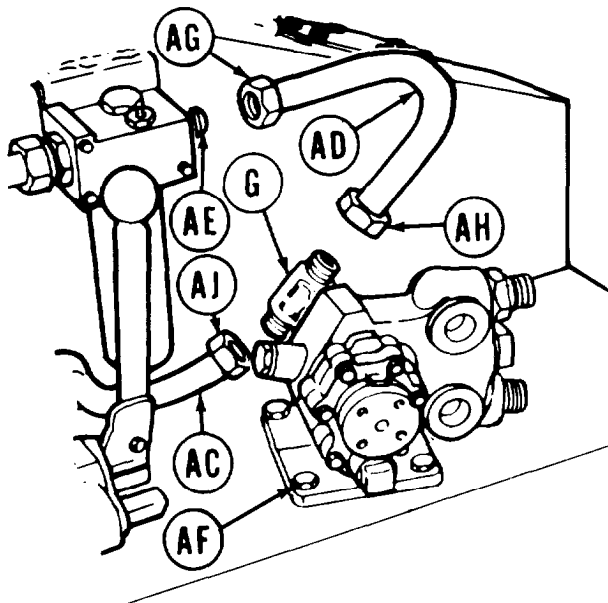
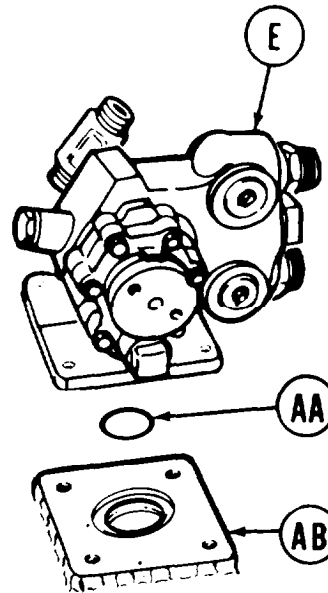
11. Using vise to hold elbows (U) or (V), connect tube assembly (W) or (X) to elbow.
12. Connect hose assembly (Y) or (Z) to elbow.
13. Using 1-1/2 inch wrench, tighten hose assembly (Y) or (Z) onto elbow.
14. Remove hose, elbow, and tube assembly from vise.

Go on to Sheet 8

TA141153

HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 8 of 11)

15. Install packing (AA) onto reservoir mount (AB).
16. Position valve (E) onto mount (AB).

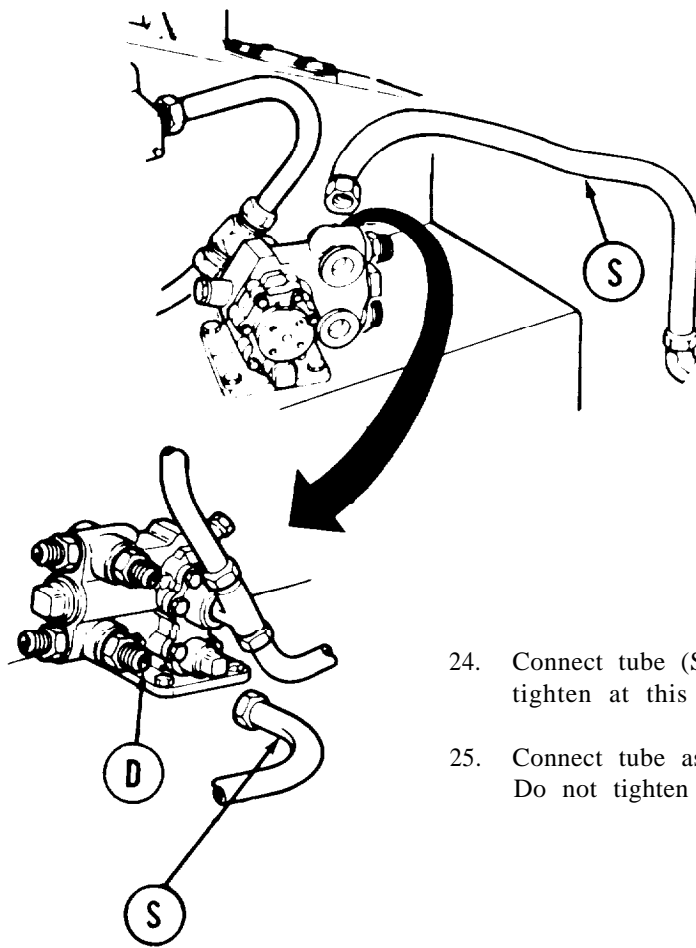


17. Using automotive wrench, tighten tee (G) in position to be able to connect tube assemblies (AC) and (AD) to tee (G).
18. Connect tube (AC) to tee (G).
19. Connect tube (AD) to tee (G) and adapter (AE).

20. Manually secure valve (E) onto reservoir with four screws and new lockwashers (AF) Do not tighten screws at this time.
21. Using 1-1/2 inch wrench, tighten nuts (AG) and (AH) on tube (AD).
22. Using 1-1/2 inch wrench, tighten nut (AJ) onto tee (G).
23. Using 3/4 inch wrench, tighten four screws and new lockwashers (AF).

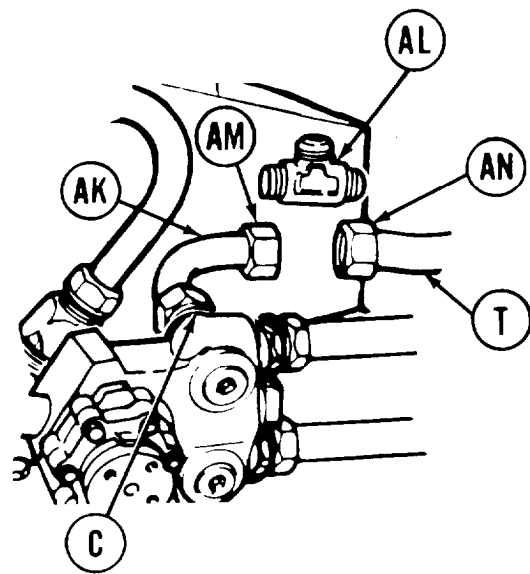
TA141154

HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 9 of 11)



24. Connect tube (S) to adapter (D). Do not tighten at this time.
25. Connect tube assembly (AK) to adapter (C). Do not tighten at this time.

26. Position tee (AL) to tube assembly (AK).
27. Connect tube nut (AM) to tee (AL). Do not tighten at this time.
28. Position tube (T) to tee (AL).
29. Connect tube nut (AN) to tee (AL). Do not tighten at this time.

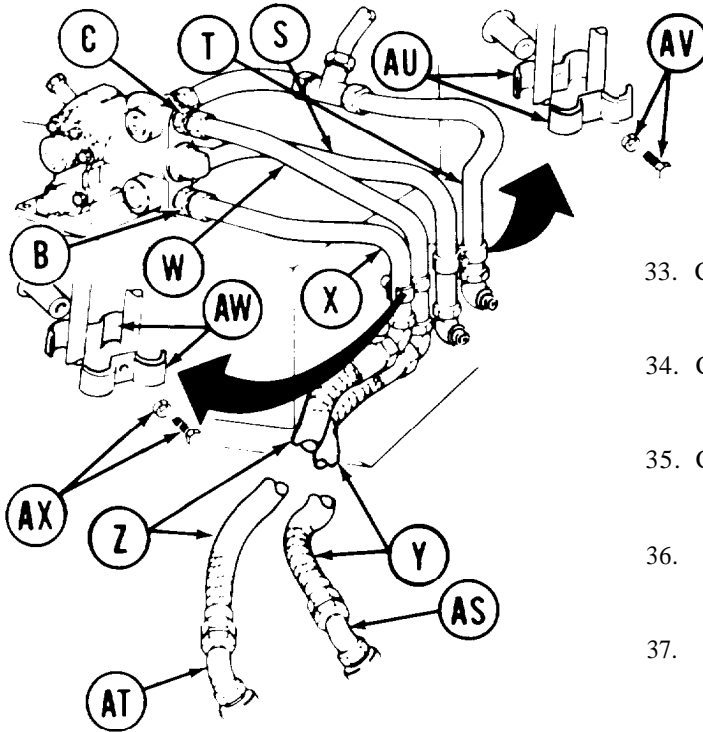
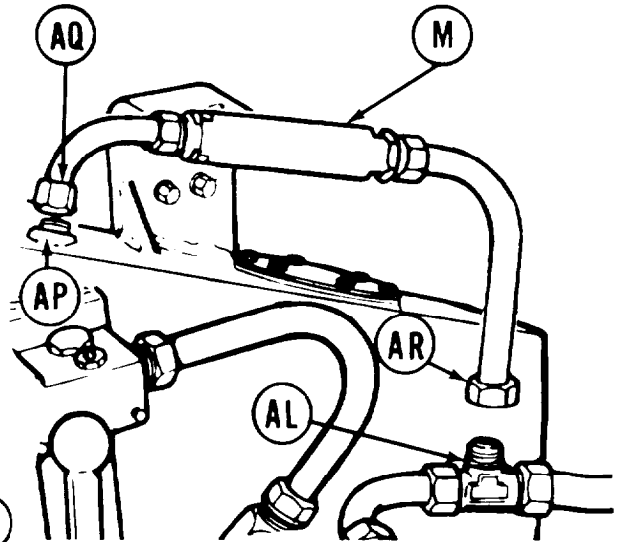


Go on to Sheet 10

TA141155

**HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 10 of 11)**

30. Install preformed packing onto adapter (AP).
31. Using 1-7/16 inch wrench, install adapter (AP) into reservoir
32. Position and connect tube assembly (M) and nut (AQ) to adapter (AP) and nut (AR) to see (AL). Do not tighten nuts at this time.



33. Connect hose assembly (Y) to elbow (AS). Do not tighten at this time.
34. Connect hose assembly (Z) to elbow (AT). Do not tighten at this time.
35. Connect tube (X) to adapter (B). Do not tighten at this time.
36. Connect tube (W) to adapter (C). Do not tighten at this time.
37. Install bulldozer actuating cylinder tubes (page 18-37).
38. Position clamps (AU) onto tube assemblies (S) and (T).

39. Using 9/16 inch socket, install screw and lockwasher (AV) to secure clamps (AU).
40. Position clamps (AW) onto tube assemblies (W) and (X).
41. Using 9/16 inch socket, install screw and new lockwasher (AX) to secure clamps (AW)

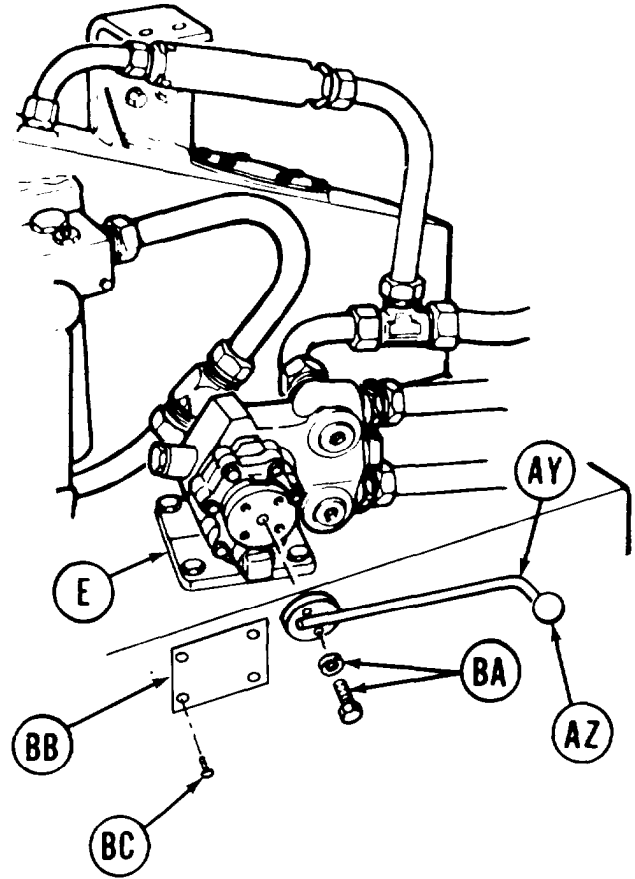
Go on to Sheet 11

TM141156



## HYDRAULIC PUMP VALVE AND ASSOCIATED LINES REPLACEMENT (Sheet 11 of 11)

42. Using appropriate wrenches, tighten all tube and hose assembly nuts that were connected in steps 8, 9, 10, 11, 24, 25, 27, 29, 32, 33, 34, 35, and 36.
43. Coat threads of handle (AY) with adhesive (Item 2, Appendix D) and install knob (AZ).
44. Position handle (AY) onto valve (E).
45. Using 9/16 inch socket, install two screws and washers (BA) to secure handle (AY) to valve (E).
46. Position instruction plate (BB) to reservoir. Using hammer, install four drive screws (BC) to secure instruction plate.
47. Install driver's seat assembly (page 17-43).
48. Install three fire extinguisher cylinders and lines (page 21-50).
49. Fill hydraulic reservoir (LO 9-2350-222-12).



End of Task

TA141157

**HYDRAULIC RESERVOIR LINE FLUID FILTER REPLACEMENT (Sheet 1 of 8)**

PROCEDURE INDEX

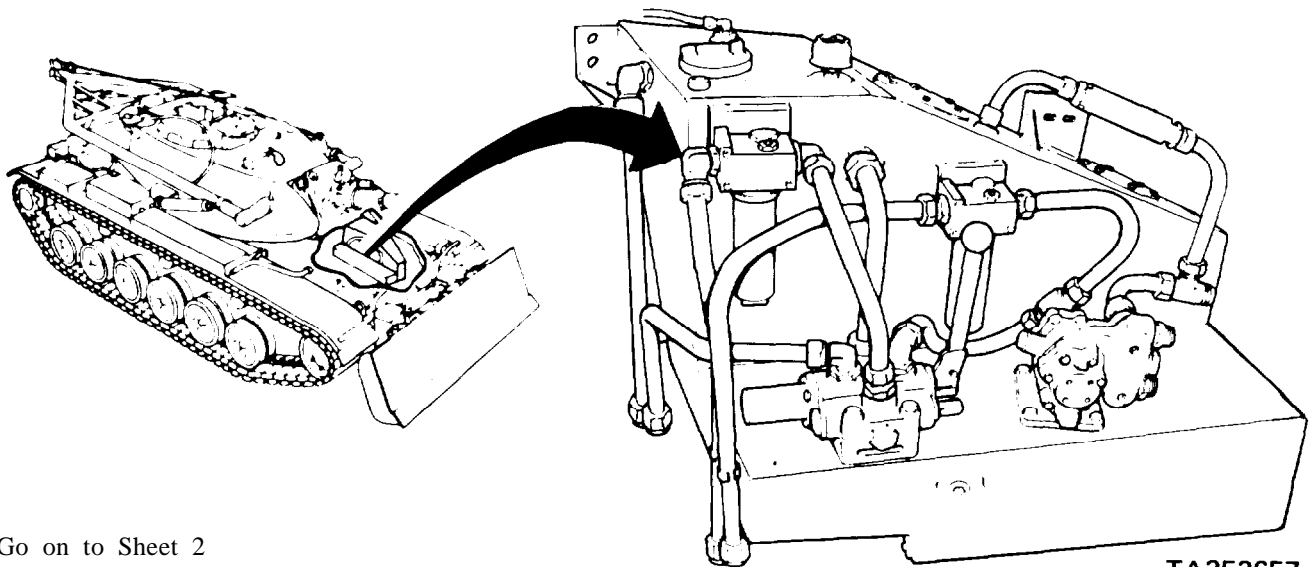
PROCEDURE	PAGE
Removal	18-57
Inspection	18-59
Installation	18-60

- TOOLS:**
- 1-5/8 in. open end wrench
  - 1-1/2 in. open end wrench
  - 7/16 in. combination box and open end wrench
  - Ratchet with 1/2 in. drive
  - 9/16 in. socket with 1/2 in. drive
  - 7/16 in. socket with 1/2 in. drive
  - 12 in. adjustable wrench
  - Vise

- SUPPLIES:**
- Rags (Item 65, Appendix D)
  - Dry cleaning solvent (Item 54, Appendix D)
  - Engine oil (Item 43, Appendix D)
  - Preformed packing (MS28778-16) (4 required)
  - Container to catch hydraulic oil
  - Lockwasher (MS35338-46)

- REFERENCES:**
- TM 9-2350-222-10
  - LO 9-2350-222-12

**PRELIMINARY PROCEDURE:** Lower moldboard to ground (TM 9-2350-222-10)



TA253657

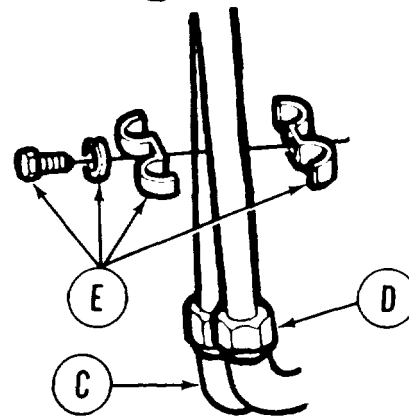
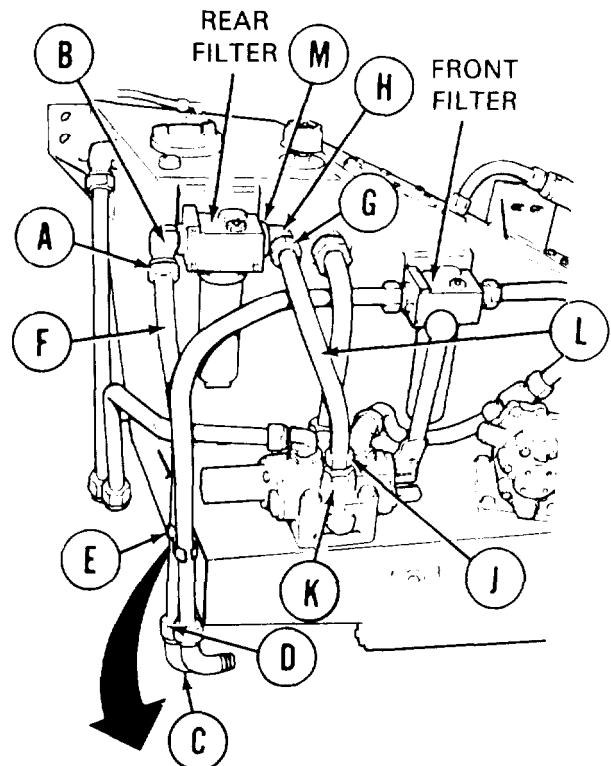
Go on to Sheet 2

## HYDRAULIC RESERVOIR LINE FLUID FILTER REPLACEMENT (Sheet 2 of 8)

## NOTE

If removing front filter, go to step 12.

1. Put container and rags under tubes and rags around valve.
2. Using 1-1/2 inch wrench, remove nut (A) from elbow (B).
3. Using 1-5/8 inch wrench to hold elbow (C) and using 1-1/2 inch wrench on nut (D), remove nut (D) from elbow (C).
4. Using 9/16 inch socket, remove screw, lockwasher, and clamp (E). Remove tube (F) from vehicle. Throw lockwasher away.
5. Using 1-1/2 inch wrench on nut (G), remove nut (G) from elbow (H).
6. Using 1-1/2 inch wrench on nut (J), remove nut (J) from adapter (K).
7. Remove tube (L) from vehicle.
8. Using 1-5/8 inch wrench on nut (M), loosen nut (M).

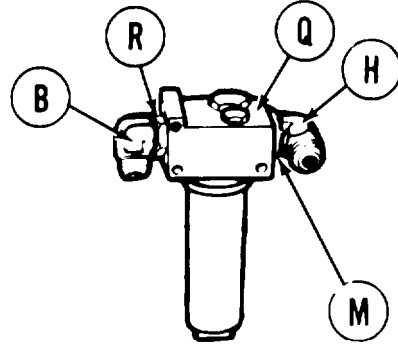


Go on to Sheet 3

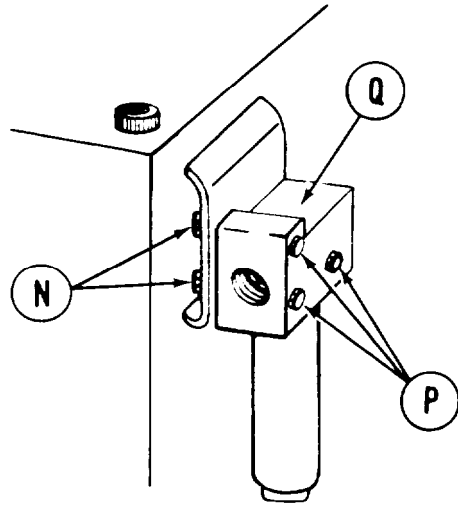
TA141159

HYDRAULIC RESERVOIR LINE FLUID FILTER REPLACEMENT (Sheet 3 of 8)

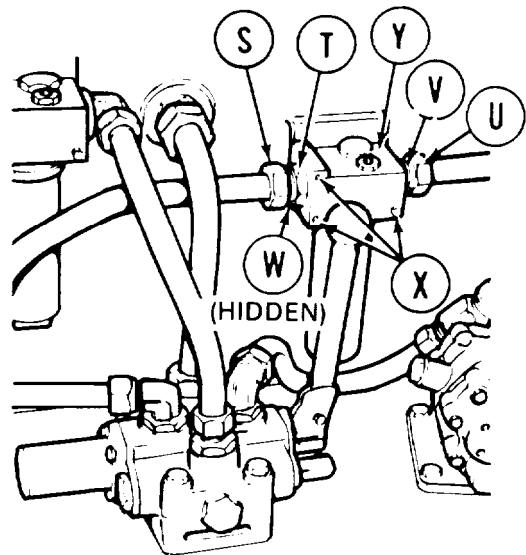
- 9. Remove elbow (H) from filter (Q). Remove packing and nut (M) from elbow (H) and throw packing away.
- 10. Using 1-5/8 inch wrench, loosen nut (R) and remove elbow (B) from filter (Q). Remove nut (R) from elbow (B). Remove packing from elbow and throw packing away.



- 11. Using 7/16 inch wrench on nuts (N) and using 7/16 inch socket on screws (P), remove three screws (P) and nuts (N), and remove rear filter (Q) from vehicle.



- 12. Using 1-1/2 inch wrench on nut (S), remove nut (S) from union (T).
- 13. Using 1-11/2 inch wrench on nut (U), remove nut (U) from union (V).
- 14. Using 1-3/4 inch wrench on unions (T) and (V), loosen unions (T) and (V).
- 15. Using 7/16 inch wrench on three nuts (W) and using 7/16 inch socket on three screws (X), remove three screws (X) and nuts (W) from front filter (Y).



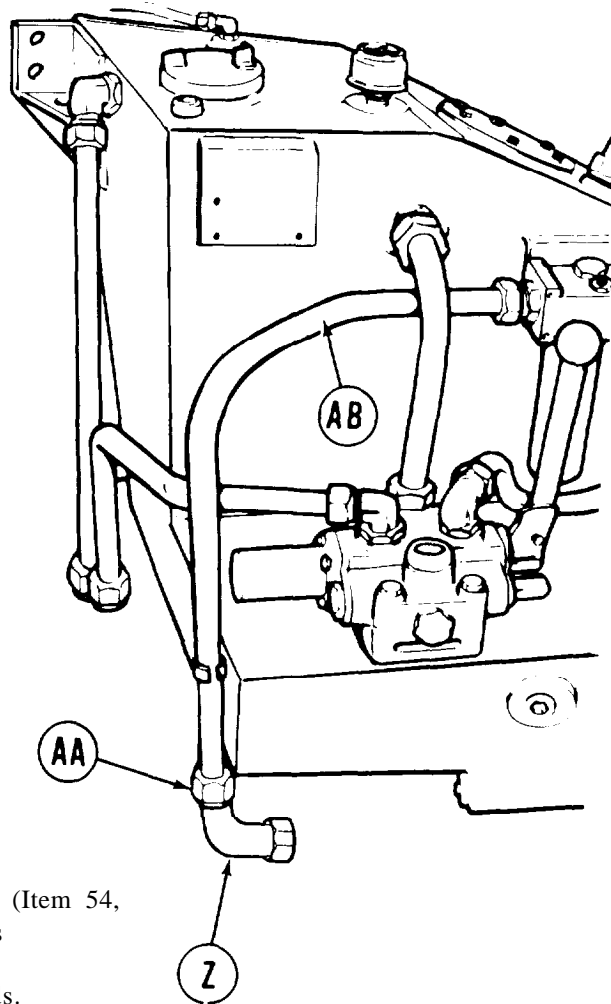
- 16. Remove filter (Y) from mount by pushing toward the left to move filter away from nut (U) and then to the right to remove from nut (S).
- 17. In vise, using 1-5/8 inch wrench on unions (T) and (V), remove unions (T) and (V) from filter (Y) and throw away old packings.

Go on to Sheet 4

TA141160

**HYDRAULIC RESERVOIR LINE FLUID FILTER REPLACEMENT (Sheet 4 of 8)**

18. Using 1-5/8 inch wrench to hold elbow (Z) and using 1-1/2 inch wrench on nut (AA), remove nut (AA) from elbow (Z). Remove tube (AB) from vehicle.

**INSPECTION:**

1. Using rags and dry cleaning solvent, (Item 54, Appendix D) clean tubes and fittings
2. Check for damaged tubes and threads.
3. Replace defective parts.

Go on to Sheet 5

TA141161

HYDRAULIC RESERVOIR LINE FLUID FILTER REPLACEMENT (Sheet 5 of 8)

NOTE

If installing front filter, go to step 15.

INSTALLATION:

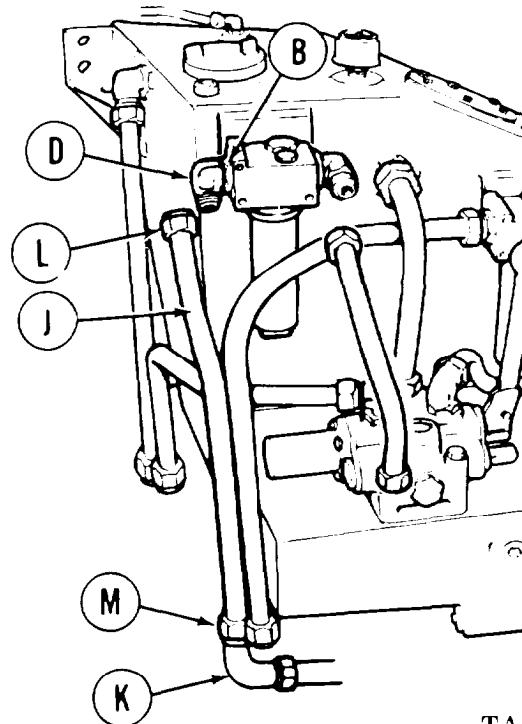
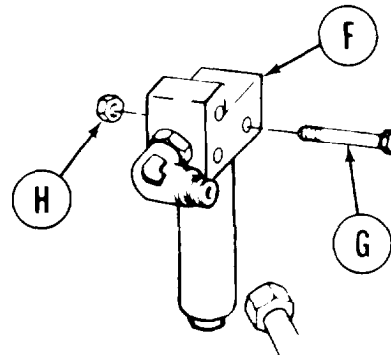
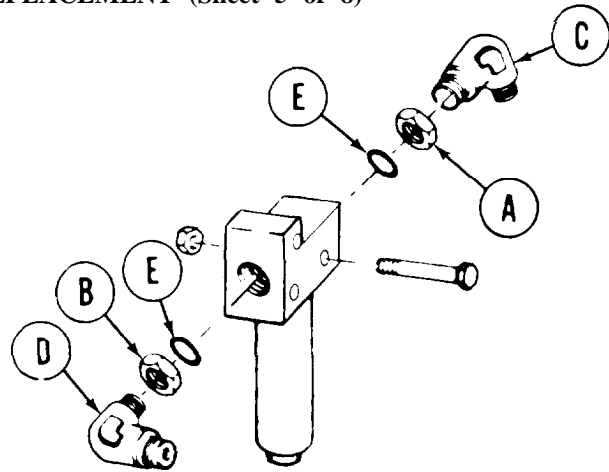
1. Lubricate all threads, packings, and sleeves with hydraulic fluid.
2. By hand, install nuts (A) and (B) onto elbows (C) and (D).
3. Install new packings (E) onto elbows (C) and (D).
4. Turn nuts (A) and (B) firmly down onto packings (E).
5. By hand, install elbows (C) and (D) into position to connect with control valve tube and slipping tube. Make sure nuts (A) and (B) turn with elbows (C) and (D) until elbows (C) and (D) are firmly set into filter ports.
6. Position filter (F) onto mounting bracket and using 7/16 inch socket and 7/16 inch wrench, install three screws (G) and three nuts (H) into filter (F) and mount.
7. Aline tube (J) with elbows (D) and (K) and start nuts (L) and (M) by hand.

NOTE

The following step will have to be performed in the turret.

8. Using 1-5/8 inch wrench on nut (B) and adjustable wrench to hold elbow (D), tighten nut (B).
9. Using 1-1/2 inch wrench, tighten nut (L).
10. Using 1-5/8 inch wrench to hold elbow (K) and using 1-1/2 inch wrench on nut (M), tighten nut (M).

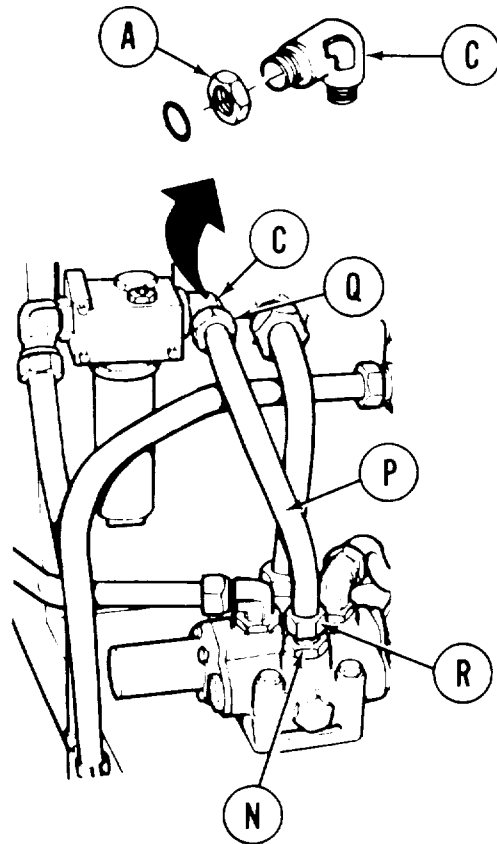
Go on to Sheet 6



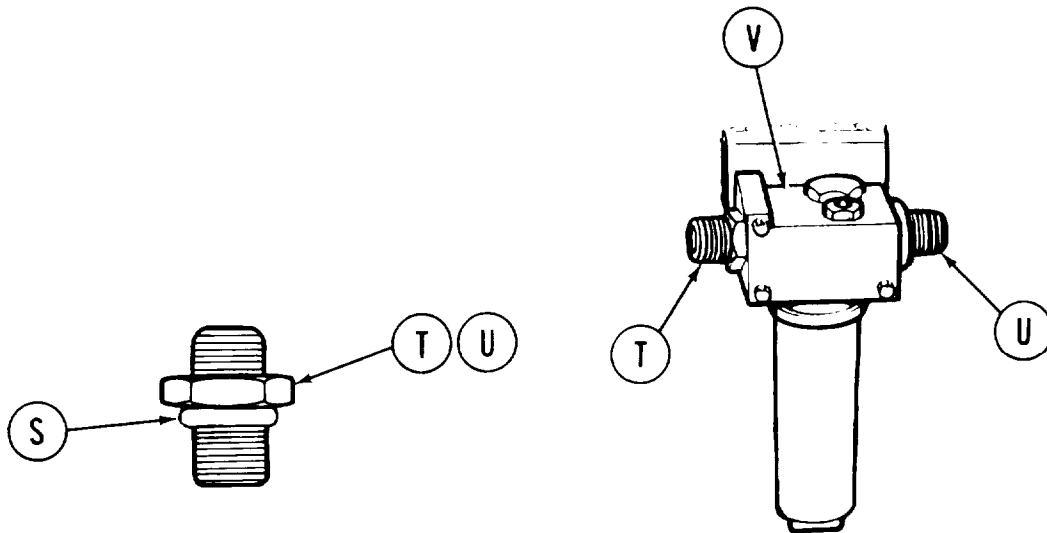
TA141162

**HYDRAULIC RESERVOIR LINE FLUID FILTER REPLACEMENT (Sheet 6 of 8)**

11. Aline tube (P) with union (N) and elbow (C).  
Start nuts (Q) and (R) by hand.
12. Using 1-1/2 inch wrench, tighten nuts (Q) and (R).
13. Using 1-5/8 inch wrench, tighten nut (A).



14. Install new packings (S) onto unions (T) and (U).
15. Holding front filter in vise, and using 1-5/8 inch wrench on unions (T) and (U), install unions (T) and (U) into filter (V) with packing (S) toward filter (V).

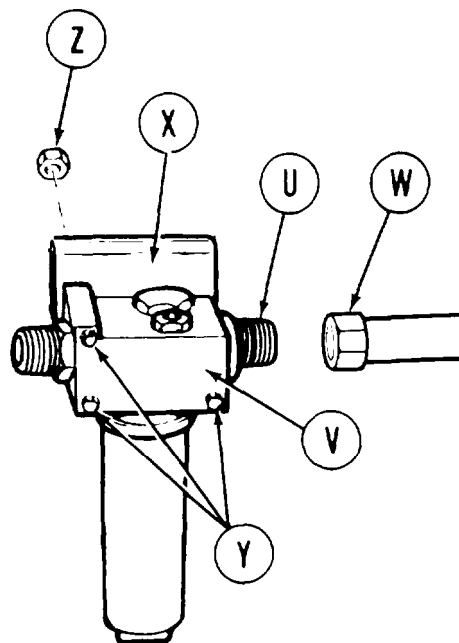


Go on to Sheet 7

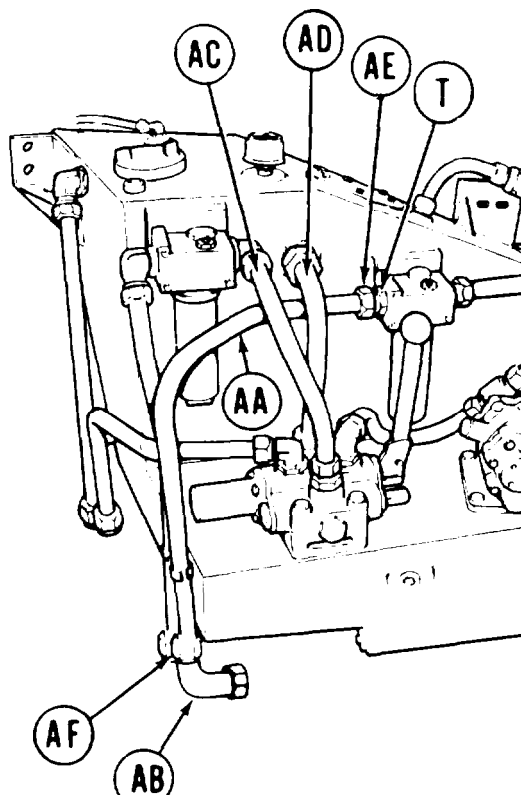
TA141163

HYDRAULIC RESERVOIR LINE FLUID FILTER REPLACEMENT (Sheet 7 of 8)

16. Aline union (U) on front filter (V) with nut on tube (W).
17. By hand, start nut on tube (W) onto union (U).
18. Aline front filter (V) onto mounting bracket (X)
19. Install three screws (Y) through filter (V) and bracket (X) Start three nuts (Z) onto screws (Y) by hand.
20. Using 7/16 inch wrench on three nuts (Z) and 7/16 inch socket on three screws (Y), tighten three screws (Y) and nuts (Z).
21. Using 1-1/2 inch wrench on nut (W), tighten nut (W) onto union.



22. Install tube (AA) onto elbow (AB) under tubes (AC) and (AD) onto union (T) as shown.
23. Using 1-1/2 inch wrench on nut (AE), tighten nut (AE) onto union (T).
24. Using 1-5/8 inch wrench to hold elbow (AB) and using 1-1/2 inch wrench on nut (AF), tighten nut (AF) onto elbow (AB).



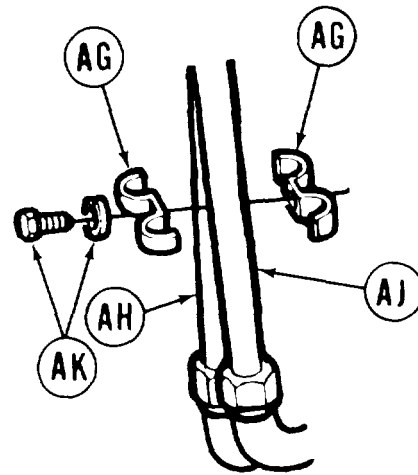
Go on to Sheet 8

TA141164



**HYDRAULIC RESERVOIR LINE FLUID FILTER REPLACEMENT (Sheet 8 of 8)**

25. Install clamp (AG) around tubes (AH) and (AJ).
26. Install screw and new lockwasher (AK) into clamp (AG) and reservoir mount.
27. Using 9/16 inch socket, tighten screw (AK).
28. Refill hydraulic reservoir with oil and check for leaks (LO 9-2350-222-12).
29. Purge hydraulic system of air by raising and lowering moldboard several times (TM 9-2350-222-10).



End of Task

TA141165

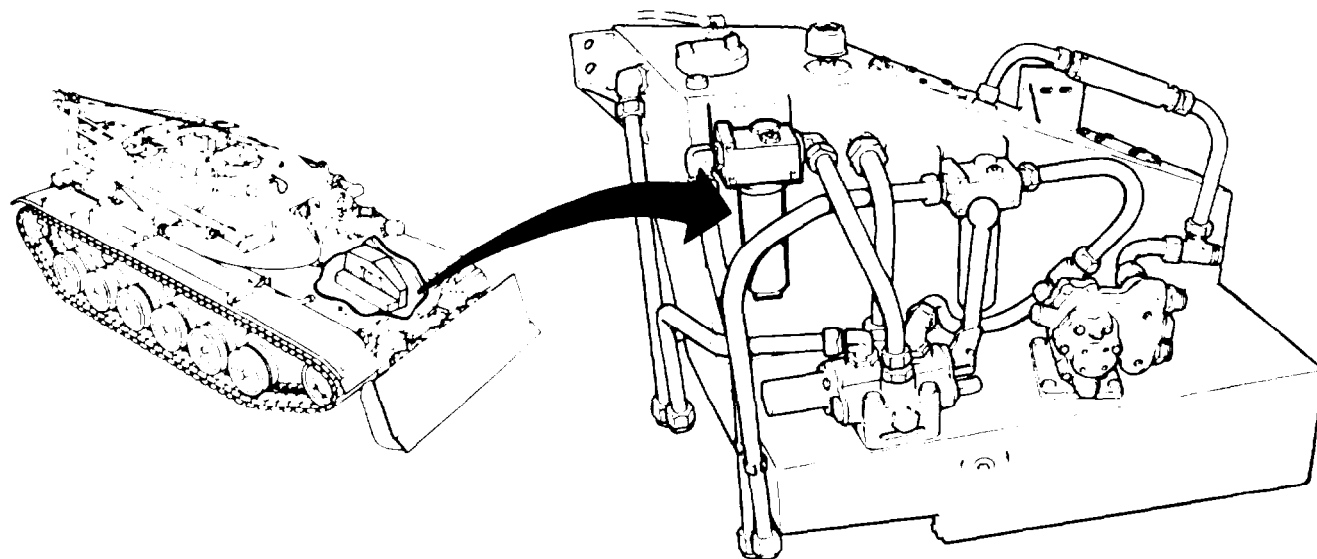
**HYDRAULIC RESERVOIR LINE FLUID FILTER ELEMENT REPLACEMENT (Sheet 1 of 3)**

TOOLS: Diagonal cutting pliers  
1-1/2 in. open end wrench

SUPPLIES: Rags (Item 65, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)  
Filter element parts kit (5703567)  
Lockwire (Item 59, Appendix D)  
Engine oil (Item 43, Appendix D)

REFERENCES: TM 9-2350-222-10  
LO 9-2350-222-12

PRELIMINARY PROCEDURE: Turn SUCTION SHUTOFF VALVE to OFF position (TM 9-2350-222-10).



**NOTE**

**Procedures for removing and installing front and rear filter elements are the same.**

Go on to Sheet 2

TA141166

**HYDRAULIC RESERVOIR LINE FLUID FILTER ELEMENT REPLACEMENT (Sheet 2 of 3)**

**REMOVAL:**

1. Place rags under filter (A) to catch oil drippings.
2. Using pliers, cut lockwire (B). Remove lockwire from filter (A).
3. Using 1-1/2 inch wrench on nut of tube (C), remove tube (C) from filter housing (A).
4. Remove filter element (D) from tube (C).

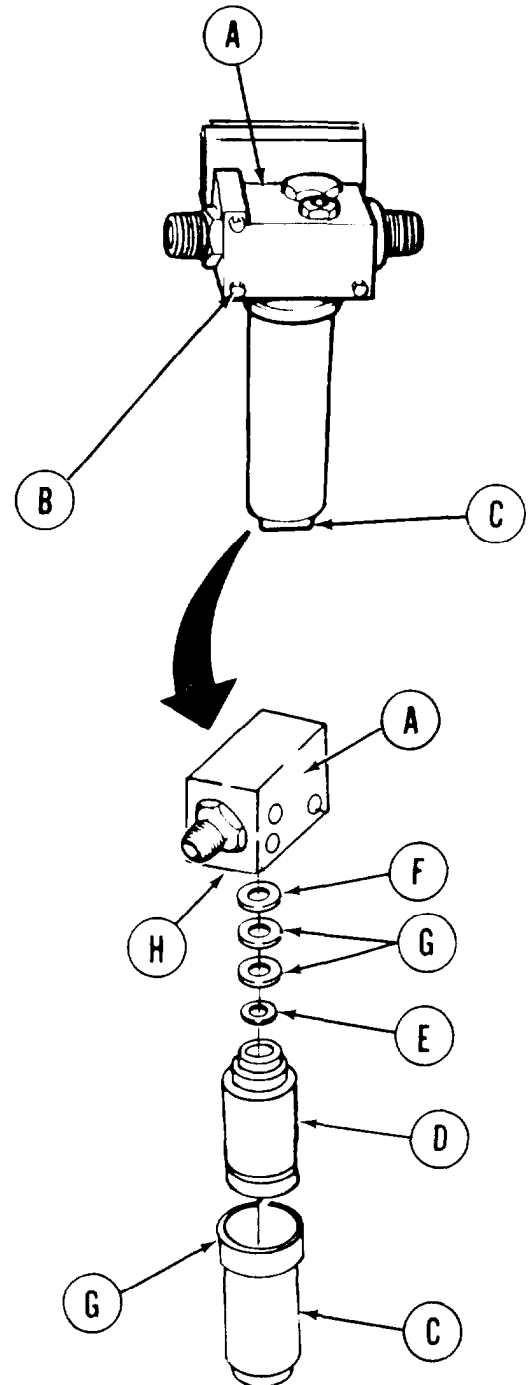
**NOTE**

**It may be necessary to remove spring located in filter housing (A) to remove preformed packings and backup rings.**

5. Remove preformed packing (E) from filter element (D).
6. Remove preformed packing (F) from filter housing (A).
7. Remove two backup rings (G) from filter element (D).
8. Throw away items (D), (E), (F), and (G).

**CLEANING AND INSPECTION:**

1. Using dry cleaning solvent (Item 54, Appendix D) and rags, clean out filter tube.
2. Inspect tube and housing for damaged threads.
3. Remove damaged parts.



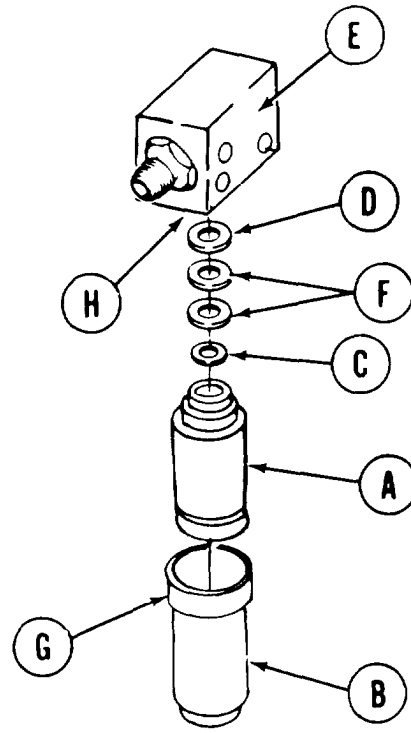
Go on to Sheet 3

TA141167

HYDRAULIC RESERVOIR LINE FLUID FILTER ELEMENT REPLACEMENT (Sheet 3 of 3)

INSTALLATION:

1. Install filter element (A) into tube (B).
2. Install preformed packing (C) onto filter element (A).
3. Install preformed packing (D) into filter housing (E).
4. Install two backup rings (F) onto filter element (A).
5. By hand, install tube (B) with filter element (A) into filter housing (E) making sure packings are seated.
6. Using 1-1/2 inch wrench on nut on tube (B), tighten tube (B).
7. Install lockwire (Item 59, Appendix D) through hole (G), upper end of tube (B), and through hole (H) in filter housing (E).
8. Refill hydraulic reservoir with oil and check for leaks (LO 9-2350-222-12).



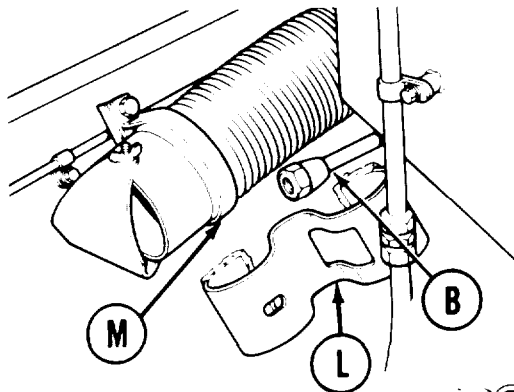
End of Task

TA141168

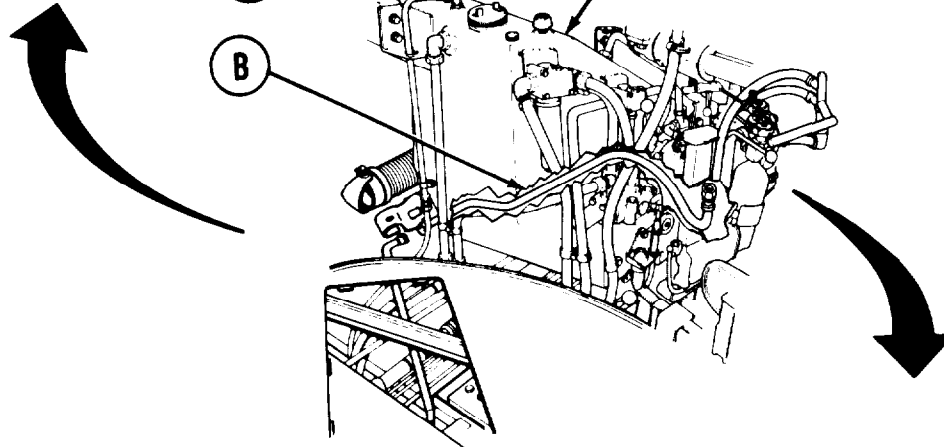
**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (LATE MODEL)**  
 (Sheet 4 of 7)

**NOTE**

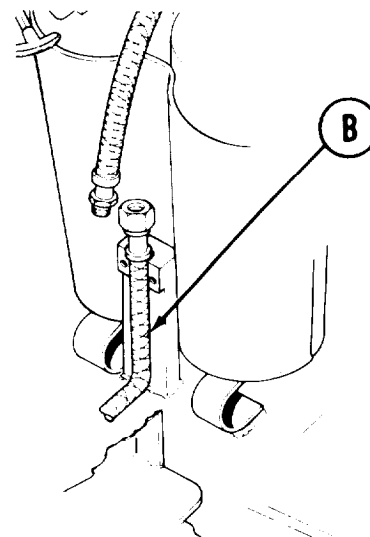
**Two persons are required to remove tube (B).**



9. First person, working from turret, place tube (B) behind delay bottle bracket (L) just below heater hose (M) as shown.



10. Second person in driver's station place front end of tube (B) behind hydraulic reservoir (N) and up against left side of tank hull just below heater hose (M) as shown.
11. First person pull tube (B) towards rear of vehicle until it is free.

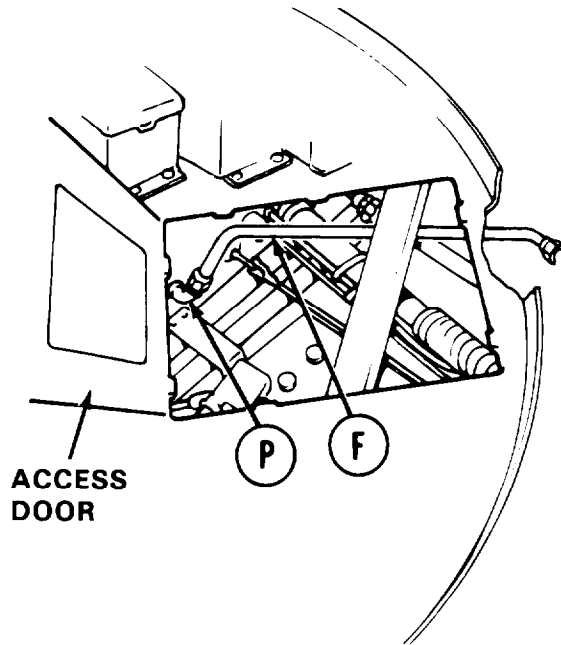


Go on to Sheet 5

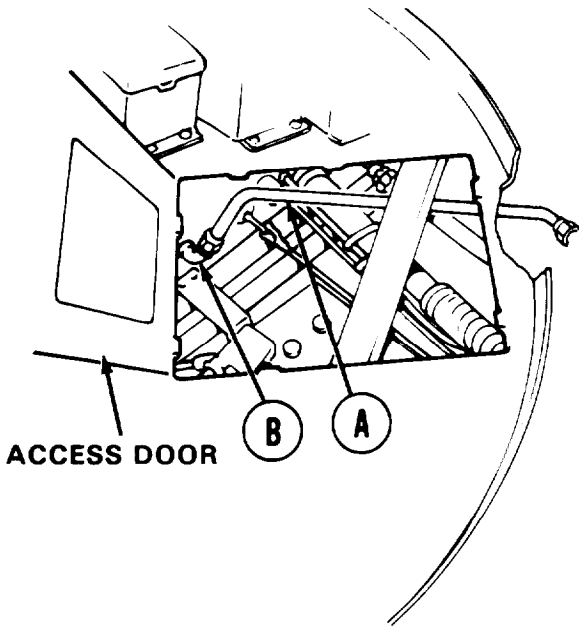
TA253746

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (LATE MODEL)**  
(Sheet 5 of 7)

12. Open platform access door and traverse turret to gain access to tube assembly (F) and elbow (P).
13. Using 1-1/4 inch wrench, disconnect tube assembly (F) from elbow (P).
14. Remove tube assembly (F) through turret floor access.



**INSTALLATION:**



**NOTE**

**Apply zinc chromate primer (Item 50, Appendix D) to threads prior to installation.**

1. Install tube assembly (A) through turret under turret floor.
2. Connect tube assembly (A) to elbow (B), finger tight.

Go on to Sheet 6

TA253747

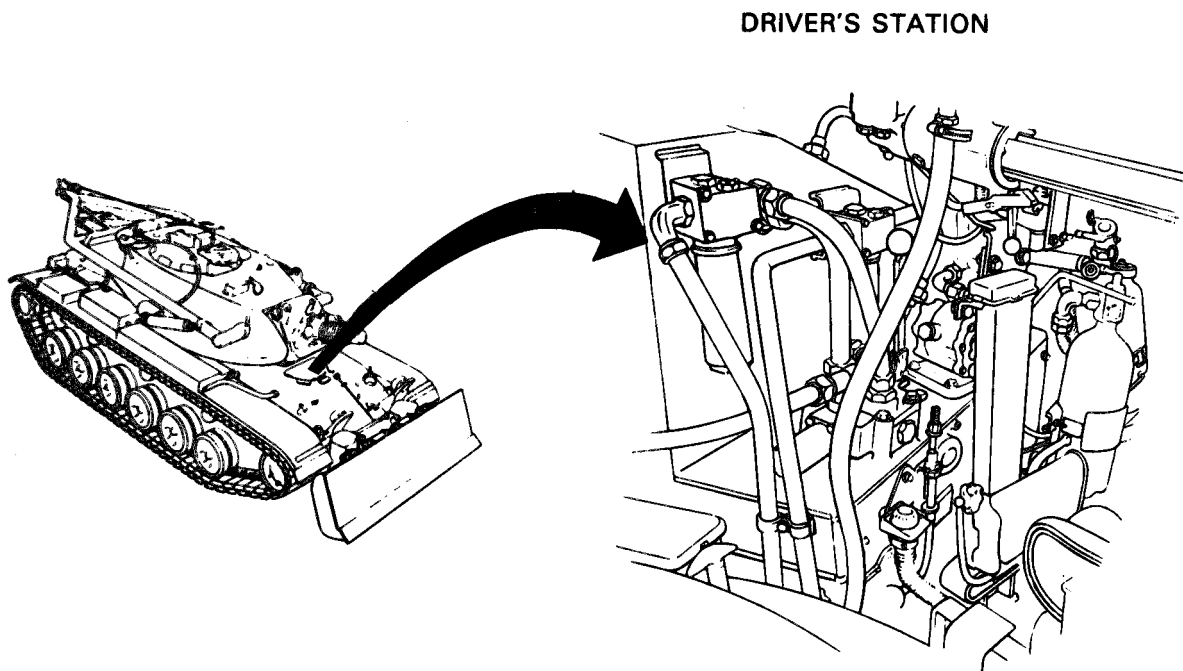
**REAR FLUID FILTER TUBE ASSEMBLY REPLACEMENT (Sheet 1 of 3)**

**TOOLS:** Ratchet with 1/2 in. drive  
9/16 in. socket with 1/2 in. drive  
1-1/2 in. open end wrench  
15 in. adjustable automotive wrench.

**SUPPLIES:** Rags (Item 65, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)  
Engine oil (Item 43, Appendix D)  
lockwasher (MS35338-27)

**REFERENCES:** TM 9-2350-222-10  
LO 9-2350-222-12

**PRELIMINARY PROCEDURE:** Traverse turret to gain access to tube assembly  
(TM 9-2350-222-10)



Go on to Sheet 2

TA141169

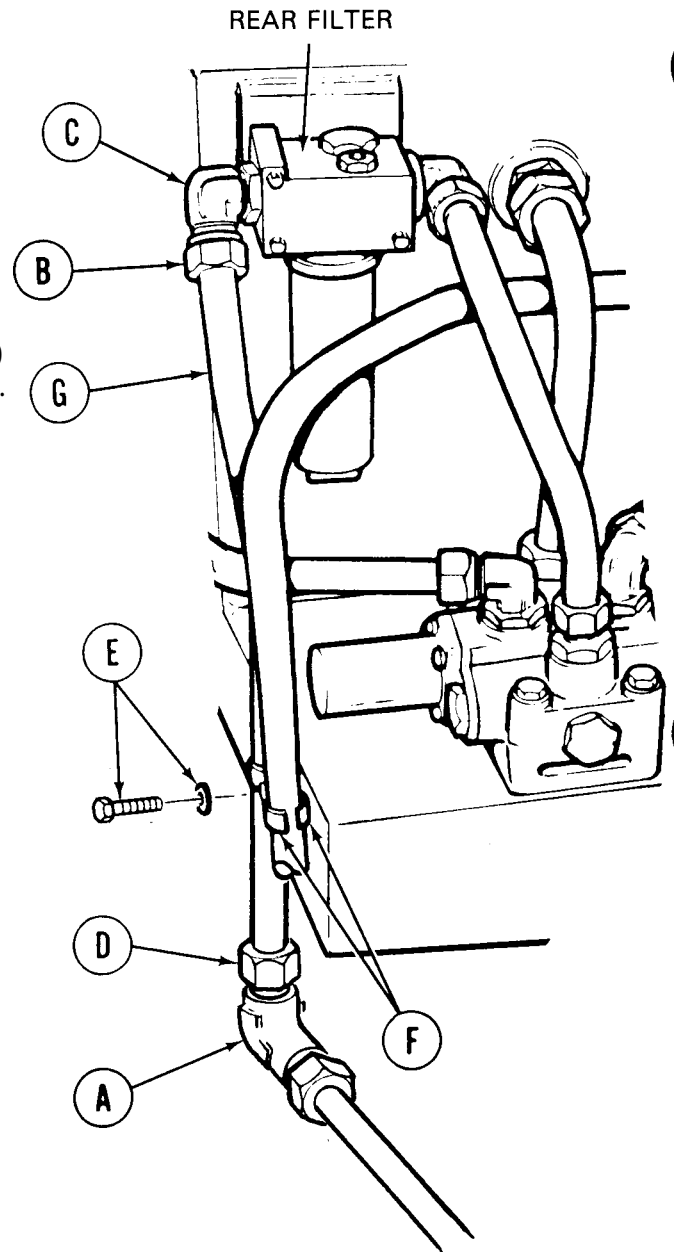
REAR FLUID FILTER TUBE ASSEMBLY REPLACEMENT (Sheet 2 of 3)

REMOVAL:

1. Place rags under elbow (A) to catch hydraulic fluid.
2. Using wrench, remove nut (B) from elbow (C).
3. Using wrench, remove nut (D) from elbow (A) while holding elbow (A) with automotive wrench.
4. Using socket, remove screw and lockwasher (E) from clamp (F), taking care to be sure clamp (F) does not fall into hull. Throw lockwasher away.
5. Remove tube (G) from vehicle.
6. Cover elbows (A) and (C) with rags.

CLEANING AND INSPECTION:

1. Using rags and dry cleaning solvent (Item 54, Appendix D), clean tube assembly and fittings.
2. Inspect for damage.
3. Replace damaged parts.



Go on to Sheet 3

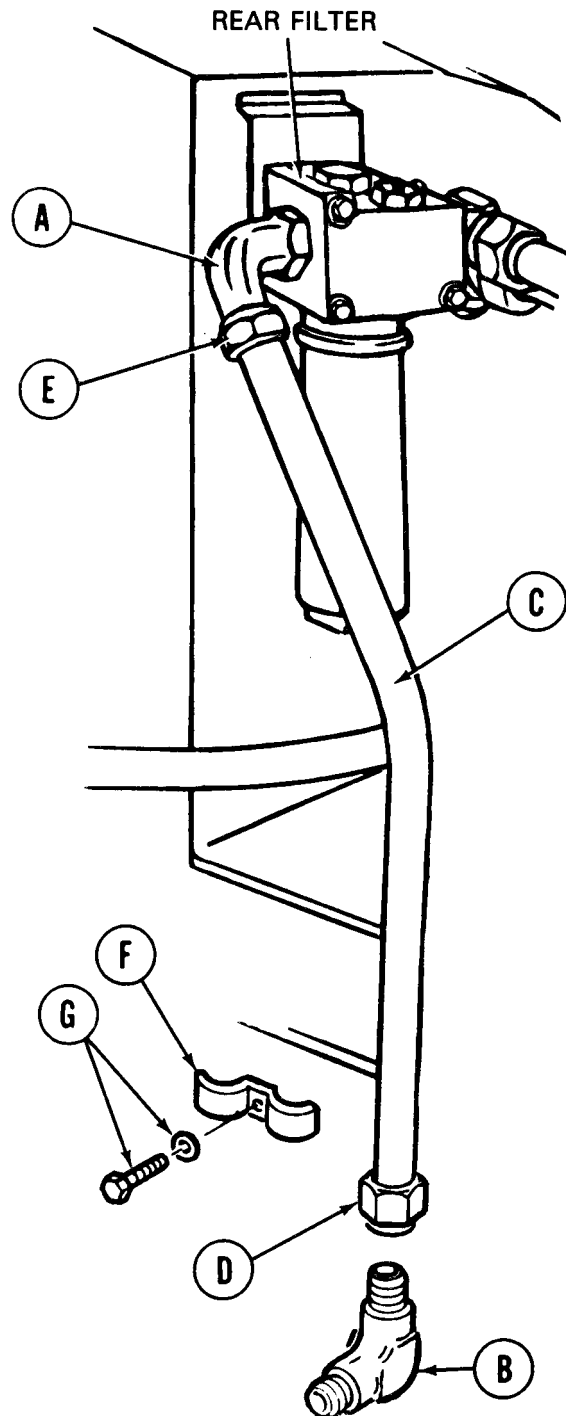
TA141170



## REAR FLUID FILTER TUBE ASSEMBLY REPLACEMENT (Sheet 3 of 3)

### INSTALLATION:

1. Lubricate threads and sleeves with hydraulic oil (Item 43, Appendix D) before assembling.
2. Remove covers from elbows (A) and (B).
3. Set tube (C) down onto elbow (B) and start nut (D) onto elbow (B) by hand.
4. Aline tube (C) with elbow (A) and start nut (E) onto elbow (A) by hand.
5. Using socket, install clamp (F) with screw and new lockwasher (G).
6. Using wrench, tighten nut (E).
7. Using automotive wrench to hold elbow (B) and, using wrench on nut (D), tighten nut (D) onto elbow (B).
8. Refill hydraulic reservoir with engine oil and check for leaks (LO 9-2350-222-12).
9. Purge hydraulic system of air by raising and lowering moldboard several times (TM 9-2350-222-10).



End of Task

TA141171

HYDRAULIC SELECTOR CONTROL VALVE REPLACEMENT (Sheet 1 of 8)

PROCEDURE INDEX

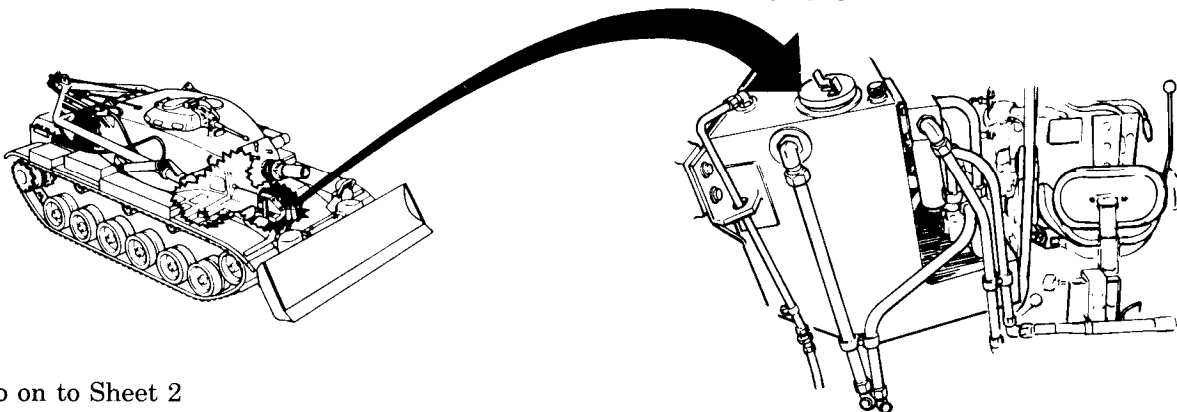
PROCEDURE	PAGE
Removal	18-71
Cleaning and Inspection	18-73
Installation	18-74

TOOLS: Ratchet with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 7/16 in. socket with 1/2 in. drive  
 1/2 in. combination box and open end wrench  
 3/16 in. socket head screw key (allen wrench)  
 7/16 in. combination box and open end wrench  
 1-1/2 in. open end wrench  
 2 in. open end wrench  
 1-3/4 in. open end wrench  
 1-5/8 in. open end wrench  
 Long round nose pliers  
 3/4 in. combination box and open end wrench

SUPPLIES: Rags (Item 65, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Engine oil (Item 43, Appendix D)  
 Preformed packing (MS28778-16) (4 required)  
 Preformed packing (MS28778-20) (2 required)  
 Clip (7753911)  
 Lockwasher (MS35338-27)  
 Lockwasher (MS35338-29) (4 required)  
 Lockwasher (MS35338-25) (2 required)

REFERENCES: TM 9-2350-222-10  
 LO 9-2350-222-12

PRELIMINARY PROCEDURES: Drain hydraulic reservoir (LO 9-2350-222-12)  
 Remove-driver's seat assembly (page 17-41)



Go on to Sheet 2

A141172

HYDRAULIC SELECTOR CONTROL VALVE REPLACEMENT (Sheet 2 of 8)

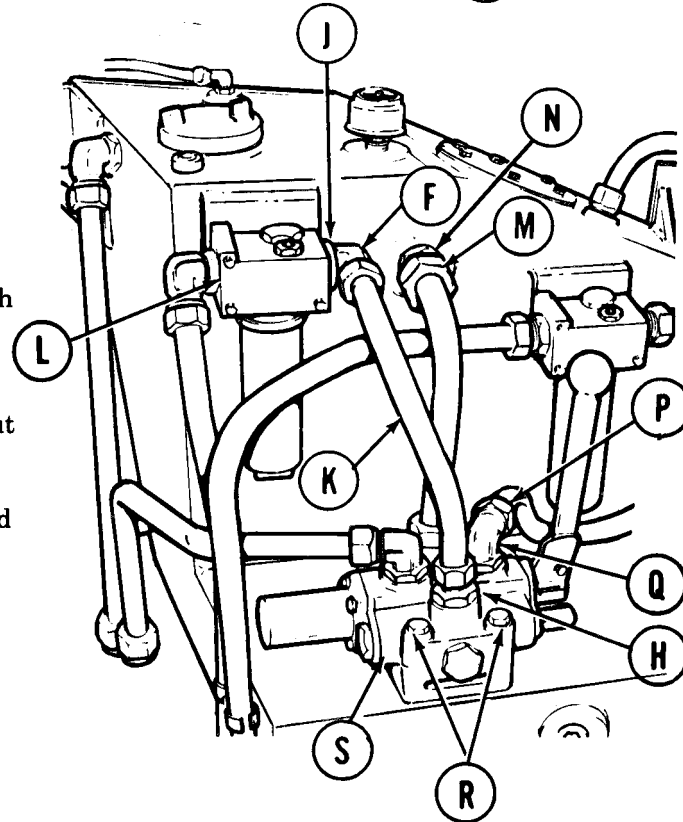
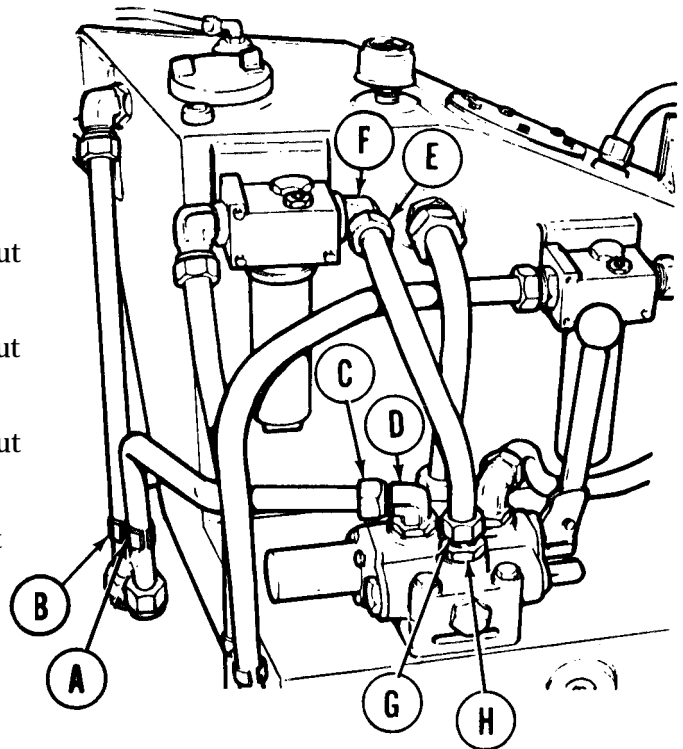
**REMOVAL:**

1. Using 9/16 inch socket, remove screw and lockwasher (A) from clamp (B) making sure clamp (B) does not fall into hull. Throw lockwasher away.
2. Using 1-1/2 inch wrench on nut (C), remove nut (C) from elbow (D).
3. Using 1-1/2 inch wrench on nut (E), remove nut (E) from elbow (F).
4. Using 1-1/2 inch wrench on nut (G), remove nut (G) from union (H).
5. Using 1-5/8 inch wrench on nut (J), loosen nut (J).

**NOTE**

It may be necessary to loosen three screws on filter (L) to remove tube (K) from elbow (F). Use 7/16 inch wrench, if necessary.

6. Remove tube (K) from elbow (F) and union (H).
7. **Remove elbow (F) from filter (L) and throw away old packing.**
8. **Using 2 inch wrench on nut (M), and 1-3/4 inch wrench to hold adapter (N), remove nut (M) from adapter (N).**
9. **Using 1-1/2 inch wrench on nut (P), remove nut (P) from elbow (Q).**
10. **Using 3/4 inch wrench, remove four screws and lockwashers (R) from valve (S). Throw lockwashers away.**

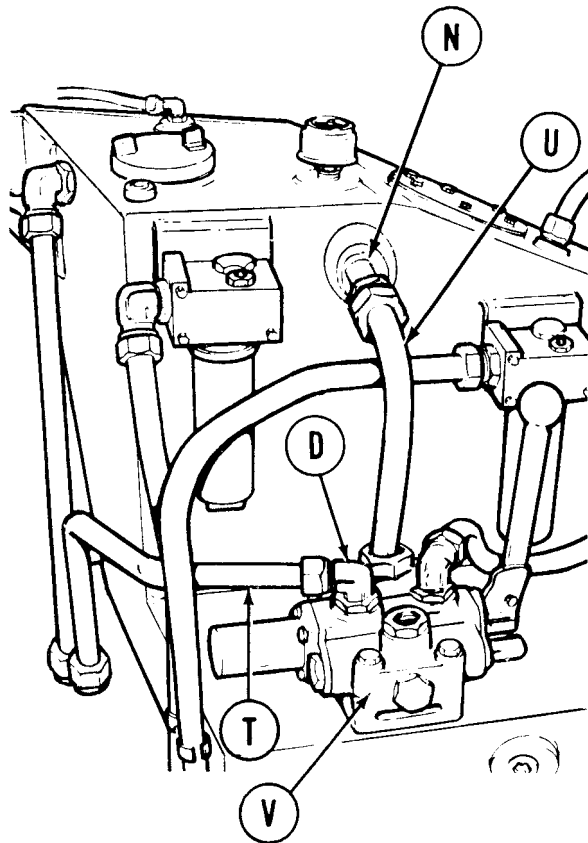


Go on to Sheet 3

TA141173

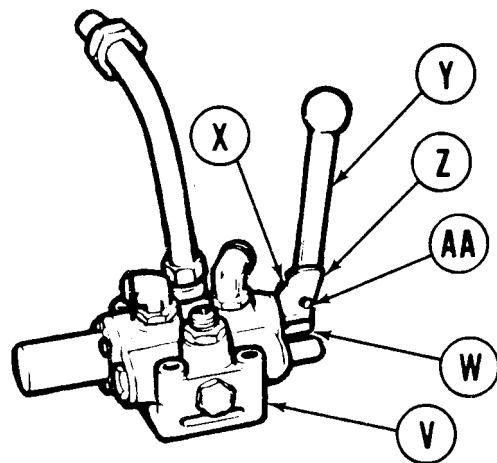
HYDRAULIC SELECTOR CONTROL VALVE REPLACEMENT (Sheet 3 of 8)

11. Pull tube (T) out of elbow (D).
12. Remove valve from reservoir mount. Pull tube (U) out of reservoir adapter (N).
13. Using 1-3/4 inch wrench, remove adapter (N) from reservoir. Throw away old packing.
14. Put valve (V) into vise.



15. Using pliers, remove clip and pin (W) (hidden).
16. Using 7/16 inch wrench on two screws and lockwashers (X) (hidden in view), remove two screws and lockwashers (X) from valve (V). Throw lockwashers away.

17. Remove handle (Y) and bracket (Z) from valve (V).
18. Using 1/2 inch wrench on nut behind screw (AA) and allen wrench on screw (AA), remove nut and screw (AA). Remove handle (Y) from bracket (Z).

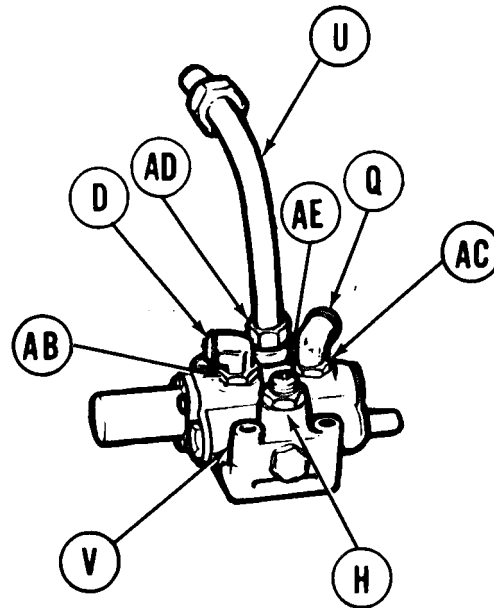


Go on to Sheet 4

TA141174

## HYDRAULIC SELECTOR CONTROL VALVE REPLACEMENT (Sheet 4 of 8)

19. Using 1-5/8 inch wrench on union (H), remove union (H) from valve (V) and throw away old packing.
20. Using 1-5/8 inch wrench on nuts (AB) and (AC), loosen nuts (AB) and (AC) to let elbows (D) and (Q) move freely.
21. Using 2 inch wrench on nut (AD), and 1-3/4 inch wrench on union (AE), remove nut (AD) from union (AE). Remove tube (U) from union (AE).
22. Remove elbows (D) and (Q) from valve (V) and throw away old packings. Remove nuts (AB) and (AC) from elbows (D) and (Q).
23. Using 1-3/4 inch wrench on union (AE), remove union (AE) from valve (V) and throw away old packing.



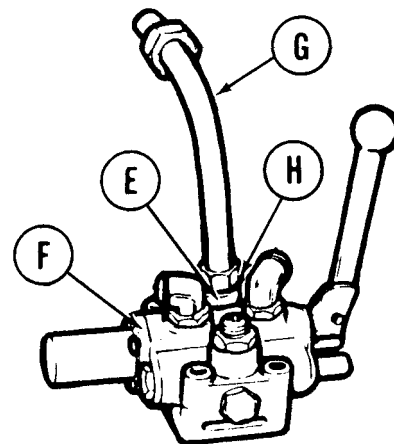
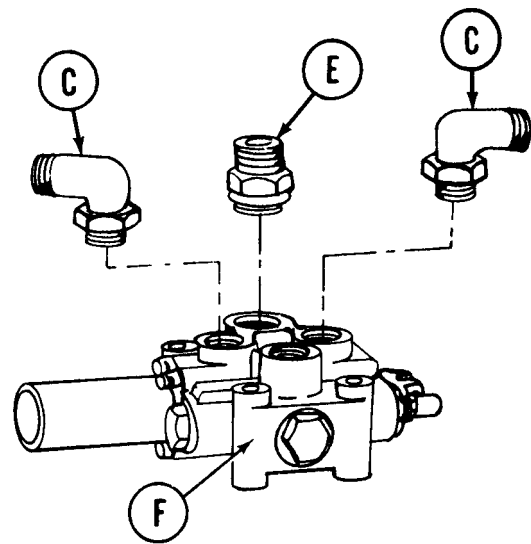
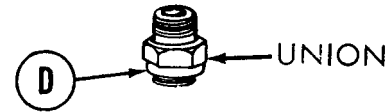
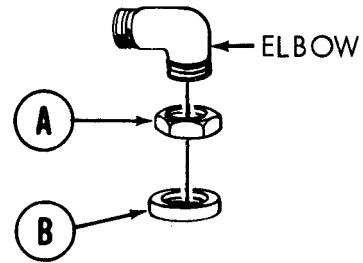
## CLEANING AND INSPECTION:

1. Using rags and dry cleaning solvent (Item 54, Appendix D), clean tubes and fitting.
2. Check for damaged threads and parts.
3. Replace damaged parts.

HYDRAULIC SELECTOR CONTROL VALVE REPLACEMENT (Sheet 5 of 8)

INSTALLATION:

1. Lubricate threads and packings with oil (Item 43, Appendix D) before installing.
2. Install nut (A) and new packing (B) onto elbows (C) as shown.
3. Install new packing (D) onto two unions (E).
4. Put valve (F) into vise.
5. By hand, install two elbows (C) into valve (F) as shown.
6. Using 1-5/8 inch wrench, install union (E) into valve (F) as shown.
7. By hand, install tube (G) into union (E) on valve (F) and start nut (H) onto union (E).

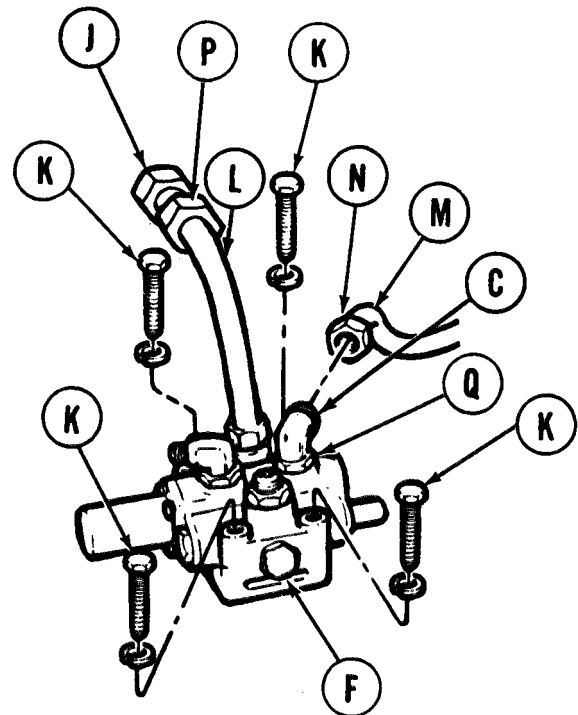
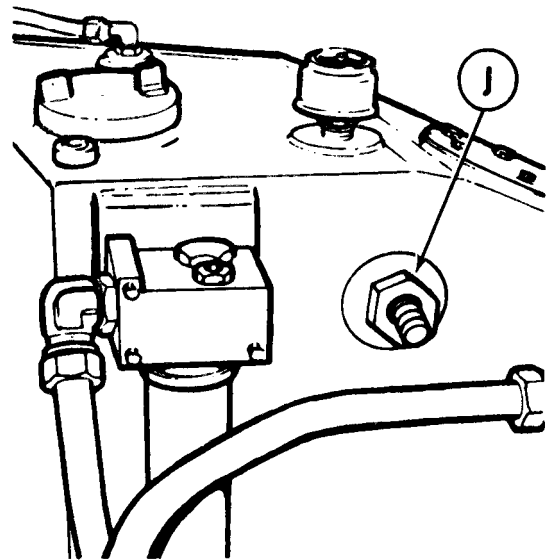


Go on to Sheet 6

TA141176

## HYDRAULIC SELECTOR CONTROL VALVE REPLACEMENT (Sheet 6 of 8)

8. Install new packing onto union (J).
9. Using 1-3/4 inch wrench, install union (J) into reservoir connection as shown.
10. Install four screws and new lockwashers (K) into new valve.
11. Aline valve (F) onto reservoir mount and install tube (L) into union (J) on reservoir.
12. Install tube (M) into elbow (C) and start nut (N) on elbow (C).
13. By hand, start nut (P) onto union (J).
14. Using inch wrench on nut (P), tighten nut (P) onto union (J).
15. Using 1-1/2 inch wrench on nut (N), tighten nut (N) onto elbow (C).
16. Using 3/4 inch wrench on four screws and new lockwashers (K), tighten screws.
17. Using 1-5/8 inch wrench on nut (Q), tighten nut (Q).

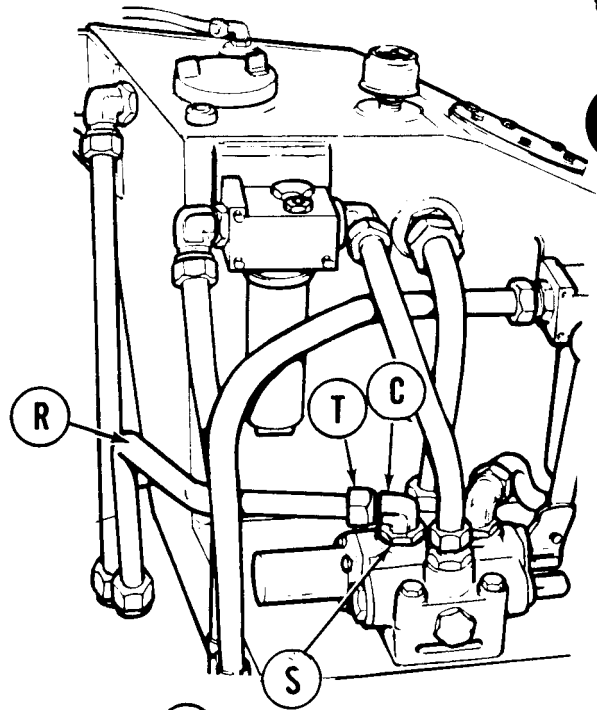
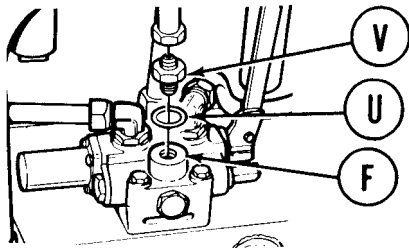


Go on to Sheet 7

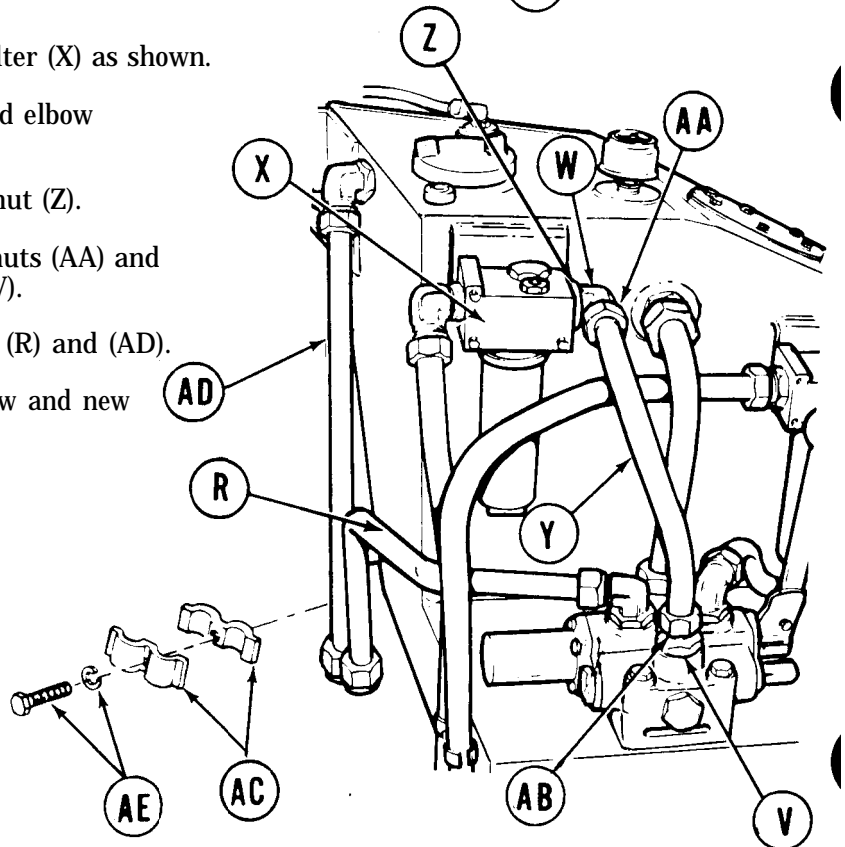
TA141177

HYDRAULIC SELECTOR CONTROL VALVE REPLACEMENT (Sheet 7 of 8)

18. Aline tube (R) with elbow (C).
19. Using 1-5/8 inch wrench, tighten nut (S).
20. Start nut (T) on elbow (C), and using 1-1/2 inch wrench, tighten nut (T) on elbow (C).
21. Install packing (U) on union (V).
22. Using 1-5/8 inch wrench, install union (V) into valve (F) as shown.



23. Install nut and packing onto elbow (W) as shown in step 2.
24. By hand, install elbow (W) onto filter (X) as shown.
25. Install tube (Y) onto union (V) and elbow (W) as shown.
26. Using 1-5/8 inch wrench, tighten nut (Z).
27. Using 1-1/2 inch wrench, tighten nuts (AA) and (AB) onto elbow (W) and union (V).
28. Position clamp (AC) around tubes (R) and (AD).
29. Using 9/16 inch socket, install screw and new lockwasher (AE) onto clamp (AC).



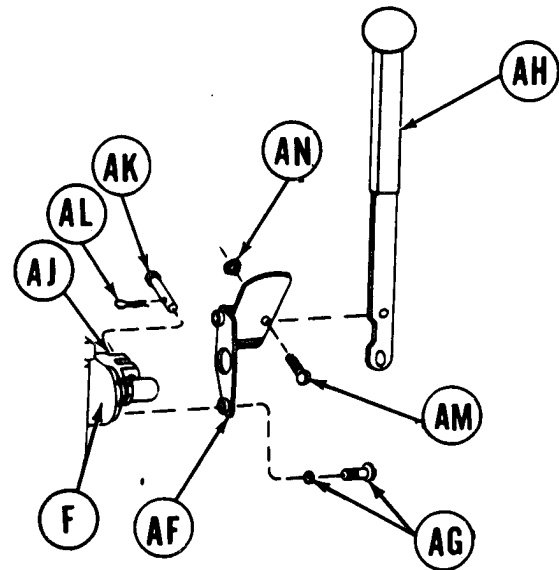
Go on to Sheet 8

TA141178



## HYDRAULIC SELECTOR CONTROL VALVE REPLACEMENT (Sheet 8 of 8)

30. Position handle mounting bracket (AF) onto valve (F) and install two screws and new lockwashers (AG) into bracket (AF).
31. Using 7/16 inch wrench on two screws and new lockwashers (AG), tighten two screws and new lockwashers (AG).
32. Position handle (AH) onto bracket (AF) and valve control arm (AJ) and install pin (AK) and cotter pin (AL) through lower hole in handle (AH).
33. Install screw (AM) through mounting bracket (AF) and upper hole in handle (AH) and install nut (AN) onto screw (AM).
34. Using 1/2 inch wrench on nut (AN) and allen wrench on screw (AM), tighten nut (AN) and screw (AM).
35. Refill hydraulic reservoir with oil (Item 43, Appendix D) and check for leaks (LO 9-2350-222-12).
36. Install driver's seat assembly (page 17-43).
37. Operate moldboard and winch (TM 9-2350-222-10).



End of Task

TA141179

HYDRAULIC SUCTION LINE SHUTOFF VALVE REPLACEMENT (Sheet 1 of 6)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	18-79
Cleaning and Inspection	18-81
Installation	18-81

TOOLS: 3/4 in. socket with 1/2 in. drive  
 1/4 in. electric drill  
 3/16 in. twist drill  
 Cold chisel  
 Ball peen hammer  
 Slip joint pliers  
 1/8 in. drive punch  
 Ratchet with 1/2 in. drive  
 10 in. extension with 1/2 in. drive  
 1/8 in. twist drill

1/2 in. combination box and open end wrench  
 7/16 in. combination box and open end wrench  
 11/16 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench  
 Vice

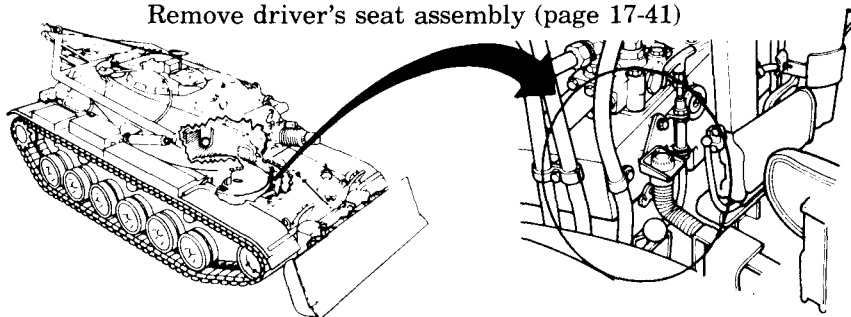
SUPPLIES: Locknuts (MS51922-13) (8 required)  
 Gaskets (10864321) (2 required)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Engine oil (Item 43, Appendix D)  
 Lockwashers (MS35338-29) (4 required)

Drive screws (MS21318-8) (4 required)  
 Drive screws (MS21318-2) (2 required)  
 Pin (MS39086-158)  
 Pin (MS39086-163)  
 Preformed packing (MS28775-232)  
 Rags (Item 65, Appendix D)

PERSONNEL: Two

REFERENCES: LO 9-2350-222-12  
 TM 9-2350-222-10

PRELIMINARY PROCEDURES: Rotate turret for access to reservoir (TM 9-2350-222-10)  
 Drain hydraulic reservoir (LO 9-2350-222-12)  
 Remove driver's seat assembly (page 17-41)



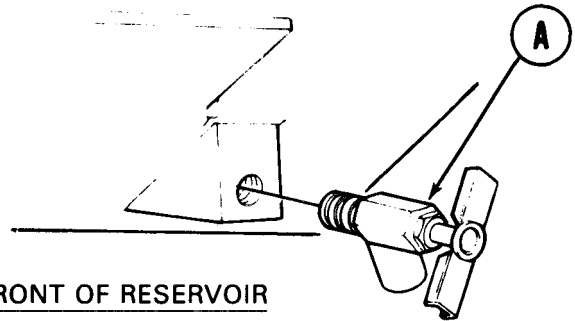
Go on to Sheet 2

TA141180

**HYDRAULIC SUCTION LINE SHUTOFF VALVE REPLACEMENT (Sheet 2 of 6)**

**REMOVAL:**

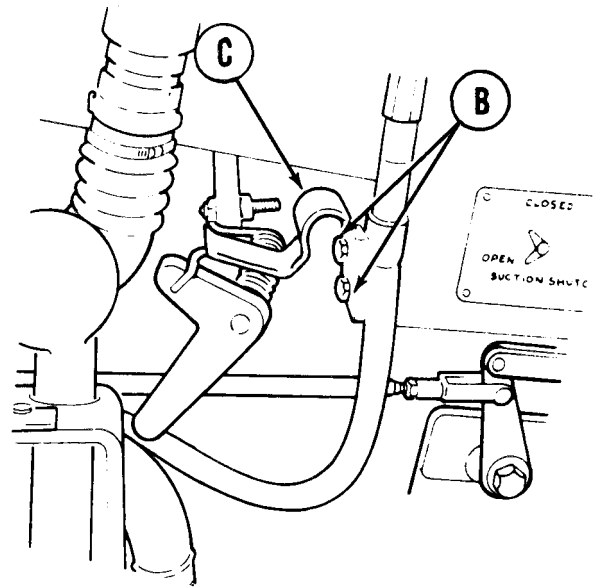
- Using 11/16 inch wrench on drain cock body (A), remove drain cock from reservoir.



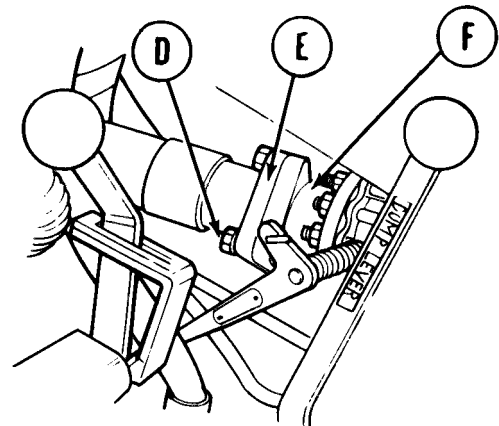
- Using 7/16 inch wrench, remove two screws and two washers (B) from spring clip (C) mount, and remove spring clip (C) from reservoir.

**NOTE**

The following step requires two people.



- With one person in turret using 3/4 inch socket and extension, remove four screws and four lockwashers (D) securing suction line flange (E) to adapter (F). Other person in driver's compartment holds socket in place. Throw lockwashers away.
- Remove suction line flanges (E).
- Pull suction line away from valve and cover open end of suction line.

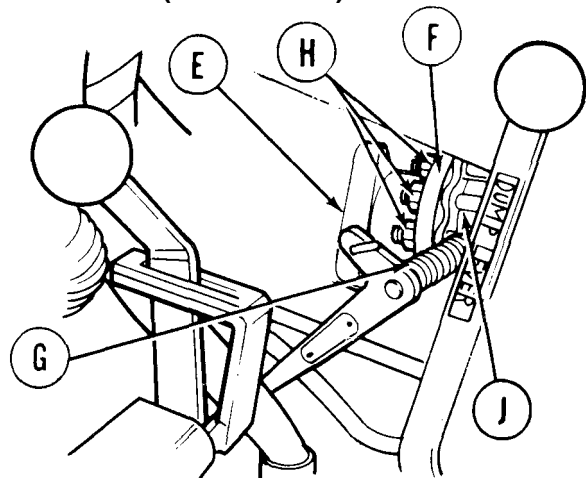


Go on to Sheet 3

TA141181

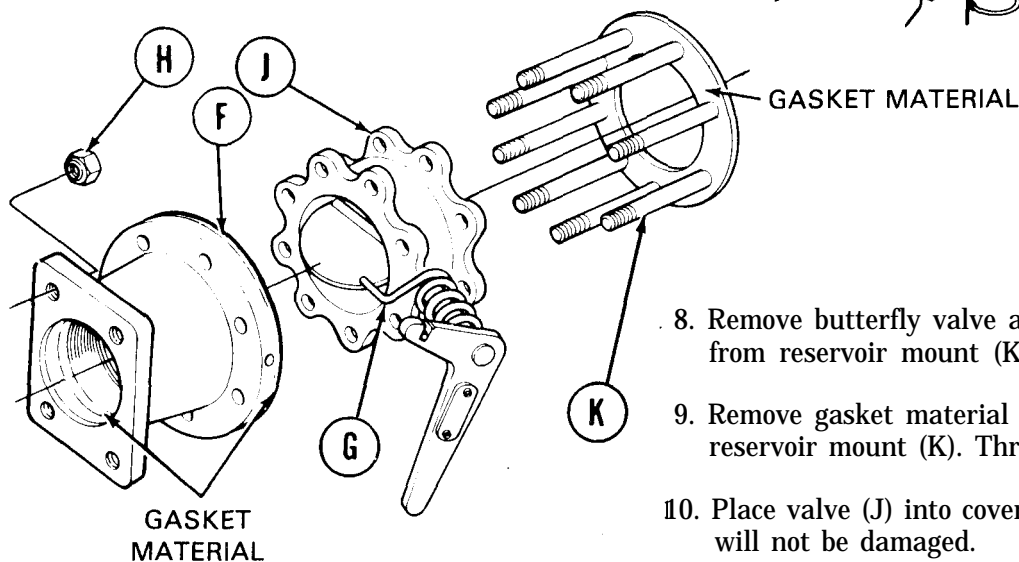
HYDRAULIC SUCTION LINE SHUTOFF VALVE REPLACEMENT (Sheet 3 of 6)

6. Using pliers, pull spring (G) from adapter (F).
7. Using 1/2 inch wrench, remove eight locknuts (H) and take adapter (F) off valve (J). Throw locknuts away.



NOTE

It may be necessary to tap valve with hammer to break gasket seal.

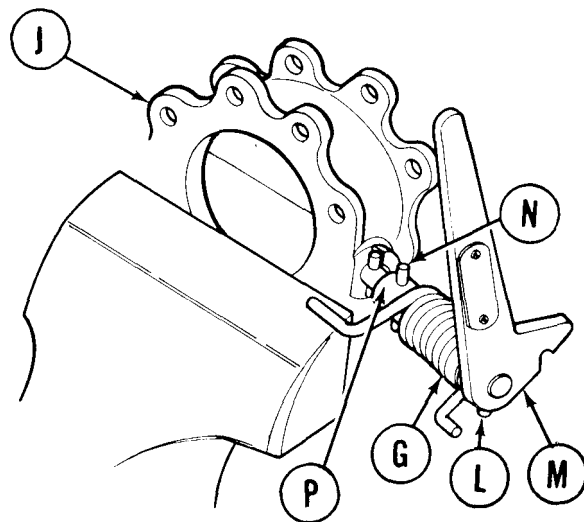


8. Remove butterfly valve and handle assembly (J) from reservoir mount (K).
9. Remove gasket material from adapter (E) or reservoir mount (K). Throw gaskets away.
10. Place valve (J) into covered vise so that faces will not be damaged.
11. Using pliers, remove spring pin (L) from handle. Throw pin away.

NOTE

Spring pin (L) may have to be drilled out using 3/16 inch drill.

12. Compress spring (G) towards handle (M).
13. Remove spring (G) and handle assembly (M).
14. Using hammer and punch, tap spring pin (N) out of handle extension (P). Throw pin away.



Go on to Sheet 4

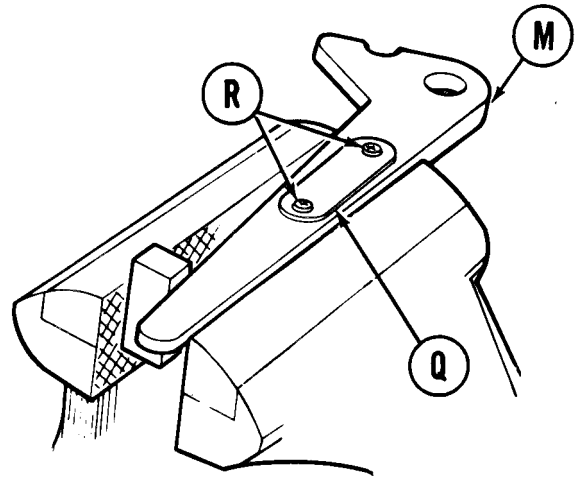
TA141182

HYDRAULIC SUCTION LINE SHUTOFF VALVE REPLACEMENT (Sheet 4 of 6)

- Using vise to hold handle (M) and using hammer and cold chisel between name plate (Q) and handle (M), pry out two screws (R) from handle (M) and name plate (Q). Throw screws away.

NOTE

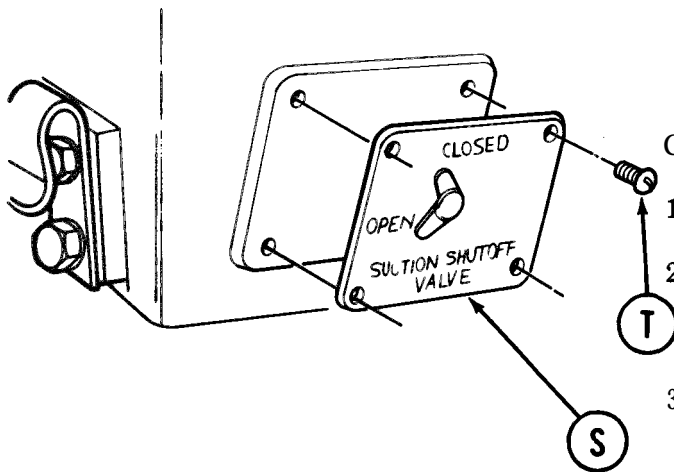
Heads of screws may break off during removal. Use 1/8 inch twist drill to drill out shafts of screws.



In driver's compartment, using hammer and cold chisel between name plate (S) and reservoir, pry out four screws (T) and take off name plate (S). Throw screws away.

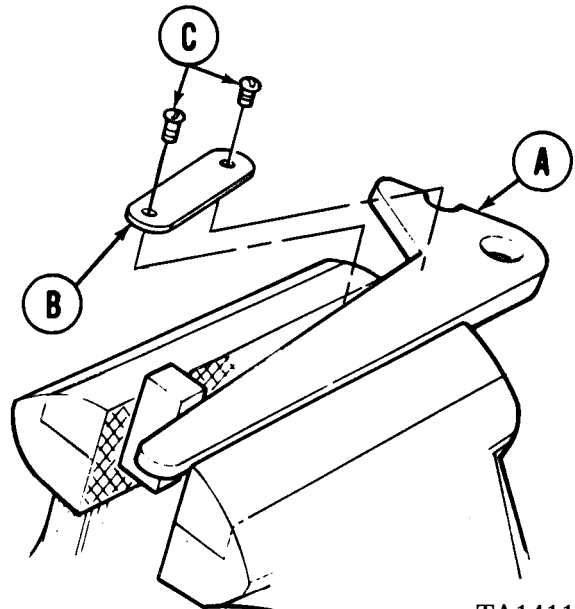
CLEANING AND INSPECTION:

- Inspect all parts closely for damage or wear.
- Clean valve, drain cock, flanges, and adapter with dry cleaning solvent (Item 54, Appendix D) and rags.
- Replace damaged or worn parts.



INSTALLATION:

- Place handle (A) in vise using hammer to install name plate (B) with two screws (C).

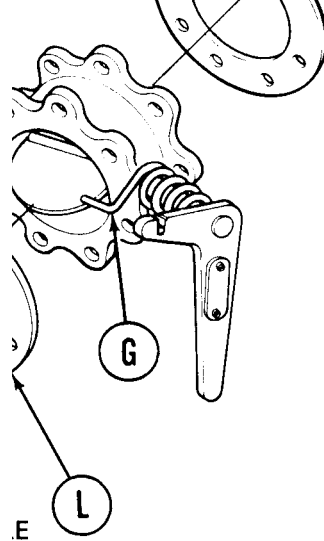
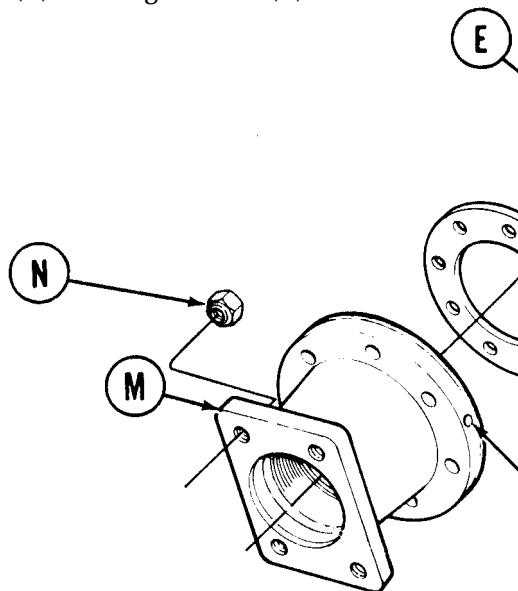
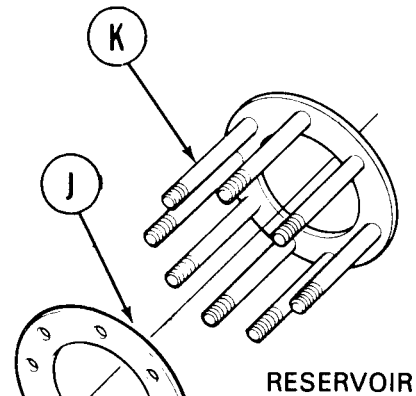
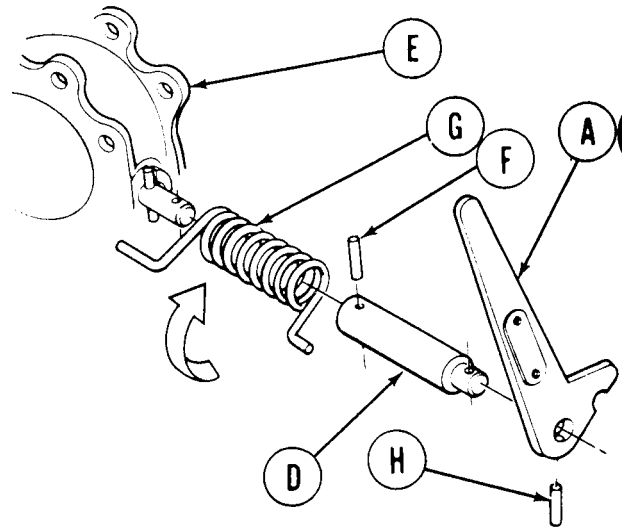


Go on to Sheet 5

TA141183

HYDRAULIC SUCTION LINE SHUTOFF VALVE REPLACEMENT (Sheet 5 of 6)

2. Install handle extension (D) onto valve (E).  
Using hammer, install new spring pin (F).
3. Install spring (G) onto handle extension (D) and valve (E).
4. Install handle (A) onto handle extension (D) with new spring pin (H).
5. Using pliers, turn spring (G) one-quarter turn (90°) clockwise (direction of arrow) and install into notch on handle (A).
6. Install gasket (J) onto eight studs (K) on reservoir mount.
7. Install valve (E) on eight studs (K) onto reservoir mount.
8. Install gasket (L) onto eight studs (K) and valve (E).
9. Install adapter (M) onto eight studs and valve (E).
10. Using pliers, install spring (G) into hole in adapter (M).
11. Using 1/2 inch wrench, install eight new locknuts (N) onto eight studs (K).



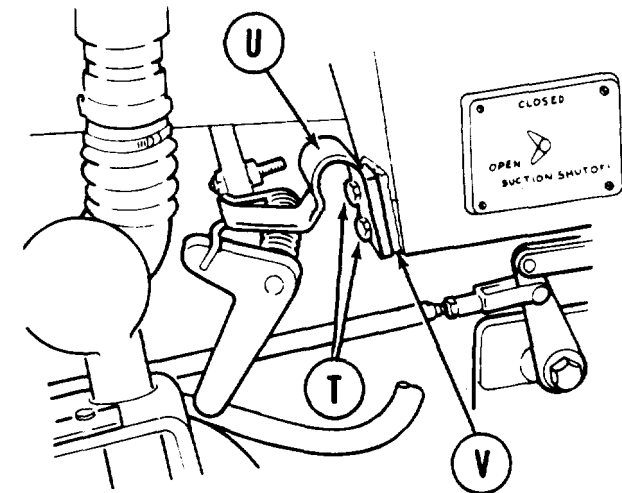
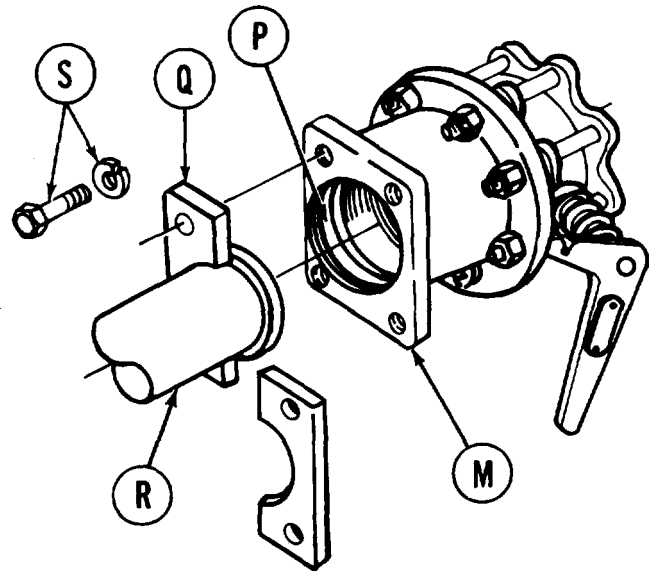
Go on to Sheet 6

TA141184

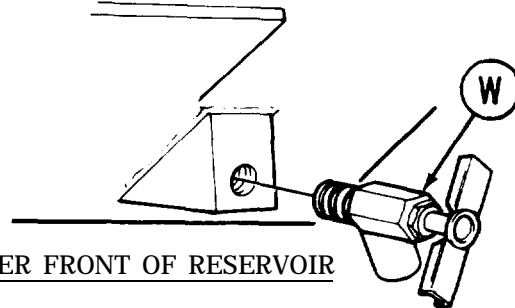
**HYDRAULIC SUCTION LINE SHUTOFF VALVE REPLACEMENT (Sheet 6 of 6)**

12. Place new packing (P) into adapter (M).

13. Place two flange adapters (Q) over suction hose (R) and with one person in turret using 3/4 inch socket and other person in driver's compartment holding socket in place, install four screws and lockwashers (S) through flanges (Q) into adapter (M).



14. Using 7/16 inch wrench, install two screws and lockwashers (T) thru spring clip (U) and into reservoir mount (V).

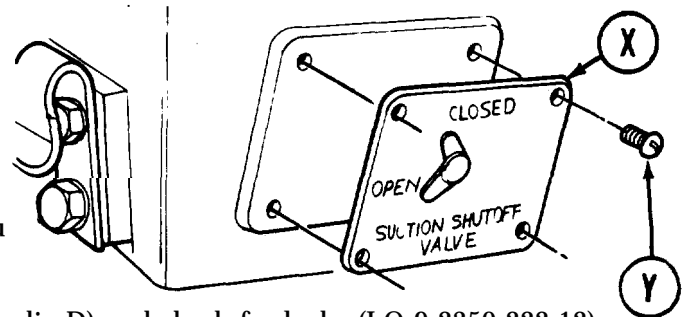


LOWER FRONT OF RESERVOIR

15. Using 11/16 inch wrench on drain cock body (W), install drain cock to reservoir.

16. Position name plate (X) onto reservoir wall.

17. Using hammer, install four screws (Y) thru holes in name plate into reservoir wall mounts.



18. Refill hydraulic reservoir with oil (Item 43, Appendix D) and check for leaks (LO 9-2350-222-12).

19. Purge hydraulic system of air by raising and lowering moldboard several times (TM 9-2350-222-10).

20. Install driver's seat assembly (page 17-43).

End of Task

TA141185

**HYDRAULIC RESERVOIR WINCH DRAIN TUBE ASSEMBLY REPLACEMENT**  
 (Sheet 1 of 4)

PROCEDURE INDEX

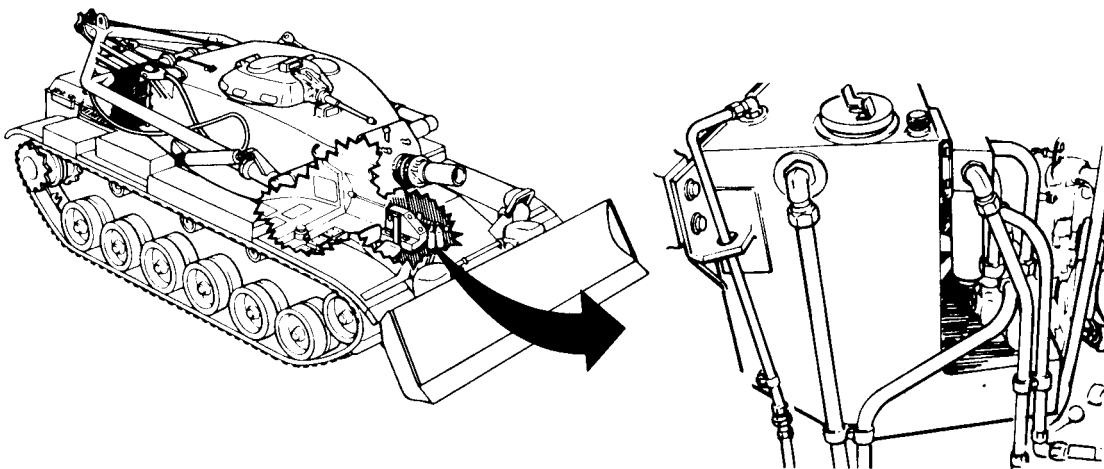
PROCEDURE	PAGE
Removal	18-85
Cleaning and Inspection	18-86
Installation	18-86

**TOOLS:** 7/16 in. combination box and open end wrench  
 11/ 16 in. combination box and open end wrench  
 13/ 16 in. combination box and open end wrench  
 9/16 in. combination box and open end wrench

**SUPPLIES:** Preformed packing (MS28778-6)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Engine oil (Item 43, Appendix D)  
 Rags (Item 65, Appendix D)

**REFERENCES:** LO 9-2350-222-12  
 TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Rotate turret to gain access to tube assembly.  
 (TM 9-2350-222-10)



Go on to Sheet 2

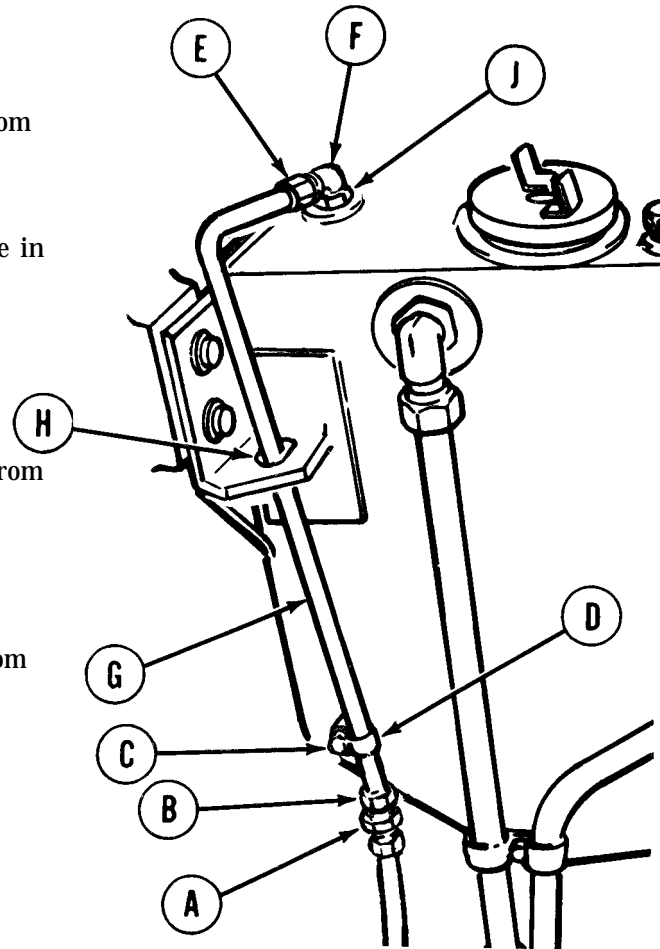
TA141186



## HYDRAULIC RESERVOIR WINCH DRAIN TUBE ASSEMBLY REPLACEMENT (Sheet 2 of 4)

### REMOVAL:

1. Using 13/16 inch wrench to hold union (A), use 11/16 inch wrench to remove nut (B) from union (A).
2. Using 7/16 inch wrench on screw (C), remove screw (C), lockwasher, and clamps (D) from elbow (F). Throw lockwasher away.
3. Using 11/16 inch wrench, remove nut (E) from elbow (F).
4. Remove tube (G) from reservoir through hole in reservoir mounting bracket (H).
5. Using 13/16 inch wrench, loosen nut (J).
6. Using 9/16 inch wrench, remove elbow (F) from reservoir. Throw away old packing.
7. Remove clamp (D) from tube (G).
8. Using 13/16 inch wrench, remove nut (J) from elbow (F).



Go on to Sheet 3

TA141187

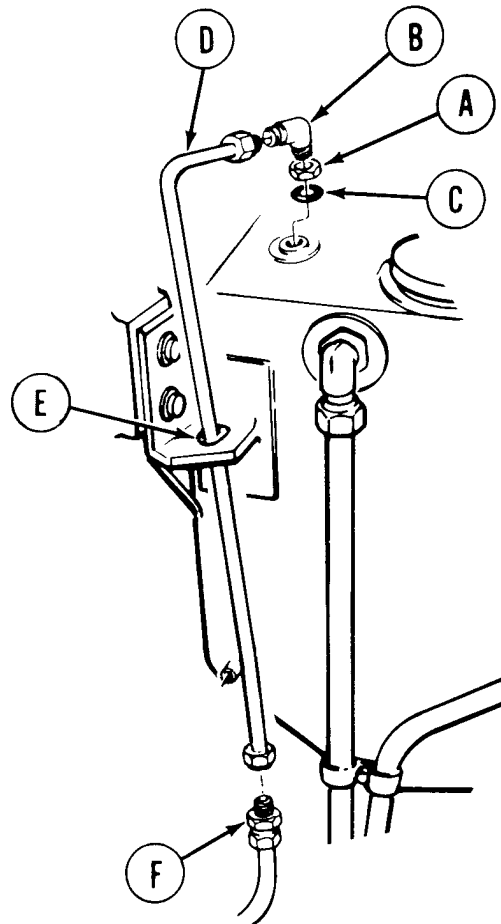
**HYDRAULIC RESERVOIR WINCH DRAIN TUBE ASSEMBLY REPLACEMENT  
(Sheet 3 of 4)**

**CLEANING AND INSPECTION:**

1. Using rags and dry cleaning solvent (Item 54, Appendix D), clean all parts.
2. Inspect parts for damage.
3. Replace damaged parts.

**INSTALLATION:**

1. Lubricate threads and packings with hydraulic oil (Item 43, Appendix D) before assembling.
2. By hand, install nut (A) onto elbow (B).
3. Work new packing (C) onto elbow (B) and turn nut (A) firmly down onto packing.
4. Using 9/16 inch wrench, install elbow (B) into reservoir mount in position to connect tube (D).
5. Holding elbow (B) in position with 9/16 inch wrench and using 13/16 inch wrench, tighten nut (A).
6. Insert tube (D) through hole in reservoir mount (E) and align with elbow (B) and tube connector (F).



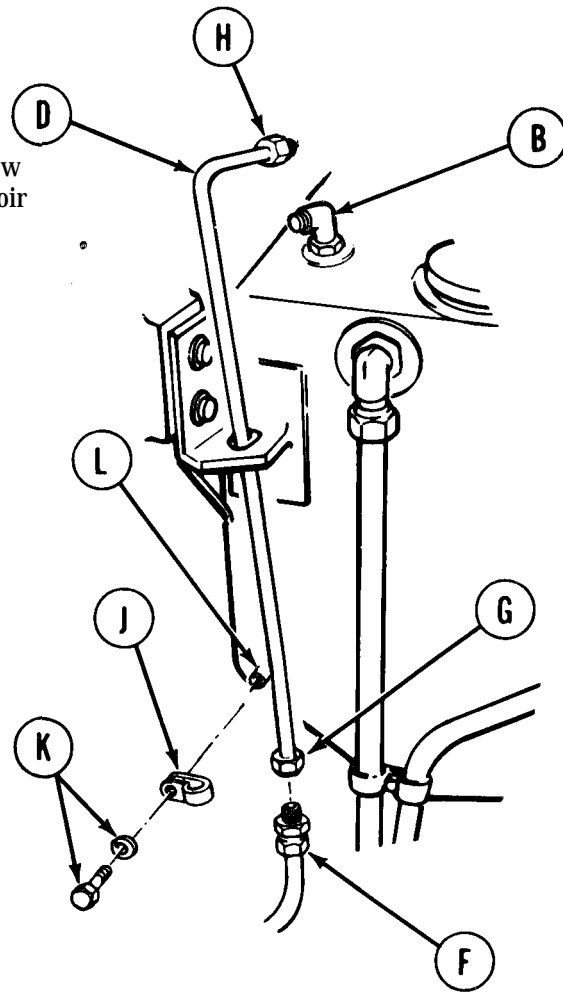
Go on to Sheet 4

TA141188

## HYDRAULIC RESERVOIR WINCH DRAIN TUBE ASSEMBLY REPLACEMENT (Sheet 4 of 4)

7. Using 13/16 inch wrench to hold connector (F) and using 11/16 inch wrench on nut (G), tighten nut (G).
8. Using 11/16 inch wrench, install nut (H) on tube (D) onto elbow (B).
9. Install clamp (J) onto tube (D).
10. Using 7/16 inch wrench, install screw and new Lockwasher (K) through clamp (J) into reservoir mounting boss (L).

Refill reservoir with oil (LO 9-2350-222-12).



End of Task

TA141189

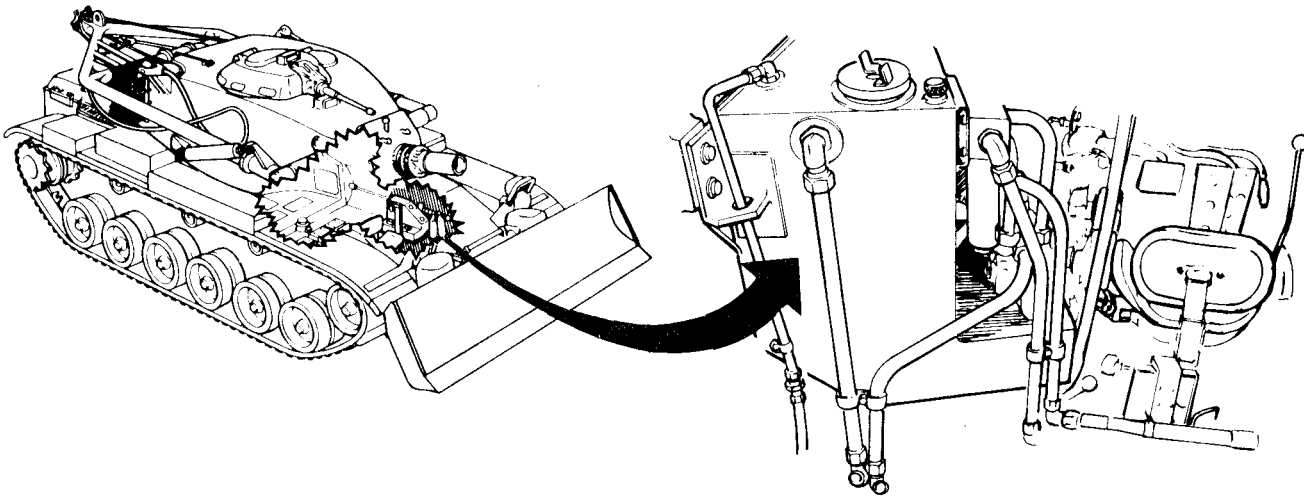
**HYDRAULIC RESERVOIR TO SLIPRING TUBE ASSEMBLY REPLACEMENT**  
(Sheet 1 of 3)

**TOOLS:** Ratchet with 1/2 in. drive  
9/16 in. socket with 1/2 in. drive  
1-5/8 in. open end wrench  
1-1/2 in. open end wrench  
1-5/16 in. open end wrench

**SUPPLIES:** Rags (Item 65, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)  
Preformed packing (MS28778-16)  
Container to catch hydraulic fluid  
Engine oil (Item 43, Appendix D)  
Lockwasher (MS35338-27)

**REFERENCES:** TM 9-2350-222-10  
LO 9-2350-222-12

**PRELIMINARY PROCEDURES:** Traverse turret to gain access to tube assembly  
(TM 9-2350-222-10)  
Put container and rags under tube to catch hydraulic fluid  
Open turret floor access cover (TM 9-2350-222-10)



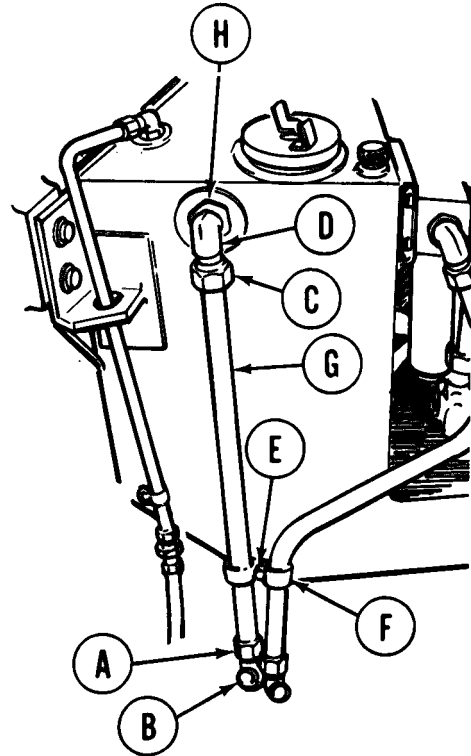
Go on to Sheet 2

TA141190

## HYDRAULIC RESERVOIR TO SLIPRING TUBE ASSEMBLY REPLACEMENT (Sheet 2 of 3)

### REMOVAL:

1. Using 1-1/2 inch wrench on nut (A), remove nut (A) from elbow (B) while holding elbow (B) with 1-5/16 inch wrench.
2. Using 1-1/2 inch wrench on nut (C), remove nut (C) from elbow (D).
3. Using socket on screw (E), remove screw (E), lockwasher, and clamp (F) from tube (G) making sure clamp (F) does not fall into hull. Throw lockwasher away.
4. Remove tube (G) from vehicle.
5. Using 1-5/8 inch wrench on nut (H), loosen nut (H).
6. Using 1-5/16 inch wrench, remove elbow (D) from reservoir connection. Throw old packing on elbow (D) away.
7. Remove nut (H) from elbow (D).



### CLEANING AND INSPECTION:

1. Clean tube assembly and elbows with rags and dry cleaning solvent (Item 54, Appendix D).
2. Check threads and tubes for damage.
3. Replace damaged parts.

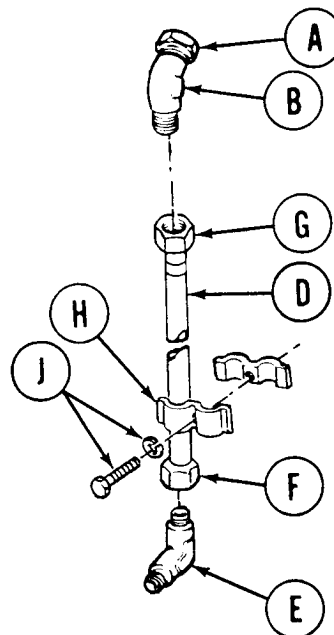
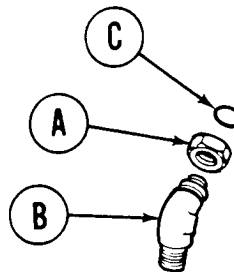
Go on to Sheet 3

TA141191

**HYDRAULIC RESERVOIR TO SLIPRING TUBE ASSEMBLY REPLACEMENT  
(Sheet 3 of 3)**

**INSTALLATION:**

1. Lubricate threads and sleeves with oil (Item 43, Appendix D) before assembling.
2. Install nut (A) onto elbow (B) by hand.
3. Work new packing (C) onto elbow (B).
4. Using 1-5/16 inch wrench, install elbow (B) into reservoir connection up to packing (C). Seat packing (C) into reservoir connection.
5. By hand, turn nut (A) down onto packing (C) and reservoir connection. Position elbow (B) in down position. Using 1-5/8 inch wrench, tighten nut (A).
6. Position tube (D) onto elbow (E) and start nut (F) onto elbow (E) by hand.
7. Install upper end of tube (D) into elbow (B) and start nut (G) by hand.
8. Using 1-5/8 inch wrench to hold elbow (E) in position and using 1-1/2 inch wrench on nut (F), tighten nut (F) onto elbow (E).
9. Using socket, install clamp (H) with screw and new lockwasher (J) onto reservoir mount.
10. Using 1-1/2 inch wrench on nut (G), tighten nut (G) onto elbow (B).
11. Close turret floor access cover.
12. Refill hydraulic reservoir with oil (Item 43, Appendix D) and check for leaks.



End of Task

TA141192

HYDRAULIC RESERVOIR SUCTION HOSE ASSEMBLY REPLACEMENT (Sheet 1 of 5)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	18-92
Cleaning and Inspection	18-93
Installation	18-94

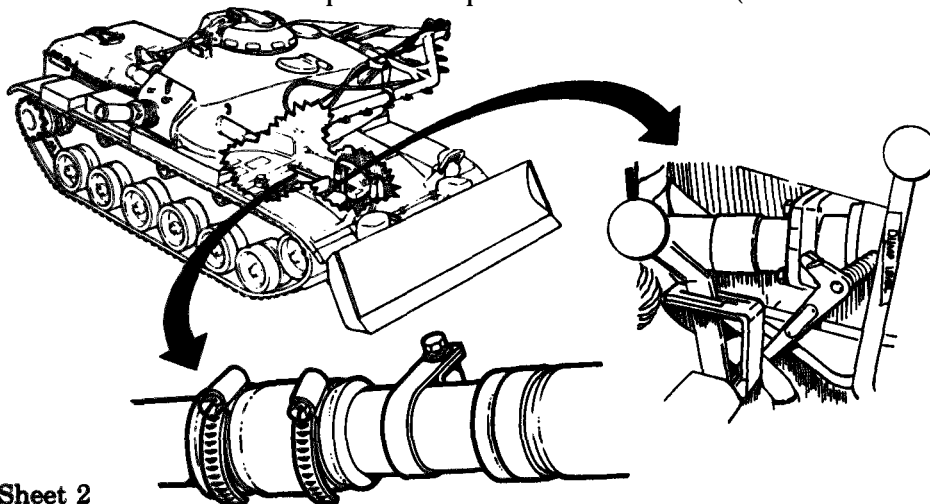
TOOLS: 3/4 in. socket with 1/2 in. drive  
 7/16 in socket with 1/2 in. drive  
 10 in. extension with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Flat-tip screwdriver

SUPPLIES: Rags (Item 65, Appendix)  
 Gaskets (2 required)  
 Oil (Item 43, Appendix B)  
 Preformed packing (MS28775-232)  
 Lockwasher (MS35338-29) (4 required)  
 Lockwasher (MS35338-27)

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10  
 LO 9-2350-222-12

PRELIMINARY PROCEDURES: Drain hydraulic reservoir (LO 9-2350-222-12)  
 Manually traverse turret as required (TM 9-2350-222-10)  
 Open turret platform access door (TM 9-2350-222-10)



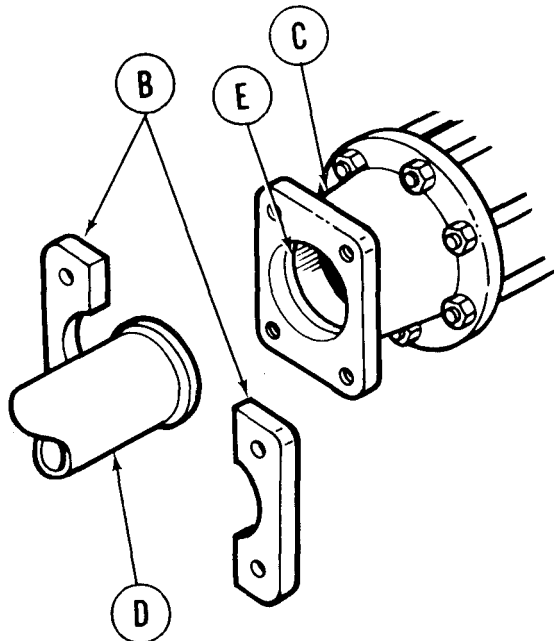
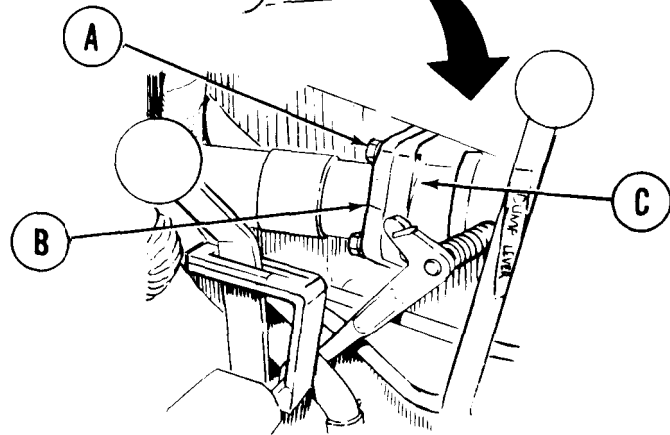
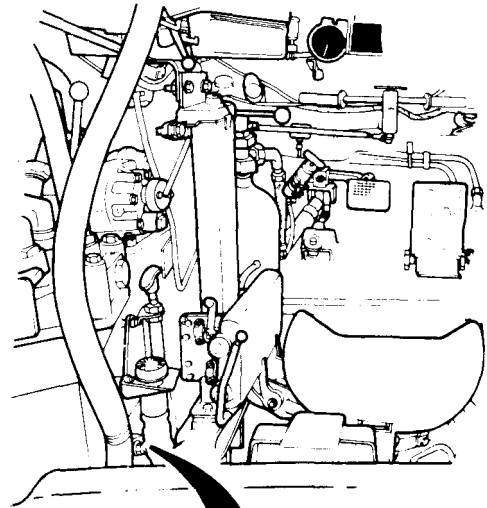
Go on to Sheet 2

TA141193

HYDRAULIC RESERVOIR SUCTION HOSE ASSEMBLY REPLACEMENT (Sheet 2 of 5)

REMOVAL:

1. Put rags under front and rear suction hose connections to catch any oil remaining in hose after draining.
2. With one person in turret using 3/4 inch socket and extension, remove four screws and four lockwashers (A) securing suction line flange (B) to adapter (C). Other person in driver's compartment holds socket in place. Throw lockwashers away.



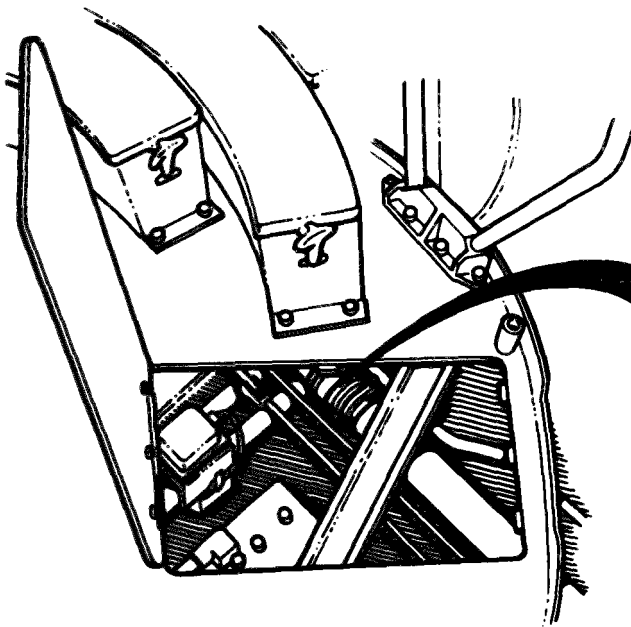
3. Remove suction hose flanges (B) from adapter (C).
4. Pull suction hose (D) out of adapter (C).
5. Remove preformed packing (E) from adapter (C). Throw packing away.
6. Using rags, wipe inside of adapter (C) to clean up oil in adapter, Install clean rags into adapter after wiping.

Go on to Sheet 3

TA141194

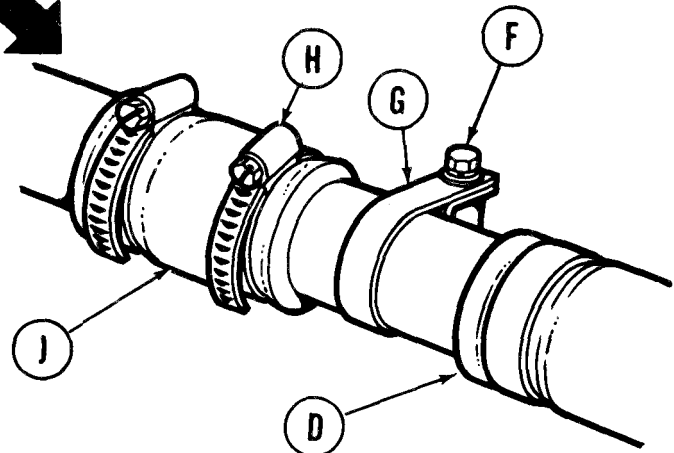


HYDRAULIC RESERVOIR SUCTION HOSE ASSEMBLY REPLACEMENT (Sheet 3 of 5)



7. Using 7/16 inch socket, remove screw, lockwasher, and flat washer (F) from clamp (G). Remove clamp (G) from suction hose (D).

8. Using screwdriver, loosen screw on clamp (H). Make sure clamp is loosened from hose (J).



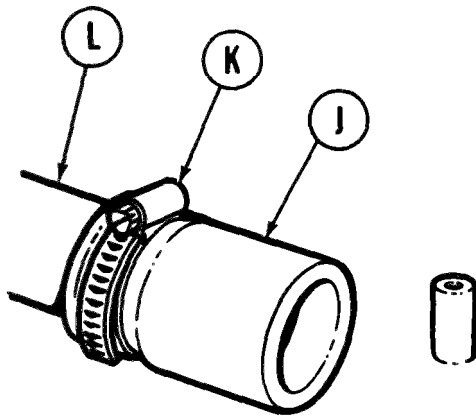
9. Remove hose (D) from hose (J).

10. Using screwdriver, loosen screw on clamp (K). Make sure clamp is loosened from hose (J).

11. Remove hose (J) from suction line (L).

12. Remove hoses (D) and (J) from vehicle.

13. Remove clamps (H) and (K) from hose (J).



**INSPECTION:**

1. Inspect clamps for cracks, breaks, and general serviceability.
2. Replace clamps if cracked, broken, or show signs of deterioration.

3. Inspect hoses for cracks, breaks, or signs of deterioration (dryness, crumbling).
4. Replace hoses if cracked, broken, or show signs of deterioration.

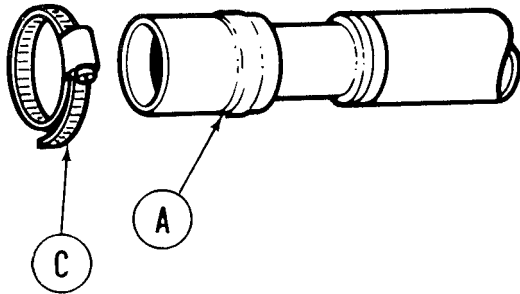
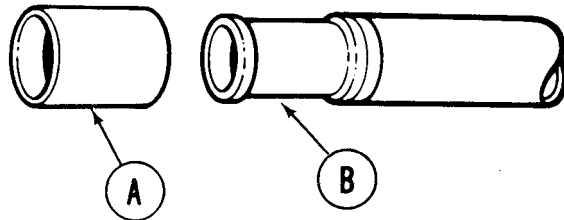
Go on to Sheet 4

TA141195

HYDRAULIC RESERVOIR SUCTION HOSE ASSEMBLY REPLACEMENT (Sheet 4 of 5)

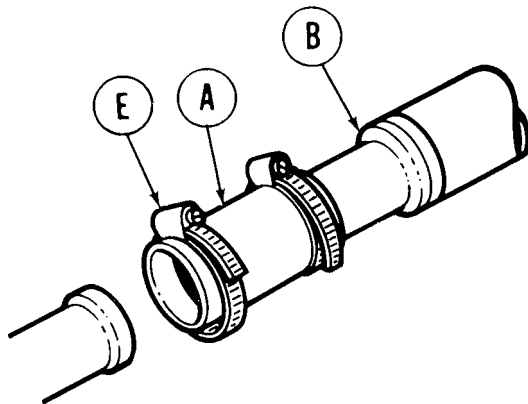
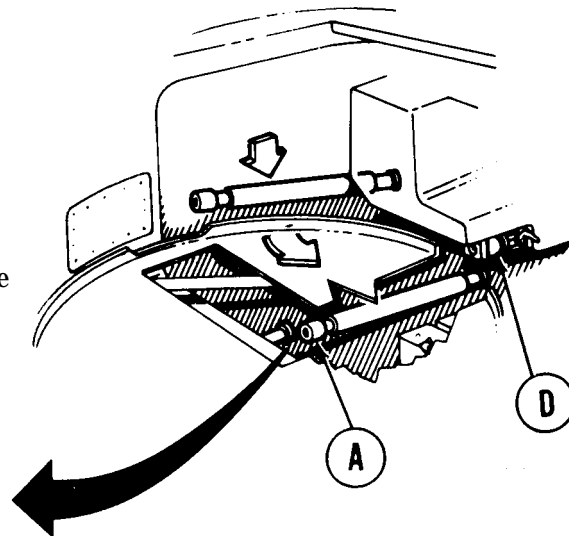
INSTALLATION:

1. Lubricate inside of hose (A) with oil (Item 43, Appendix B).
2. Install hose (A) onto suction hose (B).



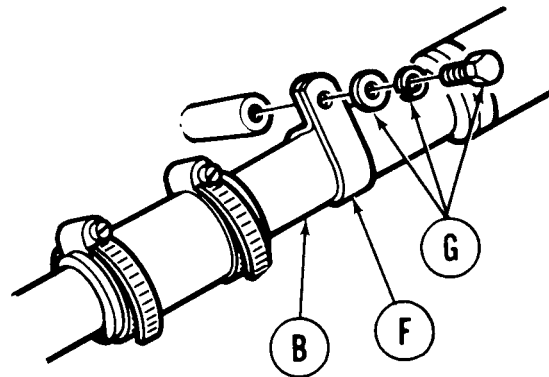
3. Install clamp (C) onto hose (A), and using screwdriver, tighten screw on clamp (C).

4. Position suction hose assembly (B) into hull by guiding from turret compartment, down between reservoir and hull, and under turret platform to suction line and adapter (D). Make sure hose (A) is positioned to suction line.



5. Position clamp (E) onto hose (A), and install hose assembly (B) onto suction line. Using screwdriver, tighten clamp (E) onto hose (A).

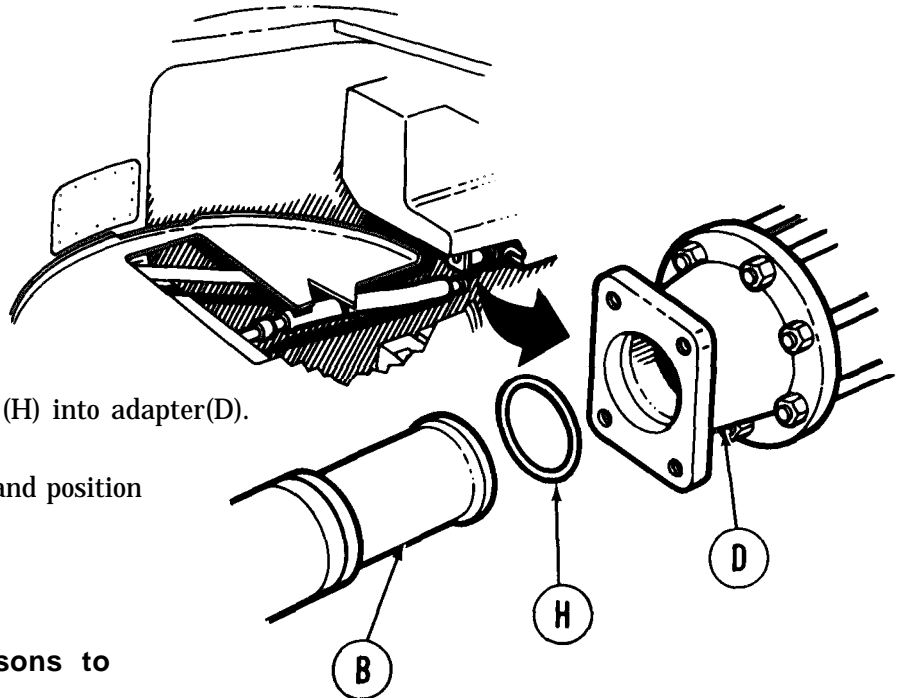
6. Install clamp (F) onto suction hose (B), and using 7/16 inch socket, install screw, new lockwasher, and flat washer (G) to clamp (F) and hull mount.



Go on to Sheet 5

TA141196

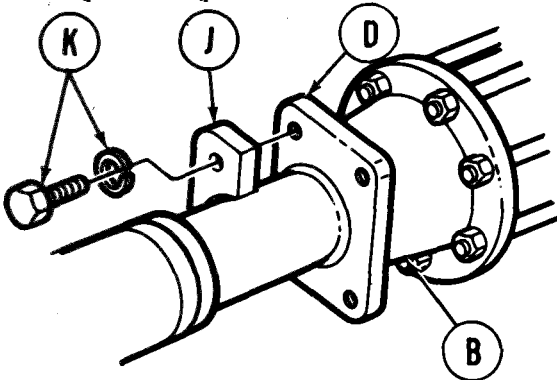
HYDRAULIC RESERVOIR SUCTION HOSE ASSEMBLY REPLACEMENT (Sheet 5 of 5)



7. Install new preformed packing (H) into adapter(D).
8. Remove rags from adapter (D) and position suction hose (B) to adapter (D).

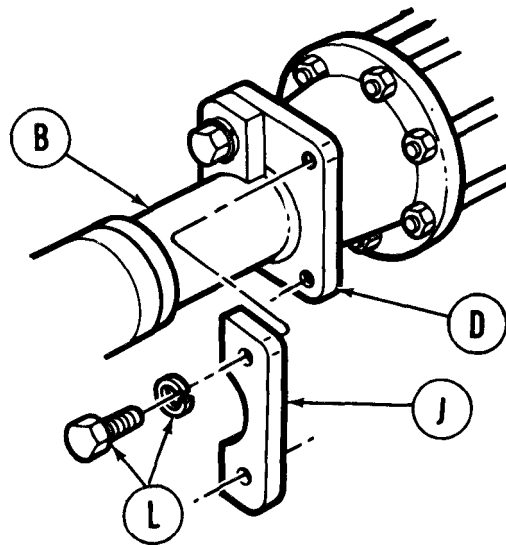
**NOTE**

It may require two persons to complete steps 10 thru 13.



9. Position half of split flange (J) onto suction hose (B) and adapter (D).
10. Using fingers, start two screws and new lockwashers (K) through flange half (J) into adapter (D).
11. Position other half of split flange (J) onto suction hose (B) and adapter (D).

12. Using fingers, start two screws and new lockwashers (L) through flange half (J) into adapter (D).
13. Using 3/4 inch socket, tighten four screws (K) and (L) to secure suction hose (B) to adapter (D).
14. Fill hydraulic reservoir with oil (Item 43, Appedix D) (LO 9-2350222-12).
15. Close turret platform access door (TM 9-2350-222-10).



End of Task

TA141197

HYDRAULIC PUMP DISCHARGE TUBE ASSEMBLY REPLACEMENT (Sheet 1 of 4)

PROCEDURE	PROCEDURE INDEX	PAGE
Removal		18-97
Cleaning and Inspection		18-98
Installation		18-98

**TOOLS:** 1-5/8 in. open end wrench  
 1-1 1/16 in. open end wrench  
 1-1/2 in. open end wrench  
 9/16 in. combination box and open end wrench

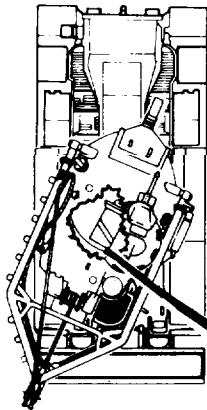
Ratchet with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 10 in. extension with 1/2 in. drive  
 6 in. flat-tip screwdriver  
 7/16 in. socket with 1/2 in. drive

**SUPPLIES:** Rags (Item 65, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Engine oil (Item 43, Appendix D)  
 Drip pan  
 Lockwasher (MS35338-27) (4 required)  
 Lockwasher (MS35338-25) (2 required)

**REFERENCES:** TM 9-2350-222-10  
 LO 9-2350-222-12

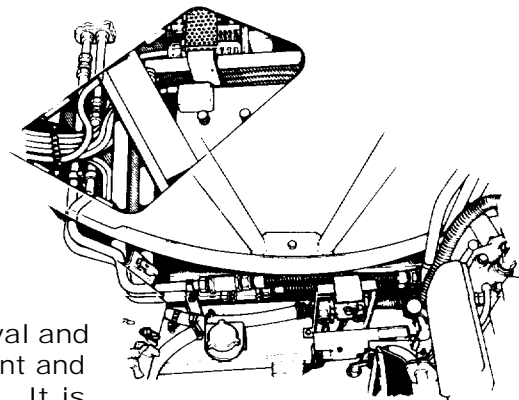
**PERSONNEL:** Two

**PRELIMINARY PROCEDURES:** Traverse turret placing boom over right front fender (TM 9-2350-222-10)  
 Open turret platform access cover (TM 9-2350-222-10)  
 Disconnect battery ground straps (page 10-283)  
 Dump driver's seat (TM 9-2350-222-10)  
 Open front hull drain valve (TM 9-2350-222-10)



**NOTE**

Traverse turret as needed during tube assembly removal and installation. Removal and installation procedures for front and rear hydraulic pump discharge lines are the same. It is necessary to remove front filter line to gain access to valve on rear filter line.



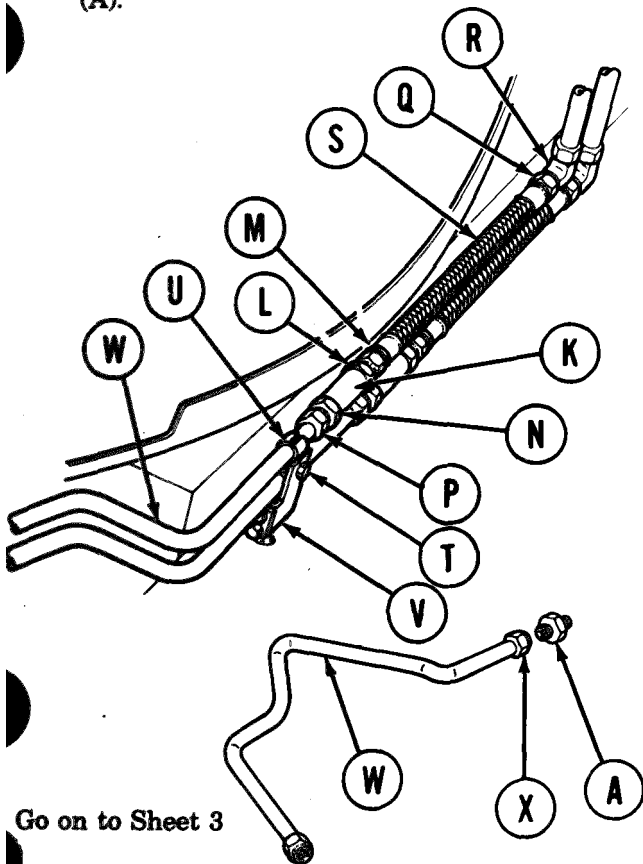
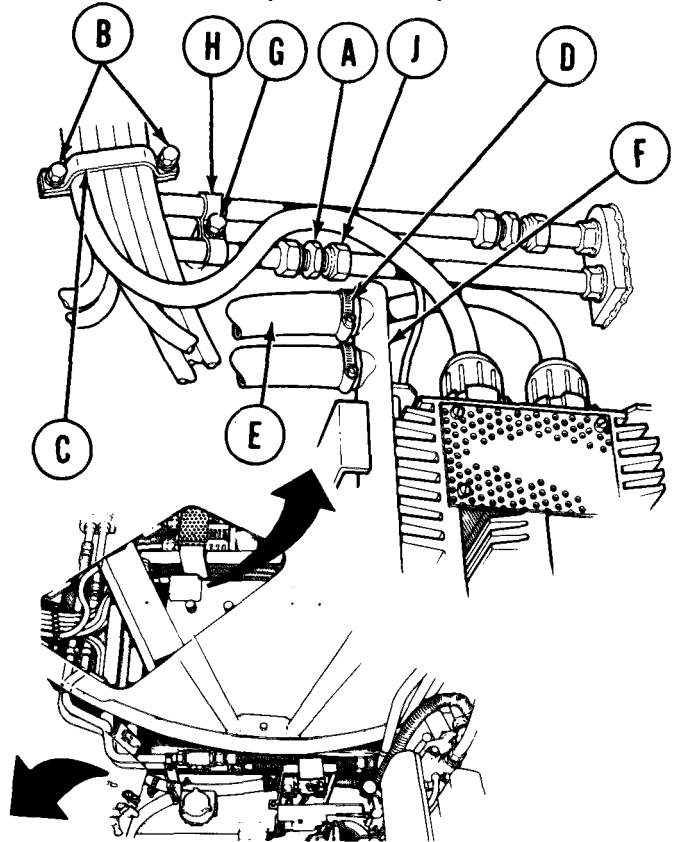
Go on to Sheet 2

TA141198

**HYDRAULIC PUMP DISCHARGE TUBE ASSEMBLY REPLACEMENT (Sheet 2 of 4)**

**REMOVAL:**

1. Place drip pan under front hull drain valve.
2. Place rags under union (A) to catch oil.
3. Using 7/16 inch socket with extension, remove two screws and lockwashers (B). Throw lockwashers away.
4. Remove clamp (C) and displace cables for access to union (A).
5. Using screwdriver, remove clamp (D).
6. Pull hose (E) from tube (F).
7. Using 9/16 inch socket with extension, remove screw and lockwasher (G) and remove clamp (H) from tubes. Throw lockwasher away.
8. Using 1-5/8 inch wrench to hold union (A), use 1-1/2 inch wrench to remove nut (J) from union (A).



9. Place rags under valve (K) to catch oil.
10. Using 1-11/16 inch wrench to hold nut (L) on valve (K), use 1-1/2 inch wrench to remove nut (M) from valve (K).
11. Using 1-11/16 inch wrench to hold nut (N) on valve (K), use 1-1/2 inch wrench to remove nut (P) from valve (K). Remove valve (K) from vehicle.
12. Using 1-1/2 inch wrench on nut (Q), remove nut (Q) from elbow (R) and remove hose (S) from vehicle.
13. Using 9/16 inch wrench, remove screw, flat washer, spacer, lockwasher (T), and nut (hidden) and remove clamp (U) from bracket (V). Throw lockwasher away.
14. Remove tube (W) with union (A) from vehicle.
15. Using 1-5/8 inch wrench on union (A) and 1-1/2 inch wrench on nut (X), remove union (A) from nut (X).

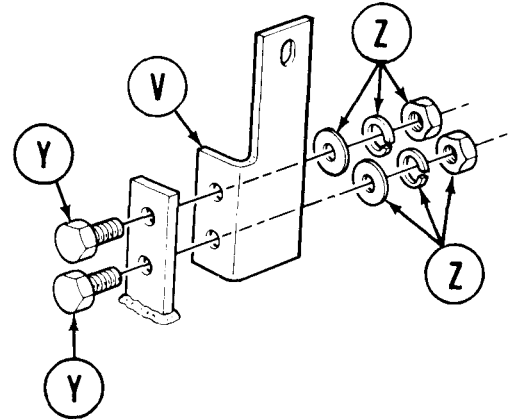
Go on to Sheet 3

TA141199

HYDRAULIC PUMP DISCHARGE TUBE ASSEMBLY REPLACEMENT (Sheet 3 of 4)

16. Using 9/16 inch wrench and socket, remove two screws (Y) and two nuts, lockwashers, and flat washers (Z). Throw lockwashers away.

17. Remove bracket (V).

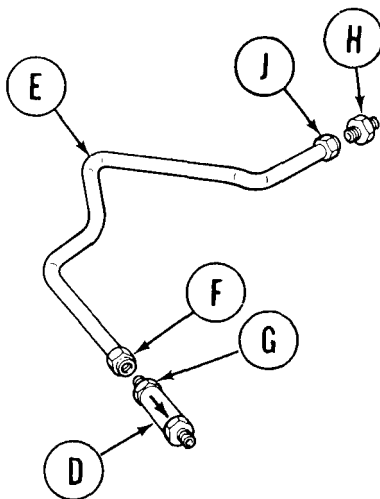
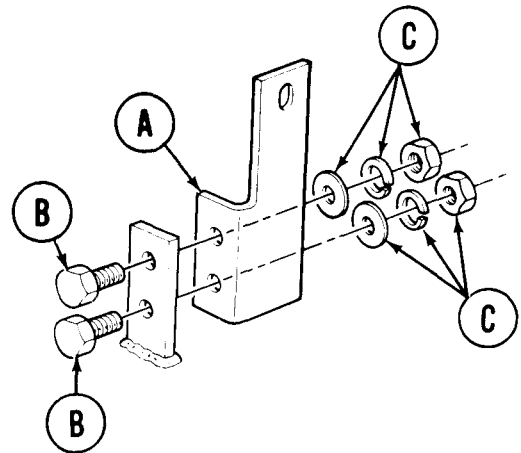


CLEANING AND INSPECTION:

1. Using rags and dry cleaning solvent (Item 54, Appendix D), clean sleeves and tubes.
2. Check for damaged parts of tubes.
3. Replace damaged parts.

INSTALLATION:

1. Lubricate threads and sleeves on tube assembly with oil (Item 43, Appendix D).
2. Using 9/16 inch wrench and socket, install bracket (A) with two screws (B), two new lockwashers, flat washers, and nuts (C).



3. Install valve (D) into tube (E) and start nut (F) by hand.
4. Using 1-3/4 inch wrench to hold nut (G) on valve (D), tighten nut (F) with 1-1/2 inch wrench.
5. Using 1-5/8 inch wrench on union (H) and 1-1/2 inch wrench on nut (J), install nut (J) on union (H).
6. Install tube (E) under turret floor.

Go on to Sheet 4

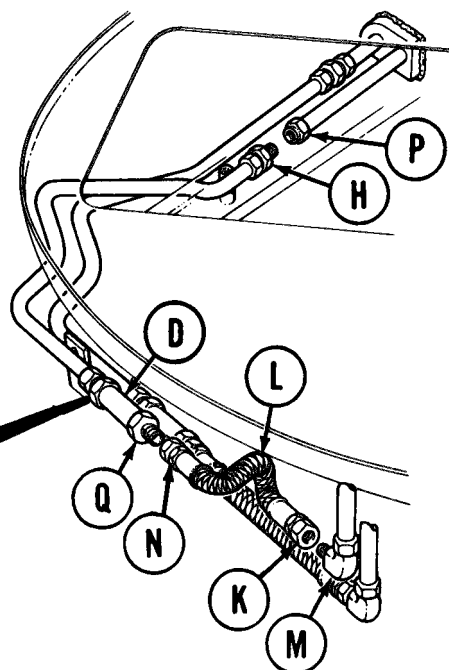
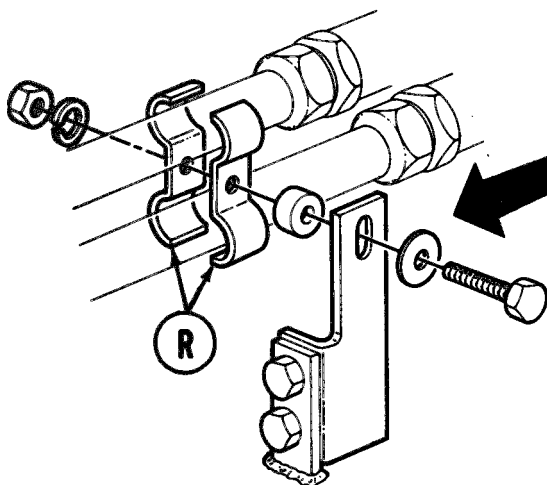
TA14120

HYDRAULIC PUMP DISCHARGE TUBE ASSEMBLY REPLACEMENT (Sheet 4 of 4)

8. By hand, install nut (K) on hose (L) onto elbow (M). Using 1-1/2 inch wrench, tighten nut (K) onto elbow (M).

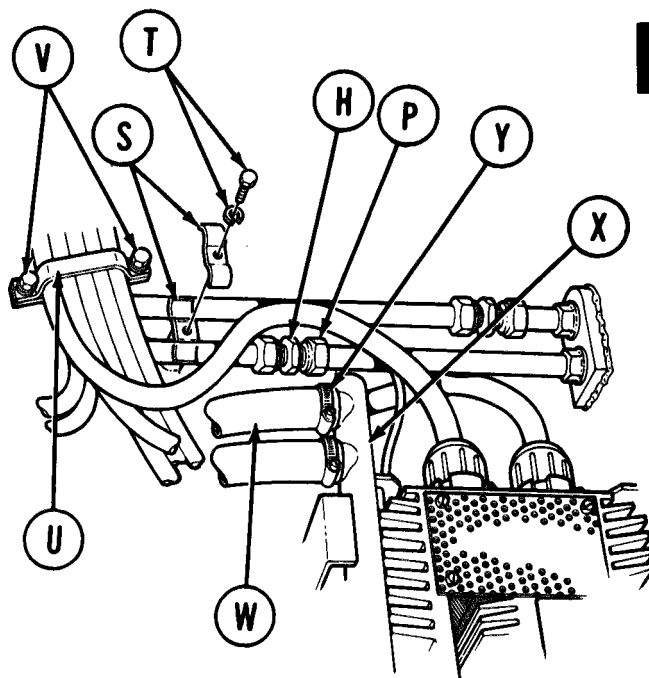
With help from another person, start nuts (N) and (P) on adapter (H) and valve (D).

9. Using 1-3/4 inch wrench to hold nut on valve (Q), tighten nut (N) with 1-1/2 inch wrench.



10. Using 9/16 inch wrench and socket, reassemble and install clamp (R) as shown.

11. Using 1-5/8 inch wrench to hold adapter (H), use 1-1/2 inch wrench to tighten nut (P).
12. Using 9/16 inch socket with extension, install clamp (S) and screw and new lockwasher (T) onto hull mounting base.
13. Position clamp (U) over cables and using 7/16 inch socket with extension, install two screws and new lockwashers (V) securing clamp (U).
14. Push hose (W) on tube (X) and using screwdriver, install clamp (Y) securing hose (W).
15. Refill hydraulic reservoir with oil (Item 43, Appendix D) and check for leaks (LO 9-2350-222-12).
16. Close front hull drain valve (TM 9-2350-222-10).
17. Close turret platform access cover (TM 9-2350-222-10).



End of Task

TA253658

RIGHT ANGLE DRIVE, CLUTCH, AND PUMP REPLACEMENT (Sheet 1 of 8)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	18-101
Installation	18-104

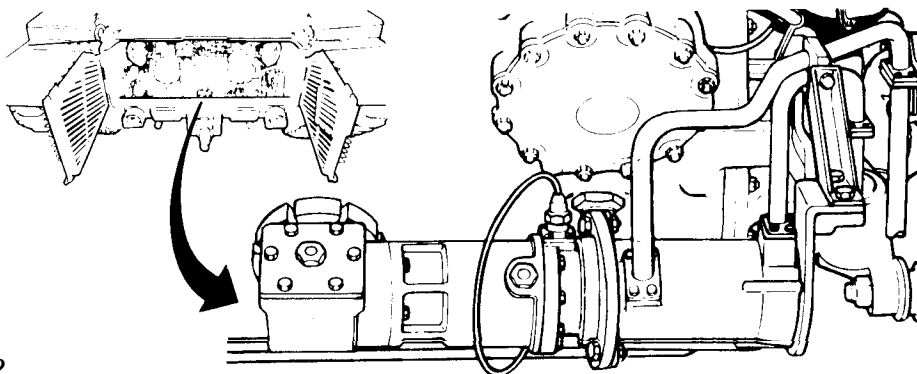
TOOLS: 7/8 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench  
 5/8 in. combination box and open end wrench  
 11/16 in. combination box and open end wrench  
 Extension with 1/2 in. drive, 10 in. long  
 9/16 in. socket with 1/2 in. drive  
 5/8 in. socket with 1/2 in. drive  
 3/4 in. socket with 1/2 in. drive  
 1/2 in. socket with 1/2 in. drive  
 Sling and lifting device (200 pound capacity)  
 Ratchet with 1/2 in. drive  
 Pry bar

SUPPLIES: Container (catch hydraulic fluid)  
 Rags (Item 65, Appendix D)  
 Preformed packing (MS28775-219) (3 required)  
 Gasket (7383694)  
 Gasket (7399926)  
 Masking tape (Item 57, Appendix D)  
 Preformed packing (MS28775-214)  
 Preformed packing (MS28775-232) (2 required)  
 Lockwasher (MS35338-47) (7 required)  
 Lockwasher (MS35338-46) (5 required)  
 Lockwasher (MS35338-48) (4 required)

PERSONNEL: Two

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Remove transmission shroud (page 9-20)



Go on to Sheet 2

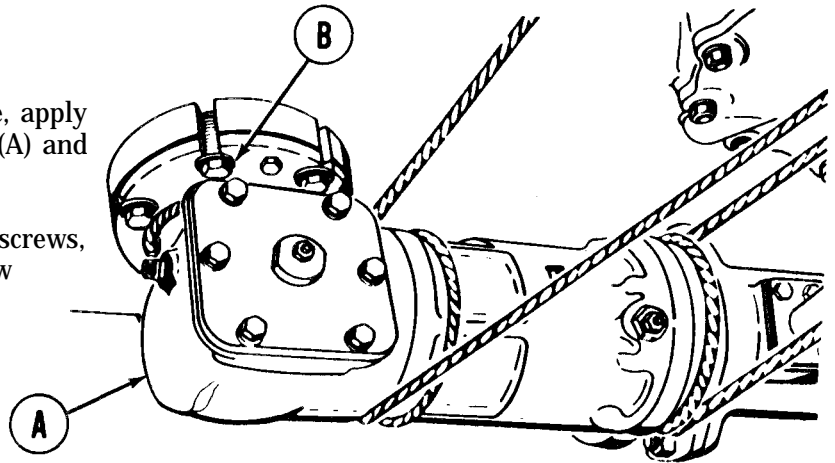
TA253659



**RIGHT ANGLE DRIVE, CLUTCH, AND PUMP REPLACEMENT (Sheet 2 of 8)**

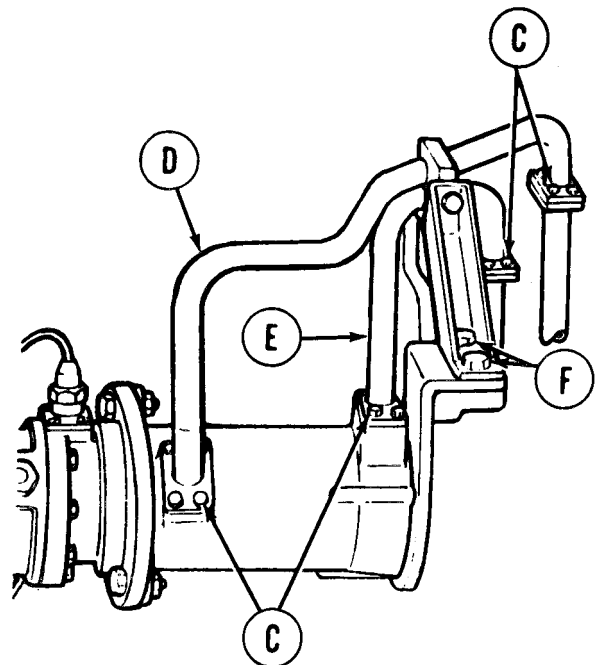
**REMOVAL:**

1. Attach sling, and using lifting device, apply tension to support right angle drive (A) and associated parts during removal.
2. Using 5/8 inch wrench, remove five screws, lockwashers, and washers (B). Throw lockwashers away.



3. Open engine compartment drain valve (TM 9-2350-222-10).
4. Place plain container under engine compartment drain valve to catch hydraulic fluid.

5. Using 9/16 inch socket, remove four screws, lockwashers, and washers (C) from each end of tube assemblies (D) and (E). Throw lockwashers away.
6. Using 5/8 inch socket on screws and 11/16 inch wrench on nuts, remove two screws, washers, lockwashers, and nuts (F). Throw lockwashers away.

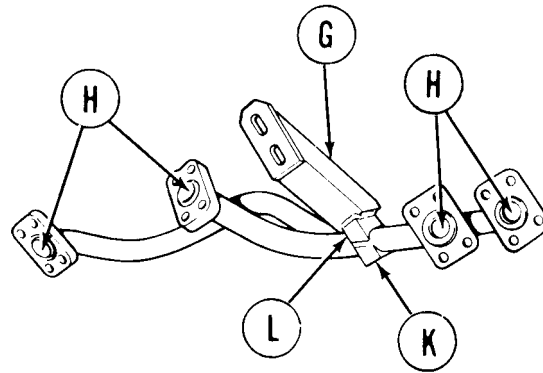
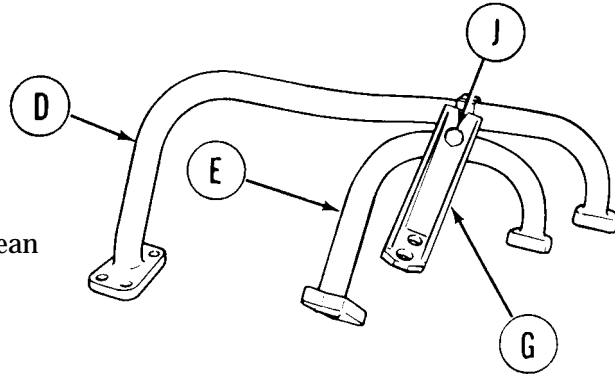


Go on to Sheet 3

TA141203

RIGHT ANGLE DRIVE, CLUTCH, AND PUMP REPLACEMENT (Sheet 3 of 8)

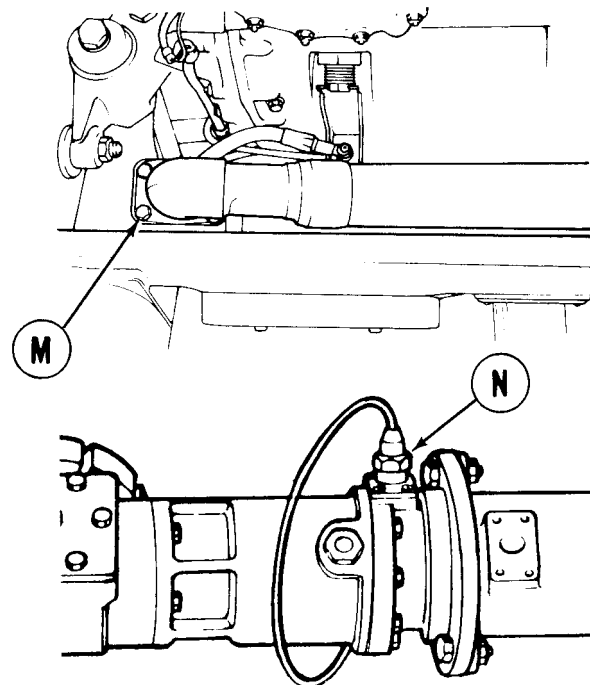
7. Remove tube assemblies (D) and (E) as an assembly with bracket (G).
8. Remove and throw away four packings (H).
9. Using rags, wipe all ports and tube ends clean and tape them with masking tape (Item 57, Appendix D) to prevent entry of dirt.



NOTE

Unless tube assemblies (D) or (E) or bracket (G) require replacement, do not disassemble them (steps 10 and 11).

10. Using 9/16 inch socket, remove screw, lockwasher, and flat washer (J). Throw lockwasher away.
11. Remove clamps (K) and (L), tube assemblies (D) and (E), and bracket (G).
12. Using 3/4 inch wrench, remove four screws and lockwashers (M). Throw lockwashers away.
13. Using 7/8 inch wrench, loosen nut of electrical connector (N) and pull connector loose.



Go on to Sheet 4

TA141204

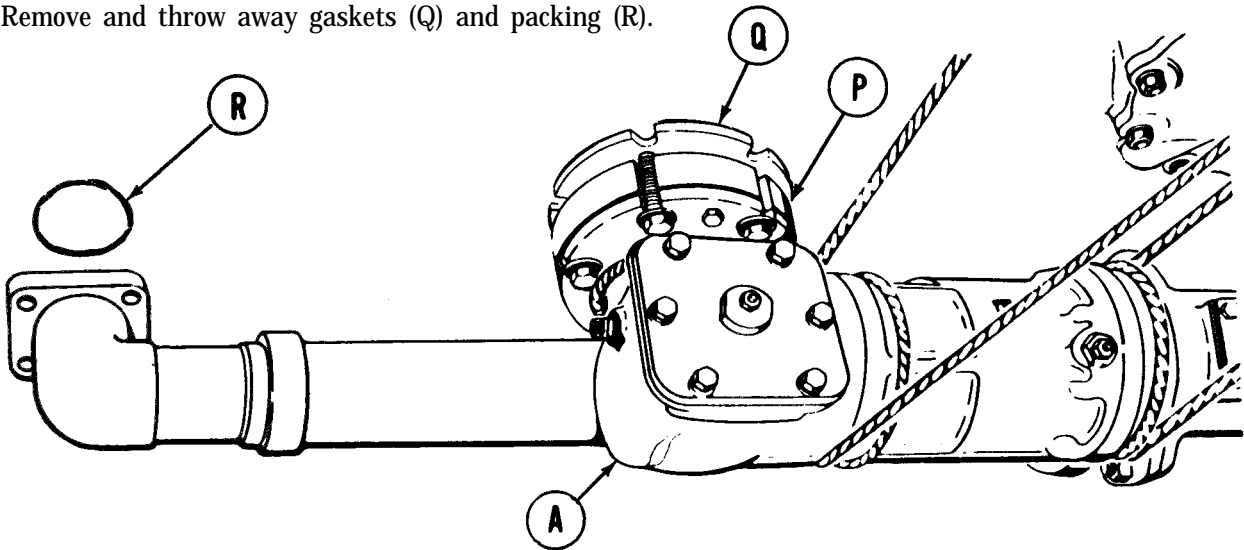
**RIGHT ANGLE DRIVE, CLUTCH, AND PUMP REPLACEMENT (Sheet 4 of 8)**

14. Using pry bar, loosen right angle drive (A) from transmission.

**NOTE**

**It may be necessary to loosen spacer (P) to disengage right angle drive from transmission.**

15. Pull right angle drive (A) away from transmission to release it from drive sprocket.
16. Raise lifting device and remove right angle drive (A) and its attached components from vehicle and place on work bench. Remove lifting device and sling.
17. Remove and throw away gaskets (Q) and packing (R).



18. Using rags, wipe suction hose end and hose end in vehicle clean and tape them with masking tape (Item 57, Appedix D) to prevent entry of dirt.
19. Remove suction hose from rotary pump (page 18-114, step 4).

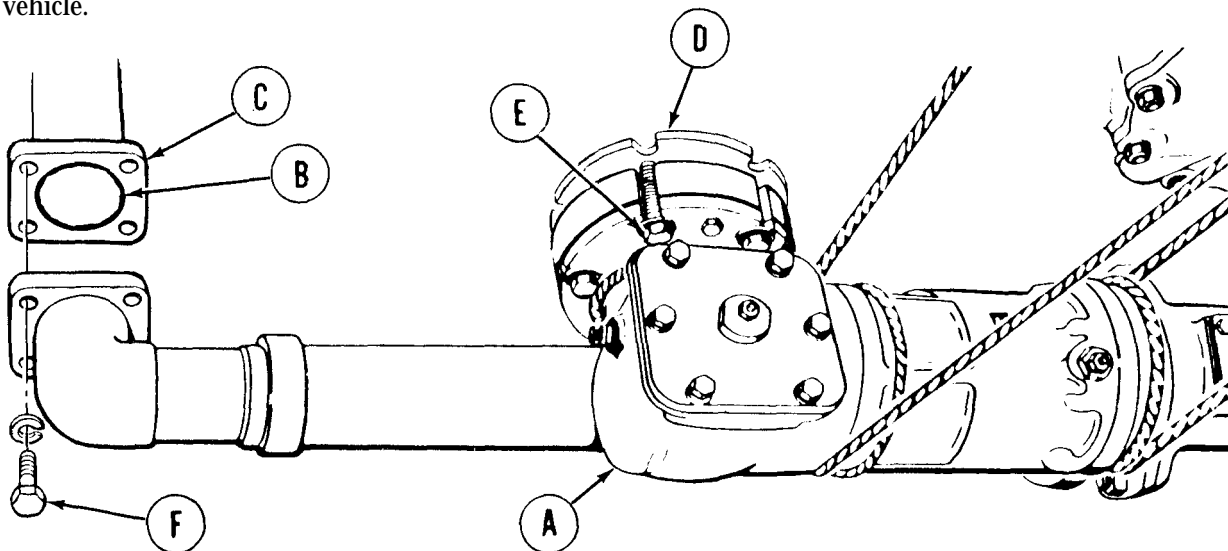
**Go on to Sheet 5**

TA141205

**RIGHT ANGLE DRIVE, CLUTCH, AND PUMP REPLACEMENT (Sheet 5 of 8)**

**INSTALLATION:**

1. Install suction hose to rotary pump (page 18-115, steps 1 thru 4).
2. Attach sling and, using lifting device, position right angle drive (A) and attached parts over rear of vehicle.



3. Position new packing (B) in groove of tube and fitting (C) in hull.
4. Position new gasket (D) on face of right angle drive (A).

**NOTE**

**It might be necessary to move right angle drive back and forth or to turn drive spline to align to transmission.**

5. Lower right angle drive (A) and attached parts to align it at transmission.
6. Insert five screws, new lockwashers, and washers (E) through flange of right angle drive (A) and gasket (D) and tighten finger tight.
7. Aline suction hose on tube end fitting (C) and insert four screws with new lockwashers (F) and tighten finger tight.

Go on to Sheet 6

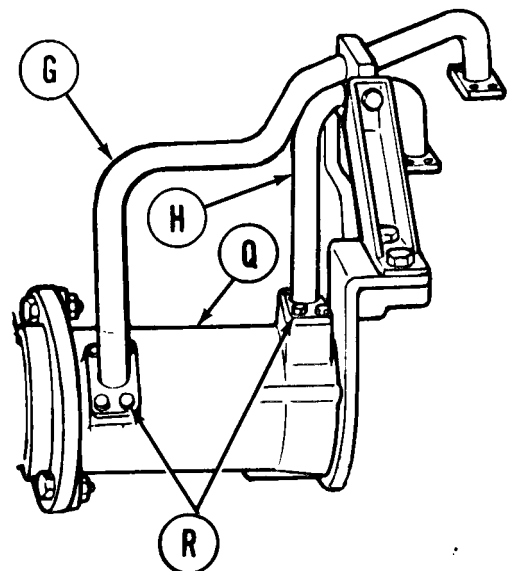
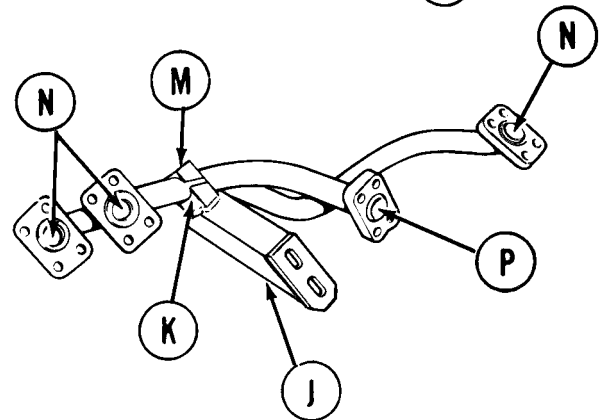
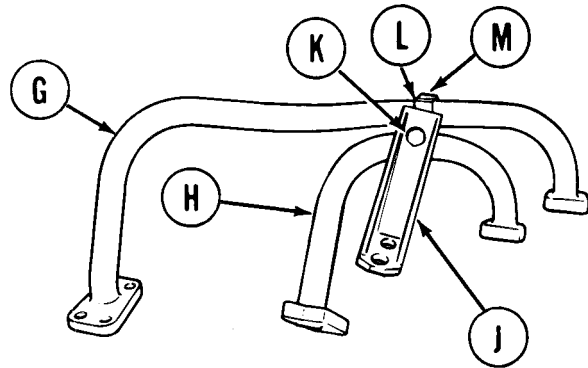
TA14120

## RIGHT ANGLE DRIVE, CLUTCH, AND PUMP REPLACEMENT (Sheet 6 of 8)

## NOTE

If tube assemblies (G) and (H) were removed from bracket (J), perform steps 8 thru 10. If not, go to step 11.

8. Place new lockwasher and flat washer on bolt (K).
9. Have person hold tube assemblies (G) and (H) in position shown.
10. Aline champs (L) and (M) and bracket (J) with tube assemblies (G) and (H), insert bolt, and tighten finger tight. A 9/16 inch socket may be used to snug the assembly together.
11. Insert three packings (N) and packing (P) in grooves indicated.
12. Carefully position tube assemblies (G) and (H) on pump (Q).
13. Place new lockwashers and washers on eight screws (R).
14. Insert four screws (R) in flange of each tube assembly (G) and (H) and tighten finger tight.



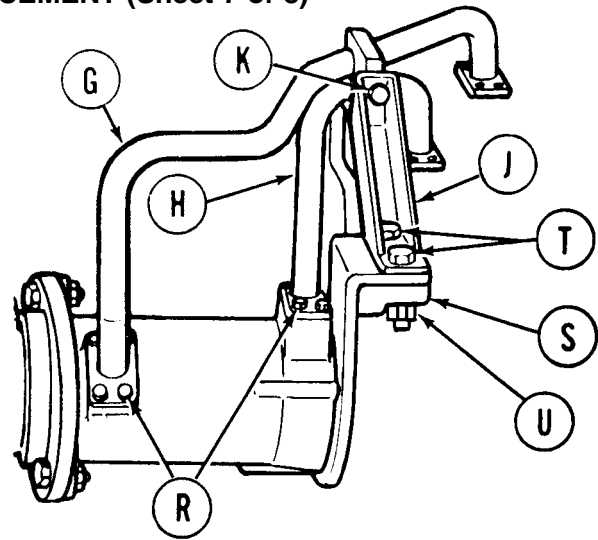
Go on to Sheet 7

TA141207

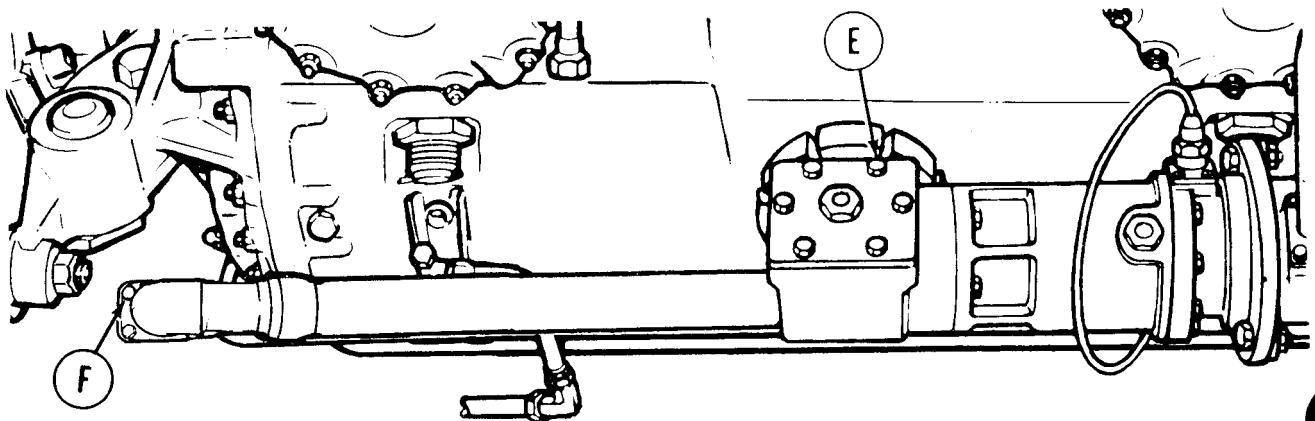
RIGHT ANGLE DRIVE, CLUTCH, AND PUMP REPLACEMENT (Sheet 7 of 8)

NOTE

It may be necessary to loosen screw (K) to aline bracket (J) on support bracket (S).



15. Place flat washers on two screws (T) and insert them through bracket (J) and support bracket (S).
16. Place new lockwasher and nut (U) on two screws (T) and tighten finger tight.
17. Using 5/8 inch socket on screws and flat washer (T) and 11/16 inch wrench on nut and lockwasher (U), tighten two screws.
18. Using 9/16 inch socket, tighten four screws, lockwashers, and washers (R) on each tube assembly (G) and (H).
19. Using 9/16 inch socket, tighten screw, lockwasher, and flat washer (K).
20. Using 5/8 inch wrench, tighten five screws, lockwashers, and washers (E).
21. Using 3/4 inch wrench, tighten four screws and lockwashers (F).

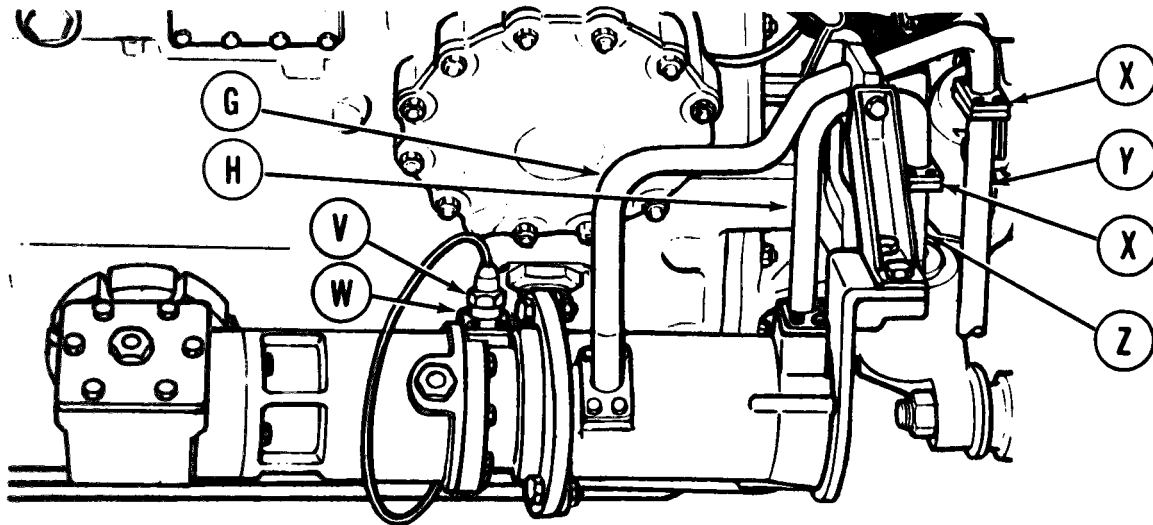


Go on to Sheet 8

TA141208

## RIGHT ANGLE DRIVE, CLUTCH, AND PUMP REPLACEMENT (Sheet 8 of 8)

22. Push electrical connector (V) on receptacle (W) and, using 7/8 inch wrench, tighten nut of electrical connector (V).



## NOTE

Make sure packings have not fallen out of grooves of tube assemblies (G) and (H).

23. Put new lockwashers and flat washers on eight screws (X).
24. Aline hose assembly (Y) with tube assembly (G) and, using 9/16 inch socket, install four screws and new lockwashers (X).
25. Aline hose assembly (Z) with tube assembly (H) and, using 9/16 inch socket, install four screws and new lockwashers (X).
26. Install transmission shroud (page 9-23).
27. Close engine compartment drain valve (TM 9-2350-222-10).
28. Remove container from under engine compartment drain valve.
29. Fill hydraulic reservoir (TM 9-2350-222-10).

**End of Task**

TA141209

RIGHT ANGLE DRIVE REPLACEMENT (Sheet 1 of 5)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	18-108
Cleaning and Inspection	18-110
Installation	18-111

TOOLS: Ratchet with 1/2 in. drive  
 1/2 in. combination box and open end wrench  
 9/16 in. socket with 1/2 in. drive  
 5/16 in. socket head screw key (allen wrench)

Large slip joint pliers  
 Center punch  
 Hammer  
 Flat-tip screwdriver  
 12 in. extension with 1/2 in. drive

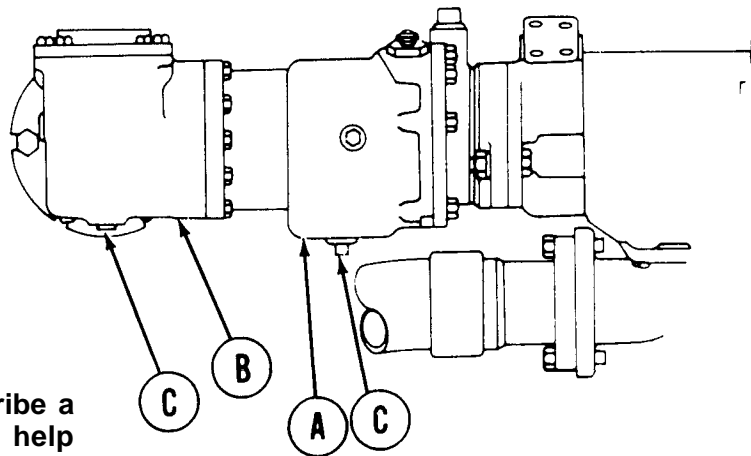
SUPPLIES: Electrician's tape (Item 58, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Lockwasher (MS35338-45) (16 required)

Container (to catch fluid)  
 Gasket (10940613)  
 Gasket (7383695)  
 Gasket (7383694)  
 Lockwasher (MS35338-46) (2 required)

REFERENCE: LO 9-2350-222-12

PRELIMINARY PROCEDURE: Remove right angle drive, clutch and pump (page 18-101)

REMOVAL:



NOTE

Using center punch, scribe a mark on housings to help align parts at installation.

1. Place container under clutch housing (A) and right angle drive (B) to catch fluid.
2. Using 5/16 inch allen wrench, remove two plugs (C) and allow fluid to drain.

TA253660

Go on to Sheet 2



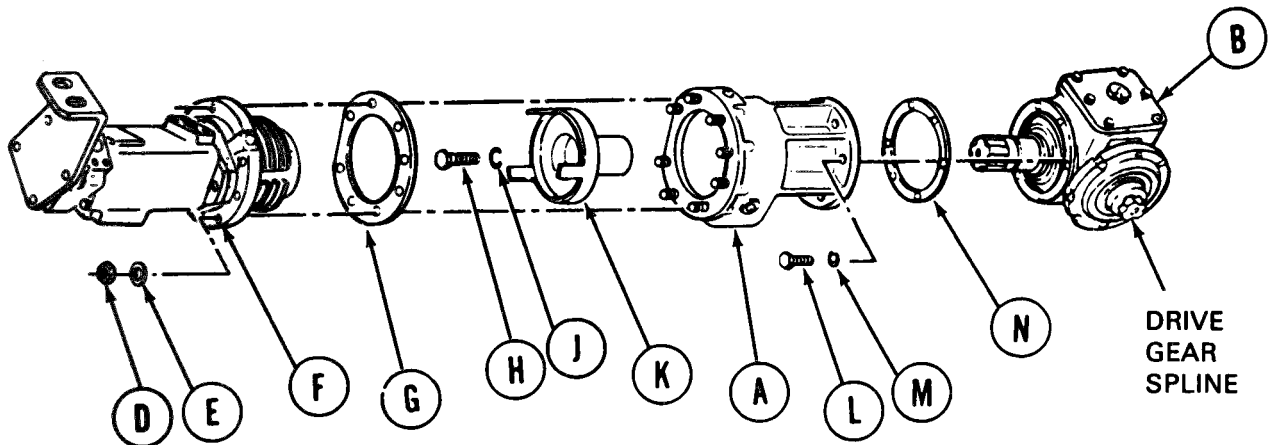
## RIGHT ANGLE DRIVE REPLACEMENT (Sheet 2 of 5)

- Using 1/2 inch wrench, remove eight nuts (D) and lockwashers (E). Throw lockwashers away.

## NOTE

If necessary, tap clutch (F) gently with screwdriver and hammer to separate from clutch housing (A).

- Pull clutch (F) hose from clutch housing (A) and remove gasket (C). Throw gasket away.



- Wrap drive gear spline with three or more layers of electrician's tape (Item 58, Appendix D).
- Using pliers, hold drive gear spline from turning while using 9/16 inch socket to remove screw (H) and lockwasher (J). Throw lockwasher away.
- Pull spider (K) from clutch housing (A).
- Using 1/2 inch wrench, remove six screws (L) and lockwashers (M). Throw lockwashers away.

## NOTE

If necessary, tap clutch housing (A) gently with screwdriver and hammer to separate from right angle drive.

- Pull clutch housing (A) loose from right angle drive (B) and remove gasket (N). Throw gasket away.

Go on to Sheet 3

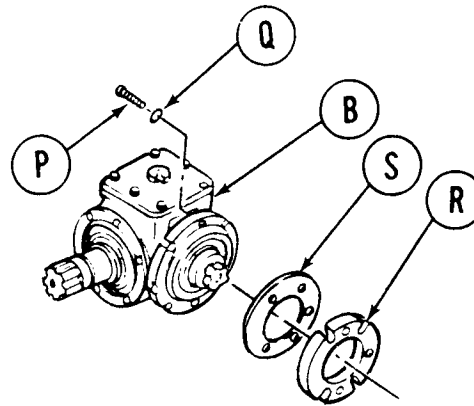
TA141211

**RIGHT ANGLE DRIVE REPLACEMENT (Sheet 3 of 5)**

10. Using 1/2 inch wrench, remove two screws (P) and lockwashers (Q). Throw lockwashers away.
11. Remove spacer assembly (R) and gasket (S). Throw gasket (S) away.

**NOTE**

**If necessary, tap spacer assembly (R) gently with screwdriver and hammer to separate from right angle drive (B).**



**CLEANING AND INSPECTION:**

1. Clean all metallic parts in dry cleaning solvent (Item 54, Appendix D).
2. Inspect all parts for damage or wear.
3. Replace all unserviceable parts.

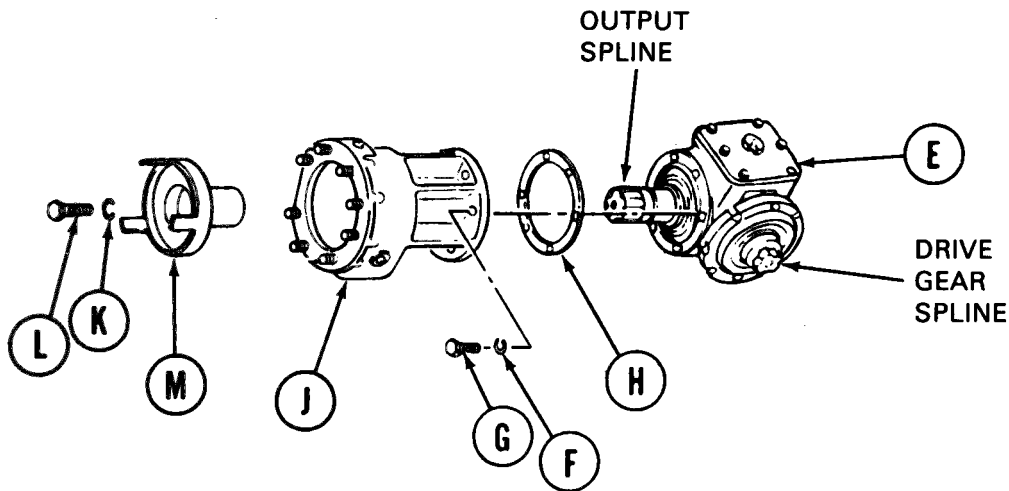
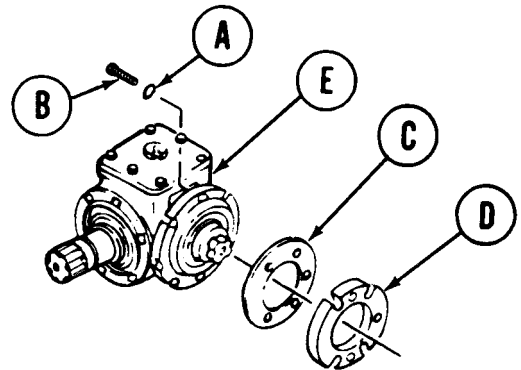
Go on to Sheet 4

TA141212

**RIGHT ANGLE DRIVE REPLACEMENT (Sheet 4 of 5)**

**INSTALLATION:**

1. Place new lockwashers (A) on two screws (B).
2. Position new gasket (C) and spacer assembly (D) on right angle drive (E).
3. Using 1/2 inch wrench, install two screws (B).



4. Place new lockwashers (F) on six screws (G).
5. Position new gasket (H) and clutch housing (J) on right angle drive (E).
6. Using 1/2 inch wrench, install six screws (G).
7. Place new lockwasher (K) on screw (L).
8. Insert spider (M) in clutch housing (J) on output spline of right angle drive (E).
9. Wrap drive gear spline with three or more layers of electrician's tape (Item 58, Appendix D).
10. Using pliers, hold drive gear spline from turning, while using 9/16 inch socket to install screw (L).

Go on to Sheet 5

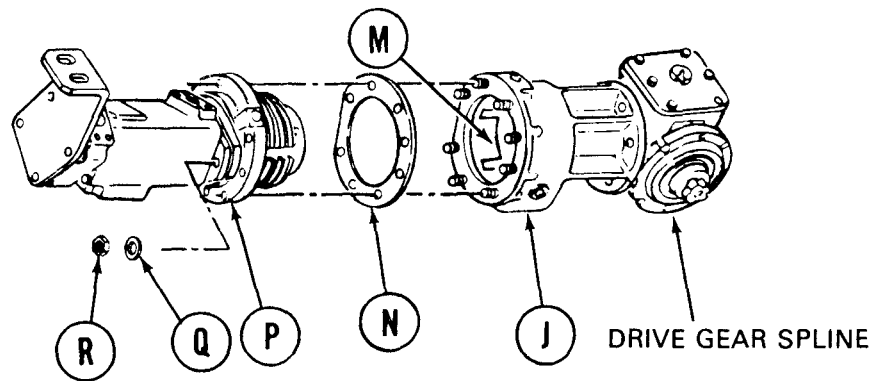
TA141213

**RIGHT ANGLE DRIVE REPLACEMENT (Sheet 5 of 5)**

11. Position new gasket (N) over studs of clutch housing (J).

**NOTE**

**When inserting magnetic clutch (P) in clutch housing (J), make sure legs of spider (M) slip in grooves of clutch.**



12. Position and insert magnetic clutch (P) in clutch housing (J).

13. Place new lockwashers (Q) on eight studs of clutch housing (J).

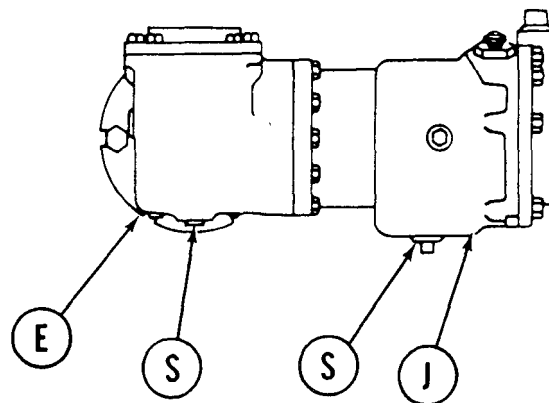
14. Using 1/2 inch wrench, install eight nuts (R).

15. Remove electrician's tape from drive gear spline.

16. Using 5/16 inch allen wrench, install two plugs (S).

17. Fill right angle drive (E) and clutch housing (J) with oil (LO 9-2350-222-12).

18. Install right angle drive, clutch, and pump (page 18-104).



End of Task

TA141214

ROTARY PUMP AND SUCTION HOSE REPLACEMENT (Sheet 1 of 4)

PROCEDURE INDEX

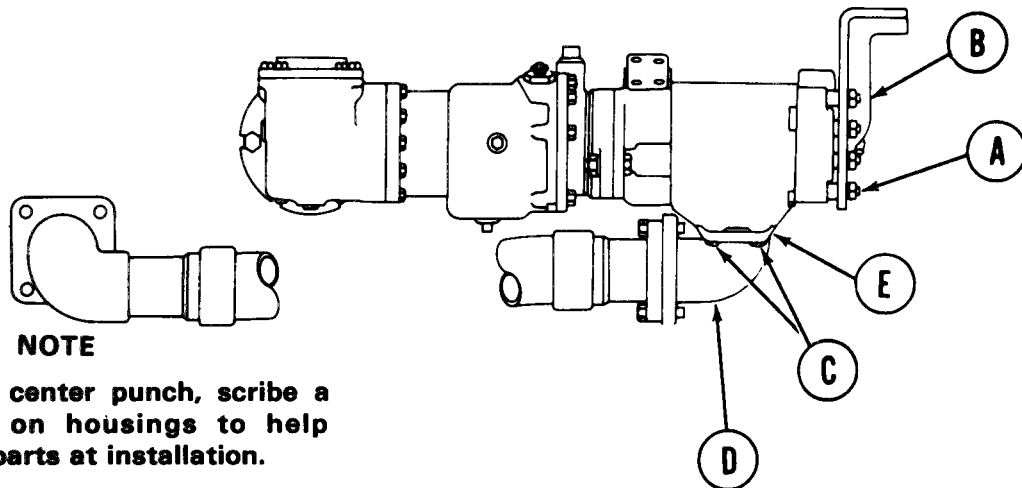
PROCEDURE	PAGE
Removal	18-113
Cleaning and Inspection	18-114
Installation	18-115

TOOLS: 11/16 in. socket with 1/2 in. drive  
 3/4 in. socket with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 5 in. extension with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Center punch  
 Hinged handle with 1/2 in. drive

SUPPLIES: Preformed packing (MS28775-232) (3 required)  
 Gasket (10940669)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Lockwasher (MS35338-48) (14 required)

PRELIMINARY PROCEDURE: Remove right angle drive, clutch, and pump (page 18-101)

**REMOVAL:**



1. Using 11/16 inch socket, remove four nuts, lockwashers (A), and bracket (B). Throw lockwashers away.
2. Using 3/4 inch wrench, remove four screws, lockwashers (C), elbow (D), and packing (E). Throw packing and lockwashers away.

Go on to Sheet 2

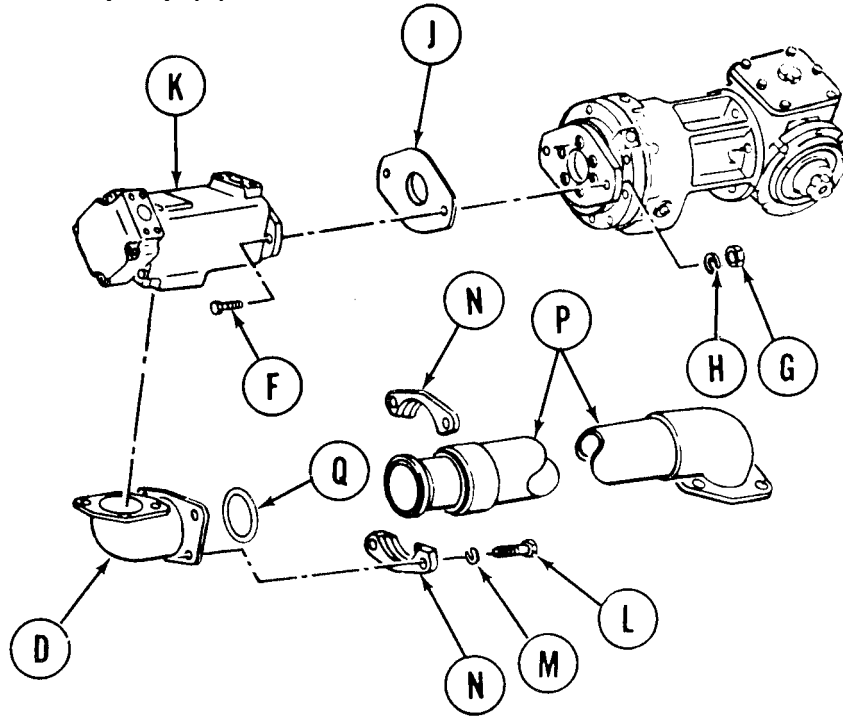
TA253661

ROTARY PUMP AND SUCTION HOSE REPLACEMENT (Sheet 2 of 4)

- Using 3/4 inch socket on screw (F) and 3/4 inch wrench on nut (G), remove screw (F), nut (G), lockwasher (H), gasket (J), and pump (K). Throw gasket and lockwashers away.

**NOTE**

It may be necessary to use screwdriver to remove pump (K).



- Using 3/4 inch wrench, remove four screws (L), lockwashers (M), two flanges (N), hose assembly (P), and packing (Q). Throw packing and lockwashers away.

**CLEANING AND INSPECTION:**

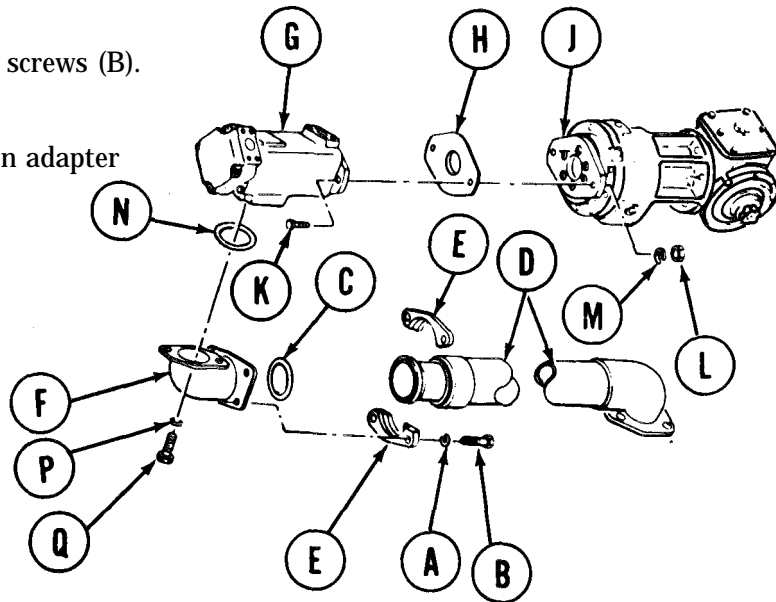
- Clean all metallic parts in dry cleaning solvent (Item 54, Appendix D).
- Inspect all parts for damage or wear.

Go on to Sheet 3

TA141216

**ROTARY PUMP AND SUCTION HOSE REPLACEMENT (Sheet 3 of 4)**

1. Place new lockwasher (A) on four screws (B).
2. Place packing (C) in groove in end of hose assembly (D).
3. Position hose assembly (D), two flanges (E), and elbow (F) in alignment.
4. Using 3/4 inch wrench, install four screws (B).
5. Position pump (G) and gasket (H) on adapter (J), using scribe marks.



6. Using 3/4 inch socket on screw (K) and 3/4 inch wrench on nut (L), install two screws (K), washers (M), and nuts (L).
7. Place packing (N) in groove of elbow (F).
8. Place new lockwasher (P) on four screws (Q).
9. Position and align elbow (F) on pump (G). Using 3/4 inch socket, install four screws (Q).

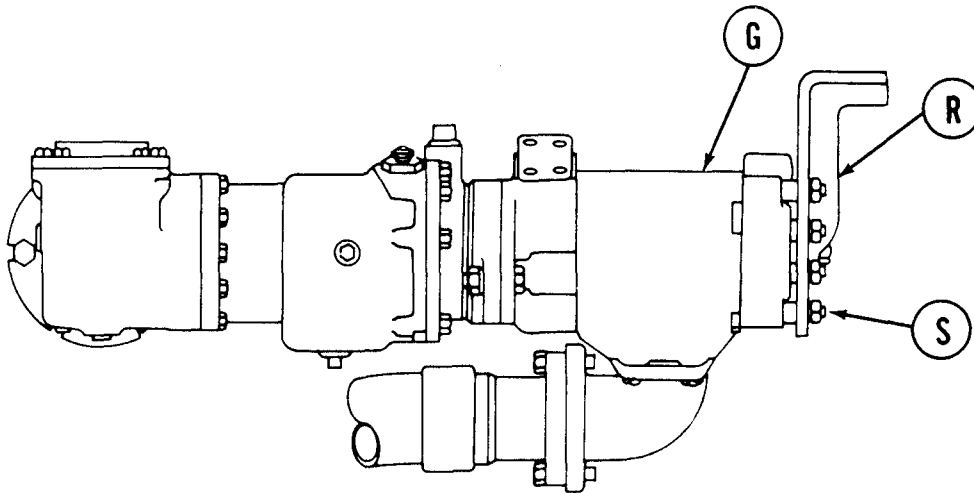
Go on to Sheet 4

TA141217

ROTARY PUMP AND SUCTION HOSE REPLACEMENT (Sheet 4 of 4)

10. Position bracket (R) on studs of pump (G).

11. Using 11/16 inch socket, install four new lockwashers and nuts (S).



12. Install right angle drive, clutch, and pump (page 18-104).



**PUMP MOUNTING BRACKET REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** 3/4 in. combination box and open end wrench

**SUPPLIES:** Lockwasher (MS35338-48) (3 required)

**PRELIMINARY PROCEDURE:** Remove right angle drive, clutch, and pump (page 18-101).

**NOTE**

Clamp may be secured by one of three screws (A).

**REMOVAL:**

1. Using wrench, remove three screws and lockwashers (A). Throw lockwashers away.
2. Using wrench, loosen screw and lockwasher (B).
3. Pull bracket (C) toward you, slipping it loose from screw and lockwasher (B).
4. Using wrench, remove three spacers (D).

**INSTALLATION:**

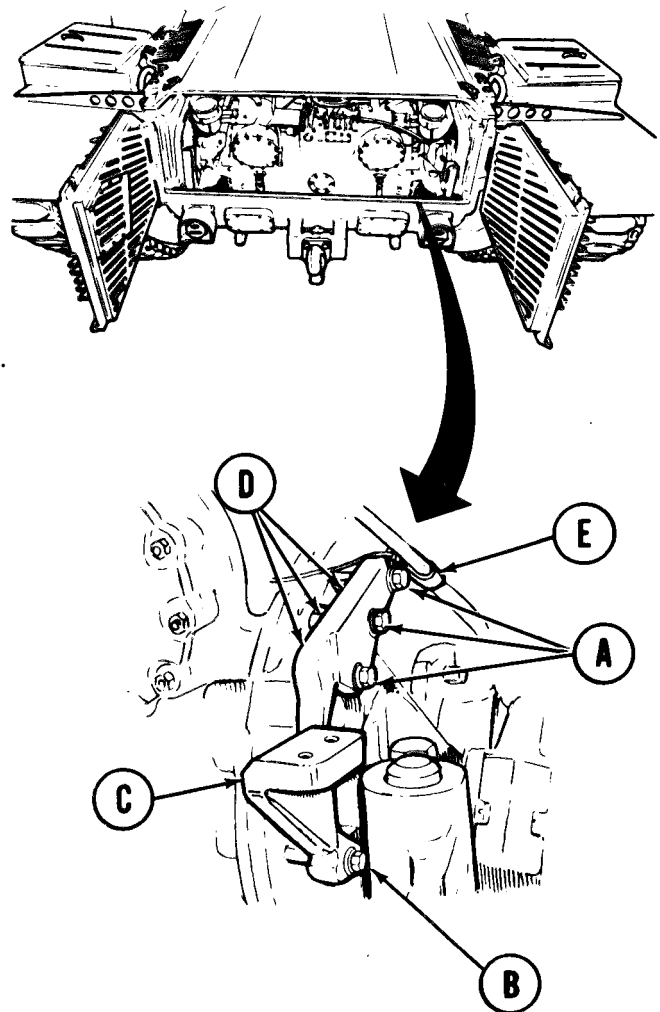
1. Using wrench, install three spacers (D).
2. Position bracket (C) on screw (B).

**NOTE**

Place clamp (E) in position, if removed.

3. Using wrench, install three screws and new lockwashers (A).

Install right angle drive, clutch, and pump (page 18-104).



End of Task

TA253662

Change 1 18-117

**MAGNETIC CLUTCH AND HOUSING REPLACEMENT (Sheet 1 of 6)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	18-118
Cleaning and Inspection	18-121
Installation	18-121

**TOOLS:**

1/2 in. combination box and open end wrench	5/16 in. socket head screw key (allen wrench)
3/8 in. combination box and open end wrench	9/16 in. socket with 1/2 in. drive
1-1/8 in. combination box and open end wrench	12 in. extension with 1/2 in. drive
7/16 in. combination box and open end wrench	Ratchet with 1/2 in. drive
3/4 in. combination box and open end wrench (2 required)	Slip joint pliers
	Bearing puller
	Stud remover and setter
	Center punch

**SUPPLIES:**

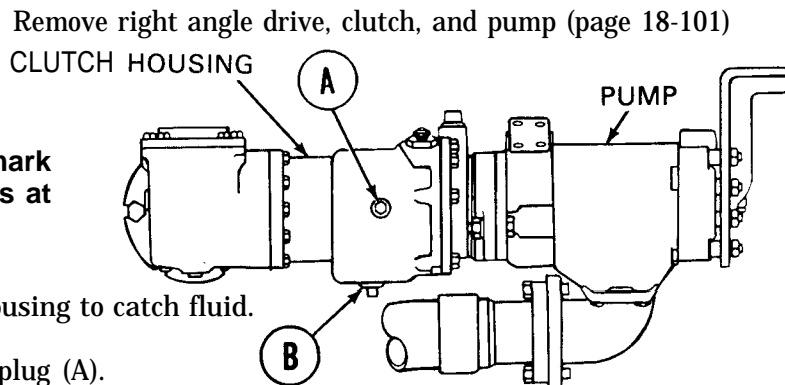
Container (to catch fluid)	Gasket (10940760)
Electrician's tape (Item 58, Appendix D)	Gasket (10940669)
Seal (10940820)	Gasket (10940613)
Dry cleaning solvent (Item 54, Appendix D)	Gasket (7383695)
Lockwasher (MS35338-46) (7 required)	Oil (Item 43, Appendix D)
Lockwasher (MS35338-48) (2 required)	Lockwasher (MS35338-26) (14 required)

REFERENCE: LO 9-2350-222-12

PRELIMINARY PROCEDURE: Remove right angle drive, clutch, and pump (page 18-101)

REMOVAL: **NOTE**

Using center punch, scribe a mark on housings to help aline parts at installation.



1. Place container under clutch housing to catch fluid.
2. Using 3/8 inch wrench, remove plug (A).
3. Using 5/16 inch allen wrench, remove plug (B) and allow clutch housing to drain.

Go on to Sheet 2

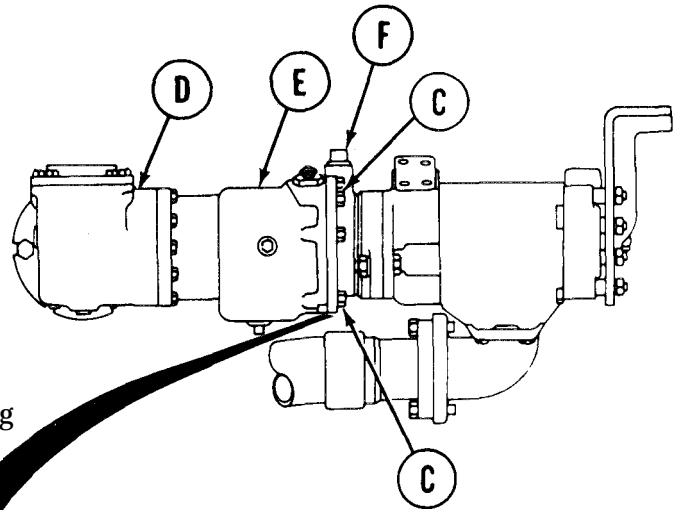
TA253663

**MAGNETIC CLUTCH AND HOUSING REPLACEMENT (Sheet 2 of 6)**

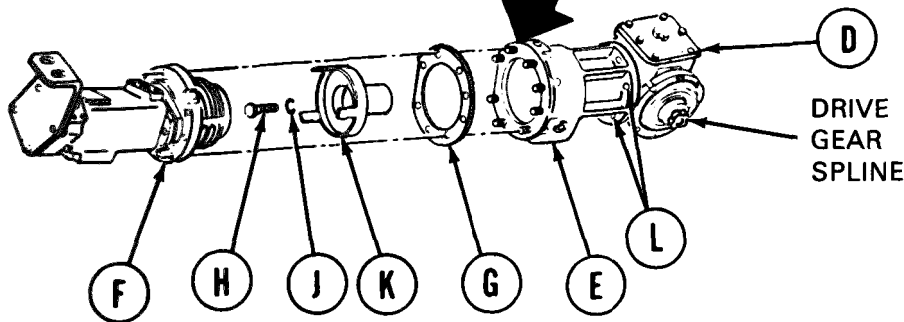
- Using 1/2 inch wrench, remove eight nuts and lockwashers (C). Throw lockwashers away.

**NOTE**

It may be necessary to use hammer and screwdriver to remove clutch housing assembly.



- Pull right angle drive (D) and clutch housing assembly (E) loose from magnetic clutch (F).
- Remove and throw away gasket (G).



- Wrap drive gear spline with three or more layers of electrician's tape (Item 58, Appendix D).
- Using pliers, hold drive gear spline from turning while using 9/16 inch socket to remove screw (H) and lockwasher (J). Throw lockwasher away.
- Remove spider (K) from clutch housing assembly (E).
- Using 1/2 inch wrench, remove six screws and lockwashers (L). Throw lockwashers away.
- Pull clutch housing assembly (E) and right angle drive (D) apart.

Go on to Sheet 3

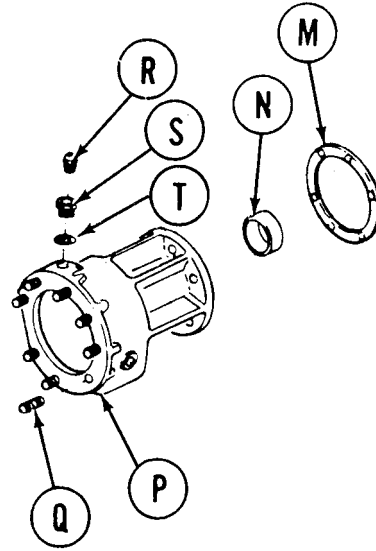
TA141221

**MAGNETIC CLUTCH AND HOUSING REPLACEMENT (Sheet 3 of 6)**

12. Remove and throw away gasket (M).
13. Using puller, remove seal (N) from housing (P).  
Throw seal away.

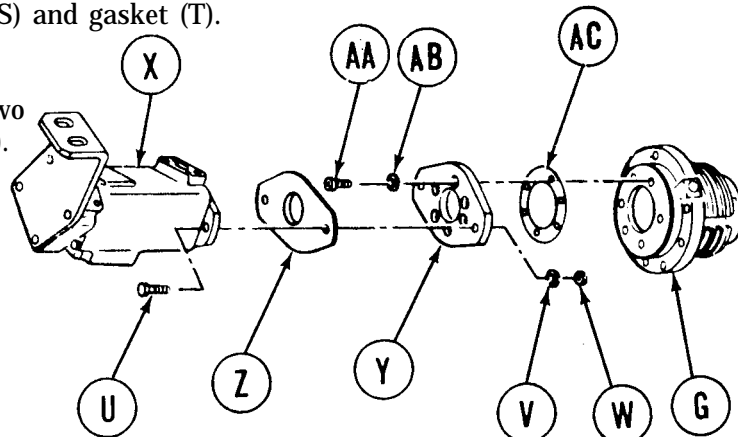
**NOTE**

**Do not remove studs unless damaged.**



14. Using stud remover, remove eight studs (Q) from housing (P).
15. Using 7/16 inch wrench, remove fitting (R).
16. Using 1-1/8 inch wrench, remove plug (S) and gasket (T).

17. Using two 3/4 inch wrenches, remove two screws (U), lockwashers (V), and nuts (W).  
Throw lockwashers away.



18. Pull pump (X) loose from adapter (Y).
19. Remove and throw away gasket (Z).
20. Using allen wrench, remove six screws (AA), lockwashers (AB), and adapter (Y) from magnetic clutch (G).  
Throw lockwashers away.
21. Remove and throw away gasket (AC).
22. Turn in magnetic clutch to be repaired or replaced.

Go on to Sheet 4

TA141222

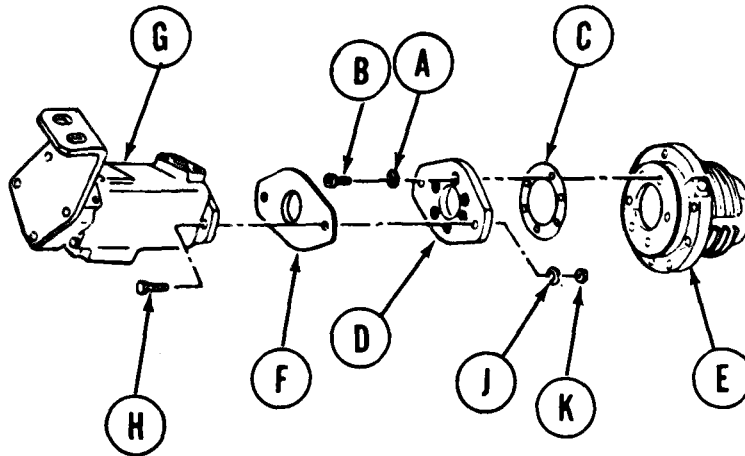
**MAGNETIC CLUTCH AND HOUSING REPLACEMENT (Sheet 4 of 6)**

**CLEANING AND INSPECTION:**

1. Clean all metallic parts in dry cleaning solvent (Item 54, Appendix D).
2. Inspect all parts for damage or wear.
3. Replace all unserviceable parts.

**INSTALLATION:**

1. Place new lockwashers(A) on six screws (B).
2. Position gasket (C) and adapter (D) on magnetic clutch (E).
3. Using allen wrench, install six screws (B).



4. Position gasket (F) and pump (G) on adapter (D).

**NOTE**

**It may be necessary to slightly rotate spline drive of pump to align with shaft of magnetic clutch.**

5. Using two 3/4 inch wrenches, install two screws (H), new lockwashers (J), and nuts (K).

Go on to Sheet 5

TA141223

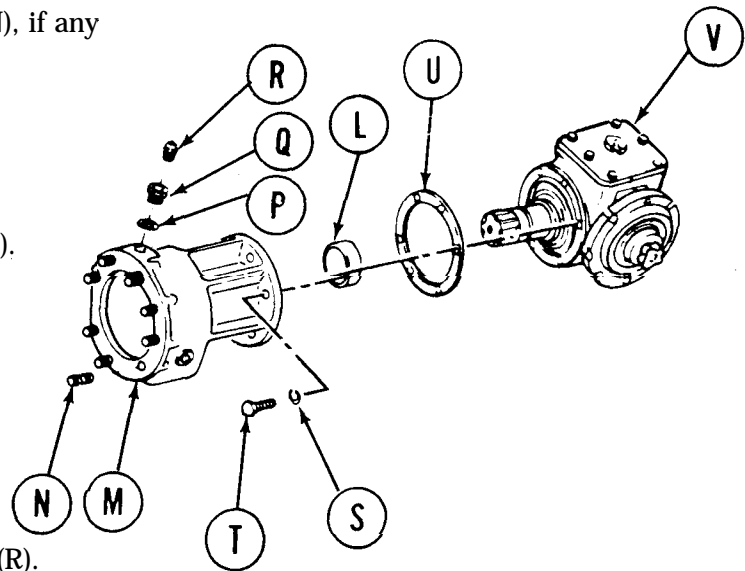
MAGNETIC CLUTCH AND HOUSING REPLACEMENT (Sheet 5 of 6)

6. Using hammer and block of wood, install seal (L) in housing (M).

7. Using stud setter, install eight studs (N), if any were removed.

8. Put gasket (P) on plug (Q).

9. Using 1-1/8 inch wrench, install plug (Q).



10. Using 7/16 inch wrench, install fitting (R).

11. Place new lockwashers (S) on six screws (T).

12. Position gasket (U) and housing (M) with right angle drive (V).

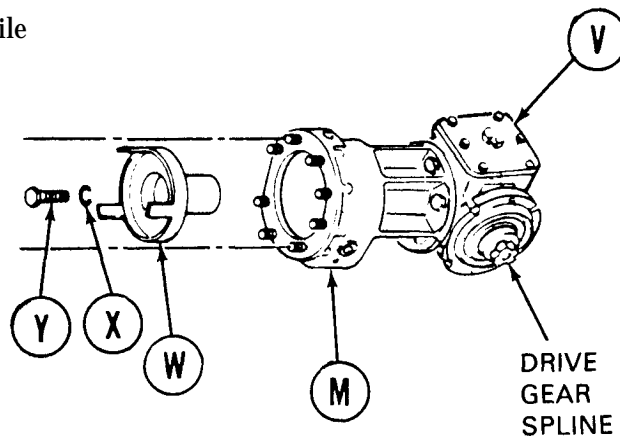
13. Using 1/2 inch wrench, install six screws (T).

14. Make sure drive gear spline is still wrapped with electrician's tape. If not, wrap with three or more layers of tape (Item 58, Appendix D).

15. Position spider (W) in housing (M) on output spline of right angle drive.

16. Place new lockwasher (X) on screw (Y).

17. Using 9/16 inch socket, install screw (Y) while holding drive gear spline from turning with pliers.

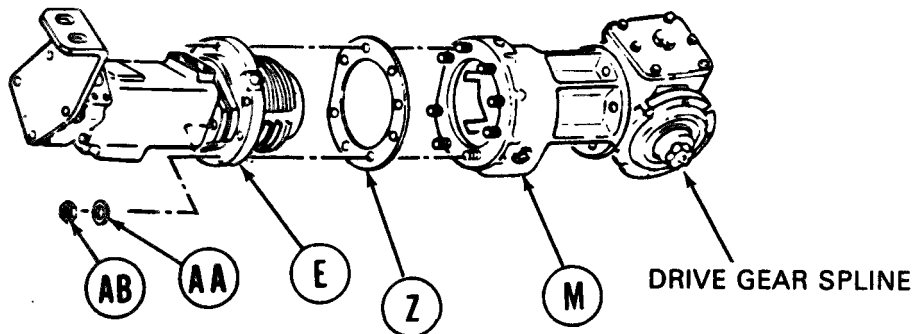


Go on to Sheet 6

TA141224

**MAGNETIC CLUTCH AND HOUSING REPLACEMENT (Sheet 6 of 6)**

18. Remove electrician's tape from drive gear spline.

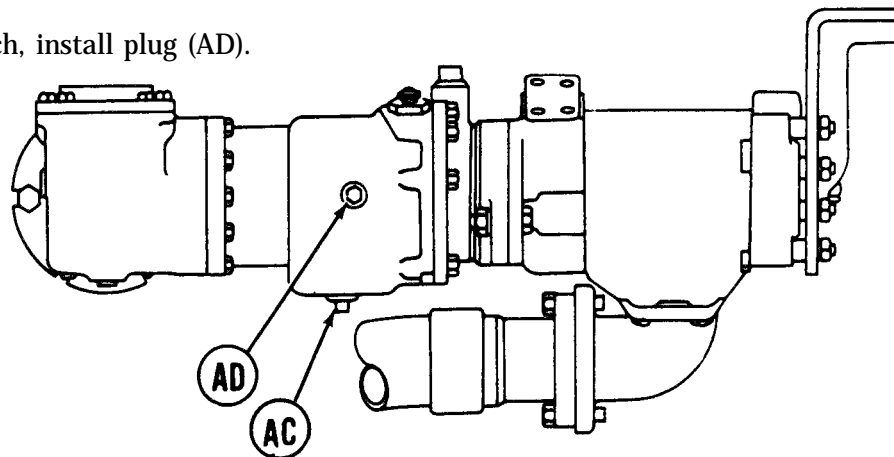


19. Place gasket (Z) on studs of housing (M).

**NOTE**

**When inserting magnetic clutch (E) in housing (M), make sure legs of spider (W) slip in grooves of clutch.**

20. Position and insert magnetic clutch (E) in housing (M).
21. Place new lockwasher (AA) on eight studs of housing (M).
22. Using 1/2 inch wrench, install eight nuts (AB).
23. Using allen wrench, install plug (AC).
24. Fill with lubricant (Item 43, Appendix D) at plug (AD) hole (LO 9-2350-222-12).
25. Using 3/8 inch wrench, install plug (AD).



26. Install right angle drive, clutch, and pump (page 18-104).

End of Task

TA141225





CHAPTER 19.1

BILGE PUMP AND GENERATOR EXHAUST MAINTENANCE INDEX

Procedure	Page
Bilge Pump Replacement	19.1-2
Generator Exhaust Valve and Control Cable Replacement	19.1-8

**BILGE PUMP REPLACEMENT (Sheet 1 of 6)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	19.1-2
Cleaning and Inspection	19.1-4
Installation	19.1-5

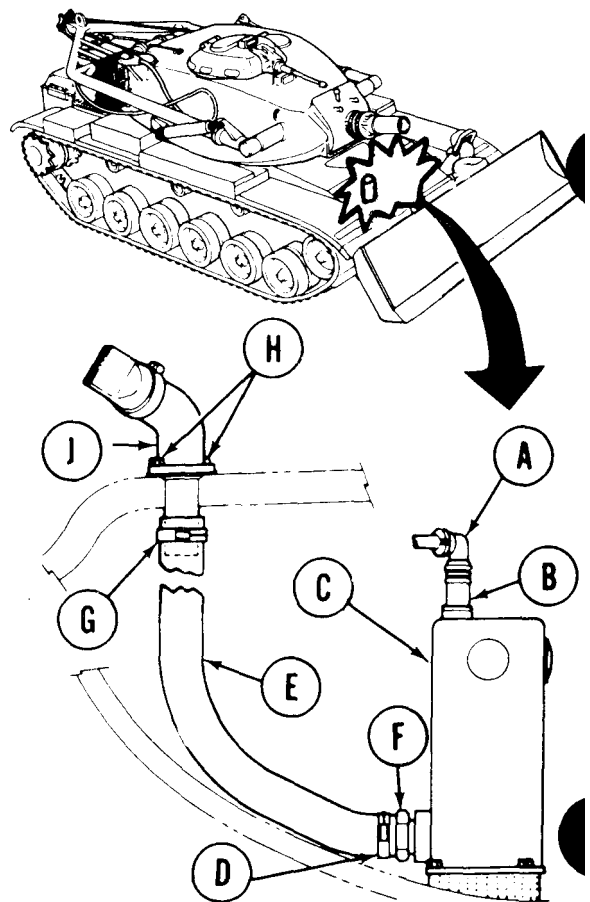
**TOOLS:** 9/16 in. combination box and open end wrench  
 7/16 in. combination box and open end wrench  
 1/2 in. combination box and open end wrench  
 2 in. open end wrench  
 Flat-tip screwdriver  
 Slip joint pliers

**SUPPLIES:** Drycleaning solvent (Item 54, Appendix D)  
 Silicone compound (Item 32, Appendix D)  
 Lockwasher (MS35338-46) (2 required)  
 Ram (Item 65, Appendix D)  
 Gasket (10873214)  
 Lockwasher (MS35338-45) (7 required)  
 Lockwasher (MS35335-34) (6 required)

**REFERENCE:** TM 9-2350-222-10

**REMOVAL:**

- Using pliers, disconnect connector (A) from electrical connector (B) on bilge pump assembly (C).
- Using screwdriver, loosen lower hose clamp (D).
- Disconnect hose (E) from bilge pump adapter (F).
- If upper hose clamp (G) is not in position to be loosened, remove two screws and lockwashers (H) from elbow (J) using 9/16 inch wrench. Throw lockwashers away.  
 If upper hose clamp (G) can be reached, go to step 6, then step 8.
- Rotate hose (E) to a position where upper hose clamp (G) can be loosened.
- Using screwdriver, loosen upper hose clamp (G).
- Using 9/16 inch wrench, install two screws and new lockwashers (H) through elbow (J).
- Disconnect hose (E) from elbow (J).



Go on to Sheet 2

TA2538

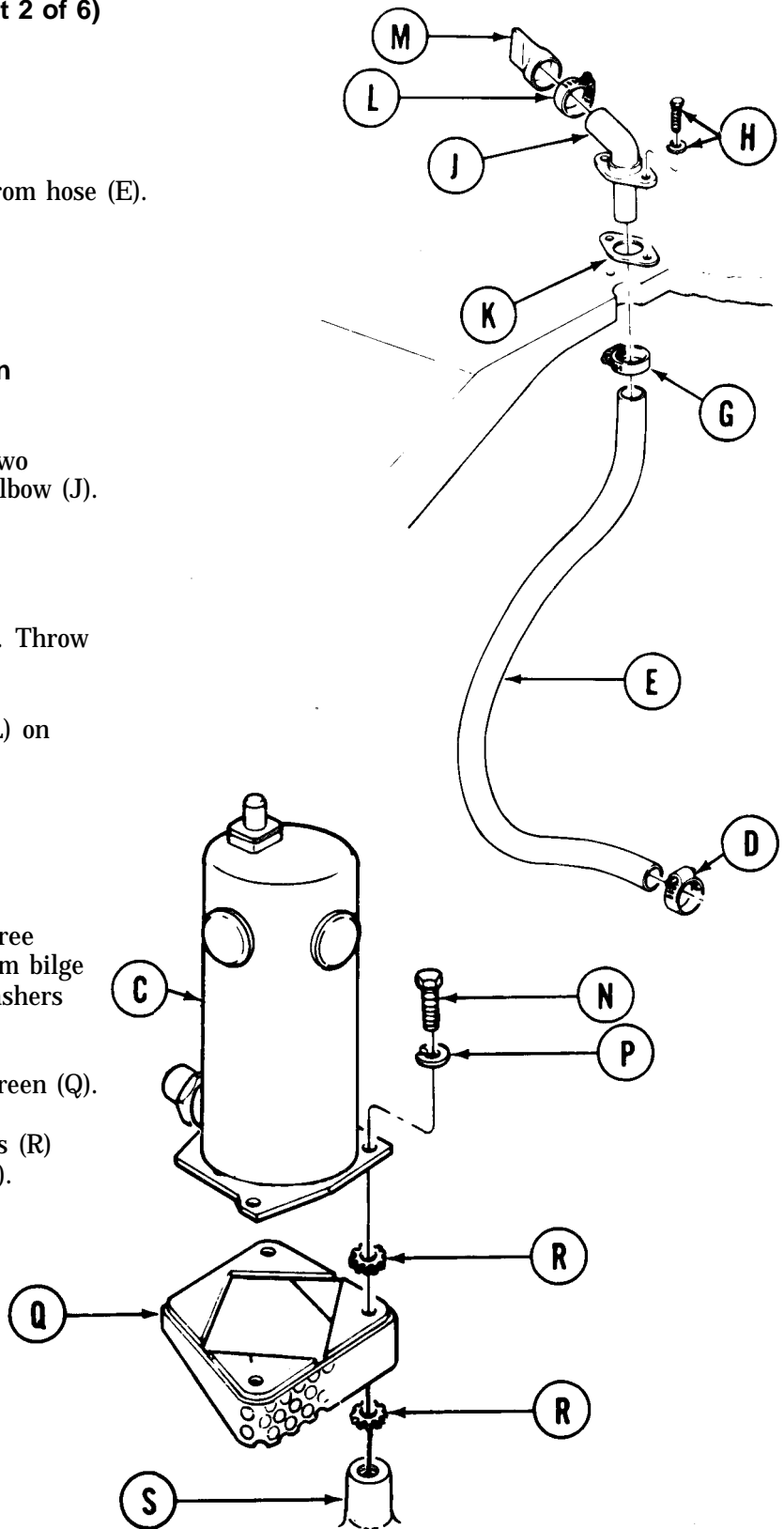
**BILGE PUMP REPLACEMENT (Sheet 2 of 6)**

9. Remove hose clamps (D) and (G) from hose (E).

**NOTE**

**If screws (H) were removed in step 4, go to step 11.**

10. Using 9/16 inch wrench, remove two screws and lockwashers (H) from elbow (J). Throw lockwashers away.
11. Remove elbow (J) from tank.
12. Remove gasket (K) from elbow (J). Throw gasket (K) away.
13. Using screwdriver, loosen clamp (L) on valve (M).
14. Remove valve (M) from elbow (J).
15. Remove clamp (L) from valve (M).
16. Using 1/2 inch wrench, remove three screws (N) and lockwashers (P) from bilge pump assembly (C). Throw lockwashers away.
17. Lift bilge pump assembly (C) off screen (Q).
18. Remove screen (Q) and lockwashers (R) from bilge pump mounting pads (S). Throw lockwashers away.



Go on to Sheet 3

TA253846

**BILGE PUMP REPLACEMENT (Sheet 3 of 6)**

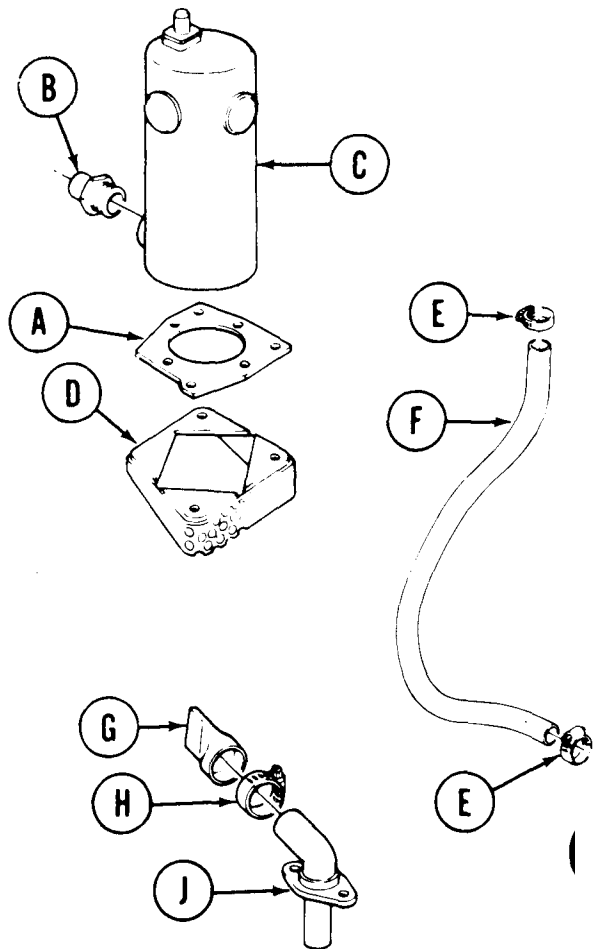
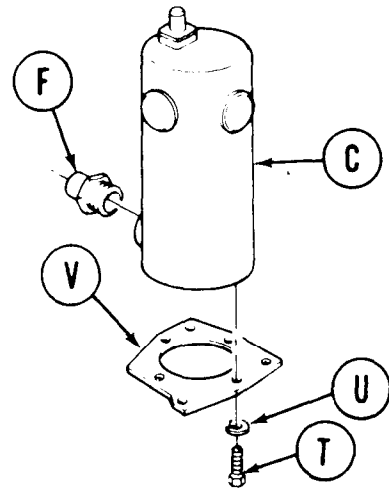
19. Using 2 inch wrench, remove bilge pump adapter (F) from bilge pump assembly (C).
20. Using 7/16 inch wrench, remove four screws (T) and lockwashers (U) from mounting plate (V) and bilge pump assembly (C). Remove plate (V). Throw lockwashers away.

**CLEANING AND INSPECTION:**

**NOTE**

**Before inspection, clean all parts thoroughly with clean rags and dry cleaning solvent (Item 54, Appendix D).**

1. Check bilge pump mounting plate (A) for cracks, corrosion, or excessive wear. Replace if required.
2. Check threads on adapter (B) for corrosion, wear, and damaged threads. Replace if required.
3. Check bilge pump (C) for corrosion, cracks, and wear. Replace if required.
4. Check screen (D) for corrosion, excessive dirt, or damage. Replace if required.
5. Check hose clamps (E) for corrosion and wear. Check screw and nut threads for damage. Replace if required.
6. Check hose (F) for breaks, cracks, or wear. Replace if required. Reposition hose (F) after inspection.
7. Check valve (G) for cracks, corrosion, and wear. Replace if required.
8. Check clamp (H) for corrosion and wear. Check screw and nut threads for damage. Replace if required.
9. Check elbow (J) for cracks, breaks, corrosion, and wear. Replace if required.



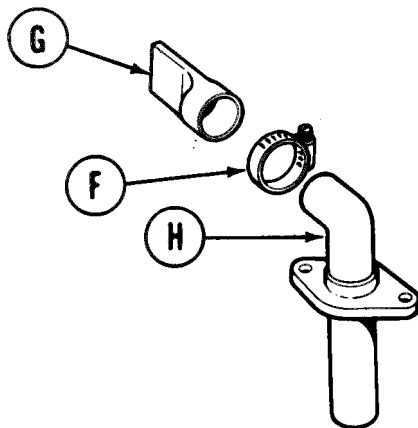
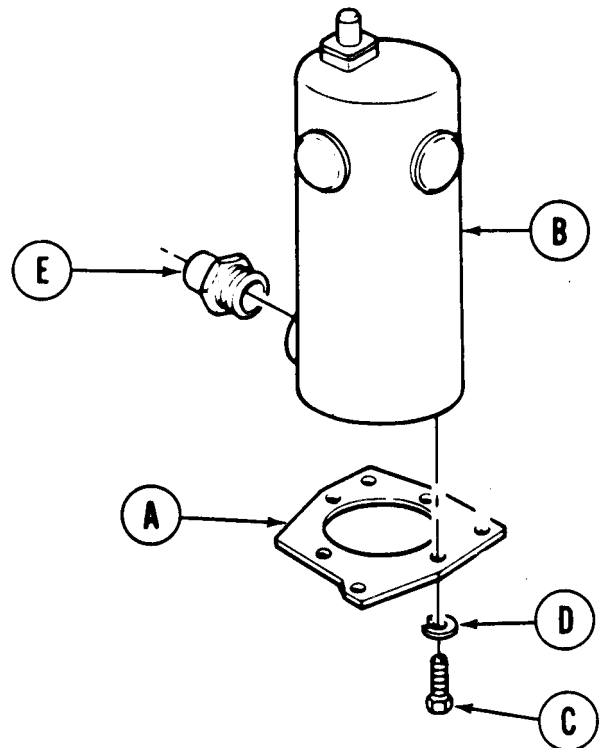
Go on to Sheet 4

T A 2 5 3 8 4 7

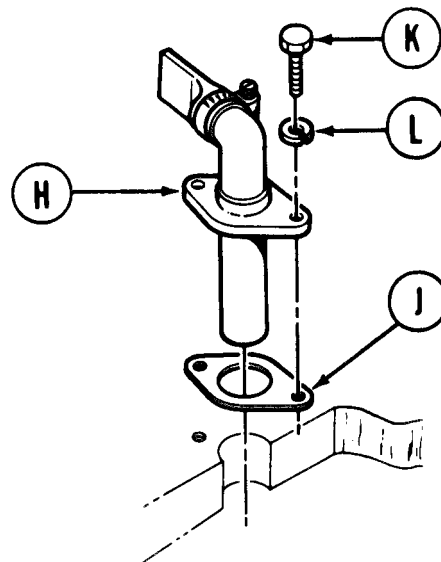
**BILGE PUMP REPLACEMENT (Sheet 4 of 6)**

**INSTALLATION:**

1. Position mounting plate (A) on bilge pump (B).
2. Using 7/16 inch wrench, install four screws (C) and new lockwashers (D) through mounting plate (A) and bilge pump assembly (B).
3. Using 2 inch wrench, install bilge pump adapter (E) on bilge pump assembly (B).
4. Install clamp (F) on valve (G).
5. Install valve (G) on elbow (H).
6. Using screwdriver, tighten clamp (F) on valve (G).
7. Position new gasket (J) on elbow (H).



8. Push elbow (H) down through hole in hull, aligning holes of elbow (H) and gasket (J) with holes in hull.
9. Using 9/16 inch wrench, install two screws (K) and new lockwashers (L) through elbow (H) and gasket (J).

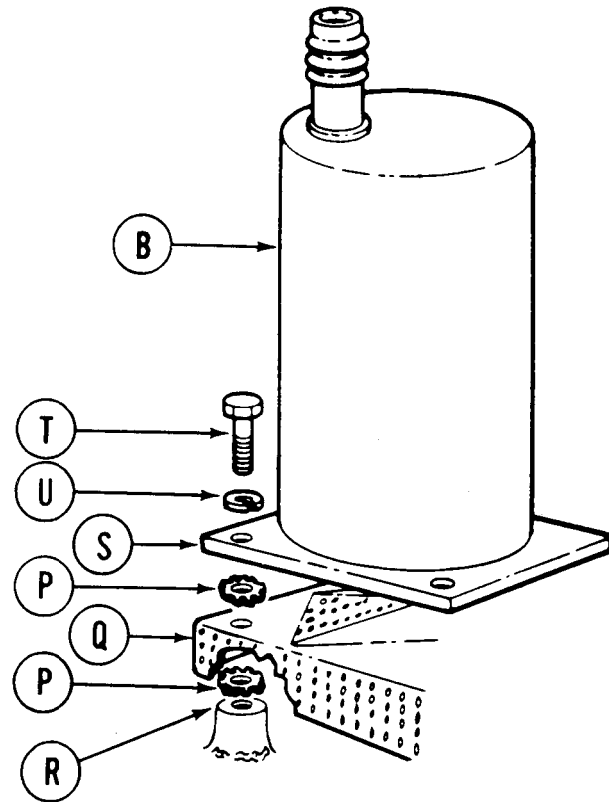
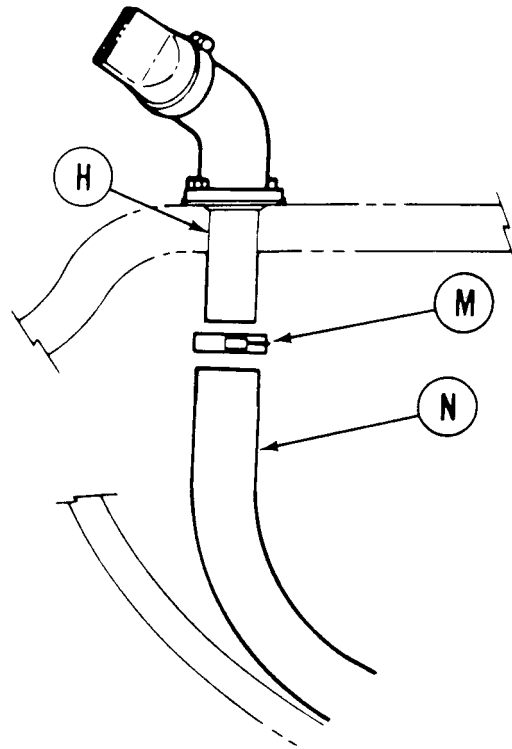


**Go on to Sheet 5**

TA253848

**BILGE PUMP REPLACEMENT (Sheet 5 of 6)**

10. Install clamp (M) on upper end of hose (N).
11. Slide hose (N) onto elbow (H).
12. Using screwdriver, tighten clamp (M) on hose (N) and elbow (H).
13. Position three new lockwashers (P) on three tank mounting pads (R).
14. Carefully position screen (Q) over lockwashers (P) on tank mounting pads (R).
15. Position three new lockwashers (P) over holes of screen (Q).
16. Carefully position bilge pump assembly (B) on screen (Q). Make sure holes in mounting plate (S), screen (Q) and tank mounting pads (R) are aligned.
17. Using 1/2 inch wrench, install three screws (T) and new lockwashers (U) through mounting plate (S), screen (Q), and tank mounting pads (R).

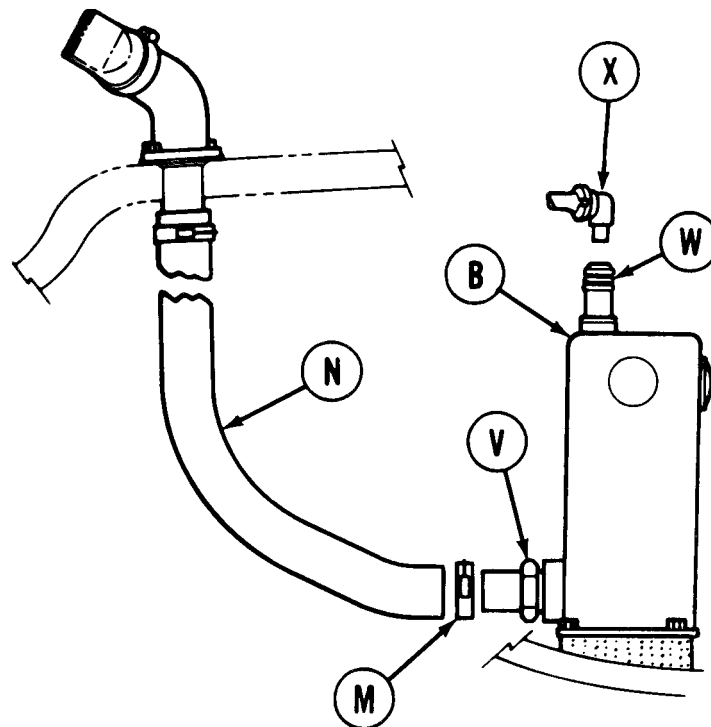


Go on to Sheet 6

TA253849

**BILGE PUMP REPLACEMENT (Sheet 6 of 6)**

18. Slide hose clamp (M) over lower end of hose (N).
19. Slide hose (N) onto bilge pump adapter (V).
20. Using screwdriver, tighten hose clamp (M).
21. Coat electrical connector (W) with silicone compound (Item 32, Appendix D).
22. Connect electrical connector (X) to electrical connector (W).
23. Using pliers, tighten electrical connector (X).
24. Perform operational check of bilge pump assembly (TM 9-2350-222-10).

**End of Task**

TA253850

**GENERATOR EXHAUST VALVE AND CONTROL CABLE REPLACEMENT (Sheet 1 of 6)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	19.1-9
Inspection	19.1-11
Installation	19.1-11

TOOLS: Slip-joint pliers  
 12 in. adjustable wrench  
 15/16 in. open end wrench  
 1 in. open end wrench  
 9/16 in. combination box and open end wrench  
 7/16 in. combination box and open end wrench  
 1-1/8 in. combination box and open end wrench  
 Ratchet with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 1/2 in. socket with 1/2 in. drive  
 5 in. extension with 1/2 in. drive

SUPPLIES: Cotter pin (MS 24665-132)  
 Gasket (11684281)  
 Lockwasher (MS 35338-46) (4 required)

PERSONNEL: Two

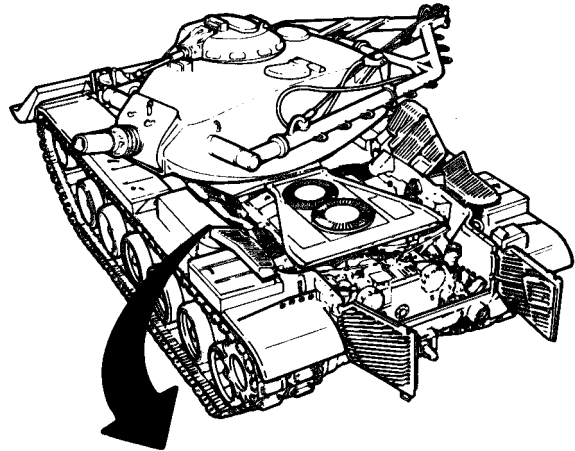
PRELIMINARY PROCEDURES: Remove engine shroud (page 9-2).  
 Remove air intake left side only (page 7-82).



## GENERATOR EXHAUST VALVE AND CONTROL CABLE REPLACEMENT (Sheet 2 of 6)

## REMOVAL:

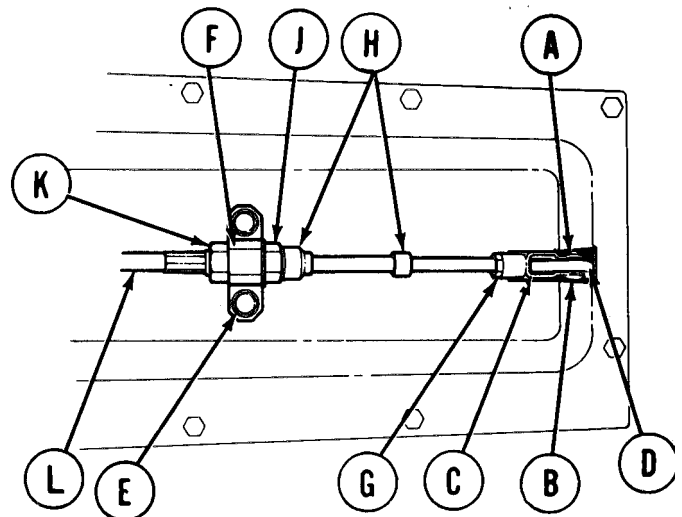
1. Using pliers, remove cotter pin (A). Throw cotter pin away.
2. Remove pin (B) to release clevis (C) from generator exhaust valve (D).
3. Using 9/16 inch wrench, remove two screws and lockwashers (E) securing support (F). Throw lockwashers away.
4. Using 7/16 inch wrench, loosen nut (G) and remove clevis (C) and then remove nut (G).
5. Carefully remove seals (H).



## NOTE

Your vehicle may or may not have nuts on both sides of support (F).

6. Using 1 inch wrench to hold support (F) use 15/16 inch wrench and remove nut and shakeproof washer (J).
7. Using fingers, remove support (F) and nut (K) from control cable (L).

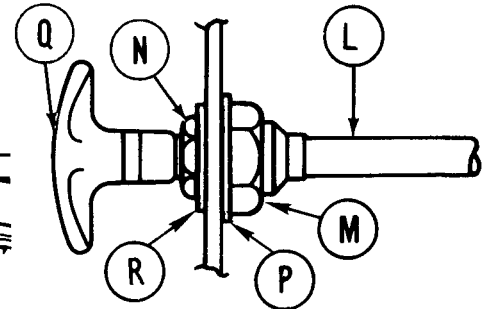
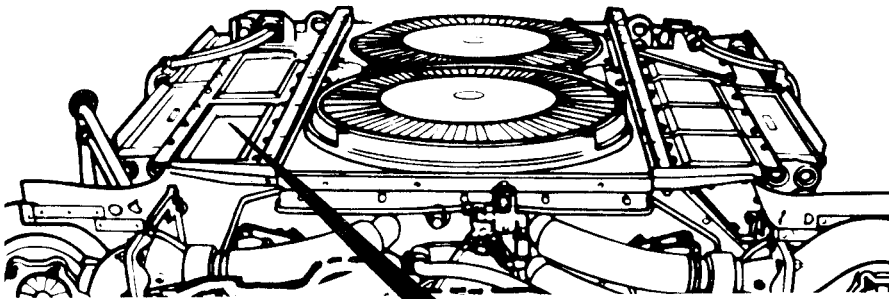
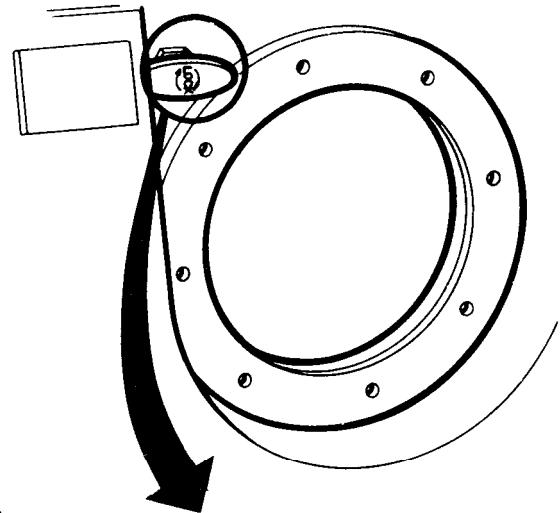


Go on to Sheet 3

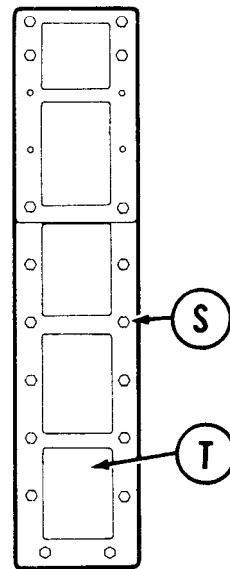
TA253852

**GENERATOR EXHAUST VALVE AND CONTROL CABLE REPLACEMENT (Sheet 3 of 6)**

8. Using adjustable wrench remove nut (M) from threaded portion of control cable (L) while holding flange (N) with 1-1/8 in. wrench.
9. Using hands remove nut (M) and shakeproof washer (P) from control cable (L).
10. Using hands, grasp handle (Q) of control cable and pull control cable (L) from hole in bulkhead.
11. Using hands, remove gasket (R) from control cable (L). Throw gasket away.



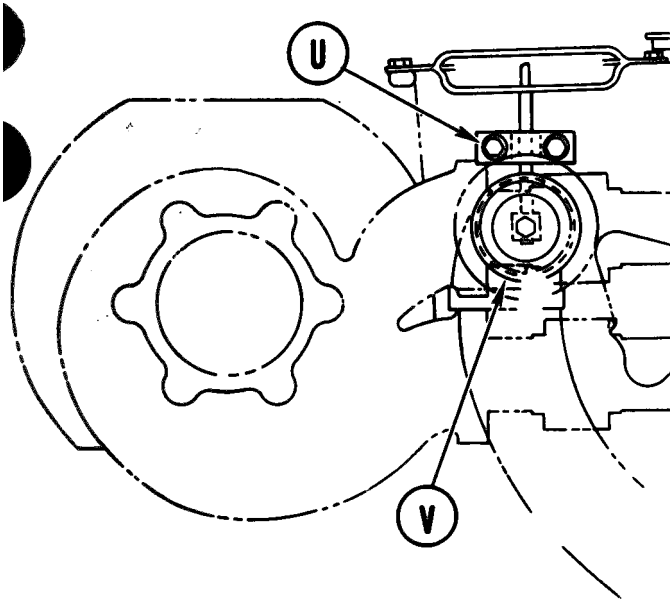
12. Using 1/2 in. socket remove 14 assembled washer screw (S) securing rear engine access cover (T).



Go on to Sheet 4

TA253853

## GENERATOR EXHAUST VALVE AND CONTROL CABLE REPLACEMENT (Sheet 4 of 6)



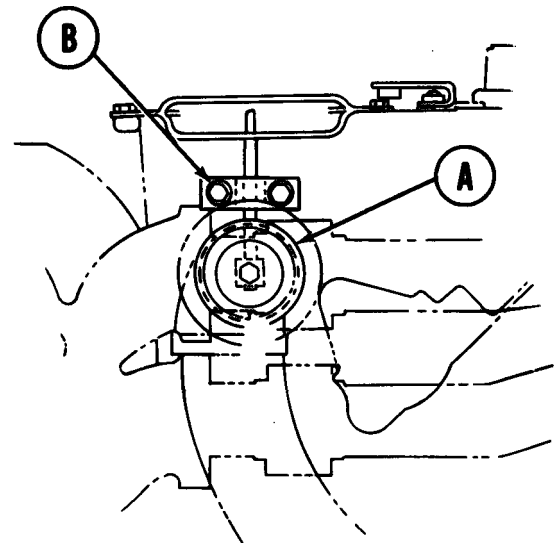
14. Using 9/16 inch socket, remove two screws and lockwashers (U). Throw lockwashers away.
15. Using hands, remove generator exhaust valve (V).

## INSPECTION:

Inspect valve assembly or control assembly for damaged or unserviceable parts. If damaged or unserviceable replace.

## INSTALLATION:

1. Place generator exhaust valve (A) in position and install two screws and new lockwashers (B).
2. Using 9/16 inch socket tighten two screws (B).

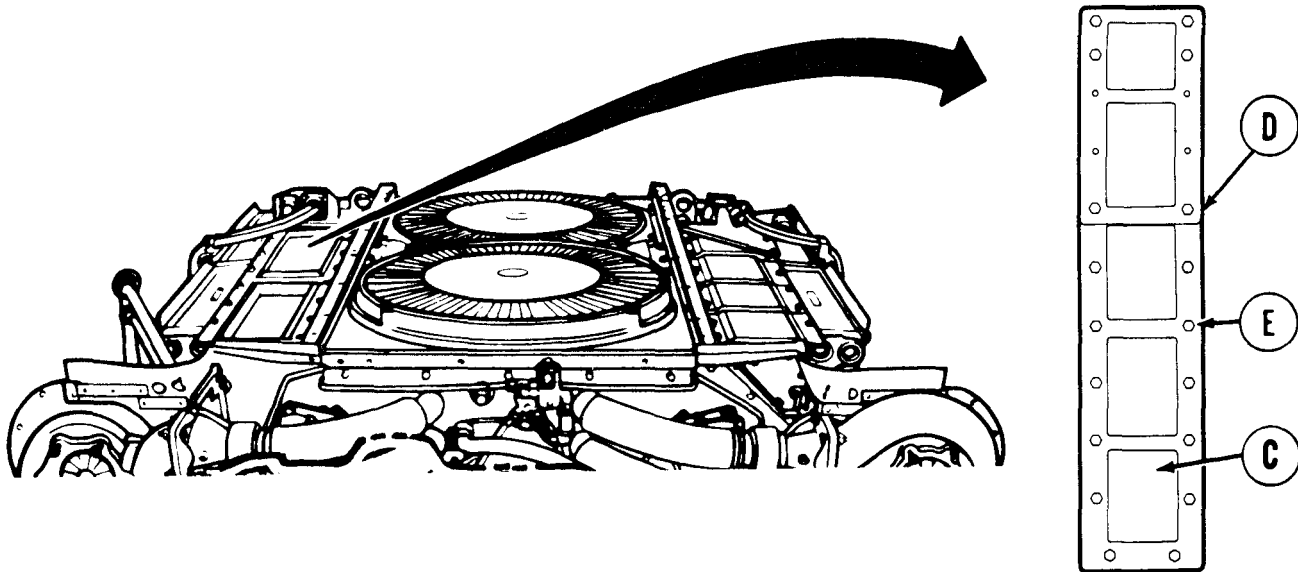


Go on to Sheet 5

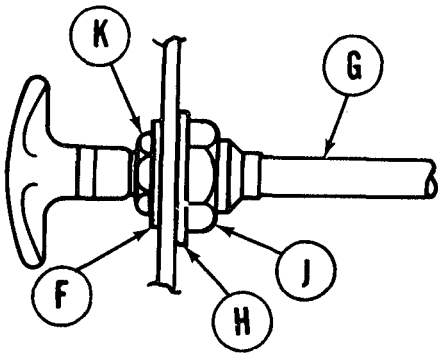
TA253854

**GENERATOR EXHAUST VALVE AND CONTROL CABLE REPLACEMENT (Sheet 5 of 6)**

3. Position rear engine access cover (C) in place under front access cover (D) on engine.
4. Install 14 assembled washer screws (E) using 1/2 inch socket, tighten 14 screws (E).



5. Install new gasket (F) on control cable (G).
6. Install control cable (G) through hole in bulkhead,
7. Install shakeproof washer (H) and nut (J) on control cable (G).
8. Using adjustable wrench, tighten nut (J). Use 1-1/8 inch wrench to hold control cable at flange (K) while tightening nut (J).

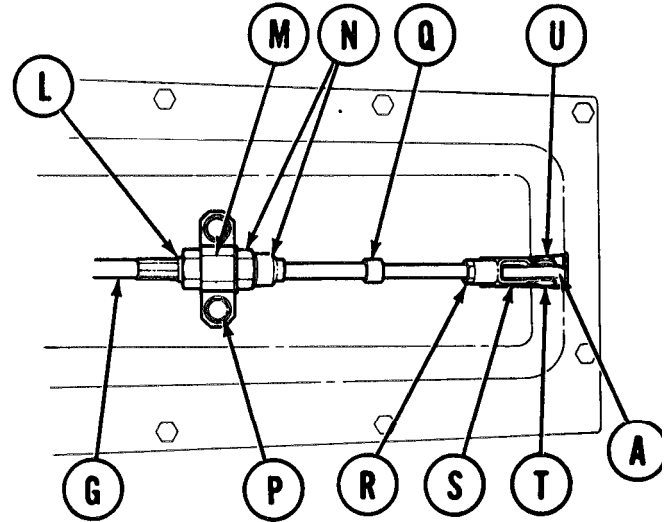


Go on to Sheet 6

TA253855

## GENERATOR EXHAUST VALVE AND CONTROL CABLE REPLACEMENT (Sheet 6 of 6)

9. Install nut (L) and support (M) over end at control cable (G).
10. Install shakeproof washer and nut (N) over end of control cable (G). Holding support (M) with 1 in. wrench, tighten nut (N) with 15/16 wrench.
11. Using 9/16 inch wrench, install two screws and new lockwashers (P) to secure support (M) to front access cover.
12. Install seals (Q) onto control cable (G).
13. Install nut (R) on control cable (G).
14. Install clevis (S) on control cable (M). Adjust clevis (S) to align holes in clevis (S) with holes in generator exhaust valve (A).
15. Install pin (T) through clevis (S) and generator exhaust valve (A).
16. Install new cotter pin (U) through pin (T). Use pliers and bend ends of cotter pin.
17. Using pliers and 7/16 inch wrench, tighten nut (R) against clevis (S).
18. Check that clevis (S) is centered and does not bind against sides of lever of generator exhaust valve (A).
19. Install engine shroud (page 9-3).
20. Install air intake (page 7-85).



End of Task

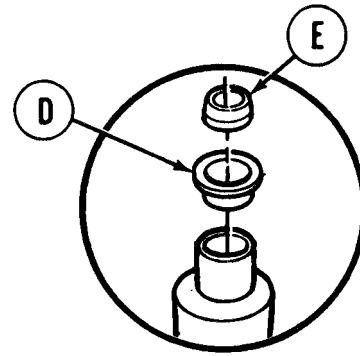
TA253856



**INNER EXHAUST PIPE REPLACEMENT (Sheet 2 of 2)**

**INSTALLATION:**

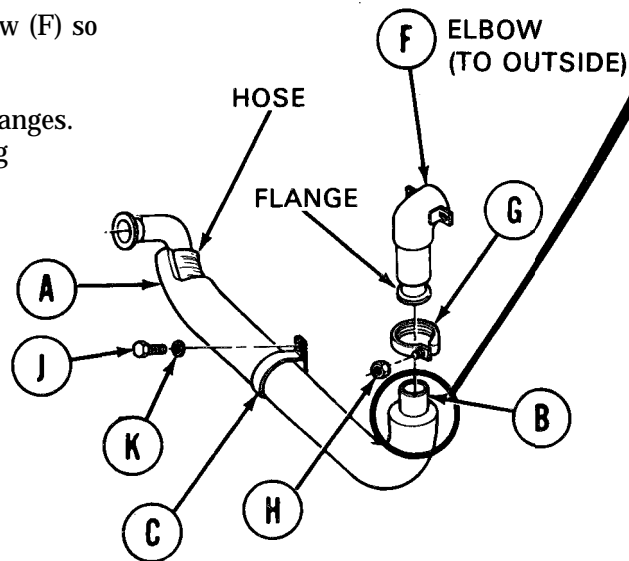
1. Install insulation (A) over hose part of pipe (B).
2. Slide clamp (C) into position on pipe (B).
3. Using hammer, lightly tap flange (D) onto exhaust elbow end of pipe (B).
4. Using hammer and chisel, tap sleeve (E), with tapered end of sleeve away from flange (D), onto pipe (B).



**NOTE**

**Sleeve (E) butts up to flange (D) to hold flange in place. It may be necessary to use hammer and punch to aid in mating the two flanges.**

5. Position heater pipe (B) to exhaust elbow (F) so flange (D) mates to flange on elbow.
6. Slide clamp coupling (G) over mating flanges. Install nut (H) onto coupling (G). Using wrench, tighten nut (H).



7. Using socket, tighten screw (J) with new lockwasher (K) securing clamp (C) to hull.
8. Install personnel heater (page 19-22).

End of Task

TA141228

**INNER EXHAUST PIPE INSULATION REPLACEMENT (Sheet 1 of 1)**

TOOLS: Knife

SUPPLIES: Dry cleaning solvent (Item 54, Appendix D)

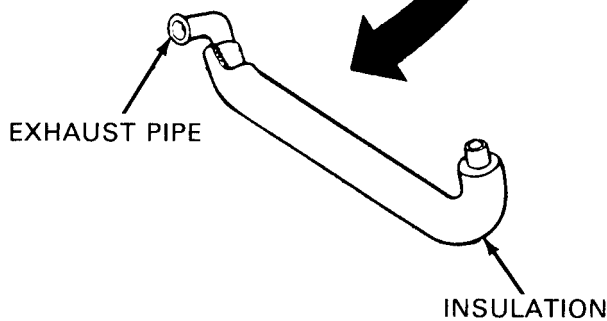
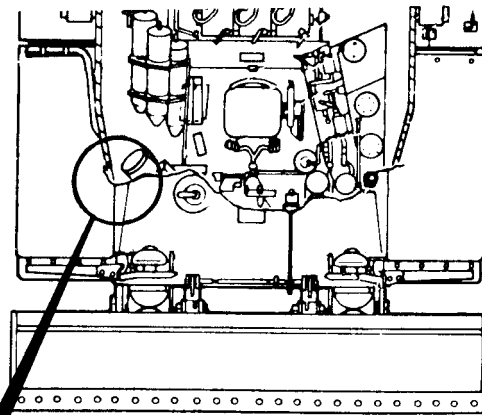
PRELIMINARY PROCEDURE: Remove inner exhaust pipe (page 19-2)

**REMOVAL:**

1. Using knife, cut away old insulation from inner exhaust pipe.
2. Using shop towel and dry cleaning solvent (Item 54, Appendix D), clean off exhaust pipe.

**INSTALLATION:**

1. Pull new insulation into position on inner exhaust pipe as shown.
2. Install pipe to personnel heater (page 19-3).



End of Task

TA141229

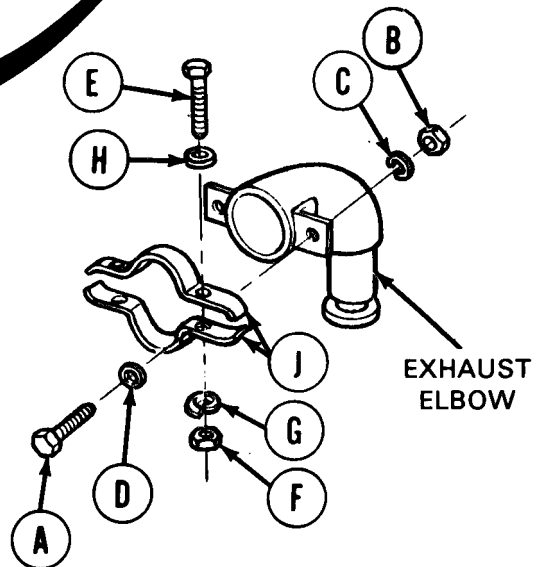
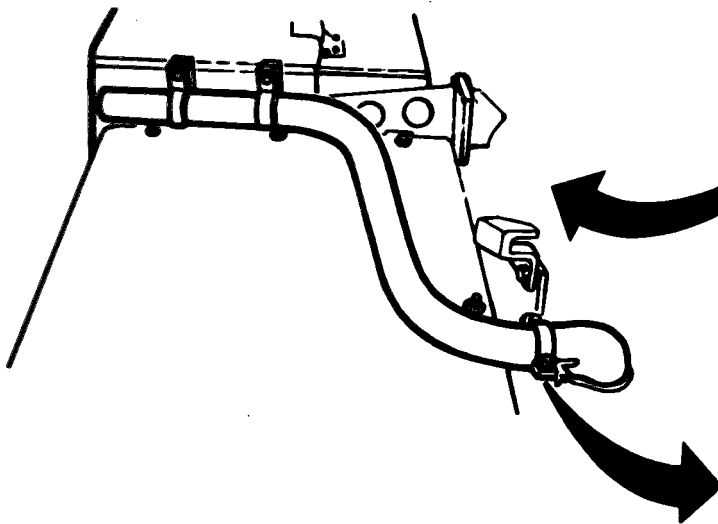
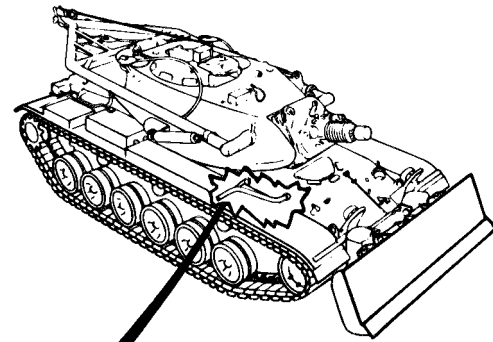


**OUTER EXHAUST PIPE REPLACEMENT (Sheet 1 of 2)**

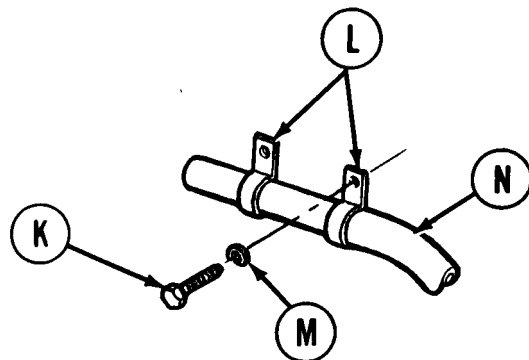
**TOOLS:** 7/16 in. socket with 1/2 in. drive  
 7/16 in. combination box and open end wrench  
 9/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Hammer

**SUPPLIES:** Lockwasher (MS35338-44) (4 required)  
 Lockwasher (MS35335-35) (2 required)

**REMOVAL:**



1. Using 7/16 inch socket, loosen two screws (A) while holding nuts (B) with wrench. Remove two nuts (B), lockwashers (C), screws (A), and flat washers (D). Throw lockwashers away.
2. Using 7/16 inch socket, loosen two screws (E) while holding nuts (F) with wrench. Remove nuts (F), lockwashers (G), screws (E), and flat washers (H). Throw lockwashers away.
3. Remove two straps (J).
4. Using 9/16 inch socket, loosen two screws (K) securing two clamps (L). Remove two screws (K) and lockwashers (M). Throw lockwashers away.
5. Remove exhaust pipe (N) from vehicle.
6. Using hammer, tap two clamps (L) off pipe (N).



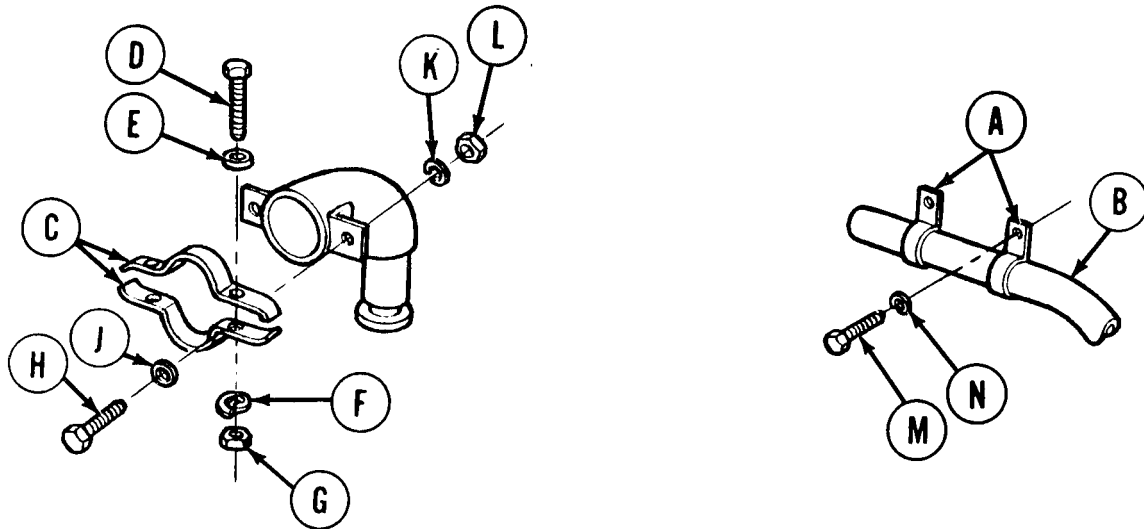
Go on to Sheet 2

TA141230

OUTER EXHAUST PIPE REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

1. Using hammer, tap two clamps (A) into position on outer exhaust pipe (B).



2. Place two straps (C) around pipe (B). Secure straps with two screws (D), flat washers (E), new lockwashers (F), and nuts (G). Finger tighten nuts.
3. Position pipe (B) assembly to exhaust elbow.
4. Secure pipe (B) to elbow with two screws (H), flat washers (J), new lockwashers (K), and nuts (L). Finger tighten nuts.
5. Install two screws (M) with new lockwashers (N) to secure clamps (A) around pipe (B).
6. Using 9/16 inch socket, tighten two screws (M).
7. Hold screws with wrench. Using 7/16 inch socket, tighten nuts (G) and (L) at elbow and straps (C).

End of Task

TA141231

**AIR DUCT HOSE REPLACEMENT (Sheet 1 of 2)**

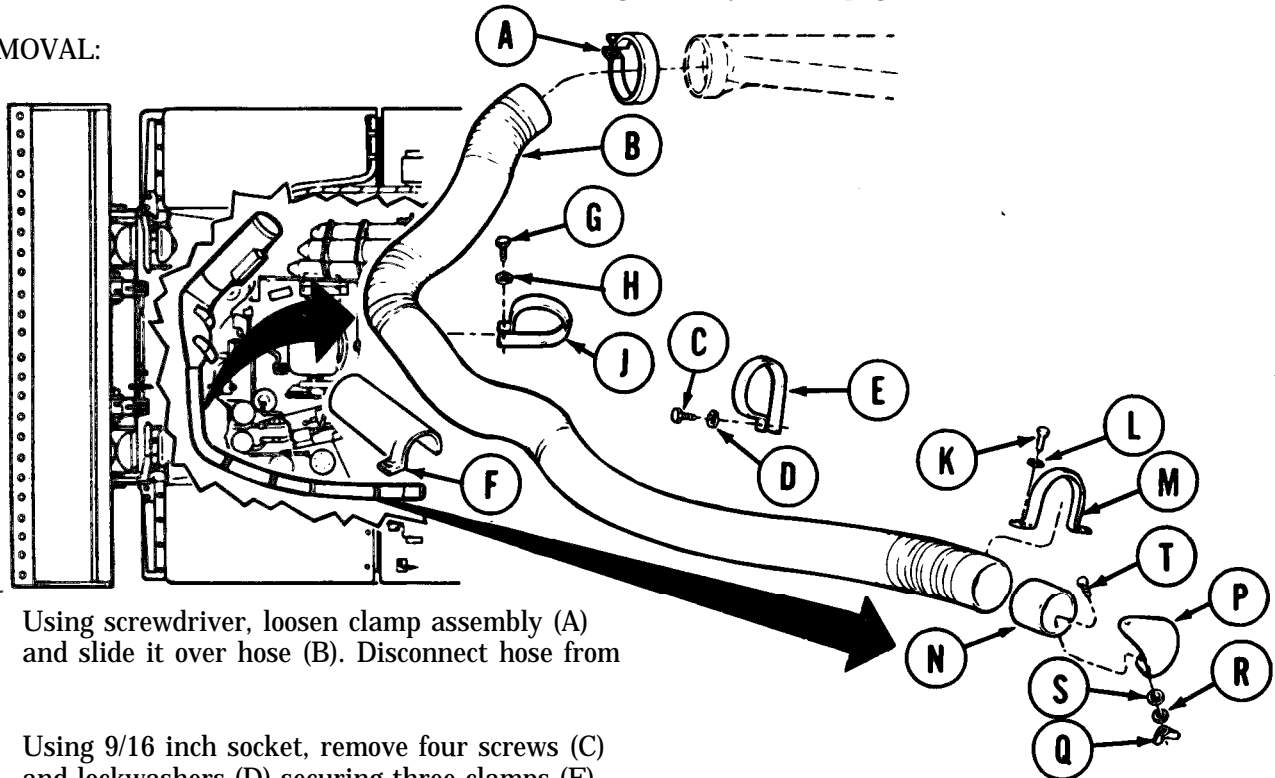
**TOOLS:** 7/16 in. socket with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 Flat-tip screwdriver

5 in. extension with 1/2 in. drive  
 Ratchet with 1/2 in. drive

**SUPPLIES:** Lockwasher (MS35335-35) (4 required)  
 Lockwasher (MS35335-32)

**PRELIMINARY PROCEDURE:** Remove fire extinguisher cylinders (page 21-49)

**REMOVAL:**



1. Using screwdriver, loosen clamp assembly (A) and slide it over hose (B). Disconnect hose from
2. Using 9/16 inch socket, remove four screws (C) and lockwashers (D) securing three clamps (E) and guard (F). Throw lockwashers away.
3. Using 7/16 inch socket, remove one screw (G) and lockwasher (H) securing one clamp (J). Throw lockwasher away.
4. Using 9/16 inch socket, remove two screws (K), lockwashers (L), and clamp (M). Throw lockwashers away.
5. Remove hose (B).
6. Remove tube assembly (N) and deflector (P) as an assembly from hose (B).
7. Remove wing nut (Q), lockwashers (R), washer (S), and screw (T) securing deflector (P) to tube assembly (N). Throw lockwashers away.
8. Separate deflector (P) from tube assembly (N).

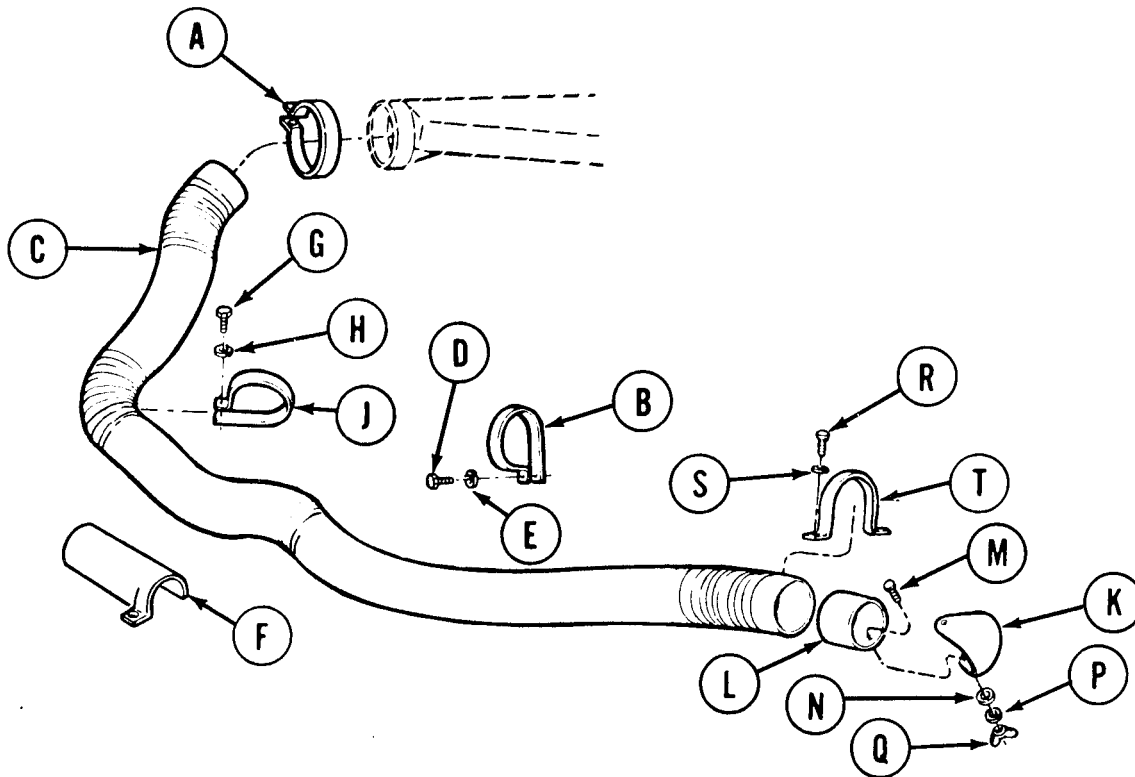
**Go on to Sheet 2**

TA141232

**AIR DUCT HOSE REPLACEMENT (Sheet 2 of 2)**

INSTALLATION:

1. Place clamp assembly (A) and four clamps (B) in position on hose (C).
2. Move hose (C) into mounting position.
3. Install hose (C) end to duct. Slide clamp (A) over hose and duct connection.
4. Using screwdriver, tighten clamp (A).
5. Using 9/16 inch socket, install four screws (D) and new lockwashers (E) securing three clamps (B) and guard (F) to hull.
6. Using 7/16 inch socket, install one screw (G) and new lockwasher (H) securing one clamp (J) to hull.



7. Secure deflector (K) to tube assembly (L) with screw (M), washer (N), new lockwasher (P), and wing nut (Q). Tighten wing nut.
8. Install tube assembly (L) and deflector (K) as an assembly into end of hose (C).
9. Using 9/16 inch wrench, install two screws (R) and new lockwashers (S) to secure clamp (T).
10. Install fire extinguisher cylinders (page 21-51).

End of Task

TA141233

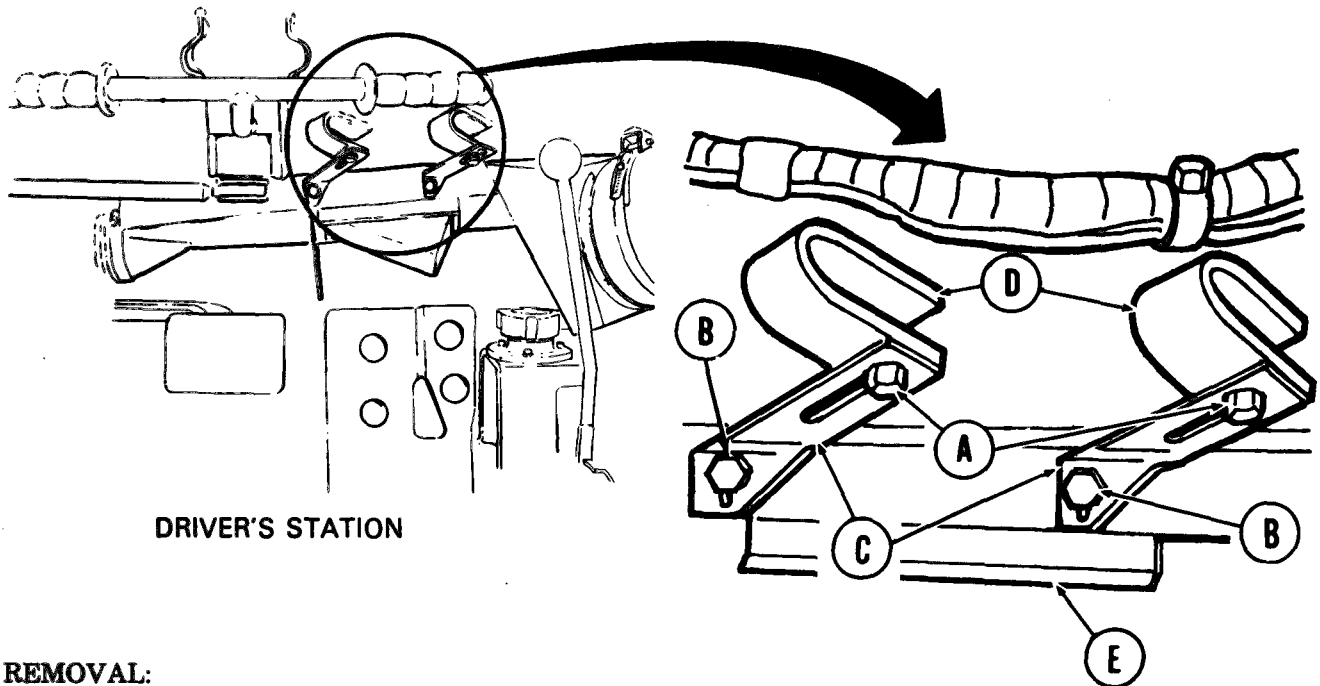
**DUCT MOUNTING BRACKET(S) REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** 9/16 in. combination box and open end wrench  
 9/16 in. socket with 1/2 in. drive  
 Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)

**SUPPLIES:** lockwasher (MS35338-46) (4 required)

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Set HEATER MASTER switch to OFF (TM 9-2350-222-10)



**REMOVAL:**

1. Using wrench, remove screws, lockwashers, and flat washers (A). Throw lockwashers away.
2. Using wrench, remove screws, lockwashers, and flat washers (B). Throw lockwashers away.
3. Remove two brackets (C) from 'C' brackets (D) and duct (E).

**INSTALLATION:**

1. Using wrench, secure bracket(s) (C) to 'C' brackets (D) with screws, new lockwashers, and flat washers (A).
2. Using wrench, secure bracket(s) (C) to duct (E) with screws, new lockwashers, and flat washers (B).
3. Using socket and torque wrench, tighten all screws to 10-15 lb-ft (13-20 N·m).

**End of Task**

TA141234

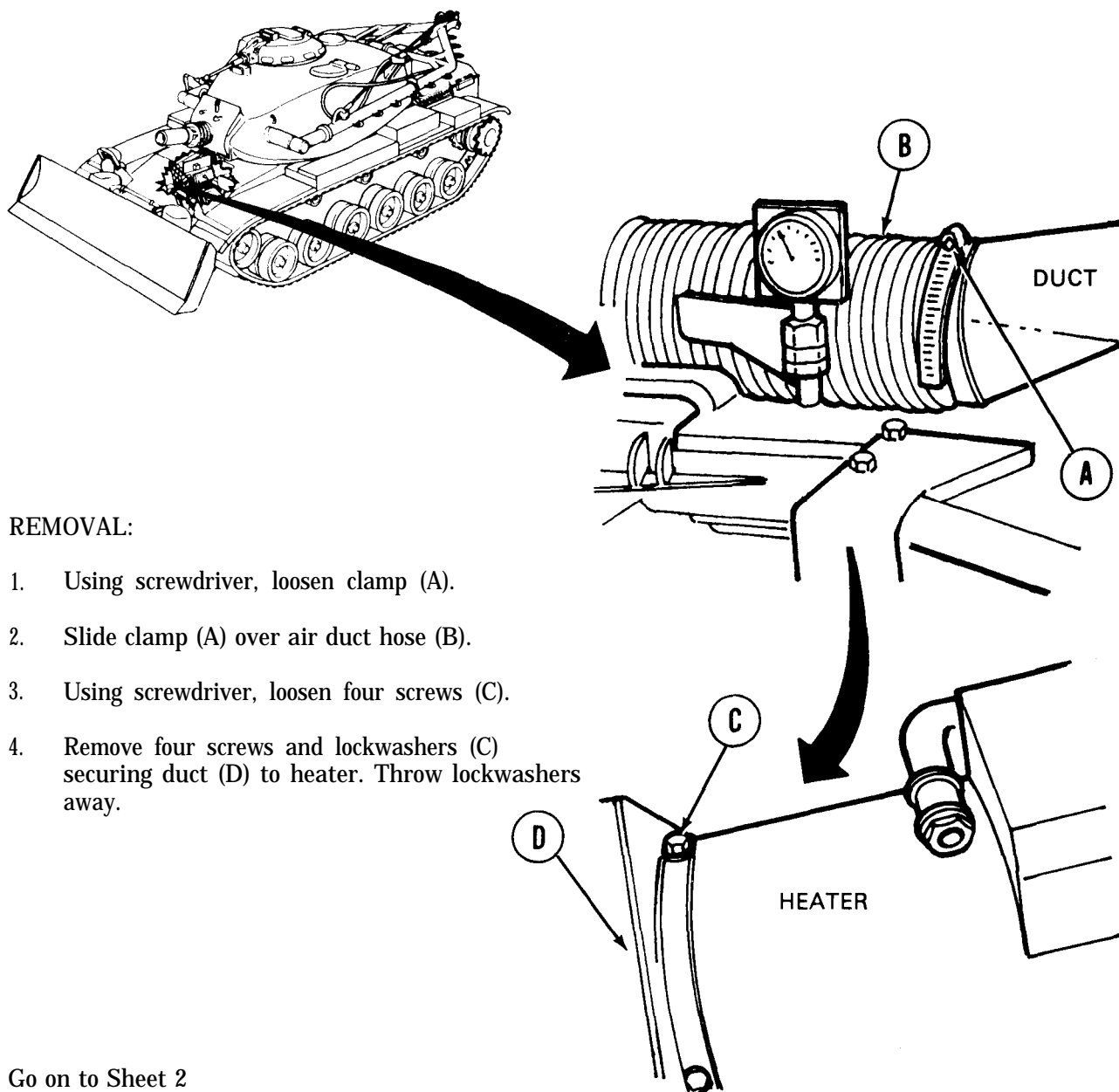
PERSONNEL HEATER DUCT REPLACEMENT (Sheet 1 of 3)

TOOLS: Flat-tip screwdriver  
9/16 in. combination box and open end wrench

SUPPLIES: Lockwasher (MS35333-39) (4 required)  
Lockwasher (MS35338-46) (4 required)

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Set HEATER MASTER switch to OFF (TM 9-2350-222-10)



REMOVAL:

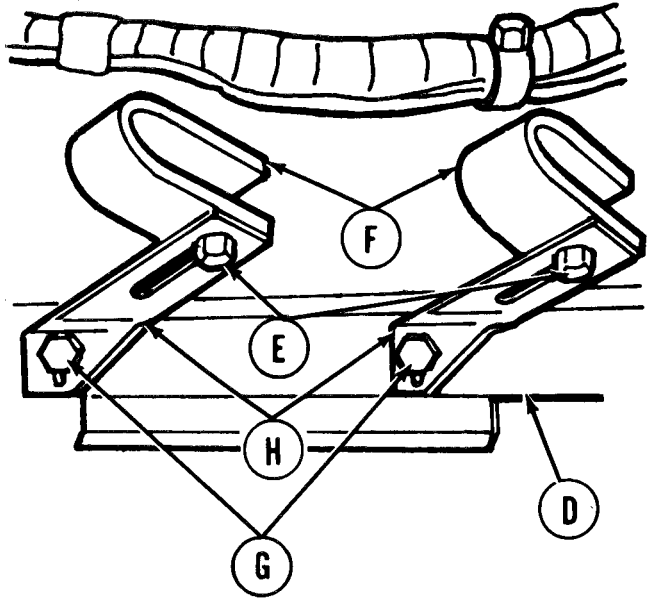
1. Using screwdriver, loosen clamp (A).
2. Slide clamp (A) over air duct hose (B).
3. Using screwdriver, loosen four screws (C).
4. Remove four screws and lockwashers (C) securing duct (D) to heater. Throw lockwashers away.

Go on to Sheet 2

TA141235

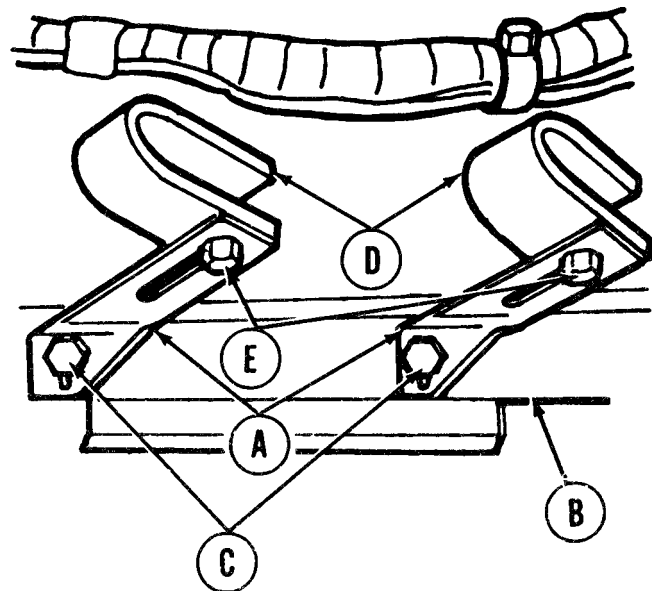
**PERSONNEL HEATER DUCT REPLACEMENT (Sheet 2 of 3)**

5. Using wrench, loosen screws (E) securing duct (D) to 'C' mounting brackets (F).
6. Remove screws, lockwashers, and flat washers (E). Throw lockwashers away.
7. Pull duct (D) from mounting place.
8. Using wrench, remove screws, lockwashers, and flat washers (G) securing two brackets (H) to duct (D). Throw lockwashers away.  
Remove brackets (H) from duct.



**INSTALLATION**

1. Install both brackets (A) to duct (B) with new lockwashers, flat washer, and screw (C). Finger tighten screws.
2. Lift duct (B) to 'C' brackets (D).
3. Secure duct to 'C' brackets with flat washers, new lockwashers, and screws (E). Finger tighten screws.

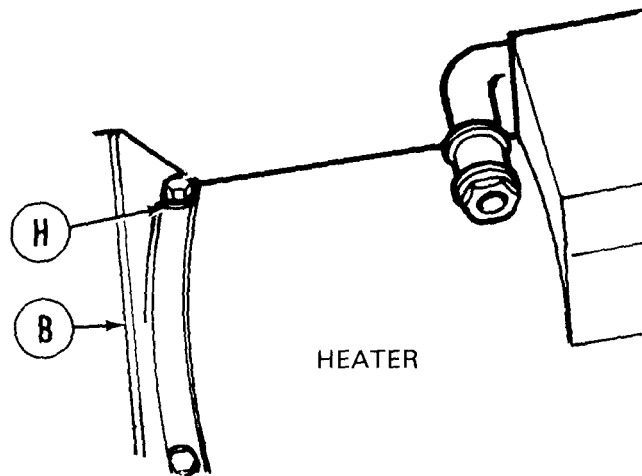
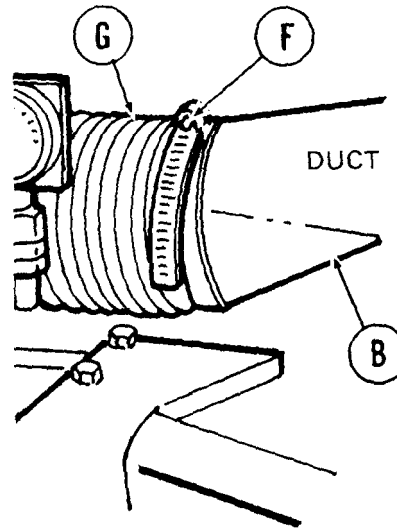


Go on to Sheet 3

TA141236

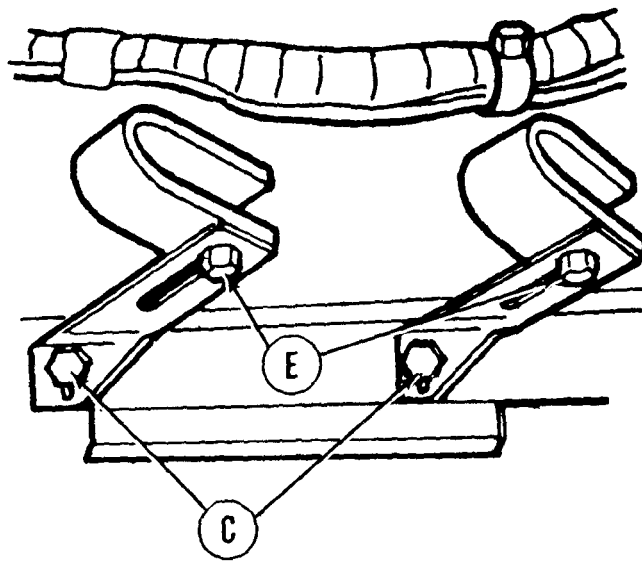
PERSONNEL HEATER DUCT REPLACEMENT (Sheet 3 of 3)

- Slide clamp (F) over duct (B) to hose (G) connection.
- Using screwdriver, tighten clamp (F) around connection.



- Position duct (B) to heater.
- Install screws and new lockwashers (H) to secure duct (B) to heater.
- Using screwdriver, tighten screws (H).

- Using wrench, tighten screws (J) and (K).



End of Task

TA141237

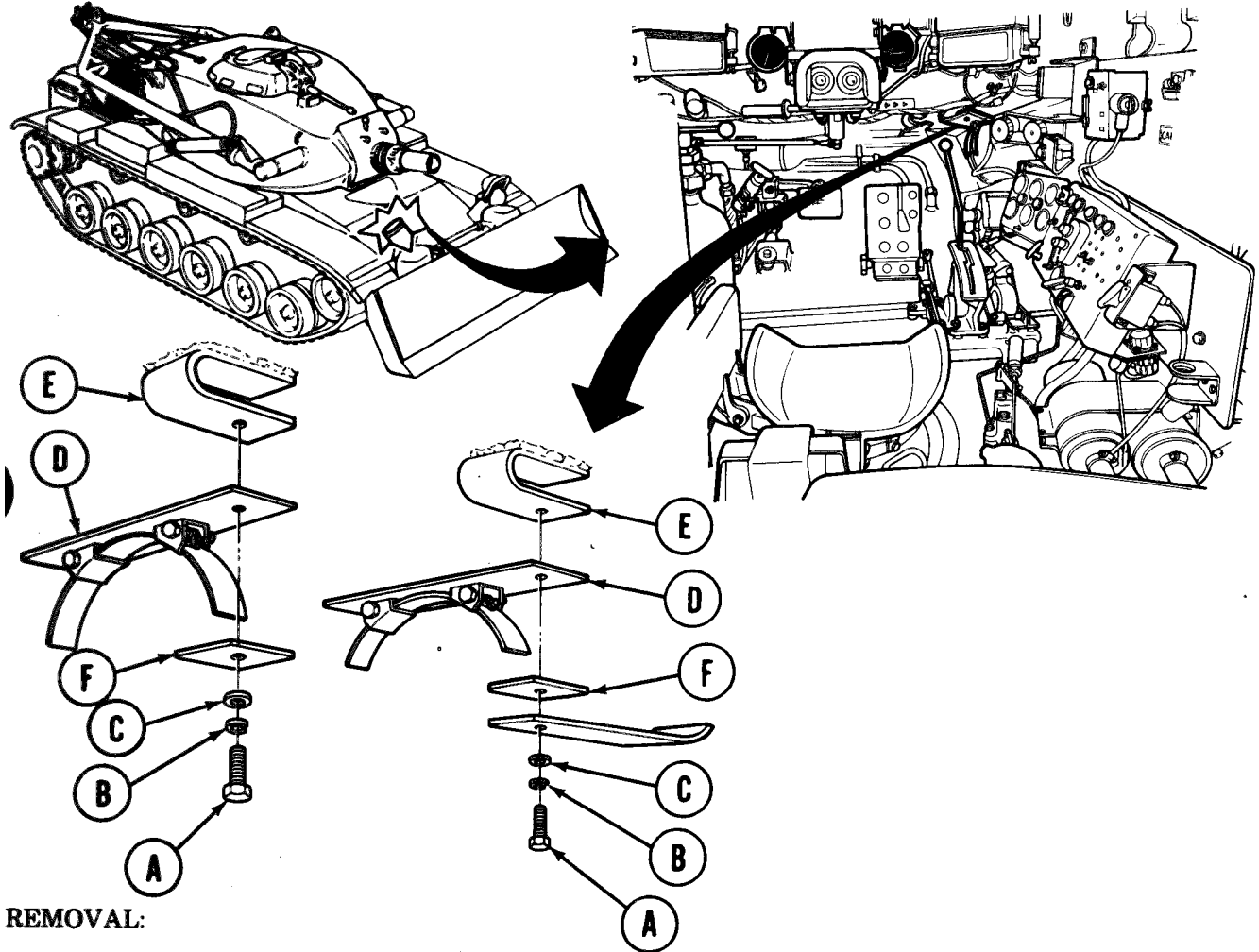


**HEATER MOUNT REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** 3/4 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 5 in. extension with 1/2 in. drive

**SUPPLIES:** Shims  
 Lockwasher (MS35338-48) (2 required)

**PRELIMINARY PROCEDURE:** Remove personnel heater (page 19-20)



**REMOVAL:**

1. Using socket, remove two screws (A), lockwashers (B), and washers (C) securing mount (D) to pads (E). Throw lockwashers away.
2. Remove mount (D) with shims (F).

**NOTE**

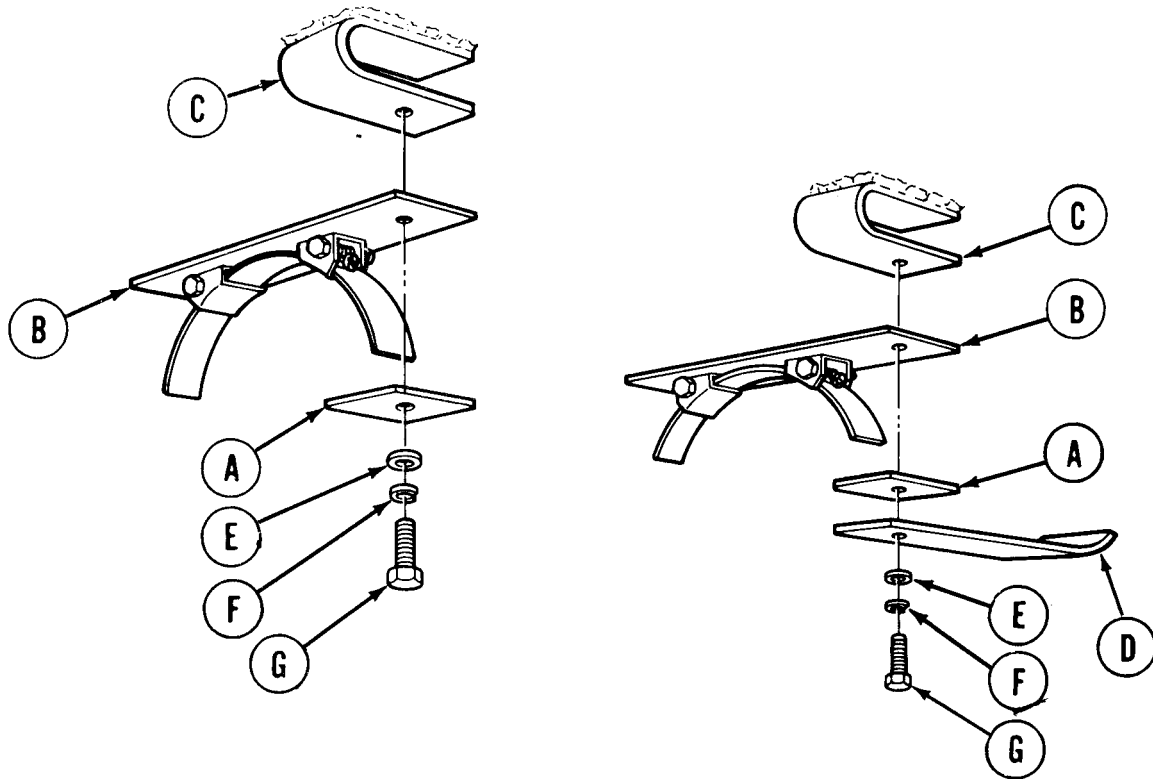
**Store shims so they can be put back on same mounting pad.**

Go on to Sheet 2

TA141238

HEATER MOUNT REPLACEMENT (Sheet 2 of 2)

INSTALLATION:



1. Using shims (A) as required for parallel mounting, place heater mount (B) to pads (C).
2. Using socket, secure mount (B) and strap (D) with two washers (E), new lockwashers (F), and screws (G).
3. Tighten screws alternately.
4. Install personnel heater (page 19-22).

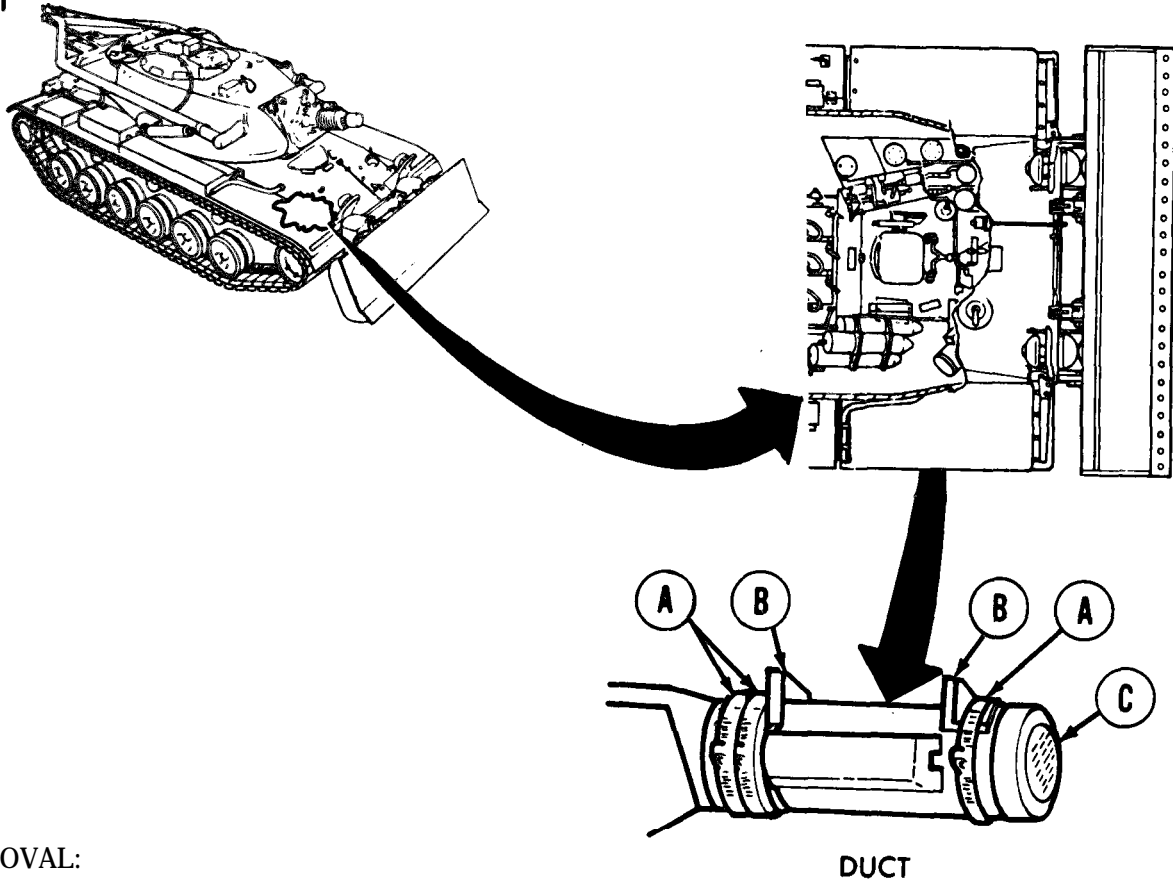
End of Task

TA141239

**PERSONNEL HEATER MOUNTING CLAMP(S) REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** Flat-tip screwdriver  
Metal cutting shears

**PRELIMINARY PROCEDURE:** Set MASTER BATTERY switch to OFF (TM 9-2350-222-10).

**DUCT****REMOVAL:**

1. Using screwdriver, remove either one or all three clamps (A), as necessary.
2. If clamps are too rusted or old to remove, use screwdriver and pry clamp away from mounting bracket(s) (B) or heater (C). Then, using shears, cut clamp(s) free.

1. Install new clamp(s) (A) around mounting brackets (B) or heater (C), as necessary.
2. Using screwdriver, tighten clamp(s) (A).

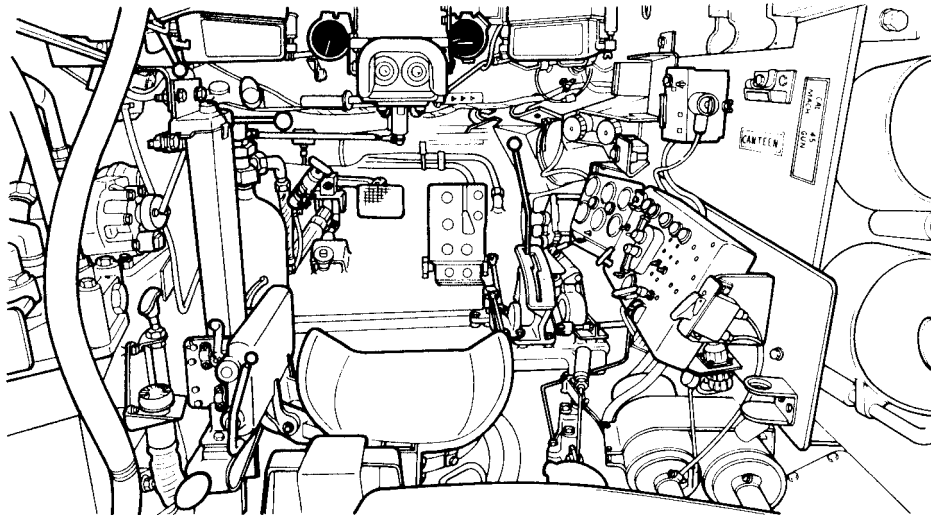
**End of Task**

TA141240

PERSONNEL HEATER DUCT DEFLECTOR REPLACEMENT (Sheet 1 of 1)

NOTE

Deflector (A) is located in front of driver's seat.



DRIVER'S  
SEAT

REMOVAL:

Slide heater duct deflector (A) from retainer on heater duct (B).

INSTALLATION:

Install deflector (A) by sliding into retainer on duct (B).

End of Task

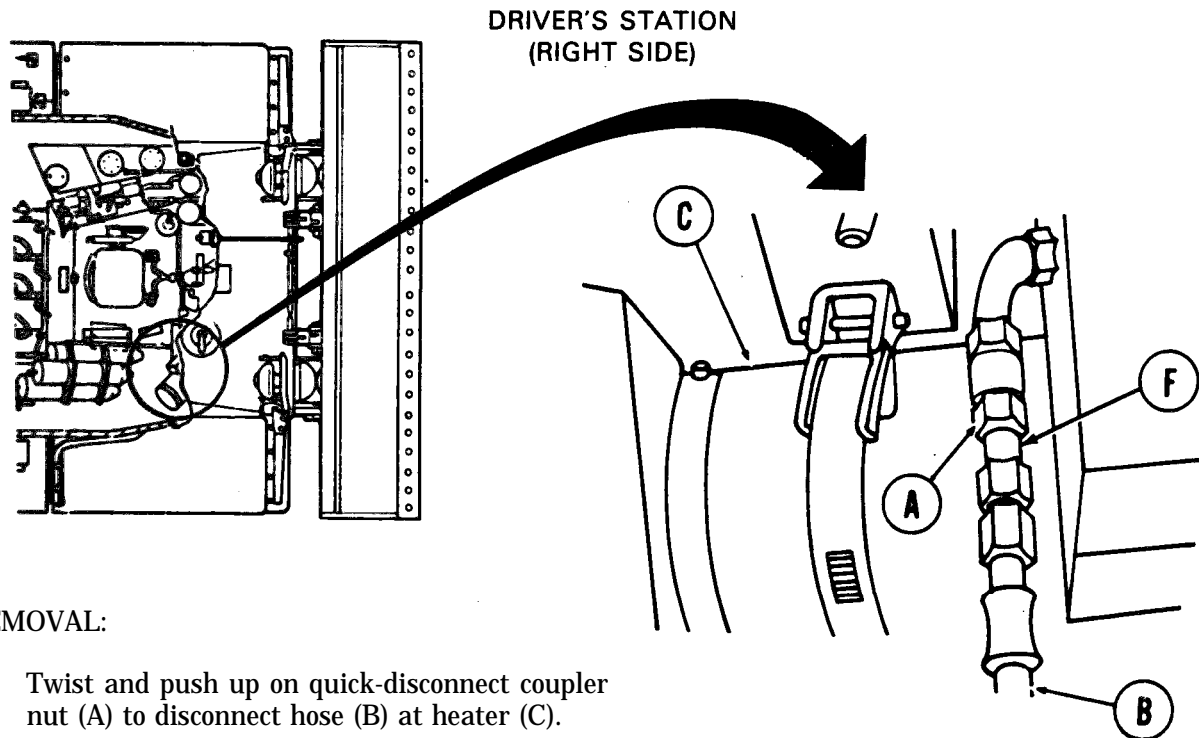
TA141241

**PERSONNEL HEATER FUEL LINE HOSE AND QUICK-DISCONNECT COUPLING ASSEMBLY REPLACEMENT (Sheet 1 of 2)**

**TOOL:** 5/8 in. combination box and open end wrenches (2 required)

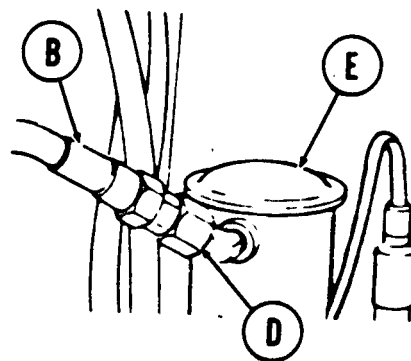
**SUPPLIES:** Rags (Item 65, Appendix D)  
Drip pan

**PRELIMINARY PROCEDURE:** Close fuel shutoff valve (page 7-342, step 2)



**REMOVAL:**

1. Twist and push up on quick-disconnect coupler nut (A) to disconnect hose (B) at heater (C).
2. Using wrench, loosen nut (D) to disconnect hose (B) at fuel pump (E).
3. Using drip pan to catch dripping fuel, remove hose (B).
4. Using two wrenches, disconnect coupling assembly (F) from hose assembly (B).



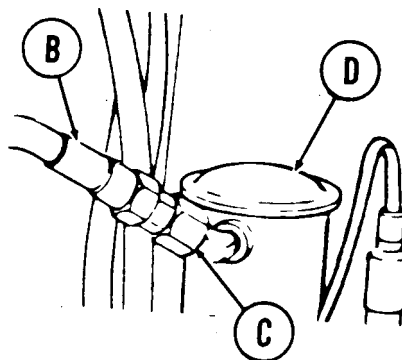
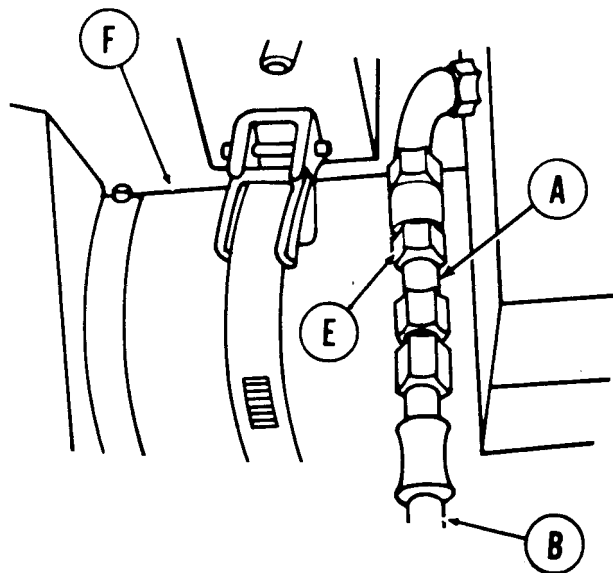
**Go on to Sheet 2**

TA141242

**PERSONNEL HEATER FUEL LINE HOSE AND QUICK-DISCONNECT COUPLING ASSEMBLY REPLACEMENT (Sheet 2 of 2)**

**INSTALLATION:**

1. Using two wrenches, install coupling assembly (A) on hose (B).
2. Install hose nut (C) on fuel pump (D) elbow.
3. Using wrench, tighten hose nut (C).
4. Push quick-disconnect coupling assembly (E) into elbow on heater assembly (F).
5. Open fuel shut-off valve (page 7-346, step 12).



End of Task

TA141243

PERSONNEL HEATER ASSEMBLY REPLACEMENT (Sheet 1 of 5)

PROCEDURE INDEX

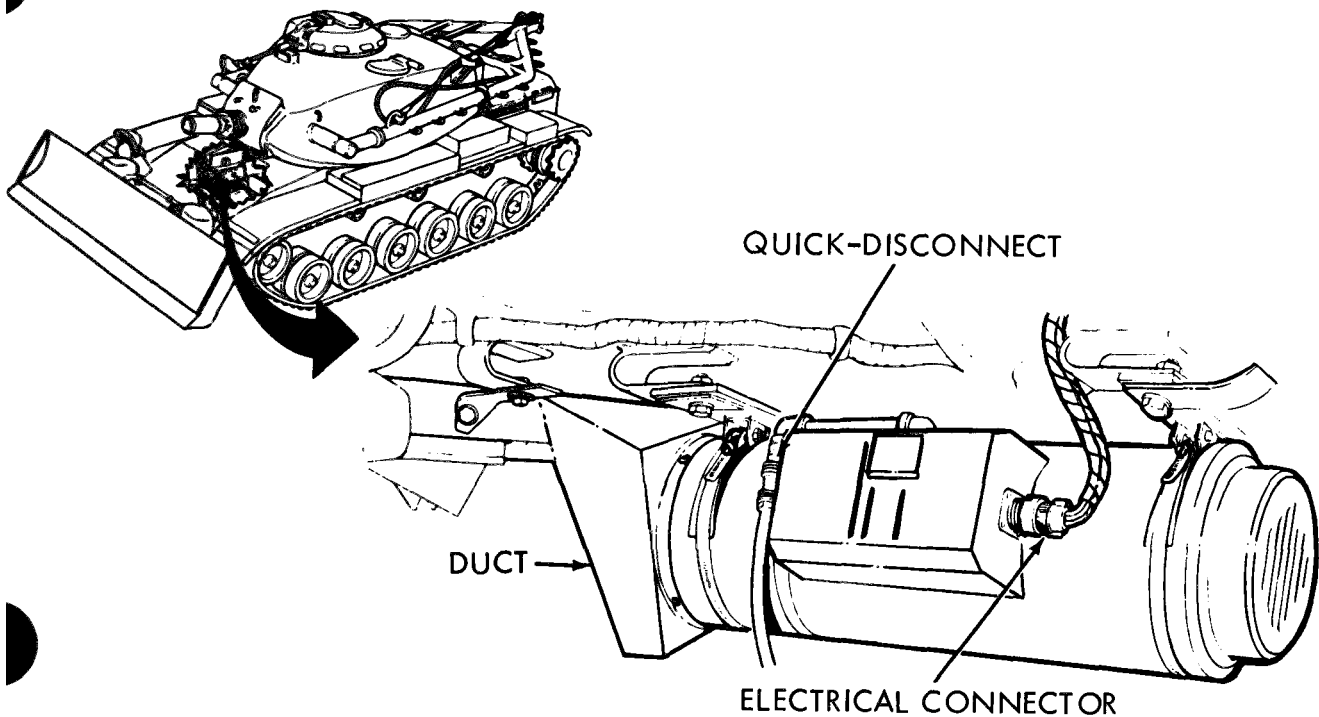
PROCEDURE	PAGE
Removal	19-20
Installation	19-22

TOOLS: 7/16 in. socket with 1/2 in. drive  
 Torque wrench with 1/2 in. drive.  
 Ratchet with 1/2 in. drive  
 Adjustable pipe wrenches (2 required)  
 7/16 in. combination box and open end wrench  
 Flat-tip screwdriver  
 3 in. extension with 1/2 in. drive

SUPPLIES: Rags (Item 65, Appendix D)  
 Drain pan  
 Lockwasher (MS35333-39) (4 required)

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Close fuel shutoff valve at left turret wall  
 (page 7-342, step 2)



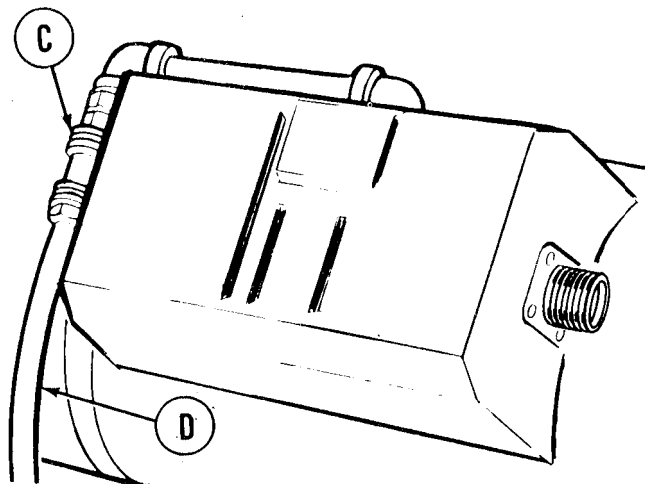
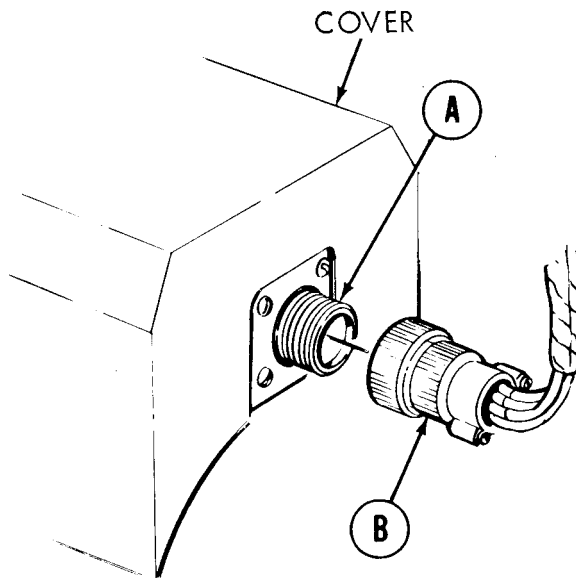
Go on to Sheet 2

TA141244

PERSONNEL HEATER ASSEMBLY REPLACEMENT (Sheet 2 of 5)

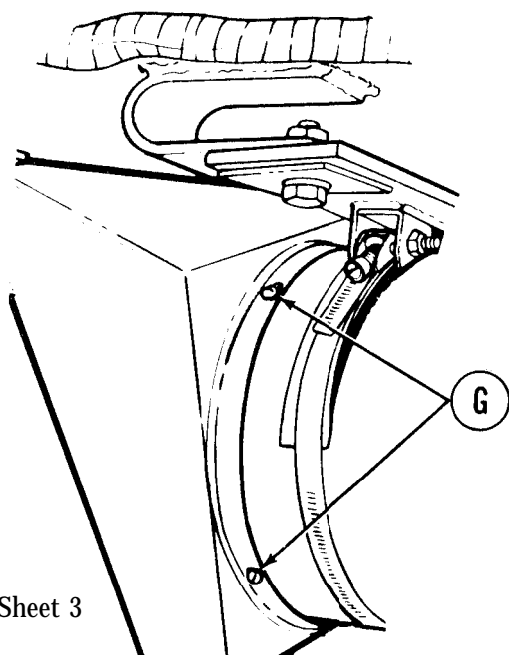
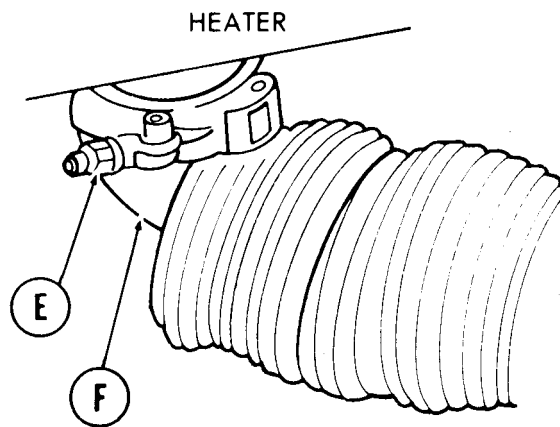
REMOVAL:

1. Locate electrical connection (A) at cover on personnel heater.
2. Disconnect cable (B).



3. Twist and pull up on quick-disconnect coupler (C) to disconnect hose (D). Position dram pan to catch fuel from hose, if necessary.

4. Using wrench on nut, loosen clamp coupling (E) securing exhaust pipe (F).
5. Remove coupling (E).
6. Separate pipe (F) from heater.



7. Using screwdriver, remove four screws and lockwashers (G) securing heater to duct. Throw lockwashers away.

Go on to Sheet 3

TA141245

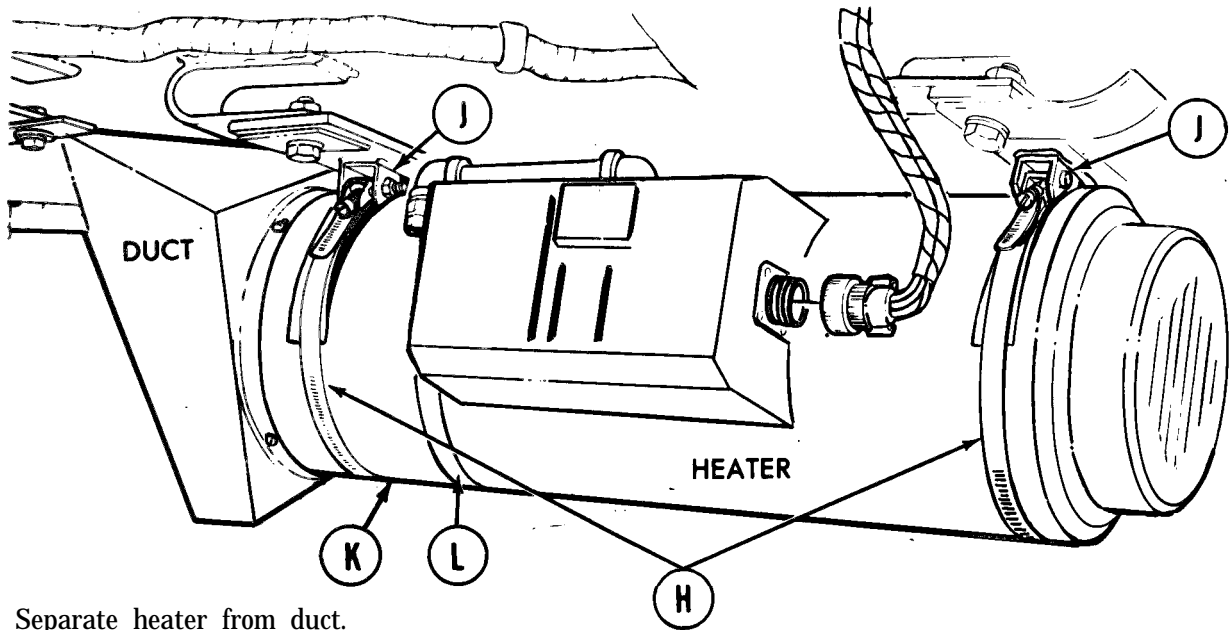


PERSONNEL HEATER ASSEMBLY REPLACEMENT (Sheet 3 of 5)

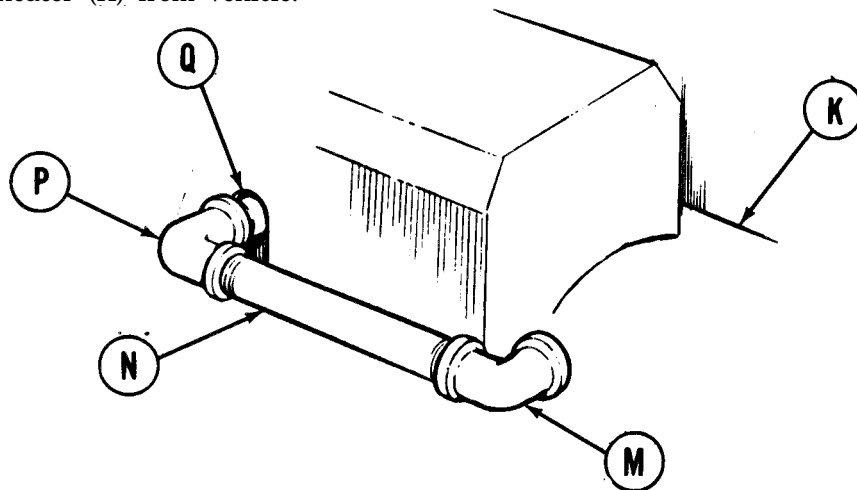
NOTE

Support heater before doing next step.

8. Using screwdriver, remove clamps (H) from heater mounting bracket (J).



9. Separate heater from duct.
  10. Lower personnel heater (K) to driver's station floor.
  11. Using screwdriver, remove clamp and exhaust tube retainer (L).
  12. Using two pipe wrenches, remove elbow (M), pipe nipple (N), and elbow (P). Also remove nipple (Q), if necessary.
  13. Remove personnel heater (K) from vehicle.
- Go on to Sheet 4



TA141246

## PERSONNEL HEATER ASSEMBLY REPLACEMENT (Sheet 4 of 5)

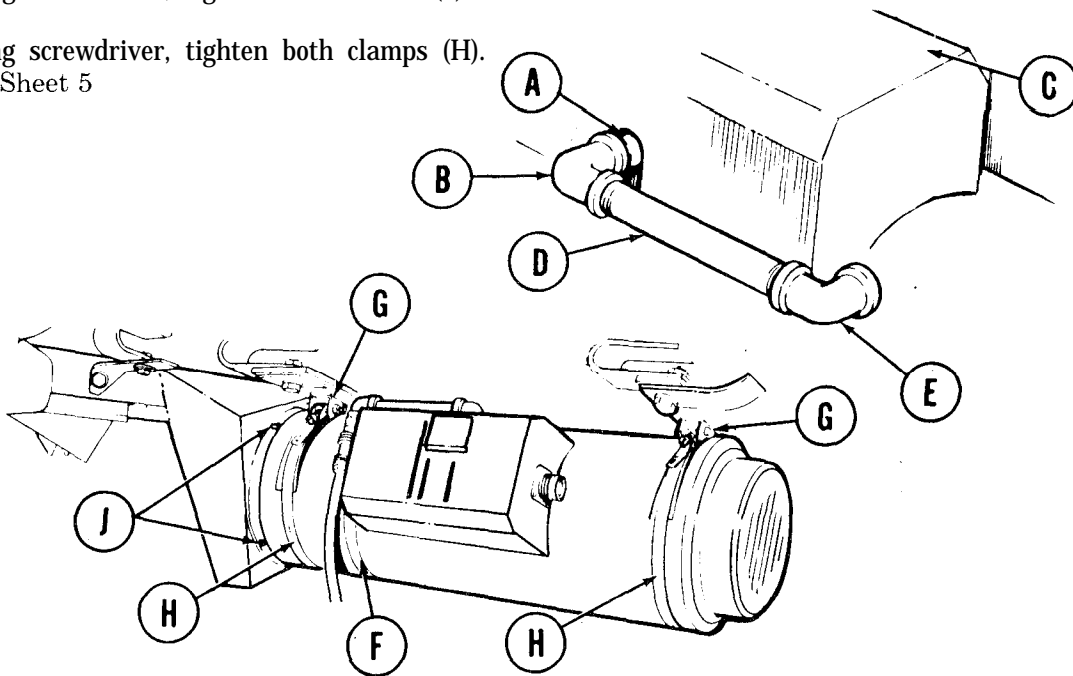
## INSTALLATION:

1. Using pipe wrench, install nipple (A) and elbow (B) to heater (C).
2. Install pipe nipple (D) to elbow (B).
3. Hold pipe nipple (D) with wrench while using another pipe wrench to install elbow (E).
4. Install clamp and exhaust tube retainer (F).
5. Brace heater (C) to mounting bracket (G) and slide both clamps (H) thru bracket arms (G).
6. Using screwdriver, tighten both clamps (H) to secure heater (C) to bracket (G).
7. Position heater (C) to duct and aline screw holes.
8. Using screwdriver, install bottom rear and top front screws and lockwashers (J). (Do not tighten screws completely down. )

## NOTE

**It may be necessary to move heater left or right to install remaining two screws and lockwashers.**

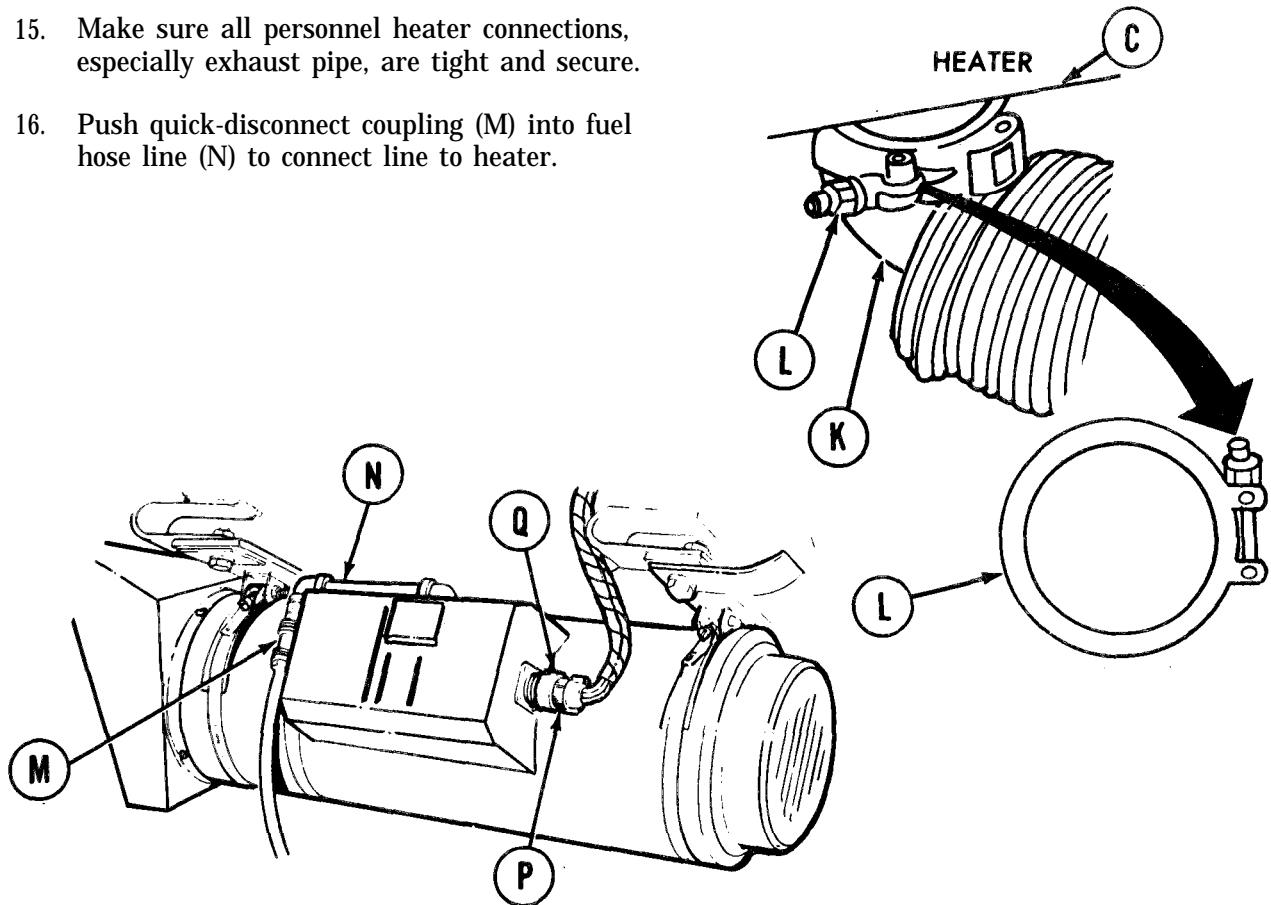
9. Using screwdriver, install top rear and bottom front screws and new lockwashers (J).
10. Using screwdriver, tighten four screws (J).
11. Using screwdriver, tighten both clamps (H).  
Go on to Sheet 5



TA141247

**PERSONNEL HEATER ASSEMBLY REPLACEMENT (Sheet 5 of 5)**

12. Install coupling (K).
13. Close clamp coupler (L) and, using 7/16 inch wrench, tighten nut to secure exhaust pipe to heater (C).
14. Using socket with torque wrench, tighten coupler (L) nut to 50 lb-in (6 N·m).
15. Make sure all personnel heater connections, especially exhaust pipe, are tight and secure.
16. Push quick-disconnect coupling (M) into fuel hose line (N) to connect line to heater.



17. Align pins of electrical connector (P) to holes.
18. Connect harness cable to connector.
19. Screw coupling (Q) over electrical connection.
20. Open fuel shutoff valve (page 7-346, step 12).

End of Task

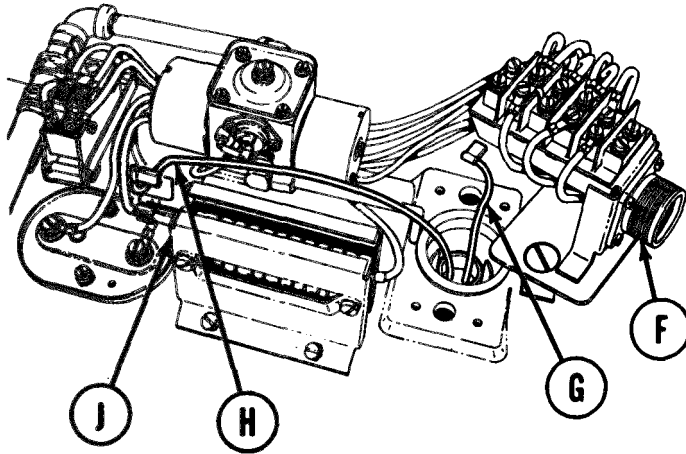
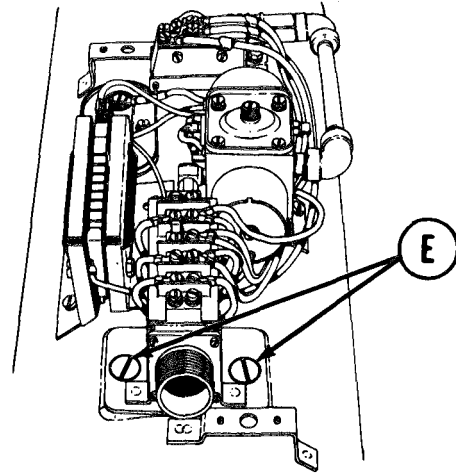
All data on pages 19-24 thru 19-32 deleted. ■

Change 4 19-23/(19-24 blank)



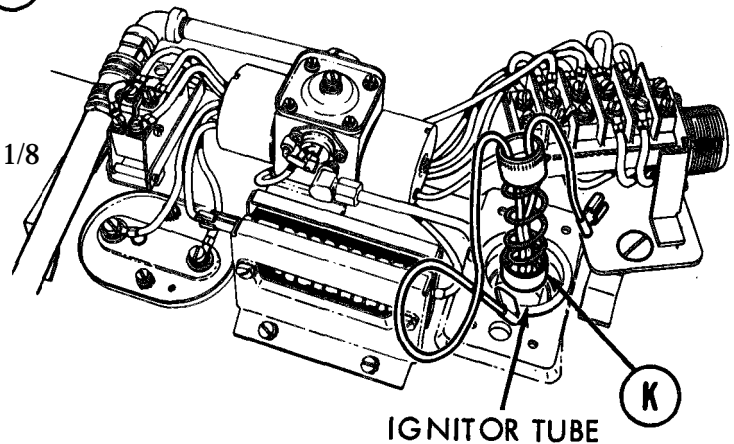
**PERSONNEL HEATER REPAIR (Sheet 2 of 8)**  
**Heater Ignitor Replacement (Sheet 2 of 4)**

- Using screwdriver, turn two captive screws (E) one quarter turn counterclockwise.



- Move electrical inlet connection (F) aside.
- Disconnect igniter ground lead (G) (shorter lead).
- Disconnect white lead (H) (longer lead) at igniter control (J).

- Push down on ignitor (K). Rotate it about 1/8 turn counterclockwise.
- Lift ignitor (K) out of tube.



**INSPECTION OF IGNITOR WICK:**

- Using flashlight, look into ignitor tube at wick. Yarn should be dry, unbroken, and white.
- If strands of yarn seem thin (less than 1/16-inch thick) or are broken, notify support maintenance.
- If wick is wet, burner is flooded.
- If burner is flooded, go to TEST procedures at end of this task.
- If burner is not flooded, go on to INSTALLATION.

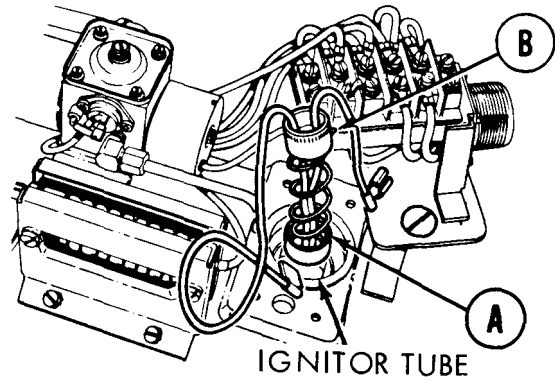
Go on to Sheet 3

TA141250

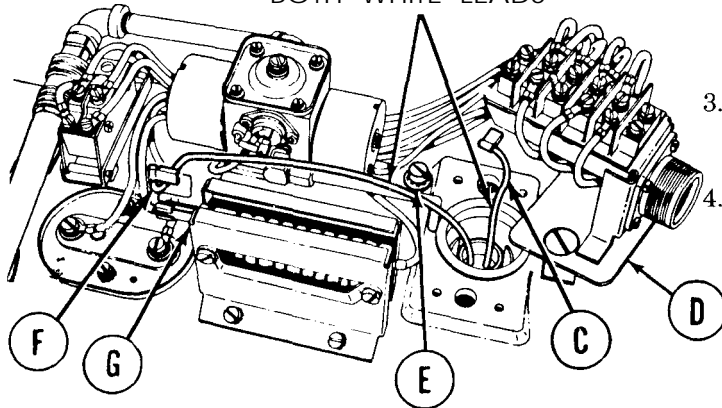
**PERSONNEL HEATER REPAIR (Sheet 3 of 8)**  
**Heater Igniter Replacement (Sheet 3 of 4)**

**INSTALLATION:**

1. Install ignitor (A) into tube.
2. Using hand, press down on ignitor (A) and, using screwdriver on pin (B), turn ignitor (A) clockwise to secure in tube.

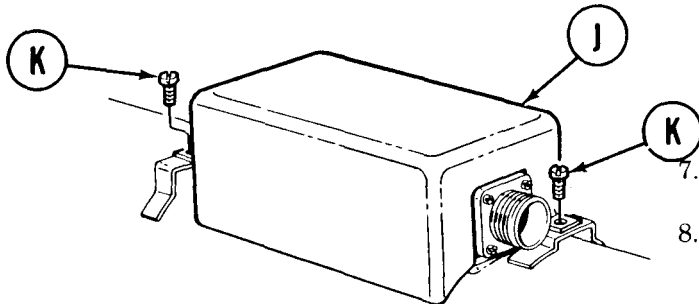
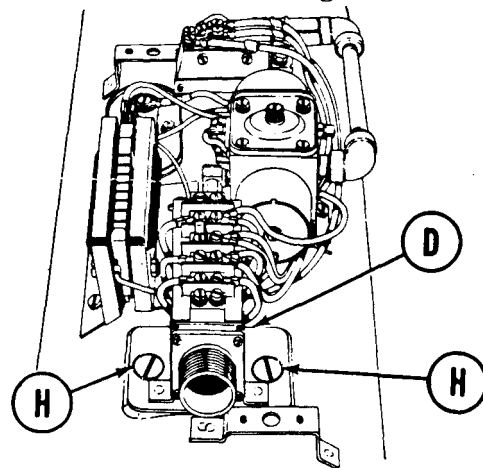


BOTH WHITE LEADS



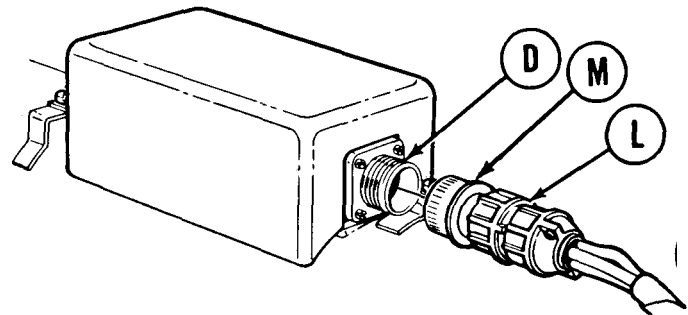
3. Feed shorter lead (C) thru cutaway portion of inlet (D) and secure to ground terminal (E).
4. Feed white lead (F) (longer lead) thru cutaway portion of inlet (D) and secure to ignition control (G).

5. Place electrical inlet connection (D) in position on personnel heater.
6. Using screwdriver, turn two captive screws (H) one quarter turn clockwise to secure inlet (D) to personnel heater.



7. Mount cover (J) on heater.
8. Using screwdriver, turn two screws (K) to secure cover (J).

9. Connect electrical connector (L) to heater electrical inlet (D).
10. Screw coupling (M) over connection.
11. Install slave receptacle (page 10-154).
12. Connect battery ground straps (page 10-283).



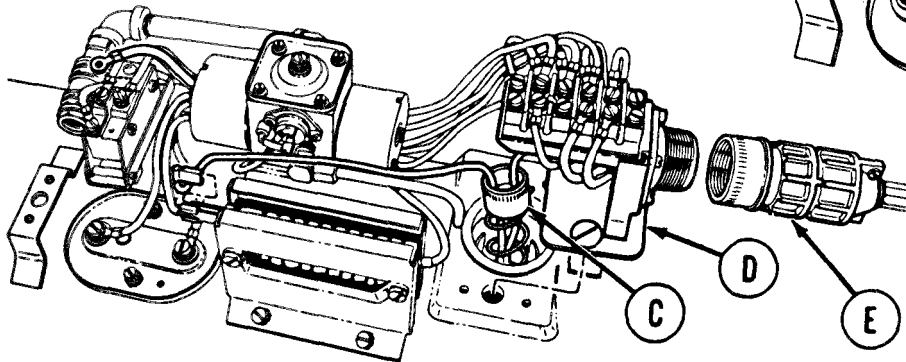
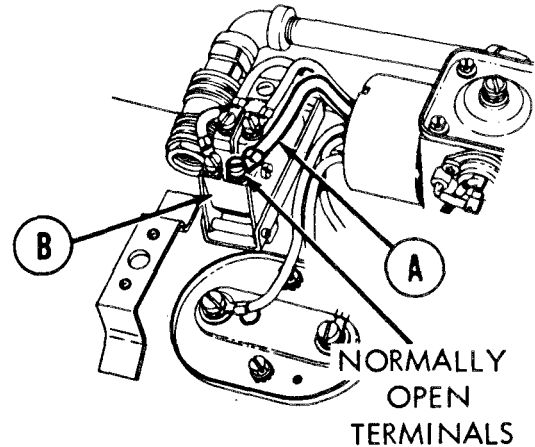
Go on to Sheet 4

TA141251

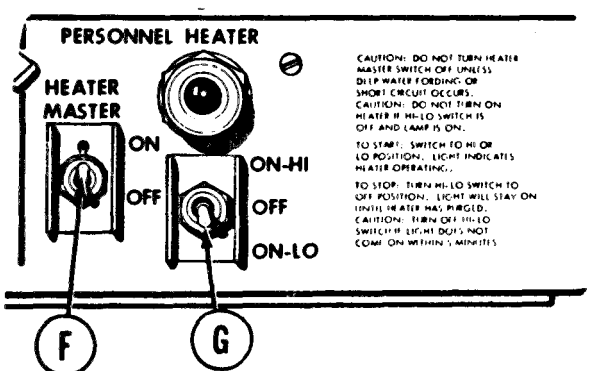
**PERSONNEL HEATER REPAIR (Sheet 4 of 8)**  
**Heater Igniter Replacement (Sheet 4 of 4)**

**TEST:**

1. If burner is flooded (see INSPECTION OF IGNITOR WICK), disconnect lead (A) at normally open (N.O.) terminal on flame detector switch (B).

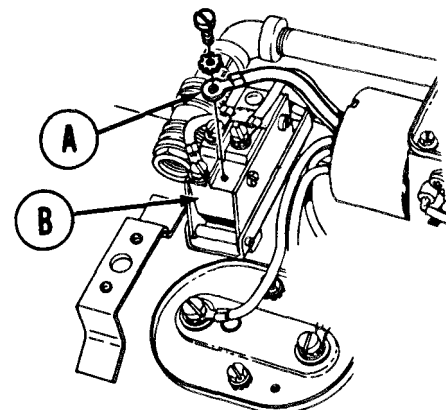


2. Install heater igniter (C), electrical inlet connection (D), and electrical connector (E). See INSTALLATION.



3. Set HEATER MASTER switch (F) to ON.
4. Set HI-LO switch (G) to ON-LO.
5. A white, smoke-like fuel vapor will flow out of exhaust tube at front of vehicle.
6. When heater ignites, wait for black-grey exhaust smoke to clear up.

7. Once this has happened, connect lead (A) to flame detector switch (B).
8. Install cover (page 19-26, steps 7 and 8).
9. Let heater run for 5 minutes.
10. Set heater HI-LO switch (G) to OFF.
11. Fan will continue running until fuel is purged from heater.



End of Task

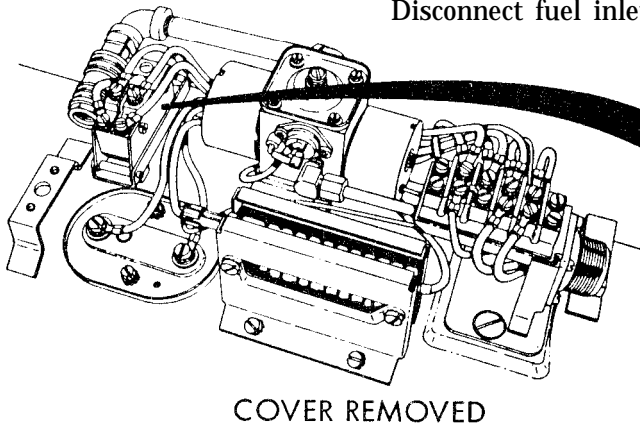
TA141252

**PERSONNEL HEATER REPAIR (Sheet 5 of 8)**  
**Heater Flame Detector Switch Replacement (Sheet 1 of 2)**

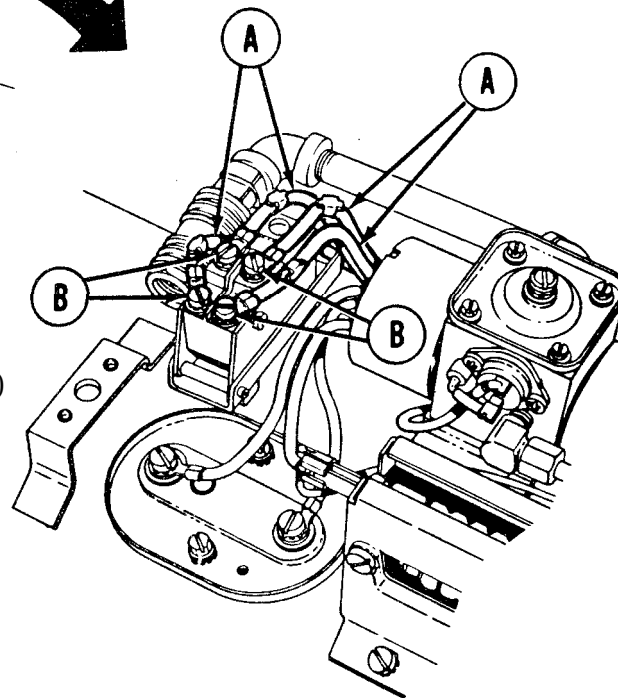
TOOLS: Flat-tip screwdriver, 4-in. long blade

REFERENCE: TM 9-2350-222-10  
TM 9-2540-205-24&P

PRELIMINARY PROCEDURES: Set HEATER MASTER switch to OFF (TM 9-2350-222-10)  
Disconnect electrical connector (page 19-24)  
Remove heater cover (page 19-24)  
Disconnect fuel inlet at quick-disconnect (page 19-17)

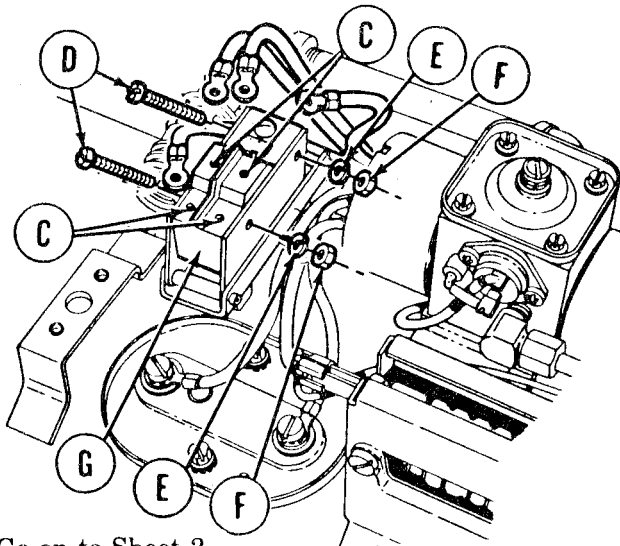


COVER REMOVED



REMOVAL:

1. Check that two wire leads (A) are labeled (N.C.) and two wire leads (A) are labeled (N.O.) for proper hook-up.
2. Using screwdriver, remove four terminal screws and lockwashers (B).



3. Disconnect four leads at terminals (C).
4. Using screwdriver, remove two screws (D), lockwashers (E), and nuts (F).
5. Remove flame detector switch (G).

Go on to Sheet 2

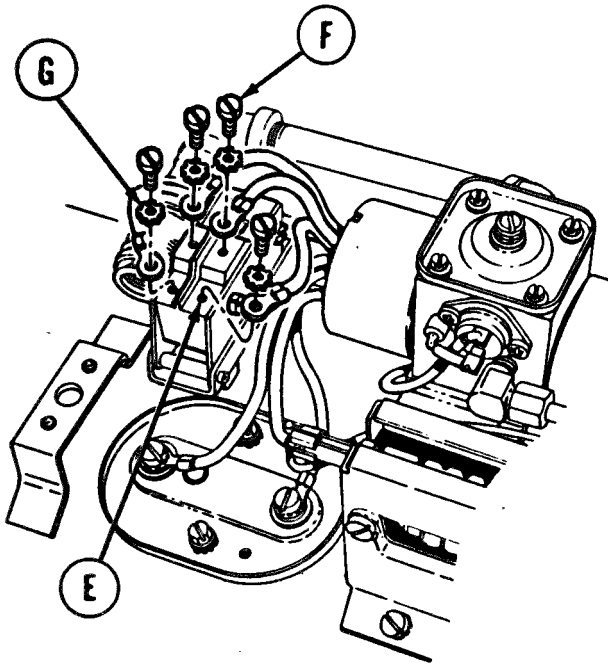
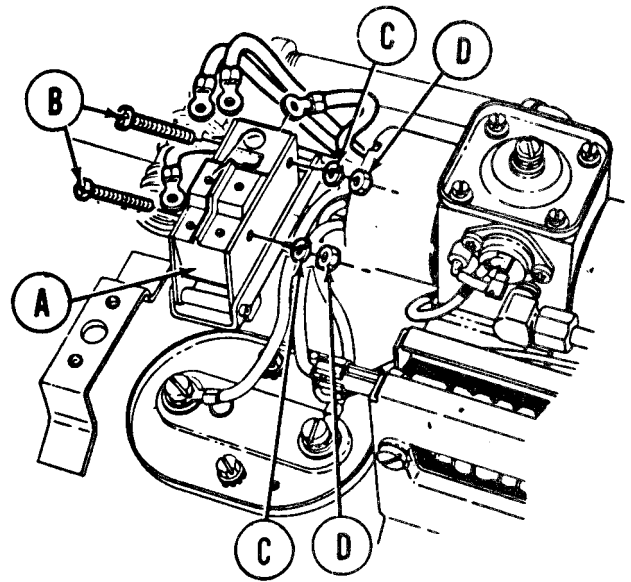
TA141253



**PERSONNEL HEATER REPAIR (Sheet 6 of 8)**  
**Heater Flame Detector Switch Replacement (Sheet 2 of 2)**

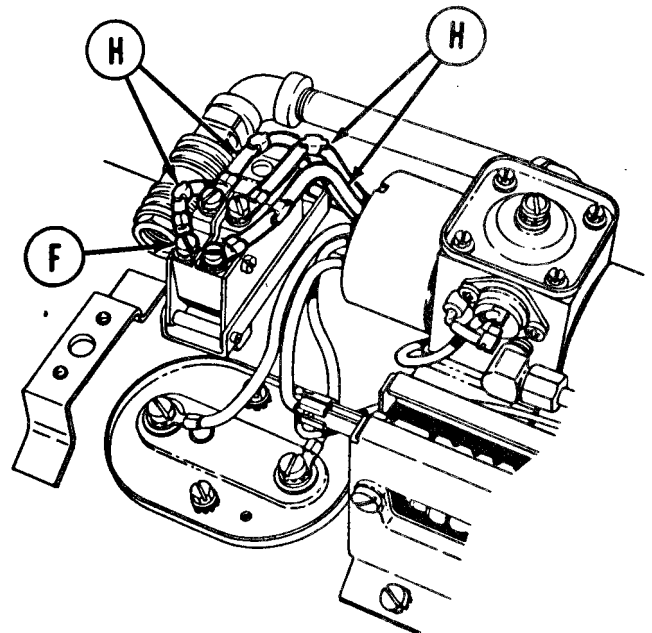
INSTALLATION:

1. Mount flame detector switch (A) to personnel heater.
2. Using screwdriver, install two screws (B), lockwashers (C), and nuts (D).



3. Connect four leads to four terminals (E), two to N.O. (normally open), two to N.C. (normally closed) switch terminals (E) with four screws (F) and lockwashers (G).

4. Make sure all labels (H) are to proper terminals.
5. Using screwdriver, tighten four screws (F).
6. Install heater cover (page 19-26, steps 7 and 8).
7. Connect electrical connector (page 19-26, steps 9 and 10).
8. Connect fuel inlet line to quick-disconnect (page 19-18).
9. Perform operational check (TM 9-2350-222-10).  
End of Task



TA141254

**PERSONNEL HEATER REPAIR (Sheet 7 of 8)**  
**Ignition Control Replacement (Sheet 1 of 2)**

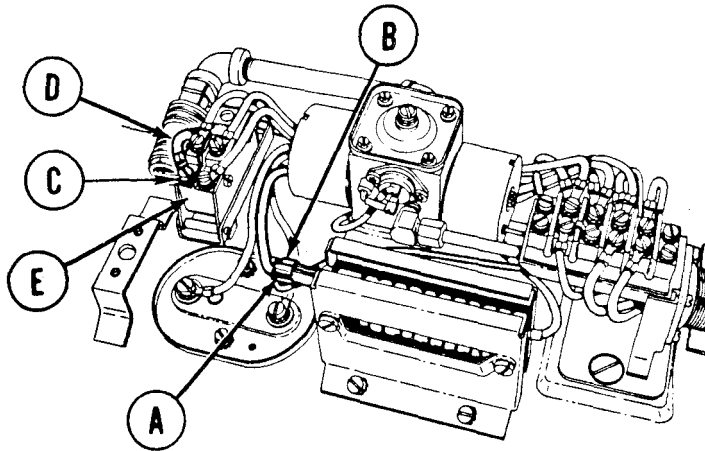
TOOLS: Flat-tip screwdriver

REFERENCE: TM 9-2350-222-10  
TM 9-2540-205-24&P

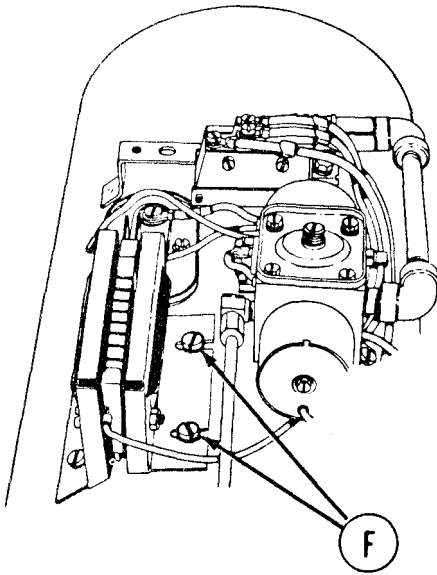
PRELIMINARY PROCEDURES: Set HEATER MASTER switch to OFF (TM 9-2350-222-10)  
Disconnect electrical connector (page 19-24)  
Remove heater cover (page 19-24)

REMOVAL:

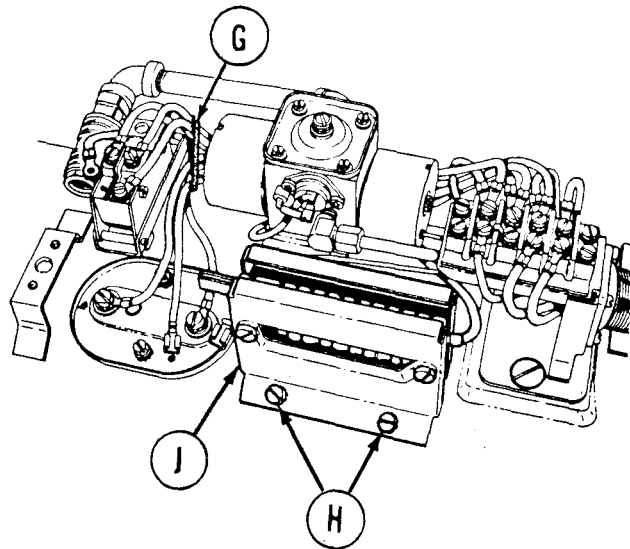
1. Disconnect two leads (A) and (B).
2. Using screwdriver, remove screw and lockwasher (C) securing third lead (D) (N.O.) to flame detector switch (E).
3. Disconnect lead (D) from switch (E).



4. Using screwdriver, loosen (do not remove) two screws (F) at slotted mounting holes.



5. Remove plastic band (G) by pulling apart.
6. Using screwdriver, remove two screws (H).
7. Remove ignition control (J) from personnel heater.



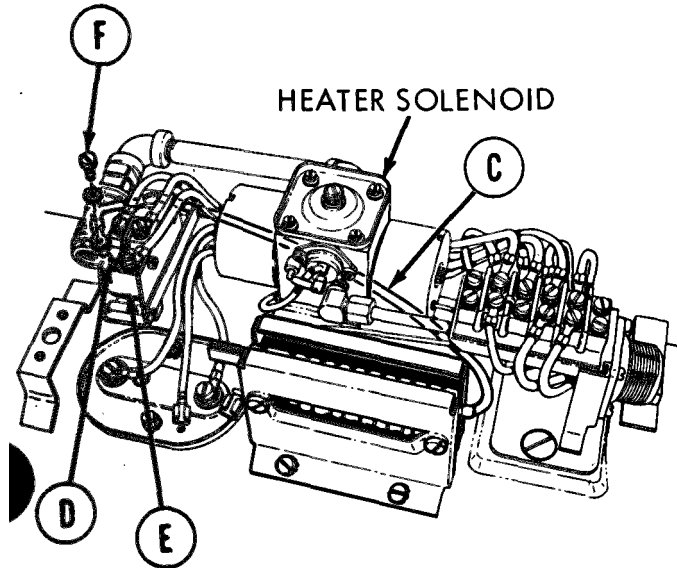
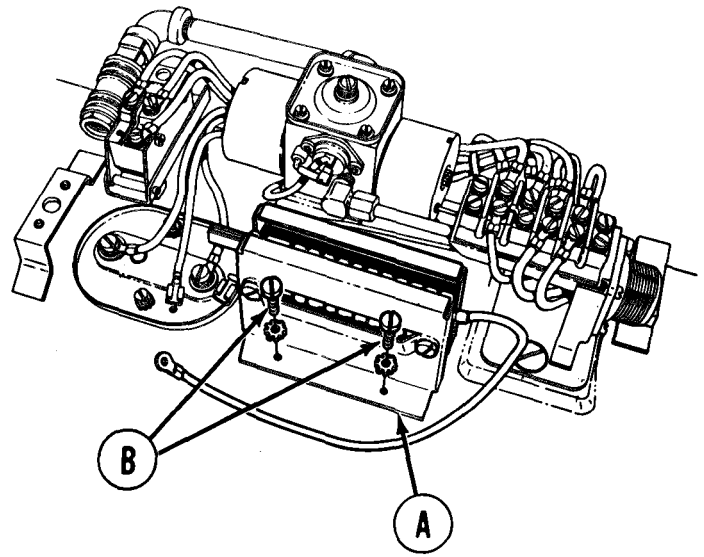
Go on to Sheet 2

TA141255

**PERSONNEL HEATER REPAIR (Sheet 8 of 8)**  
**Ignition Control Replacement (Sheet 2 of 2)**

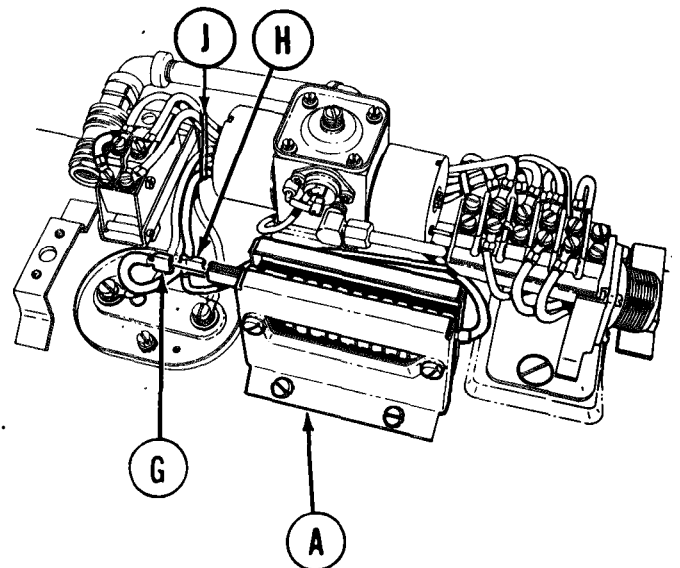
**INSTALLATION:**

1. Mount igniter control assembly (A) to heater.
2. Using screwdriver to four screws (B), secure igniter control (A) to heater.



3. Route lead (C) under heater solenoid to terminal (D) (N.O.) on flame detector switch (E).
4. Install screw and lockwasher (F) securing lead (C) to flame detector switch (E).
5. Using screwdriver, tighten screw (F).

6. Connect two leads (G) and (H) to ignition control (A).
7. Install plastic band (J).
8. Install heater cover (page 19-26, steps 7 and 8).
9. Connect electrical connector (page 19-26, steps 9 and 10).
10. Perform operational check (TM 9-2350-222-10).
11. Install right driver's periscope (TM 9-2350-222-10).



End of Task

TA141256



## CHAPTER 20

## SPEEDOMETER AND TACHOMETER MAINTENANCE INDEX

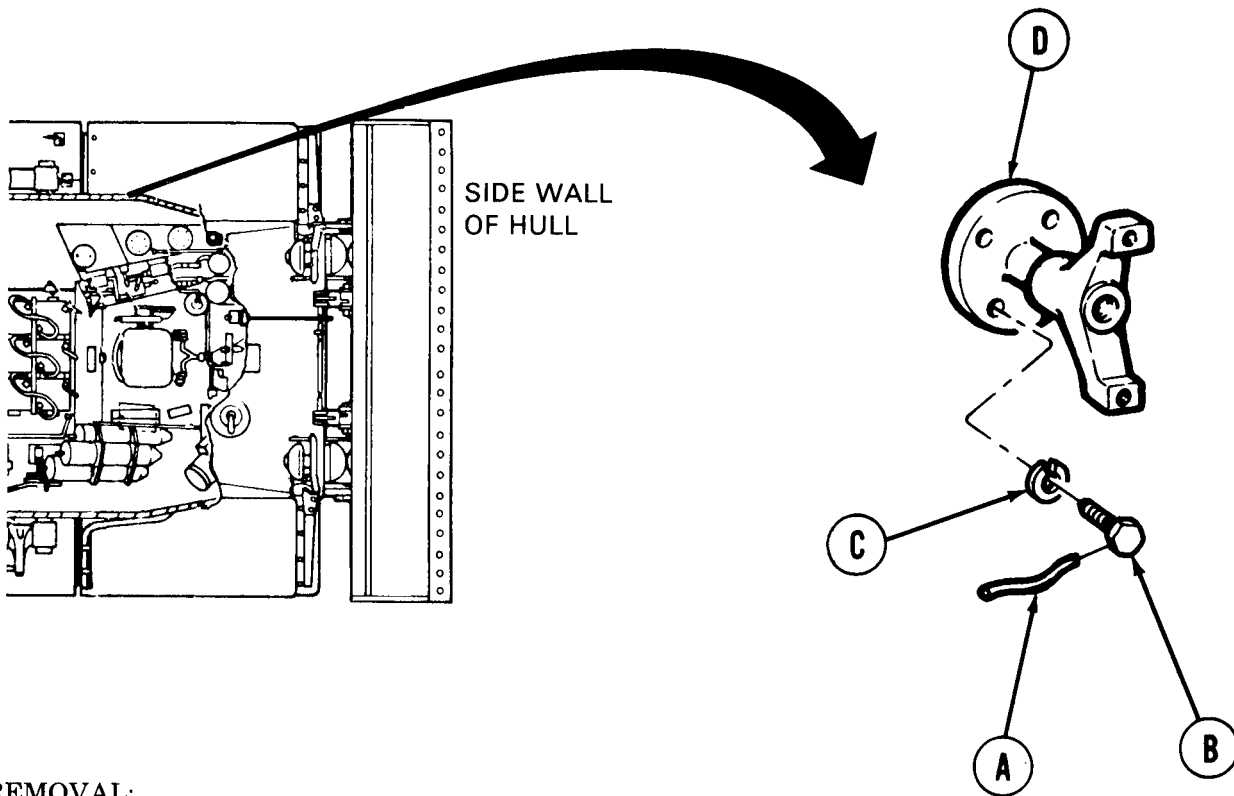
Procedure	Page
Speedometer Adapter Rotating Bracket Assembly Replacement	20-2
Speedometer Shaft Adapter Assembly Replacement and Repair	20-4
Speedometer Flexible Shaft Assembly Replacement	20-6
Speedometer Flexible Shaft Assembly Repair	20-8
Speedometer Replacement	20-10
Tachometer Replacement	20-13
Tachometer Front Flexible Shaft Assembly Replacement (Early Model)	20-16
Tachometer Front Flexible Shaft Assembly Replacement (Late Model)	20-18.1
Tachometer Front Flexible Shaft Repair	20-19
Tachometer Shaft Adapter Replacement (Early Model)	20-21
Tachometer Shaft Bulkhead Adapter Replacement (Late Model)	20-22.1
Tachometer Rear Flexible Shaft Replacement (Early Model)	20-23
Tachometer Drive Adapter Replacement and Repair	20-30
Tachometer Rear Flexible Shaft Replacement (Late Model)	20-32

**SPEEDOMETER ADAPTER ROTATING BRACKET ASSEMBLY REPLACEMENT**  
(Sheet 1 of 2)

**TOOLS:** Diagonal cutting pliers  
Ratchet with 1/2 in. drive  
7/16 in. socket with 1/2 in. drive  
Long round nose pliers  
5 in. extension with 1/2 in. drive

**SUPPLIES:** Lockwire (Item 59, Appendix D)  
Lockwasher (MS35340-44) (4 required)

**PRELIMINARY PROCEDURE:** Remove speedometer adapter (page 20-4)



**REMOVAL:**

1. Using cutting pliers, remove lockwire (A) from four screws (B). Throw lockwire away.
2. Using socket, remove four screws (B) and lockwashers (C). Throw lockwashers away.
3. Remove rotating bracket assembly (D).

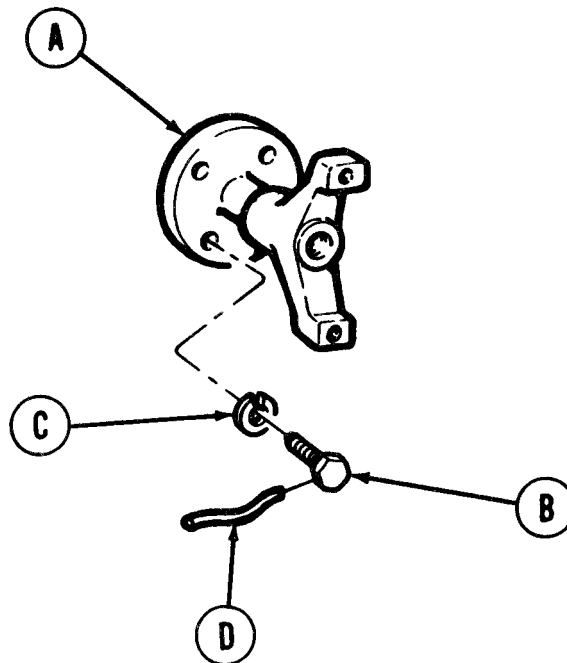
Go on to Sheet 2

TA147651

## SPEEDOMETER ADAPTER ROTATING BRACKET ASSEMBLY REPLACEMENT (Sheet 2 of 2)

### INSTALLATION:

1. Place rotating bracket (A) in position.
2. Using socket, install four screws (B) and new lockwashers (C).
3. Install new lockwire (D).
4. Install speedometer adapter (page 20-5).



**End of Task**

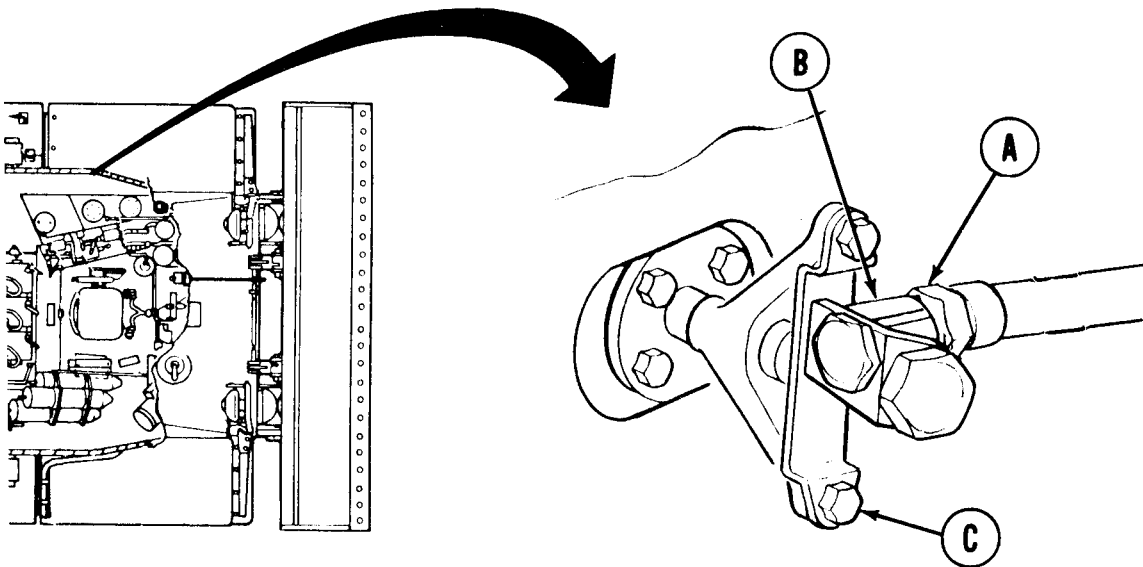
TA147652

**SPEEDOMETER SHAFT ADAPTER ASSEMBLY REPLACEMENT AND REPAIR**  
(Sheet 1 of 2)

TOOLS: 7/16 in. socket with 1/2 in. drive  
1 in. combination box and open end wrench  
Ratchet with 1/2 in. drive  
5 in. socket extension with 1/2 in. drive  
Flat-tip screwdriver

SUPPLIES: Lockwasher (MS35333-40) (2 required)  
Preformed packing (MS28775-212)  
Grease (Item 36, Appendix D)

REMOVAL:



1. Using 1 inch wrench, disconnect flexible shaft assembly (A) from speedometer shaft adapter (B).
2. Using 7/16 inch socket, remove two screws and lockwashers (C). Throw lockwashers away.
3. Remove speedometer shaft adapter assembly (B).

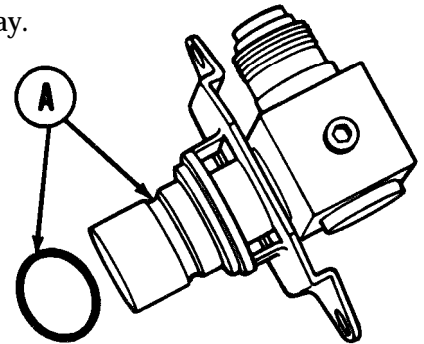
Go on to Sheet 2

TA147653



## SPEEDOMETER SHAFT ADAPTER ASSEMBLY REPLACEMENT AND REPAIR (Sheet 2 of 2)

Using screwdriver, remove preformed packing (A). Throw packing away.



### ASSEMBLY:

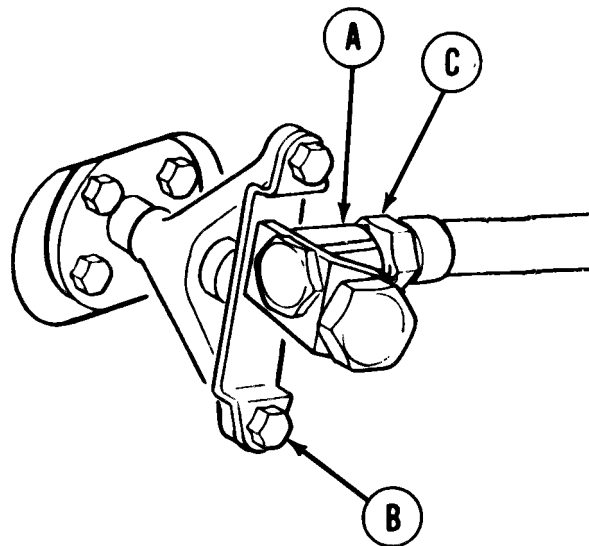
1. Lightly grease (Item 36, Appendix D) new preformed packing (A).
2. Using hands, install preformed packing (A).

### INSTALLATION:

#### NOTE

**When placing shaft adapter in position, make sure to align adapter and cable.**

1. Place speedometer shaft adapter (A) in position.
2. Using 7/16 inch socket, install two screws and new lockwashers (B).
3. Using 1 inch wrench, connect flexible shaft assembly (C) to shaft adapter (A).



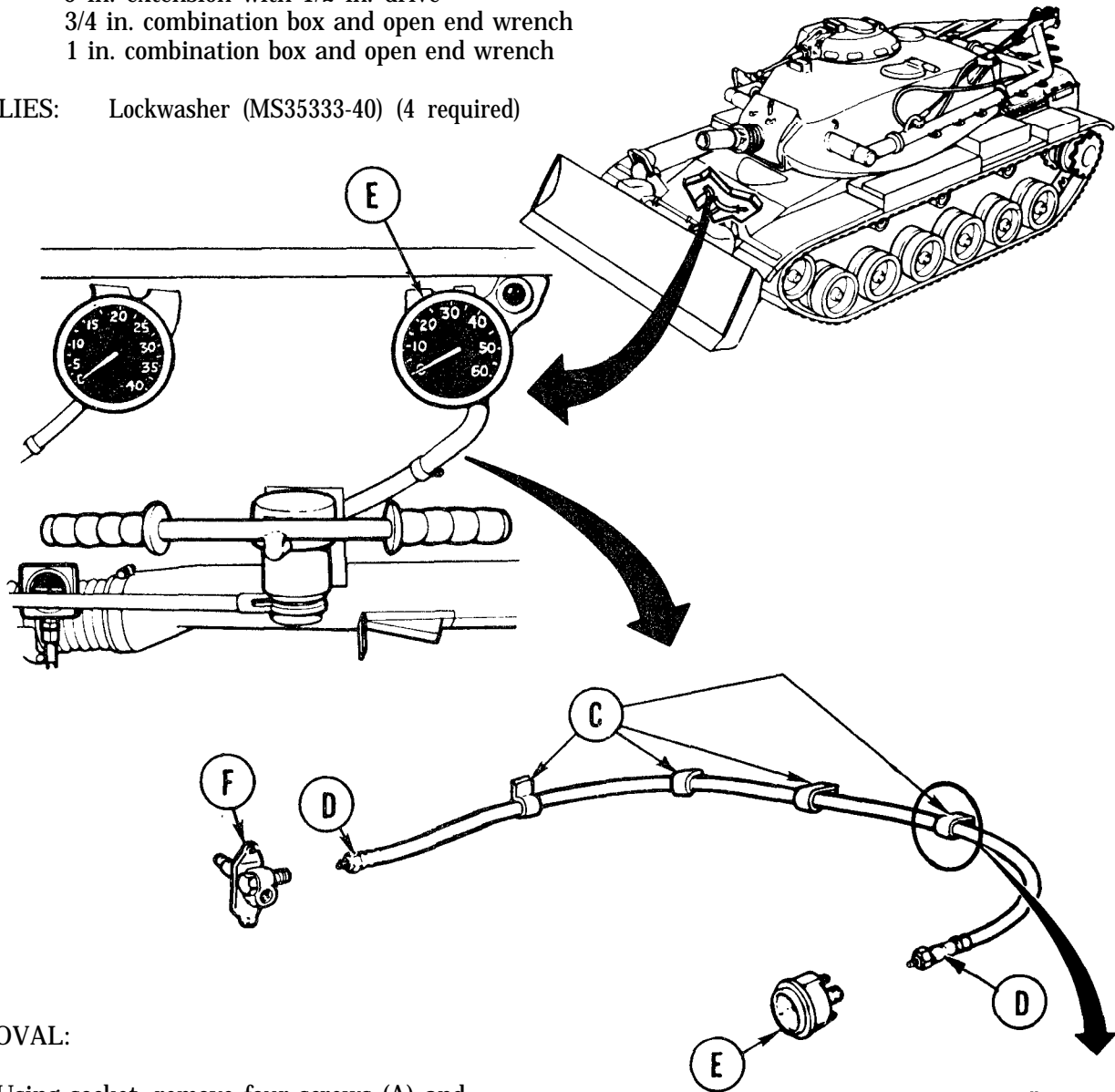
**End of Task**

TA147654

**SPEEDOMETER FLEXIBLE SHAFT ASSEMBLY REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** 7/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 5 in. extension with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 1 in. combination box and open end wrench

**SUPPLIES:** Lockwasher (MS35333-40) (4 required)



**REMOVAL:**

1. Using socket, remove four screws (A) and lockwashers (B) from loop clamps (C). Throw lockwashers away.
2. Using 3/4 inch wrench, remove end of flexible shaft (D) from speedometer (E).
3. Using 1 inch wrench, remove end of flexible shaft (D) from adapter assembly (F).

Go on to Sheet 2

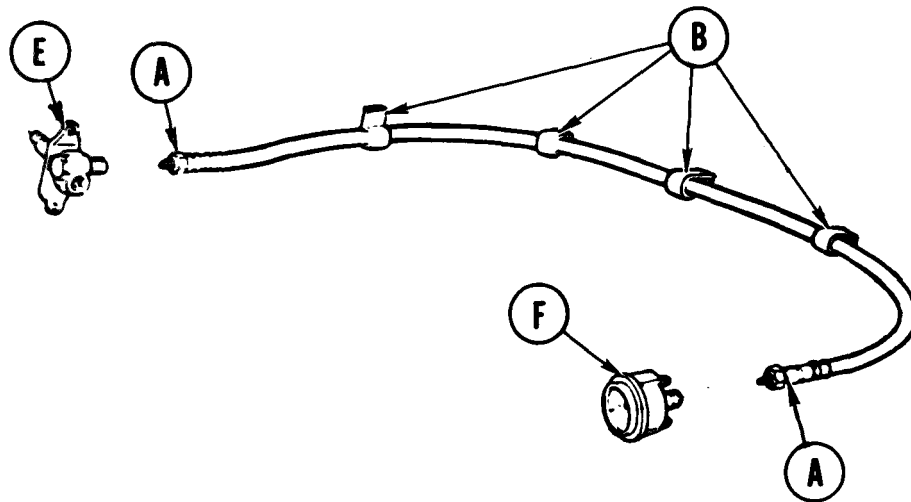
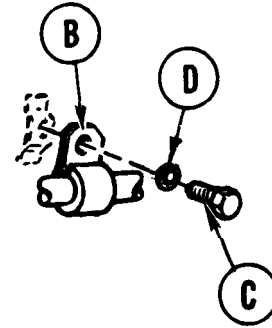
TA253857

## SPEEDOMETER FLEXIBLE SHAFT ASSEMBLY REPLACEMENT (Sheet 2 of 2)

## NOTE

Be sure to align flexible shaft key with speedometer and adapter.

1. Plain flexible shaft (A) in position.
2. Using socket, install four clamps (B) with screws (C) and new lockwashers (D).
3. Using 1 inch wrench, install end of flexible shaft (A) on adapter (E).



4. Using 3/4 inch wrench, install other end of flexible shaft (A) to speedometer (F).

End of Task

TA147656

**SPEEDOMETER FLEXIBLE SHAFT ASSEMBLY REPAIR (Sheet 1 of 2)**

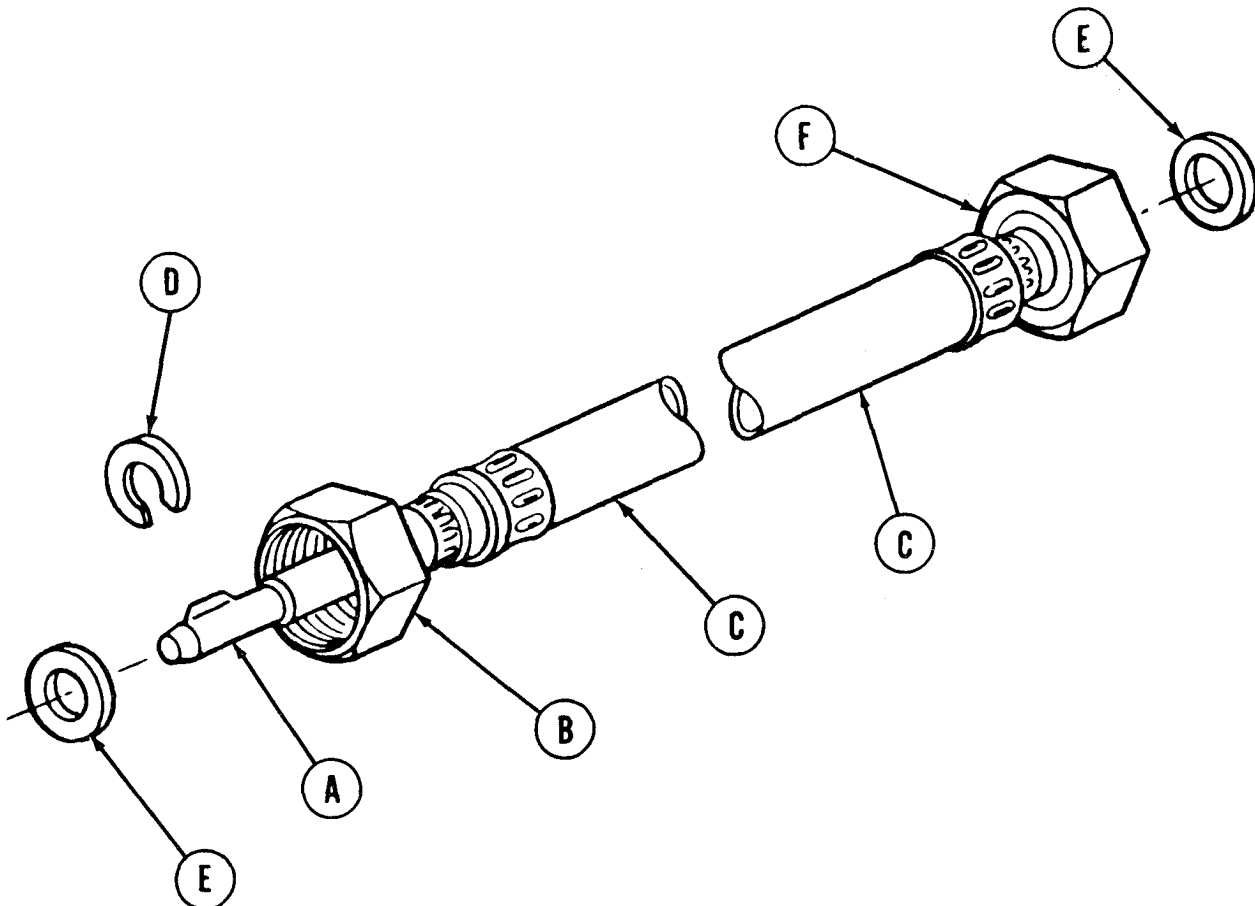
TOOLS: Slip joint pliers  
Long round nose pliers (needle nose)

SUPPLIES: Gasket (7539689) (2 required)

PRELIMINARY PROCEDURE: Remove shaft from vehicle (page 20-6)

**DISASSEMBLY:**

1. Using pliers, pull out core (A) as far as possible from right angle drive adapter end (B) of flexible shaft (C).
2. Using needle nose pliers, remove slotted washer (D).
3. Remove one gasket (E) from each end of shaft (C). Throw gaskets away.
4. Using pliers, pull out core (A) from speedometer end (F) of flexible shaft (C).

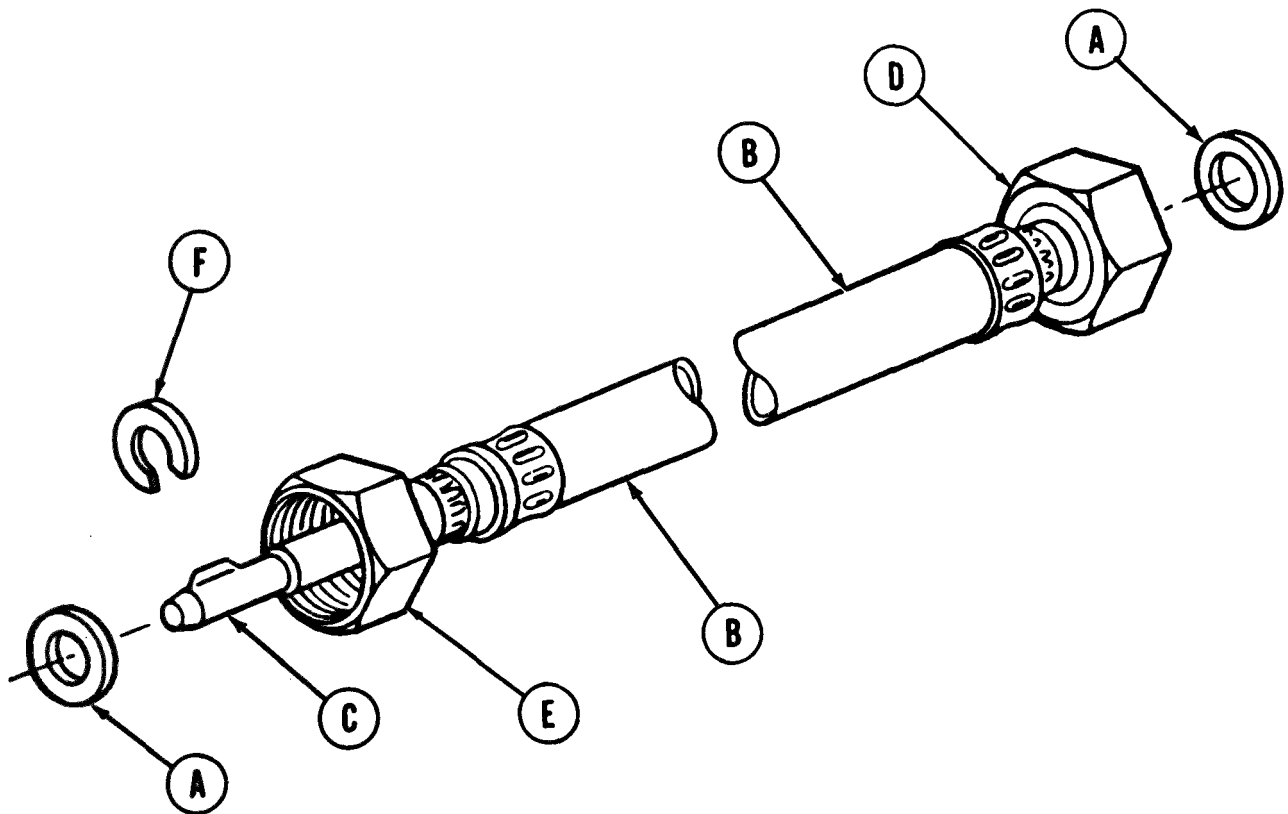


Go on to Sheet 2

TA147657

**SPEEDOMETER FLEXIBLE SHAFT ASSEMBLY REPAIR (Sheet 2 of 2)****ASSEMBLY:**

1. Install one new gasket (A.) onto each end of shaft (B).
2. Install core (C) in speedometer end (D) of flexible shaft (B).
3. Using pliers, pull out core (C) as far as possible from right angle drive adapter end (E).
4. Using needle nose pliers, install slotted washer (F) on core (C).
5. Push core (C) back into flexible shaft (B) until seated.
6. Install shaft (page 20-7).



End of Task

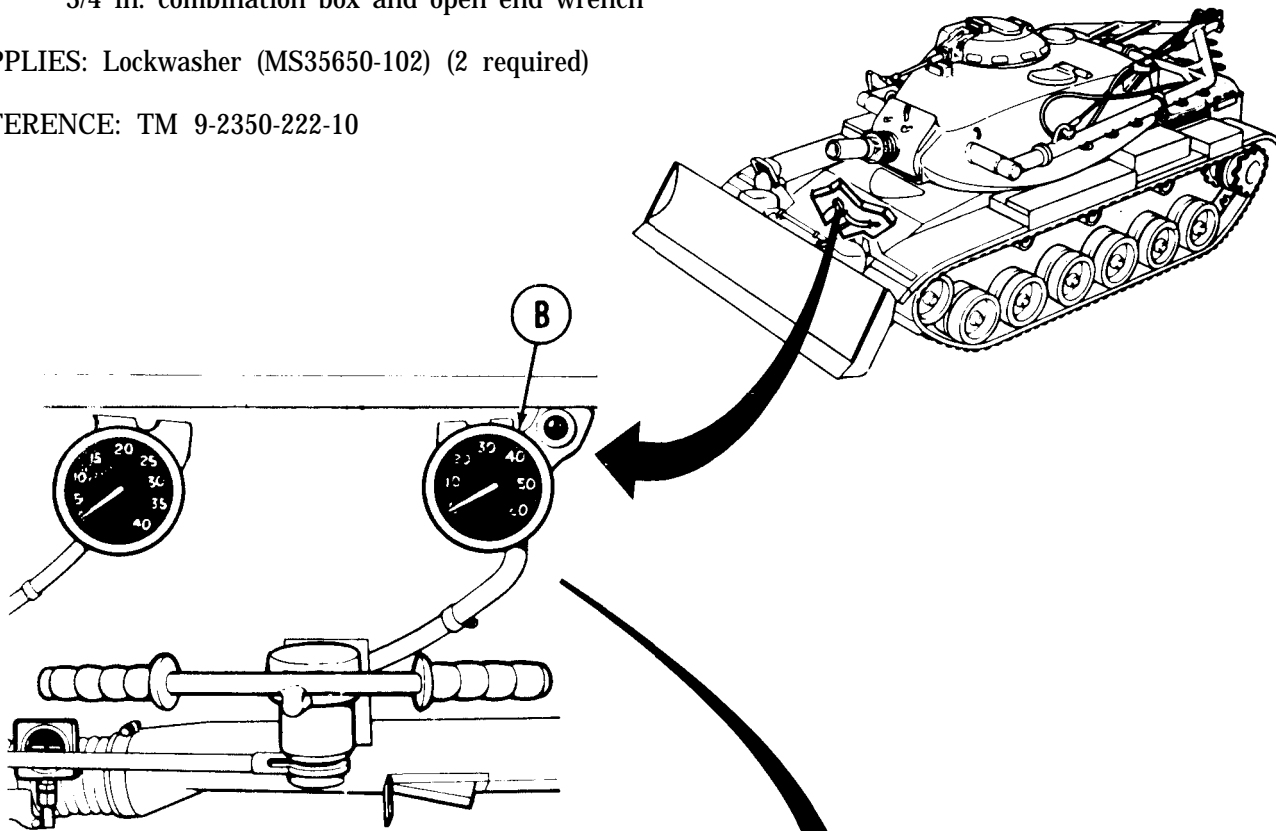
TA147658

**SPEEDOMETER REPLACEMENT (Sheet 1 of 3)**

TOOLS: 3/8 in. combination box and open end wrench  
3/4 in. combination box and open end wrench

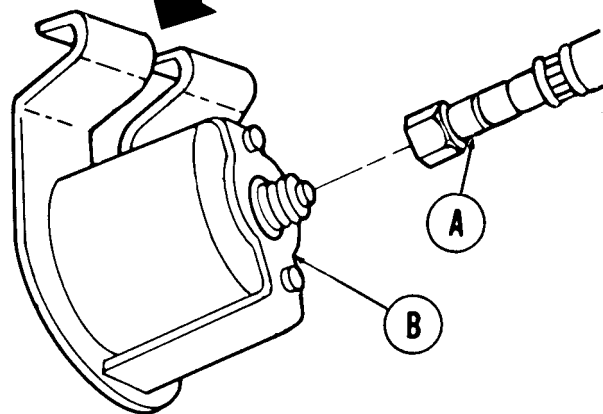
SUPPLIES: Lockwasher (MS35650-102) (2 required)

REFERENCE: TM 9-2350-222-10



**REMOVAL:**

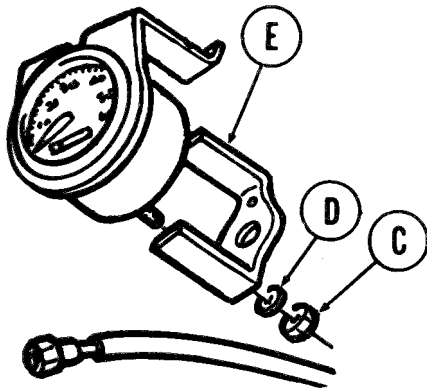
1. Using 3/4 inch wrench, disconnect flexible shaft (A) from speedometer (B).



Go on to Sheet 2

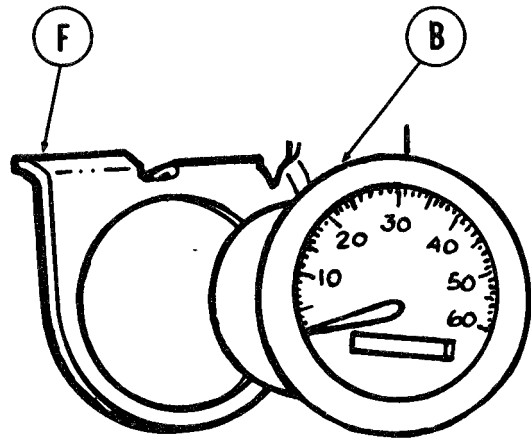
TA147659

**SPEEDOMETER REPLACEMENT (Sheet 2 of 3)**



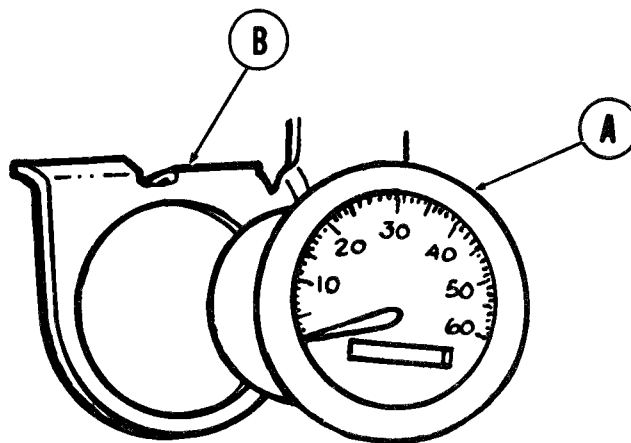
2. Using 3/8 inch wrench, remove two nuts (C) and lockwashers (D) securing retainer (E). Throw lockwashers away.
3. Remove retainer (E).

4. Remove speedometer (B) from mounting bracket (F).



**INSTALLATION:**

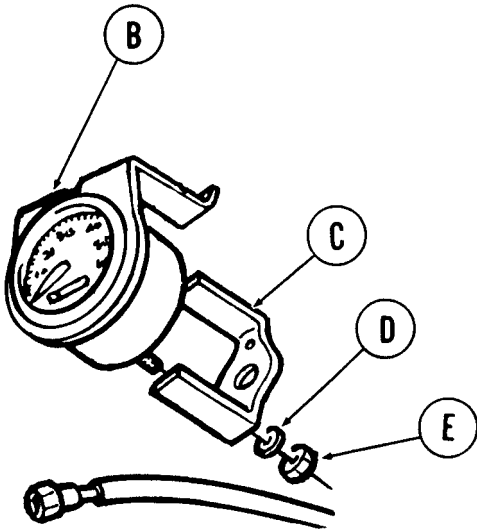
1. Place speedometer (A) in position in mounting bracket (B).



Go on to Sheet 3

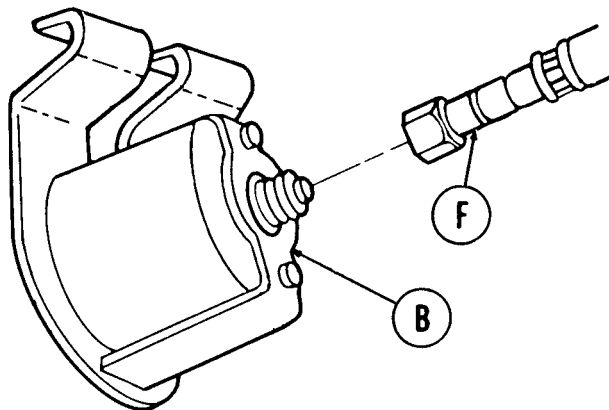
TA147660

**SPEEDOMETER REPLACEMENT (Sheet 3 of 3)**



2. Place retainer (C) in position on speedometer (B).
3. Position two new lockwashers (D). Using 3/8 inch wrench, install two nuts (E).

4. Using 3/4 inch wrench, install flexible cable (F) on speedometer (B).



End of Task

TA147661

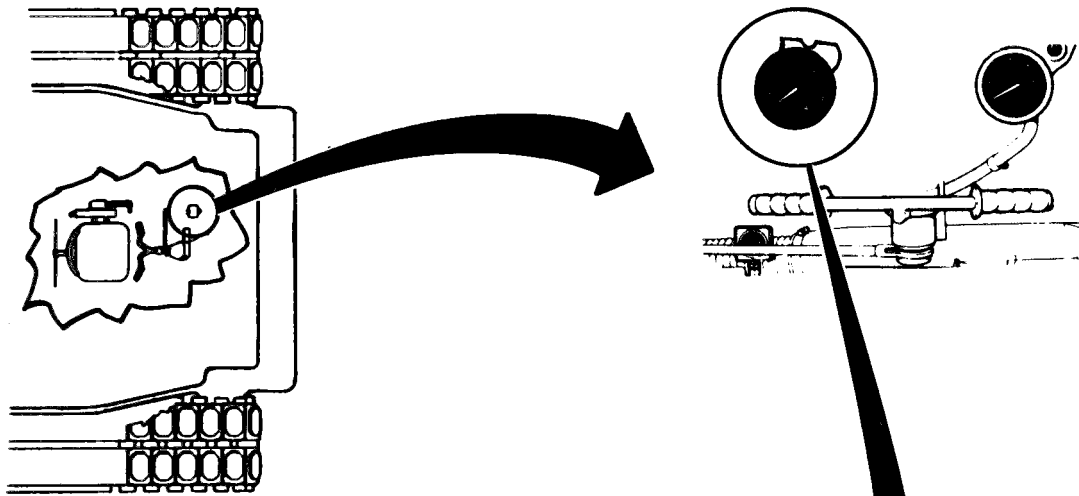


**TACHOMETER REPLACEMENT (Sheet 1 of 3)**

**TOOLS:** 3/8 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench

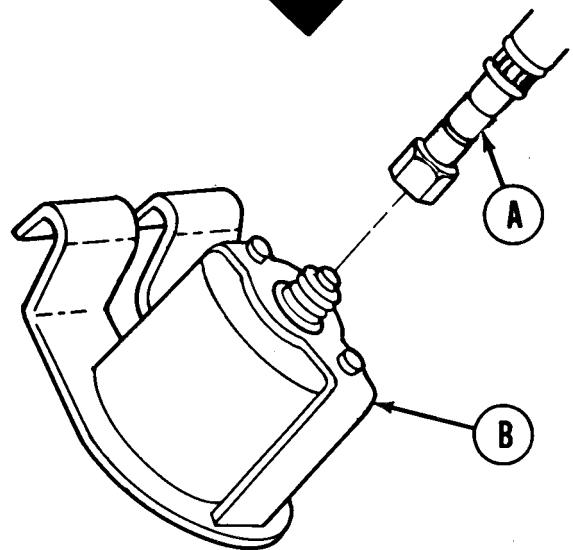
**SUPPLIES:** Lockwasher (MS35650-102) (2 required)

**REFERENCE:** TM 9-2350-222-10



**REMOVAL:**

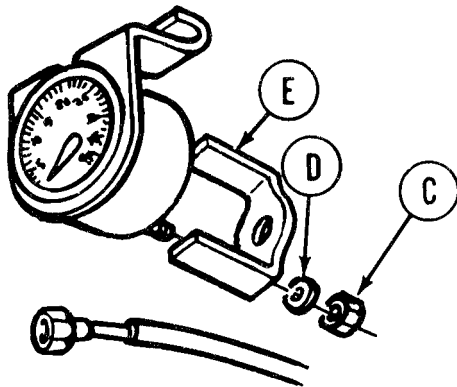
1. Using 3/4 inch wrench, disconnect flexible cable (A) from tachometer (B).



**Go on to Sheet 2**

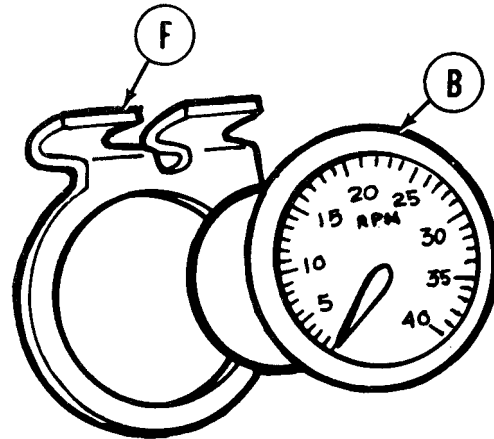
TA147662

TACHOMETER REPLACEMENT (Sheet 2 of 3)



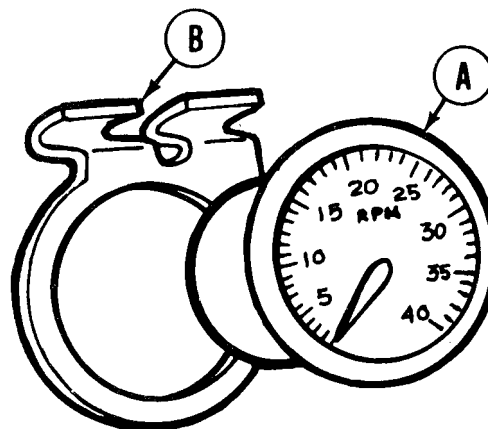
2. Using 3/8 inch wrench, remove two nuts (C) and lockwashers (D) securing retainer (E). Throw lockwashers away.
3. Remove retainer (E).

4. Remove tachometer (B) from mounting bracket (F).



INSTALLATION:

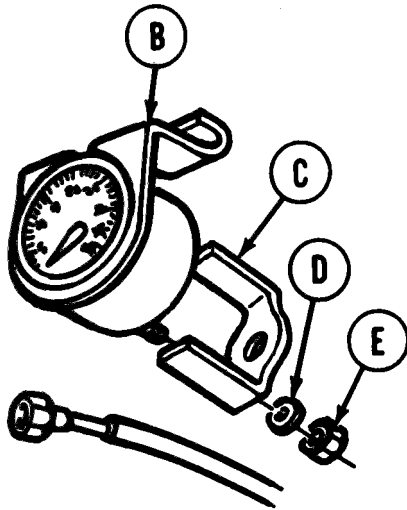
1. Place tachometer (A) in position in mounting bracket (B).



Go on to Sheet 3

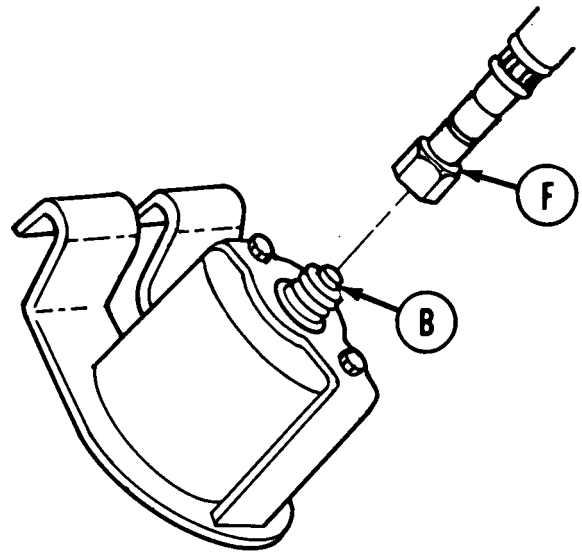
TA147663

TACHOMETER REPLACEMENT (Sheet 3 of 3)



2. Place retainer (C) in position on tachometer (B).
3. Position two new lockwashers (D). Using 3/8 inch wrench, install two nuts (E).

4. Using 3/4 inch wrench, install flexible cable (F) on tachometer (B).



5. Start engine (TM 9-2350-222-10).
6. Make sure tachometer operates.

End of Task

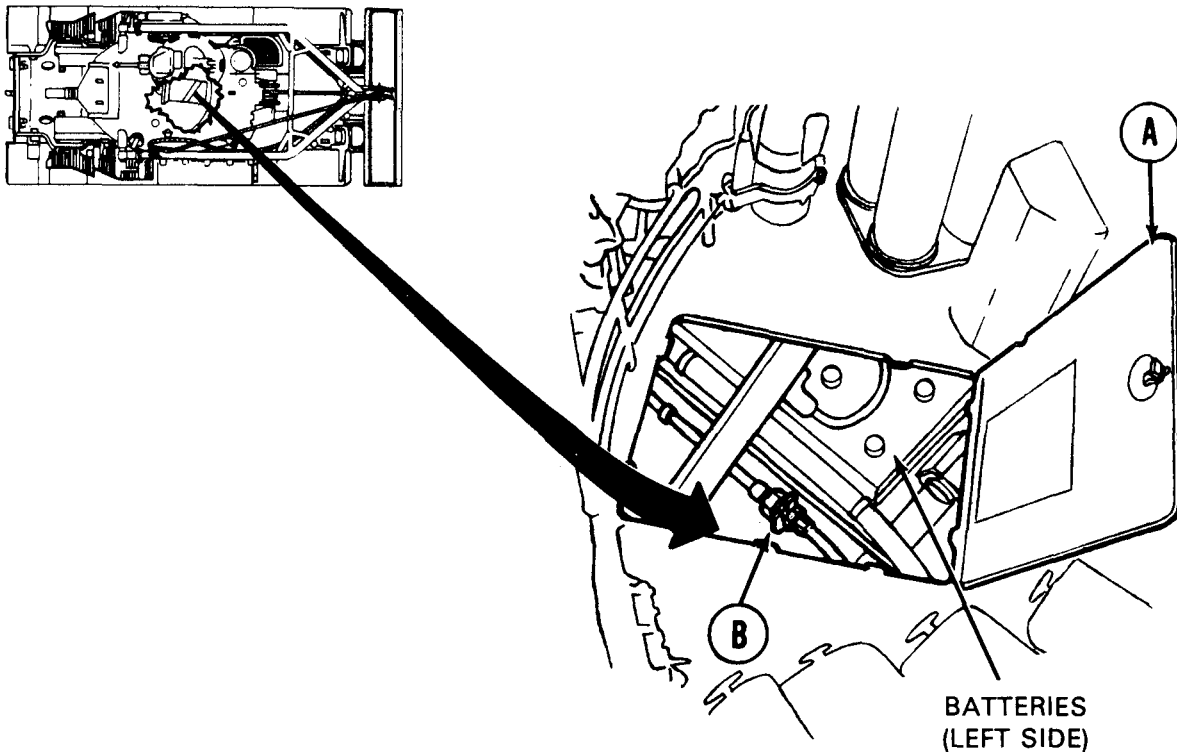
TA147664

■ TACHOMETER FRONT FLEXIBLE SHAFT ASSEMBLY REPLACEMENT (EARLY MODEL) (Sheet 1 of 3)

TOOLS: Ratchet with 1/2 in. drive  
7/16 in. socket with 1/2 in. drive  
3/4 in. combination box and open end wrench  
1 in. combination box and open end wrench

SUPPLIES: Lockwasher (MS35333-40) (5 required)  
Lockwasher (MS35333-42)

REFERENCE: TM 9-2350-222-10



REMOVAL:

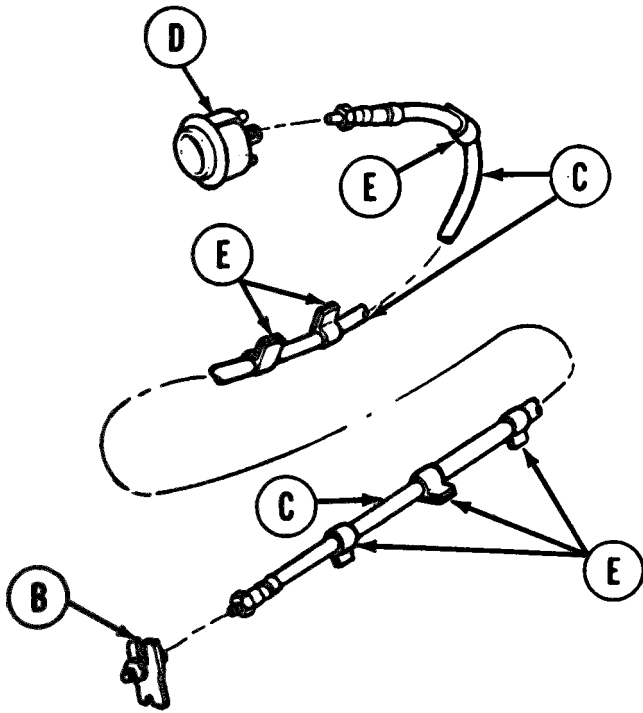
1. Open turret platform access door (A) (TM 9-2350-222-10).
2. Traverse turret to expose tachometer shaft adapter (B).

Go on to Sheet 2

TA253858

**TACHOMETER FRONT FLEXIBLE SHAFT ASSEMBLY REPLACEMENT (EARLY MODEL) (Sheet 2 of 3)**

- Using 3/4 inch wrench, remove end of shaft (C) from tachometer (D) in driver's station.



- Using 1 inch wrench, remove end of shaft (C) from tachometer shaft adapter (B) next to battery box.
- Using socket, remove six clamps, screws, and lockwashers (E). Throw lockwashers away.
- Remove front flexible shaft (C).

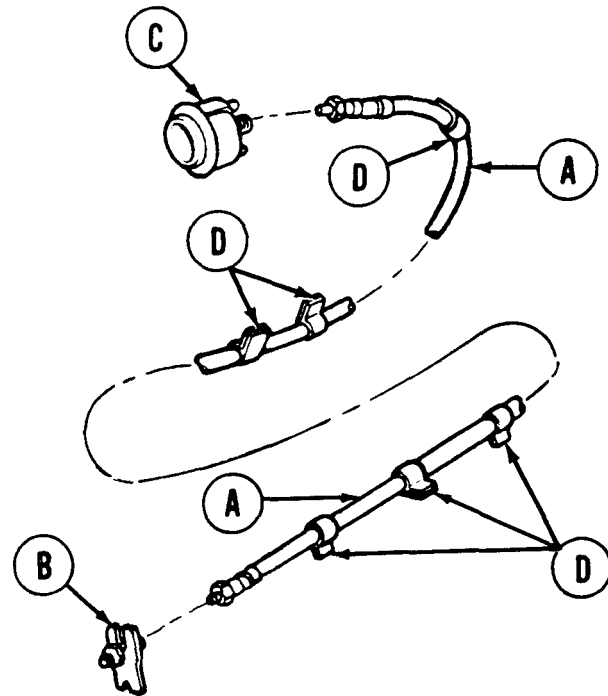
**INSTALLATION:**

**NOTE**

**Make sure to aline flexible shaft key with slot in adapter.**

TACHOMETER FRONT FLEXIBLE SHAFT ASSEMBLY REPLACEMENT (EARLY MODEL) (Sheet 3 of 3)

1. Place shaft (A) in position.
2. Using 1 inch wrench, install end of shaft (A) on tachometer shaft adapter (B).
3. Using 3/4 inch wrench, install other end of shaft (A) to tachometer (C).
4. Using socket, install six clamps, screws, and new lockwashers (D).
5. Close turret platform access door.
6. Perform functional test (TM 9-2350-222-10).



End of Task

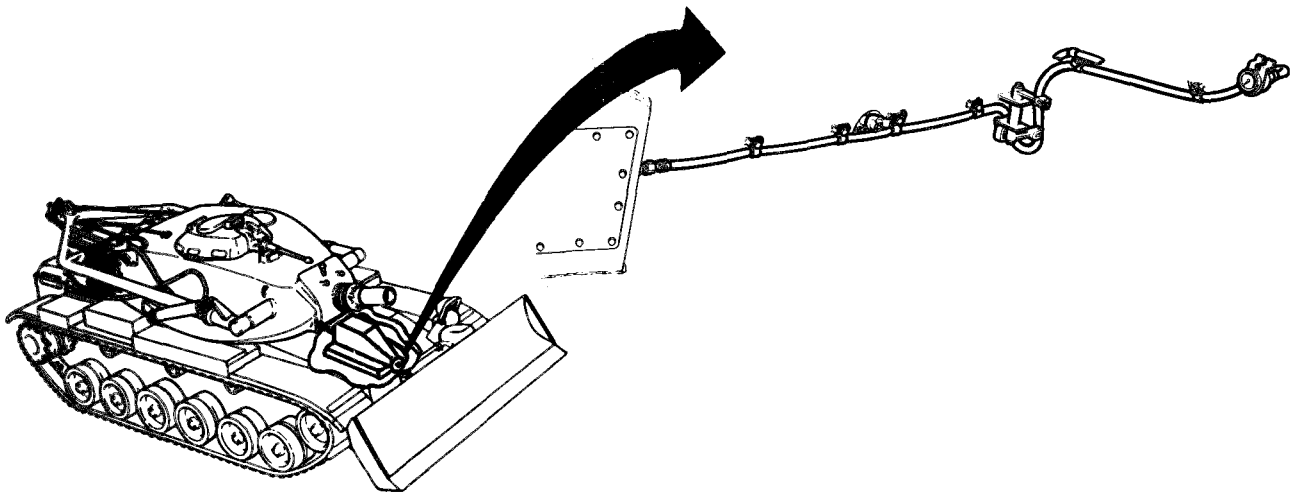
TA253860

## TACHOMETER FRONT FLEXIBLE SHAFT ASSEMBLY REPLACEMENT (LATE MODEL) (Sheet 1 of 4)

**TOOLS:** Ratchet with 1/2 in. drive  
7/16 in. socket with 1/2 in. drive  
3/4 in. combination box and open end wrench  
1 in. combination box and open end wrench

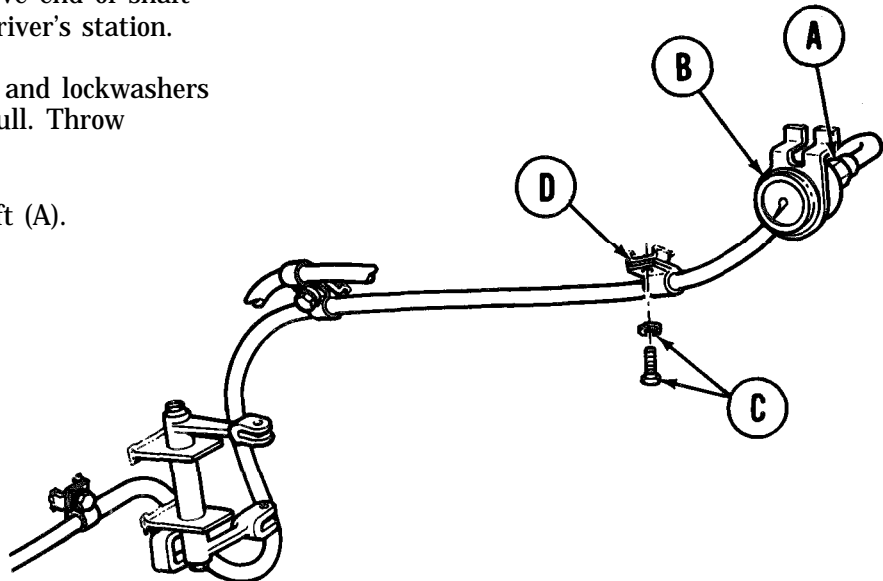
**SUPPLIES:** Lockwasher (M335333-40) (5 required)  
Lockwasher (MS35338-44)

**REFERENCE:** TM 9-2350-222-10



### REMOVAL:

1. Using 3/4 inch wrench, remove end of shaft (A) from tachometer (B) in driver's station.
2. Using socket, remove screws and lockwashers (C) securing clamps (D) to hull. Throw lockwashers away.
3. Remove clamps (D) from shaft (A).



Go on to Sheet 2

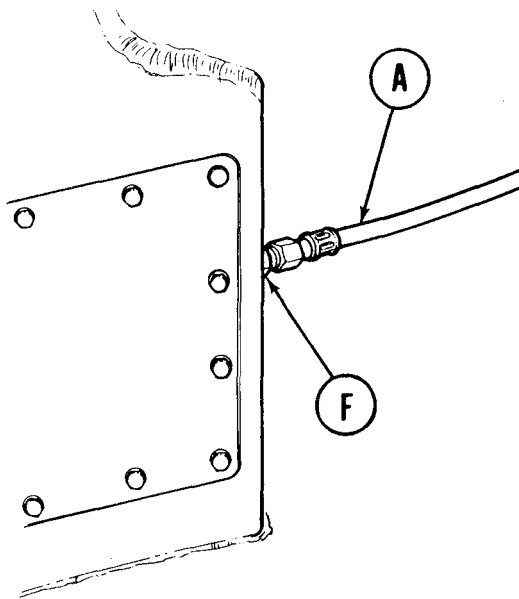
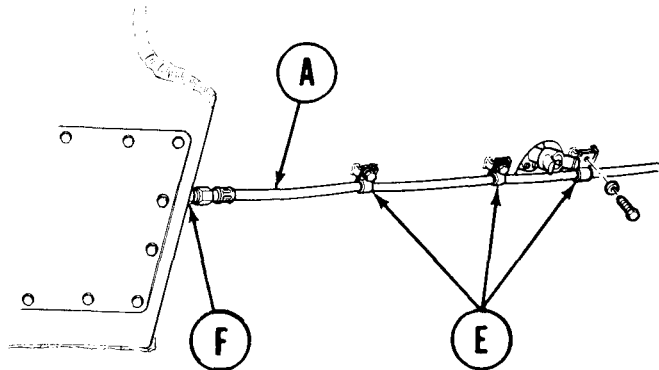
TA2538611

**TACHOMETER FRONT FLEXIBLE SHAFT ASSEMBLY (LATE MODEL)**  
(Sheet 2 of 4)

**NOTE**

Traverse turret as necessary to gain access to clamps (E) and bulkhead adapter (F). (TM 9-2350-222-10).

4. Using socket, remove screws and lockwashers securing three clamps (E) to hull. Throw lockwashers away.
5. Remove clamps (E) from shaft (A).



6. Using 1 inch wrench, disconnect end of shaft (A) from bulkhead adapter (F).
7. Remove shaft (A) from vehicle.

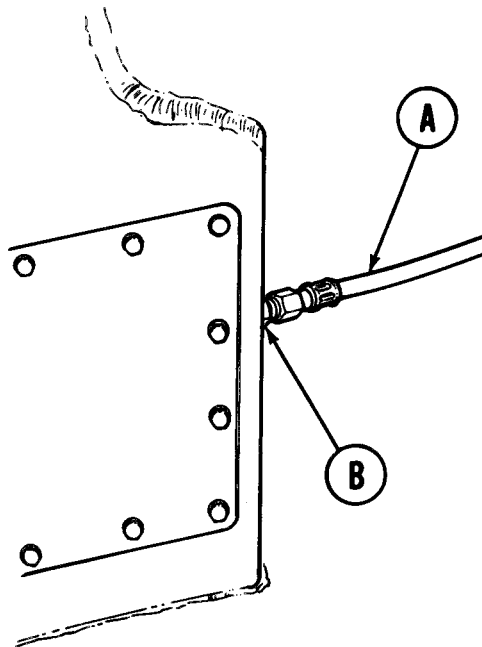


## TACHOMETER FRONT FLEXIBLE SHAFT ASSEMBLY REPLACEMENT (LATE MODEL)

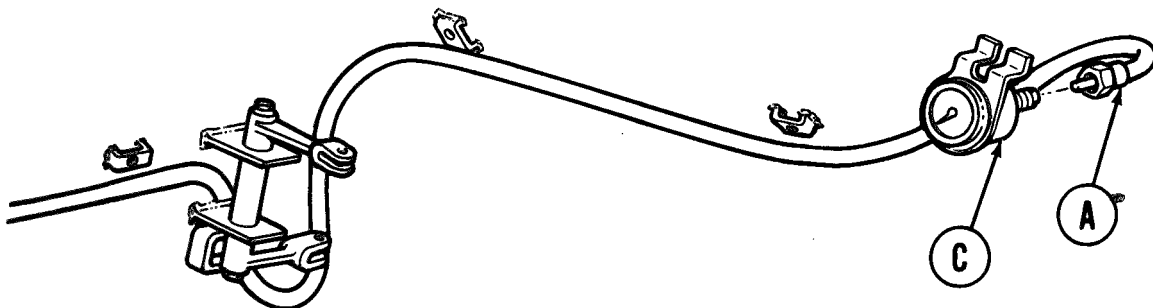
(Sheet 3 of 4)

### INSTALLATION:

1. Position shaft assembly (A) into vehicle.
2. Using 1 inch wrench, connect shaft assembly (A) to bulkhead adapter (B).



3. Using 3/4 inch wrench, connect shaft assembly (A) to tachometer (C) in driver's station.



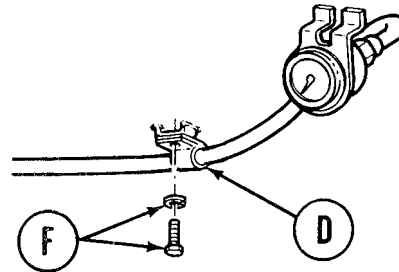
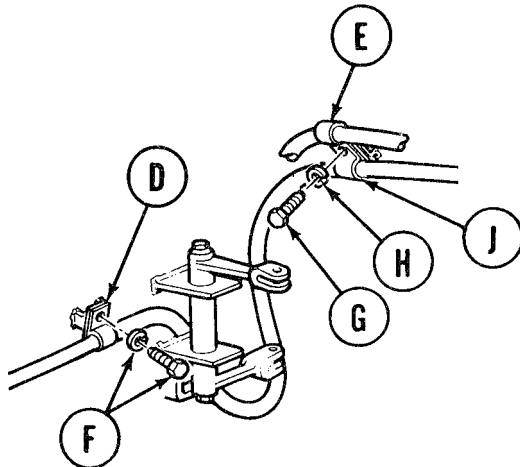
Go on to Sheet 4

TA253863

Change 1 20-18.3

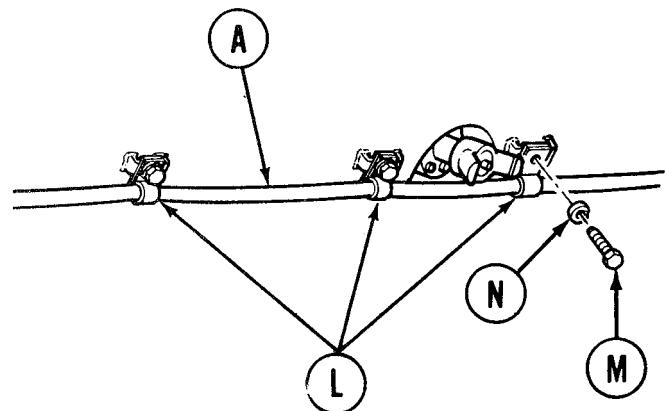
TACHOMETER FRONT FLEXIBLE SHAFT ASSEMBLY REPLACEMENT (LATE MODEL)  
 (Sheet 4 of 4)

4. Install clamps (D) and (E) onto shaft assembly (A).
5. Using socket, install screw and new lockwashers (F) to secure clamp (D) to hull roof.



6. Using socket, install screw (G) and new lockwasher (H) to secure clamps (E) and (J) to hull roof.

7. Traverse turret (TM 9-2350-222-10) as necessary and install clamps (L) onto shaft assembly (A).
8. Using socket, install screws (M) and new lockwashers (N) to secure three clamps (L) to side wall of vehicle.



End of Task

TA25386

## TACHOMETER FRONT FLEXIBLE SHAFT REPAIR (Sheet 1 of 2)

TOOLS: Slip joint pliers  
Long round nose pliers (needle nose)

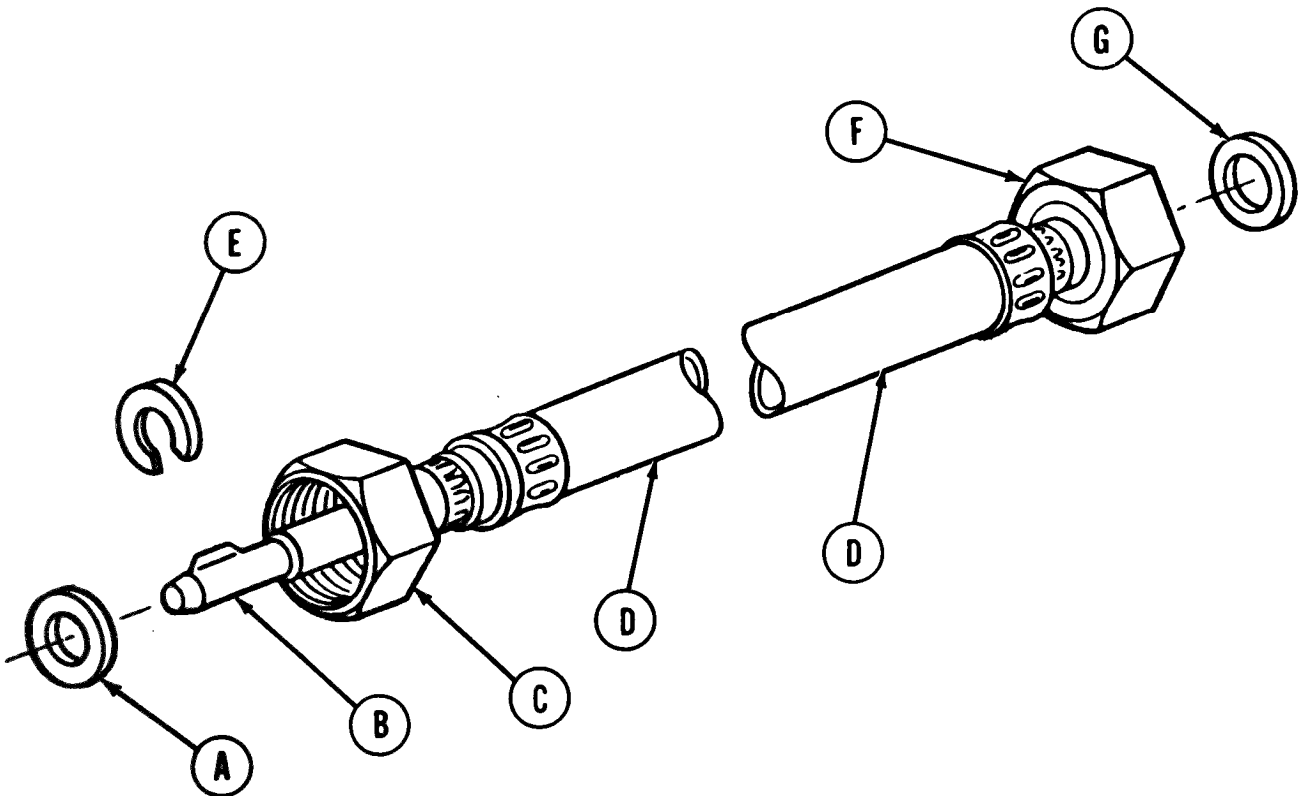
SUPPLIES: Gasket (7539689)

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Remove tachometer front flexible shaft assembly (Early Model) (page 20-16)  
Remove tachometer front flexible shaft assembly (Late Model) (page 20-18.1)

### DISASSEMBLY:

1. Remove gasket (A). Throw gasket away.
2. Using slip joint pliers, pull out core (B) approximately 2 inches from tachometer shaft adapter end (C) of flexible cable (D) as far as possible.
3. While holding core (B) with pliers, use needle nose pliers to remove slotted washer (E).
4. Using slip joint pliers, pull out core (B) from tachometer end (F) of flexible shaft (D).
5. Remove flat washer (G) from shaft end.



Go on to Sheet 2

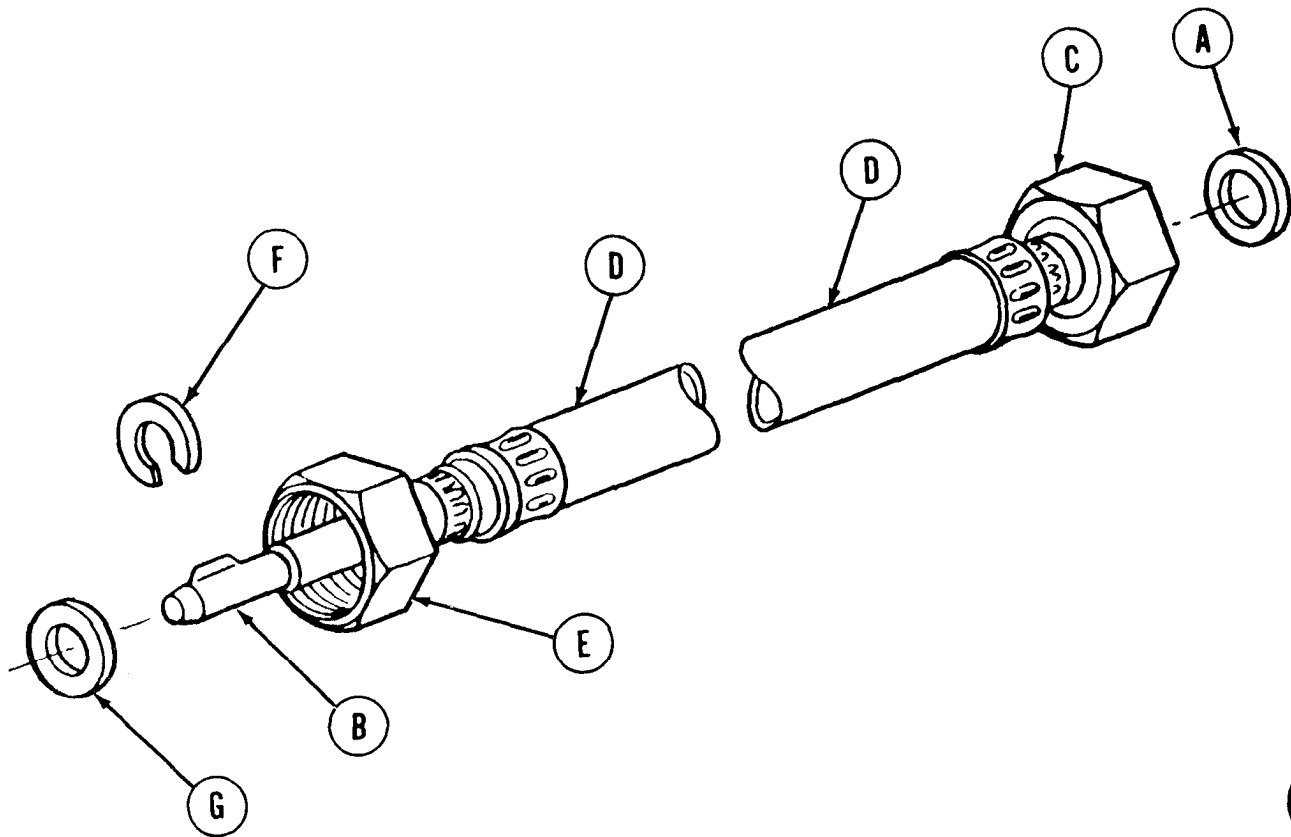
TA253865

Change 1 20-19

**TACHOMETER FRONT FLEXIBLE SHAFT REPAIR (Sheet 2 of 2)**

**ASSEMBLY:**

1. Install flat washer (A) onto shaft end.
2. Install core (B) through tachometer end (C) of flexible shaft (D).
3. Using slip joint pliers, pull out core (B) from tachometer shaft adapter end (E) as far as it will go.
4. Install slotted washer (F).
5. Install new gasket (G) onto end of shaft (D).
6. Push core (B) back into flexible shaft (D) until seated.
- 7. Install shaft in vehicle (early model, page 20-17) (late model, page 20-18.3).
8. Start engine (TM 9-2350-222-10).
9. Make sure tachometer operates.



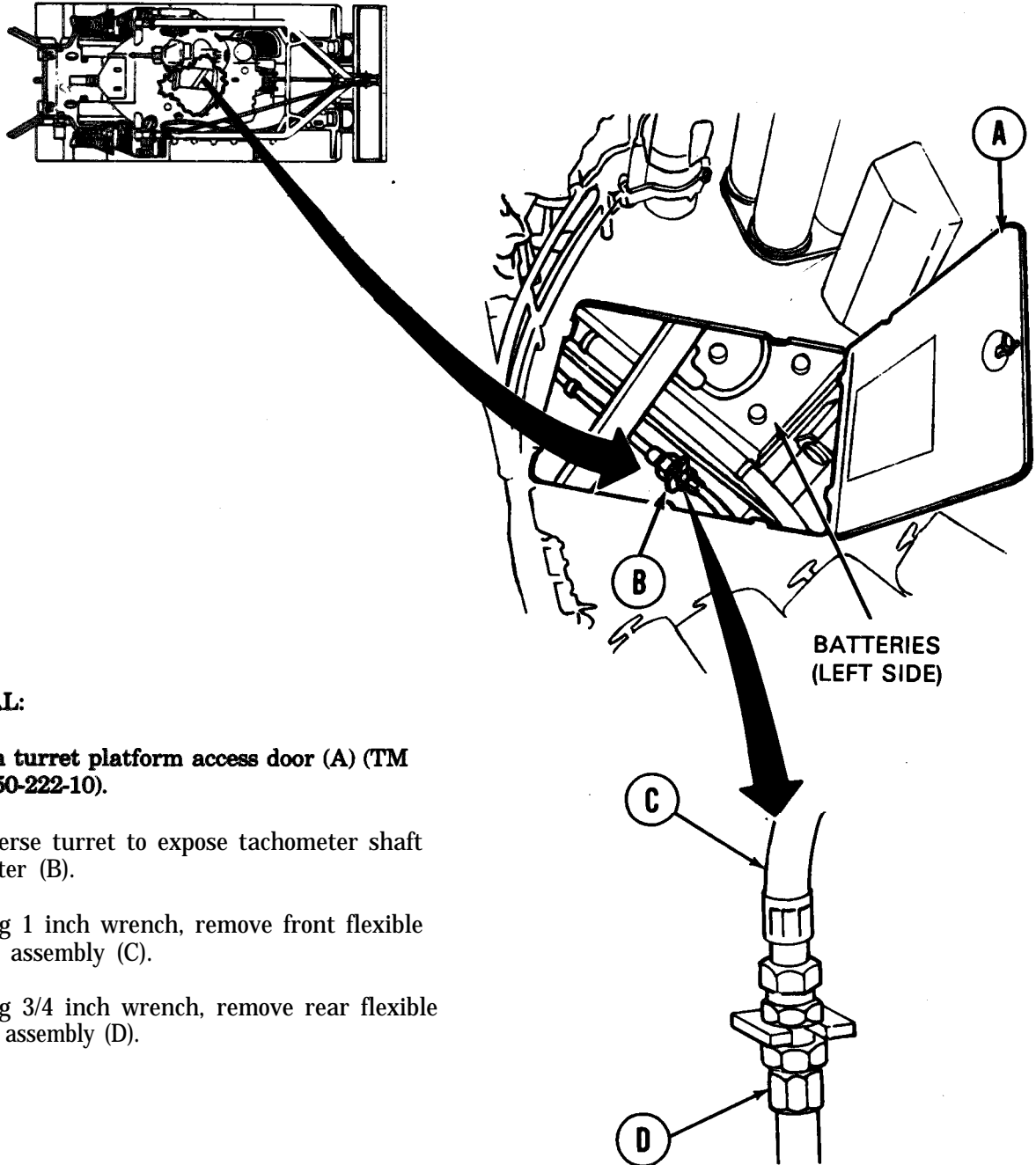
End of Task

TA253866

**TACHOMETER SHAFT ADAPTER REPLACEMENT (EARLY MODEL) (Sheet 1 of 2)**

**TOOLS:** 15/16 in. combination box and open end wrench  
 1 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench

**REFERENCE:** TM 9-2350-222-10



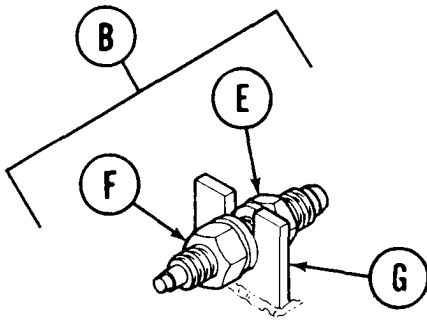
**REMOVAL:**

1. **Open turret platform access door (A)** (TM 9-2350-222-10).
2. Traverse turret to expose tachometer shaft adapter (B).
3. Using 1 inch wrench, remove front flexible shaft assembly (C).
4. Using 3/4 inch wrench, remove rear flexible shaft assembly (D).

Go on to Sheet 2

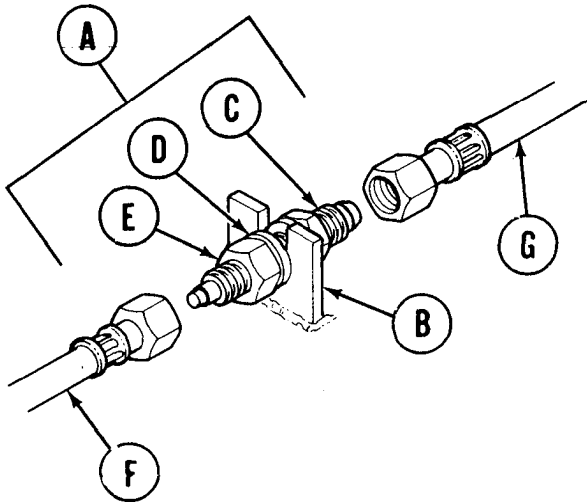
TA253867

**TACHOMETER SHAFT ADAPTER REPLACEMENT (EARLY MODEL) (Sheet 2 of 2)**



5. Using 1 inch wrench, hold adapter body (E).
6. Using 15/16 inch wrench, loosen nut and lockwasher (F).
7. Remove adapter assembly (B) from mounting bracket (G).

**INSTALLATION:**



1. Place adapter assembly (A) in position on mounting bracket (B).
2. Using 1 inch wrench, hold adapter body (C).
3. Using 15/16 inch wrench, tighten nut (E) and lockwasher (D).
4. Using fingers, install front flexible shaft (F) and rear flexible shaft (G).
5. Using 3/4 inch wrench, tighten shaft (F).
6. Using 1 inch wrench, tighten shaft (G).
7. Close turret platform access door (TM 9-2350-222-10).
8. Start engine (TM 9-2350-222-10).
9. Make sure tachometer operates.

End of Task

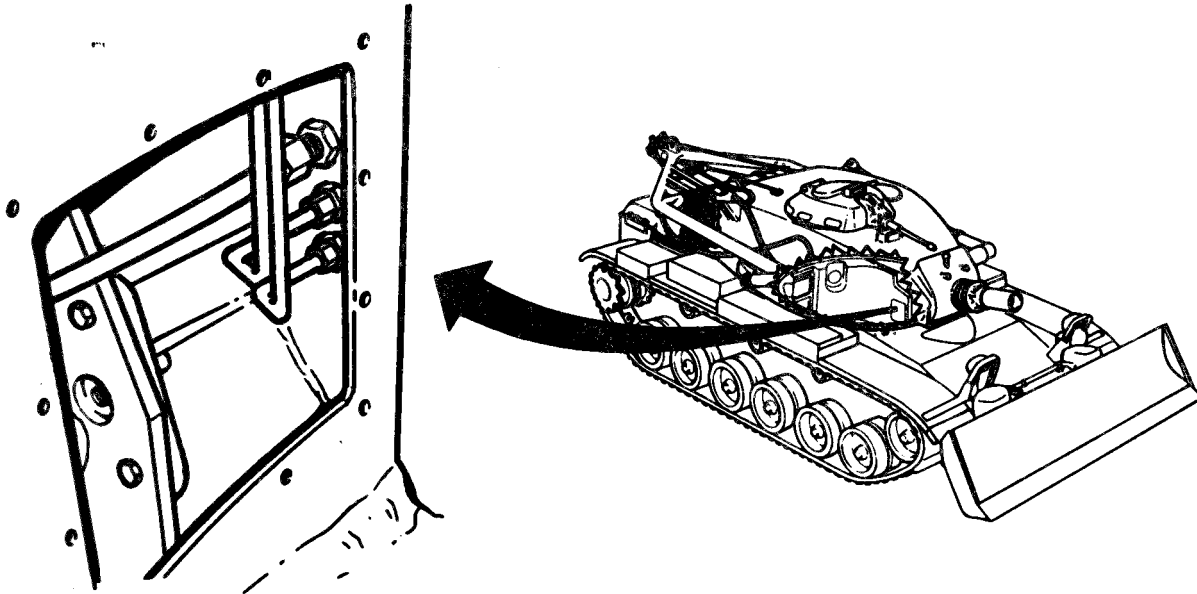
TA253871

**TACHOMETER SHAFT BULKHEAD ADAPTER REPLACEMENT (LATE MODEL) (Sheet 1 of 2)**

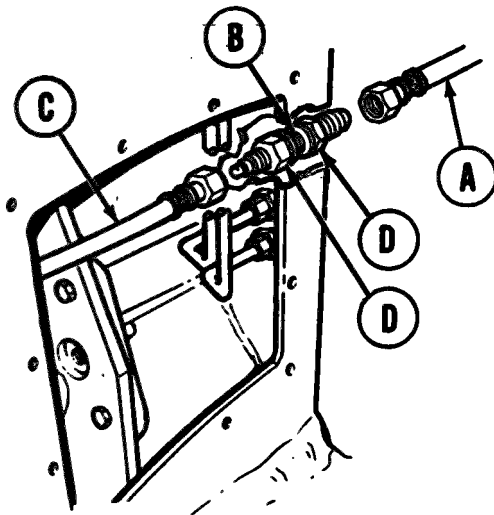
**TOOLS:** 15/16 in. combination box end open end wrench  
 1 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench

**SUPPLIES:** Lockwasher (1 required)

**PRELIMINARY PROCEDURE:** Remove left side bulkhead cover (page 16-33)



**REMOVAL:**



1. Using 1 inch wrench, disconnect front flexible shaft assembly (A) from bulkhead adapter (B).
2. Using 3/4 inch wrench, disconnect rear flexible shaft assembly (C) from bulkhead adapter (B).
3. Using 1 inch wrench to hold nut(C), use a 15/16 inch wrench to turn nut (D) and remove adapter (B).

Go on to Sheet 2

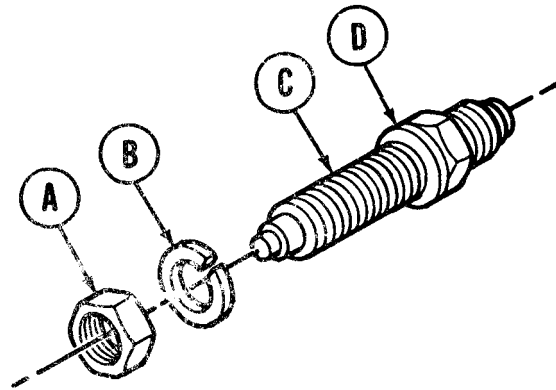
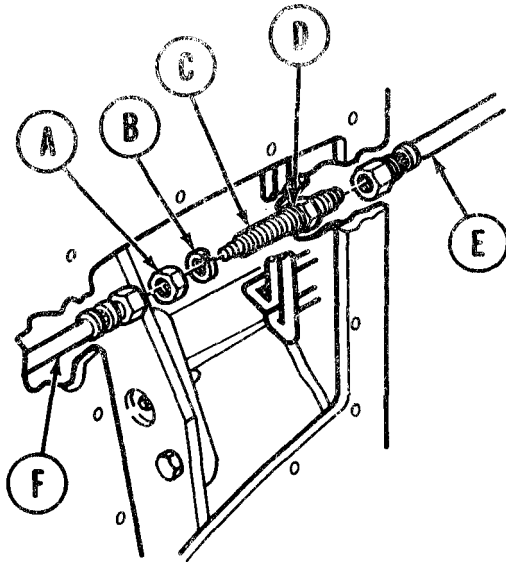
TA253872

Change 1 20-22.1

**TACHOMETER SHAFT BULKHEAD ADAPTER REPLACEMENT (LATE MODEL) (Sheet 2 of 2)**

**INSTALLATION:**

1. Remove nut (A) and lockwasher (B) from adapter body (C) of adapter assembly. Throw lockwasher away.



2. insert adapter body (C) with rubber gasket (D) into hole in bulkhead.
3. Install new lockwasher (B) and nut (A) onto adapter body (C).
4. Using 1 inch wrench to hold adapter body (C), use 15/16 inch wrench and tighten nut (A) onto adapter body (C).
5. Using 1 inch wrench, connect and tighten front flexible shaft assembly (E) onto adapter body (C).
6. Using 15/16 inch wrench, connect and tighten rear flexible shaft assembly (F) onto adapter body (C).
7. Install left side bulkhead cover (page 16-34).

End of Task

TA253873



## TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (EARLY MODEL) (Sheet 1 of 7)

PROCEDURE INDEX	
PROCEDURE	PAGE
	20-24
Disassembly	20-25
Cleaning and Inspection	20-26
Assembly	20-26
Installation	20-27

TOOLS: 1 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench  
 7/16 in. combination box and open end wrench  
 Flat-tip screwdriver  
 Heat gull  
 6 in. steel rule

SUPPLIES: Wire (Item 59, Appendix D) (8-10 ft. lg.)  
 Lockwasher screw (431953)  
 Bushing (11626512)  
 Seal (11626513)  
 Shrinkable plastic tubing (11655160-8)  
 Electrician's tape (Item 58, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)

REFERENCE: TM 9-2350-222-10

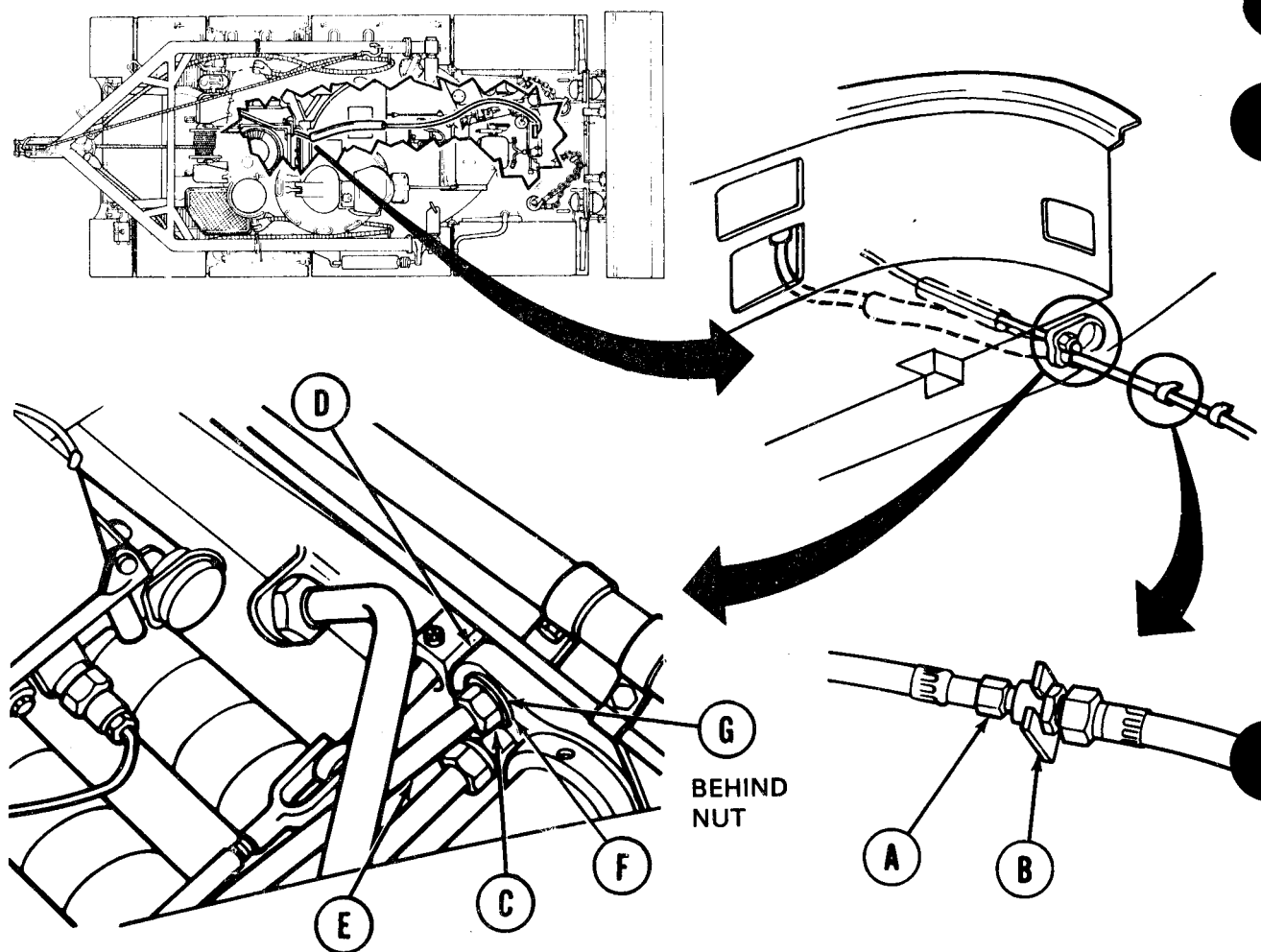
PRELIMINARY PROCEDURES: Remove powerplant (page 5-1)  
 Open turret platform access door (TM 9-2350-222-10)  
 Traverse turret to expose tachometer shaft adapter  
 and bulkhead housing (TM 9-2350-222-10)

Go on to Sheet 2

TA253874

Change 1 20-23

■ TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (EARLY MODEL) (Sheet 2 of 7)



REMOVAL:

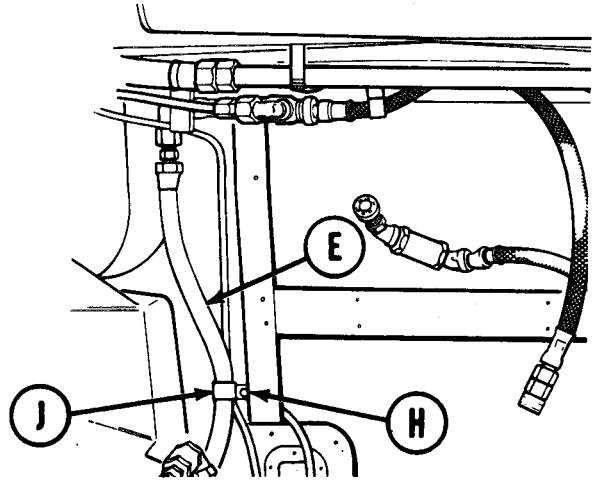
1. Using 3/4 inch wrench, disconnect rear tachometer shaft (A) from adapter (B).
2. Using 1 inch wrench, remove packing nut (C) from bulkhead housing (D), and slide nut back onto tachometer shaft (E).
3. Using screwdriver, pry out bushing (F) and seal (G) from bulkhead housing (D).
4. Remove packing nut (C), bushing (F), and seal (G) from tachometer shaft (E). Throw bushing and seal away.

Go on to Sheet 3

TA25387

**TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (EARLY MODEL) (Sheet 3 of 7)**

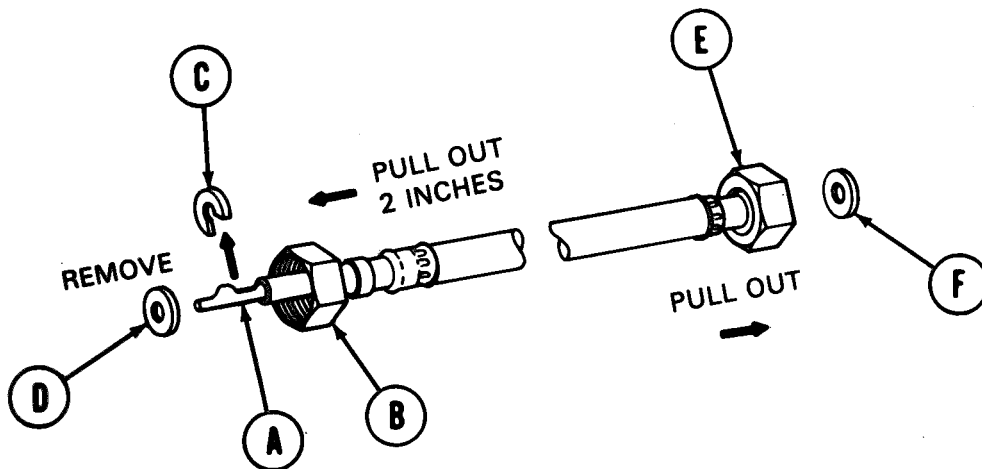
5. Using 7/16 inch wrench, remove lockwasher screw (H) from clamp (J). Throw lockwasher screw away.
6. Remove clamp (J) from tachometer shaft (E).
7. Attach wire (Item 59, Appendix D) to turret compartment end of tachometer shaft (E).
8. Remove tachometer shaft (E) by pulling out through powerplant compartment.



9. Remove wire from tachometer shaft, leaving wire in place for installation of new tachometer shaft.

**DISASSEMBLY:**

1. Using pliers, pull out core (A) approximately 2 inches from tachometer drive adapter end (B).
2. Using pliers, remove slotted washer (C) and gasket (D). Throw gasket away.
3. Using pliers, pull out core (A) from tachometer adapter end (E).
4. Remove flat washer (F) from adapter end (E).



Go on to Sheet 4

TA253876

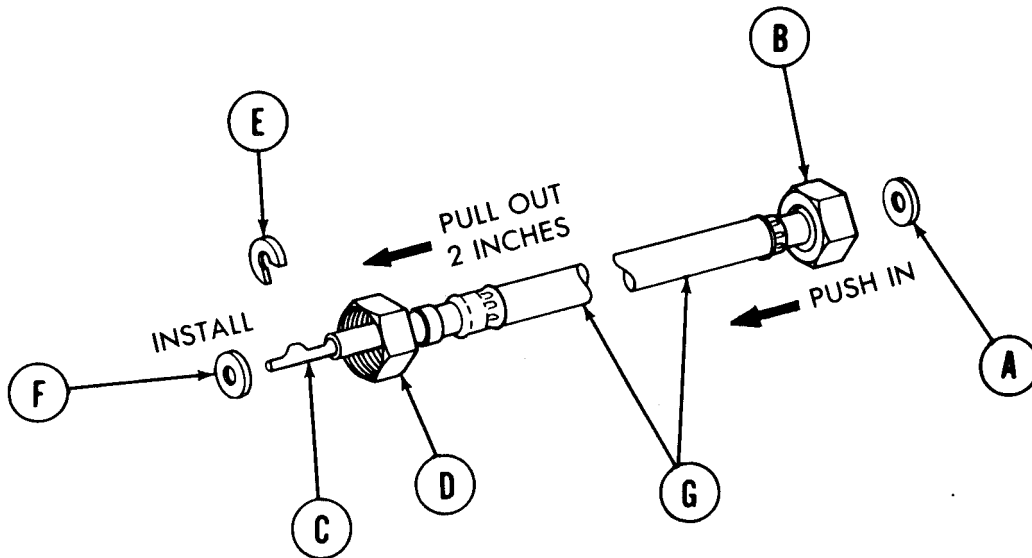
■ TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (EARLY MODEL) (Sheet 4 of 7)

CLEANING AND INSPECTION:

1. Using dry cleaning solvent (Item 54, Appendix D), clean all component parts.
2. Inspect all component parts for damage or wear and replace as required.

ASSEMBLY:

1. Install flat washer (A) into tachometer adapter end (B).
2. Install core (C) through adapter end (B).
3. Using pliers, pull core (C) approximately 2 inches from tachometer drive end (D).
4. Install slotted washer (E) and new gasket (F).
5. Push core (C) back into flexible shaft (G) until seated.

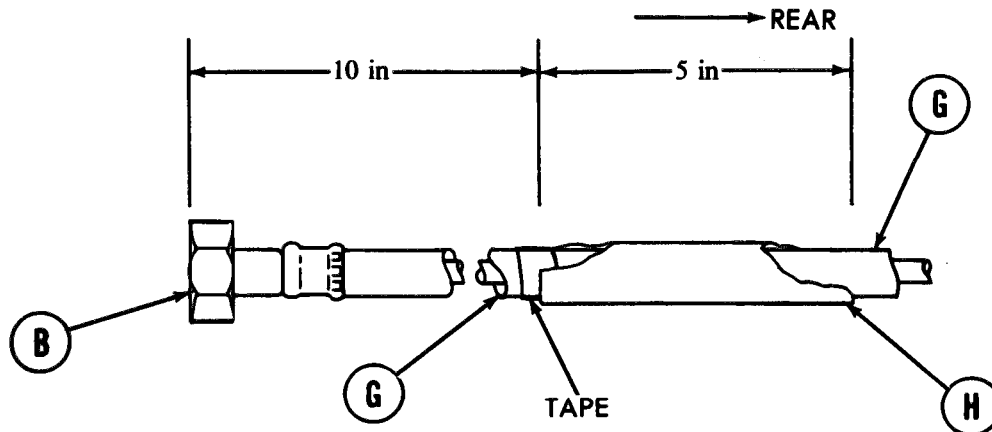


NOTE

if replacing or installing plastic tubing on flexible shaft (G), do steps 6 through 9. If not, go directly to INSTALLATION, Page 20-27.

## TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (EARLY MODEL) (Sheet 5 of 7)

6. Using steel rule, measure back approximately 10 inches from tachometer adapter end (B).
7. From 10-inch mark, wrap shaft (G) with tape (Item 58, Appendix D) 5 inches to rear until shaft (G) is approximately 5/8-inch in diameter.



8. Place heat shrinkable plastic tubing (H) over tape.

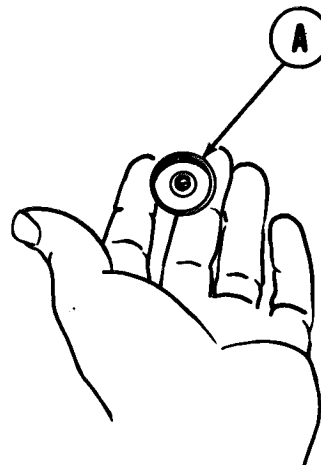
**CAUTION**

Avoid overheating in one spot as plastic tubing melts easily.

9. Using heat gun, shrink tubing by moving hot air back and forth over entire length of tubing.

**INSTALLATION:**

1. Person in powerplant compartment attach wire (Item 59, Appendix D) to end of shaft (A).
2. Person in turret pull on wire to thread shaft (A) back into position.



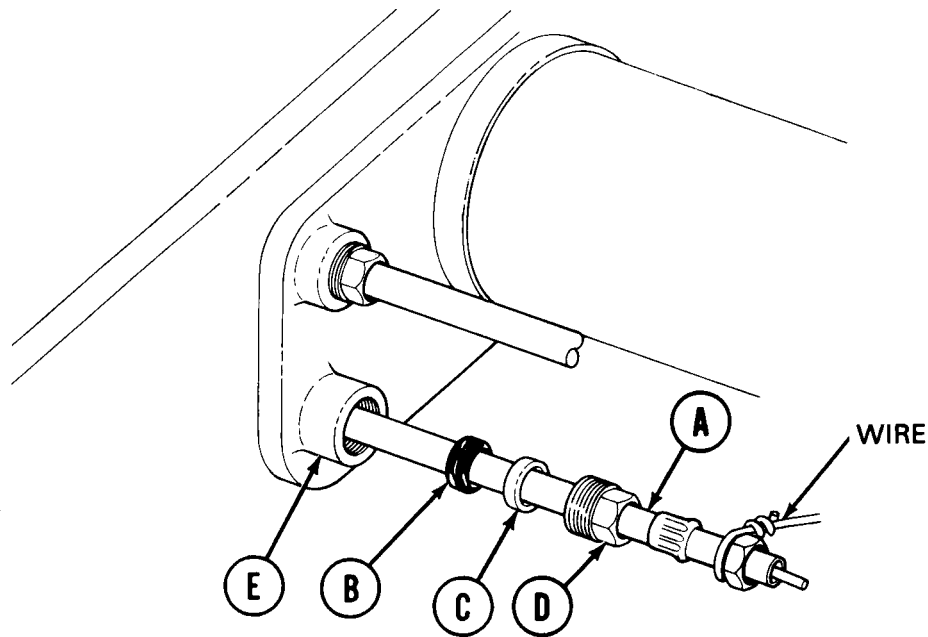
Go on to Sheet 6

TA253878

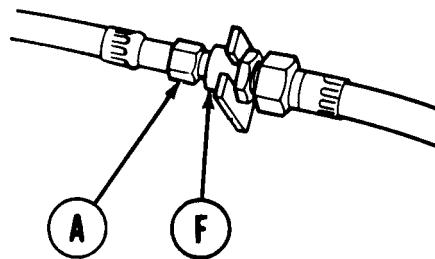
Change 1 20-27

■ TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (EARLY MODEL) (Sheet 6 of 7)

3. Remove wire from shaft (A).
4. Install new seal (B) onto tachometer shaft (A).
5. Install new bushing (C) onto tachometer shaft (A).
6. Slide packing nut (D) onto tachometer shaft (A) and push bushing (C) and seal (B) into bulkhead housing (E).



7. Using hands, connect tachometer shaft (A) to adapter (F).
8. Using 1 inch wrench, tighten packing nut (D) into bulkhead housing (E).
9. Using 3/4 inch wrench, tighten tachometer shaft (A) to adapter (F).
10. Close turret platform access door.

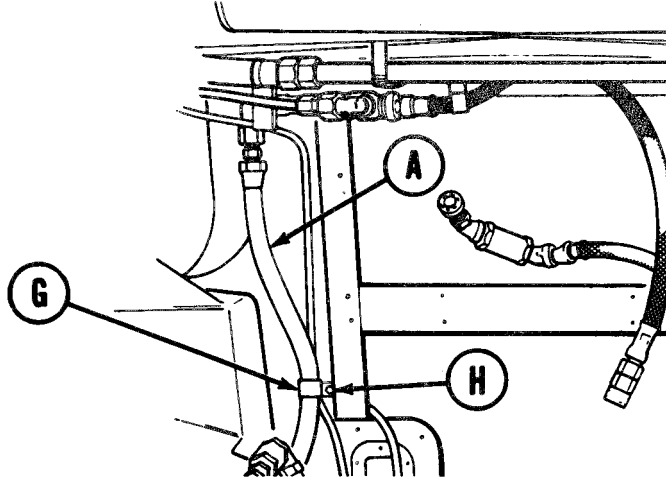


Go on to Sheet 7

TA253879

## TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (EARLY MODEL) (Sheet 7 of 7)

11. In powerplant compartment, install clamp (G) onto tachometer shaft (A).
12. Using 7/16 inch wrench, install lockwasher screw (H) through clamp (G) into bulkhead mount.



13. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).
14. Start engine and check that tachometer operates (TM 9-2350-222-10).

End of Task

TA253880

Change 1 20-29

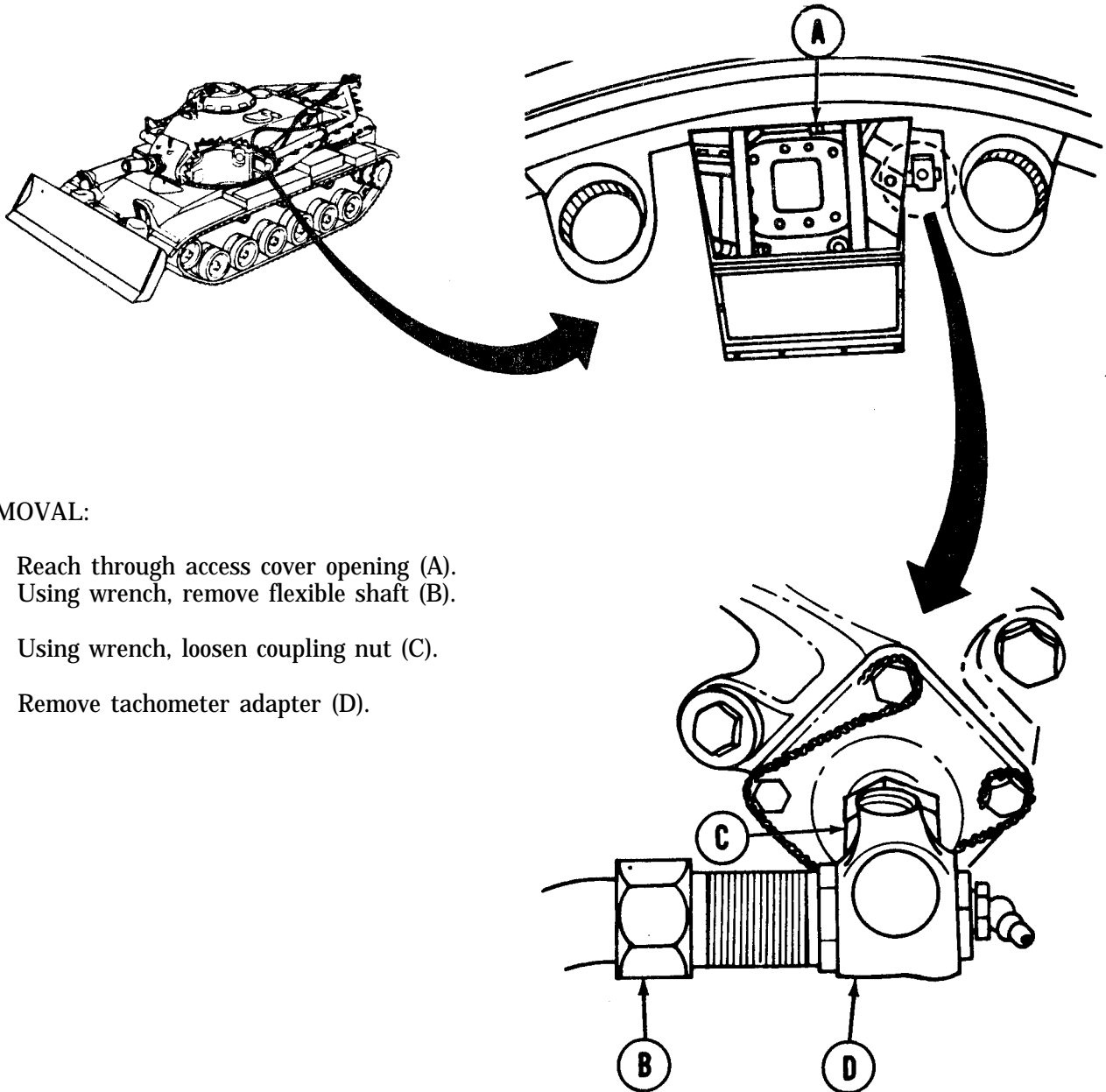
TACHOMETER DRIVE ADAPTER REPLACEMENT AND REPAIR (Sheet 1 of 2)

TOOLS: Long round nose pliers  
1 in. combination box and open end wrench  
Lubricating kit

■ SUPPLIES: Gasket (7539688)

REFERENCES: TM 9-2350-222-10  
LO 9-2350-222-12

PRELIMINARY PROCEDURE: Remove engine upper access cover (page 16-40)



REMOVAL:

1. Reach through access cover opening (A). Using wrench, remove flexible shaft (B).
2. Using wrench, loosen coupling nut (C).
3. Remove tachometer adapter (D).

Go on to Sheet 2

TA25388



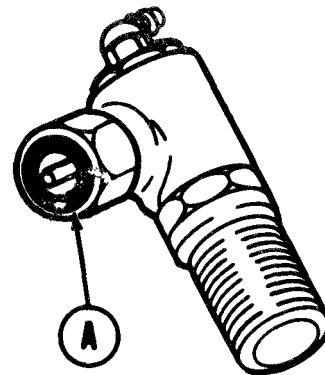
**TACHOMETER DRIVE ADAPTER REPLACEMENT AND REPAIR (Sheet 2 of 2)**

**DISASSEMBLY:**

Using pliers, remove gasket (A). Throw gasket away.

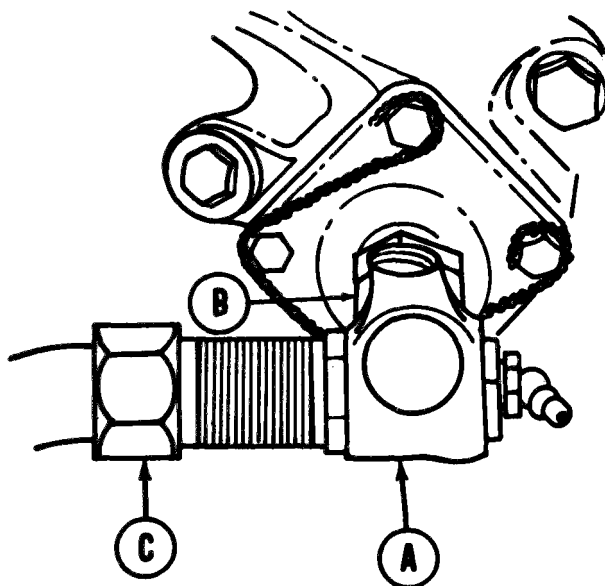
**ASSEMBLY:**

1. Using fingers, install new gasket (A).



**INSTALLATION:**

1. Reach through access cover opening and place tachometer drive adapter (A) in position.
2. Using wrench, tighten coupling nut (B).
3. Using wrench, install flexible shaft (C).



4. Start engine (TM 9-2350-222-10).
5. Make sure tachometer operates.
6. Install engine upper access cover (page 16-40).

**End of Task**

**TA253882**

TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (LATE MODEL) (Sheet 1 of 5)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	20-33
Disassembly	20-34
Assembly	20-35
Installation	20-36

TOOLS: 3/4 in. combination box and open end wrench  
 7/16 in. combination box and open end wrench  
 Slip joint pliers

SUPPLIES: Wire (Item 59, Appendix D) (8-10 ft. lg.)  
 Lockwasher (MS35338-44)  
 Gasket (7539688)

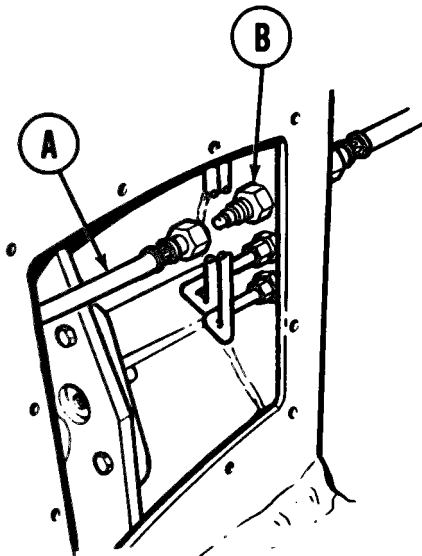
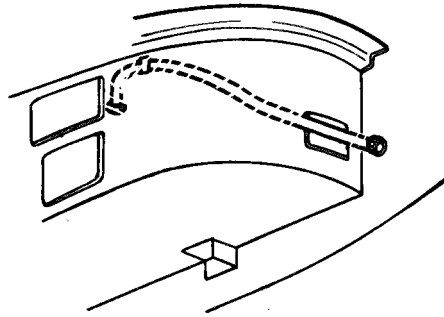
PERSONNEL: Two

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURES: Remove powerplant (page 5-1)  
 Remove left side bulkhead cover (page 16-33)

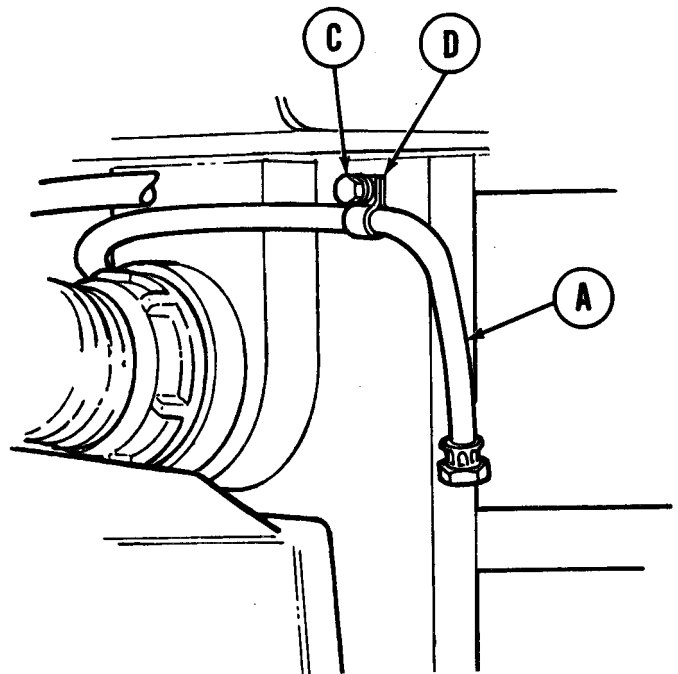
TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (LATE MODEL) (Sheet 2 of 5)

**REMOVAL:**



**LEFT SIDE BULKHEAD**

1. Using 3/4 inch wrench, disconnect rear flexible shaft (A) from bulkhead adapter (B).



**ENGINE COMPARTMENT**

2. Using 7/16 inch wrench, remove screw and lockwasher (C) securing clamp (D). Throw lockwasher away.
3. Remove clamps (D) from rear flexible shaft (A).
4. Attach wire (Item 59, Appendix D) to bulkhead adapter end of rear flexible shaft (A) inside turret.

Go on to Sheet 3

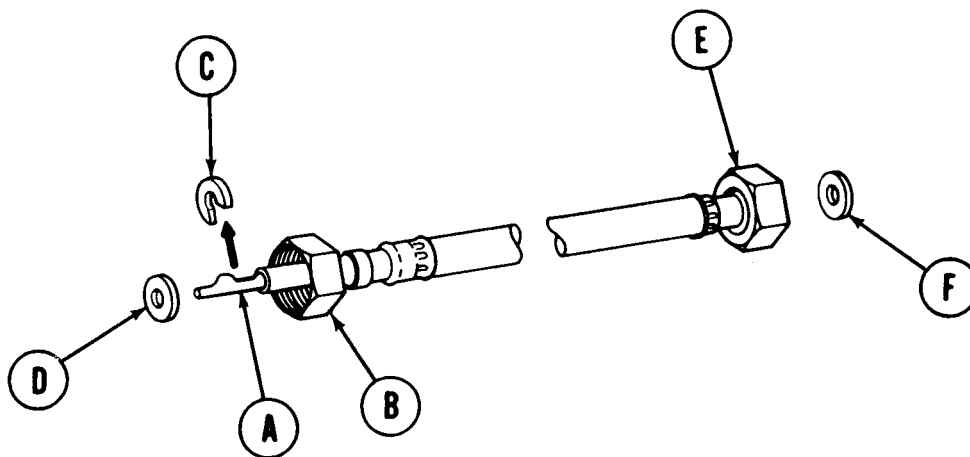
TA253884

**TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (LATE MODEL) (Sheet 3 of 5)**

5. Pull rear flexible shaft into engine compartment area.
6. Detach wire from end of rear flexible shaft, leaving wire in place, and remove rear flexible shaft from vehicle.

**DISASSEMBLY:**

1. Using pliers, pull out core (A) approximately 2 inches from tachometer drive adapter end (B).
2. Using pliers, remove slotted washer (C) and gasket (D). Throw gasket away.
3. Using pliers, pull out core (A) from tachometer adapter end (E).
4. Remove flat washer (F) from adapter end (E).

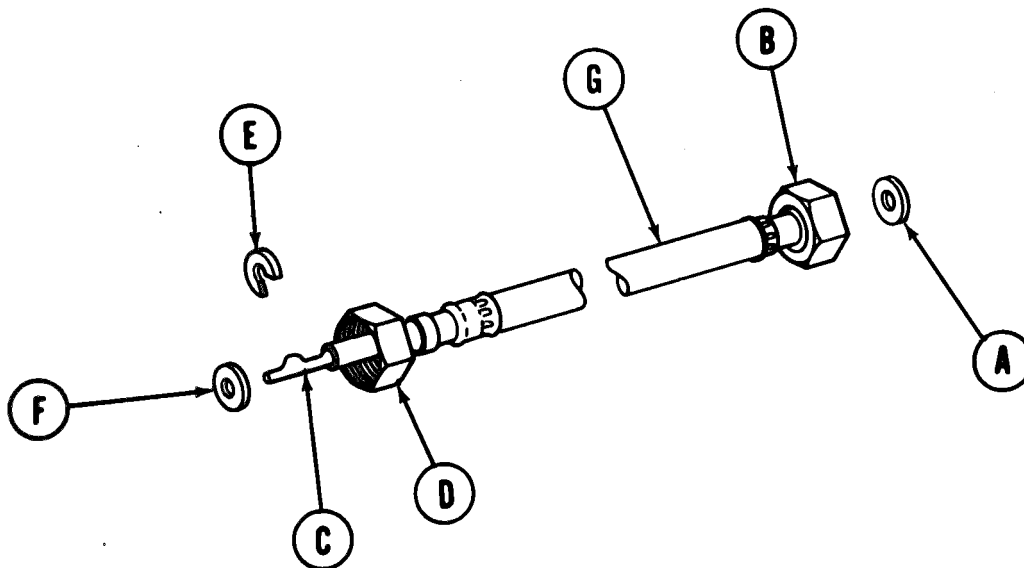


Go on to Sheet 4

TA2538

**TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (LATE MODEL) (Sheet 4 of 5)****ASSEMBLY:**

1. Install flat washer (A) into tachometer adapter end (B).
2. Install core (C) through adapter end (B).
3. Using pliers, pull core (C) approximately 2 inches from tachometer drive end (D).
4. Install slotted washer (E) and new gasket (F).
5. Push core (C) back into flexible shaft (G) until seated.

**Go on to Sheet 5**

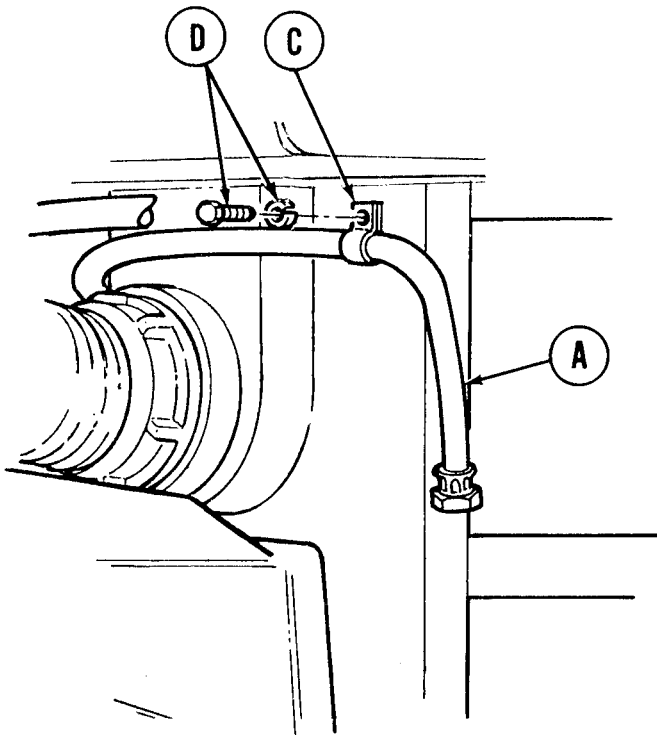
TA253886

**Change 1 20-35**

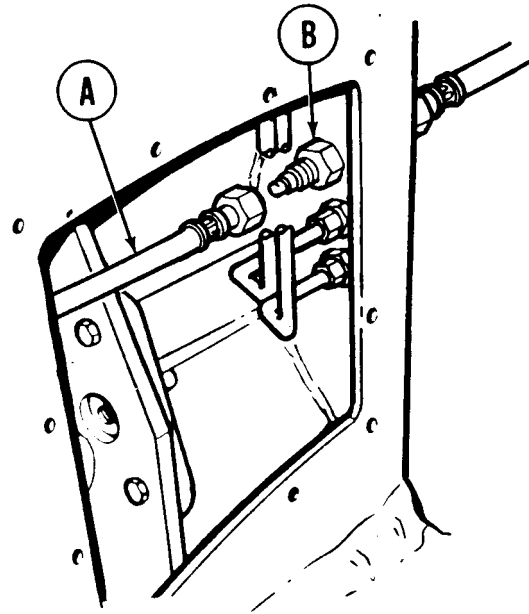
**TACHOMETER REAR FLEXIBLE SHAFT REPLACEMENT (LATE MODEL) (Sheet 5 of 5)**

**INSTALLATION:**

1. Place rear flexible shaft (A) into engine compartment area and attach wire to bulkhead adapter end of shaft (A).
2. Pull wire into turret compartment until rear flexible shaft (A) is accessible through side bulkhead opening.
3. Detach wire from end of rear flexible shaft.
4. Using 3/4 inch wrench, connect rear flexible shaft (A) to bulkhead adapter (B).



**ENGINE COMPARTMENT**



**LEFT SIDE BULKHEAD**

5. Install clamp (C) onto rear flexible shaft (A).
6. Using 7/16 inch wrench, secure clamp (C) to hull with screw and new lockwasher (D).
7. Install left side bulkhead cover (page 16-34).
8. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).
9. Start engine and check that tachometer operates (TM 9-2350-222-10).

End of Task

TA253887

## CHAPTER 21

## FIRE EXTINGUISHER SYSTEM MAINTENANCE INDEX

PROCEDURE	PAGE
Exterior Release Handle Control Assembly Replacement	21-2
Exterior Release Handle Body Assembly Replacement	21-7
Exterior Release Handle Body Assembly Repair	21-11
Exterior Release Handle Mounting Bracket Replacement	21-12
Interior Release Mechanism Replacement	21-14
Interior Release Control Assembly Replacement	21-18
Interior Release Mechanism Repair	21-23
Interior Release Mechanism Mounting Bracket Replacement (Early Model)	21-34
Interior Release Mechanism Mounting Bracket Replacement (Late Model)	21-36
Control Valve Assembly Replacement	21-36.2
Control Valve Assembly Repair	21-48
Fixed Fire Extinguisher Cylinder Replacement (Early Model)	21-49
Fixed Fire Extinguisher Cylinder Replacement (Late Model)	21-52
Fixed Fire Extinguisher Manifold Assembly Replacement (Late Model)	21-52.3
Tube Assembly First Shot Cylinder Line Replacement	21-52.6
Flexible Hose Assembly Second Shot Cylinder No. 1 Replacement	21-55
Flexible Hose Assembly Second Shot Cylinder No. 2 Replacement	21-56
Valve Body Replacement (Fixed Fire Extinguisher Lines)	21-57
Body, Elbow, Delay Bottle and Related Tubes Replacement (Early Model)	21-60
Body, Elbow, Delay Bottle and Related Tubes Replacement (Late Model)	21-66.2
Fire Extinguisher Bracket Repair	21-67
Right Discharge Valve, Tubes, and Related Parts Replacement (Fixed Fire Extinguisher)	21-71
Left Discharge Valve, Tubes, and Related Parts Replacement (Fixed Fire Extinguisher)	21-76
Upper Discharge Valve, Tubes, and Related Parts Replacement (Fixed Fire Extinguisher)	21-81
Engine Compartment Discharge Manifold Replacement (Fixed Fire Extinguisher)	21-87

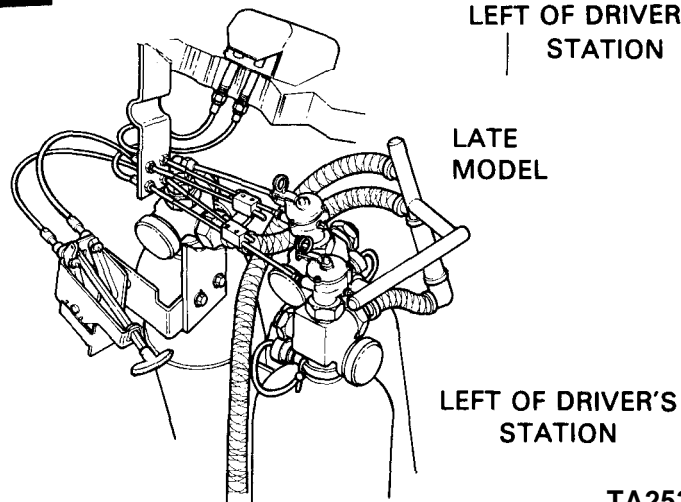
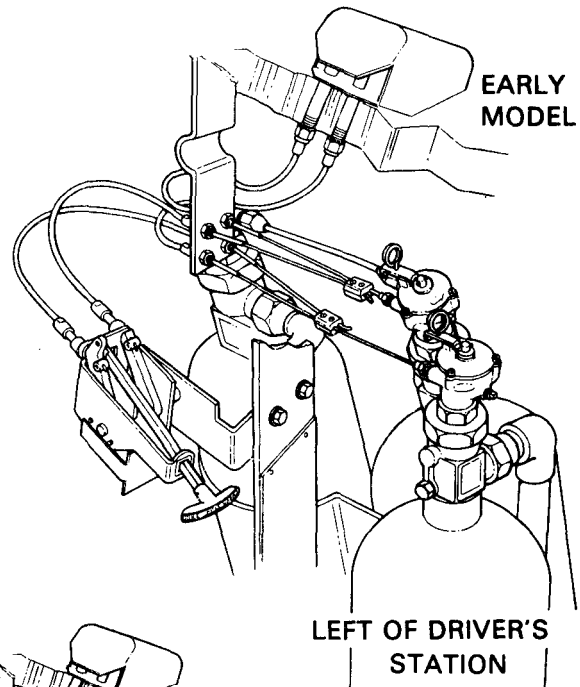
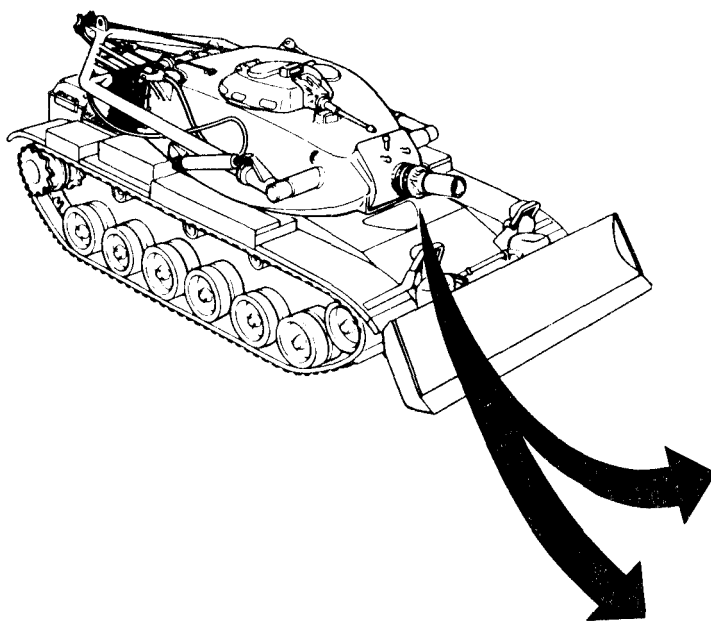
EXTERIOR RELEASE HANDLE CONTROL ASSEMBLY REPLACEMENT (Sheet 1 of 5)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	21-3
Installation	21-4

- TOOLS: 3/32 in. socket head screw key (allen wrench)  
 Flat-tip screwdriver  
 5/16 in. combination box and open end wrench  
 9/16 in. combination box and open end wrench (2 required)

PRELIMINARY PROCEDURE: Remove exterior release handle body assembly (page 21-7).



NOTE

This procedure is written for replacement of either the 1st or 2nd shot exterior release handle control assemblies. Observe and note routing of control assembly as you remove it.

Go on to Sheet 2

TA253888

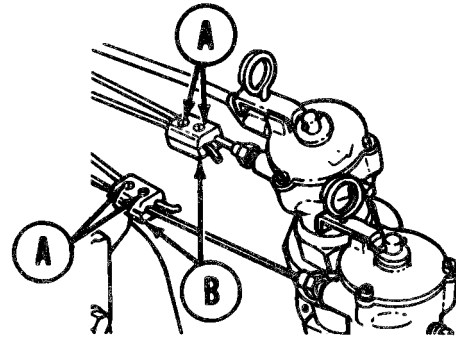


EXTERIOR RELEASE HANDLE CONTROL ASSEMBLY REPLACEMENT (Sheet 2 of 5)

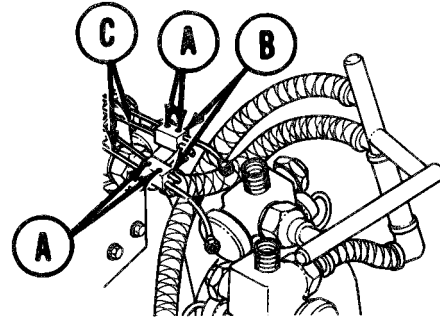
NOTE

On early model, perform steps 1 and 2 and continue with step 3. On late models start with step 2.1.

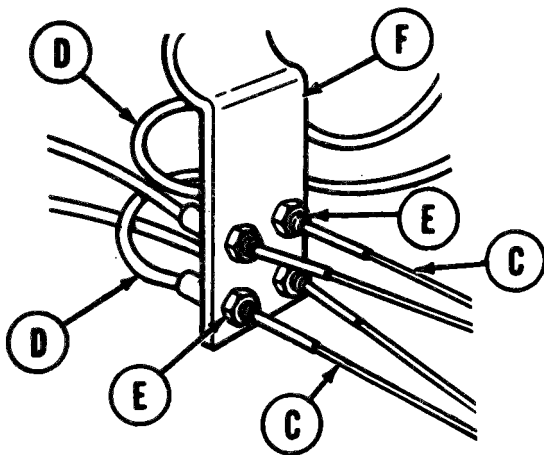
1. Using screwdriver, remove screws (A) securing clamps (B).
2. Remove clamps (B).
- 2.1. Using socket head screw key, loosen four screws (A) securing clamps (B) to cables (C).
- 2.2. Remove cables (C) from clamps (B).



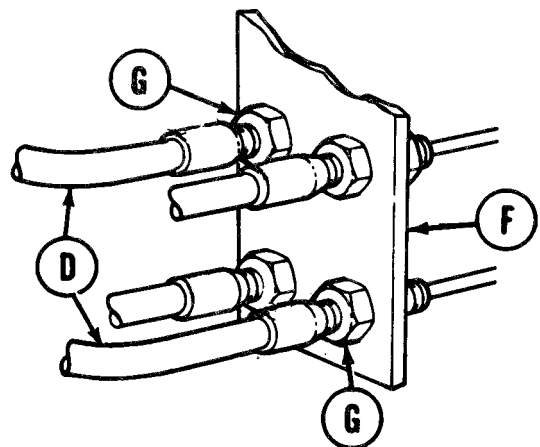
EARLY MODEL



LATE MODEL

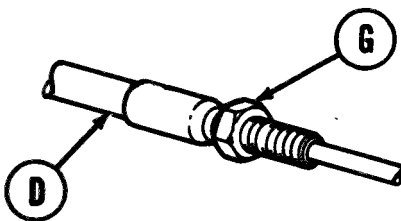


3. Pull cable (C) from control housing (D).
4. Using two 9/16 inch wrenches, remove nut (E) securing control housing (D) to bracket (F).
5. Remove control housing (D) from bracket (F).
6. Using 9/16 inch wrench, remove nut (G) from control housing (D).



NOTE

Bracket (F) rotated 90° to show installation of nuts (E) and (G) and control housing (D).

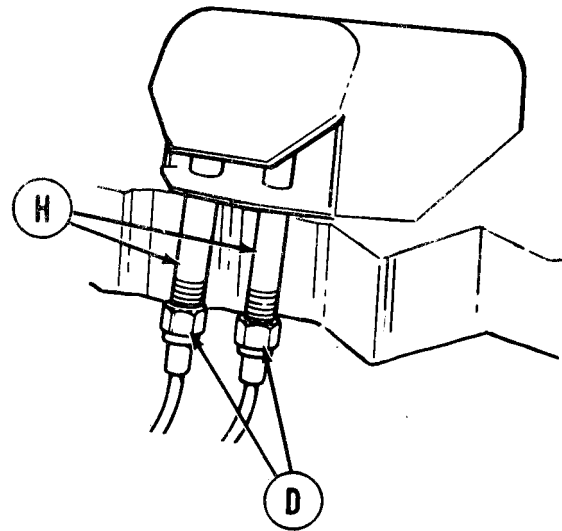


Go on to Sheet 3

TA253889

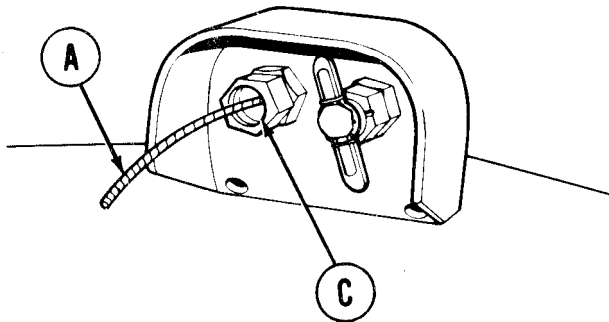
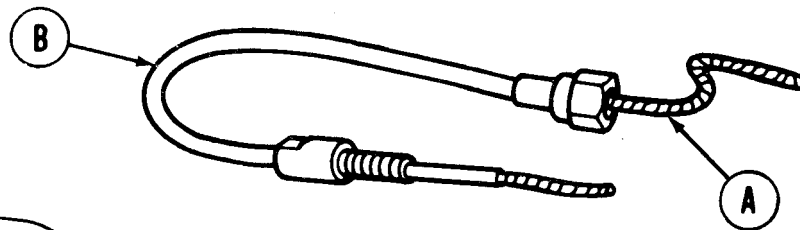
EXTERIOR RELEASE HANDLE CONTROL ASSEMBLY REPLACEMENT (Sheet 3 of 5)

- Using 5/16 inch wrench, remove control housing (D) from bracket tube (H).
- Remove control housing (D) from vehicle.



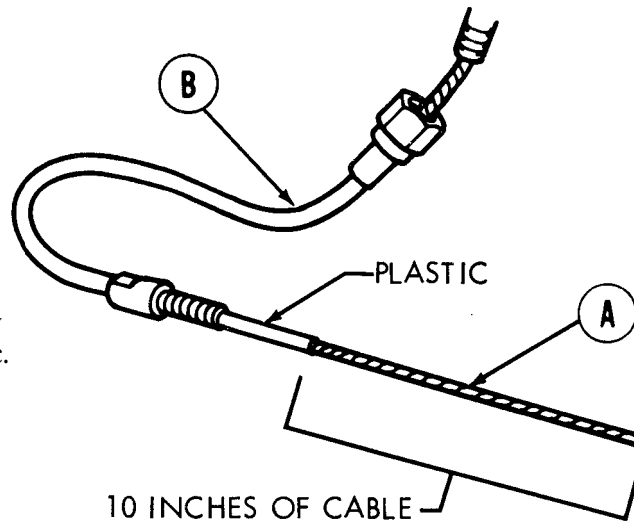
INSTALLATION:

- Install cable (A) through control housing (B).



- Install cable (A) through exterior body (C) and into vehicle. Leave approximately 6 inches of cable (A) sticking out of body (C).

- Install exterior release handle body assembly (page 21-9). Do not install control valves.
- Inside driver's compartment, install control housing (B) onto cable (A) until approximately 10 inches of cable is visible at end with plastic.

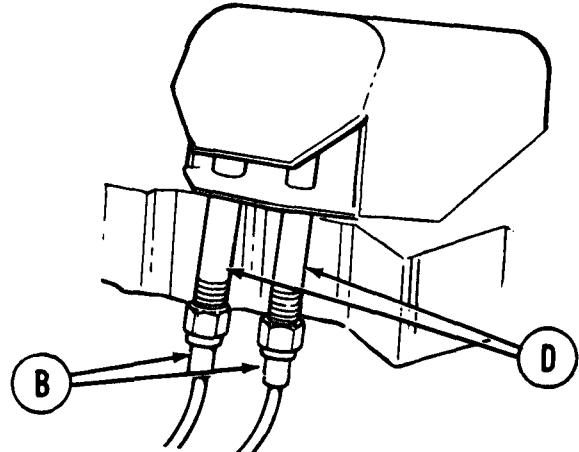
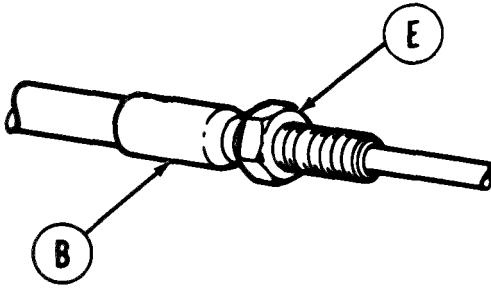


Go on to Sheet 4

TA140907

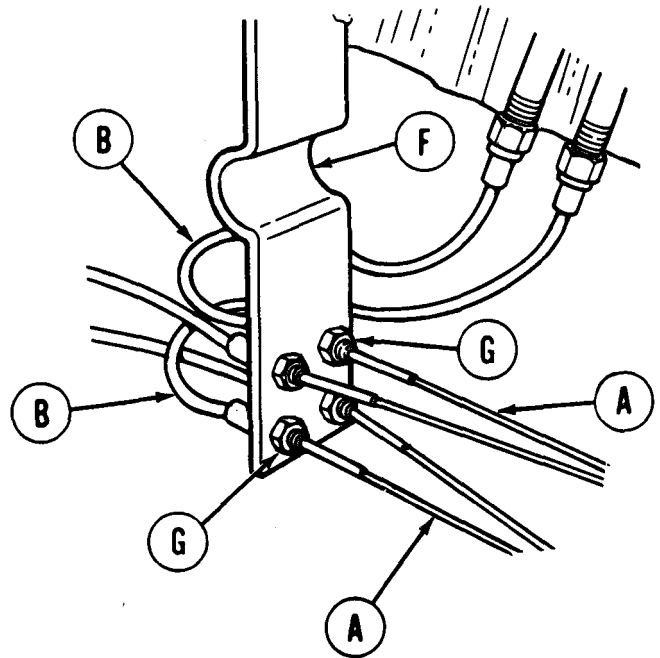
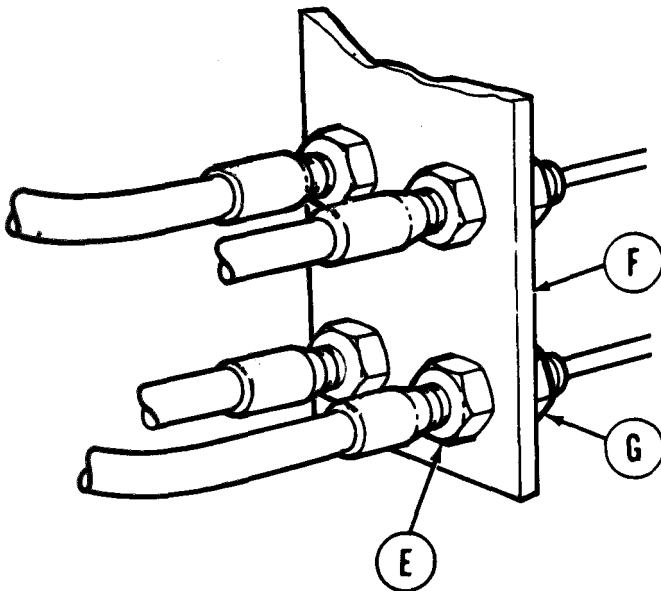
EXTERIOR RELEASE HANDLE CONTROL ASSEMBLY REPLACEMENT (Sheet 4 of 5)

- Using 5/16 inch wrench, secure control housing (B) to bracket tube (D).



- Using 9/16 inch wrench, install nut (E) onto control housing (B).

- Route cable (A) and control housing (B) through bracket (F).
- Install nut (G) onto control housing (B).



- Using two 9/16 inch wrenches, tighten nuts (E) and (G) to secure control housing (B) to bracket (F).

Go on to Sheet 5

TA140908

EXTERIOR RELEASE HANDLE CONTROL ASSEMBLY REPLACEMENT (Sheet 5 of 5)

10. Pull cables (A) toward fire extinguisher cylinders until tight.

NOTE

On early model perform steps 11, 12, 13 and 14. On late model perform steps 13.1 through 14.

11. Install cables (A) through clamps (H).

12. Install four screws (J) into clamps (H).

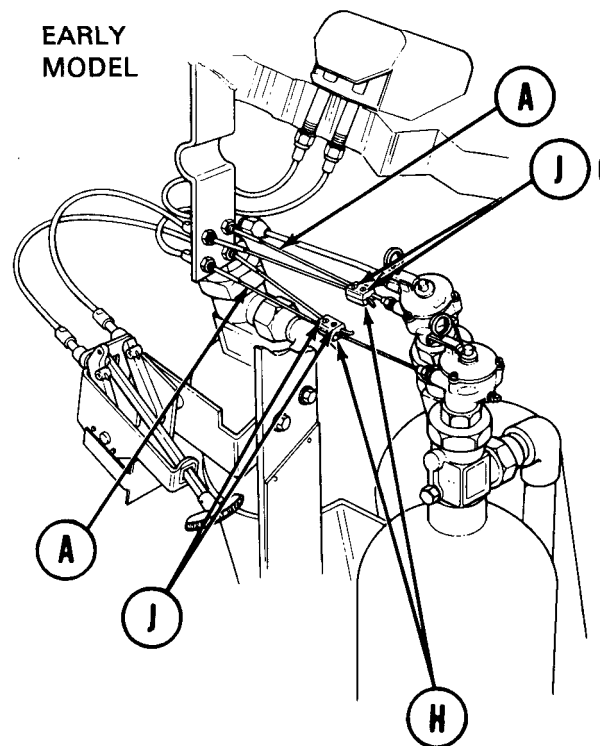
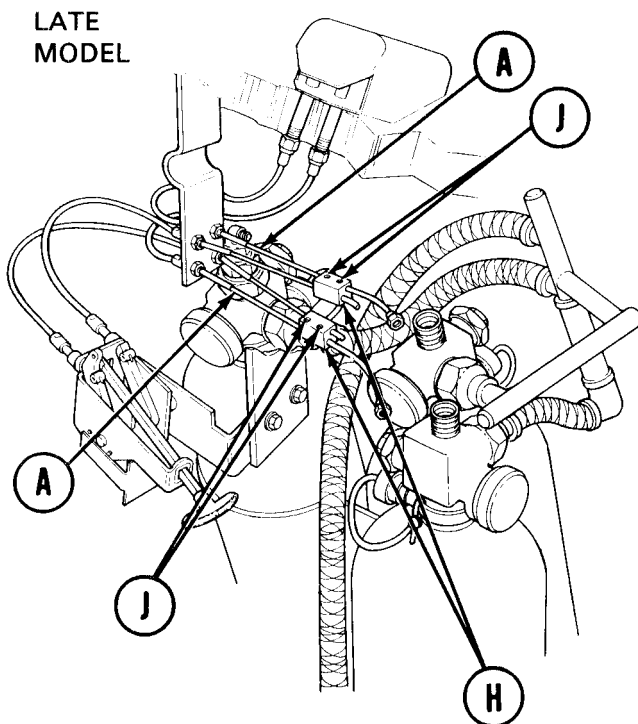
13. Using hex head screw key, tighten screws (J) to secure clamps (H) on cables (A).

13.1. Install clamps (H) approximately 2 inches from end of shorter cable.

13.2. Install two screws (J) into clamps (H).

13.3. Using screwdriver, tighten screws (J) to secure clamps (H) on cables.

14. Install control valve assemblies (page 21-41).



End of Task

TA253890

EXTERIOR RELEASE HANDLE BODY ASSEMBLY REPLACEMENT (Sheet 1 of 4)

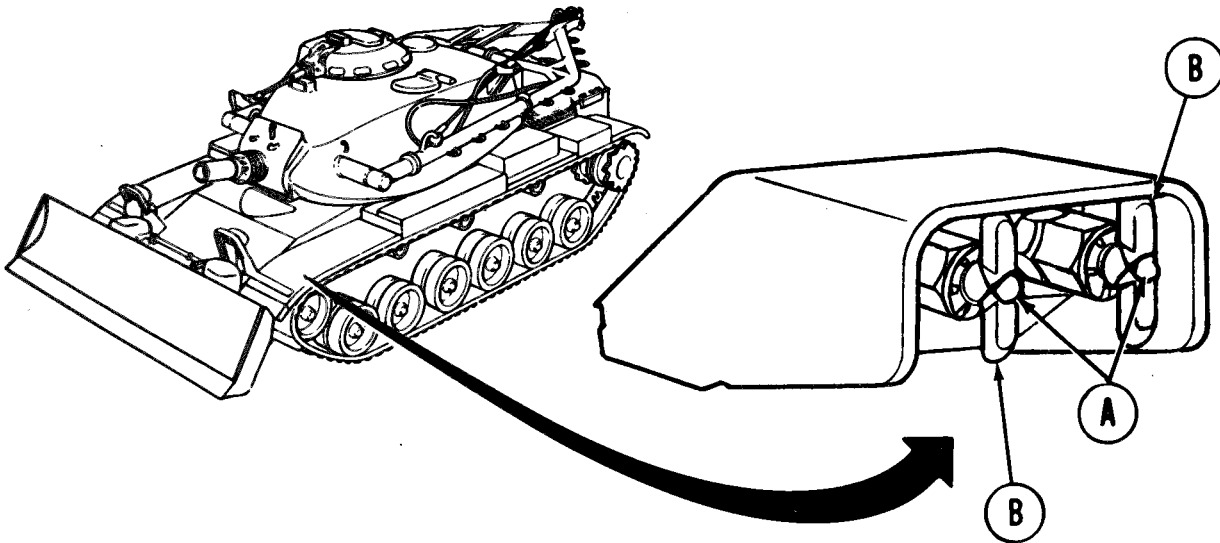
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	21-7
<b>Installation</b>	21-9

TOOLS: Diagonal cutting pliers  
 1/2 in. combination box and open end wrench  
 Slip joint pliers

SUPPLIES: Copper wire with lead seal (MS51938-4)

PRELIMINARY PROCEDURE: Remove control valve assemblies (page 21-37).



**REMOVAL:**

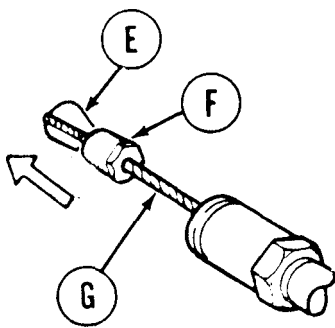
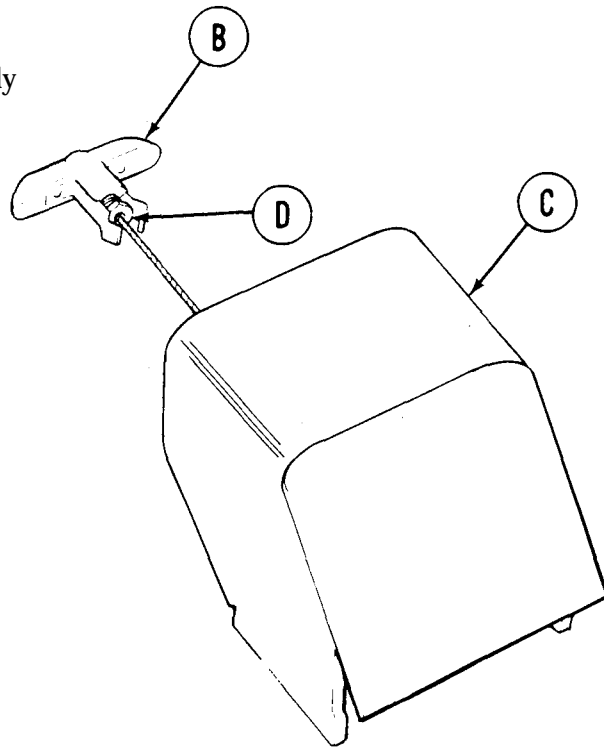
1. Using cutting pliers, cut wire seal (A) from body assembly (B). Throw seal away.

Go on to Sheet 2

TA140910

EXTERIOR RELEASE HANDLE BODY ASSEMBLY REPLACEMENT (Sheet 2 of 4)

2. Pull body assembly (B) out of mounting bracket (C) until fastener (D) is exposed.
3. Using wrench, unscrew fastener (D) from body assembly (B).



**NOTE**

**Plug (E) does not separate from socket (F) in step 4.**

4. Using pliers, push plug (E) out of socket (F) until cable (G) is unlocked and can be removed from plug (E).
5. Remove cable (G) from plug (E).

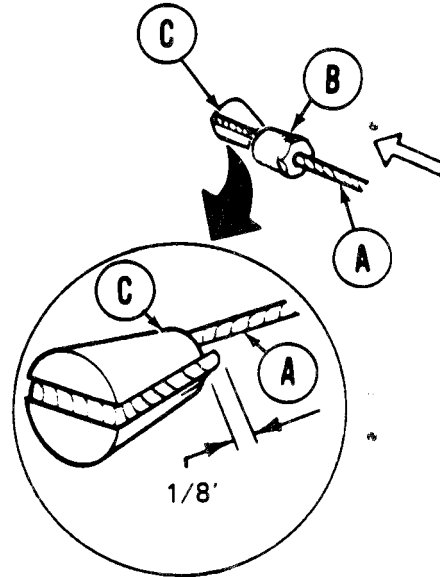
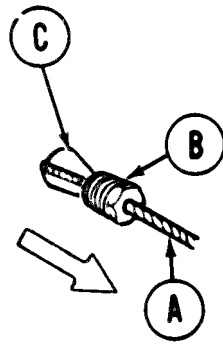
Go on to Sheet 3

TA140911

**EXTERIOR RELEASE HANDLE BODY ASSEMBLY REPLACEMENT (Sheet 3 of 4)**

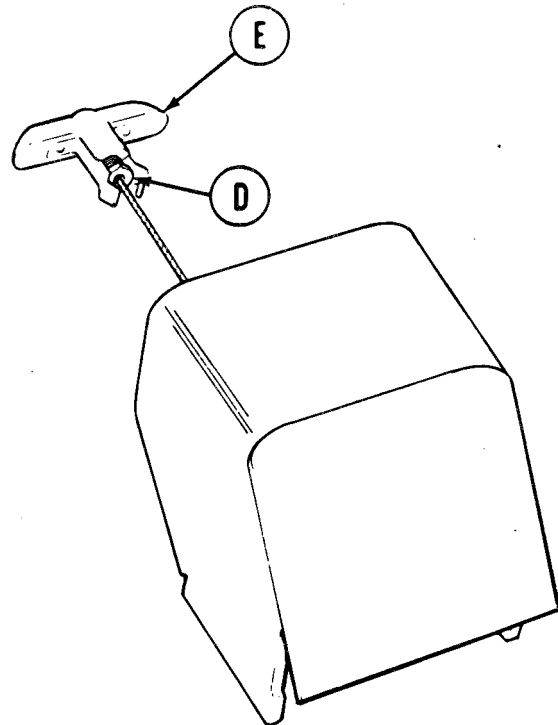
**INSTALLATION:**

1. Thread cable (A) into socket (B).
2. Lay cable (A) in groove around plug (C). Allow minimum of 1/8 inch of cable extending beyond plug (C).



3. Using pliers, seat plug (C) into socket (B).

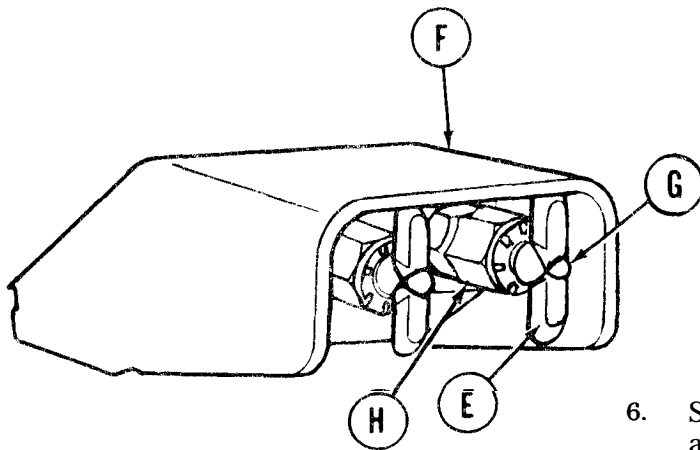
4. Install fastener assembly (D) into body assembly (E).
5. Using wrench, tighten fastener assembly (D) into body assembly (E).



Go on to Sheet 4

TA140912

EXTERIOR RELEASE HANDLE BODY ASSEMBLY REPLACEMENT (Sheet 4 of 4)



6. Squeeze spring clips on body assembly (E) and insert body assembly (E) into bracket (H).
7. Place seal as shown. Wrap wire from seal (G) around coupling (H), cross over body assembly (E) handle and thread end of wire through seal (G). (See Appendix C, General Maintenance Section.)
8. Using slip joint pliers, crimp seal (G) onto wire.
9. Install control valve assemblies (page 21-41).

End of Task

TA140913

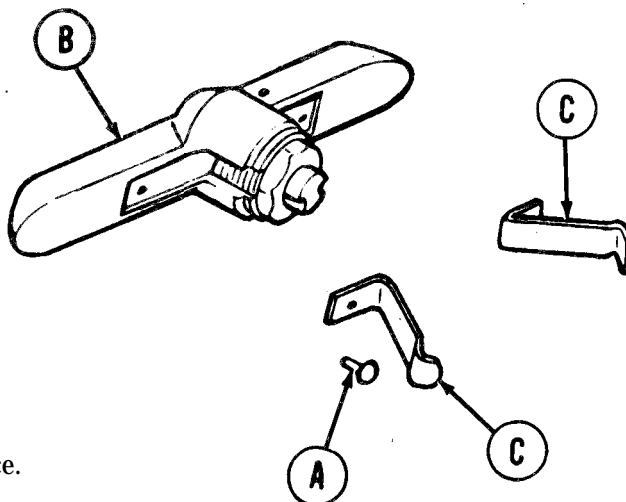


## EXTERIOR RELEASE HANDLE BODY ASSEMBLY REPAIR (Sheet 1 of 1)

TOOLS: Ball peen hammer  
Flat-tip screwdriver with 1/8 in. tip

PRELIMINARY PROCEDURE: Remove body assembly (page 21-7)

1. Using screwdriver, pry two drive screws (A) from body (B). Throw screws away.
2. **Remove two clip springs (C).**
3. Replace defective parts as required.



## ASSEMBLY:

1. Place body (B) on flat surface.
2. Position clip springs (C) onto body (B).
3. Using hammer and punch, tap new drive screws (A) into body (B).
4. Install body assembly (page 21-9).

End of Task

TA140914

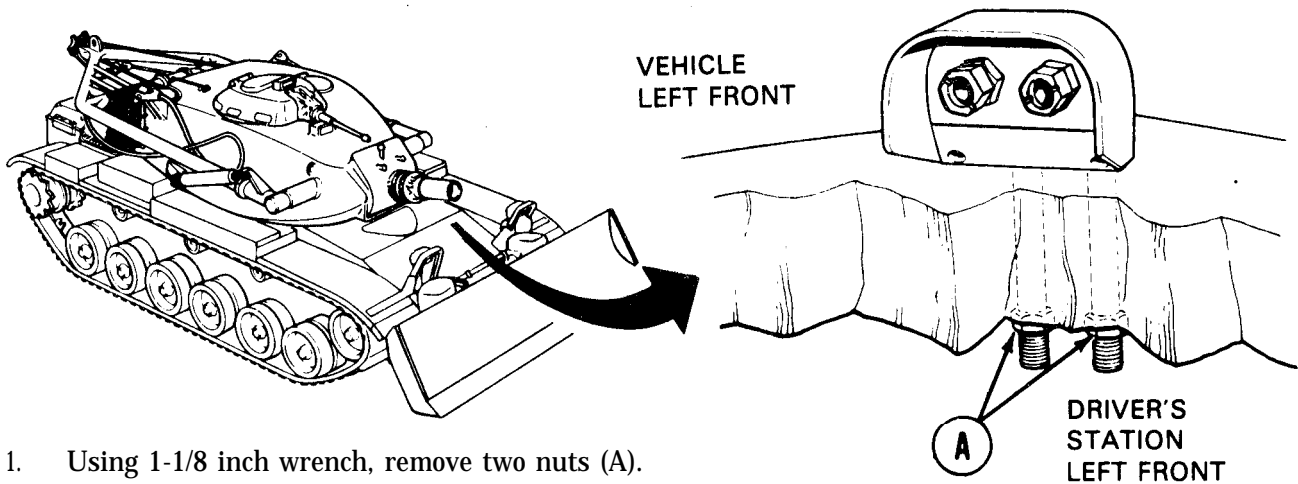
EXTERIOR RELEASE HANDLE MOUNTING BRACKET REPLACEMENT (Sheet 1 of 2)

TOOLS: 1-1/8 in. open end wrench  
 1 in. combination box and open end wrench  
 Flat-tip screwdriver with 5/16 in. tip

SUPPLIES: Preformed packings (11591390) (2 required)

PRELIMINARY PROCEDURES: Remove control valve assemblies (page 21-37)  
 Remove exterior release handle control assemblies (page 21-3)

REMOVAL:

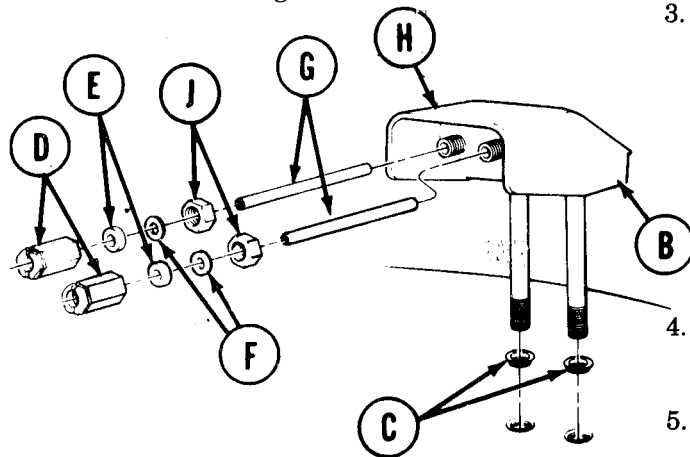


1. Using 1-1/8 inch wrench, remove two nuts (A).
2. Remove mounting bracket (B) from vehicle.

3. Using hands, remove preformed packings (C). Throw packings away.

NOTE

When removing couplings (D) in next step, bushing (E), washers (F), and tubes (G) will remain with couplings (D).



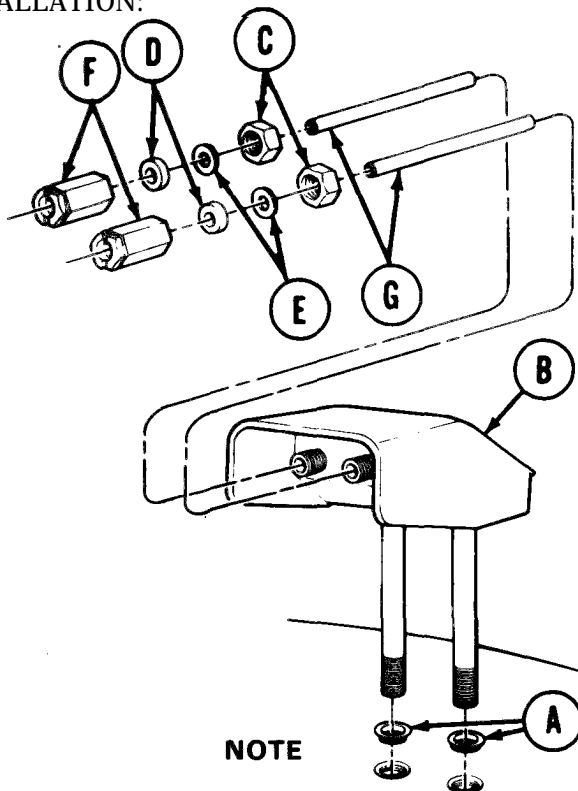
4. Using 1 inch wrench, remove couplings (D) from mounting bracket (H).
5. Using 1-1/8 inch wrench, remove nuts (J) from mounting bracket (H).

6. Using hands, remove tubes (G) from couplings (D).
7. Using screwdriver, remove washers (F) and bushings (E) from couplings (D).

Go on to Sheet 2

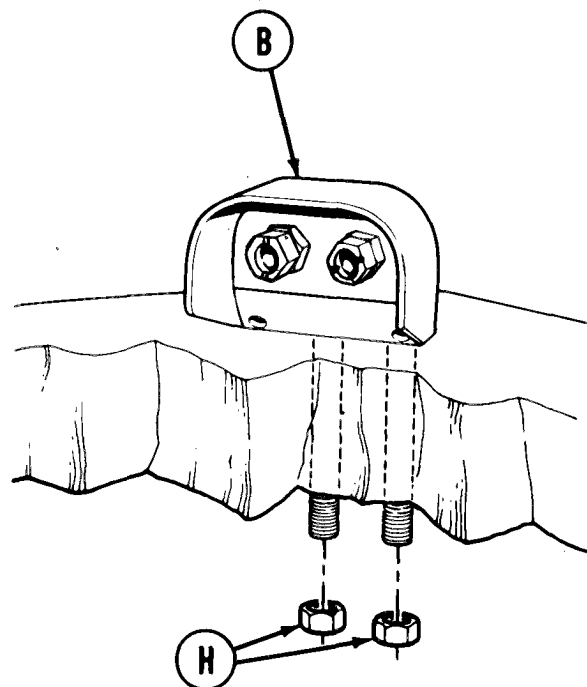
EXTERIOR RELEASE HANDLE MOUNTING BRACKET REPLACEMENT (Sheet 2 of 2)

INSTALLATION:



1. Using hands, install new preformed packings (A) onto bracket (B).
2. Using 1-1/8 inch wrench, screw nuts (C) all the way down onto bracket (B).
3. Press bushings (D) and washers (E) into couplings (F).
4. Using hands, push one end of tubes (G) through washers (E) and bushings (D) until ends of tubes (G) are flush with inside of couplings (F).
5. Insert tubes (G) through holes in bracket (B) and tighten couplings (F) finger tight to bracket (B).

6. Using 1 inch wrench to hold coupling (F), use 1-1/8 inch wrench and tighten nuts (C) against coupling (F).
7. Place mounting bracket (B) onto vehicle.
8. Screw two nuts (H) to mounting bracket (B).
9. Using 1-1/8 inch wrench, tighten two nuts (H).
10. Install exterior release handle control assemblies (page 21-4).
11. Install exterior release handle body assemblies (page 21-9).
12. Install control valve assemblies (page 21-41).



End of Task

TA140916

INTERIOR RELEASE MECHANISM REPLACEMENT (Sheet 1 of 4)

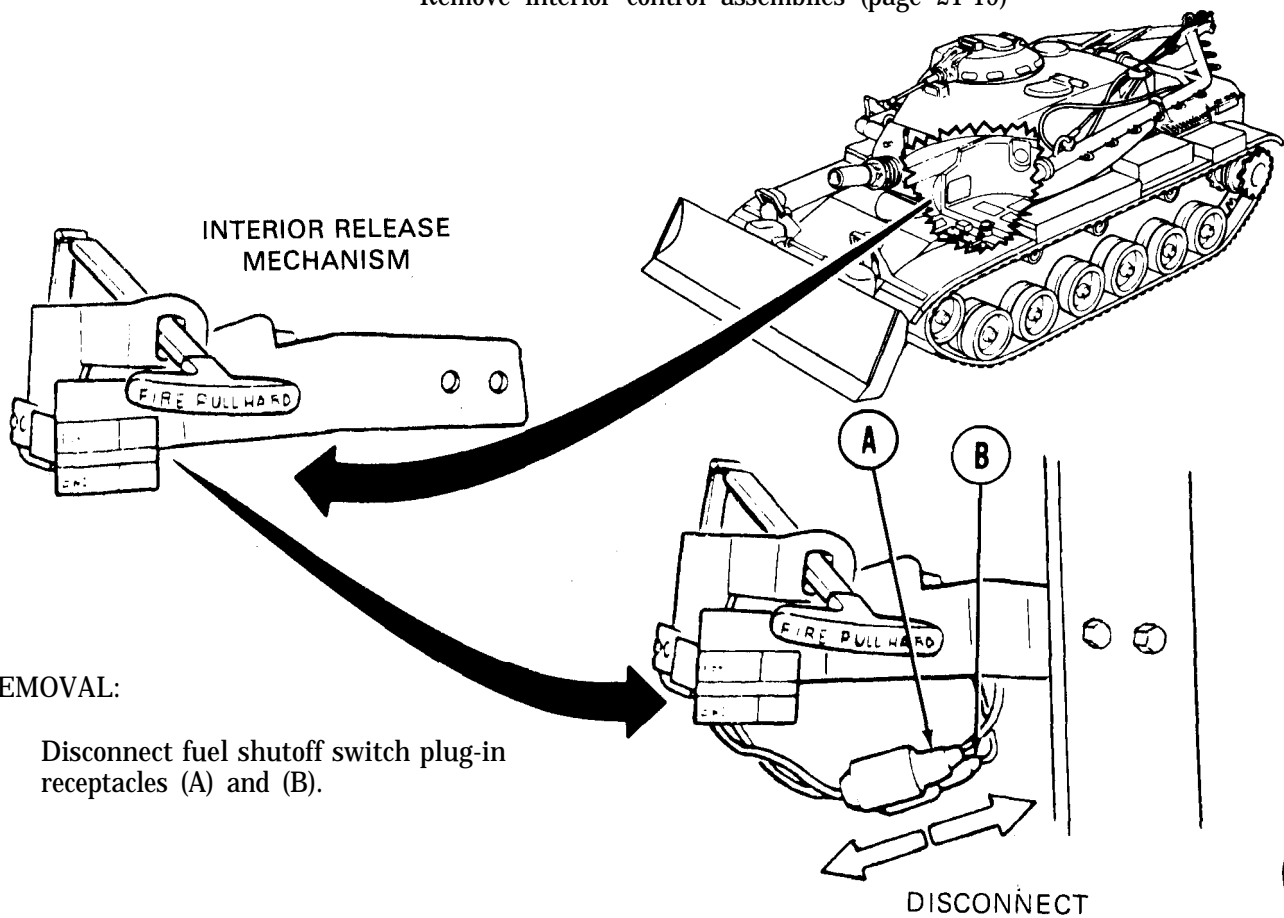
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	21-14
Installation	21-15

TOOLS: 1/2 in. combination box and open end wrench  
Slip joint pliers

SUPPLIES: Lead seal (MS51938-4)  
Silicone compound (Item 32, Appendix D)  
Lockwasher (MS35335-34) (2 required)

PRELIMINARY PROCEDURES: Remove control valves (page 21-37)  
Remove interior control assemblies (page 21-19)



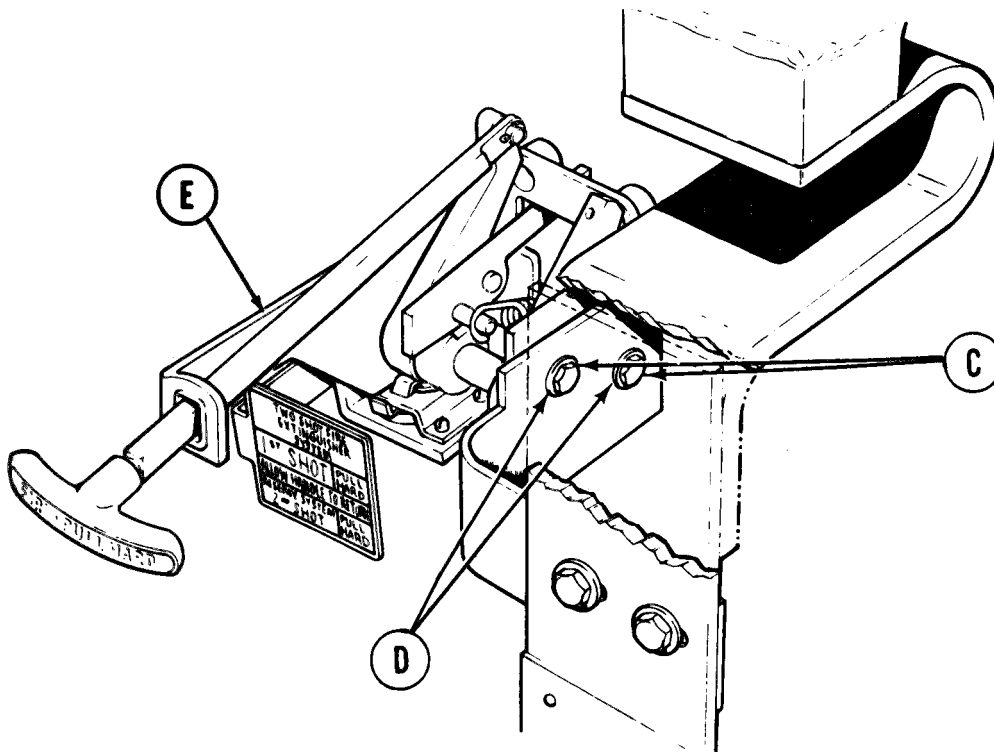
REMOVAL:

1. Disconnect fuel shutoff switch plug-in receptacles (A) and (B).

Go on to Sheet 2

TA140917

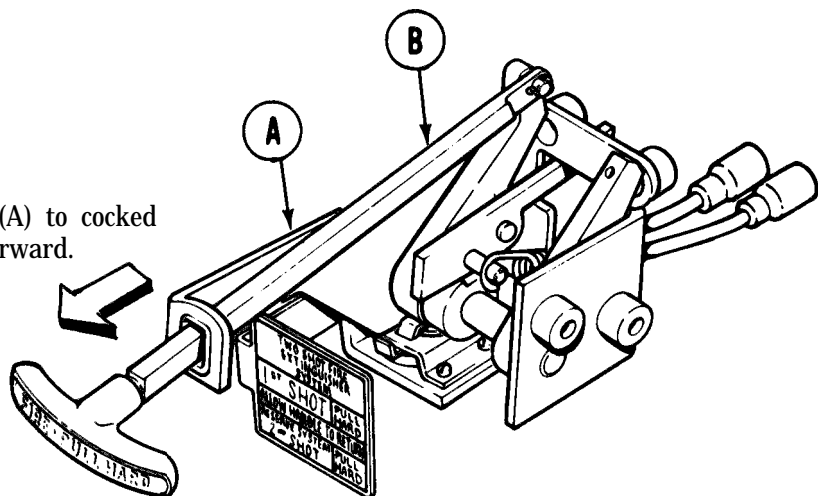
INTERIOR RELEASE MECHANISM REPLACEMENT (Sheet 2 of 4)



2. Using wrench, remove two screws (C) and lockwashers (D). Throw lockwashers away.
3. Remove interior release mechanism (E).

INSTALLATION:

1. Set interior release mechanism (A) to cocked position by pulling handle (B) forward.

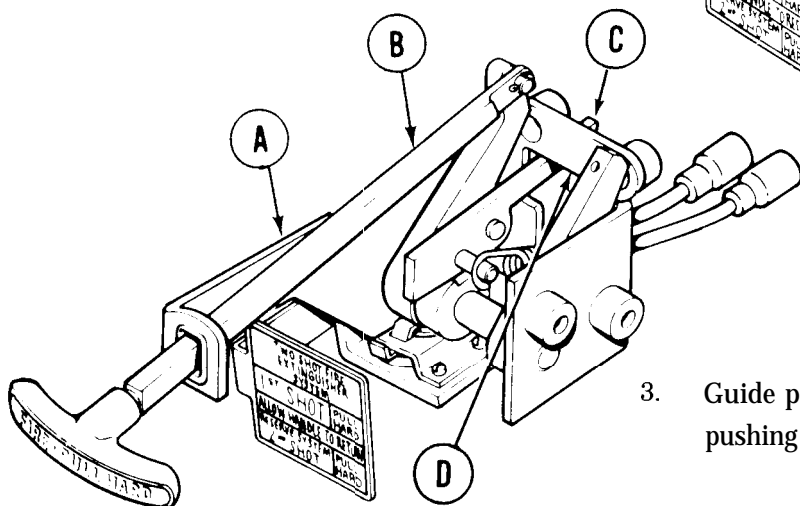
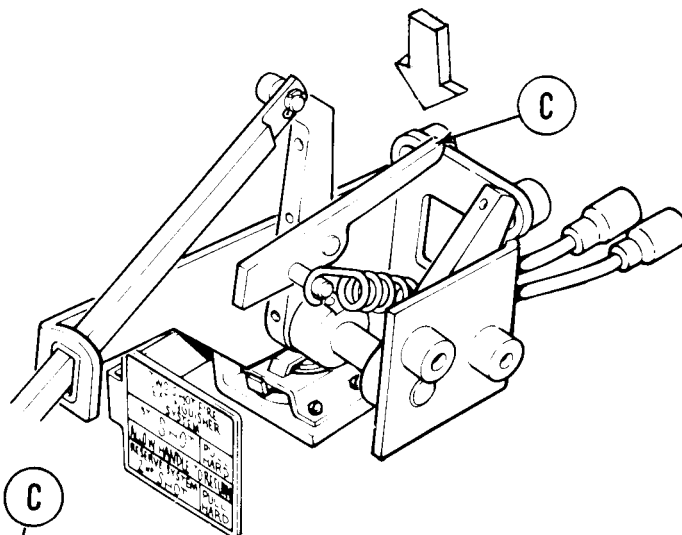


Go on to Sheet 3

TA140918

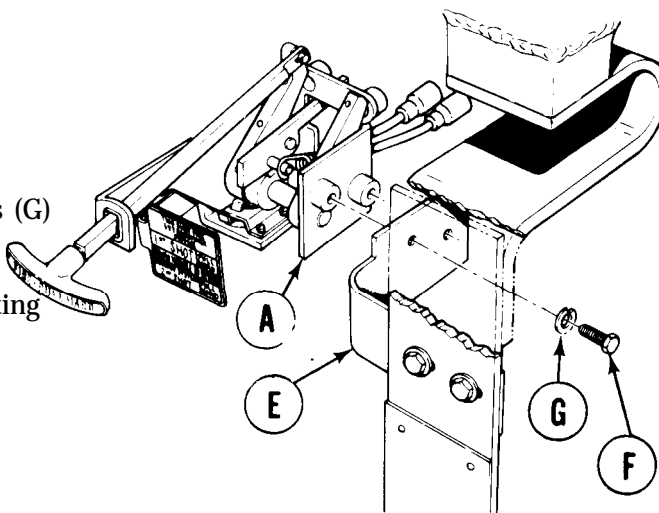
INTERIOR RELEASE MECHANISM REPLACEMENT (Sheet 3 of 4)

2. Push pawl (C) downward.



3. Guide pawl (C) into hole of bracket (D) while pushing handle (B) forward.

4. Place interior release mechanism (A) onto mounting bracket (E).
5. Start two screws (F) and new lockwashers (G) into mounting bracket (E) with hands.
6. Using wrench, tighten screws (F) to mounting bracket (E).



Go on to Sheet 4

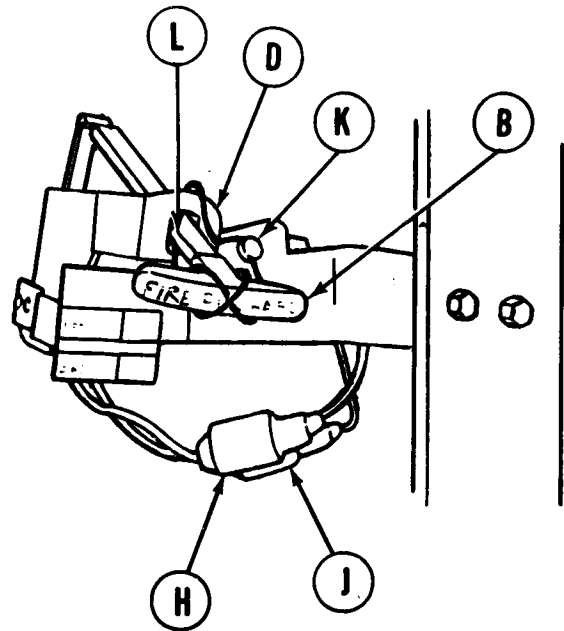
TA140919

## INTERIOR RELEASE MECHANISM REPLACEMENT (Sheet 4 of 4)

## NOTE

Apply silicone compound (Item 32, Appendix D) to male connectors prior to connecting connectors.

7. Connect fuel shutoff switch plug-in receptacles (H) and (J).
8. Install control valves (page 21-41).
9. Install interior control assemblies (page 21-21).
10. Using hands, install new lead seal (K) by threading wire of seal (K) through hole in handle (B), over top bracket (D) and back through guide (L).
11. Thread wire of seal (K) through hole in seal and pull wire until there is no slack.
12. Using pliers, squeeze seal (K) until tire cannot be removed.



End of Task

TA140920

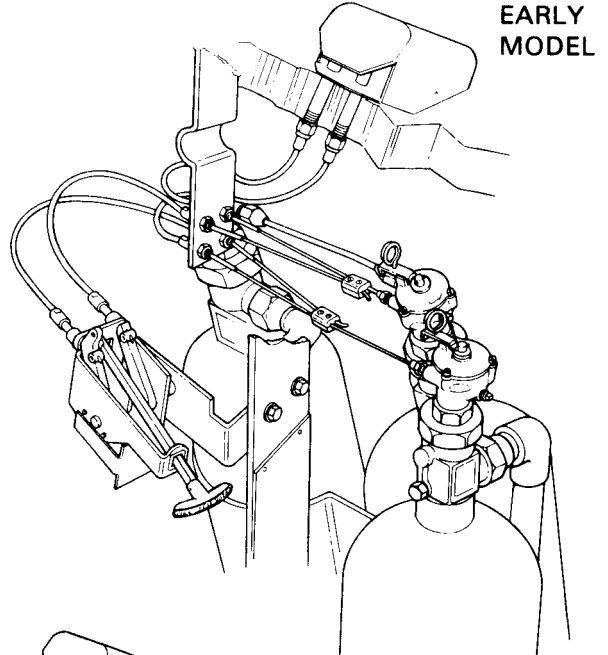
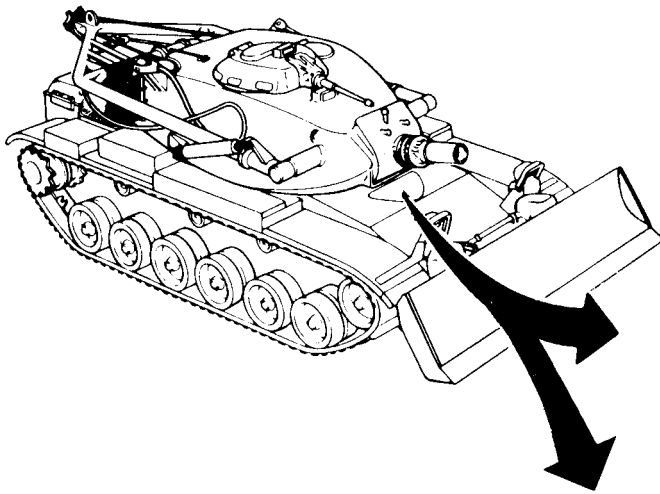
INTERIOR RELEASE MECHANISM CONTROL ASSEMBLY REPLACEMENT (Sheet 1 of 5)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	21-19
Installation	21-21

**TOOLS:** 7/64 in. socket head screw key (allen wrench)  
 9/16 in. combination box and open end wrench  
 5/16 in. combination box and open end wrench  
 3/32 in. socket head screw key (allen wrench)  
 Flat-tip screwdriver, 6 in. lg.

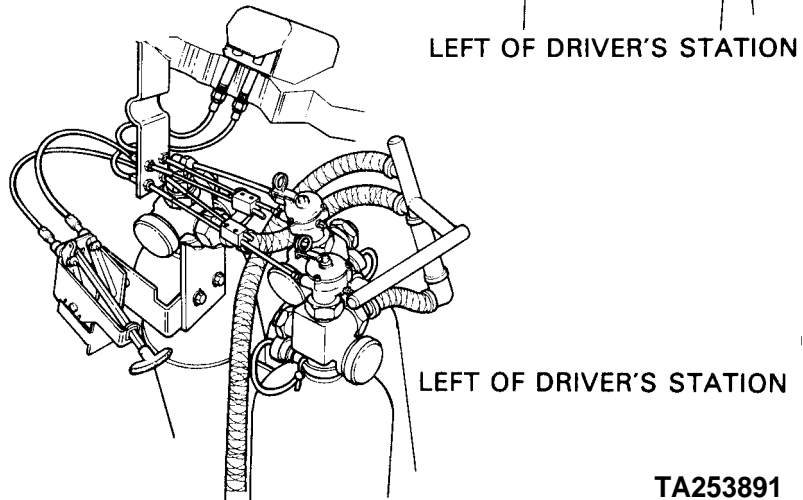
**PRELIMINARY PROCEDURE:** Remove control valve assemblies (page 21-37)



LATE MODEL

**NOTE**

This procedure is for replacement of either the 1st or 2nd shot interior release control assembly. Observe and note routing of the control assembly as You remove it.



Go on to Sheet 2

TA253891



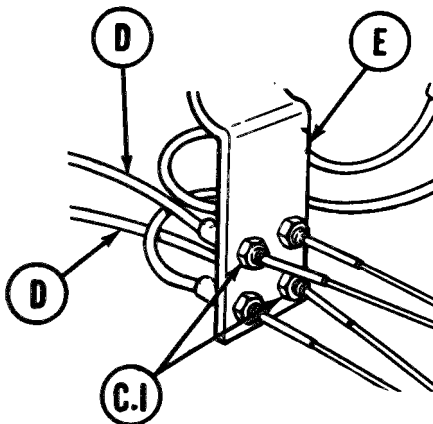
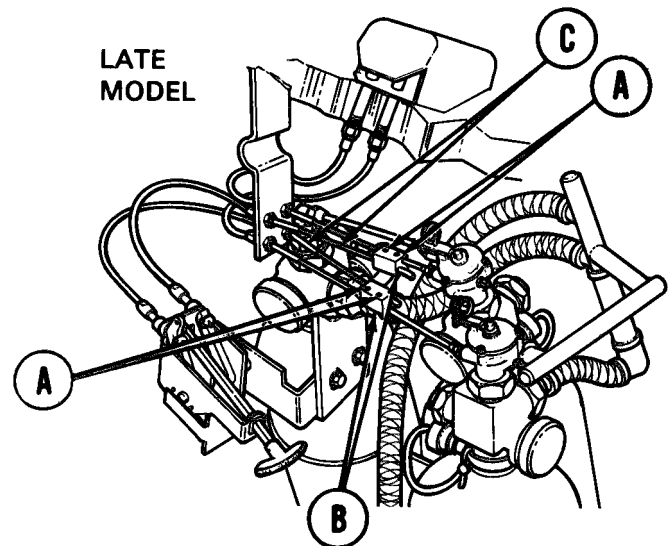
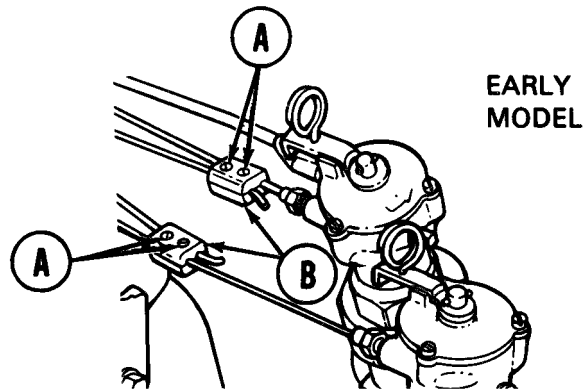
INTERIOR RELEASE MECHANISM CONTROL ASSEMBLY REPLACEMENT (Sheet 2 of 5)

REMOVAL:

NOTE

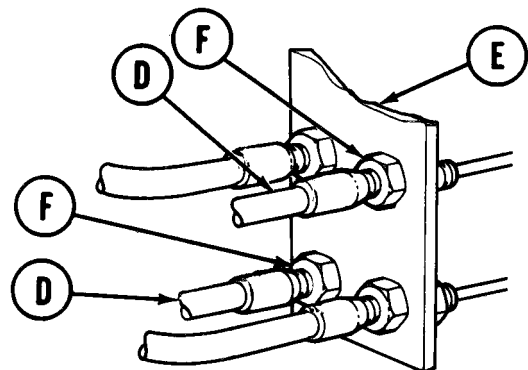
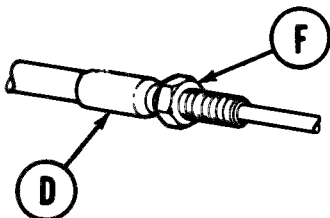
On early model perform steps 1 and 2 and continue with step 3. On late model start with step 2.1.

1. Using screwdriver, remove screws (A) securing clamps (B).
2. Remove clamps (B).
- 2.1. Using 7/64 inch allen wrench, loosen four screws (A) securing clamps(B) to cables (C).
- 2.2. Remove cables (C) from clamps (B).



3. Using two 9/16 inch wrenches, remove nut (C.1) securing control housing (D) to bracket (E).
4. Remove control housing (D) from bracket (E).

5. Using 9/16 inch and 5/16 inch wrenches, remove nut (F) from control housing (D).



NOTE

Bracket (E) rotated 90° to show installation of nuts (C) and (F) and control housing (D).

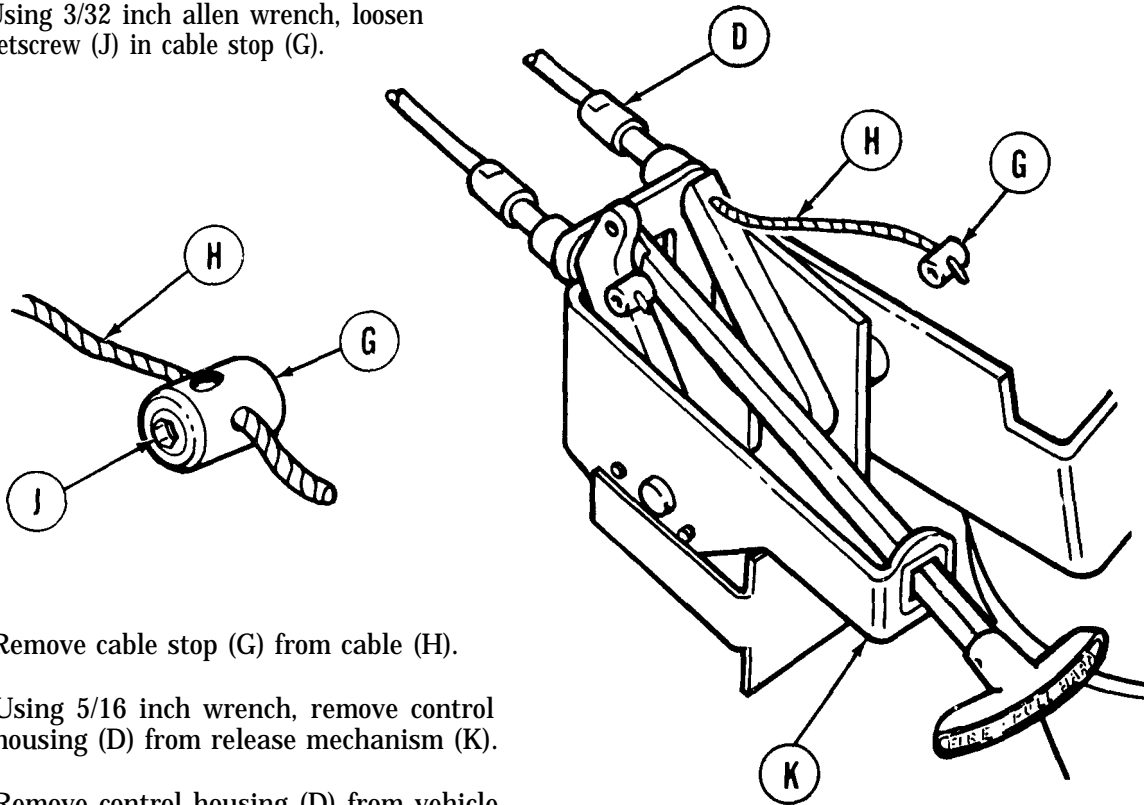
Go on to Sheet 3

TA253892

INTERIOR RELEASE MECHANISM CONTROL ASSEMBLY REPLACEMENT (Sheet 3 of 5)

6. Pull cable stop (G) and cable (H) from control housing (D).

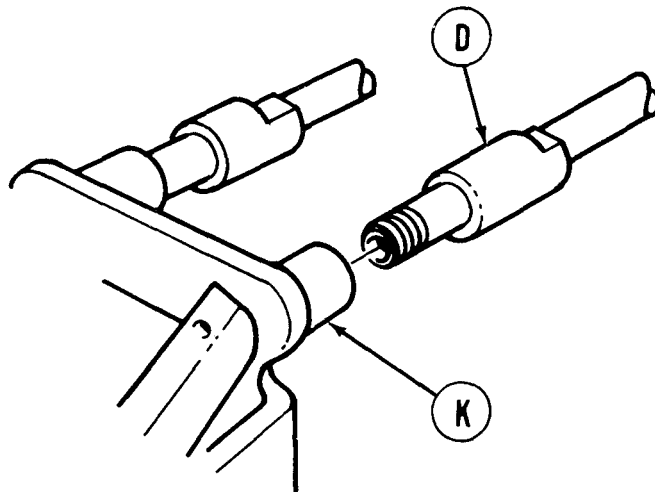
7. Using 3/32 inch allen wrench, loosen setscrew (J) in cable stop (G).



8. Remove cable stop (G) from cable (H).

9. Using 5/16 inch wrench, remove control housing (D) from release mechanism (K).

10. Remove control housing (D) from vehicle.



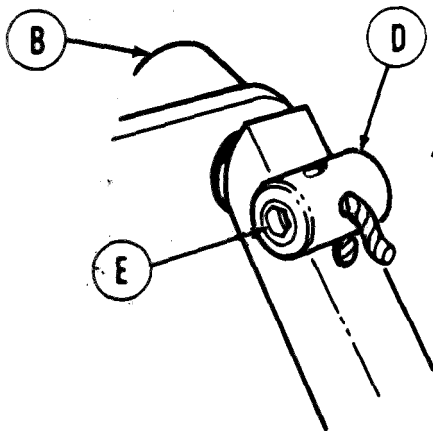
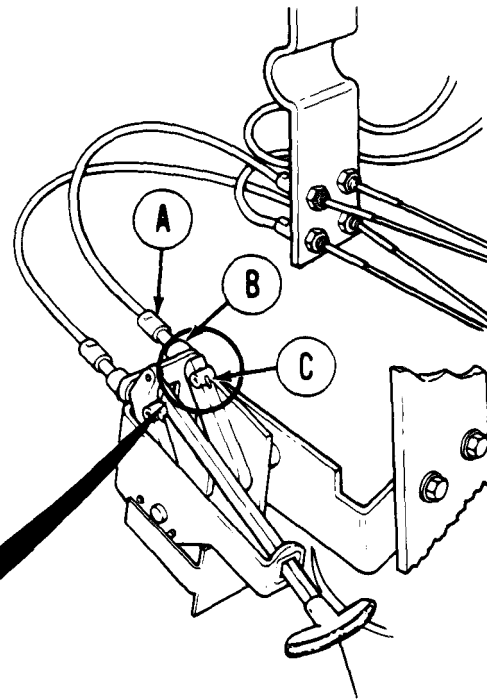
Go on to Sheet 4

TA253893

**INTERIOR RELEASE MECHANISM CONTROL ASSEMBLY REPLACEMENT (Sheet 4 of 5)**

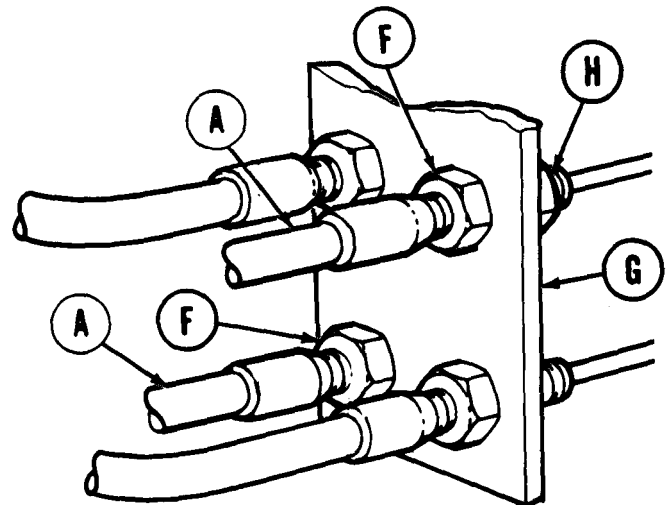
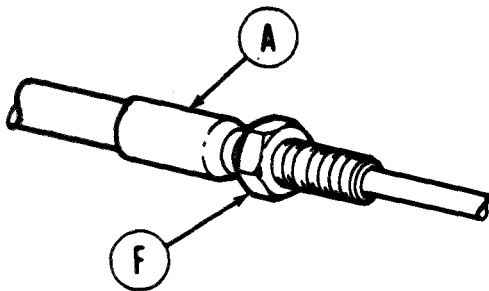
**INSTALLATION:**

1. Position control housing (A) to release mechanism (B).
2. Route cable (C) through proper lever of release mechanism (B).
3. Using 5/16 inch wrench, secure control housing (A) to release mechanism (B).
4. Install cable stop (D) onto cable (C).



5. Using 3/32 inch allen wrench, tighten setscrew (E) securing cable (C).

6. Using 9/16 inch wrench, install nut (F) onto control housing (A).



7. Route control housing (A) through bracket (G).

Go on to Sheet 5

TA253894

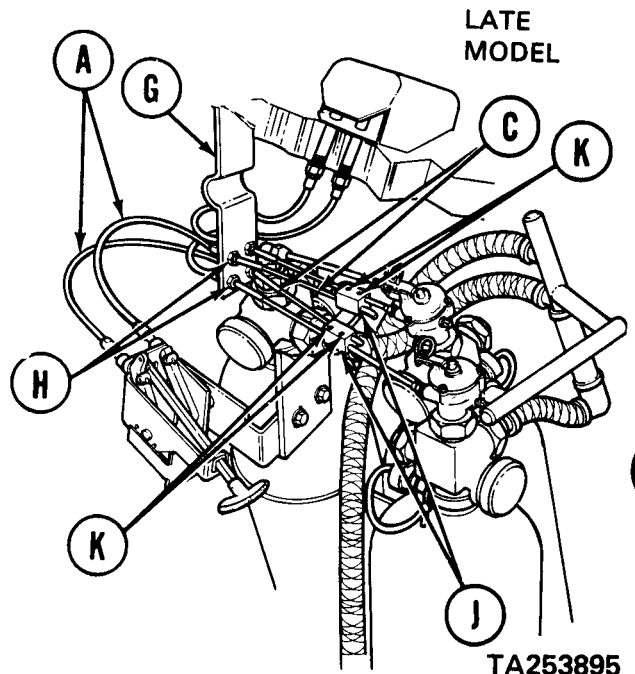
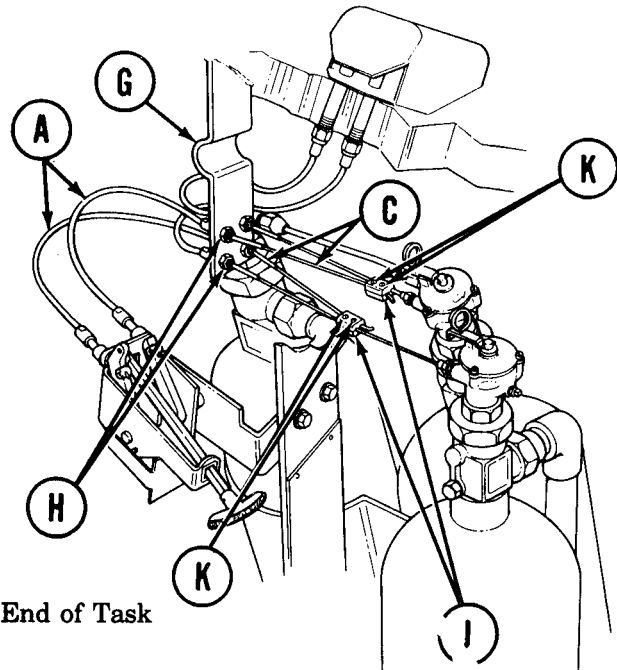
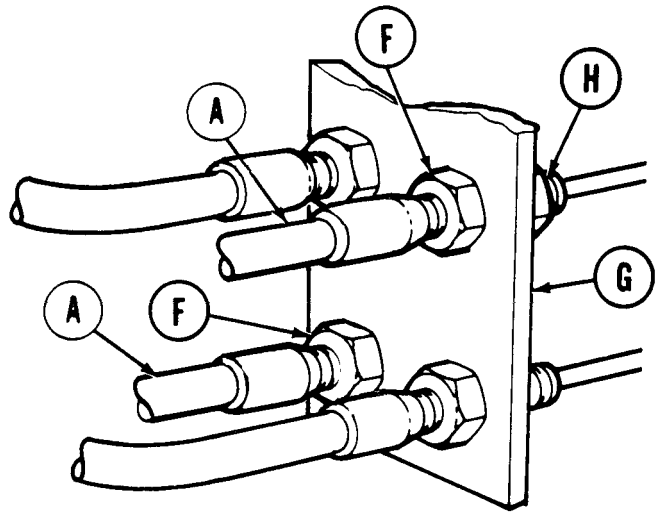
INTERIOR RELEASE MECHANISM CONTROL ASSEMBLY REPLACEMENT (Sheet 5 of 5)

8. Install nut (H) onto control housing (A).
9. Using 9/16 inch wrench, tighten nuts (F) and (H) to secure control housing to bracket (G).
10. Pull cables (C) toward fire extinguisher bottles until tight.

**NOTE**

On early model perform steps 11, 12, 13, and 14. On late model perform steps 13.1, 13.2, and 14.

11. Install clamps (J) approximately 2 inches from end of shorter cable.
12. Install two screws (K) into clamps (J).
13. Using screwdriver, tighten screws (K) to secure clamps (J) on cables.
- 13.1. Install cables through clamps (J).
- 13.2. Using 7/64 inch allen wrench, tighten screws (K) to secure clamps (J) on cables.
14. Install control valve assemblies (page 21-41).



**INTERIOR RELEASE MECHANISM REPAIR (Sheet 1 of 11)**

PROCEDURE INDEX

PROCEDURE	PAGE
Disassembly	21-23
Cleaning and Inspection	21-27
Assembly	21-27

**TOOLS:** Slip joint pliers  
 5/16 in. combination box and open end wrench  
 Flat-tip screwdriver  
 Long round nose pliers (needle nose)  
 Ball peen hammer  
 3/32 in. drive punch  
 3/16 in. drive punch  
 Cross-tip screwdriver No. 2 tip (Phillips)  
 Vise

**SUPPLIES:** Lockwasher (MS35335-34) (2 required) Spring pin (MS16562-50)  
 Lockwasher (MS5333-71) (2 required) Spring pin (MS16562-48)  
 Dry cleaning solvent (Item 54, Appendix D) Spring pin (MS16562-27)  
 Spring pin (MS51923-246)  
 Cleaning fluid (Item 35, Appendix D) Cotter pin (112726)  
 Water  
 Cooking stove  
 Rubber gloves

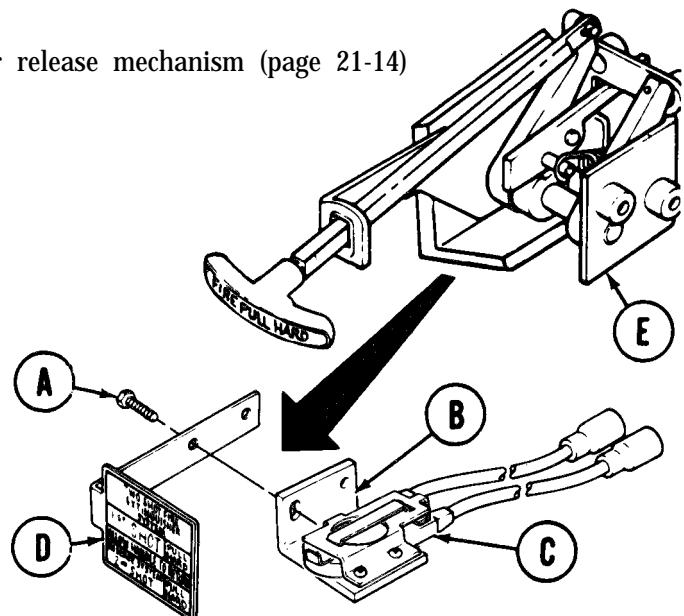
**PRELIMINARY PROCEDURE:** Remove interior release mechanism (page 21-14)

**NOTE**

Position interior release mechanism in vise as necessary to accomplish disassembly and assembly.

**DISASSEMBLY:**

- Using wrench, remove two screws and lockwashers (A) holding bracket (B) to release mechanism. Remove bracket (B), fuel shutoff switch (C), and instruction plate (D) from release mechanism (E). Throw lockwashers away.

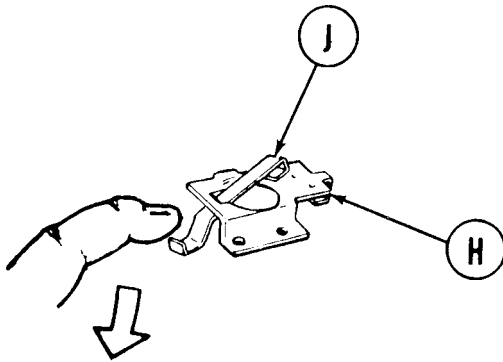
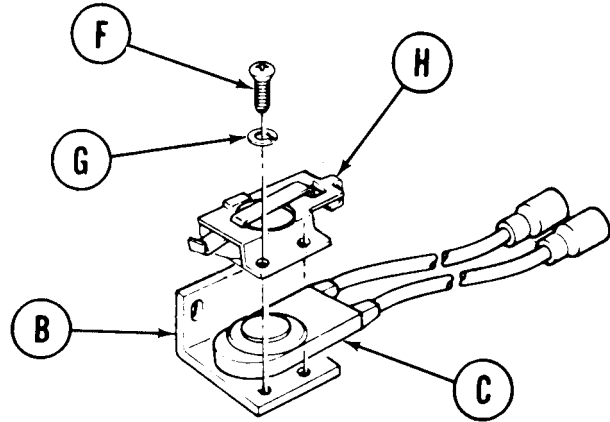


**Go on to Sheet 2**

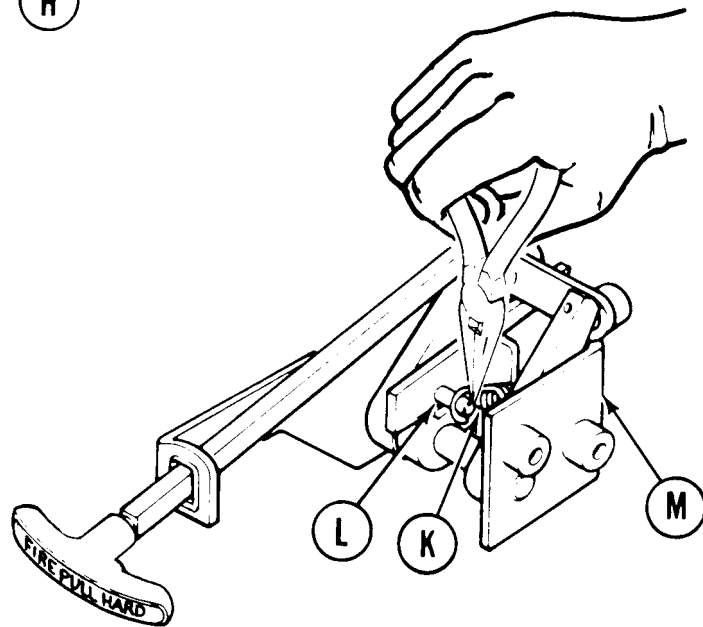
TA140926

INTERIOR RELEASE MECHANISM REPAIR (Sheet 2 of 1 1)

- Using screwdriver, remove two screws (F) and lockwashers (G) from bracket (B). Separate retainer (H) from switch assembly (C). Throw lockwashers away.



- Using finger, push down and separate switch guard (J) from retainer (H).



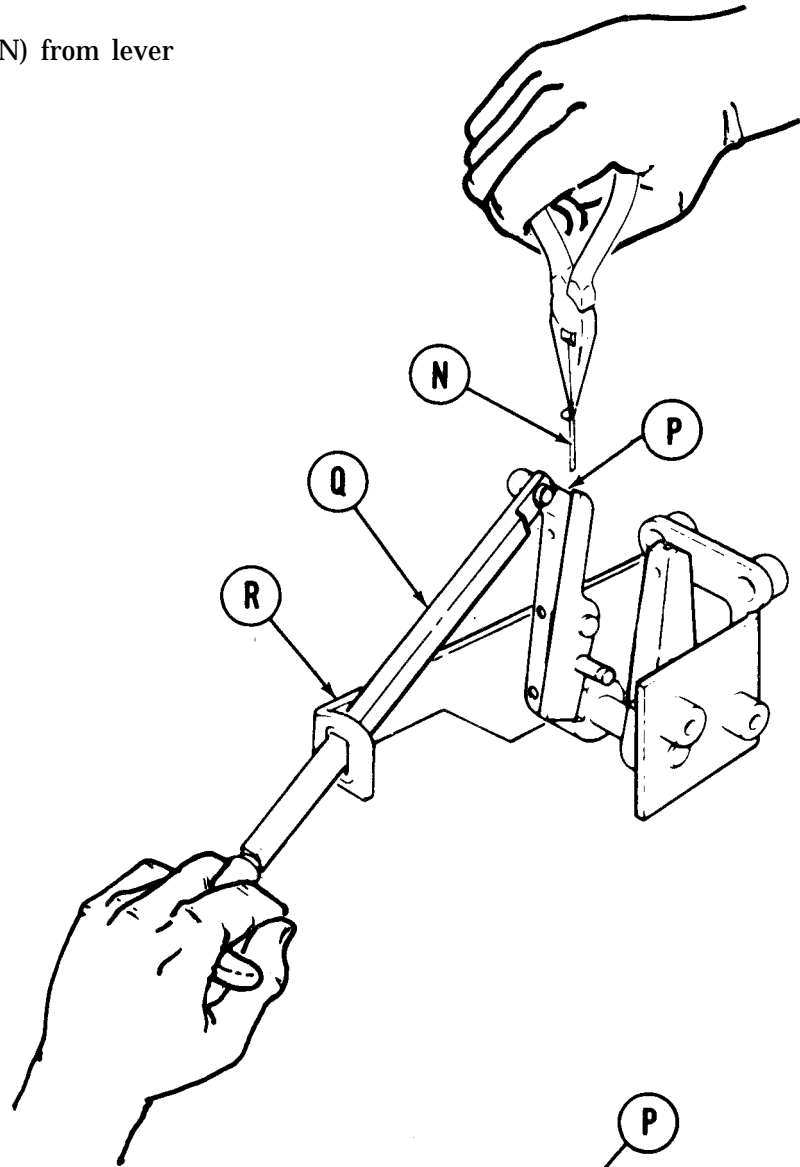
- Using pliers, remove spring (K) from pawl (L) and rear of bracket (M).

Go on to Sheet 3

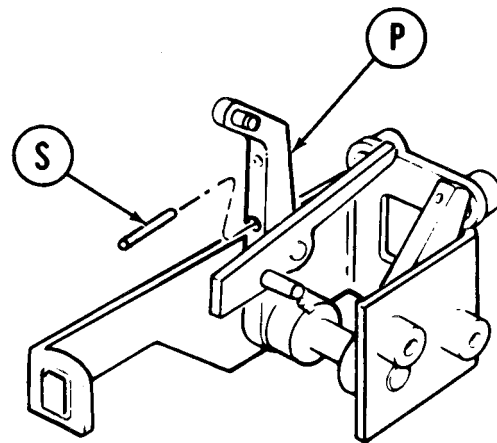
TA140927

INTERIOR RELEASE MECHANISM REPAIR (Sheet 3 of 11)

5. Using pliers, remove cotter pin (N) from lever (P). Throw cotter pin away.



6. Push shaft (Q) off lever bracket (R).



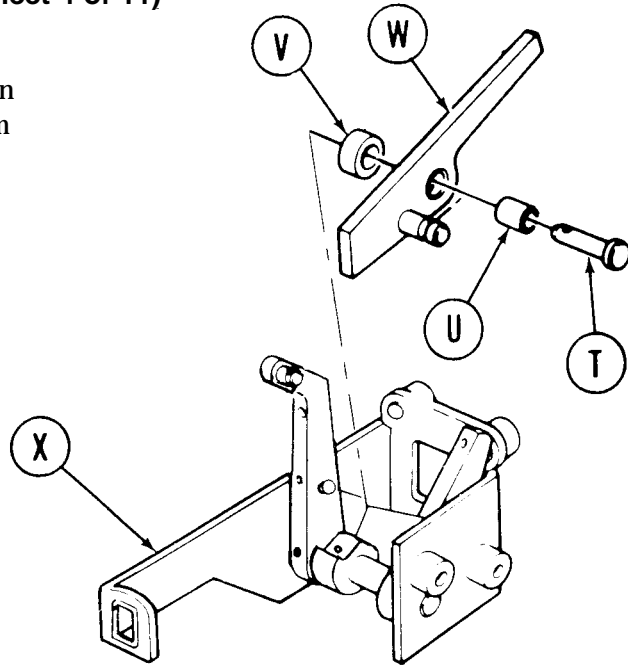
7. Using 3/32 inch punch spring pin (S) from lever (P).

Go on to Sheet 4

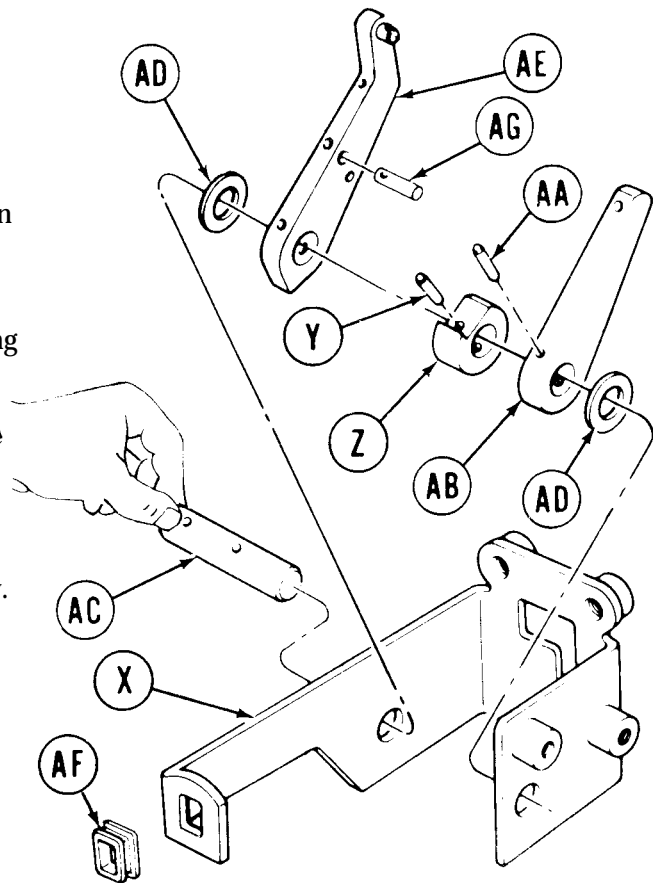
TA140928

INTERIOR RELEASE MECHANISM REPAIR (Sheet 4 of 11)

8. Using punch and hammer, remove straight pin (T), bushing (U), spacer (V), and pawl (W) from bracket (X).



9. Using 3/16 inch punch and hammer, drive spring pin (Y) out of cam (Z). Throw spring pin away.
10. Using 3/16 inch punch and hammer, drive spring pin (AA) out of lever (AB). Throw spring pin away.
11. Pull lever pin (AC) out of bracket (X). Remove two thrust washers (AD), lever (AB), cam (Z), and lever (AE).
12. Remove plastic grommet (AF) from bracket (X) only if cracked or worn or does not fit properly.
13. Using 3/16 inch punch and hammer, drive spring pin (AG) out of lever (AE). Throw spring pin away.



Go on to Sheet 5

TA140929



**INTERIOR RELEASE MECHANISM REPAIR (Sheet 5 of 11)**

14. Using 3/32 inch punch and hammer, drive spring pin (AH) out of shaft (AJ). Throw spring pin away.

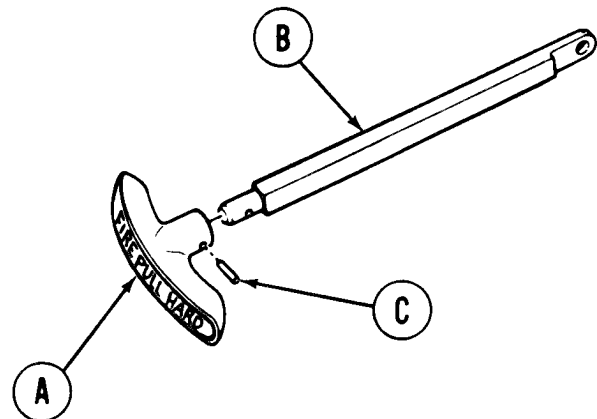
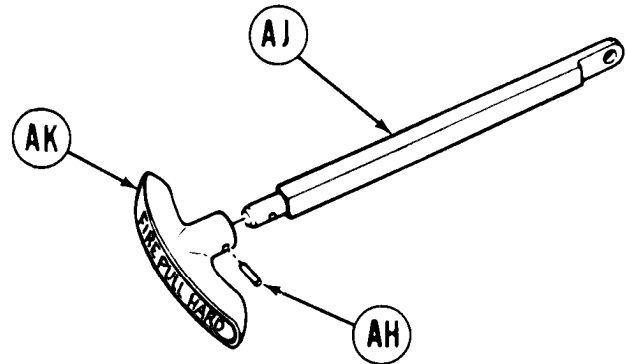
15. Pull handle (AK) off shaft (AH).

**CLEANING AND INSPECTION:**

1. Using dry cleaning solvent (Item 54, Appendix D) clean metal parts.
2. Using cleaning fluid (Rem 35, Appendix D), clean switch assembly and switch connectors.
3. Check metal parts for cracks.
4. Check levers, pins, pawl, and handle shaft for bends or breaks.
5. Check brackets for bends, elongated holes, or damaged points.
6. Check spring wire for nicks and grooves at contact points.
7. Replace all defective parts.

**ASSEMBLY:**

1. Push handle (A) onto shaft (B). Aline spring pin hole of handle (A) with holes of shaft (B).
2. Using hammer, install new spring pin (C) into handle (A) and shaft (B).



Go on to Sheet 6

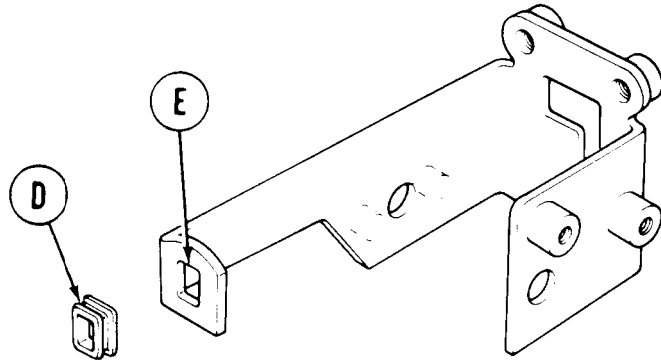
TA140930

INTERIOR RELEASE MECHANISM REPAIR (Sheet 6 of 1 1)

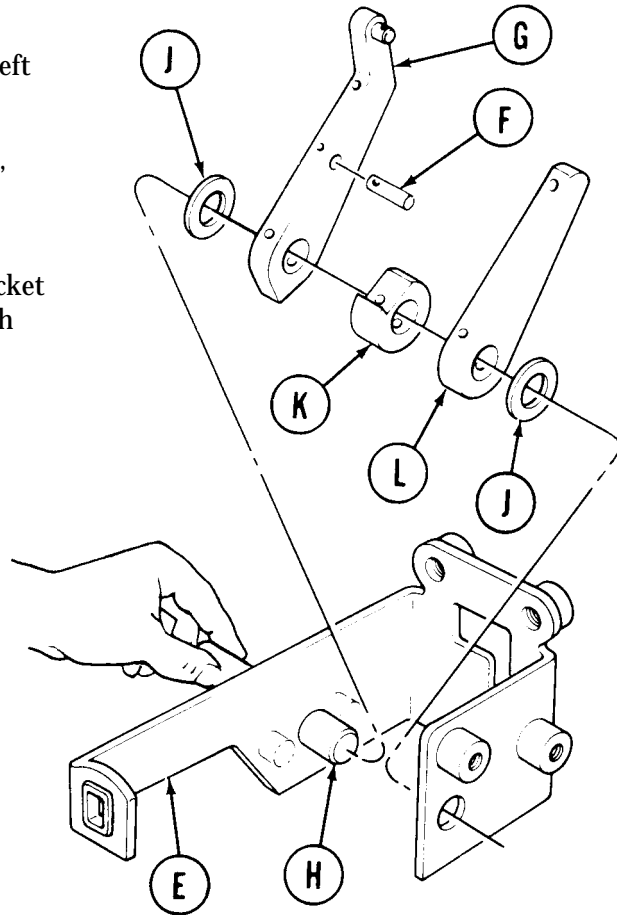
3. If grommet (D) was removed, install new grommet (D) into bracket (E).

NOTE

Before installing new grommet into bracket, it will be necessary to place grommet in boiling water, using cooking stove, for 2-3 minutes. Using pliers and wearing rubber gloves, quickly remove grommet from boiling water and snap it in place into bracket.



4. Using hammer, install spring pin (F) into lever (G).
5. Position lever pin (H) partially into hole in left side of bracket (E).
6. Position thrust washer (J), lever (G), cam (K), lever (L), and another thrust washer (J) onto lever pin (H).
7. Push lever pin (H) through right hole of bracket (E) so that both ends of pin (H) are flush with outside of bracket (E).

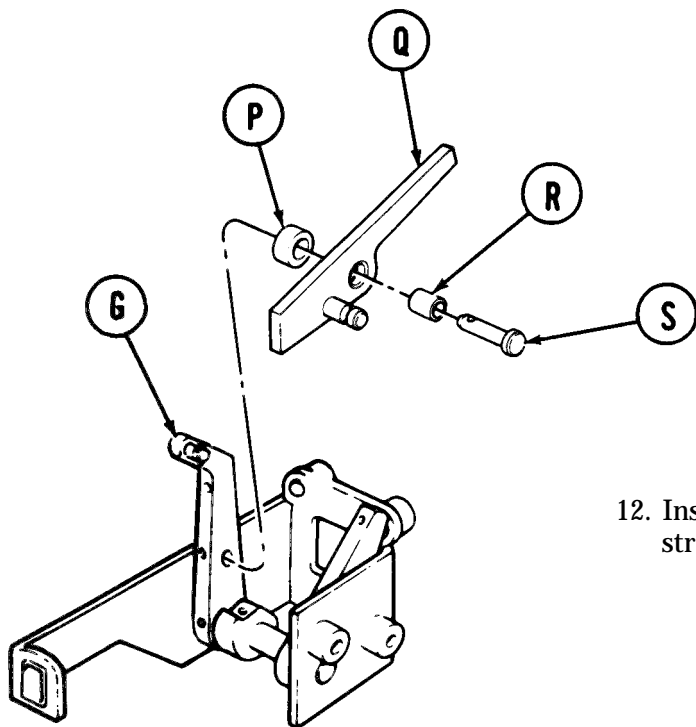
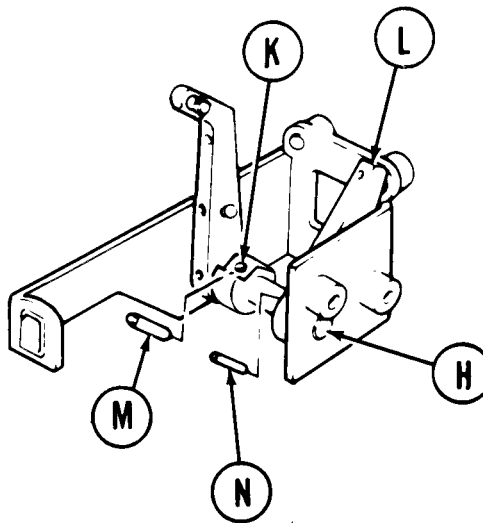


Go on to Sheet 7

TA140931

INTERIOR RELEASE MECHANISM REPAIR (Sheet 7 of 11)

8. Aline pin hole of cam (K) with pin hole of lever pin (H).
9. Using hammer and punch, tap in new short Spring pin (M).
10. Aline pin hole of lever (L) with pin hole of lever pin (H).
11. Using hammer and punch, tap in new long Spring pin (N).



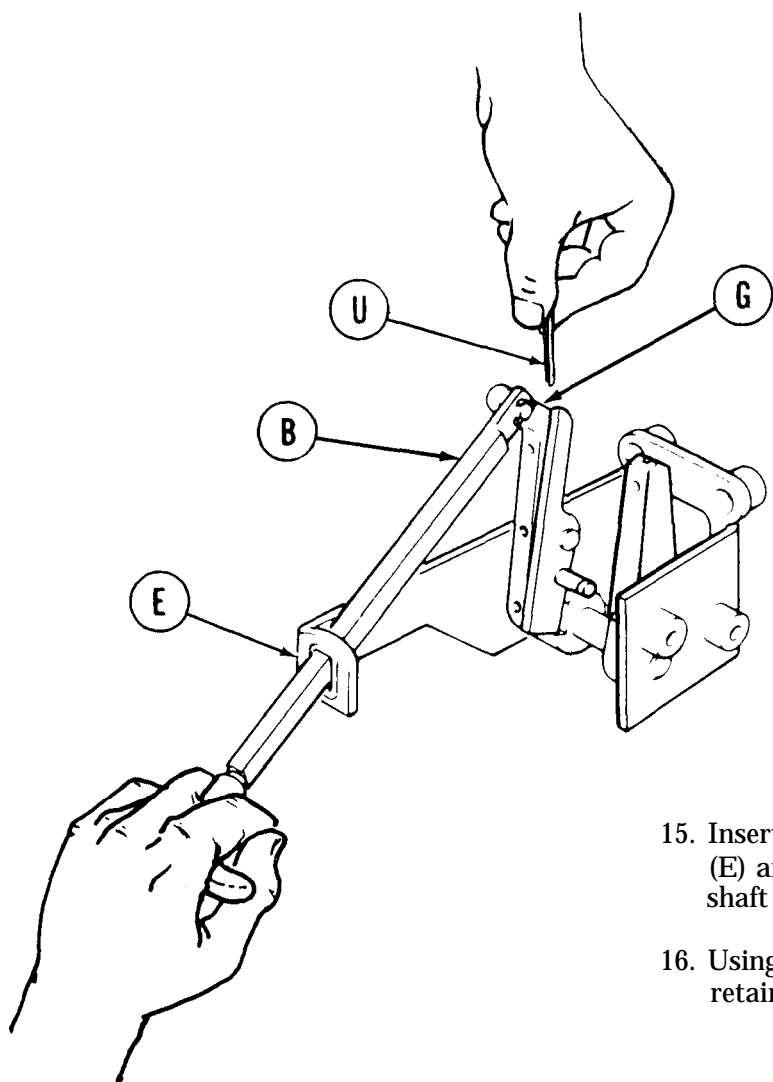
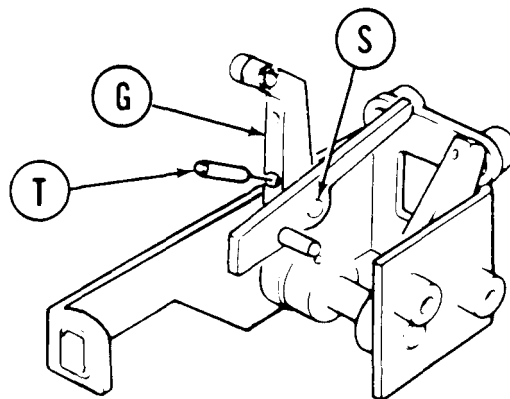
12. Install spacer (P), pawl (Q), bushing (R), and straight pin (S) onto retainer pin on lever (G).

Go on to Sheet 8

TA140932

INTERIOR RELEASE MECHANISM REPAIR (Sheet 8 of 11)

13. Using pliers, align pin hole of straight pin (S) with pin hole of lever (G).
14. Using hammer, tap in new spring pin (T).



15. Insert shaft (B) through front hole of bracket (E) and connect to retaining pin. Push end of shaft (B) onto pin of lever (G).
16. Using pliers, install new cotter pin (U) into retaining pin of lever (G).

Go on to Sheet 9

TA140933

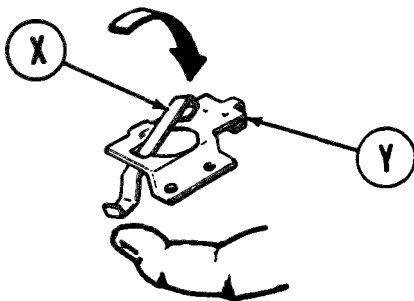
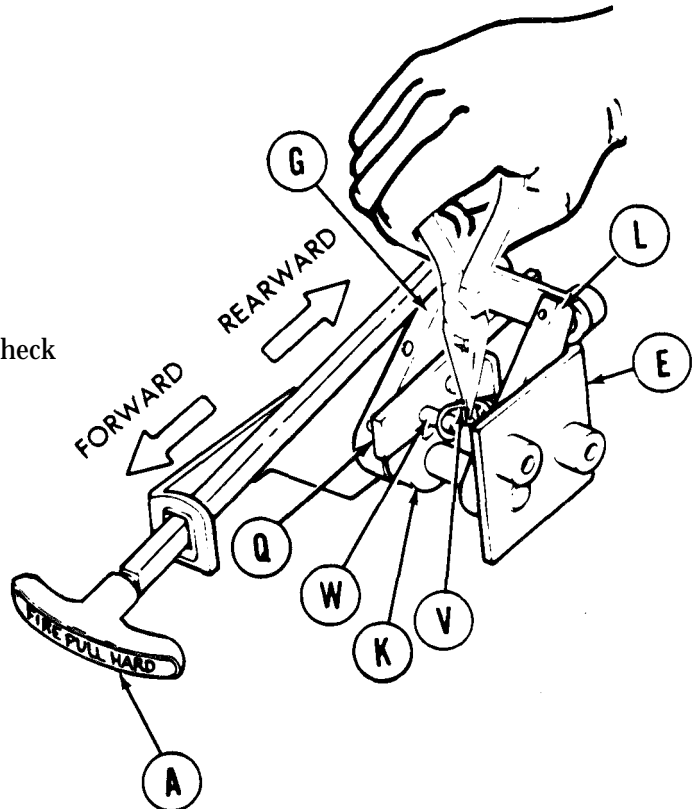
**INTERIOR RELEASE MECHANISM REPAIR (Sheet 9 of 11)**

17. Insert end of spring (V) through hole in rear of bracket (E).
18. Using pliers, connect and seat other end of spring (V) onto connecting pin (W) of pawl (Q).

**NOTE**

Make sure pawl lever (Q) snaps downward on forward stroke and engages cam (K) on rearward stroke. Also, this check will cause lever (L) to move at same time as lever (G) when activated.

19. Move handle (A) forward and rearward to check for proper operation.



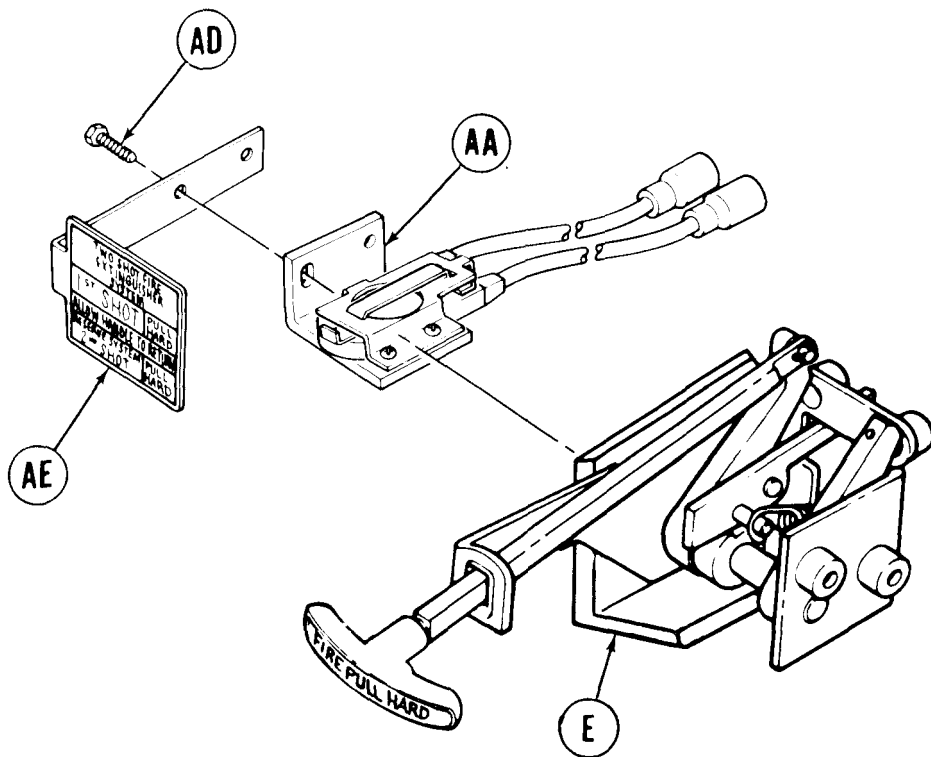
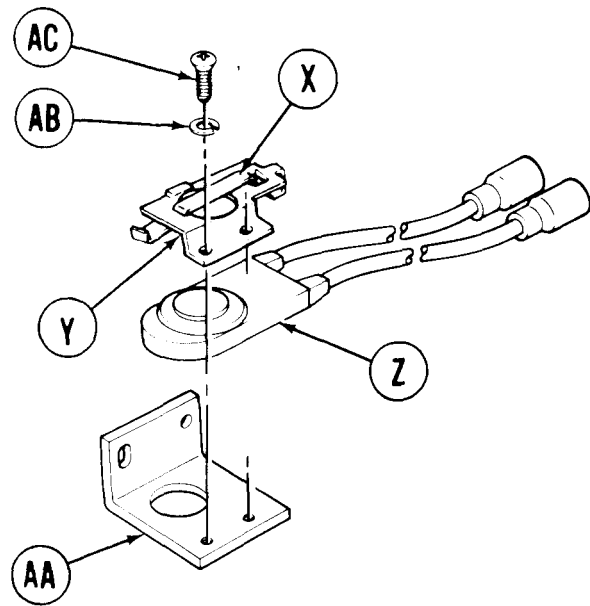
20. Insert switch guard (X) up through center hole of retainer (Y) and connect to retainer (Y).

Go on to Sheet 10

TA140934

INTERIOR RELEASE MECHANISM REPAIR (Sheet 10 of 11)

21. Place fuel shutoff switch (Z) on mounting bracket (AA).
22. Place retainer (Y) on top of switch (Z) on bracket (AA).
23. Insert two new lockwashers (AB) and screws (AC) through retainer (Y) and bracket (AA). Do not tighten screws (AC) completely.
24. Make sure fuel shutoff switch (Z) touches switch guard (X). Using screwdriver, tighten screws (AC) to bracket (AA).
25. Insert two screws and four washers (AD) through instruction plate (AE) into bracket (AA) and secure in mounting holes on left side of bracket (E).
26. Using wrench, tighten screws (AD).



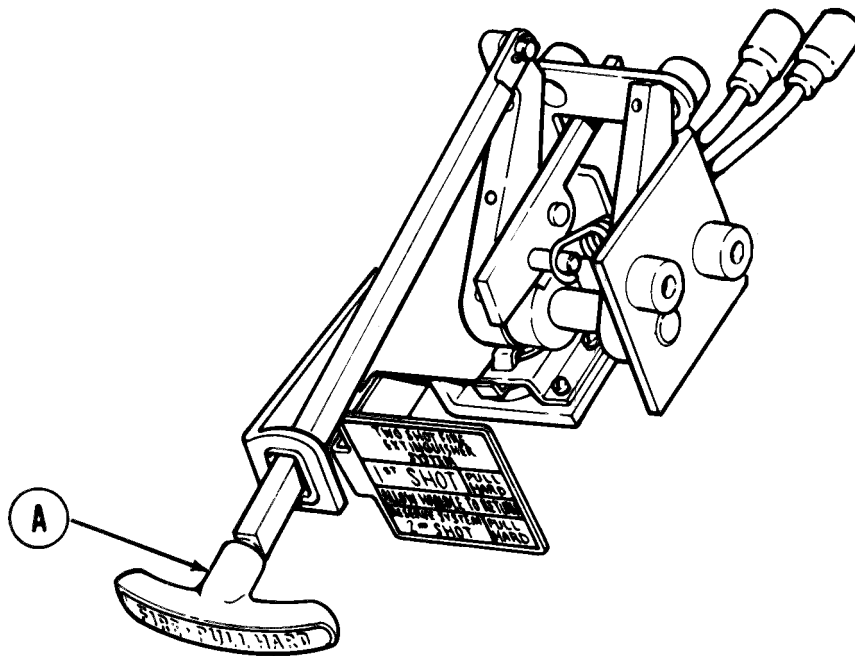
Go on to Sheet 11

TA140935

**INTERIOR RELEASE MECHANISM REPAIR (Sheet 11 of 11)**

27. Pull handle (A) forward to check fuel shutoff switch for clicking sound. If clicking sound is not heard, adjust fuel shutoff switch guard to make sure it touches fuel shutoff switch (page 21-32, step 24) or replace switch (pages 21-23, steps 1 thru 3, and 21-31, steps 20 thru 26).

28. Install interior release mechanism (page 21-15).

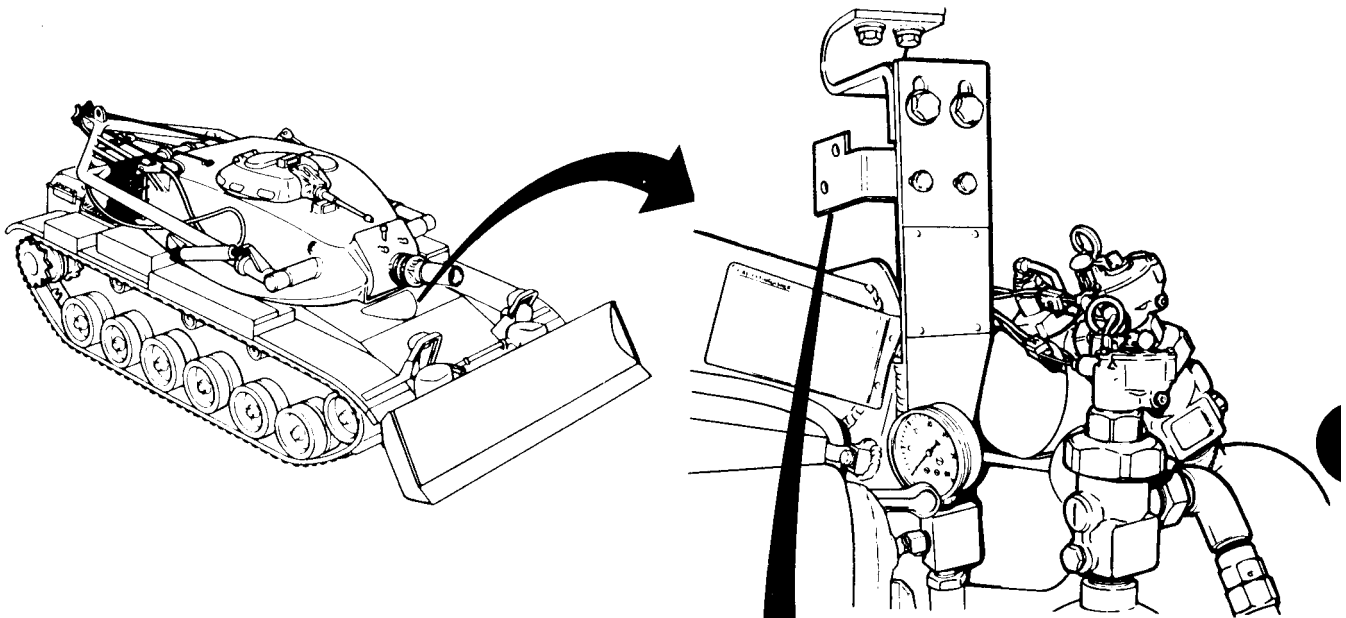
**TA140936**

**INTERIOR RELEASE MECHANISM MOUNTING BRACKET REPLACEMENT (EARLY MODEL)**  
(Sheet 1 of 2)

**TOOLS:** 7/16 in. socket with 1/2 in. drive  
1/2 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive  
7/16 in. combination box and open end wrench

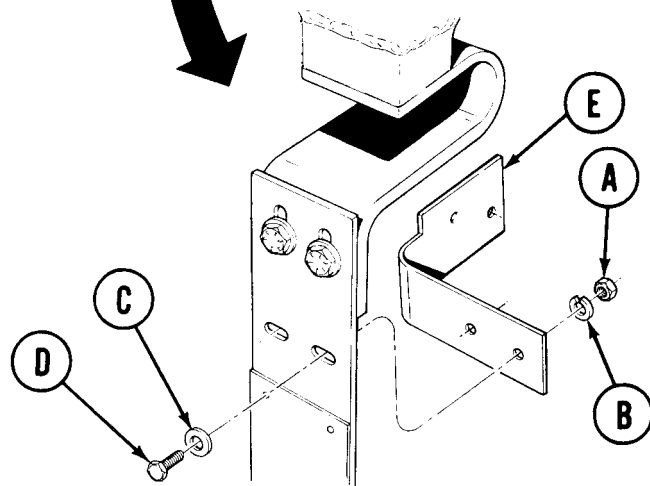
**SUPPLIES:** Lockwasher (MS35338-44) (2 required)

**PRELIMINARY PROCEDURE:** Remove interior release mechanism (page 21-14)



**REMOVAL:**

1. Using 7/16 inch socket and wrench, remove two nuts (A), lockwashers (B), flat washers (C), and screws (D). Throw lockwashers away.
2. Remove mounting bracket (E).



Go on to Sheet 2

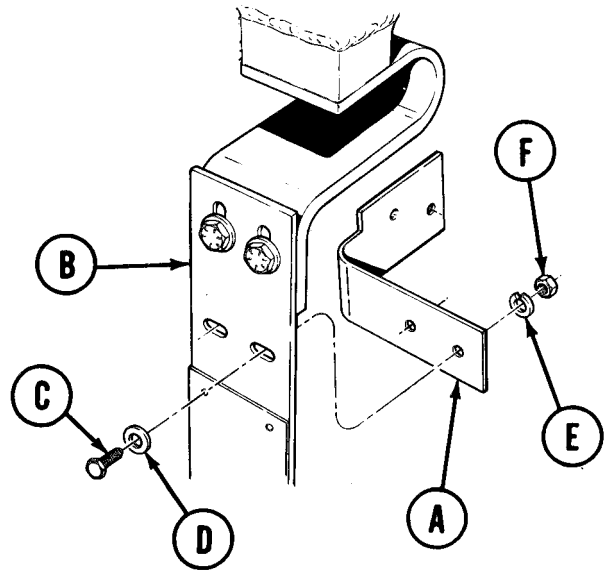
TA253896



**INTERIOR RELEASE MECHANISM MOUNTING BRACKET REPLACEMENT (EARLY MODEL)**  
(Sheet 2 of 2)

## INSTALLATION:

1. Place mounting bracket (A) onto bracket (B).
2. Insert two screws (C), flat washers (D), new lockwashers (E), and nuts (F) into ammunition rack bracket (B).
3. Using 7/16 inch socket and wrench, tighten nuts (F) and screws (C).
4. Install interior release mechanism (page 21-15).



End of Task

TA253897

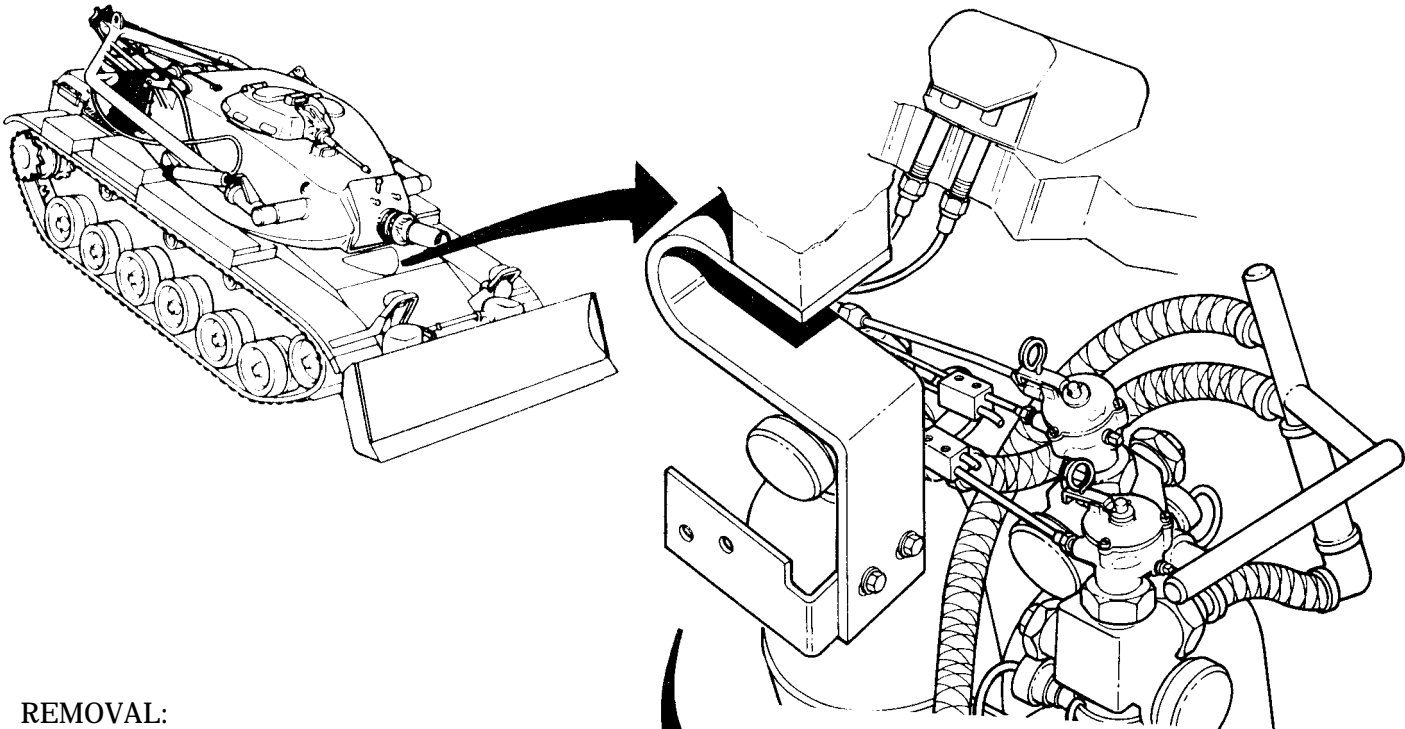
Change 1 21-35

**INTERIOR RELEASE MECHANISM MOUNTING BRACKET REPLACEMENT (LATE MODEL) (Sheet 1 of 2)**

**TOOLS:** 7/16 in. socket with 1/2 in. drive  
1/2 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive  
7/16 in. combination box and open end wrench

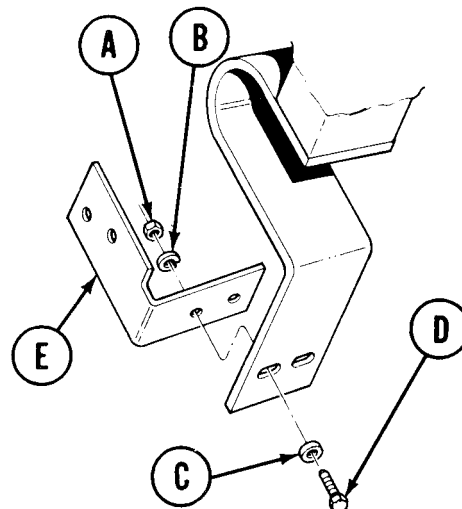
**SUPPLIES:** Lockwasher (MS35338-44) (2 required)

**PRELIMINARY PROCEDURE:** Remove interior release mechanism (page 21-14).



**REMOVAL:**

1. Using 7/16 inch socket and wrench, remove two nuts (A), lockwashers (B), flat washers (C), and screws (D). Throw lockwashers away.
2. Remove mounting bracket (E).

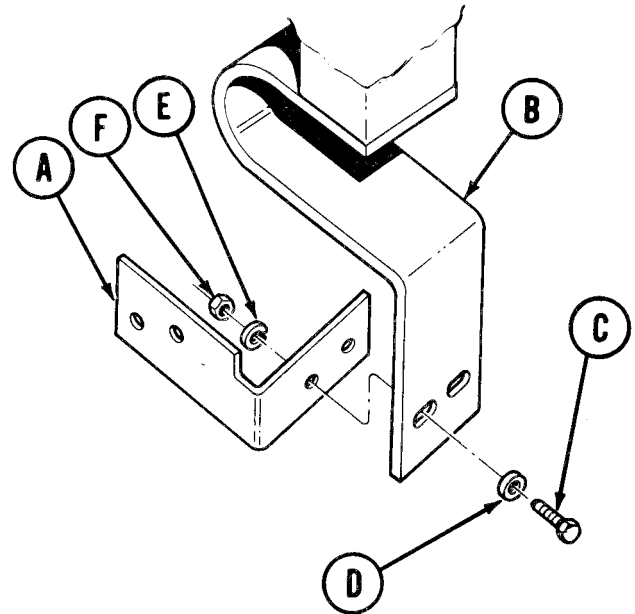


Go on to Sheet 2

TA253898

**INTERIOR RELEASE MECHANISM MOUNTING BRACKET REPLACEMENT (LATE MODEL) (Sheet 2 of 2)****INSTALLATION:**

1. Place mounting bracket (A) onto bracket (B).
2. Insert two screws (C), flat washers (D), new lockwashers (E), and nuts (F) into bracket (B).
3. Using 7/16 inch socket and wrench. tighten nuts (F) and screws (C).
4. Install interior release mechanism (page 21-15).



End of Task

TA253899

**Change 1 21-36.1**

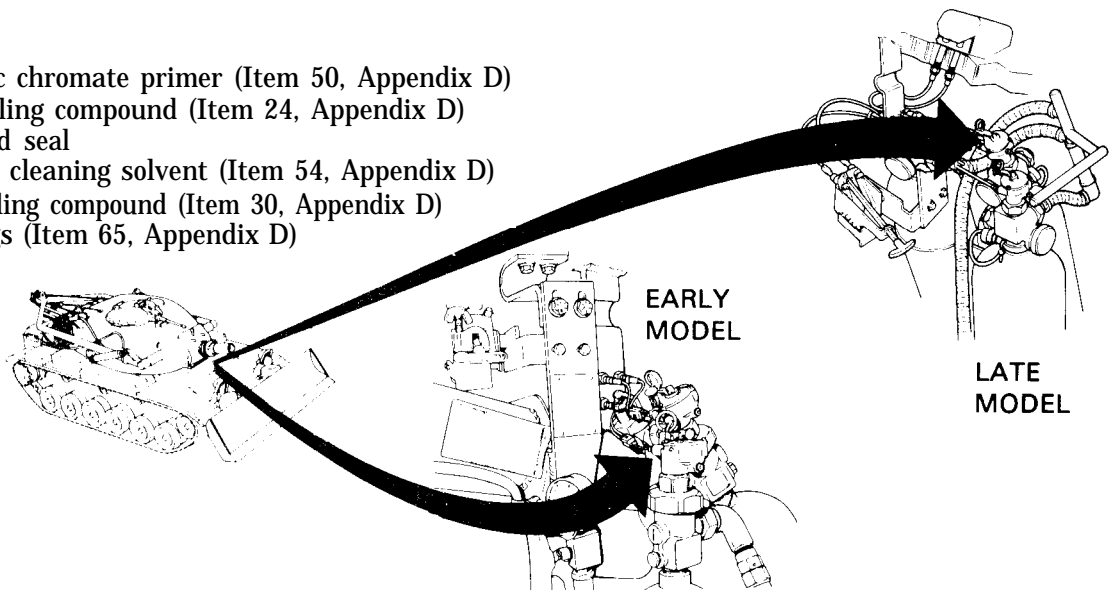
CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 1 of 12)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal and Disassembly	21-37
Cleaning and Inspection	21-41
Assembly and Installation	21-41

- TOOLS:
- 3/4 in. combination box and open end wrench
  - 7/16 in. combination box and open end wrench
  - 9/16 in. combination box and open end wrench
  - 1-1/8 in. open end wrench
  - 1-1/2 in. open end wrench
  - Hat-tip screwdriver
  - Slip joint pliers
  - 3/32 in. socket head screw key (allen wrench)
  - 5/64 in. socket head screw key (allen wrench)
  - 10 in. adjustable wrench
  - 1/16 in. rod or nail
  - Diagonal cutting pliers
  - Automotive wrench
  - Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N-m)
  - Torque wrench with 3/8 in. drive (0-200 lb-in) (0-23 N-m)
  - 5 in. extension with 1/2 in. drive
  - 7/16 in. crowfoot with 3/8 in. drive
  - 1/2 in. crowfoot with 3/8 in. drive
  - 9/16 in. crowfoot with 3/8 in. drive
  - 1-1/2 in. crowfoot with 1/2 in. drive

- SUPPLIES:
- Zinc chromate primer (Item 50, Appendix D)
  - Sealing compound (Item 24, Appendix D)
  - Lead seal
  - Dry cleaning solvent (Item 54, Appendix D)
  - Sealing compound (Item 30, Appendix D)
  - Rags (Item 65, Appendix D)



Go on to Sheet 2

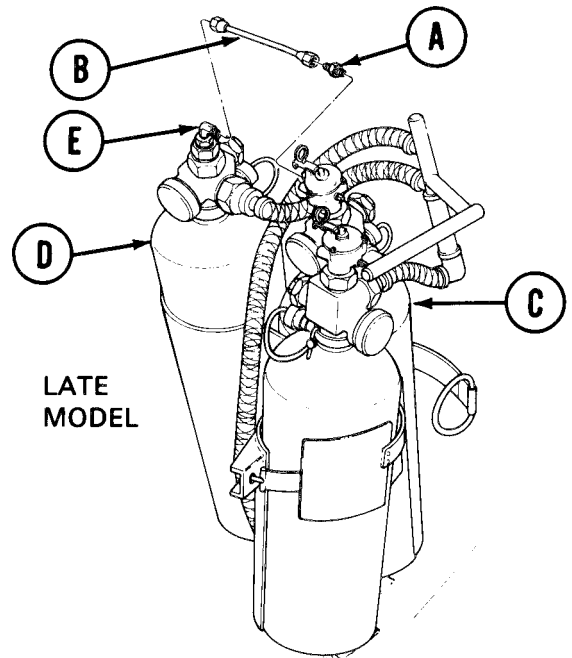
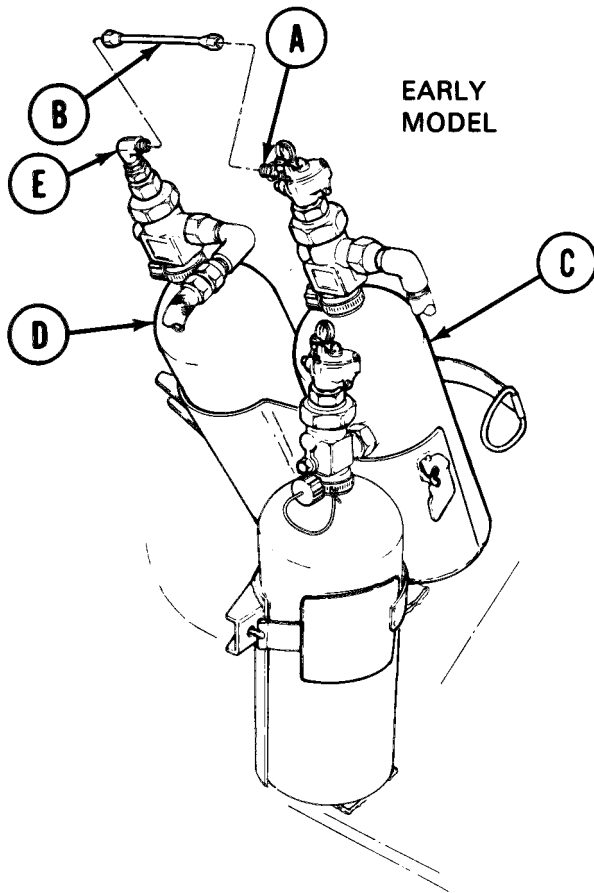
**CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 2 of 12)**

**REMOVAL AND DISASSEMBLY:**

**CAUTION**

To prevent accidental discharge of a cylinder, both control valves must be removed from cylinders even though only one of the control valves must be replaced. Do not pull on the control cable while valve is being removed, or cylinder will discharge.

1. Using 7/16 inch wrench to hold adapter (A), use 9/16 inch wrench and loosen and remove connector on tube (B) from adapter (A). Remove adapter (A).



**NOTE**

It may be necessary to loosen straps holding cylinders (C) and (D) to perform step 2.

**CAUTION**

Loosen straps only if tube (B) cannot be removed with straps tightened. When straps are loosened, the chance of accidentally discharging cylinders while performing this procedure is increased.

2. If necessary, loosen strap securing cylinders (C) and (D) and move top of cylinder (D) forward. Using 9/16 inch wrench, loosen connector on tube (B) from elbow (E). Remove tube (B).

Go on to Sheet 3

CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 3 of 12)

**NOTE**

Even though some cylinder heads (F) can be disassembled, each must be removed as one part. If flange comes out with elbow, hold flange with 3/4 inch wrench.

3. Using adjustable wrench on elbow (E) and 1-1/2 inch wrench on head (F), remove elbow (E) from head (F).
4. Using 1-1/2 inch wrench on head (F), remove head from cylinder (D).
5. Remove washer (G) from cylinder (D).

**WARNING**

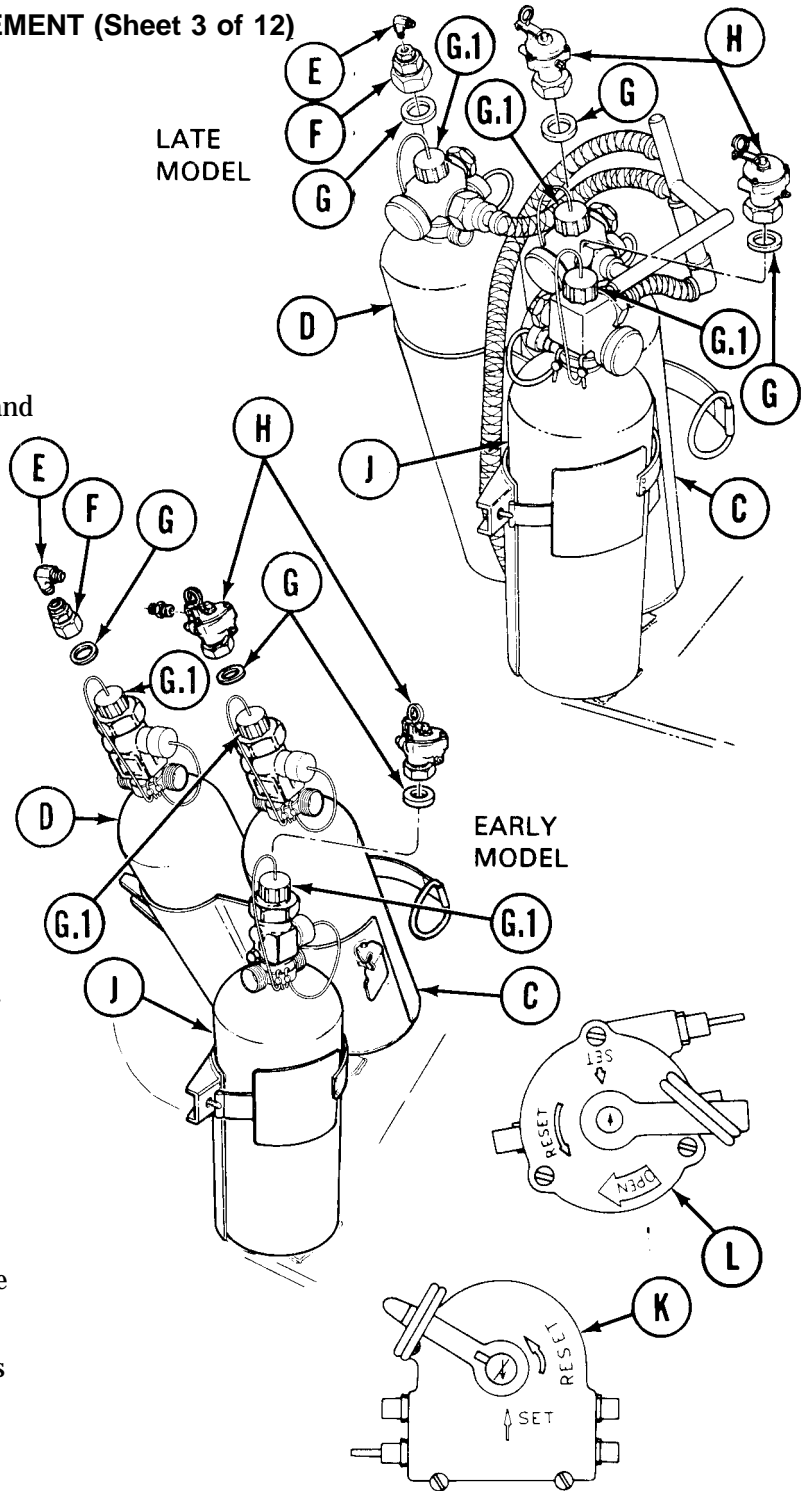
Safety cap (G.1) must be installed whenever a fire extinguisher is disconnected. Accidental discharge of cylinder can cause injury to personnel and/or damage to equipment.

- 5.1. Install safety cap (G.1) on cylinder (D).

**CAUTION**

Be careful while doing step 6 so extinguisher cylinder does not turn and pull on discharge cable, or fire extinguisher will discharge.

6. Using 1-1/2 inch wrench and automotive wrench, remove two control valves (H) and washers (G) from cylinders (C) and (J). Install safety cap (G.1) on cylinders (C) and (J).



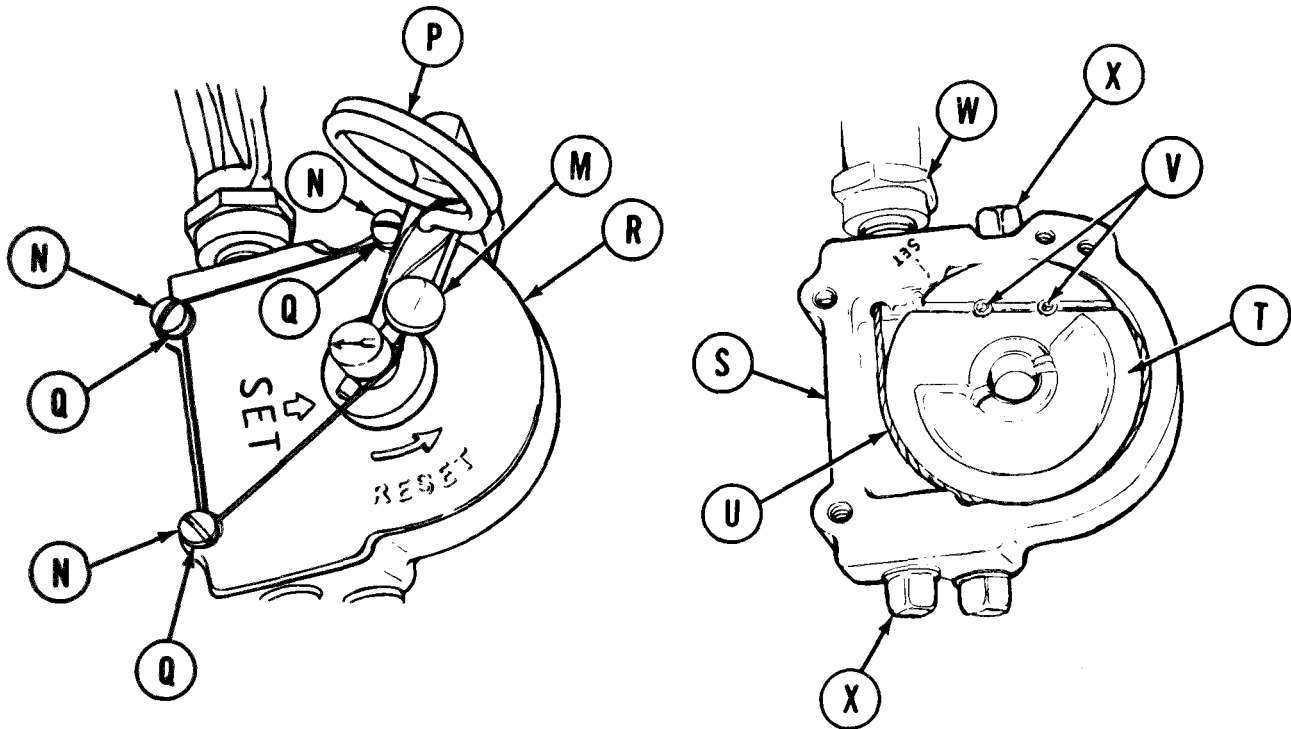
**NOTE**

Steps 7 thru 13 describe removal of four-port valve (K). Steps 14 thru 19 describe removal of three-port valve (L). Although four-port valve is latest model there are some three-port valves on current vehicles.

Go on to Sheet 4

**CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 4 of 12)**

7. Using diagonal cutting pliers, remove lead seal (M) from cover screw (N) and pin (P).
8. Using screwdriver, remove three screws (N) and washers (Q) that secure cover (R) to housing (S). Remove cover (R) from housing (S).



9. Remove sheave (T) and cable (U) from housing (S).
10. Using 5/64 inch allen wrench, remove two screws (V) securing cable (U) to sheave (T).
11. Remove cable (U) from housing (S) through hole in plug (W).
12. Using adjustable wrench, remove plug (W) from housing (S).
13. Using adjustable wrench, remove three plugs (X) from housing (S).

**Go on to Sheet 5**

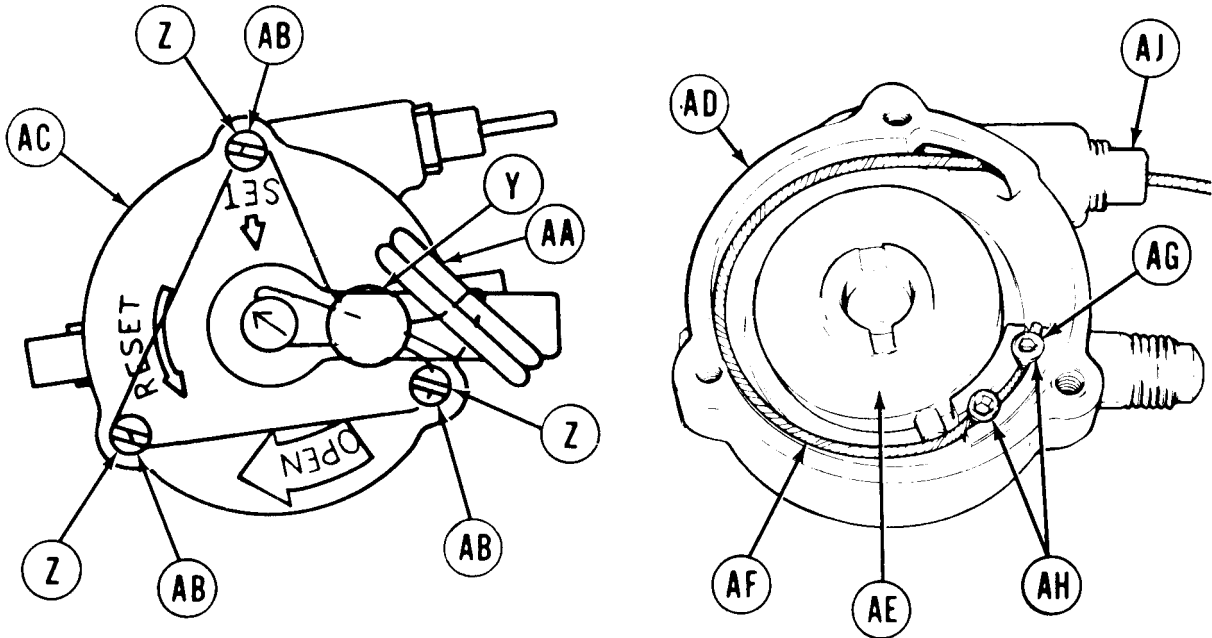
TA140942

CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 5 of 12)

NOTE

Steps 14 thru 19 apply to three-port valve.

14. Using diagonal cutting pliers, remove lead seal (Y) from screws (Z) and pin (AA).



15. Using screwdriver, remove three screws (Z) and washers (AB) securing cover (AC) to housing (AD). Remove cover (AC) from housing (AD).
16. Using 3/32 inch allen wrench, remove two screws (AE) from retainer (AF).
17. Remove sheave and nylon washer (AG), cable (AH) and retainer (AF) from housing (AD).
18. Remove cable (AH) from housing (AD) through hole in plug (AJ).
19. Using adjustable wrench, remove plug (AJ) from housing (AD).

Go on to Sheet 6

TA140943



**CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 6 of 12)****CLEANING AND INSPECTION:**

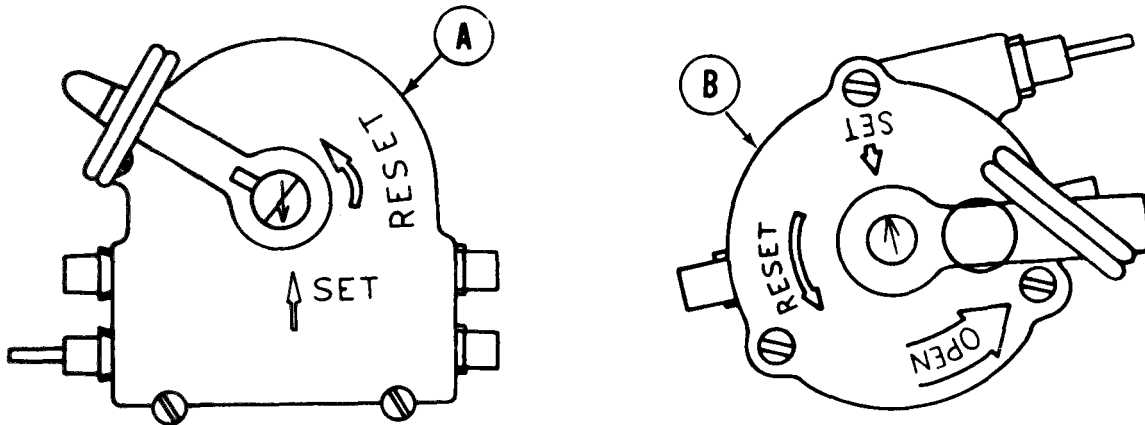
1. Using rag and dry cleaning solvent (Item 54, Appendix D), clean all parts.
2. Inspect cable ends for fraying or damaged ends. Replace if badly frayed or damaged.
3. Inspect valves and related parts for nicks, burrs, and cracks. Replace damaged parts.

**NOTE**

**Apply zinc chromate primer (Item 50, Appendix D) to threads prior to installation of threaded tube/hose connectors.**

**ASSEMBLY AND INSTALLATION:****NOTE**

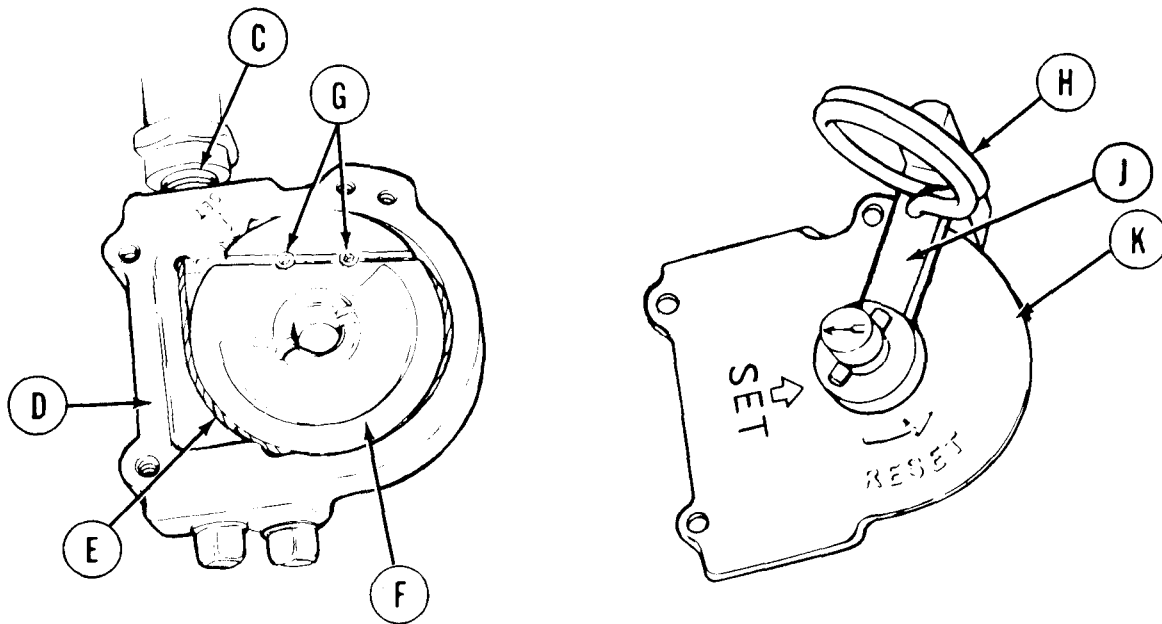
**Steps 1 thru 12 describe assembly of four-port valve (A). Steps 13 thru 23 describe assembly of three-port valve (B). Although four-port valve is latest model, both valves are used on current vehicles. If three-port valve is used, proceed to step 13.**



**Go on to Sheet 7**

TA140944

CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 7 of 12)



1. Using adjustable wrench, install plug (C) into housing (D).
2. Install cable (E) through plug (C) and lay in slot in sheave (F). Extend cable full length of slot but not past end of slot.

**NOTE**

**Prior to installing screws in step 3 below, coat threads of screws with sealing compound (Item 24, Appendix D).**

3. Using 5/64 inch allen wrench, install screws (G) into sheave (F).
4. Place sheave (F) in housing (D) and wind sheave counterclockwise with cable (E) until arrow on sheave is alined with SET arrow on housing.
5. Install safety pin (H) through handle (J) and cover (K).

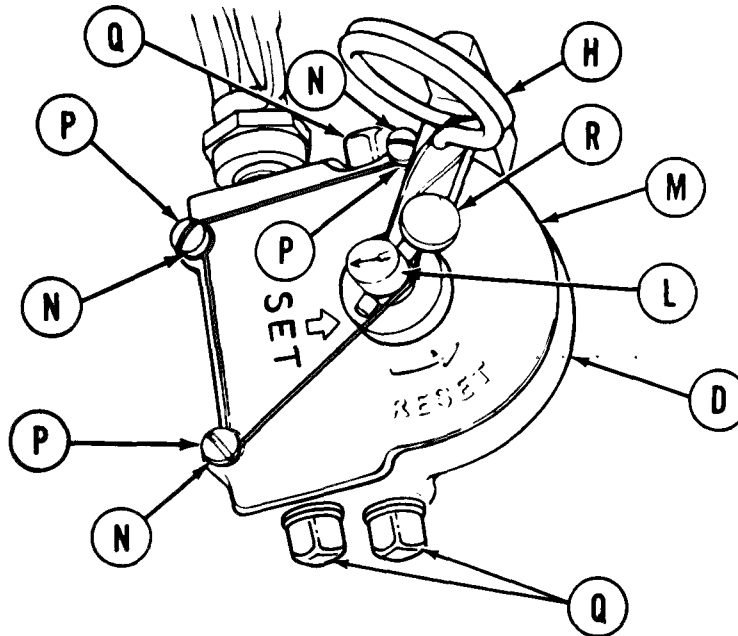
Go on to Sheet 8

TA140945

## CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 8 of 12)

## NOTE

Use safety pin, nail, rod or similar device to turn shaft in steps 6 and 9.



6. Rotate cover shaft (L) counterclockwise until arrow on shaft (L) points at SET arrow on exterior face cover (M).
7. Position cover (M) on housing (D) of valve.
8. Using screwdriver, secure cover (M) to valve with screws (N) and washers (P).
9. Check that shaft (L) is still turned fully counterclockwise. If not, reset valve by aligning arrow on shaft (L) with SET arrow on cover (M).
10. Check operation of valve by releasing with cable, resetting with handle, releasing with handle, and resetting several times. Verify that pin in bottom of valve is released and retracted each time. Leave in SET condition.
11. Coat plug (Q) with sealing compound (Item 30, Appendix D). Using adjustable wrench, install three plugs (Q) into housing (D).
12. Using slip joint pliers, install new lead seal (R) through cover screws (N) and safety pin (H). Then go to step 24.

Go on to Sheet 9

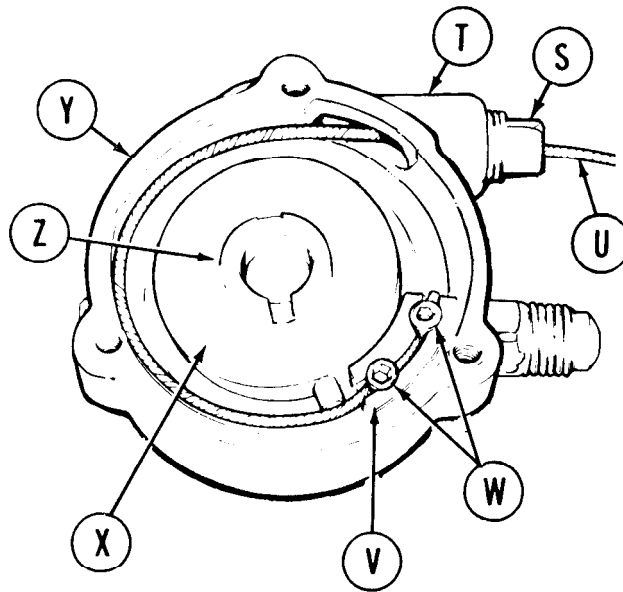
TA140946

CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 9 of 12)

NOTE

Steps 13 thru 23 apply to three-port valve.

13. Using adjustable wrench, install plug (S) into housing (T).
14. Install cable (U) through plug (S) and lay in slot of cable retainer (V). Extend cable full length of slot and flush with end of retainer (V).



NOTE

Prior to installing screws in step 15, coat threads of screws with sealing compound (Item 24, Appendix D).

15. Using 3/32 inch allen wrench, secure cable (U) to cable retainer (V) with screws (W).
16. Place sheave (X) into housing (Y). Aline arrow on sheave (X) with SET on valve housing (T).
17. Place retainer and cable into housing with cable end of retainer (V) against stop pin on sheave (X).
18. Install nylon washer (Z) onto sheave (X).

Go on to Sheet 10

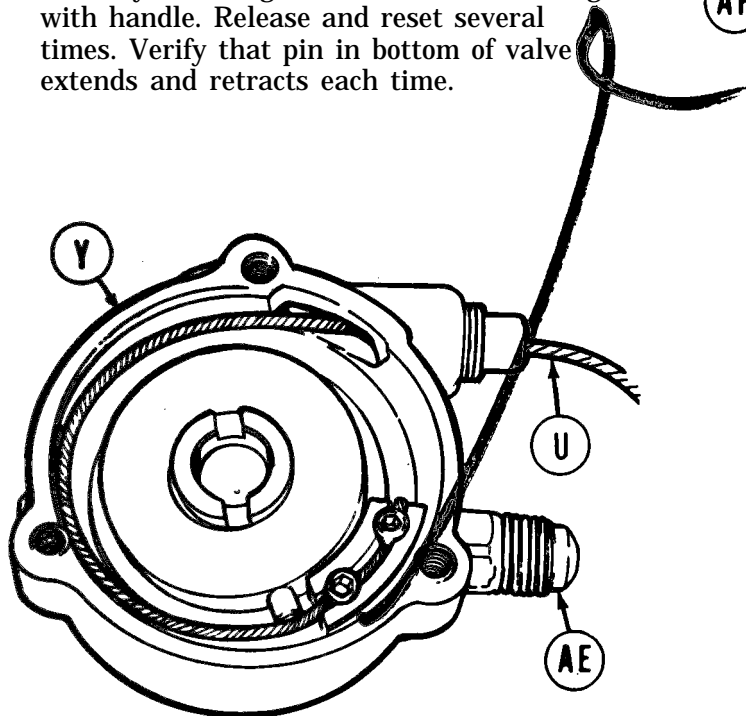
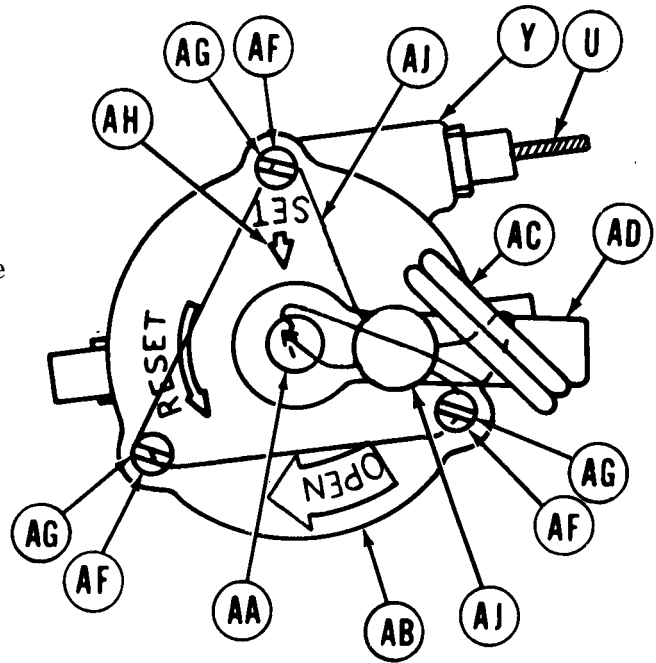
TA140947

**CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 10 of 12)**

**NOTE**

Handle (AD) must be turned fully counterclockwise before doing step 19.

19. Align arrow on shaft (AA) with SET on cover (AB) and install safety pin (AC) through handle (AD) and cover (AB).
20. Position handle (AD) over adapter (AE) and install cover (AB) onto housing (Y) with screws (AF) and washers (AG). Using screwdriver, tighten screws (AF).
21. Remove safety (AC). Check operation of valve by releasing with cable and resetting with handle. Release and reset several times. Verify that pin in bottom of valve extends and retracts each time.



**NOTE**

Use safety pin, nail, or similar device to turn shaft in step 22.

22. Turn shaft counterclockwise and reset valve by aligning arrow on shaft (AA) with SET arrow (AH) on valve cover (AB). Reinstall safety pin (AC).
23. Using slip joint pliers, install new lead seal (AJ) through cover screws (AF) and safety pin (AC).

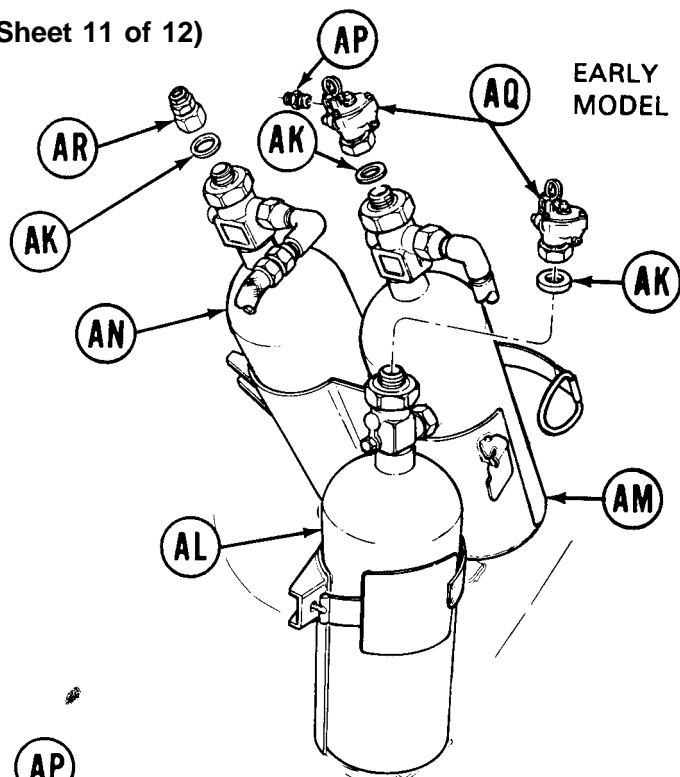
Go on to Sheet 11

TA253870

Change 1 21-45

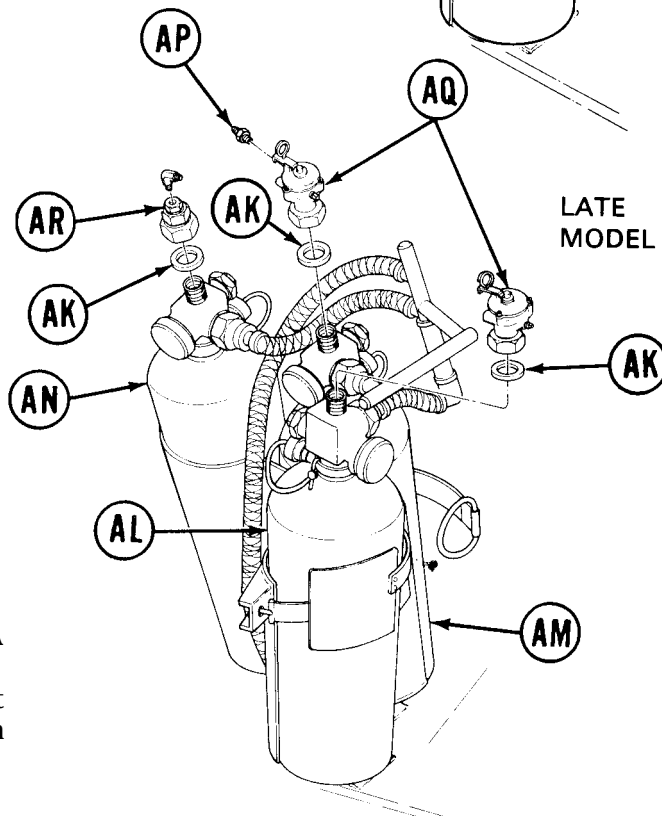
CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 11 of 12)

24. Install washers (AK) onto cylinders (AL), (AM), and (AN).
25. Using 7/16 inch wrench, install adapter (AP) into valve (AQ). Using 3/8 inch drive torque wrench and 7/16 inch crowfoot (Item 35, Chapter 3, Section I), tighten adapter (AP) to 135-150 lb-in (15-17 N·m).



**CAUTION**

Actuating pin on bottom of control valves must be fully retracted before valve is installed onto cylinders. Otherwise, cylinders will discharge.



26. Using 1-1/2 inch wrench, install two valves (AQ) onto cylinders (AL) and (A). Using 1/2 inch drive torque wrench, 5 inch extension, and 1-1/2 inch crowfoot (Item 45, Chapter 3, Section I), tighten couplings on valves to 105-130 lb-ft (142-176 N·m).
27. Using 1-1/2 inch wrench on head (AR), install head on cylinder (AN).
28. Using 1-1/2 inch wrench, tighten head (AR). Then, using 1/2 inch drive torque wrench and 1-1/2 inch crowfoot (Item 45, Chapter 3, Section I), tighten head (AR) to 105-130 lb-ft (142-176 N·m).

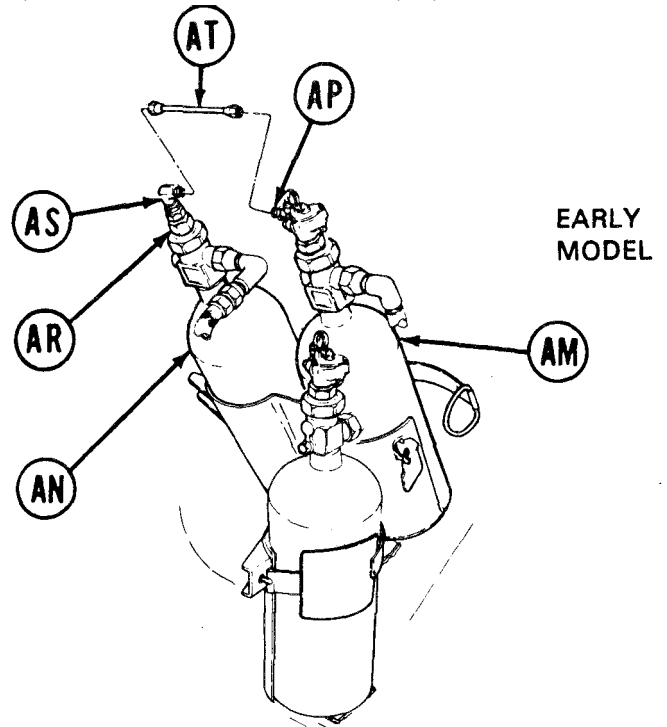
Go on to Sheet 12

TA253901

## CONTROL VALVE ASSEMBLY REPLACEMENT (Sheet 12 of 12)

29. Using 8 inch adjustable wrench, install elbow (AS) into head (AR). Using 3/8 inch drive torque wrench and 1/2 inch crowfoot (Item 36, Chapter 3, Section I), tighten elbow (AS) to 135-150 lb-in (15.3 -17.0 N m). During tightening, attempt to aline elbow (AS) for later installation of tube (AT).

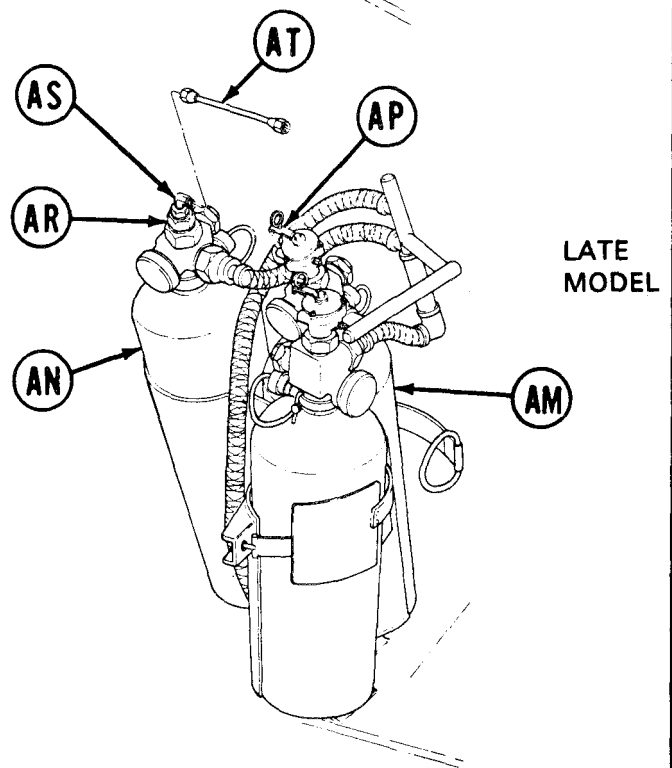
30. Using 9/16 inch wrench, install tube (AT) onto elbow (AS). Using 3/8 inch drive torque wrench and 9/16 inch crowfoot (Item 37, Chapter 3, Section I), tighten connector on tube (AT) to 135-150 lb-in (15.3 -17.0 N m).



31. Using 9/16 inch wrench, install tube (AT) onto adapter (AP). Using 3/8 inch drive torque wrench and 9/16 inch crowfoot (Item 37, Chapter 3, Section I), tighten connector on tube (AT) to 135-150 lbin (15.3-17.0 N m).

32. If cylinder strap is loosened, secure cylinders (AM) and (AN, with strap attached to mounting bracket.

33. Perform semiannual functional checkout (page 3-52).



End of Task

TA253902

**CONTROL VALVE ASSEMBLY REPAIR (Sheet 1 of 1)**

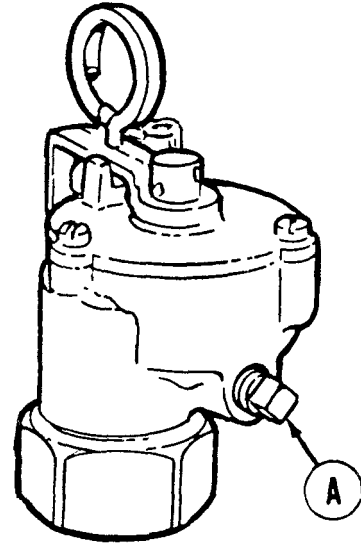
**TOOLS:** Bench vise with brass jaws  
8 in. adjustable wrench

**SUPPLIES:** Plug (11674311)

**PRELIMINARY PROCEDURE:** Remove control valve (page 21-37)

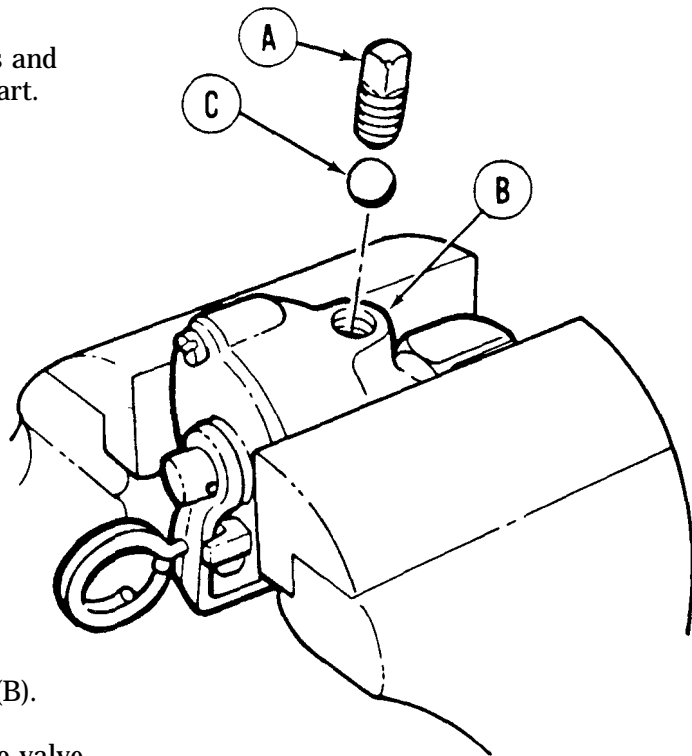
**DISASSEMBLY:**

1. Secure control valve in vise with vent plug (A) up.
2. Using wrench, remove vent plug (A) from valve (B).
3. Holding hand over hole where plug (A) was removed, remove valve (B) from vise. Turn plug hole down and remove ball (C) from valve (B).



**INSPECTION:**

Inspect plug hole and ball (C) for nicks and burrs. If damaged, replace damaged part.



**ASSEMBLY:**

1. Secure valve (B) in vise with hole up.
2. Place ball bearing (C) in hole in valve (B).
3. Using wrench, install new plug (A) into valve (B).
4. Remove valve (B) from vise.
5. Install control valve (page 21-41).

End of Task

**TA140951**



**FIXED FIRE EXTINGUISHER Cylinder REPLACEMENT (EARLY MODEL) (Sheet 1 of 3)**

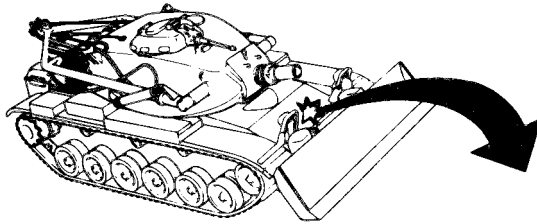
TOOLS: 1-5/8 in. open end wrench  
Scales, 0-100 lb.

PRELIMINARY PROCEDURE: Remove control valve (page 21-37)

**WARNING**

**Handle charged cylinders with care. Do not jar or subject cylinder to temperature above 140 degrees F (60 degrees C).**

REMOVAL:

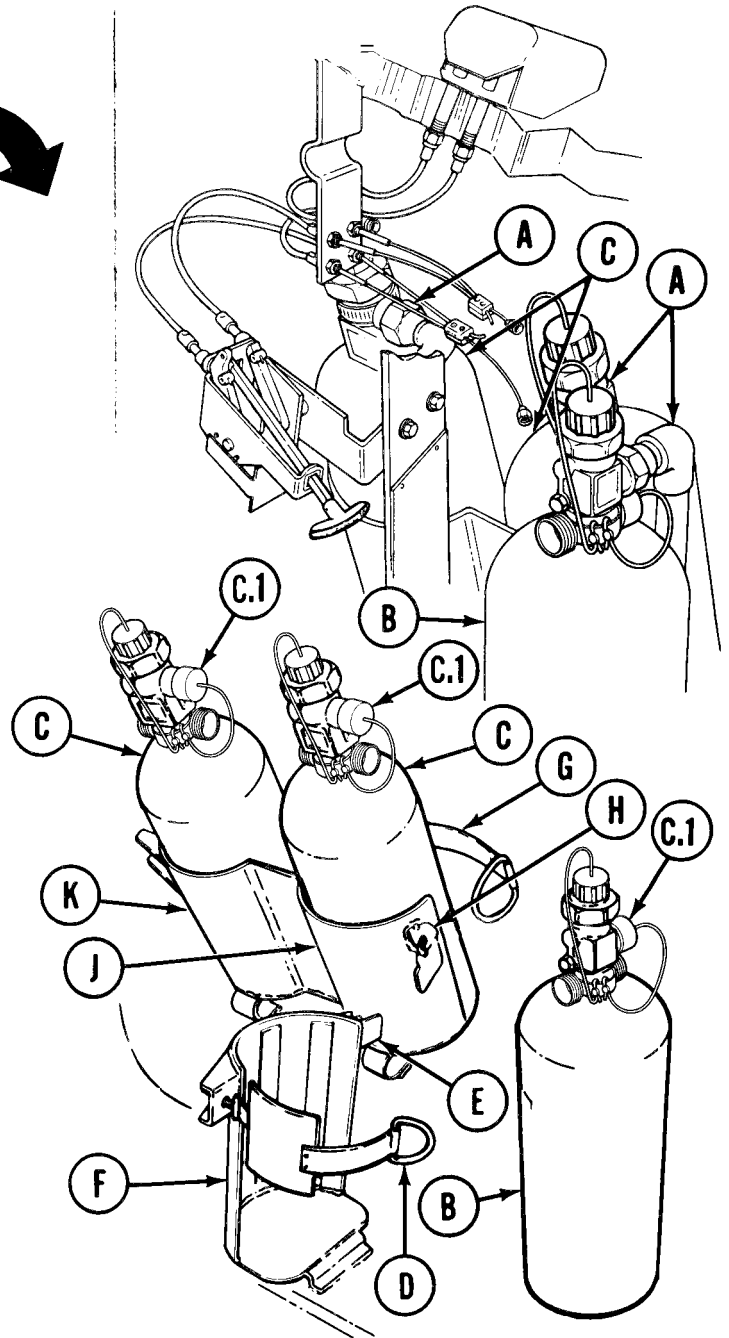


1. Using wrench, disconnect three discharge lines (A) from number one shot cylinder (B) and two number two shot cylinders (C).

**WARNING**

**Diffuser cap (C.1) must be installed whenever the discharge port is disconnected. Failure to do so could result in injury if cylinder is accidentally discharged.**

- 1.1. Install diffuser caps (C.1) on discharger ports of cylinders (B) and (C).
2. Release strap (D) holding number one shot freed fire extinguisher cylinder (B) by grasping latch (E) and pulling toward right side of vehicle.
3. Carefully remove number one shot cylinder (B) from bracket (F).
4. Release strap (G) holding two number two shot freed fire extinguisher cylinders (C) by grasping latch (H) and pulling toward front of vehicle.
5. Carefully remove cylinders (C) from brackets (J) and (K).

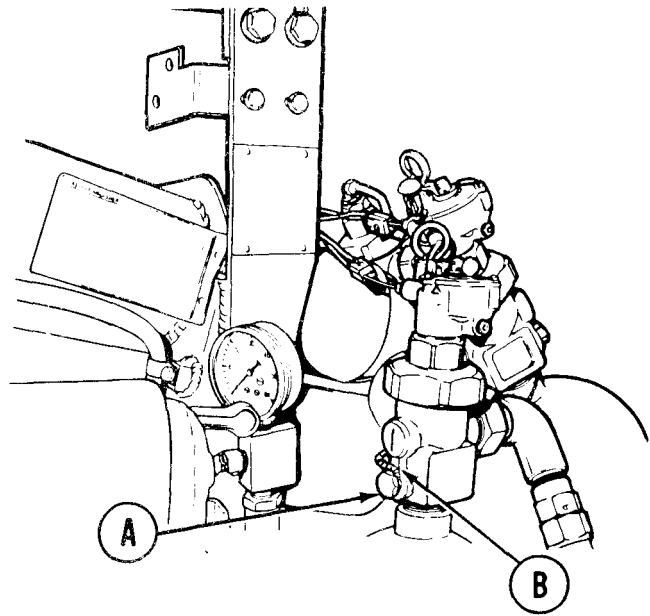


Go on to Sheet 2

**FIXED FIRE EXTINGUISHER CYLINDER REPLACEMENT (EARLY MODEL) (Sheet 2 of 3)**

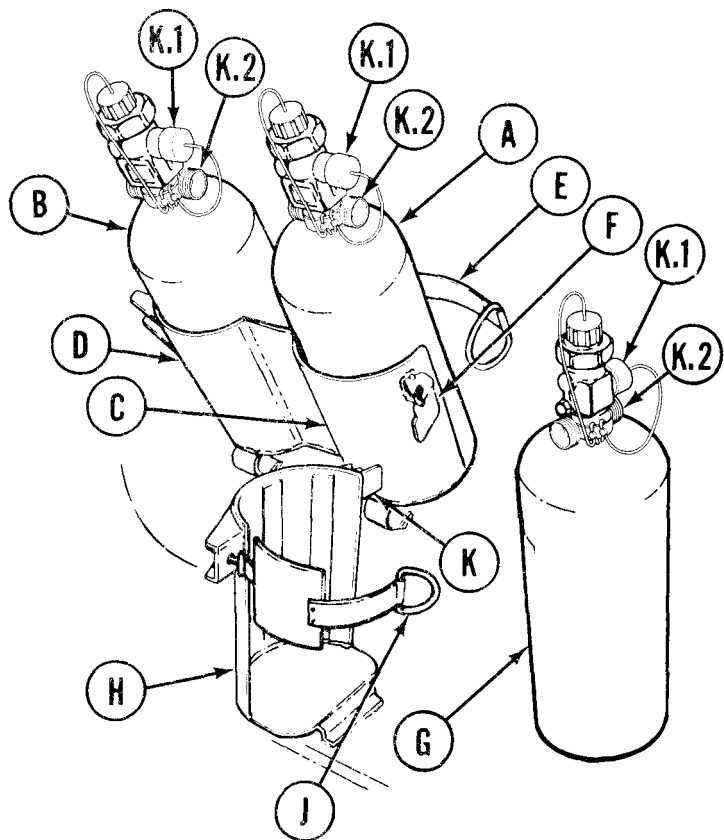
**INSPECTION:**

1. If plastic indicator (A) over safety valve outlet is missing, have cylinder recharged.
2. If safety wire lead seal (B) is broken, replace cylinder.
3. If hydrostatic test date (stamped on cylinder neck) has exceeded 12 years, replace cylinder.
4. Using scales, weigh cylinder. If weight loss exceeds 10 percent of difference between full and empty weight marked on the flood valve (A), have cylinder recharged.



**INSTALLATION:**

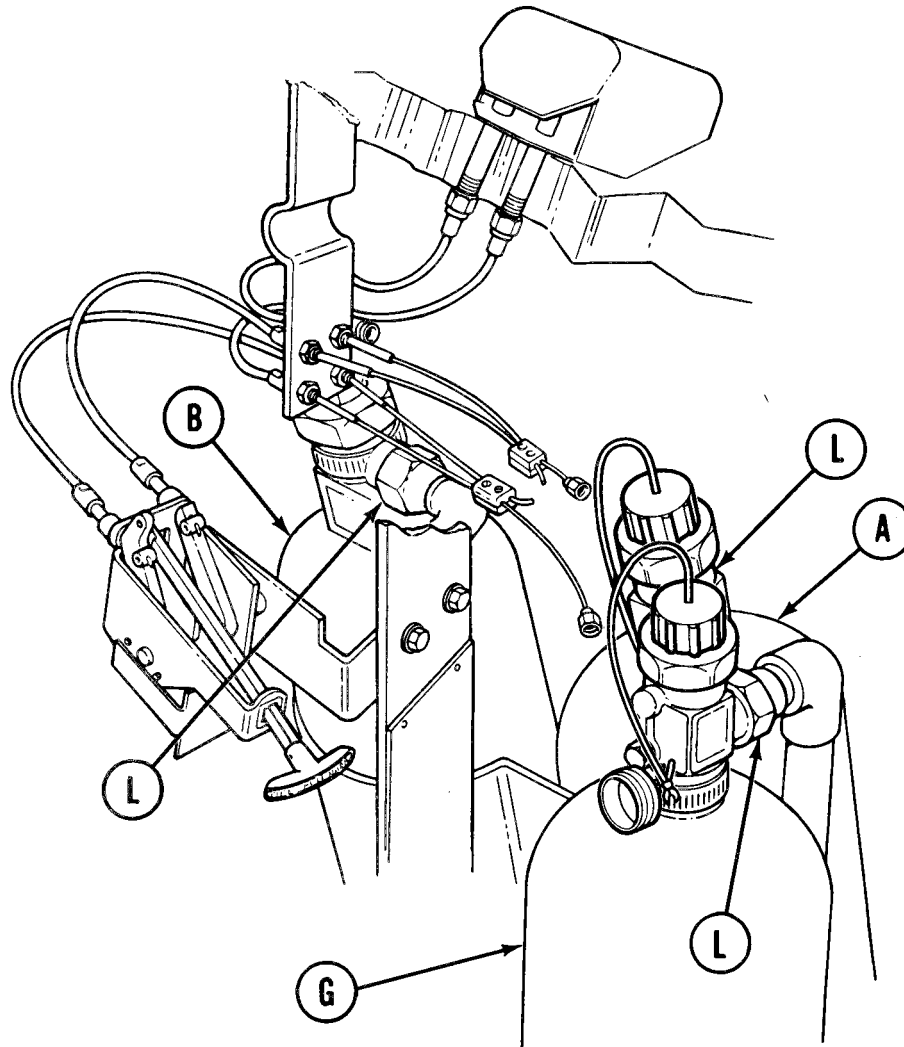
1. Place cylinders (A) and (B) into brackets (C) and (D).
2. Place clamp on strap (E) over bracket (F) and lock cylinders (A) and (B) into brackets (C) and (D).
3. Place cylinder (G) into bracket (H).
4. Place clamp on strap (J) over bracket (K) and lock cylinder (G) into bracket (H).
- 4.1. Remove diffuser caps (K.1) from discharger ports of cylinders (A), (B), and (G) and install caps (K.1) on dummy plug (K.2).



Go on to Sheet 3

**FIXED FIRE EXTINGUISHER CYLINDER REPLACEMENT (EARLY MODEL) (Sheet 3 of 3)**

5. Using wrench, connect three discharge lines (L) on number one shot cylinder (G) and two number two shot cylinders (A) and (B).
6. Install control valves (page 21-41).



End of Task

**FIXED FIRE EXTINGUISHER CYLINDER REPLACEMENT (LATE MODEL) (Sheet 1 of 3)**

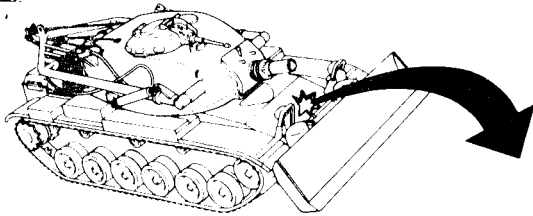
TOOLS: 1-5/8 in. open end wrench  
Scales, 0-50 lb.

PRELIMINARY PROCEDURE: Remove control valve (page 21-37)

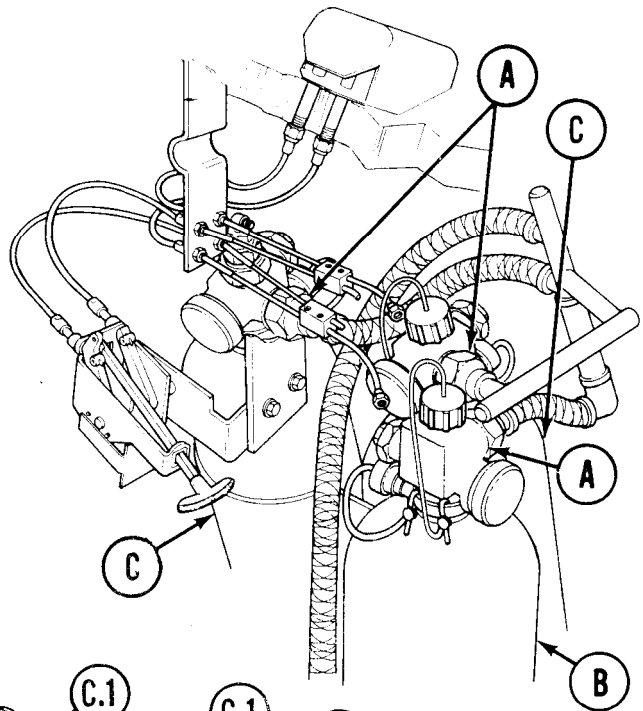
**WARNING**

**Handle charged cylinders with care. Do not jar or subject cylinder to temperature above 140 degrees F (60 degrees C).**

REMOVAL:



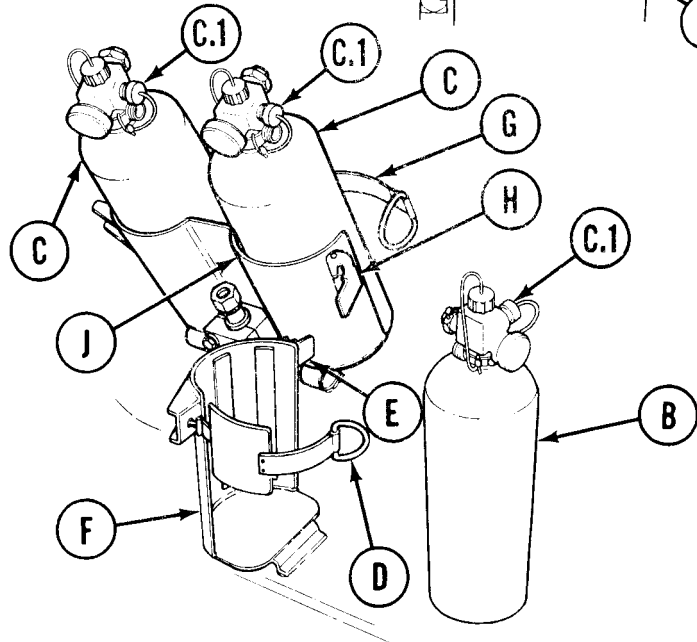
1. Using wrench, disconnect discharge line (A) from 1st shot cylinder (B) and two 2nd shot cylinders (C).



**WARNING**

**Diffuser cap (C.1) must be installed whenever the discharge port is disconnected. Failure to do so could result in injury if cylinder is accidentally discharged.**

- 1.1. Install diffuser caps (C.1) on discharger ports of cylinders (B) and (C).
2. Release strap (D) holding 1st shot fixed fire extinguisher cylinder (B) by grasping latch (E) and pulling toward right side of vehicle.
3. Carefully remove 1st shot cylinder (B) from bracket (F).
4. Release strap (G) holding two 2nd shot fixed fire extinguisher cylinders (C) by grasping latch (H) and pulling toward front of vehicle.
5. Carefully remove cylinders (C) from bracket (J).

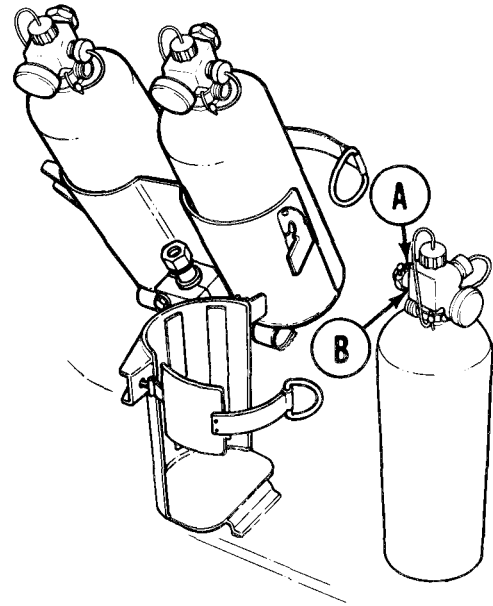


Go on to Sheet 2

**FIXED FIRE EXTINGUISHER CYLINDER REPLACEMENT (LATE MODEL) (Sheet 2 of 3)**

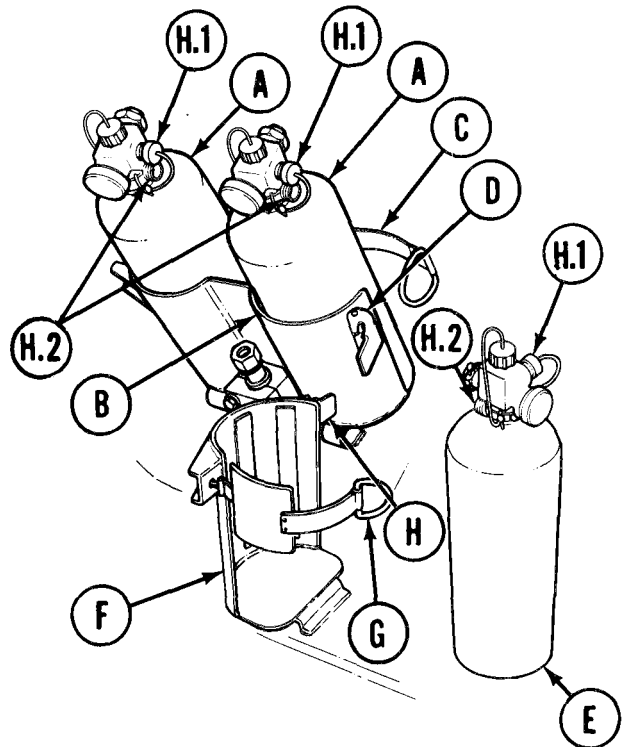
**INSPECTION:**

1. If plastic indicator (A) over safety valve outlet is missing, replace cylinder.
2. If safety tire lead seal (B) is broken, replace cylinder.
3. If latest hydrostatic test date (stamped on cylinder neck) has exceeded 12 years, replace cylinder.
4. Make sure Fire Extinguisher Record Tag (DA Form 253) indicates that cylinders have been weighed within 6 months.
5. Using scales, weigh cylinder. If weight loss exceeds 10 percent of difference between full and empty weight marked on the flood valve (A), replace cylinder.



**INSTALLATION:**

1. Place cylinders (A) into bracket (B).
2. Place clamp on strap (C) over bracket (D) and lock cylinders (A) into bracket (B).
3. Place cylinder (E) into bracket (F).
4. Place clamp on strap (G) over bracket (H) and lock cylinder (E) into bracket (F).
- 4.1. Remove diffuser caps (H.1) from cylinders (A) and (E) and install caps on dummy plugs (H.2).



Go on to Sheet 3

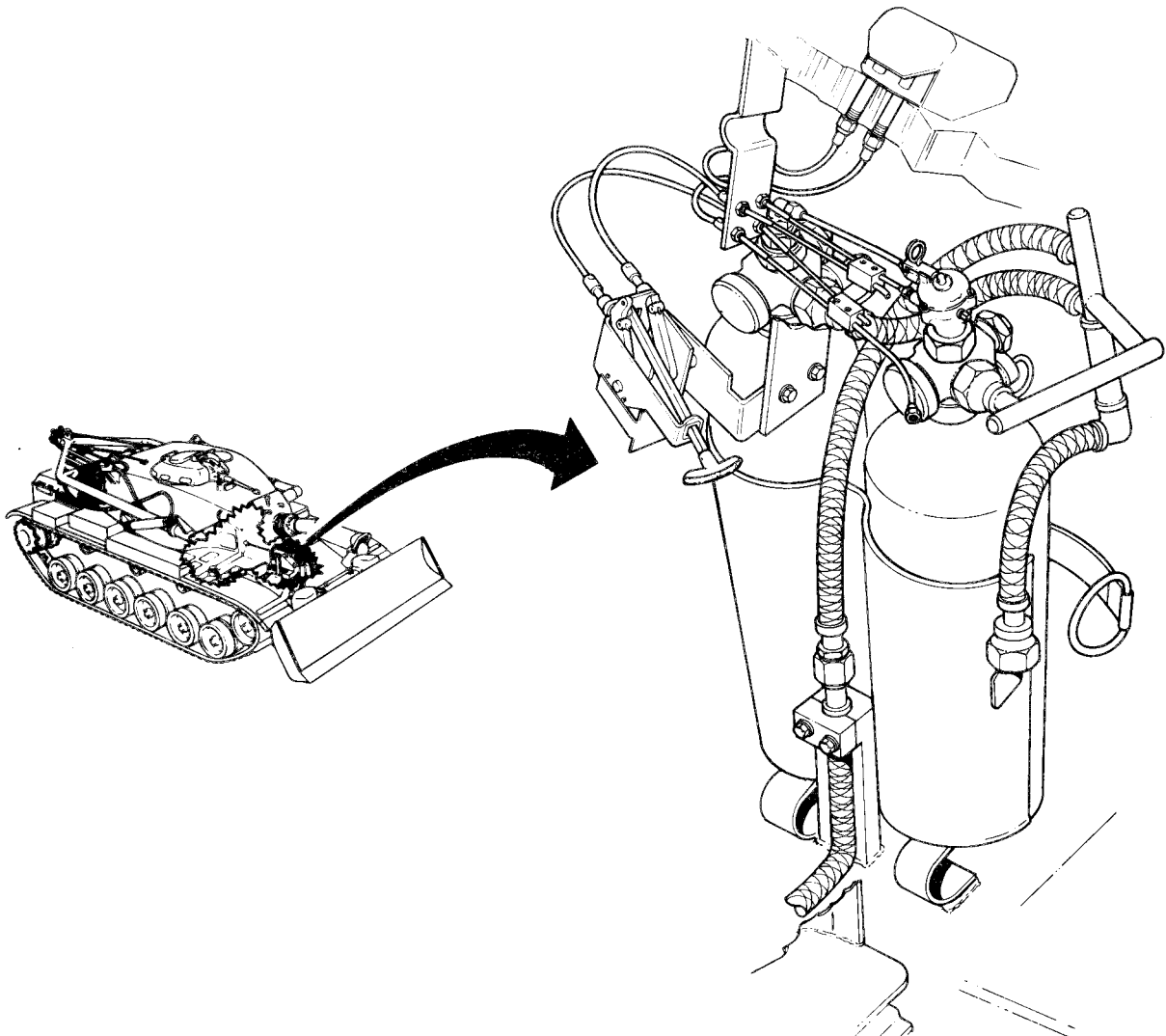


**FIXED FIRE EXTINGUISHER MANIFOLD ASSEMBLY REPLACEMENT (LATE MODEL)  
(Sheet 1 of 2)**

**TOOLS:** 1-5/8 in. open end wrench  
 1-3/8 in. open end wrench  
 1-1/4 in. Open end wrench  
 Torque wrench with 1/2 in. drive  
 1-1/4 in. crowfoot with 1/2 in. drive

**SUPPLIES:** Zinc chromate primer (Item 50, Appendix D)

**PRELIMINARY PROCEDURE:** Remove 1st shot fire extinguisher cylinder (page 21-52, steps 1 thru 3)



Go on to Sheet 2

**FIXED FIRE EXTINGUISHER MANIFOLD ASSEMBLY REPLACEMENT (LATE MODEL)**  
(Sheet 2 of 2)

REMOVAL:

1. Using 1-1/4 inch wrench to hold hose (A), use 1-3/8 inch wrench to disconnect nut (B) from hose (A).
2. Lift out manifold assembly (C).

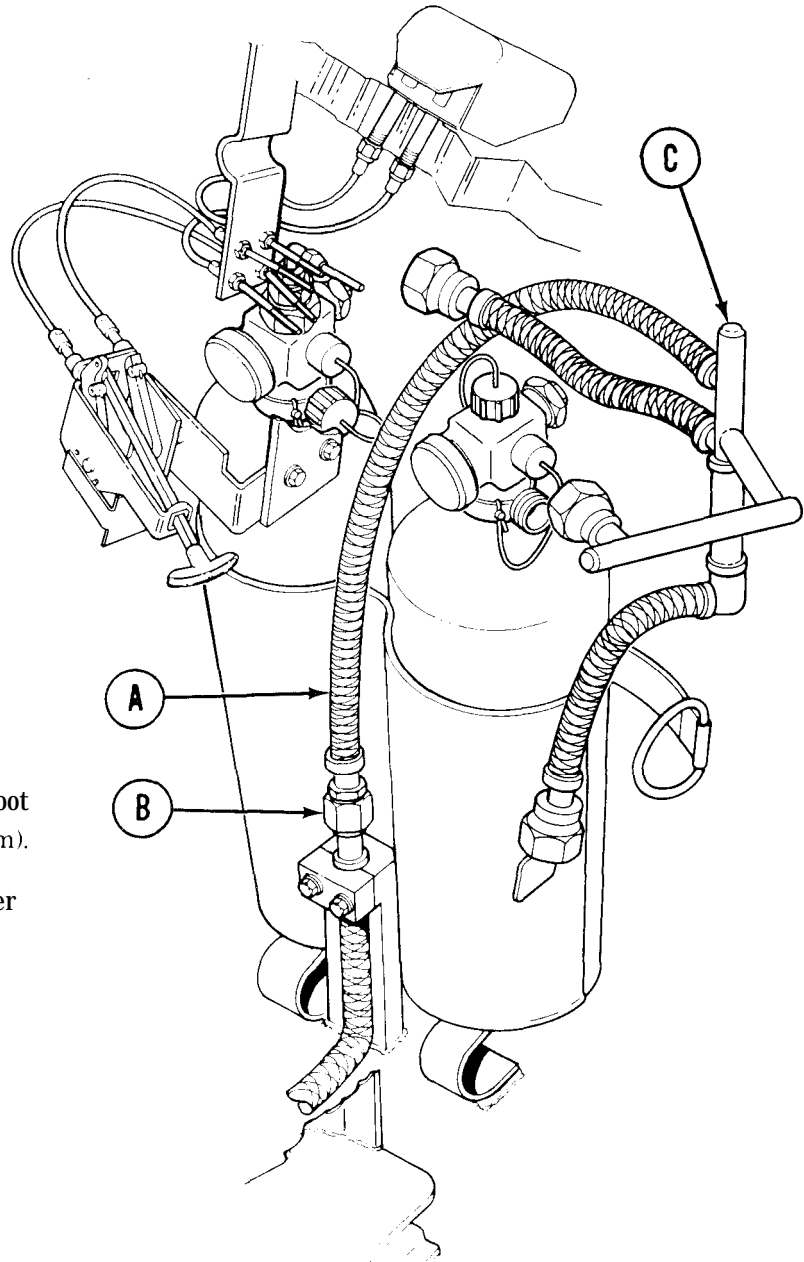
INSTALLATION:

1. Position manifold assembly (C) in place.

**NOTE**

**Apply zinc chromate primer to threads of hose (A) prior to installation.**

2. Using 1-1/4 inch wrench and 1-3/8 inch wrench, connect hose (A) to tube (B).
3. Use torque wrench and 1-1/4 inch crowfoot tighten hose (A) to 40-55 lb-ft (54-75 N·m).
4. Install 1st shot fire extinguisher cylinder (page 21-52.1, steps 3, 4, 5, and 6).



End of Task



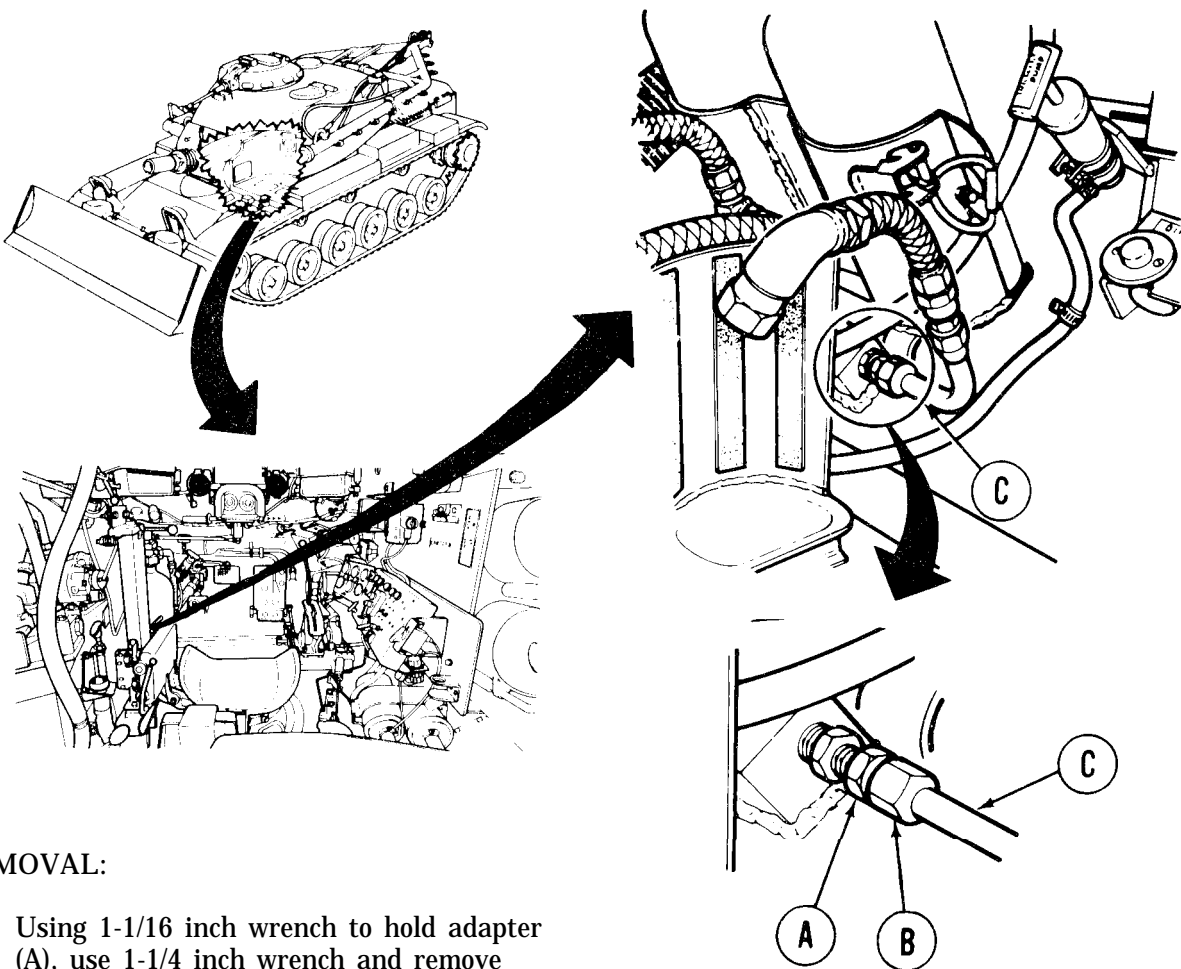


**TUBE ASSEMBLY 1ST SHOT CYLINDER LINE REPLACEMENT (Sheet 1 of 3)**

- TOOLS:**
- 1-1/16 in. open end wrench (2 required)
  - 1-1/4 in. open end wrench
  - 18 in. pipe wrench
  - Vise
  - Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)
  - 10 in. extension with 1/2 in. drive
  - 1-1/4 in. crowfoot with 1/2 in. drive

**SUPPLIES:** Zinc chromate primer (Item 50, Appendix D)

**PRELIMINARY PROCEDURE:** Remove 1st shot fire extinguisher cylinder (page 21-49)

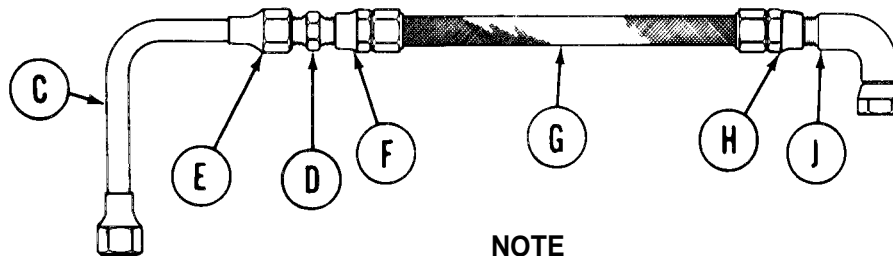


**REMOVAL:**

1. Using 1-1/16 inch wrench to hold adapter (A), use 1-1/4 inch wrench and remove connector (B) on tube (C) from adapter (A).
2. Remove assembled tube from vehicle.

Go on to Sheet 2

**TUBE ASSEMBLY 1ST SHOT CYLINDER LINE REPLACEMENT (Sheet 2 of 3)**



**NOTE**

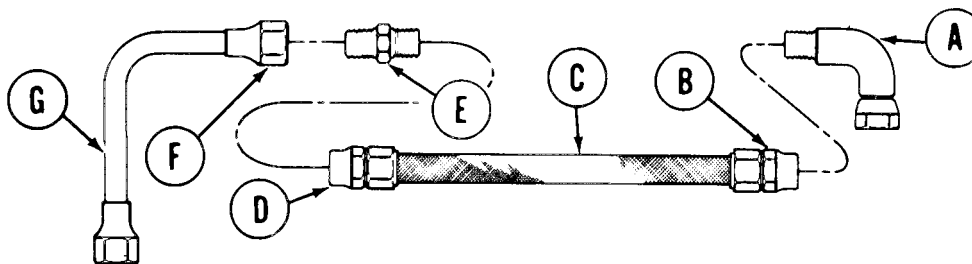
**Position tube and fitting in vise as necessary to accomplish disassembly and assembly.**

3. Using 1-1/16 inch wrench to hold nipple (D), use 1-1/4 inch wrench on connector (E) and remove tube (C) from nipple (D).
4. Using 1-1/4 inch wrench to hold connector (F), use 1-1/16 inch wrench and remove nipple (D) from hose (G).
5. Using 1-1/4 inch wrench to hold connector (H), use pipe wrench and remove elbow (J) from hose (G).

**INSTALLATION:**

**NOTE**

**Apply zinc chromate primer (Item 50, Appendix D) to threads prior to installation of threaded tube/hose connectors.**



1. Using pipe wrench to hold elbow (A), use 1-1/4 inch wrench on connector (B) and install hose (C) onto elbow (A). Then, using torque wrench and 1-1/4 inch crowfoot, tighten to 70-90 lb-ft (95-122N·m).
2. Using 1-1/4 inch wrench to hold connector(D) and 1-1/16 inch wrench on nipple (E), install nipple (E). Then, using torque wrench and 1-1/4 inch crowfoot, tighten to 70-90 lb-ft (95-122 N· m).

**NOTE**

**Be sure tube (G) is positioned as shown above when connector (F) is tightened.**

3. Using 1-1/16 inch wrench to hold nipple (E) and 1-1/4 inch wrench on connector (F), install tube (G). Then, using torque wrench and 1-1/4 inch crowfoot, tighten to 40-50 lb-ft (54-68 N· m).

Go on to Sheet 3

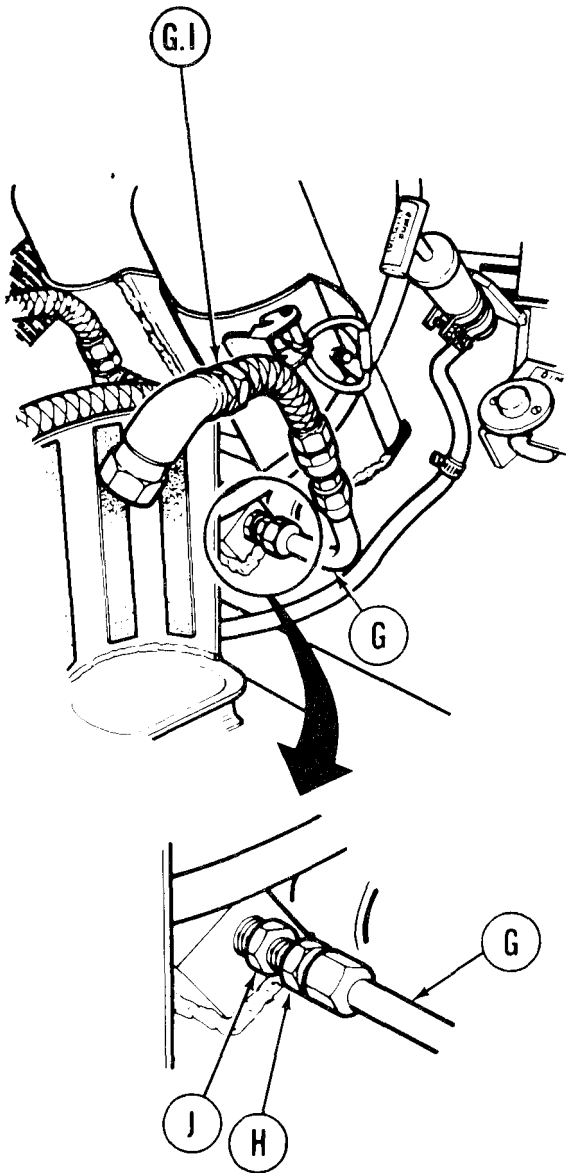
TUBE ASSEMBLY 1ST SHOT CYLINDER LINER REPLACEMENT (Sheet 3 of 3)

4. Position assembled line (G1) in vehicle.

NOTE

Be sure elbow on hose is positioned as shown when connector (H) is tightened.

5. Using 1-1/4 inch wrench, install connector (H) on tube (G) onto adapter (J). Using torque wrench and 1-1/4 inch crowfoot, tighten to 40-55 lb-ft (54-75 N•m).
6. Install 1st shot freed fire extinguisher cylinder (page 21-50).



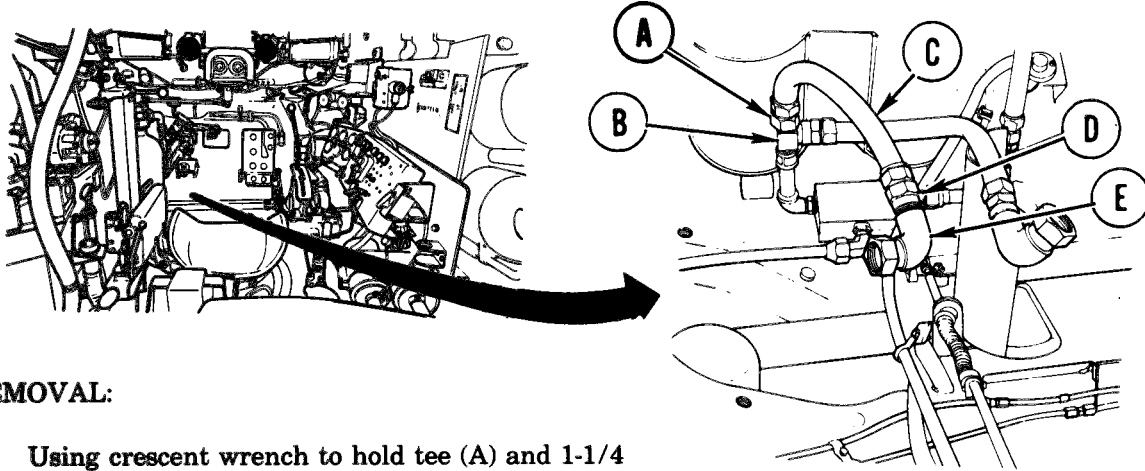
End of Task

**FLEXIBLE HOSE ASSEMBLY 2ND SHOT CYLINDER NO. 1 REPLACEMENT (Sheet 1 of 1)**

**TOOLS:** 1-1/4 in. open end wrench  
 18 in. pipe wrench  
 12 in. adjustable wrench (crescent. wrench)

**SUPPLIES:** Zinc chromate primer (Item 50, Appendix D)

**PRELIMINARY PROCEDURE:** Remove three fire extinguisher cylinders (page 21-49)



**REMOVAL:**

1. Using crescent wrench to hold tee (A) and 1-1/4 inch wrench on hose connector (B), remove hose (C) from tee (A).
2. Using 1-1/4 inch wrench to hold hose connector (D), use pipe wrench and remove elbow (E).

**INSTALLATION:**

**NOTE**

**Apply zinc chromate primer (Item 50, Appendix D) to threads prior to installation of hose connectors.**

1. Using pipe wrench to hold elbow (E), use 1-1/4 inch wrench and install and secure new hose (C) onto elbow (E).

**NOTE**

**Make sure position of elbow opening to bottle is correct before tightening hose (C) to tee (A).**

2. Using crescent wrench to hold tee (A), use 1-1/4 inch wrench on hose connector (B) and install hose (C) onto tee (A).
3. Install fire extinguisher cylinders (page 21-51).

End of Task

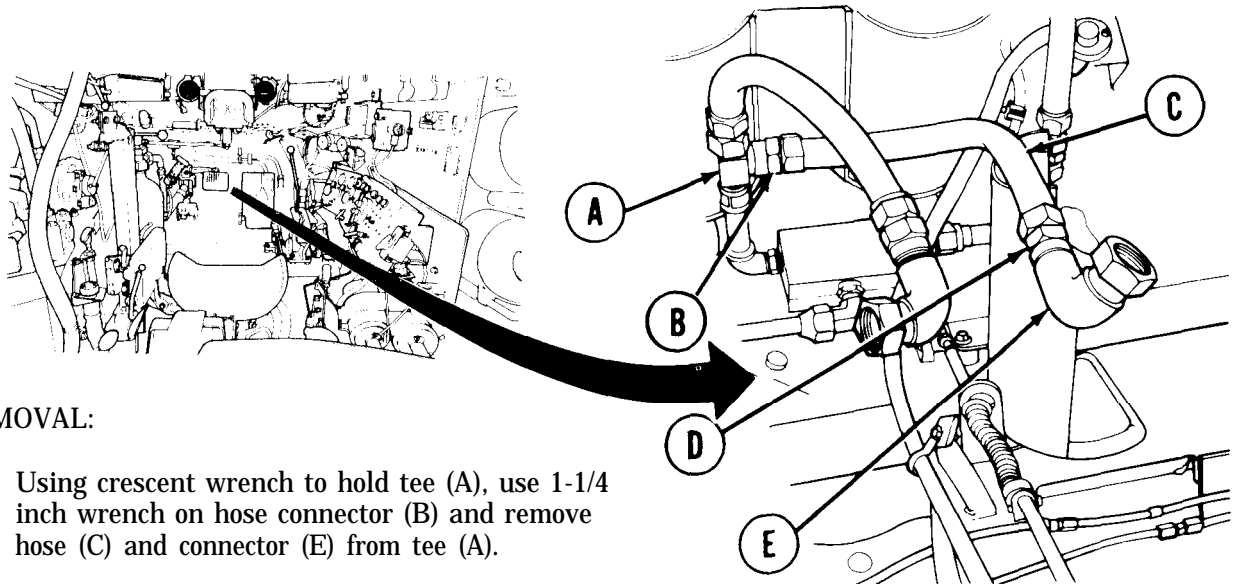
TA140958

**FLEXIBLE HOSE ASSEMBLY 2ND SHOT CYLINDER NO. 2 REPLACEMENT (Sheet 1 of 1)**

TOOLS: 1-1 /4 in. open end wrench  
18 in. pipe wrench  
12 in. adjustable wrench

SUPPLIES: Zinc chromate primer (Item 50, Appendix B)

PRELIMINARY PROCEDURE: Remove three fire extinguisher cylinders (page 21-49)



**REMOVAL:**

1. Using crescent wrench to hold tee (A), use 1-1/4 inch wrench on hose connector (B) and remove hose (C) and connector (E) from tee (A).
2. Using 1-1/4 inch wrench to hold hose connector (D), use pipe wrench and remove elbow (E) from hose (C).

**INSTALLATION:**

**NOTE**

**Apply zinc chromate primer (Item 50, Appendix D) to threads prior to installation of hose connectors.**

1. Using pipe wrench to hold elbow (E), use 1-1/4 inch wrench and install and secure new hose (C) onto elbow (E).

**NOTE**

**Make sure position of elbow opening to bottle is correct before tightening hose (C) to tee (A).**

2. Using crescent wrench to hold tee (A), use 1-1/4 inch wrench on hose connector (E) and install hose (C) onto tee (A).
3. Install fire extinguisher cylinders (page 21-50)

End of Task

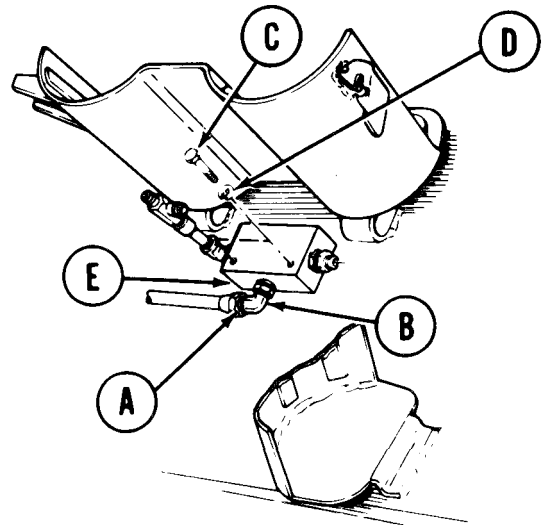
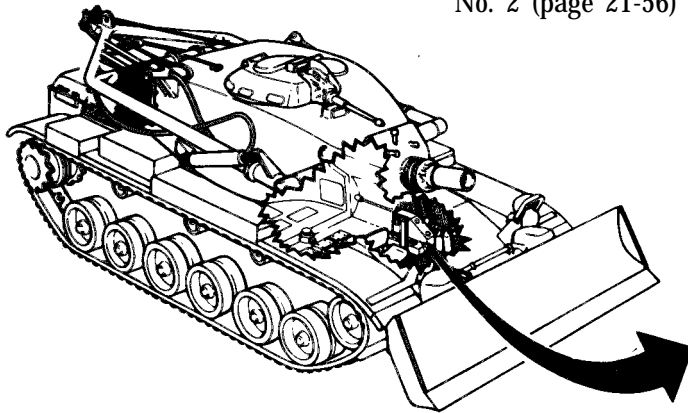
TA140959

**VALVE BODY REPLACEMENT (FIXED FIRE EXTINGUISHER LINES) (Sheet 1 of 3)**

**TOOLS:** 7/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 1-1/16 in. open end wrenches (2 required)  
 12 in. adjustable wrench  
 10 in. pipe wrenches (2 required)  
 Vice  
 Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)  
 10 in. extension with 1/2 in. drive  
 1-1/16 in. crowfoot with 3/8 in. drive  
 Adapter, 1/2 in. to 3/8 in.

**SUPPLIES:** Zinc chromate primer (Item 50, Appendix D)

**PRELIMINARY PROCEDURES:** Remove fire extinguisher cylinders (page 21-49)  
 Remove tube assembly 1st shot cylinder line (page 21-52)  
 Remove flexible hose assembly 2nd shot cylinder  
 No. 1 (page 21-55)  
 Remove flexible hose assembly 2nd shot cylinder  
 No. 2 (page 21-56)

**REMOVAL:**

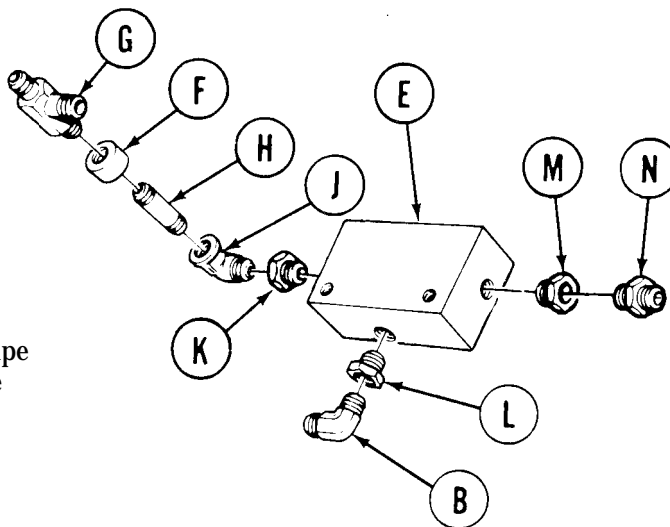
1. Using adjustable wrench, remove connector (A) from elbow (B).
2. Using socket, remove two screws (C) and washers (D) from valve body (E).
3. Remove body (E) from vehicle.

Go on to Sheet 2

VALVE BODY REPLACEMENT (FIXED FIRE EXTINGUISHER LINES) (Sheet 2 of 3)

NOTE

Position valve body (E) in vise as necessary to accomplish disassembly and assembly.



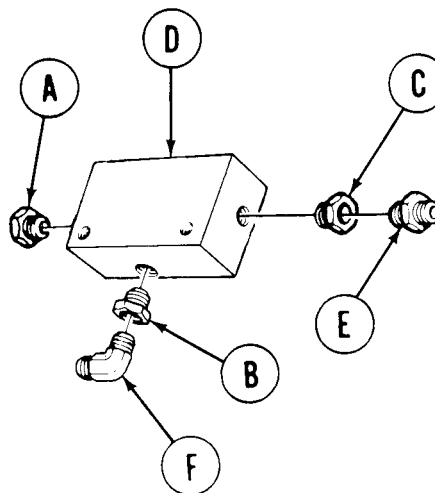
4. Using pipe wrench, hold coupling (F), use adjustable wrench and remove tee (G) from coupling (F).
5. Using pipe wrench to hold nipple (H), use pipe wrench and remove coupling (F) from nipple (H).
6. Using pipe wrench, remove nipple (H) from elbow (J).
7. Using 1-1/16 inch wrench to hold bushing (K), use pipe wrench and remove elbow (J) from bushing (K).
8. Using 1-1 /16 inch wrench to hold bushing (L), use pipe wrench and remove elbow (B) from bushing (L).
9. Using one 1-1 /16 inch wrench to hold bushing (M), use other 1-1/16 inch wrench and remove adapter (N) from bushing (M).
10. Using 1-1/16 inch wrench, remove three bushings (K), (L), and (M) from valve body (E).

NOTE

Apply zinc chromate primer to all threads prior to installation of tube/hose connectors.

INSTALLATION:

1. Using 1-1/16 inch wrench, install three bushings (A), (B), and (C) into valve body (D).
2. Using 1-1/16 inch wrench, install adapter (E) into bushing (C). Then, using torque wrench and 1-1/ 16 in. crowfoot tighten to 40-55 lb-ft (54-78 N·m).
3. Using pipe wrench, install elbow (F) into bushing (B).

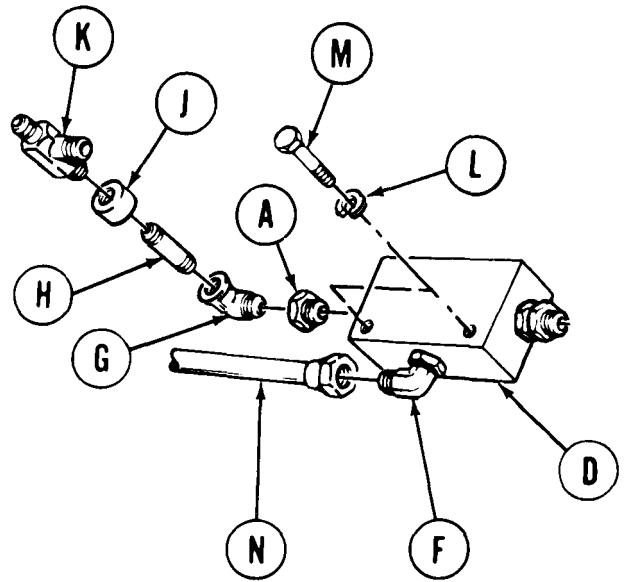


Go on to Sheet 3



## VALVE BODY REPLACEMENT (FIXED FIRE EXTINGUISHER LINES (Sheet 3 of 3))

4. Using pipe wrench, install elbow (G) into bushing (A).
5. Using pipe wrench, install nipple (H) into elbow (G).
6. Using pipe wrench, install coupling (J) onto nipple (H).
7. Using adjustable wrench, install tee (K) into coupling (J).
8. Position body (D) onto hull floor. Using socket, install two washers (L) and screws (M) securing body (D) to hull.



9. Using adjustable wrench, install tube (N) onto elbow (F). Then, using torque wrench and 1-1/16 inch crowfoot tighten to 35-50 lb-ft (47-68 N • m).
10. Install fire extinguisher cylinders (page 21-50).
11. Install flexible hose assembly, 2nd shot cylinder No. 2 (page 21-56).
12. Install flexible hose assembly, 2nd shot cylinder No. 1 (page 21-55).
13. Install tube assembly, 1st shot cylinder line (page 21-53).

End of Task

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (EARLY MODEL)**  
 (Sheet 1 of 7)

PROCEDURE INDEX

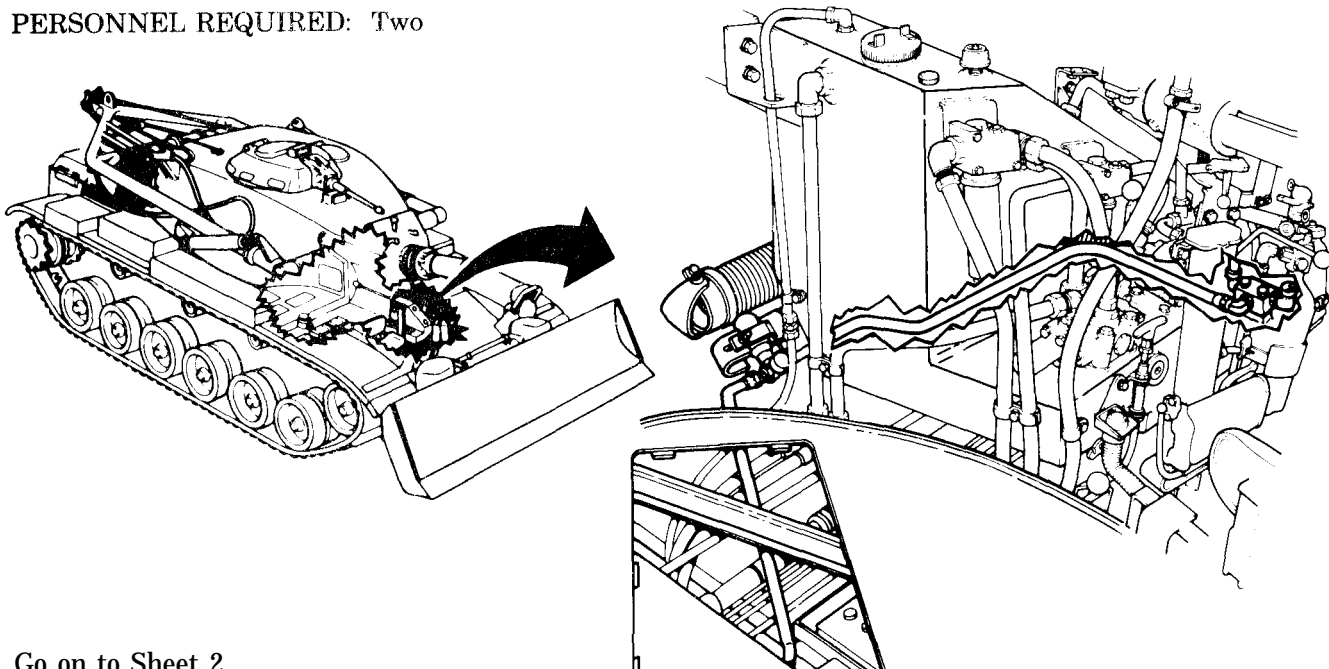
PROCEDURE	PAGE
Removal	21-61
Installation	21-64

TOOLS: 1-1/4 in. combination box and open end wrench  
 12 in. adjustable wrench  
 1-1/16 in. open end wrench  
 9/16 in. combination box and open end wrench  
 1 in. combination box and open end wrench (2 required)  
 Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)  
 Pipe wrench, 1/4 to 1 in. ips  
 Vise  
 7/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Extension with 1/2 in. drive, 10 in. lg.  
 1-1/4 in. crowfoot with 1/2 in. drive

SUPPLIES: Lockwashers (2 required)

PRELIMINARY PROCEDURE: Remove cylinder discharge hoses (pages 21-52, 21-55, and 21-56)

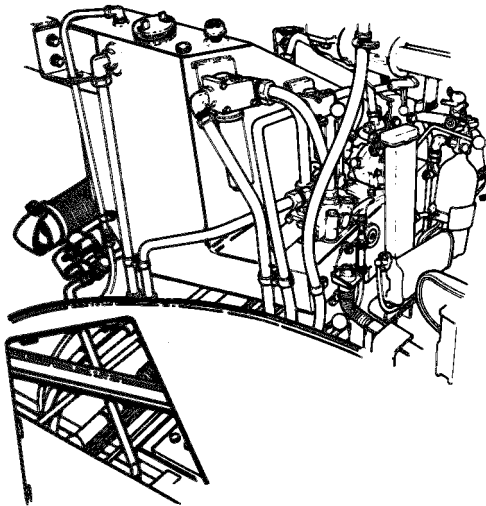
PERSONNEL REQUIRED: Two



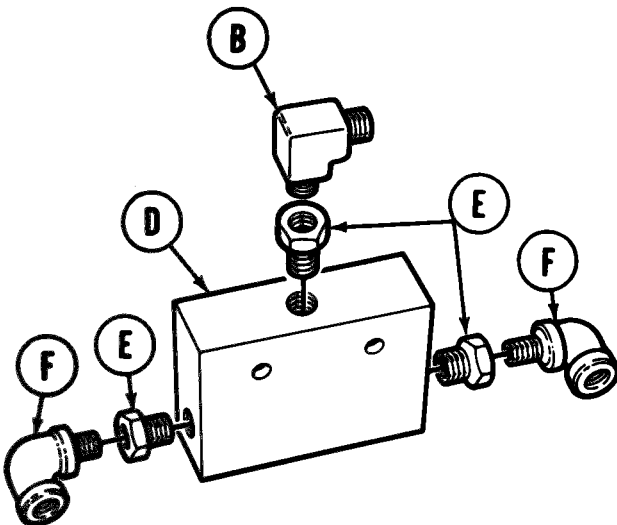
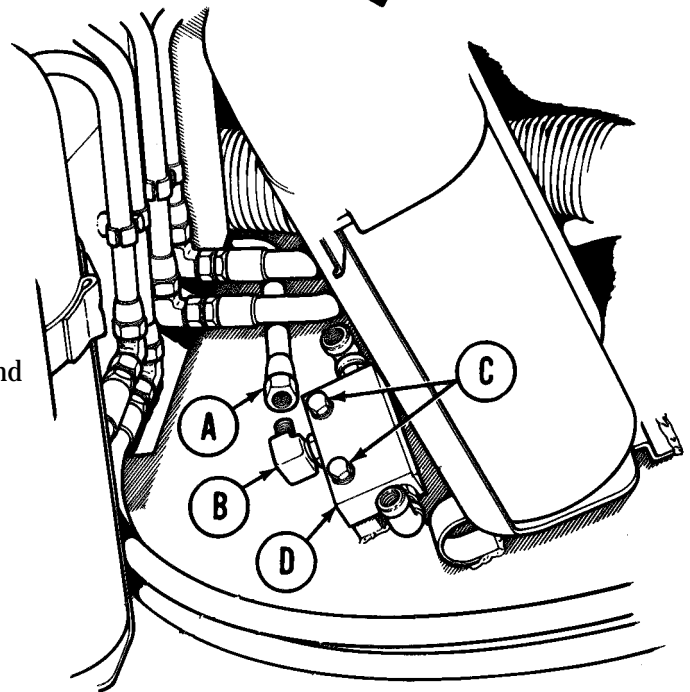
Go on to Sheet 2

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (EARLY MODEL)**

**REMOVAL:**



1. Using 1-1/4 inch wrench, disconnect tube assembly (A) from elbow (B).
2. Using 7/16 inch socket, remove two screws and lockwashers (C). Throw lockwashers away.
3. Remove body (D) and elbows as a unit.



4. Place body (D) in vise, use adjustable wrench to hold bushings (E) and, using pipe wrench, remove elbows (B) and (F) as necessary.
5. Using adjustable wrench, remove bushing (E) as necessary.
6. Remove body (D) from vise.

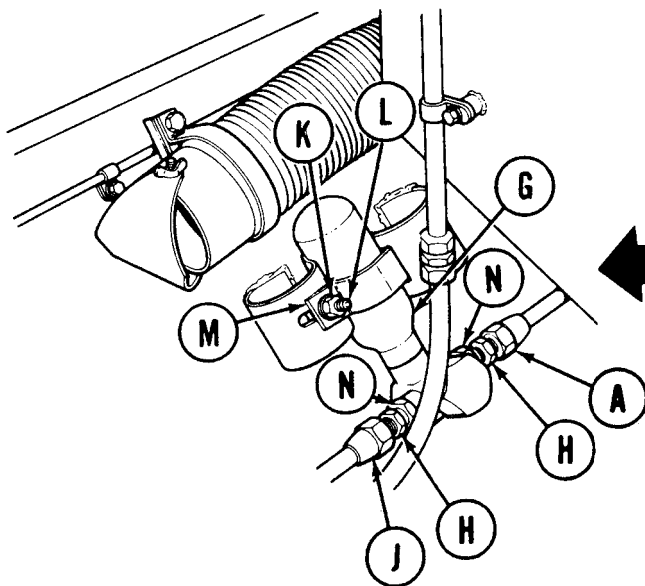
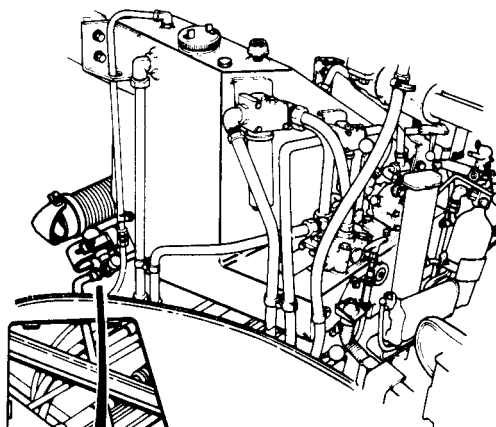
Go on to Sheet 3

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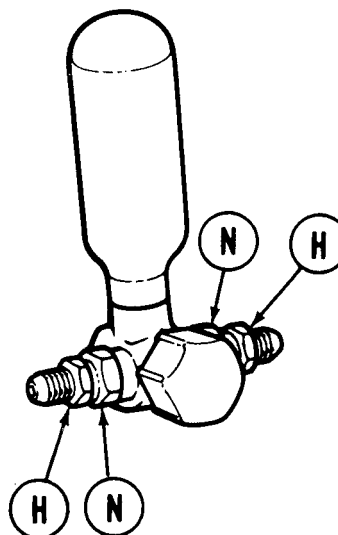
Change 1 21-61

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (EARLY MODEL)**  
 (Sheet 3 of 7)

7. Using 1-1/16 inch wrench to hold adapter (H), use 1-1/4 inch wrench and disconnect tube assembly (A).
8. Using 1-1/16 inch wrench to hold adapter (H), use 1-1/4 inch wrench and disconnect tube assembly (J).
9. Using 9/16 inch wrench, remove nut and washer (K) and bolt (L) securing strap (M).
10. Remove strap (M).
11. Remove delay bottle (G), adapters (H), and bushing (N) as a unit.



12. Using adjustable wrench to hold bushings (N), use 1-1/16 inch wrench and remove adapter (H).
13. Using adjustable wrench, remove bushings (N).



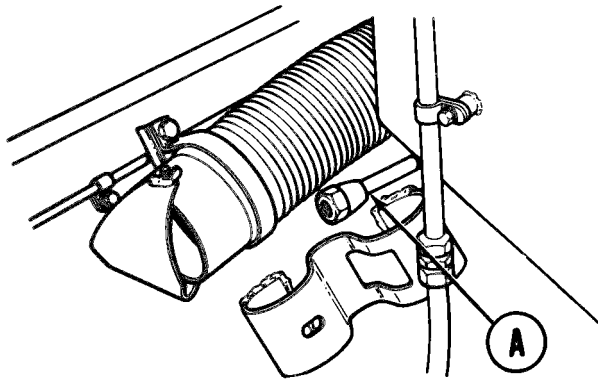
Go on to Sheet 4

TA253917

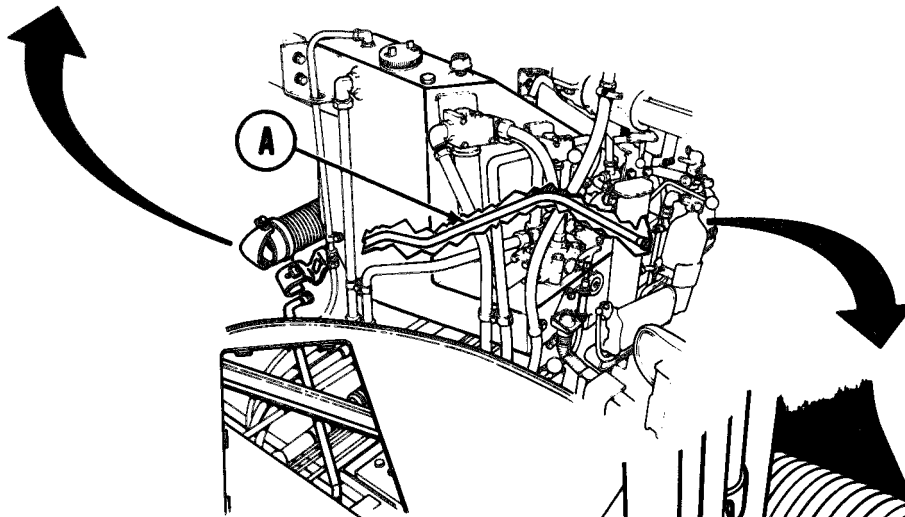
**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (EARLY MODEL)**  
 (Sheet 4 of 7)

**NOTE**

Two persons are required to remove tube (A).

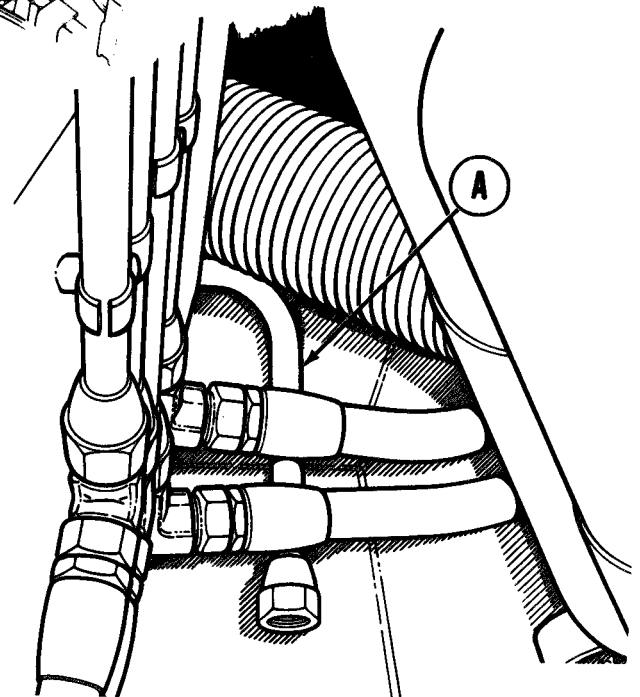


14. First person, working from turret, place tube (A) behind delay bottle bracket just below heater hose as shown.



15. Second person, in driver's compartment, place front end of tube (A) behind hydraulic reservoir and up against left side of tank hull just below heater hose as shown.

16. First person pull tube (A) towards rear of vehicle until it is free.

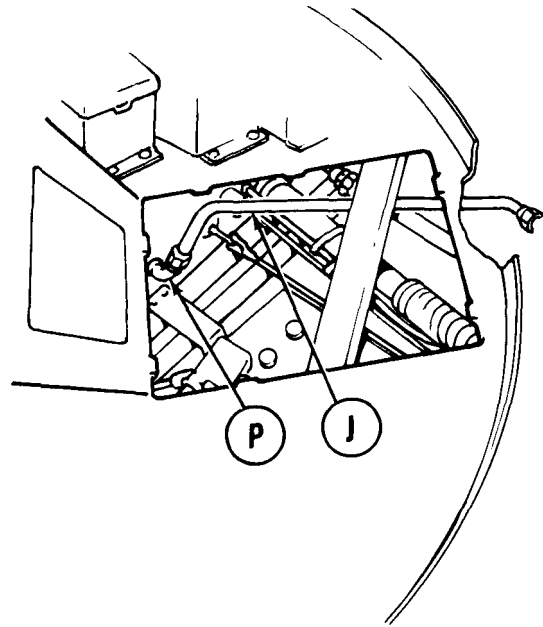


Go on to Sheet 5

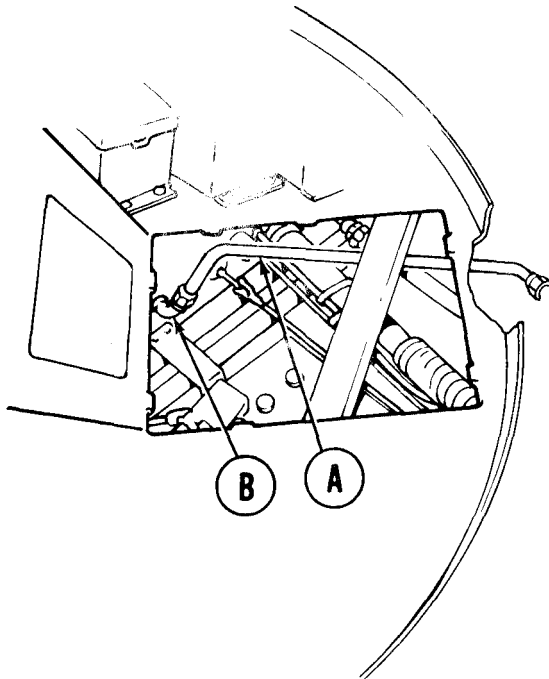
TA253918

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (EARLY MODEL)**  
(Sheet 5 of 7)

17. Open platform access door and traverse turret to gain access to tube assembly (J) and elbow (P).
18. Using 1-1/4 inch wrench, disconnect tube assembly (J) from elbow (P).
19. Remove tube assembly (J) through turret floor access.



**INSTALLATION:**

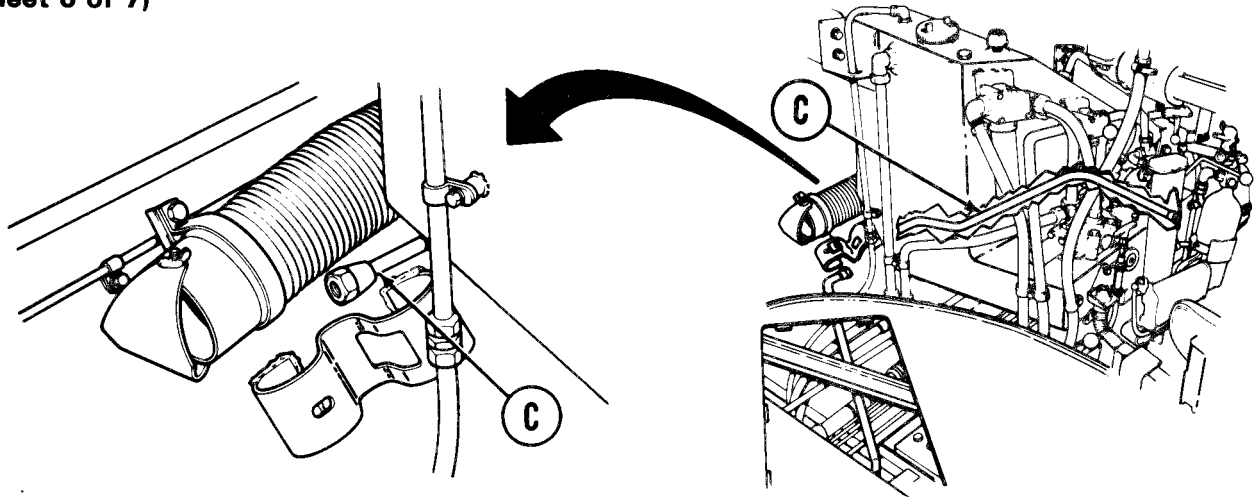


1. Install tube assembly (A) through turret under turret floor.
2. Connect tube assembly (A) to elbow (B), finger tight.

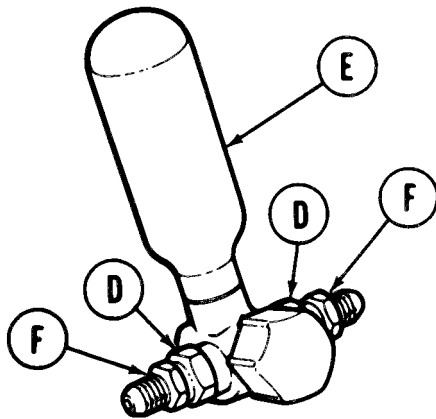
Go on to Sheet 6

TA253919

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (EARLY MODEL)**  
**(Sheet 6 of 7)**

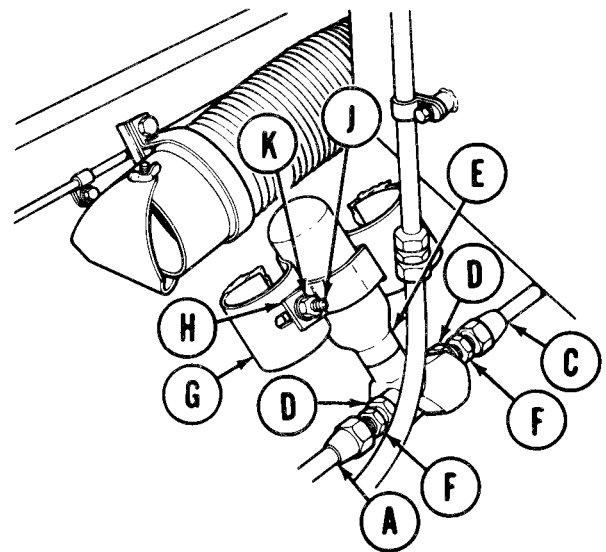


3. Install tube assembly (C) along left side of vehicle between heater hose and delay bottle bracket to driver's compartment.



4. Using adjustable wrench, install bushings (D) into delay bottle (E).
5. Using 1-1/16 inch wrench, install adapters (F) into bushings (D).

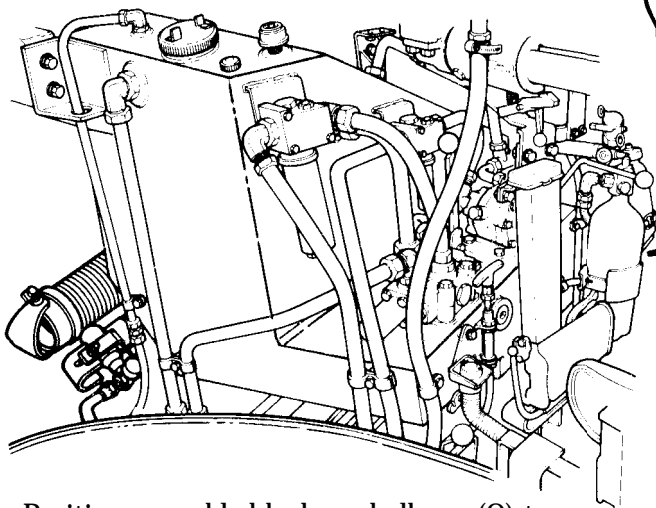
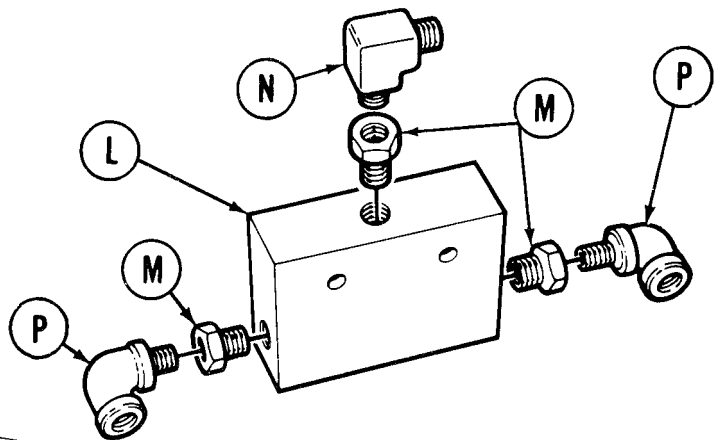
6. Position delay bottle (E) with bushing (D) and adapters (F) onto bracket (G).
7. Install strap (H) over delay bottle.
8. Using 9/16 inch wrench, install and tighten bolt (J), nut, and washer (K) to secure strap (H) over delay bottle (E).
9. Connect tube assembly (A) to adapter (F), finger tight.
10. Using torque wrench and 1-1/4 inch crowfoot, tighten tube assembly (A) nuts at each end to 40-55 lb-ft (54-75 N•m).
11. Connect tube assembly (C) to adapter (F), finger tight.



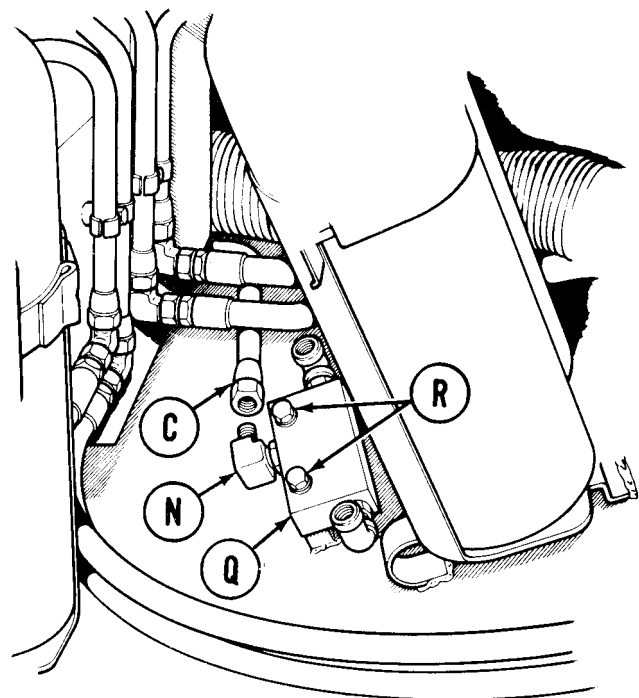
Go on to Sheet 7

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (EARLY MODEL)**  
(Sheet 7 of 7)

12. Insert body (L) into vise.
13. Using adjustable wrench, install three bushings (M) in body (L).
14. Using pipe wrench, install and position as shown, three elbows (N) and (P), to bushing (M).
15. Remove body from vise.



16. Position assembled body and elbows (Q) to hull floor just rearward of cylinder mounting bracket.
17. Using 7/16 inch socket, install two screws and washers (R) to secure body (Q) to hull.
18. Connect tube assembly (C) to elbow (N).
19. Using torque wrench and 1-1/4 inch crow-foot, tighten tube assembly (C) nuts at each end 40-55 lb-ft (54-75 N-m).
20. Install discharge hoses (pages 21-53, 21-55, and 21-56).



End of Task

TA253742





**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (LATE MODEL)**  
(Sheet 1 of 7)

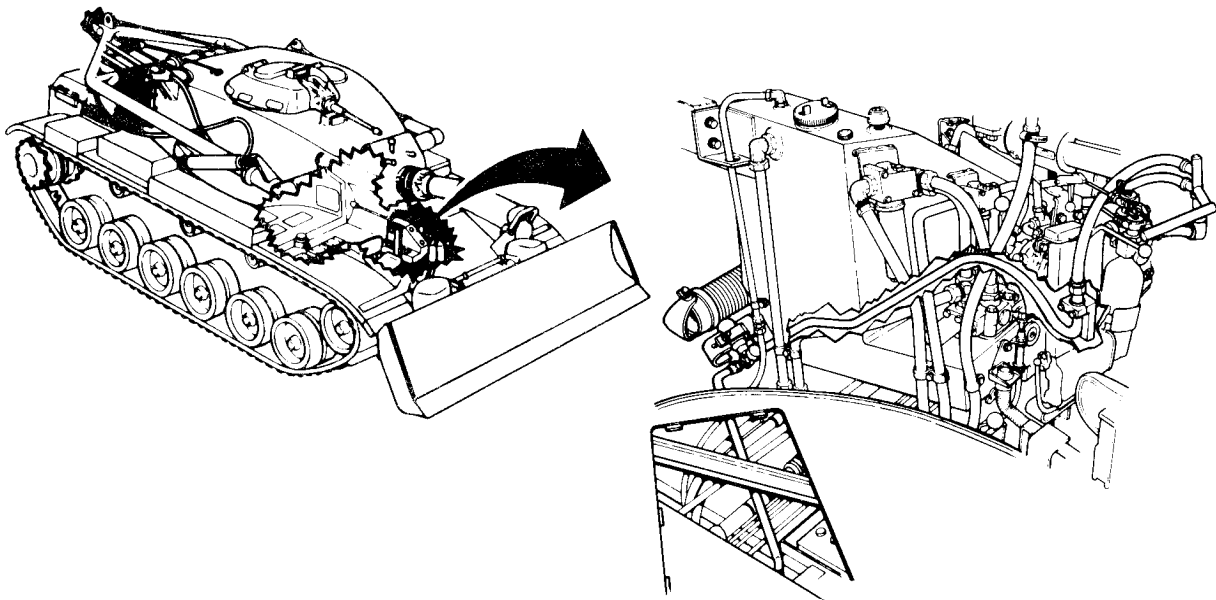
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	21-66.3
Installation	21-66.6

**TOOLS:** 1-1/4 in. open end wrench  
9/16 in. combination box and open end wrench  
1-1/8 in. open end wrench  
Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)  
1-3/8 in. open end wrench  
Extension with 1/2 in. drive, 10 in. lg.  
1-1/4 in. crowfoot with 1/2 in. drive

**SUPPLIES:** Lockwashers (MS35338-44) (2 required)  
Zinc chromate primer (Item 50, Appendix D)

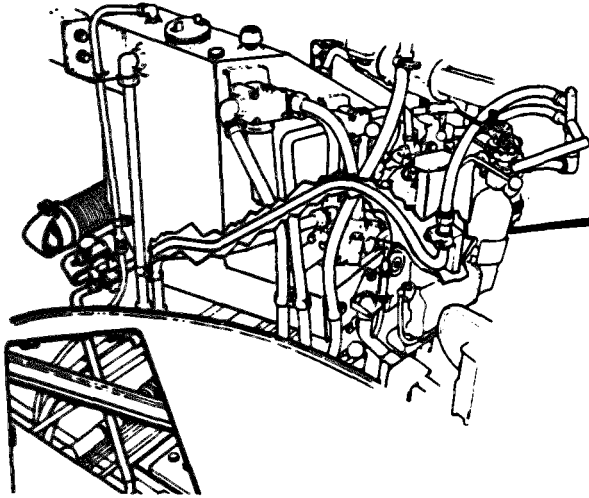
**PERSONNEL REQUIRED:** Two



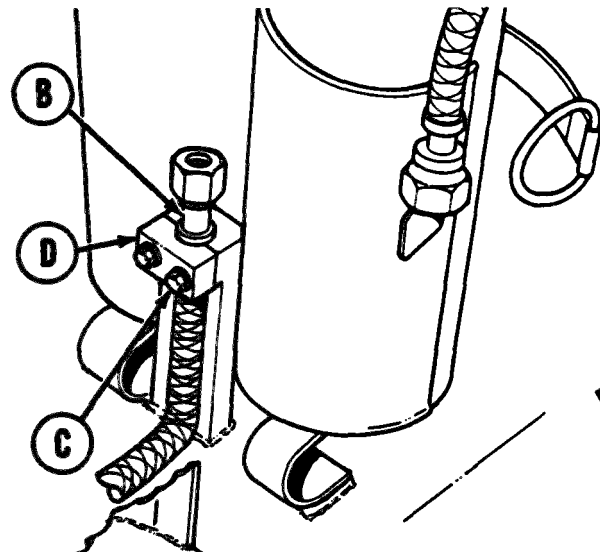
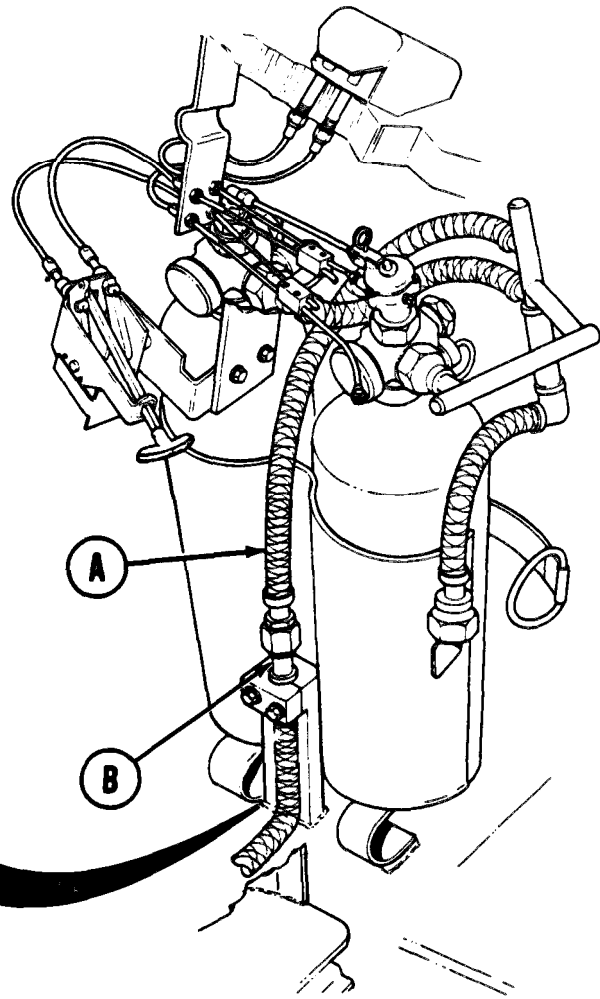
Go on to Sheet 2

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (LATE MODEL)**  
 (Sheet 2 of 7)

**REMOVAL:**



1. Using 1-1/4 inch wrench, and 1-3/8 inch wrench, disconnect manifold tube assembly (A) from tube assembly (B).
2. Using 9/16 inch wrench, remove two screws and lockwashers (C). Throw lockwashers away.
3. Remove support, cap, and cushion (D).

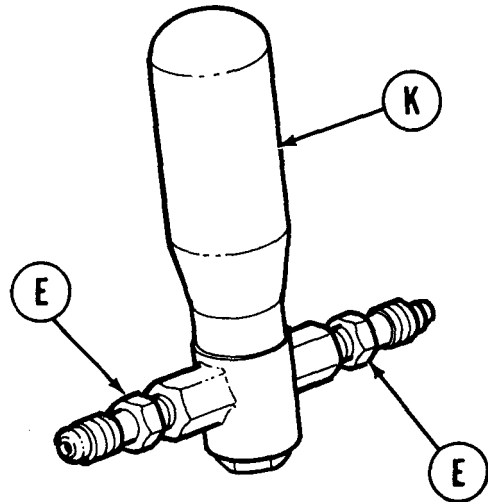
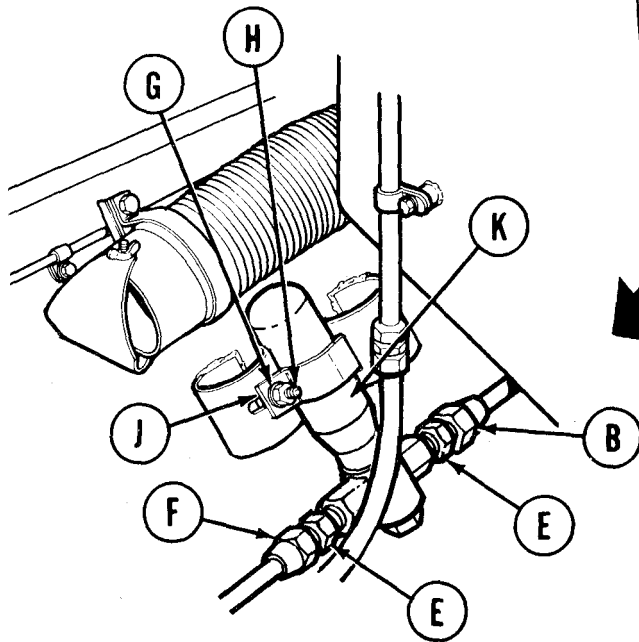
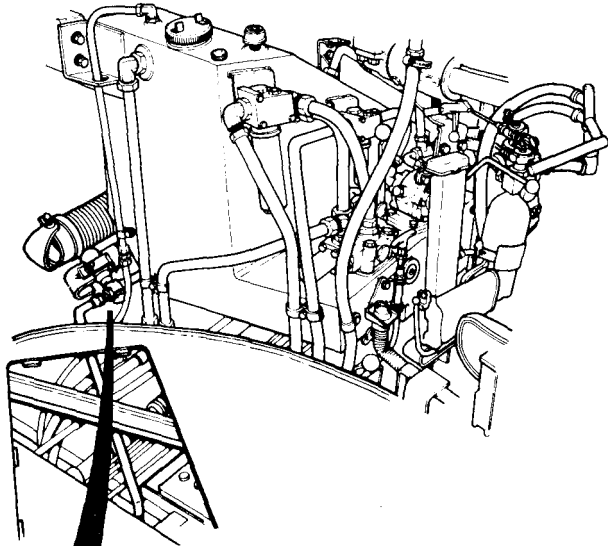


Go on to Sheet 3

TA253744

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (LATE MODEL)**  
(Sheet 3 of 7)

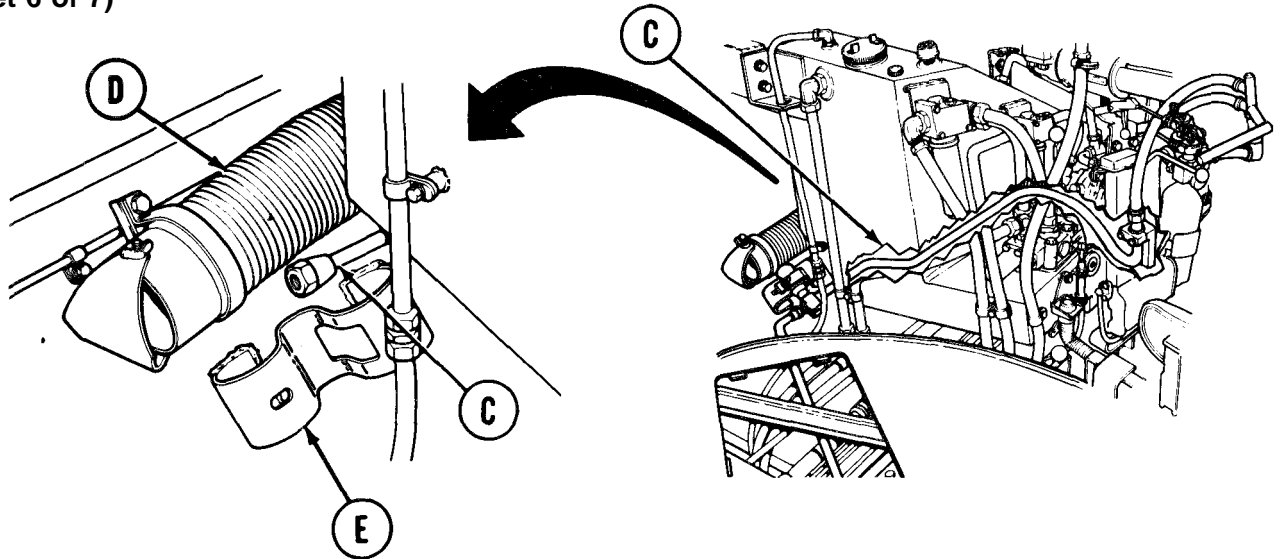
4. Using 1-1/4 inch wrench to hold adapter (E), use 1-3/8 inch wrench and disconnect tube assembly (B).
5. Using 1-1/8 inch wrench to hold adapter (E), use 1-1/4 inch wrench and disconnect tube assembly (F).
6. Using 9/16 inch wrench, remove nut and lockwasher (G) and bolt (H) securing strap (J). Throw lockwasher away.
7. Remove strap (J).
8. Remove delay bottle (K), and adapters (E).



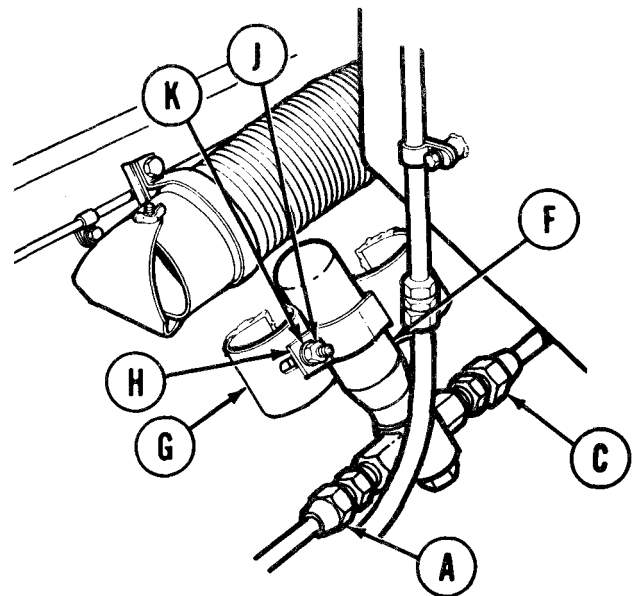
Go on to Sheet 4

TA253745

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (LATE MODEL)**  
 (Sheet 6 of 7)



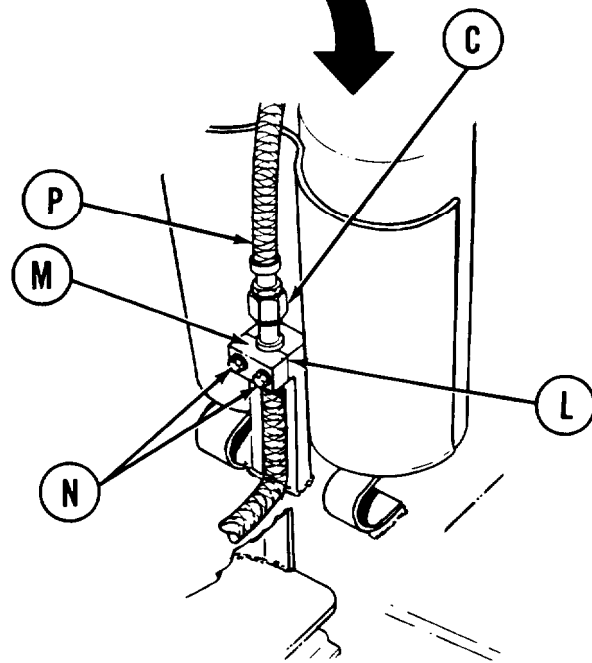
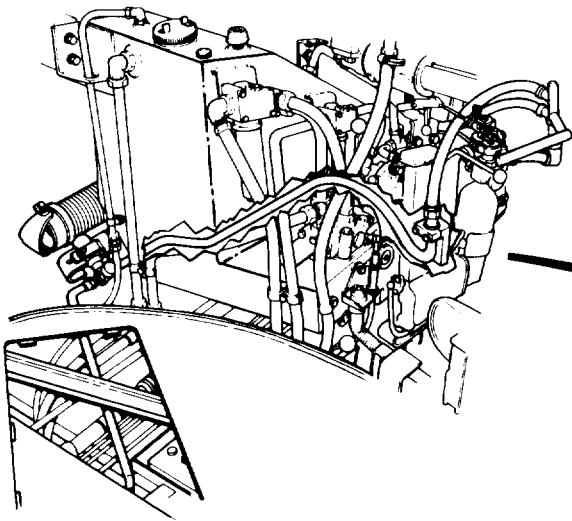
3. Install tube assembly (C) along left side of vehicle between heater hose (D) and delay bottle bracket (E) to driver's station.
4. Position delay bottle (F) onto bracket (G).
5. Install strap (H) over delay bottle (F).
6. Using 9/16 inch wrench, install and tighten bolt (J), nut, and lockwasher (K) to secure strap (H) over delay bottle (F).
7. Connect tube assembly (A) to delay bottle (F), finger tight.



8. Using torque wrench and 1-1/4 inch crowfoot, tighten tube assembly (A) nuts at each end to 40-55 lb-ft (54-75 N•m).
9. Connect tube assembly (C) to delay bottle (F), finger tight.

Go on to Sheet 7

**BODY, ELBOWS, DELAY BOTTLE, AND RELATED TUBES REPLACEMENT (LATE MODEL)**  
(Sheet 7 of 7)



10. Position tube assembly (C) on bracket (L).
11. Position support, cap, and cushion (M) in place around tube assembly (C).
12. Using 9/16 inch wrench, install two screws and new lockwashers (N).
13. Using hands, connect manifold hose (P) to tube assembly (C).
14. Using torque wrench, 1-1/4 inch crow-foot, and 1-3/8 inch wrench, tighten tube assembly (C) nuts at each end to 40-55 lb-ft (54-75 N•m).

End of Task

FIRE EXTINGUISHER BRACKET REPAIR (Sheet 1 of 4)

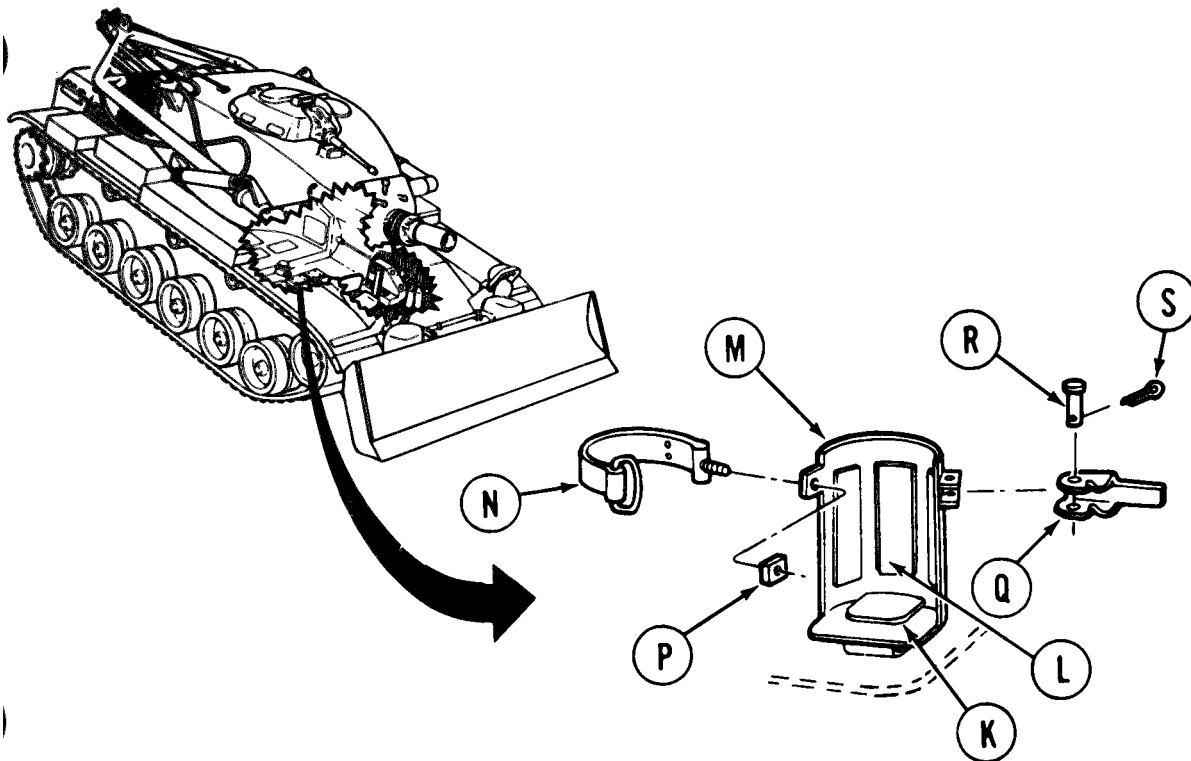
PROCEDURE INDEX

PROCEDURE	PAGE
Installation	21-68
	21-69

TOOLS: Putty knife  
 11/16 in. combination box and open end wrench  
 Slip joint pliers

SUPPLIES: Rags (Item 65, Appendix D)  
 Dry cleaning solvent (Item 54, Appendix D)  
 Pad (11659730)  
 Rubber Strip (11659731-1)  
 Rubber strip (11659731-2) (2 required)  
 Cotter pins (MS24665-208) (2 required)  
 Adhesive (Item 2, Appendix D)

PRELIMINARY PROCEDURE: Remove fire extinguisher cylinders (page 21-49)



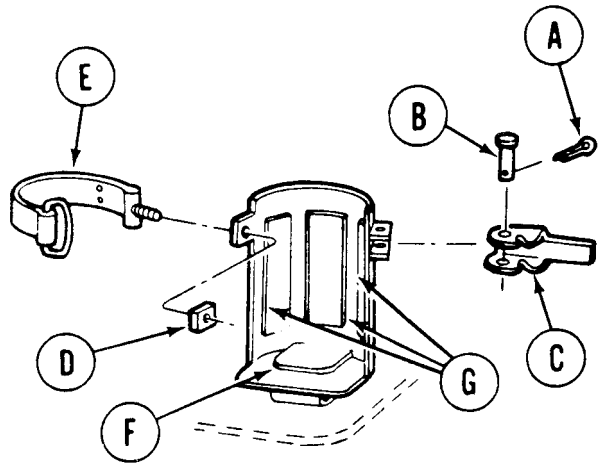
Go on to Sheet 2

TA140970

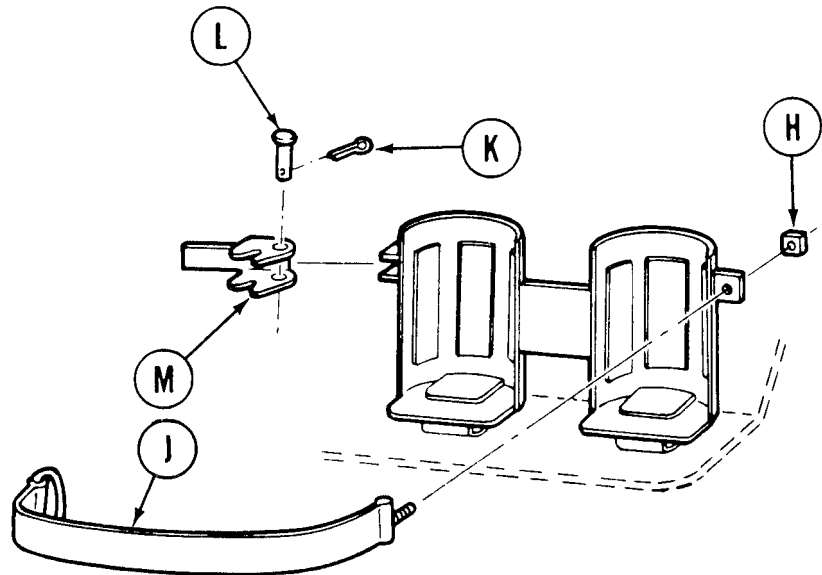
FIRE EXTINGUISHER BRACKET REPAIR (Sheet 2 of 4)

REMOVAL:

1. Using pliers, remove cotter pin (A) from pin (B), remove pin (B), and latch (C). Throw cotter pin (A) away.
2. Using wrench, remove nut (D) holding strap (E). Remove strap (E).



3. Using putty knife, dry cleaning solvent (Item 54, Appendix D), and rags, remove pad (F) and three rubber strips (G).
4. Using 11/ 16 inch wrench on nut (H), remove nut (H) and strap (J).
5. Using pliers, remove cotter pin (K) holding pin (L), remove pin (L), and latch (M). Throw cotter pin away.



Go on to Sheet 3

TA140971

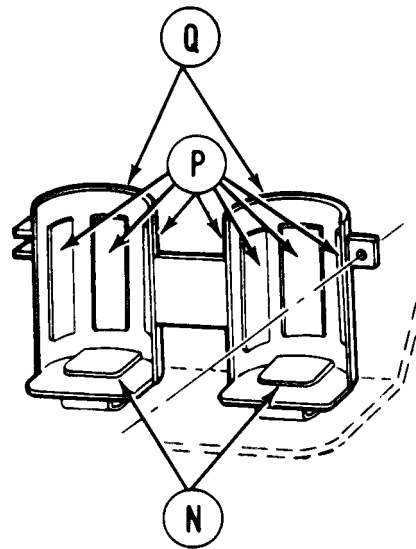
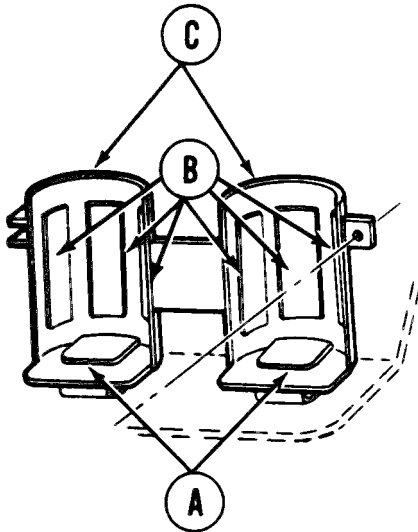


**FIRE EXTINGUISHER BRACKET REPAIR (Sheet 3 of 4)**

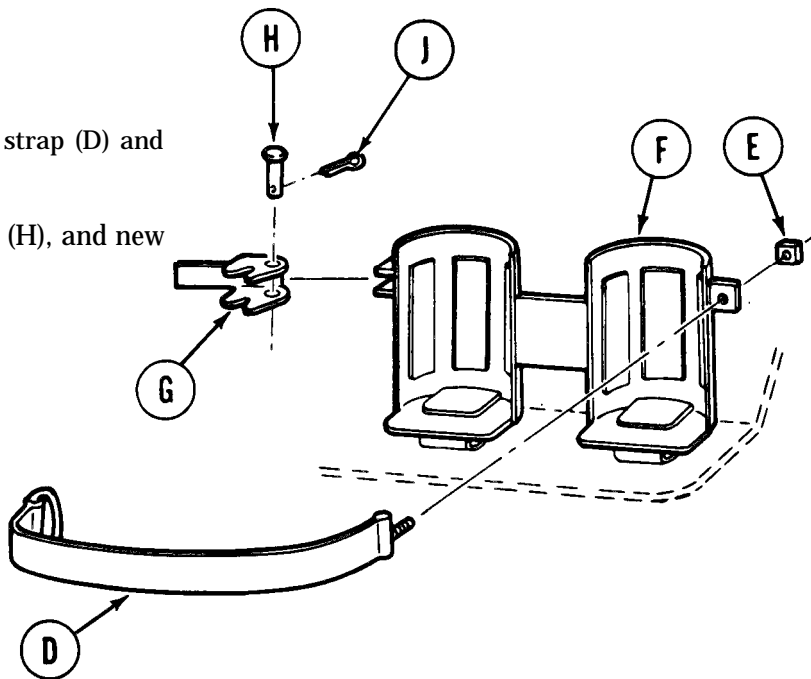
- Using putty knife, dry cleaning solvent and rags, remove two pads (N) and six rubber strips (P) from two brackets (Q).

**INSTALLATION:**

- Using adhesive (Item 2, Appendix D), install two pads (A) and six rubber strips (B) to brackets (C).



- Using 11/16 inch wrench, install strap (D) and nut (E) to bracket (F).
- Using pliers, install latch (G), pin (H), and new cotter pin (J).

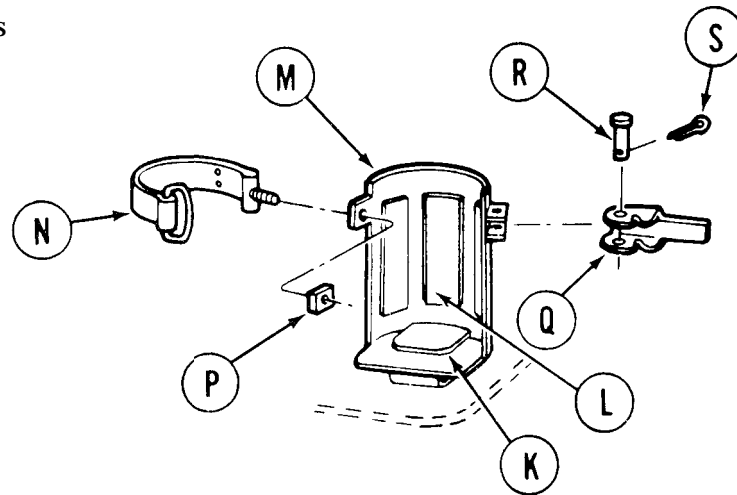


Go on to Sheet 4

TA140972

FIRE EXTINGUISHER BRACKET REPAIR (Sheet 4 of 4)

4. Using adhesive, install pad (K) and three rubber strips (L) to bracket (M).
5. Using 11/16 inch wrench, install strap (N) using nut (P).
6. Using pliers, install latch (Q), pin (R), and new cotter pin (S).
7. Install fire extinguisher cylinders



End of Task

TA140973

# RIGHT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 1 of 5)

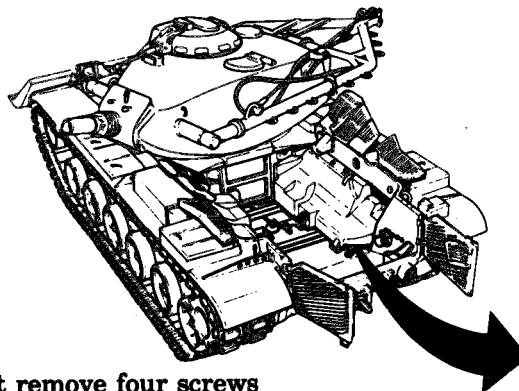
## PROCEDURE INDEX

PROCEDURE	PAGE
Removal	21-71
<b>Disassembly</b>	21-72
<b>Inspection</b>	21-73
<b>Assembly</b>	21-73
<b>Installation</b>	21-75

**TOOLS:** 3/4 in. combination box and open end wrench  
 7/8 in. combination box and open end wrench  
 1/2 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 10 in. pipe wrench (2 required)  
 Bench vise  
 1 in. combination box and open end wrench  
 1-1/8 in. open end wrench  
 3/4 in. deep well socket  
 1-1/16 in. open end wrench  
 15/16 in. combination box and open end wrench

**SUPPLIES:** Zinc chromate primer (Item 50, Appendix D)  
 Lockwashers MS35335-34 (4)

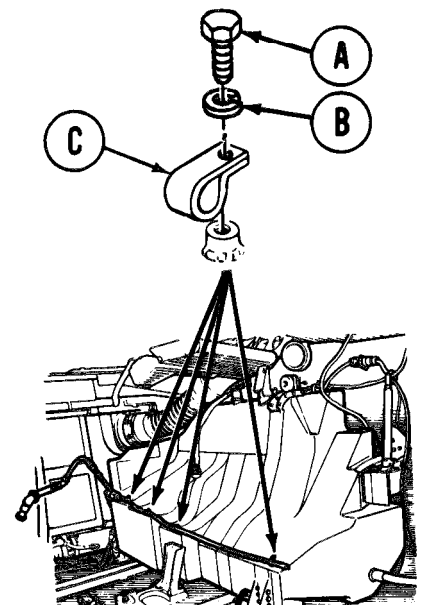
**PRELIMINARY PROCEDURE:** Remove powerplant (page 5-1)



### REMOVAL:

- Using 1/2 inch socket remove four screws (A), four lockwashers (B), and four clamps (C) that secure line to fuel tank. Throw lockwashers away.

Go on to Sheet 2



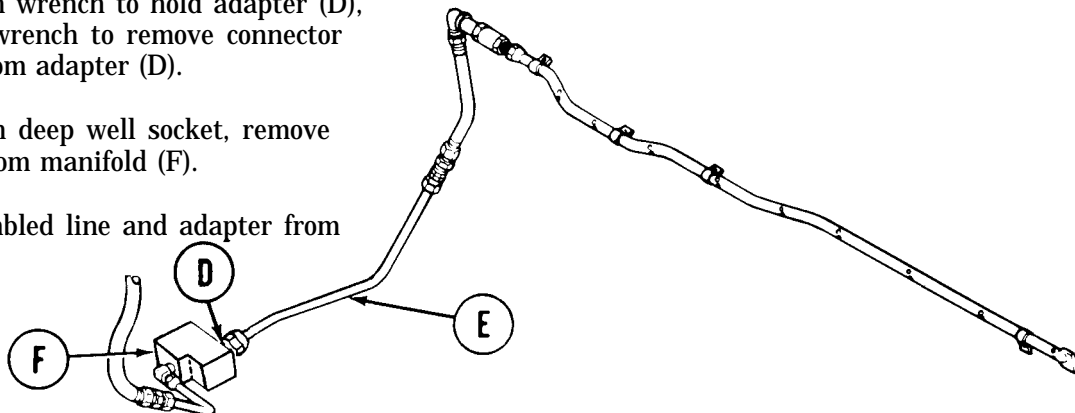
TA253750

**RIGHT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 2 of 5)**

**NOTE**

**Tag adapter (D) during removal for proper installation.**

2. Using 3/4 inch wrench to hold adapter (D), use 7/8 inch wrench to remove connector on tube (E) from adapter (D).
3. Using 3/4 inch deep well socket, remove adapter (D) from manifold (F).
4. Remove assembled line and adapter from vehicle.



**NOTE**

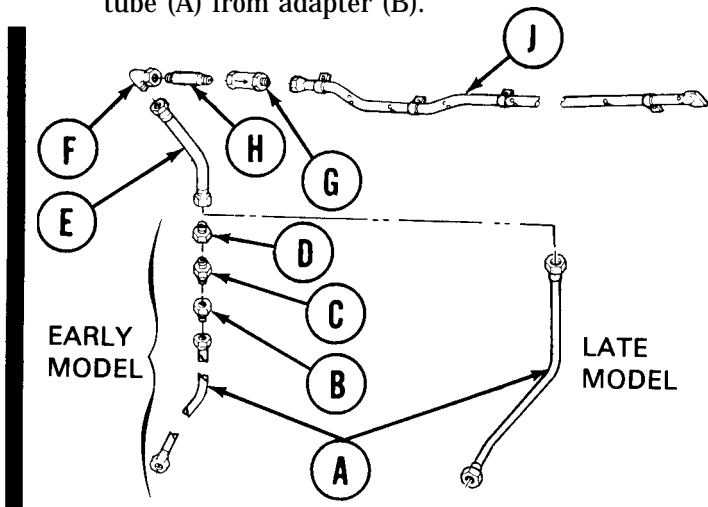
**Place assembled line in vise as necessary to accomplish disassembly.**

**DISASSEMBLY:**

**NOTE**

**For early model, perform steps 1 through 4 and continue with step 5. For late model, start at step 4.1.**

1. Using 7/8 inch wrench on tube (A) and 3/4 inch wrench on adapter (B), remove tube (A) from adapter (B).



2. Using 15/16 inch wrench on bushing (C) and 3/4 inch wrench on adapter (B), remove adapter (B) from bushing (C).
3. Using 1-1/16 inch wrench on adapter (D) and 15/16 inch wrench on bushing (C), remove bushing (C) from adapter (D).
4. Using 1-1/8 inch wrench on tube (E) and 1-1/16 inch wrench on adapter (D), remove adapter (D) from tube (E).
- 4.1 Using 7/8 inch wrench on tube (A) and 3/4 inch wrench on tube (B), remove tube (A) from tube (E).
5. Position elbow (F) in vise and, using a 7/8 inch wrench on tube (E), remove tube (E) from elbow (F).
6. Using pipe wrench, remove nipple (H), valve (G), and tube (J) as an assembly, from elbow (F).

Go on to Sheet 3

TA253751

**RIGHT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 3 of 5)**

7. Position valve (G) in vise.

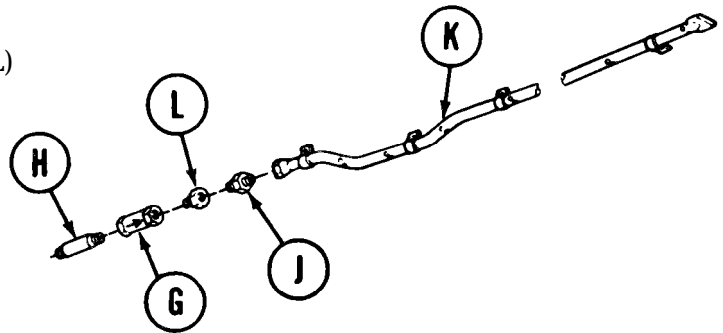
Using pipe wrench, remove nipple (H) from valve (G).

9. Using 3/4 inch wrench to hold adapter (J), use 7/8 inch wrench to remove tube (K) from adapter (J).

10. Using 15/16 inch wrench to hold bushing (L), use 3/4 inch wrench to remove adapter (J) from bushing (L).

11. Using 15/16 inch wrench, remove bushing (L) from valve (G).

12. Remove valve from vise.



**INSPECTION:**

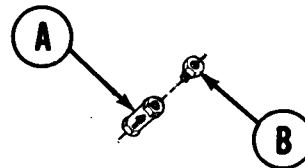
Make sure that all connections and seating surfaces are free of nicks, burrs, or other defects that could cause leakage. Replace any damaged parts.

**NOTE**

- Apply zinc chromate primer (Item 50, Appendix D) to all threads prior to installation of threaded connections.
- Position tubes, valves, and related parts in vise as necessary to accomplish assembly.

**ASSEMBLY:**

1. Using bench vise, secure new valve (A).
2. Using 7/8 inch wrench, install bushing (B) into valve (A), making sure that arrow on valve (A) points to bushing (B).

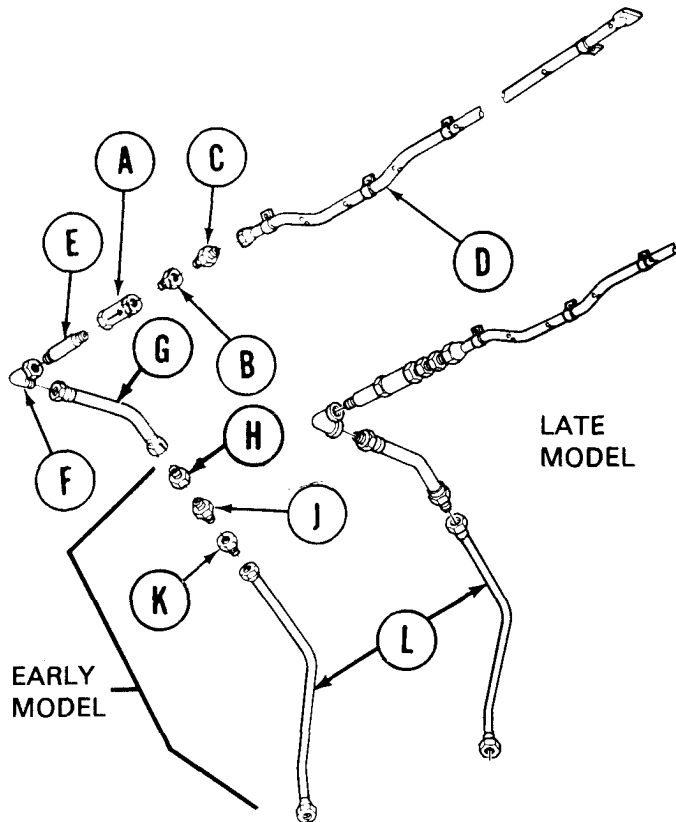


Go on to Sheet 4

TA253752

**RIGHT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 4 of 5)**

3. Using 3/4 inch wrench, install adapter (C) into bushing (B).
4. Using 7/8 inch wrench, install tube (D) onto adapter (C).
5. Using pipe wrench, install nipple (E) into valve (A).
6. Using pipe wrench, install elbow (F) onto nipple (E).
7. Using 7/8 inch wrench, install tube (G) onto elbow (F).



**NOTE**

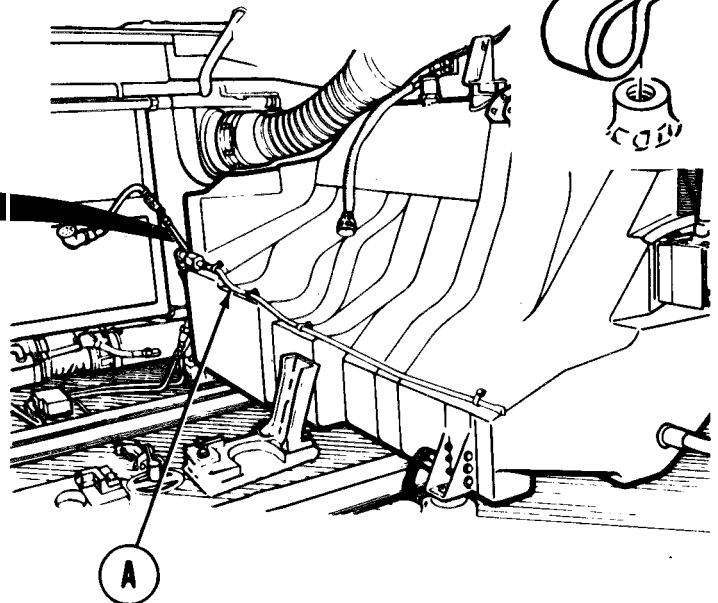
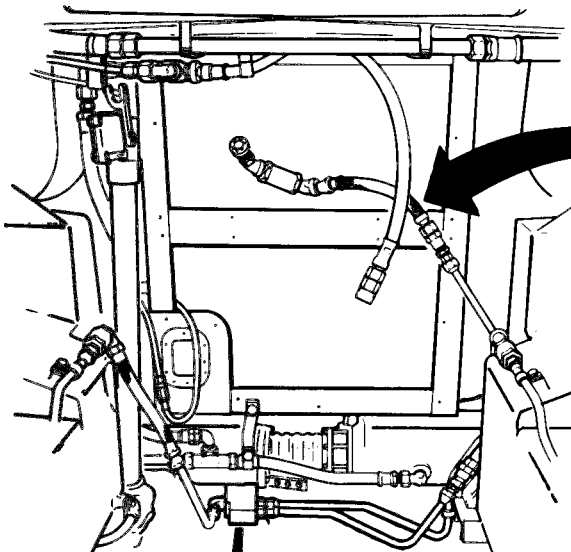
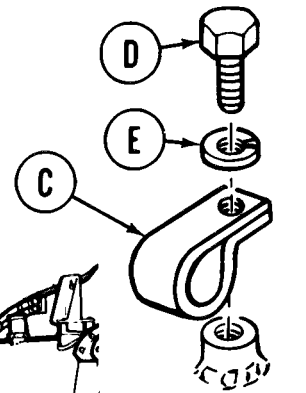
For early model, continue with step 8. For late model, perform step 7.1 and go to installation procedures (page 21-75).

- 7.1 Using 7/8 inch wrench on tube (G) and on tube (L), install tube (L) onto tube (G).
8. Using 1-1/8 inch wrench on tube (G) and 1-1/16 inch wrench on adapter (H), install adapter, (H) onto tubes (G).
9. Using 1-1/16 inch wrench on adapter (H) and 15/16 inch wrench on bushing (J), install bushing (J) into adapter (H).
10. Using 15/16 inch wrench on bushing (J) and 3/4 inch wrench on adapter (K), install adapter (K) into bushing (J).
11. Using 3/4 inch wrench on adapter (K) and 7/8 inch wrench on tube (L), install tube (L) onto adapter (K).

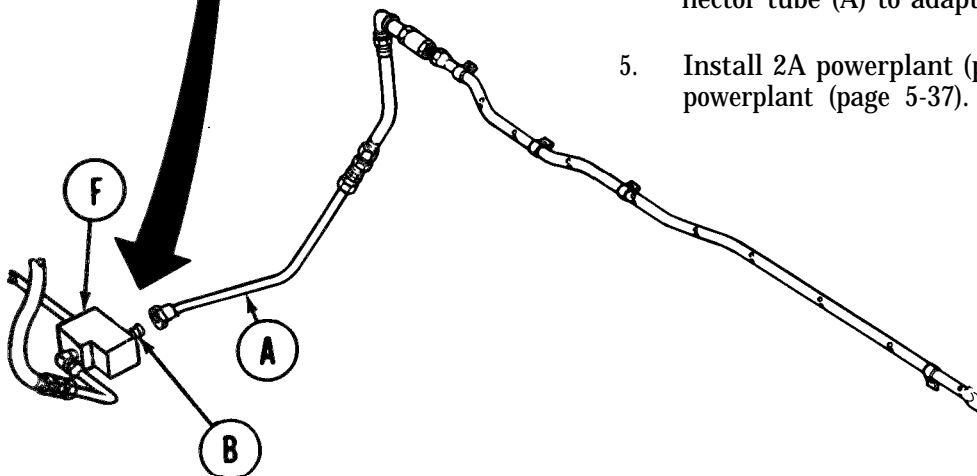
**RIGHT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 5 of 5)**

**INSTALLATION:**

1. Position assembled line (A) and adapter (B) to hull of vehicle.
2. Using socket, install four clamps (C), screws (D), and new lockwashers (E).



3. Using 3/4 inch deep well socket, install adapter (B) into manifold (F).
4. Using 7/8 inch open end wrench, install connector tube (A) to adapter (B) and tighten.
5. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).



**End of Task**

TA253754

**LEFT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 1 of 5)**

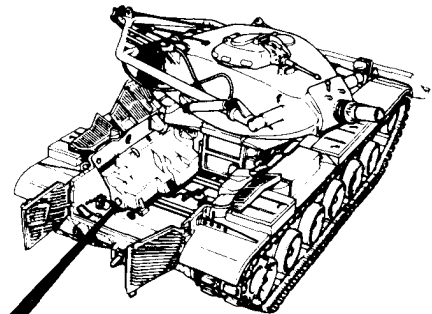
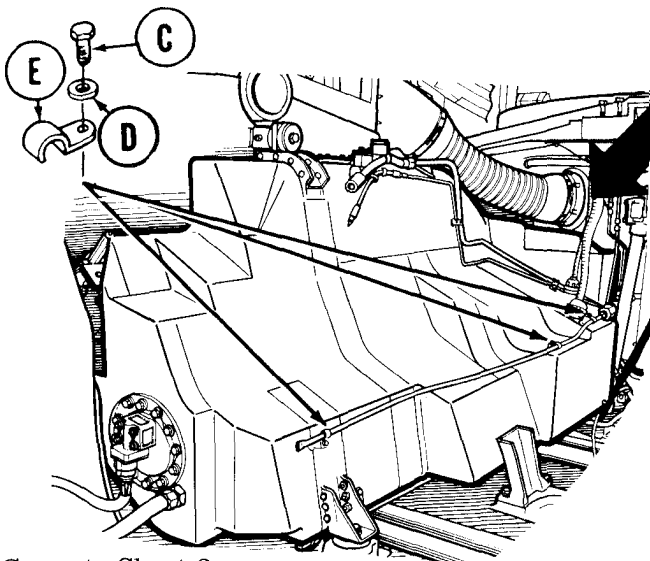
PROCEDURE	PAGE
Removal	21-76
Disassembly	21-77
Inspection	21-78
Assembly	21-78
Installation	21-79

**TOOLS:** 15/16 in. socket with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 7/8 in. combination box and open end wrench (2 required)  
 Pipe wrench (2 required)  
 1/2 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Vice  
 1-1/8 in. combination box and open end wrench (2 required)  
 15/16 in. combination box and open end wrench  
 Flat-tip screwdriver 4 in. long

**SUPPLIES:** Zinc chromate primer (Item 50, Appendix D)  
 Lockwasher MS35335-34 (3)

**PRELIMINARY PROCEDURE:** Remove powerplant (page 5-1)

**REMOVAL:**



**NOTE**

Since two types of discharge tube assemblies are used on this vehicle, this procedure will cover both types.

1. Using 7/8 and 1-1/8 inch wrench, remove connector on tube (A) from elbow (B).
2. Using 1/2 inch socket, remove three screws (C), lockwashers (D), and clamps (E), securing line to fuel tank. Throw lockwashers away.

Go on to Sheet 2

TA253755

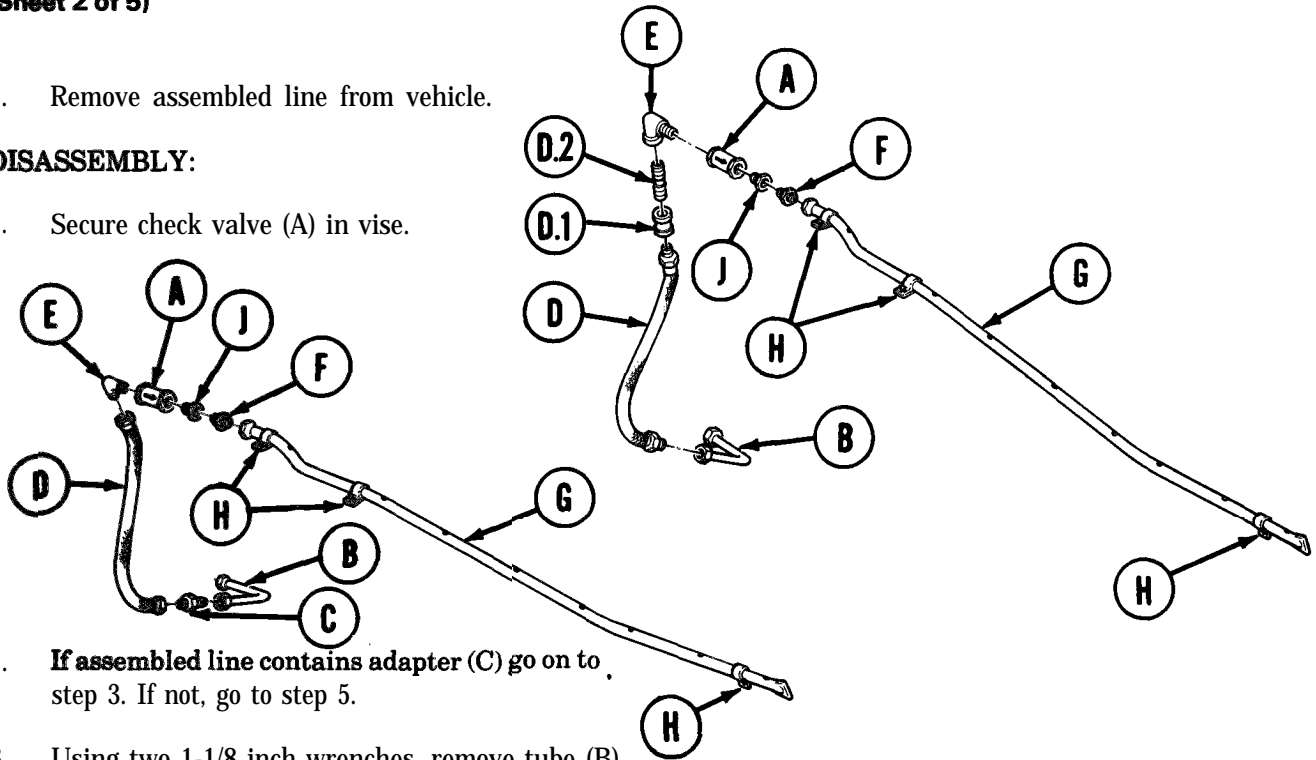


**LEFT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER)**  
**(Sheet 2 of 5)**

3. Remove assembled line from vehicle.

**DISASSEMBLY:**

1. Secure check valve (A) in vise.



2. **If assembled line contains adapter (C) go on to step 3. If not, go to step 5.**

3. Using two 1-1/8 inch wrenches, remove tube (B) from adapter (C).

4. Using two 1-1/8 inch wrenches, remove adapter (C) from tube (D), then go to step 6.

5. Using two 7/8 inch wrenches, remove tube (B) from tube (D).

5.1. Using pipe wrench to hold coupling (D.1) remove tube assembly (D) from coupling (D.1)

5.2. Using one pipe wrench to hold nipple (D.2) use another pipe wrench and remove coupling (D.1) from nipple (D.2).

5.3. Using pipe wrench remove nipple (D.2) from elbow (E), then proceed to step 7.

6. Using 7/8 inch wrench, remove tube (D) from elbow (E).

7. Using pipe wrench, remove elbow (E) from check valve (A).

8. Using 3/4 inch wrench to hold adapter (F), use 7/8 inch wrench to remove tube (G) from adapter (F).

9. Using screwdriver, remove three clamps (H) from tube (G).

10. Using 15/16 inch wrench to hold bushing (J), use 3/4 inch wrench to remove adapter (F) from bushing (J).

11. Using 15/16 inch wrench, remove bushing (J) from check valve (A).

Go on to Sheet 3

TA253756

**LEFT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 3 of 5)**

**INSPECTION:**

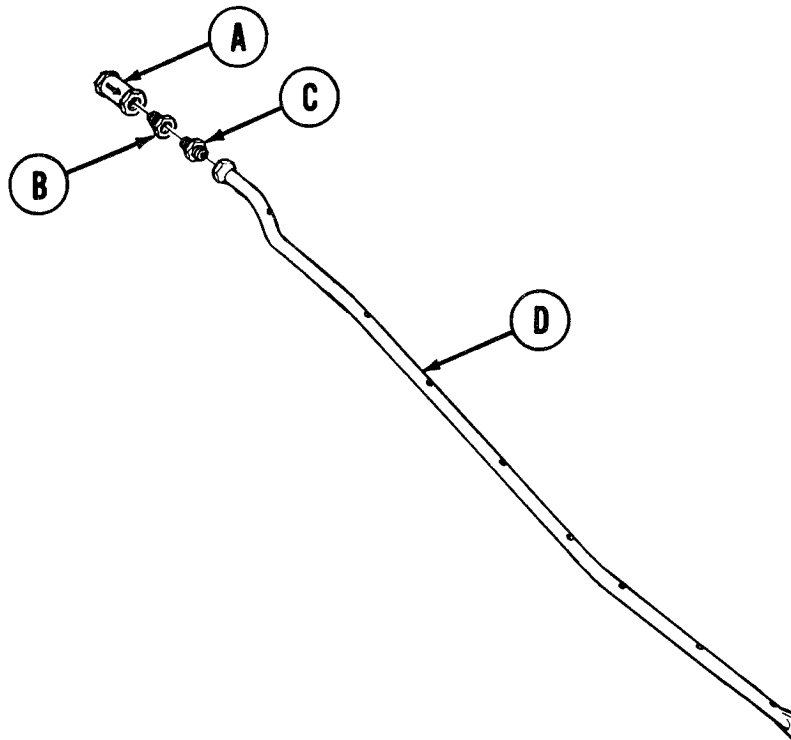
Make sure all connections and seating surfaces are free of nicks, burrs, or other defects that could cause leakage. Replace any damaged part.

**ASSEMBLY:**

**NOTE**

**Apply zinc chromate primer (Item 50, Appendix D) to all threads prior to installation of threaded tube hose connections.**

1. Secure check valve (A) in vise.
2. Using 15/16 inch wrench, install bushing (B) into free flow end of check valve (A).
3. Using 3/4 inch wrench, install adapter (C) into bushing (B) and tighten.
4. Using 7/8 inch wrench, install tube (D) loosely onto adapter (C). Tube (D) must remain loose for positioning during installation.



Go on to Sheet 4

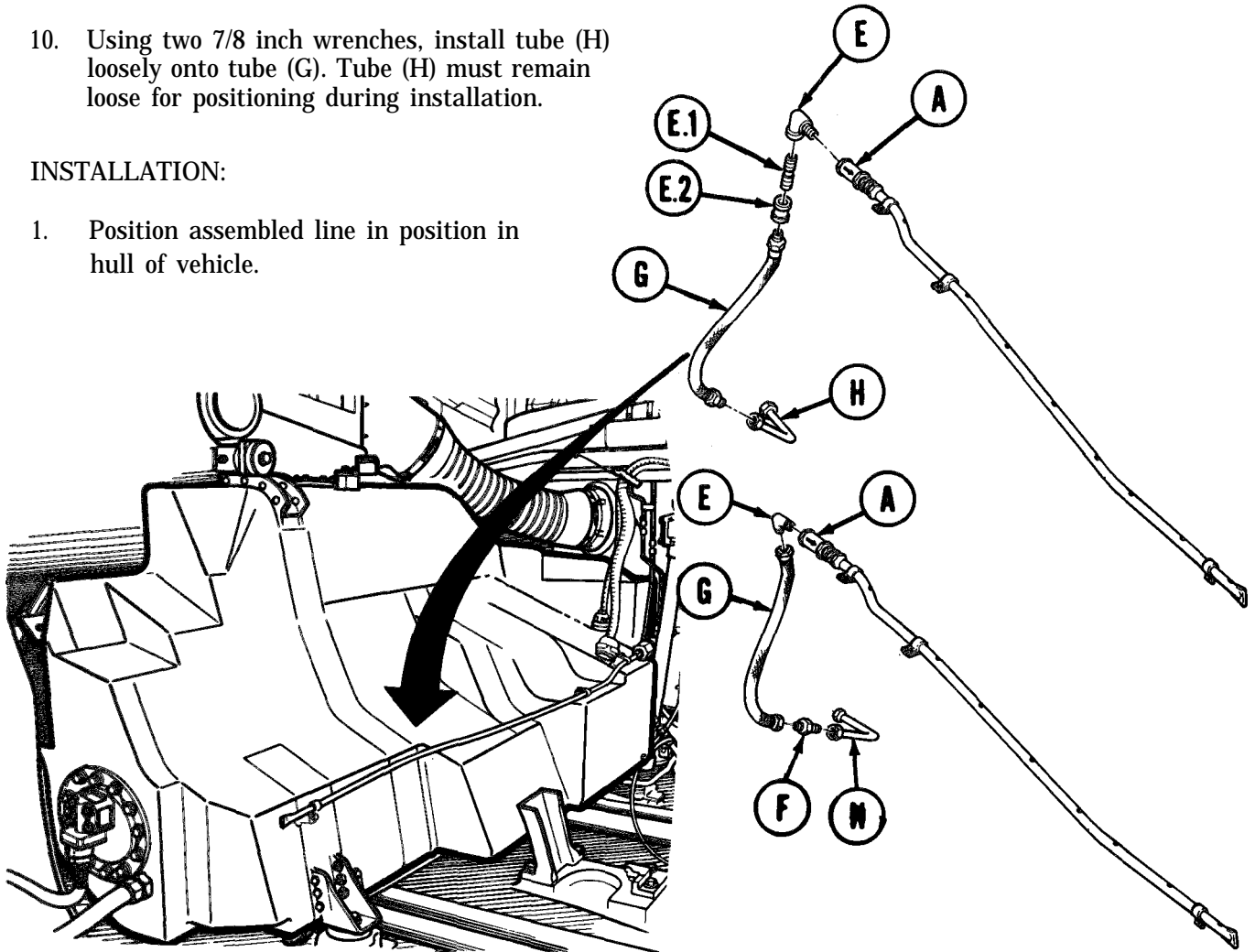
TA253757

**LEFT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 4 of 5)**

5. Using pipe wrench, install elbow (E) into check valve (A).
6. If line assembly contains adapter (F) go on to step 7. If not, go to step 6.1.
- 6.1 Using pipe wrench, install nipple (E.1) into elbow (E).
- 6.2 Using pipe wrench, install coupling (E.2) onto nipple (E.1).
- 6.3 Using 7/8 inch wrench, connect tube (G) into coupling (E2), then proceed to step 10.
7. Using 7/8 inch wrench, install tube (G) onto elbow (E) and tighten.
8. Using two 1-1/8 inch wrenches, install adapter (F) onto tube (G).
9. Using two 1-1/8 inch wrenches, install tube (H) loosely onto adapter (F). Tube (H) must remain loose for positioning during installation, then go to step 11.
10. Using two 7/8 inch wrenches, install tube (H) loosely onto tube (G). Tube (H) must remain loose for positioning during installation.

**INSTALLATION:**

1. Position assembled line in position in hull of vehicle.



Go on to Sheet 5

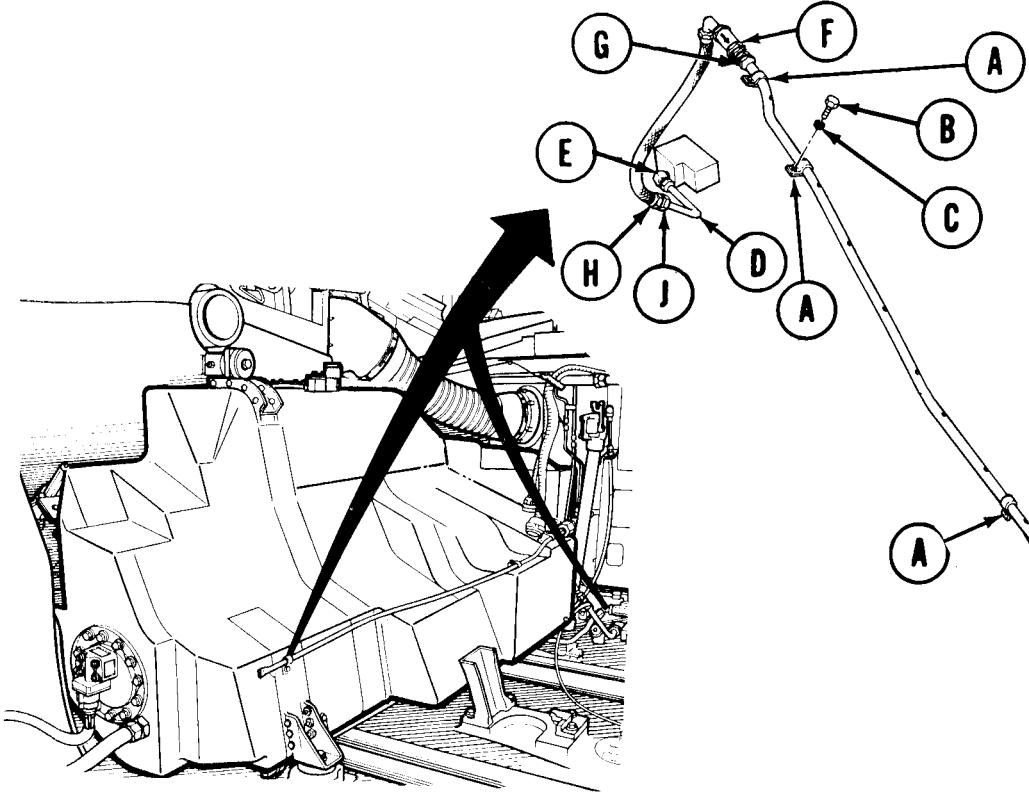
TA253758

**LEFT DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 5 of 5)**

**NOTE**

**When installing clamps in step 2, position clamps down.**

2. Using socket loosely install three clamps (A), screws (B), and new lockwashers (C), securing line to left fuel tank. (Clamps must remain loose for positioning during installation.)



3. Using 7/8 and 1-1/8 inch wrench, install connector on tube (D) to elbow (E) and tighten.
4. Using socket, tighten three screws (B) securing clamps (A) to fuel tank.
5. Holding adapter (F) with 3/4 inch wrench and using 7/8 inch wrench, tighten connector (G) onto adapter (F).
6. If tube (H) was installed to tube (D) with adapter (J), use two 1-1/8 inch wrenches to tighten connection.
7. If tube (H) was installed to tube (D) without adapter (J), use two 7/8 inch wrenches to tighten connection.
8. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).

End of Task

TA253759

**UPPER DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 1 of 6)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	21-81
Disassembly	21-83
Inspection	21-84
Assembly	21-84
Installation	21-86

**TOOLS:** 1 in. combination box and open end wrench  
 7/8 in. combination box and open end wrench (2 required)  
 3/4 in. combination box and open end wrench  
 1/2 in. combination box and open end wrench  
 Ratchet with 1/2 in. drive  
 1 in. crowfoot with 1/2 in. drive  
 Adapter, 1/2 in. to 3/8 in.  
 1-1/16 in. crowfoot with 3/8 in. drive  
 15/16 in. crowfoot with 3/8 in. drive  
 10 in. pipe wrench (2 required)

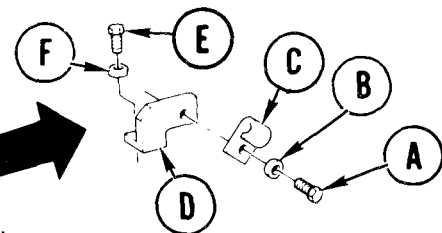
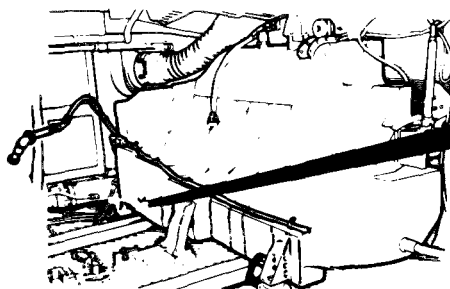
1-1/16 in. combination box and open end wrench  
 1-1/8 in. combination box and open end wrench  
 15/16 in. combination box and open end wrench  
 Vise  
 3/4 in. crowfoot with 3/8 in. drive  
 7/8 in. crowfoot with 3/8 in. drive

**SUPPLIES:** Zinc chromate primer (Item 50, Appendix D)

**PRELIMINARY PROCEDURE:** Remove powerplant (page 5-1)

**NOTE**

**Since two types of discharge tubes are used on this vehicle, this procedure will cover both types.**



**REMOVAL:**

1. Using 1 2 inch socket, remove screw (A), washer (B), and clamp (C) from bracket (D).
2. Using 1 2 inch wrench, remove screw (E) and washer (F) holding bracket (D) to hull.
3. Remove bracket (D).

Go on to Sheet 2

**UPPER DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 2 of 6)**

- Using 3/4 inch wrench hold adapter (G) and using 7/8 inch wrench, remove connector on tube (H) from adapter (G). Lay tube (H) aside.

**NOTE**

**Tag tube (K) during removal for proper installation.**

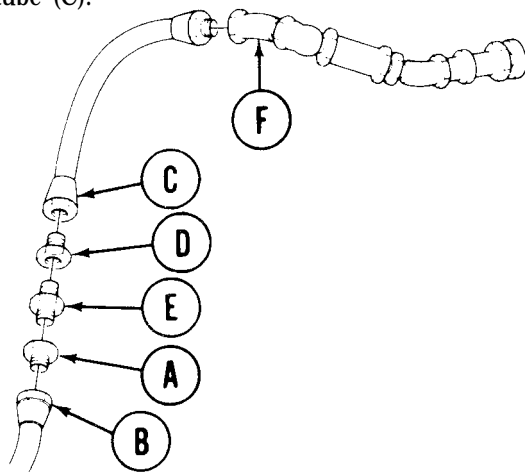
- Using 3/4 inch wrench, hold adapter (J) and using 7/8 inch wrench, remove connector on tube (K) from adapter (J).
- Using 3/4 inch wrench, remove adapter (J).
- Remove assembled line (K) from vehicle.

**DISASSEMBLY:**

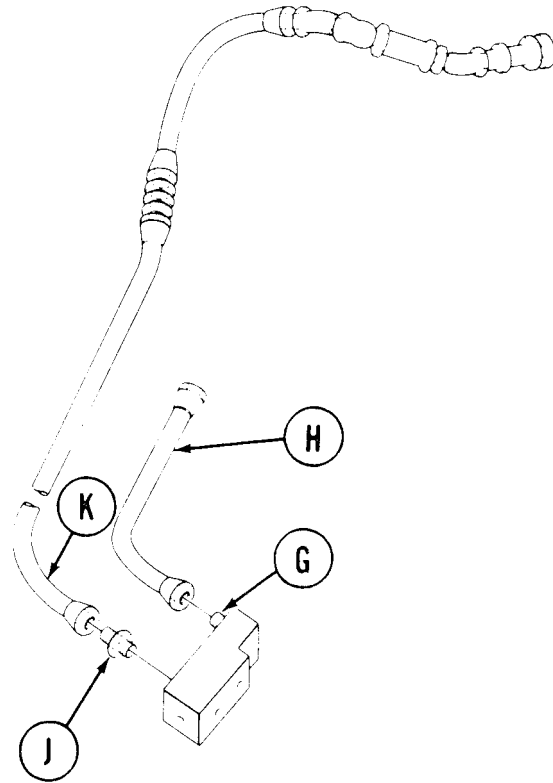
**NOTE**

**Position assembled line in vise as necessary for disassembly.**

- If assembled line contains adapters (A) and (D) and bushing (E), do steps 2 thru 6; if not, go to step 7.
- Using 3/4 inch wrench to hold adapter (A) and 7/8 inch wrench on tube (B) remove tube (B) from adapter (A).
- Using 1-1/8 inch wrench to hold tube (C) and 1-1/16 inch wrench on adapter (D) remove adapter (D), bushing (E), and adapter (B) from tube (C).



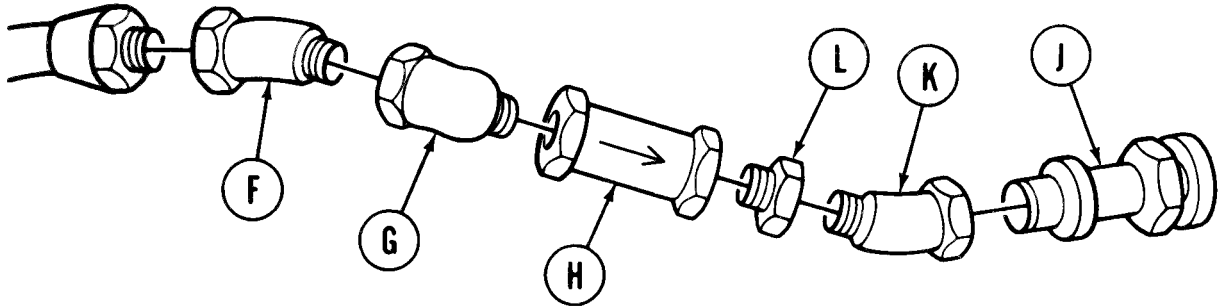
Go on to Sheet 3



- Using 15/16 inch wrench to hold bushing (E), use 3/4 inch wrench to remove adapter (A) from bushing (E).
- Using 1-1/16 inch wrench to hold adapter (D), use 15/16 inch wrench to remove bushing (E) from adapter (D).
- Go to step 8.
- Using two 7/8 inch wrenches, remove tube (B) from tube (C).
- Using pipe wrench to hold elbow (F) and 7/8 inch wrench on tube (C), remove tube (C) from elbow (F).

TA140985

**UPPER DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 3 of 6)**



9. Using pipe wrench to hold elbow (G), use pipe wrench to remove elbow (F) from elbow (G).
10. Using pipe wrench, remove elbow (G) from valve (H).
11. Using pipe wrench to hold elbow (K), use 1 inch wrench to remove self-sealing socket (J) from elbow (K).
12. Using pipe wrench, remove elbow (K) from valve (H).

**NOTE**

**Step 13 should be accomplished only if replacement of elbow (K) and nipple (L) is necessary.**

13. Using pipe wrench to hold elbow (K), use pipe wrench to remove nipple (L).

Go on to Sheet 4

TA140986

**UPPER DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 4 of 6)**

**INSPECTION:**

Make sure all connections and seating surfaces are free of nicks, burrs, or other defects that could cause leakage. Replace any damaged parts.

**NOTE**

Apply zinc chromate primer (Item 50, Appendix D) to all threads prior to installation of threaded tube/hose connections.

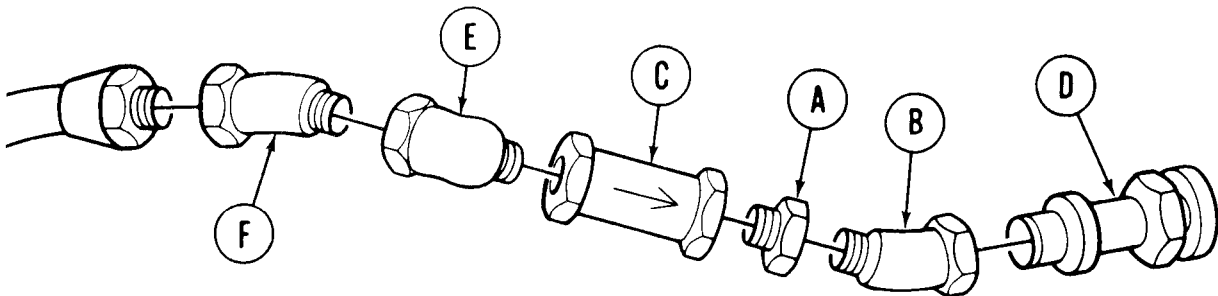
**ASSEMBLY:**

**NOTE**

Secure tubes and related parts in vise as necessary to accomplish assembly.

**NOTE**

If step 13 in disassembly was accomplished, go to step 1; if not, go to step 2.



1. Manually install nipple (A) into elbow (B).
2. Using pipe wrench, install elbow (B) into valve (C) making sure that arrow on valve (C) is pointed towards elbow (B).
3. Using 1 inch wrench, install self-sealing socket (D) onto elbow (B).
4. Using pipe wrench, install elbow (E) into valve (C).
5. Using pipe wrench, install elbow (F) into elbow (E).

Go on to Sheet 5

TA253762



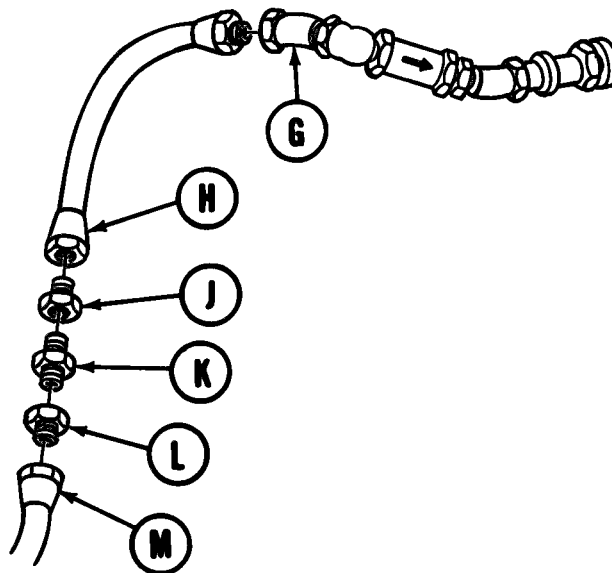
**UPPER DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 5 of 6)**

6. Using 1 inch wrench, install tube (H) into elbow (G).

**NOTE**

**If assembly uses adapters (J) and (L), and bushing (K), perform steps 7 through 10. If not, go to step 11.**

7. Using 1-1/8 inch wrench on tube (H) and 1-1/16 inch wrench on adapter (J), install adapter (J) onto tube (H).
8. Using 1-1/16 inch wrench on adapter (J) and 15/16 inch wrench on bushing (K), install bushing (K) into adapter (J).
9. Using 15/16 inch wrench on bushing (K) and 3/4 inch wrench on adapter (L), install adapter (L), into bushing (K).
10. Using 3/4 inch wrench on adapter (L) and 7/8 inch wrench on tube (M), install tubes (M) onto adapter (L).
11. Using 1-1/8 inch wrench on tube (H) and 7/8 inch wrench on tube (J), install tube (H) onto tube (J).



**Go on to Sheet 6**

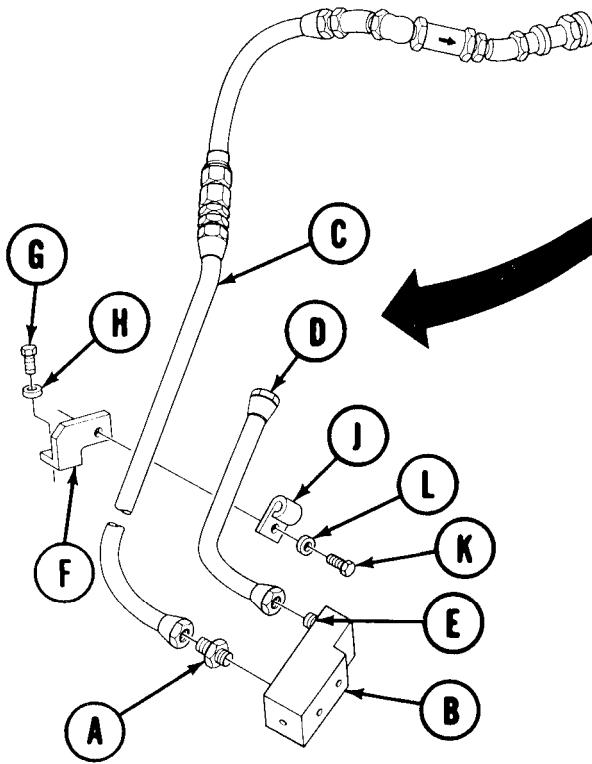
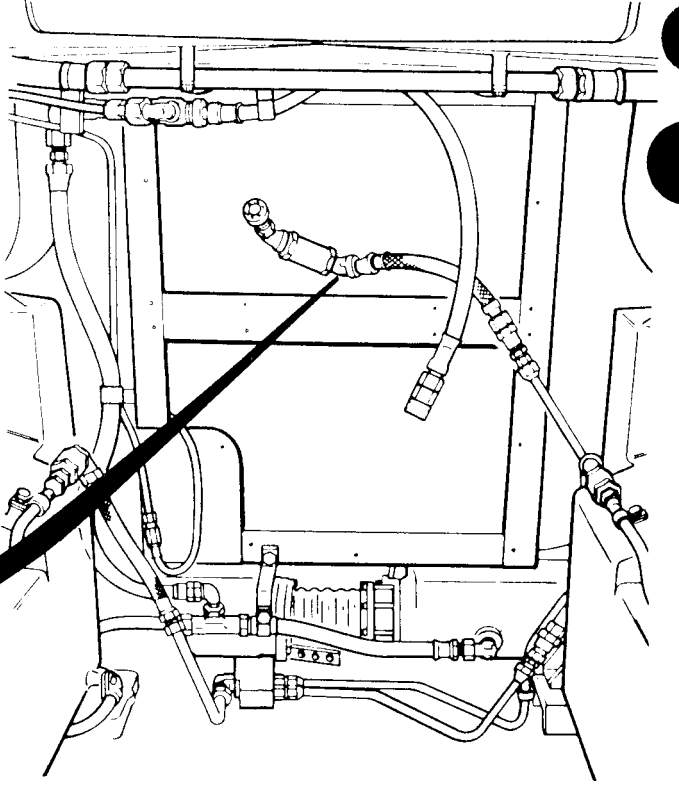
TA253763

**Change 1 21-85**

**UPPER DISCHARGE VALVE, TUBES, AND RELATED PARTS REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 6 of 6)**

**INSTALLATION:**

1. Position assembled line in installation location in vehicle.



2. Using 3/4 inch wrench, install adapter (A) into manifold (B).
3. Using 7/8 inch wrench, install tube (C) to
4. Using 7/8 inch wrench install tube (D) to adapter (E).
5. Using 1/2 inch wrench, install bracket (F) to hull of vehicle with screw (G) and washer (H).
6. Using 1/2 inch socket secure tube (C) to bracket (F) with chimp (J), screw (K), and washer (L).
7. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).

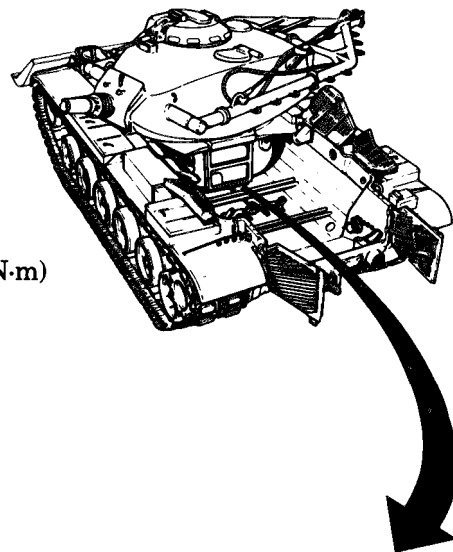
End of Task

**ENGINE COMPARTMENT DISCHARGE MANIFOLD REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 1 of 4)**

PROCEDURE INDEX

PROCEDURE	PAGE
<b>Removal</b>	21-87
<b>Inspection</b>	21-88
<b>Installation</b>	21-89

**TOOLS:** 1/2 in. combination box and open end wrench  
 3/4 in. deep style socket with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 7/8 in. combination box and open end wrench  
 Vise  
 5 in. extension with 1/2 in. drive  
 1-1/4 in. combination box and open end wrench  
 1-1/16 in. combination box and open end wrench  
 Torque wrench with 1/2 in. drive (0-175 lb-ft) (0-237 N·m)  
 1-1/8 in. combination box and open end wrench  
 1-1/16 in. deep style socket with 1/2 in. drive



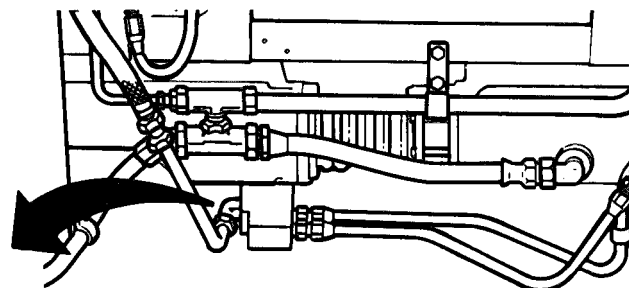
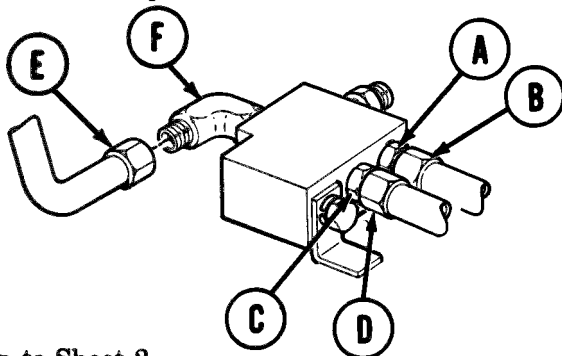
**SUPPLIES:** Zinc chromate primer (Item 50, Appendix D)  
 Lockwashers (MS35338-45) (2 required)

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURES:** Remove powerplant (page 5-1)  
 Open turret platform access door (TM 9-2350-222-10)  
 Remove center sub-floor access plate (page 16-37)

**REMOVAL:**

- Using 3/4 inch wrench to hold adapter (A), use 7/8 inch wrench and loosen connector on tube (B) from adapter (A).



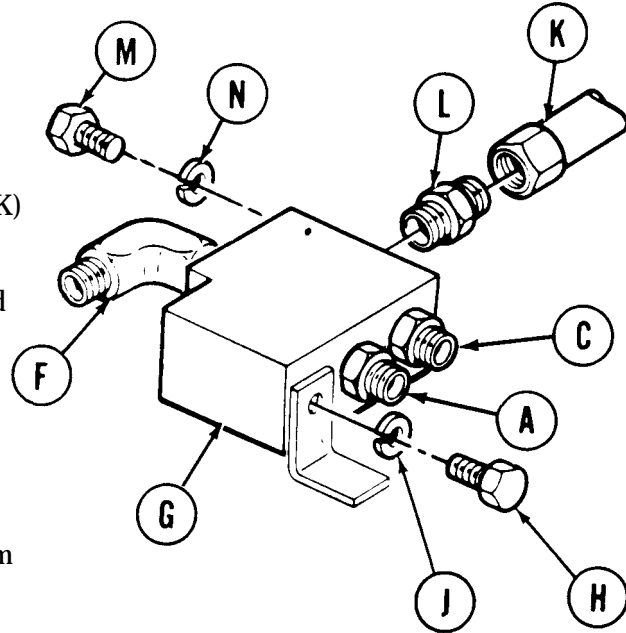
- Using 3/4 inch wrench to hold adapter (C), use 7/8 inch wrench and loosen connector on tube (D) from adapter (C).
- Using 1-1/8 inch wrench, remove connector (E) from elbow (F).

Go on to Sheet 2

TA253768

**ENGINE COMPARTMENT DISCHARGE MANIFOLD REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 2 of 4)**

4. Using 1/2 inch wrench, remove screw (H) and lockwasher (J) from manifold (G). Throw lockwasher away.
5. Go to inside of turret for the following steps.
6. Locate manifold (G) and tube (K) through center sub-floor access plate.
7. Using 1-1/16 inch wrench to hold adapter (L), use 1-1/4 inch wrench and loosen connector (K) from adapter (L).
8. Using 1/2 inch wrench, remove screw (M) and lockwasher (N) from manifold (G). Throw lockwasher away.
9. Remove manifold (G) from vehicle.
10. Secure manifold (G), in vise.
11. Using 7/8 inch wrench, remove elbow (F) from manifold (G).
12. Using 3/4 inch wrench, remove adapters (A) and (C) from manifold (G).
13. Using 1-1/16 inch wrench, remove adapter (L) from manifold (G).



**INSPECTION:**

Make sure that all connections and seating surfaces are free of nicks, burrs, or other defects that could cause leakage. Replace any damaged parts.

Go on to Sheet 3

TA140991

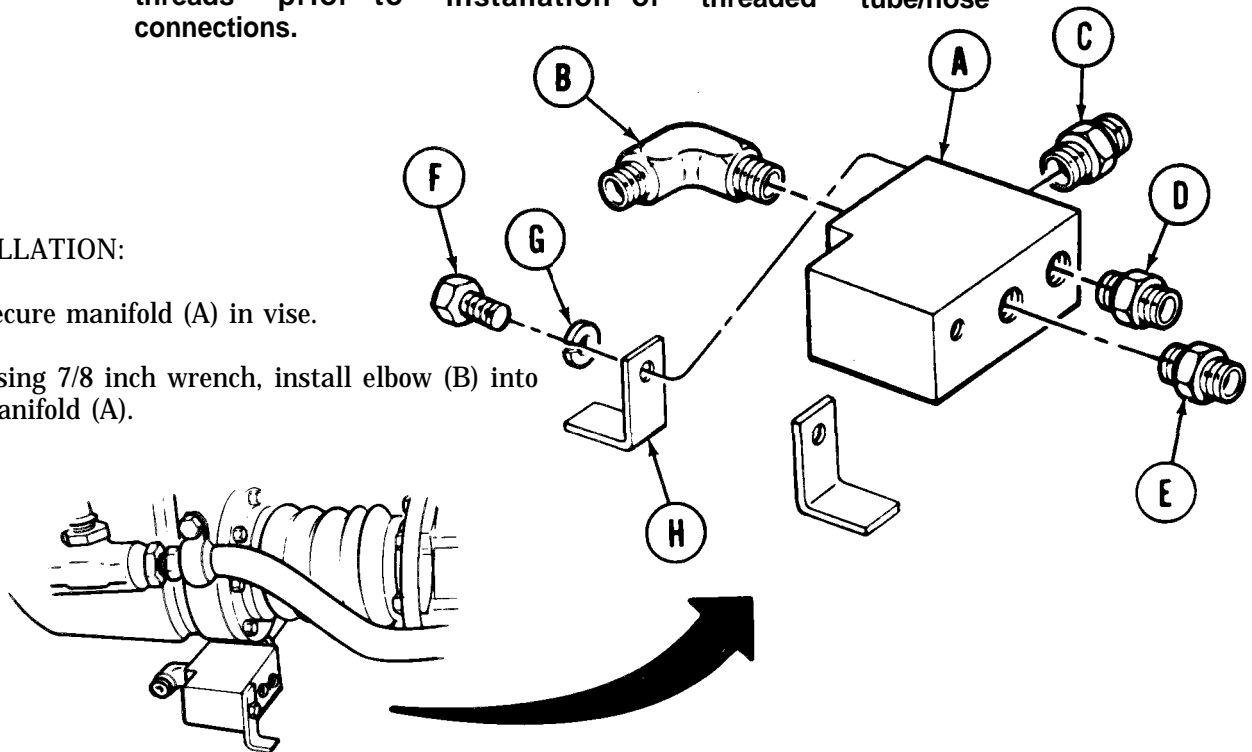
## ENGINE COMPARTMENT DISCHARGE MANIFOLD REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 3 of 4)

### NOTE

Apply zinc chromate primer (Item 50, Appendix D) to all threads prior to installation of threaded tube/hose connections.

### INSTALLATION:

1. Secure manifold (A) in vise.
2. Using 7/8 inch wrench, install elbow (B) into manifold (A).



3. Using 1-1/16 inch wrench, install adapter (C) into manifold (A). Using torque wrench and 1-1/16 inch socket, tighten adapter (C) to 40-50 lb-ft (54-75 N.m).
4. Using 3/4 inch wrench, install adapters (D) and (E) into manifold (A). Using torque wrench and 3/4 inch socket, tighten adapters (D) and (E) to 40-50 lb-ft (54-75 N.m).

### NOTE

When manifold (A) is positioned in vehicle, make sure tubes are positioned onto adapters (C) and (D).

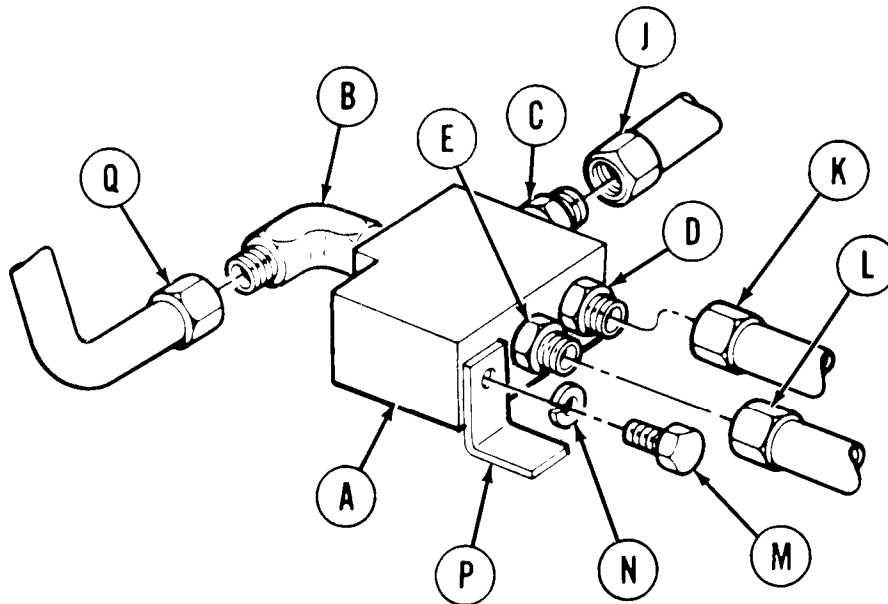
5. Remove manifold (A) from vise and position in hull of vehicle.
6. Using 1/2 inch wrench, install screw (F) and new lockwasher (G) through bracket (H) into manifold (A).

Go on to Sheet 4

TA140992

**ENGINE COMPARTMENT DISCHARGE MANIFOLD REPLACEMENT (FIXED FIRE EXTINGUISHER) (Sheet 4 of 4)**

7. Using 1-1/16 inch wrench to hold adapter (C), use 1-1/4 inch wrench to install connector (J) to adapter (C).



8. Using 7/8 inch wrench, install connector (K) onto adapter (D).
9. Go to engine compartment, and position connector (L) onto adapter (E).
10. Using 7/8 inch wrench, install connector (L) onto adapter (E).
11. Using 1/2 inch wrench, install screw (M) and new lockwasher (N) through bracket (P) into manifold (A).
12. Using 1-1/8 inch wrench, install connector (Q) onto elbow (B).
13. Install sub-floor center access plate (page 16-37).
14. Close turret platform access hatch (TM 9-2350-222-10).
15. Install 2A powerplant (page 5-14) or 2D powerplant (page 5-37).

End of Task

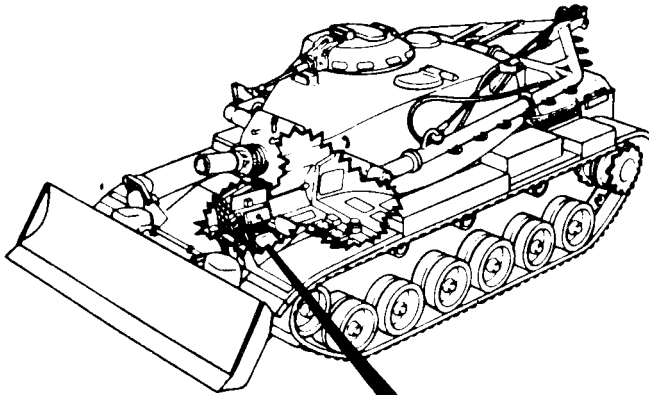
TA253764

**CHAPTER 22**  
**GAS PARTICULATE MAINTENANCE INDEX**

PROCEDURE	PAGE
Gas Particulate Filter Replacement	22-2
Precleaner and Gas Particulate Filter Replacement	22-5
Precleaner and Filter Repair	22-10
Gas Particulate Heater Replacement	22-12
Orifice Assembly and Hose Replacement	22-17
Orifice Assembly Repair	22-20
Gas Particulate Precleaned-To-Filter Hoses Replacement	22-22
Gas Particulate Tubes and Hoses Replacement	22-24

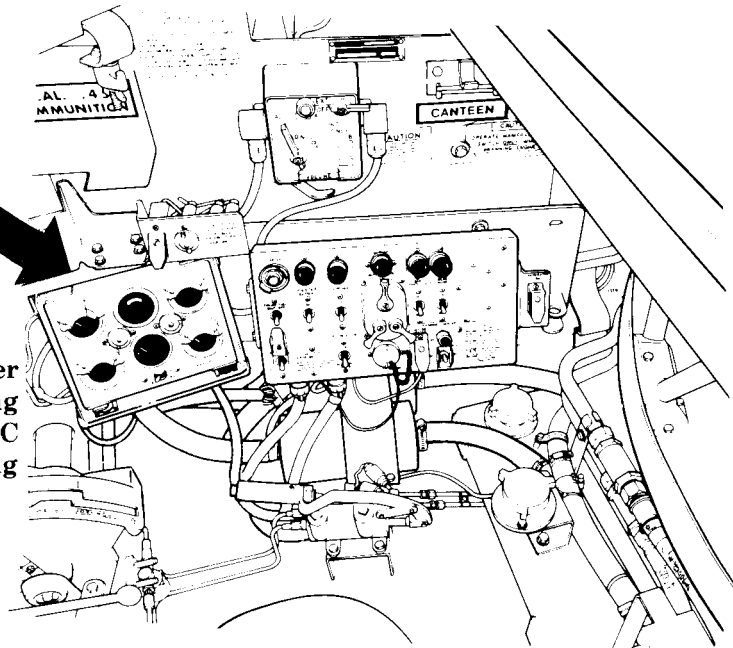
**GAS PARTICULATE FILTER REPLACEMENT (Sheet 1 of 3)**

**TOOLS:** Flat-tip screwdriver  
7/16 in. socket with 1/2 in. drive  
3 in. extension with 1/2 in. drive  
Ratchet with 1/2 in. drive  
3/8 in. combination box and open end wrench



**WARNING**

If NBC exposure is suspected, all air filter media must be handled by personnel wearing protective equipment. Contact your unit NBC Officer or NBC NCO for appropriate handling or disposal instructions.



LOCATED TO THE  
RIGHT OF DRIVER  
UNDER MASTER  
CONTROL PANEL

Go on to Sheet 2



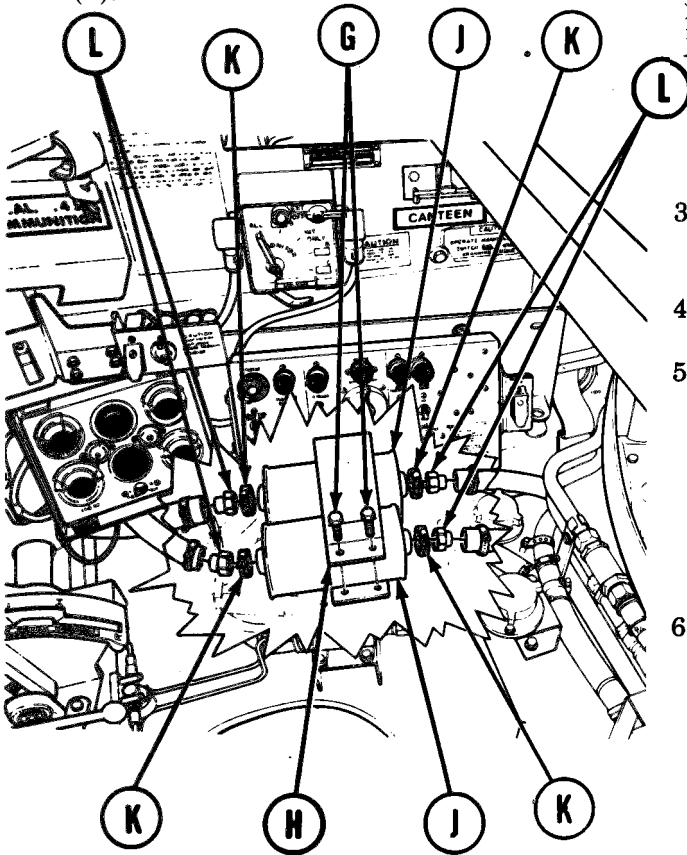
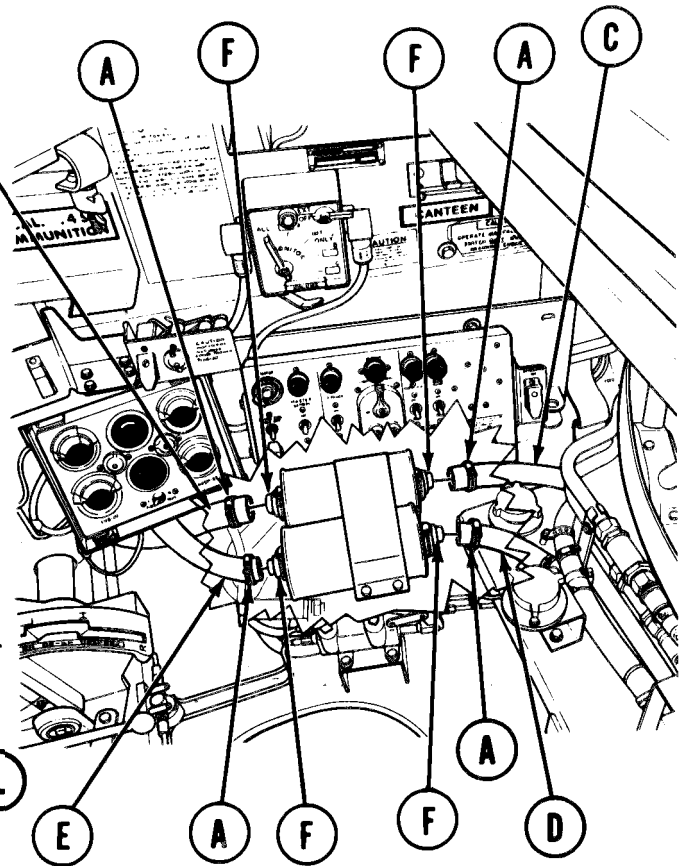
**GAS PARTICULATE FILTER REPLACEMENT (Sheet 2 of 3)**

**NOTE**

It may be necessary to use 3/8 inch wrench to remove clamps (A).

**REMOVAL:**

1. Using flat-tip screwdriver, loosen four clamps (A) securing hoses (B), (C), (D), and (E) to filter adapters (F).
2. Remove hoses (B), (C), (D), and (E) from adapter (F).



3. Using 7/16 inch socket and extension, remove two screws (G) securing strap (H).
4. Remove strap (H).
5. Remove filters (J).

**NOTE**

Some vehicles may not have adapters (L). If not, proceed to **INSTALLATION, PAGE 22-4.**

6. Using flat-tip screwdriver, loosen clamps (K) and remove adapters (L) from filters (J).

Go on to Sheet 3

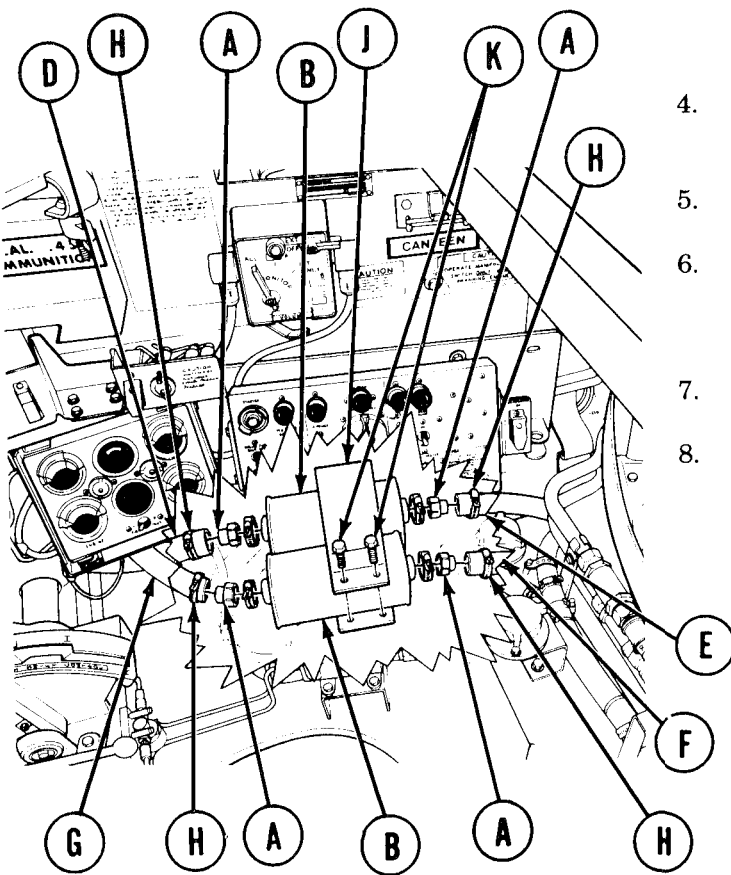
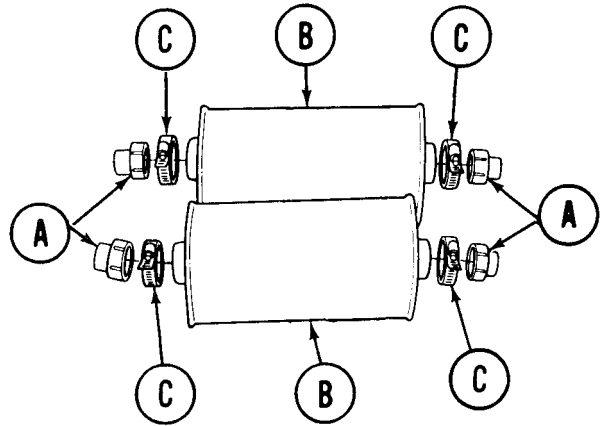
**GAS PARTICULATE FILTER REPLACEMENT (Sheet 3 of 3)**

**INSTALLATION:**

**NOTE**

If vehicle is equipped with adapters, proceed to step 1. If not, go to step 3.

1. Install adapters (A) onto each end of filter (B).
2. Using flat-tip screwdriver, install and tighten clamps (C) to secure adapters (A) to filters (B).



3. Position filters (B) on mounting bracket so that air flow arrows point toward hoses to driver's position and slipping.
4. Install hoses (D), (E), (F), and (G) to filter adapters (A).
5. Slide clamps (H) up over hoses and adapters.
6. Using flat-tip screwdriver, tighten clamps (H) to secure hoses (D), (E), (F), and (G) to adapters (A).
7. Install strap (J) over filters (B).
8. Using 7/16 inch socket and extension, install two screws (K) to secure strap (J).

End of Task

TA139342

**PRECLEANER AND GAS PARTICULATE FILTER REPLACEMENT (Sheet 1 of 5)**

PROCEDURE	PROCEDURE INDEX	PAGE
Removal		22-5
Cleaning and Inspection		22-7
Installation		22-8

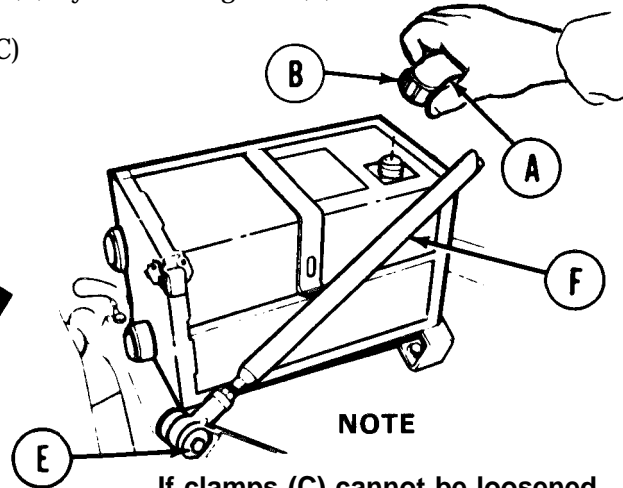
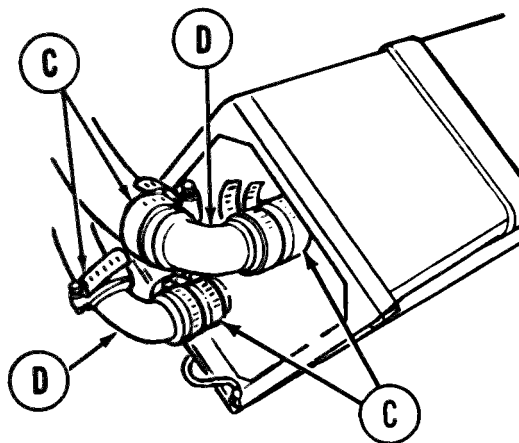
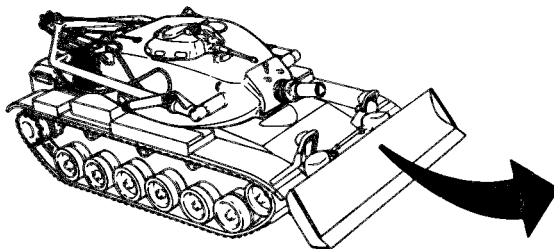
**TOOLS:** Slip joint pliers  
 Flat-tip screwdriver  
 7/16 in. socket with 1/2 in. drive  
 5/16 in. combination box and open end wrench

Ratchet with 1/2 in. drive  
 Cross-tip screwdriver  
 9/16 in. combination box and open end wrench  
 9/16 in. socket with 1/2 in. drive

**SUPPLIES:** Lockwasher (MS35335-31) (2 required)  
 Lockwasher (MS35338-44) (4 required)  
 Lockwasher (MS45904-76)

**REMOVAL:**

- Using pliers, disconnect electrical connector (A) by unscrewing nut (B) on electrical connector.
- Using screwdriver, loosen six hose clamps (C) securing hose and elbow (D) to filter.



**NOTE**

If clamps (C) cannot be loosened with screwdriver, use 5/16 inch wrench.

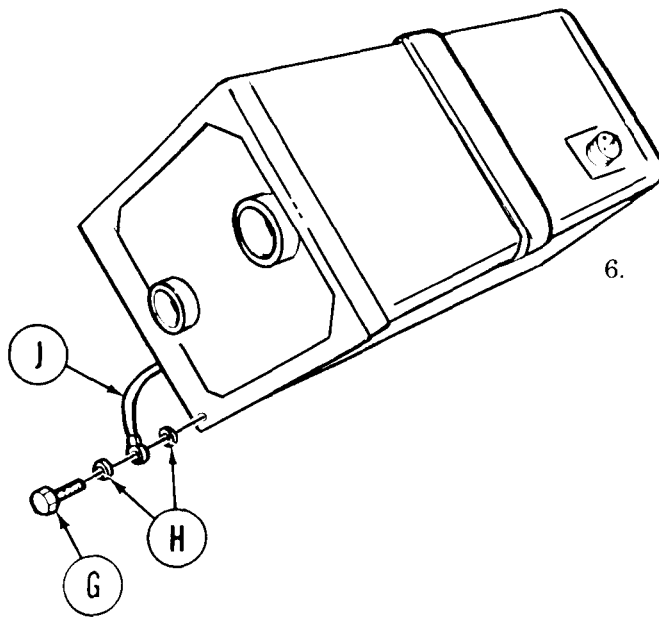
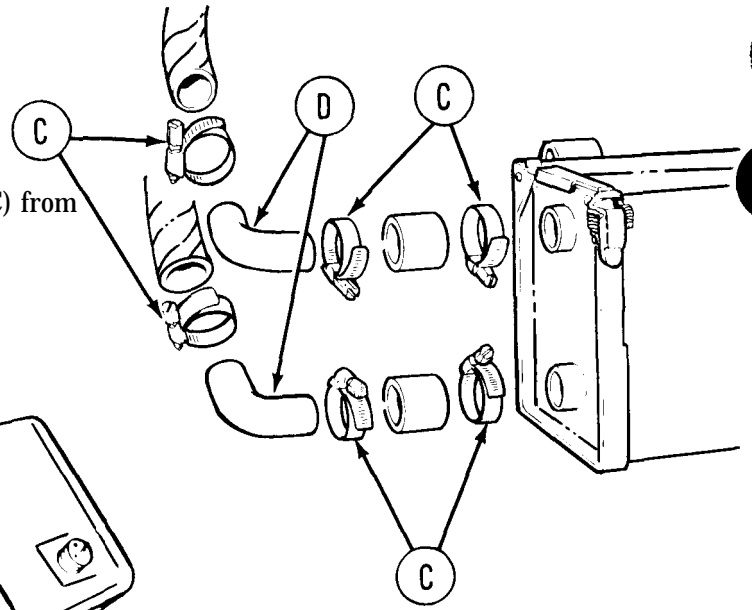
- Pull elbows (D) and hose out from filter.
- Using 9/16 inch wrench, remove bolt (E) and move shift linkage (F) out of the way.

Go on to Sheet 2

TA139343

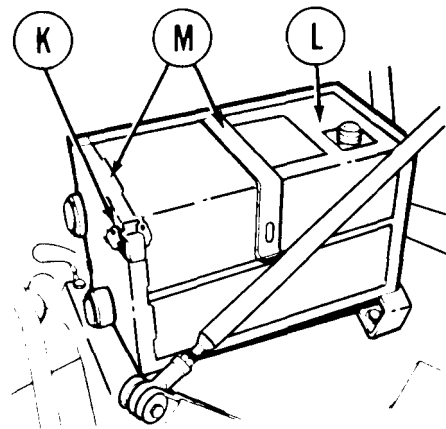
PRECLEANED AND GAS PARTICULATE FILTER REPLACEMENT (Sheet 2 of 5)

5. Remove elbows (D) and six hose clamps (C) from hoses.



6. Using screwdriver, remove screw (G) and two lockwashers (H) that secure electrical ground lead (J) to precleaned. Throw lockwashers away.

7. Release catch (K).
8. Remove precleaned and filter (L) by slowly sliding to left and lifting up frame assembly straps (M).



Go on to Sheet 3

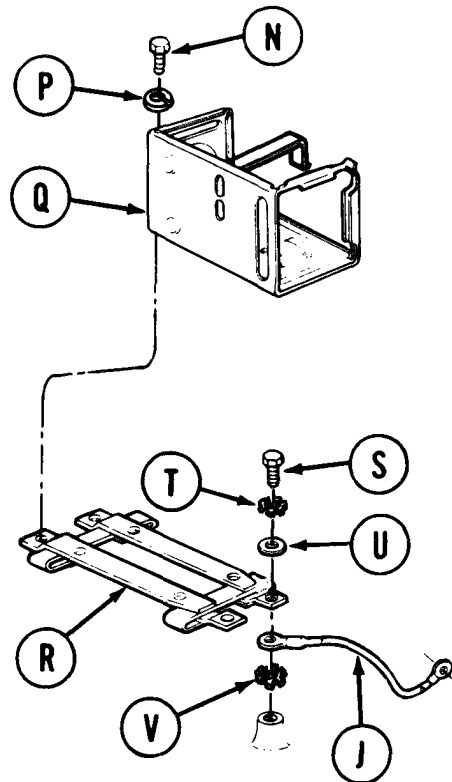
TA139344

## PRECLEANER AND GAS PARTICULATE FILTER REPLACEMENT (Sheet 3 of 5)

9. Using 7/16 inch socket, remove bolts (N) and lockwashers (P) securing frame assembly (Q) to mount (R). Throw lockwashers away.
10. Using 9/16 inch socket, remove capscrew (S), lockwasher (T), and washer (U) securing mount (R) to hull. Throw lockwasher away.
11. Remove mount (R), lockwasher (V), and ground lead (J). Throw lockwasher away.

### CLEANING AND INSPECTION:

1. Check hoses for cracks and holes.
2. Check frame for broken or bent parts.
3. Check ground lead for broken wire and terminals.
4. Check elbows for corrosion, holes, and blockage.
5. Replace parts as needed.



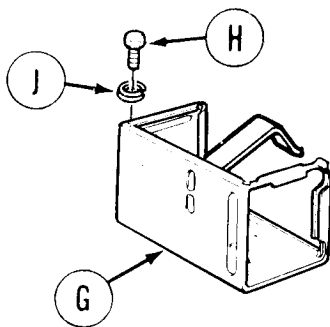
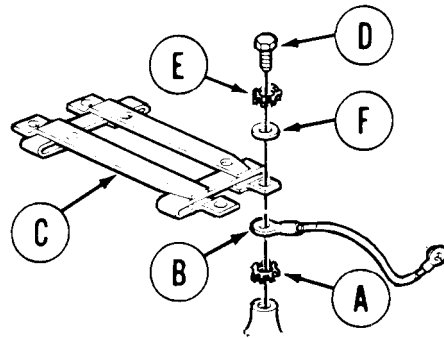
Go on to Sheet 4

TA139345

**PRECLEANED AND GAS PARTICULATE FILTER REPLACEMENT (Sheet 4 of 5)**

**INSTALLATION:**

1. Position new lockwasher (A), ground lead (B), and mount (C) onto hull mounting studs.
2. Using capscrews (D), new lockwashers (E), and washers (F), secure mount to hull.
3. Using 9/16 inch socket, tighten capscrews (D).



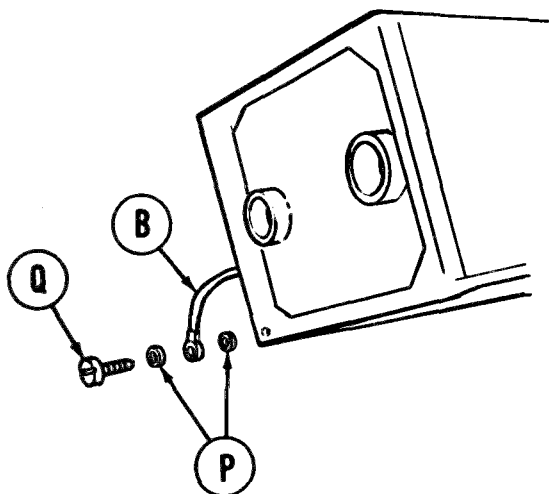
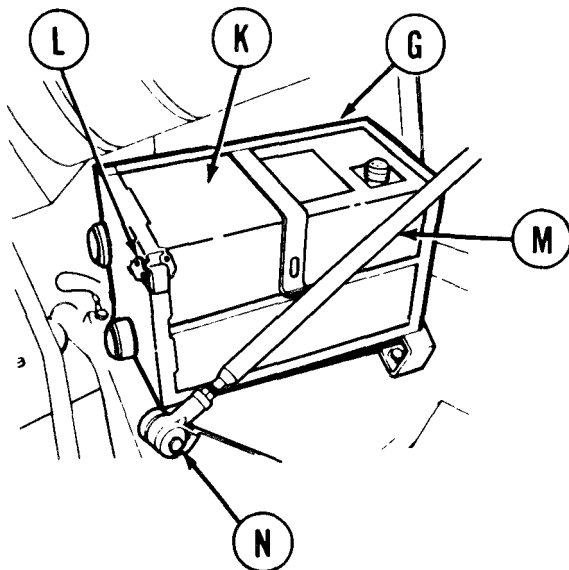
4. Position frame assembly (G) on mount (C), and using 7/16 inch socket, secure frame (G) to mount (C) with bolts (H) and new lockwashers (J).

Go on to Sheet 5

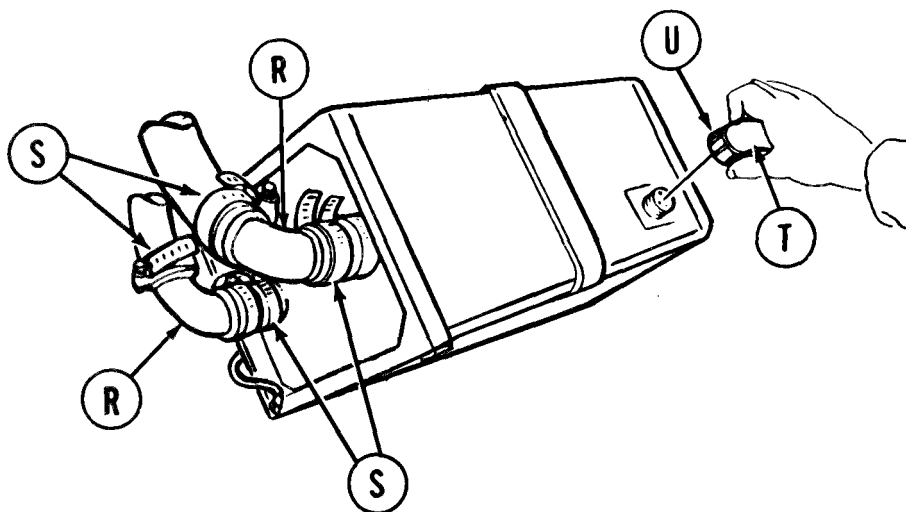
TA139346

PRECLEANED AND GAS PARTICULATE FILTER REPLACEMENT (Sheet 5 of 5)

5. Install precleaner and gas filter (K) into frame (G).
6. Secure filter in frame with latch (L).
7. Connect shifting linkage (M).
8. Using 9/16 inch wrench, install bolt (N).



9. Using screwdriver, install two new lockwashers (P) and screw (Q), and secure ground lead (B).
10. Install elbows (R) in hoses.
11. Push hoses and elbows (R) on filter openings.
12. Using screwdriver, tighten six hose clamps (S).
13. Install electrical connector (T) and, using pliers, tighten nut (U).



End of Task

TA139347

**PRECLEANED AND FILTER REPAIR (Sheet 1 of 2)**

TOOLS: Cross-tip screwdriver

SUPPLIES: Dry cleaning solvent (Item 54, Appendix D)  
Lint-free cloth (Item 12, Appendix D)  
Lockwashers (MS35338-44) (4 required)

REFERENCE: FM 21-40

PRELIMINARY PROCEDURE: Remove precleaned and filter (page 22-5)

**WARNING**

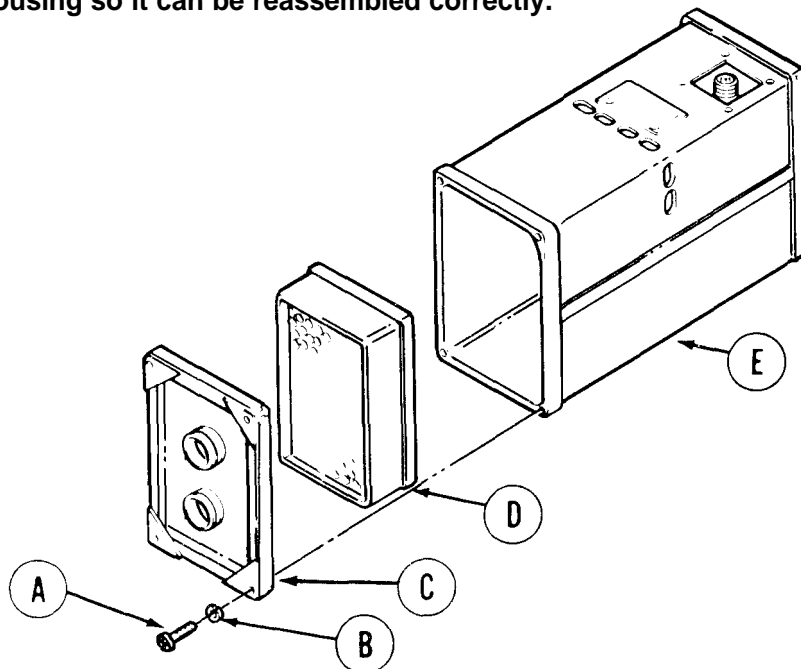
Contaminated filters must be handled using adequate precautions (FM 21-40) and must be disposed of by trained personnel.

**DISASSEMBLY:**

1. Using screwdriver, remove four screws (A) and lockwashers (B) from manifold (C). Remove manifold (C). Throw lockwashers away.
2. Remove filter (D) from housing (E).

**NOTE**

**Be sure to note direction particulate filter faces within housing so it can be reassembled correctly.**



Go on to Sheet 2

TA139348

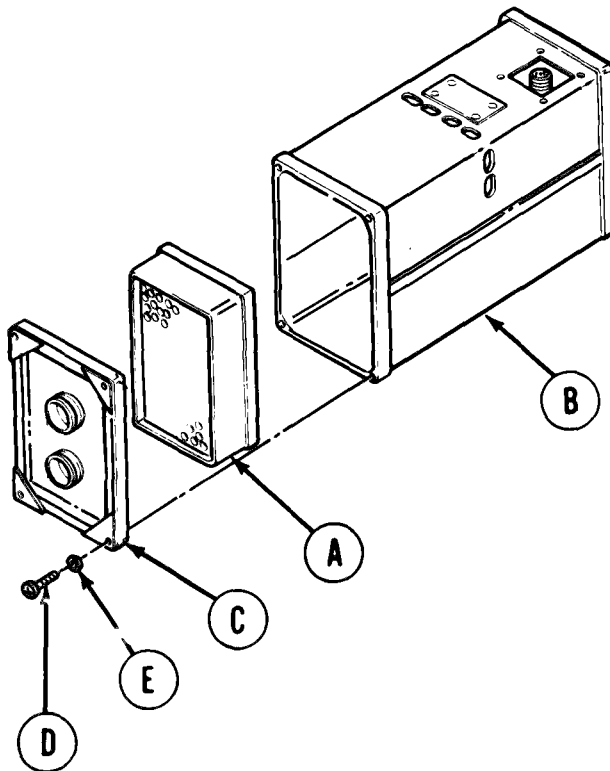


**PRECLEANED AND FILTER REPAIR (Sheet 2 of 2)****CLEANING AND INSPECTION:**

1. Clean all parts except filter with dry cleaning solvent (Item 54, Appendix D). Wipe dry with lint-free cloth (Item 12, Appendix D).
2. Check all parts for wear and damage.
3. Replace all parts as needed.

**ASSEMBLY:**

1. Making sure replacement filter faces same direction as removed filter, install replacement filter (A) in housing (B).
2. Install manifold (C) on housing (B).
3. Using screwdriver, install four screws (D) and new lockwashers (E).
4. Install precleaner and housing (page 22-8).



End of Task

TA139349

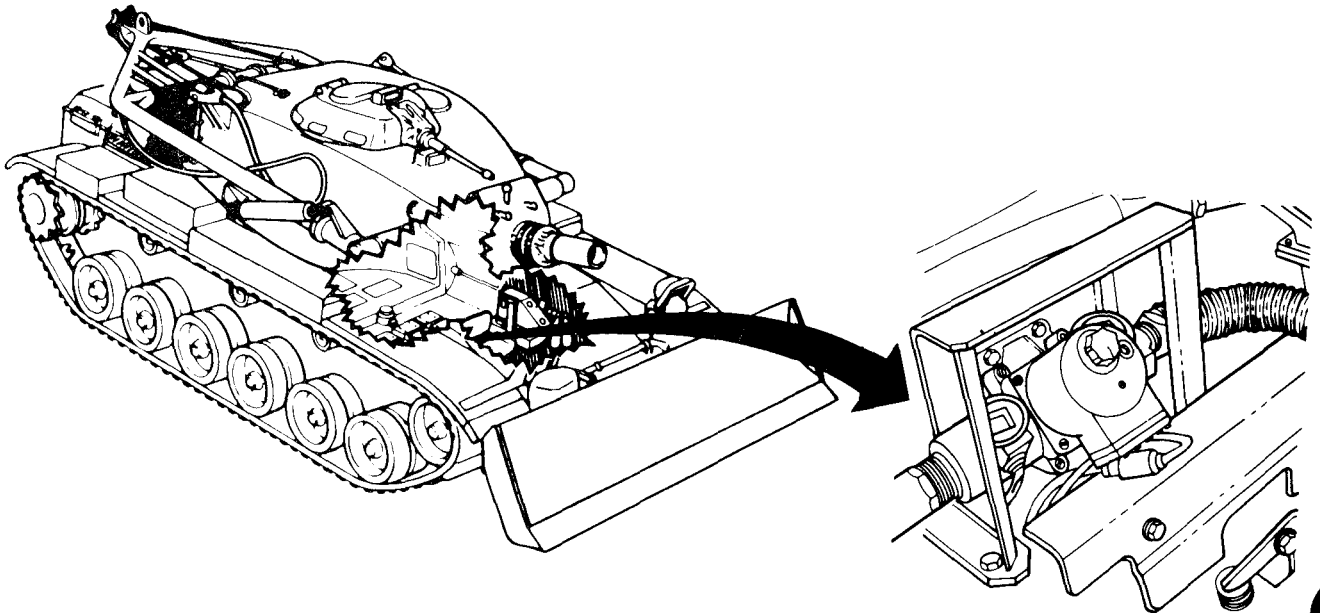
**GAS PARTICULATE HEATER REPLACEMENT (Sheet 1 of 5)**

PROCEDURE	PROCEDURE INDEX	PAGE
Removal		22-13
Installation		22-14

**TOOLS:** Ratchet with 1/2 in. drive  
 5 in. extension with 1/2 in. drive  
 9/16 in. socket with 1/2 in. drive  
 7/16 in. combination box and open end wrench  
 9/16 in. combination box and open end wrench  
 1/2 in. combination box and open end wrench (2 required)  
 1-1/2 in. open end wrench  
 1-13/16 in. open end wrench  
 Flat-tip screwdriver

**SUPPLIES:** Tags (2 required)  
 Pencil  
 Lockwasher (MS35338-46) (3 required)  
 Lockwasher (MS35335-33) (4 required)

**PRELIMINARY PROCEDURE:** Dump driver's seat (TM 9-2350-222-10)



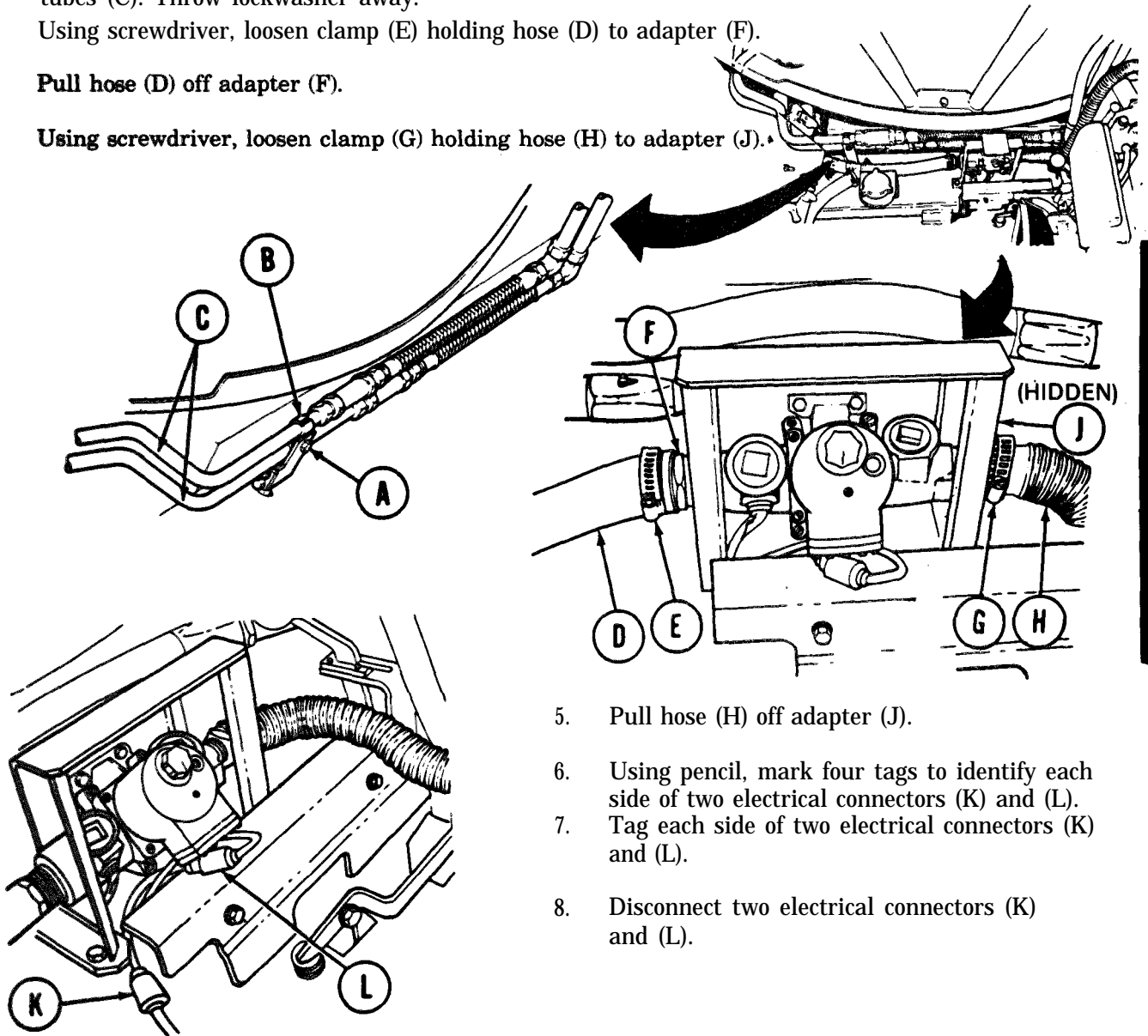
(LOCATED BEHIND DRIVER'S SEAT)

Go on to Sheet 2

TA253766

**GAS PARTICULATE HEATER REPLACEMENT (Sheet 2 of 5)**

1. Using 9/16 inch wrench to hold nut, use 9/16 inch socket to remove screw, flat washer, spacer, lockwasher, and nut (A) securing two clamps (B) to bracket. Remove two clamps (B) from hydraulic tubes (C). Throw lockwasher away.
2. Using screwdriver, loosen clamp (E) holding hose (D) to adapter (F).
3. **Pull hose (D) off adapter (F).**
4. **Using screwdriver, loosen clamp (G) holding hose (H) to adapter (J).**



5. Pull hose (H) off adapter (J).
6. Using pencil, mark four tags to identify each side of two electrical connectors (K) and (L).
7. Tag each side of two electrical connectors (K) and (L).
8. Disconnect two electrical connectors (K) and (L).

Go on to Sheet 3

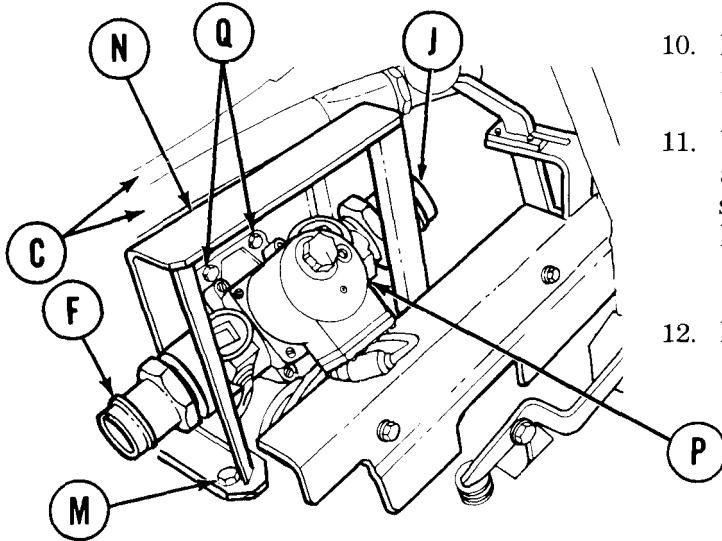
TA253769

**GAS PARTICULATE HEATER REPLACEMENT (Sheet 3 of 5)**

- Using 9/16 inch socket, remove three screws and lockwashers (M) holding cover (N) to hull. Throw lockwashers away.

**NOTE**

You may need a pry bar to move hydraulic lines (C) away from cover (N) for access to one of the three screws.

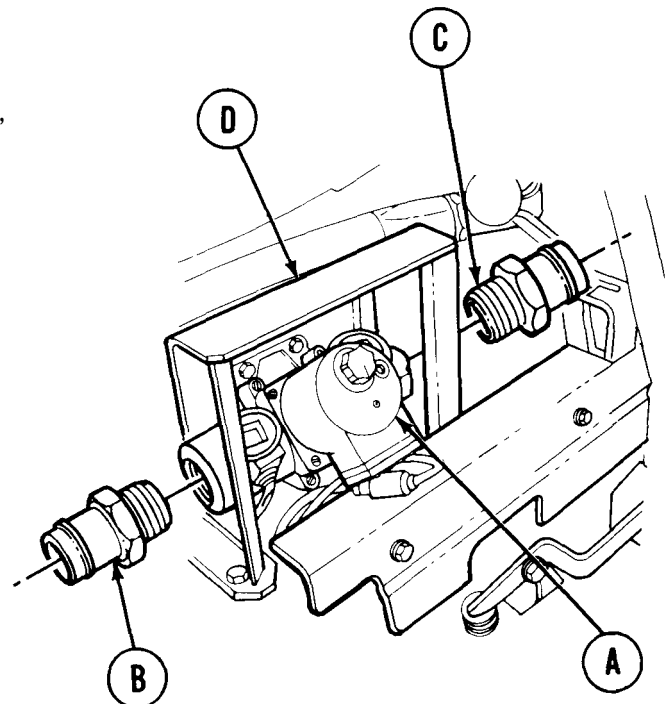


- Remove cover (N) and heater (P) from position in hull.
- Using 1/2 inch wrench to hold four nuts, use another 1/2 inch wrench to remove four screws, lockwashers, and nuts (Q) holding heater (P) to cover (N). Throw lockwashers
- Remove heater (P) from cover (N).

- Using 1-13/16 inch wrench to hold heater (P), use 1-1/2 inch wrench to remove adapters (F) and (J)

**INSTALLATION:**

- Using 1-13/16 inch wrench to hold heater (A), use 1-1/2 inch wrench to install adapters (B) and (C).
- Position cover (D) to heater (A).



Go on to Sheet 4

TA253770

**GAS PARTICULATE HEATER REPLACEMENT (Sheet 4 of 5)**

3. Using 1/2 inch wrench to hold four nuts, use another 1/2 inch wrench to install four screws, new lockwashers, and nuts (E) to hold heater (A) to cover (D).

4. Position heater (A) and cover (D) in hull.

5. Using 9/16 inch socket, install three screws and new lockwashers (F) to hold cover (D) to hull.

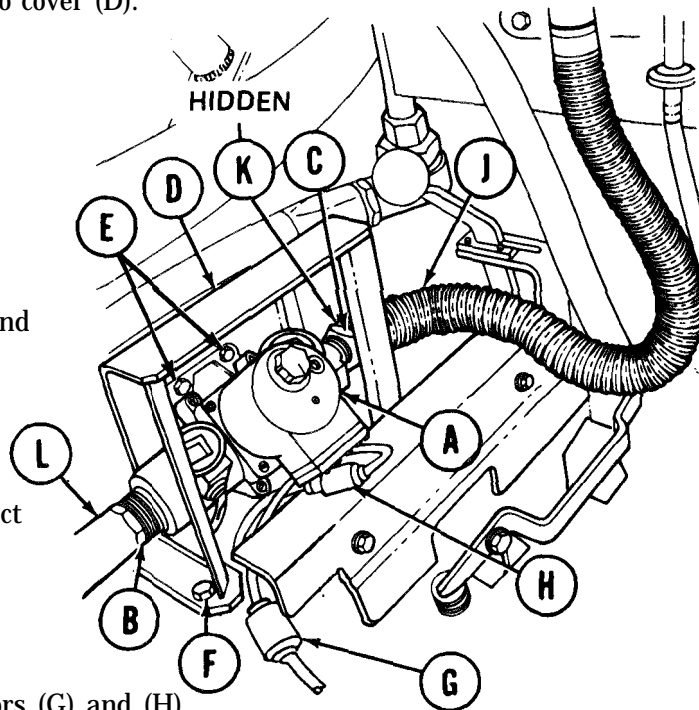
6. Matching circuit numbers on four tags, connect two electrical connectors (G) and (H).

7. Remove four tags from two electrical connectors (G) and (H).

8. Install hose (J) onto adapter (C).

9. Using screwdriver, tighten clamp (K) to hold hose (J) to adapter (C).

10. Install hose (L) onto adapter (B).

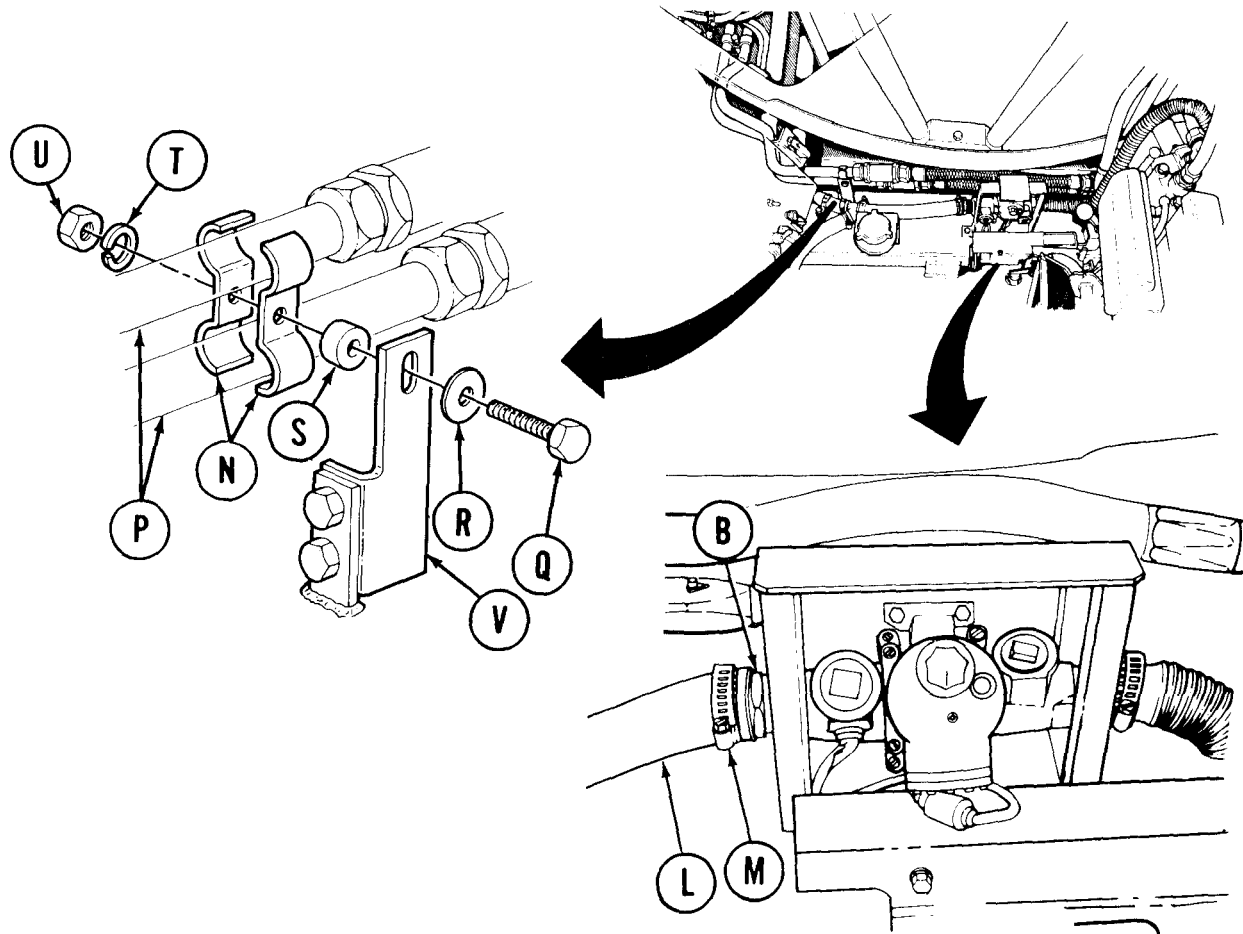


**Go on to Sheet 5**

TA139353

**Change 1 22-15**

GAS PARTICULATE HEATER REPLACEMENT (Sheet 5 of 5)



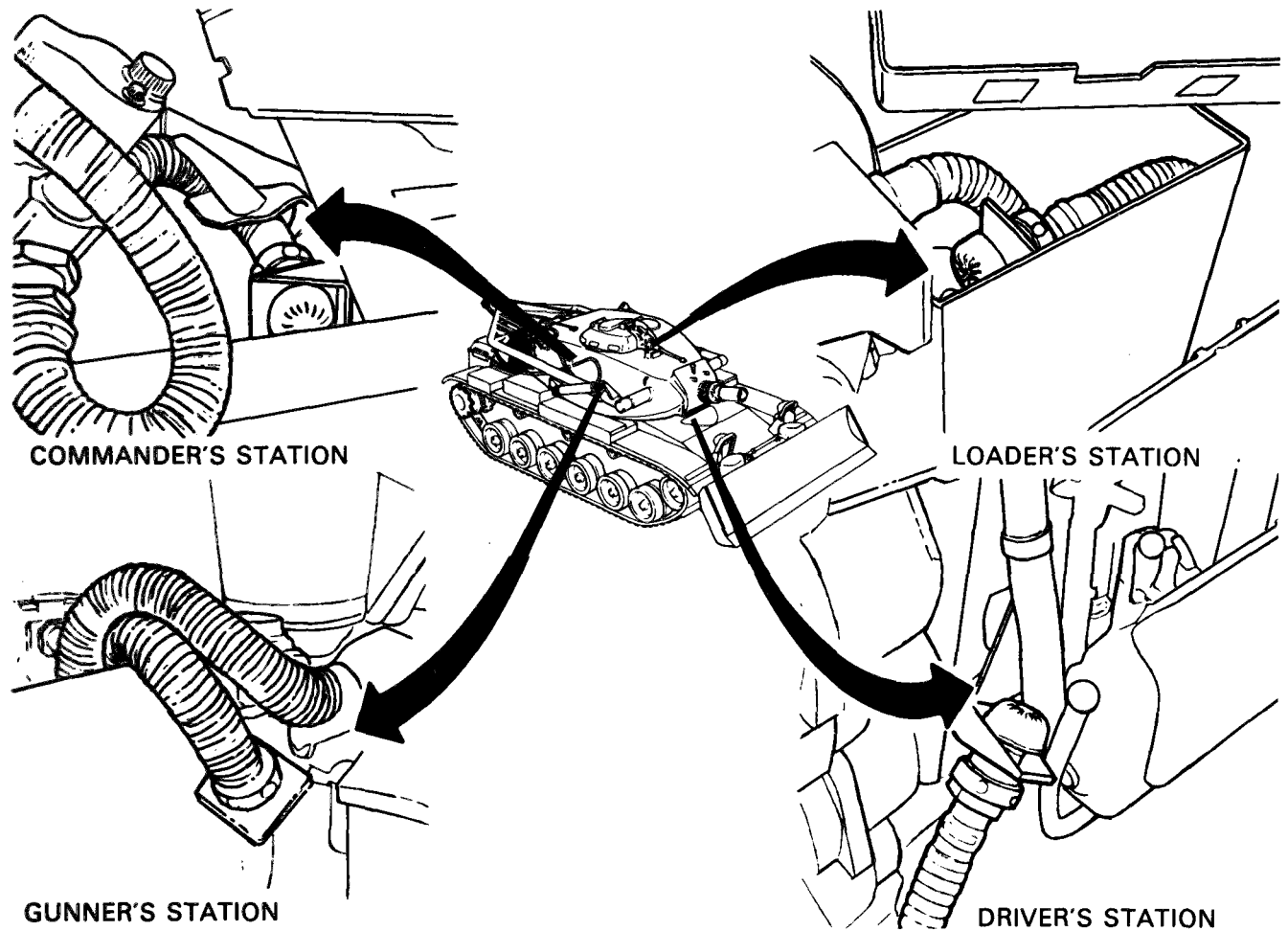
11. Using screwdriver, tighten clamp (M) to hold hose (L) to adapter (B).
12. Position two clamps (N) onto hydraulic tubes (P).
13. Install screw (Q), flat washer (R), spacer (S), new lockwasher (T), and nut (U) to secure clamps (N) to bracket (V).
14. Using 9/16 inch wrench to hold nut (U), use 9/16 inch socket and tighten screw (Q).

End of Task

**ORIFICE ASSEMBLY AND HOSE REPLACEMENT (Sheet 1 of 3)**

**TOOLS:** Flat-tip screwdriver  
Retaining ring pliers  
Slip joint pliers

**SUPPLIES:** Liquid detergent (Item 33, Appendix D)



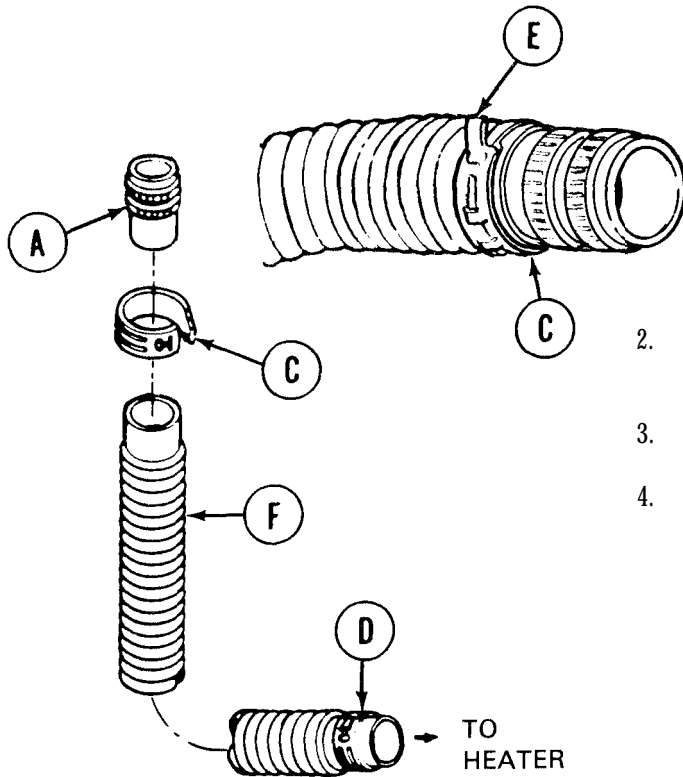
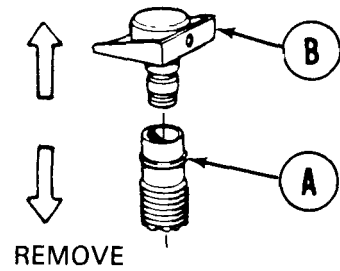
Go on to Sheet 2

TA139355

**ORIFICE ASSEMBLY AND HOSE REPLACEMENT (Sheet 2 of 3)**

**REMOVAL:**

1. Pull breakaway socket (A) from orifice assembly (B).

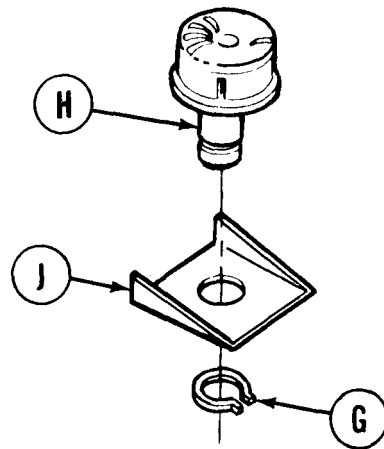


2. Using screwdriver, loosen hose clamps (C) and (D) by prying tab (E) up.
3. Remove breakaway socket (A) from hose (F).
4. Remove hose (F) from heater.

5. Using retaining ring pliers, remove snap ring (G).
6. Remove orifice assembly (H) from bracket (J).

**CLEANING AND INSPECTION:**

1. Clean hose and orifice connector with warm water and liquid detergent (Item 33, Appendix D).
2. Check all parts for damage and wear.
3. Replace parts as necessary.
4. Check hose for holes and dry rot. Replace if needed.



Go on to Sheet 3

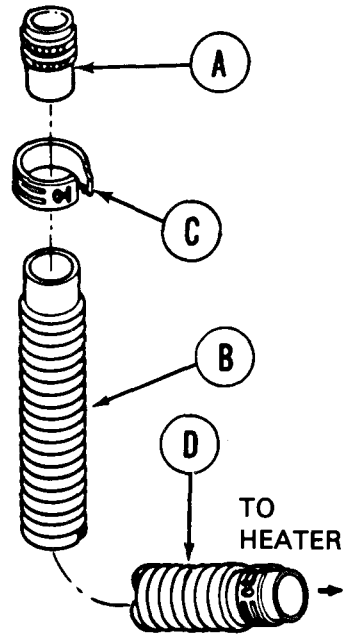
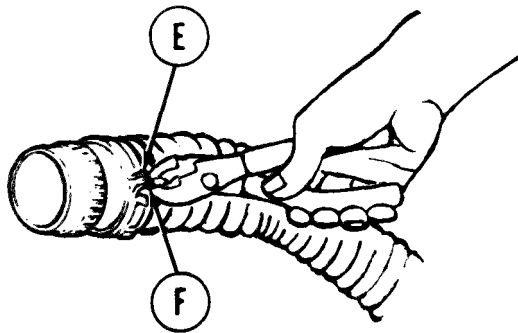
TA139356



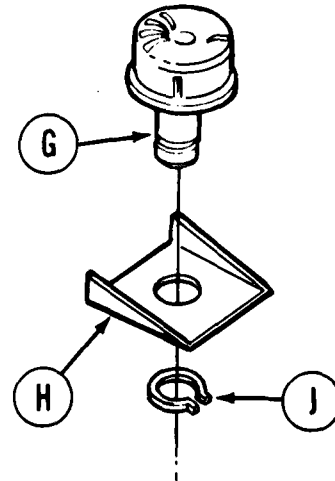
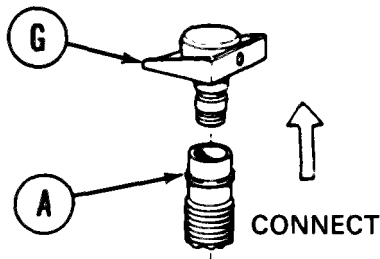
**ORIFICE ASSEMBLY AND HOSE REPLACEMENT (Sheet 3 of 3)**

**INSTALLATION:**

1. Install breakaway socket (A) in hose (B). Secure with hose clamp (C).
2. Connect free end of hose to heater. Secure with hose clamp (D).
3. Using slip joint pliers, tighten hose clamps (C) and (D) by squeezing tabs (E) and (F) on each clamp.



4. Install replacement orifice assembly (G) in bracket (H) and secure using snap ring (J) and retaining ring pliers.



5. Connect breakaway socket (A) to orifice assembly (G).

End of Task

TA139357

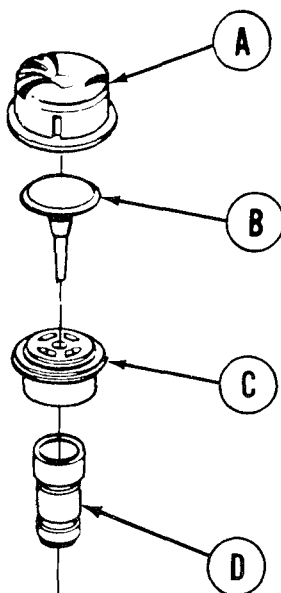
**ORIFICE ASSEMBLY REPAIR (Sheet 1 of 2)**

SUPPLIES: Sealing adhesive (Item 6, Appendix D)  
Dry cleaning solvent (Item 54, Appendix D)

PRELIMINARY PROCEDURE: Remove orifice assembly (page 22-18)

**DISASSEMBLY:**

1. Using fingers, remove plastic orifice cover (A).
2. Remove outlet valve (B).
3. Remove valve seat (C) from orifice connector (D).



**CLEANING AND INSPECTION:**

1. Using dry cleaning solvent (Item 54, Appendix D), remove any old adhesive from connector (D).
2. Check all parts for cracks and damage.
3. Check valve for holes.

Go on to Sheet 2

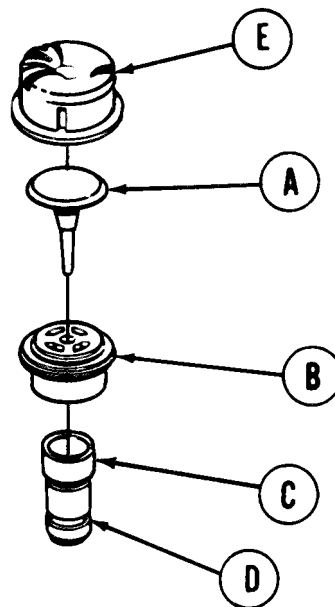
TA139358

**ORIFICE ASSEMBLY REPAIR (Sheet 2 of 2)**

4. Replace parts as needed.

**ASSEMBLY:**

1. Install valve (A) on valve seat (B).
2. Apply a thin coating of sealing adhesive (Item 6, Appendix D) to valve seating area (C) of orifice connector (D).
3. Install valve seat (B) on orifice connector (D) and allow time for adhesive to harden.
4. Install valve cover (E).
5. Install orifice assembly (page 22-19).



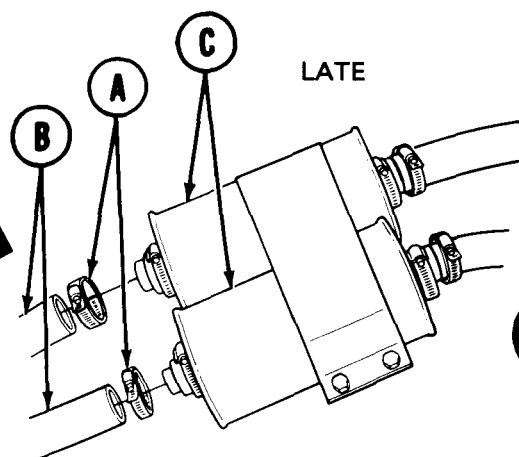
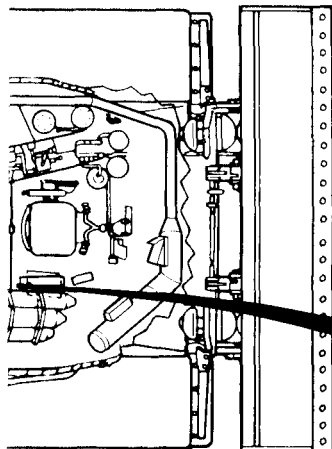
End of Task

TA139359

**GAS PARTICULATE PRECLEANER-TO-FILTER HOSES REPLACEMENT (Sheet 1 of 2)**

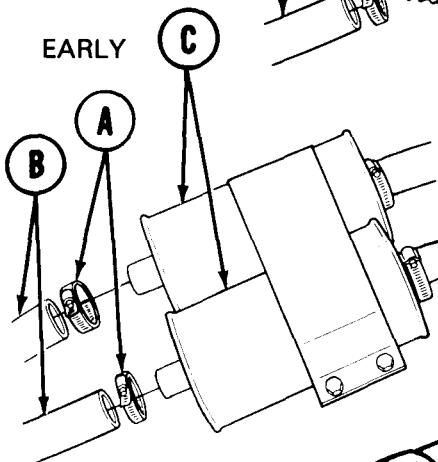
**TOOLS:** 1/2 in. socket with 1/2 in. drive  
5 in. extension with 1/2 in. drive  
Ratchet with 1/2 in. drive  
Flat-tip screwdriver

**SUPPLIES:** Lockwasher (MS35335-34)



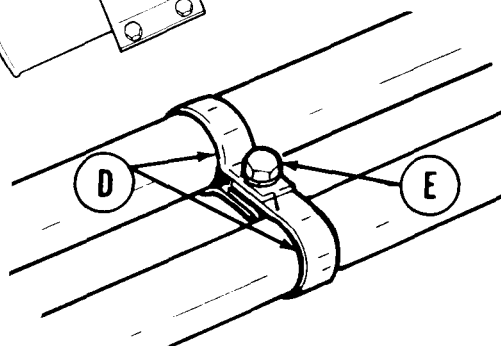
**REMOVAL:**

1. Using screwdriver, loosen two hose clamps (A). Pull two hoses (B) from filters (C). Remove hose clamps from hose.



2. Follow hoses downward past personnel heater and find two clamps (D).

3. Using socket, remove screw and lockwasher (E), from clamps (D). Throw lockwasher away.

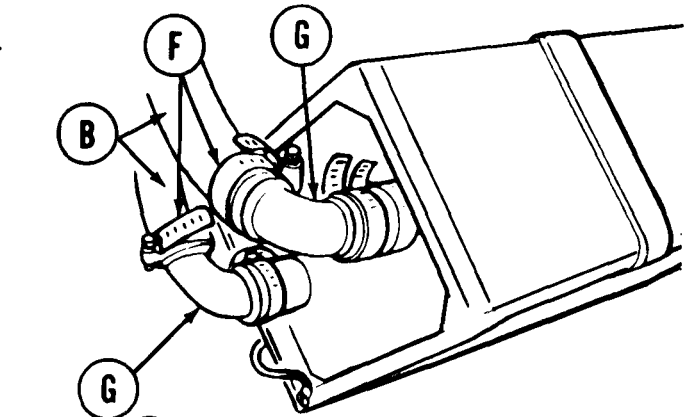


Go on to Sheet 2

TA253773

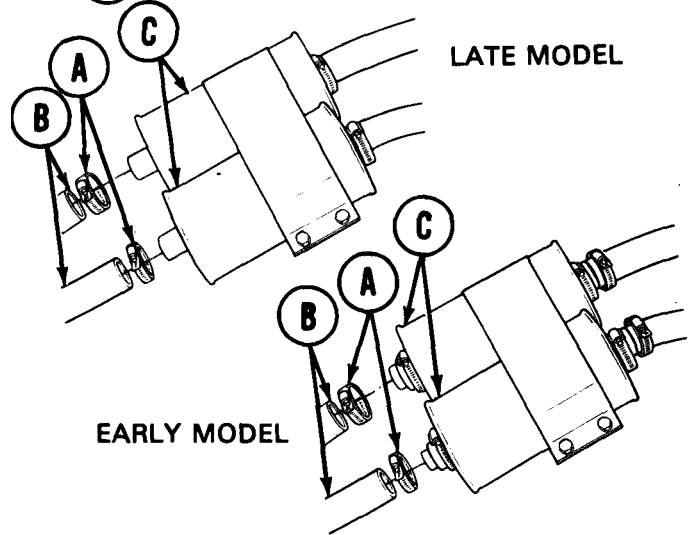
**GAS PARTICULATE PRECLEANER-TO-FILTER HOSES REPLACEMENT (Sheet 2 of 2)**

4. Using screwdriver, loosen two hose clamps (F).
5. Pull hoses (B) from elbows (G) and remove hose clamps (F) from hoses.
6. Remove two clamps (D) from hoses.
7. Remove two hoses (B) from vehicle.

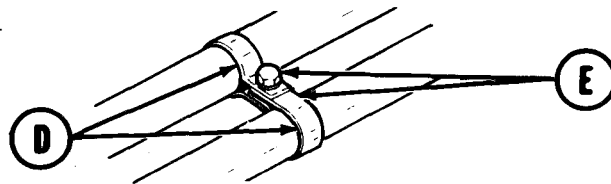


**INSTALLATION:**

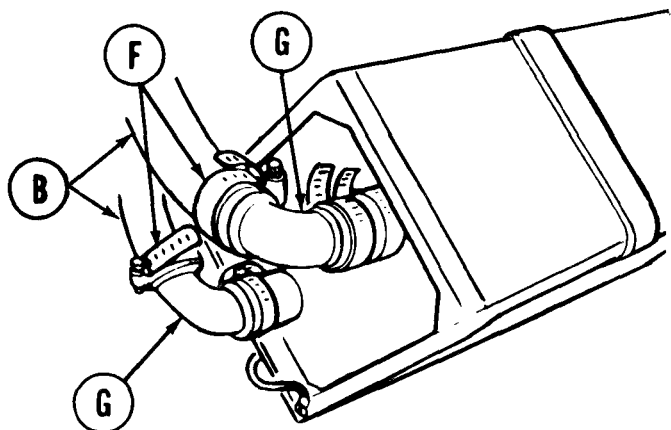
1. Position replacement hoses from pre-cleaner to filters, placing around personnel heater duct.
2. Place two hose clamps (A) onto hoses (B). Push hoses (B) onto filters (C).
3. Using screwdriver, tighten hose clamps (A).



4. Install two clamps (D) onto hoses (B), and using socket, install screw and new lock-washer (E) securing clamps (D) to hull.



5. Place two hose clamps (F) onto hoses (B). Push hoses (B) onto pre-cleaned elbows (G).
6. Using screwdriver, tighten hose clamps (F) securing hoses to elbows.



**End of Task**

**GAS PARTICULATE TUBES AND HOSES REPLACEMENT (Sheet 1 of 7)**

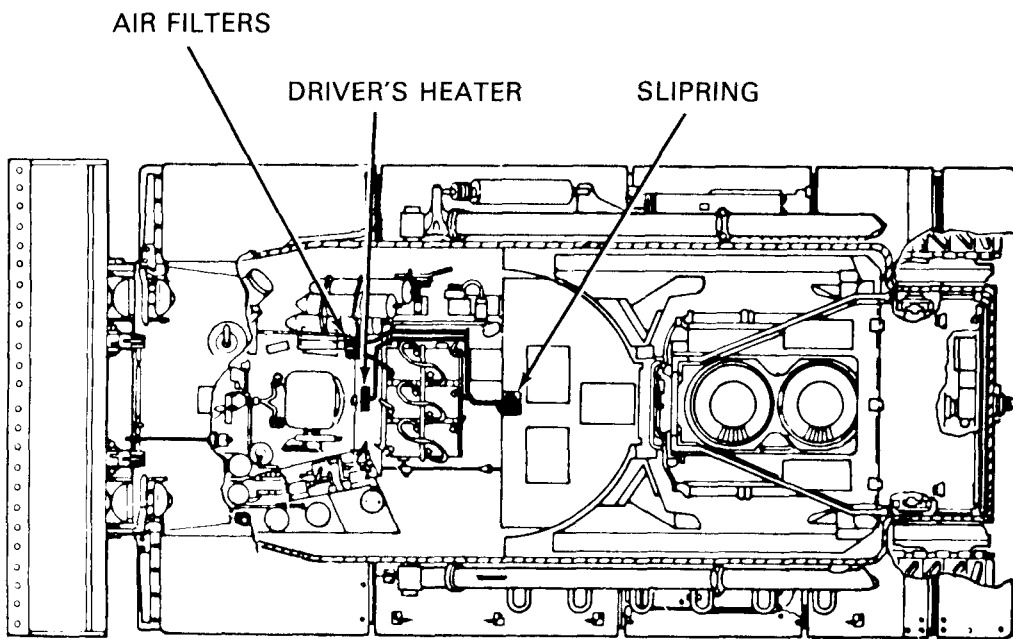
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	22-25
Installation	22-28

**TOOLS:** 7/16 in. wrench  
7/16 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive  
Flat-tip screwdriver

**SUPPLIES:** Gasket (AN763-20)  
Lockwasher (MS35338-25) (4 required)

**PRELIMINARY PROCEDURE:** Remove battery ground straps (page 10-283)



TURRET REMOVED FOR CLARITY

Go on to Sheet 2

TA253775

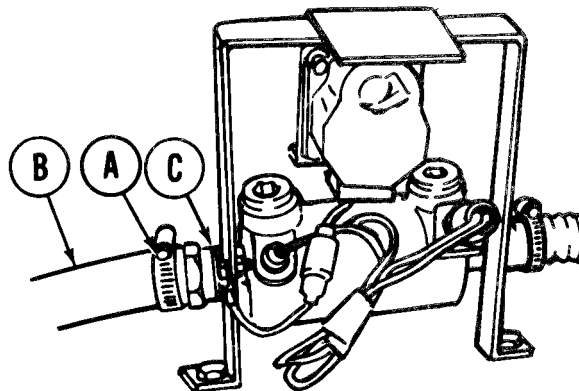
**GAS PARTICULATE TUBES AND HOSES REPLACEMENT (Sheet 2 of 7)**

**REMOVAL:**

**NOTE**

**Only remove and install those components necessary to replace the defective tube assembly or hose.**

1. Using flat-tip screwdriver, loosen clamp (A) securing hose (B) to adapter (C).
2. Using flat-tip screwdriver, loosen clamp (D) securing hose (B) to tube (E).



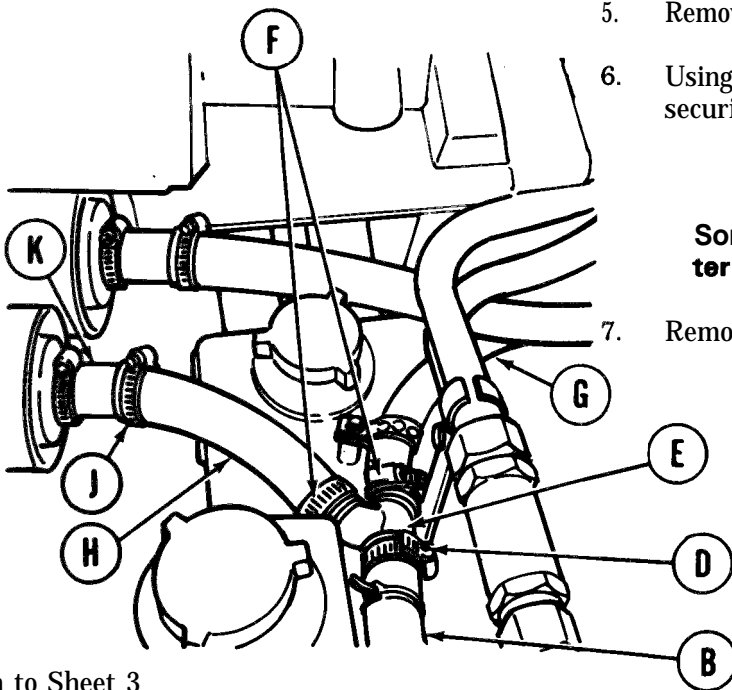
**LOCATED DIRECTLY BEHIND DRIVER'S SEAT**

3. Remove hose (B) and clamps (A) and (D).
4. Using flat-tip screwdriver, loosen clamps (F) securing hoses (G) and (H) to tube (E).
5. Remove tube (E).
6. Using flat-tip screwdriver, loosen clamp (J) securing hose (H) to adapter (K).

**NOTE**

**Some models may not have adapter (K) on filters.**

7. Remove hose (H) with clamps (F) and (J).



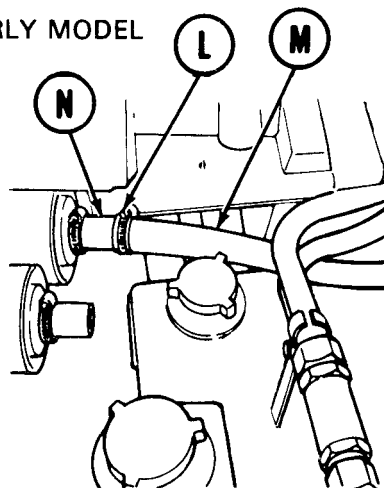
Go on to Sheet 3

TA253776

**GAS PARTICULATE TUBES AND HOSES REPLACEMENT (Sheet 3 of 7)**

8. Using flat-tip screwdriver, loosen clamp (L) securing hose (M) to adapter or filter (N).
9. Remove hose (M) from adapter or filter (N).

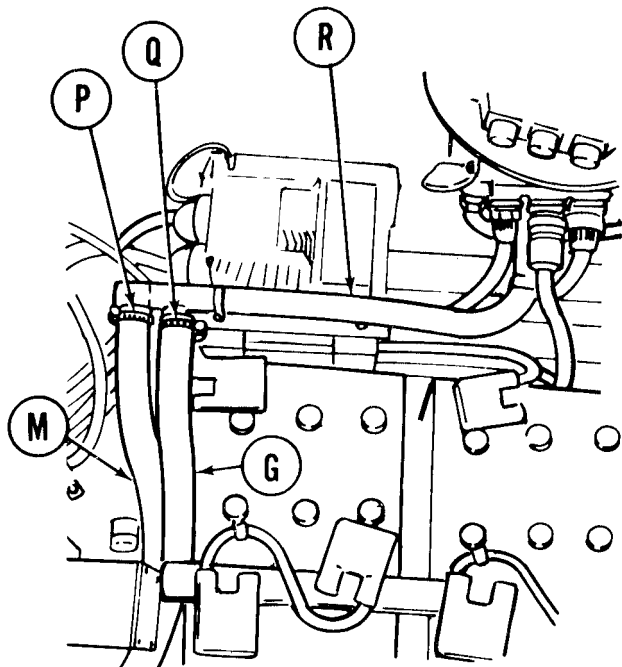
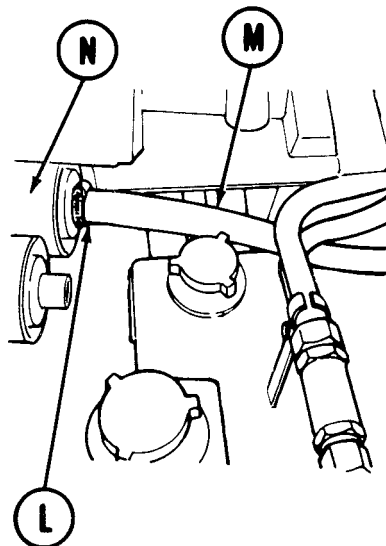
EARLY MODEL



**NOTE**

Open turret platform access door located on turret floor and traverse turret as necessary to gain access to called out parts. Traverse turret so access door is just behind ammunition rack.

LATE MODEL



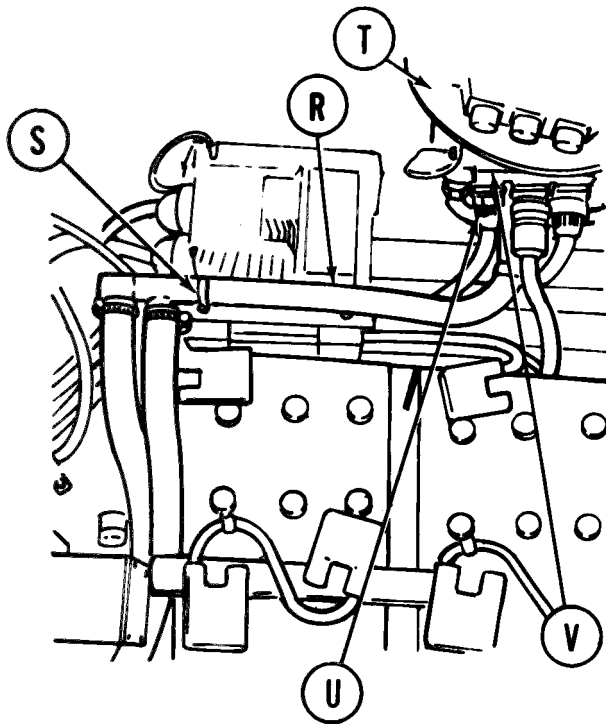
10. Using flat-tip screwdriver, loosen clamps (P) and (Q) securing hoses (M) and (G) to tube (R).
11. Remove hoses (M) and (G) with clamps (P) and (Q) from tube (R).

Go on to Sheet 4

TA253777



## GAS PARTICULATE TUBES AND HOSES REPLACEMENT (Sheet 4 of 7)



12. Using flat-tip screwdriver, loosen clamp (S).

13. Slide clamp (S) off retaining strap.

14. Using 7/16 inch wrench, remove four screws and lockwashers (U) securing tube (R) to slipring (T). Throw lockwashers away.

15. Remove tube (R) and gasket (V) from slipring (T). Throw gasket away.

16. Using flat-tip screwdriver, remove clamp (S) from tube (R).

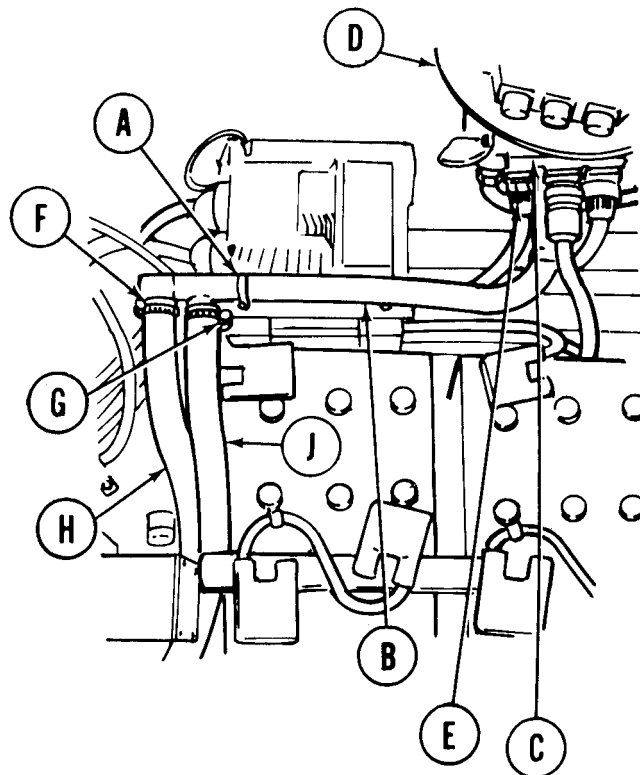
17. Inspect all parts removed and replace as necessary.

Go on to Sheet 5

TA253778

**Change 1 22-27**

GAS PARTICULATE TUBES AND HOSES REPLACEMENT (Sheet 5 of 7)



INSTALLATION:

**NOTE**

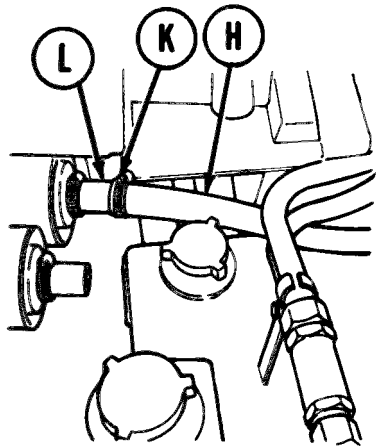
**Traverse turret as necessary to accomplish installation.**

1. Using flat-tip screwdriver, install clamps (A) onto tube (B).
2. Position new gasket (C) and tube (B) to slipring (D).
3. Using 7/16 inch wrench and socket, install four screws and new lockwashers (E) to secure tube (B) and gasket (C) to slipring (D).
4. Slip clamp (A) over tube (B) onto retaining strap.
5. Using flat-tip screwdriver, secure clamp (A) to retaining strap.
6. Slip clamps (F) and (G) onto hoses (H) and (J).
7. Install hoses (H) and (J) onto tube (B).
8. Using flat-tip screwdriver, slide clamps (F) and (G) over hoses (H) and (J) and tube (B) and tighten clamp.

Go on to Sheet 6

TA253779

**GAS PARTICULATE TUBES AND HOSES REPLACEMENT (Sheet 6 of 7)**

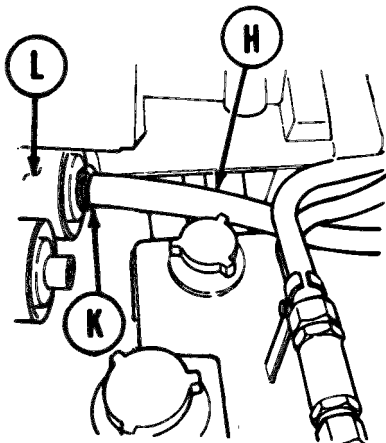


**EARLY MODEL**

9. Slip clamp (K) onto end of hose (H).

10. Install hose (H) onto adapter (L).

11. Using flat-tip screwdriver, slide clamp (K) over hose (H) and adapter (L) and tighten clamp (K).

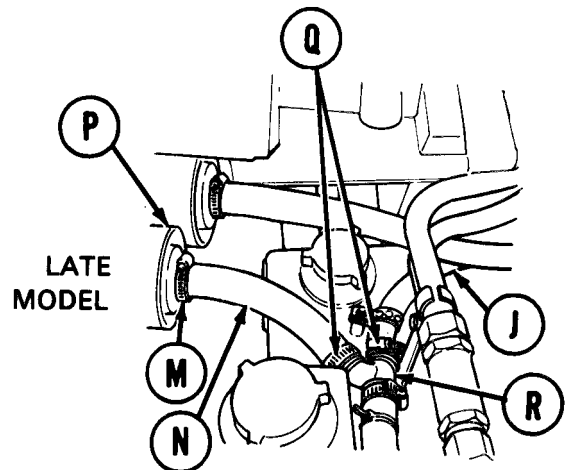


**LATE MODEL**

12. Slip clamp (M) onto end of hose (N).

13. Install hose (N) onto filter or adapter (P).

14. Using flat-tip screwdriver, slide clamp (M) over hose (N) and filter or adapter (P) and tighten clamp (M).



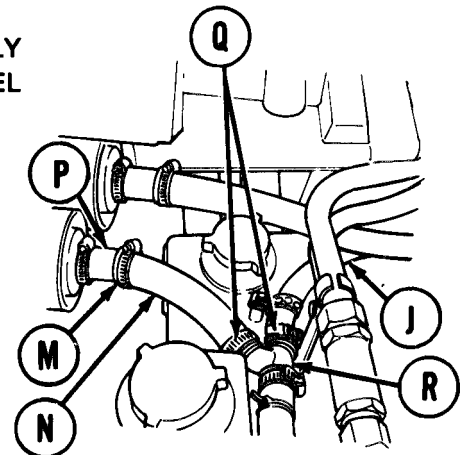
**LATE MODEL**

15. Slip clamps (Q) over ends of hose (N) and (J).

16. Install hoses (N) and (J) onto tube (R).

**EARLY MODEL**

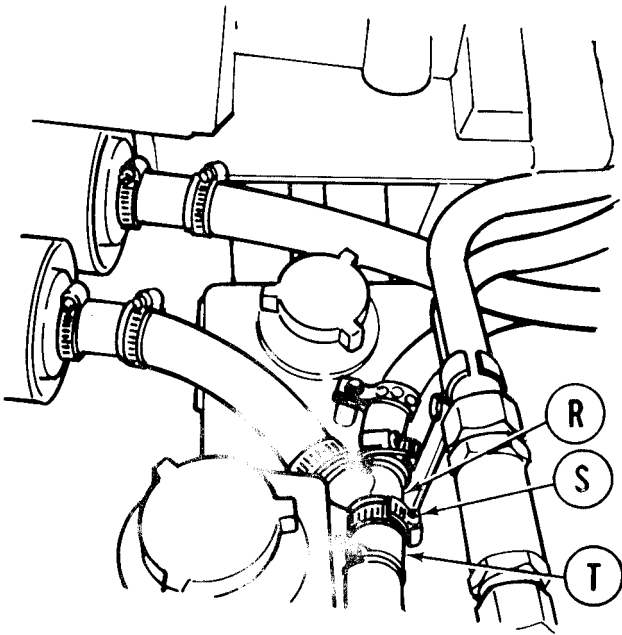
17. Using flat-tip screwdriver, slide clamps (Q) over hoses (N) and (J) and tube (R) and tighten clamps (Q).



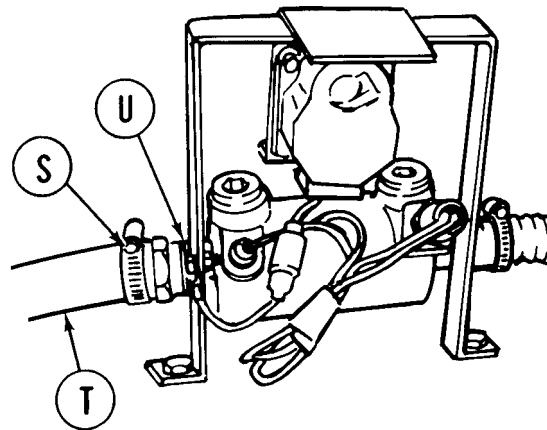
Go on to Sheet 7

TA253780

**GAS PARTICULATE TUBES AND HOSES REPLACEMENT (Sheet 7 of 7)**



8. Slip clamps (S) over end of hose (T).



19. Install hose (T) onto tube (R) and adapter (U).

20. Using flat-tip screwdriver, slide clamps (S) over hose (T), tube (R), and adapter (U), and tighten clamps.

End of Task

TA139368

## CHAPTER 23

## SMOKE GENERATOR MAINTENANCE INDEX

PROCEDURE	PAGE
Smoke Generator Switch or Guard Replacement	23-2
Smoke Generator Switch Cover Replacement	23-4
Smoke Generator Indicator Light Replacement	23-5
Smoke Generator Switch and Indicator Light Mounting Bracket Replacement	23-8
Smoke Generator Wiring Harness to Bulkhead Lead Replacement	23-10
Smoke Generator Hull Wiring Harness Replacement	23-12
Smoke Generator Front Engine Fuel Hose Replacement	23-18
Smoke Generator Intermediate Fuel Hose Replacement	23-22
Smoke Generator Fuel Shutoff Valve Replacement	23-27
Smoke Generator Solenoid Replacement	23-31
Smoke Generator Elbow-to-Solenoid Replacement	23-36
Smoke Generator Solenoid Output Fuel Hose Replacement	23-38
Smoke Generator Tee-to-TurboSupercharger Tube Assembly Replacement	23-40
Smoke Generator Engine Wiring Harness Replacement	23-45

**SMOKE GENERATOR SWITCH OR GUARD REPLACEMENT (Sheet 1 of 2)**

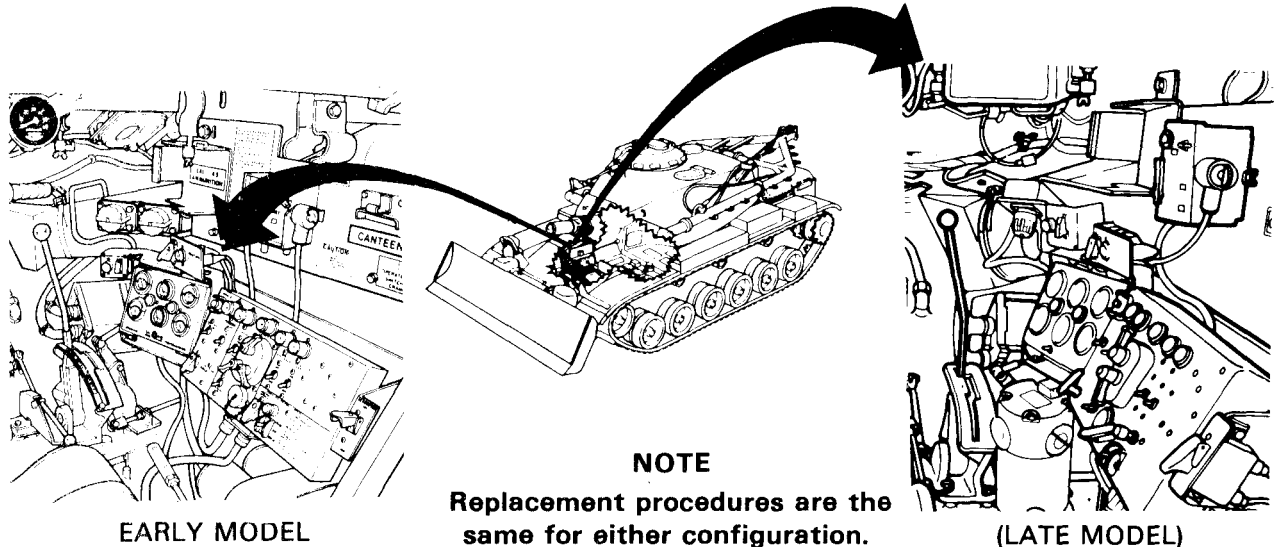
**TOOL:** Cross-tip screwdriver

**SUPPLIES:** Lockwasher (MS35338-48) (2 required)

**PERSONNEL:** Two

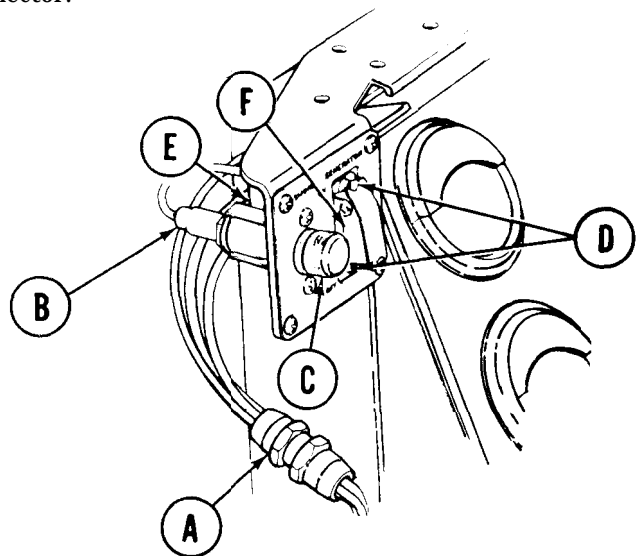
**REFERENCE:** TM 9-2350 222-10

**REMOVAL:**



**NOTE**  
Replacement procedures are the same for either configuration.  
Early model configuration is shown.

1. Be sure MASTER BATTERY switch is OFF
2. Disconnect switch connector (A) from harness connector.
3. Disconnect switch-to-indicator light lead (B) from i
4. Using screwdriver, remove two screws and lockwashers (D). Throw lockwashers away.
5. Remove switch (E) and guard (F).
6. Replace switch (E) or guard (F) as required.



Go on to Sheet 2

TA253781

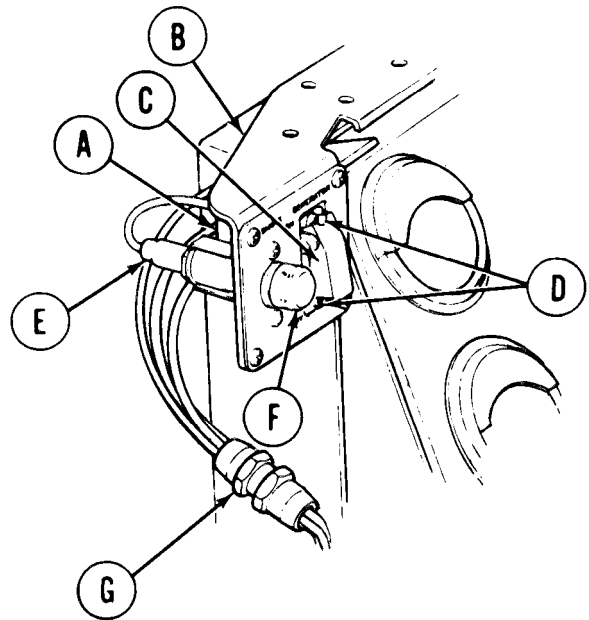
**SMOKE GENERATOR SWITCH OR GUARD REPLACEMENT (Sheet 2 of 2)****INSTALLATION:**

1. Be sure ON position is up, and position switch (A) to backside of mounting bracket (B).
2. Position guard (C) over switch (A). Be sure toggle lever on switch is down.
3. Using screwdriver, install two screws and new lockwashers (D) to secure guard (C) and switch (A) to bracket (B).
4. Connect switch-to-light indicator lead (E) to light indicator (F) connector.
5. Connect switch connector (G) to harness connector.

**WARNING**

Never activate smoke generator in a building or closed area or with personnel nearby.

6. Start engine (TM 9-2350-222-10) and run until normal operating temperatures are attained. Run engine at 1600 rpm.
7. Place SMOKE GENERATOR switch (A) to ON for 10 seconds.
8. Look for white smoke emitting from exhaust.
9. Place SMOKE GENERATOR switch (A) to OFF (down).
10. Shut down engine (TM 9-2350-222-10).
11. If white smoke was not seen, troubleshoot (page 4-963).



End of Task

TA140855

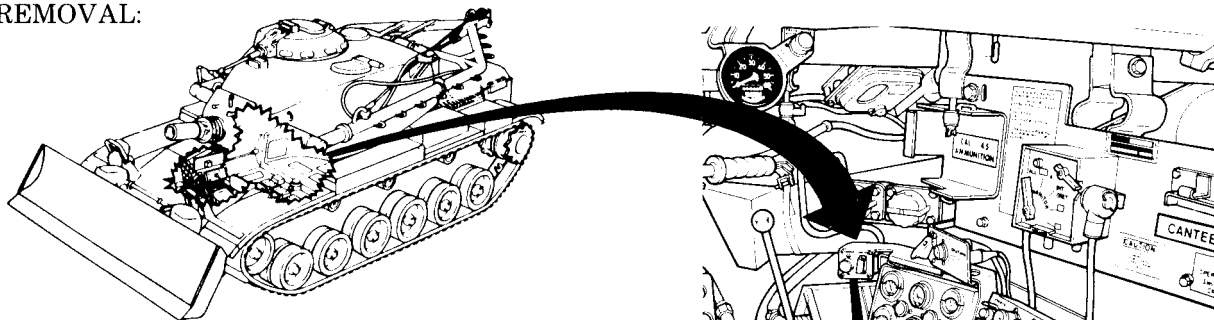
**SMOKE GENERATOR SWITCH COVER REPLACEMENT (Sheet 1 of 1 )**

**TOOLS:** Cross-tip screwdriver  
 11/32 in. combination box and open end wrench  
 3/8 in. combination box and open end wrench

**SUPPLIES:** Lockwasher (MS35338-48) (4 required)

**PRELIMINARY PROCEDURE:** Remove smoke generator indicator light (page 23-5)

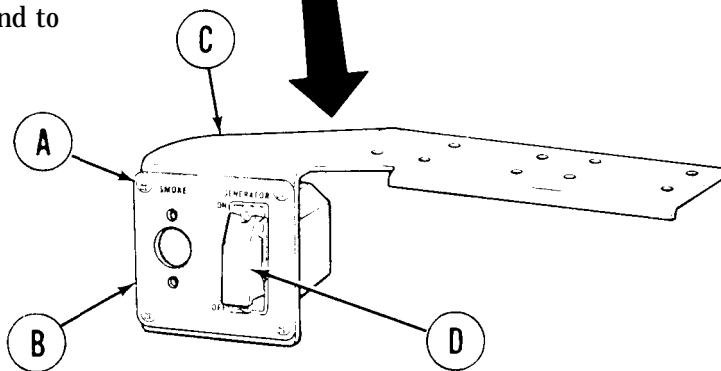
**REMOVAL:**



1. Using screwdriver and 11/32 inch wrench, remove four screws, lockwashers, flat washers, and nuts (A) securing cover (B) to mounting bracket (C). Throw lockwashers away.
2. Remove cover (B).

**INSTALLATION:**

1. Position cover (B) over switch guard (D) and to mounting bracket (C).



2. Using screwdriver and 11/32 inch wrench, install and tighten four screws, new lockwashers, flat washers, and nuts (A) securing cover (B) to mounting bracket (C).
3. Install smoke generator indicator light (page 23-7).

End of Task

TA140856

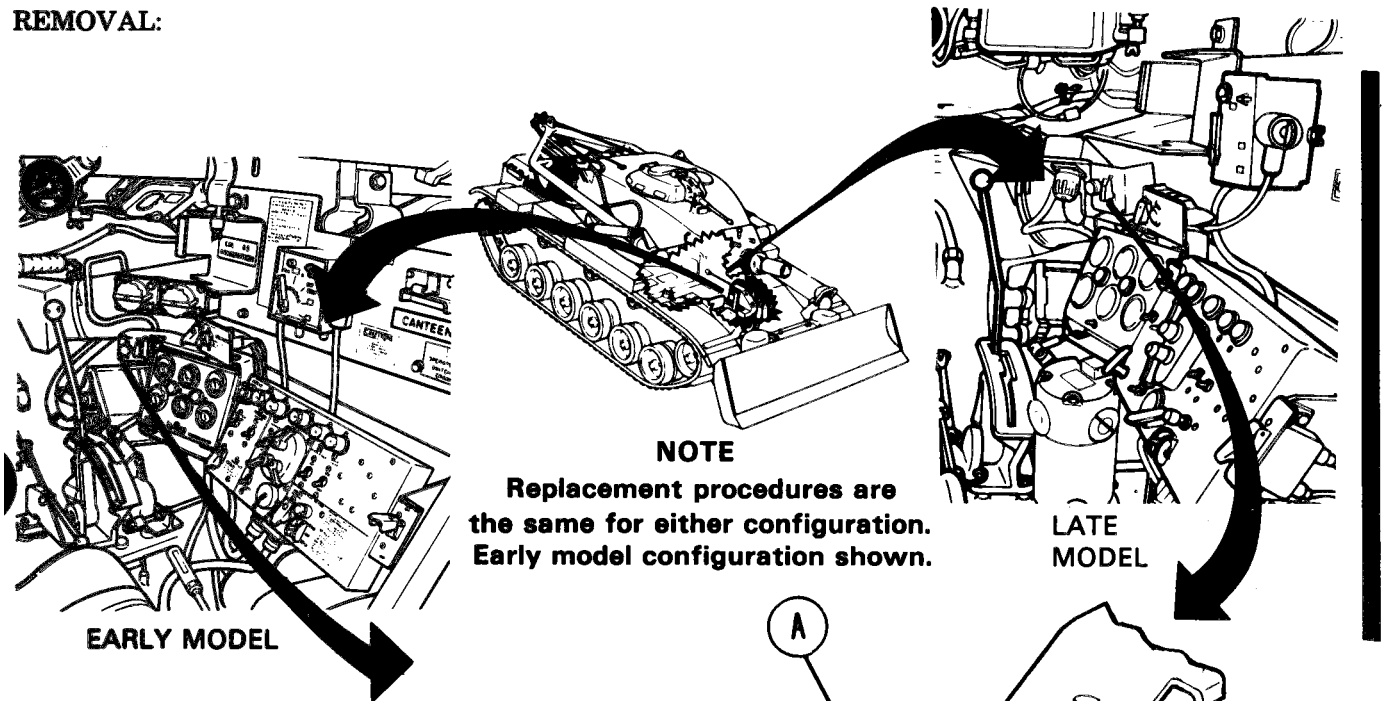


**SMOKE GENERATOR INDICATOR LIGHT REPLACEMENT (Sheet 1 of 3)**

**TOOLS:** Slip joint pliers  
Cross-tip screwdriver

**SUPPLIES:** Lint-free cloth (Item 12, Appendix D)  
Steel wool (Item 55, Appendix D)  
Silicone compound (Item 32, Appendix D)  
Preformed packing (MS28775-119)

**REMOVAL:**



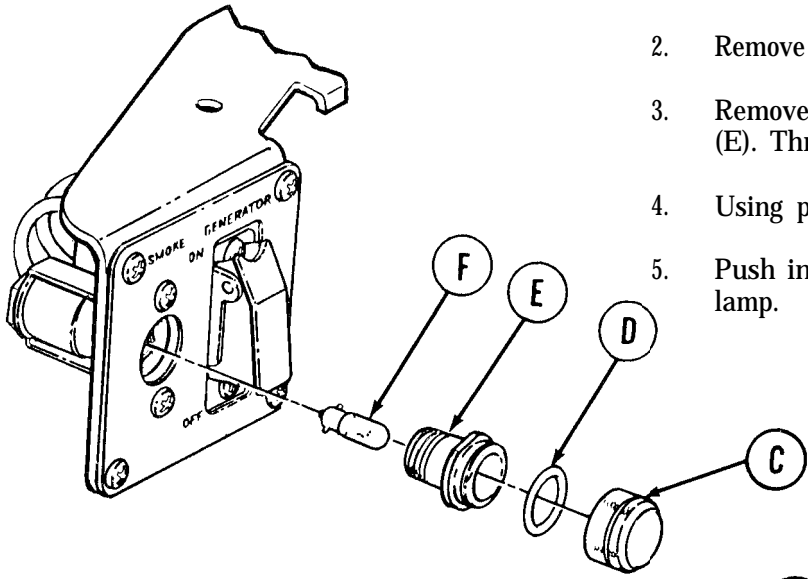
1. Disconnect electrical lead (A) from rear of light assembly (B).

Go on to Sheet 2

TA253782

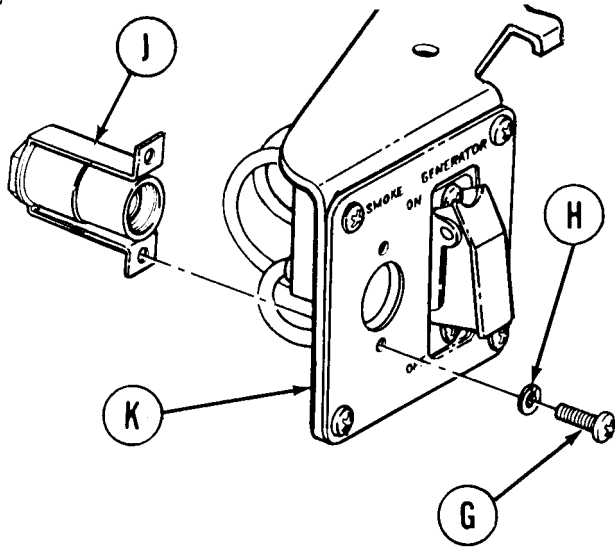
Change 1 23-5

**SMOKE GENERATOR INDICATOR LIGHT REPLACEMENT (Sheet 2 of 3)**



2. Remove lens (C).
3. Remove preformed packing (D) from adapter (E). Throw preformed packing away.
4. Using pliers, remove adapter (E).
5. Push in and turn lamp (F) to left. Remove lamp.

6. Using screwdriver, remove two screws (G) and washers (H) securing base assembly (J) to mounting bracket (K).
7. Remove base assembly (J).



**CLEANING AND INSPECTION:**

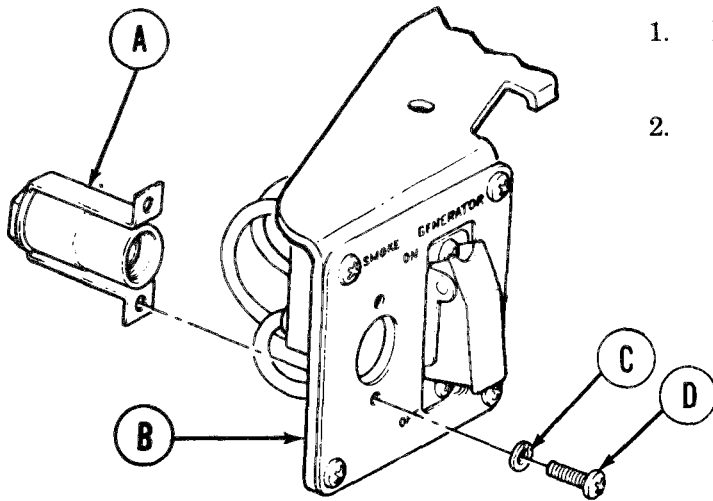
1. Clean lens (C) with moist, lint-free cloth (Item 12, Appendix D).
2. Using steel wool (Item 55, Appendix D), remove any corrosion from connector terminals and lamp socket of base assembly (J).
3. Inspect lens for cracks or deep scratches. Replace if any are found.

Go on to Sheet 3

TA140858

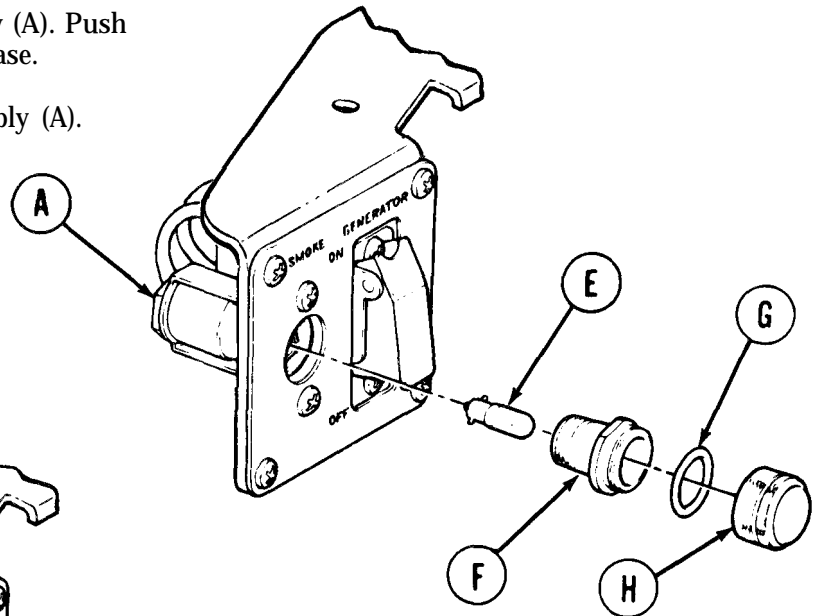
**SMOKE GENERATOR INDICATOR LIGHT REPLACEMENT (Sheet 3 of 3)**

**INSTALLATION:**

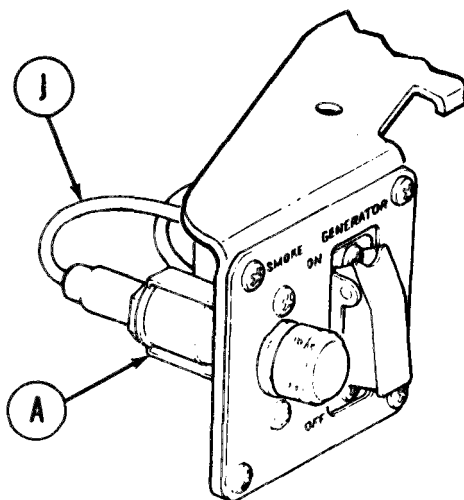


1. Position base assembly (A) to rear of
2. Using screwdriver, install two washers (C) and screws (D) to secure base assembly (A) to mounting bracket (B).

3. Install lamp (E) into base assembly (A). Push lamp in and turn to right and release.
4. Install adapter (F) into base assembly (A). Using pliers, tighten adapter (F).



5. Install new preformed packing (G) onto adapter (F).
6. Install lens (H) onto adapter (F) and tighten.
7. Lubricate electrical lead (J) connector with silicone compound (Item 32, Appendix D).
8. Connect electrical lead (J) from switch to base assembly (A) connector.



End of Task

TA140859

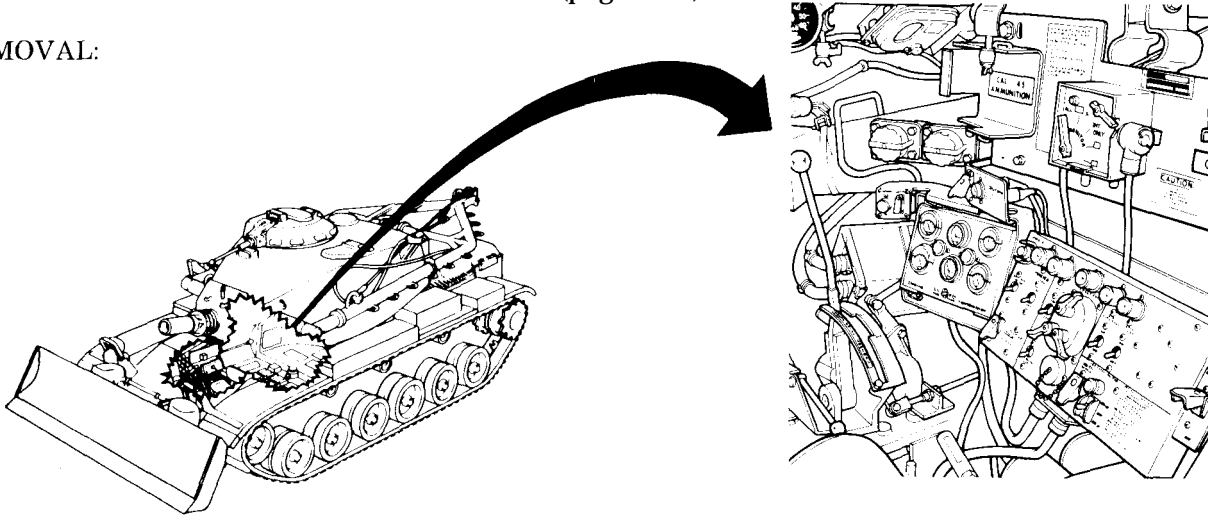
# SMOKE GENERATOR SWITCH AND INDICATOR LIGHT MOUNTING BRACKET REPLACEMENT (Sheet 1 of 2)

TOOL: 7/16 in. combination box and open end wrench

SUPPLIES: Lockwasher (MS35333-40) (4 required)

PRELIMINARY PROCEDURES: Remove switch and guard (page 23-2)  
Remove indicator light (page 23-5)  
Remove cover (page 23-4)

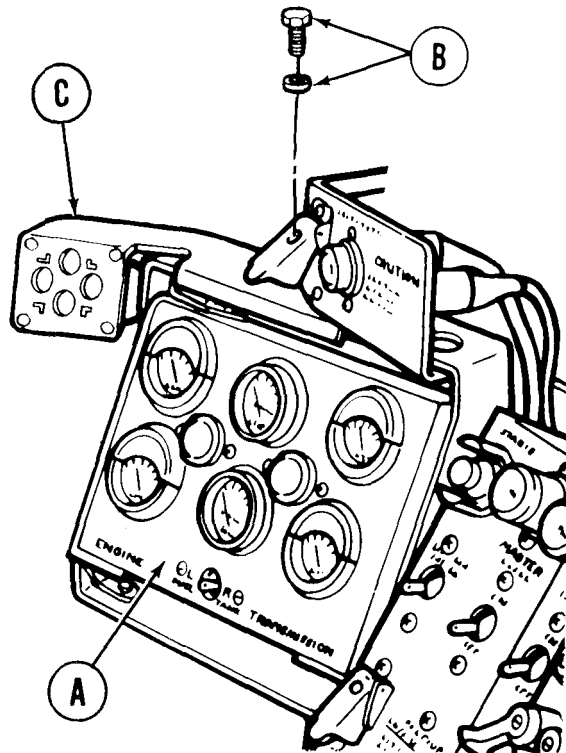
REMOVAL:



## CAUTION

Support cluster assembly when removing attaching hardware, as they are common attaching hardware for the cluster assembly and mounting bracket.

1. Support cluster assembly (A) and, using wrench, remove four screws and lockwashers (B) securing cluster assembly (A) and mounting bracket (C) to mounting plate. Throw lockwashers away.
2. Remove mounting bracket (C).



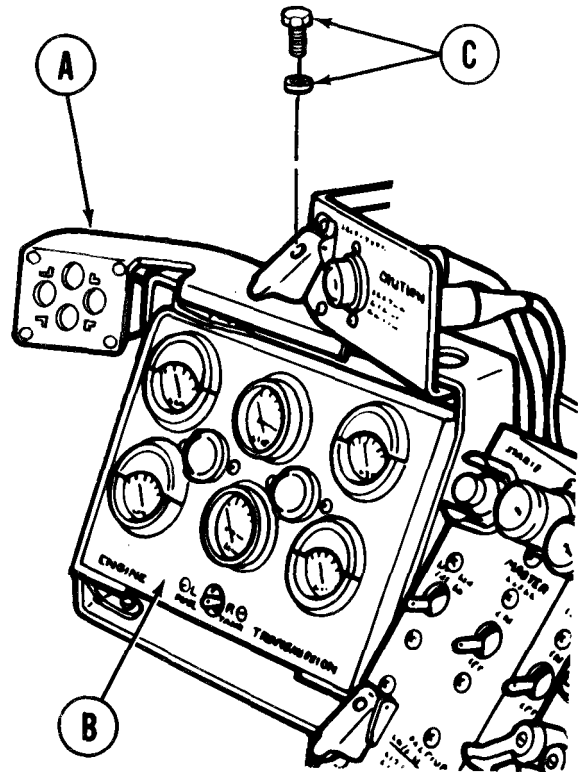
Go on to Sheet 2

TA140860

## SMOKE GENERATOR SWITCH AND INDICATOR LIGHT MOUNTING BRACKET REPLACEMENT (Sheet 2 of 2)

### INSTALLATION:

1. Position mounting bracket (A) and cluster assembly (B) to mounting plate.
2. Using wrench, install and tighten four screws and lockwashers (C) to secure mounting bracket (A) and cluster assembly (B) to mounting plate.
3. Install cover (page 23-4).
4. Install indicator light (page 23-7).
5. Install switch and guard (page 23-3).



End of Task

TA140861

**SMOKE GENERATOR WIRING HARNESS TO BULKHEAD LEAD REPLACEMENT**  
(Sheet 1 of 2)

TOOLS: Spanner wrench  
Slip joint pliers

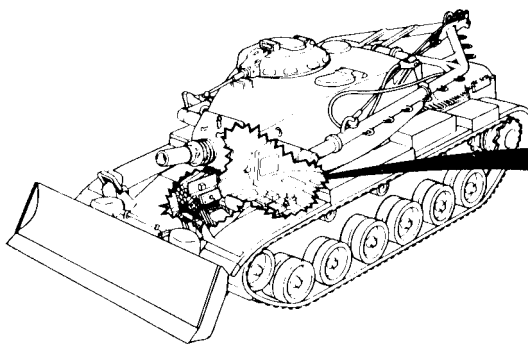
PERSONNEL: Two

REFERENCE: TM 9-2350-222-10

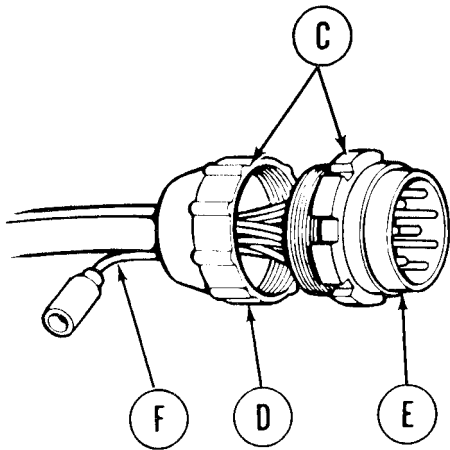
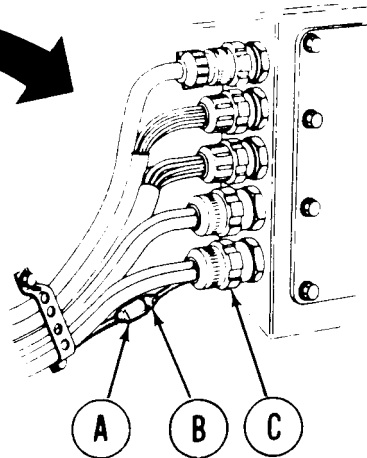
PRELIMINARY PROCEDURES: Disconnect battery ground straps (page 10-283)

Traverse turret to gain access to bulkhead connectors

REMOVAL: (TM 9-2350-222-10)



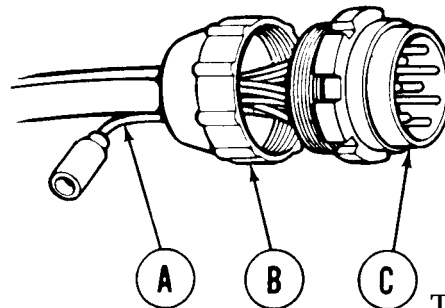
1. Pull apart connectors (A) and (B).
2. Using spanner wrench, disconnect connector (C) from bulkhead connector.



3. Using slip joint pliers, back off nut (D) from plug assembly (E).
4. Pull out wire and pin (F) from location 'A' in plug assembly (E).
5. Remove and throw away lead (F).

INSTALLATION:

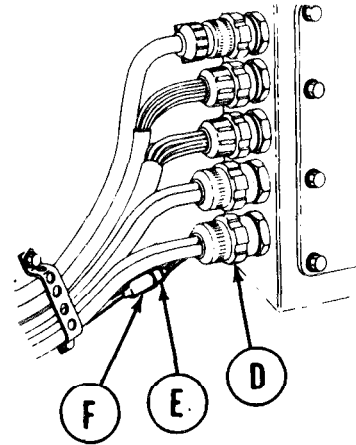
1. Thread replacement lead (A) through nut (B).
2. Insert lead (A) pin into position 'A' in plug
3. Using slip joint pliers, tighten nut (B) onto plug assembly (C).



TA140862

## SMOKE GENERATOR WIRING HARNESS TO BULKHEAD LEAD REPLACEMENT (Sheet 2 of 2)

4. Using spanner wrench, connect and tighten cable connector (D) to bulkhead connector.
5. Connect connectors (E) and (F).
6. Connect battery ground straps (page 10-283).



### WARNING

**Never activate smoke generator in a building or closed area or with personnel near.**

7. Start engine (TM 9-2350-222-10) and run until normal operating temperatures are attained. Run engine at 1600 rpm and set SMOKE GENERATOR switch ON for 10 seconds. Have one person look for white smoke emitting from exhaust, turn SMOKE GENERATOR switch OFF, shut down engine. If white smoke was not seen, troubleshoot (page 4-963).

End of Task

TA140863

**SMOKE GENERATOR HULL WIRING HARNESS REPLACEMENT (Sheet 1 of 6)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	23-13
Installation	23-15

**TOOLS:** 7/16 in. socket with 1/2 in. drive  
 3 in. extension with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Spanner wrench

**SUPPLIES:** Silicone compound (Item 32, Appendix D)  
 Lockwasher (MS35337-25)

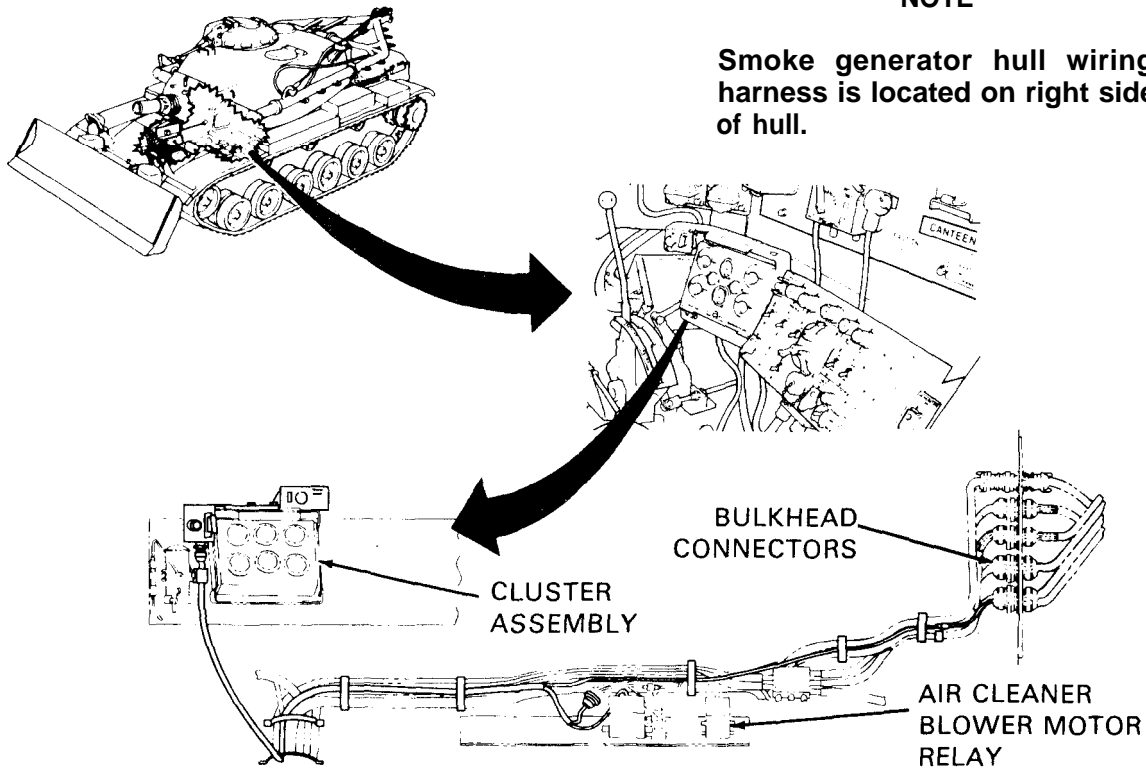
**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Disconnect battery ground straps (page 10-283)

**NOTE**

Smoke generator hull wiring harness is located on right side of hull.



Go on to Sheet 2

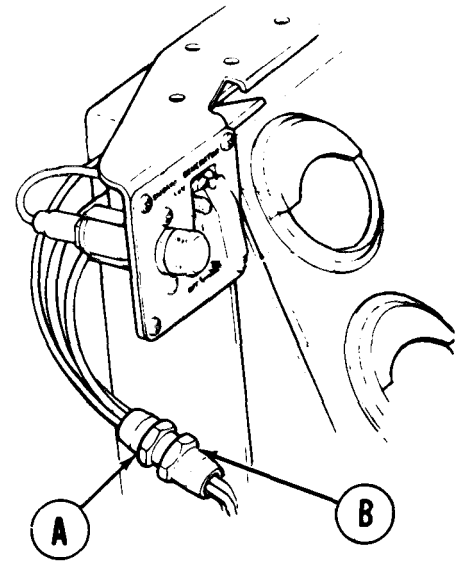
TA140864



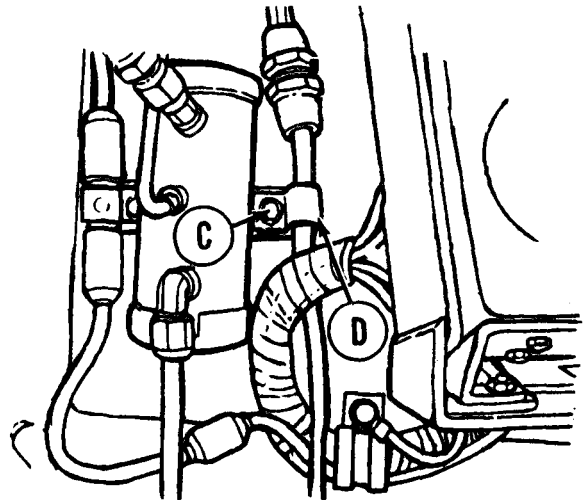
**SMOKE GENERATOR HULL WIRING HARNESS REPLACEMENT (Sheet 2 of 6)**

**REMOVAL:**

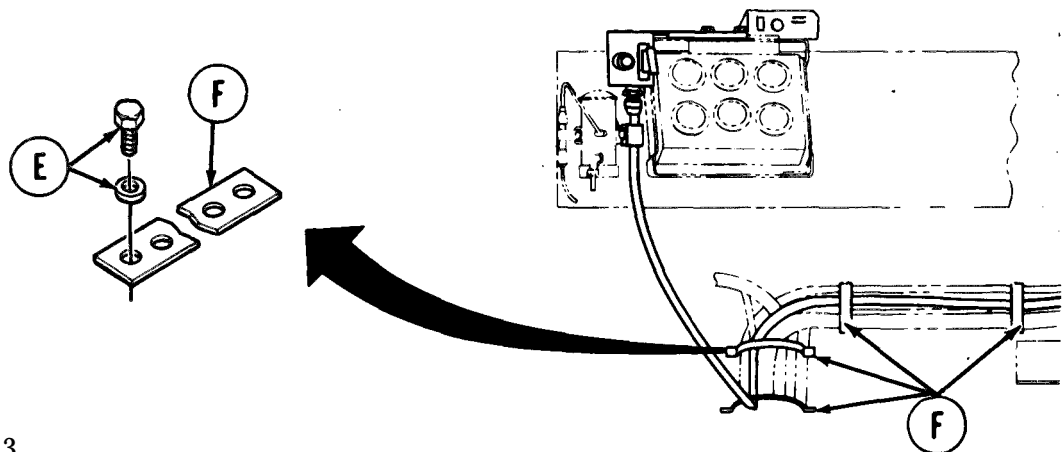
1. Disconnect smoke generator switch connector (A) from wiring harness connector (B).



2. Using socket, remove screw and lockwasher (C) to release clamp (D). Throw lockwasher away.



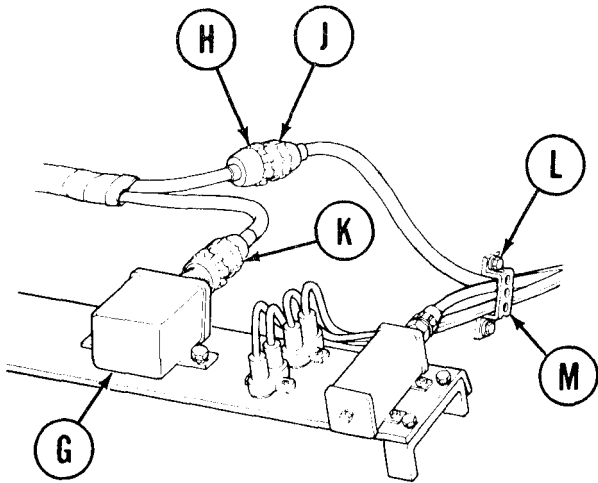
3. Using socket, remove one screw and washer (E) from one side of four straps (F). Lift strap (F) from harness.



Go on to Sheet 3

TA140865

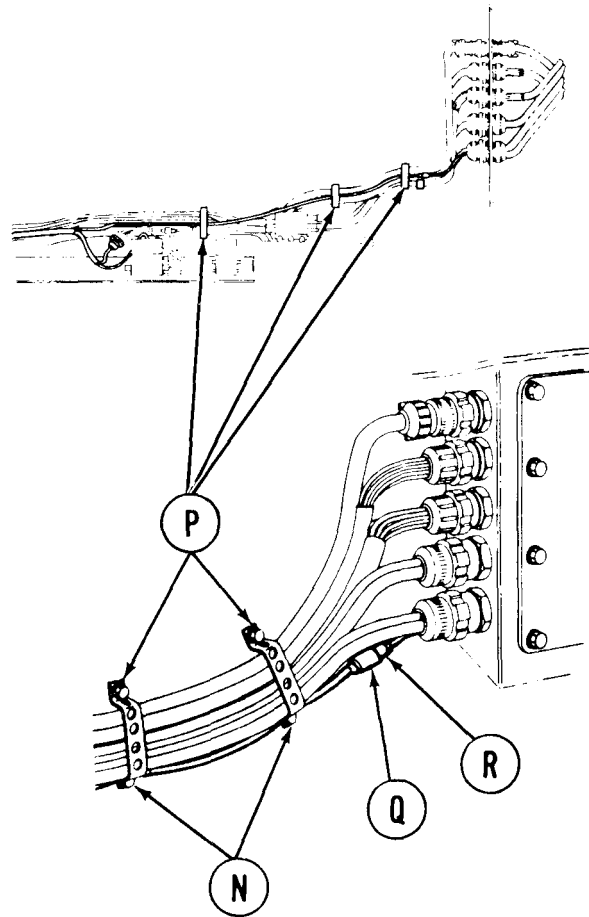
**SMOKE GENERATOR HULL WIRING HARNESS REPLACEMENT (Sheet 3 of 6)**



FRONT OF TANK

4. Open turret platform access door and traverse turret to expose air cleaner blower motor relay (G).
5. Disconnect harness connectors (H) and (J).
6. Using spanner wrench, disconnect connector (K) from air cleaner blower motor relay (G).
7. Using socket, remove screws and washers (L) to release one end of straps (M).

8. Using socket, remove screws and washers (N) to release one end of straps (P).
9. Disconnect connector (Q) from lead connector (R).
10. Note routing and remove wiring harness from hull.



Go on to Sheet 4

TA140866

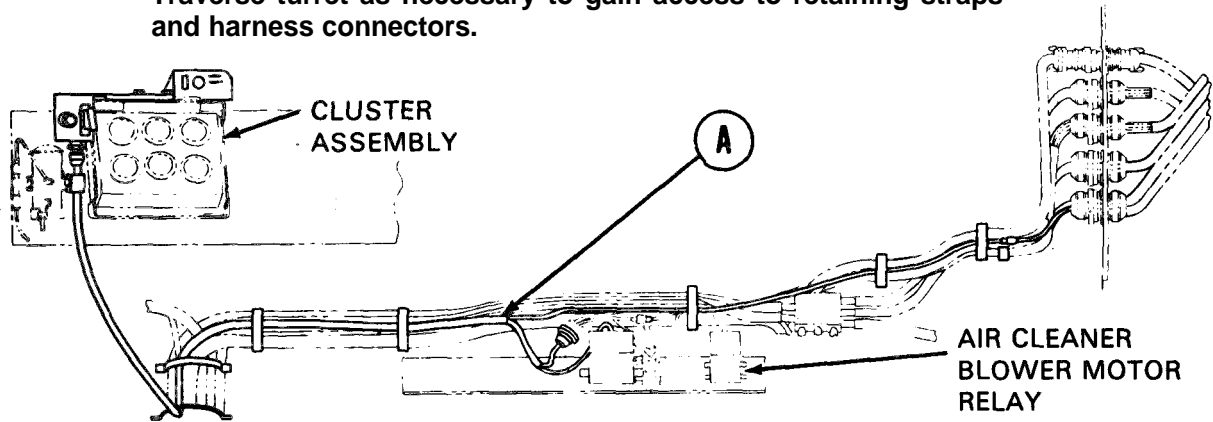
**SMOKE GENERATOR HULL WIRING HARNESS REPLACEMENT (Sheet 4 of 6)**

**INSTALLATION:**

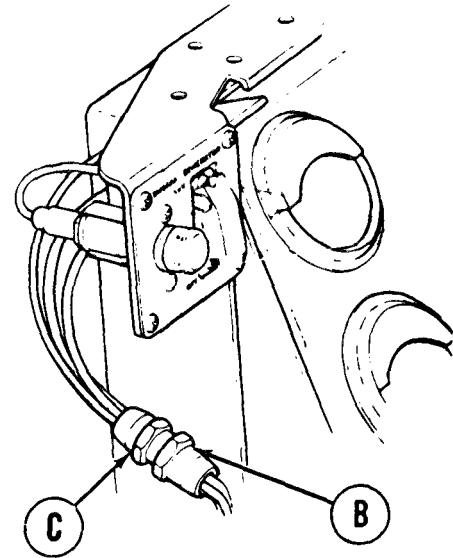
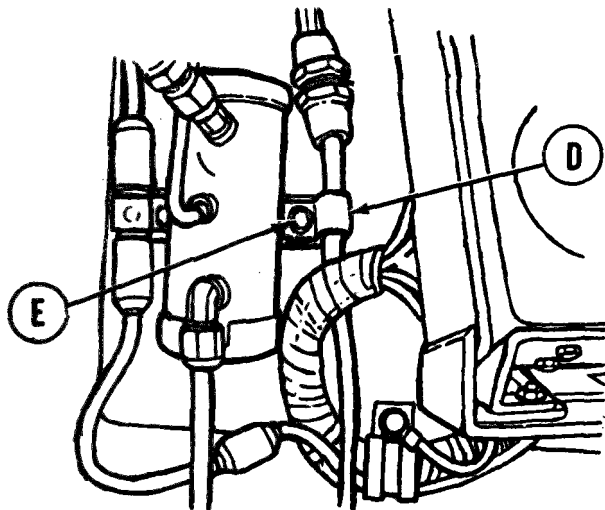
1. Position and route wiring harness (A) along right side of hull.

**NOTE**

Traverse turret as necessary to gain access to retaining straps and harness connectors.



2. Connect smoke generator switch connector (B) to fixing harness connector (C).
3. Position clamp (D) to harness, and position clamp and harness as shown.
4. Using socket, install screw and washer (E).

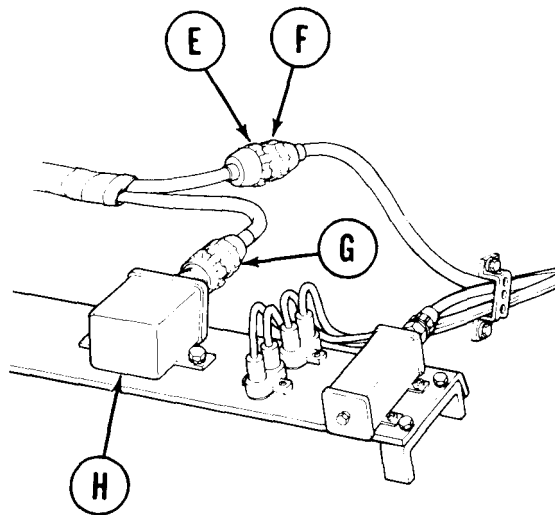


Go on to Sheet 5

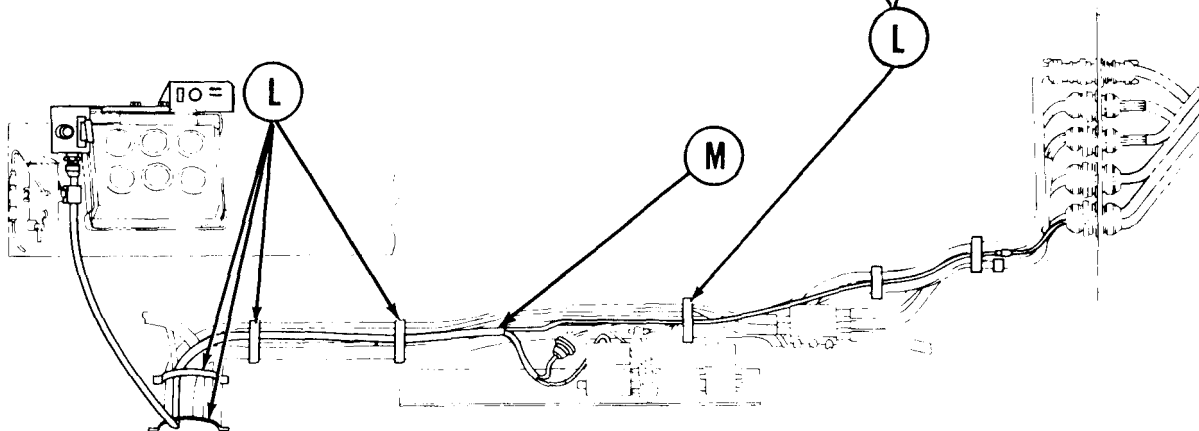
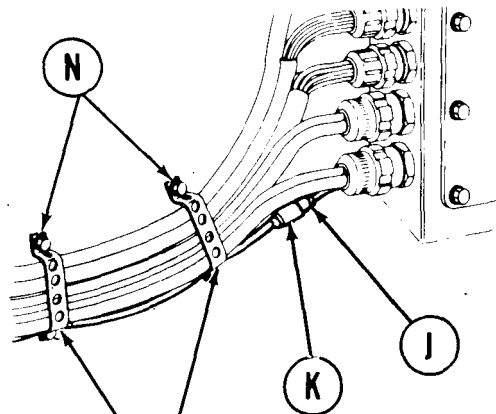
TA140867

**SMOKE GENERATOR HULL WIRING HARNESS REPLACEMENT (Sheet 5 of 6)**

- 5. Connect wiring harness connector (E) to air cleaner blower motor relay power lead (F).
- 6. Using spanner wrench, connect connector (G) to air cleaner blower motor relay (H).



- 7. Lubricate connector (J) with silicone compound (Item 32, Appendix D).
- 8. Connect connector (J) to connector (K).
- 9. Position seven straps (L) over harness (M).
- 10. Using socket, install screw and washer (N) to seven straps (L).



Go on to Sheet 6

TA140868

**SMOKE GENERATOR HULL WIRING HARNESS REPLACEMENT (Sheet 6 of 6)**

11. Connect battery ground straps (page 10-283).

**WARNING**

**Never operate smoke generator in a building or closed area or with personnel nearby.**

12. Using one person outside vehicle, perform smoke screening (TM 9-2350-222-10).

13. If white smoke was not seen, troubleshoot (page 4-963).

End of Task

**SMOKE GENERATOR FRONT ENGINE FUEL HOSE REPLACEMENT (Sheet 1 of 4)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	23-18
Installation	23-20

**TOOLS:** 1 in. combination box and open end wrench  
 7/8 in. combination box and open end wrench  
 1/2 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 Adjustable wrench

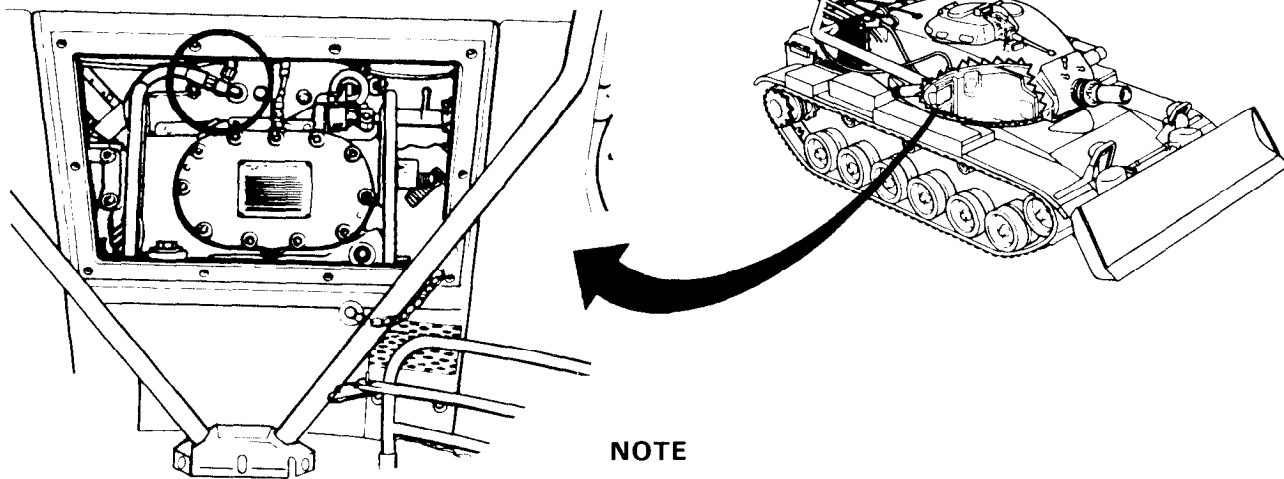
**SUPPLIES:** Container to catch fuel leaks  
 Rags (Item 65, Appendix D)

**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURES:** Remove upper bulkhead engine access cover (page 16-40)  
 Remove engine shroud (page 9-2)

**REMOVAL:**



**NOTE**

**Use suitable container to catch any leaking fuel whenever any fuel line connection is loosened or disconnected. Cap all openings to prevent contamination of fuel.**

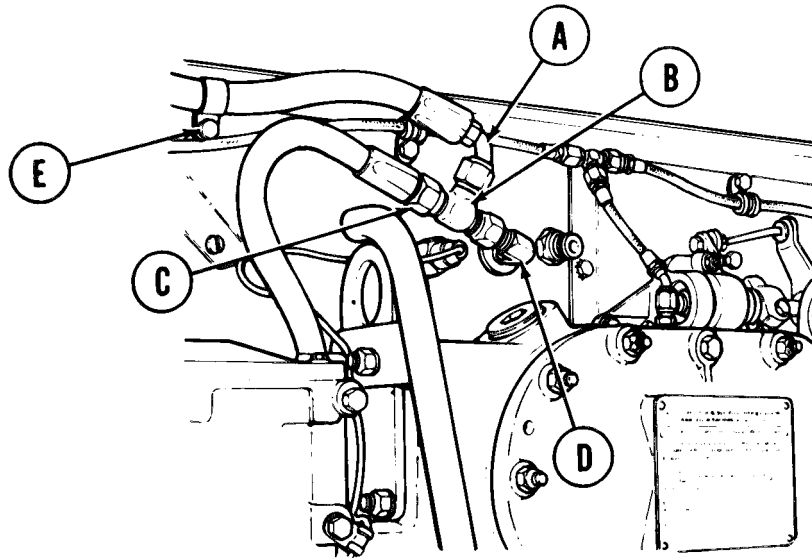
**Steps 1 thru 5 are performed from inside of crew compartment in turret area.**

Go on to Sheet 2

TA140870

**SMOKE GENERATOR FRONT ENGINE FUEL HOSE REPLACEMENT (Sheet 2 of 4)**

1. Using 7/8 inch wrench, disconnect smoke generator fuel hose (A) from tee (B).
2. Using adjustable wrench to hold tee (B), use 7/8 inch wrench to disconnect fuel water separator hose (C) from tee (B).
3. Using 7/8 inch wrench, disconnect tee (B) from bulkhead elbow (D).



4. Inspect threads on tee (B). If damaged in any way, replace.
5. Using socket, remove assembled washer screw (E).

**NOTE**

**Steps 6 thru 9 are performed from outside and atop engine.**

Go on to Sheet 3

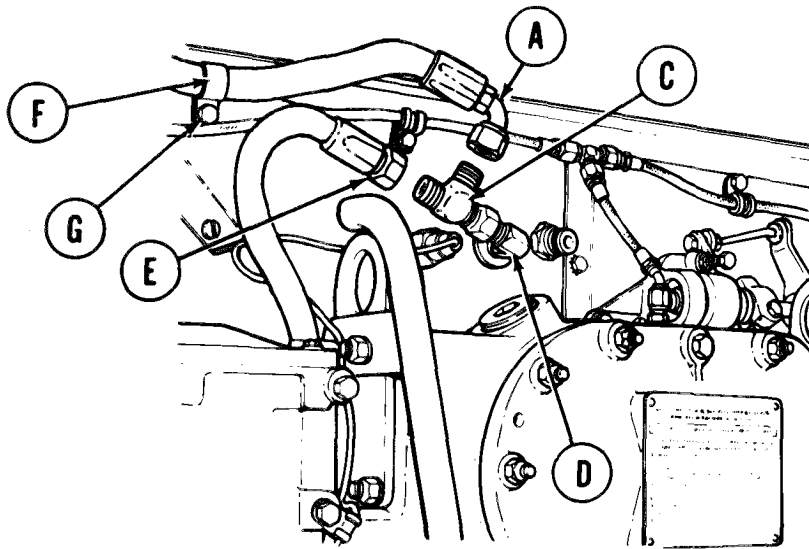
TA140871





**SMOKE GENERATOR FRONT ENGINE FUEL HOSE REPLACEMENT (Sheet 4 of 4)**

4. Install tee (C) onto bulkhead elbow (D) as shown.
5. Connect fuel-water separator hose (E) onto tee (C).
6. Connect smoke generator fuel hose (A) onto tee (C).
7. Adjust positions of tee (C) and hoses (A) and (E) for no interference with other parts. Using wrench, tighten tee (C) to elbow (D) and hoses (A) and (E) to tee (C) connections.
8. Position clamps (F) along hose (A) and, using socket, secure each clamp with assembled washer screws (G).

**WARNING**

**Never activate smoke generator in a building or closed area or with personnel near.**

9. Start engine TM 9-2350-222-10 and run until normal operating temperatures are attained. Run engine at 1600 rpm and set SMOKE GENERATOR switch ON for 10 seconds. Have one person look for white smoke emitting from exhaust, turn SMOKE GENERATOR switch OFF, shut down engine. If white smoke was not seen, troubleshoot (page 4-963).
10. Check smoke generator fuel lines for leaks. Correct as necessary.
11. Install upper bulkhead engine access cover (page 16-40).
12. Install engine shroud (page 9-3).

**End of Task**

TA140873

**SMOKE GENERATOR INTERMEDIATE FUEL HOSE REPLACEMENT (Sheet 1 of 5)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	23-22
Installation	23-25

**TOOLS:** 7/8 in. combination box and open end wrench  
 1/2 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 3/4 in. combination box and open end wrench  
 1 in. combination box and open end wrench

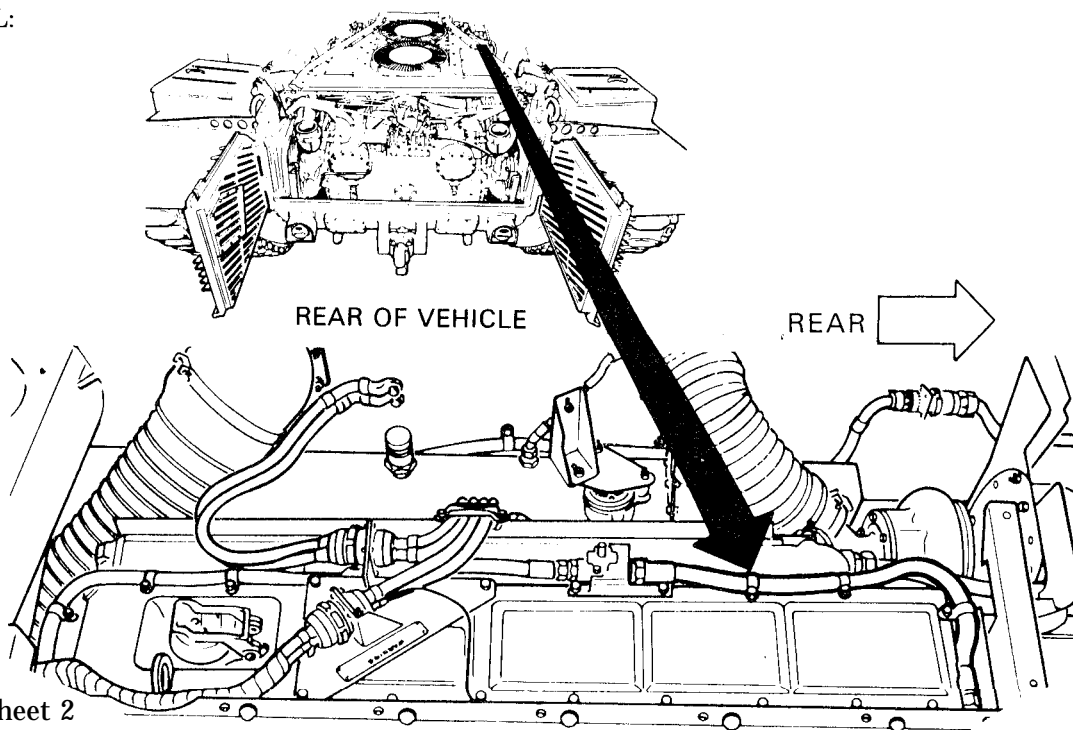
**SUPPLIES:** Container to catch fuel leaks  
 Rags (Item 65, Appendix D)  
 Lockwasher (MS35335-40)  
 Plastic caps

**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove engine shroud (page 9-2)

**REMOVAL:**



Go on to Sheet 2

TA140874

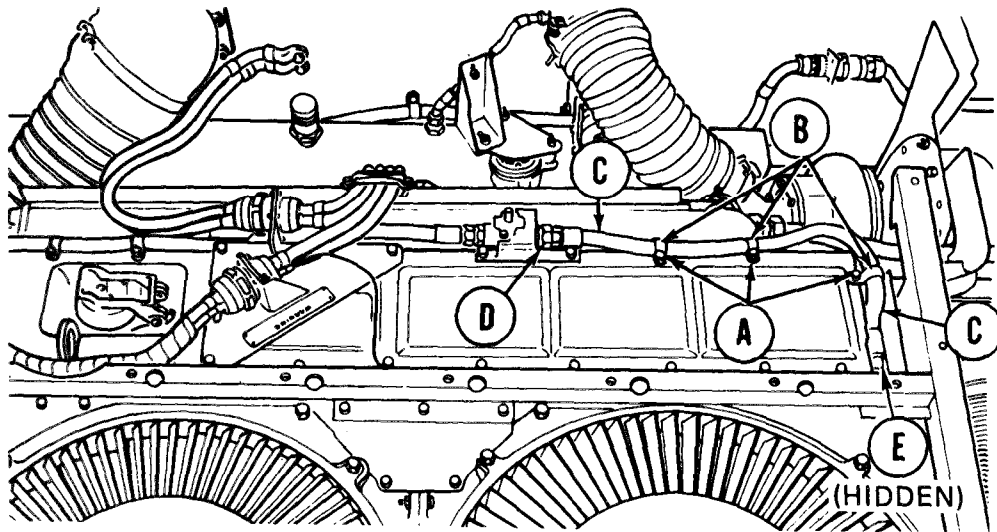
## SMOKE GENERATOR INTERMEDIATE FUEL HOSE REPLACEMENT (Sheet 2 of 5)

## NOTE

Use suitable container to catch any fuel whenever any fuel line connection is loosened or disconnected.

Cap all openings to prevent contamination of fuel.

1. Using socket, remove three assembled washer screws (A) securing clamps (B) to engine.
2. Using 7/8 inch wrench, disconnect intermediate fuel hose (C) from output port of fuel shutoff valve (D).
3. Using 7/8 inch wrench, disconnect intermediate fuel hose (C) from elbow (E) in shroud.

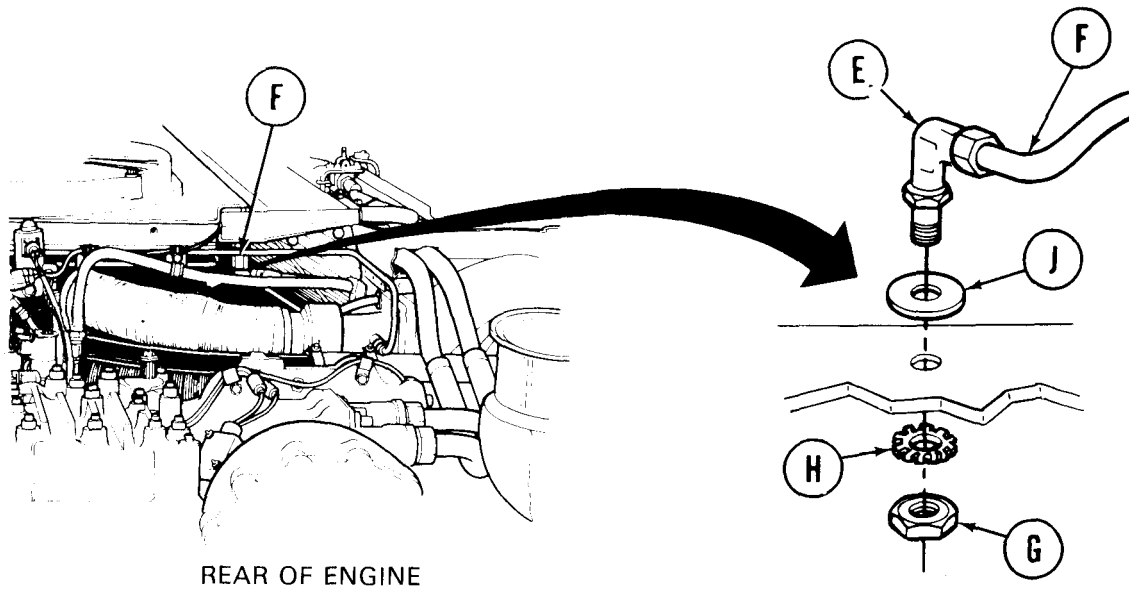


4. Remove intermediate fuel hose (C) and clamps (B) from hose. Throw intermediate fuel hose away.

Go on to Sheet 3

TA140875

SMOKE GENERATOR INTERMEDIATE FUEL HOSE REPLACEMENT (Sheet 3 of 5)



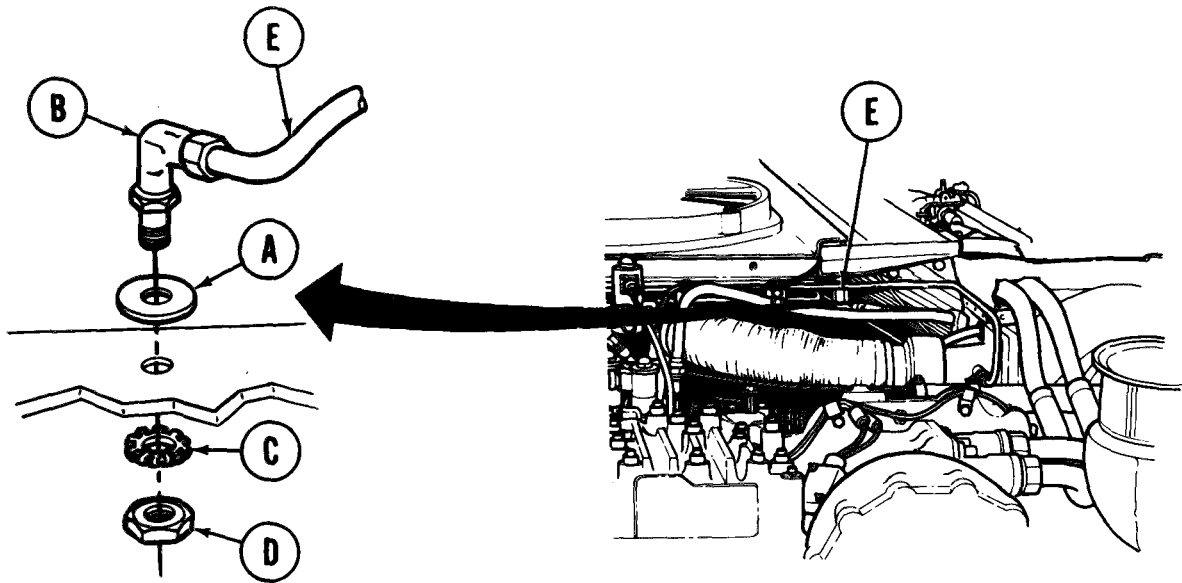
5. Using 7/8 inch wrench, disconnect elbow-to-solenoid fuel hose (F) from elbow (E) in shroud.
6. Using 3/4 inch wrench to hold elbow (E) and 1 inch wrench on nut (G), remove nut (G) and lockwasher (H). Throw lockwasher away.
7. Remove elbow (E) and flat washer (J).
8. Inspect elbow (E) for cracks and damage to threads. If elbow is cracked or threads damaged, replace elbow.

Go on to Sheet 4

TA140876

## SMOKE GENERATOR INTERMEDIATE FUEL HOSE REPLACEMENT (Sheet 4 of 5)

## INSTALLATION:



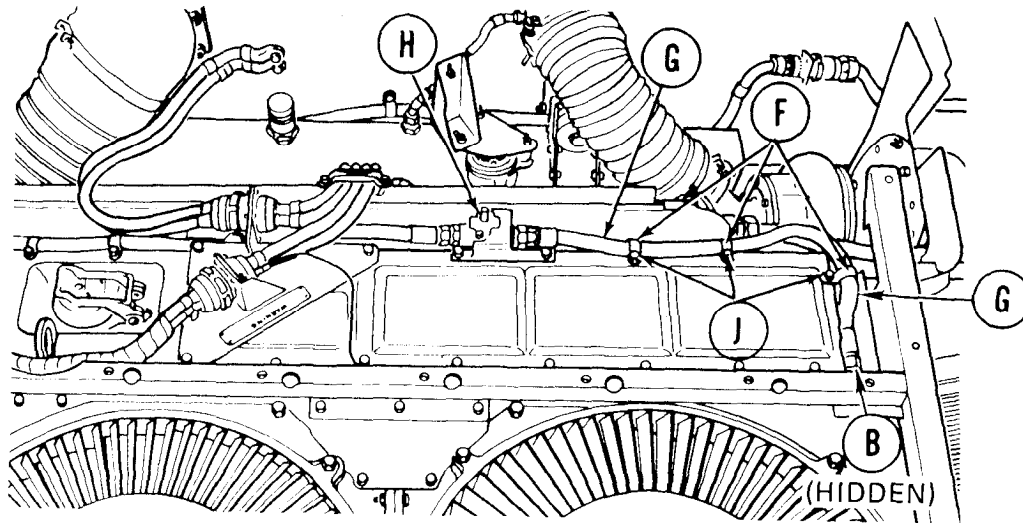
1. Install flat washer (A) and elbow (B) onto shroud.
2. Install new lockwasher (C) and nut (D) onto elbow (B) to secure elbow to shroud.
3. Position elbow (B) to face toward right side of engine. Using 3/4 inch wrench to hold elbow (B), use 1 inch wrench and tighten nut (D).
4. Connect elbow-to-solenoid fuel hose (E) to elbow (B). Using 7/8 inch wrench, tighten hose (E) connector to elbow (B).

Go on to Sheet 5

TA140877

**SMOKE GENERATOR INTERMEDIATE FUEL HOSE REPLACEMENT (Sheet 5 of 5)**

5. Install three clamps (F) onto intermediate fuel hose (G).
6. Position intermediate fuel hose (G) along top right side of engine and connect to output port of fuel shutoff valve (H) and elbow (B) in shroud.
7. Using 7/8 inch wrench, tighten hose connections.



8. Using socket, install and tighten three assembled washer screws (J) to secure clamps (F) to engine.

**WARNING**

**Never activate smoke generator in a building or closed area or with personnel rear.**

9. Start engine (TM 9-2350-222-10) and run until normal operating temperatures are attained. Run engine at 1600 rpm and set SMOKE GENERATOR switch ON for 10 seconds. Have one person look for white smoke emitting from exhaust, turn SMOKE GENERATOR switch OFF, shut down engine. If white smoke was not seen, troubleshoot (page 4-963).
10. Check smoke generator lines for leaks. Correct as necessary.
11. Install engine shroud (page 9-3).

End of Task

TA140878

**SMOKE GENERATOR FUEL SHUTOFF VALVE REPLACEMENT (Sheet 1 of 4)**

PROCEDURE	PROCEDURE INDEX	PAGE
Removal		23-27
Installation		23-29

**TOOLS:** 1/2 in. socket with 1/2 in. drive  
 7/16 in. socket with 1/2 in. drive  
 Ratchet with 1/2 in. drive  
 7/8 in. combination box and open end wrench  
 7/16 in. combination box and open end wrench  
 1 in. combination box and open end wrench  
 1-1/4 in. open end wrench

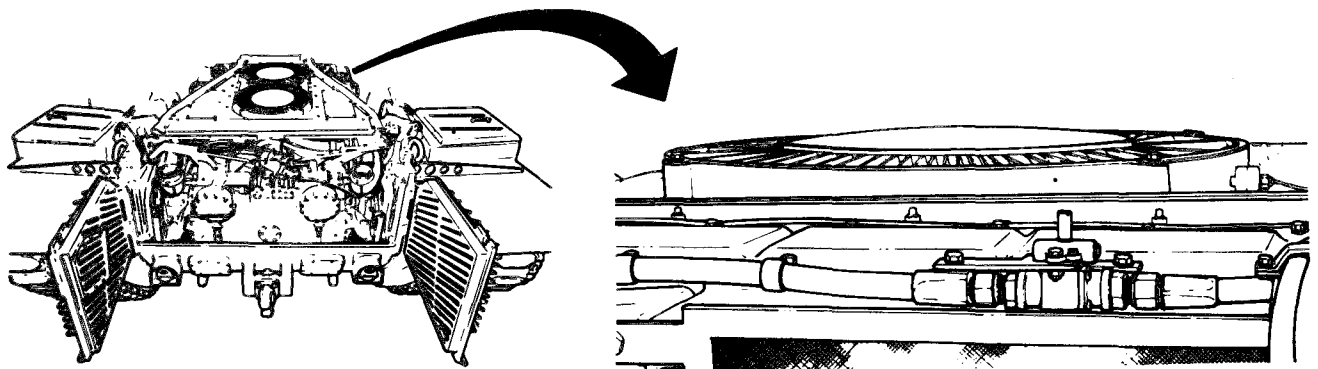
**SUPPLIES:** Valve (11591180)  
 Container to catch fuel leaks  
 Rags (Item 65, Appendix D)  
 self-locking nuts (MS21045-4) (2 required)  
 Preformed packings (MS28778-10) (2 required)  
 Plastic caps

**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove engine shroud (page 9-2)

**REMOVAL:**



**REAR OF VEHICLE**

**NOTE**

**Use suitable container to catch any fuel leaks whenever any fuel line connection is loosened or disconnected.**

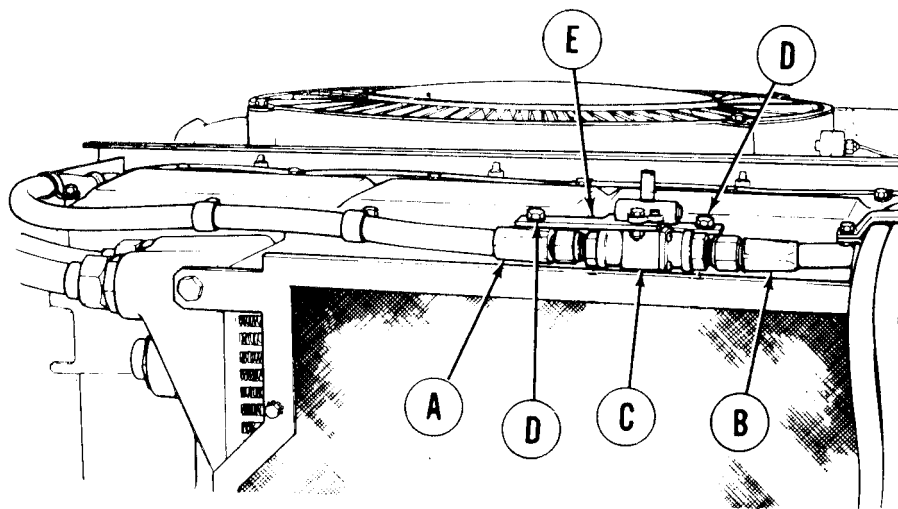
**Cap all openings to prevent contamination of fuel.**

Go on to Sheet 2

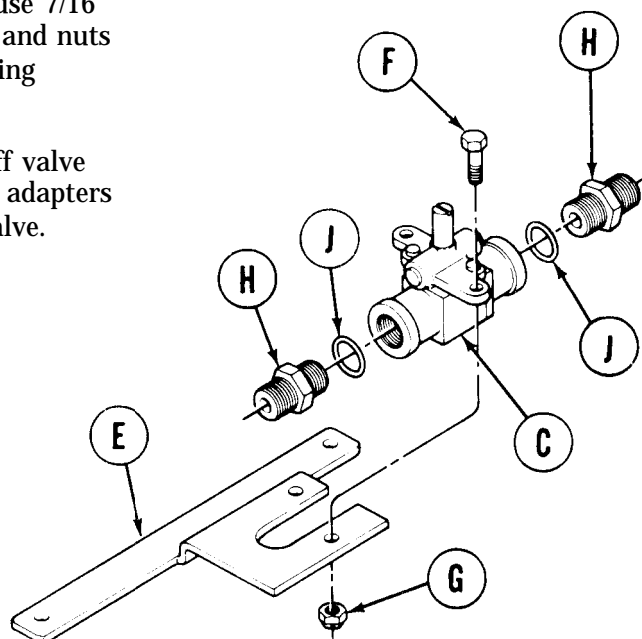
TA140879

**SMOKE GENERATOR FUEL SHUTOFF VALVE REPLACEMENT (Sheet 2 of 4)**

1. Using 7/8 inch wrench, disconnect fuel hoses (A) and (B) from fuel shutoff valve (C).
2. Using 1/2 inch socket, remove two assembled washer screws (D) securing mounting bracket (E) with fuel shutoff valve (C) to engine.
3. Remove mounting bracket (E) and fuel shutoff valve (C) as a unit.



4. Using 7/16 inch wrench to hold nuts, use 7/16 inch socket and remove two screws (F) and nuts (G) securing shutoff valve (C) to mounting bracket (E). Throw nuts (G) away.
5. Using 1-1/4 inch wrench to hold shutoff valve (C), use 1 inch wrench and remove two adapters (H) and preformed packings (J) from valve.
6. Throw preformed packings (J) away.



Go on to Sheet 3

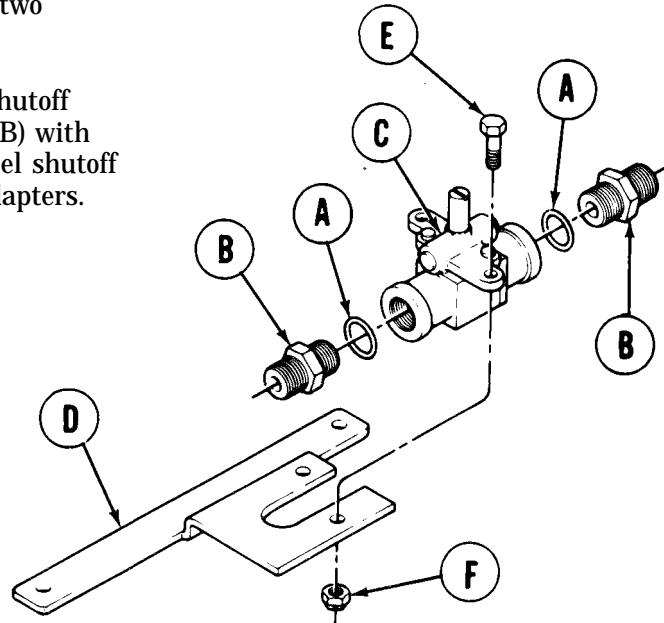
TA140880



## SMOKE GENERATOR FUEL SHUTOFF VALVE REPLACEMENT (Sheet 3 of 4)

## INSTALLATION:

1. Install new preformed packings (A) on two adapters (B).
2. Using 1-1/4 inch wrench to hold fuel shutoff valve (C), install and tighten adapters (B) with preformed packings (A) into ports of fuel shutoff valve. Using 1 inch wrench, tighten adapters.



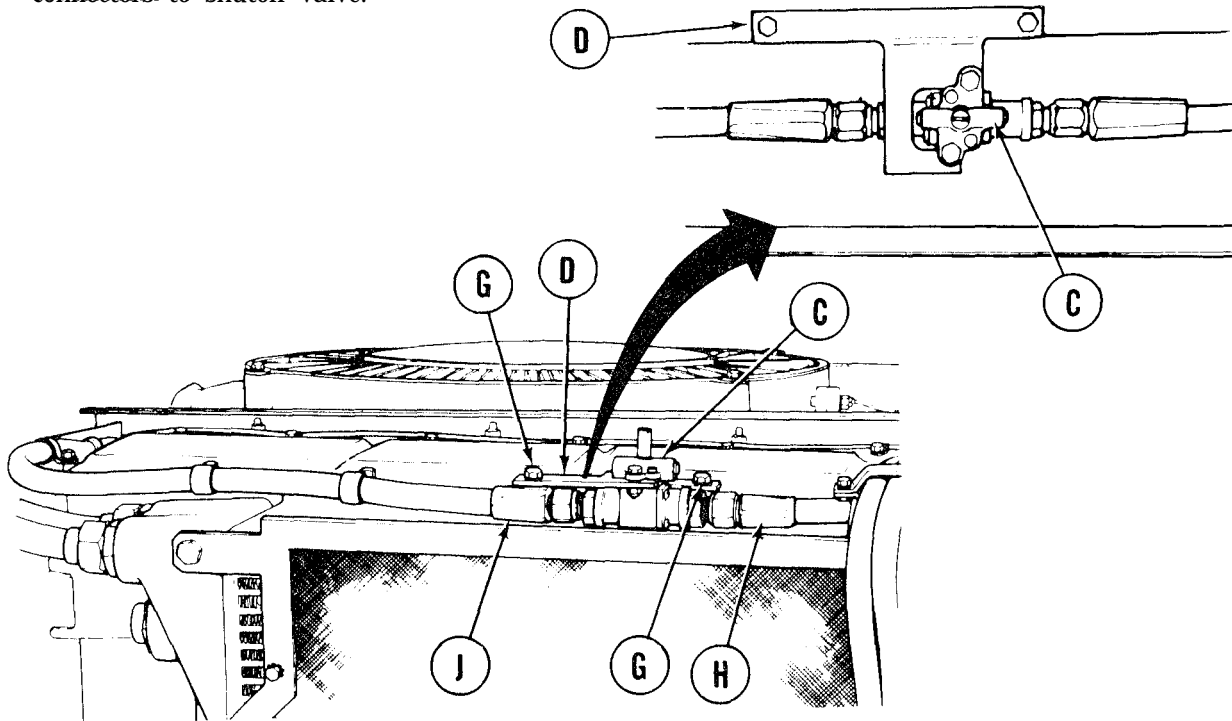
3. Position assembled fuel shutoff valve (C) to mounting bracket (D) and install two screws (E) and new self-locking nuts (F).
4. Using 7/16 inch wrench to hold nuts (F), use 7/16 inch socket and tighten screws (E).

Go on to Sheet 4

TA140881

**SMOKE GENERATOR FUEL SHUTOFF VALVE REPLACEMENT (Sheet 4 of 4)**

5. Position assembled fuel shutoff valve (C) and mounting bracket (D) onto engine.
6. Using 1/2 inch socket, install and tighten two assembled washer screws (G) to secure mounting bracket (D) to engine.
7. Connect fuel hose (H) and (J) to fuel shutoff valve (C). Using 7/8 inch wrench, tighten hose connectors to shutoff valve.



8. Be sure that fuel shutoff valve is in open position. (Index line atop shaft of fuel shutoff valve will be in line with two ports of valve.)

**WARNING**

**Never activate smoke generator in a building or closed area or with personnel near.**

9. Perform smoke screening (TM 9-2350-222-10).
10. Check smoke generator lines for leaks. Correct as necessary.
11. Install engine shroud (page 9-3).

End of Task

TA140882

**SMOKE GENERATOR SOLENOID REPLACEMENT (Sheet 1 of 5)**

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	23-31
Installation	23-33

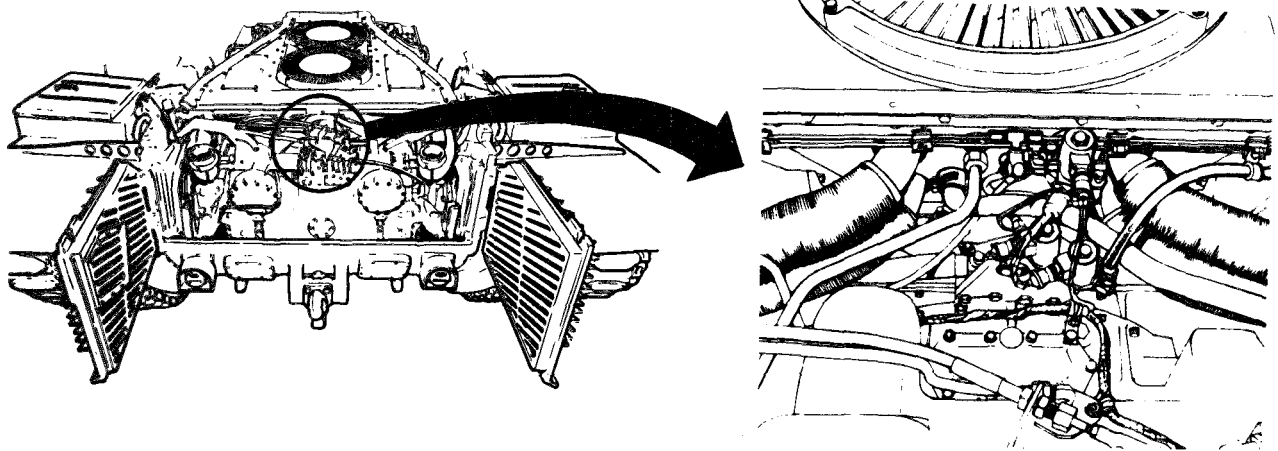
TOOLS: 5/16 in. combination box and open end wrench  
 7/16 in. combination box and open end wrench  
 9/16 in. combination box and open end wrench  
 5/8 in. combination box and open end wrench  
 3/4 in. combination box and open end wrench  
 7/8 in. combination box and open end wrench  
 7/16 in. socket with 3/8 in. drive  
 3/4 in. socket with 3/8 in. drive  
 Ratchet with 3/8 in. drive  
 Diagonal cutting pliers  
 Torque wrench with 3/8 in. drive (0-200 lb-in) (0-23.6 N·m)

SUPPLIES: Container to catch fuel leaks  
 Rags (Item 65, Appendix D)  
 Lockwire (Item 61, Appendix D)  
 Oil (Item 43, Appendix D)

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Remove engine shroud (page 9-2)

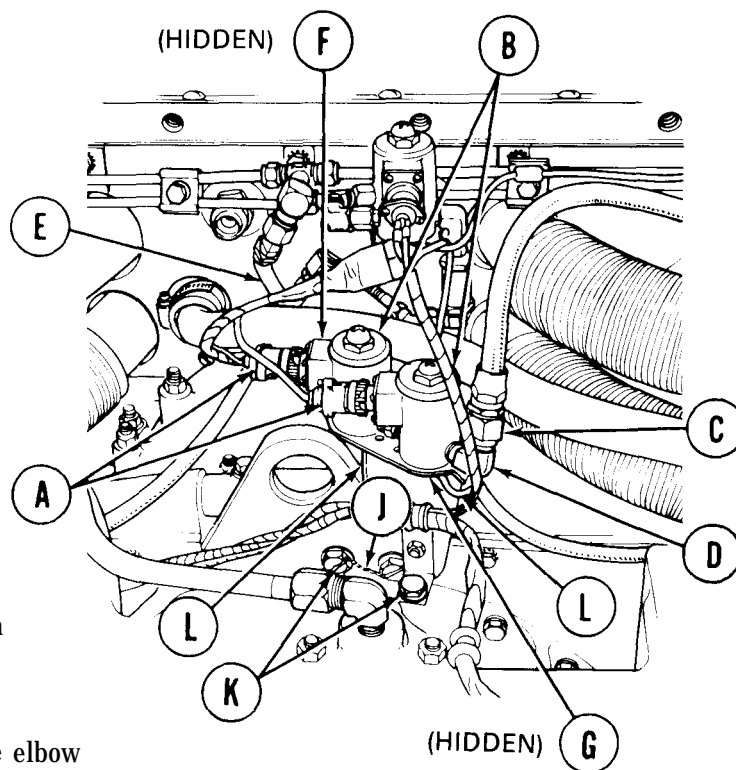
REMOVAL:



Go on to Sheet 2

TA140883

**SMOKE GENERATOR SOLENOID REPLACEMENT (Sheet 2 of 5)**

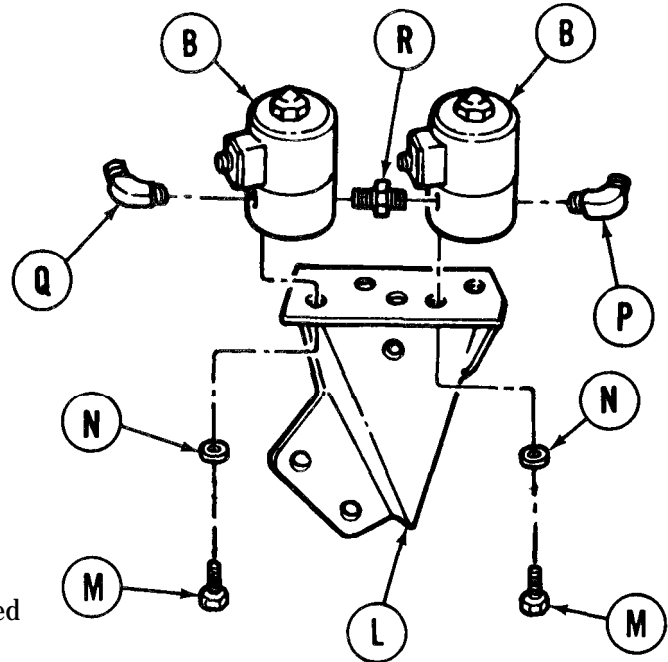


1. Disconnect electrical connectors (A) from solenoids (B).
2. Using 7/8 inch wrench, disconnect elbow-to-solenoid hose (C) from 90-degree elbow (D).
3. Using 3/4 inch wrench, disconnect output fuel hose (E) from 45-degree elbow (F).
4. Using 7/16 inch wrench to hold screw and 7/16 inch socket on nut, remove nut and screw (G) and remove ground wire (H) from bracket.
5. Using pliers, cut and remove lockwire (J). Throw lockwire away.
6. Using 3/4 inch socket, remove two screws (K) securing bracket (L) to engine.
7. Remove bracket (L) and attached solenoids (B) with fittings as a unit.

Go on to Sheet 3

TA140884

## SMOKE GENERATOR SOLENOID REPLACEMENT (Sheet 3 of 5)



8. Using 5/16 inch wrench, remove four assembled screws (M) and flat washers (N) securing solenoid valves (B) to bracket (L).
9. Remove solenoid valves (B) with fittings as a unit.
10. Using 7/8 inch wrench, remove 90-degree elbow (P) from input port of solenoid (B).
11. Using 9/16 inch wrench, remove 45-degree elbow (Q) from output port of solenoid (B).
12. Using 5/8 inch wrench, remove nipple (R) from solenoid valves (B).

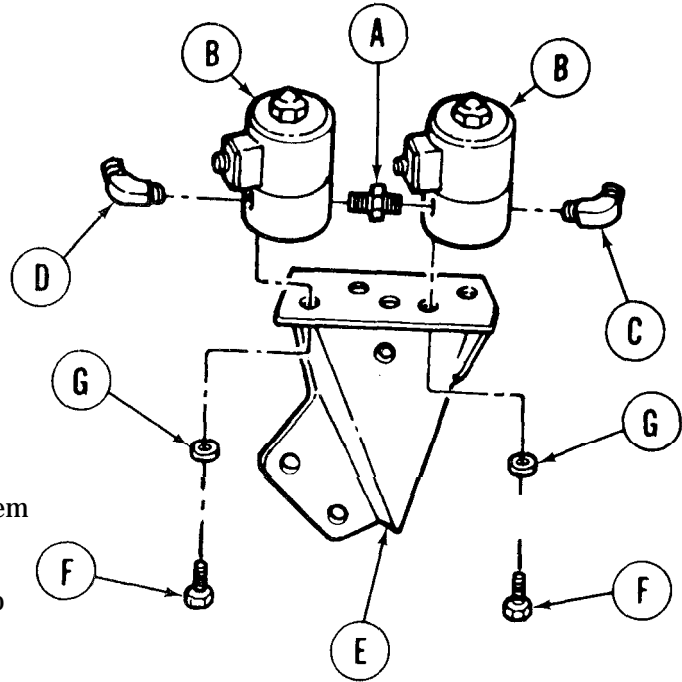
**INSTALLATION:**

1. Check position of electrical connector on solenoid valves. Hold valve with outlet port to your left. Electrical connector must be 4-5 degrees from outlet port and pointing toward you. If connector must be repositioned, place valve in soft-jawed vise. Loosen acorn nut on top of valve and rotate connector to correct position. Using torque wrench and 3/4 inch socket, tighten acorn nut to 50 lb-in (5-6 N·m).

Go on to Sheet 4

TA140885

**SMOKE GENERATOR SOLENOID REPLACEMENT (Sheet 4 of 5)**

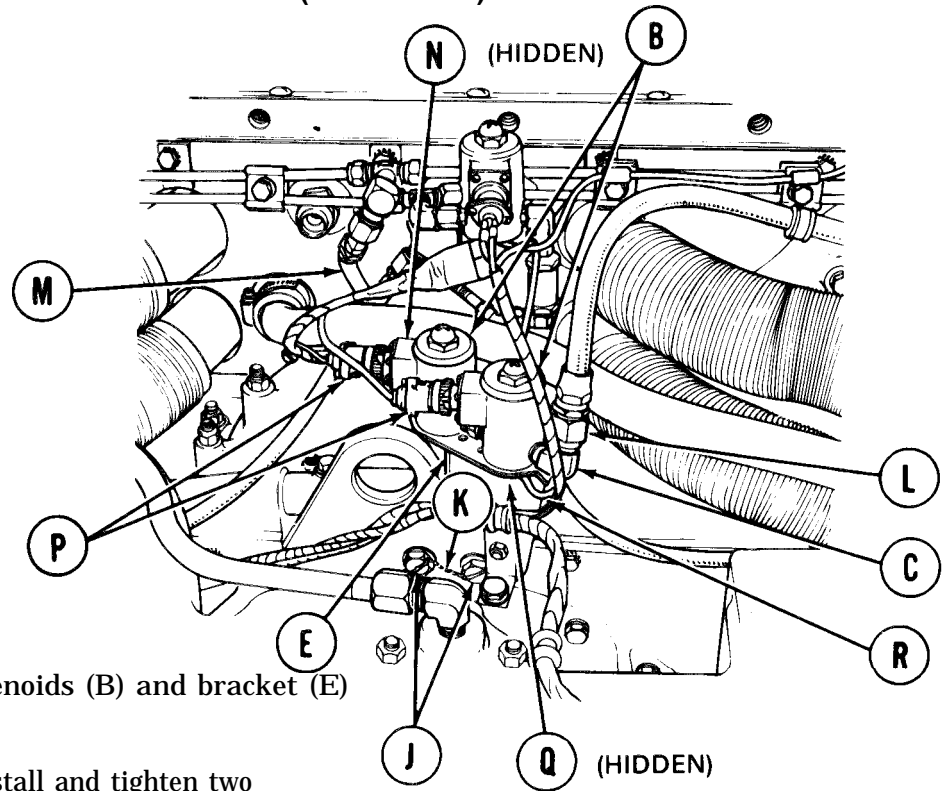


2. Lightly coat threads of nipple (A) with oil (Item 43, Appendix D).
3. Using 5/8 inch wrench, install nipple (A) into input port of one solenoid (B) and into outlet port of the other solenoid (B).
4. Tighten valves securely onto nipple and adjust valves (B) so their bottoms are even with each other.
5. Lightly coat threads of 90-degree elbow (C) and 45-degree elbow (D) with oil.
6. Holding solenoids (B) and nipple (A) assembly in your hand with connector facing toward you, install 90-degree elbow (C) into inlet port of the solenoid (B) on your right. Tighten 90-degree elbow (C) to the approximate one o'clock position.
7. Install 45-degree elbow (D) into outlet port of the solenoid on your left. Tighten 45-degree elbow (D) to the approximate eight o'clock position.
8. Position assembled solenoids (B) and fittings onto bracket (E) with connectors facing to the left as shown .
9. Using 5/16 inch wrench, install and tighten four assembled screws (F) and flat washers (G) to secure solenoids (B) to bracket (E).

Go on to Sheet 5

TA140886

## SMOKE GENERATOR SOLENOID REPLACEMENT (Sheet 5 of 5)



10. Position assembled solenoids (B) and bracket (E) to engine.

Using 3/4 inch socket, install and tighten two screws (J) to secure bracket (E) to engine.

12. Install lockwire (K) (Item 61, Appendix D).
13. Connect elbow-to-solenoid hose (L) to 90-degree elbow (C).
14. Connect output fuel hose (M) to 45-degree elbow (N).
15. Connect electrical connectors (P) to solenoids (B).
16. Using 7/16 inch wrench and 7/16 inch socket, install nut and screw (Q) to secure ground wire (R) to bracket (E).

WARNING

Never activate smoke generator in a building or closed area or with personnel near.

17. Perform smoke screening (TM 9-2350-222-10).
18. Check system for any possible fuel leaks. Correct leaks as necessary.
19. Install engine shroud (page 9-3).

End of Task

TA140887

**SMOKE GENERATOR ELBOW-TO-SOLENOID FUEL HOSE REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** 7/16 in. combination box and open end wrench  
7/16 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive  
7/8 in. combination box and open end wrench

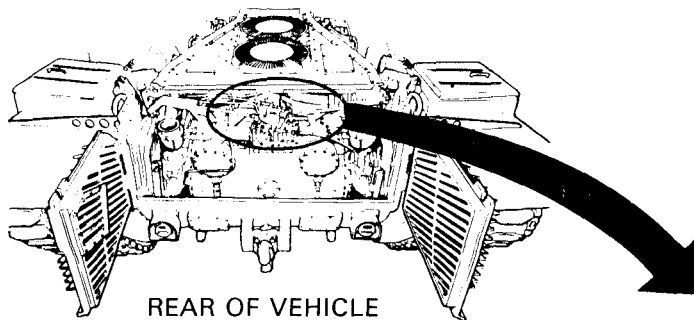
**SUPPLIES:** Container to catch fuel leaks  
Rags (Item 65, Appendix D)  
Lockwasher  
Plastic caps

**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove engine shroud (page 9-2)

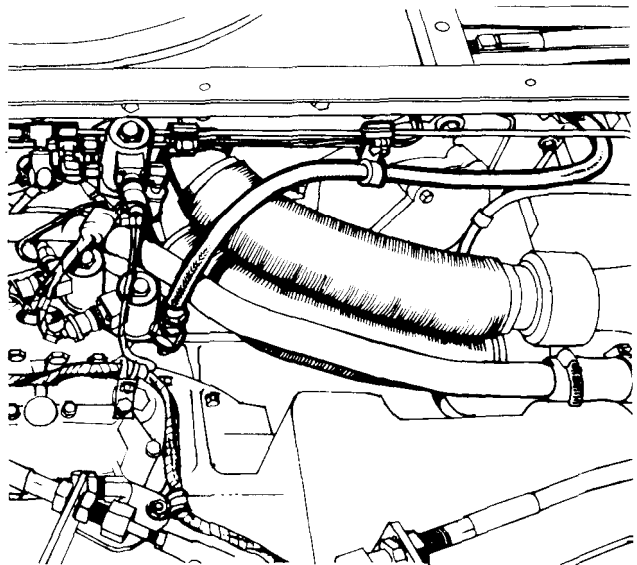
**REMOVAL:**



**NOTE**

Use suitable container to catch any fuel leaks whenever any fuel line connection is loosened or disconnected.

Cap all openings to prevent contamination of fuel.



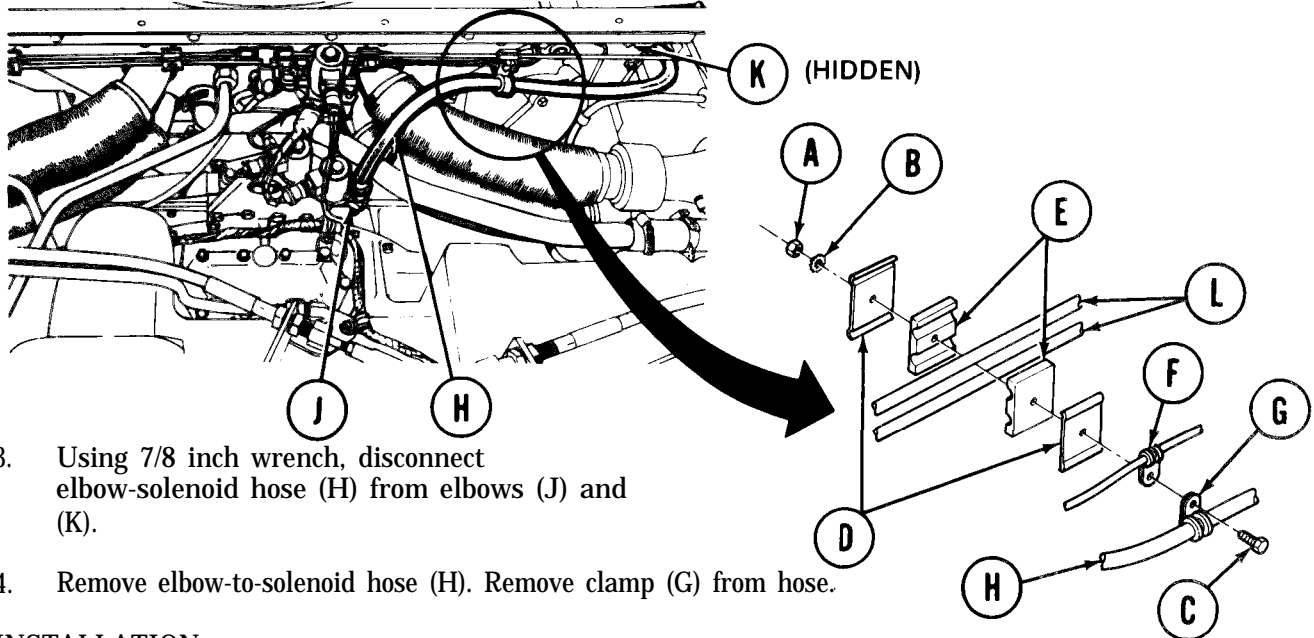
Go on to Sheet 2

TA140888



**SMOKE GENERATOR ELBOW-TO-SOLENOID FUEL HOSE REPLACEMENT (Sheet 2 of 2)****REMOVAL:**

1. Using 7/16 inch wrench to hold nut and 7/16 inch socket on screw, remove nut (A), lockwasher (B), and screw (C) securing retaining straps (D), pads (E), and clamps (F) and (G).
2. Remove retaining straps (D), pads (E), and clamps (F) and (G).



3. Using 7/8 inch wrench, disconnect elbow-solenoid hose (H) from elbows (J) and (K).
4. Remove elbow-to-solenoid hose (H). Remove clamp (G) from hose.

**INSTALLATION:**

1. Install clamp (G) onto elbow-to-solenoid hose (H).
2. Position and connect elbow-to-solenoid hose (H) to elbows (J) and (K). Using 7/8 inch wrench, tighten hose (H) connections to elbows (J) and (K).
3. Install pads (E), retaining straps (D), and clamps (J) and (K) to tube assemblies (L).
4. Install screw (C), new lockwasher (B), and nut (A) to tube assemblies. Using 7/16 inch wrench to hold nut (A) and 7/16 inch socket on screw, tighten screw (C).

**WARNING**

**Never activate smoke generator in a building or closed area or with personnel near.**

5. Perform smoke screening (TM 9-2350-222-10).
6. Check smoke generator lines for leaks. Correct as necessary.
7. Install engine shroud (page 9-3).

**End of Task**

TA140889

**SMOKE GENERATOR SOLENOID OUTPUT FUEL HOSE REPLACEMENT (Sheet 1 of 2)**

**TOOLS:** 3/4 in. combination box and open end wrench  
9/16 in. combination box and open end wrench

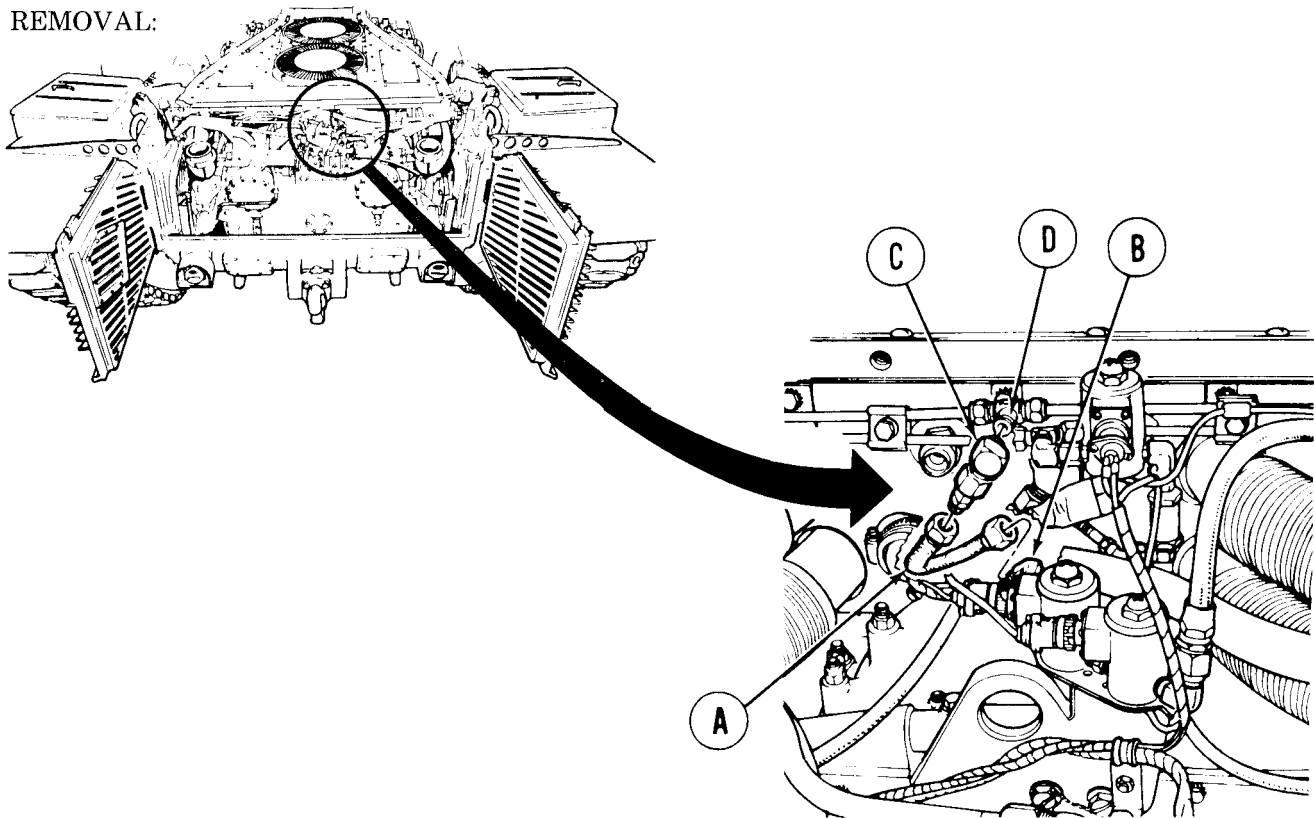
**SUPPLIES:** Suitable container to catch fuel leaks  
Rags (Item 65, Appendix D)  
Plastic caps

**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove engine shroud (page 9-2)

**REMOVAL:**



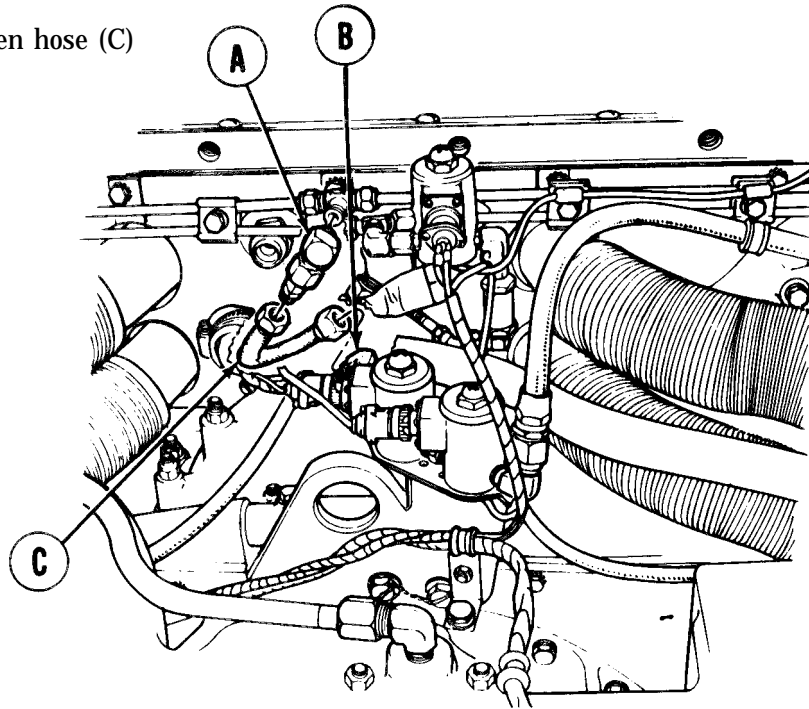
1. Using 3/4 inch wrench, disconnect output fuel hose (A) from 45-degree elbow (B) and 90-degree elbow (C).
2. Remove hose (A).
3. Inspect 90-degree elbow (D) for cracks or damaged threads.
4. If damaged or defective, using 9/16 inch wrench, remove 90-degree elbow and throw it away.

Go on to Sheet 2

TA140890

**SMOKE GENERATOR SOLENOID OUTPUT FUEL HOSE REPLACEMENT (Sheet 2 of 2)****INSTALLATION:**

1. Using 9/16 inch wrench, install 90-degree elbow (A) to tee (B). Adjust elbow to face engine.
2. Position and connect hose (C) to 90-degree elbow (A) and 45-degree elbow (C).
3. Using 3/4 inch wrench, tighten hose (C) connectors to elbows.

**WARNING**

**Never activate smoke generator in a building or closed area or with personnel near.**

4. Perform smoke screening (TM 9-2350-222-10).
5. Check smoke generator lines for leaks. Correct as necessary.
6. Install engine shroud (page 9-3).

End of Task

TA140891

**SMOKE GENERATOR TEE-TO-TURBOSUPERCHARGER TUBE ASSEMBLY REPLACEMENT**  
(Sheet 1 of 5)

PROCEDURE INDEX

PROCEDURE	PAGE
Removal	23-40
Installation	23-43

**TOOLS:** 7/16 in. combination box and open end wrench  
1/2 in. combination box and open end wrench  
9/16 in. combination box and open end wrench  
5/8 in. combination box and open end wrench  
3/4 in. combination box and open end wrench  
7/16 in. socket with 1/2 in. drive  
Ratchet with 1/2 in. drive

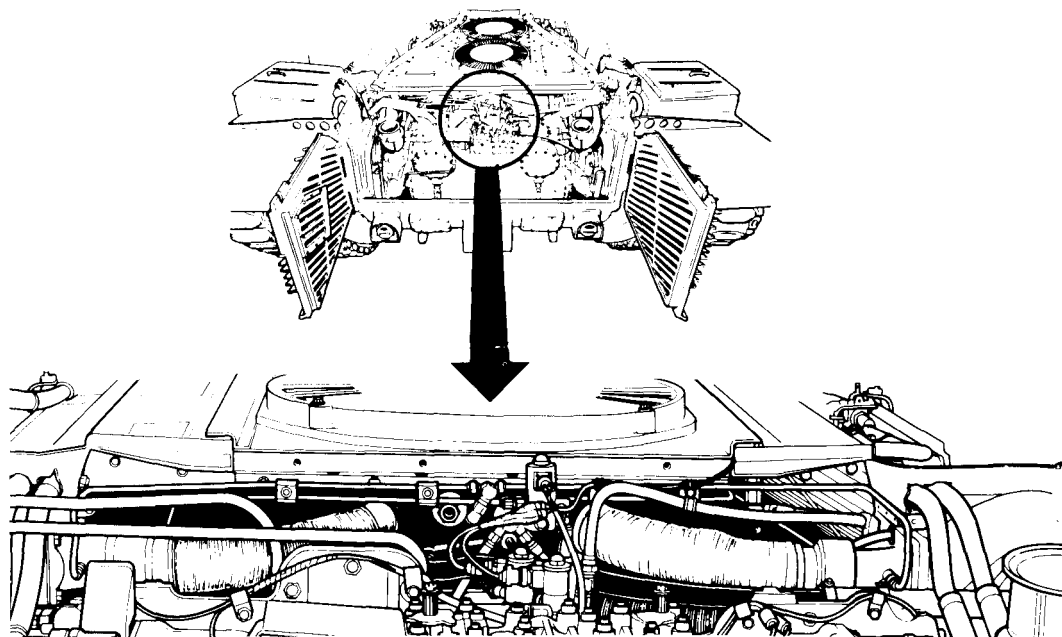
**SUPPLIES:** Container to catch fuel leaks  
Rags (Item 65, Appendix D)  
Plastic caps

**PERSONNEL:** Two

**REFERENCE:** TM 9-2350-222-10

**PRELIMINARY PROCEDURE:** Remove engine shroud (page 9-2)

**REMOVAL:**



Go on to Sheet 2

TA140892

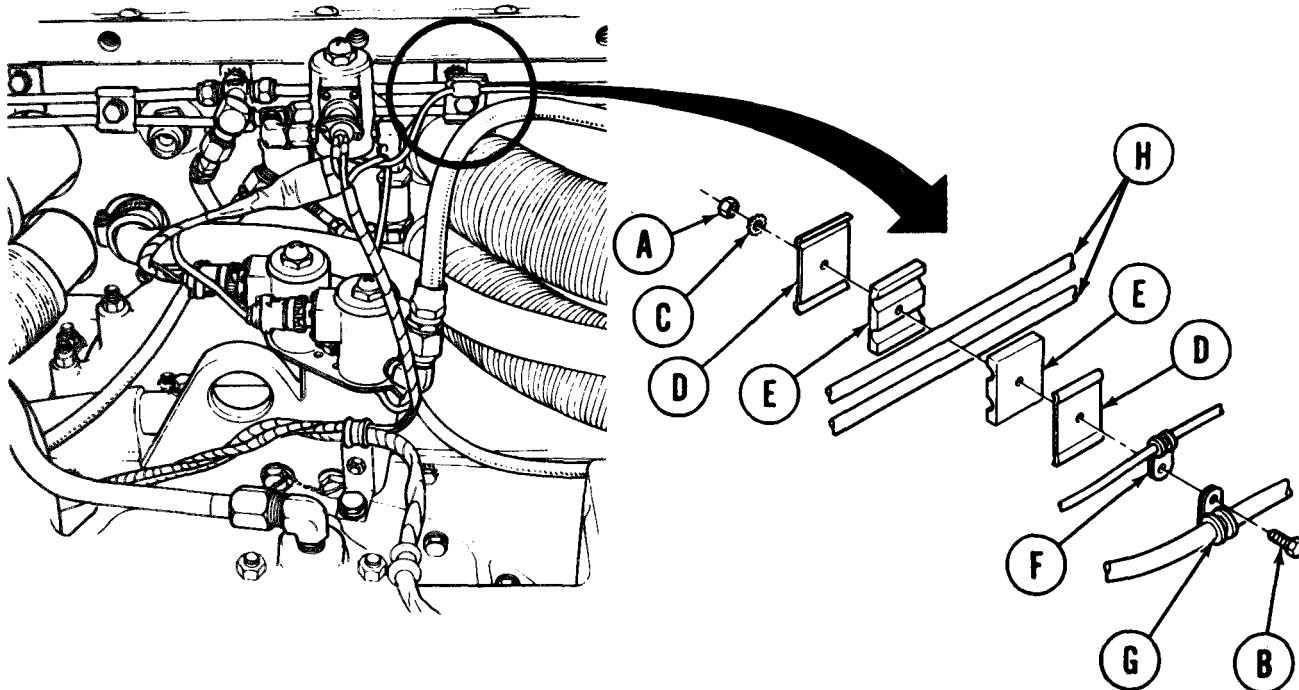
## SMOKE GENERATOR TEE-TO-TURBOSUPERCHARGER TUBE ASSEMBLY REPLACEMENT (Sheet 2 of 5)

### NOTE

Replacement of left or right tube assembly is similar, except as noted. Replacement of right tube assembly is shown.

Use suitable container to catch any fuel leaks whenever any fuel line connection is loosened or disconnected.

- Using 7/16 inch wrench to hold nut (A) and socket on screw (B), remove screw (B), washer (C), and nut (A) securing retaining straps (D), cushions (E), and clamps (F) and (G) if present (two places).



- Remove two retaining straps (D), two cushions (E), and clamps (F) and (G), if present, from fuel lines (H).

### NOTE

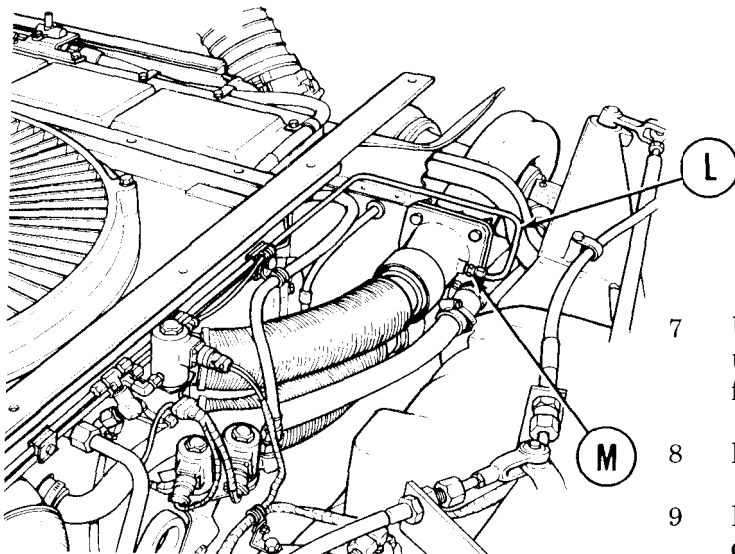
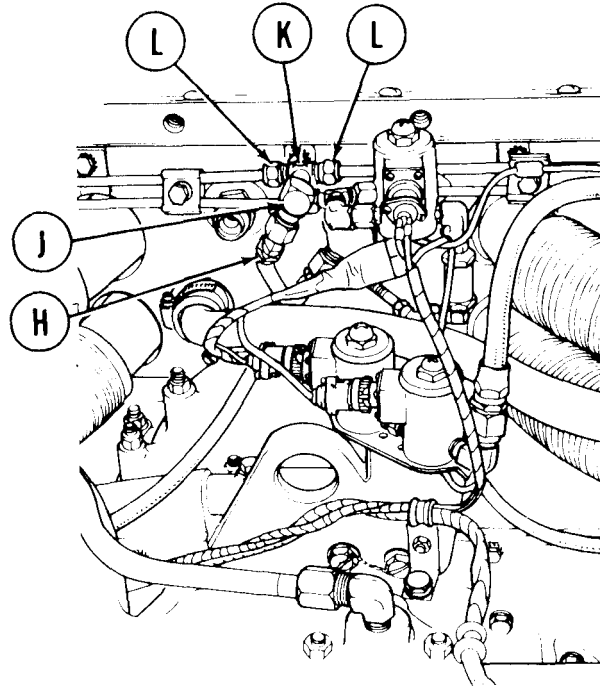
One clamp is used at inner position, two clamps at outer position for right tube installation. No clamps are used on left tube installation.

Go on to Sheet 3

TA140893

**SMOKE GENERATOR TEE-TO-TURBOSUPERCHARGER TUBE ASSEMBLY REPLACEMENT**  
(Sheet 3 of 5)

3. Using 3/4 inch wrench, disconnect solenoid output fuel hose (H) from 90-degree elbow (J).
4. Using 9/16 inch wrench to hold tee (K), use 3/4 inch wrench and remove 90-degree elbow (J) from tee (K).
5. Using 9/16 inch wrench to hold tee (K), use 5/8 inch wrench and disconnect tubes (L) from tee (K).
6. Remove tee (K).



7. Using 1/2 inch wrench to hold adapter (M), use 5/8 inch wrench and disconnect tube (L) from adapter (M).
8. Remove tube (L).
9. Inspect adapter (M) in turbosupercharger elbow for cracks or damaged threads. If defective, use 1/2 inch wrench and remove adapter (M) and throw it away.

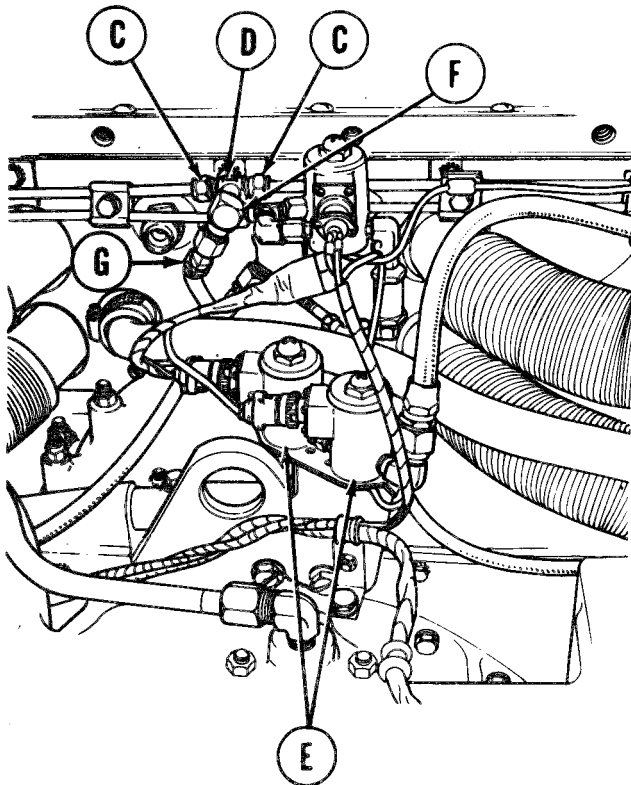
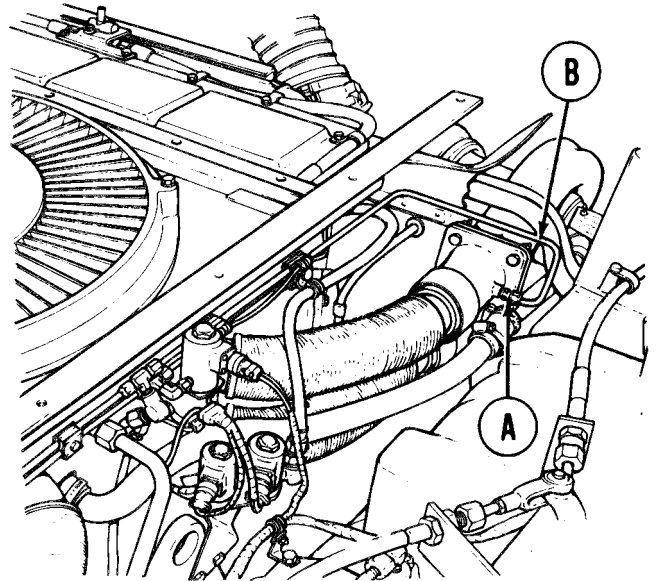
Go on to Sheet 4

TA140894

## SMOKE GENERATOR TEE-TO-TURBOSUPERCHARGER TUBE ASSEMBLY REPLACEMENT (Sheet 4 of 5)

### INSTALLATION:

1. If adapter was removed from turbosupercharger elbow, remove adapter (A) from replacement tube and, using 1/2 inch wrench, install adapter (A) to turbosupercharger elbow.
2. If adapter (A) was not removed from turbocharger elbow, remove adapter (A) from replacement tube and return adapter to supply.
3. Position tube (B) to engine and loosely connect it to adapter (A).

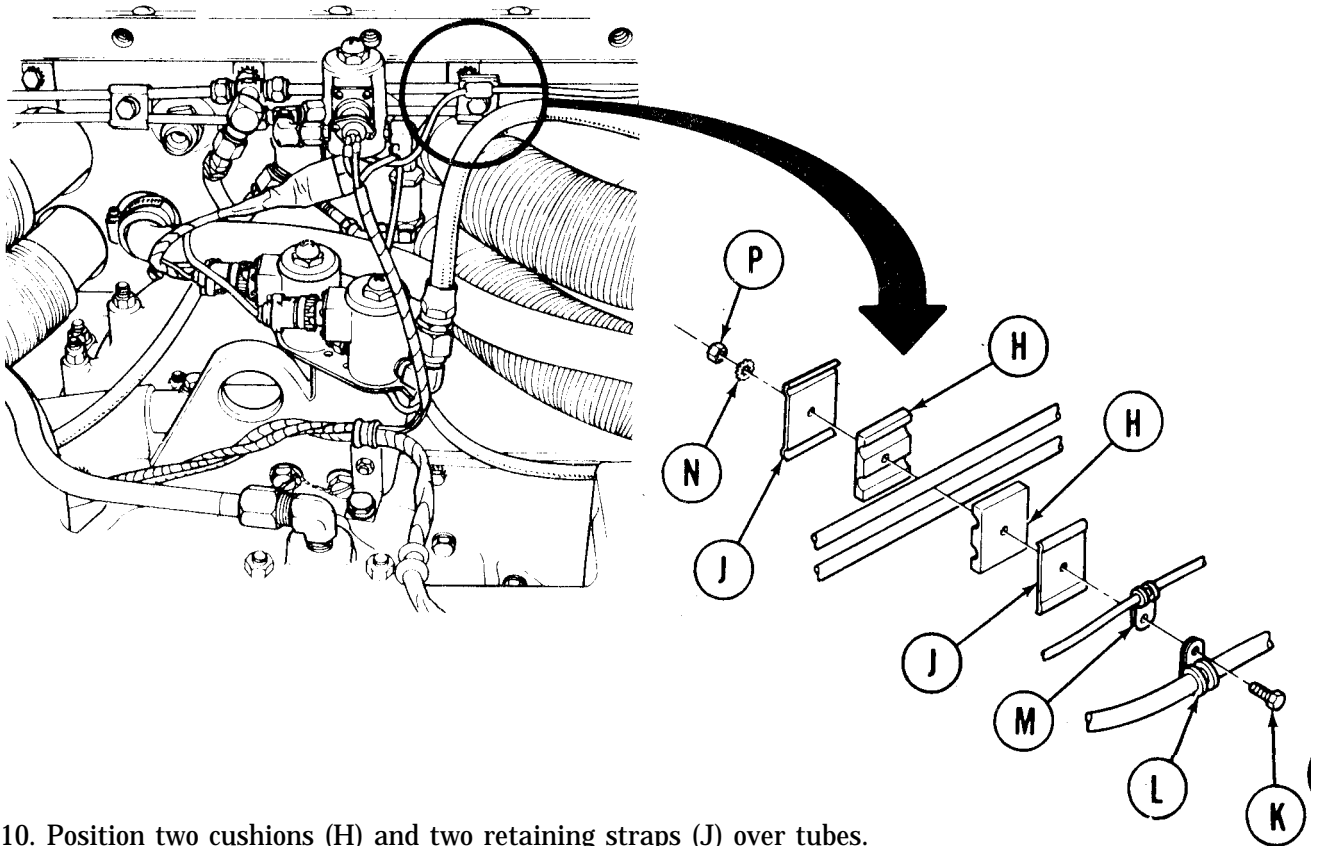


4. Loosely connect tubes (C) to tee (D).
5. Position tee (D) so the open port points toward solenoid valves (E).
6. Using 9/16 inch wrench to hold tee (D), use 5/8 inch wrench and tighten tube (C) nuts onto tee (D).
7. Using 1/2 inch wrench to hold adapter in turbosupercharger elbow, use 5/8 inch wrench and tighten tube (B) nut onto adapter (A).
8. Using 9/16 inch wrench to hold tee (D), use 3/4 inch wrench and install and tighten 90-degree elbow (F) to tee (D). Position elbow open port to face engine.
9. Using 3/4 inch wrench, connect and tighten solenoid output fuel hose (G) to 90-degree elbow (F).

Go on to Sheet 5

TA140895

**SMOKE GENERATOR TEE-TO-TURBOCHARGER TUBE ASSEMBLY REPLACEMENT**  
 (Sheet 5 of 5)



10. Position two cushions (H) and two retaining straps (J) over tubes.
11. Install screw (K) through clamps (L) and (M), if present, cushions (H), retaining straps (J), washer (N), and nut (P).
12. Using 7/16 inch wrench to hold nut (P), use socket and tighten screw (K) to secure clamps, cushions, and retaining straps.

**WARNING**

**Never activate smoke generator in a building or closed area or with personnel near.**

13. Perform smoke screening (TM 9-2350-222-10).
14. Check smoke generator lines for leaks. Correct as necessary.
15. Install engine shroud (page 9-3).

End of Task

TA140896



**SMOKE GENERATOR ENGINE WIRING HARNESS REPLACEMENT (Sheet 1 of 7)**

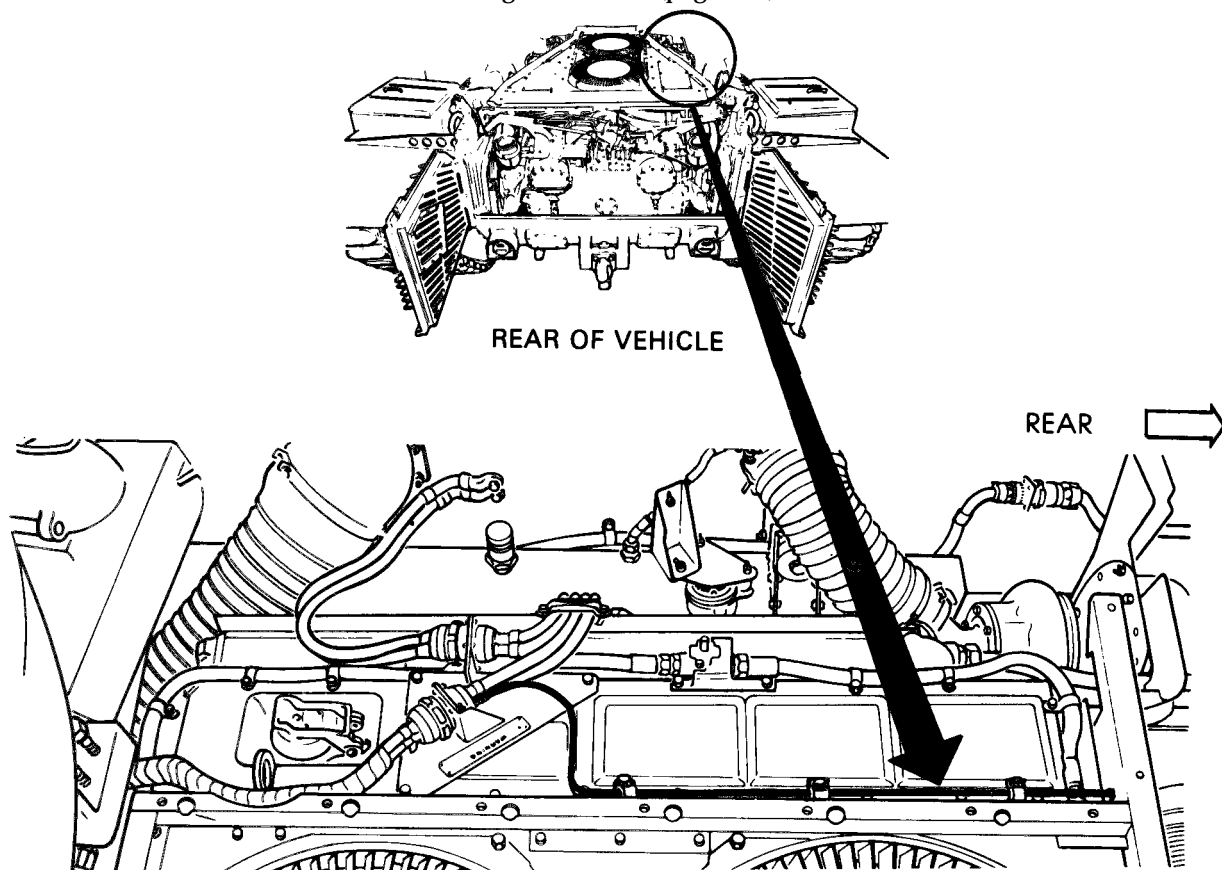
PROCEDURE INDEX

PROCEDURE	PAGE
Removal	23-46
Installation	23-49

- TOOLS:** 7/16 in. combination box and open end wrench (2 required)  
 Flat-tip screwdriver  
 3/8 in. combination box and open end wrench  
 Slip joint pliers with plastic jaw inserts  
 Soldering gun  
 Hand wire strippers  
 Diagonal cutting pliers

**SUPPLIES:** Solder (Item 63, Appendix D)

**PRELIMINARY PROCEDURE:** Remove engine shroud (page 9-2)



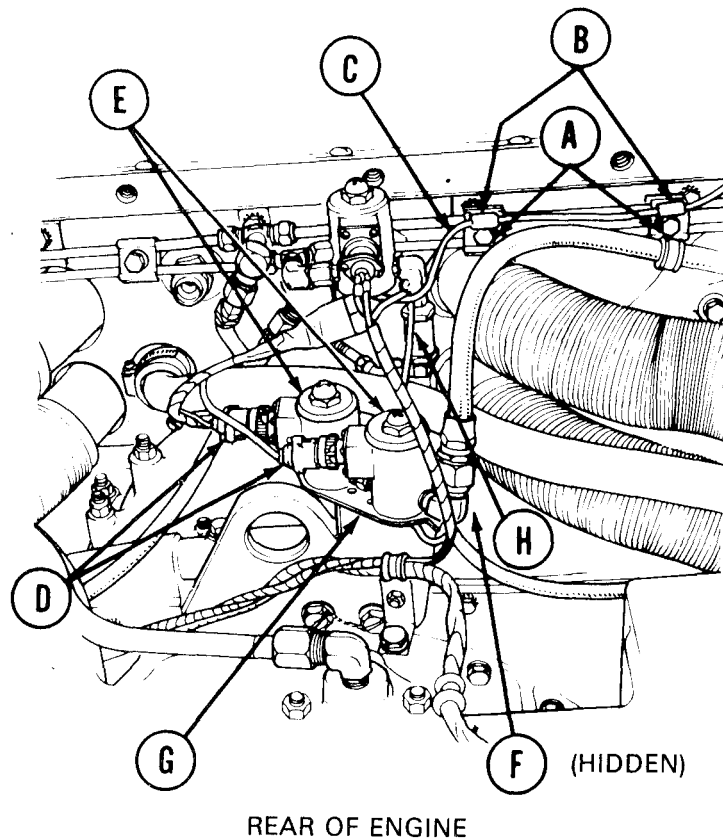
Go on to Sheet 2

TA140897

**SMOKE GENERATOR ENGINE WIRING HARNESS REPLACEMENT (Sheet 2 of 7)**

**REMOVAL:**

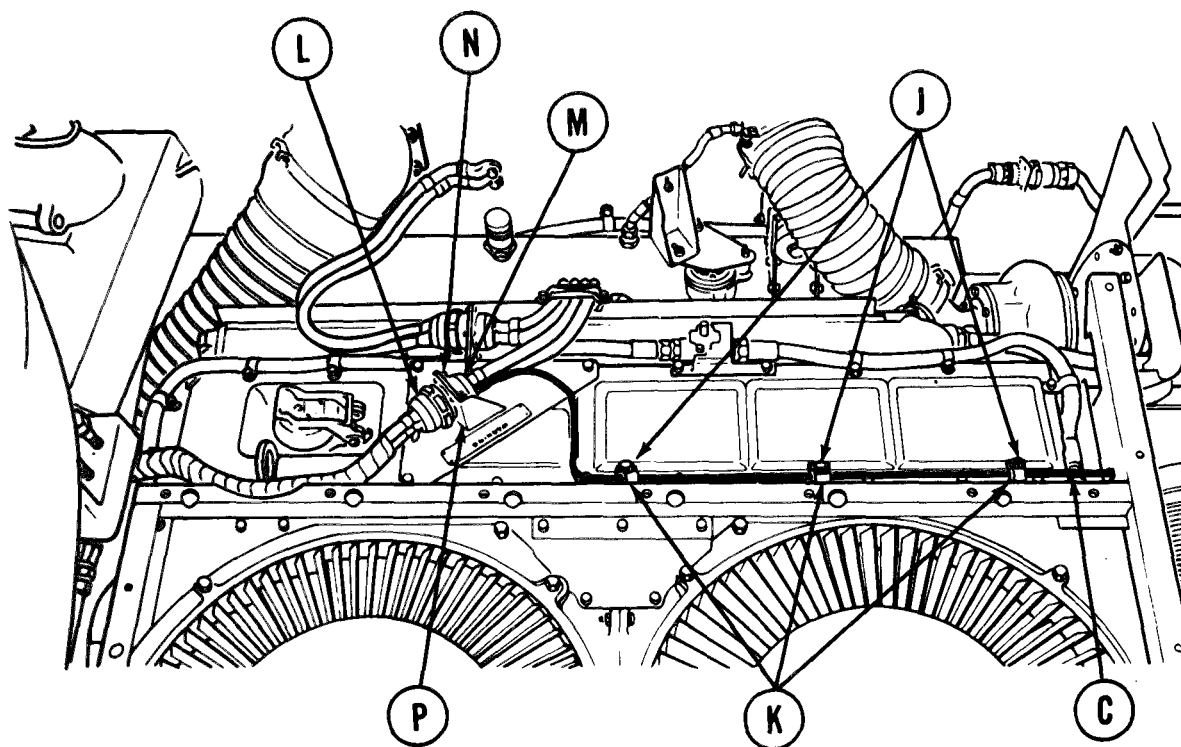
1. Using 7/16 inch wrench, remove two screws (A) and two clamps (B).
2. Remove two clamps (B) from wiring harness (C).
3. Disconnect two electrical connectors (D) from two solenoids (E).
4. Using two 7/16 inch wrenches, remove screw and nut (F) from bracket (G) and ground lead (H).



Go on to Sheet 3

TA140898

## SMOKE GENERATOR ENGINE WIRING HARNESS REPLACEMENT (Sheet 3 of 7)

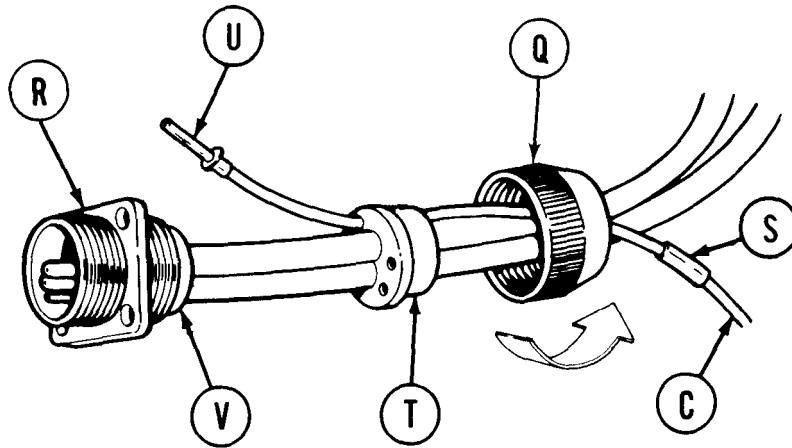


5. Using 7/16 inch wrench, remove three screws (J) and three clamps (K) from wiring harness (C).
6. Using slip joint pliers, disconnect connector (L).
7. Using 3/8 inch wrench and screwdriver, remove four screws and four nuts (N).
8. Remove connector (M) from bracket (N).

Go on to Sheet 4

TA140899

SMOKE GENERATOR ENGINE WIRING HARNESS REPLACEMENT (Sheet 4 of 7)



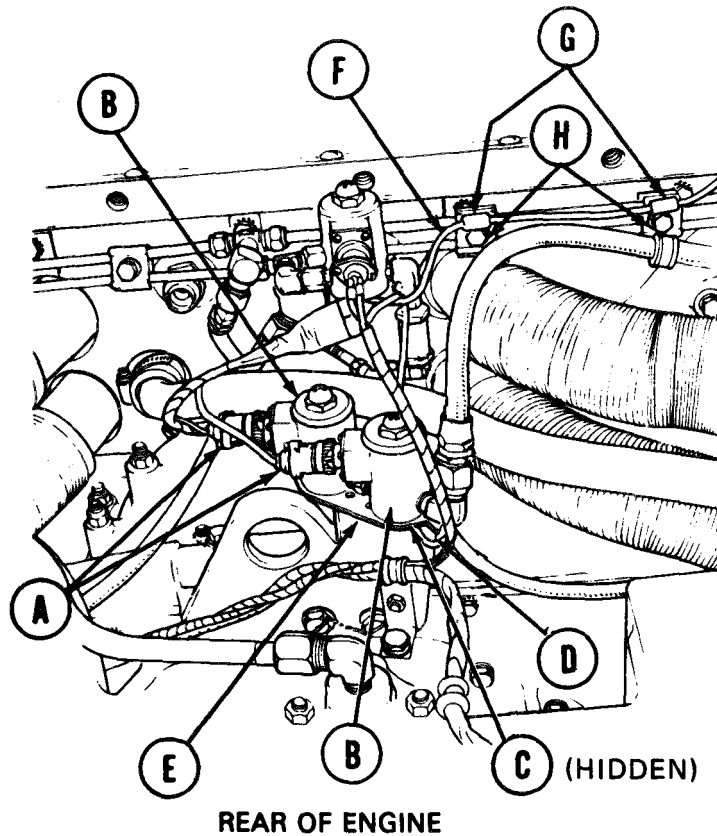
9. Using slip joint pliers, unthread retaining nut (Q) from shell (R). Slide retaining nut (Q) back along cable.
10. Slide sleeving (S) back along wiring harness (C).
11. Slide bushing (T) back along cable.
12. Remove pin (U) from insert (V).
13. Using soldering gun, unsolder pin (U) from wiring harness (C).
14. Remove wiring harness (C) from bushing (T).
15. Remove sleeving (S) from wiring harness (C).
16. Remove wiring harness (C) from vehicle.

Go on to Sheet 5

TA140900

**SMOKE GENERATOR ENGINE WIRING HARNESS REPLACEMENT (Sheet 5 of 7)****INSTALLATION:**

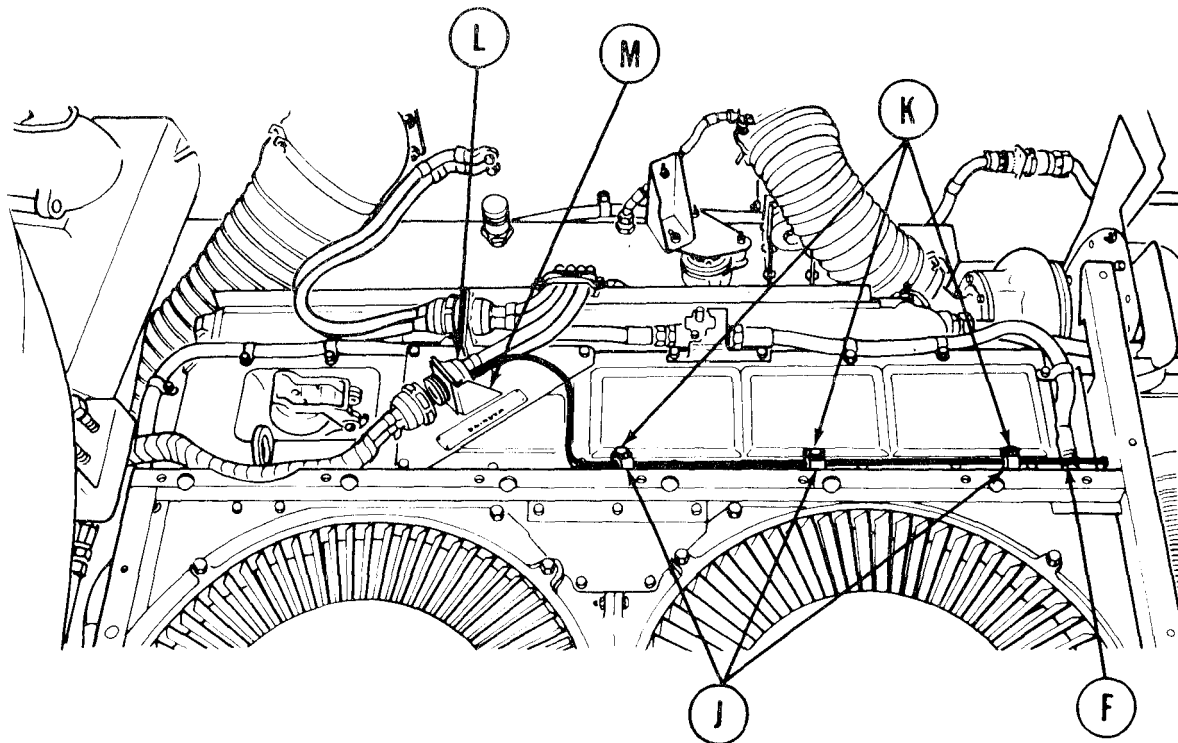
1. Connect two electrical connectors (A) on two solenoids (B).
2. Using two 7/16 inch wrenches, install screw and nut (C) to secure ground lead (D) to bracket (E).
3. Place wiring harness (F) in position.
4. Install two clamps (G) on wiring harness (F).
5. Using 7/16 inch wrench, install two screws (H) to secure clamps (G).



Go on to Sheet 6

TA140901

SMOKE GENERATOR ENGINE WIRING HARNESS REPLACEMENT (Sheet 6 of 7)



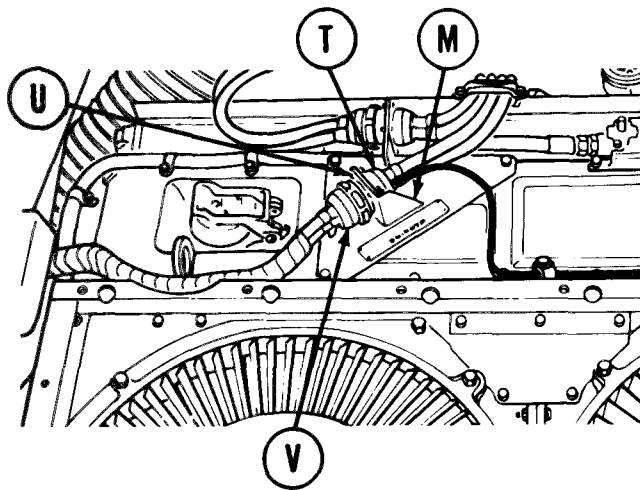
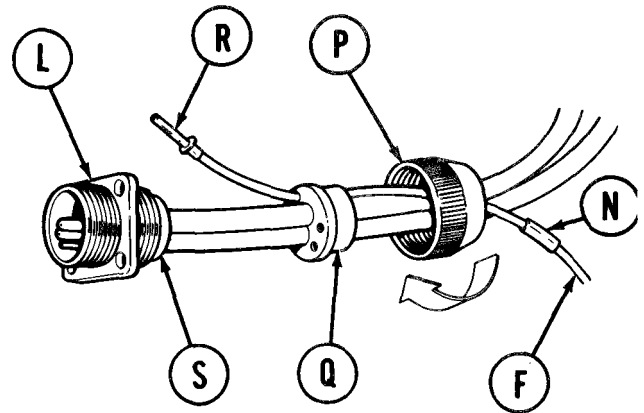
6. Install three clamps (J) on wiring harness (F).
7. Using 7/16 inch wrench, install three screws (K) to secure three clamps (J) to engine.
8. Temporarily place shell (L) in position in bracket (M).
9. Measure length of wiring harness (F) to shell (L). Allow 1/2 inch for stripping and mark wiring harness (F).
10. Using diagonal cutting pliers, cut wiring harness at mark.
11. Using wire strippers, strip 1/2 inch of insulation from end of harness (F).

Go on to Sheet 7

TA140902

**SMOKE GENERATOR ENGINE WIRING HARNESS REPLACEMENT (Sheet 7 of 7)**

12. Install sleeving (N) over wiring harness (F).
13. Insert wiring harness (F) through retaining nut (P) and bushing (Q).
14. Using solder (Item 63, Appendix D) and soldering gun, attach pin (R) to wiring harness (F).
15. Install pin (R) into hole 'A' of insert (S).
16. Push pin (R) and insert (S) into position in shell (L).
17. Slide bushing (Q) against insert (S).
18. Slide sleeving (N) against bushing (Q).
19. Install retaining nut (P) on shell (L).



20. Place connector (T) in position in bracket (M).
21. Using screwdriver and 3/8 inch wrench, install four screws and four nuts (U).
22. Install connector (V).
23. Install engine shroud (page 9-3).

End of Task





## APPENDIX A

## REFERENCES

A-1 Publication Indexes

The following indexes should be consulted frequently for latest changes or revisions of references given in this Appendix and for new publications relating to material covered in this Technical Manual:

DA PAM 25-30 Consolidated Index of Army Publications and Blank Forms

A-2 Maintenance Forms and Records

DA Form 2028 Recommended Changes to Publications  
 DA Form 2404 Equipment, Inspection, and Maintenance Worksheet  
 DA Form 2407 Maintenance Requests  
 DA PAM 738-750 The Army Maintenance Management System (TAMMS)  
 DD Form 1397 Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines  
 SF 368 Quality Deficiency Report

A-3 Regulations

AR-385-40 Accident Reporting and Records  
 AR-75-1 Malfunctions Involving Ammunition and Explosives

A-4 Lubrication

LO 9-2350-222-12 Lubrication Order for Vehicle, Combat Engineer, Full-Tracked: M728  
 NSN 2350-00795-1797

A-5 Technical Manuals

TM 9-214 Inspection, Care, and Maintenance of Antifriction Bearings  
 TM 9-237 Welding Theory and Application  
 TM 9-247 Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel  
 TM 9-4910-571-12&P Operator, Organization Maintenance Manual (Including Repair Parts and Special Tool List) for simplified Test Equipment for Internal Combustion Engines (STE/ICE) (NSN 5910-00-124-2554)  
 Operator's Organizational, Direct Support, and General Support Maintenance Manual for Lead-Acid Storage Batteries: 4HN, 24V (NSN 6140-059-3528) MS 75047-1; 2HN, 12V (6140-00-057-2553) MS35000-1, 6TN) 12V (6140-00-057-2554) MS 35000  
 TM 9-2540-205-24&P Organizational, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools Lists) for Heaters, Vehicular Compartment: (Stewart Warner Model 10560M) (NSN 2540-01-071-0651), (Model 10560M24B1) (2540-01-169-5159), (Model 10560C) (2540-01-0834691), and (Model 8460C24) (2540-00-854-4449); (Hupp Model MF510A) (2540-00930-8938), (Model MF510B) (2540-01-071-0652) and (Model MF510C) (2540-01-162-3834) and (Espar Model V7S) (2540-01-114-7688)

TM 9-2530-200-24

Unit, Direct Support and General Support Maintenance  
Manual Standards for Inspection and Classification of Tracks,  
Track Components and Solid Rubber Tires (FSC 2530)

TM 10-277

Protective Clothing Chemical Operations

TM 11-5820-401-12

Operator's and Organizational Maintenance Manual (Including  
Repair Parts and Special Tools List): Radio Set AN/VRC-12  
(NSN 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), AN/VRC-49  
(5820-00-223-7437), AN/VRC-54 (5820-223-7567) and AN/VRC  
55 (5820-00-402-2265); Mounting MT-1029/VRC (5820-00-  
893-1323) and MT-1898/URC (5820-00-893-1324); Antenna  
at 912/VRC (5820-00-897-6357); Control Frequency Selector  
C-2742/VRC (5820-00-892-3343) and Control Radio Set  
C-2299/VRC (5820-00-892-3340)

TM 43-0139

Painting Instructions for Field Use

TM 55-2350-215-10-15

Transportability Guidance Tank, Combat, Full-Track, M60 Series

#### Vehicle Manuals

TM 9-2350-222-10

Operator's Manual for Vehicle, Combat Engineer, Full-Track, M728

TM 9-2350-222-20-2

Turret Organizational Maintenance Manual for Vehicle, Combat  
Engineer, Full-Track, M728

TM 9-2350-222-20P-1

Hull Organizational Maintenance Repair Parts and Special Tools  
List for Vehicle, Combat Engineer, Full-Track, M728

#### Gas Particulate System

TM 3-4240-280-10

Operator's Manual: Mask, Chemical-Biological; M24 and M25/M25A1

TM 3-4240-280-23&P

Organizational and Direct Support Maintenance Manual Including  
Repair Parts and Special Tools List: Mask M24 and M25/M25A1

#### A-6 Supply Catalogs

SC 4940-95-CL-A08

Tool Set, Vehicle Full Tracked: Organizational  
Maintenance, Supplemental No. 2, Less Power  
(NSN 4940-00-754-0743) (LIN W65747) and MAP  
only (4940-00-919-0106) (24X Microfiche)

SC 4910-95-CL-A72

op Equipment, Automotive Maintenance and Repair:  
Organizational Maintenance, Common No. 2, Less  
Power (NSN 4910-00-754-0650) (LIN W32730) and  
MAP only (4910-00-919-0082)

#### A-7 Field Manuals

FM 9-207

Operation and Maintenance of Ordnance Materiel in Cold Weather  
(0° to -65°F) (-18° to -54°C)

FM 21-11

First Aid for Soldiers

TM 9-2910-212-34	Direct Support and General Support Maintenance Manual for Pump, Metering, Fuel Injection Assembly 10912447 (2910-00-064-6265) and 11684129 (2910-00-398-9550) (American Bosch Model PSB-12 BT)
TM 9-2910-213-34	Direct Support and General Support Maintenance Manual for Pump, Fuel, Engine, Assembly (Viking Model FV492) 8725131, 8725282, 8725283, 10882763, and 10882763-1.
TM 9-2920-224-35	DS and GS Maintenance Manual with Repair Parts and Special Tools List for Generator Assembly, Model 30B95-3B and Voltage Regulator Assembly, 300 AMP
TM 9-2920-232-34	Direct Support and General Support Maintenance Manual (Including Repair Parts List) for Starter Engine (Delco-Remy-GMC Model (1109972)
TM 9-2920-252-34&P	DS and GS Maintenance Manual with Repair Parts and Special Tools List for Generator Assembly, Model 30B95-3B and Voltage Regulator Assembly, Model 24B30-3B
TM 9-2990-200-34	Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools Lists) for Turbosupercharger Model D6S
TM 9-2990-205-34	DS and GS Maintenance Manual with Repair Parts and Special Tools List for Turbosupercharger Model 5HDR

Gas Particulate System

TM 3-4240-276-30&P	DS Maintenance (Including Repair Parts and Special Tools List): Purifier, Air: M2A1 (4240-00-307-7805); M2A2 (4240-00-868-7906) and Precleaned and Particulate Filter Assembly; M4A1-19 (4240-01-016-3113)
TM 3-4240-280-10	Operator's Manual: Mask, Chemical-Biological; M24 and M25/M25A1
TM 3-4240-280-23&P	Organizational and Direct Support Maintenance Manual Including Repair Parts and Special Tools List: Mask M24 and M25/M25A1

A-6 Supply Catalogs

SC 4910-95-CL-A31	Shop Equipment, Automotive Maintenance and Repair. Field Maintenance, Basic, Less Power (4910-754-0705) (Line Item T24660) and Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Basic, MAP only (4910-919-0076)
SC 4940-95-CL-A21	Shop Set, Contact and Emergency Repair: Field Maintenance (4940-754-0737) (Line Item T26030 Formerly Line Item 440568) and Shop Set, Contact and Emergency Repair: Field Maintenance MAP only (4940-919-0111)

A-7 Field Manuals

FM 9-207	Operation and Maintenance of Ordnance Materiel in Cold Weather (0° to -65°F) (-18° to -54°C)
FM 21-11	First Aid for Soldiers
FM 21-40	Chemical, Biological, Radiological and Nuclear Defense



MATERIAL		
STOCK	DESCRIPTION	FABRICATING REQUIREMENT
9510-00-813-5334	Bushing Replacer Tool	1500 in. 013
9510-00-813-5332	Handle	1500 in. OD

MATERIAL: STEEL, ASTM 108, GRADE 1016, COLD FINISH FABRICATION, FSCM 81348, ROUND BAR STOCK

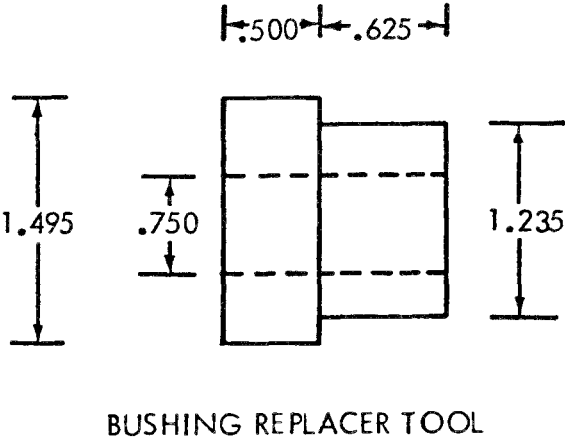
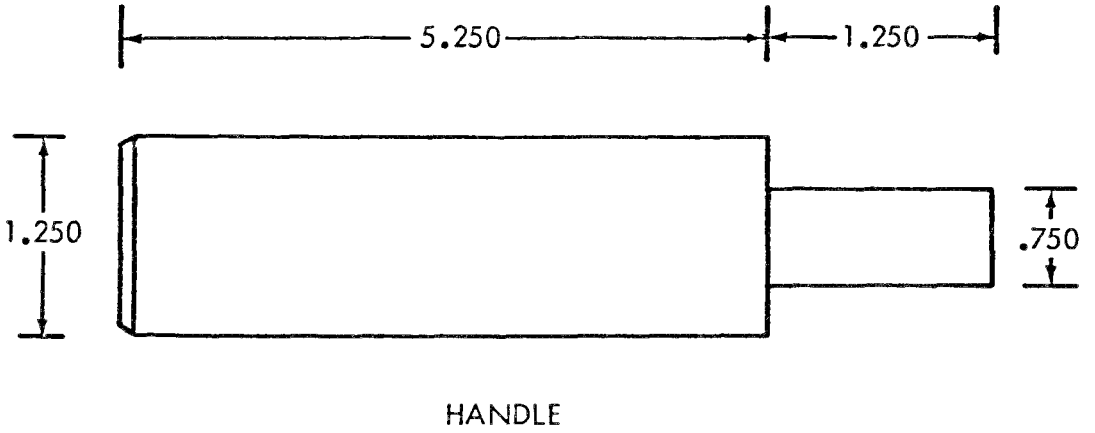


Figure F-3. Bushing replacement tool and handle.



**APPENDIX B**  
**MAINTENANCE ALLOCATION CHART**  
**FOR**  
**COMBAT ENGINEER VEHICLE**  
**FULL-TRACKED, M728**  
**(2350-00-795-1797)**

**Section I. INTRODUCTION**

**B-1. General.**

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

*b.* The Maintenance Allocation Chart (MAC) in Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

*c.* Section III lists the special tools and test equipment required for each maintenance function as referenced from Section II.

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

**B-2. Maintenance Functions.**

*a. Inspect.* To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

*b. Test.* To verify serviceability 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, or 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 equipments used in precision measurement. Consists of comparisons of two instrument, 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 an 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 like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

*i. Repair.* The application of maintenance services or other maintenance actions to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

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

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

### **B-3. Column Entries Used in the MAC.**

*a. Column 1, Group Number.* Column 1 lists functional 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 names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

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

*d. Column 4, Maintenance Category.* Column 4 specifies, by the listing of a 'work time' figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate 'work time' figures will be shown for each level. The number of manhours 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 allocation chart. The symbol designations for the various maintenance levels are as follows:

- C Operator or crew
- O Organizational 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, test, and support equipment required to perform the designated function.

*f. Column 6, Remarks.* Column 6 contains an alphabetic code which leads to the remark in Section IV, Remarks, which is pertinent to the item opposite the particular code.

#### **B-4. Column Entries Used in Tool and Test Equipment Requirements.**

*a. Column 1, Tool or Test Equipment Reference Code.* The tool or test equipment reference code correlates with maintenance function on the identified end item or component.

*b. Column 2, Maintenance Level.* The lowest level of maintenance authorized to use the tool or test equipment.

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

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

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

*f. Column 6, Remarks.* Specifies by code, as listed in Section IV, information pertinent to the maintenance being performed.

#### **B-5. Explanation of Columns in Remarks, Section IV.**

*a. Column 1, Reference Code.* The code recorded in Column 4, Section II.

*b. Column 2, Remarks.* This column lists information pertinent to the maintenance level being performed as indicated in the MAC, Section II, Column 4.

Section II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0100	Power Plant (Pack), Engine Transmission Assy.	Inspect Test	0.1	0.5 0.4				134,182,183,185 69,125-129,131, 132-134,182,183, 185	A
		Service Adjust	0.2	0.8 0.4				130,134,182 86,134,182,183, 186	
		Replace Repair		8.0 3.5	24.0			134,182,183,186 134,182,183,186, 197,198	
	Engine Assy, Diesel Models AVDS-1790-2A, and 2D	Inspect Test		1.0		0.3		134,182 1,15,24,41,48,51, 54,126-130,132- 134,182,191,197, 198	
Adjust Replace Repair				2.0 24.0 8.0		50.0	134,182,197,198 134,182,197 1-36,39-45,47-56, 60,126-128,132- 134,136-165,182, 197,198		
0100	Overhaul					297.	1-60,126-129,132- 134,136-165,182		
0100	Guide Assy, Power Plant Rear-Left and Right	Inspect Replace Repair		0.1 0.3 0.8				182,183 135,182,183	
0106	Frame Assy, Engine Oil Cooler Support Right	Replace Repair		4.0		3.0		182,183 182,190,197	
0106	Frame Assy, Engine Oil Cooler Support Left	Replace Repair		4.0		3.0		182,183 182,190,197	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH required  
TA141100

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0106	Oil Cooler Assy, Engine	Inspect Service Replace Repair	0.	0.3 0.5 2.0				130,134,182 130,134,182,183 130,182,183 182,197	C
0106	Valve Assy, Thermostatic Engine Oil Cooler	Inspect Test Replace		0.3 0.3 0.5				182 182,183,189 182	
0106	Filter Assy, Engine Oil	Inspect Service Replace Repair		0.5 0.8 1.6 2.5				182 182 182 182,183,186	
0106	Oil Pan Assy, Engine Crank- case	Inspect Replace Repair		0.1				134,182 134,182,197 182,187,190,197	
0106	Breather Assy, Crankcase Lines	Inspect Service Replace		0.1 0.3 2.0				134,182 134,182 134,182	
0106	Fluid Cooler Assy, Trans- mission	Inspect Service Replace Repair	0.	0.1 0.5 2.0				130,134,182 130,134,182,183 134,182,183 182,197	C
0106	Cover Assy, Engine Access (Upper Shroud Left Bank)	Replace Repair		0.5		1.0		134,182 182,190	
0106	Cover Assy, Engine Access (Upper Shroud Right Bank)	Replace Repair		0.5		1.0		134,192 182,190	

C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MF  
required

TA141099

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0108	Pipe Assy, Exhaust #1, 2, 3, Left Bank	Inspect Replace Repair		0.1				134,182 134,182,197 134,182,190,197	
0108	Pipe Assy, Exhaust #4, 5, 6, Left Bank	Inspect Replace Repair		0.1				134,182 134,182,197 134,182,190,197	
0108	Pipe Assy, Exhaust #1, 2, 3, Right Bank	Inspect Replace Repair		0.1				134,182 134,182,197 134,182,190,197	
0108	Pipe Assy, Exhaust #4, 5, 6, Right Bank	Inspect Replace Repair		0.1				134,182 134,182,197 134,182,190,197	
0108	Exhaust Mani- fold Assy, #1, 2, 3, Left Bank	Inspect Replace Repair		0.1				134,182 134,182,197 134,182,190,197	
0108	Exhaust Mani- fold Assy, #4, 5, 6, Left Bank	Inspect Replace Repair		0.1				134,182 134,182,197 134,182,190,197	
0108	Exhaust Mani- fold Assy, #1 2, 3, Right Bank	Inspect Replace Repair		0.1				134,182 134,182,197 134,182,190,197	
0108	Exhaust Mani- fold Assy, #4, 5, 6, Right Bank	Inspect Replace Repair		0.1				134,182 134,182,197 134,182,190,197	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141098

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0301	Nozzle and Holder Assy, Fuel Injector	Inspect		1.0	1.0			134,182	D
		Test			1.0			48,134,191,198	
		Service			*			48,191,198,201	
		Adjust			*			191,198,201	
		Replace			3.0			12,22,24,41,48, 51,134,191	
		Repair		0.2	1.0	1		22,24,41,48,51, 134,191,198,201	
0302	Pump Assy, Fuel Injector	Inspect			1.0			134,182	
		Test				4		47,134,191,198, 199,201	
		Calibrate				2		47,191,198,199, 201	
		Replace			10.0			134,191,198	
		Repair				15		47,156-164,191, 198,199,201	
		Overhaul					5.0	47,156-164,191, 198,199,201	
0302	Pump Assy, Engine Fuel	Inspect		0.3				134,182	
		Test		0.3	0.5			134,182,183,186	
		Adjust		0.1				134,182,183,186	
		Replace		0.5				134,182	
		Repair			2.0			134,182,183,186	
0302	Cover Assy, Tank Fuel Pump	Inspect						134,182	
		Replace		6.0				134,182,183,186	
		Repair		6.5				134,182,183,186	
0302	Pump Assy, Fuel Tank	Inspect		0.3				134,182,183,186	
		Replace		3.0				134,182,183,186	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141097

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0304	Air Cleaner Assy, Left and Right, Aluminum Side Loader, Aluminum Top Loader and Armored Top Loader	Inspect Service Replace Repair	0. 0.	0.5 1.5 4.0 1.0	2.			182 169,182,183 182,183 182,183,187,190, 191,198	E F G
0304	Filter Assy, Air Cleaner	Inspect Service Replace Repair	0. 0.	0.4 1.0 1.0 1.0				182 182,183 182 182	E F H
0304	Blower Assy, Air Cleaner (all Types A/C)	Inspect Replace Repair		0. 0.	1.			182,183 182 182,191,198	
0304	Lead Assy, Power-Blower Motor (all Types A/C)	Inspect Test Replace Repair		0. 0. 1. 1.				182,183 183 182 182,183	
0304	Lead Assy, Ground-Blower Motor (all Types A/C)	Inspect Test Replace Repair		0. 0. 1. 1.				182,183 182 182 182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA253227

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenanc function	(4) Maintenance Category :					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0304	Door Assy, Aluminum Top Loading A/C	Inspect Replace Repair		0.2 0.5 0.8	1.			182 182 182,183,187,190	I
0304	Door Assy, Armored Side Loading A/C	Inspect Replace Repair		0.2 0.5 0.8	1.			182 182 182,183,187,190	I
0304	Door Assy, Armored Top Loading A/C	Inspect Replace Repair		0.2 0.5 0.8	1.			182 182 182,183,187,190	I
0304	Plug Assy, Restriction Indicator Replacement Top Loading A/C (Late Production)	Inspect Replace Repair	0.	0.3 0.5				182 182	
0305	Turbosuper- charger Assy, Diesel Eng., Right and Left Bank 2A, 2D	Inspect Replace Repair  Overhaul		0.3	3.	4.	10.	134,182 134,182,197 136-156,182, 197 136-156,182	
0306	Plug Assy, Fuel Tank Relief	Inspect Replace Repair	0.	0.6 1.0				182 182,183,186	
0306	Seal Assy, Filler Neck- Right Fuel Tank	Inspect Replace Repair	0.	0.5 1.0				182 182,183,186	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141095

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0306	Fuel Tank Assy, Right	Inspect Service Replace Repair	0	0.3  4.0	18. 12.			134,182  134,182,197 134,182,183,187, 190,197	J
0306	Fuel Tank Assy, Left	Inspect Service Replace Repair	0	0.3  4.0	18. 12.			134,182  134,182,197 134,182,183,187, 190,197	J
0306	Handle Assy, Fuel Shutoff	Inspect Replace Repair	0.	0.3 0.5				182 182,183,186	
0307	Filter Assy, Fluid Pressure - Fuel Inlet	Inspect Service Replace Repair		0.2 0.7 5.0 6.0				134,182 134,182,183 134,182,183,201	
0309	Filter Assy, Primary Fuel	Inspect Service Replace Repair	0.	1.0  9.0 0.3				182  134,182,183 134,182,183	
0309	Filter Assy, Fuel Water Separator	Inspect Test Service Replace Repair	0.	1.0 0.2 0.4 9.0 0.3				182 182,183 182 134,182,183 134,182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141094



Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0309	Filter Assy, Intake Mani- fold Heater	Inspect		0.1				182	
		Service		0.3				182	
		Replace		2.0				182	
		Repair		0.3				182	
0311	Heater Assy, Manifold Air Right Bank	Inspect		0.3				134,182	
		Service		0.3				134,182	
		Replace		8.0				134,182,183	
		Repair		9.0				134,182,183,186	
0311	Heater Assy, Manifold Air Left Bank	Inspect		0.3				134,182	
		Service		0.3				134,182	
		Replace		8.0				134,182,183	
		Repair		9.0				134,182,183,186	
0311	Plug, Ignition Manifold Heater	Inspect		0.3				134,182	
		Service		0.3				134,182,183	
		Replace		8.3				134,182,183,186	
0311	Fuel Nozzle Assy, Mani- fold Heater	Inspect		0.3				134,182	
		Service		0.3				134,182	
		Replace		9.0				134,182,183	
		Repair		1.0				134,182,183	
0311	Pump Assy, Fuel Primer (Purge)	Inspect		0.3				182,183	
		Replace		1.0				182,183	
		Repair			2.0			182,191,198	
0311	Valve Assy, Inlet Fuel Primer Pump	Repair			6.0			182,191,198	

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH  
O-organizational D-Depot required  
F-direct support TA253228

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0311	Valve Assy, Outlet Fuel Primer Pump	Repair			6.0			182,191,198	
0311	Rod Assy, Pump Piston- Fuel Primer	Repair			6.0			182,191,198	
0311	Rod Sub-Assy, Fuel Primer Pump	Inspect Repair			5.0 6.0			191,198 191,198	
0312	Housing Assy, Bearing Unit Accelerator and Throttle	Inspect Replace Repair		0.3 4.5 5.5				182 182,183	
0312	Lever Assy, Control Rod- Accelerator	Inspect Replace Repair		0.2 0.5 1.0				182 182,183	
0312	Flange Assy, Bulkhead, Accelerator Control	Inspect Repair		0.2	0.2 2.0			182,197	
0312	Linkage Assy, Accelerator Control Engine Com- partment	Inspect Repair			0.3 1.0			134,182 134,182,197	
0312	Tube Assy, Linkage Assy, to Clevis	Inspect Replace Repair			0.2 1.0 1.0			134,182 134,182 134,182,197	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required TA141092

Ssction II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0312	Tube Assy, Rear Riser Linkage Assy.	Inspect Replace Repair			0.1 1.0			134,182 134,182 134,182,197	
0401	Exhaust Pipe Assy, Engine	Inspect Service Replace Repair		0.3 0.3 0.5 2.0				134,182 134,182,183 134,182,183 134,182,183,186	
0401	Cover (Cap) Assy, Engine Exhaust Out- let Protector	Inspect Replace Repair		.1 .5 .5				182 182 182,183	
0502	Support Assy, Front Engine Shroud-Models AVDS 1790-2A, and 2D	Inspect Replace Repair		0.2 2.6 4.0				134,182 134,182 134,182,183,186	
0502	Support Assy, Rear Engine Shroud (all Engine Models)	Inspect Replace Repair		0.2 2.6 4.0				134,182 134,182 134,182,183,186	
0502	Support Assy, Left Engine Shroud-Model AVDS 1790-2A only	Inspect Replace Repair		0.2 3.0 4.0				134,182 134,182 134,182,183,186	
0502	Support Assy, Right Engine Shroud-Model AVDS 1790-2A only	Inspect Replace Repair		0.2 3.0 4.0				134,182 134,182 134,182,183,186	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required TA141091

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *				(5) Tools and equipment	(6) Remarks
0502	Shroud Assy, Engine	Inspect	0.3				134,182	
		Replace	1.0				134,182	
		Repair	2.5				134,182,183,186	
0502	Cover Assy, Engine Access- Left	Inspect	0.1				134,182	
		Replace	0.4				134,182	
		Repair	0.8				134,182,183,186	
0502	Cover Assy, Engine Access- Right	Inspect	0.1				134,182	
		Replace	0.4				134,182	
		Repair	0.8				134,182,183,186	
0502	Shroud Assy, Engine Cooling Fan	Inspect	0.2				134,182	
		Replace	3.0				134,182	
		Repair		4.0			134,182,187,190	
0502	Shroud Plate Assy, Engine Left Bank Damper End	Inspect	0.3				134,182	
		Replace	4.0				134,182	
		Repair		4.5			134,182,187,190	
0502	Shroud Plate Assy, Turbo- supercharger Left Bank Inner	Inspect	0.3				134,182	
		Replace	4.0				134,182	
		Repair		4.5			134,182,187,190	
0502	Shroud Plate Assy, Turbo- supercharger Right Bank Inner	Inspect	0.3				134,182	
		Replace	4.0				134,182	
		Repair		4.5			134,182,187,190	
0502	Shroud, Cooling Left Bank Lower	Inspect	0.3				134,182	
		Replace	4.0				134,182	
		Repair		4.5			134,182,187,190	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141090

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0505	Fan Tower Assy, Engine Cooling	Inspect Test Repair		0.3 0.3 4.5		5.0	5.0	134,182 42,134,182 29,40,42,47,64, 134,182,186,193, 197	
0505	Housing Assy, Mech. Drive Cooling Fan Base Forward	Inspect Test Replace  Repair		0.3 0.5			4.0  6.0	134,182 42,134,182 29,40,42,47,134, 182,193,197 29,40,42,47,134, 182,193,197	
0505	Clutch Assy, Friction Fan Drive	Inspect Replace Repair		2.0		4.0 6.0		134,182,193 64,134,182,197 64,134,193,197	
0505	Retainer and Oil Seal Assy, Fan Drive	Inspect Replace Repair		2.0 3.0 4.0				134,182 29,134,182 29,42,134,182, 183,186	
0601	Generator, Engine Accessory 300 Amp (10889713)	Inspect Test  Replace  Repair Overhaul		0.3 0.3  10.0		0.0  2.0		134,182,183 134,182,183,191, 198,201 125-129,132-134, 182,183 191,198,199,201 182,191,198,199, 201	
0602	Generator Assembly (10898795)	Inspect Replace Repair				0.0 2.0 1.0		198 191,198 191,198,201	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141089

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0601	Filter, Radio Interference (8745469)	Inspect Replace Repair			0.3 0.8 0.8			198 195,198 191,198,201	
0601	End Bell, Electrical, Brush and Bearing Holder Assembly (8344709)	Replace Repair			0.5 0.6			191,198 191,198	
0601	Brush Holder Assembly (G22-44)	Replace Repair			0.2 0.3			191,198 191,198	
0601	Fan, Tube Axial (10898759)	Replace Repair			0.3 0.3			191,198 191,198	
0601	Motor, Fan (10898760)	Replace Repair			0.3 0.3			191,198 191,198	
0602	Regulator Assy, Voltage Control 300A (Carbon Pile) 2A Engine Only	Inspect Test Replace		0.1 0.3 2.0				182,183 182,183,184 182	
0602	Control Box Assy, Voltage (With Carbon Pile Reg)	Inspect Test Adjust Replace		0.1 0.3 0.5 2.0				182,183 182,183,184 182,183,184 182	

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH required  
 O-organizational D-Depot  
 F-direct support  
 TA141088

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0602	Regulator Assy, Voltage Control-300A Solid State (2A or 2D Engine) (12257823)	Inspect		0.3				182,183	
		Test		0.3	0.			182,183,191,198, 199	
		Replace		2.0				182	
		Repair		1.0				191,198,199,201	
0603	Starter Assy, Engine Electric	Inspect		0.3				134,182,183	
		Test			0.			182,183,191,198	
		Replace		10.0				52,125-134,182, 183	
		Repair			2.			191,198,199,201	
		Overhaul				*			
0603	Relay/Solenoid Assy, Starter	Replace			3.			191	
		Repair			3.			191,198	
0603	Plate, Commutator End	Replace			2.			191	
		Repair			2.			191,198	
0603	Plate, Commutator	Replace			2.			191	
		Repair			2.			191,198	
0603	Holder Assembly, Electrical	Replace			2.			191	
		Repair			2.			191,198	
0603	Housing, Engine Drive Starter	Replace			3.			191	
		Repair			3.			191,198	
0603	Housing Assy, Lever Starter	Replace			3.			191	
		Repair			3.			191,198	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141087

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0607	Connector Assy, Receptacle, Panel, Master Battery Wiring Harness (7722354)	Replace Repair		1.0 0.5				182,183 182,183	
0607	Wiring Harness, Accessories, Master Control Panel (11655749)	Inspect Test Replace Repair		0.2 0.5 1.5 2.0				182 182,183 182,183 182,183	
0607	Connector Assy, Receptacle, Panel, Access- ories Wiring Harness (7716794)	Replace Repair		1.0 0.5				182,183 182,183	
0607	Wiring Harness, Personnel Heater, Master Control Panel (10911163)	Inspect Test Replace Repair		0.2 0.5 1.0 2.0				182 182,183 182,183 182,183	
0607	Connector Assy, Receptacle, Panel, Master Control Panel (7716785)	Replace Repair		1.0 0.5				182,183 182,183	
0608	Handset Box Assy, External Phone (10940778)	Inspect Replace Repair	0. 0.	2.0 2.0				82,183 82,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141086



Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0607	Cluster (Gage Indicator Panel) Assy, Gage Instrument (10915377)	Inspect Test Replace Repair	0.3	0.3 0.3 4.0				182,183 182 182,183,186	
0607	Wiring Harness Assy, Instrument Panel (10915380)	Replace Repair		1.5 2.5				182,183 182,183	
0607	Connector Assembly, Panel, Gage Instrument Panel Wiring Harness (7722353)	Replace Repair		2.0 1.0				182,183 182,183	
0607	Light Assy, Indicator Gage Illumination Instrument Panel (8376500)	Replace Repair		1.0 1.5				182 182,183	
0607	Panel Assy, Master Control Driver's (12251968)	Inspect Test Repair	0.3	0.3 4.0				182 182,183	
0607	Lamp Assy, Personnel Heater Indicator, Master Control Panel (10883766)	Replace Repair		1.0 1.5				182 182,183	
0607	Utility Outlet Assy, Master Control Panel (10905682)	Repair		1.0				182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141085

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remark
			C	O	F	H	D		
0607	Base Assy, Indicator Bilge Pump, CBR, IR Pwr, Master Battery, Master Control Panel (10933573)	Inspect	0.3						
		Replace Repair	0.1	0.3 4.0				182 182,183	
0607	Lamp Assy, Personnel Heater Indicator, Master Control Panel (10883766)	Replace		1.0				182	
		Repair	0.5	1.5				182,183	
0607	Wiring Harness Assy, Fuel Shut-Off, Master Control Panel (10911164)	Inspect		0.1					
		Test		0.2				182,183	
		Replace		0.1				182,183	
		Repair		0.5				182,183	
0607	Wiring Harness Assy, Master Control Panel (11655748)	Inspect		0.2				182	
		Test		0.4				182,183	
		Replace		1.0				182,183	
		Repair		1.5				182,183	
0607	Connector Assy, Receptacle, Panel, MCP Wiring Harness (7971515)	Replace		1.0				182,183	
		Repair		0.5				182,183	
0607	Wiring Harness Master Battery, Master Control Panel (10911166)	Inspect		0.2				182	
		Test		0.5				182,183	
		Replace		1.0				182,183	
		Repair		2.0				182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141084

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0608	Light, Indicator Assy, Handset Warning (10915363)	Replace Repair		0.5				182	
				1.5				182,183	
0608	Box Sub Assy, Handset (10940777)	Replace Repair		1.0				182	
				2.0				182	
0608	Enclosure Assy, Bilge Pump Relay (10951759)	Replace Repair		0.5				182	
				1.5				182,183	
0608	Relay Solenoid Assy, Bilge Pump (MS24141-D1)	Replace Repair		1.0				182	
				1.5				182,183	
0608	Cable Assy, Bilge Pump Enclosure (10951757)	Test Repair		1.0				182,183	
				1.5				182,183	
0608	Power Supply Assy, IR High Voltage, Driver's (7978752)	Inspect Test Replace Repair		0.5				183	
				0.5				183	
				0.5				182	
				2.0				182,183	
0608	Power Supply Subassy, High Voltage (7355743)	Replace Repair		1.0		2.0	182	191,198	
0608	Base Lamp Holder Assy, Spare Head- lamp Stowage (8734281)	Replace Repair		0.3			182	182,183	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141083

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *		(5) Tools and equipment	(6) Remarks
0608	Plate Assy, Electric Equ. Mounting (12252036)	Inspect	0.2			
		Replace	1.1		182	
		Repair	1.5		182	
0608	Cable Assy, Magnetic Clutch Control	Inspect	.1			
		Test	.3		182,183	
		Replace	.5		182	
		Repair	1.0		182,183	
0608	Lamp Assy, Indicator, Magnetic Clutch Control	Inspect	.1			
		Test	.2		182,183	
		Replace	.3		182	
		Repair	.5		182,183	
0609	Domelight Assy, Driver's (MS51073-1)	Inspect	0.			
		Replace	0.7		182	
		Repair	0. 1.5		182,183	
0609	Headlight Assy, Left and Right (7972325)	Inspect	0.			
		Service	0.3		182	
		Adjust	0.5		182,183	
		Replace	1.5		182	
		Repair	0. 2.0		182,183	
0609	Wiring Harness, Headlight Base (7972347)	Inspect	0.1		182	
		Test	0.3		182,183	
		Replace	0.2		182,183	
		Repair	0.5		182,183	
0609	Base Assembly, Harness, Head- light Mounting (7972352)	Inspect	0.1		182	
		Replace	0.2		182,183	
		Repair	0.5		182,183	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141082

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0609	Lamp Assy, Left Taillight- Stoplight (8378785) (MS51329-1)	Inspect Service Adjust Replace Repair	0.3	0.3 0.5 1.5 2.0				182 182,183 182 182,183	
0609	Door Assy, Left Tail- light-Stop- light (7526020)	Replace Repair		0.5 0.7				182 182	
0609	Lamp Assy, Right Tail- light-Stop- light (8378786) (MS51330-1)	Inspect Service Adjust Replace Repair	0.3	0.3 0.5 1.5 2.0				182 182,183 182 182,183	
0609	Door Assy, Right Tail- light-Stop- light (7526018)	Replace Repair		0.5 0.7				182 182	
0610	Units, Sending Engine and Transmission	Inspect Test Replace		0.5 0.3 0.8				125-134,182 125-134,182,183 125-134,182	
0612	Battery, Vehicle 12V Type (MS35000-3)	Inspect Test Service Replace	0.4 0.4	0.3 1.5				183 182,183	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support  
H-general support  
D-Depot  
\*\*Indicates WT/MH required  
TA141081

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenanc function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0612	Box Assy, Battery (11590699)	Inspect Service Replace Repair		0.3 2.0  2.0		4.0		182 182,183,186 182,183	K
0613	Cable Assy, IR Periscope (11655546)	Inspect Test Replace Repair		0.1 0.3		0.3 1.0		182 182,183 191,198 191,198	
0613	Connector, Plug (11654592)	Replace Repair				0.5 0.5		191,198 191,198	
0613	Cable Assy, Rear Interphone (11599282)	Inspect Test Replace Repair		0.3 0.3 2.0 1.0		1.8		183 183 134,182,183 182,183,191, 198	
0613	Connector, Receptacle, Rear Tele- phone Box, Rear Inter- phone Cable Assy, (7524943)	Replace Repair		2.0 1.0				182,183 182,183	
0613	Connector, Plug, Front Interphone Cable, Rear Interphone Cable Assy, (8724247)	Replace Repair		2.0 1.0				182,183 182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141080

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenanc function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0613	Cable Assy, Front Inter- phone (11615534)	Inspect		0.3				183	
		Test		0.3				183	
		Replace		2.0				182,183	
		Repair		1.0				182,183	
0613	Connector, Receptacle, Driver's Inter- phone Con- nection, Front Interpone Cable Assy, (7524942)	Replace		2.0				182,183	
		Repair		1.0				182,183	
0613	Cable Assy, Front Inter- phone, Inter- mediate (11615532-1)	Inspect		0.3				183	
		Test		0.3				183	
		Replace		2.0				134,182,183	
		Repair		1.0				182,183,191, 198	
0613	Connector, Receptacle Bulkhead, Front Interphone Intermediate Cable Assy, (7524943)	Replace						182,183	
		Repair						182,183	
0613	Wiring Harness Assy, Engine Accessory (11615536) (12252020)	Inspect		0.3				182	
		Test		0.3				182,183	
		Replace				3.0		134,182,191,197	
		Repair		1.0	1.8			134,182,183,191, 197,198	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141079

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *				(5) Tools and equipment	(6) Remarks
			C	F	H	D		
0613	Connector, Plug, Engine Disconnect, Engine Accessory Wiring Harness (8724258)	Replace Repair					182,183 182,183	
0613	Lead Assy, Bulkhead to Engine Disconnect (11615530) (12252025)	Inspect Test Replace Repair		8 1			182 182,183 134,182,191,198 134,182,183,191,198	L L
0613	Connector, Plug, Engine Disconnect, Bulkhead to Engine Disconnect Lead Assy, (8724241)	Replace Repair					182,183 182,183	
0613	Cable Assy, Driver's Interphone/Slip-ring (10863702)	Inspect Test Replace Repair		1 1			182 182,183 182,191,197,198 182,183,191,198	
0613	Connector, Receptacle, Driver's Interphone Connection, Driver's Interphone Slip-ring Cable Assy, (7524943)	Replace Repair					182,183 182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required TA141078



Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0613	Connector, Plug, Ring Assy, Driver's Interphone Slipring Cable Assy, (8724248)	Replace		3.0				182,183	
		Repair		1.0				182,183	
0613	Wiring Harness Assy, Starter Feed (11615531) (11655553)	Inspect		2.0				134,182	
		Test		0.3				134,182,183	
		Replace				8.0		134,182,197	
		Repair		1.0	3.0			134,182,183,191, 198	
0613	Connector, Plug, Engine Disconnect, Starter Feed Wiring Harness (8724404)	Replace		2.0				182,183	
		Repair		1.0				182,183	
0613	Wiring Harness Assy, Rear Accessory (11615537)	Inspect		2.0				182	
		Test		0.3				182,183	
		Replace				8.0		182,191,198	
		Repair		0.5	2.0			182,183,191,198	
0613	Wiring Harness Assy, Heater Control (10911265)	Inspect		0.2				182	
		Test		0.3				182,183	
		Replace				8.0		182,191,198	
		Repair		2.0	2.0			182,183,191,197	
0613	Connector, Plug Heater Assy, Heater Control Wiring Harness (8724245)	Replace		2.0				182,183	
		Repair		1.0				182,183	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141077

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0613	Wiring Harness Assy, Hull Power (11676285)	Inspect Test Replace Repair		0.3 0.3 1.0	8.1 3.			182 182,183 182,191,198 182,183,191,198	
0613	Connector, Plug, Bulk- head, Hull Power Wiring Harness (8724240)	Replace Repair		0.5 0.4				182,183 182,183	
0613	Connector, Plug, Master Relay, Hull Power Wiring Harness (8724242)	Replace Repair		0.5 0.4				182,183 182,183	
0613	Connector, Plug, Voltage Regulator, Hull Power Wiring Harness (8724406)	Replace Repair		0.5 0.4				182,183 182,183	
0613	Wiring Harness Assy, Battery/ Slave Charging (12252021) (10924461)	Inspect Test Replace Repair		0.2 0.3 8.0 1.5				182 182,183 182,183 182,183	
0613	Connector, Plug Master Relay, Battery/ Slave Charging Wiring Harness (8724242)	Replace Repair		0.5 0.4				182,183 182,183	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141076

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0613	Connector, Plug, Bulk- head Discon- nect, Battery/ Slave Charging Wiring Harness (8395480)	Replace		0.5				182,183	
		Repair		0.4				182,183	
0613	Wiring Harness Assy, Hull Front Master (12252046) (12252170)	Inspect		0.3				182	
		Test		0.3				182,183	
		Replace				8.0		182,191,198	
		Repair		2.0		4.0		182,183,191,198	
0613	Connector, Plug, Master Relay, Hull Front Master Wiring Harness (8724199)	Replace		0.3				182,183	
		Repair		0.3				182,183	
0613	Connector, Plug, Fire Extinguisher Relay, Hull Front Master Wiring Harness (8724231)	Replace		1.0				182,183	
		Repair		0.5				182,183	
0613	Connector, Plug, Air Cleaner Blower Motor Relay, Hull Front Master Harness (8724238)	Replace		1.0				182,183	
		Repair		0.5				182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required TA141075

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *				(5) Tools and equipment	(6) Remarks
			C	O		D		
0613	Connector, Plug, Master Control Panel, Hull Front Master Harness (8724243)	Replace Repair		2.0			182,183	
				1.0			182,183	
0613	Connector, Plug, Foot Dimmer Switch, Gage Instru- ment Panel, Hull Front Master Harness (8724244)	Replace Repair		2.0			182,183	
				1.0			182,183	
0613	Connector, Plug, Master Control Panel, Hull Front Master Harness (8724257)	Replace Repair		2.0			182,183	
				1.0			182,183	
0613	Connector, Plug, Light Switch, Hull Front Master (8724258)	Replace Repair		2.0			182,183	
				1.0			182,183	
0613	Connector, Plug, Voltage Regulator, Hull Front Master Harness (8724405)	Replace Repair		1.0			182,183	
				0.5			182,183	
0613	Wiring Harness Assy, Engine Electrical (11682726) (10916035)	Inspect Test Replace Repair		2.0			182,183	
				0.3			182,183	
				8.0			134,182,183	
				3.0			134,182,183	

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH  
O-organizational D-Depot required  
F-direct support TA141074

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0613	Connector, Plug, Engine Electrical Wiring Harness (8724240)	Replace		1.0				182,183	
		Repair		1.5				182,183	
0613	Connector, Plug, Engine Electrical Wiring Harness (8724199)	Replace		1.0				182,183	
		Repair		1.5				182,183	
0613	Connector, Receptacle, Engine Electrical Wiring Harness (7716793)	Replace		2.5				182,183	
		Repair		3.0				182,183	
0613	Connector, Receptacle, Engine Electrical Wiring Harness (7722353)	Replace		1.0				182,183	
		Repair		1.5				182,183	
0613	Lead Assy, Generator-to-Engine Disconnect (11682723) (10863732)	Inspect		2.0				182,183	
		Test		1.0				182,183	
		Replace		3.0				134,182,183	
		Repair		2.0				134,182,183	
0613	Connector, Receptacle, Engine Disconnect, Generator Lead Assy, (7716781)	Replace		1.0				182,183	
		Repair		1.0				182,183	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH required  
TA141073

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenanc function	(4) Maintenance Category :					(5) Tools and equipment	(6) Remarks
			<u>C</u>	<u>O</u>	<u>F</u>	<u>H</u>	<u>D</u>		
0613	Wiring Harness, Starter Ground, Powerplant (10887564) (11655454)	Inspect Test Replace Repair		2.0 1.0 8.0 2.0				182,183 182,183 134,182,183 134,182,183	
0613	Connector, Receptacle, Engine Dis- connect, Starter Ground Wiring Harness (7971717)	Replace Repair		1.0 1.0				182,183 182,183	
0613	Wiring Harness Assy, Starter Motor (11655450)	Inspect Test Replace Repair		1.0 0.3 8.0 2.5				134,182 134,182,183 134,182 134,182,183	
0613	Connector, Receptacle, Starter Motor Wiring Harness (7388353)	Replace Repair		1.0 1.5				182,183 182,183	
0613	Wiring Harness Assy, Trans- mission (11655457)	Inspect Test Replace Repair		1.0 0.3 8.0 2.5				134,182 134,182,183 134,182 134,182,183	
0613	Connector, Plug, Trans- mission Dis- connect, Trans- mission Wiring Harness Assy, (1603019)	Replace Repair		1.0 1.5				182,183 182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141072

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maint enanc function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0613	Cable Assy, Starter Relay (11615533)	Inspect Test Replace Repair		1.0 0.3 8.0 2.5				182 182,183 134,182,183 134,182,183	
0613	Connector, Plug, Starter Relay Wiring Harness Assy, (8395480)	Replace Repair		1.0 1.5				182,183 182,183	
0613	Lead Assy, Generator Blower (11682724)	Inspect Test Replace Repair		2.0 1.0 8.0 2.0				182,183 182,183 134,182,183 134,182,183	
0613	Connector, Plug, Blower Lead Assy, (8724233)	Replace Repair		1.0 1.0				182,183 182,183	
0613	Cable Assy, Starter Ground (10887570)	Inspect Test Replace Repair		1.0 0.5 1.5 1.5				182,183 182,183 182,183 182,183	
0613	Cable Assy, Starter Feed, Powerplant, (10887593)	Inspect Test Replace Repair		2.0 0.5 8.0 2.5				182 182,183 134,182,183 134,182,183	
0613	Connector, Receptacle, Powerplant Starter Feed Cable Assy, (7388353)	Replace Repair		1.0 1.0				182,183 182,183	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141071

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0615	Capacitor and Housing Assy, Fuel Tank Radio Interference Suppression (7061046)	Replace Repair		2.5 3.0				134,182,183 134,182,183	
0615	Connector Assy, Capacitor (7018245)	Replace Repair		2.5 3.0				134,182,183 134,182,183	
0615	Cable and Adapter Assy, Fuel Tank Pump Power, Left (7061058)	Replace Repair		2.5 3.0				134,182,183 134,182,183	
0615	Cable and Adapter Assy, Fuel Tank Pump Power, Right (7061058-1)	Replace Repair		2.5 3.0				182,183 182,183	
0705	Controls and Linkage, Gear Shifting	Inspect Service Adjust Repair		0.3 0.5 1.5 3.0	8.			182 182,183 182,183 134,182,183,197	
0705	Seal Assy, Engine Compartment Link Assy, Shield	Replace Repair		2.5 3.0				134,182 134,182,183	
0705	Bell Crank Assy, Intermediate Shifting Control	Replace Repair		2.5	8.			182 182,197	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141070



Section II. MAINTENANCE ALLOCATION CHART - Continued

Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0705	Rod Assy, Rear Engine Compartment	Repair			3			134,182,197	
0705	Link Assy, Shift Link Rod to Inter- mediate Rod	Replace Repair		2.5				182	
				3.0				182	
0705	Connecting Link, Bhd to Rear Rod	Replace Repair			8			182	
						8.		182	
0705	Rod End Assy, Bhd Shifting Control	Replace Repair		8.0				182	
					8.0			182	
0705	Bracket Assy, Shift and Shift Link Assy.	Replace Repair		2.5				182	
					3.0			182	
0705	Bracket Assy, Xmsn Control Rod	Replace Repair		2.5				182	
					3.0			182,186,187	
0705	Connecting Link, Shift- ing Control Engine Com- partment Rear Control Rod to Riser Rod	Replace Repair		2.5				134,182	
					3.0			134,182,186,187	
0705	Bracket Assy, Engine Com- partment Link Mts	Replace Repair		2.5				134,182	
					3.0			134,182,186,187	
0705	Pivot Assy, Shifting Con- trol Hand Lever	Replace Repair		1.0				182	
					1.5			134,186,187	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141069

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0705	Base Assy, Hand Lever Pivot	Replace Repair		1. 2.				182 182,186,187	
0705	Shield Assy, Engine Com- partment Rear Control Rod	Replace Repair			8. 8.			134,182 134,182	
0708	Housing Assembly, Converter	Replace Repair				8. 8.		85,89,91,182, 189 85,89,91,182, 197	
0708	Stator Assembly, Con- vertor, First and Second Stages	Replace Repair				3. 3.		89,182,189 89,182,189	
0708	Stator Assembly, Second	Replace Repair				3. 3.		89,182,189 89,182,189	
0708	Stator Assembly, First	Replace Repair				3. 3.		39,182,189 39,182,189	
0708	Cover Assembly, Converter Tur- bine	Replace Repair				3. 3.		39,91,182,189 39,91,182,189	

\*The subcolumns are as follows:

C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required

TA141068

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenanc function	(4) Maintenance Category <sup>1</sup>					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0710	Transmission Assy, CD850-6A	Inspect			0.3			83	
		Test			0.3			69,182,197	
		Adjust			3.5			83,86,182,197	
	Repair	Replace			20.0			63,72,83,86,182, 197	
		Repair			50.0	70.0		62,63,66,67,69- 73,76-79,82,83, 86,87,90,182,189, 193,197	
		Overhaul					4.0	61-91,182,189	
	Housing Assembly, Front and Rear, Stud- ding	Replace				10.0		62,66,67,70-73, 82-86,182,189	
Repair					10.0		62,66,67,70-73, 82-86,182,189		
0710	Housing Assembly, Front and Rear, Machined	Replace				10.0		62,66,67,70-73, 82-86,182,189	
		Repair				10.0		62,66,67,70-73, 82-86,182,189	
0710	Housing Assembly, Transmission Front Sub- assembly Stud- ding	Replace				10.0		62,66,67,70-73, 82-86,182,189	
		Repair				1.0		182,189	
0710	Screen Assembly, Center Oil	Replace				1.0		182,189	
		Repair				1.0		182,189	
0710	Unit Assembly, Input Gear, Converter and Steering	Replace				11.0		61-68,70-74,82-85, 88-90,182,189	
		Repair				18.0		61-68,70-74,82-85, 88-90,182,189	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required TA141067

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0710	Plate Assembly, Reaction	Replace				2.		61,68,74,84,85, 88,182,189	
		Repair				2.		61,68,74,84,85, 88,182,189	
0710	Bushing Assembly	Replace				2.		61,68,74,84,85, 88,182,189	
		Repair				2.		61,68,74,84,85, 88,182,189	
0710	Gear Set, Bevel, Matched Input Gear	Replace				1.		85,182,189	
		Repair				1.		85,182,189	
0710	Gear Assembly, Input Drive Level	Replace				1.		85,182,189	
		Repair				1.		85,182,189	
0710	Bearing, Roller, Tapered	Replace				1.		85,182,189	
		Repair				1.		85,182,189	
0710	Carrier Assembly, Bevel Gear (7710933)	Replace				1.		85,182,189	
		Repair				1.		85,182,189	
0710	Carrier Assembly, Bevel Gear (8355736)	Replace				1.		85,182,189	
		Repair				1.		85,182,189	
0710	Carrier Assembly, Bevel Gear (7710934)	Replace				1.		85,182,189	
		Repair				1.		85,182,189	
0710	Hub Assembly, Steering Clutch Rearing	Replace				1.		85,182,189	
		Repair				1.		85,182,189	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required TA141066

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0710	Carrier Assembly, Steering Dif- ferential Planetary	Replace Repair				1.		85,182,189	
						1.		85,182,189	
0710	Pinion Assembly, Differential	Replace Repair				1.		85,182,189	
						1.		85,182,189	
0710	Gear Assembly, Reverse Sun	Replace Repair				1.		85,182,189	
						1.		85,182,189	
0710	Carrier Assembly, Reverse Plane- tary (7767597)	Replace Repair				1.		85,182,189	
						1.		85,182,189	
0710	Carrier, Reverse	Replace Repair				1.		85,182,189	
						1.		85,182,189	
0710	Hub Assembly, Reverse and Output Ring Gear	Replace Repair				1.		85,182,189	
						1.		85,182,189	
0710	Shaft Assembly, Main Cross- drive	Replace Repair				0.		182	
						1.		70,75,182,189	
0710	End Cover Assembly, Right and Left	Inspect Replace Repair			2.			62,82,83,182, 197	
					4.			62,82,83,182, 197	
					4.	8.		62,71,77,79, 80,82,83,85, 87,182,189, 197	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141065

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0710	Carrier Assembly, Output Planetary (7709550)	Replace Repair			3.0	4.		67,182,189 67,182,189	
0710	Carrier, Output Planetary (7709695)	Replace Repair				2. 3.		67,182,189 67,182,189	
0710	Piston Assembly	Replace Repair			2.0 2.0			67,182,189 67,182,189	
0710	Cover Assembly, Left or Right	Replace Repair			4.0 4.0	8.		62,82,83,182, 197 62,71,77,79,80, 82,83,85,87,182, 189,197	
0710	Bracket Assembly, Cam Return	Replace Repair			1.0 1.0			62,82,182,197 62,82,182,197	
0710	Linkage Assembly Kit, Brake Cooling Valve	Replace Repair			1.0 1.0			62,82,182,197 62,82,182,197	
0710	Valve Assembly, Brake Cooling Oil	Replace Repair			1.0 1.0			62,82,182,197 62,82,182,197	
0710	Seat Assembly, Return Spring	Replace Repair			0.5 0.5			182 182	
0710	Bracket Assembly, Brake Apply	Replace Repair			0.5 0.5			182,197 182,197	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141064

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0710	Lever Assembly, Brake Apply	Replace			0.5			182,197	
		Repair			0.5			182,197	
0710	Bracket Assembly, Brake Shaft	Replace			0.5			182,197	
		Repair			0.5			182,197	
0710	Bolt Assembly, Brake Adjust- ment	Replace			0.5			182,197	
		Repair			0.5			182,197	
0710	Carrier Assembly, Low Range Planetary (7767647)	Replace				3.		62,66,67,70-73, 82-86,182,189	
		Repair				4.		62,66,67,70-73, 82-86,182,189	
0710	Carrier Assembly, Low Range Planetary (7767643)	Replace				2.		62,66,67,70-73, 82-86,182,189	
		Repair				3.		62,66,67,70-73, 82-86,182,189	
0710	Gear Assembly, Low Range Ring	Replace				2.		62,66,67,70-73, 82-86,182,189	
		Repair				2.		62,66,67,70-73, 82-86,182,189	
0710	Piston Assembly, High Range Clutch	Replace				11.		61-68,74,84,85, 88,182,189	
		Repair				13.		61-68,74,84,85, 88,182,189	
0710	Drum Assembly, Low Range	Replace				2.		64,66,67,70-73, 82-86,182,189	
		Repair				2.		64,66,67,70-73, 82-86,182,189	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required TA141063

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0713	Housing Assembly, Steering Clutch	Replace				11.		61-68,74,84,85, 88,182,189	
		Repair				13.		61-68,74,84,85, 88,182,189	
0713	Cover Assembly, Steering Clutch Housing	Replace				11.		61-68,74,84,85, 88,182,189	
		Repair				13.		61-68,74,84,85, 88,182,189	
0713	Hub Assembly, Steering Clutch	Replace				11.		61-68,74,84,85, 88,182,189	
		Repair				12.		61-68,74,84,85, 88,182,189	
0714	Band Assembly, Reverse	Replace					3.	62,66,67,70-73, 82-86,182,189	
		Repair					3.	62,66,67,70-73, 82-86,182,189	
0714	Band Assembly, Low Range	Replace					3.	62,66,67,70-73, 82-86,182,189	
		Repair					3.	62,66,67,70-73, 82-86,182,189	
0714	Valve Assembly, Control (8355809)	Replace			2.			76,182,197	
		Repair				3.		76,182,189	
0714	Body Assembly, Control Valve (7708258)	Replace					2.	76,182,189	
		Repair					3.	76,182,189	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141062



Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0721	Pump Assembly, Input Oil	Replace				10.0		62,66,67,70-73, 82-86,182,189	
		Repair				2.0			
0721	Base Assembly	Replace				2.0		182,189	
		Repair				2.0		182,189	
0721	Strainer Assembly, Side Oil	Inspect		0.3				134,182	
		Service		1.0				134,182	
		Replace		1.0				134,182	
		Repair			1.			134,182,187,190	
0721	Filler Assembly, Top Oil Filler	Inspect		.3				182	
		Replace			1.			134,182,187	
		Repair			1.			134,182,187	
0721	Body Assembly, Top Oil Filler	Inspect		0.3				182	
		Replace			1.			134,182,187	
		Repair			1.			134,182,187	
0721	Pump Assembly, Output Oil	Replace				10.0		62,66,67,70-73, 82-86,182,189	
		Repair				2.0			
0721	Filler, Side Oil	Inspect		0.3				182	
		Replace		2.5				134,182,183	
		Repair			2.			134,182,197	
0721	Indicator Assembly, Oil Level	Inspect		0.1				182	
		Replace		0.1				182	
		Repair		0.2				182	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141061

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenanc function	(4) Maintenance Category					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0721	Tube Assembly, Oil Filter Vent	Replace			0.			182,197	
		Repair			0.			182,197	
0721	Fluid Cooler Assy, Trans- mission	Inspect	0.	0.3				134,182	
		Service		0.5				130,134,182	
		Replace		12.0				134,182,183	
		Repair				3.		182,187	
0721	Filter Assy, Main Oil	Inspect		0.3				134,182	
		Service		1.0				134,182	
		Replace		1.0				134,182	
		Repair			1.0			134,182,197	
0721	Thermostat, Flow Control: Transmission	Inspect		0.3				134,182	
		Test		1.0				182,183	
		Replace		0.5				134,182	
0801	Drive Assy, Final	Inspect		0.3				182	
		Service		0.5				182	
		Replace		1.0				96,101,103,113, 134,182,183	
		Repair		5.0	2.0			96,101,103,113, 115,117,118,134, 182,183	A
		Overhaul					*	96,101,103,113, 115,117,118,182, 189	
0801	Shaft Assy, Final Drive Output	Replace			3.0			113,115,117,182 197	
		Repair			4.0			115,117,182,197	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required

TA253541

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
0801	Case and Carrier Assy, Final Drive	Replace			13.0			113,115,117,182, 197	
		Repair			14.0			113,115,117,182, 197	
0900	Joint, Universal Final Drive	Inspect		0.3				182	
		Service		0.5				182,183	
		Replace		1.5				134,182,183	
		Repair		0.5				134,182,183	
1204	Lever, Brake Pedal: Linkage Guide (Hydraulic Brake)	Inspect		0.3				182	
		Service		0.5				182,183	
		Adjust		0.5				182	
		Repair		1.0				182,183	
1204	Lever, Brake Pedal: Linkage Cam (Hydraulic Brake)	Inspect		0.3				182	
		Service		0.5				182,183	
		Adjust		0.5				182	
		Repair		1.0				182,183	
1204	Cylinder Assy, Master Brake (Hydraulic Brake)	Inspect		0.3				182	
		Service		0.5				182,183	
		Replace		2.0				182	
		Repair			0.5			182,183	
1204	Cylinder Assy, (Hydraulic Brake) Slave Tube	Inspect		0.3				182	
		Replace		9.5				134,182,183	
		Repair			1.5			182,193,197	
1206	Housing Assy, Engine Compartment Brake Lever, Left	Inspect		2.0				134,182	
		Replace		2.5				134,182	
		Repair		3.0				134,182,183	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH required  
TA141059

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1206	Housing Assy, Engine Com- partment Brake Lever, Right	Inspect		2.0				134,182	
		Replace		2.5				134,182	
		Repair		3.0				134,182,183	
1206	Lever Assy, Parking Brake Lock, Left	Inspect		0.3				134,182	
		Replace		1.0				134,182,183	
		Repair				9.		134,182,193,197	
1206	Lever Assy, Parking Brake Lock, Right	Inspect		0.3				134,182	
		Replace		1.0				134,182,183	
		Repair				9.		134,182,193,197	
1206	Catch Assy, Parking Brake Locking Link- age	Inspect		0.2				134,182	
		Replace		1.0				134,182	
		Repair		1.5				134,182,183	
1206	Bell Crank Brake Control	Inspect		0.2				182	
		Replace		1.0				182	
		Repair		1.5				182,183	
1301	Roadwheel (Disc) Assembly, (Compensating Idler) Left and Right	Inspect	0.						
		Replace		1.5				100,182	
		Overhaul					*		M
1301	Hub and Arm Assembly No. 1 Left and Right Roadwheel	Inspect	0.						
		Service		0.5				182,183	
		Adjust		0.5				95,98-100,102, 182,183	
		Repair		3.0				94,95,98-100, 102,105,107,110, 116,120,182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA253229

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category <sup>1</sup>					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1301	Army Assy, No. 1 Left and Right Road- wheel	Inspect Service Replace	0.	0.3 0.5 5.0				182,183 94,95,98-100, 102,110,116,120, 182,183	
		Repair		3.0	5.			94,95,98-100, 102,110,116,120, 182,183,197	A
1301	Seal Assy, Hub and Arm	Replace		4.0				100,121,182,187	
		Repair			4.5			100,121,182,187	
1301	Hub Assy, Hub and Arm Assy.	Replace		4.0				100,121,182,183	
		Repair			2.0	2.		99,100,105,106, 121,182,183,195, 197	A
1301	Hub and Arm Assembly, No. 2 Left and Right, Road- wheel	Inspect Service Adjust	0.	0.5 0.5				182,183 95,98-100,116, 182,183	
		Repair			3.0			94,95,98-100, 102,105,107,110, 116,120,182,183,	A
1301	Arm Assy, No. 2 Left and Right Road- wheel	Inspect Service Replace	0.	0.3 0.5 5.0				182,183 94,95,98-100, 102,110,116,120, 182,183	
		Repair			3.0	5.		94,95,98-100, 102,110,116,120, 182,183,197	A

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required

TA141057

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1301	Hub and Arm Assembly, No's 3, 4, and 5. Left and Right Roadwheel	Inspect Service Adjust Repair	0.	0.5 0.5 3.0				182,183 95,98-100,116, 182,183 94,95,98-100, 102,105,107,110, 116,120,182,183	
1301	Arm Assy, No's 3, 4, and 5. Left and Right Roadwheel	Inspect Service Replace Repair	0.	0.3 0.5 3.0 3.0	5.5			182,183 94,95,98-100,102, 110,116,120,182, 183 94,95,98-100,102, 110,116,120,182, 183,197	A
1301	Hub and Arm Assy, No. 6 Left and Right Roadwheel	Inspect Service Adjust Repair	0.	0.5 0.5 3.0				182,183 95,98-100,116, 182,183 94,95,98-100,102 105,107,110,116, 120,182,183	
1301	Arm Assy, No. 6 Left and Right Roadwheel	Inspect Service Replace Repair		0.2 0.5 3.0 3.0	5.5			182,183 94,95,98-100,102, 110,116,120,182, 183 94,95,98-100,102, 110,116,120,182, 183,197	A

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support  
H-general support  
D-Depot  
\*\*Indicates WT/MH required  
TA141021

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1301	Cover Assy, Left and Right Torsion Bar No. 1 thru 6 Roadwheels	Inspect Replace Repair	0.0 5.0 6.0					182 182,183	
1301	Housing Assy, Roadwheel - No. 2 thru 6 Left and Right	Inspect Replace  Repair	0.0 0.5 5.0  5.0					94,95,98,100,102, 109,120,121,182, 183 94,95,98,100,102, 109,120,121,182, 183	
1301	Housing Assy, Roadwheel No. 1 Torsion Left and Right	Inspect Replace  Repair	0.0 0.5 5.0  5.0					94,95,98,100,102, 109,120,121,182, 183 94,95,98,100,102, 109,120,121,182, 183	
1302	Roller Assembly, Track Support Roller No. 1 Left	Inspect Service Adjust Replace Repair	0.0 0.2 1.0 3.0 2.5					182,183 121,182,183 111,121,182,183 99,105,107,111, 121,182,183	
1302	Wheel and Hub Assy, Track Support Roller	Inspect Replace Repair  Overhaul	0.0 4.0 2.5  					111,121,182,183 99,105,107,111, 121,182,183	M

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support  
H-general support  
D-Depot  
\*\*Indicates WT/MH  
required  
TA141022

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category :					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1302	Axle Assembly (Spindle) Track Support Roller No. 1 Left	Inspect Replace Repair		0.5 0.5	2.			111,121,182,183 111,121,182,183	
1302	Hub Assy, Track Support Roller	Inspect Replace Repair		0.1 4.0 2.5	2.			111,121,182,183 99,105,107,111, 121,182,183,195, 197	A
1302	Roller Assy. Track Support: Left No. 2 and No. 3, Right No. 1 thru No. 3	Inspect Service Adjust Replace Repair	0.	0.2 1.0 3.0 2.5				182,183 121,182,183 111,121,182,183 99,105,107,111, 121,182,183	
1302	Axle Assy, (Spindle) No. 2 and 3 Left - No. 1 thru 3 Right	Inspect Replace Repair		0.3 4.5	5.			111,121,182,183 111,121,182,183	
1303	Hub and Arm Assy, Compensating Idler Left and Right	Inspect Service Adjust Repair	0.	0.3 0.5 2.5				182,183 121,182,183 94,99,102,104- 106,108,116, 121,182,183	
1303	Arm Assy., Compensating Idler	Inspect Service Adjust  Repair	0.	0.1 0.5  2.5	2.		*	182,183 94,99,102,104- 106,108,116,121, 182,183 94,99,102,104- 106,108,116,121, 182,183,197	M   A

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141101



Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1303	Seal Assy, Compensating Idler	Inspect	0.3					182,183 99,105,106,121, 182,183 99,105,106,121, 182,183	
		Service Replace		0.3					
		Replace		2.5					
1303	Hub Assy, Compensating Idler	Inspect	0.3					182,183 99,105,106,121, 182,183 99,105,106,121, 182,183,197	A
		Service Replace		2.0					
		Replace		2.0	2.5				
1303	Link Assy, Track Adjust- ing (All Vehicles)	Inspect	0.3					182,183 94,99,102,104- 106,108,121,182 94,99,102,104- 106,108,121,182	
		Service Replace	1.0	1.5					
		Replace		2.0					
1304	Sprocket, Drive	Inspect	0.1	0.3				124 103,113,124,182, 183	N
		Replace		3.5					
1305	Track Assembly, Complete Left and Right Type T97 and T142	Inspect	0.4					97,182,183 97,182,183	
		Adjust	0.5						
		Replace	4.0	4.0					
		Repair Overhaul	0.4	2.5			*		
1305	Track Shoe Assy, Link Section Type T97 and T142	Inspect	0.1					97,182,183 97,182,183	
		Replace		1.0					
		Repair		1.0					

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141023

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category					(5) Tools and equipment	(6) m
			C	O	F	H	D		
1305	Track Shoe, Vehicular T142 Only	Inspect Replace Repair	0. 0. 0.	0.5 0.5				97,182,183 97,182,183	
1401	Controls and Linkages, Steering	Inspect Service Adjust Repair		0.5 1.0 1.0 2.0	10.0			182,183 134,182,183 134,182,183,197	A
1401	Shaft Assy, Intermediate Rod to Engine Compartment Front Rod	Inspect Repair			0.5 1.0			134,182 134,182,197	
1401	Sleeve Assy, Steering Con- trol Bhd	Inspect Replace Repair			0.5 0.5 1.0			134,182 134,182,197 134,182,197	
1401	Link Assy, Steering Con- trol Inter- mediate	Replace Repair			1.0 1.5			134,182,197 134,182,197	
1401	Link Assy, Steering Con- trol Engine Compartment Riser to Xmsn Conn. Link	Service Replace Repair		0.5 4.0 4.5				182,183 134,182,183 134,182,183	
1401	Connecting Link Assy, Engine Com- partment Rod to Riser Rod	Replace Repair		1.0 1.5				134,182,183 134,182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141024

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1401	Mount Assy, Steering Control Sleeve	Replace Repair		1.0	3.1			182,183 182,197	
1503	Pintle and Sleeve Assy.	Inspect Service Replace Repair	0.3 0.5	1.5 2.5				182,183 182,183	
1503	Pintle Assy.	Replace Repair		1.5 2.5				182,183 182,183	
1601	Spring Assy, Volute Road-wheel Arm Front and Rear, Left and Right	Inspect Replace Repair	0.1	0.1 0.3 0.3				182,183 182,183	
1604	Shock Absorber Assy, Direct Action	Inspect Replace Repair	0.1	0.2 1.5 0.5				182,183 114,182,183	
1801	Screw Assy, Rear Exh. Doors Top Deck Grille	Inspect Repair		0.1 0.5				182,183 182,183	
1801	Pump, Inflat- ing, Manual (Turret Seal)	Inspect Service Replace Repair	0.3	0.5 1.5 1.5				182,183 182,183 182,183	
1801	Seal, Inflat- ing, Hull to Turret Inflat- ing	Inspect Test Replace	0.4		0.8 20.0			182,197	O

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required  
TA141025

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenanc function	(4) Maintenance Category					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1801	Cover Assy, Fuel Filler, Hull	Replace Repair		0. 1.0				182 182,183	
1801	Cover Assy, Engine Access Upper	Replace Repair		0. 0.8				182 182,183	
1801	Cover Assy, Engine Access Lower	Replace Repair		0. 0.8				182 182,183	
1801	Retainer, Fuel Tank Cap	Replace Repair		0. 1.0				182 182,183	
1802	Fenders, Bracket, and Outriggers	Inspect Replace Repair	0	2.5 3.0				182,183 182,183	
1803	Cover (Door) Assy, Driver's M27 Periscope	Inspect Service Replace Repair	0 0	0.5 2.0 1.5				182,183 182,183	
1803	Cover Assy, Driver's Hatch	inspect Service Adjust Replace Repair	0 0	0.5 * 2.0 1.5				183 123,182,183 123,182,183 123,182,183	
1803	Latch Assy, Driver's Hatch Cover	inspect Repair	0	0.2 1.0				182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required

TA141026

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1803	Lid Assy, Driver's IR Periscope Mount	Inspect Replace Repair	0.	0.5 1.0				182,183 182,183	
1803	Cover (Door) Assy, Driver's Escape Hatch	Inspect Service Adjust Replace Repair	0. 0.	0.5 * 2.0 1.5				183 182 182 182,183	
1804	Drain Valve and Linkage Assy, (Front, Driver's Com- partment)	Inspect Service Adjust Repair	0.	0.8 0.5 2.0				183 182 182,183	
1804	Drain Valve and Linkage Assy, (Rear, Engine Com- partment)	Inspect Service Adjust Repair	0.	0.3 0.8 0.5 2.0	20.			134,182,183 134,182 134,182,183,197	P
1806	Seat Assy, Driver's	Inspect Service Repair	0. 0.	3.0				182,183	
1806	Back Assy, Driver's Seat	Replace Repair		0.5 1.5				182 182	
1806	Backrest Assy, Cushion, Driver's Seat	Replace Repair		1.0 1.5				182 182,183	
1806	Seat Assy, Driver's Seat	Replace Repair		0.5 1.5				182 182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141027

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1806	Adjusting Assy, Driver's Seat	Replace		1.0				182	
		Repair		2.0				182,183	
1806	Roller Assy, Driver's Seat Vert. Adj.	Replace		1.0				182,183	
		Repair		1.5				182,183	
1808	Fender Box Assemblies and Brackets	Inspect	0.						
		Service	0.						
		Replace Repair		1.0 1.5				182 182,183	
1808	Cover, Fender Box, Left Rear	Inspect	0.						
		Replace		0.5				182	
		Repair		1.0				182,183	
1808	Cover, Fender Box, Right Rear	Inspect	0.						
		Replace		0.5				182	
		Repair		1.0				182,183	
1808	Cover, Fender Stowage Box (Left and Right)	Inspect	0.						
		Replace		1.5				182	
		Repair		2.0				182,183	
1808	Latch Assy, Stowage Box, Cover Locking (Left)	Inspect	0.						
		Replace		0.3				182	
		Repair		0.5				182,183	
1808	Latch Assy, Stowage Box, Cover Locking (Right)	Inspect	0.						
		Replace		0.3				182	
		Repair		0.5				182,165	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required

TA141028

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
1808	Rack Assy, Stowage 165MM Ammunit ion	Inspect Replace Repair	0.	0.5	6.0 6.5			182,197 182,183,197	O
1808	Handle Assy, 165MM Ammun- ition Rack	Inspect Replace Repair	0.	0.5 0.5				182 182,183	
2002	Clutch Assembly Mag- netic Right Angle Drive	Adjust Replace Repair		3.0	2.0 3.0			166,167,182,189 182,183,185 166,167,182,189	
2002	Clutch Sub- assembly Mag- netic, Right Angle Drive	Replace Repair			2.0 2.0			166,167,182,189 166,167,182,189	
2002	Receptacle Assembly, Clutch Sub- assembly, Mag- netic, Right Angle Drive	Replace Repair			1.0 1.0			182,189 182,189	
2002	Housing Assembly, Power Take- off to Clutch Assembly	Inspect Replace Repair		0.5 2.0 2.5				182 182,183,185 182,183,185	
2002	Ring Assembly, Spacer Hy- draulic Pump Unit	Inspect Replace Repair		0.5 2.0	2.0			182 182,183,185 182,193,197	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\* \*Indicates WT/MH  
required  
TA253230

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category <sup>1</sup>					(5) Tools and equipment	(6) Remarks
			C	O	I	H	D		
2002	Power Take-off Assy, Right Angle Drive	Inspect Replace Repair		0.1 4.0	5			182 182,183,185 182,183,185,189	A
2002	Retainer Assembly, Power Take-off Assembly, Right Angle Drive	Inspect Replace Repair			1 1 1			182,189 182,189 182,189	
2002	Sprocket Assy, Power Take-off Bulldozer	Inspect Replace		0.1 3.0				134,182,183 134,182,183	
2006	Tilt Arm Assy, Moldboard Bulldozer	Inspect Replace		0.1 2.0				182 182,183,184	
2006	Guards and Brackets, Hydraulic System	Inspect Replace		0.2 1.0				182 182,183,185	
2006	Hoses Lines and Fittings- Bulldozer	Inspect Replace		0.3 1.0	3			182 134,182,183,185 193,197	T
2006	Rods and Levers, Control Hydraulic System Control Valve-Bulldozer	Inspect Replace		0.3 0.5				182 182,183,185	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA253231



Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
2006	Valve Assy, Winch and Bull- dozer Selector	Inspect Replace		0.2 1.0				182 182,183,185	
2006	Valve Assy, Unloader Relief Bulldozer	Replace		0.5				182,183,185	
2006	Valve Assy, Hydraulic Pump Control (Shut-of f) Bulldozer	Inspect Replace Repair		0.2 1.0	2			182 182,183,185 182,193,197	
2006	Reservoir, Oil Hydraulic System Bull- dozer	Inspect Service Replace Repair	0. 0.	0.5	4 5			182,183 182,193,197 182,193,197	Q R
2006	Filter, Oil Reservoir Bulldozer	Service			0.			182,193,197	
2006	Filters, Hydraulic Lines, Bull- dozer	Inspect Service Replace		0.1 0.5 0.7				182 182 182	
2006	Cylinder Assy, Right and Left Bulldozer	Inspect Replace Repair		0.2 3.0	4.			182 182,183,185 182,193,197	
2006	Ram Assy, Right and Left Cylinders Bulldozer	Inspect Replace Repair			2. 3. 1.			182,193,197 182,193,197 182,193,197	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH  
required

TA141031

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
2006	Clamp Assembly, Emergency Lift Retaining, Blade Assembly Bulldozer	Replace		0.5				182	
		Repair		1.0				182	
2006	Blade Assy, (Moldboard) Bulldozer	Inspect		0.3				182	
		Replace		4.0				182,183,185	
		Repair		4.0				182,183,185	
2006	Cutting Edge, Blade Assy, Bulldozer	Inspect		0.2				182	
		Replace		3.0				182,183	
2006	Cable Assy, Emergency Lift Blade Assy, Bulldozer	Inspect		0.2				182	
		Replace		1.0				182,183	
2006	Locking Hooks, Blade Assy, Bulldozer	Inspect		0.2				182	
		Replace		0.5				182,183,185	
2202	Heater Assy, Personnel (Combustion Multifuel) (11669496)	Inspect	0.						
		Test		0.5				182,183	
		Replace		2.0				182,183	
		Repair Overhaul		4.5			*	182,183 92,93,182,189	
2205	Bilge Pump Assembly	Inspect	0.	0.2					
		Test		0.3				182,183	
		Repair		0.6	2.0			182,183,193,197	

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\* \*Indicates WT/MH  
required

TA141032

(1) GROUP NO.	(2) COMPONENT/ ASSEMBLY	(3) MAINT. FUNC.	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
1205	Pumping Unit, Bilge Pump Discharge (P/N 7059833)	Inspect Test Replace Repair	0.1	0.2 0.3 0.6 1.0	2.0			182,183 182,183 182,183,193, 200	A
1305	Generator Exhaust Tube Valve Assy	Inspect Repair Replace		0.1 2.0 3.0				182,134 182,134 182,134	
1305	Generator Exhaust Tube Valve-Push- Pull Control Cable	Inspect Adjust Repair Replace	0.1	0.5 2.0 2.0				182,134 182,134 182,134 182,134	

TA253232



Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenanc function	(4) Maintenance Categ y *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
2205	Pumping Unit, Bilge Pump Discharge (P/N 7059833)	Inspect Test Replace Repair	0.	0.2 0.3 0.6 1.0	2.0			182,183 182,183 182,183,193,200	A
4701	Speedometer and Drive Components	Inspect Repair	0.	4.0				182	
4701	Shaft Assy, Flexible, Speedometer	Replace Repair		0.4 1.0				182 182	
4701	Adapter Assy, Speedometer Shaft Assy.	Replace Repair		0.6 1.0				182 182	
4701	Tachometer and Drive Components	Inspect Repair	0.	4.0				182	
4701	Adapter Assy, Tachometer Rear Flexible Shaft	Replace Repair		5.0 5.5				182 182	
4701	Shaft Assy, Tachometer Front Drive	Replace Repair		1.0 1.5				182 182	
4701	Shaft Assy, Tachometer Rear	Repair		5.5				182	
4701	Shaft Assy, Flexible, Tachometer Rear	Replace Repair		5.0 5.5				182 182	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141033

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
7639	Cylinder Assy, First and Second Shot Fixed Fire Extinguisher	Inspect Test Service Replace Repair	0.	1.5 3.0	3.0		*	182 182,197 171-181,182,183	S
7639	Body Assy, Outside Re- lease Handle Fixed Fire Extinguisher	Inspect Test Adjust Replace Repair	0.	1.5 1.5 0.5 0.8				182 182 182,183 182,183	
7639	Control Assy, Exterior Re- lease Mecha- nism Fixed Fire Extinguisher	Inspect Test Adjust Replace Repair	0.	* * 3.0 3.0				182 182 182,183 182,183	
7639	Release Mech- anism Assy, Inside Control - Fixed Fire Extinguisher	Inspect Test Adjust Replace Repair	0.	1.5 1.5 4.5 5.0				182 182 182,183 182,183	
7639	Valve Assy, Control Fixed Fire Extin- guisher	Inspect Replace Repair		0.1 0.5 1.0				182 171-183 171-183	
9111	Filter (Puri- fier) Assy, Gas Particu- late Tank - M2A2, M13, M13A1	Inspect Test Replace Repair Overhaul	0.	0.1 0.5	0.1 0.5			182,183,197 182 182,197	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141034

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group Number	(2) Component/ Assembly	(3) Maintenance function	(4) Maintenance Category *					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
9111	Connector Orifice Assy, Driver's Gas Particulate Heater Out- let Hose	Replace Repair		1.0				182	
				1.0				182	
9111	Valve Assy, Outlet Con- nector Orifice	Replace Repair		0.5				182	
				0.5				182	
9111	Hose Assy, Driver's Heater Outlet (Gas Particulate)	Inspect Repair	0.	0.5				182	
9111	Heater Assy, M3	Inspect	0.					182	
		Replace	0.	0.2				182	A
		Repair Overhaul	0.	0.1		0.	*	182,183	
9111	Precleaner and Particu- late Filter Assy.	Inspect	0.						
		Test	0.	0.1	0.2			182,183,197	
		Adjust		0.1	0.1			182,183,197	
		Replace		0.3				182	
		Repair Overhaul			0.5			182,197	
9111	Lead Assy, Electrical, Precleaner Motor Ground	Inspect	0.						
		Replace		0.5				182,183	
		Repair		0.5				182,183	

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141035

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
1	F,H,D	CHASSIS TOOLS, Engine Adapter: (used w/compression checking gage 4910-00-870- 6283 to engine)	4910-00-795-796	743025
2	H,D	Adapter, Mechanical Puller: Crankshaft Main Bearing: (used w/puller 5120-00-310- 4668 and spreader 5120-00- 575-7767) and Accessory Drive Second Idler Gear Spindle: (used w/5120-00- 473-7372 puller)	5120-00-837-509	375091
3	F,H,D	Blade, Thickness Gage: Valve Tappet Adjusting (.010 gap)	5210-00-793-789	0882615
4	F,H,D	Blade, Thickness Gage: Valve Tappet Adjusting (.025 gap)	5210-00-793-789	0882616
5	F,H,D	Blade, Thickness Gage: Valve Tappet Adjusting (.100 gap)	5210-00-793-789	0882617
6	F,H,D	Bolt, Eye: Flywheel lifting	5306-00-017-614	1S51937-7
7	H,D	Bushing, Reamer: Pilot Bushing for Reaming Intake Valve Guide: (used w/5110- 00-708-3698 reamer and 5110-00-708-3699 (reamer)	5110-00-460-583	1642088
8	H,D	Bushing, Reamer: Pilot Bushing for Reaming Exhaust Valve Guide: (used w/5110- 00-708-3696 reamer and 5110-00-708-3697 reamer)	5110-00-003-101	1642089

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH  
 O-organizational D-Depot required  
 F-direct support TA141037



SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
9	H,D	Bushing, Reamer: Pilot Bushing for Reaming Exhaust Valve Guide: (used w/Reamers 5110-00-708-3696 and 5110- 00-708-3697) (used for AVDS- 1790-2A engine only)	4910-00-795-7957	10882891
10	H,D	Bushing, Reamer: Pilot Bushing for Reaming Intake Valve Guides (used w/Reamers 5110-00-708-3699 and 5110- 00-708-3698) (used for AVDS- 1790-2A engine only)	4910-00-795-7950	10882892
11	H,D	Compressor and Gage: Piston Ring	4910-00-795-7956	10882888
12	F,H,D	Cutter, Carbon, Nozzle Seat: Removing Tool	4910-00-795-7958	10882949
13	H,D	Extractor, Coil Thread Insert: Cylinder to Crank- case (7/16 in to 1 in. diameter inserts)	5120-00-251-1527	7751056
14	H,D	Extractor, Coil Thread Insert: Cylinder Head to Valve Rocker Cover (No. 10 to 3/8 in. diameter inserts)	5120-00-723-6833	MIL-T-21309A Table VIII, Type 5, Size 2
15	F,H,D	Gage Assembly, Compression Testing: (used w/4910-00- 795-7961 adapter)	4910-00-870-6283	10899180
16	H,D	Gage, Ring, Plain: Piston Ring (standard and .020 oversize)	5220-00-988-8774	10912589

\*The subcolumns are as follows: C-operator/crew    H-general support    \*\*Indicates WT/MH  
O-organizational    D-Depot    required  
F-direct support    TA141038

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
17	H,D	Inserter, Coil Thread Insert: (screwlock 5/16-24)	5120-00-797-2405	MIL-T-21309A Type III, Class I, Style A
18	H,D	Inserter, Coil Thread Insert: (screwlock 3/8-24)	5120-00-710-7437	375324
19	H,D	Inserter, Coil Thread Insert: (screwlock 7/16-20)	5120-00-797-2407	MIL-T-21309A Type III, Class I, Style A
20	H,D	Inserter, Coil Thread Insert: (screwlock 1/2-20)	5120-00-672-8897	761582
21	H,D	Lifter Assembly: Valve Spring, (used w/491 0-00- 554-1317 stand)	5120-00-678-5285	761535
22	H,D	Pliers Retaining Ring: Fan Drive Retaining Ring	5120-00-752-9755	MGG-P-480A, Type II, Class 3, Style B, Size 22
23	H,D	Protector Crankcase Bore: Cylinder Mounting Pads (1 required per cylinder)	4910-00-795-7951	0882790
24	F,H,D	Puller, Fuel Injector Nozzle	5120-00-873-6943	1610150
25	H,D	Puller, Mechanical: Cam- shaft Drive Quill	5120-00-678-5282	761297

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH  
O-organizational D-Depot required  
F-direct support TA141039

## SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
26	H,D	Puller, Mechanical: Exhaust Valve Guide	5120-00-448-0401	0882954
27	H,D	Puller, Mechanical: Generator and Starter Idler Gear Shaft or Crankshaft Main Bearing: (used 2/5120-00-837-5091 adapter and 5120-00-575-7767) spreader:	5120-00-310-4668	3708712
28	H,D	Puller, Mechanical: Intake Valve Guide	5120-00-448-0400	0882953
29	O,F,H,D	Puller, Screw: Fan Drive Oil Seal Retainer or Vibration Damper	5120-00-473-7222	379997
30	H,D	Reamer, Hand: Finishing, Exhaust Valve Guide: (used w/5110-00-003-1010 bushing)	5110-00-708-3697	083697
31	H,D	Reamer, Hand: Intake Valve Guide: (used w/5110-00-460-5831 bushing)	5110-00-708-3699	083699
32	H,D	Reamer, Hand: Roughing Exhaust Valve Guide (used w/5110-00-003-1010 bushing)	5110-00-708-3696	083696
33	H,D	Reamer, Hand: Roughing, Intake Valve Guide (used w/5110-00-460-5831 bushing)	5110-00-708-3698	083698
34	H,D	Remover and Replacer, Piston Ring	5120-00-494-1846	950177
35	H,D	Replacer, Valve Guide: Intake	5120-00-448-0402	0883052
36	H,D	Replacer, Valve Guide: Exhaust	5120-00-448-7993	0883053

\*The subcolumns are as follows: C-operator/crew  
O-organizational  
F-direct support  
H-general support  
D-Depot  
\*\*Indicates WT/MH required  
TA141036

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
37	D	Reset Device, Hourmeter (used on AVDS-1790-2C/- 2D engine only)	5999-00-294-2332	11668287
38	D	Reset Device, Hourmeter (used on AVDS-1790-2A engine only)	6645-00-179-2712	11641917
39	H,D	Sling, Crankshaft and Con- necting Rods	4910-00-795-7955	10882958
40	H,D	Sling, Fan Drive and Advance Unit Hsg.	4910-00-795-7954	10882945
41	F,H,D	Socket Wrench, Fuel Injector Nozzle	5120-00-875-9556	11610171
42	O,F,H,D	Spacer, Fan Rotor Hub	4910-00-795-7952	10882651
43	H,D	Spreading Tool, Crankcase	5120-00-575-7767	8708361
44	H,D	Stand, Valve, Removing & Inserting, Cylinder Assembly: (used w/lifter 5120-00-678- 5285)	4910-00-554-1317	8708419
45	H,D	Stand, Maintenance, Auto- motive Engine	4910-00-856-4137	10912260
46	D	Stone and Holder Set, Cylinder Hone	3460-00-689-3368	5704380
47	H,D	Test Stand (Advance Unit) Fuel Injector Pump	4910-00-986-9873	10898928
48	F,H,D	Tube, Attaching Nozzle: Fuel Injector Nozzle Con- nector: (used w/tester 4910-00-255-8641)	4910-00-795-7953	10882963

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH  
O-organizational D-Depot required  
F-direct support TA141040

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
49	H,D	Wrench, Box: Torquing Cylinder Holddown Nuts	5120-00-678-5287	3761561
50	H,D	Wrench, Box: Torquing, Cylinder Holddown Nuts	5120-00-475-5414	3761562
51	F,H,D	Crowfoot, Attachment Wrench, Fuel Injector Nozzle	5120-00-871-7198 5120-01-039-2809	11610167 or 12254244
52	O,F,H,D	Wrench, Open End Fixed: Starter Mounting Nuts	5120-00-678-5288	3761568
53	F,H,D	Wrench, Socket, Crowfoot Attachment Torquing Fuel Injector Tube Nuts: (used w/torque wrench 5120-00-221-7947) (used on AVDS-1790-2A engine only)	5120-00-078-3809	10935497
54	F,H,D	Wrench, Splined: Engine Turning	5120-00-793-7895	10882747
55	H,D	Wrench, Box: Torquing No. 1 Left and Right Cylinder, Holddown Nuts (used on AVDS-1790-2D engine only)	5120-00-466-5948	11684130-1
56	H,D	Wrench, Box: Torquing No. 1 Left and Right Cylinder, Holddown Nuts (used on AVDS-1790-2D engine only)	5120-01-018-8640	11684130-2
57	D	Tester, Cylinder Barrel: (check cracks in cylinder barrel)	4910-00-937-4261	10935532
58	O,F,H,D	Wrench, Box: Generator Mounting Nuts	5120-00-789-4881	10935476

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH required  
 O-organizational D-Depot  
 F-direct support TA141041

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
59	F,H,D	Wrench, Open End, Fixed: Turbo Charger Oil Line to Engine	5120-00-448-0404	10883075
60	H,D	Wrench, Spanner: Cooling Fan, Rotor Clutch  CHASSIS TOOLS, Transmission	5120-00-793-7896	10882653
61	D	Adapter, Hoisting Front Housing Unit Assembly: (lifting package unit into front housing)	4910-00-473-7035	7081501
62	F,H,D	Adapter, Hoisting, Trans- mission End Cover: (lifting right hand end cover assy.)	4910-00-610-5963	8350448
63	F,H,D	Adapter, Mechanical Puller: Input Shaft: (used w/5120- 00-473-7352 Puller)	5120-00-708-2774	7082774
64	D	Adapter, Remover: Package Unit to Rear Housing Locating Dowel Pin: (used w/5120-00-473-7352 Puller)	5120-00-708-3673	7083673
65	D	Adapter, Mech. Puller: Accessory Drive Second Idler Gear Spindle: (used w/5120- 00-473-7352 Puller)	5120-00-837-5091	8375091
66	F,H,D	Bolt, Machine: Front & Rear Housing	5306-00-773-7292	7737292
67	F,H,D	Eye, Lifting, Output Plane- tary Assy. & Brake Drum	4910-00-708-1573	7081573
68	D	Fixture, Backlash Setting: Input Drive Bevel Gears	4910-00-084-0797	8355779

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH  
O-organizational D-Depot required  
F-direct support TA141042

## SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
69	O,F,H,D	Gage, Pressure, Dial Indicating: Transmission Oil Pressure	6620-00-795-0330	7950330
70	F,H,D	Handle, Remover and Replacer	5120-00-473-7121	7082881
71	F,H,D	Handle, Remover and Replacer	5120-00-708-2196	7082196
72	F,H,D	Puller, Attachment, Mechanical: Slide Hammer Type (used w/adapter)	5120-00-473-7352	7082201
73	F,H,D	Puller, Screw: End Cover	5120-00-708-3894	7083894
74	D	Puller Assembly: Low Drum	4910-00-070-4888	8356051
75	D	Remover and Replacer, Main Shaft Needle Bearing: (used w/5120-00-473-7121 handle)	5120-00-473-7388	7082426
76	F,H,D	Remover, Lead Seal: Control Valve Body Stud Lead Washers	5120-00-708-3514	7083514
77	F,H,D	Replacer, Bearing: Brake Apply Shaft Bracket Assembly	5120-00-708-2980	7082980
78	F,H,D	Replacer, Bearing: Brake Apply Outer Lever Trunnion Bearing	5120-00-708-2981	7082981
79	F,H,D	Replacer, Bearing: Brake Apply Shaft Bearing into End Cover	5120-00-708-2982	7082982
80	D	Replacer, Bushing, Cover: Output Flange Bushing or End Cover to Output Shaft Bushing	5120-00-658-2256	8350746

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH  
O-organizational D-Depot required  
F-direct support TA141043

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
81	D	Replacer, Gear: Rear Housing Servo Lever Needle Bearing	5120-00-473-7460	7082480
82	F,H,D	Sling, Lifting: Left End Cover Assembly	4910-00-708-1580	7081580
83	F,H,D	Sling, Lifting: Transmisison Assembly	4910-00-473-7556	7081593
84	D	Sling, Lifting: Package Unit	4910-00-708-2787	7082787
85	D	Sling, Lifting: Front Housing, Steering, Clutch Housing Reaction Plate Assembly, Torque Converter Housing Driving Bevel Gear Carrier Assembly	4910-00-708-3778	7083778
86	O,F,H,D	Socket, Socket Wrench: Band Adjusting Screw Locknut	5120-00-626-1842	7003946
87	F,H,D	Thimble, Inst alling, Parking Brake Oil Seal	4910-00-708-1614	7081614
88	D	Socket Wrench, Face Spanner: Transfer Driver Gear Locknut or Input Driving Bevel Gear Locknut	5120-00-658-2257	3350702
89	D	Socket Wrench, Face Spanner: Torque Converter Input Shaft Nut	5120-00-658-2258	3350703
90	F,H,D	Wrench, Pinion Turning: Hold- ing Input Driving Bevel Gear or Turning Engine thru Trans- mission Input Driving Bevel Gear	5120-00-708-1564	7081564

\*The subcolumns are as follows: C-operator/crew    H-general support    \*\*Indicates WT/MH  
O-organizational    D-Depot    required  
F-direct support    TA141044



## SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
91	D	Wrench, Spanner: Converter Output Shaft Flange CHASSIS TOOLS, Heater	5120-00-092-9069	8390286
92	H,D	Remover, Fuel Valve Screen: Heater	5120-00-735-5871	7355871
93	H,D	Scraper, Carbon: Ingiter Housing Heater CHASSIS TOOLS, Suspension	5110-00-735-5872	7355872
94	O,F,H,D	Adapter, Mechanical Puller: Torsion Bar	5120-01-017-5328	12251805
95	O,F,H,D	Adapter, Roadwheel Arm: (used w/5120-00-557-3615 Puller)	5120-00-473-6927	7080285
96	F,H,D	Fixture, Track Connecting Full Tracked Vehicle (used w/5120-00-632-5797 adapter, socket wrench)	5120-01-016-2149	12252120
97	O,F,H,D	Gage, Wear: End Connector	4910-00-795-7960	10873933
98	O,F,H,D	Handle, Remover and Replacer	5120-00-473-7121	7082881
99	O,F,H,D	Handle, Remover and Replacer	5120-00-708-3883	7083883
100	O,F,H,D	Lifter, Roadwheel Arm	5120-00-611-7137	7010355
101	F,H,D	Puller, Mechanical Two Leg Type: Track End Connector	5120-01-040-9318	12252143
102	O,F,H,D	Puller, Slide Hammer Type: (used w/adapter 5120-00-322- 5953)	5120-00-557-3615	5573615
103	O,F,H,D	Remover, Final Drive: Sprocket Hub Split Tapered	5120-00-034-8445	8390335

\*The subcolumns are as follows: C-operator/crew    H-general support    \*\*Indicates WT/MH  
O-organizational    D-Depot    required  
F-direct support    TA141045

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
104	O,F,H,D	Remover and Replacer Assy., Compensating Link Bearing	5120-00-614-1454	7027414
105	O,F,H,D	Remover and Replacer: Road- wheel Track Support Roller Wheel, and Compensating Idler Wheel Hub Outer Bearing Cups (used w/5120-00-708- 3883 Handle)	5120-00-473-7374	7082834
106	O,F,H,D	Remover and Replacer: Road- wheel or Compensating Idler Hub Inner Bearing Cup (used w/5120-00-708-3883 Handle)	5120-00-473-7373	7082876
107	O,F,H,D	Remover and Replacer: Track Support Roller Wheel Hub Inner Bearing Cup (used w/5120-00-708-3883 Handle)	5120-00-473-7372	7082863
108	O,F,H,D	Remover and Replacer Tool, Track Adjusting Link Pin: (used w/5120-00-557-3615)	5120-00-113-5265	11645917
109	O,F,H,D	Replacer, Oil Seal: Com- pensating Arm Spindle, Roadwheel Arm Spindle, Inner Bearing Oil Seal (used w/5120-00-473-7121 Handle)	5120-00-473-7494	7078977
110	O,F,H,D	Replacer, Oil Seal: Road- wheel Arm Support Spindle Outer Bearing Oil Seal (used w/5120-00-473-7121 Handle)	5120-00-473-7475	7078973
111	O,F,H,D	Replacer, Oil Seal: Track Support Roller Wheel Inner Bearing Oil Seal	5120-00-473-7471	7082882

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH  
 O-organizational D-Depot required  
 F-direct support TA141046

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
112	O,F,H,D	Replacer, Oil Seal and Retainer: Compensating Arm Oil Seal and Retainer Assy.	5120-00-592-3672	8708188
113	O,F,H,D	Sling Assembly, Single Leg: Final Drive Hub and Sprocket Assy.	4010-00-383-3681	8366458
114	O,F,H,D	Tool Assembly, Shock Absorber Bearing	5120-00-279-8325	11654533
115	F,H,D	Tool and Case Assy, Bearing: Final Drive Output Shaft Bearing Seal and Inner Bearing	4910-00-906-1065	10933875
116	O,F,H,D	Wrench, Hook Spanner: used on Roadwheel Arm Assy. Retaining Nut	5120-00-473-7761	7078980
117	F,H,D	Thimble, Final Drive Output Shaft Seal Installing	5120-00-977-5581	8355822
118	F,H,D	Wrench, Box: Final Drive Output Shaft Nut	5120-01-050-2070	12251988
119	F,H,D	Wrench, Open End, Fixed: Track Tension Adjusting	5120-00-563-7342	8708683
120	O,F,H,D	Wrench, Plug: Roadwheel Arm Torsion Bar End Plug	5120-00-473-7716	7078976
121	O,F,H,D	Wrench, Spanner: Roadwheel Track Support Roller, or Compensating Idler Wheel Bearing Adjusting Nut	5120-00-588-4808 5120-01-048-8640	8708459 or 12257561
122	O,F,H,D	Adapter, Torque Wrench	1025-00-215-8200	11663358-2
123	O,F,H,D	Torque Adapter, Driver's Hatch Hinge	2510-00-010-1644	11655766

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH required  
 O-organizational D-Depot  
 F-direct support TA141047

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
124	O,F,H,D	Gage, Sprocket CHASSIS TOOLS, Powerplant	5210-00-563-7320	8708388
125	O,F,H,D	Brake Applicator Tool, Powerplant Test Run (PPTR)	5120-00-570-7486	10933755
126	O,F,H,D	Cable Assembly, Ground: PPTR	2590-00-674-8738	10864170
127	O,F,H,D	Cable Assembly, Accessories: PPTR	2590-00-674-8736	10864166
128	O,F,H,D	Cable Assembly, Starter: PPTR	2590-00-674-8737	10864169
129	O,F,H,D	Cable Assembly, Generator Armature PPTR	4910-00-092-9131	8366463
130	O	Cleaner, Oil Cooler: (cleaning oil cooler/soluble cleaning solution)	2815-00-494-8257	11641959
131	O,F,H,D	Hose Assembly Brake: PPTR (used to stall check powerplant while out of vehicle)		12258071
132	O,F,H,D	Hose Assembly, Non-Metallic: Engine Primer (Powerplant Test Run)	5130-00-891-7865	11591102
133	O,F,H,D	Hose Assembly, Non-Metallic: Main Fuel Line and Fuel Injector Return (Powerplant Test Run)	5130-00-891-7864	11591103
134	O,F,H,D	Sling, Lifting: Powerplant or Grille Cover	4910-01-048-8706	12257229

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH required  
 O-organizational D-Depot  
 F-direct support  
 TA141048

**SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued**

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
135	O, F, H, D	Tool Assy., Mechanical, To Remove Resilient Mount from Transmission Mounting Bracket:  CHASSIS TOOLS, Turbosuper-charger	5120-00-463-7302	10933782
136	H, D	Gage: Ring Groove Width	4910-00-793-5030	10882675
137	H, D	Pliers, Ret aining Ring	5120-00-792-8624	10935598
138	H, D	Sleeve, Installing	4910-00-870-2122	10899149
139	H, D	Wrench, Box: Bearing Housing	5120-00-323-4875	8708189
140	F, H, D	Gage Nozzle, Vane Spacing (AVDS-1790-2A engine only)	5210-00-968-7779	10912631
141	F, H, D	Gage, Turbo Charge: Com-pressor Wheel Back Clearance (AVDS-1790-2A engine only)	4910-00-793-5032	10882677
142	F, H, D	Gage, Turbo Charger: Turbine Shaft Ring Groove (AVDS-1790-2A engine only)	4910-00-793-5031	10882676
143	F, H, D	Plate, Installing, Compressor Wheel: Shaft to Compressor Wheel Assy. (used w/replacer 5120-00-793-5050) (AVDS-1790-2A engine only)	4910-00-793-5041	10882674
144	F, H, D	Plate, Mounting Turbo-Charger (AVDS-1790-2A engine only)	4910-00-793-5034	10882668
145	F, H, D	Plate, Support: Thrust Collar to Compressor Wheel Assy. (used w/sleeve 4910-00-793-5036) (AVDS-1790-2A engine only)	4910-00-793-5035	10882670

\*The subcolumns are as follows: C-operator/crew O-organizational F-direct support H-general support D-Depot \*\*Indicates WT/MH required  
TA141049

**SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued**

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
146	F,H,D	Pliers, Retaining Ring: Compressor Cover Lock Ring (AVDS-1790-2A engine only)	5120-00-793-5052	10882671
147	F,H,D	Remover, Shaft: Turbine Core (used w/support 4910-00-793-5044) (AVDS-1790-2A engine only)	5120-00-793-5051	10882669
148	F,H,D	Replacer, Oil Slinger: (used w/spacer 4910-00-793-5042) and support 4910-00-793-5043 or Plate 4910-00-793-5041) (AVDS-1790-2A engine only)	5120-00-793-5050	10882682
149	F,H,D	Gage Nozzle, Vane Spacing (AVDS-1790-2A engine only)	4910-00-793-5033	10882681
150	F,H,D	Sleeve, Installing Piston Ring: Inner Piston Ring to Thrust Collar	4910-00-793-5038	10882680
151	F,H,D	Sleeve, Installing Piston Ring: Outer Piston Ring to Thrust Collar	4910-00-793-5037	10882679
152	F,H,D	Sleeve, Installing Thrust Collar: (used w/plate 4910-00-793-5035)	4190-00-793-5036	10882673
153	F,H,D	Socket Wrench, Face Spanner: Thrust Collar Nut	5120-00-795-7962	10882672
154	F,H,D	Spacer, Oil Slinger: (used w/replacer 5120-00-793-5050 and support 4910-00-793-5043)	4190-00-793-5042	10882667
155	F,H,D	Support, Slinger: (used w/spacer 4910-00-793-5042 & replacer 5120-00-793-5050)	4910-00-793-5043	10882666

\*The subcolumns are as follows: C-operator/crew    H-general support    \*\*Indicates WT/MH required  
 O-organizational    D-Depot  
 F-direct support  
 TA141050

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
156	F,H,D	Support, Turbine Core: (used w/remover 5120-00-793-5051)  CHASSIS TOOLS, Fuel Injector Pump	4910-00-793-5044	10882678
157	H,D	Compressor, Spring Seat	5120-00-793-5049	10882862
158	H,D	Fixture, Positioning Plunger	4910-00-793-5039	10882859
159	H,D	Gage, Spring Governor: Weight and Spider Springs	4910-00-793-5040	10882854
160	H,D	Puller, Mechanical: Weight and Spider Assy.	5120-00-793-5048	10882818
161	H,D	Remover and Replacer: Weight and Spider Assy.	5120-00-793-5055	10882856
162	H,D	Wrench, Shaft Turning and Holding	5120-00-793-5057	10882894
163	H,D	Wrench, Spanner: Access Plug	5120-00-793-5045	10882851
164	H,D	Wrench, Spanner: Clutch Torque Checking	5120-00-230-6380	10882857
165	H,D	Wrench, Turning and Holding: Pronged Type, Clutch Torque  HYDRAULIC CONTROL SYSTEM	5120-00-793-5046	10882889
166	F,H,D	Wrench, Spanner: Adjustable Face, Removing and Replacing Retaining Nut on Clutch	5120-00-293-0798	MS16146-2
167	F,H,D	Wrench, Spanner: For Removing and Replacing Retainer of Power Takeoff	5120-00-907-9001	10952095

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH required  
 O-organizational D-Depot  
 F-direct support  
 TA141051

SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
168	H,D	Wrench, Spanner, Pin Type: Remove and Replace Bulk-head Busing for Suction Line  CHASSIS TOOLS, Miscellaneous	5120-00-269-7964	MS16153-9
169	O,F,H,D	Vacuum Cleaner: Clean Air Cleaner Housing	7910-00-807-3704	A1625
170	O,F,H,D	Puller Kit, End Connector, Hydraulic Powered	5120-01-052-5642	11669394-1
171	O,F,H,D	Crowfoot Attachment, Socket Wrench, 7/16 in, flat, 3/8 dr.	5120-00-184-8383	GGG-C-001507 Type II
172	O,F,H,D	Crowfoot Attachment, Socket Wrench, 1/2 in. flat, 3/8 dr.	5120-00-184-8384	GGG-C-001 Type II
173	O,F,H,D	Crowfoot Attachment, Socket Wrench, 9/16 in. flat, 3/8 dr.	5120-00-184-8397	GGG-C-001507 Type II
174	O,F,H,D	Crowfoot Attachment, Socket Wrench, 3/4 in. flat, 3/8 dr.	5120-00-184-8400	GGG-W-641 Type IV, Class I
175	O,F,H,D	Crowfoot Attachment, Socket Wrench, 3/4 in. hex, 3/8 dr.	5120-00-189-7898	GGG-C-001507 Type II
176	O,F,H,D	Crowfoot Attachment, Socket Wrench, 7/8 in. flat, 3/8 dr.	5120-00-541-4071	GGG-C-001507 Type II
177	O,F,H,D	Crowfoot Attachment, Socket Wrench, 1 in. flat, 1/2 dr.	5120-00-293-1282	GGG-C-001507 Type II

\*The subcolumns are as follows: C-operator/crew H-general support \*\*Indicates WT/MH required  
 O-organizational D-Depot  
 F-direct support  
 TA141052



SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued

(1)	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
178	O,F,H,D	Crowfoot Attachment, Socket Wrench, 1-1/16 in. hex, 3/8 dr.	5120-00-181-6764	GGG-C-001507 Type I
179	O,F,H,D	Crowfoot Attachment, Socket Wrench, 1-1/8 in. flat, 3/8 dr.	5120-00-517-7021	GGG-C-001507 Type II
180	O,F,H,D	Crowfoot Attachment, Socket Wrench, 1-1/4 in. hex, 1/2 dr.	5120-00-181-6759	GGG-C-001507 Type I
181	O,F,H,D	Crowfoot Attachment, Socket Wrench, 1-1/2 in. flat, 1/2 dr.	5120-00-293-1284	GGG-C-001507 Type II
<p><b>NOTE</b> In addition the following can be authorized under CTA50-970 (Jan. 79).</p>				
181.1	O,F,H,D	Crowfoot Attachment, Socket Wrench, 15/16-in., 3/8 dr.	5120-00-184-8403	GGG-C-001507 Type I
181.2	O,F,H,D	Crowfoot Attachment, Socket Wrench, 11/16 in., 3/8 dr.	5120-00-184-8403	GGG-C-001507 Type I
<b>COMMON TOOL SETS</b>				
182	O,F,H	Tool Kit, General	5180-00-177-7033	
183	O	Shop Equipment, Automotive Maintenance, OM, Common # 1	4910-00-754-0654	
184	O	Shop Equipment, Automotive Maintenance, OM, Supplemental # 1	4910-00-754-0653	
185	O	Shop Equipment, Automotive Maintenance, OM, Supplemental # 2	4940-00-754-0743	
186	O	Shop Equipment, Automotive Maintenance, OM, Common # 2	4910-00-754-0650	
187	O,F,H	Tool Kit, Welder's	5180-00-754-0661	
188	F,H	Shop Equipment, Machine Shop, FM	3470-00-754-0708	
189	H	Shop Equipment, General	4940-00-287-4894	

\*The subcolumns are as follows:

C-operator/crew  
O-organizational  
F-direct support

H-general support  
D-Depot

\*\*Indicates WT/MH required

TA253233

**SECTION III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS - Continued**

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
		COMMON TOOL SETS - Continued		
190	F,H	Shop Equipment, Welding, FM	3470-00-357-7268	
191	F,H	Tool Kit, Automotive, Fuel & Electric	4910-00-754-0655	
192	O	Tool Kit, Electronic Equipment	5180-00-064-5178	
193	F,H	Shop Equipment, Automotive Repair FM, Supplemental #1	4910-00-754-0706	
194	F	Tool Kit, Body & Fender Repair, FM	5180-00-754-0643	
195	F,H	Shop Equipment, Contact Maintenance	4940-00-294-9518	
196	F	Shop Equipment, Electric Repair	4940-00-294-9542	
197	F,H	Shop Equipment, Automotive Maintenance, FM, Basic	4910-00-754-0705	
198	F,H	Shop Set, Fuel & Electric System, FM	4910-00-754-0714	
199	F,H	Shop Set, Fuel & Electric System, FM, Supplemental #2	4910-00-390-7775	
200	H	Shop Equipment, Electrical Repair, Semitrailer-MTD	3470-00-754-0738	
201	F,H	Shop Set, Fuel & Electric System, FM, Supplemental #1	4910-00-390-7774	
202	F,H	Shop Equipment, Radiator Test and Repair, Field Maintenance, Composite, Shop A	4910-00-071-0746	

\*The subcolumns are as follows: C-operator/crew    H-general support    \*\*Indicates WT/MH  
 O-organizational    D-Depot    required  
 F-direct support    TA141054

## SECTION IV. REMARKS

Reference code	Remarks
A	All repair and replacement of parts performed by organizational maintenance is limited to authorized items listed in TM 9-2350-222-20P-1.
B	All repair and replacement of parts performed by Direct Support maintenance is limited to authorized items listed in TM 9-2815-220-34P.
C	Inspection by crew level personnel is limited to a visual inspection.
D	Repair at organizational level is limited to tightening hold-down only.
E	Inspection at organizational level is identified by the PMCS. Inspection at crew level limited to that required during emergency servicing only.
F	Service at crew level is limited to emergency servicing only.
G	Use sling, cupola lifting, P/N 11658914, turret special tool.
H	Repair of filter assembly is limited to side loading filter assembly only.
I	Repair at organizational level is limited to replacement of door gasket or seal.
J	Repair at organizational level is limited to procedures in TM 9-2350-222-20-1 and does not include welding.
K	To replace the battery box assembly it is necessary to remove the turret assembly (see TM 9-2350-222-34-2).
L	To replace and repair the bulkhead to engine disconnect (left-side) wiring harness it is necessary to remove the powerplant.
M	Depot overhaul involves vulcanizing new rubber to the wheel disc.
N	Inspection by crew personnel is limited to those vehicles equipped with undercut sprocket teeth.
O	This procedure requires removal of turret; use sling, turret lifting, P/N 11615469, turret special tool.

TA141055

SECTION IV. REMARKS - Continued

Reference code	Remarks
P	Direct support repairs linkage under turret; removal of turret required, use sling, turret lifting, P/N 11615469, turret special tool.
Q	Crew personnel to service by adding oil to level as indicated by LO 9-2350-222-12.
R	Repair hydraulic reservoir by welding trades. See TM 9-2350-222-34-1.
S	Repair of cylinder assembly limited to specialized repair shop (TM 55-1680-246-40).
T	Replacement of hydraulic lines at Direct Support maintenance level is normally limited to the suction tube and the two pressure lines all of which pass under the fuel tanks and require removal of the fuel tanks.

TA141056

## APPENDIX C

## GENERAL MAINTENANCE

<u>Procedure</u>	Page
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**GENERAL MAINTENANCE - Continued**

**Inspection and Repair of Welds**

1. Inspect and repair welds in accordance with TM 9-237.
2. Military specifications referenced in this manual will be used as mandatory guidelines beyond the scope of TM 9-237 during welding processes.
3. When welding requirements are beyond organizational capabilities, notify support maintenance personnel.

**Inspection, Care, and Maintenance of Antifriction Bearings. Refer to TM 9-214**

**GENERAL MAINTENANCE - Continued**

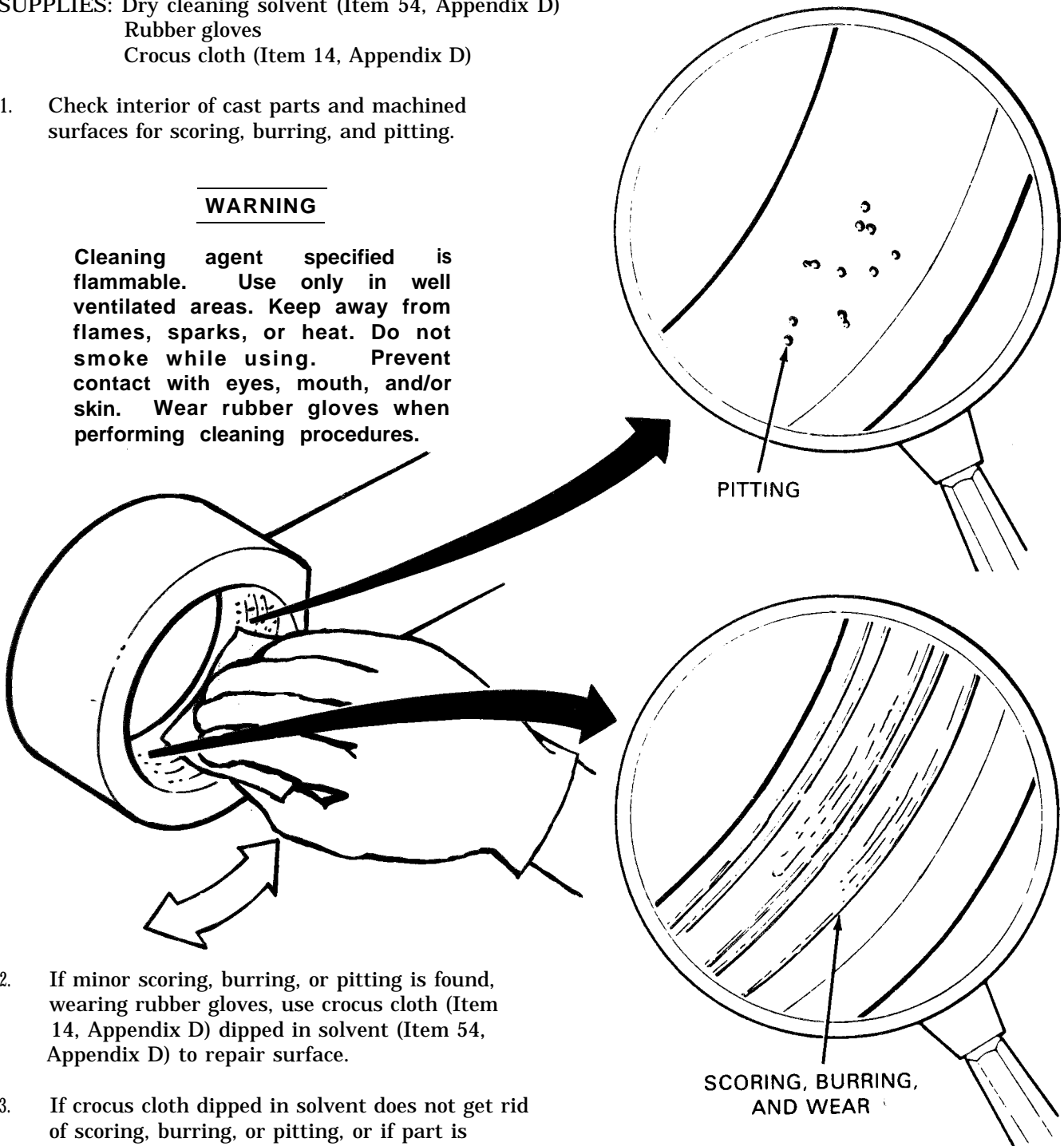
**Inspection and Repair of Cast Parts and Machined Surfaces**

SUPPLIES: Dry cleaning solvent (Item 54, Appendix D)  
 Rubber gloves  
 Crocus cloth (Item 14, Appendix D)

1. Check interior of cast parts and machined surfaces for scoring, burring, and pitting.

**WARNING**

Cleaning agent specified is flammable. Use only in well ventilated areas. Keep away from flames, sparks, or heat. Do not smoke while using. Prevent contact with eyes, mouth, and/or skin. Wear rubber gloves when performing cleaning procedures.



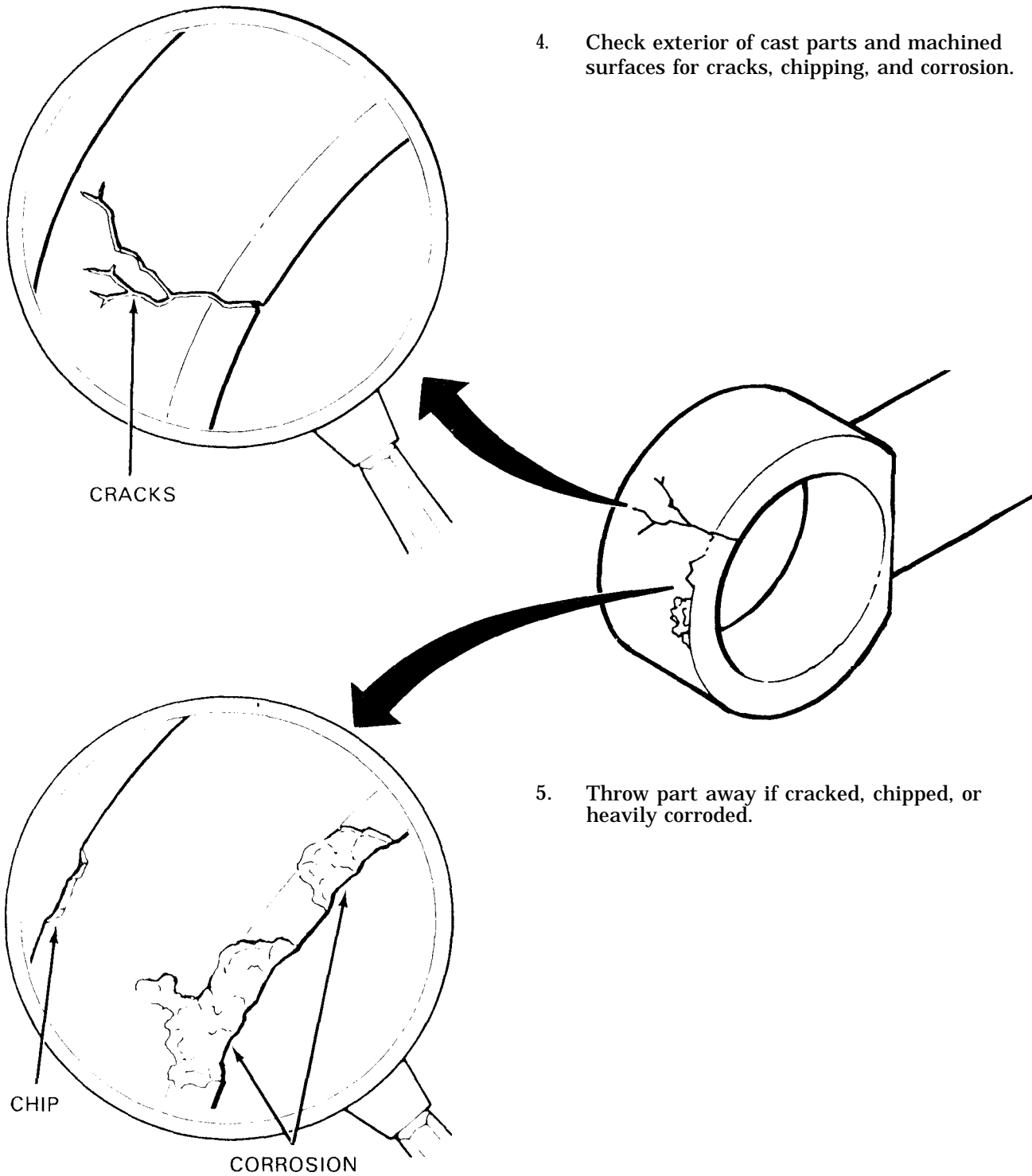
2. If minor scoring, burring, or pitting is found, wearing rubber gloves, use crocus cloth (Item 14, Appendix D) dipped in solvent (Item 54, Appendix D) to repair surface.
3. If crocus cloth dipped in solvent does not get rid of scoring, burring, or pitting, or if part is excessively scored, worn, pitted, or burred, throw part away.

TA140821

GENERAL MAINTENANCE - Continued

Inspection and Repair of Cast Parts and Machined Surfaces

4. Check exterior of cast parts and machined surfaces for cracks, chipping, and corrosion.



5. Throw part away if cracked, chipped, or heavily corroded.

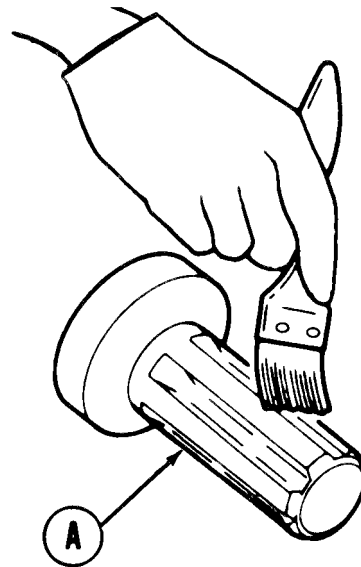


**GENERAL MAINTENANCE - Continued**

**Inspection and Repair of Splines**

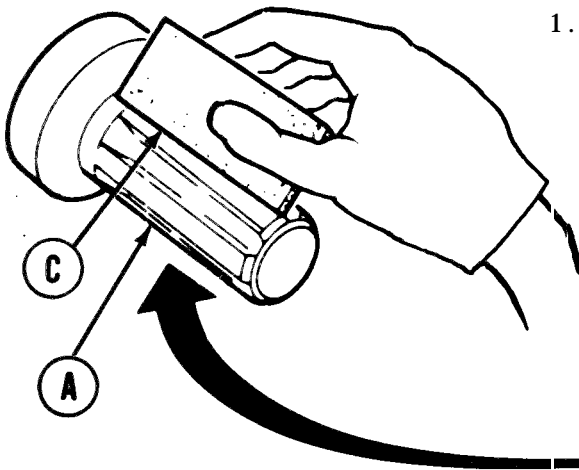
**TOOLS:** Hand file  
 Hand oiler  
 1/4 in. paint brush

**SUPPLIES:** Dry cleaning solvent (Item 54, Appendix D)  
 Rubber gloves  
 Crocus cloth (Item 14, Appendix D)  
 Rags (Item 65, Appendix D)  
 Lubricating oil (Item 44, Appendix D)  
 Protective wrapping (if required)

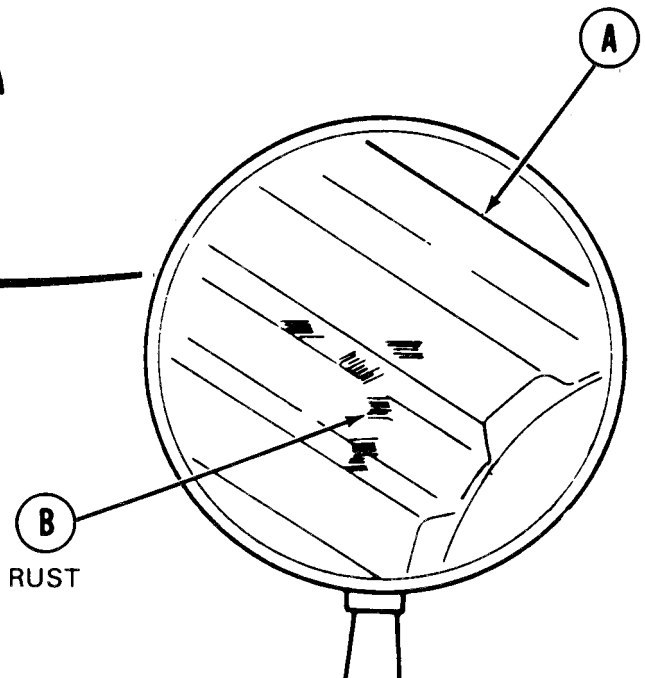


**WARNING**

Cleaning agent specified is flammable. Use only in well ventilated areas. Keep away from flames, sparks, or heat. Do not smoke while using. Prevent contact with eyes, mouth, and/or skin. Wear rubber gloves when performing cleaning procedures.



1. Wearing gloves, use dry cleaning solvent (Item 54, Appendix D) and brush to clean spline (A). Make sure all traces of grease and dirt are gone.



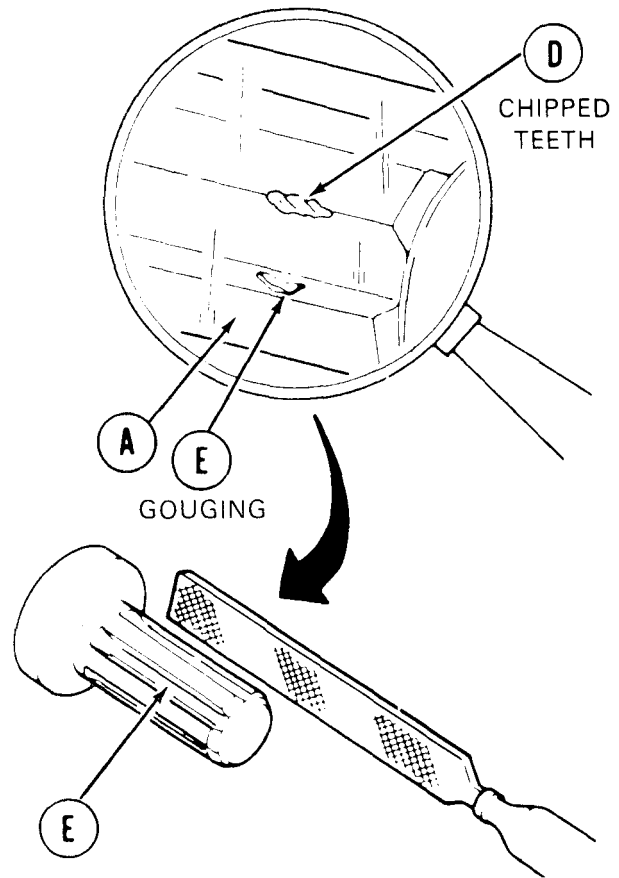
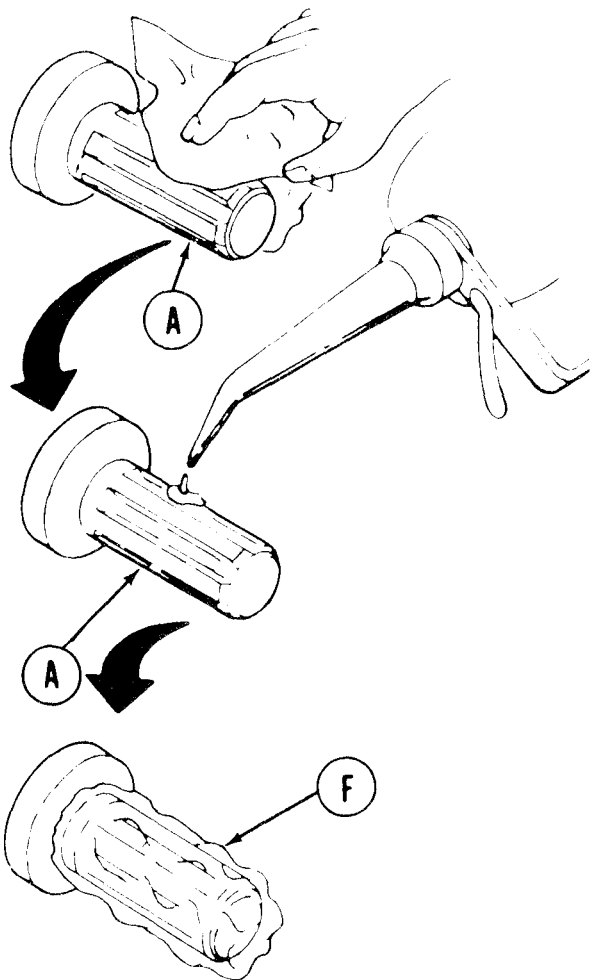
2. Using clean rag, wipe spline (A) dry.
3. Check spline (A) for signs of rust (B).
4. Using crocus cloth (C) (Item 14, Appendix D), rub rust (B) spline (A).

TA140823

GENERAL MAINTENANCE - Continued

Inspection and Repair of Splines

5. Check for chipped teeth (D) and gouging (E) on face of spline (A).
6. Using hand file, get rid of sharp edges or light gouging (E).
7. Using rag dampened with dry cleaning solvent (Item 54, Appendix D), wipe metal chips and metal dust from spline (A).



NOTE

Only if spline (A) will not be used right away, do steps 8 and 9.

8. Using oil (Item 43, Appendix D), coat spline (A).
9. Using protective wrapping (F), wrap spline (A).

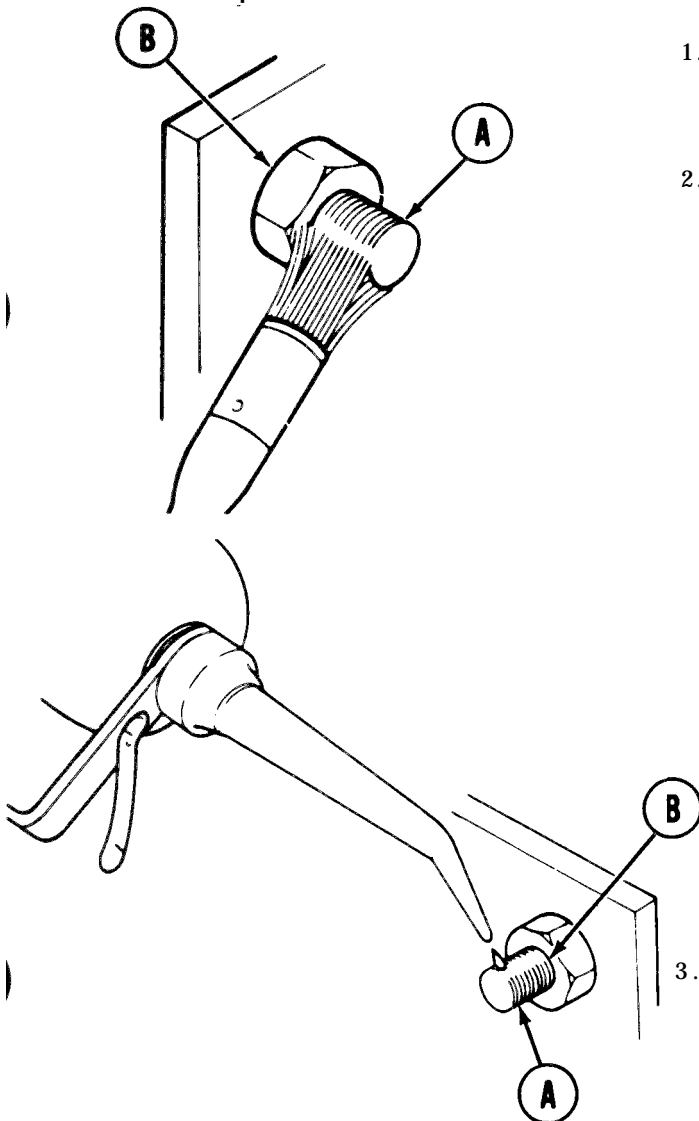
**GENERAL MAINTENANCE - Continued****Cleaning Threads and Nuts**

TOOLS: Wire brush  
 1/4 in. paint brush  
 Hand oiler

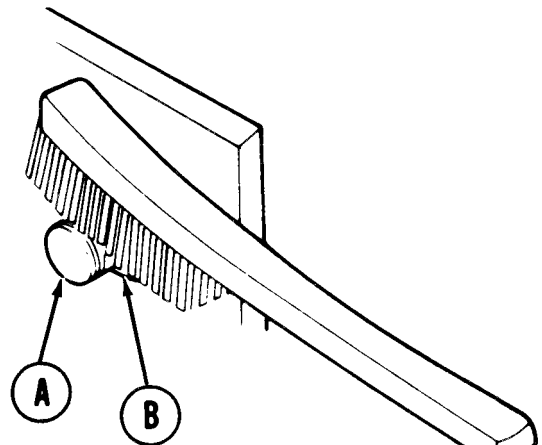
SUPPLIES: Dry cleaning solvent (Item 54, Appendix D)  
 Penetrating oil (Item 42, Appendix D)

**WARNING**

Cleaning agent specified is flammable. Use only in well ventilated areas. Keep away from flames, sparks, or heat. Do not smoke while using. Prevent contact with eyes, mouth, and/or skin. Wear rubber gloves when performing cleaning procedures.



1. Wearing gloves, use dry cleaning solvent (Item 54, Appendix D) and brush to clean threads (A) and nut (B).
2. Using wire brush, clean threads (A) and nut (B). Make sure all traces of rust and dirt are removed.



3. Using penetrating oil (Item 42, Appendix D) lube threads (A) and nut (B). Let oil seep between threads (A) and nut (B).

TA140825

**GENERAL MAINTENANCE - Continued**

**Loosening and Removing Nuts**

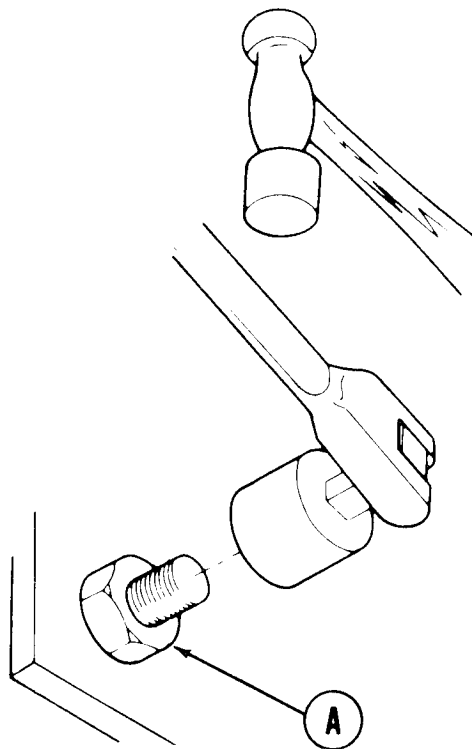
TOOLS: Ball peen hammer  
Wire brush

1. Using socket, try to remove nut (A).
2. If nut (A) will not turn, clean threads and nut (page C-7).
3. Using hammer and socket wrench handle with socket, gently tap drive end to free nut (A).

**NOTE**

**If nut (A) cannot be freed by step 3 above, go to page C-9.**

4. Take off and throw away nut (A). If nut (A) was attached to a bolt, replace bolt.

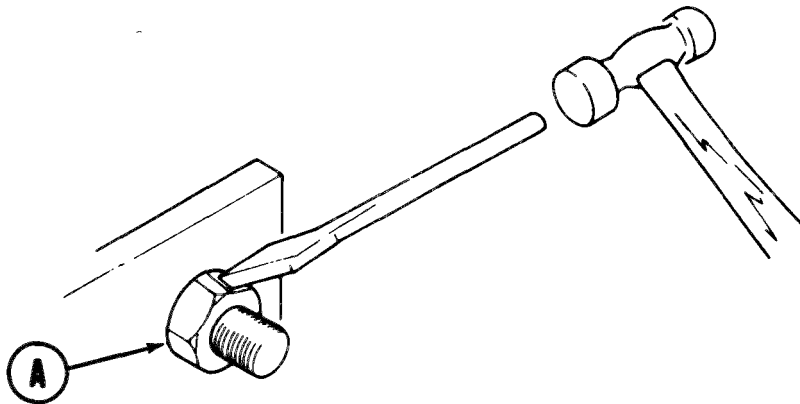


TA140826

**GENERAL MAINTENANCE - Continued**

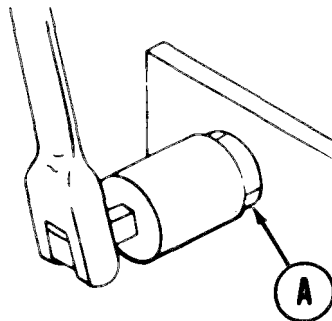
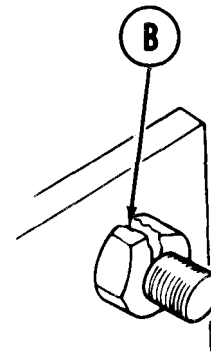
**Cutting Nuts**

TOOLS: Cape chisel  
Screw threading set  
Ball peen hammer



1. Using hammer and cape chisel, cut flat side of nut (A).

2. Stop cutting when nut (A) spreads apart (B).

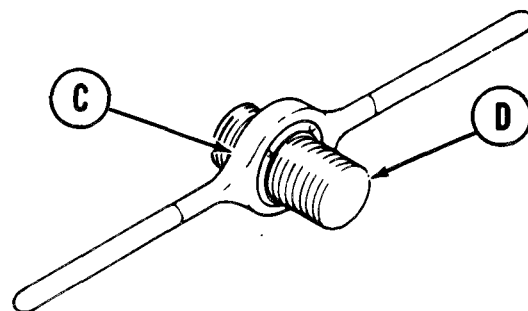


3. Using socket wrench handle with socket, remove nut (A).

**NOTE**

If nut (A) was removed from end of a bolt, throw bolt away if damaged. If nut (A) was removed from a stud or threaded shaft, do step 4.

4. Using die (C), clean up threads (D).



TA140827

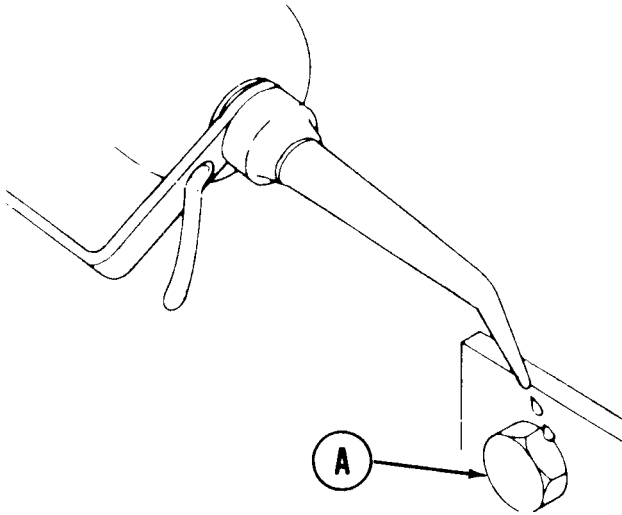
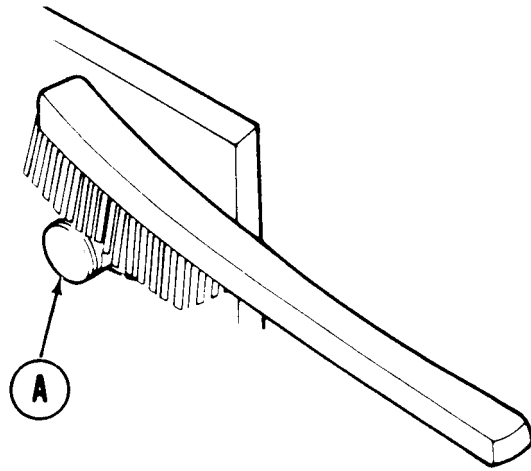
**GENERAL MAINTENANCE - Continued**

**Bolt Removal**

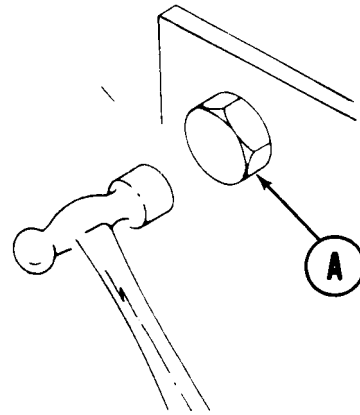
**TOOLS:** Ball peen hammer  
Wire brush  
Hand oiler

**SUPPLIES:** Penetrating oil (Item 42, Appendix D)

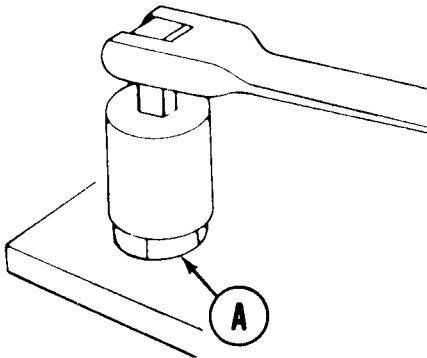
1. Using wire brush, clean head of bolt (A) and nearby area.



2. Using penetrating oil (Item 42, Appendix D) around head of bolt (A), allow oil to seep into threads.



3. Using hammer, lightly tap head of bolt (A).



4. Using socket wrench handle with socket, remove bolt (A). Throw away bolt (A) if damaged.

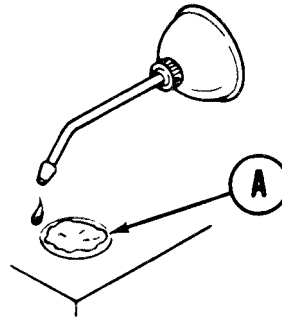
**GENERAL MAINTENANCE - Continued**

**Removal of Studs Broken at Surface**

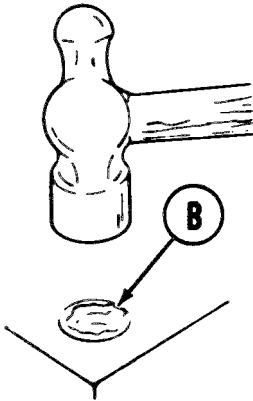
**TOOLS:** Screw threading set  
 Portable electric drill  
 Twist drill set  
 Screw extractor set  
 Ball peen hammer  
 Prick punch  
 Hand oiler

**SUPPLIES:** Penetrating oil (Item 42, Appendix D)  
 Rags (Item 65, Appendix D)

- Using penetrating oil (Item 42, Appendix D), lub thread area (A).

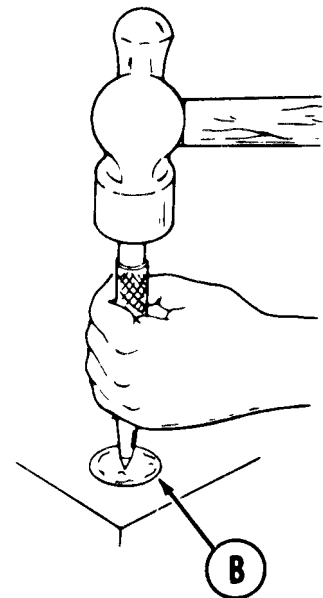


- Using hammer, lightly tap stud (B).

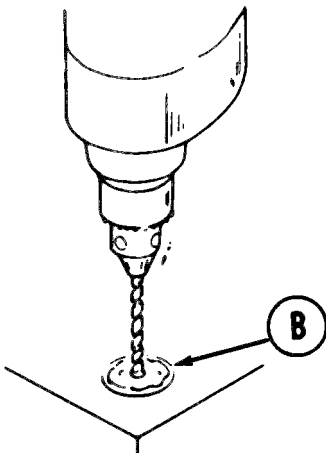


**NOTE**

It is very important to drill out broken stud on exact center line.



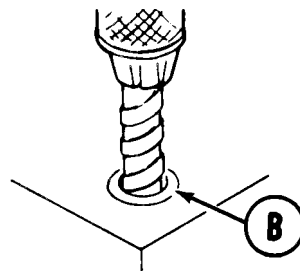
- Using punch and hammer, punch center of broken stud (B).



**WARNING**

Safety glasses must be worn when using drill to prevent injury to eyes.

- Using electric drill with pilot twist drill, drill center of stud (B).

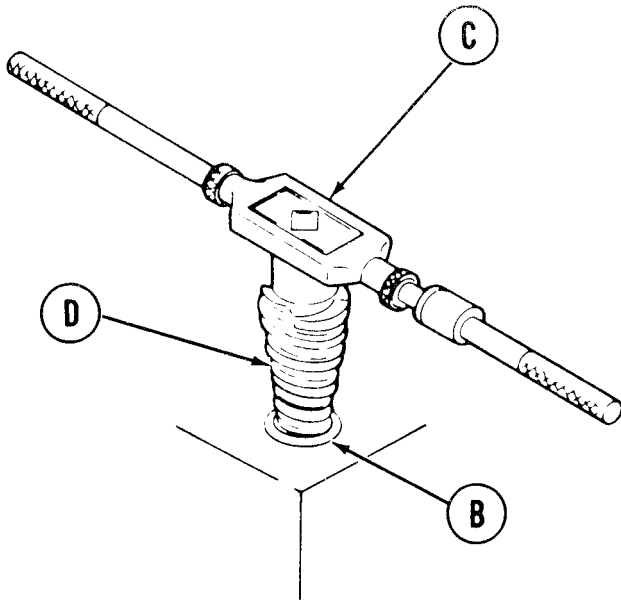


- Using electric drill with twist drill slightly smaller than extractor, drill into stud (B).

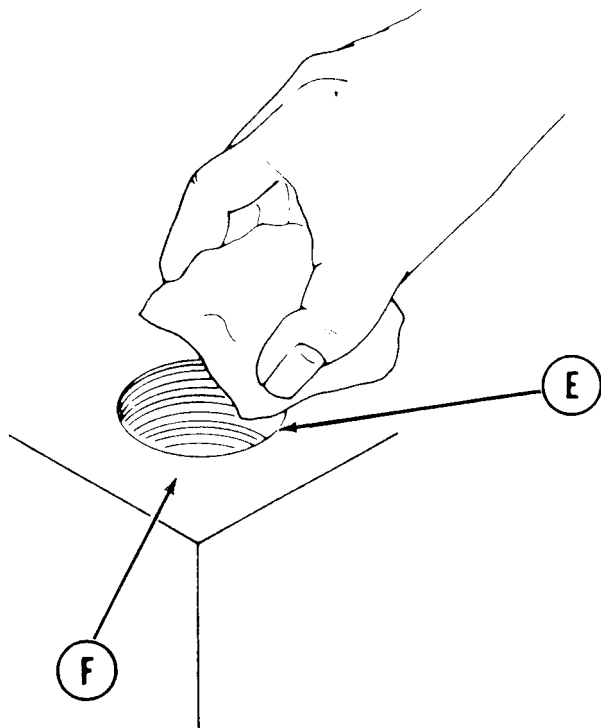
TA140829

GENERAL MAINTENANCE - Continued

Removal of Studs Broken at Surface

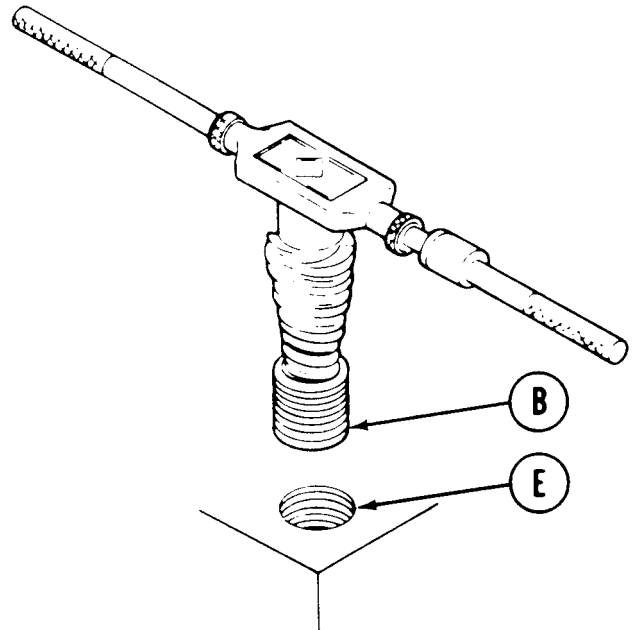


6. Using tap wrench handle (C) with screw extractor (D), turn tap wrench handle (C) counterclockwise to screw extractor (D) into stud (B).



**NOTE**

After being drilled, studs broken at a surface may be removed either by using a spiral tapered screw extractor or a fluted type extractor. If a spiral tapered screw extractor is used, go to step 6. If a fluted type extractor is used, go to step 9.



7. Keep turning extractor counterclockwise until stud (B) is removed from threaded hole (E).
8. Using clean rag, wipe out threaded hole (E) and surface (F).

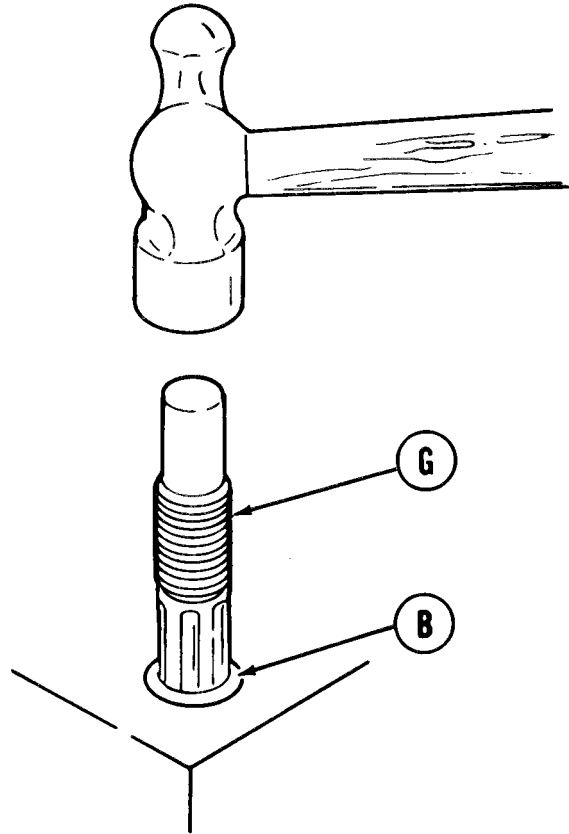
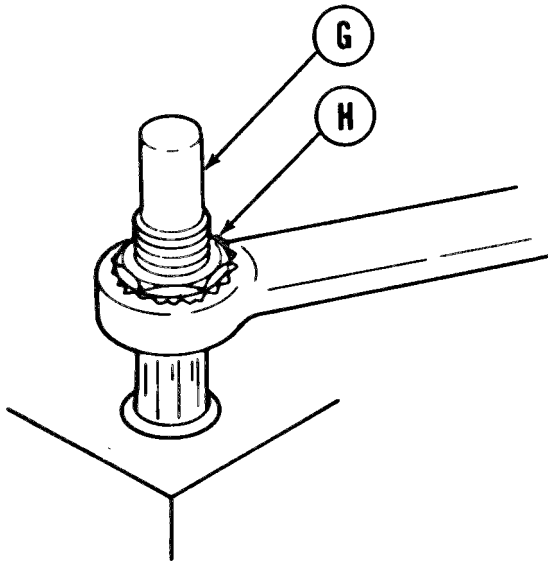
TA140830



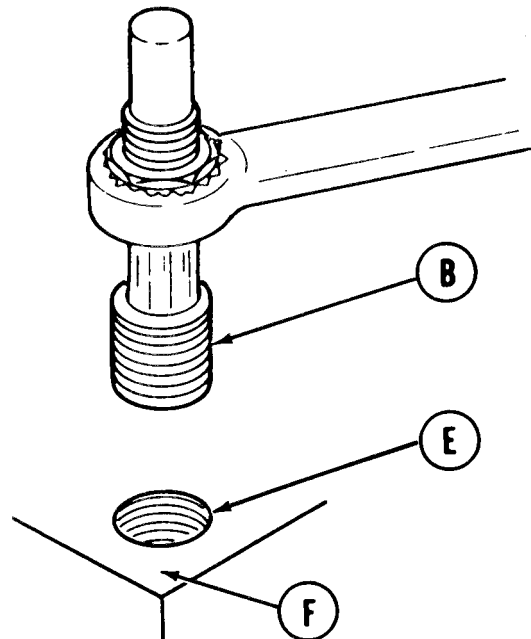
**GENERAL MAINTENANCE - Continued**

**Removal of Studs Broken at Surface**

9. Using hammer, drive fluted extractor (G) into stud (B).
10. Manually start nut (H) counterclockwise onto extractor (G).



11. Using wrench, tighten nut (H) onto extractor (G) by turning counterclockwise.
12. Using wrench, keep turning nut (H) counterclockwise until stud (B) is removed from threaded hole (E).
13. Using clean rag, wipe out threaded hole (E) and surface (F).



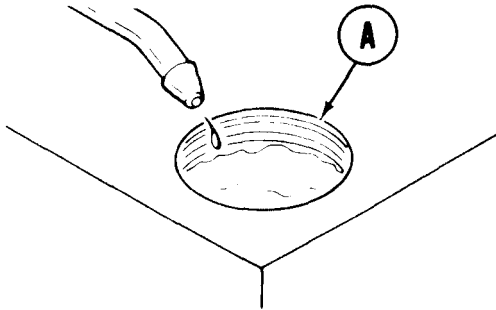
TA140831

**GENERAL MAINTENANCE - Continued**

**Removal of Studs Broken Below Surface**

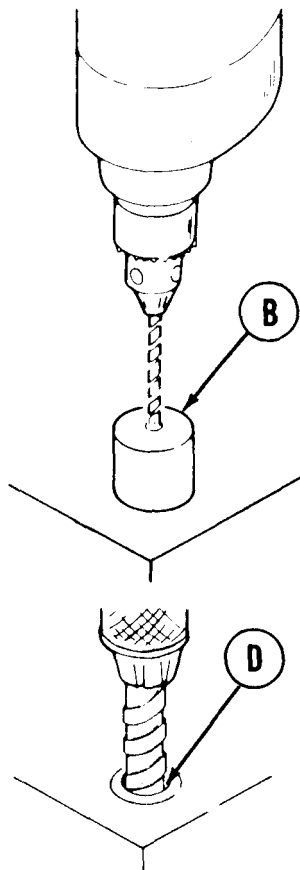
TOOLS: Screw extractor set  
Portable electric drill  
Twist drill set  
Hand oiler  
Ball peen hammer

SUPPLIES: Penetrating oil (Item 42, Appendix D)  
Rags (Item 65, Appendix D)



1. Using penetrating oil (Item 42, Appendix D), lube thread area (A).
2. Choose right size guide (B) to fit hole (C).

3. Place guide (B) into hole (C).



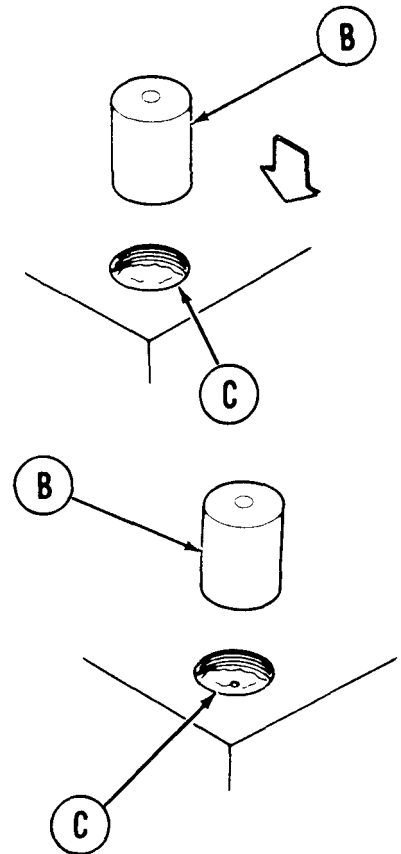
**WARNING**

Safety glasses must be worn when using drill to prevent injury to eyes.

4. Using electric drill with pilot twist drill, drill stud through center of guide (B).
5. Take guide (B) out of hole (C).
6. Using electric drill with twist drill slightly smaller than extractor, drill into stud (D).

**NOTE**

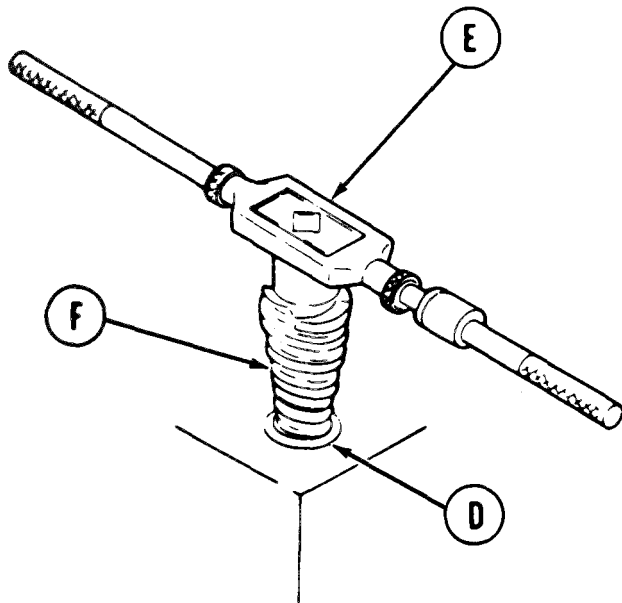
Make sure all metal chips are removed from hole (C) before using extractor.



TA140832

GENERAL MAINTENANCE - Continued

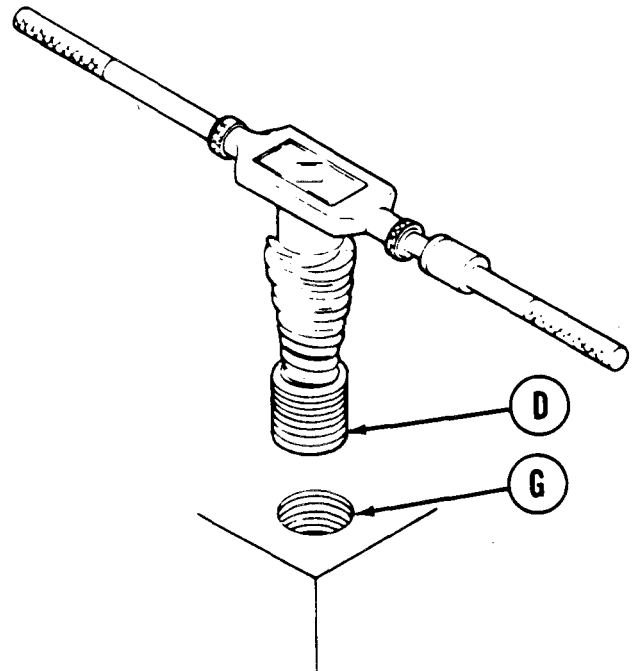
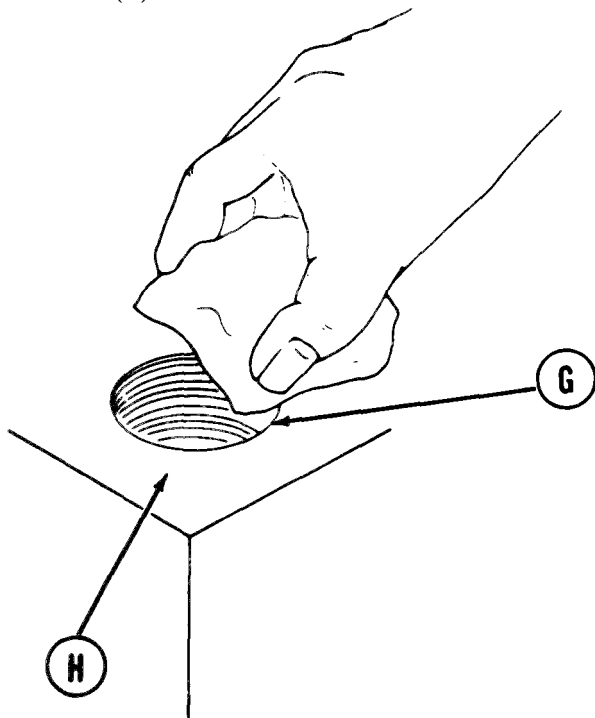
Removal of Studs Broken Below Surface



NOTE

After being drilled, studs broken below surface may be removed either by using a spiral tapered screw extractor or a fluted type. If a spiral tapered screw extractor is used, go to step 7. If a fluted type extractor is used, go to step 10.

7. Using tap wrench handle (E) with screw extractor (F), turn tap wrench handle (E) counterclockwise to screw extractor (F) into stud (D).



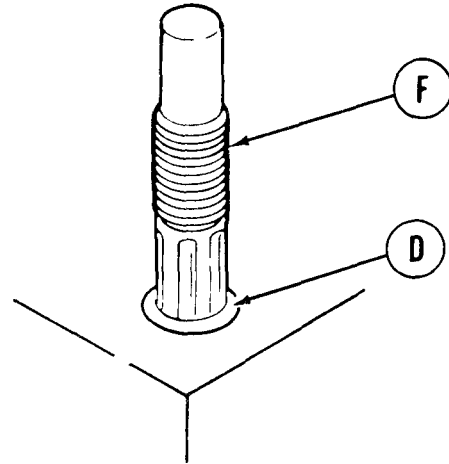
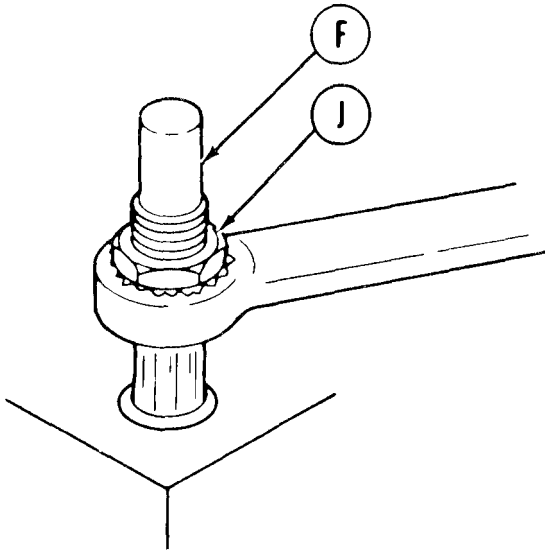
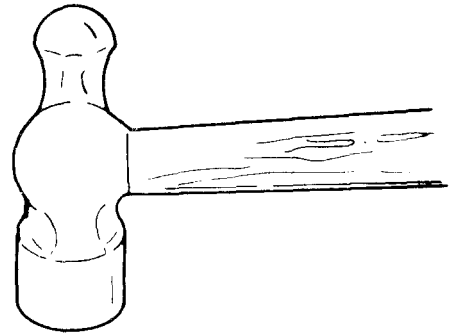
8. Keep turning extractor counterclockwise until stud (D) is removed from threaded hole (G).
9. Using clean rag, wipe out threaded hole (G) and surface (H).

TA140833

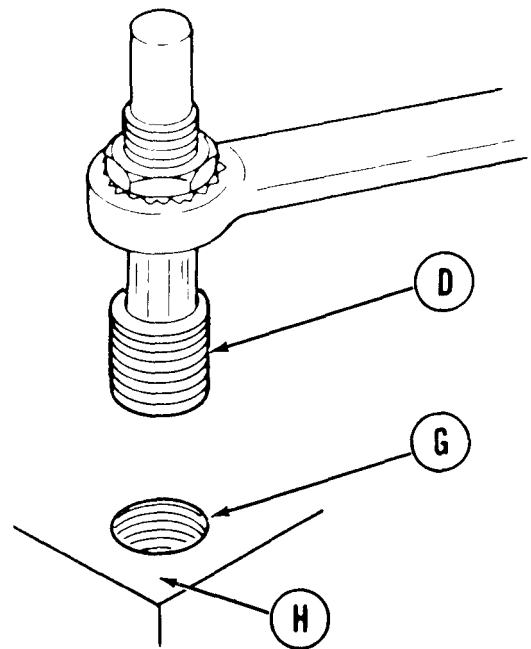
GENERAL MAINTENANCE - Continued

Removal of Studs Broken Below Surface

10. Using hammer, drive fluted extractor (F) into stud (D).
11. Manually start nut (J) counterclockwise onto extractor (F).



12. Using wrench, tighten nut (J) onto extractor (F) by turning counterclockwise.
13. Using wrench, keep turning nut (J) counterclockwise until stud (D) is removed from threaded hole (G).
14. Using clean rag, wipe out threaded hole (G) and surface (H).



TA140834

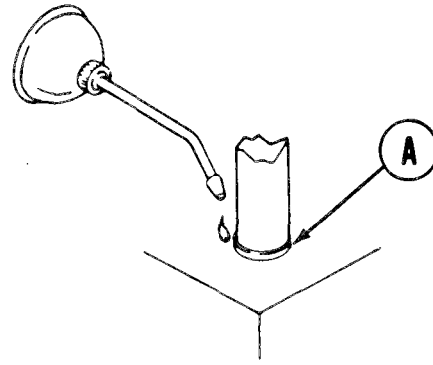
**GENERAL MAINTENANCE - Continued**

**Removal of Studs Broken Above Surface**

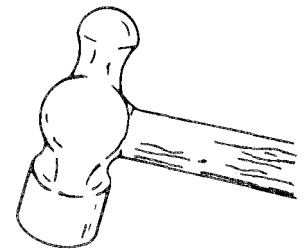
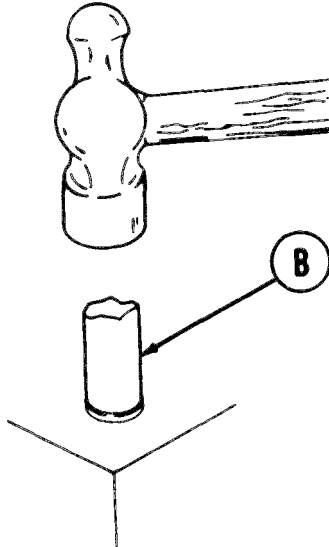
**TOOLS:** Ball peen hammer  
Screw extractor set  
Hand oiler

**SUPPLIES:** Penetrating oil (Item 42, Appendix D)  
Rags (Item 65, Appendix D)

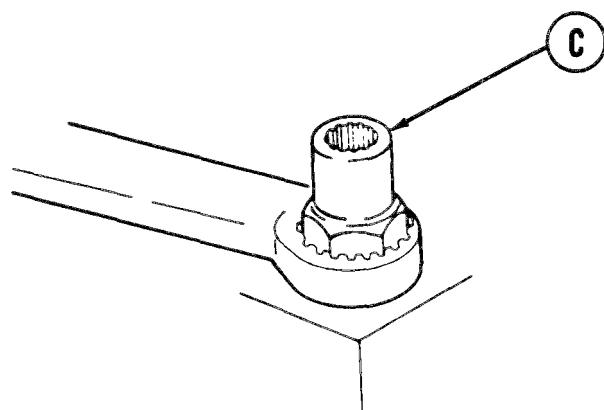
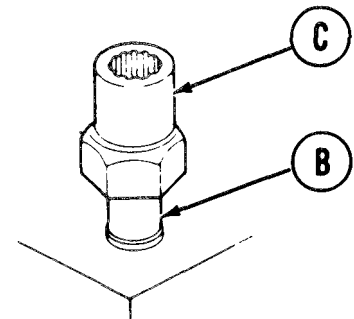
1. Using penetrating oil (Item 42, Appendix D), lube threaded area (A).



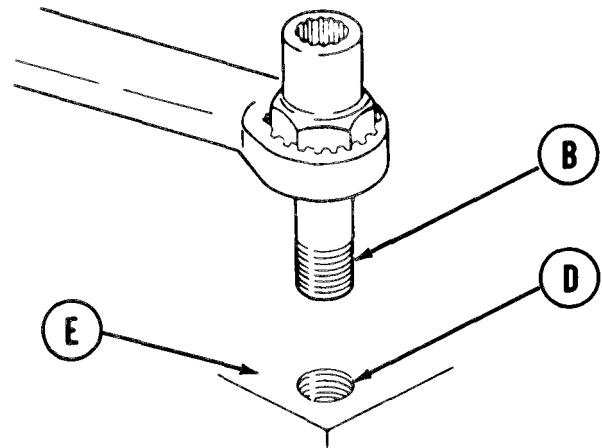
2. Using hammer, lightly tap stud (B).
3. Using hammer, tap stud remover (C).
4. Using wrench, turn stud remover (C) to the left.



5. Using wrench, keep turning stud remover (C) to the left until stud (B) is removed from threaded hole (D).



6. Using clean rag, wipe out threaded hole (D) and surface (E).



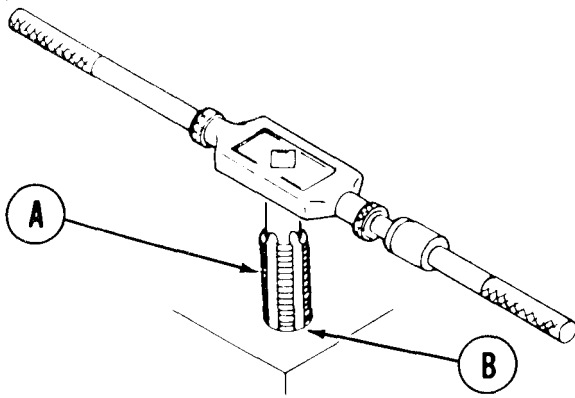
TA140835

**GENERAL MAINTENANCE - Continued**

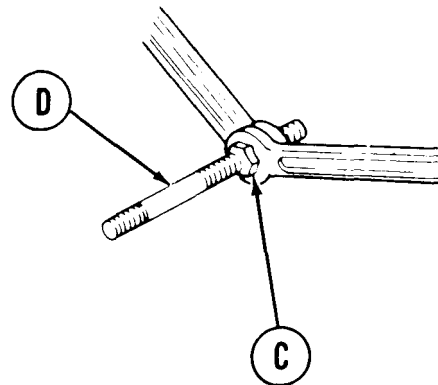
**Installation of New Studs**

TOOLS: Screw threading set

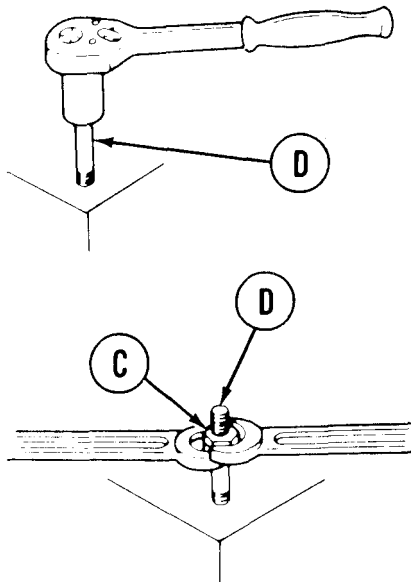
1. Using tap (A), clean out threads in hole (B).



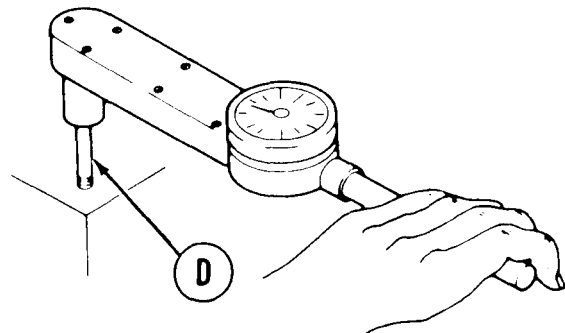
2. Using two wrenches, screw together and jam two nuts (C) onto end of new stud (D).



3. Using socket, install new stud (D) into hole (B).



4. Using torque wrench, tighten new stud (D) to required value (refer to specific maintenance procedure).



5. Using two wrenches, remove two nuts (C) from new stud (D).

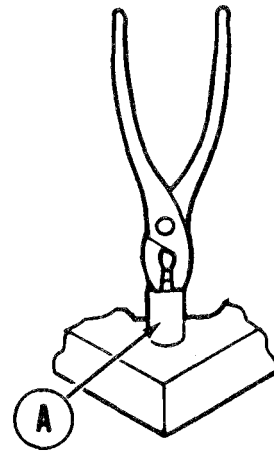
TA140836

**GENERAL MAINTENANCE - Continued**

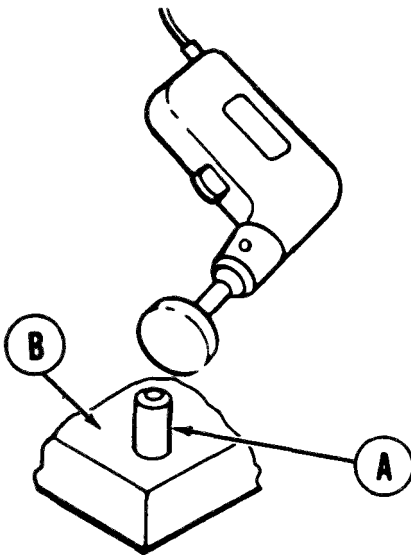
**Dowel Pin Removal**

TOOLS: Slip joint pliers  
 Portable electric hand grinder (if required)  
 Portable electric drill (if required)  
 Twist drill set

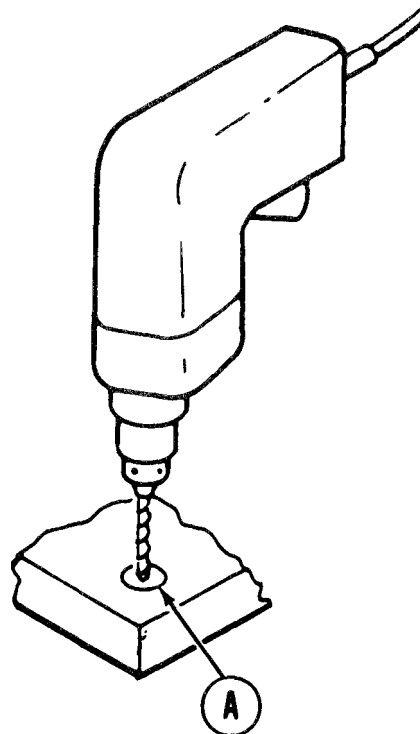
1. Using pliers, grip pin (A).
2. Using pliers, pull out pin (A) with twisting motion.



3. If unable to pull out pin (A) with pliers, using hand grinder, grind pin (A) off flush with surface (B).



4. Using electric drill and twist drill, drill out rest of pin (A).



TA140837

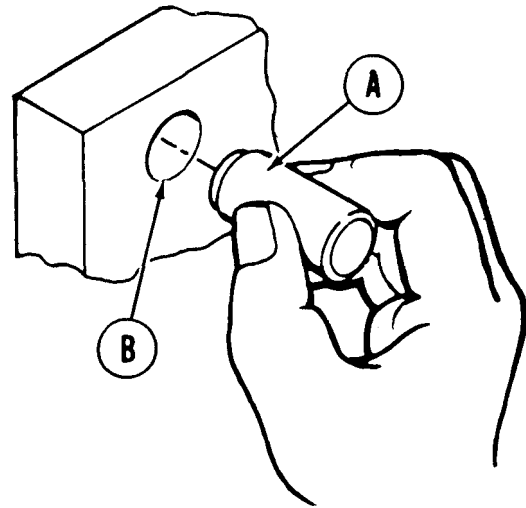
GENERAL MAINTENANCE - Continued

Dowel Pin Installation

TOOLS: Ball peen hammer

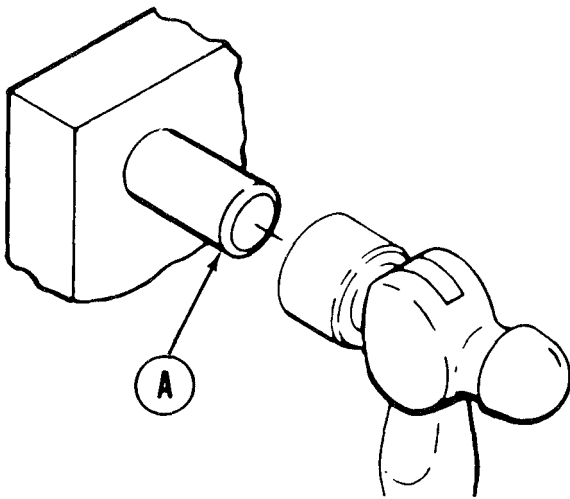
SUPPLIES: Wooden block

1. Place pin (A) into hole (B), keeping pin (A) as straight as possible.

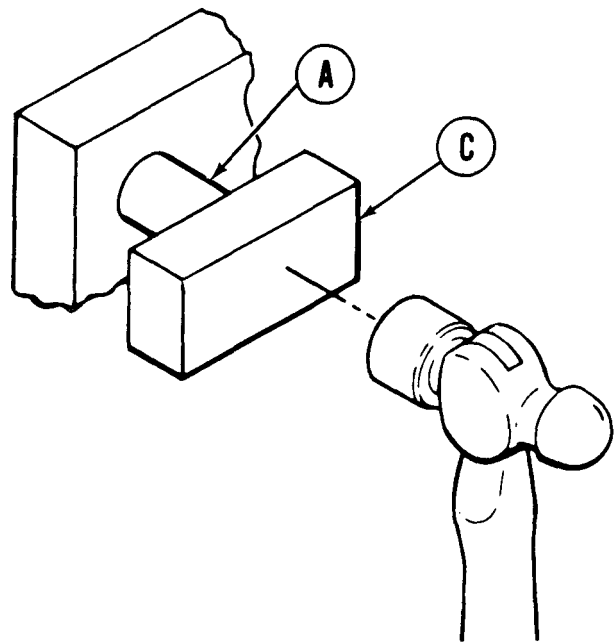


**CAUTION**

If pin (A) is tapped too hard, end will flatten out and pin (A) will not properly seat.



2. Using hammer, lightly tap in pin (A) until seated.
3. If pin (A) cannot be driven by lightly tapping with hammer, using wooden block (C), put wooden block against pin (A) and hit with hammer until pin (A) is seated.



TA140838



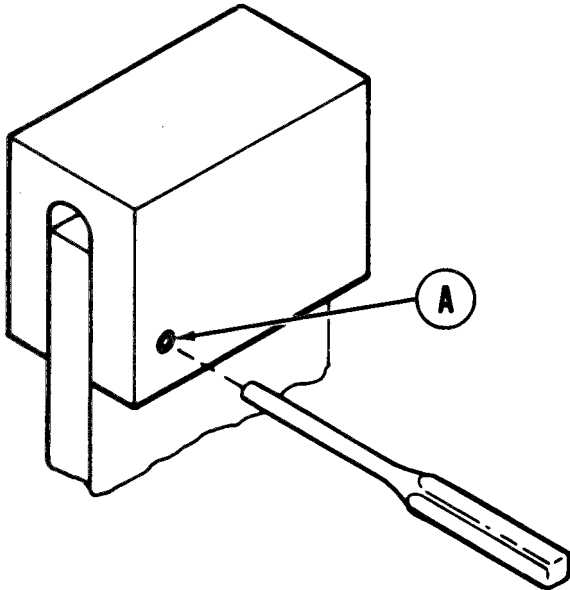
GENERAL MAINTENANCE - Continued

Spring Pin Removal

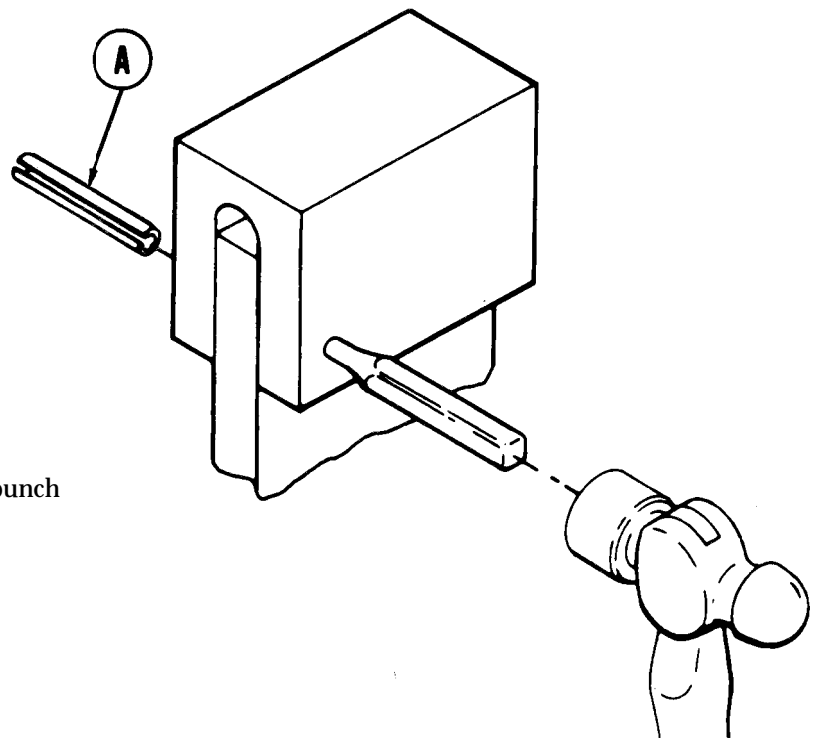
TOOLS: Ball peen hammer  
 Drive pin punch

NOTE

Drive pin punch used to remove spring pin must be about 1/32 inch smaller than pin hole.



1. Put drive pin punch into spring hole and center on pin (A).



2. Using hammer, lightly tap drive pin punch until pin (A) is driven out of hole.

TA140839

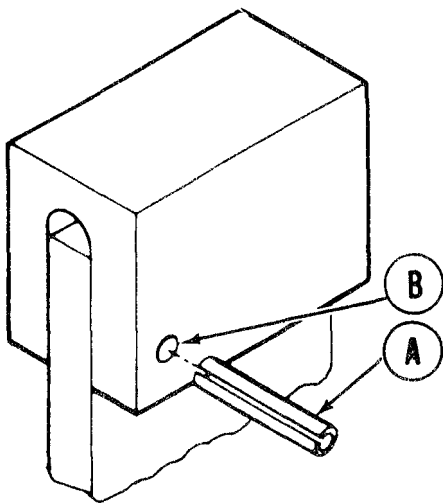
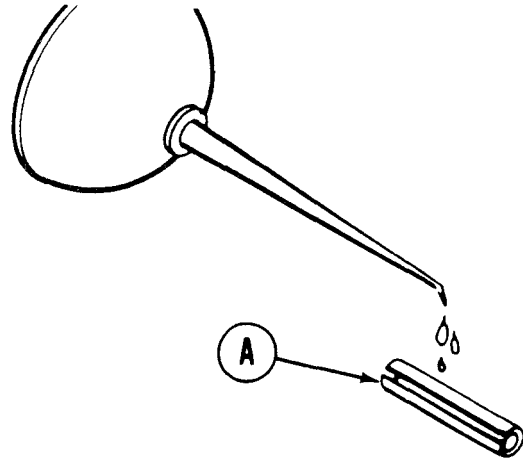
GENERAL MAINTENANCE - Continued

Spring Pin Installation

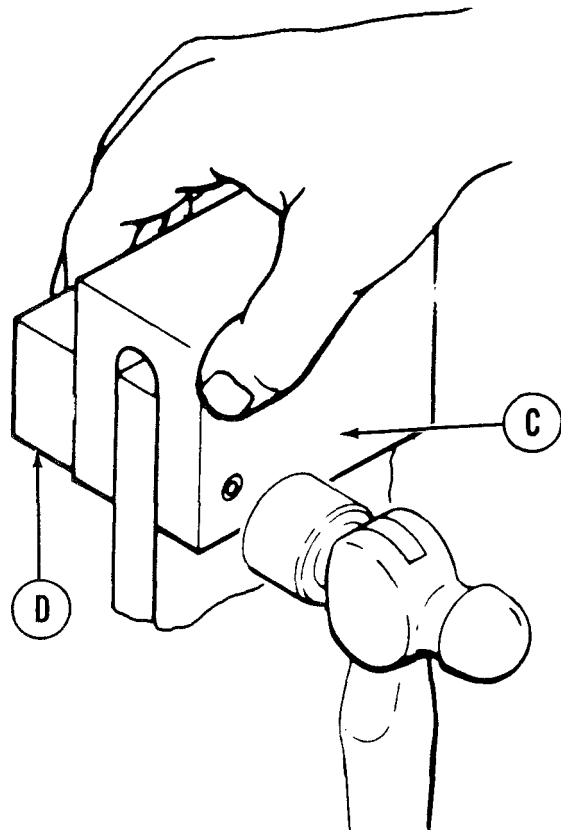
TOOLS: Ball peen hammer  
Hand oiler

SUPPLIES: Lubricating oil (Item 43, Appendix D)  
Wooden block

1. Using oil (Item 43, Appendix D), lightly lube pin (A).



2. Putting spring pin (A) into hole (B), keep it as straight as possible.
3. Using hammer, tap pin (A) until flush with surface (C).



NOTE

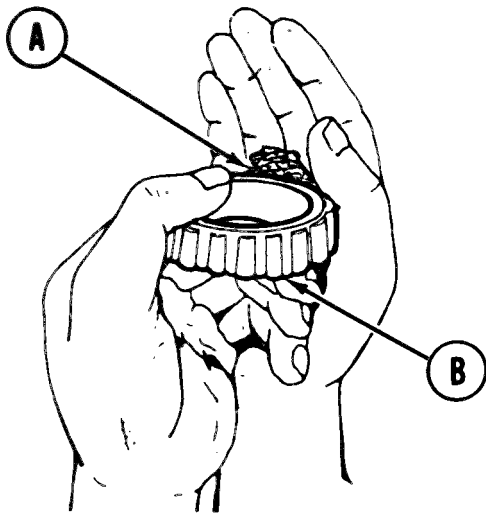
If structure is not sturdy, support opposite end of hole with wooden block (D) while tapping pin (A) into place.

TA140840

**GENERAL MAINTENANCE - Continued**

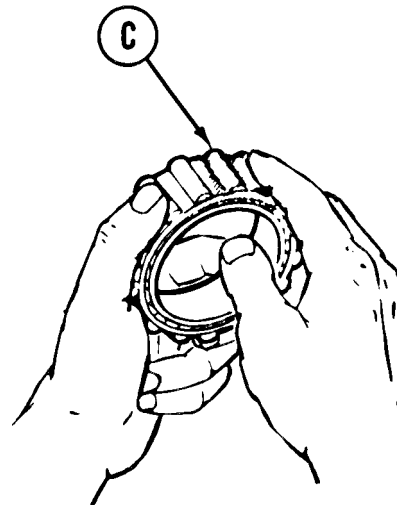
**Hand Lubrication of Bearings**

SUPPLIES: Grease (Item 36, Appendix D)  
Rags (Item 65, Appendix D)



1. Place about 1 ounce of grease (A) (Item 36, Appendix D) into palm of one hand.
2. Holding bearing (B) in other hand, force grease (A) between inner race and cage.
3. Press bearing (B) into grease until grease (A) appears on other side of bearing (B).

4. Turning bearing (B) over, repeat steps 1, 2, and 3.
5. Using light film of grease (A), lube rollers (C).
6. Using clean rags, cover bearing (B) until ready for assembly.



TA140841

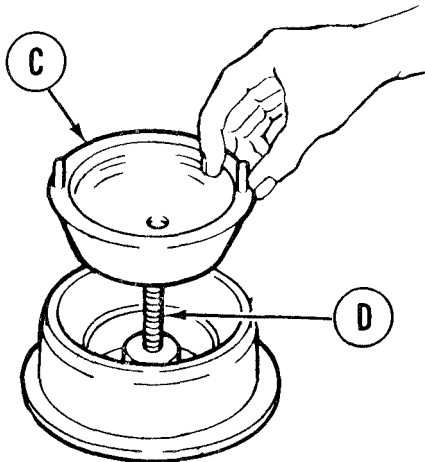
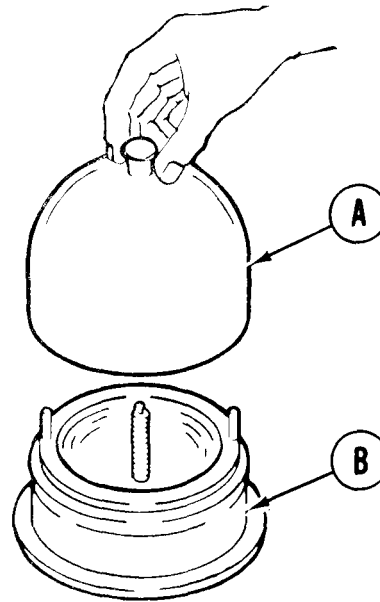
GENERAL MAINTENANCE - Continued

Wheel Bearing Packer Lubrication of Bearings

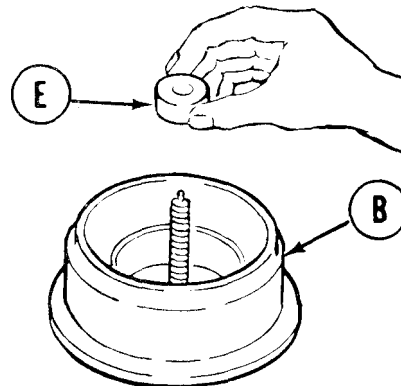
TOOLS: Wheel bearing packer  
Hand grease gun

SUPPLIES: Grease (Item 36, Appendix D)  
Rags (Item 65, Appendix D)

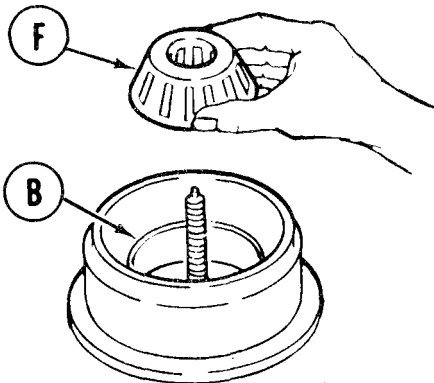
1. Take cover (A) off base (B).



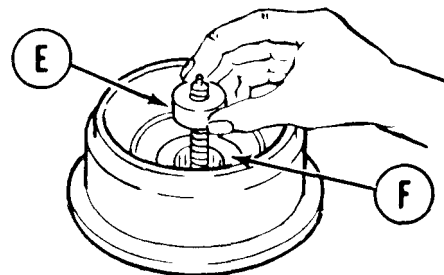
2. Unscrew cap (C) from center post (D).



3. Take insert (E) from base (B).



4. Put bearing (F) into base (B).

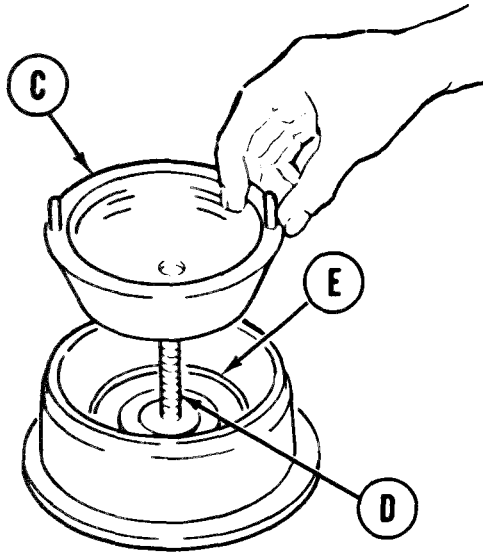


5. Put insert (E) in center of bearing (F) to act as filler.

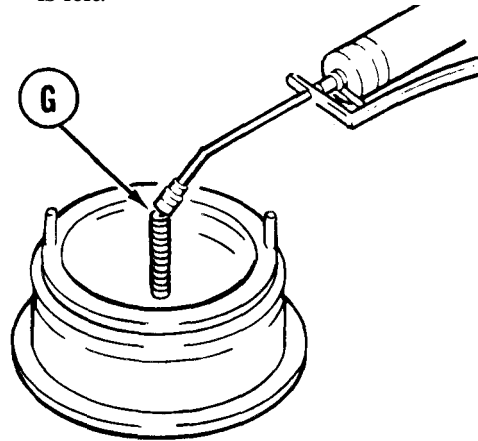
TA140842

GENERAL MAINTENANCE - Continued

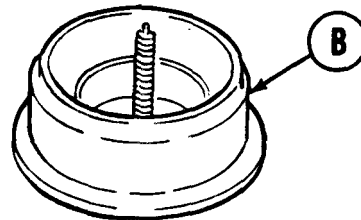
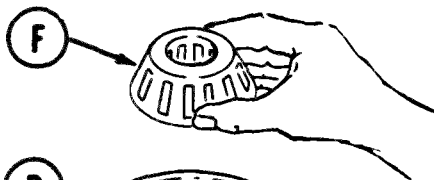
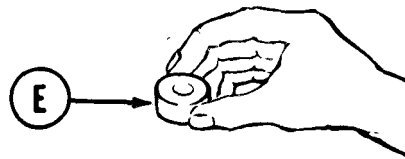
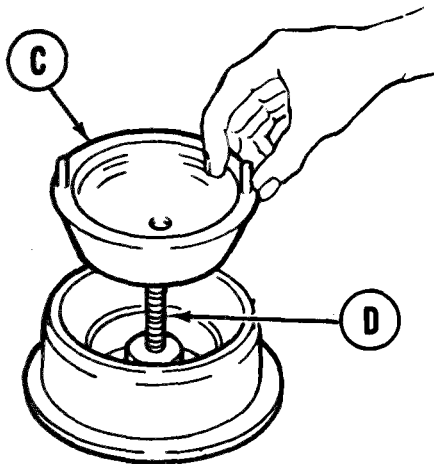
Wheel Bearing Packer Lubrication of Bearings



6. Screw cap (C) onto center post (D) to hold bearing (E) in position.
7. Using grease gun, pump grease (Item 36, Appendix D) into fitting (G) until resistance is felt.



8. Unscrew cap (C) from center post (D).
9. Take insert (E) from base (B).



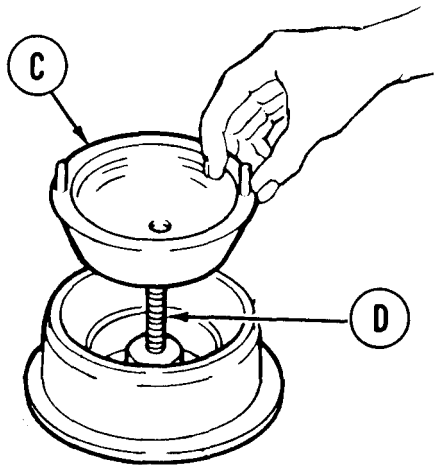
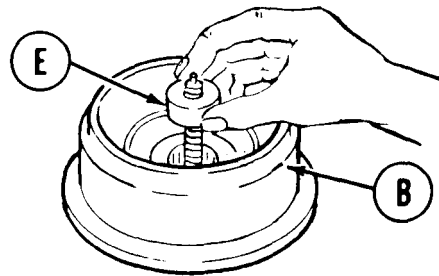
10. Remove bearing (F) from base (B).

TA140843

**GENERAL MAINTENANCE**

**Wheel Bearing Packer Lubrication of Bearings**

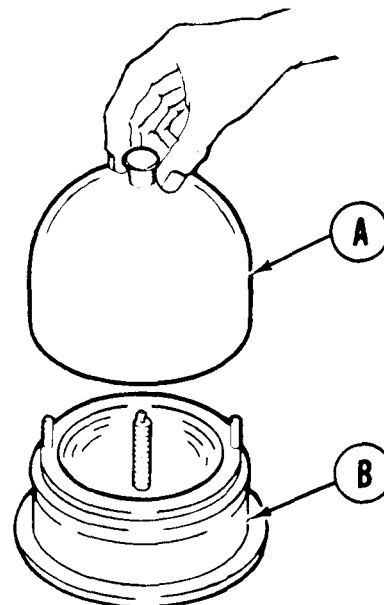
11. Put insert (E) into base (B).



12. Screw cap (C) onto center post (D).

13. Put cover (A) onto base (B).

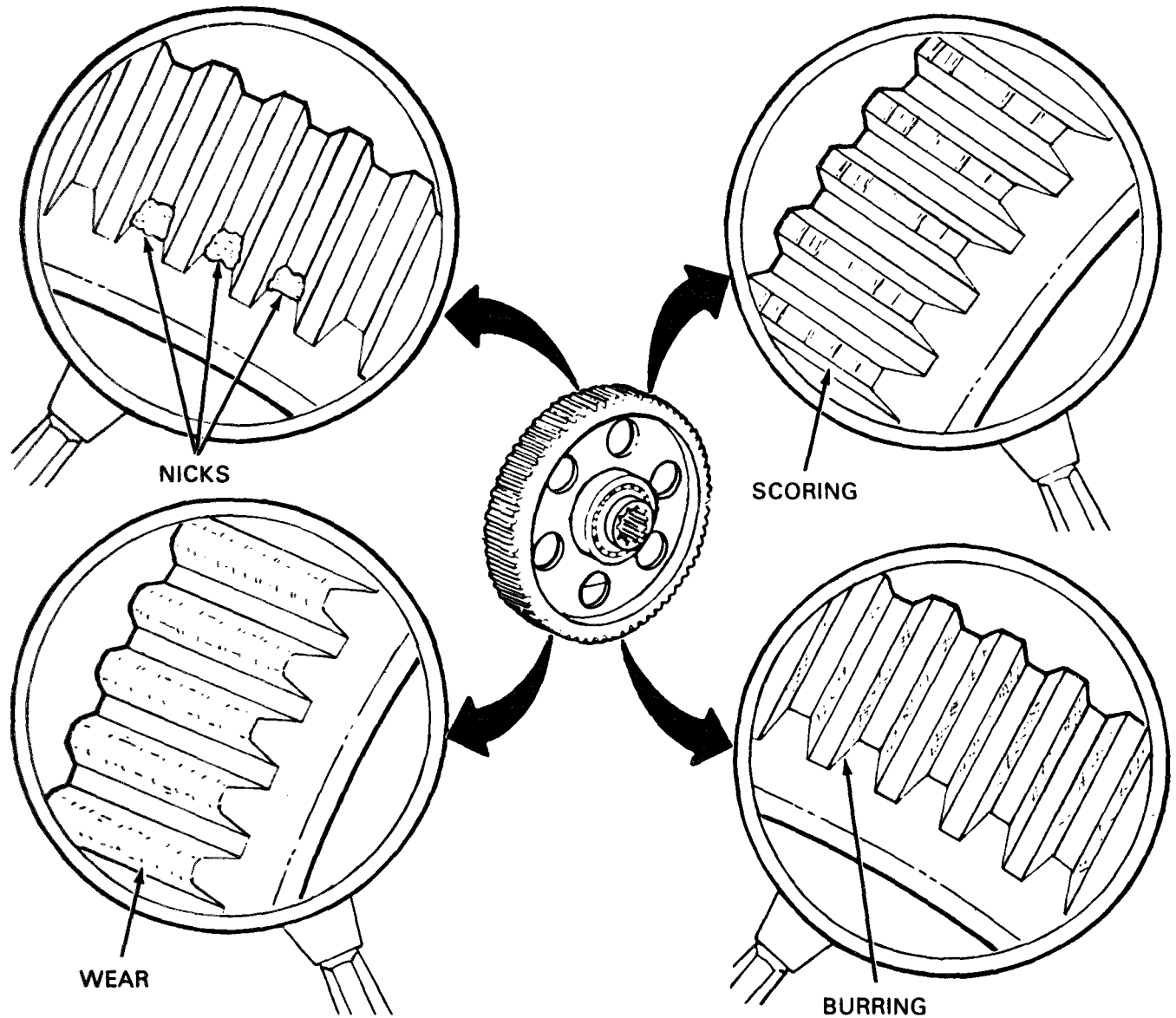
14. Place clean rags over bearing until ready for assembly.



## GENERAL MAINTENANCE - Continued

## Inspection and Repair of Gears

SUPPLIES: Crocus cloth (Item 14, Appendix D)



1. Check gears for wear, nicks, scoring, and burring.
2. Using crocus cloth (Item 14, Appendix D), try to get rid of minor nicks or burring.
3. If minor nicks or burring cannot be removed with crocus cloth, or if any other damage is seen, replace gears.

TA140845

**GENERAL MAINTENANCE - Continued**

**Safety Wiring Procedures**

**NOTE**

The double-twist method of safety wiring is used as the common method of safety wiring. Use the double-twist method for screws in closed geometric patterns which secure hydraulic or air seals, hold hydraulic pressure, or are used in critical areas of clutch mechanisms.

**NOTE**

When safety wiring widely spaced multiple groups (fastenings from 4 to 6 inches apart) by the double-twist method, three units are the maximum number that may be wired in series. When safety wiring multiple groups, the maximum number of units that may be safety wired is limited to the number that can be wired with a 24 inch length of wire.

**NOTE**

The single-wire method is used in a closely spaced (maximum of 2 inches between centers), closed geometric pattern (triangle, square, rectangle, circle, etc.) on parts in electrical systems and in similar places that would make the single-wire method more feasible. Use the single wire method for shear and seal wiring applications.

**NOTE**

Use copper wire only for securing emergency devices and install so that it can be easily broken when required.



**GENERAL MAINTENANCE - Continued****Safety Wiring Procedures****NOTE**

Always use new lockwire.

**NOTE**

Drilled head bolts and screws installed with self-locking nuts or lockwashers usually do not require safety wiring.

**NOTE**

Do not use lockwire to secure fasteners or fittings together that are spaced more than 6 inches apart.

**NOTE**

Use care when installing lockwire to be sure it is tight but not overstressed.

**NOTE**

When safety wiring castellated nuts on drilled studs, tighten nut to low side of torque range (unless otherwise specified) and continue tightening until a slot aligns with hole.

**NOTE**

Safety wire drain plugs and cocks to adjacent (less than 6 inches away) bolts, nuts, or parts having a free lockhole.

**NOTE**

Safety wire electrical connectors which have threaded coupling rings or plugs which have screws to fasten the individual parts of the plug together. Safety wire connectors and plugs individually.

TA140847

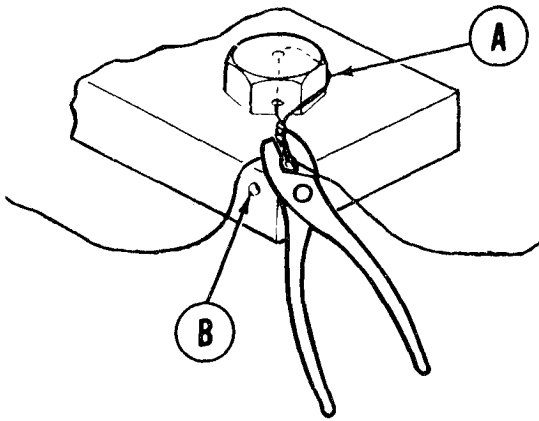
**GENERAL MAINTENANCE - Continued**

**Single Fastener Double-Twist Safety Wiring**

TOOLS: Slip joint pliers  
Diagonal cutting pliers

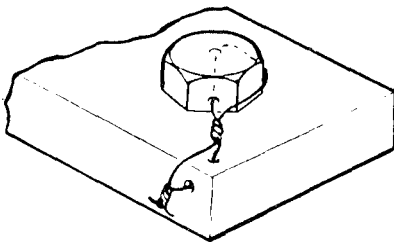
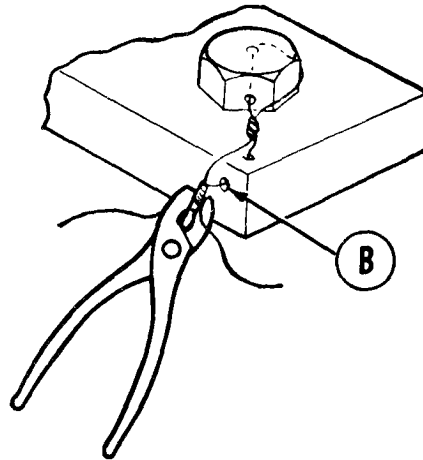
SUPPLIES: Lockwire

1. Using diagonal cutting pliers, cut piece of lockwire about 24 inches long.



2. Run wire through drilled bolt head (A), keeping length of free wire ends the same.
3. Using slip joint pliers, twist wire until wire twist almost reaches drilled hole (B) in plate.

4. Run one leg of wire through drilled hole (B) in plate.
5. Using slip joint pliers, twist wire at least six times.
6. Using diagonal cutting pliers, cut wire leaving a pigtail from 1/4 to 1/2 inch long.



7. Bend pigtail back under to prevent it from becoming a snag.

TA140848

**GENERAL MAINTENANCE - Continued**

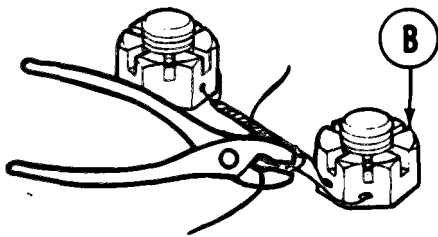
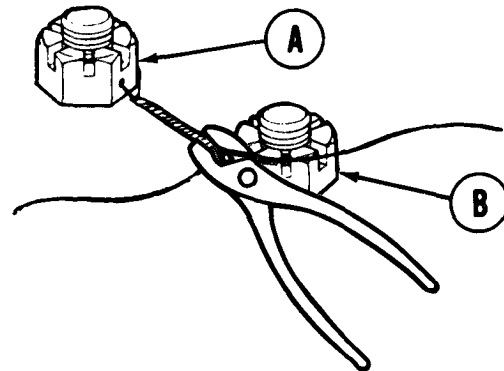
**Castellated Nuts on Undrilled Stud Double-Twist Safety Wiring**

TOOLS: Slip joint pliers  
 Diagonal cutting pliers

SUPPLIES: Lockwire

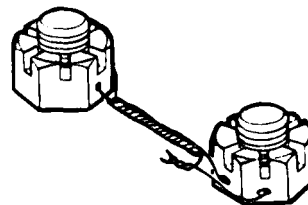
1. Using diagonal cutting pliers, cut a piece of lockwire about 24 inches long.

2. Run wire through nut (A) keeping length of free wire ends the same.
3. Using slip joint pliers, twist wire until wire twist almost reaches next nut (B).
4. Run one leg of wire through nut (B).



5. Using slip joint pliers, twist wire at least six times.

6. Using diagonal cutting pliers, cut wire leaving a pigtail from 1/4 to 1/2 inch long.
7. Bend pigtail back under to prevent it from becoming a snag.



TA140849

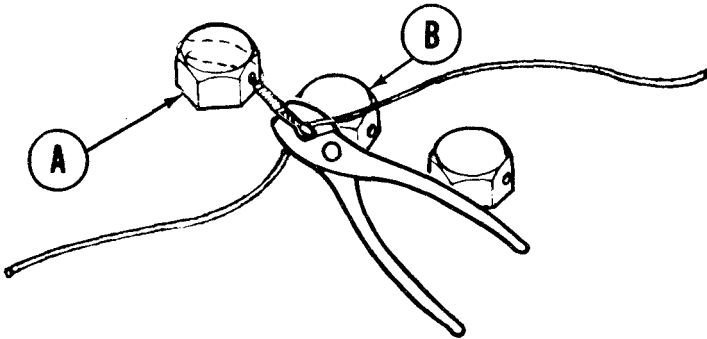
GENERAL MAINTENANCE - Continued

Multiple Fastener Double-Twist Safety Wiring

TOOLS: Slip joint pliers  
Diagonal cutting pliers

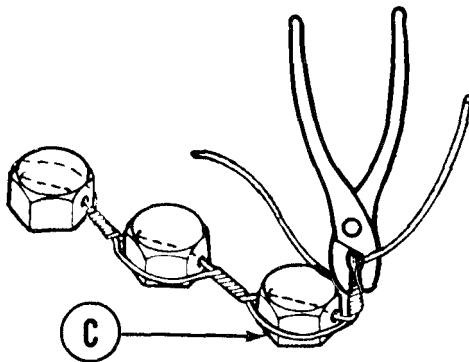
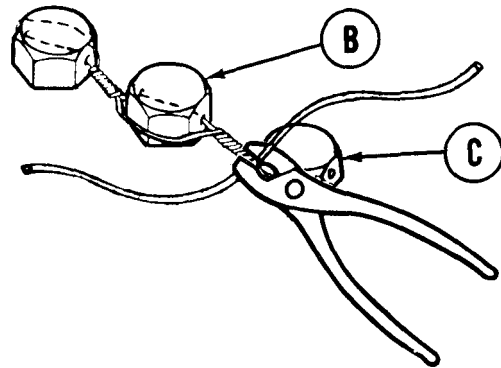
SUPPLIES: Lockwire

1. Using diagonal cutting pliers, cut a piece of lockwire about 24 inches long.



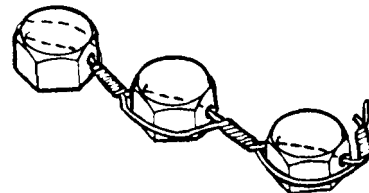
2. Run wire through drilled bolt (A) keeping length of free wire ends the same.

3. Using slip joint pliers, twist wire until twist almost reaches next bolt head (B).
4. Run one leg of wire through bolt head (B).
5. Using slip joint pliers, twist wire until wire twist almost reaches next bolt head (C).
6. Run one leg of wire through bolt head (C).



7. Using slip joint pliers, twist wire at least six times.
8. Using diagonal cutting pliers, cut wire leaving a pigtail from 1/4 to 1/2 inch long.

9. Bend pigtail back under to prevent it from becoming a snag.



TA140850

**GENERAL MAINTENANCE - Continued**

**External Snap Ring Single Wire Safety Wiring**

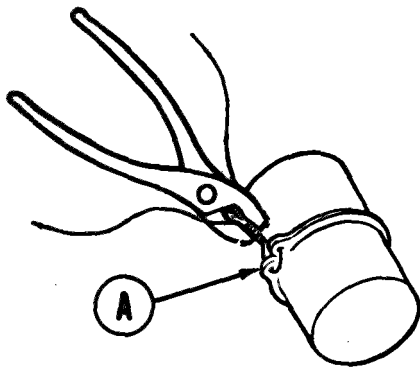
TOOLS: Slip joint pliers  
 Diagonal cutting pliers

SUPPLIES: Lockwire

**NOTE**

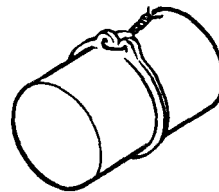
**Do not safety wire internal snap rings.**

1. Using diagonal cutting pliers, cut a piece of lockwire about 12 inches long.



2. Run wire through two holes in external snap ring (A), keeping length of free wire ends the same.
3. Using slip joint pliers, twist wire at least six times.

4. Using diagonal cutting pliers, cut wire leaving a pigtail from 1/4 to 1/2 inch long.
5. Bend pigtail back under to prevent it from becoming a snag.



TA140851

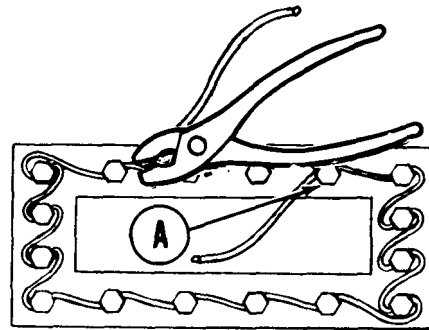
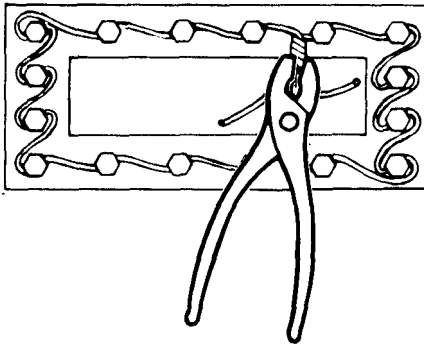
GENERAL MAINTENANCE - Continued

Small Screws in Closely Spaced, Closed Geometrical Pattern Single Wire Safety Wiring

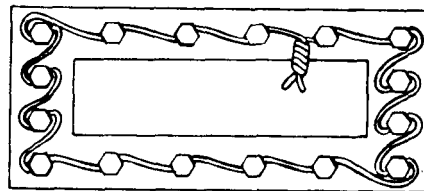
TOOLS: Slip joint pliers  
Diagonal cutting pliers

SUPPLIES: Lockwire

1. Using diagonal cutting pliers, cut a piece of lockwire long enough to hold the screws in the pattern being wired.
2. Using slip joint pliers, run wire through nuts, leaving enough wire pigtailing from nut (A) so completed lacing may be secured by twisting.



3. Using slip joint pliers, twist wire at least six times.



4. Using diagonal cutting pliers, cut wire leaving a pigtail from 1/4 to 1/2 inch long.
5. Bend pigtail back under to prevent it from becoming a snag.

**APPENDIX D**  
**EXPENDABLE SUPPLIES AND**  
**MATERIALS LIST**

**Section I. INTRODUCTION**

**Scope.**

This appendix lists expendable supplies and materials you will need to operate and maintain the M728 hull. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

**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 sealer compound, (Item 15, Appendix D).

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

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

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

*d. Column 4 - Description.* Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses if applicable.

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

SECTION II. EXPENDABLE SUPPLIES AND MATERIALS LIST

TEM	LEVEL	STOCK	DESCRIPTION	U/M
1	O	8040-01-027-4900	Adhesive (MIL-A-25457)	PT
2	O	8040-00-262-9025	Adhesive (MIL-A-5092, Type II)	PT
3	O		Adhesive (MIL-A-1154)	PT
4	O	8040-00-664-4318	Adhesive (MMM-A-1617, Type II), Rubber	PT
5	O	8040-00-118-2695	Adhesive (MIL-A-46146, Type I)	PT
5.1	O		Adhesive (MIL-A-46106, Type I)	PT
6	O		Adhesive, Sealing (MIL-A-3562)	OZ
7	O	8040-00-149-0136	Adhesive, Silicone (SR-529)	OZ
8	O	6810-00-286-5435	Alcohol (TT-I-735, Grade A)	QT
9	O		Asbestos, Sheet	FT
10	O		Brush, Paint	EA
11	O	7510-00-223-6701	Chalk, White	EA
12	C	8305-00-286-5451	Cloth, Lint Free	YD
13	C	6640-00-240-5851	Cloth, Soft, Lens Cleaning (NNN-P-40)	EA
14	C	5350-00-221-0872	Cloth, Crocus (P-C-458)	SH
14.1	O	8030-00-153-4953	Compound, Antiseize (MIL-A-13881)	LB
15	O	8030-00-148-9833	Compound, Locking (MIL-S-46163, Type II, Grade N)	CC
16	O	8030-01-014-5869	Compound, Locking (MIL-S-46163, Type II, Grade O)	PT
17	O		Compound, Locking (MIL-S-46163, Type II, Grade M)	PT
18	O		Compound, Locking (MIL-S-46164)	PT
19	O		Compound, Sealing (MIL-A-1617)	PT
20	O		Compound, Sealing (MIL-A-1617, Type II)	PT
21	O		Compound, Sealing (MIL-A-12274, Type III)	PT
22			<b>Deleted</b>	
23	O	8030-00-088-7818	Compound, Sealing (MIL-S-7916)	OZ
24	O	8030-00-275-8110	Compound, Sealing (MIL-S-11031)	PT
25	O	8030-00-081-2340	Compound, Sealing (MIL-S-22473, Grade AA)	PT
26	O	8030-00-081-2337	Compound, Sealing (MIL-S-22473, Grade AY)	QT
27	O	8030-00-964-7537	Compound, Sealing (MIL-S-22473, Grade C)	OZ
28	O	8030-00-081-2330	Compound, Sealing (MIL-S-22473, Grade CV)	BT
29	O	8030-00-081-2327	Compound, Sealing (MIL-S-22473, Grade E)	PT
30	O	8030-00-081-2325	Compound, Sealing (MIL-S-22473, Grade HV)	BT
31	O	8030-01-067-6198	Compound, Sealing (MIL-S-22473, Grade N, Form R)	PT
32	C	6850-00-880-7616	Compound, Silicone (MIL-S-8660)	OZ
33	O	7390-00-990-7391	Detergent, Liquid	DR
34	C	9150-00-265-9407	Fluid, Brake Hydraulic (MIL-H-13919) (Arctic Conditions)	QT
35	O		Fluid, Cleaning (MIL-C-8130B, Type II)	BT
36	C	9150-00-935-1017	Grease, GAA (MIL-G-10924)	LB
36.1	O	9150-00-119-9291	Grease, Aircraft (MIL-G-4343)	LB



## SECTION II. EXPENDABLE SUPPLIES AND MATERIALS LIST (Cont'd)

(1) Item	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
37	C	9150-00-965-2003	Grease, GMD (MIL-G-21164)	LB
38	O	8010-00-823-8046	Glyptol (MIL-E-22118)	OZ
39	C	9150-00-190-0932	Hydraulic Fluid, HB, Non-Petroleum Base (VV-B-680)	GA
40	C	9150-00-231-2361	Lubricant (MIL-L-3150)	QT
41	O		Material, Plastic, Barrier	
42	O	9150-00-223-4119	Oil, Penetrating (VV-P-216)	QT
43	O	9150-00-265-9425	Oil, Lubricating, Grade 10 (OE/HDO10) (MIL-S-2104)	QT
44	O	8030-01-041-1602	Paint, Acid Resistant, Black (MIL-P-20689)	QT
45	O	8030-01-041-1600	Paint, Acid Resistant (MIL-P-22750)	QT
46	O	8010-01-050-2555	Paint, Forest Green (MIL-E-52798)	QT
47	O	8010-00-286-7725	Paint, White (TT-E-489)	
48	O	8030-00-963-0930	Primer (MIL-S-22743, Type T)	QT
49	O		Primer, Paint (TT-P-646)	QT
50	O	8010-00-899-0931	Primer, Zinc Chromate (TT-P-1757)	QT
51	O		Sandpaper	
52	O	8040-00-426-0652	Sealant (MIL-A-46146, Type I)	OZ
53	O	8030-00-837-5885	Sealant (MIL-S-45180, Type II)	OZ
54	C	6850-00-281-1985	Solvent, Dry Cleaning (PD-680 Type II, SD-2)	GA
55	C		Steel Wool	
56	C		Tape, Masking 1/4 inch	RL
57	C		Tape, Masking 1/2 inch	RL
58	C	5970-00-419-3164	Tape, Electricians (MIL-I-24391)	RL
59	O	9505-00-191-3680	Wire, Steel, Carbon (QQ-W-461)	RL
60	O	9505-00-684-4843	Wire, Nonelectrical	LB
61	O		Wire, Steel, Carbon	LB
62	O	8030-00-275-8110	Accelerator and Sealer (Kit)	EA
63	O	3439-00-307-7333	Solder, Tin Alloy, Lead-Tin Alloy and Lead Alloy	RL
64	C	4020-00-689-5688	Rope, Manila, 3/4 in. (81348) TR605	FT
65	C	7920-00-205-1711	Rag, Wiping, Cotton, White (81348) (DDR 30 GB)	LB
66	O	8040-00-270-8137	Adhesive (MIL-A-8623, Type I) or use NSN 8040-01-036-3771	KT
67	O	8030-00-244-1300	Compound, Corrosion Preventive (MIL-C-16173, Grade I)	DR
68	O	8030-00-398-4130	Tape, Sealing (MIL-T-27730)	RL
69	O	8040-00-222-9038	Adhesive, M3 Periscope	QT
70	O	9920-00-292-9946	Cleaner, Pipe	EA
71	O	4720-00-964-1433	Tubing, Nonmetallic	FT
72	O	8415-00-634-4658	Gloves, Leather	PR
73	O	8415-00-641-4601	Gloves, Rubber	PR
74	O	4240-00-017-9768	Goggles, Industrial	PR
75	O	8040-00-851-0211	Adhesive, Loctite, 593-45	OZ

SECTION II. EXPENDABLE SUPPLIES AND MATERIALS LIST (Cont'd)

(1) Item	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
76	O	4240-00-542-2048	Shield, Face	EA
77	O	8020-00-297-6657	Brush, Paint	EA
78	O	3439-00-204-2555	Brazing Alloy, Copper	LB
79	O	3439-00-255-4577	Flux, Welding	LB
80	O	8030-00-244-1293	Corrosion Preventive (MIL-C-16173)	CN
81	O	9150-00-948-6912	Lubricant, Solid Film	QT
82	O	3439-00-262-2653	Electrode, welding	LB
83	O	5365-00-768-7080	Shim	EA

**APPENDIX E**  
**ELECTRICAL SCHEMATICS**

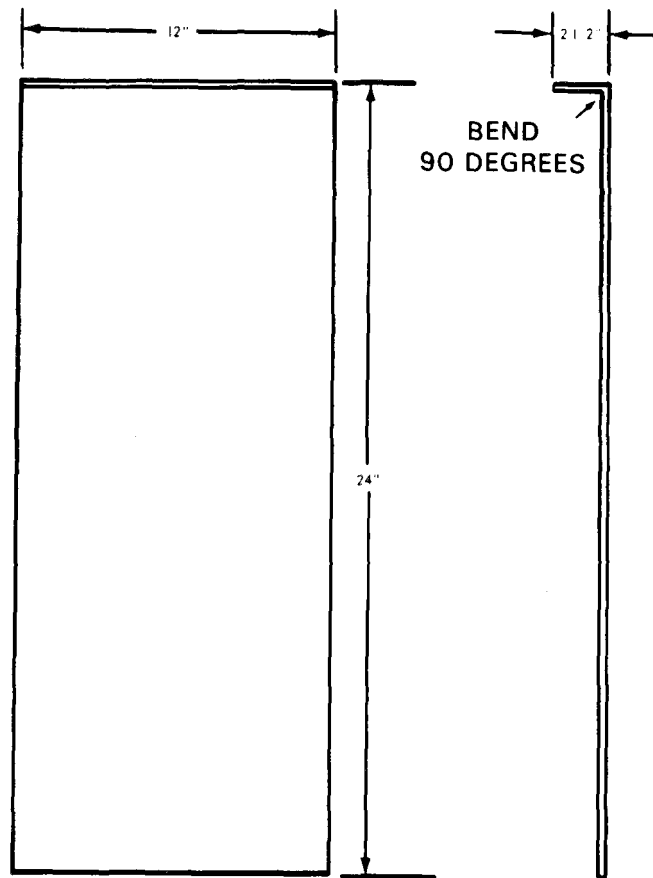
Refer to FO-1 and FO-2 in the back of this manual for the hull electrical system schematic diagram.



APPENDIX F

ILLUSTRATED LIST OF MANUFACTURED ITEMS

MATERIAL		
STOCK SIZE	DESCRIPTION	FABRICATING REQUIREMENT
11 to 16 Gauge	Sheet Metal	1. Bend 90 degrees 2. Tolerance +0 -1/4 Inch



NOTE: 2 EACH REQUIRED.

Figure F-1. Final drive guide shield.

TA141269

MATERIAL		
STOCK	DESCRIPTION	FABRICATING REQUIREMENT
MS35916	Tachometer	Assemble to Shaft
MS52116-1	Shaft Assembly	Assemble to Tachometer

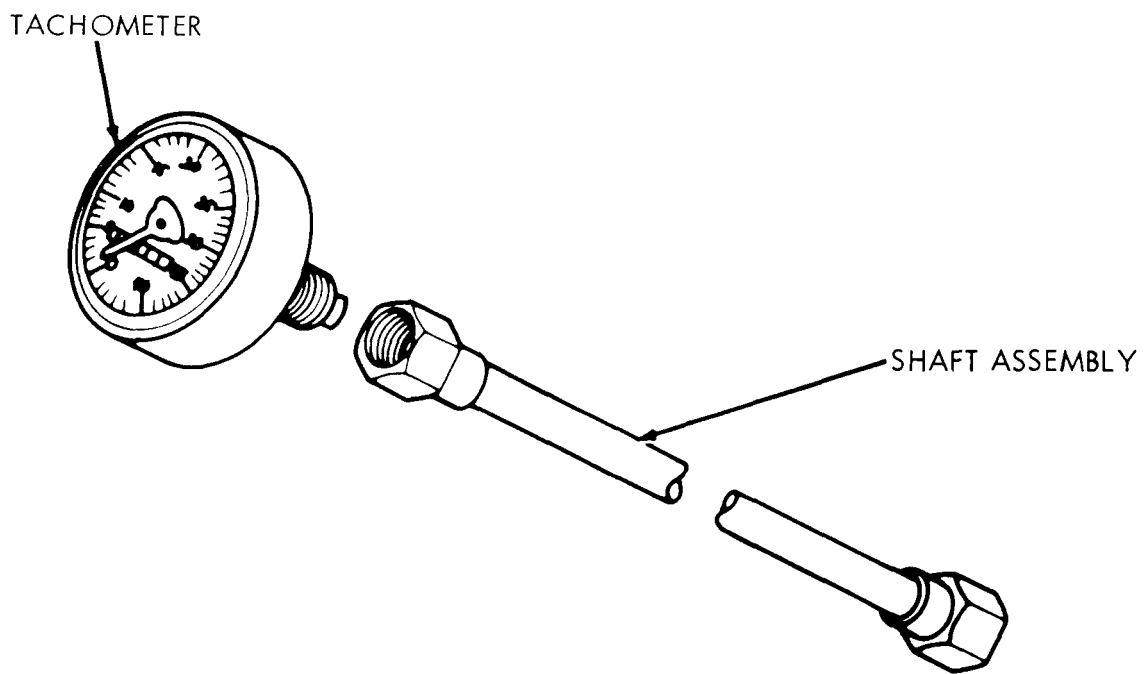


Figure F-2. Tachometer assembly.

TA141270

MATERIAL		
STOCK SIZE	DESCRIPTION	FABRICATING REQUIREMENT
1010 to 1025	Steel Rod, 3/16 in. dia.	<ol style="list-style-type: none"> <li>1. Grind one end as shown.</li> <li>2. Bend rod as shown.</li> <li>3. Remove burrs and break sharp edges.</li> <li>4. Tolerance: +1/16 in.</li> </ol>

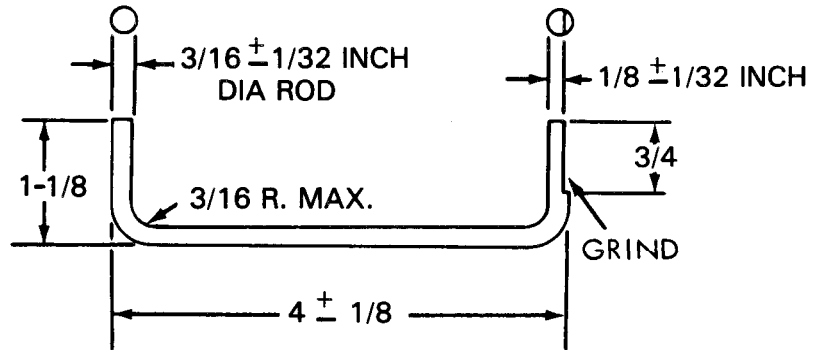


Figure F-3. Throttle linkage adjusting go-no go gage.

MATERIAL		
STOCK	DESCRIPTION	FABRICATING REQUIREMENT
P/N: 7379233 NSN: 2520-00-737-9233 NOTE: MAY BE SALVAGED FLANGE.  P/N: 10904402 NSN: 2510-00-020-2331 NOTE: CLIPS MAY BE MADE FROM ANGLE IRON OR FORMED FROM 1/4" STEEL.	1 EA QUICK DISCONNECT FLANGE  6 EA DECK CLIP	<ol style="list-style-type: none"> <li>CUT EARS OFF QUICK DISCONNECT FLANGE 1/4" OUTSIDE LIP (6.5" DIA)</li> <li>MACHINE FLAT SIDE UNTIL TOOL THICKNESS IS APPROXIMATELY 1" TO 1-5/32". (THIS STEP OPTIONAL IF MACHINE SHOP SERVICES ARE NOT AVAILABLE. )</li> <li>CUT RING IN THREE PLACES SO THAT EACH LARGE PIECE HAS 14 SPLINE TEETH.</li> <li>DEBURR SPLINE TEETH EDGES WITH WIRE BRUSH OR WIRE WHEEL IF NECESSARY.</li> <li>USING BENCH GRINDER OR EQUIVALENT, GRIND APPROXIMATELY 3" RADIUS INTO SHORT ARM OF DECK CLIP. DEBURR EDGES</li> <li>CUT OFF DECK CLIP TO A LENGTH OF 1-5/16".</li> <li>IF USING ANGLE IRON, FABRICATE GUIDE CLIPS GRIND AS IN STEP 4.</li> </ol>

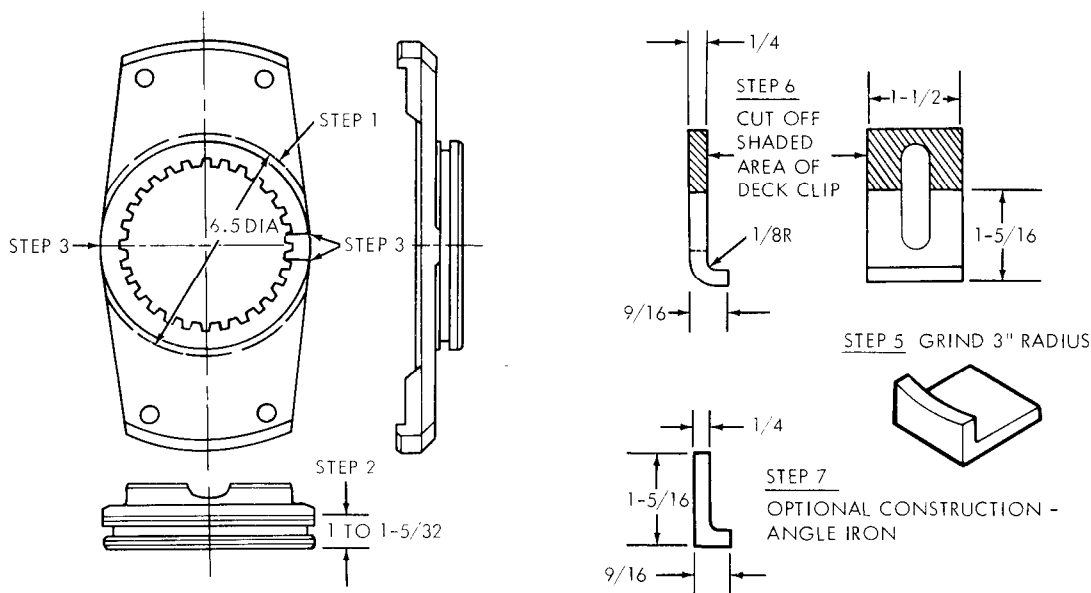


Figure F-4. Final drive adapter hook-up tool (Sheet 1 of 2).



MATERIAL		
STOCK	DESCRIPTION	FABRICATING REQUIREMENT
		<p>8. GRIND OR FILE APPROXIMATELY 1/8" OFF THE TWO INSIDE CORNERS OF THE CLIPS AT EACH END, TO AID TOOL ENGAGEMENT.</p> <p>9. WELD THREE GUIDE CLIPS TO EACH SEMICIRCULAR FLANGE PIECE.</p> <p>NOTE THE TWO CUPS ON THE ENDS SHOULD BE ANGLED OUT SLIGHTLY,</p> <p>10. WELD APPROXIMATELY 48" OF SMALL LINK CHAIN (WITH AN EYE AT THE FREE END) TO THE CENTER CLIP.</p>

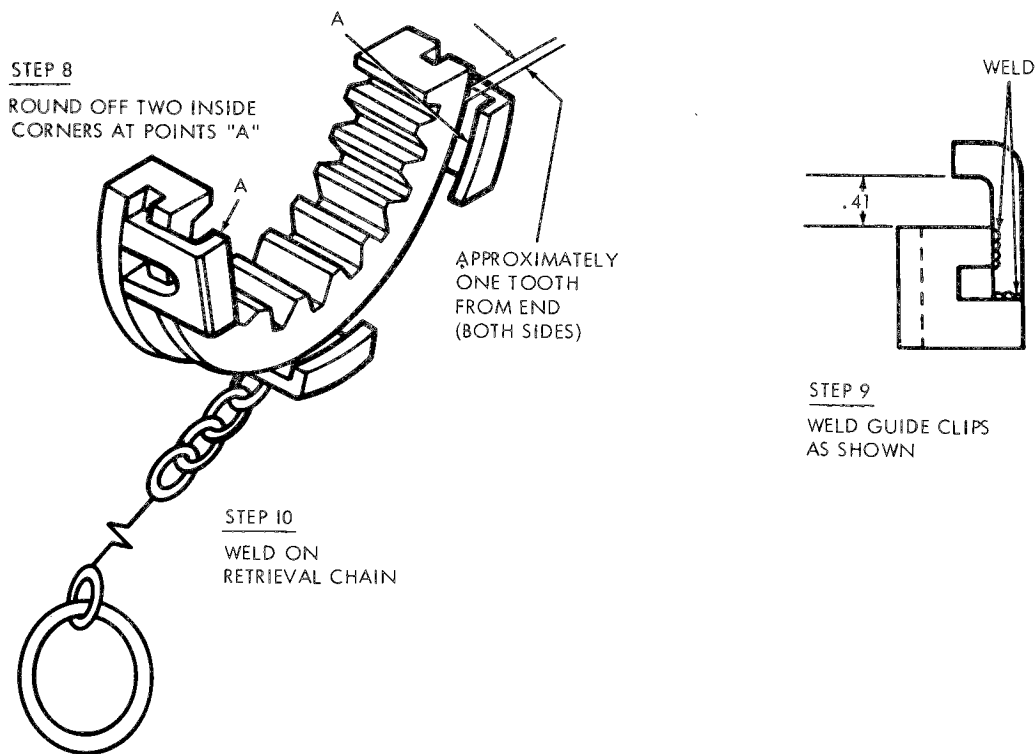


Figure F-4. Final drive adapter hook-up tool (Sheet 2 of 2).

MATERIAL		
STOCK	DESCRIPTION	FABRICATING REQUIREMENT
1010 to 1025 Steel	Bar stock: 1 x 1-1/8 x 3/4 (New) 1 x 15/16 x 3/4 } (Old) 1 x 3/16 x 3/4 }	1. Remove burrs and sharp edges. 2. Tolerance: $\pm 1/32$ in.

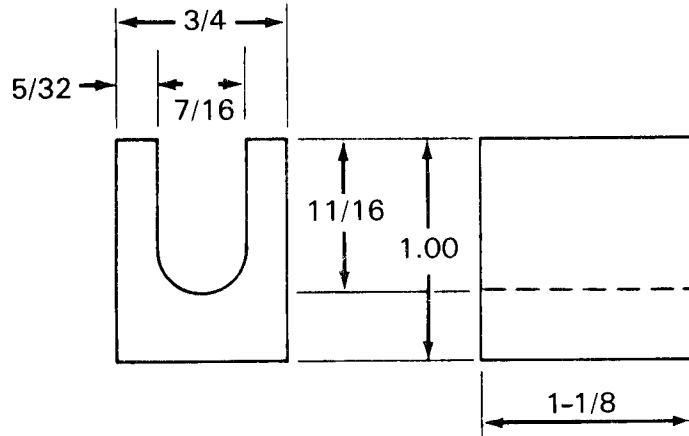


Figure F-5. Parking brake adjusting tool.

MATERIAL		
STOCK	DESCRIPTION	FABRICATING REQUIREMENT
1 X 8 N.C. 2 in. I.D. MS27 183-28 5146158	A. Nut, 1-1/2 in. flats B. Pipe, 3-1/2 in. lg. C. Flat washer 1-1/4 I.D. x 2-1/2 O.D. x 3/16 in. D. Nut, 2-1/2 in. flats	Weld parts as shown.

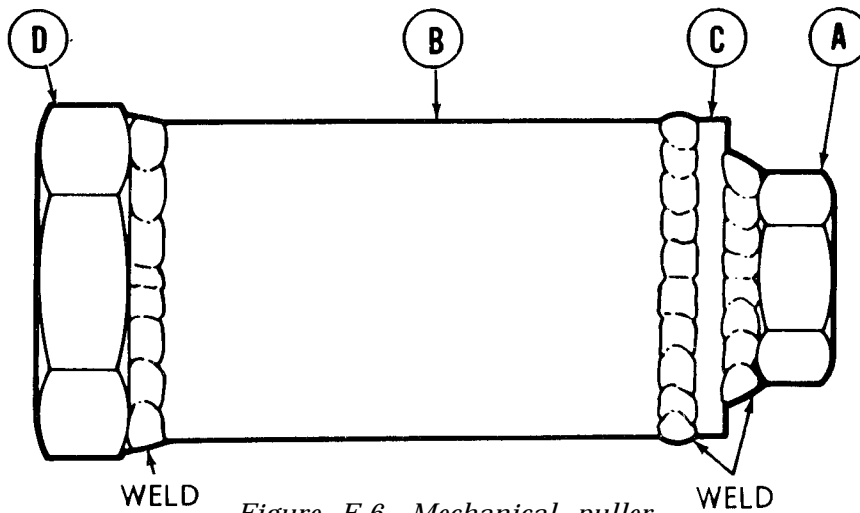


Figure F-6. Mechanical puller.

MATERIAL		
STOCK	DESCRIPTION	FABRICATING REQUIREMENT
MS3106R10SLASC	Connector, electrical	<ol style="list-style-type: none"> <li>1. If using 20 ft. wire, cut in 10 ft. lengths and connect to connector (A).</li> <li>2. If using optional wire, connect one black wire and one red wire to connector (A).</li> <li>3. Wrap electrician's tape around both wires at connector.</li> <li>4. Cut two 3 inch long pieces of heat shrink tubing and slide one piece onto each wire.</li> <li>5. Solder one lug terminal to each wire.</li> <li>6. Connect lug terminals to power clips with screws and bend ears of power clips over wires.</li> <li>7. Slide heat shrink tubing onto power clip connection and using heat gun, shrink tubing.</li> </ol>
M13486/1-3	Wire, black, electrical 16 ga., 20 ft. lg	
(OPT) M22759/16-16-0	Wire, black, electrical 16 ga., 10 ft. lg.	
(OPT) M22759/16-16-2	Wire, red, electrical 16 ga., 10 ft. lg.	
(OPT) M81044/12-16-0	Wire, black, electrical 16 ga., 10 ft. lg.	
(OPT) M81044/12-16-2	Wire, red, electrical 16 ga., 10 ft. lg.	
W-C-440B Type PC4	Power clip (2 required)	
8/32 UNC-2A x 1/4 lg	Screw (2 required)	
MIL-R-46846, Type V	Heat shrink tubing, 1 ft. lg	
7056709	Lug Terminal	
NSN 3439-00-307-7333	Solder (Item 64, Appendix D)	
NSN 5970-00-419-3164	Electricians tape (Item 59, Appendix D)	

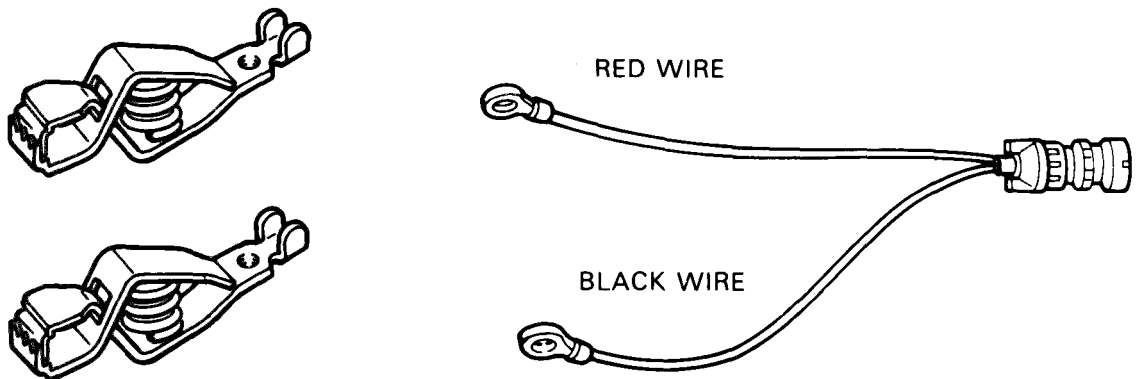


Figure F-7. Fuel-Water Separator Test Cable

TA141275

MATERIAL		
STOCK	DESCRIPTION	FABRICATING REQUIREMENT
M13486/1-3	Wire, electrical 16 gage, 3-5 ft. lg.	<ol style="list-style-type: none"> <li>1. Cut heat shrink tubing into two equal lengths and slide onto wire.</li> <li>2. Solder lug terminals to each end of wire.</li> <li>3. Connect lug terminals to power clips with screws. Bend tabs of power clips over wire.</li> <li>4. Shrink tubing over ends of lug terminal and wire connections.</li> </ol>
W-C-440B Type PC4	Power clip (2 required)	
7056709	Lug Terminal (2 required)	
8/32 UNC-2A x 1/4 lg.	Screw (2 required)	
NSN 3439-00-307-7333	Solder (Item 64, Appendix D)	
MIL-R-46846, Type V	Heat shrink tubing, 6 in. lg.	

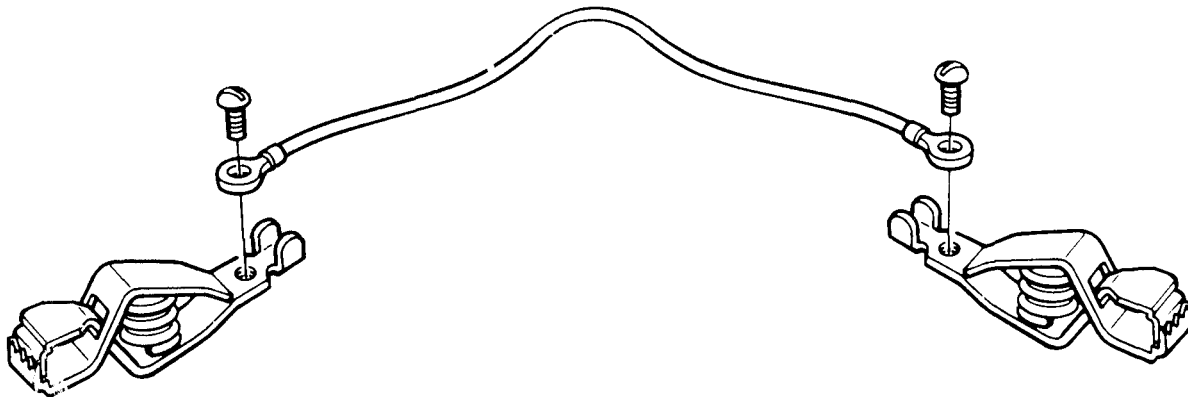


Figure F-8. Fuel-Water Separator Test Cable

TA141276

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By Order of the Secretary of the Army:

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*General, United States Army*  
*Chief of Staff*

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To be distributed in accordance with DA Form 12-37, Organizational Maintenance requirements  
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109		51	
2-8			2-1
12	1-6a		

Item 10. Change illustration. Reason: Tube end shown assembled on wrong side of lever cam.

Item 3. The NSN and P/N are not listed on the AMDF nor the MCRL. Request correct NSN and P/N be furnished.

Preventive Maintenance Checks and Services. Item 7 under "Items to be inspected" should be changed to read as follows: Firing linkage and firing mechanism pawl.

Since there are both 20- and 30- round magazines for this rifle, data on both should be listed.

SAMPLE

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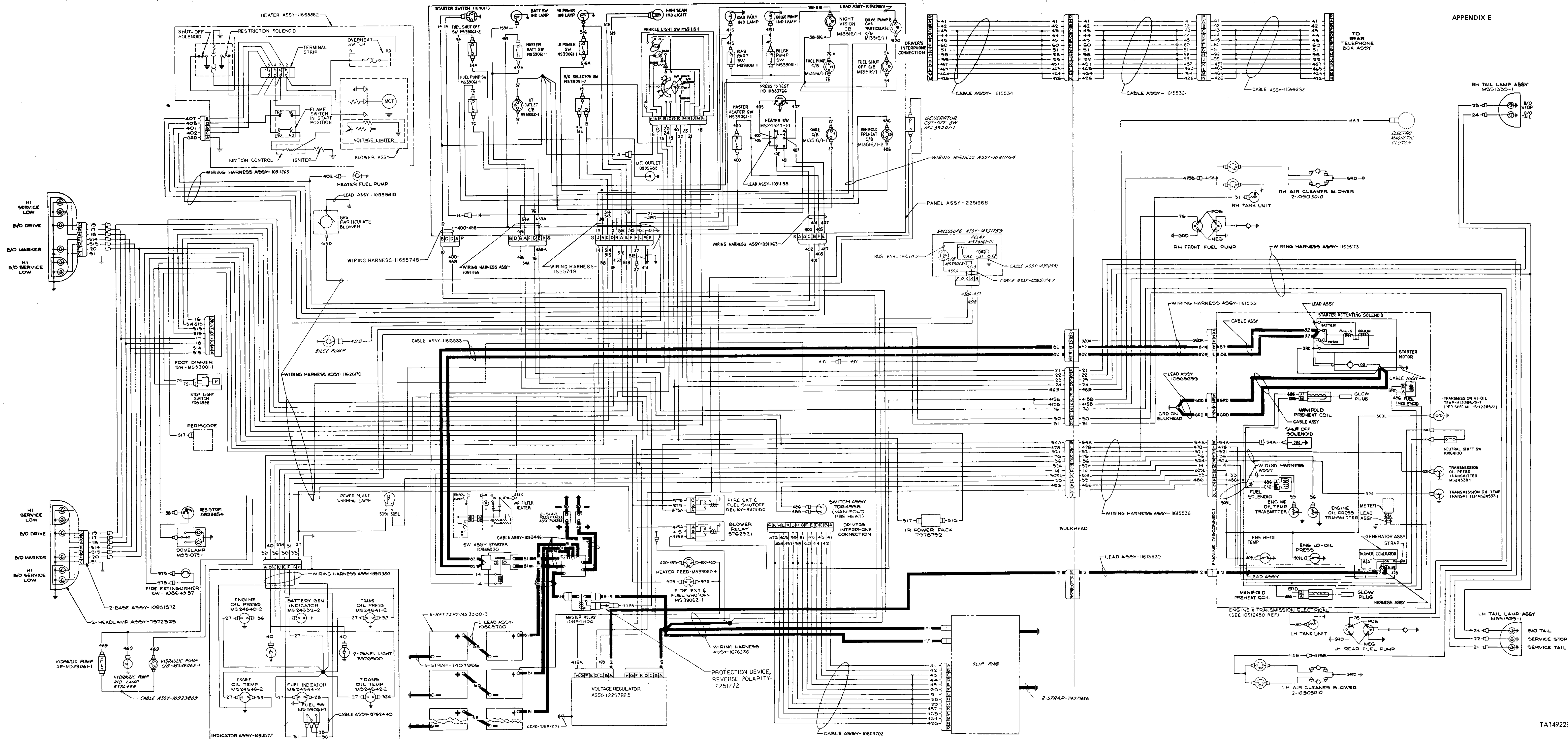
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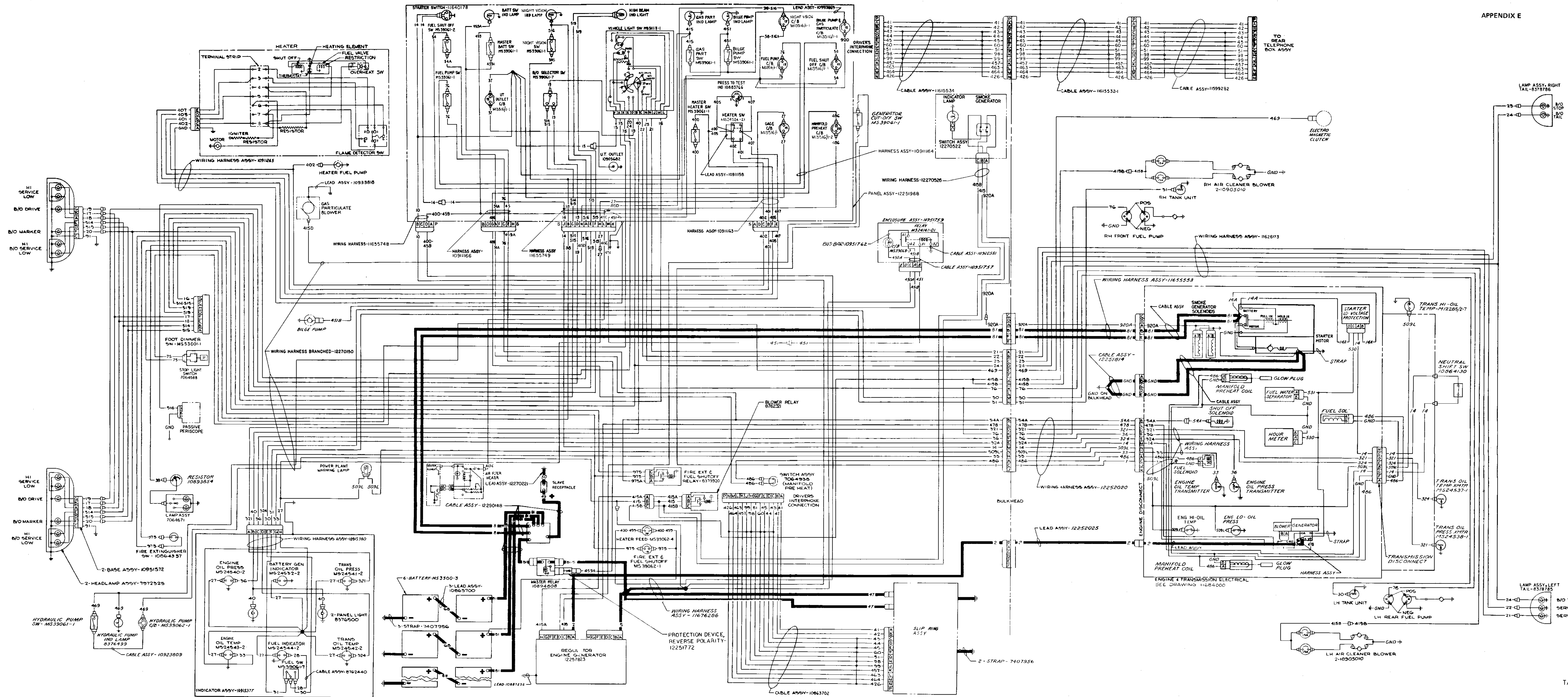


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## THE METRIC SYSTEM AND EQUIVALENTS

### LINEAR MEASURE

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

### WEIGHTS

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

### LIQUID MEASURE

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

### SQUARE MEASURE

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

### CUBIC MEASURE

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

### TEMPERATURE

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

## 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

