



**DEPARTMENT OF THE ARMY  
TECHNICAL MANUAL**

TM 9-2350-267-20

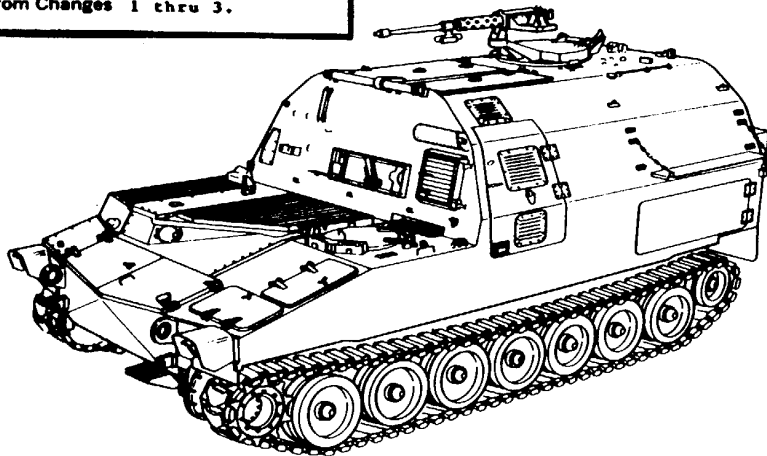
**ORGANIZATIONAL  
MAINTENANCE MANUAL**

**FOR**

**HULL, POWERPACK, DRIVE CONTROLS,  
TRACKS, SUSPENSION AND  
ASSOCIATED COMPONENTS**

**CARRIER, AMMUNITION, TRACKED**

This copy is a reprint which includes current pages from Changes 1 thru 3.



**M992**

(NSN 2350-01-110-4660)

OCTOBER 1985

TA309908

PREVENTIVE MAINTENANCE CHECKS AND SERVICES	2-6
TROUBLESHOOTING	2-49
POWERPACK REMOVAL, INSTALLATION AND TEST	3-1
FUEL, AIR INTAKE AND EXHAUST SYSTEMS	4-1
ENGINE COMPONENTS	5-1
ELECTRICAL SYSTEMS/CIRCUITS	6-1
TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES	7-1
TRACKS, SUSPENSION SYSTEM, FINAL DRIVES AND UNIVERSAL JOINTS	8-1
HULL AND RELATED COMPONENTS	9-1
STOWAGE	10-1
AMMUNITION STOWAGE RACKS	11-1
AMMUNITION HANDLING EQUIPMENT	12-1
AUXILIARY POWER UNIT	13-1
NUCLEAR BIOLOGICAL CHEMICAL (NBC), AUTOMATIC FIRE EXT. SYSTEM (AFES), VENTILATION SYSTEM AND BILGE PUMP	14-1
WINTERIZATION KIT	15-1
HYDRAULICS	16-1
DEPROCESSING AND COMBAT LOADING OF VEHICLE	17-1
SHIPMENT, LIMITED STORAGE AND DESTRUCTION TO PREVENT ENEMY USE	18-1
REFERENCES	A-1
MAINTENANCE ALLOCATION CHART	B-1
TORQUE VALUES FOR THREADED FASTENERS	C-1
EXPENDABLE SUPPLIES AND MATERIALS LIST	D-1
HYDRAULIC SYSTEM SCHEMATIC	E-1
ELECTRICAL SYSTEM SCHEMATICS	F-1

Approved for public release; distribution is unlimited

Change 5

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington D.C., 3 February 1997

CHANGE  
No. 5

**ORGANIZATIONAL MAINTENANCE MANUAL  
FOR  
HULL, POWERPACK, DRIVE CONTROLS,  
TRACKS, SUSPENSION AND  
ASSOCIATED COMPONENTS  
CARRIER, AMMUNITION, TRACKED  
M992  
(NSN 2350-01-110-4660)**

TM 9-2350-267-20, dated 28 October 1985, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New, changed, or deleted material is indicated by a vertical bar in the margin of the page or by a deletion notice.

*Remove Page*

i and ii  
2-35 and 2-36  
Cover

*Insert Pages*

i and ii  
2-35 and 2-36  
Cover

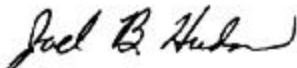
**File this change sheet in front of the publication, for reference purposes.**

Approved for public release, distribution is unlimited.



By Order of the Secretary of the Army:

Official:

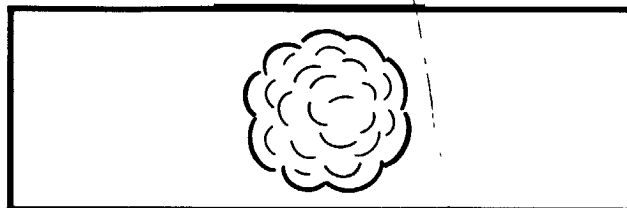


JOEL B. HUDSON  
*Administrative Assistant to the  
Secretary of the Army*  
02909

DENNIS J. REIMER  
*General, United States Army  
Chief of Staff*

DISTRIBUTION:

To be distributed in accordance with the initial distribution number (IDN) 371215, requirements for TM9-2350-267-20.

**WARNING****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, coma. Permanent brain damage or death can result from severe exposure.

It occurs in the exhaust fumes of fuel-burning heaters and internal-combustion engines and becomes dangerously concentrated under conditions of inadequate ventilation. The following precautions must be observed to ensure the safety of personnel whenever the personnel heater, main, or auxiliary engine of any vehicle is operated for maintenance purposes or tactical use.

- 1 Do not operate heater or engine of vehicle in an enclosed area unless it is adequately ventilated.
- 2 Do not drive any vehicle with inspection plates, cover plates or engine compartment doors removed unless necessary for maintenance purposes.
- 3 Be alert at all times during vehicle operation for exhaust odors and exposure symptoms. If either are present, immediately ventilate personnel compartments. If symptoms persist, remove affected personnel from vehicle and treat as follows: expose to fresh air; keep warm; do not permit physical exercise; if necessary, administer artificial respiration.

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

**CHANGE**  
No. 4

**HEADQUARTERS**  
**DEPARTMENT OF THE ARMY**  
Washington D.C., 26 August 1994

**Organizational Maintenance Manual**  
**For**  
**CARRIER, AMMUNITION, TRACKED**  
**M982**  
**(NSN 2350-01-110-4660)**

27 Apr 95  
Kathy Hogan

TM 9-2350-267-20, 28 October 1985, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Added pages are indicated by a vertical bar adjacent to the page identification number.

*Remove Pages*

iv  
1-1 and 1-2  
1-27 and 1-28  
2-1 thru 2-22  
2-19 and 2-20  
2-23 thru 2-30  
2-33 thru 2-36  
2-39 thru 2-48  
2-51 thru 2-54  
2-57 thru 2-60  
2-65 and 2-66  
2-71 and 2-72  
2-75 and 2-76  
2-81 thru 2-86  
2-89 thru 2-94  
2101 and 2-102  
2-147 and 2-148  
2-153 and 2-154  
2-175 and 2-176  
2-179 and 2-180  
2-189 and 2-190  
2-193 and 2-194  
2-199 and 2-200  
2-207 and 2-208

*Insert Pages*

ii thru iv  
1-1 and 1-2  
1-27 and 1-28  
2-1 thru 2-22  
2-19 and 2-20  
2-23 thru 2-30  
2-33 thru 2-36  
2-39 thru 2-48  
2-51 thru 2-54  
2-57 thru 2-60.3/(2-60.4 blank)  
2-65 and 2-66  
2-71 and 2-72  
2-75 and 2-76  
2-81 thru 2-86  
2-89 thru 2-94  
2-101 and 2-102  
2-147 and 2-148  
2-153 and 2-154  
2-175 and 2-176  
2-179 and 2-180  
2-189 and 2-190  
2-193 and 2-194  
2-199 and 2-200  
2-207 and 2-208

Approved for public release; distribution is unlimited.

File this change sheet in front of the publication for reference purposes.

***Remove Pages***

2-23 and 2-224  
 2-239 and 2-240  
 2-253 thru 2-256  
 2-259 thru 2-262  
 2-273 and 2-274  
 2-281 thru 2-308  
 3-5 thru 3-10  
 3-13 thru 3-20  
 4-2.1 and 4-2.2  
 4-2.7 and 4-2.8  
 4-9 thru 4-10.1/(4-10.2 blank)  
 4-15 and 4-16  
 4-23 and 4-24  
 5-1 and 5-2  
 5-9 and 5-10  
 5-11 and 5-12  
 5-17 and 5-18  
 5-21 thru 5-26  
 6-1 and 6-2  
 6-5 and 6-6  
 6-13 thru 6-16  
 6-25 thru 6-30  
 6-44.1/(6-44.2 blank)  
 6-61 and 6-62  
 6-67 thru 6-84  
 6-89 thru 6-92  
 6-97 and 6-98  
 6-109 thru 6-118  
 (6-120.1 blank)/6-120.2 and 6-122  
 6-131 thru 6-138  
 6-141 thru 6-145/(6-146 blank)  
 6-151 thru 6-158  
 7-11 thru 7-14.4  
 7-16.1 thru 7-16.3 /(7-16.4 blank)  
 7-33 and 7-34  
 7-43 thru 7-46  
 8-1 thru 8-6  
 8-9 thru 8-16  
 8-20.1 thru 8-22  
 8-27 and 8-28  
 9-2.3 and 9-2.4  
 9-13 and 9-14

***Insert Pages***

2-223 and 2-224  
 2-239 and 2-240  
 2-253 thru 2-256  
 2-259 thru 2-262  
 2-273 and 2-274  
 2-281 thru 2-308  
 3-5 thru 3-10.3/(3-10.4 blank)  
 3-13 thru 3-20  
 5-2.1 and 4-2.2  
 4-2.7 and 4-2.8  
 4-9 thru 4-10.3/(4-10.4 blank)  
 4-15 and 4-16  
 4-23 and 4-24  
 5-1 and 5-2  
 5-9 thru 5-12  
 5-17 thru 5-18.2  
 5-21 thru 5-26  
 6-1 and 6-2  
 6-4.1/(6-4.2 blank) thru 6-6  
 6-13 thru 6-16  
 6-25 thru 6-30  
 6-44.1/(6-44.2 blank)  
 6-61 and 6-62  
 6-67 thru 6-84  
 6-89 thru 6-92  
 6-97 and 6-98  
 6-109 thru 6-118  
 6-120.1 blank)/6-120.2 and 6-122  
 6-131 thru 6-138  
 6-141 thru 6-145/(6-146 blank)  
 6-151 thru 6-158  
 7-11 thru 7-14.4  
 7-16 thru 7-16.3/(7-16.4 blank)  
 7-33 and 7-34  
 7-43 thru 7-46  
 8-1 thru 8-6  
 8-9 thru 8-16  
 8-20.1 thru 8-22  
 8-27 and 8-28  
 9-2.3 and 9-2.4  
 9-13 and 9-14

***Remove Pages***

9-21 and 9-22  
9-25 thru 9-26.2  
9-28.5 and 9-28.6  
9-51 and 9-52  
9-66.3 and 9-66.4  
9-66.9 thru 9-66.12  
9-66.15 and 9-66.16  
11-3 thru 11-4.1/(11-4.2 blank)  
11-21 thru 11-22.2  
12-13 and 12-14  
12-29 thru 12-30.5/(12-30.6 blank)  
12-32.1 and 12-32.2  
12-33 and 12-34  
12-44.1 and 12-44.2  
12-45/(12-46 blank)  
13-27 and 13-28  
14-1 thru 14-14  
14-14.3 thru 14-28.1/(14-28.2 blank)  
14-28.5/(14-28.6 blank thru 14-32  
14-35 thru 14-40.2  
14-50.3 thru 14-50.6  
14-52.1 thru 14-52.6  
14-52.9 thru 14-52.20  
14-54.5 and 14-54.6  
14-55 thru 14-60.6  
14-61 and 14-62  
14-65 and 14-66  
14-68.1 thru 14-68.3/(14-68.4 blank)  
14-72.1 thru 14-72.3/(14-72.4 blank)  
14-73 and 14-74  
15-1 and 15-2  
15-5 thru 15-8  
15-13/(15-14 blank)  
16-3 thru 16-4.1/(16-4.2 blank)  
16-14.5 and 16-14.6  
16-21 thru 16-22.2  
16-22.7/(16-22.8 blank)  
16-31 thru 16-36.2

***Insert Pages***

9-21 and 9-22  
9-25 thru 9-26.2  
9-28.5 and 9-28.6  
9-51 and 9-52  
9-66.3 and 9-66.4  
9-66.9 thru 9-66.12  
9-66.15 and 9-66.16  
11-3 thru 11-4.1/(11-4.2 blank)  
11-21 thru 11-22.2  
12-13 and 12-14  
12-29 thru 12-30.5/(12-30.6 blank)  
12-32.1 and 12-32.2  
12-33 and 12-34  
12-44.1 and 12-44.2  
12-45/(12-46 blank)  
13-27 and 13-28  
14-1 thru 14-14  
14-14.3 thru 14-28.1/(14-28.2 blank)  
14-28.5/(14-28.6 blank) thru 14-32  
14-35 thru 14-40.2  
14-50.3 thru 14-50.6  
14-52.1 thru 14-52.6  
14-52.9 thru 14-52.20  
14-54.5 and 14-54.6  
14-55 thru 14-60.6  
14-61 and 14-62  
14-65 and 14-66  
14-68.1 thru 14-68.3/(14-68.4 blank)  
14-72.1 thru 14-72.3/(14-72.4 blank)  
14-73 and 14-74  
15-1 and 15-2  
15-5 thru 15-8  
15-13/(15-14 blank)  
16-3 thru 16-4.1/(16-4.2 blank)  
16-14.5 and 16-14.6  
16-21 thru 16-22.2  
16-22.7/(16-22.8 blank)  
16-31 thru 16-36.2

*Remove Pages*

18-1 thru 18-5/(18-6 blank)  
A-1 and A-2  
B-1 thru B-54  
D-3 and D-4  
D-7 thru D-9/(D-10 blank)  
INDEX-1 thru INDEX-17/(INDEX-18 blank)

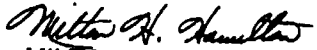
*Insert Pages*

18-1 thru 18.5/(18-6 blank)  
A-1 and A-2  
B-1 thru B-40  
D-3 and D-4  
D-7 thru D-9/(D-10 blank)  
INDEX-11 thru INDEX-12

By Order of the Secretary of the Army:

GORDON R. SULLIVAN  
*General, United States Army*

Official:

  
MILTON H. HAMILTON  
*Administrative Assistant to the  
Secretary of the Army*  
07337

Distribution:

To be distributed in accordance with DA Form 12-37-E (Block 1215) requirements for  
TM9-2350-267-20.

File this change sheet in front of the publication for reference purposes.

CHANGE  
No. 3

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, 1 November 1988

**Organizational Maintenance Manual  
For**

**HULL, POWERPACK, DRIVE CONTROLS,  
TRACKS, SUSPENSION AND  
ASSOCIATED COMPONENTS  
CARRIER, AMMUNITION, TRACKED  
M992  
(NSN 2350-01-110-4660)**

TM 9-2350-267-20, 28 October 1985, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Added pages are indicated by a vertical bar adjacent to the page identification number.

*Remove Pages*

✓ b and c  
✓ 1-3 thru 1-8  
✓ 1-27 thru 1-30  
✓ 2-1 thru 2-4  
✓ 2-23 and 2-24  
✓ 2-59 and 2-60  
✓ 2-179 and 2-180  
✓ 2-183 thru 2-186  
✓ 2-281 thru 2-306.37/(2-306.38 blank)  
✓ 6-93 thru 6-100.2  
✓ 14-13 thru 14-60.7/(14-60.8 blank)  
✓ 16-13 thru 16-14.2  
✓ D-7 and D-8  
✓ Index-1 thru Index-18

*Insert Pages*

✓ b and c  
✓ 1-3 thru 1-8  
✓ 1-27 thru 1-30  
✓ 2-1 thru 2-4  
✓ 2-23 and 2-24  
✓ 2-59 and 2-60  
✓ 2-179 and 2-180  
✓ 2-183 thru 2-186  
✓ 2-281 thru 2-306.34  
✓ 6-93 thru 6-100.2  
✓ 14-13 thru 14-60.7/(14-60.8 blank)  
✓ 16-13 thru 16-14.2  
✓ D-7 thru D-9/(D-10 blank)  
✓ Index-1 thru Index-17/(Index-18 blank)

File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

CARL E. VUONO  
*General, United States Army*  
*Chief of Staff*

Official:

WILLIAM J. MEEHAN II  
*Brigadier General, United States Army*  
*The Adjutant General*

Distribution:

To be distributed in accordance with DA Form 12-37R, Unit Maintenance Requirements for Carrier, Cargo, FA Ammunition Support Vehicle, M992 (FAASV).



CHANGE  
No. 2

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, D.C., 25 March 1988

**Organizational Maintenance Manual  
For  
CARRIER, AMMUNITION, TRACKED  
M992  
(NSN 2350-01-110-4660)**

TM 9-2350-267-20, 28 October 1985, is changed as follows:

Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added pages are indicated by a vertical bar adjacent to the page identification number.

*Remove Pages*

b/(c blank)  
2-4.1 thru 2-6  
2-59 and 2-60  
2-133 and 2-134  
2-149 and 2-150  
2-157 and 2-158  
2-163 and 2-164  
2-171 and 2-172  
2-177 thru 2-180  
2-185 and 2-186  
2-189 and 2-190  
2-241 thru 2-244  
2-281 thru 2-306  
  
3-3 and 3-4  
3-25 and 3-26  
4-2.1 thru 4-4.1/(4-4.2  
blank)  
  
4-10.1/(4-10.2 blank)  
4-13 thru 4-14.2  
4-19 thru 4-22  
4-25 thru 4-30.2  
5-9 thru 5-12  
5-17 and 5-18  
5-23 thru 5-26  
6-17 and 6-18  
6-23 thru 6-28

*Insert Pages*

b and c  
2-4.1 thru 2-6  
2-59 and 2-60  
2-133 and 2-134  
2-149 and 2-150  
2-157 and 2-158  
2-163 and 2-164  
2-171 and 2-172  
2-177 thru 2-180  
2-185 and 2-186  
2-189 and 2-190  
2-241 thru 2-244  
2-281 thru  
2-306.37/(2-306.38  
blank)  
3-3 and 3-4  
3-25 and 3-26  
  
4-2.1 thru 4-4.1/(4-4.2  
blank)  
4-10.1/(4-10.2 blank)  
4-13 thru 4-14.2  
4-19 thru 4-22  
4-25 thru 4-30.2  
5-9 thru 5-12  
5-17 and 5-18  
5-23 thru 5-26  
6-17 and 6-18  
6-23 thru 6-28

*Remove Pages*

6-35 thru 6-38  
6-43 and 6-44  
6-53 thru 6-56  
6-58.1/(6-58.2 blank)  
6-73/(6-74 blank) thru 6-88  
6-93 thru 6-102  
6-107 thru 6-108.2  
6-111 thru 6-122.1/(6-122.2 blank)  
6-125 and 6-126  
6-151 thru 6-153/(6-154 blank)  
6-157 and 6-158  
7-11 thru 7-18  
7-21 thru 7-24  
7-31 thru 7-52  
8-7 and 8-8  
8-19 thru 8-20.1/(8-20.2 blank)  
9-1 thru 9-6  
9-11 thru 9-16.2  
9-28.1 and 9-28.2  
9-57 and 9-58  
10-1 and 10-2  
10-13/(10-14 blank)  
11-1 thru 11-12  
11-19 thru 11-22  
12-5 and 12-6  
12-11 thru 12-14  
12-30.1 thru 12-30.5/(12-30.6 blank)  
12-33 thru 12-36  
12-39 thru 12-44.2  
13-13 and 13-14  
13-25 thru 13-30  
14-3 thru 14-6  
14-13 thru 14-14.2  
14-27 thru 14-34  
14-51 and 14-52  
14-55 thru 14-59  
14-64.1 thru 14-66  
16-3 thru 16-6  
16-15 thru 16-28  
16-37 and 16-38  
A-1 and A-2  
B-3 and B-4  
B-7 thru B-10  
B-19 thru B-22

*Insert Pages*

6-35 thru 6-38  
6-43 thru 6-44.1/(6-44.2 blank)  
6-53 thru 6-56  
6-58.1/(6-58.2 blank)  
6-73 thru 6-88.3/(6-88.4 blank)  
6-93 thru 6-102.1/(6-102.2 blank)  
6-107 thru 6-108.2  
6-111 thru 6-122  
(6-124.1 blank)/6-124.2 thru 6-126  
6-151 thru 6-154  
6-157 thru 6-158.1/(6-158.2 blank)  
7-11 thru 7-18  
7-21 thru 7-24  
7-31 thru 7-52  
8-7 and 8-8  
8-19 thru 8-20.2  
9-1 thru 9-6  
9-11 thru 9-16.2  
9-28.1 and 9-28.6  
9-57 and 9-58  
10-1 and 10-2  
10-13/(10-14 blank)  
11-1 thru 11-12  
11-19 thru 11-22  
12-5 and 12-6  
12-11 thru 12-14.2  
12-30.1 thru 12-30.5/(12-30.6 blank)  
12-33 thru 12-36  
12-39 thru 12-44.2  
13-12.3/(13-12.4 blank) thru 13-14  
13-25 thru 13-30  
14-3 thru 14-6  
14-13 thru 14-14.5/(14-14.6 blank)  
14-27 thru 14-34  
14-51 thru 14-52.20  
14-54.5 thru 14-60.7/(14-60.8 blank)  
14-64.1 thru 14-66  
16-3 thru 16-6  
16-15 thru (16-28.1 blank)/16-28.2  
16-37 and 16-39/(16-40 blank)  
A-1 and A-2  
B-3 and B-4  
B-7 thru B-10  
B-19 thru B-22.1/(B-22.2 blank)

*Remove Pages*

B-25 thru B-32  
B-35 and B-36  
B-39 thru B-42  
B-45 and B-46  
B-49 and B-50  
B-52.1 thru B-53/(B-54 blank)  
D-7 and D-8  
F-4  
Index-1 thru Index-16

*Insert Pages*

B-25 thru B-32.1/(B-32.2 blank)  
B-35 and B-36  
B-39 thru B-42.1/(B-42.2 blank)  
B-45 and B-46  
B-49 and B-50.1/(B-50.2 blank)  
B-52.1 thru B-54  
D-7 and D-8  
F-4  
Index-1 thru Index-17/(Index-18 blank)

File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army

Official:

R. L. DILWORTH  
*Brigadier General, United States Army*  
*The Adjutant General*

CARL E. VUONO  
*General, United States Army*  
*Chief of Staff*

Distribution:

To be distributed in accordance with DA Form 12-37R, Organizational Maintenance Requirements for Carrier, Ammunition, Tracked, M992 (FAASV).

TM 9-2350-267-20  
C1

CHANGE  
No. 1

**ORGANIZATIONAL MAINTENANCE MANUAL  
FOR  
HULL, POWERPACK, DRIVE CONTROLS  
TRACKS, SUSPENSION AND ASSOCIATED  
COMPONENTS  
CARRIER, AMMUNITION, TRACKED  
M992**

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington D.C., 14 July 1987

(NSN 2350-01-110-4660)

TM 9-2350-267-20, October 1985, is changed as follows:

Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added pages are indicated by a vertical bar adjacent to the page identification number.

*Remove Pages*

b thru iv  
1-19 thru 1-22  
2-1 thru 2-4  
2-41 and 2-42  
2-49 thru 2-52  
2-61 and 2-62  
2-65 thru 2-68  
2-75 and 2-76  
2-79 thru 2-84  
2-119 thru 2-128  
2-135 and 2-136  
2-229 and 2-230  
2-233 and 2-234  
2-237 thru 2-242  
2-307 and 2-308  
  
3-11 thru 3-18  
3-21 and 3-22  
4-1 thru 4-16  
4-25 thru 4-32  
5-1 and 5-2  
5-5 and 5-6  
5-9 thru 5-12  
5-15 thru 5-18

*Insert Pages*

b thru iv  
1-19 thru 1-22  
2-1 thru 2-4.2  
2-41 and 2-42  
2-48.1 thru 2-52  
2-61 and 2-62  
2-65 thru 2-68  
2-75 and 2-76  
2-79 thru 2-84  
2-118.1 thru 2-128  
2-135 and 2-136  
2-229 and 2-230  
2-233 and 2-234  
2-237 thru 2-242  
2-307 and 2-308  
2-315 and 2-316  
3-11 thru 3-18  
3-21 and 3-22  
4-1 thru 4-16  
4-25 thru 4-34  
5-1 and 5-2  
5-4.1 thru 5-6  
5-8.1 thru 5-12  
5-15 thru 5-18

*Remove Pages*

5-21 thru 5-26  
 6-5 and 6-6  
 6-11 and 6-12  
  
 6-31 thru 6-36  
 6-45 thru 6-48  
 6-51 and 6-52  
 6-57 thru 6-60  
 6-63 thru 6-68  
 6-71 thru 6-76  
 6-107 and 6-108  
 6-121 and 6-122  
 6-127 thru 6-132  
 6-141 and 6-142  
 6-145 thru 6-154  
 6-157 and 6-158  
 7-9 and 7-10  
 7-15 thru 7-30  
 7-33 and 7-34  
 7-47 thru 7-52  
 8-1 and 8-2  
 8-9 and 8-10  
 8-13 thru 8-20  
 8-23 thru 8-32  
 9-1 thru 9-8  
 9-11 thru 9-22  
 9-25 thru 9-28  
 9-31 thru 9-36  
 9-41 thru 9-52  
 9-57 and 9-58  
 9-63 thru 9-72  
 10-1 and 10-2  
 10-9 thru 10-12  
 11-1 thru 11-12  
 11-15 thru 11-24  
 12-9 and 12-10  
 12-29 and 12-30  
 12-33 thru 12-36  
 12-39 thru 12-44  
 13-1 thru 13-4  
 13-9 thru 13-32  
 14-1 and 14-2  
 14-9 thru 14-14  
 14-27 thru 14-30  
 14-51 thru 14-64

*Insert Pages*

5-21 thru 5-26  
 6-5 and 6-6.4  
 6-11 and 6-12  
 6-18.1 and 6-18.2  
 6-31 thru 6-36  
 6-45 thru 6-48  
 6-51 and 6-52  
 6-57 thru 6-60  
 6-63 thru 6-68  
 6-71 thru 6-76  
 6-107 and 6-108.2  
 6-121 thru 6-122.2  
 6-127 thru 6-132  
 6-141 and 6-142  
 6-145 thru 6-154  
 6-157 thru 6-162  
 7-9 and 7-10  
 7-15 thru 7-30.2  
 7-33 and 7-34  
 7-47 thru 7-52  
 8-1 and 8-2  
 8-9 and 8-10  
 8-13 thru 8-20.2  
 8-23 thru 8-40  
 9-1 thru 9-8.2  
 9-11 thru 9-22  
 9-24.1 thru 9-28.2  
 9-31 thru 9-36.2  
 9-41 thru 9-52.2  
 9-57 thru 9-58.4  
 9-63 thru 9-72  
 10-1 thru 10-2.2  
 10-9 thru 10-14  
 11-1 thru 11-12  
 11-15 thru 11-24  
 12-9 thru 12-10.2  
 12-29 thru 12-30.6  
 12-33 thru 12-36  
 12-39 thru 12-44.2  
 13-1 thru 13-4.4  
 13-9 thru 13-32.2  
 14-1 and 14-2  
 14-9 thru 14-14.2  
 14-27 thru 14-30.2  
 14-51 thru 14-64.2

*Remove Pages*

14-67 thru 14-76

16-3 thru 16-6

16-11 thru 16-14

16-21 and 16-22

16-25 and 16-26

16-31 thru 16-38

B-1 thru B-4

B-51 and B-52

D-7 and D-8

Index-1 thru Index-18

*Insert Pages*

14-67 thru 14-76

16-3 thru 16-6

16-11 thru 16-14.8

16-21 thru 16-22.2

16-24.1 thru 16-26

16-31 thru 16-38

B-1 thru B-4

B-51 thru B-52.2

D-7 and D-8

G-1 and G-2

Index-1 thru Index-16

File this change sheet in front of the publication for reference purposes.





**WARNING**

Ammunition containing explosives must be handled with care at all times. The explosive in primers and fuzes is very sensitive to shock and high temperature. If ammunition is dropped, thrown, tumbled, or dragged, an explosion may result, causing death or injury and destruction of equipment. Disassembly of ammunition is not authorized.

**WARNING**

High pressure hydraulic fluid is used to operate equipment. Serious injury may result when high pressure fluid comes in contact with human skin. Shut off all hydraulic system components before performing any maintenance.

Serious injury may result from electrical burns. Before working on electrical equipment, harnesses and battery cables, turn OFF MASTER switch and disconnect battery ground cables.

After suspected NBC exposure of this vehicle, all air filter media shall be handled only by personnel wearing full NBC protective equipment.

**WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable.

To prevent personal injury when using PD-680:

- Use only in a well-ventilated area.
- Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention.
- Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention.
- The flashpoint for Type I dry-cleaning solvent is 100 °F (38 °C); for Type II it is 138 °F (50 °C). Do not use near open flame or excessive heat.

**WARNING**

Stand away from any items being removed from vehicle using lifting device to prevent personal injury.

**WARNING**

A protective fan screen must be installed prior to doing maintenance in the engine compartment when engine is running or when running engine in ground hop mode. Contact with rotating fan can cause injury.

**WARNING**

Prolonged exposure to Halon could make you dizzy. Halon can irritate your eyes and throat. After Halon discharge, vent fan in a crew compartment comes on automatically. If vent fan does not come on, get all soldiers out of vehicle within 5 minutes.

**WARNING**

Discharging portable fire extinguisher gas can freeze your skin. Keep away from discharging gas.

**WARNING**

If fire occurs again due to equipment malfunction or damage, soldiers could be killed or injured and equipment could be damaged. If fire extinguishers are empty, and there is a possibility of fire occurring again, offload all ammunition.

**WARNING**

If Halon is discharged into engine compartment while engine is running, engine exhaust may be poisonous. Poisonous gas can injure you. If Halon is discharged while engine is running, do not breathe engine exhaust.

ORGANIZATIONAL MAINTENANCE MANUAL  
FOR  
HULL, POWERPACK, DRIVE CONTROLS,  
TRACKS, SUSPENSION AND  
ASSOCIATED COMPONENTS  
FIELD ARTILLERY AMMUNITION SUPPORT VEHICLE  
M992  
(NSN 2350-01-110-4660)

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can improve this manual by recommending improvements using DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2, located in the back of this manual. Mail the form directly to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-IM-OPIT, Warren, MI 48397-5000. A reply will be furnished to you.

You may also provide DA Form 2028-2 information to TACOM via datafax or e-mail:

\* TACOM's fax number is DSN 786-6323 or commercial (810) 574-6323

\* TACOM's e-mail address is tacom-tech-pubs@cc.tacom.army.mil

	<b>Page</b>		<b>Page</b>
HOW TO USE THIS MANUAL .....	v	Section II	Service upon Receipt..... 2-2
CHAPTER 1 <b>INTRODUCTION</b> .....	<b>1-1</b>	Section III	Preventive Maintenance Checks and Services (PMCS)..... 2-6
Section I General Information .....	1-1	Section IV	<b>STE/ICE Troubleshooting</b> ..... <b>2-48.1</b>
Section II Description of Data .....	1-3	Section V	<b>Troubleshooting</b> ..... <b>2-49</b>
CHAPTER 2 <b>GENERAL MAINTENANCE</b> .....	<b>2-1</b>	Section VI	General Maintenance Instructions..... 2-306.35
<b>PROCEDURES</b>		CHAPTER 3	<b>MAINTENANCE PROCEDURES:</b>
Section I Repair Parts, Special Tools, Test, Measurement and Diagnostic Equipment (TMDE), and Support Equipment .....	2-1		<b>POWERPACK REMOVAL, INSTALLATION AND TEST</b> ..... 3-1
			Chapter Overview..... 3-1

	Page
CHAPTER 4 <b>MAINTENANCE PROCEDURES: FUEL, AIR INTAKE AND EXHAUST SYSTEMS</b>	<b>4-1</b>
Section I Fuel System . . . . .	4-1
Section II Air Intake System . . . . .	4-24
Section III Exhaust System . . . . .	4-31
CHAPTER 5 <b>MAINTENANCE PROCEDURES: ENGINE COMPONENTS</b>	<b>5-1</b>
Chapter Overview . . . . .	5-1
Section I Engine Components . . . . .	5-1
Section II Engine Cooling System . . . . .	5-12
CHAPTER 6 <b>MAINTENANCE PROCEDURES: ELECTRICAL SYSTEMS/CIRCUITS</b>	6-1
Chapter Overview . . . . .	6-1
Section I PowerPack Electrical System . . . . .	6-2
Section II Hull Electrical Systems . . . . .	6-19
Section III Powepack and Hull Wiring Harness . . . . .	<b>6-64</b>
Section IV Simplified Test Equipment for Internal Combustion Engine Powered Materiel (STE/ICE) . . . . .	6-147
CHAPTER 7 <b>MAINTENANCE PROCEDURES: TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES</b>	<b>7-1</b>
Chapter Overview . . . . .	7-1
Section I Transmission, Transfer and Drive Control Assemblies-Components/Test . . . . .	7-1

	Page
Section II Transmission, Transfer and Drive Control Assemblies Adjustment . . . . .	7-28
CHAPTER 8 <b>MAINTENANCE PROCEDURES: TRACKS, SUSPENSION SYSTEM, FINAL DRIVE AND UNIVERSAL JOINTS</b>	<b>8-1</b>
Chapter Overview . . . . .	8-1
Section I Tracks . . . . .	8-1
Section II Suspension System . . . . .	8-9
Section III Final Drive and Universal Joints . . . . .	8-28
CHAPTER 9 <b>MAINTENANCE PROCEDURES: HULL RELATED COMPONENTS</b>	<b>9-1</b>
Chapter Overview . . . . .	9-1
Section I Driver's, Commander's and Crew Seat Assemblies . . . . .	9-1
Section II Hatches, Latches, Leeks and Covers . . . . .	9-18
Section III Doors . . . . .	9-28.6
Section IV Front Fenders, Rear Track Splash Guards and Towing Pintle . . . . .	9-67
Section V Telephone Hand Reel . . . . .	9-69
Section VI Machine Gun Mount M2 . . . . .	9-70
Section VII Deleted	
CHAPTER 10 <b>MAINTENANCE PROCEDURES: STOWAGE</b>	<b>10-1</b>
Chapter Overview . . . . .	10-1
Section I Outside Storage . . . . .	10-1
Section II Inside Storage . . . . .	10-6

	<b>Page</b>		<b>Page</b>
<b>CHAPTER 11</b>	<b>MAINTENANCE PROCEDURES: AMMUNITION STORAGE RACKS</b>	<b>11-1</b>	
	Chapter Overview .....	11-1	
■	Section I Projectile Racks .....	11-2	
	Section II Canister Compartments .....	11-12	
	Section III Canister Restraints .....	11-21	
<b>CHAPTER 12</b>	<b>MAINTENANCE PROCEDURES: AMMUNITION HANDLING EQUIP- MENT (AHE)</b>	<b>12-1</b>	
	Chapter Overview .....	12-1	
	Section I Conveyor Assembly .....	12-1	
	Section II Stacker Assembly .....	12-30	
<b>CHAPTER 13</b>	<b>MAINTENANCE PROCEDURES: AUXILIARY POWER UNIT (APU)</b>	<b>13-1</b>	
	Chapter Overview .....	13-1	
	Section I APU Removal and Installation .....	13-1	
	Section II APU Oil Filter .....	13-34	
	Section III APU Control Box .....	13-35	
<b>CHAPTER 14</b>	<b>MAINTENANCE PROCEDURES: NUCLEAR BIOLOGICAL AND CHEMICAL (NBC) SYSTEM AUTOMATIC FIRE EXTINGUISHER SYSTEM (AFES); VENTILATION SYSTEM AND BILGE PUMP</b>	<b>14-1</b>	
	Chapter Overview .....	14-1	
	Section I NBC Ventilated Face Piece System and Detection/Alarm System .....	14-2	
	Section II Automatic Fire Extinguisher System .....	14-14	
	Section III Personnel Ventilation, Blower, Heating and Ventilating Hoses and Ducts .....	14-61	
	Section IV Personnel Heater .....	14-64.2	
	Section V Bilge Pump .....	14-74	
<b>CHAPTER 15</b>	<b>MAINTENANCE PROCEDURES: WINTERIZATION KIT</b>	<b>15-1</b>	
	Chapter Overview .....	15-1	
<b>CHAPTER 16</b>	<b>MAINTENANCE PROCEDURES: HYDRAULIC SYSTEM</b>	<b>16-1</b>	
	Chapter Overview .....	16-1	
	Section I Hydraulic Reservoir and Falter .....	16-2	
	Section II Hydraulic Control Panel Assembly .....	16-6	
	Section III Hydraulic Suction and Return Lines and Associated Parts .....	16-15	
	Section IV Backup Hydraulic System .....	16-22.6	
	Section V Hand Pump Assembly and Selector Valve .....	16-27	
	Section VI Upper Rear Door Hydraulic Actuator .....	16-30	
	Section VII Ammunition Handling Equipment (AHE) .....	16-32	
	Section VIII Auxiliary Power Unit compartment .....	16-38	
<b>CHAPTER 17</b>	<b>REPROCESSING AND COMBAT LOADING OF VEHICLE</b>	<b>17-1</b>	
	Section I Reprocessing the Vehicle .....	17-1	
	Section II Reprocessing of Basic Issue Items and Combat Loading of Vehicle .....	17-5	
<b>CHAPTER 18</b>	<b>SHIPMENT, LIMITED STORAGE AND DE- STRUCTION TO PREVENT ENEMY USE</b>	<b>18-1</b>	
	Section I Shipment and Storage .....	18-1	
	Section II Destruction of Materiel to Prevent Enemy Use .....	18-5	

	Page
APPENDIX A <b>REFERENCES</b>	<b>A-1</b>
APPENDIX B <b>MAINTENANCE ALLOCATION CHART (MAC)</b>	<b>B-1</b>
Section I Introduction . . . . .	B-1
Section II Maintenance Allocation Chart . . . . .	B-4
Section III Special Tools and Test Equipment . . . . .	B-46
Section IV <b>Remarks</b> . . . . .	B-53
APPENDIX C <b>TORQUE VALUES FOR THREADED FASTENERS</b>	<b>C-1</b>
Standard Torque Value Guide . . . . .	C-2
Metric Torque Value Guide . . . . .	C-3

	Page
APPENDIX D <b>EXPENDABLE SUPPLIES AND MATERIALS LIST</b>	<b>D-1</b>
Section I Introduction . . . . .	D-1
Section II Expendable Supplies and Materials List . . . . .	D-2
APPENDIX E <b>HYDRAULIC SYSTEM SCHEMATICS</b>	<b>E-1</b>
APPENDIX F <b>ELECTRICAL SYSTEM SCHEMATICS</b>	<b>F-1</b>
APPENDIX G <b>LIST OF MANUFACTURED ITEMS</b>	
Section I Introduction . . . . .	G-1
Section II Illustrated List of Manufactured Items . . . . .	G-2
INDEX	Index-1

# CHAPTER 1 INTRODUCTION

## Section I GENERAL INFORMATION

### GENERAL INFORMATION

This manual contains instructions for organizational level maintenance of the M992.

APPENDIX A is a list of current references, including supply manuals, forms and other applicable publications.

APPENDIX B Section III, lists the common tools and supplements and special tools/fixtures for the M992 maintenance functions.

APPENDIX C lists the torque limits for the M992.

APPENDIX D lists the expendable supplies and materials required to support the M992 maintenance functions.

APPENDIX E contains a hydraulic diagram in schematic form for the M992.

APPENDIX F contains an electrical diagram in schematic form for the M992.

APPENDIX G is an illustrated list of manufactured items for the M992. It includes complete instructions for making items authorized to be manufactured or fabricated at direct and general support maintenance.

### MAINTENANCE FORMS, RECORDS AND REPORTS

Refer to DA Pam 738-750, The Army Maintenance Management System, for listing of authorized Department of the Army forms and for instructions on how to use these forms.

Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 (Accident Report) in accordance with AR385-40.

Explosive ammunition malfunctions will be reported in accordance with AR 75-1.

### METRIC TOOLS

The M992 vehicle described in this manual is non-metric metric tools are not required.

### REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR's)

EIR's must be submitted by anyone who is aware of unsatisfactory equipment design or operation. It is not necessary to show a new design or list a better way to perform a procedure. Tell why the procedure is unfavorable or difficult. EIR's will be submitted on Standard Form 368. Mail directly to Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-Q, Warren, MI 48090.

### NOTE

When equipment failure occurs that is not caused by normal wear, poor operation, or accident you must submit an Equipment Improvement Recommendation.

### ADMINISTRATIVE STORAGE

Basic requirements for administrative storage are covered in TM 740-90-1.

### DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Refer to TM 750-244-6 for procedures on how to destroy the M992.





## Section II DESCRIPTION AND DATA

### PURPOSE OF M992, CARRIER, AMMUNITION TRACKED VEHICLE

This fully armored and tracked carrier transports 155mm ammunition at convoy speed for howitzer support in both offensive and defensive combat operations.

### CAPABILITIES AND FEATURES

Quick, efficient system for loading and unloading of ammunition.

Integrated ammunition cargo compartment containing

- Projectile storage racks
- Canister compartments
- Powered ammunition conveyor assembly
- Powered ammunition stacker assembly
- Crew seating for six, plus driver's and commander's seats

Remote start diesel Auxiliary Power Unit (APU) for continuous operation of electrical and hydraulic systems without use of main engine.

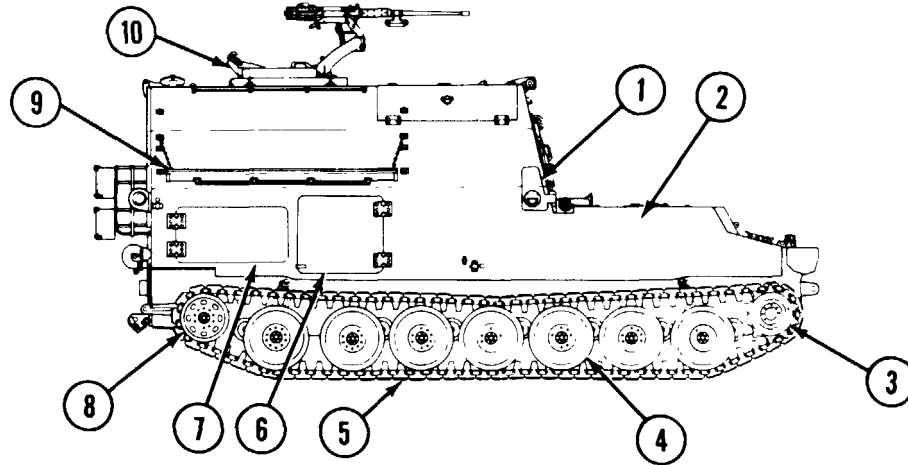
Main engine power takeoff for hydraulic system backup.

Rear door, when opened, provides overhead ballistic protection between M992 and supported howitzer.

Side doors on both sides of vehicle provide access for loading propellant charge canisters and copperhead projectiles into canister compartments.

On-board nuclear, biological and chemical (NBC) detection and protection.

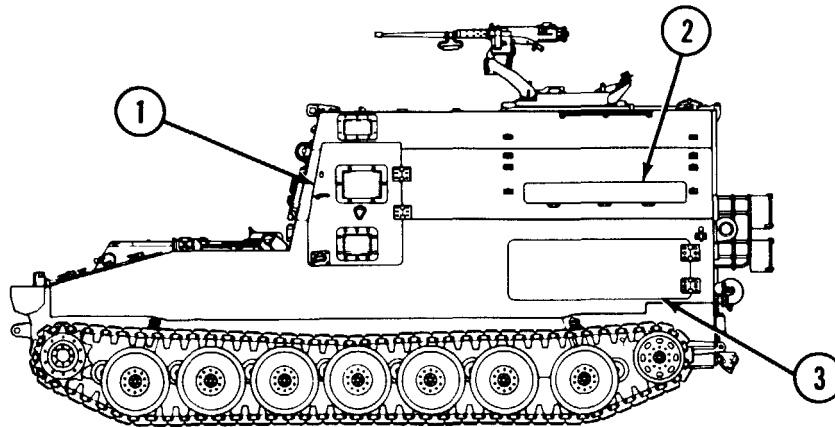
### LOCATION OF VEHICLE COMPONENTS (VEHICLES 1 THRU 344) - EXTERIOR



RIGHT SIDE VIEW

#### LEGEND

- 1 Fuel fill access door
- 2 Hull
- 3 Drive sprocket
- 4 Roadwheel
- 5 Track
- 6 Personnel side door
- 7 Canister side door
- 8 Idler wheel
- 9 Duffle bag stowage rack
- 10 Commander's cupola

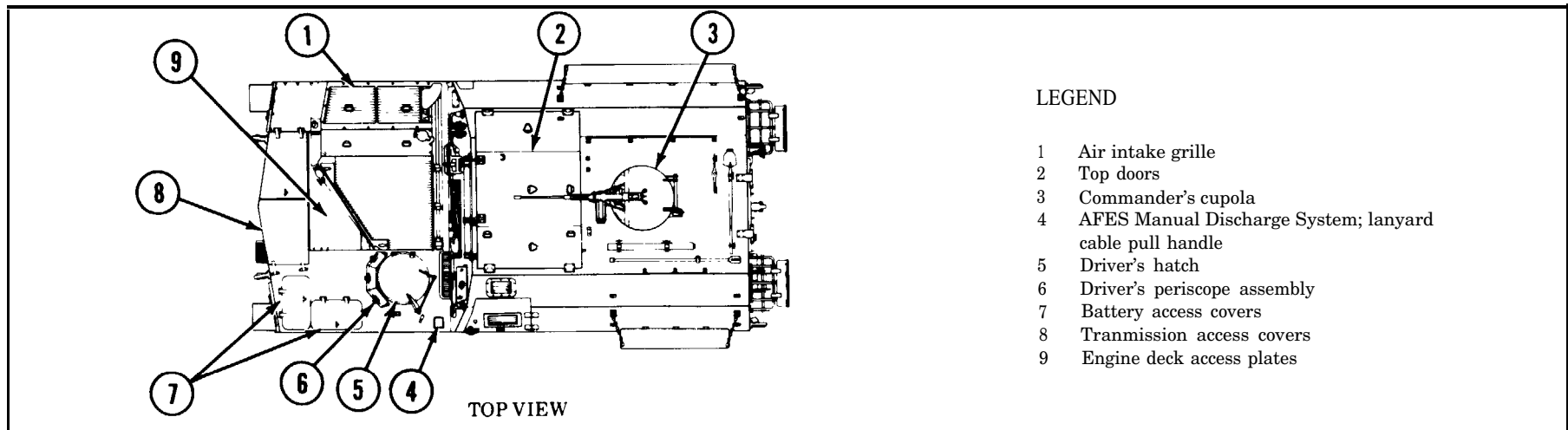
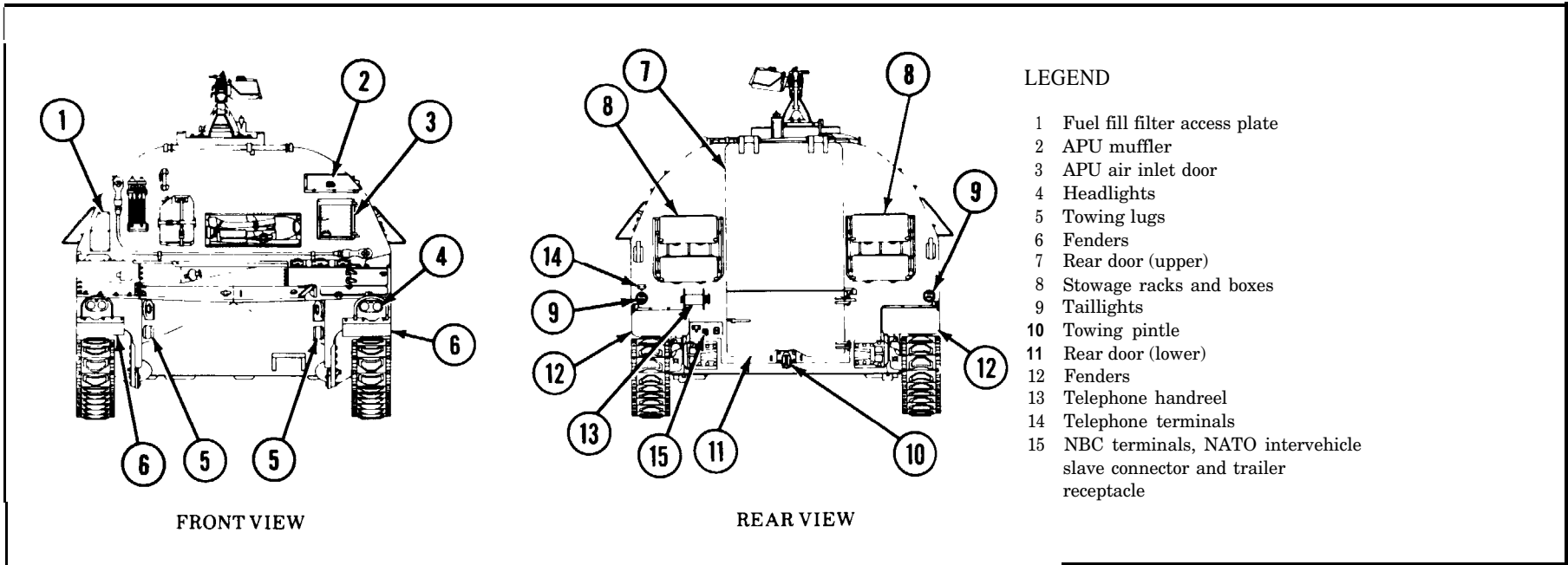


LEFT SIDE VIEW

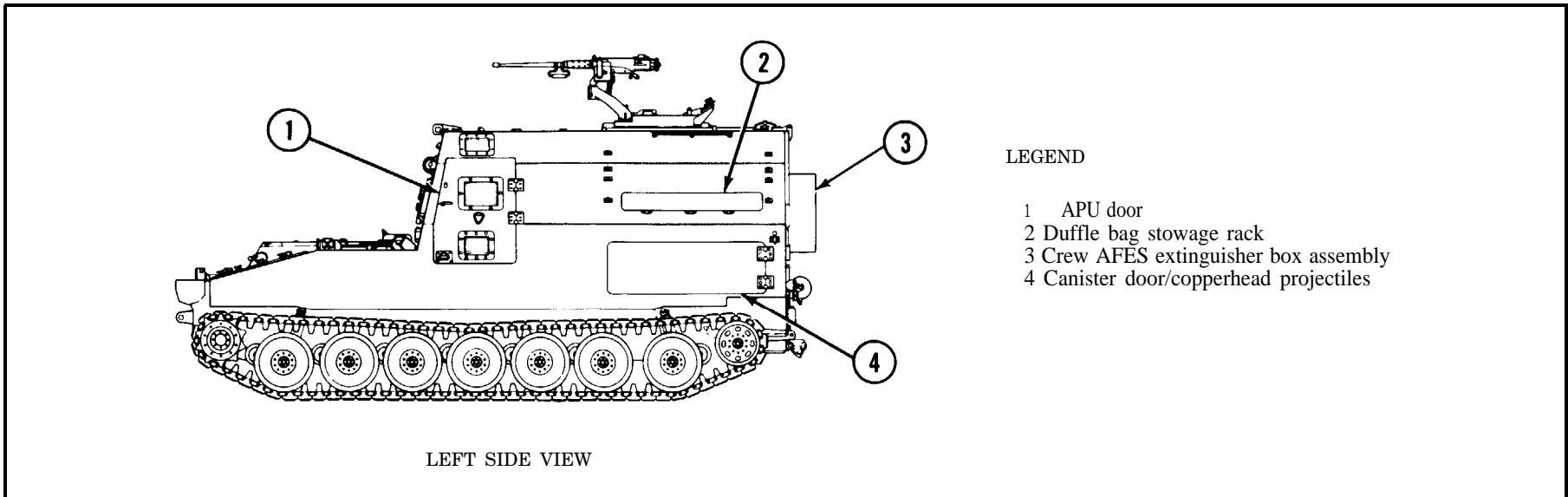
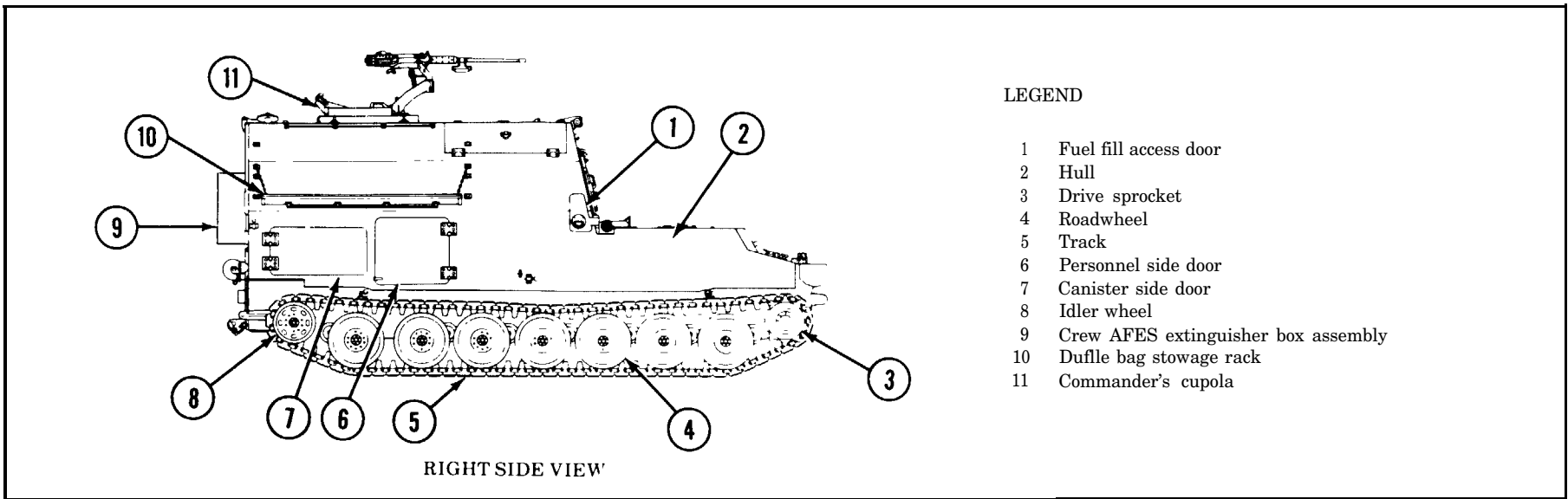
#### LEGEND

- 1 APU door
- 2 Duffle bag stowage rack
- 3 Canister side door/copperhead projectiles

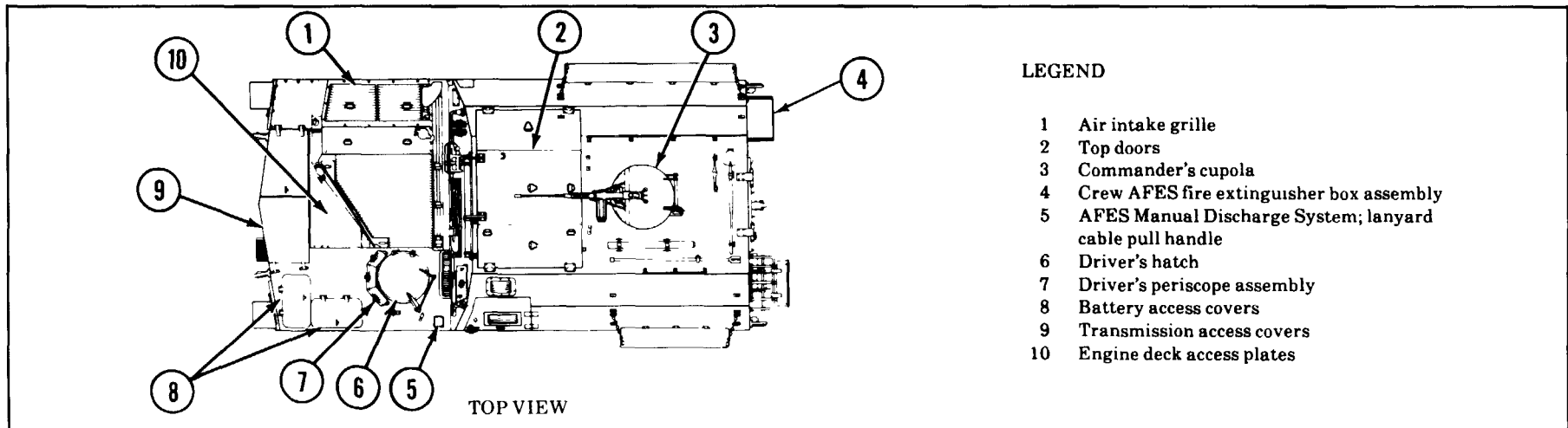
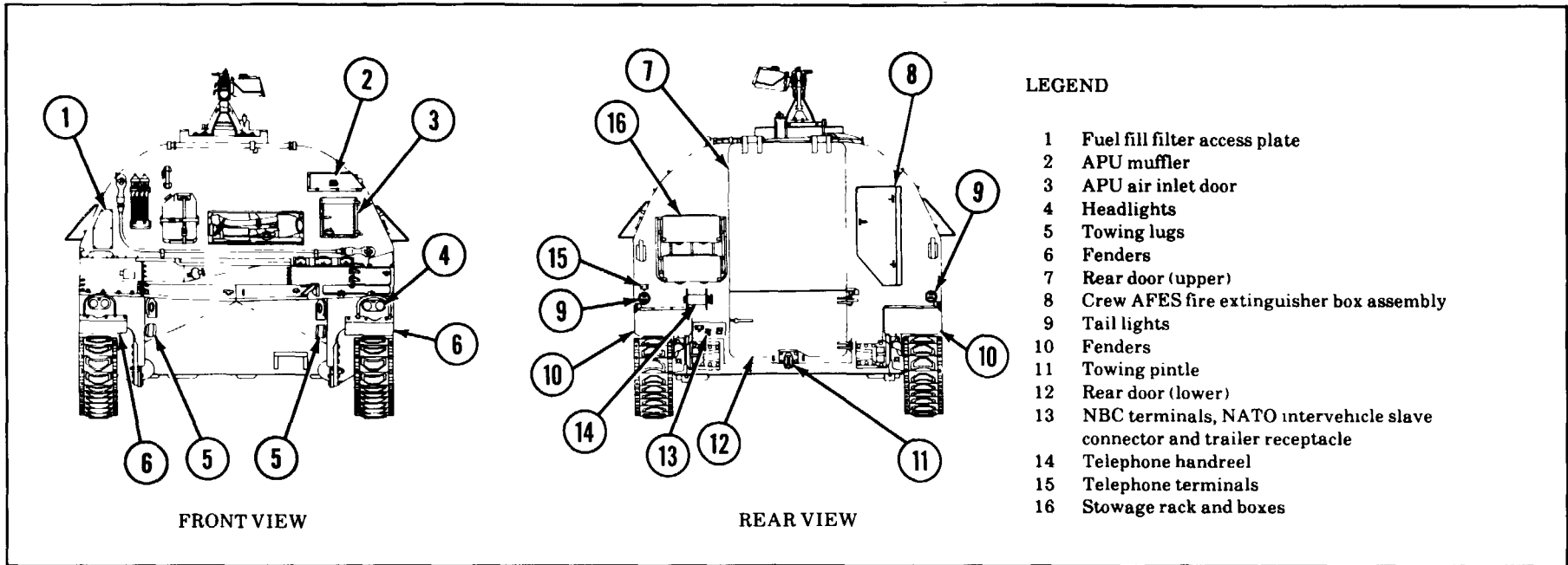
## LOCATION OF VEHICLE COMPONENTS (VEHICLES 1 THRU 344) – EXTERIOR (CONTINUED)



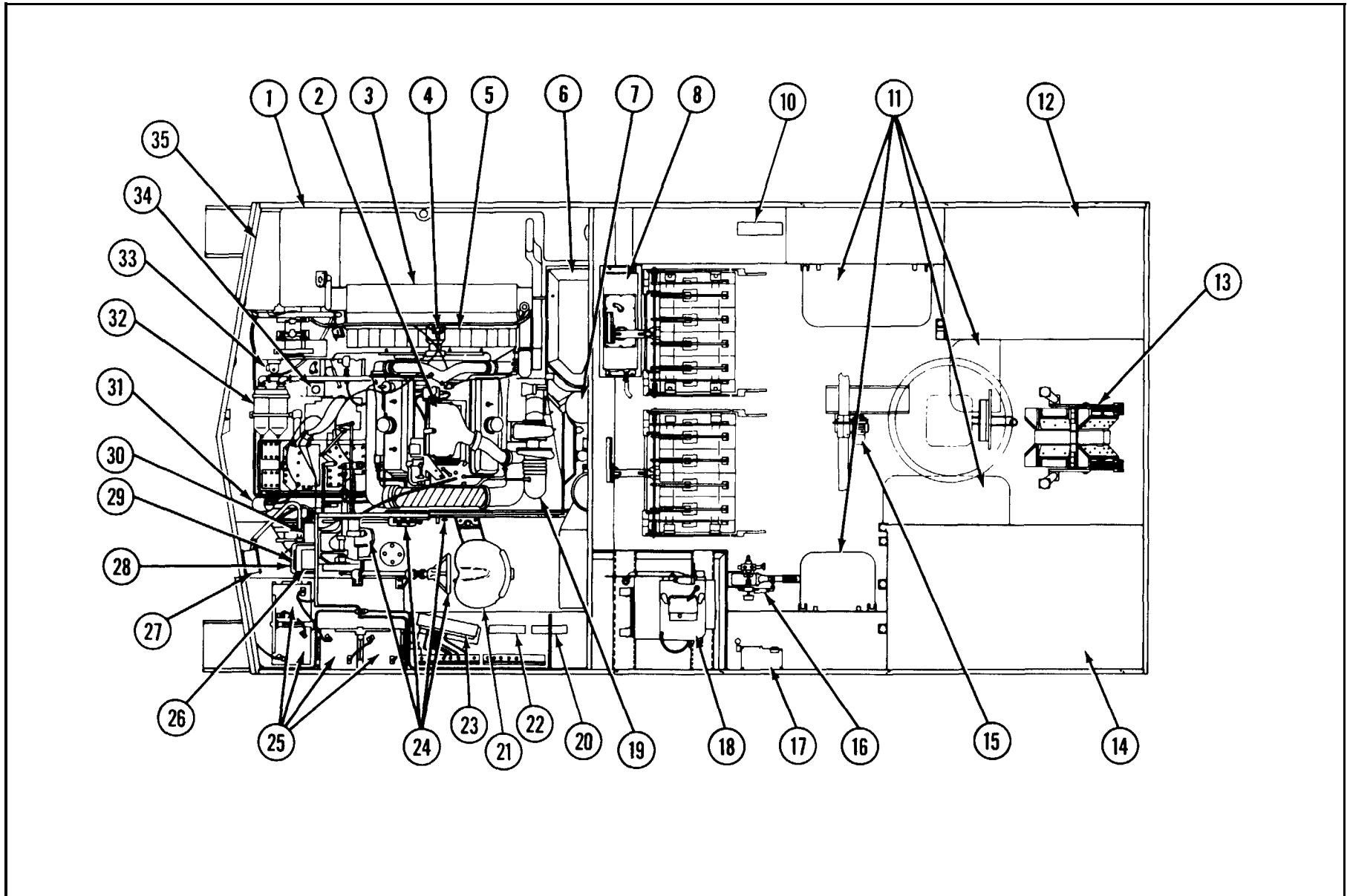
LOCATION OF VEHICLE COMPONENTS (VEHICLES 345 AND ABOVE) - EXTERIOR



LOCATION OF VEHICLE COMPONENTS (VEHICLES 345 AND ABOVE) - EXTERIOR (CONTINUED)



LOCATION OF VEHICLE COMPONENTS (VEHICLES 1 THRU 344 AND 345 AND ABOVE) - INTERIOR

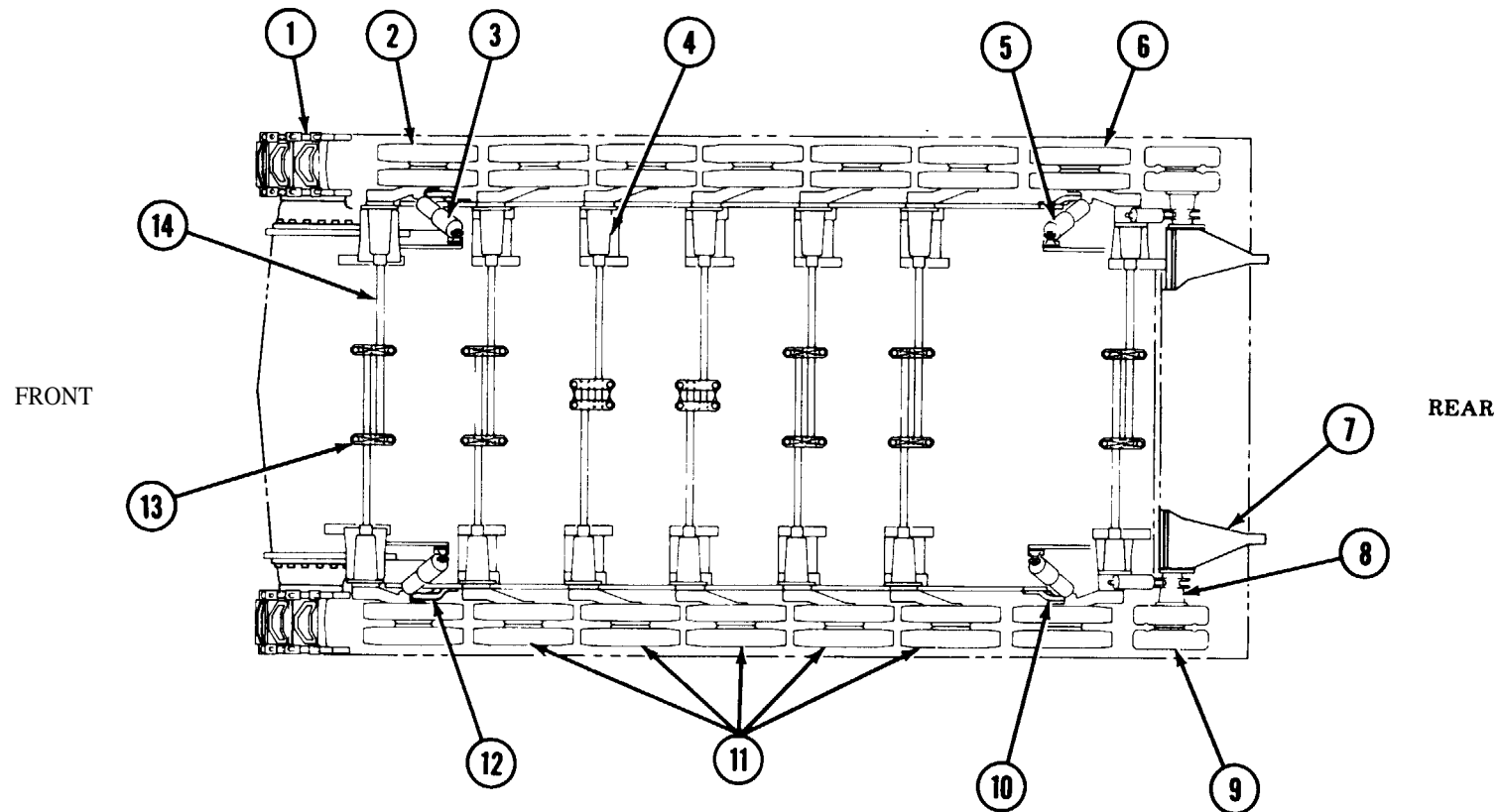


## LOCATION OF VEHICLE COMPONENTS (VEHICLES 1 THRU 344 AND 345 AND ABOVE) - INTERIOR (CONTINUED)

### LEGEND

- |    |                                      |    |  |
|----|--------------------------------------|----|--|
| 1  | Fuel tanks and pumps                 | 18 | Auxiliary power unit (APU)                     |
| 2  | Engine                               | 19 | Backup hydraulic pump                          |
| 3  | Radiator                             | 20 | AFES manual discharge system actuator assembly |
| 4  | Generator (alternator)               | 21 | Driver's seat                                  |
| 5  | Fan assembly                         | 22 | Engine AFES test and alarm (T/A) panel         |
| 6  | Air cleaner                          | 23 | Instrument panels (fixed and portable)         |
| 7  | Personnel heater                     | 24 | Driver control                                 |
| 8  | Hydraulic fluid tank                 | 25 | Batteries                                      |
| 9  | Projectile racks                     | 26 | Voltage regulator                              |
| 10 | Crew AFES test and alarm (T/A) panel | 27 | Rectifier                                      |
| 11 | Crew seats                           | 28 | Bilge pump relay                               |
| 12 | Canister racks (right)               | 29 | Starter relay                                  |
| 13 | Conveyor assembly                    | 30 | Master relay                                   |
| 14 | Canister racks (left)                | 31 | Fuel filter (secondary)                        |
| 15 | Stacker                              | 32 | Oil filters (engine)                           |
| 16 | Hydraulic hand pump                  | 33 | Fuel filter (primary)                          |
| 17 | Hydraulic control panel              | 34 | Transmission                                   |
|    |                                      | 35 | Coolant surge tank                             |

## LOCATION OF SUSPENSION SYSTEM COMPONENTS AND FINAL DRIVE



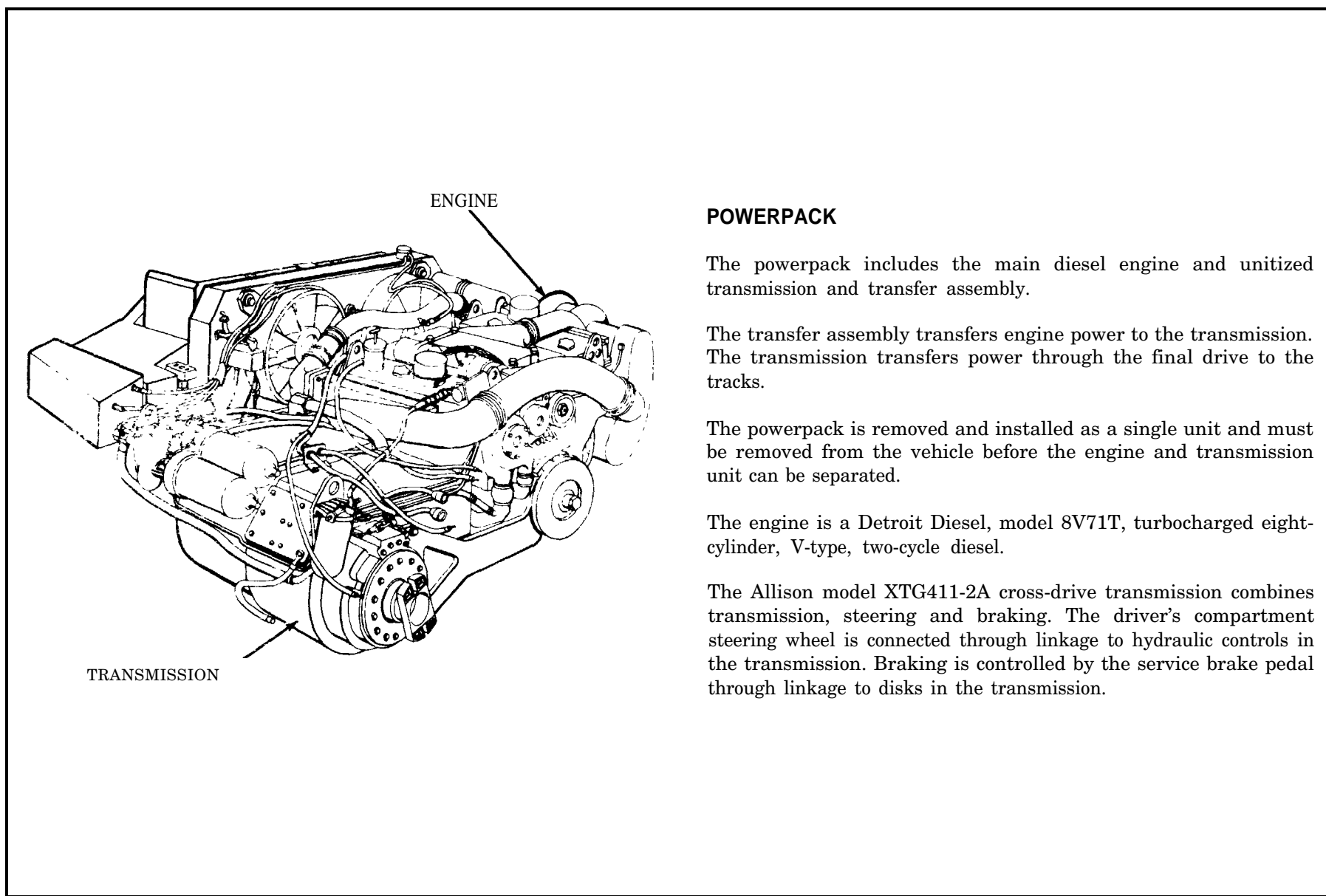
## LEGEND

- 1 Drive sprockets
- 2 Front roadwheels
- 3 Shock absorbers (front)
- 4 Roadwheel arms and hubs
- 5 Shock absorbers (rear)
- 6 Rear roadwheels
- 7 Idler wheel housings

- 8 Idler arms and hubs
- 9 **Idler** wheels
- 10 Bump stop brackets
- 11 Intermediate roadwheels
- 12 Bump stop brackets
- 13 Torsion bar anchors
- 14 Torsion bars



## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS



### POWERPACK

The powerpack includes the main diesel engine and unitized transmission and transfer assembly.

The transfer assembly transfers engine power to the transmission. The transmission transfers power through the final drive to the tracks.

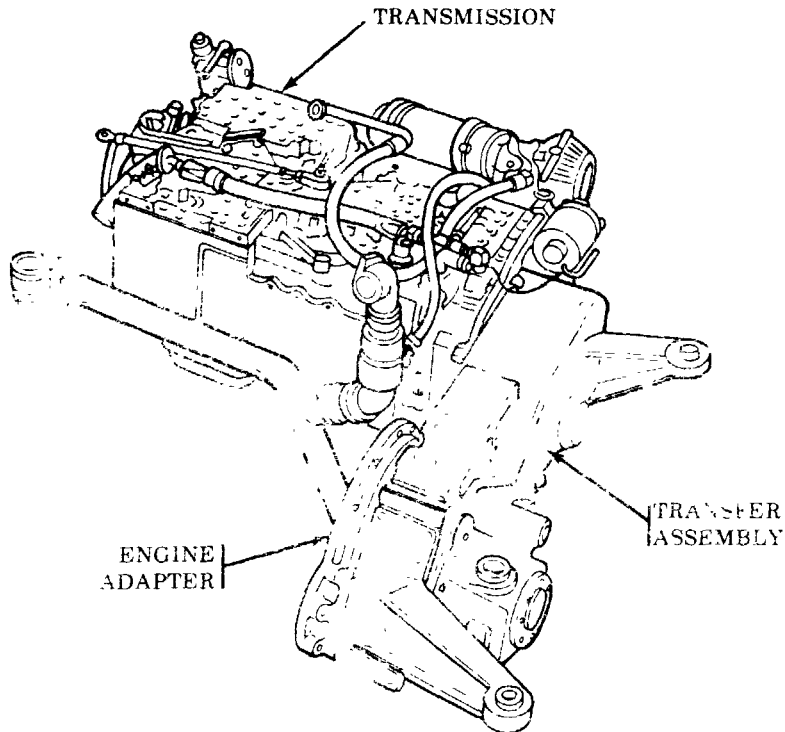
The powerpack is removed and installed as a single unit and must be removed from the vehicle before the engine and transmission unit can be separated.

The engine is a Detroit Diesel, model 8V71T, turbocharged eight-cylinder, V-type, two-cycle diesel.

The Allison model XTG411-2A cross-drive transmission combines transmission, steering and braking. The driver's compartment steering wheel is connected through linkage to hydraulic controls in the transmission. Braking is controlled by the service brake pedal through linkage to disks in the transmission.

TA309925

**LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS CONTINUED)**



**TRANSMISSION ASSEMBLY AND DRIVE CONTROL ASSEMBLIES**

The transmission is oil-cooled through the engine mounted oil cooler, and is mechanically and hydraulically operated. It receives power from the engine through a geared power transfer assembly. The transmission has four forward and two reverse speeds and one neutral setting. Power is delivered to the left and right final drives through output shafts linked by universal joints.

**TRANSMISSION MECHANICALLY LINKED DRIVE CONTROL ASSEMBLIES INCLUDE:**

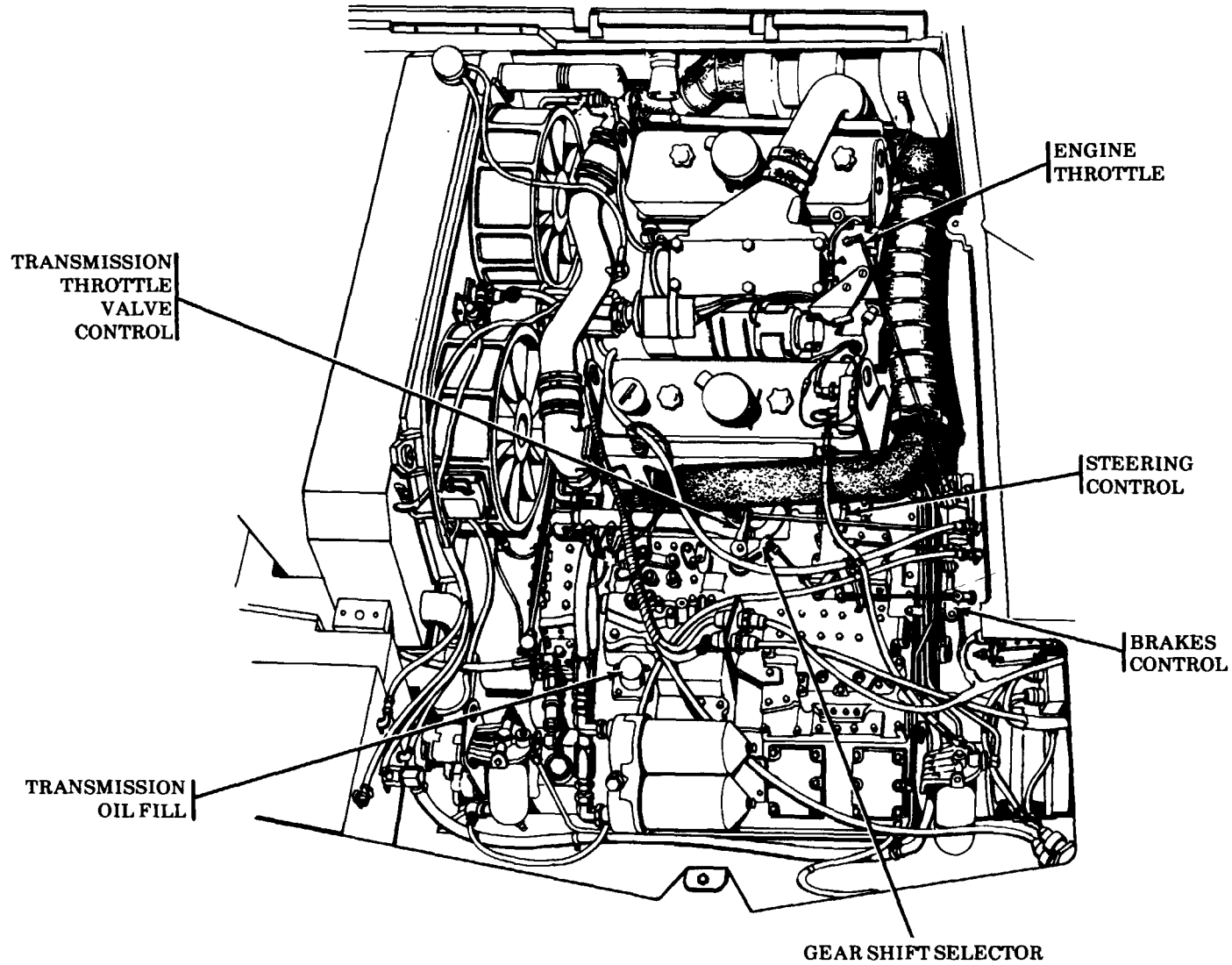
**BRAKES** — Provide internal mechanical braking for right and left transmission drive assemblies. Used to stop or slow vehicle by depressing brake pedal in driver's compartment.

**GEAR SHIFT SELECTOR** — Selects speed for the transmission.

**THROTTLE VALVE CONTROL** — Transmission throttle valve control is interconnected with engine throttle and gear shift selector. With engine operating and shift control in neutral position, the transmission throttle valve is "locked out." When gear shift selector is in one of the drive gears (or reverse), transmission throttle valve is "locked in" allowing transfer of power from transfer assembly into transmission and to drive assembly.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

TRANSMISSION ASSEMBLY AND DRIVE CONTROL ASSEMBLIES (CONTINUED)



TA309927

TM 9-2350-267-20

**LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)****TRANSMISSION ASSEMBLY AND DRIVE CONTROL ASSEMBLIES (CONTINUED)****NOTE**

The transmission throttle valve control rod does not govern the speed of the vehicle or the transmission rpm. Speed and rpm are determined by engine rpm and the shift control position.

**STEERING** – Turning steering wheel in driver's compartment applies brakes to track on inside of turn. Left turn: brake is applied to left drive output. Right turn: brake is applied to right drive output.

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

### ENGINE COOLING SYSTEM

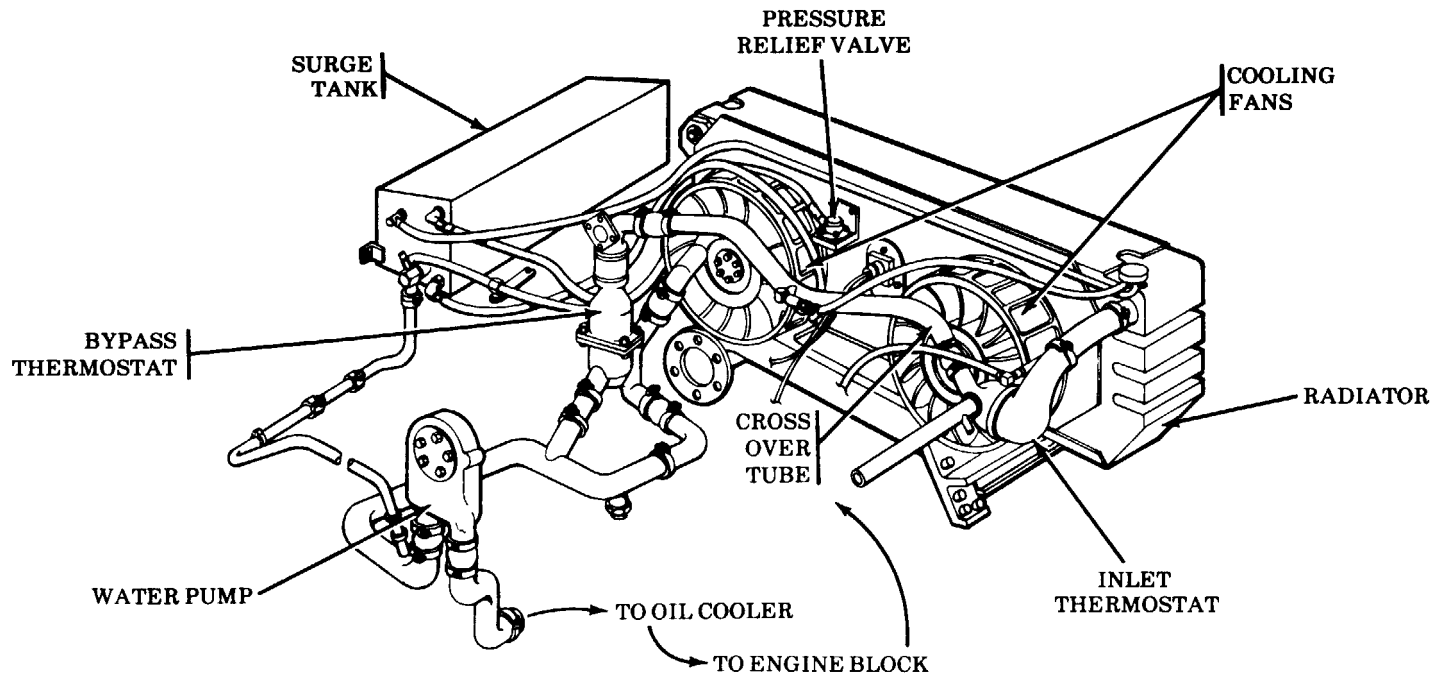
Cooling air is drawn through fan well cover and forced through radiator into engine compartment by two cooling fans. Air flows around engine and is exhausted through grilles on top of vehicle engine deck.

Engine coolant flows from coolant pump into two-section (engine/transmission) oil cooler mounted on engine. From oil cooler cores, coolant flow is directed into engine water jackets for engine block cooling. At normal operating temperatures the bypass thermostat is closed and inlet thermostat is open, allowing coolant to circulate through the radiator. Below normal operating temperatures, the inlet thermostat closes and the by-

pass thermostat opens allowing coolant to flow through cross-over tube, bypassing the radiator.

The surge tank collects and stores excess system coolant, allowing coolant to flow back into the system as required to maintain the system at full level. Air trapped in the system is bled to atmosphere through the pressure relief valve which is connected by hose to the surge tank.

The aeration detector senses low coolant level and activates a warning indicator light on the operator's instrument panel.



**LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)**

The upper and lower fuel cells have a combined capacity of 135 gallons of fuel oil. Fuel oil is pumped from the cells, by two submerged electrically driven fuel pumps, to a fuel distribution terminal where it is routed to the personnel heater, APU fuel pump and filters, primary fuel filter or returned to the fuel cell.

The primary fuel filter receives fuel from the fuel cells. The main engine driven fuel pump pulls fuel from the primary fuel filter and channels it to the secondary fuel filter.

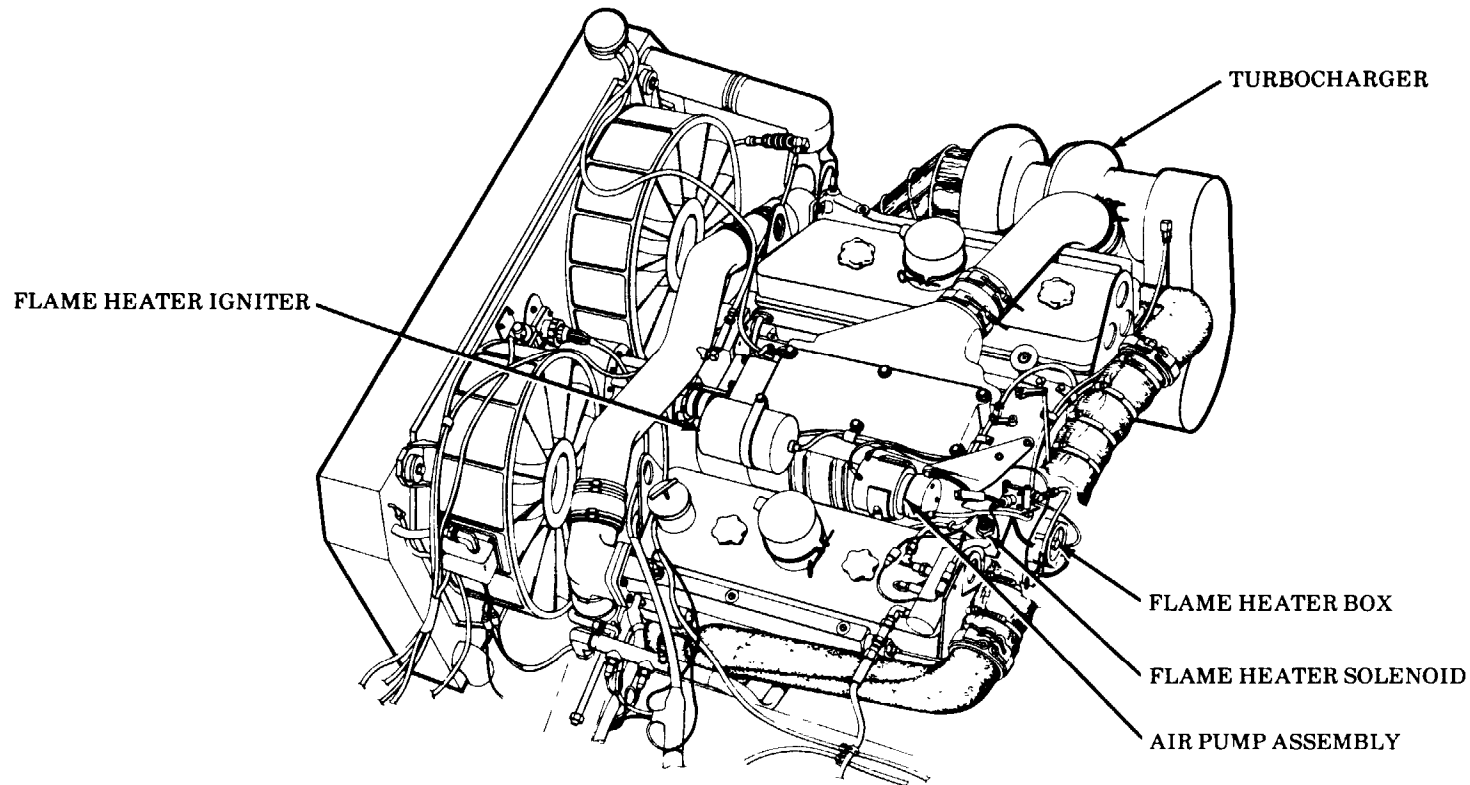
Fuel is delivered from the secondary fuel filter to the engine. The fuel return cross-over hose carries fuel from the right to the left cylinder head. Unused fuel from the engine is routed through the fuel return hose for delivery to the flame heater system, or returned to the fuel cells. The engine mounted electric fuel pump is activated by a switch on the driver's instrument panel, and allows flow of fuel from primary to secondary filters when the engine is not running.

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

### FUEL SYSTEM (CONTINUED)

The flame heater assembly is used to bring the engine fuel combustion temperature up to operational level. The system is used during cold weather conditions or whenever the engine is hard to start. An ON/OFF switch on the driver's control panel actuates the system.

The flame heater solenoid opens to allow fuel from the fuel return system to be delivered to the flame heater box. The air pump assembly delivers air from the engine turbocharger to the flame heater box. There, the air/fuel mixture is atomized and electrically ignited by the flame heater igniter. The resulting preheated air mixture is then drawn into the cylinders for combustion.



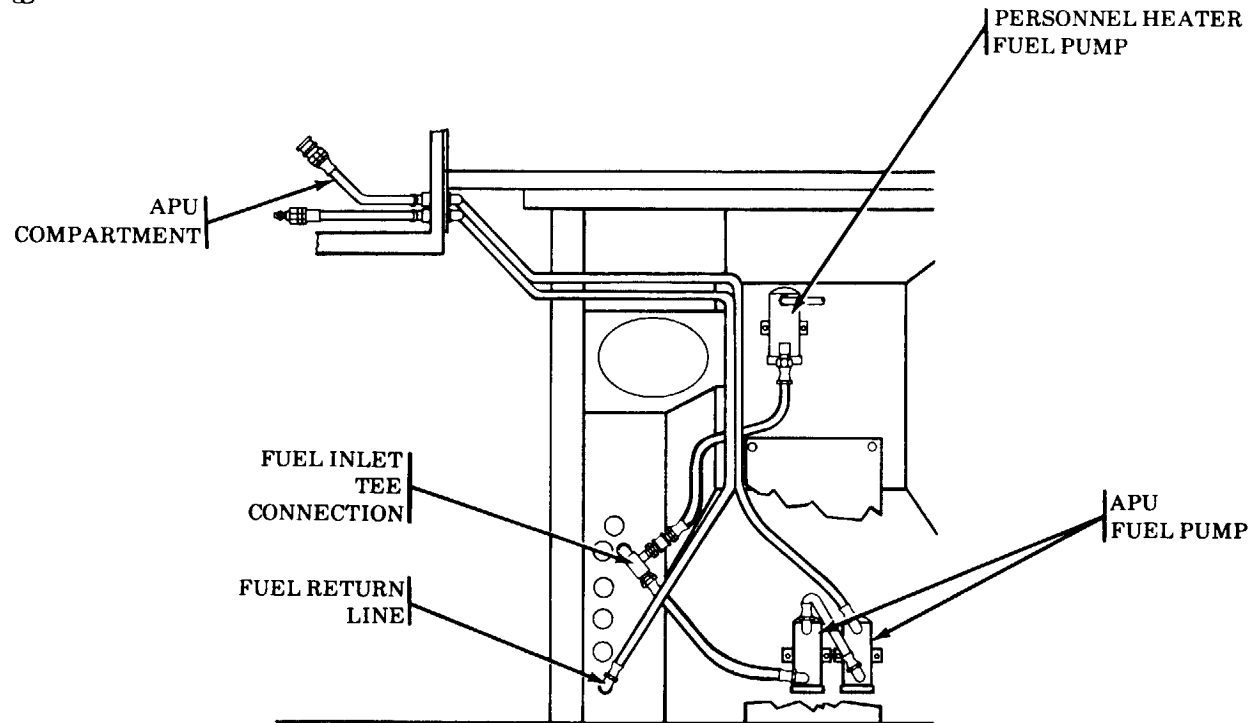
TA309931

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

### FUEL SYSTEM (CONTINUED)

The Auxiliary Power Unit (APU) and personnel heater receive fuel through the fuel inlet tee connection from the fuel distribution terminal. APU pumps become operational when the MASTER switch located on the APU control panel is turned ON. Fuel is delivered to the APU compartment wall-mounted filters and on to the APU. Excess fuel is routed through the fuel return line to the fuel cells.

The personnel heater fuel pump becomes operational when the personnel heater MASTER switch is turned ON. Fuel is routed to the personnel heater filter and onto the heating unit.



VIEW FROM INSIDE CREW COMPARTMENT

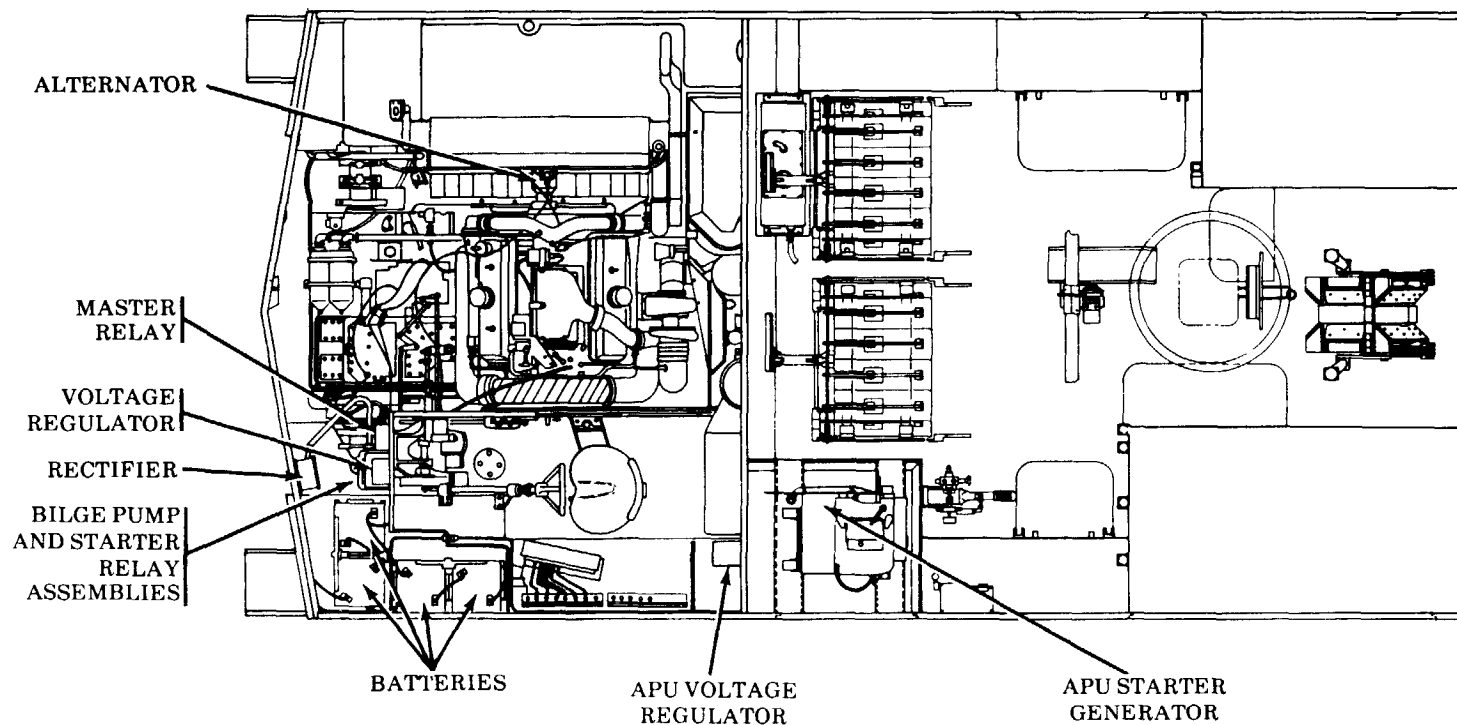


## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

### ELECTRICAL SUPPLY SYSTEMS AND COMPONENTS

Four 12-volt batteries, connected in series and parallel, deliver 24 vdc to the master relay. The MASTER switch on the driver's control panel, when turned to ON position, draws 24 vdc from the batteries and will allow operation of the vehicle electrical systems without the main engine running. The engine driven alternator supplies 24 vac to the rectifier when the engine is operating. The rectifier converts the alternator ac voltage output to dc voltage, which in turn is supplied to the voltage regulator.

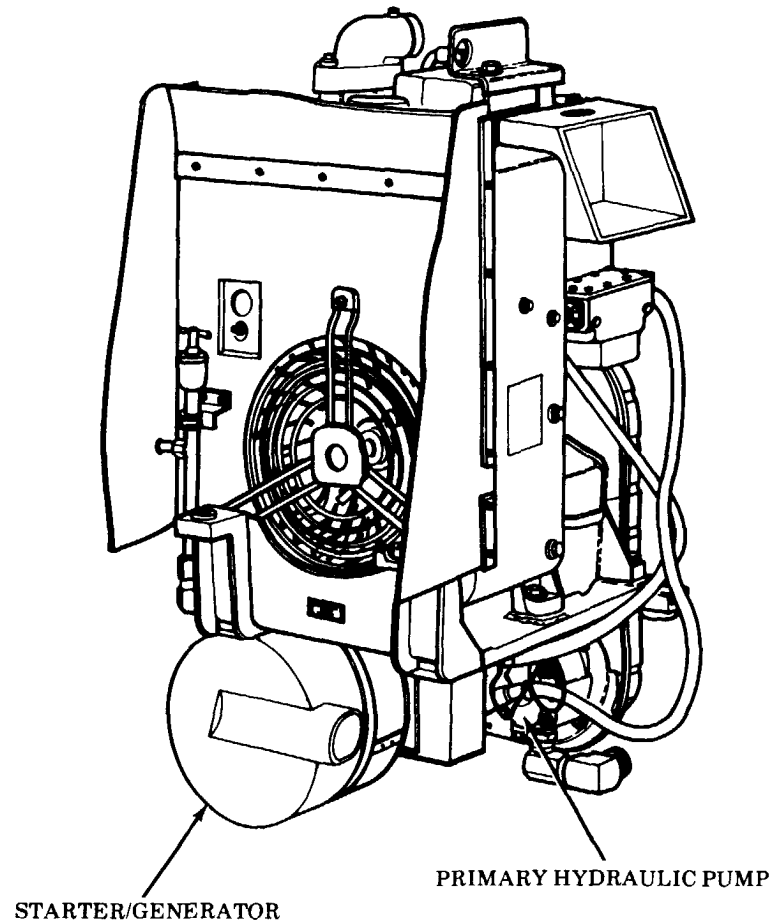
The voltage regulator controls the supply of 24 vdc to the vehicle electrical systems through the master relay. It also acts as a charger for the batteries when the engine is operating, keeping the batteries at full charge voltage. The APU electrical generator supplies 24 vdc through the APU voltage regulator to operate the vehicle electrical systems and to recharge the batteries when the vehicle main engine is not in operation.



TA309933

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

## AUXILIARY POWER UNIT

**AUXILIARY POWER UNIT (APU)**

The Auxiliary Power Unit (APU) is an 11.5-horsepower, overhead-valve, two-cylinder, four-cycle, air-cooled, diesel engine used to drive an electrical generator and the primary hydraulic system pump.

The electrical generator is used to recharge the main engine batteries and provide electrical power for the operation of M992 components and the supported howitzer. It is coupled directly to the APU engine by a drive chain.

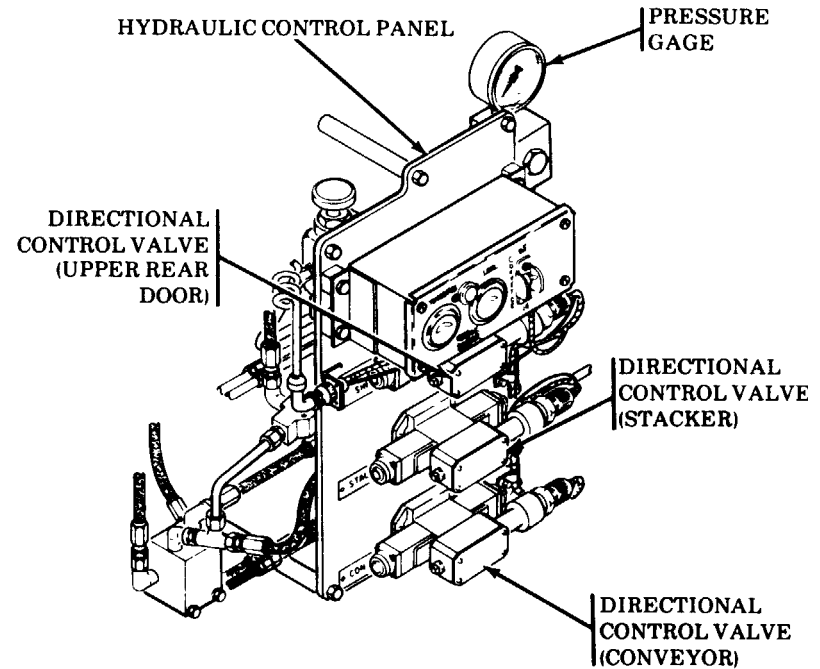
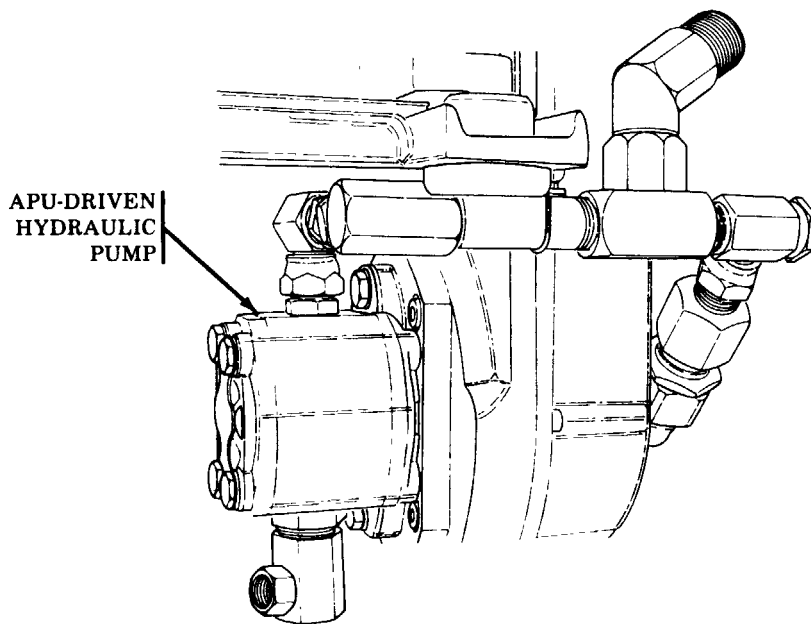
The primary hydraulic system pump provides power for hydraulic system component operation. Failure of the APU would result in primary system failure, making it necessary to operate the main engine backup hydraulic pump for system operation.

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

### HYDRAULIC SYSTEM (PRIMARY AND BACKUP)

The hydraulic system is used to operate the upper rear door, stacker and conveyor. The APU is used to drive the primary hydraulic pump for system operation. The primary hydraulic pump is capable of delivering 4.5 gallons per minute of flow at a system pressure of 1550 psi. Hydraulic fluid is pumped from the 13-gallon capacity hydraulic fluid reservoir to the hydraulic control panel. The hydraulic control panel assembly contains three electromechanically activated directional control valves used to route hydraulic fluid to the system to be operated. The upper directional control valve controls the action of the upper rear door actuator, extending or retracting the actuator to open or close the rear

door. The center directional control valve controls the stacker tray up-and-down movement. The lower directional control valve controls the action of the conveyor motor for forward or reverse travel of the conveyor. The hydraulic control panel also incorporates a pressure gage which indicates primary or backup system pressure. The conveyor control switch actuates the conveyor solenoid at the conveyor control valve. The rear door switches are located at the upper and lower left areas of the rear door opening. The stacker tray control switch is located on the stacker. If there is a failure of the primary hydraulic system, the system can be operated by switching to the backup system.



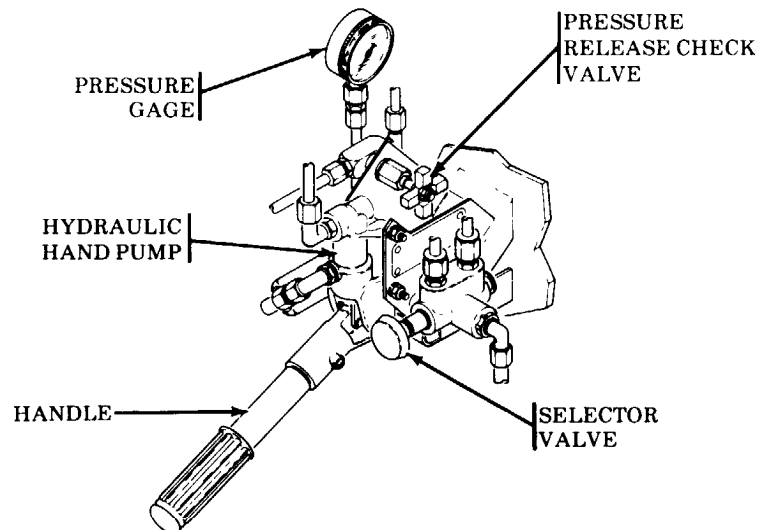
## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

## HYDRAULIC SYSTEM — PRIMARY AND BACKUP (CONTINUED)

**CAUTION**

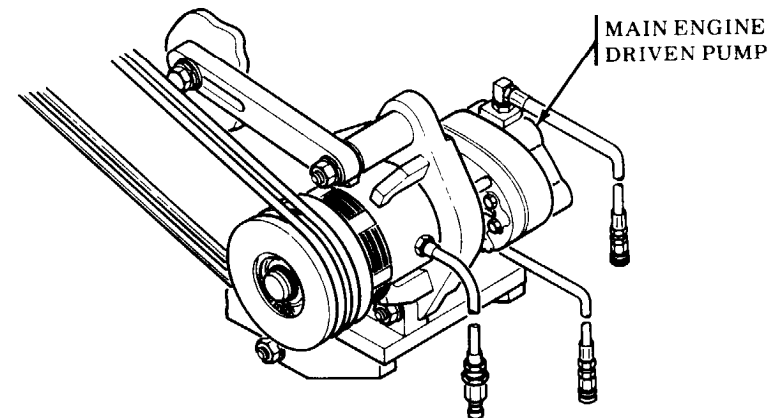
Do not exceed 150 psi.

A hydraulic hand pump is used to activate the backup system. A selector valve, located next to the hand pump, is pushed/pulled to select the hydraulic pump source, either primary or backup. In the backup system mode, the pump handle is pumped several times until the pressure gage indicates 125 psi minimum to 150 psi maximum. This pressure, held by a check valve, engages the backup system clutch, which actuates the backup system belt-driven pump mounted on the main engine. The main engine-mounted hydraulic backup pump delivers 7.1 gallons per minute of flow at a system pressure of 1550 psi with the engine operating at 1100 rpm.

**CAUTION**

Operation of the backup hydraulic system at engine speeds greater than 1100 rpm for more than a few minutes will overheat the hydraulic fluid and may cause system malfunction.

To disengage the backup hydraulic system pump, open the pressure release check valve to release hydraulic fluid pressure and push selector valve IN.

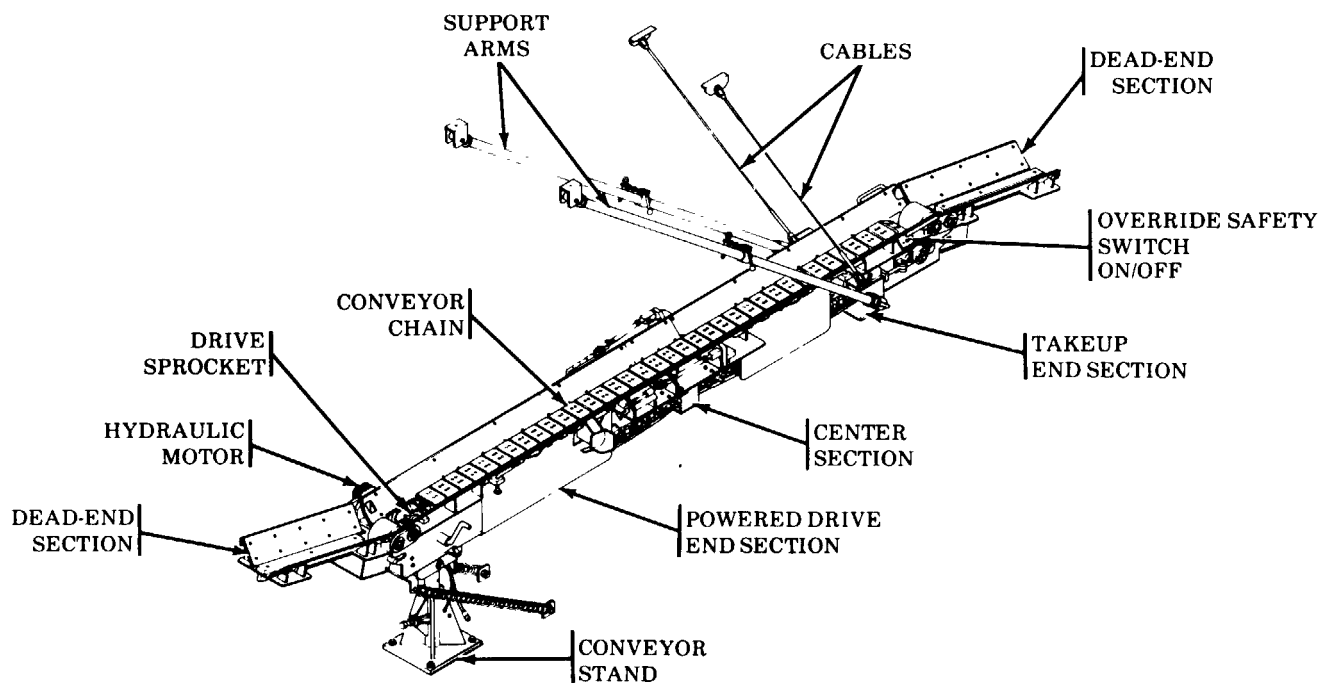


## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

### CONVEYOR SYSTEM

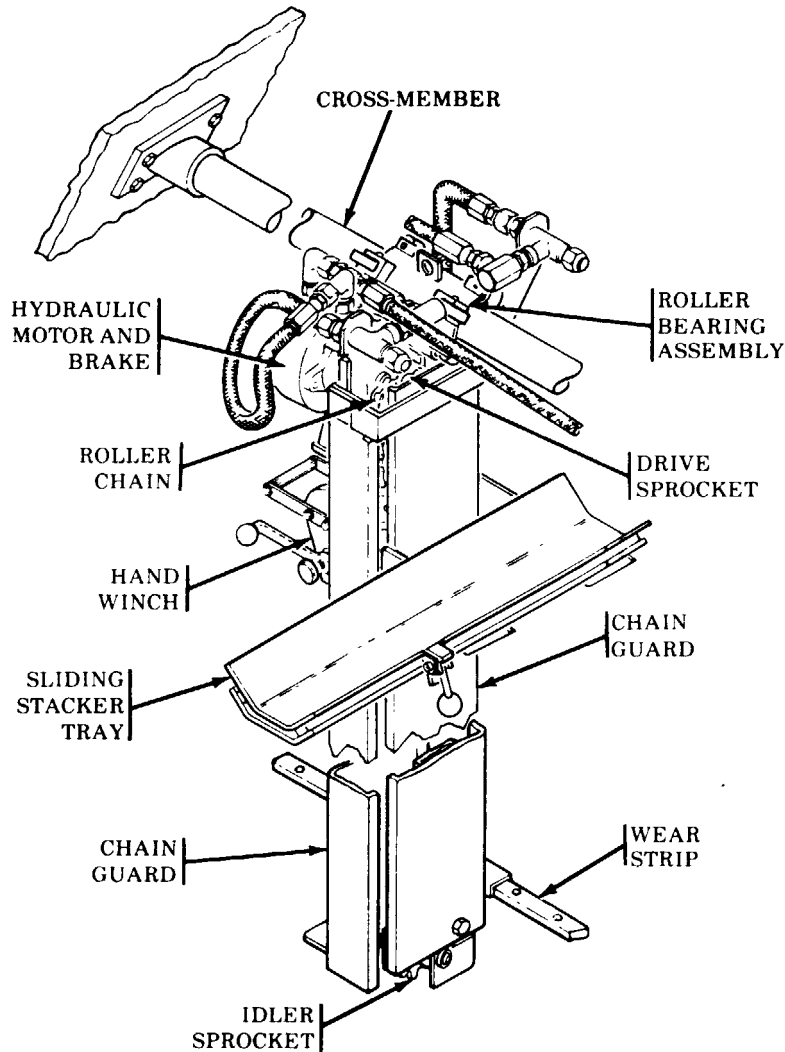
The conveyor is a hydraulically powered system and can be operated in either forward or reverse direction. Two stationary dead-end sections, one at each end, are used as staging areas for ammunition transfer. The powered parts of the conveyor are: powered drive end section, center section and takeup end section. A three-position switch, located on the hydraulic control panel, actuates the conveyor directional control valve which allows the conveyor motor to operate in either forward or reverse. A drive sprocket coupled to the motor shaft moves the conveyor chain.

An override safety (ON/OFF) switch, located at the takeup end section, provides an outside vehicle shutoff capability. The chain runs taut across the top of the conveyor, and loose across the bottom. A chain adjustment device allows chain tension to be adjusted by moving the idler sprocket forward or backward. Telescoping support arms serve to adjust and lock the conveyor in several operating positions. Two cable assemblies support the conveyor when deploying the system, and are removed and stowed when the system is in operation. A hand crank, for manual operation, is provided in case of a malfunction of the hydraulic system. The conveyor can be folded and stowed inside the vehicle when not in use.



TA309937

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)



### STACKER SYSTEM

The stacker is used to transfer projectiles between the conveyor and projectile racks.

#### Vertical Motion:

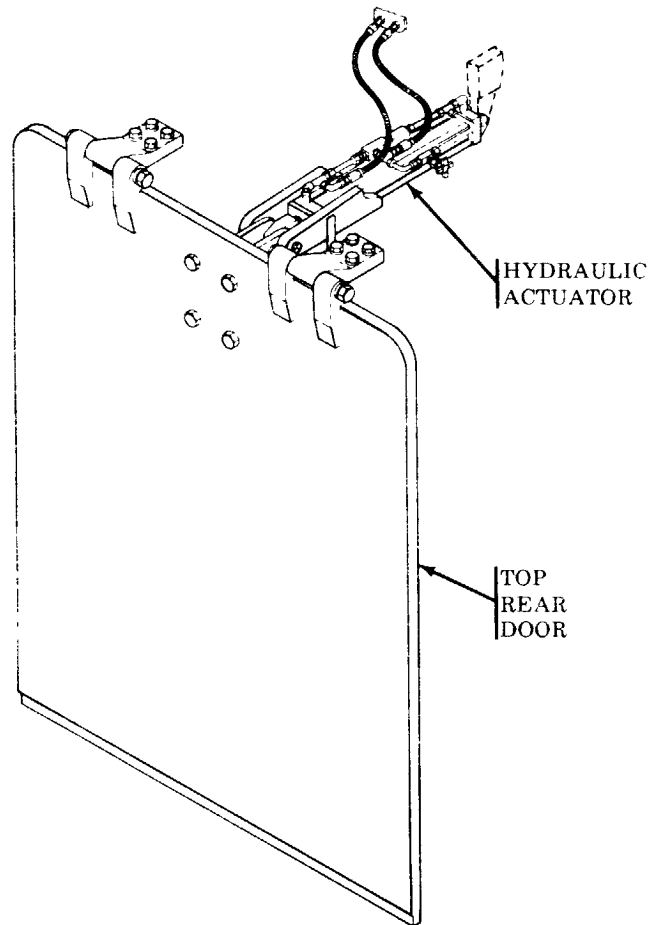
The sliding stacker projectile tray is connected to a roller chain that travels between the upper drive sprocket and lower idler sprocket. The drive sprocket is shaft-mounted to the hydraulic motor. Up-and-down movement is controlled by two pushbutton switches mounted on the upper back of the chain guard. The pushbuttons actuate the stacker directional control valve which allows hydraulic fluid to the motor. The projectile tray is prevented from falling by a hydraulic brake mounted on the motor.

A winch assembly provides manual operation of the projectile tray when hydraulic power is unavailable.

#### Horizontal Motion:

Movement of the stacker from one side of the cargo compartment to the other is accomplished by pushing the stacker manually. The stacker is supported at the top by a horizontal cross-member, and is guided along the vehicle floor by a wear strip. The roller bearing assembly, mounted to the vertical support assembly, provides ease of horizontal travel.

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)



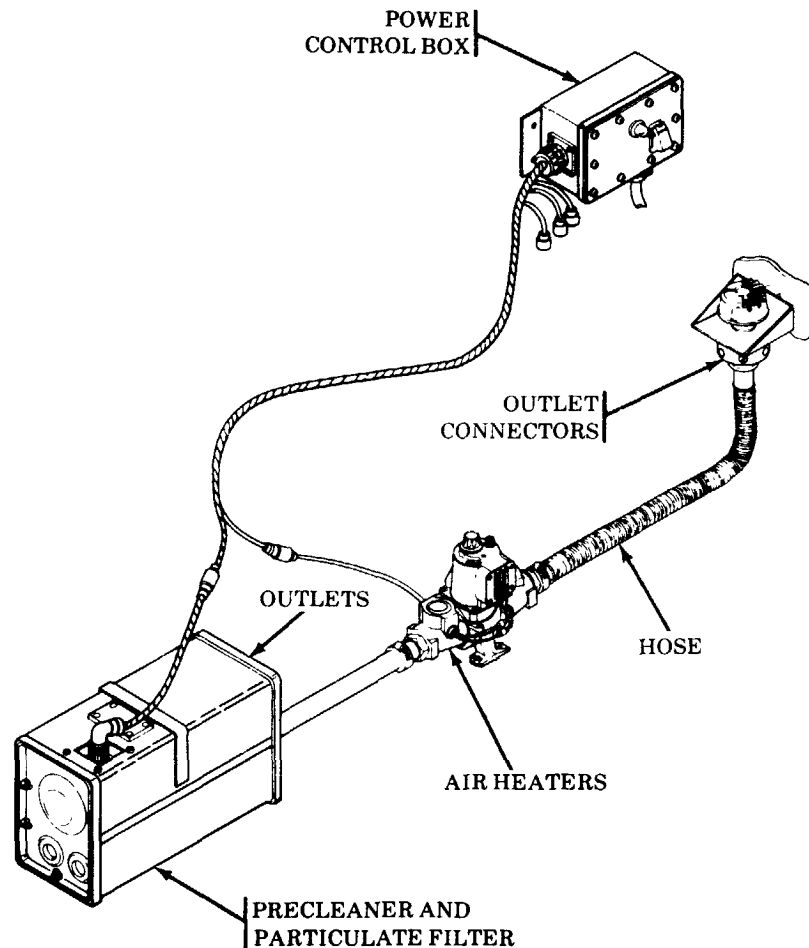
### TOP REAR DOOR

The top rear door is hydraulically actuated. In the raised position, it forms an overhead ballistic shield, providing protection between the M992 and the supported howitzer. The door is also used to deploy and position the conveyor. From the closed position, it can be raised to any position through 120 degrees. The top rear door directional control valve can be actuated by two three-position switches mounted inside the rear door opening on the left side. One is mounted high, the other low, for inside and outside access.

In the event of hydraulic power loss, the door is prevented from closing by a pilot check valve which stops hydraulic fluid backflow within the door hydraulic system. In addition, a mechanical lock engages the vehicle hull in the 45- and 90-degree positions.

TA309939

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)

**NBC VENTILATED FACE PIECE SYSTEM**

The ventilated face piece system provides clean, filtered air for the crew and personnel under NBC situations.

The system is comprised of one air precleaner/particulate filter unit with four outlets, four M3 air heaters, four outlet connectors and one NBC power control box.

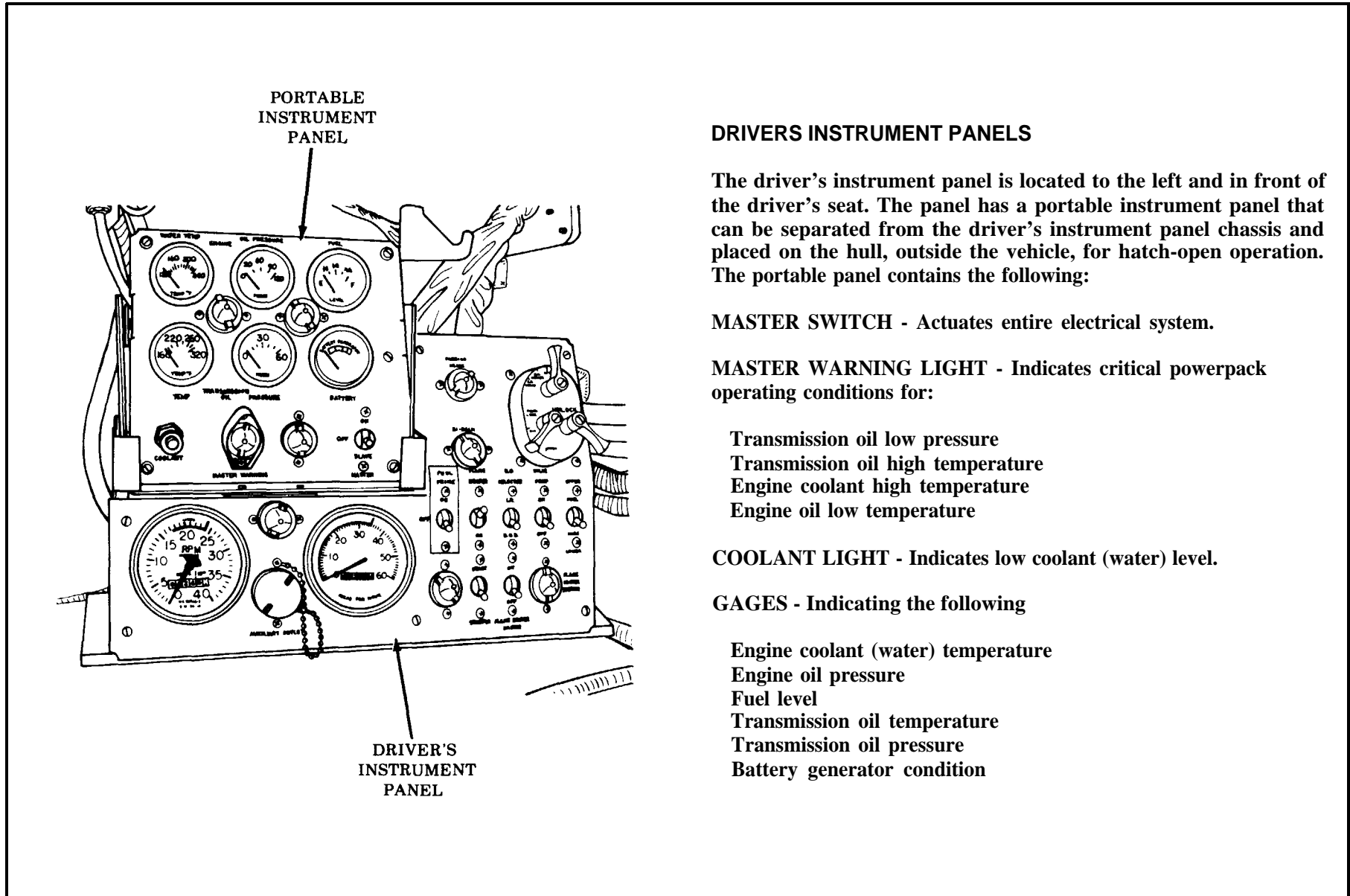
The air precleaner/particulate filter is located in the lower left rear of the crew compartment. The air heaters are mounted forward from the precleaner. The NBC power control box is attached to the vehicle ceiling in the crew compartment on the left side.

When not in use, hoses are connected to outlet connectors which function as one-way valves allowing system air to escape, and preventing contaminated air from entering through backflow. When in use, outlet connecting hoses are disconnected from outlet connectors and inserted in the canister packs of the face masks used with the system.

Each of the four filtered air outlets has an M3 air heater connected in line to allow air temperature to be individually controlled by the user.



## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS (CONTINUED)



### DRIVERS INSTRUMENT PANELS

The driver's instrument panel is located to the left and in front of the driver's seat. The panel has a portable instrument panel that can be separated from the driver's instrument panel chassis and placed on the hull, outside the vehicle, for hatch-open operation. The portable panel contains the following:

**MASTER SWITCH** - Actuates entire electrical system.

**MASTER WARNING LIGHT** - Indicates critical powerpack operating conditions for:

- Transmission oil low pressure
- Transmission oil high temperature
- Engine coolant high temperature
- Engine oil low temperature

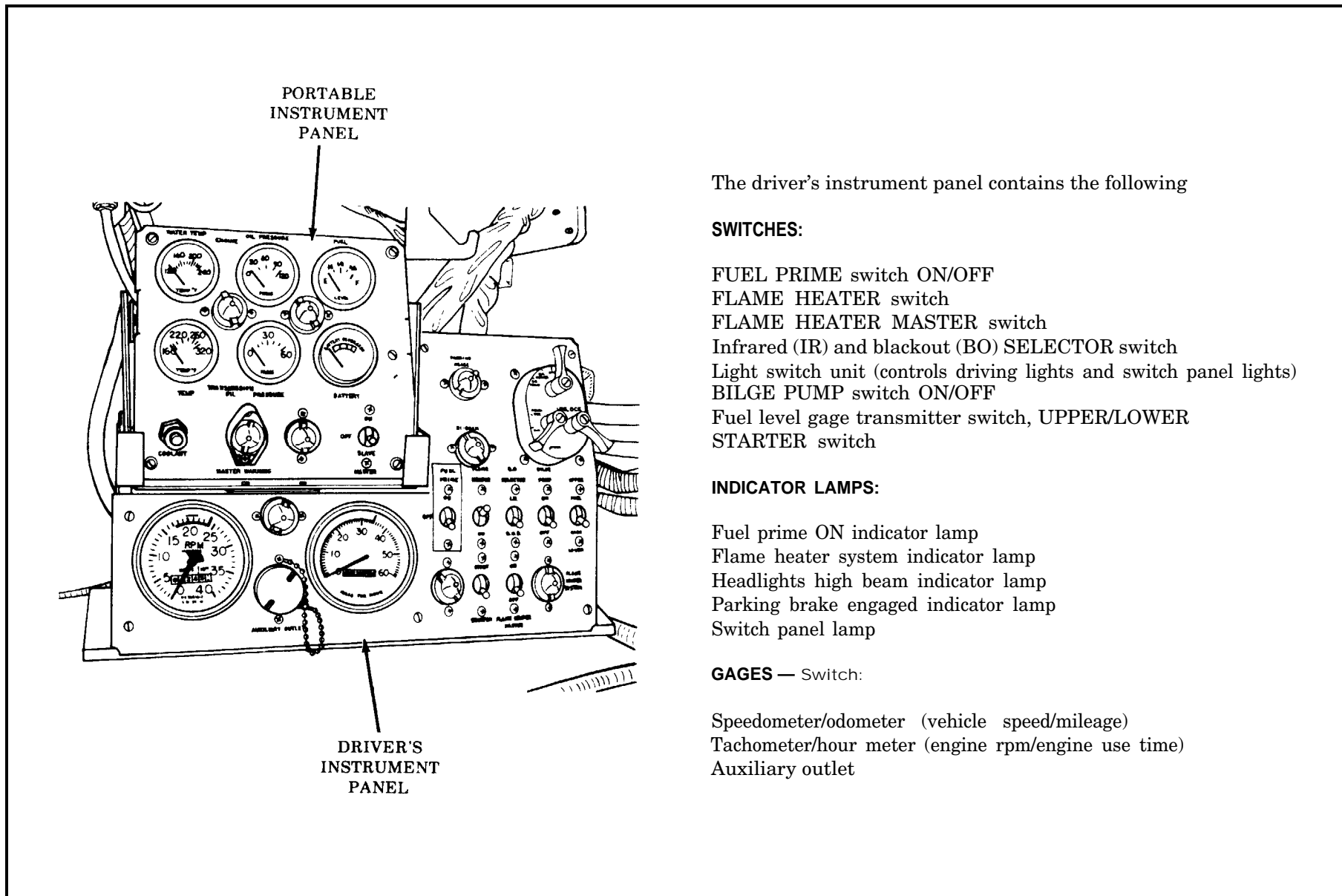
**COOLANT LIGHT** - Indicates low coolant (water) level.

**GAGES** - Indicating the following

- Engine coolant (water) temperature
- Engine oil pressure
- Fuel level
- Transmission oil temperature
- Transmission oil pressure
- Battery generator condition

TA309941

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS AND SYSTEMS [CONTINUED]



The driver's instrument panel contains the following

**SWITCHES:**

FUEL PRIME switch ON/OFF  
 FLAME HEATER switch  
 FLAME HEATER MASTER switch  
 Infrared (IR) and blackout (BO) SELECTOR switch  
 Light switch unit (controls driving lights and switch panel lights)  
 BILGE PUMP switch ON/OFF  
 Fuel level gage transmitter switch, UPPER/LOWER  
 STARTER switch

**INDICATOR LAMPS:**

Fuel prime ON indicator lamp  
 Flame heater system indicator lamp  
 Headlights high beam indicator lamp  
 Parking brake engaged indicator lamp  
 Switch panel lamp

**GAGES — Switch:**

Speedometer/odometer (vehicle speed/mileage)  
 Tachometer/hour meter (engine rpm/engine use time)  
 Auxiliary outlet

## VEHICLE SPECIFICATIONS

Crew	3
Other Personnel	5 max
Weight (combat loaded)	58,500 lb
■ Length (overall)	265.41 in.
Width (overall)	124 in.
Height (overall) combat loaded to top of machine gunmount	130-1/4 in.
Ground clearance	14-1/2 in.
■ Armament	50-cal, M2, HB flex machine gun; 5.56, M16A2 rifle

## PERFORMANCE

High speed (max)	35 mph
Reverse speed (.)	7 mph
Maximum grade	60 percent
Maximum trench (width)	72 in.
Maximum vertical wall	.21 in.
Turning radius (min)	1 vehicle length
Fording depth	42 in.
Cruising range	220 miles

## ENGINE

Type/model	Detroit Diesel 8V71T, liquid-cooled two-cycle
■ Manufacturer	Detroit Diesel Corporation
Cylinders	8
Horsepower (gross)	405 at 2350 rpm
Horsepower (net)	345 at 2300 rpm
Displacement	567.4 cu in.
Bore	4.25 in.
Stroke	5 in.
Compression ratio	17:1
Torque (max gross)	980 lb-ft at 1700 rpm
Torque (max net)	895 lb-ft at 1600 rpm
■ Ignition	Compression

## Fuel Oil

Regular grade (DF-2) (NATO F-54)	+20° to 115°F
Winter grade (DF-1)	-20 to +20°F
Arctic grade (DF-A)	65° to -25°F

## NOTE

Under emergency conditions and in military operations involving jet transportation, JP-5 aircraft turbine engine fuel may be used instead of VV-F-800.

Fuel capacity	135 gal
Fuel acceptance (safe max)	50 gpm
Lubrication oil system capacity (refill)	27 qt (approx)
Cooling system capacity (refill)	14.5 gal
Cooling system capacity (dry)	25.20 gal

## TRANSMISSION

Model	XTG411-2A
Manufacturer	Detroit Diesel Corporation Allison Div.
Usable ranges	
First (low range)	5.69:1
Second (low intermediate)	3.17:1
Third (low intermediate)	1.58:1
Fourth (high range)	0.79:1
Low reverse (R-1)	5.60:1
High reverse (R-2)	3.79:1
Steer	1.475:1
oil capacity (refill)	56 qt
Steer control (first and second)	Clutch brake
Steer control (third and fourth)	Geared
Brakes	Mechanical-applied
Oil Capacity (refill)	14 gal
Oil Capacity (dry)	21 gal

VEHICLE SPECIFICATIONS (CONTINUED)

ELECTRICAL SYSTEM

Voltage (nominal) ..... 24 vdc  
 Batteries ..... four, 12 vdc each, series-parallel  
 Generator (alternator) type ..... GTN  
 Manufacturer ..... Leece-Neville  
 Model ..... A001-5504AC  
 Type ..... Three-phase  
 Amperage ..... 100  
**RPM** ..... 2000-2800  
 Watts ..... 2800  
 Voltage ..... 28 vdc

COMMUNICATIONS

Intercommunication set (model) ..... AN/VIC-1  
 Outlets ..... 3  
 External jacks ..... 1  
 External extension (model) ..... C-988/U

SUSPENSION

**Type** ..... Independent torsion bar  
 Roadwheel ..... 7 sets  
 Size ..... 24 in.  
 Loadings:  
 1, 2 and 7 positions ..... 4000 lb (approx)  
 Intermediate positions ..... 2600 lb (approx)  
 Track  
 Adjustment at idler wheel ..... Track adjuster  
 Shoes per track ..... 80  
 Pitch ..... .6 in.  
 Width ..... 15 in.

FINAL DRIVES AND SPROCKETS

Type ..... spur gear  
 Ratio ..... 4.36:1  
 Sprocket pitch diameter ..... 19.5 in.  
 Number teeth per sprocket ..... 10

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)

Manufacturer ..... HTL systems  
 Extinguishing agent ..... Halon 1301  
**system.**

Quantity ..... 3

Type ..... Engine AFES, Crew AFES, AFES Manual Discharge System

Bottles (freed (Vehicles 1 thru 344):

Number ..... Engine AFES-2, Crew AFES-4  
 Capacity (m) ..... 10 lb, Halon 1301  
 Pressure ..... 750 psig, Nitrogen at 70°F

Bottles (fixed) (Vehicles 345 and above):

Number ..... Engine AFES-2, Crew AFES-6  
 Capacity (es) ..... Engine AFES-Two 10 lb, Halon 1301  
 Crew AFES-Six 7 lb, Halon 1301  
 Pressure ..... 750 psig, Nitrogen at 70°F  
 Halon Distribution ..... Engine and crew compartments

Detection system (hydrocarbon fires):

Engine AFES ..... Engine compartment thermal wire

## VEHICLE SPECIFICATIONS (CONTINUED)

### AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) (CONTINUED)

Crew AFES . . . . . Four crew compartment optical fire detecting assemblies

Discharge System . . . . . Automatic (engine AFES and crew AFES) and Manual (AFES/MDS and MANUAL switch on engine AFES and crew AFES T/A panel)

Detection/suppress time . . . . . 250 ms

Portable extinguishers:

Manufacturer . . . . . Metalcraft, Inc.

Bottles . . . . . 2

Type . . . . . CF<sup>3</sup>

Capacity . . . . . 2.75 lb

Extinguishing agent . . . . . CF<sup>3</sup>

Discharge System . . . . . Manual

### HYDRAULIC SYSTEM

Reservoir capacity . . . . . 13 gal

Primary pump (APU-driven):

Manufacturer . . . . . Rexroth Corp

Model . . . . . P2-3AH2-1L

Flow rate . . . . . 6.9 gpm at 2000 rpm

Type . . . . . Gear

Backup pump (engine-drive):

Manufacturer . . . . . Parker Hannifin Corp.

Model . . . . . 4-62-AA-1-B

Flow rate . . . . . 7.1 gpm at 1157 rpm, engine speed 1100 rpm

Type . . . . . Gear

Hydraulic clutch

Manufacturer . . . . . Carlyle Johnson Machine Co.

Model . . . . . A-H50A

System pressure . . . . . 1550 psi

Oil . . . . . MIL-H-6083

Temperature . . . . . -65° to +129°F

Filter . . . . . 10-micron element

Hydraulic hand pump

Manufacturer . . . . . Teledyne Republic

Model . . . . . 404210

### CONVEYOR

Hydraulic Motor

Manufacturer . . . . . H.P.I. Nichols

Model . . . . . 110-3-450

Type . . . . . Gear

Chain

Length . . . . . 19 ft

### STACKER

Hydraulic Motor

Manufacturer . . . . . Char-Lyn

Model . . . . . 101-1011

Type . . . . . Gear

Hydraulic Brake

Manufacturer . . . . . Ausco

Model . . . . . 35385

Roller chain length . . . . . 13 ft

### AUXILIARY POWER UNIT (APU)

Manufacturer . . . . . ONAN

Model . . . . . DJEAM

Type . . . . . Four-cycle diesel

**VEHICLE SPECIFICATIONS (CONTINUED)**

Number of cylinders . . . . . 2  
 Displacement . . . . . 70 cu in.  
 Horsepower at 2000 rpm (500 ft elevation -125°F, ambient 11.5 hp  
 Governor setting . . . . . 2000 rpm ± 100  
 Bore . . . . . 3.50 in. dia  
 Stroke . . . . . 3.625 in.  
 Compression ratio . . . . . 19:1  
 Oil capacity, including 1/2 qt for filter . . . . . 3.5 qt  
 Operating temperature (ambient) . . . . . 125°F max  
 Fuel . . . . . See Main Engine Fuel Specifications  
 Cooling air at 2000 rpm, cu ft/min . . . . . 650 cu ft/min  
 Combustion air at 2000 rpm . . . . . 34.0 cu ft/min

**APU ELECTRICAL DATA**

Generator/starter (combination)  
 Manufacturer . . . . . Minowitz Mfg. Co.  
 Output . . . . . 24 vdc (nominal)  
 Battery voltage requirements . . . . . 24-volt system  
 Glow plug . . . . . 2  
 Manifold heater, series connected . . . . . 2

## CHAPTER 2 GENERAL MAINTENANCE PROCEDURES

---

### CHAPTER OVERVIEW

The objective of this chapter is to accurately present to the mechanic detailed instructions and additional information required to maintain the M992 vehicle equipment and components in good repair. These detailed instructions provide a step-by-step and item-by-item illustrated test describing M992 equipment and component service and maintenance.

The maintenance functions described in this chapter are limited to those authorized by the MAC for organizational maintenance level activities. If maintenance is required on equipment or components not discussed in this chapter, notify Direct Support Maintenance for assistance.

Section I Repair Parts, Special Tools, TMDE and Support Equipment

Section II Service Upon Receipt

Section III Preventive Maintenance Checks and Services (PMCS)

Section IV STE/ICE Troubleshooting

Section V Troubleshooting

Section VI General Maintenance Instructions

---

### Section I REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE) AND SUPPORT EQUIPMENT

#### GENERAL

Tools, equipment and repair parts are issued to organizational maintenance personnel for maintaining vehicle equipment. Special tools and equipment should not be used for purposes other than those prescribed and when not in use should be properly stowed.

#### SPARES AND REPAIR PART

Gaskets, packings, preformed packings, seals lockwashers self-locking nuts, cotter pins, and spring pins must be replaced. Bushings must be replaced only if removed.

Vehicle spares and repair parts are listed and illustrated in the Repair Parts and Special Tool List (RPSTL) TM 9-2350-267-24P.

#### COMMON TOOLS AND EQUIPMENT

Standard and commonly used tools and equipment having general application to vehicle components are authorized for use by Tables of Allowance (TA) and Tables of Organization and Equipment (TOE).

#### SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

Tools and equipment specially designed for organizational maintenance use are listed in Appendix B for information only and are not to be used for requisitioning parts.

**Section II SERVICE UPON RECEIPT****GENERAL**

- A Follow all precautions on DD Form 1397 (Processing and Reprocessing Record for Shipment, Storage and Issue of Vehicles and Spare Engines).
- B If the vehicle has been shipped by rail, unblock and unload the equipment, using the instructions in Chapters 17 and 18 as a guide. Observe existing regulations.
- C Conduct a run-in of at least 5 miles on all new or reconditioned vehicles. Operate used vehicles enough to completely check proper operation.

**WARNING**

**DO NOT USE MINERAL SPIRITS OR PAINT THINNER TO CLEAN THE M992.**

Mineral spirits and paint thinners are highly toxic and combustible. Prolonged breathing can cause dizziness, nausea and even death. **DO NOT USE THESE MATERIALS.**

**WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100° F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- D Interior and exterior parts should be coated with rust-preventive compound when received from storage. They should be thoroughly cleaned with rags or a brush saturated with dry-cleaning solvent (item 19, Appx D). After complete removal of the compound lubricate if specified in LO 9-2350-267-12. Component parts of each weapon should be cleaned separately where possible. Although like parts are interchangeable, the parts originally assembled work best together.

**SPECIFIC PROCEDURES**

- A To make the M992 Automatic Fire Extinguishing System (AFES) operational, perform the following procedures in the sequence listed. AFES consists of three individual systems: Engine AFES, Crew AFES and AFES Manual Discharge System. Each must be serviced upon receipt as follows



**WARNING**

Use caution when working near fire extinguisher nozzles. When nozzles discharge, frostbite may occur to personnel and small objects may become projectiles causing **SERIOUS INJURY** or damage. Do not strike extinguisher with tools.

- (1) Move projectile racks to rear of vehicle (TM 9-2350-267-10).
- (2) Turn MASTER switch ON.
- (3) Engine AFES

**WARNING**

AFES is designed to provide 2 to 4 hours of fire protection **AFTER** vehicle shutdown. Turning MASTER switch OFF does not deactivate AFES. Working AFES when active may cause **SERIOUS INJURY** to personnel.

- a Turn Maintenance switch (1) on engine T/A panel (2 or 3) (p 14-14.3) to vertical position. Make sure all lamps including POWER ON lamp on T/A panel, are not lit.
- b Check that seven connector backshells\ harness 123515000 of vehicles 1 thru 344 (p 14-50.5) or wiring harness 12352354 of vehicles 345 and above (p 14-52.12) are secure. If not secure, loosen connector backshells, apply sealing compound (item 75, Appx. D), and retighten.
- c Check that engine compartment fire sensing wire is secure and connections are tight

- d Make sure locking pin (5) (p 14-14.5) is installed in valve actuator guard of engine extinguisher cylinder bottle no. 1 (1) (p 14-28.1 for vehicles 1 thru 344) and (1) (p 14-28.7 for vehicles 345 and above).
- e Turn MAINTenance switch (1) on engine T/A panel (2 or 3) (p 14-14.3) to horizontal position. Make sure green POWER ON lamp lights and green PASS TEST lamp lights and then goes out indicating that system is operational.
- f Set SYSTEM TEST/LAMP TEST switch on engine T/A panel to LAMP TEST position. Verify that all four lamps and four light-emitting diodes (LED's) light. Time permitting, perform engine AFES system test (p 14-59 for vehicles 1 thru 344 or p 14-60.5 for vehicles 345 and ABOVE).

(4) Crew AFES

**WARNING**

AFES is designed to provide 2 to 4 hours of fire protection **AFTER** vehicle shutdown. Turn MASTER switch OFF does not deactivate AFES. Working on AFES when active may cause **SERIOUS INJURY** to personnel.

- a Turn MAINTenance switch (1) on crew T/A panel (2 or 3) (p 14-14.3) to vertical position. Make sure all lamps, including POWER ON lamp on crew T/A panel, go off.

- b Check that 13 electrical connectors of wire harnesses 12351498, 12351499, and 12351501 of vehicles 1 thru 344 (p 14-40.2) or 15 electrical connectors of wire harnesses 12352316, 12352353, or 12352315 of vehicles 345 and above (p 14-52.1) are secure. Ensure that keyways are aligned, shells are fully seated and locking rings are fully rotated. If not secure, make sure Optical Fire Sensing Assemblies (OFSA) connectors snap in place. Loosen all other connectors, apply scaling compound (item 75, Appx D) and retighten.
- c Remove locking pin (13) (p 14-28.5) from two crew compartment extinguishers no. 3 and no. 4 valve actuator guards 2 and 12) (p 14-28.5) connected by mechanical cable to actuator assembly. Make sure the other two extinguisher's (vehicles 1 thru 344) and four extinguisher's (vehicles 345 and above) locking pins are installed.
- d Remove anti-recoil plug (9) (p 14-14.8) from four crew compartment extinguisher (1, 2,4, and 12) (p 14-28.4) in vehicles 1 thru 344 or from six crew compartment extinguishers (1,2,4, 12,13, and 14) (p 14-28.9) in vehicles 345 and above. Place nozzle on extinguisher (p 14-14.8).
- e Turn Maintenance switch (1) on crew T/A panel (2 or 3) (p 14-14.3) to horizontal position. Make sure green POWER ON lamp lights and green PASS TEST lamp lights and then goes out indicating that system is operational.
- f Momentarily hold SYSTEM TEST/LAMP TEST toggle switch on crew T/A panel to LAMP TEST position. Verify that all four lamps and all LED's light. Time permitting, perform crew AFES system test (p 14-56 for vehicles 1 thru 344 or p 14-60.1 for vehicles 345 and above).

## (5) AFES Manual Discharge System

- a Make sure external manual cable pull handle near driver's hatch is safety wired ( p 14-55).

- b Make sure actuator assembly (p 14-52.2) cables are tight.
- c Remove locking pin (5) (p 14-14.4) from engine extinguisher no. 2 valve actuator guard (5) (p 14-28.2). Do not remove locking pin from engine extinguisher no. 1 valve actuator guard (p 14-14.3).

(6) Move projectile racks to forward compartment (TM 9-2350-267-10).

- B Run engine until preservative oil is out of combustion chambers and engine is operating smoothly. Check for fuel and oil leaks immediately.

**NOTE**

Due to internal processing, engine may start hard, smoke, and run rough. Conditions should improve after approximately 5 minutes running time. Conduct troubleshooting procedures if engine fails to develop full power after 5 minutes.

**NOTE**

Preservative engine oils PE1 and PE2 are identical to engine oils OE- 10 and OE-30 except they contain a preservative. PE1 and PE2 oil be used in the same manner as regularly used engine oils OE-10 or OE-30 PE1 or PE2 will be used in the transmission until the first scheduled 2000-mile or semiannual oil change. Refer to L09-2350-267-12 for lubrication instructions.

C Perform complete annual service.

### **CHECKING UNPACKED EQUIPMENT**

- A Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6, Packing Improvement Report.
- B Check equipment against packing slip to see if shipment is complete. Report all discrepancies in accordance with instructions in DA Pam 738-750.
- c Check ammunition issued for .50-caliber machine gun M2 and personnel weapons to verify ammunition received was ammunition requisitioned. Conduct visual check of all ammunition for scratches, dents, grease and other conditions which could make use of ammunition hazardous.

### **REPROCESSING UNPACKED EQUIPMENT**

- A Clean all tools and equipment.
- B Properly stow all basic issue items in designated stowage areas (TM 9-2350-267-10).
- C Cleaning rust-preventive compound from vehicle and components will be done in accordance with p 2-2.

## **TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED FOR INSTALLATION (Appx B)**

### **ASSEMBLY OF EQUIPMENT**

The M992 vehicle equipment and systems are shipped as assembled units. Assembly is not required upon receipt of equipment. However, assembly of related components is discussed in detail in Chapters 3 thru 16 of this manual. These chapters provide detailed information on removal, disassembly, assembly and installation of equipment for maintenance purposes at the organizational level.

### **INSTALLATION INSTRUCTIONS**

General location of vehicle on-board equipment, equipment racks/brackets and stowage equipment is shown on p 1-6.

Removal and installation of components for maintenance purposes are covered in detail in Chapters 3 thru 16 of this manual.



## **INTERCONNECTIONS**

Interconnection wiring data for equipment which is not permanently installed in the M992 is discussed in detail in Chapter 6 in this manual.

## **PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT**

Equipment faults disclosed during preliminary inspection and servicing or during break-in period will be corrected by Organizational or Support Maintenance.

## **REPORTING UNSATISFACTORY CONDITIONS**

Serious equipment faults which appear to involve unsatisfactory design or material will be reported on SF 368, Quality Deficiency Report (Category II), as prescribed in DA Pam 738-750.

## **PREOPERATIONAL SERVICING AND ADJUSTMENT**

Conduct general overall inspection of the vehicle. Refer to TM 9-2350-267-10.

Check:

- A All electrical wires/connectors
- B Hydraulic lines/connectors
- C Welds
- D Bolts
- E Seals

**WARNING**

Lead-acid battery gases can explode. Do not smoke, have open flames, or make sparks around a battery. Be especially careful if caps are removed from battery. If battery is gassing, it can explode, causing injury.

Turn OFF vehicle MASTER switch. When disconnecting batteries, remove ground cables first. Connect batteries, remove ground cables first. Connect ground cables last when connecting batteries.

Connect batteries as shown in the hook-up diagram.

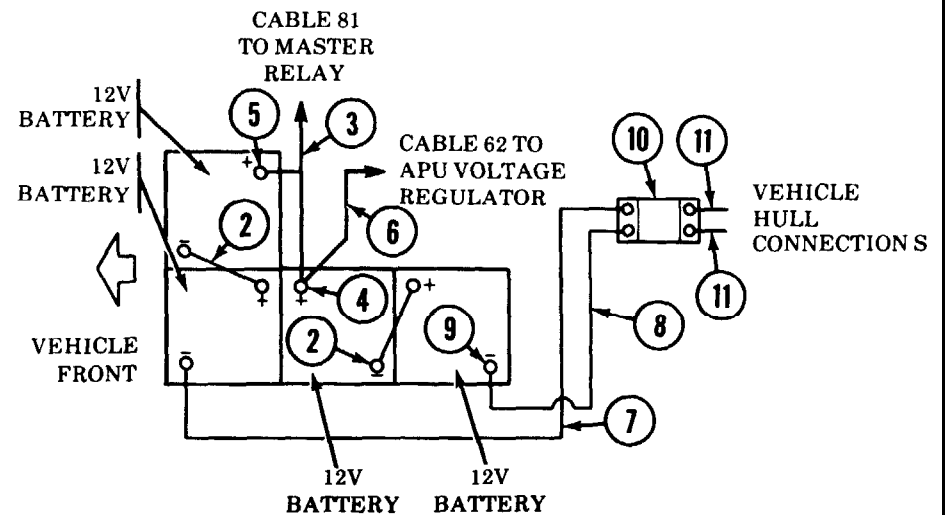
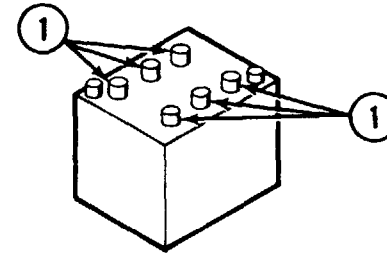
- A Open two battery access doors.
- B Remove six filler caps (1) from each battery.
- C Service battery according to TM 9-6140-200-14.
- D Replace filler caps.

**CAUTION**

Install batteries with positive (+) and negative (-) terminals positioned as shown in illustration.

- E Install two battery cables (2).

- F Connect cable 81 (3) to terminals (4 and 5), and connect cable 62 (6) to terminal (4) also.
- G Install two ground cables (7 and 8) between terminals (9) and shunt (10).
- H Install two cables (11) from shunt (10) to vehicle hull connections.
- I Close and secure two battery access doors.



## RADIATOR FAN PROTECTIVE SCREENS: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Special Tools

Screen assembly, protective (item 28.1, Appx B)

### REMOVAL

#### WARNING

A protective fan screen must be installed prior to doing maintenance in the engine compartment when engine is running or when engine is in ground hop mode. Contact with rotating fan can cause injury.

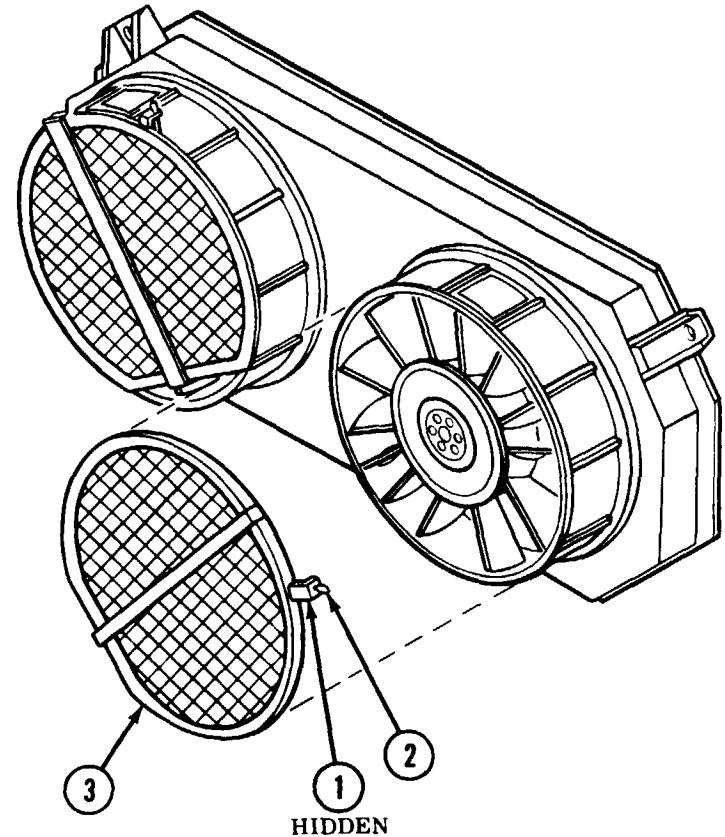
Loosen locknut (1) and thumb or hex-head screw (2). Remove protective screen (3).

### INSTALLATION

#### NOTE

Flat side of screen should align with two lower mounting bolts of fan housing.

Install protective screen (3), thumb or hex-head screw (2), and locknut (1).



## Section III PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

### GENERAL

Preventive maintenance is step-by-step care, inspection, maintenance and service of equipment to find and correct problems before extensive time-consuming repairs or replacements are required. Refer to DA Pam 738-750 for instructions on use of forms for preventive maintenance services.

This section contains procedures and instructions needed to conduct organizational preventive maintenance checks.

### INTERVALS

Preventive maintenance service intervals at organizational maintenance level are quarterly and annually, 750 miles or 75 hours, whichever occurs first. This is scheduled on DD Form 314 in accordance with DA Pam 738-750.

Clean and lubricate after operation in:

- Water
- Mud
- Sand

### LUBRICATION ORDER

For detailed location, intervals, lubricant specifications and step-by-step lubrication instructions refer to LO 9-2350-267-12.

### PROCEDURES

**ROUTINE APPLICATIONS:** Operator's manual TM 9-2350-267-10 contains important and necessary information the organizational maintenance level mechanic must know to maintain and operate the vehicle.

**VEHICLE CLEANLINESS:** The vehicle should be reasonably clean when brought in for scheduled organizational maintenance. It should be dry, and not caked with mud.

#### NOTE

Do not wash vehicle immediately before scheduled inspection. Loose parts and oil leaks are not as noticeable after washing.

#### CAUTION

Do not direct a stream of water against grilles, exhaust openings, FES components, or open oil and fuel fill ports. Operate bilge pump after washdown to remove water from engine compartment.

### SERVICES

Organizational services are defined by, and limited to, the following general procedures. High level maintenance services shall be approved by the supporting maintenance unit.

**ADJUST.** Make all needed adjustments using instructions in this manual and/or technical bulletins.

**CLEAN.** Wash the unit to remove old lubricant, dirt and other foreign matter. Special cleaning instructions are given as needed.

**INSPECT.** Determine the serviceability of an item by comparing physical, mechanical and/or electrical characteristics with established standards through examination.



**SERVICE.** Includes fluid fill operations such as radiator coolant level, battery electrolyte level, draining and refilling units with lubrication or hydraulic oil; and, changing or cleaning oil, fuel, and air filters.

**TIGHTEN.** All nuts, bolts, screws and plugs are tightened to torque values given in this manual. Use accurate torque wrench. If torque value is not given, refer to Torque Value Guide Tables, Appendix C. Do not overtighten fasteners. Be sure to install lockwashers, locknuts, lock wire, and cotter pins where needed.

**SPECIAL LUBRICATION.** Lubrication as specified by LO 9-2350-267-12 to be conducted on an annual basis: also, any lubrication requirements not specified in LO 9-2350-267-12.

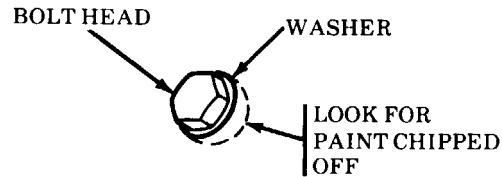
**REPAIR.** Restore an item to a serviceable condition. This includes, but is not limited to, inspection, cleaning, preserving, adjusting, replacing, welding, riveting and strengthening. Refer to Appendix B for authorized crew and organizational maintenance level repair, replacement and adjustment functions on the M992.

### FORMS

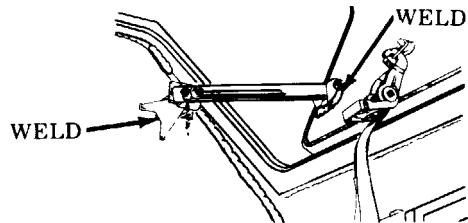
DA Form 2404, Equipment Inspection and Maintenance Worksheet, is used by the mechanic to record periodic maintenance services performed and faults corrected. The item number on the 2404 must be the same as the item number of the PMCS.

### COMMON ITEMS

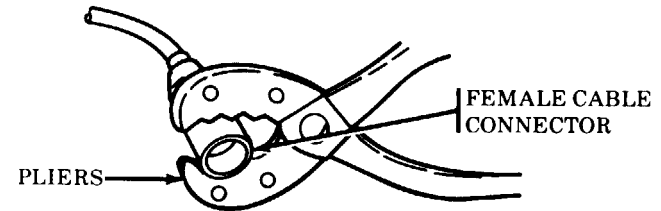
Be sure to check the common items shown on this page as you do PMCS.



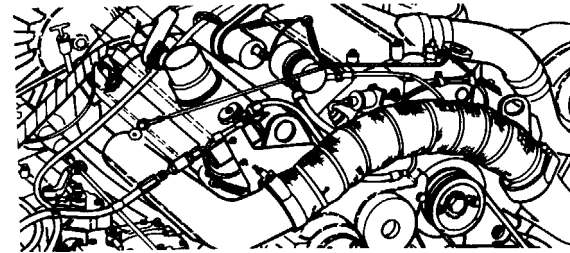
**NUTS, BOLTS AND SCREWS.** Loose attaching hardware may be hard to spot without using a wrench. Check for loose parts by looking for cracked or chipped paint around bolt heads, and missing or broken cotter pins or lock wire.



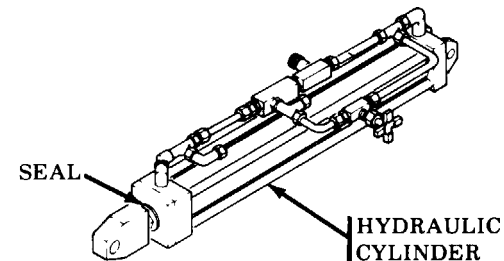
**WELDS.** Check for damaged welds by looking for rust or chipped paint at seams.



**ELECTRICAL WIRES AND CONNECTORS.** Check electrical wiring for cracked insulation and exposed wires. Tighten loose connectors by slightly flattening female connector with pliers as shown.



**HOSES AND TUBES.** Check all hoses and tubes for rubbing damage, leaks, loose fittings and loose clamps.

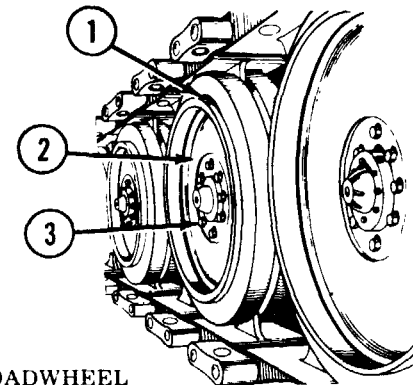


**SEALS.** Check seals for leaks.

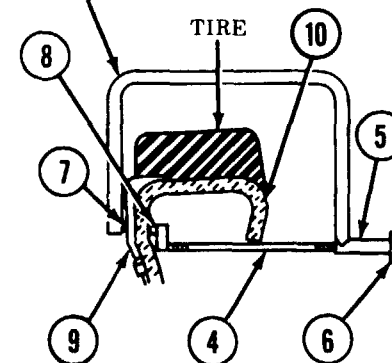
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY      S-SEMIANNUALLY      A-ANNUALLY      B-BIENNIALY      H-HOURS      MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
1			•		75	750	Lubrication	Lubricate vehicle as instructed in LO 9-2350-267-12.
2			•		75	750	Roadwheels and Idler Wheels	<p>A Inspect roadwheels for rubber separation (1) and missing chunks.</p> <p>B Check for cracks in wheel (2).</p> <p>C Tighten 10 nuts (3) to 180 lb-ft.</p> <p>D Use wear gage 10911904 and measure roadwheel wear as follows:</p> <ol style="list-style-type: none"> <li>(1) Pull threaded rod (4) through gage bracket (5) enough to allow positioning of gage over roadwheel.</li> <li>(2) Back off knurled knob (6) to end of rod (4).</li> <li>(3) Place gaging ball (7) against outside wear ring (9).</li> <li>(4) Pull rod (4) through bracket (5) and place gaging ball (8) against inside wheel disk (10) while maintaining position of gaging ball (7) against outside wear ring (9).</li> </ol>



ROADWHEEL WEAR GAGE

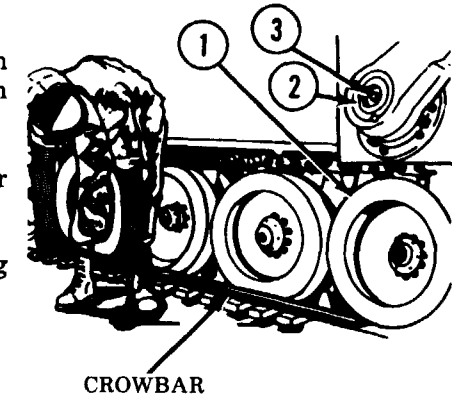
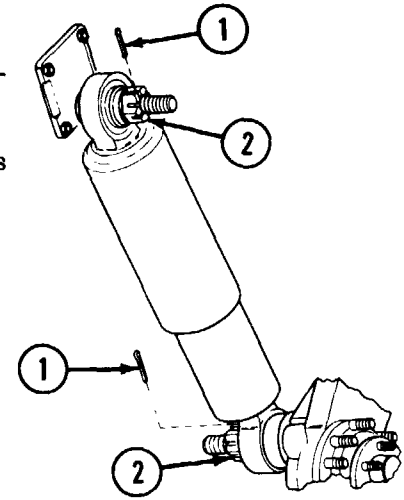


PREVENTIVE MAINTENANCE CHECKS AND SERVICES												
		Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES					
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE				
	Q	S	A	B	H	MI						
								Roadwheels and Idler wheels (cont.) <p>(5) Turn knurled knob (6) clockwise until it contacts gage bracket (5).</p> <p><b>NOTE</b></p> <p>Do not tighten knob (6) or gaging ball (8) will be pulled away from inside disk (10).</p> <p>(6) Pull rod (4) through gage bracket (5) without disturbing position of knob (6) on rod (4), and remove gage from roadwheel.</p> <p>(7) Push rod (4) in until knob (6) contacts gage bracket (5).</p> <p>(8) Measure distance between gaging balls (7 and 8).</p> <p>(9) If distance between balls is 7/16 inch, or less, the roadwheel should be replaced (p 8-11).</p>				
3			•			75	750	Bump Stop Brackets <p>Torque four bolts (1) of each bump stop bracket (2) to 300-350 lb-ft.</p>				

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY      S-SEMIANNUALLY      A-ANNUALLY      B-BIENNIALY      H-HOURS      MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
4			•		75	750	Shock Absorbers	<p>A Remove two cotter pins (1).</p> <p>B Tighten shock absorber mounting nuts (2) to 100-140 lb-ft.</p> <p>C Replace and install cotter pins (1).</p>
5			•		75	750	Torsion Bar	<p>A Pry up each roadwheel (1) with a crowbar and check for broken torsion bars.</p> <p>B Fully seat any loose torsion bar plugs (2).</p> <p>C Tighten any loose retaining screws (3).</p>

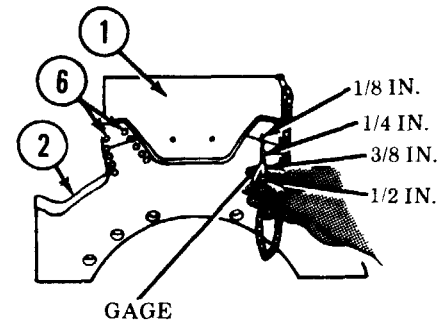
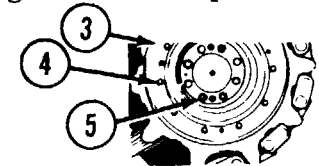


CROWBAR

TA310345

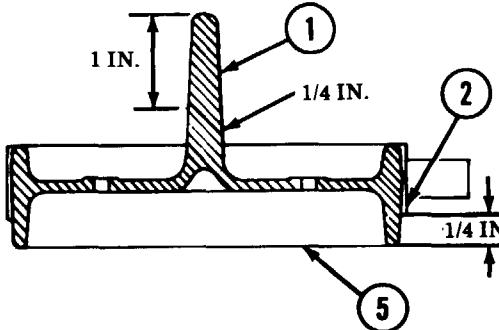
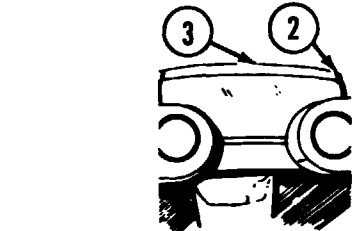
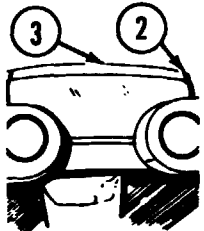
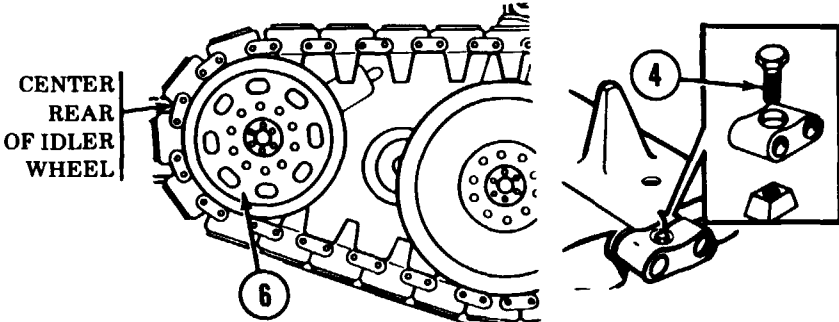
TM 9-2350-267-20

PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
		Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALY	H-HOURS	MI-MILES	
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
6			•		75	750	<p>Drive Sprocket and Hubs</p> <p>A Place template (1) on sprocket (2) between two sprocket teeth and measure between template and sprocket with gage 10954499.</p> <p>B Reverse sprocket wheel (3) when wear on drive side of sprocket tooth shows 1/2-inch.</p> <p><b>NOTE</b></p> <p>Reverse entire sprocket wheel assembly.</p> <p>C Replace sprocket (2) when wear on both sides of sprocket tooth is 1/2 inch.</p> <p>D Replace sprocket (2) if track shoe center guide contacts sprocket hub.</p> <p>E Check sprocket mounting bolts (4) and tighten to 90 lb-ft each.</p> <p>F Check hub mounting bolts (5) and tighten to 450-475 lb-ft.</p> <p>G If no gage is available, use check marks (6) to determine wear. Reverse sprocket wheel (3) when sprocket teeth are worn to any mark. Replace sprocket (2) when tooth is worn to mark on both sides (p 8-28).</p>	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY    S-SEMIANNUALLY    A-ANNUALLY    B-BIENNIALY    H-HOURS    MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
7			•		75	750	Tracks	<p>A Measure thickness of center guide (1) at a point 1 inch from end.</p> <p>B Replace track shoe (5) if center guide measures less than 1/4 inch, or if metal grouser (2) measures less than 1/4 inch (p 8-3).</p> <p>C Replace rubber pads (3) when worn even with metal grouser (2) (p 8-2).</p> <p>D Position track shoe (5) at center rear of idler wheel (6) and tighten track link connector screws (4) to 85 lb-ft.</p>    

TA310347

PREVENTIVE MAINTENANCE CHECKS AND SERVICES											
Q-QUARTERLY		S-SEMIANNUALLY		A-ANNUALLY		B-BIENNIALLY		H-HOURS		MI-MILES	
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE			
	Q	S	A	B	H	MI					
8			•		75	750	Drain Covers and Plugs	<p>Replace or secure drain covers and plugs on underside of hull.</p> <p>The diagram illustrates the locations of four drain plugs on the underside of a hull. It shows a cross-section of the hull with four drain covers and plugs. Labels with arrows point to each plug: 'ENGINE COOLANT DRAIN PLUG' on the left, 'FUEL DRAIN PLUG' in the center, 'TRANSMISSION DRAIN PLUG' at the top center, and 'ENGINE OIL DRAIN PLUG' on the right. The hull structure is shown with internal ribs and a central vertical channel.</p>			



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

S-SEMIANNUALLY

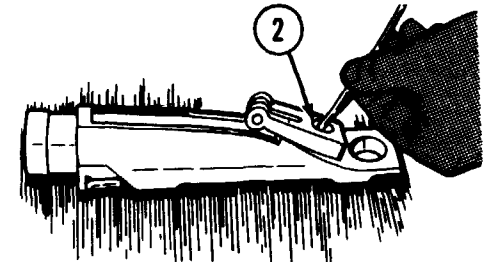
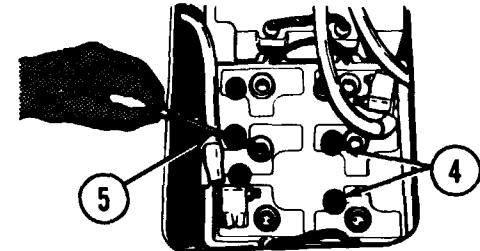
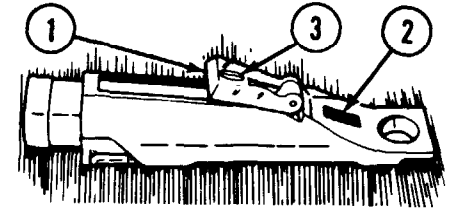
A-ANNUALLY

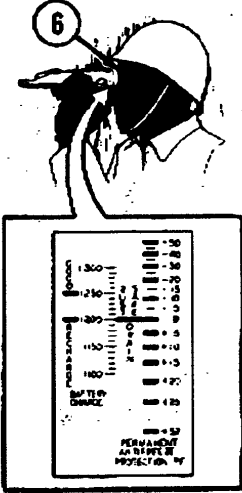
B-BIENNIALLY

H-HOURS

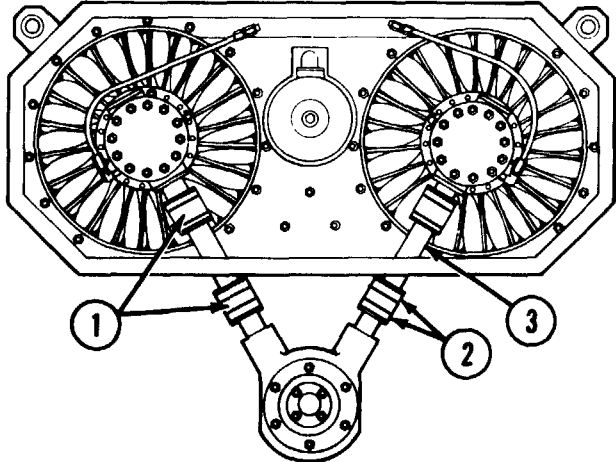
MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
9			•		75	750	Batteries	<p>Test specific gravity of electrolyte with duotester as follows:</p> <p>A Swing back plastic cover (1) of duo-check coolant and battery tester. Clean measuring window (2) and bottom cover (3) with a clean soft cloth (item 16, Appx D).</p> <p>B Close plastic cover (1).</p> <p>C Remove battery caps (4) from all cells.</p> <p>D Use dipstick (5) to obtain a small sample of battery acid.</p> <p>E Place a few drops of acid onto measuring surface (2) through opening in plastic cover (1).</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p align="center"><b>WARNING</b></p> <p>Do not look into infrared (blackout) light. If using headlight as a light source, look into white light only. Infrared light can injure the eyes.</p> </div>



PREVENTIVE MAINTENANCE CHECKS AND SERVICES							Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE				
	Q	S	A	B	H	MI						
							Batteries (cont.)	<p>F Point instrument toward any light source (headlight) and look into eyepiece (6). Battery charge is indicated at a point on left-hand part of scale where the dividing line between light and dark (shadow) crosses scale.</p> <p>G Repeat steps C through F and check all four batteries.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Experience will enable you to quickly determine contrast between light and dark portions of field of view. Tilt instrument toward light source until best results are obtained. If edge of the indicating shadow is not sharp, measuring surface was not sufficiently cleaned or dried.</p> <div style="text-align: right;">  </div>				

PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
	Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALY	H-HOURS	MI-MILES		
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
10			•		75	750	Fuel System	<p>A Inspect all fuel lines and fuel line couplings and fittings for evidence of leaks.</p> <p>B Change primary fuel filter (1) and secondary fuel filter (2) (p 4-11 and 4-13).</p>
11	•						Fuel Fill Strainer	<p>A Remove six screws (2) and fuel fill access plate (1).</p> <p><b>B Remove fuel fill cap (3) and inspect cap rubber seal for cracks.</b></p> <p>C Remove fuel strainer(4) by pulling straight up and out.</p> <p>D Clean strainer (4) with solvent (item 19, Appx D).</p> <p>E If strainer is badly clogged or torn, replace strainer.</p>

PREVENTIVE MAINTENANCE CHECKS AND SERVICES											
Q-QUARTERLY		S-SEMIANNUALLY		A-ANNUALLY		B-BIENNIALLY		H-HOURS		MI-MILES	
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE			
	Q	S	A	B	H	MI					
12			•		75	750	Engine Fan Drive System	 <p>A Inspect universal joint rubber boots (1) for cracks and tears.</p> <p>B Inspect rubber boot retaining rings (2) for looseness.</p> <p>C Replace universal joint (3) if boots (1) or retaining rings (2) are defective.</p> <p>D Conduct fan gear backlash test as follows:</p> <p>(1) Disconnect both battery ground cables (p 6-44).</p> <p>(2) Open vehicle intake grille for access.</p> <p>(3) Mark any accessible blade (4).</p>			

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

S-SEMIANNUALLY

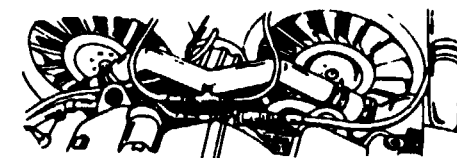
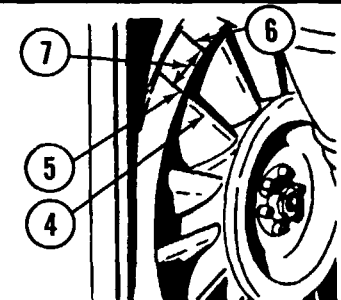
A-ANNUALLY

BIENNIALY

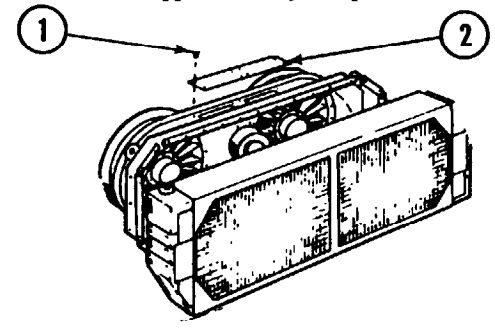
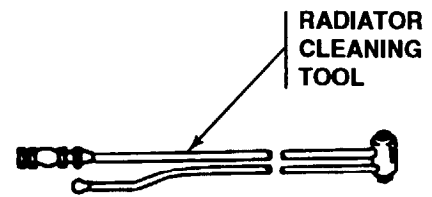
H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
13							Engine Fan Drive System (cont).	(4) While holding opposite fan impeller, rotate marked blade (4) as far left as possible. Mark fan housing directly above mark (5). (5) While holding opposite fan impeller, rotate marked blade (4) as far right as possible. Mark fan housing directly above blade mark (6). (6) Measure distance between marks (5 and 6). If distance (7) is over 1 inch, backlash is excessive. Notify Direct Support Maintenance.
			•				Cooling System Radiator Hoses and Pump	<div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p align="center"><b>WARNING</b></p> <p>Make sure engine is cool before removing radiator cap. Hot coolant can spurt from radiator opening causing severe burns and injury to personnel.</p> </div> A Check for cracked, weak, or broken hoses and signs of leakage. B Check coolant level (TM 9-2350-267-10).



PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
		Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES	
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
							<p>Cooling System Radiator Hoses and Pump (cont.)</p> <p>C Remove shroud access cover and inspect drive shafts for wear and loose rubber boots (p 5-21).</p> <p>D Clean radiator with radiator cleaning tool 11641959 to remove deposits of sand, oil, clay and other debris from radiator cooling fins while installed in vehicle. Clean radiator as follows:</p> <ol style="list-style-type: none"> <li>(1) Mix one part of detergent, or nontoxic solvent to approximately five parts water in clean suitable container.</li> <li>(2) Remove eight screws (1) and shroud cover (2).</li> <li>(3) Remove hull drain covers (p 9-26).</li> <li>(4) Cover all exposed engine openings.</li> <li>(5) Connect tool to air supply and insert liquid supply hose in container of solution.</li> <li>(6) Insert tool through shroud cover opening and set front and back of radiator with solution. Soak for approximately 10 minutes.</li> </ol>	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

**Q-QUARTERLY**

**S-SEMIANNUALLY**

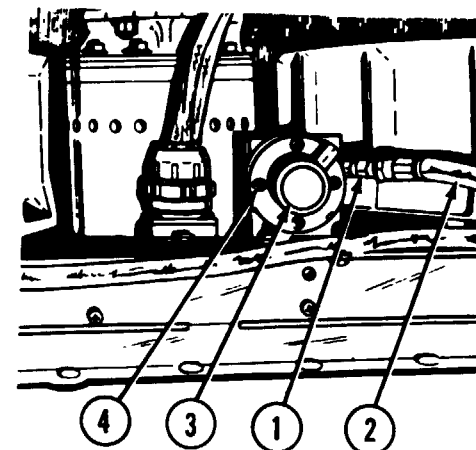
**A-ANNUALLY**

**B-BIENNIALLY**

**H-HOURS**

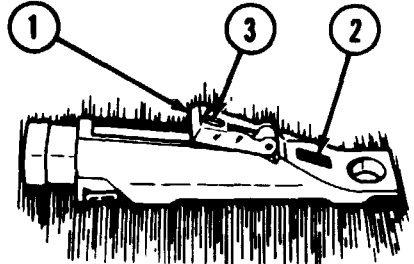
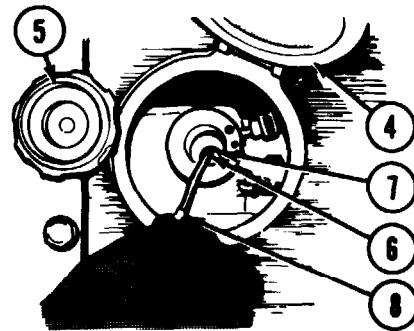
**MI-MILES**

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
							Cooling System Radiator Hoses and Pump (cont.)	(7) Remove heavy deposits from face of radiator by brushing with medium stiff brush that will not damage fins.  (8) Blast radiator with air/liquid mixture, holding head of tool approximately 1/2-inch from face of radiator. Alternate from back to front until a good flow of liquid through radiator is observed over entire area.  (9) Flush engine parts and radiator with clear water. Remove hose from container and use air to complete operation.  (10) Uncover engine openings and install radiator shroud cover (2) with eight screws (1). Close hull drains.
14			•		75	750	Cooling System Pressure Relief Valve	<p align="center"><b>NOTE</b></p> <p align="center">Illustrated cleaning procedures can be found on page 5-20.</p> Remove and clean pressure relief valve as follows:  A Unscrew nut (1) and remove hose (2) from lower end of relief valve (3).  B Remove four screws (4). Lift off relief valve (3).



TA310355

TM 9-2350-267-20

PREVENTIVE MAINTENANCE CHECKS AND SERVICES											
Q-QUARTERLY		S-SEMIANNUALLY		A-ANNUALLY		B-BIENNIALY		H-HOURS		MI-MILES	
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE			
	Q	S	A	B	H	MI					
15			•		75	750	Cooling System Pressure Relief Valve (cont.)	C Wipe off accumulation of rust. Depress spring to make sure it is not broken.			
							Coolant	D To install pressure relief valve, reverse removal procedures (p 5-18).			
								Test radiator coolant antifreeze level as follows:			
								A Swing back plastic cover (1) of duo-check coolant and battery tester. Clean measuring window (2) and bottom of plastic cover (3) with a soft clean cloth (item 16, Appx D).			
								<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p style="text-align: center;">WARNING</p> <p>Make sure engine is cool before removing radiator cap. Hot coolant will spurt from radiator opening causing severe burns and injury to personnel.</p> </div>			
								B Open radiator access cover (4).			
								C Slowly remove radiator cap (5). Coolant should be visible. If not, start engine and slowly add coolant until it reaches top of filler neck. Run engine until new coolant is mixed with old coolant.			



## PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Q-QUARTERLY

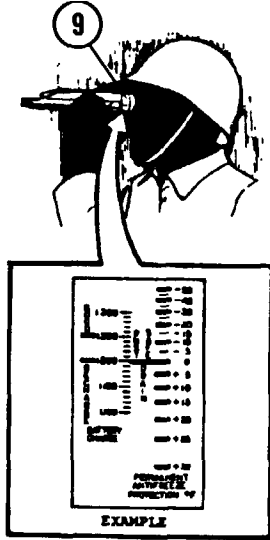
S-SEMIANNUALLY

A-ANNUALLY

B-BIENNIALLY

H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
							Coolant (cont).	<p>D Insert tip of bulb-type syringe (6) into radiator filler neck (7) well below coolant level. Press and release bulb (8) to draw up sample of coolant.</p> <p>E Depress bulb (8), ejecting a few drops of coolant onto measuring window (2) of duo-check coolant tester.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0; text-align: center;"> <p><b>WARNING</b></p> <p>Do not look into inbred (blackout) light. If using headlight as a light source, look into white light only. Infrared light can injure the eyes.</p> </div> <p>F Point instrument toward any light source (headlight) and look into eyepiece (9). The antifreeze protection is indicated at a point on right side of scale where dividing line between light and dark (shadow) crosses scale.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Experience will enable you to quickly determine contrast between light and dark portions of field of view. Tilt instrument toward light source until best results are obtained. If edge of the indicating shadow is not sharp, measuring surface was not sufficiently cleaned or dried.</p> <div style="text-align: right; margin-top: 20px;">  </div>

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

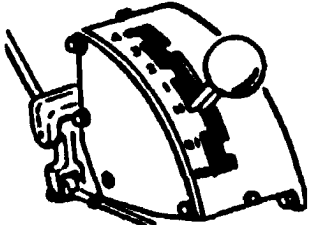
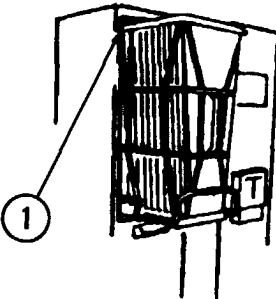
S-SEMIANNUALLY

A-ANNUALLY

B-BIENNIALLY

H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
16			•		75	750	Transmission	<p>Move transmission shift control lever to all positions. The shift control lever should not bind. If binding occurs, adjust linkage (p 7-34).</p> 
17			•				Engine Automatic Fire Extinguishing System	<p>Do engine AFES test for vehicles 1 thru 344 (p 14-59) or vehicles 345 and above (p 14-60.5).</p>
18			•				Crew Automatic Fire Extinguishing System	<p>Do crew AFES test for vehicles 1 thru 344 (p 14-56) or for vehicles 345 and above (p 14-60.1).</p>
19			•				Air Cleaner Filter	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p align="center"><b>WARNING</b></p> <p>If NBC exposure is suspected, all air filter media will be handled by personnel wearing full NBC protective equipment.</p> </div>  <p>A Check for worn or missing seals (1) and hoses (2).</p> <p>B Check blower motors for proper operation and troubleshoot if necessary (p 2-113).</p> <p>C Clean, repair, or replace motors, seals and filter packs as required (p 4-25).</p>

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

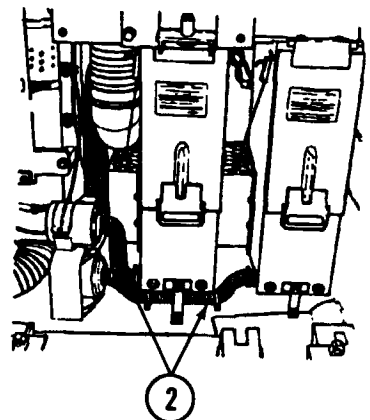
S-SEMIANNUALLY

A-ANNUALLY

B-BIENNIALLY

H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
							Air Cleaner Filter (cont).	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p align="center"><b>CAUTION</b></p> <p>Clean filter packs with compressed air only.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p align="center"><b>WARNING</b></p> <p>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.)</p> </div> <p>D Fan out element and shake out dust. Filter elements with holes or ruptures must be replaced.</p> <div style="text-align: center;">  </div>

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

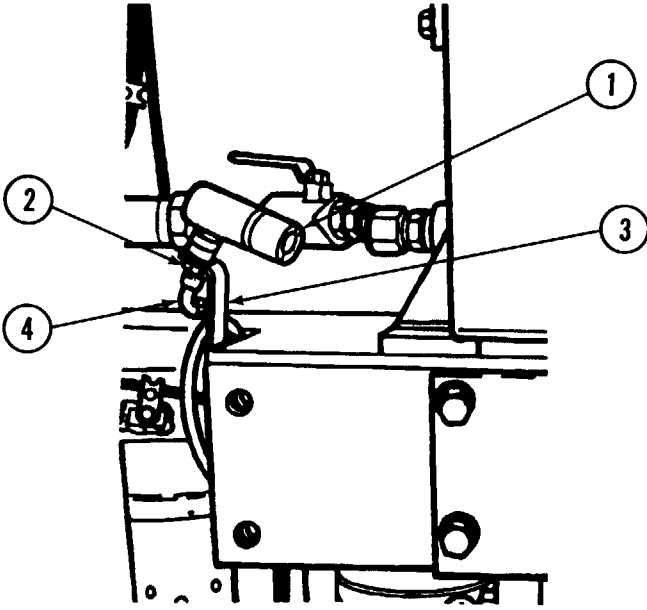
S-SEMIANNUALLY

A-ANNUALLY

B-BIENNIALLY

H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
19A		•					<p>Air Cleaner Restriction Indicator</p> <p>A Check housing of restriction indicator (1) for cracks and other damage.</p> <p>B Tighten mounting nuts and bolts (2) to make sure indicator (1) and indicator mounting bracket (3) are secure.</p> <p>C Inspect vacuum hose (4) for leaks and loose fittings.</p> <p>D Inspect mounting gasket of indicator for evidence of deterioration.</p> 	

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

S-SEMIANNUALLY

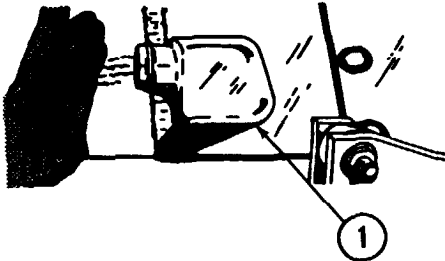
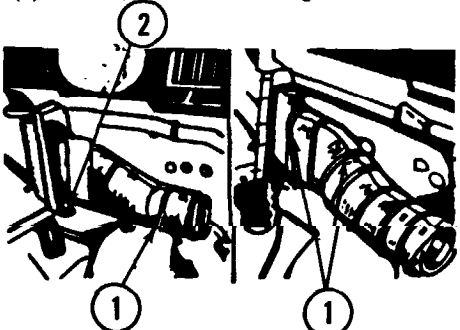
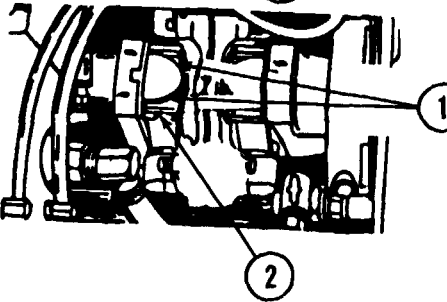
A-ANNUALLY

B-BIENNIALLY

H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
20			•				Neutral Safety Switch	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>WARNING</b></p> <p>Clear personnel and equipment from near vehicle.</p> </div> <p>A Set vehicle brake.</p> <p>B Shift transmission selector into gear.</p> <p>C Pullout FUEL SHUTOFF handle to OFF position.</p> <p>D Turn MASTER switch ON.</p> <p>E Attempt to crank engine with STARTER switch.</p> <p>F If starter engages, STOP IMMEDIATELY. Adjust neutral safety switch (p 6-16).</p>
21			1		75	750	Engine	<p>A Start engine (TM 2350-267-10).</p> <p>B Determine if engine develops adequate cranking speed.</p> <p>C Listen for unusual noises in engine and generator (alternator) that might indicate mechanical problems or inadequate lubrication.</p> <p>D Make repairs as necessary.</p>

PREVENTIVE MAINTENANCE CHECKS AND SERVICES															
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE	H-HOURS	MI-MILES	Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALY	
	Q	S	A	B	H	MI									
22		•			75	750	Bilge Pump	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p style="text-align: center;"><b>CAUTION</b></p> <p style="text-align: center;">Do not dry-test bilge pump longer than 1 minute.</p> </div> <p>A Turn on bilge pump and dry-test unit.</p> <p>B Air should be felt at bilge pump outlet (1). If not, troubleshoot bilge pump (p 2-190).</p>							
23		•			75	750	Exhaust Ducts	<p>A Inspect ducts for damage.</p> <p>B Check for loose clamps (1) and mounting bolts (2).</p> <p>C Replace defective exhaust duct components (p 4-32).</p>							
24			•		75	750	Final Drive Universal Joints	<p>A Inspect for missing or broken lock wires (1); if broken or missing, tighten mounting bolts (2) to <math>90 \pm 10</math> lb-ft and replace lock wires.</p>							

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

S-SEMIANNUALLY

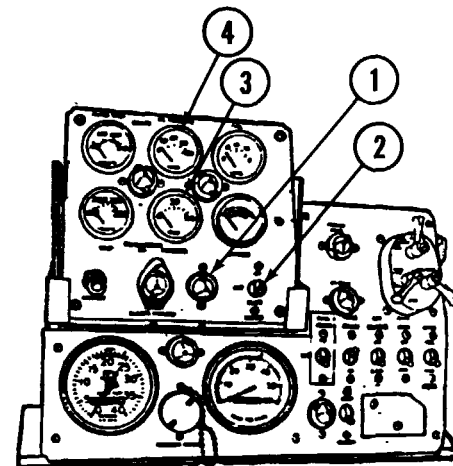
A-ANNUALLY

B-BIENNIALLY

H-HOURS

M I - M I L E S

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
25			•		75	750	Instrument Panel	<p align="center"><b>NOTE</b></p> <p align="center">Conduct road test to check items 25 thru 28.</p> <p>A Check all lights and gages for proper operation.</p> <p>B Follow troubleshooting procedures in Chapter 2, if malfunction appears.</p> <p>C MASTER switch indicator 91 lights when MASTER switch (2) is ON.</p> <p>D ENGINE OIL PRESSURE gage (3): 30-50 psi at 1000 rpm and 50-70 psi at 2100 rpm.</p> <p align="center"><b>NOTE</b></p> <p align="center">A reading of 70 psi is maximum</p> <p>E TRANSMISSION OIL PRESSURE gage (4): 18-45 psi is normal at 1835-1900 rpm.</p>



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

S-SEMIANNUALLY

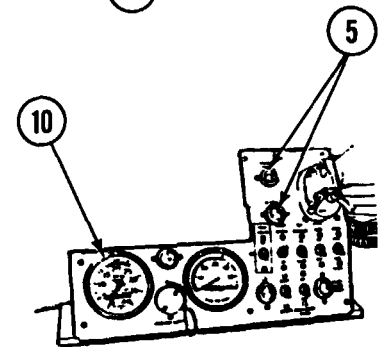
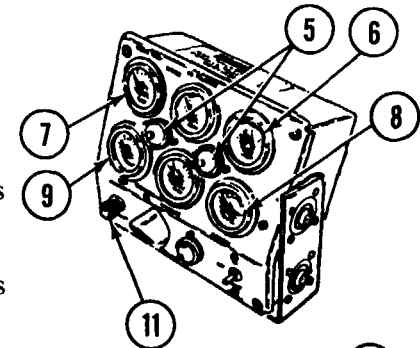
A-ANNUALLY

B-BIENNIALLY

H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
							Instrument Panel (cont.)	<p><b>NOTE</b></p> <p>A reading of 10 psi at 1000 rpm is minimum.</p> <p>F INSTRUMENT PANEL light (5) illuminates panel.</p> <p>G FUEL gage (6) registers full when fuel tanks are full.</p> <p>H WATER TEMP gage (7) registers higher temperature as engine warms up.</p> <p>I BATTERY generator indicator (9) registers battery charging rate.</p> <p>J TRANSMISSION OIL TEMP gage (9) registers higher oil temperature as transmission warms up.</p> <p><b>NOTE</b></p> <p>220°-240° is normal.</p> <p>K TACHOMETER (10) registers indicated engine speed in rpm.</p> <p>L LOW COOLANT LEVEL INDICATOR (11): registers low engine coolant level.</p>





**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

**Q-QUARTERLY**

**S-SEMIANNUALLY**

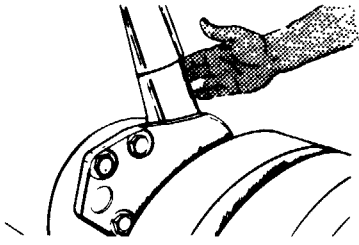
**A-ANNUALLY**

**B-BIENNIALLY**

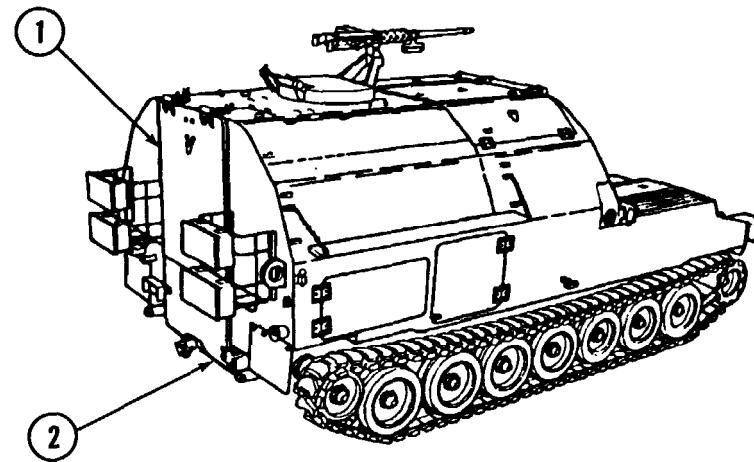
**H-HOURS**

**MI-MILES**

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE														
	Q	S	A	B	H	MI																
26			•		75	750	Steering Control	<p>A Move steering wheel through entire range. Observe if steering response is satisfactory.</p> <p>B With vehicle operating at 15 to 20 mph and steering wheel centered, observe if there is any tendency to wander or to pull to one side.</p> <p>C Troubleshoot if required (p 2-90).</p>														
27			•		75	750	Brakes	<p>A Accelerate vehicle to 15 mph, release accelerator pedal and apply brakes. Vehicle should stop without pulling to one side.</p> <p>B With the vehicle stopped on an incline and with transmission in neutral, depress brake pedal and apply parking brake. Brake should lock securely and hold vehicle in place.</p> <p>C Adjust brakes if required (p 7-40).</p>														
28			•		75	750	Engine Governed Speed and Performance	<p>A Test engine for acceleration and power in each gear. While testing in first gear, accelerate with wide-open throttle from low speed Governed speed under load should not exceed 2350 rpm.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p align="center"><b>CAUTION</b></p> <p align="center">Observe maximum speed limitations.</p> <table border="0"> <tr> <td align="left">GEAR</td> <td align="right">MAXIMUM SPEED</td> </tr> <tr> <td>1st . . . . .</td> <td>6 mph</td> </tr> <tr> <td>2nd . . . . .</td> <td>9 mph</td> </tr> <tr> <td>3rd . . . . .</td> <td>24 mph</td> </tr> <tr> <td>4th . . . . .</td> <td>35 mph</td> </tr> <tr> <td>A1 . . . . .</td> <td>5 mph</td> </tr> <tr> <td>R2 . . . . .</td> <td>7 mph</td> </tr> </table> </div>	GEAR	MAXIMUM SPEED	1st . . . . .	6 mph	2nd . . . . .	9 mph	3rd . . . . .	24 mph	4th . . . . .	35 mph	A1 . . . . .	5 mph	R2 . . . . .	7 mph
GEAR	MAXIMUM SPEED																					
1st . . . . .	6 mph																					
2nd . . . . .	9 mph																					
3rd . . . . .	24 mph																					
4th . . . . .	35 mph																					
A1 . . . . .	5 mph																					
R2 . . . . .	7 mph																					

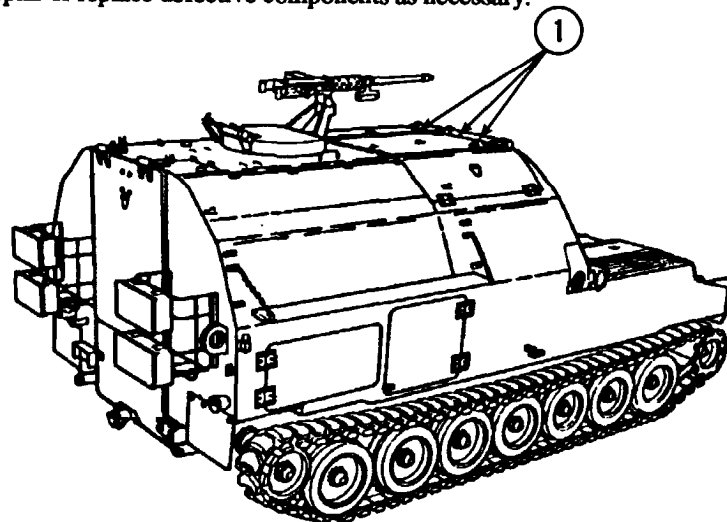
PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
Q-QUARTERLY		S-SEMIANNUALLY		A-ANNUALLY		B-BIENNIALY	H-HOURS	MI-MILES
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
29			•		75	750	Temperature of Hubs and Shock Absorber	<p>A Feel all wheel hubs cautiously. Notice difference in temperature between hubs. An overheated hub indicates a bearing problem (p 8-13).</p> <p>B Feel the lower end of the shock absorber. Check for difference in temperature between hull and shock absorber. If shock absorber is operating properly, it will be warmer than the hull (p 8-26).</p>  <p>C Repair or replace defective components as necessary.</p>
30			•		75	750	Leakage from Powerpack	<p>A Inspect all areas inside of engine compartment and underneath vehicle for fuel, water or engine/transmission leakage.</p>
31			•		75	750	Decals, Instruction Plates and Paint	<p>A Replace decals and instruction plates as necessary.</p> <p>B Clean and paint bare or worn spots.</p>
32			•		75	750	Final Road Test	<p>A Check for proper performance of items that were adjusted, repaired or replaced as a result of the road test.</p>

PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
		Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES	
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
33			•				<p>Rear Doors</p> <p>A Inspect both upper and lower rear doors (1 and 2) for loose, damaged or deteriorated door seals (p 9-35 and 9-40).</p> <p>B Check operation of top rear door (1). Inspect hydraulic lines and fittings for leaks, damage and deterioration. Be sure door will hold and stay in opened position (p 9-30).</p> <p>c Check latch operation of lower rear door (2). Check that door opens freely, and leaks in opened position (p 9-36 thru 9-39).</p> <p>D Check for cracked hinges, broken latches and missing or loose bolts (p 9-28.6 thru 9-40).</p> <p>E Repair or replace components as necessary.</p>	



PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES		
34			•				Top Doors  A Check operation and fit of all three top doors (1) (TM 9-2350-267-10). B Inspect doors for loose, damaged, or deteriorated door seals (p 9-58.1). C Check inside latch operation of top middle door (p 9-57). D Inspect hinges and hinge operation. Check for cracked hinges, latches, and attaching bolts (p 9-50 thru 9-57). E Check spring assist of torsion bars by opening and closing middle top door. Replace torsion bars as necessary (p. 9-55). F Repair or replace defective components as necessary.	



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

**Q-QUARTERLY**

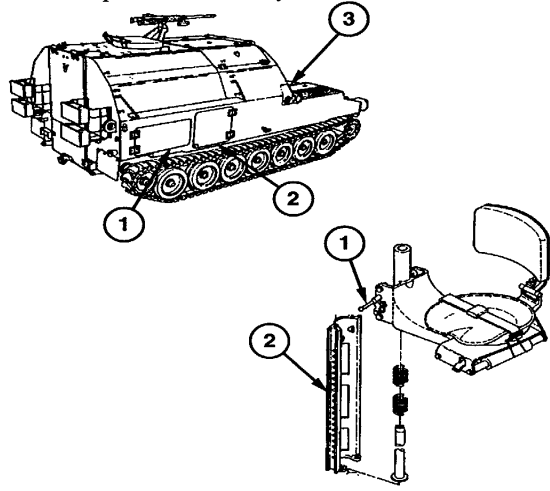
**S-SEMIANNUALLY**

**A-ANNUALLY**

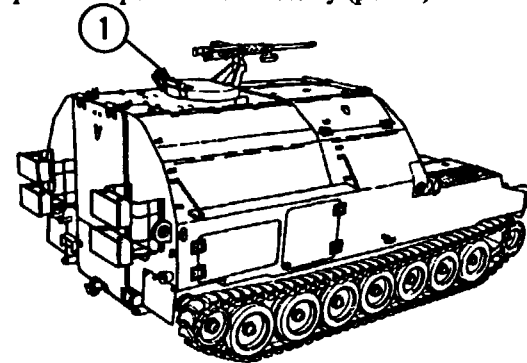
**B-BIENNIALY**

**H-HOURS**

**MI-MILES**

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
35			•				Left and Right Side Doors, Personnel Side Door and Fuel Fill Door	A Inspect left and right canister doors (1) and personnel side door (2) for loose, damaged or deteriorated door seals (p 9-48.3).  B Check that doors latch securely and operate freely. Inspect free operation of hinges.  C Check fit of fuel fill door (3). Check for proper door and latch operation (p 9-64.1).  D Repair or replace defective components as necessary.
35.1		•					Driver's Seat	 A Inspect driver's seat adjusting lever/plunger assembly (1) for broken or worn parts.  B Inspect driver's seat support (2) for worn/ elongated holes.  C Repair or replace defective components as necessary.
2-35 Change 5								

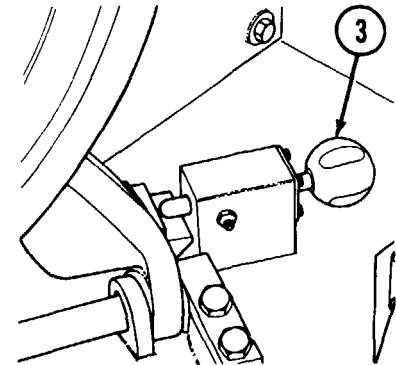
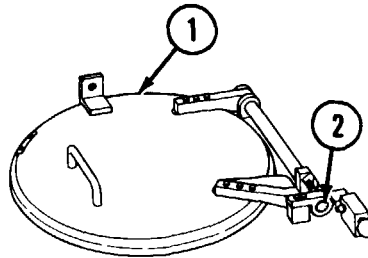
PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES		
36			•				APU Compartment Front and Side Doors A Check that doors latch securely and operate freely (p 9-62). B Check hinges for free operation (p 9-60). C Repair or replace defective components as necessary.	
37			•				Commander's Cupola A Rotate cupola (1) to ensure ease of rotation. B Operate cupola door latches and locks in both open and closed position to ensure ease of operation. C Check seals for tears and deterioration. D If repairs or replacement of components is necessary, notify Direct Support Maintenance.	
38			•				Fenders and Rear Splash Guards A Inspect for dents, cracks, breaks, or other damage. B Repair or replace components as necessary (p 9-67).	

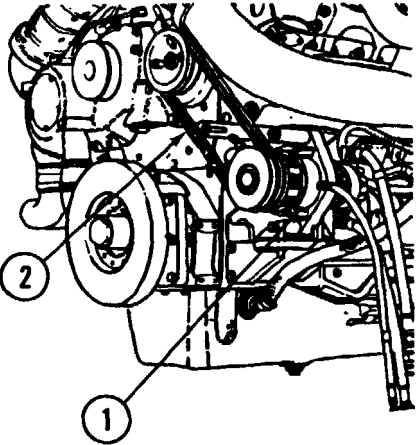
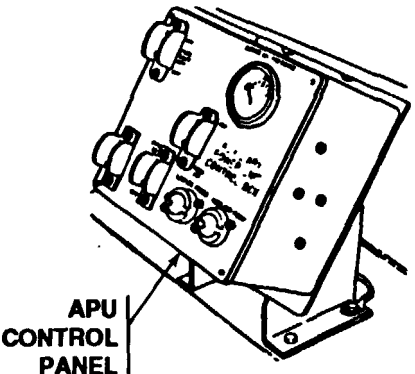


**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY    S-SEMIANNUALLY    A-ANNUALLY    B-BIENNIALLY    H-HOURS    MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
39			•				Commander's, Driver's and Crew Seats	<p>A Inspect seats for torn cushions and backrests.</p> <p>B Check adjusting mechanisms and trip levers for smooth operation.</p> <p>C Check seat belts and buckles for proper operation.</p> <p>D Check frames for breaks and other damage.</p> <p>E Repair or replace defective components (p 9-1 thru 9-17).</p>
40			•				Driver's Hatch	<p>A Inspect driver's hatch cover (1). Check locking chuck and handle for damage.</p> <p>B Check for broken torsion bar (2).</p> <p>C Inspect hold-open lock (3) for proper operation. Check hatch cover and lock engagement.</p>



PREVENTIVE MAINTENANCE CHECKS AND SERVICES							Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE				
	Q	S	A	B	H	MI						
42			•				<p><b>Backup Hydraulic system</b></p> <p>A Open engine compartment access plate (p 3-14) and inspect backup hydraulic pump (1). Check condition of V-belts (2), tension and alinement (p 16-26).</p> <p>B Inspect hydraulic lines for leaks and tighten any loose fittings (p 16-15).</p> <p>C Inspect and tighten loose mounting hardware (p 16-15).</p>					
44		•					<p><b>Auxiliary Power unit</b></p> <p>A Start APU (TM 9-2350-267-10). Listen for unusual noises m engine and generated starter which might indicate mechanical malfunction.</p> <p>B Remove APU panel lenses for LOW OIL PRESSure and HIGH AIR TEMP lights. Remove bulbs and visually check bulbs for broken filaments. Replace if necessary.</p> <p>C Check ENGINE OIL PRESSURE gage; gage should indicate 25-35 psi.</p> <p>D Tighten fuel, oil and air connections that leak.</p> <p>E Troubleshoot APU as necessary (p 2-252).</p>	 <p>APU CONTROL PANEL</p>				



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

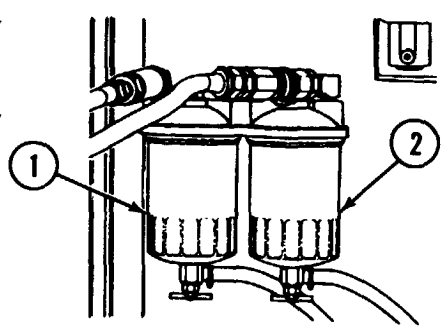
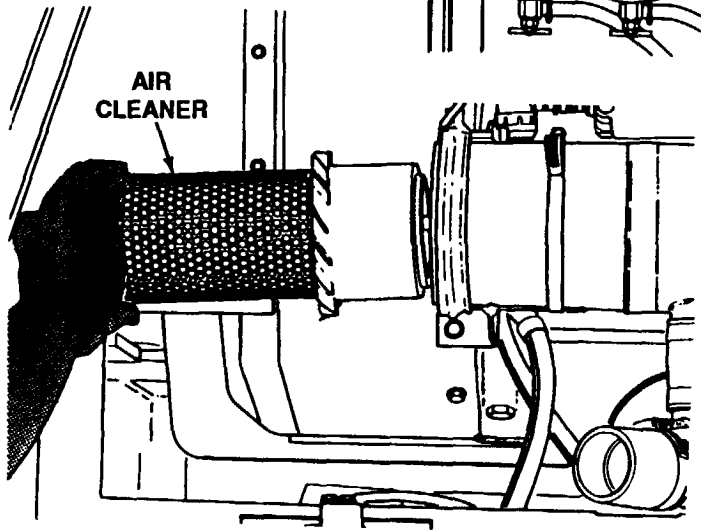
S-SEMIANNUALLY

A-ANNUALLY

B-BIENNIALLY

H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
45					•		<p>APU Fuel Filters</p> <p>A Replace primary fuel filter (1) every 600 hours (p 13-16).</p> <p>B Replace secondary fuel filter (2) every 3000 hours (p 13-16).</p> 	
46		•					<p>APU Air Cleaner</p> <p>A Inspect air cleaner (1) for cleanliness and obstructions (TM 9-2350-267-10).</p> <p>B Inspect air system components and replace if damaged or deteriorated (p 13-15).</p> 	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES												
		O-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES					
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE				
	Q	S	A	B	H	MI						
47			•				Stacker	<p><b>NOTE</b></p> <p>Some M992 vehicles are not equipped with a stacker.</p> <p><b>A</b> Operate stacker (TM 9-2350-267-10) tray up and down and check action of roller chain (1). Chain must operate freely without binding or sticking.</p> <p><b>B</b> Move stacker horizontally and check for binding or sticking.</p> <p><b>C</b> Remove outer chain guard (p 12-31) and visually inspect drive and idler sprockets (2) for worn or broken teeth.</p> <p><b>D</b> Check chain tension (TM 9-2350-267-10).</p> <p><b>E</b> Inspect hydraulic lines and check fittings for leakage. Tighten fittings as necessary (p 16-32).</p> <p><b>F</b> Check operation of sliding tray (3).</p> <p><b>G</b> Visually inspect components for wear, cracks and other damage.</p>				

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

**Q-QUARTERLY**

**S-SEMIANNUALLY**

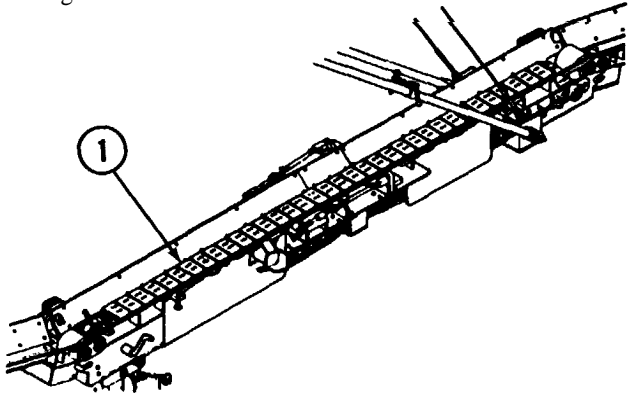
**A-ANNUALLY**

**B-BIENNIALLY**

**H-HOURS**

**MI-MILES**

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
48							Stacker (cont.)	H Inspect and tighten loose mounting hardware (p 12-30). I Inspect floor-mounted wear strip (4) for condition and tighten mounting hardware as necessary (p 12-41). J Check winch operation. K Check operation of stacker foot brake; adjust if necessary (p 12-40.2). L Repair or replace defective components as necessary (p 12-30 thru 12-45).
			•				Conveyor	A Operate conveyor (TM 9-2350-267-10) and check action of conveyor chain (1). Chain must operate freely, without binding or sticking. B Visually inspect chain, convey or sections, and supports for cracks, bends, twists and other damage.



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

Q-QUARTERLY

S-SEMIANNUALLY

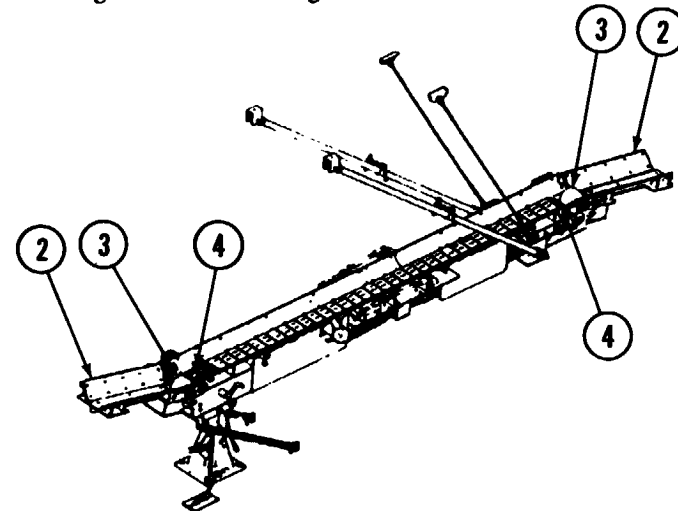
A-ANNUALLY

B-BIENNIALLY

H-HOURS

MI-MILES

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
							Conveyor (cont.)	<p>C Check chain tension (TM 9-2350-267-10).</p> <p>D Check end sections (2) for security and ease of operation.</p> <p>E Check for ease of folding conveyor to stowage position and back to operating position (TM 9-2350-267-10).</p> <p>F Check that rollers (3) and sprockets (4) are undamaged. Inspect for broken or worn sprocket teeth, and worn or damaged rollers.</p> <p>G Inspect conveyor hydraulic lines and fittings for leakage and tighten loose fittings (p 16-36.2).</p> <p>H Inspect and tighten loose mounting hardware.</p>



**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

**Q-QUARTERLY**

**S-SEMIANNUALLY**

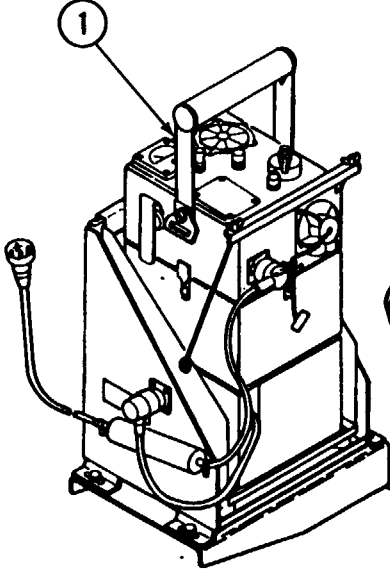
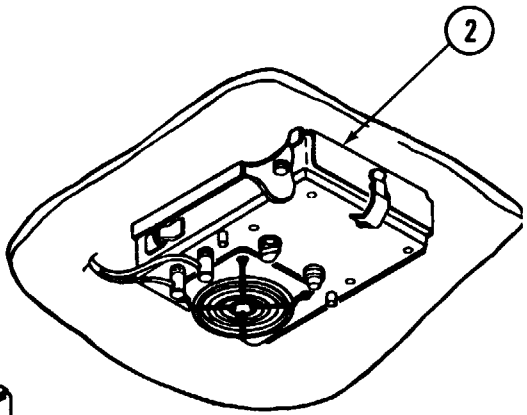
**A-ANNUALLY**

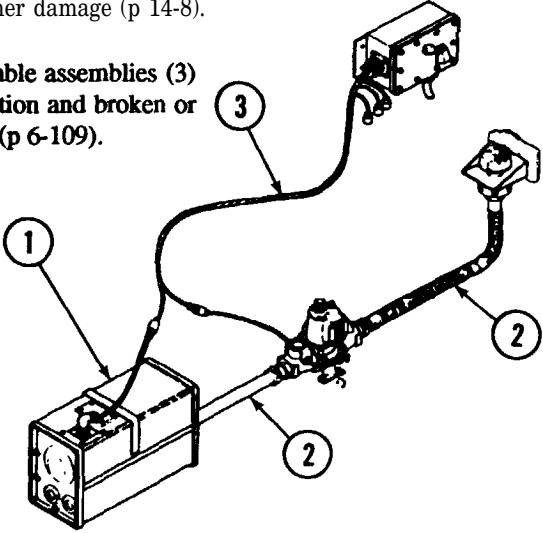
**B-BIENNIALLY**

**H-HOURS**

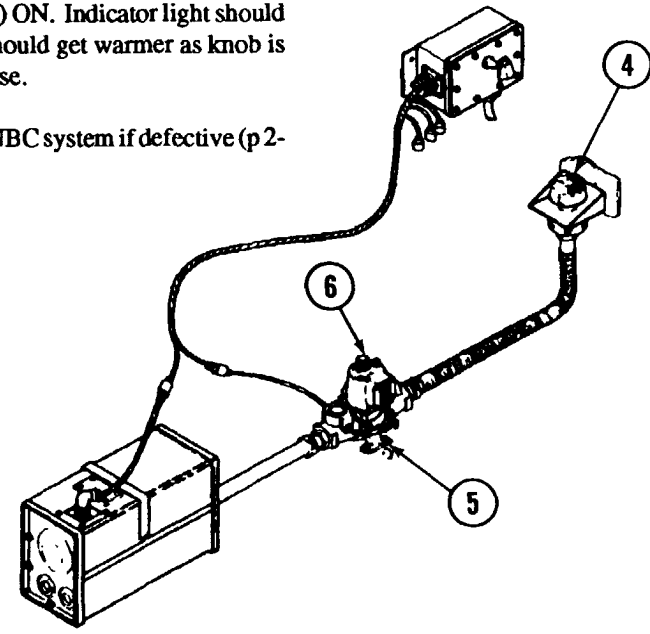
**MI-MILES**

ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
49							Conveyor (cont.)	I Inspect for worn or damaged wear strips. J Inspect conveyor chain pads. Replace as necessary (TM 9-2350-267-10). K Repair or replace defective components as necessary (p 12-1 thru 12-28).
			•				Projectile Racks	A Inspect projectile rack for cracks, bends, twists and other damage. B Inspect locking mechanisms for damage and wear. Make sure locking mechanisms securely hold projectile in rack. c Tighten loose screws. Replace missing screws, washers and nuts. D Repair or replace defective components (p 11-1 thru 11-11).
			•				Canister Racks and Fuze Containers	A Inspect for cracks, bends, wear and other damage. B Tighten loose screws. Replace missing screws, washers and nuts. c Inspect restraint straps and restraint bars. D Repair or replace defective components (p 11-12 thru 11-23).
51			•				Electrical System Wring Harnesses and Cables	A Inspect harnesses and cables for damaged insulation and deterioration (Chapter 6). B Tighten loose electrical connection mounting brackets and clamps. Check for broken or damaged terminals and replace or repair as necessary. Ref. (p 2-50 thru 2-60). C Replace missing chassis grommets.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES		
52			•				<p>Dome Lights</p> <p>A Test operation of lights (TM 9-2350-267-10).</p> <p>B Replace broken, cracked or discolored lamps or lenses (p 6-40).</p>	
53		•					<p>Chemical Detector and Alarm System</p> <p>A Check chemical detector (1) and alarm system (2) for proper operation. Refer to TM 3-665-225-12 for maintenance procedures. Removal and installation can be found on (p 14-12 thru 14-13).</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q	S	A	B	H	MI		
54		•					NBC Equipment	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>WARNING</b></p> <p>After suspected NBC exposure of this vehicle, all air filter elements shall be handled only by personnel wearing full NBC protective equipment.</p> </div> <p>A Inspect M2A2 precleaned (1) for dents loose connections and missing parts. Replace filter if damaged (p 14-2 thru 14-6). Refer to TM 9-2350-267-10 for filter change information.</p> <p>B Inspect condition of hose assemblies (2). Check for deterioration, loose connections, holes, tears, and other damage (p 14-8).</p> <p>C Inspect electrical cable assemblies (3) for damaged insulation and broken or damaged terminals (p 6-109).</p> 

PREVENTIVE MAINTENANCE CHECKS AND SERVICES								
ITEM	INTERVAL						ITEM TO BE INSPECTED	PROCEDURE
	Q-QUARTERLY	S-SEMIANNUALLY	A-ANNUALLY	B-BIENNIALLY	H-HOURS	MI-MILES		
	Q	S	A	B	H	MI		
							<p>NBC Equipment (cont.)</p> <p>D Operate ventilated face piece system (TM 9-2350-267-10). Check that air moves through each air hose outlet orifice connector (4).</p> <p><b>NOTE</b></p> <p>Allow M3 heater to operate for approximately 15 minutes before checking for warm air circulation.</p> <p>E Check operation of M3 heater (5) by turning control knob (6) ON. Indicator light should be lit and air should get warmer as knob is turned clockwise.</p> <p>F Troubleshoot NBC system if defective (p 2-246).</p>	





## Section IV STE/ICE TROUBLESHOOTING

### GENERAL

TM 9-4910-571-12&P provides instructions for operation and maintenance of the Simplified Test Equipment/Internal Combustion Engines (STE/ICE) equipment.

This section contains detailed procedures for performing the STE/ICE tests applicable to the M992 as referenced in Section V troubleshooting and the Vehicle Test Card.

The Vehicle Test Card for use with the STE/ICE equipment is located on p 2-48.47.

### STE/ICE TEST TASK INDEX

<u>TASK</u>	<u>PAGE</u>	<u>TASK</u>	<u>PAGE</u>
Hook Up STE/ICE Test Equipment to DCA . . . . .	2-48.2	STE/ICE (VTM Only) Test No. 50 Engine Oil Pressure (Idle) . . . . .	2-48.18
Hook Up STE/ICE Test Equipment on Batteries . . . . .	2-48.4	STE/ICE (VTM Only) Test No. 50 Engine Oil Pressure (Engine Running) . . . . .	2-48.22
STE/ICE Test No. 10 Engine RPM (Cranking) . . . . .	2-48.6	STE/ICE Test No. 67 Battery Voltage (Engine Off) . . . . .	2-48.27
STE/ICE Test No. 10 Engine RPM (Idle) . . . . .	2-48.7	STE/ICE Test No. 67 Battery Voltage (Engine Cranking) . . . . .	2-48.28
STE/ICE Test No. 10 Engine RPM (Governor Speed) . . . . .	2-48.8	STE/ICE Test No. 67 Battery Voltage (Engine Running) . . . . .	2-48.29
STE/ICE Test No. 13 Power (Percent) . . . . .	2-48.10	STE/ICE Test No. 71 Cranking Current . . . . .	2-48.31
STE/ICE Test No. 14 Compression Unbalance . . . . .	2-48.13	STE/ICE Test No. 72 Current First Peak . . . . .	2-48.33
STE/ICE Test No. 24 Fuel Supply Pressure . . . . .	2-48.15	STE/ICE Test No. 73 Battery Internal Resistance . . . . .	2-48.34
STE/ICE Test No. 26 Fuel Filter Pressure Drop . . . . .	2-48.16	STE/ICE Test No. 74 Starter Circuit Resistance . . . . .	2-48.35
STE/ICE Test No. 32 Air Box Pressure . . . . .	2-48.17	STE/ICE Test No. 75 Battery Resistance Change . . . . .	2-48.36

**STE/ICE TEST TASK INDEX**

<u>TASK</u>	<u>PAGE</u>	<u>TASK</u>	<u>PAGE</u>
STE/ICE Test No. 80 Battery Current .....	2-48.37	STE/ICE Test No. 84 Alternator Negative Cable Drop .....	2-48.42
STE/ICE Test No. 82 Alternator Output Voltage (DC) .....	2-48.38	Remove STE/ICE Test Equipment from DCA .....	2-48.43
STE/ICE Test No. 83 Alternator Diagnostic (Field) Voltage .....	2-48.40	Remove STE/ICE Test Equipment from Batteries .....	2-48.45
		Vehicle Test Card .....	2-48.47

**HOOK UP STE/ICE TEST EQUIPMENT TO DCA**

**INITIAL SETUP**

Tools:

STE/ICE test set

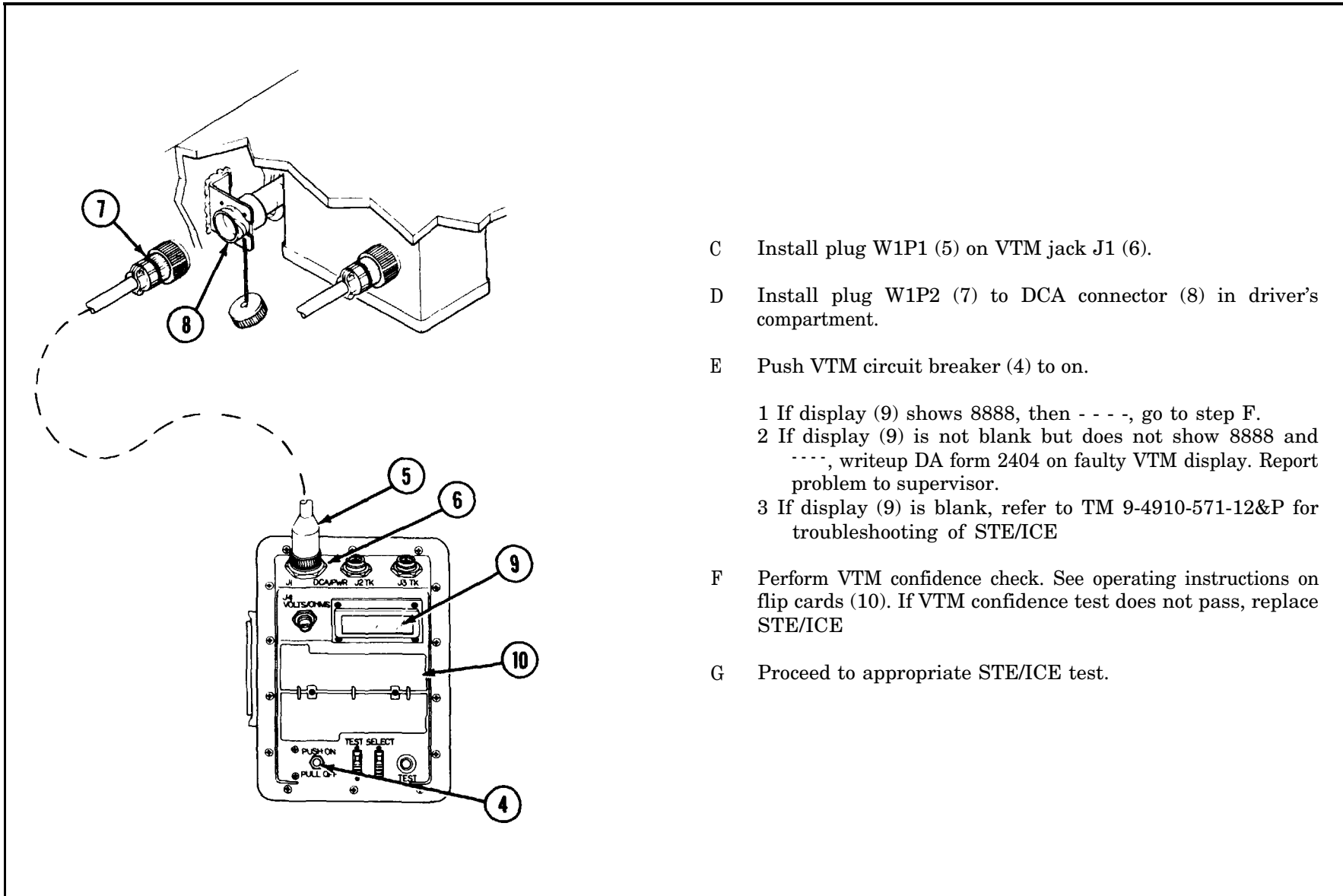
References:

TM 9-4910-57-12&P

A Move STE/ICE test equipment to vehicle.  
Remove VTM (1) and cable W1 (2) from transit case (3).

B Pull VTM Circuit breaker (4) up to off.

## HOOK UP STE/ICE TEST EQUIPMENT TO DCA (CONTINUED)



- C Install plug W1P1 (5) on VTM jack J1 (6).
- D Install plug W1P2 (7) to DCA connector (8) in driver's compartment.
- E Push VTM circuit breaker (4) to on.
  - 1 If display (9) shows 8888, then - - - -, go to step F.
  - 2 If display (9) is not blank but does not show 8888 and - - - -, writeup DA form 2404 on faulty VTM display. Report problem to supervisor.
  - 3 If display (9) is blank, refer to TM 9-4910-571-12&P for troubleshooting of STE/ICE
- F Perform VTM confidence check. See operating instructions on flip cards (10). If VTM confidence test does not pass, replace STE/ICE
- G Proceed to appropriate STE/ICE test.

TA312639 ■

### HOOK UP STE/ICE TEST EQUIPMENT ON BATTERIES

#### INITIAL SETUP

Tools:

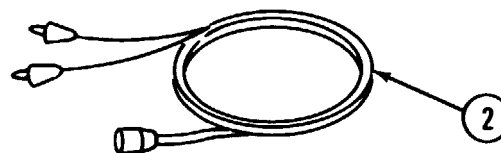
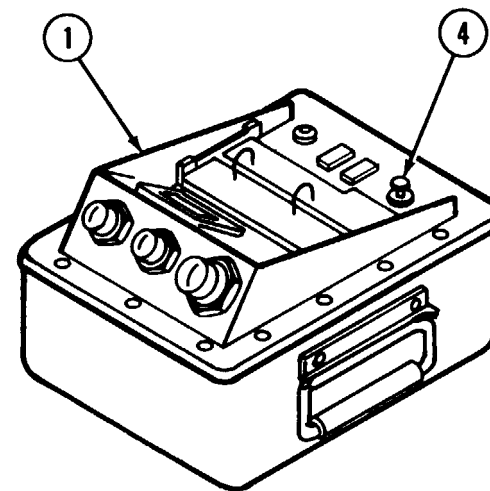
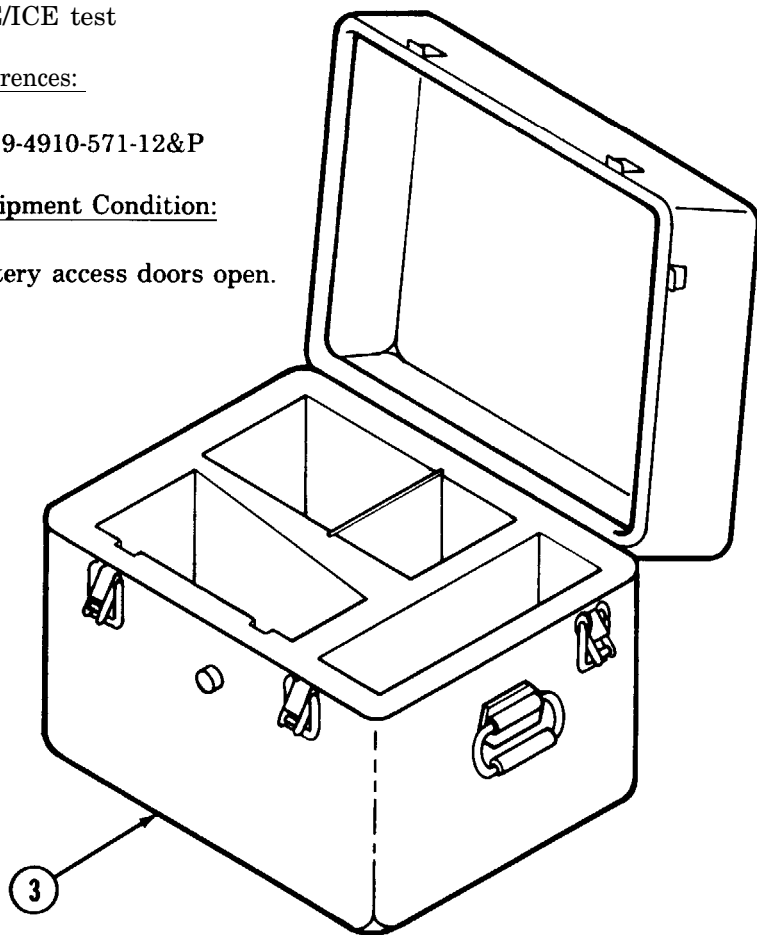
STE/ICE test

References:

TM 9-4910-571-12&P

Equipment Condition:

Battery access doors open.

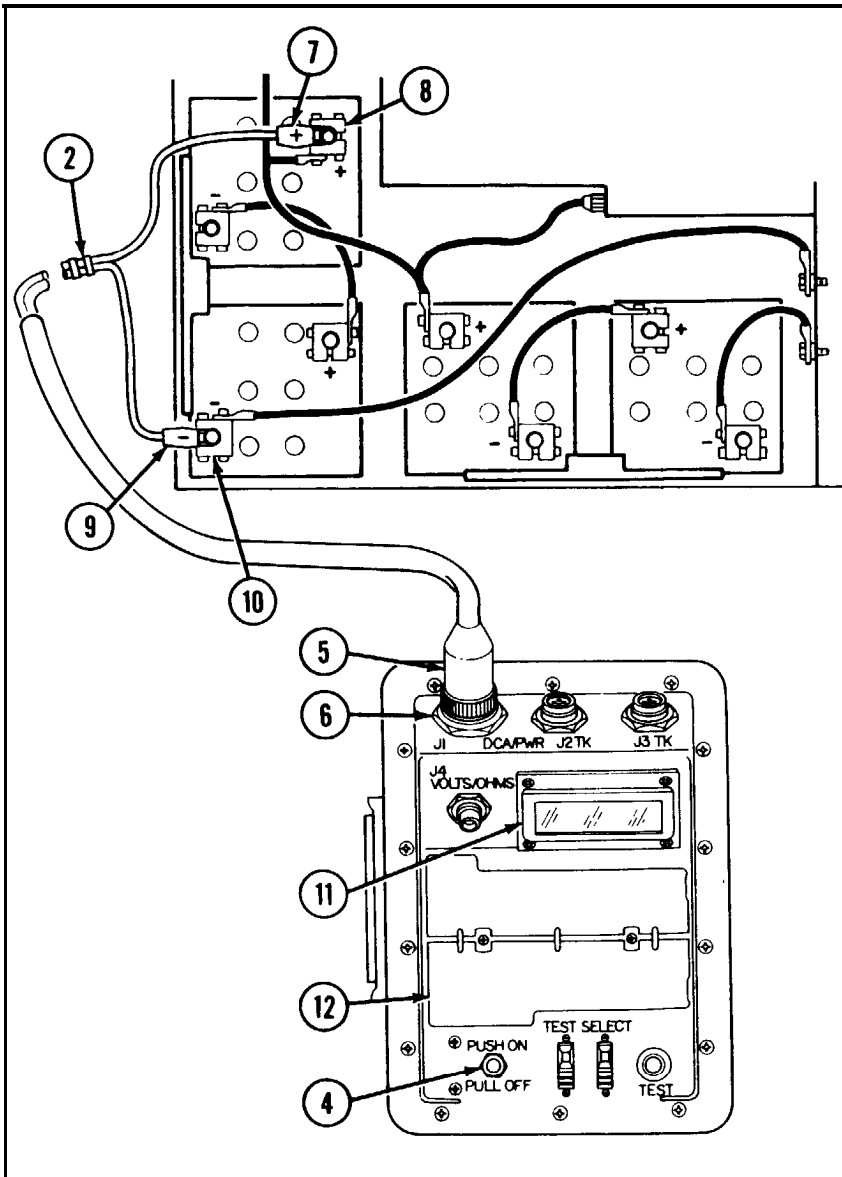


A Move STE/ICE test equipment to vehicle.

Remove VTM (1) and cable W5 (2) from transit case (3).

B Pull VTM circuit breaker (4) up to off.

## HOOK UP STE/ICE TEST EQUIPMENT ON BATTERIES (CONTINUED)



- C Install plug W5P1 (5) on VTM jack J1 (6).
- D Install red lead (7) of cable W5 (2) on battery positive terminal clamp (8).
- E Install black lead (9) of cable W5 (2) on battery negative terminal clamp (10).
- F Push VTM circuit breaker (4) to on.
  - 1 If display (11) shows 8888, then ----, go to Step G.
  - 2 If display (11) is not blank but does not show 8888 and ----, write up DA form 2404 on faulty VTM display. Report problem to supervisor.
  - 3 If display (11) is blank refer to TM 9-4910-571-12&P for troubleshooting of STE/ICE
- G Perform VTM confidence check. See operating instructions on flip cards (12). If VTM confidence check fails, replace STE/ICE
- H Proceed to appropriate STE/ICE test.

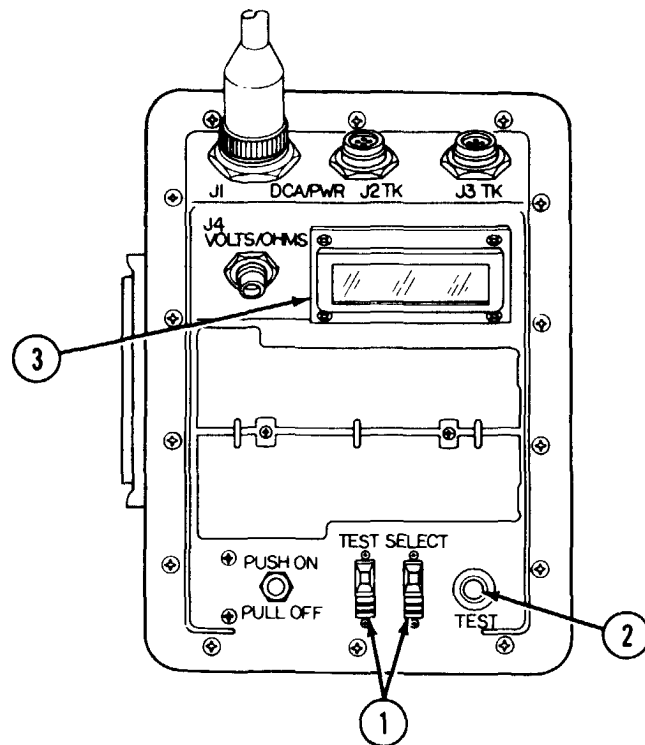
TA312641

**STE/ICE TEST NO. 10 ENGINE RPM (CRANKING)****INITIAL SETUP**References:

TM 9-2350-267-10

Equipment Condition:

STE/ICE hooked up to DCA.  
Vehicle blocked.



- A Set engine to prevent starting. Locate and hold FUEL SHUTOFF closed.
- B Dial test select (1) to 10.
- C Locate and hold FUEL SHUTOFF closed while cranking engine. Engine must not start while performing this step.
- D Press and release test button (2).
- E Check display (3).
  - 1 Test No. 10 passes if display (3) shows at least 100 rpm.
  - 2 If display (3) shows O, check connections and repeat test.
  - 3 If display (3) shows erratic reading, check connections and repeat test.
- F Return to troubleshooting.

## STE/ICE TEST NO. 10 ENGINE RPM (IDLE)

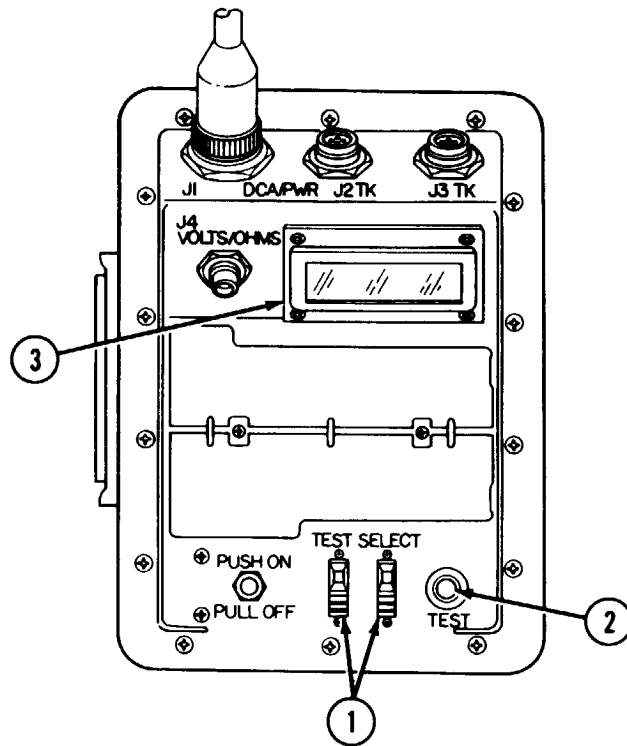
### INITIAL SETUP

#### References:

TM 9-2350-267-10

#### Equipment Condition:

STE/ICE hooked up to DCA.  
Vehicle blocked.



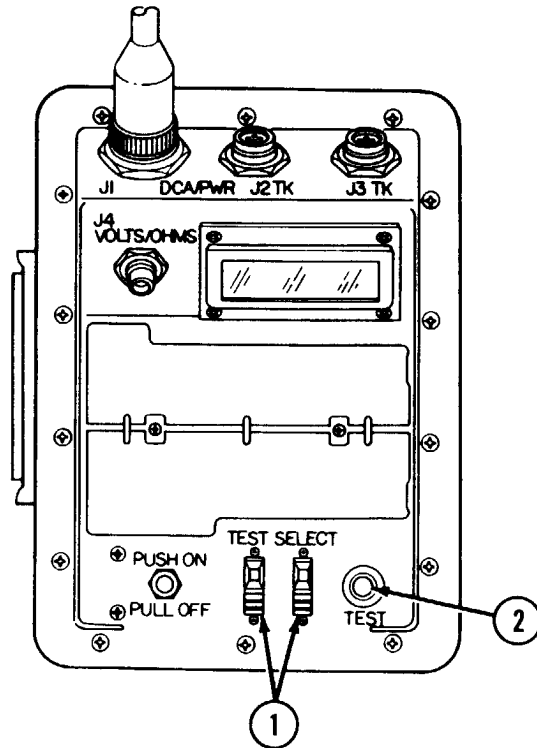
- A Dial test select (1) to 10.
- B Start engine. See TM 9-2350-267-10.
- C Press and release test button (2).
- D Check display (3).
  - 1 Test No. 10 passes if display (3) shows between 550-600 rpm.
  - 2 If display (3) shows 0, check connections and repeat test.
  - 3 If display (3) shows erratic reading, check connections and repeat test.
- E Stop engine. See TM 9-2350-267-10.
- F Return to troubleshooting.

**STE/ICE TEST NO. 10 ENGINE RPM (GOVERNOR SPEED)****INITIAL SETUP**References:

TM 9-2350-267-10

Equipment Condition:

STE/ICE hooked up to DCA.  
Vehicle blocked.



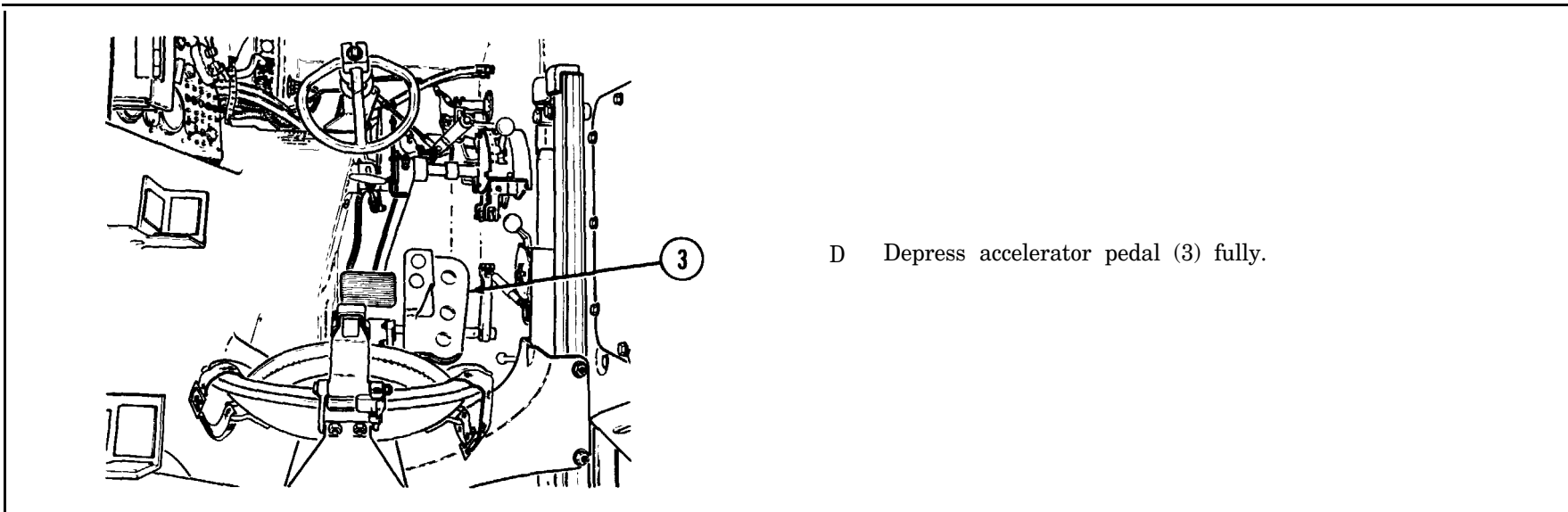
A Dial test select (1) to 10.

B Press and release test button (2).

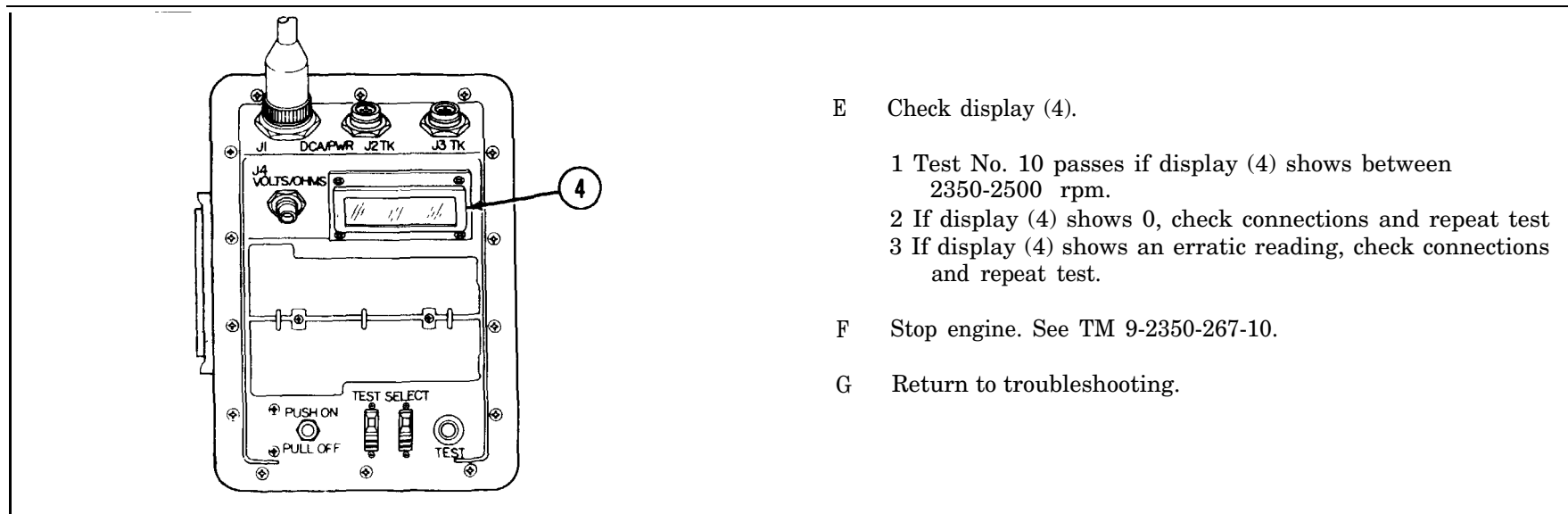
C Start engine. See TM 9-2350-267-10.



STE/ICE TEST NO. 10 ENGINE RPM (GOVERNOR SPEED) (CONTINUED)



D Depress accelerator pedal (3) fully.



E Check display (4).

- 1 Test No. 10 passes if display (4) shows between 2350-2500 rpm.
- 2 If display (4) shows 0, check connections and repeat test
- 3 If display (4) shows an erratic reading, check connections and repeat test.

F Stop engine. See TM 9-2350-267-10.

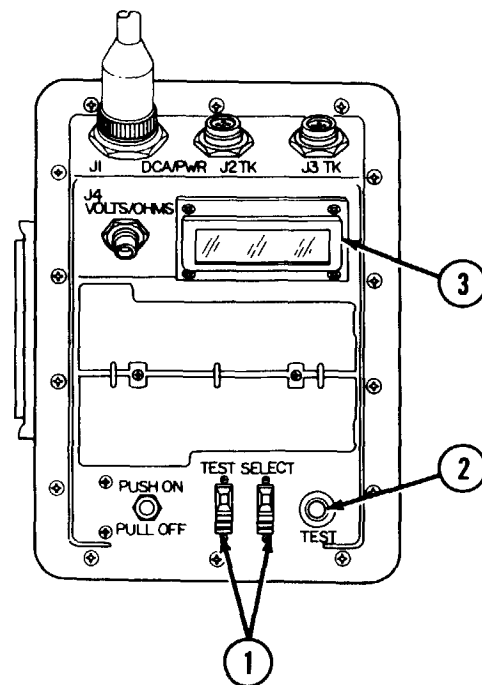
G Return to troubleshooting.

**STE/ICE TEST NO. 13 POWER (PERCENT)****INITIAL SETUP**References:

TM 9-2350-267-10

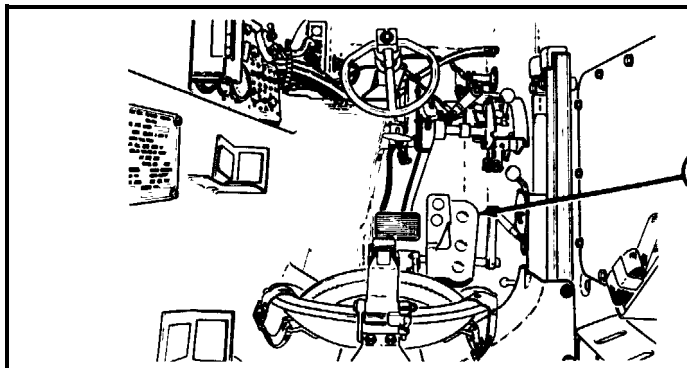
Equipment Condition:

STE/ICE hooked up to DCA  
 Vehicle blocked.

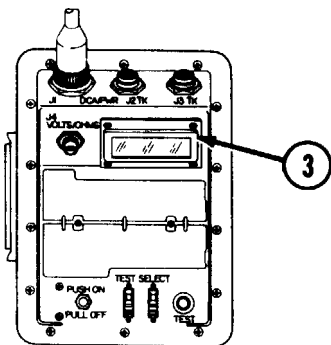


- A Dial test select (1) to 60.
- B Press and release test button (2). VTM display (3) will indicate VEH.
- C Dial test select (1) to 11,
- D Press and release test button (2). VTM display (3) will indicate 11.
- E Dial test select (1) to 10.
- F Start engine. See TM 9-2350-267-10.
- G Press and release test button (2).
- H Check display (3).
  - 1 If displayed value is less than 550 rpm or more than 600 rpm, adjust idle speed. See p 7-47.
  - 2 DO NOT run power test if idle speed cannot be properly adjusted.
- I Press and release test button (2).

## STE/ICE TEST NO. 13 POWER (PERCENT) (CONTINUED)

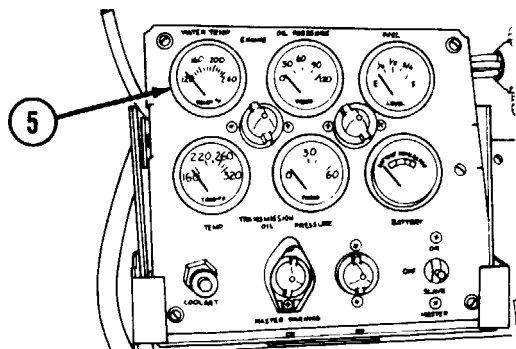


J Depress accelerator pedal (4) fully.



K Check display (3).

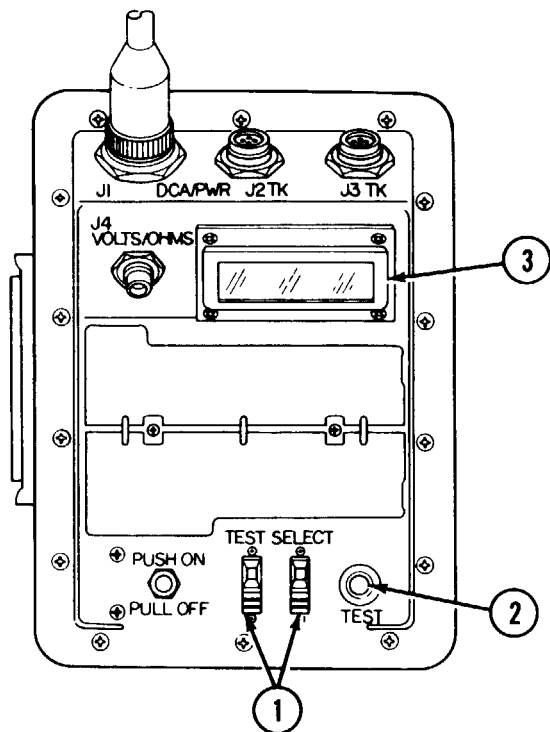
- 1 If displayed value is less than 2350 rpm or more than 2500 rpm, adjust governor speed. See p 7-46.
- 2 DO NOT run power test if governor speed cannot be properly adjusted.



L Check engine temperature gage (5).

Power test cannot be run if engine temperature is above normal (170°F to 185°F)

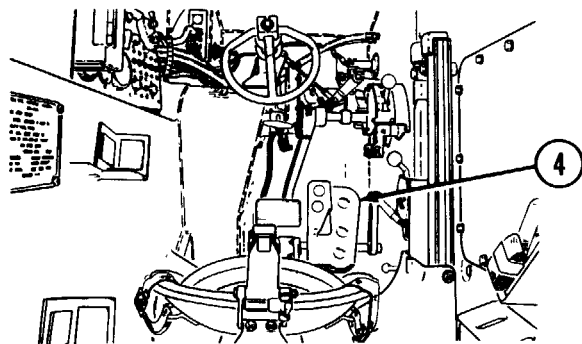
## STE/ICE TEST NO. 13 POWER (PERCENT) (CONTINUED)



- M Dial test select (1) to 13.
- N Press and release test button (2).
- O Wait for display (3) to read CIP.
- P Sharply depress accelerator pedal (4).
- Q Wait for display (3) to read OFF.
- R Release accelerator pedal (4).
- S Check display (3).

Test No. 13 passes if display shows 60% or above.

- T Stop engine. See TM 9-2350-267-10.
- U Return to troubleshooting.



## STE/ICE TEST NO. 14 COMPRESSION UNBALANCE

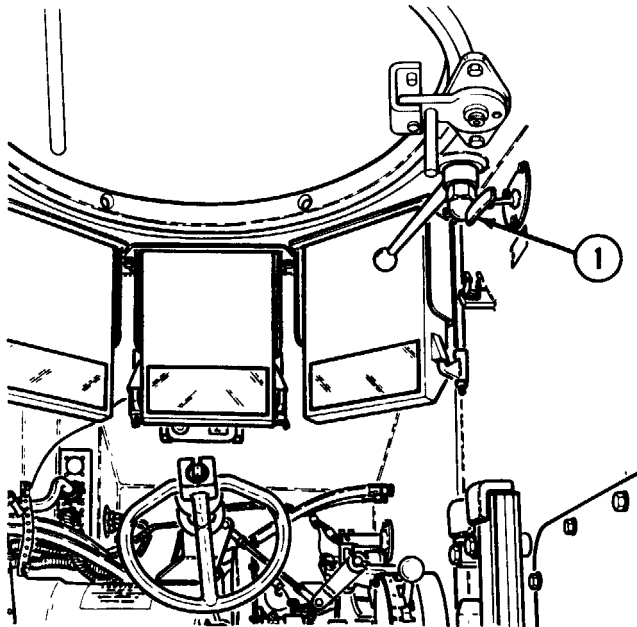
### INITIAL SETUP

#### References:

TM 9-2350-267-10

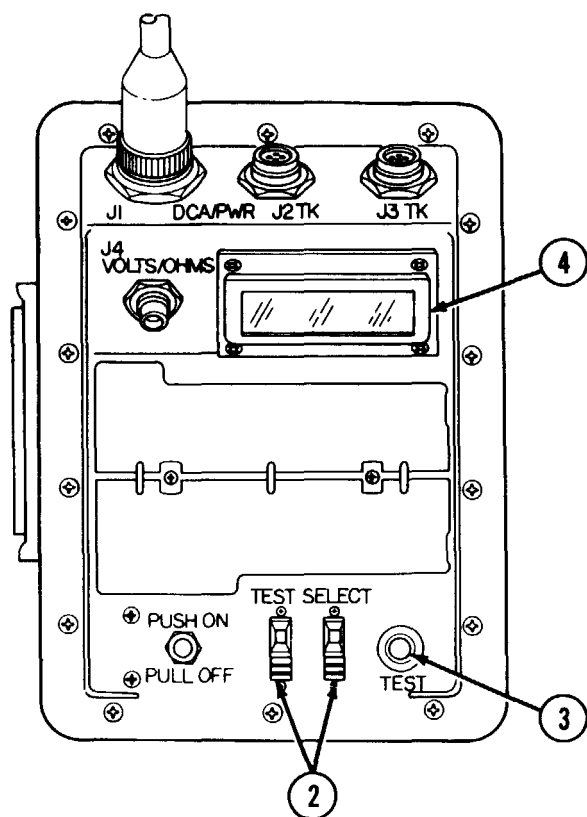
#### Equipment Condition:

STE/ICE hooked up to DCA.  
Vehicle blocked.



- A Perform STE/ICE tests No. 72 (p 2-48.33), No. 73 (p 2-48.34), No. 74 (p 2-48.35) and No. 75 (p 2-48.36).
- B Warm up engine to operating temperature (TM 9-2350-267-10).  
Run engine on low idle for 2 minutes before stopping.
- C Set up engine to prevent starting.  
Pull FUEL SHUTOFF lever (1) to OFF position.

## STE/ICE TEST NO. 14 COMPRESSION UNBALANCE (CONTINUED)



## CAUTION

Do not run more than two compression unbalance tests in a row because vehicle batteries may discharge.

- D Set test select (2) to 14.
- E Press and release test button (3).
- F Wait for display (4) to read GO.
- G Crank engine until display (4) reads OFF.

## NOTE

Display will change to ---- while engine is turning.

- H Check display (4).  
Test No. 14 passes if display shows 10% or less.
- I Return to troubleshooting.

## STE/ICE TEST NO. 24 FUEL SUPPLY PRESSURE

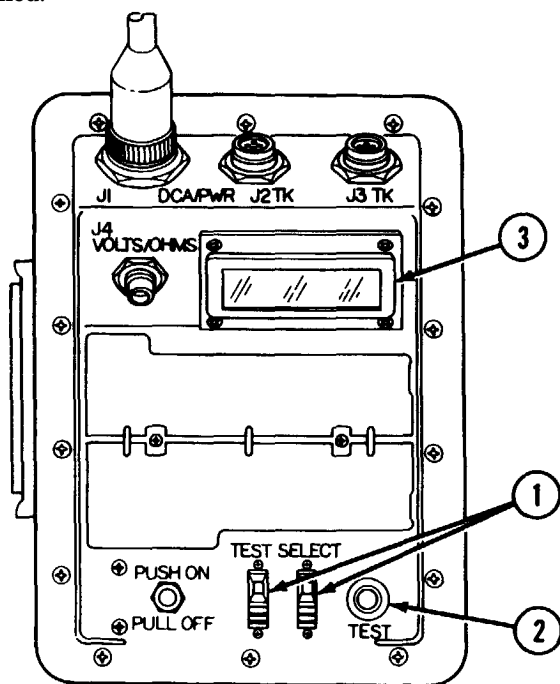
### INITIAL SETUP

#### References:

TM 9-2350-267-10  
TM 9-4910-571-12&P

#### Equipment Condition

STE/ICE hooked up to DCA.  
Vehicle blocked.



- A Dial test select (1) to 60.
- B Press and release test button (2). Display (3) will indicate VEH.
- C Dial test select (1) to 11.
- D Press and release test button (2). Display (3) will indicate 11.
- E Dial test select (1) to 24.
- F Press test button (2) until display (3) shows CAL. Release test button (2).
- G Check display (3).
  - 1 If display (3) shows between  $\pm 15$ , press and release test button (2).
  - 2 If display (3) shows less than - 15 or more than + 15 refer to TM 9-4910-571-12&P
- H Start engine. See TM 9-2350-267-10.
  - 1 Check display (3).  
Test No. 24 passes if display (3) shows between 40-70 psig.
- J Stop engine. See TM 9-2350-267-10.
- K Return to troubleshooting.

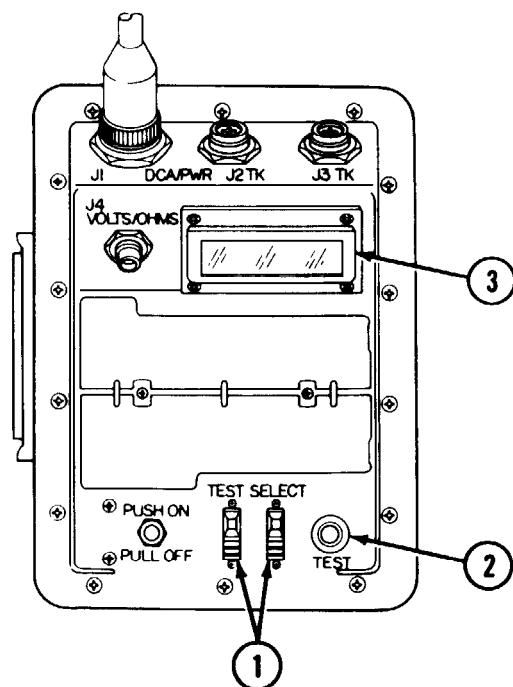
## STE/ICE TEST NO. 26 FUEL FILTER PRESSURE DROP

**INITIAL SETUP**References:

TM 9-2350-267-10

Equipment Condition:

STE/ICE hooked up to DCA.  
Vehicle blocked.



- A Dial test select (1) to 60.
  - B Press and release test button (2). Display (3) will indicate VEH.
  - C Dial test select (1) to 11.
  - D Press and release test button (2). Display (3) will indicate 11.
  - E Dial test select (1) to 04.
  - F Press and release test button (2).
  - G Wait for display (3) to read PASS.
  - H Dial test select (1) to 26.
  - I Start engine. See TM 9-2350-267-10.
  - J Press and release test button (2).
  - K Check display (3).
- 1 Test No. 26 passes if display (3) shows PASS.  
2 Test No. 26 fails if display (3) shows FAIL.
- L Stop engine. See TM 9-2350-267-10.
  - M Return to troubleshooting.



## STE/ICE TEST NO. 32 AIR BOX PRESSURE

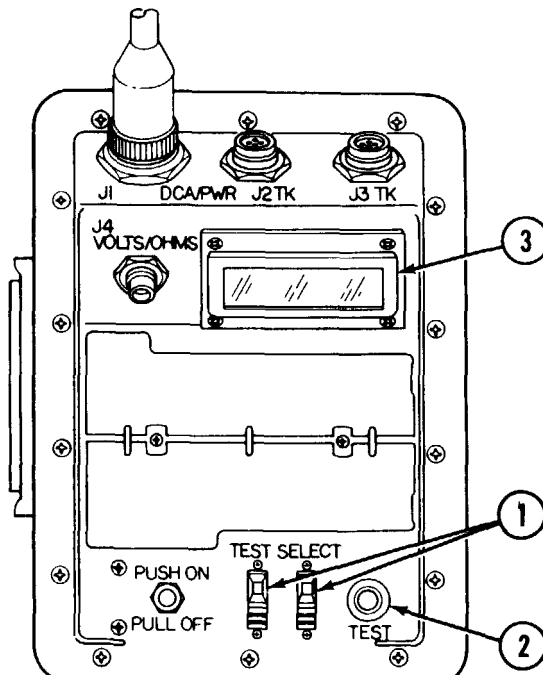
### INITIAL SETUP

#### References:

TM 9-2350-267-10  
TM 9-4910-571-12&P

#### Equipment Condition:

STE/ICE hooked Up to DCA.  
Vehicle blocked.



- A Dial test select (1) to 60.
- B Press and release test button (2). Display (3) will indicate VEH.
- C Dial test select (1) to 11.
- D Press and release test button (2). Display (3) will indicate 11.
- E Dial test select (1) to 32.
- F Press and hold test button (2) until display (3) shows CAL. Release test button (2).
- G Check display (3).
  - 1 If display (3) shows between  $\pm 4$ , press and release test button (2).
  - 2 If display (3) shows less than  $-4$  or more than  $+4$ , refer to TM 9-4910-571-12&P.
- H Start engine. See TM 9-2350-267-10. Accelerate engine to 2300 rpm.
- I Check display (3).

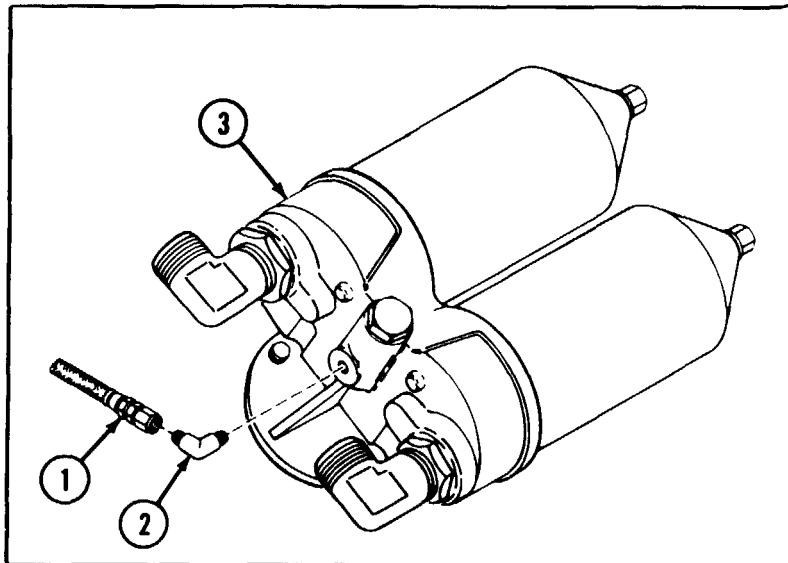
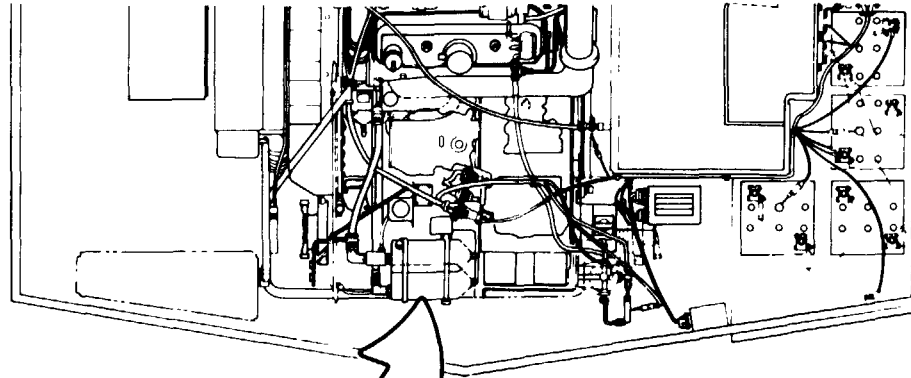
Test No. 32 passes if display (3) shows 45-55 in. Hg.
- J Stop engine. See TM 9-2350-267-10.
- K Return to troubleshooting.

**STE/ICE (VTM ONLY) TEST NO. 50 ENGINE OIL PRESSURE (IDLE)****INITIAL SETUP**References:

TM 9-2350-267-10  
TM 9-4910-571-12&P

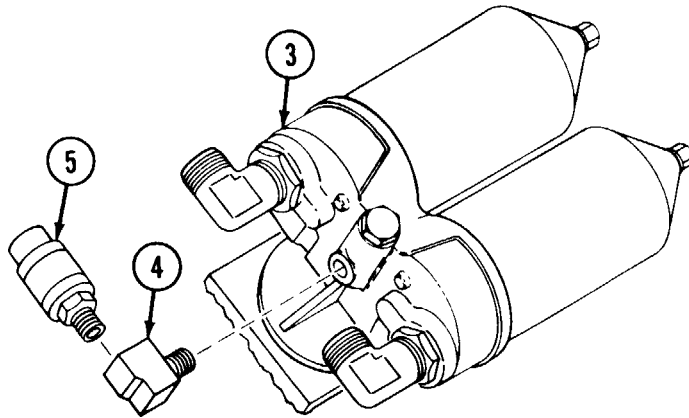
Equipment Condition:

STE/ICE hooked Up to DCA.  
Vehicle blocked.

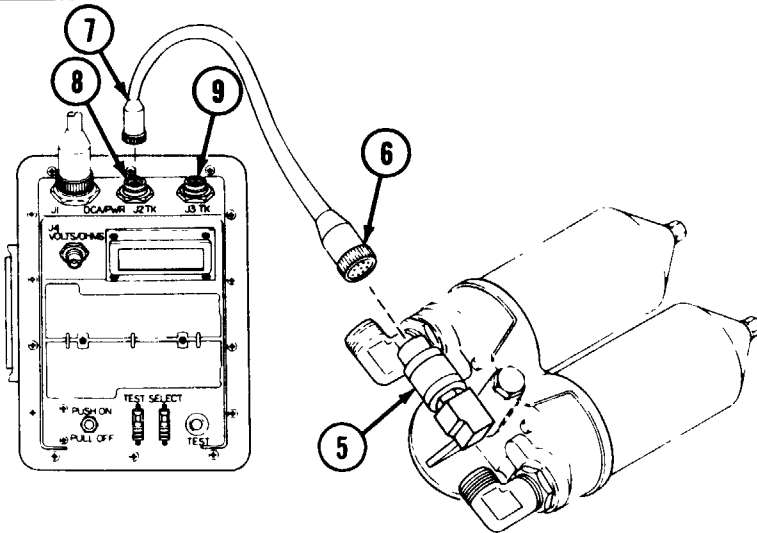


- A Open transmission access doors.
- B Disconnect oil sample tube (1) and remove elbow (2) from oil filter (3).

**STE/ICE (VTM ONLY) TEST NO. 50 ENGINE OIL PRESSURE (IDLE) (CONTINUED)**

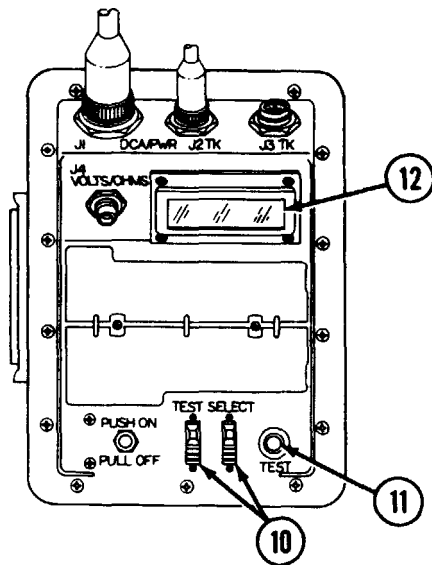


- C Install street elbow (TK item 26) (TM 9-4910-571-12&P) (4) on filter (3).
- D Install blue-striped transducer (TK item 17) (TM 9-4910-571-12&P) (5) on street elbow (4).



- E Install plug W4P2 (6) on blue-striped transducer (5).
- F Install plug W4P1 (7) on VTM jack J2 (8) or VTM jack J3 (9).

## STE/ICE (VTM ONLY) TEST NO. 50 ENGINE OIL PRESSURE (IDLE) (CONTINUED)



G Dial test select (10) to 50.

H Press test button (11) until display (12) shows CAL. Release test button (11).

I Check display (12).

1 If display shows between  $\pm 225$ , press and release test button.

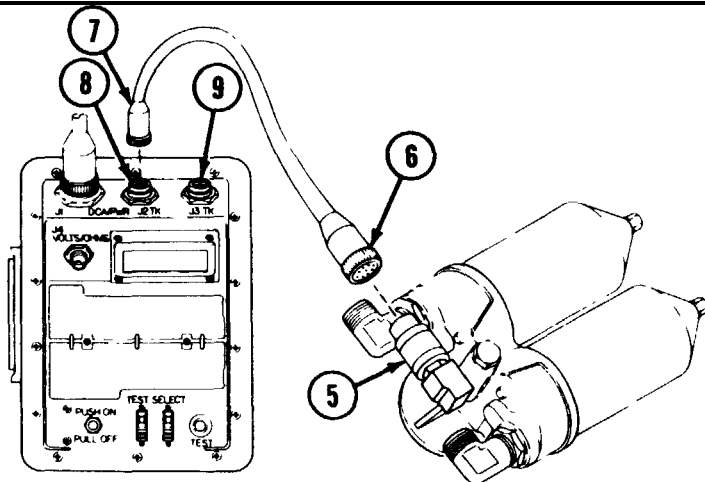
2 If display shows less than -225 or more than +225, refer to TM 9-4910-571-12&P.

J Start engine. See TM 9-2350-267-10.

K Check display (12).

Test No. 50 passes if display shows 5 psi or more.

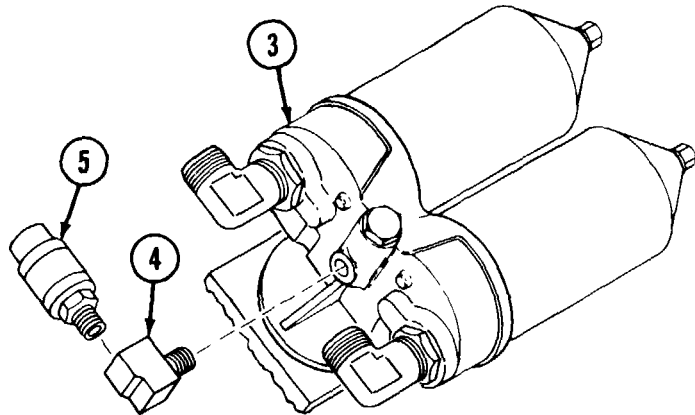
L Stop engine. See TM 9-2350-267-10.



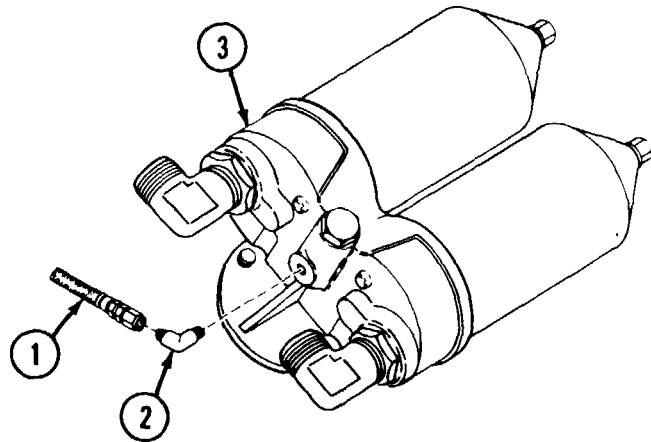
M Remove plug W4P1 (7) from VTM jack J2 (8) or VTM jack J3 (9).

N Remove plug W4P2 (6) from blue striped transducer (5).

STE/ICE (VTM ONLY) TEST NO. 50 ENGINE OIL PRESSURE (IDLE) (CONTINUED)



- O Remove blue-striped transducer (5) from street elbow (4).
- P Remove street elbow (4) from filter (3).



- Q Install elbow (2) on filter (3) and connect oil sample tube (1).
- R Close transmission access doors.
- S Return to troubleshooting.

### STE/ICE (VTM ONLY) TEST NO. 50 ENGINE OIL PRESSURE (ENGINE RUNNING)

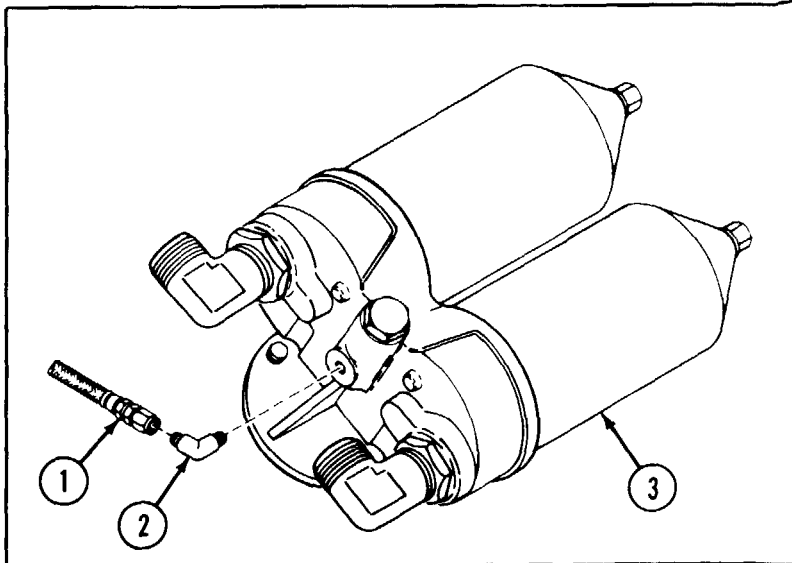
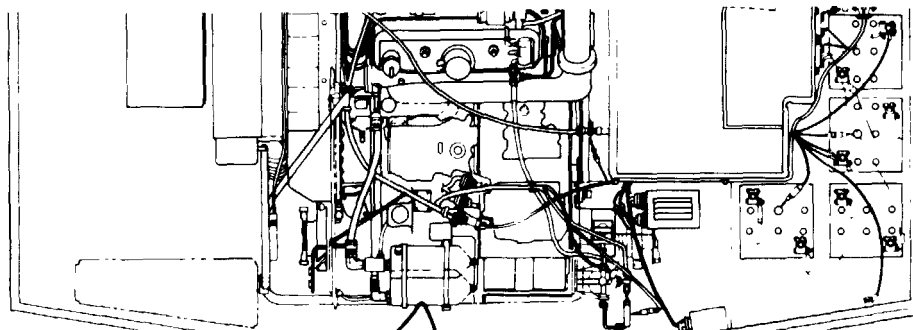
#### INITIAL SETUP

References:

TM 9-2350-267-10  
TM 9-4910-571-12&P

Equipment Condition:

STE/ICE hooked up to DCA.  
Vehicle blocked.

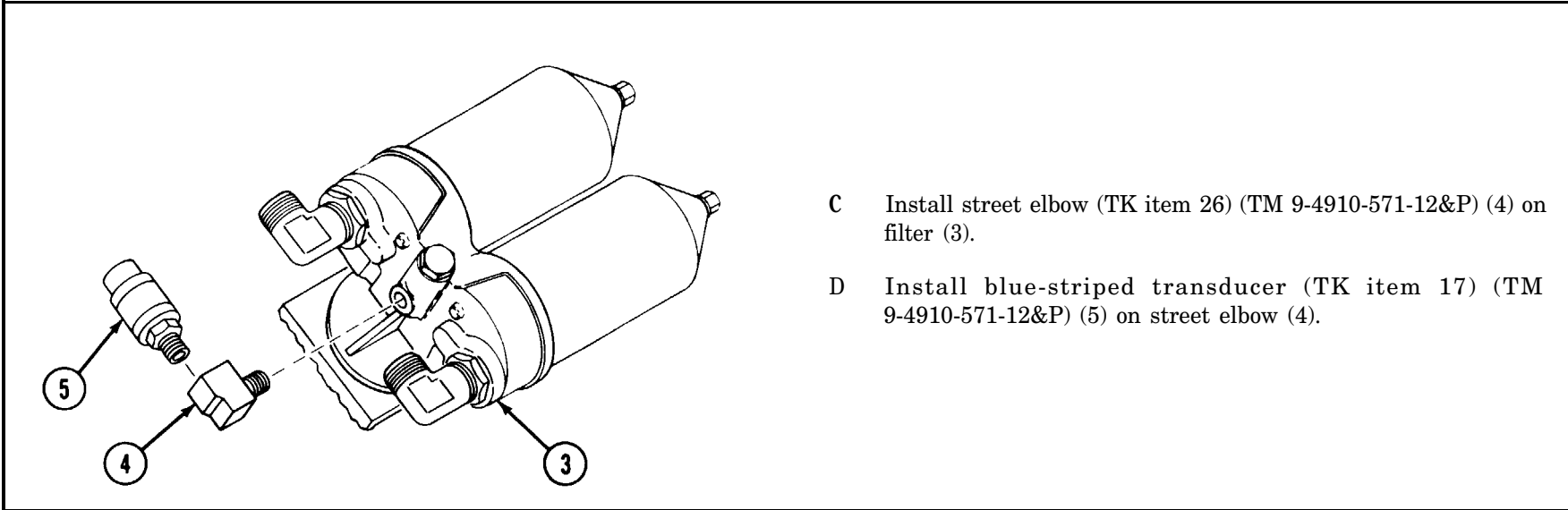


#### NOTE

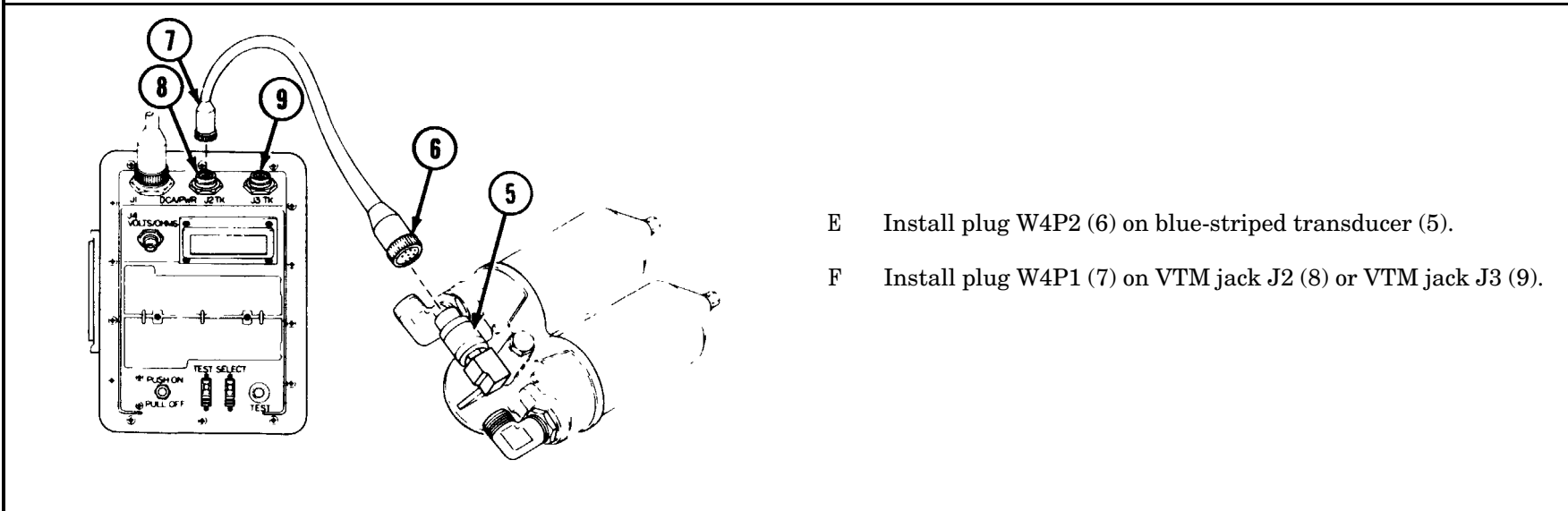
Allow vehicle to warm up to 140°F (ENGINE WATER TEMPerature gage) before performing this test.

- A Open transmission access doors.
- B Disconnect oil sample tube (1) and remove elbow (2) from oil filter (3).

STE/ICE (VTM ONLY) TEST NO. 50 ENGINE OIL PRESSURE (ENGINE RUNNING) (CONTINUED)

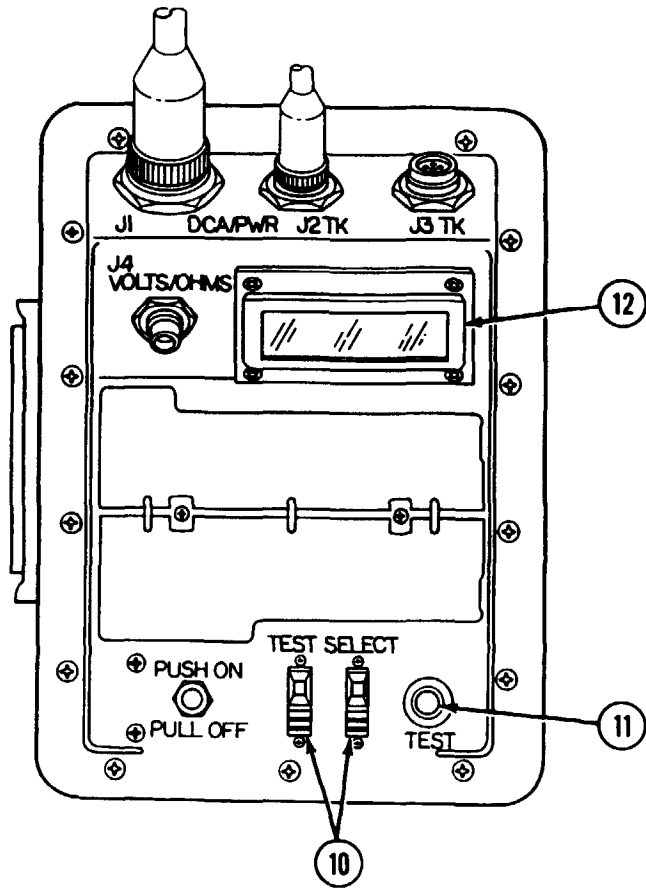


- C Install street elbow (TK item 26) (TM 9-4910-571-12&P) (4) on filter (3).
- D Install blue-striped transducer (TK item 17) (TM 9-4910-571-12&P) (5) on street elbow (4).



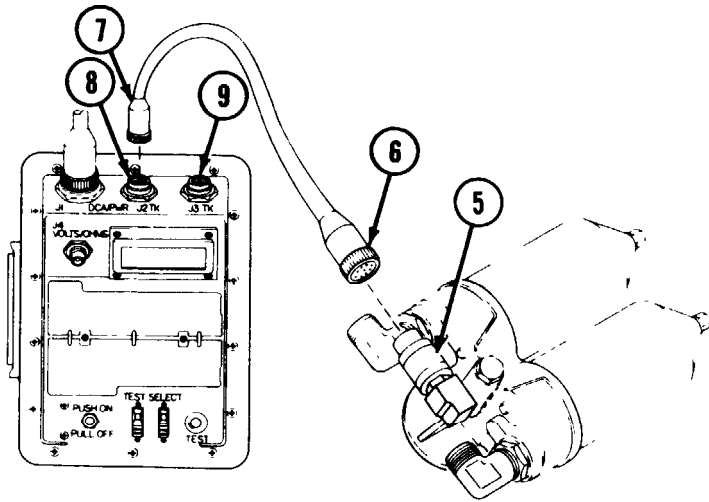
- E Install plug W4P2 (6) on blue-striped transducer (5).
- F Install plug W4P1 (7) on VTM jack J2 (8) or VTM jack J3 (9).

STE/ICE (VTM ONLY) TEST NO. 50 ENGINE OIL PRESSURE (ENGINE RUNNING) (CONTINUED)

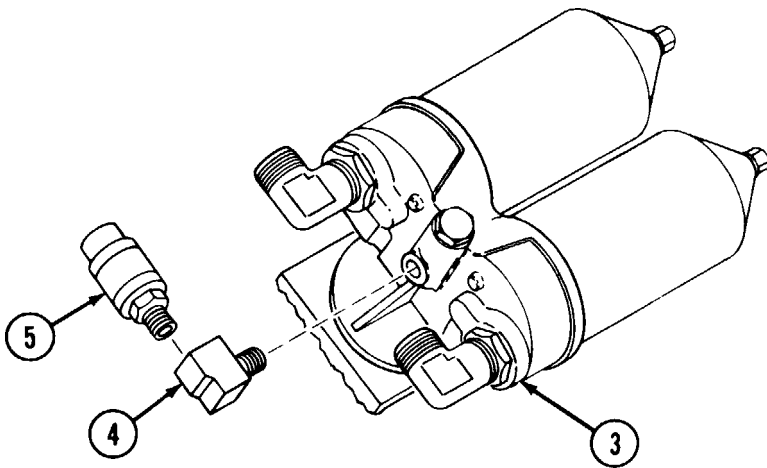


- G Dial test select (10) to 50.
  - H Press test button (11) and hold until display (12) shows CAL. Release test button.
  - I Check display (12).
    - 1 If display shows between  $\pm 225$ , proceed to Step J.
    - 2 If display shows less than -225 or more than + 225, refer to TM 9-4910-571-12&P.
  - J Dial test select (10) to 01.
  - K Press and release test button (11).
  - L Wait for display (12) to read PASS.
  - M Dial test select (10) to 50.
  - N Press and release test button (11).
  - O Start engine. See TM 9-2350-267-10.
- NOTE
- Two different numbers will flash on display.
- P Depress accelerator until flashing display (12) shows 1000 rpm.
  - Q Check display (12).
    - Test No. 50 passes if display shows 30-50 psi.
  - R Stop engine. See TM 9-2350-267-10.

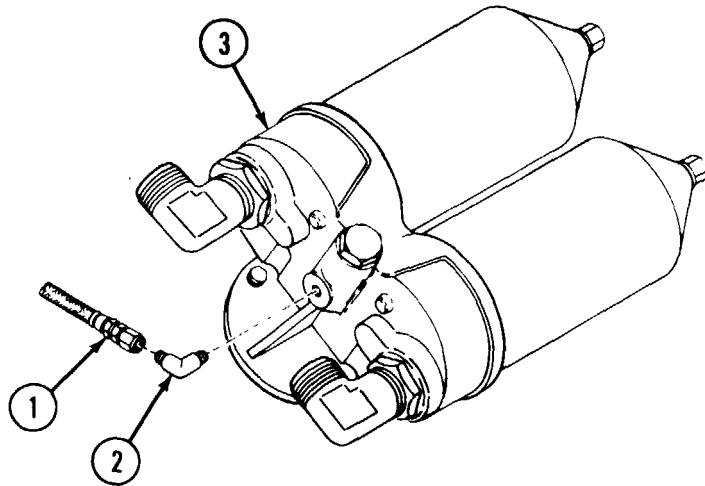




- S Remove plug W4P1 (7) from VTM jack J2 (8) or VTM jack J3 (9).
- T Remove plug W4P2 (6) from blue-striped transducer (5).



- U Remove blue-striped transducer (5) from street elbow (4).
- V Remove street elbow (4) from filter (3).

**STE/ICE (VTM ONLY) TEST NO. 50 ENGINE OIL PRESSURE (ENGINE RUNNING) (CONTINUED)**

W Install elbow (2) on filter (3) and connect oil sample tube (1).

X Close transmission access doors.

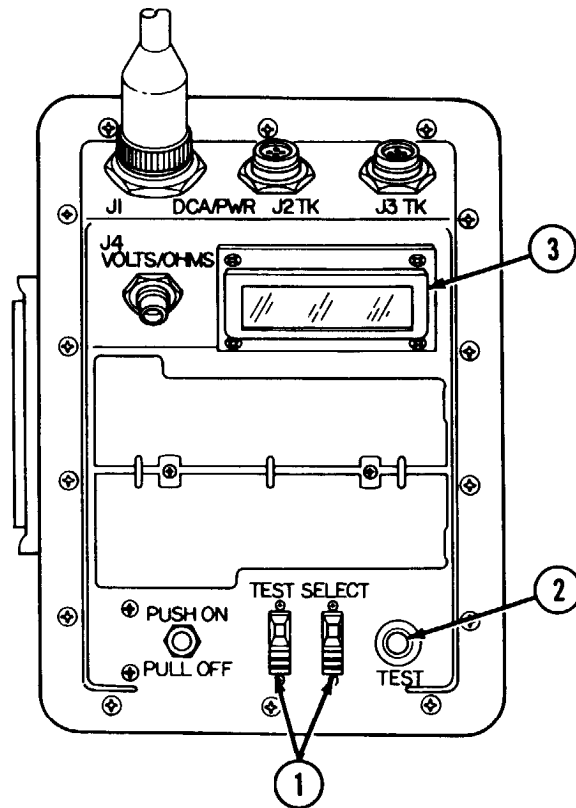
Y Return to troubleshooting.

## STE/ICE TEST NO. 67 BATTERY VOLTAGE (ENGINE OFF)

### INITIAL SETUP

#### Equipment Condition:

STE/ICE hooked Up to DCA.  
Vehicle blocked.



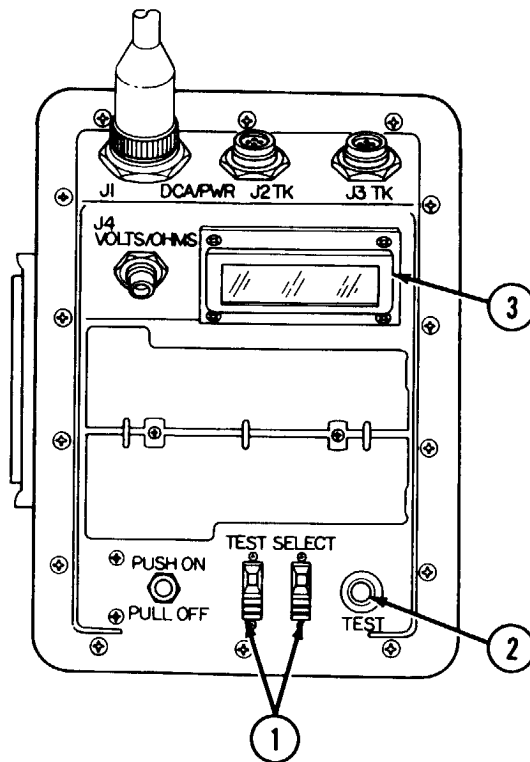
- A Dial test select (1) to 67.
- B Press and release test button (2).
- C Check display (3).

1 Test No. 67 passes if display (3) shows at least 22 volts.  
2 If display (3) shows 0 volts, check vehicle electrical connections and repeat test.

- D Return to troubleshooting.

**STE/ICE TEST NO. 67 BATTERY VOLTAGE (ENGINE CRANKING)****INITIAL SETUP**Equipment Condition:

STE/ICE hooked Up to DCA.  
Vehicle blocked.



A Set engine to prevent starting.

Locate and hold FUEL SHUTOFF in OFF position.

B Dial test select (1) to 67.

C Locate and hold FUEL SHUTOFF closed while cranking engine for 2 to 3 seconds. Engine must not start while performing this step.

D Press and release test button (2).

E Check display (3).

1 Test No. 67 passes if display (3) shows at least 18 volts.  
2 If display (3) shows 0 volts, check vehicle electrical connections and repeat test.

F Return to troubleshooting.

## STE/ICE TEST NO. 67 BATTERY VOLTAGE (ENGINE RUNNING)

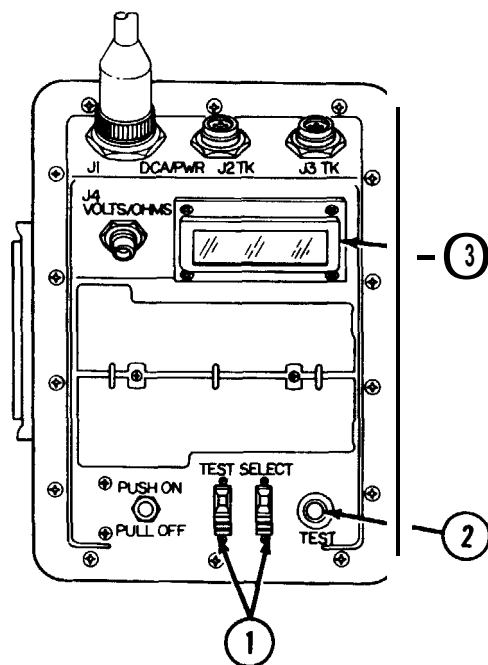
### INITIAL SETUP

#### References:

TM 9-2350-267-10

#### Equipment Condition:

STE/ICE hooked Up to DCA.  
Vehicle blocked.



A Dial test select (1) to 01.

B Press and release test button (2).

C Wait for display (3) to read PASS.

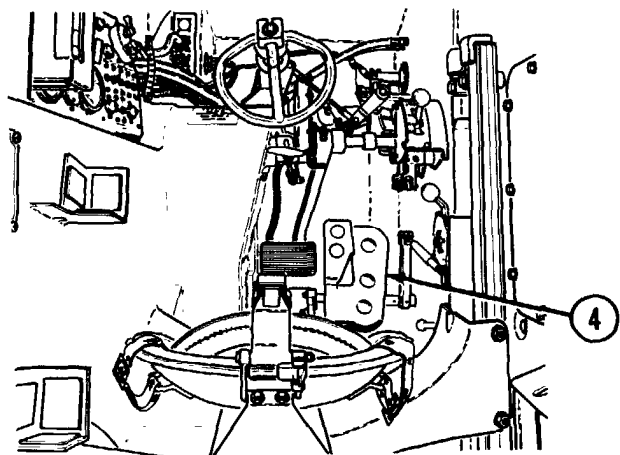
D Dial test select (1) to 67.

E Start engine. See TM 9-2350-267-10.

F Turn on service drive lights. See TM 9-2350-267-10.

G Press and release test button (2).

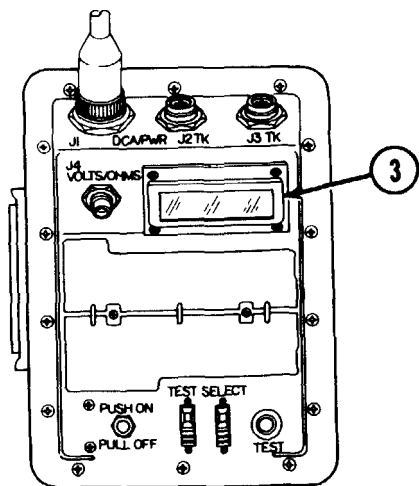
STE/ICE TEST NO. 67 BATTERY VOLTAGE (ENGINE RUNNING) (CONTINUED)



NOTE

Two different numbers will flash on display.

H Depress accelerator (4) until flashing display (3) shows 1000 to 1200 rpm.



I Check display (3).

- 1 Test NO. 67 passes if display (3) shows 26.5 -28.5 volts.
- 2 If display (3) shows 0 volts, check electrical connections and repeat test.

J Turn off service drive lights. See TM 9-2350-267-10.

K Stop engine. See TM 9-2350-267-10.

L Return to troubleshooting.

## STE/ICE TEST NO. 71 CRANKING CURRENT

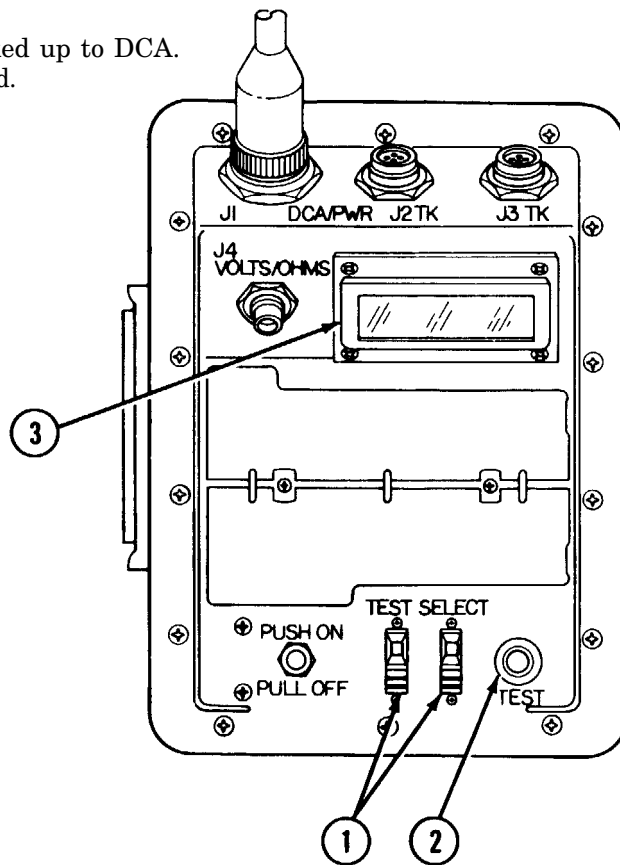
### INITIAL SETUP

#### References:

TM 9-4910-571-12&P

#### Equipment Condition:

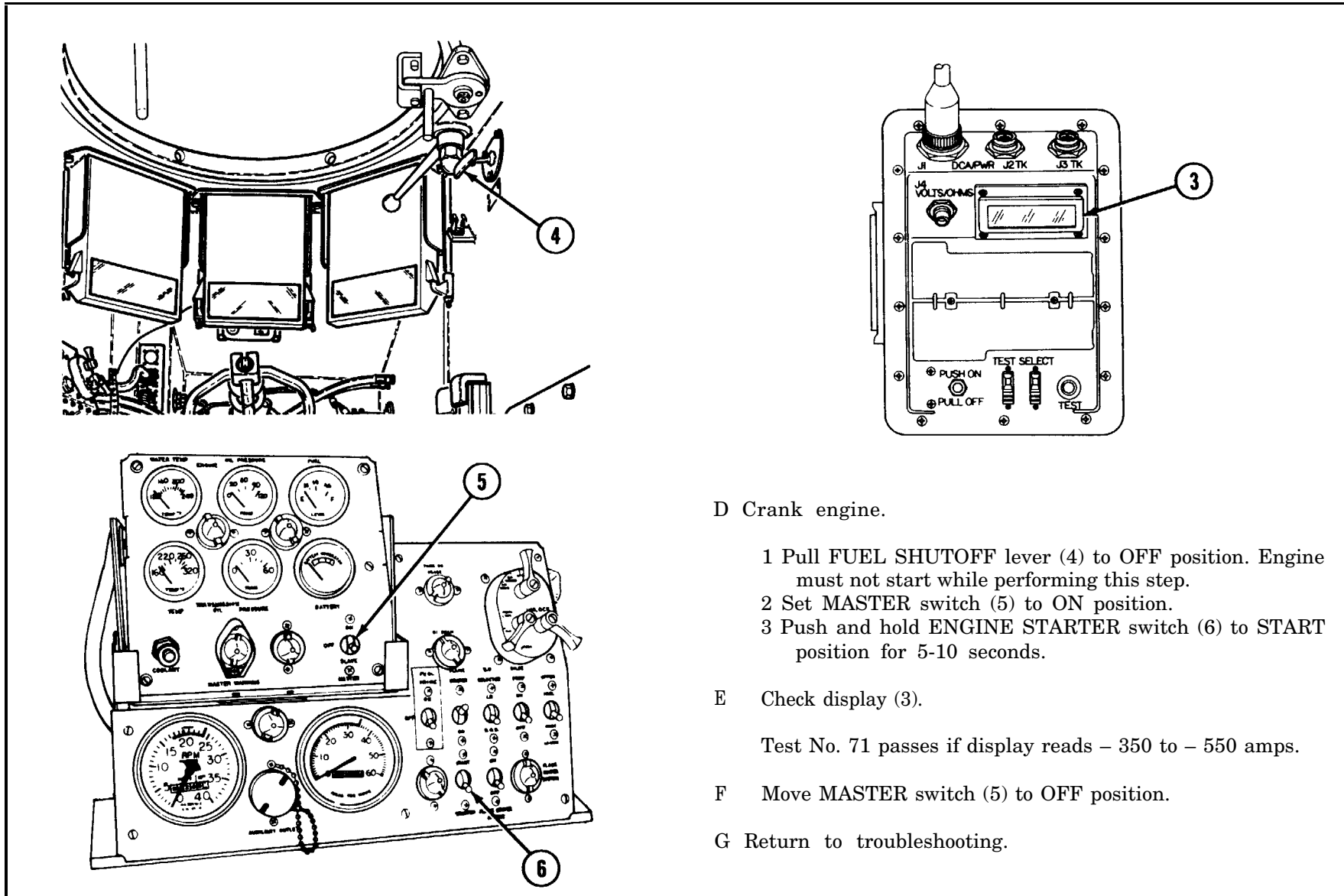
STE/ICE hooked up to DCA.  
Vehicle blocked.



- A Dial test select (1) to 71.
- B Press test button (2) until display (3) reads CA. Release test button (2).
- C Check display (3).

- 1 If display shows between  $\pm 225$ , press and release test button.
- 2 If display shows less than  $- 225$  or more than  $+ 225$ , refer to TM 9-4910-571-12&P.

## STE/ICE TEST NO. 71 CRANKING CURRENT (CONTINUED)



D Crank engine.

- 1 Pull FUEL SHUTOFF lever (4) to OFF position. Engine must not start while performing this step.
- 2 Set MASTER switch (5) to ON position.
- 3 Push and hold ENGINE STARTER switch (6) to START position for 5-10 seconds.

E Check display (3).

Test No. 71 passes if display reads – 350 to – 550 amps.

F Move MASTER switch (5) to OFF position.

G Return to troubleshooting.



## STE/ICE TEST NO. 72 CURRENT FIRST PEAK

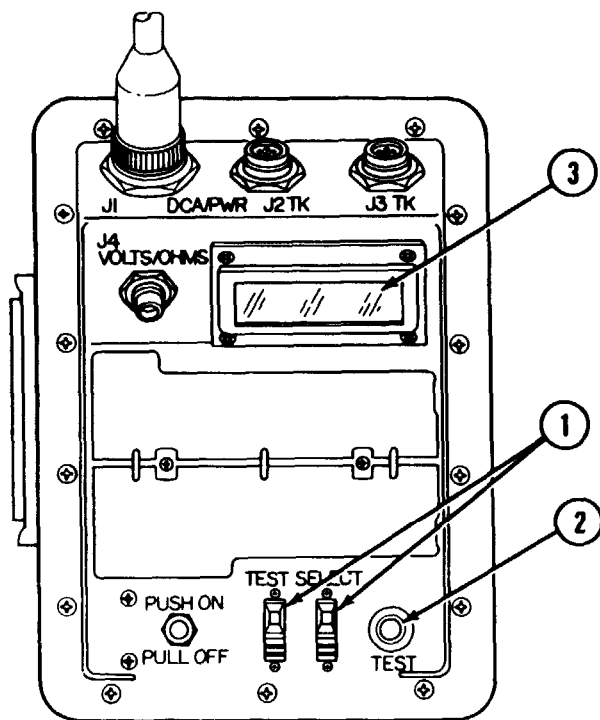
### INITIAL SETUP

#### References:

TM 9-4910-571-12&P

#### Equipment Condition:

STE/ICE hooked up to DCA.  
All electrical accessories turned off.  
Vehicle blocked.



- A Dial test select (1) to 60.
- B Press and release test button (2). Display (3) will indicate VEH.
- C Dial test select (1) to 11.
- D Press and release test button (2). Display (3) will indicate 11.
- E Dial test select (1) to 72.
- F Press test button (2) until display (3) shows CAL. Release test button (2).
- G Check display (3).
  - 1 If display shows between  $\pm 225$ , press and release test button.
  - 2 If display shows less than  $-225$  or more than  $+ 225$ , refer to TM 9-4910-571-12&P.
- H Crank engine when display (3) reads GO.
- I Stop cranking engine when display (3) reads OFF.
- J Check display (3).

Test No. 72 passes if display shows 875-1680 amps.
- K Return to troubleshooting.

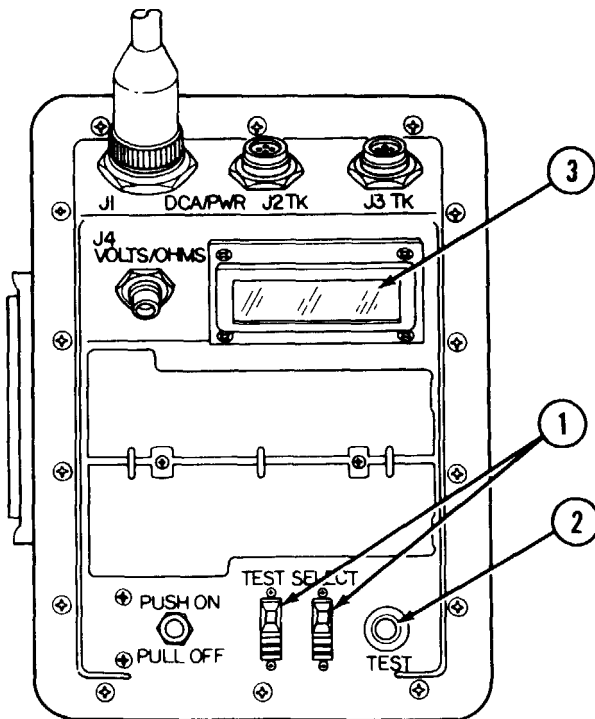
## STE/ICE TEST NO. 73 BATTERY INTERNAL RESISTANCE

**INITIAL SETUP**References:

TM 9-4910-571-12&amp;P

Equipment Condition:

STE/ICE hooked Up to DCA.  
 All electrical accessories turned off.  
 Vehicle blocked.



- A Dial test select (1) to 60.
- B Press and release test button (2). Display (3) will indicate VEH.
- C Dial test select (1) to 11.
- D Press and release test button (2). Display (3) will indicate 11.
- E Dial test select (1) to 73.
- F Press test button (2) until display (3) shows CAL. Release test button (2).
- G Check display (3).
  - 1 If display shows between  $\pm 225$ , press and release test button.
  - 2 If display shows less than  $- 225$  or more than  $+ 225$ , refer to TM 9-4910-571-12&P.
- H Crank engine when display (3) reads GO.
- I Stop cranking engine when display (3) reads OFF.
- J Check display (3).

**NOTE**

Display reading is given in milliohms.

Test No. 73 passes if display shows 13 milliohms or less.

- K Return to troubleshooting.

## STE/ICE TEST NO. 74 STARTER CIRCUIT RESISTANCE

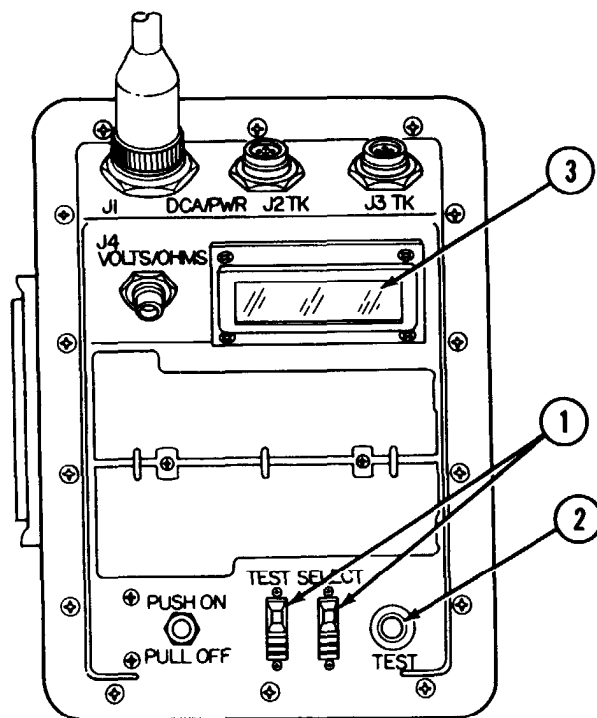
### INITIAL SETUP

#### References:

TM 9-4910-571-12&P

#### Equipment Condition:

STE/ICE hooked Up to DCA.  
All electrical accessories turned off.  
Vehicle blocked.



- A Dial test select (1) to 60.
  - B Press and release test button (2). Display (3) will indicate VEH.
  - C Dial test select (1) to 11.
  - D Press and release test button (2). Display (3) will indicate 11.
  - E Dial test select (1) to 74.
  - F Press test button (2) until display (3) shows CAL. Release test button (2).
  - G Check display (3).
    - 1 If display shows between  $\pm 225$ , press and release test button.
    - 2 If display shows less than  $- 225$  or more than  $+ 225$ , refer to TM 9-4910-571-12&P.
  - H Crank engine when display (3) reads GO.
  - I Stop cranking engine when display (3) reads OFF.
  - J Check display (3).
- NOTE
- Display reading is given in milliohms.
- Test No. 74 passes if display reads 3-25 milliohms.
- K Return to troubleshooting.

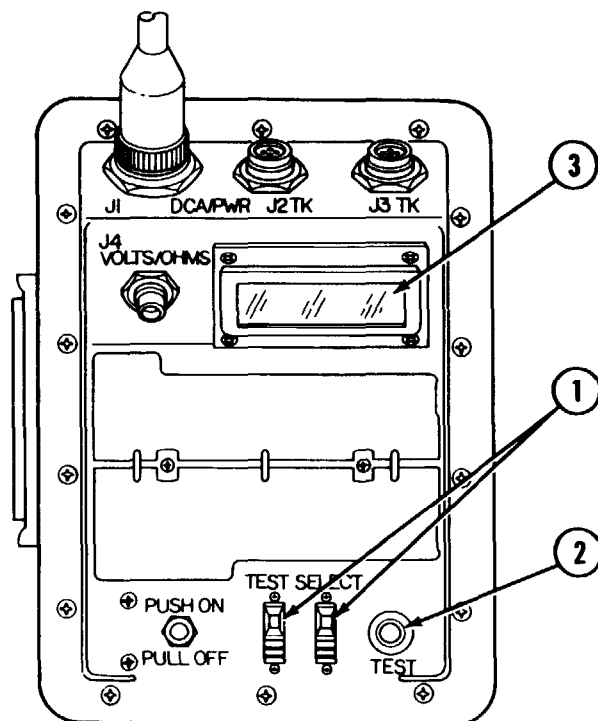
## STE/ICE TEST NO. 75 BATTERY RESISTANCE CHANGE

**INITIAL SETUP**References:

TM 9-4910-571-12&amp;P

Equipment Condition:

STE/ICE hooked Up to DCA.  
 All electrical accessories turned off.  
 Vehicle blocked.



- A Dial test select (1) to 60.
- B Press and release test button (2). Display (3) will indicate VEH.
- C Dial test select (1) to 11.
- D Press and release test button (2). Display (3) will indicate 11.
- E Dial test select (1) to 75.
- F Press test button (2) until display (3) shows CAL. Release test button (2).
- G Check display (3).

- 1 If display shows between  $\pm 225$ , press and release test button.
- 2 If display shows less than  $- 225$  or more than  $+225$ , refer to TM 9-4910-571-12&P.

- H Crank engine when display (3) reads GO.
- I Stop cranking engine when display (3) reads OFF.
- J Check display (3).

**NOTE**

Display reading is given in milliohms/second.

Test No. 75 passes if display reads 50 milliohms/second or less.

- K Return to troubleshooting.

## STE/ICE TEST NO. 80 BATTERY CURRENT (CHARGING)

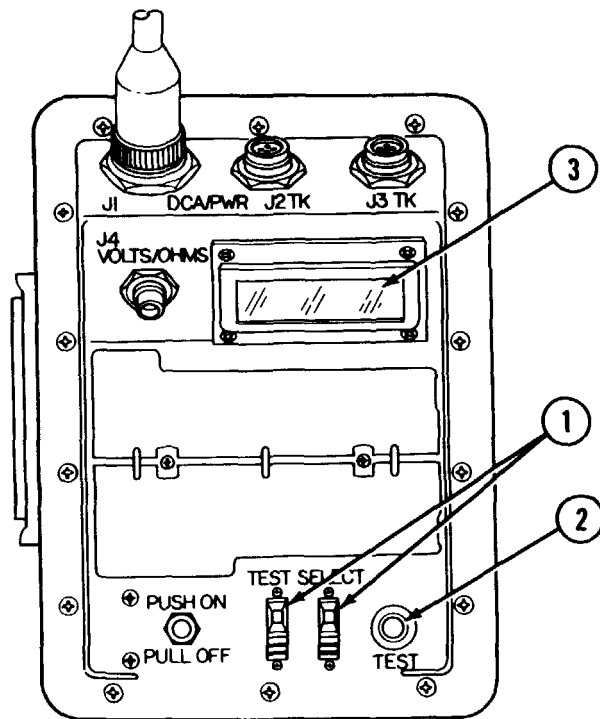
### INITIAL SETUP

#### References:

TM 9-2350-267-10  
TM 9-4910-571-12&P

#### Equipment Condition:

STE/ICE hooked up to DCA.  
Vehicle blocked.



- A Dial test select (1) to 80.
- B Press test button (2) until display (3) shows CAL. Release test button.
  - 1 If display (3) shows between  $\pm 225$ , press and release test button (2).
  - 2 If display (3) shows less than  $- 225$  or more than  $+ 225$ , refer to TM 9-4910-571-12&P.
- C Dial test select (1) to 02.
- D Press and release test button (2).
- E Wait for display (3) to show PASS.
- F Dial test select (1) to 80.
- G Press and release test button (2).
- H Start engine. Refer to TM 9-2350-267-10.
- I Check display (3).
  - Test No. 80 passes if display (3) shows 8-100 amps.
- J Stop engine. See TM 9-2350-267-10.
- K Return to troubleshooting.

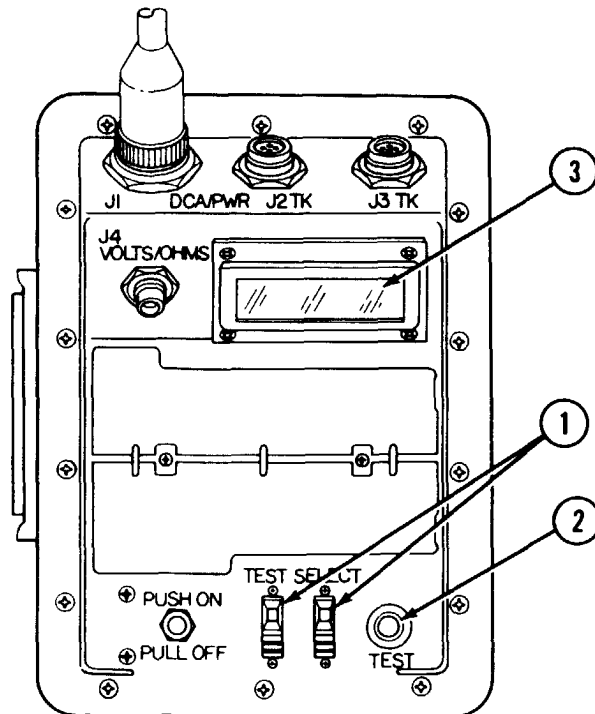
## STE/ICE TEST NO. 82 ALTERNATOR OUTPUT VOLTAGE (DC)

**INITIAL SETUP**References:

TM 9-2350-267-10

Equipment Condition:

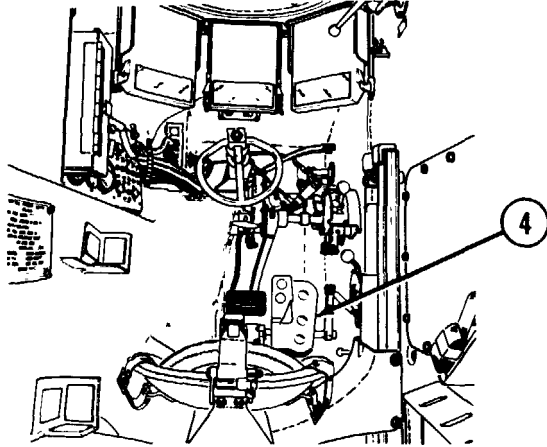
STE/ICE hooked up to DCA.  
Vehicle blocked.

**NOTE**

Test must be conducted with fully charged batteries.

- A Dial test select (1) to 60.
- B Press and release test button (2). Display (3) will indicate VEH.
- C Dial test select (1) to 11.
- D Press and release test button (2). Display (3) will indicate 11.
- E Dial test select (1) to 01.
- F Press and release test button (2).
- G Wait for display (3) to read PASS.
- H Dial test select (1) to 82.
- I Start engine. See TM 9-23560-267-10.
- J Press and release test button (2).
- K Turn on service drive lights. See TM 9-2350-267-10.

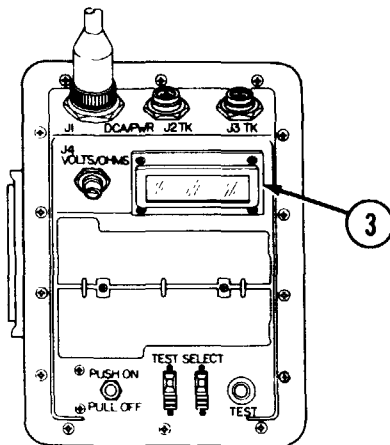
## STE/ICE TEST NO. 82 ALTERNATOR OUTPUT VOLTAGE (DC) (CONTINUED)



### NOTE

Two different numbers will flash on display.

- L Depress accelerator (4) until flashing display (3) shows 1000 to 1200 rpm.



- M Check display (3).

- 1 Test No. 82 passes if display (3) shows between 27.5-28.5 VDC.
- 2 If display (3) shows 0 volts, check vehicle electrical connections and repeat test.

- N Turn off service drive lights. See TM 9-2350-267-10.

- O Stop engine. See TM 9-2350-267-10.

- P Return to troubleshooting.

**STE/ICE TEST NO. 83 ALTERNATOR DIAGNOSTIC (FIELD) VOLTAGE**

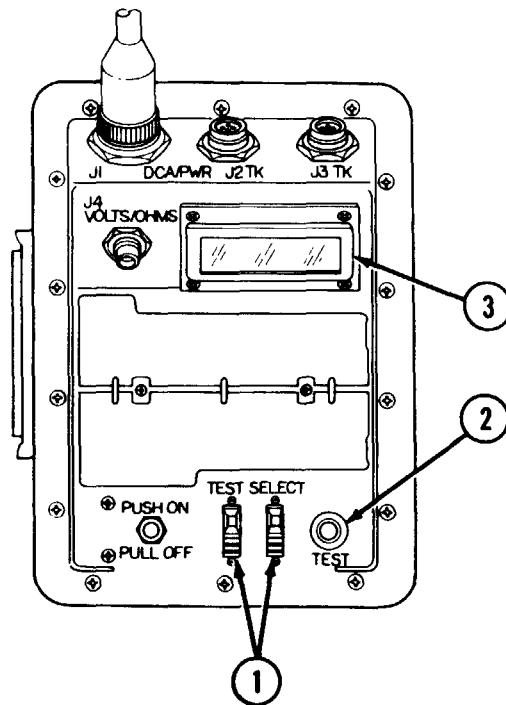
**INITIAL SETUP**

References:

TM 9-2350-267-10

Equipment Condition:

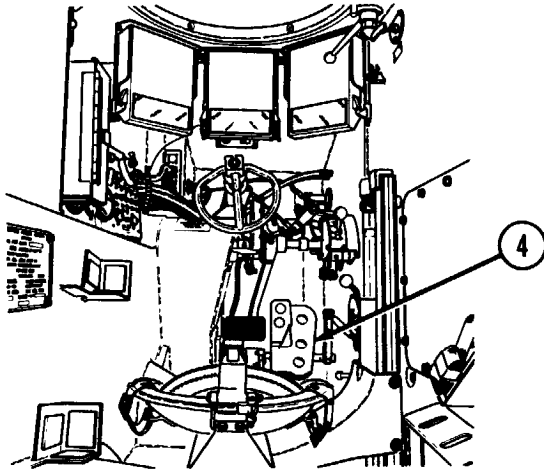
STE/ICE hooked up to DCA.  
Vehicle blocked.



- A Dial test select (1) to 60.
- B Press and release test button (2). Display (3) will indicate VEH.
- C Dial test select (1) to 11.
- D Press and release test button (2). Display (3) will indicate 11.
- E Dial test select (1) to 01.
- F Press and release test button (2).
- G Wait for display (3) to read PASS.
- H Dial test select (1) to 83.
- I Start engine. See TM 9-23560-267-10.
- J Press and release test button (2).
- K Turn on service drive lights. See TM 9-2350-267-10.



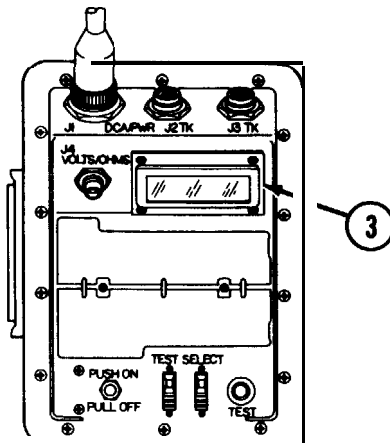
## STE/ICE TEST NO. 83 ALTERNATOR DIAGNOSTIC (FIELD) VOLTAGE (CONTINUED)



### NOTE

Two different numbers will flash on display.

- L Depress accelerator (4) until flashing display (3) shows 1000 to 1200 rpm.



- M Check display (3).

1 Test No. 83 passes if display (3) shows between 6-28 volts.  
2 If display (3) shows 0 volts, check vehicle electrical connections and repeat test.

- N Turn off service drive lights. See TM 9-2350-267-10.

- O Stop engine. See TM 9-2350-267-10.

- P Return to troubleshooting.

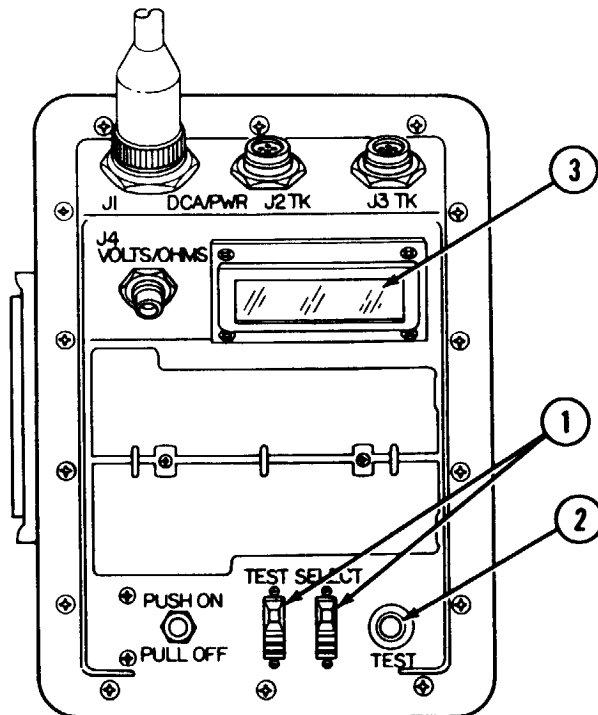
## STE/ICE TEST NO. 84 ALTERNATOR NEGATIVE CABLE VOLTAGE DROP

**INITIAL SETUP**References:

TM 9-2350-267-10

Equipment Condition:

STE/ICE hooked up to DCA.  
Vehicle blocked.

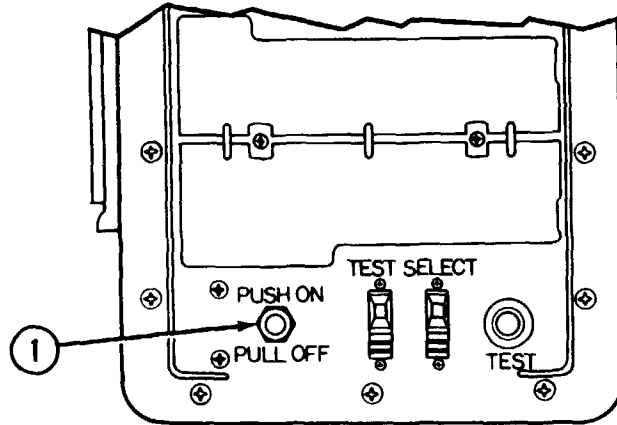


- A Dial test select (1) to 84.
- B Start engine. See TM 9-2350-267-10.
- C Press and release test button (2).
- D Check display (3).

Test No. 84 passes if display (3) shows between .01-.48 VDC.

- E Stop engine. See TM 9-23560-267-10.
- F Return to troubleshooting.

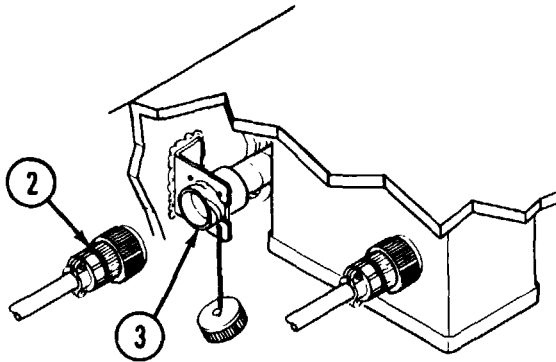
## REMOVE STE/ICE TEST EQUIPMENT FROM DCA



### NOTE

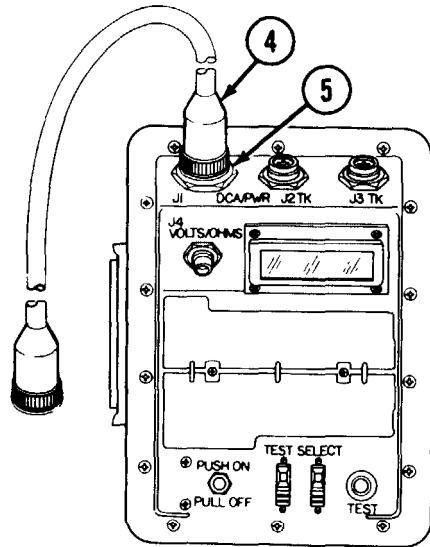
Do the following steps after STE/ICE tests or measurements are completed.

A Pull VTM circuit breaker (1) up to off.

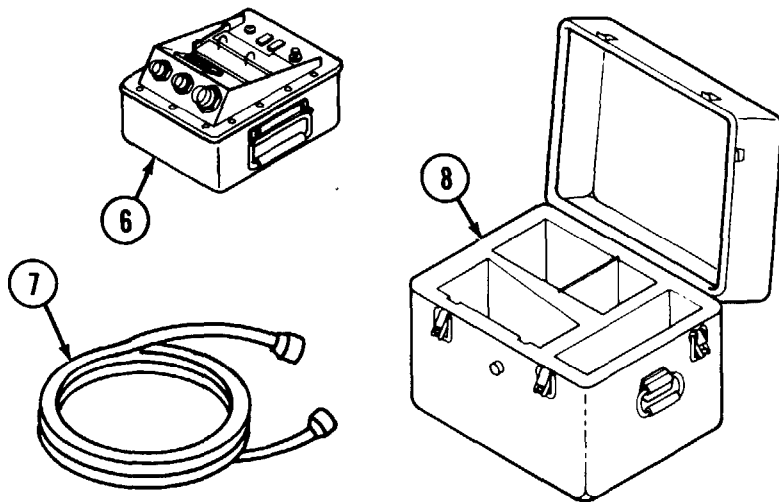


B Remove plug W1P2 (2) from DCA connector (3) in driver's compartment.

### REMOVE STE/ICE TEST EQUIPMENT FROM DCA (CONTINUED)

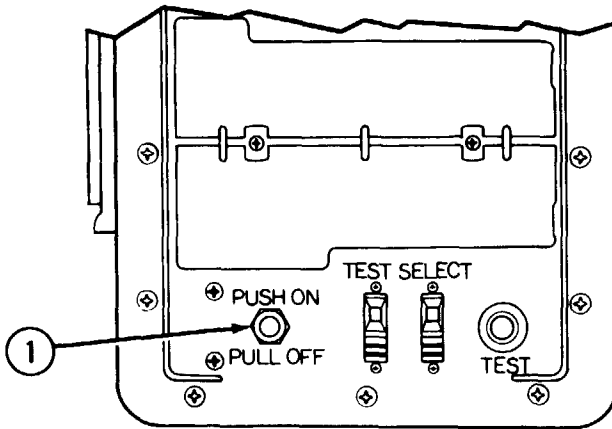


C Remove plug W1P1 (4) from VTM jack J1 (5).



D Stow VTM (6) and cable W1 (7) in transit case (8).

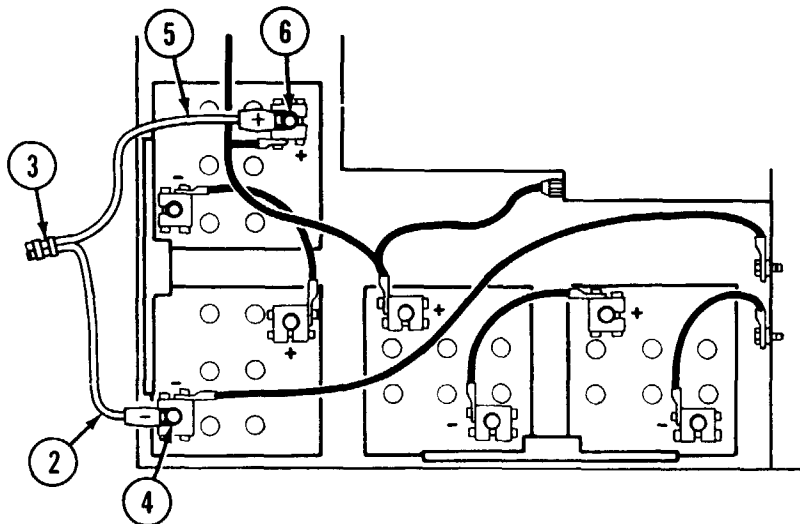
## REMOVE STE/ICE TEST EQUIPMENT FROM BATTERIES



### NOTE

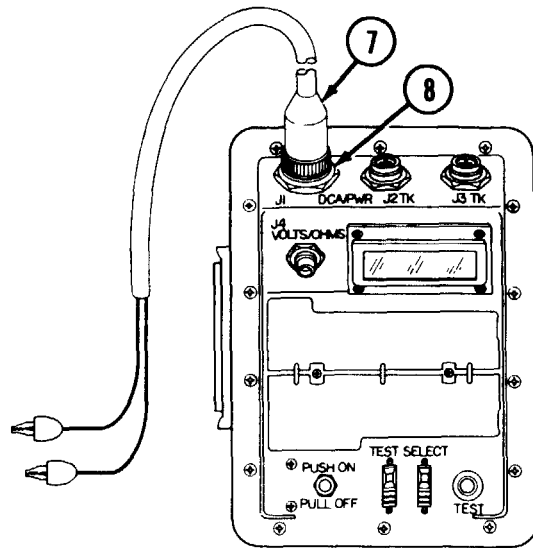
Do the following steps after STE/ICE tests or measurements are completed.

- A Pull VTM circuit breaker (1) up to off.



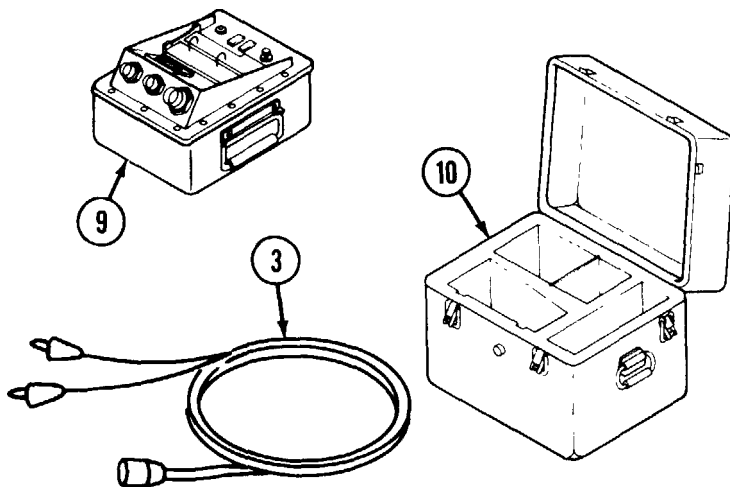
- B Remove black lead (2) of cable W5 (3) from battery negative terminal clamp (4).
- C Remove red lead (5) of cable W5 (3) from battery positive terminal clamp (6).

## REMOVE STE/ICE TEST EQUIPMENT FROM BATTERIES (CONTINUED)



D Close battery access doors.

E Remove plug W5P1 (7) from VTM jack J1 (8).



F Stow VTM (9) and cable W5 (3) in transit case (10).

M992 VEHICLE TEST CARD - VID 11

PRE-TEST INSPECTION	POWERING UP VTM	
	DCA MODE	TK MODE (USED WHEN DCA IS INOPERABLE OR NOT APPLICABLE TO TEST)
1. Oil Level 2. Coolant Level 3. Fuel Level 4. Battery Electrolyte Level	1. Connect DCA Cable W1 to VTM Fig 1. 2. Connect DCA CABLE W 1 to Vehicle DCA Connector Fig 2. 3. Perform Confidence Test 66/99. 4. Enter vehicle VID Number using Test 60.	1. Connect VTM to Cable W5 Fig 3. 2. Connect Cable W5 to Batteries Fig 4. 3. Perform Confidence Test 66/99. 4. Enter vehicle VID Number 11 using Test 60. (See Note.)

Be sure to keep a log on all performance parameters. This will be your best indication of system deterioration to failure  
 NOTE: When using TK mode, remove DCA Transducers as required to install STE-ICE Kit Transducers.

MEASUREMENT NAME	DCA VTM TEST NOS.	VTM OFFSET LIMITS	OPERATING CONDITION	TK VTM TEST NOS.	SPECIAL TK CONNECTION REQUIRED	LIMITS		UNITS
						MIN	MAX	
Battery Voltage	67	—	Engine Off	67	Fig 4	22	—	Volts
Current First Peak	72	+ 22.5	Crank on Go	72	Fig 4	875	1680	Amps
Vehicle Gage Oil Pressure	—	—	Idle	50	Fig 5	5	—	PSI
Charging Voltage	01, 67	—	Lights & Acc on 1000-1200 RPM	01, 67	Fig 5	26.5	28.5	Volts
Vehicle Gage Cool Temp	—	—	Warm Engine	—	—	170	185	°F
Vehicle Gage Oil Pressure	—	—	At 1000 RPM	01, 50	Fig 5	30	50	PSI
Engine RPM Average	10	—	Idle	10	Fig 5	550	600	RPM
Engine RPM Average	10	—	Governor	10	Fig 5	2350	2500	RPM
Power	13	—	Warm Engine	13	Fig 5	60*	—	%
Compression Unbalance	14	—	Warm Engine	14	—	—	10	%
Cranking RPM	10	—	Cranking	10	Fig 5	100	—	RPM
Cranking Voltage	67	—	Cranking	67	Fig 4	18	—	Volts
Cranking Current	71	± 225	Cranking	90	Fig 4	- 350	-550	Amps
Battery Pack Internal Resistance	73	± 225	Crank on Go	73	Fig 4	—	13	Milliohms
Starter Circuit Resistance	74	± 225	Crank on Go	74	Fig 4	3	25	Milliohms
Battery Pack Resistance Change	75	± 225	Crank on Go	75	Fig 4	—	50	Milliohms/sec

\* Typical power % for an engine with a turbocharger and fuel limiting device is 68. If power % falls below 60, investigate further.

### M992 VEHICLE TEST CARD — VID 11 ADDITIONAL TEST CONNECTIONS

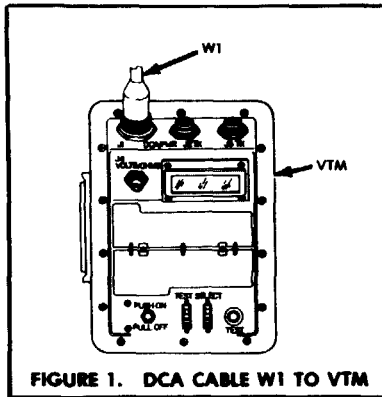


FIGURE 1. DCA CABLE W1 TO VTM

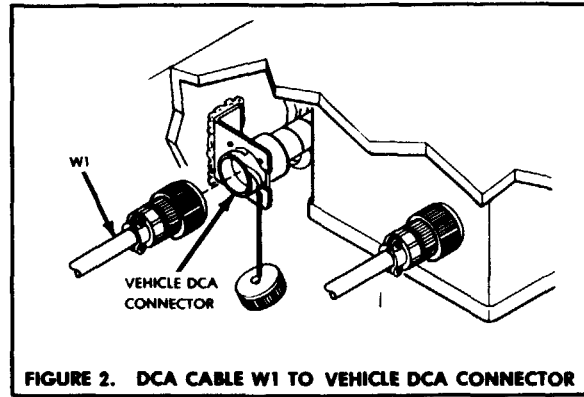


FIGURE 2. DCA CABLE W1 TO VEHICLE DCA CONNECTOR

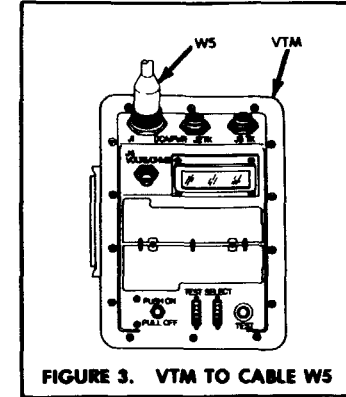
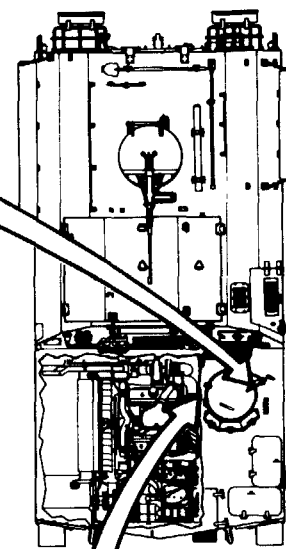


FIGURE 3. VTM TO CABLE W5

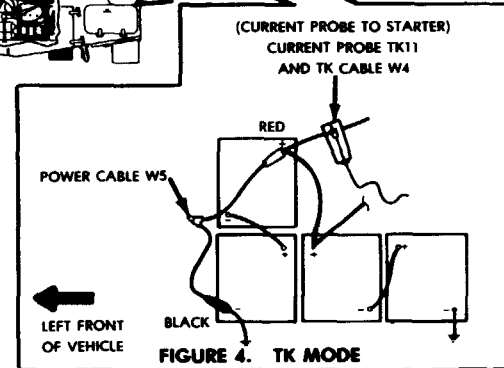
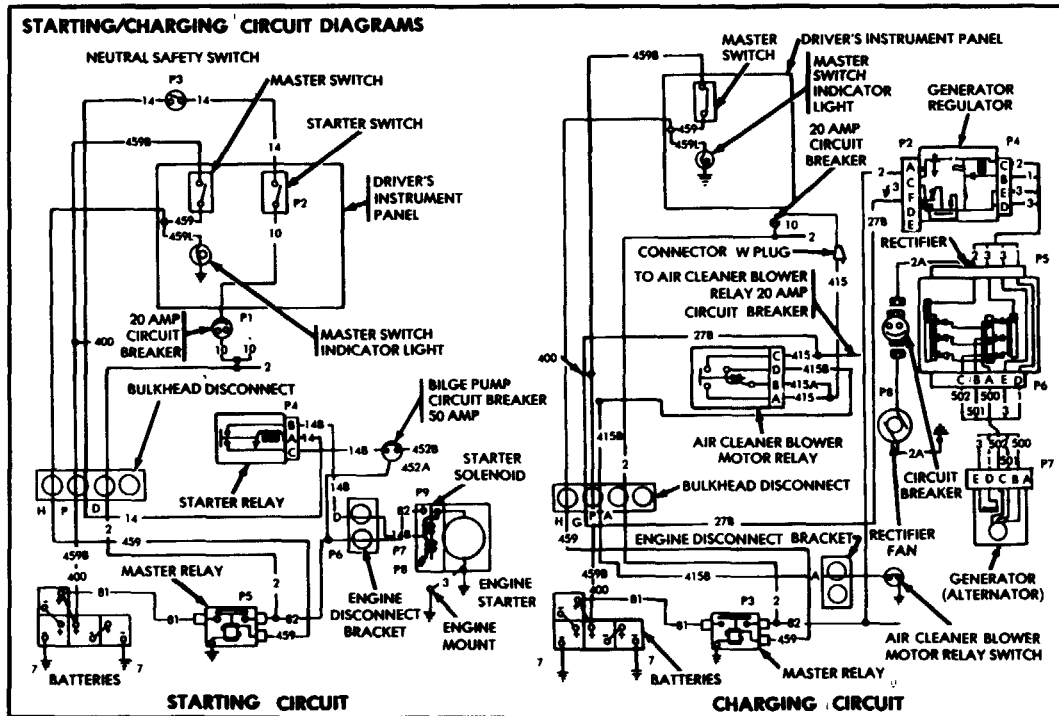


FIGURE 4. TK MODE

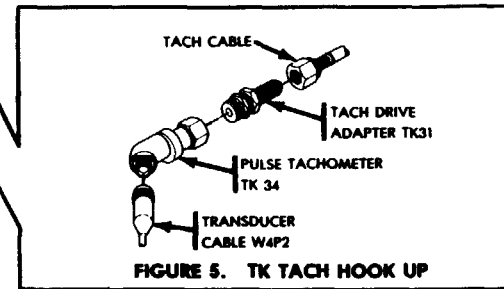


FIGURE 5. TK TACH HOOK UP

Test limits given are advisory only and are not necessarily the same as vehicle TM's specifications. If test limits are different, use vehicle TM's specifications.



## Section V TROUBLESHOOTING

### GENERAL

This section contains troubleshooting, testing and repair information to fix the M992 vehicle. Make sure the problem is real. Be sure electrical or hydraulic power is ON when it is needed. Use the Quick Guide to Troubleshooting (p 2-51) and the Troubleshooting Charts (p 2-61) by following the instructions below.

#### WARNING

Remove all jewelry and wristwatches before working on electrical circuits.

#### NOTE

Proper operation of electrical components requires proper grounding. In all troubleshooting procedures of components which depend on screws or physical contact for their electrical ground, use jumper wire connected between the component and the hull to check component operation. If component then operates, a faulty ground is indicated. Clean ground contact surfaces and tighten screws, or repair/replace ground wires found to be defective.

#### NOTE

If the problem is not listed or if you are unable to correct it, notify Support Maintenance.

### ELECTRICAL CHECKS AND TESTS

- A TM 9-4910-571-12&P provides instructions for operation and use of Simplified Test Equipment/Internal Combustion Engines (STE/ICE) during vehicle testing.
- B A Vehicle Test Card for use with STE/ICE is located on 2-48.47.
- C Procedures for performing STE/ICE tests referenced in the troubleshooting can be found in Section IV of this chapter.

**HOW TO USE THIS SECTION**

- A** Look in quick guide to troubleshooting and find the name of the item that doesn't work.
- B** Find the problem with the item.
- C** Find the solution to the problem.
- D** Turn to the page referenced.
- or
- E** Do the maintenance procedure given.
- F** Locate page in troubleshooting section, find item and problem.
- G** Follow steps to fix the item.

QUICK GUIDE TO TROUBLESHOOTING

ITEM	PROBLEM	SOLUTION OR REFERENCE
<p><b>A</b> → ENGINE</p>	<p>ENGINE CRANKS SLOWLY.</p> <p>BATTERY indicator is in red. Lights and instruments don't operate, and there is no ignition.</p> <p>Lights dim while cranking.</p>	<p>See page 2-62 ← <b>C</b> <b>D</b></p> <p>See page 2-62</p>
<p><b>B</b> → ENGINE DOESN'T CRANK.</p>	<p>Master switch indicator light is lit. Instruments and lights don't operate.</p> <p>Master switch indicator light isn't lit. Instruments and lights operate.</p> <p>All electrical accessories operate.</p>	<p>See page 2-64</p> <p>See page 2-64</p> <p>See page 2-68</p>
<p><b>F</b> → ENGINE</p>	<p>Starter spins but doesn't turn engine.</p>	<p>Replace starter ← <b>E</b></p>
<p><b>G</b> → <b>START HERE</b></p>	<p><b>ENGINE</b> does not crank. BATTERY indicator is in red. Electrical circuits are not operating.</p> <p>1 Check batteries with tester and charge or replace batteries (p 2-16) as required. (TM 9-6140-200-14).</p> <p>2 Troubleshoot battery power circuit.</p>	

**QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)**

item	Problem	Solution or Reference
ENGINE	<p>ENGINE CRANKS SLOWLY</p> <p>BATTERY indicator is in red Electrical circuits not operating.</p> <p>Lights dim while cranking.</p> <p>ENGINE DOESN'T CRANK</p> <p>MASTER switch indicator light is ON. Instruments and lights don't operate.</p> <p>MASTER switch indicator light isn't ON. Instruments and lights don't operate.</p> <p>MASTER switch indicator light isn't ON. Instruments and lights operate.</p> <p>All electrical accessories operate.</p> <p>Starter spins but doesn't turn engine.</p> <p>ENGINE CRANKS BUT DOESN'T START</p> <p>ENGINE IDLES OVER 650 RPM</p> <p>ENGINE DOESN'T ACCELERATE PROPERLY</p> <p>ENGINE DOESN'T KEEP STEADY SPEED</p> <p>ENGINE DOESN'T DEVELOP FULL POWER</p> <p>Engine runs slowly and idles roughly.</p>	<p>See page 2-61</p> <p>See page 2-61</p> <p>See page 2-63</p> <p>See page 2-63</p> <p>See page 2-63</p> <p>See page 2-66</p> <p>Replace starter</p> <p>See page 2-75</p> <p>See page 2-75</p> <p>See page 2-76</p> <p>See page 2-80</p> <p>See page 2-80</p>

## QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)

Item	Problem	Solution or Reference
ENGINE (cont.)	ENGINE USES TOO MUCH OIL	See page 2-81
	ENGINE USES TOO MUCH FUEL	See page 2-81
	BLUE EXHAUST SMOKE IS PRESENT	Notify Support Maintenance
	BLACK EXHAUST SMOKE IS PRESENT AFTER ENGINE WARM-UP	
	WHITE EXHAUST SMOKE IS PRESENT	See page 2-82
	EXHAUST FUMES ARE PRESENT IN CREW COMPARTMENT	See page 2-83
	Eyes burn and exhaust smell is present.	
	ENGINE HAS LOW OR NO OIL PRESSURE	See page 2-83
	ENGINE OVERHEATS	See page 2-84
TRANSMISSION AND DRIVING CONTROLS	HAND THROTTLE CONTROL DOESN'T MAINTAIN CONSTANT SPEED	Check for loose mounting bolts on hand throttle control rod and accelerator shaft.
	ENGINE DOESN'T INCREASE RPM WHEN ENGINE IS ACCELERATED	Adjust accelerator pedal and hand throttle control rod (p 7-47).
	VEHICLE CREEPS FORWARD IN NEUTRAL	Adjust transmission shift control (p 7-34).
	TRANSMISSION OVERHEATS	
	TRANSMISSION OIL TEMP gage is over/under 270° F. MASTER WARNING light is iii.	See page 2-85

**QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)**

Item	Problem	Solution or Reference
TRANSMISSION AND DRIVING CONTROLS (cont.)	<p>VEHICLE DOESN'T DRIVE</p> <p>Transmission doesn't operate in any shift position.</p> <p>Shift lever is in third gear, but transmission is in first gear.</p>	<p>See page 2-65</p> <p>Adjust transmission shift control linkage (p 7-34)</p>
TRACKS AND SUSPENSION	<p>VEHICLE DOESN'T STEER IN EITHER DIRECTION IN ANY RANGE</p> <p>VEHICLE STEERS IN ONE DIRECTION ONLY</p> <p>VEHICLE BRAKES POORLY</p> <p>Vehicle doesn't stop when braked</p> <p>VEHICLE PULLS TO ONE SIDE WITH STEERING WHEEL IN CENTER POSITION</p> <p>VEHICLE THROWS TRACKS</p> <p>VEHICLE SAGS TO ONE SIDE</p> <p>SUSPENSION SYSTEM IS NOISY DURING OPERATION</p>	<p>See page 2-90</p> <p>See page 2-92</p> <p>See page 2-92</p> <p>See page 2-93</p> <p>See page 2-94</p> <p>Check for correct installation of torsion bars (p 6-17).</p> <p>See page 2-94</p>
BATTERY POWER	<p>BATTERY SUPPLIES NO ELECTRICAL POWER</p> <p>BATTERY indicator is in red. Lights and instruments don't operate, and there is no ignition.</p> <p>ENGINE CRANKS SLOWLY</p>	<p>See page 2-61</p> <p>See page 2-61</p>

## QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)

Item	Problem	Solution or Reference
STARTER MOTOR	STARTER MOTOR DOESN'T OPERATE	See page 2-67
FLAME HEATER	FLAME HEATER DOESN'T OPERATE  Motor and pump assembly doesn't operate.  Fuel solenoid doesn't operate.  Fuel prime pump doesn't operate.  Ignition unit doesn't operate.	See page 2-95  See page 2-95  See page 2-95  See page 2-95
ENGINE MASTER WARNING LIGHT (STEERING SHAFT)	STEERING SHAFT MASTER WARNING LIGHT DOESN'T LIGHT	See page 2-106
	STEERING SHAFT MASTER WARNING LIGHT DOESN'T LIGHT WHEN PRESS-TO-TEST IS PREFORMED	See page 2-106
ENGINE MASTER WARNING LIGHT (PORTABLE INSTRUMENT PANEL)	MASTER WARNING LIGHT DOESN'T LIGHT  MASTER switch is ON and engine is off, but MASTER WARNING light isn't on.  MASTER WARNING LIGHT IS ON  Everything appears normal, but MASTER WARNING light is ON.	See page 2-109  See page 2-109
AIR CLEANER DUST EXHAUSTER MOTOR	MOTOR DOESN'T OPERATE  Engine is running, but dust exhauster motor doesn't operate.	See page 2-113

**QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)**

<b>Item</b>	<b>Problem</b>	<b>Solution or Reference</b>
AIR CLEANER DUST EXHAUSTER MOTOR (cont.)	<p>MOTOR DOESN'T STOP</p> <p>Engine is off and MASTER switch is ON, and motor runs.</p>	<p>See page 2-113</p> <p>See page 2-113</p>
GENERATOR (ALTERNATOR)	<p>ONE BLOWER MOTOR DOESN'T OPERATE</p> <p>CHARGING SYSTEM DOESN'T OPERATE</p> <p>Gage shows no charge with engine running or isn't steady or accurate.</p>	<p>See page 2-113</p> <p>See page 2-119</p> <p>See page 2-119</p>
GAGES	<p>BATTERY IS OVERCHARGING</p> <p>BATTERY gage is in right red.</p> <p>ENGINE COOLANT TEMPERATURE GAGE NEEDLE DOESN'T MOVE OR ISN'T STEADY OR ACCURATE</p> <p>ENGINE LOW LEVEL COOLANT LIGHT DOESN'T LIGHT OR GIVES FALSE INDICATION OF COOLANT LOW LEVEL CONDITIONS</p> <p>ENGINE OIL PRESSURE GAGE NEEDLE DOESN'T MOVE OR ISN'T STEADY OR ACCURATE</p> <p>TRANSMISSION OIL TEMPERATURE GAGE NEEDLE DOESN'T MOVE OR ISN'T STEADY OR ACCURATE</p> <p>TRANSMISSION OIL PRESSURE GAGE NEEDLE DOESN'T MOVE OR ISN'T STEADY OR ACCURATE</p> <p>BATTERY GAGE NEEDLE DOESN'T MOVE OR ISN'T STEADY OR ACCURATE</p>	<p>See page 2-119</p> <p>See page 2-119</p> <p>See page 2-129</p> <p>See page 2-129</p> <p>See page 2-135</p> <p>See page 2-137</p> <p>See page 2-141</p> <p>See page 2-119</p>

**QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)**

<b>Item</b>	<b>Problem</b>	<b>Solution or Reference</b>
GAGES (cont.)	FUEL LEVEL GAGE NEEDLE DOESN'T MOVE	See page 2-143
	FUEL LEVEL GAGE SHOWS LEVEL FOR LOWER TANK BUT NOT FOR UPPER TANK	See page 2-143
	FUEL LEVEL GAGE SHOWS LEVEL FOR UPPER TANK BUT NOT FOR LOWER TANK	See page 2-143
SERVICE HEADLIGHTS, TAILLIGHTS, AND STOPLIGHTS	ALL LIGHTS ARE OUT	See page 2-149
	HEADLIGHTS ARE OUT	See page 2-149
	ONE BEAM ONLY ON HEADLIGHT OPERATES	See page 2-149
	RIGHT OR LEFT HEADLIGHT IS OUT	See page 2-149
	TAILLIGHT IS OUT	See page 2-149
	STOPLIGHT IS OUT	See page 2-149
BLACKOUT MARKERS AND BLACKOUT DRIVE LIGHTS	BLACKOUT MARKER LIGHTS ARE OUT	See page 2-157
	FRONT BLACKOUT MARKERS ARE OUT	See page 2-157
	RIGHT OR LEFT FRONT BLACKOUT MARKER IS OUT	See page 2-157
	REAR BLACKOUT MARKERS ARE OUT	See page 2-157
	RIGHT OR LEFT REAR BLACKOUT MARKER IS OUT	See page 2-157
	BLACKOUT DRIVE LIGHT IS OUT	See page 2-157



QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)

Item	Problem	Solution or Reference
SERVICE BLACKOUT INFRARED HEADLIGHTS	BOTH BEAMS DON'T OPERATE	See page 2-183
	ONE BEAM DOESN'T OPERATE	See page 2-183
	BLACKOUT STOPLIGHT IS OUT	See page 2-183
INSTRUMENT PANEL LIGHTS	ONE OR MORE LIGHTS ARE OUT	See page 2-170
	ALL LIGHTS ARE OUT	See page 2-170
	LIGHTS ARE OUT ON BRIGHT OR DIM	Replace dimmer switch (p 8-38).
PERSONNEL HEATER	PERSONNEL HEATER DOESN'T OPERATE	See page 2-172
PERSONNEL VENTILATION BLOWER	VENTILATION BLOWER DOES NOT OPERATE	See page 2-177
	VENTILATION BLOWER OPERATES, BUT DOES NOT COME ON AUTOMATICALLY IN EXHAUST MODE DURING AFES TEST	See page 2-177
	VENTILATION BLOWER RESET SWITCH DOES NOT RESET SYSTEM AFTER CREW COMPARTMENT TEST	See page 2-177
	AIR CIRCULATION ISN'T SUFFICIENT	See page 2-189
BILGE PUMP	BILGE PUMP DOESN'T OPERATE	See page 2-190
PARKING BRAKE	PARKING BRAKE WARNING LIGHT IS OUT	See page 2-198
LEFT AND RIGHT FUEL TANK	ENGINE MISSES WHEN LOW ON FUEL	See page 2-199
ELECTRICAL FUEL PUMP	See FLAME HEATER DOESN'T OPERATE (p 2-54).	

## QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)

Item	Problem	
WINTERIZATION KIT	COOLANT HEATER DOESN'T OPERATE	See page 2-201
	HEATER BLOWER OPERATES, BUT MOTOR DOESN'T OPERATE	See page 2-201
	HEATER MOTOR OVERHEATS	See page 2-201
CONVEYOR	CONVEYOR CHAIN WILL NOT MOVE	See page 2-208
	CONVEYOR CHAIN JAMMED OR BROKEN	see page 2-208
	CONVEYOR CHAIN CREEPS	See page 2-208
	CONVEYOR MOVES IN ONE DIRECTION ONLY	See page 2-208
UPPER REAR DOOR (BALLISTIC SHIELD)	DOOR DOES NOT GO UP OR DOWN	See page 2-218
	DOOR WILL NOT REMAIN IN OPEN POSITION	See page 2-218
	DOOR RAISES OR LOWERS ROUGHLY	See page 2-218
STACKER	PROJECTILE TRAY DOES NOT MOVE UP OR DOWN	See page 2-228
	PROJECTILE TRAY FAILS TO HOLD	See page 2-228
	PROJECTILE TRAY RAISES AND LOWERS ROUGHLY	See page 2-228
	PROJECTILE TRAY MOVES IN ONE DIRECTION ONLY	See page 2-228
	STACKER CHAIN BROKEN	Replace roller chain (p 12-32).
	STACKER MOVES WITH DIFFICULTY ACROSS CARGO COMPARTMENT	See page 2-239
	WINCH DOES NOT OPERATE	See page 2-240

QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)

Item	Problem	Solution or Reference
STACKER (cont.)	PROJECTILE TRAY WILL NOT SLIDE, OR SLIDES WITH DIFFICULTY	See page 2-241
	PROJECTILE TRAY DOES NOT LOCK IN POSITION	See page 2-241
	PROJECTILE TRAY HAS EXCESSIVE PLAY ON SUPPORT SHAFT	Adjust projectile tray rollers (p 12-38).
PRIMARY HYDRAULIC PUMP	INSUFFICIENT OR NO SYSTEM OIL PRESSURE	See page 2-242
	LOSS OF HYDRAULIC PRESSURE DURING OPERATION	See page 2-242
BACKUP HYDRAULIC PUMP	PUMP DOES NOT OPERATE	See page 2-244
	PUMP OPERATES INTERMITTENTLY	See page 2-244
NBC VENTILATED FACE PIECE SYSTEM	INSUFFICIENT OR NO AIR FLOW AT QUICK-DISCONNECT FITTINGS	See page 2-246
	AIR PURIFIER MOTOR DOES NOT OPERATE	See page 2-246
	M3 HEATER DOES NOT OPERATE	See page 2-246
<b>AUXILIARY POWER UNIT</b>	ENGINE CRANKS BUT FAILS TO START	See page 2-252
	ENGINE OVERHEATING	see page 2-258
	ENGINE STARTS BUT FAILS TO KEEP RUNNING	See page 2-260
	ENGINE HARD TO START	See page 2-261
	ENGINE HARD TO START IN COLD WEATHER	See page 2-261

## QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)

Item	Problem	Solution or Reference
AUXILIARY POWER UNIT (cont.)	ENGINE MISFIRES	See page 2-262
	ENGINE LACKS POWER	See page 2-263
	ENGINE FAILS TO CRANK WHEN STARTING SWITCH IS OPERATED	See page 2-270
APU STARTER/GENERATOR	GENERATOR CHARGING SYSTEM INDICATOR READS IN YELLOW OR RED REGION WITH APU OPERATING AND APU GENERATOR SWITCH ON	See page 2-264
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS (EFFECTIVE FOR VEHICLES 1 THRU 344)	POWER ON LAMP DOES NOT LIGHT WHEN MASTER SWITCH IS ON. All other electrical systems operate.	See page 2-281
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS (EFFECTIVE FOR VEHICLES 345 AND ABOVE)	POWER ON LAMP DOES NOT LIGHT WHEN MASTER POWER SWITCH IS ON. All other electrical systems operate.	See page 2-288
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	FIRE WIRE (F/W) LED REMAINS ON, NO FIRE PRESENT.	See page 2-294
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS (EFFECTIVE FOR VEHICLES 1 THRU 344)	FAULT LAMP REMAINS ON. AUTO LED IS LIT.	See page 2-298

**QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)**

Item	Problem	Solution or Reference
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS (FOR VEHICLES 345 AND ABOVE)	FAULT LAMP REMAINS ON. AUTO LED IS LIT.	See page 2-300
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS (EFFECTIVE FOR VEHICLES 1 THRU 344)	FAULT LAMP REMAINS ON. MANUAL LED IS LIT.	See page 2-302
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS (EFFECTIVE FOR VEHICLES 345 AND ABOVE)	FAULT LAMP REMAINS ON. MANUAL LED IS LIT.	See page 2-304
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	BOTH ENGINE BOTTLES DISCHARGE WHEN MANUAL SWITCH ON ENGINE AFES T/A PANEL IS ACTIVATED.	See page 2-306
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	BOTTLES NOT DISCHARGING WHEN PULLING MANUAL CABLES.	See page 2-306.1
ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	ENGINE AFES MEGOMETER TROUBLESHOOTING PROCEDURES.	See page 2-306.2

## QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)

Item	Problem	Solution or Reference
CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS (EFFECTIVE FOR VEHICLES 1 THRU 344)	POWER ON LAMP DOES NOT LIGHT WHEN MASTER SWITCH IS TURNED ON. All other electrical systems operate.	See page 2-306.9
CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS (EFFECTIVE FOR VEHICLES 345 AND ABOVE)	POWER ON LAMP DOES NOT LIGHT WHEN MASTER SWITCH IS TURNED ON. All other electrical systems operate.	See page 2-306.12
CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	FAULT LAMP REMAINS LIT. FIRE DET. LED'S LIT.	See page 2-305.15
CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	CREW BOTTLES DISCHARGE WITHOUT BEING ACTIVATED.	See page 2-305.17
CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	FIRE EXT. LED'S ARE LIT. FAULT LAMP REMAINS ON.	See page 2-305.18
CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	CREW BOTTLES NOT FULLY DISCHARGING/NOT EXTINGUISHING FIRES.	See page 2-305.22

**QUICK GUIDE TO TROUBLESHOOTING (CONTINUED)**

<b>Item</b>	<b>Problem</b>	<b>Solution or Reference</b>
CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	BOTTLES NOT DISCHARGING WHEN PULLING MANUAL CABLES.	See page 2-306.23
CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM FIRE DETECTION T/A PANEL INDICATORS	CREW AFES MEGOMETER TROUBLESHOOTING PROCEDURES.	See page 2-306.24





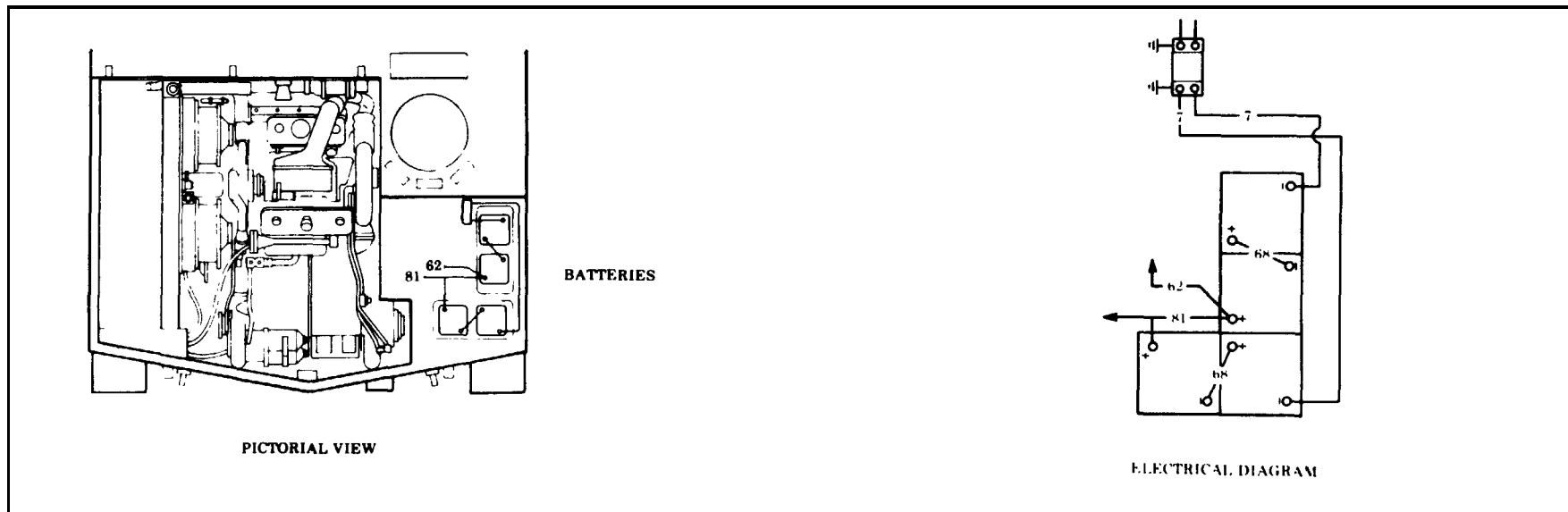
## TROUBLESHOOTING CHARTS

ENGINE	ENGINE CRANKS SLOWLY  BATTERY indicator is in red. Electrical circuits are not operating. Lights dim while cranking.
--------	--



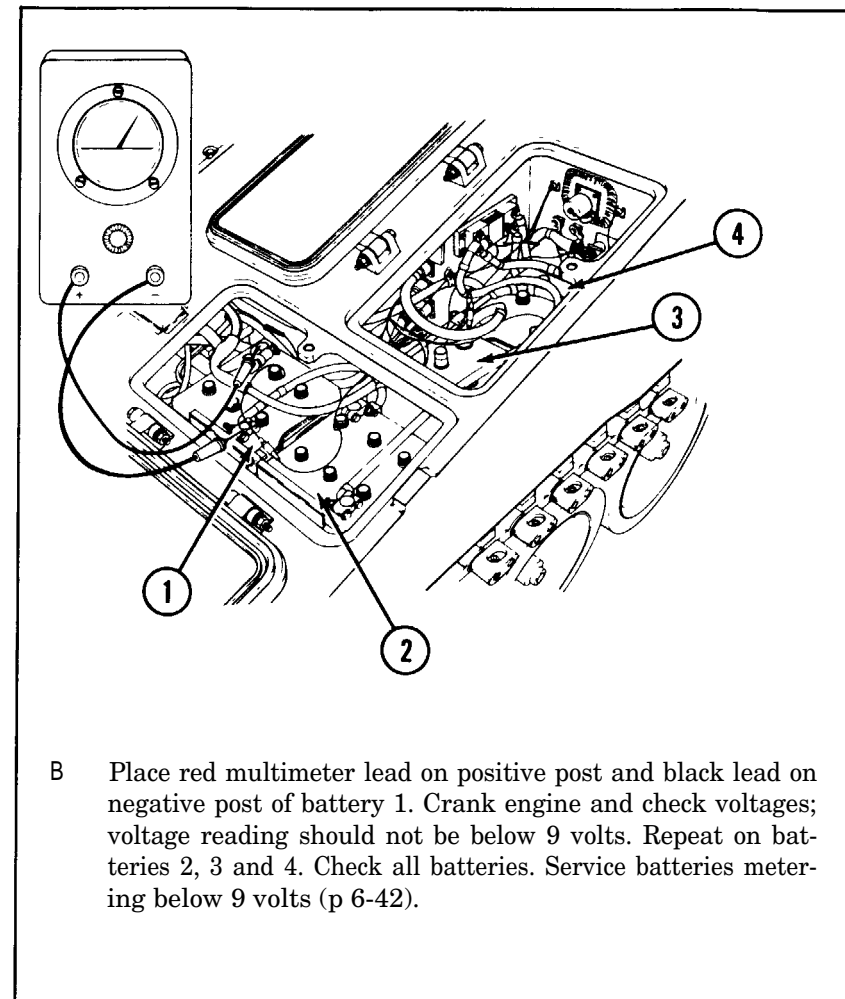
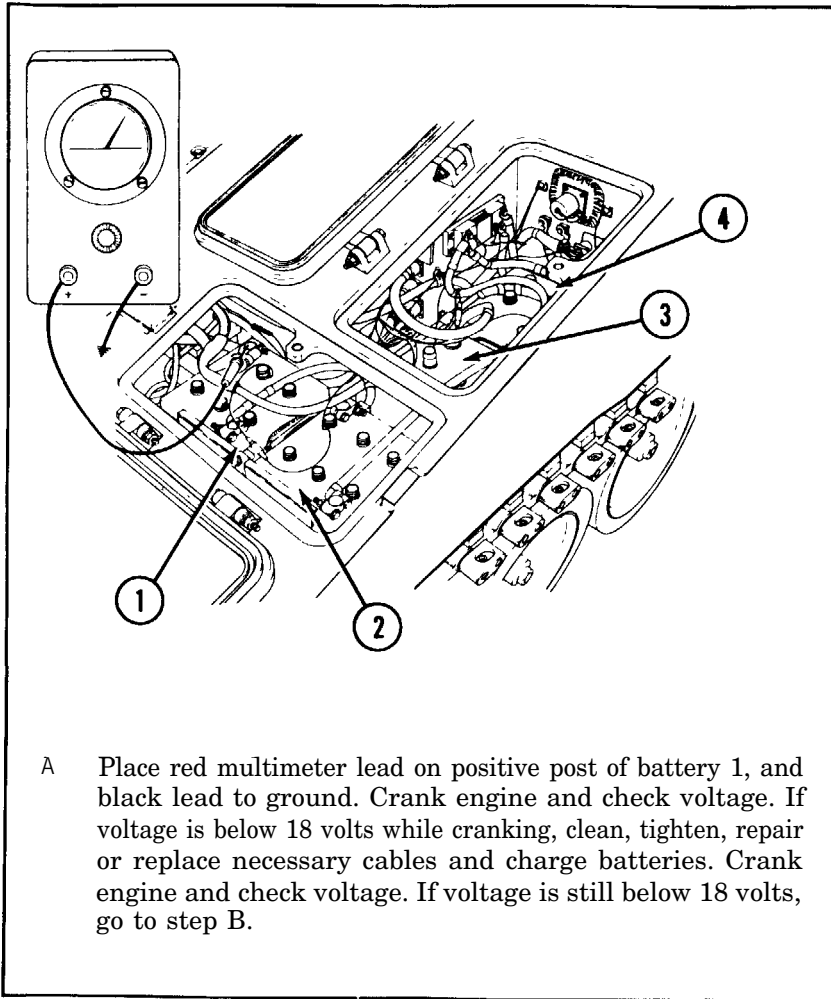
- 1 Run STE/ICE Test No. 67 (cranking) (p 2-48.28). If test fails, go
- 2 Run STE/ICE Test No. 80 (p 2-48.37).
  - a If test passes, go to step 3.
  - b If test fails, replace batteries (p 6-42) and verify no faults.
- 3 Troubleshoot battery power circuit.

### BATTERY POWER CIRCUIT



## NOTE

When using multimeter refer to DA Pam 750-33 for setup of multimeter.



ENGINE

### ENGINE DOESN'T CRANK

Master switch indicator light is on. Instruments and lights don't operate. Do steps A through D.

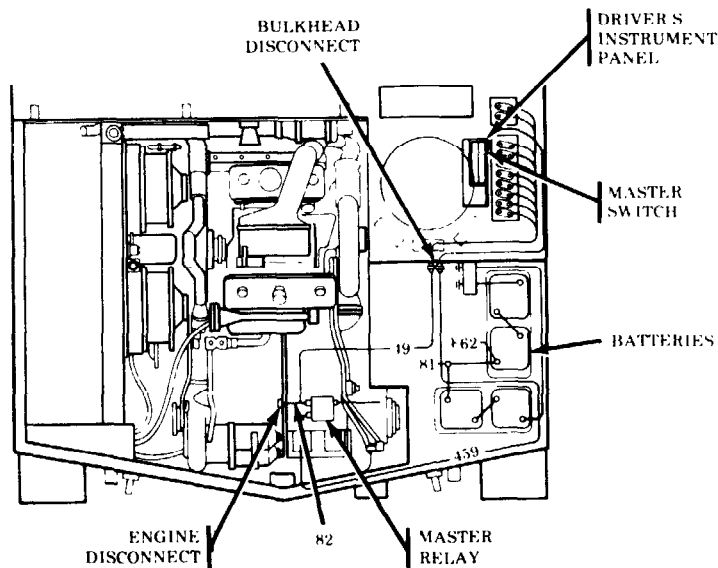
Master switch indicator light isn't on. Instruments and lights don't operate. Do step C.

Master switch indicator light isn't on. Instruments and lights operate. Do step E.

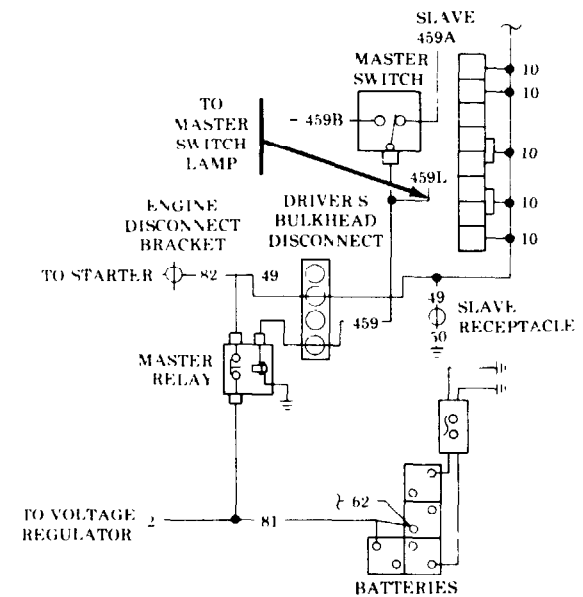
START HERE

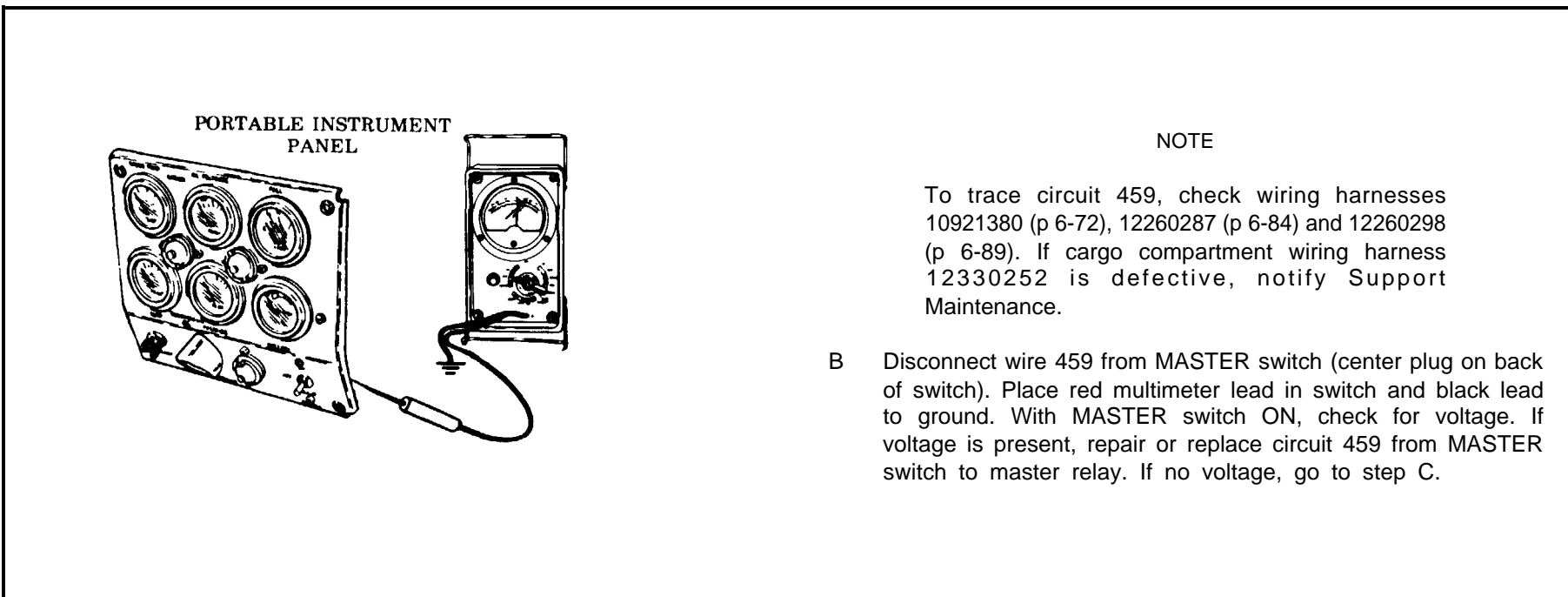
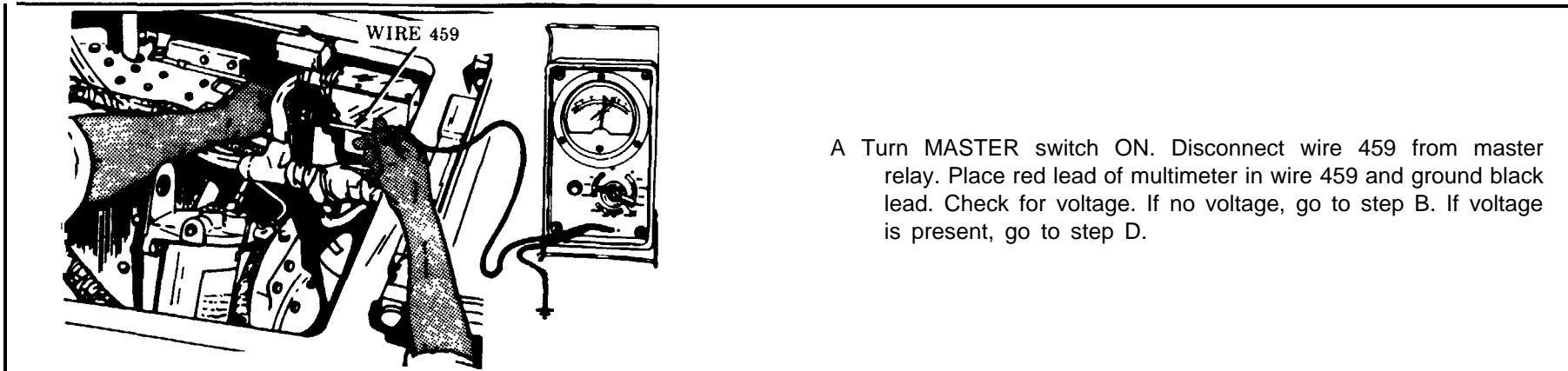
Troubleshoot master relay circuit.

### MASTER RELAY CIRCUIT

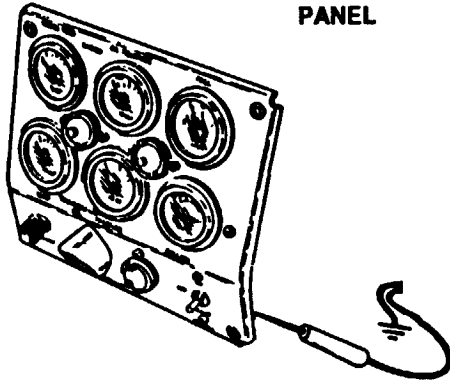


### ELECTRICAL DIAGRAM





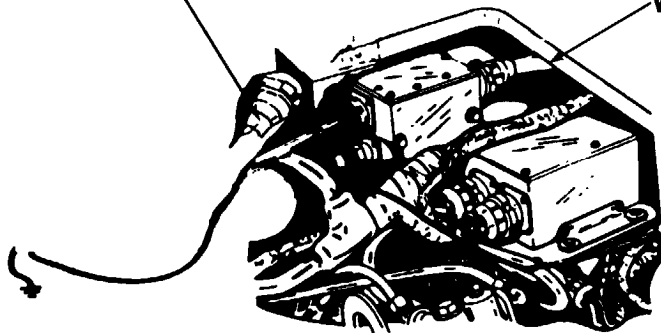
**PORTABLE INSTRUMENT  
PANEL**



C With MASTER switch ON, disconnect wire 459B from MASTER switch (bottom plug). Place red multimeter lead in wire 459B, ground black lead and check for voltage. If voltage is present, replace MASTER switch (p 6-21). If no voltage, repair or replace wire 459B-400.

**WIRE 82**

**WIRE 81**

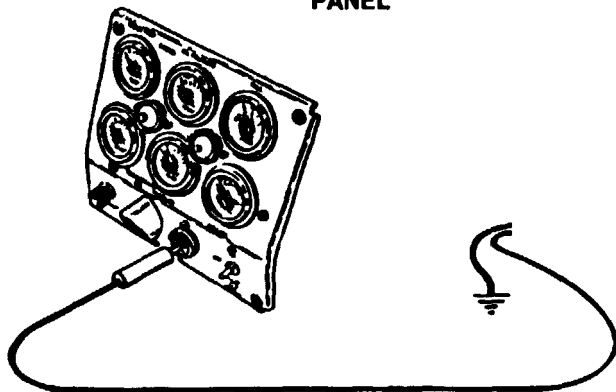


**NOTE**

To trace circuit 459B-400, check wiring harnesses 12268100 (p 6-68), 12260287 (p 6-84) and 12260298 (p 6-89).

D Reconnect all wires and check wire 81 for breaks, cuts and corroded terminals. Replace if necessary (p 6-68). Disconnect wire 82 from master relay. Place red multimeter lead in master relay and ground black lead. Check voltage. If no voltage is present, replace master relay (p 6-45). If voltage is present repair or replace wire 82 (Appx F).

**PORTABLE INSTRUMENT  
PANEL**



- E Remove master switch indicator light from socket. Place red mutimeter lead in center of socket and black lead to ground. Check for voltage. If voltage is present replace light bulb. If no voltage, repair or replace wire 459L (p 6-89).

**ENGINE**

**ENGINE DOESN'T CRANK**

**All electrical accessories operate.**

**START HERE**



a If reading is greater than 550 amps, attempt to rotate engine manually.

- (1) Remove access plate (p 9-25).
- (2) Pull and hold FUEL SHUTOFF handle.
- (3) Using 3/4 in. drive socket and breaker bar placed on bolt of vibration dampener, rotate engine manually.
- (4) If engine does not rotate, notify Support Maintenance. If engine rotates, replace starter (p 6-13) and verify no faults.

b If reading is less than 350 amps, go to step 2.

c If reading is 0, go to step 3.

- 2 Run STE/ICE Test No. 74 (p 2-48.35).
  - a If test fails, replace starter (p 6-13) and verify no faults.
  - b If test passes, go to step 3.
- 3 Troubleshoot starter motor circuit.

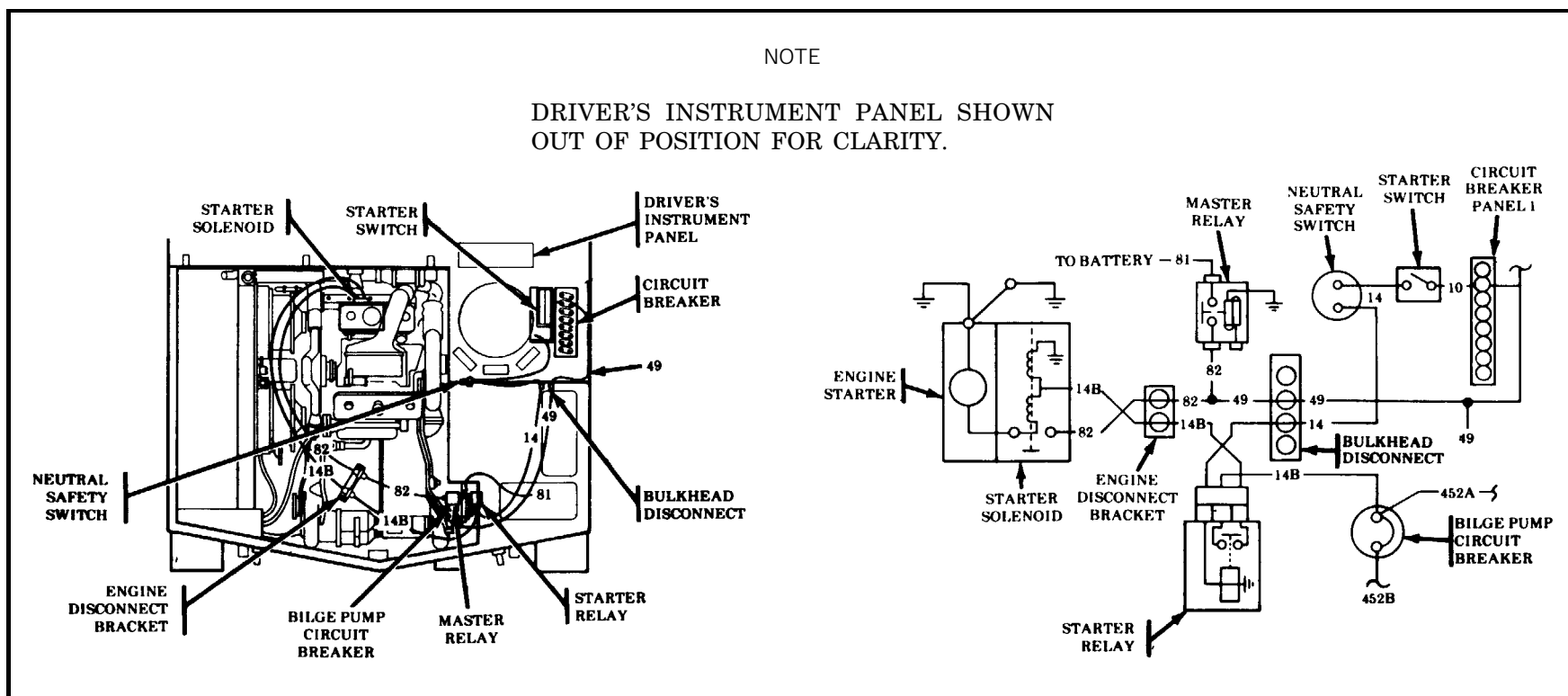
NOTE

Ensure the shift lever is in the neutral position before troubleshooting this circuit.

**STARTER MOTOR CIRCUIT**

NOTE

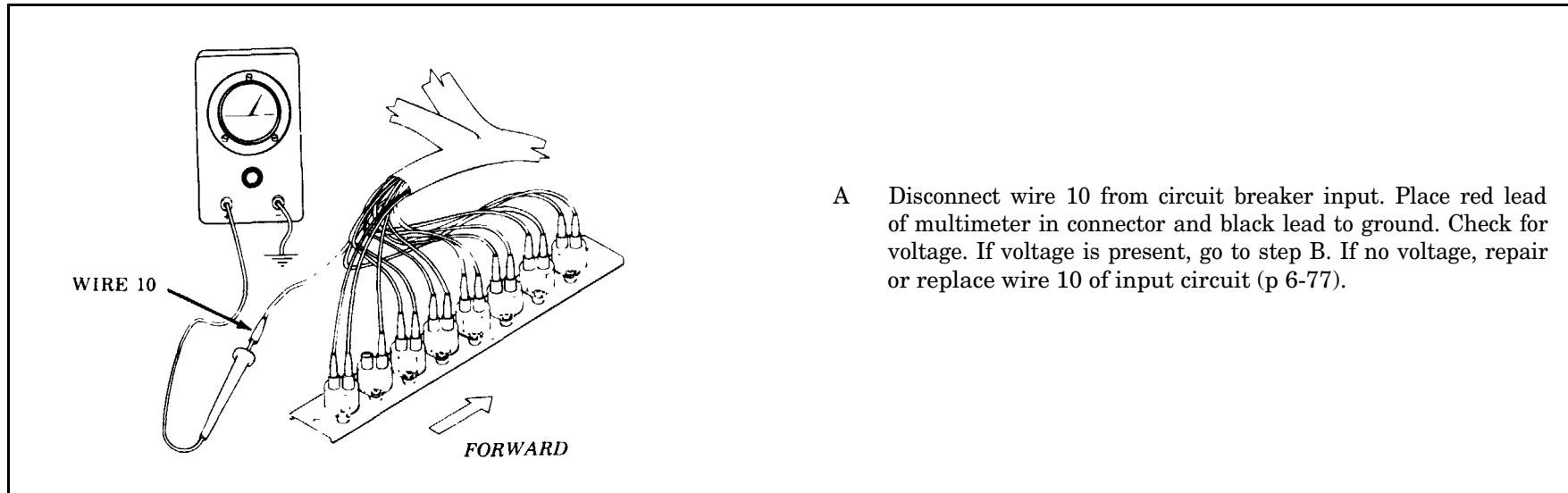
DRIVER'S INSTRUMENT PANEL SHOWN OUT OF POSITION FOR CLARITY.



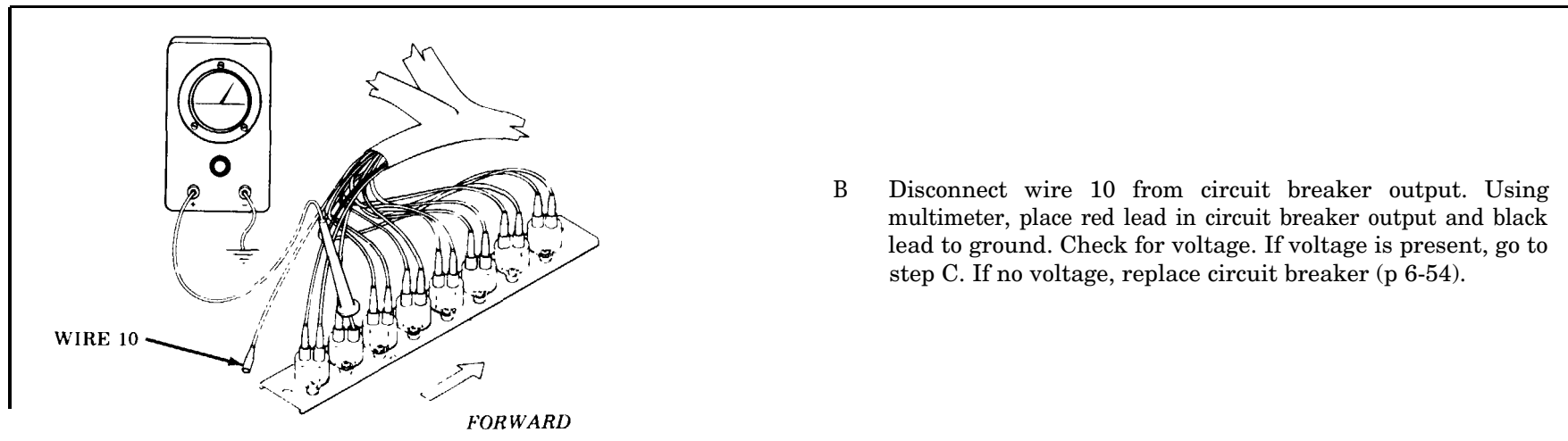
TA312689

## NOTE

Turn Master switch ON, steps A through N.

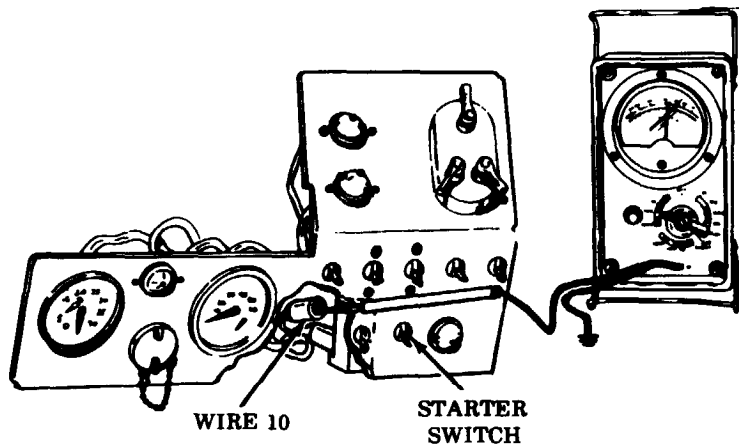


- A Disconnect wire 10 from circuit breaker input. Place red lead of multimeter in connector and black lead to ground. Check for voltage. If voltage is present, go to step B. If no voltage, repair or replace wire 10 of input circuit (p 6-77).

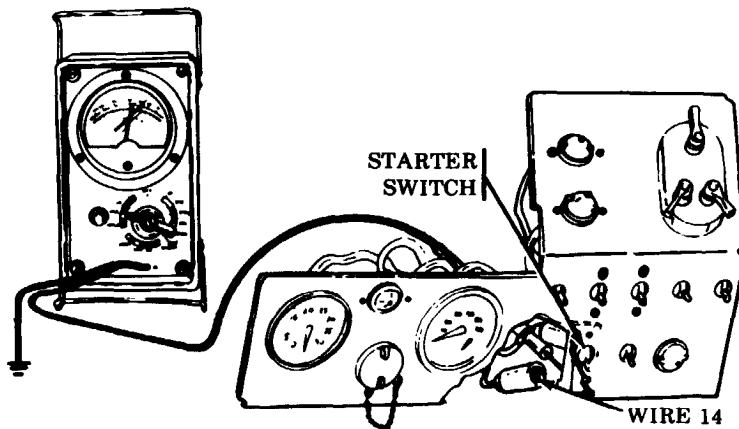


- B Disconnect wire 10 from circuit breaker output. Using multimeter, place red lead in circuit breaker output and black lead to ground. Check for voltage. If voltage is present, go to step C. If no voltage, replace circuit breaker (p 6-54).

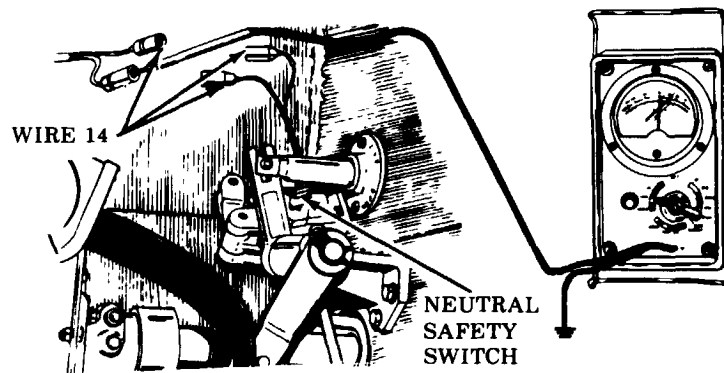




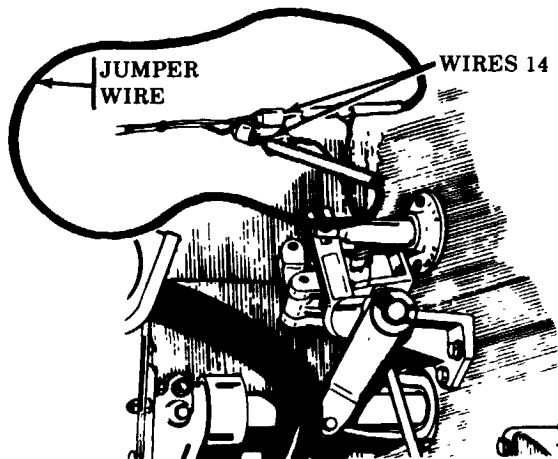
C Disconnect wire 10 from STARTER switch. Using multimeter, place red lead in wire 10. Ground black lead. Check for voltage. If voltage is present, go to step D. If no voltage, replace wire 10 from STARTER switch to circuit breaker (Appx F).



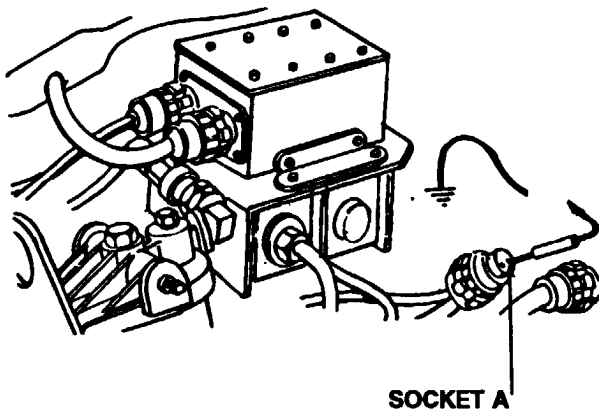
D Disconnect wire 14 at STARTER switch. Using multimeter, place red lead in STARTER switch output and black lead to ground. Push STARTER switch to check for voltage. If voltage is present, go to step E. If voltage is not present, replace STARTER switch (p 6-19).



E Disconnect both wires numbered 14 at neutral safety switch. Place red multimeter lead in cable end of connector and black multimeter lead to ground. Push STARTER switch and check for voltage in each wire. If voltage is present in either wire, go to step F. If no voltage, repair or replace wire 14 from neutral safety switch to STARTER switch (p 6-84).



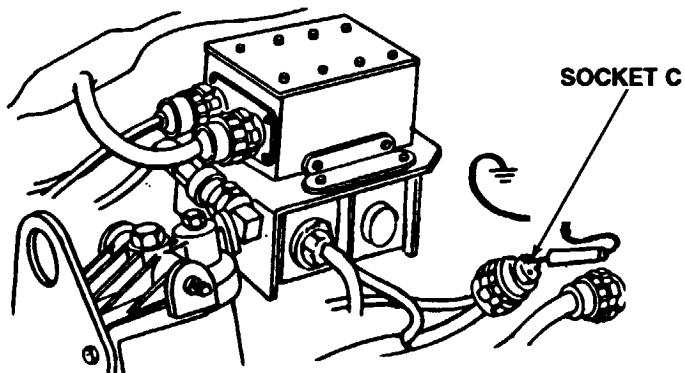
F Using jumper wire, connect wires 14 together. Push STARTER switch. If engine cranks, adjust or replace neutral safety switch (p 6-16). Reconnect all wires. If engine doesn't crank, go to step G.



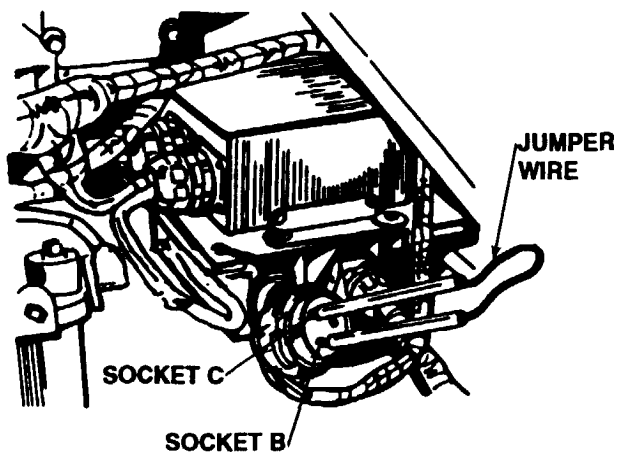
#### NOTE

To trace circuit 14, check wiring harness 12268100 (p 6-68) and 12260287 (p 6-84).

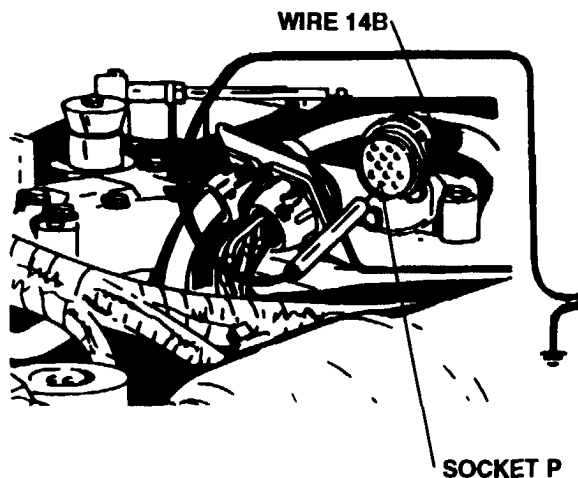
- G Disconnect electrical connector at starter relay. Using multimeter, place red lead in socket A and ground blackhead. Place shift lever in neutral. Push STARTER switch and observe voltage. If no voltage is present, repair or replace wire 14 from starter relay to neutral safety switch. If voltage is present, go to step H.



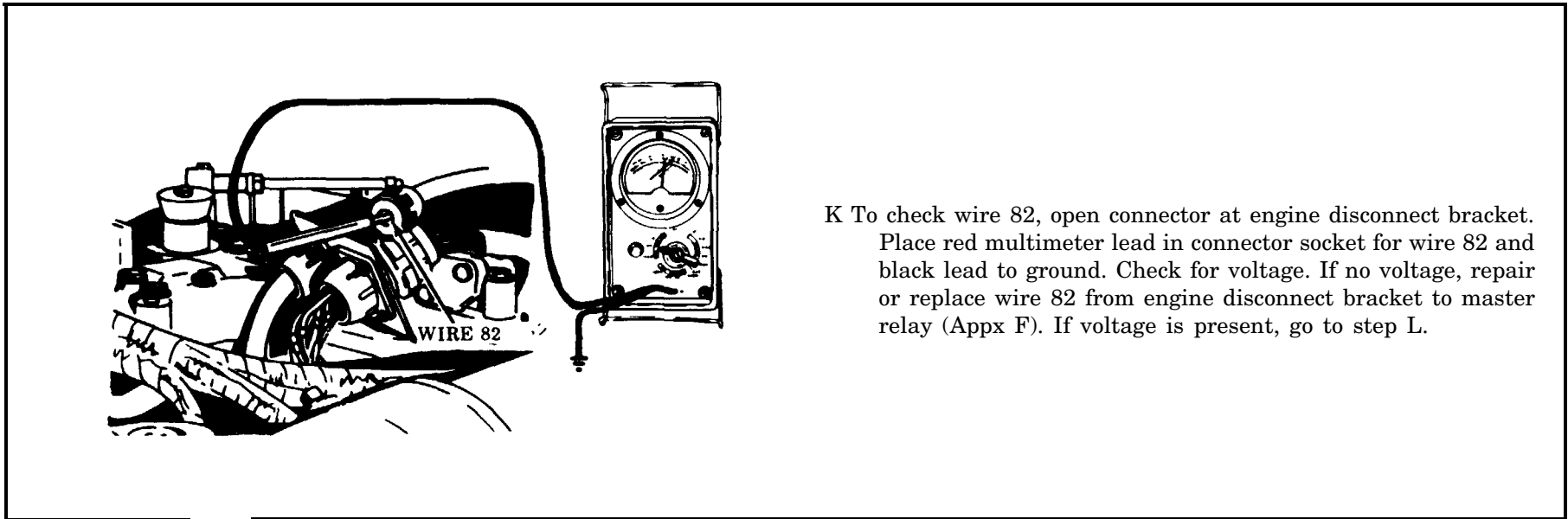
- H Place red multimeter lead in socket C and ground black lead. Check for voltage. If no voltage, repair or replace wire 14B from starter relay to bilge pump circuit breaker (p 6-68). If voltage is present, go to step I.



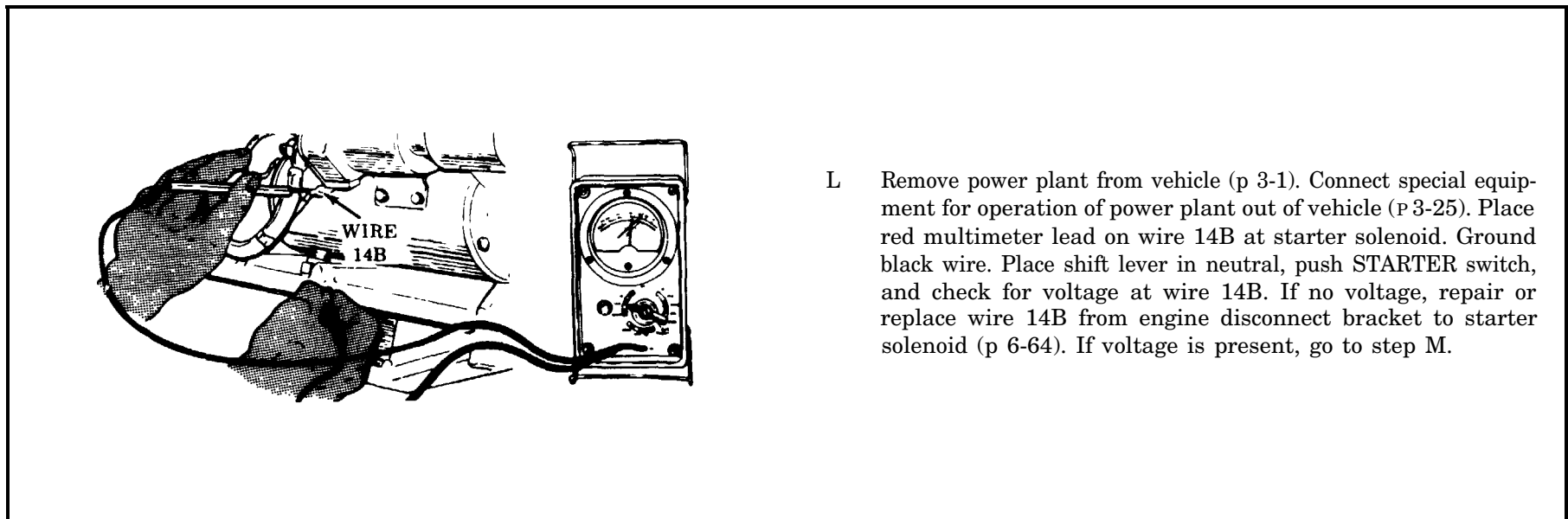
- I With starter relay connector still connected use jumper wire between socket C and socket B. If engine cranks, replace starter relay (p 6-5). If engine fails to crank, reconnect relay connector and go to step J.



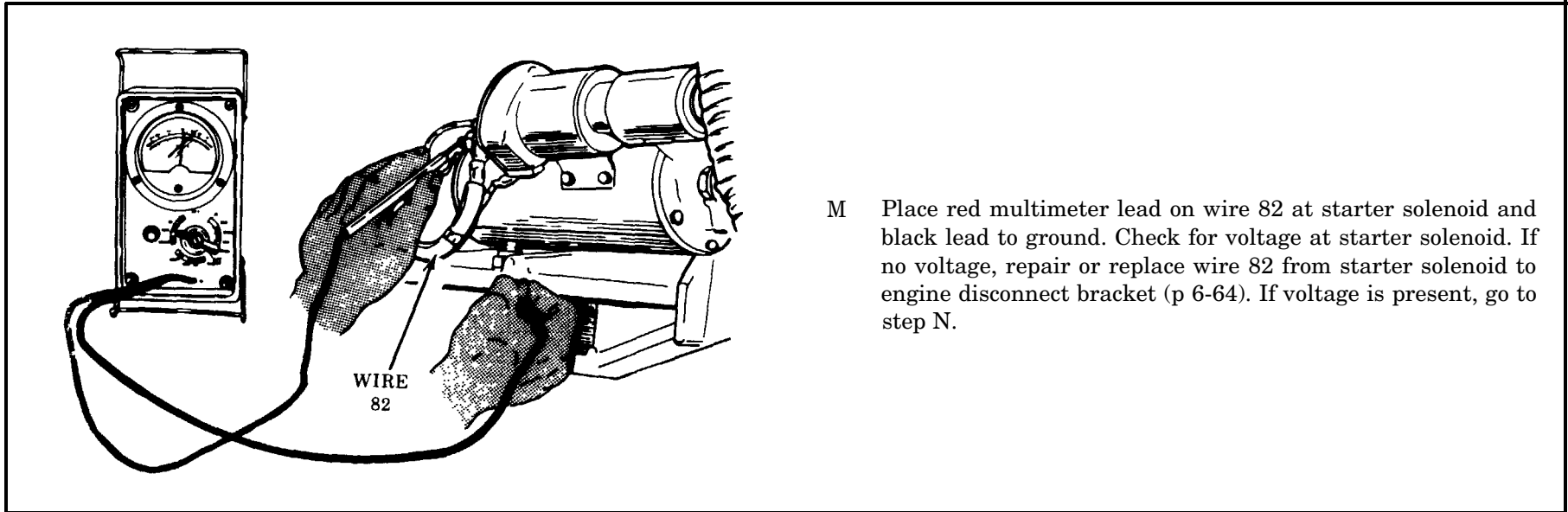
- J To check circuit 14B, open connector at engine disconnect bracket. Using multimeter, place red lead in socket P and black lead to ground. Push STARTER switch and check for voltage. If no voltage, repair or replace wire 14B from engine disconnect bracket to starter relay (p 6-68). If voltage is present, reconnect wire 14B and go to Step K.



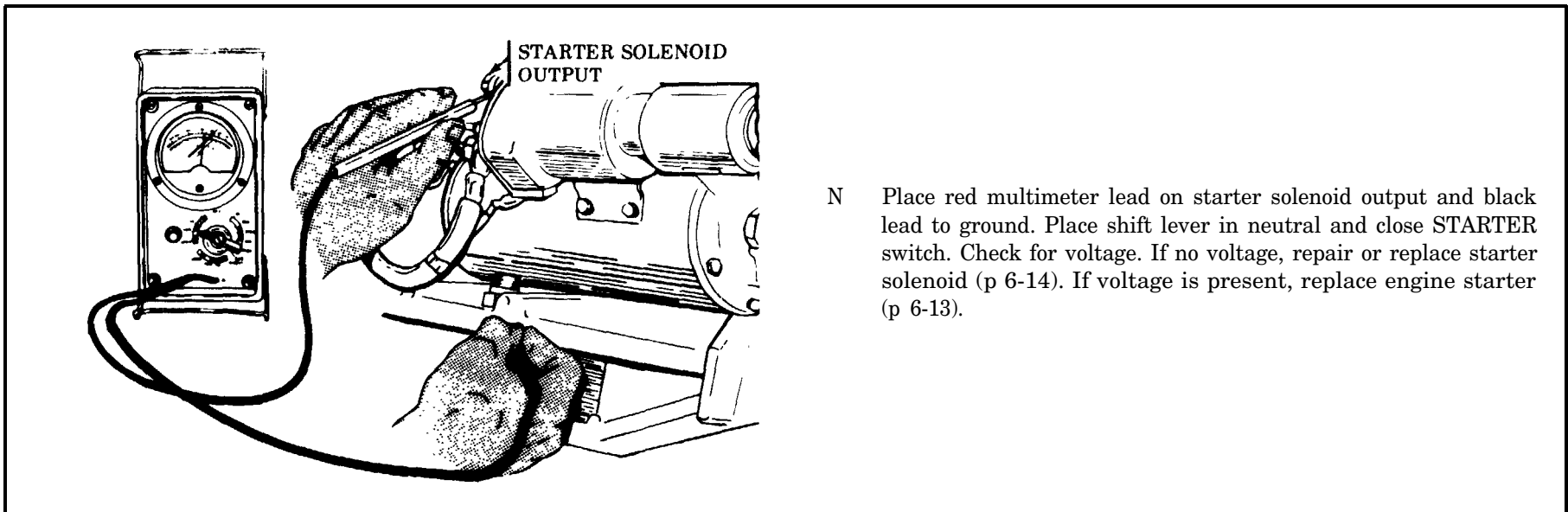
K To check wire 82, open connector at engine disconnect bracket. Place red multimeter lead in connector socket for wire 82 and black lead to ground. Check for voltage. If no voltage, repair or replace wire 82 from engine disconnect bracket to master relay (Appx F). If voltage is present, go to step L.



L Remove power plant from vehicle (p 3-1). Connect special equipment for operation of power plant out of vehicle (p 3-25). Place red multimeter lead on wire 14B at starter solenoid. Ground black wire. Place shift lever in neutral, push STARTER switch, and check for voltage at wire 14B. If no voltage, repair or replace wire 14B from engine disconnect bracket to starter solenoid (p 6-64). If voltage is present, go to step M.



- M Place red multimeter lead on wire 82 at starter solenoid and black lead to ground. Check for voltage at starter solenoid. If no voltage, repair or replace wire 82 from starter solenoid to engine disconnect bracket (p 6-64). If voltage is present, go to step N.



- N Place red multimeter lead on starter solenoid output and black lead to ground. Place shift lever in neutral and close STARTER switch. Check for voltage. If no voltage, repair or replace starter solenoid (p 6-14). If voltage is present, replace engine starter (p 6-13).

<b>ENGINE</b>	<b>ENGINE CRANKS BUT DOESN'T START</b>
---------------	--



- 1 Check fuel shutoff lever.
- 2 Check fuel level. Fill tanks to visible level (TM 9-2350-267-10).
- 3 Check main fuel hose for proper connection at primary fuel falter (p 4-11).
- 4 Clean primary fuel falter and replae element (p 4-11).
- 5 Clean secondary fuel falter and replace element (p 4-13).
- 6 Check for pinched, kinked or plugged fuel tubes or hoses. Replace if damaged (p 4-2 and 4-21).
- 6.1 Test left and right electric fuel pump (p 4-10).
- 7 Run STE/ICE Test No. 24 (p 2-48.15).
  - a If test passes, go to step 8.
  - b If test fails, replace fuel pump (p 4-16) and verify no faults.
- 8 Test engine fuel pump. Connect fuel flow test (p 4-22).

<b>ENGINE</b>	<b>ENGINE IDLES OVER 660 RPM</b>
---------------	----------------------------------



- 1 Adjust hand throttle control rod and accelerator pedal (p 7-47).
- 2 Run STE/ICE Test No. 10 (idle) (p 2-48.7). If test fails notify Support Maintenance,

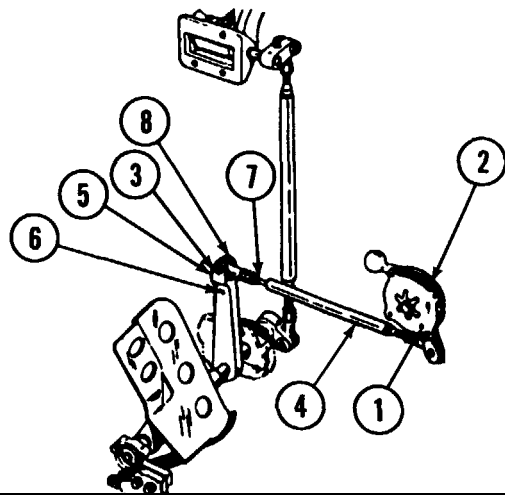
## ENGINE

## ENGINE DOESN'T ACCELERATE PROPERLY



- 1 Run STE/ICE Test No. 13 (p 2-48.10).
  - a If test passes, go to step2.
  - b If test fails, notify Supprtt Maintenance.
- 2 Run STE/ICE Test No. 24 (p 2-48.15).
  - a If test passes, go to step3.
  - b. If test fails, replace fuel pump and verify no faults.
- 3 Check brake adjustment (p 2-77 and 7-40).
- 4 conduct fuel flow test (p 4-22).

## HAND THROTTLE CONTROL ROD AND ACCELERATOR PEDAL: ADJUSTMENT



## HAND THROTTLE CONTROL ROD: ADJUSTMENT

A Insert dowel pin (0.225-inch diameter) in positioning hole (1) of throttle lever cover (2). Remove cotter pin (hidden) and clevis pin(3) and remove control rod (4) from throttle lever (5).

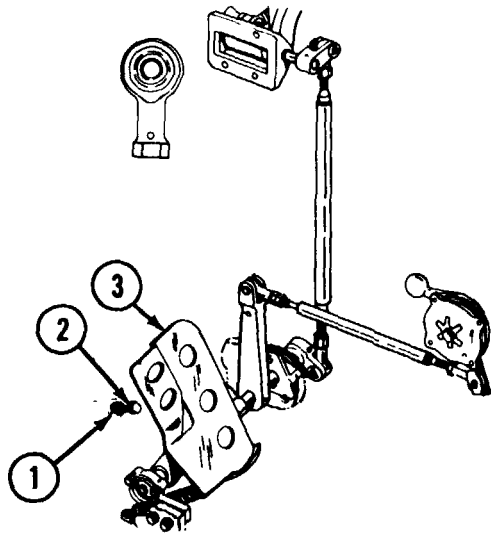
Insert dowel pin (0.225-inch diameter) in positioning hole (6) in throttle lever and bulkhead.

C Loosen nut (7) and adjust rod length until clevis pin (3) can be easily inserted through rod end (8). Install clevis pin (3) and cotter pin (hidden). Tighten nut (7).

D Start engine with throttle control closed. Engine should be at idle speed (650 rpm).



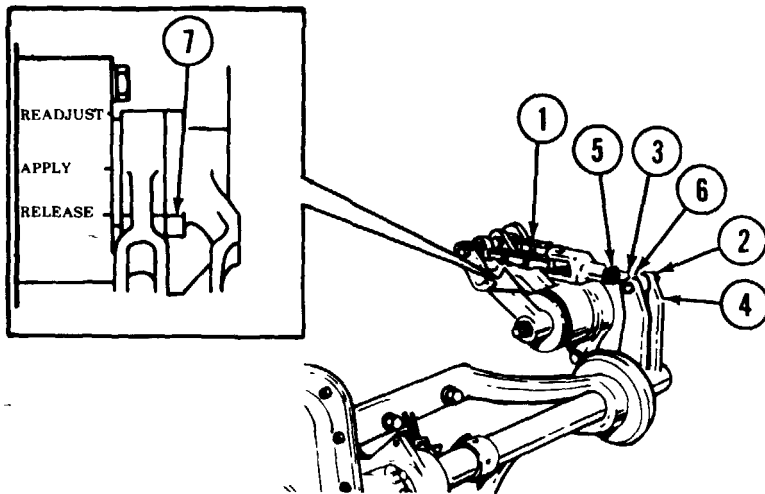
## HAND THROTTLE CONTROL ROD AND ACCELERATOR PEDAL: ADJUSTMENT (CONTINUED)



### ACCELERATOR PEDAL: ADJUSTMENT

- A Ensure hand throttle control adjustment is correct (p 2-76).
- B Loosen jam nut (1) and then turn adjusting screw (2) completely in.
- C Depress accelerator pedal (3) until it stops. Hold pedal down and turn adjusting screw (2) until it touches the accelerator pedal.
- D Tighten jam nuts (1).

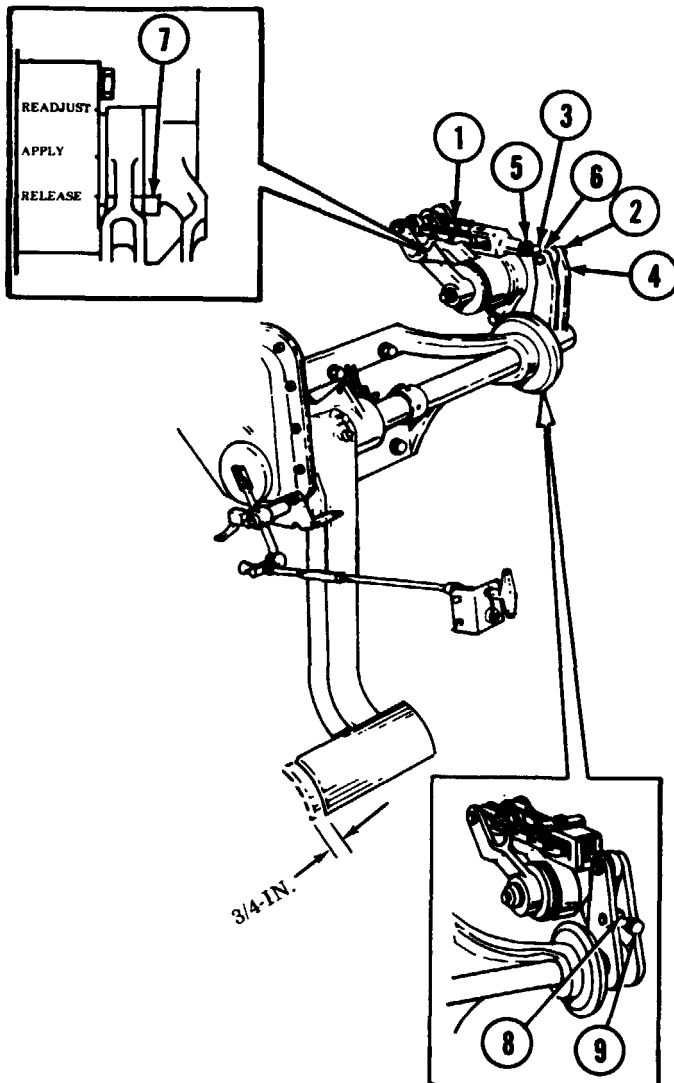
## SERVICE AND PARKING BRAKE LINKAGE: ADJUSTMENT



### SERVICE BRAKE: ADJUSTMENT

- A Release service brake. Check for slack in the sprocket control chain (1). If no slack is present, go to step B. If slack is present, remove cotter pin (2) and clevis pin (3) from brake shaft lever (4). Loosen locknut (5) and turn rod (6) clockwise to shorten. Replace pin (3) and check for slack again. If slack is still present, repeat the above. If no slack, go to step B.

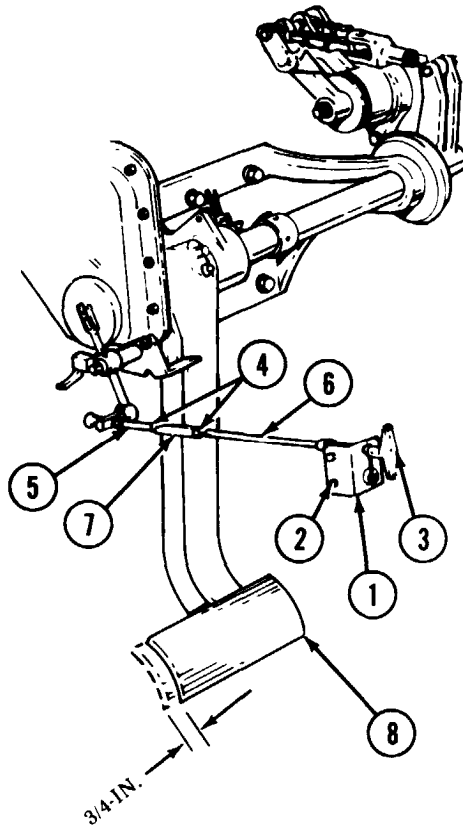
## SERVICE AND PARKING BRAKE LINKAGE: ADJUSTMENT (CONTINUED)



B Check to ensure alinement of brake and apply shaft index mark with release point (7). If linkage alinement is correct, go to step C. If not dined, adjust the length of rod (6) until they are alined.

C After brake adjustment, loosen locknut (8) on brake pedal lever stop screw (9). Adjust brake shaft lever stop screw (9) so that pedal has 3/4-inch free travel. Tighten locknut (8).

## SERVICE AND PARKING BRAKE LINKAGE: ADJUSTMENT (CONTINUED)



### PARKING BRAKE: ADJUSTMENT

- A Loosen parking brake (1) by removing screws and lockwashers (2).
- B Unlock parking brake handle (3) (up position). Loosen two locknuts (4) on forward brake control rod (5) and rear brake control rod (6).
- C Turn connecting nut (7) in either direction until holes in parking bracket (1) align with mating holes (not shown) and with no pressure applied to bell crank assembly.
- D Secure bracket to driver's compartment wall with two screws and two lockwashers (2). Tighten two locknuts (4) on each control rod (5 and 6).
- E Depress brake pedal (8). Pull back on parking brake handle (3). Remove foot from pedal. Brake should stay locked. To release parking brake, lift up and in on parking brake handle; then depress and release brake pedal.

TA310438

ENGINE	ENGINE DOESN'T KEEP STEADY SPEED
--------	----------------------------------



- 1 Check to see if engine coolant is at operating temperature 170°F.
- 2 Check accelerator and throttle linkage for loose mounting bolts.
- 3 Check primary fuel filter. Replace filter element if required (p 4-12).

ENGINE	ENGINE DOESN'T DEVELOP FULL POWER Engine runs slowly and idles roughly.
--------	--



- 1 Remove air cleaner filters. Clean if clogged or replace if damaged (p 2-24 and p 4-28).
- 2 Run STE/ICE Test No. 14 (p 2-48.13).
  - a If test passes, go to step 3.
  - b If test fails, notify Support Maintenance.
- 3 Run STE/ICE Test No. 24 (p 2-48.15).
  - a If test passes, go to step 4.
  - b If test fails, replace fuel pump (p 4-16) and verify no faults.

- 4 Conduct fuel flow test (p 4-22).
- 5 Run STE/ICE Test No. 13 (p 2-48.10).
  - a If test passes, verify no faults.
  - b If test fails, notify Support Maintenance

<b>ENGINE</b>	<b>ENGINE USES TOO MUCH OIL</b>
---------------	---------------------------------



Check for external oil leaks. Correct cause of leaks if within scope of Organizational Maintenance (Appx B). If not, notify Support Maintenance.

<b>ENGINE</b>	<b>ENGINE USES TOO MUCH FUEL</b>
---------------	----------------------------------



- 1 Inspect fuel tanks, lines, fittings and connections for leaks. Tighten loose fittings and connections. Replace any damaged fuel lines. Notify Direct Support Maintenance to repair fuel tank leaks.
- 2 Check for dirty air filters. Clean or replace if necessary (p 2-24 and 4-28).
- 3 If problem still exists, notify Support Maintenance.

ENGINE	BLACK EXHAUST SMOKE IS PRESENT AFTER ENGINE WARM-UP
--------	---



- 1 Check air filter for restricted air flow. Clean, repair or replace as necessary (p 2-24 and 4-28).
- 2 If smoke persists, notify Support Maintenance.

ENGINE	WHITE EXHAUST SMOKE IS PRESENT
--------	--------------------------------



- Drain and clean fuel filters to remove contaminated fuel (p 4-12).
- Check radiator for excessive coolant consumption and coolant for oil contamination.
- 3 Check coolant for oil contamination.
  - 4 If smoke persists, notify Support Maintenance.

<b>ENGINE</b>	<b>EXHAUST FUMES ARE PRESENT IN CREW COMPARTMENT</b> <b>Eyes burn and exhaust smell is present.</b>
---------------	--



- 1 Check for leaks at exhaust connections (p 4-32).
- 2 Check personnel beater exhaust system (p 14-72.3).
- 3 Inspect all clamps and tubes for leaks or damage. Tighten clamps if necessary.
- 4 Remove engine compartment access cover (p 3-14) and inspect gasket for serviceability.
- 5 Check APU exhaust system for possible leaks or damage (p 13-14, 13-14.1 and 13-20.3).

<b>ENGINE</b>	<b>ENGINE HAS LOW OR NO OIL PRESSURE</b>
---------------	--



- 1 Check engine oil level. Level should be between ADD and FULL marks on dipstick (LO 9-2350-267-12).
- 2 Check for oil leaks (p 5-2). Correct cause of any leaks if within the scope of organizational Maintenance (Appx B).
- 3 Run STE/ICE Test No. 50 (idle) (p 2-48.18).
  - a If test passes, troubleshoot engine oil pressure gage (p 2-135).
  - b If test fails, notify Support Maintenance.

## ENGINE

## ENGINE OVERHEATS

**START HERE**

- 1 Check coolant level. Add coolant if necessary (TM 9-2350-267-10).
- 2 Check cooling fans for proper operation (p 2-18).
- 3 Check grilles and radiator for clogged air passages. Clean if necessary (p 5-20). Replace radiators if damaged (p 5-21).
- 4 Check for collapsed hoses (p 5-29). Replace if necessary.
- 5 Flush cooling system (TM 9-2350-267-10) for draining and tilling of the cooling system.
- 6 Remove and inspect inlet and bypass thermostats. Replace if necessary (p 5-24 and 5-26).
- 7 Replace pressure relief valve (p 5-18).
- 8 Troubleshoot engine coolant temperature indicator circuit (p 2-130).



<b>TRANSMISSION AND DRIVING CONTROLS</b>	<p style="text-align: center;"><b>TRANSMISSION OVERHEATS</b></p> <p>TRANSMISSION OIL TEMP gage is over/under 270°F. Master warning light is lit.</p>
--	--

- 3 Check transmission oil filter for cleanliness and proper installation (p 7-9).
- 4 Check transmission oil pressure (p 7-1). If below specified pressure, notify support Maintenance.

<b>ENGINE</b>	<p style="text-align: center;"><b>VEHICLE DOESN'T DRIVE</b></p> <p>Transmission doesn't operate in any shift position.</p>
---------------	---



- 1 Check for improperly adjusted or disconnected shift control linkage. Connect linkage or adjust properly (p 2-87 and 7-34).
- 2 Check broke linkage (p 7-40) and transmission internal brake adjustment (p 7-38). Adjust as required

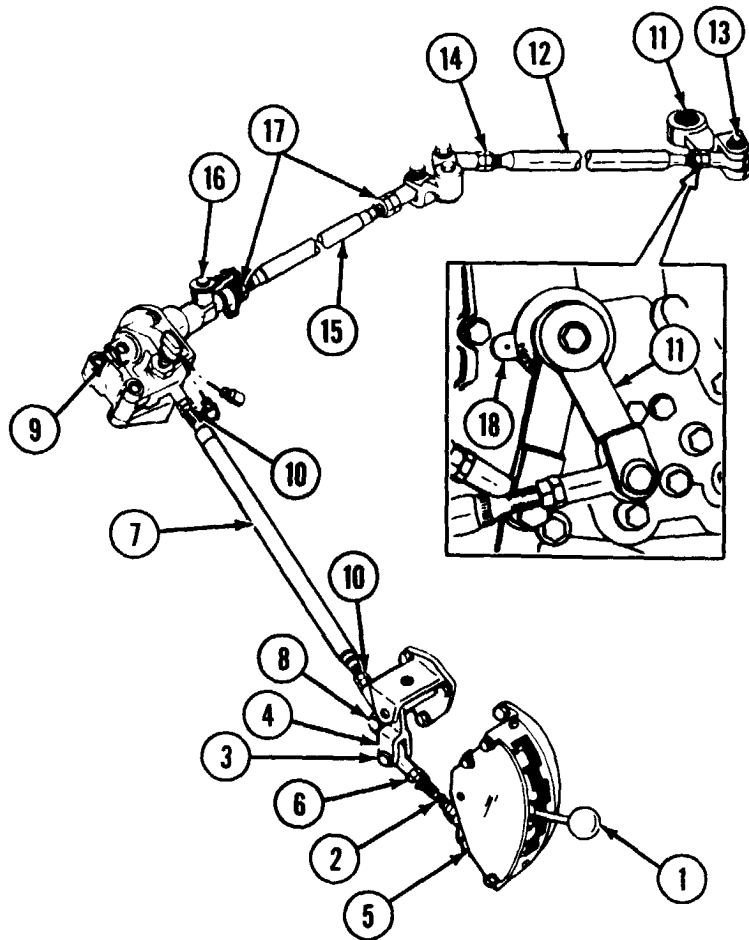
**ENGINE (CONTINUED)****VEHICLE DOESN'T DRIVE (CONTINUED)**

Transmission doesn't operate in any shift position.

**START HERE**

- 3 Check oil level and add as required (LO 9-2350-267-12). If oil level is low, check transmission seals, plugs and gaskets for oil leaks. Correct cause of leaks if within scope of Organizational Maintenance (Appx B). If repairs are beyond scope of Organizational Maintenance, notify Support Maintenance.
- 4 Check transmission oil pressure (p 7-1). If below specified pressure, notify support Maintenance.
- 5 Check for broken universal joints. If broken, replace (p 8-37).
- 6 Road test vehicle to ensure problem is corrected.

## TRANSMISSION SHIFT CONTROL LINKAGE: ADJUSTMENT



A Place shift control lever (1) in neutral (N) position. Disconnect shift control inner rod (2) by removing cotter pin, flat washer and clevis pin (3) from shift control inner bell crank (4).

B Place bell crank (4) parallel with lever on shift control (5). Loosen nut (6) and adjust shift control inner rod (2) until clevis pin (3) can be installed easily. Install flat washer and cotter pin. Tighten nut (6).

C Disconnect shift control inner tube (7) by removing cotter pin, flat washer and clevis pin (8). With base lever (9) at neutral position on neutral safety switch (verify by attempting to crank engine after fuel shutoff has been pulled) and with shift lever in neutral position, loosen nuts (10). Adjust shift control inner tube (7) until clevis pin (8) can be easily inserted into lever of inner bell crank (4). Install flat washer and cotter pin. Tighten nut (10) on shift control inner tube (7).

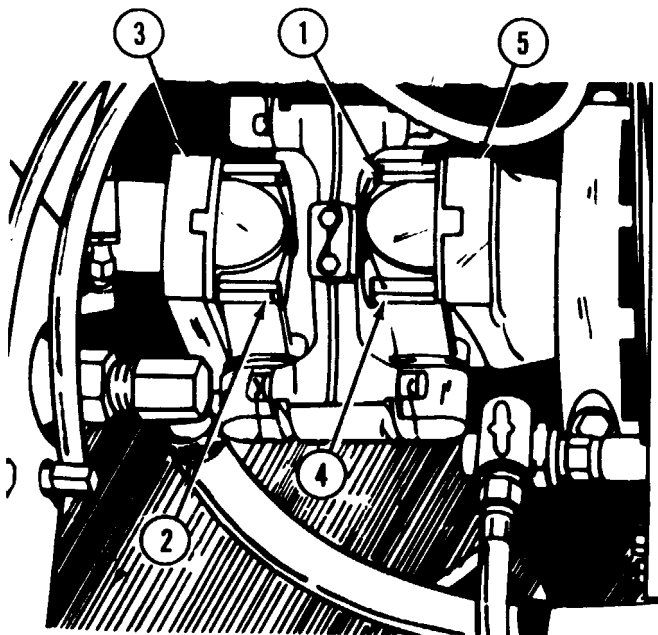
D With shift control lever (11) in neutral (N) position, check indicator (18), disconnect shift control outer rod (12) from transmission shift control lever (11) by removing cotter pin, flat washer and clevis pin (13). Loosen nuts (14) and adjust rod to approximately 8-1/4 inches (centerline of bearing bore to centerline of bearing bore). Tighten nuts (14).

E Disconnect shift control outer tube (15) by pulling quick-disconnect pin (16). Make sure control lever (11) is in neutral position and install shift control rod (12) in transmission shift control lever (11). Install clevis pin, flat washer and cotter pin (13).

F Loosen nut (17) and adjust shift control outer tube (15) until quick-disconnect pin (16) can be easily inserted. Tighten nuts on shift control outer tube.

G Move shift control lever (1) through all positions. In each position, check to see that transmission shift control lever indicator (18) indicates the same as the shift control lever position.

## UNIVERSAL JOINTS: REMOVAL AND INSTALLATION



## REMOVAL

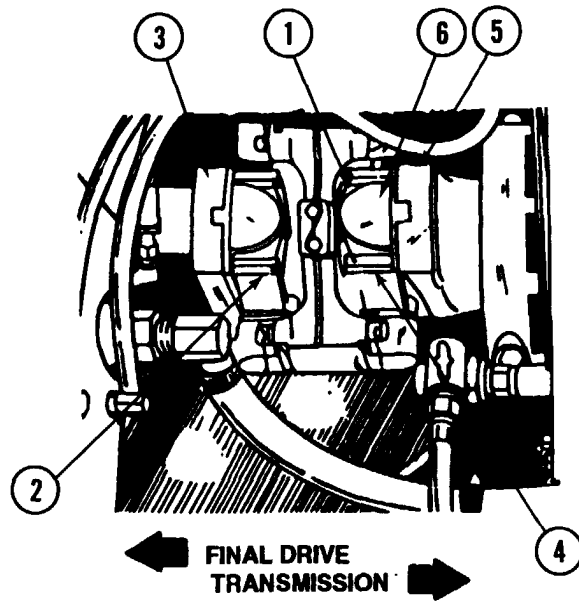
- A Open transmission access door.
- B Remove lock wires (1).

## NOTE

If flange and adapter screws are inaccessible, place transmission shift lever in neutral (N) and push or tow vehicle until universal joint rotates sufficiently to allow access to screws.

- C Remove four screws (2) at flange assembly (3) and four screws (4) at adapter (5).

## UNIVERSAL JOINTS: REMOVAL AND INSTALLATION (CONTINUED)



D Slide flange assembly (3) toward final drive, and adapter (5) toward transmission. Lift out spider, plate, bumper and retainer group (6).

E Slide flange assembly (3) off final drive.

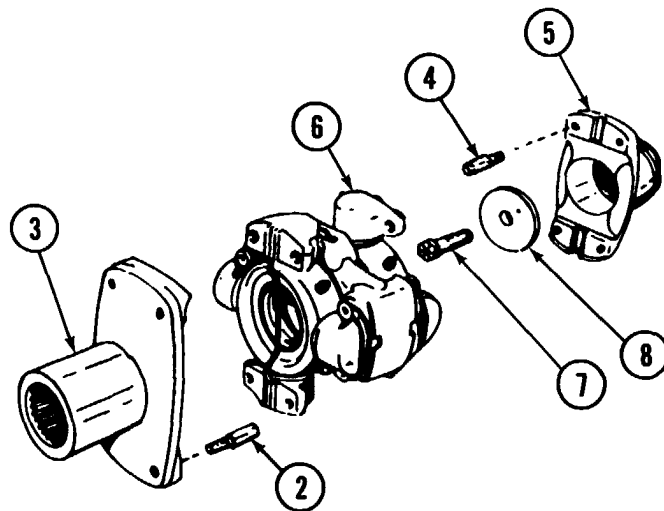
F Remove screw (7) and plate (8). Slide adapter (5) off transmission.

### INSTALLATION

A Install plate (8) and screw (7) into adapter (5) and slide on transmission.

B Slide flange assembly (3) on final drive.

C Hold spider, plate, bumper and retainer group (6) and mate with adapter (5) and flange assembly (3).



### CAUTION

Lock wires must be used to secure screws otherwise serious damage can result.

D Install eight screws (2 and 4) and lock wires (1).

E Close transmission access door.





## ENGINE TRANSMISSION AND DRIVING CONTROLS

## VEHICLE DOESN'T STEER IN EITHER DIRECTION IN ANY RANGE


 START HERE

- 1 Check for broken or disconnected steering linkage. Connect steering linkage (p 7-11).
- 2 Check transmission oil level (LO 9-2350-267-12).
- 3 Adjust steering control linkage (p 7-44).

## TRANSMISSION AND DRIVING CONTROLS

## VEHICLE STEERS IN ONE DIRECTION ONLY


 START HERE

- 1 Check steering control linkage adjustment (p 7-44).
- 2 Check transmission oil pressure (p 7-1). If below specified pressure, notify support Maintenance.

## TRACKS AND SUSPENSION

**VEHICLE BRAKES POORLY**  
 Vehicle doesn't stop correctly when brake is used.


 START HERE

- 1 Check for improperly adjusted brakes. Adjust if necessary (p 7-40).
- 2 Check for faulty brake linkage. Replace brake linkage if defective (p 7-15 thru 7-22.1).



**TRACKS AND SUSPENSION**

**VEHICLE PULLS TO ONE SIDE WITH STEERING WHEEL  
IN CENTER POSITION**



**NOTE**

Crown on road causes vehicle to pull away from center of road. Road test vehicle.

- 1 Check for disconnected or improperly adjusted steering control linkage (p 7-44).
- 2 Check brakes. Adjust if necessary (p 7-40).
- 3 Check track and suspension (p 2-9).
- 4 Check for worn drive sprocket (p 2-12).

**TRACKS AND SUSPENSION****VEHICLE THROWS TRACKS****NOTE**

**Improper driving or operation of vehicle**  
(high-speed turns) causes vehicles to throw  
track (TM 9-2350-267-10).

- 1 Check for loose or worn track. Replace as required  
(p 8-5).
- 2 Check for broken torsion bars. Replace if broken  
(p 8-17).

**TRACKS AND SUSPENSION****SUSPENSION IS NOISY DURING OPERATION**

- 1 Immediately after operating vehicle, check  
roadwheel hubs for excessive heat (p 2-9).
- 2 Check for excessive sprocket tooth wear. Reverse  
or replace (p 8-29).
- 3 Check for worn track shoes (p 2-13). Replace if  
necessary (p 84).

## FLAME HEATER

### FLAME HEATER DOESN'T OPERATE

Motor and pump assembly doesn't operate. Do steps A through G.

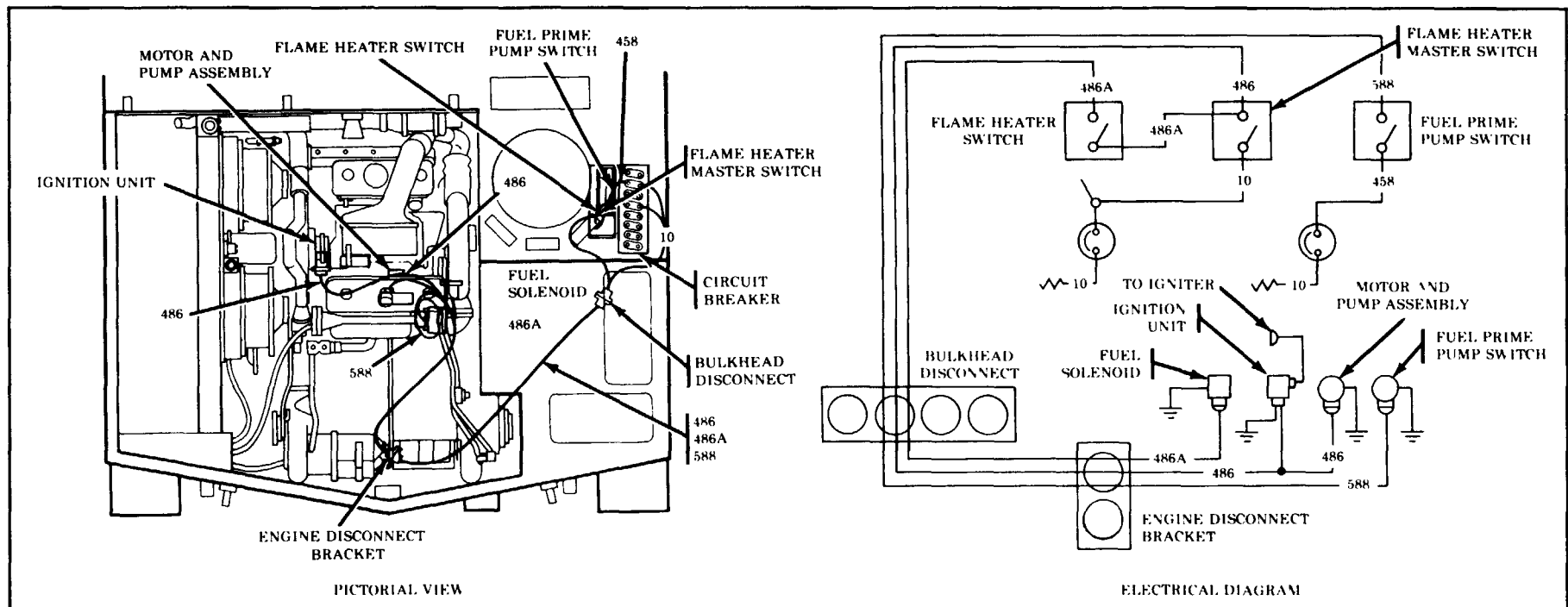
Fuel solenoid doesn't operate. Do steps H through K.

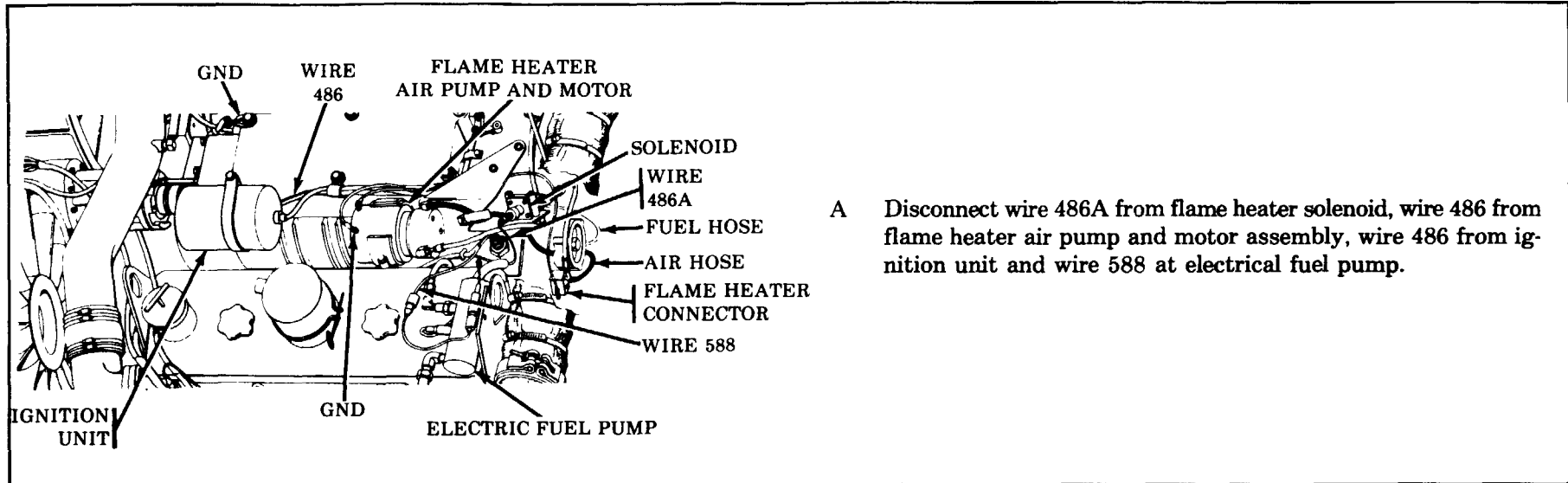
Ignition unit doesn't operate. Do steps Q through S.

**START HERE** →

With switch ON and FUEL SHUTOFF pulled, crank engine. A small amount of smoke should come out of exhaust when FLAME HEATER is turned ON. If not, troubleshoot flame heater circuit.

### FLAME HEATER CIRCUIT

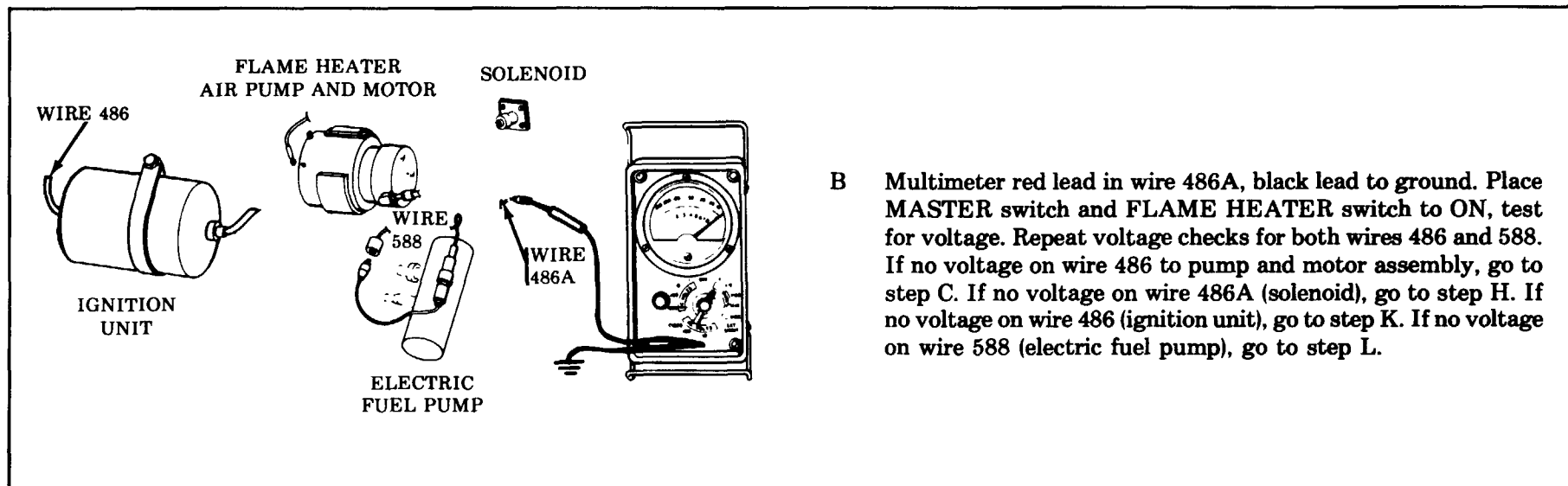




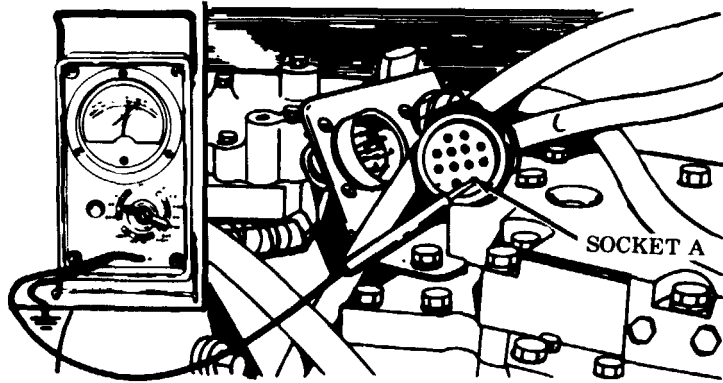
- A Disconnect wire 486A from flame heater solenoid, wire 486 from flame heater air pump and motor assembly, wire 486 from ignition unit and wire 588 at electrical fuel pump.

**NOTE**

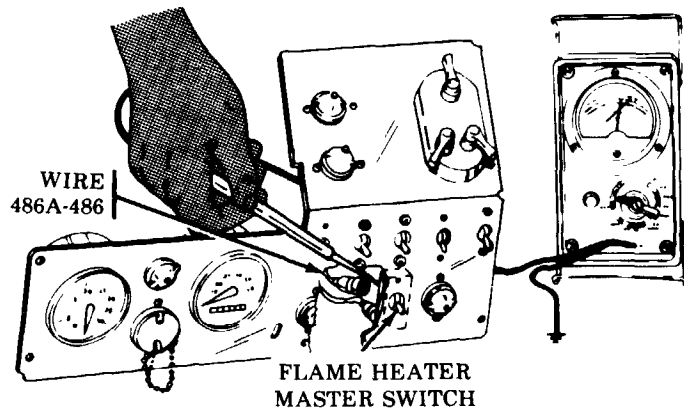
MASTER switch ON, steps B-S.



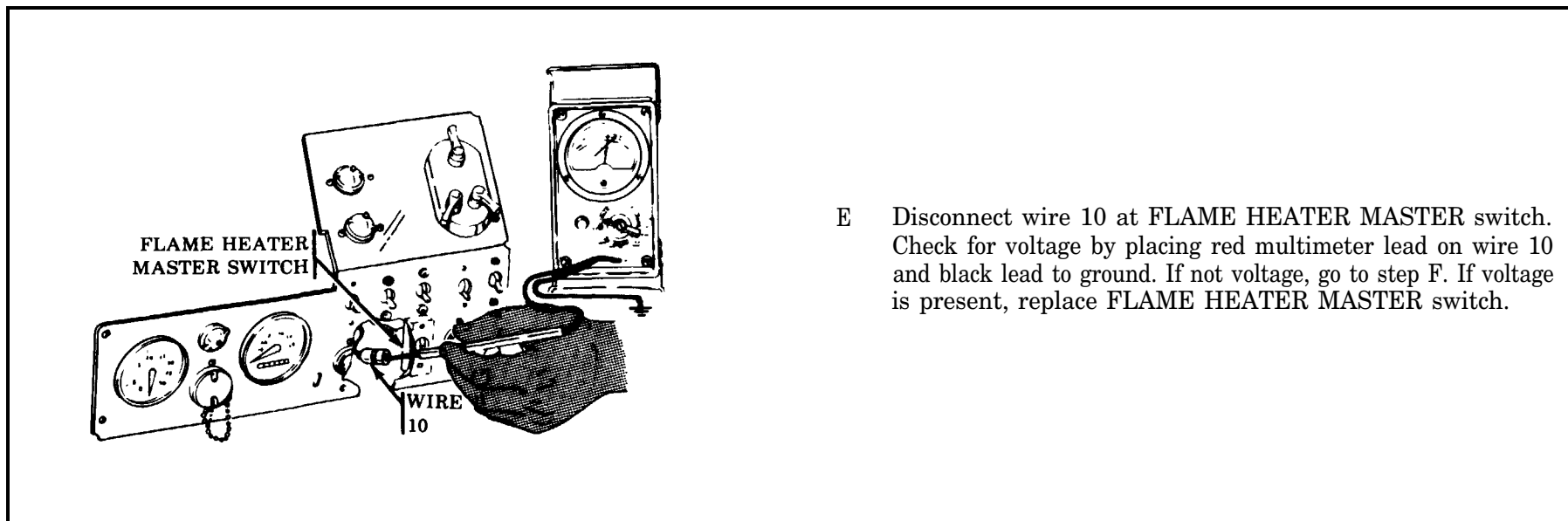
- B Multimeter red lead in wire 486A, black lead to ground. Place MASTER switch and FLAME HEATER switch to ON, test for voltage. Repeat voltage checks for both wires 486 and 588. If no voltage on wire 486 to pump and motor assembly, go to step C. If no voltage on wire 486A (solenoid), go to step H. If no voltage on wire 486 (ignition unit), go to step K. If no voltage on wire 588 (electric fuel pump), go to step L.



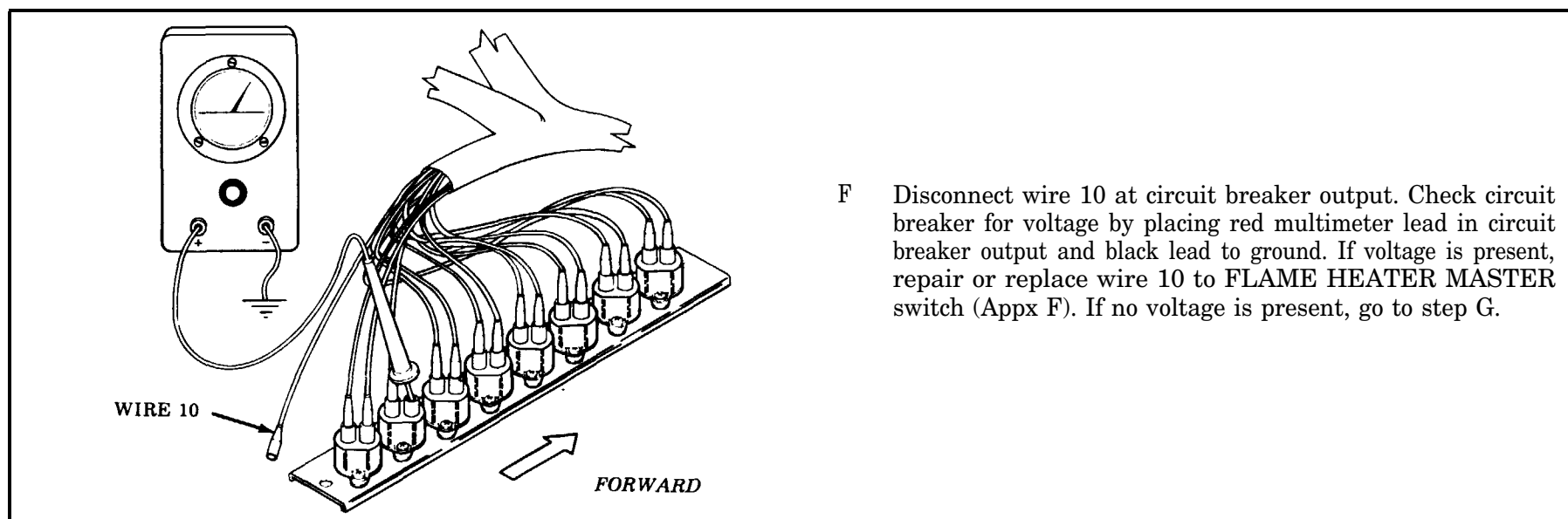
- C Disconnect connector at engine disconnect bracket. Place red multimeter lead in socket A. Ground black lead and check for voltage. If voltage to ignition unit is present, repair or replace wire 486 from engine disconnect bracket to motor and pump assembly (p 6-64). If no voltage, go to step D.



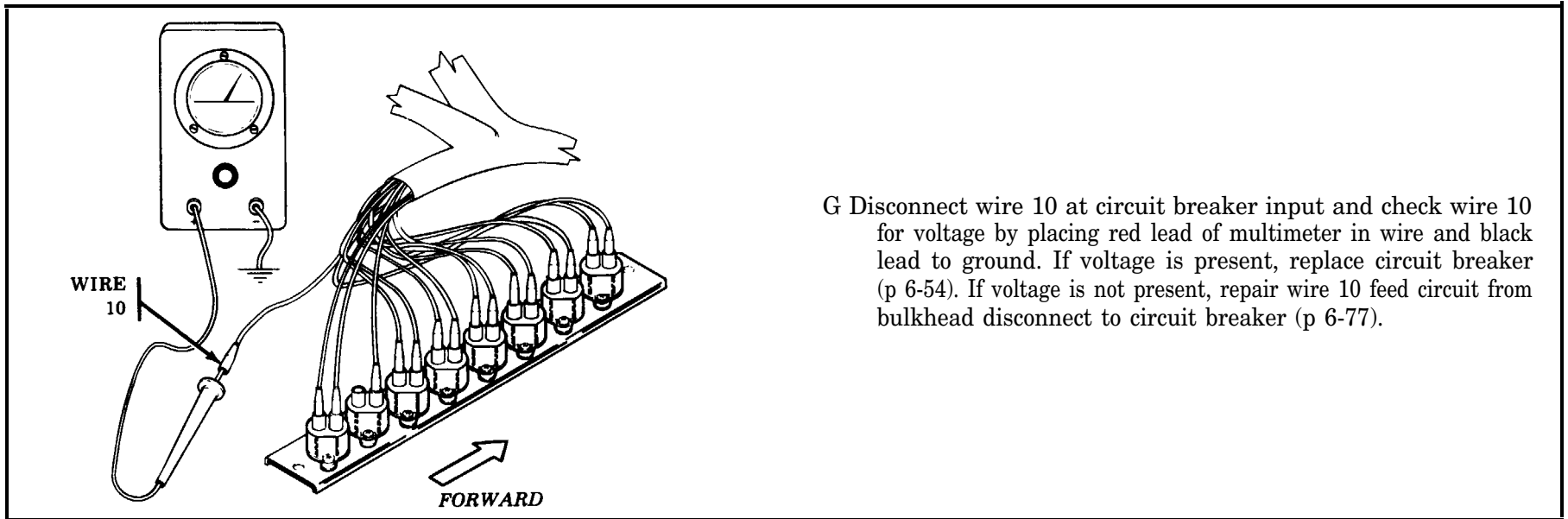
- D Disconnect wire 486A and 486 from FLAME HEATER MASTER switch output. With FLAME HEATER MASTER switch ON, check switch for voltage by placing red lead in switch and black lead to ground. If no voltage, go to step E. If voltage is present, repair or replace wire 486 from FLAME HEATER MASTER switch to engine disconnect bracket (Appx F).



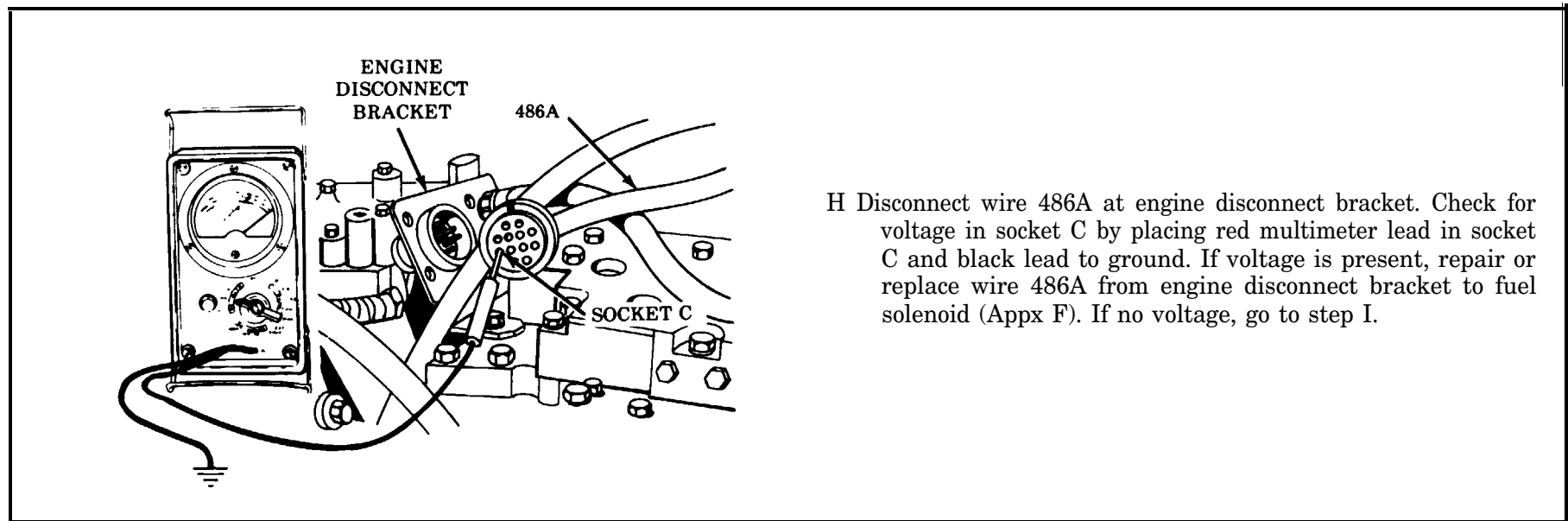
- E Disconnect wire 10 at FLAME HEATER MASTER switch. Check for voltage by placing red multimeter lead on wire 10 and black lead to ground. If not voltage, go to step F. If voltage is present, replace FLAME HEATER MASTER switch.



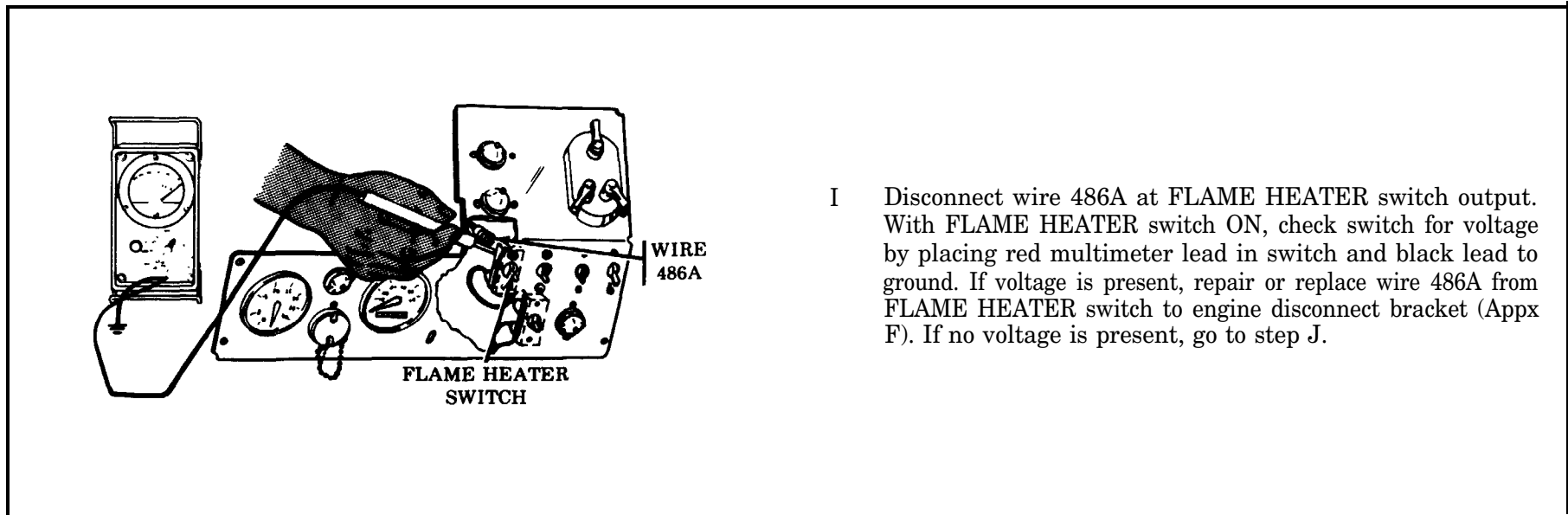
- F Disconnect wire 10 at circuit breaker output. Check circuit breaker for voltage by placing red multimeter lead in circuit breaker output and black lead to ground. If voltage is present, repair or replace wire 10 to FLAME HEATER MASTER switch (Appx F). If no voltage is present, go to step G.



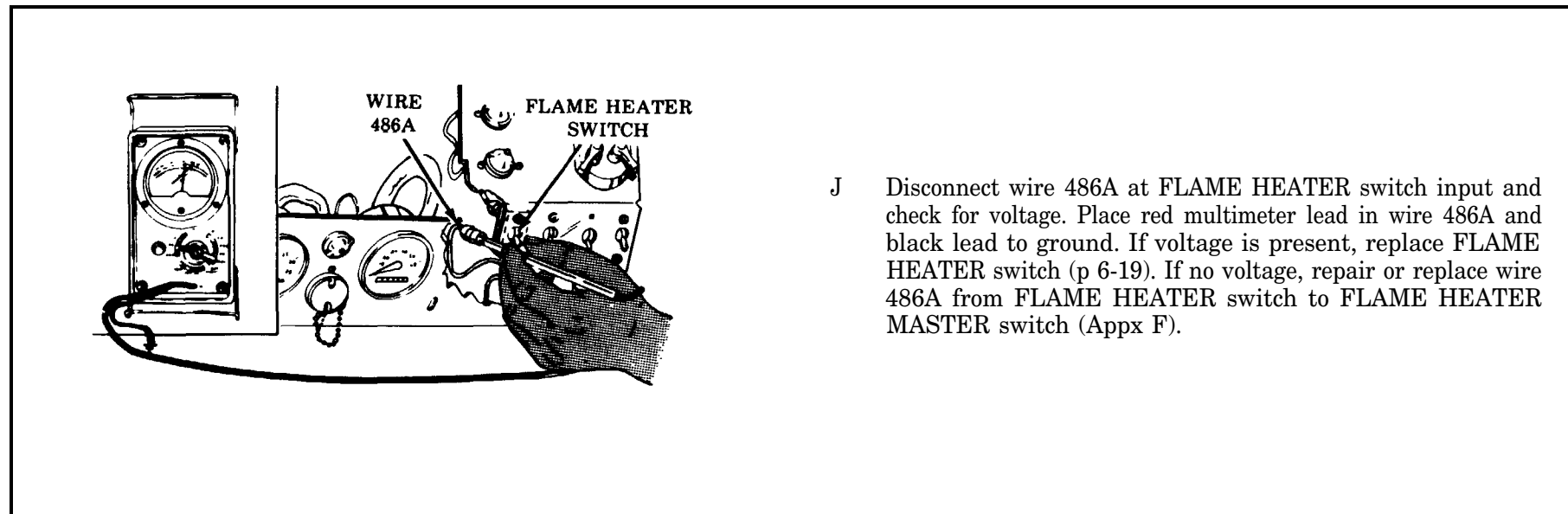
G Disconnect wire 10 at circuit breaker input and check wire 10 for voltage by placing red lead of multimeter in wire and black lead to ground. If voltage is present, replace circuit breaker (p 6-54). If voltage is not present, repair wire 10 feed circuit from bulkhead disconnect to circuit breaker (p 6-77).



H Disconnect wire 486A at engine disconnect bracket. Check for voltage in socket C by placing red multimeter lead in socket C and black lead to ground. If voltage is present, repair or replace wire 486A from engine disconnect bracket to fuel solenoid (Appx F). If no voltage, go to step I.



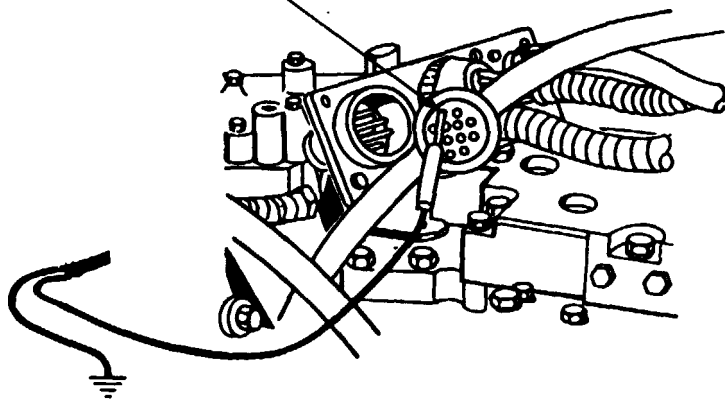
- I Disconnect wire 486A at FLAME HEATER switch output. With FLAME HEATER switch ON, check switch for voltage by placing red multimeter lead in switch and black lead to ground. If voltage is present, repair or replace wire 486A from FLAME HEATER switch to engine disconnect bracket (Appx F). If no voltage is present, go to step J.



- J Disconnect wire 486A at FLAME HEATER switch input and check for voltage. Place red multimeter lead in wire 486A and black lead to ground. If voltage is present, replace FLAME HEATER switch (p 6-19). If no voltage, repair or replace wire 486A from FLAME HEATER switch to FLAME HEATER MASTER switch (Appx F).



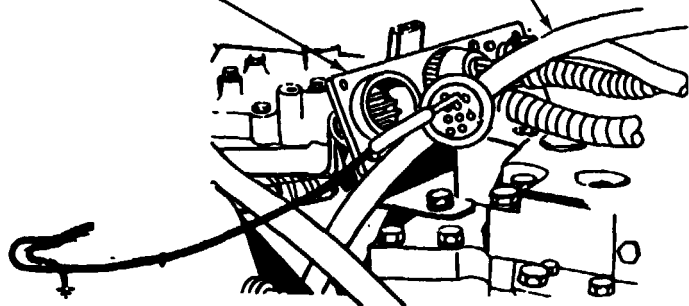
SOCKET A



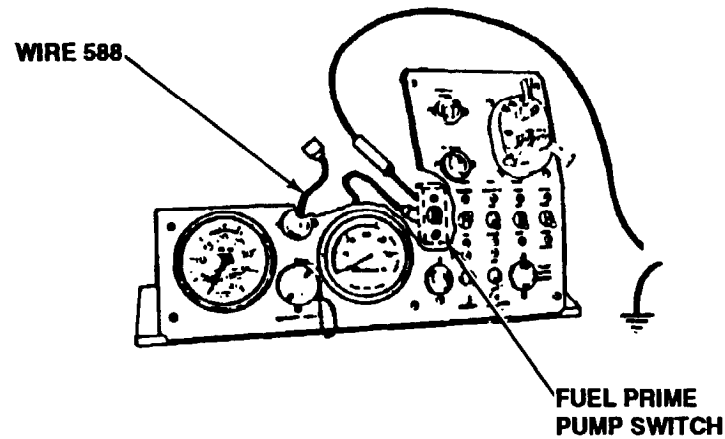
- K Disconnect wire 486 at engine disconnect bracket and check socket A for voltage. Place red multimeter lead in socket A and black lead to ground. If voltage is present repair or replace wire 486 from engine disconnect bracket to ignition unit (Appx F). If no voltage, repair or replace wire 486 from FLAME HEATER MASTER switch to engine disconnect bracket (Appx F).

ENGINE  
DISCONNECT  
BRACKET

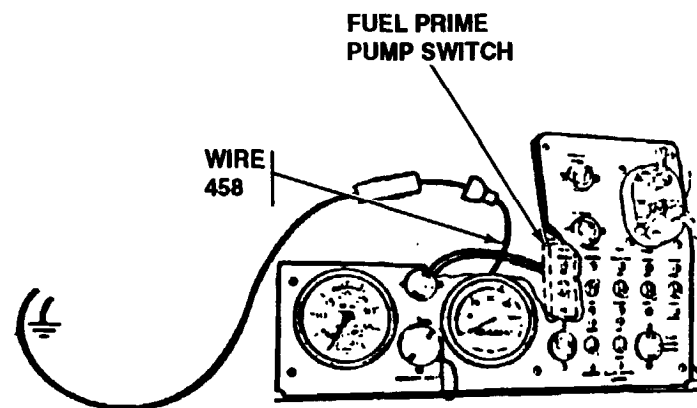
588



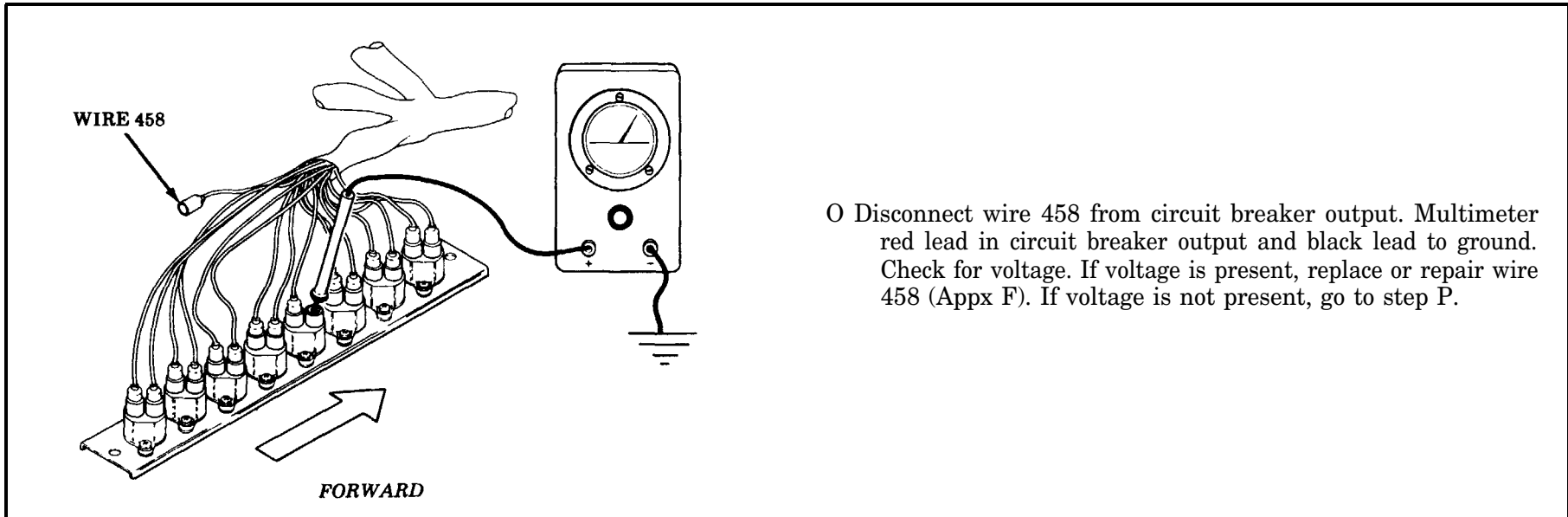
- L Disconnect wire **588** at engine disconnect bracket. Place red multimeter lead in socket J and black lead to ground. Move fuel prime pump switch to ON position and check for voltage. If voltage is present, repair or replace wire 588 from engine disconnect bracket to fuel prime pump (Appx F). If voltage is not present, go to step M.



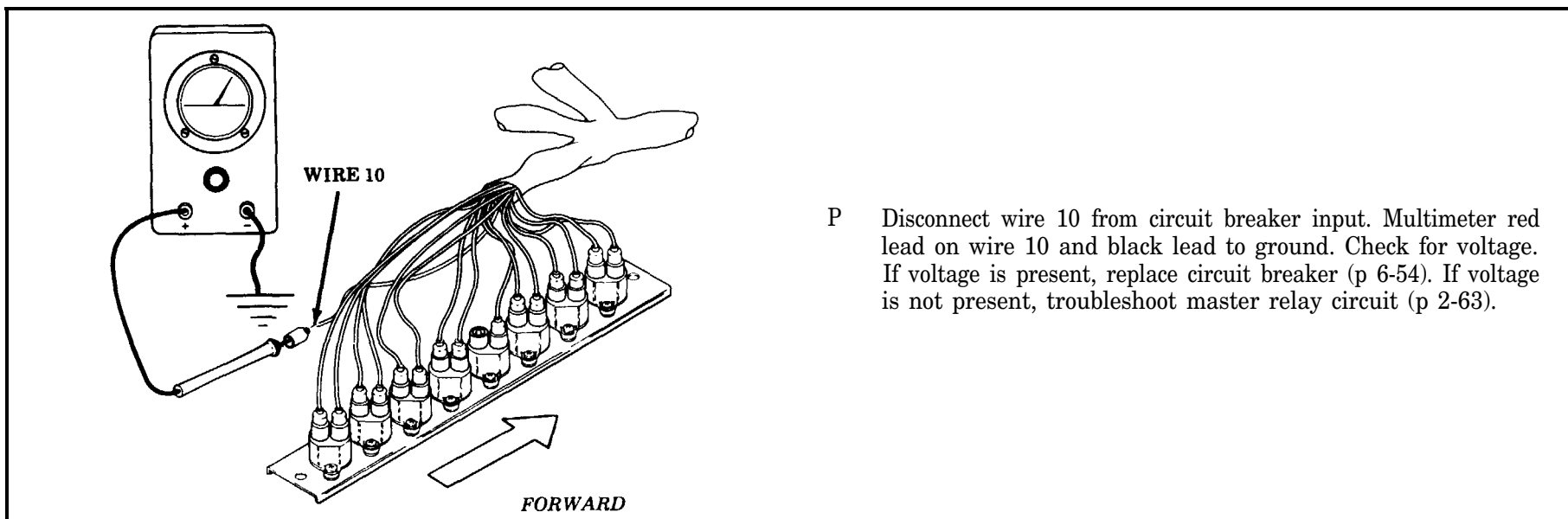
- M Disconnect wire 588 from fuel prime pump switch. Place red multimeter lead in switch output and black lead to ground. Fuel prime pump switch to ON and check for voltage. If voltage is present, repair or replace wire 588 from switch to engine disconnect bracket (Appx F). If voltage is not present, go to step N.



- N Disconnect wire 458 from fuel prime pump switch input. Place red multimeter lead in wire 458, and black lead to ground. Check for voltage. If voltage is present, replace fuel prime pump switch (6-19). If voltage is not present, go to step O.

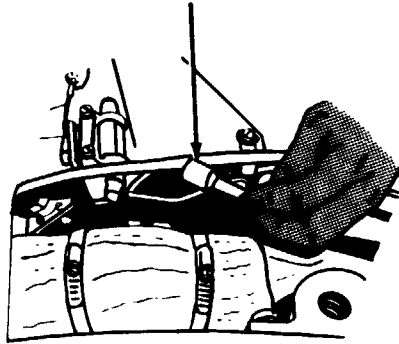


- O Disconnect wire 458 from circuit breaker output. Multimeter red lead in circuit breaker output and black lead to ground. Check for voltage. If voltage is present, replace or repair wire 458 (Appx F). If voltage is not present, go to step P.



- P Disconnect wire 10 from circuit breaker input. Multimeter red lead on wire 10 and black lead to ground. Check for voltage. If voltage is present, replace circuit breaker (p 6-54). If voltage is not present, troubleshoot master relay circuit (p 2-63).

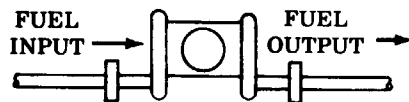
HIGH VOLTAGE  
WIRE



**WARNING**

If fuel vapors are present, do not do step Q.

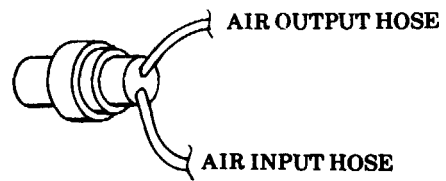
- Q Disconnect high voltage wire from igniter and hold wire 1/4-inch from ground. Place FLAME HEATER MASTER switch ON. If spark fails to jump 1/2-inch gap, notify Support Maintenance.



**CAUTION**

Use a container to catch any fuel that may flow through the input hose.

- R Disconnect fuel input hose at solenoid. Place FLAME HEATER switch and fuel prime pump switch ON. If fuel flows freely, replace solenoid. If fuel does not flow, notify Support Maintenance.



**AIR MOTOR AND PUMP  
ASSEMBLY**

- S** Disconnect air output hose at the motor and pump assembly. Place **FLAME HEATER MASTER** switch **ON**. If air does not flow from the port, notify Support Maintenance.

**ENGINE MASTER WARNING LIGHT (STEERING SHAFT)**

**STEERING SHAFT MASTER WARNING LIGHT DOESN'T LIGHT**

Do steps A and B.

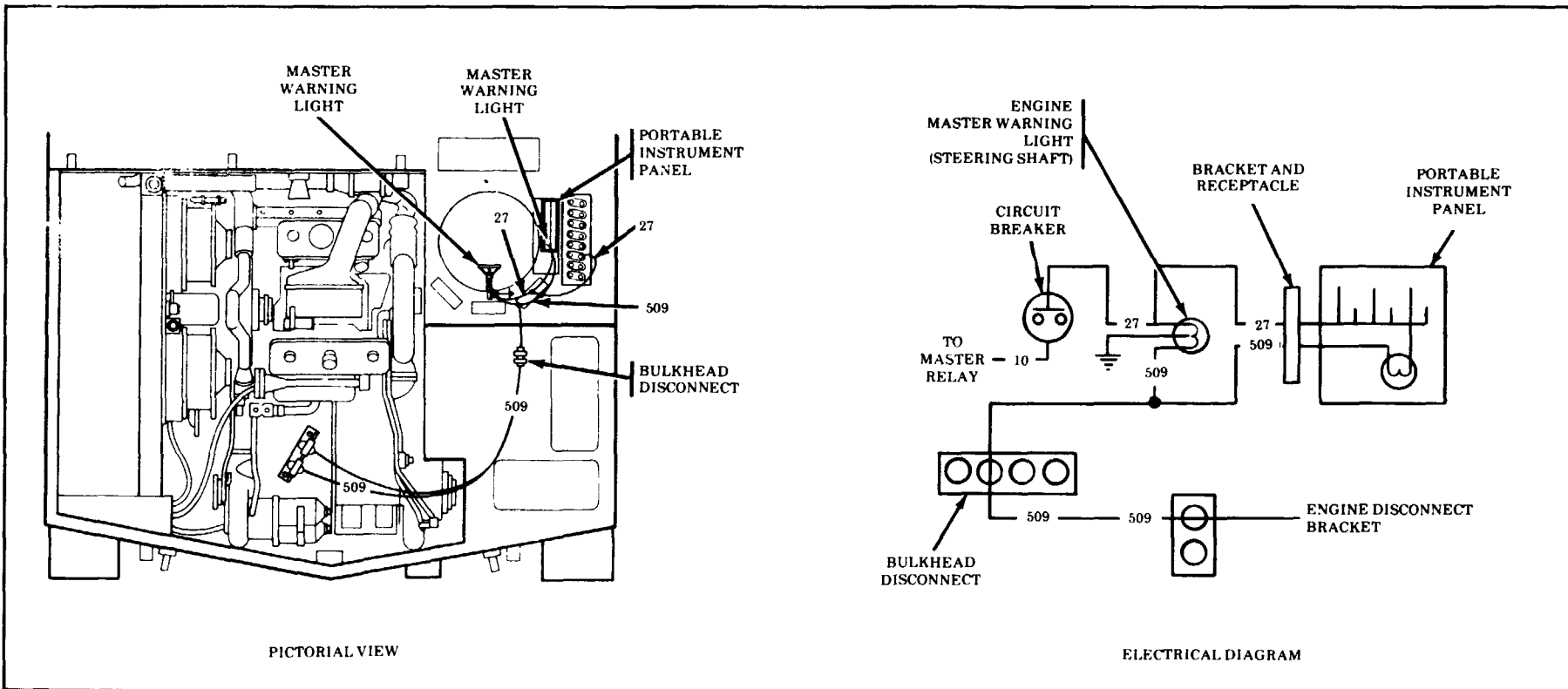
**STEERING SHAFT MASTER WARNING LIGHT DOESN'T LIGHT WHEN PRESS-TO-TEST IS PERFORMED**

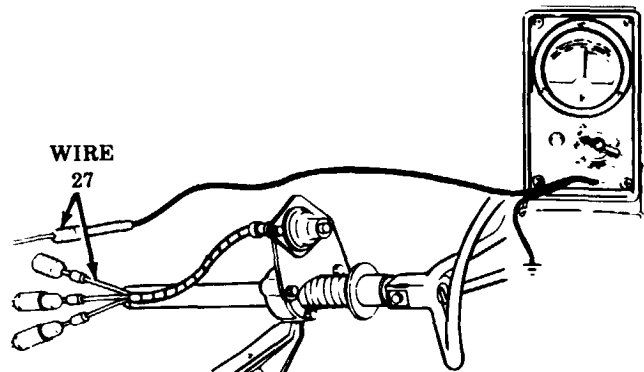
Do step C.



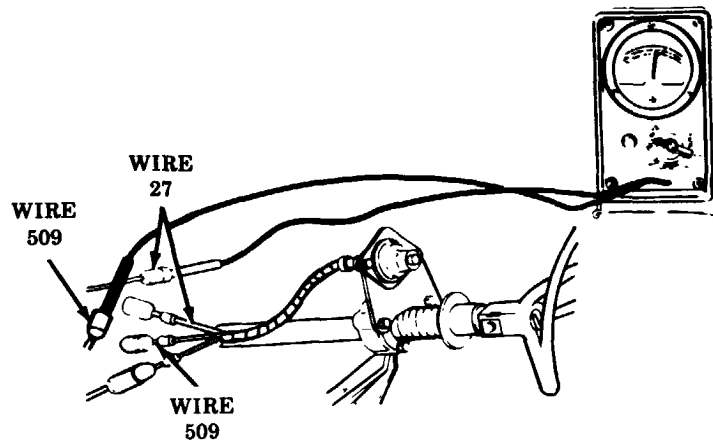
Troubleshoot engine MASTER WARNING light circuit.

**MASTER WARNING LIGHT CIRCUIT**

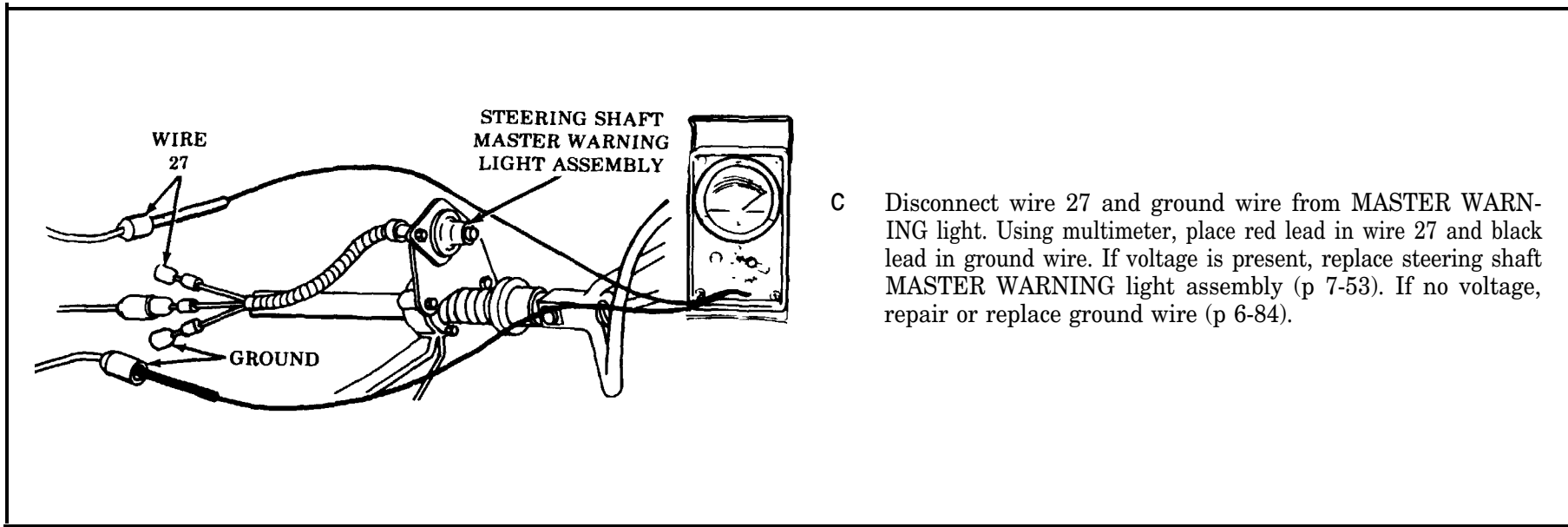




A Disconnect wire 27 from MASTER WARNING light. Then turn MASTER switch ON. Using multimeter set on dc volts scale, place red lead in wire 27 and ground black lead to hull. If voltage is present, go to step B. If no voltage, repair or replace wire 27 (p 6-84).



B Disconnect wire 509 from MASTER WARNING light. With **red** multimeter lead in wire 27, place black lead in wire 509. If voltage is present, replace bulb (p 7-53). If no voltage, repair wire 509 (p 6-84).





**ENGINE  
MASTER WARNING LIGHT  
(PORTABLE INSTRUMENT PANEL)**

**MASTER WARNING LIGHT DOESN'T LIGHT**

Do steps A and B.

MASTER switch is ON and engine is off, but MASTER WARNING light isn't on.

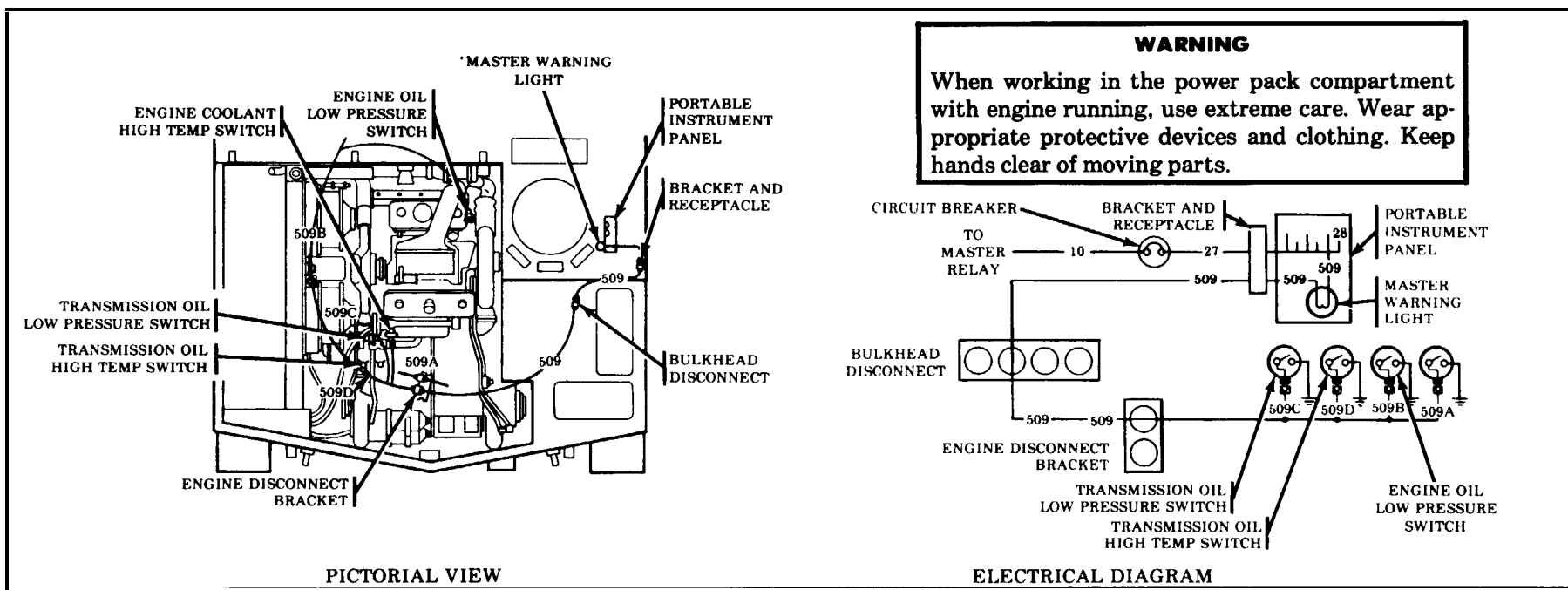
**MASTER WARNING LIGHT IS ON**

Do steps C through F.

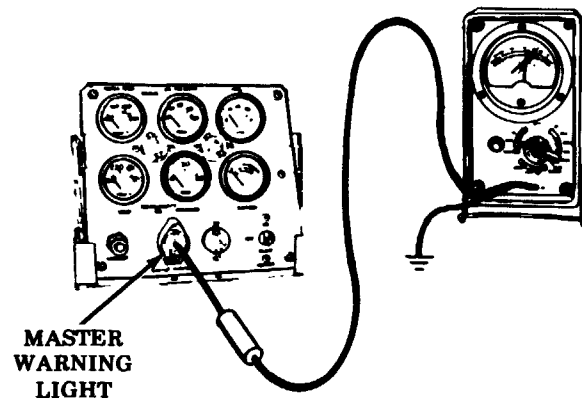
Everything appears normal, but MASTER WARNING light is on.

Troubleshoot engine MASTER WARNING light circuit.

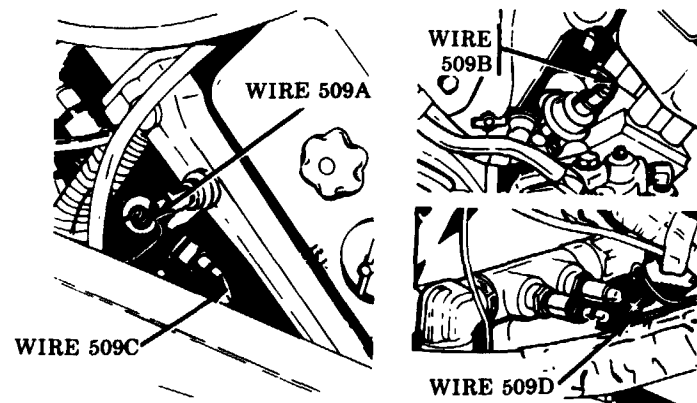
**MASTER WARNING LIGHT CIRCUIT**



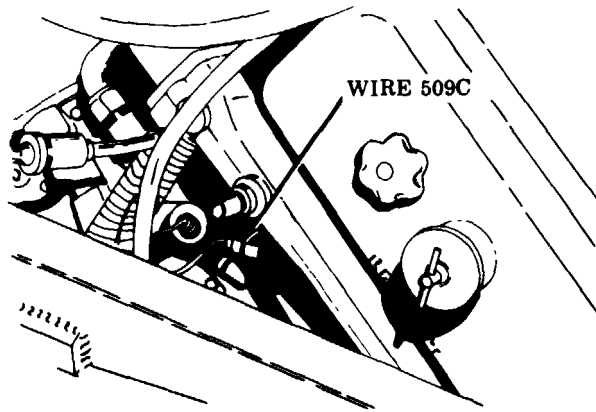
TA310468



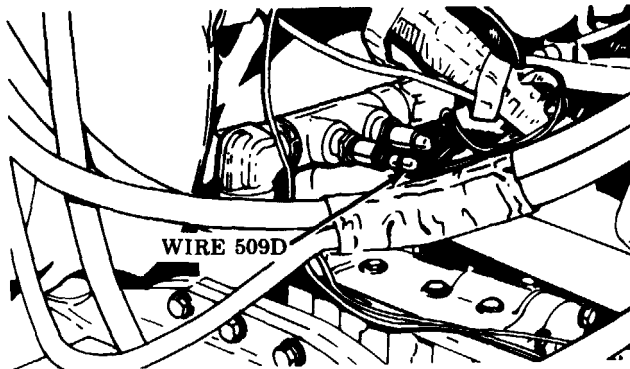
- A Remove bulb from MASTER WARNING light. Turn MASTER switch ON. Put red multimeter lead in center contact, ground black lead and check voltage. If no voltage, troubleshoot wire 509 from center contact to junction of wires 509 and 27-28-40A (p 6-89). If voltage is present, go to step B. Repair if required.



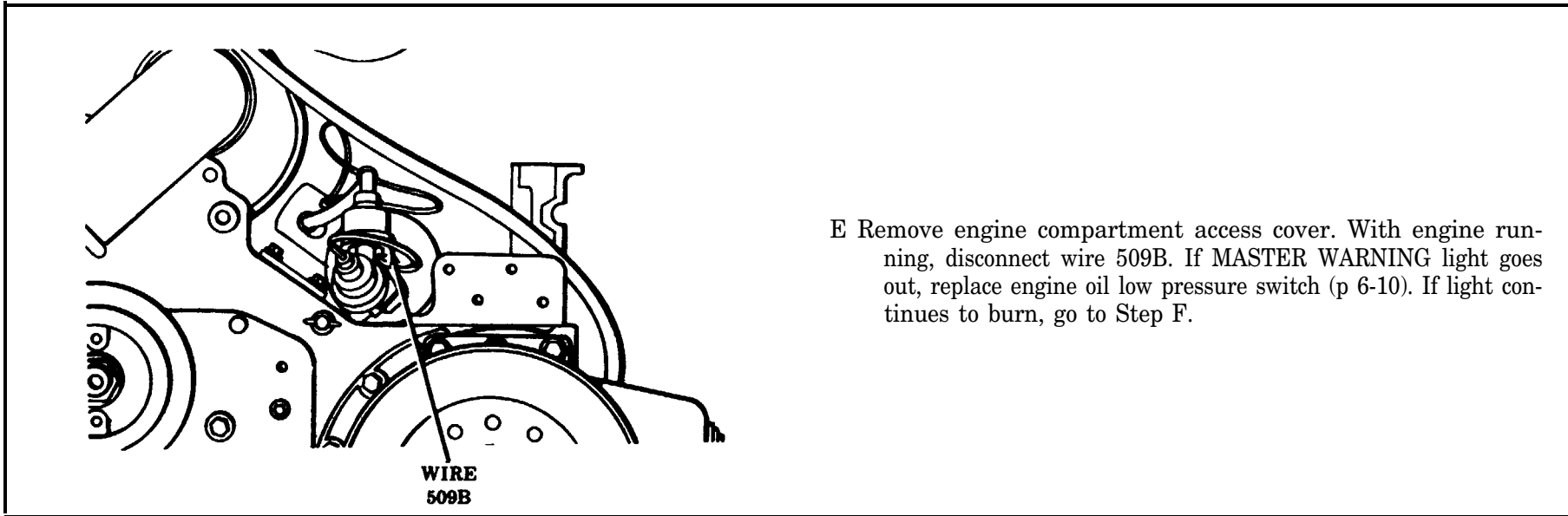
- B Place a good bulb in MASTER WARNING light socket. If bulb lights, old bulb was bad and the wiring is good.



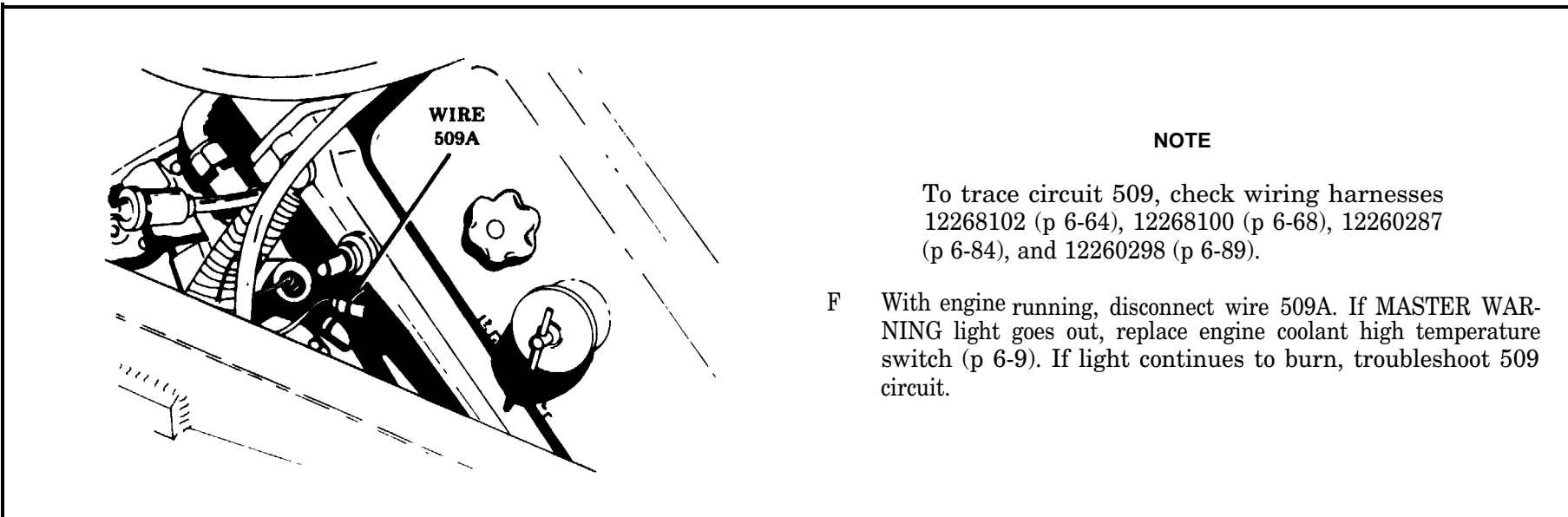
- C **Start** engine and disconnect wire 509C while watching MASTER WARNING light. If light goes out, replace transmission oil low pressure switch (p 6-12). If **light stays on**, go to step D.



- D With engine operating, disconnect wire 509D while observing MASTER WARNING light. If light goes out, replace transmission oil high temperature switch (p 6-11). If light continues to burn, go on to step E.



- E Remove engine compartment access cover. With engine running, disconnect wire 509B. If MASTER WARNING light goes out, replace engine oil low pressure switch (p 6-10). If light continues to burn, go to Step F.



#### NOTE

To trace circuit 509, check wiring harnesses 12268102 (p 6-64), 12268100 (p 6-68), 12260287 (p 6-84), and 12260298 (p 6-89).

- F With engine running, disconnect wire 509A. If MASTER WARNING light goes out, replace engine coolant high temperature switch (p 6-9). If light continues to burn, troubleshoot 509 circuit.

**AIR CLEANER DUST EXHAUSTER MOTOR**

**MOTOR DOESN'T OPERATE**

Do steps A through H. Engine is running, but dust exhaust motor doesn't operate

**MOTOR DOESN'T STOP**

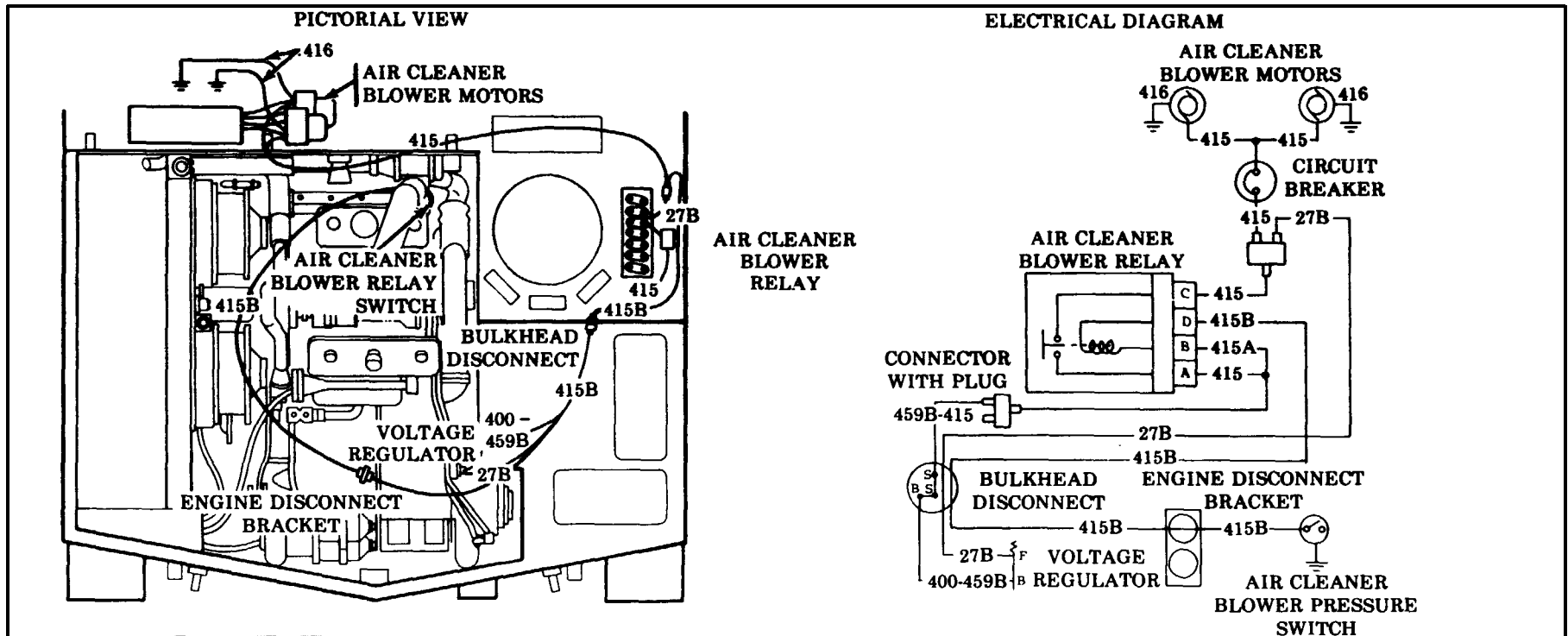
Do steps I and J. Engine is off and MASTER switch is ON, and motor runs.

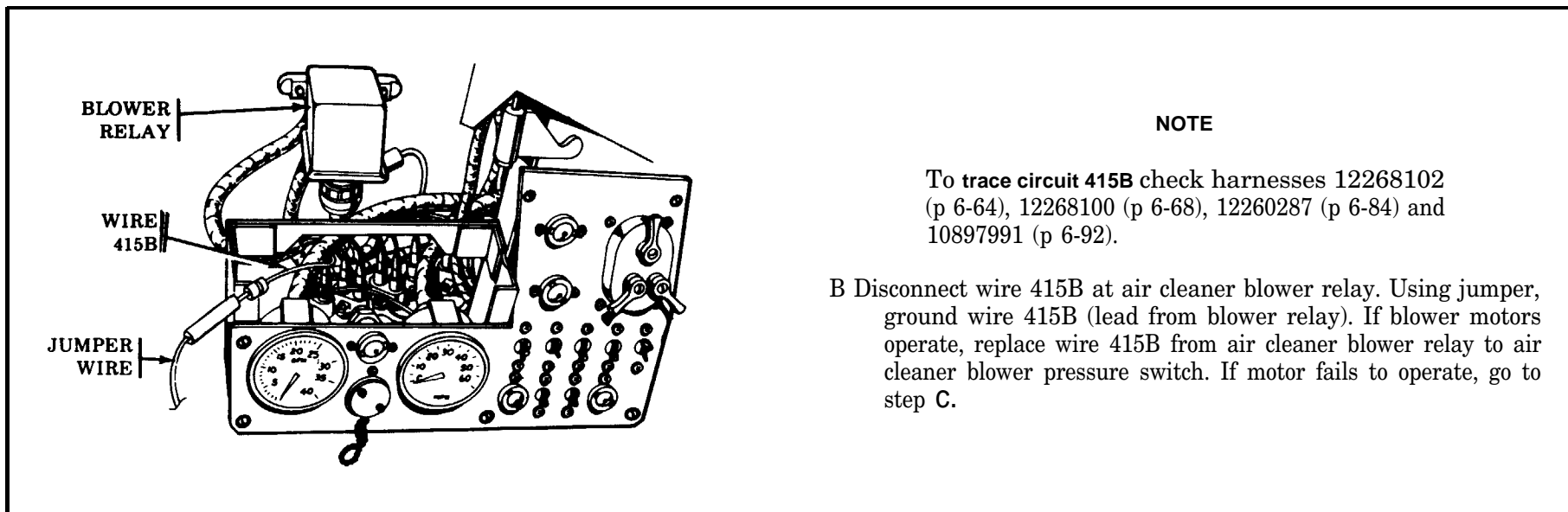
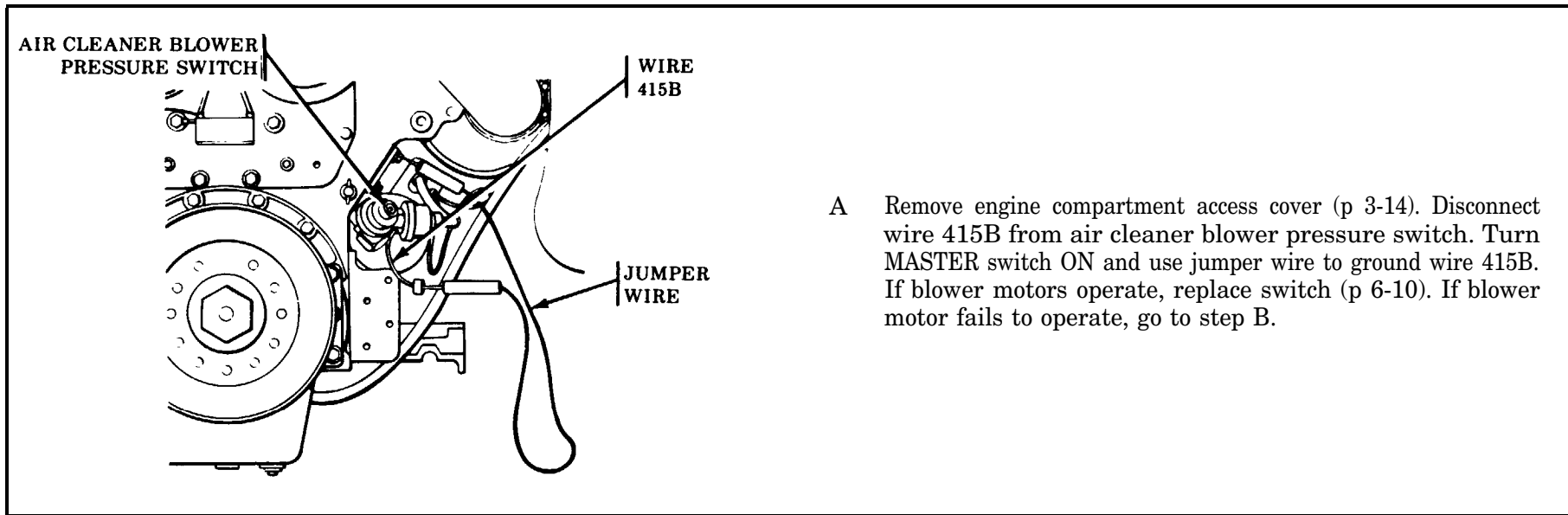
**ONE BLOWER MOTOR DOESN'T OPERATE**

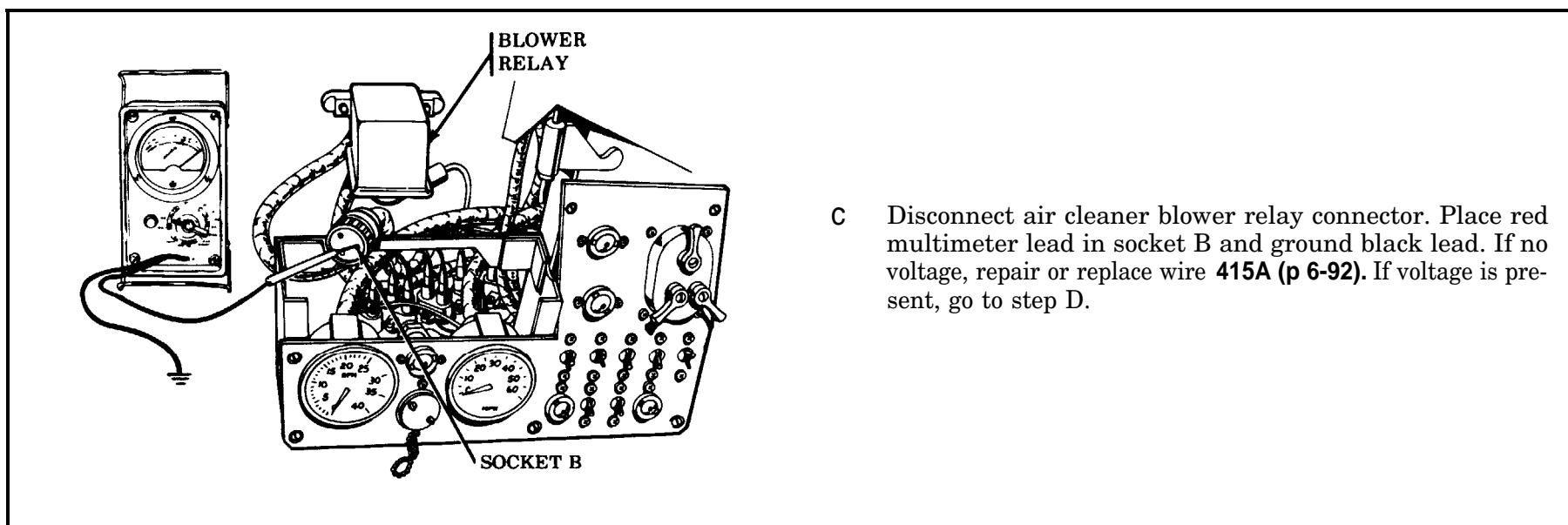
Do step K.

Troubleshoot air cleaner blower motor circuit.

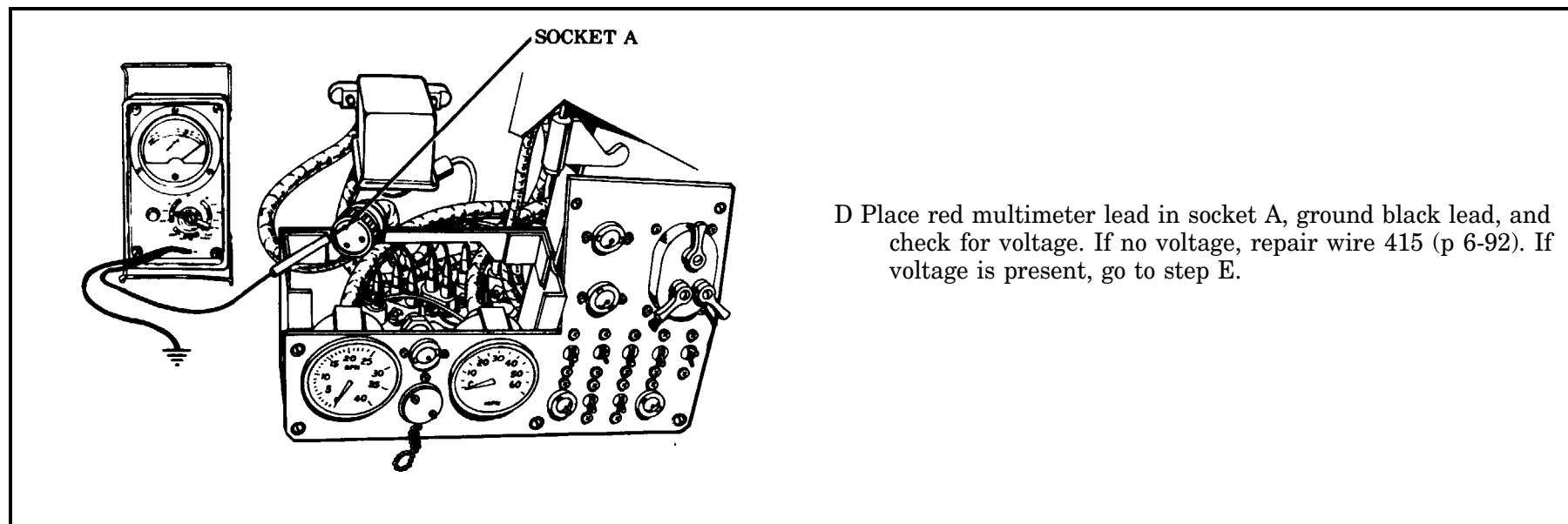
**AIR CLEANER BLOWER MOTOR CIRCUIT**



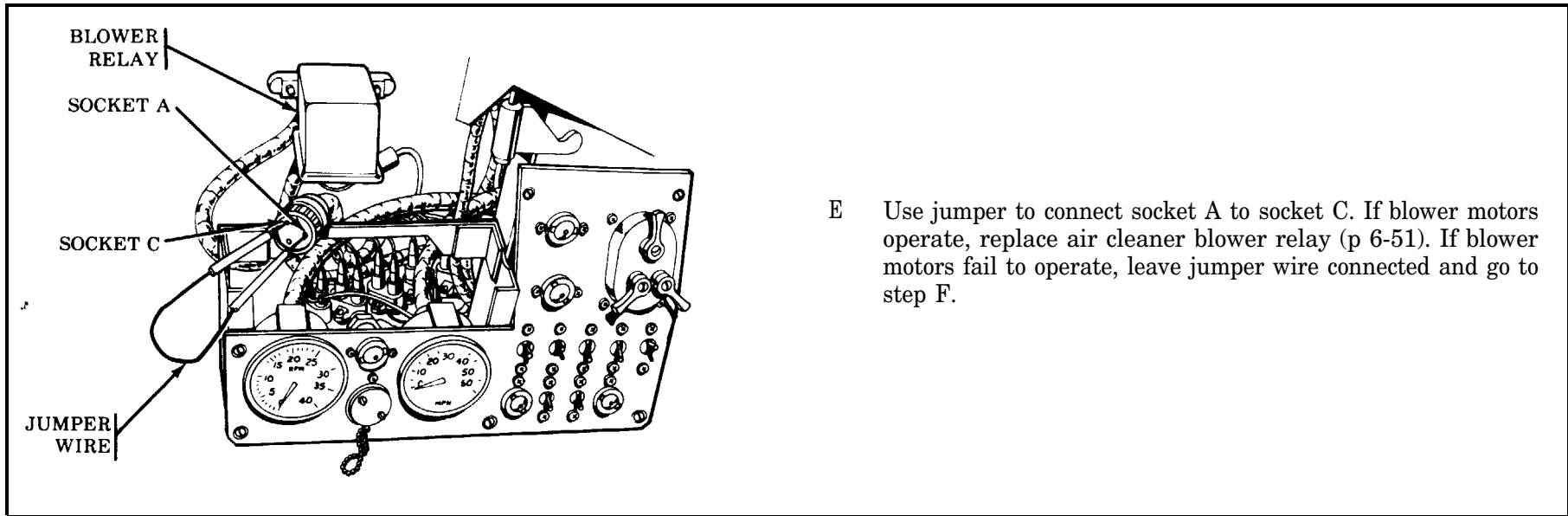




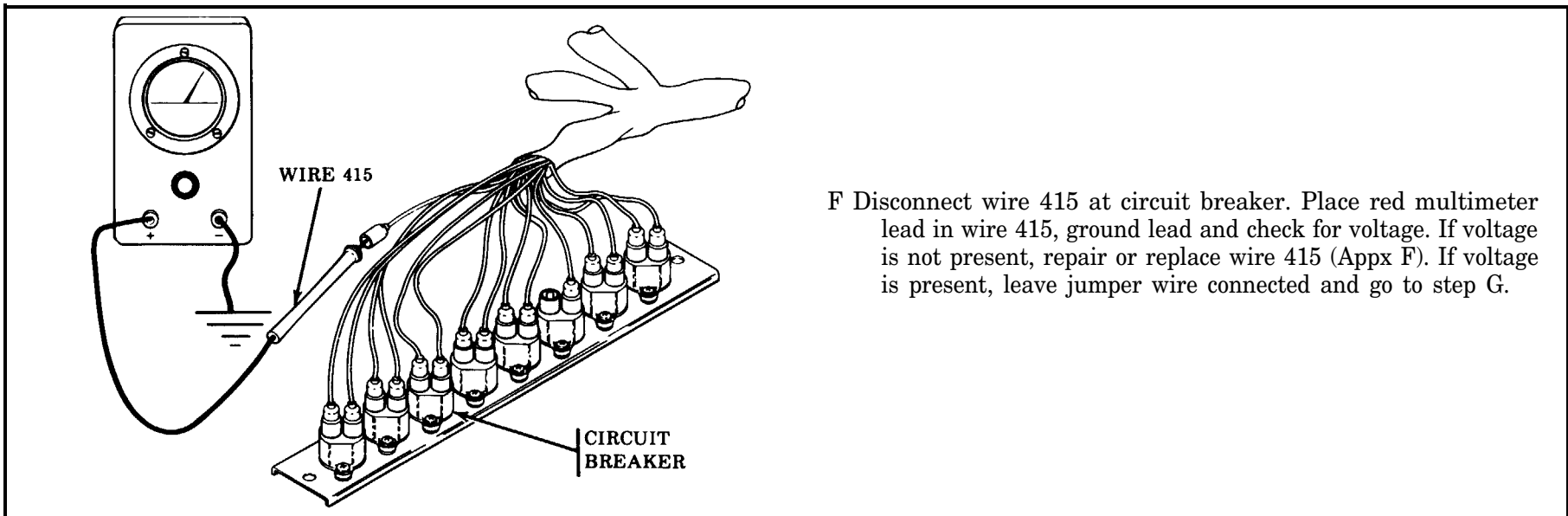
- C Disconnect air cleaner blower relay connector. Place red multimeter lead in socket B and ground black lead. If no voltage, repair or replace wire **415A (p 6-92)**. If voltage is present, go to step D.



- D Place red multimeter lead in socket A, ground black lead, and check for voltage. If no voltage, repair wire 415 (p 6-92). If voltage is present, go to step E.

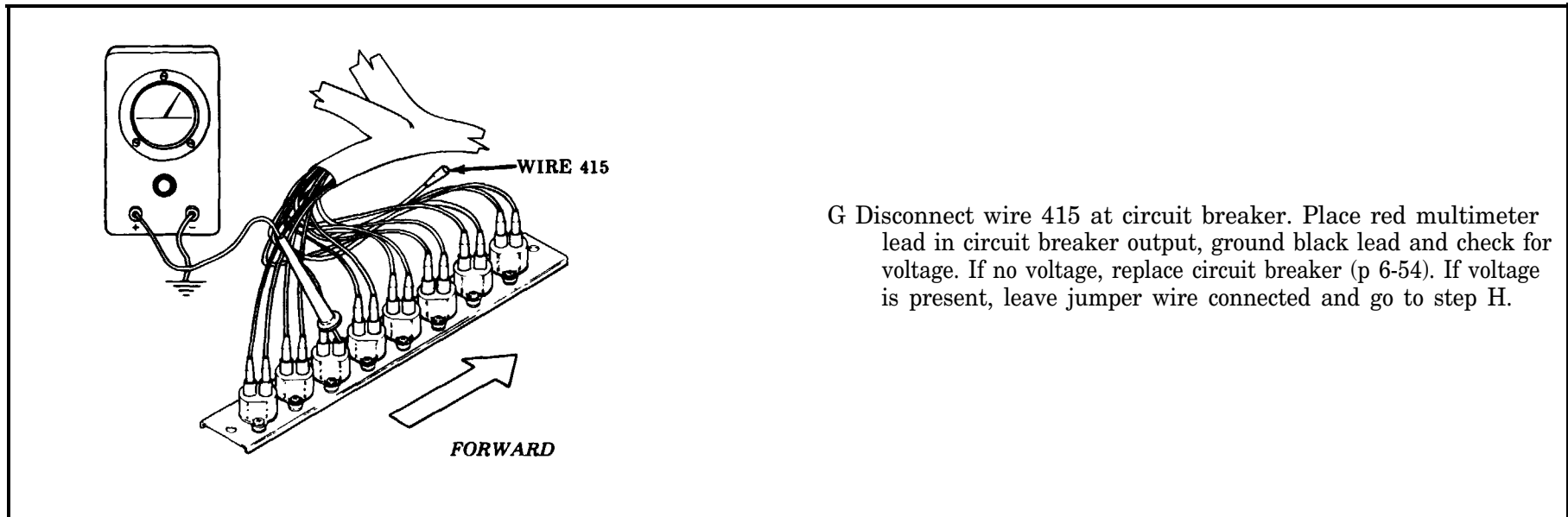


- E Use jumper to connect socket A to socket C. If blower motors operate, replace air cleaner blower relay (p 6-51). If blower motors fail to operate, leave jumper wire connected and go to step F.

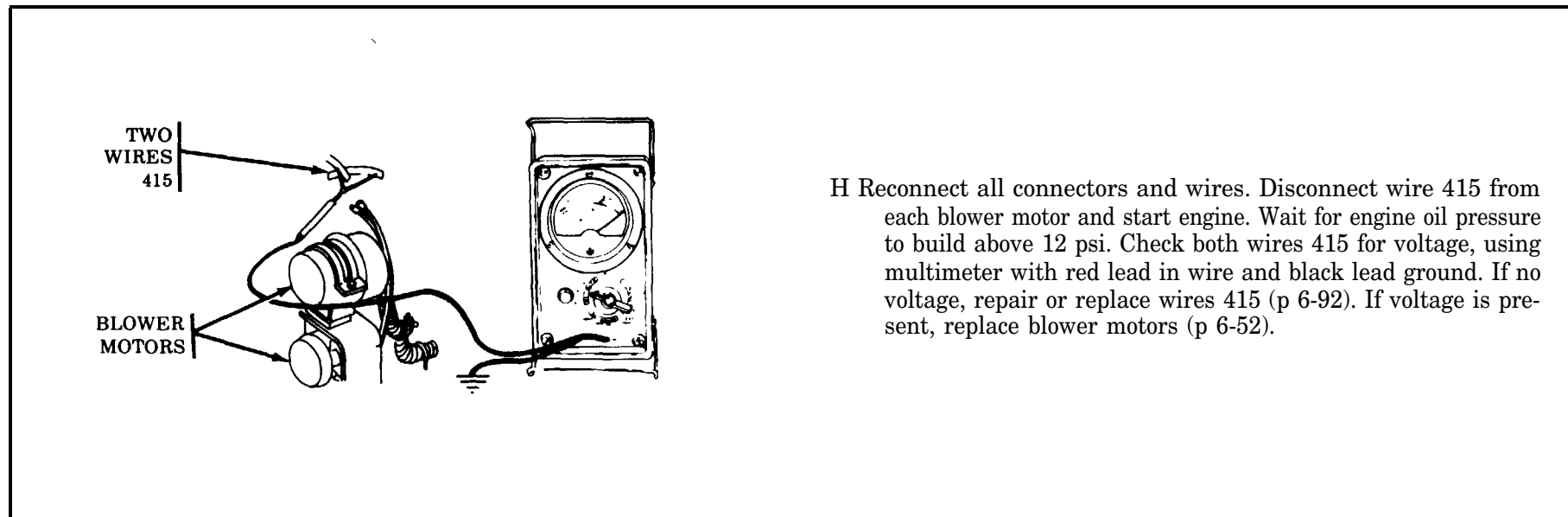


- F Disconnect wire 415 at circuit breaker. Place red multimeter lead in wire 415, ground lead and check for voltage. If voltage is not present, repair or replace wire 415 (Appx F). If voltage is present, leave jumper wire connected and go to step G.

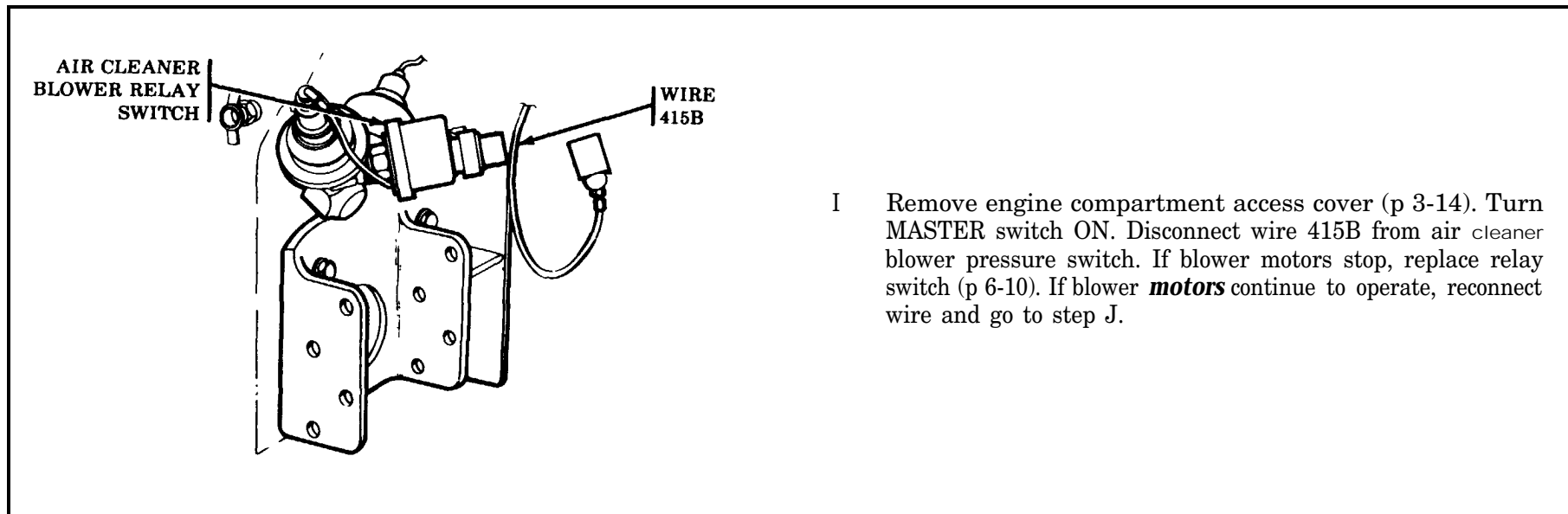




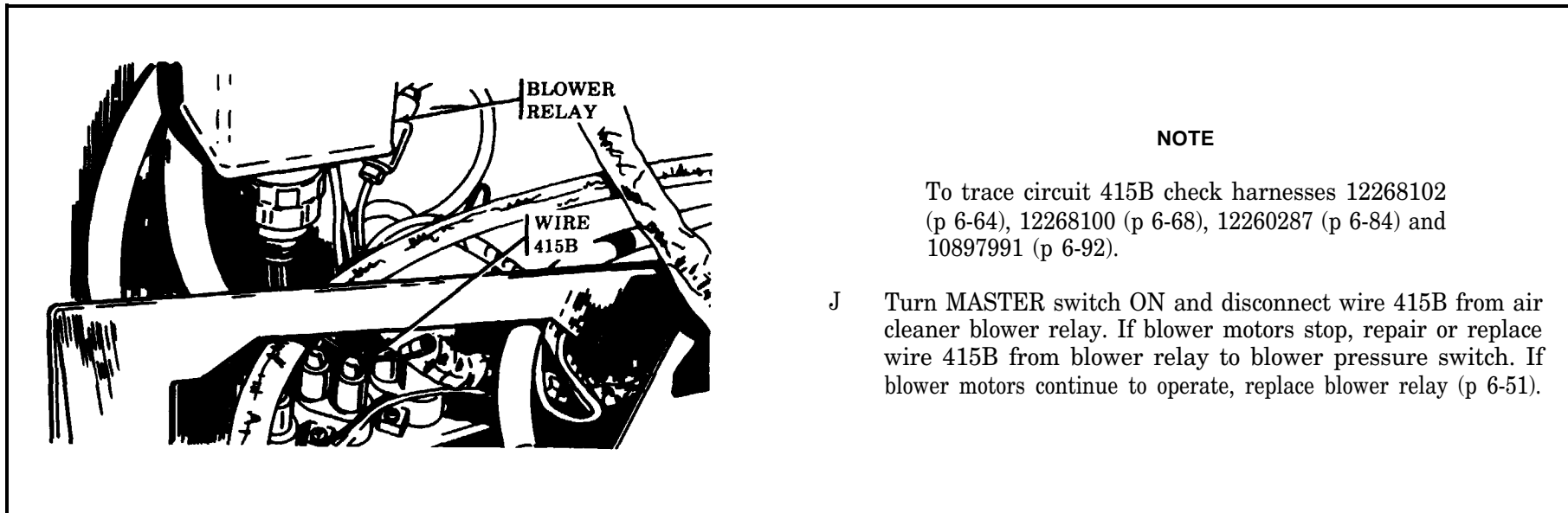
G Disconnect wire 415 at circuit breaker. Place red multimeter lead in circuit breaker output, ground black lead and check for voltage. If no voltage, replace circuit breaker (p 6-54). If voltage is present, leave jumper wire connected and go to step H.



H Reconnect all connectors and wires. Disconnect wire 415 from each blower motor and start engine. Wait for engine oil pressure to build above 12 psi. Check both wires 415 for voltage, using multimeter with red lead in wire and black lead ground. If no voltage, repair or replace wires 415 (p 6-92). If voltage is present, replace blower motors (p 6-52).



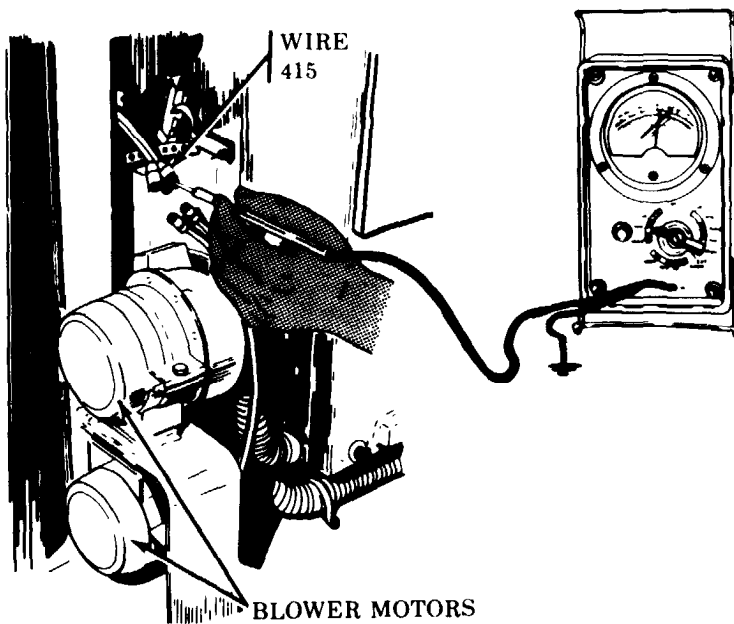
- I Remove engine compartment access cover (p 3-14). Turn MASTER switch ON. Disconnect wire 415B from air cleaner blower pressure switch. If blower motors stop, replace relay switch (p 6-10). If blower **motors** continue to operate, reconnect wire and go to step J.



#### NOTE

To trace circuit 415B check harnesses 12268102 (p 6-64), 12268100 (p 6-68), 12260287 (p 6-84) and 10897991 (p 6-92).

- J Turn MASTER switch ON and disconnect wire 415B from air cleaner blower relay. If blower motors stop, repair or replace wire 415B from blower relay to blower pressure switch. If blower motors continue to operate, replace blower relay (p 6-51).



- K Start engine and wait for engine oil pressure to build above 12 psi. Disconnect wire 415 at disabled blower motor and check for voltage. If no voltage, repair or replace wire 415 (p 6-92). If voltage is present, replace blower motor (p 6-51).

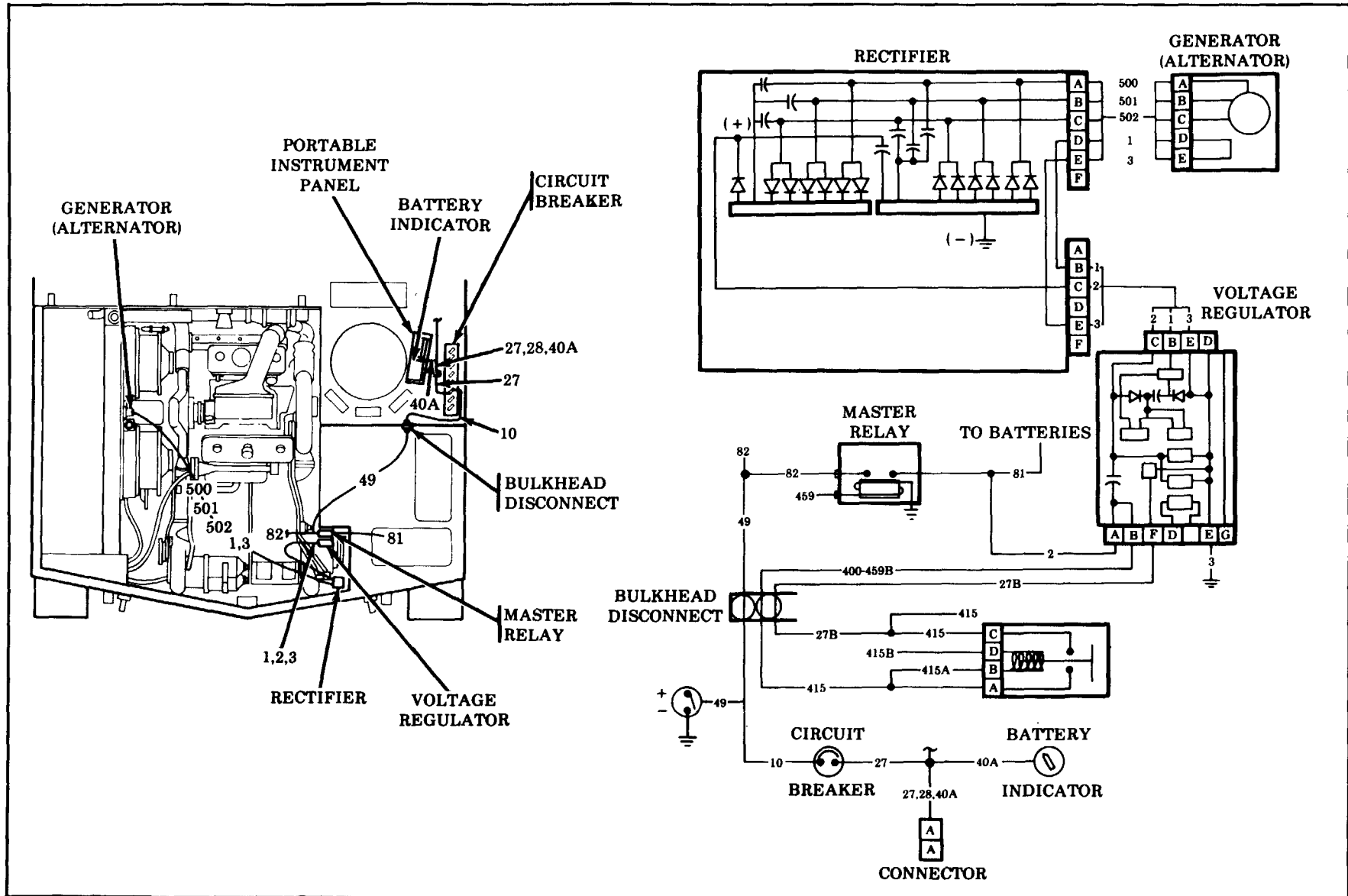


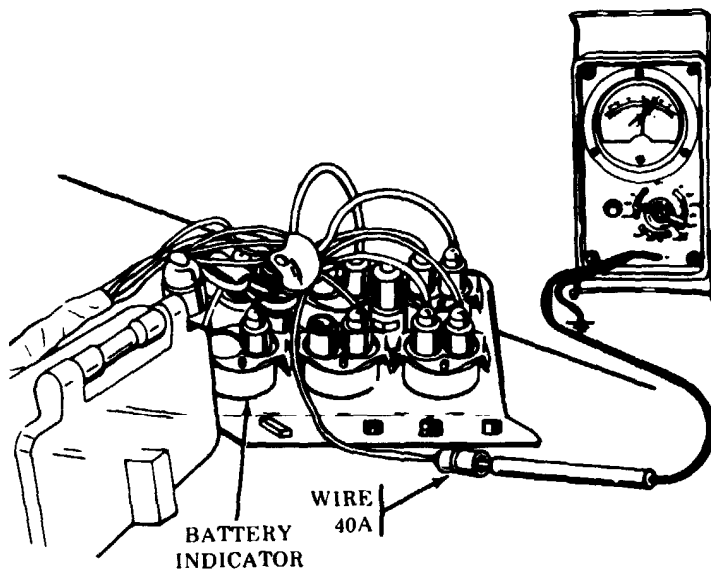
<p><b>GENERATOR (ALTERNATOR)</b></p>	<p><b>CHARGING SYSTEM DOESN'T OPERATE</b></p> <p>Gage shows no charge with engine running or isn't steady or accurate.</p> <p><b>BATTERY IS OVERCHARGING</b></p> <p>Battery gage is in right red.</p>
--------------------------------------	---



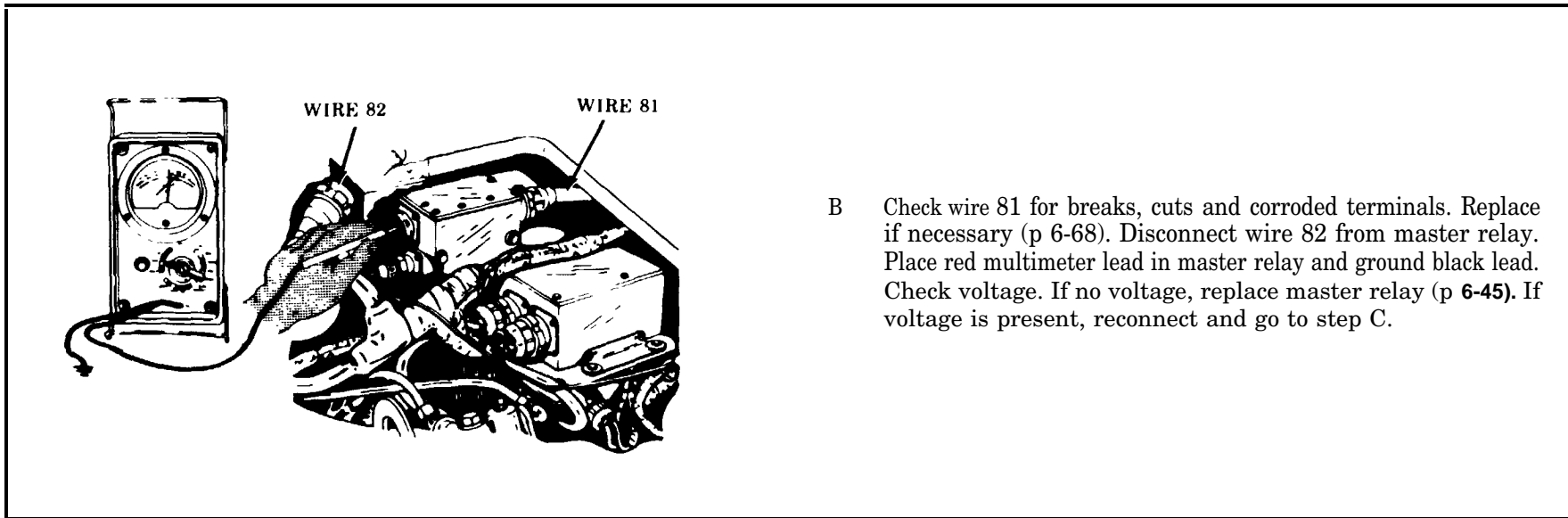
- 1 Start engine and check air cleaner dust exhauster motors for operation. If inoperative, troubleshoot and repair air cleaner blower motor circuit (p 2-113). If air cleaner dust exhauster motors operate, go to step 2.
- 2 Run STE/ICE Test No. 83 (p 2-48.40).
  - a If test passes, go to step 3.
  - b If test fails, go to step 5.
- 3 Run STE/ICE Test No. 82 (p 2-48.38).
  - a If test passes, go to step 4.
  - b If test fails, replace voltage regulator (p 6-5) and verify no faults.
- 4 Run STE/ICE Test No. 67 (engine running) (p 2-48.29).
  - a If reading is greater than 28.5 volts, go to step 51.
  - b If reading is less than 27.5 volts, go to step 5G.
  - c If test passes, go to step 5A.
- 5 Troubleshoot charging system circuit.

**CHARGING SYSTEM CIRCUIT**

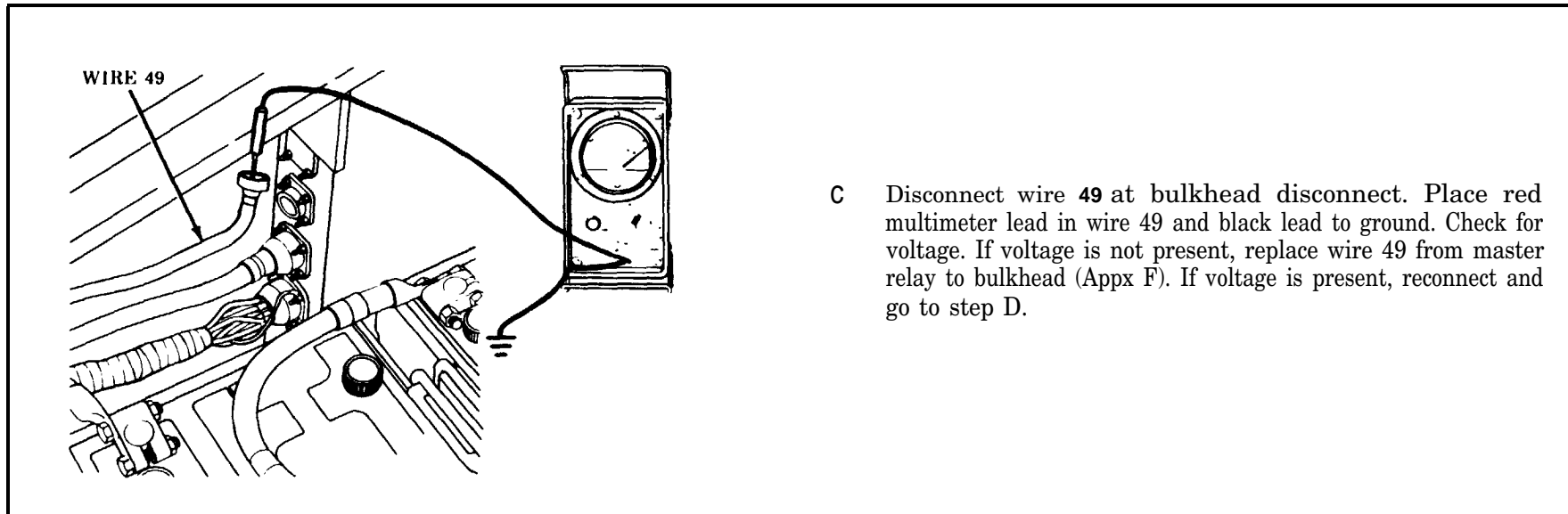




A Disassemble portable instrument panel (p 6-21). Disconnect wire 40A from BATTERY indicator and check for voltage by placing red lead of multimeter in wire 40A and black lead to ground. If voltage is present, replace indicator (p 6-19). If voltage is not present, go to step B.

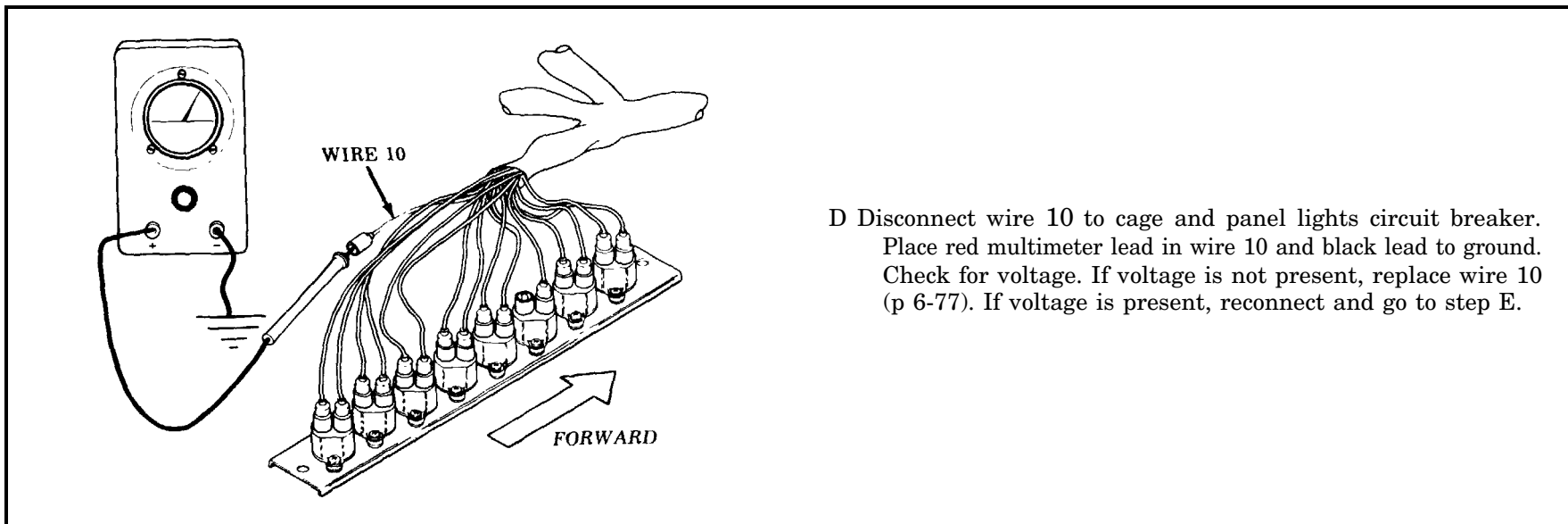


- B Check wire 81 for breaks, cuts and corroded terminals. Replace if necessary (p 6-68). Disconnect wire 82 from master relay. Place red multimeter lead in master relay and ground black lead. Check voltage. If no voltage, replace master relay (p 6-45). If voltage is present, reconnect and go to step C.

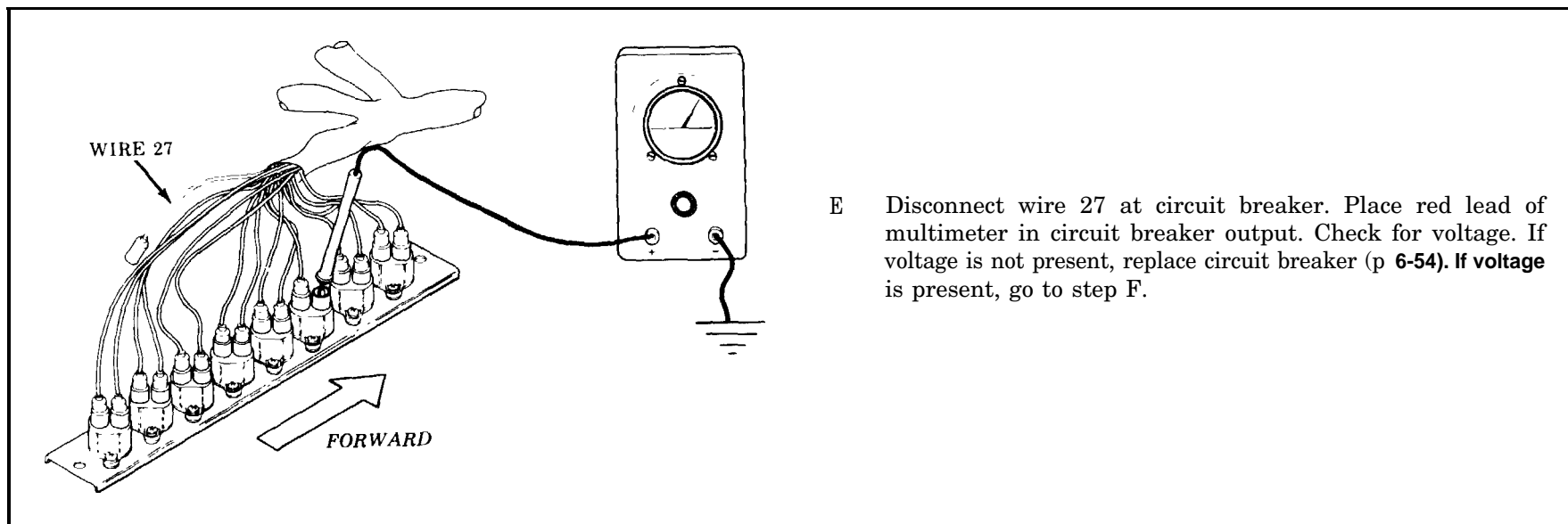


- C Disconnect wire 49 at bulkhead disconnect. Place red multimeter lead in wire 49 and black lead to ground. Check for voltage. If voltage is not present, replace wire 49 from master relay to bulkhead (Appx F). If voltage is present, reconnect and go to step D.

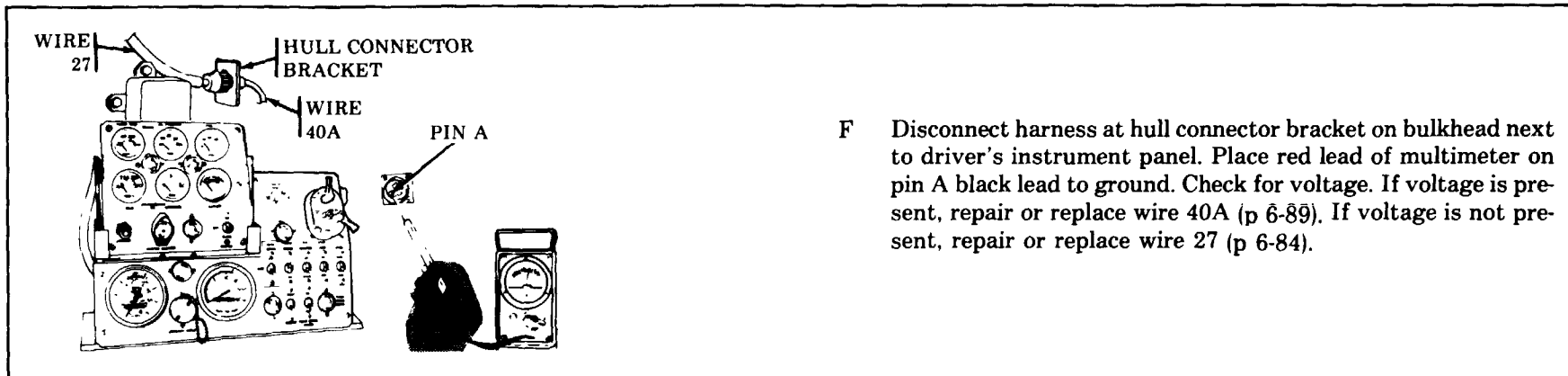




D Disconnect wire 10 to cage and panel lights circuit breaker. Place red multimeter lead in wire 10 and black lead to ground. Check for voltage. If voltage is not present, replace wire 10 (p 6-77). If voltage is present, reconnect and go to step E.



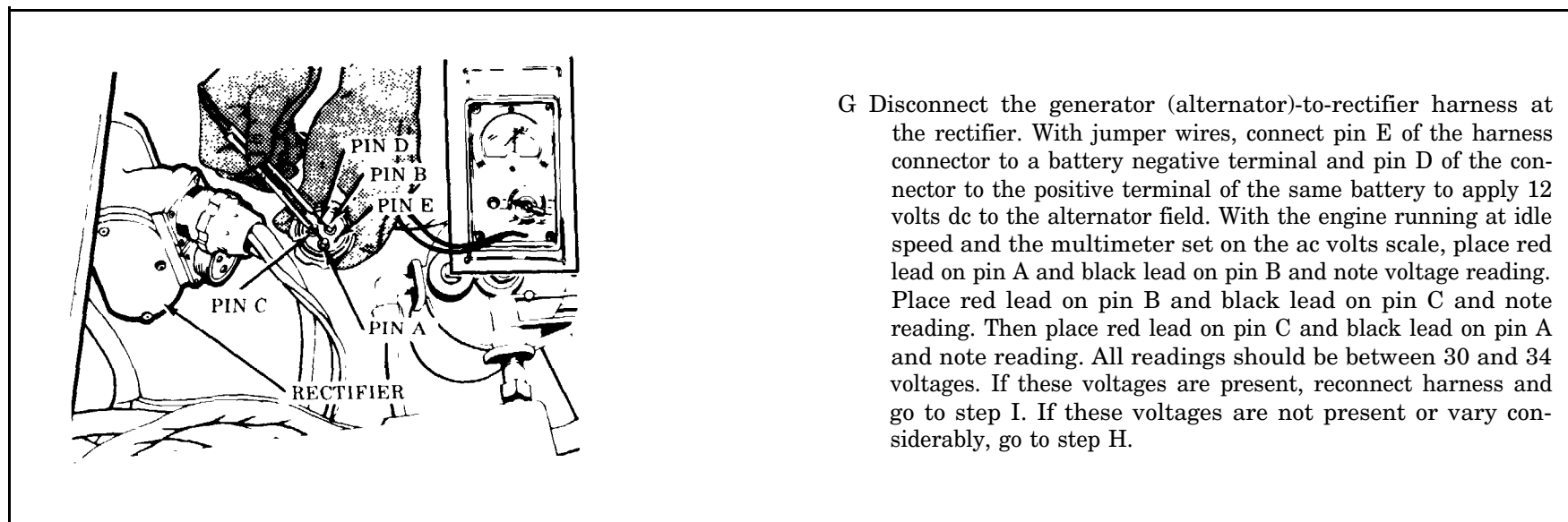
E Disconnect wire 27 at circuit breaker. Place red lead of multimeter in circuit breaker output. Check for voltage. If voltage is not present, replace circuit breaker (p 6-54). If voltage is present, go to step F.



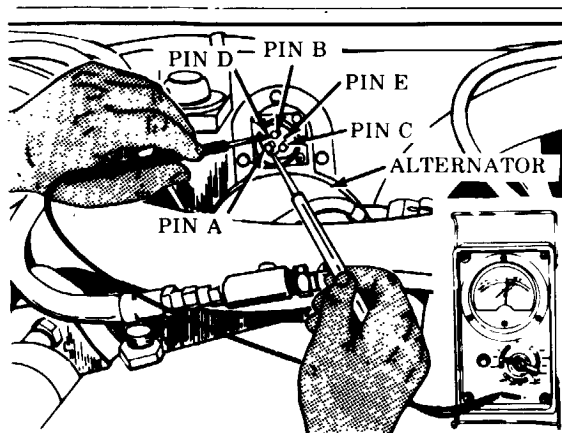
- F Disconnect harness at hull connector bracket on bulkhead next to driver's instrument panel. Place red lead of multimeter on pin A black lead to ground. Check for voltage. If voltage is present, repair or replace wire 40A (p 6-89). If voltage is not present, repair or replace wire 27 (p 6-84).

#### NOTE

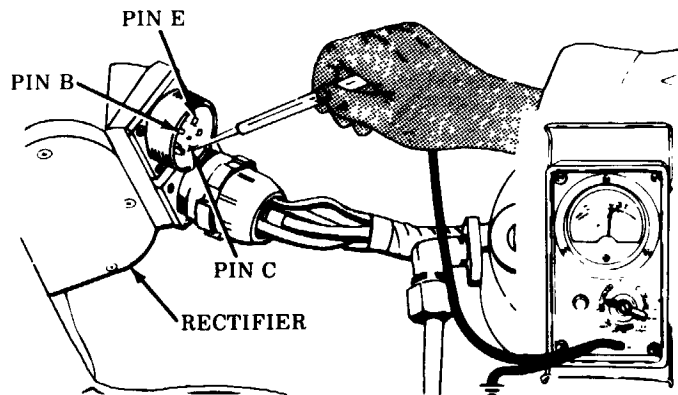
For steps G, H, I and J, use jumper wires with alligator clips.



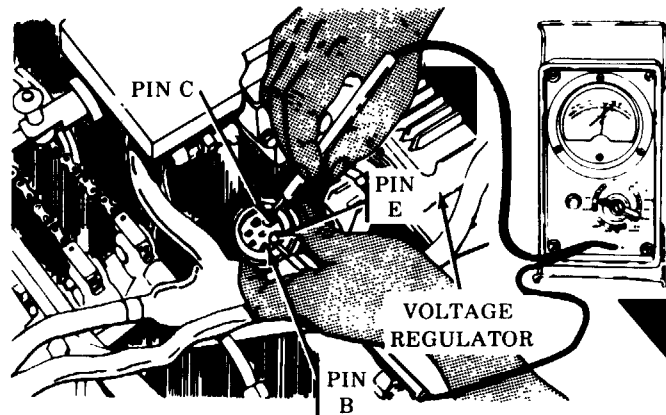
- G Disconnect the generator (alternator)-to-rectifier harness at the rectifier. With jumper wires, connect pin E of the harness connector to a battery negative terminal and pin D of the connector to the positive terminal of the same battery to apply 12 volts dc to the alternator field. With the engine running at idle speed and the multimeter set on the ac volts scale, place red lead on pin A and black lead on pin B and note voltage reading. Place red lead on pin B and black lead on pin C and note reading. Then place red lead on pin C and black lead on pin A and note reading. All readings should be between 30 and 34 voltages. If these voltages are present, reconnect harness and go to step I. If these voltages are not present or vary considerably, go to step H.



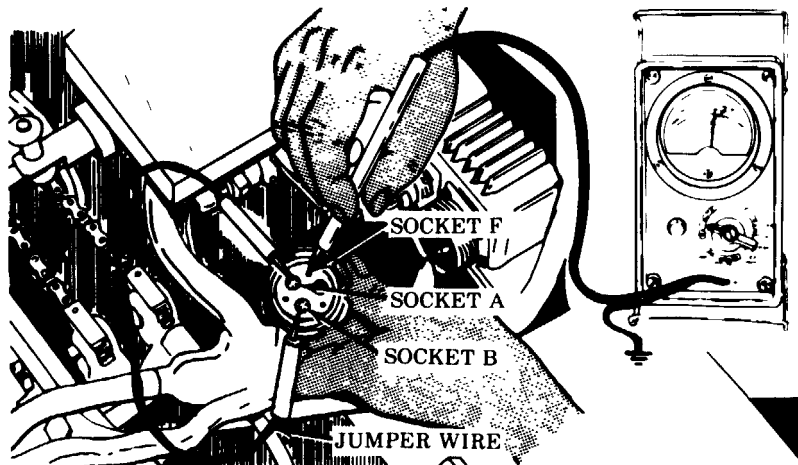
- H Disconnect harness at alternator. With jumper wires, connect pin E of alternator to a battery negative terminal and pin D of alternator to the same battery positive terminal to apply 12 volts dc to the alternator field. Run vehicle engine at idle speed, set multimeter on ac volts scale, place red lead on pin A and negative lead on pin B, and note voltage reading. Then place red lead on pin C and black lead on pin A and note voltage reading. All readings should be between 30 and 34 volts. If these voltages are present, repair or replace cable from alternator to rectifier (p 6-64). If these voltages are not present or vary considerably, replace generator (alternator) (p 6-4).



- I Disconnect rectifier-to-regulator harness at rectifier. With jumper wires, connect pin E of rectifier to a battery negative terminal and pin B of harness to same battery positive terminal. With vehicle engine running at idle speed and multimeter set on dc volts scale, place red lead on rectifier pin C and black lead to ground. Multimeter reading should be between 30 and 34 volts. If this voltage is not present, replace rectifier (p 6-7). If this voltage is present, reconnect harness and go to step J.



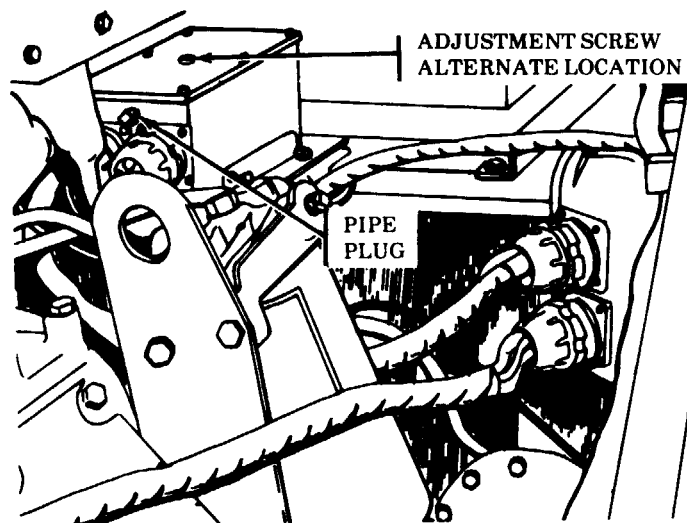
- J Disconnect rectifier-to-regulator harness at voltage regulator. With jumper wires, connect pin E of harness to a battery negative terminal and pin B of harness to positive terminal of the same battery. With vehicle engine running at idle speed and multimeter set on the dc volts scale, place red lead on pin C of harness and black lead to ground. Multimeter reading should be between 30 to 34 volts. If this voltage is not present, repair or replace rectifier-to-regulator harness (p 6-76). If this voltage is present, go to step K.



- K MASTER switch OFF. Disconnect voltage regulator to bulkhead harness at voltage regulator. Use a jumper wire to connect socket A to socket B. Place MASTER switch to ON position and start engine. Run engine at 1000 rpm (oil pressure 12 psi). Place red lead of multimeter in socket F and black lead to ground. If voltage is 24 vdc, troubleshoot air cleaner blower motor circuit (p 2-113).

## NOTE

Batteries can be totally discharged within four to six hours if air cleaner blower motor system is malfunctioning or if blower motors operate full time. Troubleshooting step K provides a basic test of the blower motor circuit by testing the blower motor relay output voltage to the voltage regulator (wire 27B). If the blower motor relay output is 24 vdc (battery power) with the voltage regulator disconnected from the circuit, then the voltage regulator is malfunctioning/inoperative and will not charge the battery. If the voltage is less than 24 vdc (battery power), then the blower motor circuit is malfunctioning and discharging the battery.



## CAUTION

Extremely low battery electrolyte levels will cause a low voltage indication on the BATTERY indicator on portable instrument panel. Regulators can be damaged by attempts to adjust the rheostat beyond its stops when the only problem is dry batteries.

L Do not check or adjust voltage regulator except as follows:

Make sure batteries are fully charged  
(TM 9-2350-267-10).

TA312704

Connect red multimeter lead to the positive battery cable terminal and black lead to negative battery cable terminal.

Start engine and run at approximately 1000 rpm. Run engine as required to bring engine compartment, regulator and batteries to normal operating temperature.

During above warm-up period, increase engine speed to approximately 2500 rpm and then return to idle speed while observing multimeter. Voltage reading should not vary more than + 0.1 volt during above check. This also provides a check on tightness of wiring connection. Turn headlights on and off several times. Multimeter needle may vary slightly, but should return to its original (voltage) quickly.

Turn off all major vehicle electrical components and turn on vehicle headlights.

Open transmission left access door and remove square head pipe plug from end of voltage regulator (between and above harness connectors).

**CAUTION**

**Rheostat turns easily. Do not force beyond the stops.**

With engine running at 1000 rpm, use a screwdriver to adjust rheostat to obtain a voltage reading of 27.5 to 28.5 volts. Turn screwdriver counterclockwise to reduce voltage. Slowly turn screwdriver clockwise to bring regulated voltage up to 27.5 to 28.5 volts.

Replace plug in end of regulator (screw on top of regulator).

Shut off engine and remove multimeter.

If regulator cannot be adjusted, replace regulator (p 6-5).

If electrical (battery) problems continue after the regulator has been properly checked and/or adjusted, check the service, maintenance and/or usage of the battery (TM 9-6140-200-141).

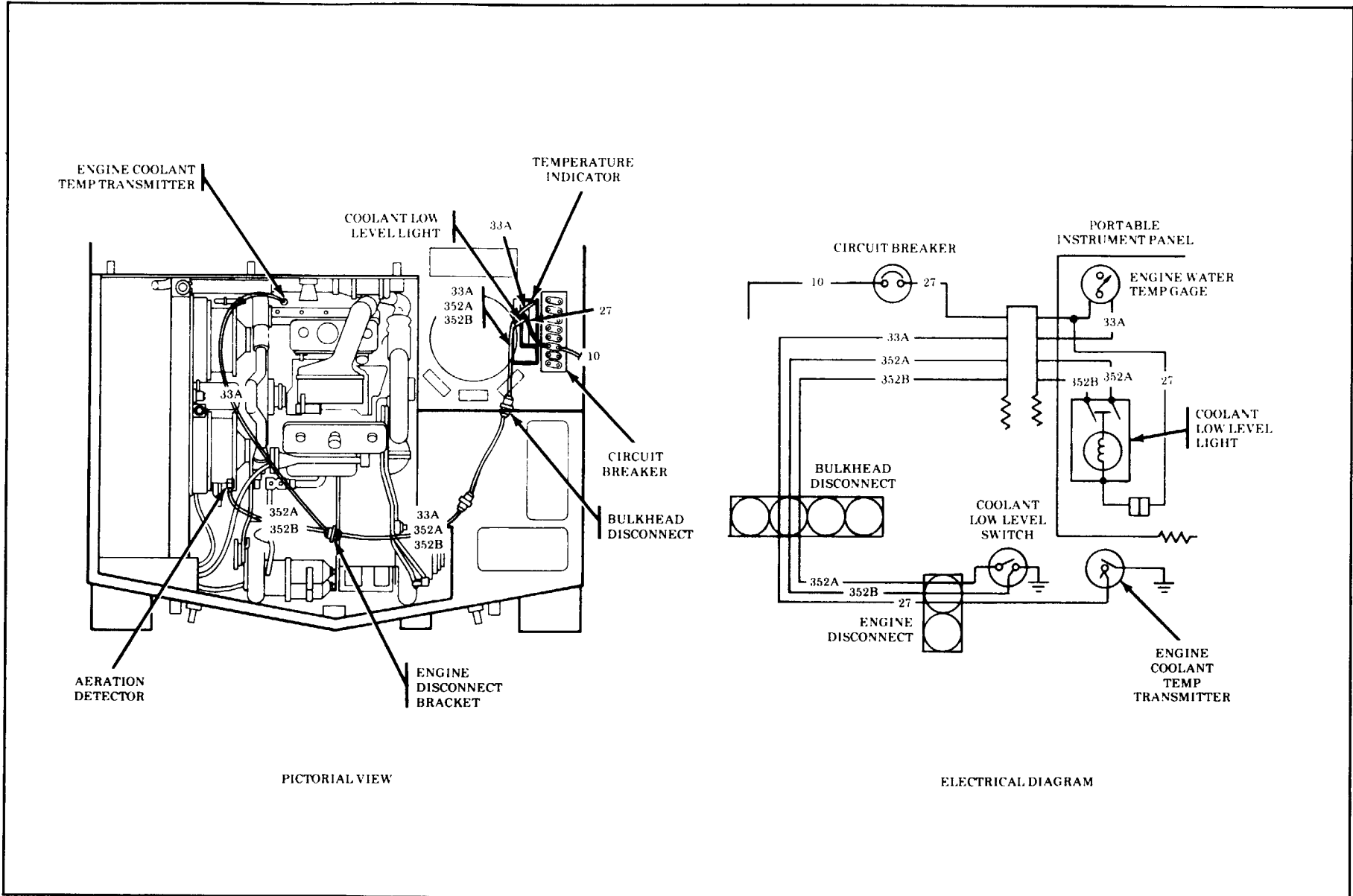
<p style="text-align: center;"><b>GAGES</b></p>	<p><b>ENGINE COOLANT TEMPERATURE GAGE NEEDLE DOESN'T MOVE OR ISN'T STEADY OR ACCURATE</b></p> <p>Do steps A through C.</p> <p><b>ENGINE LOW LEVEL COOLANT LIGHT DOESN'T LIGHT OR GIVES FALSE INDICATION OF COOLANT LOW LEVEL CONDITIONS</b></p> <p>Do steps D through G.</p>
---	--



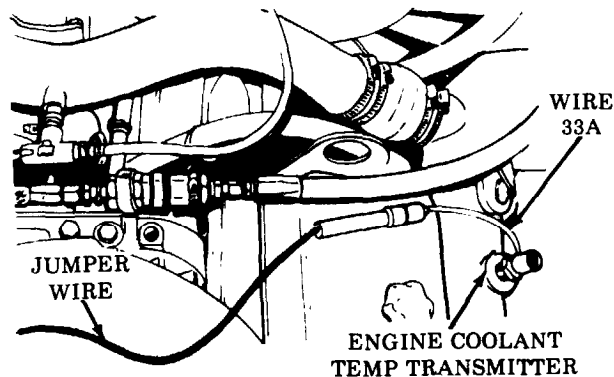
Troubleshoot engine coolant temperature (ENGINE WATER TEMP) indicator circuit.

- 2 Troubleshoot engine low level coolant (AERATION DETECTOR) circuit.

### ENGINE COOLANT INDICATOR CIRCUITS



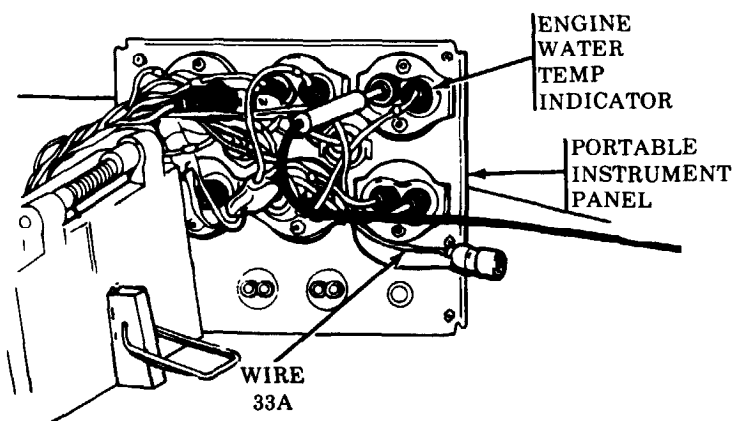




**NOTE**

Battery cables connected and MASTER switch ON.

- A Disconnect wire 33A from engine coolant temperature transmitter. After disconnecting, if ENGINE WATER TEMP indicator shows a minimum reading, use a jumper wire to ground wire 33A. After grounding, if indicator shows a maximum reading, replace engine coolant temperature transmitter (p 6-8). If indicator fails to show a minimum or maximum reading, go to step B.

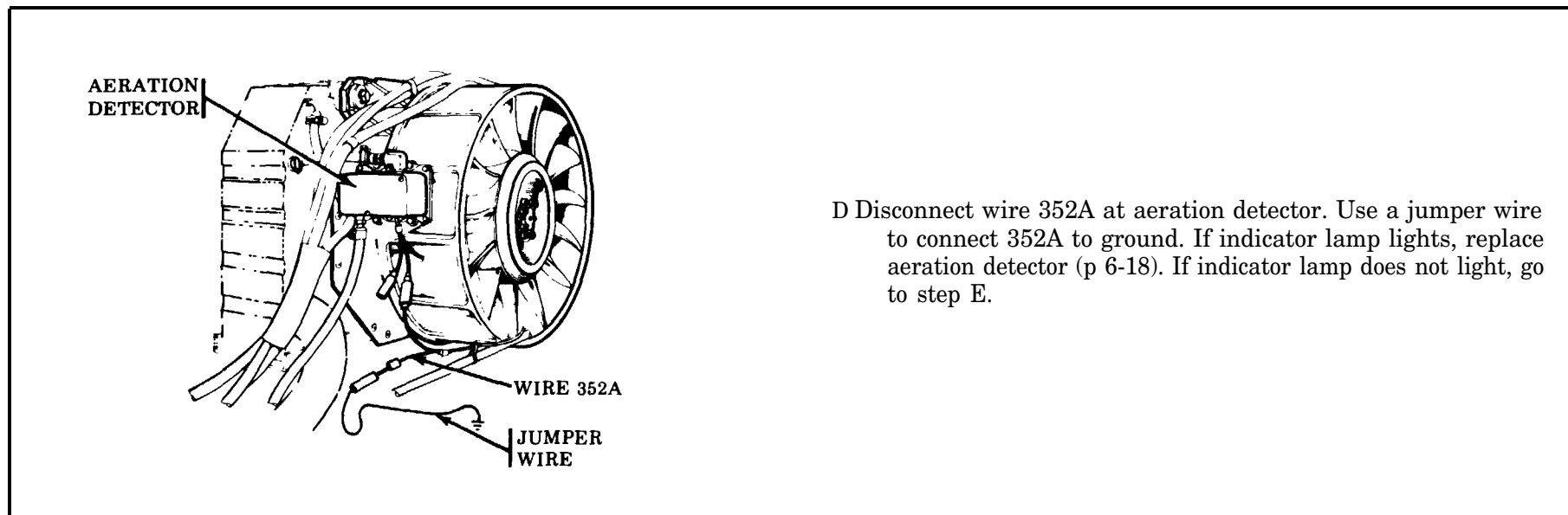
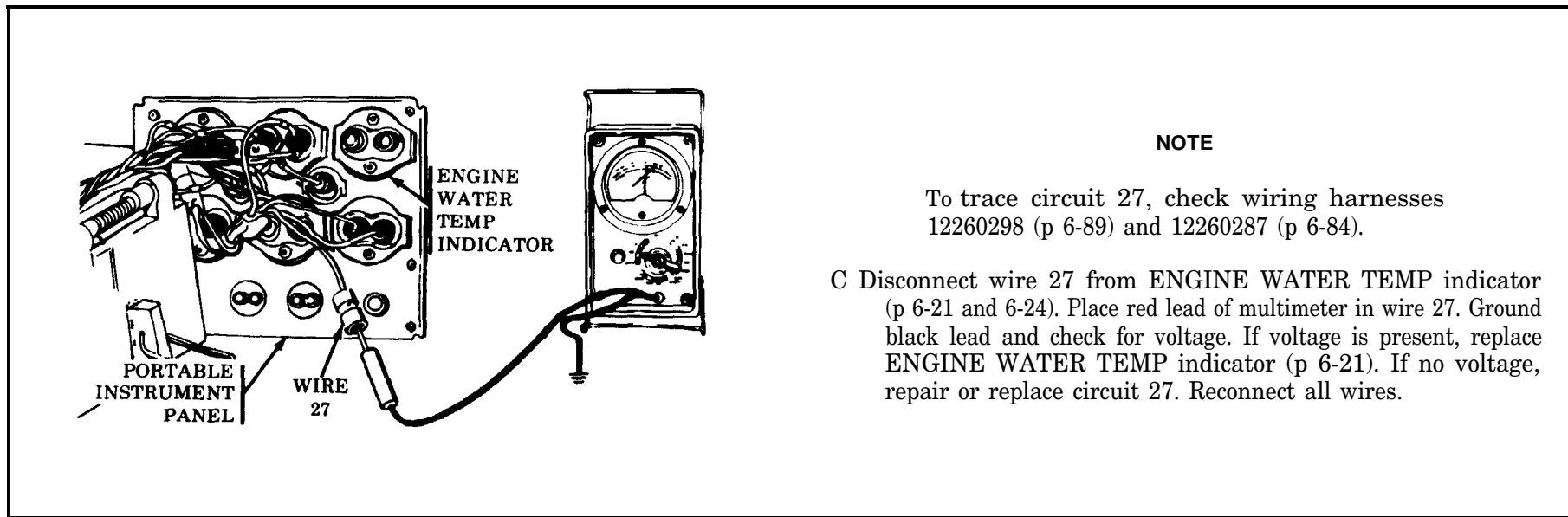


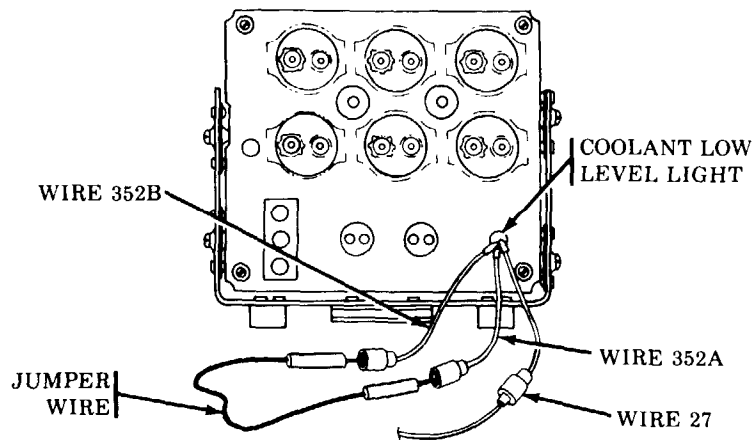
**NOTE**

To trace circuit 33A, check harnesses 12268102 (p 6-64), 12208100 (p 6-68), 12260287 (p 6-84) and 12260298 (p 6-89).

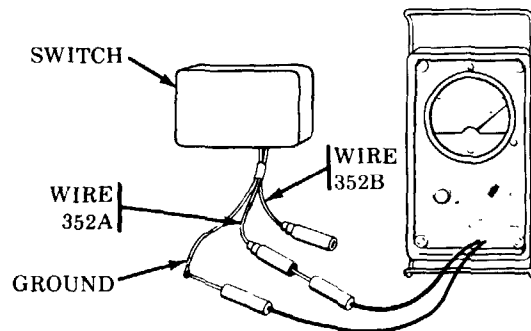
- B Disconnect wire 33A at ENGINE WATER TEMP indicator (p 6-21 and 6-24). If indicator shows a minimum reading, use a jumper wire to ground indicator. If indicator shows a maximum reading, repair or replace circuit 33A from indicator to transmitter. If indicator fails to read correctly, go to step C.

TA310490

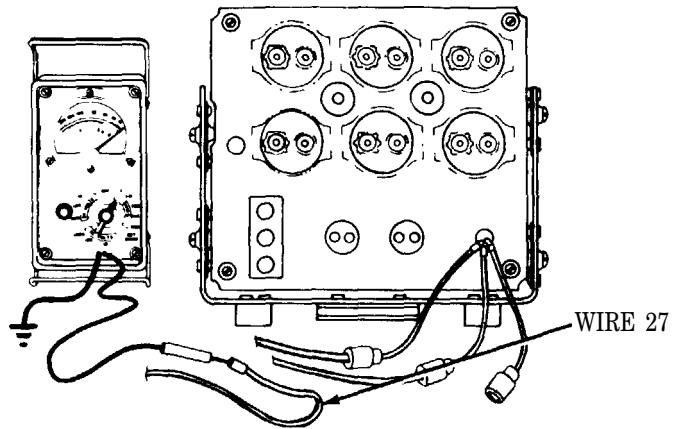




- E Disconnect wires 352A and 352B at coolant low level light terminals at portable instrument panel (p 6-21). Use jumper wire to connect wire 352A and 352B connectors on indicator light. If indicator lamp lights up, go to step F. If indicator lamp does not light up, go to step G.



- F Disconnect wires 352A and 352B at aeration detector. Remove aeration detector cover. Place red lead of multimeter in wire 352A and black lead to ground. If multimeter reading is infinity ( $\infty$ ), depress switch. Multimeter should read above 0 ohms but below  $\infty$ . Repeat for wire 352B. If multimeter reading does not move from  $\infty$  toward the 0-ohm level when the switch is depressed, replace the aeration detector (p 6-18).

**NOTE**

To trace circuit 36, check wiring harnesses 12268102 (p 6-64), 12268100 (p 6-68), 12260287 (p 6-84) and 12260298 (p 6-89).

- G Disconnect wire 27 from coolant low level light terminal (p 6-21). Place red lead of multimeter in wire 27 and black lead to ground. If voltage is present, replace coolant low level light assembly (p 6-21). If voltage is not present, repair or replace wire 27.

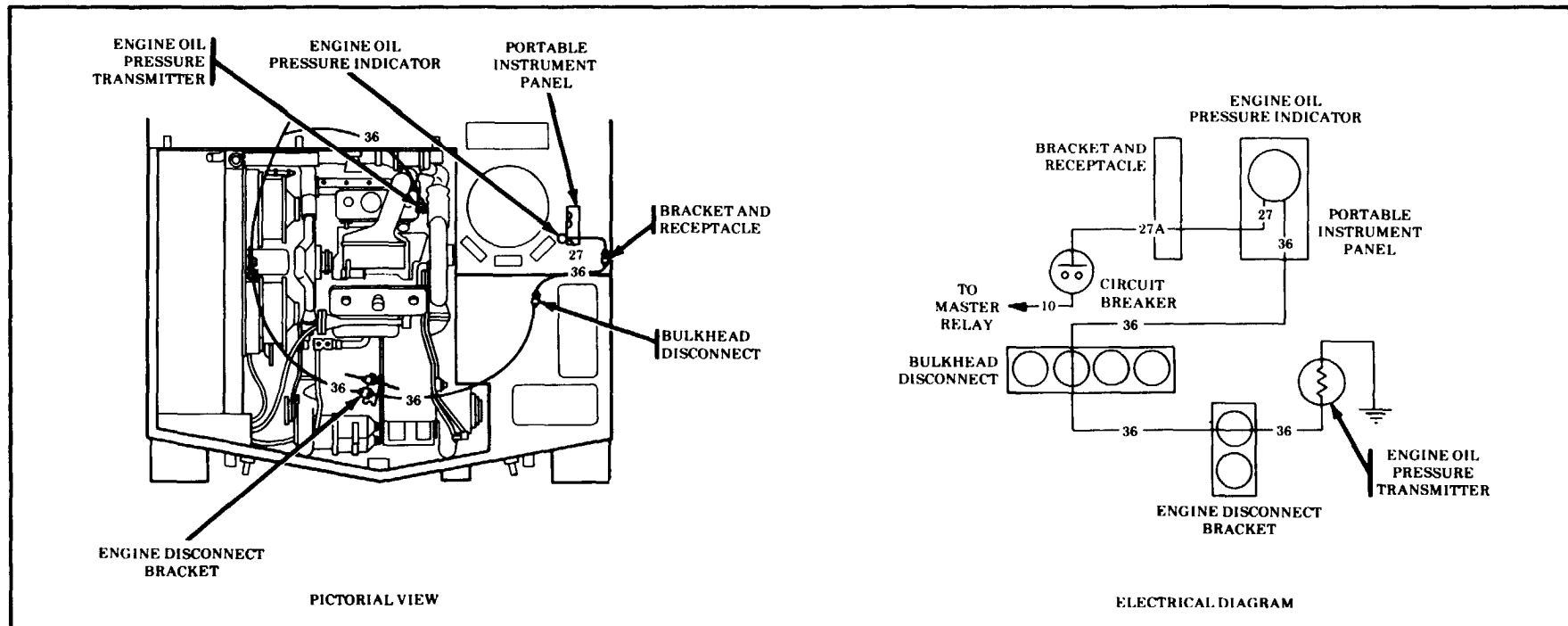
## GAGES

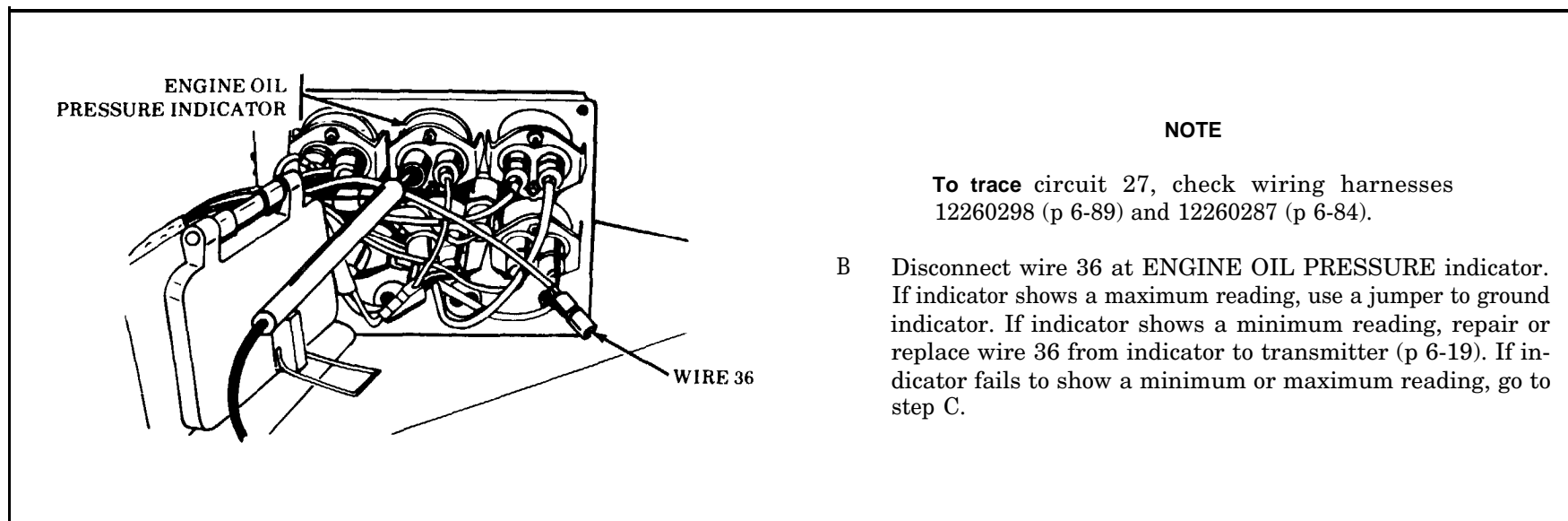
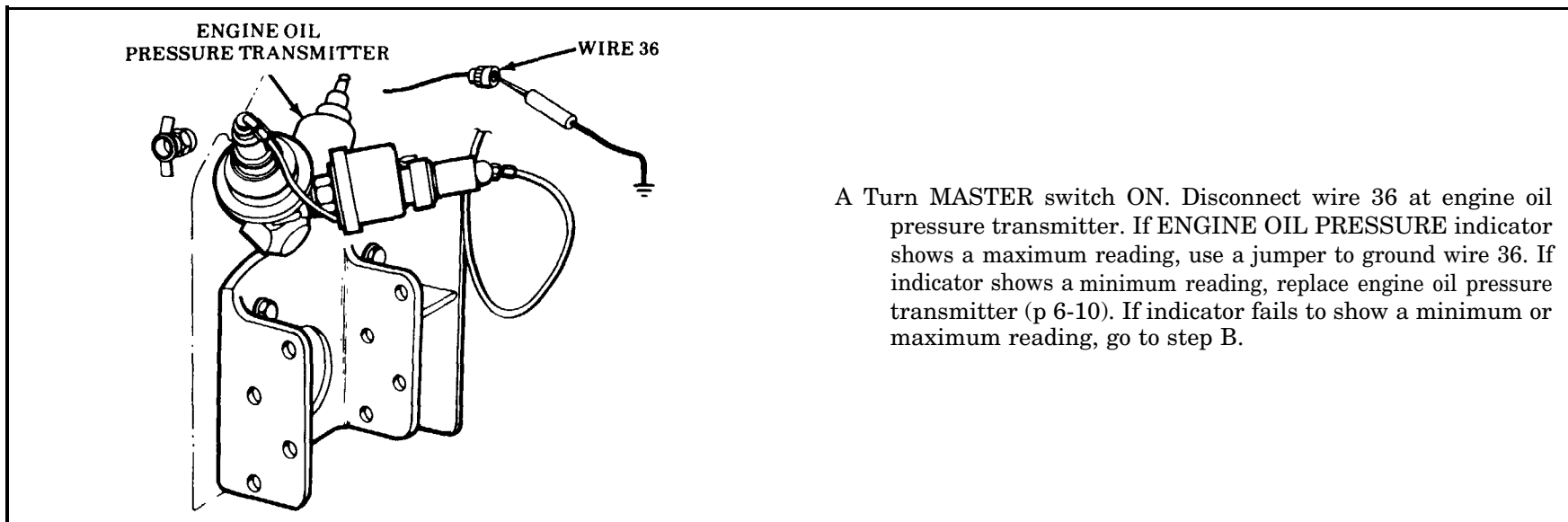
## ENGINE OIL PRESSURE GAGE NEEDLE DOESN'T MOVE OR ISN'T STEADY OR ACCURATE

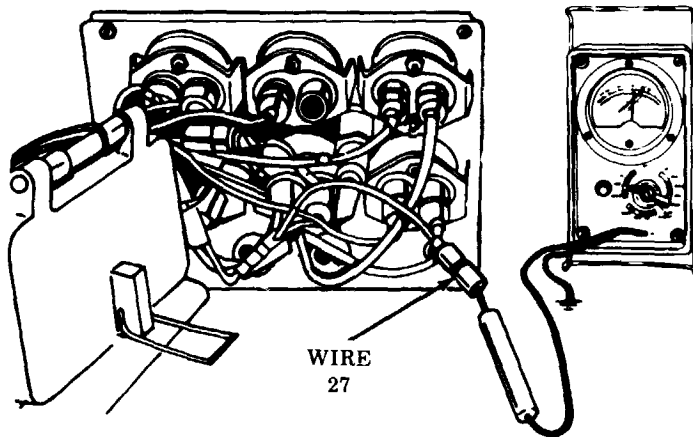
START HERE

- 1 Run STE/ICE Test No. 50 (idle) (p 2-48.18).
  - a If test passes, go to step 2.
  - b If test fails, go to engine troubleshooting. (p 2-82).
- 2 Troubleshoot ENGINE OIL PRESSURE indicator circuit.

### ENGINE OIL PRESSURE INDICATOR CIRCUIT







**NOTE**

To trace circuit 27, check wiring harnesses 12260298 (p 6-89) and 12260287 (p 6-84).

- C Disconnect wire 27 from ENGINE OIL PRESSURE indicator, Place red multimeter lead in wire 27, ground black lead, and check for voltage. If voltage is present, replace ENGINE OIL PRESSURE indicator (p 6-21). f no voltage, repair or replace wire 27. Reconnect all wires.

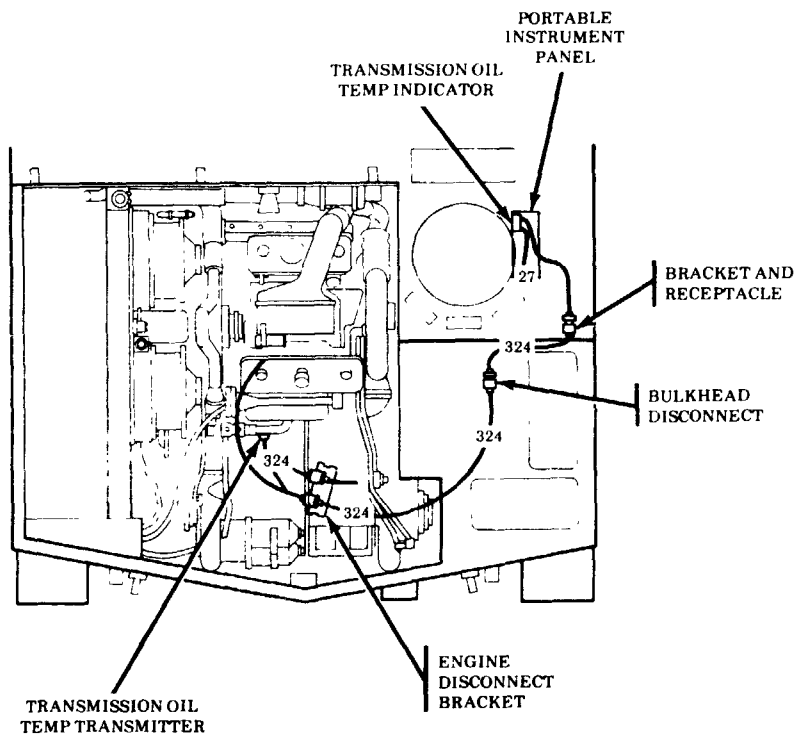
**GAGES**

**TRANSMISSION OIL TEMPERATURE GAGE NEEDLE DOESN'T MOVE OR ISN'T STEADY OR ACCURATE**

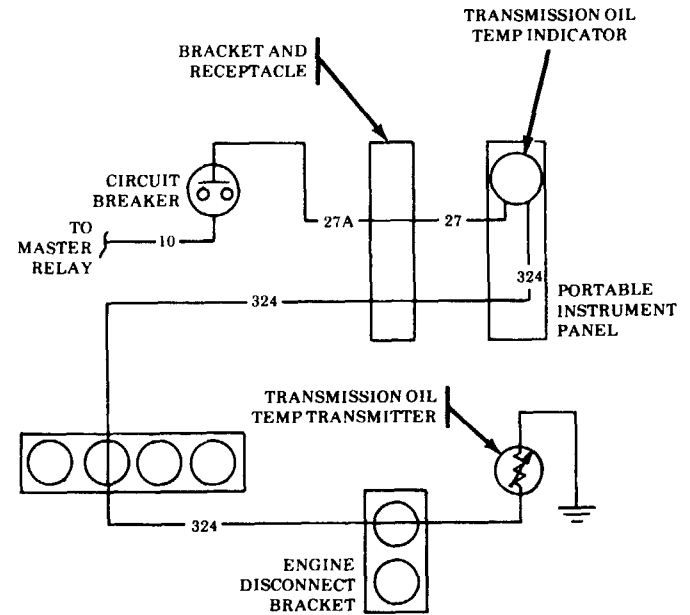
**START HERE** →

Troubleshoot transmission oil temperature (TRANSMISSION OIL TEMP) indicator circuit.

### TRANSMISSION OIL TEMPERATURE INDICATOR CIRCUIT

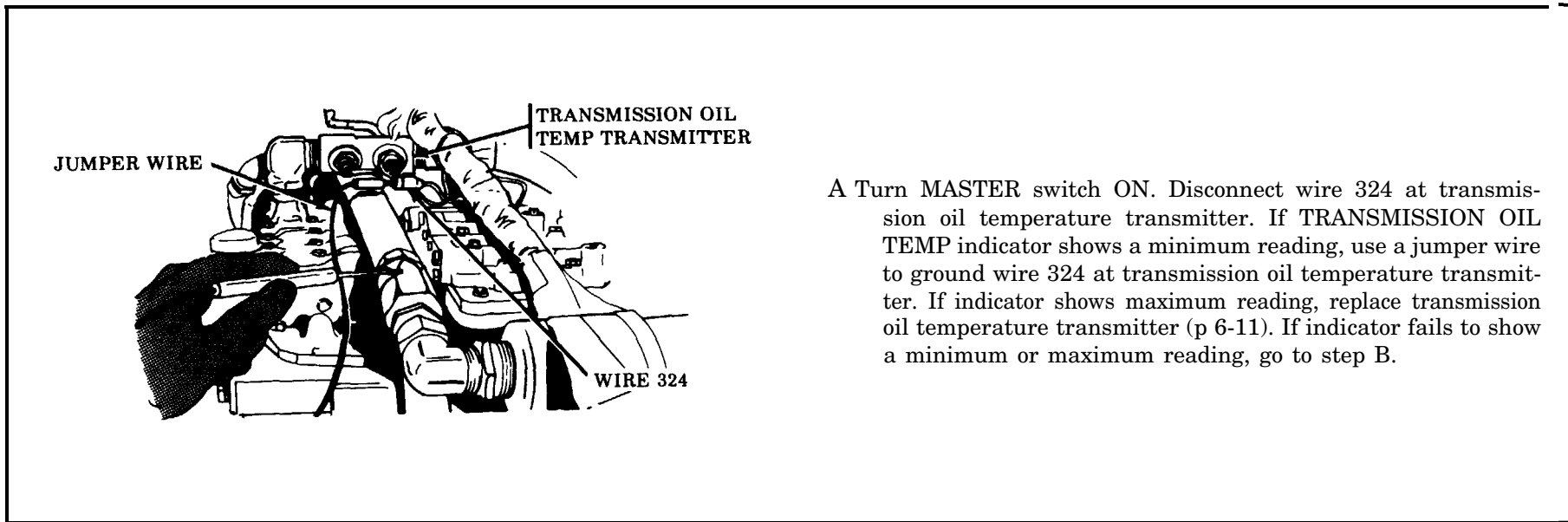


PICTORIAL VIEW

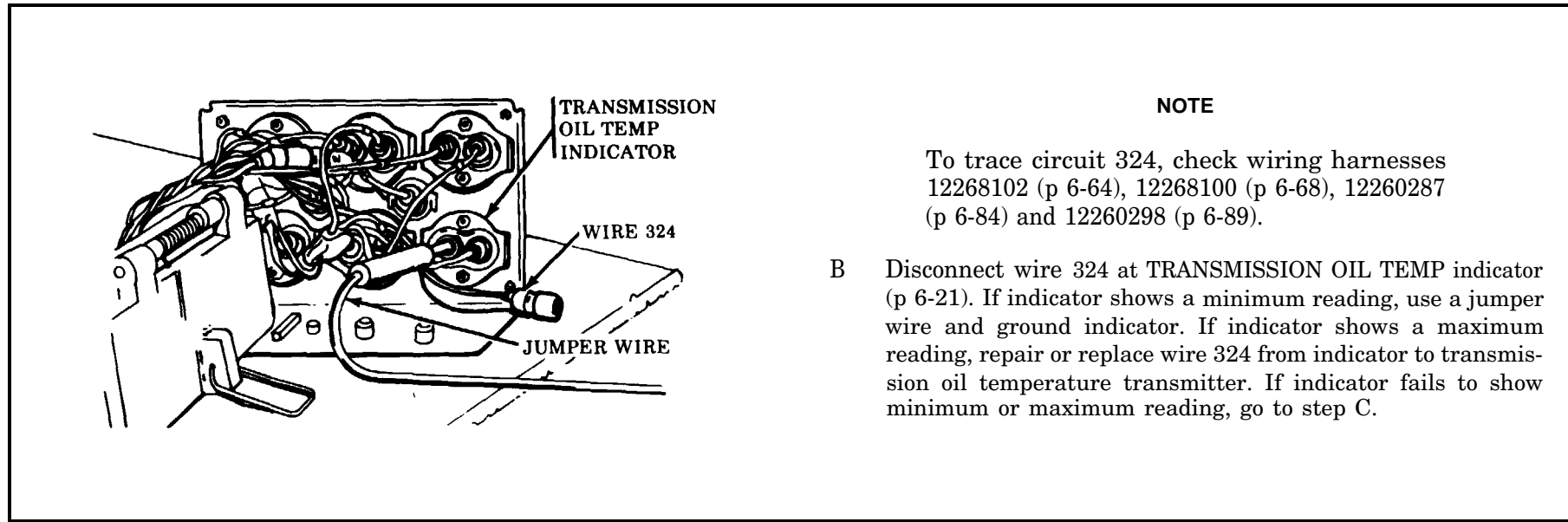


ELECTRICAL DIAGRAM





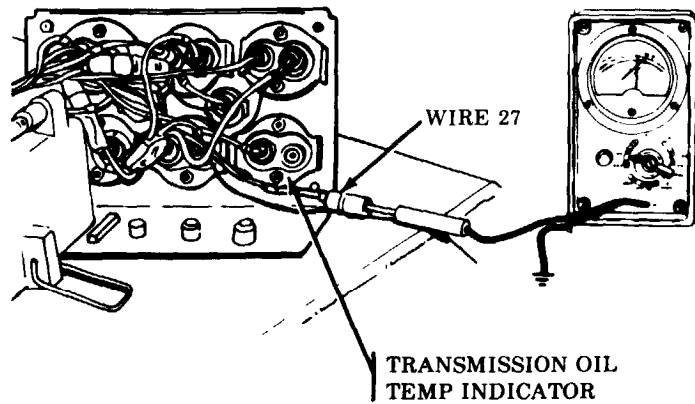
A Turn MASTER switch ON. Disconnect wire 324 at transmission oil temperature transmitter. If TRANSMISSION OIL TEMP indicator shows a minimum reading, use a jumper wire to ground wire 324 at transmission oil temperature transmitter. If indicator shows maximum reading, replace transmission oil temperature transmitter (p 6-11). If indicator fails to show a minimum or maximum reading, go to step B.



**NOTE**

To trace circuit 324, check wiring harnesses 12268102 (p 6-64), 12268100 (p 6-68), 12260287 (p 6-84) and 12260298 (p 6-89).

B Disconnect wire 324 at TRANSMISSION OIL TEMP indicator (p 6-21). If indicator shows a minimum reading, use a jumper wire and ground indicator. If indicator shows a maximum reading, repair or replace wire 324 from indicator to transmission oil temperature transmitter. If indicator fails to show minimum or maximum reading, go to step C.

**NOTE**

To trace circuit 27, check wiring harnesses 12260298 (p 6-89) and 12260287 (p 6-84).

- C Disconnect wire 27 from TRANSMISSION OIL TEMP indicator. Place red lead of multimeter in wire 27, ground black lead, and check for voltage. If voltage is present, replace TRANSMISSION OIL TEMP indicator (p 6-21). If no voltage, repair or replace wire 27. Reconnect all wires.

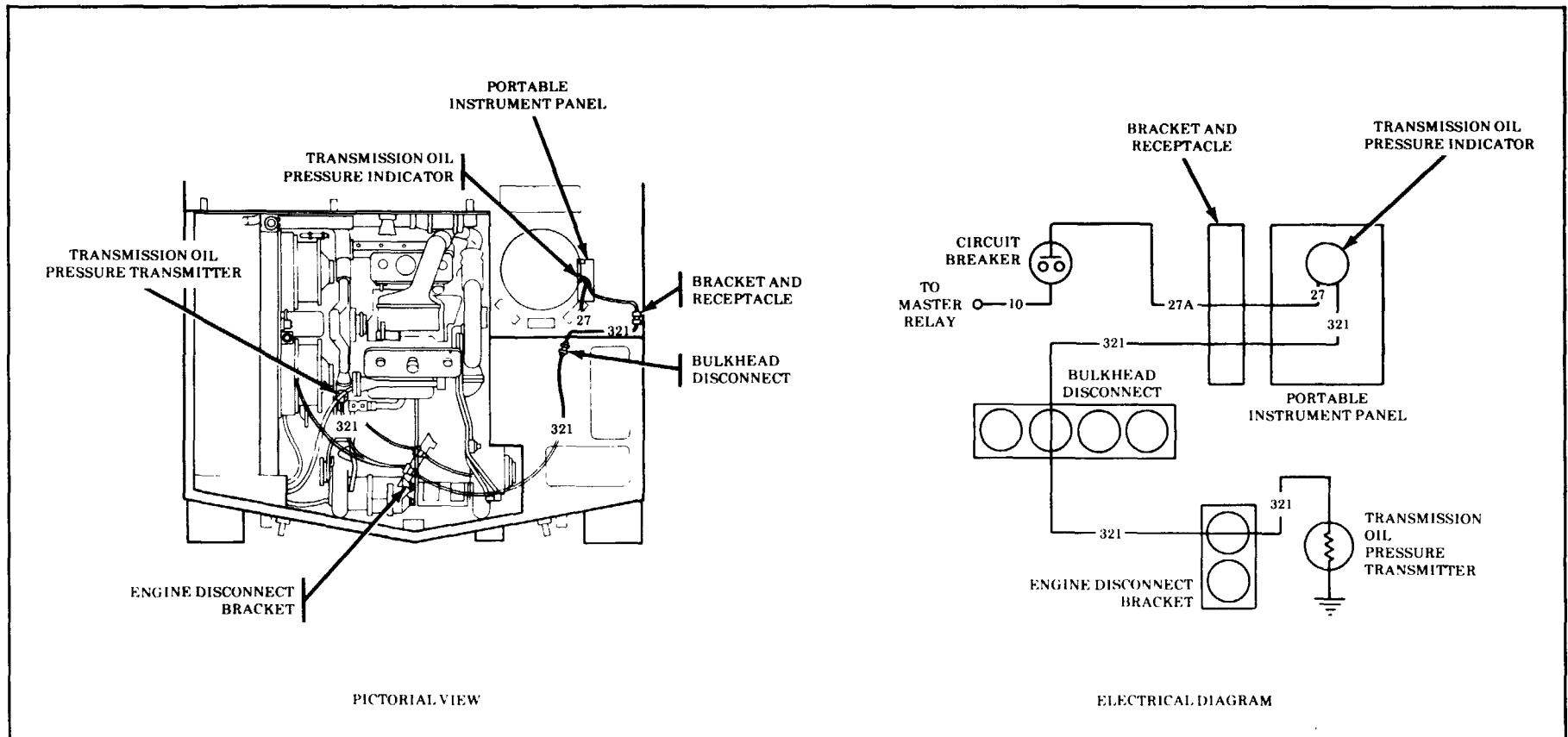
**GAGES**

**TRANSMISSION OIL PRESSURE GAGE NEEDLE DOESN'T MOVE  
OR ISN'T STEADY OR ACCURATE**

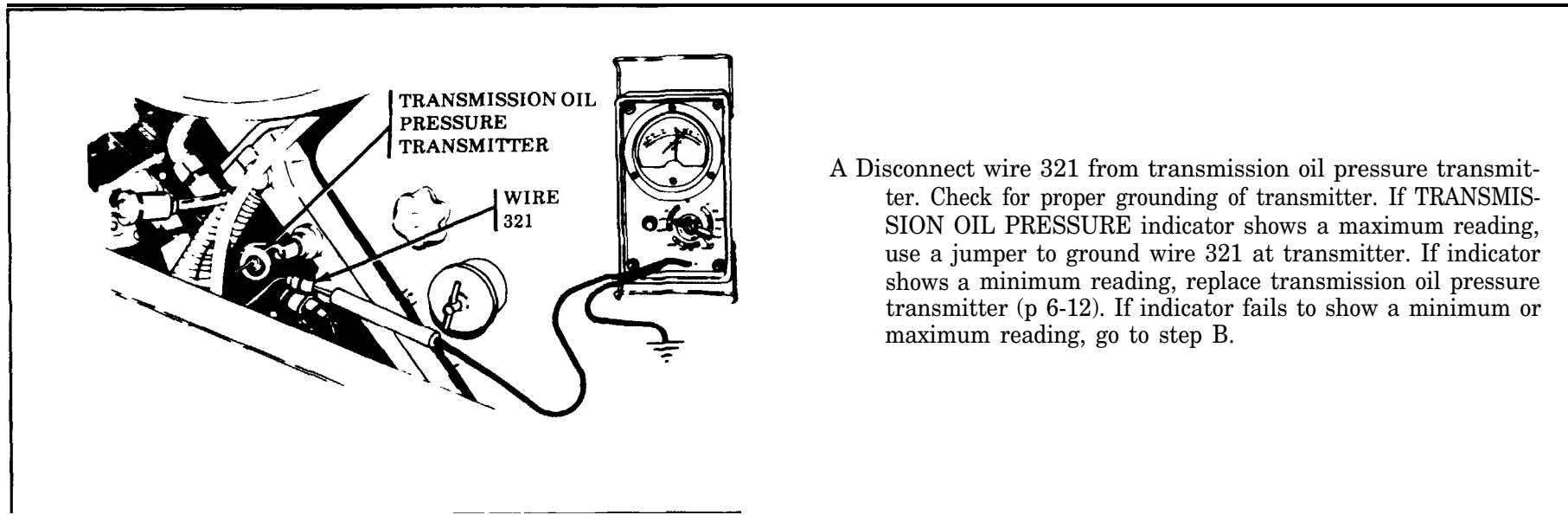
**START HERE** →

Troubleshoot TRANSMISSION OIL PRES-  
SURE indicator circuit.

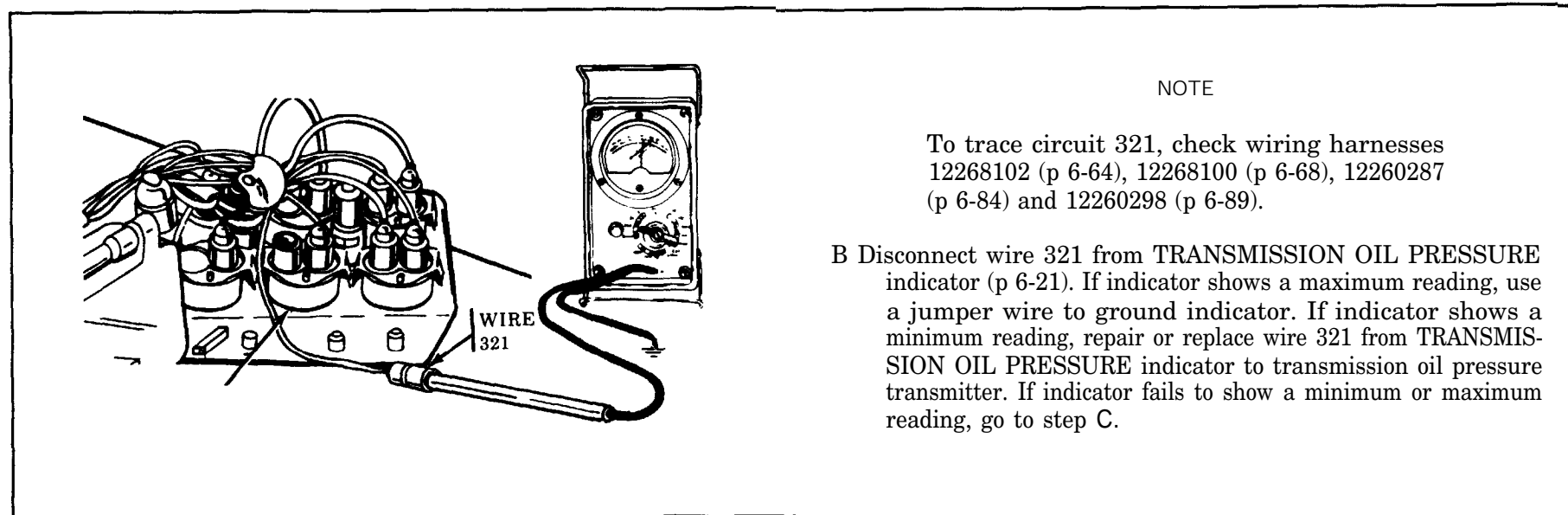
**TRANSMISSION OIL PRESSURE INDICATOR CIRCUIT**



TA310500



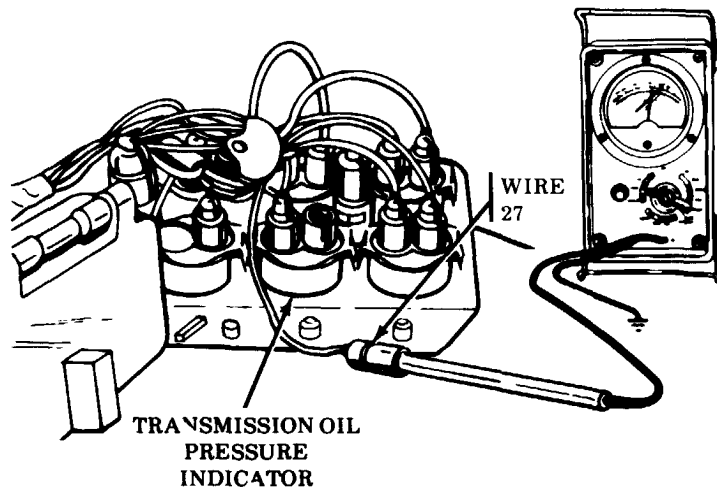
A Disconnect wire 321 from transmission oil pressure transmitter. Check for proper grounding of transmitter. If TRANSMISSION OIL PRESSURE indicator shows a maximum reading, use a jumper to ground wire 321 at transmitter. If indicator shows a minimum reading, replace transmission oil pressure transmitter (p 6-12). If indicator fails to show a minimum or maximum reading, go to step B.



## NOTE

To trace circuit 321, check wiring harnesses 12268102 (p 6-64), 12268100 (p 6-68), 12260287 (p 6-84) and 12260298 (p 6-89).

B Disconnect wire 321 from TRANSMISSION OIL PRESSURE indicator (p 6-21). If indicator shows a maximum reading, use a jumper wire to ground indicator. If indicator shows a minimum reading, repair or replace wire 321 from TRANSMISSION OIL PRESSURE indicator to transmission oil pressure transmitter. If indicator fails to show a minimum or maximum reading, go to step C.



NOTE

To trace circuit 27, check wiring harnesses 12260298 (p 6-89) and 12260287 (p 6-84).

- C Disconnect wire 27 from TRANSMISSION OIL PRESSURE indicator (p 6-21). Place red multimeter lead in wire 27 and ground black lead. Check for voltage. If voltage is present, replace TRANSMISSION OIL PRESSURE indicator (p 6-21). If no voltage, repair or replace wire 27. Reconnect all wires.

**GAGES**

FUEL LEVEL GAGE NEEDLE DOESN'T MOVE

Do steps A through C.

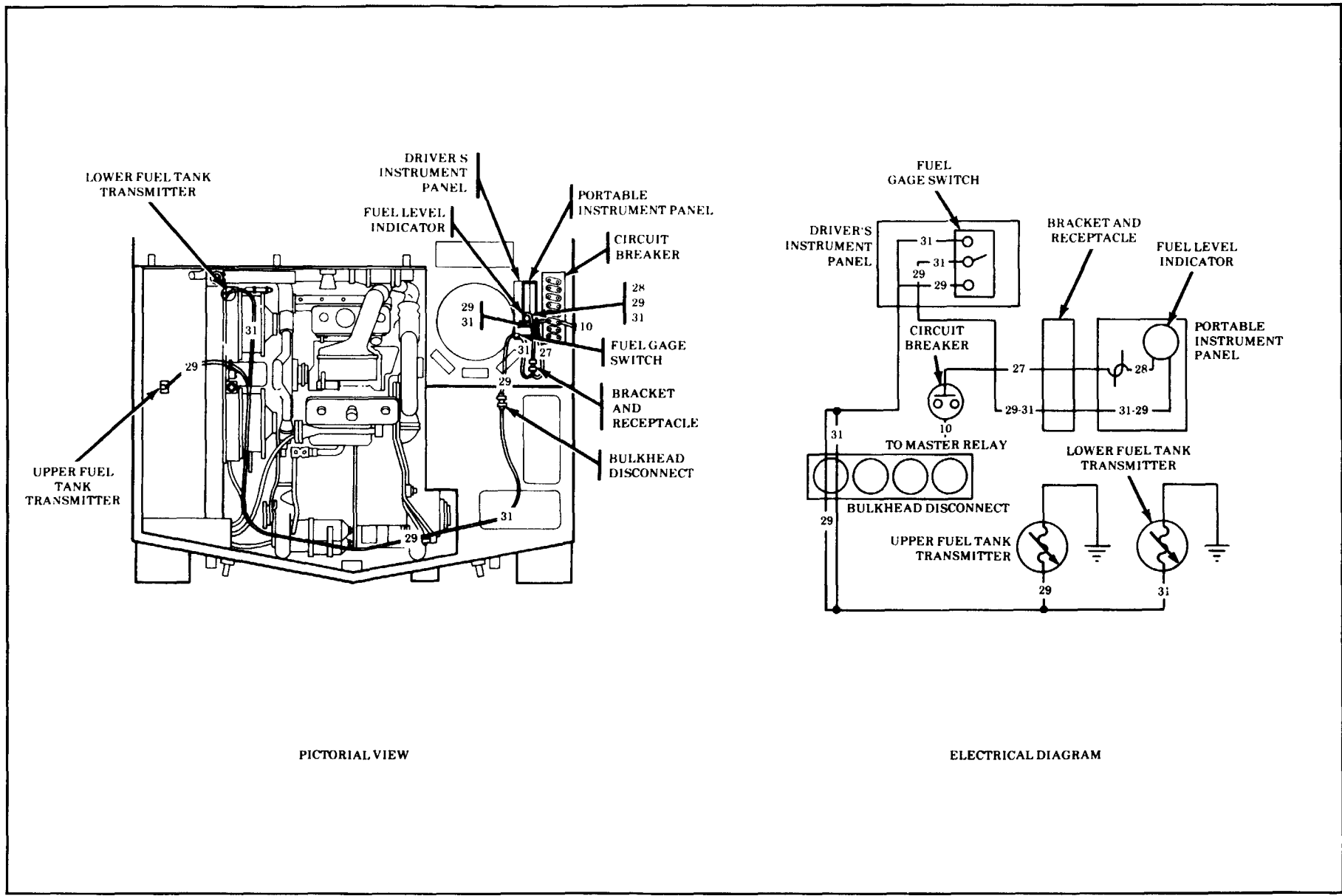
FUEL LEVEL GAGE SHOWS LEVEL FOR LOWER TANK BUT NOT FOR UPPER TANK.

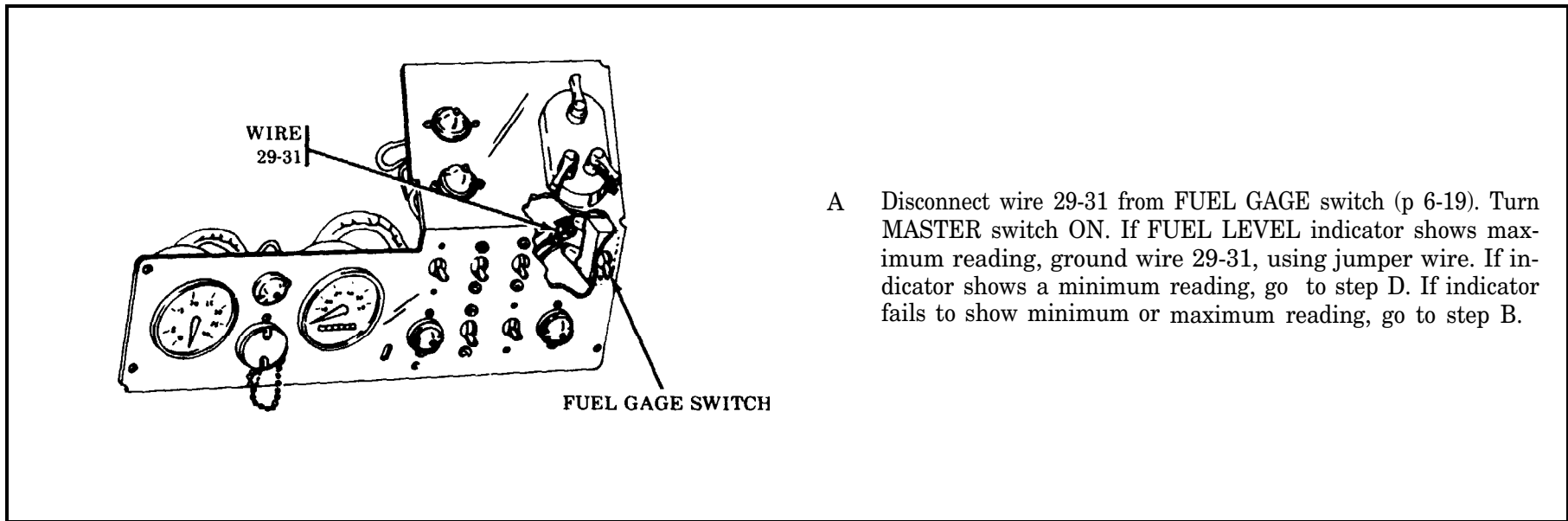
Do steps D and E.

FUEL LEVEL GAGE SHOWS LEVEL FOR UPPER TANK BUT NOT FOR LOWER TANK.

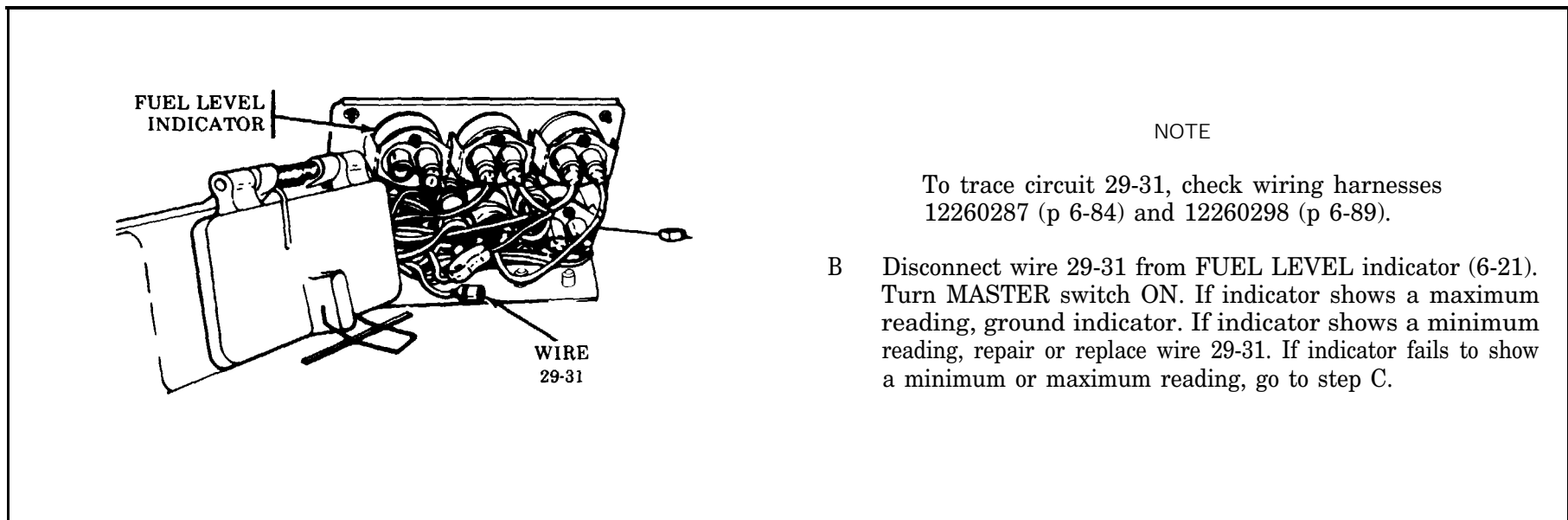
Do steps F and G.

### FUEL LEVEL INDICATOR CIRCUIT





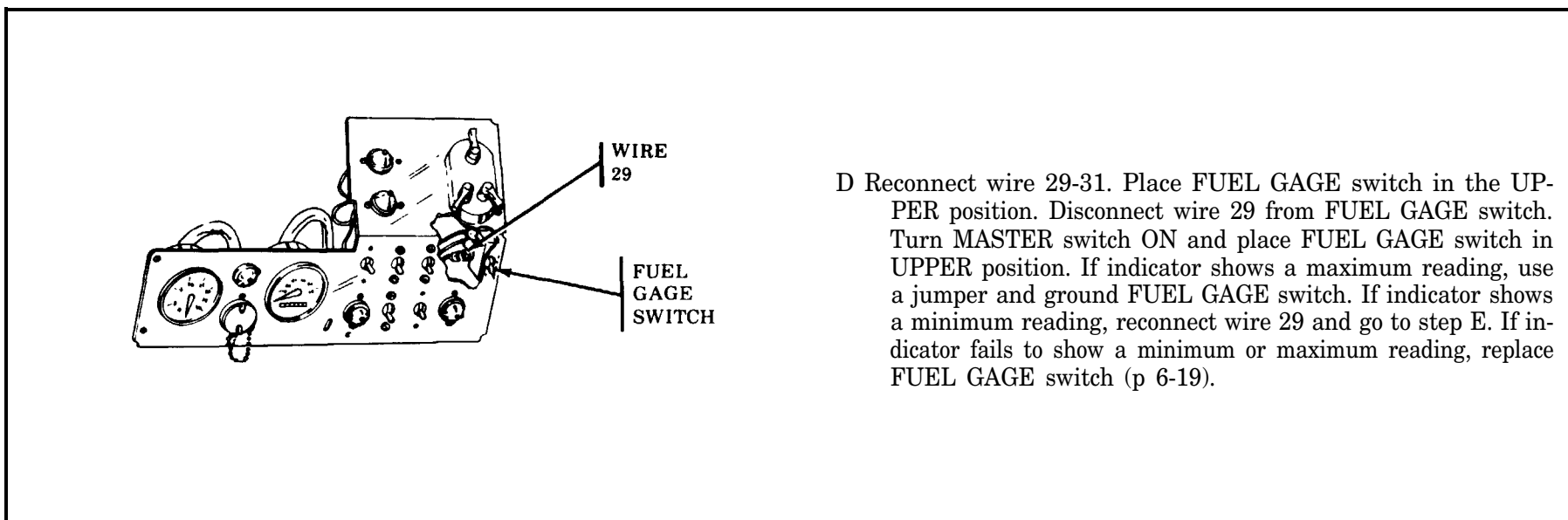
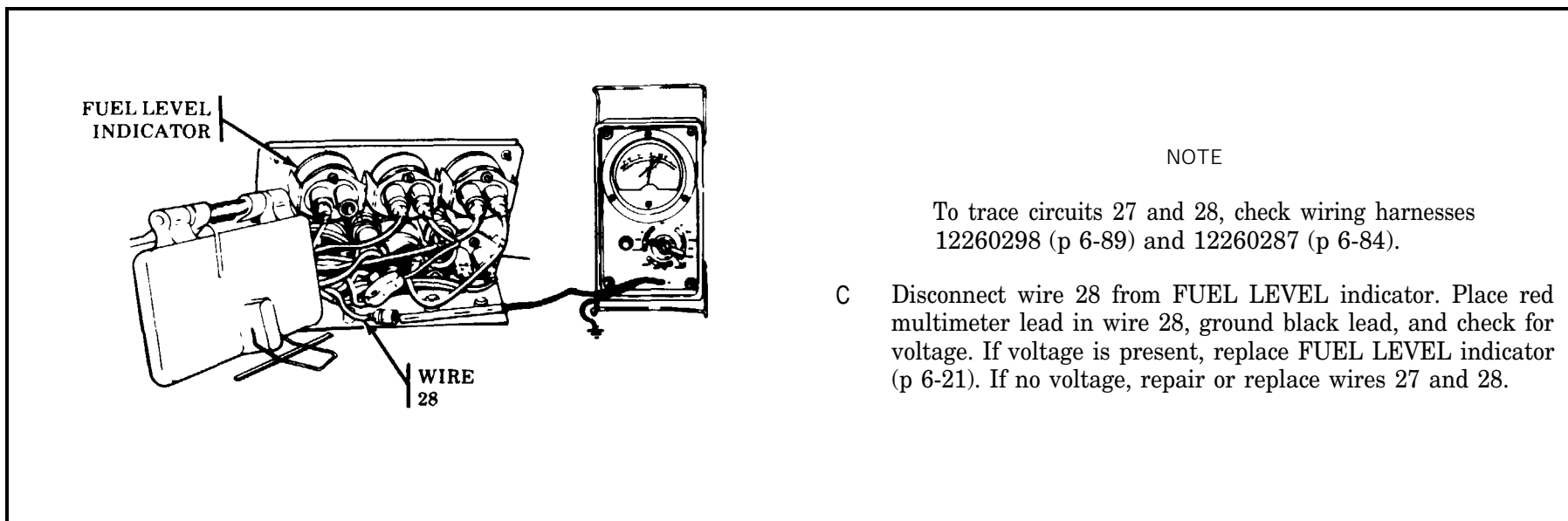
- A Disconnect wire 29-31 from FUEL GAGE switch (p 6-19). Turn MASTER switch ON. If FUEL LEVEL indicator shows maximum reading, ground wire 29-31, using jumper wire. If indicator shows a minimum reading, go to step D. If indicator fails to show minimum or maximum reading, go to step B.



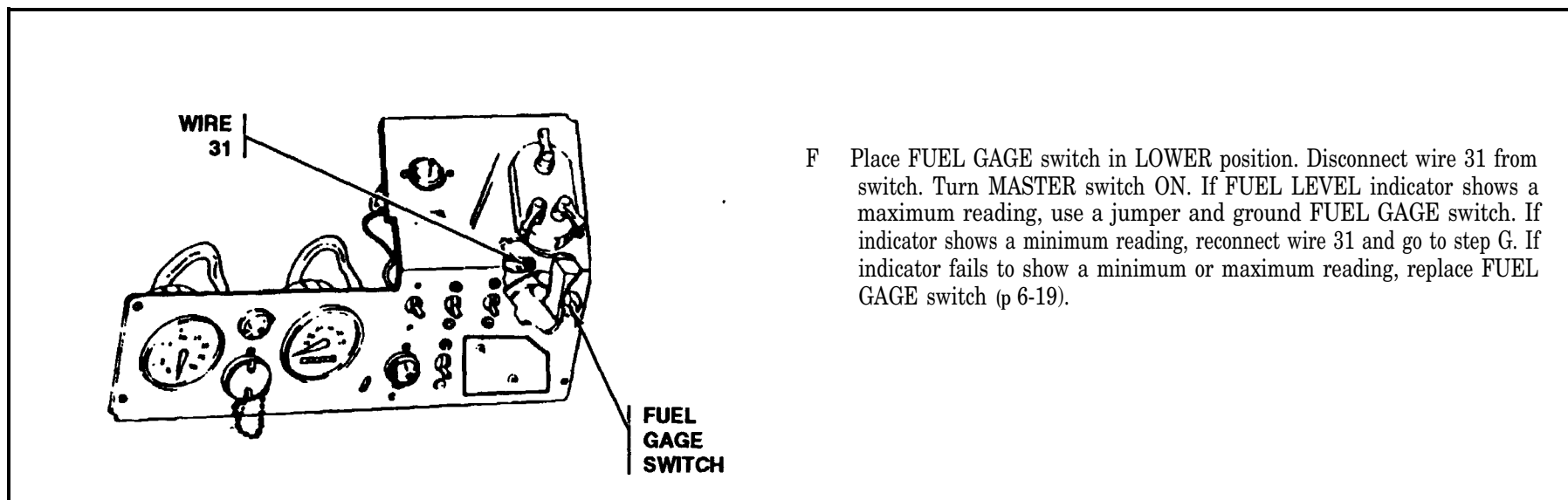
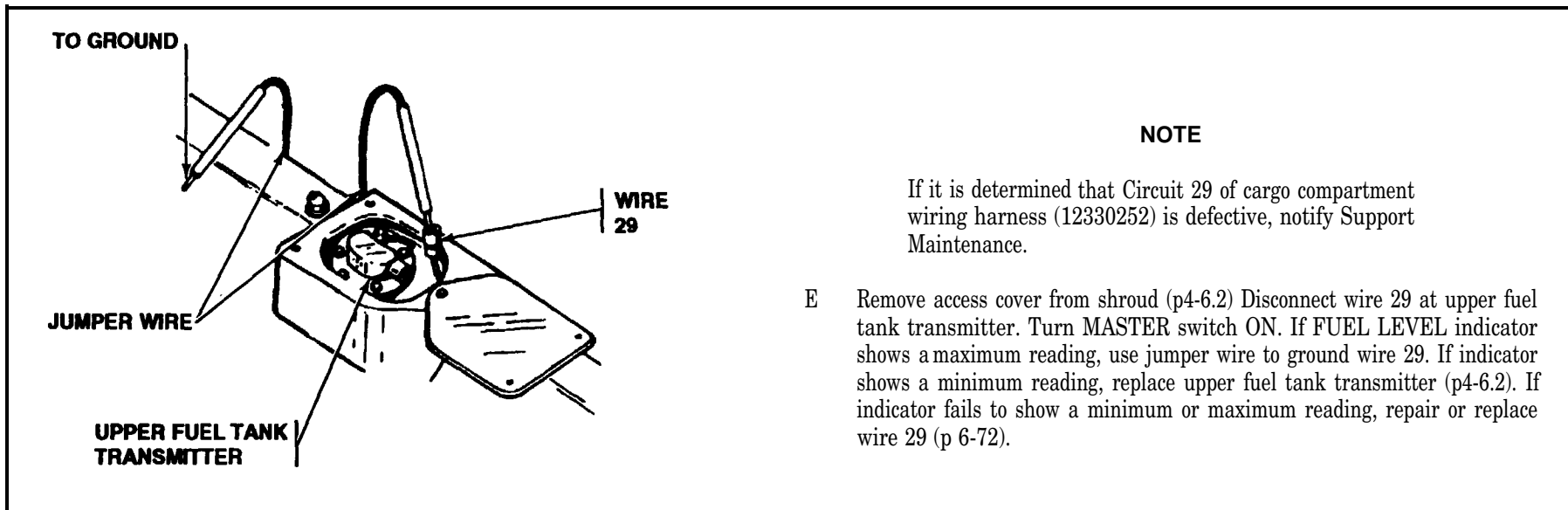
NOTE

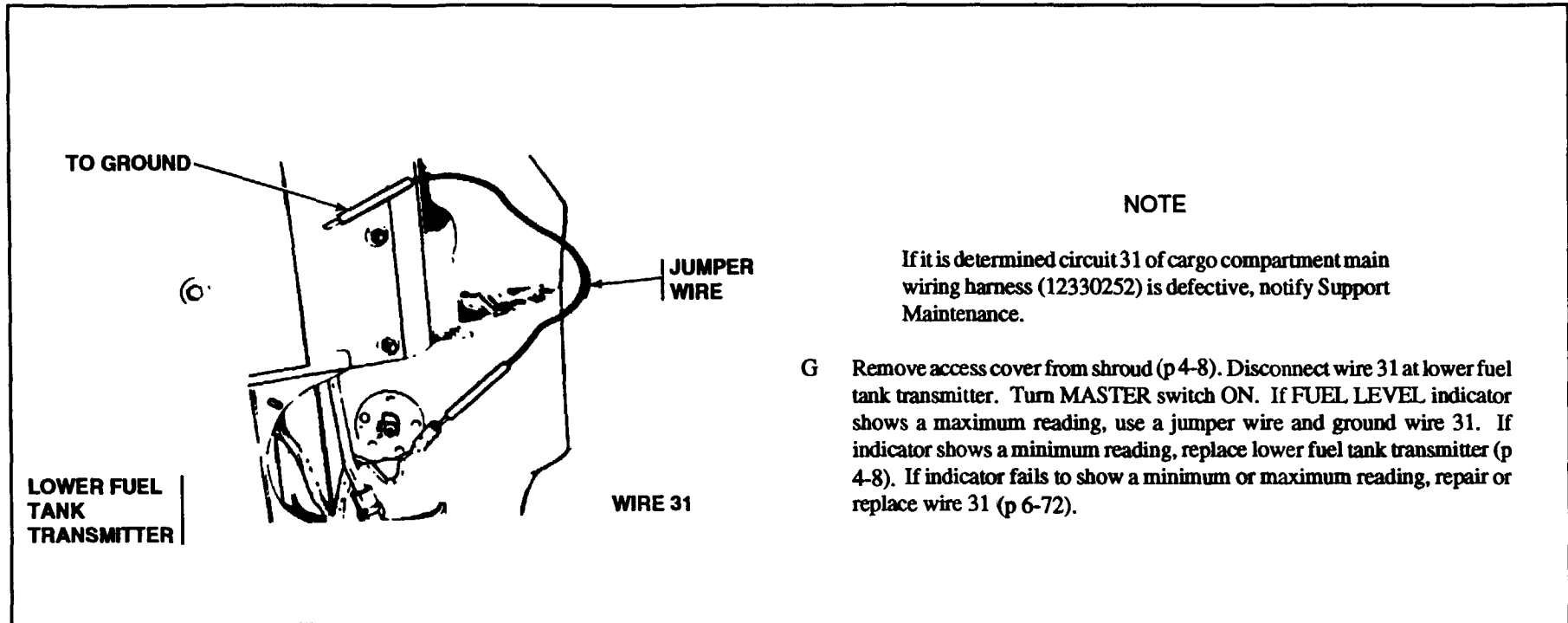
To trace circuit 29-31, check wiring harnesses 12260287 (p 6-84) and 12260298 (p 6-89).

- B Disconnect wire 29-31 from FUEL LEVEL indicator (6-21). Turn MASTER switch ON. If indicator shows a maximum reading, ground indicator. If indicator shows a minimum reading, repair or replace wire 29-31. If indicator fails to show a minimum or maximum reading, go to step C.









**SERVICE HEADLIGHTS, TAILLIGHTS, AND STOPLIGHTS**

**ALL LIGHTS ARE OUT**

Do steps A and B.

**HEADLIGHTS ARE OUT**

Do steps C through F.

**ONE BEAM ONLY ON HEADLIGHT OPERATES**

Do step G.

**RIGHT OR LEFT HEADLIGHT IS OUT**

Do steps H and I.

**TAILLIGHT IS OUT**

Do steps J and K.

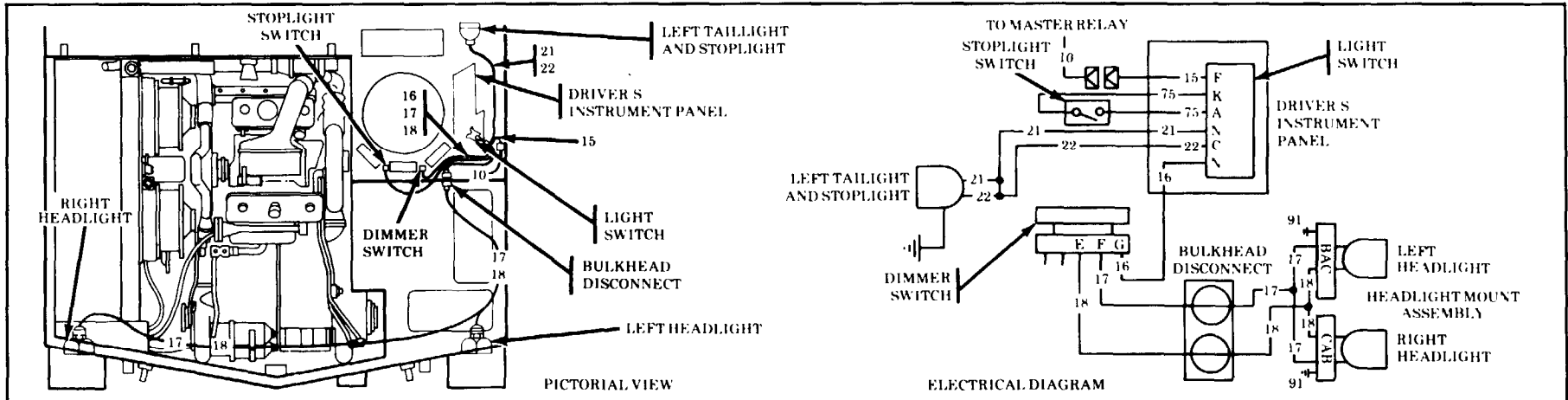
**STOPLIGHT IS OUT**

Do steps L through P.

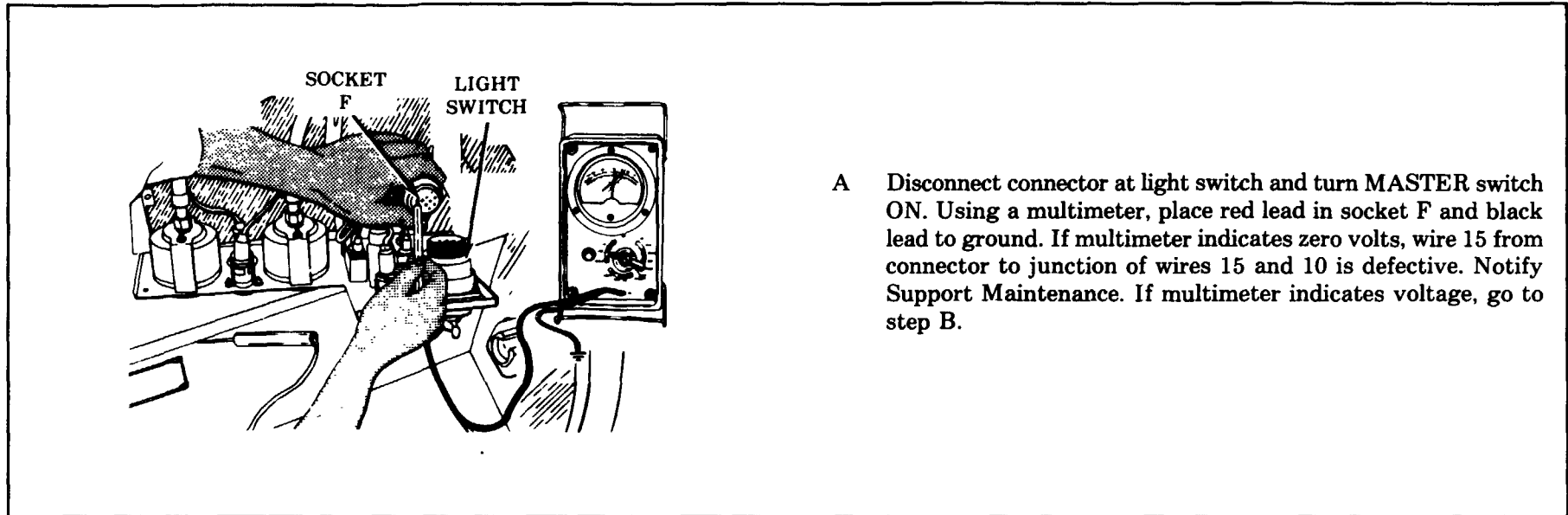
**START HERE** →

Troubleshoot service headlights, taillights, and stoplights circuitry.

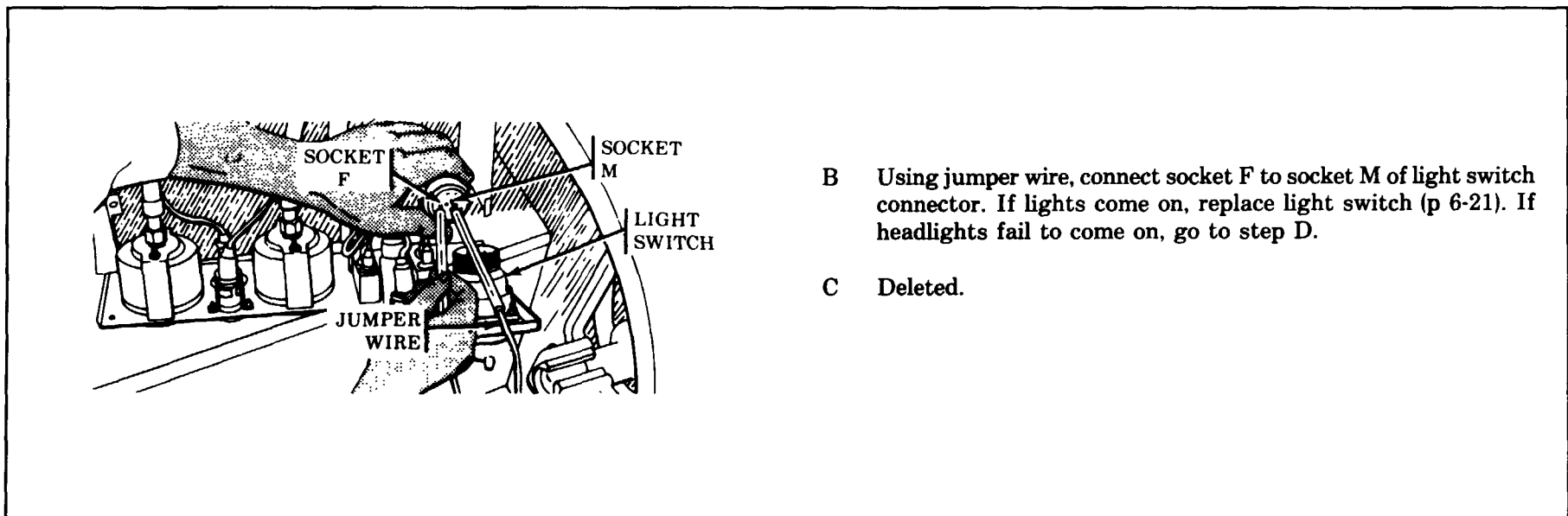
**SERVICE HEADLIGHTS, TAILLIGHTS, AND STOPLIGHTS CIRCUITS**



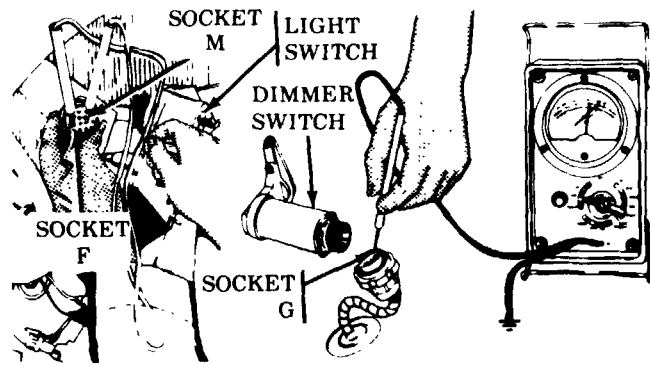
TA310508



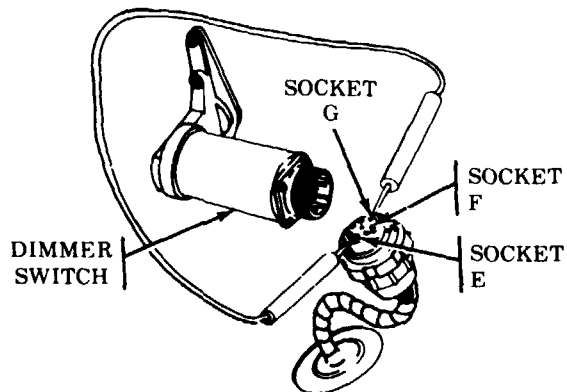
- A Disconnect connector at light switch and turn MASTER switch ON. Using a multimeter, place red lead in socket F and black lead to ground. If multimeter indicates zero volts, wire 15 from connector to junction of wires 15 and 10 is defective. Notify Support Maintenance. If multimeter indicates voltage, go to step B.



- B Using jumper wire, connect socket F to socket M of light switch connector. If lights come on, replace light switch (p 6-21). If headlights fail to come on, go to step D.
- C Deleted.



- D With jumper wire connecting sockets F and M of light switch, place red multimeter lead in socket G of dimmer switch connector and ground black lead. If no voltage, wire 16 from DIMMER SWITCH to light switch is defective. Notify Support Maintenance. If voltage is present, go to step E.



**NOTE**

Light switch in SER drive position.

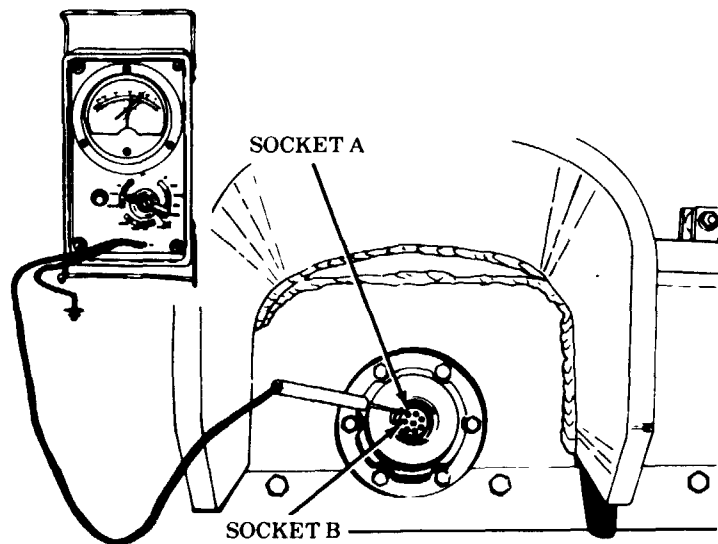
- E Remove jumper wire from sockets F and M and reconnect light switch connector. Using jumper wire, connect socket G to socket F of dimmer switch connector. Repeat test with jumper wire connecting sockets G and E of dimmer switch connector. If headlights come on, replace DIMMER SWITCH (p 6-38). If headlights fail to come on, go to step F.

**NOTE**

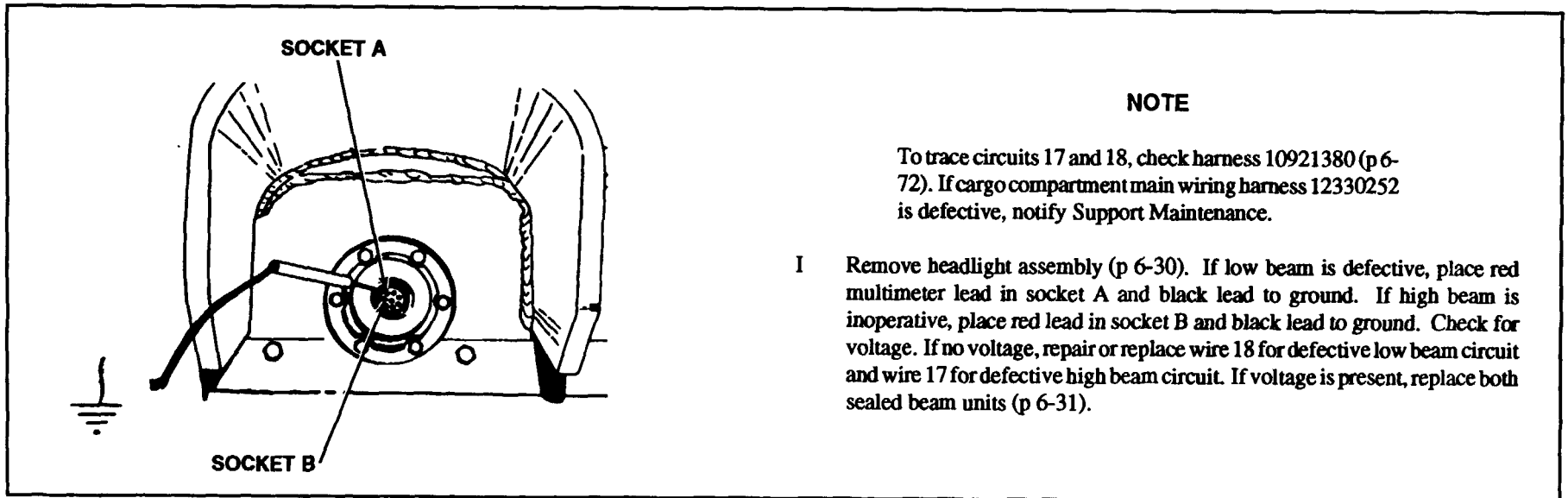
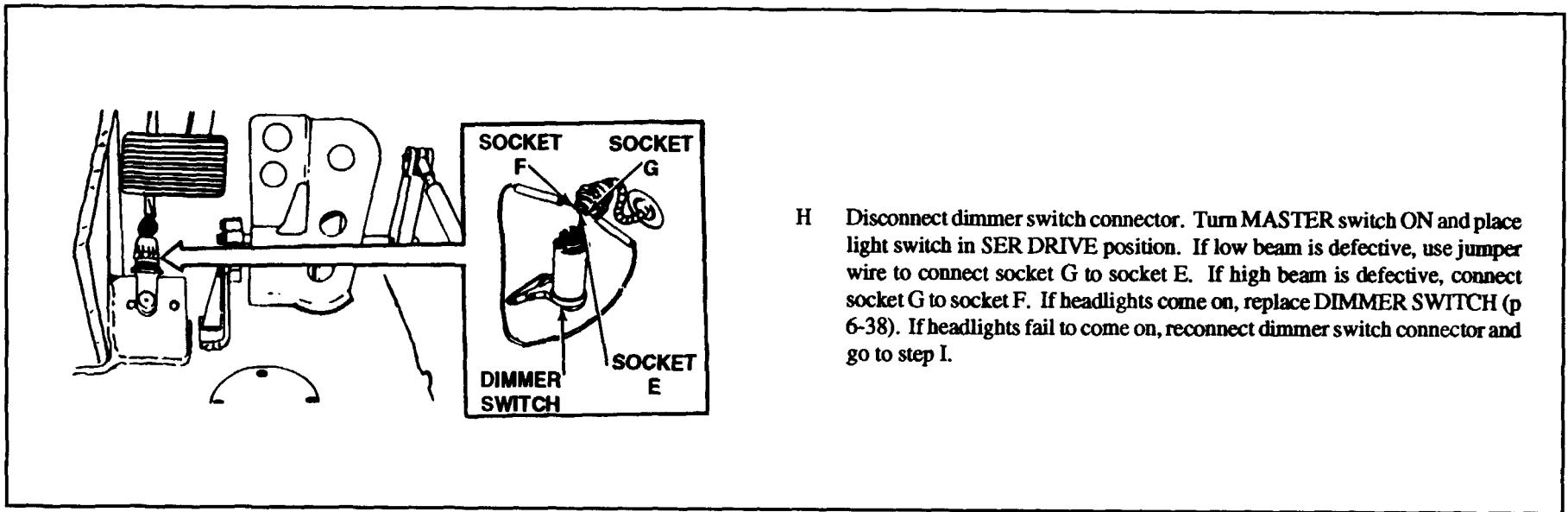
To trace circuits 17 and 18, check harness 10921380 (p 6-72). If cargo compartment main wiring harness 12330252 is defective, notify Support Maintenance.

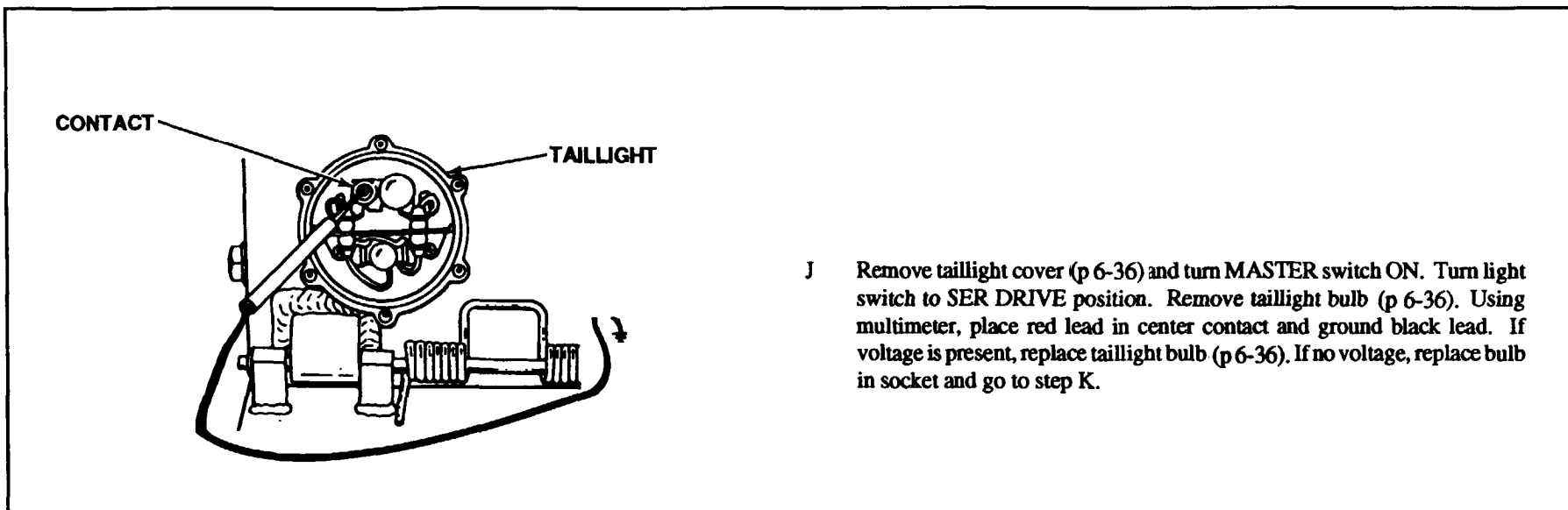
**NOTE**

Light switch in SER DRIVE position.

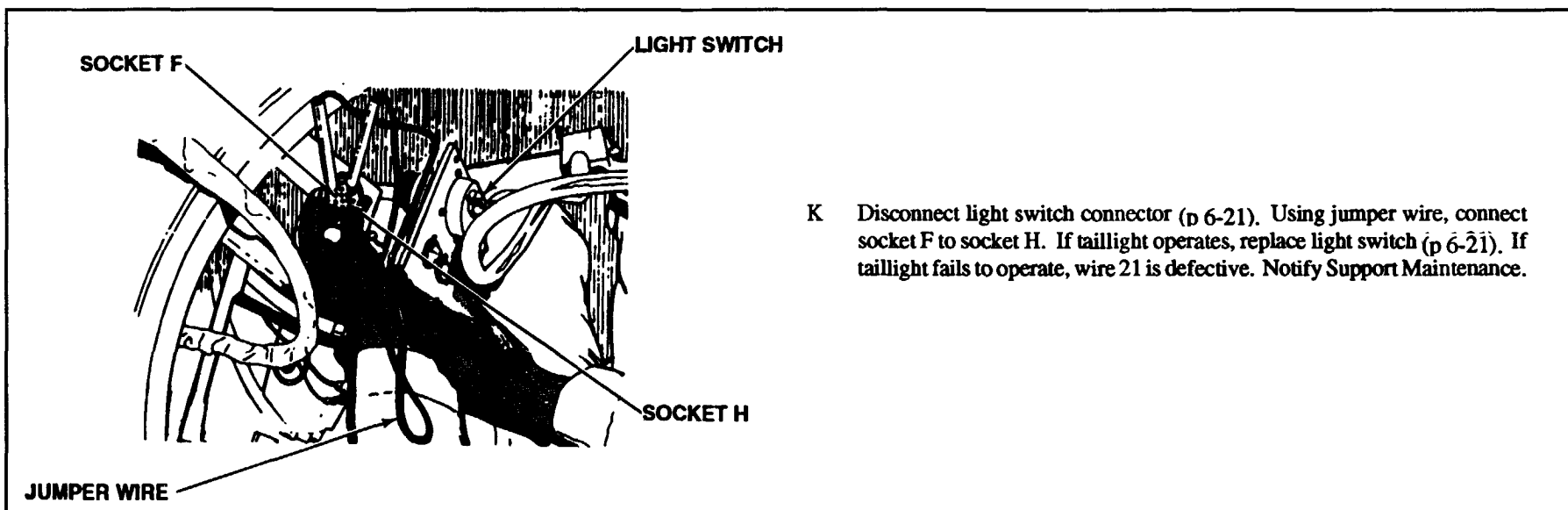


- F Reconnect dimmer switch connector and remove headlight assembly. Using multimeter, check for voltage in sockets B and A. If no voltage, repair or replace wires 17 and 18 from headlight assembly to DIMMER SWITCH. If voltage is present, replace headlights (p 6-31).
- G Both headlight assemblies have identical wiring. For troubleshooting the right or left headlight, follow same procedure. Remove inoperative headlight assembly (p 6-30) and turn headlight switch on. If low beam is inoperative, place DIMMER SWITCH in low beam position and test for voltage at socket A. If no voltage in socket A, repair or replace wire 18. If high beam is inoperative, place DIMMER SWITCH in the high beam position and check for voltage in socket B. If no voltage in socket B, repair or replace wire 17. If voltage is present, replace sealed beam unit (p 6-31).



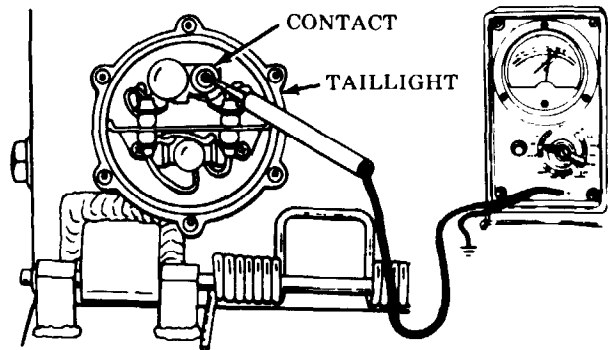


- J Remove taillight cover (p 6-36) and turn MASTER switch ON. Turn light switch to SER DRIVE position. Remove taillight bulb (p 6-36). Using multimeter, place red lead in center contact and ground black lead. If voltage is present, replace taillight bulb (p 6-36). If no voltage, replace bulb in socket and go to step K.

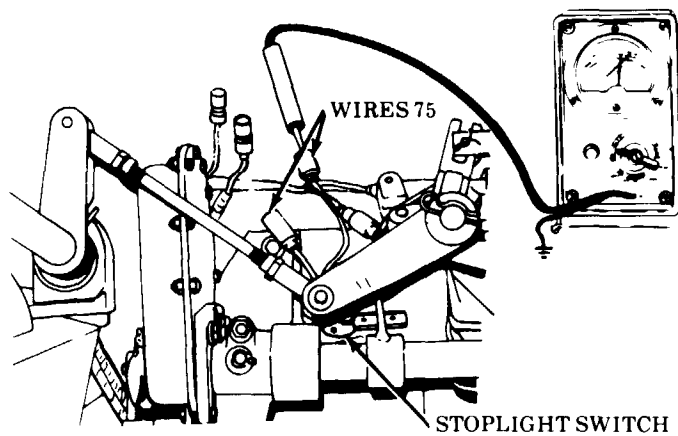


- K Disconnect light switch connector (p 6-21). Using jumper wire, connect socket F to socket H. If taillight operates, replace light switch (p 6-21). If taillight fails to operate, wire 21 is defective. Notify Support Maintenance.

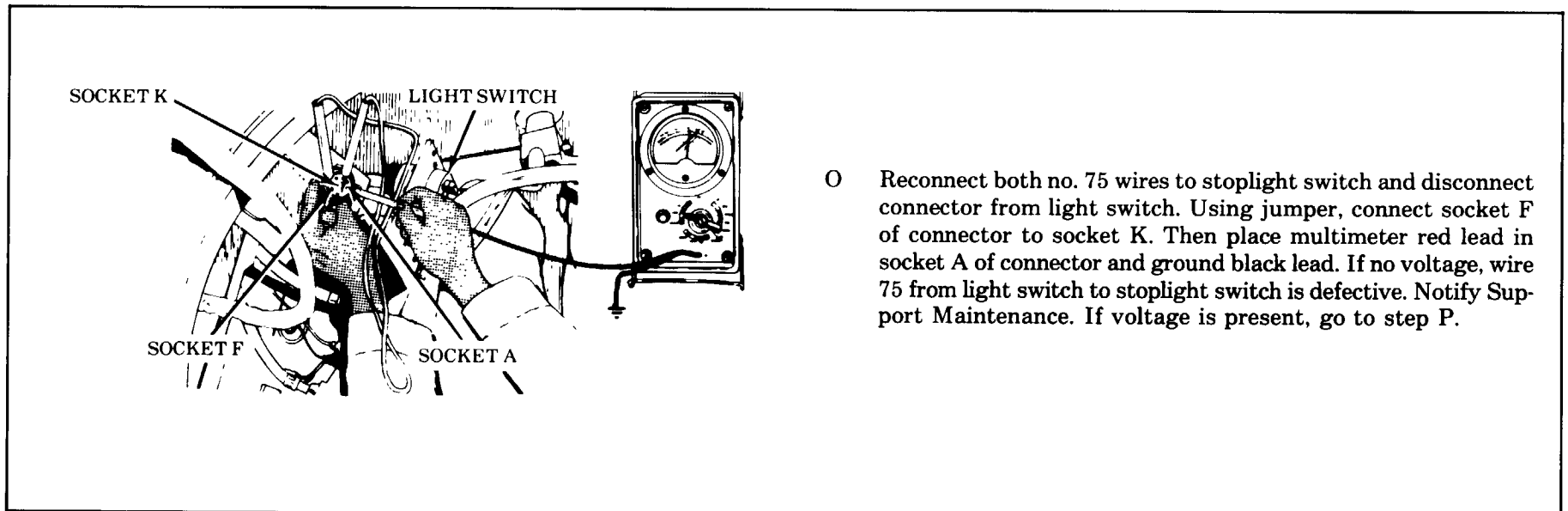
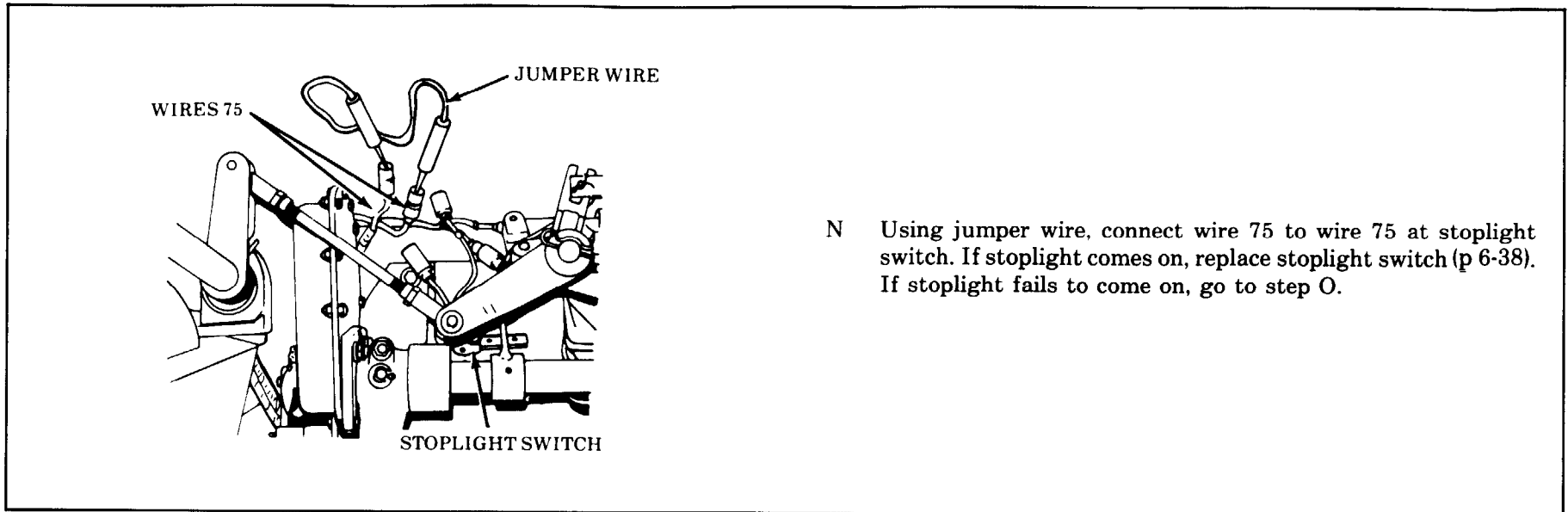


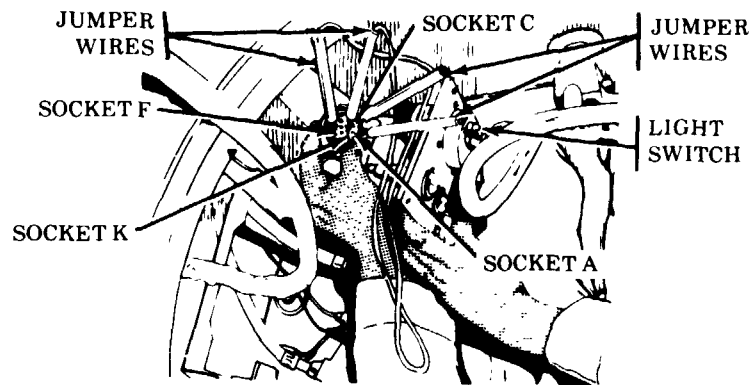


- L Remove taillight cover (p 6-36) and turn MASTER switch ON. Turn light switch to SER DRIVE position. Apply parking brake and remove stoplight bulb. Using multimeter, place red lead in center contact and ground black lead. If voltage is present, replace bulb (p 6-36). If no voltage, install stoplight bulb and go to step M.



- M Disconnect wires 75 at stoplight switch (p 6-38). Place red multimeter lead in one of the no. 75 wires and ground black lead. Check for voltage. Repeat for second wire. If voltage is present on one wire, go to step N. If no voltage, go to step O.





P With jumper wire connected to socket F and socket K of light switch connector, connect second jumper wire from socket A to socket C. If stoplight fails to come on, wire 22 from light switch to stoplight is defective. Notify Support Maintenance. If stoplight comes on, replace light switch (p 6-38). Reconnect all wires.

**BLACKOUT MARKER AND BLACKOUT DRIVE LIGHTS**

**BLACKOUT MARKER LIGHTS ARE OUT**

Do steps A and B.

**FRONT BLACKOUT MARKERS ARE OUT**

Do step C.

**RIGHT OR LEFT FRONT BLACKOUT MARKER IS OUT**

Do step D.

**REAR BLACKOUT MARKERS ARE OUT**

Do step E.

**RIGHT OR LEFT REAR BLACKOUT MARKER IS OUT**

Do step F.

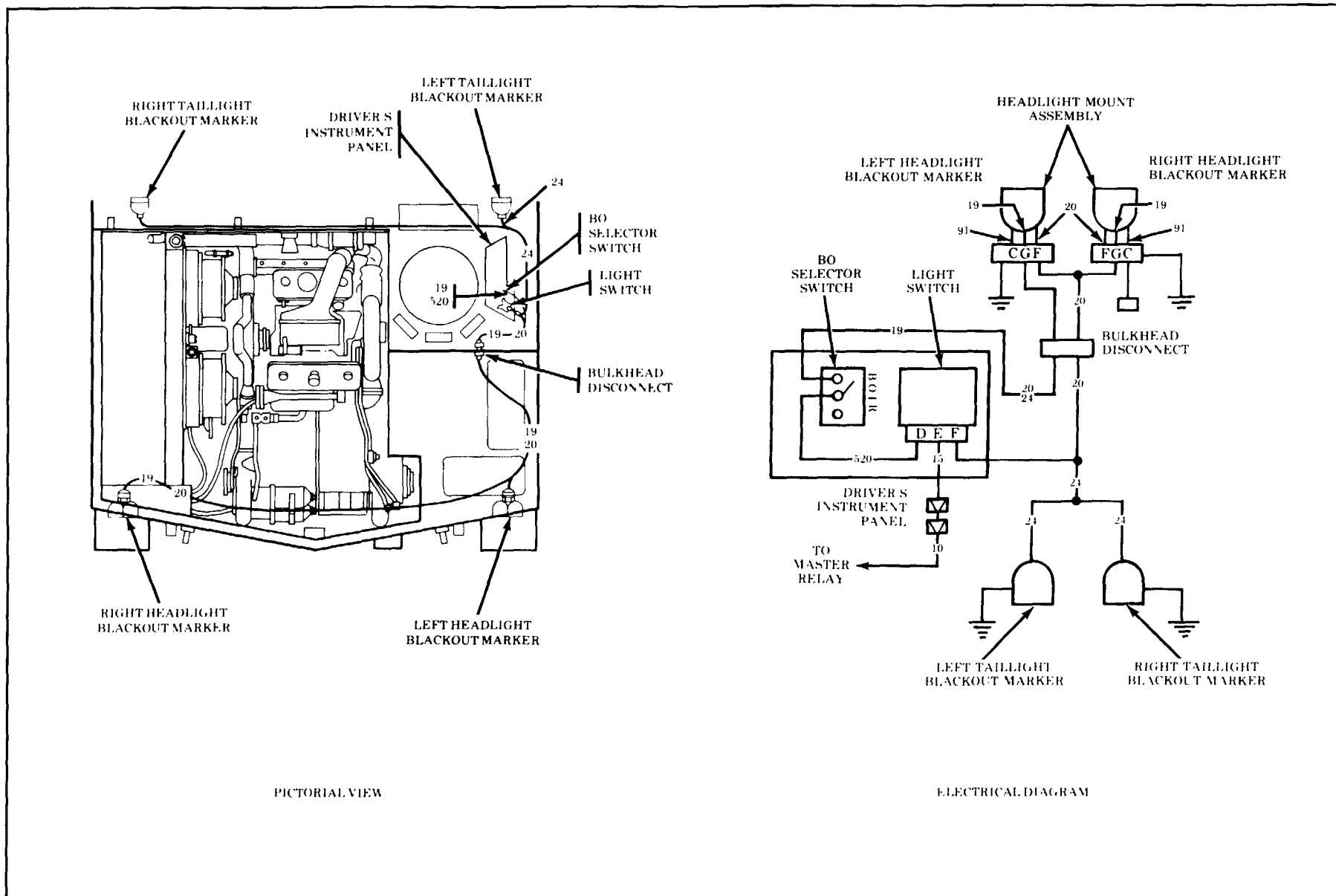
**BLACKOUT DRIVE LIGHT IS OUT**

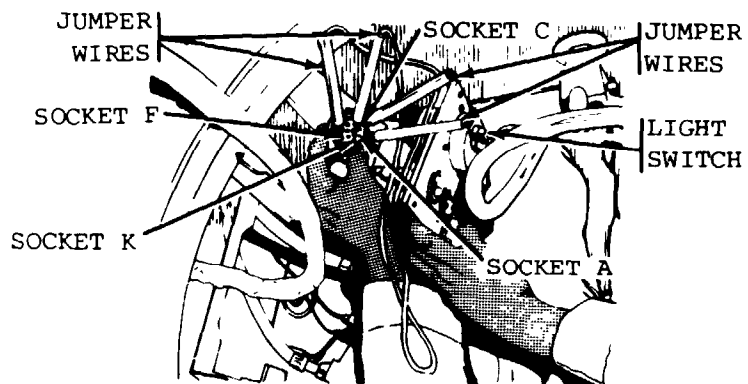
Do steps G through J.



Troubleshoot blackout markers and blackout drive lights circuits.

### BLACKOUT MARKERS AND BLACKOUT DRIVE LIGHTS CIRCUITS





- J Reconnect all wires and disconnect connector at light switch (p 6-19). Make sure BO SELECTOR switch is in BOD position. Using jumper, connect sockets F and D. If BO drive light comes on, replace light switch (p 6-21). If BO light does not come on, wire 520 is defective. Notify Support Maintenance.

**SERVICE BLACKOUT INFRARED HEADLIGHTS**

**BOTH BEAMS DON'T OPERATE**

Do steps A through F.

**ONE BEAM DOESN'T OPERATE**

Do steps G and H.

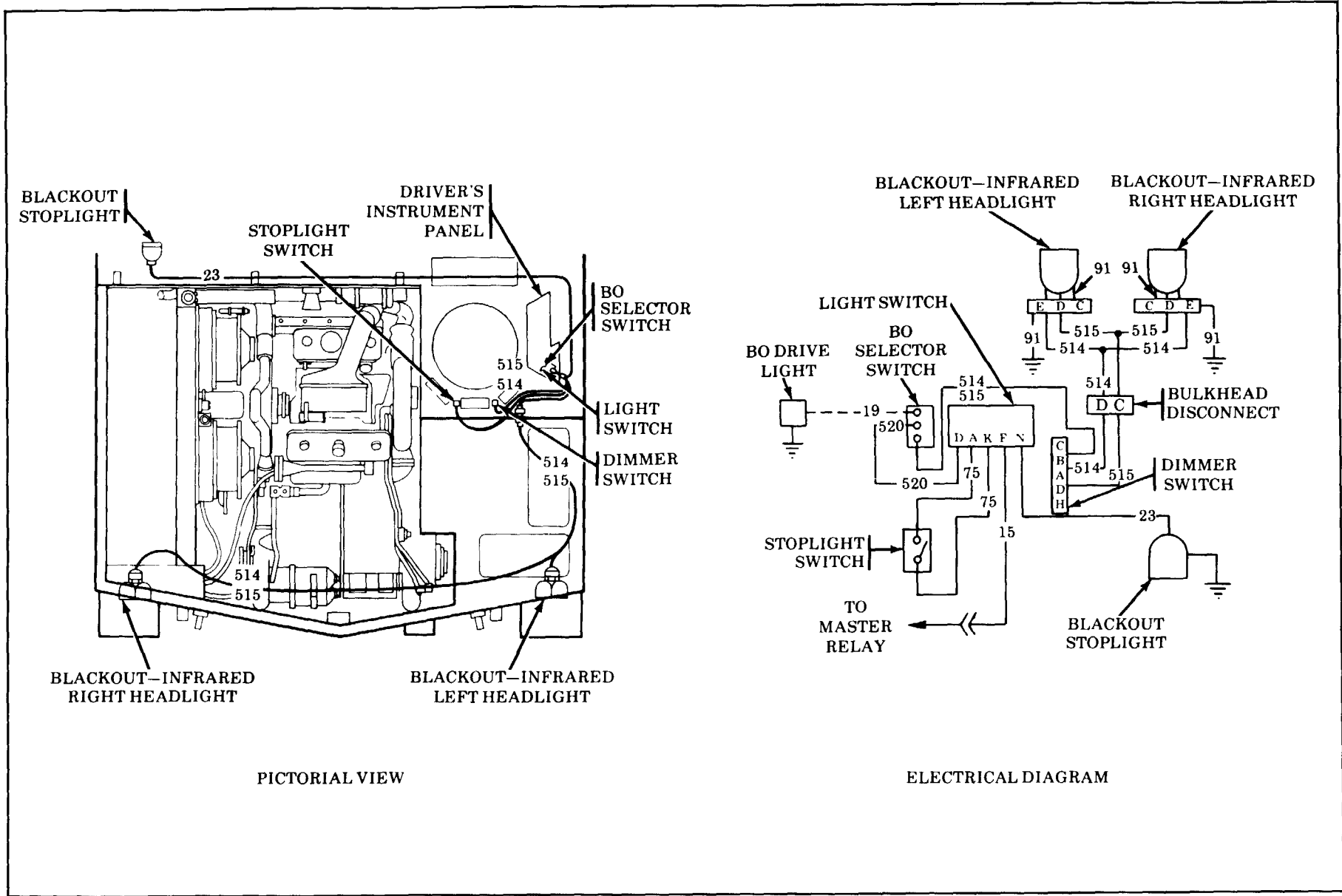
**BLACKOUT STOPLIGHT IS OUT**

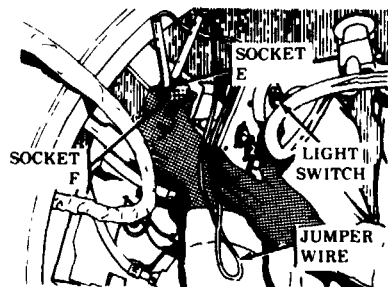
Do steps I and J.

START HERE

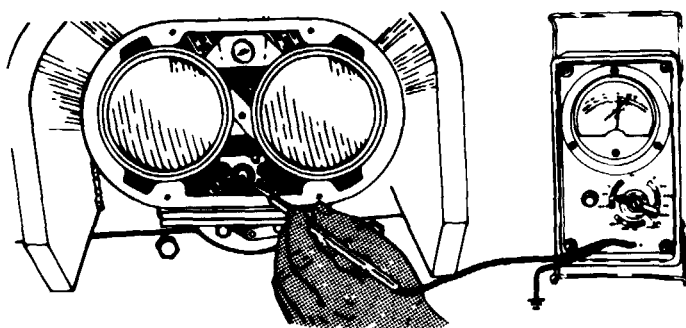
Troubleshoot service blackout-infrared headlights and blackout stoplights circuits.

### SERVICE BLACKOUT-INFRARED HEADLIGHTS AND BLACKOUT STOPLIGHTS CIRCUITS





- A Disconnect light switch connector (p 6-19). Use jumper wire to connect sockets F and E. Turn MASTER switch ON. If blackout (BO) marker lights come on, replace light switch (p 6-21). If BO marker lights fail to come on, go to step B.



**NOTE**

To trace circuits 20 and 19, check harness 10921380 (p 6-72). If cargo compartment main wiring harness 12330252 is defective, notify Support Maintenance.

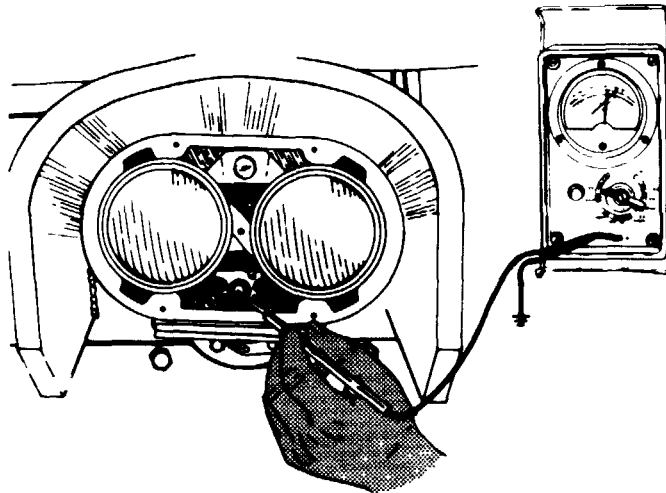
- B Remove cover from one BO marker and remove bulb (p 6-31). Use jumper to connect light switch sockets F and E. Turn MASTER switch ON. Place red multimeter lead on BO marker center contact and ground black lead. If voltage is present, replace bulb (p 6-31). If no voltage, repair or replace wire 20 and wire 19.

**NOTE**

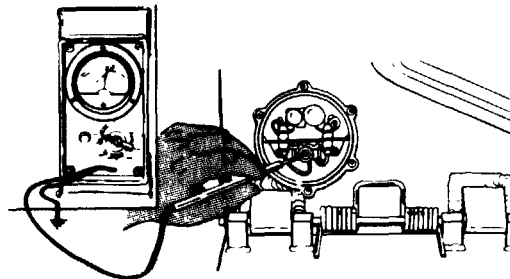
If step B corrects condition on one light, repeat procedure for all marker lights.

**NOTE**

To trace circuit 20, check wiring harness 10921380 (p 6-72). If cargo compartment main wiring harness 12330252 is defective, notify Support Maintenance.

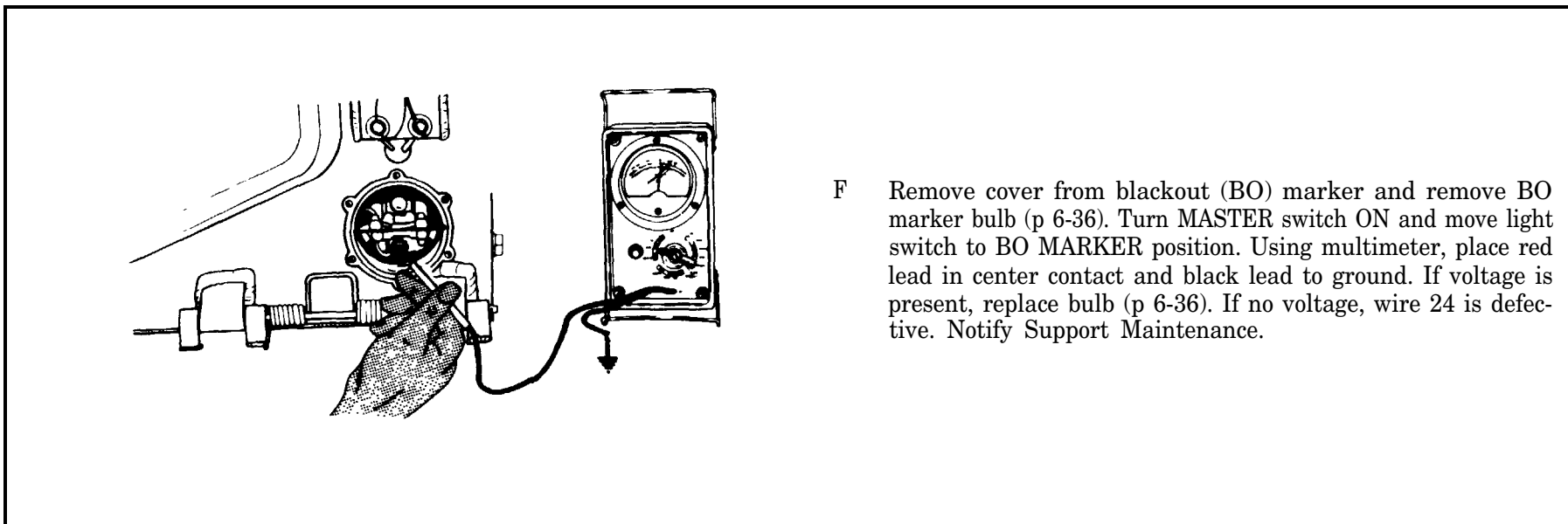


- C Remove cover from front blackout (BO) marker lights and remove bulbs (p 6-31). Using multimeter, place red lead in BO marker center contact and black lead to ground. Turn MASTER switch ON and move light switch to BO MARKER position. If voltage is present, replace light bulbs (p 6-31). If no voltage, repair or replace wire 20 from both lights.
- D Remove cover from inoperative blackout (BO) marker. Then remove BO marker bulb (p 6-31). Turn MASTER switch ON. Move light switch to BO MARKER position. Using multimeter, place red lead in center contact of socket and place black lead to ground. If voltage is present, replace bulb (p 6-31). If no voltage, repair or replace wire 20.

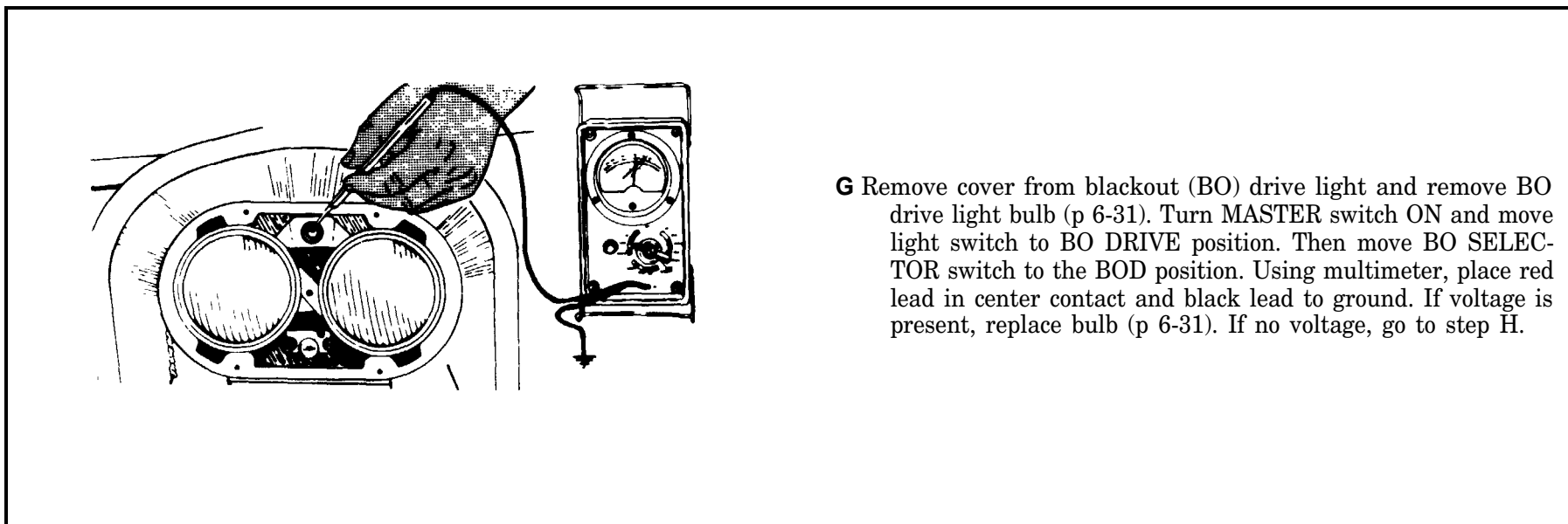


- E Remove covers from rear blackout (BO) marker lights and remove BO marker bulbs (p 6-36). Turn MASTER switch ON and move light switch to BO MARKER position. Using multimeter, place red lead in center contact of socket and black lead to ground. If voltage is present, replace bulb (p 6-36). If no voltage, wire 24 is defective. Notify Support Maintenance.

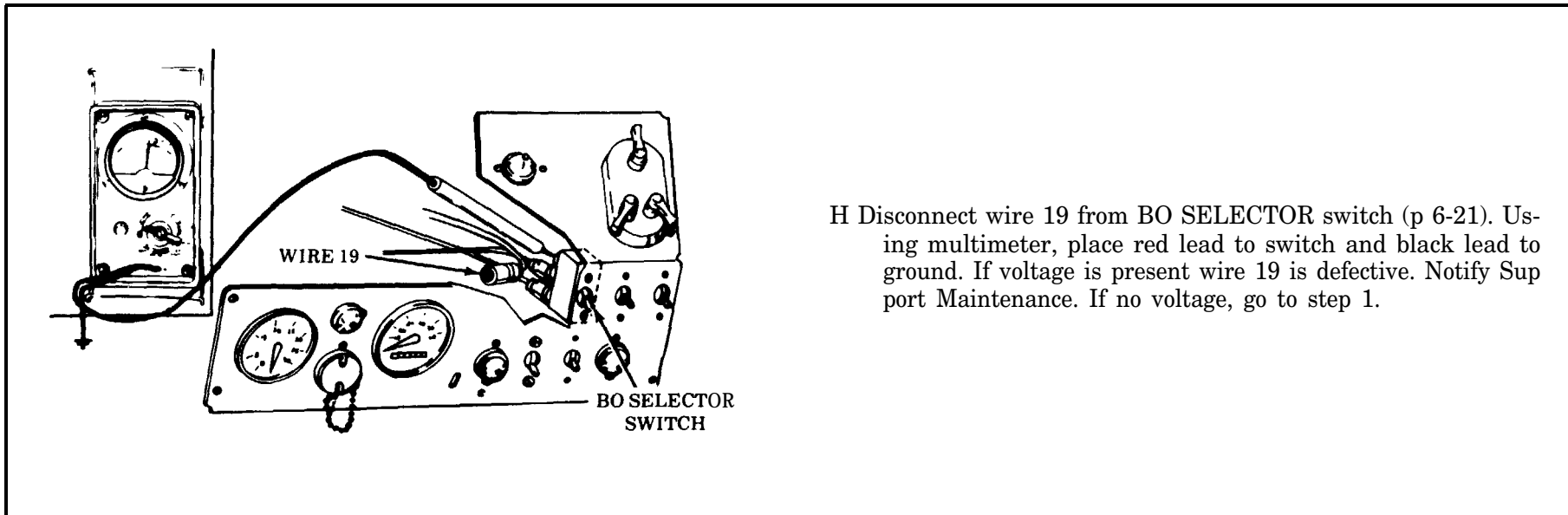




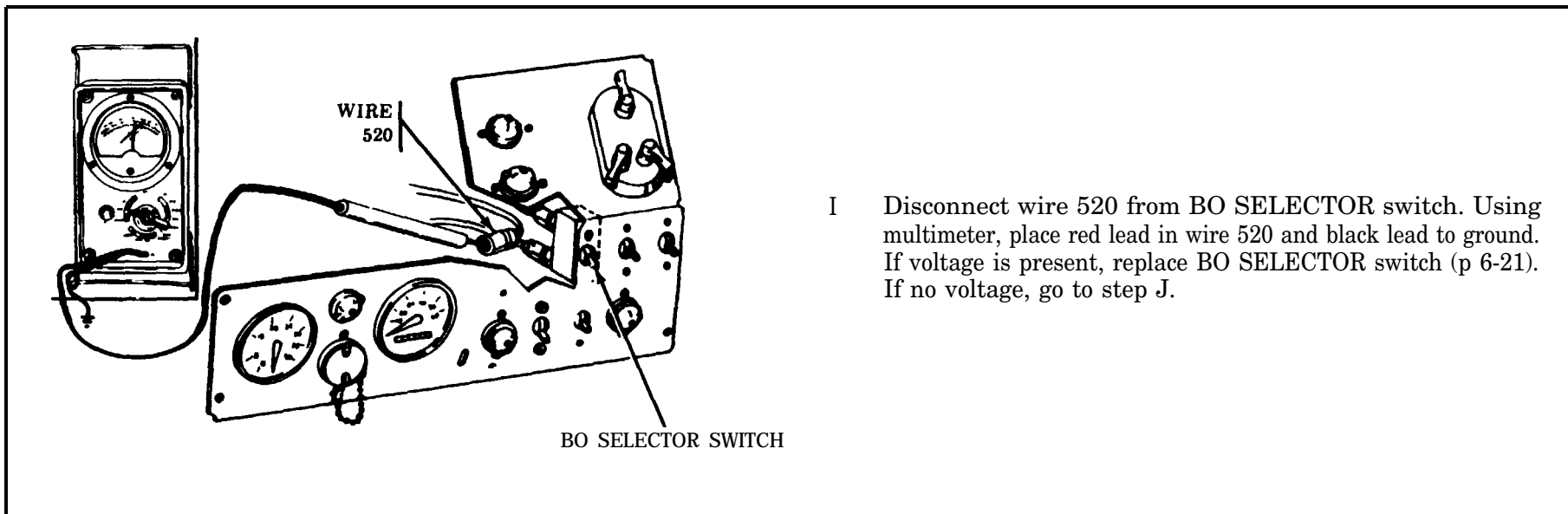
- F** Remove cover from blackout (BO) marker and remove BO marker bulb (p 6-36). Turn MASTER switch ON and move light switch to BO MARKER position. Using multimeter, place red lead in center contact and black lead to ground. If voltage is present, replace bulb (p 6-36). If no voltage, wire 24 is defective. Notify Support Maintenance.



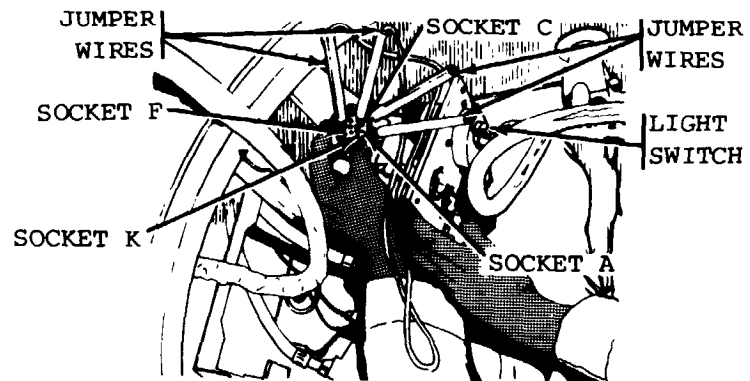
- G** Remove cover from blackout (BO) drive light and remove BO drive light bulb (p 6-31). Turn MASTER switch ON and move light switch to BO DRIVE position. Then move BO SELECTOR switch to the BOD position. Using multimeter, place red lead in center contact and black lead to ground. If voltage is present, replace bulb (p 6-31). If no voltage, go to step H.



H Disconnect wire 19 from BO SELECTOR switch (p 6-21). Using multimeter, place red lead to switch and black lead to ground. If voltage is present wire 19 is defective. Notify Support Maintenance. If no voltage, go to step 1.



I Disconnect wire 520 from BO SELECTOR switch. Using multimeter, place red lead in wire 520 and black lead to ground. If voltage is present, replace BO SELECTOR switch (p 6-21). If no voltage, go to step J.



- J** Reconnect all wires and disconnect connector at light switch (p 6-19). Make sure BO SELECTOR switch is in BOD position. Using jumper, connect sockets F and D. If BO drive light comes on, replace light switch (p 6-21). If BO light does not come on, wire 520 is defective. Notify Support Maintenance.

**SERVICE BLACKOUT INFRARED HEADLIGHTS**

**BOTH BEAMS DON'T OPERATE**  
Do steps A through F.

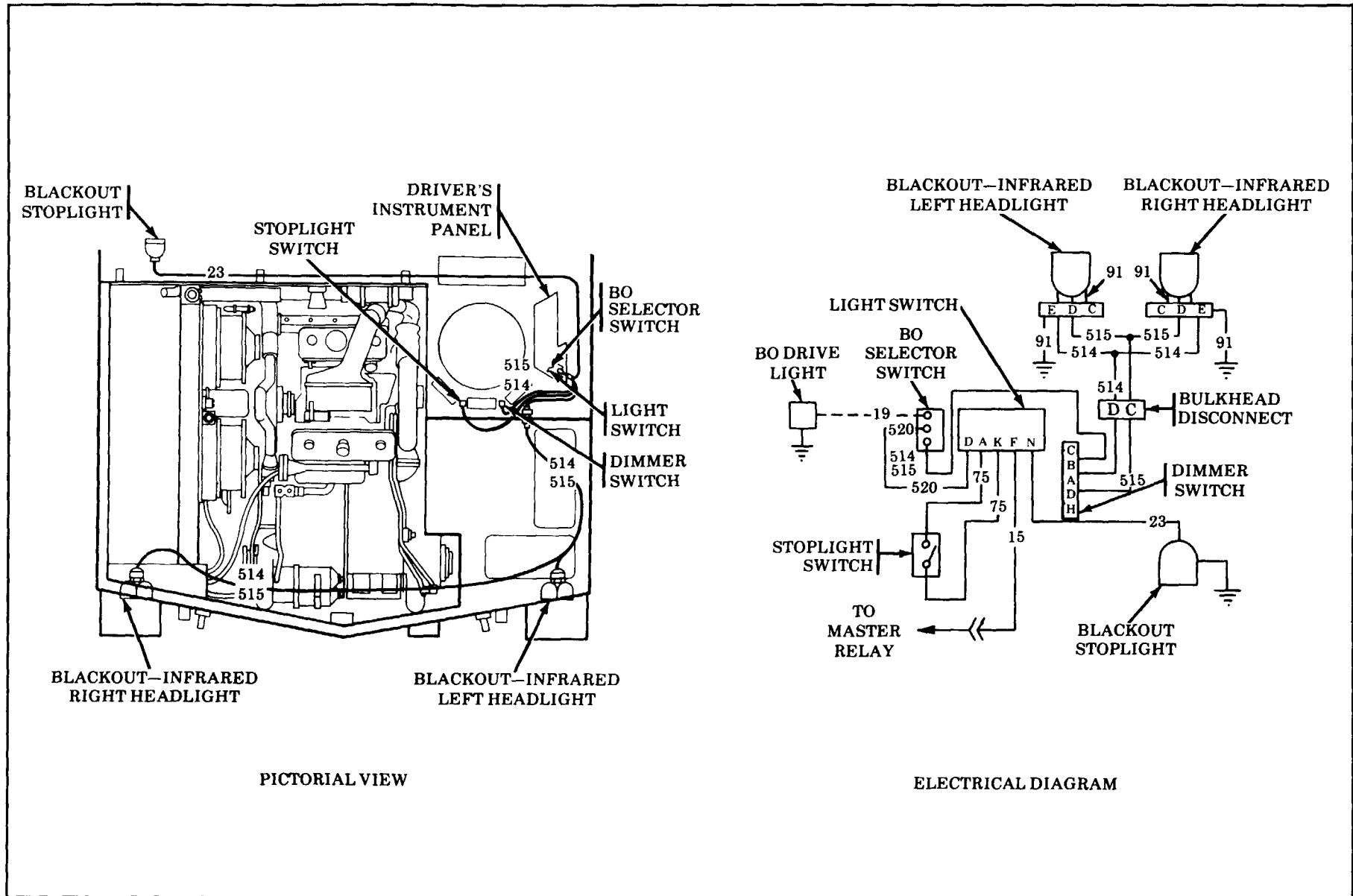
**ONE BEAM DOESN'T OPERATE**  
Do steps G and H.

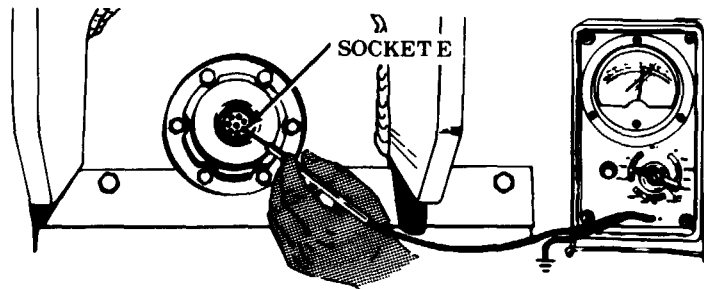
**BLACKOUT STOPLIGHT IS OUT**  
Do steps I and J.

**START HERE** →

Troubleshoot service blackout-infrared headlights and blackout stoplights circuits.

SERVICE BLACKOUT-INFRARED HEADLIGHTS AND BLACKOUT STOPLIGHTS CIRCUITS

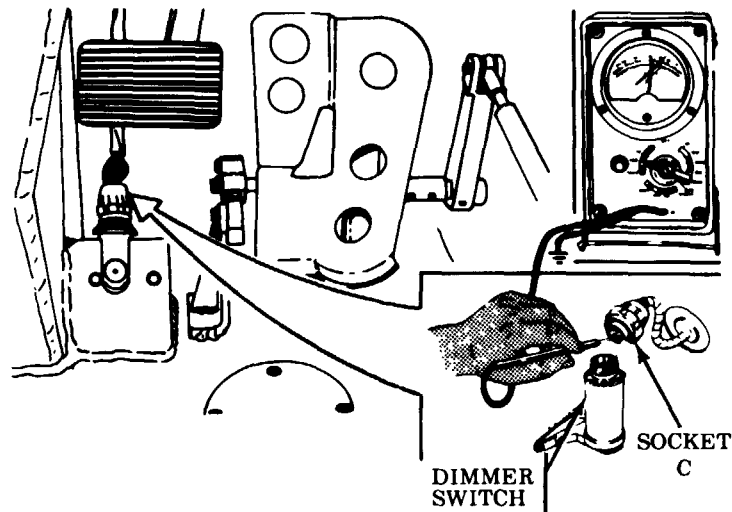




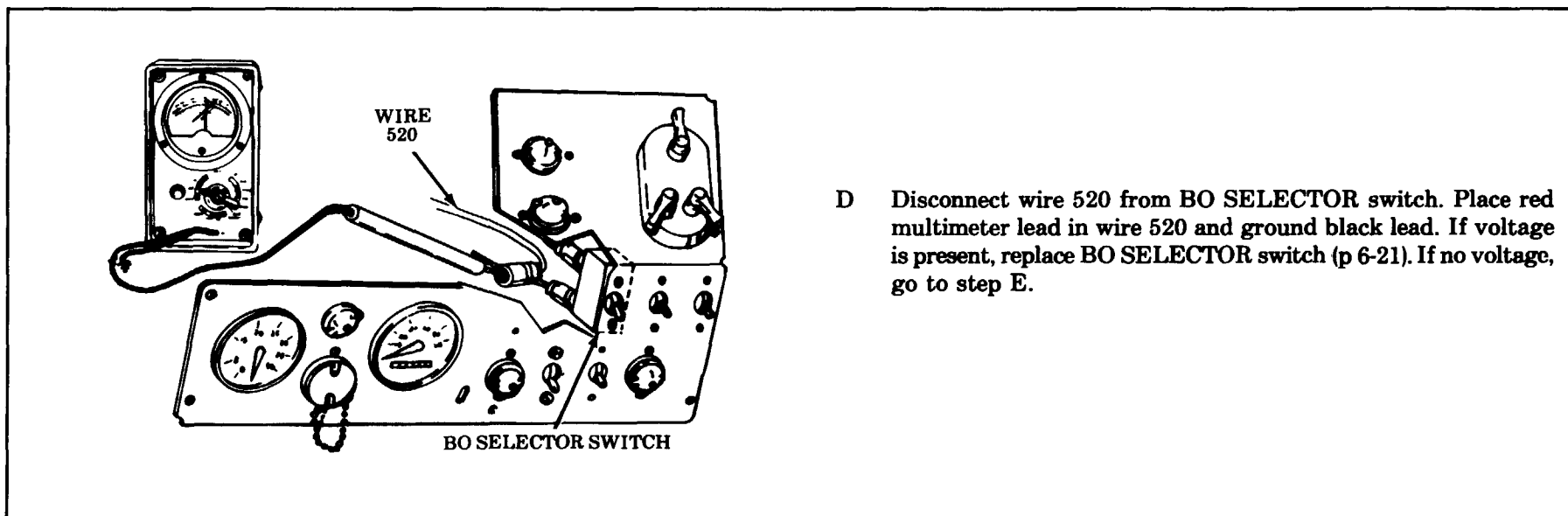
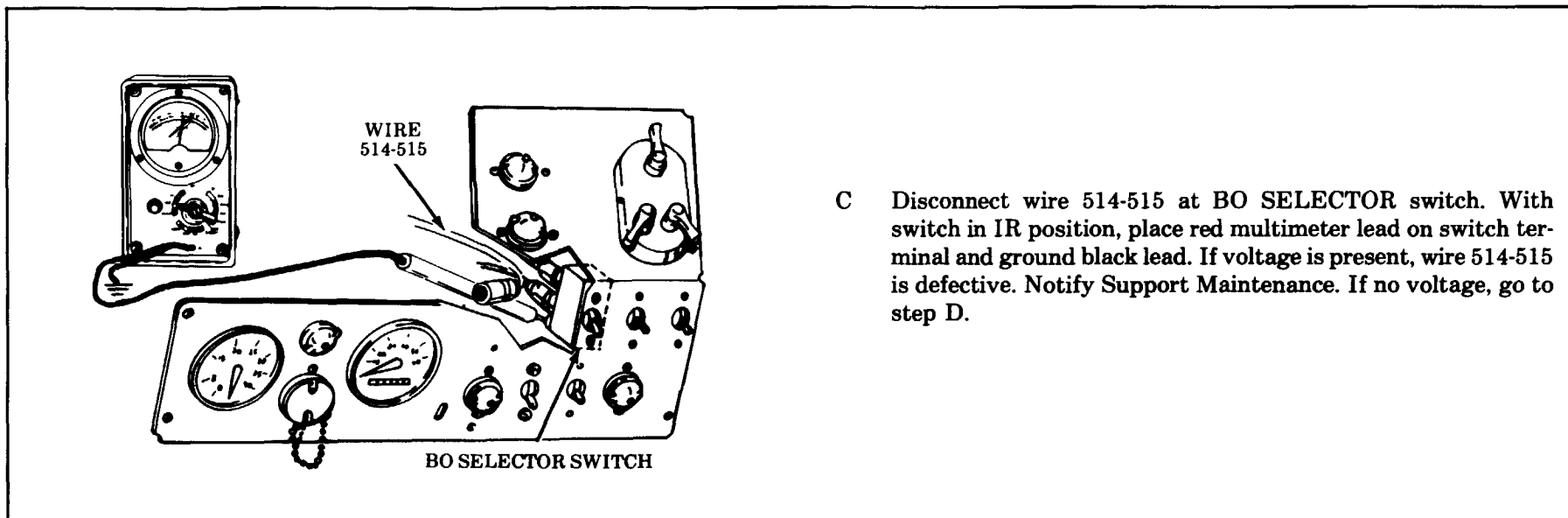
**NOTE**

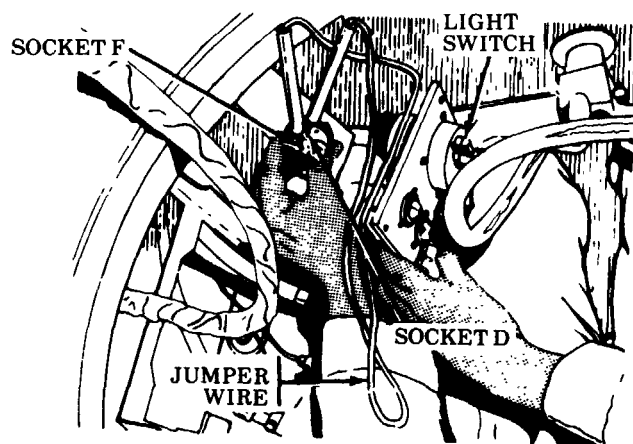
Before performing these steps, ensure that service drive lights are operational.

- A Remove blackout-infrared (BO-IR) headlight assembly (p 6-30). Turn MASTER switch ON. Move light switch to BO DRIVE position, and BO SELECTOR switch to IR position. Place red multimeter lead in socket E and ground black lead. If no voltage, push dimmer switch. If voltage is present, replace sealed beam unit (p 6-31). If no voltage, go to step B.

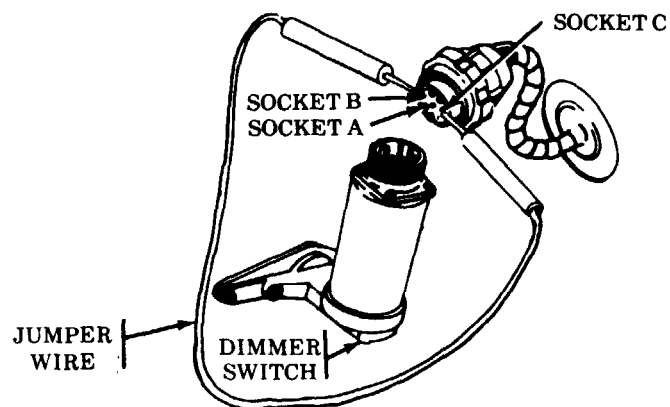


- B Disconnect dimmer switch connector. Place red multimeter lead in socket C of connector and ground black lead. If no voltage, go to step C. If voltage is present, go to step F.





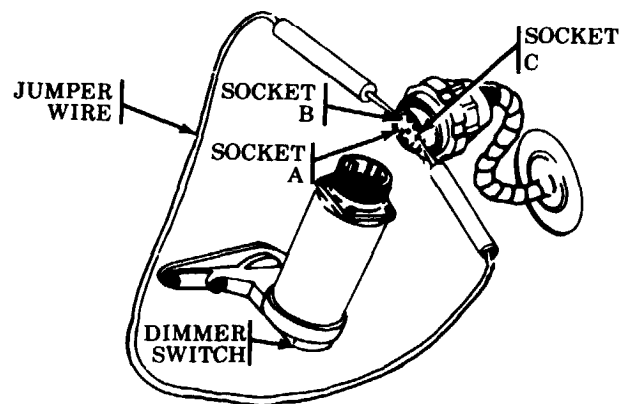
- E Reconnect all wires. Disconnect light switch connector. Using jumper wire, connect socket F to socket D. If IR lights operate, replace light switch (p 6-21). If IR lights fail to operate, wire 520 is defective. Notify Support Maintenance.



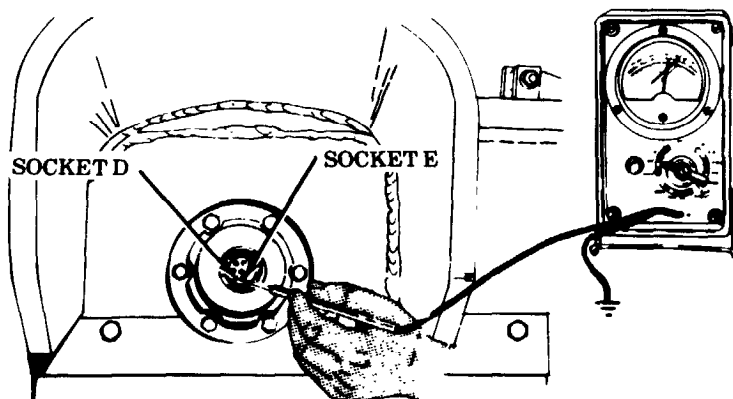
**NOTE**

To trace circuits 514 and 515, check harness 10921380 (p 6-72). If cargo compartment main wiring harness (12330252) is defective, notify Support Maintenance.

- F Using jumper, connect socket C of dimmer switch connector to socket B and then to socket A. If IR lights fail to operate when socket C is connected to socket B, repair or replace wire 514. If IR lights fail to operate when socket C is connected to socket A, repair or replace wire 515. If both lights operate when jumper wire is used, replace dimmer switch (p 6-38).



- G Determine which beam is inoperative by using high beam indicator. Disconnect connector from dimmer switch and using jumper wire, connect socket C of connector to socket B if high beam is inoperative, and to socket A if low beam is inoperative. If lights operate, replace dimmer switch (p 6-38). If lights fail to operate, go to step H.

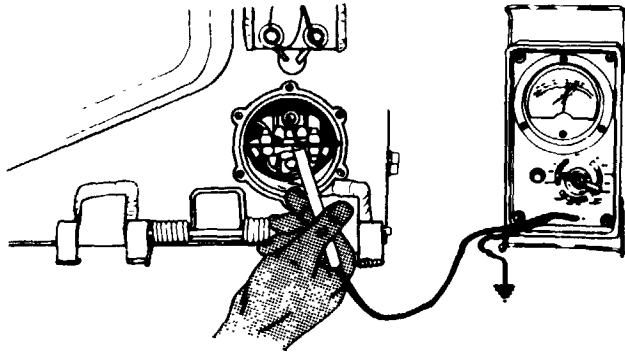


#### NOTE

To trace circuits 514 and 515, check wiring harness 10921380 (p 6-72). If cargo compartment main wiring harness (12330252) is defective, notify Support Maintenance.

- H Remove headlight assembly (p 6-30). If high beam is inoperative, place red multimeter lead in socket E. If low beam is inoperative, place red lead in socket D and ground black lead. If voltage is present, replace sealed beam units (p 6-31). If no voltage, repair or replace wire 515 if low beam is defective or wire 514 if high beam is defective.

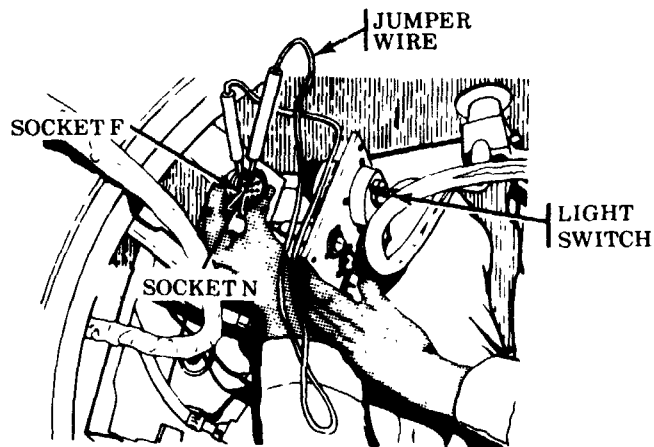




**NOTE**

Before performing these steps, ensure that service stoplight is operational.

- I Remove blackout (BO) stoplight bulb. Turn MASTER switch ON. Then move light switch to BO DRIVE position and apply parking brake. Using multimeter, place red lead in center contact and ground black lead. If voltage is present, replace bulb (p 6-36). If no voltage, go to step J.



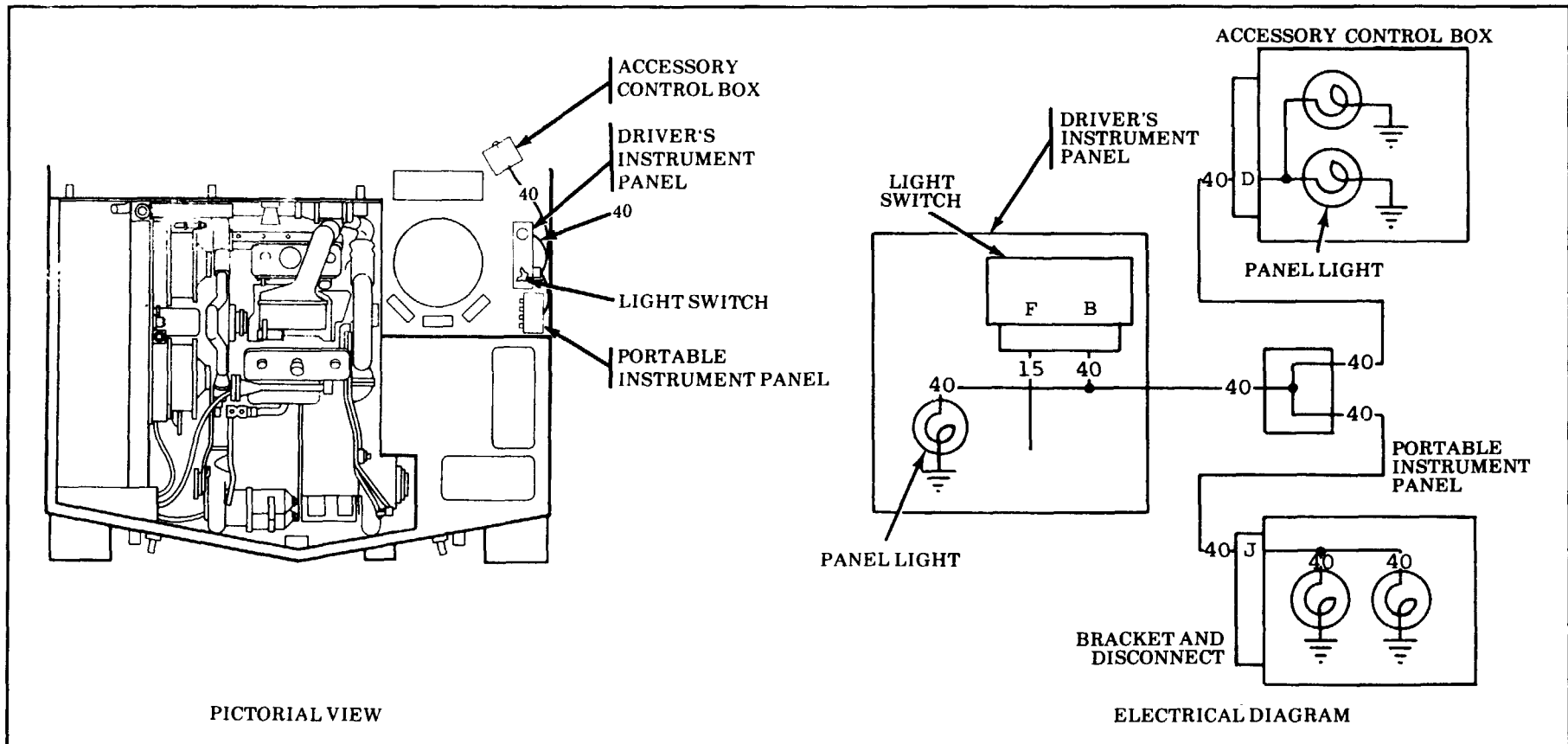
- J Disconnect light switch connector. Place jumper wire from socket F to socket N. If BO stoplight operates, replace light switch (p 6-21). Apply brakes. If light fails to operate, wire 23 is defective. Notify Support Maintenance.

<p><b>INSTRUMENT PANEL LIGHTS</b></p>	<p><b>ONE OR MORE LIGHTS ARE OUT</b> Do step A.</p> <p><b>ALL LIGHTS ARE OUT</b> Do step B.</p>
---------------------------------------	---



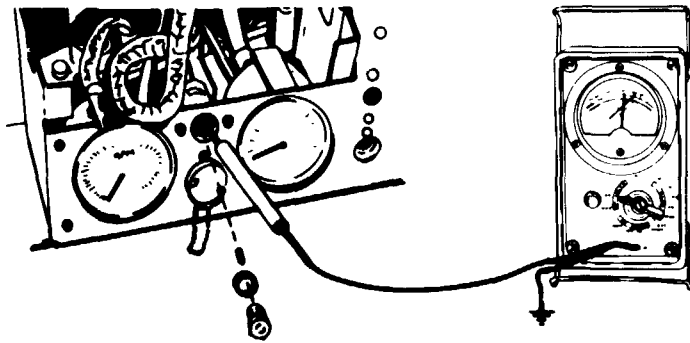
Troubleshoot instrument panel light circuit.

**INSTRUMENT PANEL LIGHT CIRCUIT**



PICTORIAL VIEW

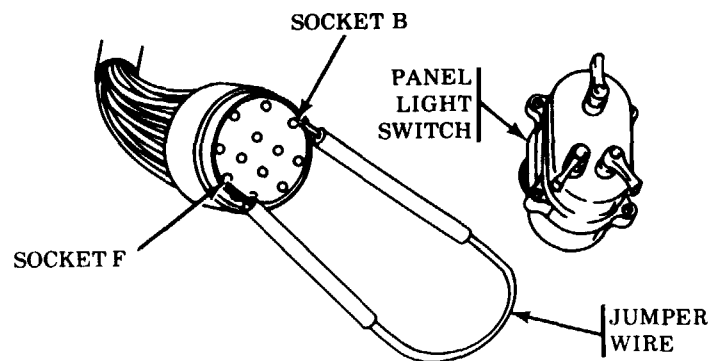
ELECTRICAL DIAGRAM



**NOTE**

Before troubleshooting panel lights, be sure that service drive lights are operational.

- A Remove inoperative panel light bulb (p 6-21). Turn MASTER switch and panel light switch ON. Using multimeter, place red lead in center contact. Ground black lead. If voltage is present, replace bulb (p 6-21). If no voltage, repair wire 40.



- B Disconnect light switch connector and use jumper to connect socket F to socket B. Turn panel lights ON. If panel lights operate, replace light switch. If panel lights fail to operate, repair or replace wire 40 (Appx F).

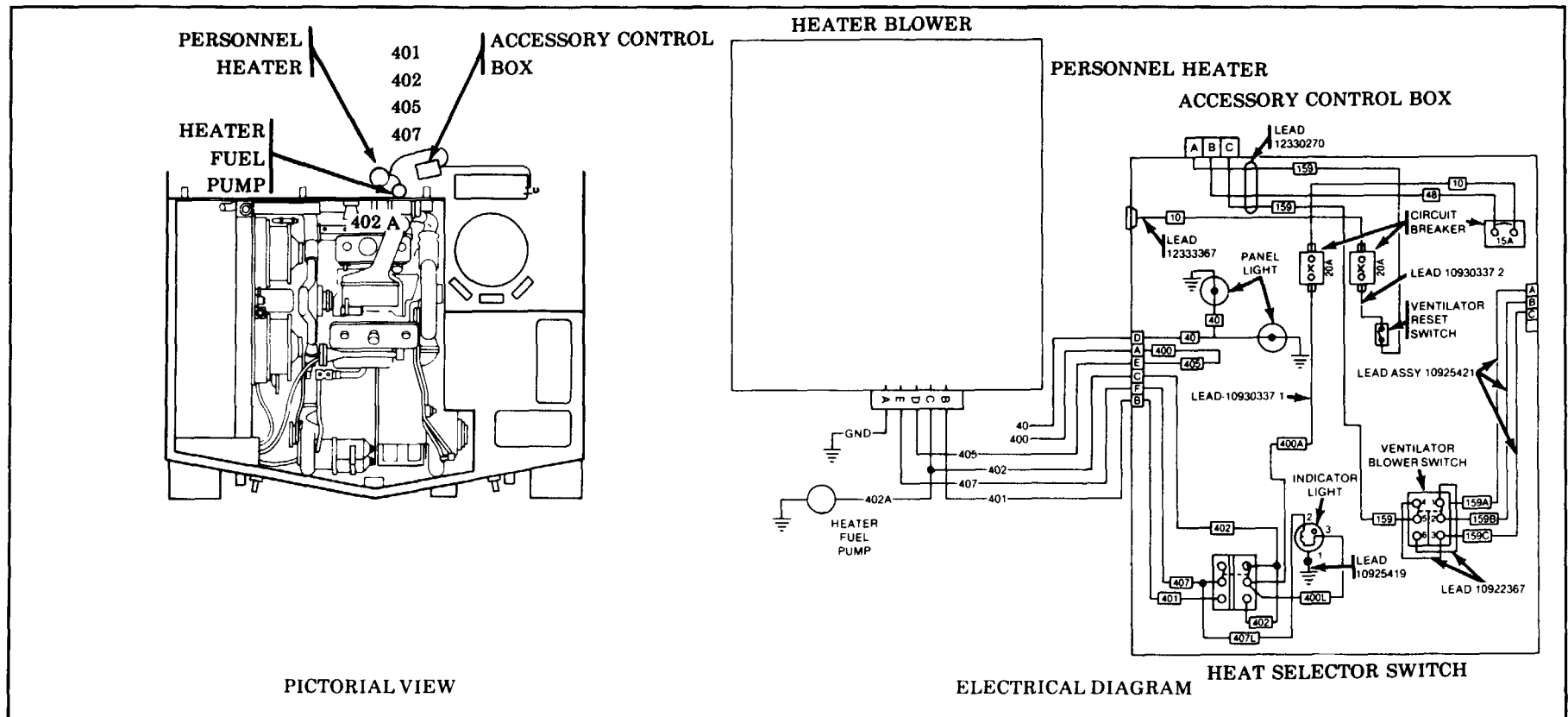
**PERSONNEL HEATER**

**PERSONNEL HEATER DOESN'T OPERATE**  
Do steps A through H.



- 1 Troubleshoot personnel heater circuit.
- 2 Troubleshoot personnel heater (TM 9-2540-205-24&P).

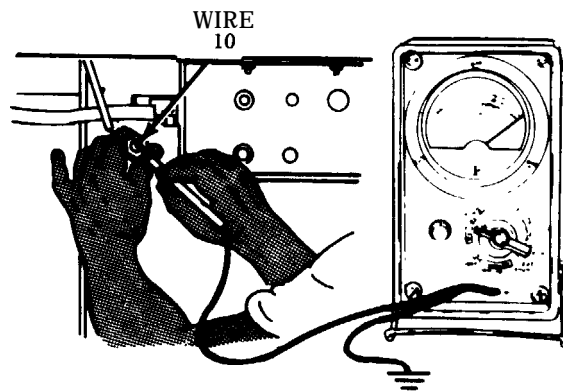
**PERSONNEL HEATER CIRCUIT**



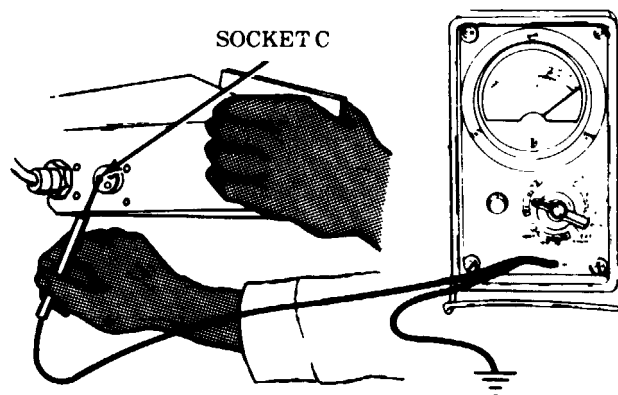
PICTORIAL VIEW

ELECTRICAL DIAGRAM

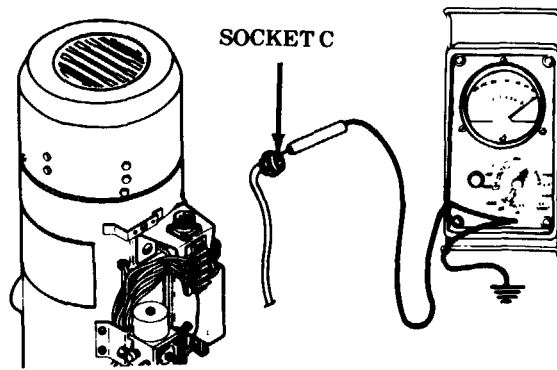
HEAT SELECTOR SWITCH



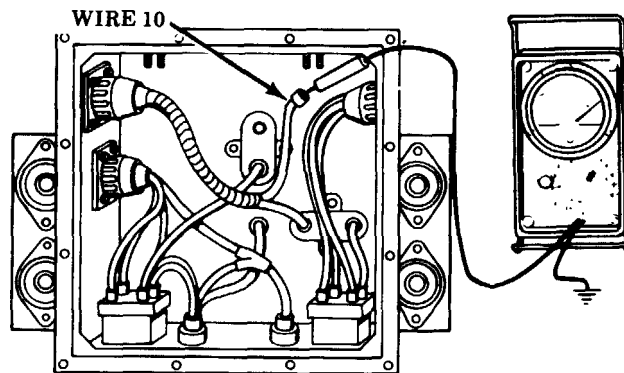
- A Disconnect wire 10 at accessory control box. Place MASTER switch ON. Place red lead of multimeter on wire 10 socket in connector. If voltage is not present, repair or replace wire 10 (p 6-77). If voltage is present, reconnect wire 10 to accessory control box and go to step B.



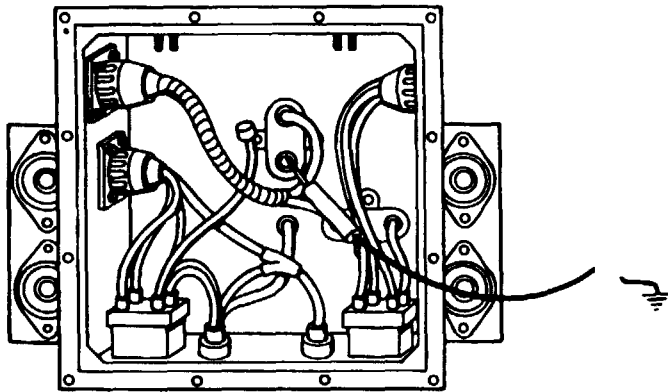
- B Disconnect wiring harness at accessory control box. Place MASTER switch ON, HEATER SELECTOR switch LOW. Place red lead of multimeter in socket C (wire 402) of accessory control box and black lead to ground. If voltage is not present, go to step D. If voltage is present, go to step C.



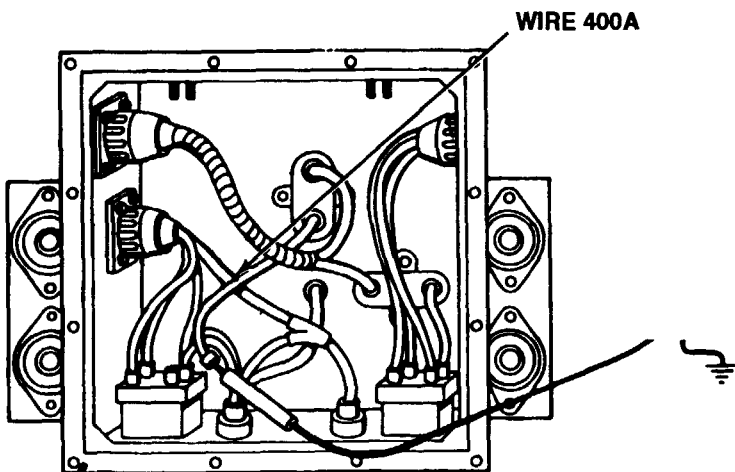
- c Reconnect harness at accessory control box. Disconnect wiring harness and personnel heater. MASTER switch ON, HEAT SELECTOR switch LOW. Place red lead of multimeter in socket C (wire 402) and black lead to ground. Check for voltage. Repeat voltage check on socket D (wire 405). If voltage is not present in both wires, repair or replace defective wires (p 6-100). If voltage is present reconnect harness and troubleshoot personnel heater circuitry (TM 9-2540-205-24&P).



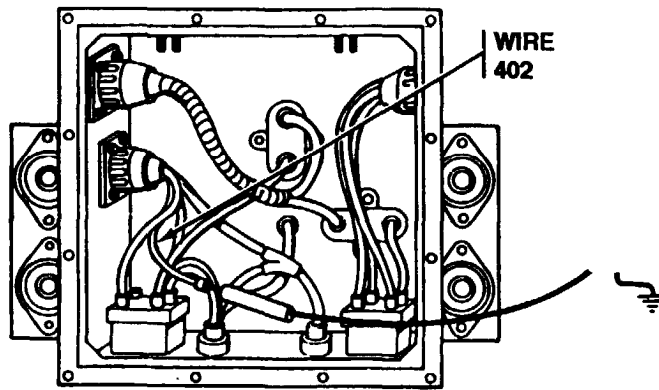
- D Remove accessory control box (p 6-26). Remove cover and disconnect wire 10 from circuit breaker. Place MASTER switch ON. Place red lead of multimeter in wire 10 connector and black lead to ground. If voltage is not present, replace wire 10 in accessory control box (p 6-26). If voltage is present, go to step E.



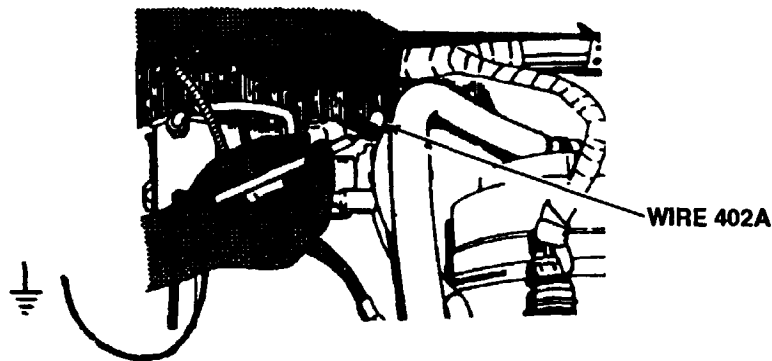
- E Disconnect wire 400 from circuit breaker. Place MASTER switch ON. Place red lead of multimeter in circuit breaker terminal and black lead to ground. If voltage is not present, replace circuit breaker (p 6-26). If voltage is present, go to step F.



- F Place red lead of multimeter on HEAD SELECTOR switch (input wire 400) and black lead to ground. If voltage is not present, repair or replace wire 400 (p 6-26). If voltage is present, go to step G.



G Place red lead of multimeter on heat selector switch (output wire 402) and black lead to ground. Move HEAT SELECTOR switch to HIGH and LOW positions (position red lead on HIGH and LOW terminals). If voltage is not present in both positions, replace switch (p 6-26). If voltage is present go to step H.



H Assemble and install accessory control box (p 6-26). Disconnect wire 402A at personnel heater fuel pump. Place MASTER switch ON, HEAT SELECTOR switch LOW. Place red lead of multimeter in wire 402A connector and black lead to ground. If voltage is not present replace wire 402A (p 6-100.3). If voltage is present, replace fuel pump (p 14-71). If heater still does not operate, replace heater (p 14-68.2).



**PERSONNEL VENTILATION BLOWER**

**VENTILATION BLOWER DOES NOT OPERATE**

Do step A.

**VENTILATION BLOWER OPERATES BUT DOES NOT COME ON AUTOMATICALLY IN EXHAUST MODE DURING AFES TEST**

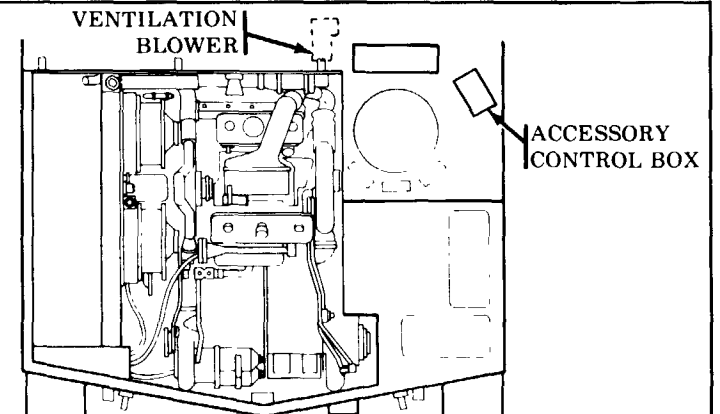
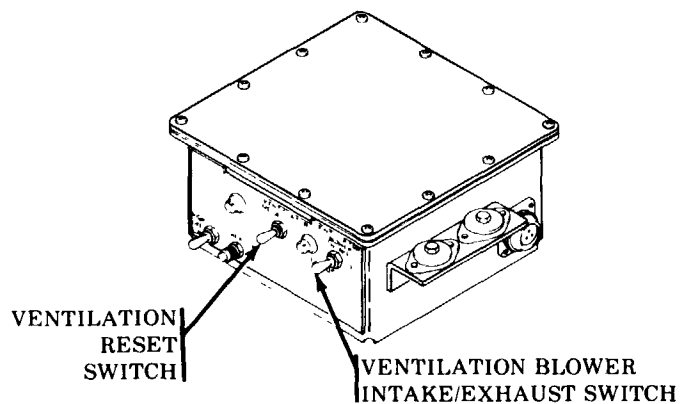
Do step J.

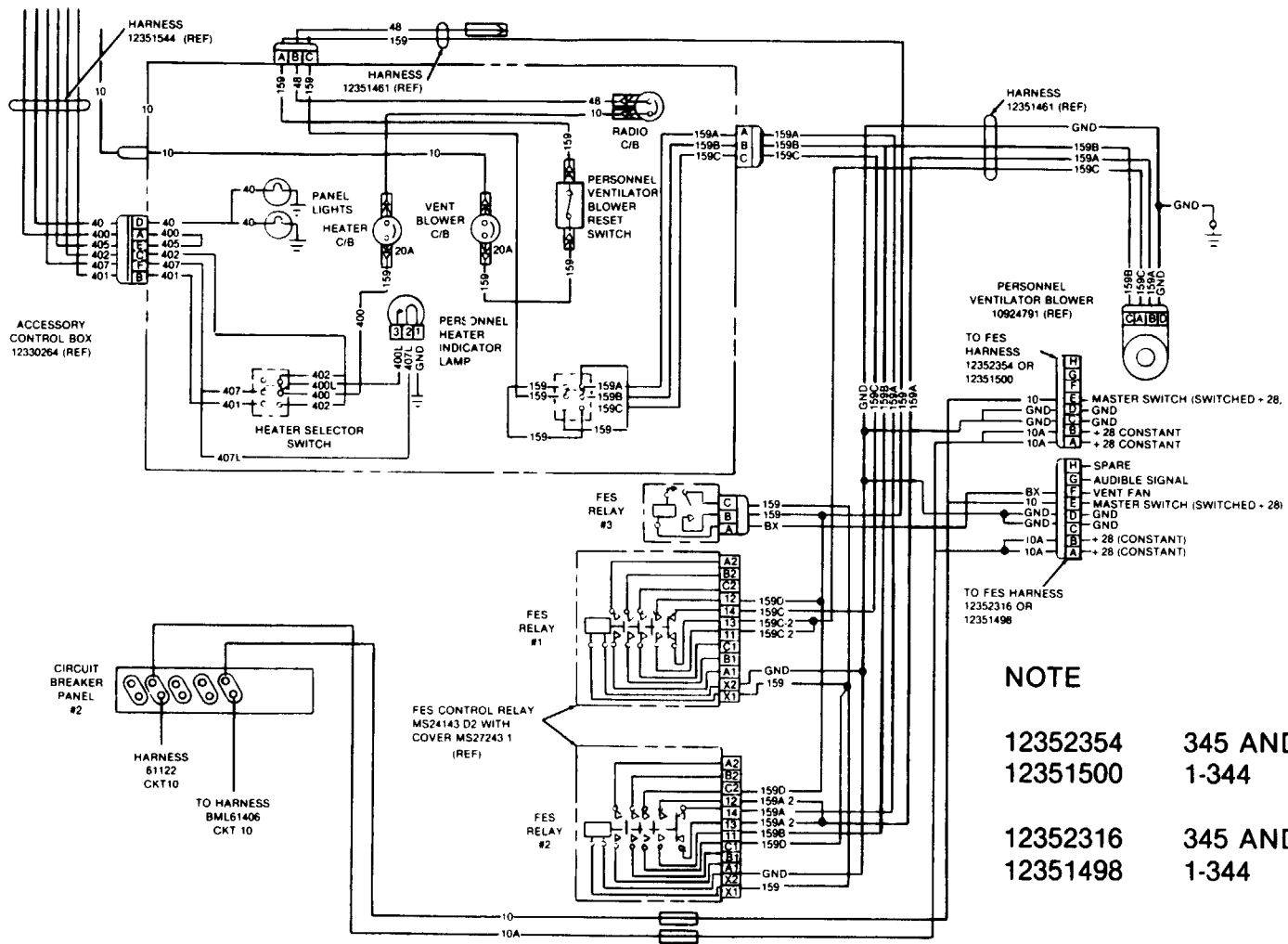
**VENTILATION BLOWER RESET SWITCH DOES NOT RESET SYSTEM AFTER AFES CREW COMPARTMENT TEST**

Replace ventilation blower reset switch (p 6-26).

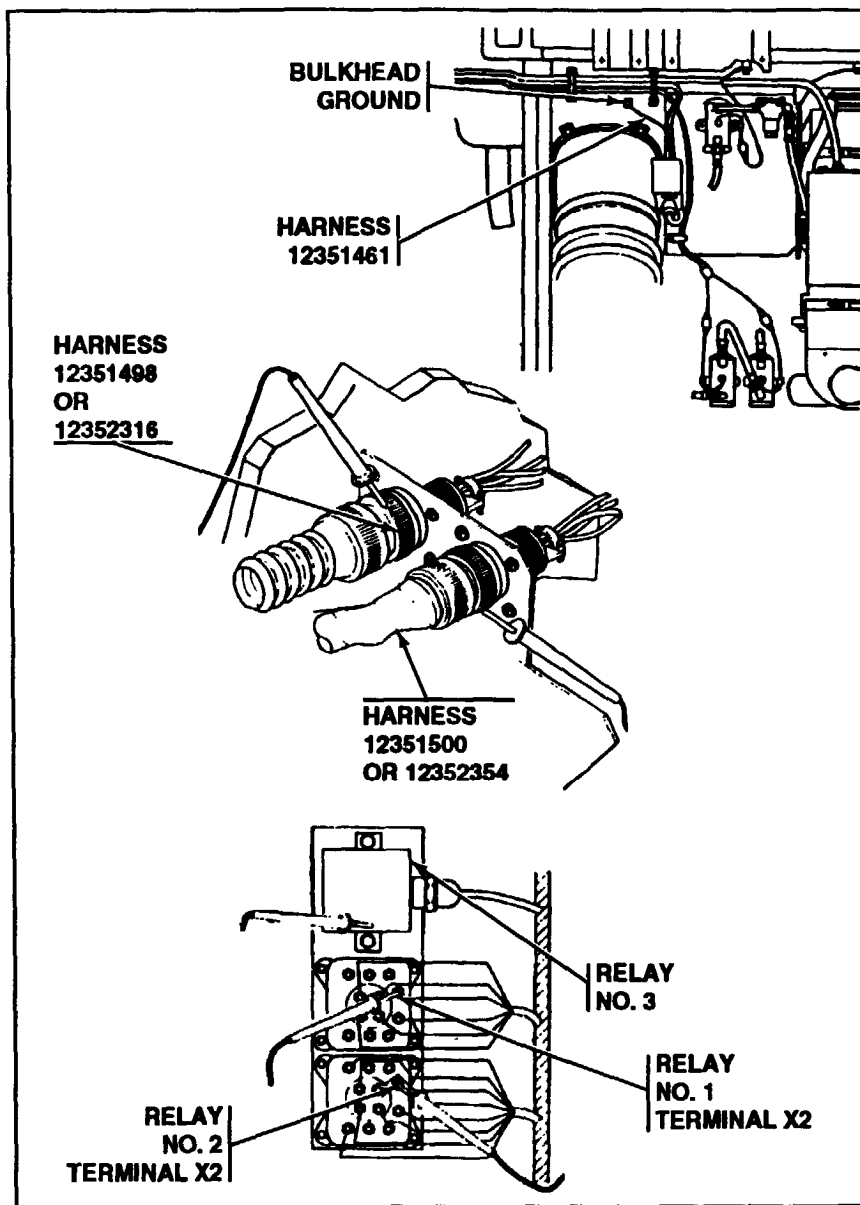
**START HERE** →

- 1 Turn MASTER switch ON.
- 2 Press ventilation blower reset toggle switch on accessory control box.
- 3 Operate ventilation system in both intake and exhaust modes. If system does not operate in either intake or exhaust, or both, proceed with step A.





SCHMATIC DIAGRAM



### WARNING

Ventilation and Automatic Fire Extinguisher System (AFES) electrical systems are interconnected. Install anti-recoil plugs in AFES crew compartment Halon bottle discharge ports. Install safety pin in all AFES bottle actuators. Turn both ENGINE and CREW AFES test and alarm panel MAINT switches to ON position (slot vertical). Disconnect electrical harness plugs from all extinguisher bottle actuators to prevent accidental discharge during troubleshooting procedures.

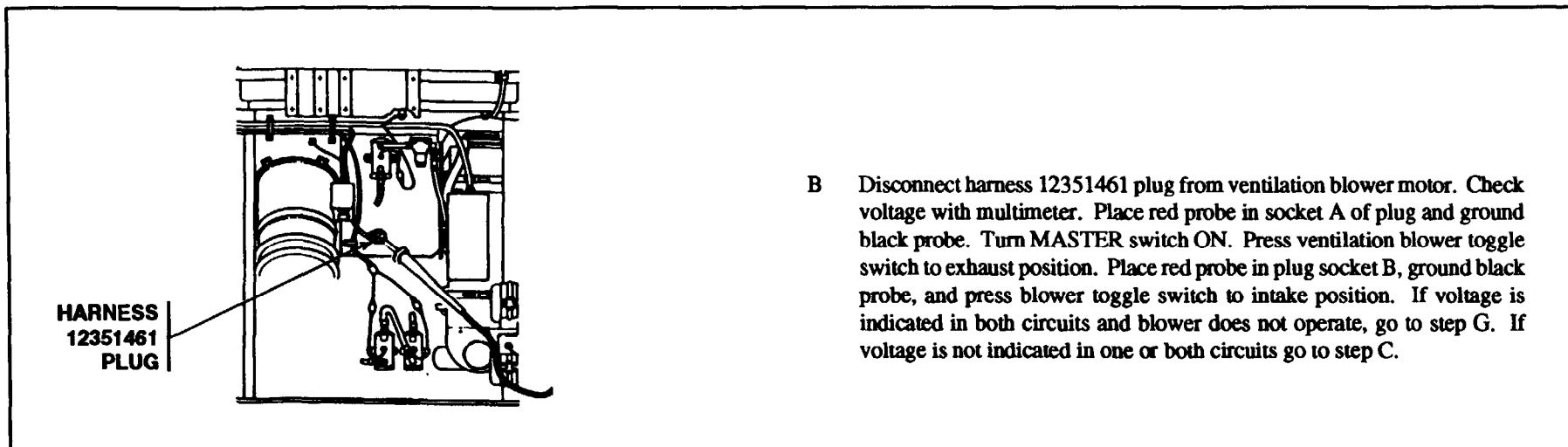
- A Turn MASTER switch OFF. Remove AFES relays cover (p 14-35). Remove left projectile rack (p 11-5). Check harness 12351461 (p 6-93) ground at bulkhead. Tighten screw to ensure good ground. Check ground between the following points.

Relay no. 1, terminal X2 and chassis.  
Relay no. 2, terminal X2 and chassis.

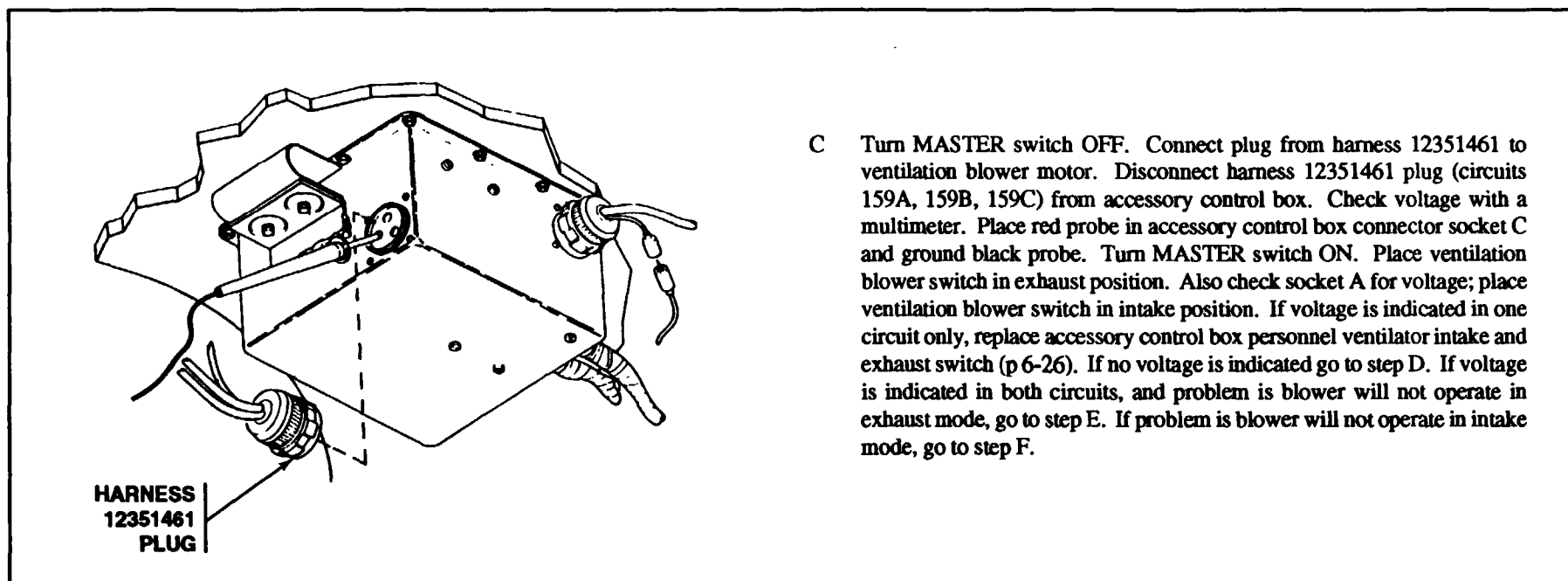
Plug shells at interconnection of harness 12351461 and AFES harness 12352316 or 12351498 and 12352354 or 12351500.

Relay no. 3, case and chassis.

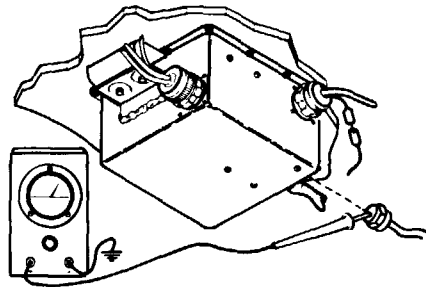
Repair ground where possible, otherwise replace electrical harness 12351461 (p 6-93). If grounds check, but blower still does not operate, go to step B.



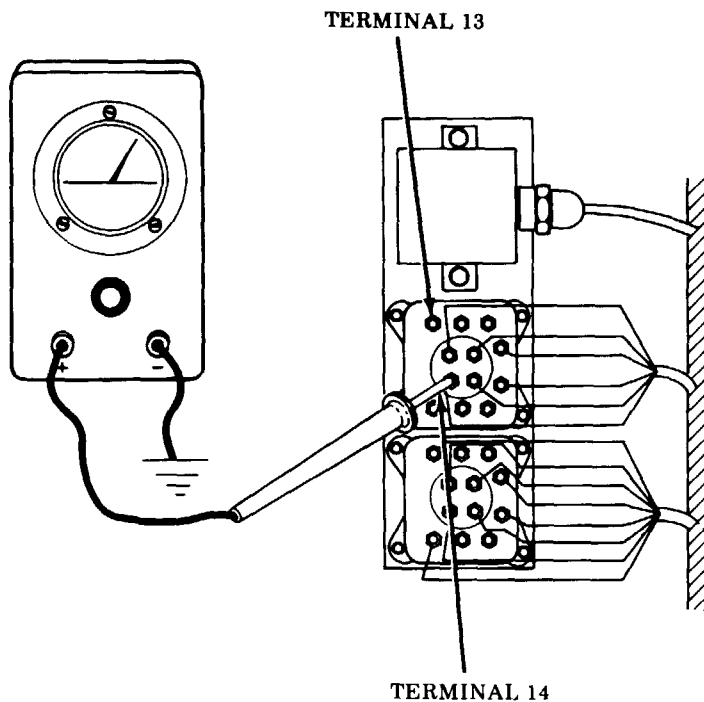
- B** Disconnect harness 12351461 plug from ventilation blower motor. Check voltage with multimeter. Place red probe in socket A of plug and ground black probe. Turn MASTER switch ON. Press ventilation blower toggle switch to exhaust position. Place red probe in plug socket B, ground black probe, and press blower toggle switch to intake position. If voltage is indicated in both circuits and blower does not operate, go to step G. If voltage is not indicated in one or both circuits go to step C.



- C** Turn MASTER switch OFF. Connect plug from harness 12351461 to ventilation blower motor. Disconnect harness 12351461 plug (circuits 159A, 159B, 159C) from accessory control box. Check voltage with a multimeter. Place red probe in accessory control box connector socket C and ground black probe. Turn MASTER switch ON. Place ventilation blower switch in exhaust position. Also check socket A for voltage; place ventilation blower switch in intake position. If voltage is indicated in one circuit only, replace accessory control box personnel ventilator intake and exhaust switch (p 6-26). If no voltage is indicated go to step D. If voltage is indicated in both circuits, and problem is blower will not operate in exhaust mode, go to step E. If problem is blower will not operate in intake mode, go to step F.



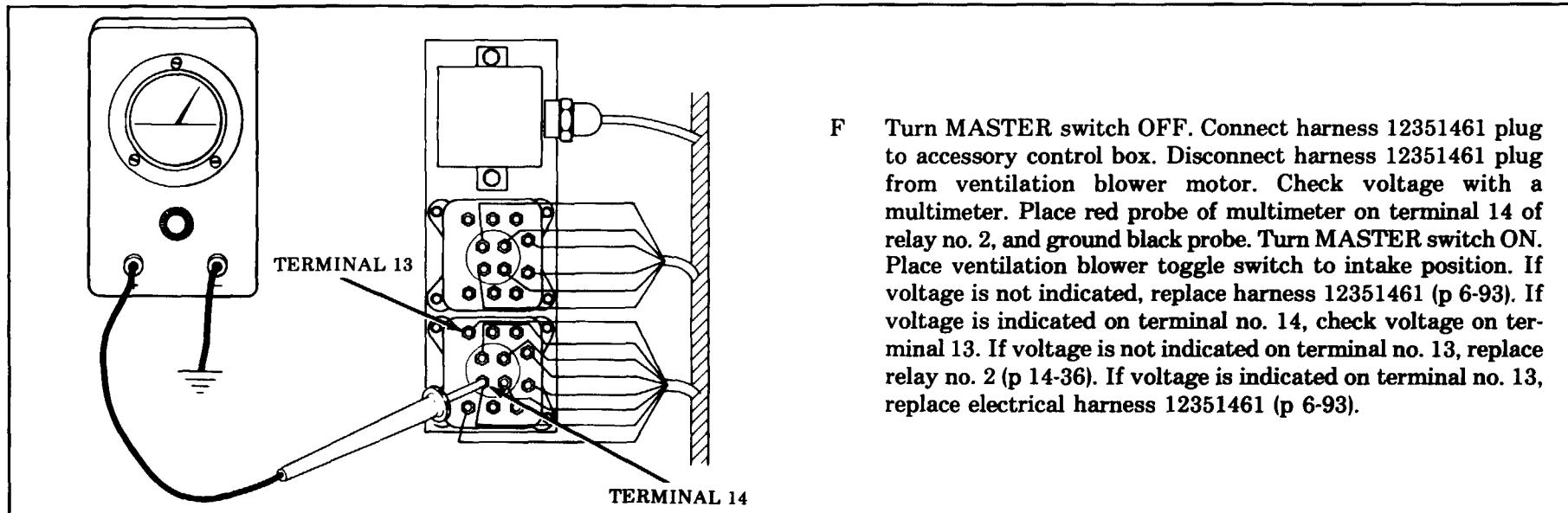
- D Turn MASTER switch OFF. Disconnect harness 12330257 circuit 10 plug from accessory control box. Check voltage with a multimeter. Place red probe in harness plug and ground black probe. Turn MASTER switch ON. If voltage is indicated, troubleshoot accessory control box circuitry (p 6-26). If no voltage is indicated, troubleshoot wiring harness 12330257 (p 6-77).



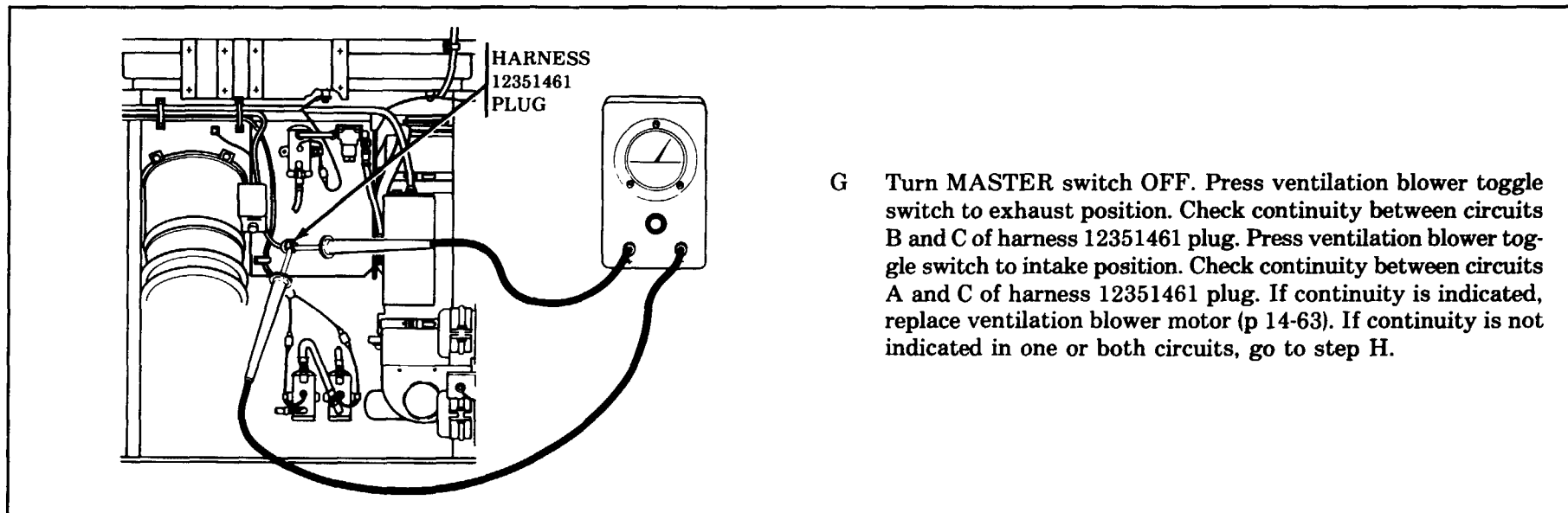
**WARNING**

When AFES relays cover is removed, use caution while working around exposed electrical terminals to avoid electrical shock. Do not short out terminals with tools or bare hands.

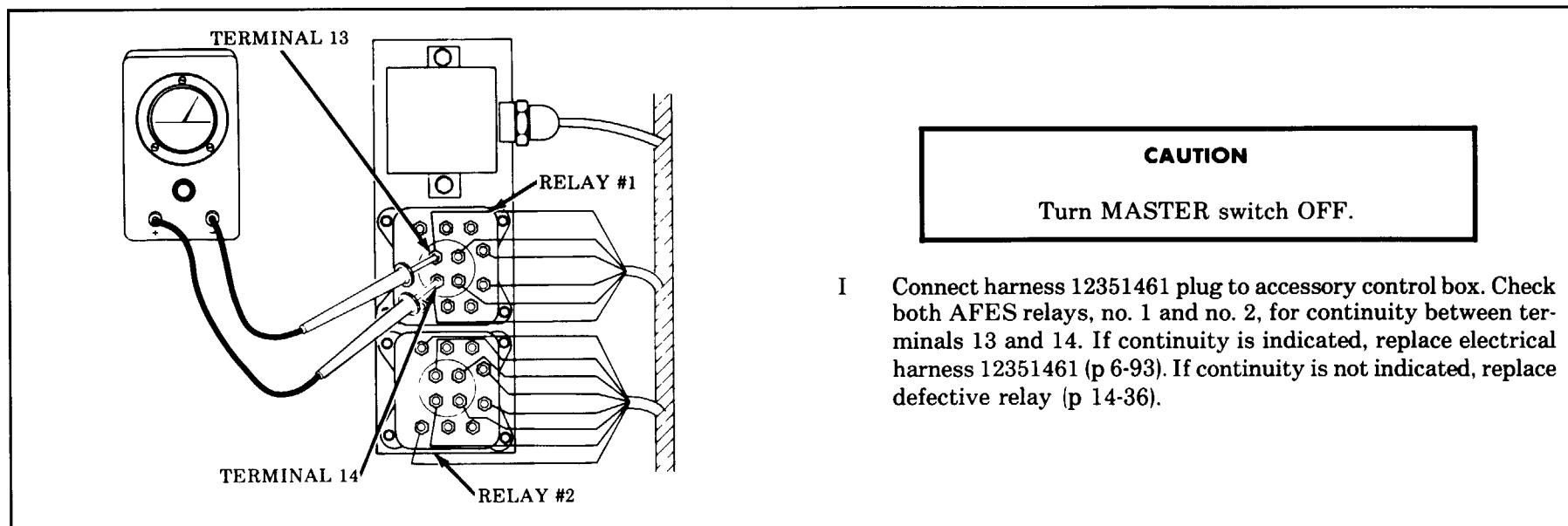
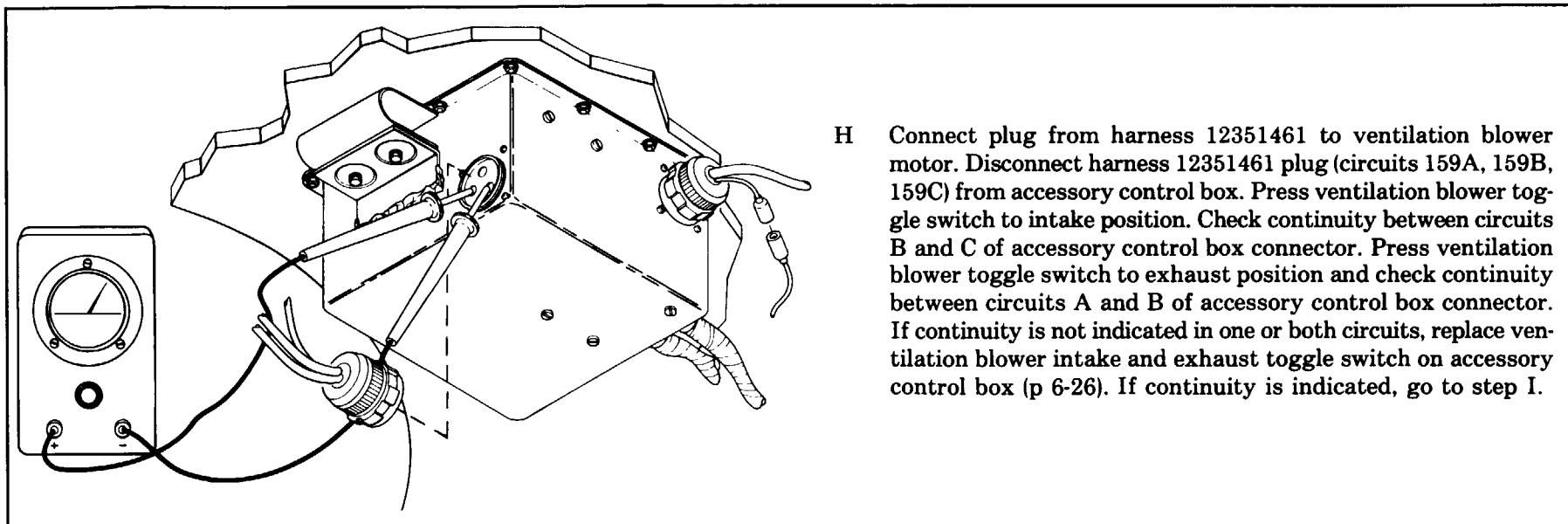
- E Turn MASTER switch OFF. Connect harness 12351461 plug to accessory control box. Disconnect harness 12351461 plug from ventilation blower motor. Check voltage with a multimeter. Place red probe of multimeter on terminal 14 of relay no. 1, and ground black probe. Turn MASTER switch ON. Place ventilation blower toggle switch to exhaust position. If voltage is not indicated, replace harness 12351461 (p 6-93). If voltage is indicated on terminal no. 14, check voltage on terminal 13. If voltage is not indicated on terminal no. 13, replace relay no. 1 (p14-36). If voltage is indicated on terminal no. 13, replace electrical harness 12351461 (p 6-93).

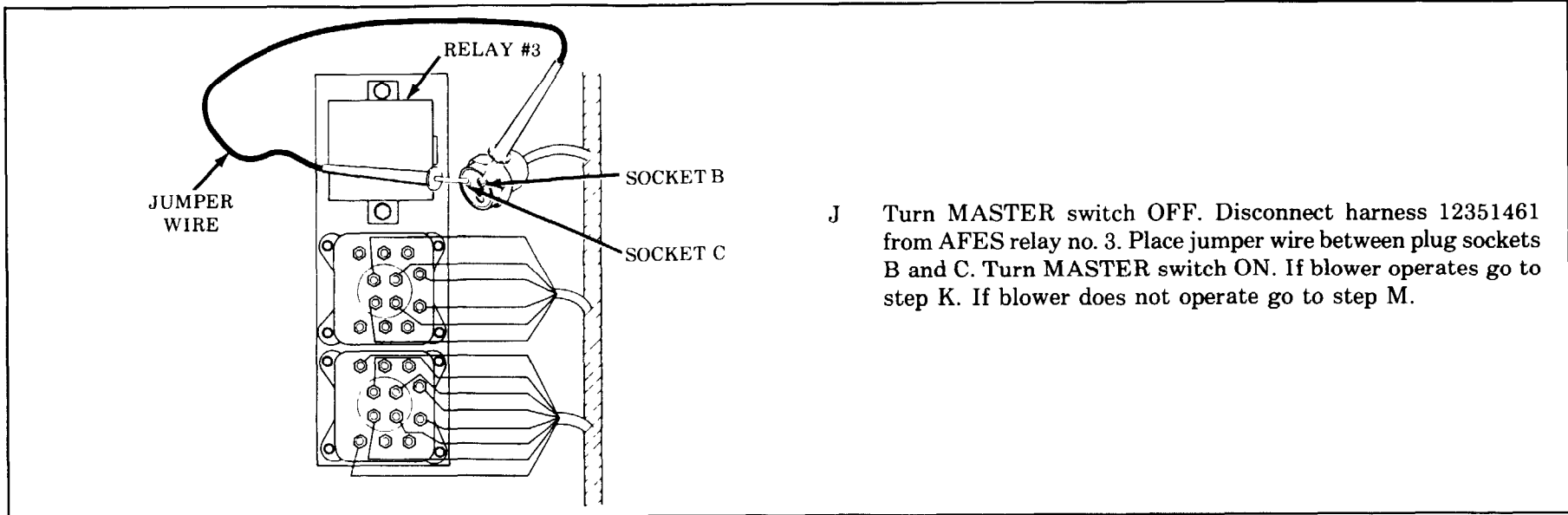


- Turn MASTER switch OFF. Connect harness 12351461 plug to accessory control box. Disconnect harness 12351461 plug from ventilation blower motor. Check voltage with a multimeter. Place red probe of multimeter on terminal 14 of relay no. 2, and ground black probe. Turn MASTER switch ON. Place ventilation blower toggle switch to intake position. If voltage is not indicated, replace harness 12351461 (p 6-93). If voltage is indicated on terminal no. 14, check voltage on terminal 13. If voltage is not indicated on terminal no. 13, replace relay no. 2 (p 14-36). If voltage is indicated on terminal no. 13, replace electrical harness 12351461 (p 6-93).

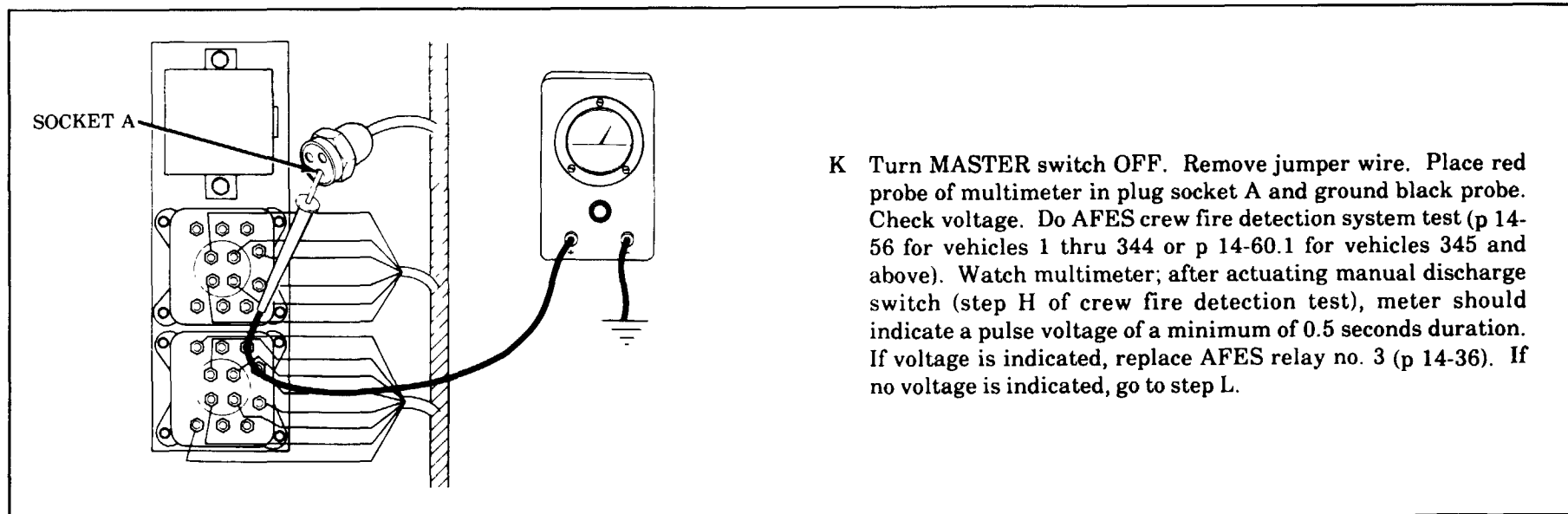


- Turn MASTER switch OFF. Press ventilation blower toggle switch to exhaust position. Check continuity between circuits B and C of harness 12351461 plug. Press ventilation blower toggle switch to intake position. Check continuity between circuits A and C of harness 12351461 plug. If continuity is indicated, replace ventilation blower motor (p 14-63). If continuity is not indicated in one or both circuits, go to step H.



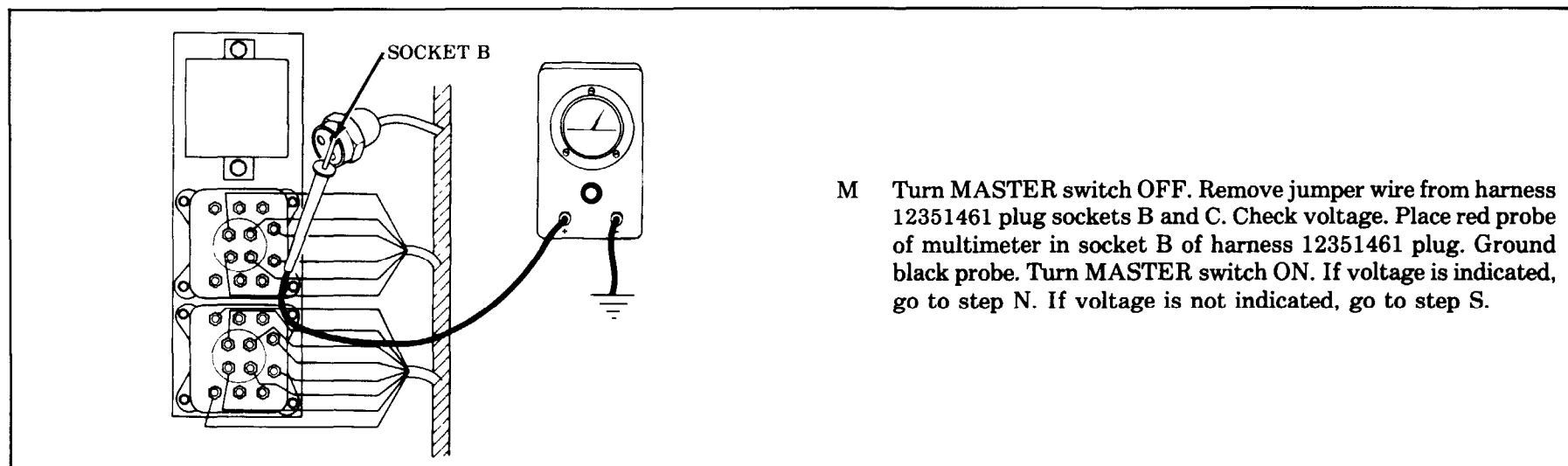
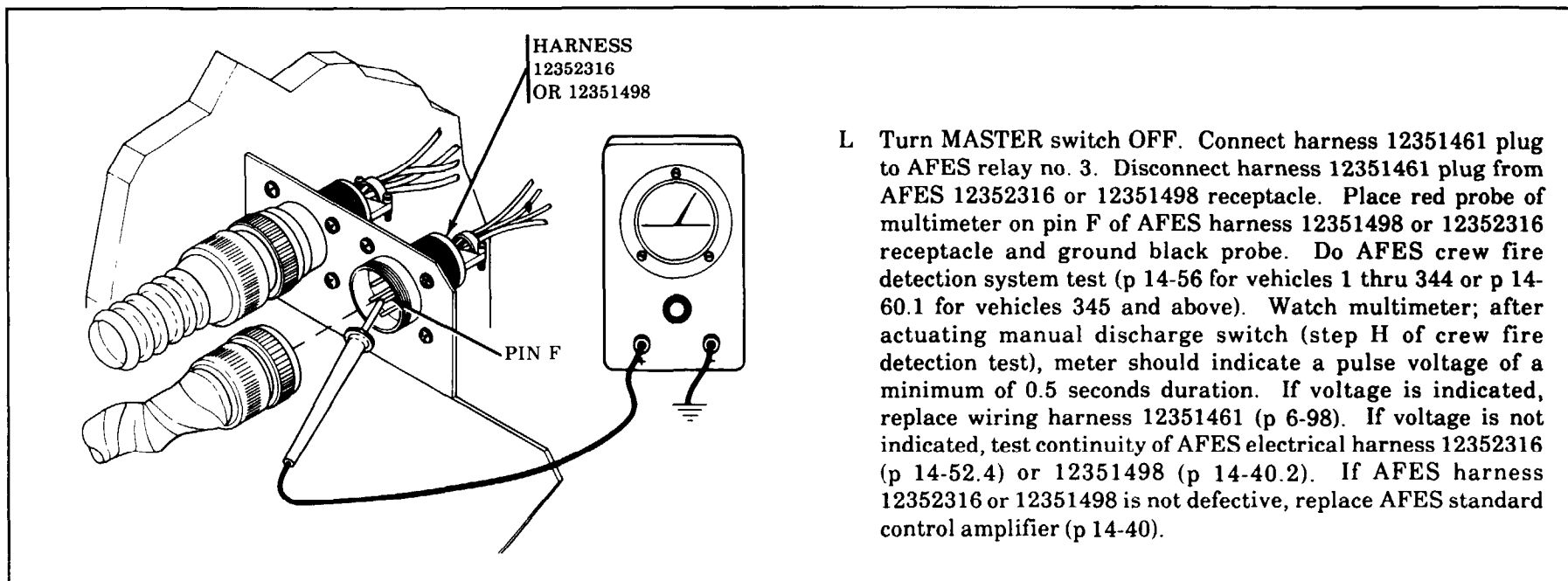


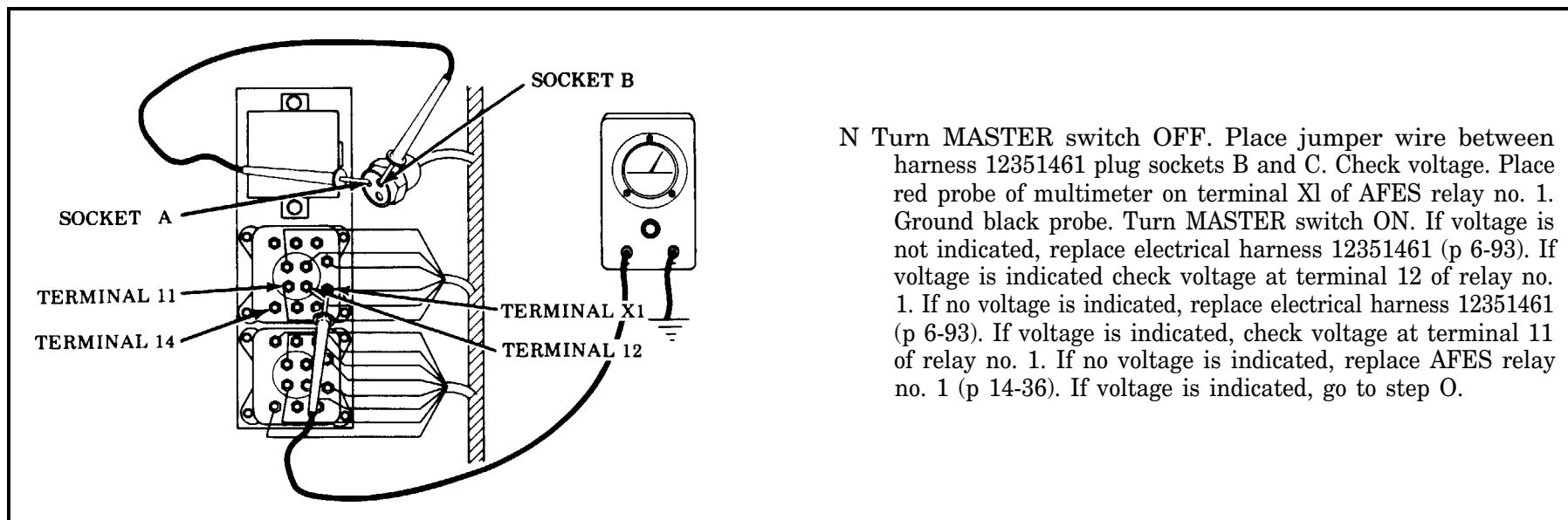
- J Turn MASTER switch OFF. Disconnect harness 12351461 from AFES relay no. 3. Place jumper wire between plug sockets B and C. Turn MASTER switch ON. If blower operates go to step K. If blower does not operate go to step M.



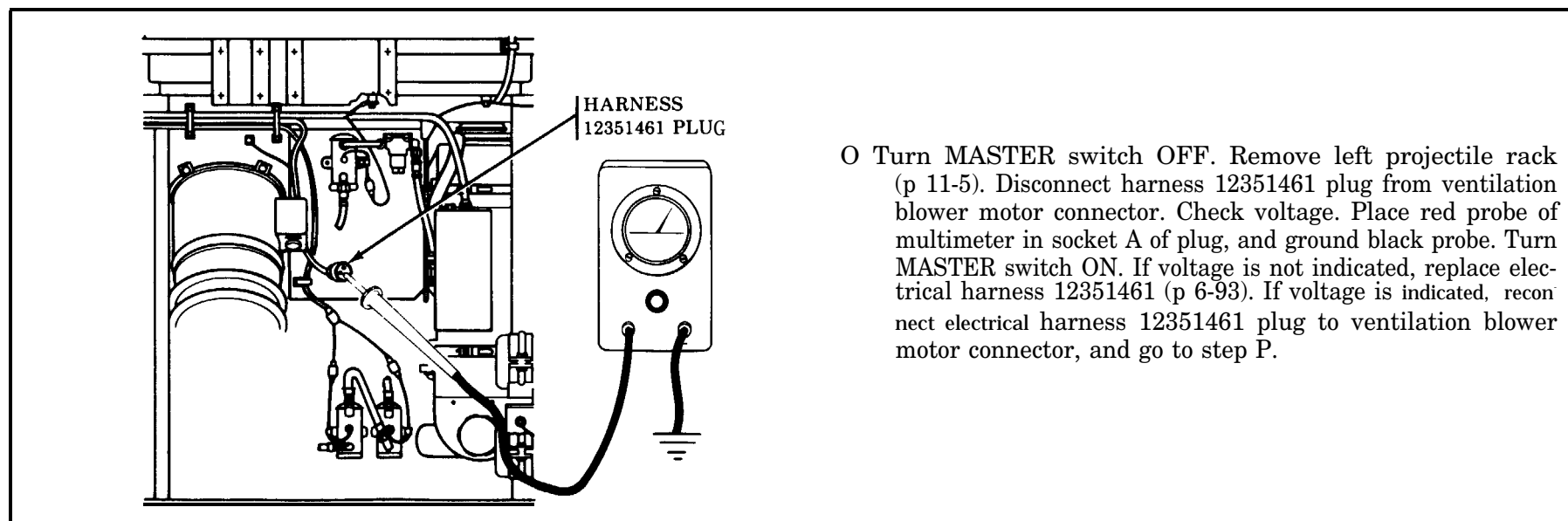
- K Turn MASTER switch OFF. Remove jumper wire. Place red probe of multimeter in plug socket A and ground black probe. Check voltage. Do AFES crew fire detection system test (p 14-56 for vehicles 1 thru 344 or p 14-60.1 for vehicles 345 and above). Watch multimeter; after actuating manual discharge switch (step H of crew fire detection test), meter should indicate a pulse voltage of a minimum of 0.5 seconds duration. If voltage is indicated, replace AFES relay no. 3 (p 14-36). If no voltage is indicated, go to step L.



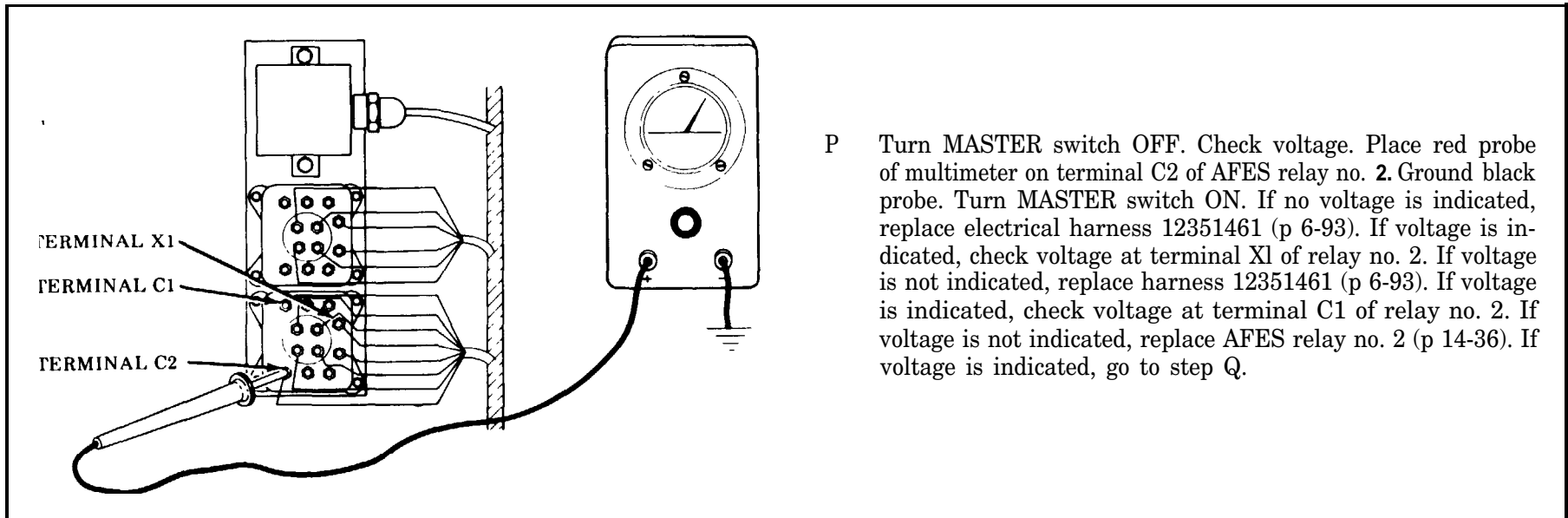




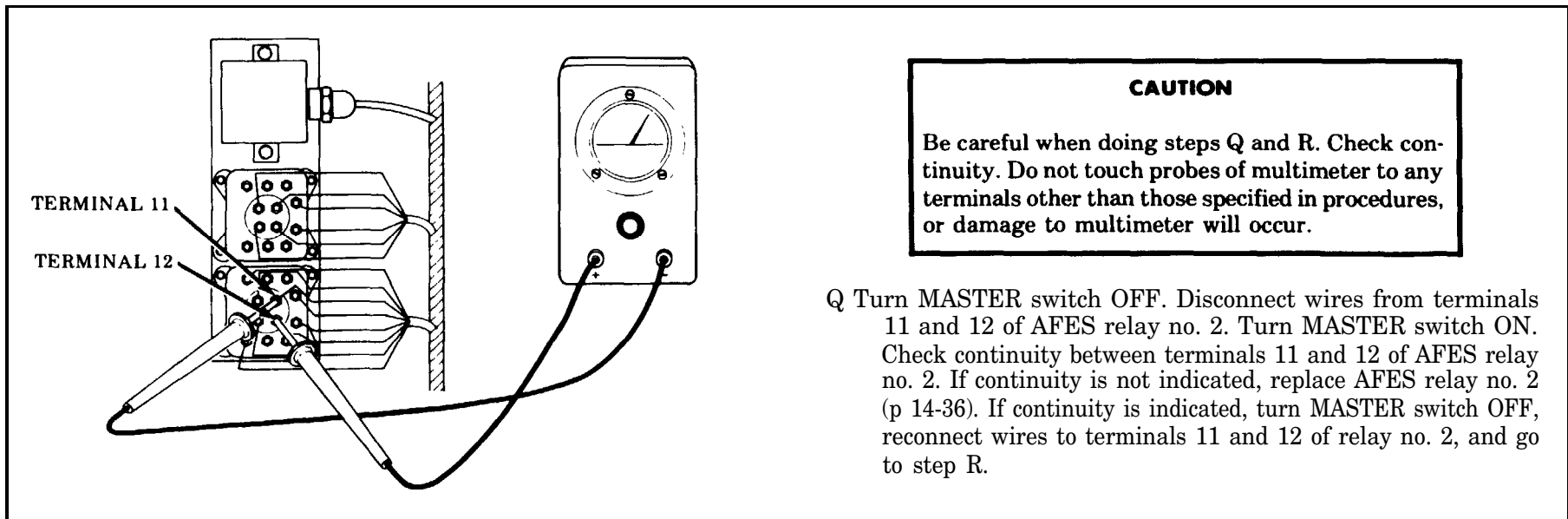
N Turn MASTER switch OFF. Place jumper wire between harness 12351461 plug sockets B and C. Check voltage. Place red probe of multimeter on terminal X1 of AFES relay no. 1. Ground black probe. Turn MASTER switch ON. If voltage is not indicated, replace electrical harness 12351461 (p 6-93). If voltage is indicated check voltage at terminal 12 of relay no. 1. If no voltage is indicated, replace electrical harness 12351461 (p 6-93). If voltage is indicated, check voltage at terminal 11 of relay no. 1. If no voltage is indicated, replace AFES relay no. 1 (p 14-36). If voltage is indicated, go to step O.



O Turn MASTER switch OFF. Remove left projectile rack (p 11-5). Disconnect harness 12351461 plug from ventilation blower motor connector. Check voltage. Place red probe of multimeter in socket A of plug, and ground black probe. Turn MASTER switch ON. If voltage is not indicated, replace electrical harness 12351461 (p 6-93). If voltage is indicated, reconnect electrical harness 12351461 plug to ventilation blower motor connector, and go to step P.



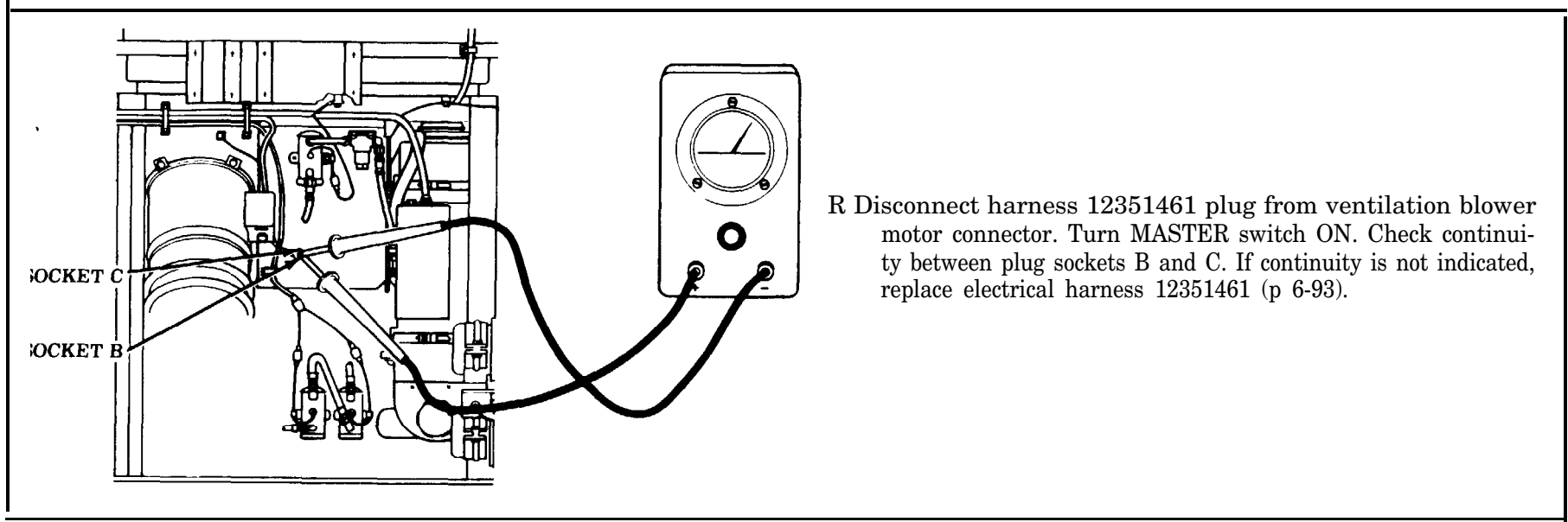
- P Turn MASTER switch OFF. Check voltage. Place red probe of multimeter on terminal C2 of AFES relay no. 2. Ground black probe. Turn MASTER switch ON. If no voltage is indicated, replace electrical harness 12351461 (p 6-93). If voltage is indicated, check voltage at terminal X1 of relay no. 2. If voltage is not indicated, replace harness 12351461 (p 6-93). If voltage is indicated, check voltage at terminal C1 of relay no. 2. If voltage is not indicated, replace AFES relay no. 2 (p 14-36). If voltage is indicated, go to step Q.



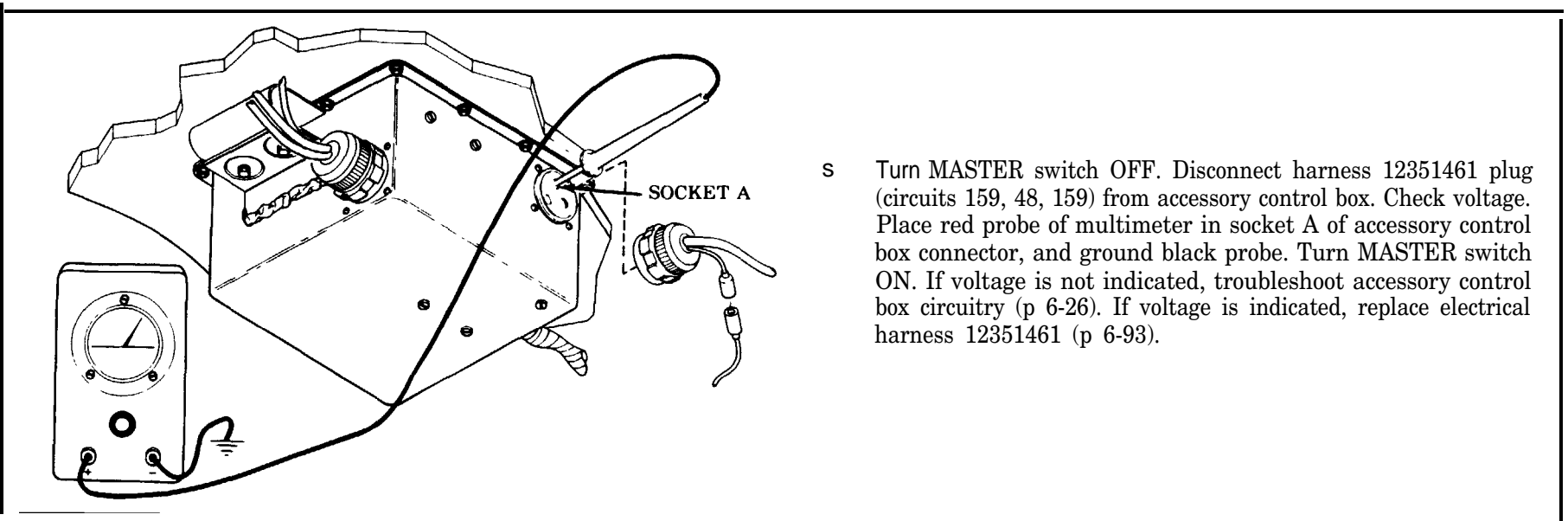
**CAUTION**

Be careful when doing steps Q and R. Check continuity. Do not touch probes of multimeter to any terminals other than those specified in procedures, or damage to multimeter will occur.

- Q Turn MASTER switch OFF. Disconnect wires from terminals 11 and 12 of AFES relay no. 2. Turn MASTER switch ON. Check continuity between terminals 11 and 12 of AFES relay no. 2. If continuity is not indicated, replace AFES relay no. 2 (p 14-36). If continuity is indicated, turn MASTER switch OFF, reconnect wires to terminals 11 and 12 of relay no. 2, and go to step R.



R Disconnect harness 12351461 plug from ventilation blower motor connector. Turn MASTER switch ON. Check continuity between plug sockets B and C. If continuity is not indicated, replace electrical harness 12351461 (p 6-93).



S Turn MASTER switch OFF. Disconnect harness 12351461 plug (circuits 159, 48, 159) from accessory control box. Check voltage. Place red probe of multimeter in socket A of accessory control box connector, and ground black probe. Turn MASTER switch ON. If voltage is not indicated, troubleshoot accessory control box circuitry (p 6-26). If voltage is indicated, replace electrical harness 12351461 (p 6-93).

**PERSONNEL VENTILATION BLOWER**

**AIR CIRCULATION ISN'T SUFFICIENT**



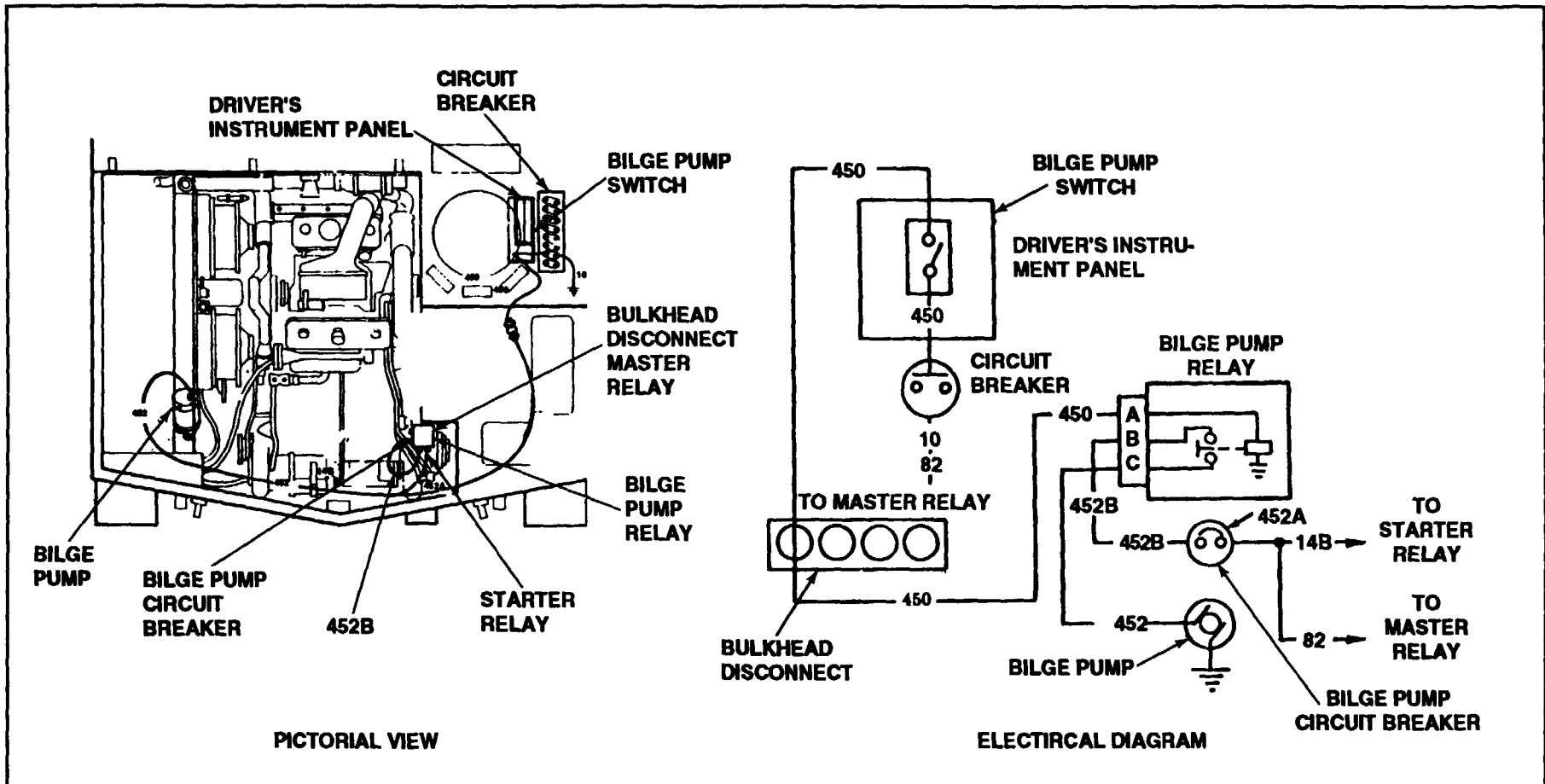
- 1 Clean air intake screen.
- 2 Replace blower (p 14-63).

<b>BILGE PUMP</b>	<b>BILGE PUMP DOESN'T OPERATE</b>
-------------------	-----------------------------------



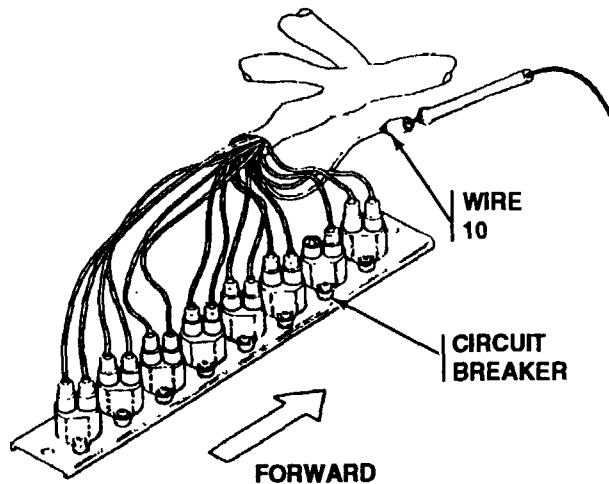
Troubleshoot bilge pump circuit.

**BILGE PUMP CIRCUIT**

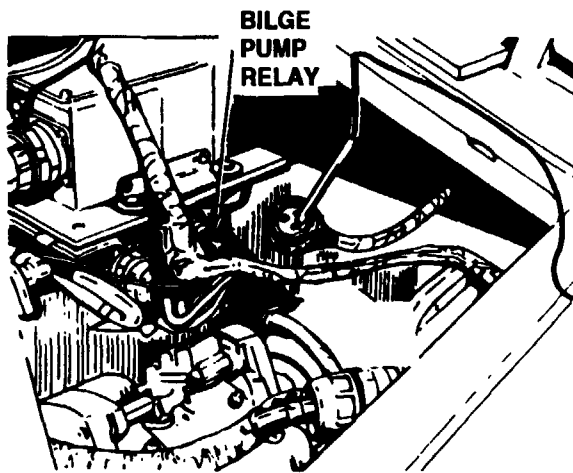


PICTORIAL VIEW

ELECTRICAL DIAGRAM

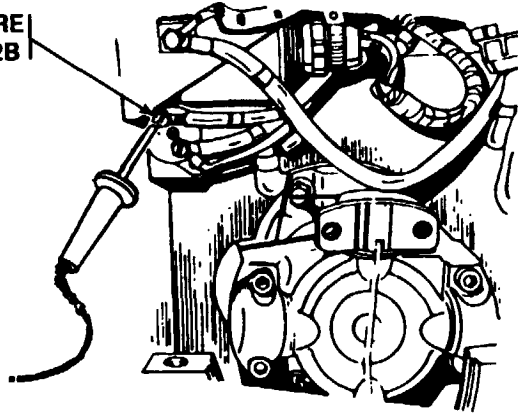


E Disconnect wire 10 from circuit breaker input. Using multimeter, place red lead in wire 10. Ground black lead. If voltage is present replace circuit breaker (p 6-54). If no voltage, repair or replace wire 10 (p 6-77).



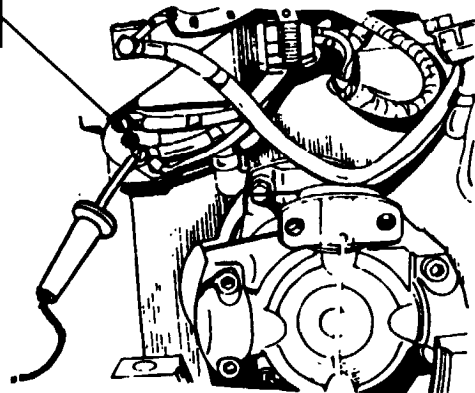
F With bilge pump relay connector disconnected, place red multimeter lead in socket C (wire 452B), and black lead to ground. If no voltage, go to step G. If voltage is present, go to step I.

WIRE  
452B



G Place red multimeter lead on bilge pump circuit breaker output (wire 452B) and ground black lead. If voltage is present, repair or replace wire 452B (p 6-72). If no voltage, go to step H.

WIRE  
452A



H Place red multimeter lead on bilge pump circuit breaker input (wire 452A) and ground black lead. If voltage is present replace circuit breaker (p 6-54). If no voltage, repair or replace wire 452A (Appx F).



**LEFT AND RIGHT FUEL TANK FUEL PUMP TEST**

**ENGINE MISSES WHEN LOW ON FUEL**

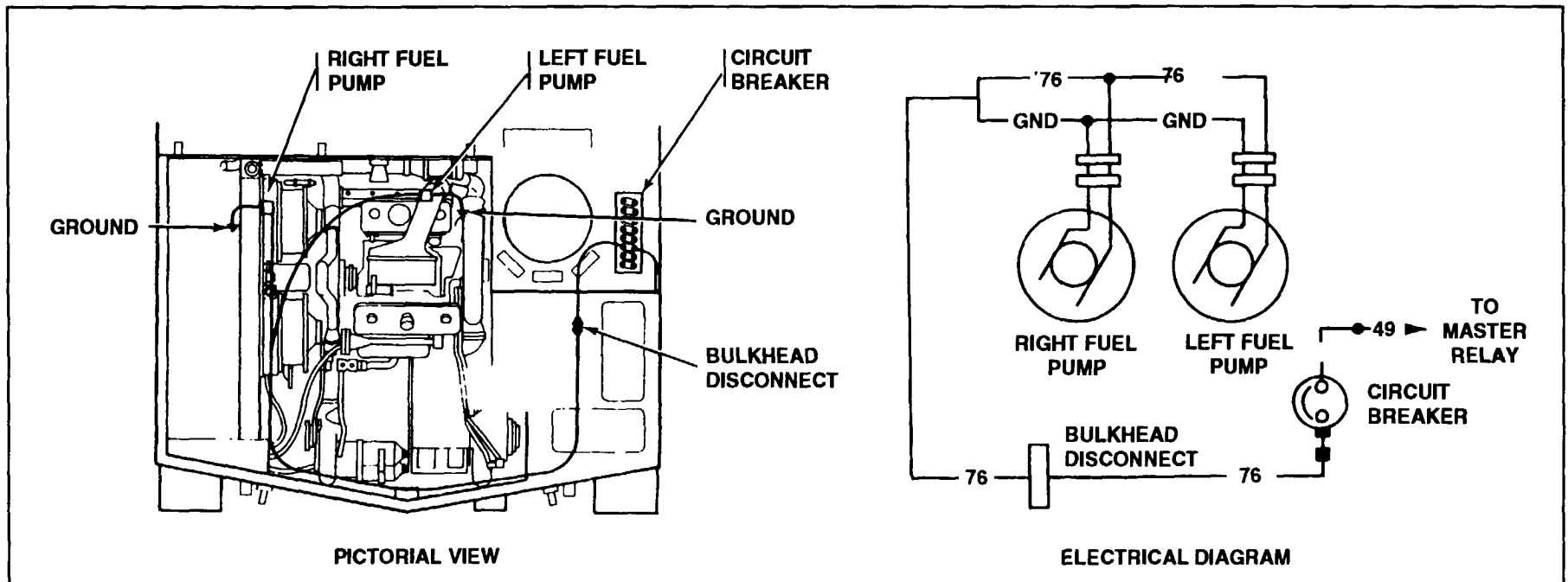
**START HERE** 

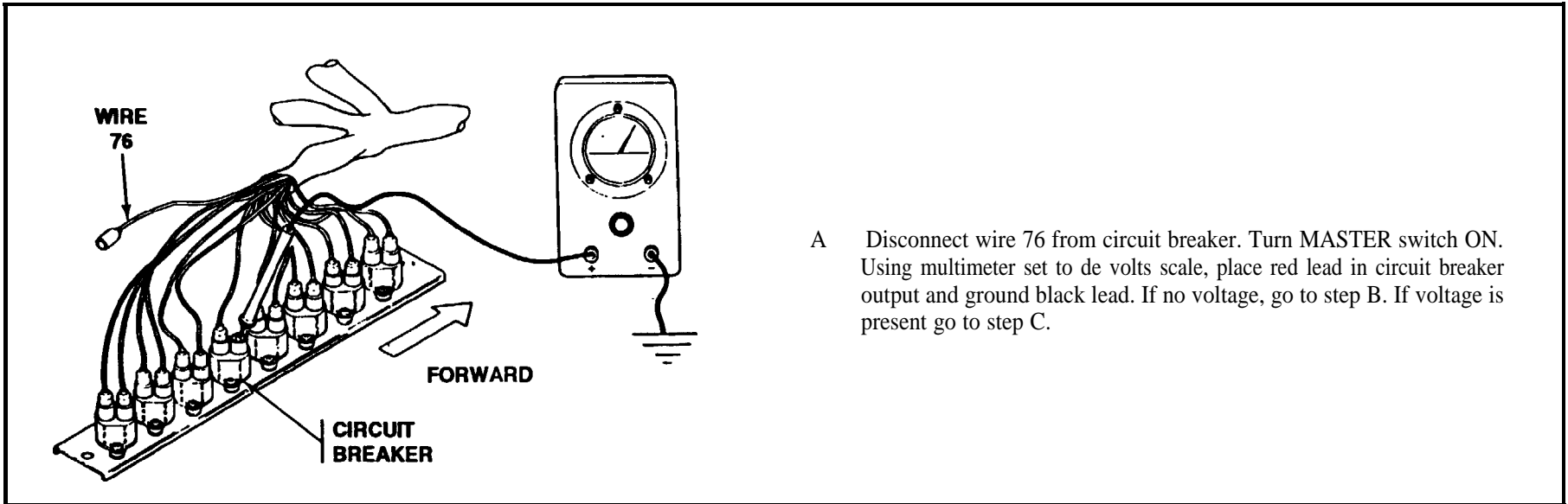
Troubleshoot electric fuel pump circuit.

**NOTE**

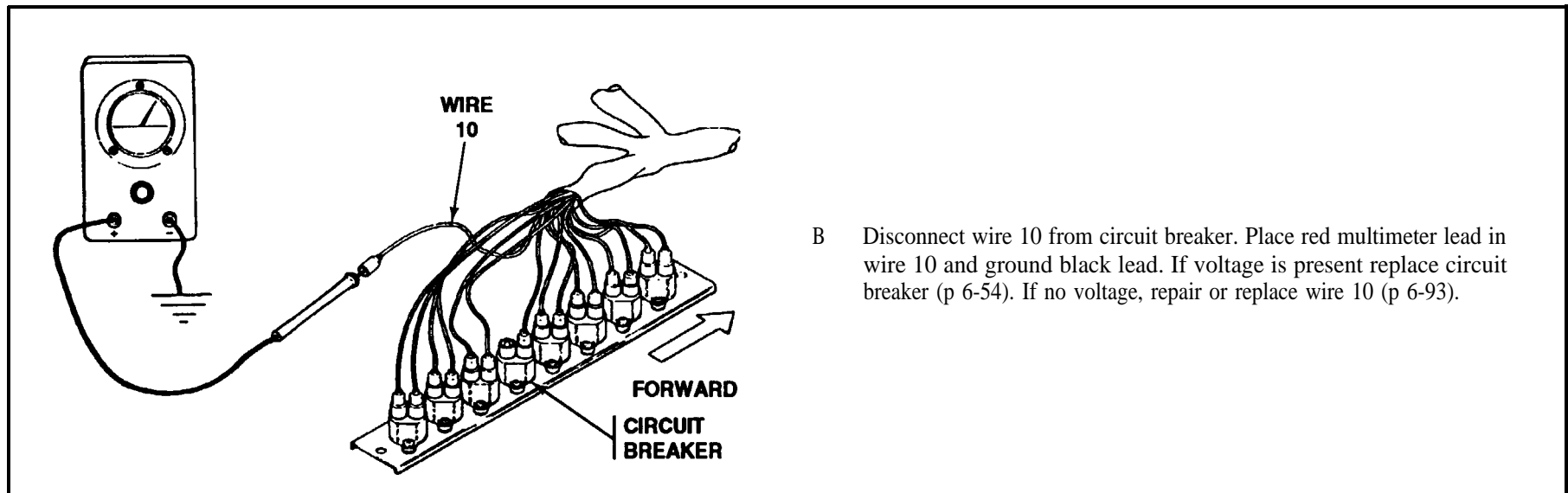
Left fuel pump can be tested from driver's access door. Powerpack must be removed to test right fuel pump.

**ELECTRIC FUEL PUMP CIRCUIT**

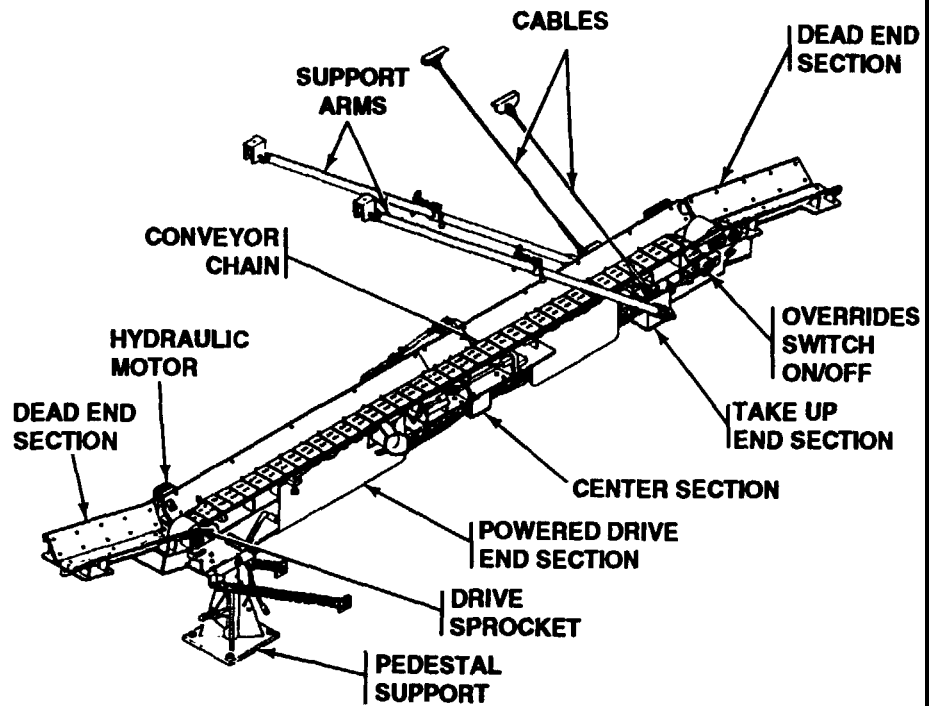
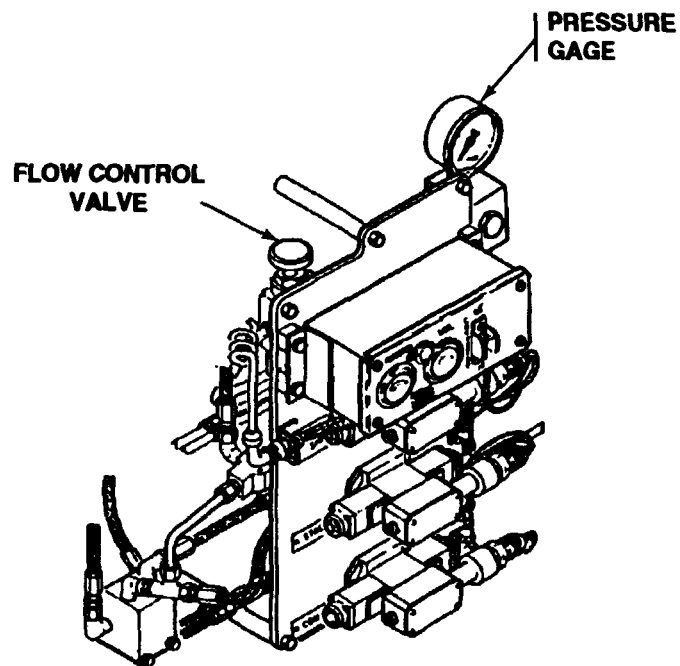




- A Disconnect wire 76 from circuit breaker. Turn MASTER switch ON. Using multimeter set to de volts scale, place red lead in circuit breaker output and ground black lead. If no voltage, go to step B. If voltage is present go to step C.



- B Disconnect wire 10 from circuit breaker. Place red multimeter lead in wire 10 and ground black lead. If voltage is present replace circuit breaker (p 6-54). If no voltage, repair or replace wire 10 (p 6-93).



Vehicle MASTER switch is in ON position.

APU operating primary hydraulic system and hydraulic system selector valve is pushed IN (TM 9-2350-267-10).

OR

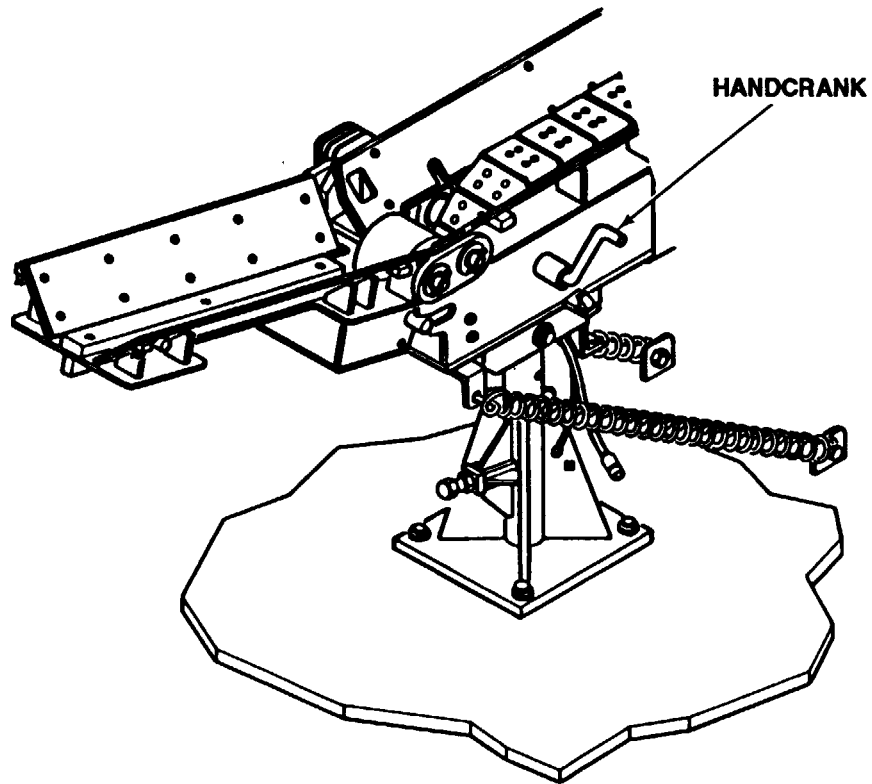
Main engine operating backup hydraulic system and hydraulic system selector valve is pulled OUT (TM 9-2350-267-10).

Check hydraulic panel pressure gage. Gage should indicate 100-300 psi. If not, troubleshoot hydraulic system (p 2-242).

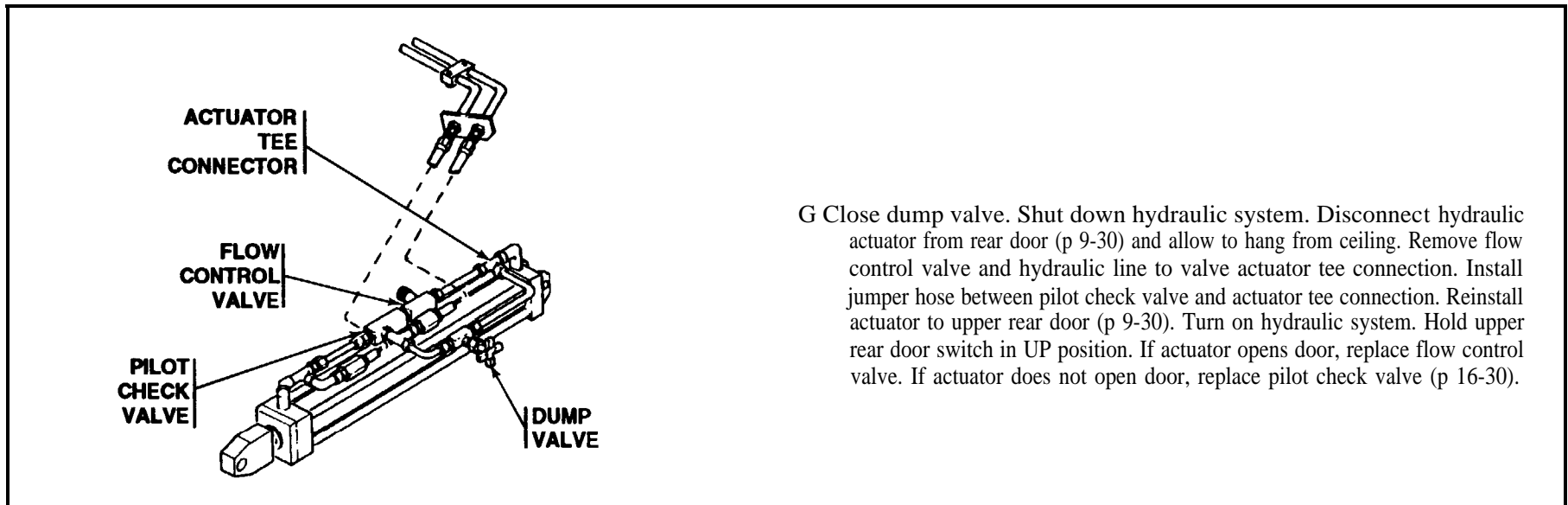
Fully deploy convey (TM 9-2350-267-10).

Put conveyor override safety switch in ON position.

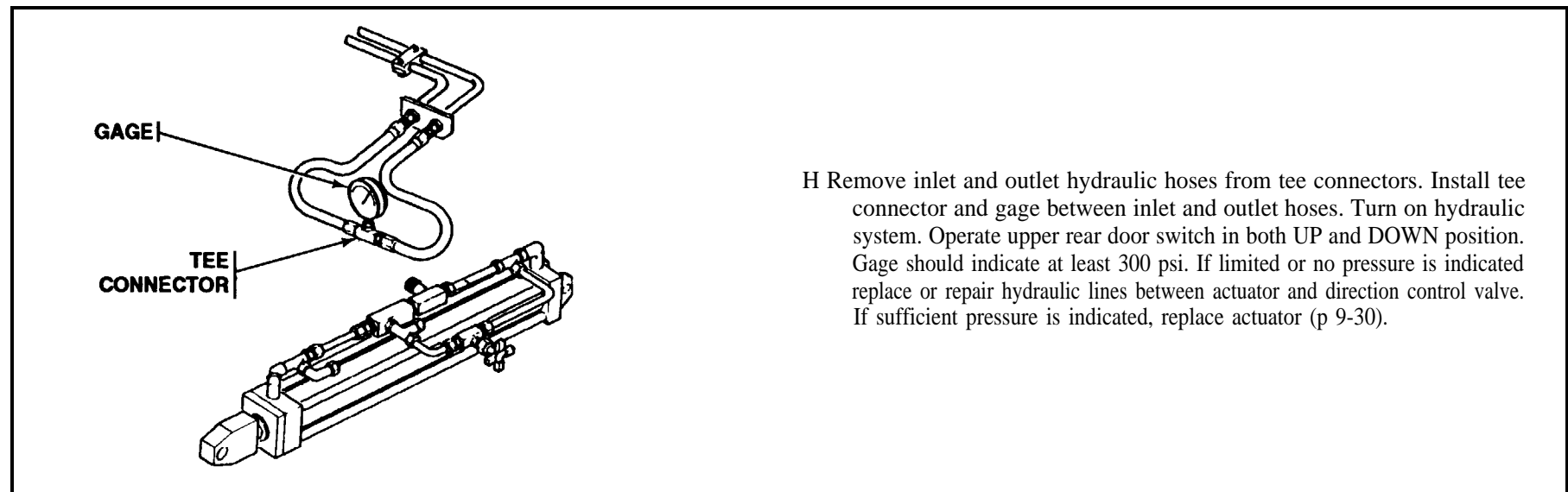
Check flow control valve. Open if closed and adjust conveyor speed.



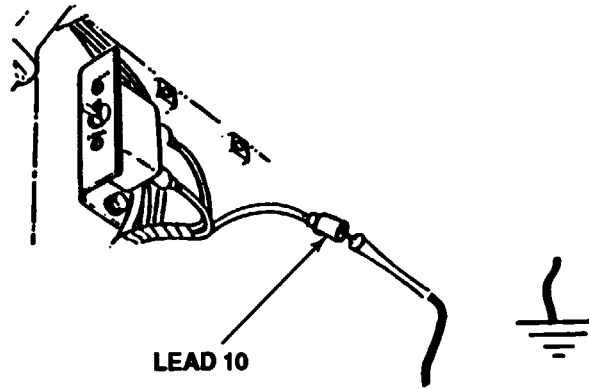
- A Shut down hydraulic system insert handcrank in conveyor manually. If conveyor chain moves easily one full cycle in both directions go to step B. If conveyor chain does not move (binds or jams), go to step K.



G Close dump valve. Shut down hydraulic system. Disconnect hydraulic actuator from rear door (p 9-30) and allow to hang from ceiling. Remove flow control valve and hydraulic line to valve actuator tee connection. Install jumper hose between pilot check valve and actuator tee connection. Reinstall actuator to upper rear door (p 9-30). Turn on hydraulic system. Hold upper rear door switch in UP position. If actuator opens door, replace flow control valve. If actuator does not open door, replace pilot check valve (p 16-30).

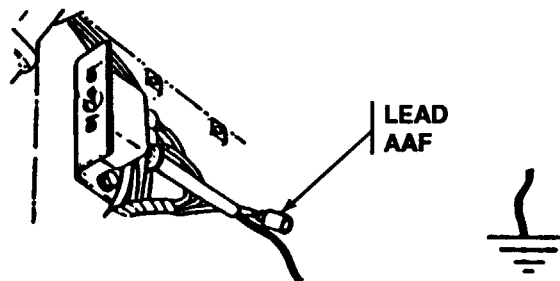


H Remove inlet and outlet hydraulic hoses from tee connectors. Install tee connector and gage between inlet and outlet hoses. Turn on hydraulic system. Operate upper rear door switch in both UP and DOWN position. Gage should indicate at least 300 psi. If limited or no pressure is indicated replace or repair hydraulic lines between actuator and direction control valve. If sufficient pressure is indicated, replace actuator (p 9-30).

**NOTE**

Troubleshoot both top and bottom upper rear door switches in same manner.

- J Shut down hydraulic system. Disconnect lead 10 from center switch connector. Place red probe of multimeter in lead 10 and ground black probe. Set MASTER switch ON. Multimeter should indicate voltage. If no voltage is indicated, lead 10 to switch is defective. Notify Support Maintenance. If voltage is indicated, go to step J. Reconnect lead 10 to switch.



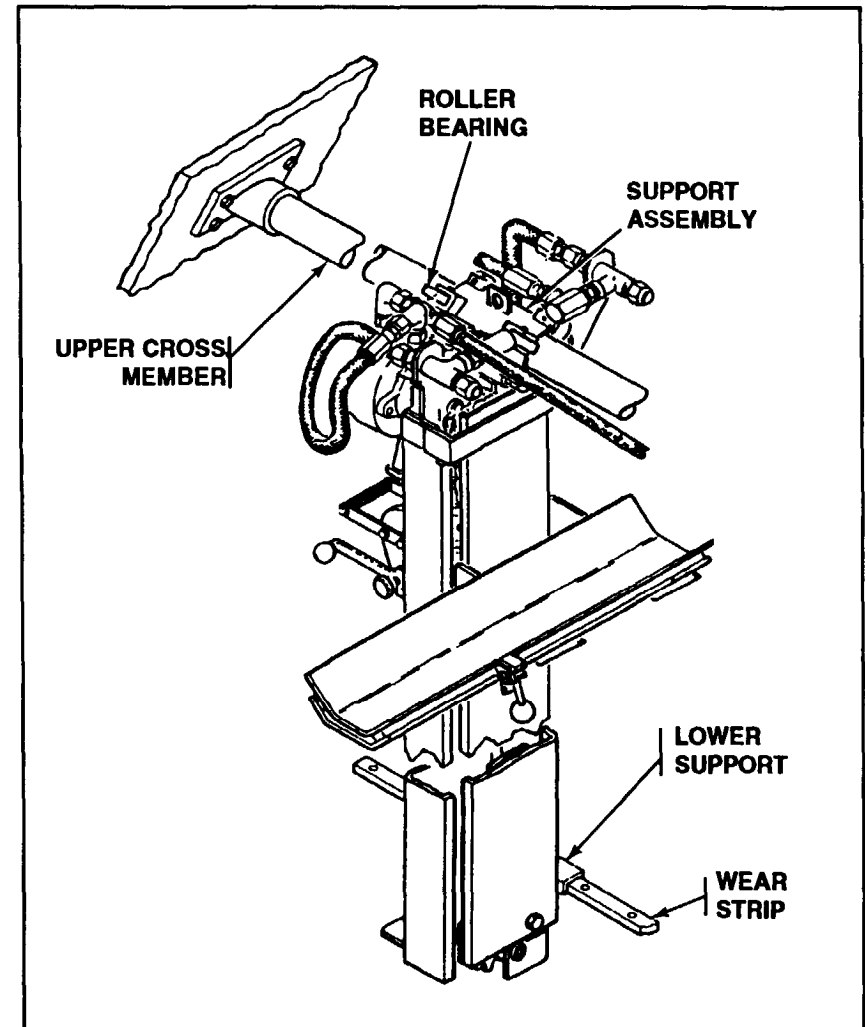
- J Disconnect lead AAF from switch. Place red probe of multimeter in switch and ground black probe. Set MASTER switch ON. Hold switch in UP position. Multimeter should indicate voltage. If no voltage is indicated replace upper rear door switch (p 6-61). If voltage is indicated, go to step K. Reconnect lead AAF to switch.

## STACKER

**MOVES WITH DIFFICULTY ACROSS CARGO COMPARTMENT**  
Do steps A through C.

**START HERE** →

- A Check upper cross member for misalignment, dents, bends, corrosion, rust or other damage. Replace if defective. Refer to replacement procedure (p 12-44.1).
- B Check roller bearing on support assembly for corrosion, rust, excessive wear or flat spots and binding. Replace if defective. Refer to replacement procedure (p 12-44.1).
- C Check wear strip and lower support for misalignment, wear, damage, corrosion or blockage. Replace or repair if defective. Refer to replacement procedures (p 12-40 and 12-41).
- D Check routing of hydraulic hoses to ensure there is no obstruction of movement (p 16-32).

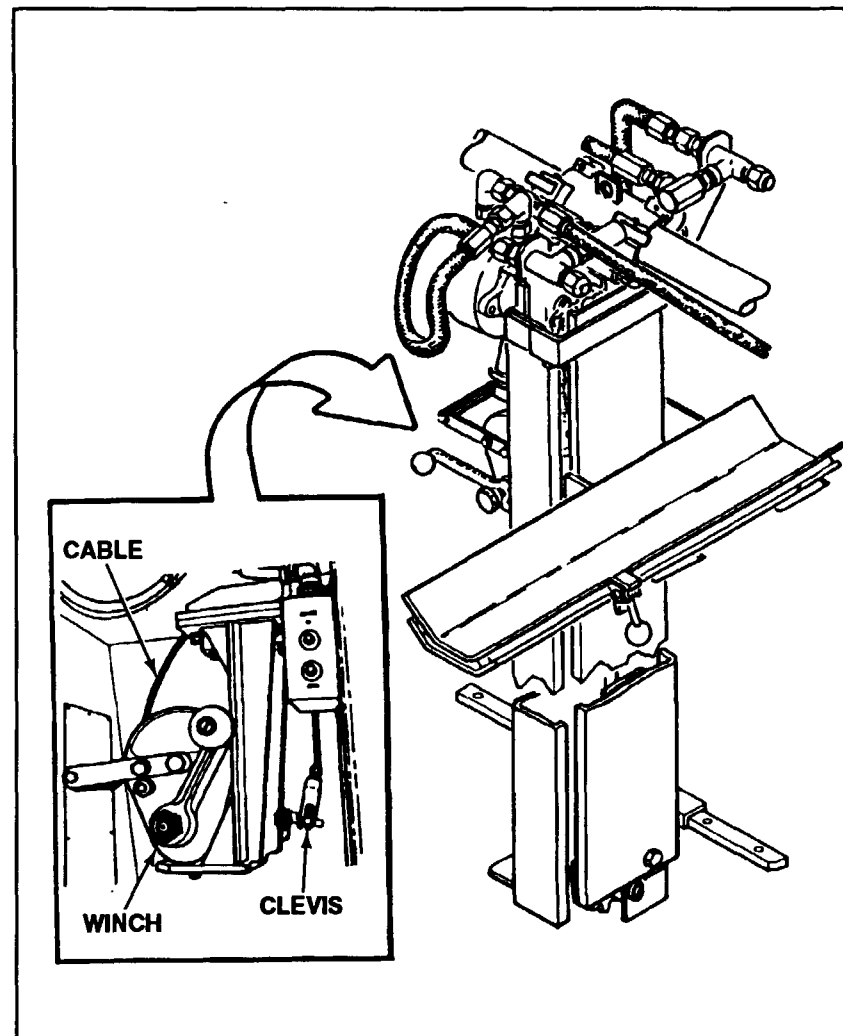


**STACKER****WINCH DOES NOT OPERATE**

Do steps A through C.

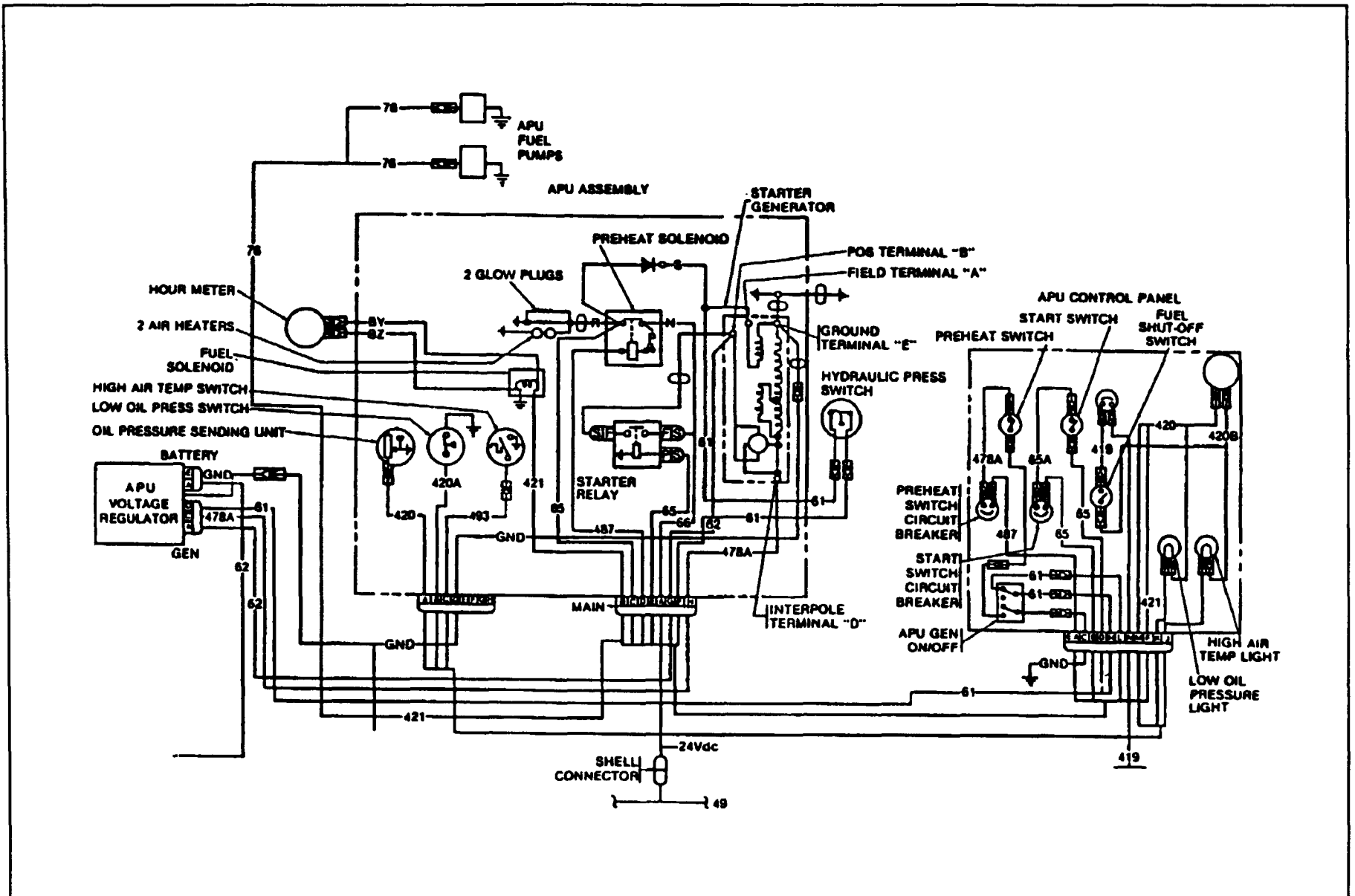


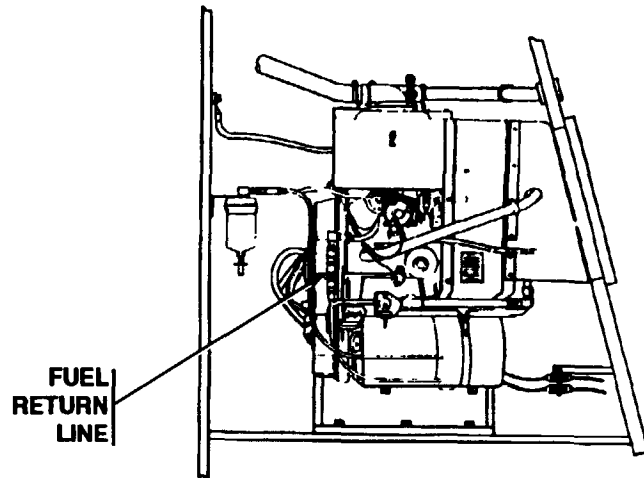
- A Make sure stacker tray is disconnected from stacker chain.
- B Check for broken winch cable. Replace if broken. Refer to replacement procedure (p 12-32.1).
- C Check for damaged or broken cable clevis. Replace if defective. Refer to replacement procedure (p 12-32.1).
- D If winch handle does not turn, inspect for stripped, worn or broken gears. Replace winch if defective. Refer to replacement procedure (p 12-32.1).



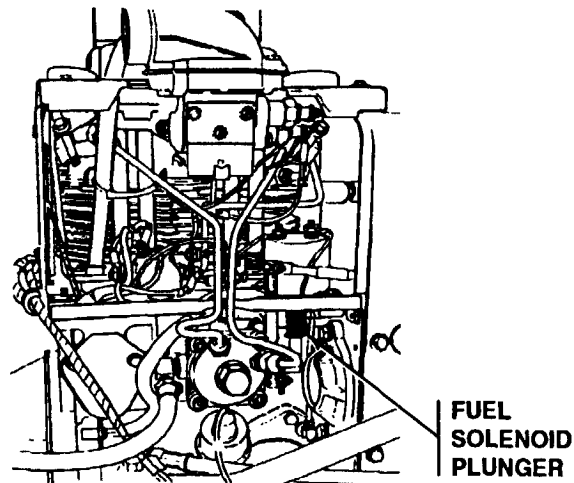
TA312711



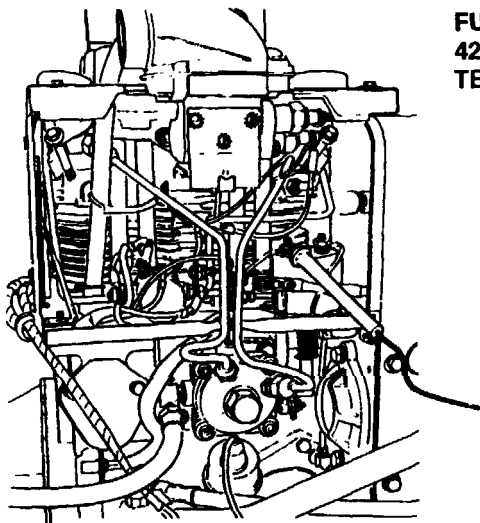




- A Remove APU access plate (p 13-12.3). Disconnect fuel return line. Set MASTER switch ON. Set APU FUEL SHUTOFF switch ON. Place suitable container under engine-mounted disconnect fitting. Use screwdriver to push open disconnect valve observe fuel flow. If fuel flow is observed, go to step B. If fuel does not flow, go to Step E.

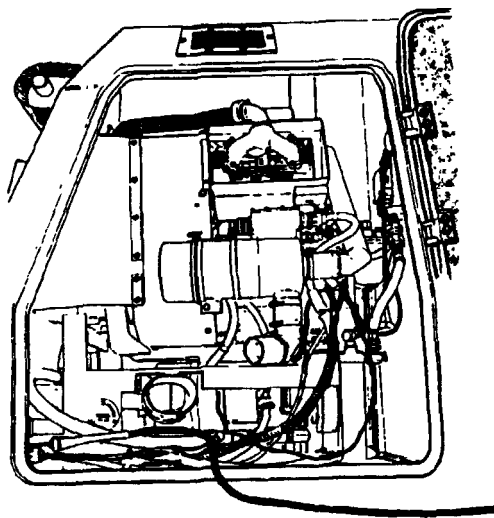


- B Turn APU FUEL SHUT OFF switch ON and OFF while observing fuel solenoid plunger. Plunger should pull up when switch is turned ON, and move down when switch is turned OFF. If solenoid functions properly, notify Support Maintenance to troubleshoot APU. If solenoid does not function properly, go to step C.



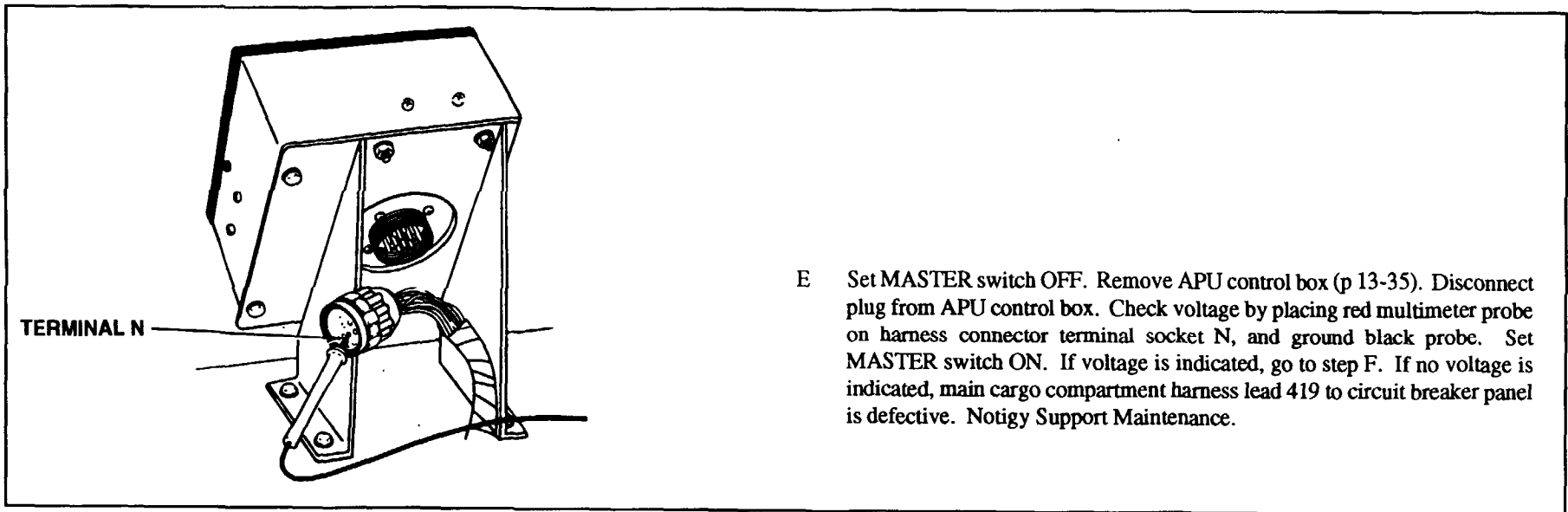
**FUEL SOLENOID  
421 LEAD  
TERMINAL**

- C** Remove APU access panel from APU. Set MASTER switch OFF. Check voltage at fuel solenoid 421 lead terminal. Place red multimeter probe on 421 terminal and ground black probe. Set MASTER switch ON. Set APU FUEL SHUT OFF switch ON. If voltage is indicated fuel solenoid is defective. Notify Support maintenance. If no voltage is indicated, go to step D.

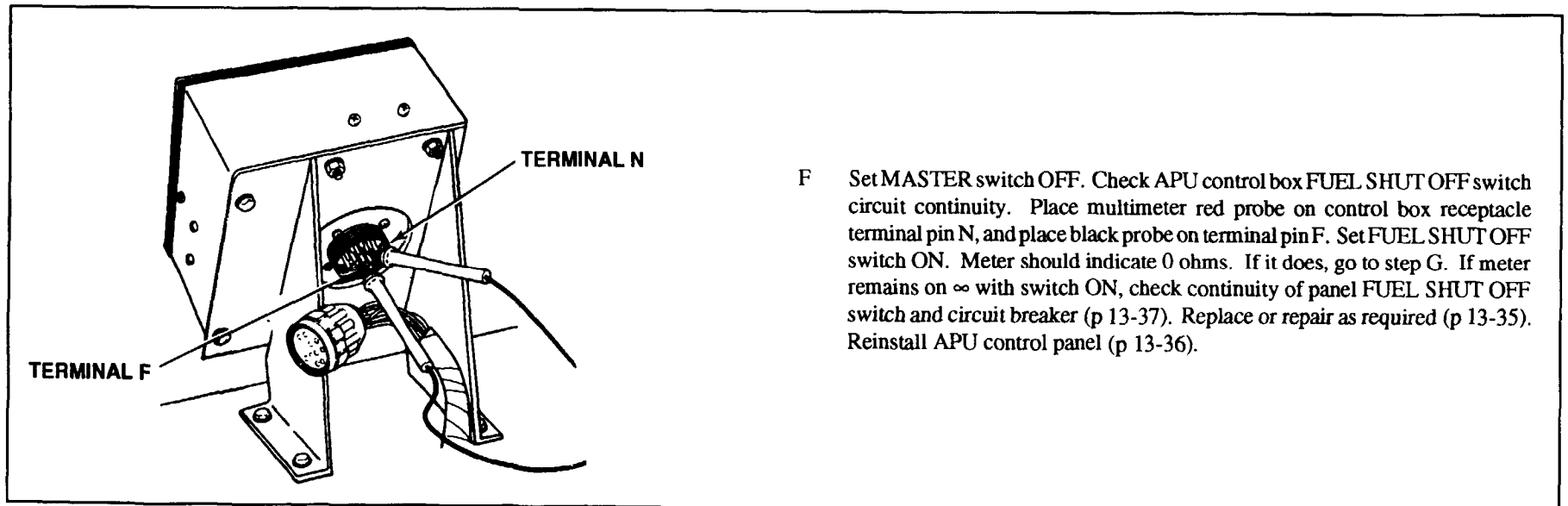


**TERMINAL B**

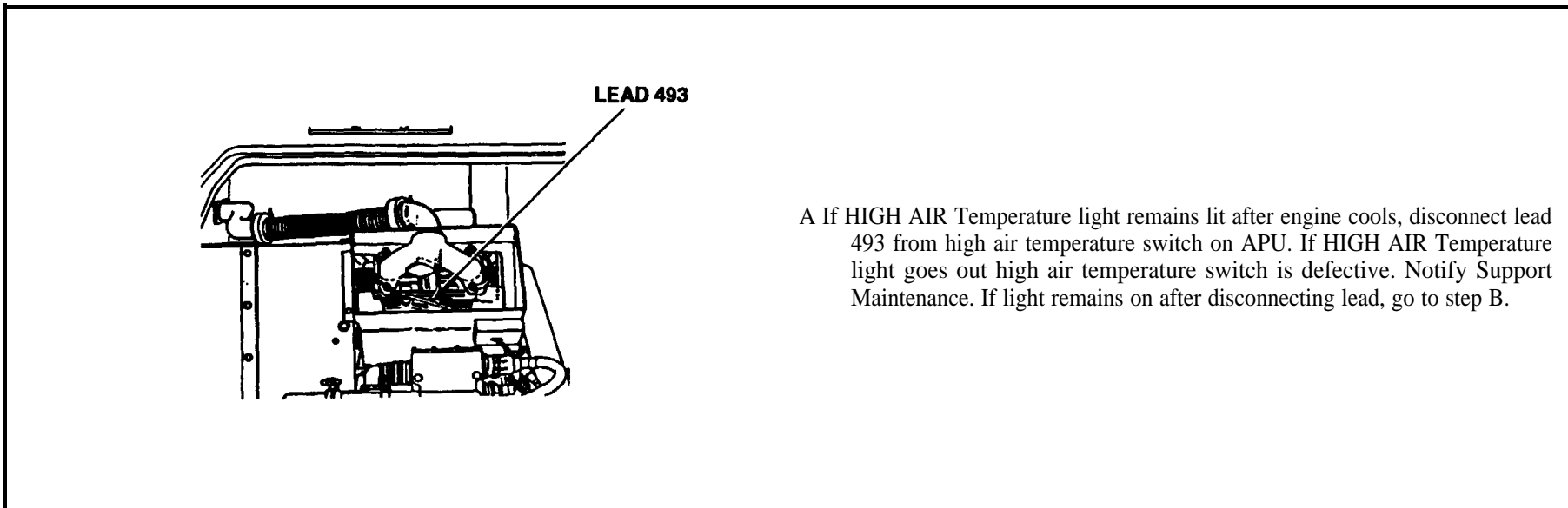
- D** Set MASTER switch OFF. Disconnect main harness connector (large connector) at APU wall mount. Place red probe of multiimeter on wall-mounted connector terminal B, and ground black probe. Set MASTER switch ON. Set FUEL SHUT OFF switch ON. If voltage is indicated repair or replace harness 421 from wall-mounted connector to solenoid (p 6- 132). If no voltage is indicated, go to step E. Reconnect main harness connector.



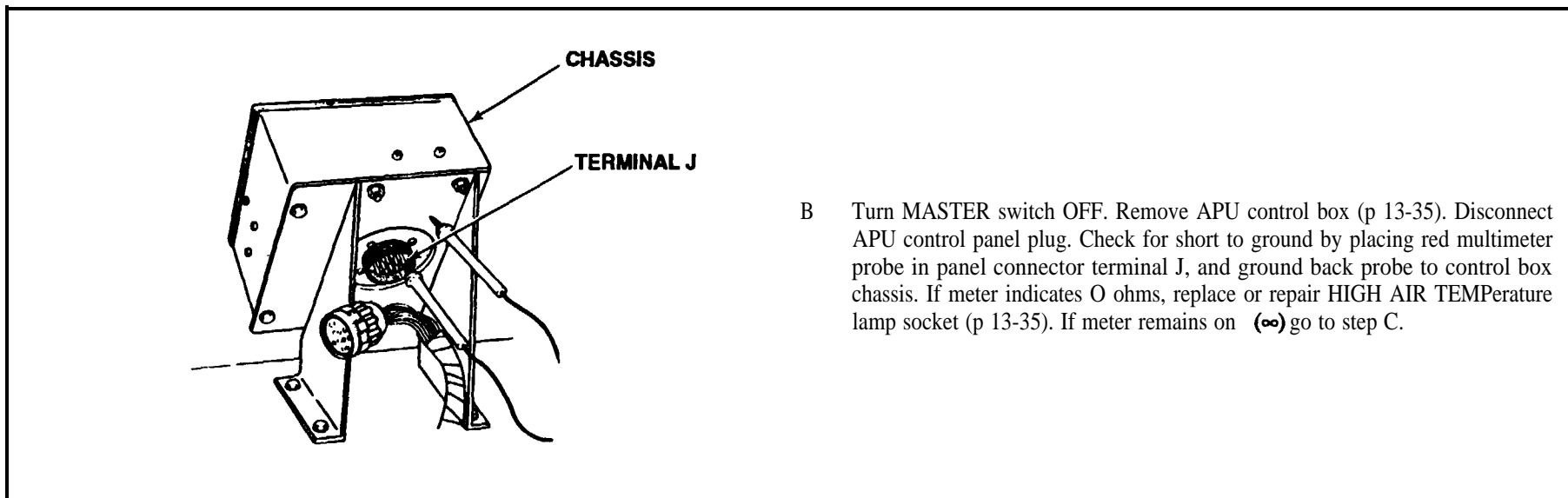
- E Set MASTER switch OFF. Remove APU control box (p 13-35). Disconnect plug from APU control box. Check voltage by placing red multimeter probe on harness connector terminal socket N, and ground black probe. Set MASTER switch ON. If voltage is indicated, go to step F. If no voltage is indicated, main cargo compartment harness lead 419 to circuit breaker panel is defective. Notify Support Maintenance.



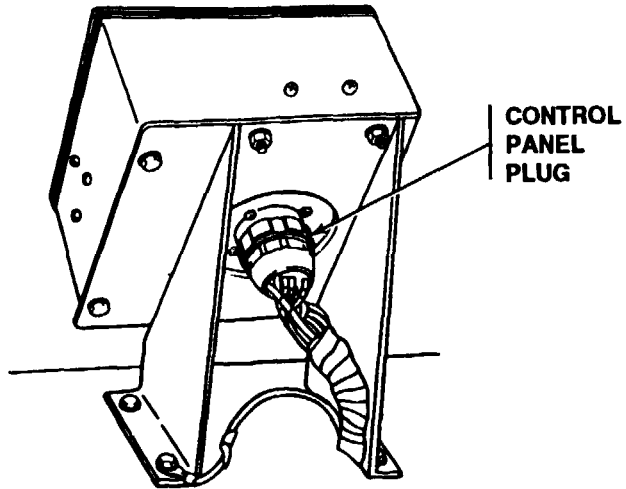
- F Set MASTER switch OFF. Check APU control box FUEL SHUT OFF switch circuit continuity. Place multimeter red probe on control box receptacle terminal pin N, and place black probe on terminal pin F. Set FUEL SHUT OFF switch ON. Meter should indicate 0 ohms. If it does, go to step G. If meter remains on  $\infty$  with switch ON, check continuity of panel FUEL SHUT OFF switch and circuit breaker (p 13-37). Replace or repair as required (p 13-35). Reinstall APU control panel (p 13-36).



A If HIGH AIR Temperature light remains lit after engine cools, disconnect lead 493 from high air temperature switch on APU. If HIGH AIR Temperature light goes out high air temperature switch is defective. Notify Support Maintenance. If light remains on after disconnecting lead, go to step B.



B Turn MASTER switch OFF. Remove APU control box (p 13-35). Disconnect APU control panel plug. Check for short to ground by placing red multimeter probe in panel connector terminal J, and ground back probe to control box chassis. If meter indicates 0 ohms, replace or repair HIGH AIR TEMPerature lamp socket (p 13-35). If meter remains on  $(\infty)$  go to step C.



**C Reconnect APU** control box panel plug. If HIGH AIR TEMPerature lamp is lit, repair or replace cable lead 493 (p 6-113).

AUXILIARY POWER UNIT

ENGINE STARTS BUT FAILS TO KEEP RUNNING

**START HERE**

- A Check for dirty air cleaner falter element. Clean or replace falter element (TM 9-2350-267-10).
- B Check APU engine fuel supply line for restriction or damage. Clean fuel line or replace, if necessary (p 13-25 thru 13-29).
- c Replace fuel filter elements if dirty (p 13-16).

**AUXILIARY POWER UNIT**

**ENGINE HARD TO START**  
Do steps A through F.

**ENGINE HARD TO START IN COLD WEATHER**  
Do steps E through F.



**NOTE**

Install winterization kit in extremely cold weather conditions, 0° to -65° F.

- A Open fuel falter drain cocks to remove water and contaminants from falters.
- B Check for dirty or clogged fuel filters. Replace fuel falter elements if dirty (p 13-16).
- C Inspect for leaking APU fuel lines and fittings. Tighten or replace defective lies or fittings (p 13-25 thru 13-29).
- D Check for dirty air cleaner filter element. Clean or replace falter element (TM 9-2350-267-10).
- E Disconnect lead R to glow plugs and preheater (p 6-133). Measure continuity from preheat relay terminal to glowplugs and preheater. Meter should indicate 0 ohms. If not, replace or repair lead R from relay terminal to glow plugs and preheater. If circuit R shows continuity, disconnect lead R from glow plug and measure resistance from each glow plug terminal to ground. The meter should indicate  $4.75 \pm 1.5$  ohms for each glow plug. If not, applicable glow plug is defective; notify Support Maintenance. If it does, go to step F.
- F Measure resistance from preheater plug terminal to preheat terminal. The meter should indicate  $0.6 \pm 0.05$  ohms. If it does not, replace appropriate defective preheater plug.

## AUXILIARY

## ENGINE MISFIRES

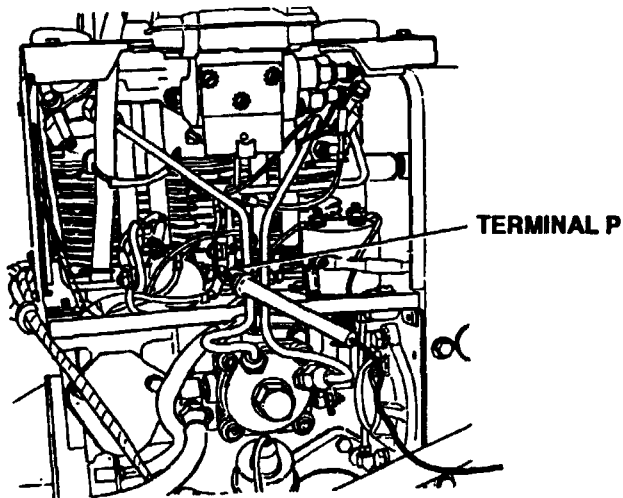
Check for dirty air cleaner filter element. Clean or replace filter element (TM 9-2350-267-10).

Check for dirty or clogged fuel filters. Replace fuel filter elements if necessary (p 13-16).

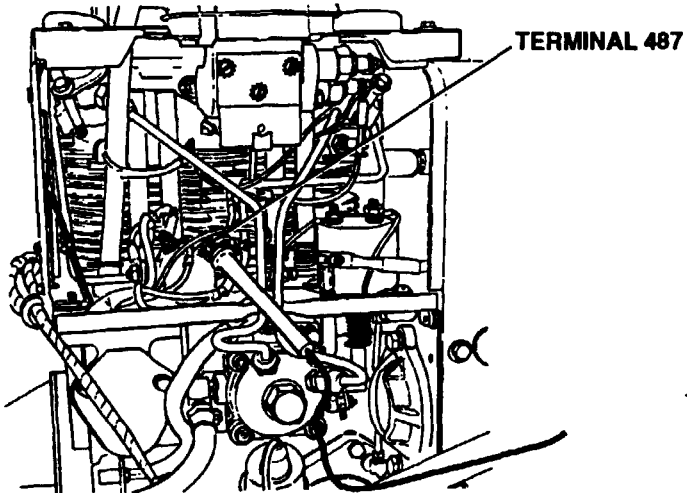
- C Open fuel filter drain cocks to remove water and contaminants from filters.
- D Inspect APU fuel lines and fittings for leaks. Tighten or replace defective lines or fittings (p 13-25 thru 13-29).
- E If fuel contamination is suspected, drain fuel tanks and replace with new fuel (TM 9-2350-267-10).
- F Disconnect fuel return line at injection pump quick-disconnect. Use screwdriver to push open disconnect valve. Operate fuel pumps and bleed fuel into suitable container to remove any air in the fuel system.
- G If fuel flow is not steady or is weak, check fuel lines for obstructions or restrictions. Repair or replace as required (p 13-25 thru 13-29).

Use screwdriver to push open disconnect valve; operate fuel pumps and bleed fuel into suitable container to remove any air in the fuel system.



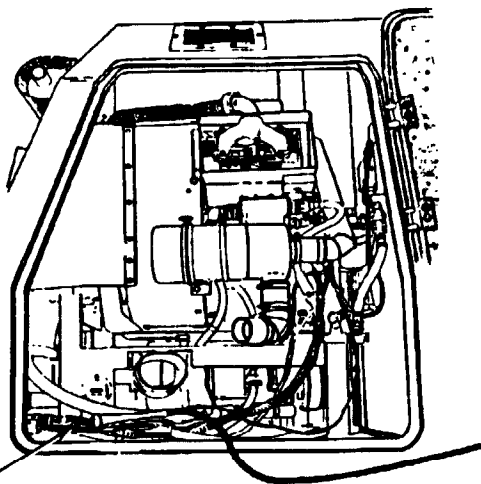


- C Place multimeter red probe terminal P; ground black probe. If voltage is indicated, go to step D. If no voltage is indicated repair or replace lead P.



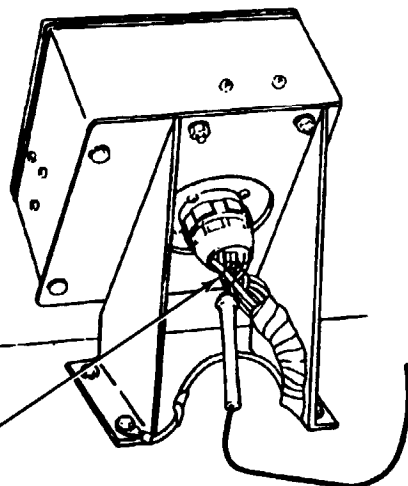
- D Place multimeter red probe on terminal 487; ground black probe. If voltage is indicated, go to step E. If no voltage is indicated, preheat solenoid is defective; notify Support Maintenance.





TERMINAL D

- E Set MASTER switch OFF. Locate terminal D, lead 487, in APU harness plug. Probe through insulation of lead 487 wire with multimeter red probe; ground black probe. Set MASTER switch ON. If voltage is indicated, go to step F. If no voltage is indicated, repair or replace lead 487 from preheat solenoid terminal 487 to APU harness plug (p 6-132).



TERMINAL A

- F Set MASTER switch OFF. Remove APU control box (p 13-35) but do not disconnect control box harness. Locate APU control box connector lead 487 terminal A. Probe through insulation of terminal A wire 487 with multimeter red probe; ground black probe. Set MASTER switch ON. If voltage is indicated, go to step G. If no voltage is indicated, repair or replace harness lead 487 from APU compartment connector to APU control box (p 6-113).

**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR VEHICLES 1 thru 344)**

**POWER ON LAMP DOES NOT LIGHT WHEN MASTER SWITCH  
IS ON. All other electrical systems operate.**



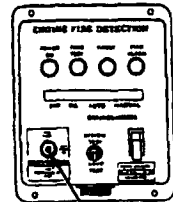
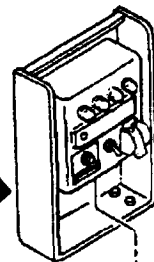
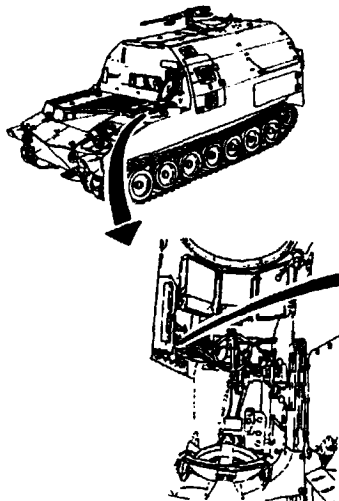
Before troubleshooting AFES, check the following

Make sure MASTER switch is set to OFF (TM 9-2350-267-10).

Make sure engine AFES T/A panel Maintenance switch is turned to maintenance position (p 14-14.3).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 maybe performed.



**ENGINE T/A  
PANEL MAINT  
SWITCH**



**SOCKETS  
A AND D  
HARNESS  
12351500 OR  
12352354**

**WARNING**

Turn crew T/A panel Maintenance switch to vertical position and MASTER switch OFF before disconnecting any electrical wiring harnesses. Failure to comply may result in discharge of fire extinguisher cylinders, electrical shock and injury to personnel.

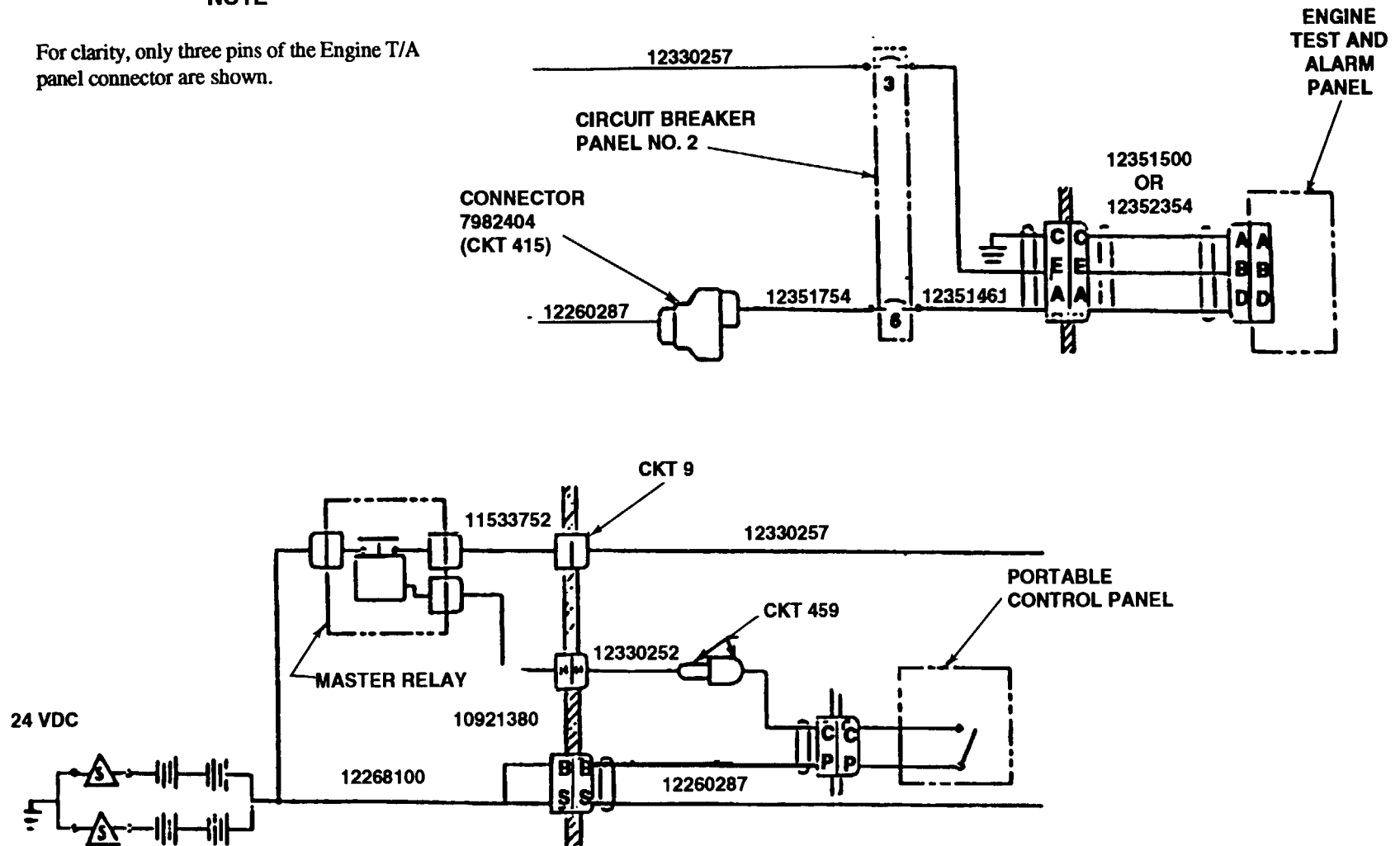
**NOTE**

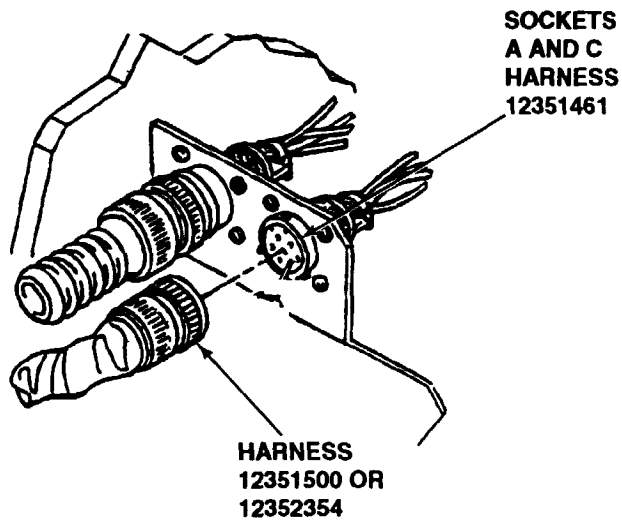
Wiring harness 12352354 is an optional replacement for wiring harness 12351500.

- A Disconnect wiring harness 12351500 or 12352354 connector P1 from Engine T/A panel.
- B Place red lead of multimeter in socket D and black lead of multimeter in socket A.
- C Check for  $24 \pm 3$  vdc. If voltage is indicated go to step U. If no voltage is indicated, to to step D.

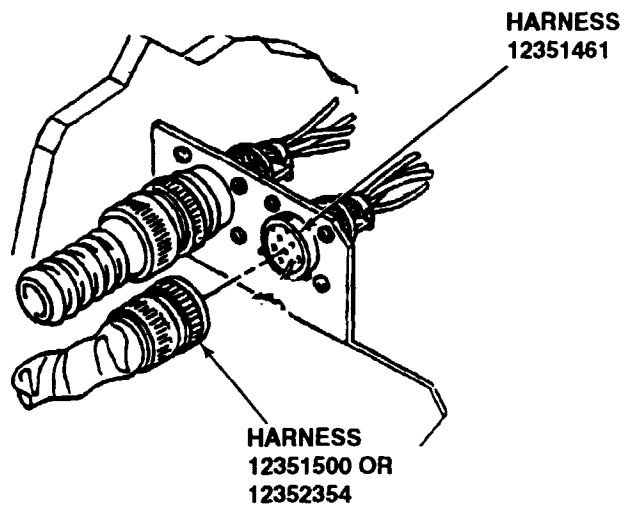
**NOTE**

For clarity, only three pins of the Engine T/A panel connector are shown.





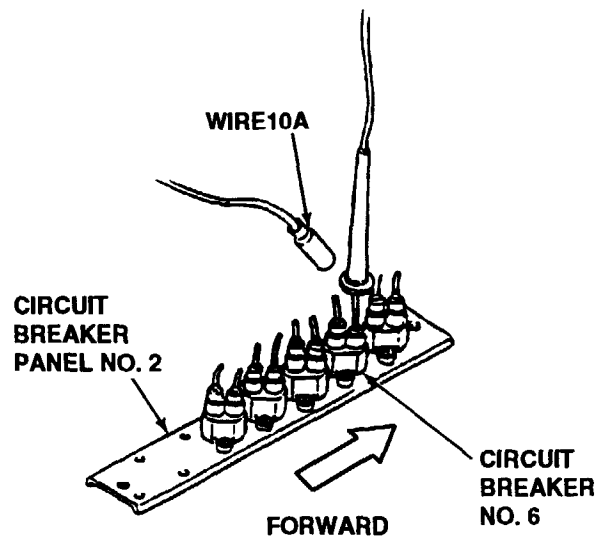
- D Connect wiring harness 12351500 or 12352354 connector P1 to Engine AFES T/A panel.
- E Disconnect wiring harness 12351500 or 12352354 connector P7 from bracket-mounted socket of harness 12351461.
- F Place red lead of multimeter in socket A of harness 12351461 and black lead of multimeter in socket C.
- G Check for  $24 \pm 3$  vdc. If voltage is indicated, repair wire 10A or replace wiring harness 12351500 or 12352354 (p 14-50.5). Verify problem is solved. If no voltage is indicated go to step H.



#### WARNING

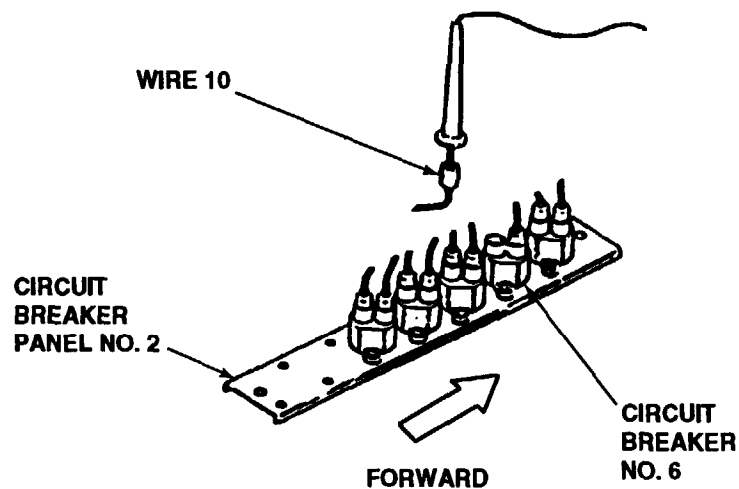
Circuit 10A, if functioning properly, is a live circuit carrying a constant **24 volts**. Failure to comply with this precaution when working with this circuit may result in personal injury or damage to equipment.

- H Connect wiring harness 12351500 or 12352354 P7 to bracket-mounted socket of wire harness 12351461.

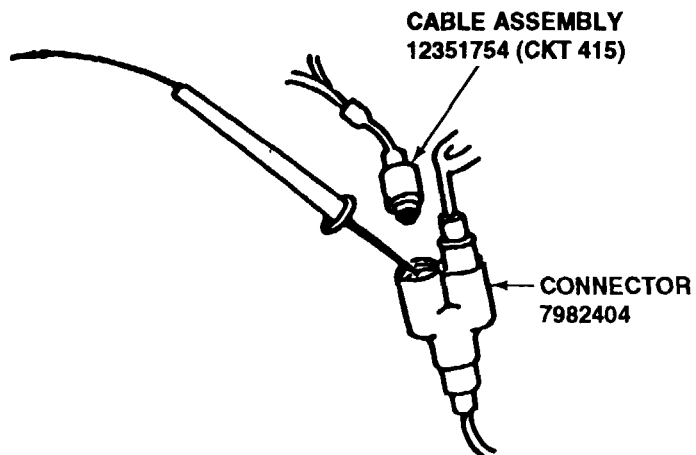
**NOTE**

Circuit breaker panel 2 is located on the sponson directly behind the engine T/A panel.

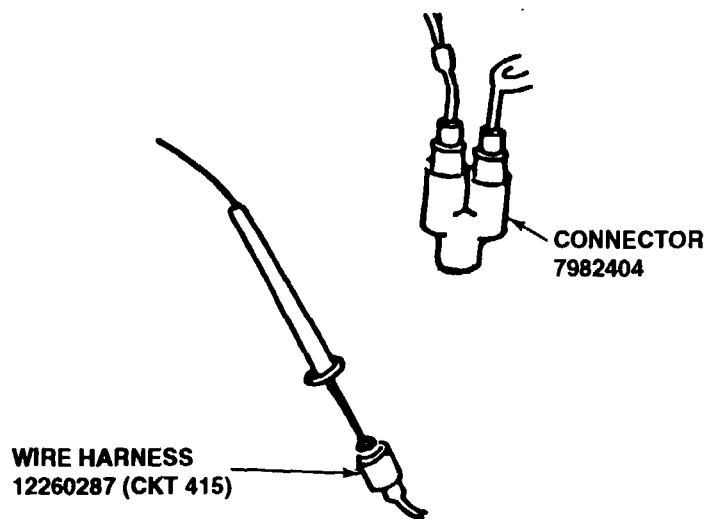
- I Disconnect wiring harness 12351461, wire 10A from circuit breaker panel No. 2.
- J Place red lead of multimeter in circuit breaker socket and ground black lead of multimeter.
- K Check for  $24 \pm$  vdc. If voltage is indicated, repair wire 10A or replace wiring harness 12351461 (p 14-50.5). Verify problem is solved. If no voltage is indicated, go to step L.



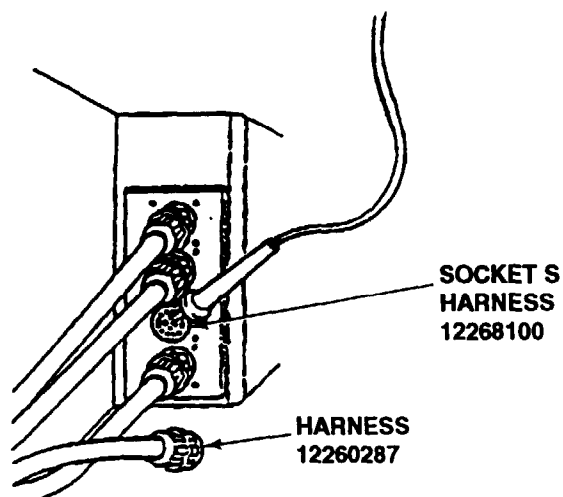
- L Connect wiring harness 12351461, wire 10A to circuit breaker No. 6 on circuit breaker panel No. 2.
- M Disconnect wiring harness 12351754, wire 10 from circuit breaker No. 6 on circuit breaker panel No. 2.
- N Place red lead of multimeter in wire 10 connector and ground black lead of multimeter.
- O Check for  $24 \pm 3$  vdc. If voltage is indicated, replace circuit breaker No. 6 (p 6-54). Verify problem is solved. If no voltage is indicated, go to step P.



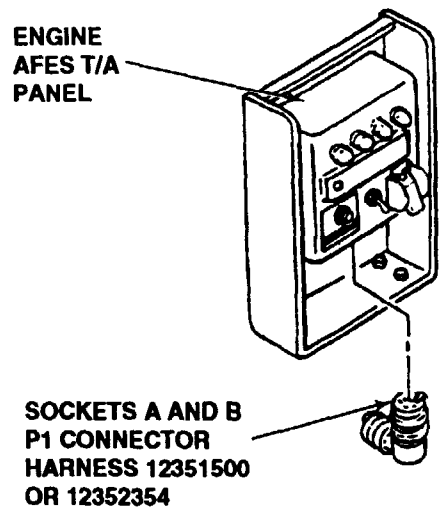
- P Connect wiring harness 12351754 wire 10 connector to circuit breaker No. 6 on circuit breaker panel No. 2. Disconnect cable assembly 12351754 from connector 7982404 (circuit 415) which is located behind the remote control panel. Place red lead of multimeter in socket of connector 7982404 and ground black probe. Check for  $24 \pm$  (vdc). If voltage is indicated, repair or replace cable assembly 12351754. If no voltage is indicated, go to step Q.



- Q Connect cable assembly 12351754 to connector 7982404 (circuit 415). Disconnect wire harness 12360287 from connector 7982404 (circuit 415). Place red prong of meter in socket of wire harness 12260287 (circuit 415) and ground black probe. Check for voltage (vdc). If voltage is indicated, replace connector 7982404. If no voltage is indicated, connect wiring harness 12360287 to connector 7982404 and go to step R.



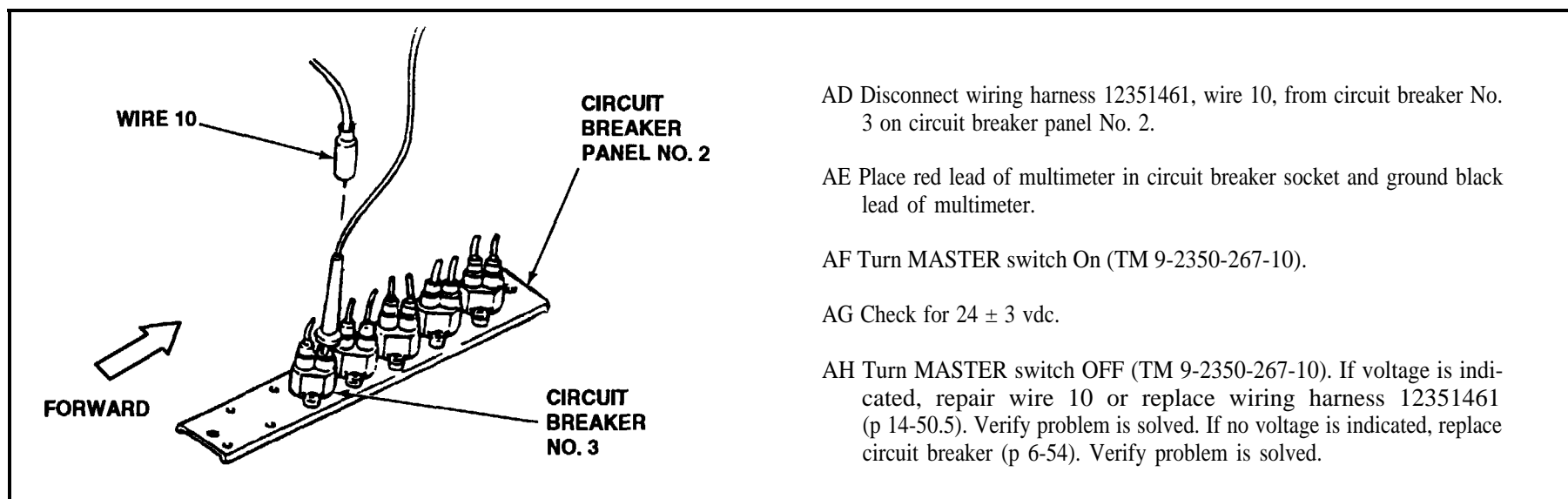
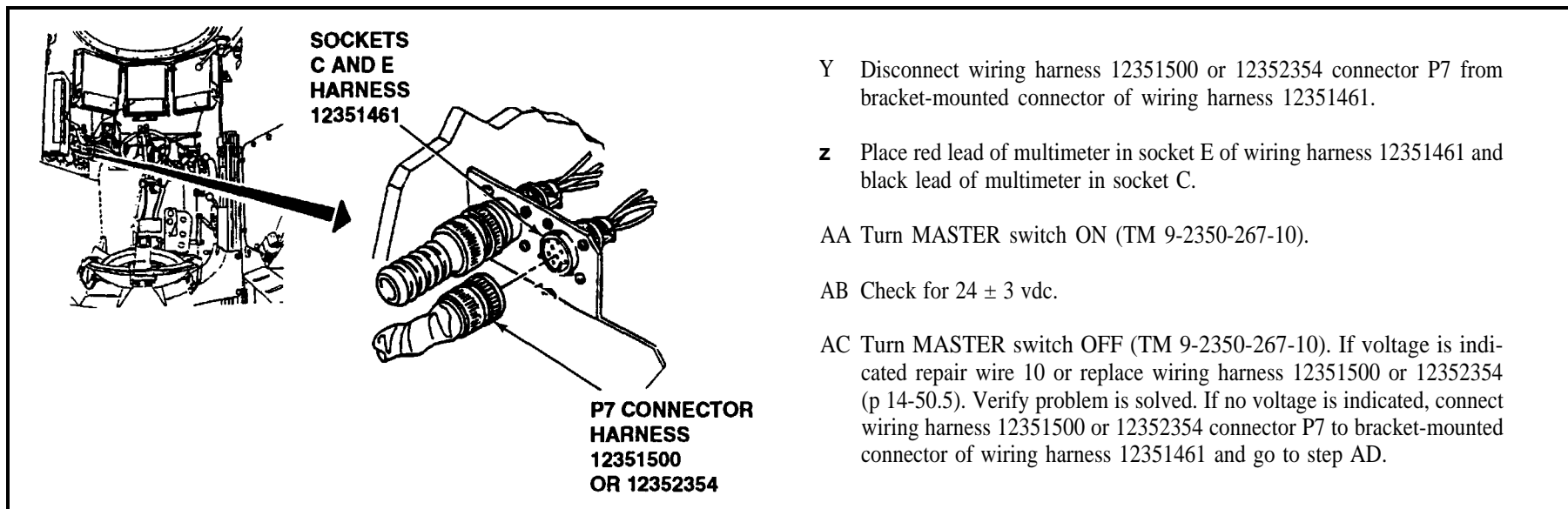
- R Disconnect wiring harness 12260287 from bulkhead connector.
- S Place red lead of multimeter in bulkhead connector socket S of wiring harness 12268100 and ground black lead of multimeter.
- T Check for  $24 \pm 3$  vdc. If voltage is indicated, repair wire 415 or replace wiring harness 12260287 (p 6-84). Verify problem is solved. If no voltage is indicated, repair wire 415 or replace wiring harness 12268100 (p 6-68). Verify problem is solved.



CONTINUED FROM STEP C

- U Place red lead of multimeter in socket B of wiring harness 12351500 or 12352354 connector P1 and black lead of multimeter in socket A.
- V Turn MASTER switch ON (TM 9-2350-267-10).
- W Check for  $24 \pm 3$  vdc.
- X Turn MASTER switch OFF (TM 9-2350-267-10). If voltage was indicated, replace engine AFES T/A panel (p 14-39). Verify problem is solved. If no voltage was indicated, connect wiring harness 12351500 or 12352354 connector P1 to engine AFES T/A panel and go to step Y.





**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR VEHICLES 345 and ABOVE)**

**POWER ON LAMP DOES NOT LIGHT WHEN MASTER SWITCH IS ON. All other electrical systems operate.**

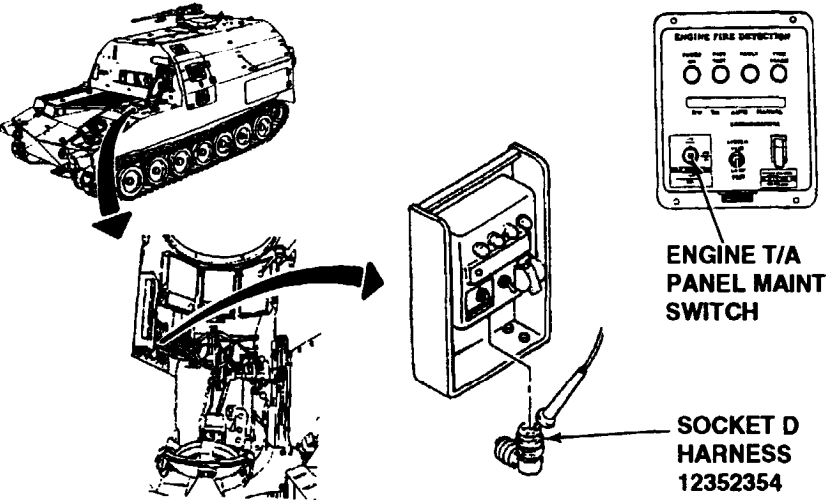
**START HERE**

Before troubleshooting AFES, check the following:

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Make sure engine AFES T/A panel MAINTenance switch is turned to maintenance position (p 14-14.3).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 may be performed.



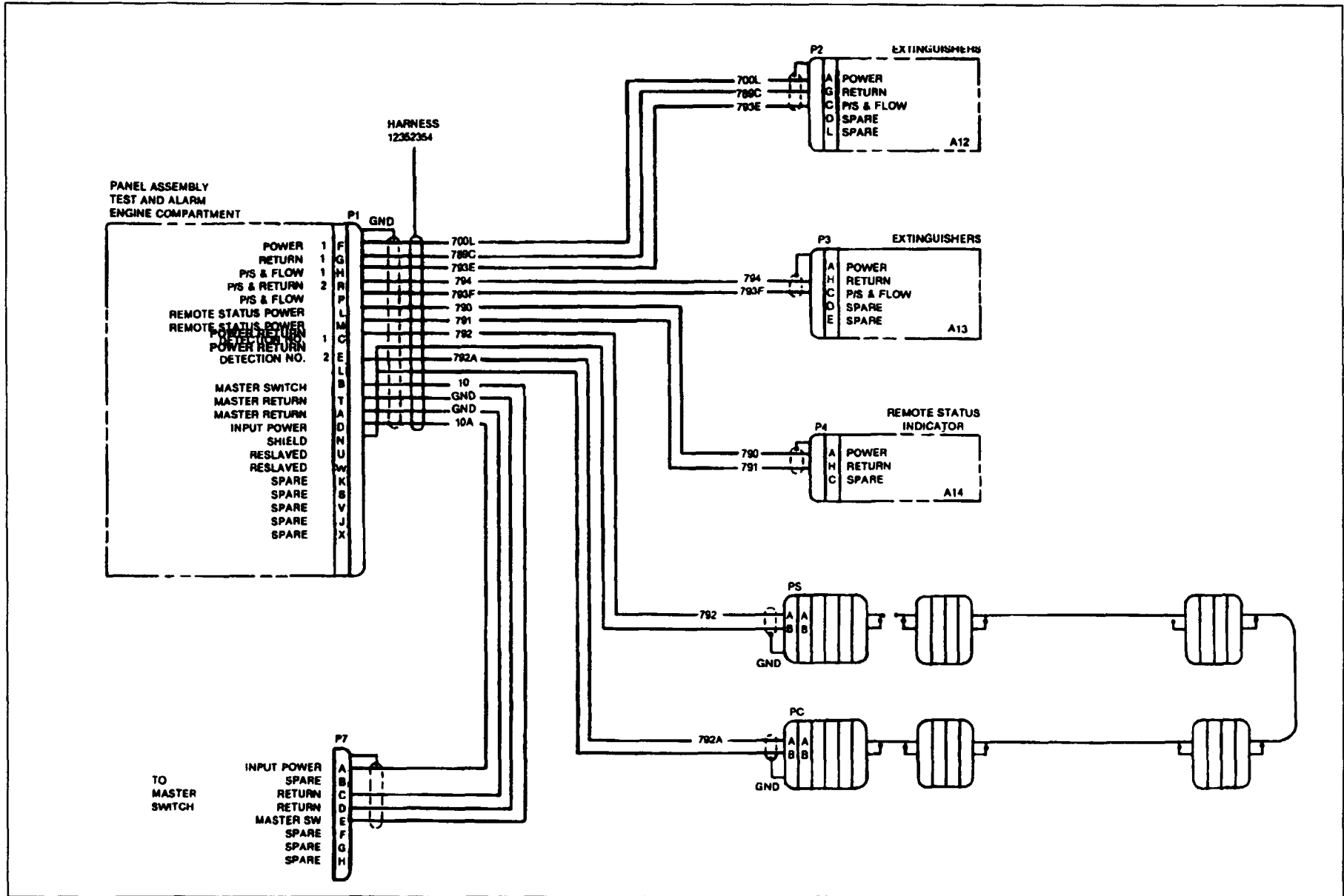
**ENGINE T/A  
PANEL MAINT  
SWITCH**

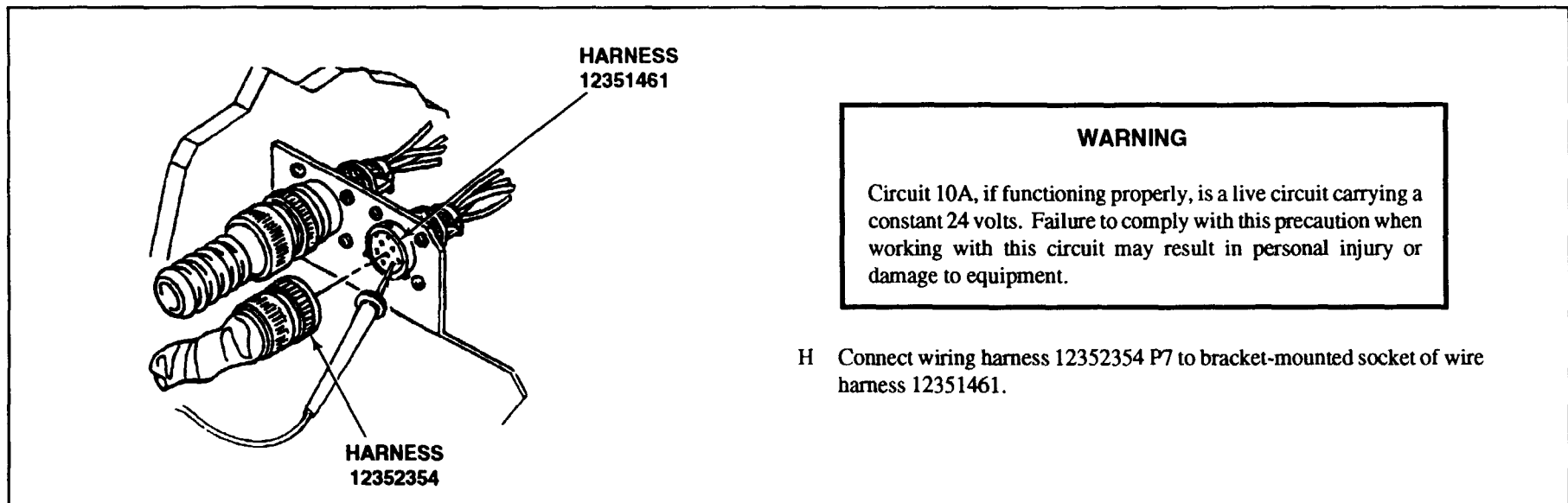
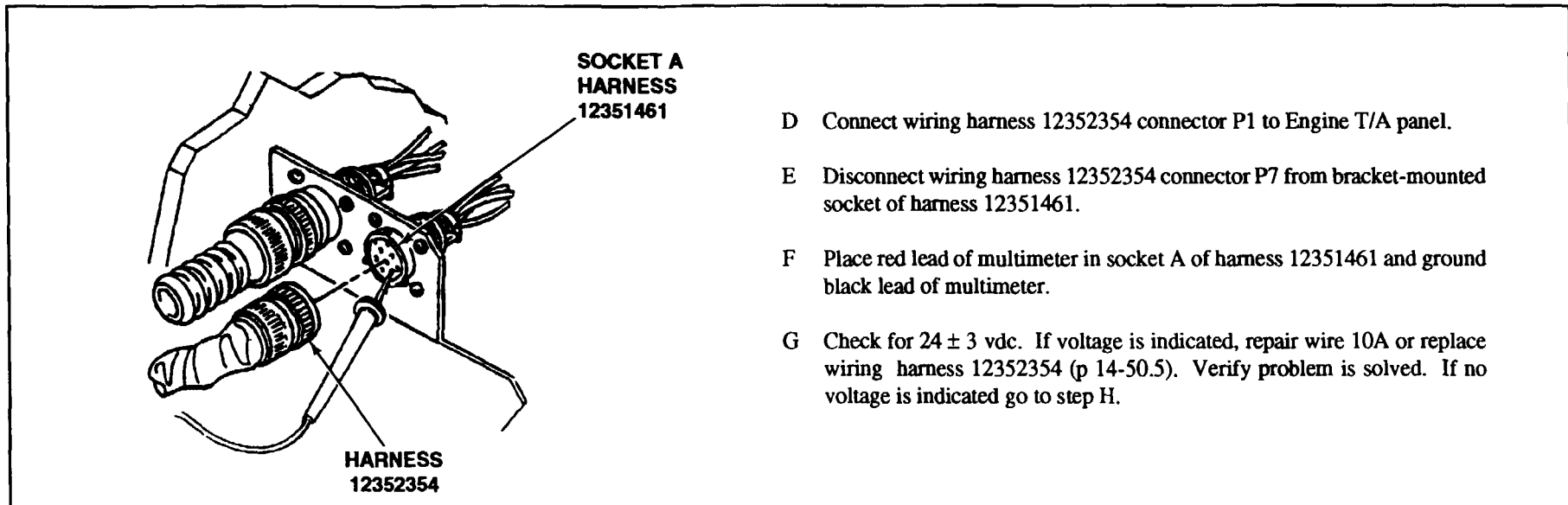
**SOCKET D  
HARNESS  
12352354**

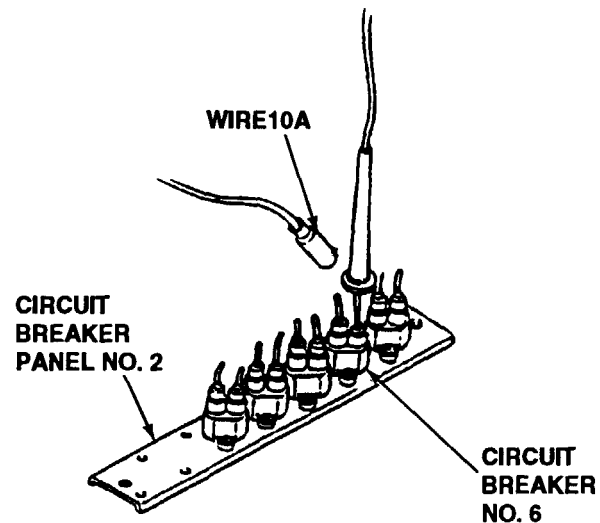
**WARNING**

Turn crew T/A panel MAINTenance switch to vertical position and MASTER switch OFF before disconnecting any electrical wiring harnesses. Failure to comply may result in discharge of fire extinguisher cylinders, electrical shock and injury to personnel.

- A. Disconnect wiring harness 12352354 connector P1 from Engine T/A panel.
- B. Place red lead of multimeter in socket D and ground black lead of multimeter.
- C. Check for  $24 \pm 3$  vdc. If voltage is indicated, go to step T. If no voltage is indicated, to to step D.



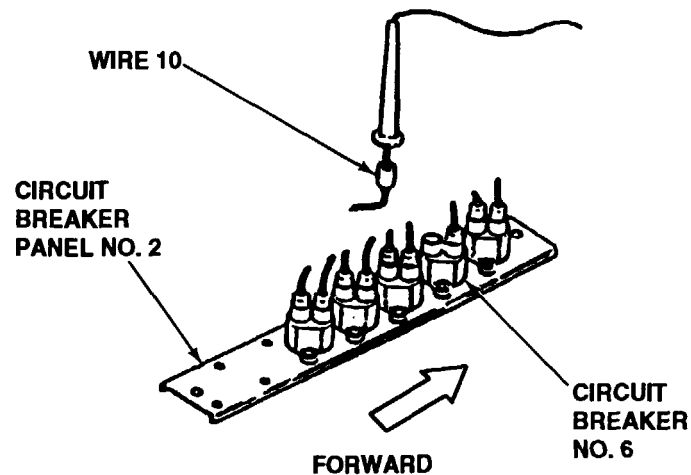




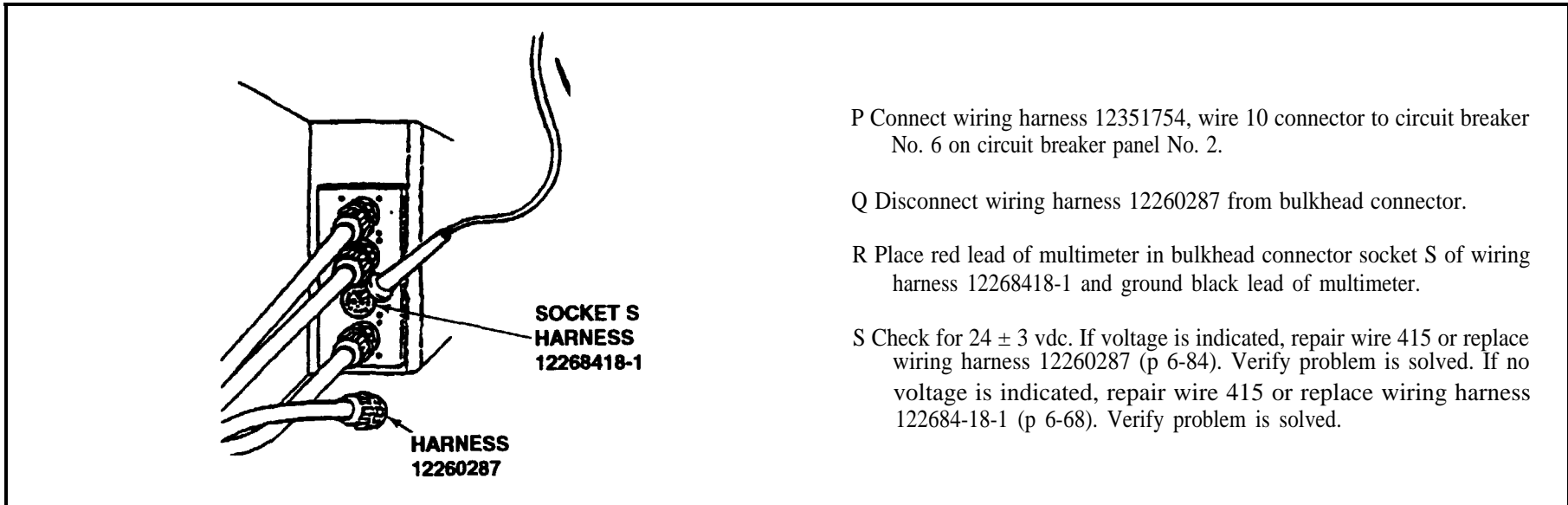
#### NOTE

Circuit breaker panel 2 is located on the sponson directly behind the engine T/A panel.

- I Disconnect wiring harness 12351461, wire 10A from circuit breaker panel No. 2.
- J Place red lead of multimeter in circuit breaker socket and ground black lead of multimeter.
- K Check for  $24 \pm$  vdc. If voltage is indicated, repair wire 10A or replace wiring harness 12351461 (p 14-50.5). Verify problem is solved. If no voltage is indicated, go to step L.



- L Connect wiring harness 12351461, wire 10A to circuit breaker No. 6 on circuit breaker panel No. 2.
- M Disconnect wiring harness 12351754, wire 10 from circuit breaker No. 6 on circuit breaker panel No. 2.
- N Place red lead of multimeter in wire 10 connector and ground black lead of multimeter.
- O Check for  $24 \pm 3$  vdc. If voltage is indicated, replace circuit breaker No. 6 @6-54). Verify problem is solved. If no voltage is indicated, go to step P.

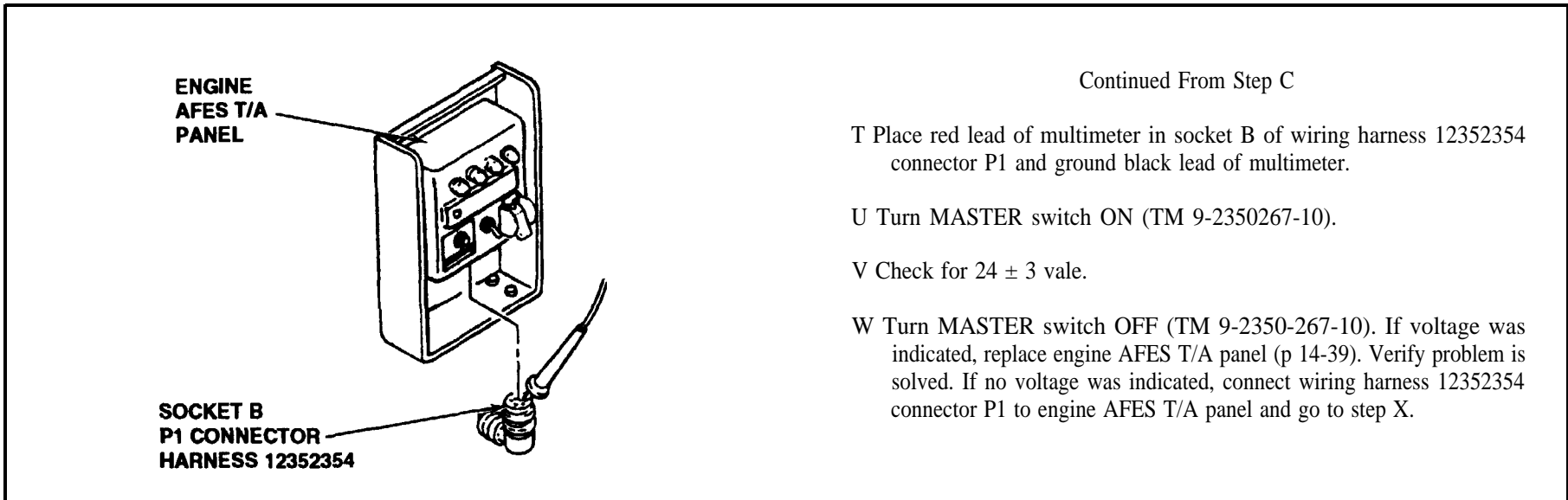


P Connect wiring harness 12351754, wire 10 connector to circuit breaker No. 6 on circuit breaker panel No. 2.

Q Disconnect wiring harness 12260287 from bulkhead connector.

R Place red lead of multimeter in bulkhead connector socket S of wiring harness 12268418-1 and ground black lead of multimeter.

S Check for  $24 \pm 3$  vdc. If voltage is indicated, repair wire 415 or replace wiring harness 12260287 (p 6-84). Verify problem is solved. If no voltage is indicated, repair wire 415 or replace wiring harness 122684-18-1 (p 6-68). Verify problem is solved.



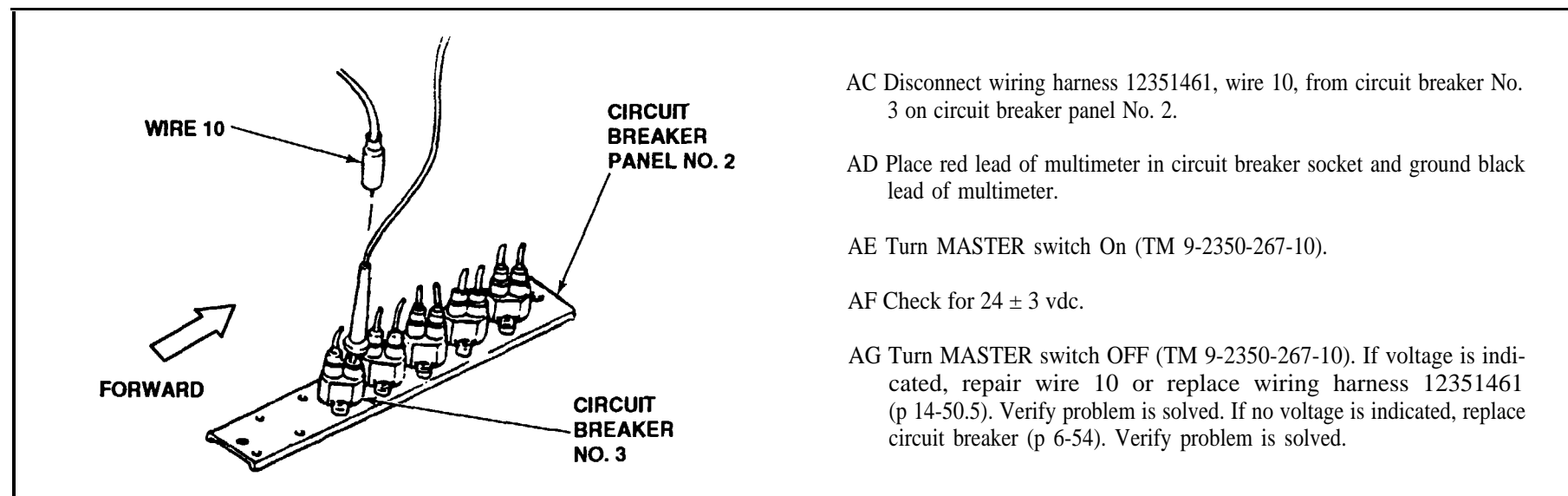
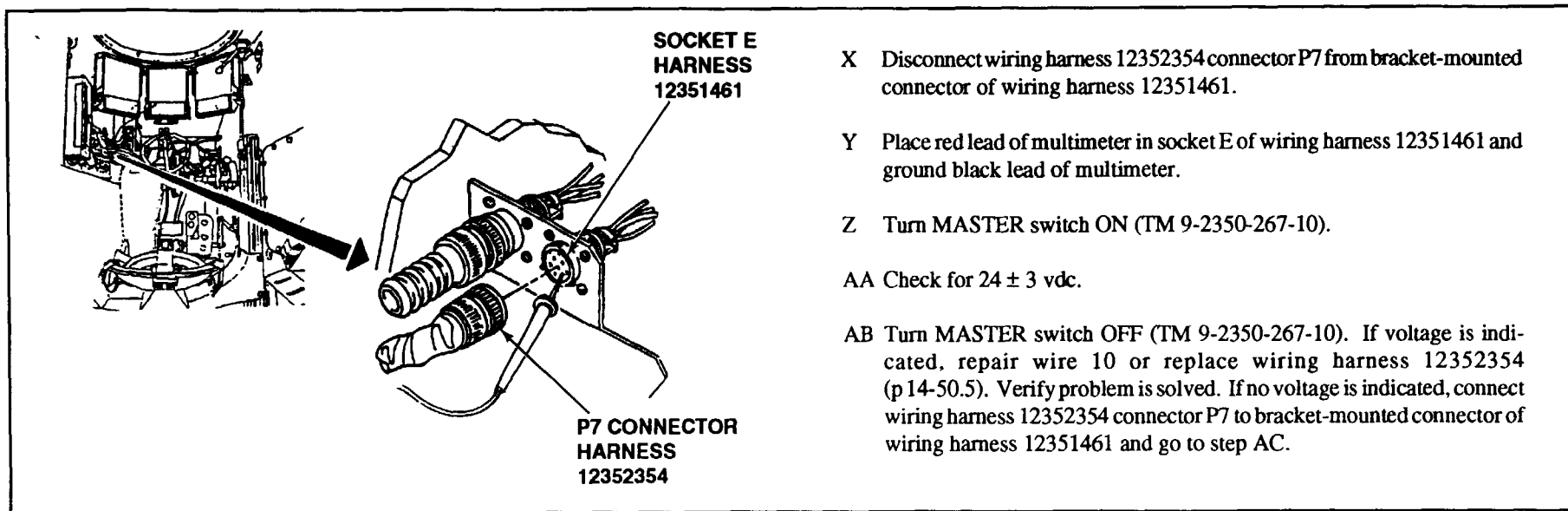
Continued From Step C

T Place red lead of multimeter in socket B of wiring harness 12352354 connector P1 and ground black lead of multimeter.

U Turn MASTER switch ON (TM 9-2350267-10).

V Check for  $24 \pm 3$  vdc.

W Turn MASTER switch OFF (TM 9-2350-267-10). If voltage was indicated, replace engine AFES T/A panel (p 14-39). Verify problem is solved. If no voltage was indicated, connect wiring harness 12352354 connector P1 to engine AFES T/A panel and go to step X.



**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

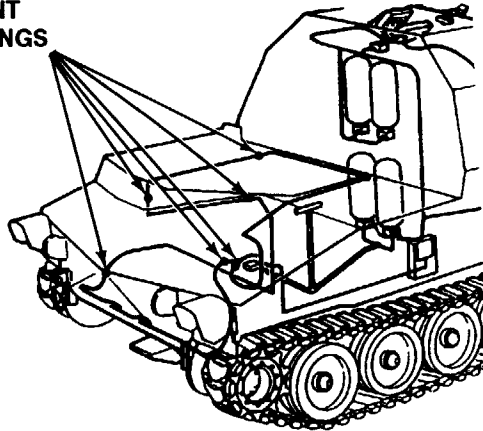
**FIRE WIRE (F/W) LED REMAINS ON, NO FIRE PRESENT.**

**START HERE** 

Before troubleshooting AFES, check the following:

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Transmission doors are open (TM 9-2350-267-10).
- 3 Forward battery box is open (TM 9-2350-267-10).
- 4 Air Intake grille is open and secured (TM 9-2350-267-10).
- 5 Engine AFES T/A panel MAINTenance switch is turned to maintenance position (p 14-14.3).

**SENSING  
ELEMENT  
COUPLINGS**



**CAUTION**

Digital multimeter (DMM) must not be operated any longer than necessary to obtain a reading. Misleading improvements in resistance readings could result.

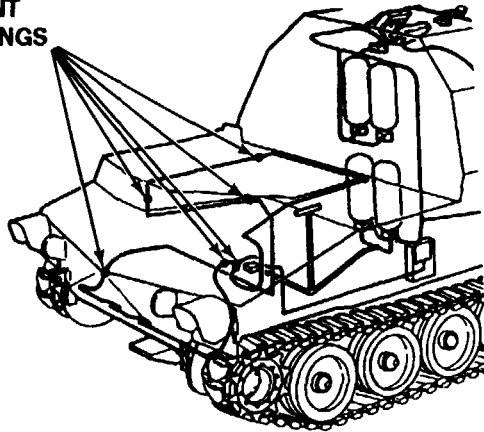
**NOTE**

- Use a DMM for the following tests. Do not use a standard Volt/Ohm meter (VOM). The VOM's method of operation will not give accurate readings.
- Sixty inch elements are installed at the underside of engine deck, above engine.

A Disconnect all sensing element couplings (p 14-26) and check connections for dirt and grease. Clean with cleaning compound.



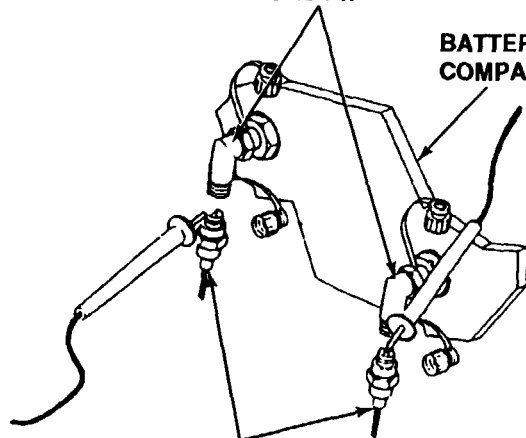
**SENSING  
ELEMENT  
COUPLINGS**



- B Using a multimeter, measure resistance between center and outer sheath of each of five sensing elements and six couplings separately. Resistance of each item must be greater than 2 kilohms.
- C If resistance of any component is less than 2 kilohms, replace defective components (p 14-26 or p 14-27). Verify problem is solved. If resistance of all components is greater than 2 kilohms, connect all couplings except the two couplings that connect to the elbows in the battery compartment and go to step D.

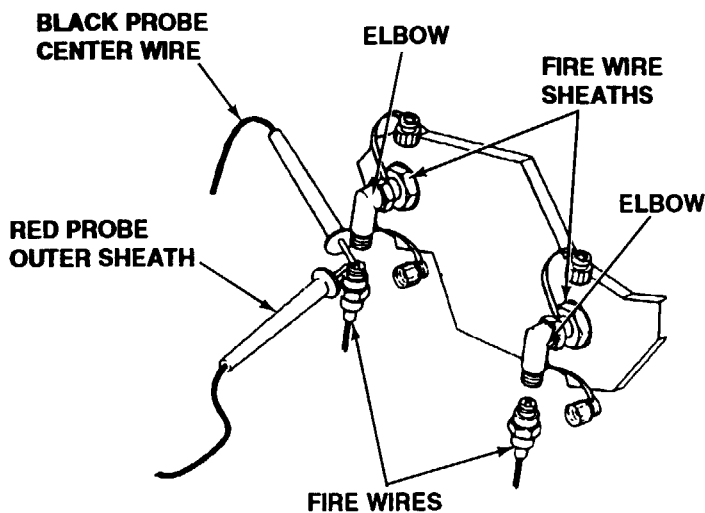
**ELBOW**

**BATTERY  
COMPARTMENT**



**FIRE WIRES**

- D Place red multimeter probe in the center of one fire wire and the black probe in the center of the other. Check resistance.
- E If resistance is between 95 and 180.5 ohms, replace engine AFES T/A panel (p 14-39). Verify problem is solved. If resistance is not between 95 and 180.5 ohms, go to step F.



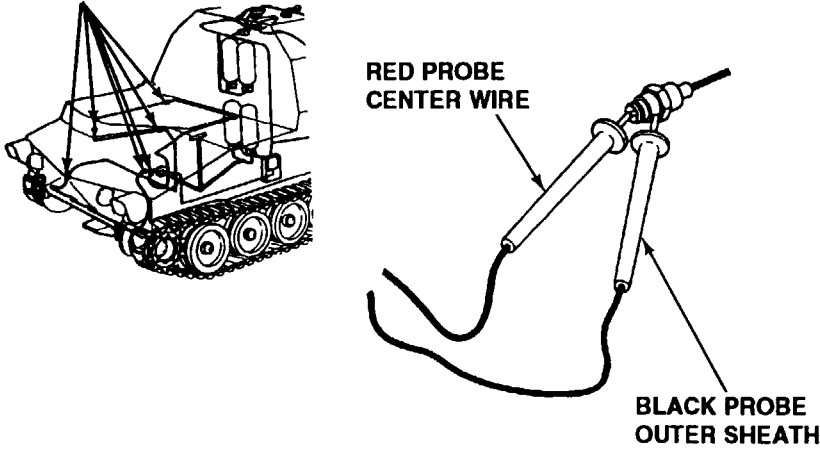
**NOTE**

Use a DMM with range greater than 1 megohm.

F Place black probe on center wire and red probe on the outer sheath of thermal sensing elements loop. Check for resistance.

G If resistance is between 1 and 1 megohm, replace engine AFES T/A panel (p 14-39). Verify problem is solved. If resistance is not between 1 and 1 megohm, go to step H.

**SENSING ELEMENT COUPLINGS**



**NOTE**

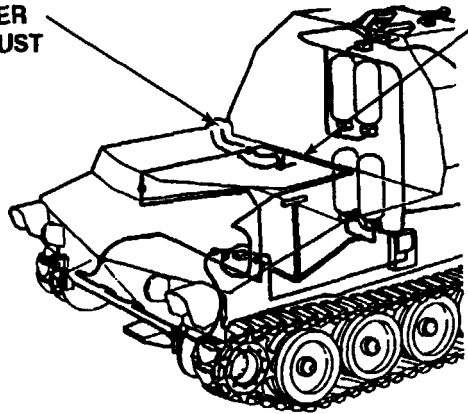
Sixty inch elements are installed at the underside of engine deck, above engine.

H Disconnect all five sensing elements (p 14-15 and 14-26). Place red probe of digital multimeter (DMM) on center wire of sensing element, and place black probe on outer sheath of coupling. Record resistance.

I Repeat step H for all five sensing elements and six couplings. Using the following chart as a guide, replace any defective component (p 14-15 and 14-26). Verify problem is solved. If components are within specifications, go to step J.

Sensing Element Length	MIN ohms	MAX ohms
150"	25.0	37.5
60"	10.0	30.5
Coupling	0.0	1.0

**PERSONNEL  
HEATER  
EXHAUST**



**REAR SENSING  
ELEMENT**

- J Connect all elements and ensure connections are secure.
- K Trace route of sensing elements. Ensure there are no kinks or bends in sensing elements. Ensure rear sensing element is clear of personnel heater exhaust.
- L If all sensing elements are properly routed, repeat steps F through I. Verify problem is solved. If a sensing element is improperly routed, reroute sensing element properly (p 14-26). Verify problem is solved.

**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR VEHICLES 1 THRU 344)**

**FAULT LAMP REMAINS ON. AUTO LED IS LIT.**

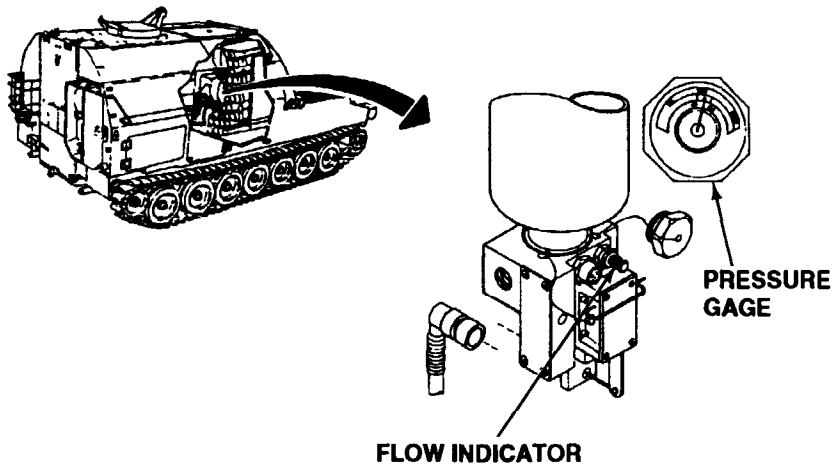
**START HERE**

Before troubleshooting AFES, check the following:

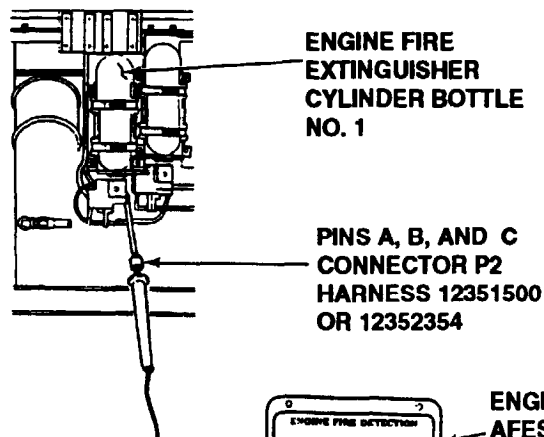
- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left projectile rack is moved to the rear of vehicle (TM 9-2350-267-10).
- 3 Engine AFES T/A panel MAINTenance switch is turned to maintenance position (p14-14.3).

**NOTE**

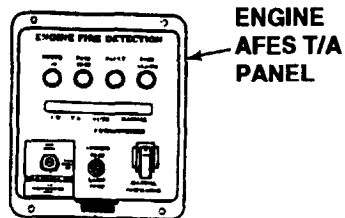
- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 may be performed.



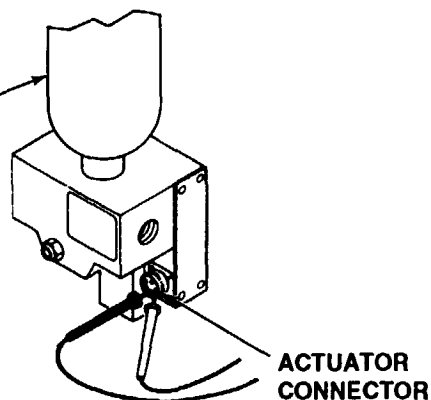
- A Check for protruding flow indicator of valve actuator of engine fire extinguisher No. 1. Check pressure gage of engine fire extinguisher no. 1 and make sure black needle is on green temperature wedge.
- B If flow indicator is protruding, reset flow indicator of valve actuator by pushing it into valve body. If pressure gage indicates low pressure, replace engine fire extinguisher cylinder bottle No. 1 (p 14-27). Verify problem is solved. If flow indicator and pressure gage reading are ok, go to step C.



PINS F, G, AND H  
CONNECTOR P1  
HARNESS  
12351500 OR  
12352354



ENGINE FIRE  
EXTINGUISHER  
CYLINDER BOTTLE  
NO. 1



### WARNING

Make sure that engine T/A panel MAINTenance switch is in the vertical position. Failure to comply may result in cylinder discharge.

### NOTE

Wiring harness 12352354 is an optional replacement for wiring harness 12351500.

- C Disconnect harness 12351500 or 12352354 connector P1 from engine AFES T/A panel, and disconnect connector P2 from valve actuator of engine fire extinguisher cylinder bottle No. 1. Check continuity as follows:

T/A Panel Connector P1	Extinguisher Connector P2
Pin F (788E)	Pin A (GND)
Pin G (789E)	Pin B (10)
Pin H (798E)	Pin C (792)

- D If continuity is present in all circuits, connect harness 12351500 or 12352354 to engine AFES T/A panel and go to step E. If continuity is not present in all circuits, repair or replace wire harness 12351500 or 12352354 (p 14-50.5). Verify problem is solved.
- E Place red probe of multimeter on pin A and black probe on pin B of engine fire extinguisher No. 1 connector. Check for continuity. Place red probe of multimeter on pin B and black probe on pin C of engine fire extinguisher No. 1 connector. Check for continuity.
- F If continuity is indicated for both checks in step E, replace engine AFES T/A panel (14-39). Verify problem is solved. If continuity is not indicated in both checks, replace engine fire extinguisher cylinder bottle No. 1 (p 14-27). Verify problem is solved.

**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR VEHICLES 245 and ABOVE)**

**FAULT LAMP REMAINS ON. AUTO LED IS LIT.**

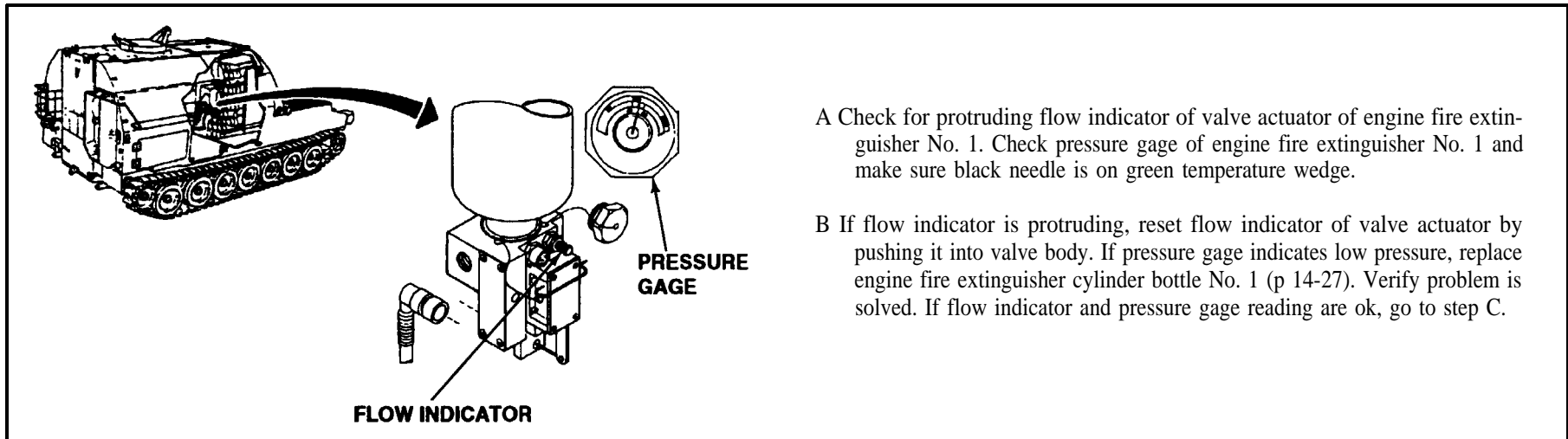
**START HERE**

Before trouble shooting AFES, check the following

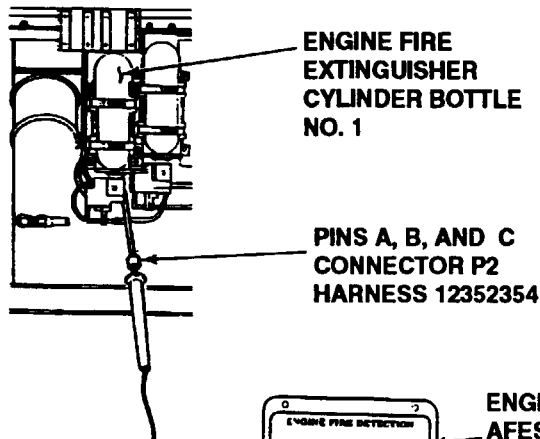
- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left projectile rack is moved to the rear of vehicle (TM 9-2350-267-10).
- 3 Engine AFES T/A panel Maintenance switch is turned to maintenance position (p14-14.3).

**NOTE**

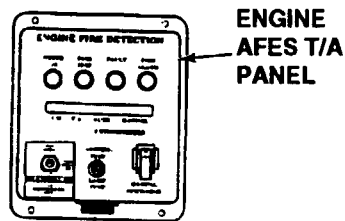
- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 maybe performed.



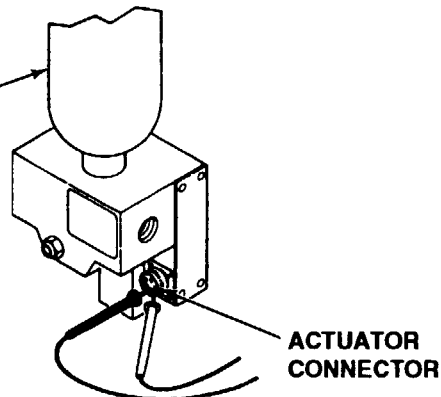
- A Check for protruding flow indicator of valve actuator of engine fire extinguisher No. 1. Check pressure gage of engine fire extinguisher No. 1 and make sure black needle is on green temperature wedge.
- B If flow indicator is protruding, reset flow indicator of valve actuator by pushing it into valve body. If pressure gage indicates low pressure, replace engine fire extinguisher cylinder bottle No. 1 (p 14-27). Verify problem is solved. If flow indicator and pressure gage reading are ok, go to step C.



PINS F, G, AND H CONNECTOR P1 HARNESS 12352354



ENGINE FIRE EXTINGUISHER CYLINDER BOTTLE NO. 1



### WARNING

Make sure that engine T/A panel MAINTenance switch is in the vertical position. Failure to comply may result in cylinder discharge.

- C Disconnect harness 12352354 connector P1 from engine AFES T/A panel, and disconnect connector P2 from valve actuator of engine fire extinguisher cylinder bottle No. 1. Check continuity as follows:

<u>T/A Panel Connector P1</u>	<u>Extinguisher Connector P2</u>
Pin F (788E)	Pin A (GND)
Pin G (789E)	Pin B (10)
Pin H (798E)	Pin C (792)

- D If continuity is present in all circuits, connect harness 12352354 to engine AFES T/A panel and go to step E. If continuity is not present in all circuits, repair or replace wire harness 12352354 (p 14-50.5). Verify problem is solved.
- E Place red probe of multimeter on pin A and black probe on pin B of engine fire extinguisher No. 1 connector. Check for continuity. Place red probe of multimeter on pin B and black probe on pin C of engine fire extinguisher No. 1 connector. Check for continuity.
- F If continuity is indicated for both checks in step E, replace engine AFES T/A panel (14-39). Verify problem is solved. If continuity is not indicated in both checks, replace engine fire extinguisher cylinder bottle No. 1 (p 14-27). Verify problem is solved.

**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR VEHICLES 1 THRU 344)**

**FAULT LAMP REMAINS ON. MANUAL LED IS LIT.**

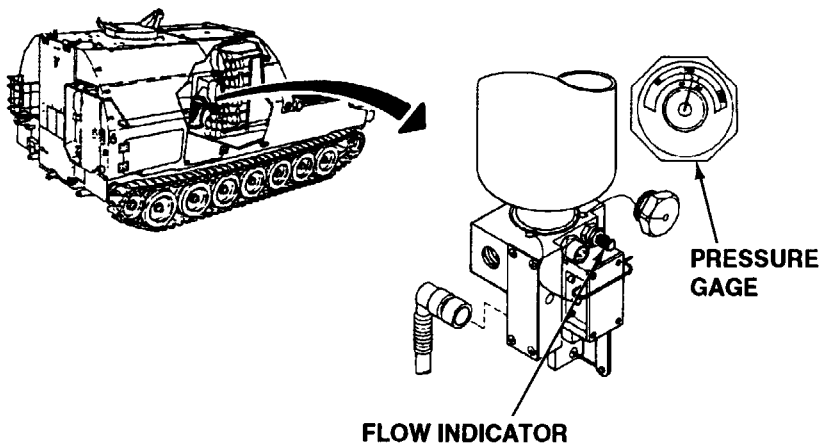
**START HERE**

Before troubleshooting AFES, check the following:

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left and right projectile racks is moved to the rear of vehicle (TM 9-2350-267-10).
- 3 Engine AFES T/A panel MAINTenance switch is turned to maintenance position (p 14-14.3).

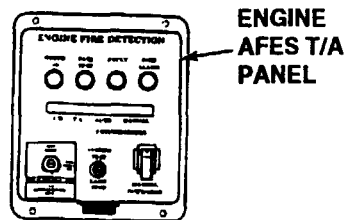
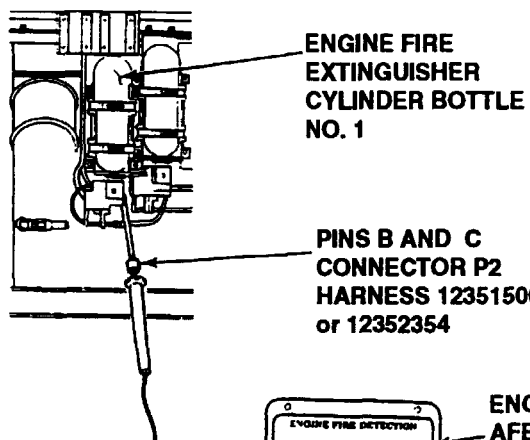
**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 may be performed.



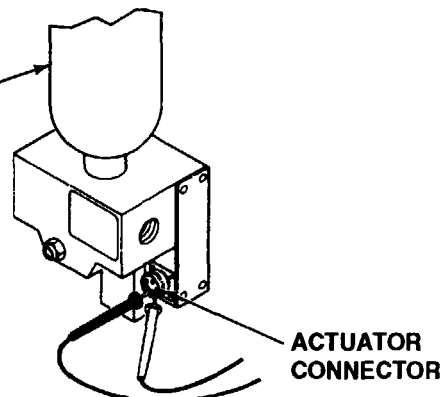
- A Check for protruding flow indicator of valve actuator of engine fire extinguisher cylinder bottle No. 2. Loosen clamps and remove ventilation duct hose (p 14-62). Check pressure gage of engine fire extinguisher cylinder bottle No. 2 to make sure black needle of the gage is in green temperature wedge.
- B If flow indicator is protruding, reset flow indicator of valve actuator by pushing it into valve body. If pressure gage indicates low pressure, replace engine fire extinguisher cylinder bottle No. 2 (p 14-27). Verify problem is solved. If flow indicator and pressure gage reading are ok, go to step C.





PINS R AND P CONNECTOR P1 HARNESS 12351500 OR 12352354

ENGINE FIRE EXTINGUISHER CYLINDER BOTTLE NO. 1



### WARNING

Make sure that engine T/A panel MAINTenance switch is in the vertical position. Failure to comply may result in cylinder discharge.

### NOTE

Wiring harness 12352354 is an optional replacement for wiring harness 12351500.

- C Disconnect harness 12351500 or 12352354 connector P1 from engine AFES T/A panel, and plug P3 from valve actuator of engine fire extinguisher cylinder bottle No. 2. Check continuity as follows:

T/A Panel Connector P1	Extinguisher Connector P3
Pin R (794)	Pin B (794)
Pin P (793F)	Pin C (793F)

- D If continuity is present in all circuits, connect harness 12351500 or 12352354 to engine AFES T/A panel and go to step E. If continuity is not present in all circuits, repair or replace wire harness 12351500 or 12352354 (p 14-50.5). Verify problem is solved.
- E Place red probe of multimeter on pin B and the other lead on pin C of engine fire extinguisher cylinder bottle No. 2 actuator socket. Check for continuity.
- F If continuity is indicated, replace engine AFES T/A panel (p 14-39). Verify problem is solved. If continuity is not indicated, replace engine fire extinguisher cylinder bottle No. 2 (p 14-27). Verify problem is solved.

**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR VEHICLES 345 and ABOVE)**

**FAULT LAMP REMAINS ON. MANUAL LED IS LIT.**

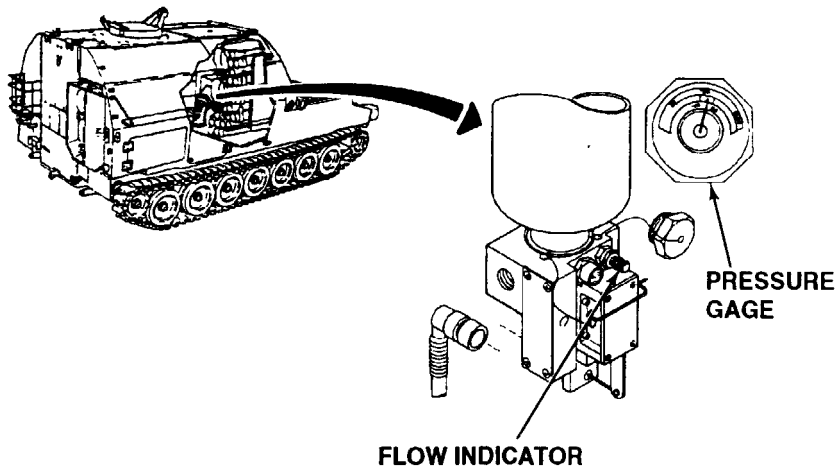
**START HERE**

Before troubleshooting AFES, check the following

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left and right projectile racks is moved to the rear of vehicle (TM9-2350-267-10).
- 3 Engine AFES T/A panel Maintenance switch is turned to maintenance position (p 14-14.3).

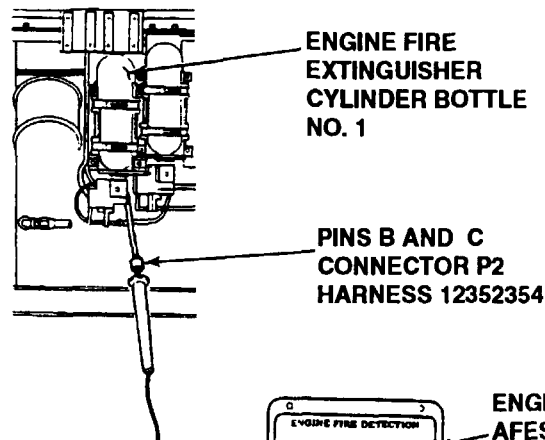
**NOTE**

- Instead of using multimeter for voltage check STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 maybe performed.



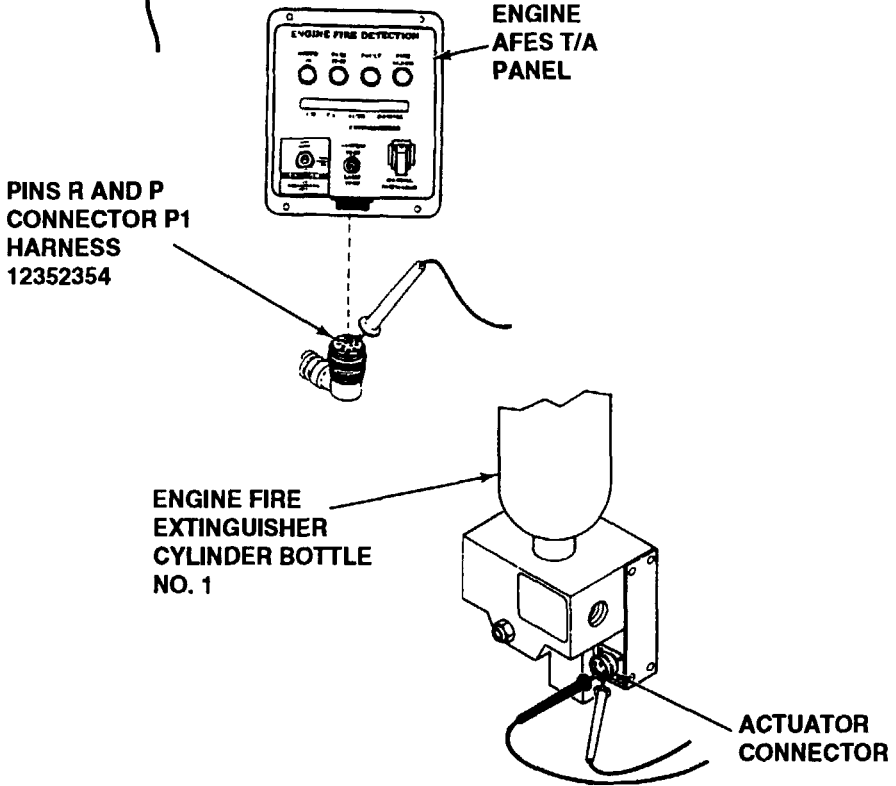
A Check for protruding flow indicator of valve actuator of engine fire extinguisher cylinder bottle No. 2. Loosen clamps and remove ventilation duct hose (p 14-62). Check pressure gage of engine fire extinguisher cylinder bottle No. 2 to make sure black needle of the gage is in green temperature wedge.

B If flow indicator is protruding, reset flow indicator of valve actuator by pushing it into valve body. If pressure gage indicates low pressure, replace engine fire extinguisher cylinder bottle No. 2 (p 14-27). Verify problem is solved. If flow indicator and pressure gage reading are ok, go to step C.



**WARNING**

Make sure that engine T/A panel MAINTenance switch is in the vertical position. Failure to comply may result in cylinder discharge.



C Disconnect harness 12352354 connector P1 from engine AFES T/A panel, and plug P3 from valve actuator of engine fire extinguisher cylinder bottle No. 2. Check continuity as follows:

<u>T/A Panel Connector P1</u>	<u>Extinguisher Connector P3</u>
Pin R (794)	Pin B (794)
Pin P (793F)	Pin C (793F)

- D If continuity is present in all circuits, connect harness 12352354 to engine AFES T/A panel and go to step E. If continuity is not present in all circuits, repair or replace wire harness 12352354 (p 14-50.5). Verify problem is solved.
- E Place red probe of multimeter on pin B and the other lead on pin C of engine fire extinguisher cylinder bottle No. 2 actuator socket. Check for continuity.
- F If continuity is indicated, replace engine AFES T/A panel (p 14-39). Verify problem is solved. If continuity is not indicated, replace engine fire extinguisher cylinder bottle No. 2 (p 14-27). Verify problem is solved.

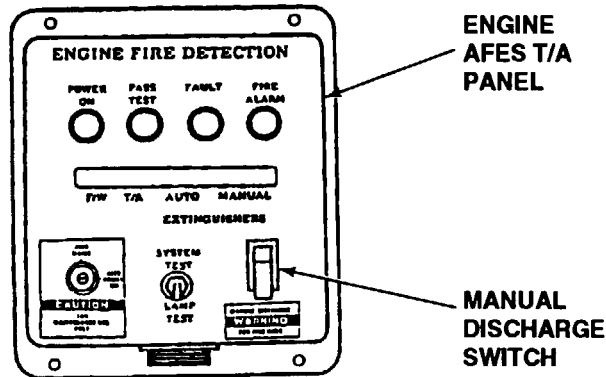
**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**BOTH ENGINE BOTTLES DISCHARGE WHEN MANUAL SWITCH  
ON ENGINE AFES T/A PANEL IS ACTIVATED.**



Before troubleshooting AFES, check the following:

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left and right projectile racks is moved to the rear of vehicle (TM9-2350-267-10).
- 3 Engine AFES T/A panel MAINTenance switch is turned to maintenance position (p 14-14.3).



If both engine bottles discharge when manual discharge switch or pull cable at engine AFES T/A panel is activated, replace engine fire extinguisher cylinder bottles and check tee (p 14-27). If both bottles do not discharge, the engine AFES system is functioning properly.

**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**BOTTLES NOT DISCHARGING WHEN PULLING MANUAL CABLES.**

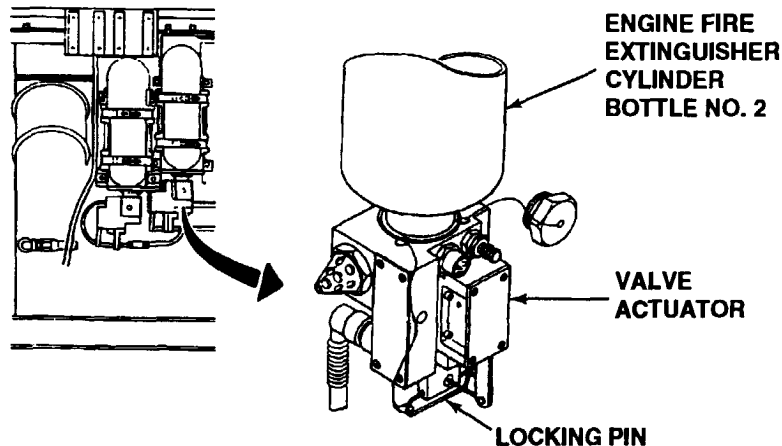
**START HERE**

Before troubleshooting AFES, check the following:

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left and right projectile racks is moved to the rear of vehicle (TM 9-2350-267-10).
- 3 Make sure engine AFES T/A panel MAINTenance switch is turned to maintenance position (p 14-14.3).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 may be performed.

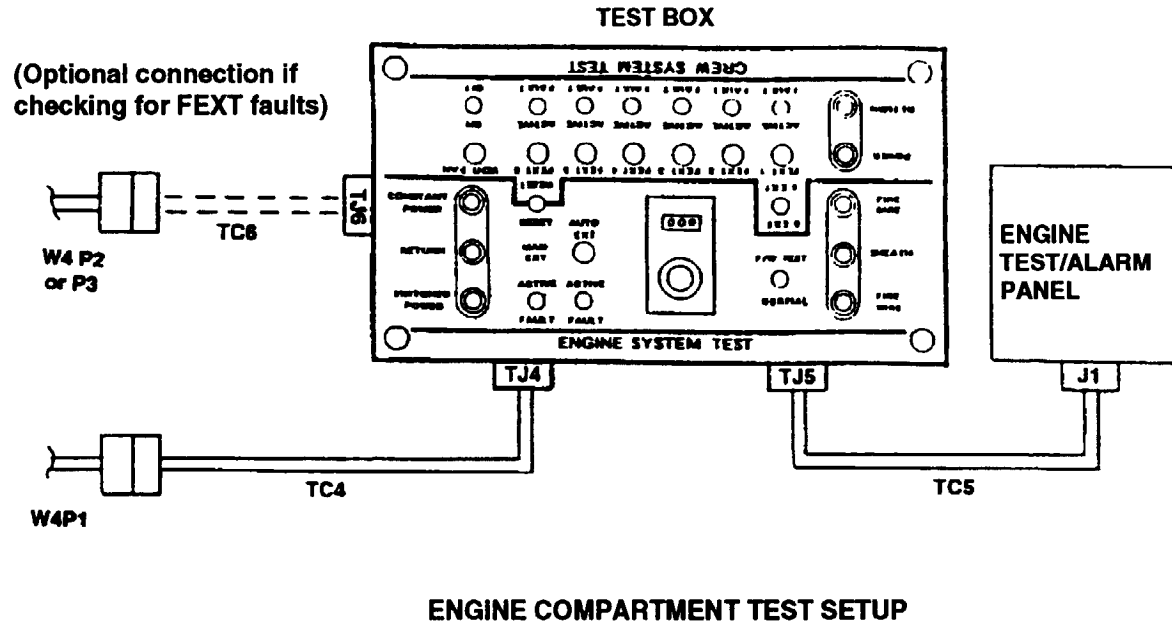


- A Ensure locking pin is installed in the stowed position in the valve actuator of engine fire extinguisher cylinder bottle No. 2.
- B If locking pin is installed correctly, check adjustments of cables (p 14-55). If locking pin is not installed properly, correctly install locking pin in the stowed position.

**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**ENGINE AFES MEGOMETER TROUBLESHOOTING PROCEDURES.**

The FAASV Automatic Fire Extinguishing System (AFES) Troubleshooting Aid is a test box and set of seven connecting cables, developed by HTL, to assist the FAASV user in troubleshooting the FAASV AFES. Using the troubleshooting aid allows testing of both the crew and engine subsystems individually without the fear of accidental discharge of fire extinguishers. This is accomplished by disconnecting the FAASV's installed fire extinguishers from the AFES and substituting "dummy" simulation fire extinguishers contained within the test box. Use of the troubleshooting aid speeds fault finding and helps achieve a more accurate fault diagnosis by allowing maintenance personnel to take measurements at the test box. The troubleshooting aid allows the user to isolate an AFES problem without moving the projectile racks, saving considerable time and effort. The troubleshooting aid should be used in conjunction with TM 9-2350-267-20 as the technical manual is used for reference in the following troubleshooting procedure.



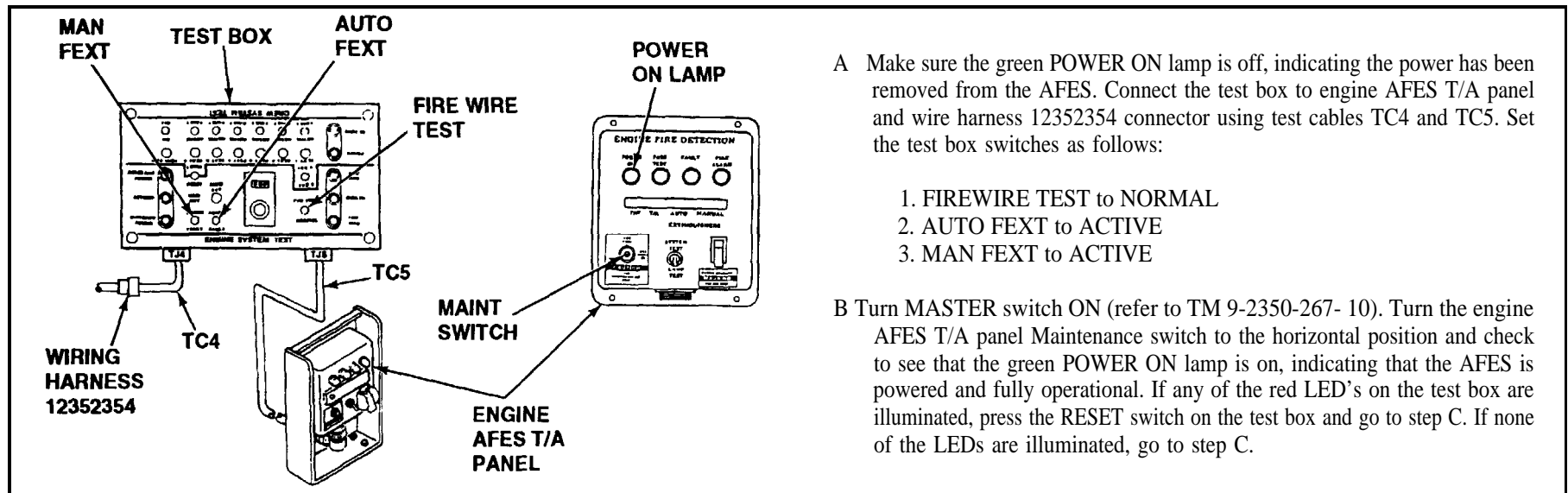


Before troubleshooting AFES, check the following:

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Make sure engine AFES T/A panel Maintenance switch is turned to maintenance position (p 14-14.3).
- 3 AFES fire extinguisher bottle harnesses are disconnected (p 14-50.5).

#### NOTE

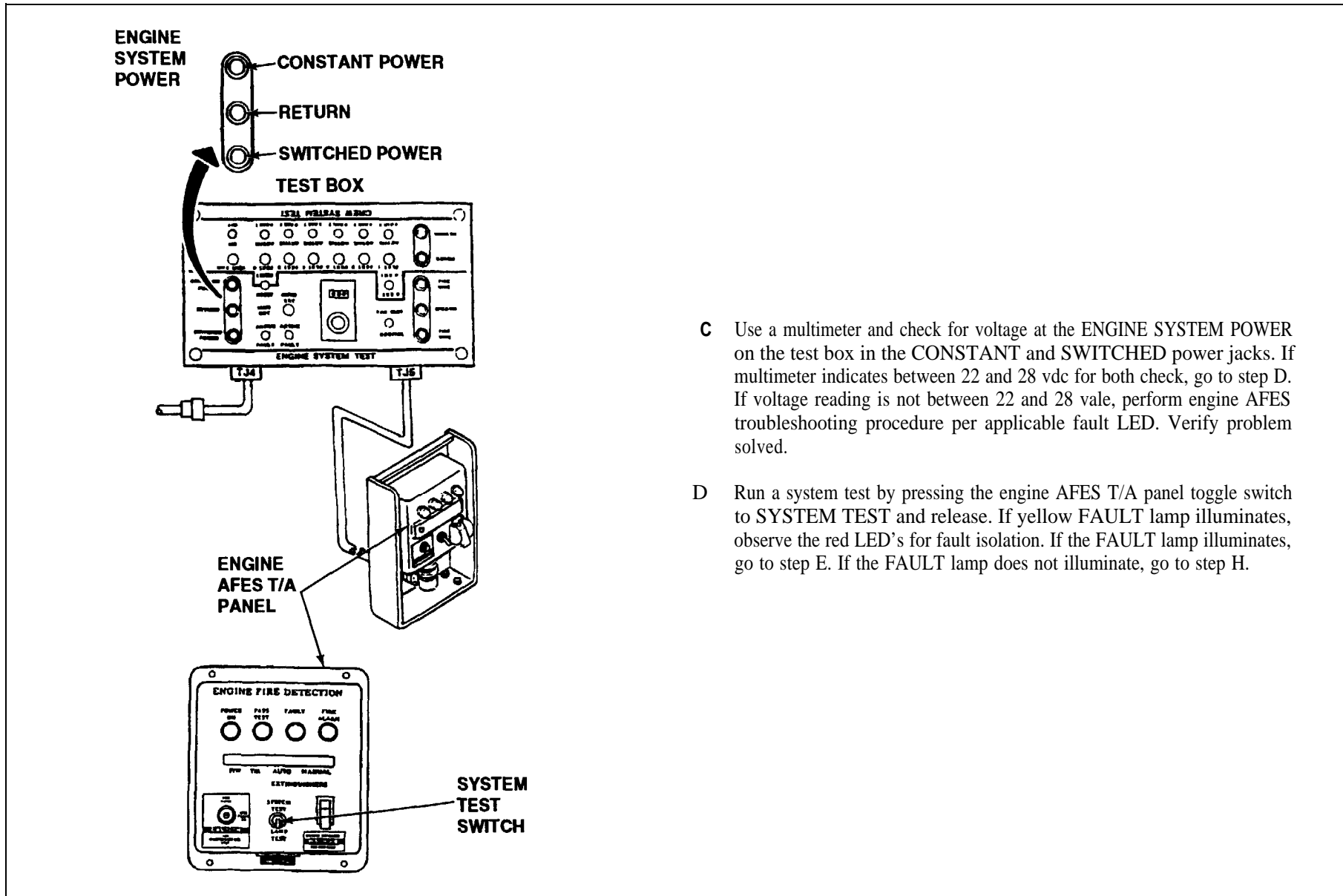
- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 maybe performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 maybe performed.



A Make sure the green POWER ON lamp is off, indicating the power has been removed from the AFES. Connect the test box to engine AFES T/A panel and wire harness 12352354 connector using test cables TC4 and TC5. Set the test box switches as follows:

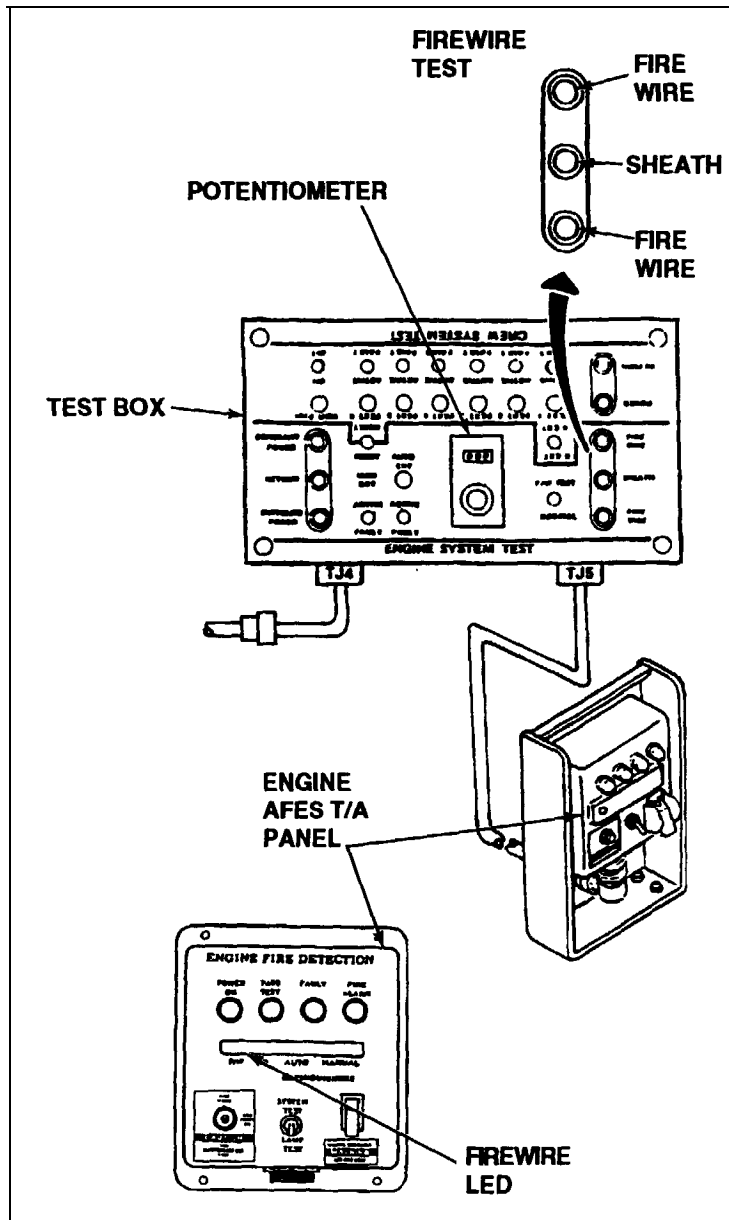
1. FIREWIRE TEST to NORMAL
2. AUTO FEXT to ACTIVE
3. MAN FEXT to ACTIVE

B Turn MASTER switch ON (refer to TM 9-2350-267- 10). Turn the engine AFES T/A panel Maintenance switch to the horizontal position and check to see that the green POWER ON lamp is on, indicating that the AFES is powered and fully operational. If any of the red LED's on the test box are illuminated, press the RESET switch on the test box and go to step C. If none of the LEDs are illuminated, go to step C.



- C Use a multimeter and check for voltage at the ENGINE SYSTEM POWER on the test box in the CONSTANT and SWITCHED power jacks. If multimeter indicates between 22 and 28 vdc for both check, go to step D. If voltage reading is not between 22 and 28 vdc, perform engine AFES troubleshooting procedure per applicable fault LED. Verify problem solved.
- D Run a system test by pressing the engine AFES T/A panel toggle switch to SYSTEM TEST and release. If yellow FAULT lamp illuminates, observe the red LED's for fault isolation. If the FAULT lamp illuminates, go to step E. If the FAULT lamp does not illuminate, go to step H.





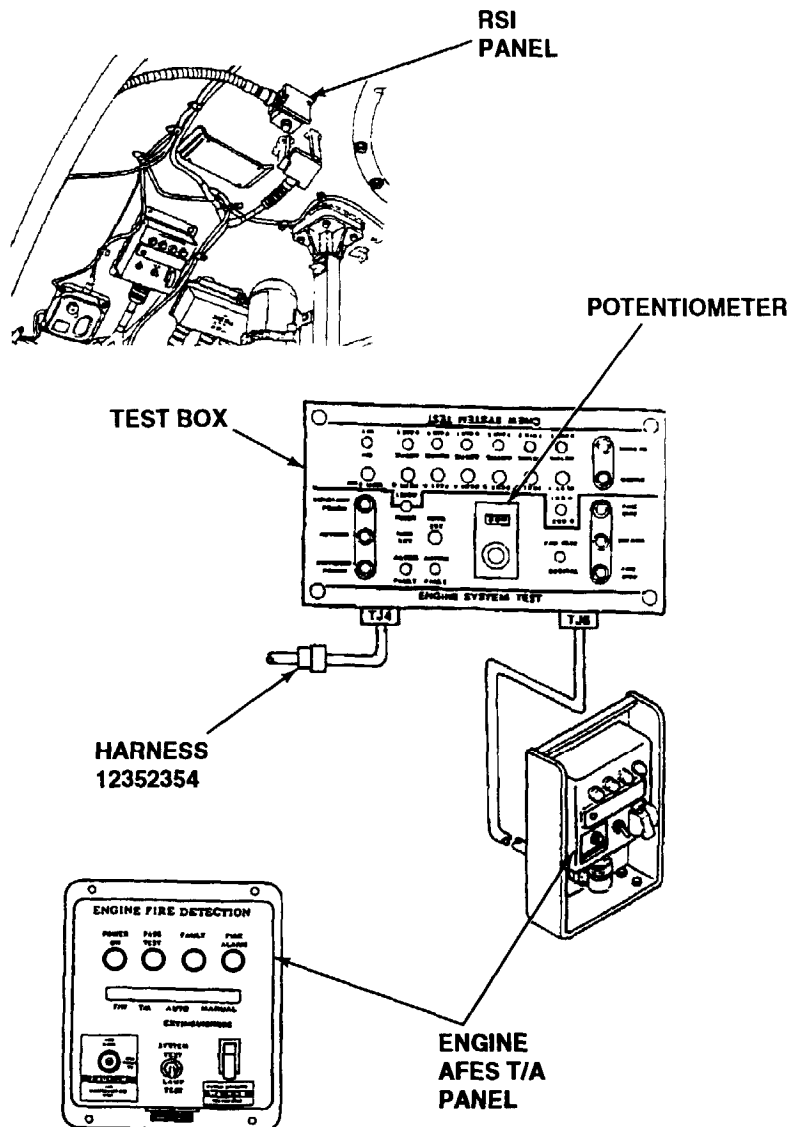
#### NOTE

The fire wire test switch substitutes an adjustable potentiometer dial for the firewire loop.

E Set the knob of the potentiometer to its maximum setting, fully clockwise. The potentiometer dial should read 10.0, representing 10 Kohms. Rerun the system test and observe the firewire LED indicator on the engine AFES T/A panel. If firewire LED remains illuminated on engine AFES T/A panel, replace faulty engine AFES T/A panel (p 14-39). If the firewire LED does not remain illuminated, go to step F.

F Test the firewire loop with a multimeter at the FIREWIRE TEST jacks as follows:

1. Check the center wire continuity/resistance by placing the multimeter probes in the red and green FIREWIRE TEST jacks. The resistance must be between 95 and 180 ohms.
2. Check insulation resistance between the center wire and the outer sheath by placing the multimeter probes in either the black and red or the black and green FIREWIRE TEST jacks. The resistance must be greater than 1 megohm. If the resistance tests of the firewire are within the required ranges, go to step G. If firewire resistance tests fail, perform FAULT LAMP REMAINS ON AUTO LED IS LIT (p 2-306.10). Verify problem is solved.



G Check operation of engine AFES T/A panel overheat and fire detection circuits as follows:

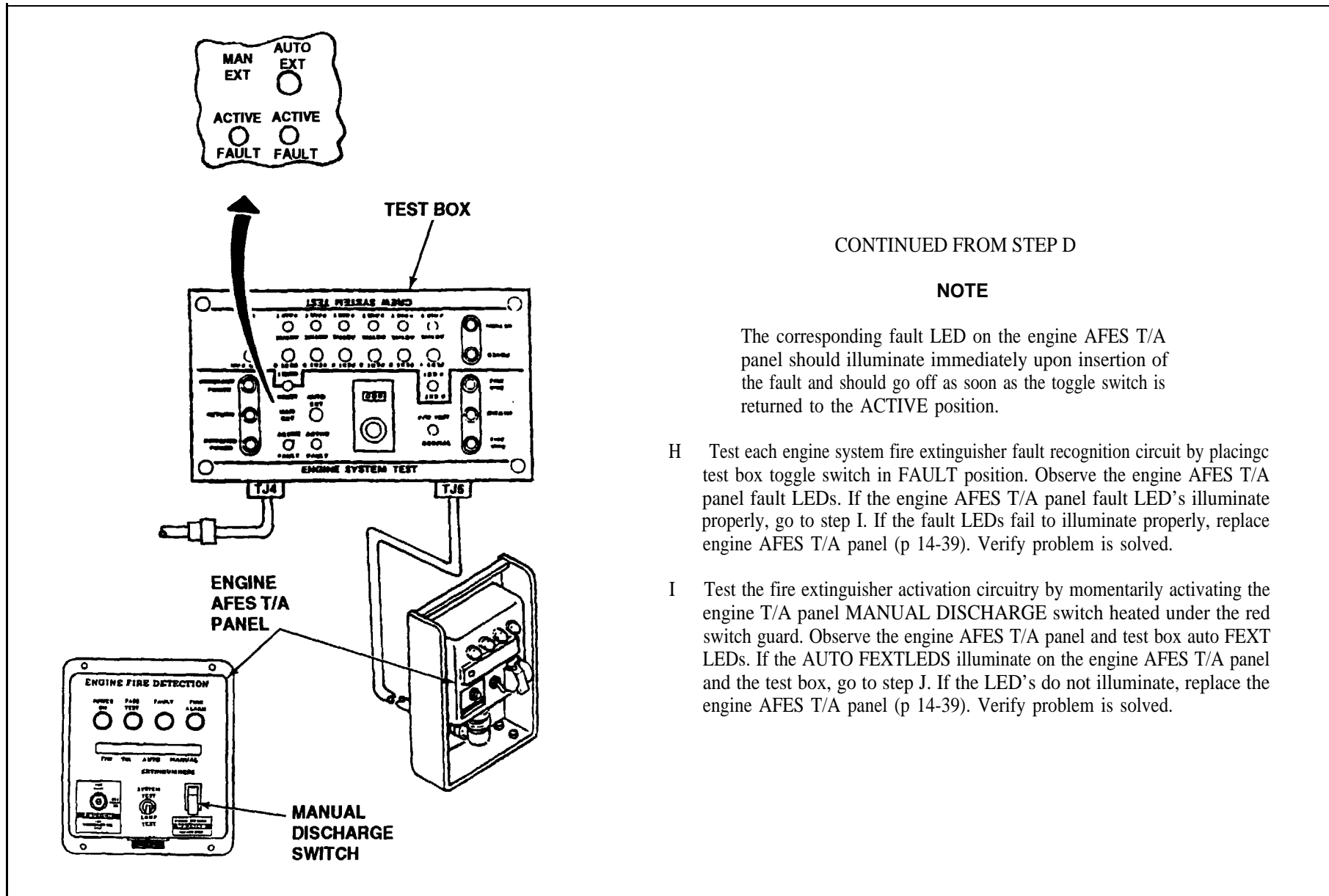
1. Reduce potentiometer setting to 5.0 k.

**NOTE**

The red FIRE lamps on the engine AFES T/A panel and the RSI panel in the crew compartment should begin to blink on and off.

2. Observe red FIRE lamps on the engine AFES T/A panel and RSI panel.
3. Reduce potentiometer setting to 1.0 k.
4. Observe red fire lamps on the engine AFES T/A panel and on the RSI panel.

If the FIRE lamps stay on without blinking and the AUTO FEXT LED'S on the engine AFES T/A panel illuminate, repair or replace wire harness 12352354 (p 14-50.5). Re-adjust the potentiometer knob to its maximum setting (10 kohms) and press the RESET button on the test box. Verify problem is solved. If the FIRE lamps do not stay on and the AUTO FEXT LED'S do not illuminate, replace engine AFES T/A panel (p 14-39). Re-adjust the potentiometer knob to its maximum setting (10 kohms) and press the RESET button on the test box. Verify problem is solved.

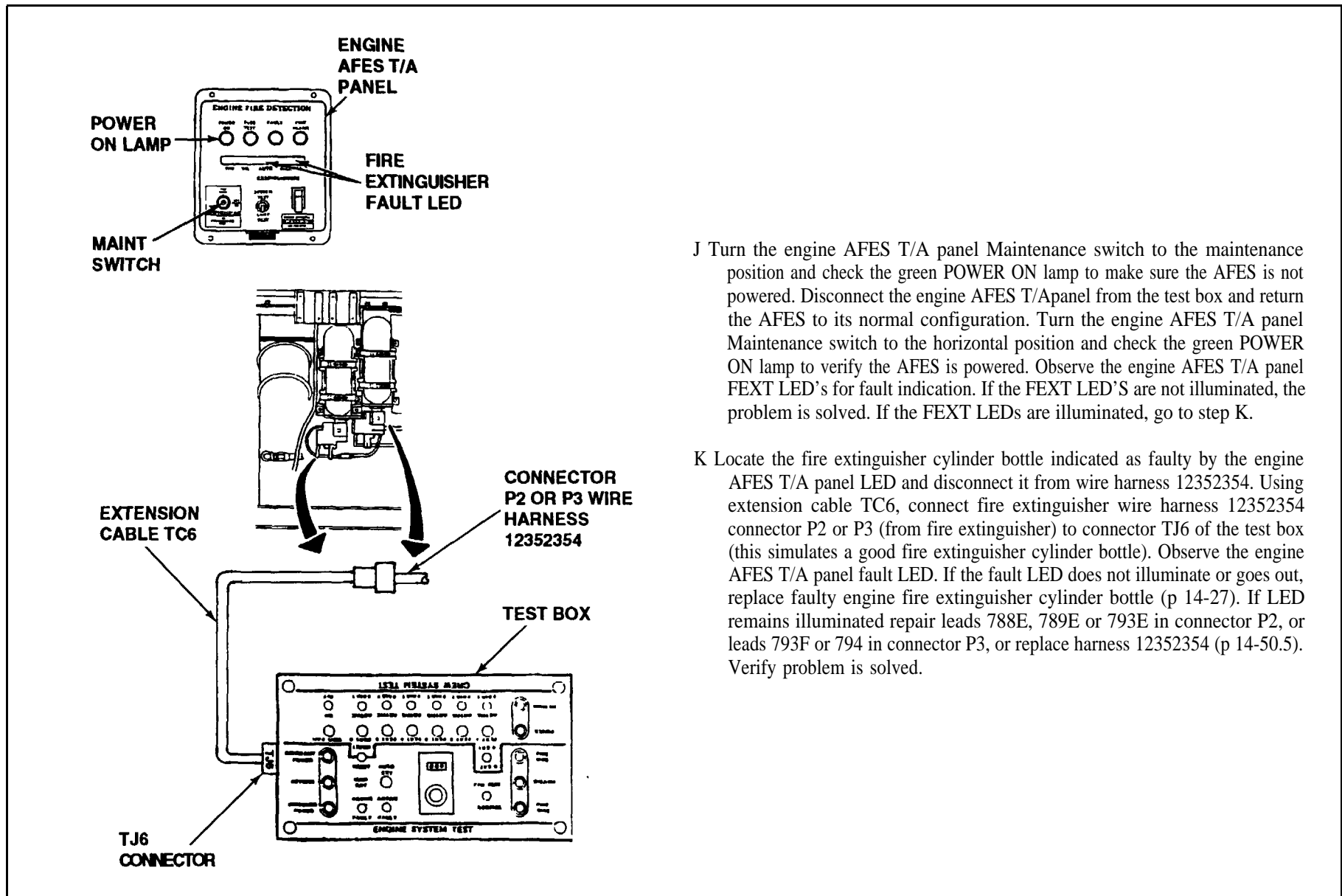


CONTINUED FROM STEP D

**NOTE**

The corresponding fault LED on the engine AFES T/A panel should illuminate immediately upon insertion of the fault and should go off as soon as the toggle switch is returned to the ACTIVE position.

- H Test each engine system fire extinguisher fault recognition circuit by placing test box toggle switch in FAULT position. Observe the engine AFES T/A panel fault LEDs. If the engine AFES T/A panel fault LED's illuminate properly, go to step I. If the fault LEDs fail to illuminate properly, replace engine AFES T/A panel (p 14-39). Verify problem is solved.
- I Test the fire extinguisher activation circuitry by momentarily activating the engine T/A panel MANUAL DISCHARGE switch heated under the red switch guard. Observe the engine AFES T/A panel and test box auto FEXT LEDs. If the AUTO FEXTLEDS illuminate on the engine AFES T/A panel and the test box, go to step J. If the LED's do not illuminate, replace the engine AFES T/A panel (p 14-39). Verify problem is solved.



J Turn the engine AFES T/A panel Maintenance switch to the maintenance position and check the green POWER ON lamp to make sure the AFES is not powered. Disconnect the engine AFES T/A panel from the test box and return the AFES to its normal configuration. Turn the engine AFES T/A panel Maintenance switch to the horizontal position and check the green POWER ON lamp to verify the AFES is powered. Observe the engine AFES T/A panel FEXT LED'S for fault indication. If the FEXT LED'S are not illuminated, the problem is solved. If the FEXT LEDs are illuminated, go to step K.

K Locate the fire extinguisher cylinder bottle indicated as faulty by the engine AFES T/A panel LED and disconnect it from wire harness 12352354. Using extension cable TC6, connect fire extinguisher wire harness 12352354 connector P2 or P3 (from fire extinguisher) to connector TJ6 of the test box (this simulates a good fire extinguisher cylinder bottle). Observe the engine AFES T/A panel fault LED. If the fault LED does not illuminate or goes out, replace faulty engine fire extinguisher cylinder bottle (p 14-27). If LED remains illuminated repair leads 788E, 789E or 793E in connector P2, or leads 793F or 794 in connector P3, or replace harness 12352354 (p 14-50.5). Verify problem is solved.

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR VEHICLES 1 THRU 344)**

**POWER ON LAMP DOES NOT LIGHT WHEN MASTER SWITCH IS  
TURNED ON. All other electrical systems operate.**

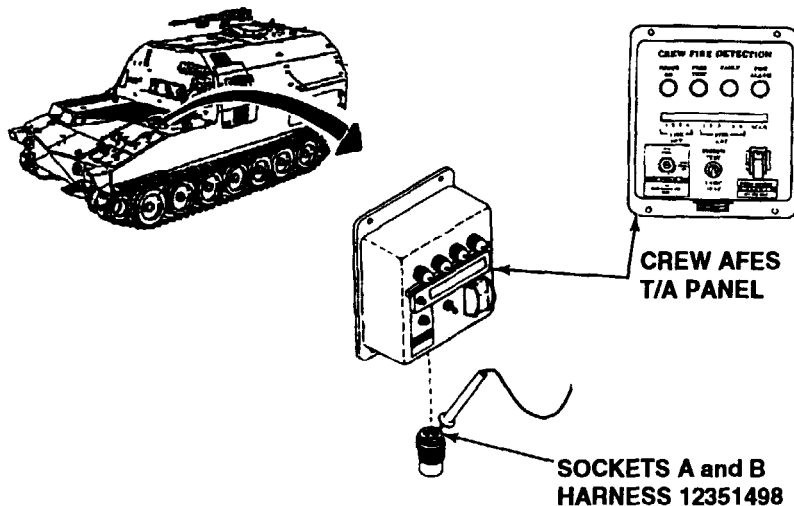


Before troubleshooting AFES, check the following:

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Make sure crew T/A panel Maintenance switch is tinned to maintenance position (p 14-14.5).

**NOTE**

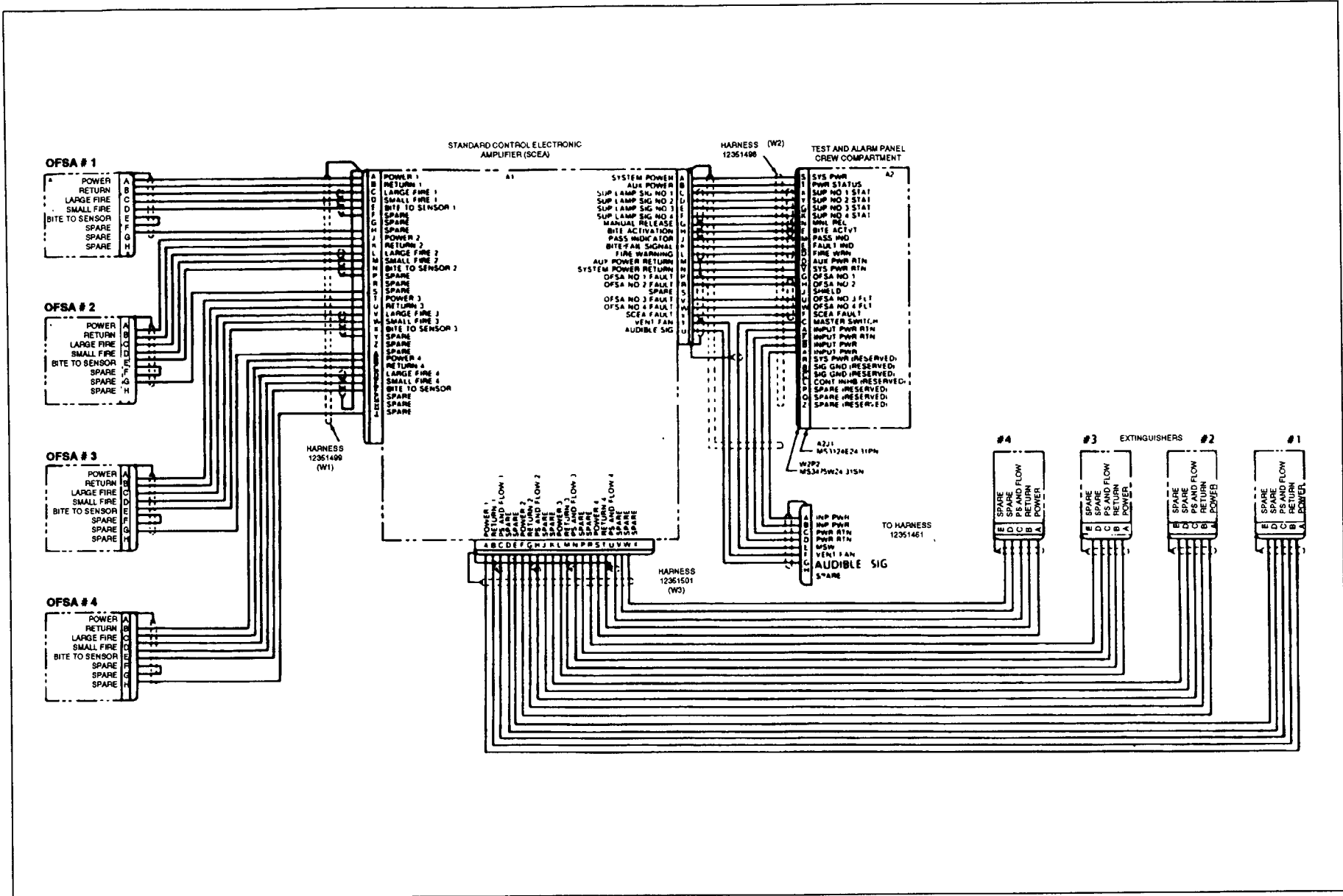
- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 be performed.
- Instead of using multimeter for continuity check STE/ICE troubleshooting, TEST 91 may be performed.

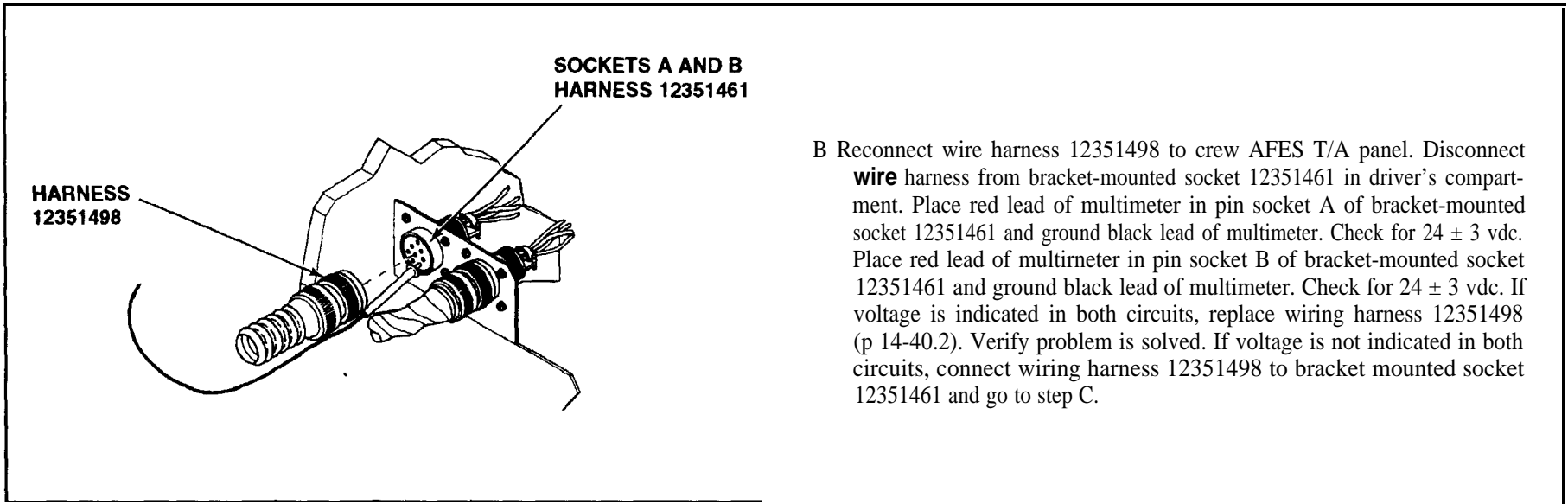


**WARNING**

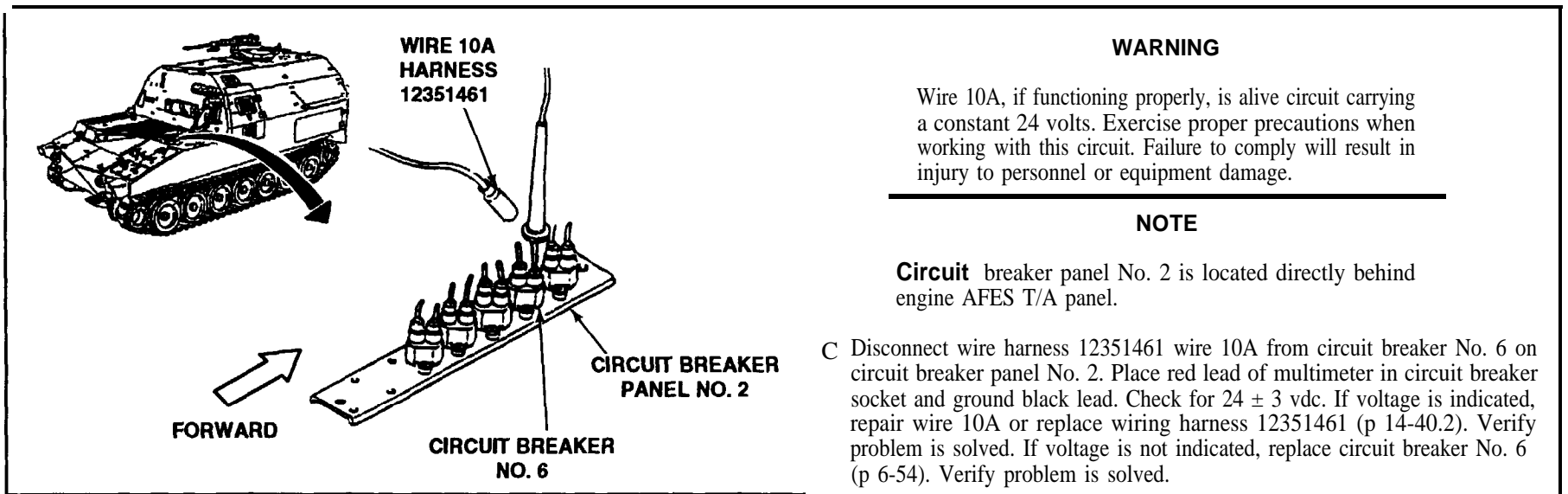
Turn crew AFES T/A panel Maintenance switch to vertical position before disconnecting any electrical wiring harnesses. Failure to comply may result in discharge of extinguisher cylinders and injury to personnel.

- A. Disconnect wiring harness 12351498 from crew AFES T/A panel. Place red lead of multimeter in socket B of harness 12351498 and ground black lead of multimeter. Check for  $24 \pm 3$  vdc. Repeat procedure for socket A. If voltage is indicated in both sockets, go to step C. If voltage is not indicated in both sockets, go to step B.





B Reconnect wire harness 12351498 to crew AFES T/A panel. Disconnect **wire** harness from bracket-mounted socket 12351461 in driver's compartment. Place red lead of multimeter in pin socket A of bracket-mounted socket 12351461 and ground black lead of multimeter. Check for  $24 \pm 3$  vdc. Place red lead of multimeter in pin socket B of bracket-mounted socket 12351461 and ground black lead of multimeter. Check for  $24 \pm 3$  vdc. If voltage is indicated in both circuits, replace wiring harness 12351498 (p 14-40.2). Verify problem is solved. If voltage is not indicated in both circuits, connect wiring harness 12351498 to bracket mounted socket 12351461 and go to step C.



**WARNING**

Wire 10A, if functioning properly, is alive circuit carrying a constant 24 volts. Exercise proper precautions when working with this circuit. Failure to comply will result in injury to personnel or equipment damage.

**NOTE**

**Circuit** breaker panel No. 2 is located directly behind engine AFES T/A panel.

C Disconnect wire harness 12351461 wire 10A from circuit breaker No. 6 on circuit breaker panel No. 2. Place red lead of multimeter in circuit breaker socket and ground black lead. Check for  $24 \pm 3$  vdc. If voltage is indicated, repair wire 10A or replace wiring harness 12351461 (p 14-40.2). Verify problem is solved. If voltage is not indicated, replace circuit breaker No. 6 (p 6-54). Verify problem is solved.

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR VEHICLES 345 AND ABOVE)**

**POWER ON LAMP DOES NOT LIGHT WHEN MASTER SWITCH IS  
TURNED ON. All other electrical systems operate.**

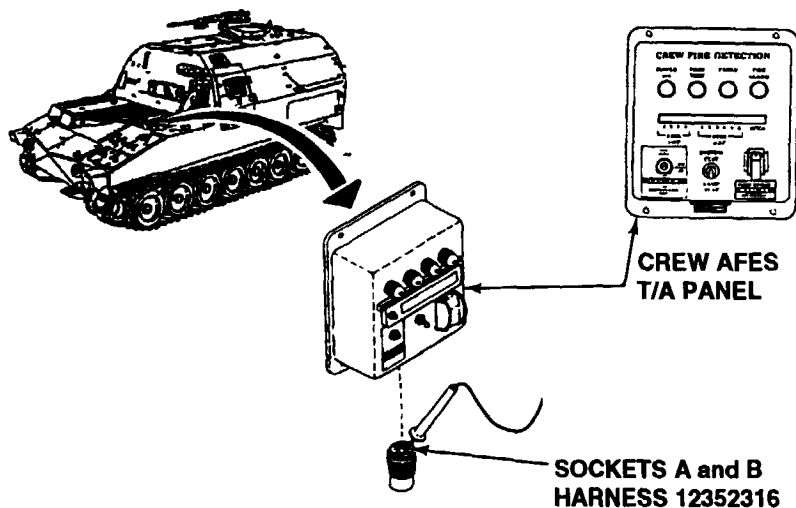
**START HERE**

Before troubleshooting AFES, check the following

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Make sure crew AFES T/A panel Maintenance switch is turned to maintenance position (p 14-14.5).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 maybe performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 maybe performed.



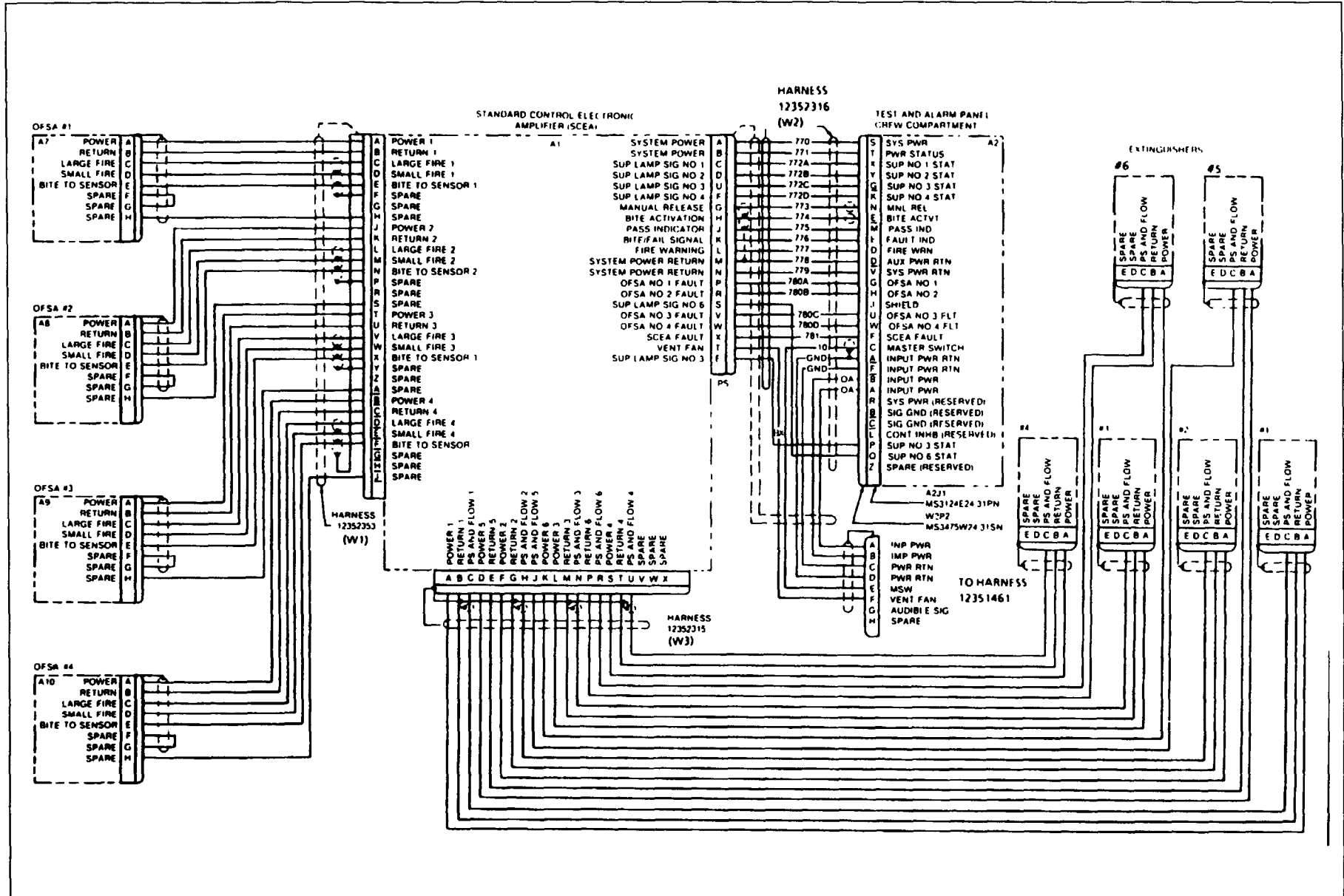
**WARNING**

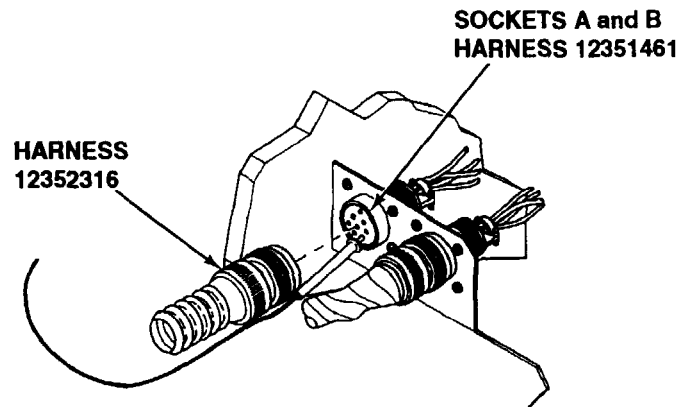
Turn crew AFES T/A panel Maintenance switch to vertical position before disconnecting any electrical wiring harnesses. Failure to comply may result in discharge of extinguisher cylinders and injury to personnel.

- A. Disconnect wiring harness 12352316 from crew AFES T/A panel. Place red lead of multimeter in socket B of harness 12352316 and ground black lead of multimeter. Check for  $24 \pm 3$  vdc. Repeat procedure for socket A. If voltage is indicated in both sockets, connect wiring harness 12352316 to crew AFES T/A panel and go to step C. If voltage is not indicated in both sockets, go to step B.

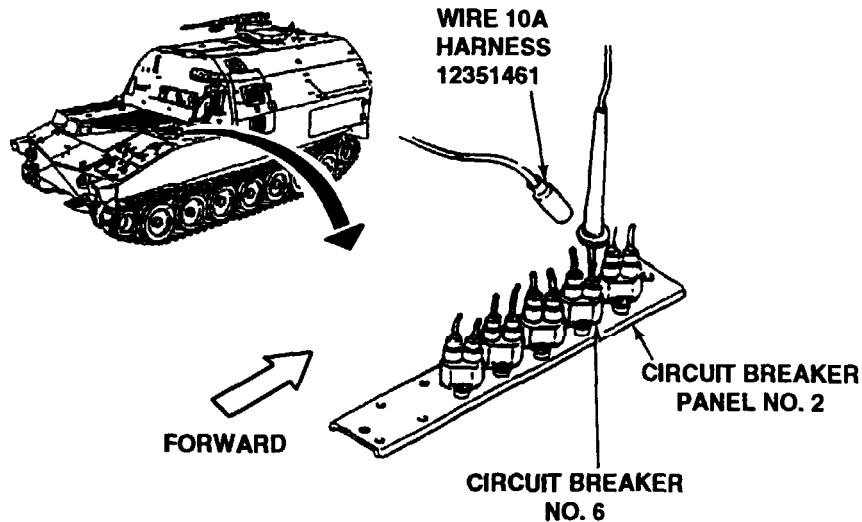


CREW AFES S/N 345 AND ABOVE





B. Disconnect wire harness from bracket-mounted socket 12351461 in driver's compartment. Place red lead of multimeter in pin socket A of bracket-mounted socket 12351461 and ground black lead of multimeter. Check for  $24 \pm 3$  vdc. Place red lead of multimeter in pin socket B of bracket-mounted socket 12351461 and ground black lead of multimeter. Check for  $24 \pm 3$  vdc. If voltage is indicated in both circuits, replace wiring harness 12352316 (p 1440.2). Verify problem is solved. If voltage is not indicated in both circuits, connect wiring harness 12352316 to bracket-mounted socket 12351461 and go to step C.



#### WARNING

Wire 10A if functioning properly, is a live circuit carrying a constant 24 volts. Exercise proper precautions when working with this circuit. Failure to comply will result in injury to personnel or equipment damage.

#### NOTE

Circuit breaker panel No. 2 is located directly behind engine AFES T/A panel.

C Disconnect wire harness 12351461, wire 10A from circuit breaker No. 6 on circuit breaker panel No. 2. Place red lead of multimeter in circuit breaker socket and ground black lead. Check for  $24 \pm 3$  vdc. If voltage is indicated, repair wire 10A or replace wiring harness 12351461 (p 1440.2). Verify problem is solved. If voltage is not indicated, replace circuit breaker No. 6 (p 6-54). Verify problem is solved.

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**FAULT LAMP REMAINS LIT. FIRE DET. LED'S LIT.**

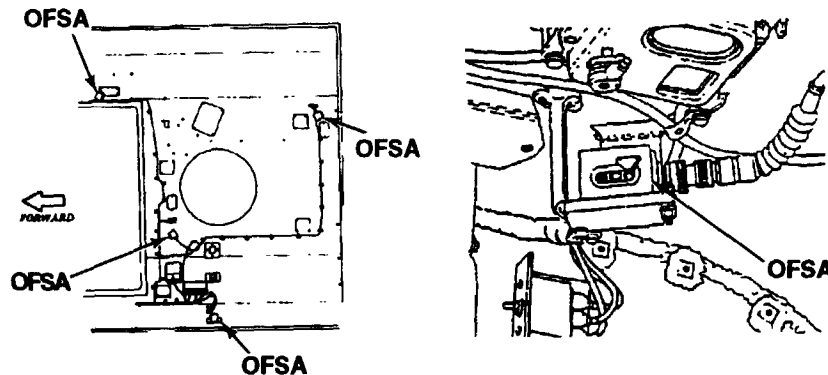
**START HERE**

Before troubleshooting AFES, check the following:

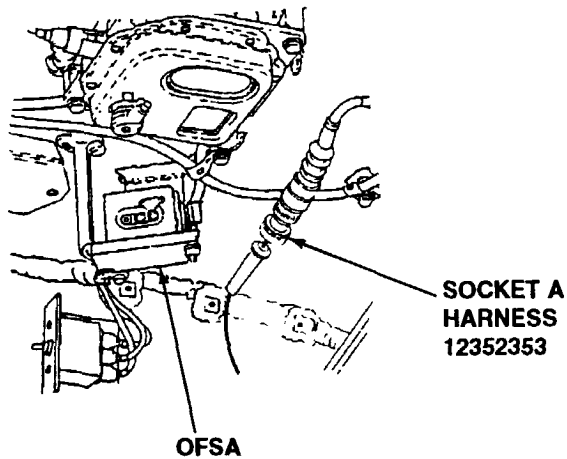
- Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Make sure crew AFES T/A panel MAINTenance switch is turned to maintenance position (p 14-14.5).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 may be performed.

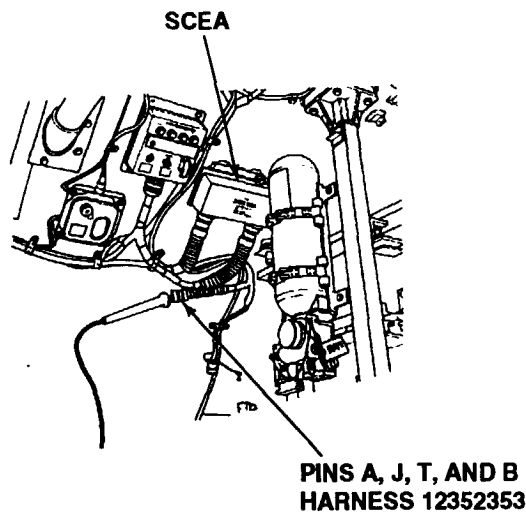


- Inspect all four wire harness connectors to OFSAs for loose connectors. Inspect connectors for moisture or contamination. If all connections are clean, dry, and secure, go to step B. If not, clean connectors with cleaning compound, then apply sealing compound to connectors and reinstall. Verify problem is solved.
- Inspect all four OFSA's for corrosion, dirt, or cracked lenses. Clean dirty lenses with lens paper, or replace OFSA (p 14-34) if broken. Verify problem is solved. If OFSA's are ok, go to step C.

**WARNING**

Turn crew AFES T/A panel Maintenance switch to vertical position before disconnecting any electrical wiring harnesses. Failure to comply may result in discharge of extinguisher cylinders and injury to personnel.

- c Disconnect harness 12352353 connectors from OFSAs. Place red lead of multimeter in socket A (wire 783A, 783B, 783C, or 783D) of the four connectors and ground black lead. With the aid of an assistant, turn MASTER switch ON (TM 9-2350-267-10), and turn crew AFES T/A panel Maintenance switch to horizontal position. Check for  $24 \pm 3$  vdc. Turn MASTER switch OFF (TM 9-2350-287-10), and turn crew AFES T/A panel Maintenance switch to vertical position. If voltage is indicated at the OFSA's, replace defective OFSA(s) (p 14-34). If voltage is not indicated, go to step D.



- D. Disconnect harness 12352353 connector from the standard control electronic amplifier (SCEA). Check for continuity between:

1. Socket A of OFSA connector W1P2 and pin A of SCEA connector (wire 783A).
2. Socket A of OFSA connector W1p2 and pin A of SCEA connector (wire 783A).
3. Socket A of OFSA connector W1P4 and pin T of SCEA connector (wire 783C).
4. Socket A of OFSA connector W1P5 and pin B of SCEA connector (wire 783 D).

If continuity is indicated on all four wires, replace standard control electronic amplifier (SCEA) (p 14-40). Verify problem is solved. If continuity is not indicated, replace wire harness 12352353 (p 14-40.2). Verify problem is solved.

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**CREW BOTTLES DISCHARGE WITHOUT BEING ACTIVATED.**

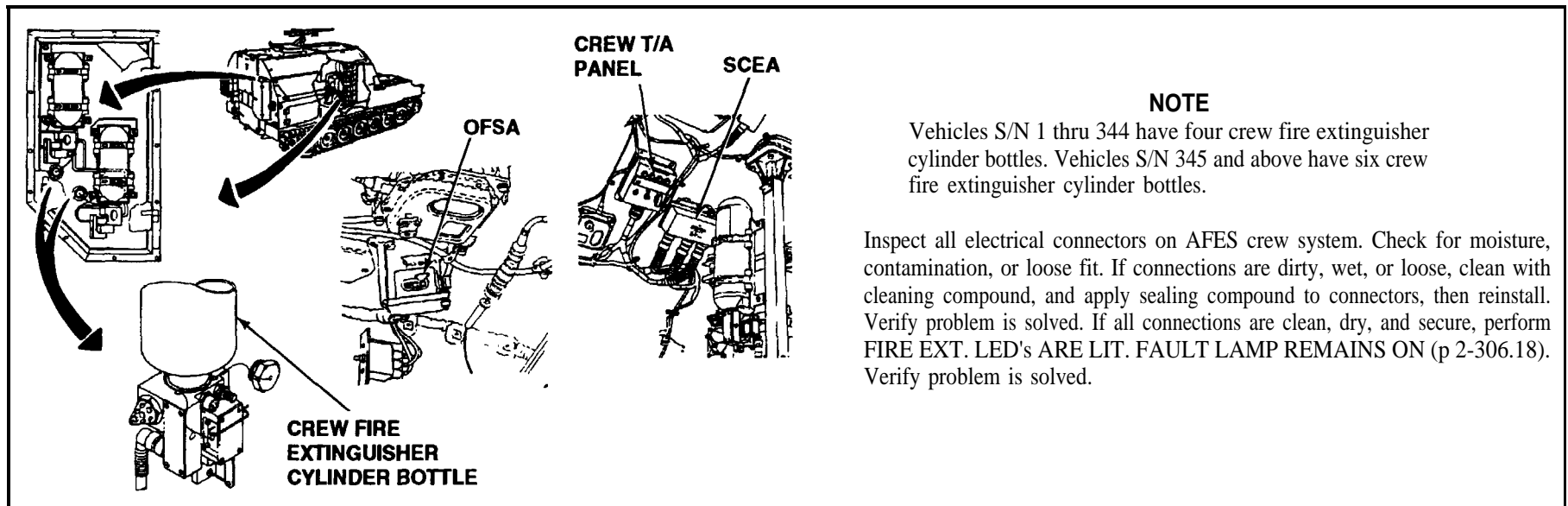


Before troubleshooting AFES, check the following

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left projectile rack assembly moved to rear of vehicle (TM9-2350-267-10).
- 2 Make sure crew AFES T/A panel Maintenance switch is turned to maintenance position (p 14-14.5).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be per-
- Instead of using multimeter for continuity check STE/ICE troubleshooting, TEST 91 maybe performed.



**NOTE**

Vehicles S/N 1 thru 344 have four crew fire extinguisher cylinder bottles. Vehicles S/N 345 and above have six crew fire extinguisher cylinder bottles.

Inspect all electrical connectors on AFES crew system. Check for moisture, contamination, or loose fit. If connections are dirty, wet, or loose, clean with cleaning compound, and apply sealing compound to connectors, then reinstall. Verify problem is solved. If all connections are clean, dry, and secure, perform FIRE EXT. LED'S ARE LIT. FAULT LAMP REMAINS ON (p 2-306.18). Verify problem is solved.

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**FIRE EXT. LED's ARE LIT. FAULT LAMP REMAINS ON.**

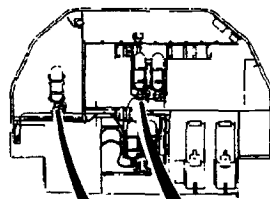
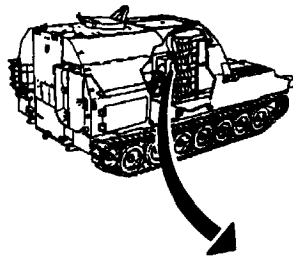
**START HERE**

Before troubleshooting AFES, check the following

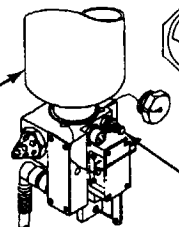
- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left and right projectile rack assemblies moved to rear of vehicle (TM 9-2350-267-10).
- 2 Make sure crew AFES T/A panel Maintenance switch is turned to maintenance position (p 14-14.5).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check STE/ICE troubleshooting, TEST 91 may be performed.



**CREW FIRE  
EXTINGUISHER  
CYLINDER  
BOTTLES**



**PRESSURE  
GAGE**

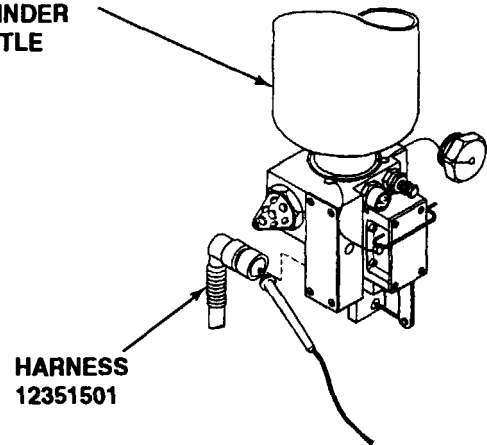
**FLOW  
INDICATOR**

**NOTE**

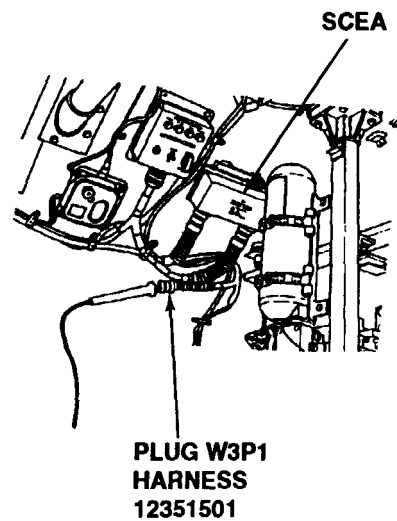
Vehicles S/N 1 thru 344 have four crew from extinguisher cylinder bottles. Vehicles S/N 345 and above have six crew from extinguisher cylinder bottles.

- A. Inspect all electrical connectors for moisture, contamination, or loose fit. If connections are dirty, wet, or loose, clean connectors with cleaning compound, apply sealing compound, then reinstall. Verify problem is solved. If connections are ok, go to step B.
- B Check for protruding flow indicator on valve actuators of crew fire extinguisher cylinder bottles as indicated by LED's on crew T/A panel. Check pressure gage of crew fire extinguisher cylinder bottles. Make sure black needle is in green temperature wedge. If pressure gage needles are in correct position and flow indicators are not protruding, go to step C (S/N 1 thru 344) or step D (S/N 345 and above). If any needle indicates low pressure, replace crew fire extinguisher cylinder bottle (p 14-28.3). Verify problem is solved. If flow indicator is protruding, reset flow indicator by pushing it into the valve actuator. Verify problem is solved.

**CREW FIRE  
EXTINGUISHER  
CYLINDER  
BOTTLE**



**HARNESS  
12351501**



**SCEA**

**PLUG W3P1  
HARNESS  
12351501**

**WARNING**

Make sure crew AFES T/A panel MAINTenance switch is turned to vertical position before troubleshooting AFES system. Failure to comply will result in injury to personnel or damage to vehicle.

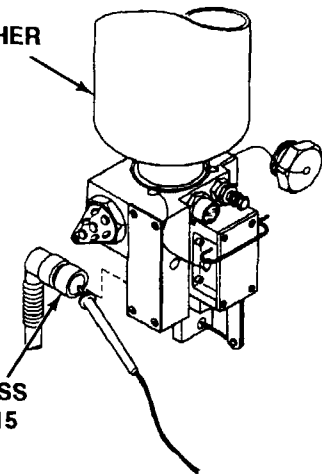
- C Disconnect wire harness 12351501 from SCEA connector J2, and also disconnect wiring harness 12351501 from actuator of defective fire extinguisher(s). Check wiring harness 12351501 circuits for continuity in the following order for applicable fire extinguisher bottle:

FIRE EXTINGUISHER NO. 2	
<u>W3P3</u>	<u>W3P1</u>
A	F
B	G
C	H
FIRE EXTINGUISHER NO. 4	
<u>W3P5</u>	<u>W3P1</u>
A	S
B	T
C	U
FIRE EXTINGUISHER NO. 3	
<u>W3P4</u>	<u>W3P1</u>
A	L
B	M
C	N
FIRE EXTINGUISHER NO. 1	
<u>W3P2</u>	<u>W3P1</u>
A	A
B	B
C	C

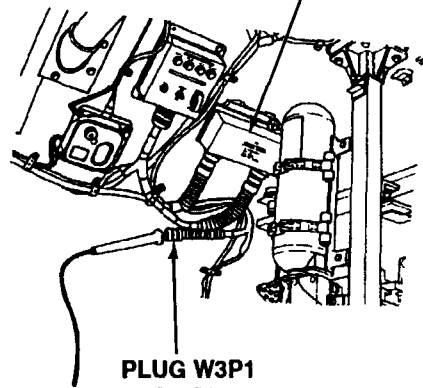
If continuity is indicated in all circuits, go to step E. If continuity is not indicated in all circuits, replace wiring harness 12351501 (p 14-40.2). Verify problem is solved.

CREW FIRE  
EXTINGUISHER  
CYLINDER  
BOTTLE

HARNESS  
12352315



SCEA



PLUG W3P1  
HARNESS  
12352315

**WARNING**

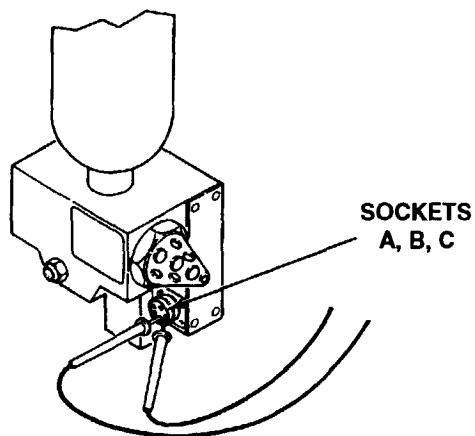
Make sure crew AFES T/A panel MAINTenance switch is turned to vertical position before troubleshooting AFES system. Failure to comply will result in injury to personnel or damage to vehicle.

- D Disconnect wire harness 12352315 from SCEA connector J2, and also disconnect wire harness 12352315 from actuator of defective fire extinguisher(s). Check wiring harness 12352315 circuits for continuity in the following order for applicable fire extinguisher bottle:

FIRE EXTINGUISHER NO. 2	
<u>W3P3</u>	<u>W3P1</u>
A B C	F G H
FIRE EXTINGUISHER NO. 4	
<u>W3P3</u>	<u>W3P1</u>
A B C	S T U
FIRE EXTINGUISHER NO. 3	
<u>W3P3</u>	<u>W3P1</u>
A B C	D E J
FIRE EXTINGUISHER NO. 1	
<u>W3P3</u>	<u>W3P1</u>
A B C	A B C
FIRE EXTINGUISHER NO. 5	
<u>W3P6</u>	<u>W3P1</u>
A B C	L M N
FIRE EXTINGUISHER NO. 6	
<u>W3P7</u>	<u>W3P1</u>
A B C	K O P

If continuity is indicated in all circuits, go to step E. If continuity is not indicated in all circuits, replace wiring harness 12352315 (p 14-40.2). Verify problem is solved.





- E Place multimeter red probe in socket A and other probe in socket B of crew fire extinguisher actuator. Check for continuity. Place multimeter red probe in socket B and other probe in socket C of crew fire extinguisher actuator. Check for continuity. If continuity is indicated in all circuits, replace SCEA (p 14-40). Verify problem is solved. If continuity is not indicated in all circuits, replace crew fire extinguisher cylinder bottle (p 14-28.3). Verify problem is solved.

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**CREW BOTTLES NOT FULLY DISCHARGING/  
NOT EXTINGUISHING  
FIRES.**

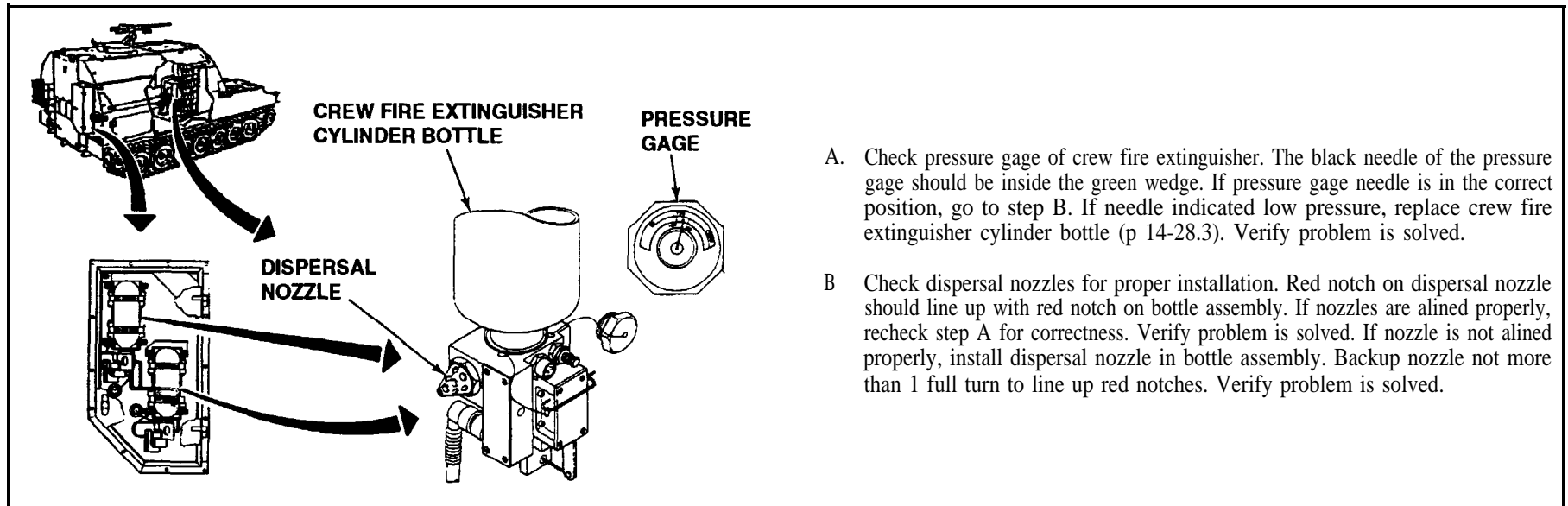
**START HERE**

Before troubleshooting AFES, check the following:

- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left projectile rack assembly moved to rear of vehicle (TM 9-2350-267-10).
- 3 Make sure crew AFES T/A panel Maintenance switch is turned to maintenance position (p 14-14.5).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 may be performed.



**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**BOTTLES NOT DISCHARGING WHEN PULLING MANUAL CABLES.**

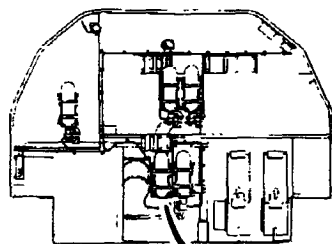


Before troubleshooting AFES, check the following:

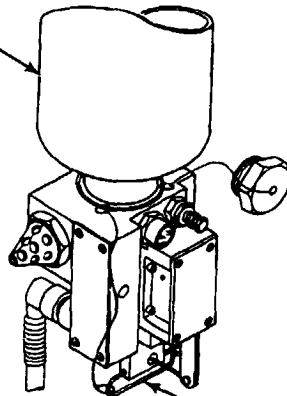
- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Left projectile rack assembly moved to rear of vehicle (TM 9-2350-267-10).
- 3 Make sure crew AFES T/A panel Maintenance switch is turned to maintenance position (p 14-14.5).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE ST-TEST 89 may be performed.
- Instead of using multimeter for continuity check STE/ICE troubleshooting, TEST 91 may be performed.



**CREW FIRE  
EXTINGUISHER  
CYLINDER  
BOTTLE**



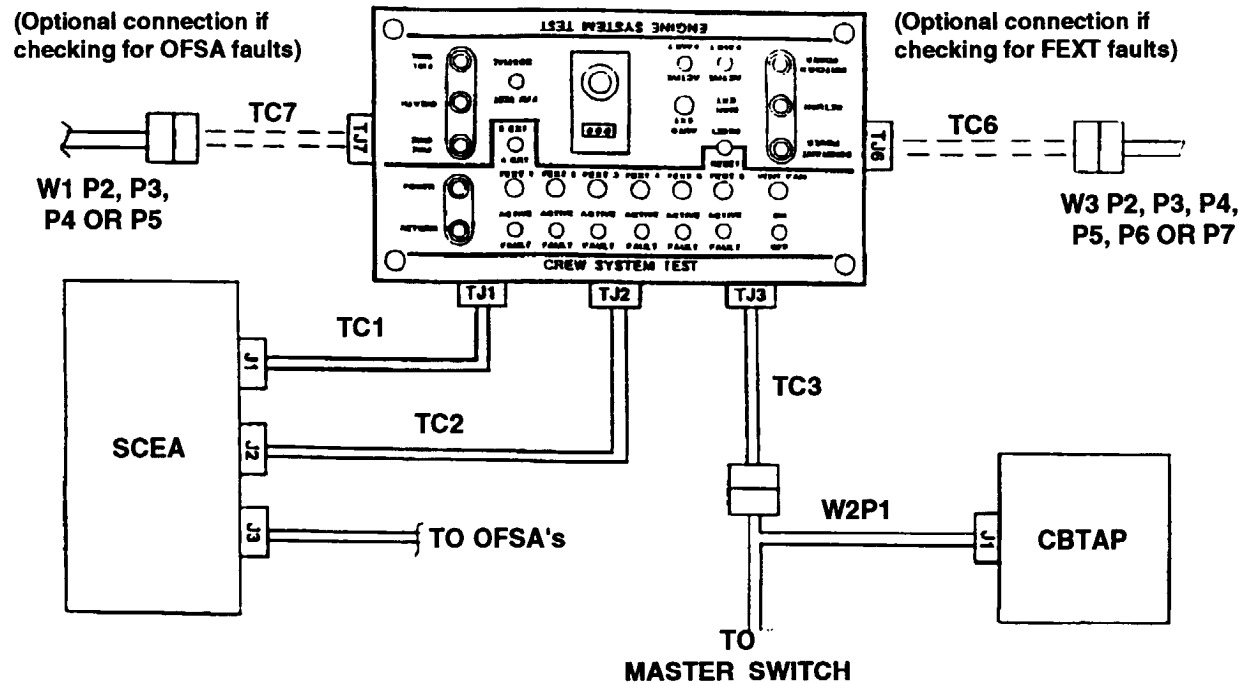
**LOCKING  
PIN**

- A. Ensure locking pins on crew fire extinguisher cylinder bottles 3 and 4 and engine fire extinguisher cylinder bottle 2 are in stowed position. If pins are in correct position, check adjustment of cables (p 14-55). Verify problem is solved. If pins are not in correct position, install pins correctly. Verify problem is solved.

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM  
FIRE DETECTION TEST AND ALARM  
PANEL INDICATORS  
(EFFECTIVE FOR ALL VEHICLES)**

**CREW AFES MEGOMETER TROUBLESHOOTING PROCEDURES.**

The FAASV Automatic Fire Extinguishing System (AFES) Troubleshooting Aid is a test box and set of seven connecting cables, developed by HTL, to assist the FAASV user in troubleshooting the FAASV AFES. Using the troubleshooting aid allows testing of both the crew and engine subsystems individually without the fear of accidental discharge of fire extinguishers. This is accomplished by disconnecting the FAASV'S installed fire extinguishers from the AFES and substituting "dummy" simulation fire extinguishers contained within the test box. Use of the troubleshooting aid speeds fault finding and helps achieve a more accurate fault diagnosis by allowing maintenance personnel to take measurement at the test box. The troubleshooting aid allows the user to isolate an AFES problem without moving the projectile racks, saving considerable time and effort. The troubleshooting aid should be used in conjunction with TM 9-2350-267-20 as the technical manual is used for reference in the following troubleshooting procedure.



**CREW COMPARTMENT TEST SETUP**

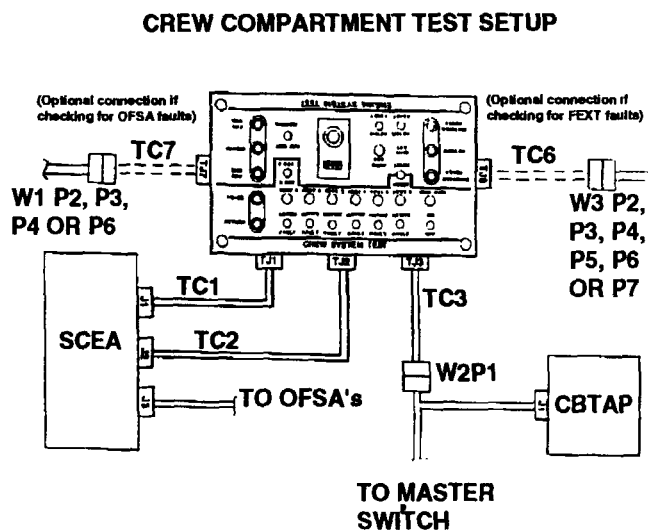
**START HERE**

Before troubleshooting AFES, check the following:

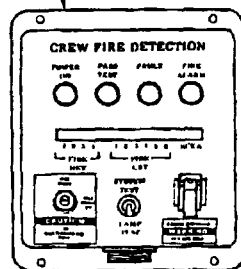
- 1 Make sure MASTER switch is set to OFF (TM 9-2350-267-10).
- 2 Make sure crew AFES T/A panel MAINTenance switch is turned to maintenance position (p 14-14.5).
- 3 Crew AFES fire extinguisher bottle harnesses are disconnected (p 14-40.2).

**NOTE**

- Instead of using multimeter for voltage check, STE/ICE troubleshooting, INDIVIDUAL BATTERY VOLTAGE TEST-TEST 89 may be performed.
- Instead of using multimeter for continuity check, STE/ICE troubleshooting, TEST 91 may be performed.



**CREW AFES T/A PANEL**



- A Make sure the green POWER ON lamp on the crew T/A panel is off, indicating that power has been removed from the AFES system. Connect the test box to the SCEA and W2 wiring harness using test cables TC1, TC2, and TC3 as shown. Set the test box switches as follows:

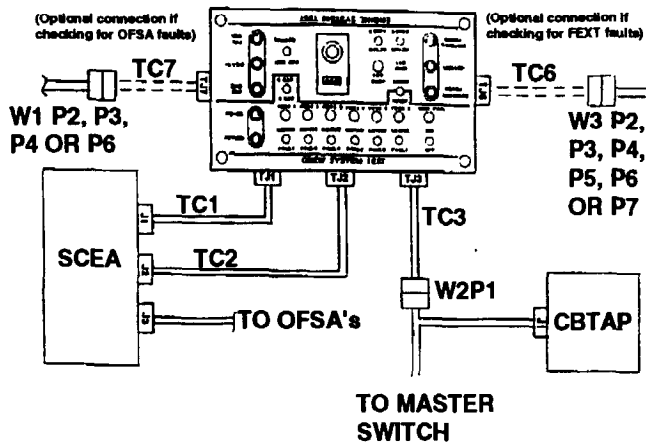
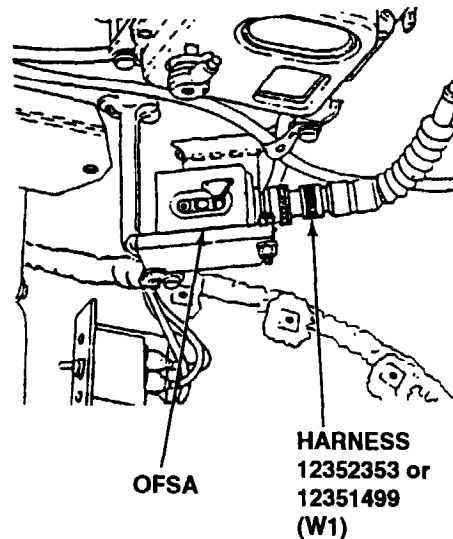
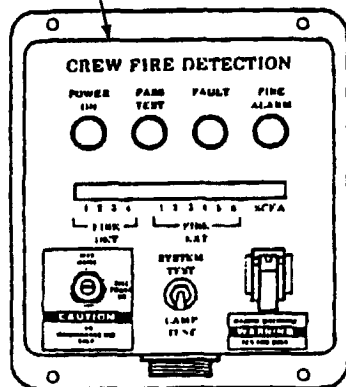
**NOTE**

The W3P1 connector is disconnected during these tests.

1. All fire extinguishers (FEXT 1-6) to ACTIVE.
2. VENT FAN to ON.
3. CREW switch to 4 EXT or 6 EXT, depending on whether the vehicle has a four extinguisher system or a six-extinguisher system.

- B Turn MASTER switch ON (refer to TM 9-2350-287-10). Turn CREW AFES T/A panel MAINTenance switch to the horizontal position and check to see that the green POWER ON lamp is ON, indicating that the AFES is powered and fully operational. If any red LED's on the test box are illuminated, press the RESET switch on the test box and go to step C. If none of the LED's are illuminated, go to step C.

## CREW COMPARTMENT TEST SETUP

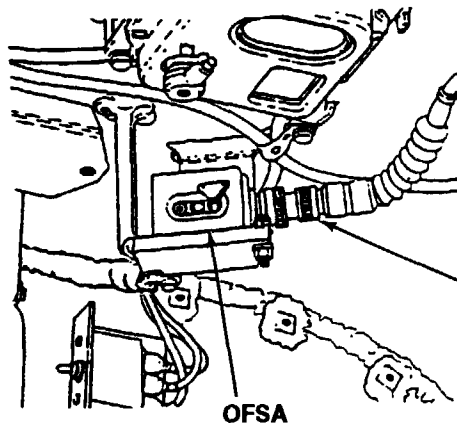
CREW AFES  
T/A PANEL

- C Use a multimeter and check for voltage at the CREW SYSTEM POWER on the test box in the CONSTANT and SWITCHED power jacks. If multimeter indicates between 22 and 28 vdc for both check, go to step D. If voltage reading is not between 22 and 28 vdc, perform crew AFES troubleshooting procedure per applicable fault LED. Verify problem solved.
- D Run a system test by pressing the crew AFES T/A panel toggle switch to SYSTEM TEST and release. If yellow FAULT lamp illuminates, observe the red LED's for fault isolation and go to step E. If the FAULT lamp does not illuminate, go to step H.

## NOTE

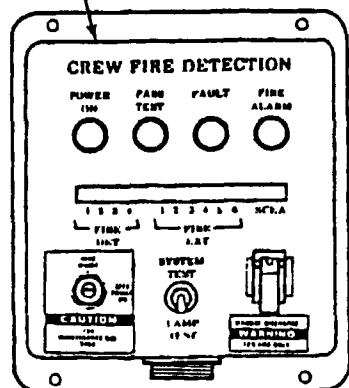
This connection simulates a good OFSA for the possible faulty one.

- E Locate the OFSA indicated as faulty by the CREW AFES T/A panel LED and disconnect harness 12352353 or 12351499 W1 from it. Connect the harness 12352353 or 12351499 W1 OFSA connector to connector TJ7 on the test box using test cable TJ7. Press and release SYSTEM TEST. Observe the results on the CREW AFES T/A panel. If fault lamp remains illuminated on crew AFES T/A panel, replace wiring harness 12352353 or 12351499 (p 14-52.6). Verify problem is solved. If fault lamp does not remain illuminated, go to step F.

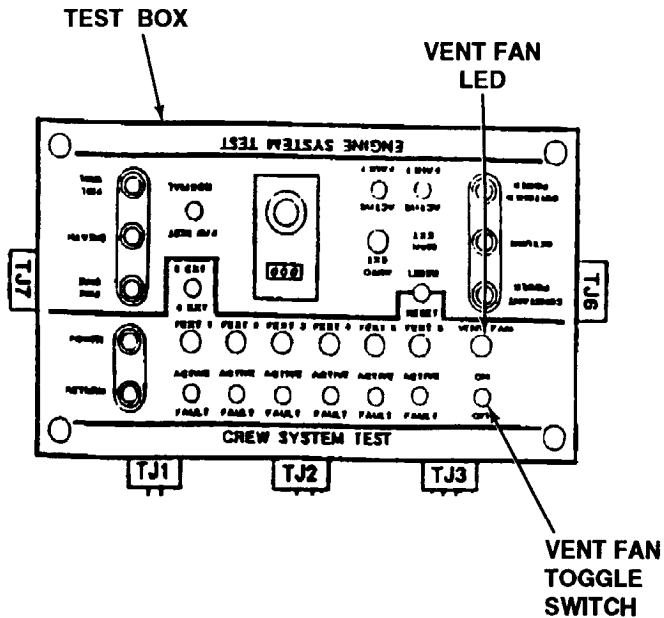
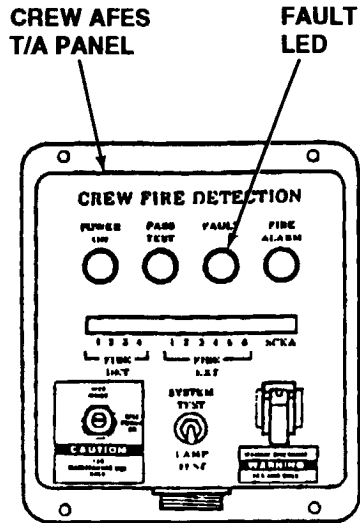


- F Test the performance of each OFSA by holding a cigarette lighter up to the "eyes" of the OFSA and lighting the flame. Observe the results on the CREW AFES T/A panel. If the system discharges the simulated fire extinguishers, go to step G. If the simulated fire extinguishers do not discharge, replace defective OFSA (p 14-34). Press RESET switch on test box to rest OFSA. Verify problem is solved.

CREW AFES  
T/A PANEL



- G Test each fire extinguisher fault recognition circuit by placing the applicable test box toggle switch in the FAULT position. Observe the corresponding fault LED on the CREW AFES T/A panel. It should illuminate immediately. Turn fault switch on test panel back to ACTIVE position. Observe the fault LED on the crew AFES T/A panel if it should go out. If crew AFES T/A panel LED's operate as indicated above, to to step H. If LED's do not operate as indicated, perform SCEA or CREW AFES T/A panel troubleshooting.

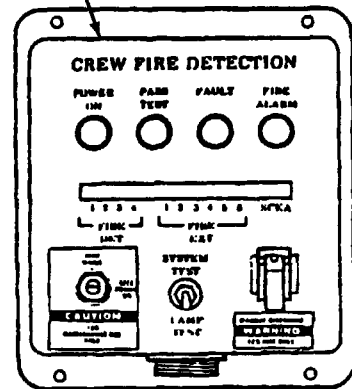


H Test fire extinguisher activation circuitry by momentarily activating CREW AFES T/A panel MANUAL DISCHARGE switch located under red switch guard. Corresponding LEDs on CREW AFES T/A panel and on test box should illuminate to indicate the fire extinguishers which were activated, and personnel ventilation fan should automatically turn on in exhaust mode 8 to 10 seconds after fire extinguisher activation. If personnel ventilation fan turns on, go to step J. If personnel fan does not turn on go to step I.

I Set VENT FAN toggle switch on the test box to OFF. Reset fire extinguisher simulators on test box by pressing RESET switch on the test box. Repeat step H. Observe VENT FAN LED on the test box. If VENT FAN LED on test box illuminates for 5 seconds after the 8-10 second fire extinguisher activation, perform personnel ventilation blower system troubleshooting (p 14-63). Return VENT FAN switch to ON. Verify problem is solved. If VENT FAN LED does not illuminate, replace SCEA (p 14-40). Return VENT FAN LED to ON. Verify problem is solved.



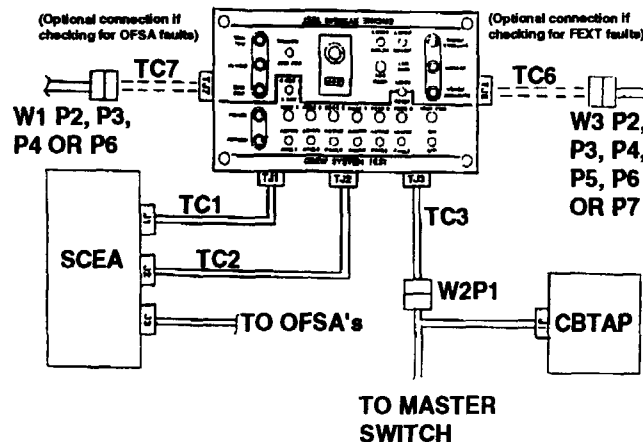
**CREW AFES  
T/A PANEL**



CONTINUED FROM STEP H

- J Turn the CREW AFES T/A panel MAINTenance switch to the vertical position and check the green POWER ON lamp to make sure the AFES is not powered. Disconnect SCEA from the test box and return the AFES to its normal configuration. Turn the CREW AFES T/A panel maintenance switch to the horizontal position and check the green POWER ON lamp to verify the AFES is powered. Check the CREW AFES T/A panel for FIRE EXT fault LED's. If a faulty fire extinguisher is indicated on crew AFES T/A panel, go to step K. If no faulty fire extinguisher is indicated, Verify problem is solved.

**CREW COMPARTMENT TEST SETUP**



- K Locate the fire extinguisher indicated as faulty by the CREW AFES T/A panel LED and disconnect it from the harness 12352315 W3. Using extension cable TC6, connect the fire extinguisher connector to the W3 wiring harness to connector TJ6 of the test box, which simulates a good fire extinguisher. Observe the status of the CREW AFES T/A panel fault LED. If fault LED goes out, replace faulty crew fire extinguisher cylinder bottle (p 14-28.3 or p 14-28.10). If fault LED remains on, replace harness 12352315 or 12351499 W3 (p 14-52). Verify problem is solved.

## REPAIR METHODS

- A Complete disassembly is not always necessary to make a repair. Exercise good judgement to keep disassembly and assembly to a minimum.
- B Repair or replace unserviceable parts and hardware. Always replace packings, gaskets, seals, lockwashers, locknuts, locking wire, rivets and cotter pins with new parts.
- C Remove burrs with a stone or file. Remove burrs on closely fitted mating surfaces by lapping the surfaces with abrasive-grade compound.

## TORQUE VALUES

Torque value given in these procedures apply to unlubricated threads. Follow torque values given throughout this manual. When no torque value is given, follow the Torque Value Guide (Appendix C) to prevent damaging parts.

## LUBRICATION

Apply a light coat of lubricating oil (item 34, Appx D) to parts during repair procedures to prevent rusting. Lubricate parts during repair and assembly as required by LO 9-2350-267-12.

## CLEANING

- A Wire brush metal parts to remove rust and corrosion.

### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100° F (38° C); for Type II it is 140° F (60° C). Do not use near open flame or excessive heat.

- B Clean metal parts with dry-cleaning solvent (item **20**, Appx D). Metal or fiber brushes may be used to apply cleaning solvent and to remove softened or dissolved material. Hand scraping with metal scrapers maybe used to remove soft coatings or deposits.
- c Soak very oily or greasy metal parts in a tank containing dry-cleaning solvent (item 20, Appx D). The soaking time in solvent varies with type and amount of material to be removed.
- D Apply white enamel (item 25, Appx D) to interior of hull.
- E Apply appropriate shade of CARC paint (items 67 and 68, Appx D) to exterior of vehicle.
- F Apply deck-covering compound (item 66, Appx D) to areas where personnel walk, such as front deck plates and crew compartment interiors.

## DECAL REPLACEMENT

### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100° F (38° C); for Type II it is 140° F (60° C). Do not use near open flame or excessive heat.

### NOTE

Note position of decal prior to removal to ensure proper installation.

A Remove damaged decal and clean surface with dry-cleaning solvent (item 20, Appx D). Discard decal.

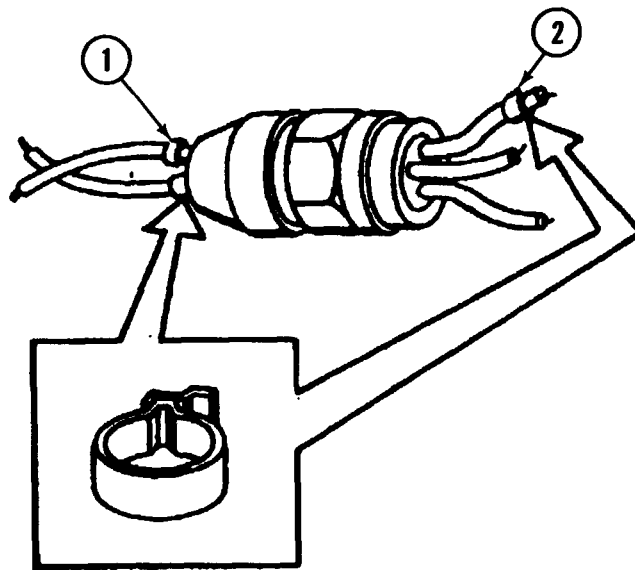
### NOTE

Surface area must be clean and dry before attaching new decal.

- B Remove protective backing from new decal and position on surface.
- C Using a dry rag, press decal into position. Start in the center and press outward to remove any air bubbles.



## WIRING HARNESS AND CABLE REPAIRS: DISASSEMBLY AND ASSEMBLY



### CAUTION

Use resin core solder only.

### CABLE, WIRE, AND RECEPTACLE AND PLUG IDENTIFIERS

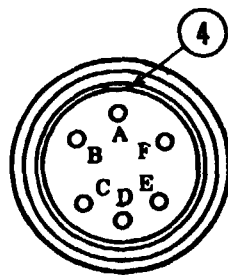
- A Cable identifiers (1) are aluminum tags attached to cables. These tags are embossed with the cable identification number. The identification number is the same number as shown on the system wiring diagram.
- B Wire identifiers (2) are embossed with the individual wire number. The wire number is the same as shown on the system wiring diagram.

### NOTE

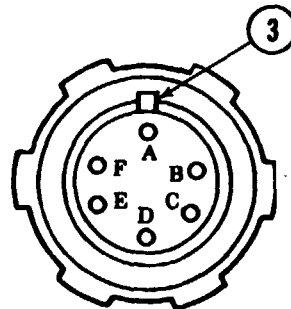
If cables or wires are replaced, remove tags from old wire and place on new wires.

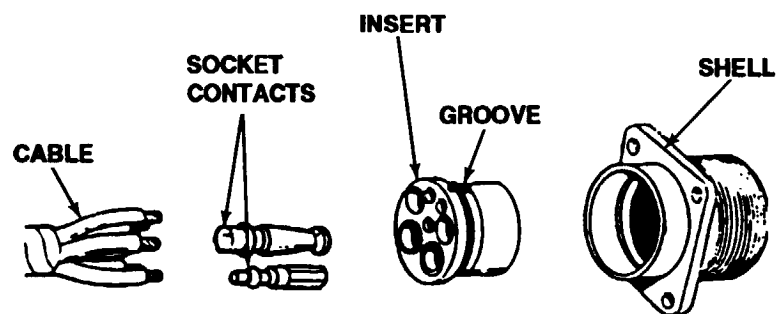
- C All pins (male connectors) and sockets (female connectors) in receptacles and plugs are identified by alphabetic code. Coded identification starts at the connector key (3) or groove (4). Identifying letters on male connectors run clockwise. Identifying letters on female connectors run counterclockwise.

FEMALE CONNECTOR



MALE CONNECTOR



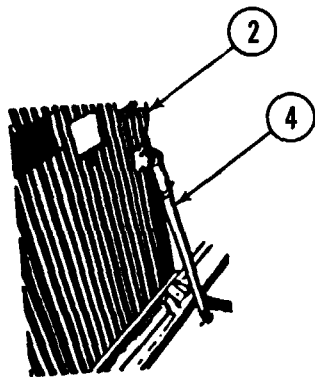
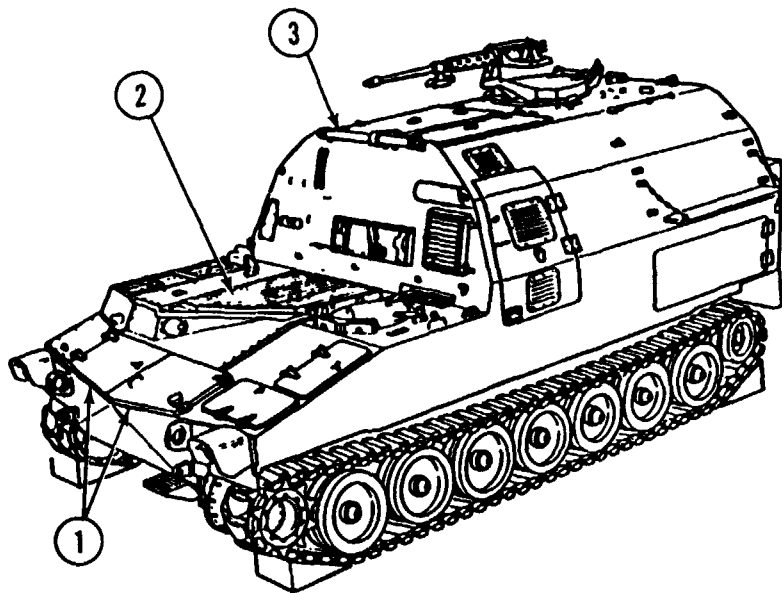
**WIRING HARNESS AND CABLE REPAIRS: DISASSEMBLY AND ASSEMBLY (CONTINUED)****TYPICAL FEMALE-TYPE PANEL MOUNTING RECEPTACLE****DISASSEMBLY**

- A Drive socket contact out through rear of insert with pin extractor.
- B Unsolder cable leads from solder wells on socket contacts.
- C Slide insert out through rear of shell.

**ASSEMBLY**

- A Strip cable insulation equal to depth of solder wells of socket contacts.
- B Insert cable leads into solder wells of socket contacts and solder using resin core solder only.
- C Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit.
- D Push socket contacts into insert from rear until seated.

## HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION



### INITIAL SETUP

#### Materials/Parts:

Antiseize Compound (Item 78, Appendix D)

### REMOVAL

#### WARNING

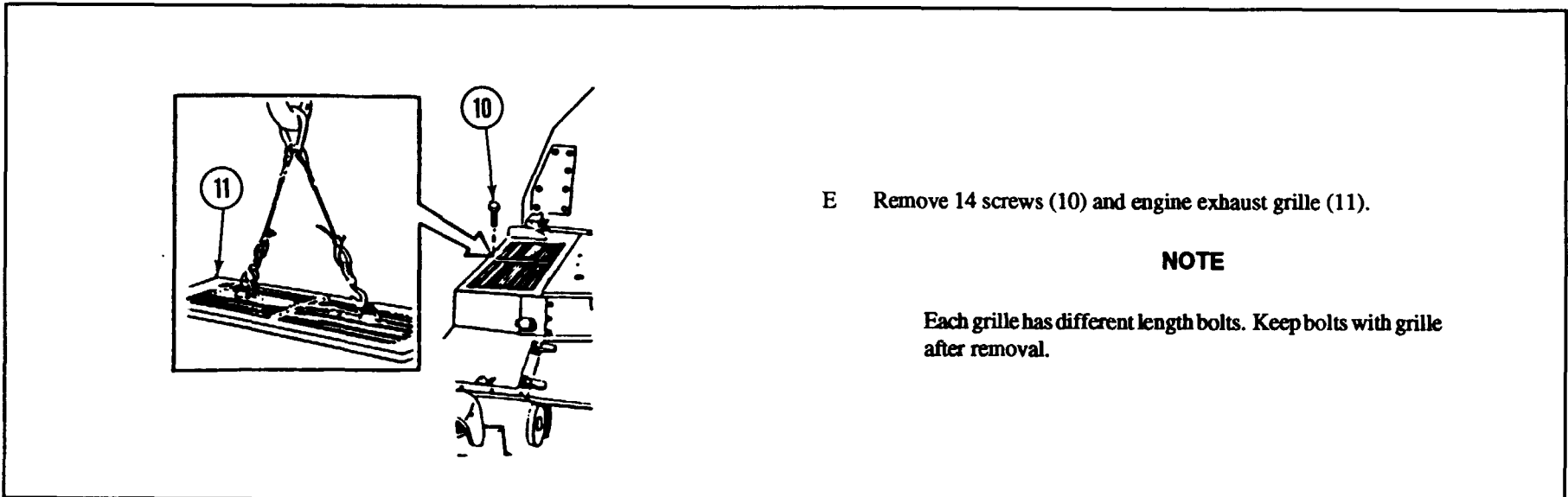
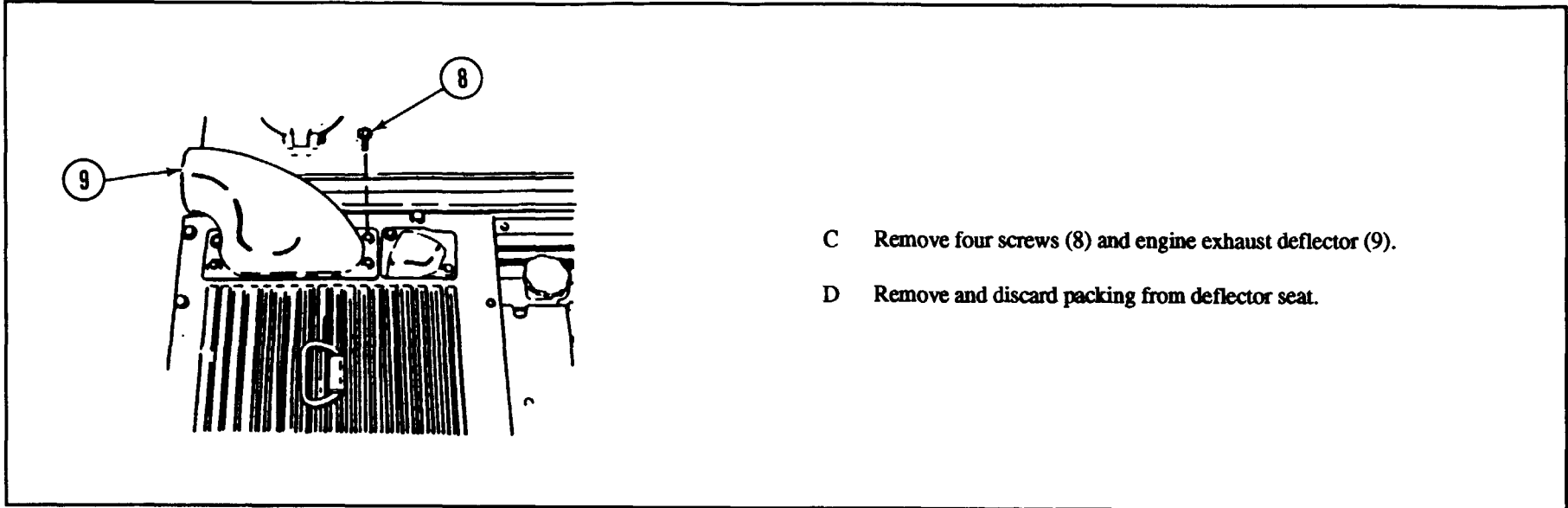
Access doors are heavy. Use suitable lifting equipment and handle them carefully.

- A Open transmission access doors (1).
- B Open air intake grille (2) and secure to top door torsion bar cover (3) with rope/strap.

#### NOTE

Secure grille when hold-open support arm (4) is not used.

## HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)





HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)

F Disconnect AFES thermal wire (p 14-27) before proceeding to step G.

G Remove six screws (14), six washers (15) and radiator fan access door (16).

**CAUTION**

Do not set radiator fan access door down on AFES thermal wire. Set door on blocks to avoid damaging wire.

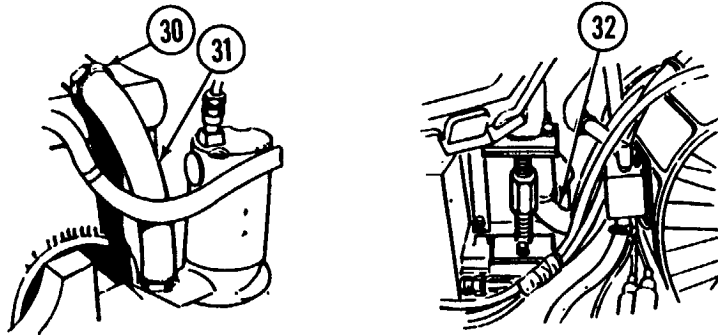
H Pull quick-disconnect pin (12) to release throttle rod (13). Position throttle rod out of the way to avoid catching rod on underside of deck bracket during deck removal.

I Remove two screws (17), two flat washers (18) and two hex nuts (19), and remove transmission door support (20).

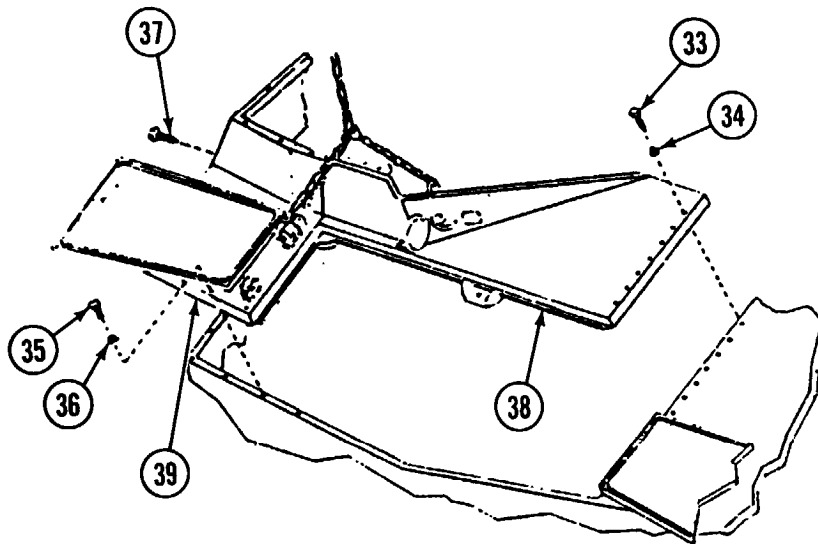
J Remove two screws (21), four flat washers (22), two nuts (23) and two lockwashers (24) from grille support (25).

K Loosen jam nut (26) and turn grille support adjustment nut (27) counterclockwise to shorten support assembly and relieve load on support (25).

L Remove two screws (28), two flat washers (29), and remove support assembly (25) from vehicle.

**HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)**

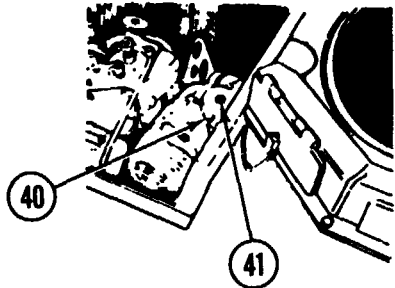
M Loosen hose clamp (30) and pull hose (31) away from connector tube (32).

**CAUTION**

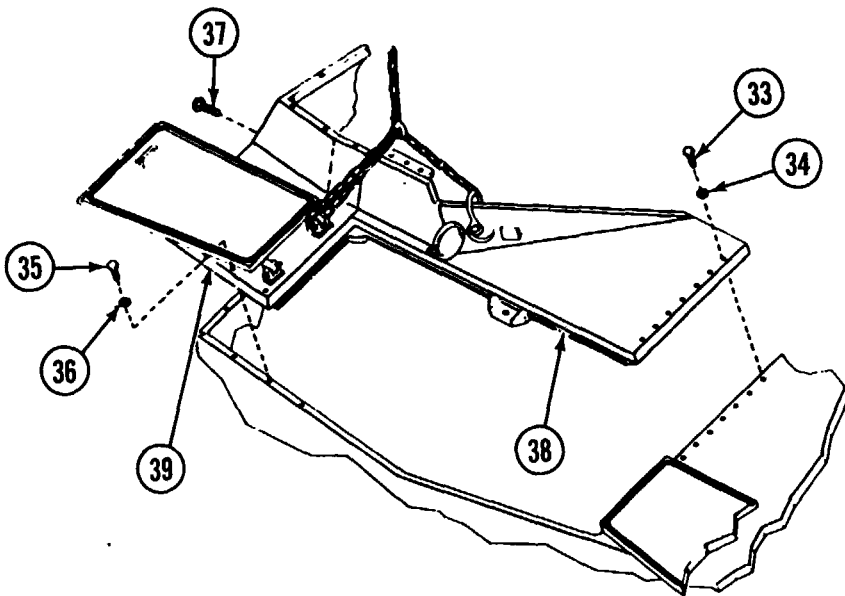
Be careful when setting slope plate and air intake grille on floor; avoid damaging attached thermal wire.

- N Remove seven screws (33) and seven flat washers (34).
- O Remove seven screws (35) and seven flat washers (36).
- P Remove six countersunk bolts (37).
- Q Install lifting device to front slope plate (38) and attached air intake grille (39) as shown. Carefully lift decks from vehicle.

## HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)



- R Remove two screws (40) and air intake grille handle bracket (41) from vehicle.



### INSTALLATION

- A Install air intake grille handle bracket (41) and secure with two screws (40).

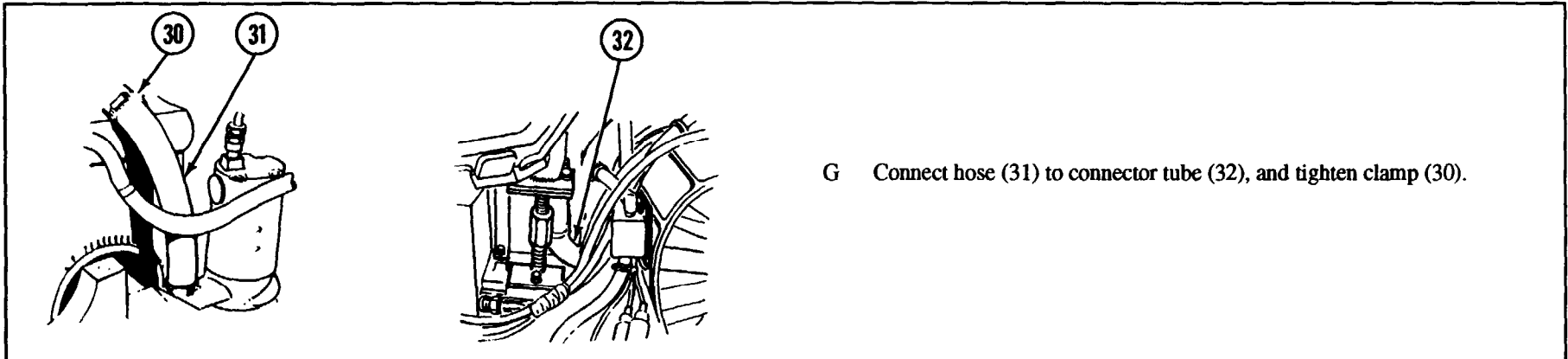
#### CAUTION

Be careful when setting slope plate and air intake grille into vehicle; avoid damaging attached thermal wire.

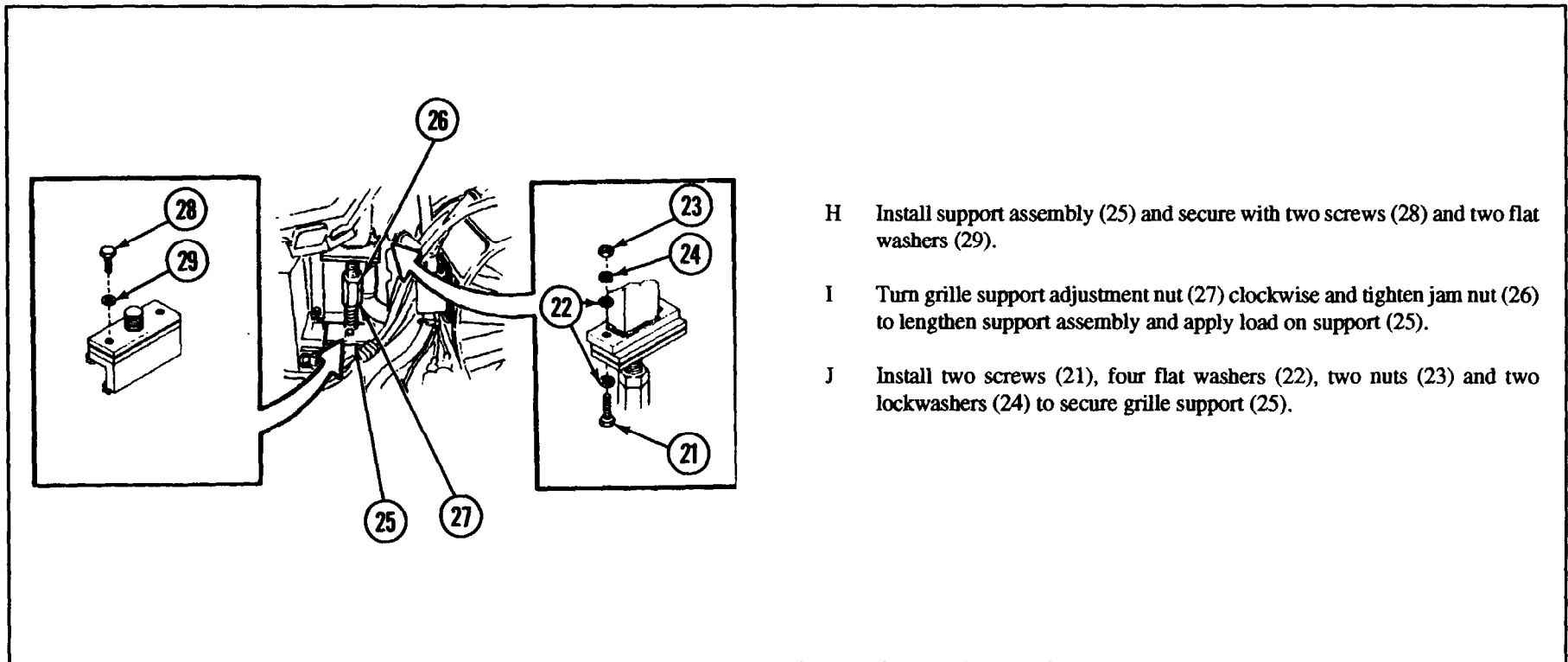
- B Install lifting device to front slope plate (38) and to attached air intake grille (39) as shown. Carefully lift decks into vehicle.
- C Apply antiseize compound (Item 78, Appendix D) to six countersunk bolts (37).
- D Install six countersunk bolts (37).
- E Install seven screws (35) and seven flat washers (36).
- F Install seven screws (33) and seven flat washers (34).



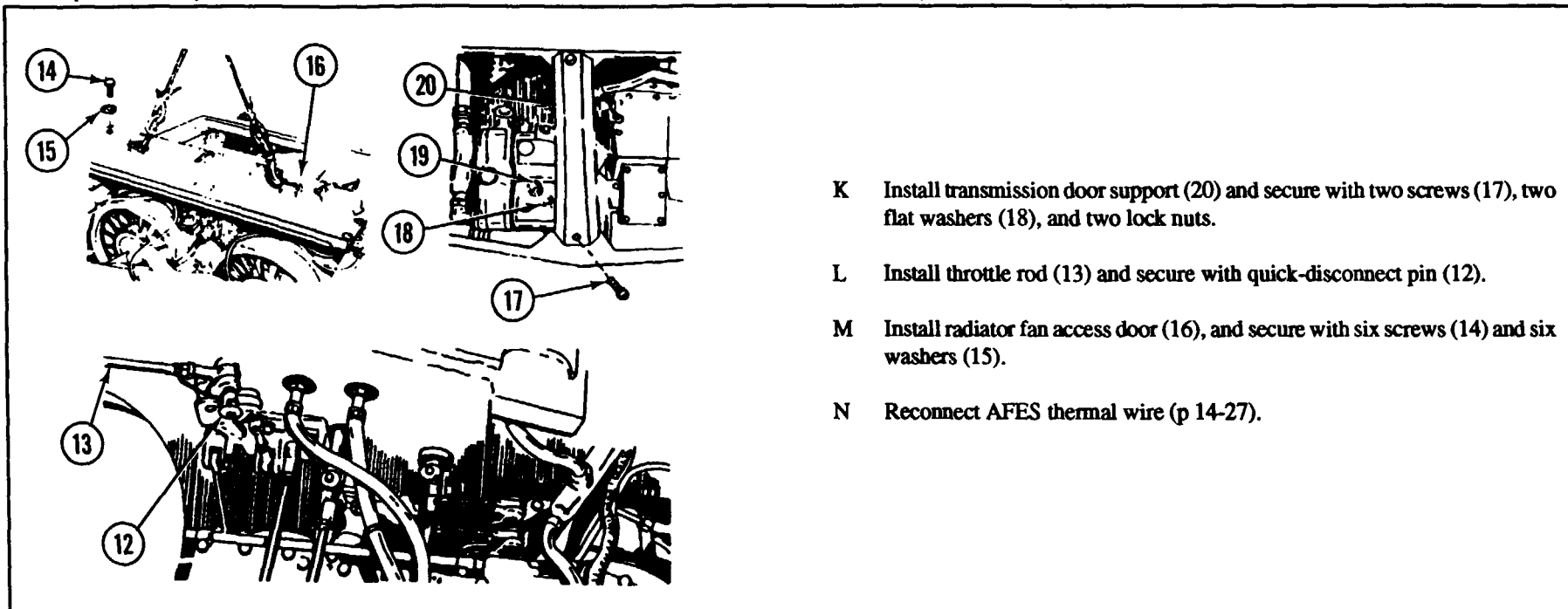
HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)



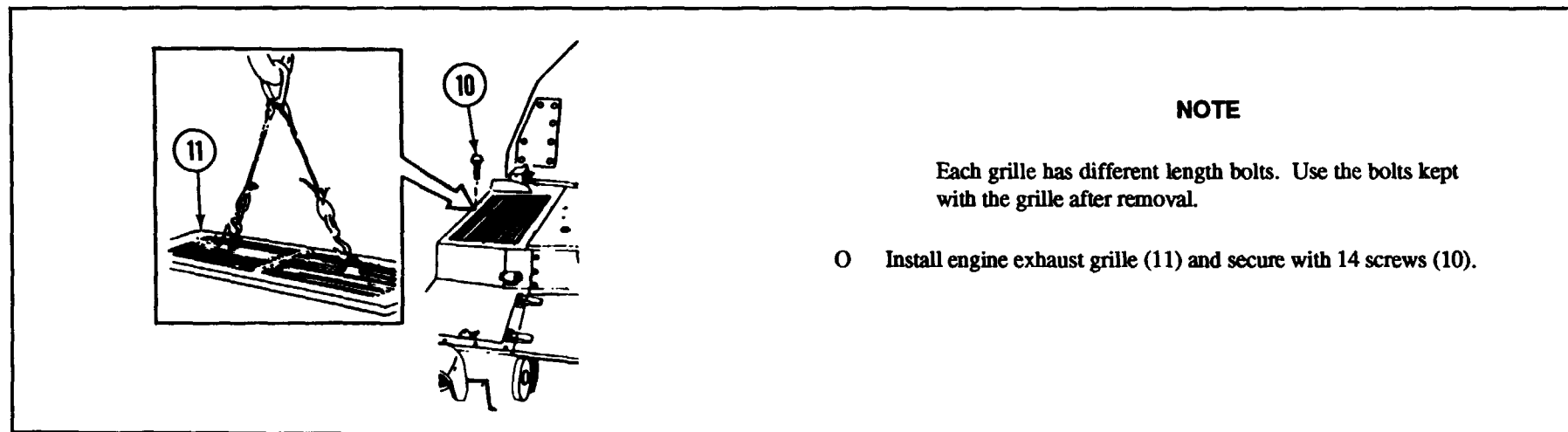
G Connect hose (31) to connector tube (32), and tighten clamp (30).



- H Install support assembly (25) and secure with two screws (28) and two flat washers (29).
- I Turn grille support adjustment nut (27) clockwise and tighten jam nut (26) to lengthen support assembly and apply load on support (25).
- J Install two screws (21), four flat washers (22), two nuts (23) and two lockwashers (24) to secure grille support (25).

**HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)**

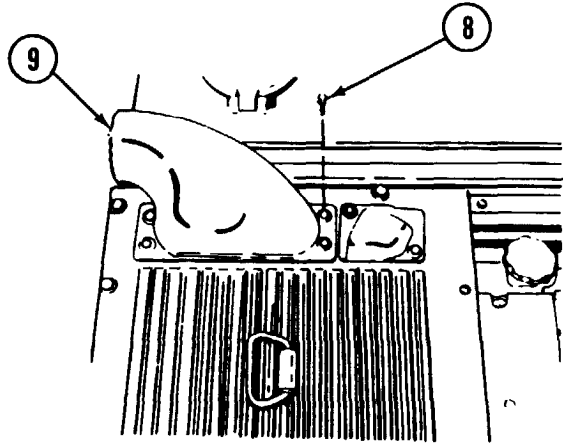
- K Install transmission door support (20) and secure with two screws (17), two flat washers (18), and two lock nuts.
- L Install throttle rod (13) and secure with quick-disconnect pin (12).
- M Install radiator fan access door (16), and secure with six screws (14) and six washers (15).
- N Reconnect AFES thermal wire (p 14-27).

**NOTE**

Each grille has different length bolts. Use the bolts kept with the grille after removal.

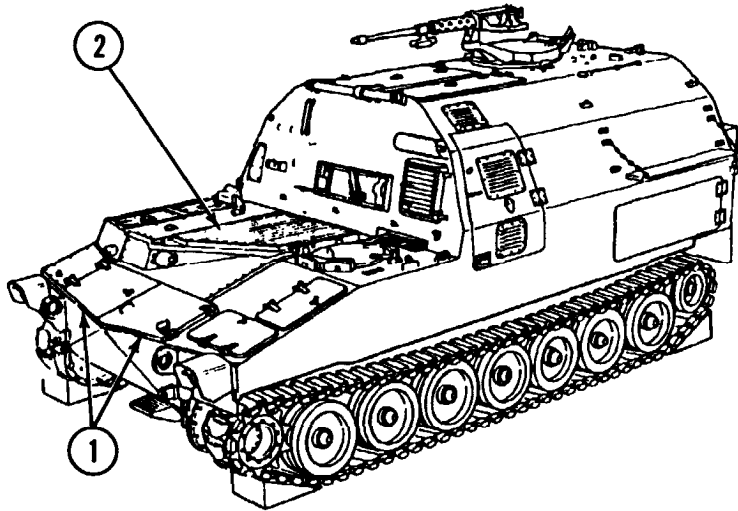
- O Install engine exhaust grille (11) and secure with 14 screws (10).

HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)



P Install new packing around deflector seat.

Q Install engine exhaust deflector (9) and secure with four screws (8).



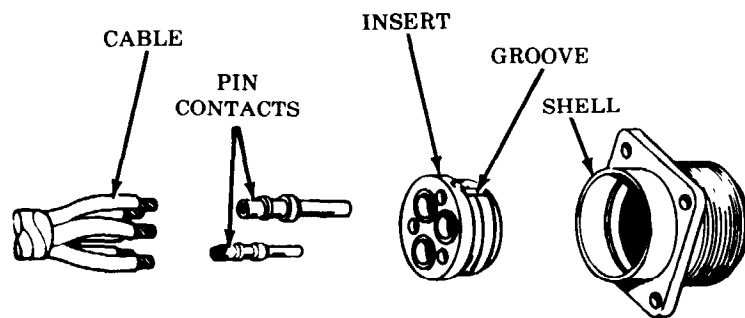
R Close air intake grille (2).

S Close transmission access doors (1).





## WIRING HARNESS AND CABLE REPAIRS: DISASSEMBLY AND ASSEMBLY (CONTINUED)



### TYPICAL MALE-TYPE PANEL MOUNTING RECEPTACLE

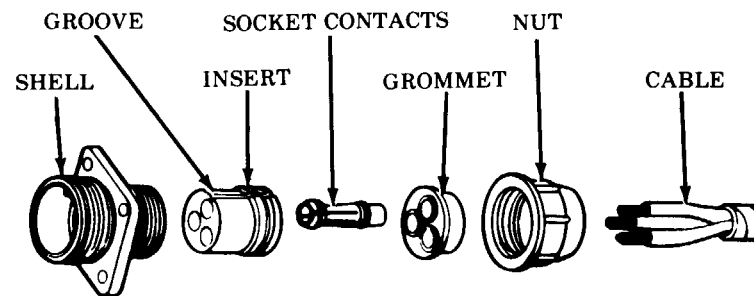
#### DISASSEMBLY

- A Drive pin contacts out through rear of insert with pin extractor.
- B Unsolder cable leads from solder wells on pin contacts.
- C Slide insert out through rear of shell.

#### ASSEMBLY

- A Strip cable insulation equal to depth of solder wells of pin contacts.
- B Insert cable leads into solder wells of pin contacts and solder using resin core solder only.
- C Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit.
- D Push pin contacts into insert from rear until seated.

## WIRING HARNESS AND CABLE REPAIRS: DISASSEMBLY AND ASSEMBLY (CONTINUED)

**TYPICAL FEMALE-TYPE PANEL MOUNTING  
RECEPTACLE WITH RIDGED LOCKING NUT**

**DISASSEMBLY**

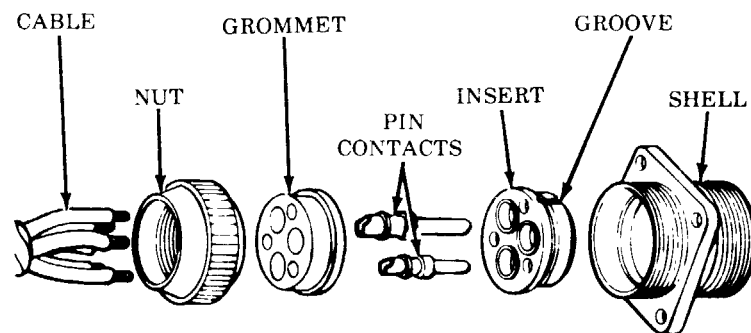
- |   |   |   |   |
|---|---|---|---|
| A | Unscrew nut from shell assembly and slide back on cable.              | B | Slide nut over cable.   |
| B | Slide grommet back on cable leads.                                    | C | Slide grommet over cable leads.   |
| C | Drive socket contacts out through front of insert with pin extractor. | D | Insert cable leads into solder wells of socket contacts and solder using resin core solder only.                          |
| D | Unsolder leads from socket contacts.                                  | E | Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit. |
| E | Push insert out through rear of shell.                                | F | Push socket contacts into insert from rear until seated.  |

**ASSEMBLY**

- |   |   |   |   |
|---|---|---|---|
| A | Strip cable insulation to depth of solder wells of socket contacts. | G | Push grommet down cable leads and over solder wells of socket contacts. |
|   |   | H | Screw nut onto shell assembly.  |

## WIRING HARNESS AND CABLE REPAIRS: DISASSEMBLY AND ASSEMBLY (CONTINUED)

### TYPICAL MALE-TYPE PANEL MOUNTING RECEPTACLE WITH RIDGED LOCKING NUT



#### DISASSEMBLY

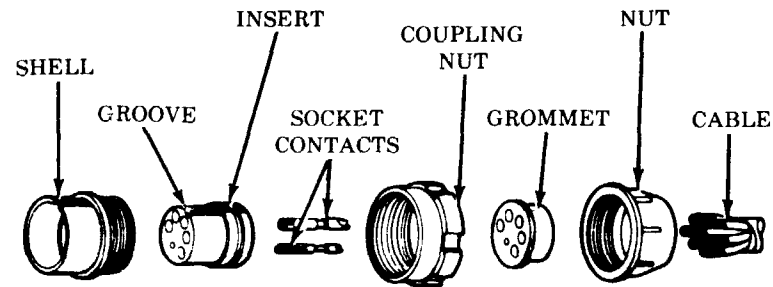
- A Unscrew nut from shell assembly and slide back on cable.
- B Push grommet back on cable leads.
- C Drive pin contacts out through rear of insert with pin extractor.
- D Push insert out through rear of shell.
- E Unsolder leads from pin contacts.

#### ASSEMBLY

- A Strip cable insulation equal to depth of solder wells of pin contacts.

- B Slide nut onto cable.
- C Slide grommet over cable leads.
- D Insert cable leads into solder wells of pin contacts and solder, using resin core solder only.
- E Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit.
- F Push pin contacts into insert from rear until seated.
- G Push grommet down cable leads and over solder wells of pin contacts.
- H Screw nut onto shell assembly.

## WIRING HARNESS AND CABLE REPAIRS: DISASSEMBLY AND ASSEMBLY (CONTINUED)

**TYPICAL FEMALE-TYPE PLUG WITH RIDGED LOCKING NUT****DISASSEMBLY**

- A Unscrew nut from shell assembly and slide back on cable.
- B Slide grommet back on cable leads.
- C Slide coupling nut off shell.
- D Drive socket contacts out through rear of insert with pin extractor.
- E Push insert out through rear of shell.
- F Unsolder leads from socket contact.

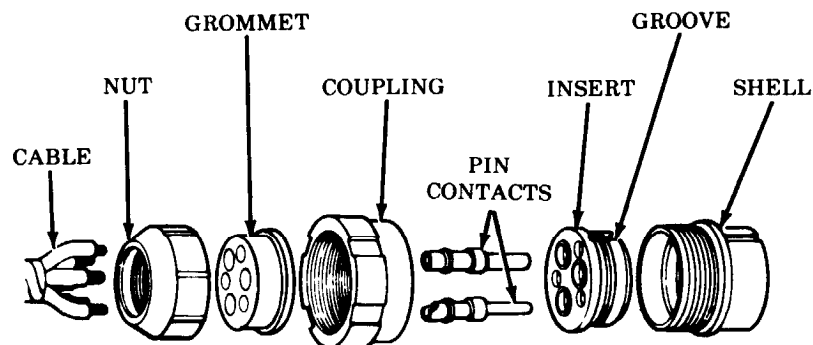
**ASSEMBLY**

- A Strip cable insulation equal to depth of solder wells of socket contacts.

- B Slide nut over cable leads.
- C Slide grommet over cable leads.
- D Insert cable leads into solder wells of socket contacts and solder using resin core solder only.
- E Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit.
- F Push socket contacts into insert rear until seated.
- G Slide coupling nut onto shell assembly.
- H Push grommet down cable leads and over solder wells of socket contacts.
- I Screw nut onto shell assembly.

## WIRING HARNESS AND CABLE REPAIRS: DISASSEMBLY AND ASSEMBLY (CONTINUED)

### TYPICAL MALE-TYPE PLUG WITH RIDGED LOCKING NUT

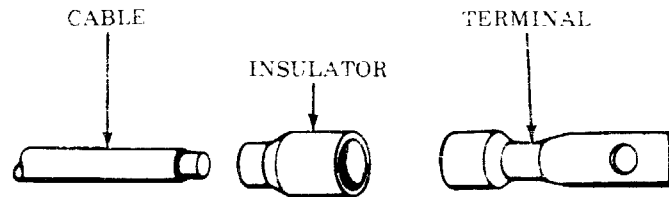


#### DISASSEMBLY

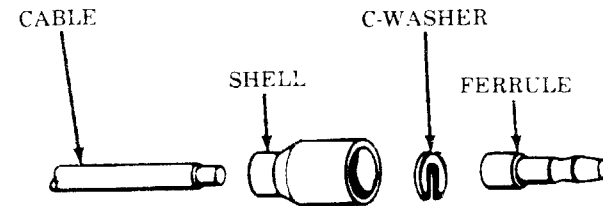
- A Unscrew nut from shell assembly and slide back on cable.
- B Slide grommet back on cable leads.
- C Slide coupling nut off shell assembly.
- D Drive pin contacts out through rear of insert with pin extractors.
- E Push insert out through rear of shell.
- F Unsolder cable leads from pin contacts.
- B Slide nut over cable.
- C Slide grommet over cable leads.
- D Insert cable leads into solder wells of pin contacts and solder using resin core solder only.
- E Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit.
- F Push pin contacts into insert from rear until seated.

#### ASSEMBLY

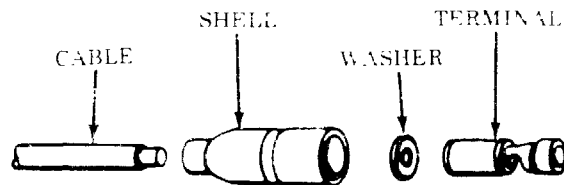
- A Strip cable of insulation equal to depth of solder wells of pin contact.
- G Slide coupling nut onto shell assembly.
- H Push grommet down cable leads and over solder wells of pin contacts.
- I Screw nut onto shell assembly.

**WIRING HARNESS AND CABLE REPAIRS: DISASSEMBLY AND ASSEMBLY (CONTINUED)****CABLE TERMINALS AND CONNECTORS:****REPLACEMENT TERMINAL-TYPE CABLE CONNECTORS**

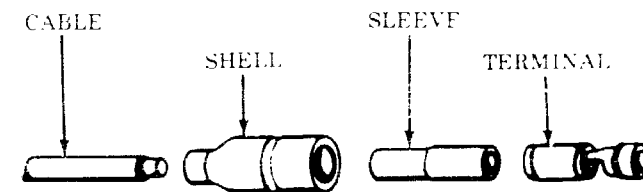
- A Strip cable insulation equal to depth of terminal well.
- B Slide insulator over cable.
- C Insert cable into terminal well and crimp.
- D Slide insulator over crimped end of terminal.

**MALE CABLE CONNECTOR (WITH WASHER)**

- A Strip cable insulation equal to depth of ferrule well.
- B Slide shell over cable.
- C Insert cable into terminal well and crimp.
- D Place C-washer over cable at crimped junction and slide shell over C-washer and terminal.

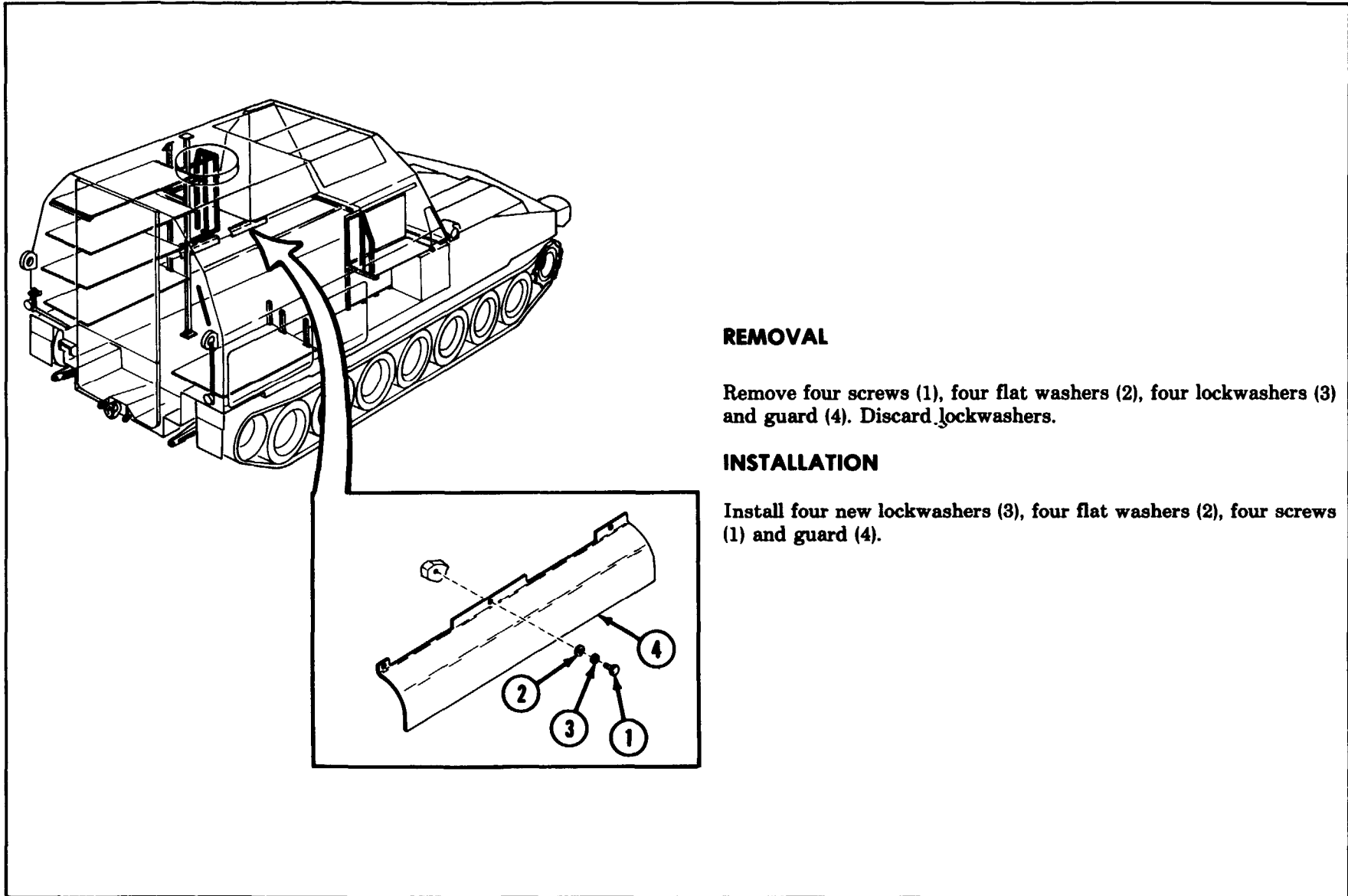
**FEMALE CABLE CONNECTOR (WITH WASHER)**

- A Strip cable insulation approximately 1/8-inch.
- B Slide shell and washer over cable.
- C Place cable in cylinder end of terminal and crimp.
- D Slide shell and washer over terminal.

**FEMALE CABLE CONNECTOR (WITH SLEEVE)**

- A Strip cable insulation approximately 1/8-inch.
- B Slide shell and sleeve over cable.
- C Place cable in cylinder end of terminal and crimp.
- D Slide shell and sleeve over terminal.

## WIRING HARNESS GUARD: REMOVAL AND INSTALLATION



### REMOVAL

Remove four screws (1), four flat washers (2), four lockwashers (3) and guard (4). Discard lockwashers.

### INSTALLATION

Install four new lockwashers (3), four flat washers (2), four screws (1) and guard (4).





# CHAPTER 3

## MAINTENANCE PROCEDURES

### POWERPACK REMOVAL, INSTALLATION AND TEST

---

#### CHAPTER OVERVIEW

This chapter shows and describes removal and installation of the complete powerpack, consisting of the engine, transfer case, transmission assemblies and related accessories.

Procedures for operating the powerpack, after removed from the vehicle, are given.

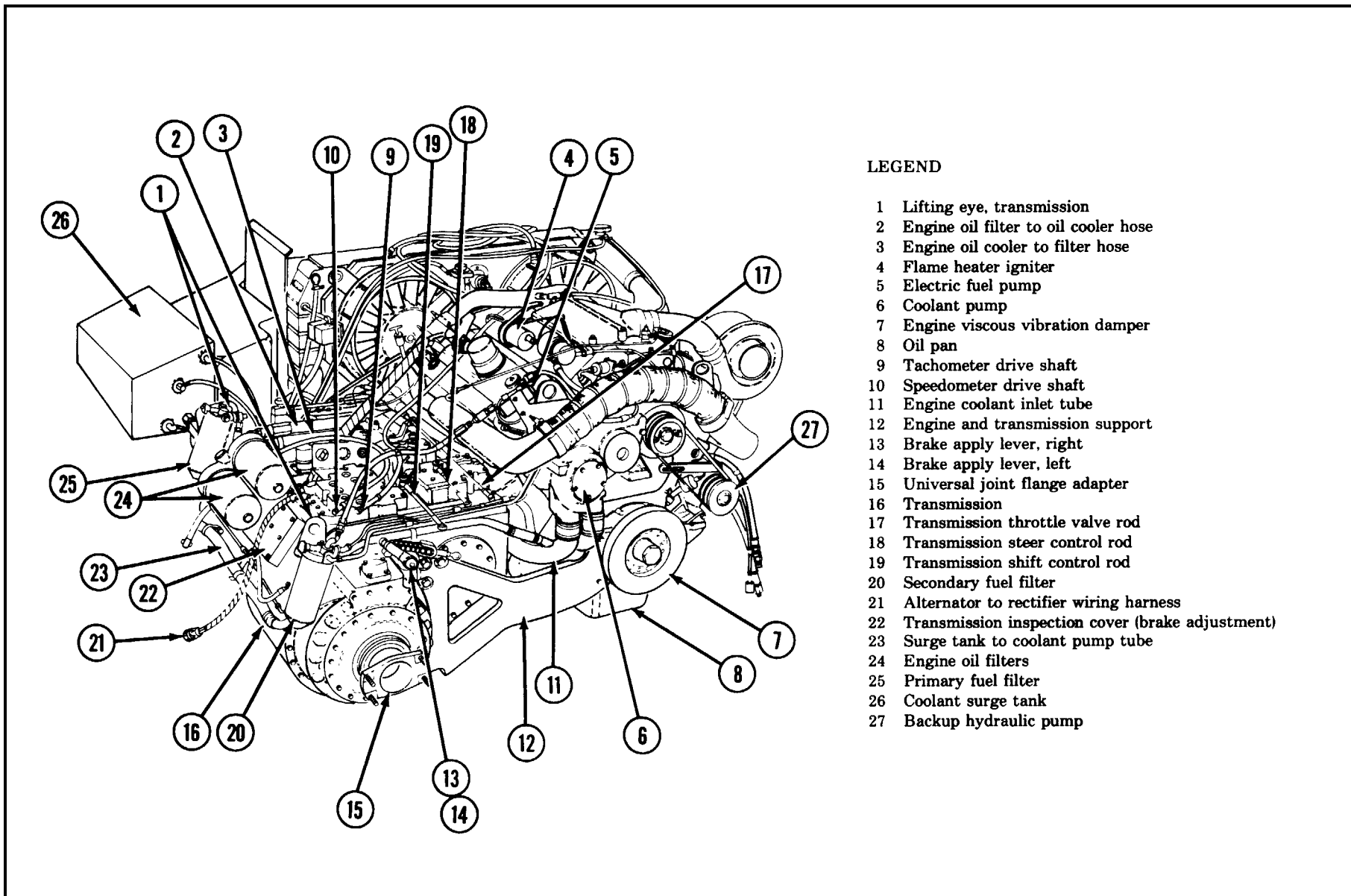
The powerpack shall be given periodic checks to find possible fire hazards. Inspect powerpack cooling accessories, air shrouds, wiring and powerpack hull compartment for foreign matter during each maintenance service.

Whenever a powerpack is removed for maintenance, or because of a malfunction, general cleaning and inspection of wiring, hoses, piping and engine compartment should be a standard practice.

Maintenance procedures given in this chapter are:

- Powerpack Preliminary Removal Procedures (p 3-4 through 3-23).
- Powerpack Removal and Installation (p 3-24).
- Control and Drive Components Inspection (p 3-25).
- Special Equipment Hookups for Operation out of Vehicle (p 3-25).
- Powerpack Stall Test with Powerpack Removed (p 3-29).

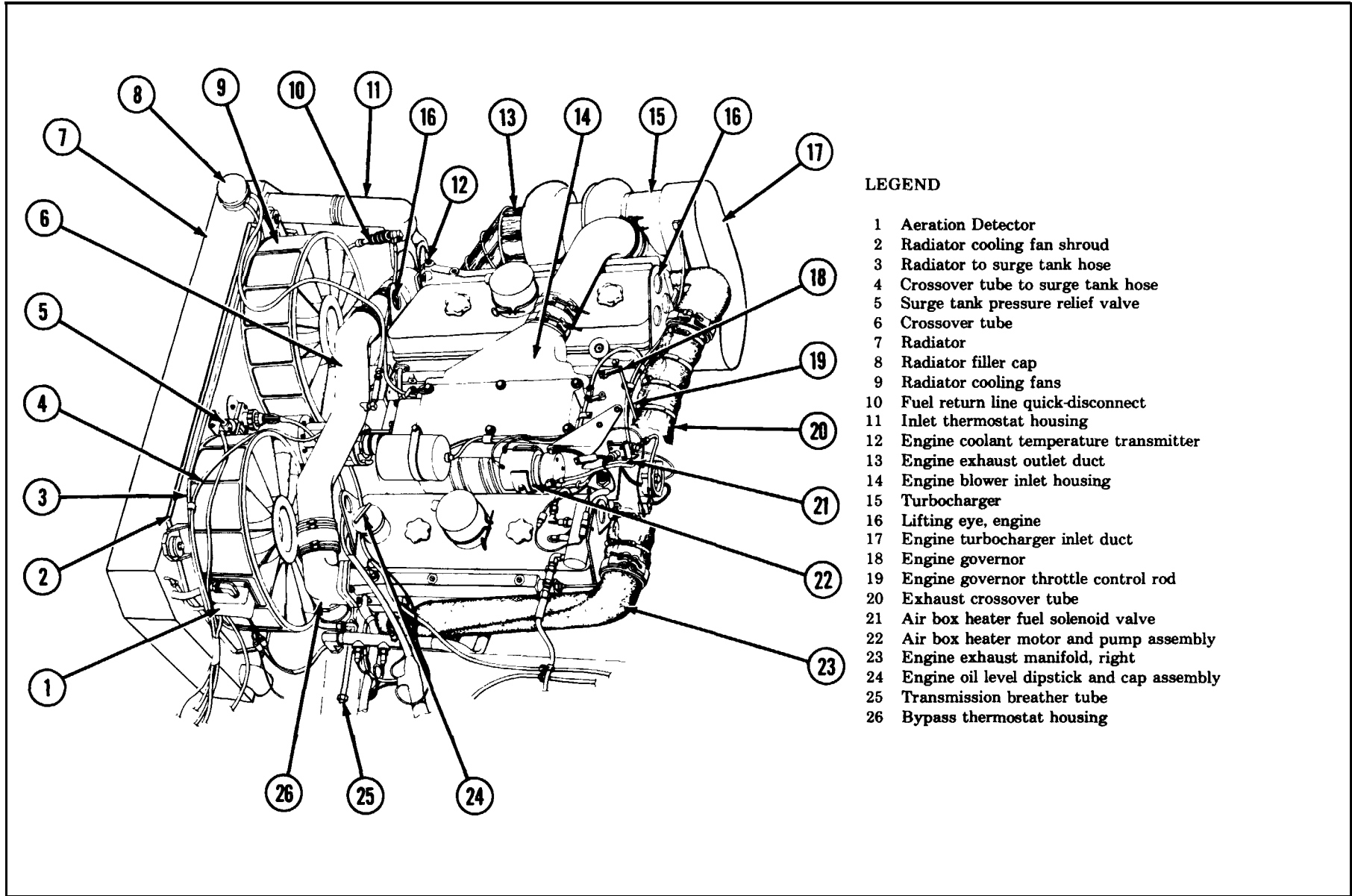
## POWERPACK — LEFT FRONT VIEW



## LEGEND

- 1 Lifting eye, transmission
- 2 Engine oil filter to oil cooler hose
- 3 Engine oil cooler to filter hose
- 4 Flame heater igniter
- 5 Electric fuel pump
- 6 Coolant pump
- 7 Engine viscous vibration damper
- 8 Oil pan
- 9 Tachometer drive shaft
- 10 Speedometer drive shaft
- 11 Engine coolant inlet tube
- 12 Engine and transmission support
- 13 Brake apply lever, right
- 14 Brake apply lever, left
- 15 Universal joint flange adapter
- 16 Transmission
- 17 Transmission throttle valve rod
- 18 Transmission steer control rod
- 19 Transmission shift control rod
- 20 Secondary fuel filter
- 21 Alternator to rectifier wiring harness
- 22 Transmission inspection cover (brake adjustment)
- 23 Surge tank to coolant pump tube
- 24 Engine oil filters
- 25 Primary fuel filter
- 26 Coolant surge tank
- 27 Backup hydraulic pump

POWERPACK TOP VIEW

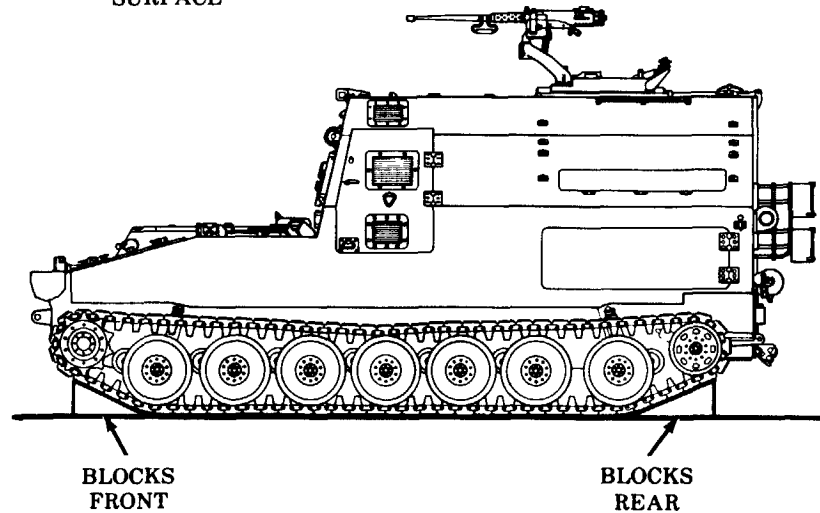


LEGEND

- 1 Aeration Detector
- 2 Radiator cooling fan shroud
- 3 Radiator to surge tank hose
- 4 Crossover tube to surge tank hose
- 5 Surge tank pressure relief valve
- 6 Crossover tube
- 7 Radiator
- 8 Radiator filler cap
- 9 Radiator cooling fans
- 10 Fuel return line quick-disconnect
- 11 Inlet thermostat housing
- 12 Engine coolant temperature transmitter
- 13 Engine exhaust outlet duct
- 14 Engine blower inlet housing
- 15 Turbocharger
- 16 Lifting eye, engine
- 17 Engine turbocharger inlet duct
- 18 Engine governor
- 19 Engine governor throttle control rod
- 20 Exhaust crossover tube
- 21 Air box heater fuel solenoid valve
- 22 Air box heater motor and pump assembly
- 23 Engine exhaust manifold, right
- 24 Engine oil level dipstick and cap assembly
- 25 Transmission breather tube
- 26 Bypass thermostat housing

**POWERPACK: PRELIMINARY REMOVAL PROCEDURES**

VEHICLE  
ON FLAT  
SURFACE



- A Check equipment to be used to remove the powerpack unit. It must have a lifting capacity of at least 7500 pounds, reach at least 9 feet and lift at least 10 feet. It should be movable, or provisions must be made to move the vehicle as the powerpack is removed.
- B Open transmission access doors and check universal joint screws. Screws must be in a position to be removed easily. If not, move vehicle until screws can be easily accessed.
- C Provide an area 8 feet by 10 feet near the track for the powerpack after removal.
- D Provide a stand or frame to hold the powerpack after removal. If unavailable, set the powerpack on wood blocks (p 3-24).

**CAUTION**

Tracks must be blocked so that the vehicle will not roll out of control. When the powerpack is disconnected, the vehicle is without brakes.

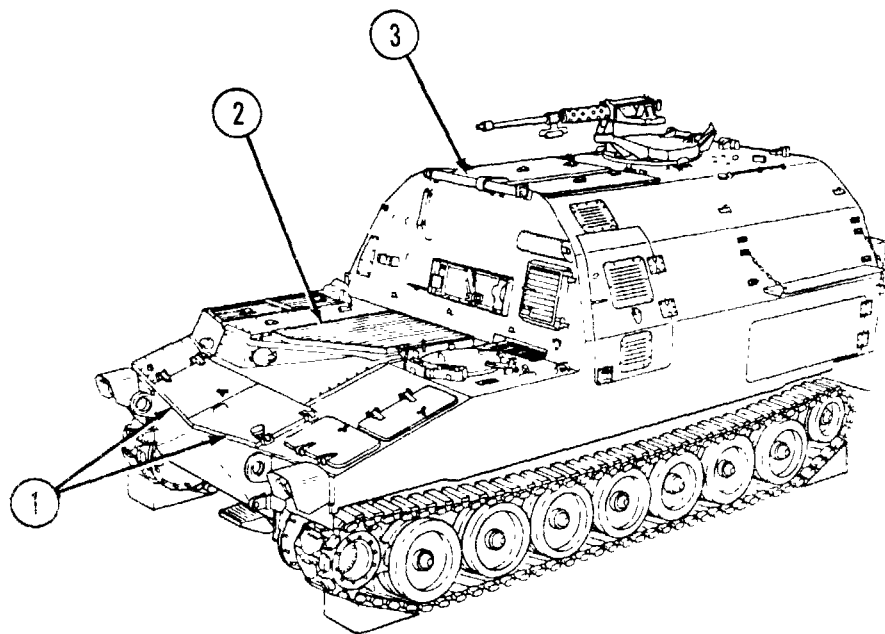
- E Move vehicle to level surface. Secure with blocks under tracks.
- F Place MASTER switch in OFF position.
- G Disconnect both battery ground cables (p 6-44).
- H Release parking brake. Place transmission in R2. Move steering wheel to right position.
- I Move throttle to full open position so it is easier to disconnect throttle linkage.

**WARNING**

A protective fan screen must be installed prior to doing maintenance in the engine compartment when engine is running or when engine is in ground hop mode. Contact with rotating fan can cause injury.

- J Install radiator fan protective screen (p 2-5).

## HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION



### REMOVAL

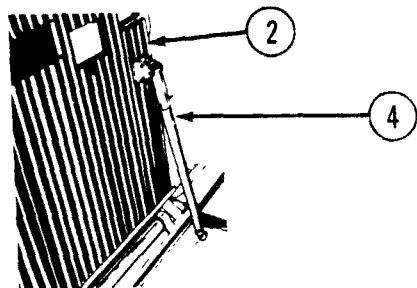
#### WARNING

Access doors are heavy. Use suitable lifting equipment and handle them carefully.

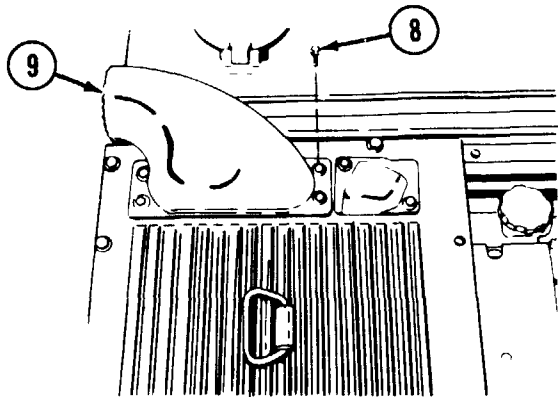
- A Open transmission access doors (1).
- B Open air intake grille (2) and secure to top door torsion bar cover (3) with rope/strap.

#### NOTE

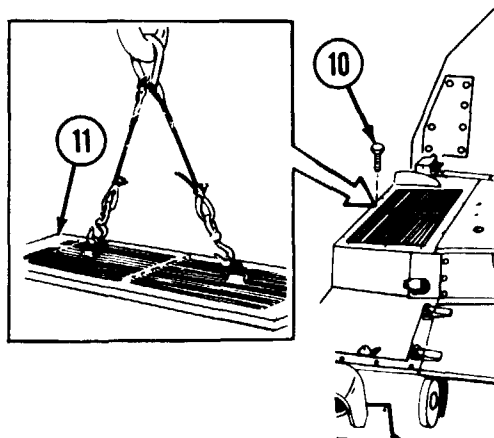
Secure grille when hold-open support arm (4) is not used.



## HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)



- C Remove four screws (8) and engine exhaust deflector (9).
- D Remove and discard packing from deflector seat.

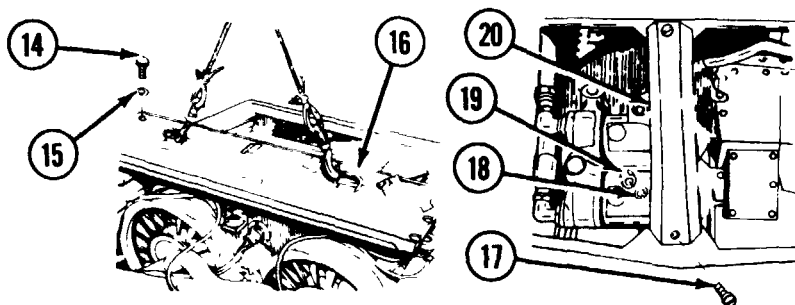


- E Remove 14 screws (10) and engine exhaust grille (11).

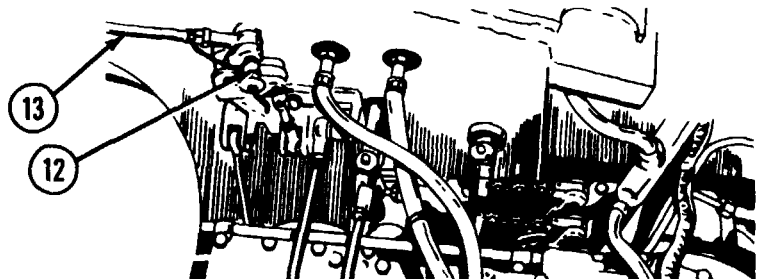
**NOTE**

Each grille has different length bolts. Keep bolts with grille after removal.

## HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)



POWERPLANT—LEFT BULKHEAD

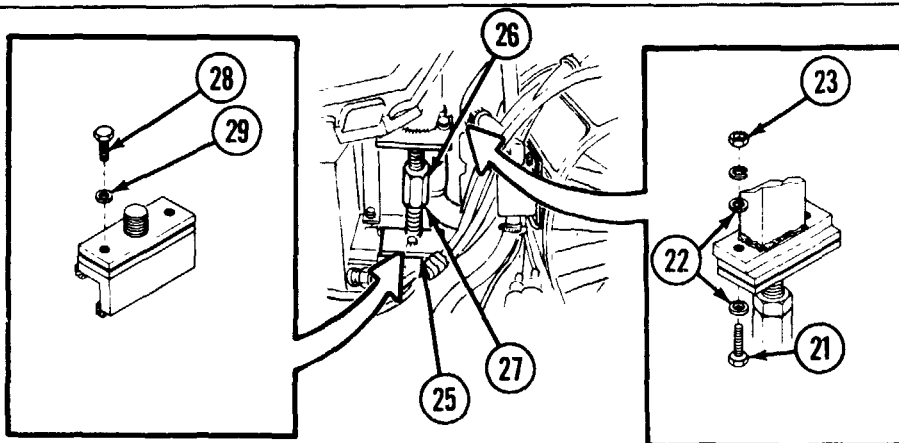


- F Disconnect AFES thermal wire (p 14-27) before proceeding to step G.
- G Pull quick-disconnect pin (12) to release throttle rod (13). Position throttle rod out of the way to avoid catching rod on underside of deck bracket during deck removal.

### CAUTION

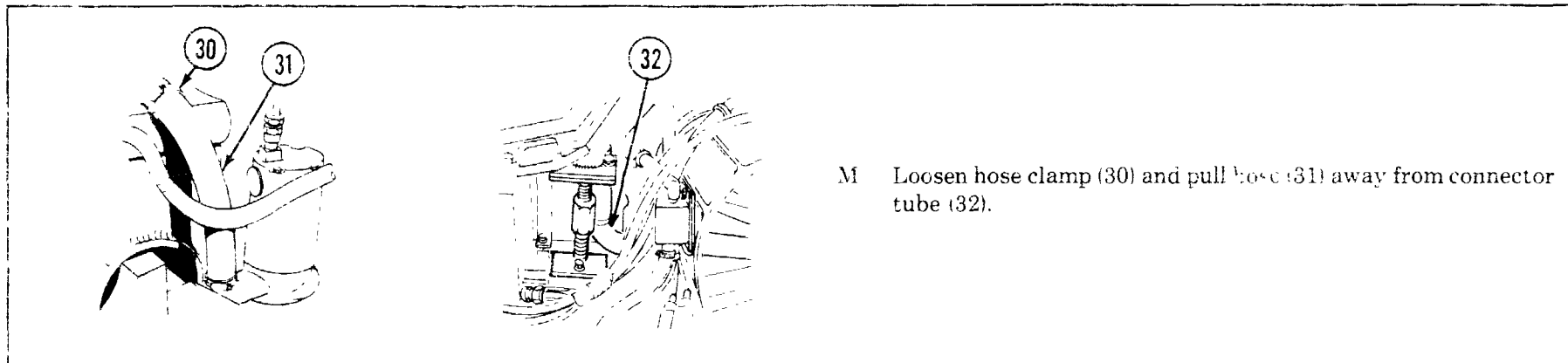
Do not set radiator fan access door down on AFES thermal wire. Set door on blocks to avoid damaging wire.

- H Remove six screws (14), six washers (15) and radiator fan access door (16).
- I Remove two screws (17), two flat washers (18) and two hex nuts (19), and remove transmission door support (20).

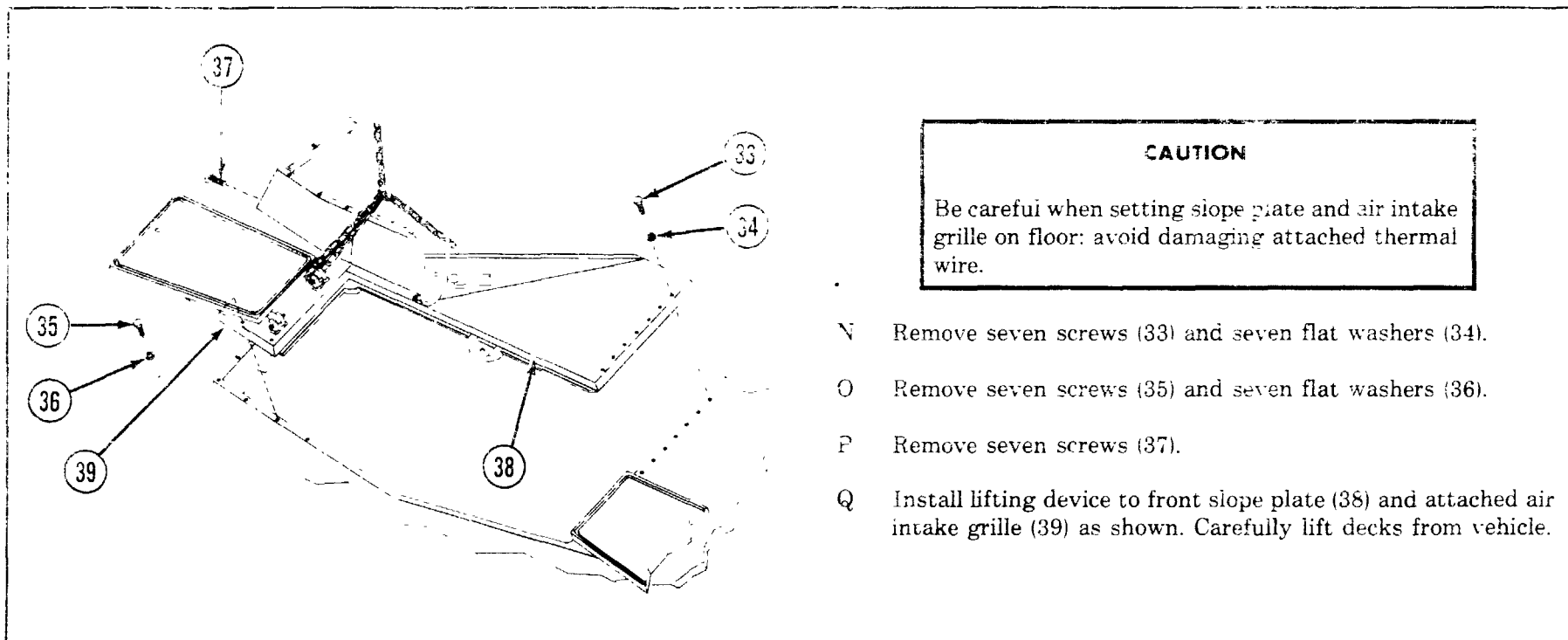


- J Remove two screws (21), four flat washers (22), two nuts (23) and two lockwashers (24) from grille support (25).
- K Loosen jam nut (26) and turn grille support adjustment nut (27) counterclockwise to shorten support assembly and relieve load on support (25).
- L Remove two screws (28), two flat washers (29), and remove support assembly (25) from vehicle.

## HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)



- M Loosen hose clamp (30) and pull hose (31) away from connector tube (32).

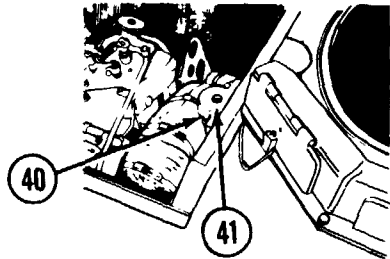
**CAUTION**

Be careful when setting slope plate and air intake grille on floor: avoid damaging attached thermal wire.

- N Remove seven screws (33) and seven flat washers (34).  
 O Remove seven screws (35) and seven flat washers (36).  
 P Remove seven screws (37).  
 Q Install lifting device to front slope plate (38) and attached air intake grille (39) as shown. Carefully lift decks from vehicle.



**HULL (EXTERIOR) ACCESS DOORS AND GRILLES: REMOVAL AND INSTALLATION (CONTINUED)**



R Remove two screws (40) and air intake grille handle bracket (41) from vehicle.

**INSTALLATION**

Install in reverse order of removal.

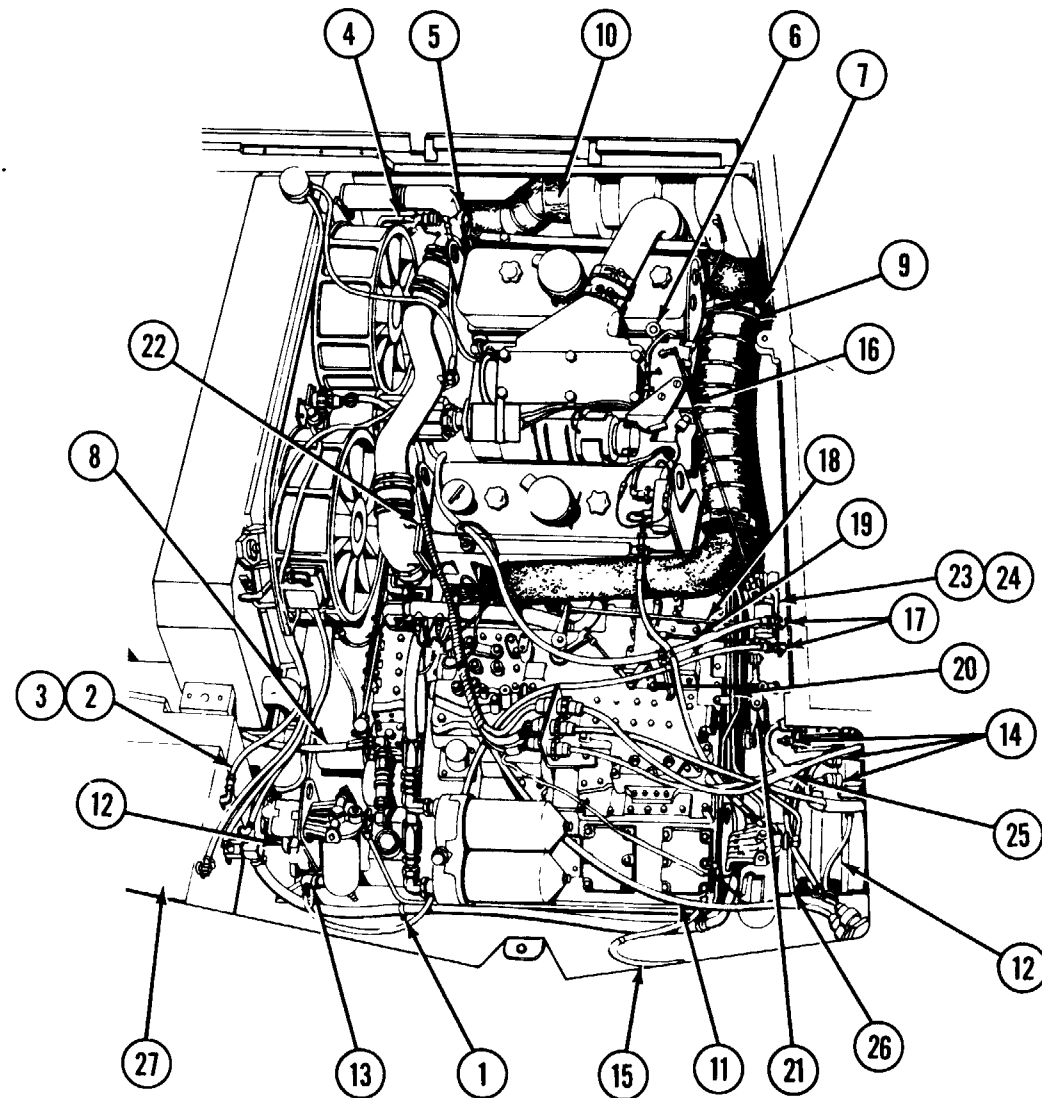
## POWERPACK DISCONNECT POINTS IN HULL (POWERPACK IN VEHICLE)

**NOTE**

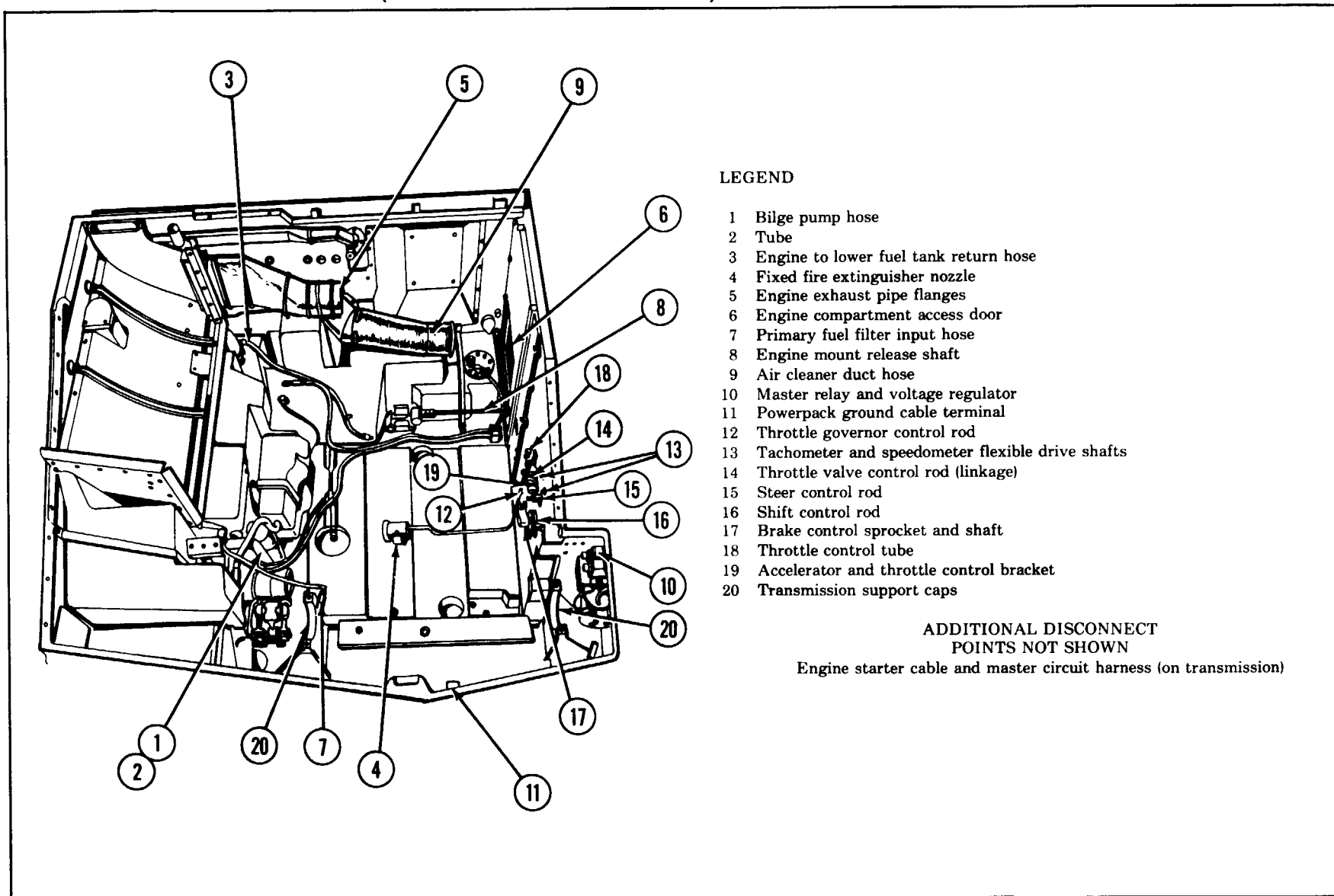
Refer to appropriate item for required actions.

**LEGEND**

- 1 Coolant pump to surge tank hose clamps
- 2 Bilge pump hose
- 3 Tube and clamp
- 4 Engine to lower fuel tank return hose and clamp
- 5 Engine exhaust pipe flanges
- 6 Governor fuel shutoff lever, pulley and cable
- 7 Engine compartment access door
- 8 Primary fuel filter input hose
- 9 Engine mount release shaft
- 10 Air cleaner duct hose at turbocharger
- 11 Generator to rectifier harness (at rectifier)
- 12 Final drive universal joints
- 13 Speedometer right angle rod
- 14 Master relay and voltage regulator disconnects
- 15 Powerpack ground cable
- 16 Throttle governor control rod
- 17 Tachometer and speedometer flexible drive shafts
- 18 Throttle governor control rod (linkage)
- 19 Steer control rod
- 20 Shift control rod
- 21 Brake control sprocket, shaft and pin
- 22 Separation of starter cable and generator to rectifier harness
- 23 Throttle control tube
- 24 Accelerator and throttle control bracket
- 25 Engine starter cable, master circuit, and STE/ICE harness
- 26 Transmission support caps
- 27 Coolant surge tank, retainer and pad

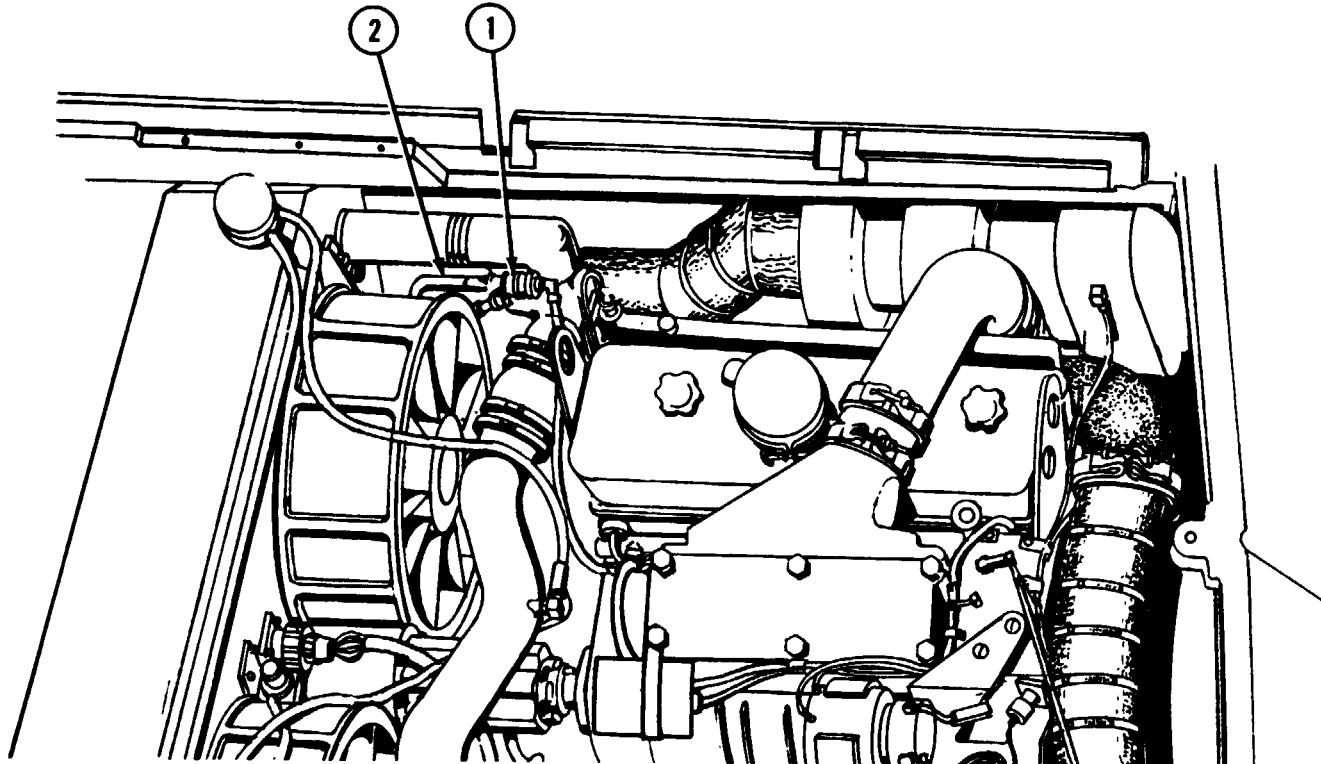


## POWERPACK DISCONNECT POINTS (POWERPACK OUT OF VEHICLE)



TA310257

**ENGINE TO LOWER FUEL TANK RETURN HOSE: REMOVAL AND INSTALLATION**



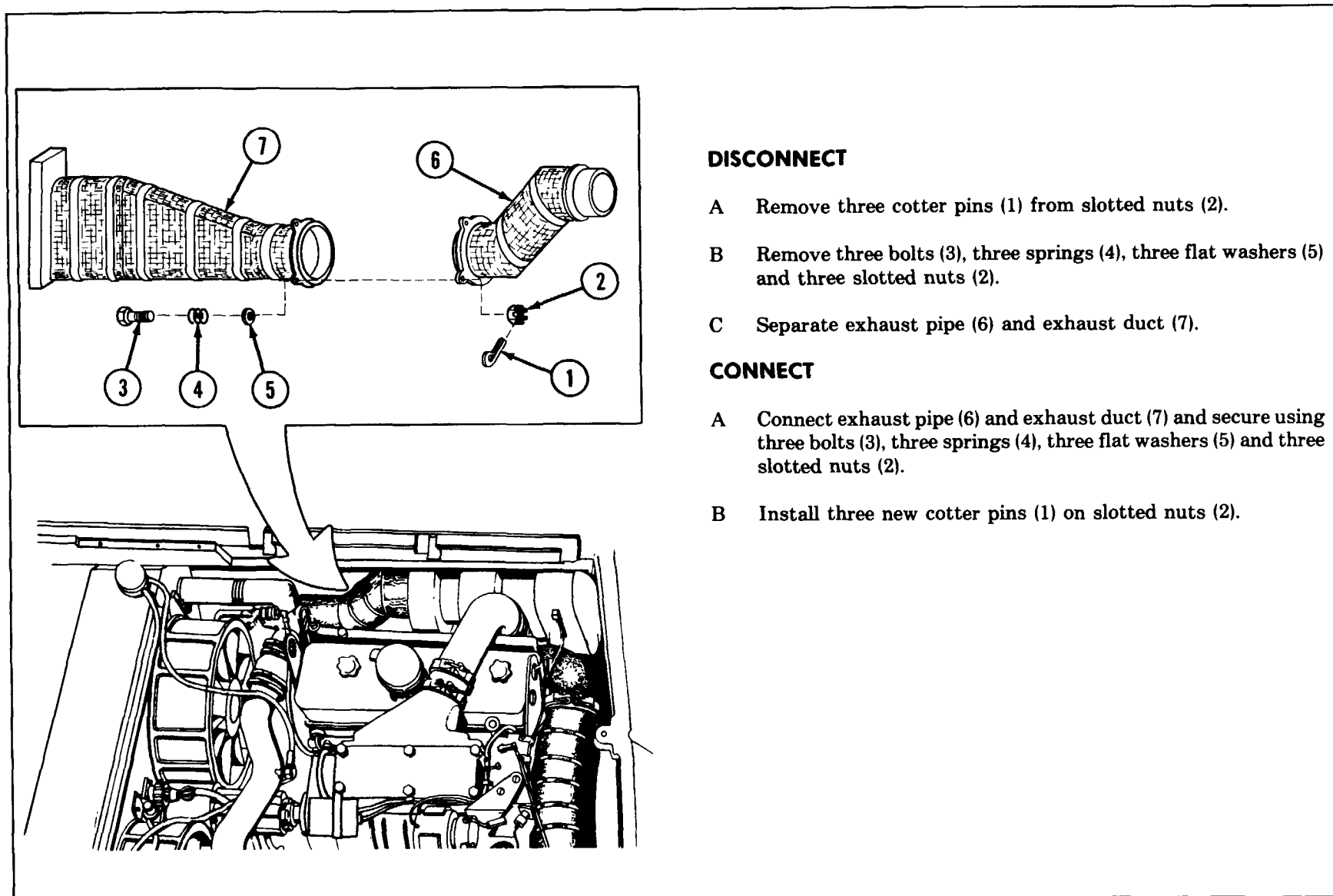
**REMOVAL**

Disconnect hose quick-disconnect assembly (1) from engine to lower fuel tank return hose (2).

**INSTALLATION**

Install in reverse order.

## EXHAUST PIPE DISCONNECT



### DISCONNECT

- A Remove three cotter pins (1) from slotted nuts (2).
- B Remove three bolts (3), three springs (4), three flat washers (5) and three slotted nuts (2).
- C Separate exhaust pipe (6) and exhaust duct (7).

### CONNECT

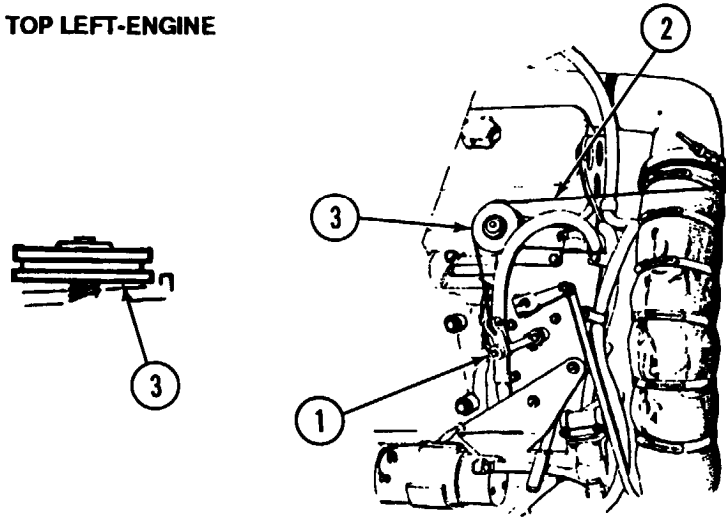
- A Connect exhaust pipe (6) and exhaust duct (7) and secure using three bolts (3), three springs (4), three flat washers (5) and three slotted nuts (2).
- B Install three new cotter pins (1) on slotted nuts (2).

TA312716



## GOVERNOR FUEL SHUTOFF CABLE: REMOVAL AND INSTALLATION

TOP LEFT-ENGINE



### REMOVAL

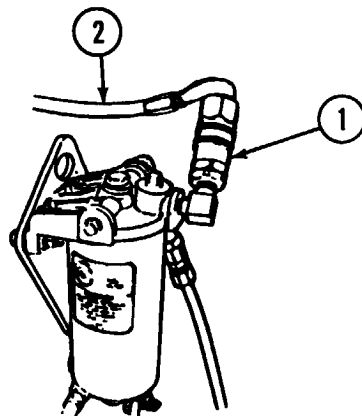
- A Pull out quick-release pin (1) from governor fuel shutoff cable (2).
- B Pull spring-loaded pulley (3) up and remove cable (2). Allow pulley (3) to drop back down.
- C Lay cable (2) on hull.

### INSTALLATION

Install in reverse order of removal procedure.

## PRIMARY FUEL FILTER INPUT HOSE: REMOVAL AND INSTALLATION

TOP RIGHT-ENGINE

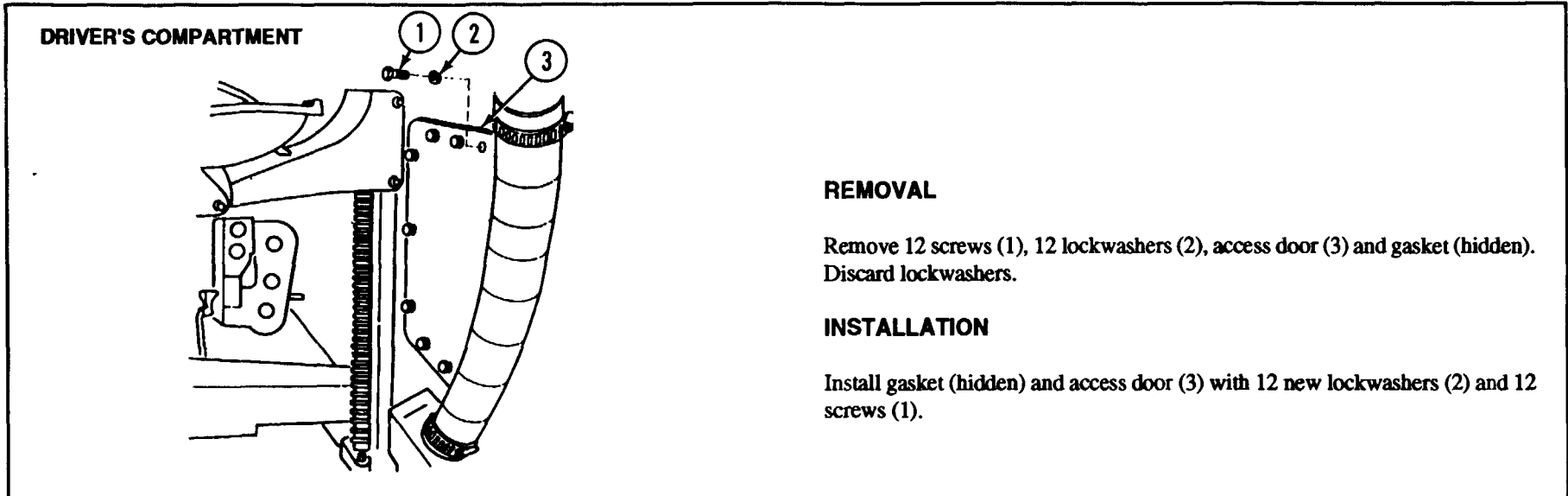
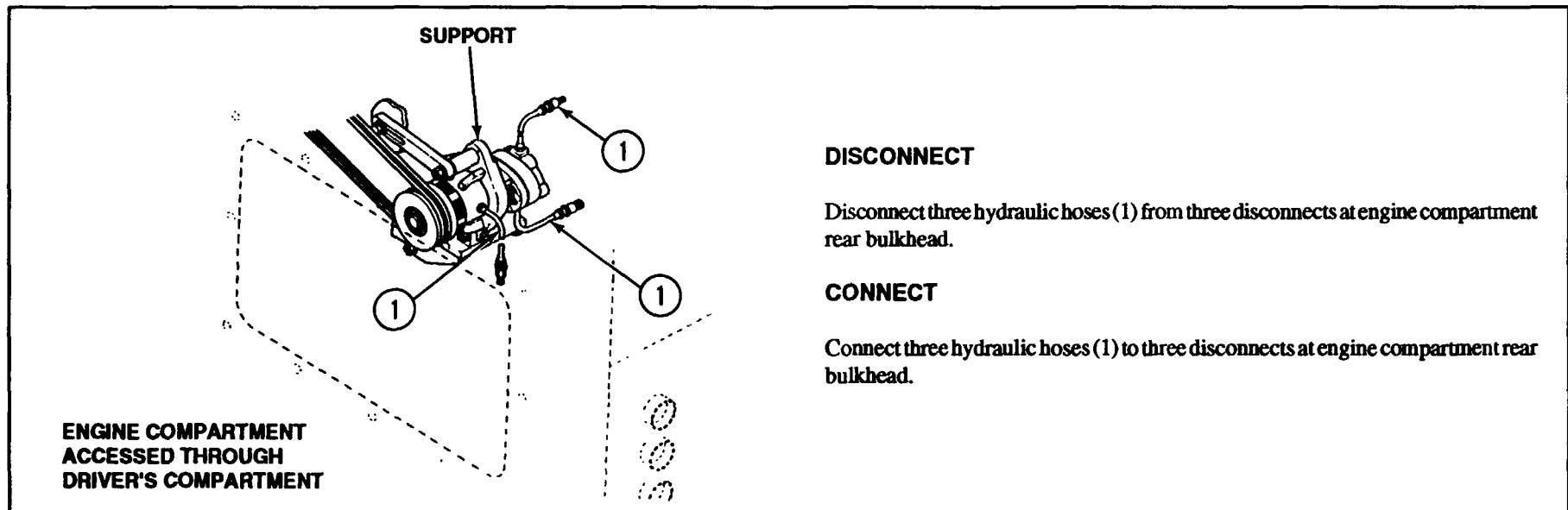


### REMOVAL

Remove quick-disconnect (1) from primary fuel filter input hose (2).

### INSTALLATION

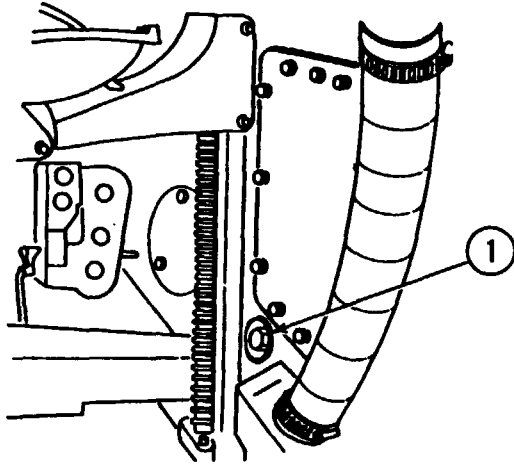
Install in reverse order of removal procedure.

**ENGINE COMPARTMENT ACCESS COVER: REMOVAL AND INSTALLATION****BACKUP HYDRAULIC PUMP HOSES: DISCONNECT AND CONNECT**



## ENGINE MOUNT: RELEASE AND CONNECT

### DRIVER'S COMPARTMENT



### RELEASE

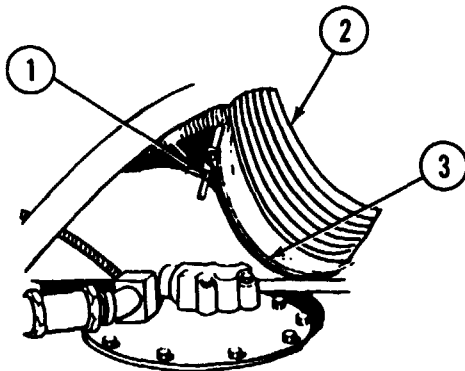
Release engine mount by turning engine mount release bar (1) counterclockwise until bar is fully extended.

### CONNECT

Tighten engine mount by turning engine mount release bar (1) clockwise. Tighten to 175-190 lb-ft.

## ENGINE MOUNT: REMOVAL AND INSTALLATION

### REAR-POWERPACK COMPARTMENT



### REMOVAL

A Loosen nut (1) on air cleaner duct (2).

### NOTE

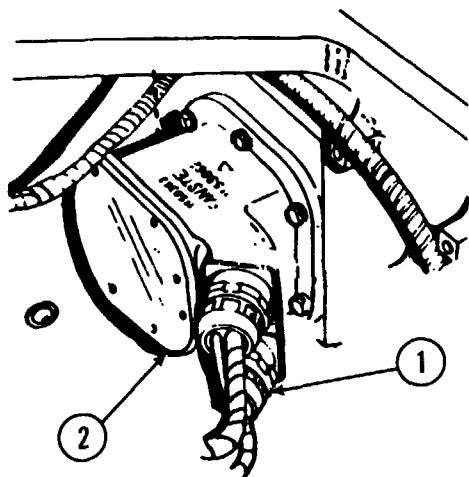
Access through driver's compartment access door.

B Remove clamp (3) from air cleaner duct (2).

### INSTALLATION

Install clamp (3) on air cleaner duct (2) and tighten nut (1).

## GENERATOR TO RECTIFIER HARNESS REMOVAL AND INSTALLATION

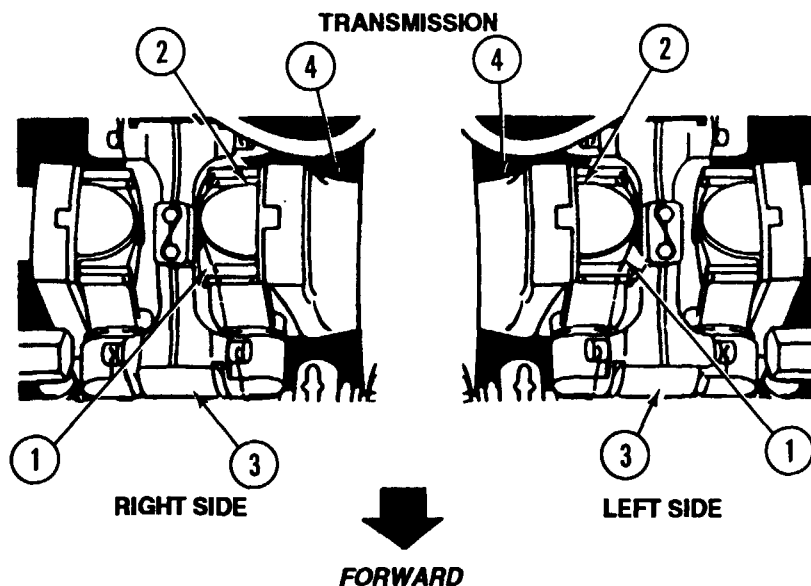
**REMOVAL**

Disconnect two electrical connectors (1) from generator to rectifier (2).

**INSTALLATION**

Reverse removal procedures.

## FINAL DRIVE UNIVERSAL JOINTS: REMOVAL AND INSTALLATION

**REMOVAL**

A Remove two safety wires (1) and four screws (2). Discard safety wires (1).

**NOTE**

After disconnecting transmission from universal joints, slide joints toward final drive.

B Push final drive universal joint (3) away from flange (4).

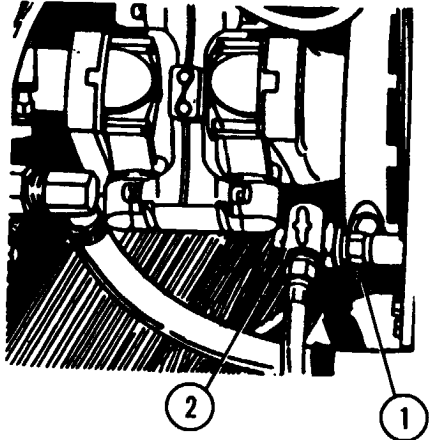
**INSTALLATION**

A Push final drive universal joint (3) toward flange (4).

B Install four screws (2) and two new safety wires (1).

## SPEEDOMETER RIGHT-ANGLE DRIVE REMOVAL AND INSTALLATION

**TRANSMISSION-RIGHT FRONT**



**REMOVAL**

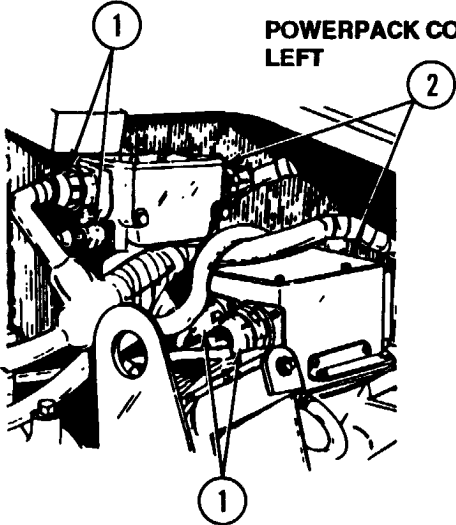
Unscrew nut (1) from speedometer right-angle drive (2).

**INSTALLATION**

Install in reverse order of removal procedure.

## MASTER RELAY, GENERATOR AND REGULATOR: REMOVAL AND INSTALLATION

**POWERPACK COMPARTMENT LEFT**

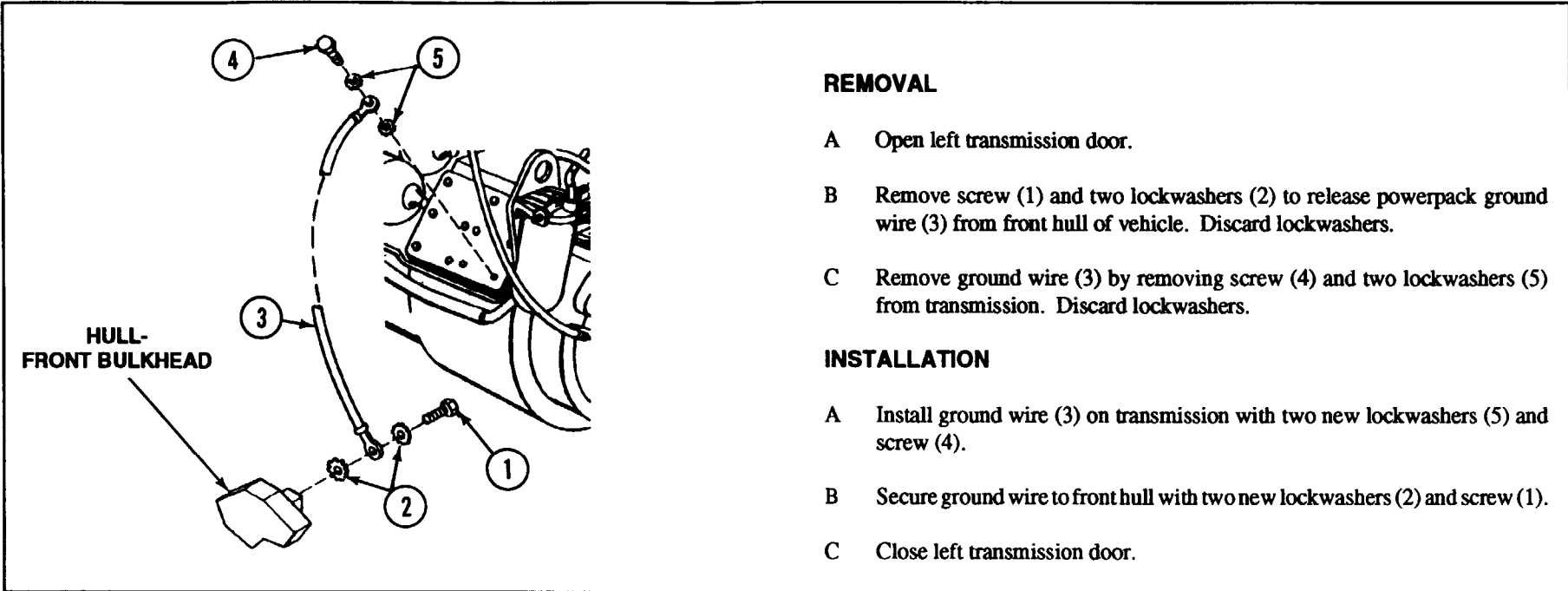
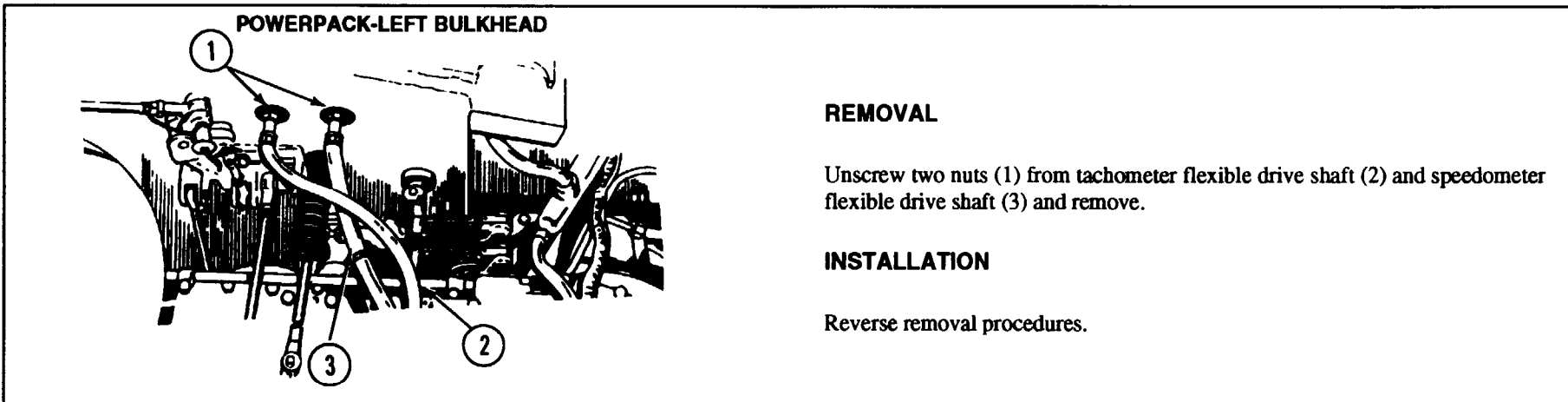


**REMOVAL**

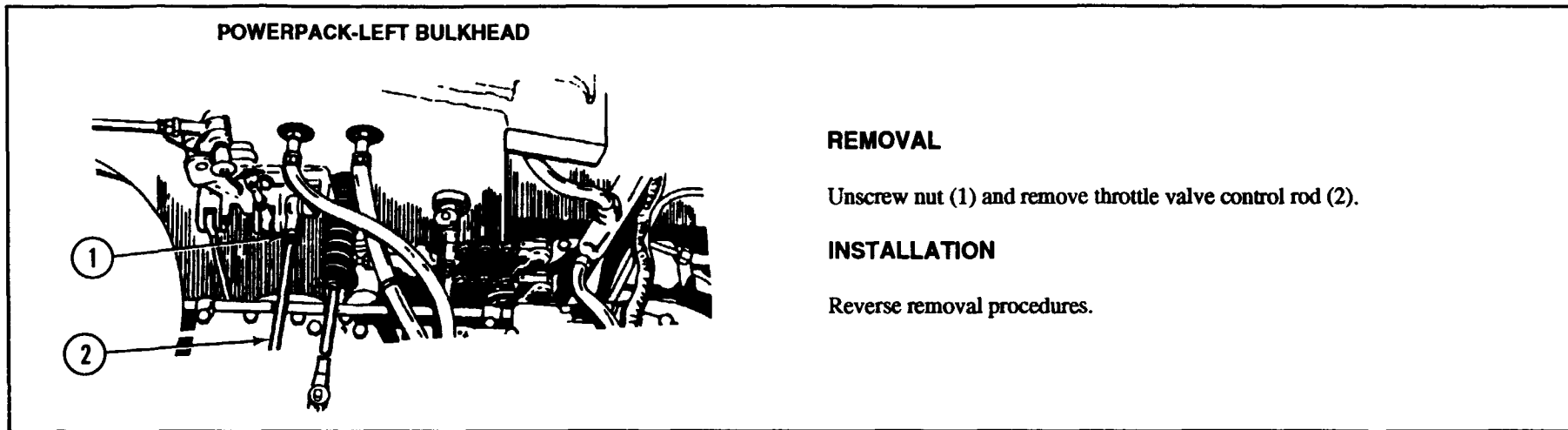
Disconnect four electrical connectors (1) from master relay and regulator (2).

**INSTALLATION**

Install in reverse order of removal procedures.

**POWERPACK GROUND WIRE: REMOVAL AND INSTALLATION****TACHOMETER AND SPEEDOMETER FLEXIBLE DRIVE SHAFTS: REMOVAL AND INSTALLATION**

## THROTTLE VALVE CONTROL ROD: REMOVAL AND INSTALLATION



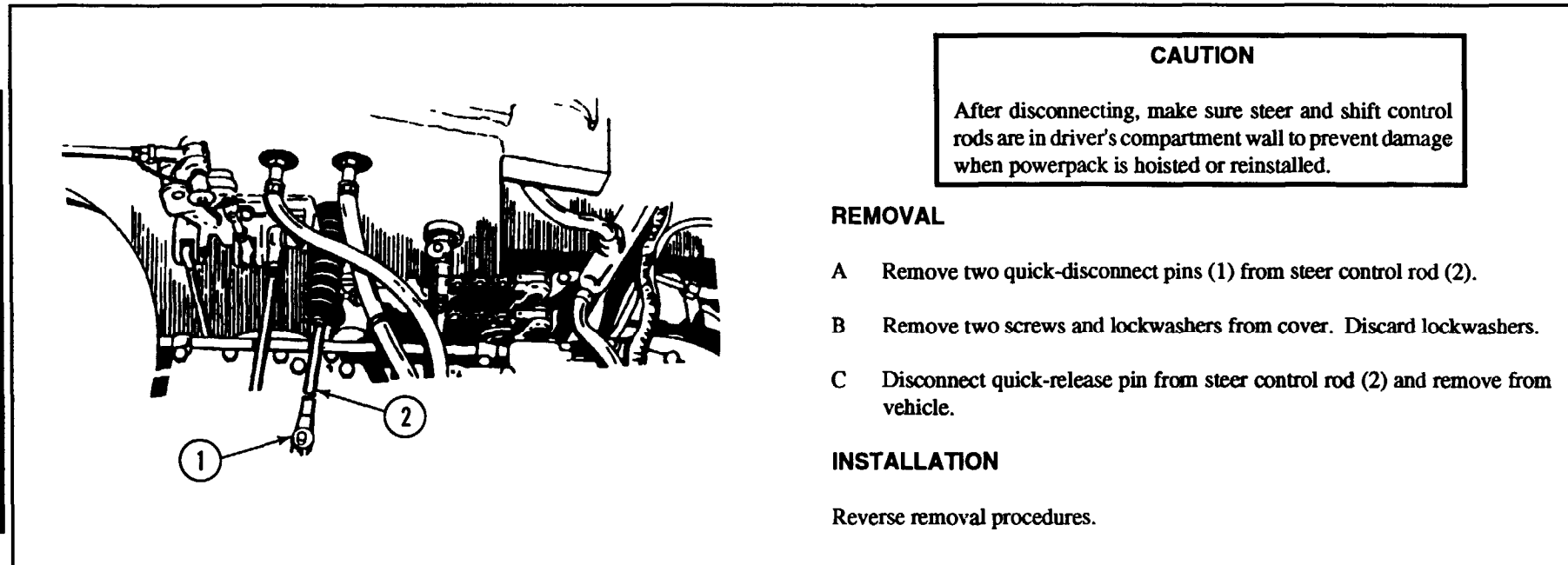
### REMOVAL

Unscrew nut (1) and remove throttle valve control rod (2).

### INSTALLATION

Reverse removal procedures.

## STEER CONTROL ROD: REMOVAL AND INSTALLATION



### CAUTION

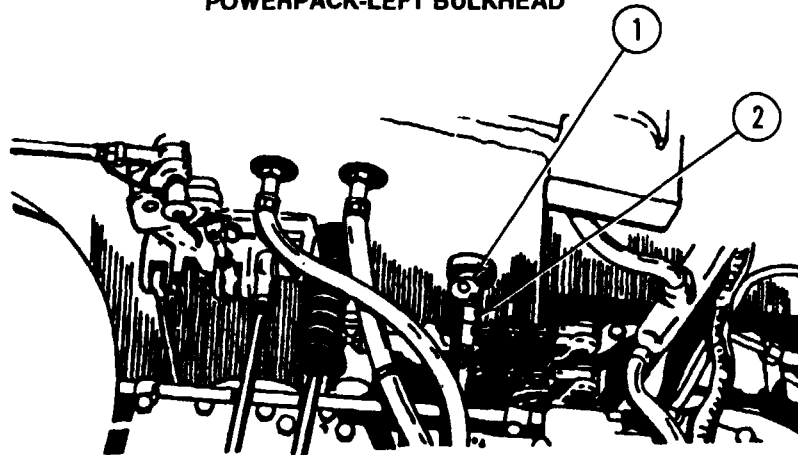
After disconnecting, make sure steer and shift control rods are in driver's compartment wall to prevent damage when powerpack is hoisted or reinstalled.

### REMOVAL

- A Remove two quick-disconnect pins (1) from steer control rod (2).
- B Remove two screws and lockwashers from cover. Discard lockwashers.
- C Disconnect quick-release pin from steer control rod (2) and remove from vehicle.

### INSTALLATION

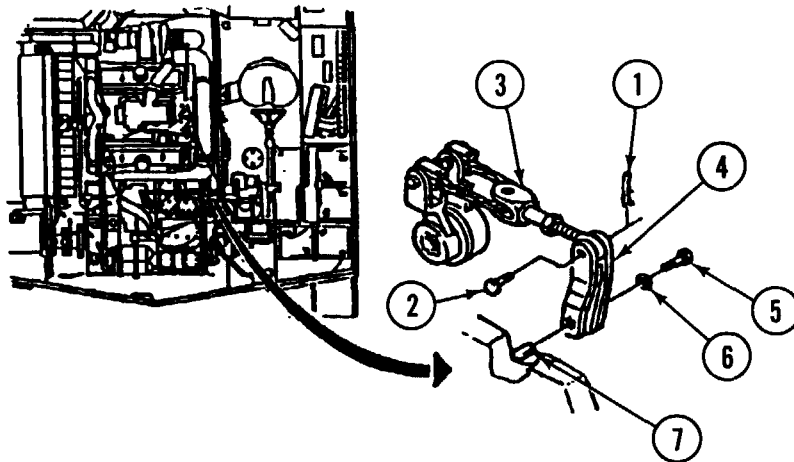
Reverse removal procedures.

**SHIFT CONTROL ROD: REMOVAL AND INSTALLATION****POWERPACK-LEFT BULKHEAD****REMOVAL**

- A Pull out quick-release pin (1) and remove shift control rod (2).
- B Move control rod into hull to prevent damage. Place shift control lever in R2 position.

**INSTALLATION**

Reverse removal procedures.

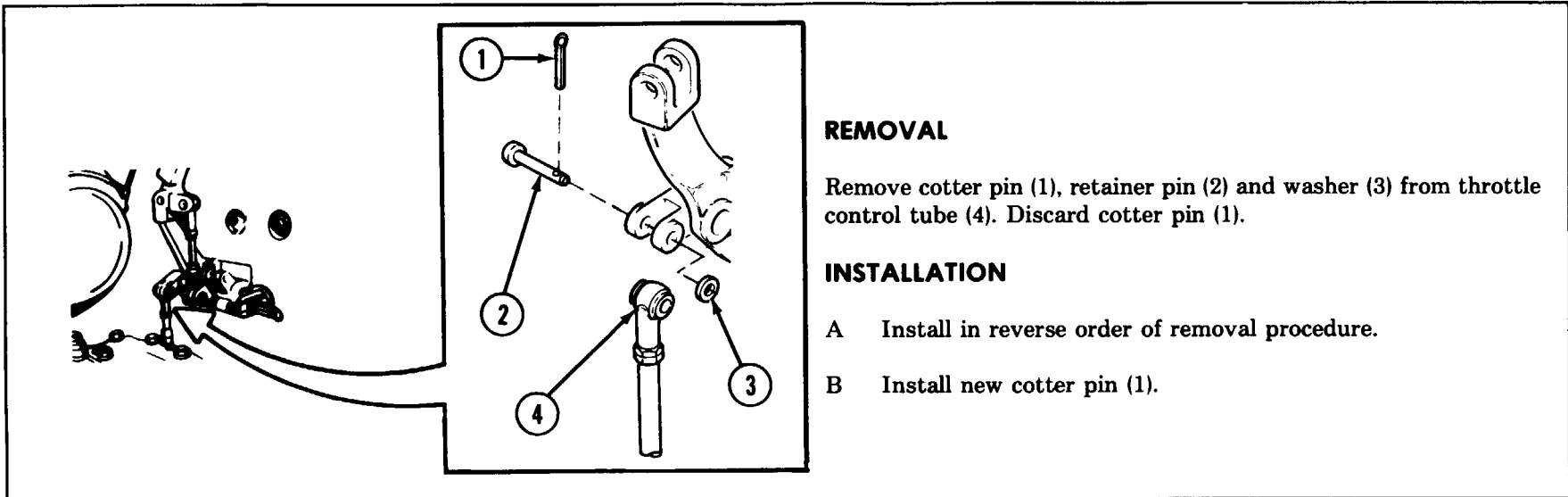
**BRAKE CONTROL SPROCKET AND SHAFT: REMOVAL AND INSTALLATION****REMOVAL**

- A Remove cotter pin (1) and straight pin (2) and brake control sprocket and shaft assembly (3) from lever (4). Discard cotter pin.
- B Remove screw (5) and lockwasher (6) and lever (4) from shaft (7). Discard lockwasher.

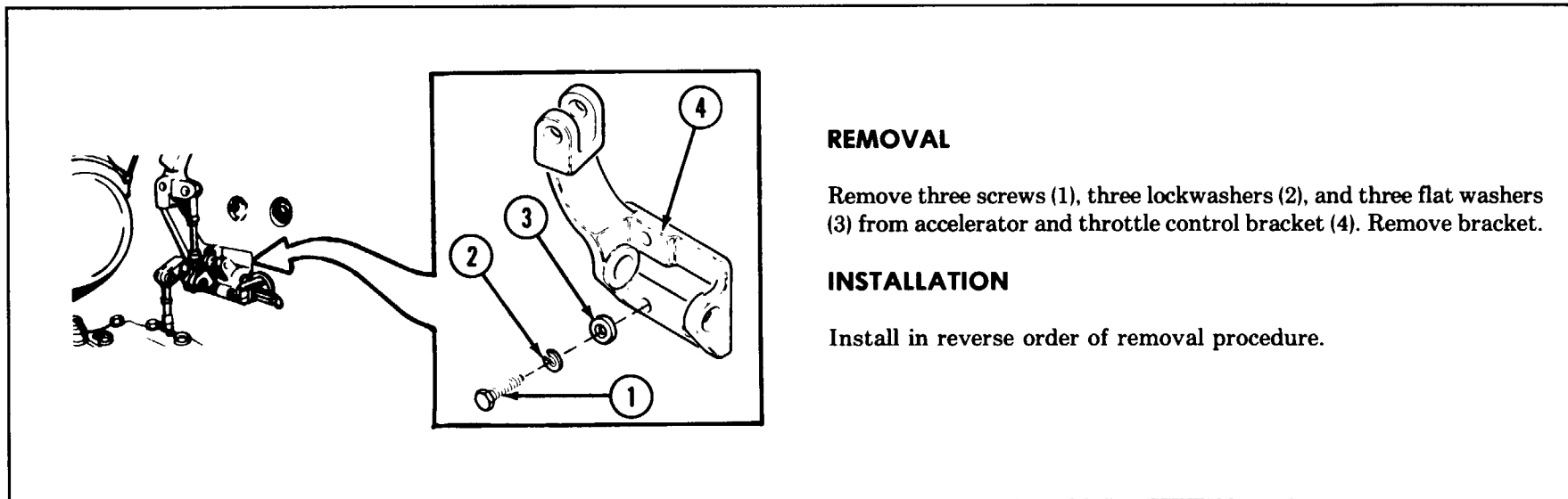
**INSTALLATION**

Reverse removal procedures using new cotter pin.

### THROTTLE CONTROL TUBE: REMOVAL AND INSTALLATION

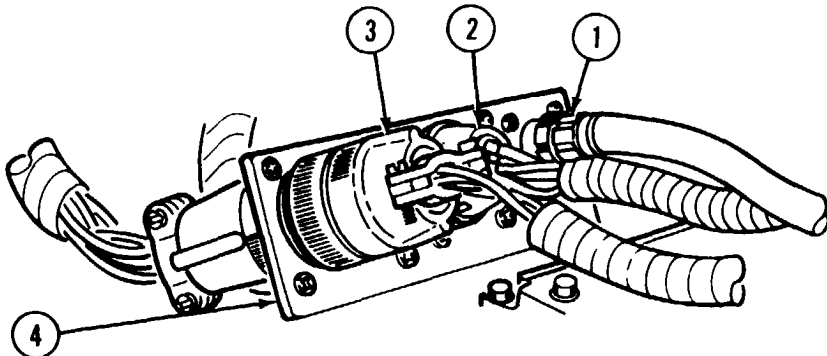


### ACCELERATOR AND THROTTLE CONTROL BRACKET: REMOVAL AND INSTALLATION



TA310267

### ENGINE STARTER CABLE AND MASTER CIRCUIT HARNESS: REMOVAL AND INSTALLATION



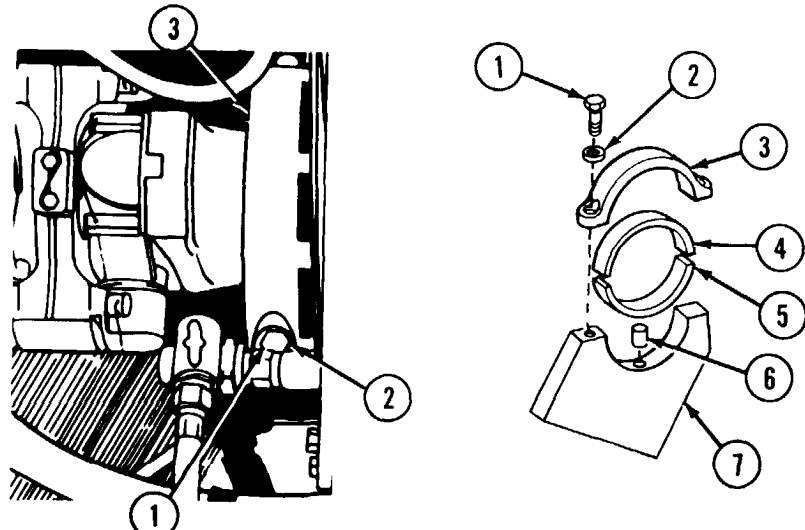
**REMOVAL**

Disconnect starter cable connector (1), master circuit harness connector (2) and STE/ICE harness connector (3) from engine starter cable, master circuit harness and STE/ICE harness engine disconnect bracket (4).

**INSTALLATION**

Install in reverse order of removal procedure.

### TRANSMISSION SUPPORT CAPS: REMOVAL AND INSTALLATION



**REMOVAL**

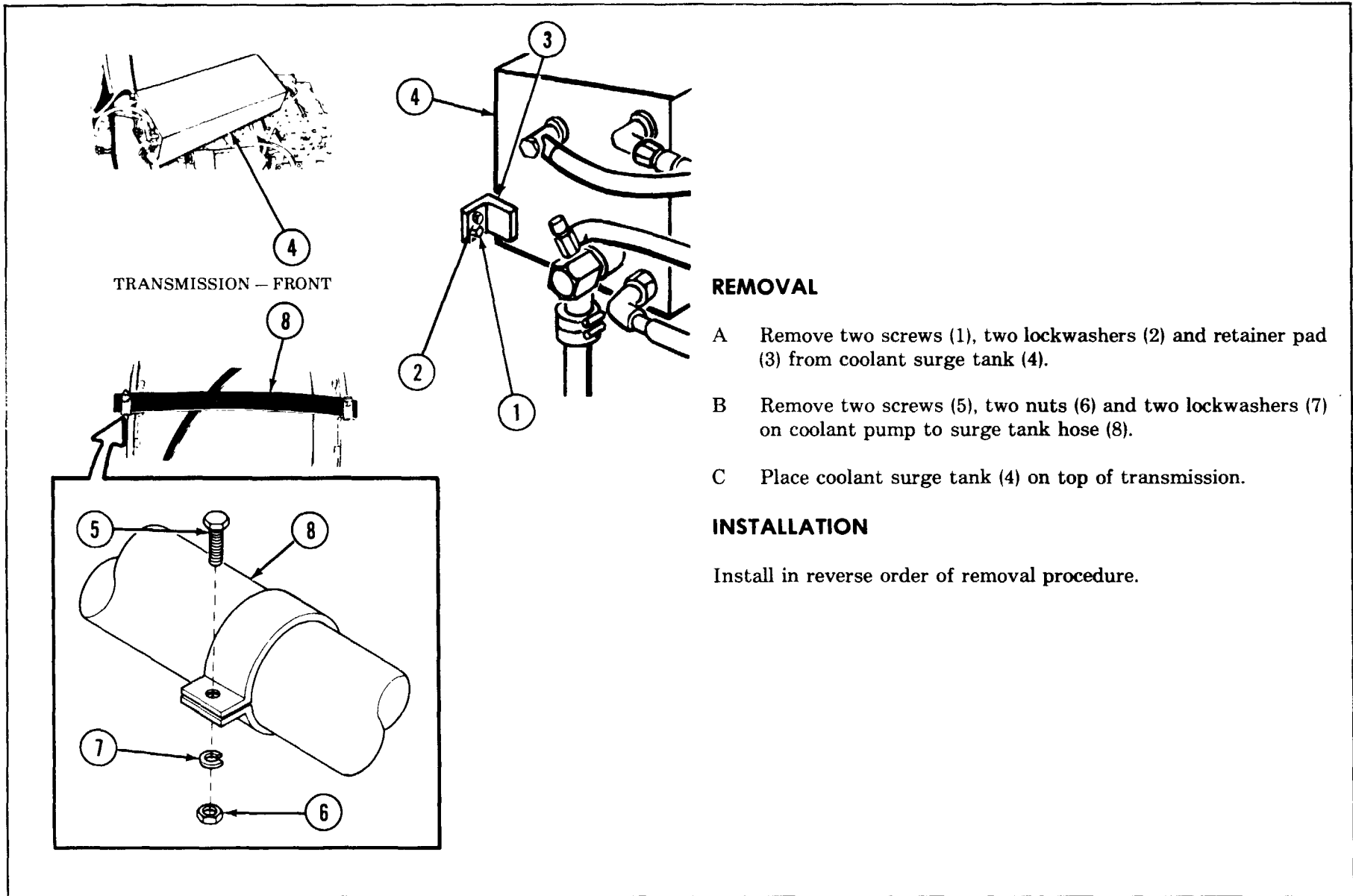
Remove two screws (1), two flat washers (2) and transmission support caps (3) (left and right support assembly). Remove upper inserts (4) if necessary. After powerpack removal, remove lower inserts (5) if necessary. Remove pin (6) from right trunnion mount (7) if necessary.

**INSTALLATION**

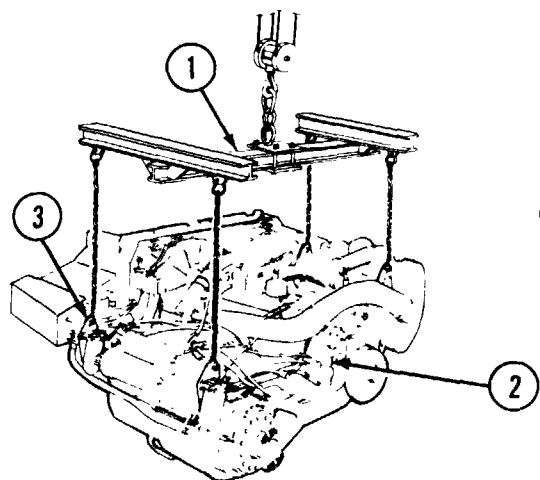
Prior to powerpack installation, install pin (6) on right trunnion mount (7) and lower inserts (5) if removed. Install powerpack. Install upper inserts (4) if removed. Install transmission support caps (3) with two flat washers (2) and two screws (1). Torque screws to 85-90 ft-lb.



## COOLANT SURGE TANK: REMOVAL AND INSTALLATION (CONTINUED)



## POWERPACK: REMOVAL AND INSTALLATION



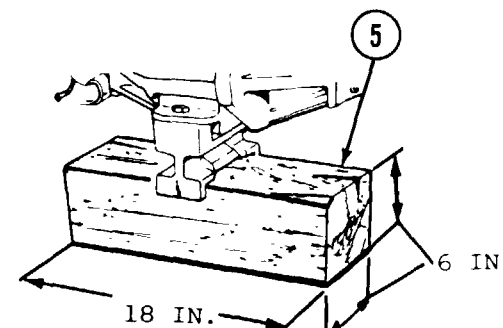
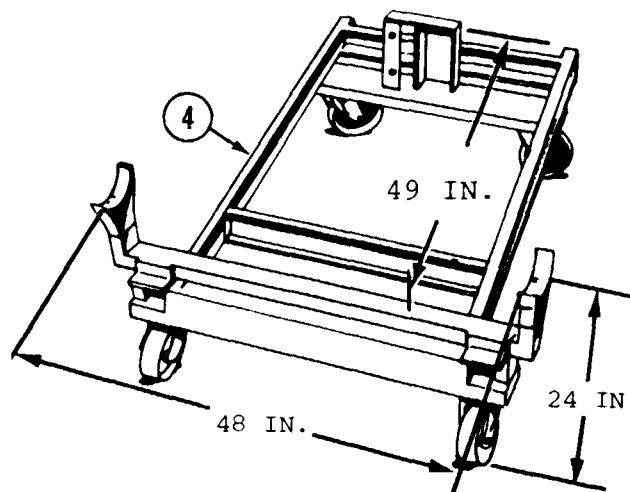
## REMOVAL

## NOTES

After lifting powerpack several inches, shift it toward front of vehicle for clearance.

Watch all sides of powerpack to ensure clearance during removal.

- A Attach lifting sling (1) to powerpack (2) at lifting eyes (3).
- B Lift powerpack (2) slowly out of hull.
- C Place on powerpack stand (4) or improvised powerpack stand (5).



## INSTALLATION

- A Make sure trunnion-cap shims are installed in original location.
- B Make sure trunnion caps are installed in proper location as marked on caps (left front and right front), with stamp facing toward front of M992.

## NOTE

Primary fuel pump bracket (lifting eye) must be disconnected and removed to install and properly torque right front trunnion cap bolts.

- C Torque trunnion cap bolts to 85-90 lb-ft.
- D Test run vehicle to check powerpack operation.
- E Install in reverse order of removal procedure.

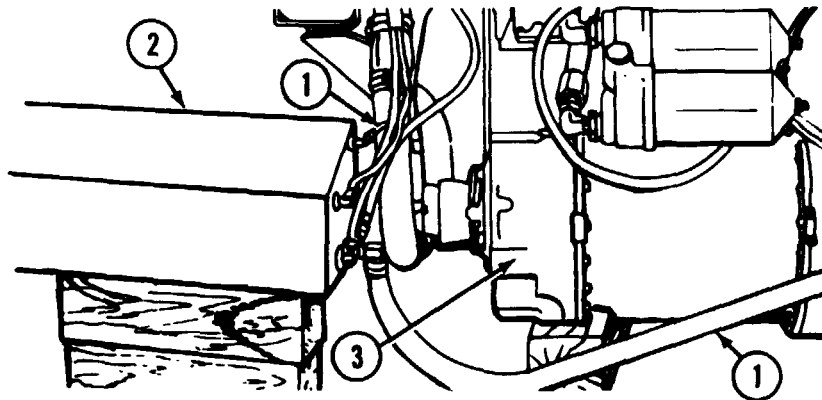
## CONTROL AND DRIVE COMPONENTS: INSPECTION

### WARNING

A protective fan screen must be installed prior to doing maintenance in the engine compartment when engine is running or when engine is in ground hop mode. Contact with rotating fan can cause injury.

Operating powerpack out of vehicle lets maintenance personnel inspect control and drive components of powerpack by operating the control linkages on the transmission by hand. Components can be checked for proper functioning and performance with the powerpack unit outside the vehicle without damaging the unit.

## COOLANT SYSTEM: SPECIAL EQUIPMENT HOOKUP FOR OPERATION OUT OF VEHICLE



### CAUTION

Make sure all hoses are connected and secure.

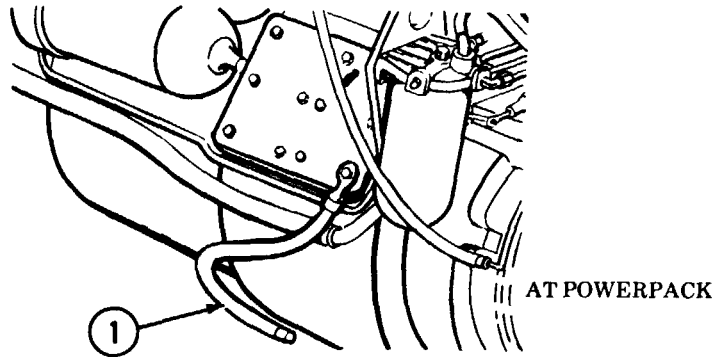
- A Check hoses and connectors (1).
- B Position surge tank (2) on left side of the transmission at final drive universal joint (3).

### NOTES

Make sure hoses are not kinked.

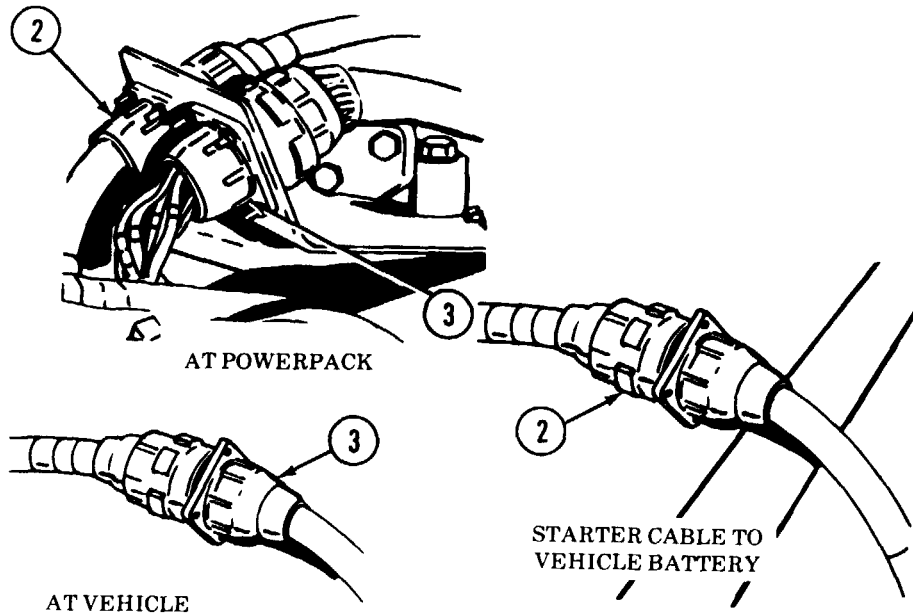
Make sure coolant and engine lubricant are replenished before starting engine.

## POWERPACK: EQUIPMENT HOOKUPS

**NOTE**

Make sure paint is removed from vehicle at connection point.

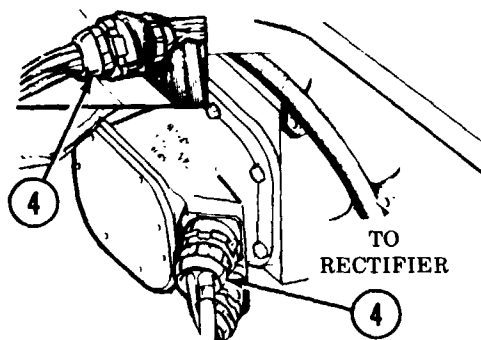
- A Connect ground cable (1) to powerpack.



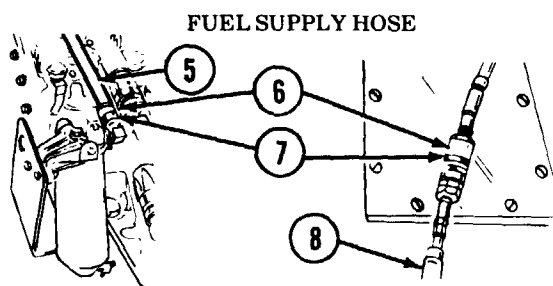
- B Connect engine starter cable connector (2) to powerpack.

- C Connect master circuit power harness connector (3) to powerpack.

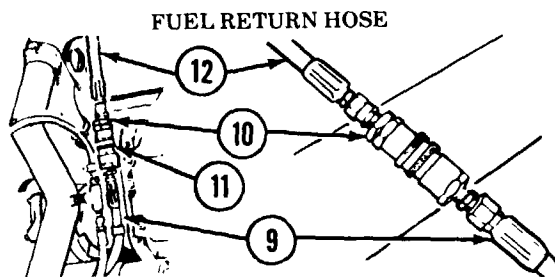
## POWERPACK: EQUIPMENT AND HOOKUPS (CONTINUED)



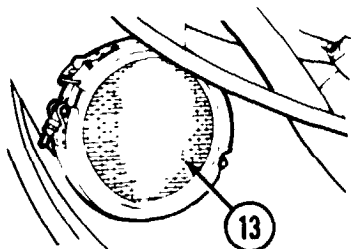
- D Connect generator to rectifier harness connector (4) to powerpack.



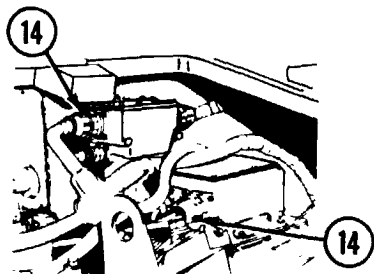
- E Install fuel supply hose assembly (5), adapter (6), quick-disconnect (7) and hose (8) to powerpack.



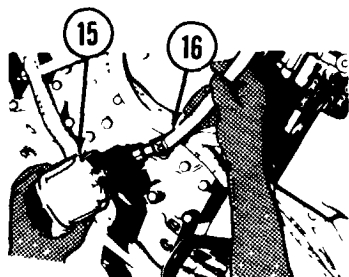
- F Install fuel return hose assembly (9), adapter (10), quick-disconnect (11) and hose (12) to powerpack.

**POWERPACK: EQUIPMENT HOOKUPS (CONTINUED)**

G Install air inlet screen (13) to powerpack.

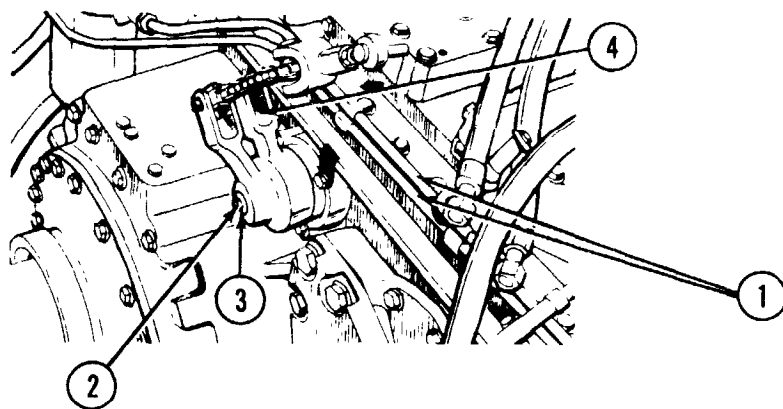


H Connect five wiring harness connectors (14) at master relay and generator regulator.



I Attach tachometer (15) to flexible drive shaft assembly (16).

## STALL TEST WITH POWERPACK REMOVED — BRAKE Transmission



### CAUTION

When operating the powerpack while mounted on blocks, watch closely to prevent powerpack from vibrating off the blocks.

During stall test, check coolant and oil temperatures. Coolant temperature should not exceed 180°F. Oil temperature should not exceed 250°F. If either condition exists, run engine at 1000-1200 rpm for 2 minutes before shutdown.

### NOTE

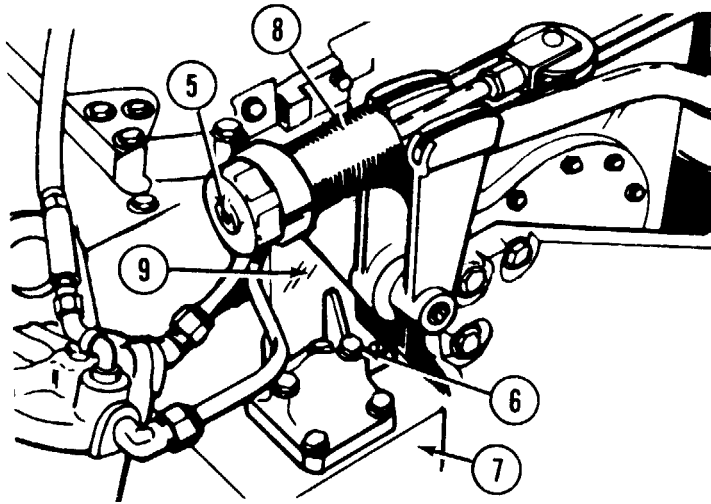
To conduct stall test with engine removed, install brake apply kit. (Brakes must be properly adjusted before conducting stall test p 7-38).

Remove the two fuel filter mounting screws and allow filter to be suspended by the two fuel tubes (1).

- A Remove screw (2), flat washer (3) and brake apply lever (4).

TA310275

### STALL TEST WITH POWERPACK REMOVED — BRAKE TRANSMISSION (CONTINUED)



- B Install brake apply kit (5) and two screws (6) at transmission housing (7).

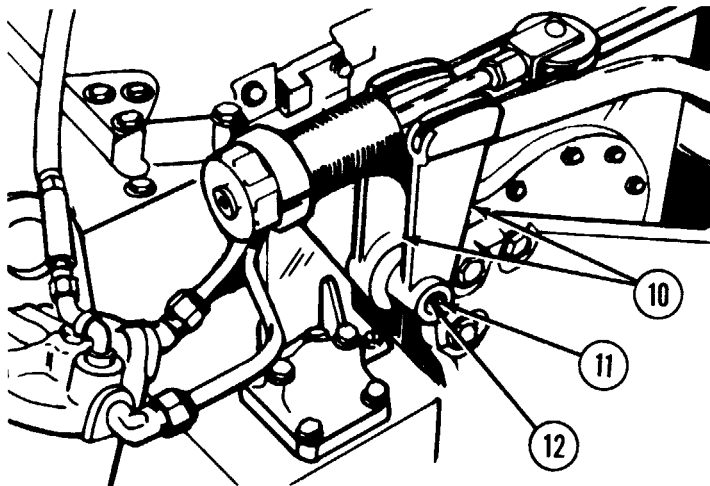
**NOTE**

Remove and use two screws (6) from transmission housing (7).

- C Remove brake apply kit tube (8) from base (9).

**NOTE**

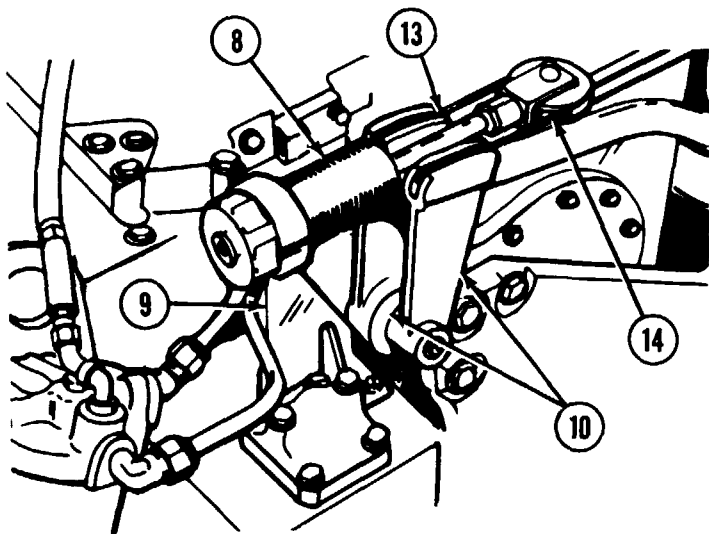
Align pin in kit levers with blind spline on apply shaft on transmission.



- D Attach brake apply kit levers (10) to shaft with screw (11) and washer (12).



STALL TEST WITH POWERPACK REMOVED — BRAKE TRANSMISSION (CONTINUED)

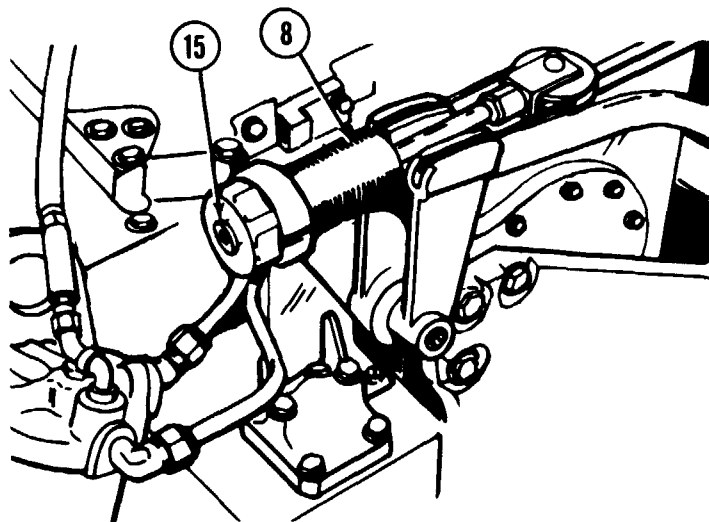


- E Screw brake apply kit tube (8) into brake apply kit base (9).
- F Position cable (13) in slots of two brake apply kit levers (10) and seat in pulley (14).
- G Start engine.

**NOTES**

Operate at 1200 to 1400 rpm until coolant tank is 169° to 180°F and transmission oil temperature is 160°F.

Allow engine to return to normal idle speed (650 rpm).



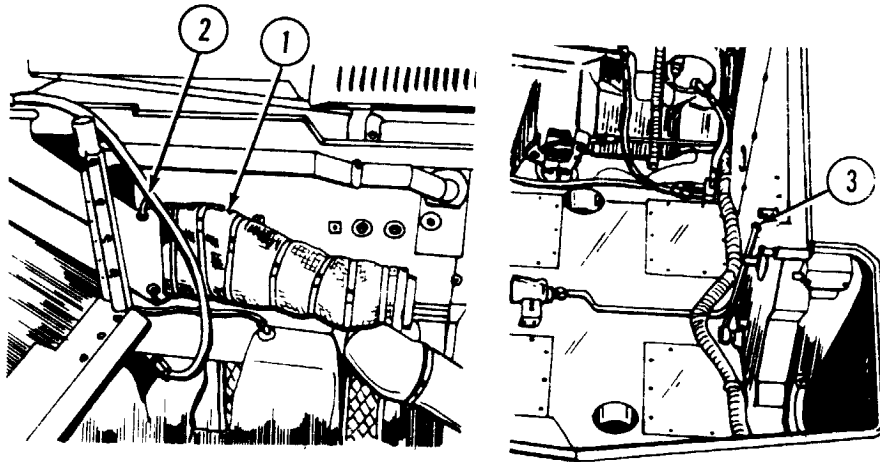
- H Using a 1/2-inch drive ratchet, rotate brake apply shaft (15) clockwise until threaded section brake apply tube (8) ceases to rotate.

**STALL TEST WITH POWERPACK REMOVED — ENGINE****NOTES**

- A Position transmission shift lever in 4th speed range (high).
- B Move governor control lever to full open throttle.

Check engine rpm (1850 rpm minimum). Lower rpm indicates engine malfunction (p 7-6).

Stall speed greater than 2075 rpm indicates transmission malfunction (p 7-6).

**POWERPACK INSTALLATION — HULL PREPARATION****NOTE**

Lubricate and exercise engine mounting bracket before installing powerpack (LO 9-2350-267-12).

- A Position engine exhaust pipe (1) and fuel return hose (2) against powerpack compartment wall (p 3-12).

**CAUTION**

Failure to secure accelerator/throttle linkage to engine compartment wall may damage linkage.

- B Fasten throttle valve control rod linkage (3) to compartment wall (p 3-21).

CHAPTER 4  
FUEL, AIR INTAKE AND EXHAUST SYSTEMS

---

**Section I FUEL SYSTEM**

**GENERAL**

This section contains instructions on how to remove, disassemble, clean, inspect, assemble, test and install the fuel system. The fuel system consists of the following:

- Electric Fuel Pumps
- Fuel Check Valves
- Fuel Filter Assemblies
- Fuel Tank Level Transmitters
- Hoses, Tubes and Fittings

The maintenance procedures are given under the following headings:

- Draining of Fuel System (p 4-2)
- Heat Shield Removal (p 4-2.1)
- Fuel Hoses, Lines and Fittings Removal (p 4-2.2)
- Fuel Fill Access Plate, Fuel Fill Cap and Fuel Strainer (p 4-5)
- Filler Neck Assembly Seal (p 4-6)
- Filler Neck Removal (p 4-6.1)
- Fuel Tank Level Transmitter (Upper) Removal (p 4-6.2)
- Fuel Tank Level Transmitter (Lower) Removal (p 4-8)
- Fuel Check Valve (Right and Left) (p 4-9)
- Left Electric Fuel Pump Removal (p 4-10)
- Right Electric Fuel Pump Removal (p 4-10.1)
- Fuel Filter Assembly (Primary) Removal (p 4-11)
- Primary Fuel Filter Lifting Bracket (p 4-12.2)
- Fuel Filter Assembly (Secondary) Removal (p 4-13)
- Secondary Fuel Filter Lifting Bracket (p 4-14.2)
- Engine Driven Fuel Pump Removal (p 4-15)
- Electric Fuel Pump Removal (p 4-16)
- Relief Valve Checking and Cleaning (p 4-17)
- Powerpack Fuel Hoses, Tubes, and Connectors Removal (p 4-19)
- Fuel Flow Test (p 4-22)

**DRAINING OF FUEL SYSTEM****INITIAL SETUP**References:

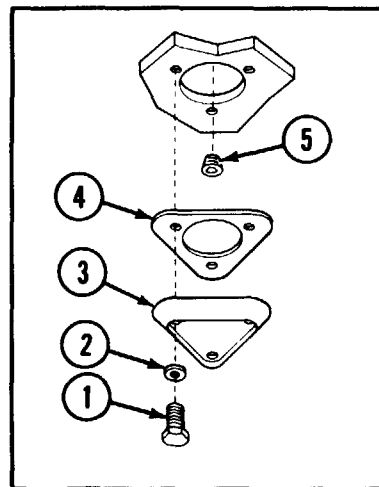
TM 9-2350-267-10

General Safety Instructions:

No smoking or open flame when working on fuel system.

**NOTE**

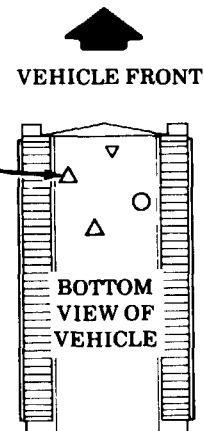
Fuel tank capacity is 135 gallons. Removing drain plug at bottom of vehicle allows draining of the system in less than 30 minutes.

**DRAIN**

- A Drive vehicle over maintenance pit to provide clearance for 55-gallon containers used to catch fuel.
- B Remove three screws (1), three flat washers (2), access cover (3) and gasket (4). Discard gasket.
- C Remove fuel plug (5) and drain fuel.

**REFUEL**

- A Install fuel plug (5).
- B Install new gasket (4) and access cover (3) with three screws (1) and three flat washers (2).
- C Move vehicle from maintenance pit and refuel system (TM 9-2350-267-10).



## HEAT SHIELD: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Adhesive (item 4, Appx D)  
Sealing Compound (item 54, Appx D)  
Dry-cleaning solvent (item 20, Appx D)

#### Personnel Required:

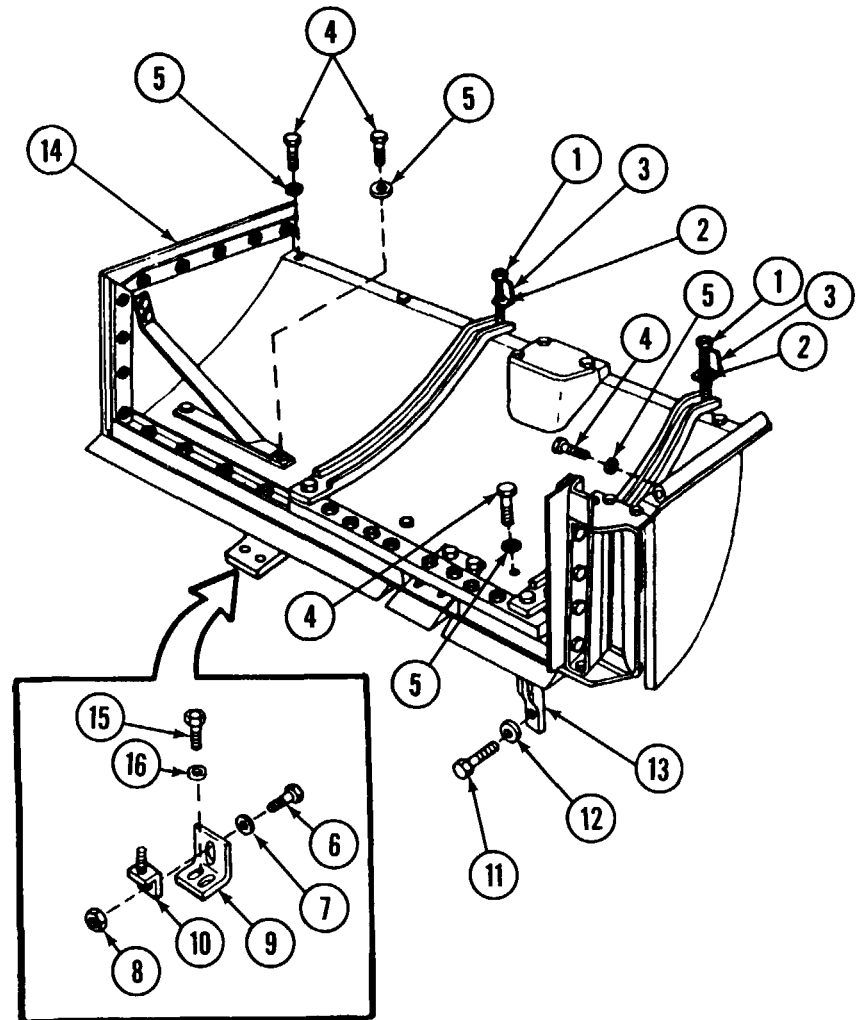
Three

#### Equipment Conditions:

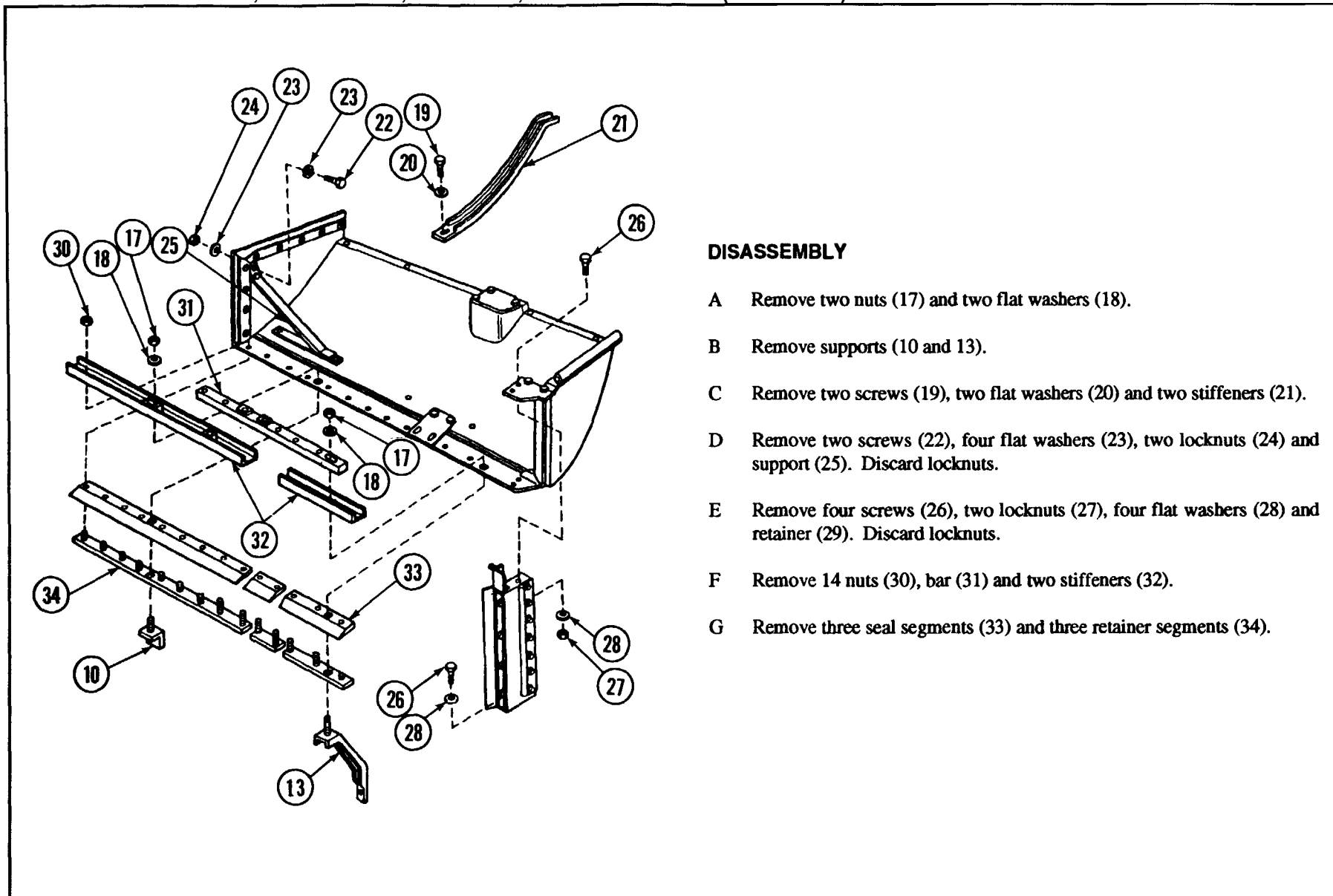
Powerpck removed (p 3-1).  
Engine exhaust duct removed (p 4-32).

### REMOVAL

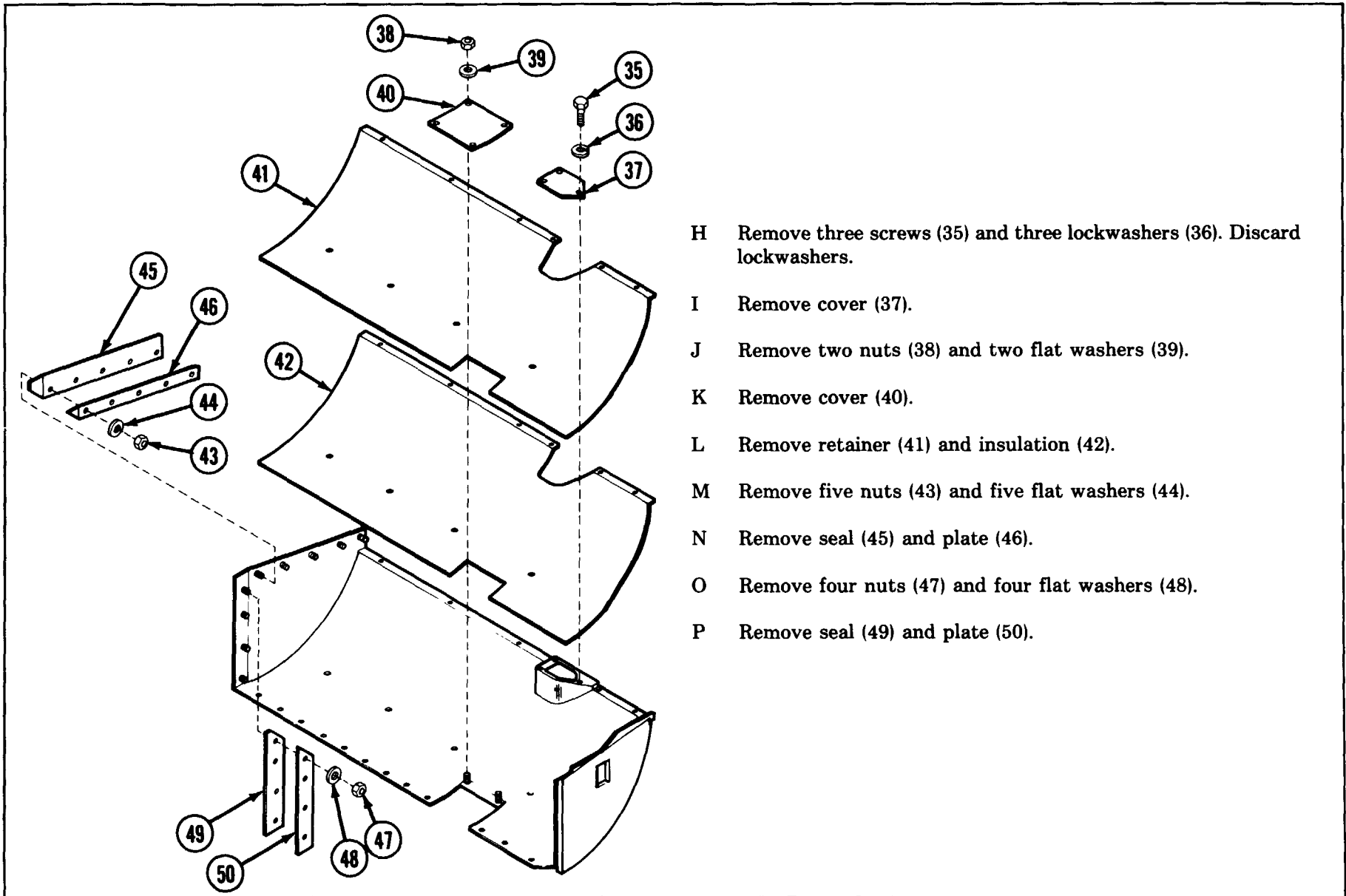
- A Remove two screws (1), two jamnuts (2) and two brackets (3).
- B Remove 10 screws (4) and 10 flat washers (5).
- C Remove one screw (6), one flat washer (7), and one locknut (8) to separate bracket (9) from support (10). Discard locknut.
- D Remove one screw (11) and one flat washer (12) from support (13).
- E Remove fuel tank heat shield (14) from vehicle.
- F Remove two screws (15), two flat washers (16), and bracket (9) from vehicle.



## HEAT SHIELD: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)

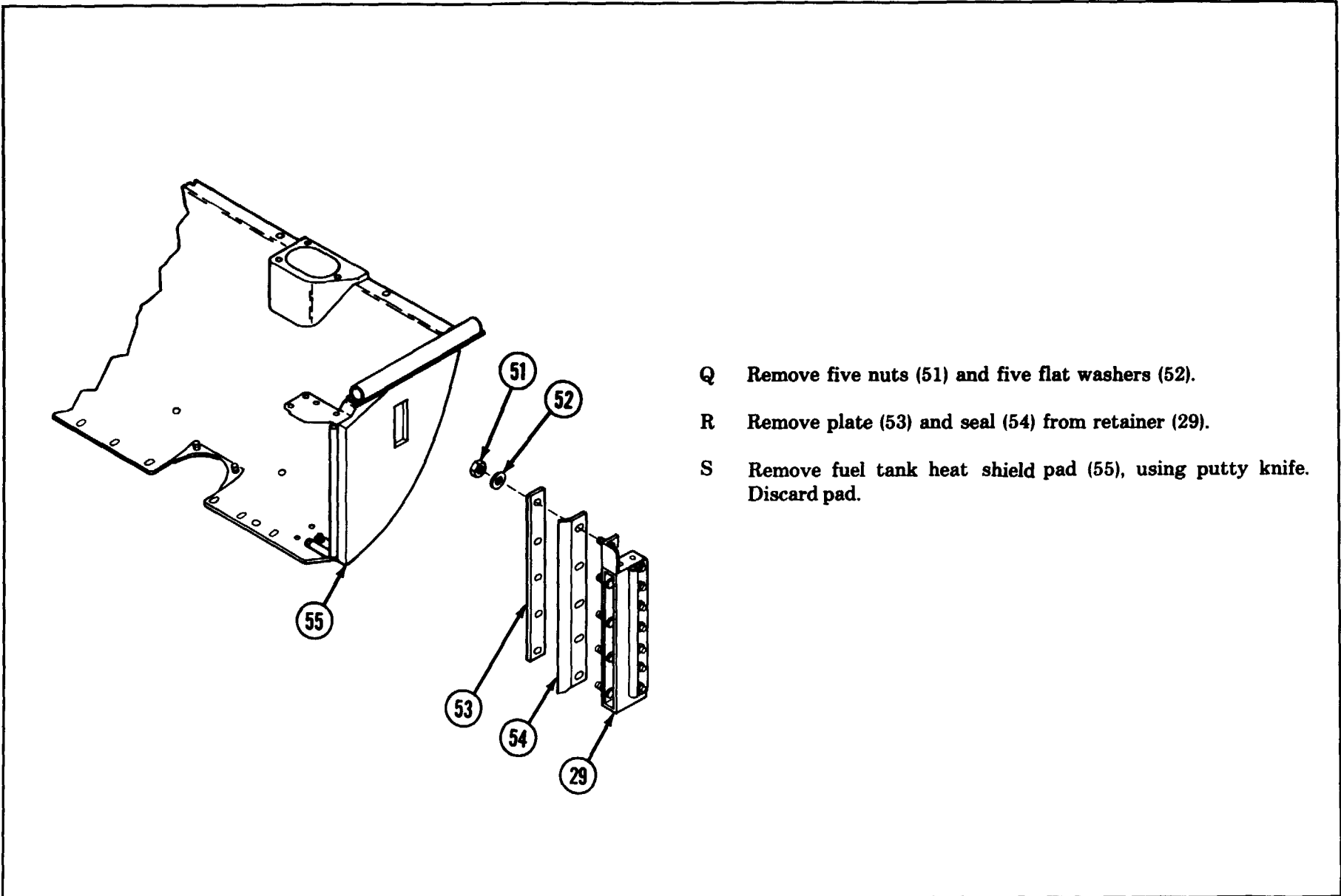


## HEAT SHIELD: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION



TA58060 ■

HEAT SHIELD: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)



- Q Remove five nuts (51) and five flat washers (52).
- R Remove plate (53) and seal (54) from retainer (29).
- S Remove fuel tank heat shield pad (55), using putty knife. Discard pad.



## HEAT SHIELD: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)

### ASSEMBLY

#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy, get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

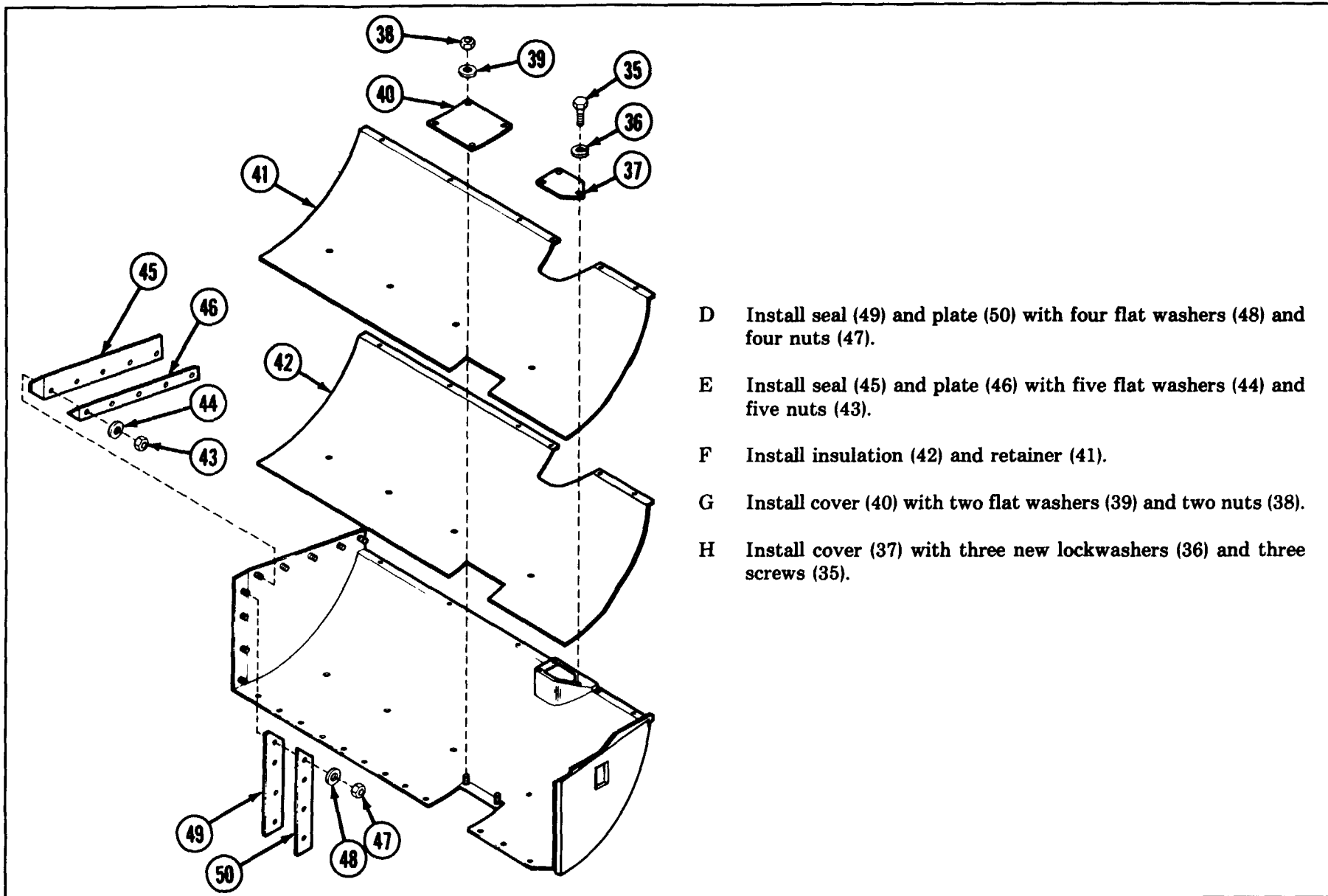
- A Clean pad mounting surface with dry-cleaning solvent (item 20, Appx D) to remove all residue and adhesive from old pad.
- B Apply adhesive (item 4, Appx D) and install new pad (55).

#### NOTE

Tighten plate and seal nuts tight enough to show slight compression of rubber.

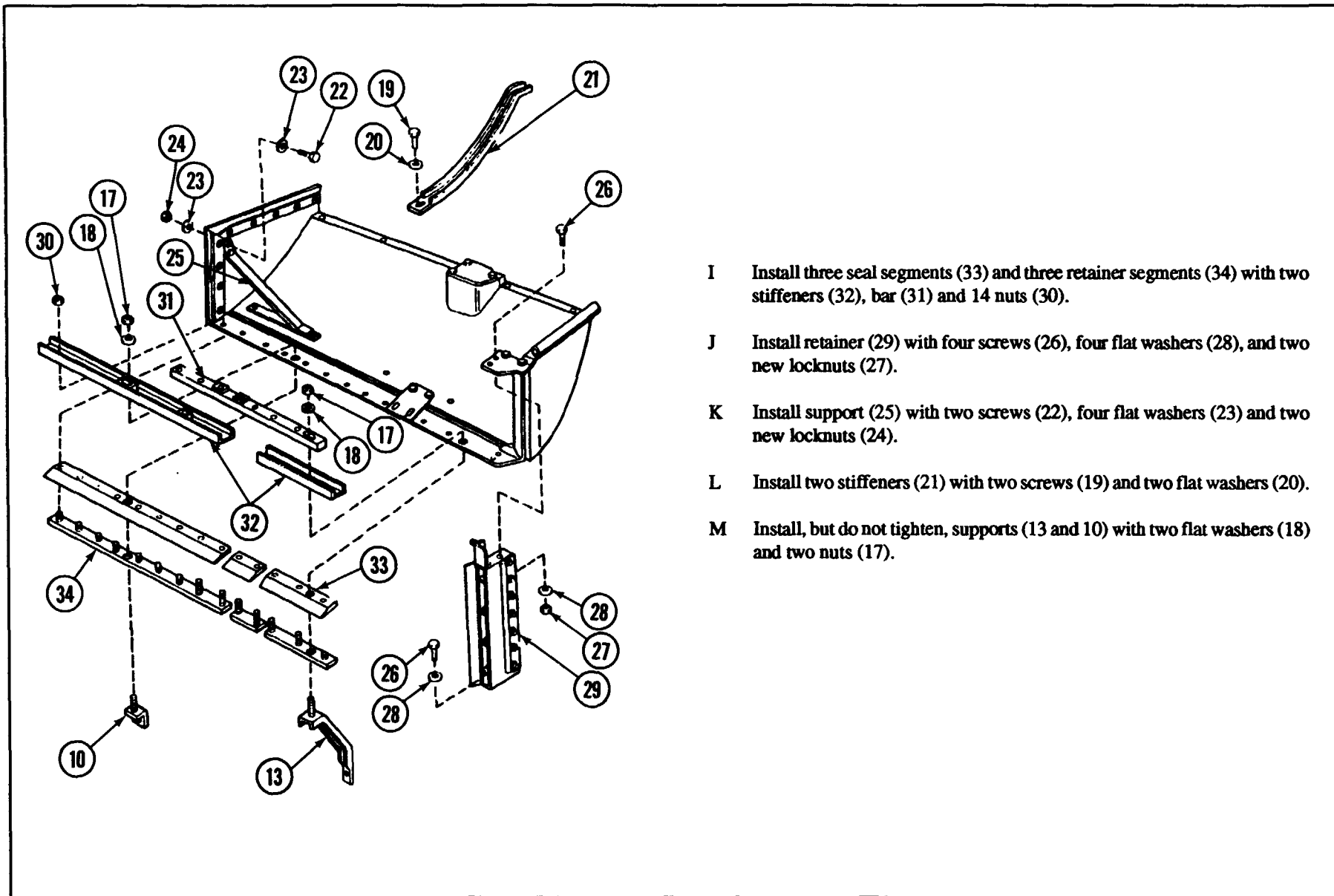
- C Install seal (54) and plate (53) on retainer (29) with five flat washers (52) and five nuts (51).

## HEAT SHIELD: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)

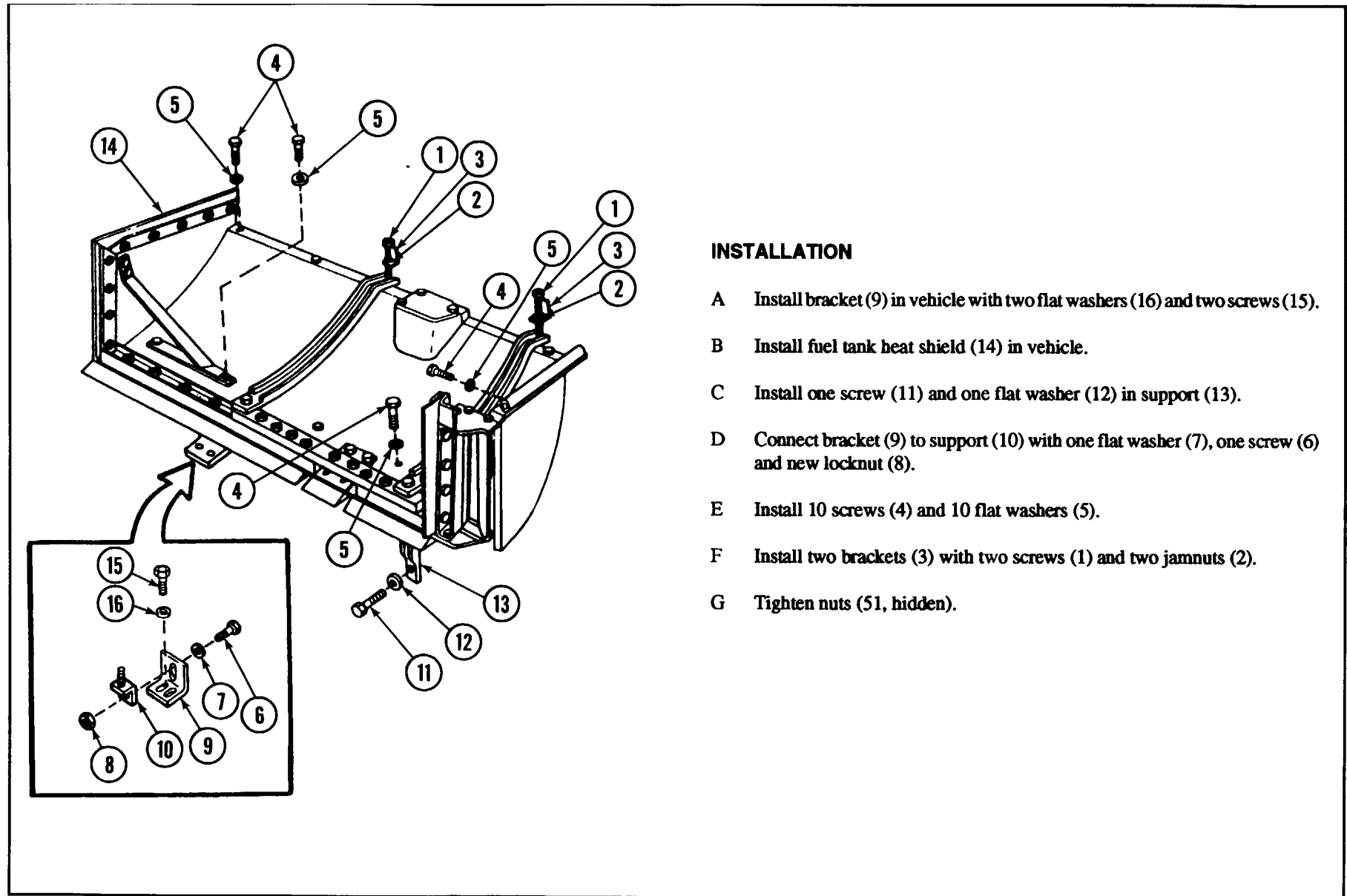


- D Install seal (49) and plate (50) with four flat washers (48) and four nuts (47).
- E Install seal (45) and plate (46) with five flat washers (44) and five nuts (43).
- F Install insulation (42) and retainer (41).
- G Install cover (40) with two flat washers (39) and two nuts (38).
- H Install cover (37) with three new lockwashers (36) and three screws (35).

HEAT SHIELD: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)



## HEAT SHIELD: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)

**INSTALLATION**

- A Install bracket (9) in vehicle with two flat washers (16) and two screws (15).
- B Install fuel tank heat shield (14) in vehicle.
- C Install one screw (11) and one flat washer (12) in support (13).
- D Connect bracket (9) to support (10) with one flat washer (7), one screw (6) and new locknut (8).
- E Install 10 screws (4) and 10 flat washers (5).
- F Install two brackets (3) with two screws (1) and two jamnuts (2).
- G Tighten nuts (51, hidden).



FUEL HOSES, LINES AND FITTINGS: REMOVAL AND INSTALLATION

**INITIAL SETUP**

Test Equipment/Special Tools:

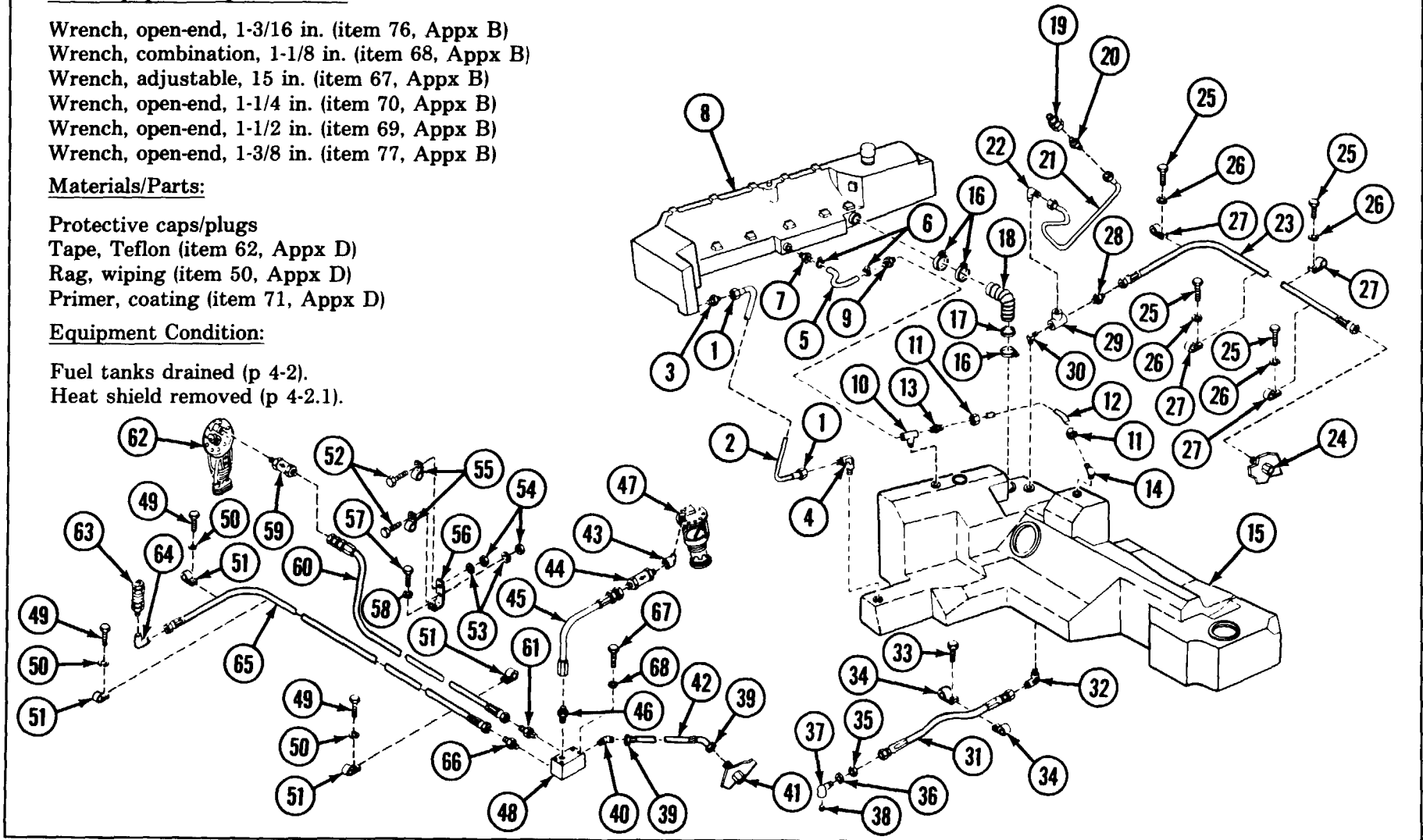
- Wrench, open-end, 1-3/16 in. (item 76, Appx B)
- Wrench, combination, 1-1/8 in. (item 68, Appx B)
- Wrench, adjustable, 15 in. (item 67, Appx B)
- Wrench, open-end, 1-1/4 in. (item 70, Appx B)
- Wrench, open-end, 1-1/2 in. (item 69, Appx B)
- Wrench, open-end, 1-3/8 in. (item 77, Appx B)

Materials/Parts:

- Protective caps/plugs
- Tape, Teflon (item 62, Appx D)
- Rag, wiping (item 50, Appx D)
- Primer, coating (item 71, Appx D)

Equipment Condition:

- Fuel tanks drained (p 4-2).
- Heat shield removed (p 4-2.1).



## FUEL HOSES, LINES AND FITTINGS: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

#### NOTE

- Apply coating primer (item 71, Appx D) to contacting surfaces of adapters (24 and 41).
- Apply Teflon tape (item 62, Appx D) to all male pipe threads during installation.

- A Install fuel distribution terminal fitting (48) with four screws (67) and four new lockwashers (68).
- B Install adapter (66), fuel filter inlet hose (65), elbow (64) and coupling (63) on fuel distribution terminal fitting (48).
- C Install check valve (59), fuel tank outlet hose (60) and adapter (61) on fuel pump (62) and fuel distribution terminal fitting (48).
- D Install bracket (56) with new lockwasher (58), and screw (57).
- E Install two clamps (55) with two screws (52), two new lockwashers (53) and two nuts (54).
- F Install four clamps (51) with three screws (49) and three new lockwashers (50).
- G Install adapter (46), fuel tank outlet hose (45), check valve (44) and elbow (43) on fuel pump (47) and fuel distribution terminal fitting (48).
- H Install elbow (40) on fuel distribution terminal fitting (48).
- I Install adapter (41).
- J Install APU personnel heater fuel supply hose (42) and tighten two swivel nuts (39) at elbow (40) and adapter (41).
- K Install nut (35), flat washer (36) and elbow (37) on drain hose (31).
- L Install pipe plug (38) in elbow (37).
- M Install elbow (32) and connect fuel tank drain hose (31).
- N Install two clamps (34) and screw (33).
- O Install elbow (30), tee (29), adapter (28) and hose (23).
- P Connect APU fuel return hose (23) at adapter (24).
- Q Install four clamps (27) with four screws (25) and four new lockwashers (26).
- R Install elbow (22), engine fuel return hose (21), adapter (20) and coupling (19).
- S Install fuel tank filler hose (18), hose flange (17) and three hose clamps (16).
- T Install tee (10), elbow (14) and adapter (13) on lower fuel tank (15).
- U Install bent metal tube assembly (12) and tighten two swivel nuts (11).
- V Install adapter (9) on tee (10) and adapter (7) on upper fuel tank (8).
- W Install fuel tank breather hose assembly (5) and tighten two hose clamps (6).
- X Install elbow (4) and adapter (3).
- Y Install crossover hose assembly (2) and tighten swivel nuts (1).

TA58027





## FUEL HOSES, LINES AND FITTINGS: REMOVAL AND INSTALLATION (CONTINUED)

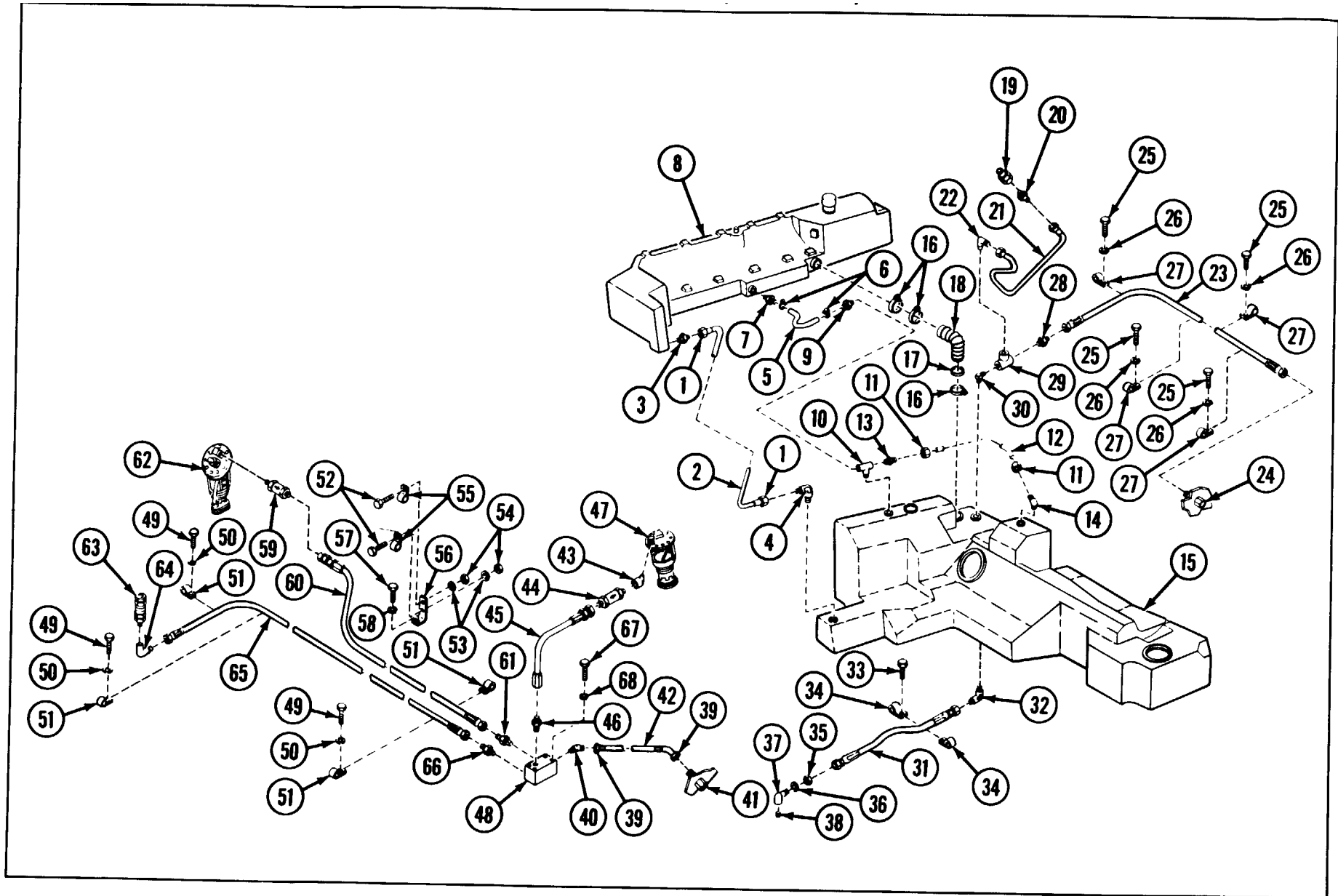
### REMOVAL

#### NOTE

- Use protective caps/plugs on all disconnected hoses and fittings.
- Use wiping rags to remove leaked fuel.

- A Loosen two swivel nuts (1) and remove crossover hose assembly (2).
- B Remove adapter (3) and elbow (4).
- C Remove fuel tank breather hose assembly (5) by loosening two hose clamps (6).
- D Remove adapter (7) from upper fuel tank (8) and adapter (9) from tee (10).
- E Loosen two swivel nuts (11) and remove bent metal tube assembly (12).
- F Remove adapter (13), elbow (14) and tee (10) from lower fuel tank (15).
- G Remove three hose clamps (16), hose flange (17) and fuel tank filler hose (18).
- H Remove coupling (19), adapter (20), engine fuel return hose (21) and elbow (22).
- I Disconnect APU fuel return hose (23) at adapter (24).
- J Remove four screws (25), four lockwashers (26), and four clamps (27). Discard lockwashers.
- K Remove hose (23), adapter (28), tee (29) and elbow (30).
- L Disconnect fuel tank drain hose (31) at elbow (32) and remove elbow (32).
- M Remove screw (33) and two clamps (34).
- N Remove nut (35), flat washer (36) and elbow (37) from drain hose (31).
- O Remove pipe plug (38) from elbow (37).
- P Loosen two swivel nuts (39) at elbow (40) and adapter (41) and remove fuel supply hose (42) for APU and personnel heater. Remove elbow (40) and adapter (41).
- Q Remove elbow (43), check valve (44), fuel tank outlet hose (45) and adapter (46) from fuel pump (47) and fuel distribution terminal fitting (48).
- R Remove three screws (49), three lockwashers (50) and four clamps (51). Discard lockwashers.
- S Remove two screws (52), two lockwashers (53), two nuts (54) and two clamps (55). Discard lockwashers.
- T Remove bracket (56) by removing one screw (57) and one lockwasher (58). Discard lockwasher.
- U Remove check valve (59), fuel tank outlet hose (60) and adapter (61) from fuel pump (62) and fuel distribution terminal fitting (48).
- V Remove coupling (63), elbow (64), fuel filter inlet hose (65) and adapter (66) from fuel distribution terminal fitting (48).
- W Remove fuel distribution terminal fitting (48) by removing four screws (67) and four lockwashers (68). Discard lockwashers.

FUEL HOSES, LINES AND FITTINGS: REMOVAL AND INSTALLATION (CONTINUED)

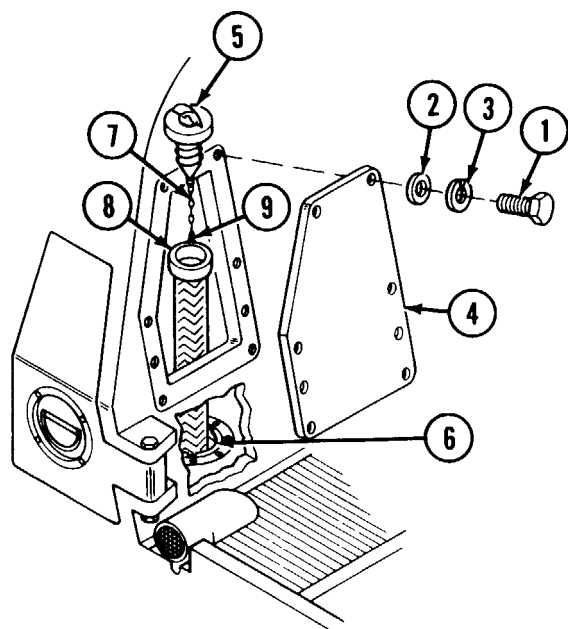


## FUEL FILL ACCESS PLATE, FUEL FILL CAP AND FUEL STRAINER: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Dry-cleaning solvent (item 19, Appx D)



#### REMOVAL

- A Remove eight screws (1), eight flat washers (2) and eight lockwashers (3). Discard lockwashers.
- B Remove access plate (4).
- C Unscrew fill cap (5) from tank fill tube (6).

- D Pull fill cap (5) and chain (7) straight up and out of access opening grasp strainer assembly (8) and remove from vehicle.
- E Remove fill cap (5) and chain (7) from strainer assembly (8) by releasing hook (9).

#### INSTALLATION

#### WARNING

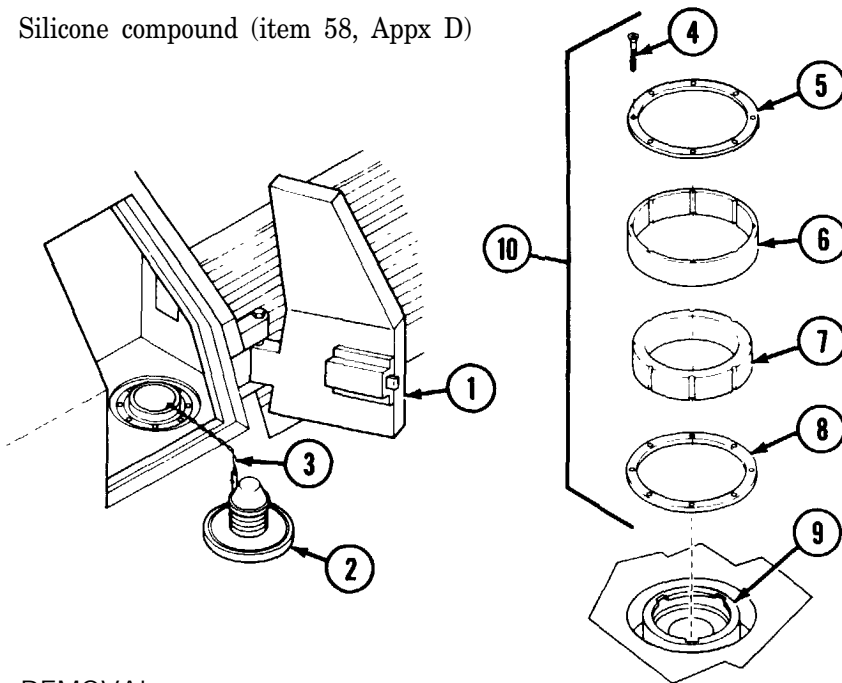
Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (380°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- A Clean strainer assembly (8) mesh with dry-cleaning solvent (item 19, Appx D), or discard if strainer mesh is torn.
- B Install fill cap (5) and chain (7) on strainer assembly (8) using hook (9).
- C Install strainer assembly (8) in vehicle.
- D Screw fill cap (5) into tank fill tube (6).
- E Install access plate (4) using eight screws (1), eight flat washers (2) and eight new lockwashers (3).

## FILLER NECK ASSEMBLY SEAL: REMOVAL AND INSTALLATION

**INITIAL SETUP**Materials/Parts:

Silicone compound (item 58, Appx D)



## REMOVAL

- A Open fuel fill access door (1).
- B Pull fuel fill cap (2) and chain (3) straight up and remove from strainer (hidden).
- C Remove eight screws (4), top washer (5), outer seal (6), inner seal (7) and bottom washer (8) from around fuel fill neck (9).

## INSTALLATION

## NOTE

Seals are made eccentric so that they maybe adjusted. Filler neck may not be centered in filler neck hole; adjust accordingly.

- A Apply silicone compound (item 58, Appx D) to both seals.
- B Place inner seal (7) inside outer seal (6). Turn seals to dine screw holes.
- c Assemble top washer (5) on top, and position washer (8) with threaded holes on bottom.
- D Insert eight screws (4) and turn three to four turns. Do not tighten screws.

## NOTE

Tightening or loosening of screws maybe required during seal assembly installation.

- E Aline fuel fill neck (9) and seal assembly (10), and drive in assembly with hammer.
- F After seal assembly (10) is installed, tighten eight screws (4).
- G Connect chain hook (3) and fuel fill cap (2) to strainer (hidden).
- H Screw fuel fill cap (2) into fuel fill neck (9).
- I Close fuel fill access door (1).

## FILLER NECK: REMOVAL AND INSTALLATION

### INITIAL SETUP

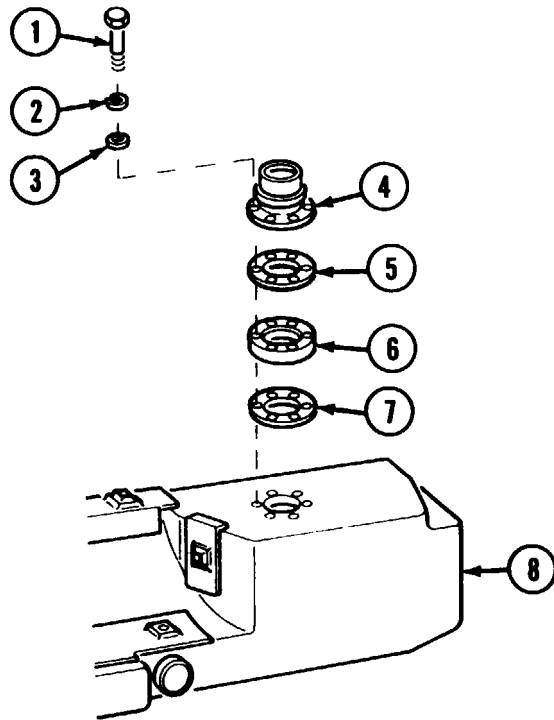
#### Materials/Parts:

Silicone compound (item 58, Appx D)

#### Equipment Condition:

Filler neck assembly removed (p 4-6).

Upper fuel tank drained (p 4-2).



### REMOVAL

- A Remove six screws (1), six lockwashers (2) and six flat washers (3). Discard lockwashers.
- B Remove filler neck (4), gasket (5), spacer (6) and gasket (7) from upper fuel tank (8). Discard gaskets.

### INSTALLATION

#### NOTE

Apply silicon compound (item 58, Appx D) to gasket surfaces before installation.

- A Install new gasket (7), spacer (6), new gasket (5) and filler neck (4) in upper fuel tank (8).
- B Install six screws (1), six new lockwashers (2) and six flat washers (3).

## FUEL TANK LEVEL TRANSMITTER (UPPER): REMOVAL AND INSTALLATION

**INITIAL SETUP**Materials/Parts:

Sealing compound (item 54, Appx D)

Personnel Required:

Two

Equipment Condition:

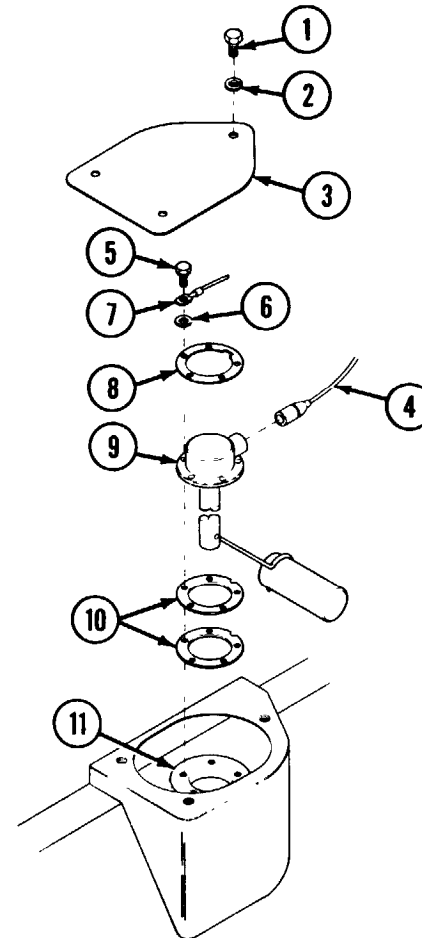
Exhaust deflector removed (p 9-66.13).  
Exhaust deck removed (p 9-66.12).

## REMOVAL

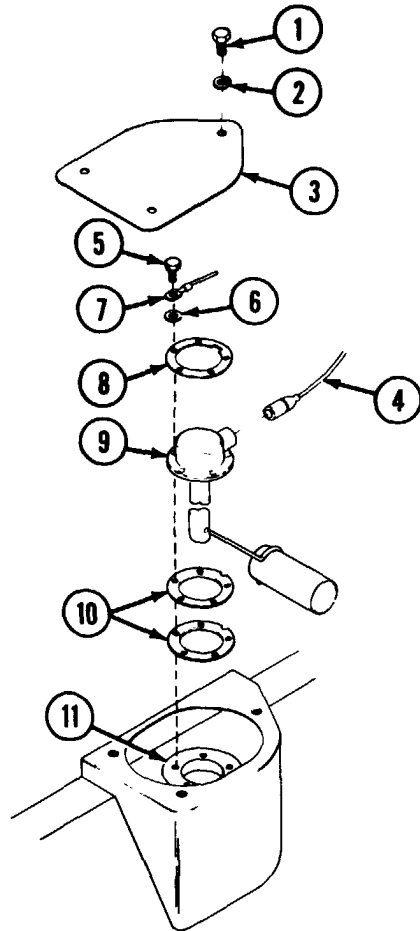
## NOTE

If upper fuel tank is full, drain enough fuel to make removal of transmitter possible.

- A Remove three screws (1), three lockwashers (2) and cover (3). Discard lockwashers.
- B Disconnect electrical connector (4).
- C Remove five screws (5), five flat washers (6), ground lead (7) and spacer (8).
- D Remove transmitter (9) and two gaskets (10) from fuel tank (11). Discard gaskets.



## FUEL TANK LEVEL TRANSMITTER (UPPER): REMOVAL AND INSTALLATION (CONTINUED)



### INSTALLATION

#### NOTE

Apply sealing compound (item 54, Appx D) to gaskets before installation.

- A Install two new gaskets (10) and transmitter (9) in fuel tank (11).
- B Install spacer (8), ground lead (7), five screws (5) and five flat washers (6).
- C Connect electrical connector(4).
- D Install cover (3) with three screws (1) and three new lockwashers (2).

FUEL TANK LEVEL TRANSMITTER (LOWER): REMOVAL AND INSTALLATION

**INITIAL SETUP**

Materials/Parts:

Sealing compound (item 54, Appx D)

Personnel Required:

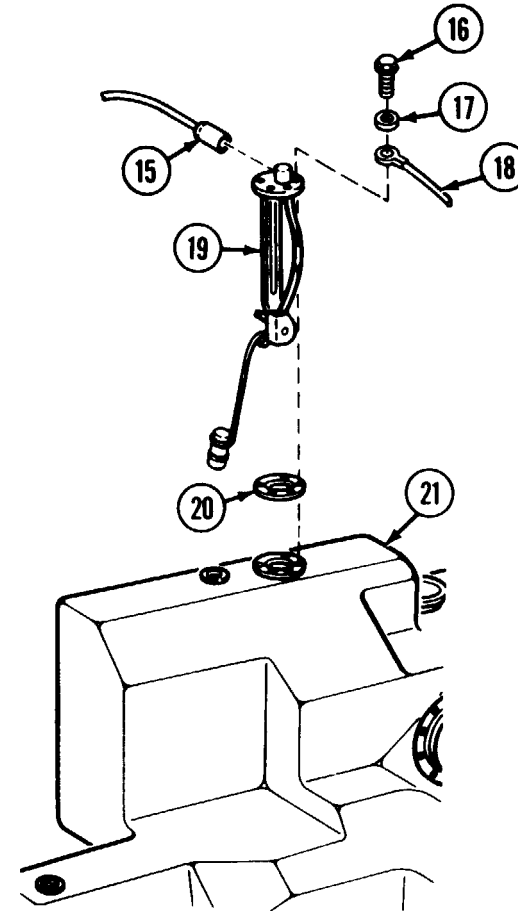
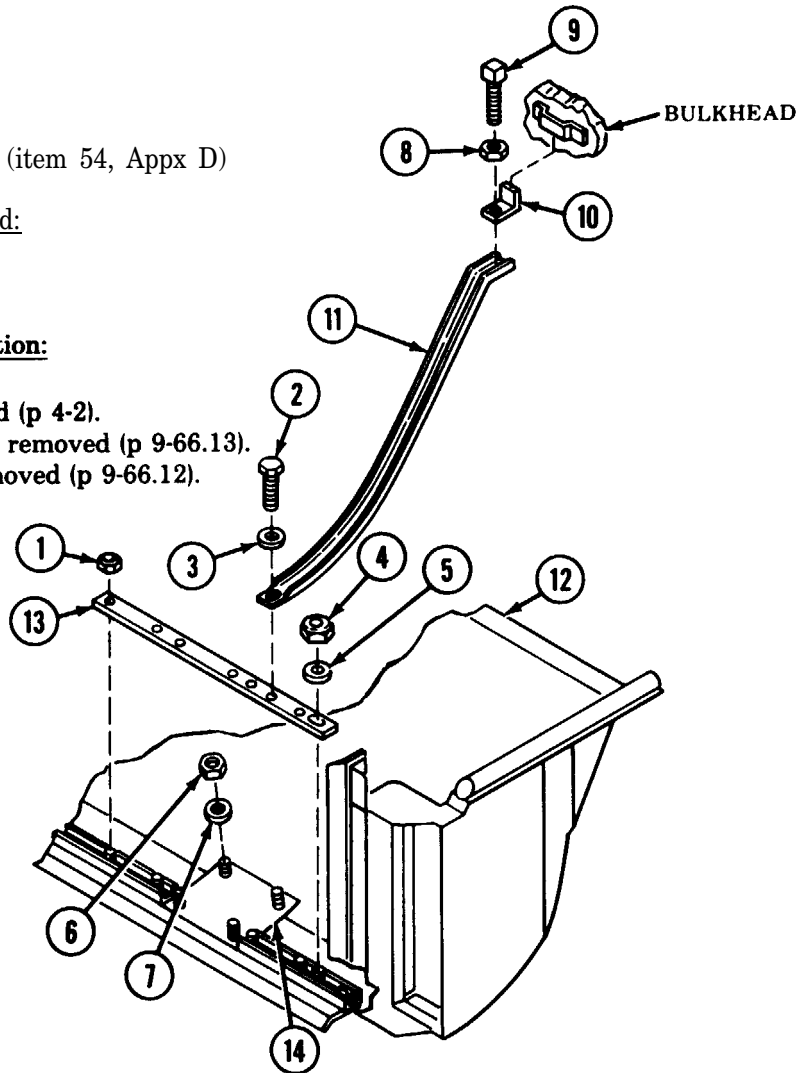
Two

Equipment Condition:

Fuel tanks drained (p 4-2).

Exhaust deflector removed (p 9-66.13).

Exhaust deck removed (p 9-66.12).





FUEL TANK LEVEL TRANSMITTER (LOWER): REMOVAL AND INSTALLATION (CONTINUED)

REMOVAL

- A Remove six self-locking nuts (1), screw (2), and flat washer (3). Discard nuts.
- B Remove nut (4) and flat washer (5).
- C Remove two nuts (6) and two flat washers (7).
- D Loosen locknut (8) and screw (9) enough to remove angle bracket (10) from bulkhead.
- E Remove stiffener (11) from heat shield (12).
- F Remove bar (13) and access cover (14).
- G Disconnect electrical connector (15).
- H Remove five screws (16), five flat washers (17) and ground lead (18).
- I Remove transmitter (19) and gasket (20) from lower fuel tank (21). Discard gasket.

INSTALLATION

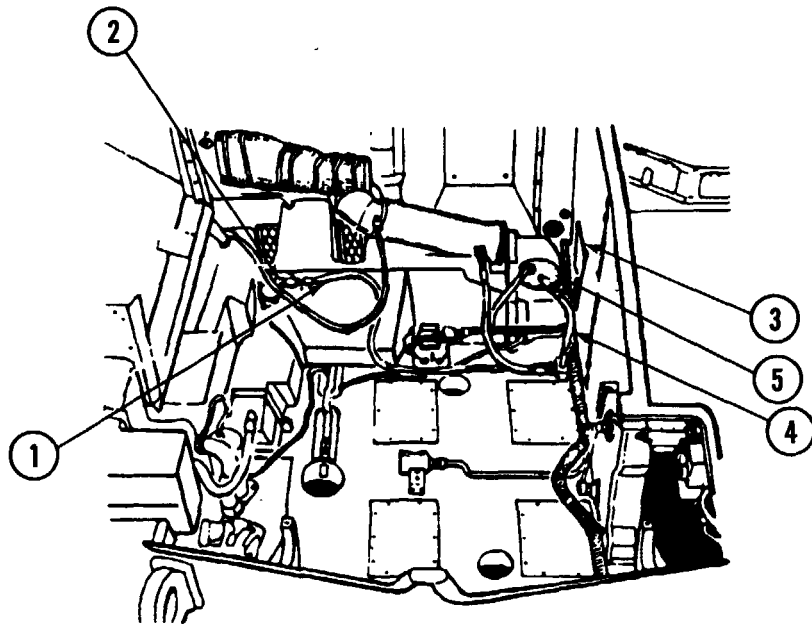
NOTE

Apply sealing compound (item 54, Appx D) to new gasket before installation.

- A Install new gasket (20) and transmitter (19) in lower fuel tank (21).
- B Install ground lead (18), five screws (16) and five flat washers (17).
- C Connect electrical connector (15).
- D Install access cover (14) and bar (13).
- E Install stiffener (11) on heat shield (12).
- F Install angle bracket (10) on bulkhead, and tighten screw (9) and locknut (8).
- G Install two nuts (6) and two flat washers (7).
- H Install nut (4) and flat washer (5).
- I Install screw (2), flat washer (3) and six new self-locking nuts (1).



## FUEL CHECK VALVE (RIGHT AND LEFT): REMOVAL AND INSTALLATION



### FUEL CHECK VALVE (RIGHT)

#### REMOVAL

- A Remove powerpack (p 3-1).
- B Drain fuel tanks (TM 9-2350-267-10).
- C Disconnect fuel hose (1) at right check valve (2).
- D Remove right check valve (2) from pump assembly.

### FUEL CHECK VALVE (LEFT)

#### REMOVAL

#### NOTE

Powerpack does not have to be removed to remove left fuel check valve.

- A Remove engine compartment access cover (3) (p 3-14).
- B Drain fuel tanks (TM 9-2350-267-10).
- C Remove fuel hose (4) at left check valve (5).
- D Remove check valve (5) from pump assembly.

#### INSTALLATION

Reverse removal procedures for both right and left fuel check valves.

## LEFT AND RIGHT ELECTRIC FUEL PUMP TEST

**INITIAL SETUP****Tools/Test equipment:**

General mechanic's tool kit (item 52, Appx B)  
Suitable container

**Materials/Parts:**

Wire 14 gauge (two required) (fabricate using P/N 811615,  
NSN 6145-01-164-7561 or equivalent)

**Personnel Required:**

Two

**Equipment Conditions:**

Vehicle parked on level ground (refer to TM 9-2350-267-10).  
Right transmission access door opened (refer to TM 9-2350-267-10).  
Engine compartment access cover removed (p 9-25).  
Battery access cover opened (refer to TM 9-2350-267-10).

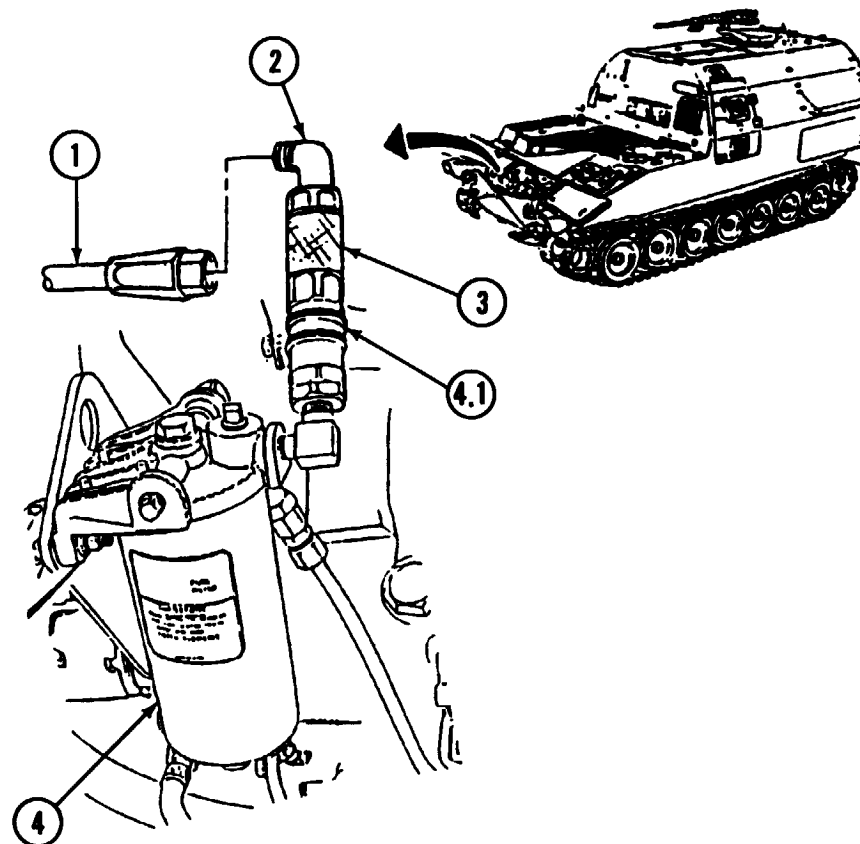
**TEST**

A Disconnect quick-disconnect fitting (3) from fitting (4.1).

**NOTE**

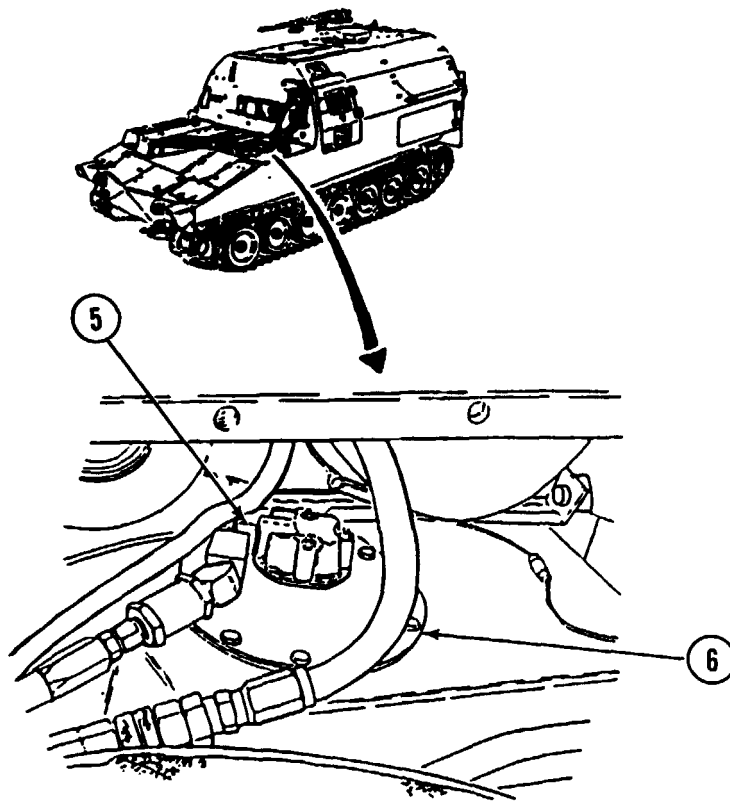
When elbow is removed from hose, fuel will continually  
flow. An assistant is needed to monitor fuel flow.

B Disconnect hose (1) from elbow (2) on fuel quick-disconnect fitting (3) on  
primary fuel filter (4). Place end of hose (1) in suitable container.



LEFT AND RIGHT ELECTRIC FUEL PUMP: TEST (CONTINUED)

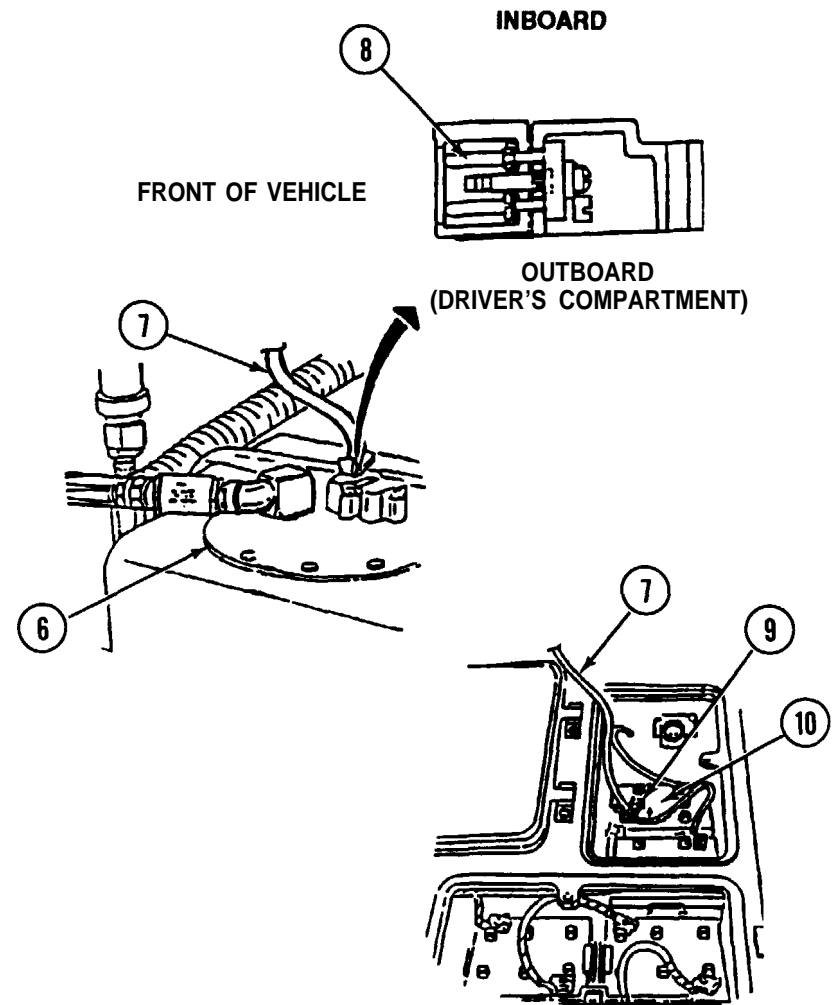
C Disconnect connector (5) from left electric fuel pump (6).



NOTE

Connector on left fuel pump is a three-pin connection. The center pin is a dummy pin.

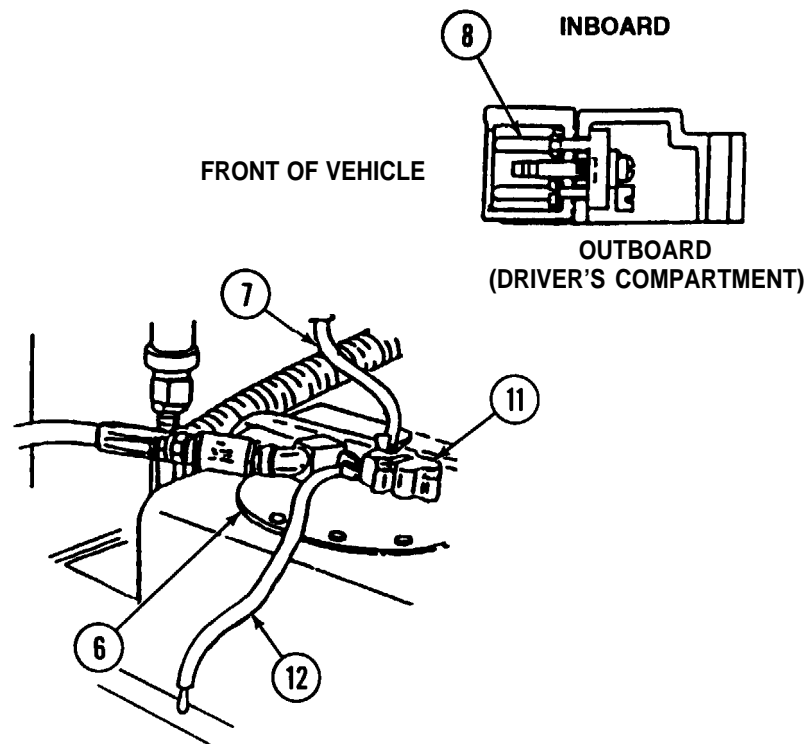
D Connect jumper wire (7) from pin (8) (inboard when looking down on fuel pump through engine compartment access opening) on left fuel pump (6) to positive terminal (9) on vehicle battery (10).



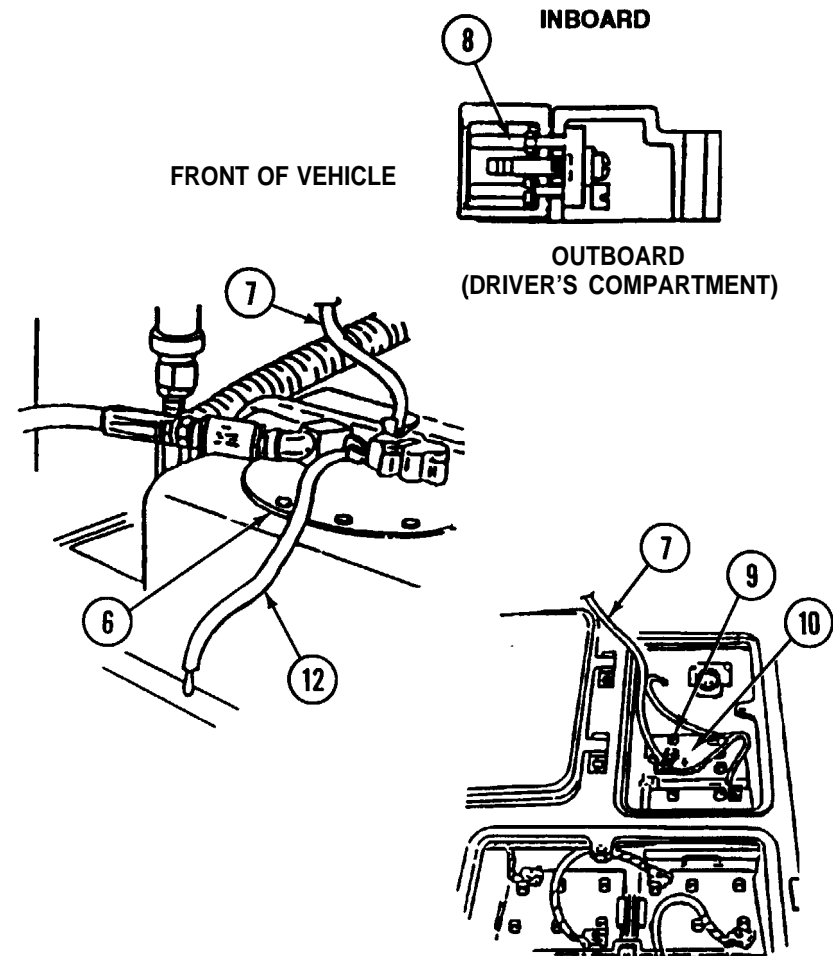
**LEFT AND RIGHT ELECTRIC FUEL PUMP: TEST (CONTINUED)****WARNING**

Keep fuel away from open flames. Fuel is very flammable and can explode easily.

- E Connect jumper wire (12) to fuel pump housing (11) on left pump (6); ground other end of jumper wire (12). With both jumper wires (7 and 12) connected fuel should flow from hose (1) into container. If fuel still does not flow from hose (1), refer top 2-199.



- F Disconnect jumper wires (7 and 12) from left fuel pump (6). Remove jumper wire (7) from positive terminal (8) of battery (9).

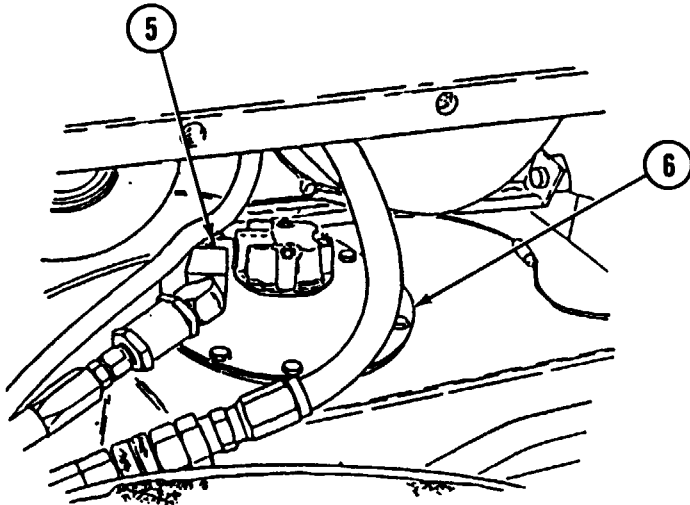


## LEFT AND RIGHT ELECTRIC FUEL PUMP TEST (CONTINUED)

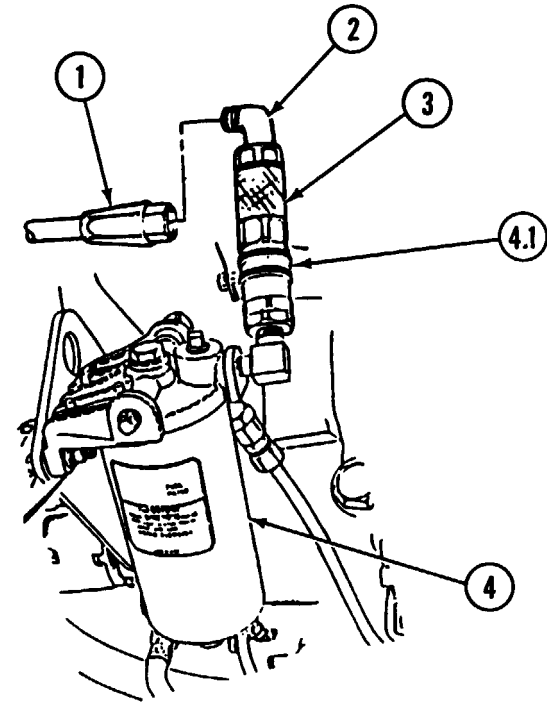
### NOTE

An assistant is needed to turn MASTER switch ON and OFF during right fuel pump test.

- G To test electric fuel pump, leave left fuel pump (6) disconnected. Turn vehicle MASTER switch to ON (refer to TM 9-2350-267-10), and check for fuel flow from hose (1). If fuel does not flow from hose (1), refer to p 2-199.
- H Turn MASTER switch to OFF (refer to TM 9-2350-267-10).
- I Connect connector (5) to left fuel pump (6).



- J Connect hose (1) to elbow (2) on fuel quick-disconnect fitting (3) on primary fuel filter (4).



- K Connect quick-disconnect fitting (3) to fitting (4.1).

### FOLLOW-ON TASKS:

Install engine compartment access cover (p 9-25).  
Close right transmission access door (refer to TM 9-2350-267-10).  
Close battery access cover (refer to TM 9-2350-267-10).



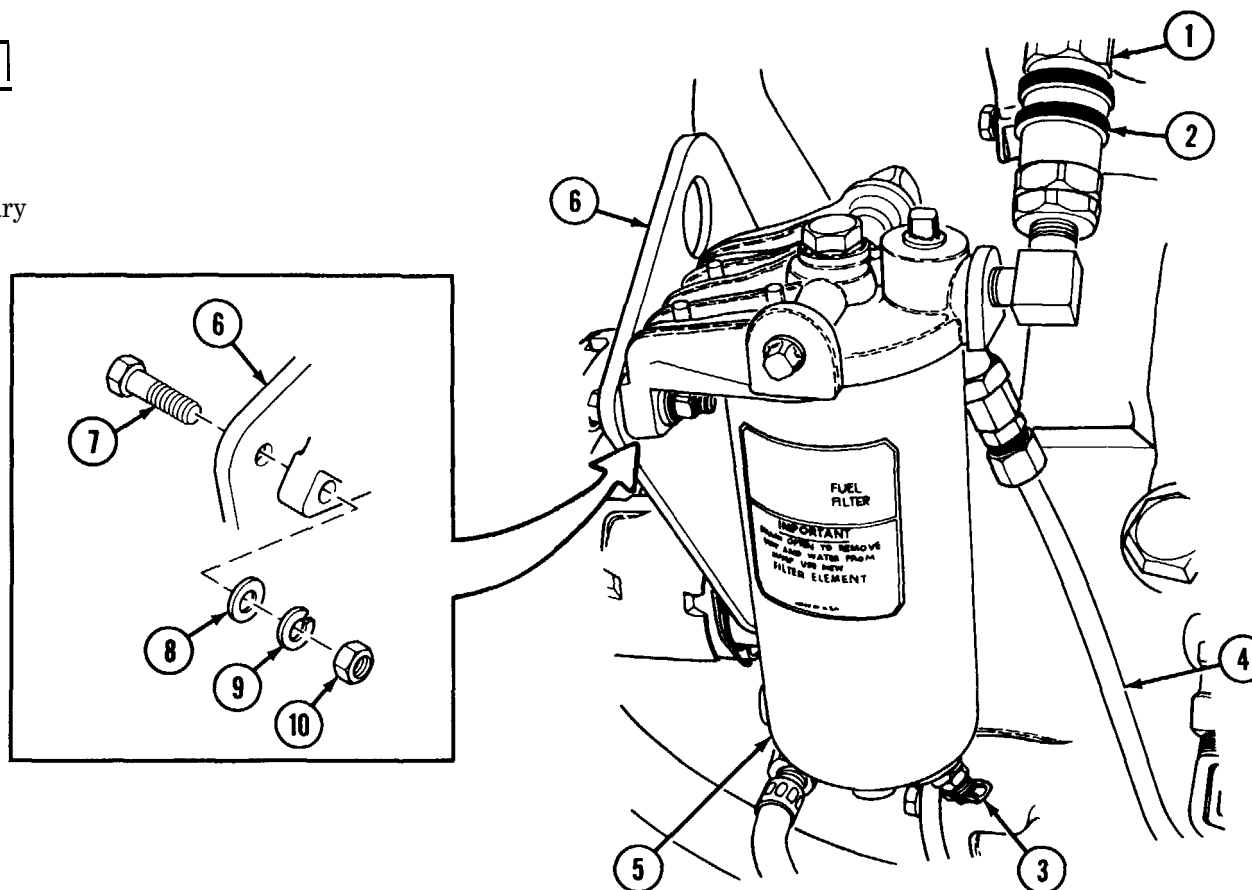


## FUEL FILTER ASSEMBLY (PRIMARY): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Parts/Materials:

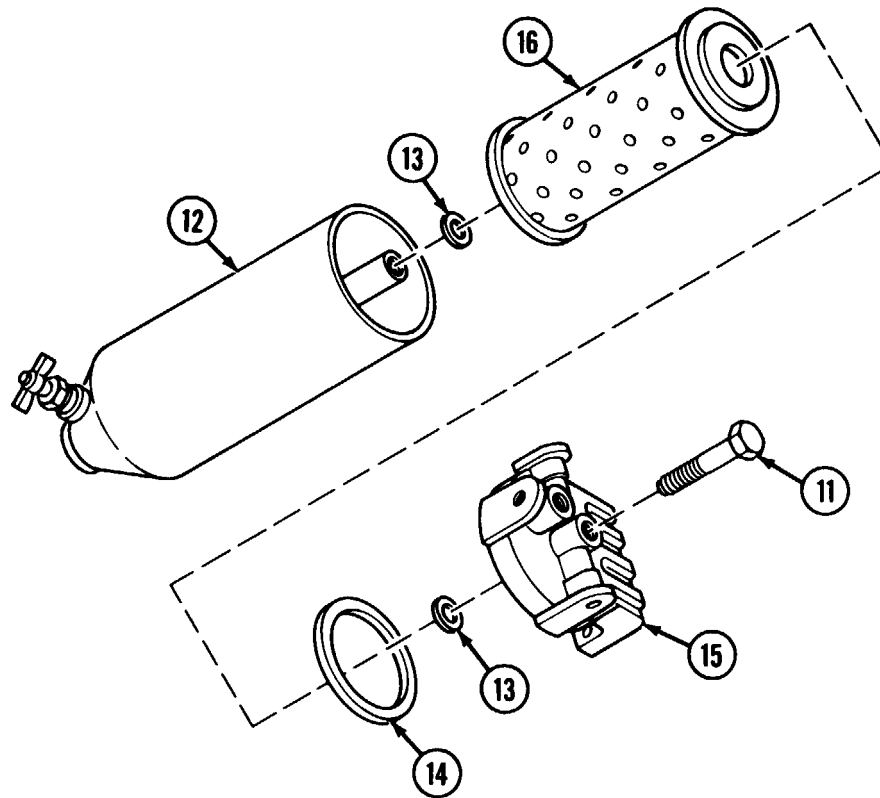
Fuel filter, primary



### REMOVAL

- A Open right transmission access door.
- B Disconnect main fuel hose (1) at quick-disconnect (2).
- C Open drain cock (3) and drain fuel from filter.
- D Disconnect primary filter-to-engine driven fuel pump hose (4).
- E Remove filter assembly (5) from bracket (6) by removing two screws (7), two flat washers (8), two lockwashers (9) and two nuts (10). Discard lockwashers.

FUEL FILTER ASSEMBLY (PRIMARY): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



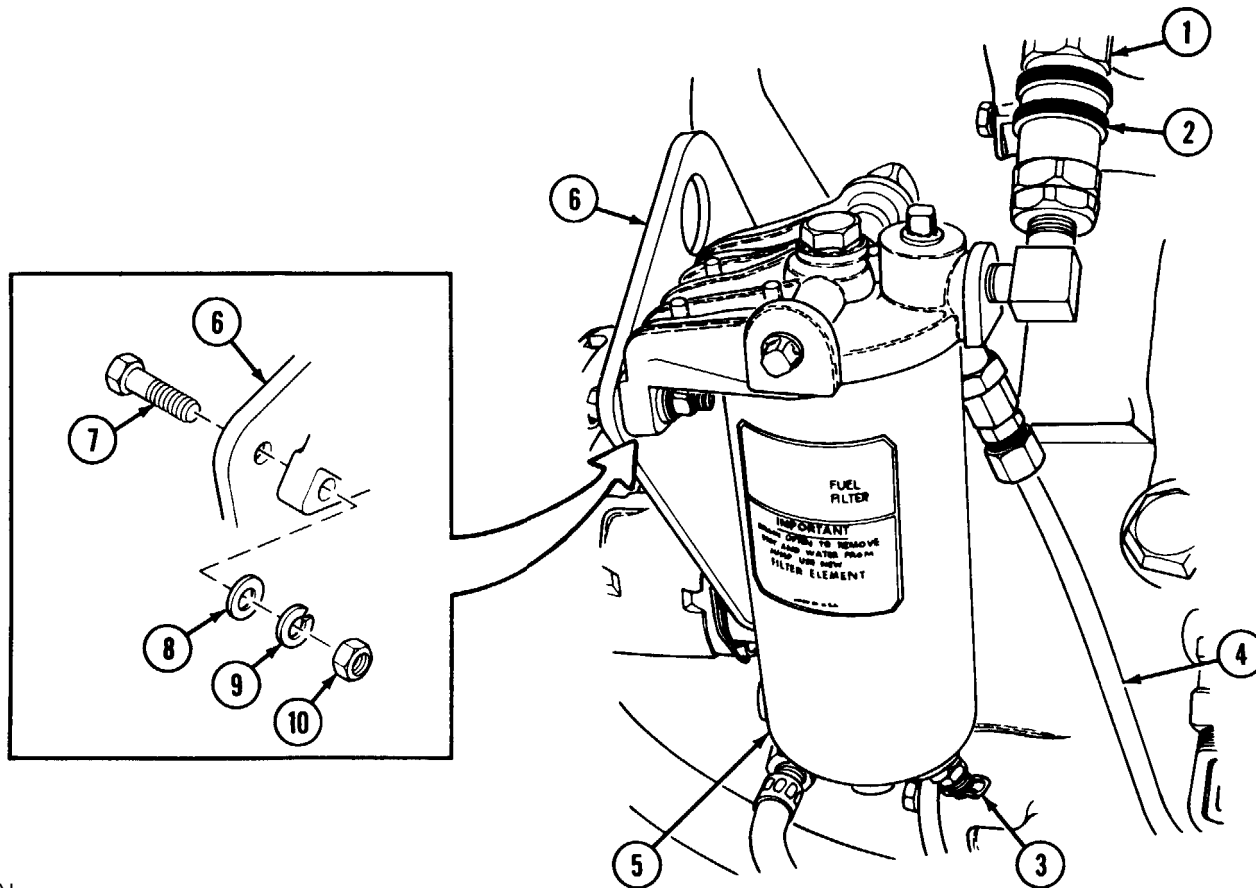
DISASSEMBLY

- A Loosen cover screw (11).
- B Remove filter shell (12), two washers (13) and gasket (14) from filter cover (15). Discard gasket.
- C Remove and discard filter element (16).

ASSEMBLY

- A Install new filter element (16) in filter shell (12).
- B Install new gasket (14), two washers (13) and filter shell (12) on filter cover (15).
- C Tighten cover screw (11).

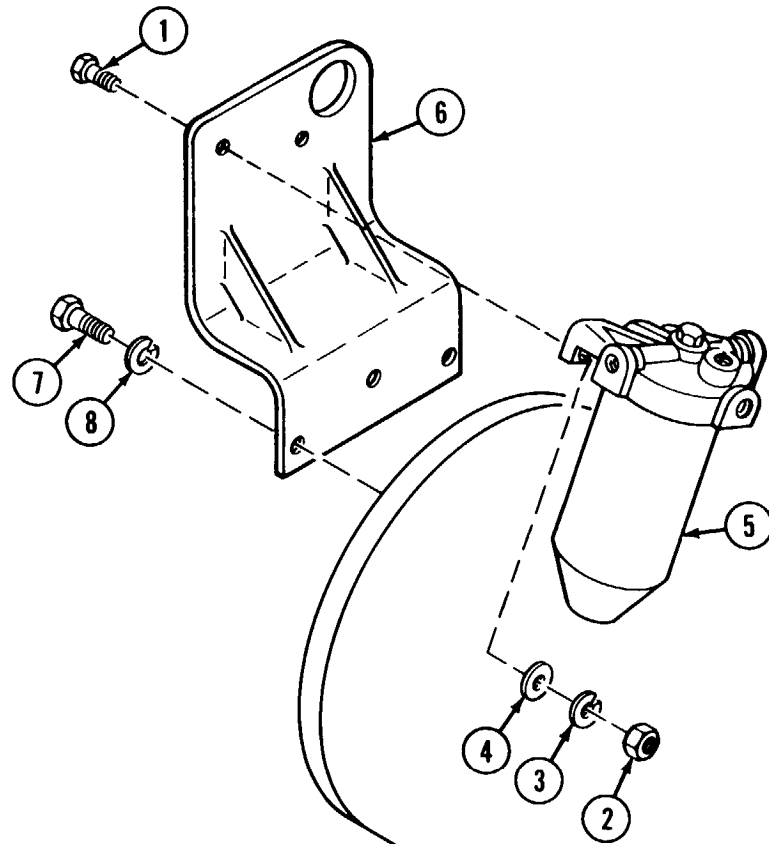
FUEL FILTER ASSEMBLY (PRIMARY): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



INSTALLATION

- A Install filter assembly (5) on bracket (6) with two screws (7), two flat washers (8), two new lockwashers (9) and two nuts (10).
- B Connect primary filter-to-engine driven fuel pump hose (4).
- C Close drain cock (3).

- D Connect main fuel hose (1) at quick-disconnect (2).
- E Close right transmission access door.

**PRIMARY FUEL FILTER LIFTING BRACKET: REMOVAL AND INSTALLATION****REMOVAL**

A Open and secure both transmission access doors.

**NOTE**

It is not necessary to disconnect fuel lines or drain fuel filter.

B Remove two screws (1), two nuts (2), two lockwashers (3) and two flat washers (4) that secure primary fuel filter (5) to bracket assembly (6). Discard lockwashers.

C Pull fuel filter (5) away from bracket assembly (6).

**NOTE**

Three screws (7) are of different lengths. Mark upon removal to ensure proper installation.

D Remove three screws (7) and three lockwashers (8) and remove bracket assembly (6) from transmission. Discard lockwashers.

**INSTALLATION**

A Install bracket assembly (6) on transmission with three screws (7) and three new lockwashers (8).

B Secure primary fuel filter (5) to bracket assembly (6) with two screws (1), two new lockwashers (3), two flat washers (4) and two nuts (2).

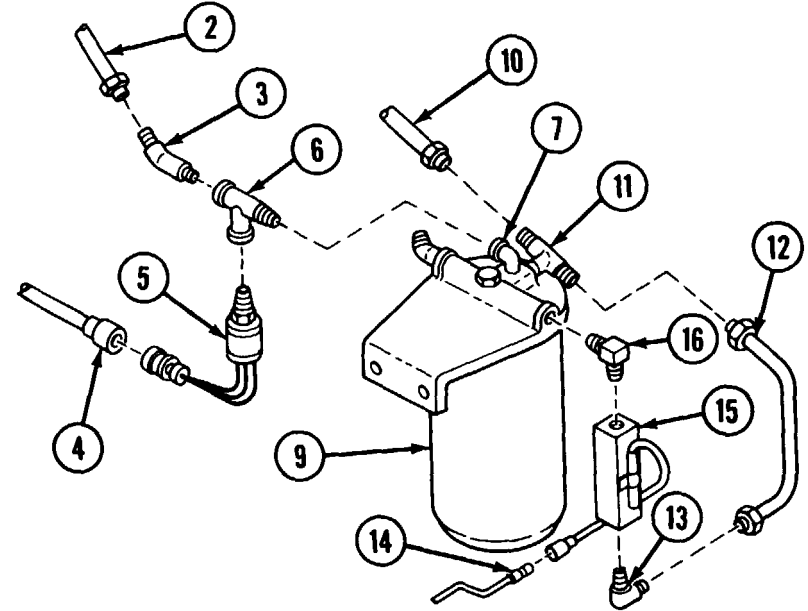
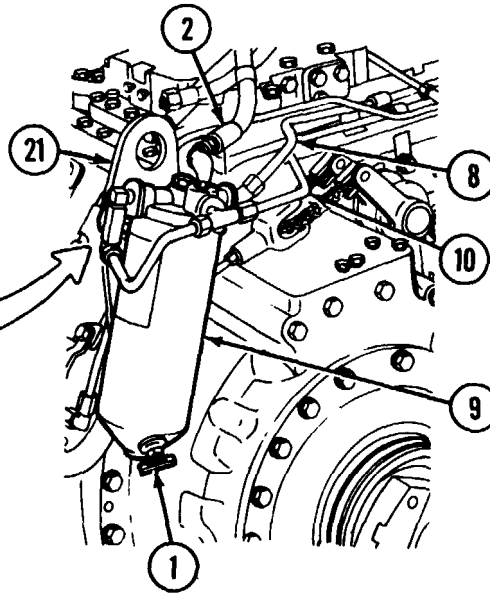
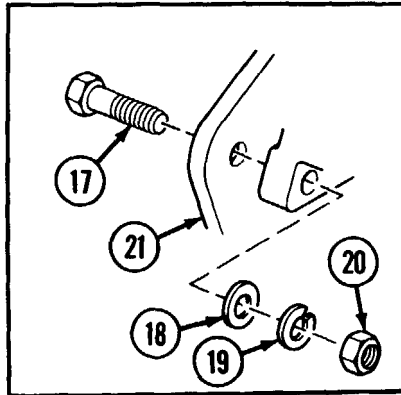
C Close and secure both transmission access doors.

## FUEL FILTER ASSEMBLY (SECONDARY): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Fuel filter, secondary

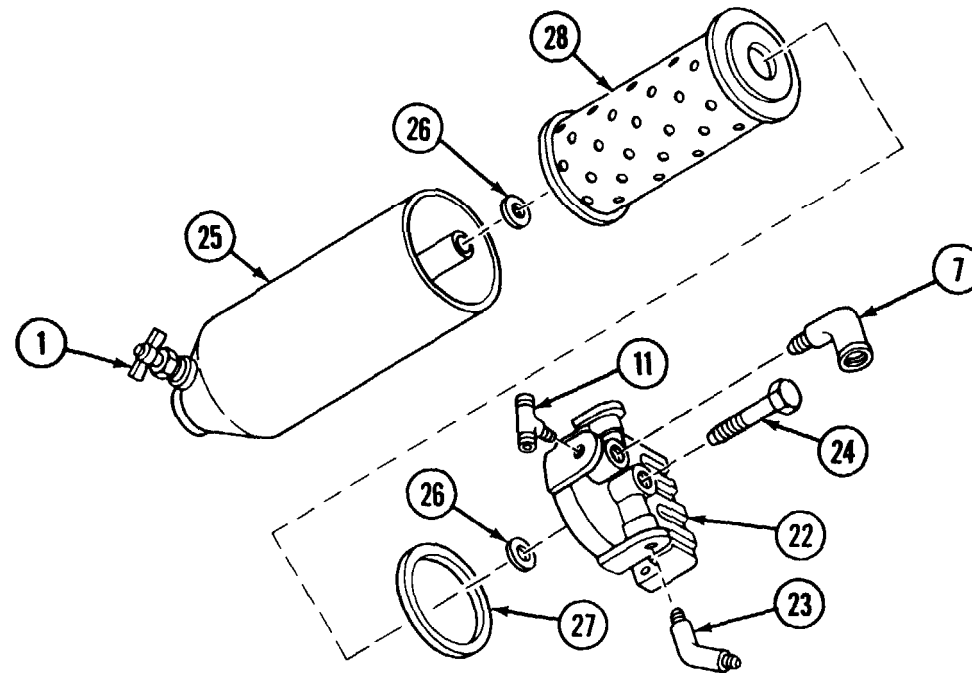


### REMOVAL

- A Open transmission access doors.
- B Open drain cock (1) and drain fuel from filter.
- C Disconnect electric fuel pump-to-secondary fuel filter hose (2) at elbow (3).
- D Remove electrical connector (4) from transducer (5).
- E Remove transducer (5) from tee (6).
- F Remove elbow (3) and tee (6) from elbow (7).
- G Disconnect secondary fuel filter-to-cylinder head tube (8) from fuel filter assembly (9).
- H Disconnect engine driven fuel pump-to-secondary fuel filter tube (10) from tee (11).
- I Remove tube (12) from elbow (13) and tee (11).
- J Disconnect electrical connector (14) from transducer (15).
- K Remove elbow (13), transducer (15) and elbow (16) from fuel filter assembly (9).
- L Remove two screws (17), two flat washers (18), two lockwashers (19), two nuts (20) and secondary fuel filter assembly (9) from bracket (21). Discard lockwashers.

TA57128

FUEL FILTER ASSEMBLY (SECONDARY): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



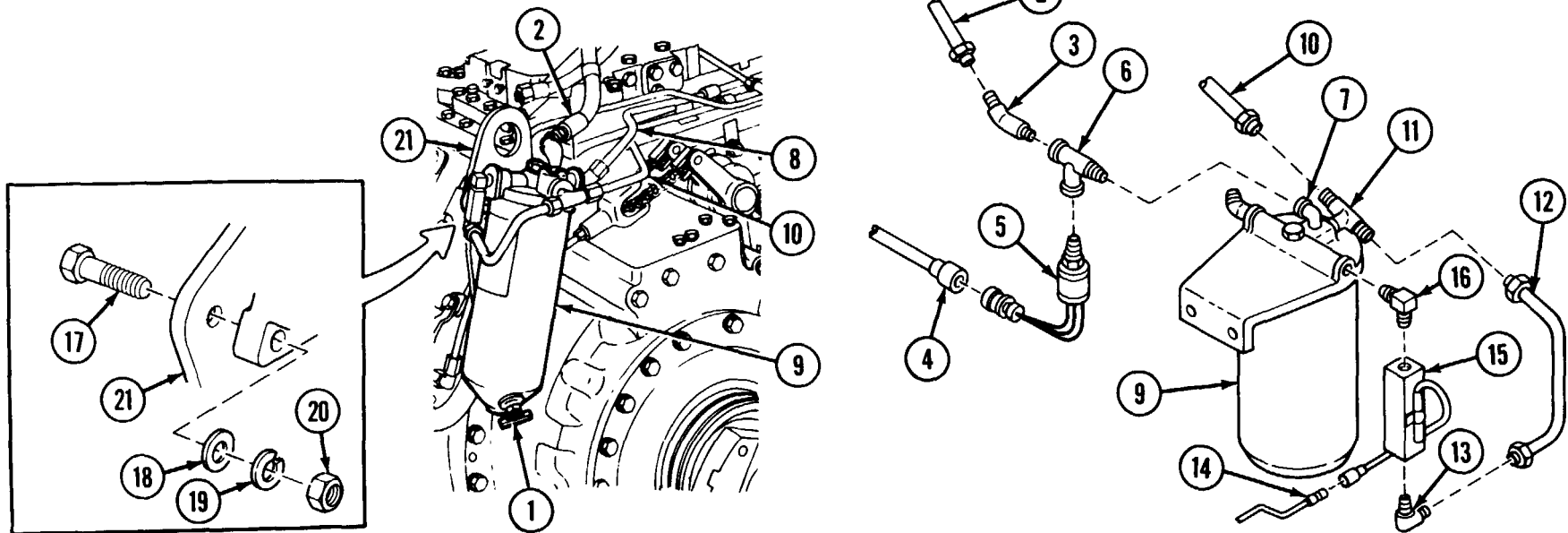
DISASSEMBLY

- A Remove drain cock (1).
- B Remove elbow (7) and tee (11) from filter cover (22).
- C Remove elbow (23) from filter cover (22).
- D Remove cover screw (24).
- E Remove filter shell (25), two washers (26) and gasket (27) from filter cover (22). Discard gasket.
- F Remove and discard filter element (28).

ASSEMBLY

- A Install new filter element (28) in filter shell (25).
- B Install new gasket (27), two washers (26) and filter shell (25) on filter cover (22).
- C Install cover screw (24).
- D Install elbow (7) and tee (11) on filter cover (22).
- E Install elbow (23) on filter cover (22).
- F Install and close drain cock (1).

FUEL FILTER ASSEMBLY (SECONDARY): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

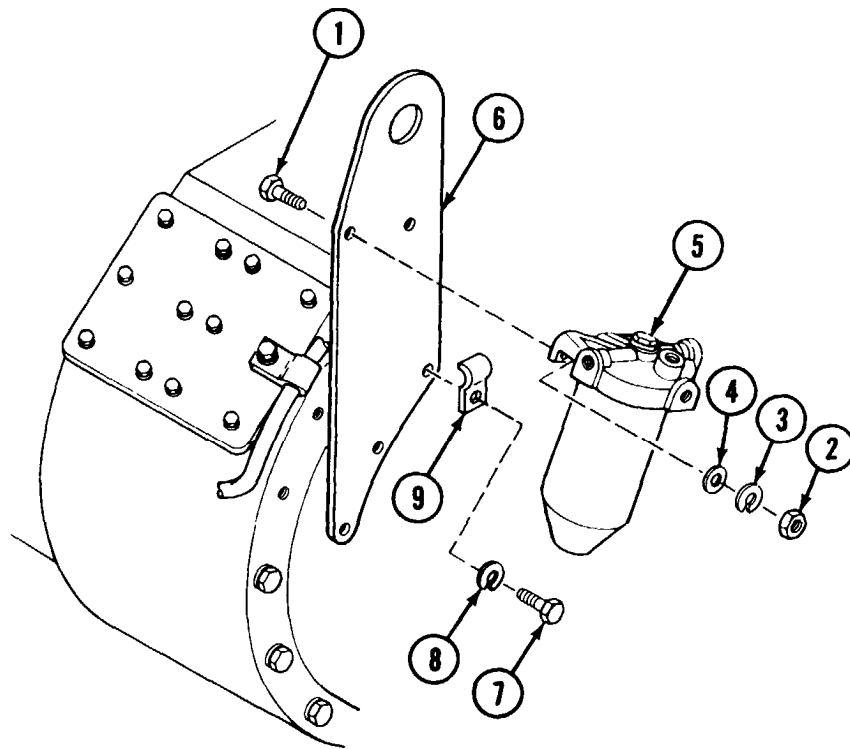


INSTALLATION

- A Install secondary fuel filter assembly (9) on bracket (21) with two screws (17), two flat washers (18), two new lockwashers (19) and two nuts (20).
- B Install elbow (16), transducer (15) and elbow (13) on filter assembly (9).
- C Install tube (12) on elbow (13) and tee (11).
- D Connect engine driven fuel pump-to-secondary fuel filter tube (10) to tee (11).
- E Connect secondary fuel filter-to-cylinder head tube (8) to fuel filter (9).
- F Install tee (6) and elbow (3) on elbow (7).
- G Install transducer (5) on tee (6).
- H Connect electric fuel pump-to-secondary fuel filter hose (2) at elbow (3).
- I Connect electrical connector (14) to transducer (15) and electrical connector (4) to transducer (5).
- J Close transmission access doors.

TA57130

## SECONDARY FUEL FILTER LIFTING BRACKET: REMOVAL AND INSTALLATION



## REMOVAL

A Open and secure both transmission access doors.

## NOTE

It is not necessary to disconnect fuel lines or drain fuel filter.

B Remove two screws (1), two nuts (2), two lockwashers (3) and two flat washers (4) that secure secondary fuel filter (5) to lifting bracket (6). Discard lockwashers.

C Remove three screws (7), three lockwashers (8) and surge tank tube retaining strap (9) and remove lifting bracket (6) from transmission. Discard lockwashers.

## INSTALLATION

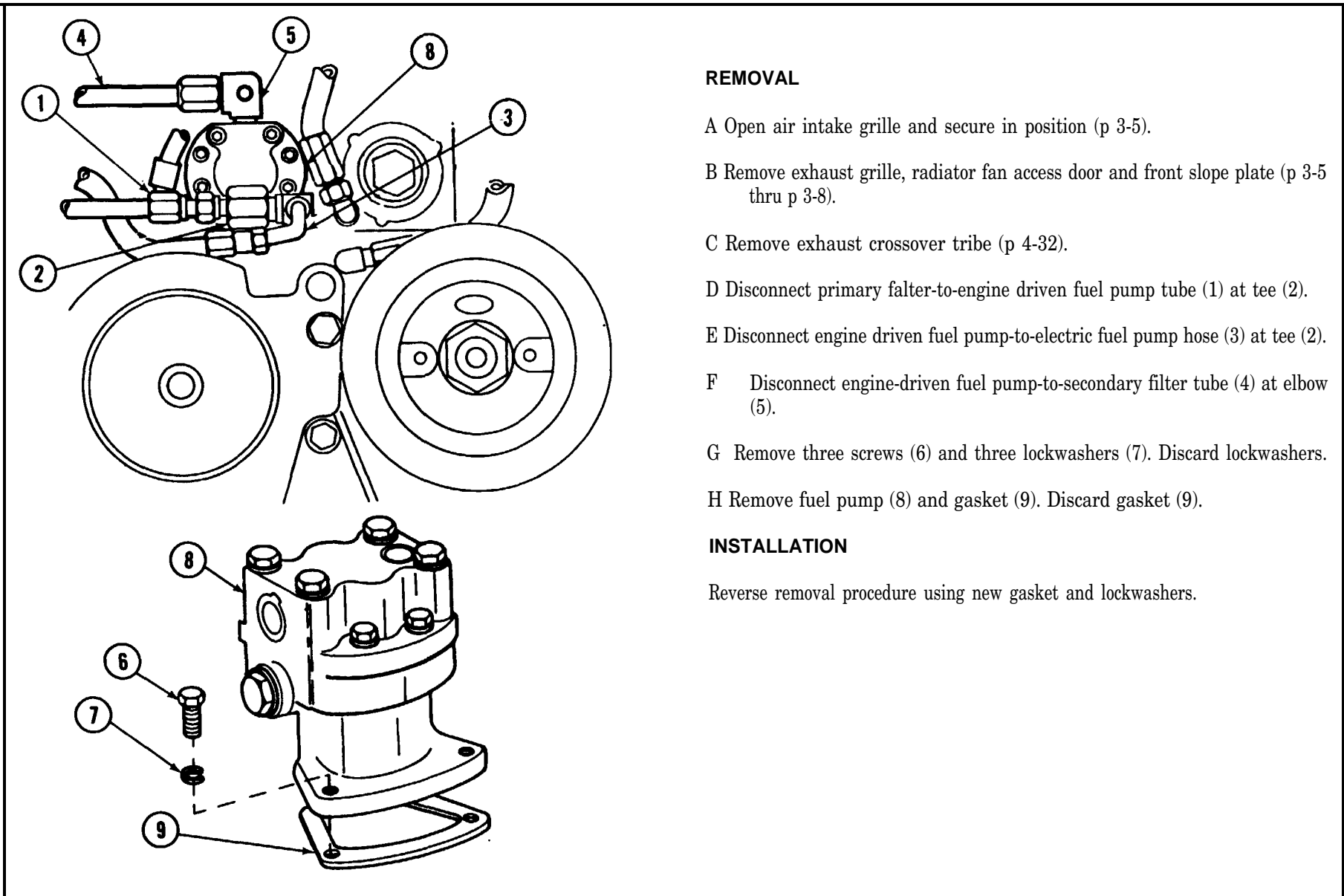
A Install lifting bracket (6) and surge tank retaining strap (9) on transmission with three screws (7) and three new lockwashers (8).

B Secure secondary fuel filter (5) to fuel filter lifting bracket (6) with two screws (1), two flat washers (4), two new lockwashers (3) and two nuts (2).

C Close and secure both transmission access doors.



## ENGINE DRIVEN FUEL PUMP: REMOVAL AND INSTALLATION



### REMOVAL

- A Open air intake grille and secure in position (p 3-5).
- B Remove exhaust grille, radiator fan access door and front slope plate (p 3-5 thru p 3-8).
- C Remove exhaust crossover tube (p 4-32).
- D Disconnect primary filter-to-engine driven fuel pump tube (1) at tee (2).
- E Disconnect engine driven fuel pump-to-electric fuel pump hose (3) at tee (2).
- F Disconnect engine-driven fuel pump-to-secondary filter tube (4) at elbow (5).
- G Remove three screws (6) and three lockwashers (7). Discard lockwashers.
- H Remove fuel pump (8) and gasket (9). Discard gasket (9).

### INSTALLATION

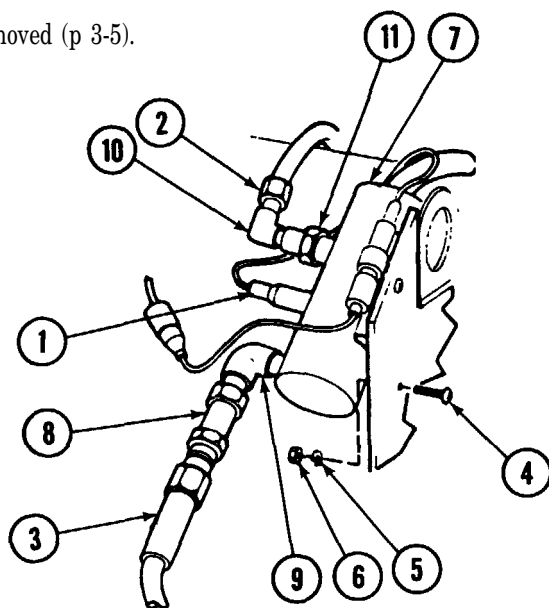
Reverse removal procedure using new gasket and lockwashers.

**ELECTRIC FUEL PUMP: REMOVAL AND INSTALLATION****INITIAL SETUP****Materials/Parts:**

Tape, Teflon (item 62, Appx D)

**Equipment Condition:**

Front slope plate removed (p 3-5).

**REMOVAL**

- A Disconnect electrical connector (1).
- B Disconnect engine driven fuel pump-to-electrical fuel pump hose (2).
- C Disconnect electric fuel pump-to-secondary filter hose (3).

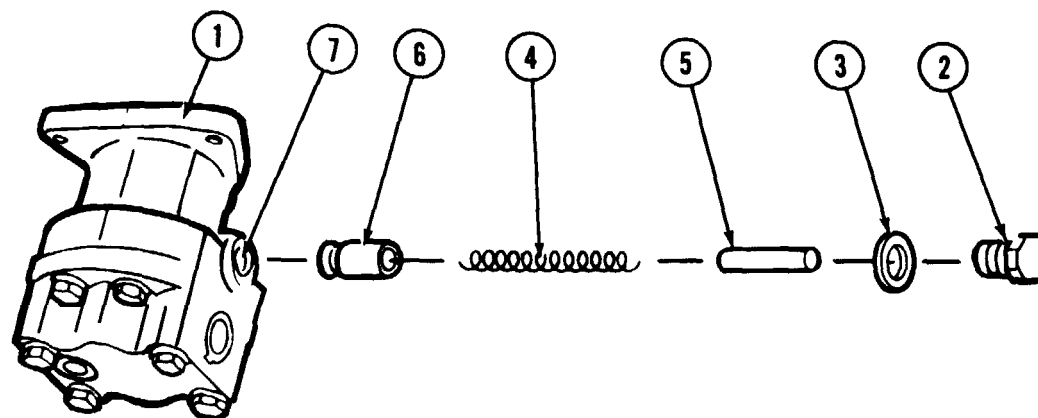
- D Remove two screws (4), two lockwashers (5) and two nuts (6). Discard lockwashers.
- E Remove electric fuel pump (7).
- F Remove assembled check valve (8) and elbow (9) from electric fuel pump (7).
- G Remove assembled elbow (10) and adapter (11) from electric fuel pump (7).

**INSTALLATION****NOTE**

Use Teflon tape (item 62, Appx D) on all male pipe threads during installation.

- A Install assembled adapter (11) and elbow (10) on electric fuel pump (7).
- B Install assembled elbow (9) and check valve (8) on electric fuel pump (7).
- C Install electric fuel pump (7) with two screws (4), two new lockwashers (5) and two nuts (6).
- D Connect electric fuel pump-to-secondary fuel hose (3).
- E Connect engine driven fuel pump-to-electrical fuel pump hose (2).
- F Connect electrical connector (1).

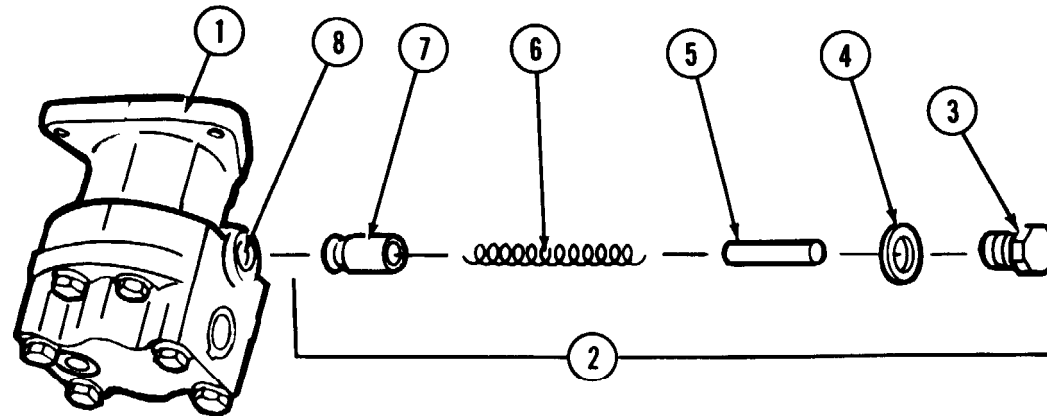
## RELIEF VALVE: CHECKING AND CLEANING



### CHECKING

- A Remove engine driven fuel pump (1) (p 4-15).
- B Remove plug (2) and gasket (3).
- C Remove spring (4), pin (5) and valve (6). Wash with solvent (item 19, Appx D).
- D Discard gasket (3).
- E Blow out fuel pump cavity port (7) with compressed air.
- F Install valve (6), pin (5), spring (4), new gasket (3) and plug (2) in fuel pump (1).
- G Install engine driven fuel pump (1) (p 4-15).

## RELIEF VALVE: CHECKING AND CLEANING (CONTINUED)



## CLEANING

- |   |   |
|---|---|
| A Remove engine fuel pump (p 4-15).   | E Reassemble check relief valve assembly (2). Install new gasket (4).                                   |
| B Disassemble check relief valve assembly (2) (p 4-17) Discard gasket (4).                        | F Install in engine driven fuel pump (1).   |
| C Wash check relief valve assembly components, items 3 through 7, with solvent (item 19, Appx D). | G Test for fuel flow - 1/2 gallon per minute. If flow is less than 1/2 gallon per minute, replace pump. |
| D Blow out check relief valve cavity port (8) with compressed air.                                |   |

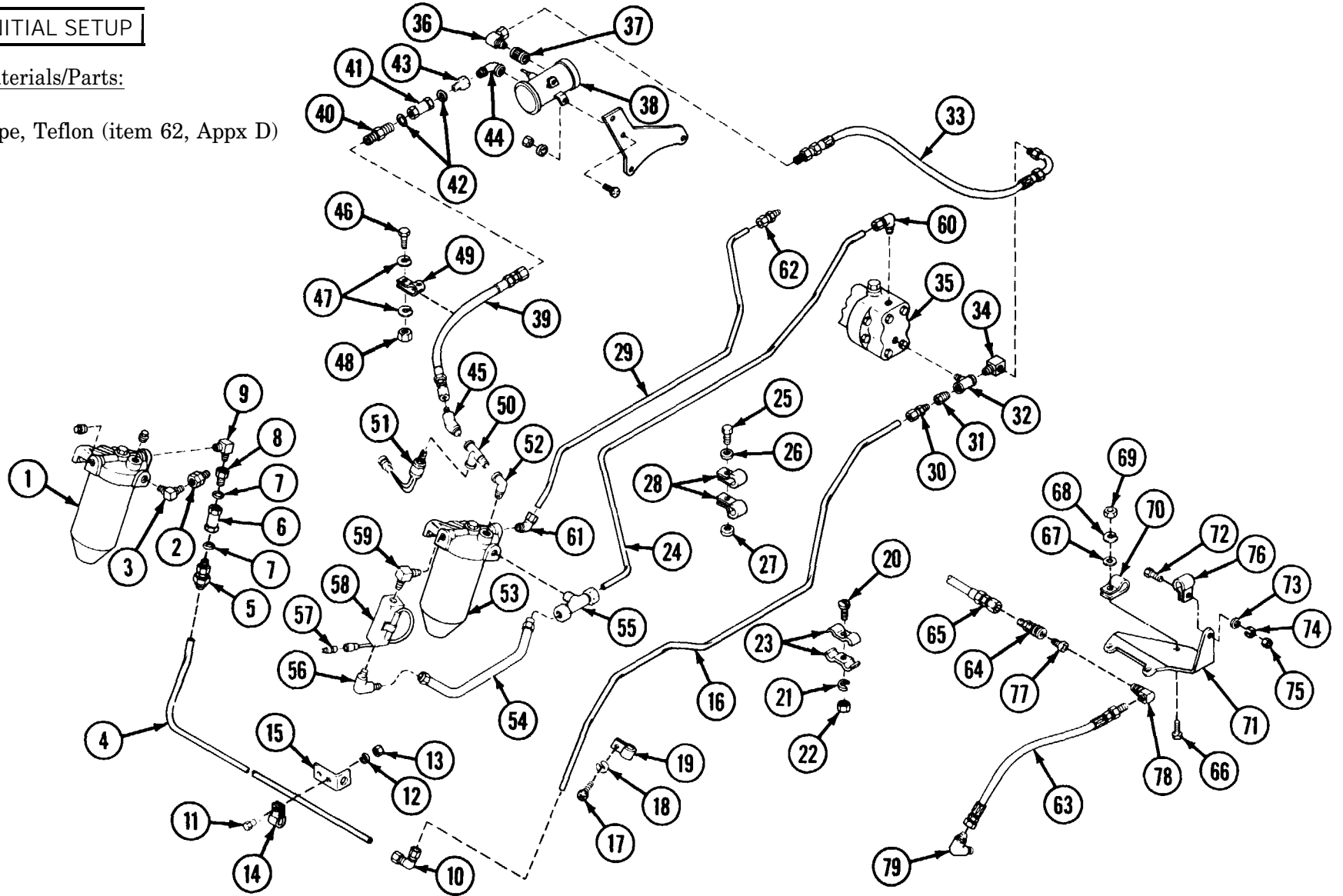


POWERPACK FUEL HOSES, TUBES AND CONNECTORS: REMOVAL AND INSTALLATION

INITIAL SETUP

Materials/Parts:

Tape, Teflon (item 62, Appx D)



POWERPACK FUEL HOSES, TUBES AND CONNECTORS: REMOVAL AND INSTALLATION (CONTINUED)

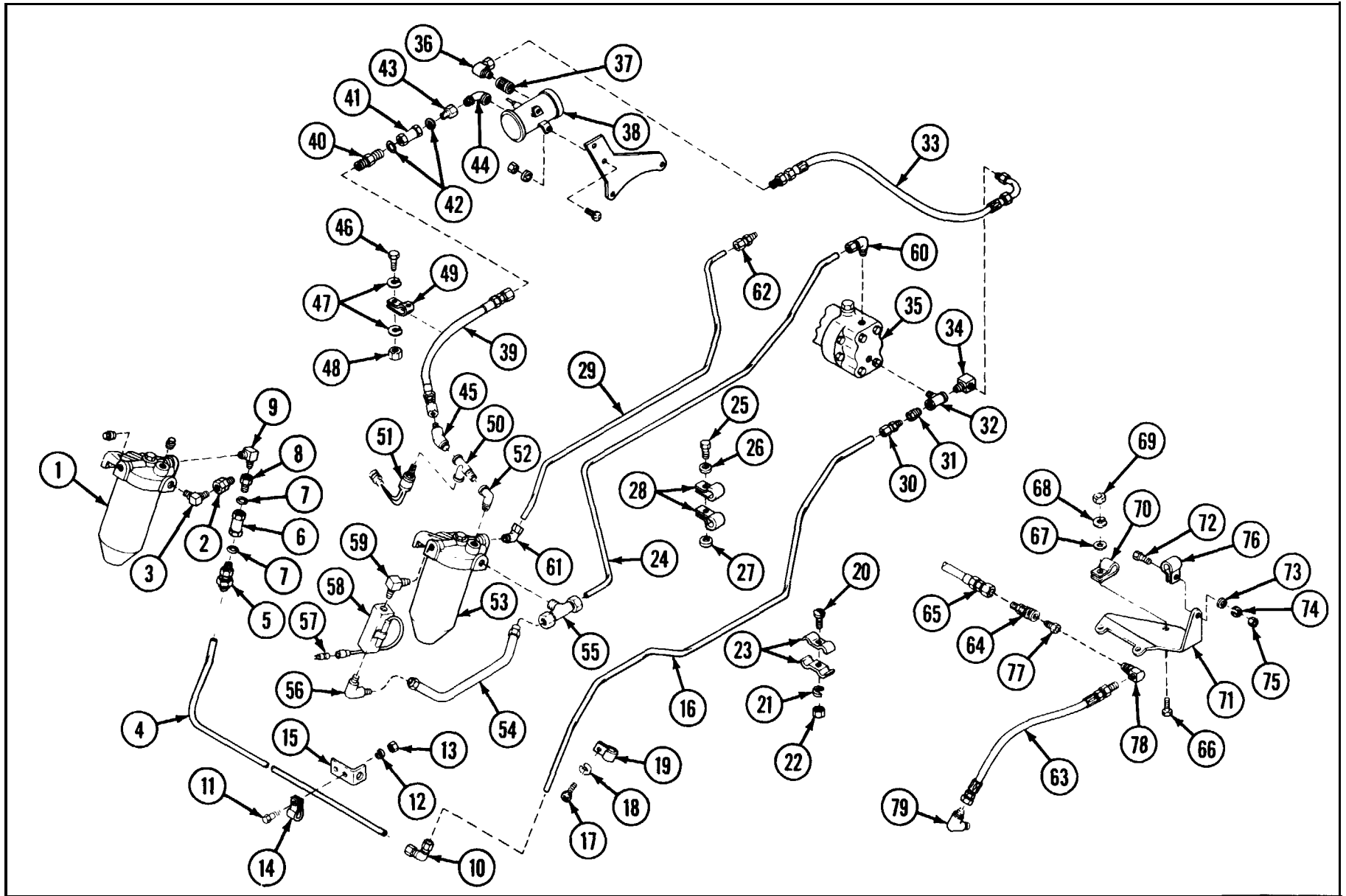
REMOVAL

**NOTES**

- Restrict removal to only those fuel system hoses, tubes, and connectors which must be replaced.
- Removal of certain components will require removal of the front slope plate (p 3-8).

- A At primary fuel filter (1) input, disconnect quick-disconnect coupling (2).
- B Remove quick-disconnect coupling half (2) from elbow (3).
- C Remove elbow (3) from filter (1) input.
- D Disconnect tube (4) from nipple (5).
- E Remove nipple (5), check valve (6), two preformed packings (7), adapter (8), and elbow (9) from primary fuel filter (1) output. Discard preformed packings.
- F Disconnect tube (4) from elbow (10).
- G Remove screw (11), lockwasher (12), nut (13), and loop clamp (14) from angle bracket (15). Remove tube (4). Discard lockwasher.
- H Remove elbow (10) from tube (to engine driven fuel pump) (16).
- I Remove screw (17), lockwasher (18), and loop clamp (19) securing tube (16) to engine. Discard lockwasher.
- J Remove two screws (20), two lockwashers (21), two nuts (22), and four straps (23) securing tubes (16 and 24). Discard lockwashers.
- K Remove three screws (25), three lockwashers (26), three flat washers (27), and six loop clamps (28) securing tubes (24 and 29) to transmission. Discard lockwashers.
- L Disconnect adapter (30) from bushing (31). Remove tube (16).
- M Remove bushing (31) from tee (32).
- N Disconnect hose (33) from elbow (34).
- O Remove elbow (34) and tee (32) from engine driven fuel pump (35).
- P Remove hose (33) from elbow (36).
- Q Remove elbow (36) from coupling (37).
- R Remove coupling (37) from electric fuel pump (38) input.

POWERPACK FUEL HOSES, TUBES AND CONNECTORS: REMOVAL AND INSTALLATION (CONTINUED)





## POWERPACK FUEL HOSES, TUBES AND CONNECTORS: REMOVAL AND INSTALLATION (CONTINUED)

- S Disconnect hose (39) from nipple (40).
- T Remove nipple (40), check valve (41), two preformed packings (42), adapter (43) and elbow (44) from electric fuel pump (38) output. Discard preformed packings.
- U Disconnect hose (39) from elbow (45).
- V Remove screw (46) two lockwashers (47), nut (48), loop clamp (49) and hose (39). Discard lockwashers.
- W Remove elbow (45) from tee (50).
- X Disconnect wires from STE/ICE transducer (51).
- Y Disconnect the STE/ICE transducer (51) from tee (50).
- Z Remove tee (50) from elbow (52).
- AA Remove elbow (52) from top of secondary fuel filter (53).
- AB Disconnect tube (54) from tee (55) and elbow (56). Remove tube.
- AC Disconnect wire (57) from transducer (58).
- AD Remove elbow (56) from transducer (58).
- AE Remove transducer (58) from elbow (59).
- AF Remove elbow (59) from secondary fuel filter (53).
- AG Disconnect tube (24) from tee (55) and elbow (60). Remove tube.
- AH Remove tee (55) from secondary fuel filter (53).
- AI Remove elbow (60) from engine driven fuel pump (35).
- AJ Disconnect tube (25) from elbow (61) and adapter (62). Remove tube.
- AK Remove elbow (61) from secondary fuel filter (53) output.
- AL Disconnect vehicle fuel return line (63) at quick-disconnect coupling assembly (64) located at thermostat housing (65).
- AM Remove screw (66), flat washer (67), lockwasher (68), nut (69), and loop clamp (70) from bracket (71). Discard lockwasher.
- AN Remove screw (72), flat washer (73), lockwasher (74), nut (75), and loop clamp (76) from bracket (71). Discard lockwasher.
- AO Remove quick-disconnect coupling (64), bushing (77), and elbow (78) from hose (63).
- AP Disconnect other end of hose (63) from elbow (79). Remove hose.

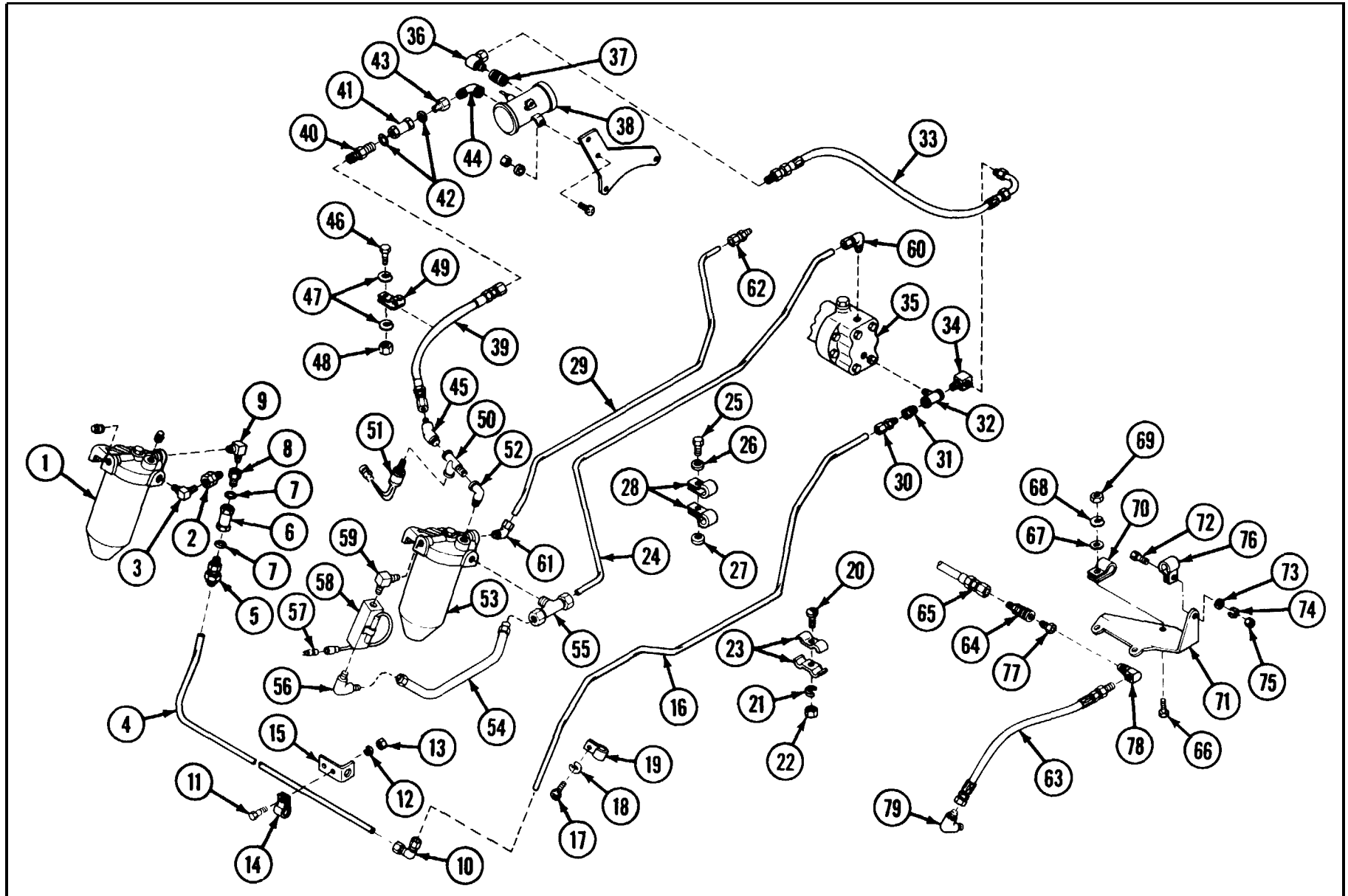
### INSTALLATION

#### NOTE

Apply Teflon tape (item 62, Appx D) to all male pipe threads during installation.

- A Connect one end of hose (63) to elbow (79) located near rear of blower assembly.
- B Install elbow (78), bushing (77), and quick-disconnect coupling half (64) on free end of hose (63).

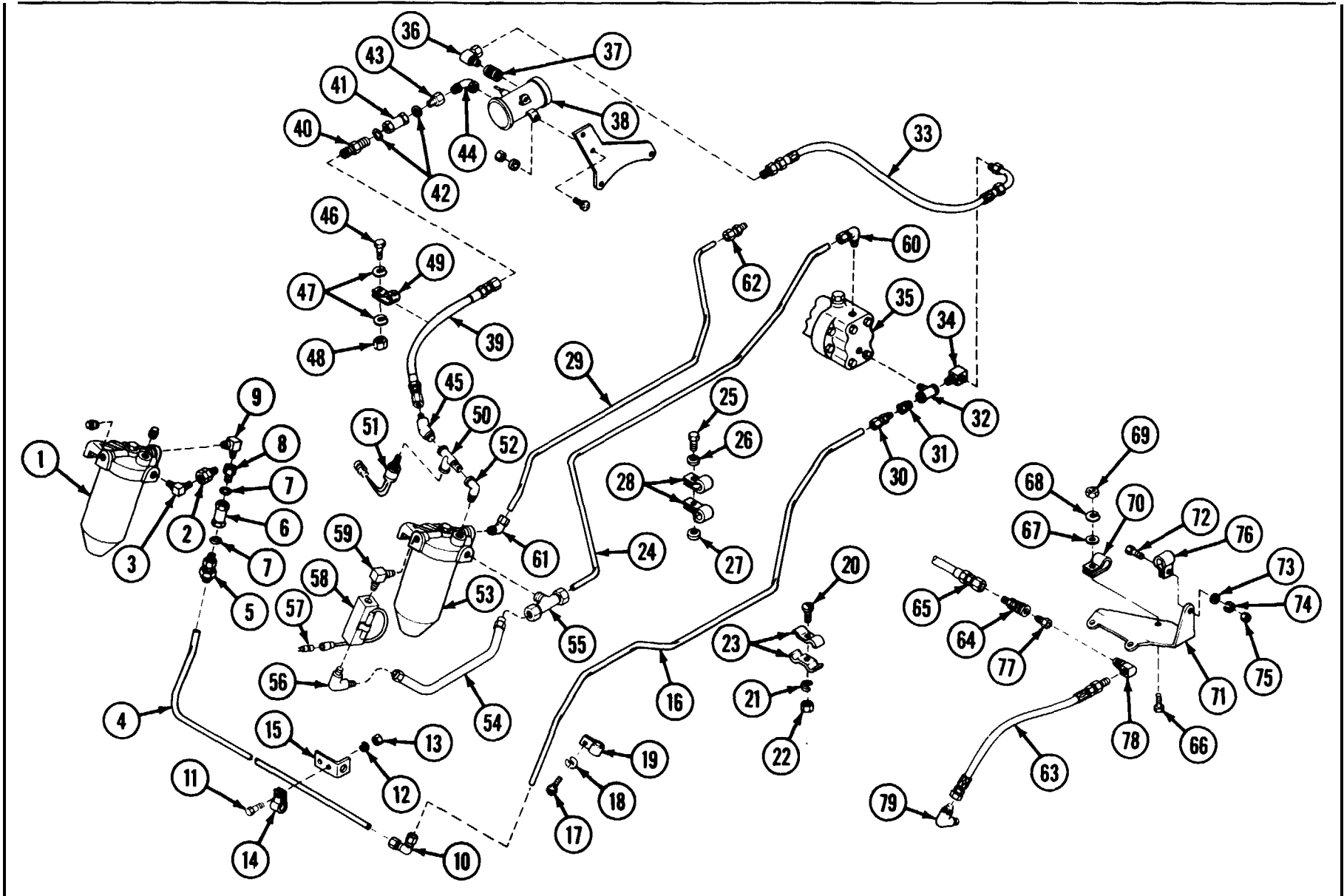
POWERPACK FUEL HOSES, TUBES AND CONNECTORS: REMOVAL AND INSTALLATION (CONTINUED)



## POWERPACK FUEL HOSES, TUBES AND CONNECTORS: REMOVAL AND INSTALLATION (CONTINUED)

- C Clamp end of hose (63) to bracket (71) using screw (72), flat washer (73), new lockwasher (74), nut (75), and loop clamp (76).
- D Clamp quick-disconnect coupling half (64) and bushing (77) to bracket (71) using screw (66), flat washer (67), new lockwasher (68), nut (69), and loop clamp (70).
- E Connect vehicle fuel return line (63) to quick-disconnect coupling half (64).
- F Install elbow (61) on secondary fuel filter (53) output.
- G Connect tube (25) to adapter (62) and elbow (61).
- H Install elbow (60) on engine driven fuel pump (35).
- I Install tee (55) on secondary fuel filter (53).
- J Connect tube (24) to elbow (60) and tee (55).
- K Install elbow (59) in secondary fuel filter (53).
- L Install transducer (58) on elbow (59).
- M Install elbow (56) on transducer (58).
- N Connect wire (57) to transducer (58).
- O Connect tube (54) to tee (55) and elbow (56).
- P Install elbow (52) on top of secondary fuel filter (53).
- Q Install tee (50) on elbow (52).
- R Connect the STE/ICE transducer (51) to tee (50).
- S Connect wires to STE/ICE transducer (51).
- T Install elbow (45) on tee (50).
- U Connect hose (39) to elbow (45).
- V Install elbow (44), adapter (43), two new preformed packings (42), check valve (41) and nipple (40) on electric fuel pump (38) output.
- W Connect free end of hose (39) to nipple (40).
- X Secure hose (39) to engine using screw (46), two new lockwashers (47), loop clamp (49) and nut (48).
- Y Install coupling (37) on electric fuel pump (38) input.
- Z Install elbow (36) on coupling (37).
- AA Connect hose (33) to elbow (36).
- AB Install tee (32) and elbow (34) on engine driven fuel pump (35) input.
- AC Connect free end of hose (33) to elbow (34).
- AD Install bushing (31) on tee (32).
- AE Connect the adapter (30) end of tube (16) to bushing (31).
- AF Connect free end of tube (16) to elbow (10).

POWERPACK FUEL HOSES, TUBES AND CONNECTORS: REMOVAL AND INSTALLATION (CONTINUED)



POWERPACK FUEL HOSES, TUBES AND CONNECTORS: REMOVAL AND INSTALLATION (CONTINUED)

AG Secure two tubes (24 and 29) to transmission using three screws (25), three new lockwashers (26), three flat washers (27), and six loop clamps (28). Tube (29) must be to right of tube (24).

AH Secure two tubes (16 and 24) using two screws (20), two new lockwashers (21), two nuts (22), and four straps (23). Tube (16) must be above tube (24).

AI Secure tube (16) to engine using screw (17), new lockwasher (18), and loop clamp (19).

AJ Connect tube (4) to elbow (10).

AK Install elbow (9), adapter (8), check valve (6), two new preformed packings (7), and nipple (5) on primary fuel filter (1) output.

AL Connect free end of tube (4) to nipple (5).

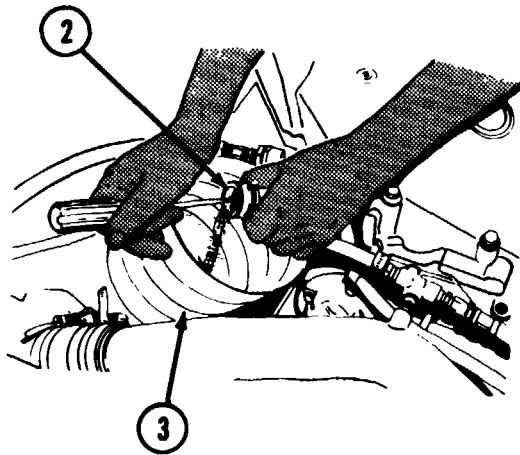
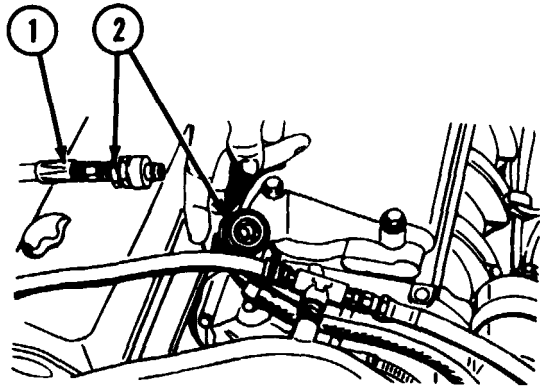
AM Secure tube (4) to angle bracket (15) using screw (11), new lockwasher (12), nut (13) and loop clamp (14).

AN Install elbow (3) on primary fuel filter (1) input.

AO Install quick-disconnect coupling half (2) on elbow (3).

AP Connect fuel line to quick-disconnect coupling half (2).

## FUEL FLOW TEST

**TEST**

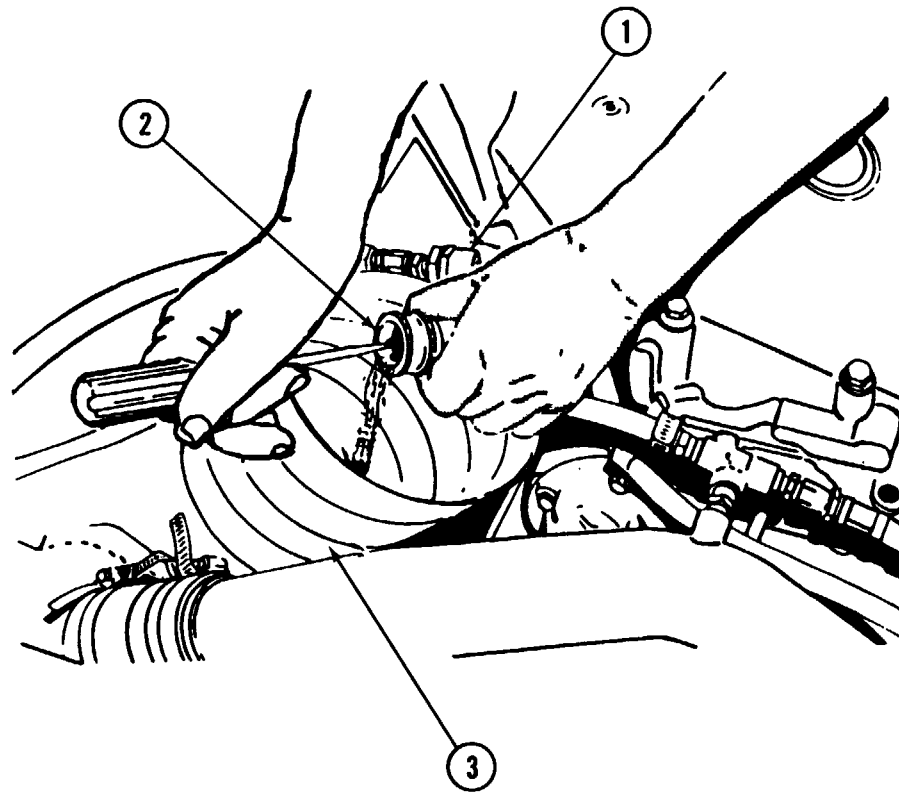
- A Check that main fuel hose quick-disconnect is fully seated (p 4-20).
- B Install new fuel filter(s) (p 4-12 and 4-14).
- C Open air intake grille and secure (p 3-5).
- D Warm up engine to 170°F (TM 9-2350-267-10).
- E Disconnect fuel return hose (1).

**CAUTION**

**Ensure valve in quick-disconnect is pushed all the way in during the test.**

- F Place female half of quick-disconnect (2) over suitable container (3) to catch fuel.
- G Set engine at 1200 rpm.

## FUEL FLOW TEST (CONTINUED)



H Depress female half of quick-disconnect (2) for one minute. Measure fuel in container (3).

J Reconnect fuel return hose (1) at quick-disconnect (2).

I If fuel flow is less than 1/2 gallon per minute, replace engine driven fuel pump (p 4-15).

## Section II AIR INTAKE SYSTEM

### GENERAL

This section contains instructions on how to remove, disassemble, assemble and install the air intake system. The air intake system consists of the following

- Air cleaner
- Air Filter
- Ducts and Hoses

The maintenance procedures are given under the following headings:

- Air Cleaner Removal (p 4-25)
- Air Cleaner Box Assembly (p 4-26.8)
- Air Filter Removal (p 4-28)
- Ducts and Hoses Removal (p 4-29)



## AIR CLEANER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### INITIAL SETUP

#### Materials/Parts:

Adhesive (item 4, Appx D)  
2 x 4 x 18 in. wooden supports

#### Personnel Required:

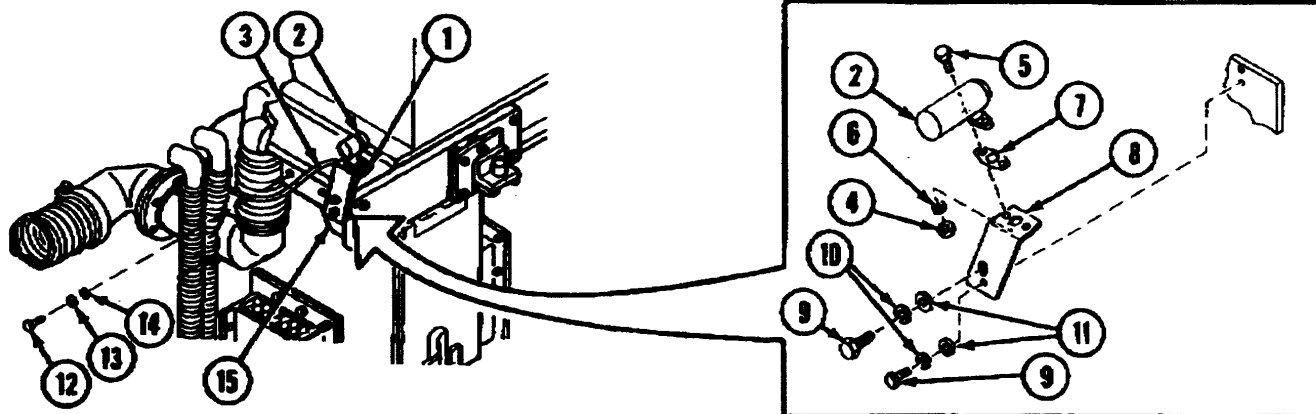
Two

#### Equipment Condition:

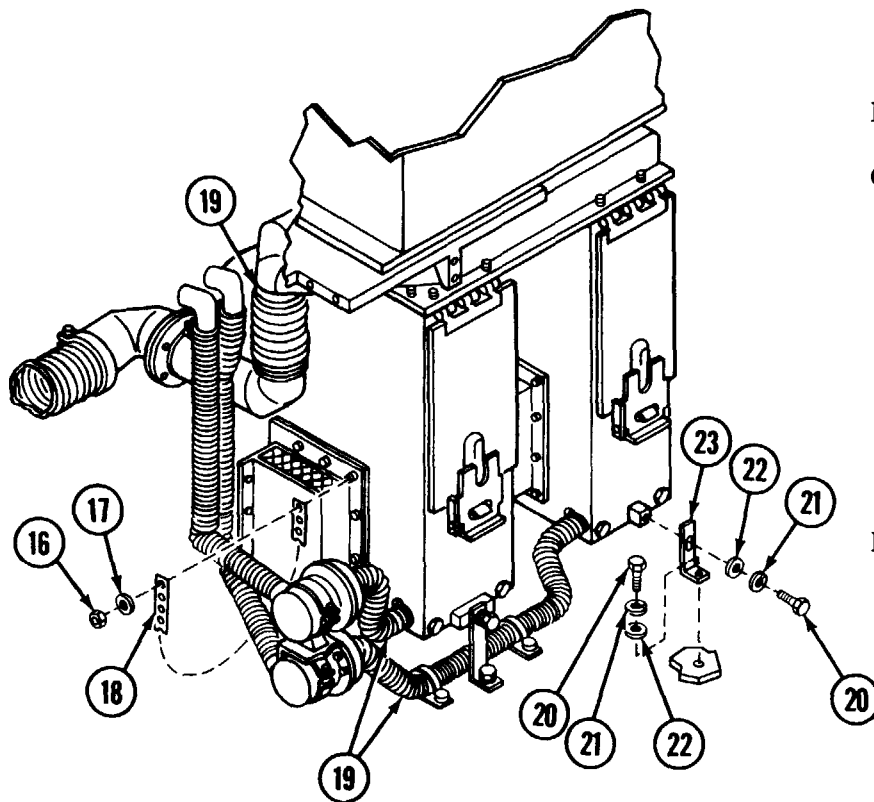
Right projectile rack moved to rear of vehicle (TM 9-2350-267-10).  
Air cleaner filters removed (p 4-28).

### REMOVAL

- A Loosen fitting (1) at pressure indicator (2) and disconnect pressure indicator hose (3).
- B Remove pressure indicator (2) by removing two nuts (4), two screws (5), two lockwashers (6) and gasket (7) from bracket (8). Discard lockwashers and gasket.
- C Remove bracket (8) by removing two screws (9), two lockwashers (10) and two flat washers (11). Discard lockwashers.
- D Remove two screws (12), two lockwashers (13) and two flat washers (14) from right side of support bracket (15) and one screw (12), one lockwasher (13) and one flat washer (14) from left side of support bracket (15). Discard lockwashers.
- E Remove support bracket (15) using hammer.



TA57132

**AIR CLEANER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

F Remove nut (16), flat washer (17) and strap (18).

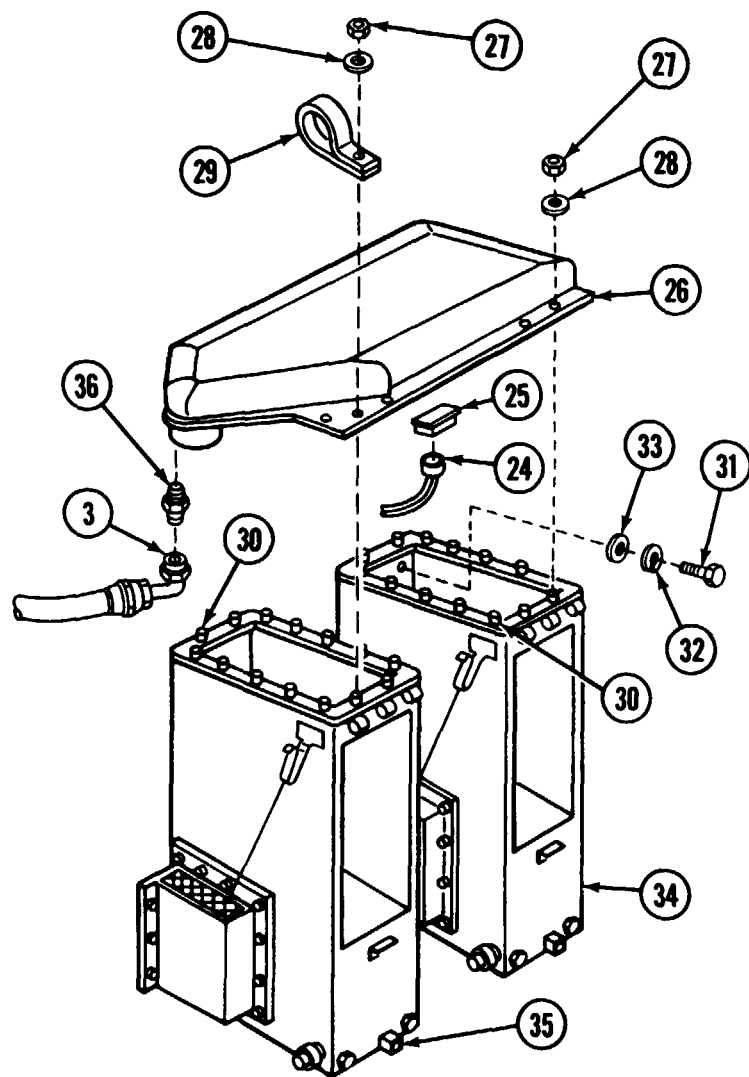
G Remove three air inlet ducts and hoses (19) (p 4-29).

**WARNING**

Using two persons, place 2 x 4 supports under air cleaner boxes to prevent possible injury to personnel or damage to air cleaner boxes before going to step H.

H Remove four screws (20), four lockwashers (21), four flat washers (22) and two brackets (23). Discard lockwashers.

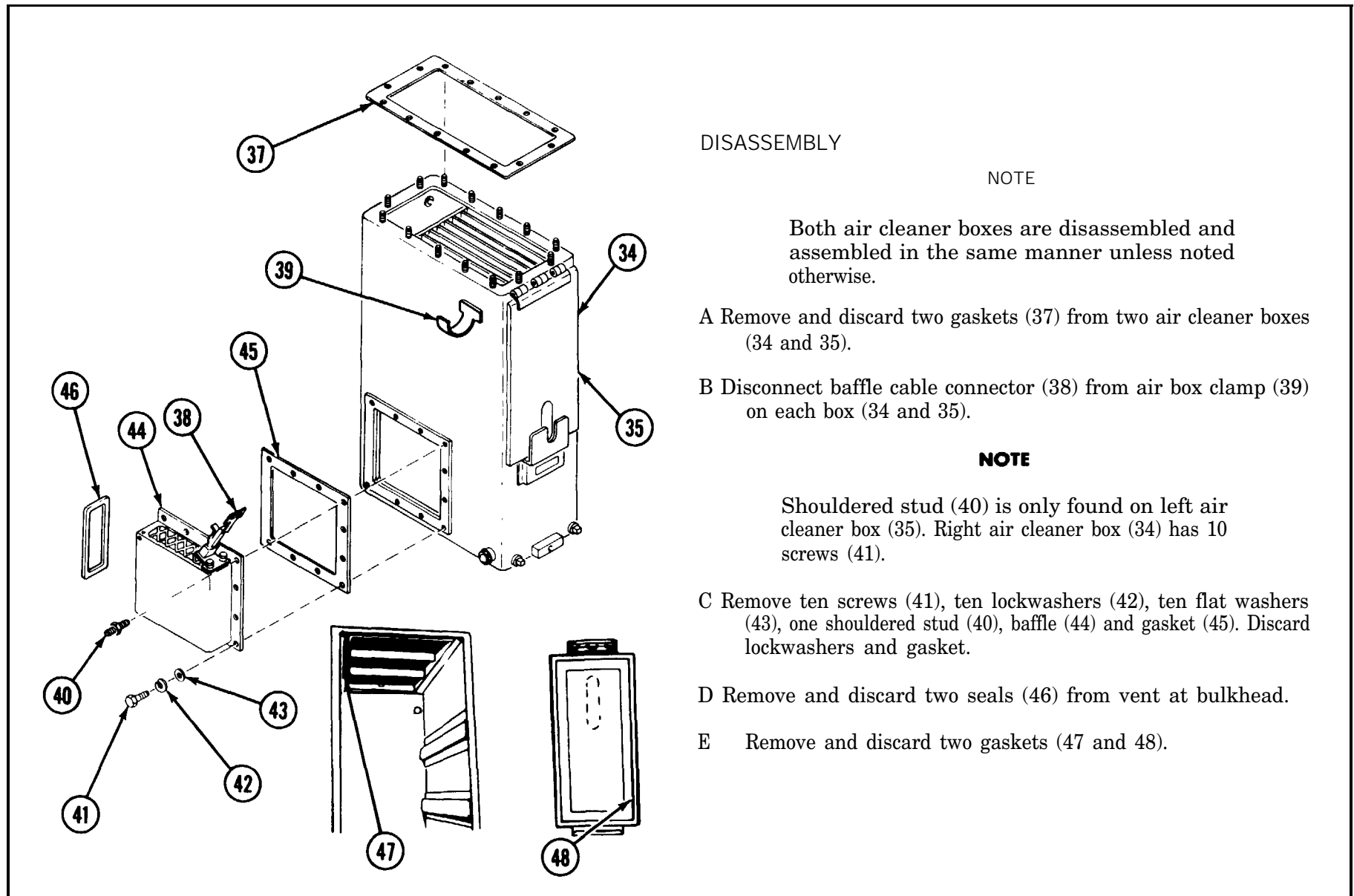
## AIR CLEANER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



- I Disconnect STE/ICE wiring harness (24) and remove transducer (25) under air cleaner duct (26).
- J Remove five nuts (27), five flat washers (28) and STE/ICE harness clamp (29) from stud (30).
- K Remove eight screws (31), eight lockwashers (32) and eight flat washers (33). Discard lockwashers.
- L Remove 2 x 4 supports and lower boxes (34 and 35) and duct (26) to hull deck.
- M From inside of air cleaner duct (26) remove 23 nuts (27) and 23 flat washers (28) from studs (30).
- N Remove left air cleaner box (35), air cleaner duct (26) and right air cleaner box (34).
- O Disconnect pressure indicator hose (3) from adapter (36) under left side of air cleaner duct (26).

TA57134

## AIR CLEANER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



## DISASSEMBLY

## NOTE

Both air cleaner boxes are disassembled and assembled in the same manner unless noted otherwise.

A Remove and discard two gaskets (37) from two air cleaner boxes (34 and 35).

B Disconnect baffle cable connector (38) from air box clamp (39) on each box (34 and 35).

## NOTE

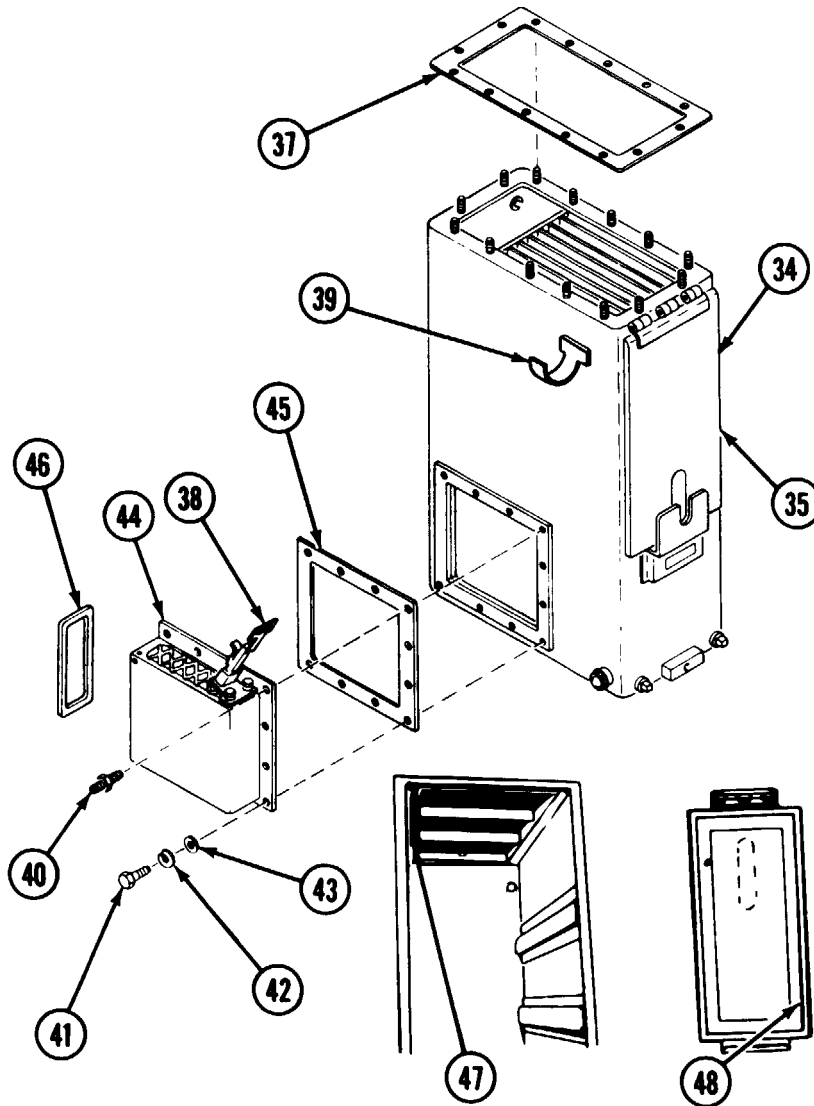
Shouldered stud (40) is only found on left air cleaner box (35). Right air cleaner box (34) has 10 screws (41).

C Remove ten screws (41), ten lockwashers (42), ten flat washers (43), one shouldered stud (40), baffle (44) and gasket (45). Discard lockwashers and gasket.

D Remove and discard two seals (46) from vent at bulkhead.

E Remove and discard two gaskets (47 and 48).

AIR CLEANER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



ASSEMBLY

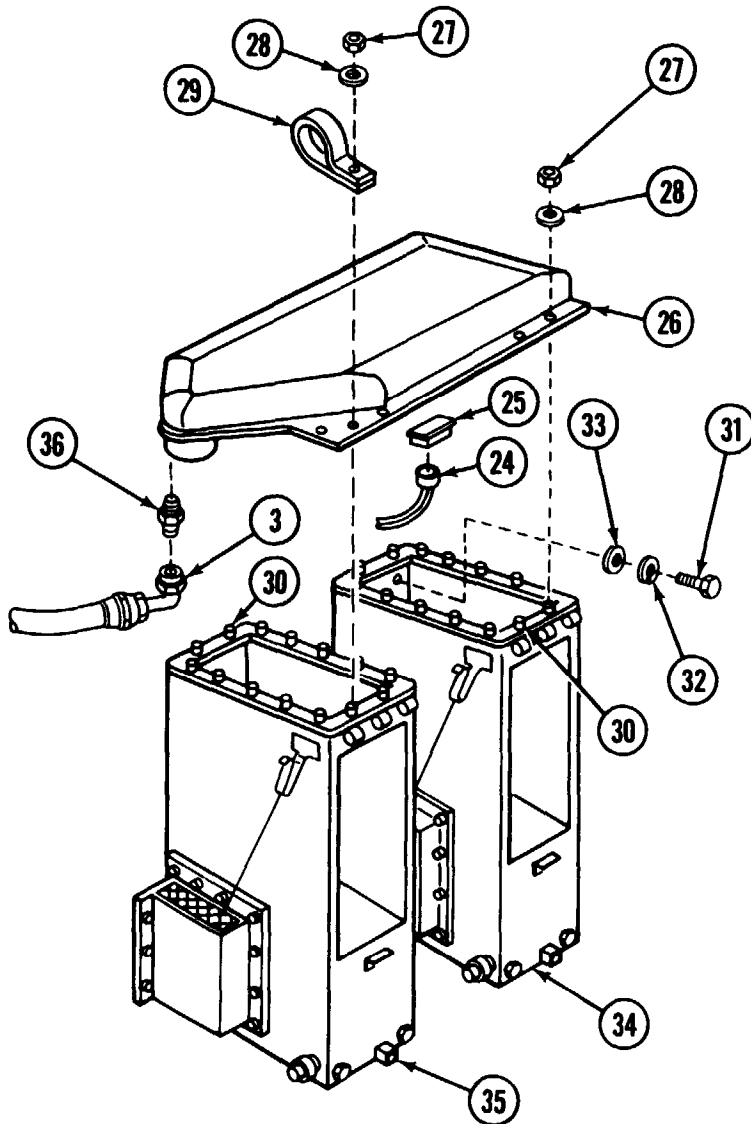
- A Install two new gaskets (47 and 48).
- B Apply adhesive (item 4, Appx D) to bulkhead surface and two new seals (46) and install seals (46).

NOTE

Shouldered stud (40) is only found on left air cleaner box (35). Right air cleaner box (34) has 10 screws (41).

- C Install new gasket (45) and baffle (44) with shouldered stud (40), ten screws (41), ten new lockwashers (42) and ten flat washers (43).
- D Connect baffle cable connector (38) to air box clamp (39) on each air cleaner box (34 and 35).
- E Install two new gaskets (37) on two air cleaner boxes (34 and 35).

## AIR CLEANER: REMOVAL DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



## INSTALLATION

A Connect pressure indicator hose (3) to adapter (36) under left side of air cleaner duct (26).

## WARNING

Using two persons, place 2 x 4 supports under air cleaner boxes before proceeding to step B to prevent possible injury to personnel or damage to air cleaner boxes.

B Install right air cleaner box (34) and air cleaner duct (26). Hand tighten four flat washers (28) and four nuts (27) inside air cleaner duct (26).

C Place 2 x 4 support under air cleaner box (34).

D Lift air cleaner box (34) and install four screws (31), four new lockwashers (32) and four flat washers (33).

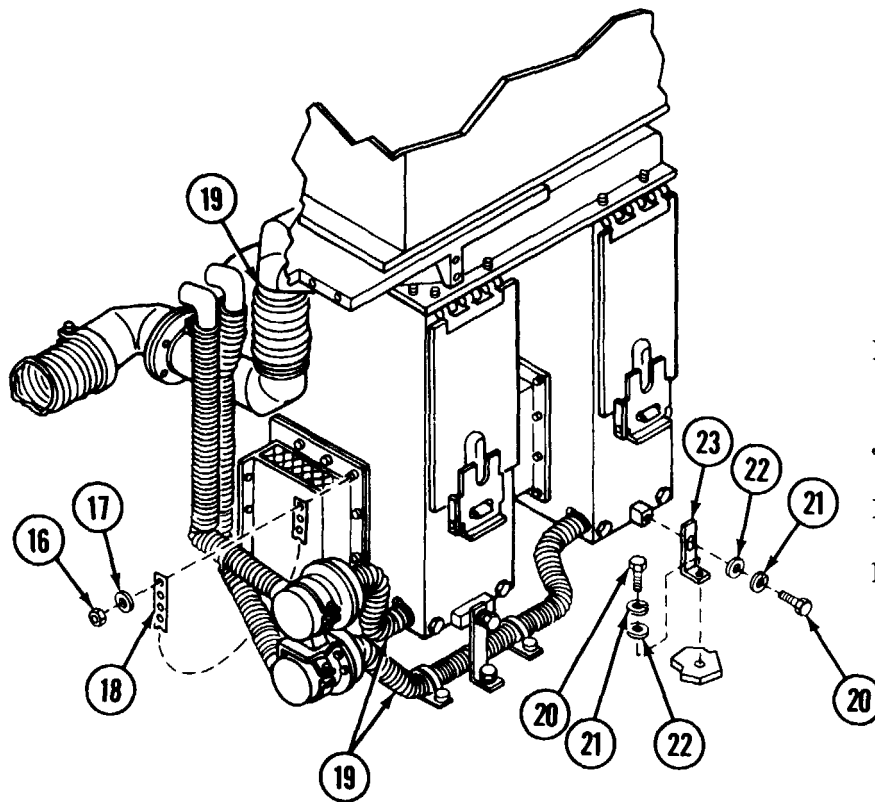
E Install left air cleaner box (35) with 2 x 4 underneath with four screws (31), four new lockwashers (32) and four flat washers (33).

F From inside of air cleaner duct (26) install nineteen flat washers (28) and nineteen nuts (27) on studs (30). Tighten all nuts (27).

G Install five nuts (27), five flat washers (28) and STE/ICE harness clamp (29) on stud (30).

H Connect transducer (25) and STE/ICE harness (24) under air cleaner duct (26).

AIR CLEANER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

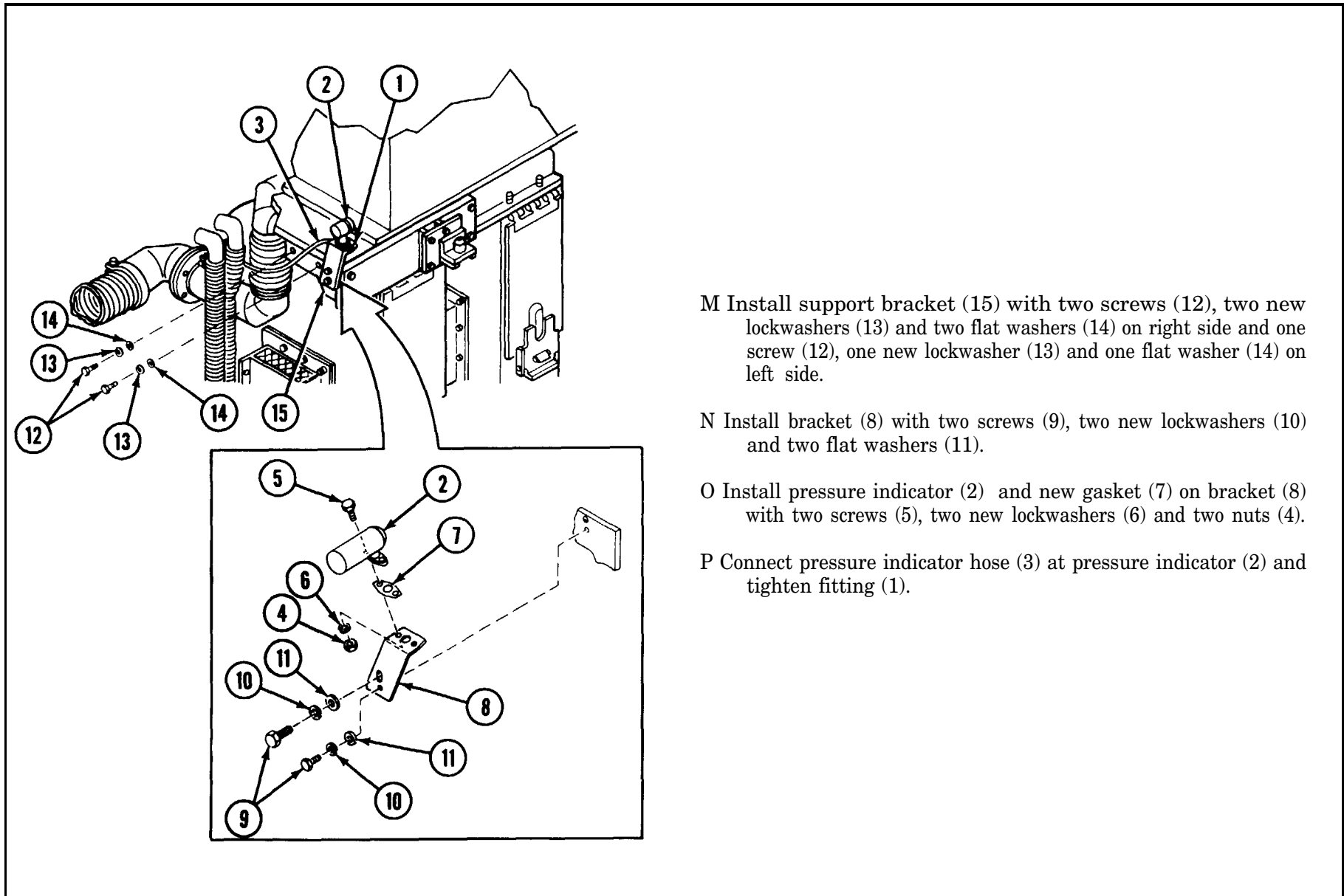


NOTE

Larger bracket (23) is installed on left air cleaner box (35).

- I Install two brackets (23) with four screws (20), four new lockwashers (21) and four flat washers (22).
- J Remove 2 x 4 supports.
- K Install three air inlet ducts and hoses (19) (p 4-29).
- L Install strap (18), flat washer (17) and nut (16).

## AIR CLEANER: REMOVAL DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



M Install support bracket (15) with two screws (12), two new lockwashers (13) and two flat washers (14) on right side and one screw (12), one new lockwasher (13) and one flat washer (14) on left side.

N Install bracket (8) with two screws (9), two new lockwashers (10) and two flat washers (11).

O Install pressure indicator (2) and new gasket (7) on bracket (8) with two screws (5), two new lockwashers (6) and two nuts (4).

P Connect pressure indicator hose (3) at pressure indicator (2) and tighten fitting (1).





## AIR CLEANER BOX ASSEMBLY: DISASSEMBLY AND ASSEMBLY

**INITIAL SETUP**Materials/Parts:

Dry-cleaning solvent (item 20, Appx D)

Adhesive cement (item 3, Appx D)

Equipment Condition:

Box removed (p 4-25)

Special Tools:

Punch, drive pin 1/16 inch (item 78, Appx B)

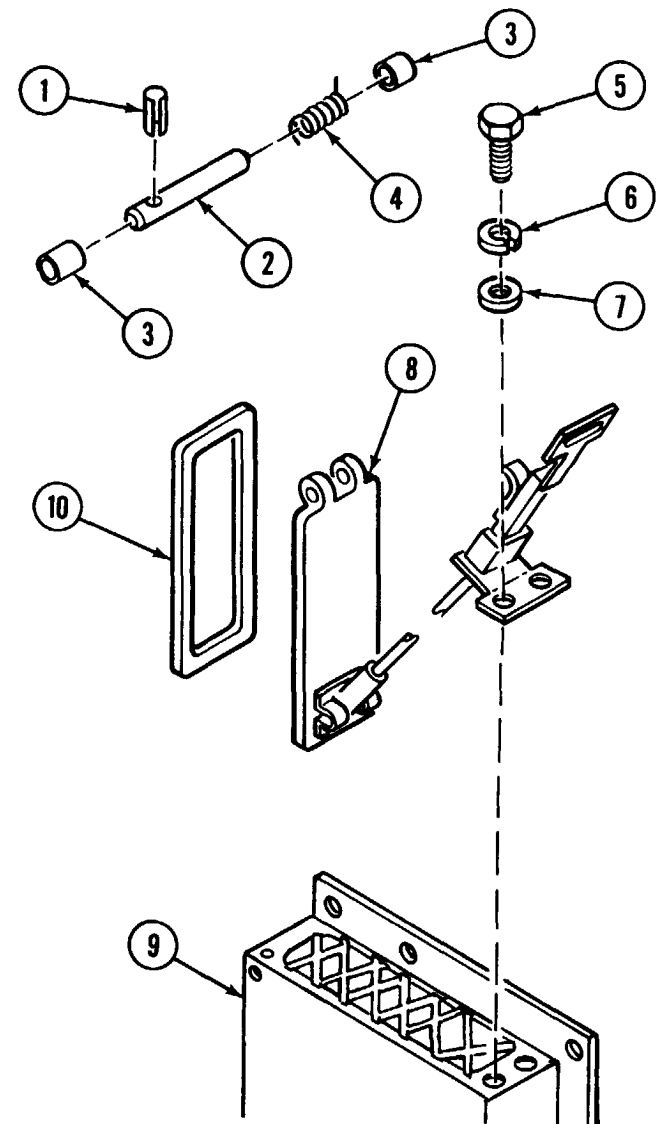
## DISASSEMBLY

A Remove spring pin (1) from hinge pin (2). Discard spring pin.

B Remove hinge pin (2), two spacers (3) and spring (4).

C Remove two screws (5), two lockwashers (6), two flat washers (7) and baffle (8) from air cleaner box (9). Discard lockwashers.

D Remove seal (10) from baffle (8). Discard seal



AIR CLEANER BOX ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)

ASSEMBLY

WARNING

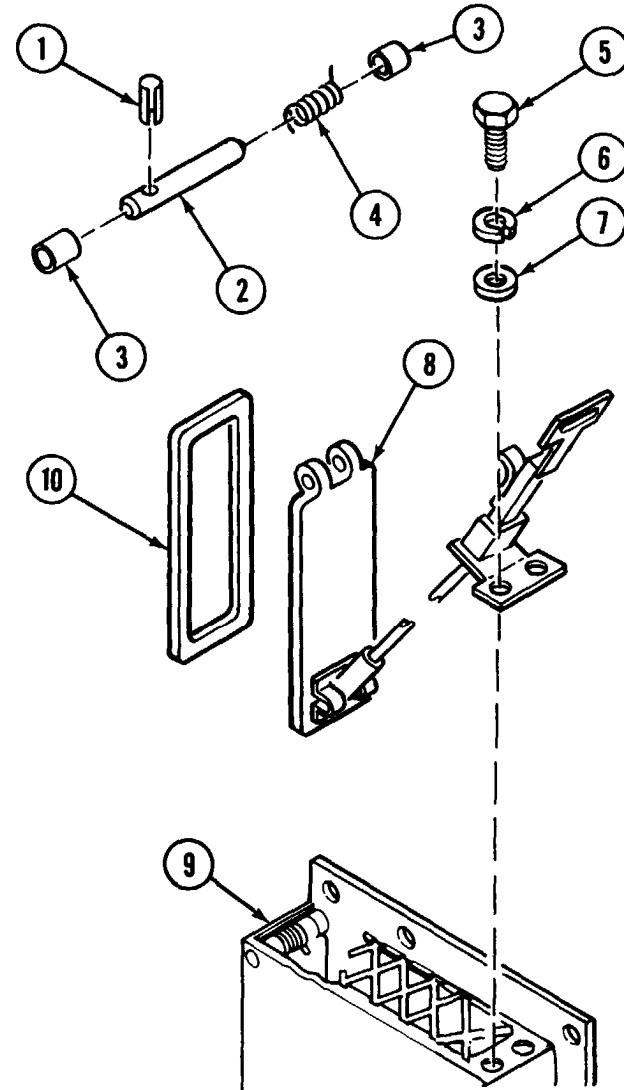
Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy, get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II, it is 138°F (50°C). Do not use near open flame or excessive heat.

- A Use dry-cleaning solvent (item 20, Appx D) to clean residue from baffle (8).
- B Use adhesive cement (item 3, Appx D) to install new seal (10) on baffle (8).
- C Install baffle (8) on air cleaner box (9) by installing two flat washers (7), two new lockwashers (6), and two screws (5).

NOTE

Preload spring in reset so that door is spring loaded in closed position.

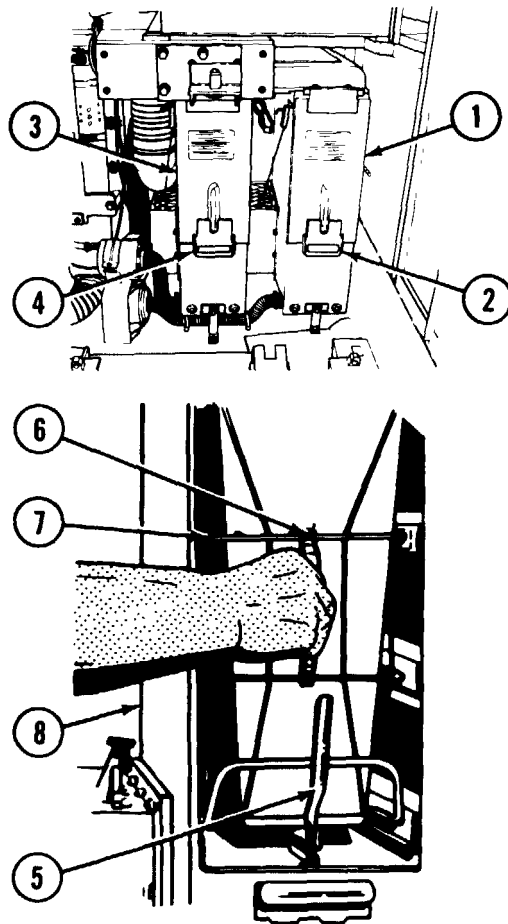
- D Install hinge pin (2), spring (4) and two spacers (3).
- E Install new spring pin (1) on hinge pin (2).



## AIR FILTER: REMOVAL AND INSTALLATION

**INITIAL SETUP**Equipment Condition:

Right projectile rack moved to rear of vehicle (TM 9-2350-267-10).



## REMOVAL

- A Remove right access door (1) by pulling locking latch (2) down and lifting door up.

## CAUTION

Do not pull left door up too far to cause binding and damage to door when removing.

- B Remove left access door (3) by pulling locking latch (4) down, pulling door up slightly, and sliding door off to right.
- C Pull locking handles (5) down. Pull filter pack removal handle (6) to remove filter pack (7) from air cleaner boxes (8).

## INSTALLATION

- A Install new gasket on each new filter.
- B Install filters; dine with outlet gaskets to ensure proper seal. Secure locking handles.
- C Install access doors (1 and 3) and secure by pulling locking latches (2 and 4) down and then up.

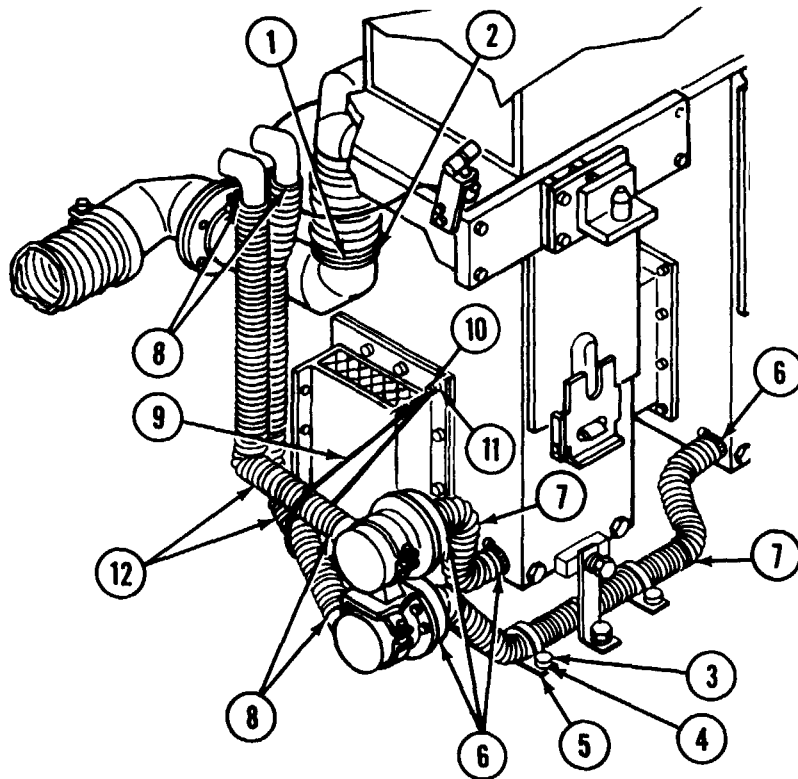
## DUCTS AND HOSES: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Equipment Condition:

Powerpack removed (p 3-1).

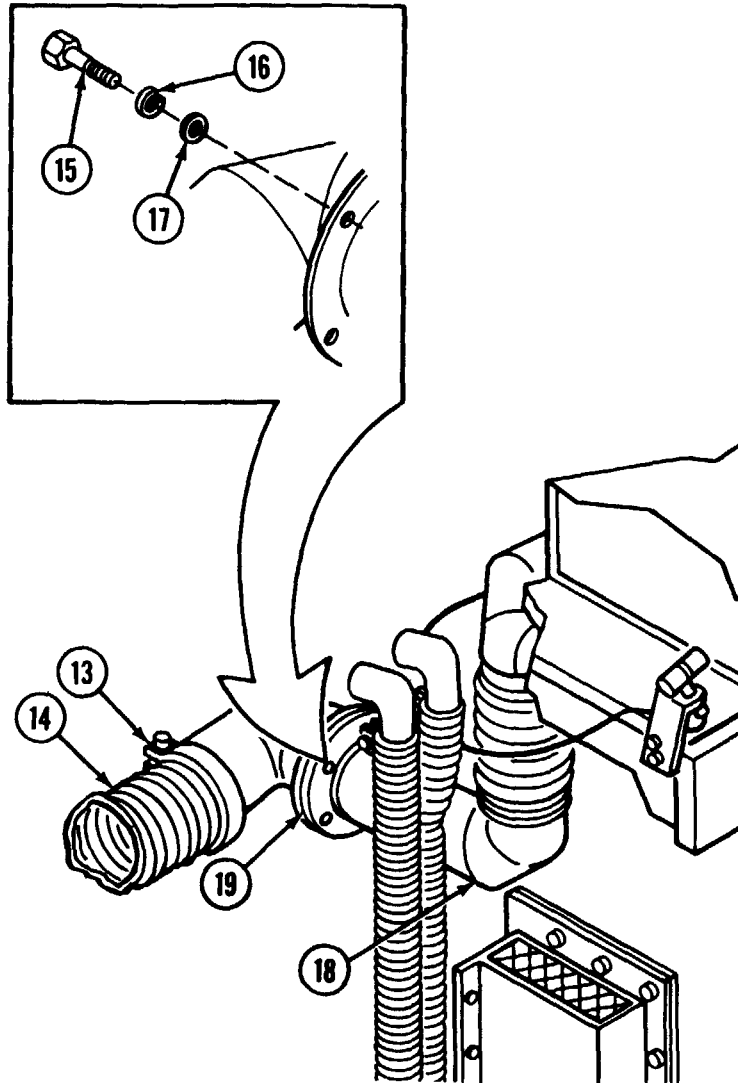
Right projectile rack removed (p 11-5).



### REMOVAL

- A Loosen two hose clamps (1).
- B Remove air cleaner duct-to-elbow duct hose (2).
- C Remove two screws (3), two lockwashers (4) and two mounting clamps (5). Discard lockwashers.
- D Loosen four hose clamps (6).
- E Remove two air cleaner-to-dust exhaust hoses (7).
- F Loosen four hose clamps (8).
- G Remove strap (9) by removing nut (10) and flat washer (11).
- H Remove two dust exhaust-to-elbow hoses (12).

TA57142

**DUCTS AND HOSES: REMOVAL AND INSTALLATION (CONTINUED)****NOTE**

Powerplant must be removed to remove air intake duct and elbow duct.

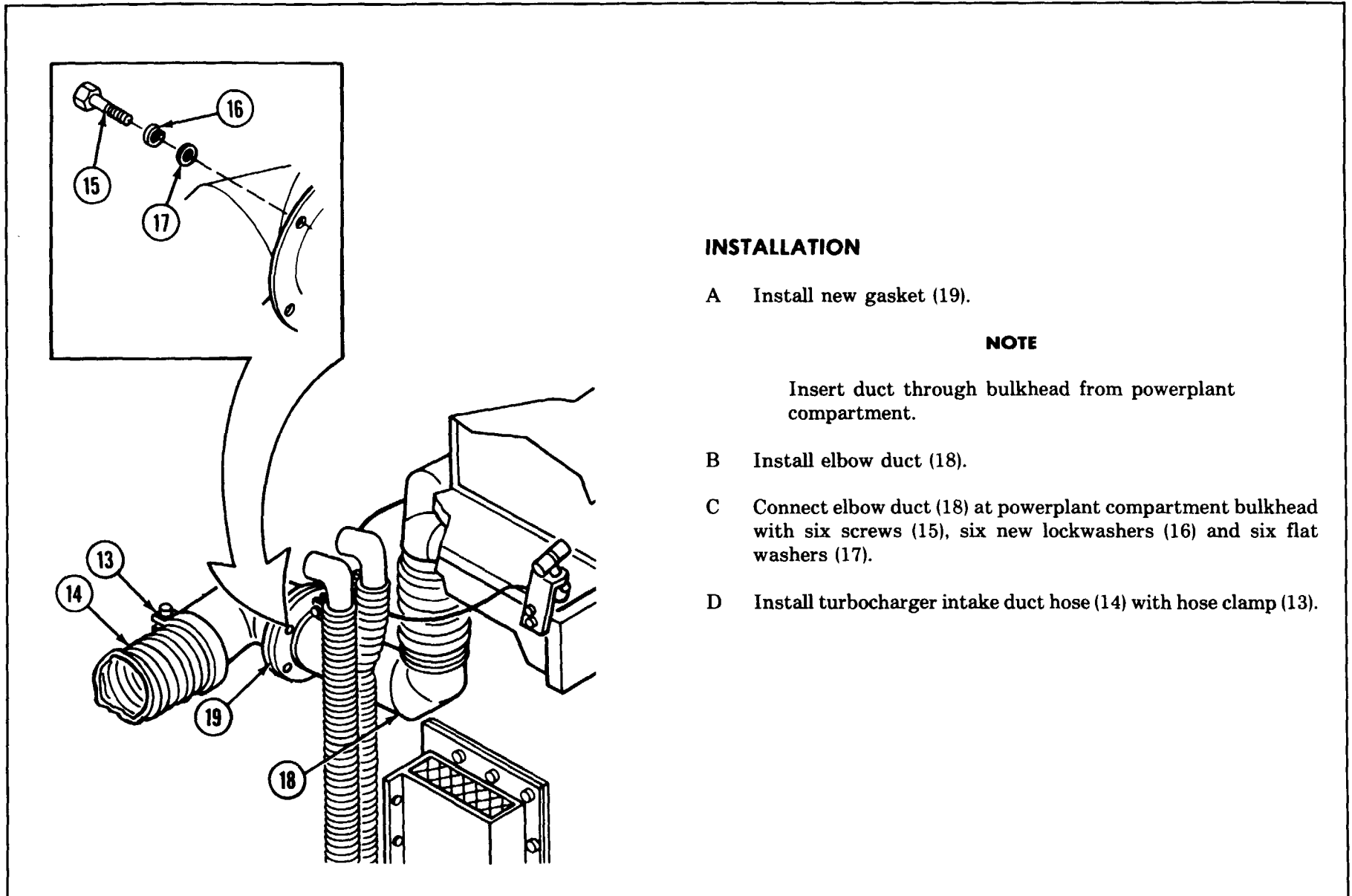
- I Remove hose clamp (13) and turbocharger air intake duct hose (14).
- J Remove six screws (15), six lockwashers (16) and six flat washers (17) at powerplant compartment bulkhead. Discard lockwashers.
- K Separate elbow duct (18) from bulkhead.

**NOTE**

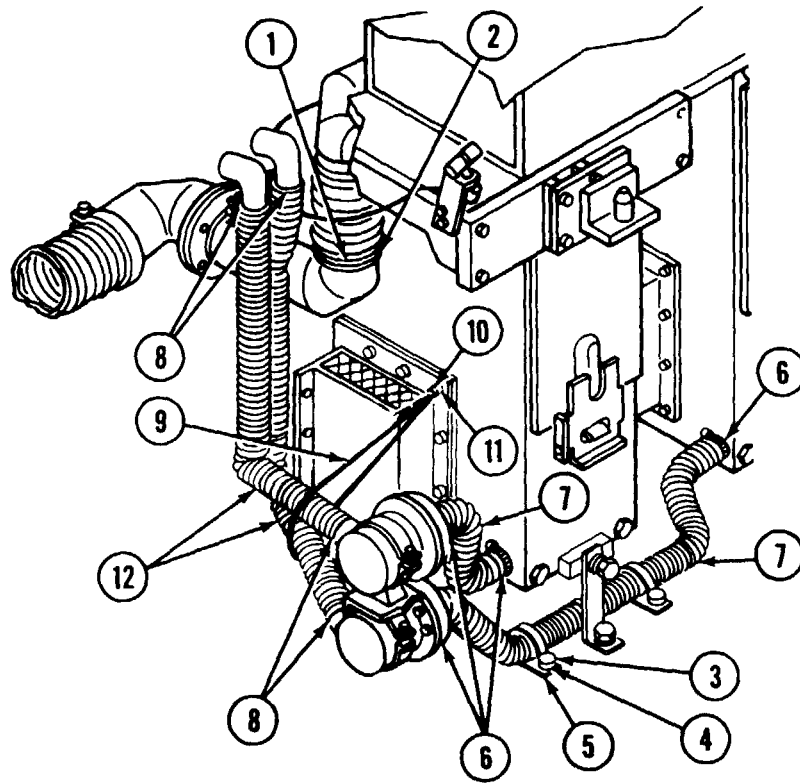
Pull duct through bulkhead into powerplant compartment.

- L Remove elbow duct (18).
- M Remove and discard gasket (19).

## DUCTS AND HOSES: REMOVAL AND INSTALLATION (CONTINUED)



DUCTS AND HOSES: REMOVAL AND INSTALLATION (CONTINUED)



- E Install two dust exhaust-to-elbow hoses (12) and tighten four hose clamps (8).
- F Install strap (9) with flat washer (11) and nut (10).
- G Install two air cleaner-to-dust exhaust hoses (7) and tighten four hose clamps (6).
- H Install two mounting clamps (5) with two screws (3) and two new lockwashers (4).
- I Install air cleaner duct-to-elbow duct hose (2) and tighten two hose clamps (1).



## Section III EXHAUST SYSTEM

### GENERAL

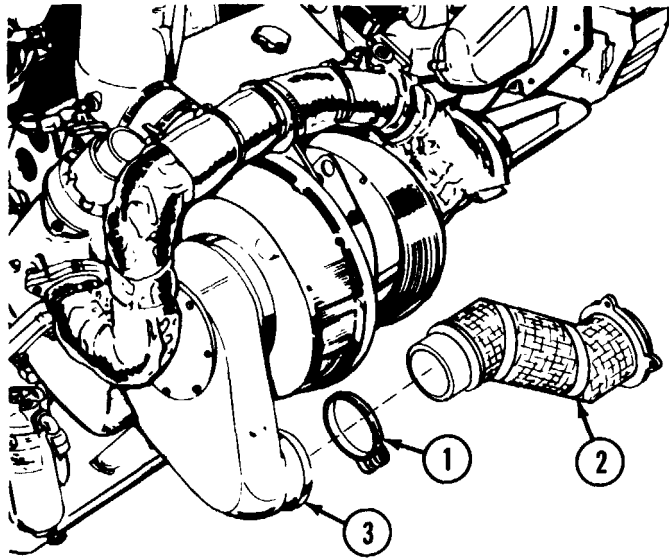
This section contains instructions on how to remove, install or repair the exhaust system. The exhaust system consists of the following

- . Exhaust Crossover Tube Insulation
- Exhaust Duct and Pipe

The maintenance procedures are given under the following headings:

- ž Exhaust Pipe Removal (p 4-32)
- Exhaust Duct Removal (p 4-32)
- Exhaust Duct and Pipe Insulation Removal (p 4-33)
- Exhaust Crossover Tube Insulation Removal (p 4-34)

## EXHAUST PIPE: REMOVAL AND INSTALLATION



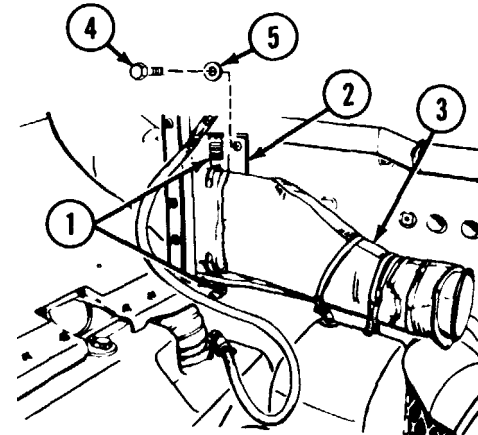
### REMOVAL

- A Remove powerplant (p 3-1).
- B Loosen clamp (1) and pull exhaust pipe (2) from turbocharger blower flange (3).

### INSTALLATION

- A Install exhaust pipe (2) on turbocharger blower flange (3).
- B Tighten clamp (1).
- C Install powerplant (p 3-1).

## EXHAUST DUCT: REMOVAL AND INSTALLATION



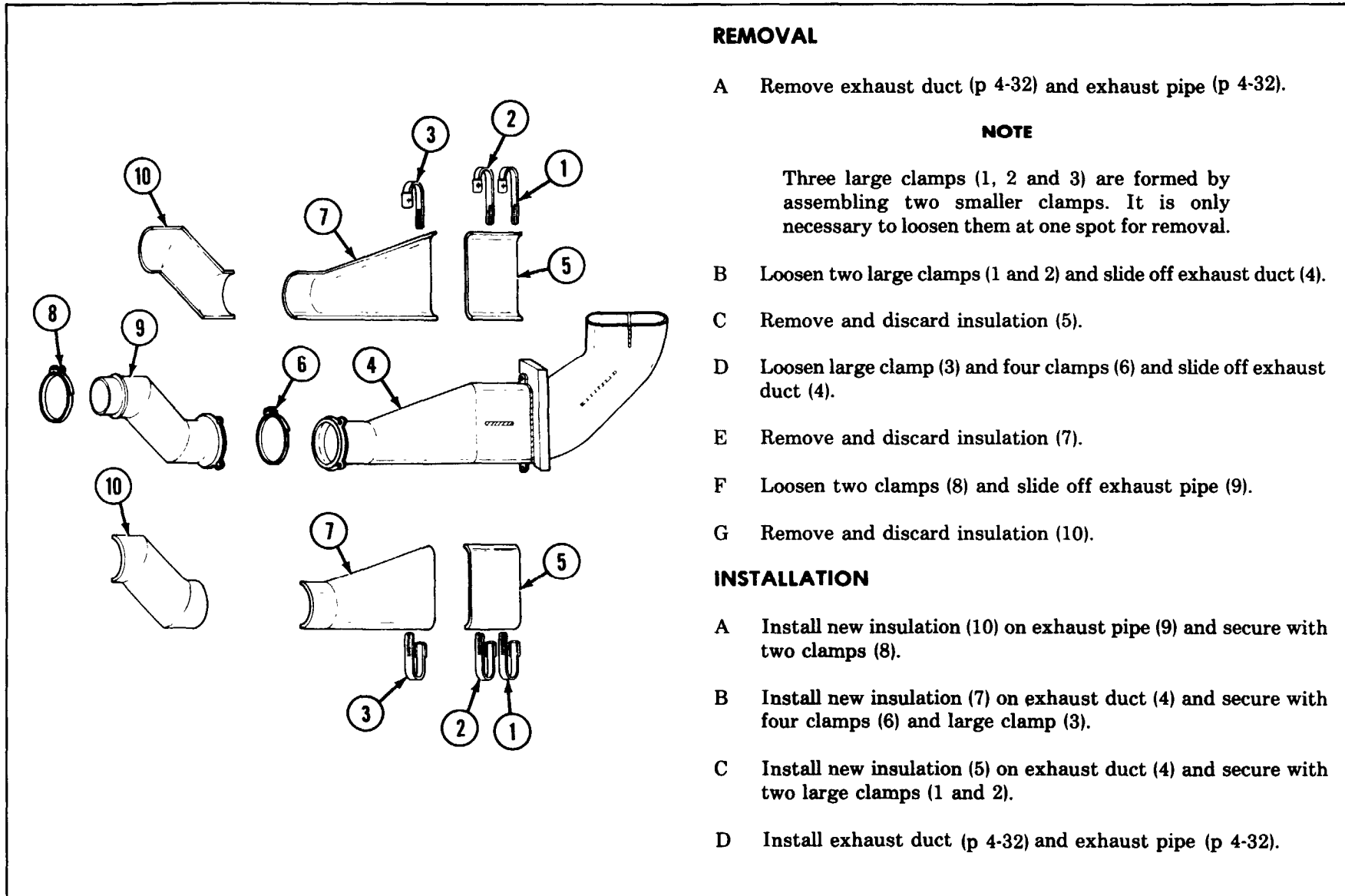
### REMOVAL

- A Remove powerplant (p 3-1).
- B Disconnect two springs (1) from hanger (2).
- C Remove exhaust duct (3) from vehicle.
- D Remove hanger (2) by removing two screws (4) and two flat washers (5).

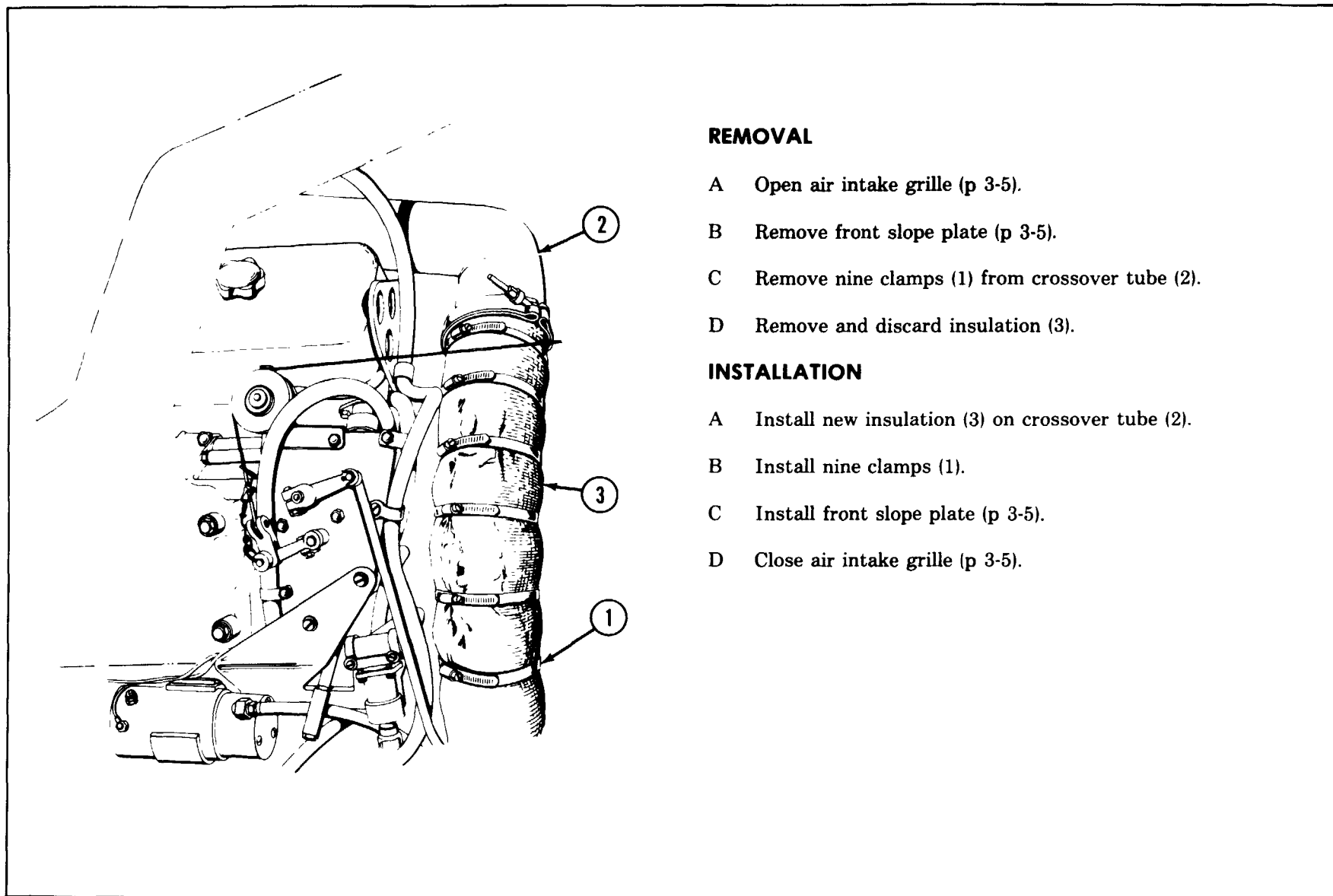
### INSTALLATION

- A Install hanger (2) with two screws (4) and two flat washers (5).
- B Install exhaust duct (3) in vehicle.
- C Connect two springs (1) to hanger (2).
- D Install powerplant (p 3-1).

## EXHAUST DUCT AND PIPE INSULATION: REMOVAL AND INSTALLATION



### ENGINE CROSSOVER TUBE INSULATION: REMOVAL AND INSTALLATION



#### REMOVAL

- A Open air intake grille (p 3-5).
- B Remove front slope plate (p 3-5).
- C Remove nine clamps (1) from crossover tube (2).
- D Remove and discard insulation (3).

#### INSTALLATION

- A Install new insulation (3) on crossover tube (2).
- B Install nine clamps (1).
- C Install front slope plate (p 3-5).
- D Close air intake grille (p 3-5).

## CHAPTER 5 ENGINE COMPONENTS MAINTENANCE INSTRUCTIONS

---

### CHAPTER OVERVIEW

This Chapter illustrates and describes procedures for inspection, removal, disassembly, assembly and installation of the engine components.

Section I Engine Components  
Section II Engine Cooling System

Procedures and functions discussed in this chapter are in compliance with authorized organizational maintenance responsibilities as defined in the Maintenance Allocation Chart (MAC).

### LUBRICATION

Engine lubrication requirements and procedures are defined in LO 9-2350-267-12.

---

### Section I ENGINE COMPONENTS

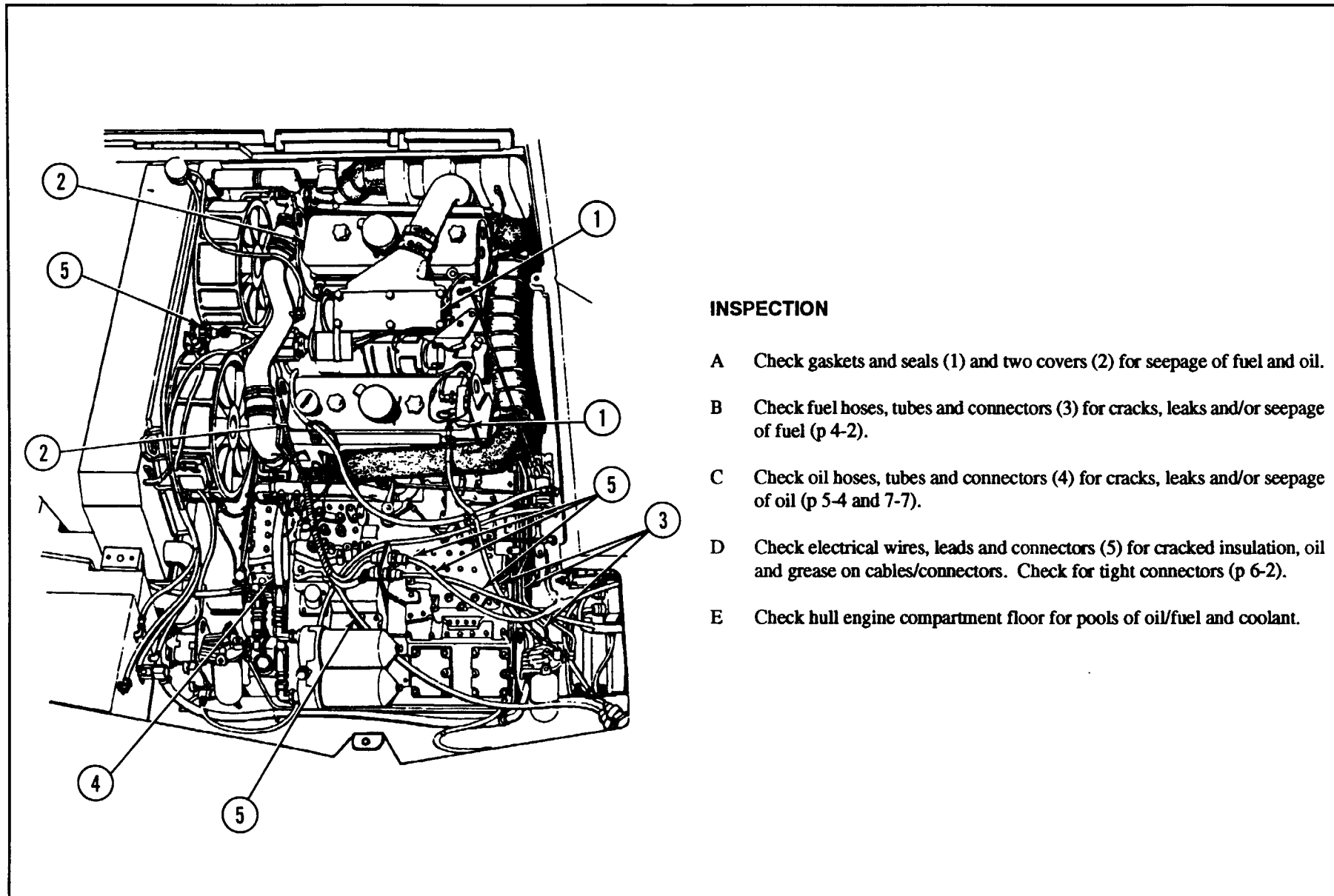
#### GENERAL

This section contains instructions on how to inspect remove, disassemble, assembly and install engine components. The engine components consist of the following:

- Engine Inspection
- Oil Cooler Hoses
- Oil Filter and Bracket
- Oil Sampler System
- Crankcase and Gear Train Breather Tubes
- Engine Mount Release Bar
- Shock Mount and Bracket
- Fuel Shutoff Assembly

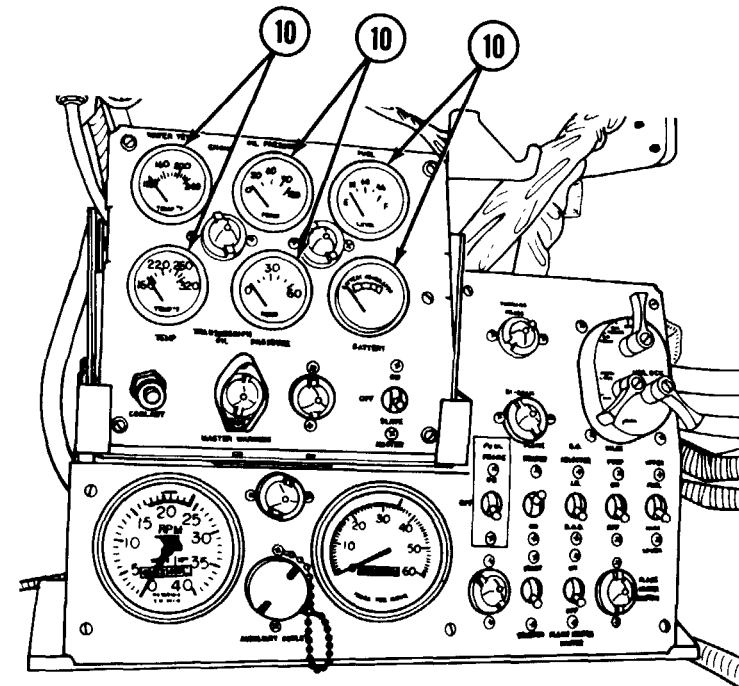
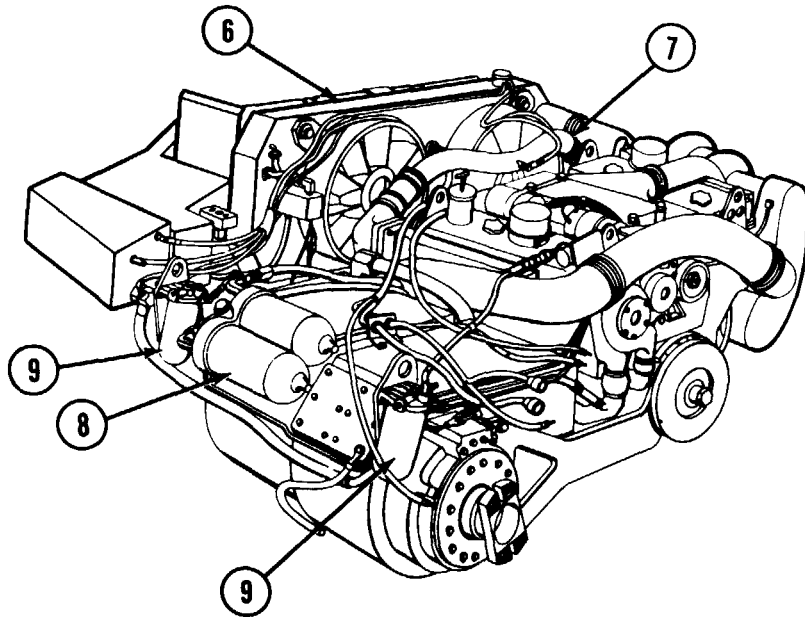
The maintenance procedures are given under the following headings:

- Engine Inspection (p 5-2)
- Oil Cooler Hoses Removal (p 5-4)
- Oil Sampler System Removal (p 5-4.1)
- Oil Filter Removal (p 5-4.3)
- Oil Falter Bracket Removal (p 5-5)
- Crankcase and& Train Breather Tubes Removal (p 5-6)
- Engine Mount Release Bar Removal (p 5-8.1)
- ž Shock Mount and Bracket Removal (p 5-9)
- Fuel Shutoff Assembly Removal (p 5-10.2)

**ENGINE INSPECTION****INSPECTION**

- A Check gaskets and seals (1) and two covers (2) for seepage of fuel and oil.
- B Check fuel hoses, tubes and connectors (3) for cracks, leaks and/or seepage of fuel (p 4-2).
- C Check oil hoses, tubes and connectors (4) for cracks, leaks and/or seepage of oil (p 5-4 and 7-7).
- D Check electrical wires, leads and connectors (5) for cracked insulation, oil and grease on cables/connectors. Check for tight connectors (p 6-2).
- E Check hull engine compartment floor for pools of oil/fuel and coolant.

## ENGINE INSPECTION (CONTINUED)



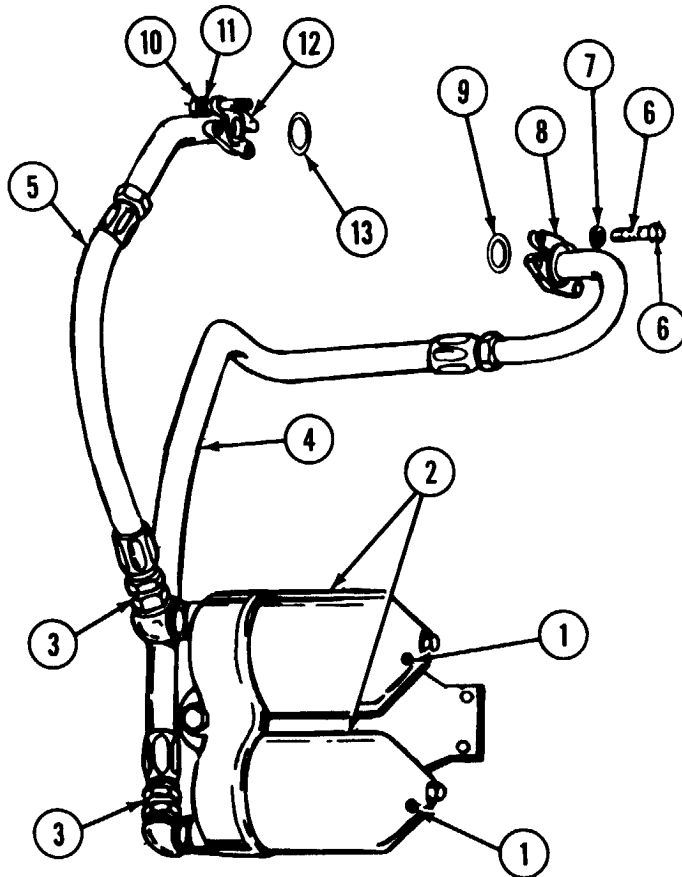
F Check radiator (6) coolant level and specific gravity (p 2-22).

G Check coolant hoses (7) for cracks, deterioration and signs of coolant seepage (p 5-12).

H Check oil filters (8) and fuel filters (9) for collection of sediment on filter elements (TB 43-0210), engine oil filters, transmission oil filters (p 7-9) and fuel filters (p 4-11 and 4-13).

I Start up engine and check instrument panel indicators (10) (TM 9-2350-267-10).

## OIL COOLER HOSES: REMOVAL AND INSTALLATION



## REMOVAL

**WARNING**

Be sure exhaust is cool before removing hoses.

- A Remove two drain plugs (1) from oil filters (2). Drain oil from filters.
- B Remove two nuts (3) to disconnect hoses (4 and 5).
- C Remove four screws (6) and four lockwashers (7).
- D Remove split flange (8), preformed packing (9) and hose (4) from front of engine oil cooler. Discard preformed packing (9).
- E Remove four screws (10) and four lockwashers (11).
- F Remove split flange (12), preformed packing (13) and hose (5) from rear of engine oil cooler. Discard preformed packing (13).

## INSTALLATION

- A Reverse removal procedures.
- B Install new preformed packing (9 and 13).
- C Check engine oil level (LO 9-2350-267-12).

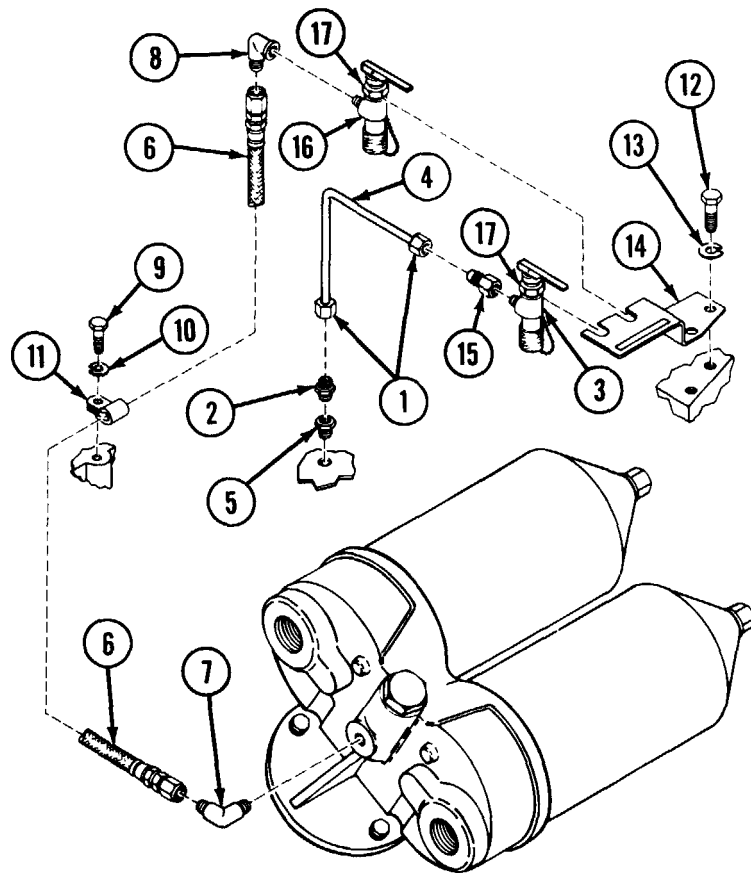


## OIL SAMPLER SYSTEM: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Tape, Teflon (item 62, Appx D)

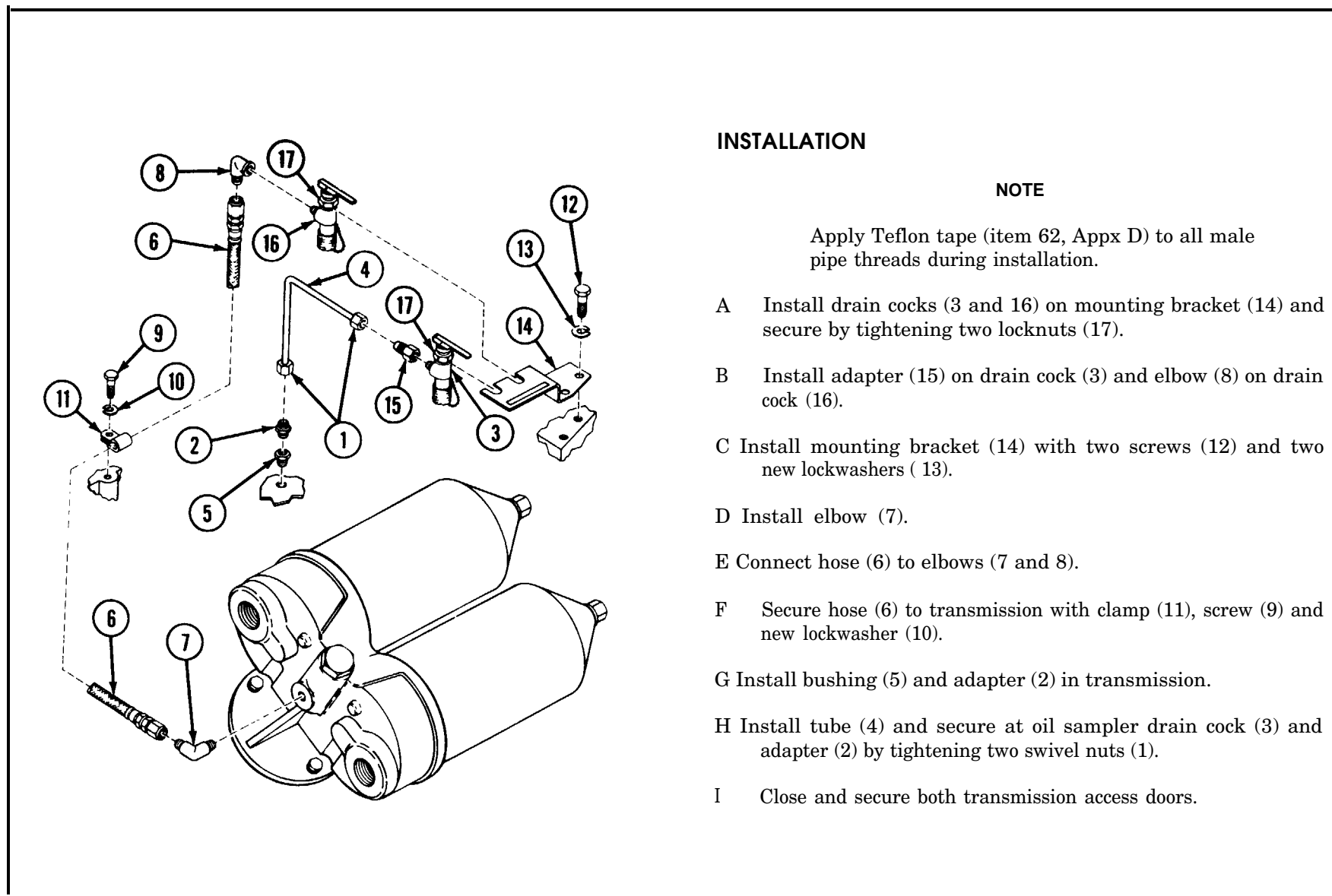


### REMOVAL

- A Open and secure both transmission access doors.
- B Loosen two swivel nuts (1) at transmission adapter (2) and oil sampler drain cock (3). Remove tube (4).
- C Remove adapter (2) and bushing (5) from transmission.
- D Disconnect hose (6) from elbows (7 and 8).
- E Remove elbow (7).
- F Remove screw (9), lockwasher (10) and clamp (11) from transmission and remove hose (6). Discard lockwasher.
- G Remove two screws (12), two lockwashers (13) and mounting bracket (14). Discard lockwashers.
- H Remove adapter (15) from drain cock (3) and elbow (8) from drain cock (16).
- I Loosen two locknuts (17) and pull drain cocks (3 and 16) from mounting bracket (14).

TA312760 ■

## OIL SAMPLER SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)



## INSTALLATION

## NOTE

Apply Teflon tape (item 62, Appx D) to all male pipe threads during installation.

- A Install drain cocks (3 and 16) on mounting bracket (14) and secure by tightening two locknuts (17).
- B Install adapter (15) on drain cock (3) and elbow (8) on drain cock (16).
- C Install mounting bracket (14) with two screws (12) and two new lockwashers (13).
- D Install elbow (7).
- E Connect hose (6) to elbows (7 and 8).
- F Secure hose (6) to transmission with clamp (11), screw (9) and new lockwasher (10).
- G Install bushing (5) and adapter (2) in transmission.
- H Install tube (4) and secure at oil sampler drain cock (3) and adapter (2) by tightening two swivel nuts (1).
- I Close and secure both transmission access doors.

## OIL FILTER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

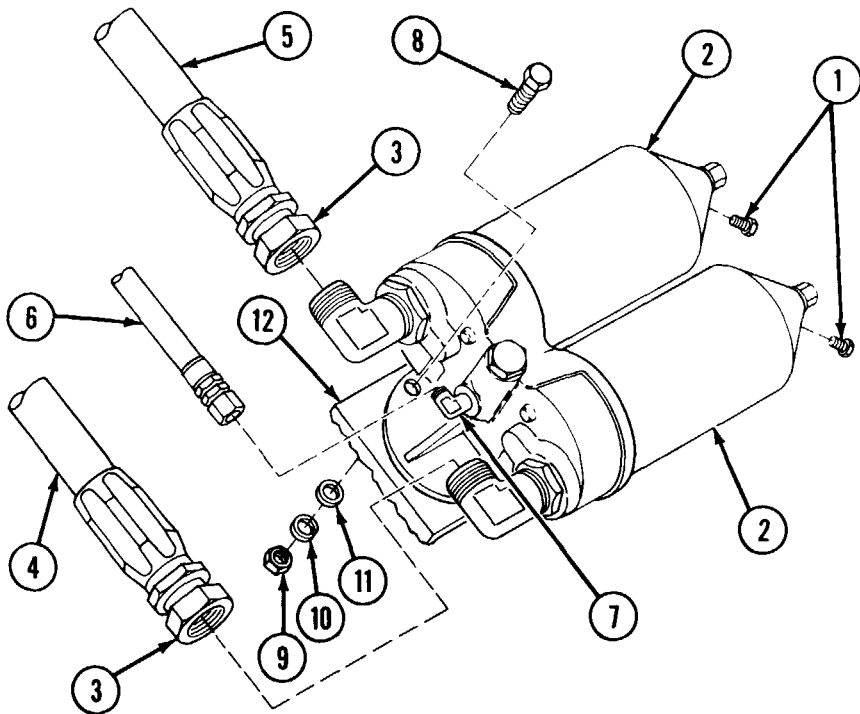
### INITIAL SETUP

#### Test Equipment/Special Tools:

Wrench, torque, 0-175 lb-ft (item 74, Appx B)

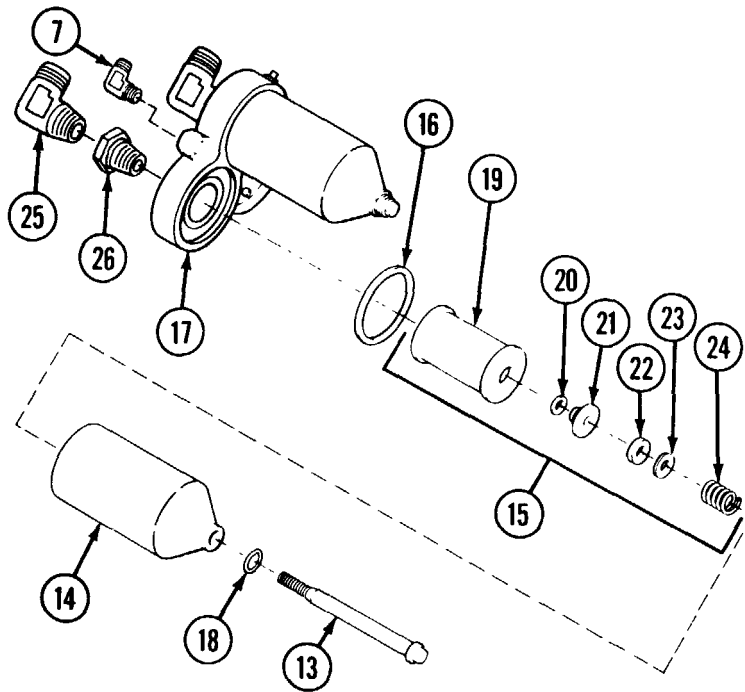
#### References:

LO 9-2350-267-12



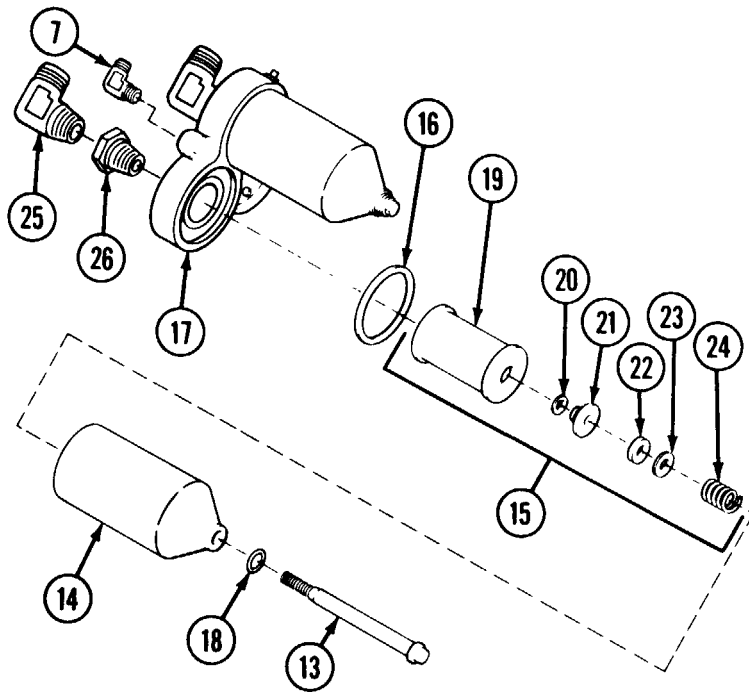
### REMOVAL

- A Remove two drain plugs (1) and drain oil from filters (2) into suitable container.
- B Unscrew two nuts (3) and disconnect hoses (4 and 5).
- C Disconnect hose (6) from elbow (7).
- D Remove four screws (8), four nuts (9), four lockwashers (10) and four flat washers (11) and remove oil filters (2) from bracket (12). Discard lockwashers.

**■ OIL FILTER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****DISASSEMBLY**

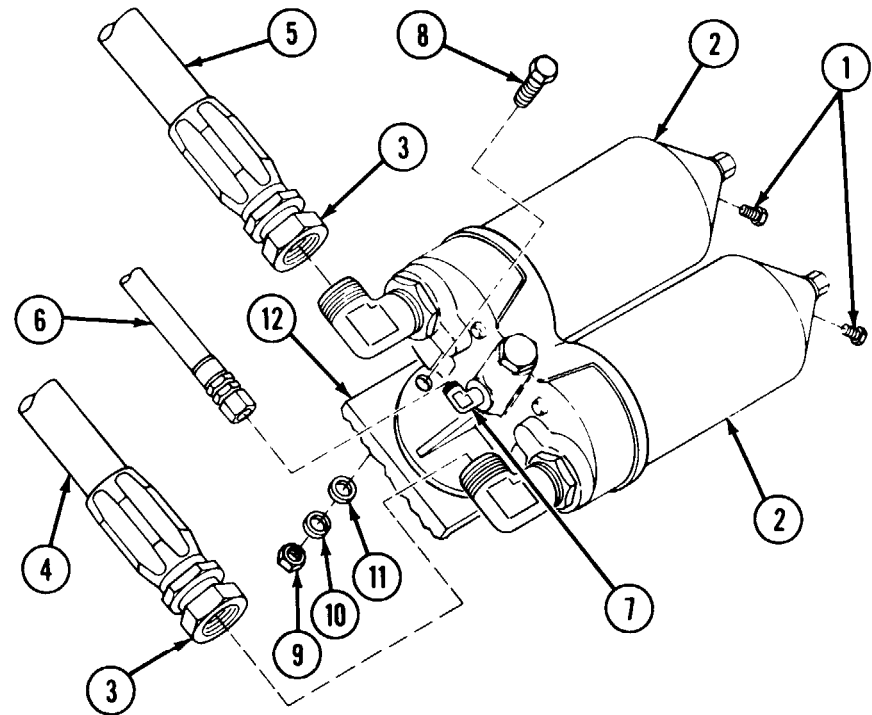
- A Unscrew two center studs (13).
- B Remove two shells (14) with filter element assemblies (15) and two gaskets (16) from adapter (17). Discard gaskets.
- C Remove two center studs (13), two gaskets (18), two filter elements (19), two retaining rings (20), two retainers (21), two gaskets (22), two washers (23) and two springs (24) from shells (14). Discard gaskets.
- D Remove elbow (7) from adapter (17).
- E Remove two elbows (25) and two bushings (26) from adapter (17).

## OIL FILTER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### ASSEMBLY

- A Install two bushings (26) and two elbows (25) on adapter (17).
- B Install elbow (7) on adapter (17).
- C Install two springs (24), two washers (23), two new gaskets (22), two retainers (21), two retaining rings (20), two filter elements (19), two new gaskets (18) and two center studs (13) in shells (14).
- D Install two shells (14) with filter element assemblies (15) and two new gaskets (16) on adapter (17) and secure by torquing two center studs (13) to 40-50 lb-ft.



### INSTALLATION

- A Install oil filters (2) on bracket (12) with four screws (8), four flat washers (11), four new lockwashers (10) and four nuts (9).
- B Connect hose (6) to elbow (7).
- C Connect hoses (4 and 5) and tighten two nuts (3).
- D Install two drain plugs (1) in filters (2).
- E Check engine oil level (LO 9-2350-267-12).

TA312764

TM 9-2350-267-20

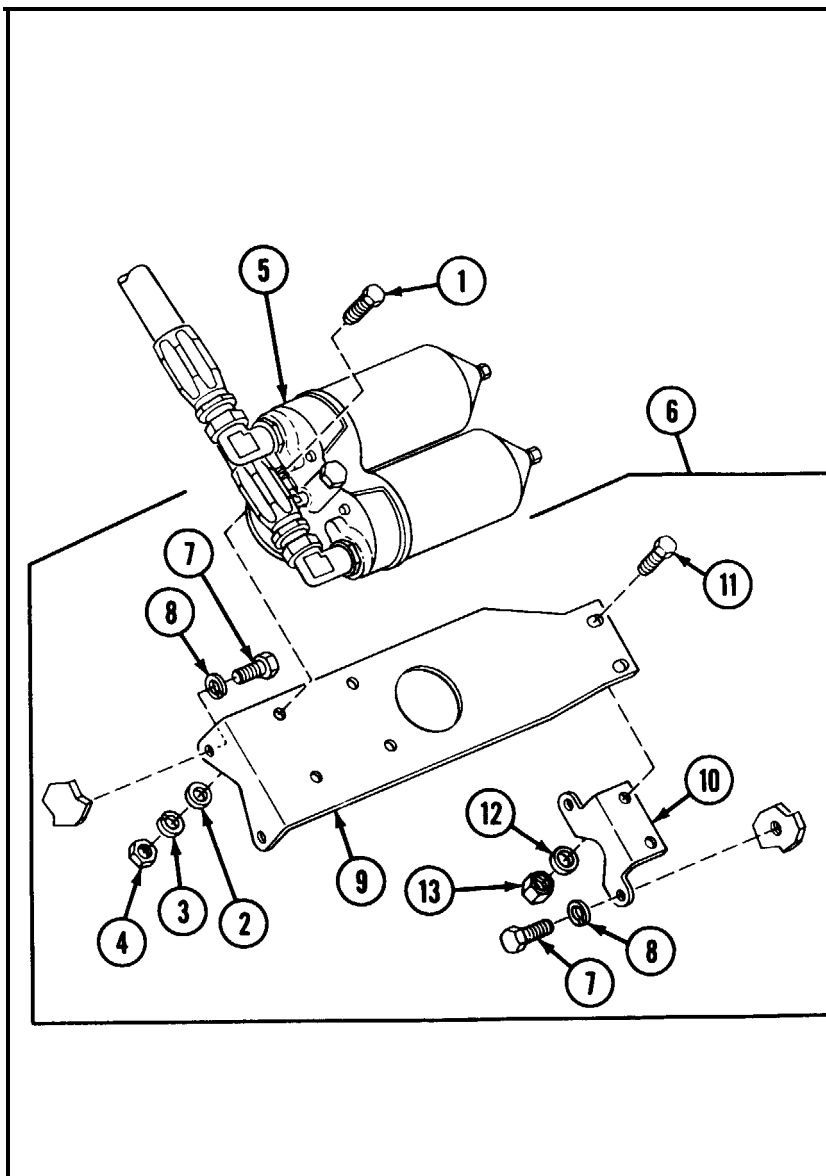
(

(

(

|

## OIL FILTER BRACKET: REMOVAL AND INSTALLATION



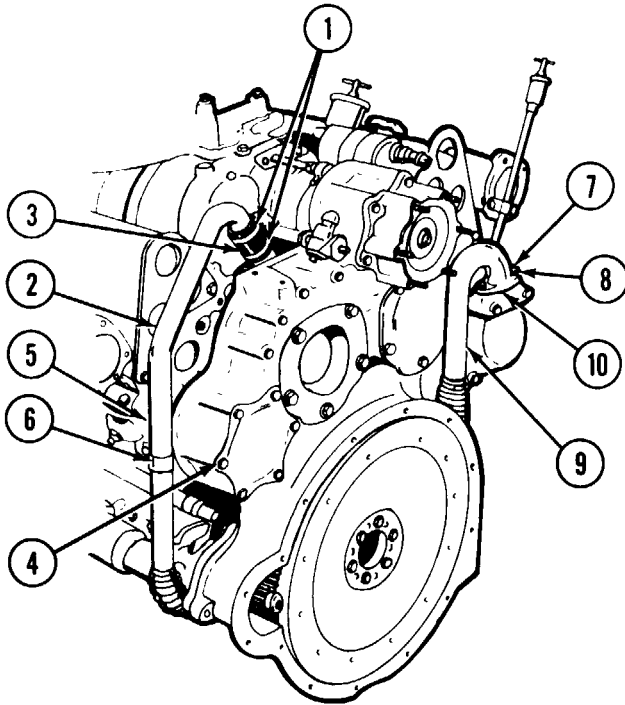
### REMOVAL

- A Open and secure both transmission access doors.
- B Remove four screws (1), four flat washers (2), four lockwashers (3) and four nuts (4), securing oil filter assembly (5) to mounting bracket assembly (6). Discard lockwashers.
- C Lift oil filter assembly (5) from bracket assembly (6) and lay on transmission.
- D Remove four screws (7), four lockwashers (8) and mounting bracket assembly (6) from transmission. Discard lockwashers.
- E Separate mounting brackets (9 and 10) by removing two screws (11), two flat washers (12) and two self-locking nuts (13). Discard self-locking nuts.

### INSTALLATION

- A Secure mounting bracket (9) to bracket (10) with two screws (11), two flat washers (12) and two new self-locking nuts (13).
- B Install mounting bracket assembly (6) on transmission with four screws (7) and four new lockwashers (8).
- C Position oil filter assembly (5) on mounting bracket assembly (6) and secure with four screws (1), four flat washers (2), four new lockwashers (3) and four nuts (4).
- D Close and secure both transmission access doors.

## CRANKCASE AND GEAR TRAIN BREATHER TUBES: REMOVAL AND INSTALLATION



### REMOVAL

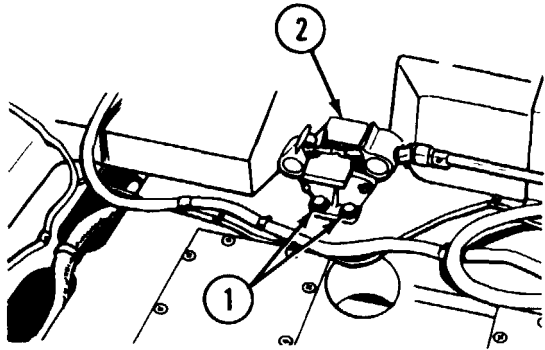
- A Remove powerpack from vehicle (p 3-1).
- B Unscrew screws to loosen two clamps (1).
- C Pull crankcase breather tube (2) out of hose (3).
- D Remove screw (4), nut (5) and retaining collar (6).
- E Remove two screws (7) and two washers (8).
- F Remove gear train breather tube (9).
- G Remove gasket (10) and discard.

### INSTALLATION

- A Reverse removal procedures.
- B Replace gasket (10).

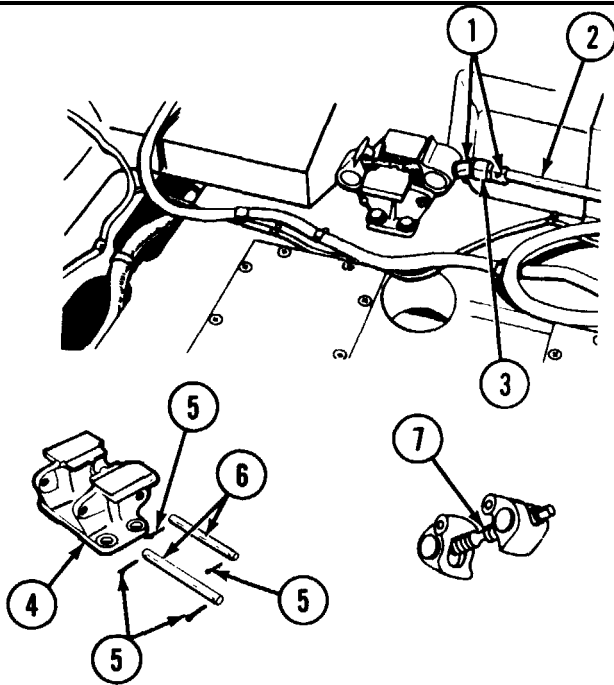


## MOUNT BASE ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



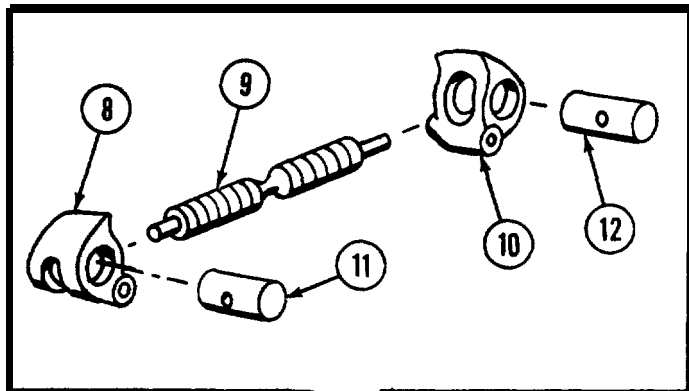
### REMOVAL

- A Remove powerpack (p 3-1).
- B Remove four screws (1) and mount base assembly (2) using a box wrench.



### DISASSEMBLY

- A Remove two cotter pins (1) and discard.
- B Separate and remove mount handle (2) and universal joint (3) from mount base (4).
- C Remove four cotter pins (5) and two jaw pins (6). Discard four cotter pins (5).
- D Remove jaw assembly (7) from mount base (4).

**MOUNT BASE ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**


E Turn jaw (8) counterclockwise to remove from bolt (9).

**NOTE**

Inspect mount base (4), jaws (8 and 10) and jaw nuts (11 and 12) for cracks,

F Turn jaw (10) clockwise to remove from bolt (9).

G Slide jaw nuts (11 and 12) out of jaws (8 and 10).

**NOTE**

Inspect bolt (9) and jaw nuts (11 and 12) for damaged threads.

**ASSEMBLY**

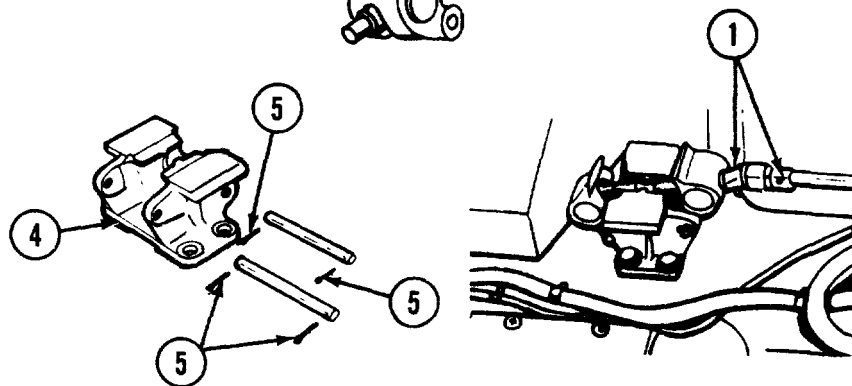
Reverse disassembly procedures.

**NOTES**

Replace two cotter pins (1) and four cotter pins (5).

Make sure jaws (8 and 10) are evenly spaced on bolt (9) during assembly.

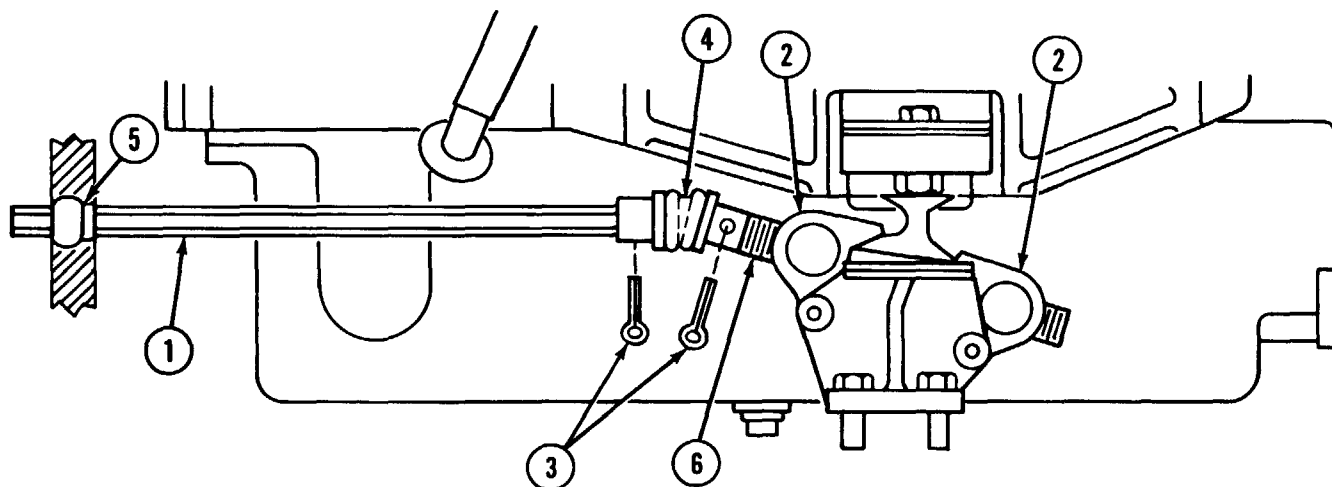
Make sure hexhead on bolt (9) is installed on high side of mount base (4).


**INSTALLATION**

Reverse removal procedures.

All data on pages 5-7 and 5-8 deleted

## ENGINE MOUNT RELEASE BAR: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove engine compartment access cover (p 9-25).
- B Turn engine mount release bar (1) counterclockwise to open mount jaws (2).
- C Remove and discard two cotter pins (3) from universal joint (4).
- D Pull engine mount release bar (1) and bushing (5) into driver's compartment.
- E Remove universal joint (4) from engine mount tie rod (6).

### INSTALLATION

- A Install universal joint (4) on engine mount tie rod (6) and secure with new cotter pin (3).
- B Insert bushing (5) and engine mount release bar (1) through driver's compartment bulkhead.
- C Secure engine mount release bar (1) to universal joint (4) with new cotter pin (3).
- D Turn engine mount release bar (1) clockwise to close mount jaws (2).
- E Install engine compartment access cover (p 9-25).

TA312766



## SHOCK MOUNT AND BRACKET: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

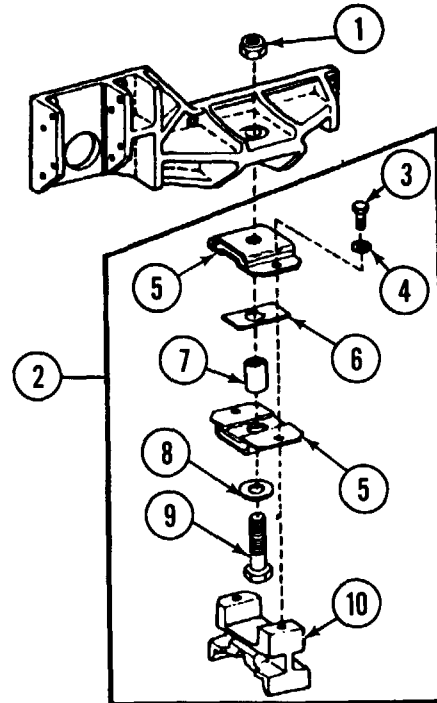
Wrench, torque, 0-175 lb-ft  
(item 74, Appx B)

#### Personnel Required:

Three

#### Equipment Conditions:

Powerpack removed (p 3-1)  
Hydraulic backup pump bracket  
and support removed (p 16-24.1)



### REMOVAL

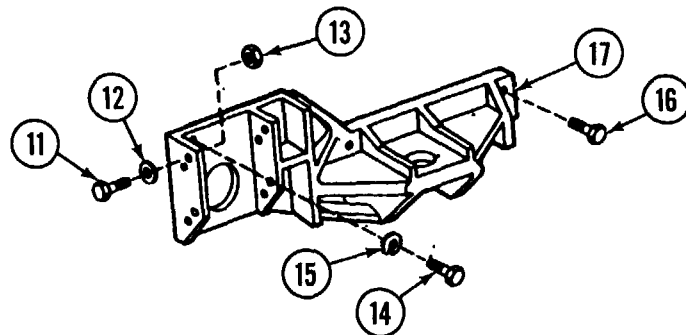
#### WARNING

Support engine before removing mount.

#### NOTE

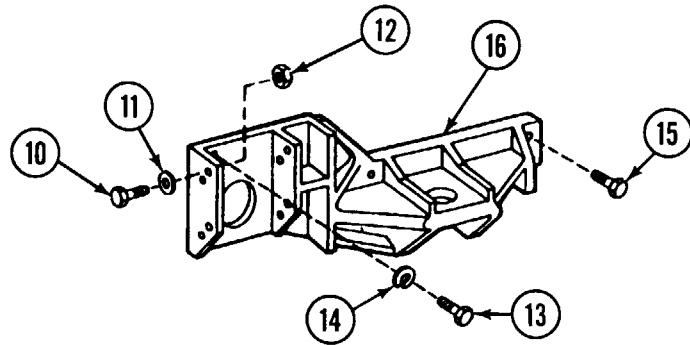
Shock mount and bracket are located on lower rear of engine.

- A Remove self-locking nut (1) and engine mount group (2). Discard self-locking nut.
- B Remove two screws (3) and two lockwashers (4). Discard lockwashers.
- C Separate two engine shock mount plates (5), spacer plate (6), spacer sleeve (7), flat washer (8) and screw (9) from mount (10).



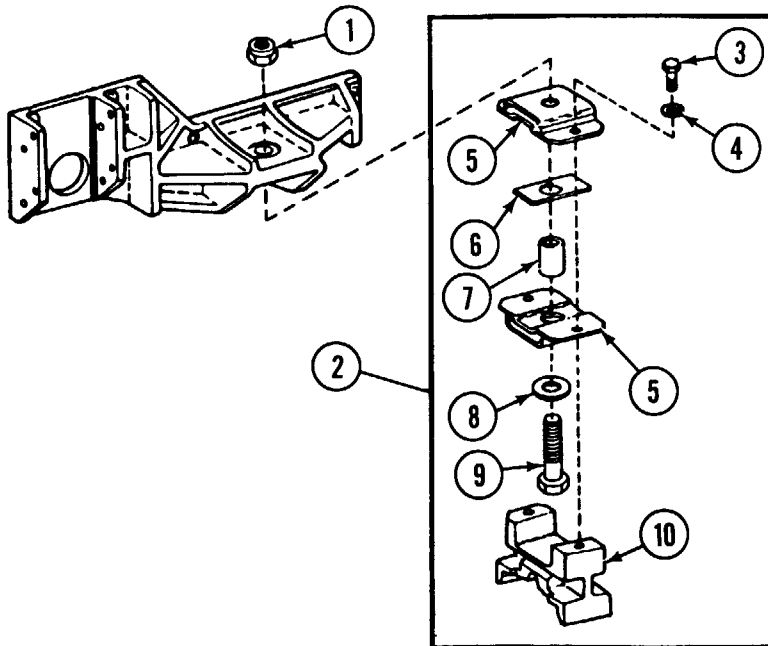
- D Remove eight screws (11), eight flat washers (12) and eight nuts (13).
- E Remove three screws (14) and three lockwashers (15). Discard lockwashers.
- F Remove eight screws (16) and bracket (17) from engine. Inspect mount (10) and bracket (17) for cracks.

SHOCK MOUNT AND BRACKET: REMOVAL AND INSTALLATION (CONTINUED)



**INSTALLATION**

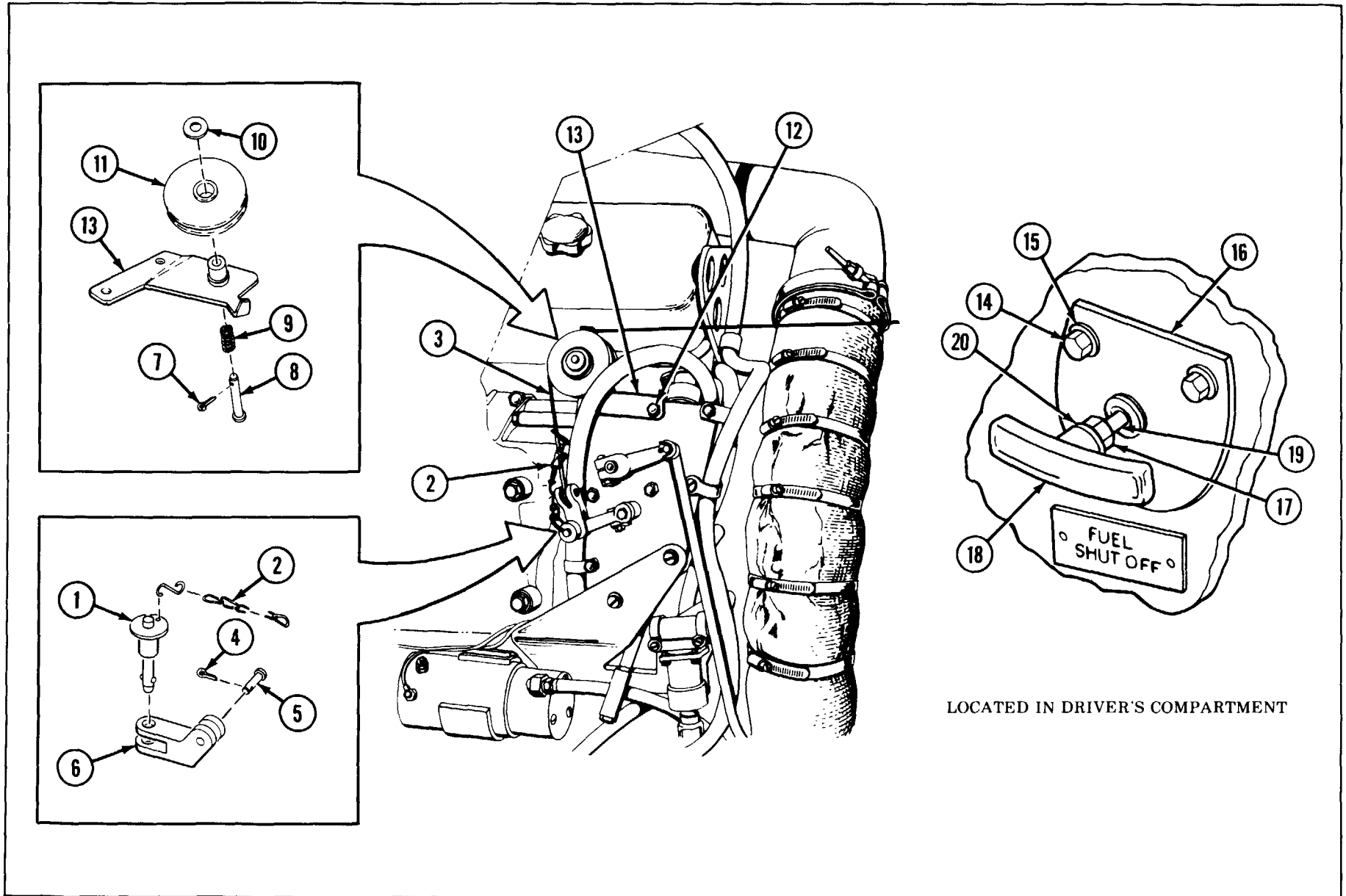
- A Install eight screws (16) and bracket (17).
- B Torque screws (16) to 60-65 lb-ft.
- C Install three screws (14) and three new lockwashers (15).
- D Torque screws (14) to 35 lb-ft.
- E Install eight screws (11), eight flat washers (12) and eight nuts (13).



- F Install two engine shock mount plates (5), spacer plate (6), spacer sleeve (7), flat washer (8) and screw (9) on mount (10) and secure with two screws (3) and two new lockwashers (4).
- G Install engine mount group (2) on bracket (17) with new self-locking nut (1).



FUEL SHUTOFF ASSEMBLY: REMOVAL AND INSTALLATION



LOCATED IN DRIVER'S COMPARTMENT



## FUEL SHUTOFF ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

- A Open and secure air intake grille and driver's hatch.**
- B Remove quick-release pin (1).
- C Release S-hook and chain (2) from cable (3).
- D Remove cotter pin (4), clevis pin (5) and clevis (6). Discard cotter pin.
- E Remove cotter pin (7), straight pin (8), spring (9), Washer (10) and pulley (11). Separate pulley (11) and cable (3). Discard cotter pin.
- F Remove two screws (12) and pulley bracket (13).
- G Remove three screws (14) and three **lockwashers (15) from FUEL SHUTOFF** control assembly (16). Discard lockwashers.
- H Remove control assembly (16) and attached cable (3) from vehicle.
- I Loosen nut (17) on control assembly (16) by backing it away from handle (18).
- J Remove handle (18) from cable (19).
- K Remove lockwasher (20) and nut (17). Discard lockwasher.

### INSTALLATION

- A Install, but do not tighten, nut (17) on cable (19). Install new lockwasher (20) against nut (17).
- B Screw handle (18) onto cable (19) until headed section bottoms in handle. Back off handle to horizontal position.
- C Secure handle (18) by tightening nut (17).
- D Insert cable (3) through driver's compartment bulkhead.
- E Install FUEL SHUTOFF control assembly (16) with three screws (14) and three new lockwashers (15).
- F Install pulley bracket (13) With two screws (12).
- G Run cable (3) around pulley (11) and install on bracket (13) with straight pin (8), spring (9), washer (10) and new cotter pin (7).
- H Install clevis (6) with clevis pin (5) and new cotter pin (4).
- I Install S-hook and chain (2) on cable (3).
- J Install quick-release pin (1).
- K Close and secure air intake grille and driver's hatch.

## Section II ENGINE COOLING SYSTEM

### GENERAL

This section contains instructions on how to clean, remove and install the engine cooling system. The engine cooling system consists of the following:

- Engine Cooling System
- Engine Coolant Main and Lower Tubes (Main Tube Assembly)
- Surge Tank and Pressure Relief Valve
- Aeration Detector
- Radiator and Mounts
- Radiator shroud
- Inlet Thermostat and Housing Assembly
- Bypass Thermostat and Housing Assembly
- **coolant** Pump
- **Hoses** and Tubes

The maintenance procedures are given under the following headings:

- Engine Cooling System (p 5-12)
- Engine Coolant Main Tube Assembly Removal (p 5-14)
- Engine Coolant Lower Tube Removal (p 5-15)
- Surge Tank Removal (p 5-16.2)
- Surge Tank Hoses and Fittings Removal (p 5-16.5)
- Radiator Shroud Removal (p 5-18)
- Pressure Relief Valve and Block Mount (p 5-18.2)
- Aeration Detector Removal (p 5-19)
- Radiator Cleaning (p 5-20)
- Radiator Replacement (p 5-21)
- Radiator Mounts Replacement (p 5-23)
- Inlet Thermostat and Housing Assembly Removal (p 5-24)
- Bypass Thermostat and Housing Assembly Removal (p 5-26)
- Coolant Pump **Removal** (p 5-28)
- **Hoses and Tubes Removal** (p 5-29)

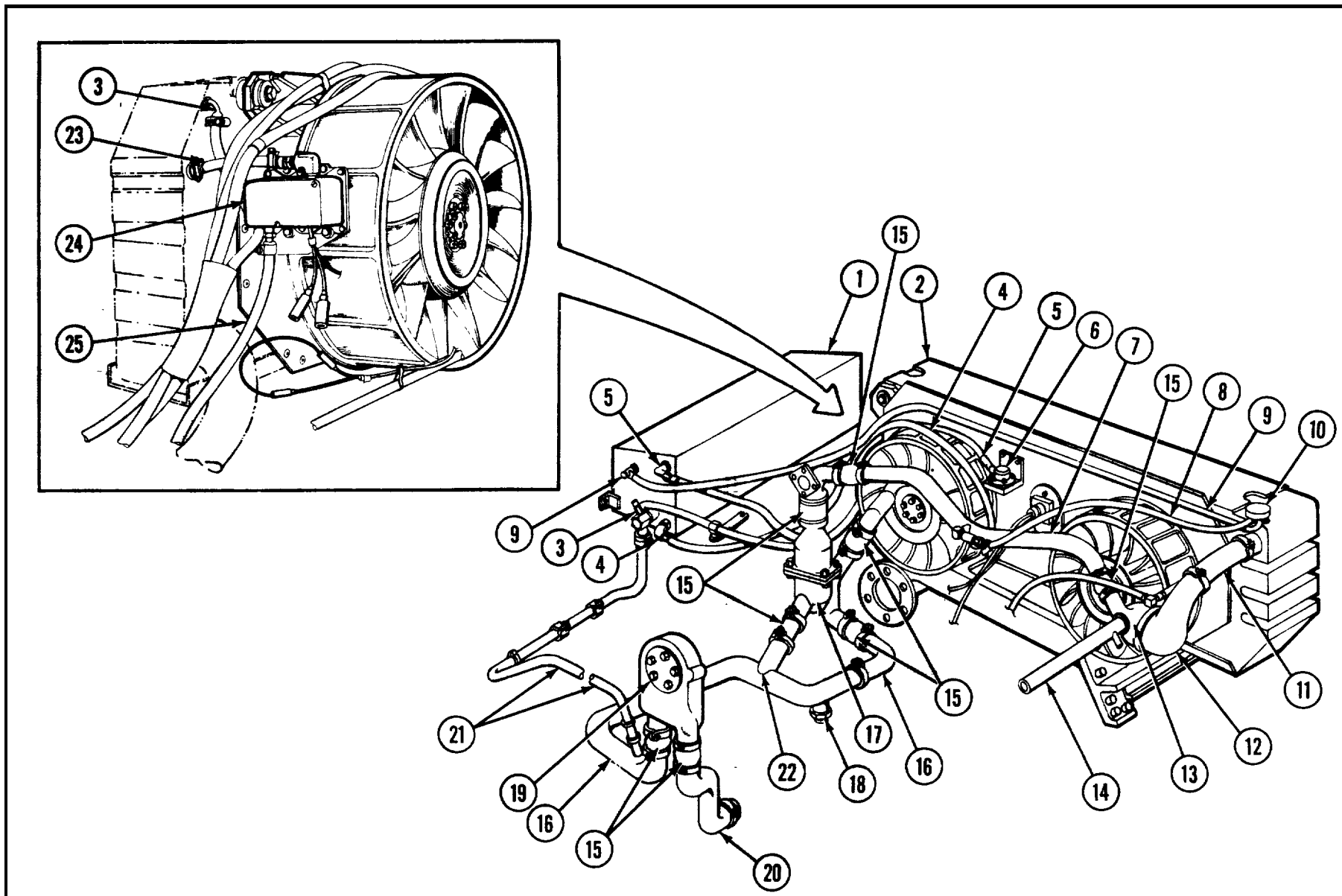
### ENGINE COOLING SYSTEM

Component/Function

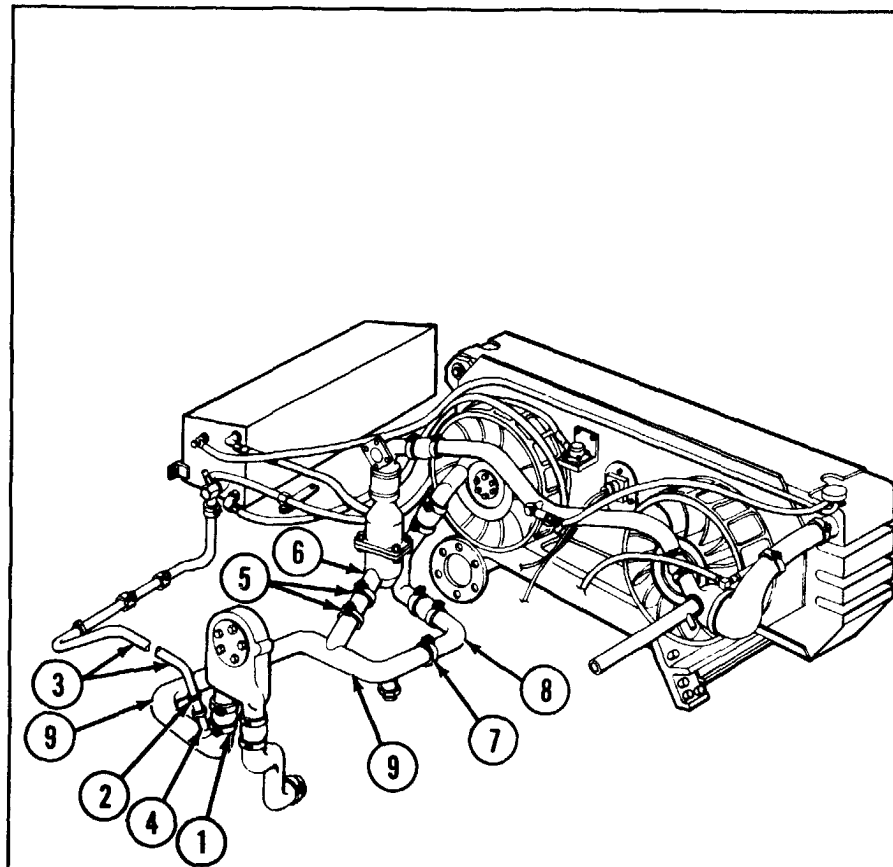
#### LEGEND

- 1 Surge Tank
- 2 Radiator
- 3 **Radiator-to-surge** tank hose
- 4 Engine coolant cross-over tube-to-surge tank hose
- 5 Surge **tank-to-pressure** relief valve hose
- 6 Pressure relief valve assembly
- 7 Engine coolant cross-over tube
- 8 Engine coolant cross-over tube-to-radiator vent hose
- 9 **Radiator** vent-to-surge tank hose
- 10 Radiator **filler** cap
- 11 Inlet thermostat housing-to-radiator inlet hose
- 12 Inlet thermostat housing
- 13 **Engine** coolant manifold connector housing
- 14 **Engine** coolant manifold
- 15 **Connector** hoses (8)
- 16 Engine coolant main tube assembly
- 17 Bypass thermostat housing assembly
- 18 Engine coolant drain plug
- 19 Engine coolant pump
- 20 Engine coolant pump-to-oil cooler tube
- 21 Surge tank-to-engine coolant pump **tube/hose** assembly
- 22 Bypass thermostat housing assembly-to-engine coolant main tube assembly.  
tube
- 23 Radiator-to-aeration detector hose
- 24 Aeration detector
- 25 Aeration detector-to-engine coolant main tube assembly hose

# ENGINE COOLING SYSTEM (CONTINUED)



TA310305

**ENGINE COOLANT MAIN TUBE ASSEMBLY: REMOVAL AND INSTALLATION****REMOVAL**

- A Remove powerpack (p 3-1).
- B Loosen clamp (1).

**NOTE**

Drain coolant system before removal of coolant tubes or hoses.

- C Loosen and separate clamp (2) and surge tank tube (3) from nipple (4).
- D Loosen clamp (5) at bypass thermostat housing tube (6).
- E Loosen clamp (7) at lower main coolant tube (8).
- F Remove main coolant tube (9); pull from connectors (1, 5 and 7).

**INSTALLATION****NOTES**

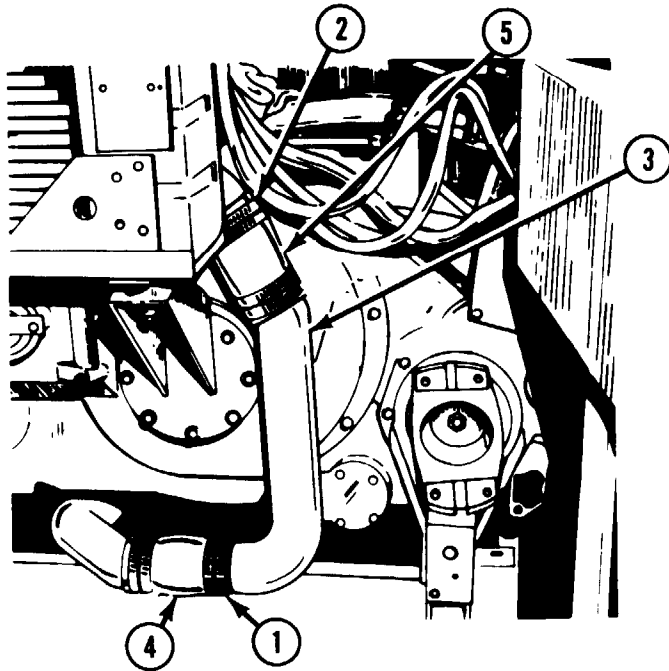
Use adhesive (item 1, Appx D) at connectors between hoses and mating tubes or castings.

Tighten all hose clamps, run engine minimum of five minutes and check for leaks (torque clamps to 40-60 lb-in).

Hoses must cover unpainted areas of tubes and fittings, or be positioned evenly between red bands on tubes and housings.

Reverse removal procedures.

## ENGINE COOLANT LOWER TUBE: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove powerpack (p 3-1).
- B Loosen two clamps (1).
- C Loosen two clamps (2).
- D Remove engine coolant lower tube (3).
- E Pull loose at lower tube to main tube hose (4) and radiator to lower tube hose (5).

### INSTALLATION

#### NOTES

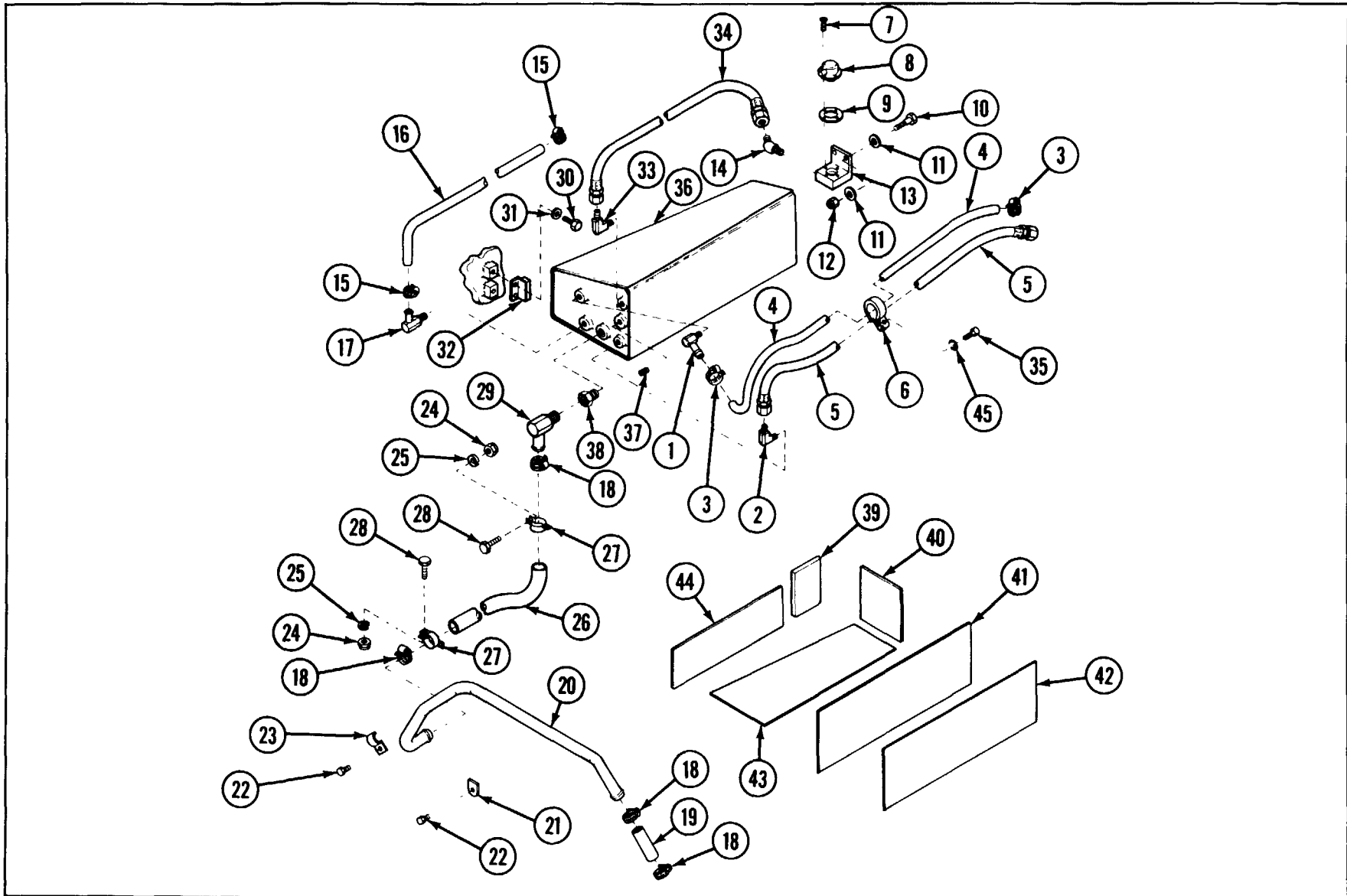
Use adhesive (item 1, Appx D) at connectors between hoses and mating tubes or castings.

Tighten all hose clamps, run engine minimum of five minutes, and check for leaks (torque clamps to 40-60 lb-in).

Hoses must cover unpainted areas of tubes and fittings, or be positioned evenly between red bands on tubes and housings.

Reverse removal procedures.

### SURGE TANK AND PRESSURE RELIEF VALVE



## SURGE TANK AND PRESSURE RELIEF VALVE

### LEGEND

- |    |                       |    |                     |
|----|-----------------------|----|---------------------|
| 1  | Elbow                 | 24 | Nut (2)             |
| 2  | Elbow                 | 25 | Lockwasher (2)      |
| 3  | Clamp (2)             | 26 | Hose (main tube)    |
| 4  | Hose (radiator vent)  | 27 | Clamp (2)           |
| 5  | Hose (bypass tube)    | 28 | Screw (2)           |
| 6  | Clamp                 | 29 | Elbow               |
| 7  | Screw (4)             | 30 | Screw (2)           |
| 8  | Pressure relief valve | 31 | Flat washer (2)     |
| 9  | Gasket                | 32 | Retainer            |
| 10 | Screw (2)             | 33 | Elbow               |
| 11 | Flat washer (4)       | 34 | Hose (relief valve) |
| 12 | Nut (2)               | 35 | Screw               |
| 13 | Block                 | 36 | Surge tank          |
| 14 | Adapter               | 37 | Plug                |
| 15 | Clamp (2)             | 38 | Pipe connector      |
| 16 | Hose (radiator)       | 39 | Cushioning pad      |
| 17 | Elbow                 | 40 | Cushioning pad      |
| 18 | Clamp (4)             | 41 | Radiator surge pad  |
| 19 | Hose                  | 42 | Cushioning pad      |
| 20 | Tube                  | 43 | Radiator pad        |
| 21 | Retainer              | 44 | Cushioning pad      |
| 22 | Screw (2)             | 45 | Lockwasher          |
| 23 | Retainer              |    |                     |

TA312772

### SURGE TANK: REMOVAL AND INSTALLATION

#### INITIAL SETUP

Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

Materials/Parts:

Adhesive (item 1, Appx D)

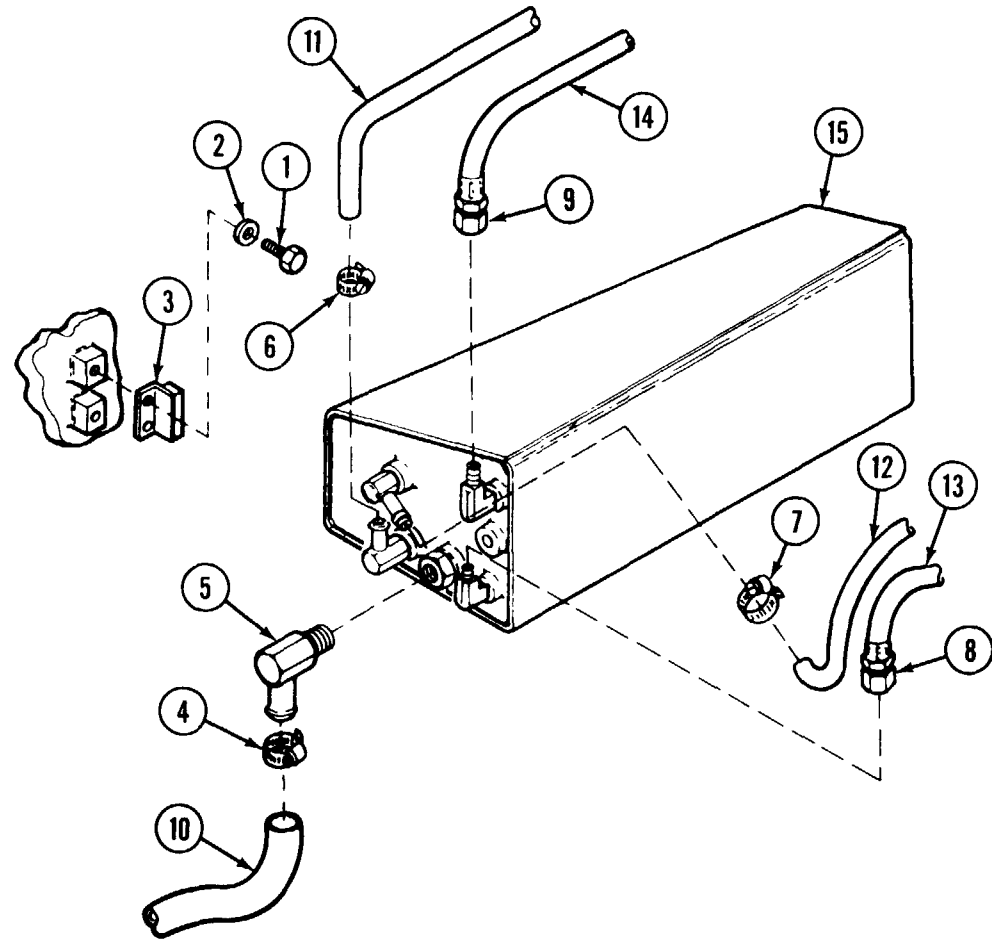
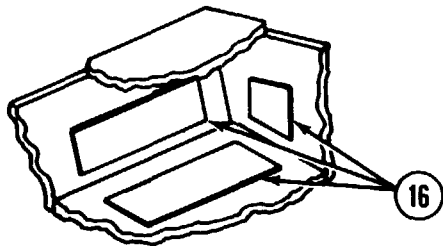
Dry-cleaning solvent (item 19, Appx D)

Personnel Required:

Two

Equipment Conditions:

Front slope plate removed (p 3-5).  
Coolant system drained.





## SURGE TANK: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

- A Remove two screws (1), two lockwashers (2) and retainer (3). Discard lockwashers.
- B Loosen clamp (4) at elbow (5).
- C Loosen two clamps (6 and 7).
- D Unscrew two nuts (8 and 9).
- E Disconnect five hoses (10, 11, 12, 13 and 14) from surge tank (15).
- F Lift surge tank (15) up and out.

### NOTE

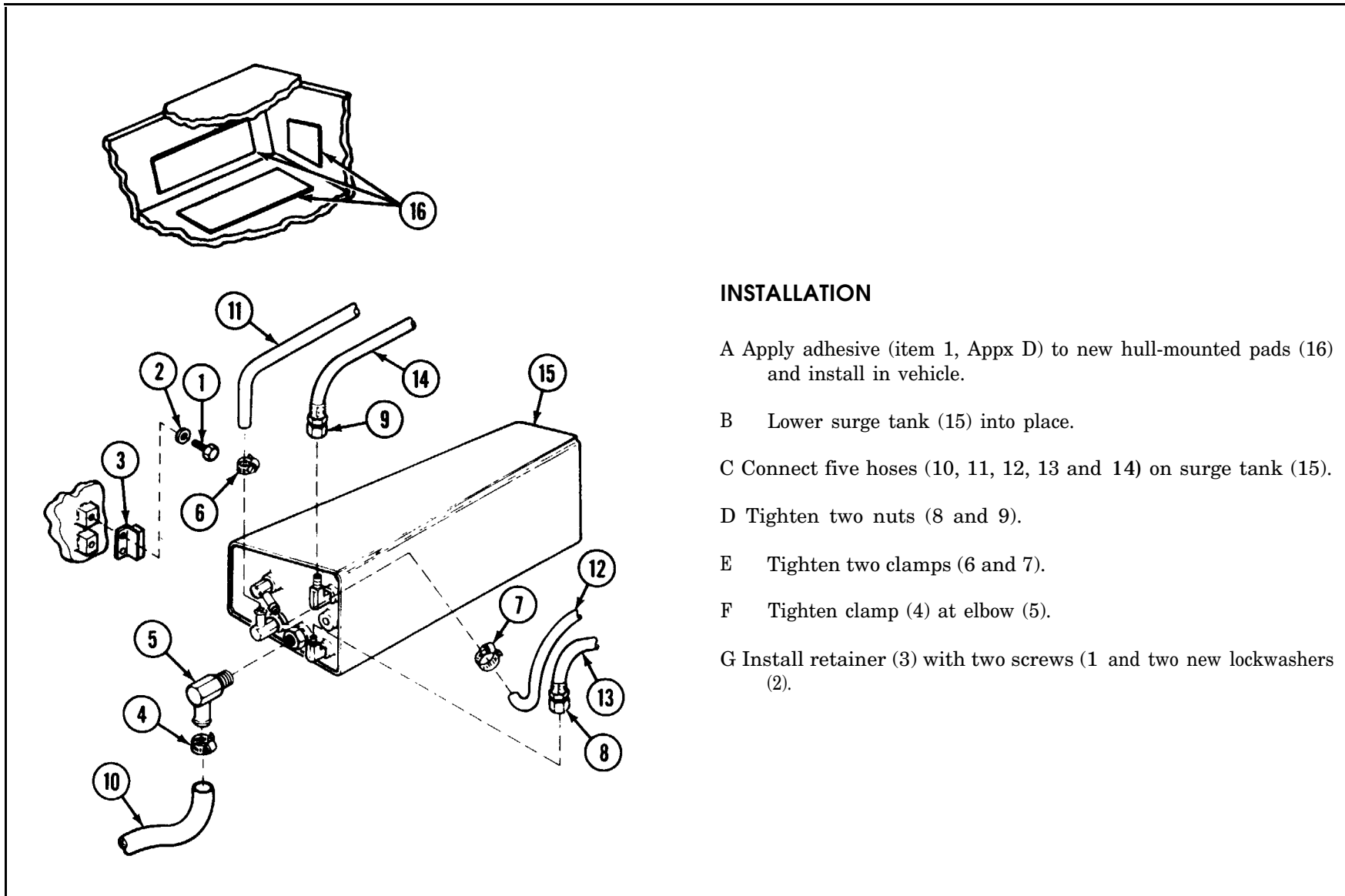
**Only** remove pads that are defective and need to be replaced.

- G Use putty knife to pry and scrape hull-mounted pads (16) from hull.

### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 1000 F (38 °C); for Type II it is 1380 F (50 °C). Do not use near open flame or excessive heat.

- H Use dry-cleaning solvent (item 19, Appx D), wire brush (item 48, Appx B) and rags to clean pad-mounting surface thoroughly. Remove all residue from old pad and adhesives.

**SURGE TANK: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

A Apply adhesive (item 1, Appx D) to new hull-mounted pads (16) and install in vehicle.

B Lower surge tank (15) into place.

C Connect five hoses (10, 11, 12, 13 and 14) on surge tank (15).

D Tighten two nuts (8 and 9).

E Tighten two clamps (6 and 7).

F Tighten clamp (4) at elbow (5).

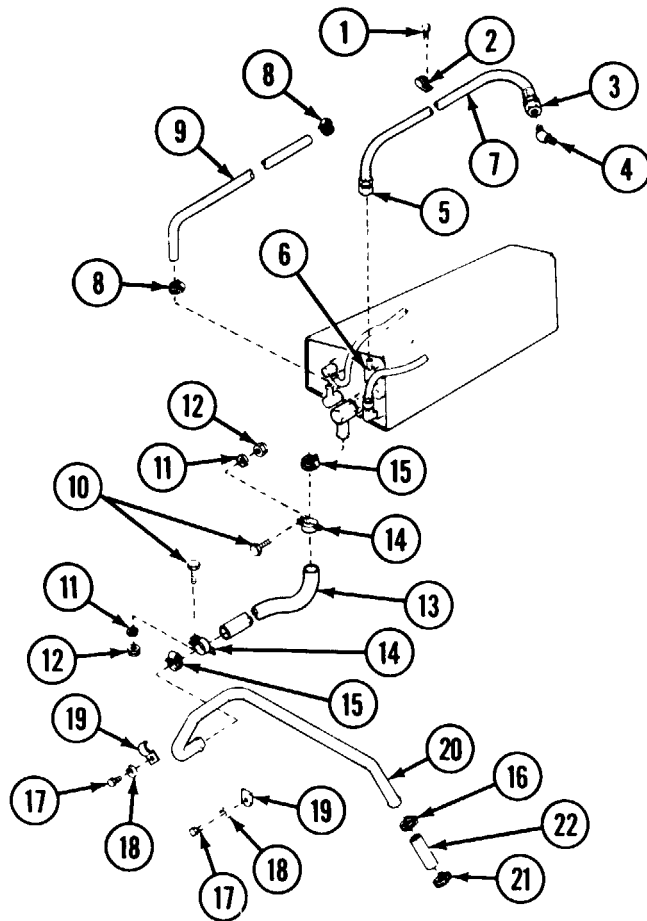
G Install retainer (3) with two screws (1) and two new lockwashers (2).

## SURGE TANK HOSES AND FITTINGS: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Equipment Condition:

Front slope plate removed (p 3-5).  
Coolant system drained.

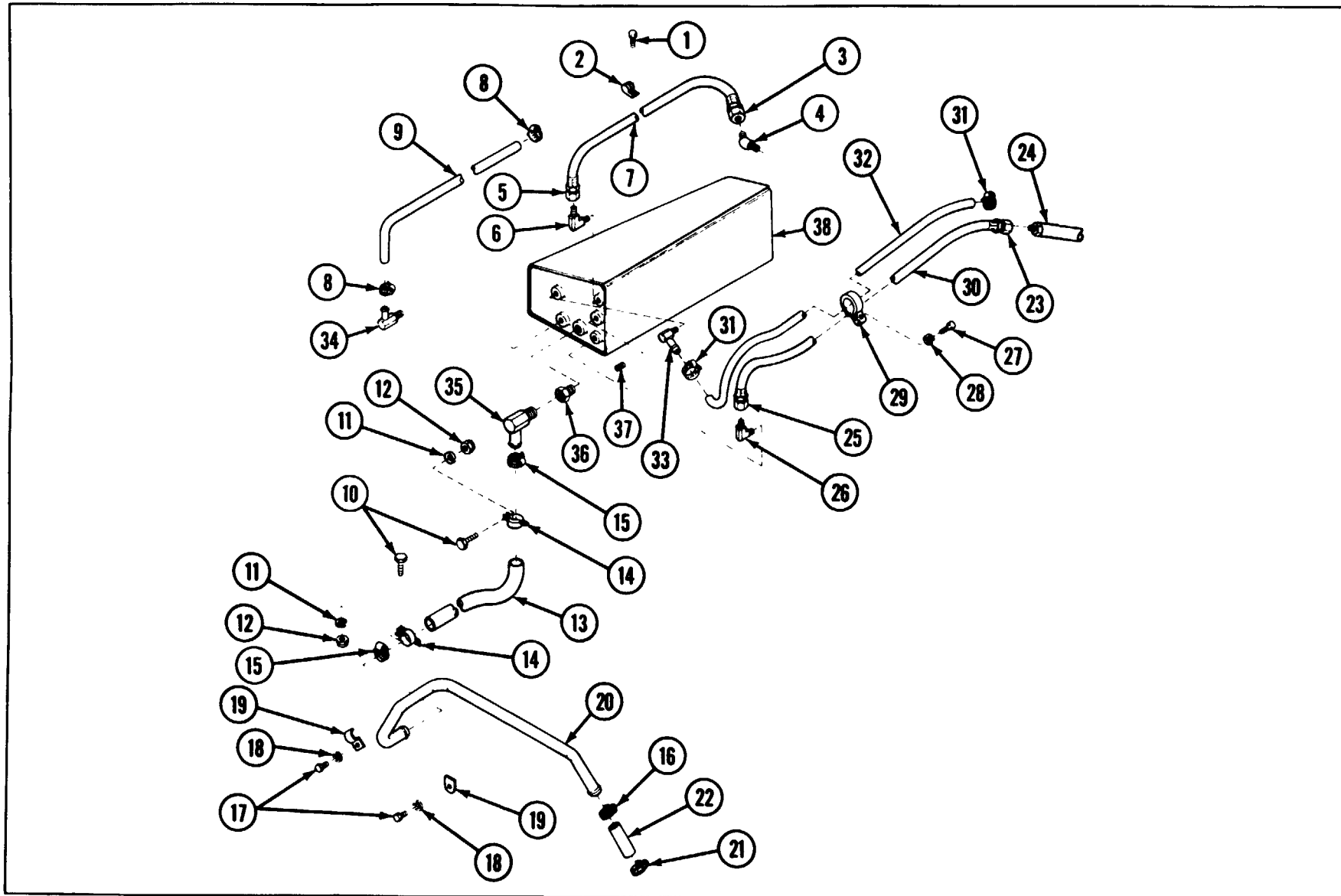


### REMOVAL

- A Remove screw (1) and clamp (2).
- B Loosen swivel nut (3) at elbow (4) and swivel nut (5) at elbow (6). Remove hose (7).
- C Loosen two hose clamps (8) and remove hose (9).
- D Remove two screws (10), two lockwashers (11) and two nuts (12), securing hose (13) in two clamps (14). Discard lockwashers.
- E Loosen two clamps (15) and remove hose (14).
- F Loosen clamp (16).
- G Remove two screws (17), two lockwashers (18) and two clamps (19). Discard lockwashers.
- H Remove tube (20).
- I Loosen clamp (21) and remove tube (22).

TA312776

**SURGE TANK HOSES AND FITTINGS: REMOVAL AND INSTALLATION (CONTINUED)**



## SURGE TANK HOSES AND FITTINGS: REMOVAL AND INSTALLATION (CONTINUED)

J Loosen swivel nut (23) at crossover tube (24) and swivel nut (25) at elbow (26).

K Remove screw (27), lockwasher (28) and clamp (29). Discard lockwashers.

L Remove hose (30).

M Remove two clamps (31) and hose (32).

N Remove five elbows (6, 26, 33, 34 and 35), connector (36) and plug (37) from surge tank (38).

### INSTALLATION

A Install plug (37), connector (39) and five elbows (35, 34, 33, 26 and 6) in surge tank (38).

B Install hose (32) and two clamps (31).

C Install hose (30) by tightening swivel nut (25) at elbow (26) and swivel nut (23) at crossover tube (24).

D Install clamp (29) with screw (27) and new lockwasher (28).

E Install tube (22) and tighten clamp (21).

F Install tube (20) and tighten clamp (16).

G Install two clamps (19) with two screws (17) and two new lockwashers (18).

H Install hose (13) and tighten two clamps (15).

I Secure two clamps (14) around hose (13) with two screws (10), two new lockwashers (11) and two nuts (12).

J Install hose (9) and tighten two hose clamps (8).

K Install hose (7) by tightening swivel nut (5) at elbow (6) and swivel nut (3) at elbow (4).

L Install clamp (2) with screw (1).

**RADIATOR SHROUD: REMOVAL AND INSTALLATION****INITIAL SETUP**Test Equipment/Special Tools:

Blind hand riveter (item 6, Appx D)

Equipment Conditions:

Powerpack removed (p 3-1).

Radiator removed from powerpack (p 5-22).

**REMOVAL**

- A Remove 12 screws (1), 12 lockwashers (2) and 12 flat washers (3) from inside shroud (4). Discard lockwashers.
- B Remove three screws (5), seven lockwashers (6) and cover plate (7) from shroud (4).
- C Remove two lines (8 and 9) from both fan drives (10) and plate (11).

**NOTE**

Fittings must be installed in same location from which they were removed.

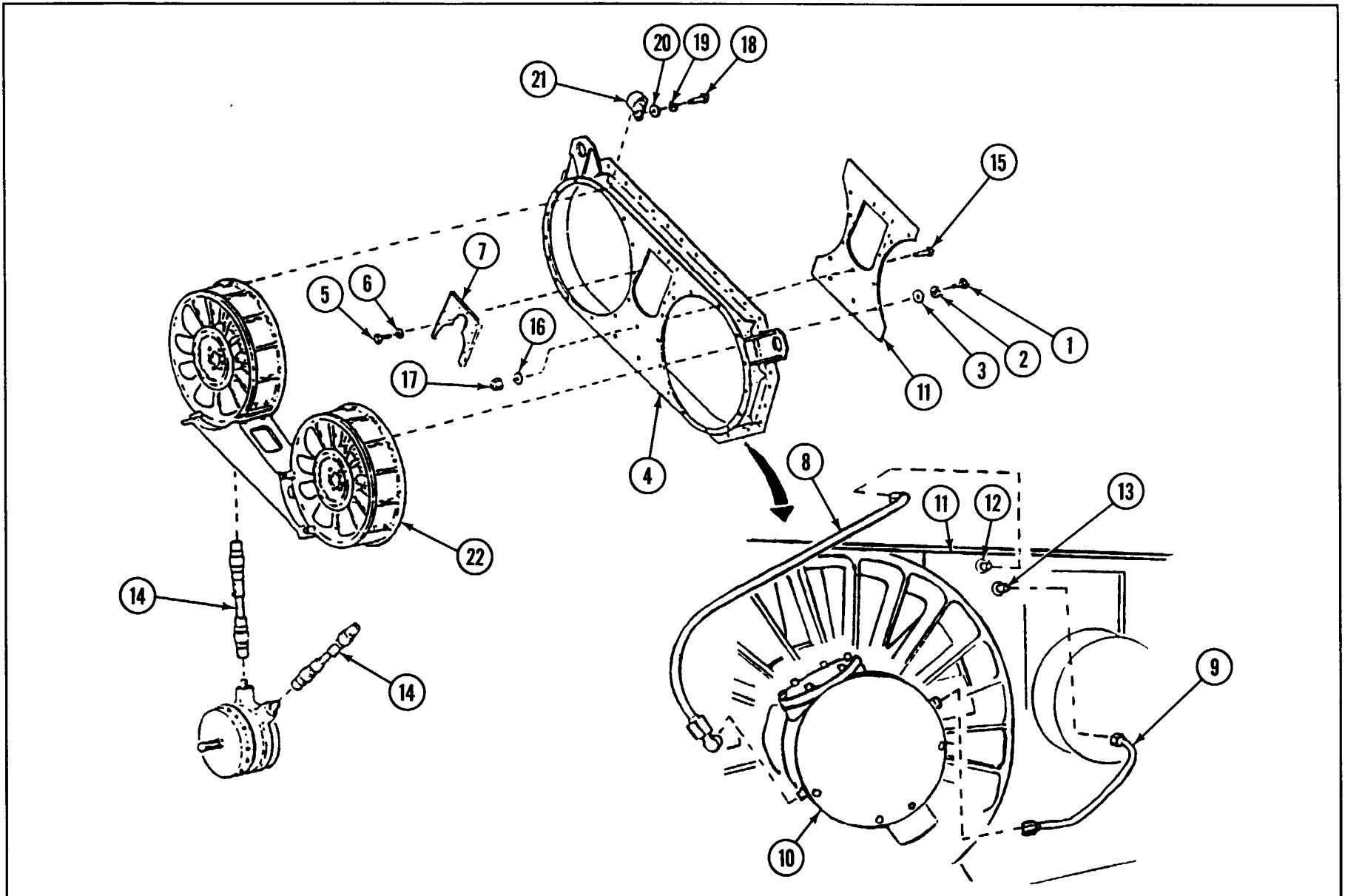
- D Remove 4 nuts (12) and 4 fittings (13) from plate (11).
- E Depress upper fan universals (14) and remove.
- F Remove three screws (15) three flat washers (16) and three nuts (17) and plate (11) from shroud (4).
- G Remove 18 screws (18), 18 lockwashers (19), 18 flat washers (20) and 3 clamps (21) from shroud (4). Discard lockwashers.

- H Remove shroud (4) from fan assemblies (22).

**INSTALLATION**

- A Install shroud (4) from fan assemblies (22).
- B Install 18 screws (18), 18 lockwashers (19), 18 flat washers (20) and 3 clamps (21) from shroud (4). Discard lockwashers.
- C Install three screws (15), three flat washers (16) and three nuts (17) and plate (11) from shroud (4).
- D Depress upper fan universals (14) and install.
- E Install 4 nuts (12), and 4 fittings (13) from plate (11).
- F Install two lines (8 and 9) from both fan drives (10) and plate (11).
- G Install three screws (5), seven lockwashers (6) and cover plate (7) from shroud (4).
- H Install 12 screws (1), 12 lockwashers (2) and 12 flat washers (3) from inside shroud (4). Discard lockwashers.

**RADIATOR SHROUD: REMOVAL AND INSTALLATION (CONTINUED)**



**PRESSURE RELIEF VALVE AND BLOCK MOUNT: REMOVAL AND INSTALLATION**

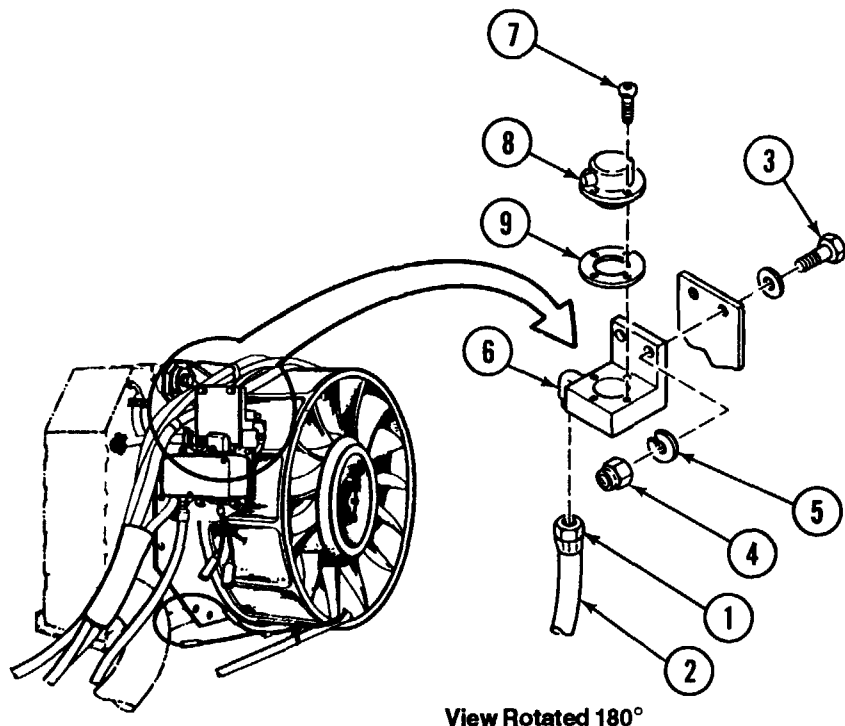
**INITIAL SETUP**

Equipment Condition:

Radiator fan protectors installed (p 2-5).

**WARNING**

A protective fan screen must be installed prior to doing maintenance in the engine compartment when engine is running or when running engine in ground hop mode. Contact with rotating fan can cause injury.



**REMOVAL**

- A Unscrew nut (1) on hose (2).
- B Remove hose (2) from block (6).
- C Remove two screws (3), two self-locking nuts (4), two flat washers (5) and block (6). Discard self-locking nuts.

**NOTE**

When removing relief valve, note location of breather hole for installation.

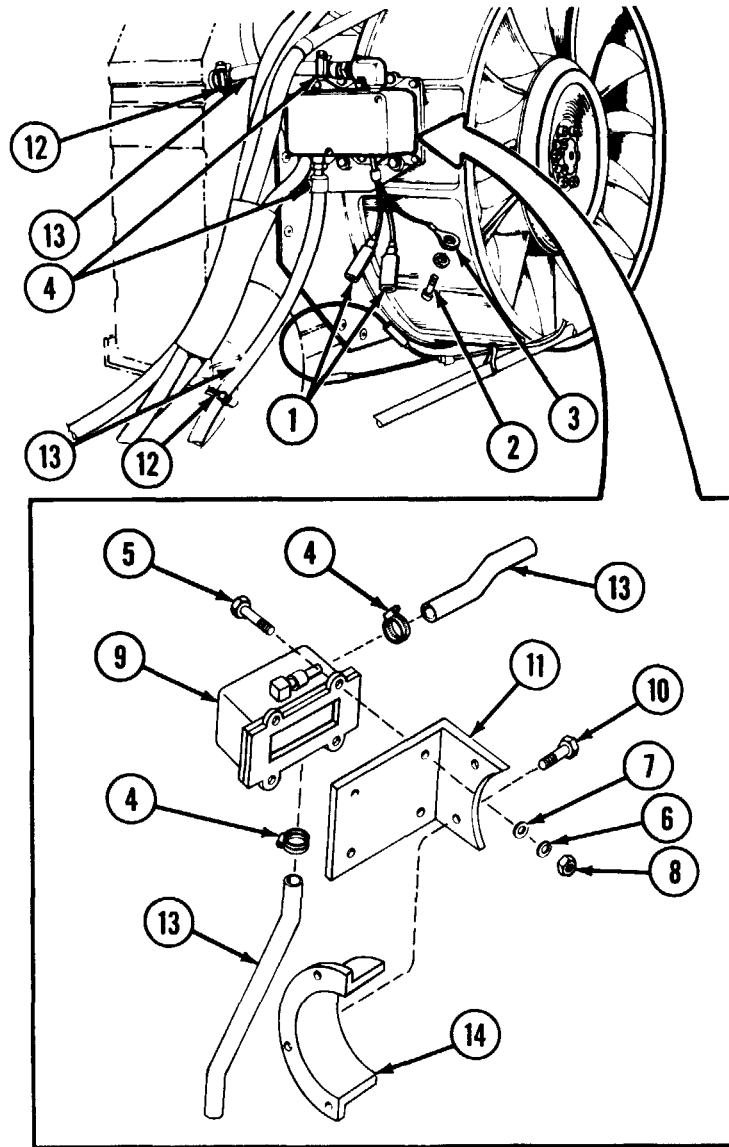
- D Remove four screws (7), relief valve (8) and gasket (9) from block (6). Discard gasket.
- E Replace relief valve (8) if defective.

**INSTALLATION**

- A Install new gasket (9) and relief valve (8) on block (6) with four screws (7).
- B Install block (6) with two screws (3), two flat washers (5) and two self-locking nuts (4).
- C Install hose (2).
- D Tighten nut (1).



## AERATION DETECTOR: REMOVAL AND INSTALLATION



### REMOVAL

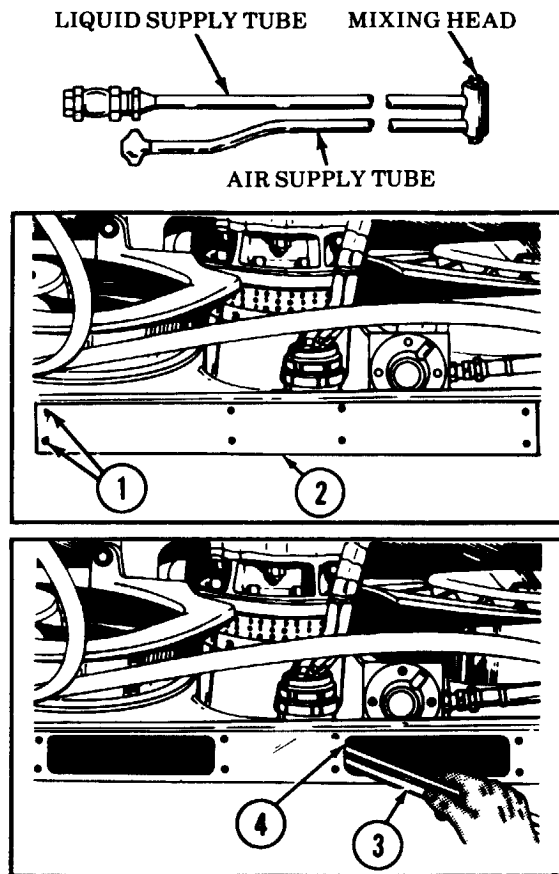
- A Disconnect two electrical leads (1).
- B Remove screw (2) and ground lead (3).
- C Loosen two clamps (4).
- D Remove four screws (5), four lockwashers (6), four flat washers (7) and four nuts (8).
- E Remove aeration detector (9).
- F Remove two screws (10) and bracket (11) from fan shroud (14).
- G Loosen two clamps (12) if removal of hoses is required.
- H Remove two hoses (13).

### INSTALLATION

- A Reverse removal procedures.
- B Use adhesive (item 1, Appx D) at hose and tube interface(s).

TA310311

## RADIATOR: CLEANING



The radiator cleaning tool (11641959) is designed to remove deposits of sand, oil, clay and other debris from the radiator cooling fins while installed in the vehicle. The cleaning agent may be a water solution of detergent and water, or nontoxic, nonflammable solvent and water. Mix one part of detergent or solvent to approximately five parts of water. A solution of detergent and water is recommended.

- A Remove eight screws (1) and radiator shroud cover (2).
- B Open hull drains (TM 9-2350-267-10).
- C Cover all exposed openings of the engine.
- D Connect radiator cleaning tool (3) to air supply and insert hose in container of solution.
- E Insert cleaning tool through shroud cover opening (4). Saturate front and back of radiator with solution. Soak for approximately 10 minutes.
- F Remove heavy deposits from face of radiator by brushing with medium stiff brush that will not damage the fins.
- G Blast radiator exterior with air/liquid mixture, hold head of tool approximately 1/2 inch from face of radiator. Alternate from back to front until a good flow of liquid over the radiator fins is observed over entire area.
- H Flush engine parts and exterior of radiator with clean water. Remove hose from container and use air to complete the operation.
- I Uncover engine openings. Install radiator shroud cover (2) with eight screws (1). Close hull drains.

## NOTE

If overheating still occurs, notify Direct Support Maintenance.

## RADIATOR REPLACEMENT

### INITIAL SETUP

#### Tool/Test Equipment:

General mechanic's tool kit

#### Materials/Parts:

Lockwasher, MS35338-67 (two required)

#### Equipment Conditions:

Vehicle parked on level ground (refer to TM 9-2350-267-10)

Cooling system drained (refer to TM 9-2350-267-10)

Air intake grille removed (p 3-8)

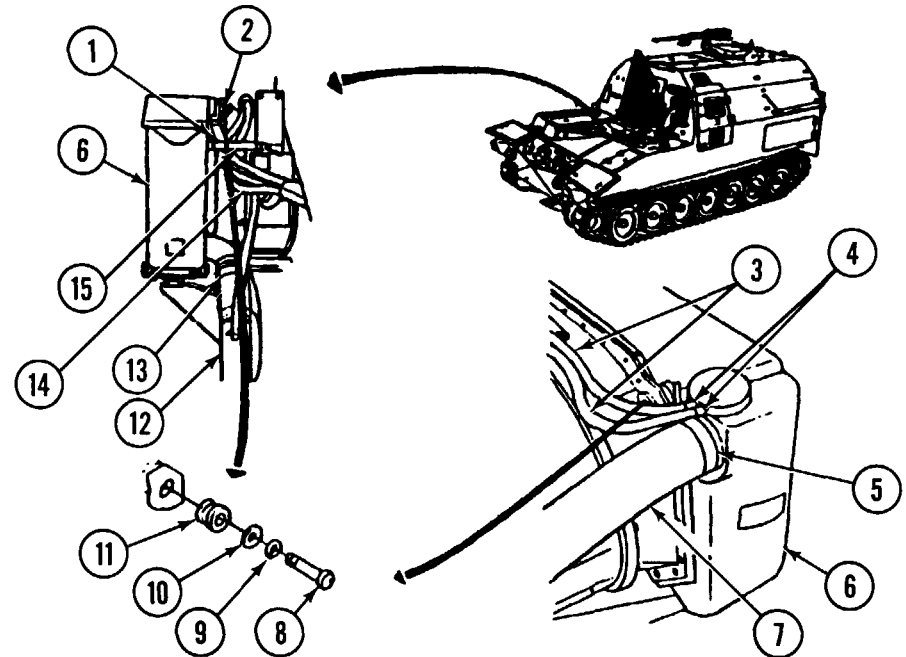
Engine exhaust grille removed (p 3-5)

### REMOVAL

#### NOTE

Vehicles 1 through 344 may be equipped with lower radiator mounting nuts. If lower radiator mounting nuts are present, powerpack must be removed. Do not reinstall lower radiator mounting nuts.

- A Loosen clamp (1) and remove hose (15) from radiator (6).
- B Loosen clamp (2) and remove hose (14) from radiator (6).
- C Remove two screws (8), two lockwashers (9), two flat washers (10) and two resilient mounts (11) from either side of radiator (6). Discard lockwashers.
- D Loosen outlet hose clamp (13) on radiator outlet hose (12).



E Loosen two vent hose clamps (4) and remove two radiator vent hoses (3) from radiator (6).

F Loosen inlet hose clamp (5) and remove radiator inlet hose (7) from radiator (6).

#### WARNING

Radiator is very heavy. To prevent injury to personnel, two persons are required when removing radiator from vehicle.

G Lift radiator (6) out of vehicle.

H Remove two resilient mounts (11) from shroud.

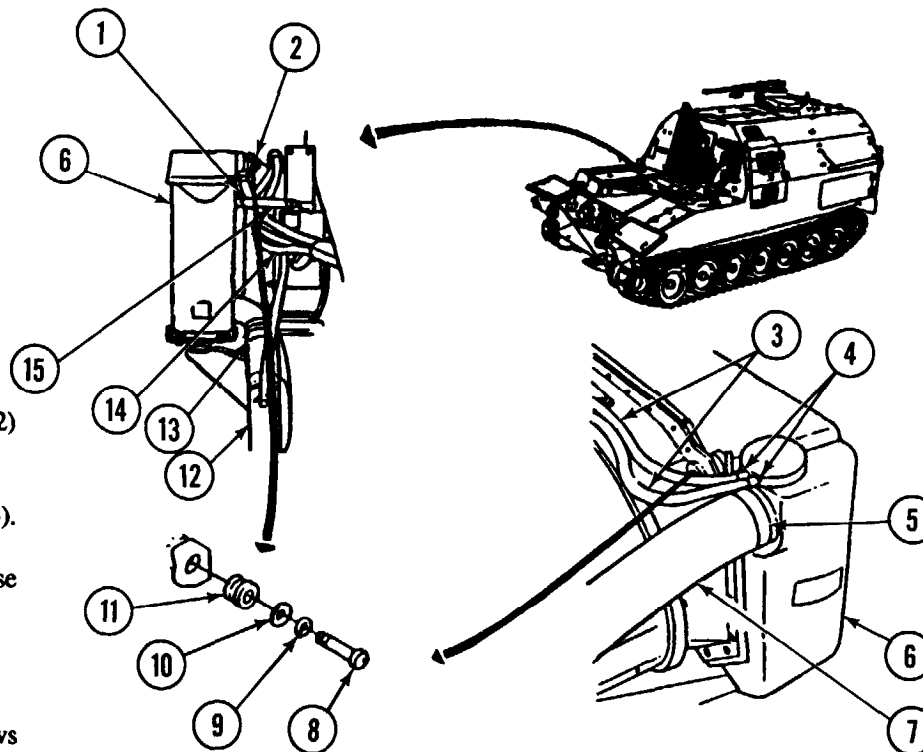
**RADIATOR REPLACEMENT (CONTINUED)****INSTALLATION**

- A Install two resilient mounts (11) on shroud.

**WARNING**

Radiator is very heavy. To prevent injury to personnel, two persons are required when installing radiator in vehicle.

- B Position radiator (6) in place against radiator shroud and position hose (12) over radiator outlet.
- C Install radiator inlet hose (7) on radiator (6), and tighten inlet hose clamp (5).
- D Install two radiator vent hoses (3) on radiator (6), and tighten two vent hose clamps (4).
- E Tighten outlet hose clamp (13).
- F Install two resilient mounts (11) on either side of radiator (6) with two screws (8), two new lockwashers (9) and two flat washers (10).
- G Install hose (14) on radiator (16) and tighten clamp (2).
- H Install hose (15) on radiator (6) and tighten clamp (1).

**FOLLOW-ON TASKS**

- Refill cooling system (refer to TM 9-2350-267-10)  
 Install air intake grille (p 3-8)  
 Install engine exhaust grille (p 3-5)

## RADIATOR MOUNTS REPLACEMENT

### INITIAL SETUP

#### Tools/Test Equipment:

General mechanic's tool kit

#### Materials/Parts:

Bushing 10917099 (two required)

Lockwasher, MS35338-65 (20 required)

#### Equipment Conditions:

Vehicle parked on level ground (refer to TM 9-2350-267-10)

Powerpack removed (p 3-4)

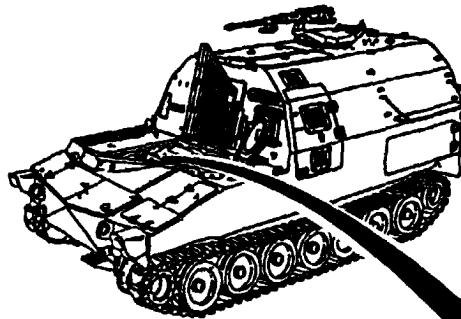
Cooling system drained (refer to TM 9-2350-267-10)

Radiator removed (p 5-21)

Personnel Required: Two

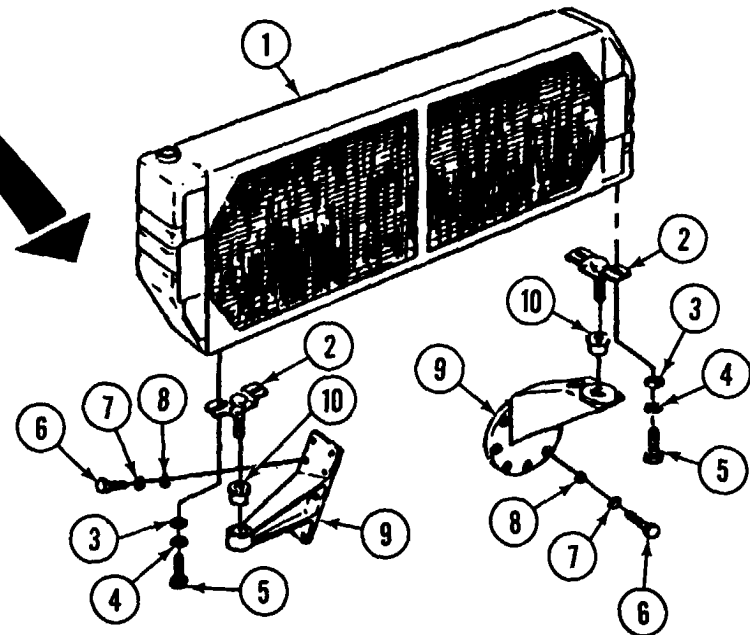
### REMOVAL

- A Remove four screws (5), four lockwashers (4), and four flat washers (3) and two brackets (2) from bottom of radiator (1). Discard lockwashers.
- B Remove 16 screws (6), 16 lockwashers (7), and 16 flat washers (8) and two mounts (9) from vehicle. Discard lockwashers.
- C Remove bushing (10) from each of two mounts (9). Discard bushings.



### INSTALLATION

- A Install new bushing (10) in each of two mounts (9).
- B Install two mounts (9), 16 screws (6), 16 new lockwashers (7), and 16 flat washers (8) on vehicle.
- C Install two brackets (2) and four screws (5), four new lockwashers (4), and four flat washers (3) on bottom of radiator (1).



### FOLLOW-ON TASKS

Install powerpack (p 3-4)

Install radiator (p 5-21)

Refill cooling system (refer to TM 9-2350-267-10)

**INLET THERMOSTAT AND HOUSING ASSEMBLY: REMOVAL AND INSTALLATION****INITIAL SETUP**Test Equipment/Special Tools:

Handle, installer (item 36, Appx B)

Installer, seal (item 37, Appx B)

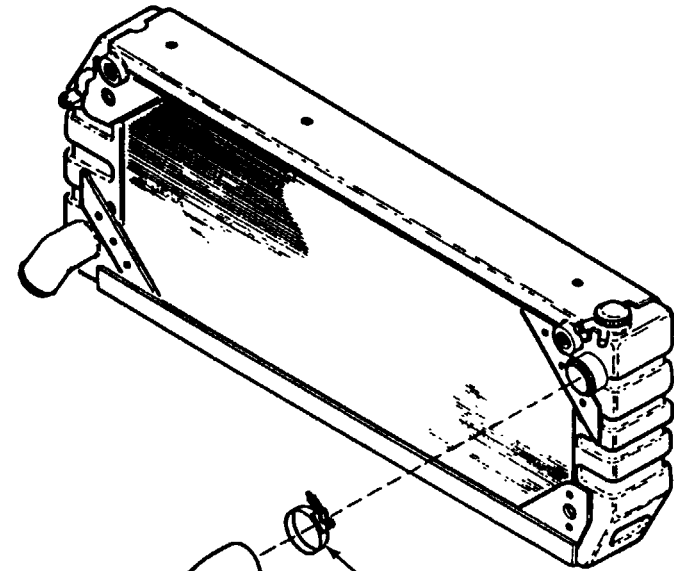
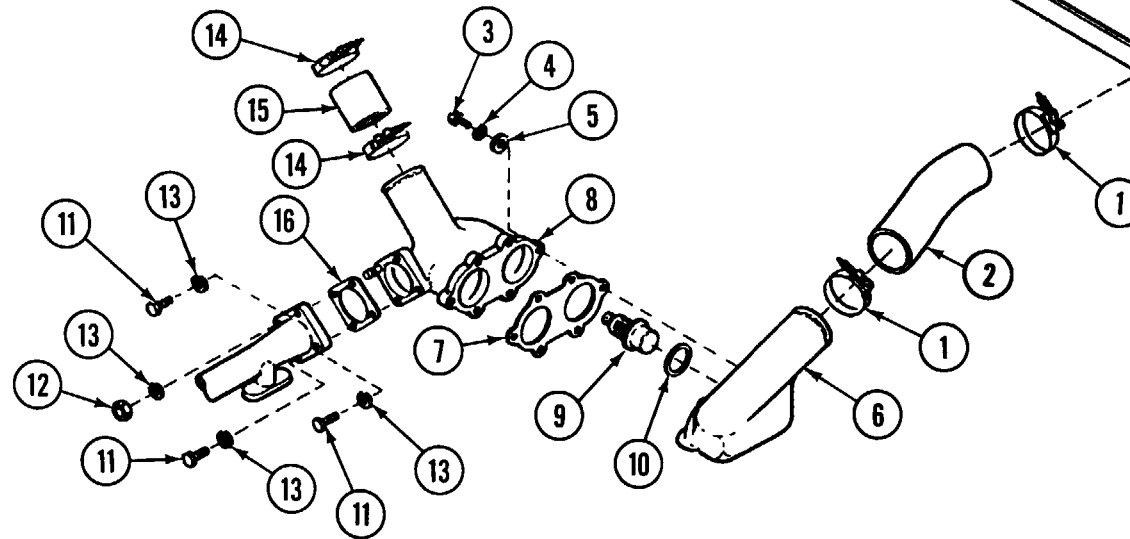
Equipment Conditions:

Radiator fan protectors installed (p 2-5).

Front slope plate removed (p 3-5).

General Safety Instructions:

A protective fan screen must be installed prior to doing maintenance in the engine compartment when engine is running or when running engine in ground hop mode. Contact with rotating fan can cause injury.



## INLET THERMOSTAT AND HOUSING ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

- A Open and secure air intake grille.
- B Loosen two clamps (1).
- C Remove tube (2).
- D Remove six screws (3), six lockwashers (4) and six flat washers (5). Discard lockwashers.
- E Remove inlet housing (6) and gasket (7) from manifold coolant connector (8). Discard gasket.
- F Remove two thermostats (9) and two seals (10). Discard seals.
- G Remove three screws (11), nut (12) and four lockwashers (13) at manifold coolant connector (8). Discard lockwashers.
- H Loosen two clamps (14) and remove hose (15).
- I Remove manifold coolant connector (8) and gasket (16). Discard gasket.

### INSTALLATION

- A Install new gasket (16) and manifold coolant connector (8).
- B Install hose (15) and tighten two clamps (14).
- C Install three screws (11), nut (12) and four new lockwashers (13) at manifold coolant connector (8).
- D Using seal installer (item 37, Appx B) and handle (item 36, Appx B), install two new seals (10) into inlet housing (6) with leather surface facing outward.
- E Install two thermostats (9).
- F Install new gasket (7) and inlet housing (6) on manifold coolant connector (8).
- G Install six screws (3), six new lockwashers (4) and six flat washers (5).
- H Install tube (2).
- I Tighten two clamps (1).
- J Close and secure air intake grille.

## BYPASS THERMOSTAT AND HOUSING ASSEMBLY: REMOVAL AND INSTALLATION

**INITIAL SETUP**Test Equipment/Special Tools:

Handle Installer (item 36, Appx B)

Materials/Parts:

Adhesive (item 1, Appx D)

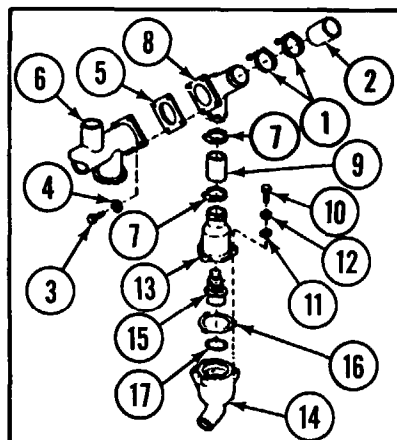
Equipment Conditions:

Radiator fan protectors installed (p 2-5).

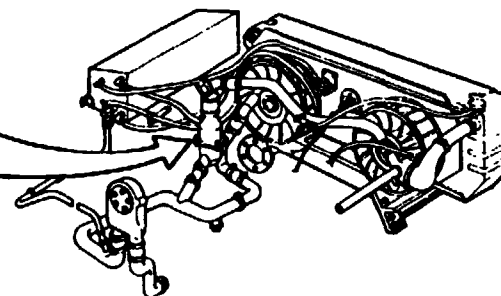
Front slope plate removed (p 3-5)

**WARNING**

A protective fan screen must be installed prior to doing maintenance in the engine compartment when engine is running or when running engine in ground hop mode. Contact with rotating fan can cause injury.

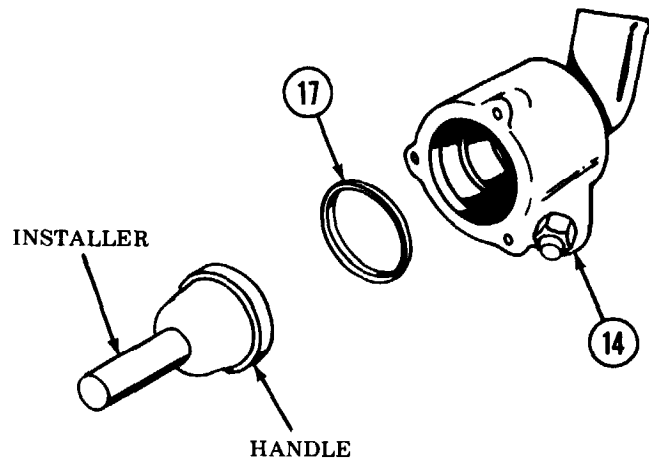
**REMOVAL**

- A Loosen two clamps (1) at cross-over tube connector (2).
- B Remove four screws (3), four lockwashers (4) and gasket (5) at engine coolant manifold (6). Discard lockwashers and gasket.
- C Loosen upper clamp (7).
- D Remove manifold connector (8).
- E Loosen lower clamps (7).
- F Remove coolant hose (9).
- G Remove three screws (10), three flat washers (11) and three lockwashers (12). Discard lockwashers.
- H Separate upper housing (13) and lower housing (14).
- I Remove thermostat (15), gasket (16) and seal (17) by pulling upward.
- J Discard thermostat (15), gasket (16) and seal (17).



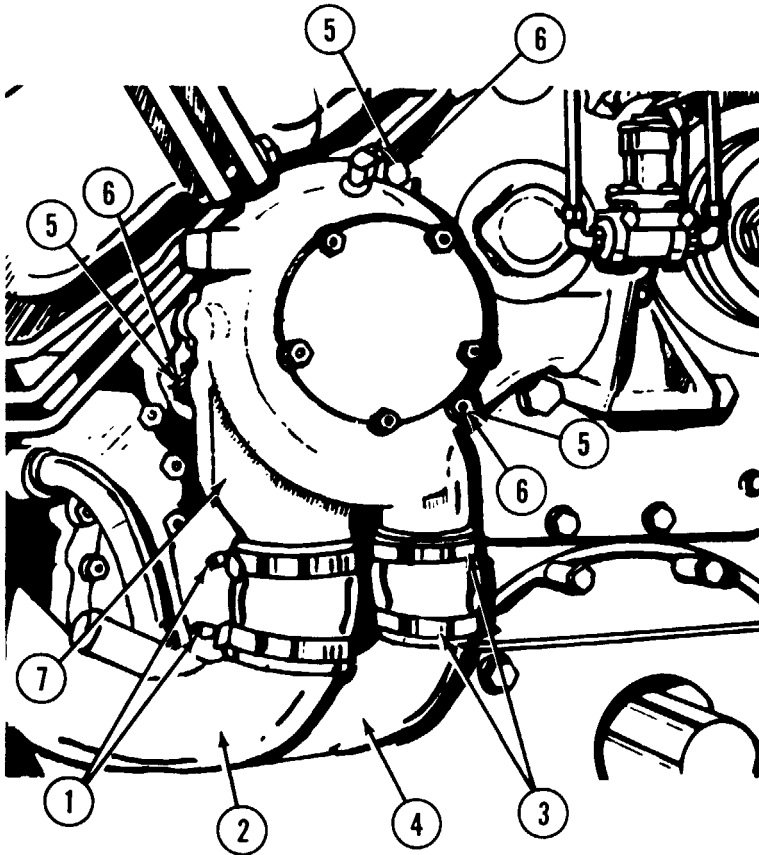


## BYPASS THERMOSTAT AND HOUSING ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



### INSTALLATION

- A Reverse removal procedures.
- B Install seal (17) in lower housing (14) using installer and handle.
- C Replace gaskets (5 and 16).
- D Replace thermostat (15).
- E Apply adhesive (item 1, Appx D) at connections of all mating surfaces.
- F Refill radiator (TM 9-2350-267-10).

**COOLANT PUMP: REMOVAL AND INSTALLATION****REMOVAL**

- A Remove powerpack (p 3-1).
- B Drain coolant system (TM 9-2350-267-10).
- C Loosen two clamps (1) on inlet hose (2).
- D Loosen two clamps (3) on outlet hose (4).
- E Remove three screws (5) and three lockwashers (6).
- F Remove coolant pump (7) and gasket (8). Discard gasket (8).

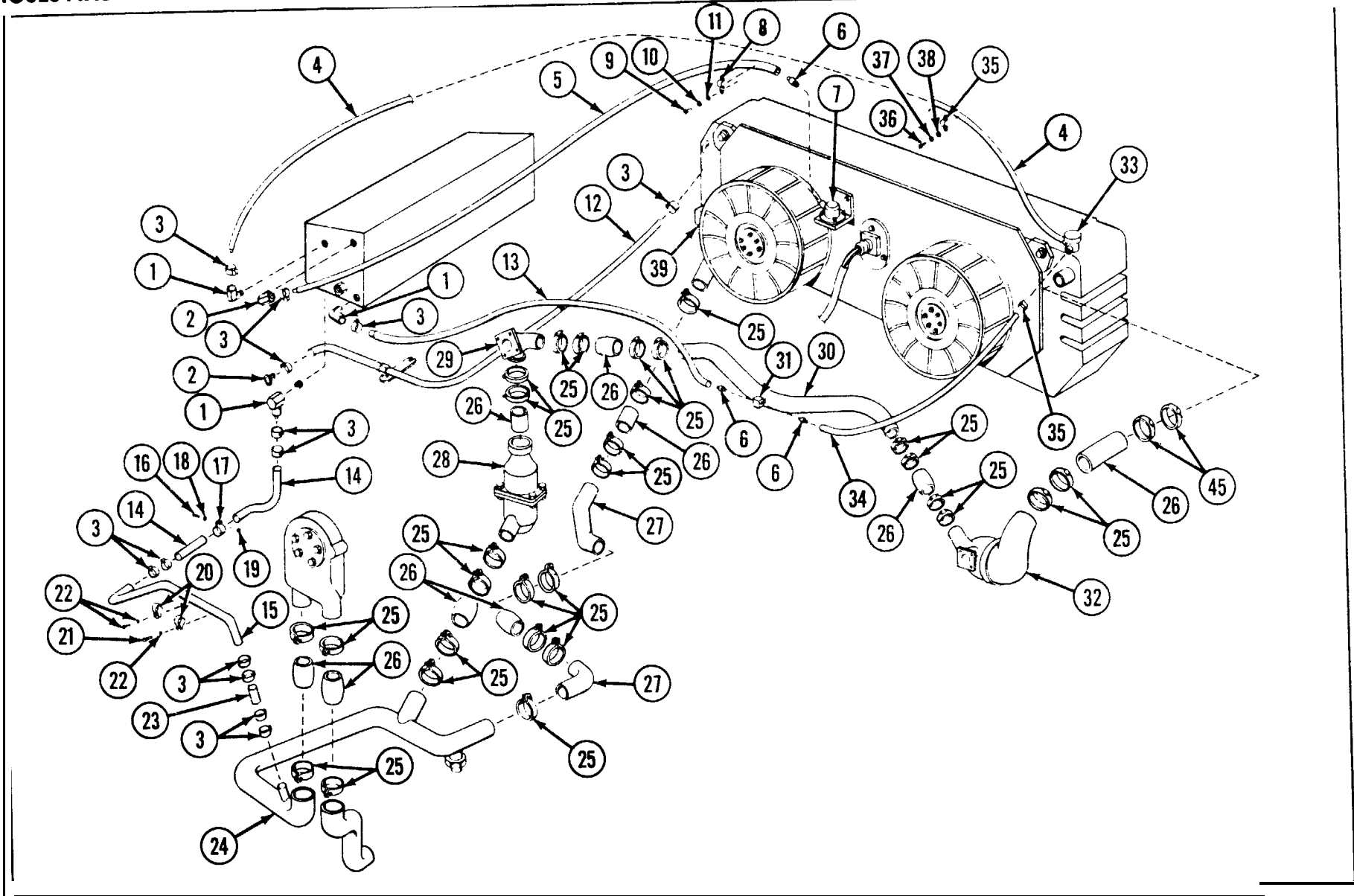
**NOTE**

Gasket (8) between pump (7) and engine not shown.

**INSTALLATION**

- A Reverse removal procedures.
- B Install new gasket (8).
- C Apply adhesive (item 1, Appx D) to ends of tubes and hoses.
- D Refill radiator (TM 9-2350-267-10).

# HOSES AND TUBES: REMOVAL AND INSTALLATION



TA310321

TM 9-2350-267-20

**HOSES AND TUBES: REMOVAL AND INSTALLATION (CONTINUED)****REMOVAL**

Remove in sequence of illustration.

**LEGEND**

- 1 Elbow (3)
- 2 Elbow (2)
- 3 Adjustable clamp (13)
- 4 Hose, surge tank-to-radiator vent
- 5 Hose, surge tank-to-relief valve
- 6 Adapter (3)
- 7 Pressure relief valve
- 8 Clamp
- 9 Screw
- 10 Flat washer
- 11 Lockwasher
- 12 Hose, surge tank-to-radiator
- 13 Hose, surge tank-to-bypass tube
- 14 Hose, surge tank-to-tube 12 (to main tube)
- 15 Tube, hose 12-to-hose 19 (to main tube)
- 16 Screw
- 17 Clamp
- 18 Lockwasher
- 19 Nut
- 20 Clamp (2)
- 21 Screw
- 22 Lockwasher
- 23 Hose, tube 13-to-main tube
- 24 Main tube
- 25 clamp (33)
- 26 Connector hose (9)
- 27 Engine coolant lower tube
- 28 Outlet thermostat housing assembly

- 29 Engine coolant manifold connector housing
- 30 Bypass tube
- 31 T-connector bypass tube
- 32 Inlet thermostat housing assembly
- 33 Radiator filler tube with two vents
- 34 Hose, radiator vent-to-bypass tube
- 35 clamp (2)
- 36 Screw
- 37 Flat washer
- 38 Lockwasher (2)
- 39 Aeration detector assembly tubing

**INSTALLATION**

- A Reverse removal procedures.
- B Apply adhesive (item 1, Appx D) to ends of tubes and hoses before assembly.
- C Replace gaskets at inlet and outlet thermostat assemblies if engine coolant manifolds are disconnected.
- D Torque all tube/hose connector clamps to 40-60 lb-in.
- E Install power plant (p 3-1) and refill radiator (22 gal) with coolant (TM 9-2350-267-10).

## CHAPTER 6 MAINTENANCE PROCEDURES ELECTRICAL SYSTEM/CIRCUITS

---

### CHAPTER OVERVIEW

This chapter illustrates and describes removal and installation of powerpack and hull electrical systems and components. Procedures are also included for disassembly, assembly, checks and adjustments of components, as authorized by the MAC for organizational maintenance.

Disassemble components only to the extent required to correct a malfunction or defect. Replace only those parts necessary to correct the malfunction. Install the mandatory replacement parts at that point.

**Section I** Powerpack Electrical System

**Section II** Hull Electric-al Systems

Section III Powerpack and Hull Wiring Harnesses

Section IV Simplified Test Equipment for Internal Combustion Engine  
(STE/ICE)

## Section I POWERPACK ELECTRICAL SYSTEM

### GENERAL INSPECTION AND REPAIR PROCEDURES

The technician will conduct a visual inspection of electrical components and wiring harnesses during removal and disassembly to determine serviceability or repair/replace status of the items. During inspection, look for the following conditions and take actions as indicated

- Cracked tom or deteriorated wire/cable insulation.

Replace or repair individual harness leads where practical.  
Replace entire harness if necessary.

- Broken, crocked or damaged connectors (i.e., missing pins).

Repair where practical. Replace connector if necessary.

- Burned or discolored connectors or components.

Troubleshoot electrical circuitry to correct problem. Repair or replace components, circuit leads, harnesses and connectors as necessary.

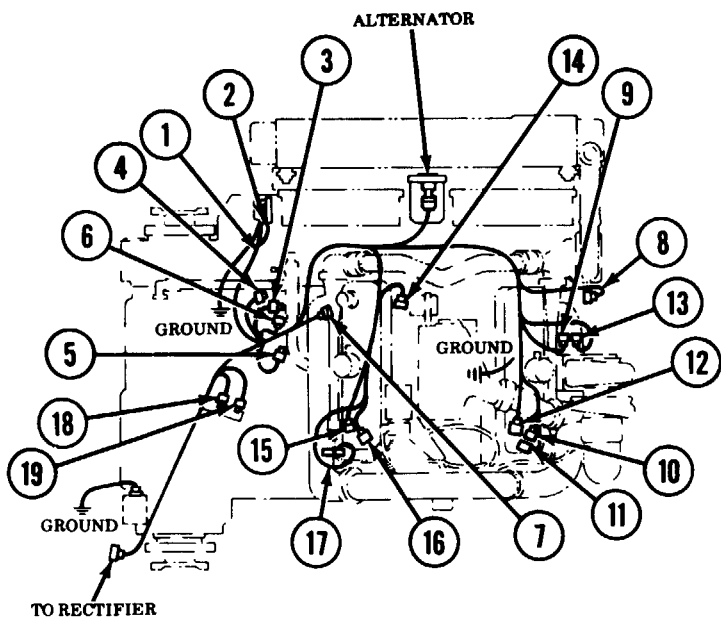
- Cracked, broken or damaged electrical component housings.

Repair where practical. If necessary, replace components such as master relay, generator, rectifier, voltage regulator and solenoids.

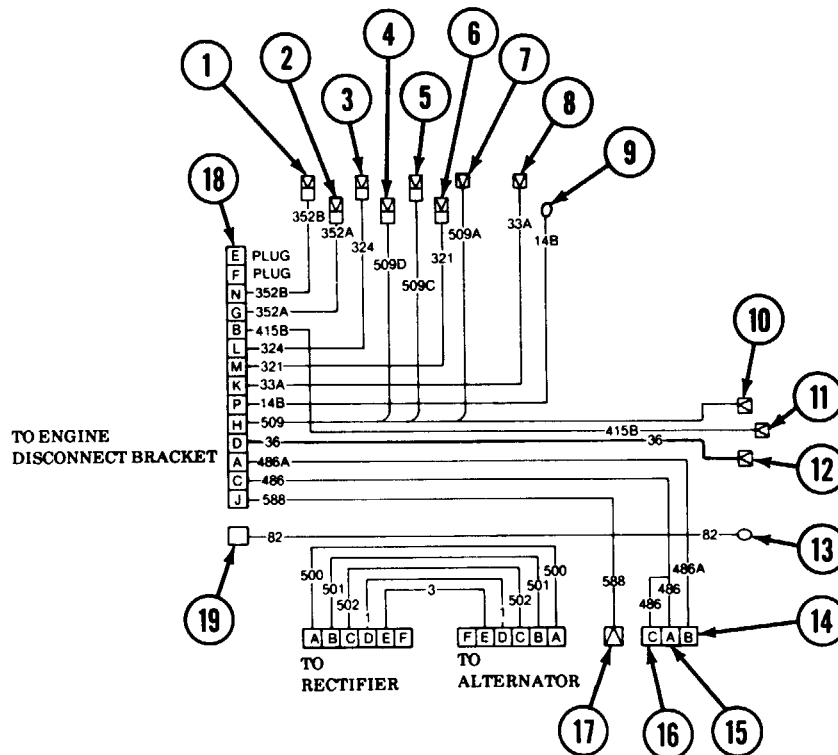
# POWERPACK ELECTRICAL SYSTEM

Connector Number	Electrical Lead To:	Wire No.
1	Aeration detector	352A
2	Aeration detector	352B
3	Transmission oil temperature transmitter	324
4	Transmission oil high temperature switch	509D
5	Transmission oil low pressure switch	509C
6	Transmission oil pressure transmitter	321
7	Engine coolant high temperature switch	509A
8	Engine coolant temperature transmitter	33A
9	Starter motor solenoid from starter relay	14B
10	Engine oil low pressure switch	509B

Connector Number	Electrical Lead To:	Wire No.
11	Air cleaner blower motor switch	415
12	Engine oil pressure transmitter	36
13	Starter motor solenoid from master relay	82
14	Flame heater ignition coil	486
15	Flame heater air pump	486
16	Flame heater solenoid	486A
17	Fuel prime pump	588
18	Master circuit harness	12268102
19	Starter cable connector	82

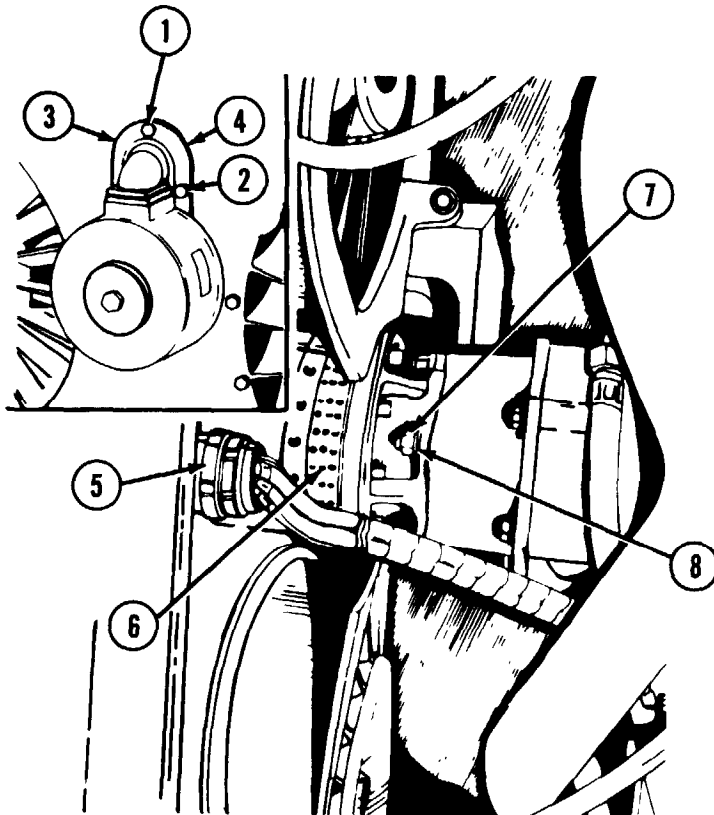


PICTORIAL VIEW



ELECTRICAL DIAGRAM

## GENERATOR (ALTERNATOR): REMOVAL AND INSTALLATION



## REMOVAL

**WARNING**

Set MASTER switch OFF. Disconnect battery ground cables.

- A Remove powerpack from vehicle (p 3-1).
- B Remove radiator from powerpack (p 5-21).
- C Remove three screws (1), three nuts (2), retainer (3) and gasket (4) from inside shroud assembly.
- D Disconnect alternator-to-rectifier wiring harness (5) at alternator (6).
- E Remove six mounting nuts (7) and six lockwashers (8).

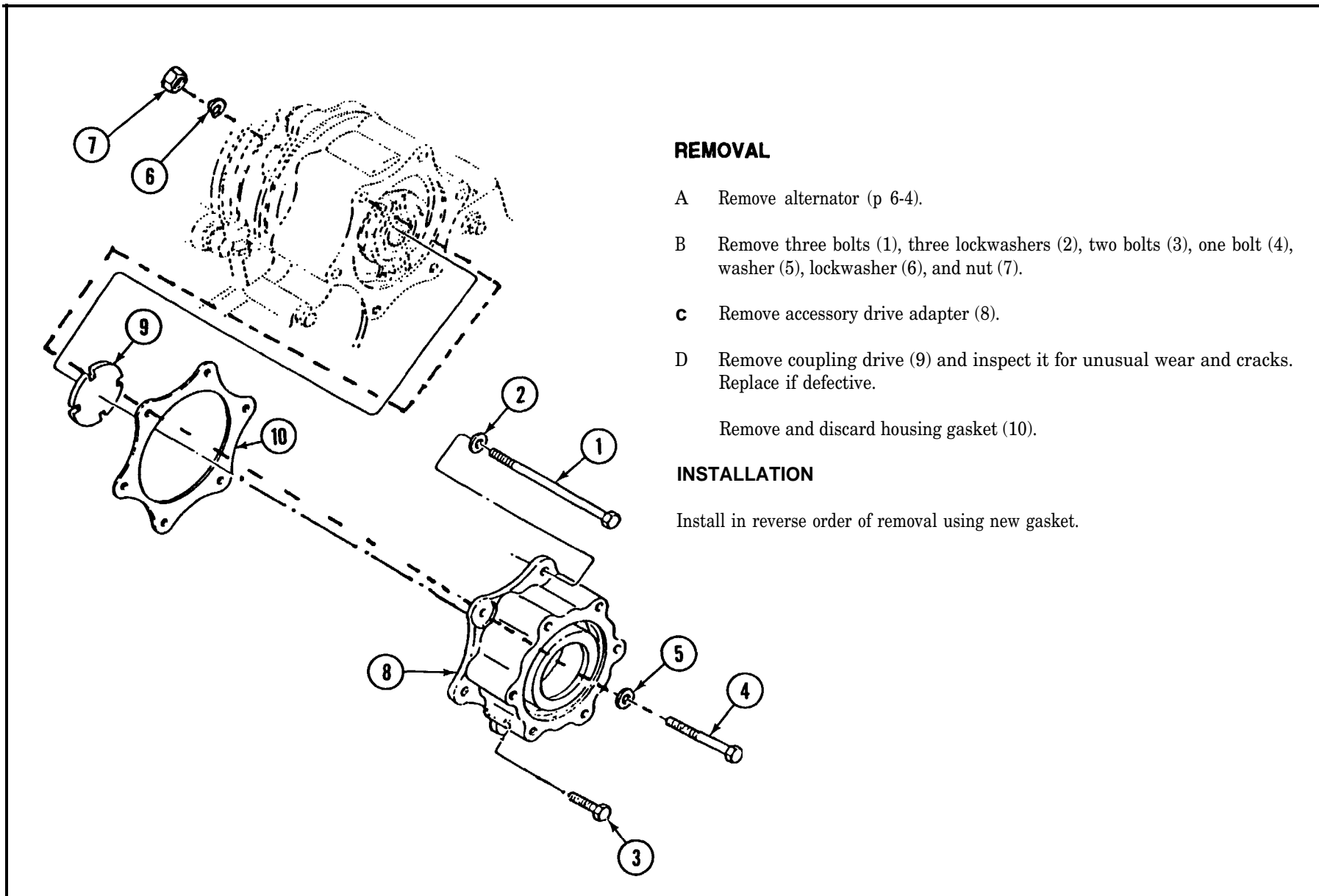
**WARNING**

Weight of alternator is 85 lb. Grip firmly when removing.

- F Remove alternator (6).



## ACCESSORY DRIVE ADAPTER: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove alternator (p 6-4).
- B Remove three bolts (1), three lockwashers (2), two bolts (3), one bolt (4), washer (5), lockwasher (6), and nut (7).
- C Remove accessory drive adapter (8).
- D Remove coupling drive (9) and inspect it for unusual wear and cracks. Replace if defective.

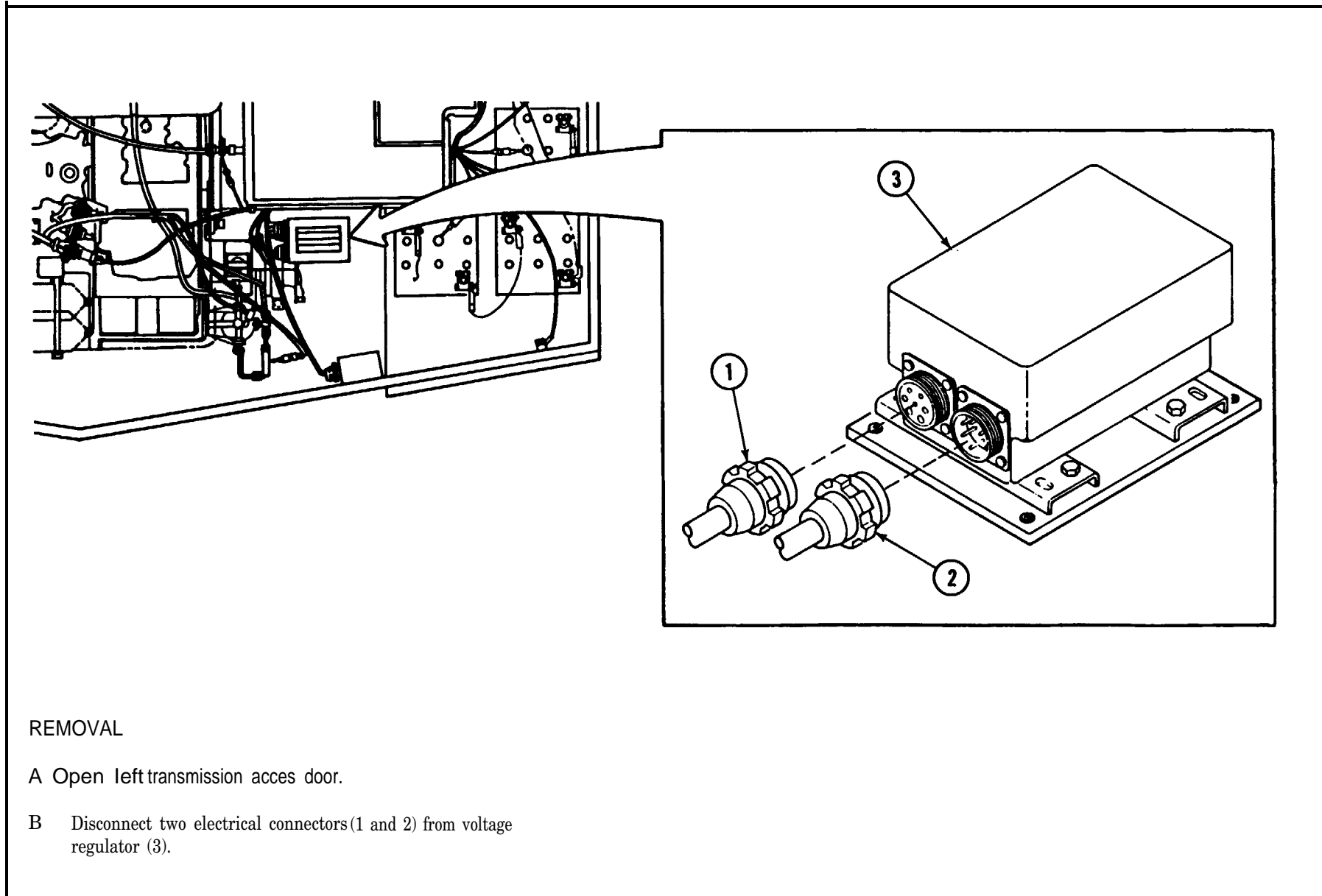
Remove and discard housing gasket (10).

### INSTALLATION

Install in reverse order of removal using new gasket.



## VOLTAGE REGULATOR, BILGE PUMP RELAY, STARTER RELAY, CIRCUIT BREAKER AND MOUNTING BRACKETS: REMOVAL AND INSTALLATION

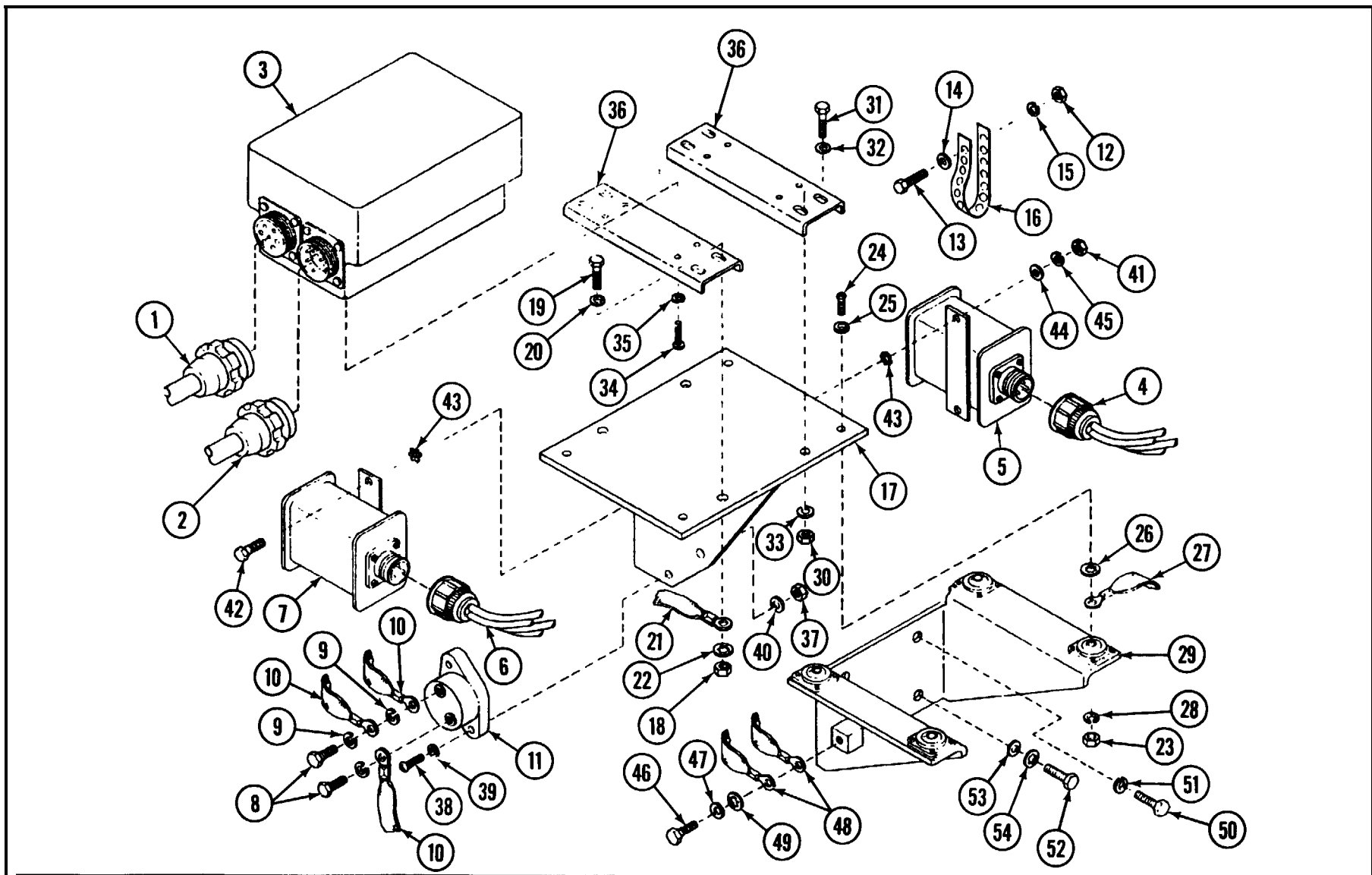


### REMOVAL

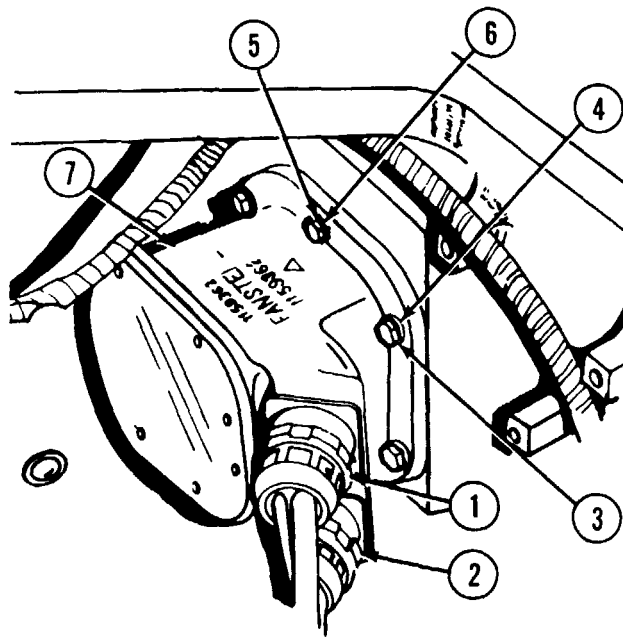
A Open left transmission access door.

B Disconnect two electrical connectors (1 and 2) from voltage regulator (3).

VOLTAGE REGULATOR, BILGE PUMP RELAY, STARTER RELAY, CIRCUITBREAKER AND MOUNTING BRACKETS: REMOVAL AND INSTALLATION (CONTINUED)



## RECTIFIER: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cable.

- A Disconnect wiring harnesses (1 and 2).
- B Remove four screws (3) and four flat washers (4).
- C Remove two brass screws (5) and two lockwashers (6).
- D Remove rectifier (7).
- E Scrape packing from groove of rectifier base.

### INSTALLATION

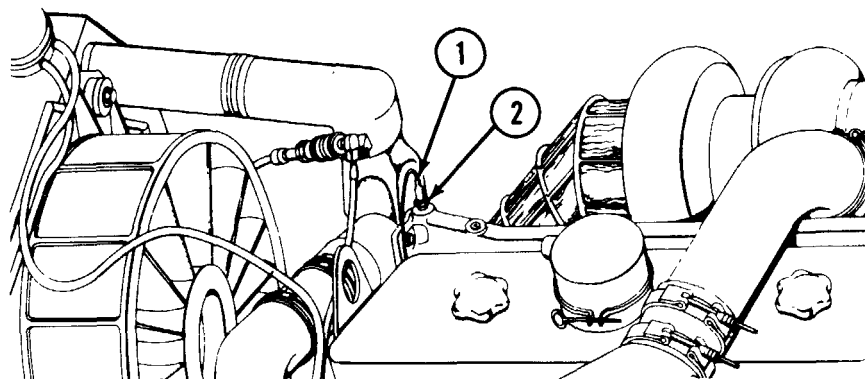
- A Coat packing groove with silicone compound (item 58, Appx D), and fill groove with packing.
- B Install rectifier (7) and secure with two brass screws (5) and two lockwashers (6). Torque screws to 16 lb-ft.
- C Install four flat washers (4) and screws (3). Torque to 30 lb-ft.
- D Connect wiring harnesses (1 and 2).

**ENGINE COOLANT TEMPERATURE TRANSMITTER: REMOVAL AND INSTALLATION****NOTE**

Working temperature range of this transmitter is +120° to +280°F.

**REMOVAL****WARNING**

Engine must be cool before removing transmitter. Removal of transmitter from hot engine will allow hot coolant to spurt from transmitter receptacle, possibly causing severe burns.



- A Open powerpack air intake door and lock in position,
- B Disconnect lead 33A electrical connector (1).

**NOTE**

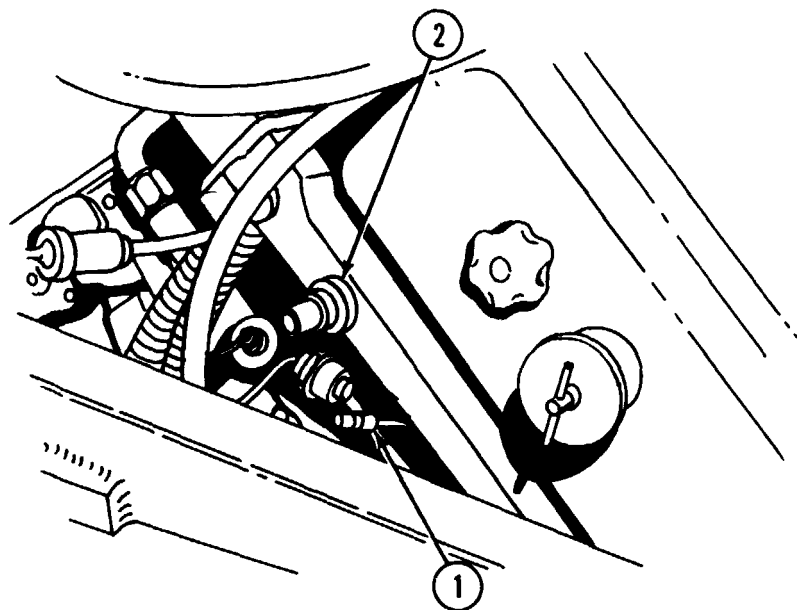
Cooling system coolant will drain from opening when transmitter is removed. Install replacement transmitter immediately.

- C Unscrew and remove temperature transmitter (2).

**INSTALLATION**

Reverse removal procedures.

## ENGINE COOLANT HIGH TEMPERATURE SWITCH: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

Engine must be cool before removing switch. Removal of switch from hot engine will allow hot coolant to spurt from switch receptacle, possibly causing severe burns.

#### NOTE

Working temperature range of this switch is +218° to +232°F.

- A Open powerpack air intake door and lock in position (p
- B Disconnect 509A electrical connector (1).

#### NOTE

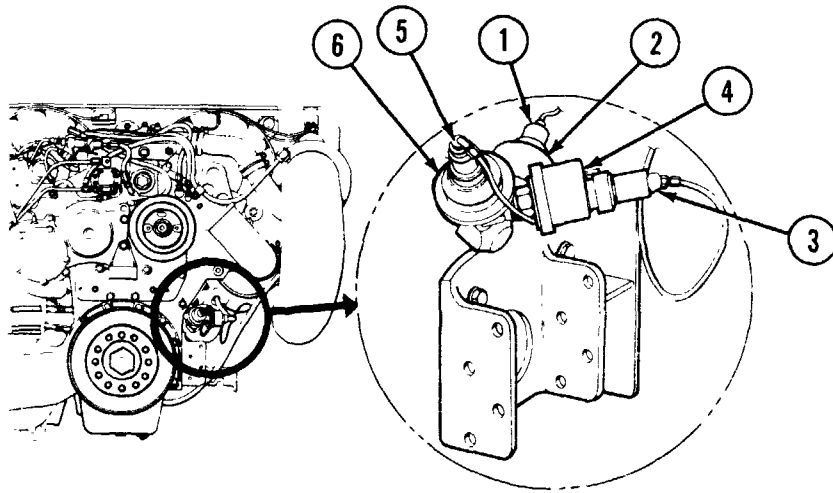
When switch is removed, coolant will drain through switch mounting opening. Replacement switch should be installed immediately to prevent loss of coolant.

- C Unscrew and remove engine coolant high temperature switch (2).

### INSTALLATION

Reverse removal procedures.

**ENGINE OIL PRESSURE TRANSMITTER, ENGINE OIL LOW PRESSURE SWITCH AND AIR CLEANER BLOWER MOTOR SWITCH:  
REMOVAL AND INSTALLATION**



**REMOVAL**

- A Remove engine compartment access cover (p 3-14).
- B Disconnect wire 36 electrical connector (1).
- C Unscrew and remove engine oil pressure transmitter (2).
- D Disconnect wire 509B electrical connector (3).
- E Unscrew and remove engine oil low pressure switch (4).

**NOTE**

Oil pressure switch energizes air cleaner blower motor relay and generator system relay.

- F Disconnect wire 415B electrical connector (5).
- G Unscrew and remove air cleaner blower motor switch (6).

**INSTALLATION**

**NOTE**

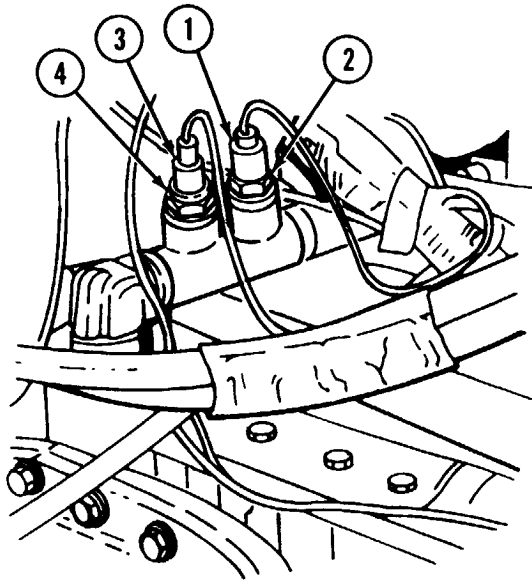
The operating pressure range for each part is as follows:

Engine oil pressure transmitter – 0-120 psi  
 Engine oil low pressure switch – 15-19 psi  
 Air cleaner blower motor switch – 9-13 psi

Reverse removal procedures.



## TRANSMISSION OIL TEMPERATURE TRANSMITTER AND OIL HIGH TEMPERATURE SWITCH: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

Make sure engine has cooled before removing switches.

- A Open and secure right transmission door.
- B Disconnect wire 324 electrical connector (1).

- C Unscrew and remove transmission oil temperature transmitter (2).

#### NOTE

The operating temperature range of transmission oil temperature transmitter is + 120 to + 280°F.

- D Disconnect wire 509D electrical connector (3).
- E Unscrew and remove transmission oil high temperature switch (4).

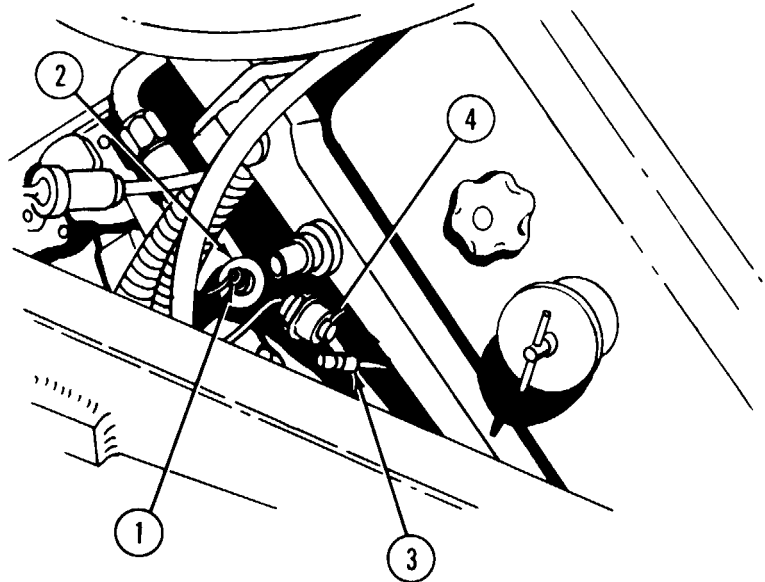
#### NOTE

The operating temperature range of transmission oil high temperature switch is + 298 to + 312°F.

### INSTALLATION

- A Install transmission oil high temperature switch (4).
- B Connect wire 509D electrical connector (3).
- C Install transmission oil temperature transmitter (2).
- D Connect wire 324 electrical connector (1).
- E Close and secure right transmission door.

TA312791

**TRANSMISSION OIL PRESSURE TRANSMITTER AND OIL LOW PRESSURE SWITCH: REMOVAL AND INSTALLATION****REMOVAL****WARNING**

Make sure engine has cooled before removing switches.

- A Open right transmission access door.
- B Disconnect wire 321 electrical connector (1).
- C Unscrew and remove transmission oil pressure transmitter (2)

**NOTE**

The operating pressure range of transmission oil pressure transmitter is 0 to 60 psi.

- D Disconnect wire 509C electrical connector (3).
- E Unscrew and remove transmission low oil pressure switch (4).

**NOTE**

The operating pressure range of transmission low oil pressure switch is 9 to 13 psi.

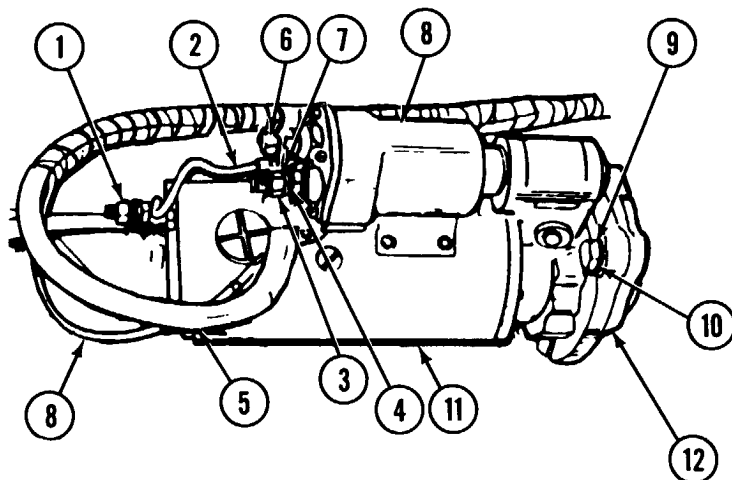
**INSTALLATION**

Reverse removal procedures.

## STARTER MOTOR: REMOVAL AND INSTALLATION

### WARNING

Starter motor weighs 80 lb. Use care during removal and installation.



### REMOVAL

- A Remove powerpack from vehicle (p 3-1).
- B Remove nut (1) and disconnect ground lead (2).
- C Remove nut (3), flat washer (4) and disconnect starter cable lead 82 (5).
- D Remove nut (6), flat washer (7) and disconnect solenoid lead 14B (8).
- E Remove three screws (9) and three lockwashers (10). Discard lockwashers.
- F Remove starter motor assembly (11) and mounting gasket (12). Discard gasket.

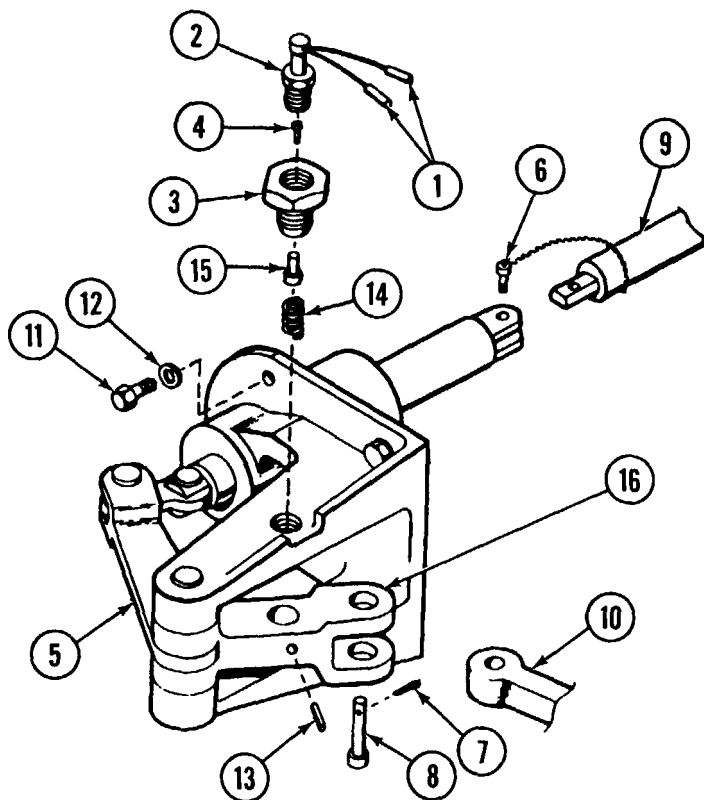
### INSTALLATION

- A Reverse removal procedures using new lockwashers and new mounting gasket.
- B Operate powerpack before installing in vehicle (p 3-29).
- C Install powerpack (p 3-24).





## NEUTRAL SAFETY SWITCH: REMOVAL, INSTALLATION AND ADJUSTMENT

**REMOVAL**

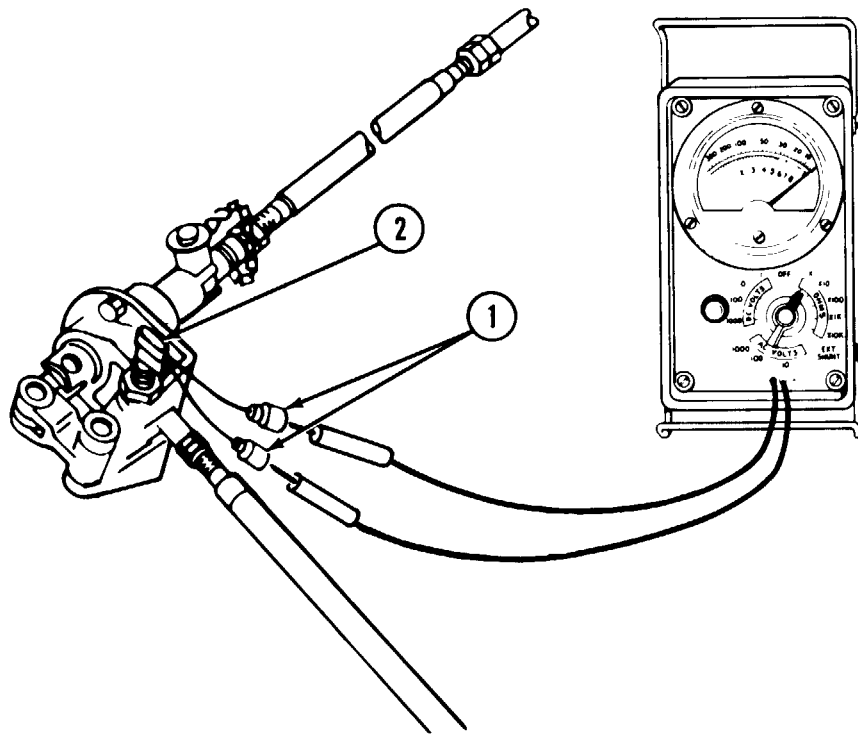
- A Disconnect two electrical connectors (1).
- B Unscrew safety switch (2) from adapter (3) by turning counterclockwise.
- C Remove pin (4).
- D Unscrew adapter (3) from shift control linkage base assembly (5).
- E Remove quick-release pin (6), cotter pin (7) and straight pin (8). Disconnect rods (9 and 10).

**NOTE**

Location of quick-release pin (6) is in powerpack compartment.

- F Remove four screws (11), four lockwashers (12) and remove shift control linkage base assembly (5) from driver's compartment bulkhead.
- G Remove pin (13), spring (14) and contact pin (15) from bell crank (16).

## NEUTRAL SAFETY SWITCH: REMOVAL, INSTALLATION AND ADJUSTMENT (CONTINUED)



### ADJUSTMENT

- A Disconnect two electrical connectors (1).
- B Set transmission shift control lever in neutral (N) position.
- C Using a multimeter to check continuity, turn neutral safety switch (2) until multimeter indicates 0 ohms - switch closed.
- D Set transmission shift control lever to first gear. Multimeter must indicate  $\infty$  - switch open.
- E Set transmission shift control lever to neutral (N) position. Multimeter must indicate 0 - switch open. If not, repeat steps C and D.
- F Set transmission shift control lever to every shift position. Check multimeter indication at each position. Multimeter must indicate  $\infty$  at positions 1, 2, 3, 4, R1 and R2, and must indicate 0 ohms at N (neutral). If not, readjust.

### INSTALLATION

Reverse removal procedures.

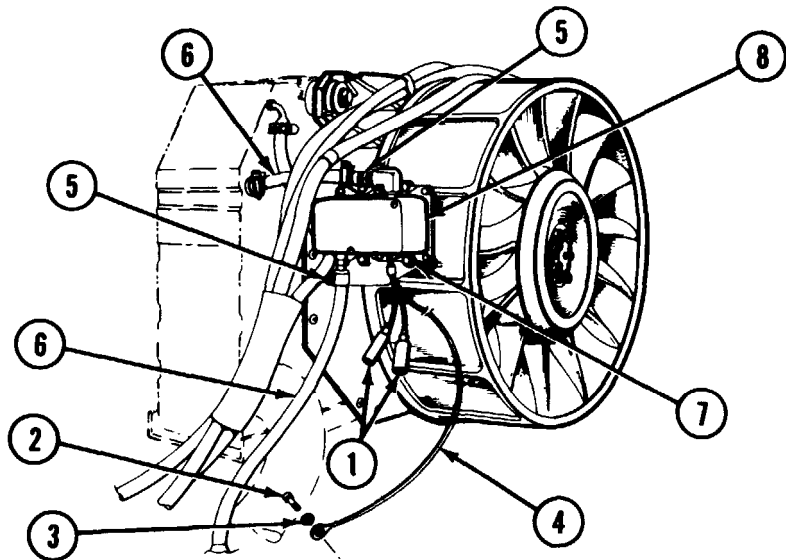
TA311048

**AERATION DETECTOR: REMOVAL AND INSTALLATION****INITIAL SETUP**Equipment Condition:

Radiator fan protectors installed (p 2-5).  
Coolant drained (TM 9-2350-267-10).

General Safety Instructions:

A protective fan screen must be installed prior to doing maintenance in the engine compartment when engine is running or when running engine in ground hop mode. Contact with rotating fan can cause injury.

**REMOVAL****WARNING**

Make sure engine and coolant are sufficiently cooled before disconnecting hoses. Removal of hoses while engine and coolant are hot will cause coolant to spurt from hoses under pressure and will cause severe burns.

- A Disconnect two electrical connectors, wires 352A and 352B (1).
- B Remove screw (2), flat washer (3) and ground wire (4).
- C Unscrew and loosen hose clamps (5).
- D Remove two hoses (6).

**NOTE**

Plug hoses from radiator and main tube.

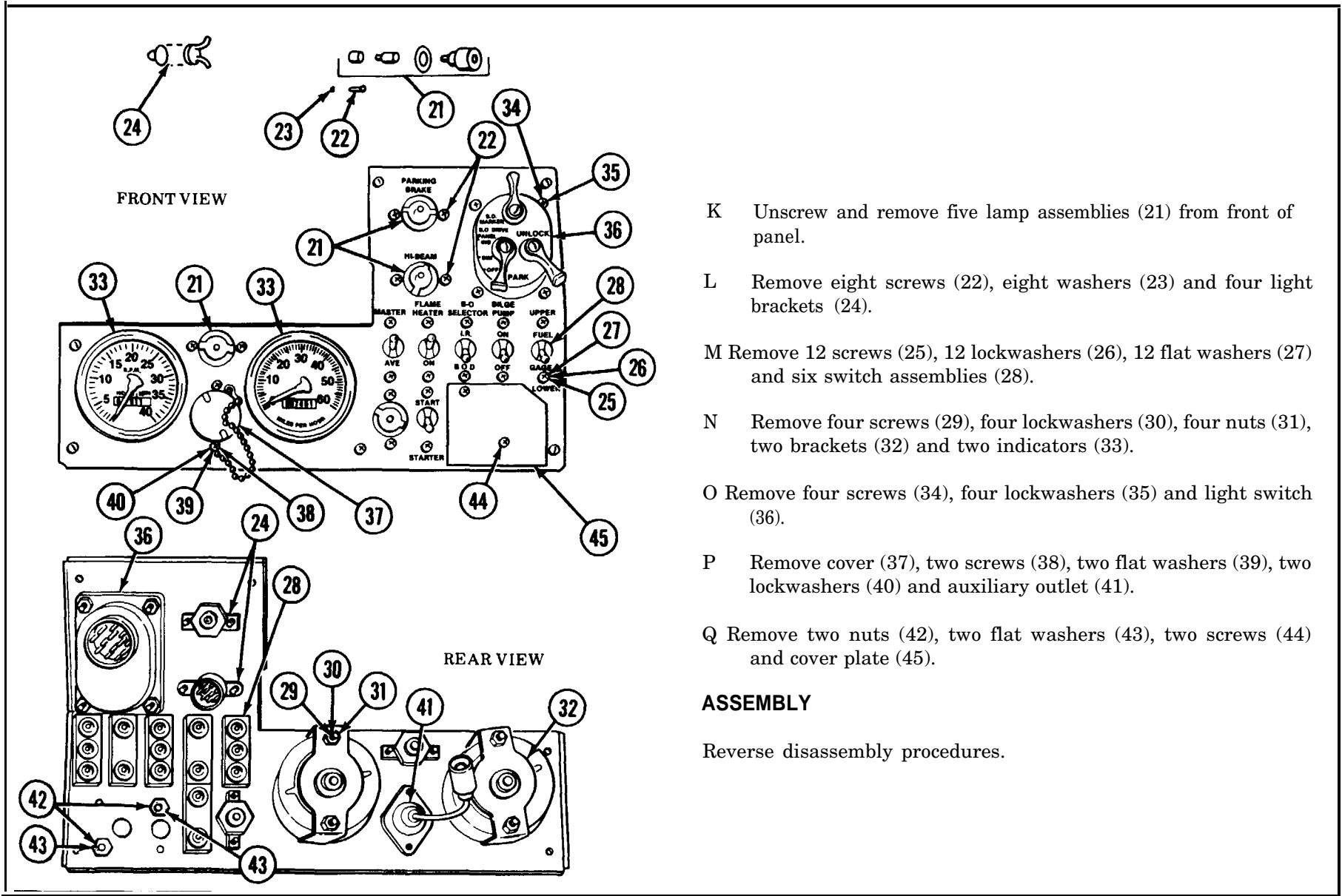
- E Remove four screws and four lockwashers (7).
- F Remove aeration detector (8).

**INSTALLATION**

Reverse removal procedures.



PORTABLE AND DRIVERS INSTRUMENT PANELS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



- K Unscrew and remove five lamp assemblies (21) from front of panel.
- L Remove eight screws (22), eight washers (23) and four light brackets (24).
- M Remove 12 screws (25), 12 lockwashers (26), 12 flat washers (27) and six switch assemblies (28).
- N Remove four screws (29), four lockwashers (30), four nuts (31), two brackets (32) and two indicators (33).
- O Remove four screws (34), four lockwashers (35) and light switch (36).
- P Remove cover (37), two screws (38), two flat washers (39), two lockwashers (40) and auxiliary outlet (41).
- Q Remove two nuts (42), two flat washers (43), two screws (44) and cover plate (45).

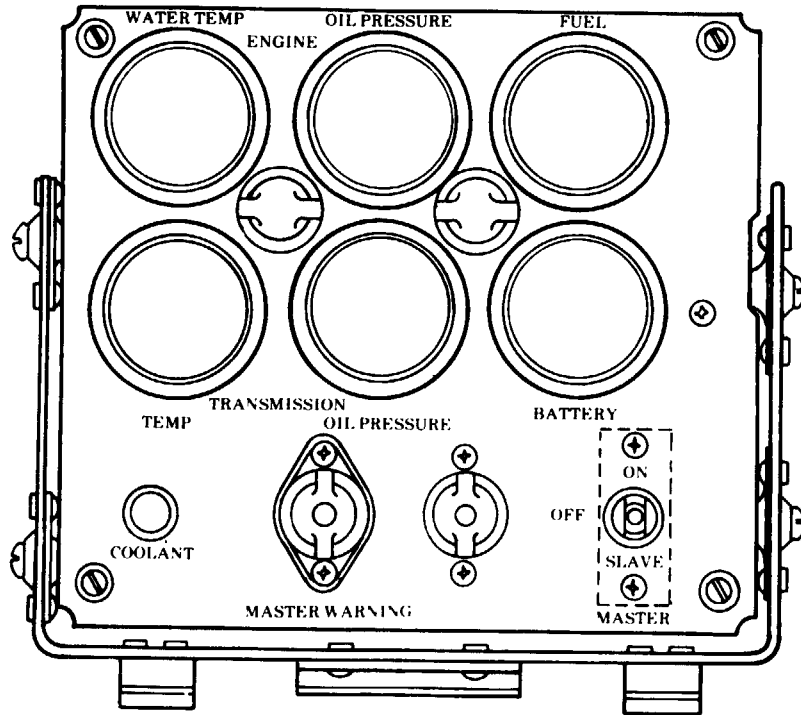
**ASSEMBLY**

Reverse disassembly procedures.

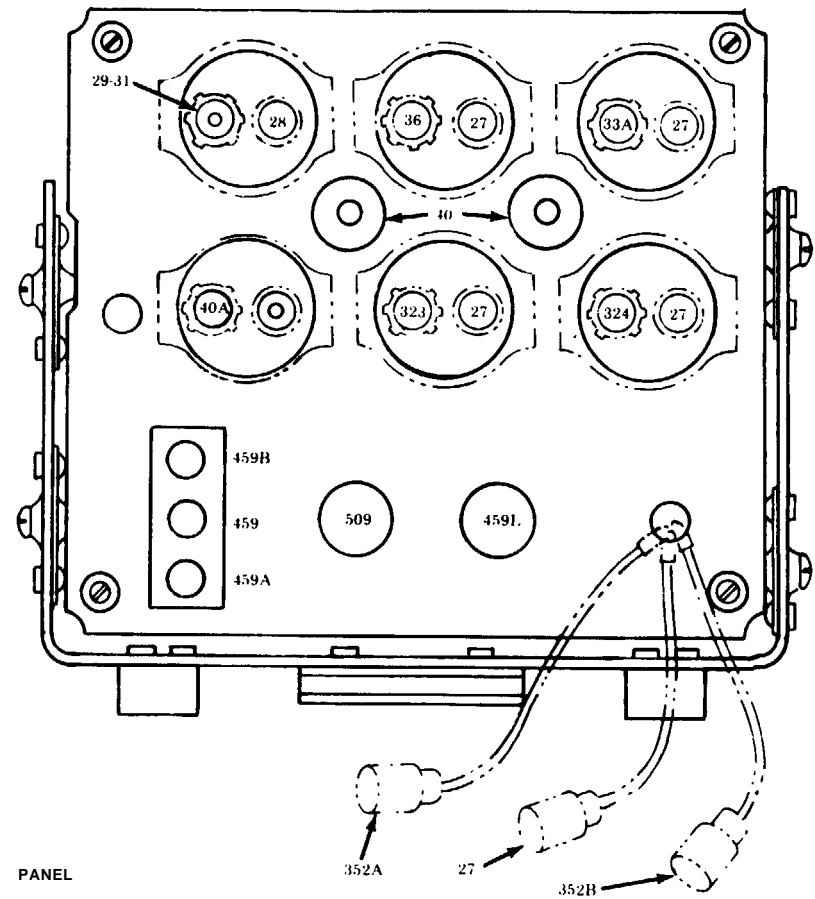
PORTABLE AND DRIVER'S INSTRUMENT PANELS: REMOVAL, ASSEMBLY, DISASSEMBLY AND INSTALLATION (CONTINUED)

INSTALLATION (PORTABLE AND DRIVER'S PANELS)

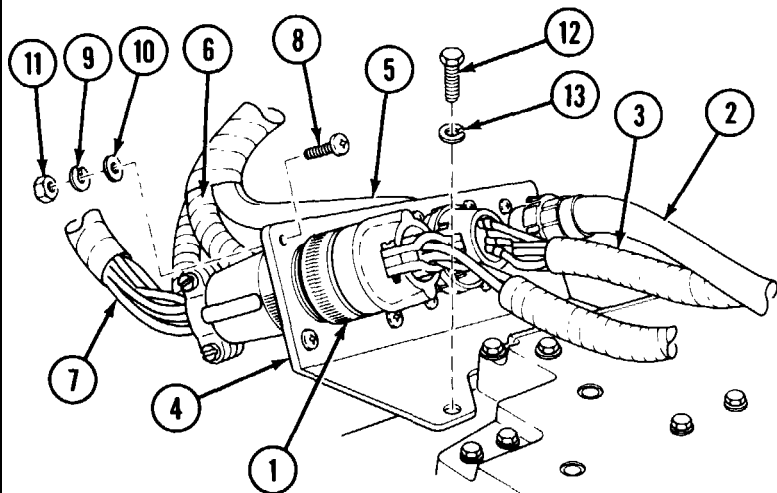
Reverse removal procedures.



PORTABLE INSTRUMENT PANEL



## POWERPACK WIRING HARNESS MOUNTING BRACKET: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

When working on vehicle's electrical system, turn MASTER switch to OFF position. Remove rings, dog tags, and other jewelry. Disconnect batteries by removing ground cables first. Connect ground cables last when connecting batteries.

- A Open battery compartment access door and disconnect battery ground cable from negative battery post.
- B Open and secure both transmission access doors.
- C Disconnect STE/ICE wiring harness (1), starter cable connector (2) and master circuit wiring harness (3) at mounting bracket (4).
- D Remove starter cable receptacle (5), master circuit harness receptacle (6) and STE/ICE harness receptacle (7) by removing four screws (8), four lockwashers (9), four flat washers (10) and four nuts (11) from each. Discard lockwashers.
- E Remove two screws (12) and two lockwashers (13) and remove mounting bracket (4) from transmission. Discard lockwashers.

### INSTALLATION

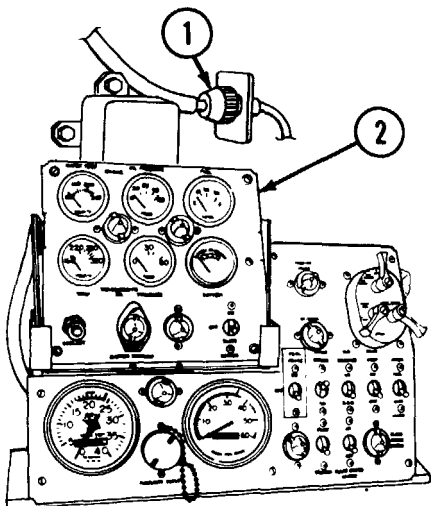
- A Install mounting bracket (4) on transmission with two screws (12) and two new lockwashers (13).
- B Install STE/ICE harness receptacle (7), master circuit harness receptacle (6) and starter cable receptacle (5) with four screws (8), four new lockwashers (9), four flat washers (10) and four nuts (11) for each receptacle.
- C Connect STE/ICE wiring harness (1), starter cable connector (2) and master circuit wiring harness (3) at mounting bracket (4).
- D Close and secure both transmission access doors.
- E Connect battery ground cable at negative battery post and close battery compartment access door.

TA312792



## Section II HULL ELECTRICAL SYSTEMS

### PORTABLE AND DRIVER'S INSTRUMENT PANELS: REMOVAL . DISASSEMBLY. ASSEMBLY AND INSTALLATION



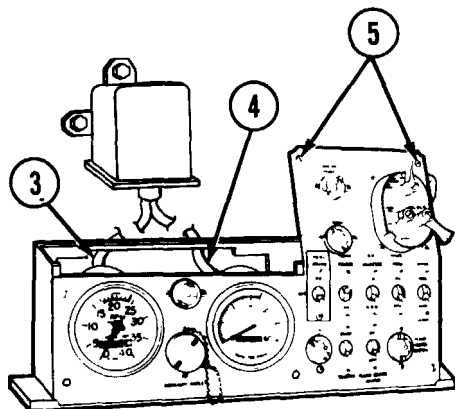
#### REMOVAL

##### WARNING

Set MASTER switch OFF. Disconnect battery ground cables.

##### NOTE

Remove portable instrument panel before driver's panel.



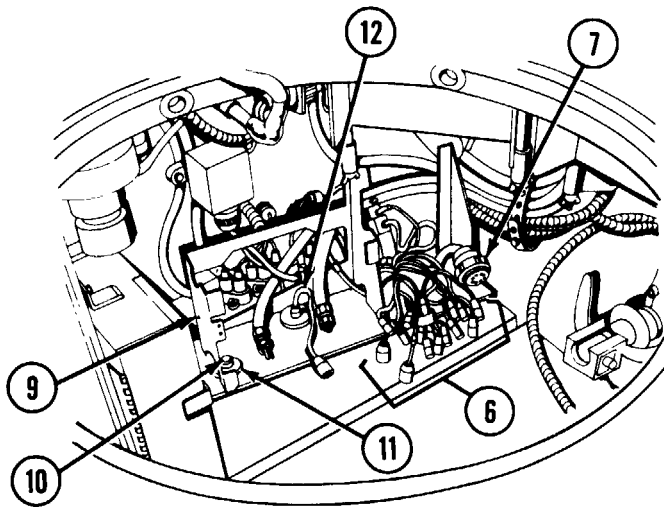
A Disconnect electrical harness (1) at hull-mounted bracket.

B Lift off portable instrument panel (2) from driver's instrument panel bracket.

C Disconnect flexible tachometer cable (3) and speedometer cable (4) from instrument panel.

D Use screwdriver to unfasten six stud fasteners (5) by pushing in and turning counterclockwise.

## PORTABLE AND DRIVER'S INSTRUMENT PANELS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

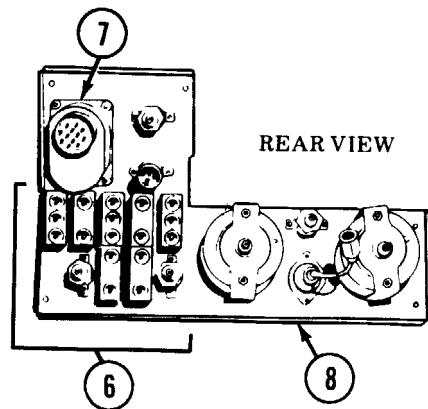


E Disconnect 23 instrument panel connectors (6) and light switch connector (7).

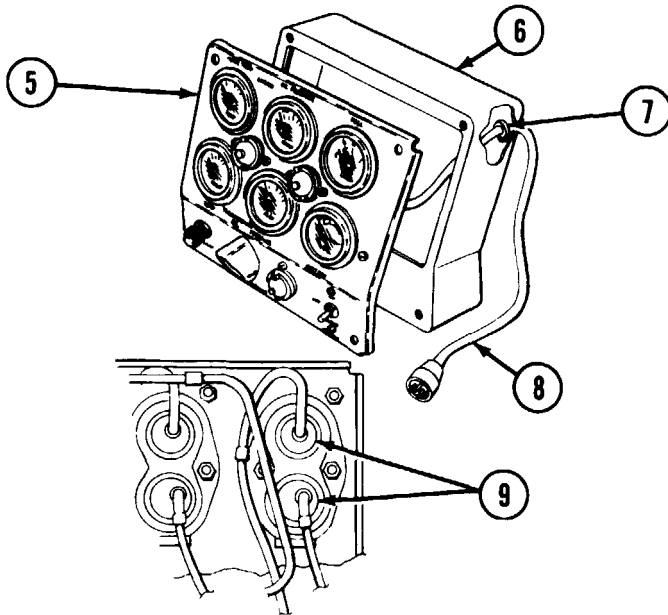
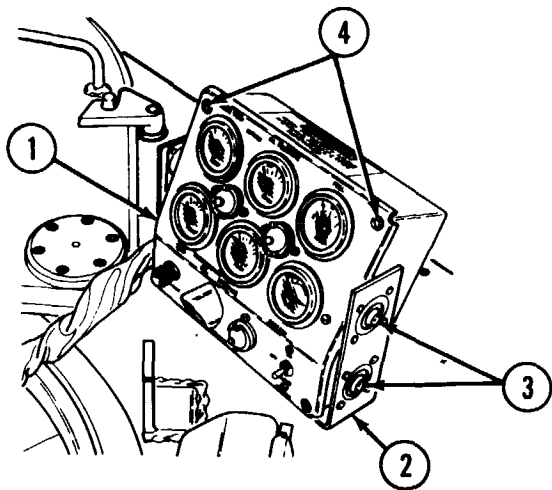
F Remove driver's instrument panel (8) from mounting support (9).

G Remove four screws (10) and four lockwashers (11) and ground strap (12).

H Remove mounting support (9).



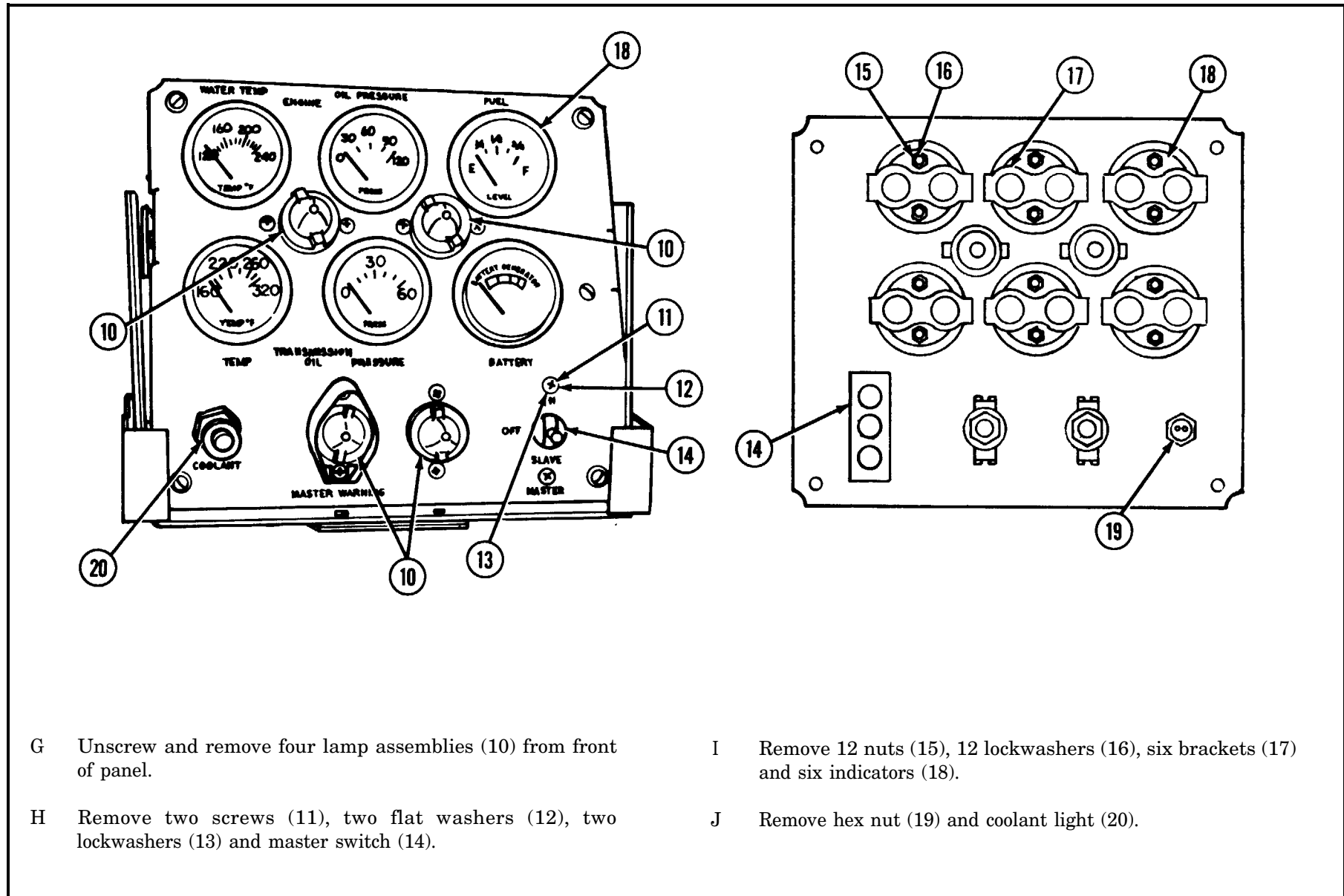
PORTABLE AND DRIVERS INSTRUMENT PANELS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



**DISASSEMBLY**

- A Separate portable instrument panel (1) from bracket assembly (2) by removing four crosspoint screws (3).
- B Using screwdriver, unfasten four stud fasteners (4) by pushing in and turning counterclockwise.
- C Pull panel (5) away from instrument panel cover (6).
- D Slide grommet (7) back over harness assembly (8) and remove.
- E Disconnect 19 electrical connectors (9) at back of panel (p
- F Remove harness assembly (8) from instrument panel cover (6).

## PORTABLE AND DRIVER'S INSTRUMENT PANELS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



G Unscrew and remove four lamp assemblies (10) from front of panel.

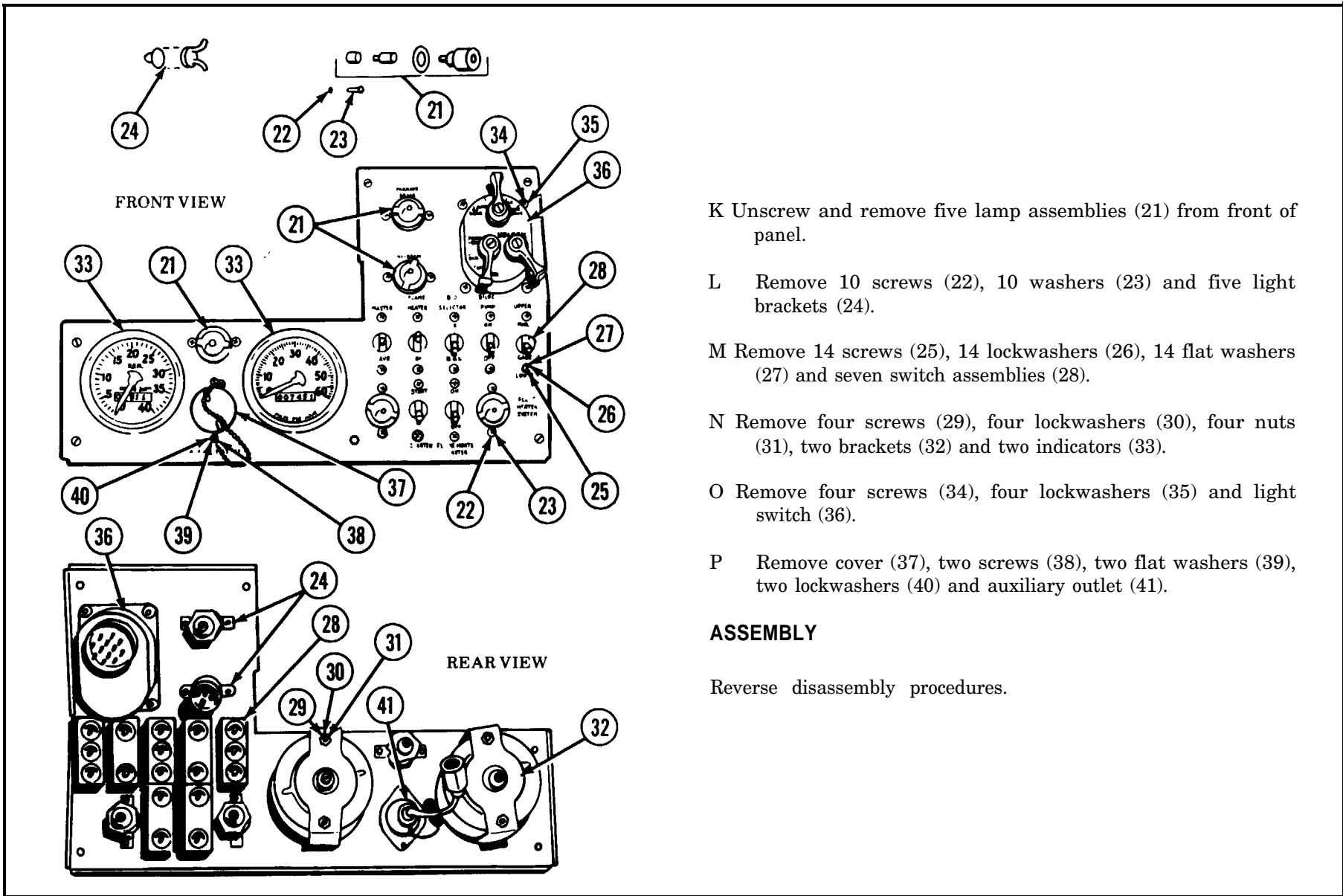
H Remove two screws (11), two flat washers (12), two lockwashers (13) and master switch (14).

I Remove 12 nuts (15), 12 lockwashers (16), six brackets (17) and six indicators (18).

J Remove hex nut (19) and coolant light (20).



PORTABLE AND DRIVER'S INSTRUMENT PANELS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



K Unscrew and remove five lamp assemblies (21) from front of panel.

L Remove 10 screws (22), 10 washers (23) and five light brackets (24).

M Remove 14 screws (25), 14 lockwashers (26), 14 flat washers (27) and seven switch assemblies (28).

N Remove four screws (29), four lockwashers (30), four nuts (31), two brackets (32) and two indicators (33).

O Remove four screws (34), four lockwashers (35) and light switch (36).

P Remove cover (37), two screws (38), two flat washers (39), two lockwashers (40) and auxiliary outlet (41).

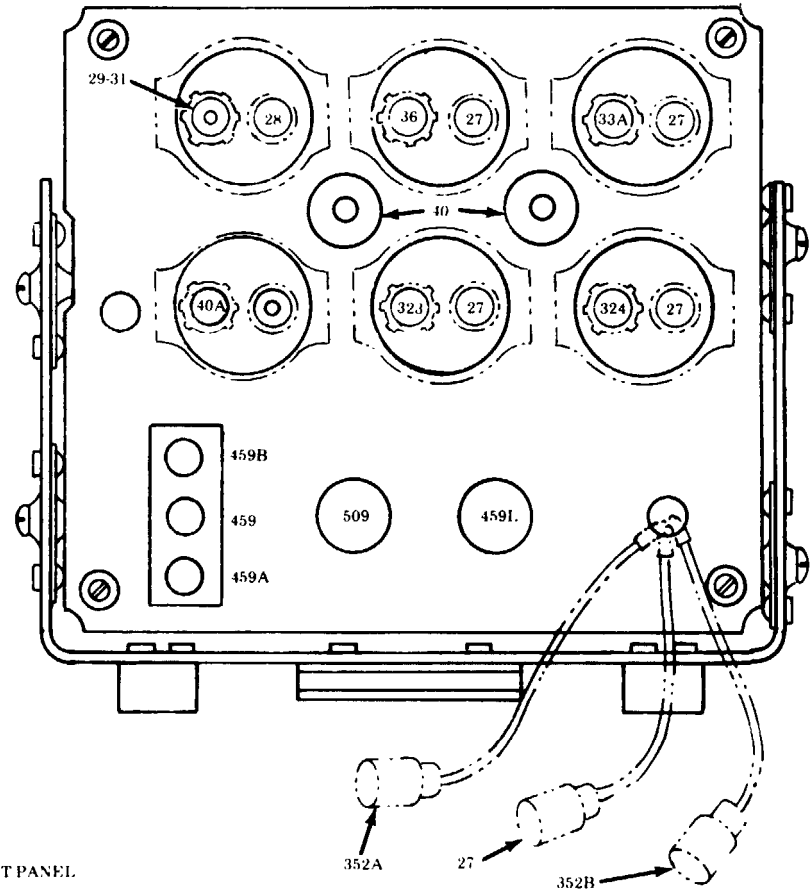
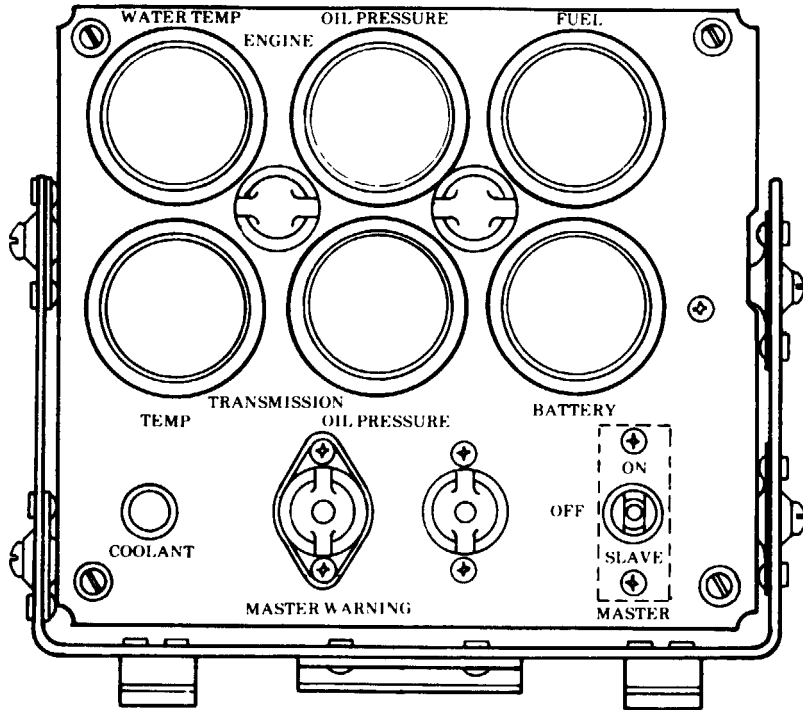
**ASSEMBLY**

Reverse disassembly procedures.

PORTABLE AND DRIVER'S INSTRUMENT PANELS: REMOVAL, ASSEMBLY, DISASSEMBLY AND INSTALLATION (CONTINUED)

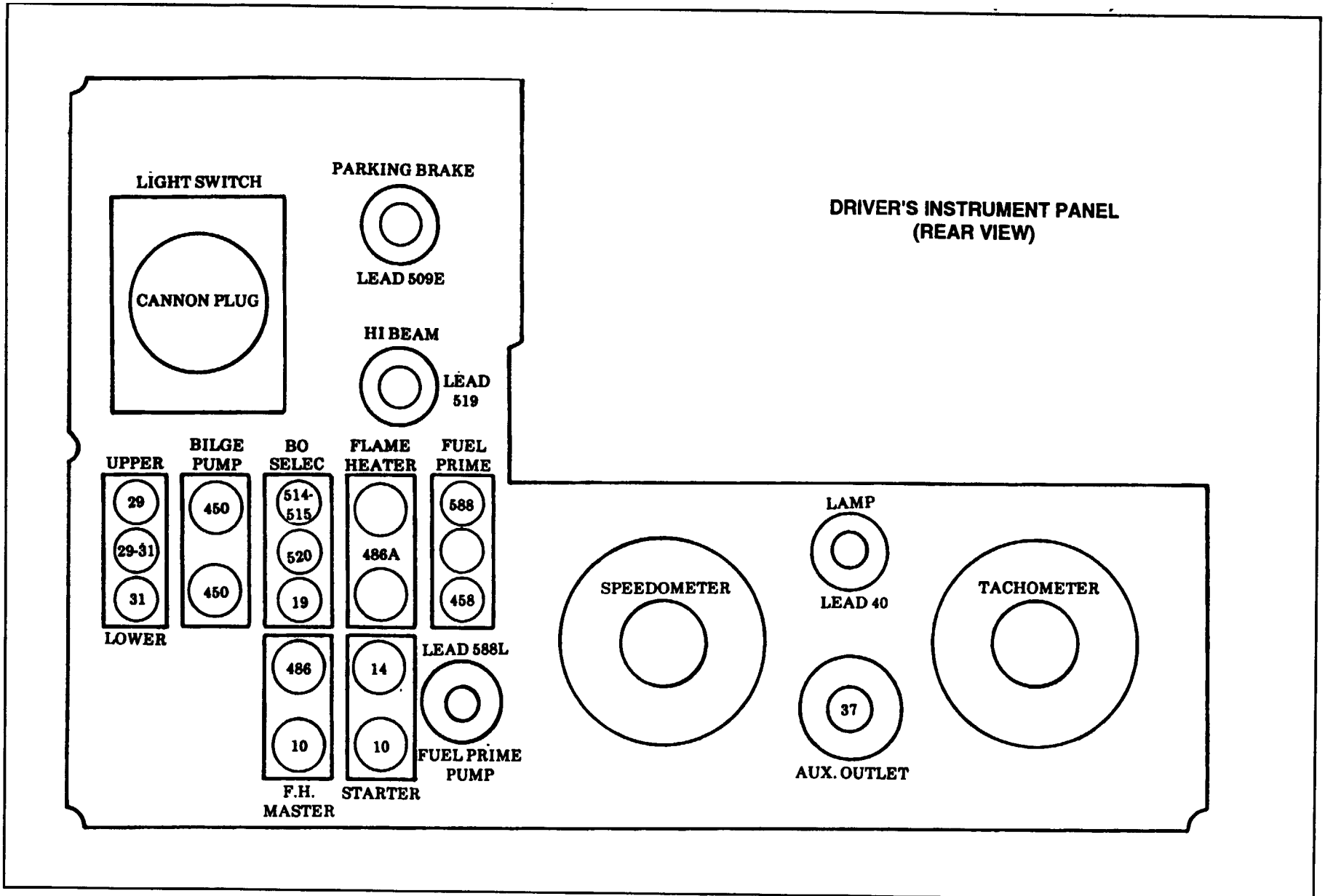
INSTALLATION (PORTABLE AND DRIVER'S PANELS)

Reverse removal procedures.



PORTABLE INSTRUMENT PANEL

PORTABLE AND DRIVER'S INSTRUMENT PANELS REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



## ACCESSORY CONTROL BOX REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

**INITIAL SETUP**Equipment Condition:

Battery ground cables disconnected (p 6-44).  
 MASTER switch OFF.

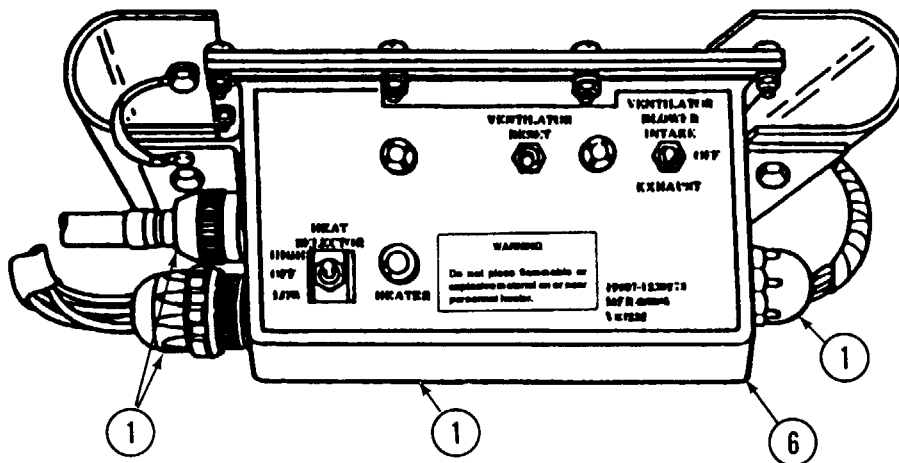
**REMOVAL**

- A Disconnect four electrical connectors (1).

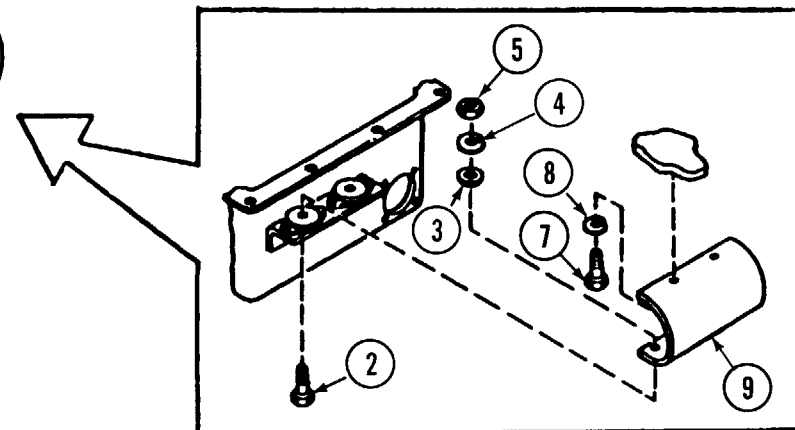
**NOTE**

Support accessory control box while removing  
 Screws.

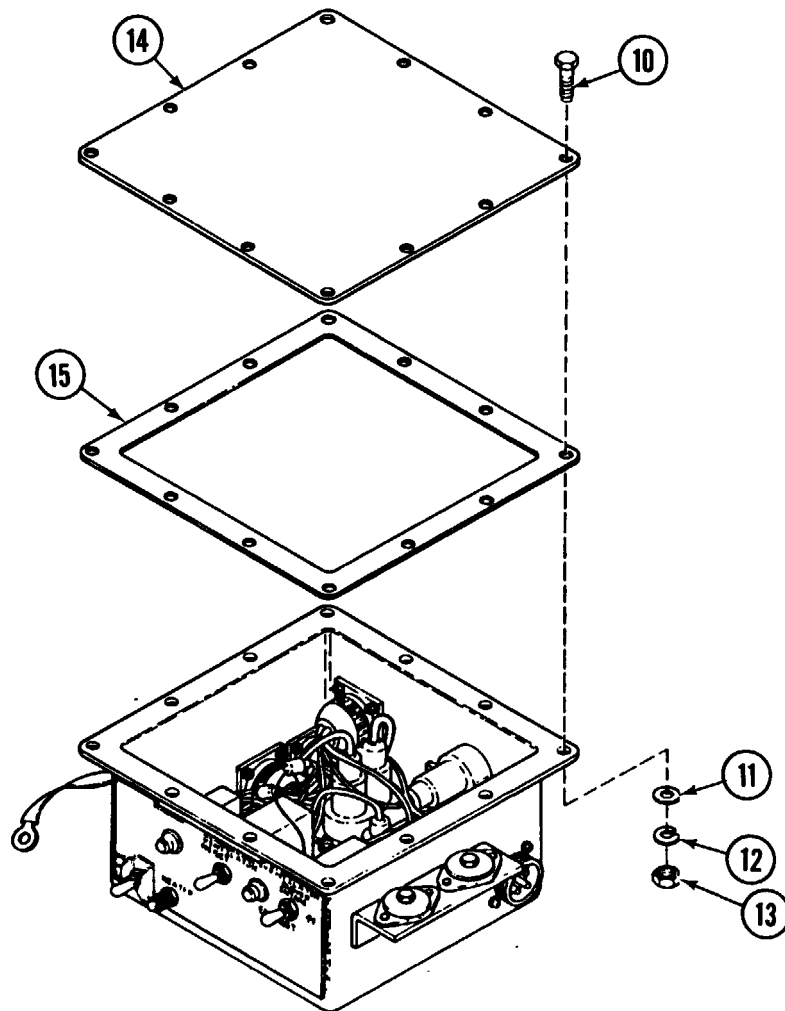
- B Remove four screws (2), four flat washers (3), four lockwashers (4), four nuts (5) and control box (6). Discard lockwashers.
- C Remove four screws (7), four lockwashers (8) and two mounting brackets (9). Discard lockwashers.



HIDDEN



## ACCESSORY CONTROL BOX REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

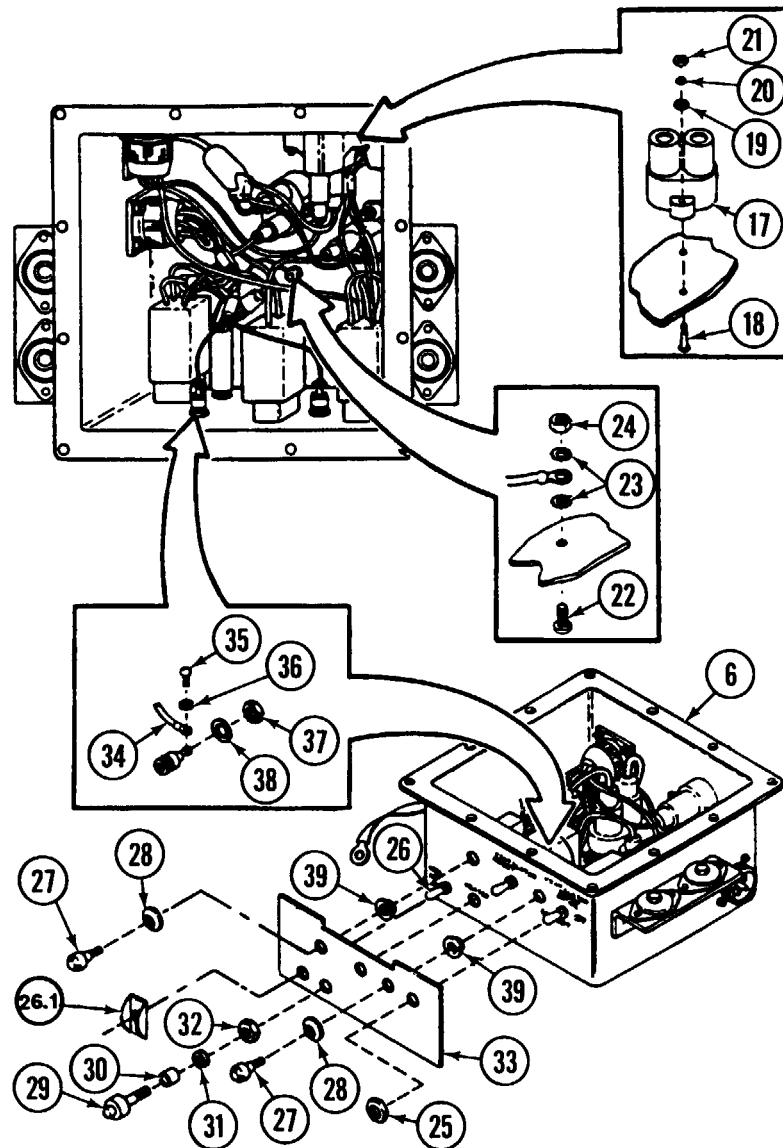


### DISASSEMBLY

A Remove 12 screws (10), 12 flat washers (11), 12 lockwashers (12) and 12 nuts (13). Discard lockwashers.

B Remove cover (14) and gasket (15). Discard gasket.

## ACCESSORY CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLTION (CONTINUED)

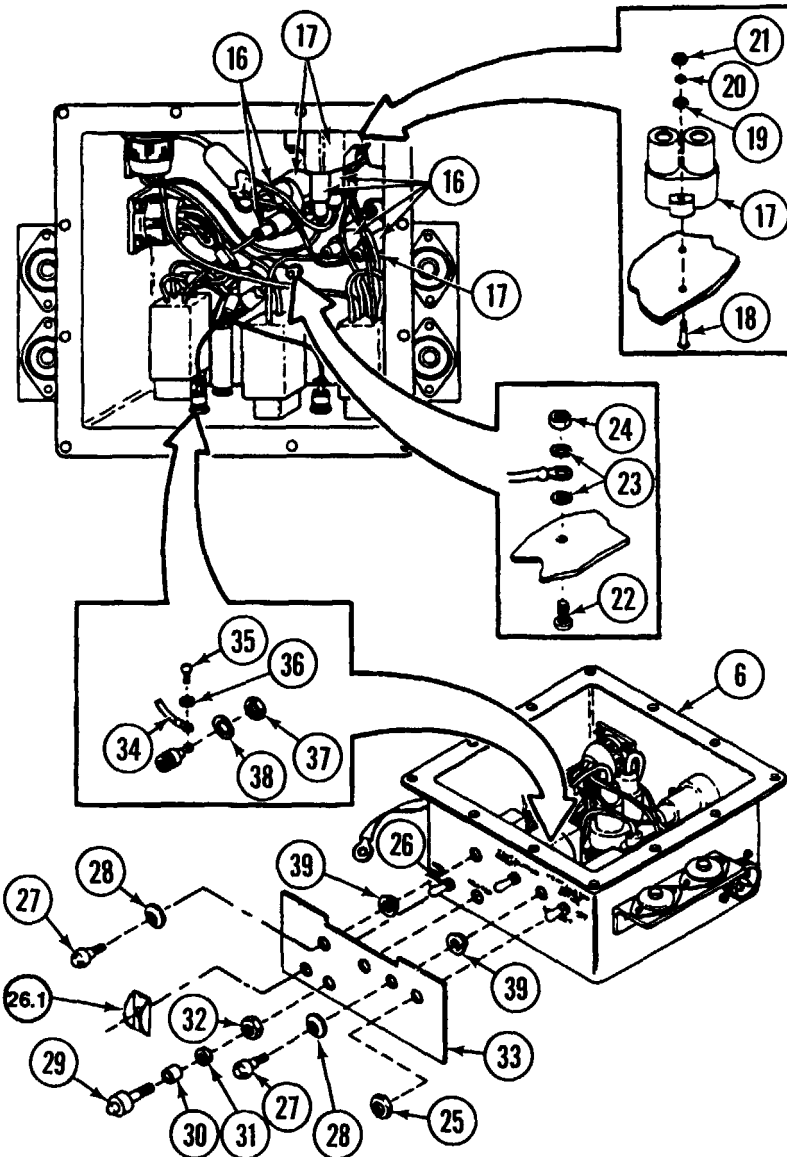


## NOTE

Refer to Accessory Control Box Wiring Schematic, Appx F to ensure proper installation.

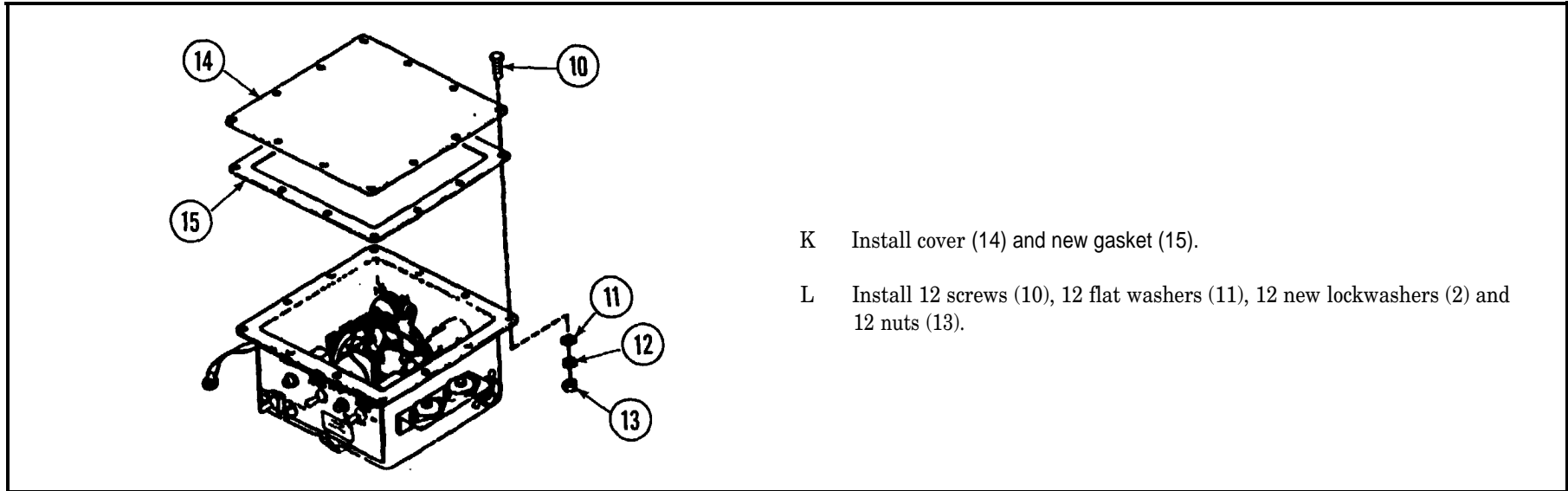
- C Disconnect six electrical connectors (16) from circuit breakers (17).
- D Remove six screws (18), six flat washers (19), six lockwashers (20), six nuts (21) and three circuit breakers (17). Discard lockwashers.
- E Remove screw (22), two lockwashers (23) and nut (24). Discard lockwashers.
- F Unscrew three hexnuts (25) and switch guard (26.1) and pull three switches (26) into accessory.
- G Remove two leads on ventilator/blower switch (26) between terminals 4 and 3, and 6 and 1.
- H Remove two panel light lamps (27) and two gaskets (28). Discard gaskets.
- I Remove indicator light cap (29), lamp (30), gasket (31), hexnut (32), and indicator panel (33) from accessory control box (6). Discard gaskets.
- J Disconnect wire (34) by removing screw (35) and washer (36). Remove nut (37) and washer (38) and pull lightbracket (39) out of accessory control box (6).

## ACCESSORY CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



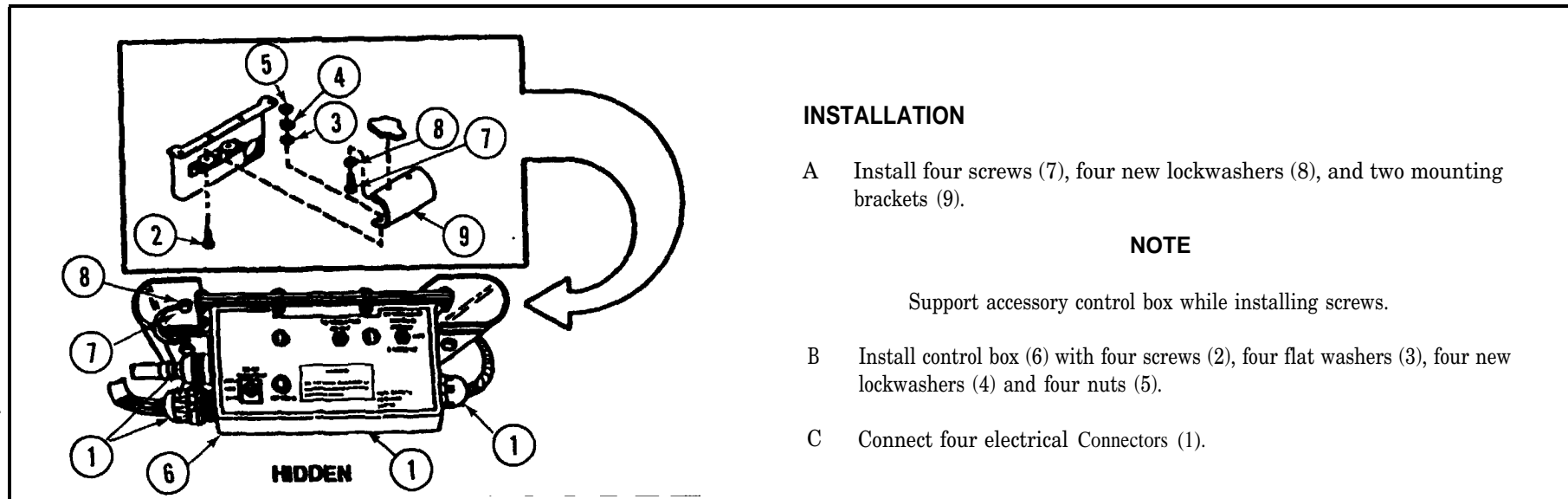
- C Install light bracket (39) in accessory control box (6) with washer (38) and nut (37). Connect wire (34) with washer (36) and screw (35).
- D Install indicator panel (33), indicator light cap (29), lamp (30), gasket (31) and hexnut (32) on light bracket (39) in accessory control box (6).
- E Install two panel light lamps (27) and two gaskets (28).
- F Connect two leads on ventilator/blower switch (26) between terminals 4 and 3, and 6 and 1.
- G Install three switches (26) and switch guard (26.1) and three hexnuts (25) to accessory control box (6).
- H Install screw (22), two new lockwashers (23) and nut (24).
- I Install six screws (18), six flat washers (19), six new lockwashers (20), six nuts (21) and three circuit breakers (17).
- J Connect six electrical connectors (16) to circuit breakers (17).

ACCESSORY CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



K Install cover (14) and new gasket (15).

L Install 12 screws (10), 12 flat washers (11), 12 new lockwashers (2) and 12 nuts (13).



**INSTALLATION**

A Install four screws (7), four new lockwashers (8), and two mounting brackets (9).

**NOTE**

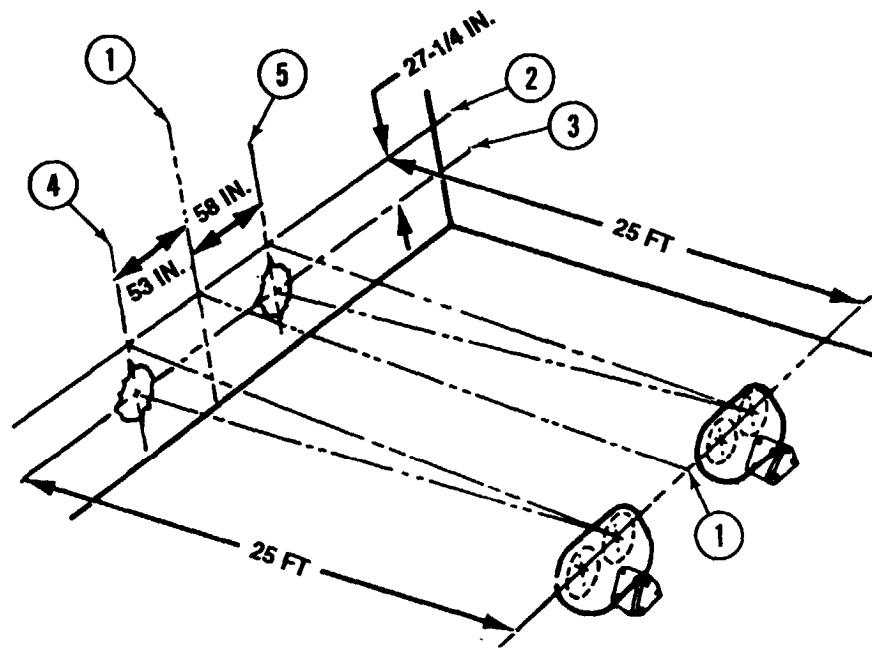
Support accessory control box while installing screws.

B Install control box (6) with four screws (2), four flat washers (3), four new lockwashers (4) and four nuts (5).

C Connect four electrical Connectors (1).



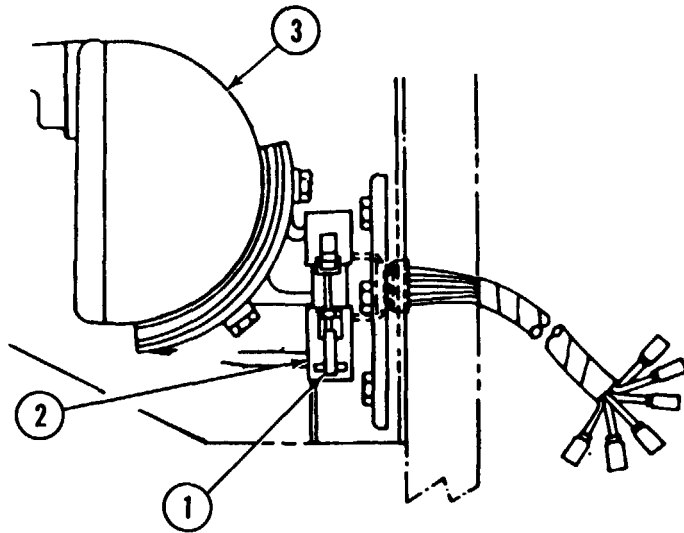
## HEADLIGHTS: ALINEMENT, REMOVAL, INSTALLATION AND ADJUSTMENT



### ALINEMENT

- A Park vehicle on level ground or pavement 25 feet from wall or screen.
- B Draw line (1) perpendicular to wall or screen, passing through center of vehicle.
- C Measure distance from center of sealed lamp unit (service side, clear) to ground. Duplicate this measurement on wall or screen, drawing horizontal centerline (2) of lamp unit.
- D Draw line (3) parallel to and 27-1/4 inches below line (2).
- E Draw line (4) parallel to and 53 inches left of centerline of vehicle.
- F Draw line (5) parallel to and 58 inches right of centerline of vehicle.
- G Turn on lights to low beam. Center of left beam's highest light intensity should be where lines (3 and 4) cross. Center of right beam's highest light intensity should be where lines (3 and 5) cross. Adjust if necessary (p 6-30).

## HEADLIGHTS: ALINEMENT, REMOVAL, INSTALLATION AND ADJUSTMENT (CONTINUED)

**REMOVAL**

A Pull upward on T-handle locking device(1).

B Remove retaining clamp (2).

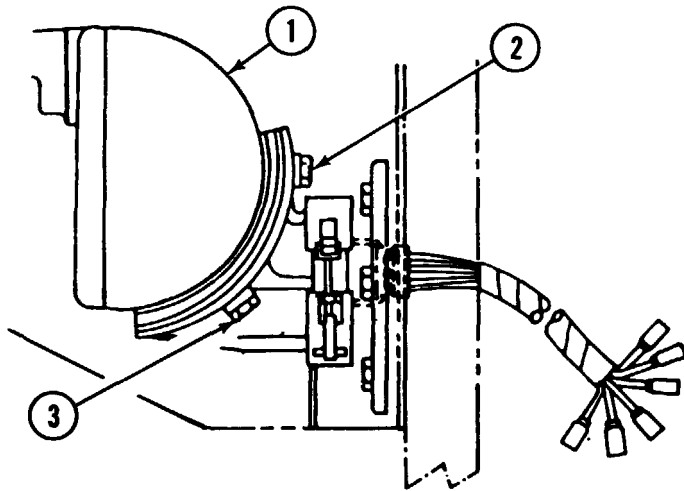
**CAUTION**

Do not twist headlight assembly during removal or installation. Damage to connectors may result.

C Pull headlight assembly (3) straight out.

**INSTALLATION**

Reverse removal procedures.

**ADJUSTMENT**

A Remove headlight assembly (1).

B Loosen two nuts (2) and two nuts (3).

C Install headlight assembly (1).

D Manually adjust headlight (1) to alinement marks (p 6-29).

E Tighten two lower nuts (3).

F Remove headlight assembly (1).

G Tighten two upper nuts (2).

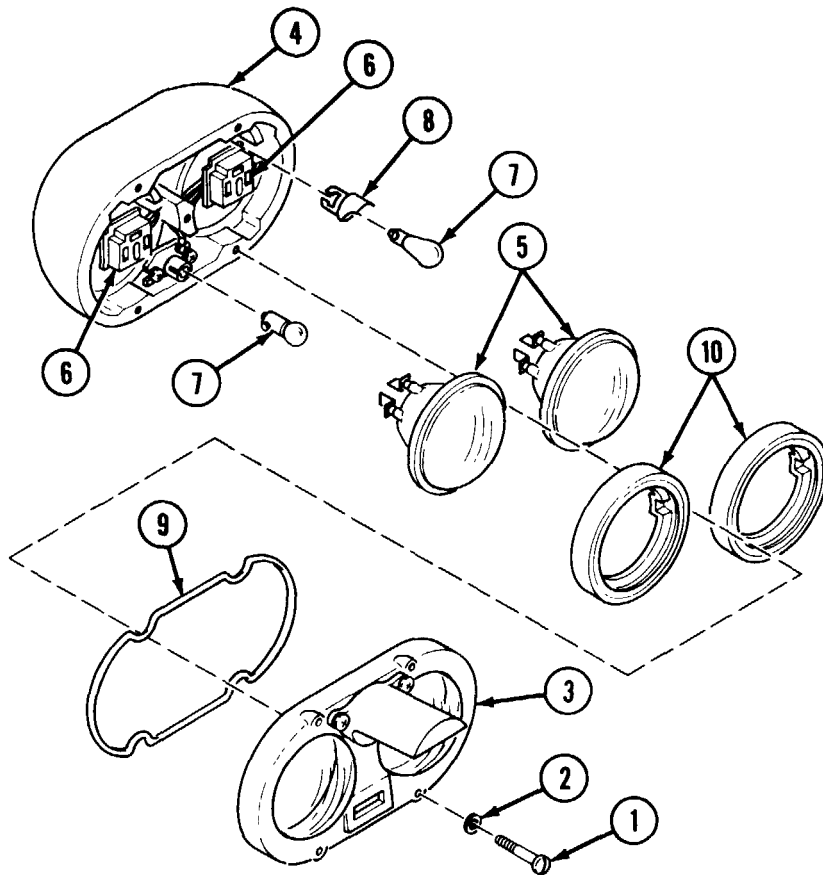
H Install headlight assembly (1).

## HEADLIGHT SEALED-BEAM AND INCANDESCENT LAMPS: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Adhesive (item 2, Appx D)



### REMOVAL

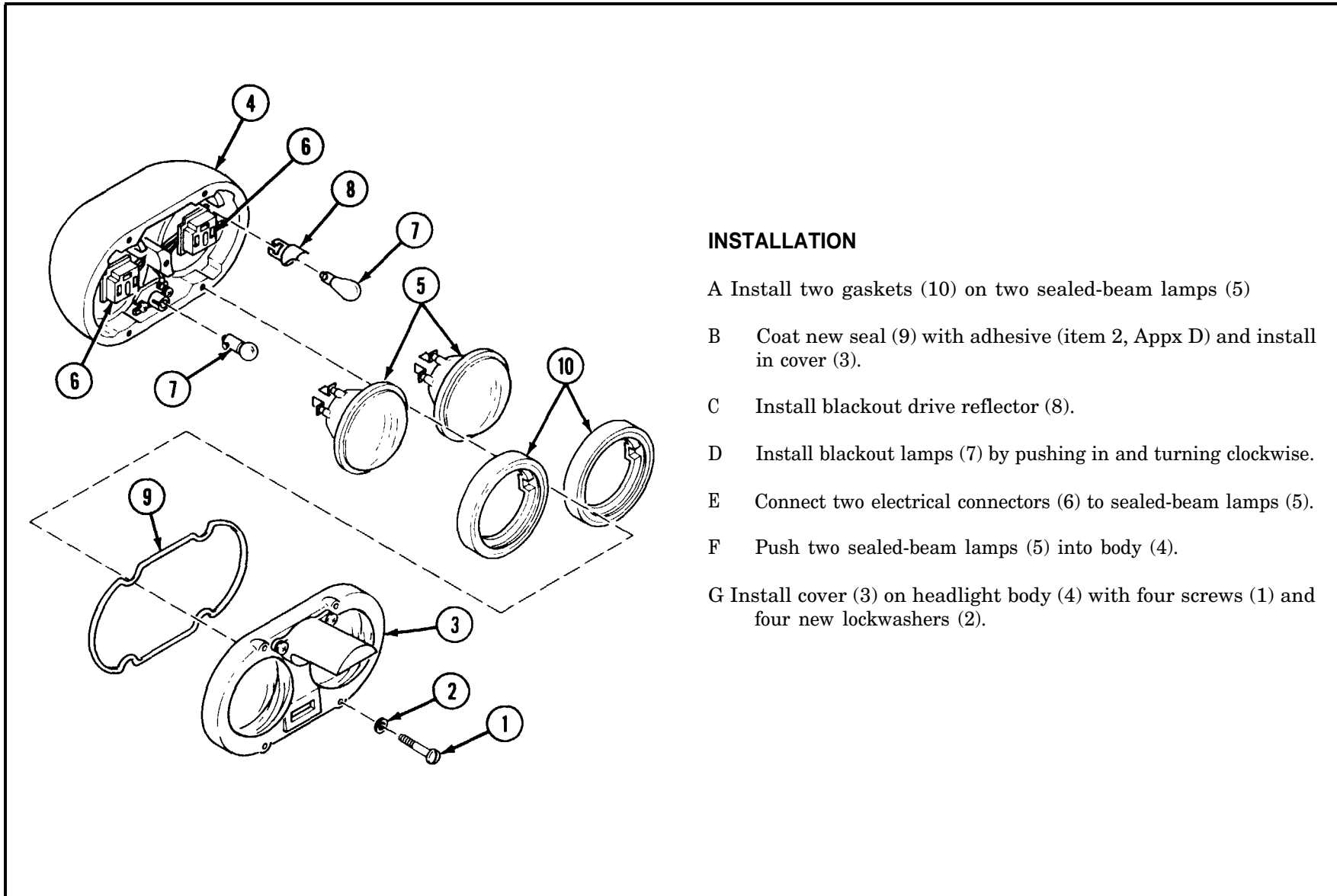
#### WARNING

Set MASTER switch OFF. Disconnect battery ground cables.

- A Remove four screws (1) and four lockwashers (2), and cover (3) from headlight body (4). Discard lockwashers.
- B Pull two sealed-beam lamps (5) out of body (4).
- C Disconnect two electrical connectors (6) from sealed-beam lamps (5).
- D Push in blackout lamps (7), turn counterclockwise and remove.
- E Pull out and remove blackout drive reflector (8).
- F Remove and discard seal (9) from cover (3).
- G Remove two gaskets (10) from two sealed-beam lamps (5). Discard gaskets if damaged.

TA312793

## HEADLIGHT SEALED-BEAM AND INCANDESCENT LAMPS: REMOVAL AND INSTALLATION (CONTINUED)



## HEADLIGHT ASSEMBLY: DISASSEMBLY AND ASSEMBLY

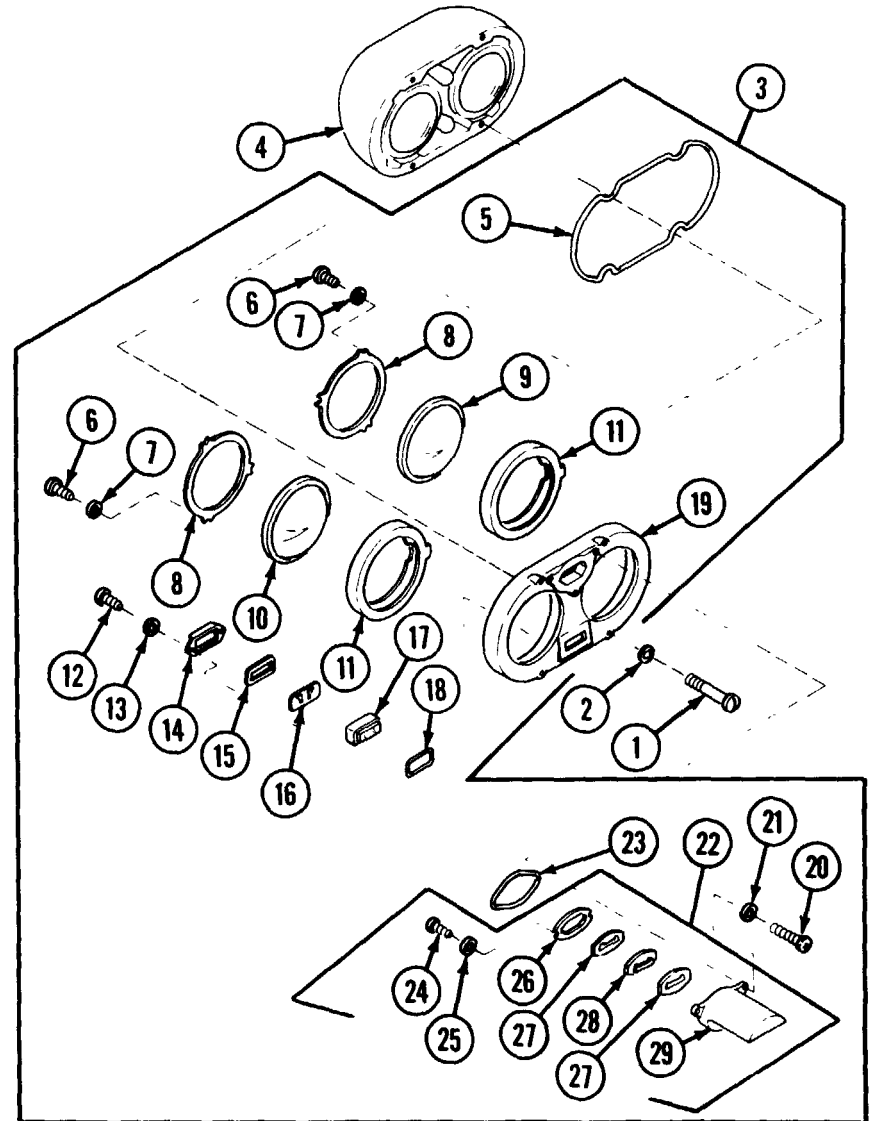
### INITIAL SETUP

#### Materials/Parts:

Dry film lubricant (item 33, Appx D)  
Adhesive (item 2, Appx D)  
Sealing compound (item 55, Appx D)

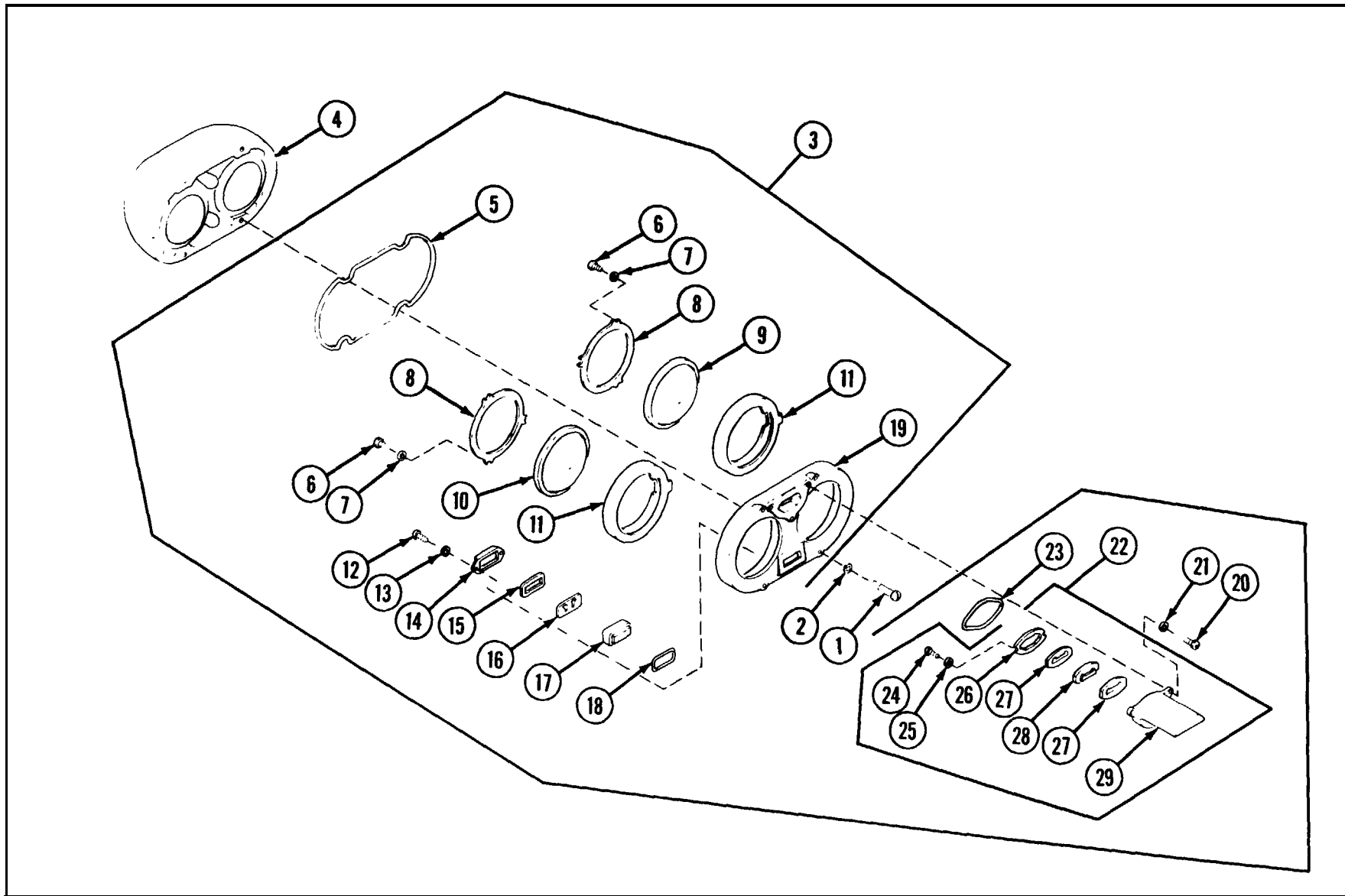
### DISASSEMBLY

- A Remove four screws (1), four lockwashers (2) and cover assembly (3) from body (4). Discard lockwashers.
- B Disassemble cover assembly (3) by removing seal (5), six screws (6), six lockwashers (7), two retainers (8), infrared lens (9), service headlight lens (10), two gaskets (11), two screws (12), two lockwashers (13), retainer (14), gasket (15), filter (16), lens (17) and gasket (18) from cover (19). Discard lockwashers. Discard gaskets and seal if damaged.
- C Remove three screws (20), three lockwashers (21) and light shield assembly (22). Discard lockwashers.
- D Remove gasket (23). Discard if damaged.
- E Disassemble light shield assembly (22) by removing two screws (24), two lockwashers (25), retainer (26), two gaskets (27) and lens (28) from shield (29). Discard lockwashers. Discard gaskets if damaged.



TA312795

HEADLIGHT ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



## HEADLIGHT ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)

### ASSEMBLY

- A Apply dry film lubricant (item 33, Appx D) between gasket (27) and shield (29).
- B Assemble light shield assembly (22) by installing lens (28), two gaskets (27), retainer (26), two new lockwashers (25) and two screws (24) in shield (29).
- C Coat gasket (23) with adhesive (item 2, Appx D) and install in shield assembly (22).
- D Install light shield assembly (22) with three screws (20) and three new lockwashers (21).
- E Coat gasket (18) with sealing compound (item 55, Appx D) and install in cover (19).
- F Install lens (17), filter (16), gasket (15) and retainer (14) on cover (19) with two new lockwashers (13) and two screws (12).

### NOTE

Make sure infrared lens is installed on left side looking forward.

- G Install two gaskets (11), **service** headlight lens (10), infrared lens (9) and two retainers (8) on cover (19) with six new lockwashers (7) and six screws (6).
- H Coat seal (5) with adhesive (item 2, Appx D) and install in cover (19).
- I Install cover assembly (3) on body (4) with four screws (1) and four new lockwashers (2).

### HEADLIGHT BODY: DISASSEMBLY AND ASSEMBLY

#### INITIAL SETUP

Test Equipment/Special Tools:

Solder iron (item 62, Appx B)

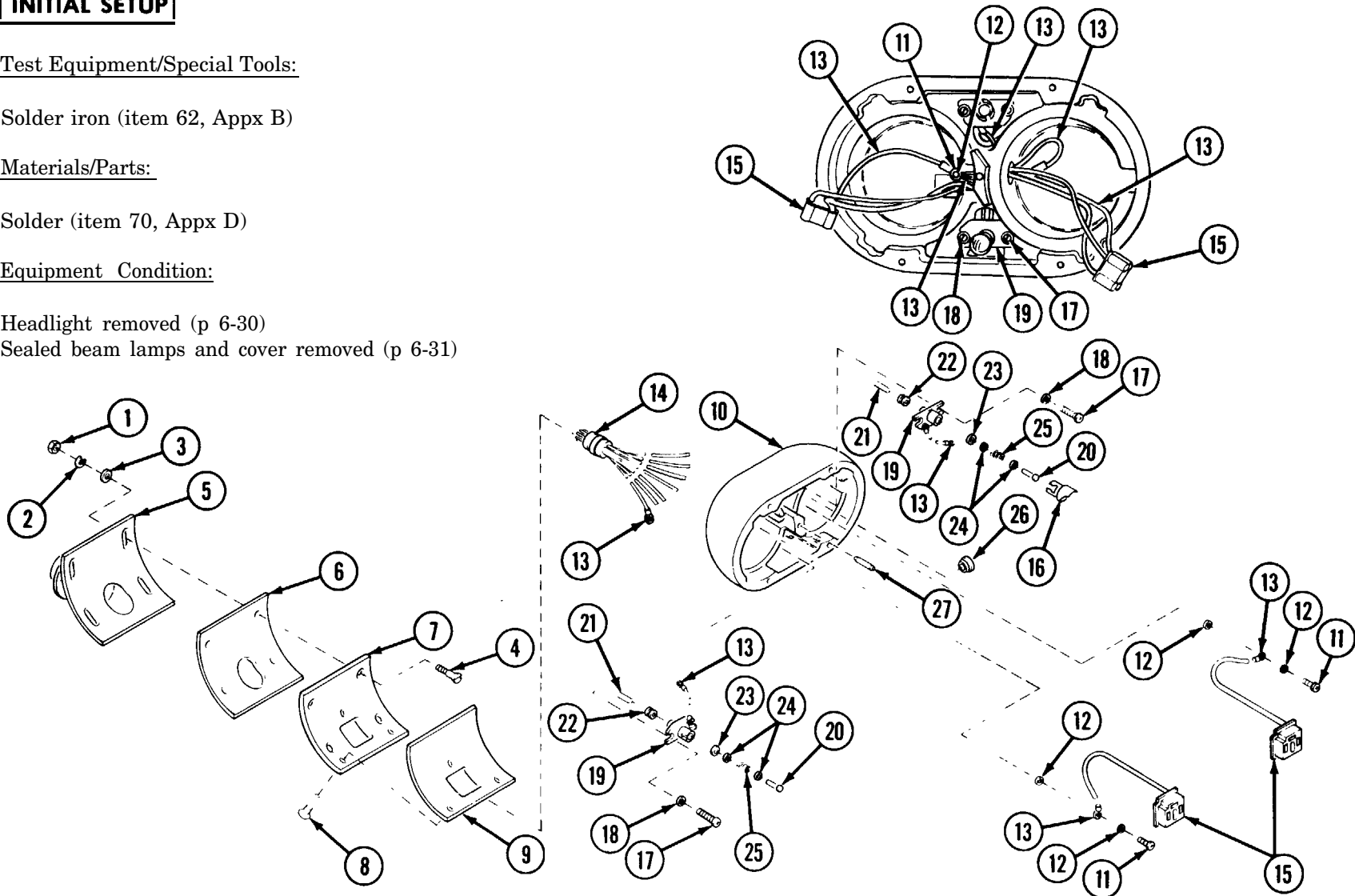
Materials/Parts:

Solder (item 70, Appx D)

Equipment Condition:

Headlight removed (p 6-30)

Sealed beam lamps and cover removed (p 6-31)





## HEADLIGHT BODY: DISASSEMBLY AND ASSEMBLY (CONTINUED)

### DISASSEMBLY

#### NOTE

Tag all electrical leads upon removal to ensure proper installation.

- A Remove four nuts (1), four lockwashers (2) and four flat washers (3) from four screws (4). Discard lockwashers.
- B Remove mounting bracket (5) and gasket (6) from plate (7). Discard gasket.
- c Remove three screws (8), plate (7), four screws (4) and gasket (9) from headlight body (10). Discard gasket.
- D Remove two screws (11) and four lockwashers (12) to release five ground leads (13). Discard lockwashers.
- E Remove four wiring harness (14) leads from two connectors (15) and remove connectors.
- F Remove reflector (16).
- G Remove four screws (17) and four lockwashers (18) to release two socket assemblies (19) from headlight body (10). Discard lockwashers.
- H Remove two wiring harness (14) leads from two tubular rivets (20). Discard rivets.
- I Remove wiring harness (14) lead, insulator (21), grommet (22), washer (23), two washers (24) and spring (25) from each of two socket assemblies (19). Discard insulator.
- J Remove wiring harness (14) from headlight body (10).

- K Remove grommet (26) and pin (27) from headlight body (10).

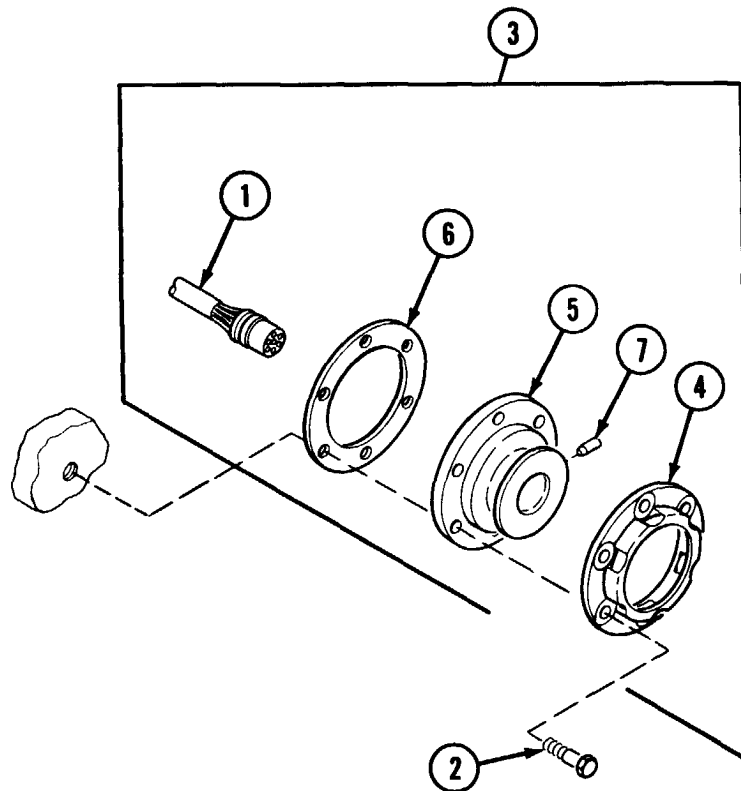
### ASSEMBLY

- A Install grommet (26) and pin (27) in headlight body (10).
- B Install wiring harness (14) through grommet (26) in headlight body (10).
- c Install new insulator (21), grommet (22), socket assembly (19), washer (23), one washer (24), spring (25) and one washer (24) on each of two wiring harness (14) leads.
- D Solder two new tubular rivets (20) to two wiring harness (14) leads.
- E Secure two socket assemblies (19) to headlight body (10) with four screws (17) and four new lockwashers (18).
- F Install reflector (16).
- G Install four wiring harness (14) leads to two connectors (15).
- H Secure five ground leads (13) to headlight body (10) with two screws (11) and four new lockwashers (12).
- I Install four screws (4) in plate (7).
- J Install plate (7) and new gasket (9) on headlight body (10) with three screws (8).
- K Install new gasket (6) and mounting bracket (5) on plate (7).
- L Install four flat washers (3), four new lockwashers (2) and four nuts (1) on four screws (4).

TA312799 ■



## HEADLIGHT MOUNT, DISASSEMBLY AND ASSEMBLY



### DISASSEMBLY

- A Unplug wiring harness (1).
- B Remove six screws (2).
- C Remove hull mount assembly (3).
- D Separate retainer (4), mount (5) and gasket (6). Discard gasket.
- E Remove pin (7).
- F Remove wiring harness (1) from headlight body wiring harness socket.

### ASSEMBLY

- A Install wiring harness (1) in headlight body wiring harness socket.
- B Install pin (7) in mount (5).
- C Install retainer (4), mount (5) and new gasket (6) on hull with six screws (2).
- D Plug in wiring harness (1).

## RIGHT TAILLAMP ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

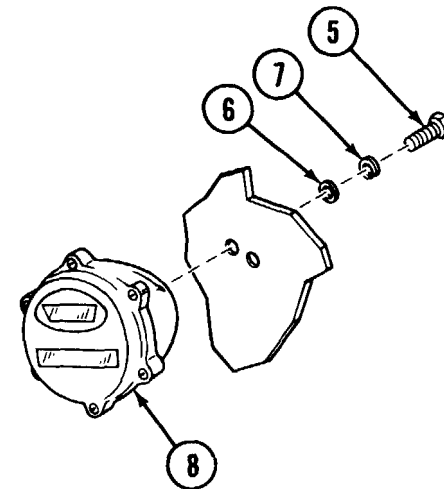
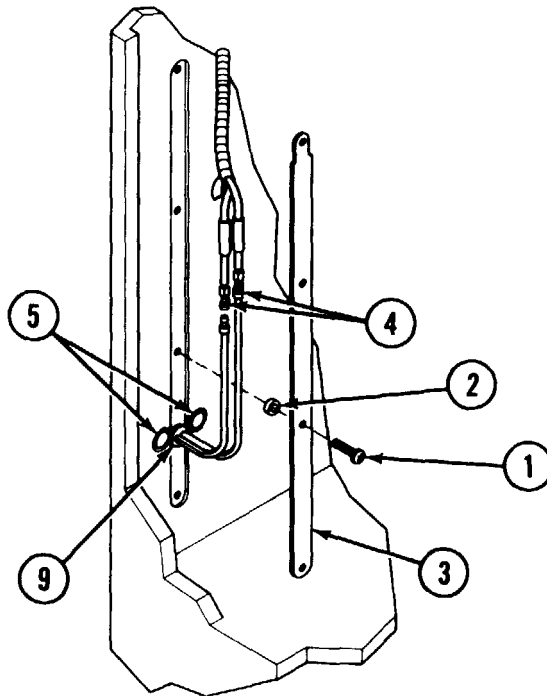
### INITIAL SETUP

#### Equipment Condition:

Battery ground cables disconnected (6-44).  
MASTER Switch OFF.

#### Personnel Required:

Two



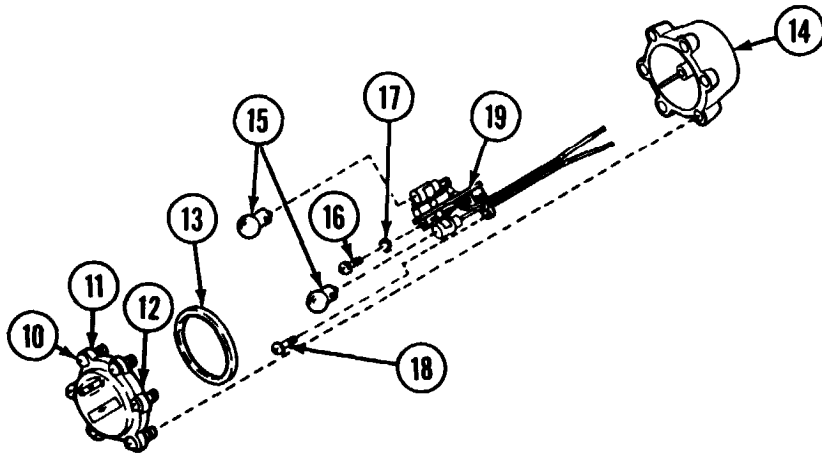
### REMOVAL

#### NOTE

Be careful that spacers do not fall during removal.

- A Remove four screws (1), four spacers (2) and cover plate (3) from vehicle crew compartment.
- B Disconnect two electrical leads (4).
- C Remove two screws (5), two flat washers (6) and two lockwashers (7). Discard lockwashers.
- D Remove taillight assembly (8), grommet (9) and electrical leads (4) from hull.

## RIGHT TAILLAMP ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### DISASSEMBLY

#### NOTE

Taillight does not have to be removed to service lamps.

- A Loosen six screws (10) with six retaining rings (11).
- B Separate door (12) and gasket (13) from body (14). Discard gasket.
- c Push in two lamps (15), turn counterclockwise and remove.
- D Remove two screws (16) and two lockwashers (17). Discard lockwashers.
- E Remove three screws (18) and lamp holder (19) from body (14).

### ASSEMBLY

- A Position new lamp holder (19) in body (14) and secure with three screws (18).
- B Install two screws (16) and two new lockwashers (17).
- C Install lamps (15) and turn clockwise until seated.
- D Install door (12) and new gasket (13) with six screws (10) and six retaining rings (11).

### INSTALLATION

- A Install leads (4) through grommet (9) and hull.
- B Install taillight assembly (8) with two screws (5), two flat washers (6), and two new lockwashers (7).
- C Connect two electrical leads (4).
- D Install four spacers (2), cover plate (3) and four screws (1).

## LEFT TAILLAMP ASSEMBLY, REMOVAL, DISASSEMBLE, REPAIR, ASSEMBLY AND INSTALLATION

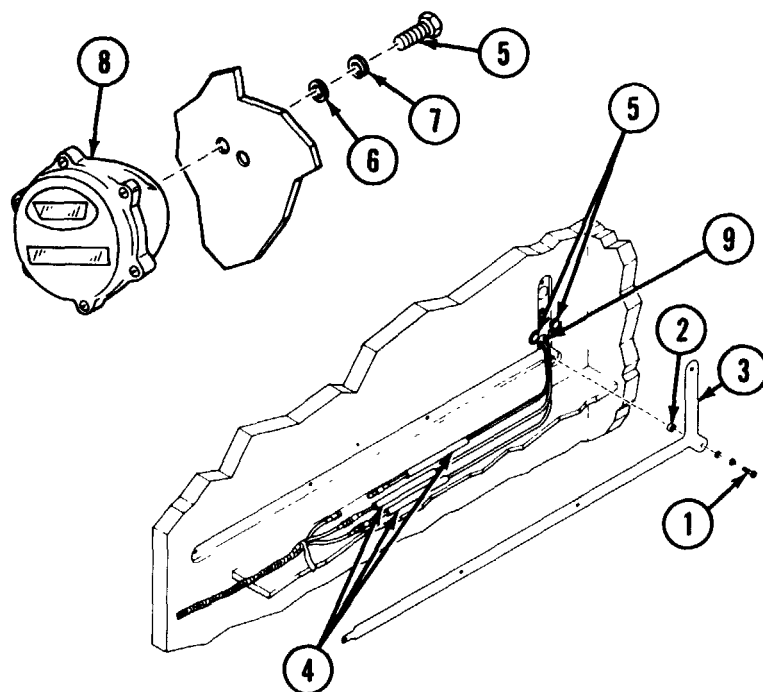
### INITIAL SETUP

#### Personnel Required:

Two

#### Equipment Condition:

Left canister guard removed (p 11-16).  
 MASTER switch OFF.  
 Battery ground cables disconnected (6-44).



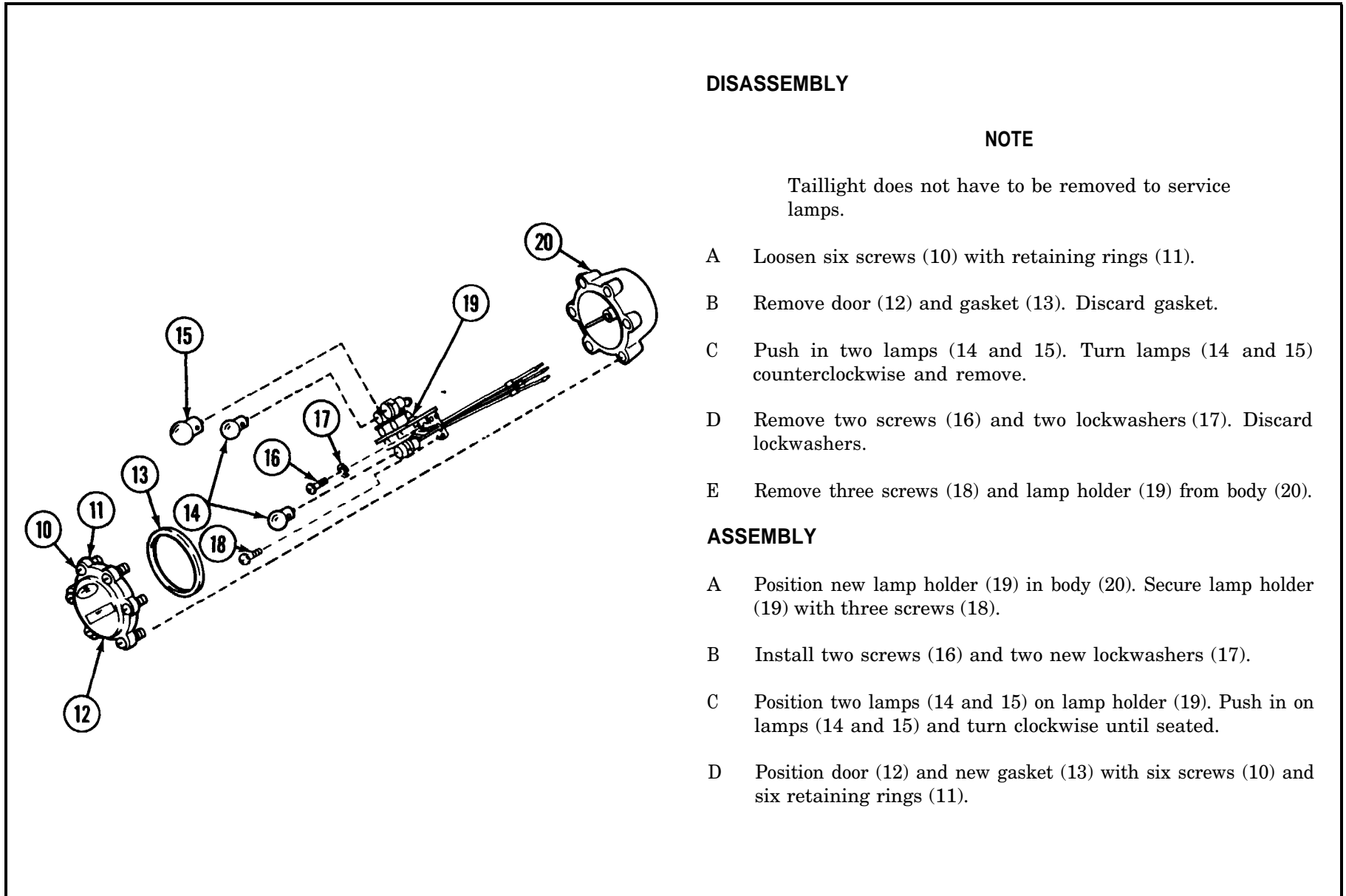
### REMOVAL

#### NOTE

Be careful that spacers do not fall during removal.

- A Remove five screws (1), five spacers (2), and cover plate (3).
- B Disconnect three electrical leads (4).
- C Remove two screws (5), two flat washers (6) and two lockwashers (7). Discard lockwashers.
- D Remove taillight assembly (8), grommet (9) and electrical leads (4).

## LEFT TAILLAMP ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### DISASSEMBLY

#### NOTE

Taillight does not have to be removed to service lamps.

- A Loosen six screws (10) with retaining rings (11).
- B Remove door (12) and gasket (13). Discard gasket.
- C Push in two lamps (14 and 15). Turn lamps (14 and 15) counterclockwise and remove.
- D Remove two screws (16) and two lockwashers (17). Discard lockwashers.
- E Remove three screws (18) and lamp holder (19) from body (20).

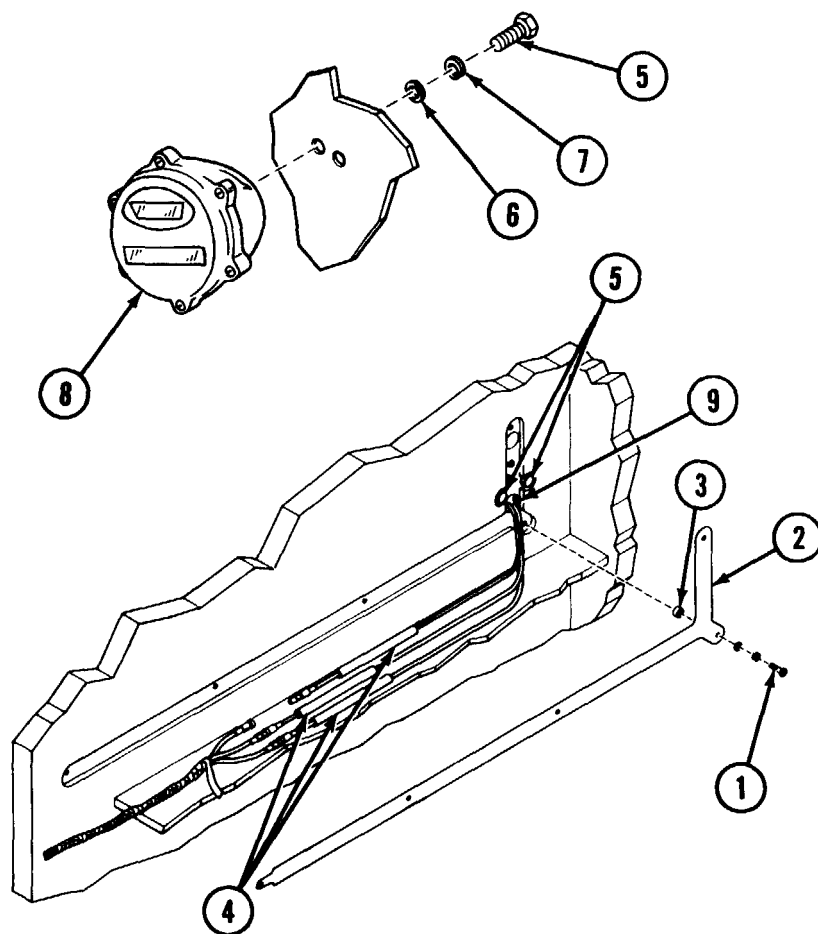
### ASSEMBLY

- A Position new lamp holder (19) in body (20). Secure lamp holder (19) with three screws (18).
- B Install two screws (16) and two new lockwashers (17).
- C Position two lamps (14 and 15) on lamp holder (19). Push in on lamps (14 and 15) and turn clockwise until seated.
- D Position door (12) and new gasket (13) with six screws (10) and six retaining rings (11).





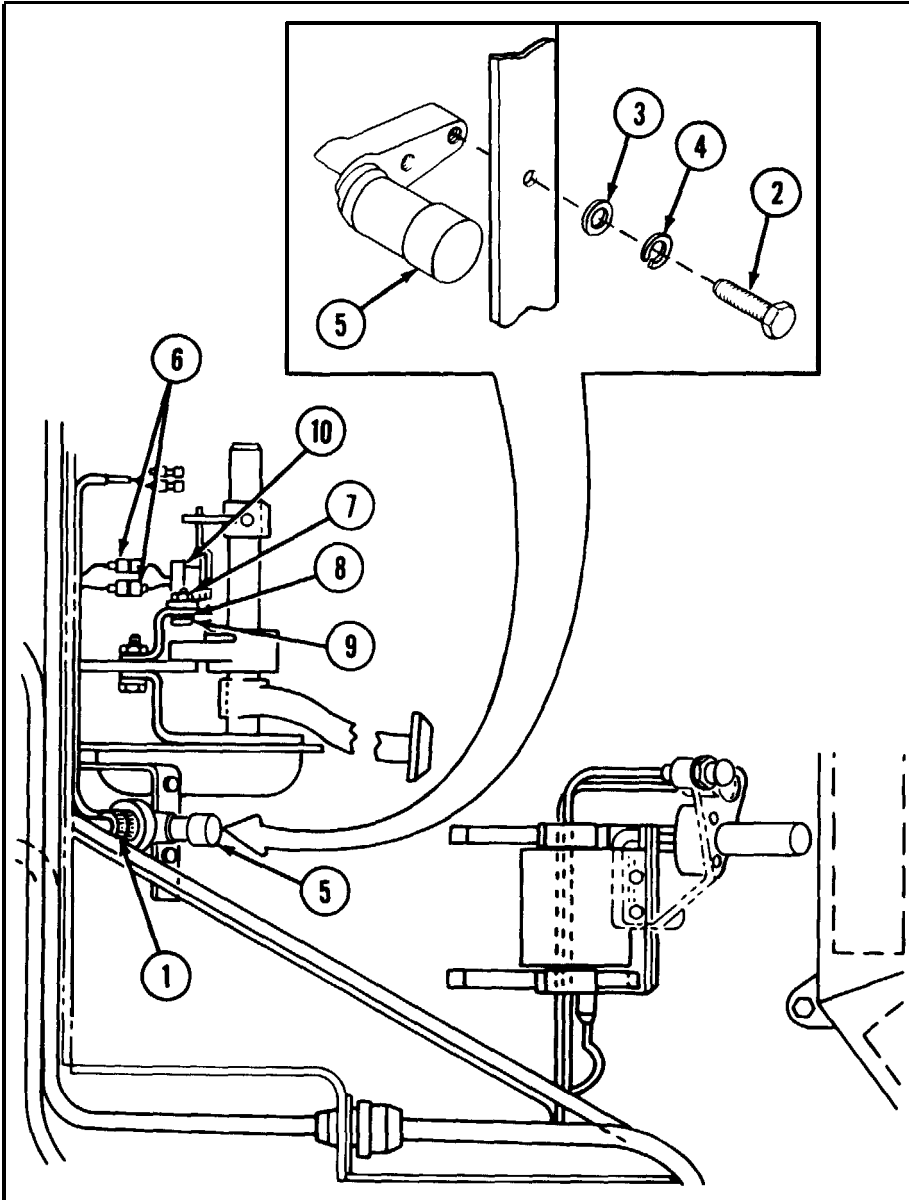
## LEFT TAILLAMP ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### INSTALLATION

- A Install leads (4) through grommet (9) and hull.
- B Install taillight assembly (8) with two screws (5), two flat washers (6) and two new lockwashers (7).
- C Connect three electrical leads (4).
- D Install cover plate (3), five spacers (2), and five screws (1).

**HEADLIGHT DIMMER AND STOPLIGHT SWITCHES: REMOVAL, INSTALLATION AND ADJUSTMENT**



**REMOVAL**

**WARNING**

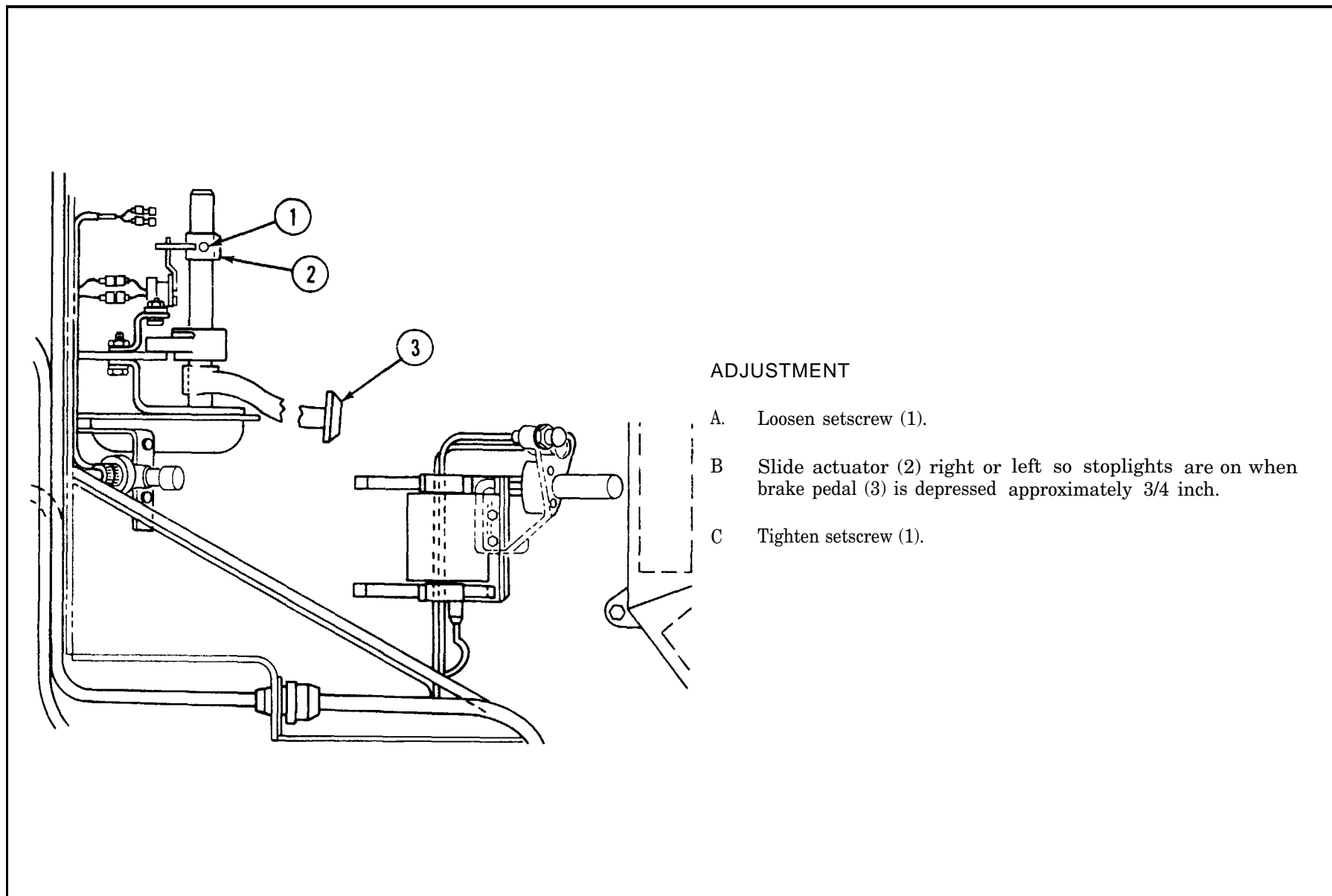
Turn OFF MASTER switch. Disconnect battery cables.

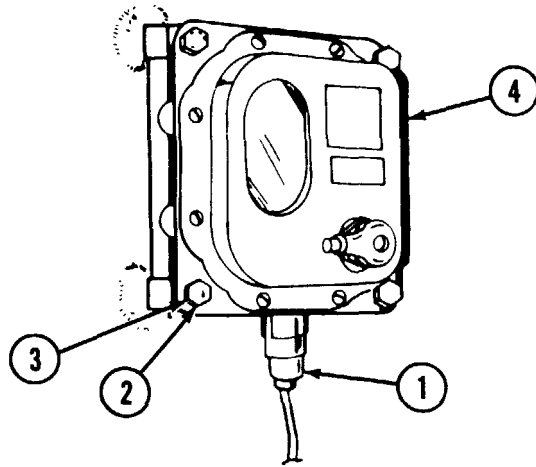
- A Disconnect electrical plug (1).
- B Remove two screws (2), two flat washers (3) and two lockwashers (4).
- C Remove dimmer switch (5).
- D Disconnect two electrical connectors (6).
- E Remove two nuts (7), two washers (8) and two screws (9).
- F Remove stoplight switch (10).

**INSTALLATION**

Reverse removal procedures.

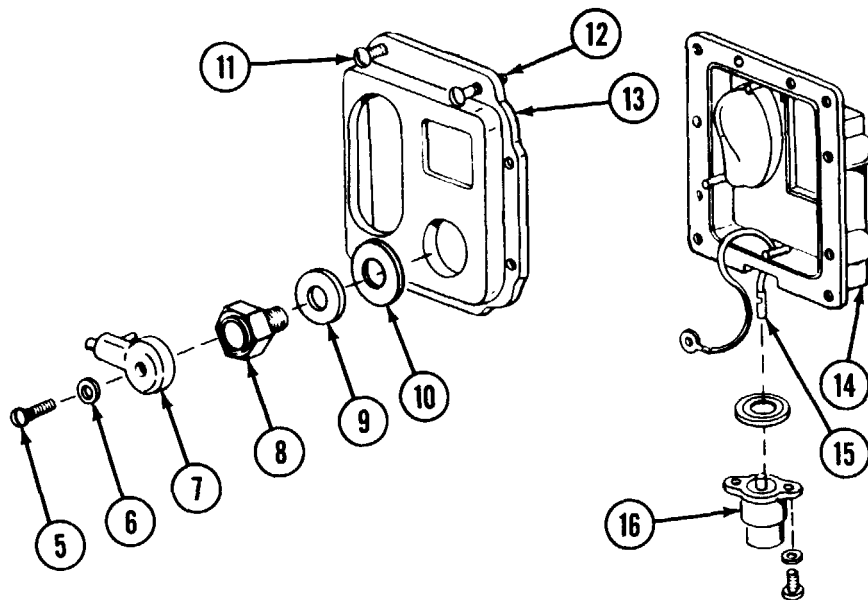
## HEADLIGHT DIMMER AND STOPLIGHT SWITCHES: REMOVAL, INSTALLATION AND ADJUSTMENT (CONTINUED)



**DOMELIGHT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION****REMOVAL****WARNING**

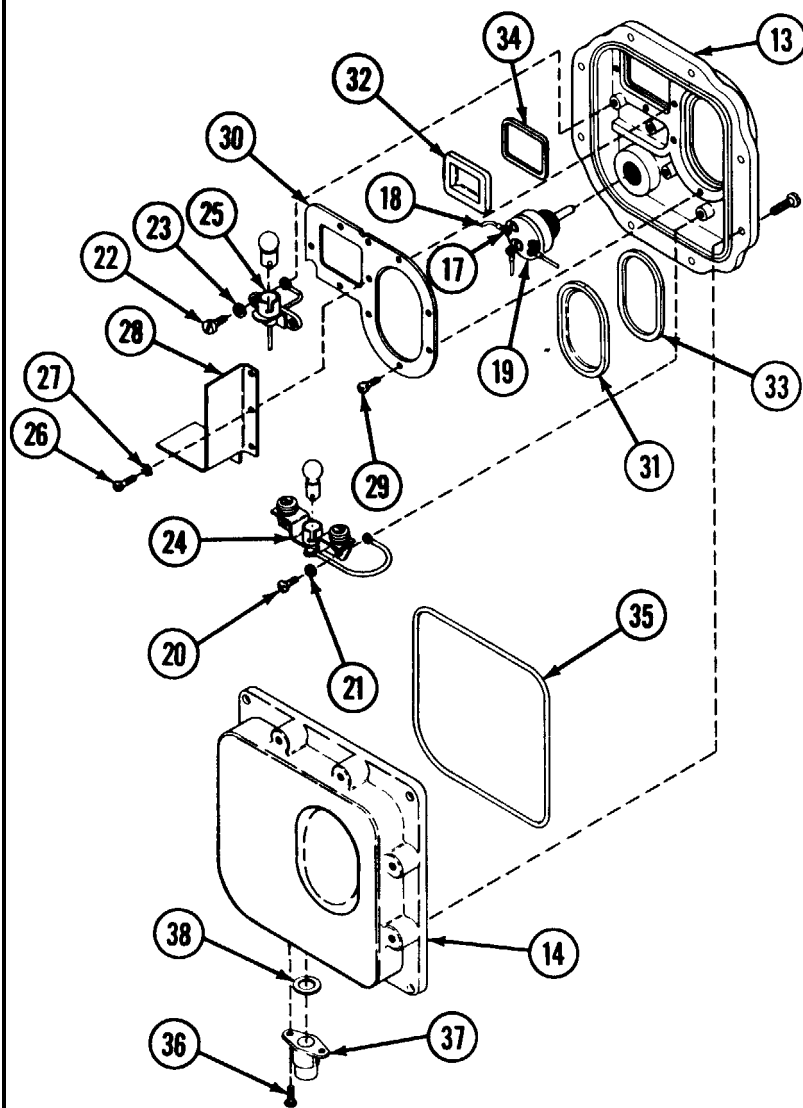
Turn OFF MASTER switch. Disconnect battery ground cables.

- A Disconnect electrical lead (1).
- B Remove four screws (2) and four lockwashers (3) and dome light (4).

**DISASSEMBLY**

- A Remove screw (5), lockwasher (6), switch knob (7), nut (8), gasket (9) and flat washer (10).
- B Loosen eight screws (11) with retaining rings (12).
- C Separate dome light door assembly (13) from light body (14).
- D Disconnect electrical lead (15) from connector assembly (16).
- E Remove door assembly (13) from body (14).

## DOMELIGHT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



F Remove three screws (17) and three electrical leads (18) from switch (19).

G Remove switch (19).

H Remove two crosspoint screws (20), two lockwashers (21), two screws (22), two flat washers (23) and lamp assemblies (24 and 25) from door (13).

I Remove four crosspoint screws (26), four lockwashers (27) and partition (28).

J Remove four crosspoint screws (29), plate (30), lens (31), lens (32), gaskets (33, 34 and 35) from door assembly (13).

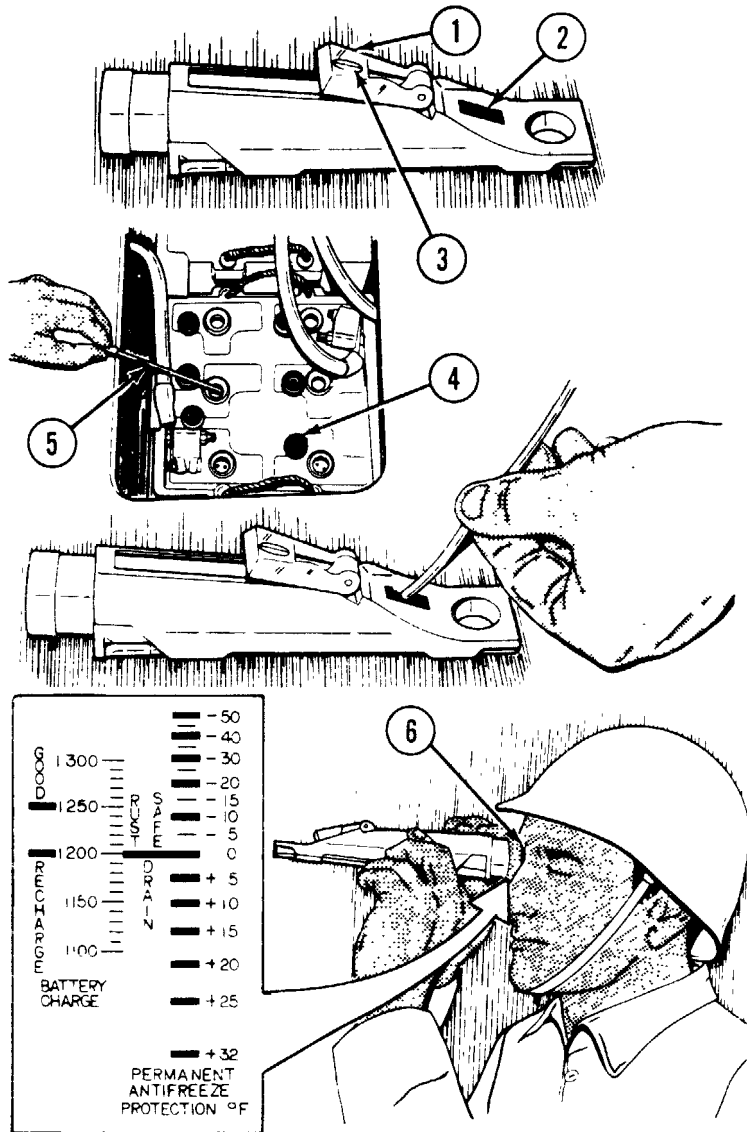
K Remove two crosspoint screws (36), connector assembly (37) and grommet (38) from dome light body (14).

### ASSEMBLY

Reverse disassembly procedures.

### INSTALLATION

Reverse removal procedures.

**BATTERIES: BATTERY SPECIFIC GRAVITY CHECK, REMOVAL AND INSTALLATION**

**SPECIFIC GRAVITY CHECK**
**WARNING**

Set MASTER switch OFF. When working on batteries, wear eye protection, remove all jewelry, dog tags and metal items.

**CAUTION**

When removing batteries always disconnect ground cables first.

A Swing plastic cover (1) back on duo-check coolant and battery tester. Clean measuring surface (2) and bottom cover (3) with clean soft cloth (item 16, Appx D).

B Remove battery caps (4) from all cells.

**NOTE**

Repeat steps B through D for each cell.

C Use black dipstick (5) to obtain small sample of battery acid.

D Place few drops of acid onto measuring surface (2) through opening in cover plate.

**BATTERIES: BATTERY SPECIFIC GRAVITY CHECK, REMOVAL AND INSTALLATION (CONTINUED)**

**WARNING**

Do not look into the infrared (blackout) light. If using headlight as a light source, look into white light only. Infrared light can damage the eyes.

- E Point instrument toward any light source (headlight) and look into eyepiece (6). Battery charge is at point on left-hand part of scale where dividing line between light and dark (shadow) crosses line.

**NOTE**

A little experience will enable you to obtain quickly the best contrast between light and dark positions of field of view. Tilt instrument toward light source until best results are obtained. If edge of shadow is not sharp, measuring surface was not sufficiently cleaned or dried.

## BATTERIES: REMOVAL AND INSTALLATION

### INITIAL SETUP

Equipment Condition:

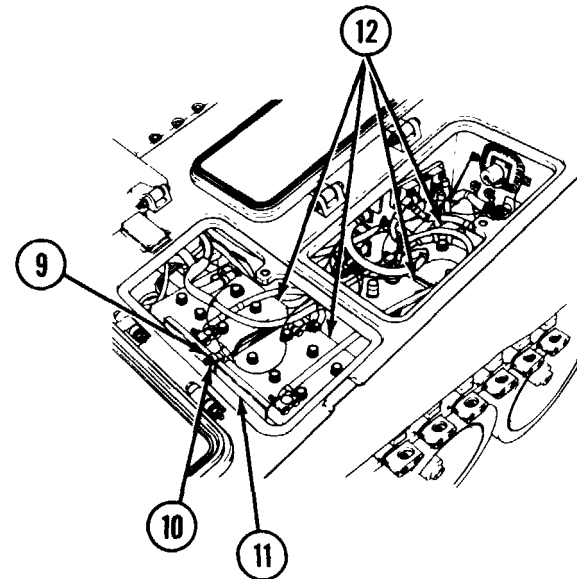
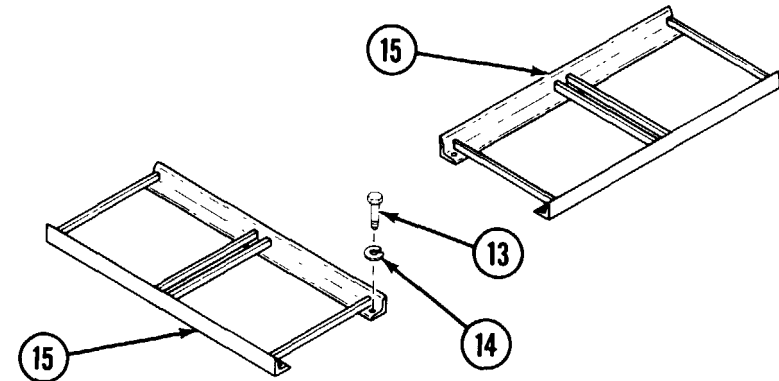
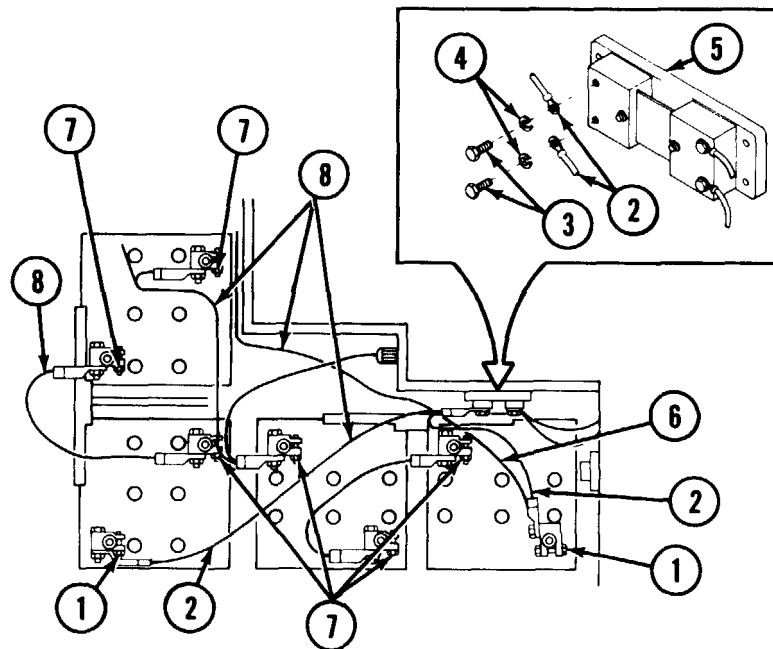
MASTER switch OFF

General Safety Instructions:

Make sure MASTER switch is OFF.

Wear eye protection.

Remove all jewelry, dog tags and metal items.





## BATTERIES: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### WARNING

When removing batteries, always disconnect ground cables first. Failure to do so may result in personnel injury or death.

#### WARNING

Batteries can emit gases that explode. Do not smoke, have open flame, or make sparks around batteries. If the battery is emitting gases, it can explode, causing death or personal injury.

#### WARNING

Batteries contain sulfuric acid which can cause severe burns. Avoid contact with skin, eyes, or clothing, and remove all metal or jewelry. If battery electrolyte is spilled, stop its burning effects immediately (ref. FM21-11).

#### NOTE

Remove cables with terminal lugs attached

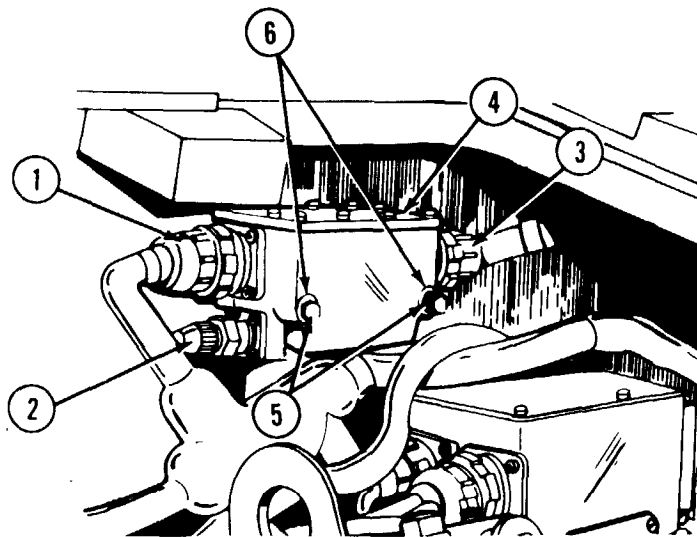
- A Loosen two nuts (1) and remove two ground cables (2) from battery terminals.
- B Remove two screws (3), two lockwashers (4) and two ground cables (2) from shunt (5). Discard lockwashers.
- C Disconnect STE/ICE wire (6).
- D Loosen six nuts (7) and remove four cables (8) from battery terminals.
- E Remove two nuts (9) and two washers (10), and remove two hold-down brackets (11).
- F Lift out batteries (12).
- G Remove eight screws (13), eight lockwashers (14) and two battery trays (15). Discard lockwashers.

### INSTALLATION

- A Install eight screws (13), eight new lockwashers (14) and two battery trays (15).
- B Install batteries (12).
- c Install two nuts (9), two washers (10), and two hold-down brackets (11).
- D Install four cables (8) to battery terminals and tighten six nuts (7).
- E Connect STE/ICE wire (6).
- F Install two screws (3), two new lockwashers (4) and two ground cables (2) to shunt (5).
- G Install two ground cables (2) to battery terminals and tighten two nuts (1).



## MASTER RELAY BOX: REMOVAL AND INSTALLATION



### REMOVAL

#### **WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

- A Disconnect starter cable (1), master switch cable (2) and battery cable (3) from master relay box (4).
- B Remove two screws (5) and washers (6).
- C Remove master relay box (4).

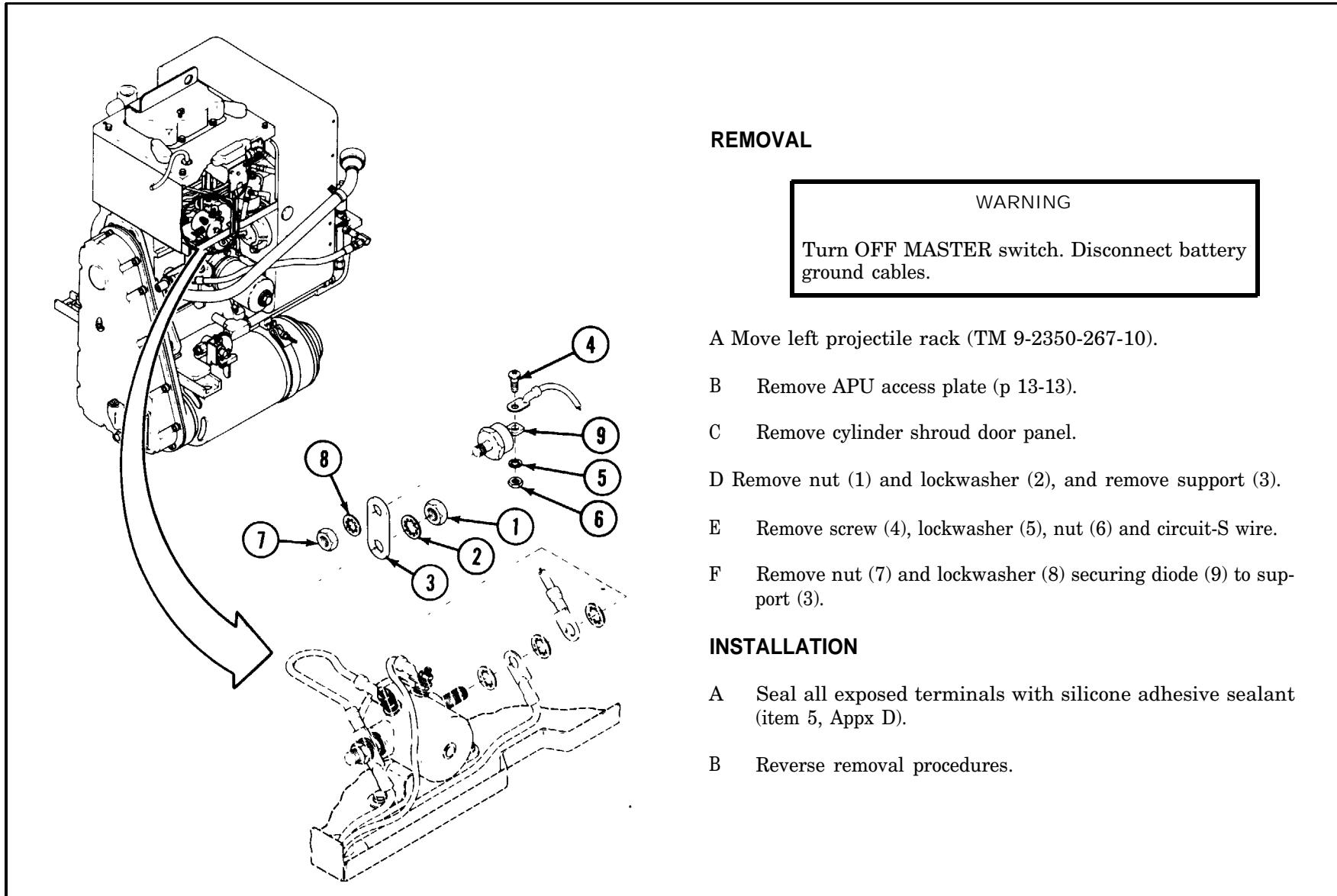
### INSTALLATION

Reverse removal procedures.





## APU DIODE: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

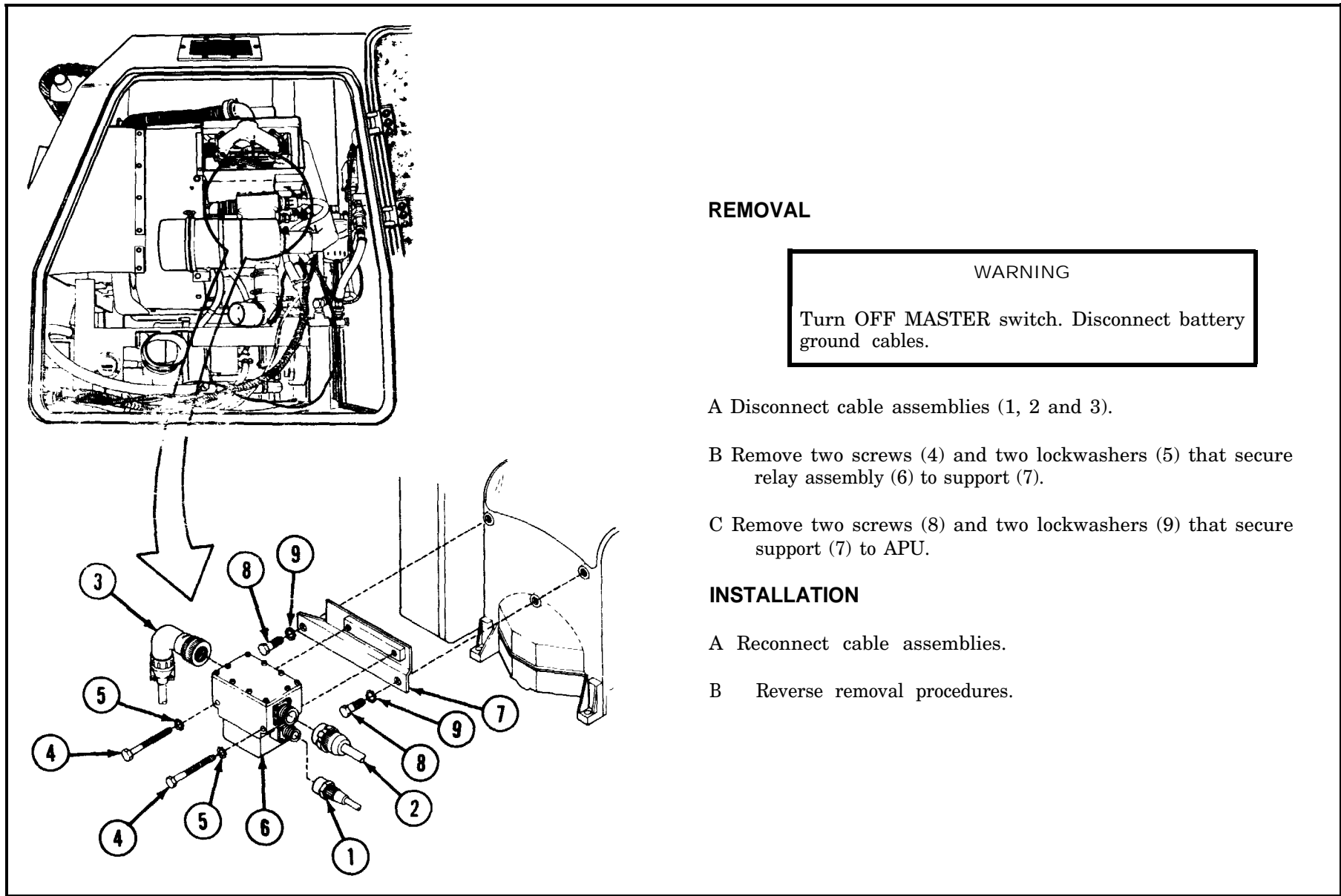
Turn OFF MASTER switch. Disconnect battery ground cables.

- A Move left projectile rack (TM 9-2350-267-10).
- B Remove APU access plate (p 13-13).
- C Remove cylinder shroud door panel.
- D Remove nut (1) and lockwasher (2), and remove support (3).
- E Remove screw (4), lockwasher (5), nut (6) and circuit-S wire.
- F Remove nut (7) and lockwasher (8) securing diode (9) to support (3).

### INSTALLATION

- A Seal all exposed terminals with silicone adhesive sealant (item 5, Appx D).
- B Reverse removal procedures.

## APU STARTER RELAY: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

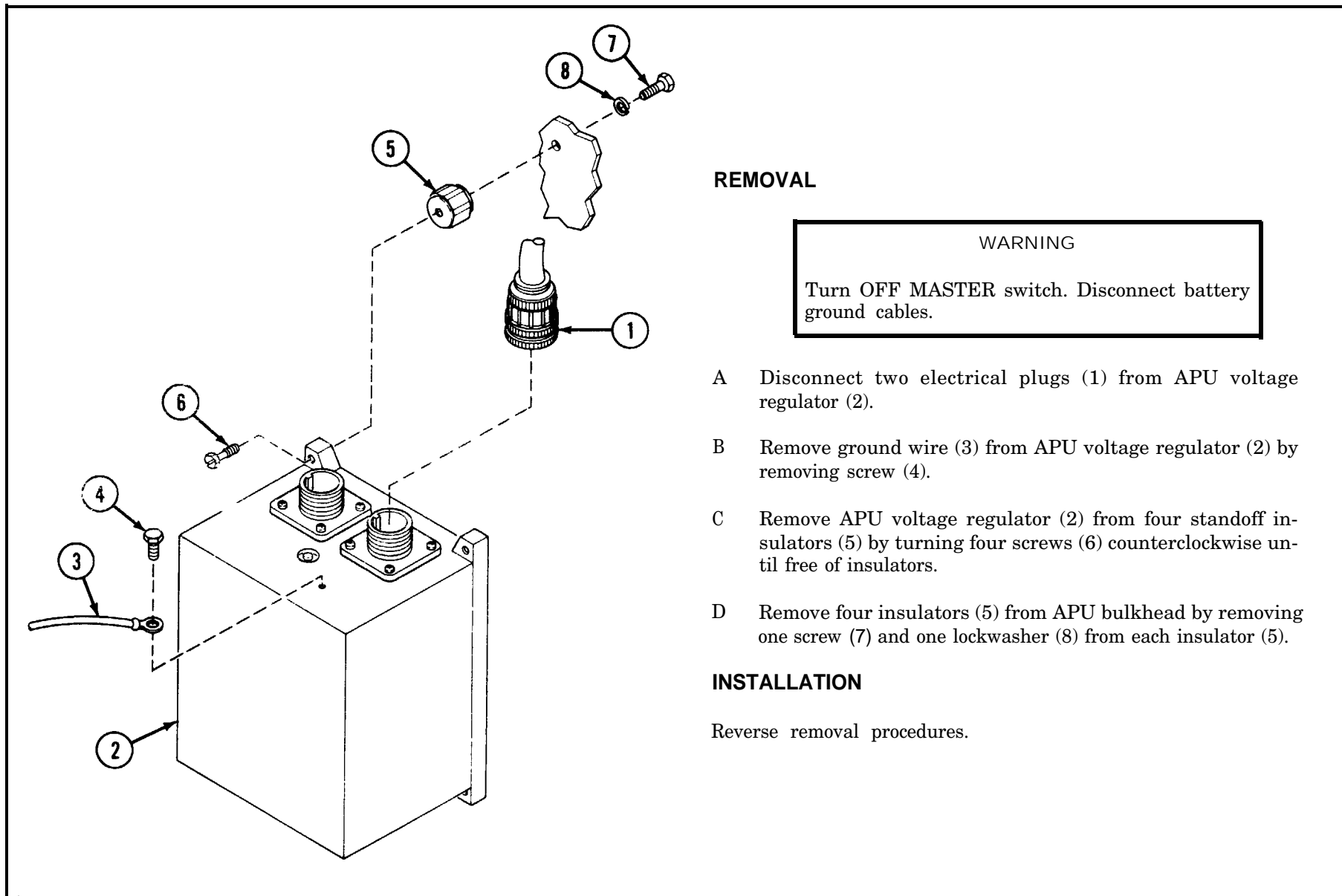
Turn OFF MASTER switch. Disconnect battery ground cables.

- A Disconnect cable assemblies (1, 2 and 3).
- B Remove two screws (4) and two lockwashers (5) that secure relay assembly (6) to support (7).
- C Remove two screws (8) and two lockwashers (9) that secure support (7) to APU.

### INSTALLATION

- A Reconnect cable assemblies.
- B Reverse removal procedures.

## APU VOLTAGE REGULATOR: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

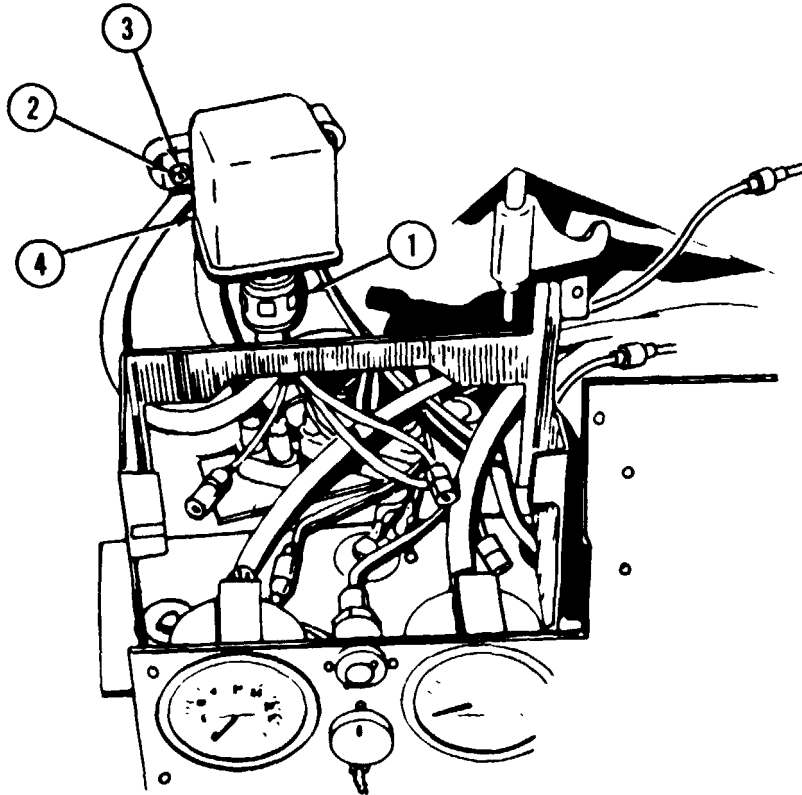
- A Disconnect two electrical plugs (1) from APU voltage regulator (2).
- B Remove ground wire (3) from APU voltage regulator (2) by removing screw (4).
- C Remove APU voltage regulator (2) from four standoff insulators (5) by turning four screws (6) counterclockwise until free of insulators.
- D Remove four insulators (5) from APU bulkhead by removing one screw (7) and one lockwasher (8) from each insulator (5).

### INSTALLATION

Reverse removal procedures.



## AIR CLEANER BLOWER MOTOR RELAY: REMOVAL AND INSTALLATION



DRIVER'S COMPARTMENT  
(INSTRUMENT PANEL)

### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

- A Remove driver's portable instrument panel (p 6-19).
- B Disconnect electrical connector (1).
- C Remove three nuts (2) and three washers (3).
- D Remove air cleaner blower relay (4).

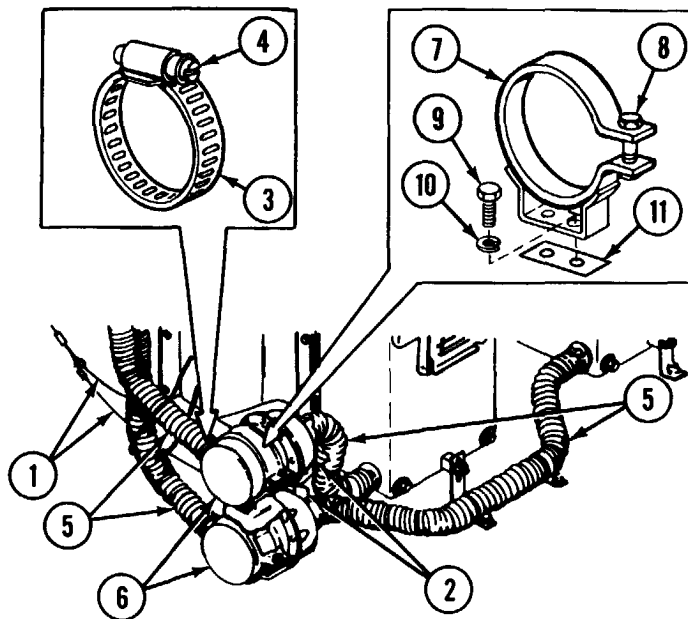
### INSTALLATION

Reverse removal procedures.

## AIR CLEANER BLOWER MOTORS: REMOVAL AND INSTALLATION

**INITIAL SETUP**References:

TM 9-2350-267-10



CREW COMPARTMENT  
(HULL FORWARD BULKHEAD)

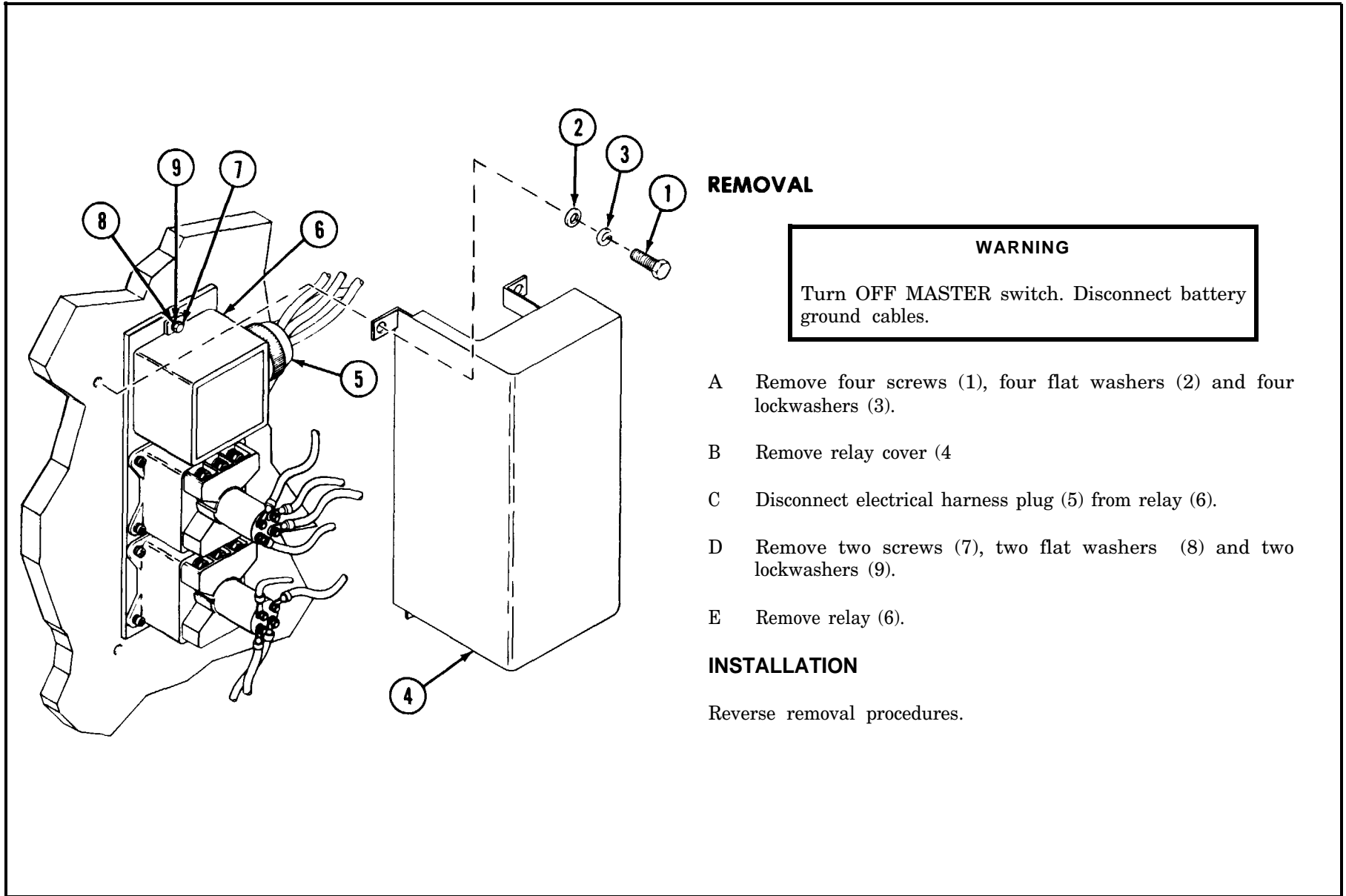
**REMOVAL**

- A Move right projectile rack to rear of vehicle (TM 9-2350-267-10).
- B Disconnect two electrical leads (1) and two ground leads (2).
- C Loosen four clamps (3) by turning four screws (4).
- D Disconnect four hoses (5) from blower motors (6).
- E Loosen two clamps (7) by turning two screws (8).
- F Pull two blower motors (6) out of two clamps (7) and remove.
- G Remove two clamps (7) by removing from each; two screws (9), two lockwashers (10) and gasket (11). Discard lockwashers and gaskets.

**INSTALLATION**

- A Install two clamps (7) with new gasket (11), two screws (9) and two new lockwashers (10).
- B Install two blower motors (6) in two clamps (7) and secure by tightening two screws (8).
- C Connect four hoses (5) to blower motors (6).
- D Tighten four clamps (3) by turning four screws (4).
- E Connect two ground leads (2) and two electrical leads (1).
- F Move right projectile rack to front of vehicle (TM 9-2350-267-10).

## VENTILATION BLOWER RELAY: REMOVAL AND INSTALLATION



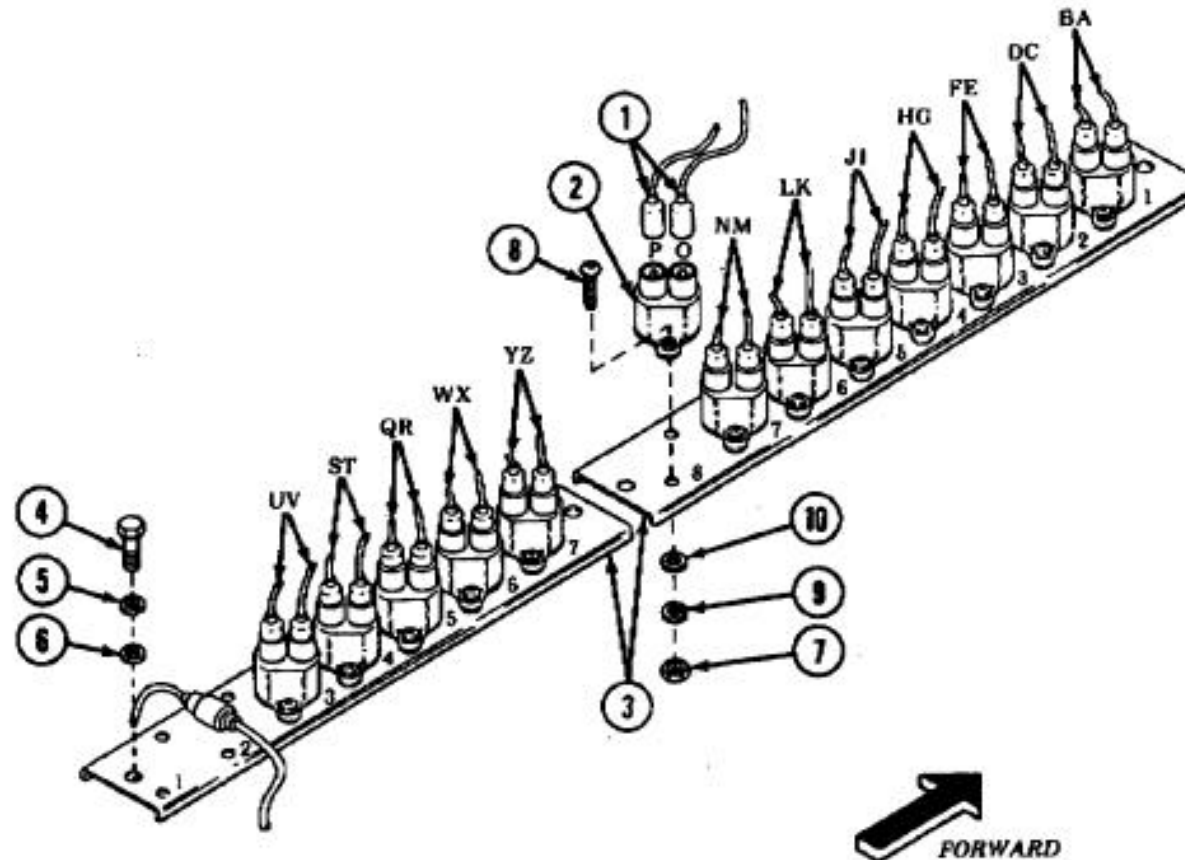
TA311084

## CIRCUIT BREAKER PANELS AND CIRCUIT BREAKERS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

## LEGEND

- A - Harness, 12330252, wire 37-38
- B - Harness, 12330257, wire 10A
- C - Harness, 12268104, wire 450
- D - Harness, 12330257, wire 10B
- E - Harness, 12260287, wire 27
- F - Harness, 12330257, wire 10C
- G - Harness, 12268104, wire 458
- H - Harness, 12330257, wire 10D
- I - Harness, 12330252, wire 76
- J - Harness, 12330257, wire 10E
- K - Harness, 12351544, wire 415
- L - Lead, 11682358, wire 415
- M - Harness, 12268104, wire 10
- N - Harness, 12330257, wire 10F
- O - Harness, 12330252, wire 419
- P - Harness, 12330257, wire 10G
- Q - Harness, 12330257, wire 10J
- R - Harness, 12330252, wire 38, 27, 40
- S - Harness, 12330257, wire 10K
- T - Harness, 12330252, wire 10
- U - Harness, 12351531, wire 10M
- V - Harness, 12351461, wire 10
- W - Harness, 12351754, wire 10
- X - Harness, 12351461, wire 10A
- Y - Harness, 12330257, wire 10H
- Z - Harness, 12330316, wire 10

- 1 Harness electrical connectors
- 2 Circuit breaker (13)
- 3 Circuit breaker panels (2)
- 4 Screw (4)
- 5 Lockwasher (4)
- 6 Flat washer (4)
- 7 Nuts (26)
- 8 Screw (26)
- 9 Lockwashers (26)
- 10 Flat washers (26)



## CIRCUIT BREAKER PANELS AND CIRCUIT BREAKERS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### INITIAL SETUP

#### Equipment Condition:

Battery ground cables disconnected (6-44).  
MASTER switch OFF.  
Portable instrument panel removed (p 6-19).  
Driver's instrument panel removed (p 6-19).

### REMOVAL

- A Disconnect 26 electrical leads (1) from 13 circuit breakers (2).
- B Remove two panels (3) from driver's compartment by removing four screws (4), four lockwashers (5) and four flat washers (6). Discard lockwashers.

### DISASSEMBLY

Remove circuit breakers (2) from panels (3) by removing two nuts (7), two screws (8), two lockwashers (9) and two flat washers (10). Discard lockwashers.

### ASSEMBLY

Install circuit breakers (2) to panels (3) by installing two nuts (7), two screws (8), two new lockwashers (9) and two flat washers (10).

### INSTALLATION

- A Install four screws (4), four new lockwashers (5), two flat washers (6) and two panels (3) to driver's compartment.
- B Install 26 electrical leads (1) to 13 circuit breakers (2).

## NATO INTERVEHICLE SLAVE CONNECTOR: REMOVAL AND INSTALLATION

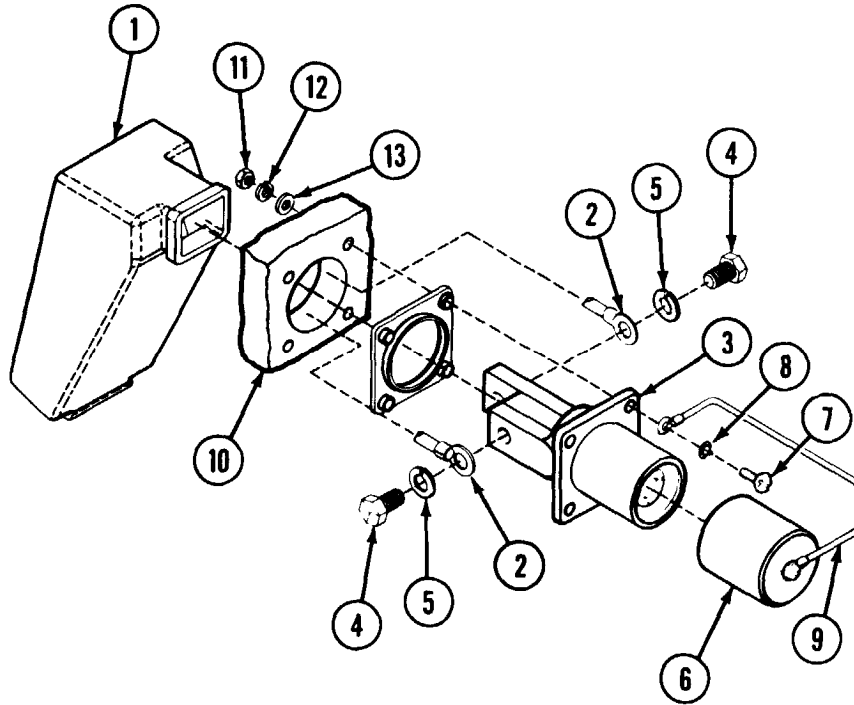
### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

#### NOTE

The following procedures apply to both battery compartment and rear plate mounted intervehicle slave connectors.



- A Pull back rubber boot (1) to expose electrical leads (2).
- B Disconnect two electrical leads (2) from connector (3) by removing from each lead, one screw (4) and one lockwasher (5).
- C Remove rubber boot (1).
- D Pull off cover (6) from connector (3).
- E For rear NATO receptacle, remove four screws (7) and four lockwashers (8) that secure cord (9) and connector (3) to hull rear plate (10).

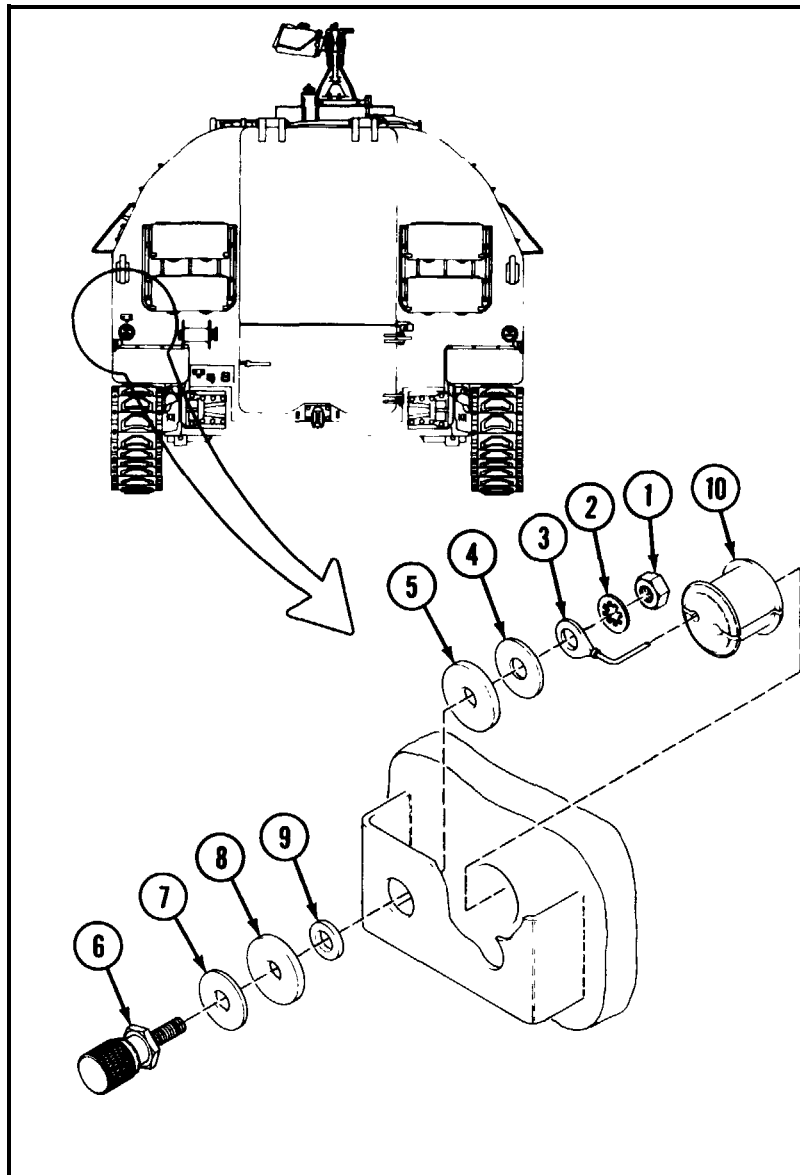
or

For battery compartment NATO receptacle, remove four screws (7), four nuts (11), four lockwashers (12), four flat washers (13) and cord (9) from rear plate (10).

### INSTALLATION

Reverse removal procedures.

## INTERCOM TERMINALS: REMOVAL AND INSTALLATION



### NOTE

Removal and installation procedures for both intercom terminals are identical.

### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

- A Remove nut (1) and lockwasher (2). Discard lockwasher.
- B Remove cable (3), flat washer (4) and nonmetallic washer (5).
- C Remove telephone terminal (6), flat washer (7), nonmetallic washer (8), flat washer (9) and grommet (10). Discard nonmetallic washer.

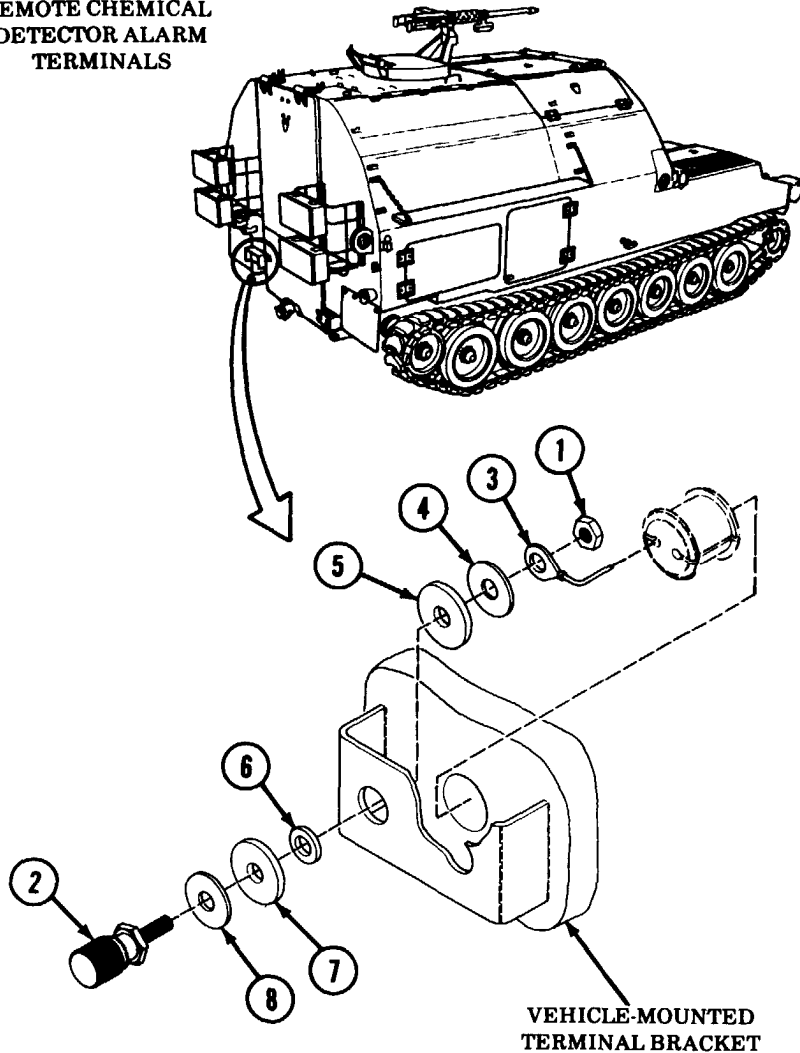
### INSTALLATION

- A Install telephone terminal (6) with grommet (10), flat washer (9), new nonmetallic washer (8) and flat washer (7).
- B Install cable (3) with new nonmetallic washer (5) and flat washer (4).
- C Install new lockwasher (2) and nut (1).

TA312802

## REMOTE CHEMICAL DETECTOR ALARM TERMINALS: REMOVAL AND INSTALLATION

### REMOTE CHEMICAL DETECTOR ALARM TERMINALS



### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

#### NOTE

There are two pairs of terminals. Each pair is installed on a vehicle-mounted bracket. Each terminal is removed and installed in the same way. These procedures cover only one terminal.

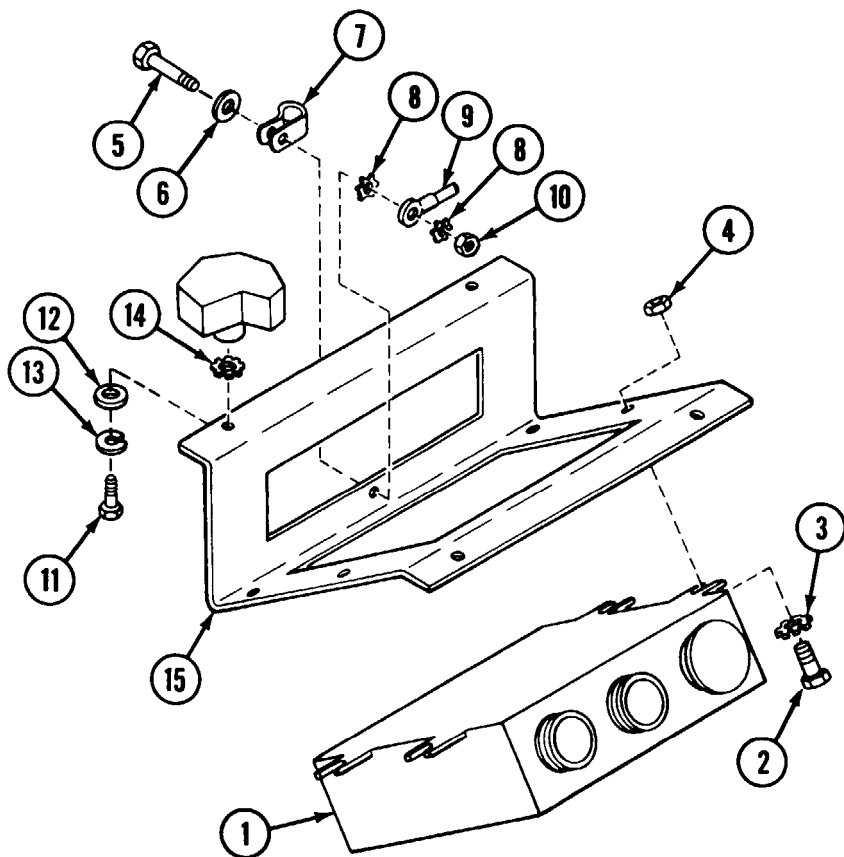
- A Remove nut (1) from terminal (2).
- B Remove cable connector (3).
- C Remove flat metal washer (4) and insulating washer (5).
- D Pull terminal (2) out of vehicle-mounted bracket along with insulating washers (6 and 7) and flat metal washer (8).

### INSTALLATION

Reverse removal procedures.



## INTERCOM POWER SUPPLY BRACKET: REMOVAL AND INSTALLATION



### REMOVAL

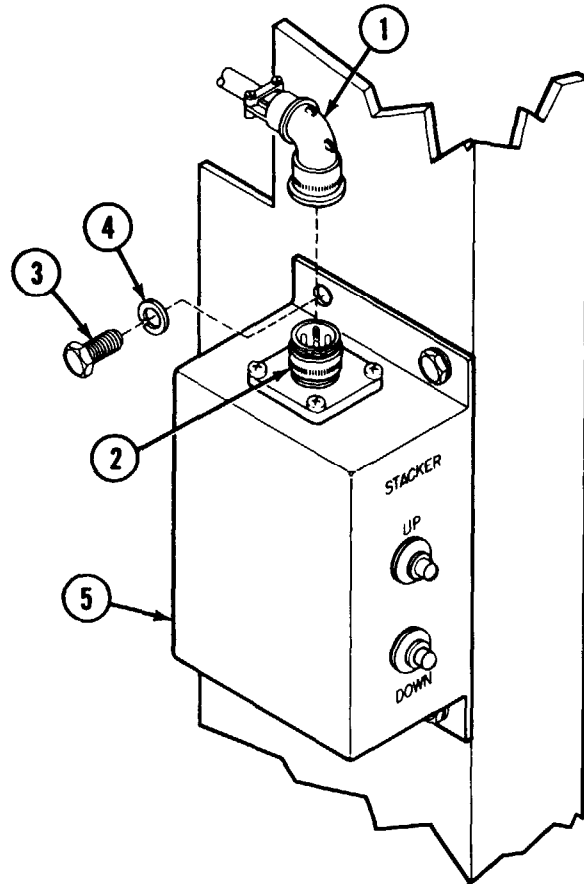
- A Disconnect cable connectors from intercom power supply (1) as necessary.
- B Remove four screws (2), four lockwashers (3) and four nuts (4). Discard lockwashers.
- C Remove power supply (1).
- D Remove screw (5), flat washer (6), tiedown strap (7), two lockwashers (8), ground wire (9) and nut (10). Discard lockwashers.
- E Remove four screws (11), four flat washers (12), four lockwashers (13) and four lockwashers (14). Discard lockwashers.
- F Remove intercom power supply bracket (15).

### INSTALLATION

- A Install intercom power supply bracket (15) with four new lockwashers (14), four new lockwashers (13), four flat washers (12) and four screws (11).
- B Install nut (10), ground wire (9), two new lockwashers (8), tiedown strap (7), flat washer (6) and screw (5).
- C Install intercom power supply (1) with four nuts (4), four new lockwashers (3) and four screws (2).
- D Connect cable connectors to intercom power supply (1) as necessary.



## STACKER CONTROL SWITCH BOX: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

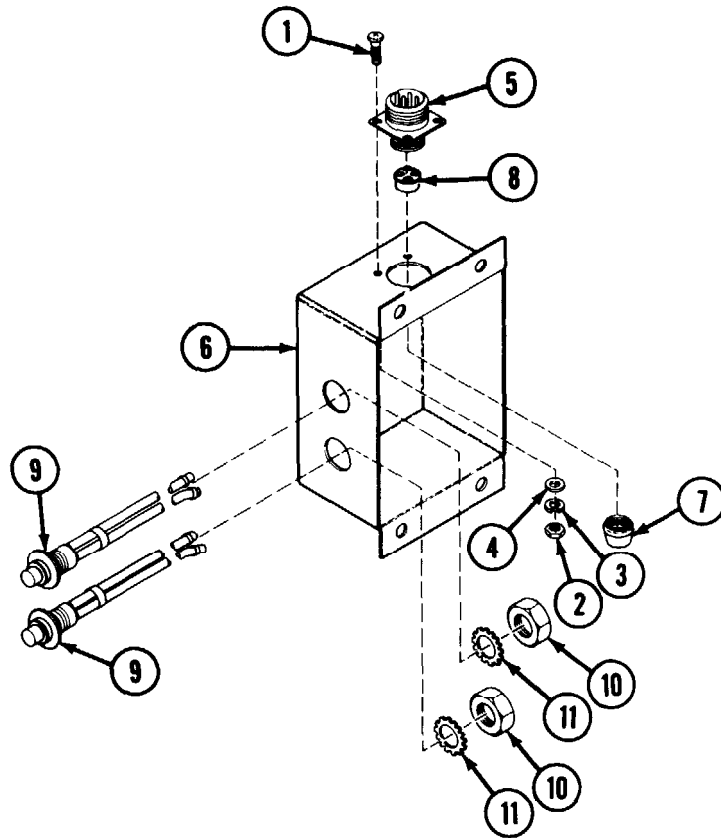


### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

- A Disconnect electrical wiring harness plug (1) from control box receptacle (2).
- B Remove four screws (3) and four lockwashers (4).
- C Remove switch box (5) from stacker outer guard.

**STACKER CONTROL SWITCH BOX: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****DISASSEMBLY**

- A Remove four screws (1), four nuts (2), four lockwashers (3) and four flat washers (4).
- B Remove receptacle (5) from box (6), unscrew retaining nut (7) and pull rubber grommet (8) from receptacle (5).

C Push four pin sockets, on ends of switch (9) wires, from receptacle (5).

D Remove rubber grommet (8) and retaining nut (7) from switch (9) wires.

E Remove two switches (9) from box (6) by removing from each one nut (10) and one lockwasher (11).

**ASSEMBLY****NOTE**

Seal all bare wires with silicone adhesive sealant (item 5, Appx D).

A Locate pin sockets of switch (9) wires in receptacle (5) using the following chart as a guide.

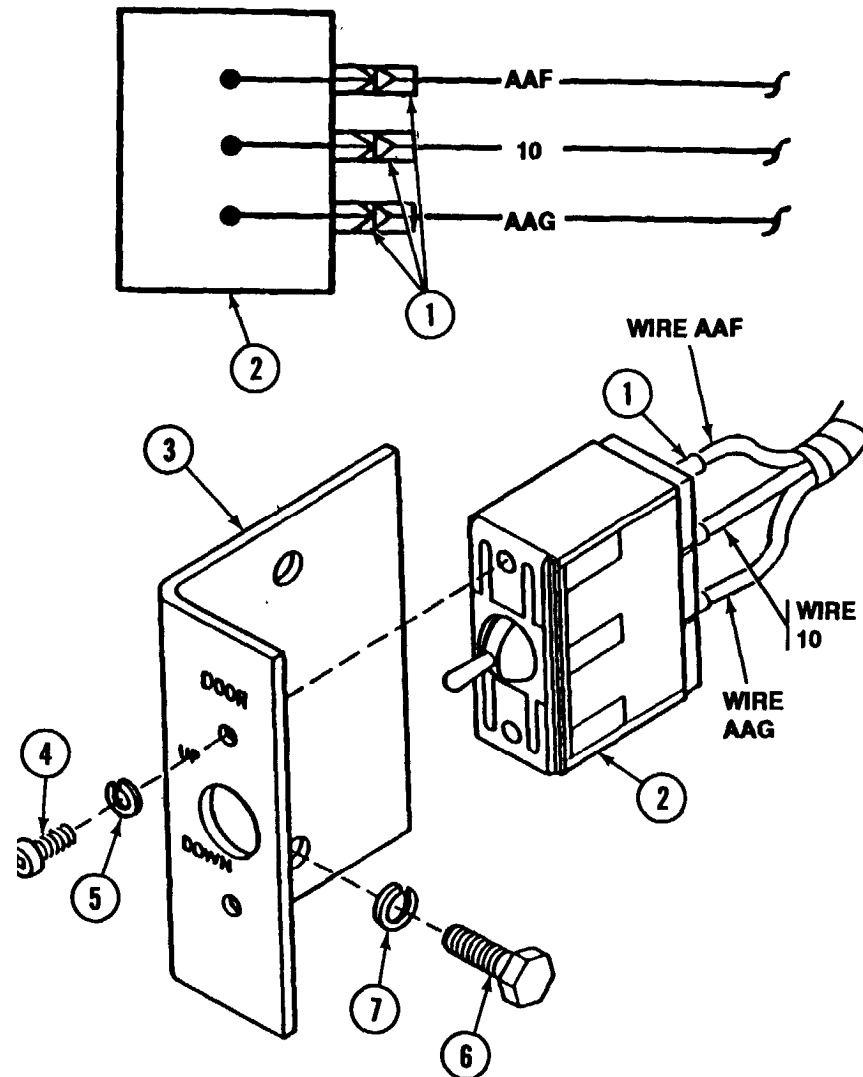
WIRE NO	PIN LOCATION	SWITCH
AAE	C	DOWN
10	D	
AAD	A	UP
10	B	

B Reverse disassembly procedures.

**INSTALLATION**

Reverse removal procedures.

## UPPER REAR DOOR CONTROL SWITCHES: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

#### NOTE

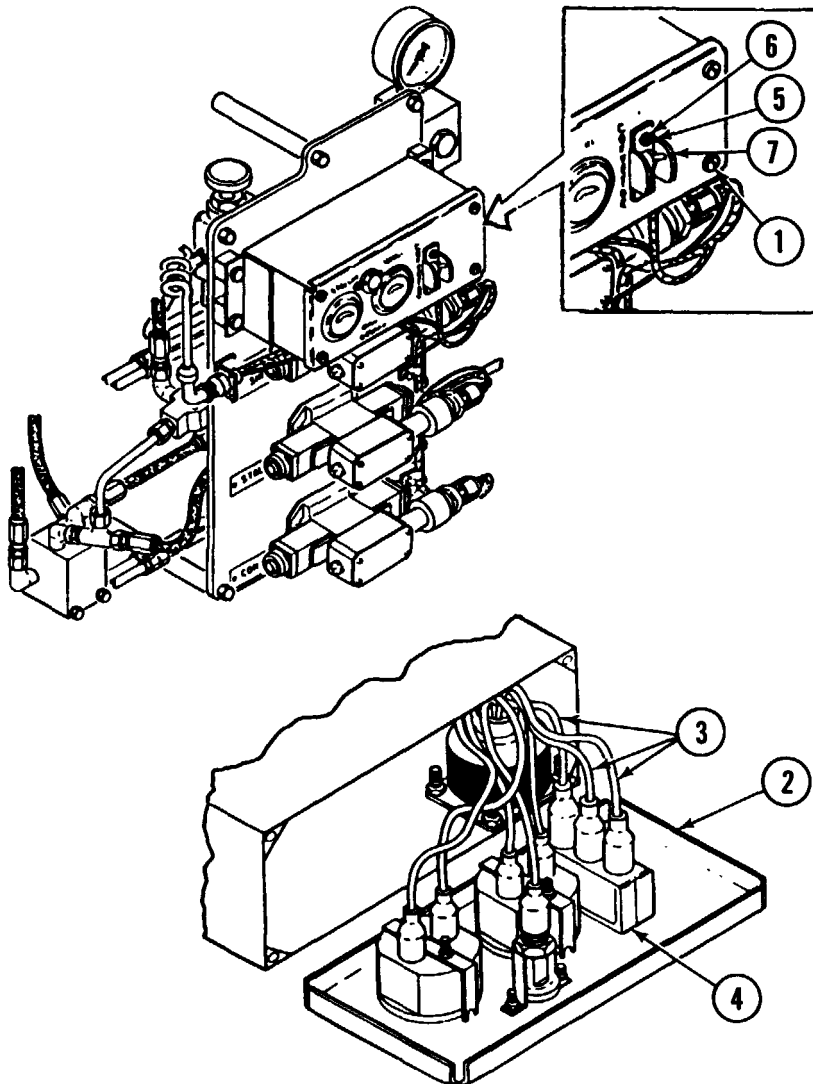
The following procedures can be used to remove both upper and lower control switches.

- A Disconnect three electrical harness connectors (1) from door control toggle switch (2).
- B Remove toggle switch (2) from bracket (3) by removing two screws (4) and lockwashers (5). Discard lockwashers.
- C Remove switch bracket (3) from vehicle by removing two screws (6) and two lockwashers (7). Discard lockwashers.

### INSTALLATION

Reverse removal procedures, using new lockwashers.

### CONVEYOR CONTROL SWITCH: REMOVAL AND INSTALLATION



#### REMOVAL

#### WARNING

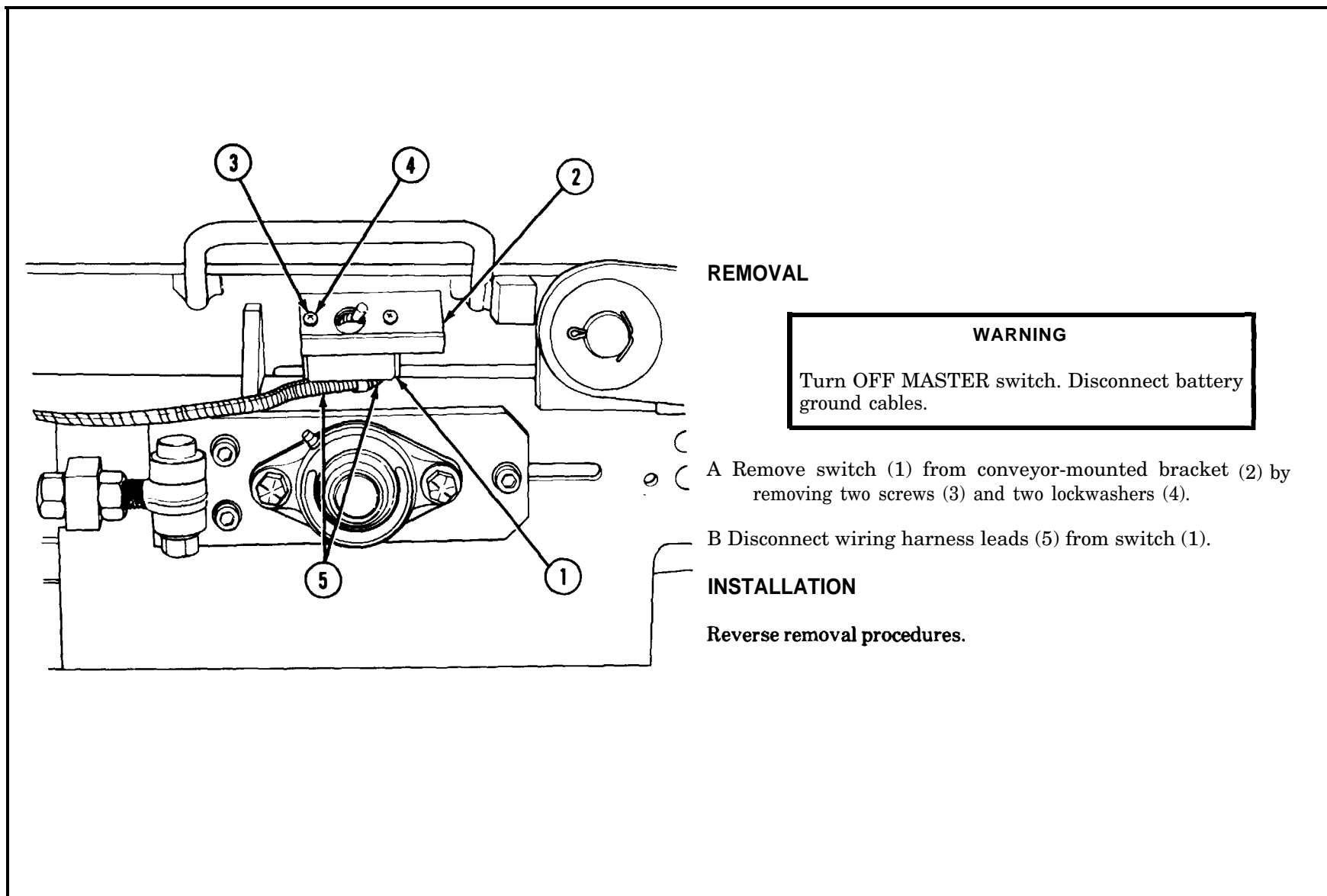
Turn OFF MASTER switch. Disconnect battery ground cables.

- A Turn four retaining studs (1) and open gage panel cover (2).
- B Disconnect three harness connectors (3) from conveyor control switch (4).
- C Remove two screws (5), two lockwashers (6), switch (4) and guard (7). Discard lockwashers.

#### INSTALLATION

Reverse removal procedures using new lockwashers.

## CONVEYOR OVERRIDE SAFETY SWITCH: REMOVAL AND INSTALLATION



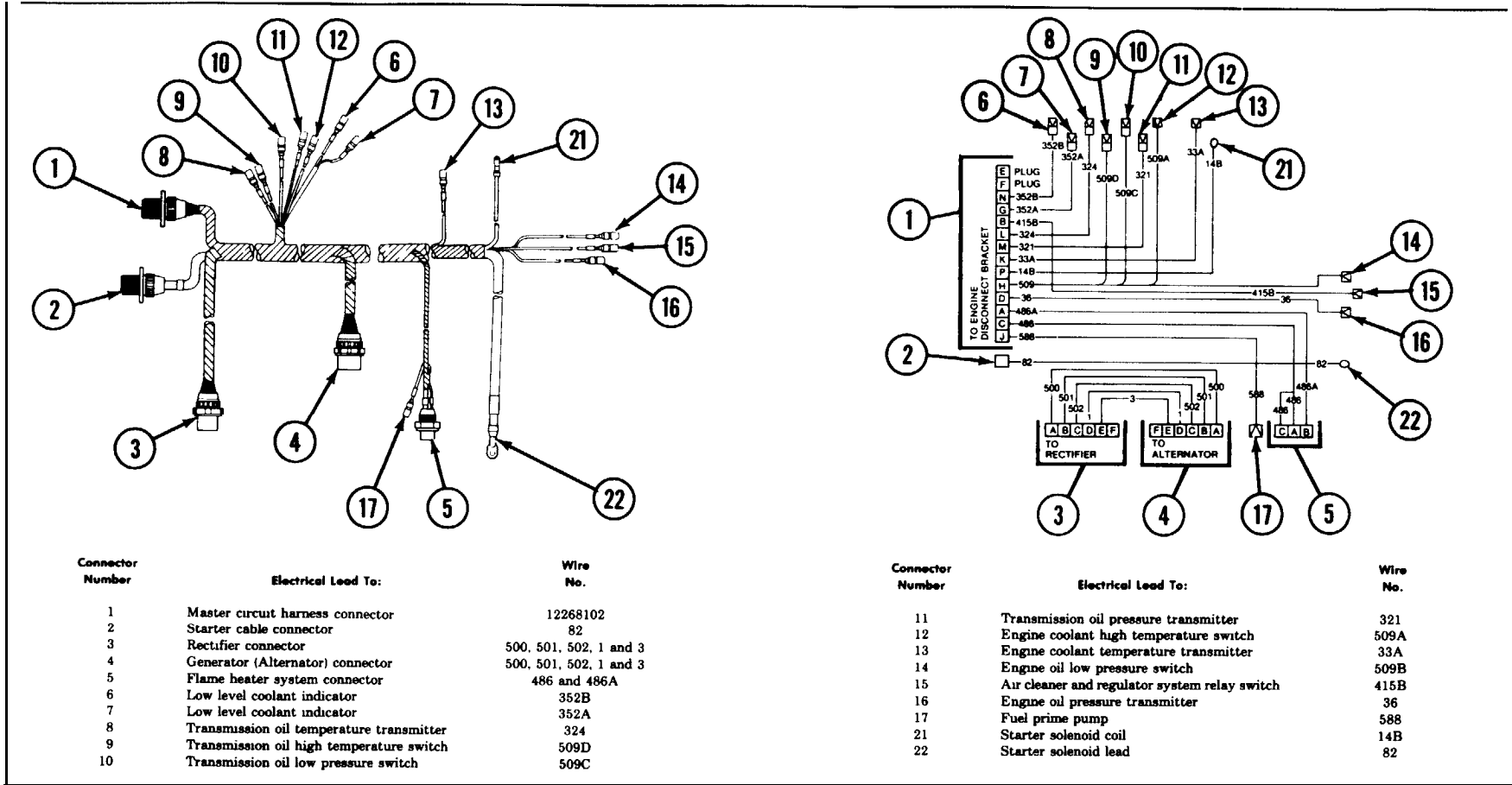
**Section III POWERPACK AND HULL WIRING HARNESSSES**

**NOTE**

Each electrical cable is marked with a wire numbered metal tag attached to the junction of terminal of the cable. All electrical circuits shown in schematics and wiring diagrams are identified by wire numbers listed in each area.

Instructions for disassembly and assembly of individual wiring harnesses are contained in Chapters 2 and 3 of this manual.

**POWERPACK WIRING HARNESS (12268102): REMOVAL, REPAIR AND INSTALLATION**



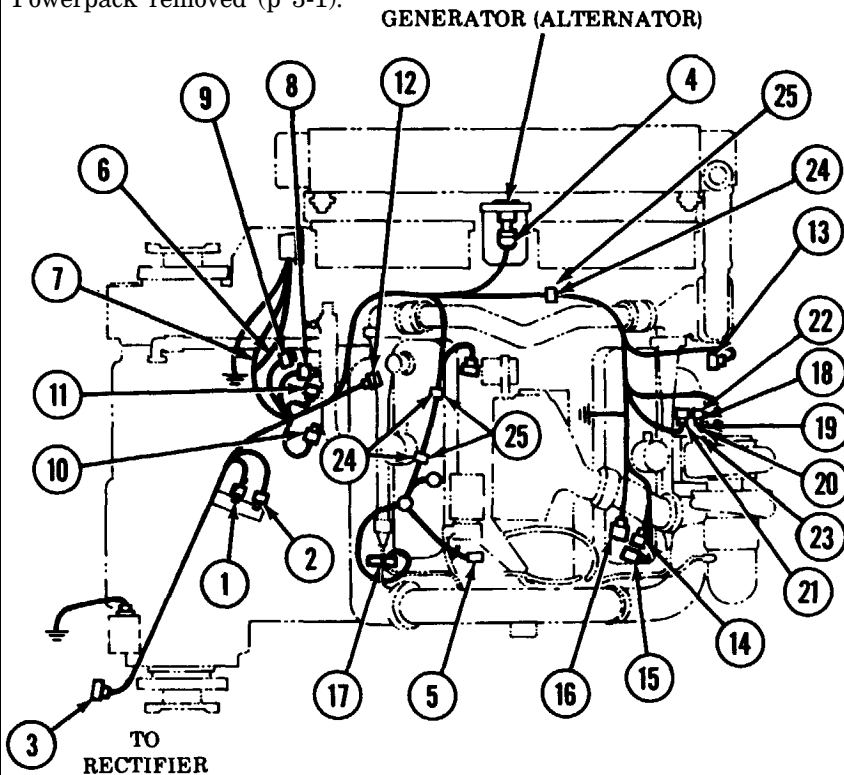


## POWERPACK WIRING HARNESS (12268102): REMOVAL, REPAIR AND INSTALLATION (CONTINUED)

### INITIAL SETUP

#### Equipment Conditions

Powerpack removed (p 3-1).



### REMOVAL

A Disconnect five connectors (1, 2, 3, 4 and 5).

B Disconnect 12 connectors (6 thru 17).

C Remove two screws (18), four flat washers (19) and two nuts (20) to disconnect two leads (21 and 22) from starter solenoid (23).

D Remove three screws (24) and three clamps (25).

E Remove powerpack wiring harness.

### REPAIR

#### NOTE

Remove electrical tape only from section of harness to be repaired.

A Remove section of electrical tape from harness.

B Isolate and separate wiring harness branches.

C Disassemble wiring branch and replace defective wires (p 2-307).

### INSTALLATION

A Install powerpack wiring harness.

B Install three clamps (25) and three screws (24).

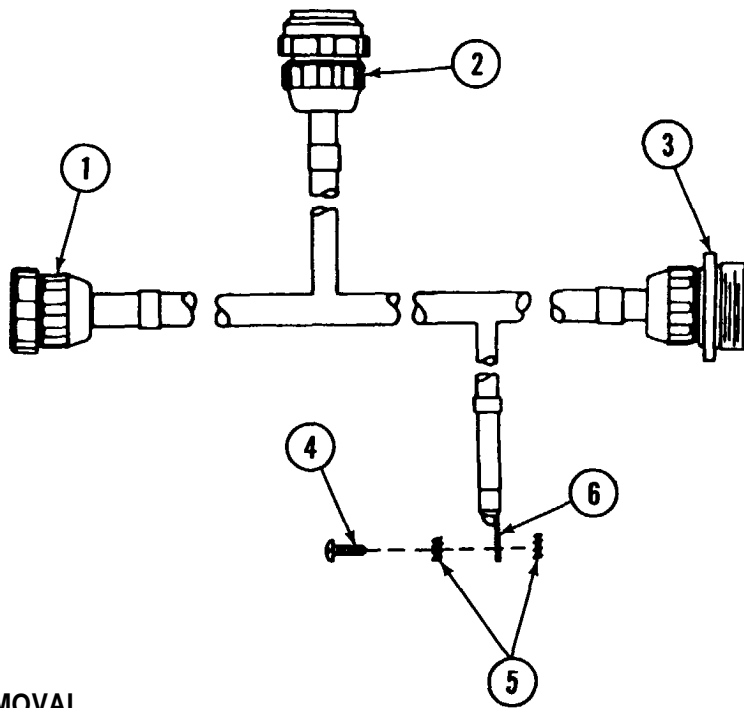
C Connect two leads (21 and 22) to starter solenoid (23) with two screws (18), four flat washers (19) and two nuts (20).

D Connect 12 connectors (6 thru 17).

E Connect five connectors (1, 2, 3, 4 and 5).



**ENGINE BRACKET TO DRIVER'S BULKHEAD WIRING HARNESS (1 1593782): REMOVAL AND INSTALLATION**



**REMOVAL**

- A Disconnect connector (1) from engine bracket receptacle.
- B Disconnect connector (2) from master day box.

**WARNING**

Turn MASTER switch OFF. Disconnect battery ground cables.

- C Disconnect connector (3) from driver's compartment bulkhead receptacle.
- D Remove screw (4) and two lockwashers (5) securing terminal lug (6) to bottom of bilge pump relay box. Discard lockwashers.
- E Remove wiring harness.

**INSTALLATION**

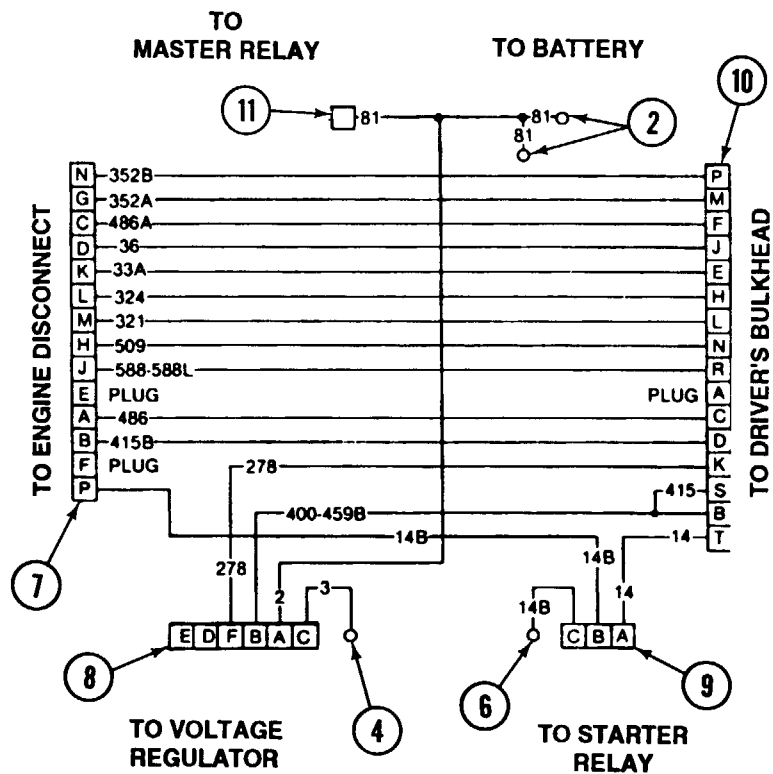
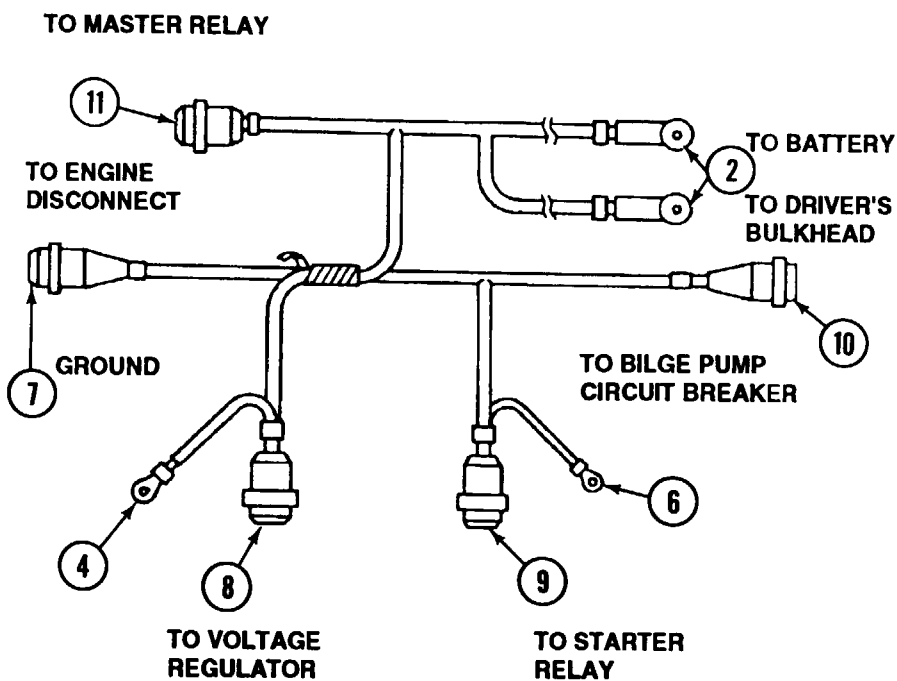
- A Position wiring harness in engine compartment and battery compartment
- B Install terminal lug (6) to bottom of bilge pump relay box with screw (4) and two new lockwashers (5).
- C Connect connector (3) to driver's compartment bulkhead receptacle.
- D Connect connector (2) to master relay box.
- E Connect connector (1) to engine bracket receptacle.

## ENGINE DISCONNECT BRACKET TO DRIVER'S BULKHEAD WIRING HARNESS (12268100): REMOVAL, DISASSEMBLY, ASSEMBLY AND

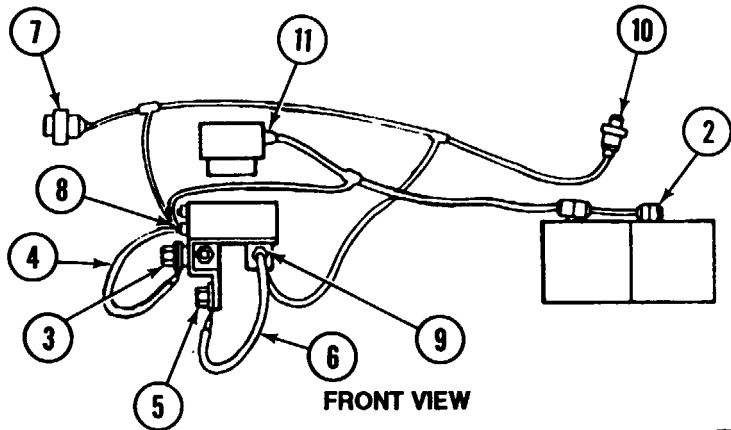
Connector Number	Electrical Lead To:	Wire No.	Connector Number	Electrical Lead To:	Wire No.
2	Battery connectors			Transmission oil temperature transmitter to	
4	Ground wire			transmission oil temperature gage	324
6	Bilge pump circuit breaker lead			Transmission oil pressure transmitter to	
7	Engine bracket disconnect connector			transmission oil pressure switch	321
8	Voltage regulator connector			High/Low temperature and pressure	
9	Starter relay connector			switches/transmitters to master warning light	509
10	Driver's bulkhead connector			Fuel prime pump to fuel prime pump switch	588
11	Master relay connector			Flame heater motor pump to flame heater master	
				switch	486
	Battery assembly to master relay	81		Air cleaner blower motor switch to air cleaner	
	Aeration detector to coolant indicator	352B		blower motor assembly	415B
	Aeration detector to coolant indicator	352A		Regulator cutoff relay coil energizer	27B
	Flame heater to flame heater switch	486A		Air cleaner blower motor circuit	415
	Engine oil pressure transmitter engine oil			Master switch to voltage regulator lead	400-459B
	pressure gage switch	36		Engine starter circuit (starter relay bilge pump	
	Engine coolant temperature transmitter to engine			circuit breaker, neutral safety switch)	14/14B
	water temperature gage	33A		Voltage regulator to master relay lead	2

**ENGINE DISCONNECT BRACKET TO DRIVER'S BULKHEAD WIRING HARNESS (12266100): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

**NUMBERS KEYED TO  
REMOVAL SEQUENCE**



**ENGINE DISCONNECT BRACKET TO DRIVER'S BULKHEAD WIRING HARNESS (12268100): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**FRONT VIEW**

**REMOVAL**

**WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

When working on batteries, wear eye protection. Remove all jewelry, dog tags and metal items.

**NOTE**

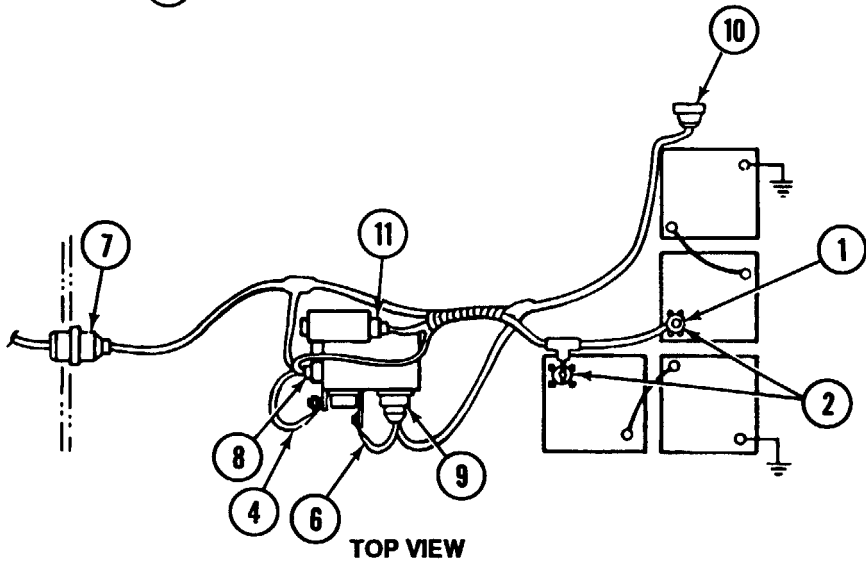
Open battery access and transmission access doors.

- A** Remove two screws, two lockwashers, two nuts (1) and disconnect two connectors (2) from batteries.

**NOTE**

Reinstall hardware in appropriate connectors.

- B** Remove nut, lockwasher (3) and ground wire (4) from voltage regulator mount.
- C** Remove nut lockwasher (5) and lead (6) from bilge pump circuit breaker.



**TOP VIEW**

**ENGINE DISCONNECT BRACKET TO DRIVER'S BULKHEAD WIRING HARNESS (12268100): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

D Disconnect five connectors (7, 8, 9, 10 and 11).

E Remove engine-to-bulkhead wiring harness.

**DISASSEMBLY**

A Remove section of electrocal tape from harness.

**NOTE**

Remove electrical tape only from section of harness to be disassembled.

B Separate and isolate harness branches.

C Disassemble wiring branch and replace defective wires (p 2-307).

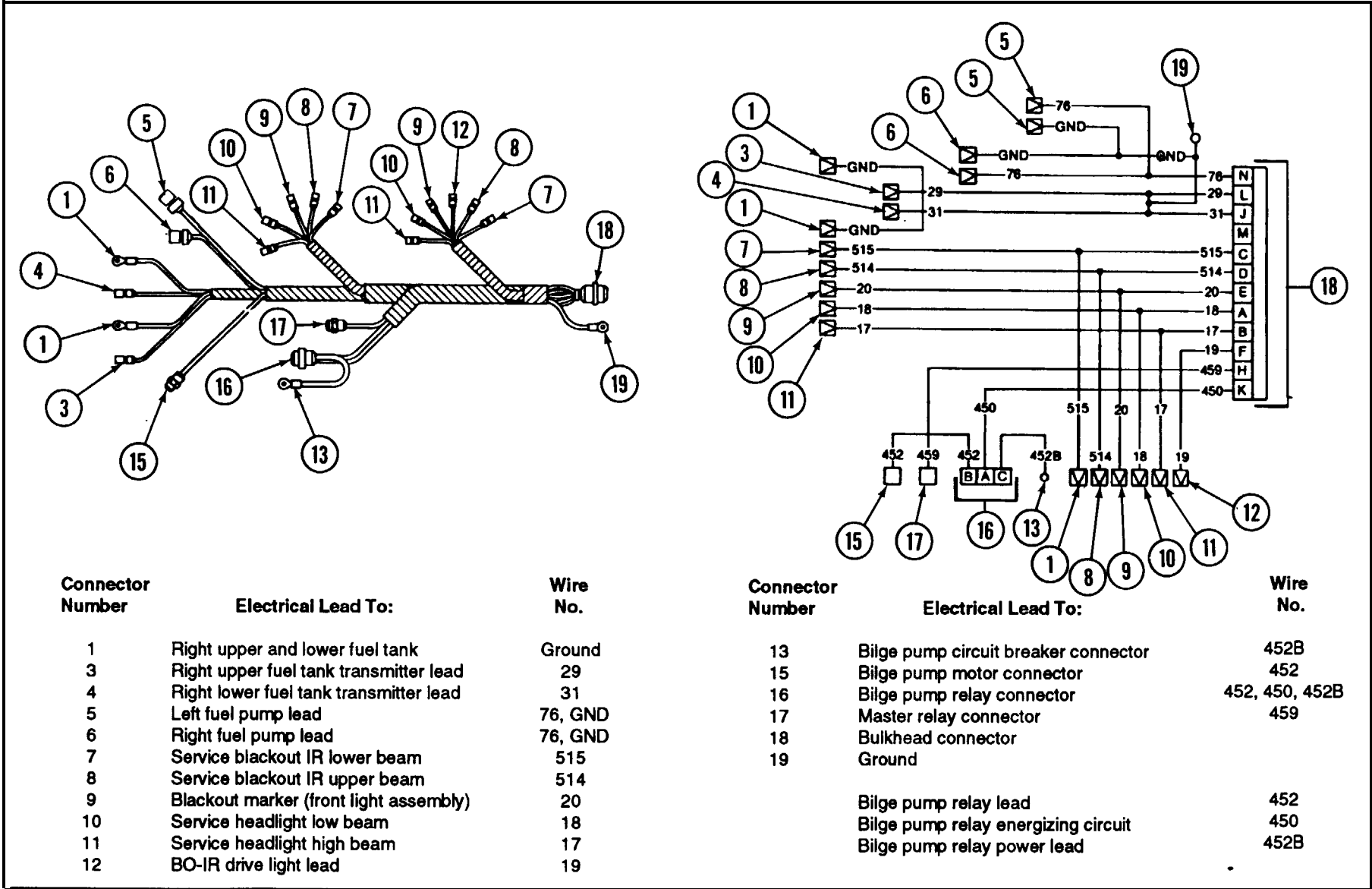
**ASSEMBLY**

Reverse disassembly procedures.

**INSTALLATION**

Reverse removal procedures.

■ HULL FRONT WIRING HARNESS (10921380): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION





**HULL FRONT WIRING HARNESS (10921360): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

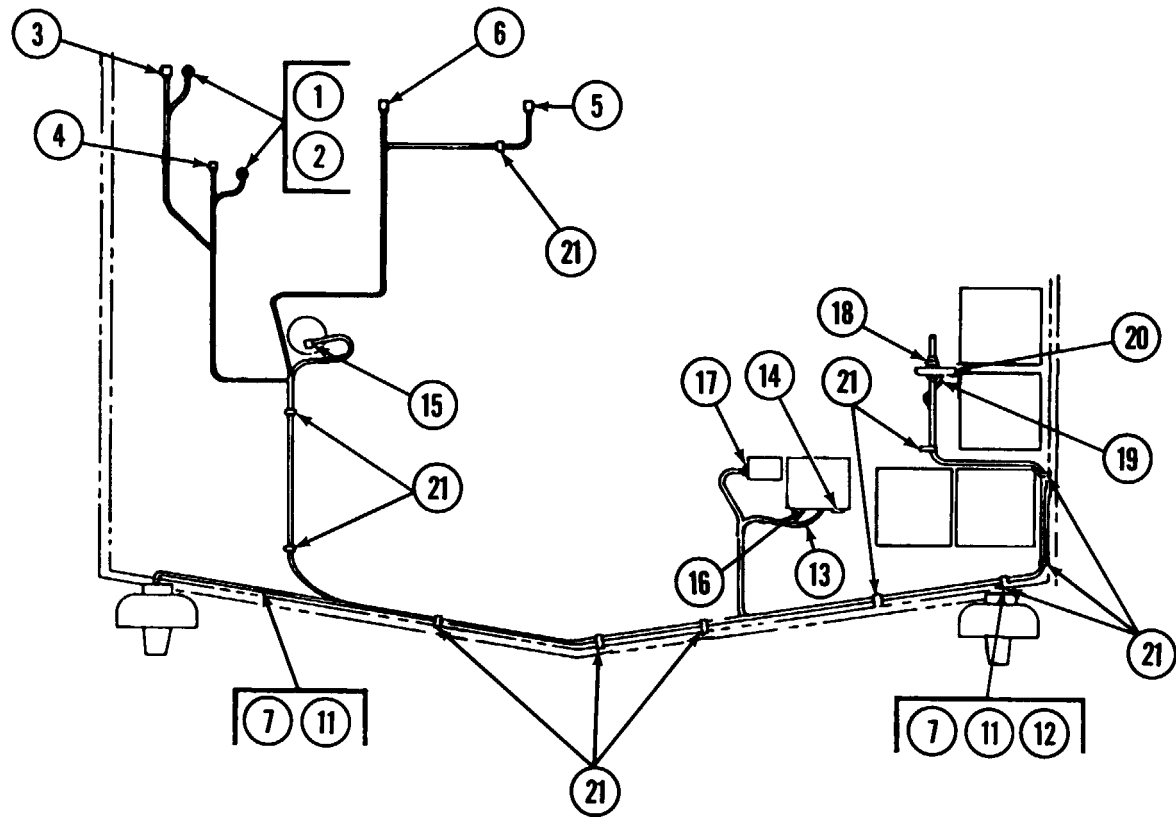
**INITIAL SETUP**

**Materials/Parts:**

Tape, electrical (item 60, Appx D)

**Equipment Condition:**

Powerpack removed (p 3-1).



**LEGEND**

- 1 Ground wire (2) - fuel level transmitter
- 2 Screw and two washers (2)
- 3-4 Connectors - fuel level transmitter
- 5 Connector - left fuel pump
- 6 Connector - right fuel pump
- 7-11 Connector (10) - headlight assembly
- 12 Connector - BO marker light
- 13 Connector-bilge pump circuit breaker

- 14 Nut and two washers
- 15 Connector - bilge pump motor
- 16 Connector- bilge pump relay
- 17 Connector- master relay
- 18 Connector - bulkhead
- 19 Ground wire
- 20 Screw and two washers
- 21 Attaching strap, screw, lockwasher and flat washer (as required)

## ■ HULL FRONT WIRING HARNESS (10921380): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTE

- Remove and disassemble wiring harness only to extent needed to repair defect.
- For wire identification, see p 6-72.

- A Remove ground leads (1) from upper and lower fuel tanks by removing screw and two washers (2) from each lead.
- B Disconnect two connectors (3 and 4) from fuel level transmitters.
- C Remove two snap-in connectors (5 and 6) from fuel pumps.
- D Disconnect 11 quick-disconnects (7 through 12) from both right and left headlight assemblies.
- E Release connector wire (13) from bilge pump circuit breaker by removing nut and two washers (14).
- F Disconnect four electrical connectors (15, 16, 17 and 18).
- G Release ground lead (19) by removing screw and two washers (20).
- H Remove plastic retainers, screws, lockwashers, and flat washers (21) to release wiring harness from vehicle. Discard lockwashers.

### DISASSEMBLY

#### NOTE

Remove electrical tape only from section of harness to be disassembled.

- A Remove section of electrical tape from harness.
- B Separate and isolate wiring harness branches.
- C Disassemble wiring branch and replace defective wires (p 2-307).

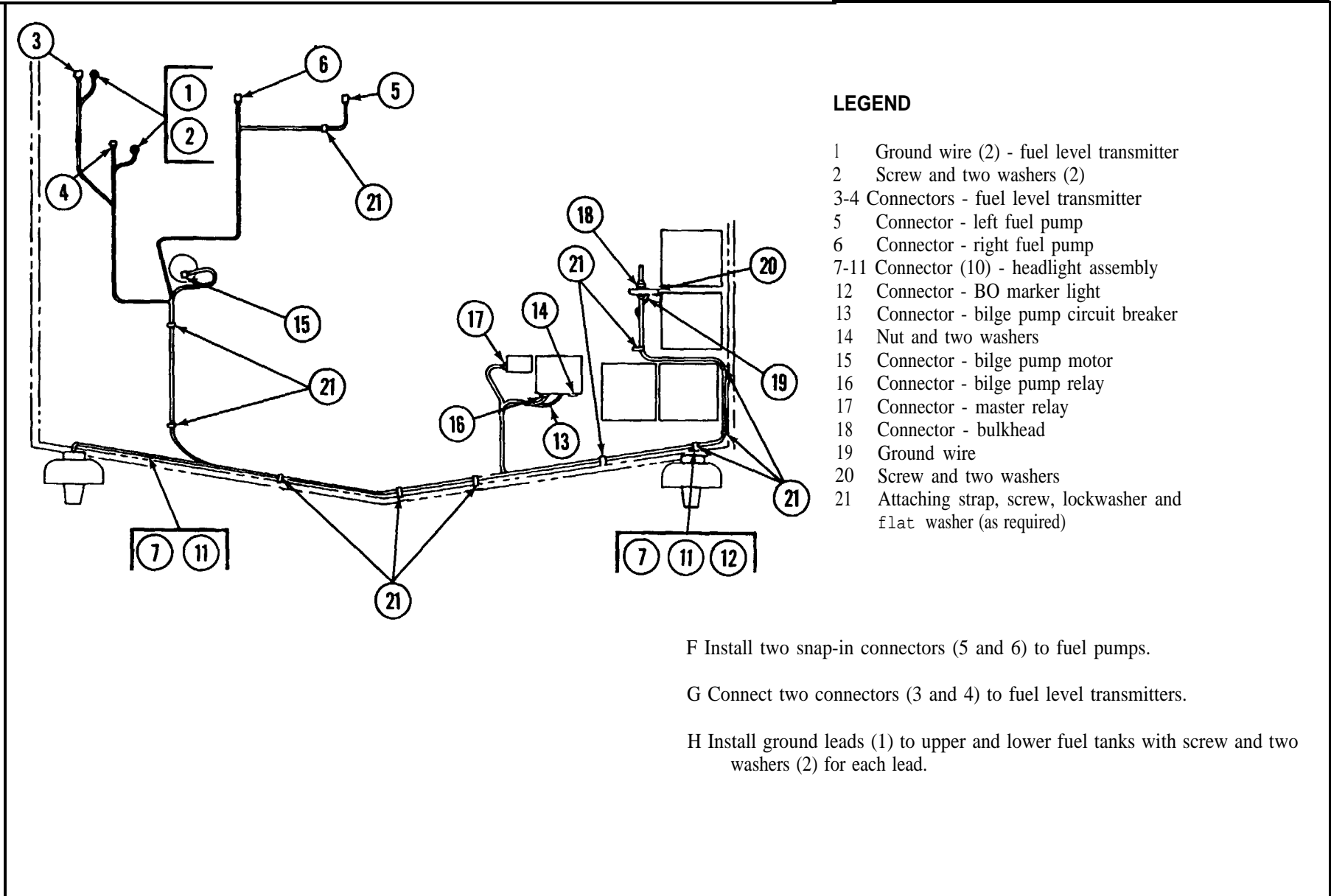
### ASSEMBLY

- A Reassemble wiring branch.
- B Regroup wiring branches and secure with electrical tape (item 60, Appx D).

### INSTALLATION

- A Install wiring harness in vehicle using plastic retainers, screws, new lockwashers, and flat washers (21).
- B Install ground lead (19) with screw and two washers (20).
- C Connect four electrical connectors (15, 16, 17 and 18).
- D Install connector wire (13) to bilge pump circuit breaker with nut and two washers (14).
- E Connect 11 quick-disconnects (7 through 12) to both right and left headlight assemblies.

■ HULL FRONT WIRING HARNESS (10921380): REMOVAL, Disassembly, ASSEMBLY AND INSTALLATION (Continued)



**LEGEND**

- 1 Ground wire (2) - fuel level transmitter
- 2 Screw and two washers (2)
- 3-4 Connectors - fuel level transmitter
- 5 Connector - left fuel pump
- 6 Connector - right fuel pump
- 7-11 Connector (10) - headlight assembly
- 12 Connector - BO marker light
- 13 Connector - bilge pump circuit breaker
- 14 Nut and two washers
- 15 Connector - bilge pump motor
- 16 Connector - bilge pump relay
- 17 Connector - master relay
- 18 Connector - bulkhead
- 19 Ground wire
- 20 Screw and two washers
- 21 Attaching strap, screw, lockwasher and flat washer (as required)

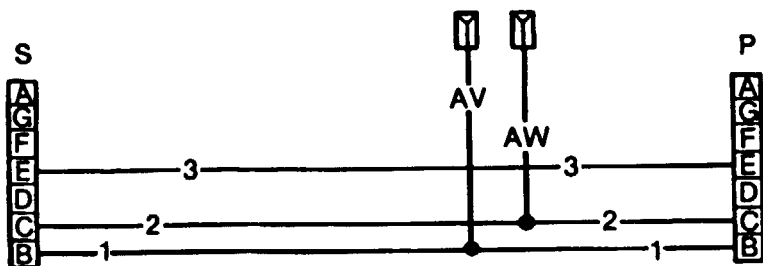
- F Install two snap-in connectors (5 and 6) to fuel pumps.
- G Connect two connectors (3 and 4) to fuel level transmitters.
- H Install ground leads (1) to upper and lower fuel tanks with screw and two washers (2) for each lead.

**RECTIFIER TO REGULATOR WIRING HARNESS (12330342): REMOVAL AND INSTALLATION**

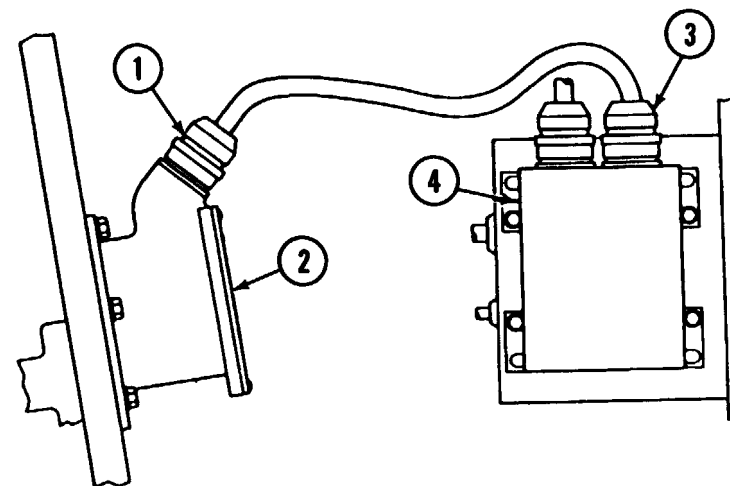
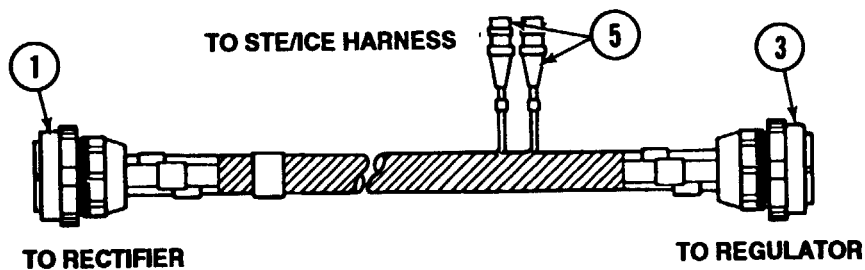
**INITIAL SETUP**

**Equipment Condition:**

Battery ground cables disconnected (6-44).  
 MASTER switch OFF.



**WIRING HARNESS BML61488**



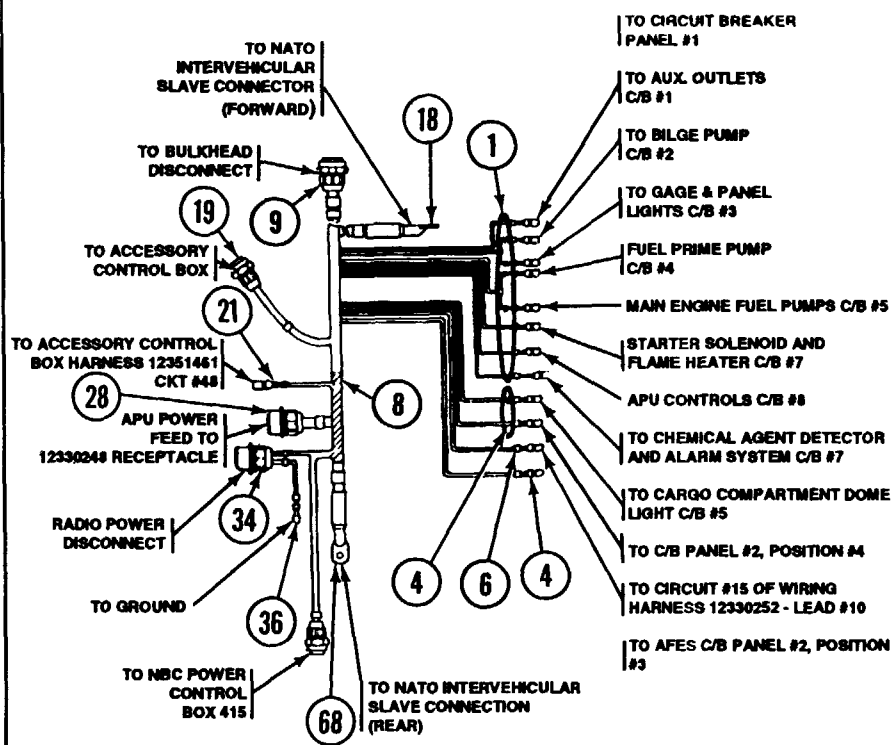
**REMOVAL**

- A Disconnect plug (1) from rectifier (2).
- B Disconnect plug (3) from regulator (4).
- C Disconnect connectors (5) from STE/ICE harness 12329994.

**INSTALLATION**

- A Connect connector (5) to STE/ICE harness 12329994.
- B Connect plug (3) to regulator (4).
- C Connect plug (1) to rectifier (2).

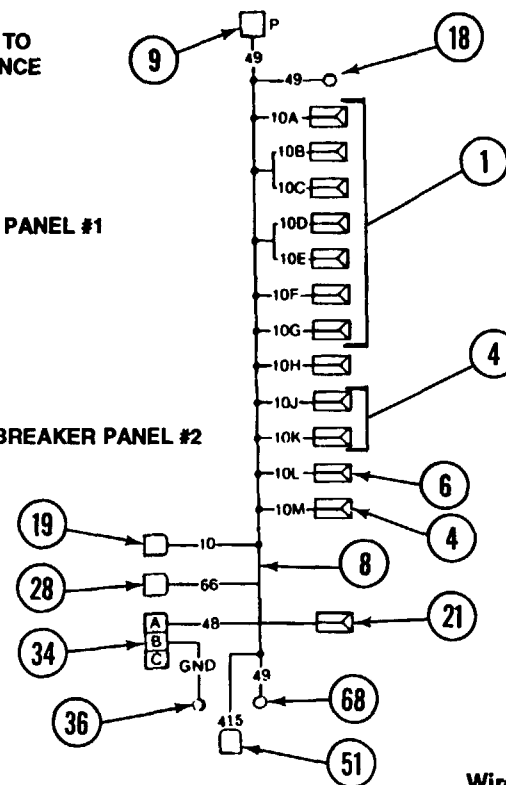
# CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



NUMBERS KEYED TO REMOVAL SEQUENCE

CIRCUIT BREAKER PANEL #1

CIRCUIT BREAKER PANEL #2



Connector Number	Electrical Lead To:	Wire No.
1	Circuit breaker panel 1, circuit breakers auxiliary outlets C/B, bilge pump C/B, gage and panel lights C/B, fuel prime pump C/B, main engine fuel pumps C/B, starter solenoid and flame heater C/B, APU controls C/B	(7) 10
4	Panel 2, circuit breakers 7, 5, 4 and 3	(4) 10
6	Circuit 15 of wiring harness 12330252	10
8	Power harness	
9	Bulkhead disconnect	49

Connector Number	Electrical Lead To:	Wire No.
18	NATO slave receptacle	49
19	Accessory control box	10
21	Harness 12351461	48
28	APU power feed to 12330248 receptacle	66
34	Radio power disconnect	48
36	Radio power disconnect	GND
51	NBC power control box	415
68	NATO slave receptacle	49

**CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****INITIAL SETUP****Materials/Parts:**

Tape, electrical (item 60, Appx D)

**Equipment Condition:**

Battery ground cables disconnected (p 6-44).

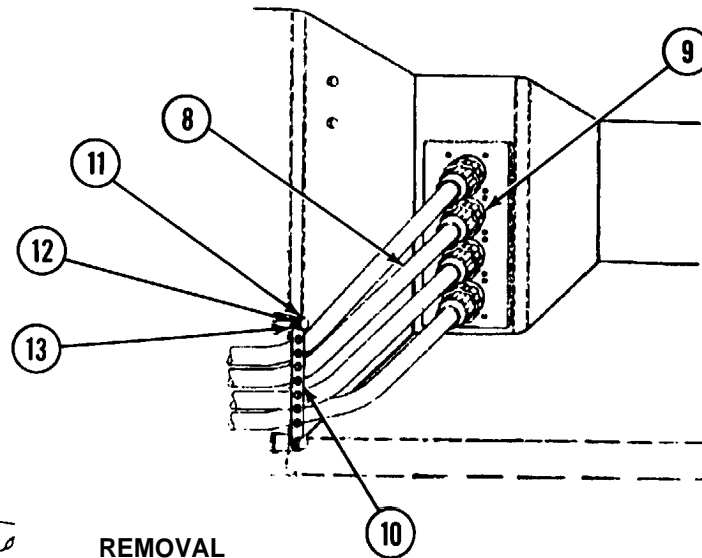
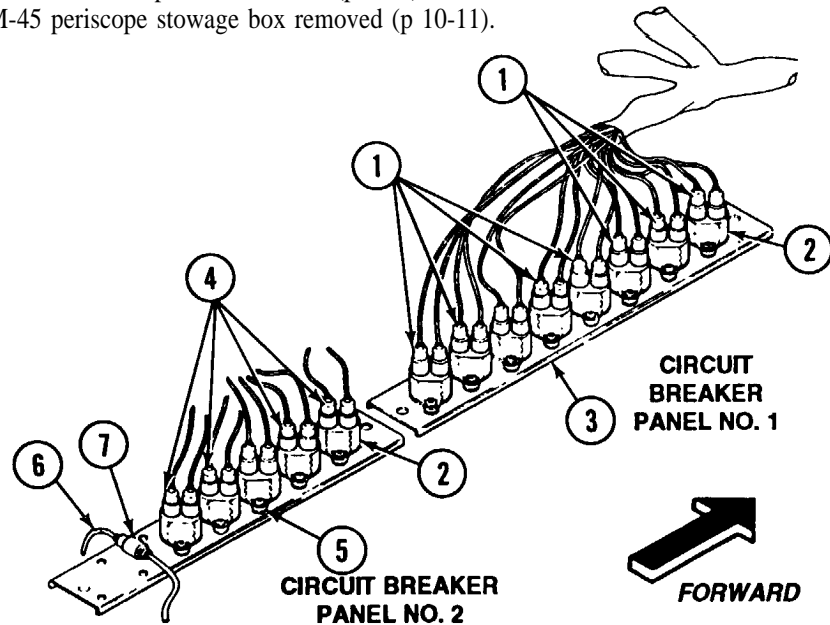
**MASTER switch OFF.**

Driver's instrument panel removed (p 6-19).

APU control box removed (p 13-35).

NBC M2A2 air purifier removed (p 14-3).

M-45 periscope stowage box removed (p 10-11).

**REMOVAL**

A Disconnect seven leads (1) from circuit breakers (2) on panel (3).

B Disconnect four leads (4) from circuit breakers (2) on panel (5).

C Disconnect lead (6) from harness (7).

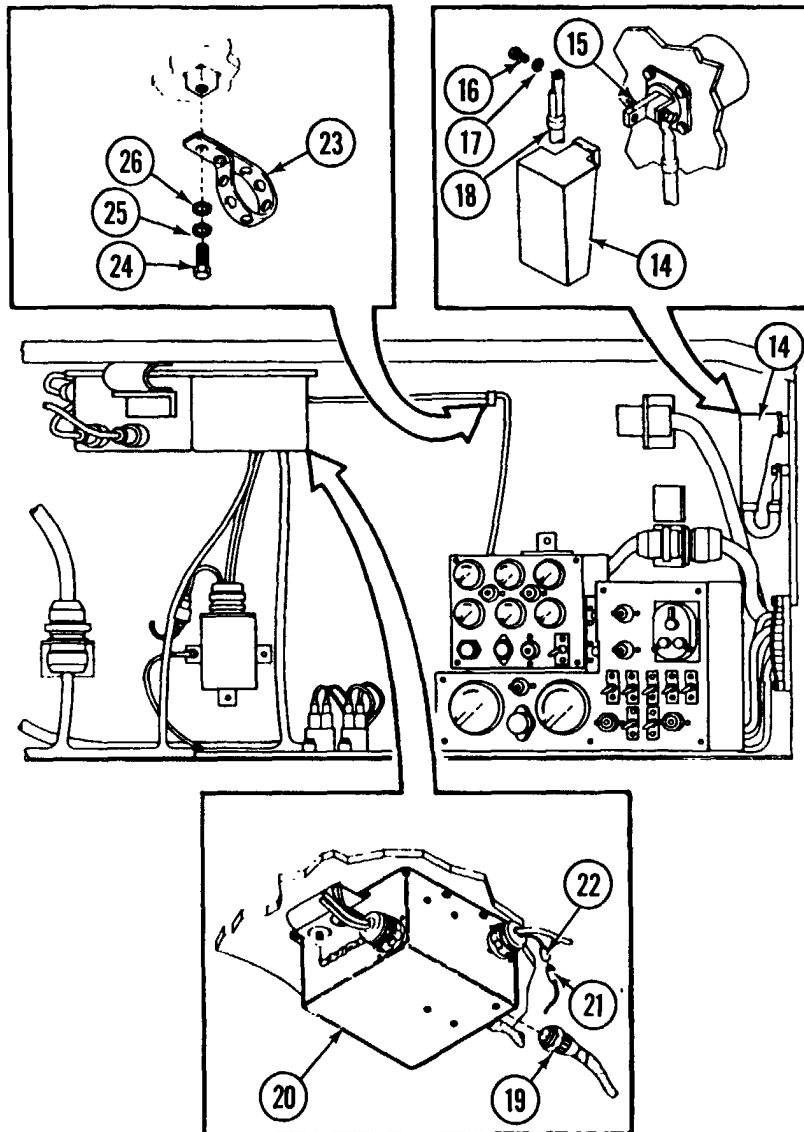
D Disconnect harness (8) plug (9) from driver's bulkhead disconnect receptacle.

**NOTE**

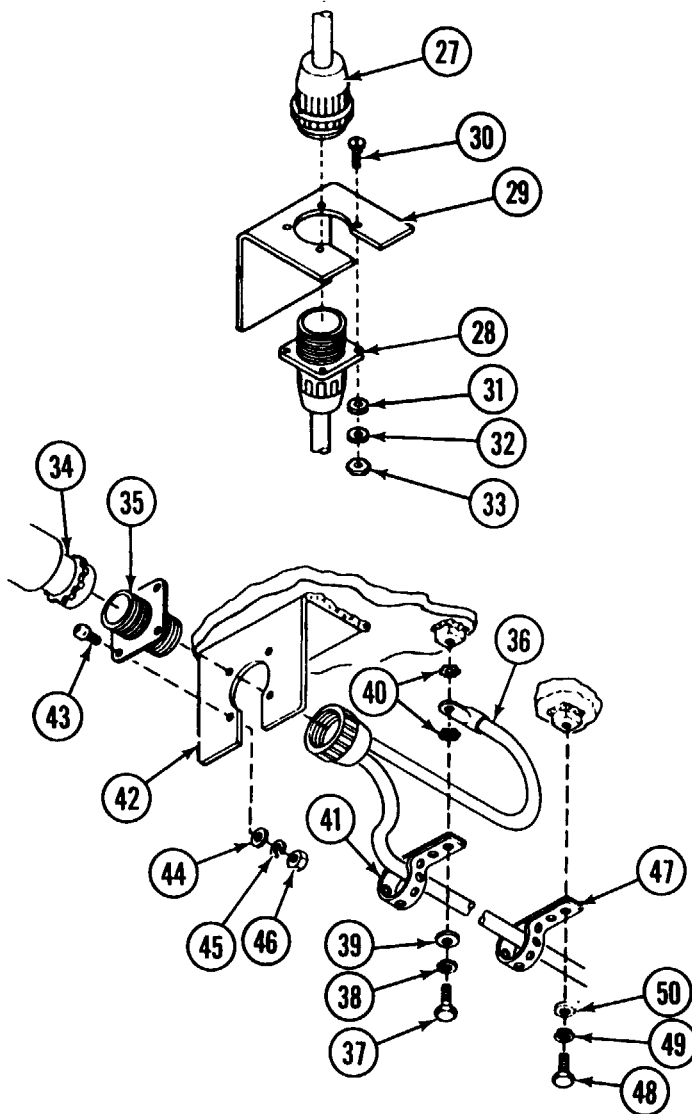
For steps E, J, N, R, and U, reinstall screws and flat washers on each strap to support remaining harnesses.

E Remove wiring harness (8) from two straps (10) by removing two screws (11), two lockwashers (12), and two flat washers (13) at only one end of each strap. Discard lockwashers.

**CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



- F Pull back boot (14) to expose forward NATO slave receptacle lug (15).
- G Remove screw (16), lockwasher (17) and disconnect lead 49 (18) from lug (15). Discard lockwasher.
- H Disconnect harness plugs (19) from accessory control box (20).
- I Disconnect harness connector CKT 48 (21) from harness 12351461 cable connector no. 4B (22).
- J Remove harness from two harness straps (23) by removing screw (24), lockwasher (25) and flat washer (26) from each strap. Discard lockwashers.

**CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**


K Disconnect APU power lead 66 (27) from power feed receptacle (28).

L Remove receptacle (28) from wall-mounted bracket (29) by removing four screws (30), four flat washers (31), four lockwashers (32) and four nuts (33). Discard lockwashers.

**NOTE**

Radio power disconnect is located on left side of cargo compartment ceiling.

M Remove radio power disconnect (34) from radio power disconnect receptacle (35).

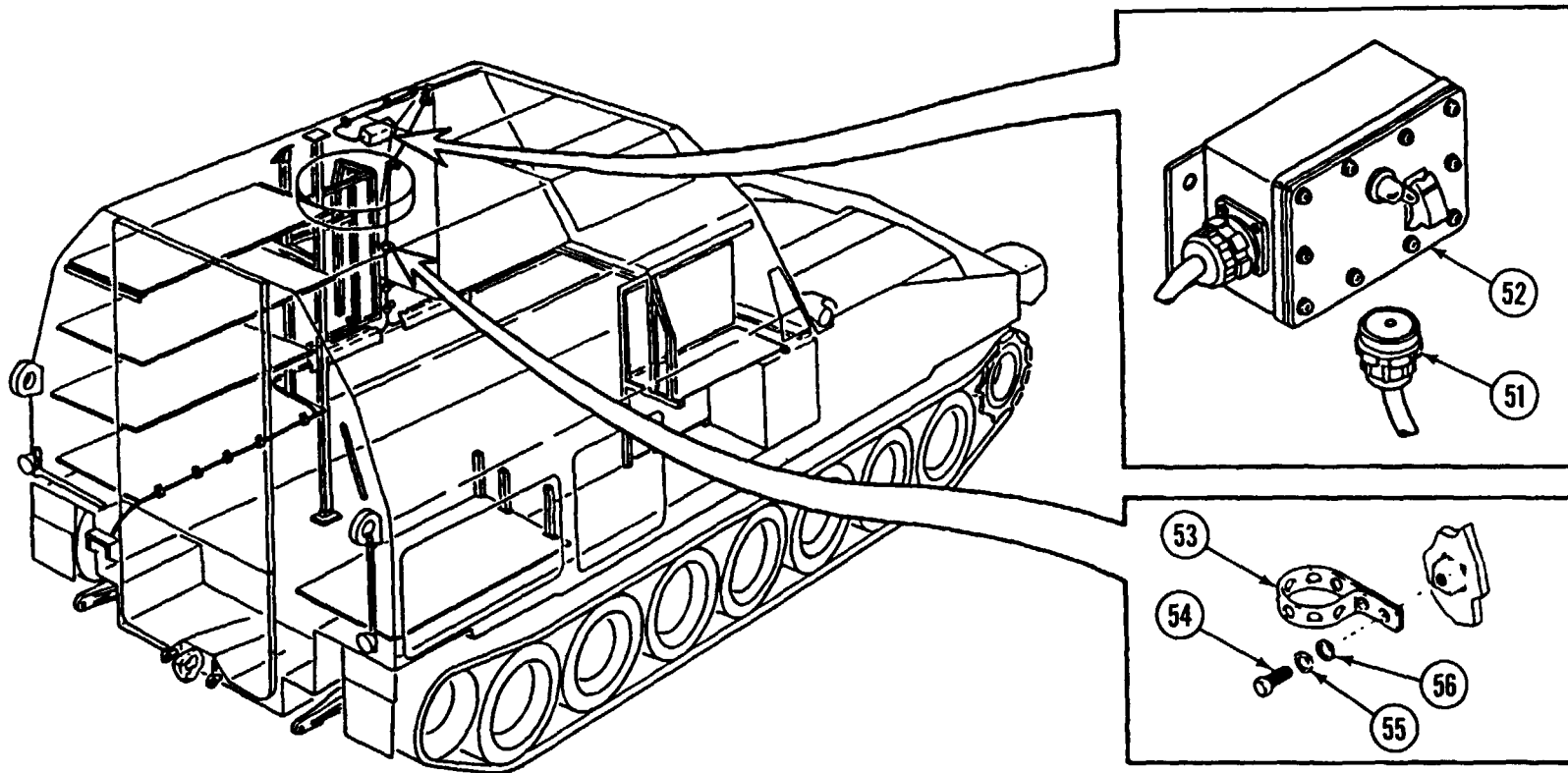
N Remove radio power disconnect ground lug (36) by removing screw (37), lockwasher (38), flat washer (39), two lockwashers (40) and harness retaining Strap (41). Discard lockwashers.

O Remove radio power disconnect receptacle (35) from bracket (42) by removing four screws (43), four flat washers (44), four lockwashers (45) and four nuts (46). Discard lockwashers.

P Remove strap (47) by removing screw (48), lockwasher (49) and flat washer (50). Discard lockwasher.



CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

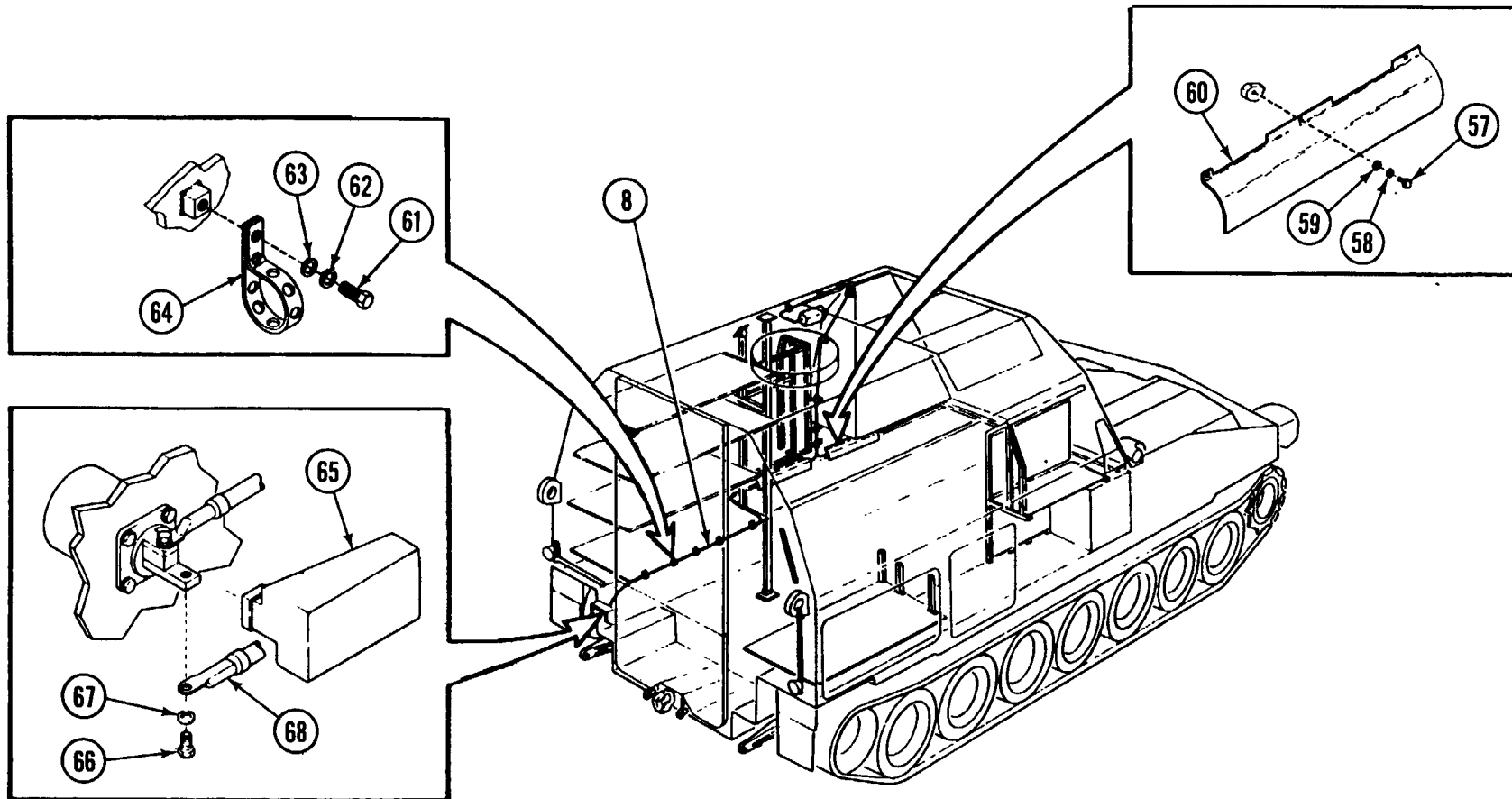


Q Disconnect NBC power control box plugs (51) from NBC control box (52).

R Remove seven retaining straps (53) by removing seven screws (54), seven lockwashers (55) and seven flat washers (56). Discard lockwashers.

S Remove radio disconnect receptacle lead and NBC power control box plug lead.

## CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



T Remove seven screws (57), seven lockwashers (58) and seven flat washers (59) and remove two guards (60). Discard lockwashers.

U Remove five screws (61), five lockwashers (62), five flat washers (63) and five straps (64). Discard lockwashers.

V Pull back boot (65). Remove screw (66), lockwashers (67) and harness lead (68). Discard lockwashers.

W Remove harness (8) from vehicle.

**CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

**DISASSEMBLY**

**NOTE**

Remove electrical tape only from section of harness to be disassembled.

- A Remove section of electrical tape from harness.
- B Separate and isolate wiring harness branches.
- C Disassemble wiring branch and replace defective wires (p 2-307).

**ASSEMBLY**

- A Reassemble wiring branch.
- B Regroup wiring branches and secure with electrical tape (item 60, AppxD).

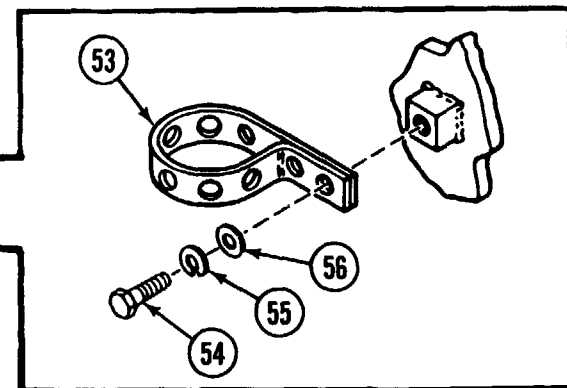
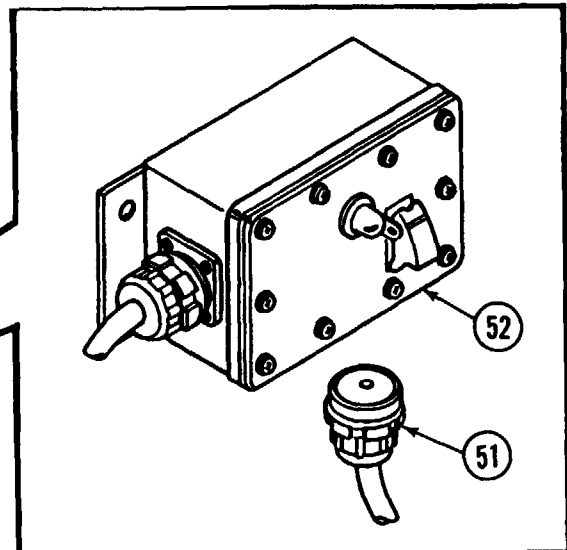
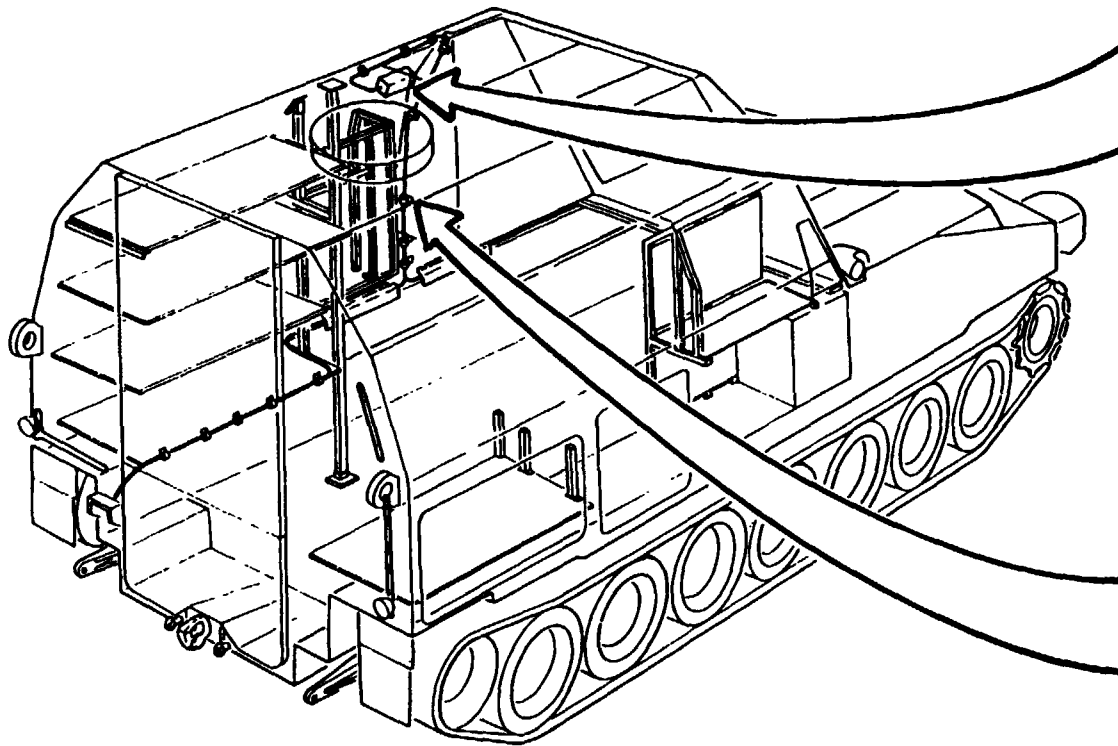
**INSTALLATION**

- A Install harness (8) to vehicle by installing lead (68), new lockwashers (67), and screw (66). Push boot (65) back into position.

**NOTE**

For steps B, E, G, M, and R, remove screws and flat washers from each strap before installing harness.

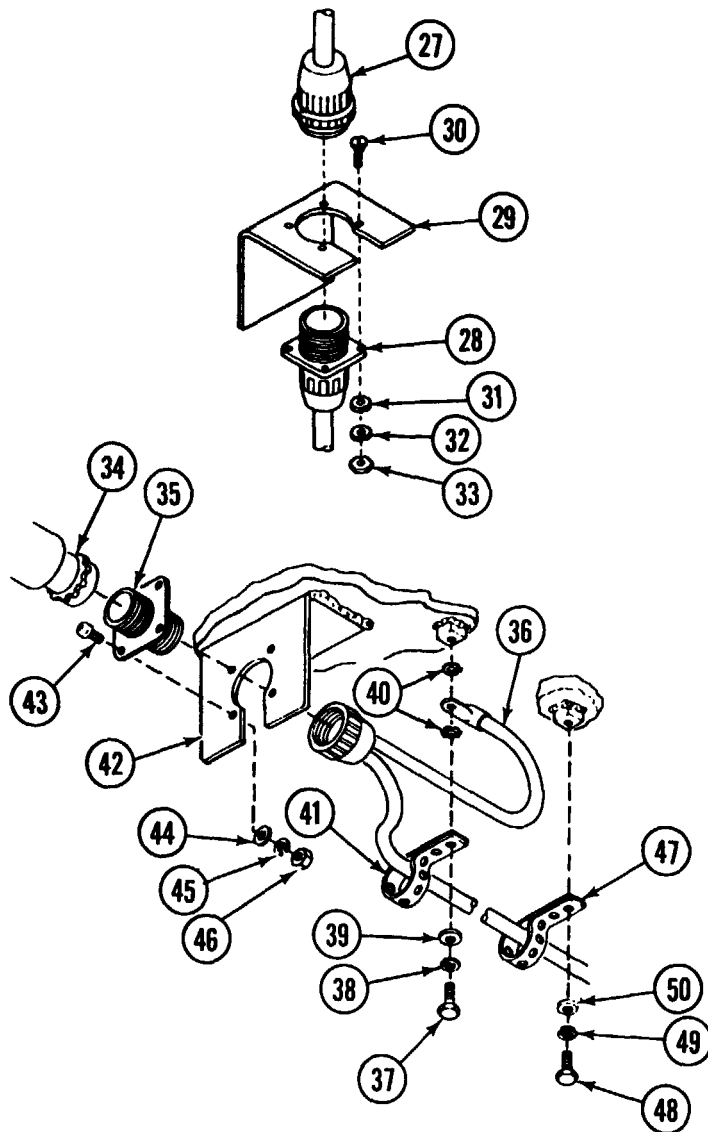
- B Install five straps (64), five flat washers (63), five new lockwashers (62), and five screws (61).
- c Install two guards (60) with seven flat washers (59), seven new lockwashers (58), and seven screws (57).
- D Install NBC power control box plug lead and radio disconnect receptacle lead.

**CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

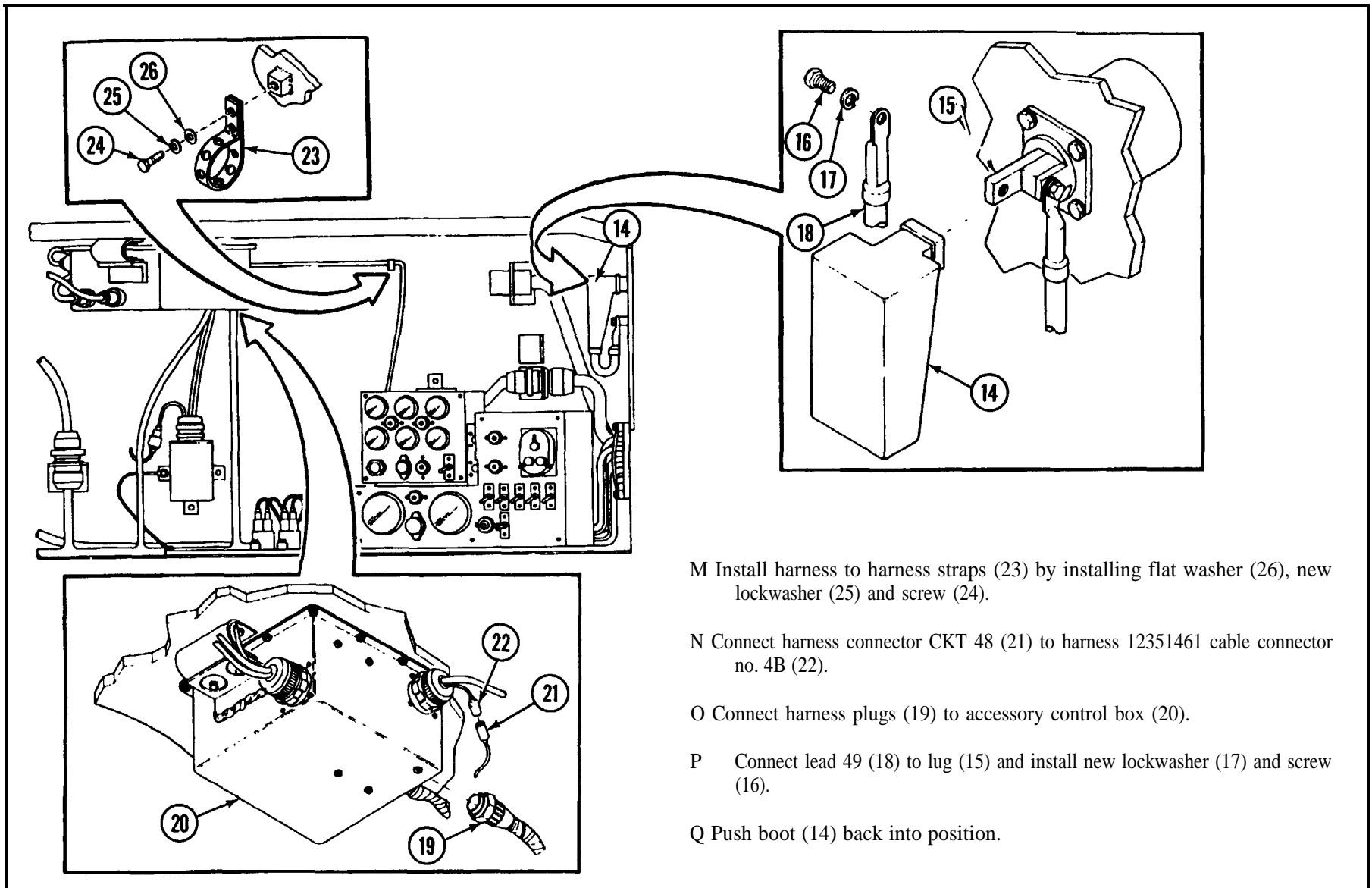
E Install seven retaining straps (53), with seven flat washers (56), seven new lockwashers (55), and seven screws (54).

F Connect NBC power control box plug (51) to NBC control box (52).

**CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, Disassembly, ASSEMBLY AND INSTALLATION (CONTINUED)**



- G Install strap (47), with flat washer (50), new lockwasher (49) and screw (48).
- H Install radio power disconnect receptacle (35) to bracket (42) by installing four screws (43), four flat washers (44), four new lockwashers (45) and four nuts (46).
- I Install radio power disconnect ground lug (36) by installing harness retaining strap (41), two new lockwashers (40), flat washer (39), new lockwasher (38), and screw (37).
- J Install radio power disconnect (34) to radio power disconnect receptacle (35).
- K Install receptacle (28) to wall mounted bracket (29) by installing four screws (30), four flat washers (31), four new lockwashers (32) and four nuts (33).
- L Connect APU power lead 66 (27) to power feed receptacle (28).

**CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, Disassembly, ASSEMBLY AND INSTALLATION (CONTINUED)**


M Install harness to harness straps (23) by installing flat washer (26), new lockwasher (25) and screw (24).

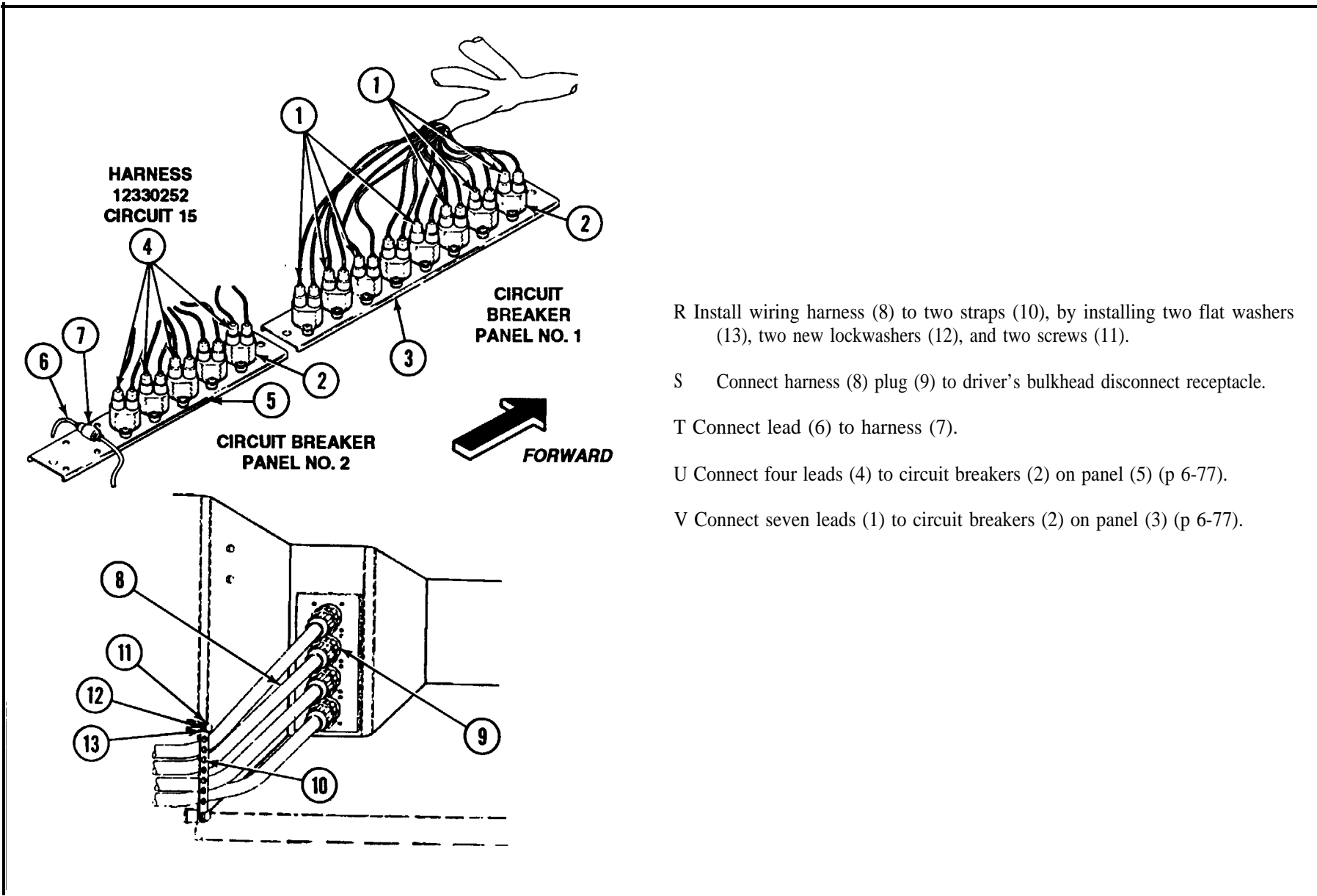
N Connect harness connector CKT 48 (21) to harness 12351461 cable connector no. 4B (22).

O Connect harness plugs (19) to accessory control box (20).

P Connect lead 49 (18) to lug (15) and install new lockwasher (17) and screw (16).

Q Push boot (14) back into position.

**CARGO COMPARTMENT WIRING HARNESS (12330257): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



R Install wiring harness (8) to two straps (10), by installing two flat washers (13), two new lockwashers (12), and two screws (11).

S Connect harness (8) plug (9) to driver's bulkhead disconnect receptacle.

T Connect lead (6) to harness (7).

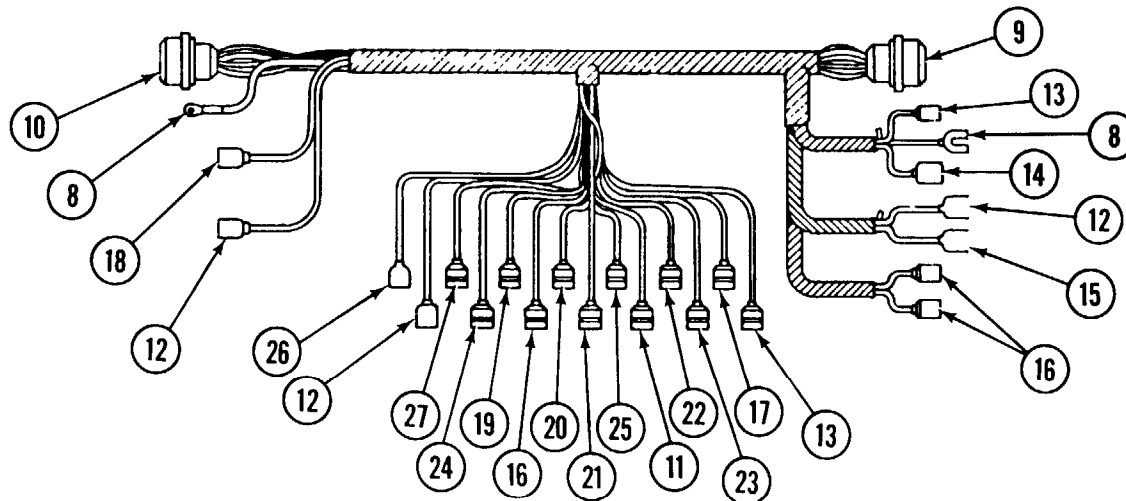
U Connect four leads (4) to circuit breakers (2) on panel (5) (p 6-77).

V Connect seven leads (1) to circuit breakers (2) on panel (3) (p 6-77).

**BULKHEAD PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260287): REMOVAL, DISASSEMBLY. ASSEMBLY AND INSTALLATION**

Connector Number	Electrical Lead To:	Wire No.	Connector Number	Electrical Lead To:	Wire No.
8	Ground	GND	23	Fuel prime pump indicator lamp	588L
9	Bulkhead connector		24	Panel lights	40
10	Portable instrument connector		25	Accessory control box	400
11	Master switch	459A	26	Air cleaner blower motor relay	415B
12	Parking brake warning switch and light	509E	27	Connector to 415 air cleaner blower motor relay	27B
13	Engine instrument and master warning light	27			
14	Warning lamp - switch	509		Aeration detector	352B
15	Parking brake warning light	509E		Aeration detector	352A
16	Starter switch neutral safety switch	14		Master switch	459B
17	Air cleaner blower assembly	415		Engine oil pressure gage	36
18	Master switch	459		Engine water temperature gage	33A
19	Fuel level gage and switch	29-31		Transmission oil temperature gage	324
20	Flame heater switch	486A		Transmission oil pressure gage	321
21	Flame heater master switch	486		To fuel prime pump	588-588L
22	Fuel prime pump switch	588		To voltage regulator	400-459B

TO PORTABLE INSTRUMENT PANEL

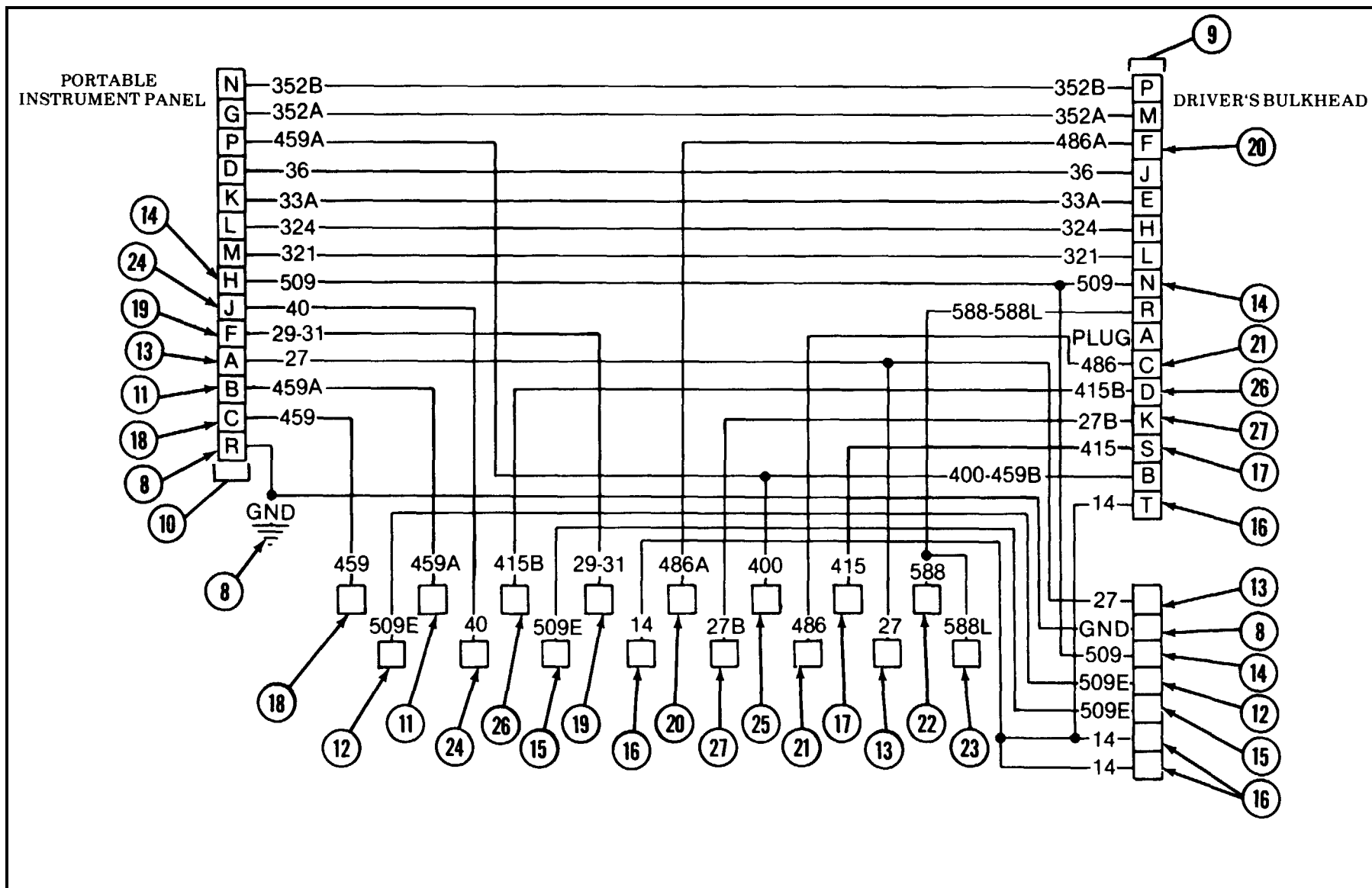


TO BULKHEAD

NUMBERS KEYED TO REMOVAL SEQUENCE



**BULKHEAD TO PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260287): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



TA57181

## BULKHEAD TO PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260287): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### INITIAL SETUP

#### Materials/Parts:

Tape, electrical (item 60, Appx D)

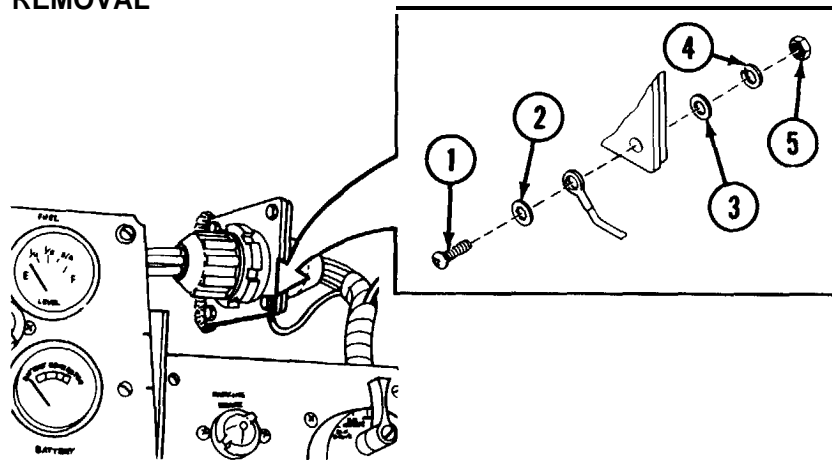
#### Equipment Condition:

Battery ground cables disconnected (p 6-44).

MASTER switch OFF.

Portable instrument panel removed (p 6-19).

### REMOVAL

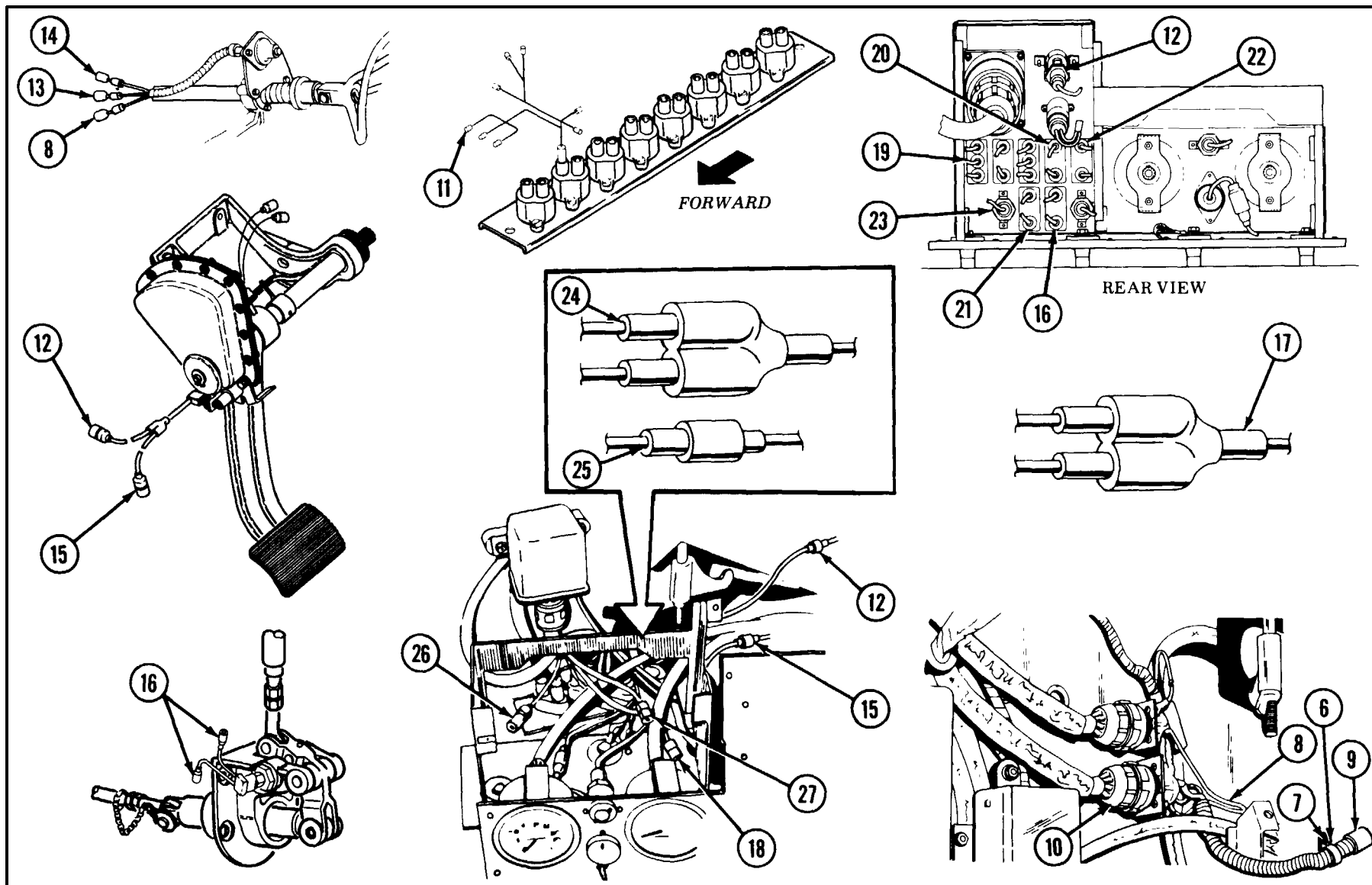


A Remove four screws (1), lockwasher (2), four flat washers (3), four lockwashers (4), and four nuts (5). Discard lockwashers.

B Remove screw (6) and washer (7) and release ground wire (8) from plastic attaching strap.

- C Disconnect two connectors (9 **and** 10).
- D Disconnect wires 459A (11) and 509E (12) between circuit breakers and driver's instrument panel.
- E Disconnect steering column-mounted master warning light harness. Disconnect three wires 27, 509 and GND (13, 14 and 8) at snap-in connectors.
- F Disconnect two 509E wire snap-in connectors (12 **and** 15) from parking brake warning switch at brake assembly.
- G Disconnect two wire 14 snap-in connectors (16) at transmission shift control linkage.
- H Disconnect wire connector 27 (13) from circuit breaker.
- I Disconnect wire 415 connector (17) from lead assembly 10897991 wire 415 connector.
- J Disconnect wire connector 459 (18) from harness wire 459 connector 12330252.
- K Disconnect seven connectors (19, 12, 16, 20, 21, 22 and 23) at driver's control panel.
- L Disconnect two connectors, wire 40 (24) and wire 400 (25) from behind driver's instrument panel.
- M Disconnect two connectors, wire 415B (26) and wire 27B (27) at air cleaner blower relay connector.
- N Disconnect wire 415 connector (17) from lead assembly 10897991 wire 415 connector.

**BULKHEAD TO PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260287): REMOVAL, DISASSEMBLY , ASSEMBLY AND INSTALLATION (CONTINUED)**



**BULKHEAD TO PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260287): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****DISASSEMBLY****NOTE**

Remove electrical tape only from section of harness to be disassembled.

- A Remove section of electrical tape from harness.
- B Separate and isolate wiring harness branches.
- C Disassemble wiring branch and replace defective wires (p 2-307).

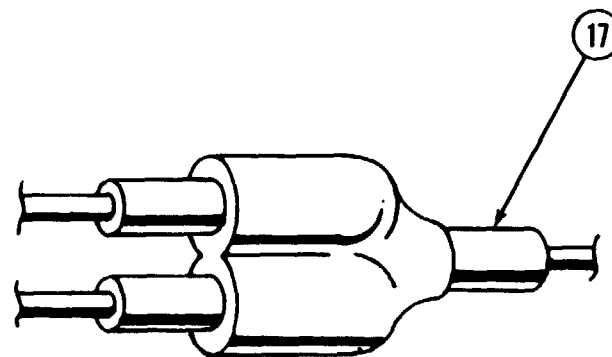
**ASSEMBLY**

- A Reassemble wiring branches (p 2-307).
- B Regroup wiring branches and secure with electrical tape (item 60, Appx D).

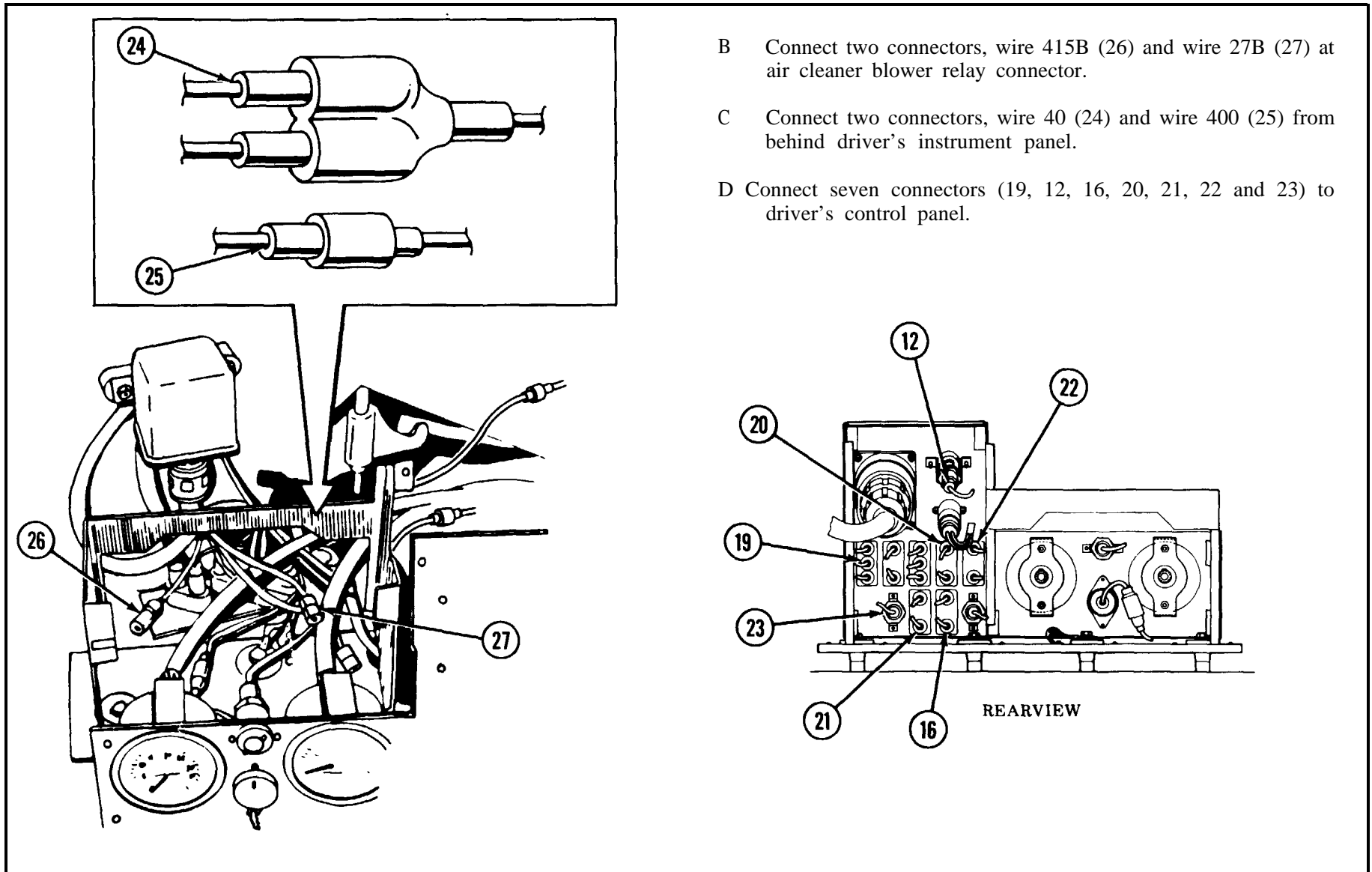
**INSTALLATION****NOTE**

Guide to wire connector locations on instrument panel is located on pages 6-24 and 6-25.

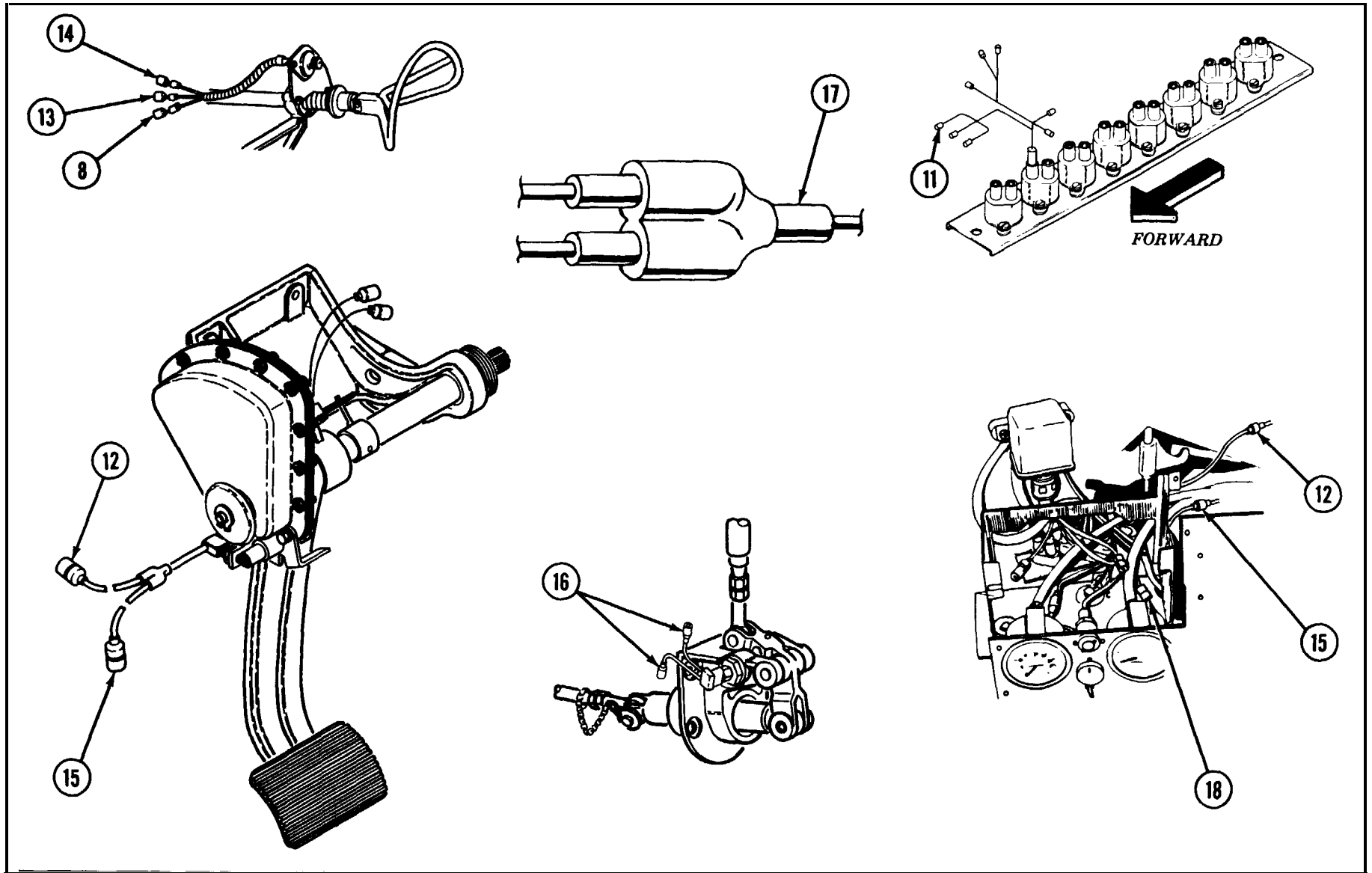
- A Connect wire 415 connector (17) to lead assembly 10897991 wire 415 connector.



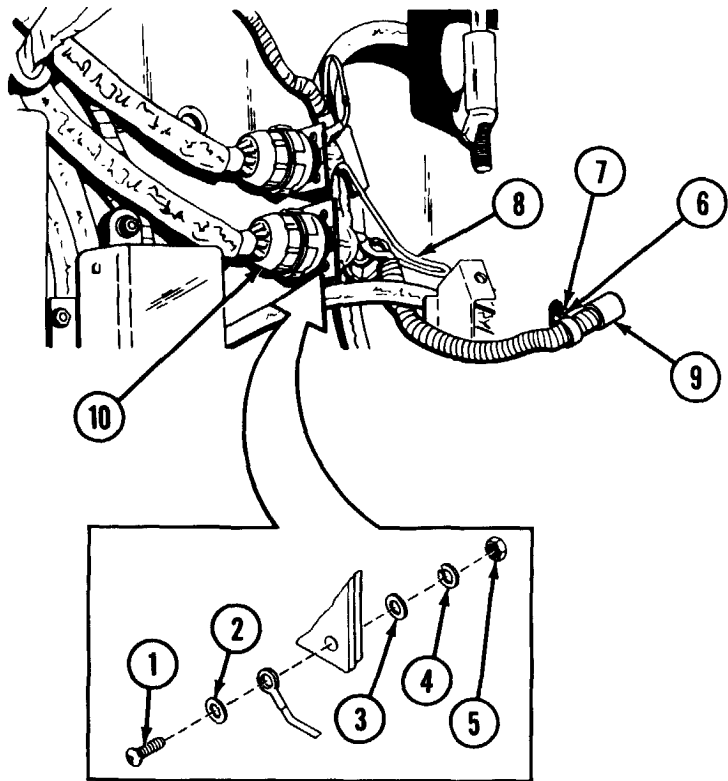
**BULKHEAD TO PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260287): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**BULKHEAD TO PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260287): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**BULKHEAD TO PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260287): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

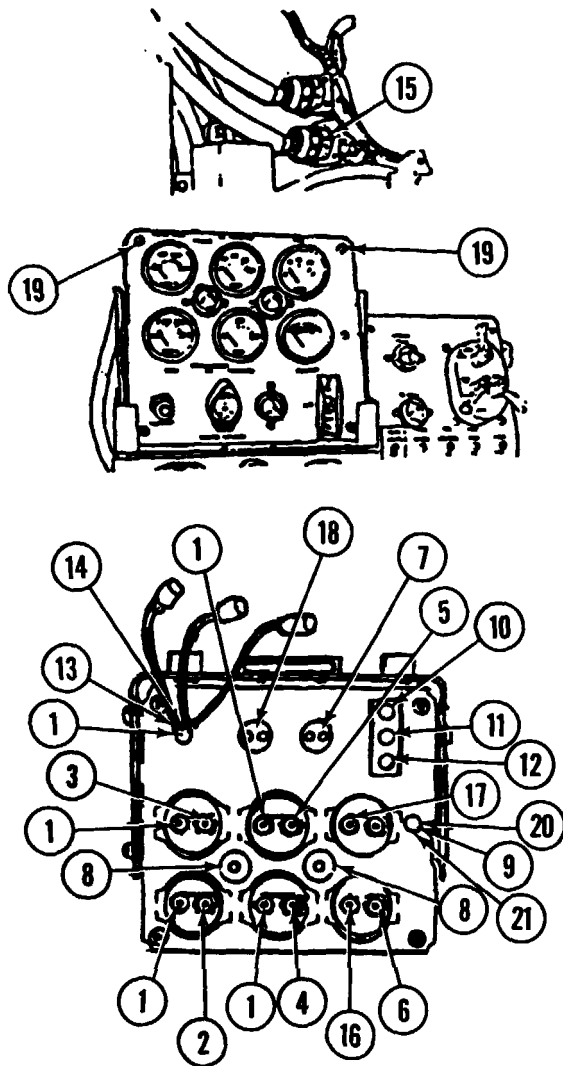


- E Connect wire connector 459 (18) to harness 12330252 wire 459 connector.
- F Connect wire 415 connector (17) to lead assembly 10897991 wire 415 connector.
- G Connect wire connector 27 (13) to circuit breaker.
- H Connect two wire 14 snap-in connectors (16) to transmission shift control linkage.
- I Connect two 509E wire snap-in connectors (12 and 15) at parking brake warning switch at brake assembly.
- J Connect steering column-mounted master warning light harness. Connect three wires 27, 509 and GND (13, 14 and 8) at snap-in connectors.
- K Connect wires 459A (11) and 509E (12) between circuit breakers and driver's instrument panel.
- L Connect two connectors (9 and 10).
- M Install ground wire (8), to plastic attaching strap by installing screw (6) and washer (7).
- N Install four screws (1), new lockwasher (2), four flat washers (3), four new lockwashers (4) and four nuts (5).





## DRIVER'S PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260268): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### REMOVAL

- A Remove portable instrument panel from main panel by pulling straight up.
- B Disconnect harness connector (15) horn hull bulkhead driver's compartment.
- C Loosen four screws (19) at portable instrument panel. Pull cover outward to expose electrical leads to instruments.
- D Remove nut (20) and washer (21). Release ground lead (9) and replace screw and washer.
- E Disconnect 21 electrical connectors (1 through 8, 10 through 14 and 16 through 18) at instrument panel.
- F Remove wiring harness 12260298 and grommet from panel assembly.

**DRIVER'S PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260298): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

**DISASSEMBLY**

**NOTE**

Remove electrical tape only from section of harness to be disassembled.

- A Remove section of electrical tape from harness.
- B Separate and isolate defective harness leads.
- C Disassemble wiring branch and replace defective leads (p 2-307).

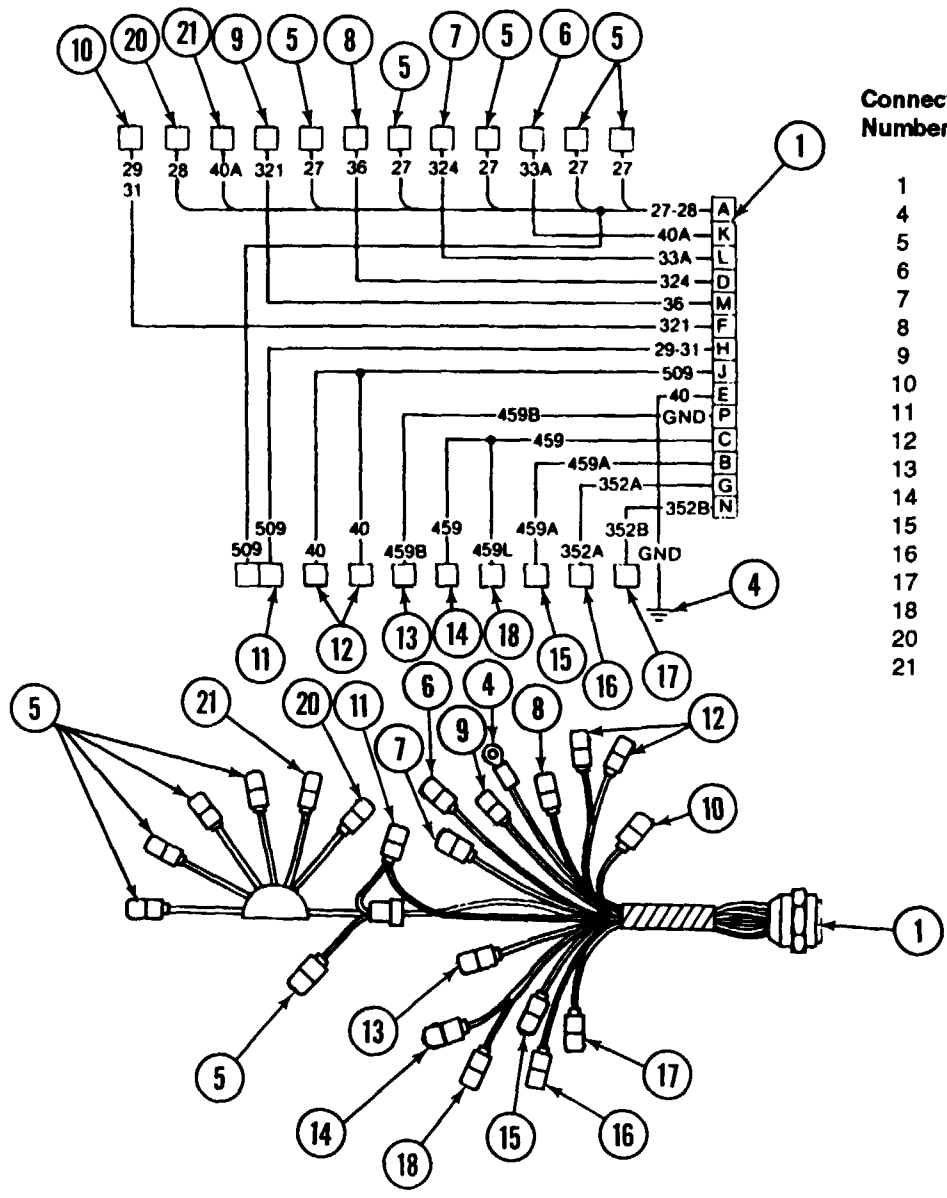
**ASSEMBLY**

Reverse disassembly procedure.

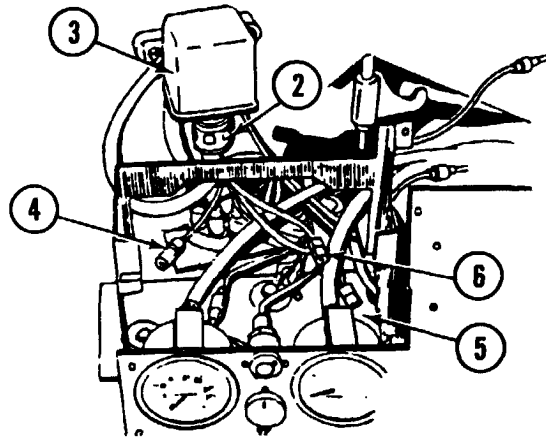
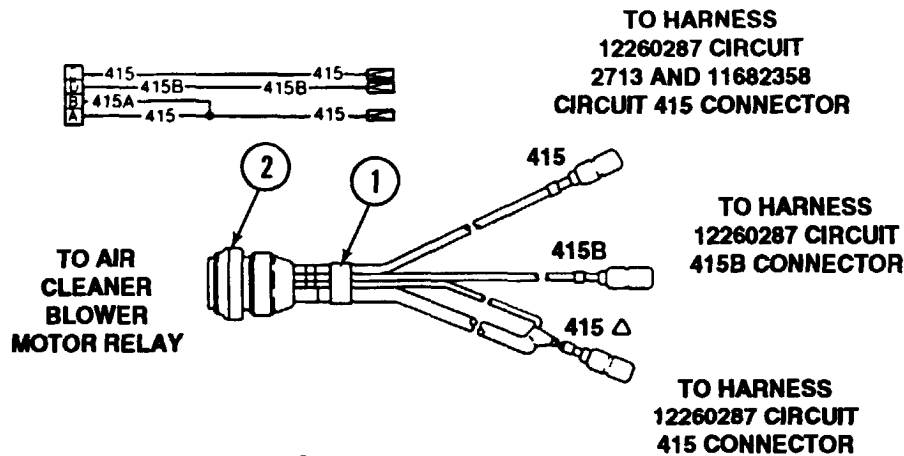
**INSTALLATION**

Install in reverse order of removal.

**DRIVER'S PORTABLE INSTRUMENT PANEL WIRING HARNESS (12260298): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



Connector Number	Electrical Lead To:	Wire No.
1	Connector harness 12260298	
4	Ground	GND
5	Power lead: engine instrumentation	27
6	Engine water temperature lead	33A
7	Transmission oil temperature lead	324
8	Engine oil pressure lead	36
9	Transmission oil pressure lead	321
10	Fuel gage lead	29-31
11	Warning lamp lead	509
12	Panel lights	40
13	Master switch output lead	459B
14	Master switch input	459
15	Master switch auxiliary outlet lead	459A
16	Coolant indicator	352A
17	Coolant indicator	352B
18	Master switch warning light	459L
20	Battery indicator	40A
21	Fuel gage	28

**AIR CLEANER BLOWER MOTOR RELAY WIRING HARNESS (10897991): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**

**REMOVAL**
**WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

A Remove portable instrument panel (p 6-19).

B Disconnect harness (1) plug (2) from air cleaner blower motor relay (3).

C Disconnect three connectors (4, 5 and 6) from wiring harness circuit Connectors.

D Remove harness (1) from vehicle.

**DISASSEMBLY**
**NOTE**

Remove electrical tape only from section of harness to be disassembled.

A Remove section of electrical tape from harness branches.

B Separate and isolate wiring harness branches.

C Disassemble wiring branch and replace defective wires (p 2-307).

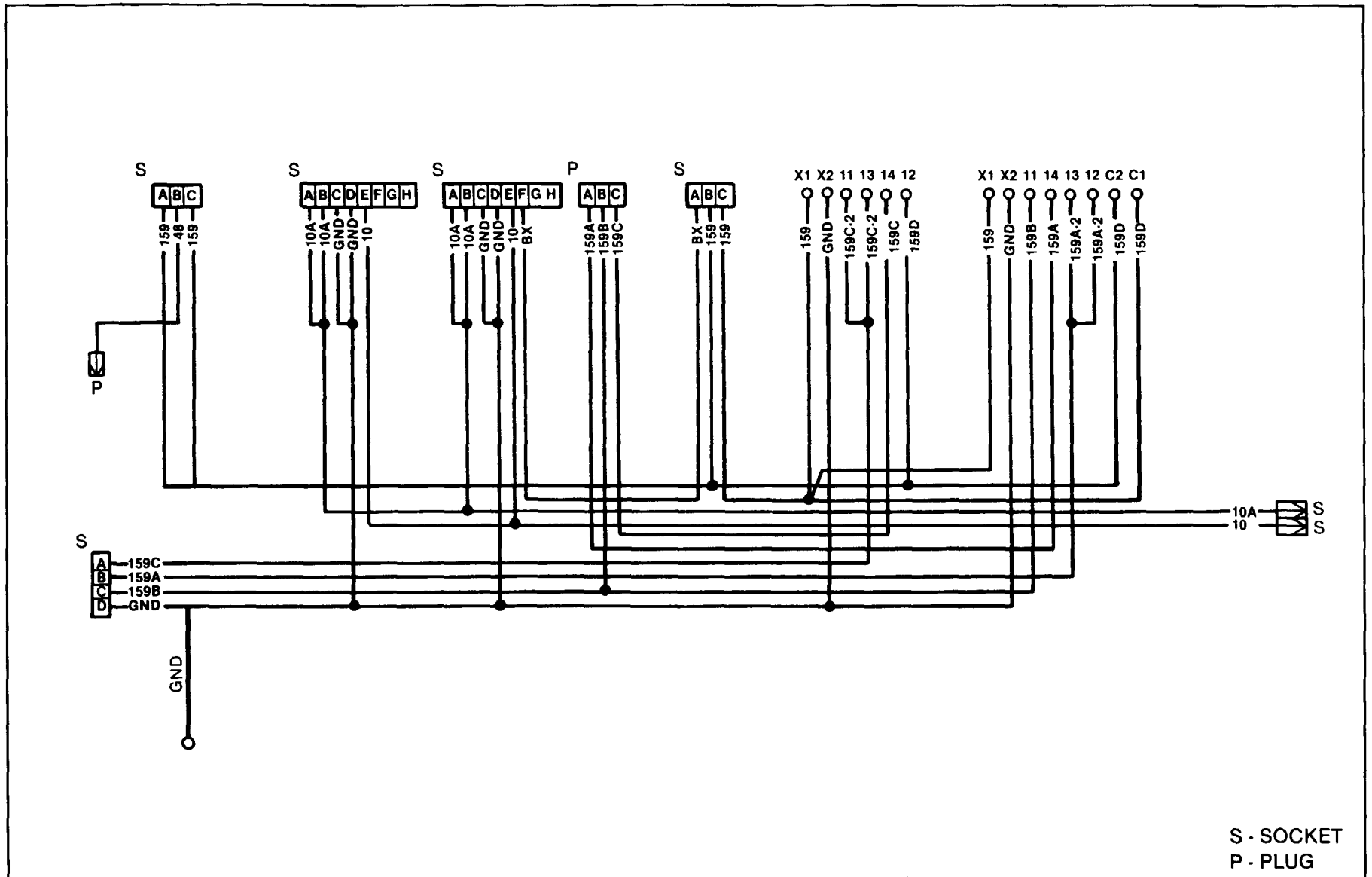
**ASSEMBLY**

Reverse disassembly procedures.

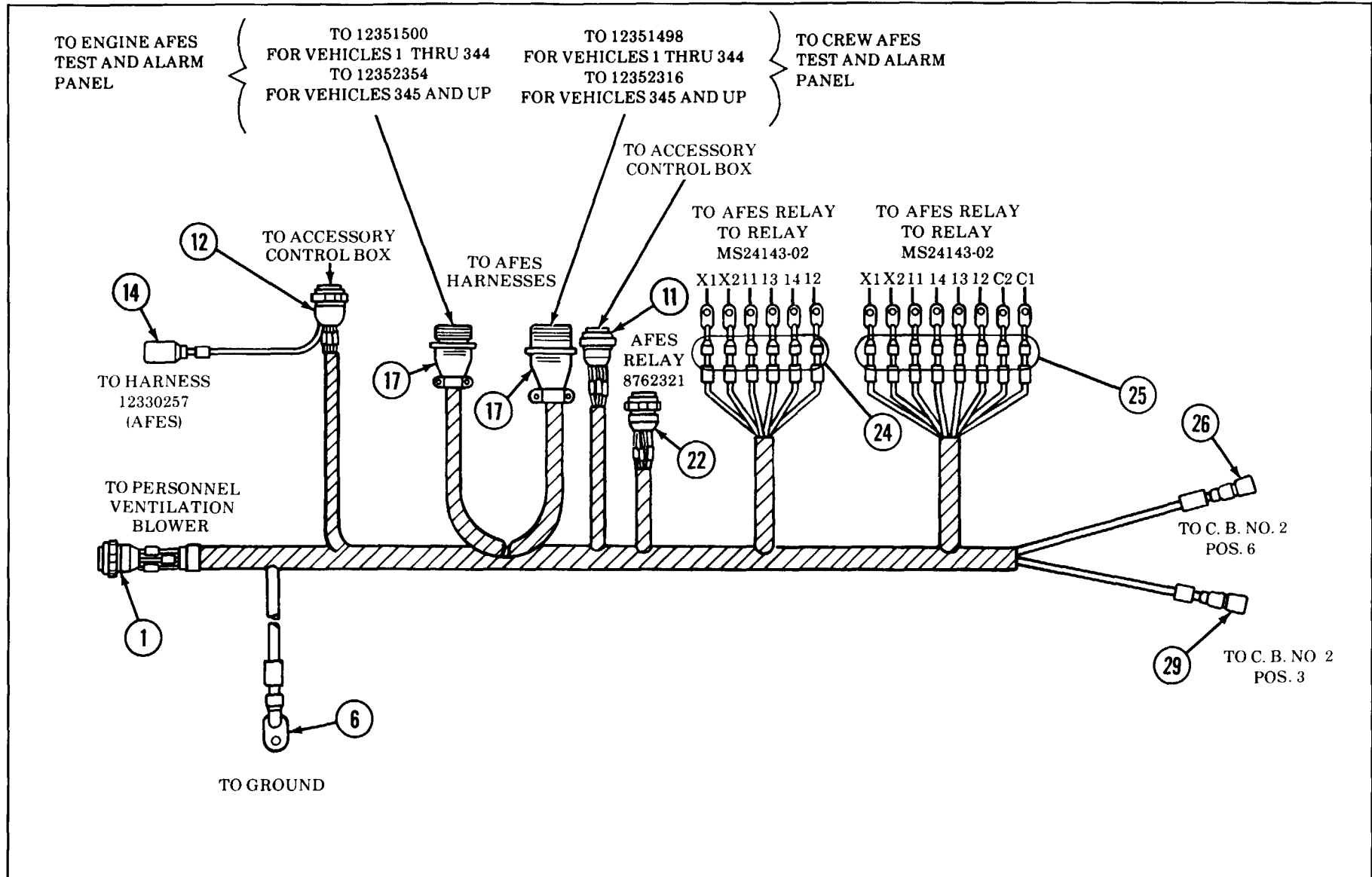
**INSTALLATION**

Reverse removal procedures.

ACCESSORY CONTROL BOX TO AFES HARNESSES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS  
 (12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



**ACCESSORY CONTROL BOX TO AFES HARNESES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS (12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**ACCESSORY CONTROL BOX TO AFES HARNESSES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS  
(12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

Connector Number	Electrical Lead To:	Wire No.	Connector Number	Electrical Lead To:	Wire No.
1	Personnel ventilation blower	159C, 159A, 159B, GND	22	AFES relay - 8762321	BX, 159, 159
6	Ground	GND	24	AFES relay - MS24143-D2	X1, X2, 11, 13, 14, 12
11	Accessory control box	159A, 159B, 159C	25	AFES relay - MS24143-D2	X1, X2, 11, 14, 13, 12, C2, C1
12	Accessory control box	159, 159, 48	26	Circuit breaker panel no. 2	
14	AFES Harness 12330257	48		circuit breaker position no. 6	10A
17	AFES Harness 12351500 } For vehicles Harness 12351498 } 1 thru 344	10A 10A GND, GND, 10	29	Circuit breaker panel no. 2	
	Harness 12352354 } For vehicles Harness 12352316 } 345 and up	10A, 10A GND, GND, 10, BX		circuit breaker position no. 3	10

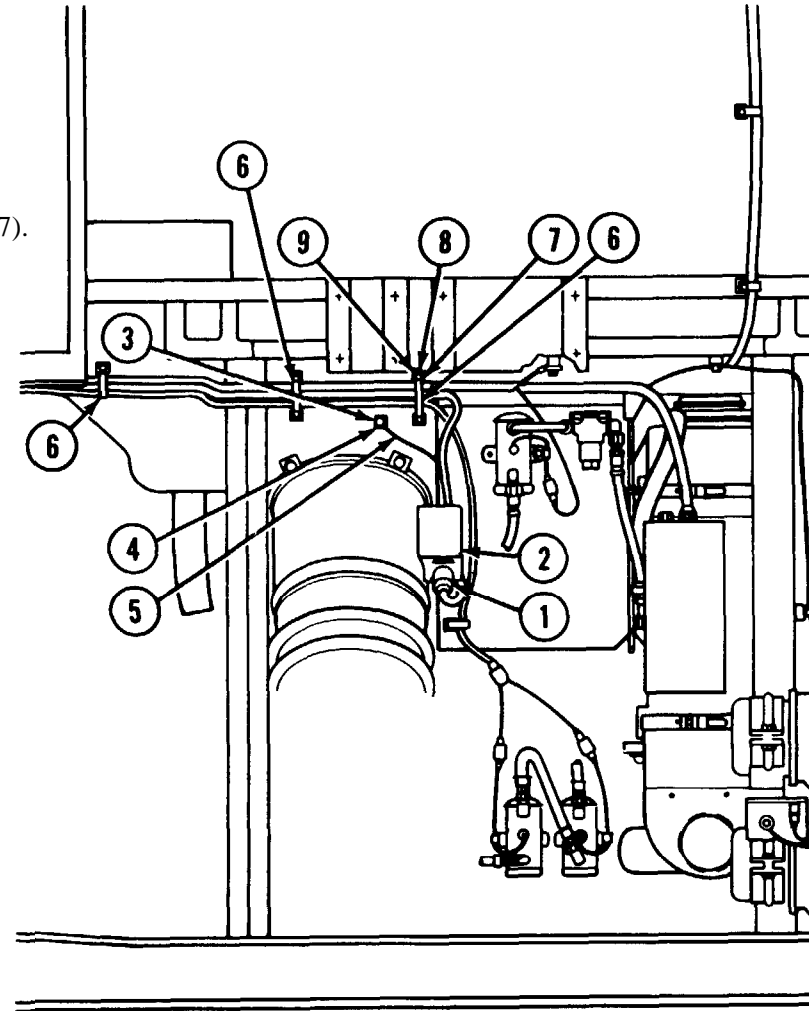
**ACCESSORY CONTROL BOX TO AFES HARNESSES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS (12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****INITIAL SETUP**Equipment Condition:

Battery ground cables disconnected (6-44).  
MASTER switch OFF.  
Engine AFES deactivated (p 14-14.3) and Crew AFES deactivated (p 14-14.7).  
Left projectile rack moved toward rear of vehicle (TM 9-2350-267-10).

General Safety Instructions:

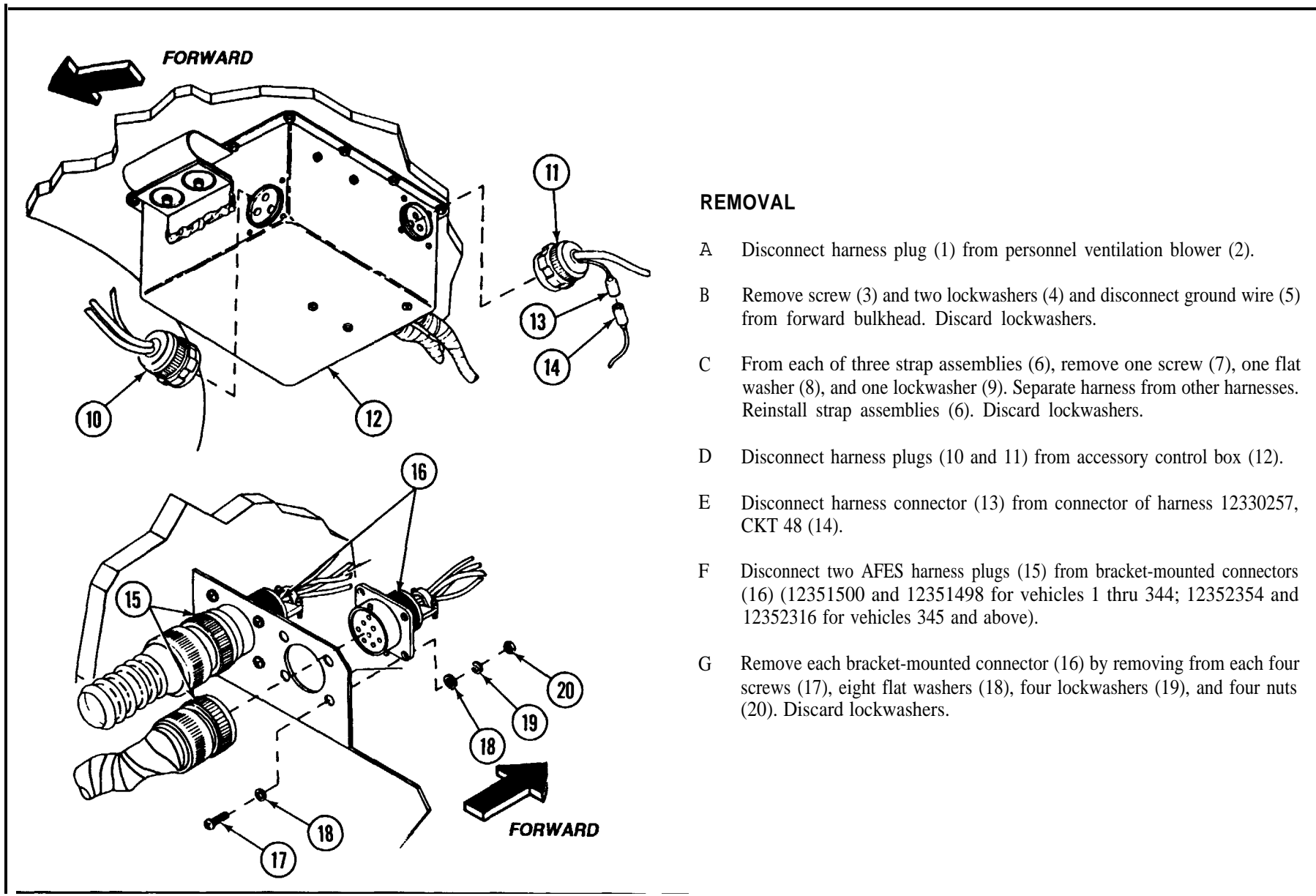
Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

Do not strike cylinder bottle with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge.





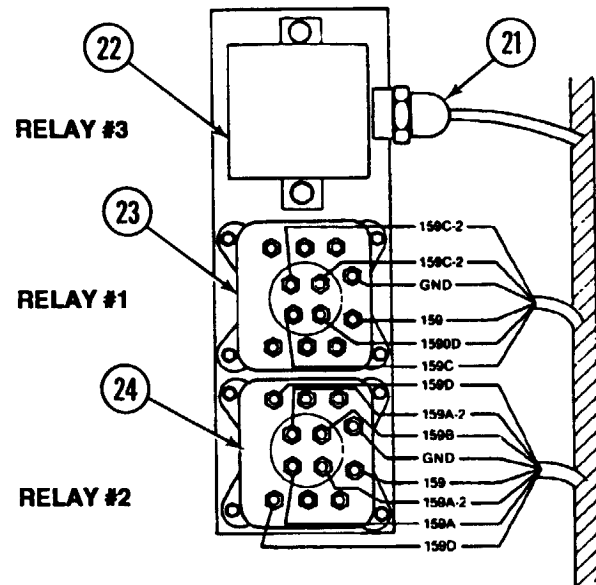
ACCESSORY CONTROL BOX TO AFES HARNESS, AFES RELAYS, AND PERSONNEL VENTILATION BLOWER WIRING HARNESS (12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



**REMOVAL**

- A Disconnect harness plug (1) from personnel ventilation blower (2).
- B Remove screw (3) and two lockwashers (4) and disconnect ground wire (5) from forward bulkhead. Discard lockwashers.
- C From each of three strap assemblies (6), remove one screw (7), one flat washer (8), and one lockwasher (9). Separate harness from other harnesses. Reinstall strap assemblies (6). Discard lockwashers.
- D Disconnect harness plugs (10 and 11) from accessory control box (12).
- E Disconnect harness connector (13) from connector of harness 12330257, CKT 48 (14).
- F Disconnect two AFES harness plugs (15) from bracket-mounted connectors (16) (12351500 and 12351498 for vehicles 1 thru 344; 12352354 and 12352316 for vehicles 345 and above).
- G Remove each bracket-mounted connector (16) by removing from each four screws (17), eight flat washers (18), four lockwashers (19), and four nuts (20). Discard lockwashers.

**ACCESSORY CONTROL BOX TO AFES HARNESSSES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS (12351461):  
REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

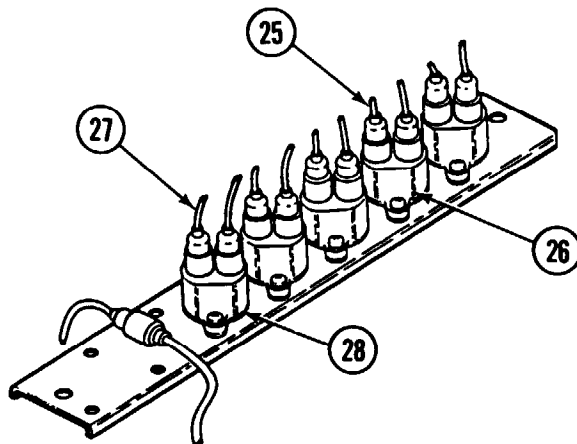


H Remove relay covers (p 14-35).

I Disconnect harness plug (21) from AFES relay no. 3 (22).

J Disconnect six harness terminals from relay no. 1 (23).

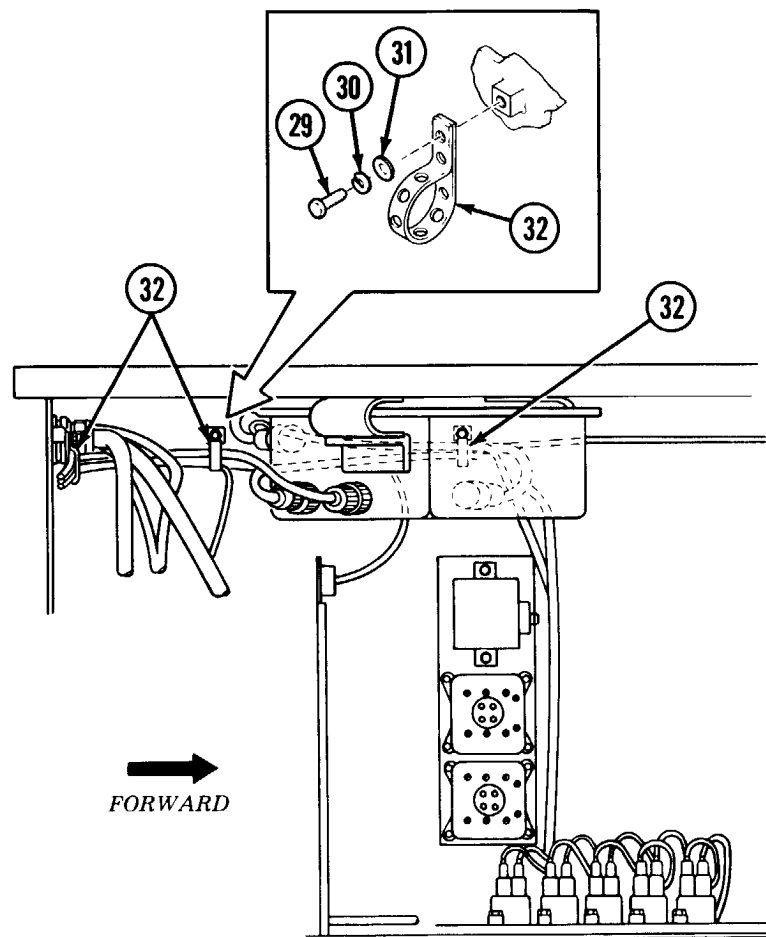
K Disconnect eight harness terminals from relay no. 2 (24).



L Disconnect harness circuit 10A (25) from circuit breaker panel no. 2, circuit breaker no. 6 (26).

M Disconnect harness circuit 10 (27) from circuit breaker panel no. 2, circuit breaker no. 3 (28).

**ACCESSORY CONTROL BOX TO AFES HARNESSSES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS (12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



N Remove three screws (29), three lockwashers (30), three flat washers (31) and three strap assemblies (32). Separate harnesses and reinstall strap assemblies.

O Remove harness 12351461 from vehicle.

**DISASSEMBLY**

**NOTE**

Remove electrical tape only from section of harness to be disassembled.

A Remove section of electrical tape from harness.

B **Separate** and isolate wiring harness branches.

C Disassemble wiring branch and replace defective wires (p 2-307).

**ASSEMBLY**

A Reassemble wiring branch (p 2-307).

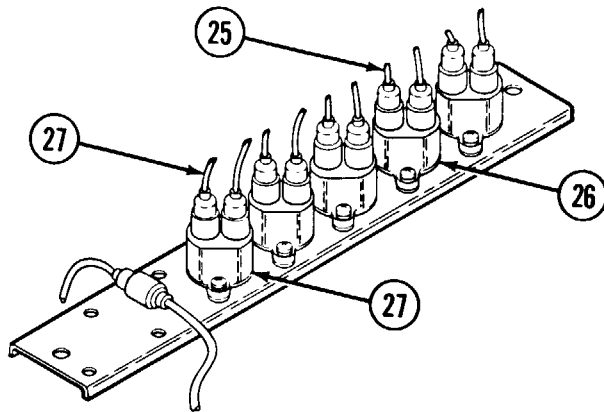
B Regroup wiring branches and secure with electrical tape (item 60, Appx D).

**INSTALLATION**

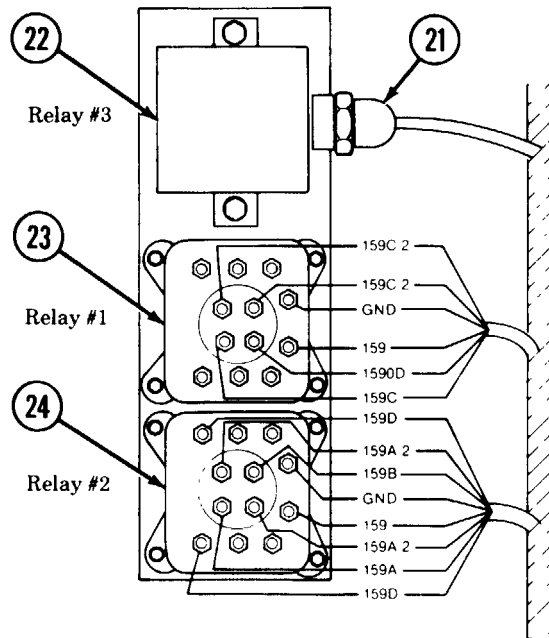
A Install harness 12351461 to vehicle.

B Install three screws (29), three new lockwashers (30), three flat washers (31), and three strap assemblies (32).

**ACCESSORY CONTROL BOX TO AFES HARNESES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS (12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

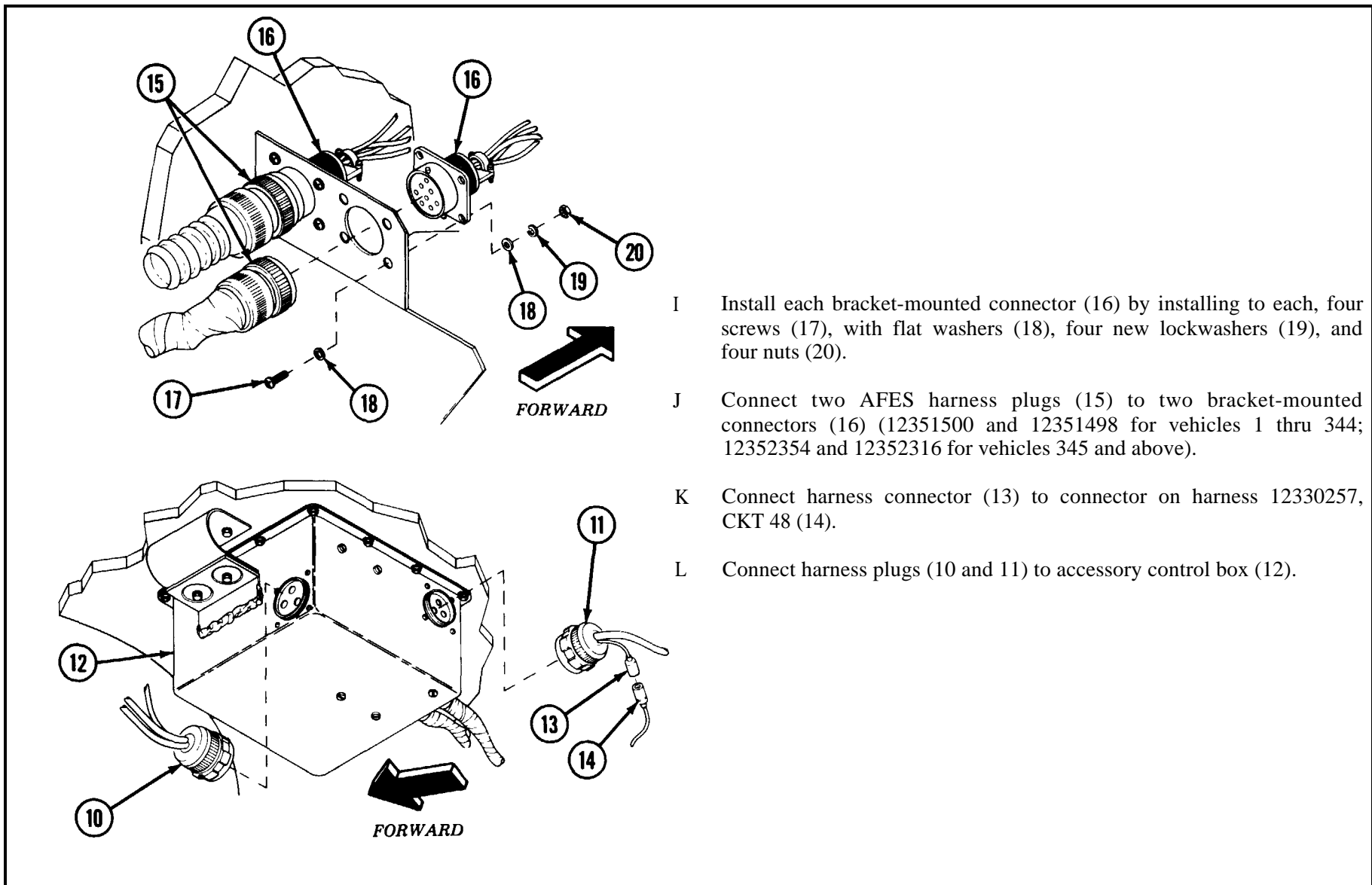


- C Connect harness circuit 10 (27) to circuit breaker panel no. 2, circuit breaker no. 3 (28).
- D Connect harness circuit 10A (25) to circuit breaker panel no. 2, circuit breaker no. 6 (26).



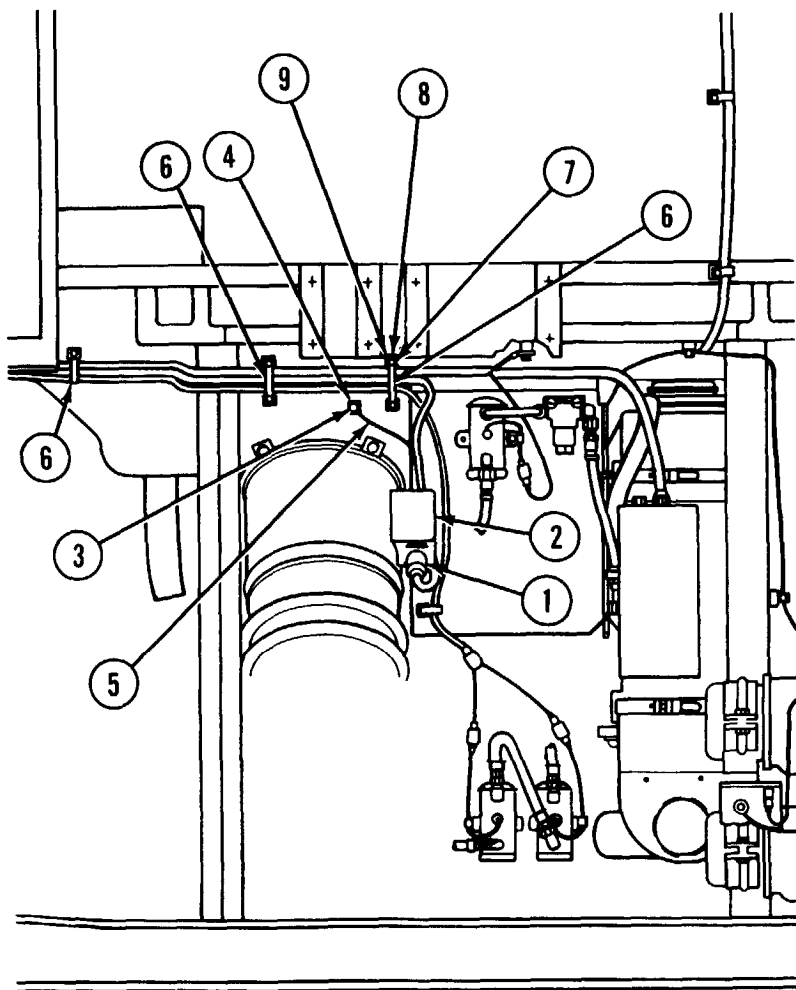
- E Connect eight harness terminals to relay no. 2 (24).
- F Connect six harness terminals to relay no. 1 (23).
- G Connect harness plug (21) to AFES relay no. 3 (22).
- H Install relay covers (p 14-35).

**ACCESSORY CONTROL BOX TO AFES HARNESES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS (12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



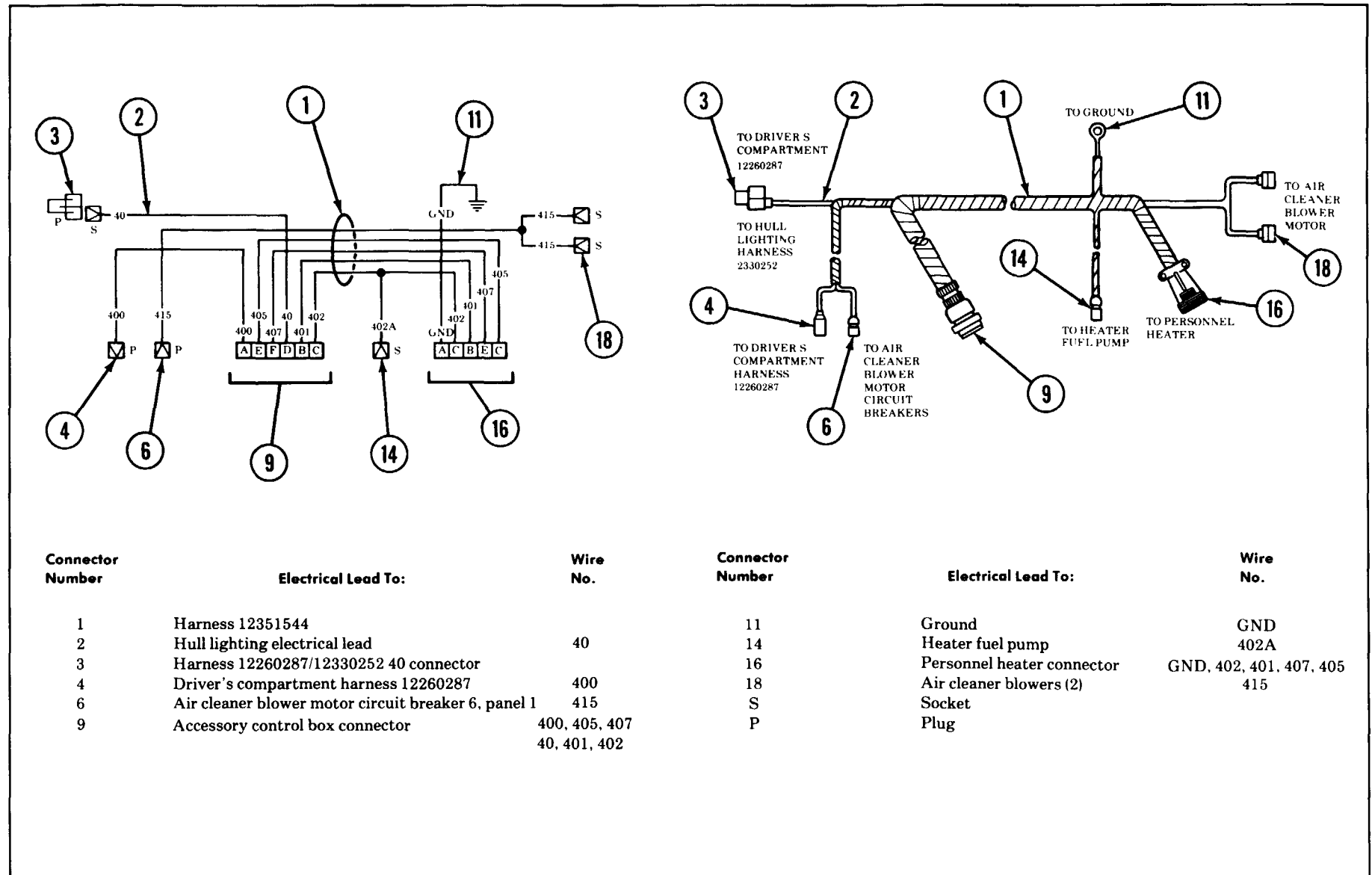
- I Install each bracket-mounted connector (16) by installing to each, four screws (17), with flat washers (18), four new lockwashers (19), and four nuts (20).
- J Connect two AFES harness plugs (15) to two bracket-mounted connectors (16) (12351500 and 12351498 for vehicles 1 thru 344; 12352354 and 12352316 for vehicles 345 and above).
- K Connect harness connector (13) to connector on harness 12330257, CKT 48 (14).
- L Connect harness plugs (10 and 11) to accessory control box (12).

### ACCESSORY CONTROL BOX TO AFES HARNESES, AFES RELAYS AND PERSONNEL VENTILATION BLOWER WIRING HARNESS (12351461): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



- M Install screw (7), flat washer (8) and new lockwasher (9) to each of three strap assemblies (6).
- N Connect ground wire (5) to forward bulkhead and secure it by installing two new lockwashers (4) and screw (3).
- O Connect harness plug (1) to personnel ventilation blower (2).
- P Connect ground cable (6-44).
- Q Reactivate engine AFES (p 14-14.5) and crew AFES (p 14.14.8).
- R Move left projectile rack toward front of vehicle (TM 9-2350-267-10).

**ACCESSORY CONTROL BOX TO HEATER, BLOWERS, HULL LIGHTING CIRCUITS WIRING HARNESS (12351544): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**







## ACCESSORY CONTROL BOX TO HEATER, BLOWERS, HULL LIGHTING CIRCUITS WIRING HARNESS (12351544): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

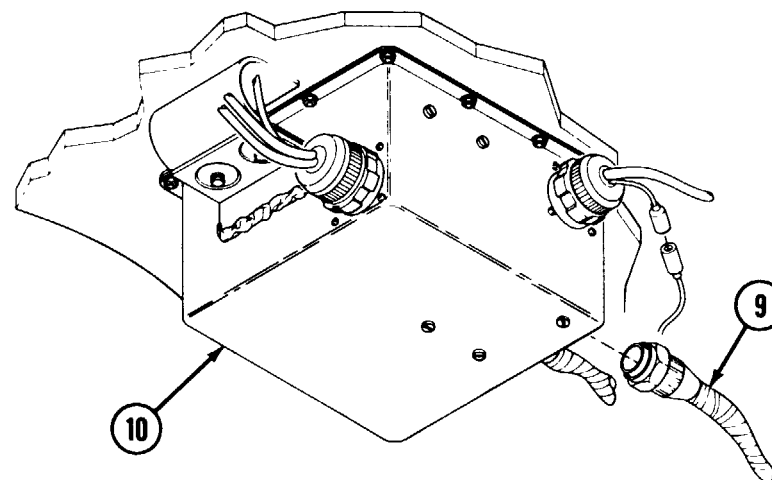
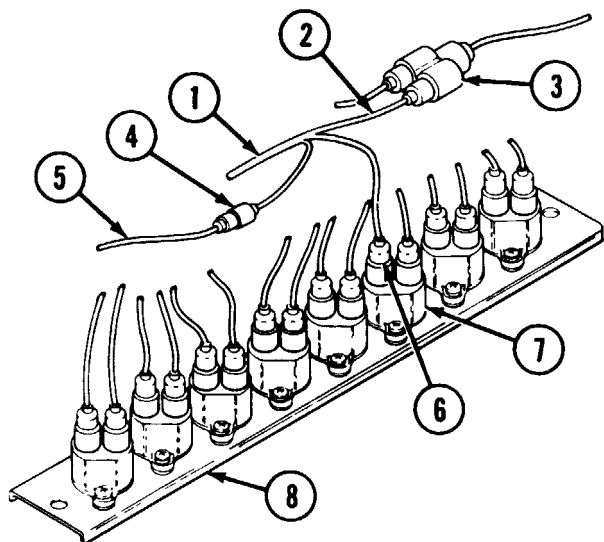
### INITIAL SETUP

#### Parts/Materials:

Electrical tape (item 60, Appx D)

#### Equipment Condition:

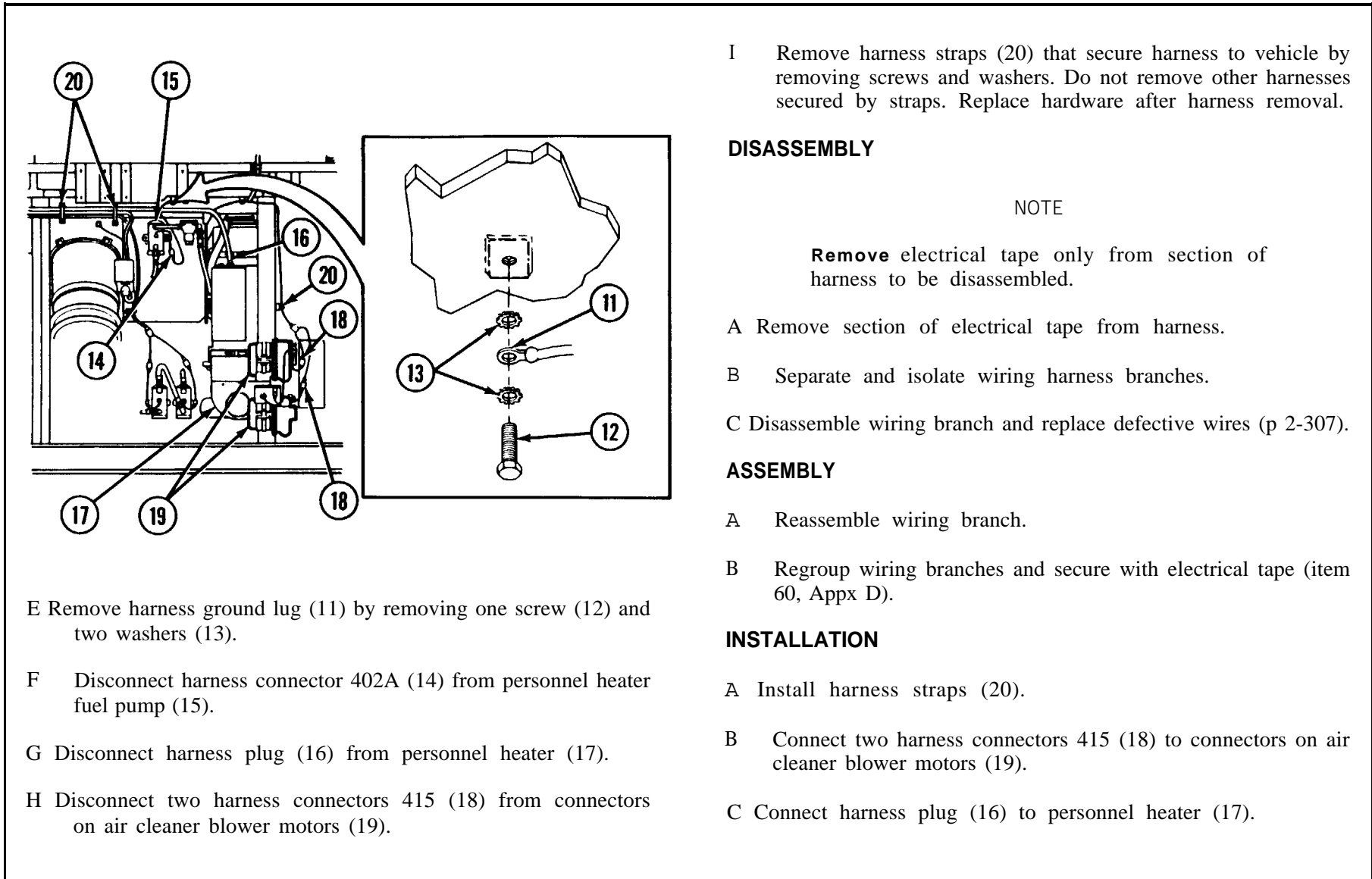
Battery ground cables disconnected (p 6-44).  
MASTER switch OFF.  
Portable instrument panel removed (p 6-19).  
Projectile racks removed (TM 9-2350-267-10).



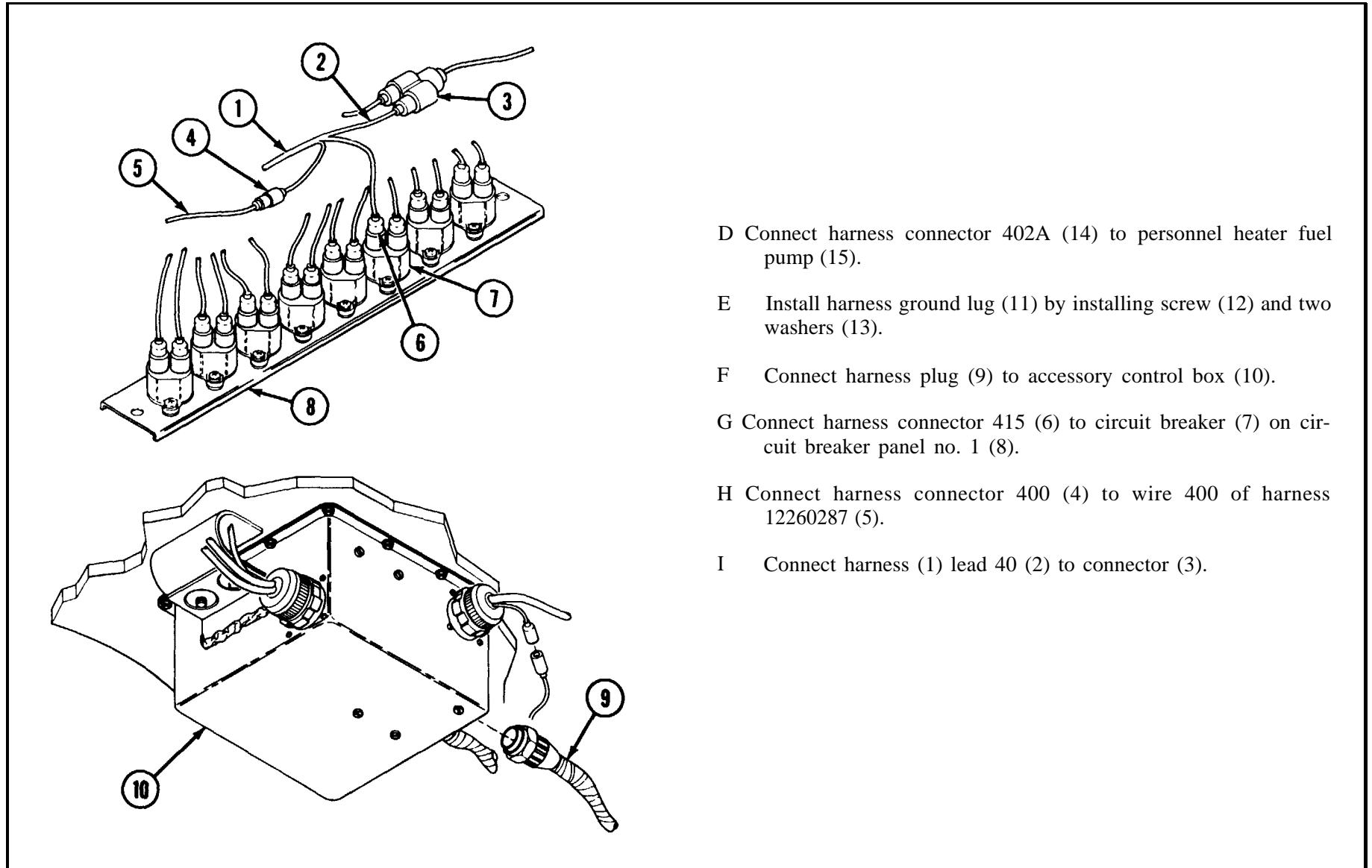
### REMOVAL

- A Disconnect harness (1) lead 40 (2) from connector (3).
- B Disconnect harness connector 400 (4) from wire 400 of harness 12260287 (5).
- C Disconnect harness connector 415 (6) from circuit breaker (7) on circuit breaker panel no. 1 (8).
- D Disconnect harness plug (9) from accessory control box (10).

**ACCESSORY CONTROL BOX TO HEATER, BLOWERS, HULL LIGHTING CIRCUITS WIRING HARNESS (12351544): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

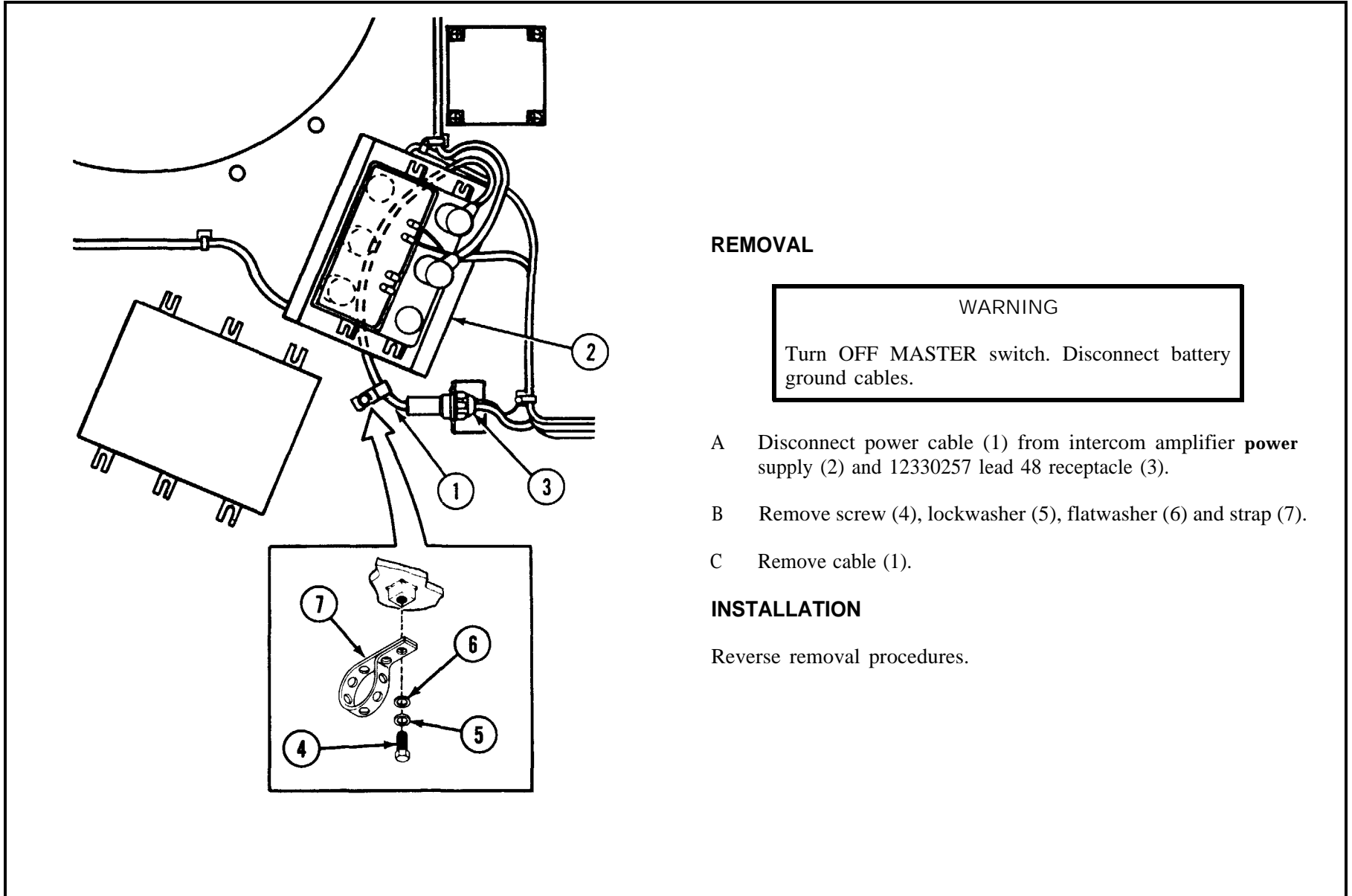


**ACCESSORY CONTROL BOX TO HEATER, BLOWERS, HULL LIGHTING CIRCUITS, WIRING HARNESS (12351544): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**





## INTERCOM POWER CABLE CX13089/VRC — 2 FT: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

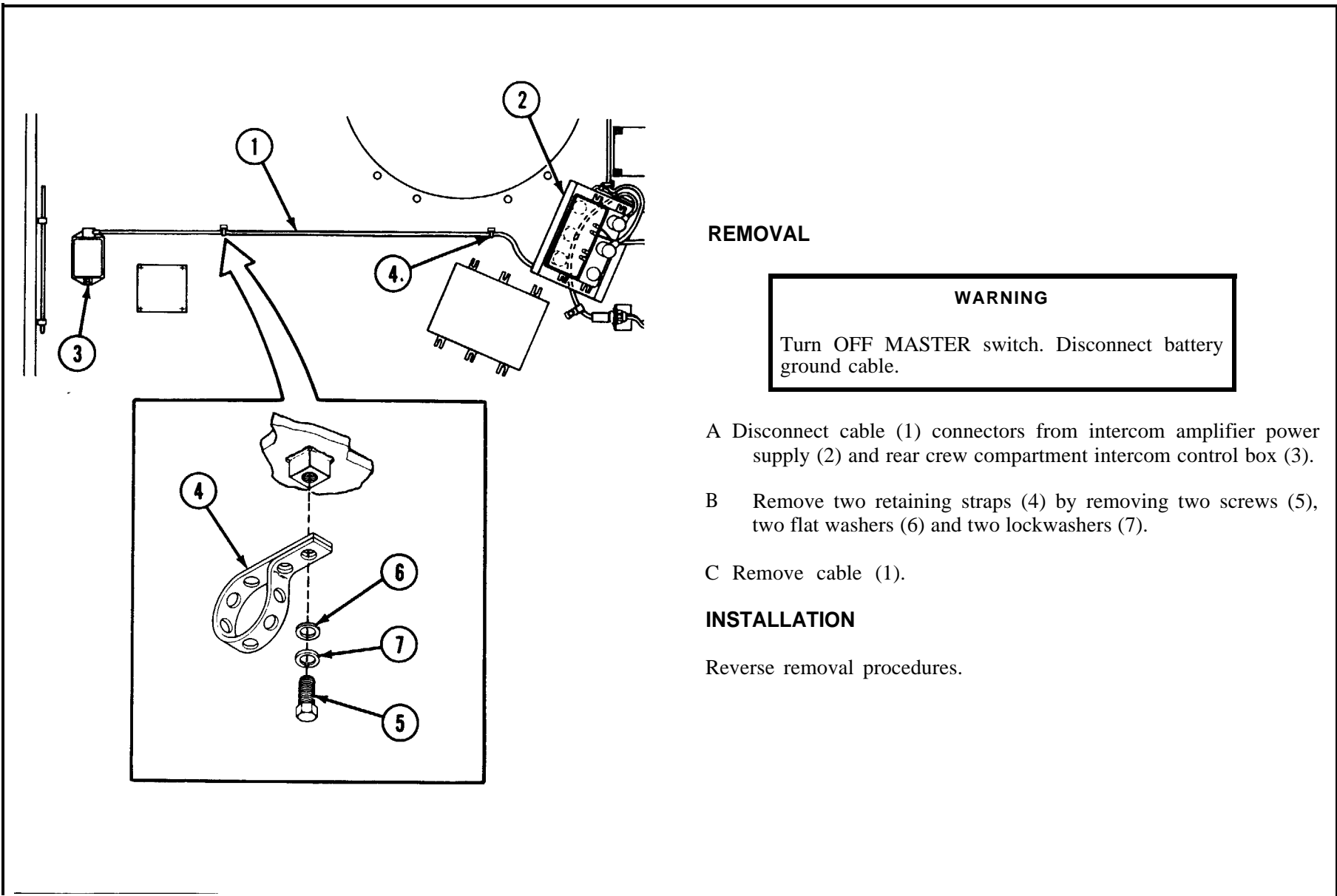
Turn OFF MASTER switch. Disconnect battery ground cables.

- A Disconnect power cable (1) from intercom amplifier **power** supply (2) and 12330257 lead 48 receptacle (3).
- B Remove screw (4), lockwasher (5), flatwasher (6) and strap (7).
- C Remove cable (1).

### INSTALLATION

Reverse removal procedures.

# INTERCOM CABLE CX4723/VRC — 6 FT: REMOVAL AND INSTALLATION



## REMOVAL

### WARNING

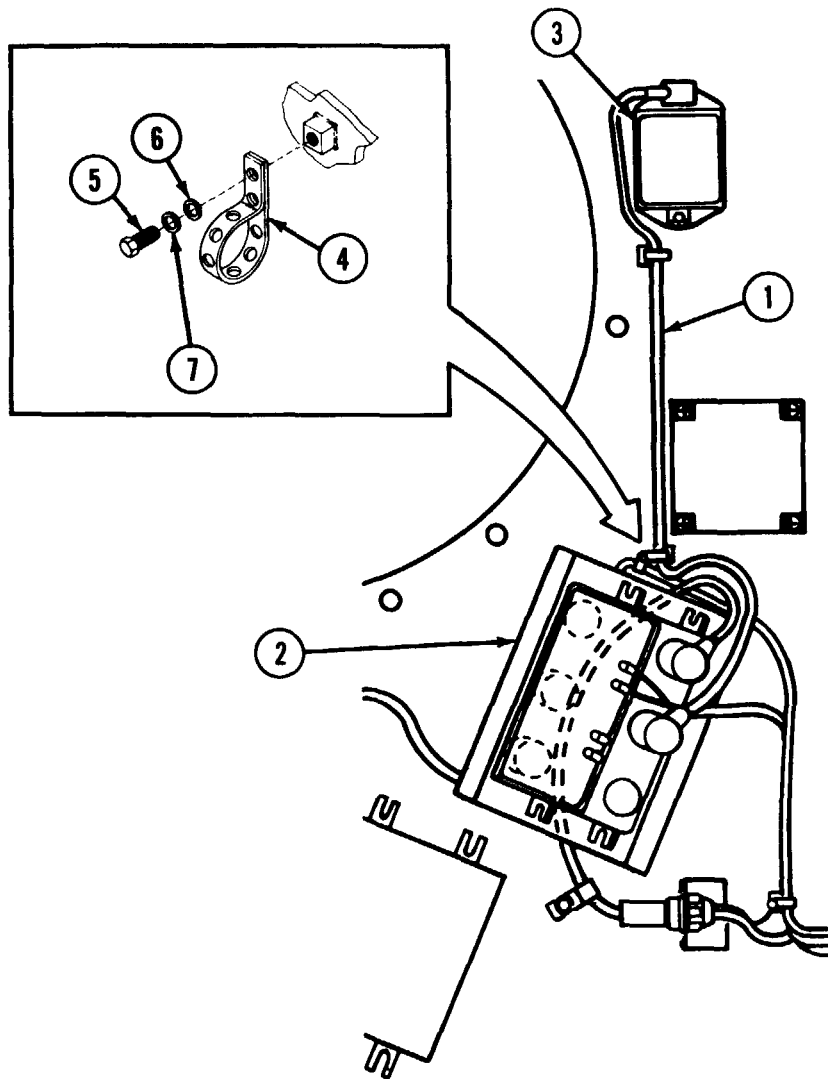
Turn OFF MASTER switch. Disconnect battery ground cable.

- A Disconnect cable (1) connectors from intercom amplifier power supply (2) and rear crew compartment intercom control box (3).
- B Remove two retaining straps (4) by removing two screws (5), two flat washers (6) and two lockwashers (7).
- C Remove cable (1).

## INSTALLATION

Reverse removal procedures.

## INTERCOM CABLE CX4723/VRC — 4 FT: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

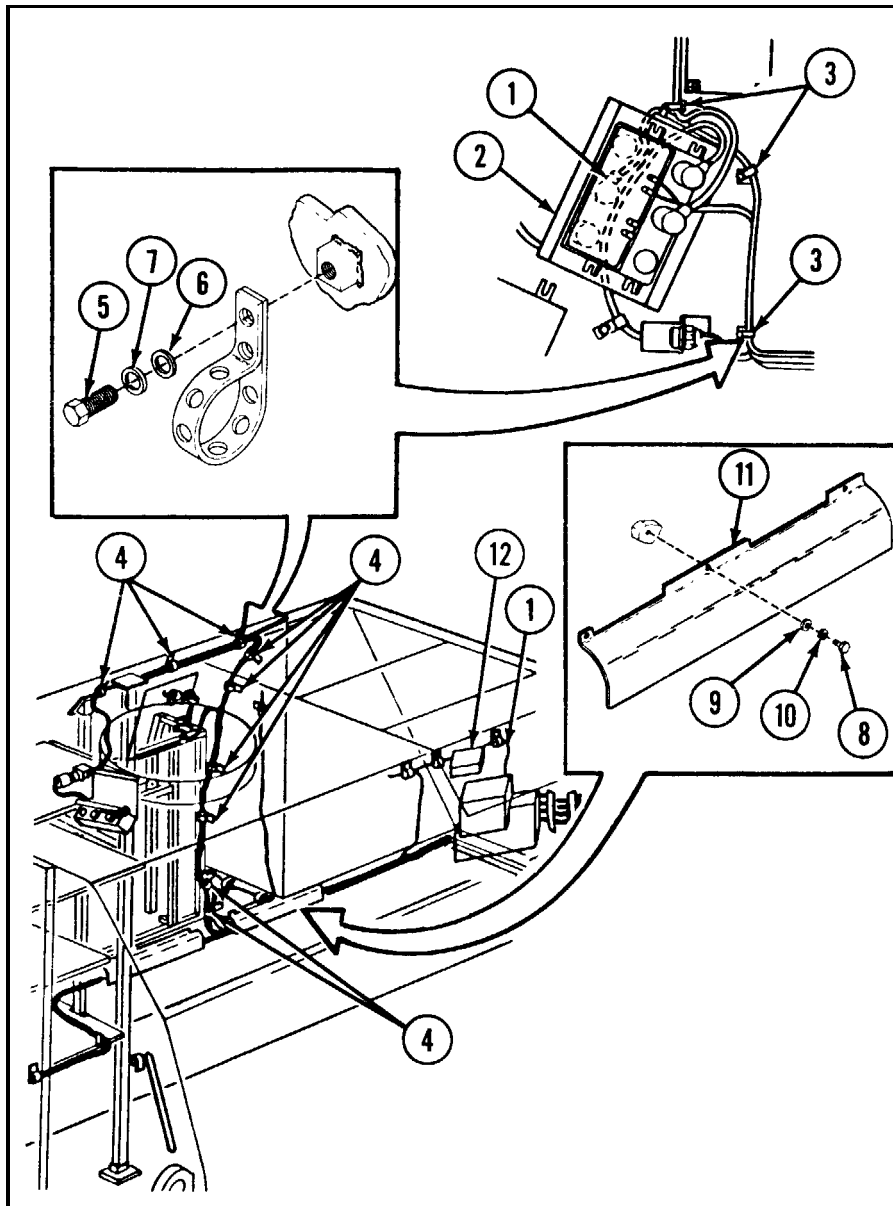
Turn OFF MASTER switch. Disconnect battery ground cable.

- A Disconnect cable (1) connectors from intercom amplifier power supply (2) and intercom control box (3).
- B Remove three retaining straps (4) from cable (1) by removing one screw (5), one flat washer (6) and one lockwasher (7) from each.
- c Remove cable (1) from vehicle.

### INSTALLATION

Reverse removal procedures.

## INTERCOM CABLE CX4723/VRC — 20 FT: REMOVAL AND INSTALLATION



## REMOVAL

## WARNING

Turn OFF MASTER switch. Disconnect battery ground cable.

- A Disconnect cable (1) connector from intercom amplifier power source (2).
- B Remove three retaining straps (3) from cable (1) and nine retaining straps (4) by removing one screw (5), one flat washer (6) and one lockwasher (7) from each strap.

## NOTE

Do not remove other wiring harnesses from retaining straps. Reinstall straps, screws and washers.

- C Remove three screws (8), three flat washers (9), three lockwashers (10) and guard (11).
- D Disconnect cable (1) from driver's intercom (12).
- E Remove cable (1) from vehicle.

## INSTALLATION

Reverse removal procedures.

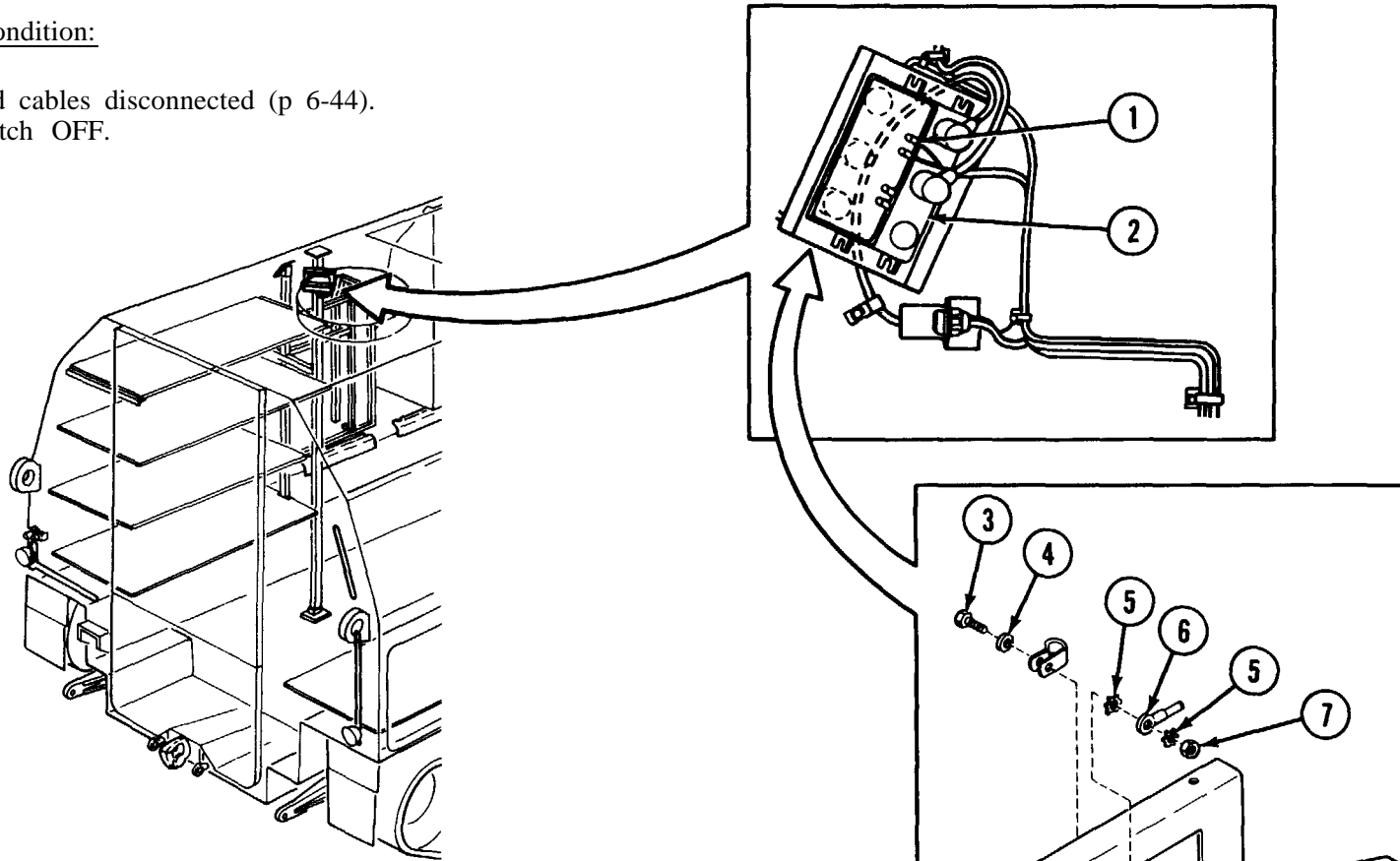


## TELEPHONE WIRING HARNESS (12330024): REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Equipment Condition:

Battery ground cables disconnected (p 6-44).  
MASTER switch OFF.

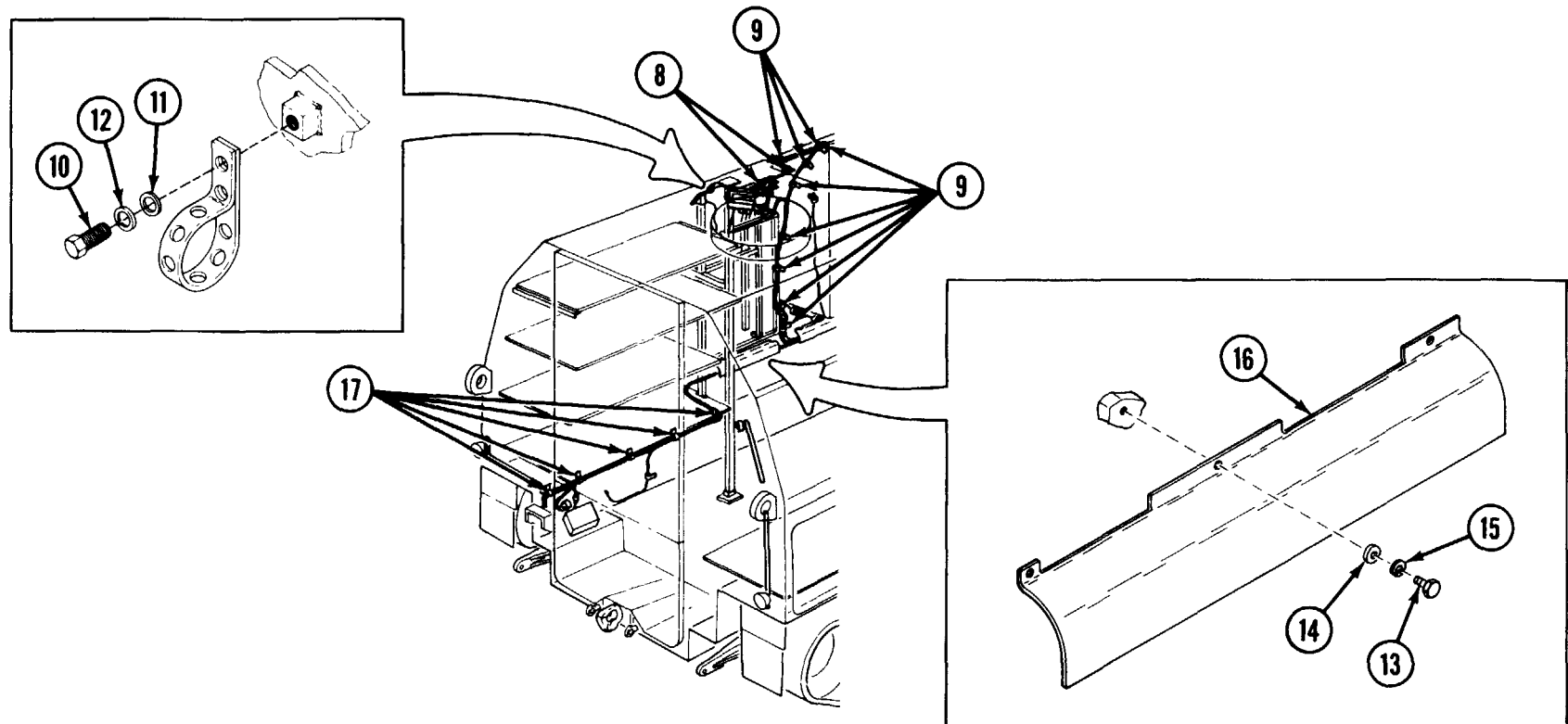


### REMOVAL

A Disconnect cable (1) from intercom amplifier power supply (2).

B Remove screw (3), flat washer (4), two lockwashers (5), ground wire (6) and nut (7). Discard lockwashers.

■ TELEPHONE WIRING HARNESS (12330024): REMOVAL AND INSTALLATION (CONTINUED)



C Remove two retaining straps (8) and nine retaining straps (9), by removing one screw (10), one flat washer (11) and one lockwasher (12) from each strap. Discard lockwashers.

**NOTE**

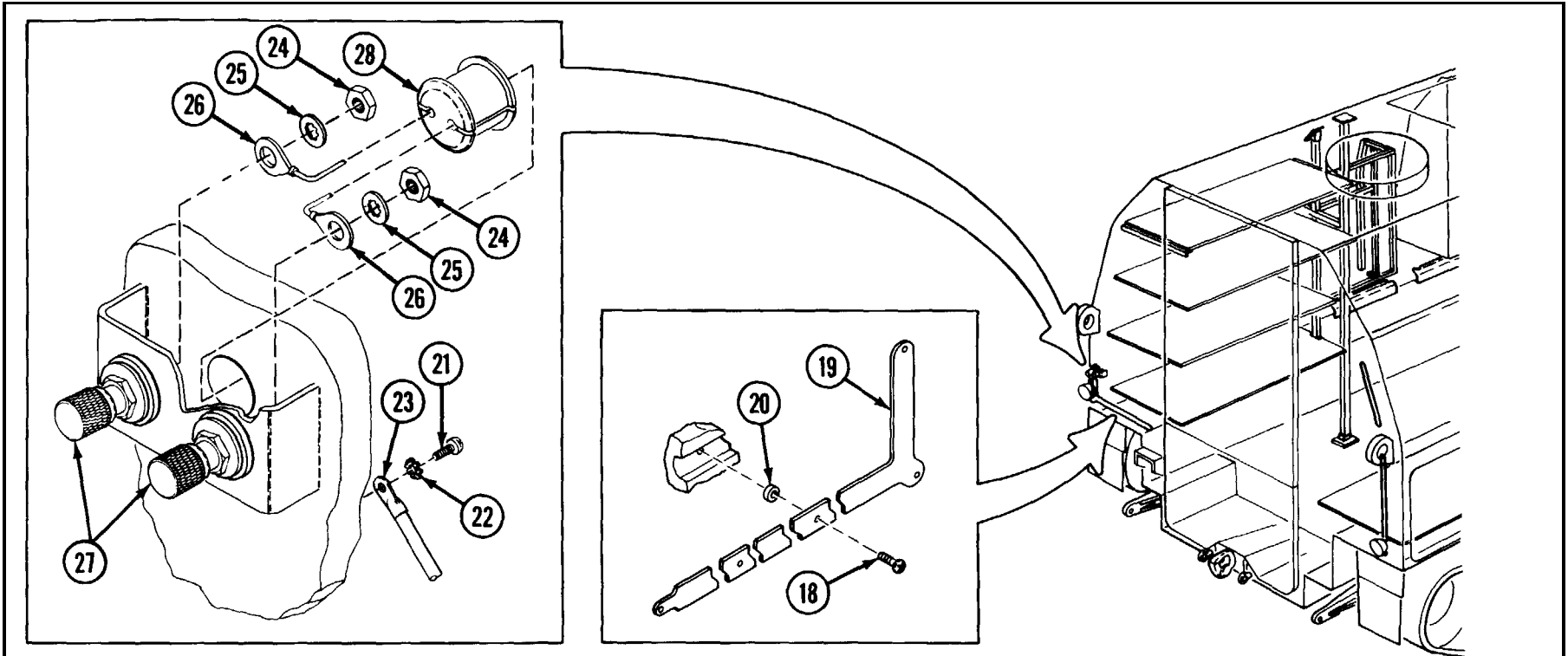
Do not remove other wiring harnesses from retaining straps. Reinstall straps, screws and washers.

D Place left crew seat in deployed position and remove four screws (13), four flat washers (14), four lockwashers (15) and guard (16). Discard lockwashers.

E Remove NBC air purifier (p 14-3).

F Remove five retaining strap assemblies (17).

## ■ TELEPHONE WIRING HARNESS (12330024): REMOVAL AND INSTALLATION (CONTINUED)

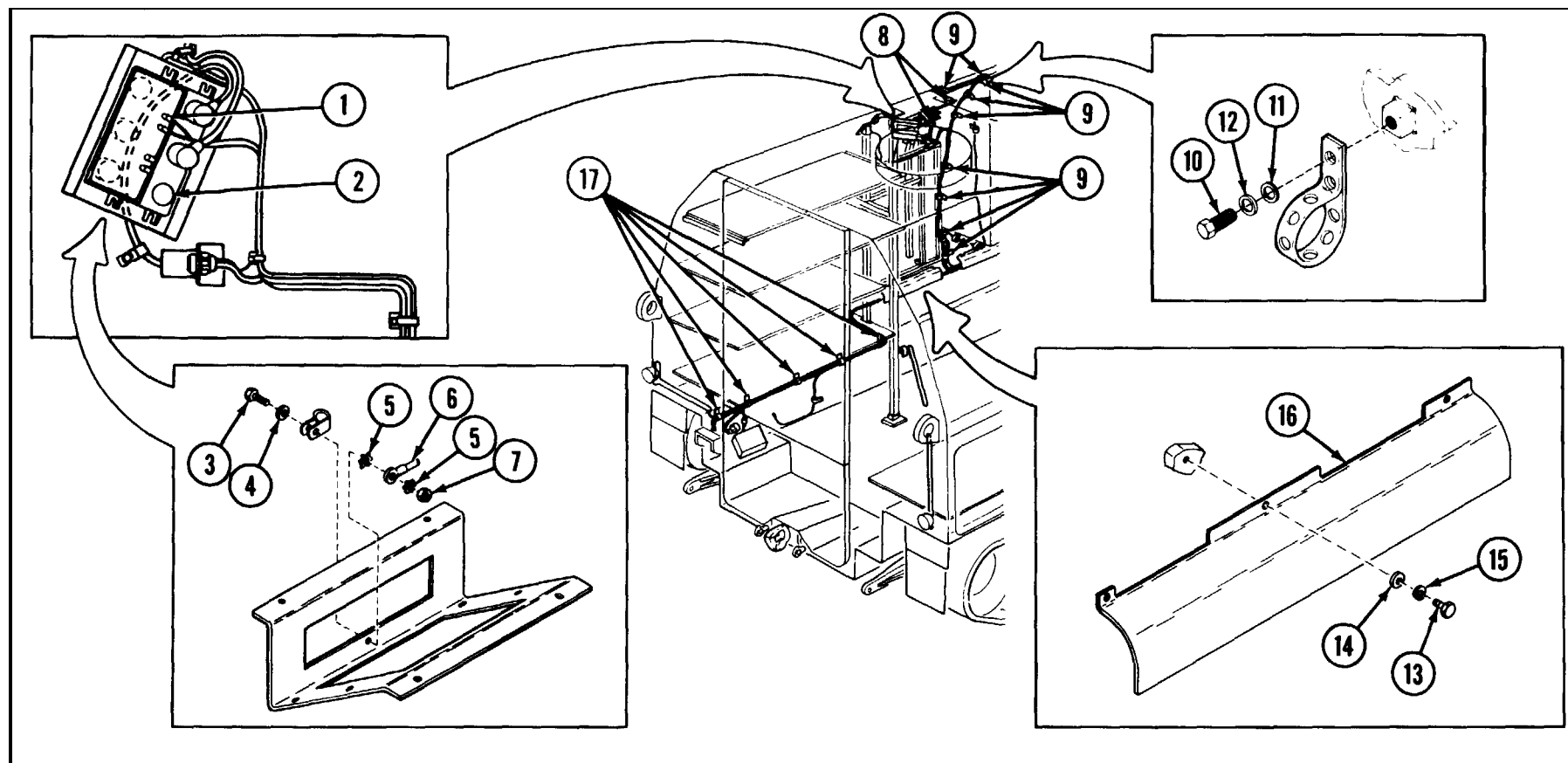


- G Remove five screws (18), cover (19) and five spacers (20).
- H Remove screw (21) and washer (22) to release ground wire (23).
- I Remove two nuts (24) and two lockwashers (25) and remove cable terminal leads (26) from intercom terminals (27). Discard lockwashers.
- J Remove rubber grommet (28) and cable terminal leads (26) from rear of vehicle. Separate cable terminal leads (26) from grommet (28).

### INSTALLATION

- A Install cable terminal leads (26) in rubber grommet (28). Install rubber grommet (28) and cable terminal leads (26) on rear of vehicle.
- B Install cable terminal leads (26) on intercom terminals (27) with two new lockwashers (25) and two nuts (24).
- C Install screw (21) and washer (22) to secure ground wire (23).
- D Install five screws (18), cover (19) and five spacers (20).

■ TELEPHONE WIRING HARNESS (12330024): REMOVAL AND INSTALLATION (CONTINUED)



E Install five retaining strap assemblies (17).

F Install NBC air purifier (p 14-3).

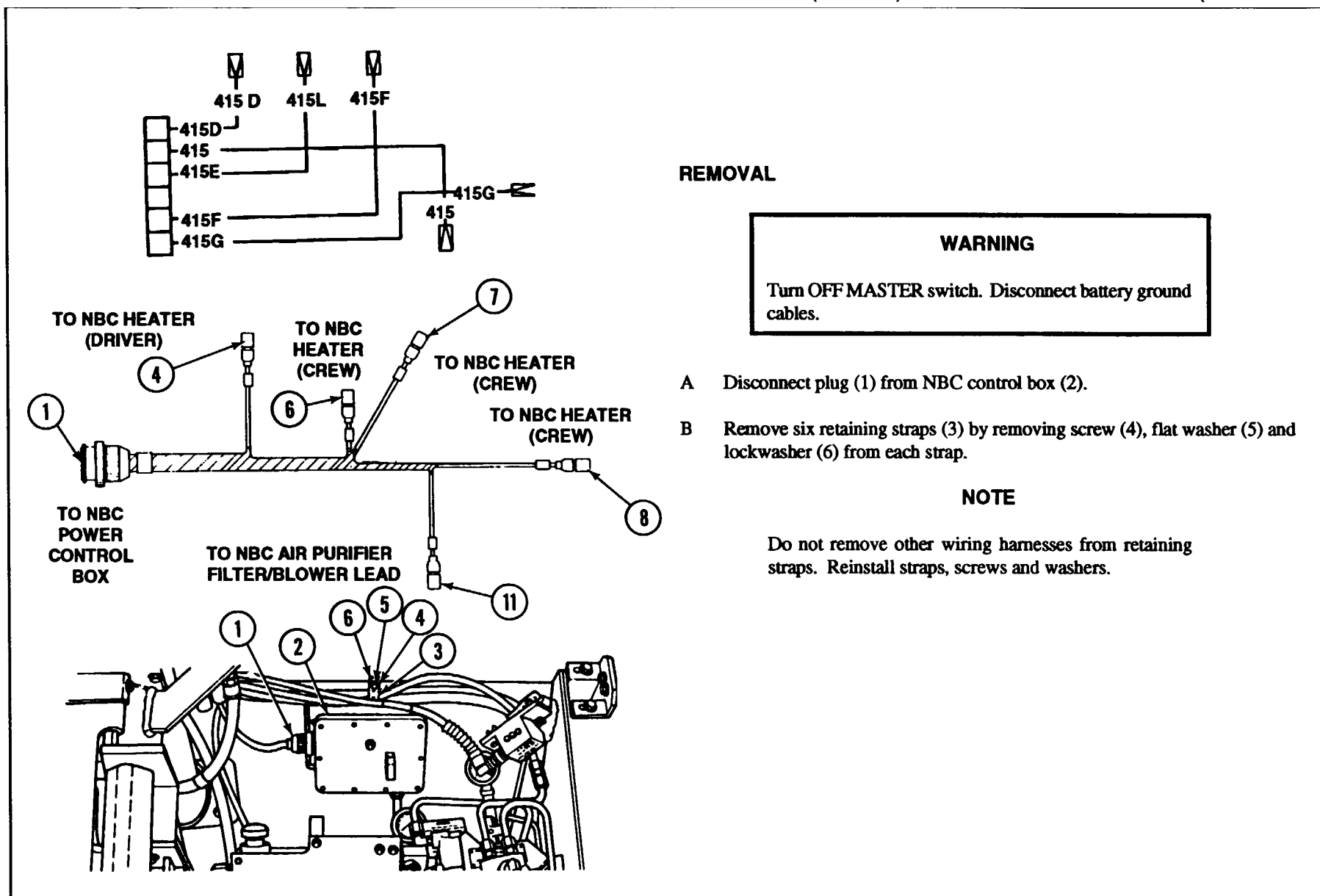
G Install guard (16), four new lockwashers (15), four flat washers (14) and four screws (13).

H Install two retaining straps (8) and nine retaining straps (9) **with** one screw (10), one flat washer (11) and one new lockwasher (12) for each strap.

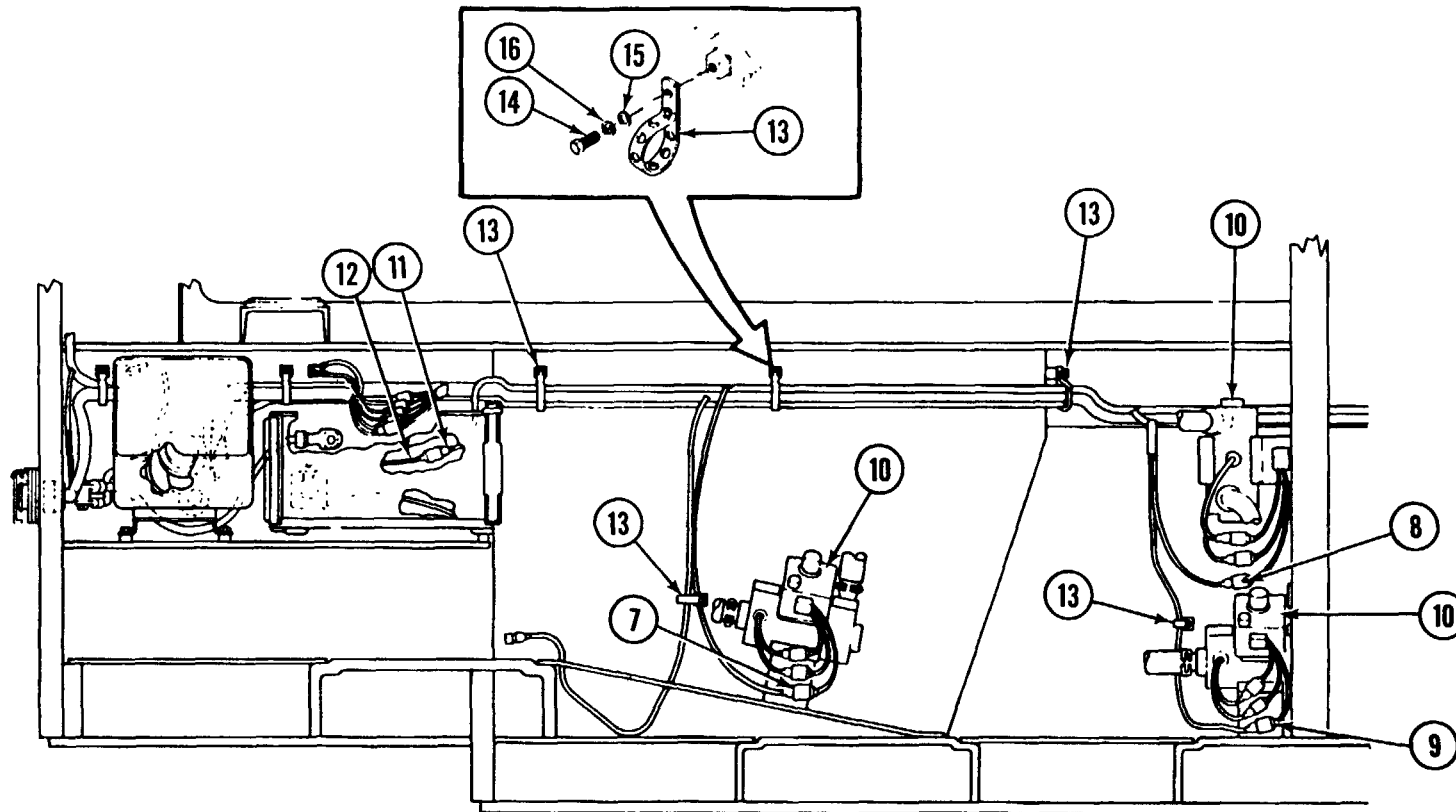
I Install nut (7), ground wire (6), two new lockwashers (5), flat washer (4) and screw (3).

J Connect cable (1) to intercom amplifier power supply (2).

NBC POWER CONTROL BOX TO NBC HEATERS AND AIR PURIFIER WIRING HARNESS (12330296): REMOVAL AND INSTALLATION (CONTINUED)



**NBC POWER CONTROL BOX TO NBC HEATERS AND AIR PURIFIER WIRING HARNESS (12330296): REMOVAL AND INSTALLATION (CONTINUED)**



C Disconnect harness connectors 415G (7), 415E (8) and 415F (9) from three crew compartment NBC heaters (10).

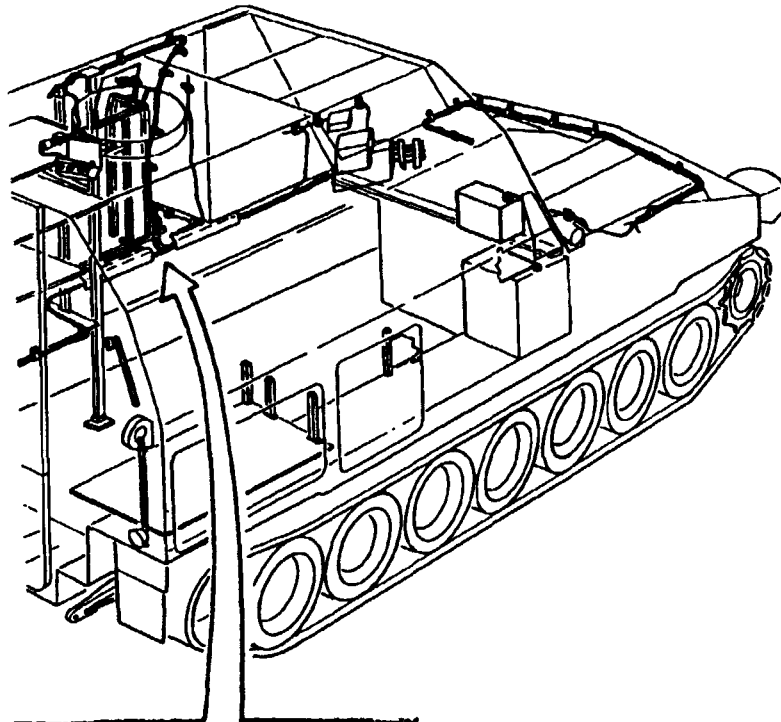
D Disconnect harness connector 415 (11) from NBC air purifier filter/blower 415 wire from harness 12330298 (12).

E Remove five retaining straps (13) by removing one screw (14), one flat washer (15) and one lockwasher (16) from each.

**NOTE**

Do not remove other wiring harnesses from strap assemblies. Reinstall retaining straps, screws and washers.

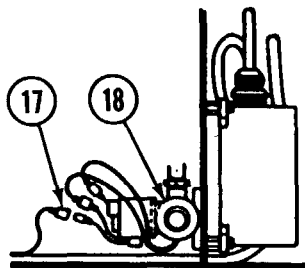
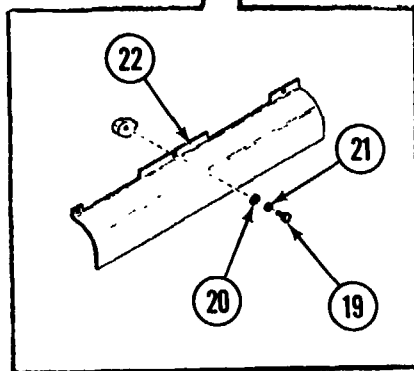
**NBC POWER CONTROL BOX TO NBC HEATERS AND AIR PURIFIER WIRING HARNESS (12330296): REMOVAL AND (CONTINUED)**



- F Disconnect connector 415D (17) from driver's compartment NBC heater (18).
- G Remove seven screws (19), seven flat washers (20), seven lockwashers (21) and two wiring harness guards (22).
- H Remove wiring harness from vehicle.

**INSTALLATION**

Reverse removal procedures.

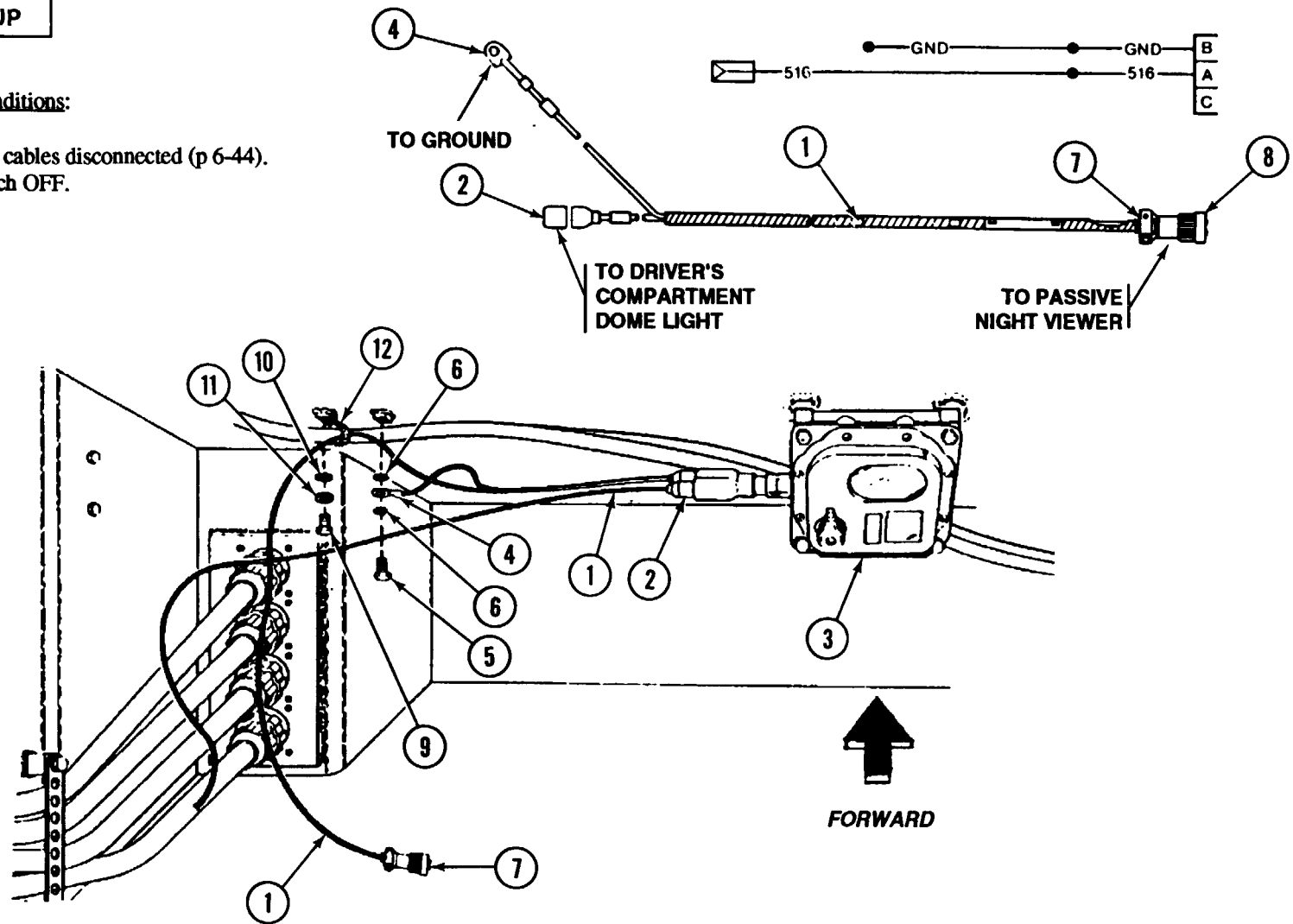


**PASSIVE NIGHT VIEWER CABLE ASSEMBLY (12332740): REMOVAL AND INSTALLATION**

**INITIAL SETUP**

**Equipment Conditions:**

Battery ground cables disconnected (p 6-44).  
**MASTER switch OFF.**





## PASSIVE NIGHT VIEWER CABLE ASSEMBLY (12332740): REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

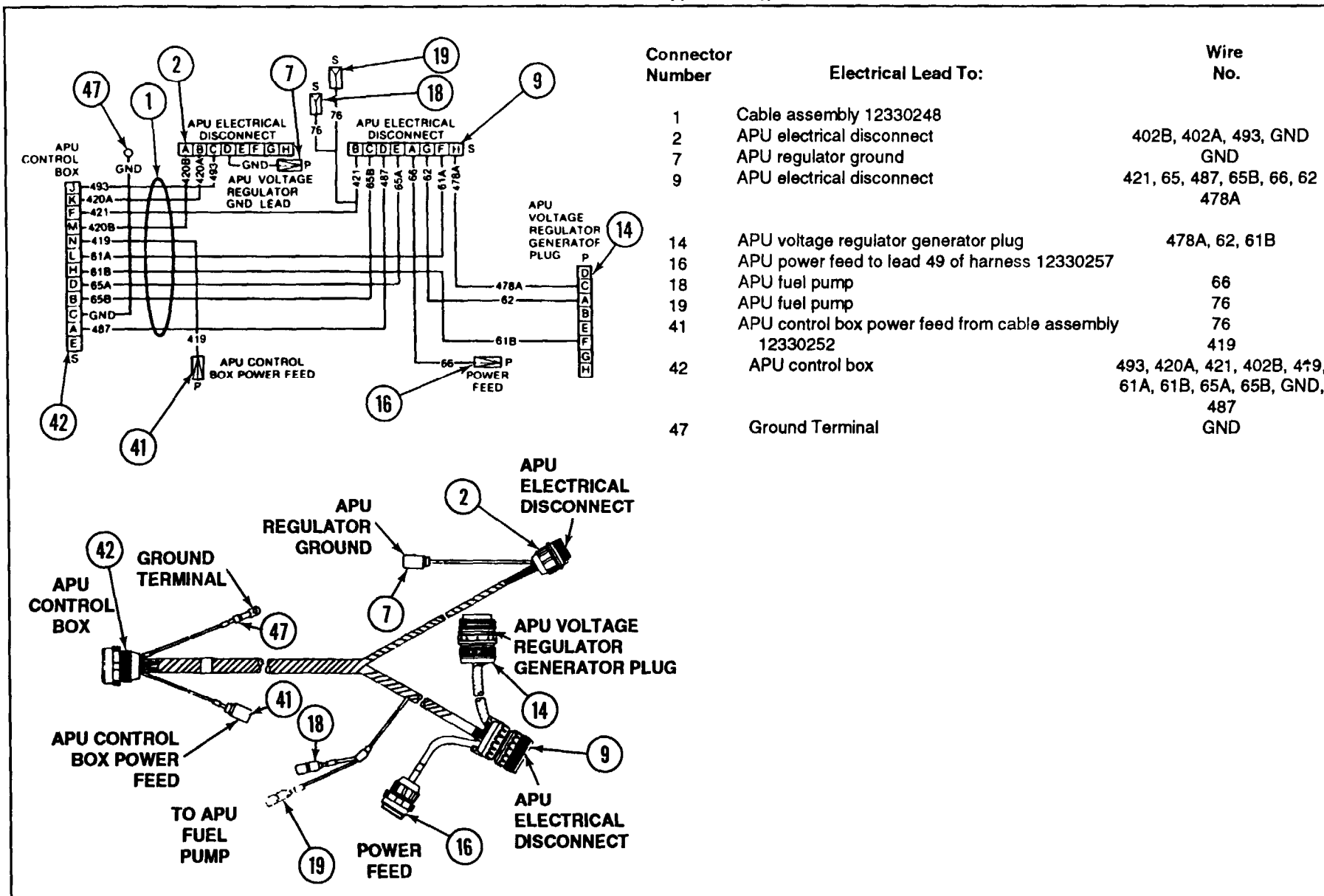
- A Disconnect cable assembly (1) connector (2) from driver's compartment dome light connector (3).
- B Disconnect cable assembly ground wire (4) by removing one screw (5) and Two lockwashers (6). Discard lockwashers.
- C If connected, disconnect cable assembly plug (7) from passive night viewer connector. Install protective cap (8) on plug (7).
- D Remove one screw (9), one lockwasher (10), one flat washer (11) and one retaining strep (12). Discard lockwasher.
- E Remove cable assembly (1) from vehicle.

### INSTALLATION

- A Connect cable assembly (1) to vehicle.
- B Install one screw (9), new lockwasher (10), flat washer (11) and retaining strap (12).
- C Remove protective cap (8) from plug (7). Install plug (7) to passive night viewer connector.
- D Install screw (5), two new lockwashers (6) and connect cable assembly ground wire (4).
- E Connectable assembly (1) connector (2) to driver's compartment dome light connector (3).



APU CONTROL BOX TO APU VOLTAGE REGULATOR CABLE ASSEMBLY (12330248): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



# APU CONTROL BOX TO APU VOLTAGE REGULATOR CABLE ASSEMBLY (12330248): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

## INITIAL SETUP

### Parts/Materials:

Tape, electrical (item 60, Appx D)

### Equipment Condition:

Battery ground cables disconnected (p 6-44).

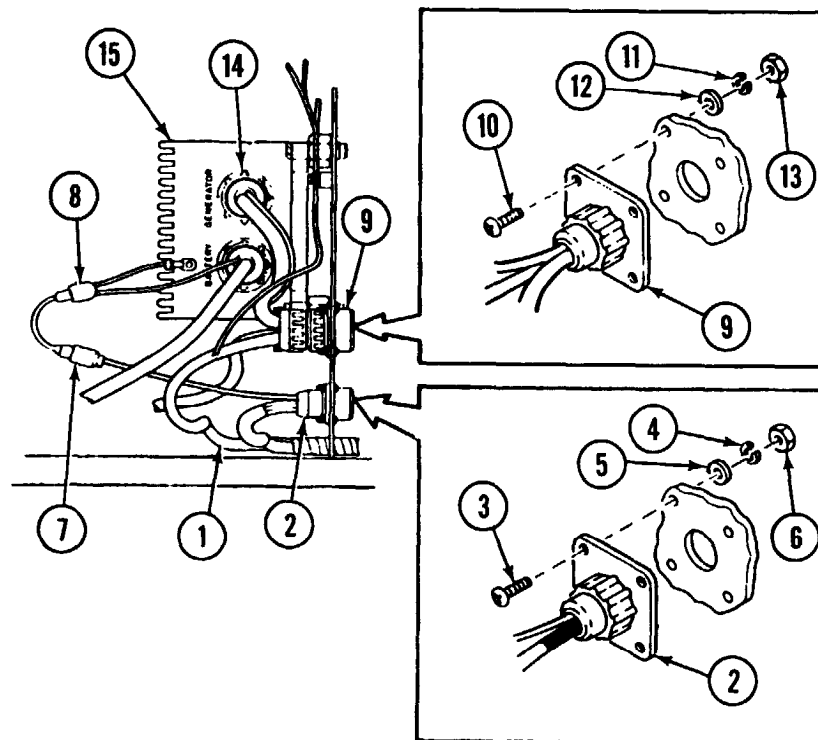
MASTER switch OFF.

APU control box removed (p 13-35).

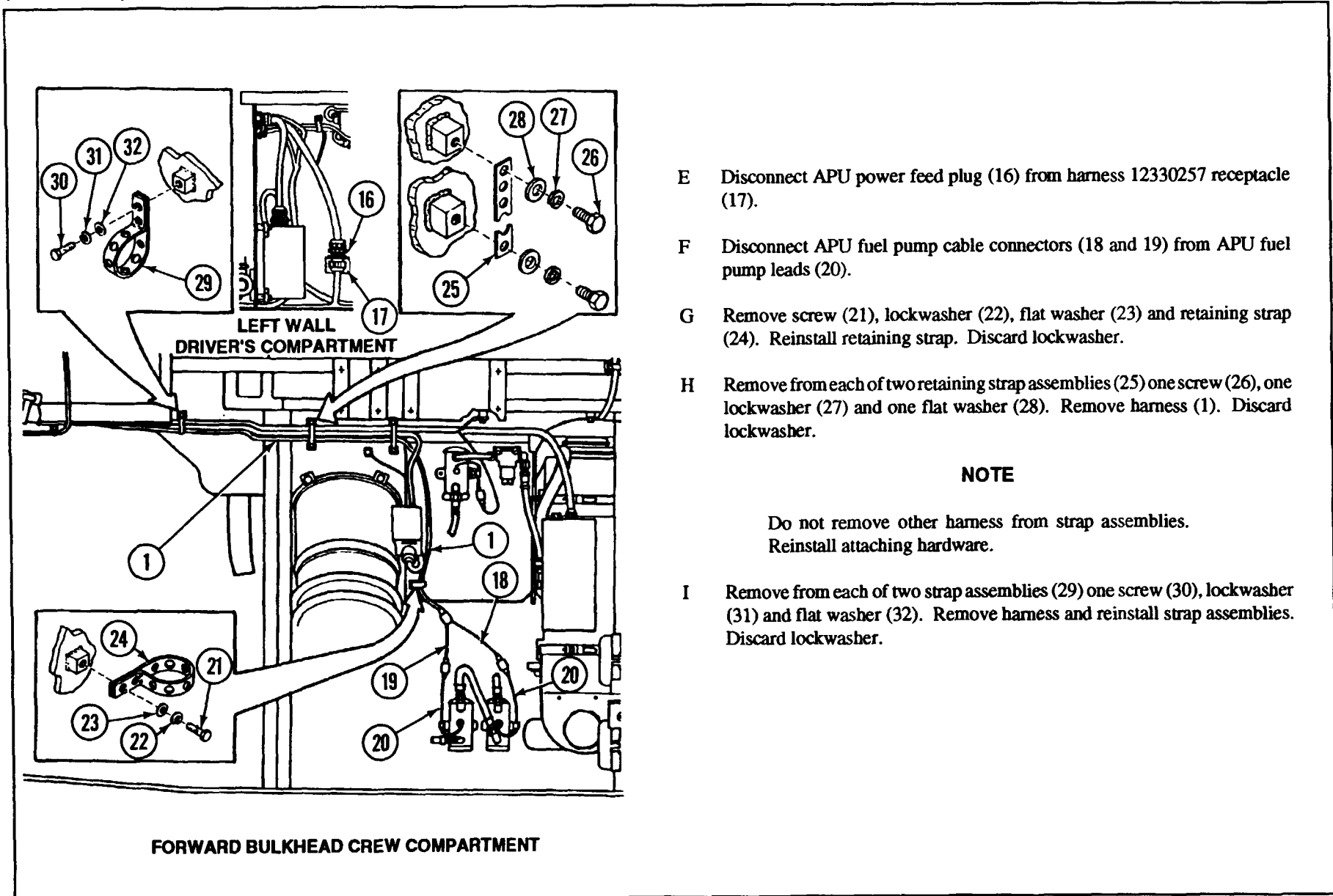
Left projectile rack removed (TM 9-2350-267-10).

## REMOVAL

- A Disconnect cable assembly (1), APU electrical disconnect (2) and remove receptacle from APU bulkhead by removing four screws (3), four lockwashers (4), four flat washers (5) and four nuts (6). Discard lockwashers.
- B Disconnect cable connector (7) from cable assembly 12330256 regulator ground circuit (8).
- C Disconnect APU electrical disconnect and remove receptacle (9) from APU bulkhead by removing four screws (10), four lockwashers (11), four flat washers (12), and four nuts (13). Discard lockwashers.
- D Disconnect APU voltage regulator generator plug (14) from APU voltage regulator (15).



**APU CONTROL BOX TO APU VOLTAGE REGULATOR CABLE ASSEMBLY (12330248): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



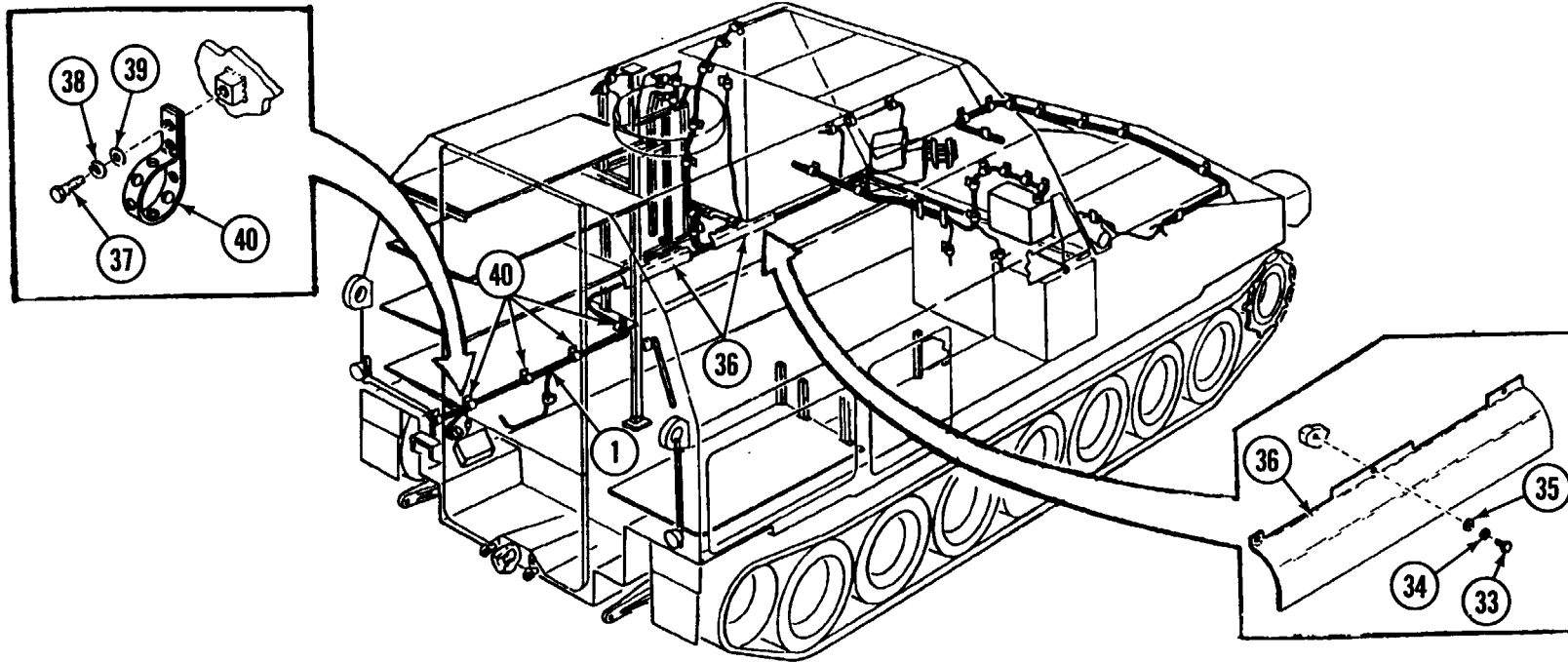
- E Disconnect APU power feed plug (16) from harness 12330257 receptacle (17).
- F Disconnect APU fuel pump cable connectors (18 and 19) from APU fuel pump leads (20).
- G Remove screw (21), lockwasher (22), flat washer (23) and retaining strap (24). Reinstall retaining strap. Discard lockwasher.
- H Remove from each of two retaining strap assemblies (25) one screw (26), one lockwasher (27) and one flat washer (28). Remove harness (1). Discard lockwasher.

**NOTE**

Do not remove other harness from strap assemblies. Reinstall attaching hardware.

- I Remove from each of two strap assemblies (29) one screw (30), lockwasher (31) and flat washer (32). Remove harness and reinstall strap assemblies. Discard lockwasher.

APU CONTROL BOX TO APU VOLTAGE REGULATOR CABLE ASSEMBLY (12330248): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION  
(CONTINUED)



J Remove seven screws (33), seven lockwashers (34), seven flat washers (35) and two harness guards (36). Discard lockwashers.

K Remove four screws (37), four lockwashers (38), four flat washers (39) and four harness retaining straps (40). Remove harness (1) only. Discard lockwashers. Reinstall straps and hardware.

L Remove APU control box (p 13-35).

M Remove cable assembly (1) from vehicle.

### DISASSEMBLY

### NOTE

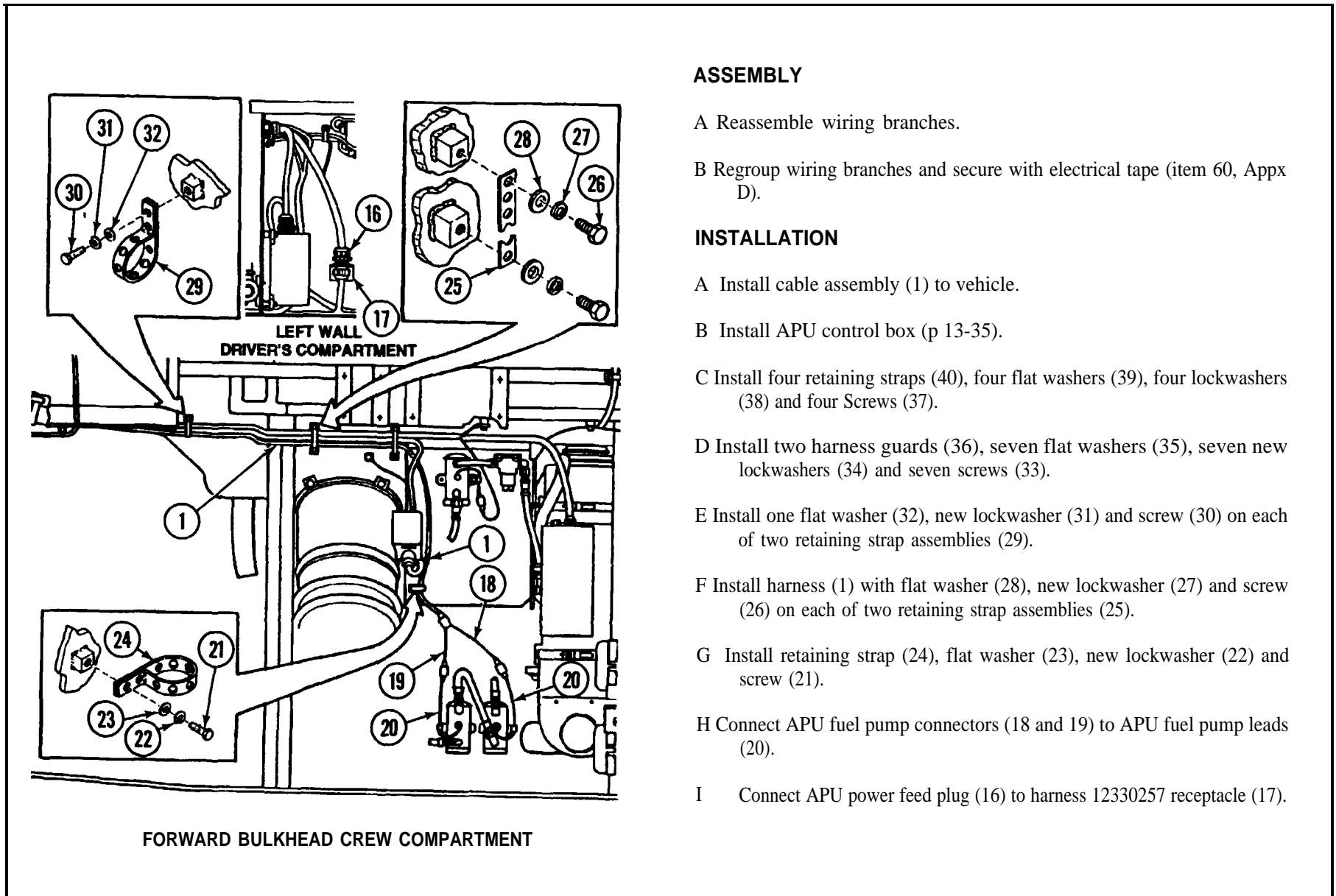
Remove electrical tape only from section of harness to be disassembled.

A Remove section of electrical tape from harness.

B Separate and isolate wiring harness branches.

C Disassemble wiring branch and replace defective wires (p 2-307).

**APU CONTROL BOX TO APU VOLTAGE REGULATOR CABLE ASSEMBLY (12330248): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**ASSEMBLY**

- A Reassemble wiring branches.
- B Regroup wiring branches and secure with electrical tape (item 60, Appx D).

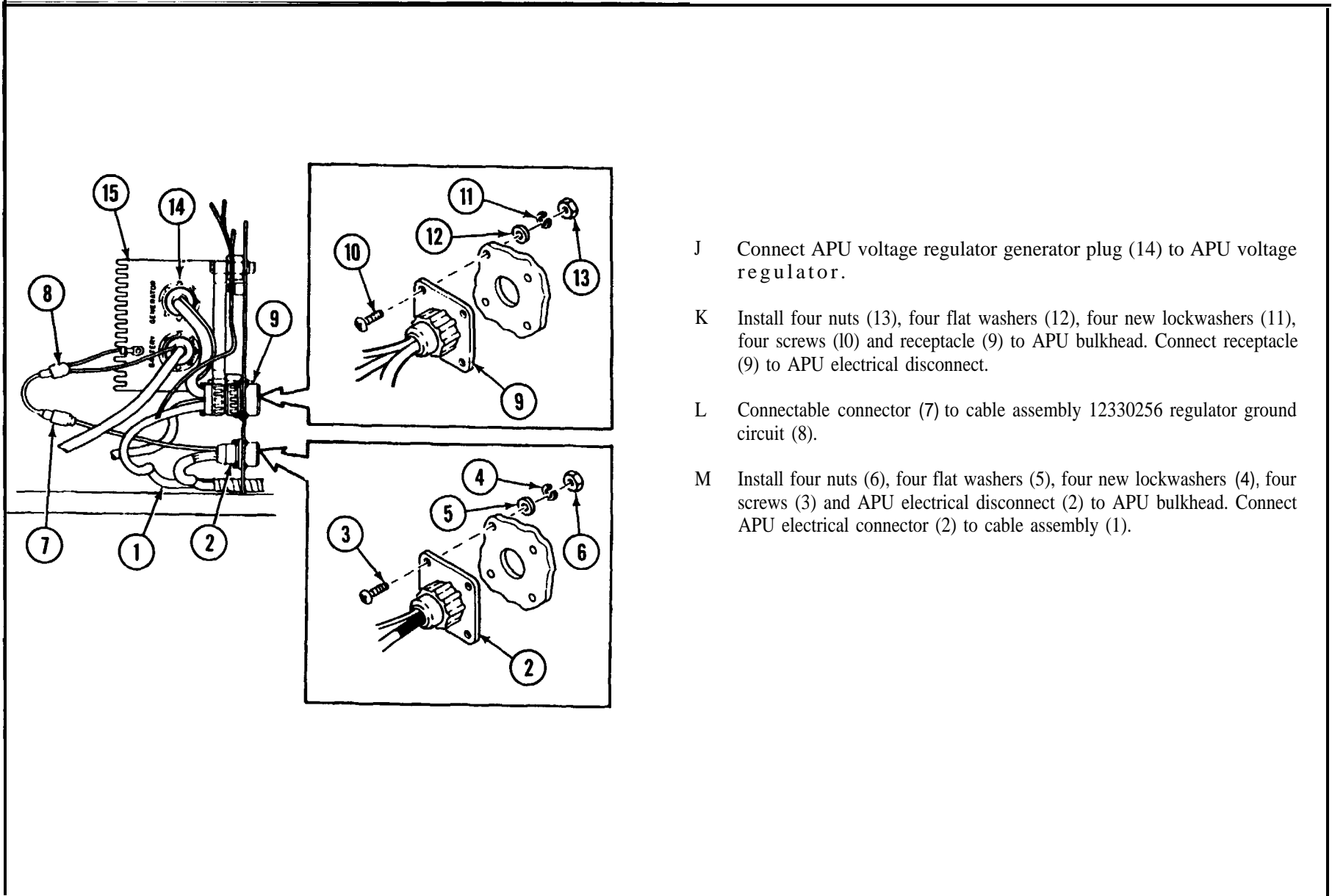
**INSTALLATION**

- A Install cable assembly (1) to vehicle.
- B Install APU control box (p 13-35).
- C Install four retaining straps (40), four flat washers (39), four lockwashers (38) and four Screws (37).
- D Install two harness guards (36), seven flat washers (35), seven new lockwashers (34) and seven screws (33).
- E Install one flat washer (32), new lockwasher (31) and screw (30) on each of two retaining strap assemblies (29).
- F Install harness (1) with flat washer (28), new lockwasher (27) and screw (26) on each of two retaining strap assemblies (25).
- G Install retaining strap (24), flat washer (23), new lockwasher (22) and screw (21).
- H Connect APU fuel pump connectors (18 and 19) to APU fuel pump leads (20).
- I Connect APU power feed plug (16) to harness 12330257 receptacle (17).





**APU CONTROL BOX TO APU VOLTAGE REGULATOR CABLE ASSEMBLY (12330248): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION  
CONTINUED)**



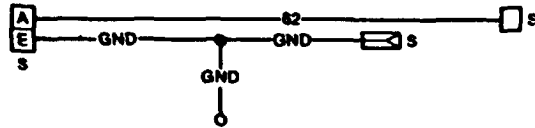
- J Connect APU voltage regulator generator plug (14) to APU voltage regulator.
- K Install four nuts (13), four flat washers (12), four new lockwashers (11), four screws (10) and receptacle (9) to APU bulkhead. Connect receptacle (9) to APU electrical disconnect.
- L Connectable connector (7) to cable assembly 12330256 regulator ground circuit (8).
- M Install four nuts (6), four flat washers (5), four new lockwashers (4), four screws (3) and APU electrical disconnect (2) to APU bulkhead. Connect APU electrical connector (2) to cable assembly (1).

**DRIVER'S BULKHEAD TO APU VOLTAGE REGULATOR WIRING HARNESS (12330256): REMOVAL AND INSTALLATION**

**INITIAL SETUP**

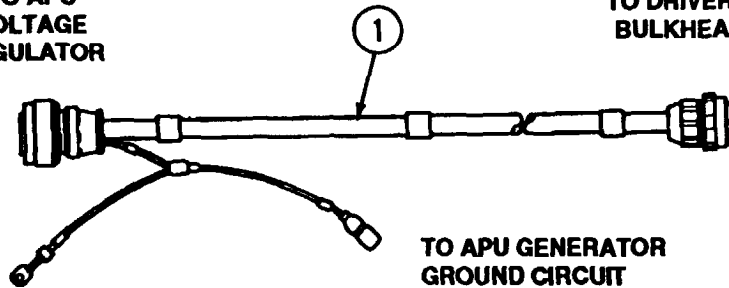
**Equipment Condition:**

Battery ground cables disconnected (p 6-44).  
 MASTER switch OFF.



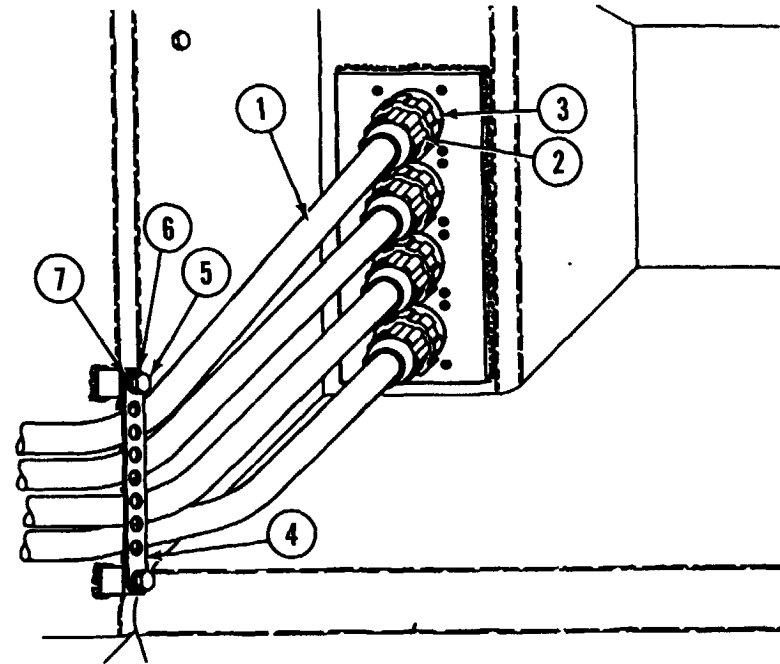
TO APU  
 VOLTAGE  
 REGULATOR

TO DRIVER'S  
 BULKHEAD



TO APU VOLTAGE  
 REGULATOR  
 GROUND SCREW

TO APU GENERATOR  
 GROUND CIRCUIT



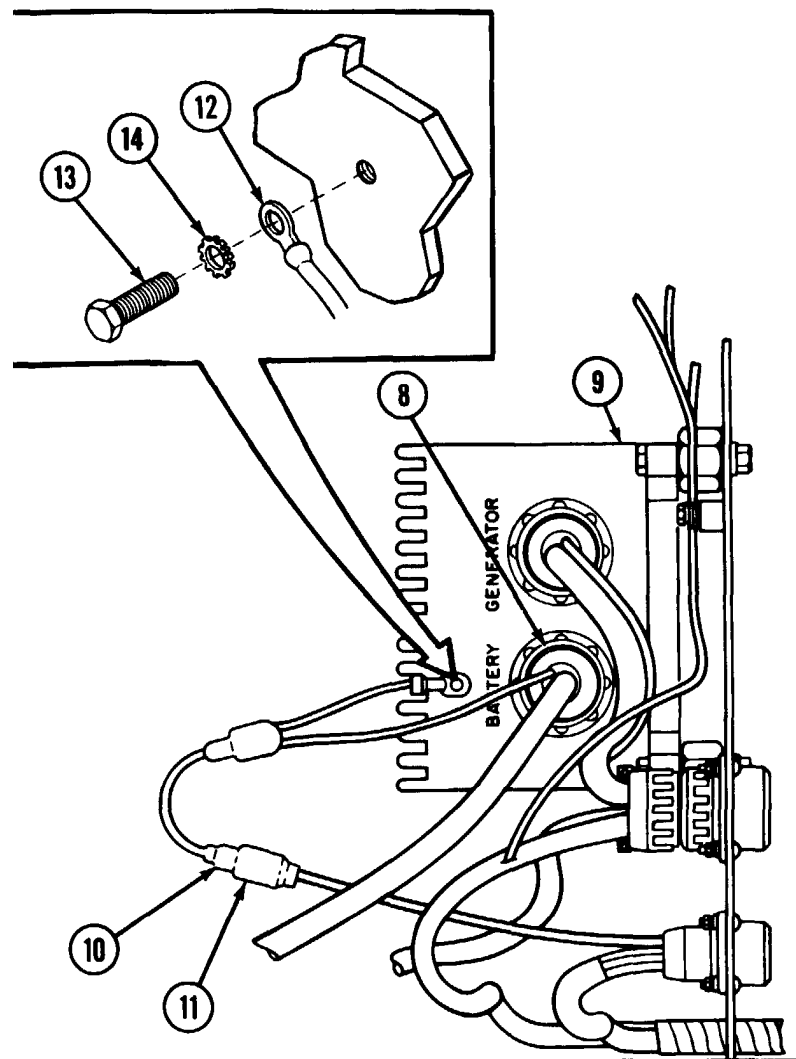
**REMOVAL**

- A Disconnect cable (1) plug (2) from driver's bulkhead receptacle (3).

**NOTE**

- Do not remove other harnesses from straps. Replace hardware after removal.
- B Remove cable (1) from two retaining straps (4) by removing from one end only, one screw (5), lockwasher (6) and flat washer (7).

## DRIVERS BULKHEAD TO APU VOLTAGE REGULATOR CABLE (12330256): REMOVAL AND INSTALLATION (CONTINUED)

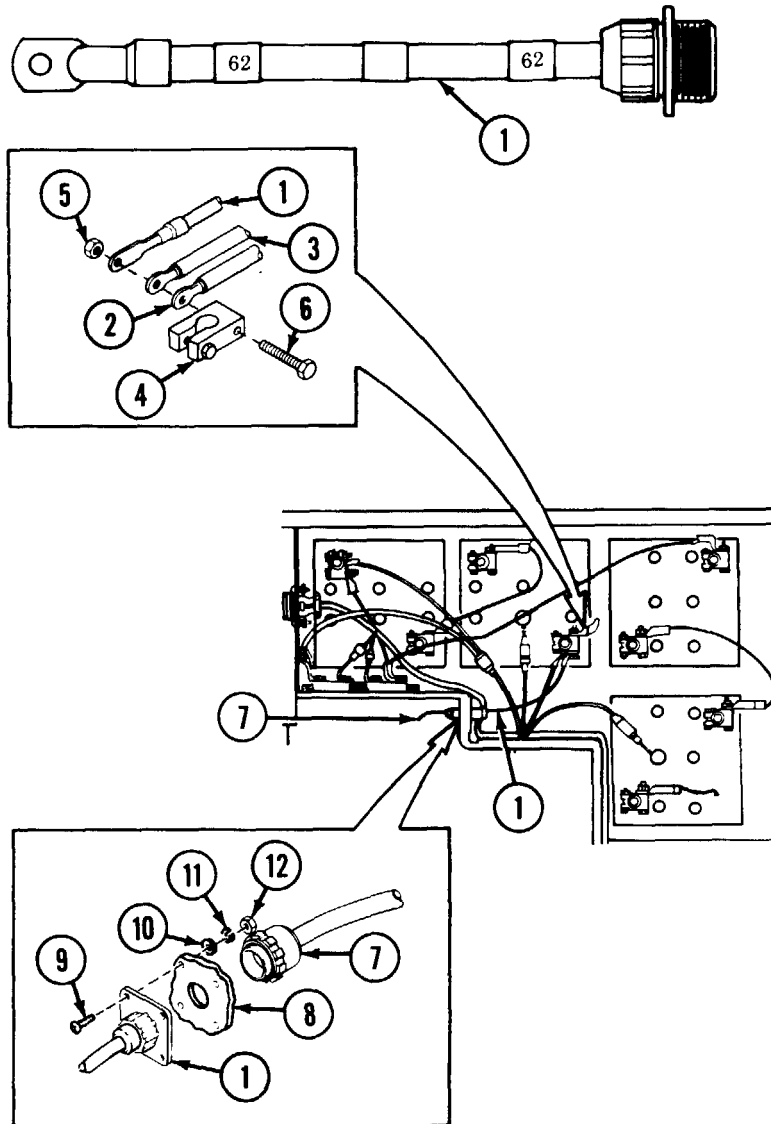


LEFT WALL DRIVER'S COMPARTMENT

- C Disconnect cable plug (8) from APU voltage regulator (9).
- D Disconnect lead connector (10) from harness 12330248 lead (11).
- E Remove cable ground lug (12) from APU voltage regulator (9) by removing screw (13) and lockwasher (14). Discard lockwasher.

### INSTALLATION

- A Install cable ground lug (12) to APU voltage regulator (9) by installing screw (13) and new lockwasher (14).
- B Connect lead connector (10) to harness 12330248 lead (11).
- C Connect cable plug (8) to APU voltage regulator (9).
- D Install cable (1) with two retaining straps (4) by installing screw (5), lockwasher (6) and flat washer (7).
- E Connect cable (1) plug (2) to driver's bulkhead receptacle (3).

**BATTERY TO DRIVER'S BULKHEAD CABLE (12330317): REMOVAL AND INSTALLATION**

**REMOVAL**
**WARNING**

Wear eye protection and remove all jewelry, dog tags and metal items. Turn OFF MASTER switch. Remove battery ground cables.

- A Disconnect cable (1) and STE/ICE leads 10R (2) and 10V (3) at battery terminal (4) by removing terminal nut (5) and screw (6).
- B Disconnect harness 12330256 plug (7) from receptacle of cable (1) at driver's side of bulkhead (8).
- C Remove cable (1) receptacle at driver's compartment bulkhead by removing four screws (9), four flat washers (10), four lockwashers (11) and four nuts (12).

**INSTALLATION**

Reverse removal procedures.

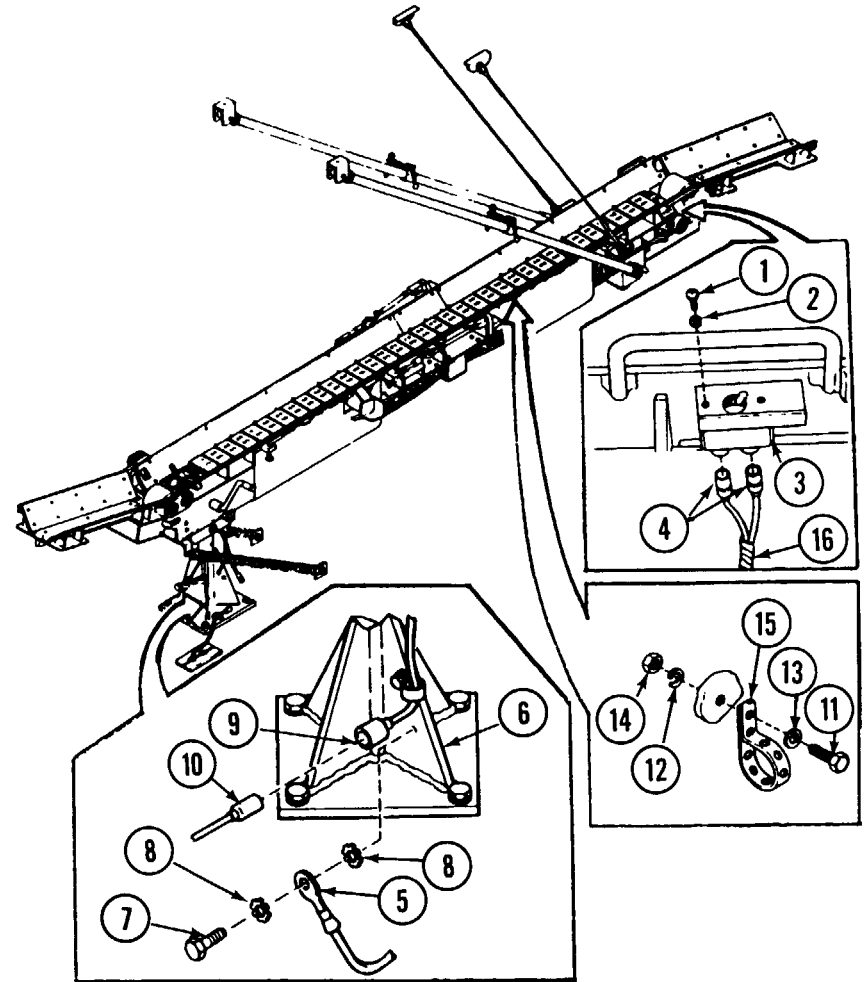
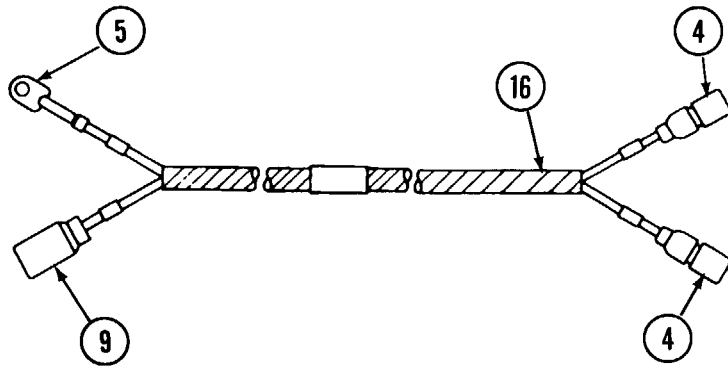
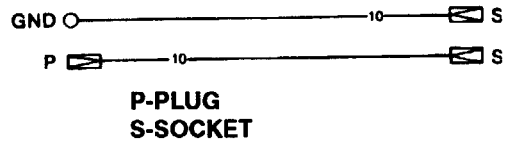


■ CONVEYOR CONTROL SWITCH TO CONVEYOR OVERRIDE SWITCH CABLE ASSEMBLY (12330244): REMOVAL AND INSTALLATION

**INITIAL SETUP**

Equipment Condition:

Battery ground cables disconnected (p 6-44).  
MASTER switch OFF.



■ **CONVEYOR CONTROL SWITCH TO CONVEYOR OVERRIDE SWITCH CABLE ASSEMBLY (12330244): REMOVAL AND INSTALLATION  
(CONTINUED)**

**REMOVAL**

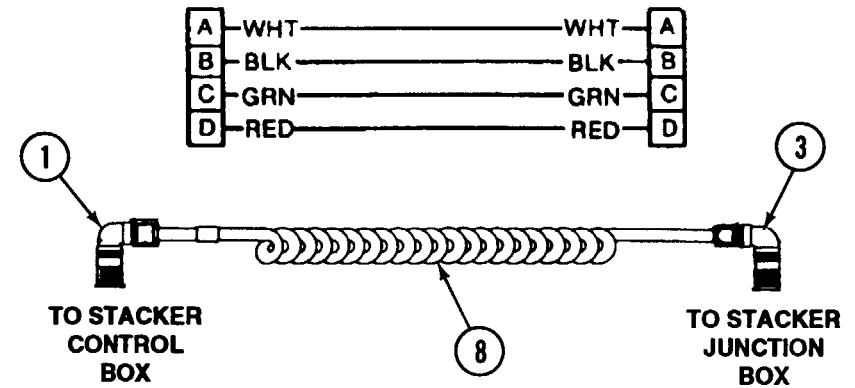
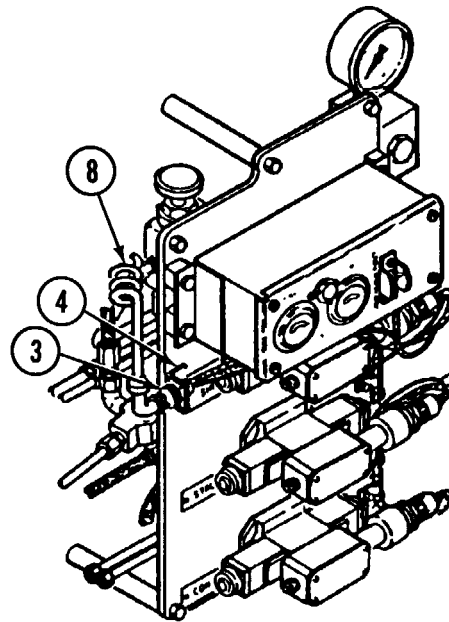
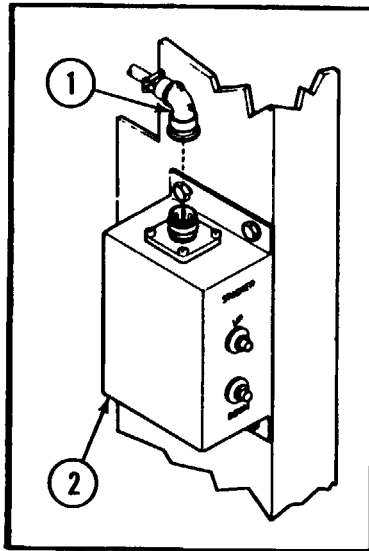
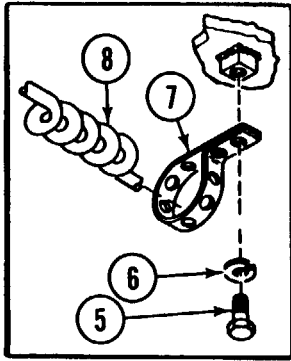
**NOTE**

Tag wiring harness lead connector location before removal.

- A Remove two screws (1) and two lockwashers (2) and remove conveyor override switch (3). Discard lockwashers.
- B Disconnect harness connectors (4) from conveyor override switch (3).
- C Disconnect ground lead (5) from conveyor pedestal (6) by removing screw (7) and two lockwashers (8). Discard lockwashers.
- D Disconnect connector (9) from 12330252 harness connector (10).
- E Remove 13 screws (11), 13 lockwashers (12), 13 flat washers (13), four nuts (14) and 13 straps (15) that secure harness (16) to conveyor. Discard lockwashers.
- F Remove harness (16) from conveyor.

**INSTALLATION**

- A Install harness (16) to conveyor with 13 straps (15), four nuts (14), 13 flat washers (13), 13 new lockwashers (12) and 13 screws (11).
- B Connect connector (9) to 12330252 harness connector (10).
- C Connect ground lead (5) to conveyor pedestal (6) with screw (7) and two new lockwashers (8).
- D Connect harness connectors (4) to conveyor override switch (3).
- E Install conveyor override switch (3) with two screws (1) and two new lockwashers (2).

**STACKER CONTROL SWITCH CABLE ASSEMBLY (12320259): REMOVAL AND INSTALLATION**

**REMOVAL**
**WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

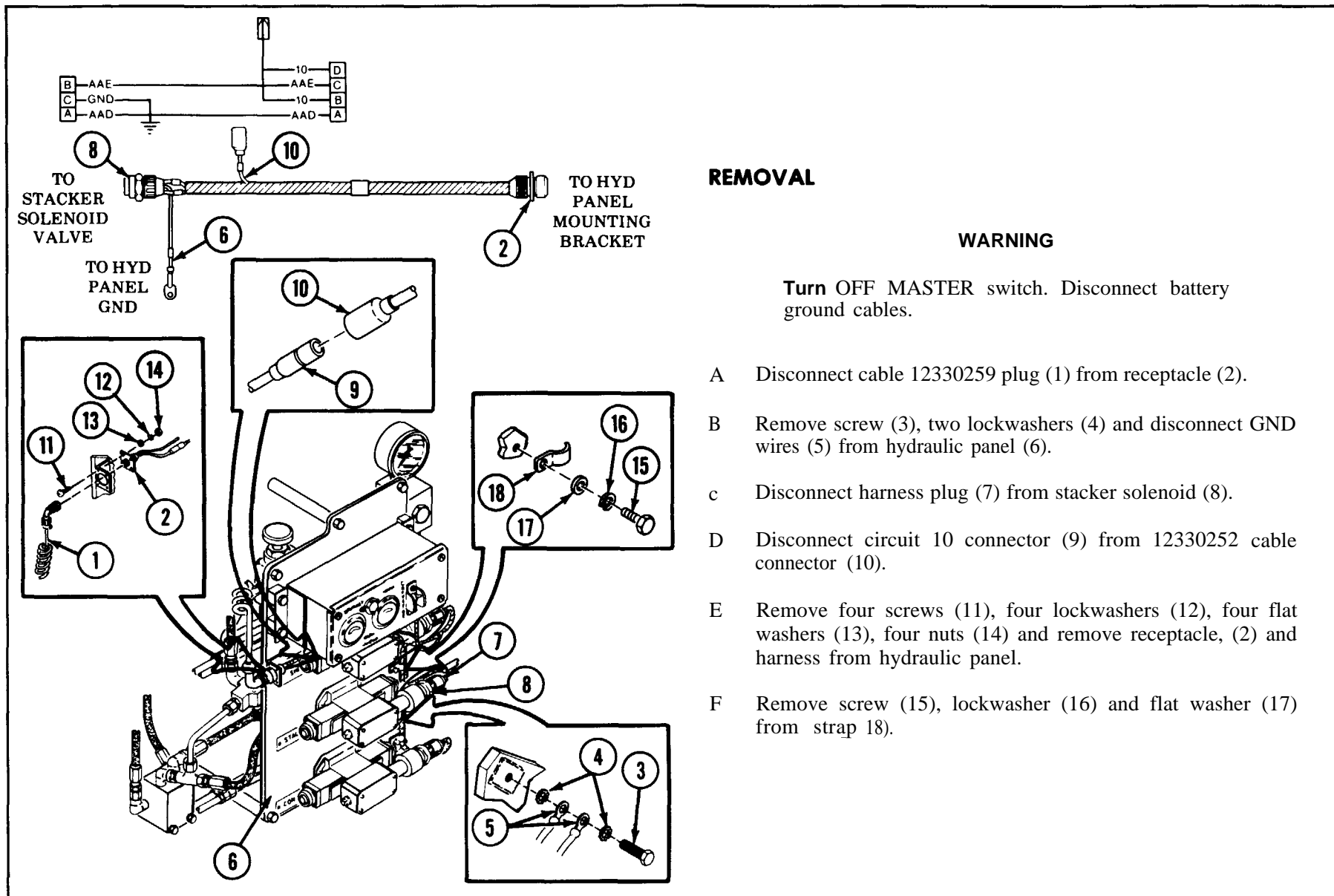
- A Disconnect cable plug (1) from stacker control switch (2).
- B Disconnect cable plug (3) from harness receptacle (4).
- C Remove screw (5), lockwasher (6) and strap (7) located on upper left ceiling between canister rack and hydraulic panel. Remove cable (8) from vehicle. Discard lockwasher.

**INSTALLATION**

Reverse removal procedures using new lockwasher.



## STACKER SOLENOID VALVE WIRING HARNESS (12332677-1): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

- A Disconnect cable 12330259 plug (1) from receptacle (2).
- B Remove screw (3), two lockwashers (4) and disconnect GND wires (5) from hydraulic panel (6).
- C Disconnect harness plug (7) from stacker solenoid (8).
- D Disconnect circuit 10 connector (9) from 12330252 cable connector (10).
- E Remove four screws (11), four lockwashers (12), four flat washers (13), four nuts (14) and remove receptacle, (2) and harness from hydraulic panel.
- F Remove screw (15), lockwasher (16) and flat washer (17) from strap (18).

TA311154

**STACKER SOLENOID VALVE WIRING HARNESS (12332677-1): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION  
(CONTINUED)****DISASSEMBLY****NOTE**

Remove electrical tape only from section of harness to be disassembled.

- A Remove section of electrical tape from harness.
- B Separate and isolate wiring harness branches.
- c Disassemble wiring branch and replace defective wires (p 2-307).

**ASSEMBLY**

Reverse disassembly procedures,

**INSTALLATION**

Reverse removal procedures.

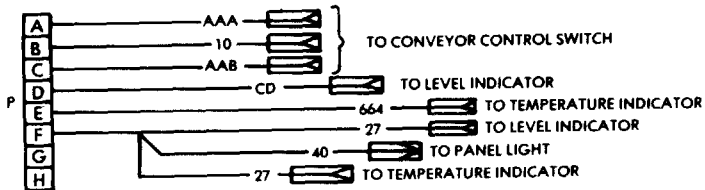


**HYDRAULIC GAGE PANEL WIRING HARNESS (12333555): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**

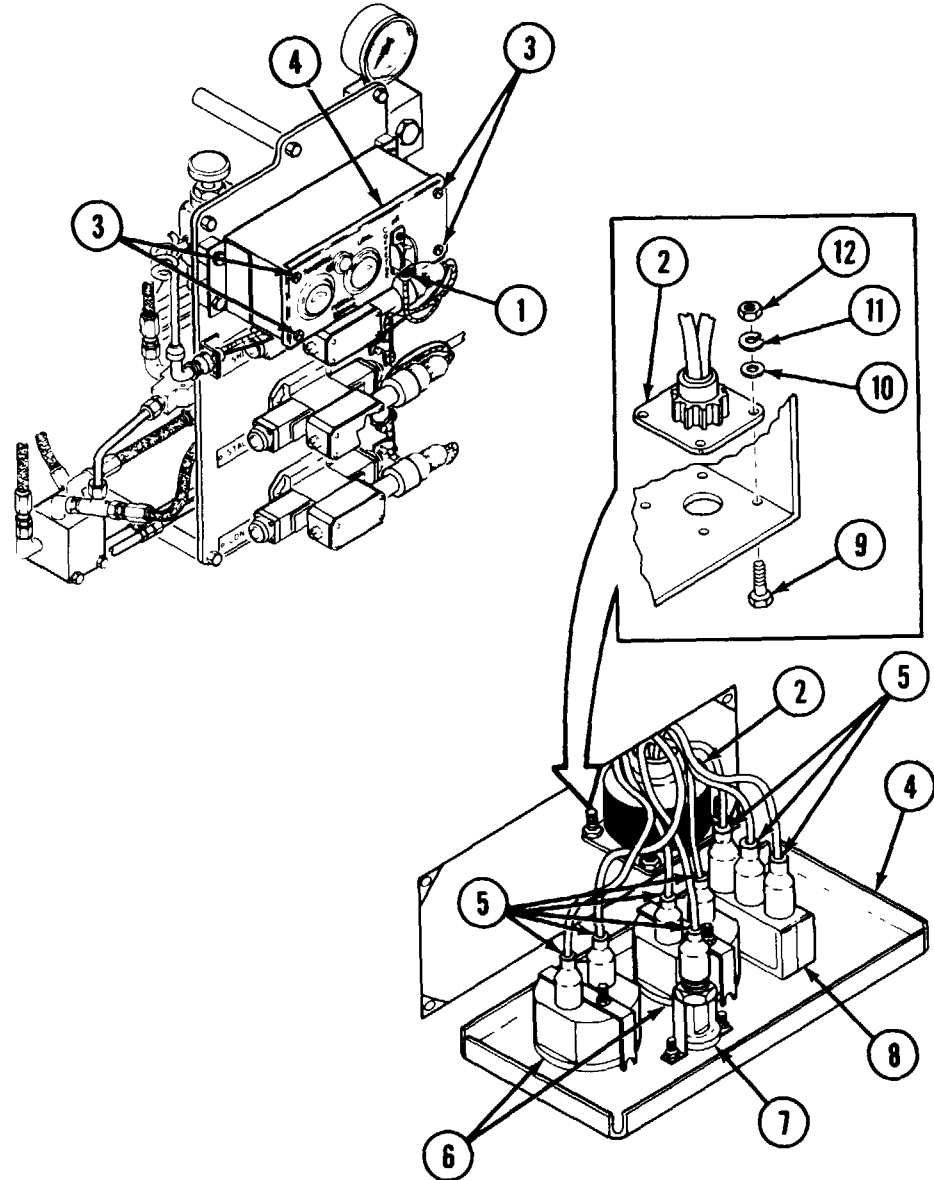
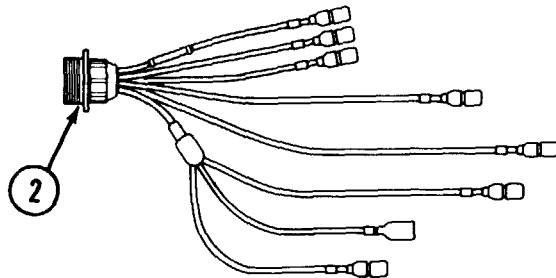
**INITIAL SETUP**

Equipment Condition:

Battery ground cables disconnected (6-44).  
MASTER switch OFF.



P = PLUG



## HYDRAULIC GAGE PANEL WIRING HARNESS (12333555): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### ■ (CONTINUED)

#### REMOVAL

- A Disconnect wiring harness plug (1) from gage panel receptacle (2).
- B Turn four retaining studs (3) and open cover (4).
- C Remove eight harness connectors (5) from gages (6), light (7) and conveyor control switch (8).
- D Remove four screws (9), four flat washers (10), four lockwashers (11) and four nuts (12). Discard lockwashers.
- E Remove receptacle (2) and attached wires from gage panel assembly.

#### DISASSEMBLY

Disassemble and replace defective wires (p 2-307).

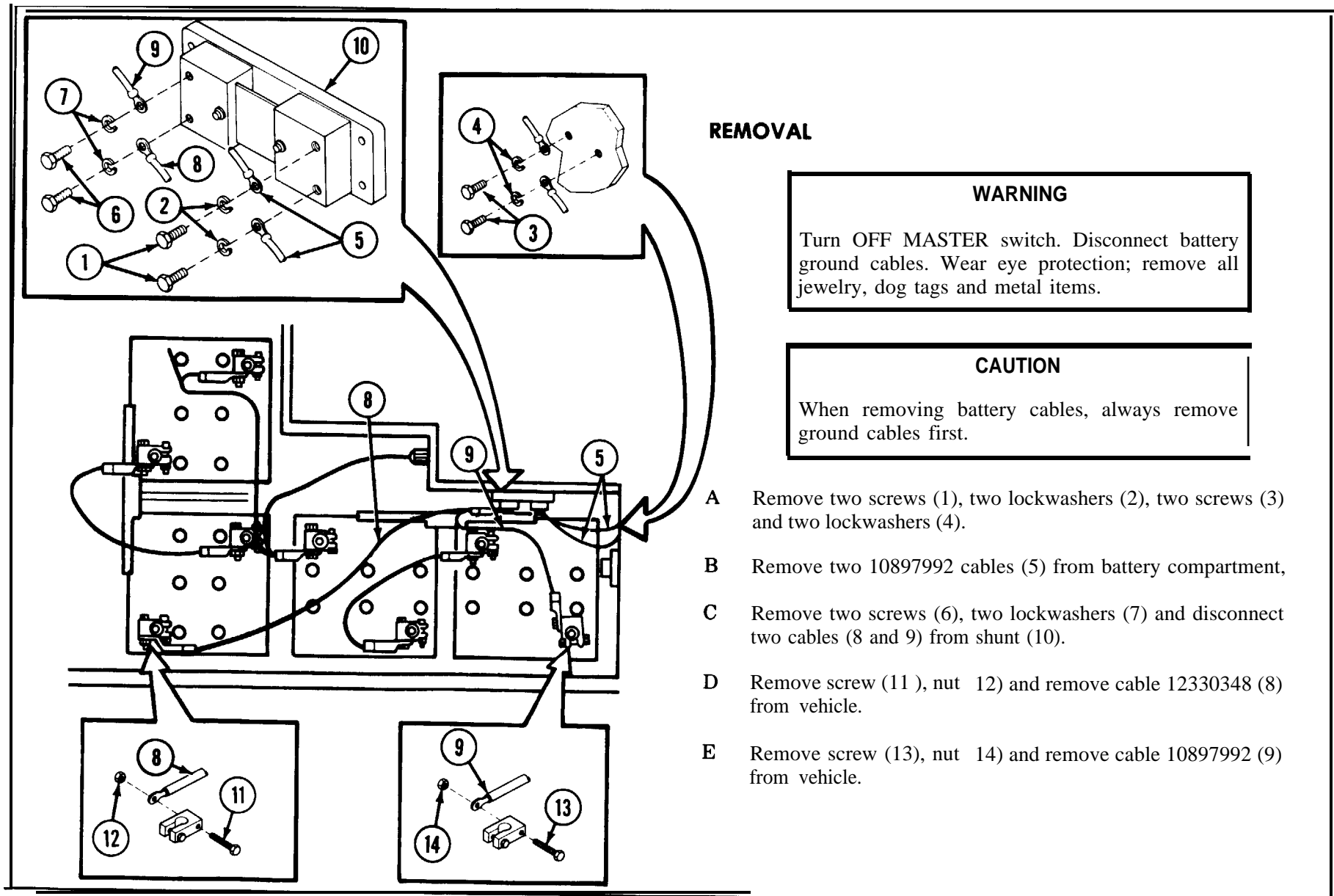
#### ASSEMBLY

Reassemble and regroup wires.

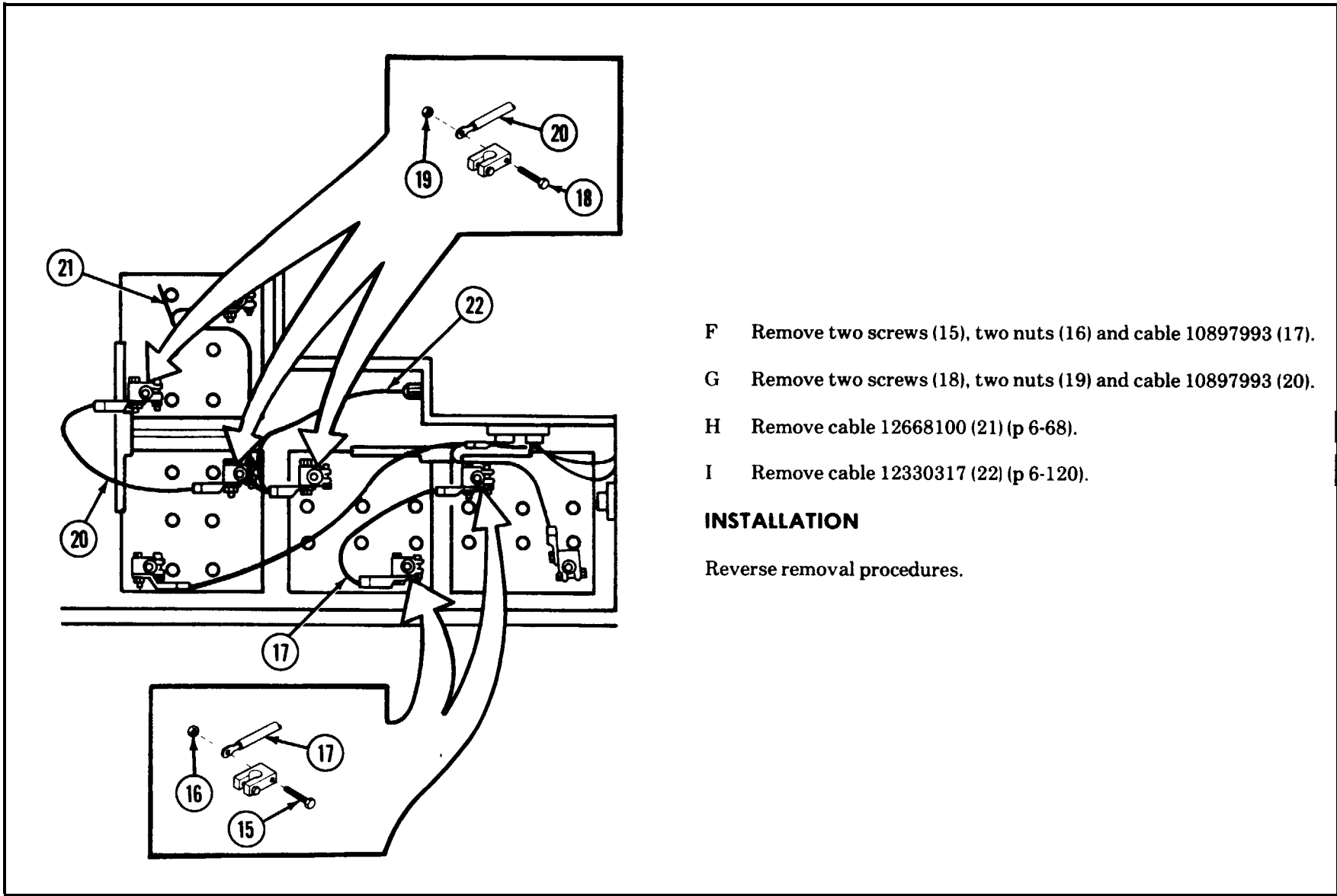
#### INSTALLATION

- A Install receptacle (2) and attached wires to gage panel assembly.
- B Install four screws (9), four flat washers (10), four new lockwashers (11) and four nuts (12).
- C Install eight harness connectors (5) to gages (6), light (7) and conveyor control switch (8).
- D Close cover (4) and turn four retaining studs (3).
- E Connect wiring harness plug (1) to gage panel receptacle (2).

## BATTERY CABLES (10897992, 10897993, 12330348): REMOVAL AND INSTALLATION



**BATTERY CABLES (10897992, 10897993, 12330348): REMOVAL AND INSTALLATION (CONTINUED)**



- F Remove two screws (15), two nuts (16) and cable 10897993 (17).
- G Remove two screws (18), two nuts (19) and cable 10897993 (20).
- H Remove cable 12668100 (21) (p 6-68).
- I Remove cable 12330317 (22) (p 6-120).

**INSTALLATION**

Reverse removal procedures.

**TRAILER RECEPTACLE WIRING HARNESS (12330246): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**

**INITIAL SETUP**

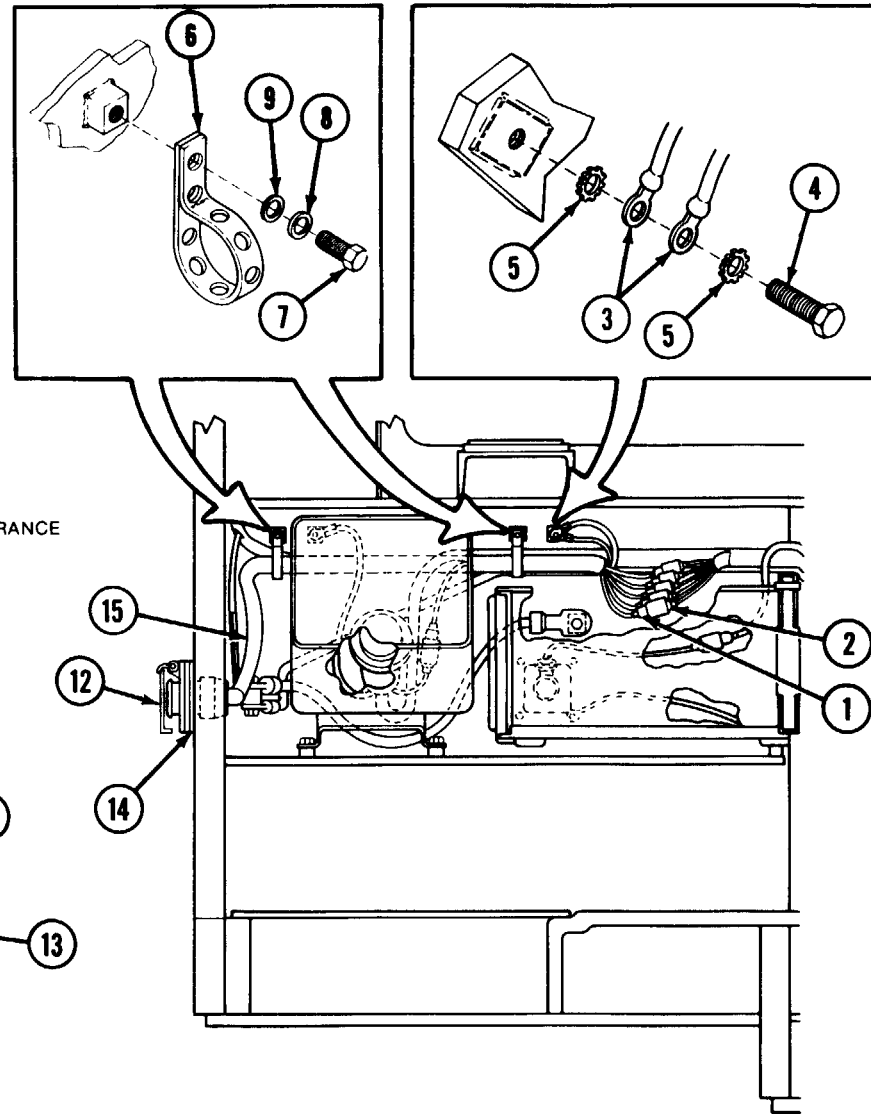
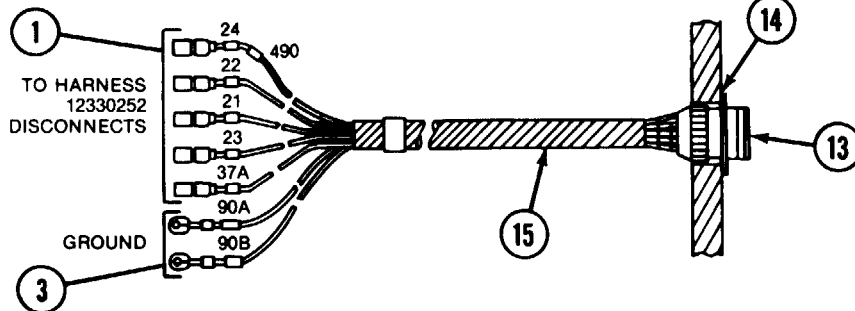
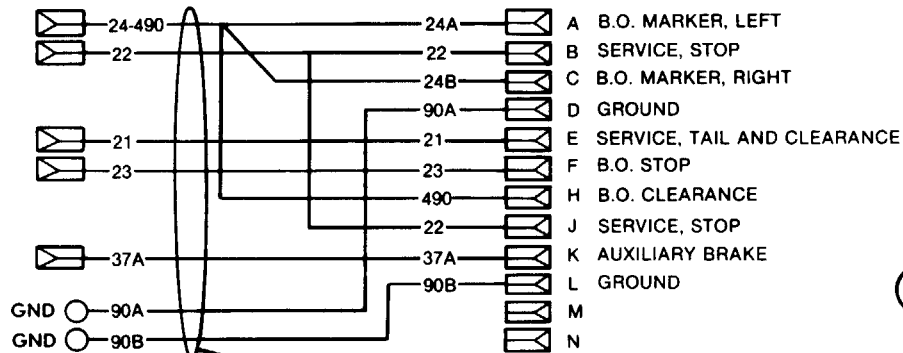
**Material/Parts:**

Tape, electrical (item 60, Appx D)

**Equipment Condition:**

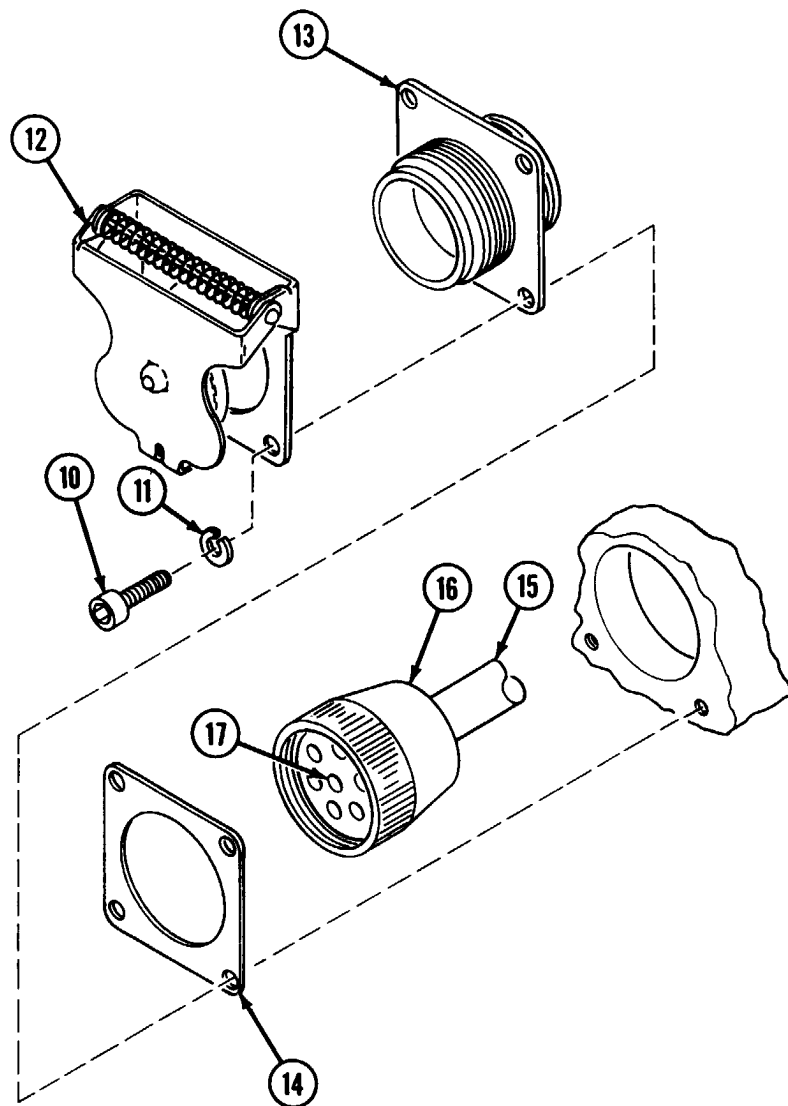
APU control box removed (p 13-35).

NBC air purifier removed (p 14-9).





## TRAILER RECEPTACLE WIRING HARNESS (12330246): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### REMOVAL

#### WARNING

Turn MASTER switch OFF. Disconnect battery ground cables.

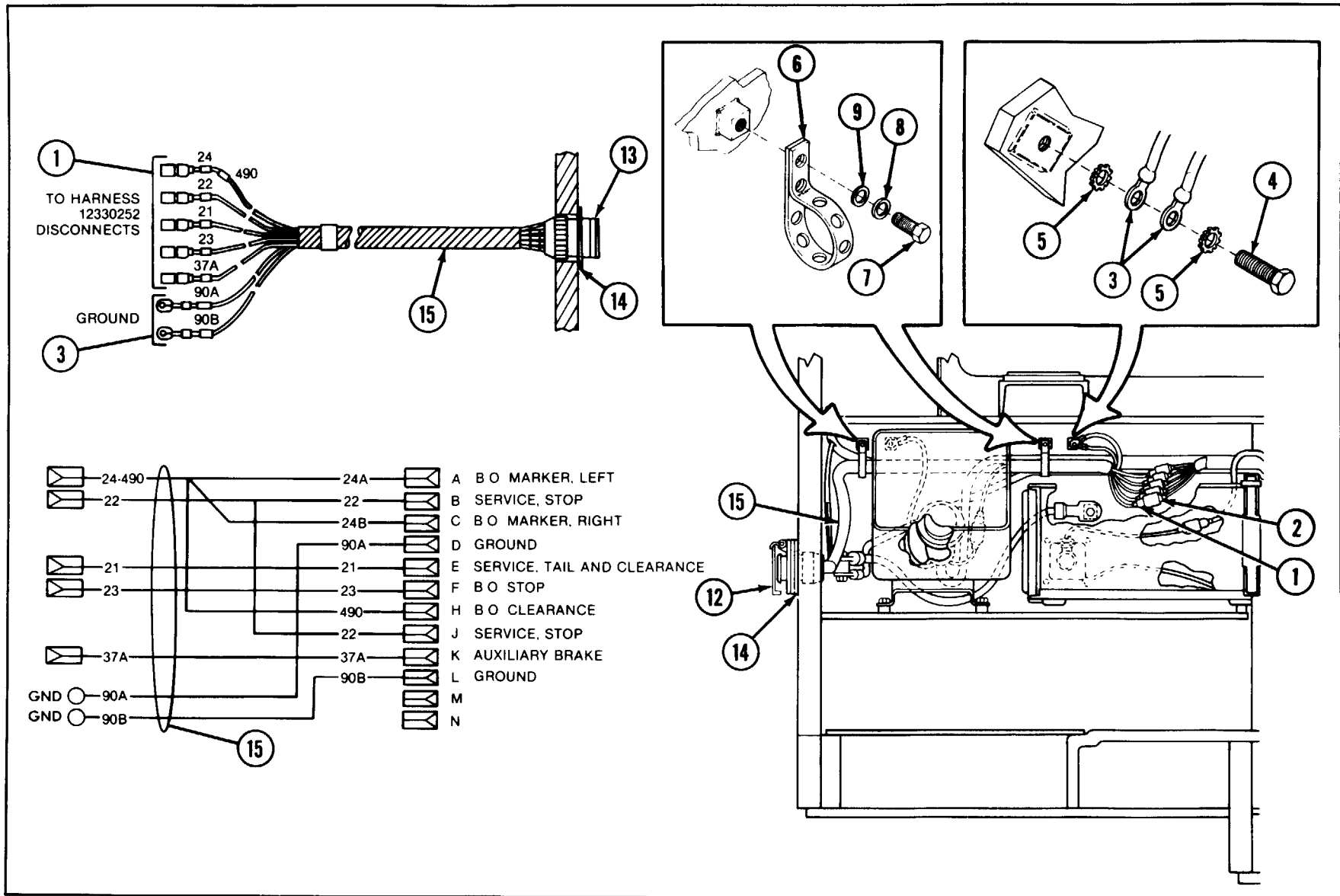
- A Open and secure battery compartment doors.
- B Disconnect five connectors (1) from harness 12330252 connectors (2).
- C Disconnect two wiring harness ground lugs (3) from vehicle mounting studs by removing screw (4) and two lockwashers (5). Discard lockwashers.
- D Remove two harness straps (6) by removing from each one screw (7), lockwasher (8) and flat washer (9). Discard lockwashers.

#### NOTE

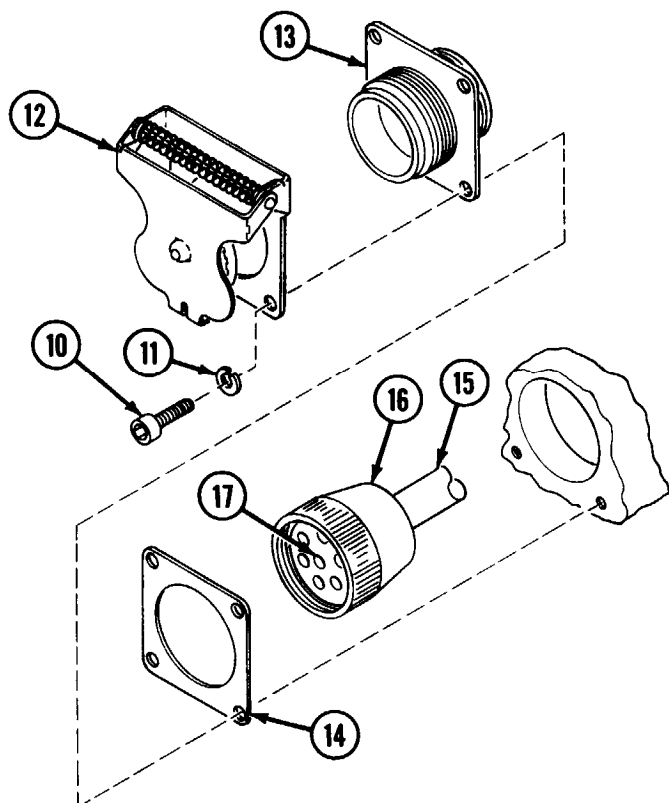
Do not remove other harnesses from straps.  
Reinstall hardware after harness removal.

- E Remove four screws (10), four lockwashers (11) and receptacle cover (12). Discard lockwashers.
- F Pull receptacle (13) and gasket (14) with wiring harness (15) attached from rear of vehicle.
- G Unscrew cap (16) from receptacle (13) and slide back on wiring harness (15).
- H Pull grommet (17) from receptacle (13).
- I Remove receptacle (13) and gasket (14). Discard gasket.

TRAILER RECEPTACLE WIRING HARNESS (12330246): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



## TRAILER RECEPTACLE, WIRING HARNESS (12330246): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### DISASSEMBLY

- A Remove electrical tape.
- B Separate and isolate defective harness wires.
- C Repair wires (p 2-307).

### ASSEMBLY

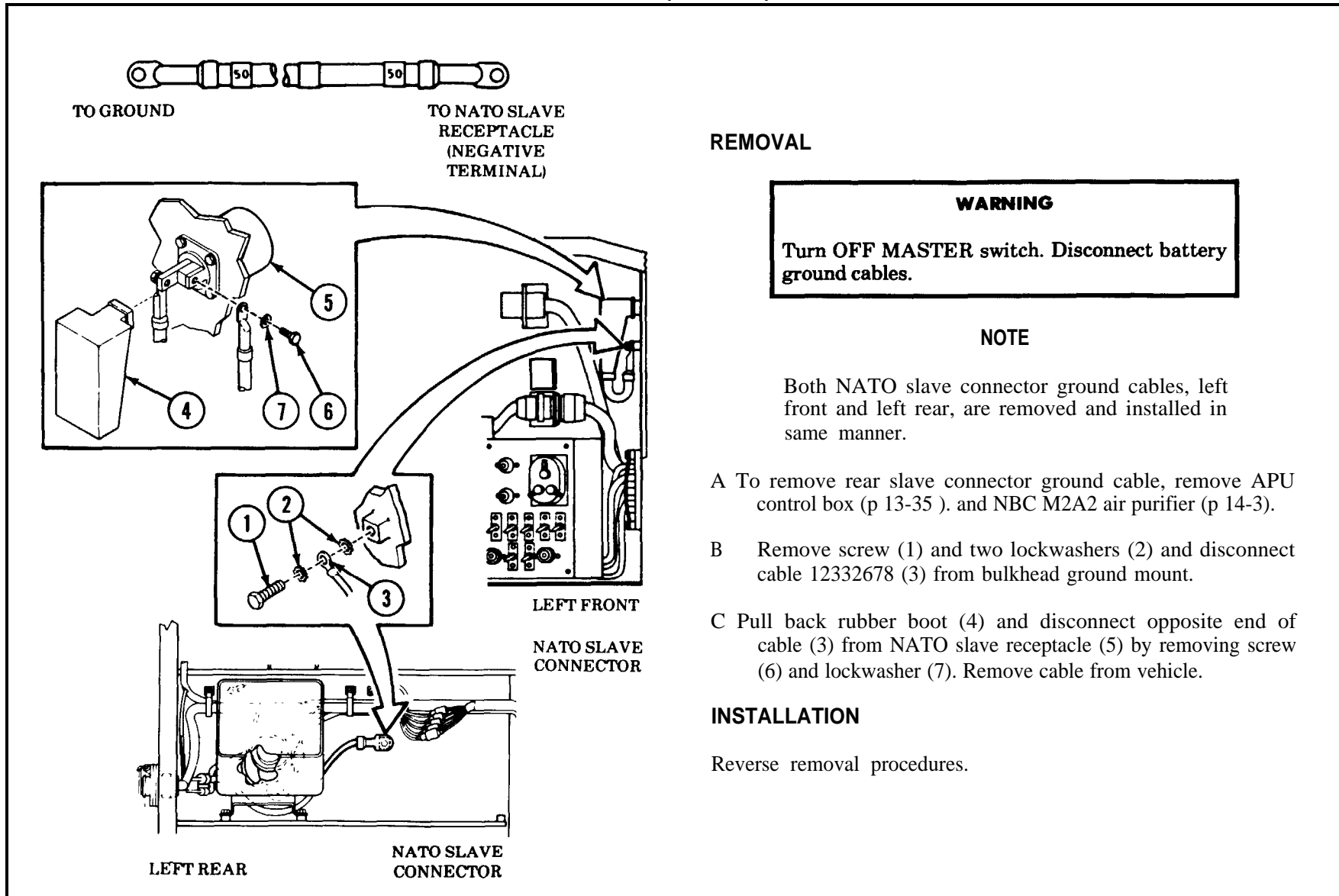
Regroup harness wires. Secure with electrical tape (item 60, Appx D).

### INSTALLATION

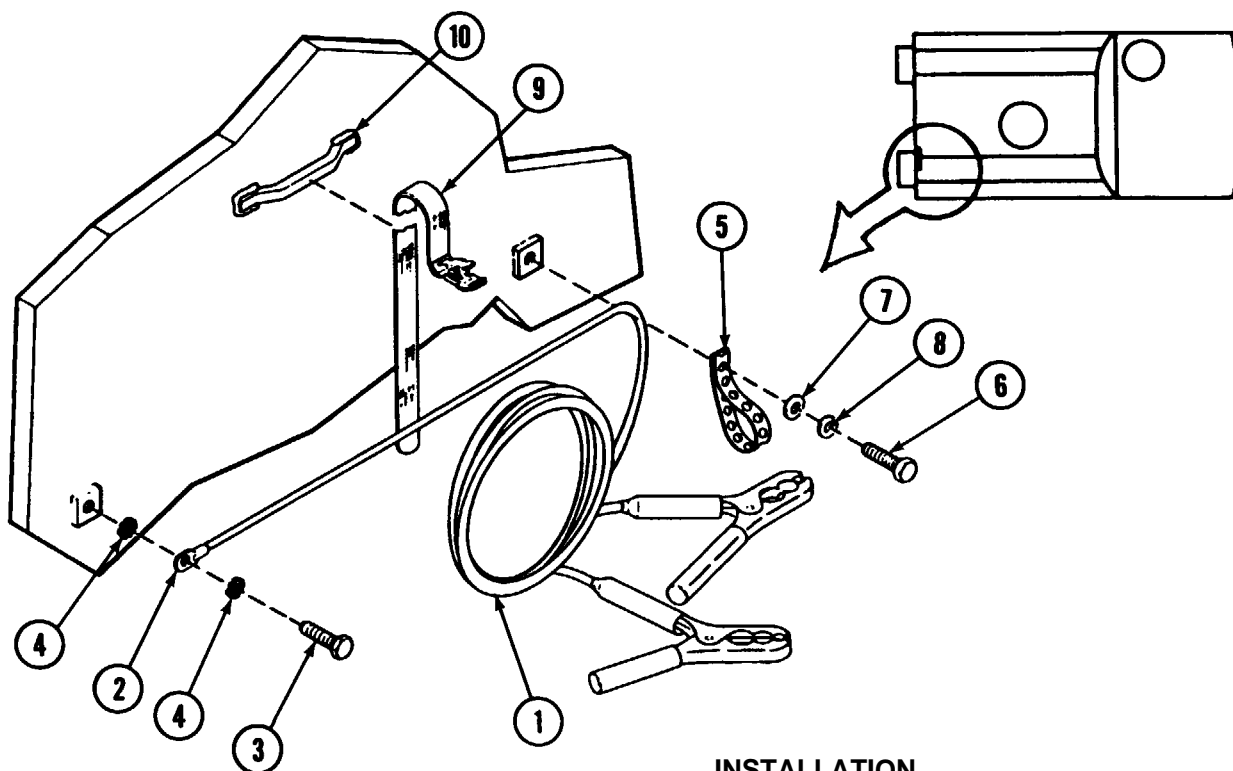
- A Install new gasket (14) on receptacle (13).
- B Install grommet (17) in receptacle (13).
- C Screw cap (16) onto receptacle (13).
- D Install receptacle (13) with wiring harness (15).
- E Install receptacle cover (12).
- F Secure new gasket (14), trailer receptacle (13), and cover (12) to vehicle with four screws (10) and four new lockwashers (11).
- G Remove lower upper rear door control switch (p 6-61).
- H Install two harness straps (6) with two screws (7), two new lockwashers (8) and two flat washers (9).
- I Install lower upper rear door control switch (p 6-61).
- J Connect two wiring harness ground lugs (3) to vehicle mounting studs with screw (4) and two new lockwashers (5).
- K Connect five connectors (1) to harness 12330252 connectors (2).
- L Close and secure battery compartment doors.

TA312820

## NATO INTERVEHICULAR SLAVE CONNECTOR GROUND CABLE (12332678): REMOVAL AND INSTALLATION



## INTERVEHICULAR GROUNDING CABLE ASSEMBLY (12330301): REMOVAL AND INSTALLATION



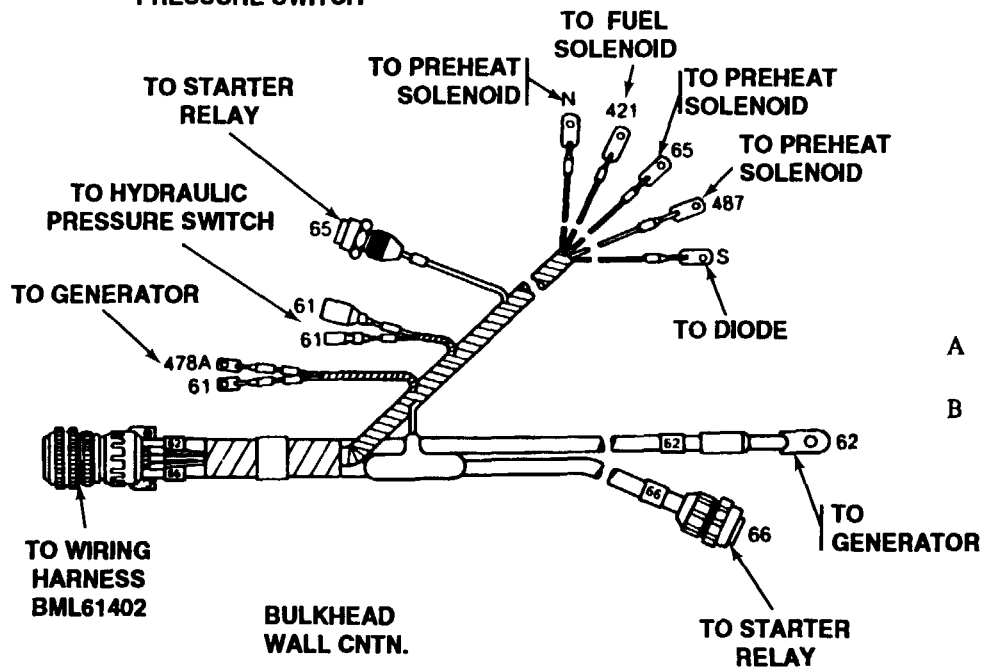
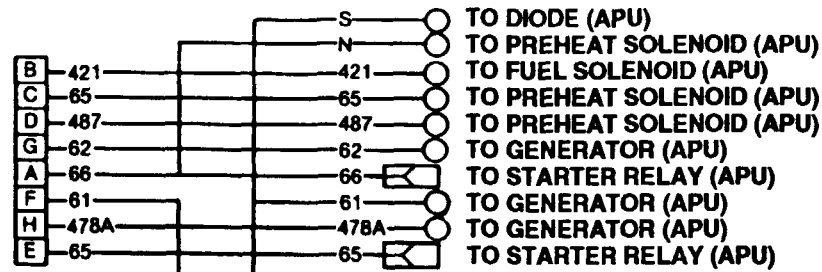
### REMOVAL

- A Remove cable (1) grounding lug (2) by removing one screw (3) and two lockwashers (4). Discard lockwashers.
- B Remove tie-down strap (5) by removing screw (6), flat washer (7) and lockwasher (8). Discard lockwasher.
- C Remove cable (1) from vehicle by unstrapping strap assembly (9).
- D Remove strap (9) from vehicle-mounted bracket (10).

### INSTALLATION

- A Install strap (9) on vehicle-mounted bracket (10).
- B Install cable (1) in vehicle by searing strap (9).
- C Install tie-down strap (5) with screw (6), new lockwasher (8) and flat washer (7).
- D Install cable (1) grounding lug (2) with one screw (3) and two new lockwashers (4).

**APU BRANCHED WIRING HARNESS (12329640): REMOVAL DISASSEMBLY, ASSEMBLY AND INSTALLATION**



**REMOVAL**

**WARNING**

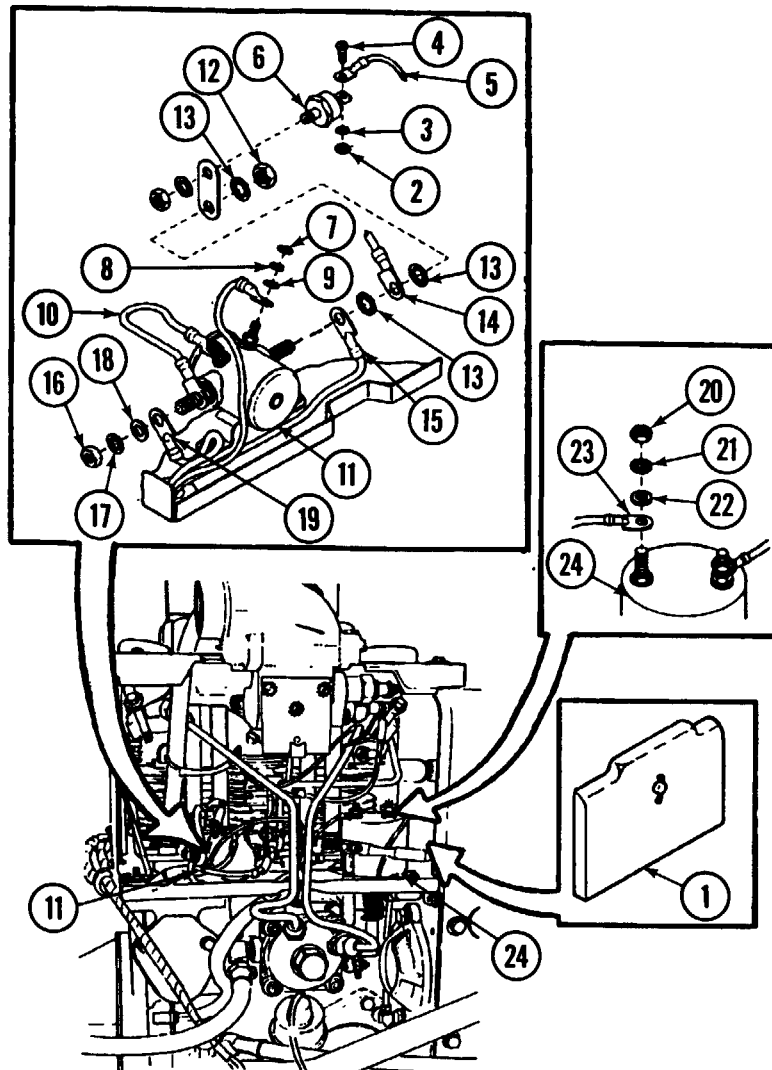
Turn OFF MASTER switch. Disconnect battery ground cables.

**NOTE**

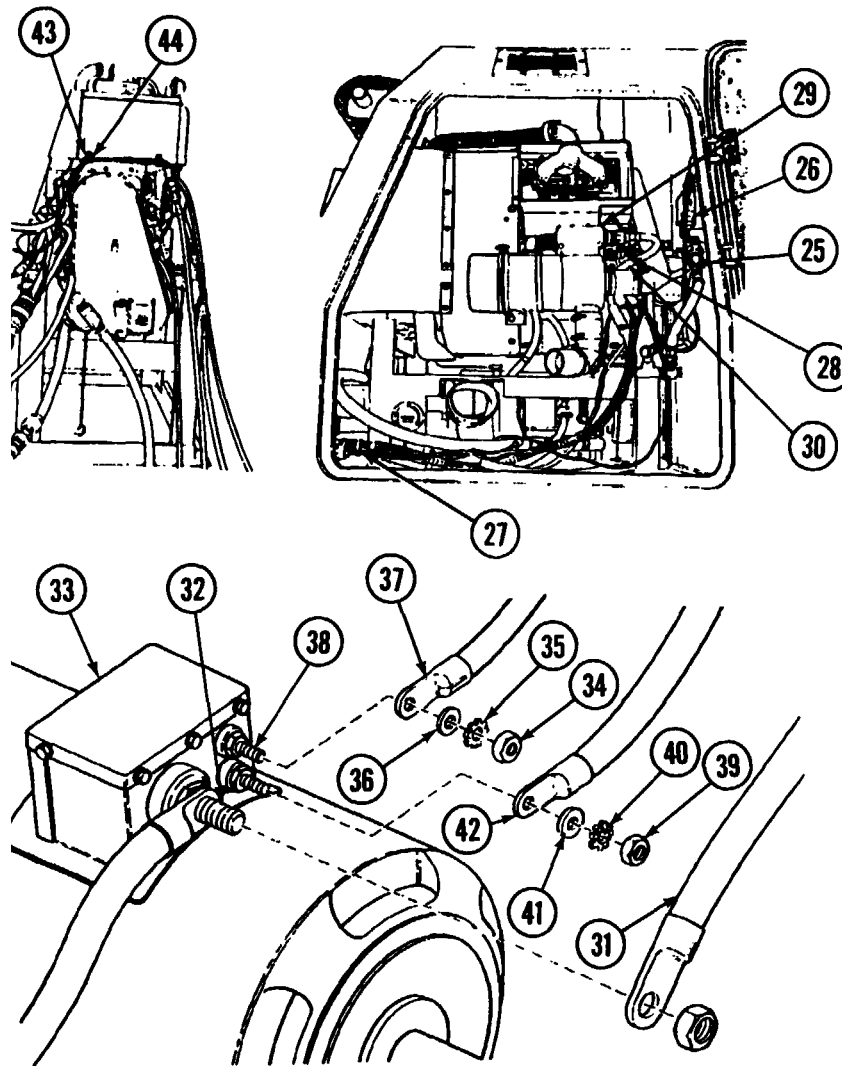
Removal of left projectile rack is required (TM 9-2350-267-10).

- A Remove APU compartment access plate (p 13-13).
- B Remove air intake plenum (p 13-1).

APU BRANCHED WIRING HARNESS (12329640): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (Continued)



- C Remove engine cylinder shroud door panel (1).
- D Remove one nut (2), lockwasher (3) and screw (4) securing lead S (5) at diode (6).
- E Remove one nut (7), lockwasher (8) and flat washer (9) securing lead 487 (10) at preheat solenoid (11).
- F Remove one nut (12) and three lockwashers (13) securing diode support, circuit R (14) and circuit 65 (15) at preheat solenoid (11).
- G Remove one nut (16), lockwasher (17) and flat washer (18) securing lead circuit N (19) at preheat solenoid (11).
- H Remove one nut (20), one lockwasher (21) and one flat washer (22) securing lead circuit 421 (23) at fuel shutoff solenoid (24).

**APU BRANCHED WIRING HARNESS (12329840): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**


- I Disconnect connectors for two circuits 61 (25) going to hydraulic pressure switch (26) on upper rear bulkhead.
- J Disconnect main receptacle 12329640 (27) from vehicle connector at lower left front corner of APU compartment.
- K Remove connector circuit 66 (28) from top right side of starter relay (29).
- L Remove connector circuit 65 (30) from bottom right side of starter relay (29).
- M Remove one nut securing lead 62 (31) at positive terminal B (32) on generator terminal box (33).
- N Remove one nut (34), lockwasher (35) and flat washer (36) securing lead 61 (37) to field terminal A (38) on generator terminal box (33).
- O Remove one nut (39), lockwasher (40) and flat washer (41) securing lead 478A (42) at interpole terminal D on generator terminal box (33).
- P Remove two screws (43) and two clamps (44) securing wiring harness to rear side of APU.



**APU BRANCHED WIRING HARNESS (12329640): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (Continued)**

**DISASSEMBLY**

**NOTE**

Remove electrical tape only from section of harness to be disassembled.

- A** Remove section of electrical tape from harness.
- B** Separate and isolate wiring harness branches.
- C** Disassemble wiring branch and replace defective wires (p 2-307).

**ASSEMBLY**

Reverse disassembly procedures.

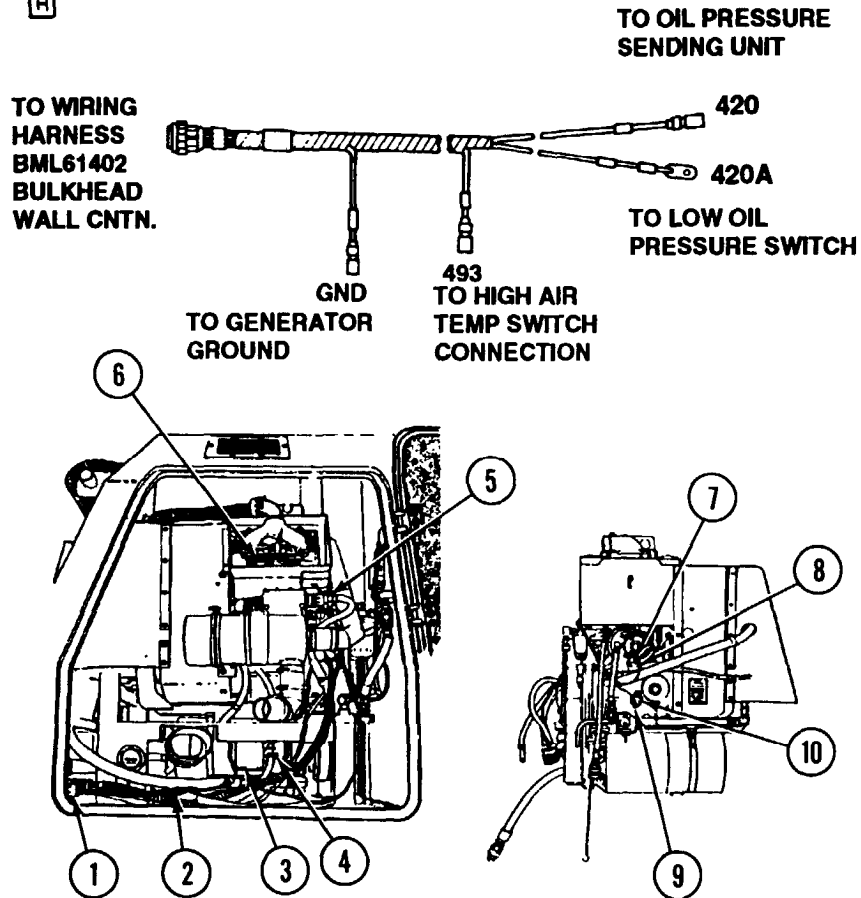
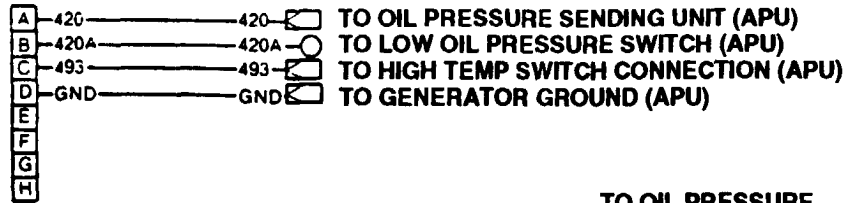
**INSTALLATION**

**NOTE**

Seal all exposed terminals with silicone sealant adhesive (item 5, Appx D).

Reverse removal procedures.

**APU SENDING UNITS WIRING HARNESS (12329650): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**



**REMOVAL**

**WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

**NOTE**

Removal of left projectile rack is required (TM 9-2350-267-10).

- A Remove APU compartment access plate (p 13-13).
- B Remove air intake plenum (p 13-1).
- C Disconnect main receptacle (1) from vehicle harness connector located in lower left front corner of APU compartment.
- D Disconnect lead GND (2) going to ground lead 12329662 (3) attached to terminal E on generator terminal box (4).
- E Disconnect lead 493 (5) from lead 11671371 attached to engine high temperature switch (6).
- F Disconnect lead 420 (7) going to engine oil pressure sending unit (8).
- G Remove one screw and one lockwasher securing lead 420A (9) at engine low pressure switch (10). Discard lockwasher.
- H Remove three screws and three clamps securing wiring harness to APU.
- I Remove harness from APU.

■ **APU SENDING UNITS WIRING HARNESS (12329650): REMOVAL DISASSEMBLY, ASSEMBLY AND INSTALLATION (Continued)**

**DISASSEMBLY**

**NOTE**

Remove electrical tape only from section of harness  
**to be** disassembled.

- A Remove section of electrical tape from harness.
- B Separate and isolate wiring harness branches.
- C Disassemble wiring branch and replace defective wires (p 2-307).

**ASSEMBLY**

Reverse disassembly procedures.

**INSTALLATION**

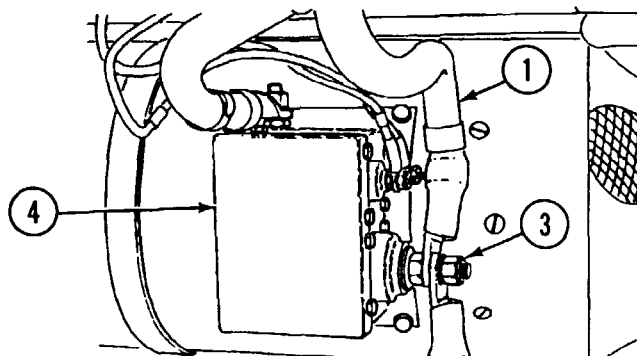
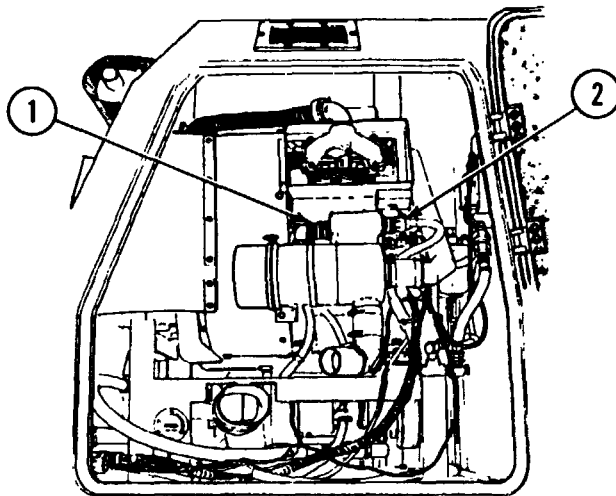
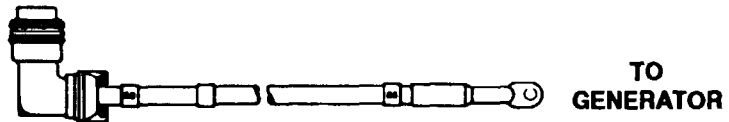
**NOTE**

Seal all exposed terminals with silicone seal adhesive  
(item 5, Appx D).

Reverse removal procedures

## APU CABLE ASSEMBLY (12332833): REMOVAL AND INSTALLATION

TO STARTER RELAY



## REMOVAL

**WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

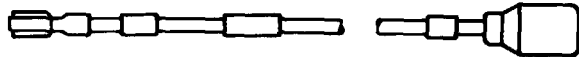
- A Remove air intake plenum (p 13-1).
- B Disconnect cable 12332833 (1) plug from starter relay (2).
- C Remove nut (3) that secures cable (1) to positive terminal B at generator terminal box (4).
- D Remove cable (1) from vehicle.

## INSTALLATION

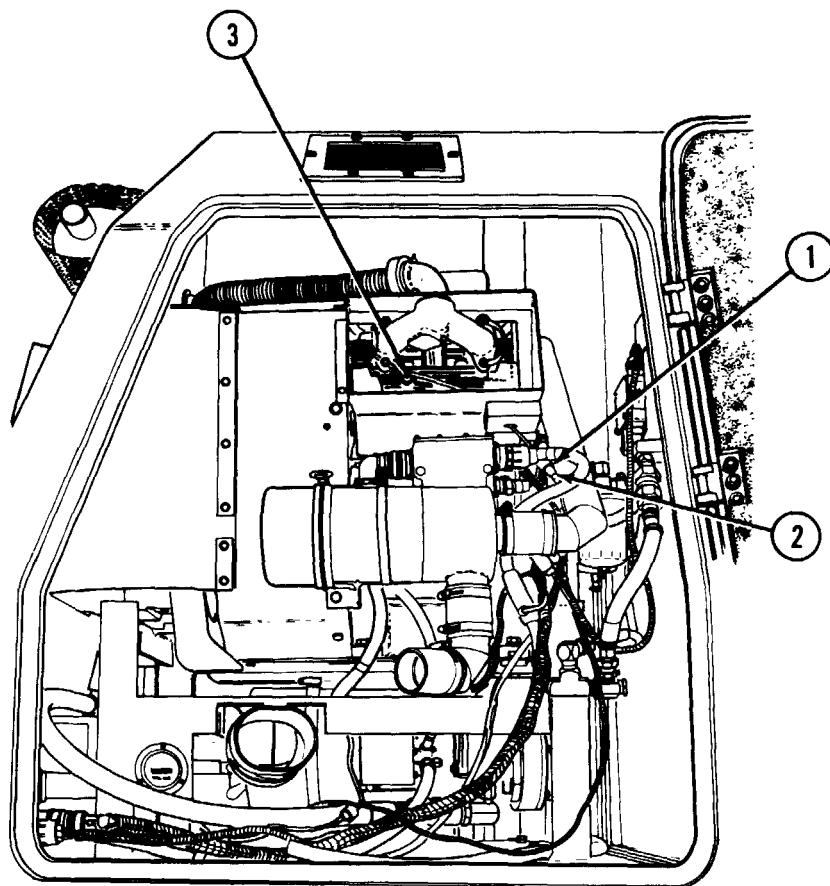
Reverse removal procedures.

## APU CABLE ASSEMBLY (11671371 ): REMOVAL AND INSTALLATION

TO HIGH  
AIR TEMP  
SWITCH



TO WIRING  
HARNESS  
BML43106



### REMOVAL

#### WARNING

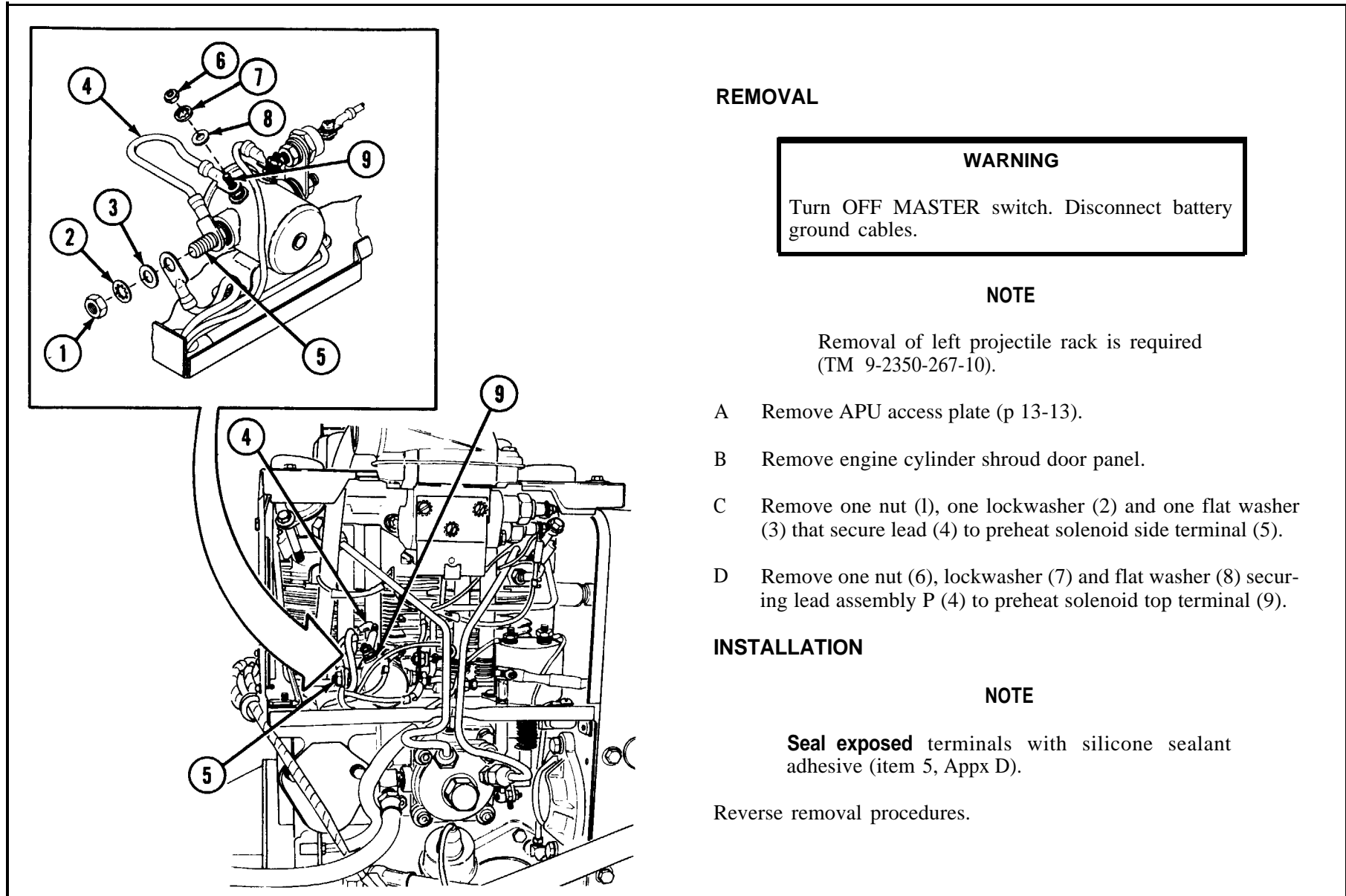
Turn OFF MASTER switch. Disconnect battery ground cables.

- A Disconnect circuit 493 (1) from wiring harness 12329650 (2).
- B Disconnect lead 493 (1) from high air temperature switch (3).

### INSTALLATION

Reverse removal procedures.

## APU CABLE ASSEMBLY (11671380-1 ): REMOVAL AND INSTALLATION



## REMOVAL

**WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

**NOTE**

Removal of left projectile rack is required (TM 9-2350-267-10).

- A Remove APU access plate (p 13-13).
- B Remove engine cylinder shroud door panel.
- C Remove one nut (1), one lockwasher (2) and one flat washer (3) that secure lead (4) to preheat solenoid side terminal (5).
- D Remove one nut (6), lockwasher (7) and flat washer (8) securing lead assembly P (4) to preheat solenoid top terminal (9).

## INSTALLATION

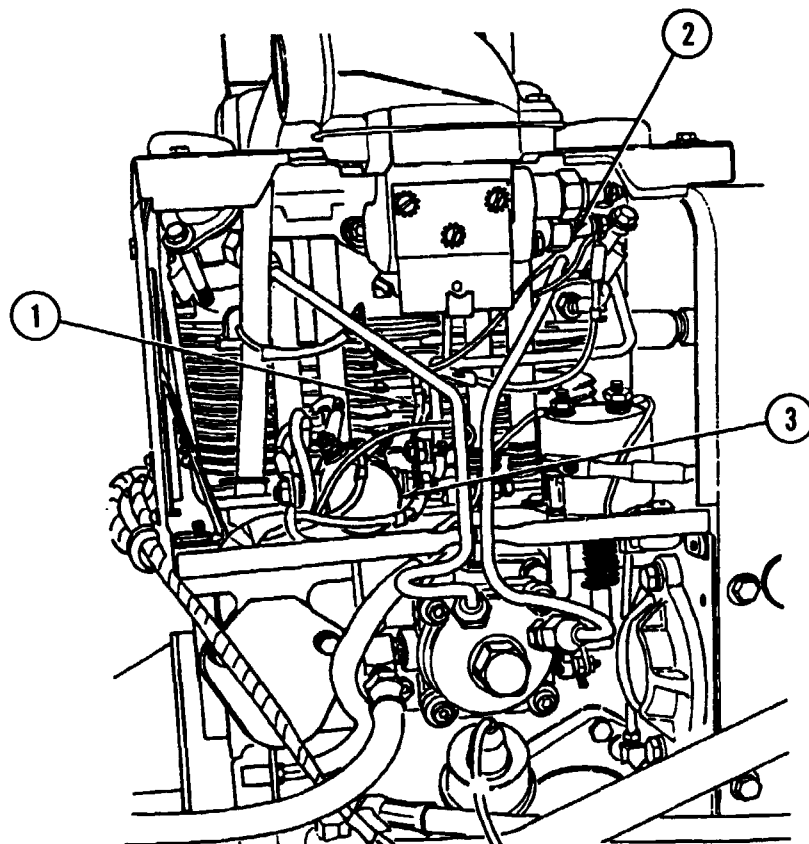
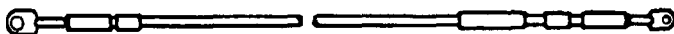
**NOTE**

**Seal exposed** terminals with silicone sealant adhesive (item 5, Appx D).

Reverse removal procedures.

## APU CABLE ASSEMBLY (11671380-2): REMOVAL AND INSTALLATION

TO MANIFOLD  
HEATER



### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

#### NOTE

Removal of left projectile rack is required (TM9-2350-267-10).

- A Remove APU access plate (p 13-13).
- B Remove engine cylinder shroud door panel.
- C Remove one nut, lockwasher and flat washer that secure lead assembly (1) to manifold heater (2).
- D Remove one nut, lockwasher and flat washer that secure lead assembly (1) to preheat solenoid (3) side terminal.
- E Remove cable from APU.

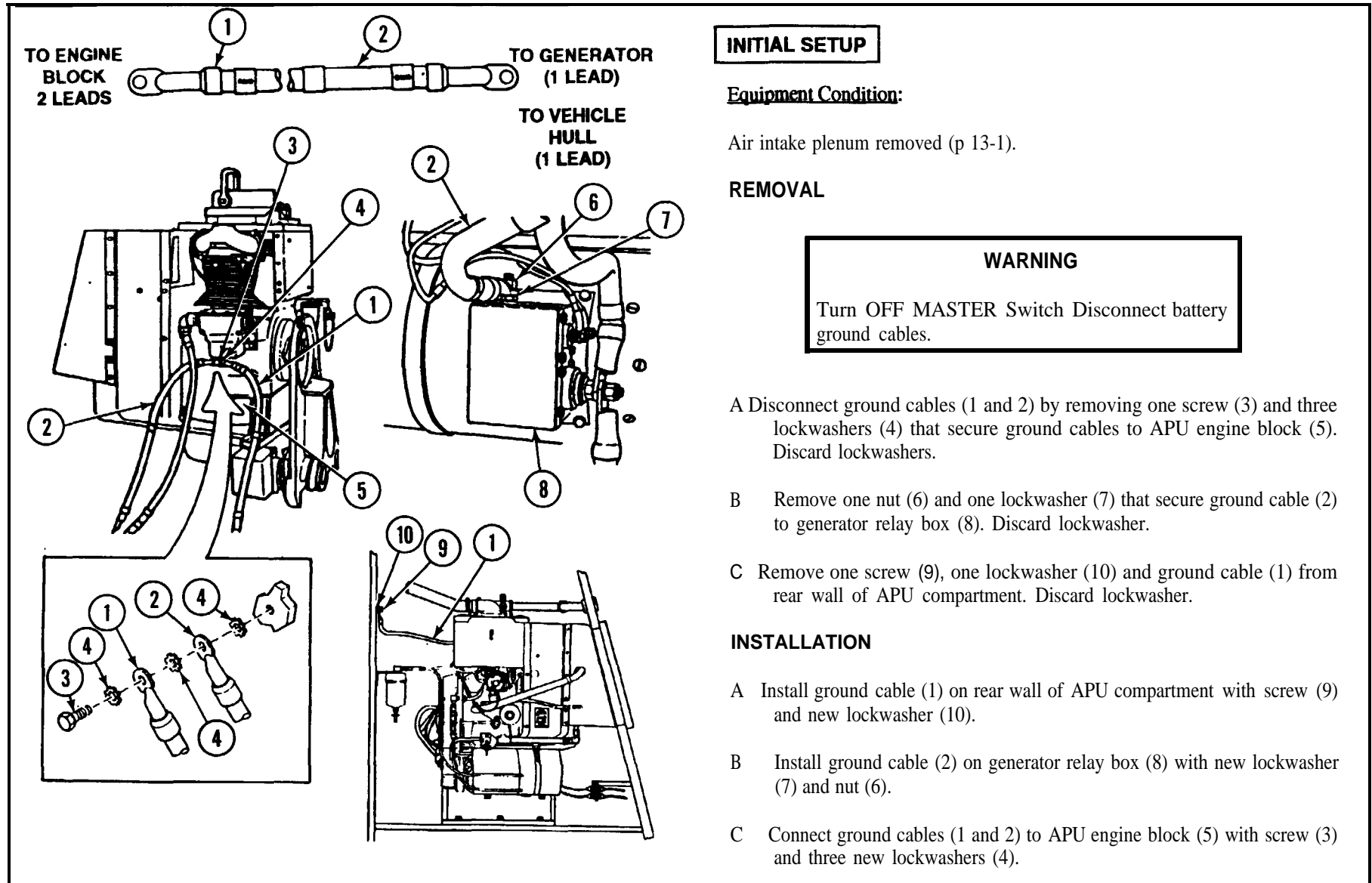
### INSTALLATION

#### NOTE

Seal all exposed terminals with silicone sealant adhesive (item 5, Appx D).

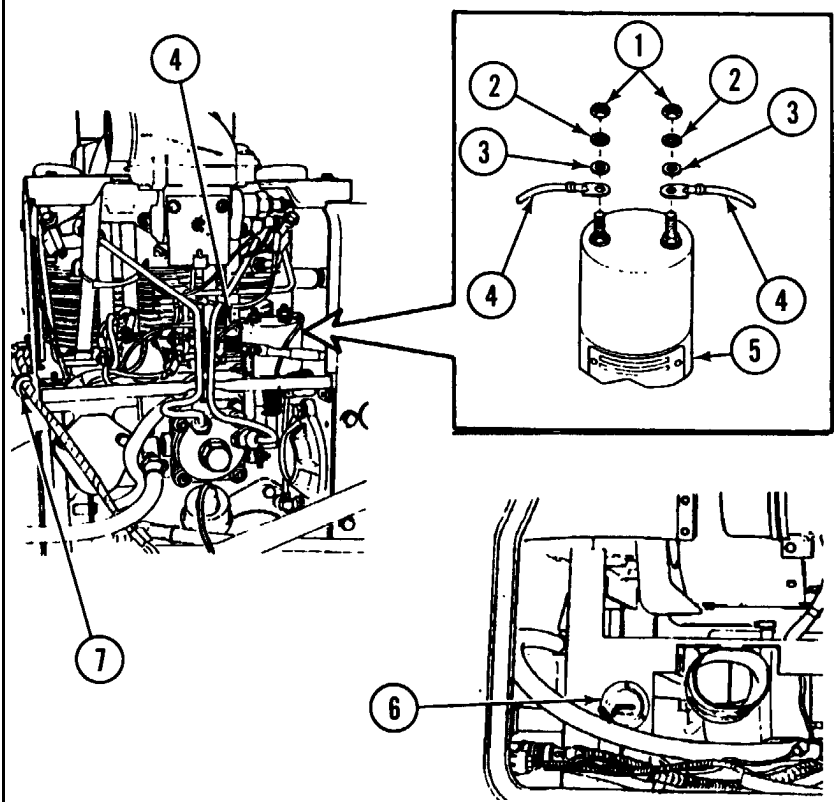
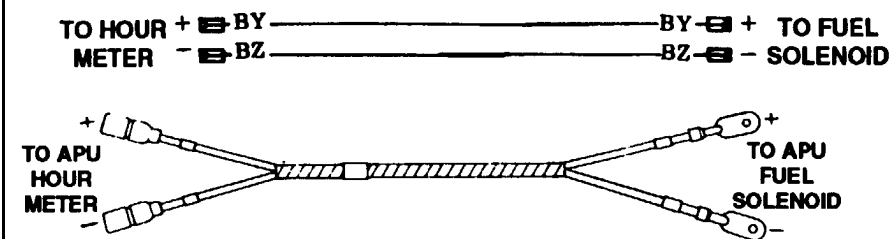
Reverse removal procedures.

## APU GROUND LEADS (11671369-1): REMOVAL AND INSTALLATION





**APU HOUR METER WIRING HARNESS (12329660): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**



**REMOVAL**

**WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

**NOTE**

Removal of left projectile rack is required (TM 9-2350-267-10).

- A Remove APU compartment access plate (p 13-13).
- B Remove APU intake plenum (p 13-1).
- c Remove engine cylinder shroud door panel.
- D Remove from each fuel solenoid terminal one nut (1), lockwasher (2) and flat washer (3). Discard lockwasher.
- E Disconnect harness (4) from fuel solenoid (5).
- F Disconnect harness (4) connectors from APU hour meter (6).
- G Remove two screws and two clamps (7).
- H Remove harness (4) from APU.

**APU HOUR METER WIRING HARNESS (12329660): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

**DISASSEMBLY**

A Remove electrical tape from harness.

B Separate harness wires.

C Disassemble and replace defective wires (p 2-307).

**ASSEMBLY**

Reverse disassembly procedures.

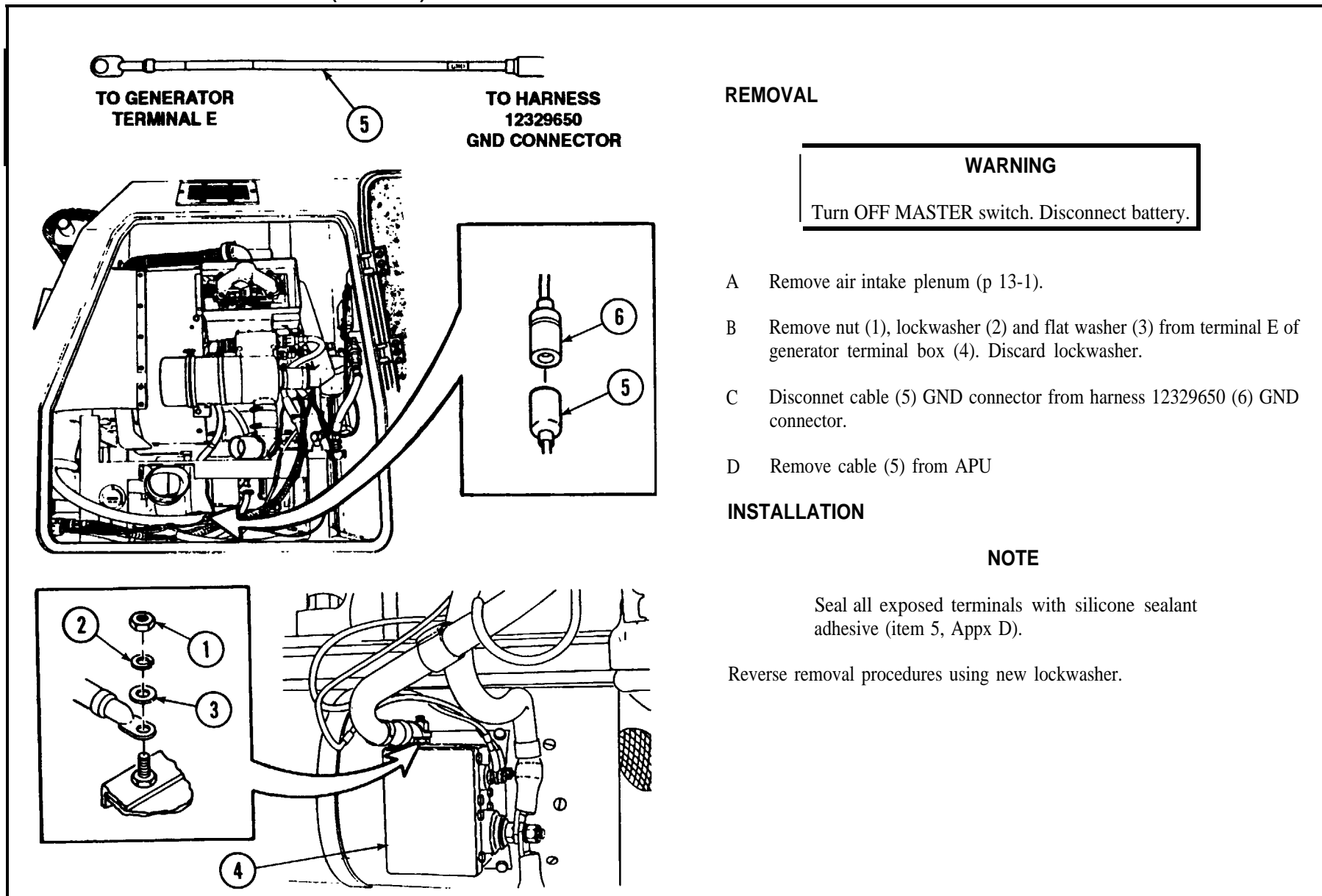
**INSTALLATION**

**NOTE**

Seal all exposed terminals with silicone sealant adhesive (item 5, Appx D).

Reverse removal procedures.

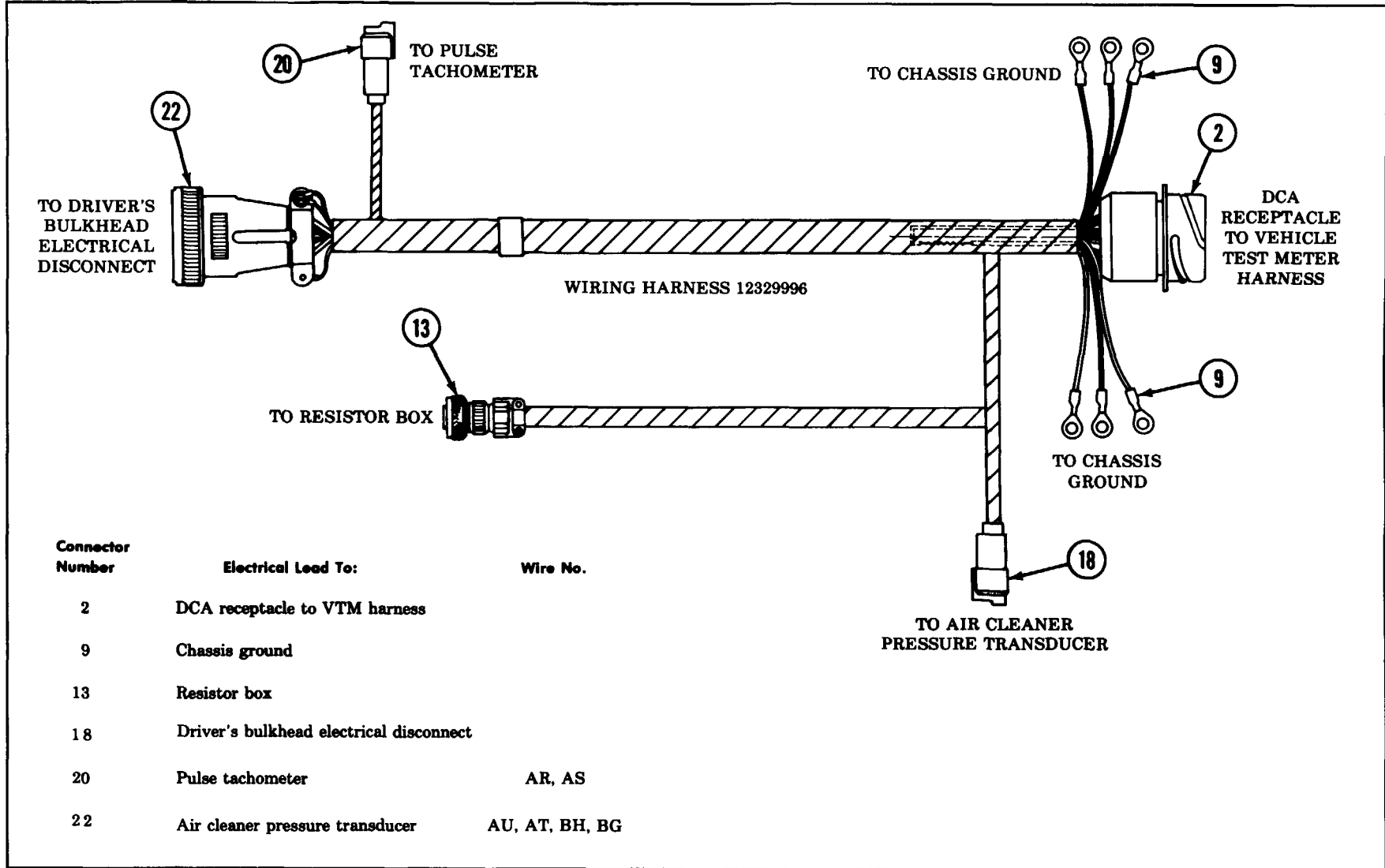
## APU GENERATOR GROUND LEAD (12329662): REMOVAL AND INSTALLATION





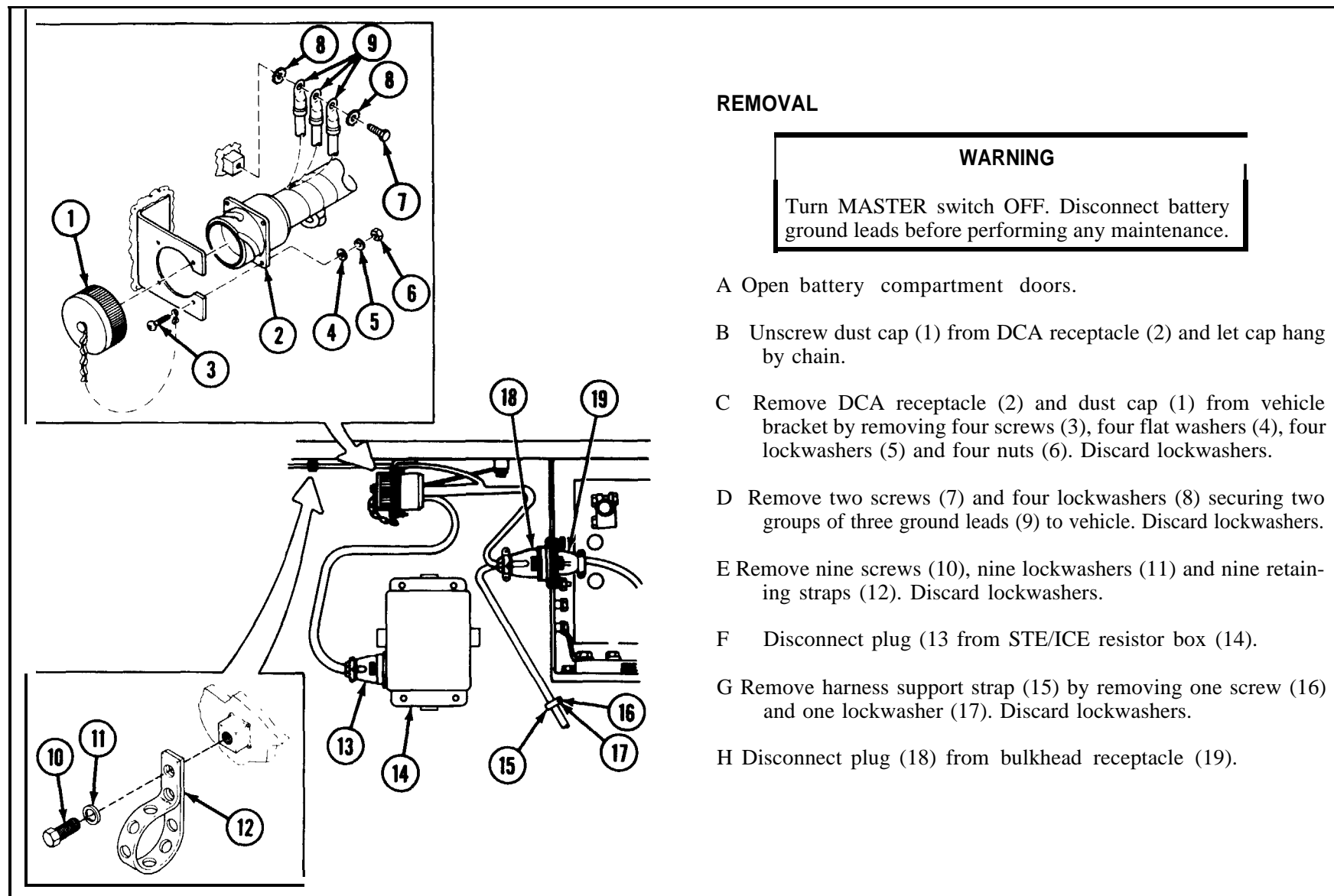
Section IV SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINE POWERED MATERIEL (STE/ICE)

STE/ICE WIRING HARNESS, DCA TO DRIVERS BULKHEAD (12329996): REMOVAL AND INSTALLATION



TA312823

## STE/ICE WIRING HARNESS, DCA TO DRIVERS BULKHEAD (12329996): REMOVAL AND INSTALLATION (CONTINUED)



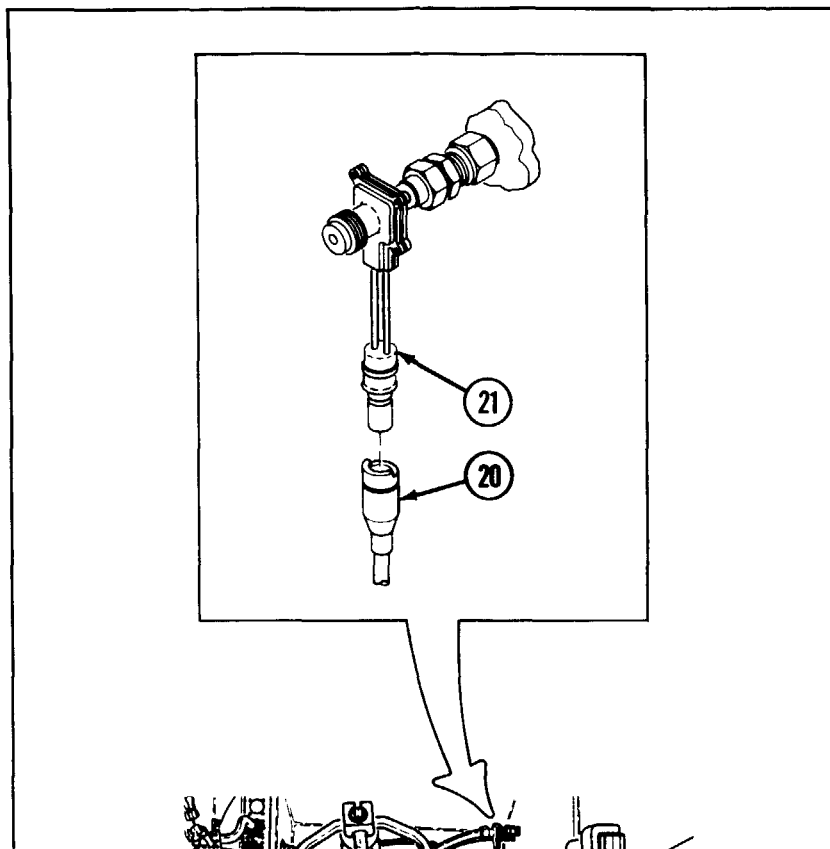
## REMOVAL

**WARNING**

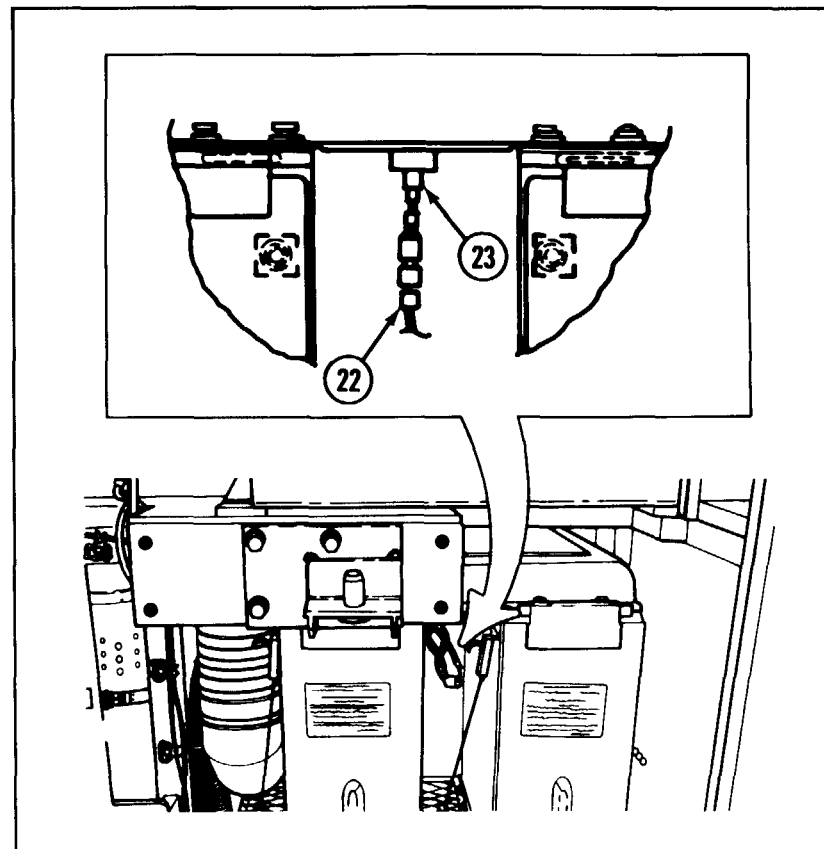
Turn MASTER switch OFF. Disconnect battery ground leads before performing any maintenance.

- A Open battery compartment doors.
- B Unscrew dust cap (1) from DCA receptacle (2) and let cap hang by chain.
- C Remove DCA receptacle (2) and dust cap (1) from vehicle bracket by removing four screws (3), four flat washers (4), four lockwashers (5) and four nuts (6). Discard lockwashers.
- D Remove two screws (7) and four lockwashers (8) securing two groups of three ground leads (9) to vehicle. Discard lockwashers.
- E Remove nine screws (10), nine lockwashers (11) and nine retaining straps (12). Discard lockwashers.
- F Disconnect plug (13) from STE/ICE resistor box (14).
- G Remove harness support strap (15) by removing one screw (16) and one lockwasher (17). Discard lockwashers.
- H Disconnect plug (18) from bulkhead receptacle (19).

**STE/ICE WIRING HARNESS, DCA TO DRIVERS BULKHEAD (12329996): REMOVAL AND INSTALLATION (CONTINUED)**



I Disconnect plug (20) from engine pulse tachometer (21).



J Disconnect plug (22) from air cleaner pressure transducer (23).

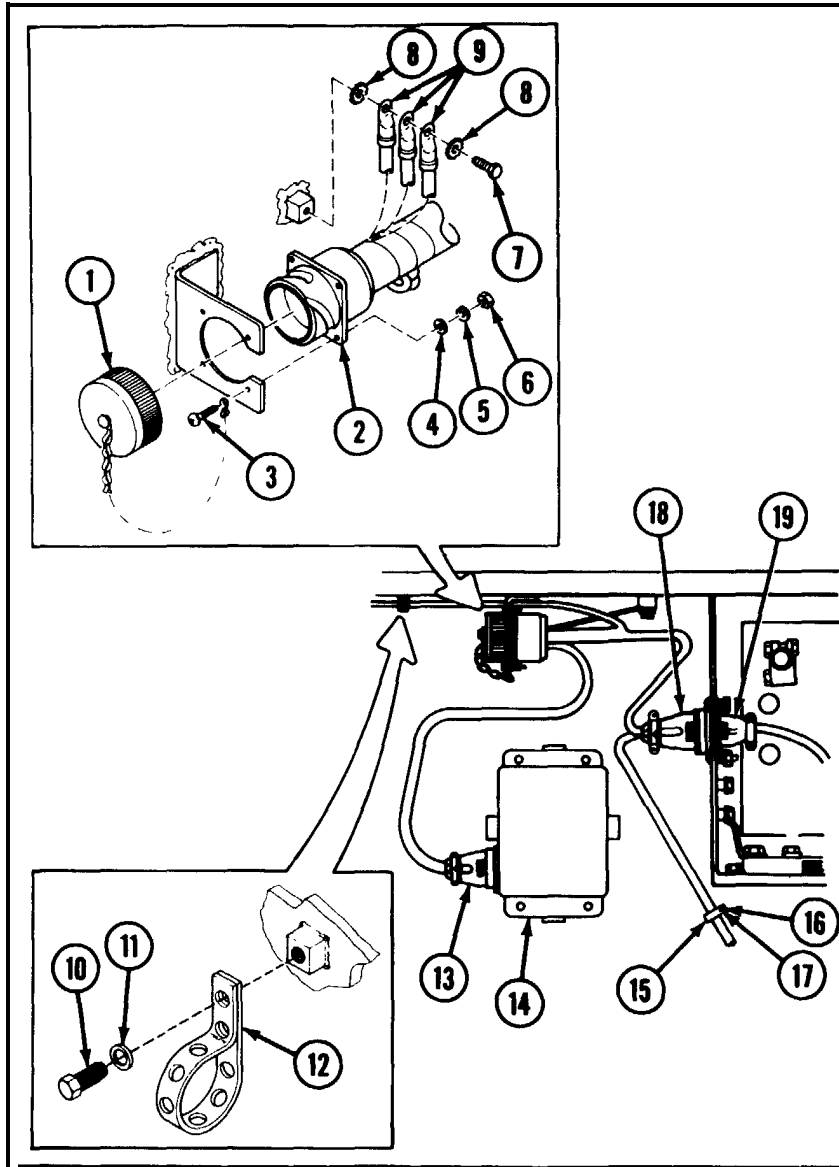
K Remove wiring harness from vehicle.

**INSTALLATION**

A Connect plug (22) to air cleaner pressure transducer (23).

B Connect plug (20) to engine pulse tachometer (21).

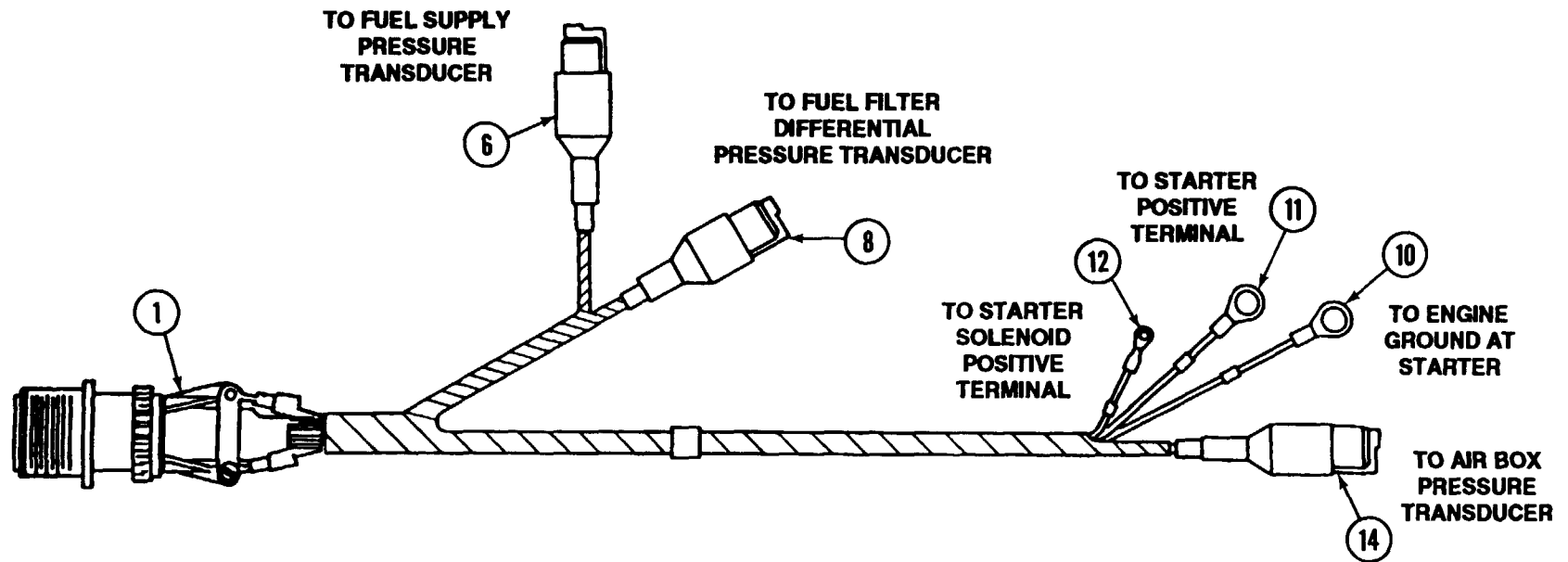
## STE/ICE WIRING HARNESS, DCA TO DRIVERS BULKHEAD (12329996): REMOVAL AND INSTALLATION (CONTINUED)



- C Connect plug (18) to bulkhead receptacle (19).
- D Install harness support strap (15) with one screw (16) and one new lockwasher (17).
- E Connect plug (13) to STE/ICE resistor box (14).
- F Install nine retaining straps (12) with nine screws (10) and nine new lockwashers (11).
- G Install two groups of three ground leads (9) with two screws (7) and four new lockwashers (8).
- H Install DCA receptacle (2) and dust cap (1) on vehicle bracket with four screws (3), four flat washers (4), four new lockwashers (5) and four nuts (6).
- I Install dust cap (1) on DCA receptacle (2).
- J Close battery compartment doors.



STE/ICE WIRING HARNESS, ENGINE TRANSDUCERS TO ENGINE ELECTRICAL DISCONNECT,(12329990): REMOVAL AND INSTALLATION



Connector Number	Electrical Lead To:	Wire No.
1	Engine electrical disconnect	
6	Fuel supply pressure transducer	BJ, BK, AC, AD
8	Fuel filter differential pressure transducer	AA, AB
10	Engine ground at starter	GND-N
11	Starter positive terminal	AY
12	Starter solenoid positive terminal	AX
14	Air box pressure transducer	BN, BP, AG, AH

STE/ICE WIRING HARNESS, ENGINE TRANSDUCERS TO ENGINE ELECTRICAL DISCONNECT (12329990): REMOVAL AND INSTALLATION  
(CONTINUED)

**INITIAL SETUP**

**Equipment Condition:**

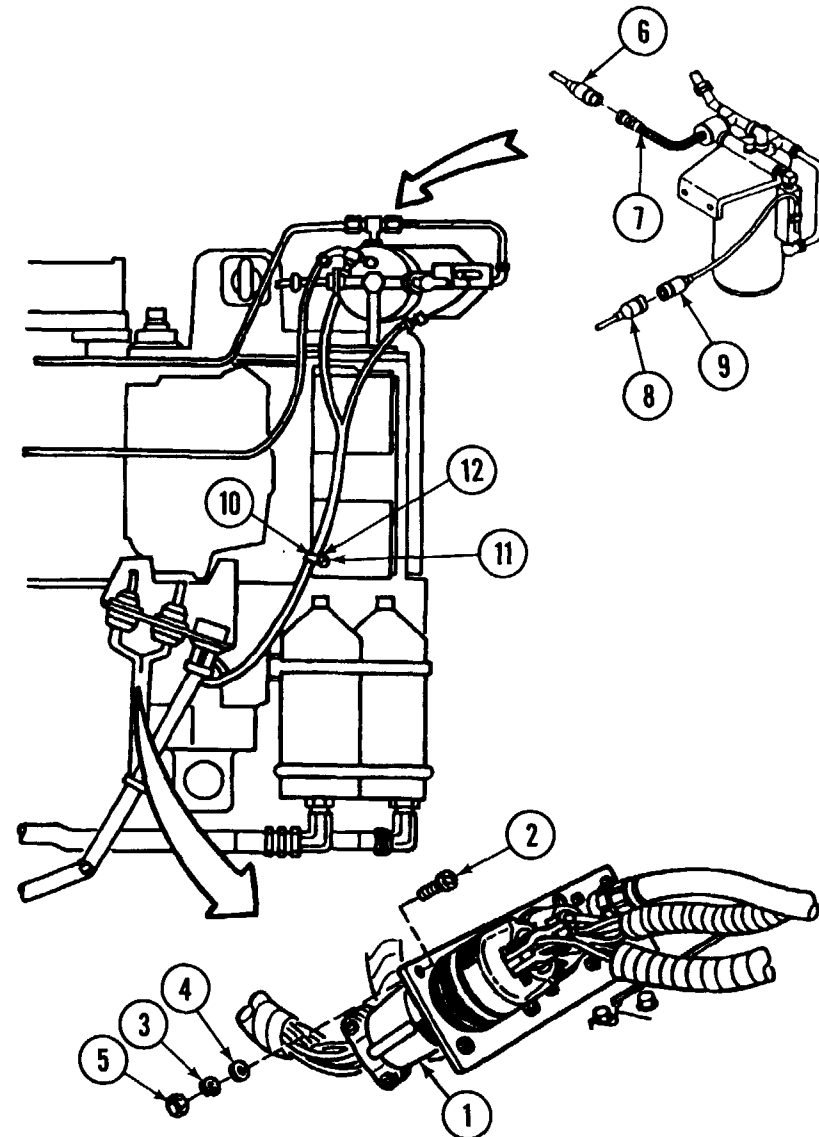
Battery ground cables disconnected (p 6-44).

MASTER switch OFF.

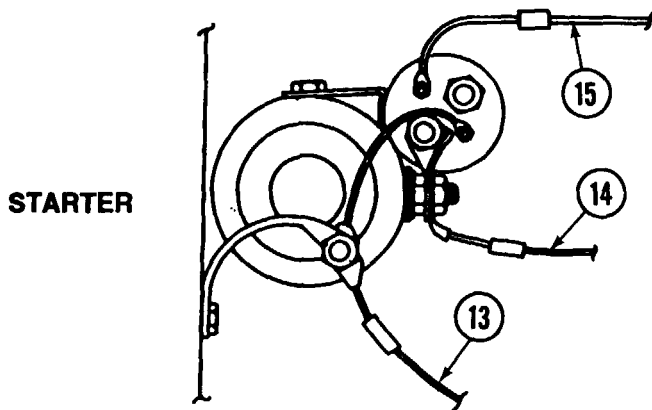
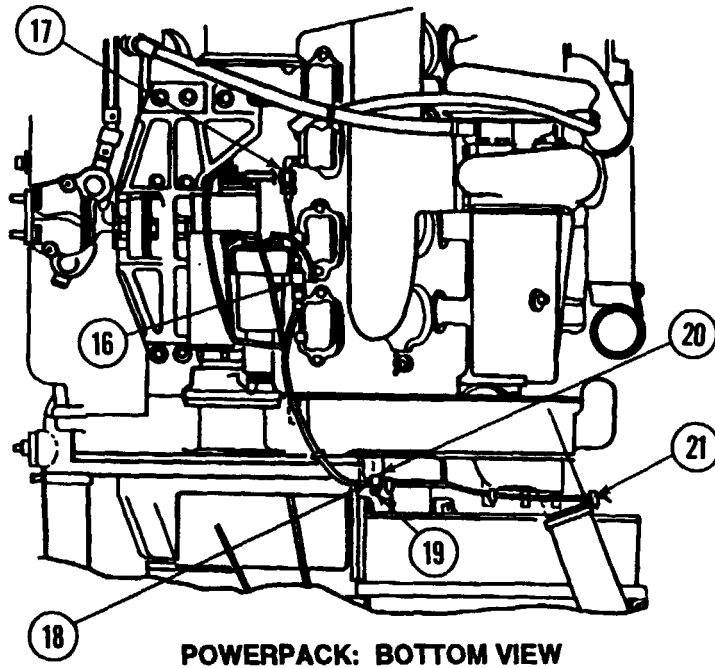
Powerpack removed (p 3-1).

**REMOVAL**

- A Remove harness receptacle (1) from vehicle bracket by removing four screws (2), four lockwashers (3), four flat washers (4) and four nuts (5). Discard lockwashers.
- B Disconnect connector (6) from fuel supply pressure transducer (7).
- C Disconnect connector (8) from fuel filter differential pressure switch (9).
- D Remove clamp (10), screw (11), and lockwasher (12). Discard lockwasher.



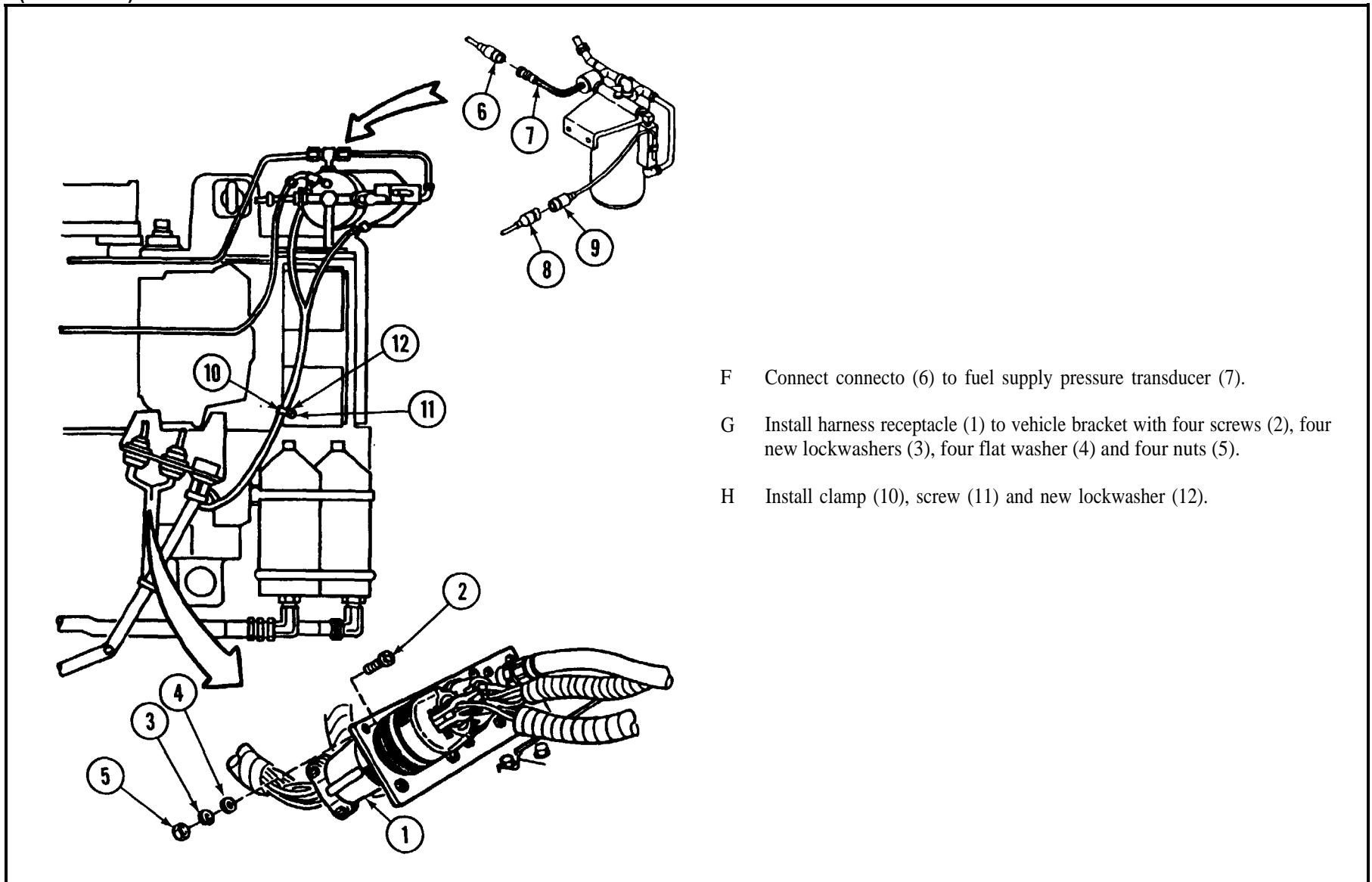
**STE/ICE WIRING HARNESS, ENGINE TRANSDUCERS TO ENGINE ELECTRICAL DISCONNECT (12329990): REMOVAL AND INSTALLATION (CONTINUED)**



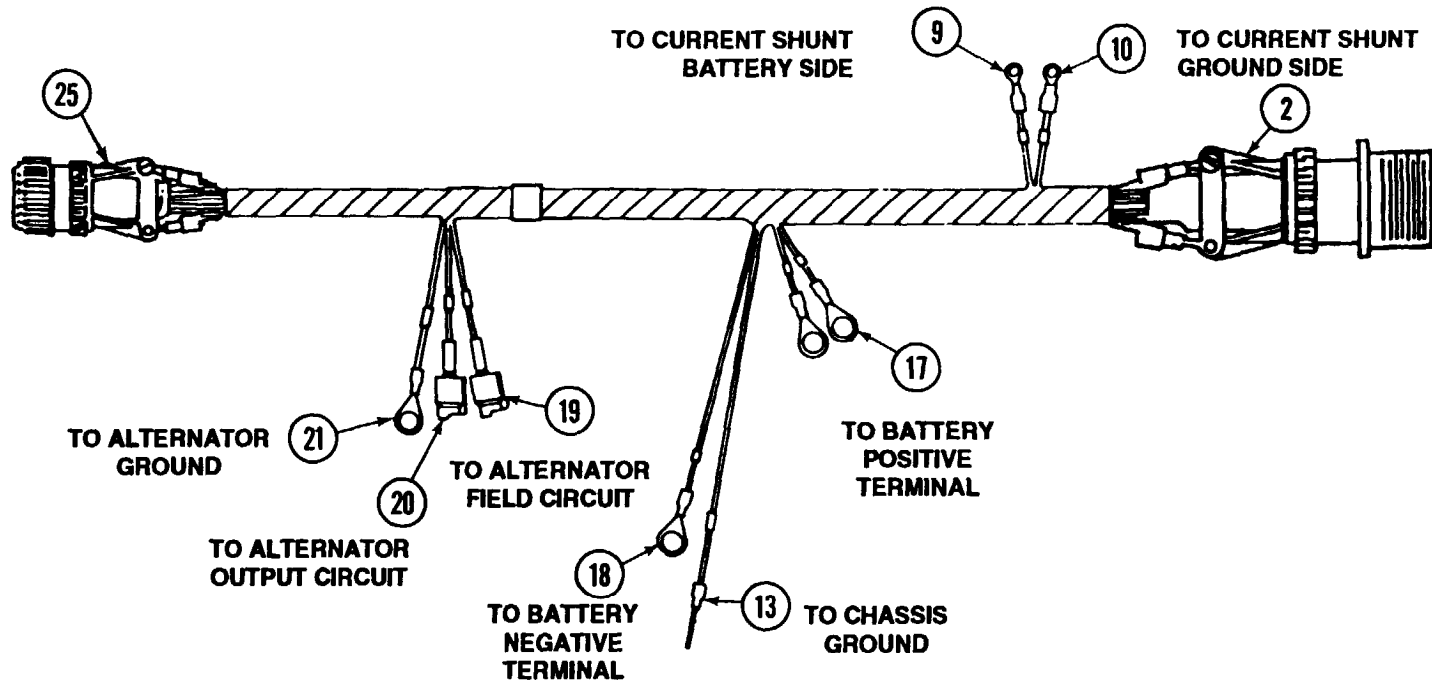
- E Disconnect ground lead (13), starter positive terminal AY (14) and starter solenoid positive terminal AX (15) from engine starter. Reinstall remaining wires on terminals.
- F Disconnect connector (16) from air box pressure transducer lead (17).
- G Remove clamp (18), screw (19) and lockwasher (20). Discard lockwasher.
- H Remove harness from engine by removing from five tiedown straps (21). (Do not remove straps from engine and around other harnesses.)

**INSTALLATION**

- A Install harness to engine by installing five tiedown straps (21).
- B Install clamp (18), screw (19) and new lockwasher (20).
- C Connect connector (16) to air box pressure transducer lead (17).
- D Connect ground lead (13), starter positive terminal AY (14) and starter solenoid positive terminal AX (15) to engine starter.
- E Connect connector (8) to fuel falter differential pressure switch (9).

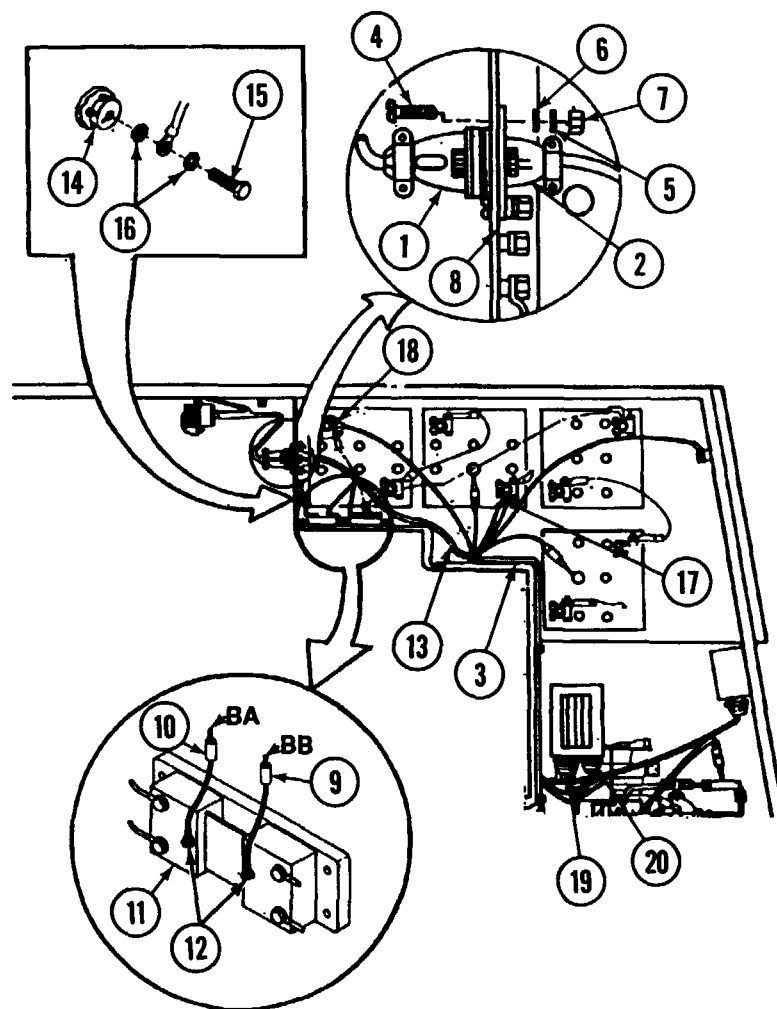
STE/ICE WIRING HARNESS, ENGINE TRANSDUCERS TO ENGINE ELECTRICAL DISCONNECT (12329990): REMOVAL AND INSTALLATION  
(CONTINUED)

STE/ICE WIRING HARNESS, DRIVER'S BULKHEAD TO ENGINE DISCONNECT (12329994): REMOVAL AND INSTALLATION (CONTINUED)



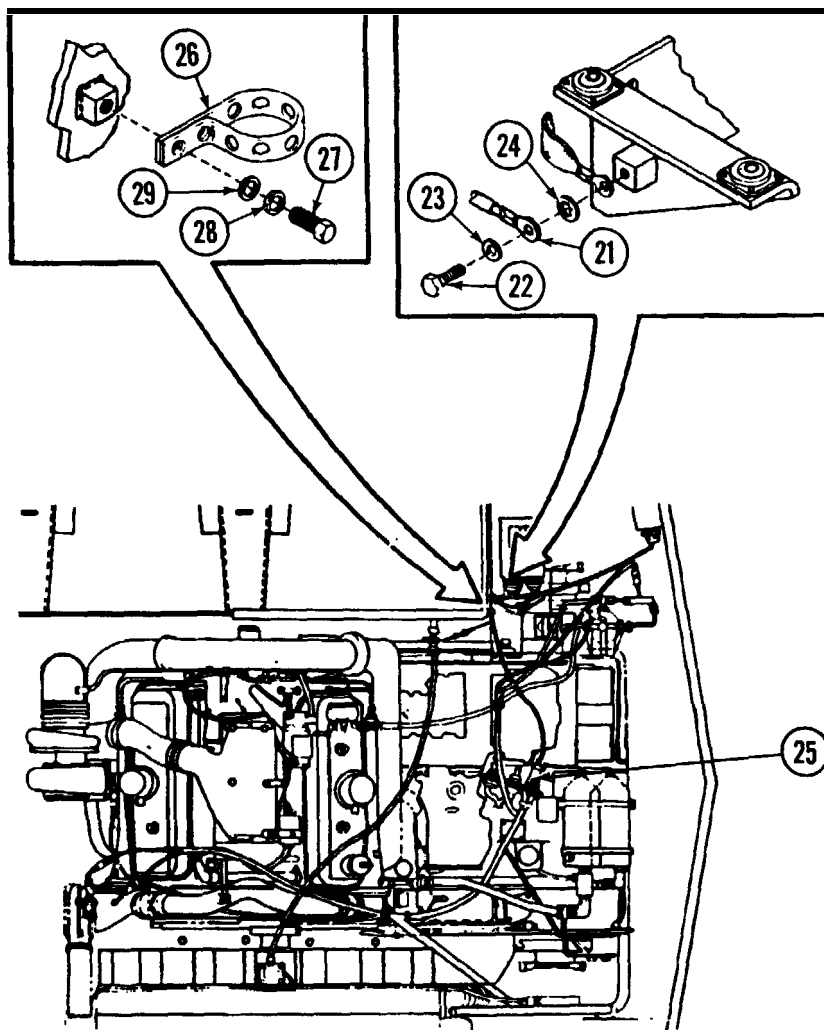
Connector Number	Electrical Lead To:	Wire No.	Connector Number	Electrical Lead To:	Wire No.
2	Bulkhead disconnect		18	Battery negative terminal	AZ
9	Current shunt battery side	BB	19	Alternator field circuit	AV
10	Current shunt ground side	BA	20	Alternator output circuit	AV
13	Chassis ground at battery	GND-W	21	Alternator ground	GND Z
17	Battery (+) terminal	10-V, 10-R	25	Engine electrical disconnect	

## STE/ICE WIRING HARNESS, DRIVER'S BULKHEAD TO ENGINE DISCONNECT (12329994): REMOVAL AND INSTALLATION (CONTINUED)

**REMOVAL**

- A Disconnect connector (1) from bulkhead receptacle (2).
- B Remove harness (3) receptacle (2) from bulkhead disconnect by moving four screws (4), four lockwashers (5), four flat washer (6), four nuts (7) and gasket (8). Discard lockwashers.
- C Remove current shunt leads (9 and 10) from shunt (11) by removing two screws (12).
- D Disconnect ground lead (13) from chassis ground connection (14) by removing screw (15) and two washers (16). Do not remove other cables from ground connection (14). Reinstall washers (16) and screw (15).
- E Remove two harness leads 10V and 10R (17) from battery positive terminal.
- F Remove negative battery terminal (18).
- G Remove two alternator leads (19 and 20).

STE/ICE WIRING HARNESS. DRIVER'S BULKHEAD TO ENGINE DISCONNECT (12329994): REMOVAL AND INSTALLATION (CONTINUED)



H Disconnect alternator ground lead (21) by removing screw (22), washer (23) and lockwasher (24). Do not remove other **cables** from ground connection. Reinstall screw (22) and washer (23). Discard lockwasher.

I Disconnect plug (25) from engine electrical disconnect receptacle.

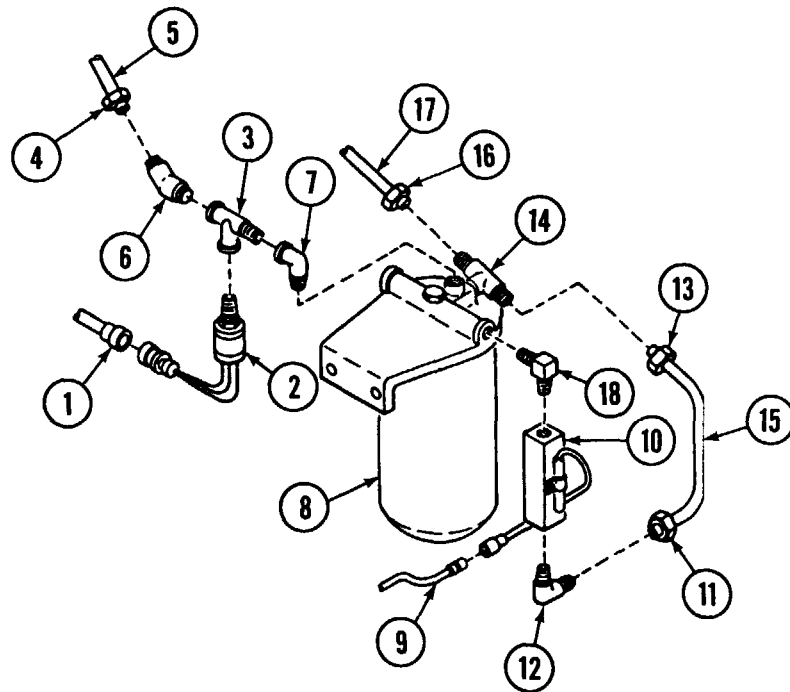
J Remove four retaining straps (26) by removing from each, one screw (27), one lockwasher (28), and one flat washer (29).

K Remove harness from vehicle.

### INSTALLATION

Reverse removal procedures, using new lockwasher.

## STE/ICE FUEL PRESSURE TRANSDUCER AND Differential SWITCH: REMOVAL AND INSTALLATION

**INITIAL SETUP****Equipment Condition:****MASTER switch OFF.****Battery ground cables disconnected (p 6-44).****REMOVAL**

- A Open and secure transmission access doors.
- B Disconnect wiring harness connector (1) from fuel pressure transducer(2).
- C Remove fuel pressure transducer (2) from tee (3).
- D Unscrew nut (4) and disconnect hose (5).

**NOTE**

Note position of fittings before removing.

- E Remove elbow (6) from tee (3).
- F Remove tee (3) from elbow (7).
- G Remove elbow (7) from fuel filter (8).
- H Disconnect wiring harness connector (9) from differential switch (10).
- I Unscrew nut (11) at elbow (12) and nut (13) at tee (14) and remove tube (15).
- J Unscrew nut (16) at tee (14) and disconnect tube (17).
- K Remove tee (14).

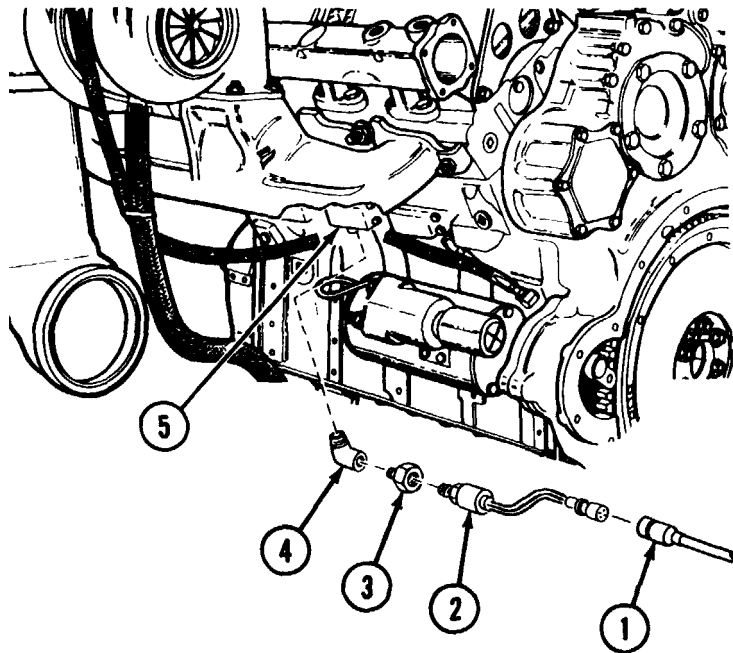


## STE/ICE AIR BOX TRANSDUCER REMOVAL AND INSTALLATION

### I INITIAL SETUP I

#### Equipment Condition

Powerpack removed (p 3-1).



### **REMOVAL**

#### **WARNING**

Turn MASTER switch OFF. Disconnect battery ground leads before performing any maintenance.

- A Disconnect wiring harness connector (1) from transducer (2).
- B Remove transducer (2) from pipe reducer (3).
- C Remove reducer (3) from elbow (4).
- D Remove elbow (4) from air box (5).

### **INSTALLATION**

- A Install elbow (4) in air box (5).
- B Install reducer (3) in elbow (4).
- C Install transducer (2) in pipe reducer (3).
- D Connect wiring harness connector (1) to transducer (2).

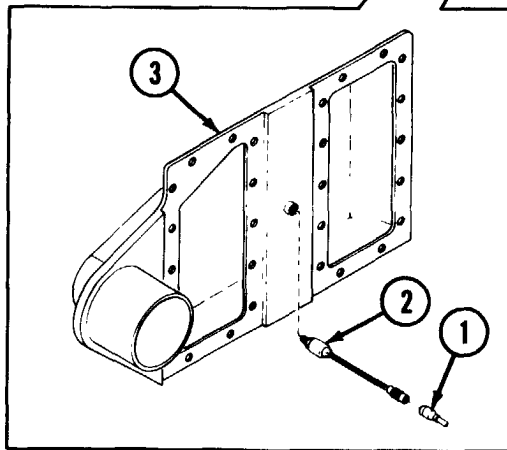
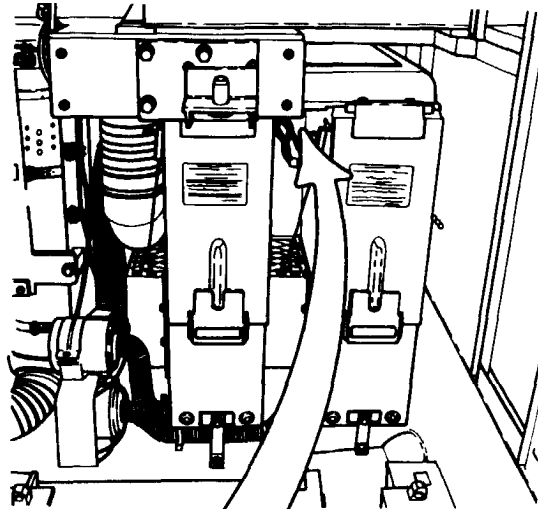
TA312829

### STE/ICE AIR CLEANER TRANSDUCER: REMOVAL AND INSTALLATION

#### INITIAL SETUP

References:

TM 9-2350-267-10



#### REMOVAL

##### WARNING

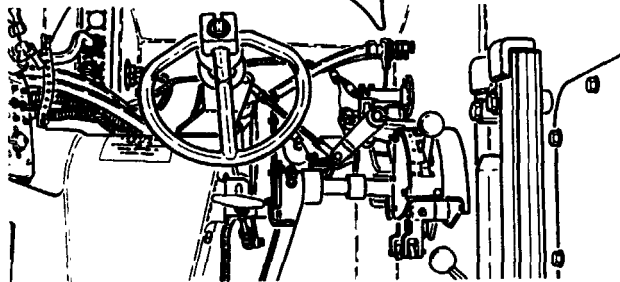
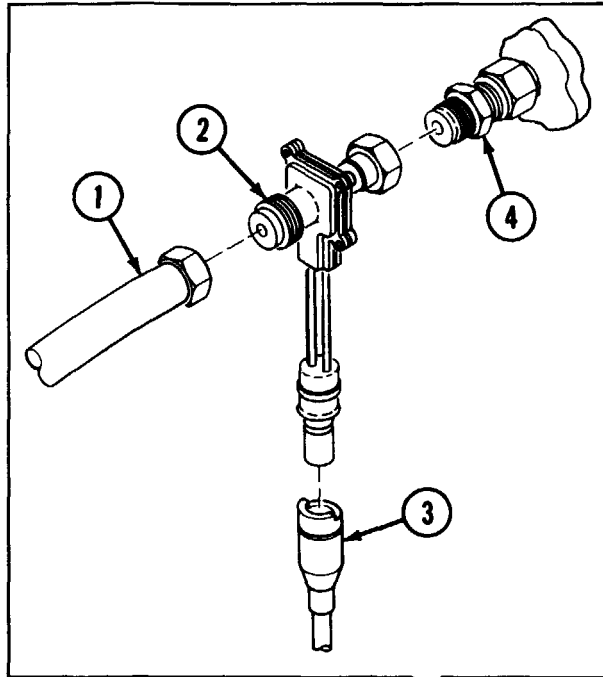
Turn MASTER switch OFF. Disconnect battery ground leads before performing any maintenance.

- A Move right projectile rack to rear (TM 9-2350-267-10).
- B Disconnect wiring harness connector (1) from transducer (2).
- C Remove transducer (2) from air cleaner (3).

#### INSTALLATION

- A Install transducer (2) on air cleaner (3).
- B Connect wiring harness connector (1) to transducer (2).
- C Move right projectile rack into position (TM 9-2350-267-10).

## STE/ICE PULSE TACHOMETER: REMOVAL AND INSTALLATION



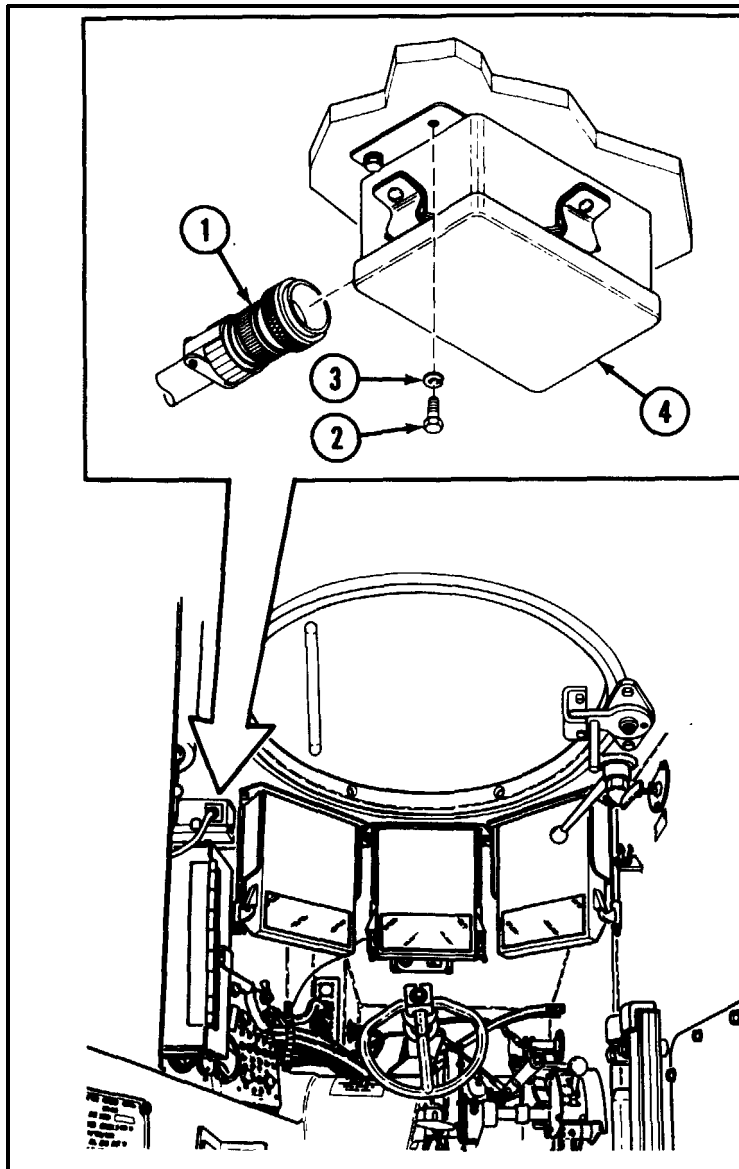
### REMOVAL

#### WARNING

Turn MASTER switch OFF. Disconnect battery ground leads before performing any maintenance.

- B Disconnect plug (3) from pulse tachometer (2).
- C Remove pulse tachometer (2) from adapter (4).

### INSTALLATION

**STE/ICE RESISTOR BOX: REMOVAL AND INSTALLATION****REMOVAL****WARNING**

Turn MASTER switch OFF. Disconnect battery ground leads before performing any maintenance.

A Disconnect STE/ICE control cable (1).

B Remove four screws (2) and four lockwashers (3) to remove STE/ICE resistor box (4) from driver's compartment bulkhead. Discard lockwashers.

**INSTALLATION**

A Install STE/ICE resistor box (4) on driver's compartment bulkhead with four screws (2) and four new lockwashers (3).

B Connect STE/ICE control cable (1).

**CHAPTER 7  
MAINTENANCE PROCEDURES  
TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES**

---

**CHAPTER OVERVIEW**

This chapter illustrates and describes the testing and adjustments of the transmission, transfer and drive control assemblies.

Procedures are designed to show the proper sequence of actions required to perform the maintenance tasks.

This chapter contains the following sections:

Section I Transmission, Transfer and Drive Control assemblies - Components/Tests

Section II Transmission, Transfer and Drive Control Assemblies - Adjustment

**Section I TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES — COMPONENTS/TESTS**

**GENERAL**

This section contains instructions for testing components of the transmission, transfer and drive control assemblies. These testing procedures are organizational maintenance.

Source of leakage must be determined and the condition corrected to avoid damage to transmission. Notify Support Maintenance personnel.

**TRANSMISSION PRESSURE CHECKS**

**OIL CHECK**

The cross-drive transmission is lubricated by oil. Whenever the transmission oil level is found to be low, it is due to leakage.

**PREPARATION CHECK**

Check oil level before starting the engine. After the engine starts, check lubricating oil pressure. The minimum oil pressure is 10 psi at 1000 rpm.

**TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES — COMPONENT TESTS (CONTINUED)****MAIN AND LUBRICATING OIL PRESSURE AND OIL TEMPERATURE CHECK**

During the following tests, observe the oil pressure and oil temperature gages on portable instrument panel. The oil temperature should be approximately 220°F for normal operation. If the oil temperature exceeds 300°F in any of the tests, the engine should be stopped and the cause determined. Small variations in pressure from those given in table 7-1 (p 7-5) do not necessarily mean that malfunctions exist. Malfunctions will cause radical changes in pressure.

**GENERAL INSPECTION AND REPAIR PROCEDURES**

The technician will perform a visual inspection of transmission-related components during removal and disassembly.

During inspection, look for the following conditions and take indicated action:

A Stripped or damaged threads on retaining bolts, nuts, or studs:

Repair threads or replace bolts, nuts, or studs as needed.

B Broken screws or bolts:

Drill and remove with stud remover. Replace broken screw or bolt.

C Bent, distorted, or damaged control rods and tubes:

Straighten, repair, or replace rods and tubes as appropriate.

D Rod ends fit too loosely on retaining pins:

Readjust rods as specified in appropriate control system instructions. Replace rod ends if bearing wear is excessive.

E Improper alignment of control systems. Adjust appropriate control linkages.

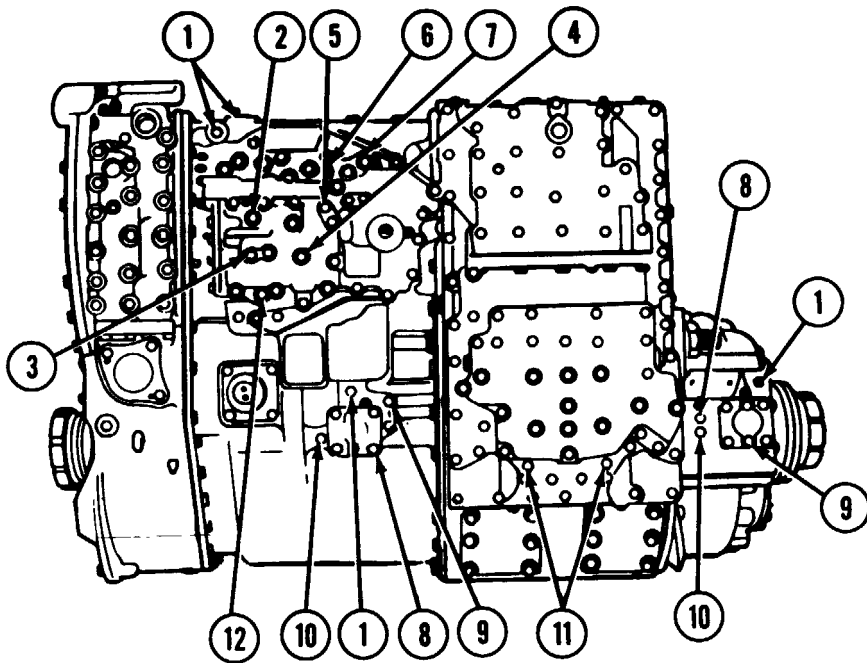
F Cracked, distorted, or damaged bell crank and support assemblies:

Replace as required.

**PRESSURE CHECK POINTS**

To aid in troubleshooting and testing, a number of plugged openings are provided for checking operating pressures. These plugs can be removed for connection of pressure gages. Use these test pressure points to locate abnormal pressures that indicate transmission malfunctions. Table 7-1 lists normal oil pressures under various operating conditions with an engine speed of 1000 to 1500 rpm (p 7-5).

TRANSMISSION , TRANSFER AND DRIVE CONTROL ASSEMBLIES — PRESSURE CHECKS (CONTINUED)



LEGEND

- 1 Transmission lubrication fittings (4)
- 2 Pitot
- 3 Throttle valve
- 4 Main
- 5 Third gear
- 6 Fourth gear
- 7 First gear
- 8 Geared steer clutch
- 9 Geared steer coolant (2)
- 10 Output clutch (2)
- 11 Brake (2)
- 12 Throttle

## TRANSMISSION , TRANSFER AND DRIVE CONTROL ASSEMBLIES — PRESSURE CHECKS (CONTINUED)

**CAUTION**

Stop engine before removing or installing pipe plugs and attaching gage adapter. Install plug as soon as gage adapter is removed. Remove only the plug necessary to perform the desired test.

**TEST**

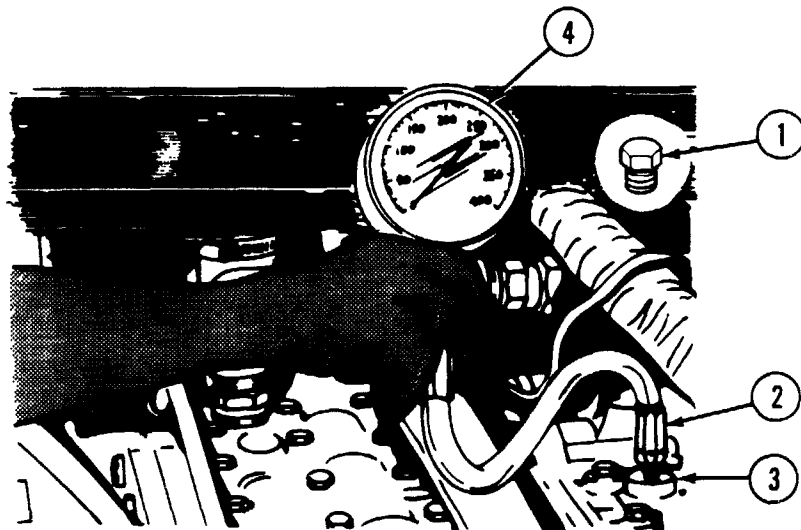
- A Identify required test port from pages 7-3 and 7-5 and remove pipe plug (1). Set plug aside for reinstallation.
- B Screw gage assembly hose (2) into port (3).
- C Start up engine and operate (TM 9-2350-267-10), following rpm instructions on page 7-3 for 12 test ports.
- D Read from gage (4), in compliance with instructions on page 7-5 for 12 test ports.

**NOTE**

After completing all pressure tests, if pressure readings are above or below limits identified on page 7-5, notify Support Maintenance.

- E Shut down engine and remove gage assembly hose (2).
- F Install pipe plug (1).

TYPICAL TEST HOOK-UP





TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES — PRESSURE CHECKS (CONTINUED)

Table 7-1 Transmission Oil Pressures

	Check Point No.	RPM	Reading	Neutral	1st Gear	2nd Gear	3rd Gear	4th Gear	Reverse 1	Reverse 2	Right Steer	Left Steer
Main pressure in converter	4	1000 to 1500	Normal Actual	210-230	210-230	210-230	210-230	118-160	300-320	300-320	Same as range reading	
Main pressure in lockup	4	1000 to 1500	Normal Actual	118-160	118-160	118-160	118-160	118-160	160-190	160-190	Same as range reading	
Lockup and range clutch apply pressure	4	1000 to 1500	Normal Actual	Same as main pressure for applicable range								
1st, neutral, and reverse 1 signal pressure	7	1000 to 1500	Normal Actual	Same as main pressure for applicable range								
3rd, 4th and reverse 2 signal pressure	5-6	1000 to 1500	Normal Actual	Same as main pressure for applicable range								
Geared steer apply pressure (no steer)	8	1000 to 1500	Normal Actual	210	210	0	0	0	210	0	0	0
Geared steer apply pressure (during steer)	10	1000 to 1500	Normal Actual	0	0	0	0	0	0	0	74-127	74-127
Brake apply pressure	11	1000 to 1500	Normal Actual	0	0	0	0	0	0	0	74-127	74-127
Geared steer and brake coolant pressure	9	1000 to 1500	Normal Actual	0	0	0	0	0	0	0	8-12	8-12
Output clutch pressure	10	1000 to 1500	Normal Actual	0	0	210	210	118-160	0	210	0*	0*
Governor pressure (pitot) at lockup engagement	2	1000 to 1500	Normal Actual	82-88	82-88	82-88	82-88	82-88	82-88	82-88	82-88	82-88
Lubrication pressure	1	1835 to 1900	Normal Actual	18-45	18-45	18-45	18-45	18-45	18-45	18-45	18-45	18-45
Throttle (T) pressure	12	Full throttle	Normal Actual	32-40	32-40	32-40	32-40	32-40	32-40	32-40	32-40	32-40
Throttle valve (TV) pressure	3	Full throttle	Normal Actual	32-40	32-40	32-40	32-40	32-40	32-40	32-40	32-40	32-40

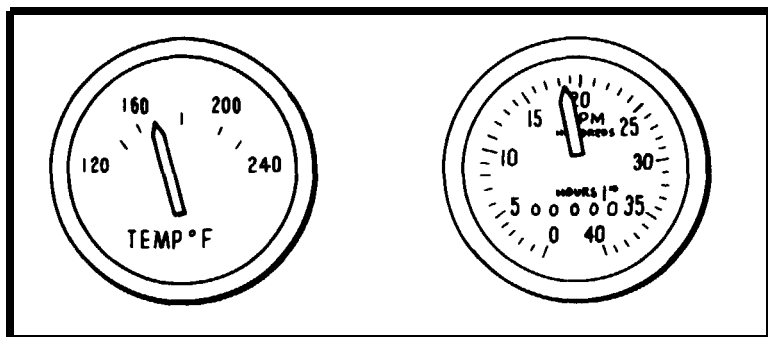
• On side toward which turn is made.

## TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES — STALL TEST

**TEST****NOTE**

The stall test is done to check performance of the engine and transmission.

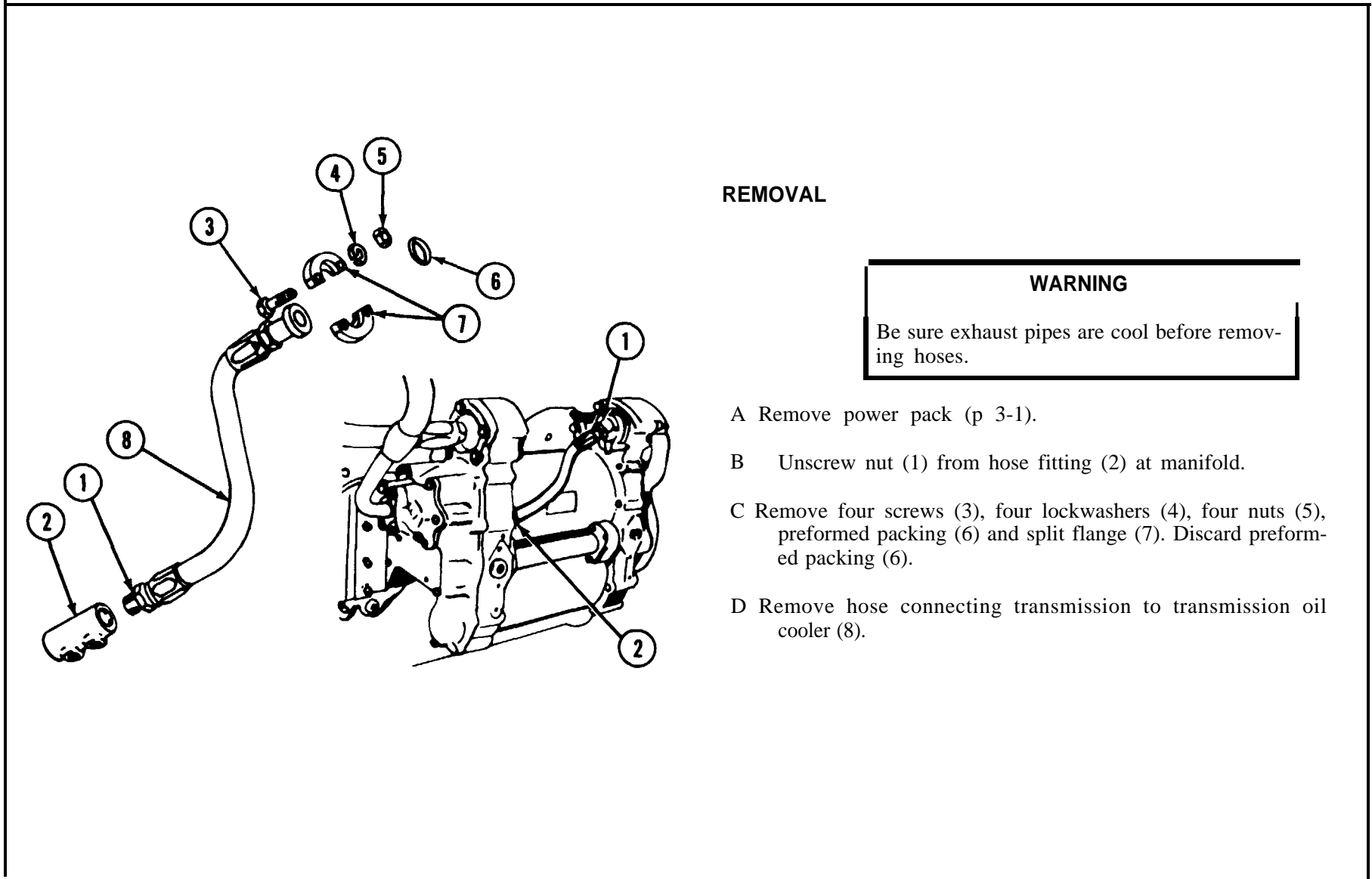
- A Check engine and transmission oil levels. Operate engine until normal operating temperature of 170°F is reached.

**CAUTION**

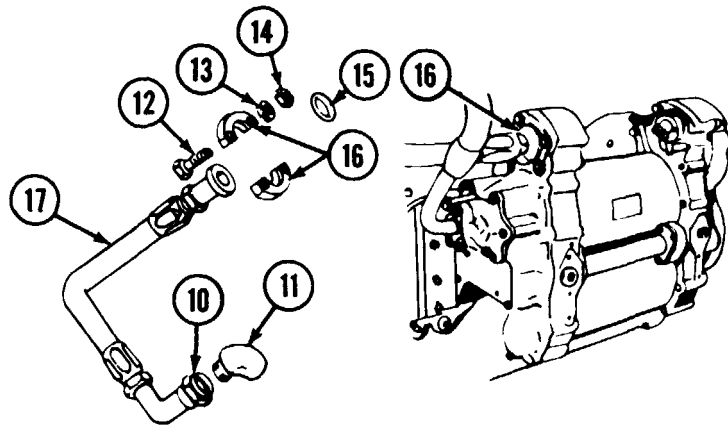
Do not stall engine for more than 15 seconds or the transmission oil temperature will go too high.

- B Lock brakes and put transmission in fourth gear. Run engine at full throttle for 15 seconds.
- C If engine speed is below 1850 rpm, it indicates engine is not operating properly. If fuel flow test (p 4-22) and linkage adjustments (p 7-46) are correct, notify Support Maintenance that check of engine performance is required.
- D If engine speed exceeds 2075 rpm, check throttle linkage (p 7-46). If correct, notify Support Maintenance to check for slippage in transmission.

**TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES — OIL FILTER AND OIL COOLER HOSES:  
REMOVAL AND INSTALLATION**



**TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES — OIL FILTER AND OIL COOLER HOSES:  
REMOVAL AND INSTALLATION (CONTINUED)**



E Unscrew nut (10) at elbow (11).

F Remove four screws (12), four lockwashers (13), four nuts (14), preformed packing (15) and split flange (16). Discard preformed packing (15).

G Remove hose (17) connecting transmission oil cooler with transmission.

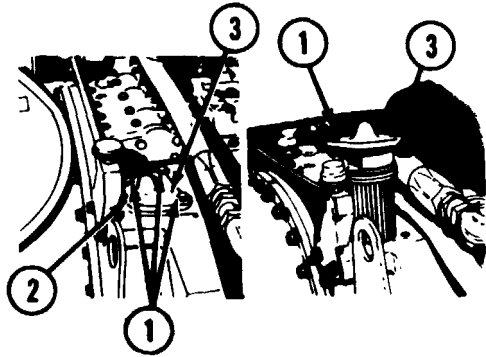
**INSTALLATION**

A Replace preformed packings (6 and 15) at assembly.

B Check oil level and replenish as required (LO 9-2350-267-12).

C Install oil filter and oil cooler in reverse order of removal.

## TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES — OIL FILTER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

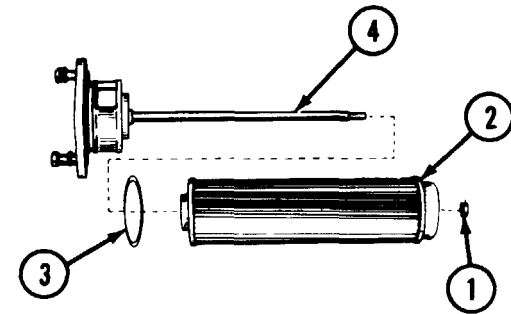


### REMOVAL

- A Remove front slope plate (p 3-5 thru 3-8).
- B Remove three screws and three lockwashers (1).
- C Remove oil filter (2) by lifting up.

### NOTE

If filter cannot be removed, insert two screws (1) into puller screw holes (3) and lift out.



### DISASSEMBLY

- A Remove nut (1) from oil filter (2).
- B Separate filter element (2) and preformed packing (3) from rod assembly (4).
- C Discard filter element (2) and preformed packing (3).

### ASSEMBLY

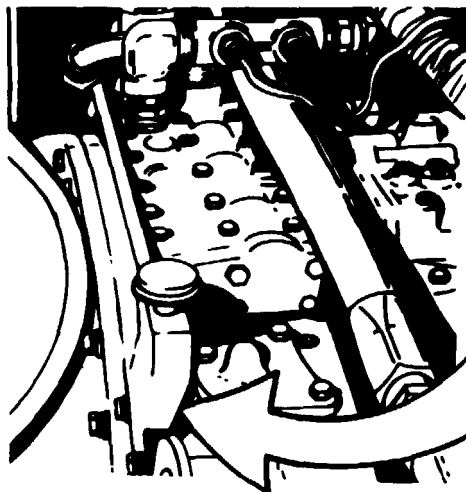
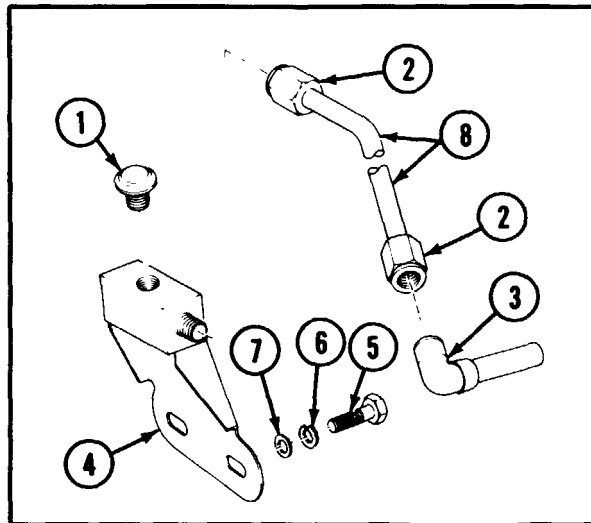
- A Replace filter element (2) and preformed packing (3).
- B Assemble oil filter in reverse order of disassembly.

### INSTALLATION

Install oil filter in reverse order of removal.

**BREATHER TUBE, FILTER AND MOUNT: REMOVAL AND INSTALLATION****NOTE**

Exploded view  
rotated 180°.

**REMOVAL**

- A Remove breather filter (1).
- B Loosen two nuts (2) at elbow (3) and mount (4).
- C Remove two screws (5), two lockwashers (6) and two flat washers (7). Discard lockwashers..

**NOTE**

Breather tube can be removed without removing mount.

- D Remove mount (4) and breather tube (8).
- E Clean breather tube (8).

**INSTALLATION****NOTE**

Do not tighten screws.

- A Install mount (4) loosely with two screws (5), two new lockwashers (6) and two flat washers (7).
- B Install breather tube (8).
- C Tighten nuts (2).
- D Tighten two screws (5).
- E Install breather filter (1).

## STEERING CONTROL LINKAGE: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Lubricant, solid, wax base, Nylube 150 (item 72, Appx D)

#### Equipment Condition:

Vehicle tracks chocked

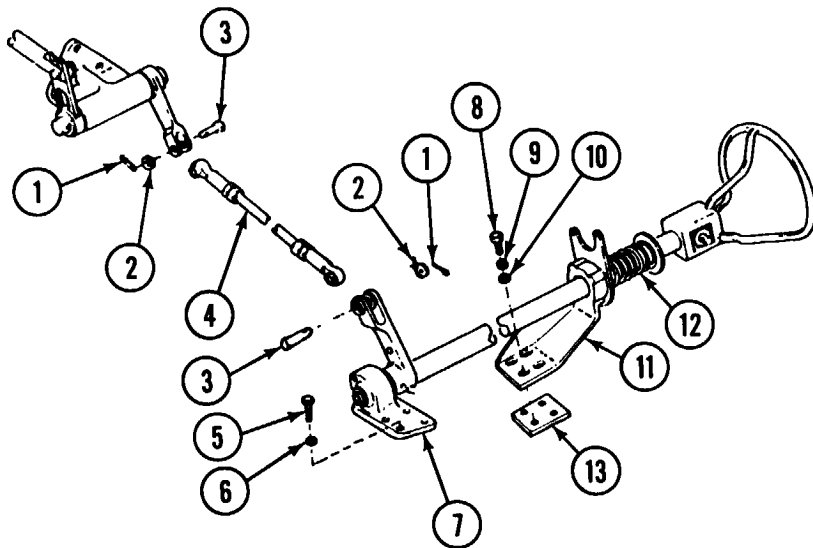
### REMOVAL

- A Open Transmission access doors.
- B Remove master warning light assembly from steering shaft mount (p 7-53).

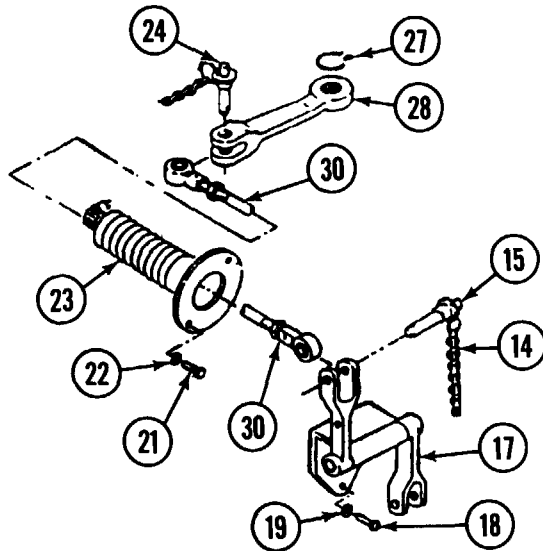
### NOTE

Rod assembly (4) is connected between steering shaft and bulkhead-mounted housing.

- C Remove two cotter pins (1), two flat washers (2), two pins (3) and rod assembly (4). Discard cotter pins.
- D Remove four screws (5) and four lockwashers (6) from bracket (7). Discard lockwashers.
- E Remove four screws (8), four lockwashers (9) and four flat washers from bracket (11). Discard lockwashers.
- F Remove steering shaft assembly (12) with two brackets (7 and 11), and spacer (13) from driver's compartment.

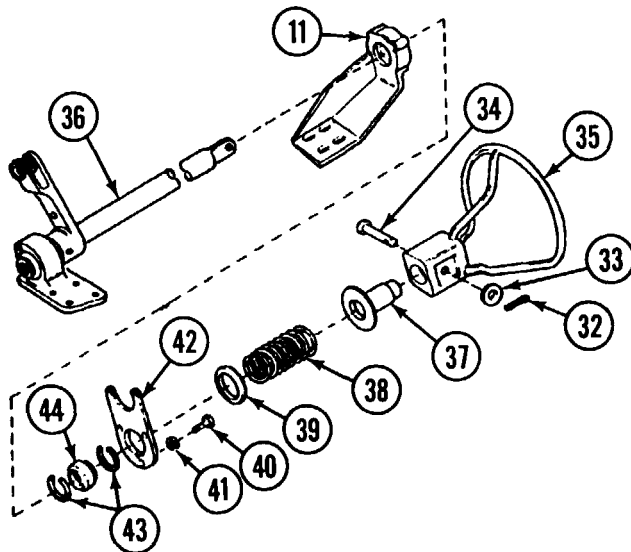


## STEERING CONTROL LINKAGE: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



- G Remove pin (24) with chain (29) from lever (28). Separate rod (30) from lever (28).
- H Remove snap ring (27) from lever (28).
- I Remove pin (15) with chain (14) from rod (30) and lever (17). Separate rod (30) from lever (17).
- J Remove three screws (18) and lockwashers (19) and housing assembly at bulkhead. Discard lockwashers.
- K Remove two screws (21) and two lockwashers (22) from cover (23). Remove cover (23) from bulkhead. Discard lockwashers.
- L Remove rod (30) and lever assembly (23).

## STEERING SHAFT ASSEMBLY: DISASSEMBLY

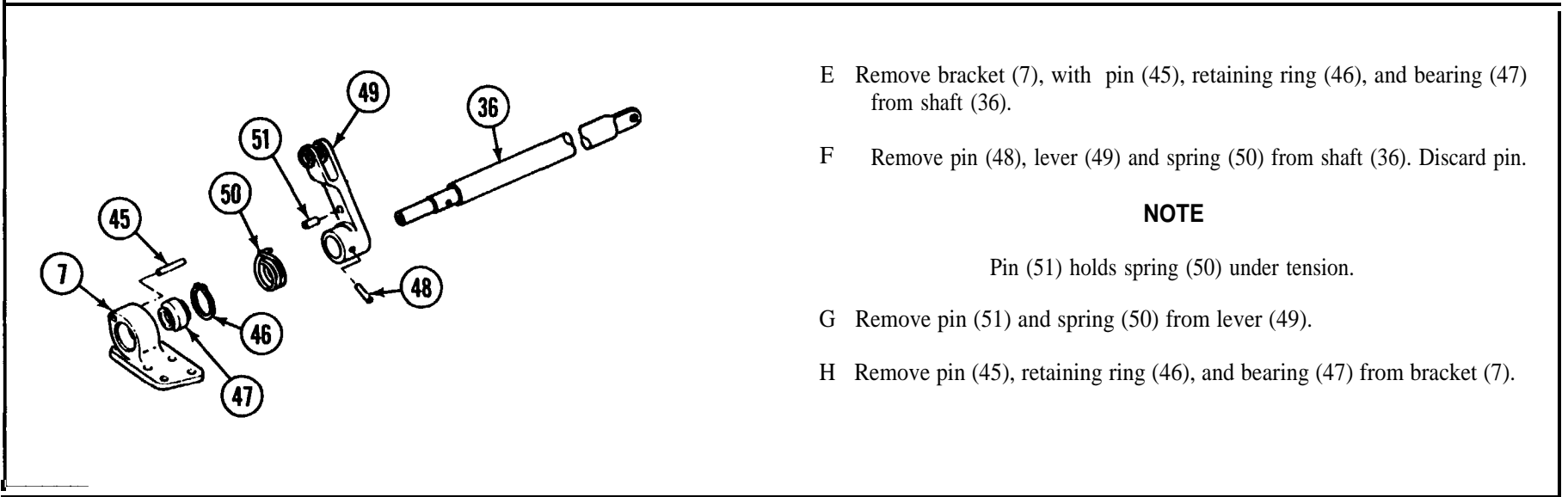


## DISASSEMBLY

- A Remove cotter pin (32), flat washers (33), pin (34) and steering wheel (35) horn shaft (36). Discard cotter pin.
- B Remove sleeve (37), spring (38) and washer (39) from shaft (36).
- C Remove three screws (40), three lockwashers (41) and master warning light bracket (42) from bracket (11). Discard lockwashers.
- D Remove two retaining rings (43), bearing (44) and bracket (11) from shaft (36). Discard retaining rings.



## STEERING SHAFT ASSEMBLY: DISASSEMBLY (CONTINUED)



E Remove bracket (7), with pin (45), retaining ring (46), and bearing (47) from shaft (36).

F Remove pin (48), lever (49) and spring (50) from shaft (36). Discard pin.

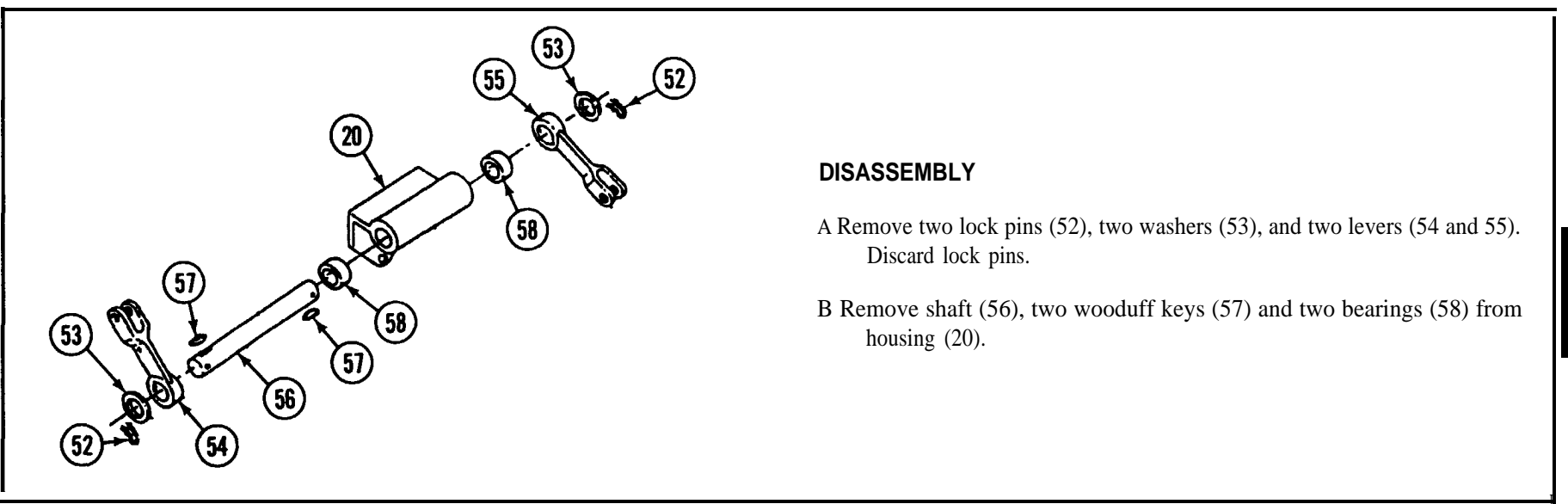
### NOTE

Pin (51) holds spring (50) under tension.

G Remove pin (51) and spring (50) from lever (49).

H Remove pin (45), retaining ring (46), and bearing (47) from bracket (7).

## HOUSING ASSEMBLY: DISASSEMBLY

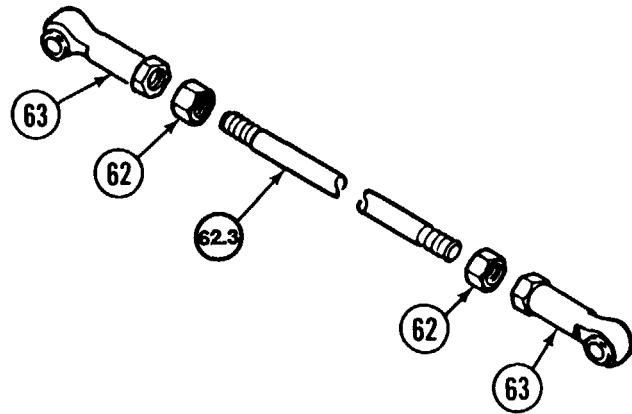


### DISASSEMBLY

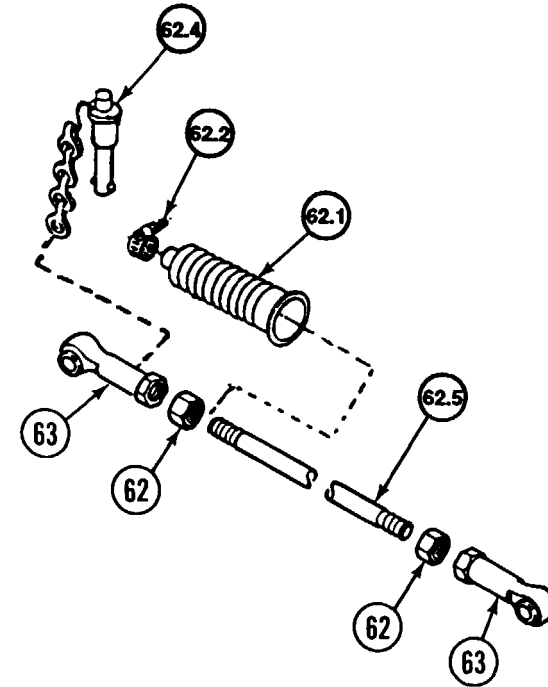
A Remove two lock pins (52), two washers (53), and two levers (54 and 55). Discard lock pins.

B Remove shaft (56), two woodruff keys (57) and two bearings (58) from housing (20).

## ROD ASSEMBLIES: DISASSEMBLY

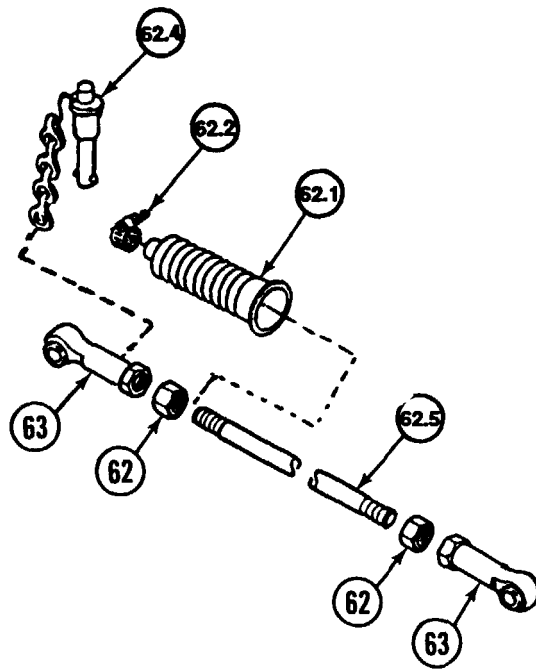
**DISASSEMBLY**

- A Loosen two nuts (62), one at each end of rod (62.3).
- B Unscrew two rod ends (63) from both ends of rod (62.3).
- C Unscrew two nuts (62) from each rod (62.3).

**DISASSEMBLY**

- A Loosen two nuts (62), one at each end of rod (62.5).
- B Unscrew two rod ends (63) from both ends of rod (62.5).
- C Unscrew two nuts (62) from each rod (62.5). Slide quick-release pin (62.4) and chain off rod.
- D Loosen and remove clamp (62.2). Remove boot (62.1) from rod (62.5).

## ROD ASSEMBLIES: ASSEMBLY

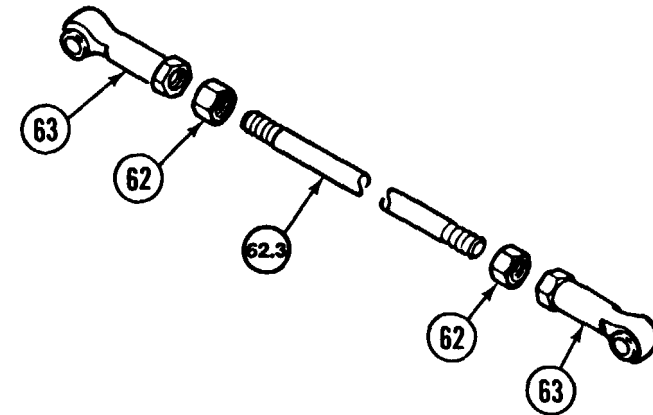


### ASSEMBLY

#### NOTE

Assemble rod so that center-to-center distance between rod ends is 16-3/4 in.

- A Slide boot (62.1) and chip (62.2) onto rod (62.5).
- B Slide quick-release pin (62.4) and chain onto rod (62.5).
- C Install two nuts (62) and two rod ends (63) onto end of rod (62.5). Do not tighten clamp or nuts at this time. They will be tightened during adjustment.

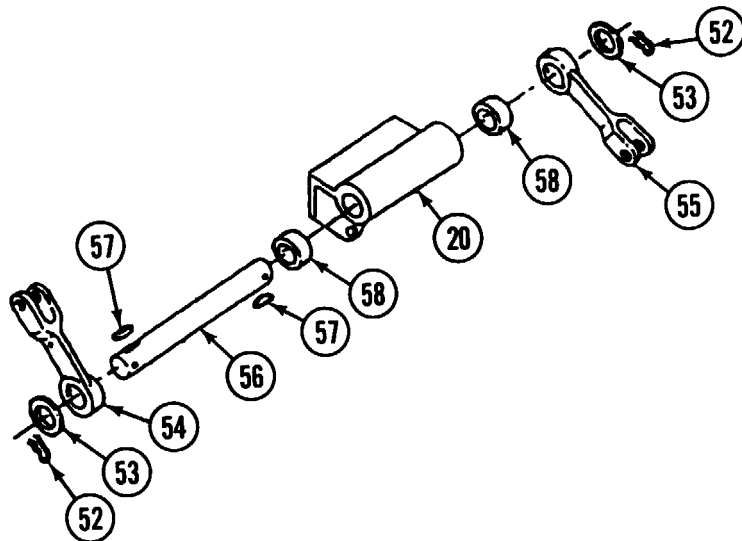


### ASSEMBLY

#### NOTE

Assemble rod so that center-to-center distance between rod ends is 8-11/16 in.

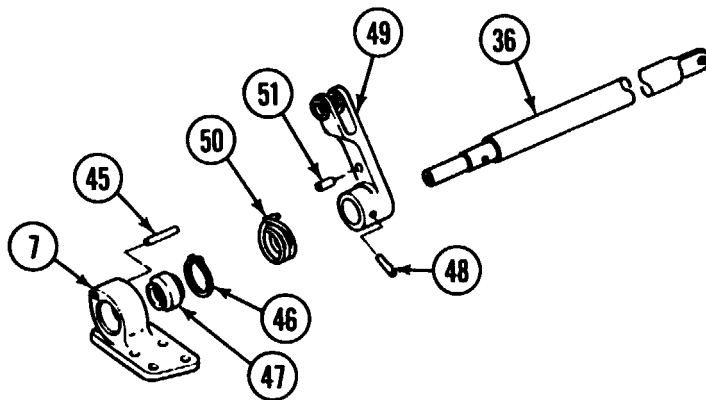
- A Install two nuts (62), one at each end of rod (62.3).
- B Install two rod ends (63) on rod (62.3). Do not tighten nuts at this time. They will be tightened during adjustment.



**ASSEMBLY**

- A Install shaft (56) and two bearings (58) in housing (20).
- B Install two woodruff keys (57), two levers (54 and 55), washers (53), and new lock pins (52).

**STEERING SHAFT ASSEMBLY: ASSEMBLY**



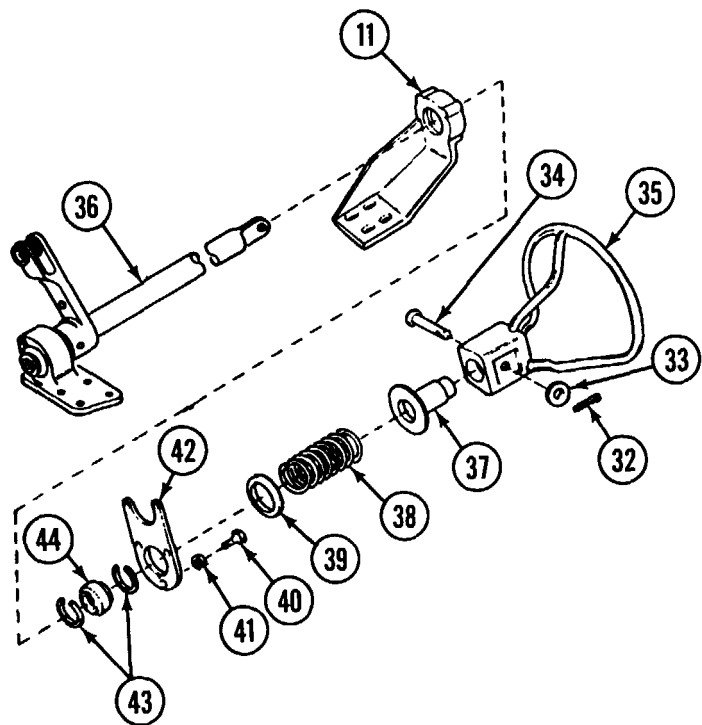
**ASSEMBLY**

**NOTE**

Pins (51 and 48) bold spring (50) under tension.

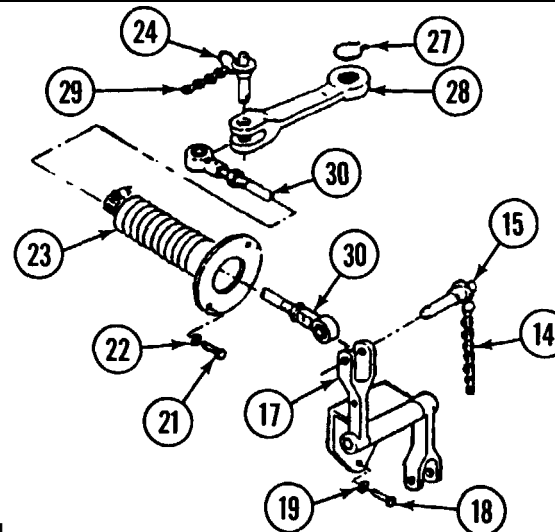
- A Install spring (50) and pin (51) in lever (49).
- B Install new pin (48), lever (49) and spring (50) on shaft (36).
- c Install pin (45), retaining ring (46), bearing (47) and shaft (36) into bracket (7).
- D Install bracket (7) with pin (45), retaining ring (46), and bearing (47) on shaft (36).

## STEERING SHAFT ASSEMBLY: ASSEMBLY (CONTINUED)



- D Install bracket (11) on shaft (36) using two new retaining rings (43) and bearing (44).
- E Install master warning light bracket (42) on bracket (11) using three screws (40) and three new lockwashers (41).
- F Install sleeve (37), spring (38) and washer (39) on shaft (36).
- G Install steering wheel (35) on shaft (36) using new cotter pin (32), flat washers (33), and pill (34).

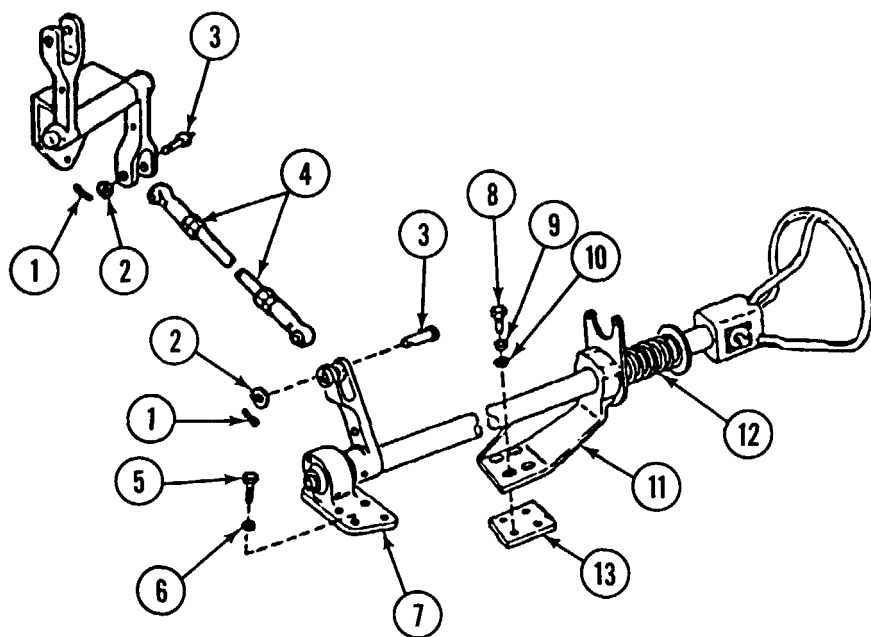
## STEERING CONTROL LINKAGE: INSTALLATION



### INSTALLATION

- A Install rod (30) through bulkhead with clamped end of boot first.
  - B Install cover (23) using two screws (21) and washers (22).
  - C Install housing assembly at bulkhead with three screws (18) and new lockwashers (19).
  - D Connect pin (15) with chain (14) and wire to lever (17).
  - E Connect rod (30) to lever (17) using pin (15) with chain (14).
  - F Install lever (28) and snap ring (27).
- NOTE**
- When installing shaft center line of shaft rod lever must be in line with transmission shaft pointer.
- G Connect rod (30) to lever (28) using pin (24) and chain (29).

## STEERING CONTROL LINKAGE: INSTALLATION (CONTINUED)



- G Position steering shaft assembly (12) with two brackets (7 and 11), and spacer (13) in driver's compartment.
- H Install bracket (11) and spacer (13) using four screws (8), four new lockwashers (9) and four flat washers (10).
- I Install bracket (7) using four screws (5) and four new lockwashers (6).

**NOTE**

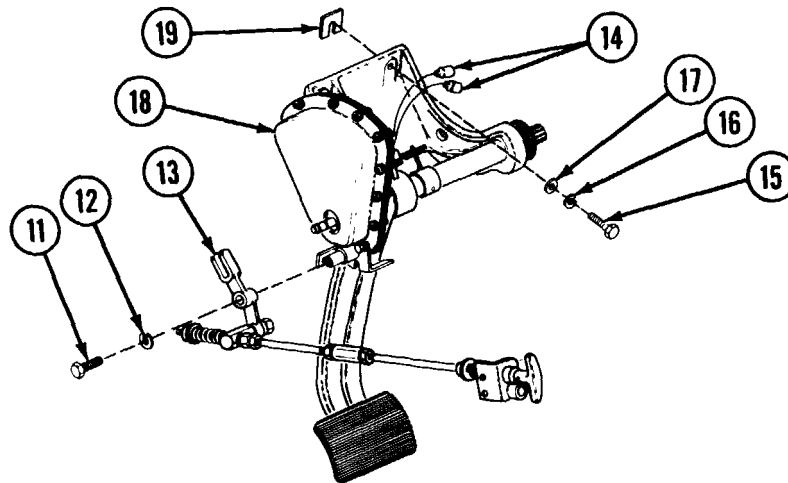
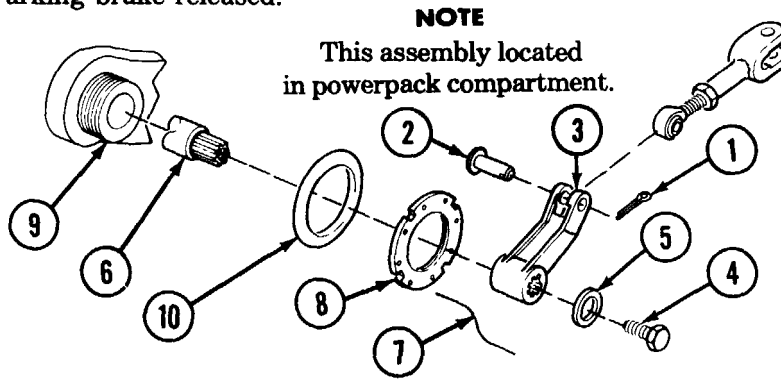
Rod assembly (4) is connected between steering shaft and bulkhead-mounted housing.

- J Install rod assembly (4) using two new cotter pins (1), two flat washers (2) and two pins (3).
- K Install master warning light assembly on steering shaft mount (p 7-53).
- L Adjust steering control linkage (p 7-44).
- M Close transmission access doors.

## BRAKE ASSEMBLY IN DRIVER'S COMPARTMENT: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT

### INITIAL SETUP

Equipment condition:  
Vehicle tracks blocked.  
Parking brake released.



### REMOVAL

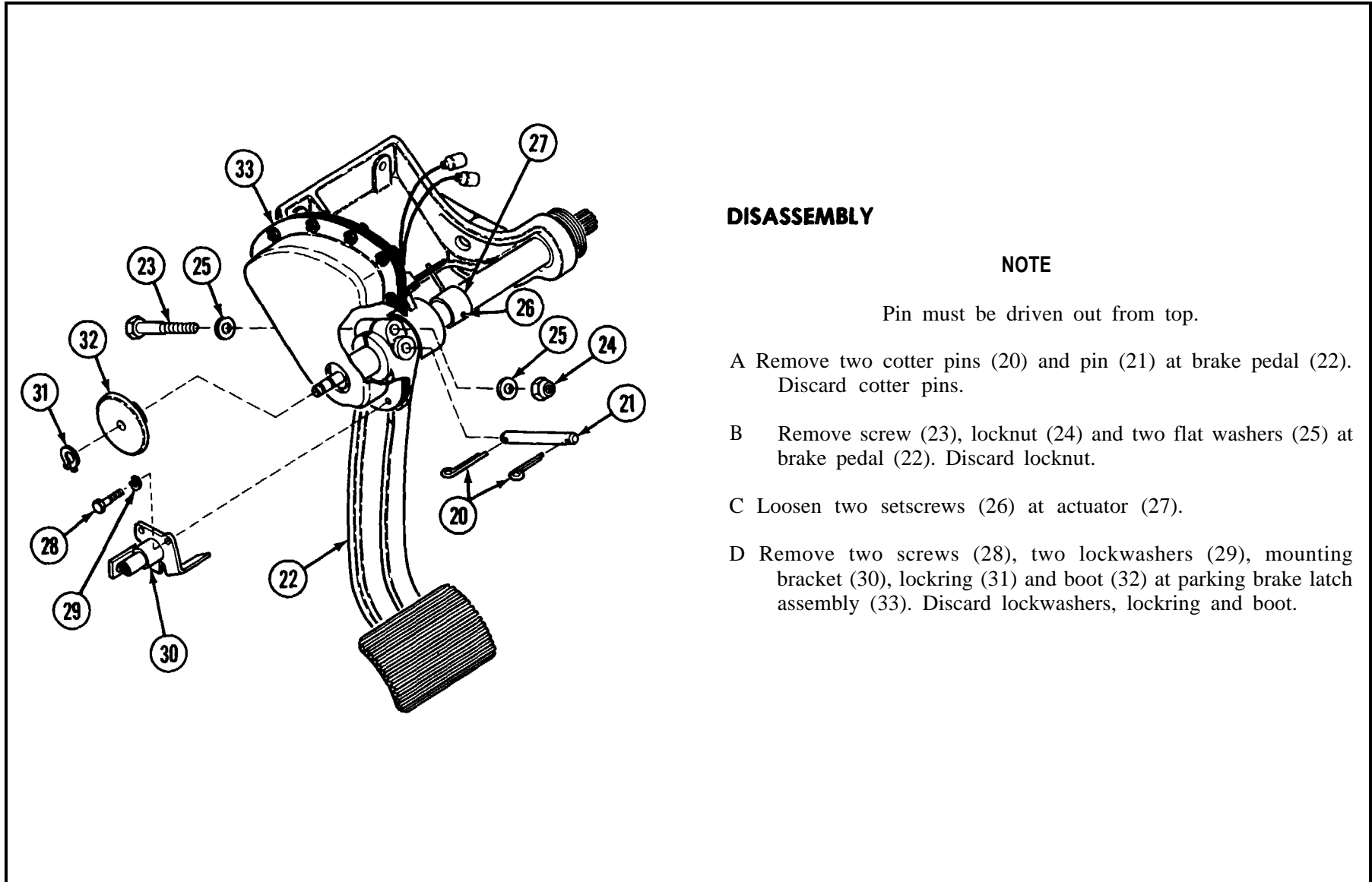
- A Open transmission access doors.
- B Remove cotter pin (1) and straight pin (2) from pull lever (3). Discard cotter pin.
- C Remove screw (4), flat washer (5) and pull lever (3) from shaft (6).
- D Remove and discard lockwire (7).
- E Unscrew retainer plate (8) from end of support (9) and remove seal (10). Discard seal.
- F Remove screw (11) and lockwasher (12) from parking brake (13). Discard lockwasher.
- G Disconnect two electrical connectors (14) at brake warning light switch.
- H Remove four screws (15), four lockwashers (16) and four flat washers (17) at driver's bulkhead. Discard lockwashers.

### NOTE

Note number and location of shims to ensure proper installation.

- I Remove brake assembly (18) and shims (19) from driver's compartment.

**BRAKE ASSEMBLY IN DRIVER'S COMPARTMENT: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT  
(CONTINUED)**



**DISASSEMBLY**

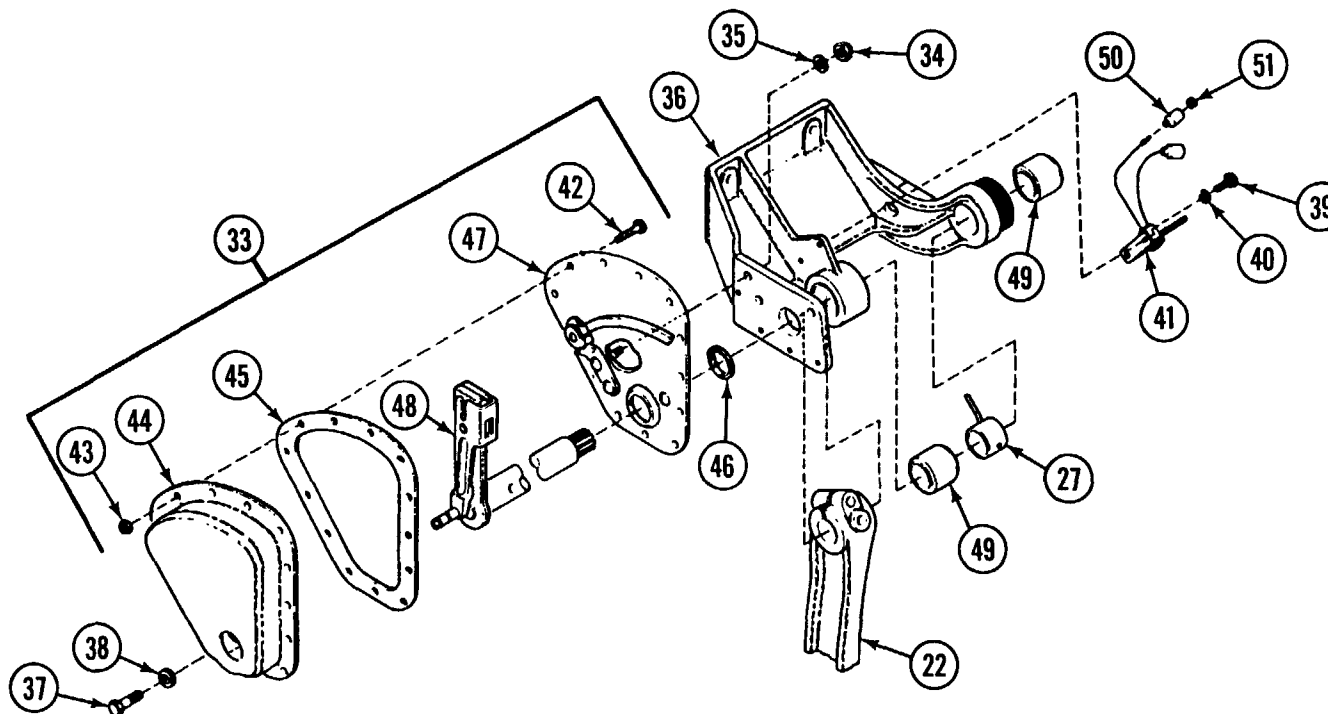
**NOTE**

Pin must be driven out from top.

- A Remove two cotter pins (20) and pin (21) at brake pedal (22). Discard cotter pins.
- B Remove screw (23), locknut (24) and two flat washers (25) at brake pedal (22). Discard locknut.
- C Loosen two setscrews (26) at actuator (27).
- D Remove two screws (28), two lockwashers (29), mounting bracket (30), lockring (31) and boot (32) at parking brake latch assembly (33). Discard lockwashers, lockring and boot.



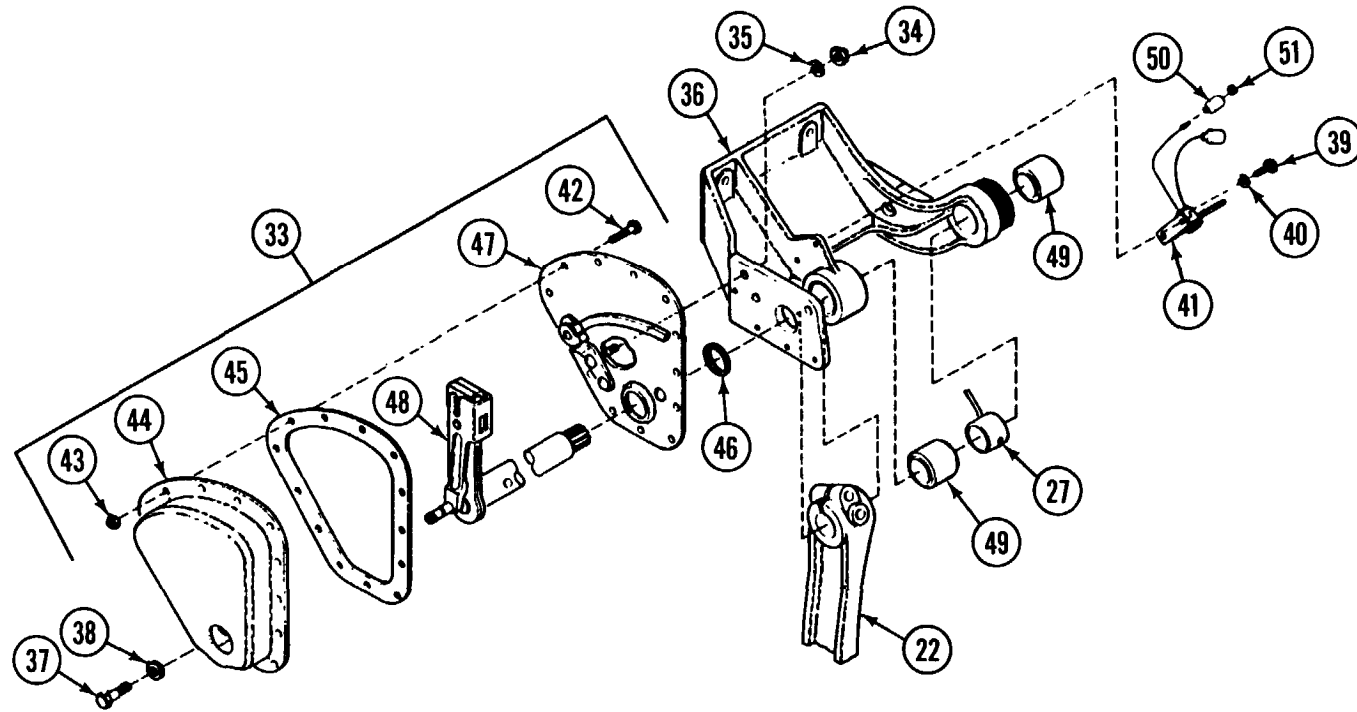
**BRAKE ASSEMBLY IN DRIVER'S COMPARTMENT REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT (CONTINUED)**



- E Remove three locknuts (34) and three flat washers (35) at support bracket (36). Discard locknuts.
- F Remove two screws (37) and two lockwashers (38). Discard lockwashers.
- G Remove parking brake latch assembly (33) by withdrawing from support bracket (36) to release actuator (27) and brake pedal (22).
- H Remove two screws (39), two lockwashers (40) and bracket with stoplight switch (41) from support bracket (36). Discard lockwashers.

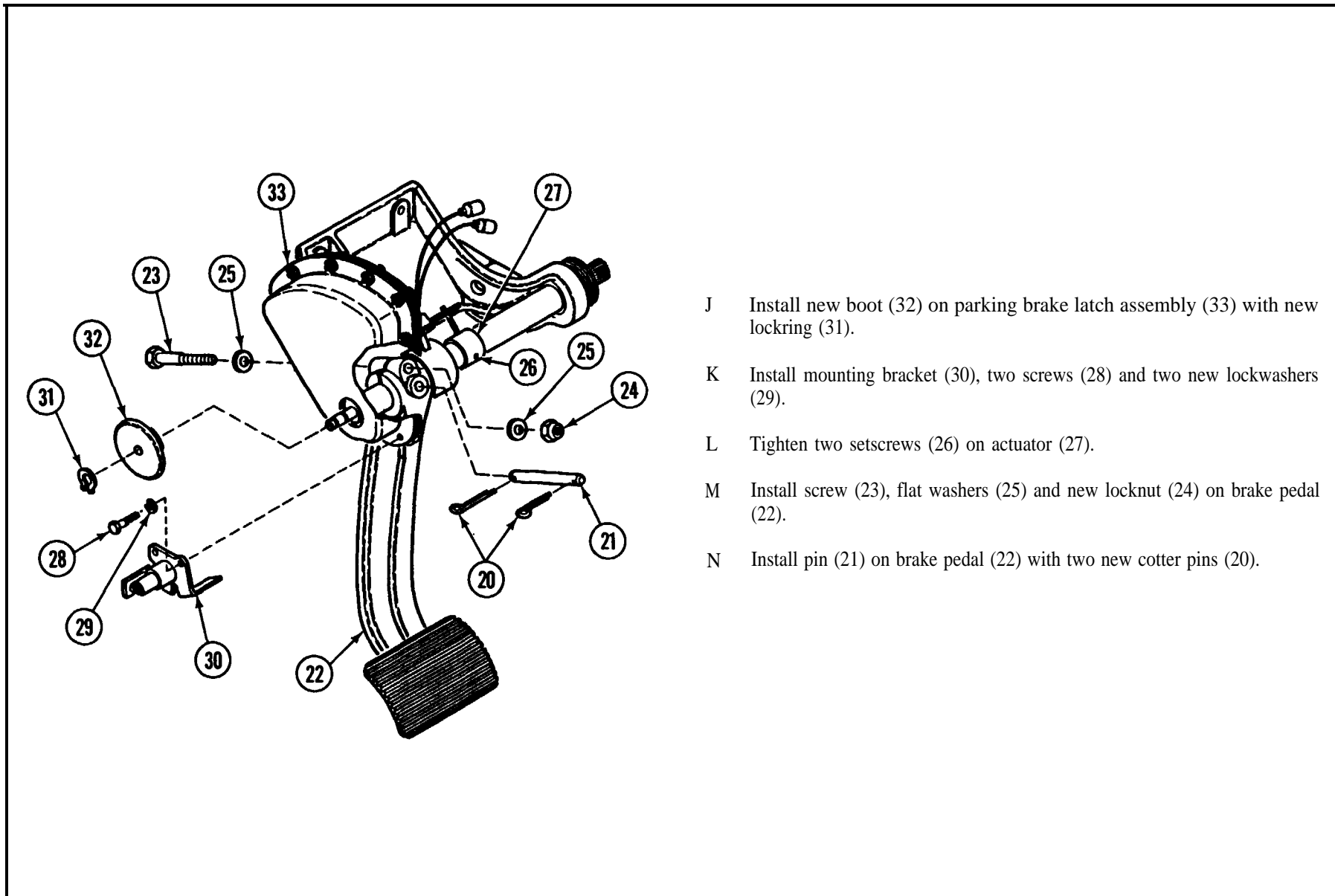
- I Remove 10 screws (42), 10 locknuts (43), cover (44), gasket (45) and seal (46) from bracket assembly (47). Discard locknuts, gasket and seal.
- J Remove latch (48) from bracket assembly (47).
- K Inspect two bearings (49) for nicks or burrs. Remove bearings if damaged.
- L Remove two shells (50) and two slotted washers (51) from stoplight switch (41).

## BRAKE ASSEMBLY IN DRIVER'S COMPARTMENT: REMOVAL, Disassembly, ASSEMBLY, INSTALLATION AND ADJUSTMENT (CONTINUED)

**ASSEMBLY**

- A Install two slotted washers (51) and two shells (50) on stoplight switch (41).
- B Install two new bearings (49) if necessary.
- C Position latch (48) on bracket assembly (47).
- D Install new seal (46) on shaft end of latch (48).
- E Install new gasket (45) and cover (44) on bracket assembly (47) with 10 screws (42) and 10 new locknuts (43).
- F Install two screws (37) and two new lockwashers (38) in cover (44).
- G Install bracket with stoplight switch (41) on support bracket (36) with two screws (39) and two new lockwashers (40).
- H Position parking brake latch assembly (33) on support bracket (36), brake pedal (22) and actuator (27).
- I Install three new locknuts (34) and three flat washers (35) at support bracket (36).

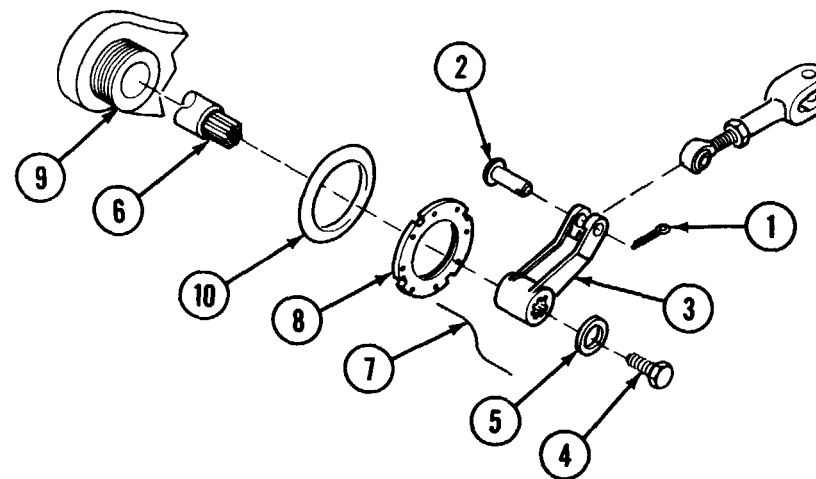
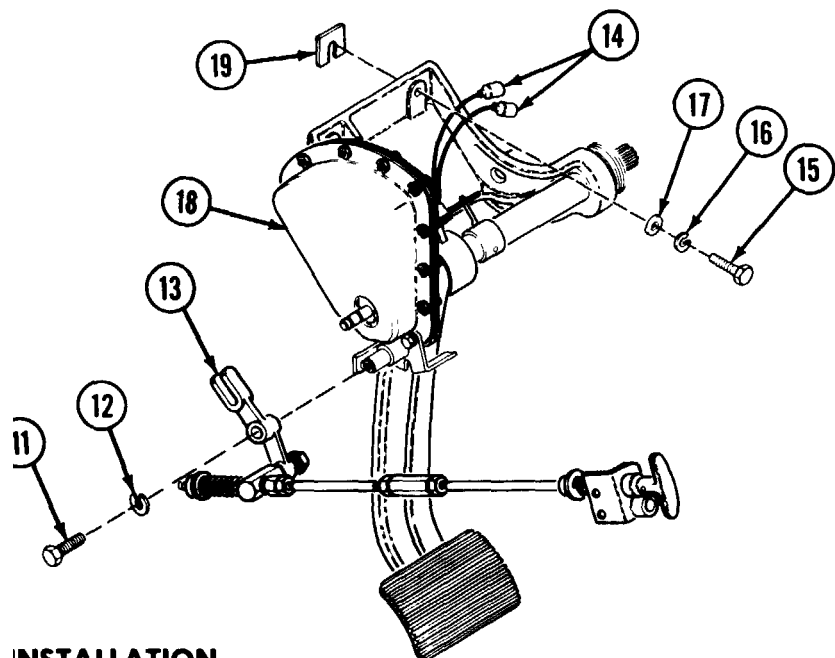
**BRAKE ASSEMBLY IN DRIVER'S COMPARTMENT: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION, AND ADJUSTMENT (CONTINUED)**



- J Install new boot (32) on parking brake latch assembly (33) with new locking (31).
- K Install mounting bracket (30), two screws (28) and two new lockwashers (29).
- L Tighten two setscrews (26) on actuator (27).
- M Install screw (23), flat washers (25) and new locknut (24) on brake pedal (22).
- N Install pin (21) on brake pedal (22) with two new cotter pins (20).



**BRAKE ASSEMBLY IN DRIVER'S COMPARTMENT: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT  
(CONTINUED)**



**INSTALLATION**

- A Install brake assembly (18) with shims (19) as required, four screws (15), four new lockwashers (16) and four flat washers (17).
- B Connect two electrical connectors (14) to brake warning light switch.
- C Install parking brake (13) with screw (11) and new lockwasher (12).
- D Position new seal (10) on support (9) and screw on retainer plate (8).
- E Install new lockwire (7).

F Install pull lever (3) on end of shaft (6) with screw (4) and flat washer (5).

G Install straight pin (2) in pull lever (3) with new cotter pin (1).

H Close transmission access doors.

**ADJUSTMENT**

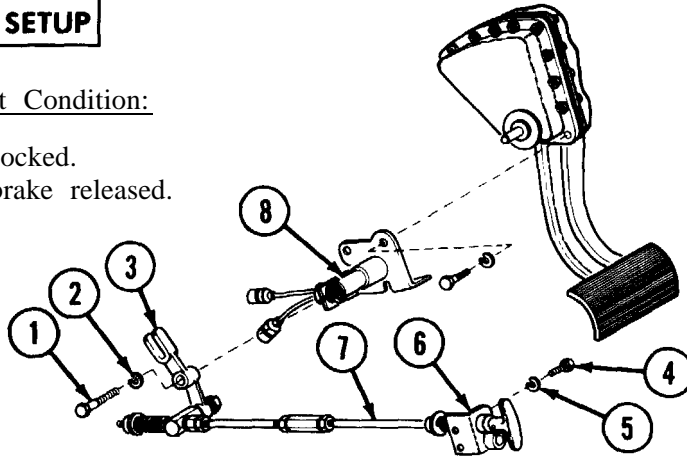
Refer to p 7-40 for instructions on adjustment of brake after installation.

## SERVICE AND PARKING BRAKE LINKAGE: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

Equipment Condition:

Vehicle blocked.  
Parking brake released.



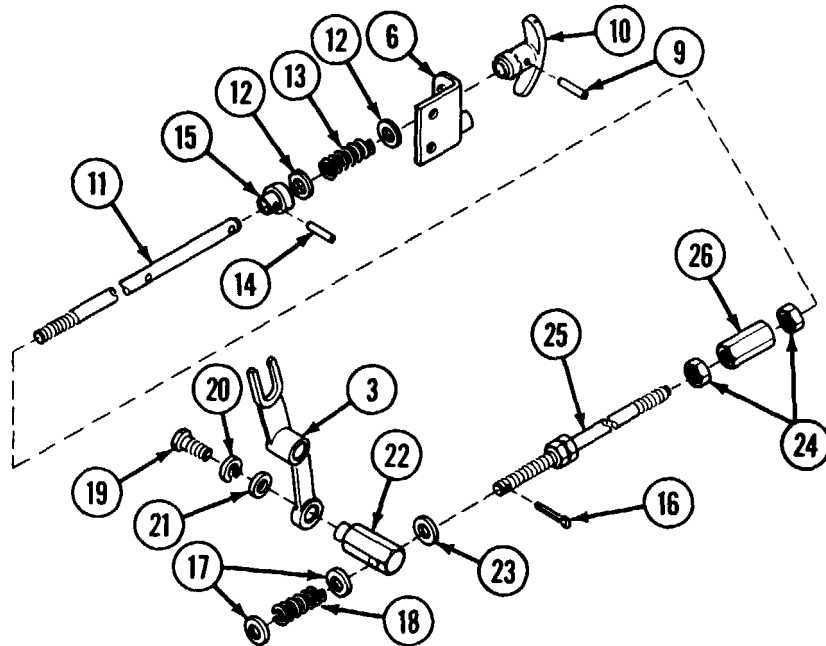
### REMOVAL

- A Remove screw (1) and lockwasher (2) from bell crank (3). Discard lockwasher.
- B Remove two screws (4) and two lockwashers (5) from bracket (6). Discard lockwashers.

### NOTE

Support parking brake linkage by hand.

- C Remove parking brake linkage assembly (7). Pull bell crank (3) off bracket spindle (8).



### DISASSEMBLY

- A Remove pin (9) and handle (10) from end of rod (11). Discard pin.
- B Remove mounting bracket (6), two flat washers (12) and spring (13). Discard spring.
- C Remove pin (14) and collar (15). Discard pin.
- D Remove cotter pin (16), two flat washers (17) and spring (18). Discard cotter pin and spring.
- E Remove screw (19), lockwasher (20), flat washer (21), bell crank (3) and rod guide (22). Discard lockwasher.
- F Remove flat washer (23).

### NOTE

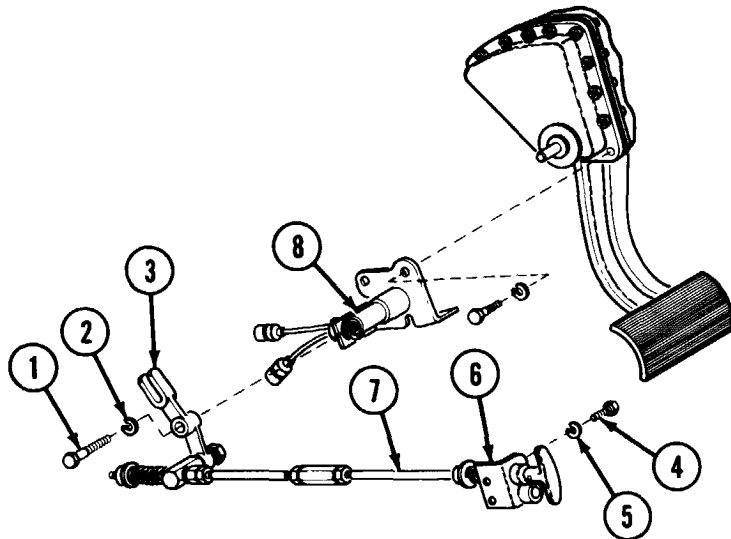
Removal of nuts from rods is not necessary.

- G Loosen two nuts (24). Loosen and unscrew rods (11 and 25) from nut (26).

## SERVICE AND PARKING BRAKE LINKAGE: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### ASSEMBLY

- A Make sure nuts (24) are screwed on rods (11 and 25).
- B Screw rods (11 and 25) into nut (26) and tighten two nuts (24).
- C Install flat washer (23), rod guide (22), two flat washers (17) and new spring (18) on end of rod (25).
- D Install new cotter pin (16) in end of rod (25).
- E Install bell crank (3) on rod guide (22) with flat washer (21), new lockwasher (20) and screw (19).
- F Install collar (15) on end of rod (11) with new pin (14).
- G Position two flat washers (12), new spring (13) and bracket (6) on rod (11).
- H Install handle (10) on end of rod (11) with new pin (9).
- I Install brake linkage (p 7-17).



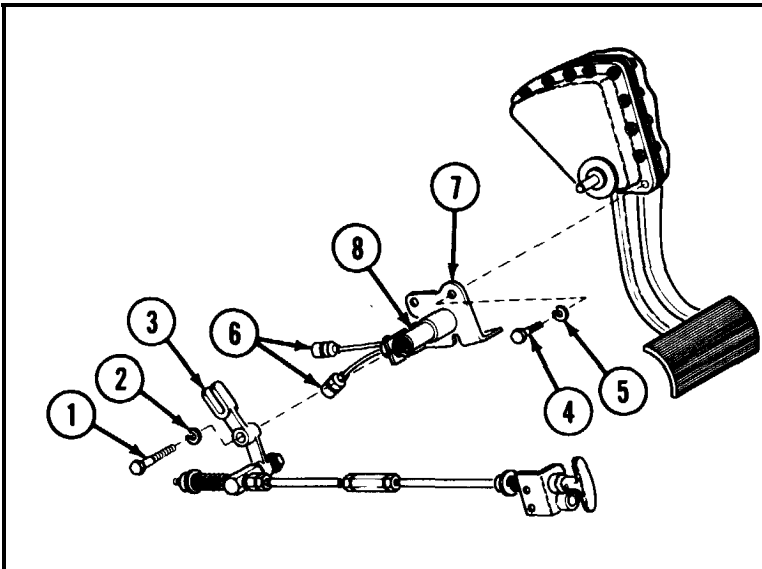
### INSTALLATION

- A Position parking brake linkage assembly (7) and install bell crank (3) on bracket spindle (8).
- B Install screw (1) and new lockwasher (2).
- C Secure bracket (6) with two screws (4) and two new lockwashers (5).



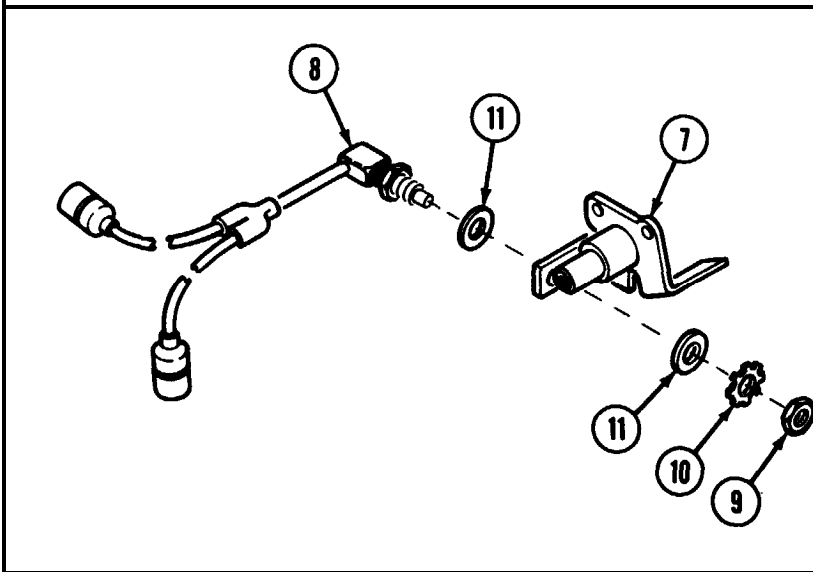


## ■ PARKING BRAKE LIGHT SWITCH AND BRACKET: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### REMOVAL

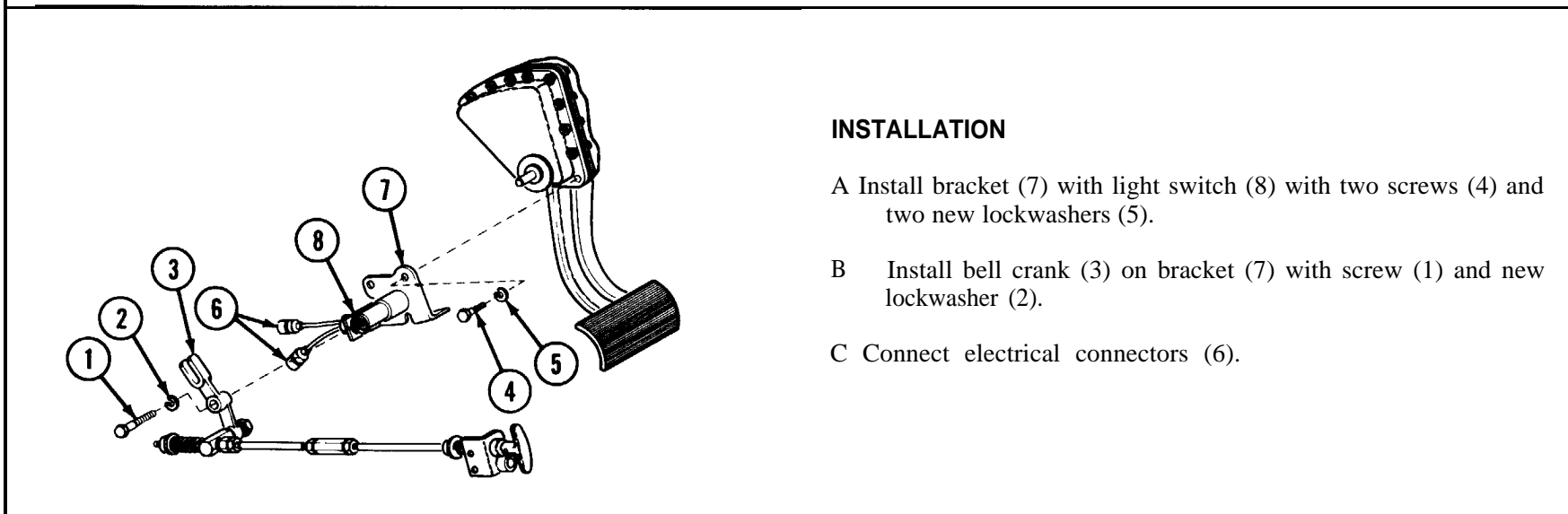
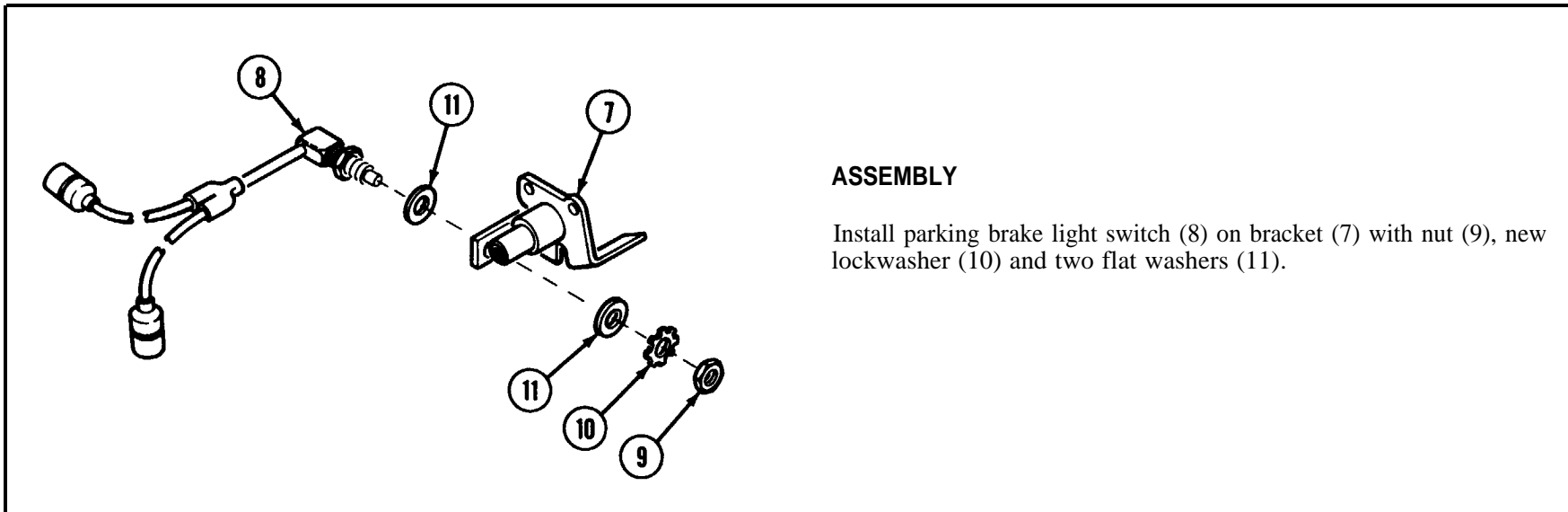
- A Remove screw (1) and lockwasher (2) from bell crank (3). Discard lockwasher.
- B Remove two screws (4) and two lockwashers (5). Discard lockwashers.
- C Disconnect electrical connectors (6).
- D Remove bracket (7) with light switch (8).



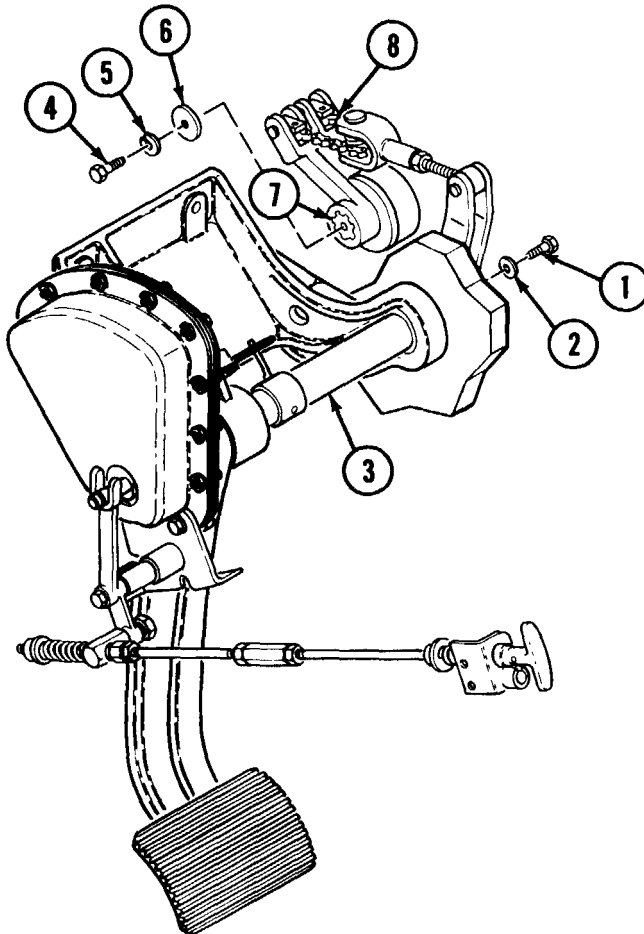
### DISASSEMBLY

- A Unscrew nut (9), lockwasher (10) and two flat washers (11) from parking brake light switch (8). Discard lockwasher.
- B Separate parking brake light switch (8) and bracket (7).

**PARKING BRAKE LIGHT SWITCH AND BRACKET: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



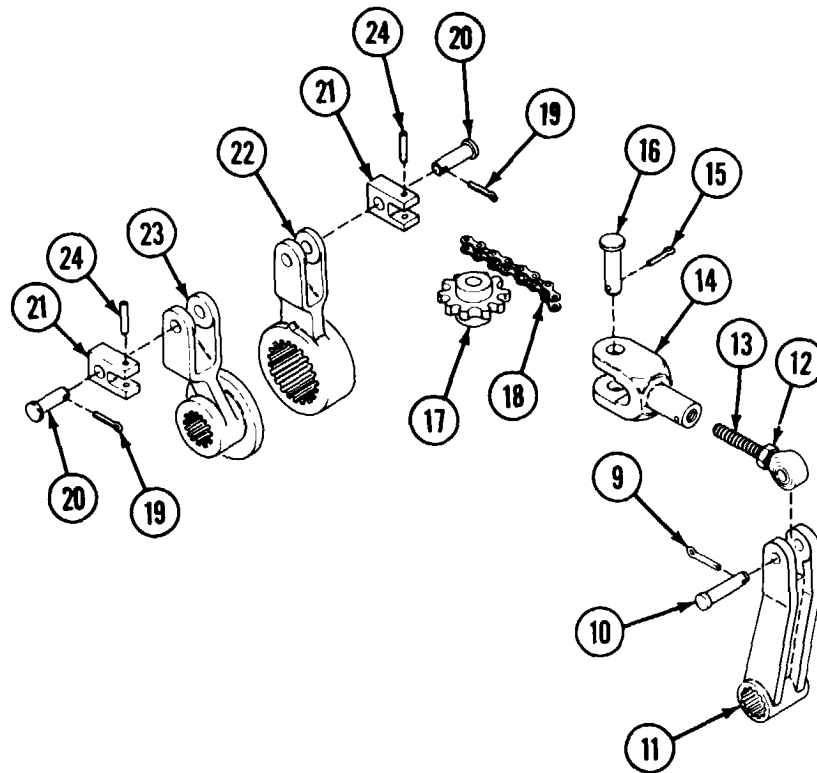
## LINKAGE IN POWERPACK COMPARTMENT: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT



### REMOVAL

- A Open transmission access doors.
- B Remove screw (1) and flat washer (2) from shaft (3).
- C Remove screw (4), lockwasher (5) and flat washer (6) from shaft (7). Discard lockwasher.
- D Remove linkage (8) from shafts (3 and 7).

## LINKAGE IN POWERPACK COMPARTMENT: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT (CONTINUED)



### DISASSEMBLY

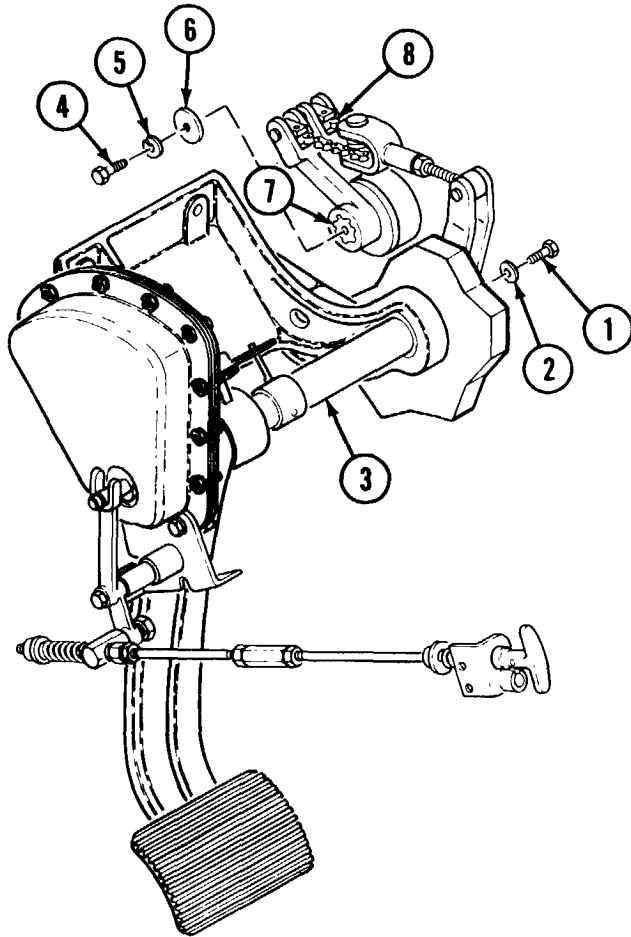
- A Remove cotter pin (9) and pin (10) from lever (11). Discard cotter pin.
- B Loosen nut (12) on rod end (13).

- c Unscrew and remove rod (13) from clevis (14).
- D Remove cotter pin (15) and discard.
- E Remove pin (16) and sprocket (17) with chain (18) from clevis (14).
- F Remove two cotter pins (19), two pins (20) and two clevises (21) with chain (18) from right brake lever (22) and left brake lever (23). Discard cotter pins.
- G Remove two pins (24) and separate chain (18) from clevises (21). Discard pins.

### ASSEMBLY

- A Install two clevises (21) on ends of chain (18) with two new pins (24).
- B Position chain (18) with clevises (21) on sprocket (17).
- c Install clevises (21) in right brake lever (22) and left brake lever (23) with two pins (20) and two new cotter pins (19).
- D Install clevis (14) on sprocket (17) with pin (16) and new cotter pin (15).
- E Screw rod end (13) into clevis (14) and tighten nut (12).
- F Install lever (11) on rod end (13) with pin (10) and new cotter pin (9).

**LINKAGE IN POWERPACK COMPARTMENT: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT  
(CONTINUED)**



**INSTALLATION**

- A Position linkage (8) on shafts (3 and 7).
- B Install screw (4), new lockwasher (5) and flat washer (6) on shaft (7).
- C Install screw (1) and flat washer (2) on shaft (3).
- D Close transmission access doors.

**ADJUSTMENT**

Refer top 7-40 for instructions on adjustment of service and parking brakes after installation. Brakes must be adjusted after installation to ensure proper operation.

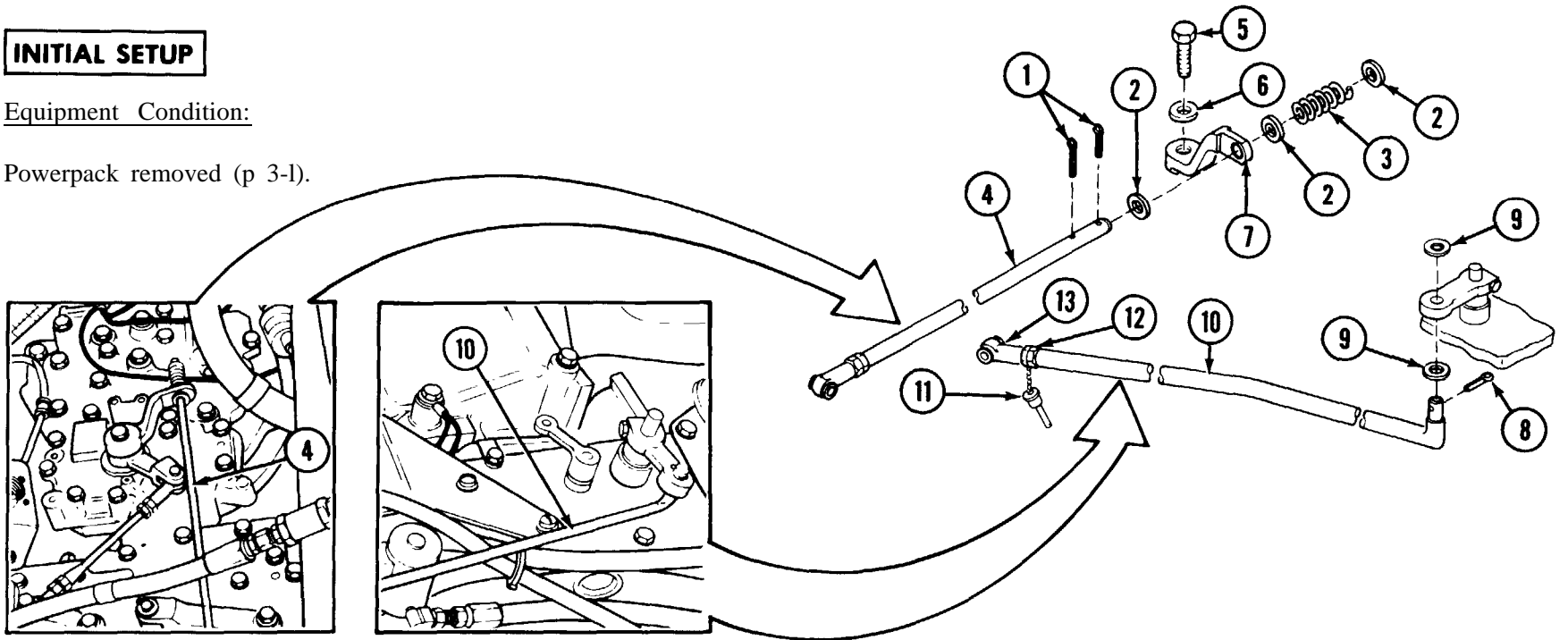
TA58097

**ACCELERATOR, THROTTLE AND ENGINE CONTROL GOVERNOR: REMOVAL AND INSTALLATION**

**INITIAL SETUP**

Equipment Condition:

Powerpack removed (p 3-1).



**REMOVAL**

A Remove two cotter pins (1), three flat washers (2), spring (3) and B rod assembly (4). Discard cotter pins.

B Remove bolt (5), flat washer (6), and throttle control lever (7) at transmission. Replace bolt (5) and flat washer (6).

NOTE

- Remove throttle control lever (7) only if damaged or requiring replacement

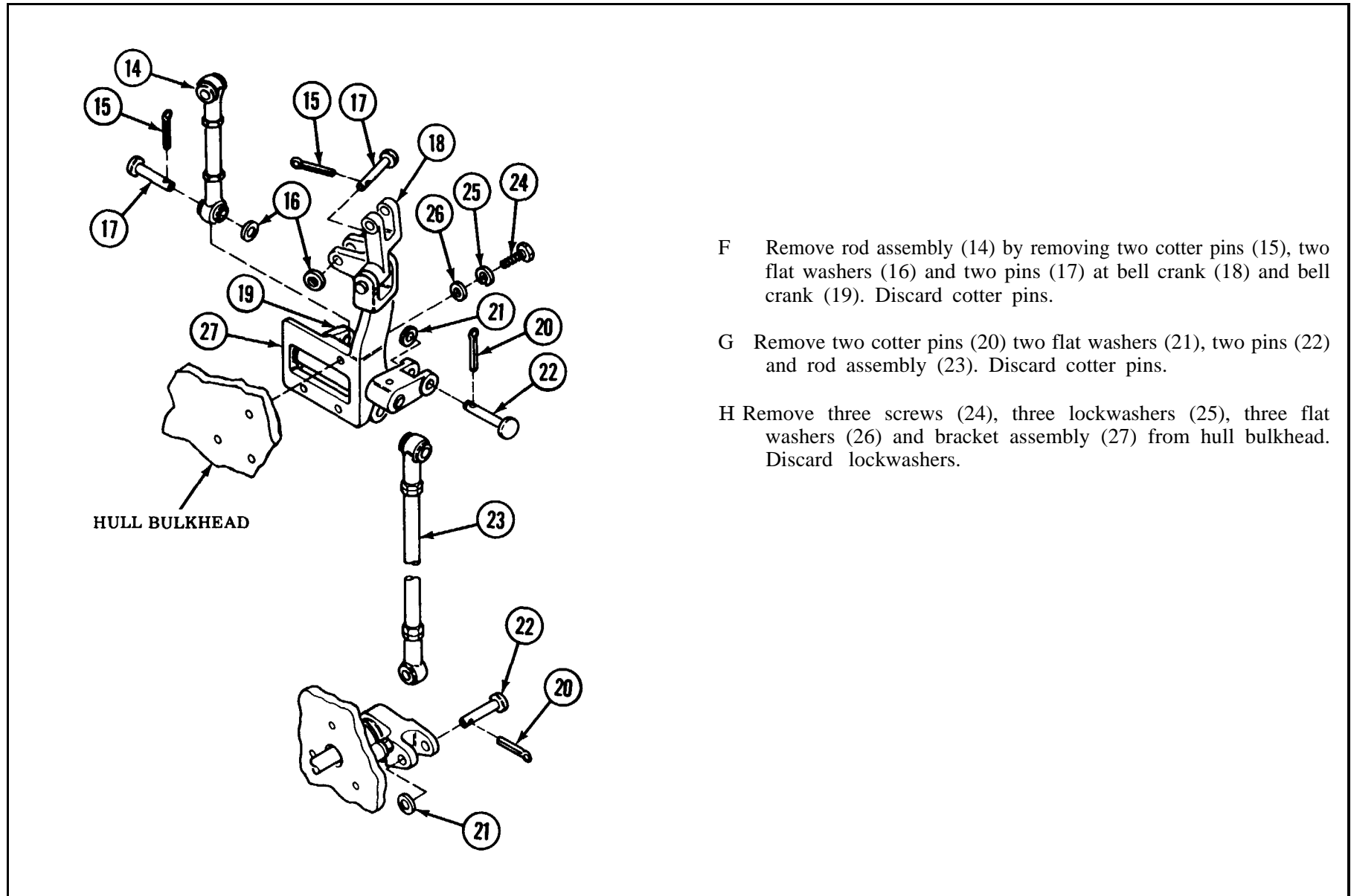
C Remove cotter pin (8) and two flat washers (9) at engine throttle control lever end of connecting link (10). Discard cotter pin.

- If bolt (5) is lost or damaged, notify support maintenance,

D Loosen nut (12) and remove end (13) and nut (12).

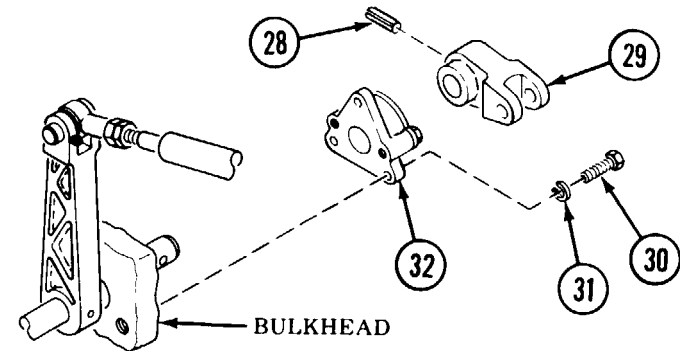
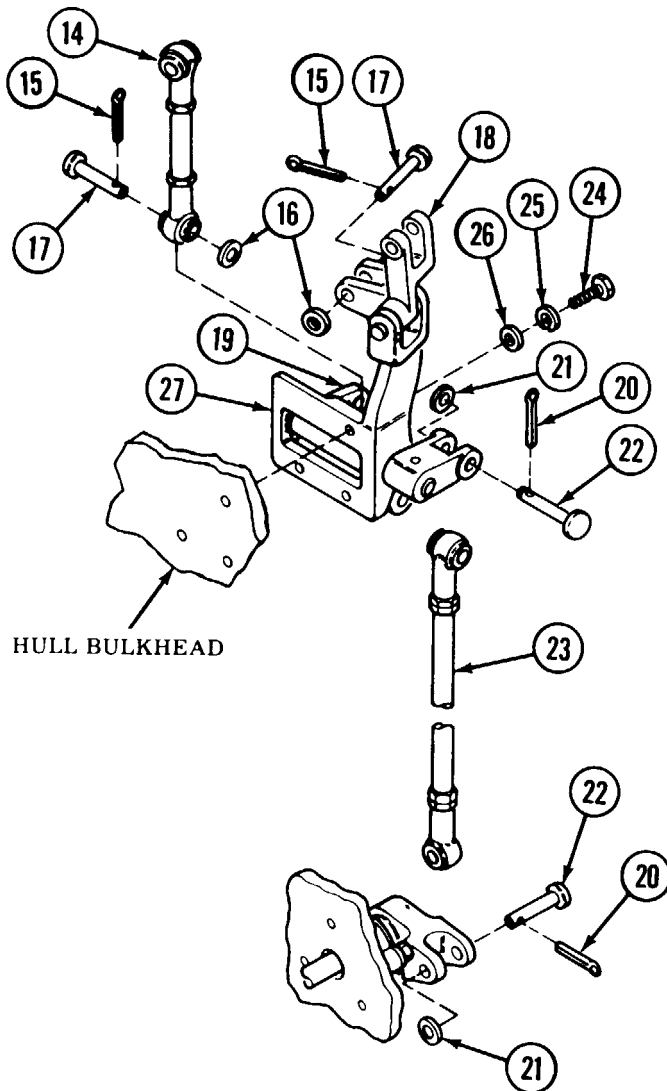
E Remove quick-release pin (11), chain, and wire.

## ACCELERATOR, THROTTLE AND ENGINE CONTROL GOVERNOR: REMOVAL AND INSTALLATION (CONTINUED)



- F Remove rod assembly (14) by removing two cotter pins (15), two flat washers (16) and two pins (17) at bell crank (18) and bell crank (19). Discard cotter pins.
- G Remove two cotter pins (20) two flat washers (21), two pins (22) and rod assembly (23). Discard cotter pins.
- H Remove three screws (24), three lockwashers (25), three flat washers (26) and bracket assembly (27) from hull bulkhead. Discard lockwashers.

## ACCELERATOR, THROTTLE AND ENGINE CONTROL GOVERNOR: REMOVAL AND INSTALLATION (CONTINUED)



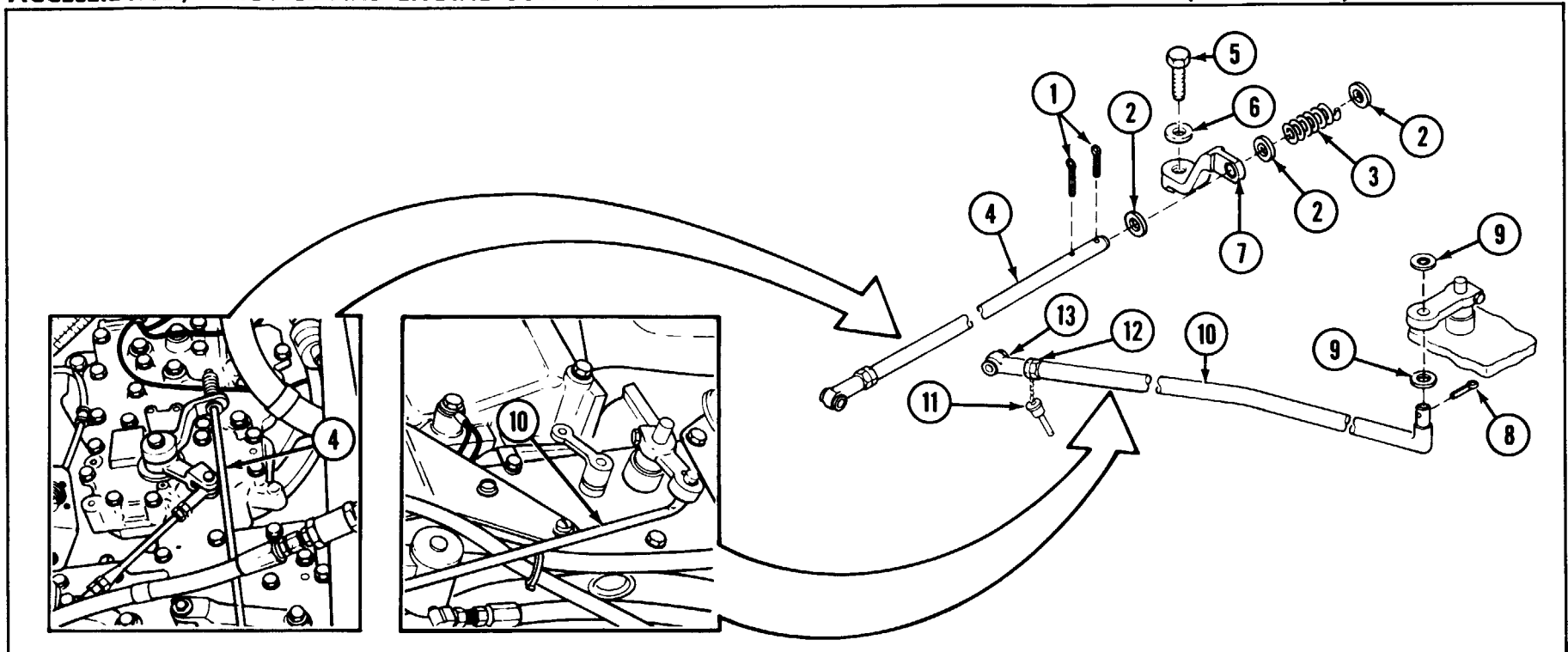
- I Remove spring pin (28) and lever (29). Use drive pin punch and hammer to remove pin (28).
- J Remove three screws (30) and three lockwashers (31) at accelerator shaft support bracket assembly (32). Discard lockwashers.
- K Remove accelerator shaft support bracket assembly (32) from bulkhead.

**INSTALLATION**

- A Install accelerator shaft support bracket assembly (32) on bulkhead with three screws (30) and three new lockwashers(31).
- B Install lever (29) and spring pin (28).
- C Install bracket assembly (27) on hull bulkhead with three screws (24), three new lockwashers (25) and three flat washers (26).
- D Install rod assembly (23) with two pins (22), two flat washers (21) and two new cotter pins (20).
- E Install rod assembly (14) at bell crank (19) and bell crank (18) with two pins (17), two flat washers (16) and two new cotter pins (15).



## ACCELERATED, THROTTLE AND ENGINE CONTROL GOVERNOR: REMOVAL AND INSTALLATION (CONTINUED)



F Install quick-release pin (11), chain and wire to connecting link (10).

G Install nut (12) and rod end (13) to connecting link (10).

H Install engine throttle control lever end of connecting link (10) with two flat washers (9) and new cotter pin (8).

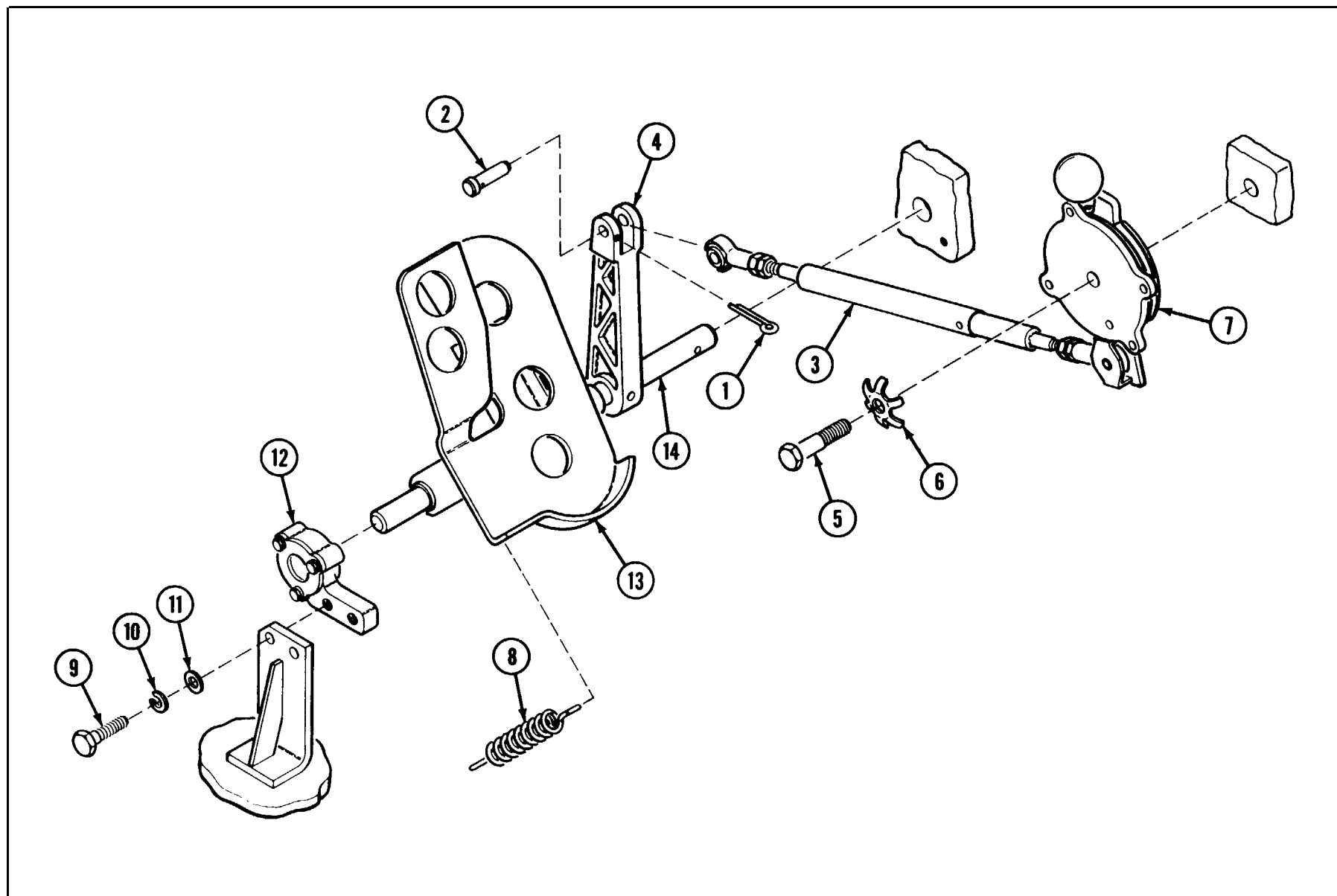
I Remove bolt (5) and flat washer (6). Install throttle control lever (7), flat washer (6), and bolt (5), at transmission.

J Install rod assembly (4) and spring (3) with three flat washers (2) and two new cotter pins (1).

### ADJUSTMENT

Refer to pages 7-46 through 7-49 for instructions on adjustment of accelerator, throttle and engine control governor after installation.

### THROTTLE CONTROL LEVER AND ACCELERATOR PEDAL: REMOVAL AND INSTALLATION



## THROTTLE CONTROL AND ACCELERATOR PEDAL: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTE

Throttle control rod is part of hand throttle control assembly.

- A Remove cotter pin (1) and pin (2) at end of throttle control rod (3) at lever (4). Discard cotter pin.
- B Remove screw (5), key washer (6), and hand throttle control assembly (7) from driver's bulkhead.
- c Remove spring (8) at pedal.
- D Remove two screws (9), two lockwashers (10) and two flat washers (11) at support bracket (12). Discard lockwashers.

#### NOTE

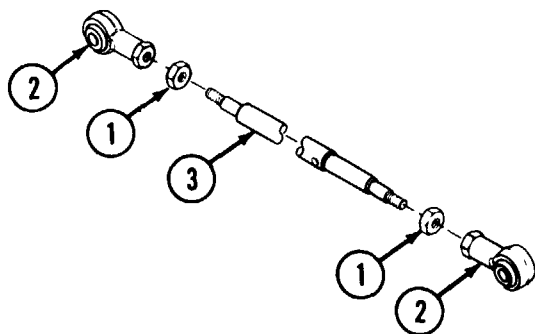
Lift pedal assembly until support bracket clears mounting bracket and remove from bulkhead.

- E Remove pedal (13), lever (4) and shaft (14) from bulkhead as an assembly.

### INSTALLATION

- A Install pedal (13), lever (4) and shaft (14) in bulkhead as an assembly.
- B Install support bracket (12) with two screws (9), two new lockwashers (10) and two flat washers (11).
- c Install spring (8).
- D Install hand throttle control assembly (7) at driver's bulkhead with key washer (6) and screw (5).
- E Install throttle control rod (3) at lever (4) with pin (2) and new cotter pin (1).

### ROD ASSEMBLIES: DISASSEMBLY

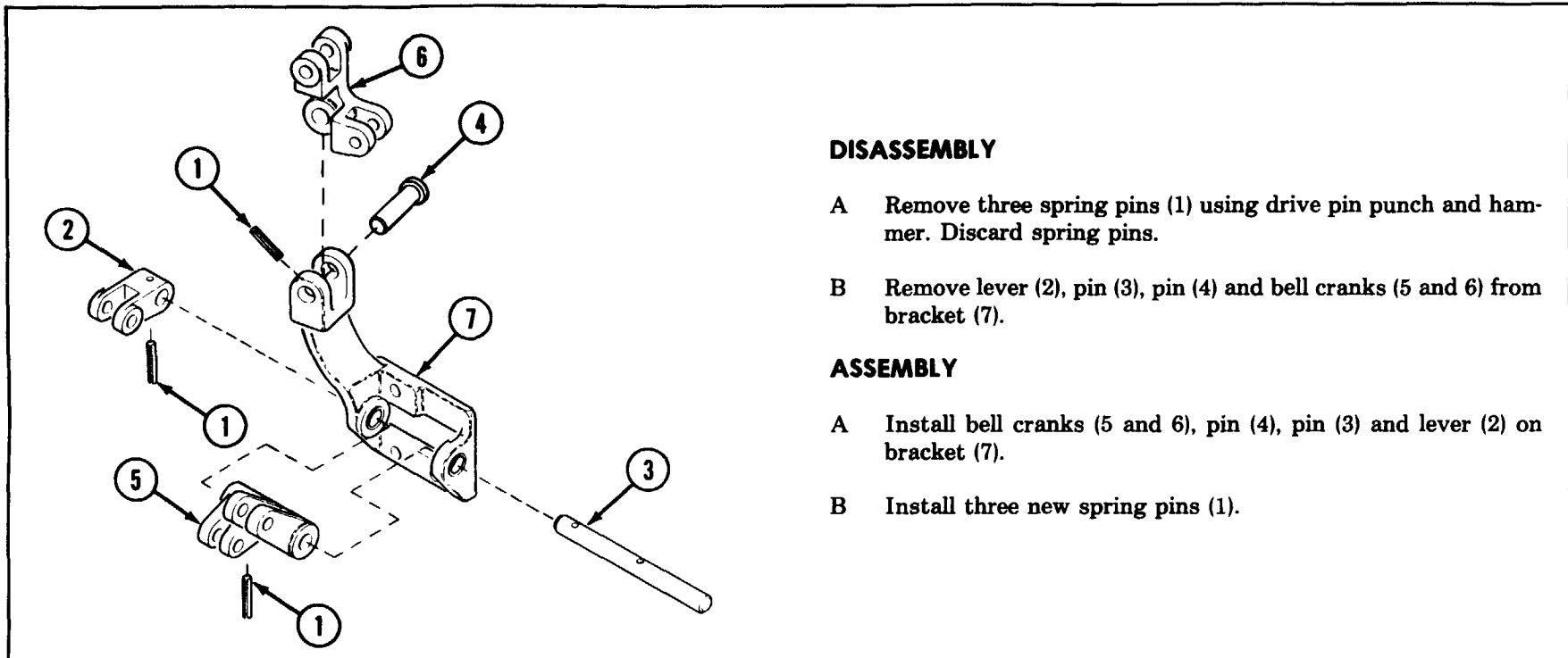


### DISASSEMBLY

- A Loosen locknut (1).
- B Unscrew rod ends (2) from shaft (3).
- C Unscrew locknut (1) from shaft (3).

### ASSEMBLY

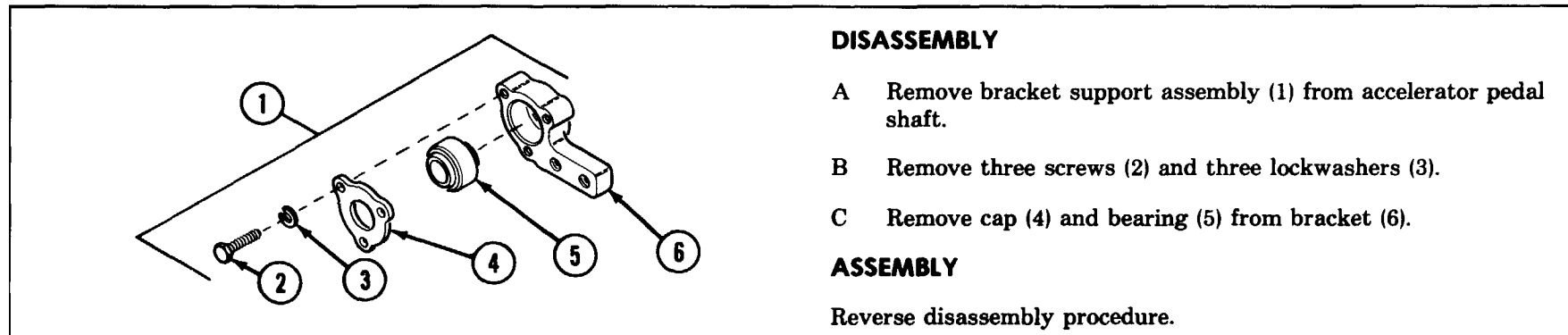
Reverse disassembly procedures.

**BRACKET ASSEMBLY: DISASSEMBLY AND ASSEMBLY****DISASSEMBLY**

- A Remove three spring pins (1) using drive pin punch and hammer. Discard spring pins.
- B Remove lever (2), pin (3), pin (4) and bell cranks (5 and 6) from bracket (7).

**ASSEMBLY**

- A Install bell cranks (5 and 6), pin (4), pin (3) and lever (2) on bracket (7).
- B Install three new spring pins (1).

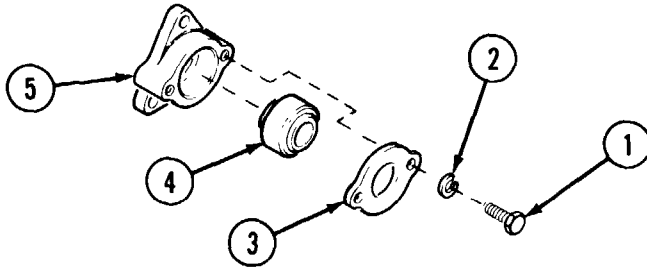
**BRACKET SUPPORT ASSEMBLY: DISASSEMBLY AND ASSEMBLY****DISASSEMBLY**

- A Remove bracket support assembly (1) from accelerator pedal shaft.
- B Remove three screws (2) and three lockwashers (3).
- C Remove cap (4) and bearing (5) from bracket (6).

**ASSEMBLY**

Reverse disassembly procedure.

## BRACKET SUPPORT ASSEMBLY: DISASSEMBLY AND ASSEMBLY



### DISASSEMBLY

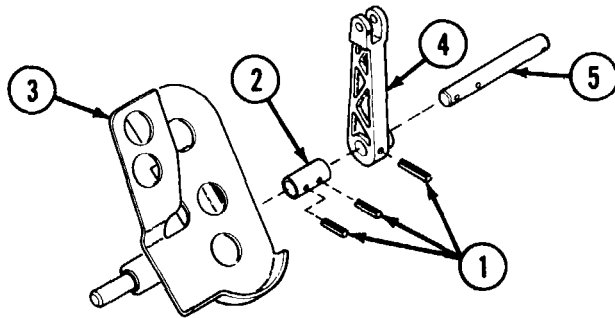
- A Remove two screws (1) and two lockwashers (2).
- B Remove cap (3) and bearing (4) from bracket (5).

### ASSEMBLY

Reverse disassembly procedure.



## PEDAL AND SHAFT ASSEMBLY: DISASSEMBLY AND ASSEMBLY



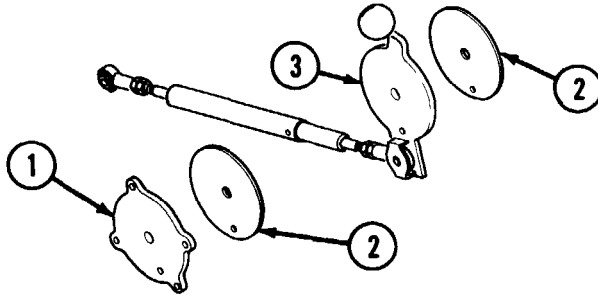
### DISASSEMBLY

Remove three spring pins (1), collar (2), pedal (3) and lever (4) from shaft (5). Use drive pin punch and hammer to remove spring pins (1). Discard spring pins.

### ASSEMBLY

Install lever (4), pedal (3), collar (2) and three new spring pins (1) on shaft (5).

## HAND THROTTLE CONTROL ASSEMBLY: DISASSEMBLY AND ASSEMBLY



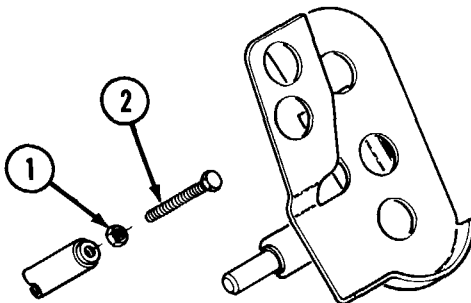
### DISASSEMBLY

Separate cover (1), two disks (2) and lever rod assembly (3).

### ASSEMBLY

Reverse disassembly procedure.

## PEDAL STOP: DISASSEMBLY AND ASSEMBLY



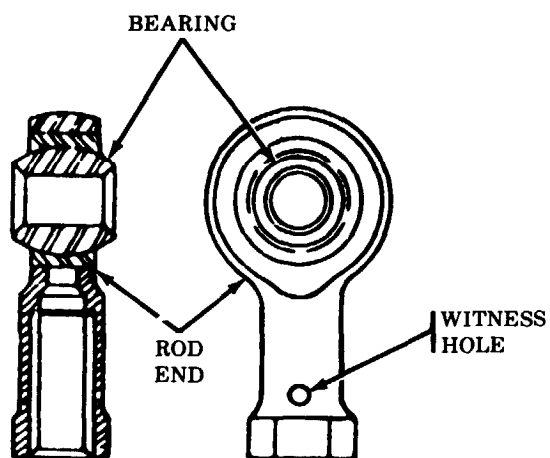
### DISASSEMBLY

- A Loosen locknut (1).
- B Remove screw (2) and locknut (1) from support.
- C Unscrew locknut (1) from screw (2).

### ASSEMBLY

Reverse disassembly procedure.

## Section II TRANSMISSION, TRANSFER AND DRIVE CONTROL ASSEMBLIES — ADJUSTMENT

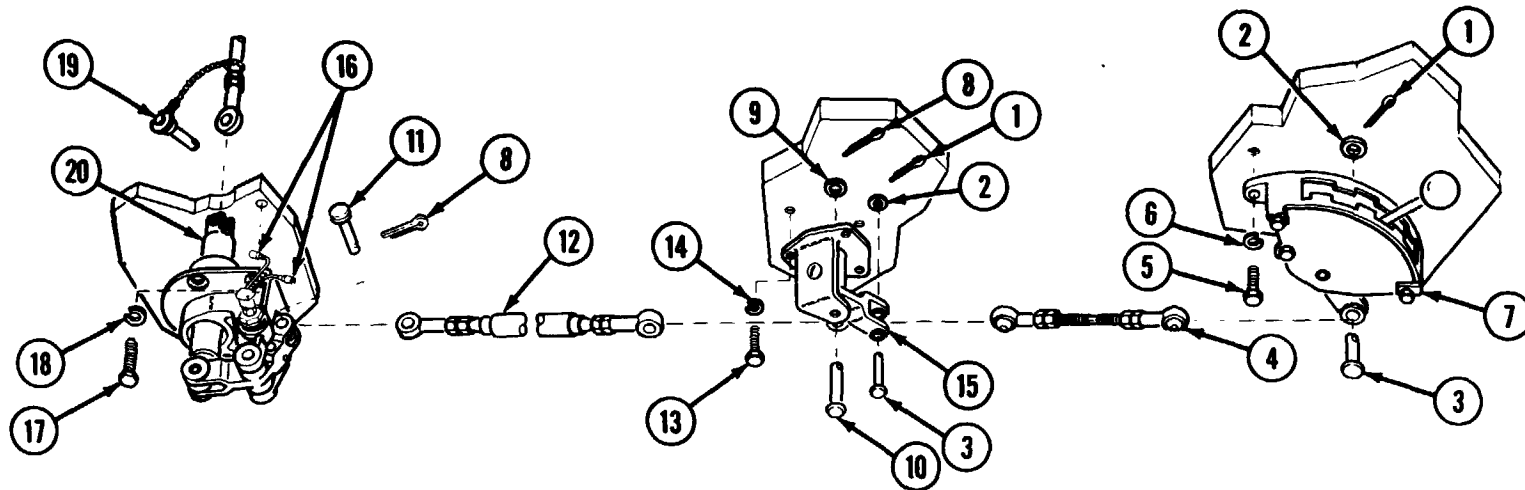


TYPICAL ROD END WITH BEARING

Rod end bearings used on various control linkages are of similar design and construction. For replacement of rod end bearings on any of the linkages, refer to illustration to the left. Inspect rod ends during adjustment procedures. Replace damaged or defective rod ends. Make sure witness hole is closed, after adjustment is completed, by trying to insert a small piece of wire into the hole.



## SHIFT CONTROL LINKAGE: REMOVAL AND INSTALLATION



### REMOVAL

- A Open and secure both transmission doors and air intake grille.
- B Remove two cotter pins (1), two flat washers (2) and two pins (3) to release rod assembly (4). Remove rod assembly (4). Discard cotter pins.
- C Remove three screws (5) and three lockwashers (6) to release quadrant assembly (7). Discard lockwashers.
- D Remove two cotter pins (8), flat washer (9) and two pins (10 and 11) to release rod assembly (12). Remove rod assembly (12). Discard cotter pins.
- E Remove three screws (13) and three lockwashers (14) to release support assembly (15). Remove support assembly (15). Discard lockwashers.

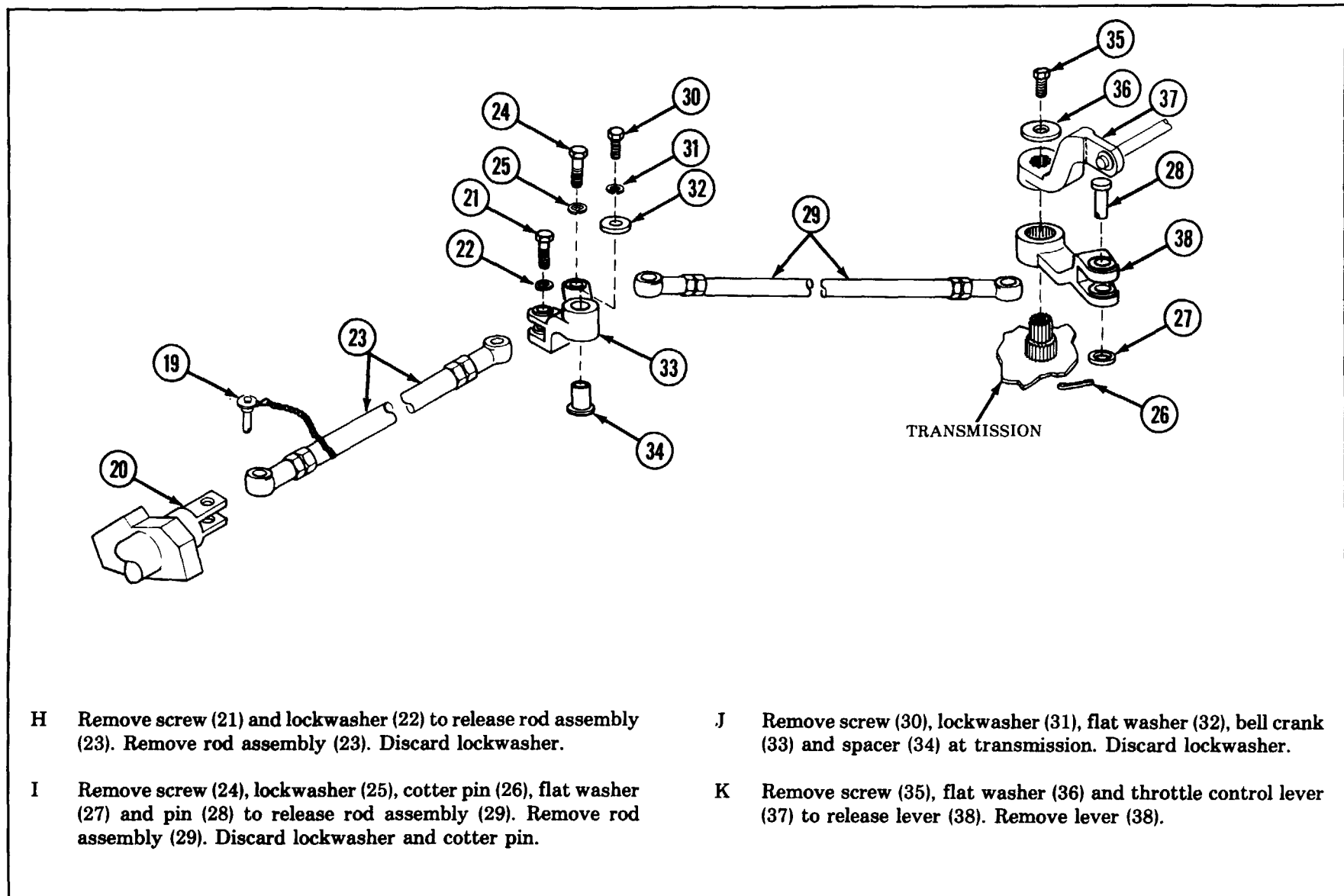
- F Disconnect two push switch electrical leads (16).

### NOTE

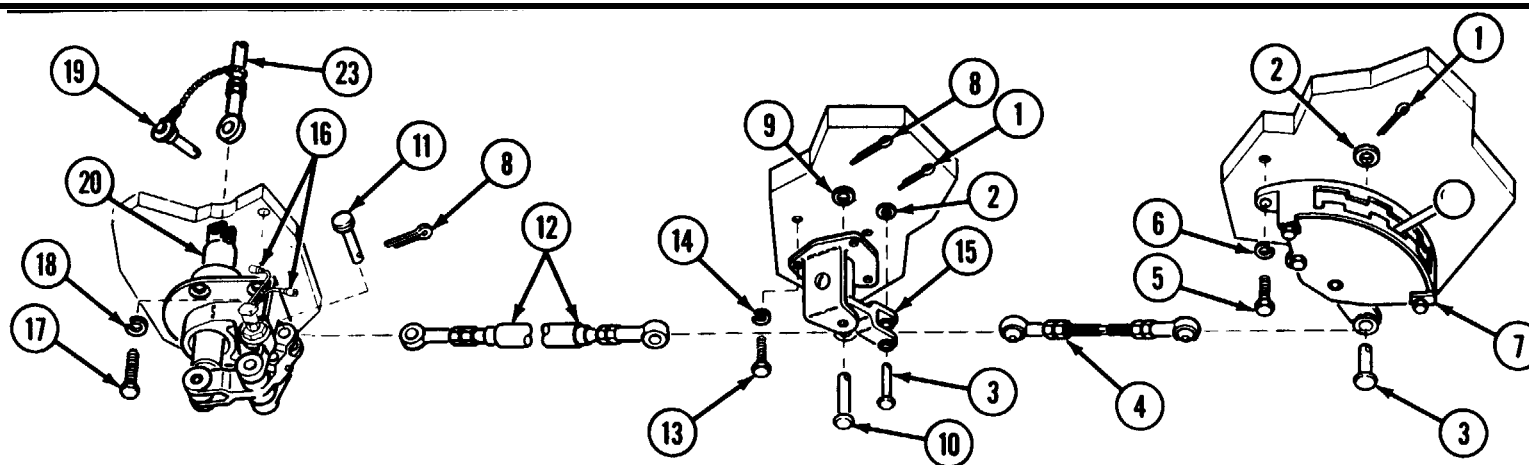
Quick-release pin is located in powerpack compartment at the bulkhead.

- G Remove four screws (17), four lockwashers (18) and quick-release pin (19) to release base assembly with shaft (20). Remove base assembly with shaft (20). Discard lockwashers.

## SHIFT CONTROL LINKAGE: REMOVAL AND INSTALLATION (CONTINUED)



## SHIFT CONTROL LINKAGE: REMOVAL AND INSTALLATION (CONTINUED)



### INSTALLATION

- A Install lever (38) and throttle control lever (37) and secure with flat washer (36) and screw (35).
- B Install spacer (34) and bell crank (33) at transmission with screw (30), new lockwasher (31) and flat washer (32).
- C Install rod assembly (29) with pin (28), flat washer (27), new cotter pin (26), new lockwasher (25) and screw (24).
- D Install rod assembly (23) with screw (21) and new lockwasher (22).
- E Install base assembly with shaft (20) with four screws (17) and four new lockwashers (18).
- F Connect rod assembly (23) to shaft (20) with quick-release pin (19).
- G Connect two push switch electrical leads (16).

- H Install support assembly (15) with three screws (13) and three new lockwashers (14).
- I Install rod assembly (12) with two pins (10 and 11), flat washer (9) and two new cotter pins (8).
- J Install quadrant assembly (7) with three screws (5) and three new lockwashers (6).
- K Install rod assembly (4) with two pins (3), two flat washers (2) and two new cotter pins (1).

- L Close and secure both transmission doors and air intake grille.

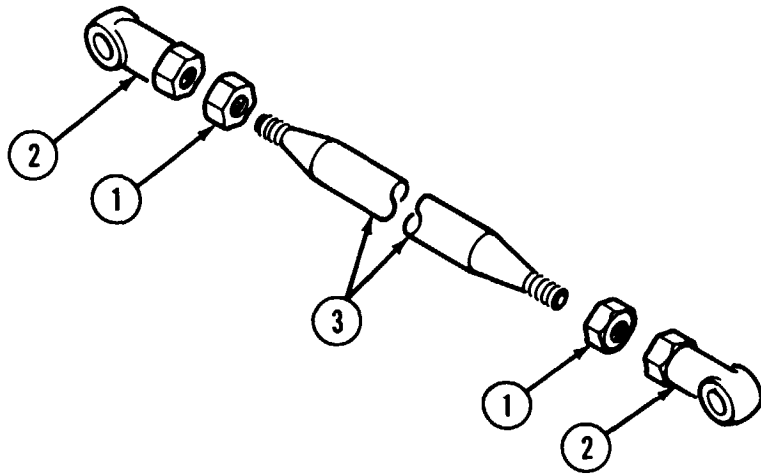
### ADJUSTMENT

Refer to p 7-34 for adjustment procedures.

TA312859



## ROD ASSEMBLIES: DISASSEMBLY AND ASSEMBLY



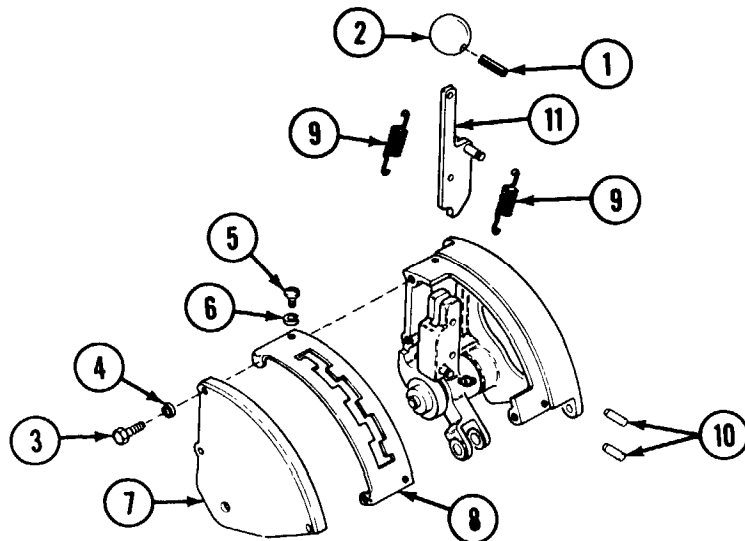
### DISASSEMBLY

- A Loosen two locknuts (1).
- B Remove two rod ends (2) from rods.
- C Remove two locknuts (1) from rod (3).

### ASSEMBLY

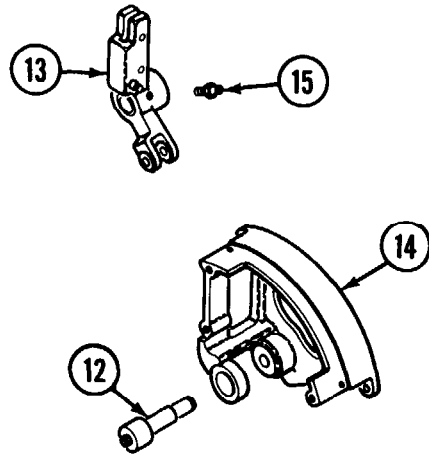
Reverse disassembly procedures.

## QUADRANT ASSEMBLY: DISASSEMBLY AND ASSEMBLY



### DISASSEMBLY

- A Remove pin (1) and knob (2).
- B Remove three screws (3) and three lockwashers (4), two machine screws (5) and two lockwashers (6) to release cover (7) and shift guide (8). Remove cover (7) and shift guide (8).
- C Remove two springs (9) and two pins (10) to release lever (11). Remove lever (11).

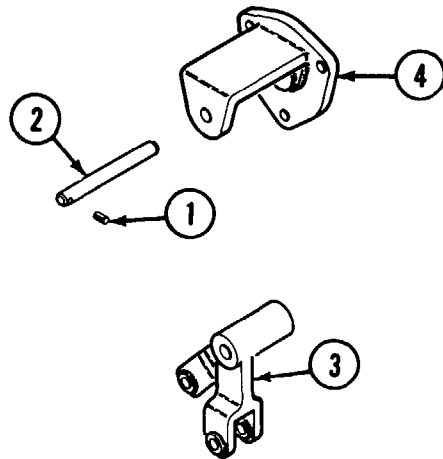
**QUADRANT ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)****DISASSEMBLY**

D Remove shaft (12) and lever (13) from bracket (14).

E Remove grease fittings (15) from lever (13).

**ASSEMBLY**

Reverse disassembly procedure.

**SUPPORT ASSEMBLY: DISASSEMBLY AND ASSEMBLY****DISASSEMBLY**

Remove pin (1), shaft (2) and bell crank (3) from support (4).

**ASSEMBLY**

Reverse disassembly procedure.

## BASE ASSEMBLY: DISASSEMBLY AND ASSEMBLY

### INITIAL SETUP

#### Test Equipment/Special Tools:

Wrench, open-end 1-1/4 inch (item 70, Appx B)

#### Materials/Parts:

Lubricant, solid wax base (item 72, Appx D)

#### Equipment Condition:

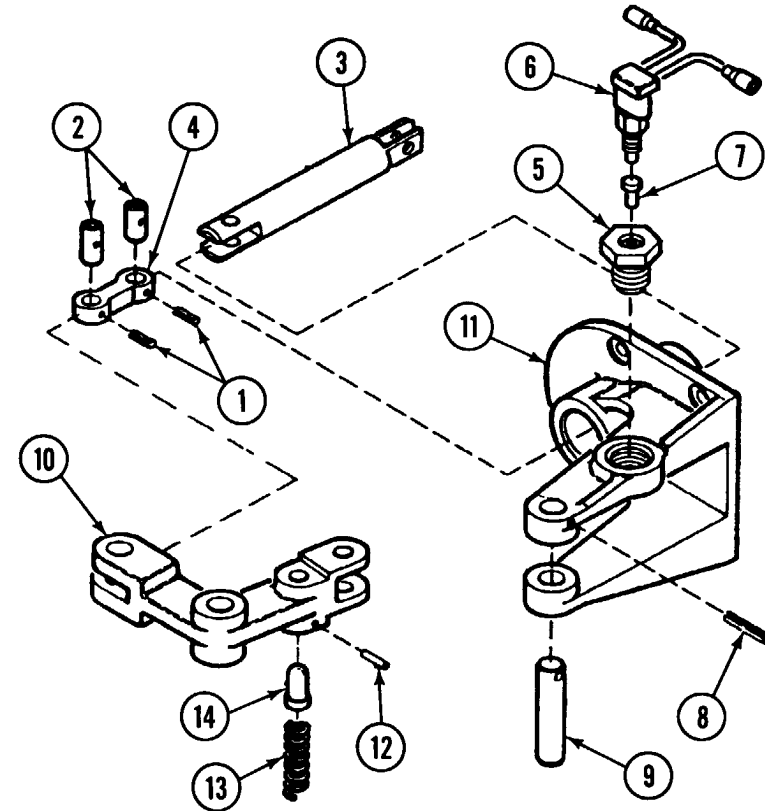
Base assembly with Shaft removed (p 7-29).

### DISASSEMBLY

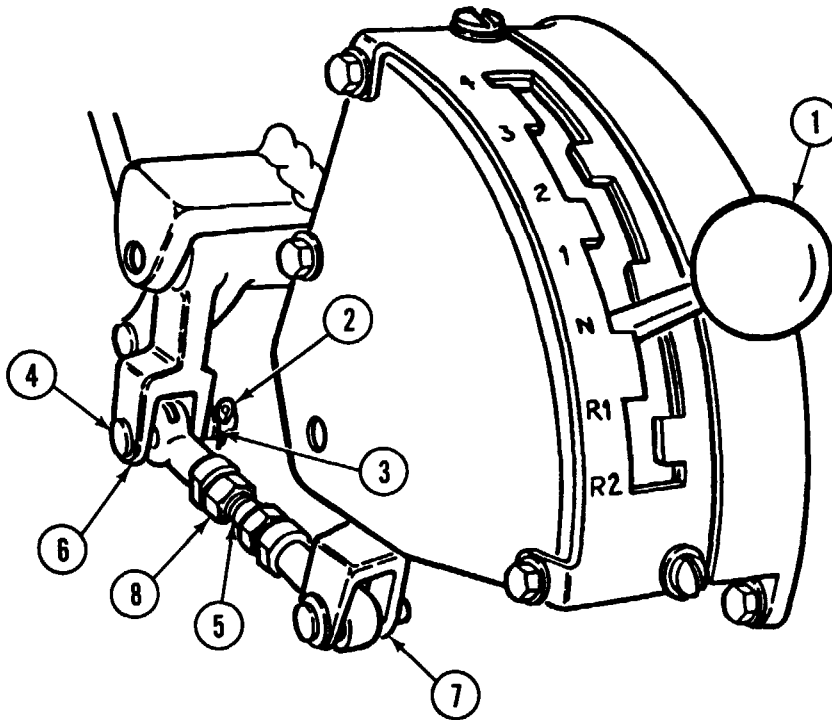
- A Remove two spring pins (1). Remove two shafts (2), shaft (3) and link (4) from base assembly. Discard spring pins.
- B Remove adapter (5) using 1-1/4 inch open-end wrench. Remove switch (6) and plunger (7) from adapter (5).
- C Remove spring pin (8). Remove shaft (9) and lever (10) from base (11). Discard spring pin.
- D Remove spring pin (12). Remove spring (13) and pin (14) from lever (10). Discard spring pin.

### ASSEMBLY

- A Install pin (14), spring (13) and new spring pin (12) in lever (10).
- B Install lever (10) in base (11) with shaft (9) and new spring pin (8).



- C Install plunger (7) and switch (6) in adapter (5). Install adapter (5).
- D Apply lubricant to shaft (3).
- E Install shaft (3) and link (4) on base assembly with two shafts (2) and two new spring pins (1).

**SHIFT CONTROL LINKAGE: ADJUSTMENT****ADJUSTMENT**

- A Open and secure air intake grille and driver's hatch.
- B Place shift selector (1) in neutral (N) position.
- C Remove cotter pin (2), flat washer (3) and clevis pin (4). Discard cotter pin.
- D Remove shift control inner rod (5) from bell crank arm (6).
- E Position bell crank arm (6) parallel to shift control arm (7) and in vertical position.

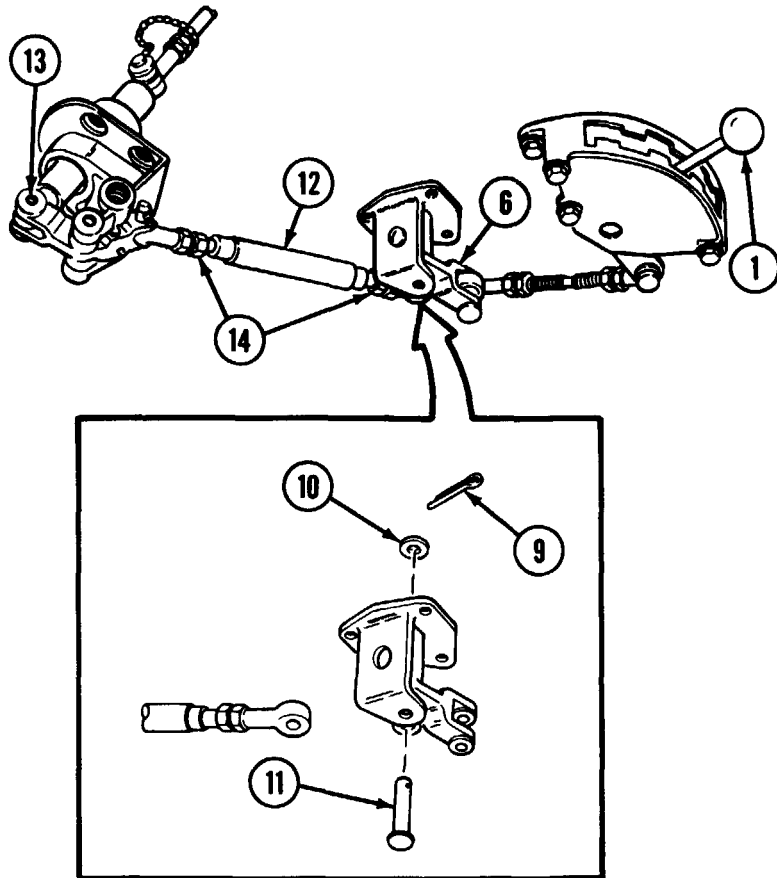
**NOTE**

Keep bell crank arm (6) parallel to arm (7).

- F Loosen two nuts (8).
- G Adjust shift control inner rod (5). Unscrew until clevis pin (4) can be installed easily.
- H Install new cotter pin (2), flat washer (3) and clevis pin (4) through bell crank arm (6) and rod (5).
- I Tighten two nuts (8).



## SHIFT CONTROL LINKAGE: ADJUSTMENT (CONTINUED)



J Remove cotter pin (9), flat washer (10) and clevis pin (11). Discard cotter pin.

K Remove shift control inner tube (12) from bell crank arm (6).

L Check base assembly (13) to ensure that the neutral safety switch is in neutral position. Verify by trying to crank engine after fuel shutoff has been pulled (p 5-11).

M Loosen two nuts (14),

### NOTE

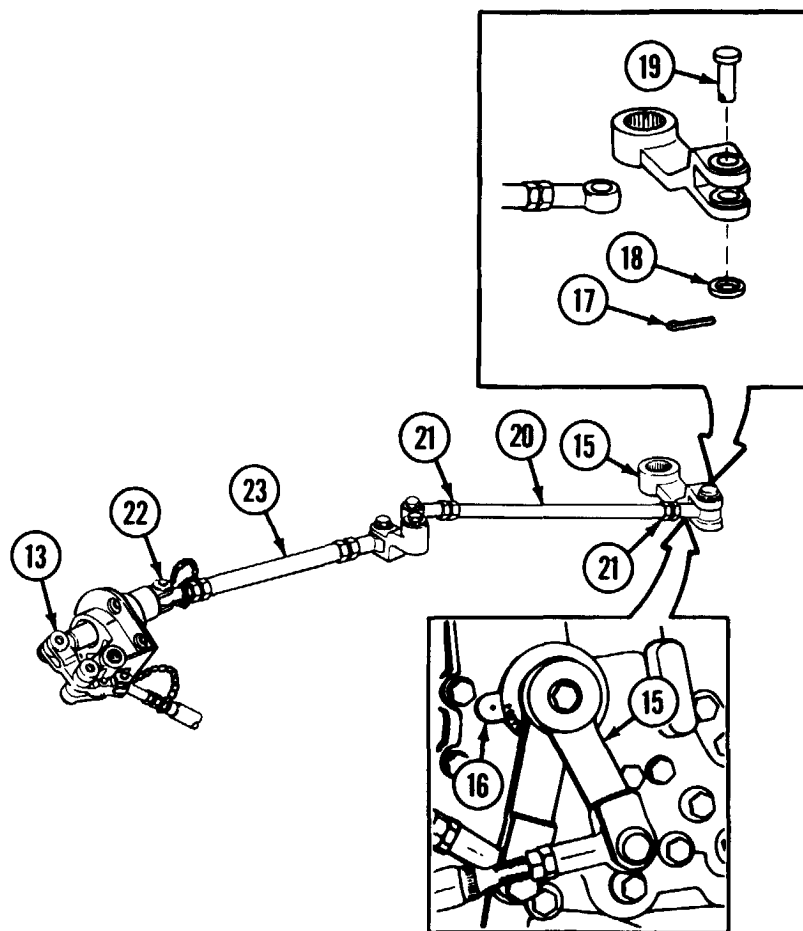
Keep shift selector (1) in neutral position.

N Adjust shift control inner tube (12). Unscrew until clevis pin (11) can be installed easily into bell crank arm (6).

O Install new cotter pin (9), flat washer (10) and clevis pin (11).

P Tighten two nuts (14).

## SHIFT CONTROL LINKAGE: ADJUSTMENT (CONTINUED)



- Q Check that shift control lever (15) is in neutral position at shift control lever index (16).
- R Remove cotter pin (17), flat washer (18) and clevis pin (19). Discard cotter pin.
- S Remove shift control outer rod (20) from shift control lever (15).
- T Loosen two nuts (21).
- U Adjust shift control outer rod (20). Screw/unscrew to approximately 8-1/4 inches, from center line bearing bore to center line bearing bore.

**NOTE**

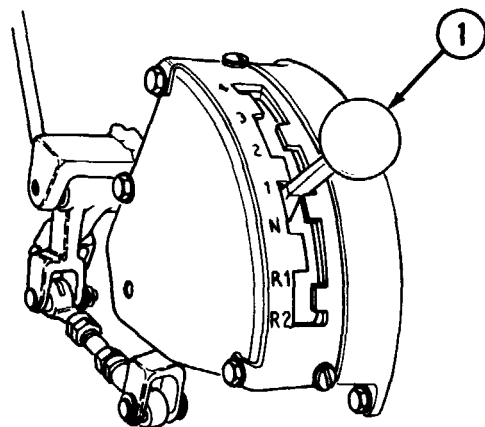
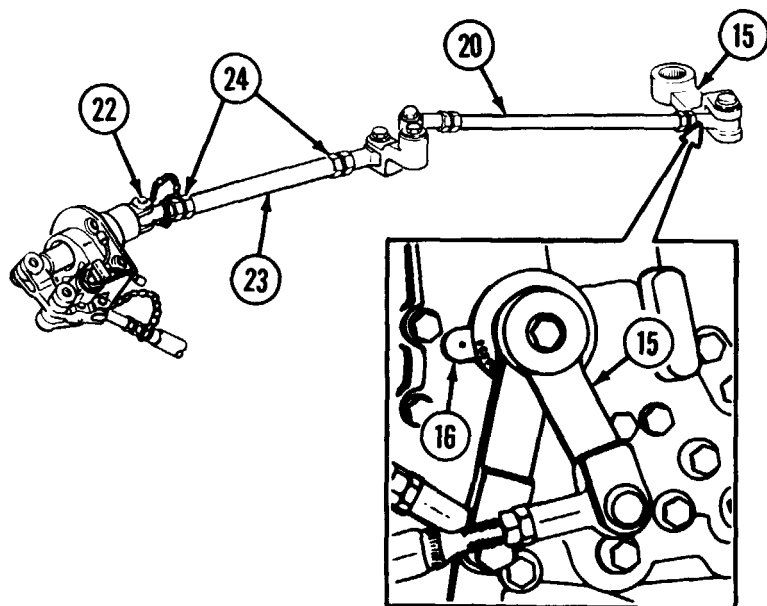
Check that shift control lever (15) is in neutral position at index (16).

- V Disconnect quick-disconnect pin (22).
- W Remove shift control outer tube (23) from base assembly (13).
- X Install shift control outer rod (20), clevis pin (19), flat washer (18) and new cotter pin (17).

**NOTE**

Check that shift control lever (15) is in neutral position at index (16).

## SHIFT CONTROL LINKAGE: ADJUSTMENT (CONTINUED)



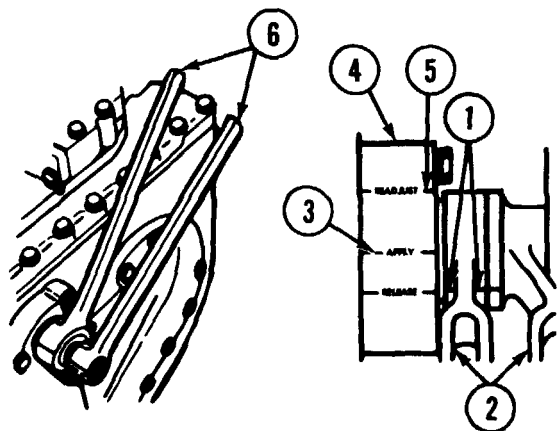
- Y Loosen two nuts (24).
- Z Adjust shift control outer tube (23). Unscrew until quick-disconnect pin (22) fits in easily.
- AA Install quick-disconnect pin (22).
- AB Tighten two nuts (24).

### WARNING

Verification of shift positions must be performed prior to starting engine. Failure to do so may result in personnel injury or damage to the vehicle.

- AC Move shift selector (1) through all positions. Verify shift selector (1) setting is same as shift control lever index (16) reading at all positions.
- AD Close and secure air intake grille and driver's hatch.

## TRANSMISSION INTERNAL BRAKE: ADJUSTMENT



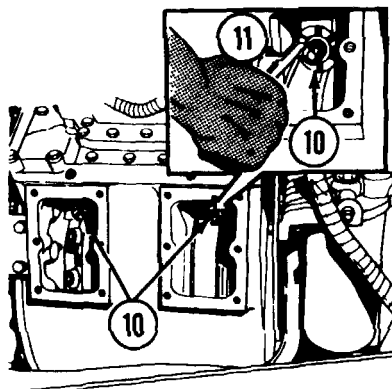
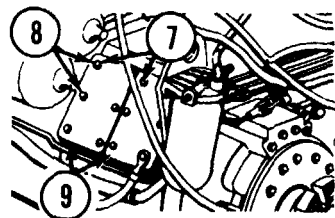
## ADJUSTMENT

## NOTE

If brake linkage is not installed, brakes may be adjusted using same procedure as outlined, except that special wrenches for brake adjustment may be used to apply brakes. Brakes should be applied to approximately 90 Lb-ft.

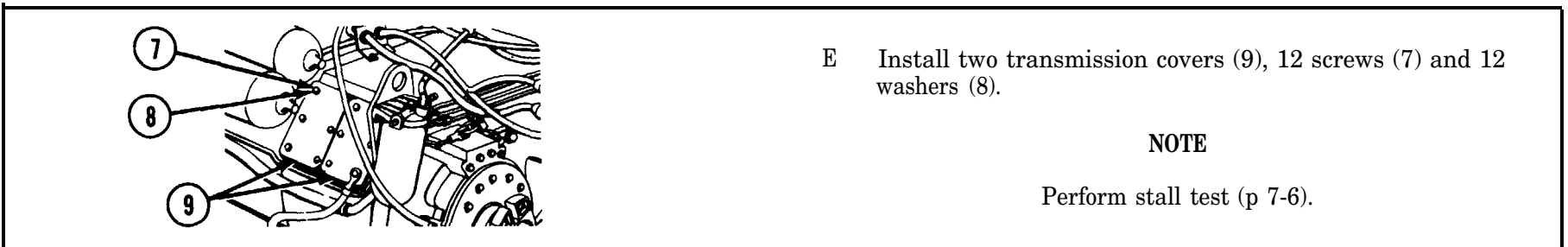
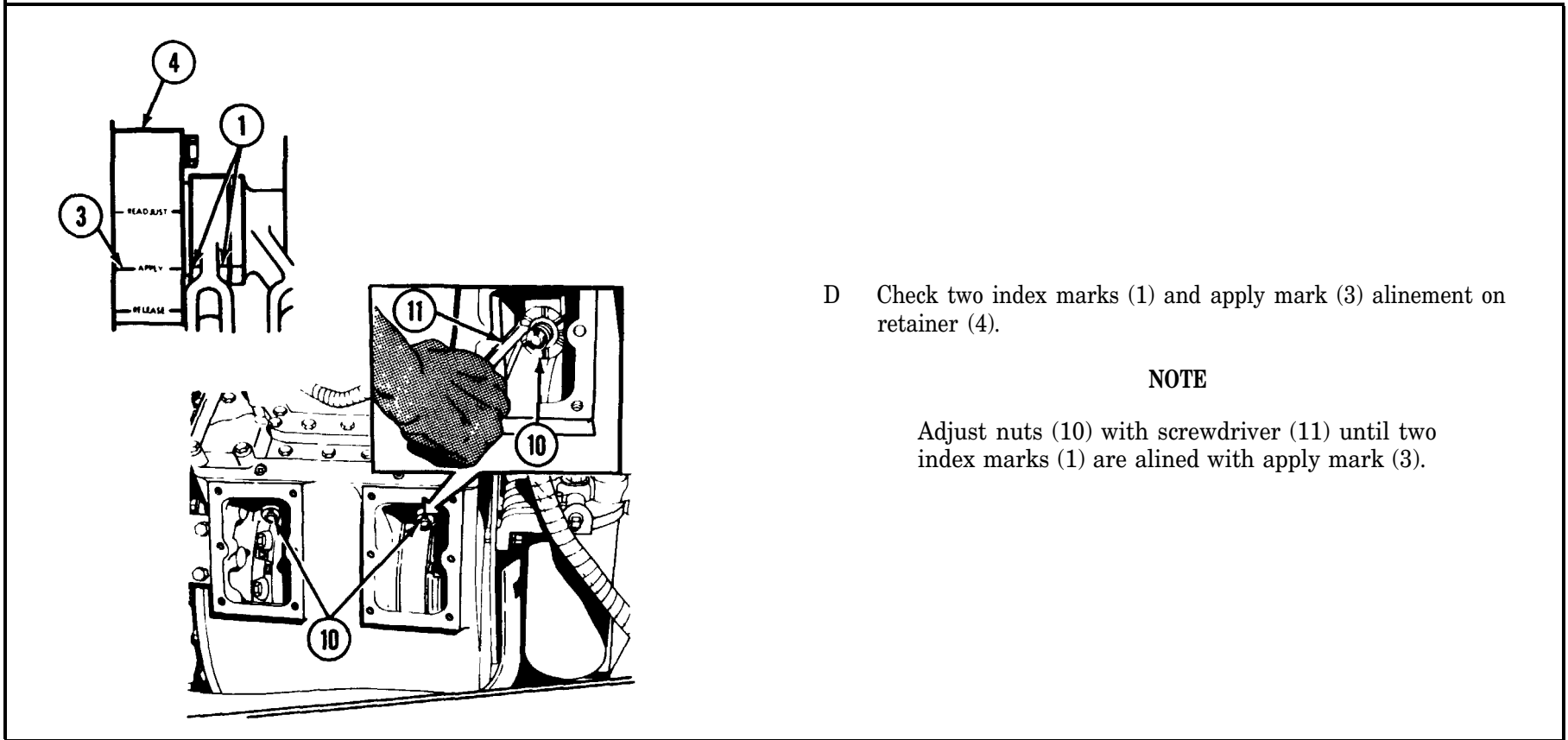
Check brake linkage adjustment.

Apply brakes fully and watch index marks (1) on brake levers (2). If index marks (1) rotate to APPLY mark (3) on retainer (4), but not to RE-ADJUST mark (5), brakes are not properly adjusted. If index marks (1) do not rotate to APPLY mark (3) or rotate past readjust mark (5), brakes must be readjusted.



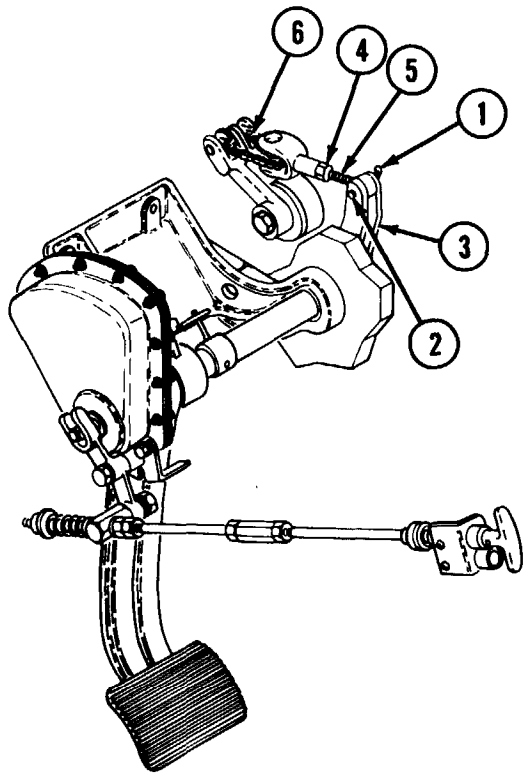
- A Remove 12 screws (7), 12 washers (8) and two transmission covers (9).
- B Adjust by rotating two nuts (10) counterclockwise to tighten and clockwise to loosen, using screwdriver (11).
- C Apply two brakes uniformly using brake adjust wrenches (6).

## TRANSMISSION INTERNAL BRAKE: ADJUSTMENT (CONTINUED)



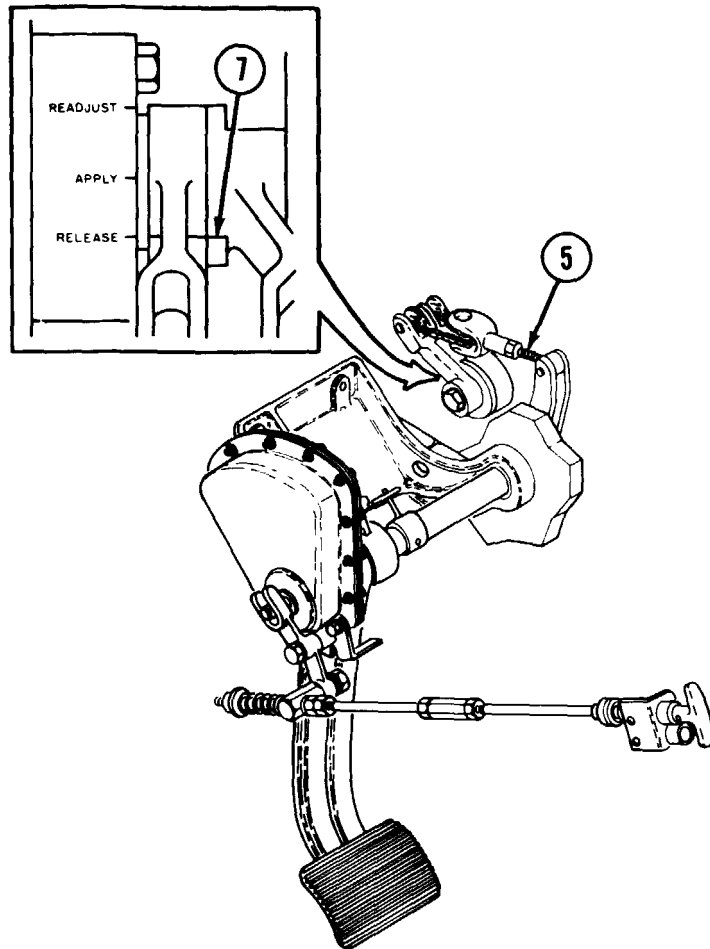
**SERVICE BRAKE LINKAGE: ADJUSTMENT****INITIAL SETUP**Equipment Condition:

Vehicle tracks blocked.

**ADJUSTMENT**

- A Open transmission access doors.
- B Remove cotter pin (1) and clevis pin (2) from shaft lever (3). Discard cotter pin.
- C Loosen locknut (4).
- D Rotate rod end (5) until all slack is removed from brake control sprocket chain (6) when brake shaft lever index marks are at 0 degrees.
- E Install clevis pin (2) and new cotter pin (1).

## SERVICE BRAKE LINKAGE: ADJUSTMENT (CONTINUED)



### NOTE

If not alined, adjust rod (5) until marks and release point (7) are alined.

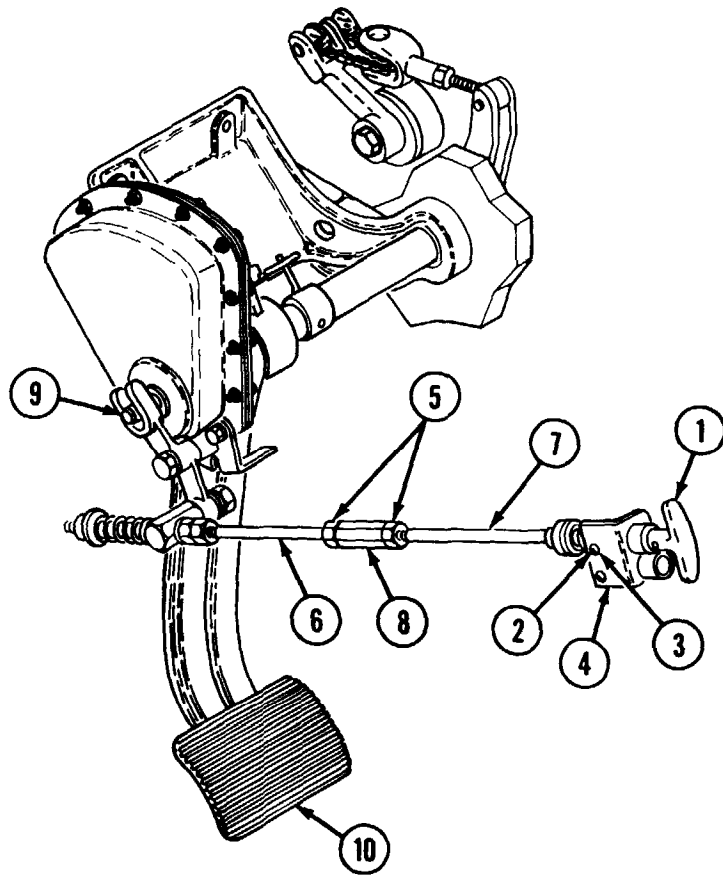
- F Check apply shaft index mark for alinement with release point (7).

### NOTE

If no further adjustment is possible, notify support maintenance.

- G Close transmission access doors.

TA57231

**PARKING BRAKE LINKAGE: ADJUSTMENT****ADJUSTMENT**

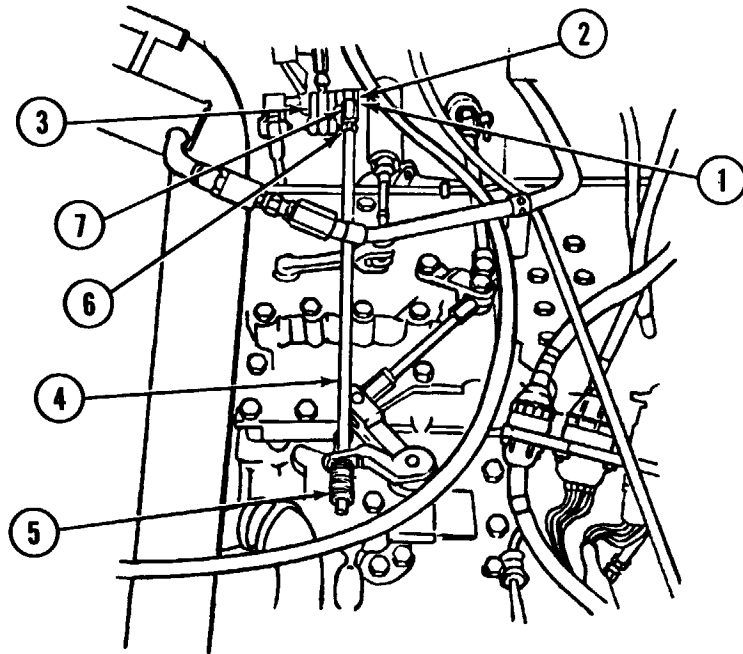
- A Unlock (up position) parking brake handle (1).
- B Remove two screws (2) and two lockwashers (3) to loosen bracket (4). Discard lockwashers.
- C Loosen two locknuts (5) at forward and rear brake control rods (6 and 7).
- D Turn connecting nut (8) in either direction until bracket screw holes (4) line up with mating holes (not shown), and no pressure is on bell crank (9) to drive holes.
- E Install two screws (2) and two new lockwashers (3) to secure bracket (4) to bulkhead.
- F Tighten two locknuts (5) on forward and rear brake control rods (6 and 7).
- G Depress service brake pedal (10) and pull back parking brake handle (1).
- H Release service brake pedal (10).

**NOTE**

Parking brakes should stay locked. If not, readjust.



## TRANSMISSION THROTTLE VALVE: ADJUSTMENT



- C Move transmission throttle valve control rod (4) against stop (towards driver's bulkhead).
- D Loosen nut (6).
- E Turn transmission throttle valve control rod ends (7) until pin (2) enters rod end and lever bracket freely. Turn 1/2 turn at a time.
- F Release accelerator pedal (p 7-47).
- G Rotate transmission throttle valve control rod end (7) two turns clockwise. Lengthen rod (4) and compress spring (5).
- H Tighten nut (6).
- I Install transmission throttle valve control rod (4), clevis pin (2) and new lockpin (1) on bracket (3).

### ADJUSTMENT

#### NOTE

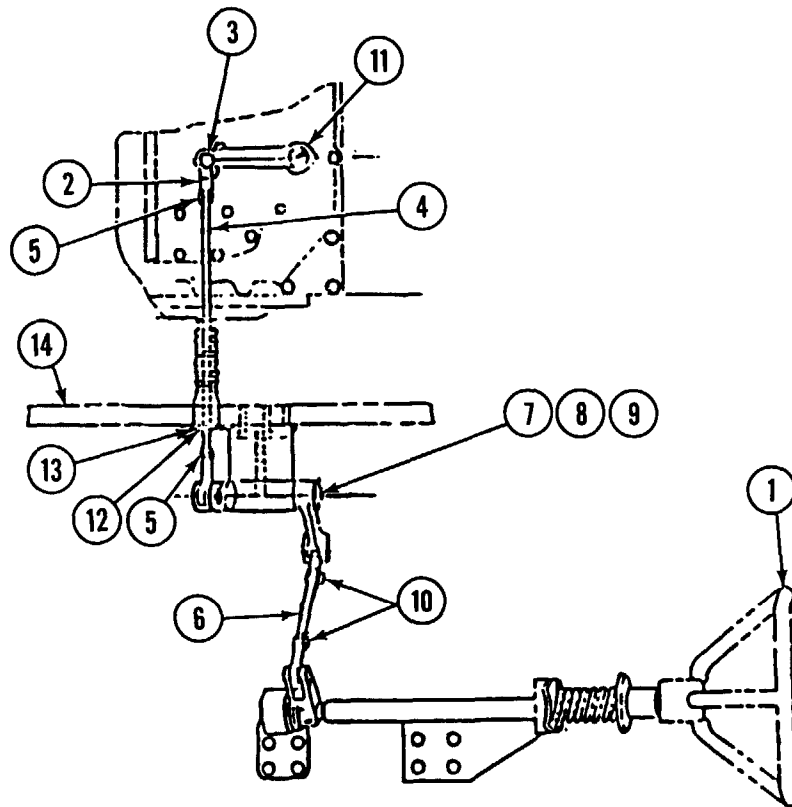
Perform engine throttle governor control rod adjustment (p 7-46).

A Remove lockpin (1), clevis pin (2) and transmission throttle valve control rod (4) from throttle control lever bracket (3). Discard lockpin.

B Hold accelerator pedal in depressed position (p 7-47).

**STEERING CONTROL LINKAGE: ADJUSTMENT****INITIAL SETUP****References:**

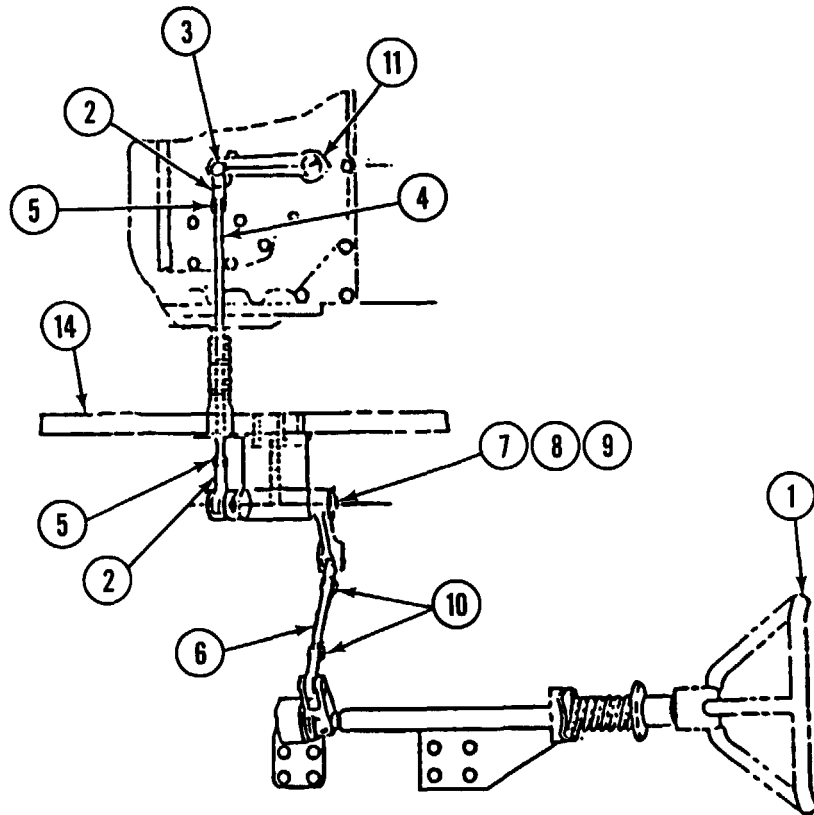
TM 9-2350-267-10

**ADJUSTMENT****NOTE**

- All adjustment to the steering linkage must result with steering shaftrod lever (11) in neutral position (pointer on transmission steering shaft points to center position).
- Steering wheel (1) must return to normal "forward" position (center spoke vertical).
- Quick disconnect pins (3) should easily insert through steering rod ends.

- A Turn steering wheel (1) full left and hold. Check for contact between rod end (2) and bottom of hole through bulkhead. If there is no contact proceed to step E.
- B Remove two quick release (3), two bolts (12) and lockwashers (13) from cover plate (14) and rod assembly (4).
- C Loosen two nuts (5) and adjust rod ends (2) to lengthen rod assembly (4).
- D Tighten nuts (5) and install rod assembly (4). Return to step A.
- E Turn steering wheel (1) full right and hold. Check for contact between rod end (2) and top of hole through bulkhead. If there is no contact proceed to step H.
- F Remove two quick disconnect pins (3), two bolts (12) and lockwashers (13) from cover plate (14) and rod assembly (4).
- G Loosen two nuts (5) and adjust rod ends (2) to shorten rod assembly (4). Return to step E.

## STEERING CONTROL LINKAGE: ADJUSTMENT (CONTINUED)



H Tighten nuts (5) and install rod assembly (4) and cover plate (14).

### NOTE

If any adjustment was made to rod assembly (4), and equal and opposite adjustment must be made to rod assembly (6) to maintain forward position of steering wheel. Proceed if necessary.

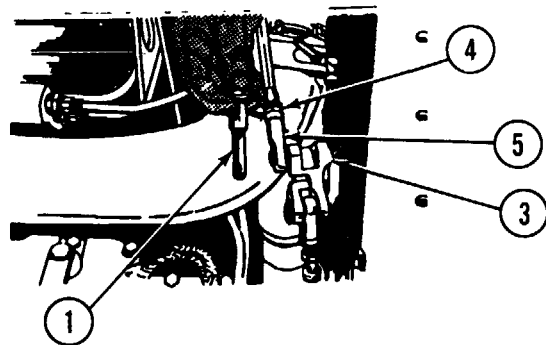
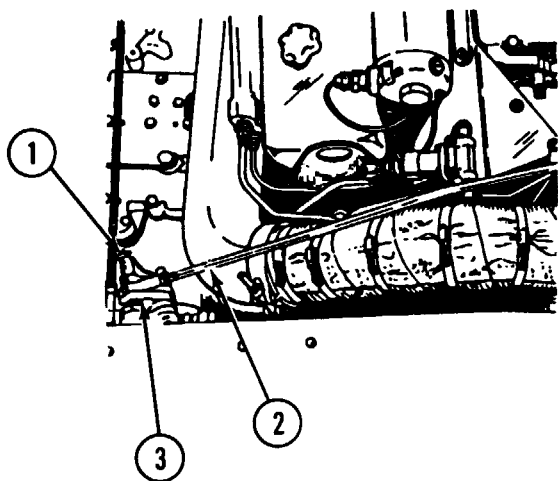
I Remove cotter pin (7), washer (8), and pin (9). Loosen two locknuts (10).

J Increase or decrease center to center distance between rod ends as needed.

K Check steering wheel (1). Center spoke should be vertical. If necessary, repeat step J.

L Tighten two locknuts (10).

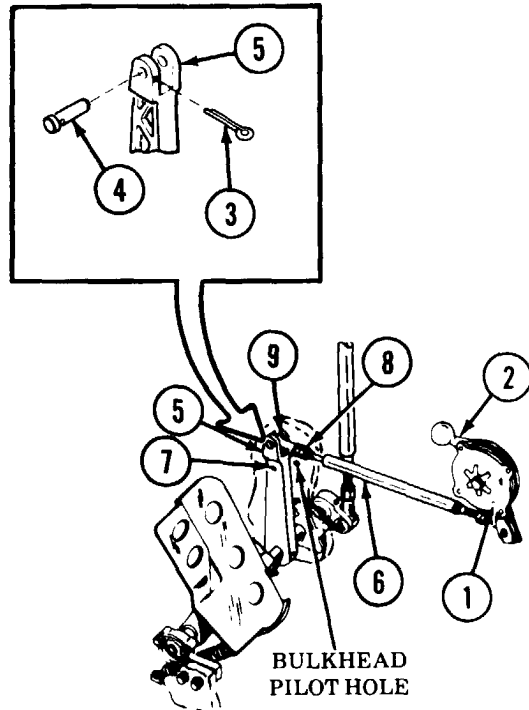
## ENGINE THROTTLE GOVERNOR CONTROL ROD: ADJUSTMENT



## ADJUSTMENT

- A Open and secure driver's hatch.
- B Open transmission doors.
- C Fully depress accelerator pedal.
- D Remove quick-release pin (1).
- E Disconnect engine throttle governor control rod (2) from throttle governor control rod lever (3).
- F Push throttle governor control rod (2) towards rear of vehicle.
- G Loosen locknut (4).
- H Turn rod end (5) until pin (1) can be easily installed.
- I Tighten locknut (4).
- J Install rod (2) on lever (3) with pin (1).
- K Perform stall test (p 7-6). If malfunctioning continues, notify support maintenance.
- L Close transmission doors.
- M Close and secure driver's hatch.

## HAND THROTTLE CONTROL ROD AND ACCELERATOR PEDAL: ADJUSTMENT



### ADJUSTMENT

A Open and secure driver's hatch.

### NOTE

- 1/4-inch dowel may be used.
- Dowel fits through lever and into bulkhead pilot hole.

B Insert 1/4-inch diameter dowel pin into positioning hole (1) on throttle lever cover (2).

C Remove cotter pin (3) and clevis pin (4) from throttle lever (5). Discard cotter pin.

D Remove control rod (6) from throttle lever (5).

E Insert 1/4-inch diameter dowel pin into positioning hole (7).

F Loosen locknut (8).

G Adjust rod end (9) until clevis pin (4) can be inserted easily.

H Tighten locknut (8).

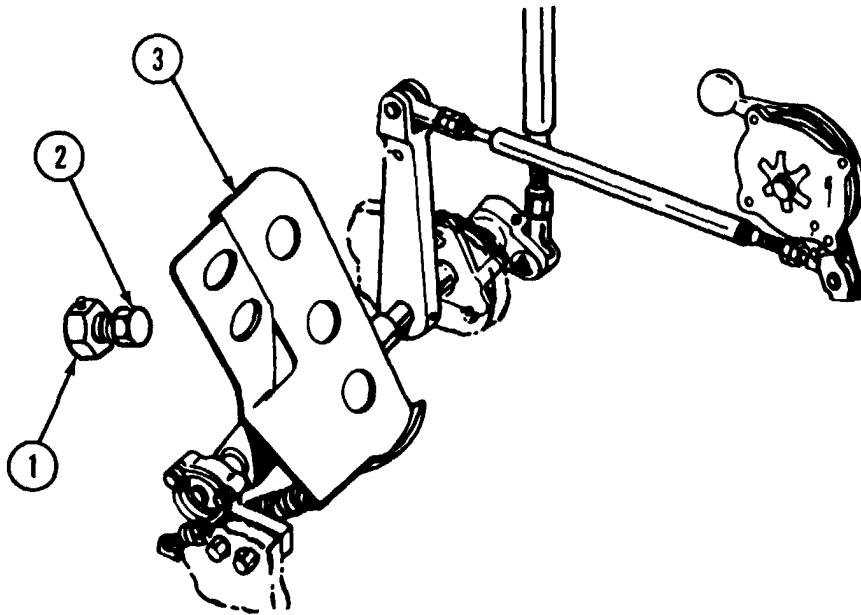
I Install rod (6), new cotter pin (3) and clevis pin (4).

J Remove dowel pins in positioning holes (1 and 7).

K Start engine with throttle control closed.

L Check tachometer. Engine should be at idle speed (650 rpm).

M Close driver's hatch.

**ACCELERATOR PEDAL: ADJUSTMENT****ADJUSTMENT**

A Open and secure driver's hatch.

**NOTE**

Make certain hand throttle is properly adjusted.

B Loosen jamnut (1).

C Screw adjusting screw (2) into maximum depth.

D Depress accelerator pedal (3) until it stops, and hold in depressed position.

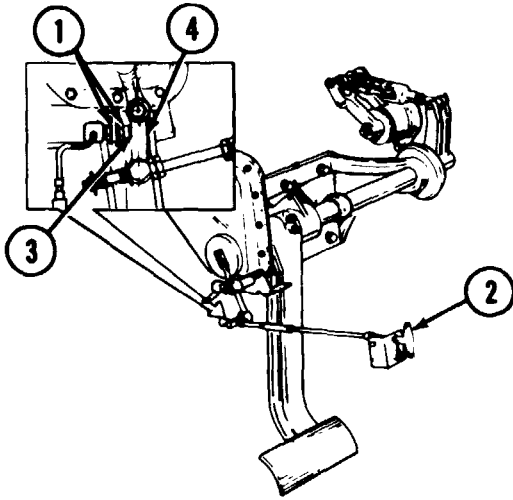
E Unscrew adjusting screw (2) until it touches depressed pedal (3).

F Tighten jamnut (1).

G Perform stall test (p 7-6). If malfunctioning continues notify support maintenance.

H Close driver's hatch.

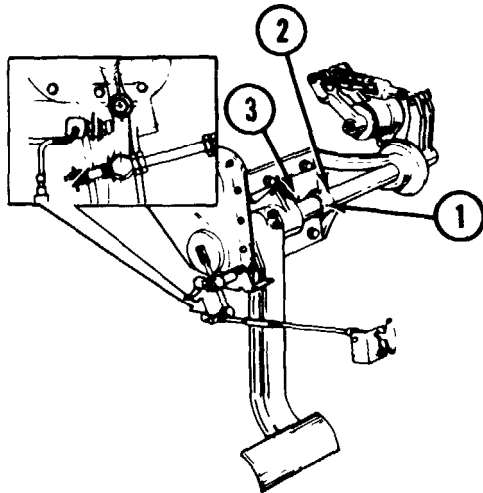
## WARNING LIGHT SWITCH: ADJUSTMENT



### ADJUSTMENT

- A Loosen two locknuts (1).
- B Move parking brake handle (2) out  $\frac{3}{8}$  inch.
- C Adjust locknut (1) on back of switch (3) until switch touches arm (4).
- D Tighten front locknut (1).

## STOPLIGHT SWITCH: ADJUSTMENT



### ADJUSTMENT

- A Depress brake pedal  $\frac{3}{4}$  inch.
- B Lock brakes.
- C Loosen two socket head screws (1).
- D Turn stoplight actuator (2) until it touches switch (3).
- E Tighten two socket head screws (1).

# SPEEDOMETER AND TACHOMETER SYSTEMS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

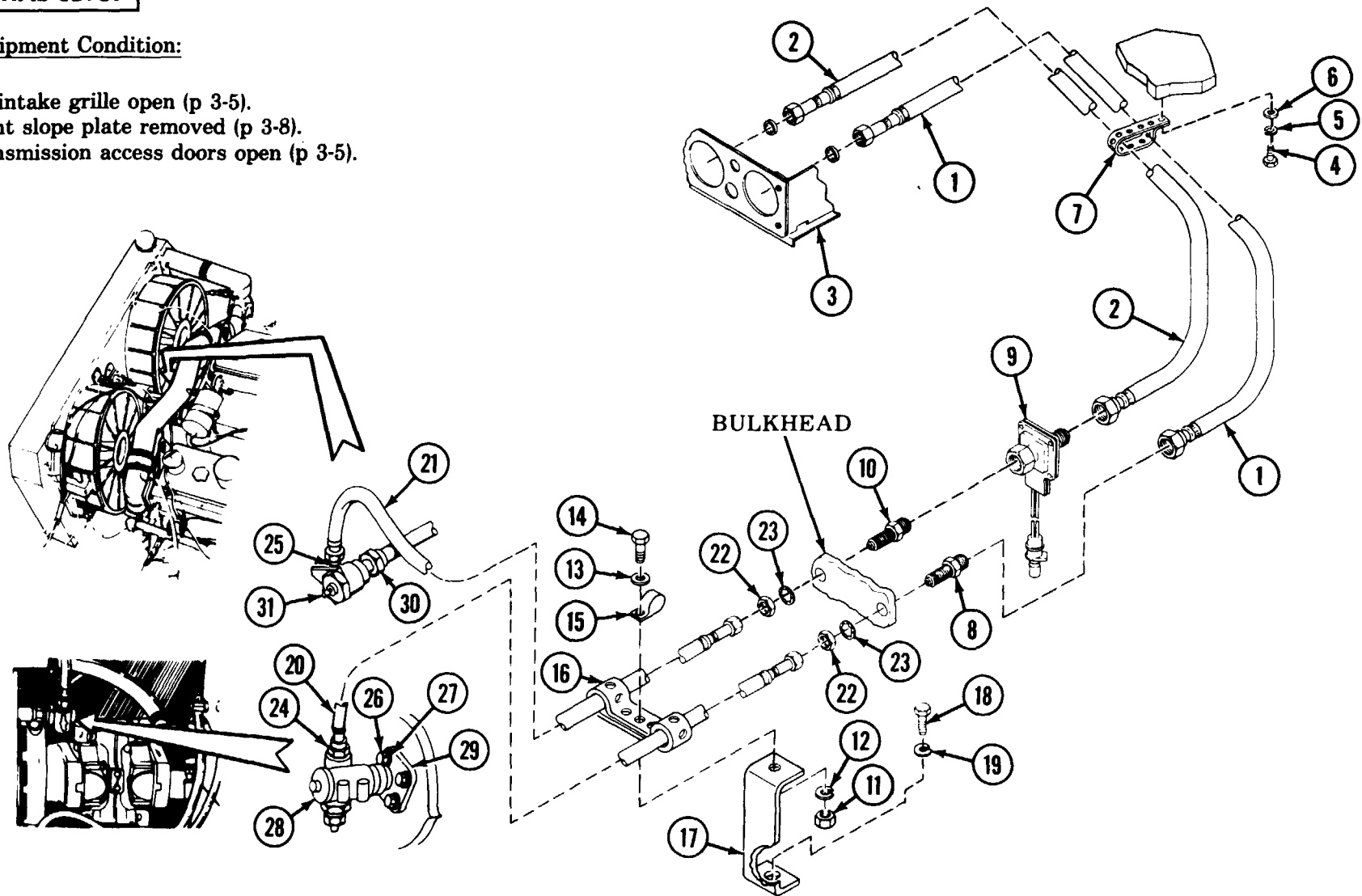
## INITIAL SETUP

### Equipment Condition:

Air intake grille open (p 3-5).

Front slope plate removed (p 3-8).

Transmission access doors open (p 3-5).





## SPEEDOMETER AND TACHOMETER SYSTEMS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### REMOVAL

#### WARNING

Air intake grille is held by support arm when in open position. Ensure that support arm secures air intake grille after opening. Failure to comply may result in personnel injury or death.

#### NOTE

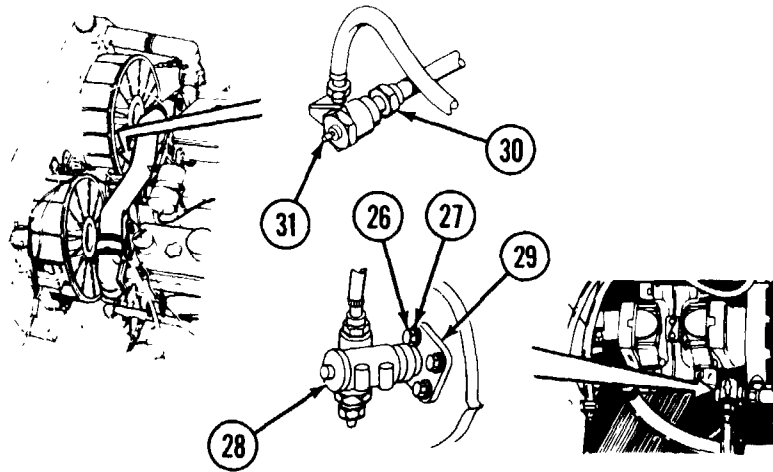
Driver's portable instrument panel may have to be removed for access to cables.

- A Disconnect speedometer shaft assembly (1) and tachometer shaft assembly (2) from driver's instrument panel (3).
- B Remove two screws (4), two lockwashers (5), two flat washers (6) and two straps (7) (located in driver's compartment). Discard lockwashers.
- C Disconnect speedometer shaft assembly (1) from adapter (8) at bulkhead and remove speedometer shaft assembly (1) from driver's compartment.
- D Disconnect tachometer shaft assembly (2) from STE/ICE pulse tachometer (9) and remove tachometer shaft assembly (2) from driver's compartment.
- E Remove STE/ICE pulse tachometer (9) from adapter (10).

#### CAUTION

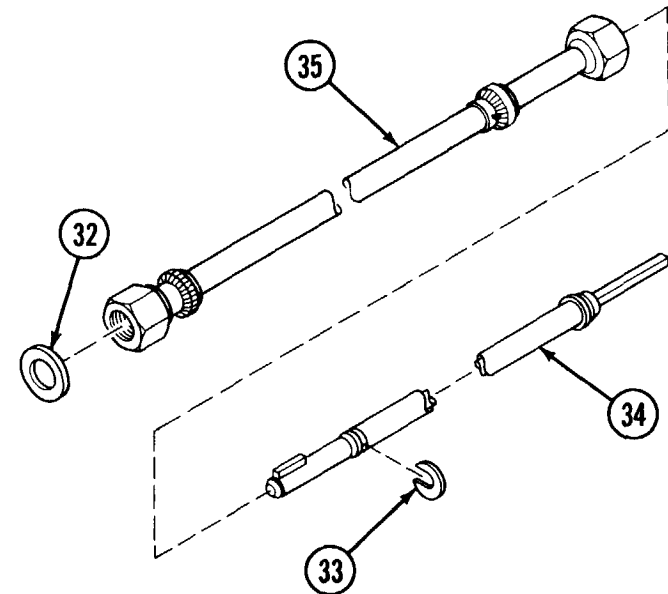
Loose hardware can fall into engine compartment. Be sure that any dropped hardware is recovered before continuing with maintenance. Failure to comply may result in equipment damage.

- F Remove nut (11), lockwasher (12), flat washer (13), screw (14), fuel line retaining strap (15) and retaining strap (16) at support bracket (17) on transmission. Discard lockwasher.
- G Remove screw (18), lockwasher (19), and support bracket (17) from transmission compartment. Discard lockwasher.
- H Disconnect speedometer flexible drive shaft (20) and tachometer flexible drive shaft (21) from adapters (8 and 10).
- I Remove two nuts (22), two lockwashers (23) and two adapters (8 and 10) from bulkhead. Discard lockwashers.
- J Disconnect speedometer drive shaft (20) from drive joint (24).
- K Remove tachometer drive shaft (21) from drive joint (25).

**SPEEDOMETER AND TACHOMETER SYSTEMS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

**NOTE**

Speedometer adapter has a keyed pin. During removal of adapter, remove and store pin until ready for installation. Speedometer will not work without pin.

- L Remove four screws (26), four lockwashers (27) and speedometer adapter (28) with preformed packing (hidden) from adapter at transmission. Discard lockwashers and preformed packing.
- M Separate speedometer adapter (28) from adapter (29).
- N Remove nut (30) and tachometer drive shaft adapter (31) from adapter on engine, adjacent to generator housing.


**DISASSEMBLY**
**NOTE**

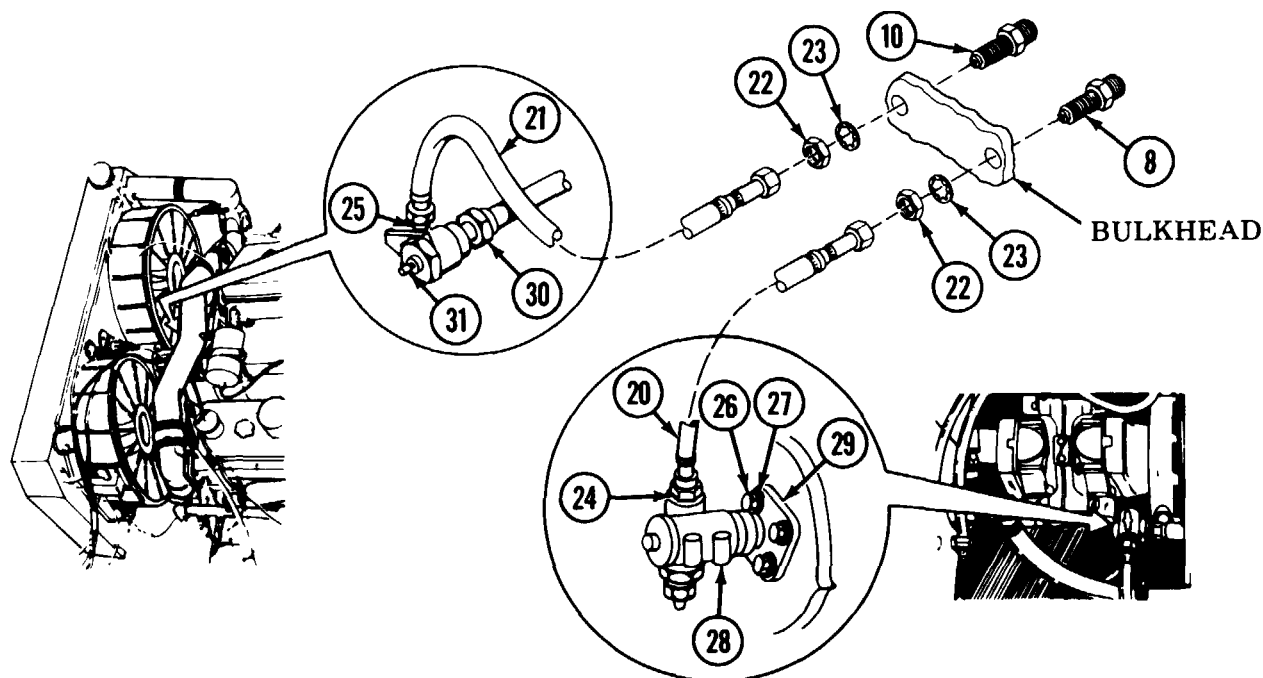
Disassembly procedures apply to speedometer and tachometer shaft assemblies.

- A Remove gasket (32) and slotted washer (33).
- B Remove flexible drive shaft core (34) from shaft assembly (35).

**ASSEMBLY**

- A Install flexible drive shaft core (34) in shaft assembly (35).
- B Install slotted washer (33) and gasket (32).

SPEEDOMETER AND TACHOMETER SYSTEMS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



INSTALLATION

- A Install tachometer drive shaft adapter (31) and nut (30) on adapter at engine, adjacent to generator housing.

NOTE

Speedometer adapter has a keyed pin. Insert pin during installation. Speedometer will not work without pin.

- B Connect adapter (29) and speedometer adapter (28).

- C Install speedometer adapter (28) and new preformed packing (hidden) on adapter at transmission housing with four screws (26) and four new lockwashers (27).

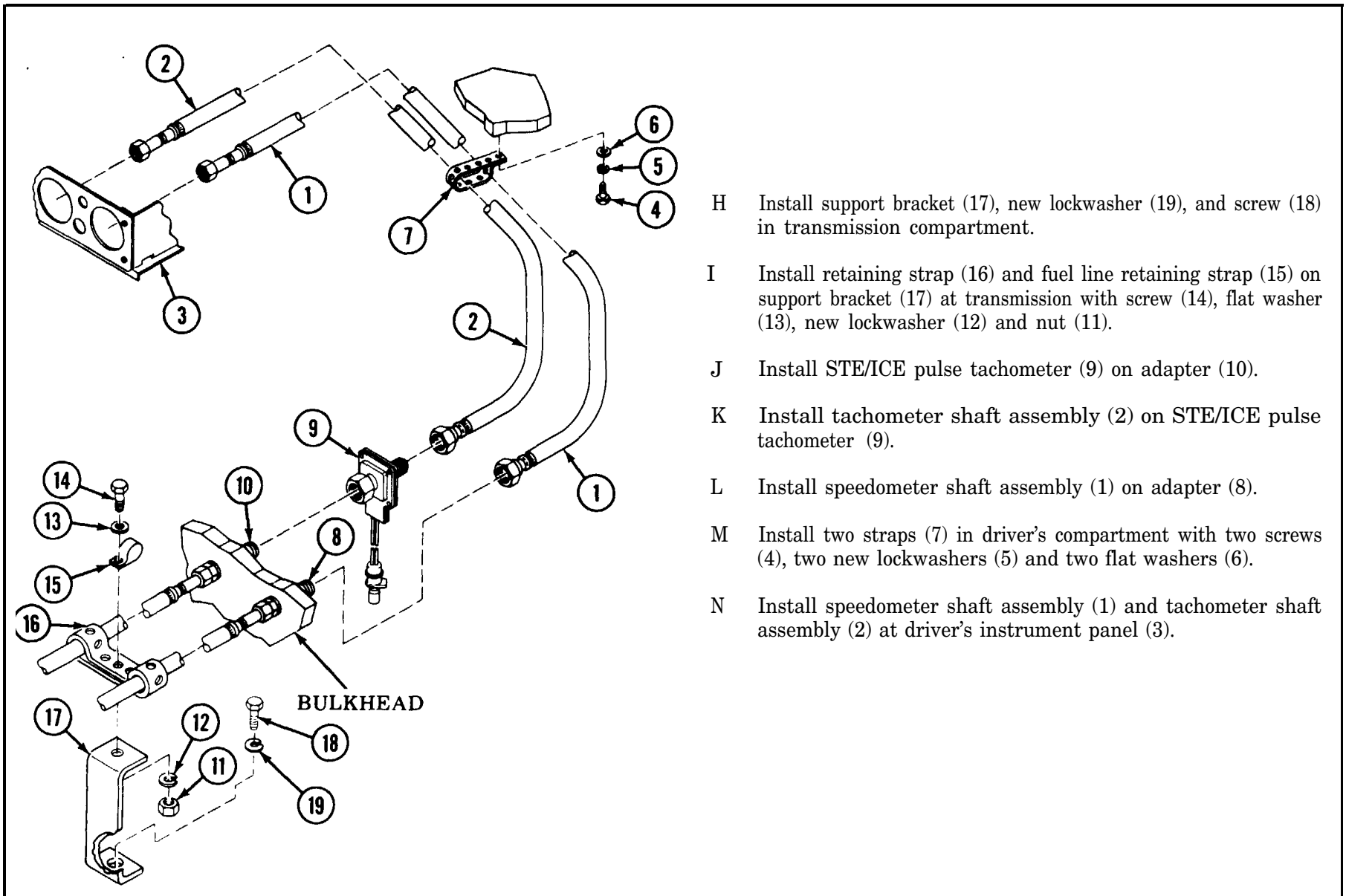
- D Install tachometer drive shaft (21) at drive joint (25).

- E Install speedometer drive shaft (20) at drive joint (24).

- F Install two adapters (8 and 10), two new lockwashers (23) and two nuts (22) at bulkhead.

- G Connect speedometer drive shaft (20) and tachometer drive shaft (21) to adapters (8 and 10).

## SPEEDOMETER AND TACHOMETER SYSTEMS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



H Install support bracket (17), new lockwasher (19), and screw (18) in transmission compartment.

I Install retaining strap (16) and fuel line retaining strap (15) on support bracket (17) at transmission with screw (14), flat washer (13), new lockwasher (12) and nut (11).

J Install STE/ICE pulse tachometer (9) on adapter (10).

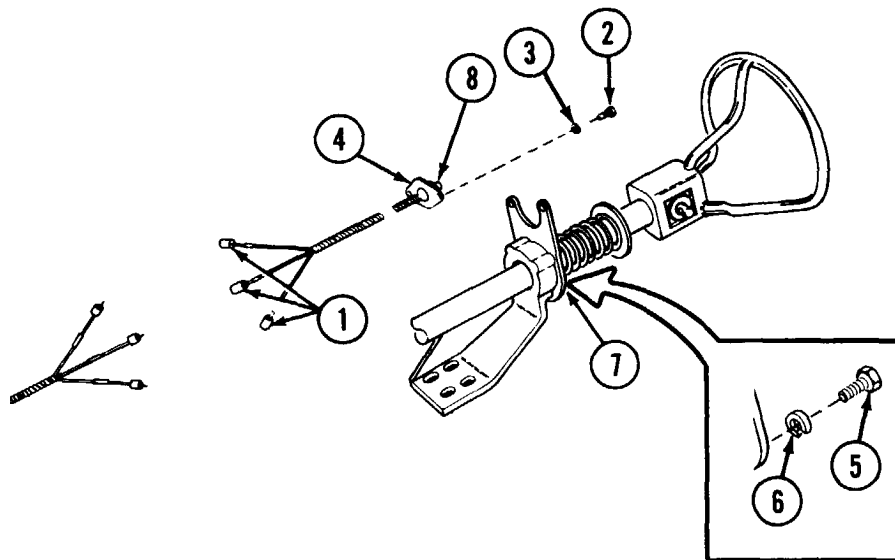
K Install tachometer shaft assembly (2) on STE/ICE pulse tachometer (9).

L Install speedometer shaft assembly (1) on adapter (8).

M Install two straps (7) in driver's compartment with two screws (4), two new lockwashers (5) and two flat washers (6).

N Install speedometer shaft assembly (1) and tachometer shaft assembly (2) at driver's instrument panel (3).

## MASTER WARNING LIGHT (STEERING SHAFT): REMOVAL AND INSTALLATION



### REMOVAL

- A Disconnect three electrical connectors (1) (p 6-84 for wire and connector identifiers).
- B Remove two screws (2) and two lockwashers (3).
- C Remove master warning lights (4).
- D Remove three screws (5) and three lockwashers (6).

### NOTE

To remove mounting bracket (7), remove steering wheel (p 7-44).

- E Remove mounting bracket (7) from steering column.

### INSTALLATION

Install master warning light in reverse order of removal. (See p 6-84 for wire and connector identification).

### NOTE

For replacement of bulb, unscrew cap (8). Push in on bulb and turn bulb counterclockwise.



## **CHAPTER 8**

### **TRACKS, SUSPENSION SYSTEM, FINAL DRIVES AND UNIVERSAL JOINTS MAINTENANCE INSTRUCTIONS**

---

#### **CHAPTER OVERVIEW**

This chapter illustrates and defines procedures for removal, disassembly, assembly, installation, checking and adjusting the M992 Track Suspension, Final Drive and Universal Joint assemblies.

Procedures and functions discussed in this chapter are in compliance with authorized organizational maintenance responsibilities as defined in the MAC.

Section I Tracks  
Section II Suspension System  
Section III Final Drives and Universal Joints

---

#### **Section I TRACKS**

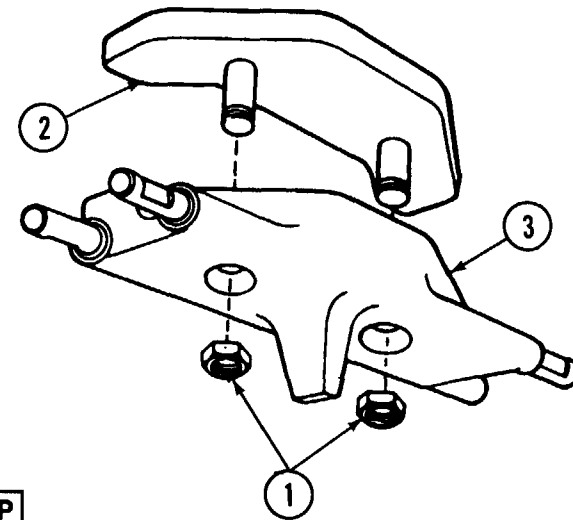
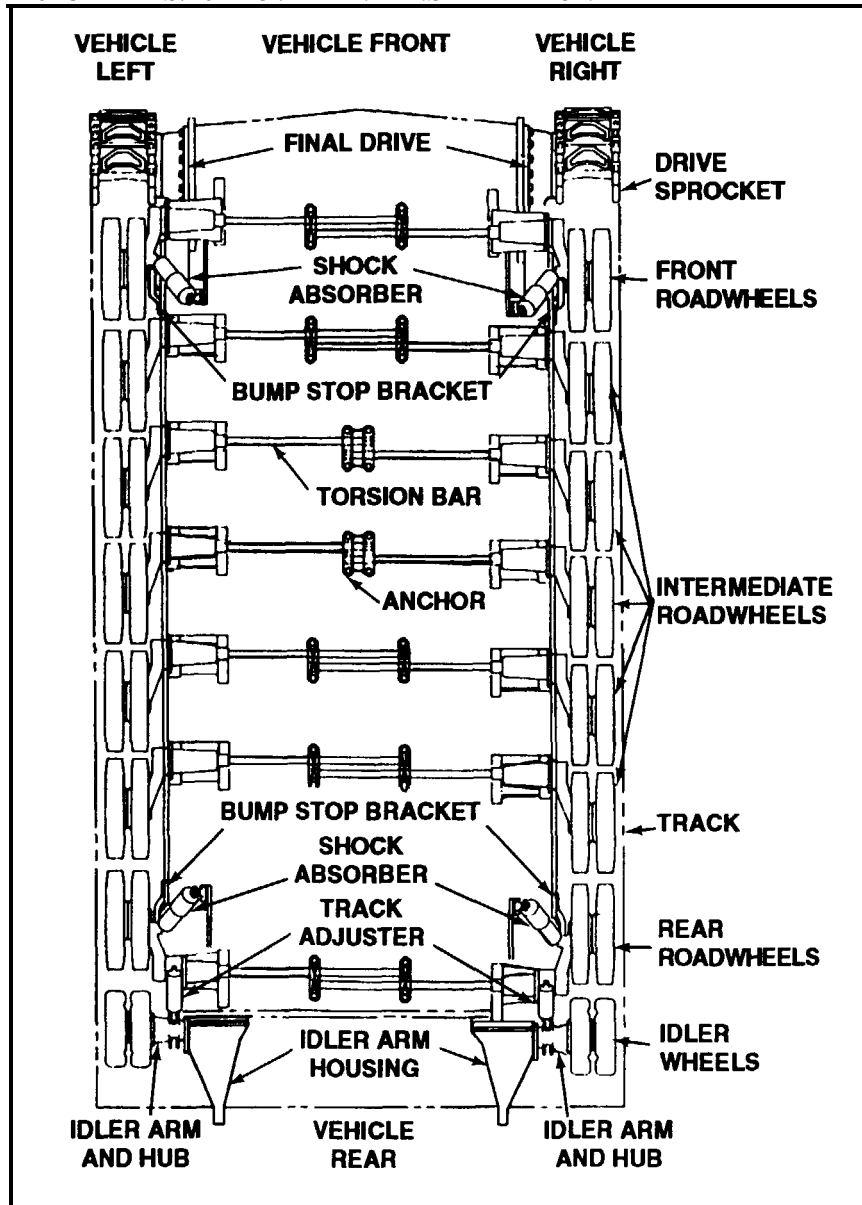
##### **GENERAL**

This section contains instructions on how to remove, check adjust, and install the tracks. The tracks consist of the following

- Track pads
- Track replacement
- Track tension

This maintenance procedures are given under the following headings:

- Track pad removal (p 8-2)
- Track shoe removal (p 8-3)
- Thrown track and track replacement (p 8-5)
- Track tension checking (p 8-8)

**TRACK PADS: REMOVAL AND INSTALLATION****INITIAL SETUP**Test Equipment/Special Tools

General mechanic's tool kit (item 52, Appx B)

Wrench, torque, 1/2 in. dr, 0-175 lb-ft (item 74, Appx B)

**REMOVAL**

- A Remove and discard two nuts (1).
- B Discard track pad (2).

**INSTALLATION**

- A Clean track shoe (3).
- B Install new track pad (2) with two new nuts (1).
- C Torque new nuts to 40-45 lb-ft.

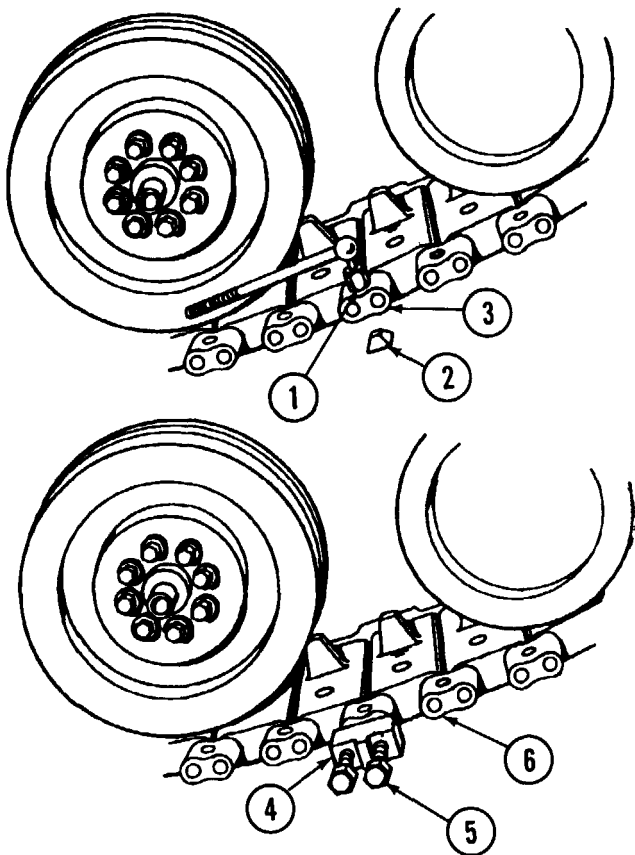


## TRACK SHOES: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Fixture, track connecting (item 7, Appx B)  
General mechanic's tool kit (item 52, Appx B)  
Puller, end connector track (item 13, Appx B)  
Wrench, torque 1/2 in. dr, 0-175 lb-ft (item 74, Appx B)



### REMOVAL

#### NOTE

Move vehicle so that track shoe to be removed is off the ground, either between the roadwheel and the idler wheel or between the drive sprocket and the front roadwheels.

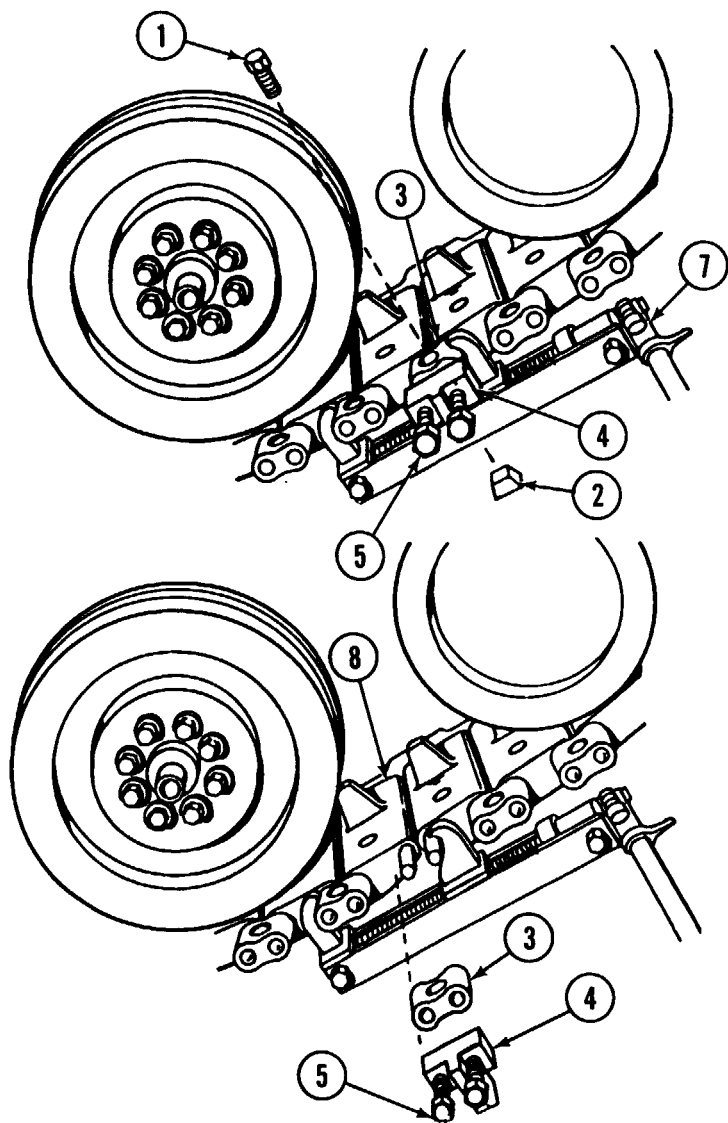
#### NOTE

Locking hardware is designed for one time use only. All self-locking fasteners must be replaced upon removal.

- A Decrease track tension (p 8-8).
- B Remove four bolts (1) and retaining wedges (2) from four end connectors (3). Discard bolts.
- C Install end connector puller (4).
- D Tighten two screws (5) against ends of track link pins (6).

#### NOTE

Tighten until connectors move outward approximately 1 inch.

**TRACK SHOES: REMOVAL AND INSTALLATION (CONTINUED)**

- E Install track connecting fixture (7) with jaws on end connectors (3) holding shoe to be replaced.
- F Remove four end connectors (3), end connector puller (4) with screws (5), and track shoe (8).

**WARNING**

Before removing track connecting fixtures, support weight of track with crowbar to lower track to ground.

**NOTE**

Track removal: Use same procedures for removal of shoe, but remove only two end connectors.

**INSTALLATION**

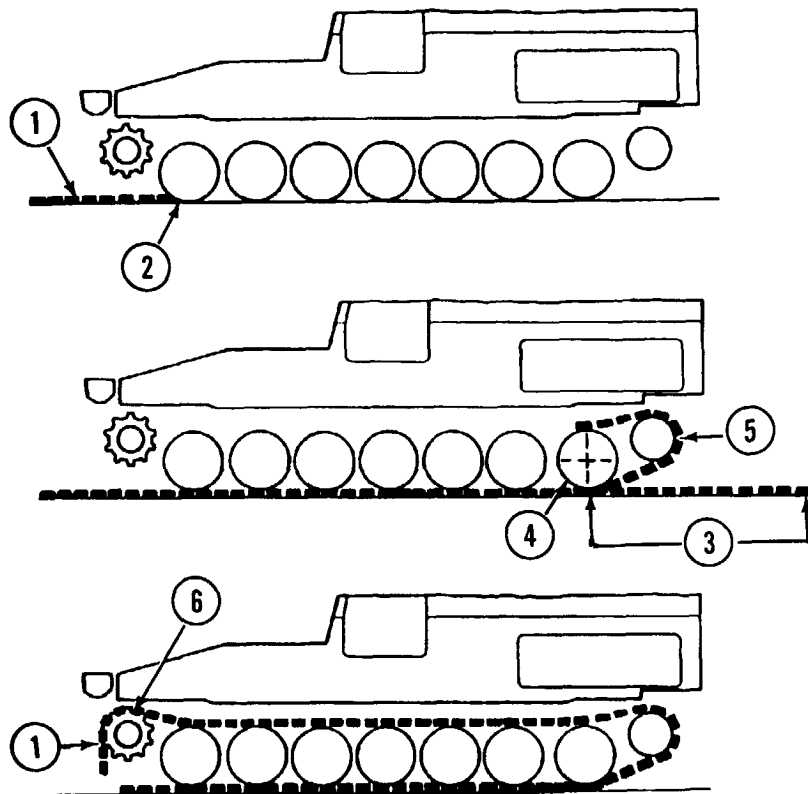
- A Reverse removal procedures.
- B Torque new bolt (1) and retaining wedge (2) to 90 to 100 lb-ft.

## THROWN TRACK AND TRACK REPLACEMENT: INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Crowbar, tanker (item 40, Appx B)  
Fixture, track connecting (item 7, Appx B)  
General mechanic's tool kit (item 52, Appx B)  
Wrench, torque, ½ in. dr, 0-175 lb-ft. (item 74, Appx B)



### INSTALLATION

- A Lay track (1) out (in front of vehicle) in a straight line, touching first roadwheel (2).

#### CAUTION

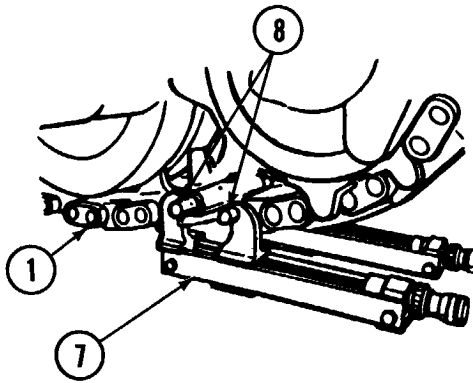
Use extreme care when moving vehicle on only one track. Drive slowly, moving only short distances.

- B Drive slowly onto track until 11 track shoes (3) extend past centerline of last roadwheel (4).  
C Lift track (1) with tanker bar over idler wheel (5) to top of last roadwheel (4).

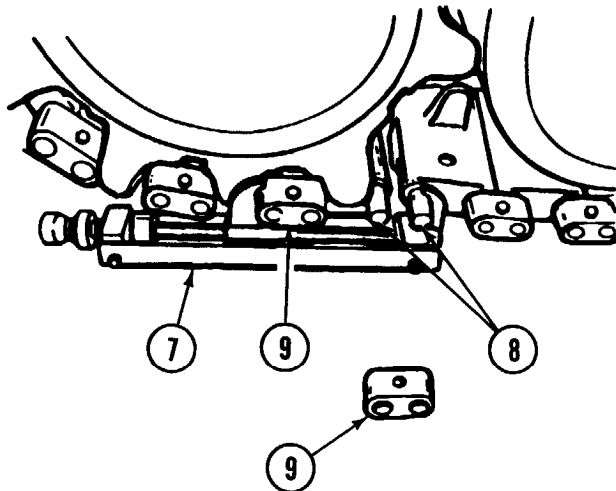
#### CAUTION

Raise end of track with crowbar to prevent it from getting caught between roadwheels.

- D Shift lever into F-1.  
E Drive M992 slowly.  
F Steer in direction of removed track (1).  
G Stop when track can be laid on drive sprocket (6).  
H Steer towards opposite track (1).  
I Move forward slowly.

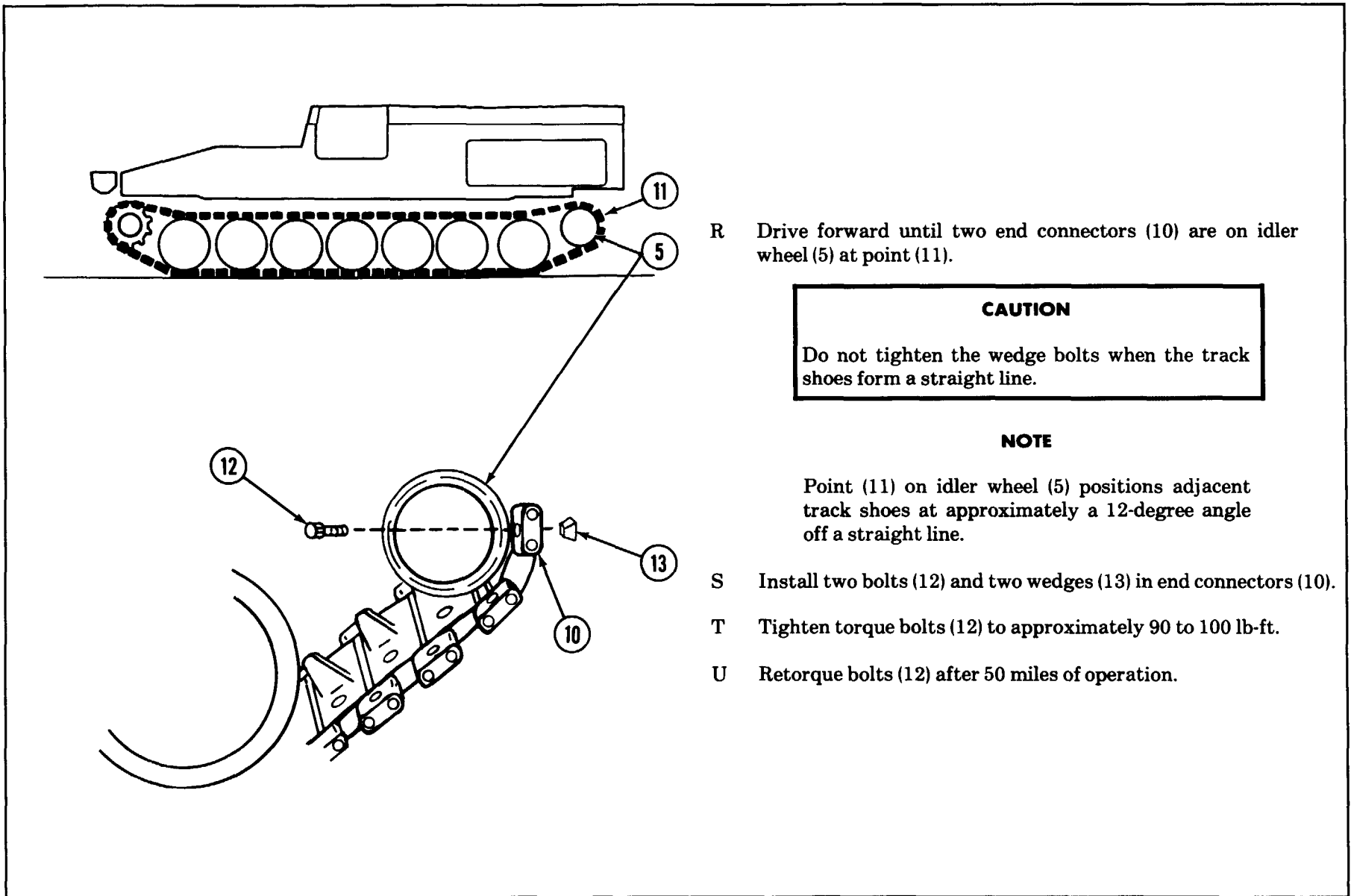
**THROWN TRACK AND TRACK REPLACEMENT: INSTALLATION (CONTINUED)**

- J Stop vehicle when track connecting fixture (7) can be connected to track end link pins (8) on both ends of track (1).
- K Apply parking brakes.
- L Install two track connecting fixtures (7) over track end link pins (8).



- M Tighten two track connecting fixtures (7) until track end link pins (8) are close enough to install end connectors (9).
- N Install two end connectors (9). Tap lightly with hammer to install.
- O Remove two track connecting fixtures (7).
- P Torque bolt and retaining wedge on connector (9) to 90 to 100 lb-ft.

THROWN TRACK AND TRACK REPLACEMENT: INSTALLATION (CONTINUED)



- R Drive forward until two end connectors (10) are on idler wheel (5) at point (11).

**CAUTION**

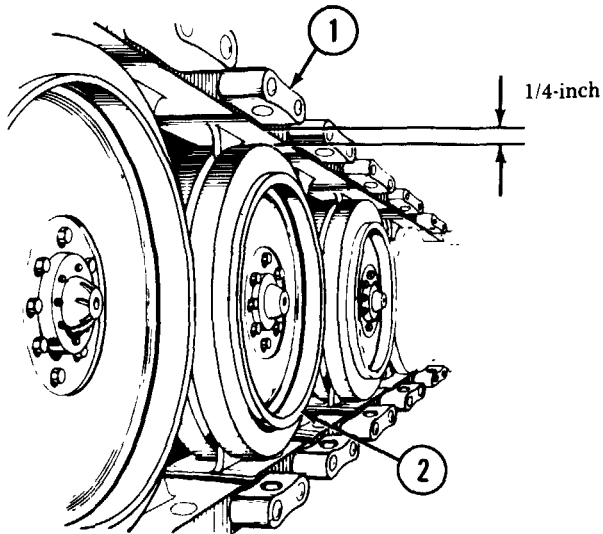
Do not tighten the wedge bolts when the track shoes form a straight line.

**NOTE**

Point (11) on idler wheel (5) positions adjacent track shoes at approximately a 12-degree angle off a straight line.

- S Install two bolts (12) and two wedges (13) in end connectors (10).  
T Tighten torque bolts (12) to approximately 90 to 100 lb-ft.  
U Retorque bolts (12) after 50 miles of operation.

## TRACK TENSION: CHECKING AND ADJUSTING



### CHECKING

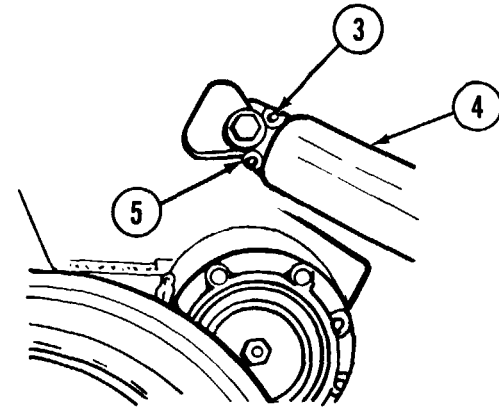
#### A Exercise tracks:

- 1 Drive M992 forward and reverse several times.
- 2 Coast to a stop. Do NOT use brakes.
- 3 Place transmission in neutral.
- 4 Turn off engine.

#### B Measure distance from bottom of track (1) to top of third roadwheel (2).

### NOTE

Distance should be 1/4 inch.



### ADJUSTING

#### CAUTION

Do not allow track adjuster to extend more than 3-1/2 inches. Remove a shoe to shorten track if necessary.

- A Clean input pressure fitting (3).
- B Increase tension by raising track away from third roadwheel.
- C Add lubricant to track adjuster (4) until measurement from top of roadwheel to bottom of track is 1/4 inch.
- D Decrease tension by loosening bleed plug (5) and allow lubricant to escape until track hangs loose.
- E Tighten bleed plug (5) and clean off excess lubricant.
- F Repeat step C.

## Section II SUSPENSION SYSTEM

### GENERAL








This section contains instructions on how to remove disassemble, assemble, install, and adjust the suspension system. The suspension system consists of the following

- Roadwheels
- Roadwheel hubs
- Roadwheel arm
- Torsion bars
- Torsion bar anchors
- Track adjuster and mounting bracket
- Idler wheels and hub
- Idler arm assembly
- Idler arm housing
- Shock absorber and absorber bearing







The maintenance procedures are given under the following headings:

- Roadwheels removal (p 8-11)
- Roadwheel hubs disassembly (p 8-13)
- Roadwheel arm removal (p 8-16)
- Torsion bars removal (p 8-17)
- Torsion bar anchors removal (p 8-19)
- Track adjuster and mounting bracket removal (p 8-20.2)
- Idler wheels and hub removal (p 8-22)
- Idler arm assembly removal (p 8-23)
- Idler arm housing removal (p 8-25)
- Shock absorber and suspension bracket removal (p 8-26)
- Shock absorber bearing removal (p 8-27)

## TORSION BAR, ANCHOR, AND ROAD WHEEL ARM HUB ASSEMBLY IDENTIFICATION CHART (LEFT)

VEHICLE POSITION	TORSION BAR PART NUMBER	IDENTIFYING ARROW (PRESET)	ANCHOR PART NO.	LOCATION OF BLIND SPLINE IN ANCHOR	ROAD WHEEL ARM AND HUB ASSEMBLY PART NO.
1 FRONT	10898191-1		10921192-1	12 O'CLOCK	10925061-1
2 INTERMEDIATE	10898191-1		10921192-1	12 O'CLOCK	10925059
3 INTERMEDIATE	10898193		10921192-1	12 O'CLOCK	10925059
4 INTERMEDIATE	10898193		10921192-1	12 O'CLOCK	10925059
5 INTERMEDIATE	10898193		10921192-1	12 O'CLOCK	10925059
6 INTERMEDIATE	10898193-1		10921192-1	12 O'CLOCK	10925059
7 REAR	10898191-2		10921192-2	12 O'CLOCK	10925061-2

## TORSION BAR, ANCHOR, AND ROAD WHEEL ARM HUB ASSEMBLY IDENTIFICATION CHART (RIGHT)

VEHICLE POSITION	TORSION BAR PART NUMBER	IDENTIFYING ARROW (PRESET)	ANCHOR PART NO.	LOCATION OF BLIND SPLINE IN ANCHOR	ROAD WHEEL ARM AND HUB ASSEMBLY PART NO.
1 FRONT	10898191-2		10921192-2	12 O'CLOCK	10925061-2
2 INTERMEDIATE	10898191-2		10921192-2	12 O'CLOCK	10925059
3 INTERMEDIATE	10898194		10921192-2	12 O'CLOCK	10925059
4 INTERMEDIATE	10898194		10921192-2	12 O'CLOCK	10925059
5 INTERMEDIATE	10898194		10921192-2	12 O'CLOCK	10925059
6 INTERMEDIATE	10898194-1		10921192-2	12 O'CLOCK	10925059
7 REAR	10898191-1		10921192-1	12 O'CLOCK	10925059-1



## ROADWHEELS: REMOVAL AND INSTALLATION

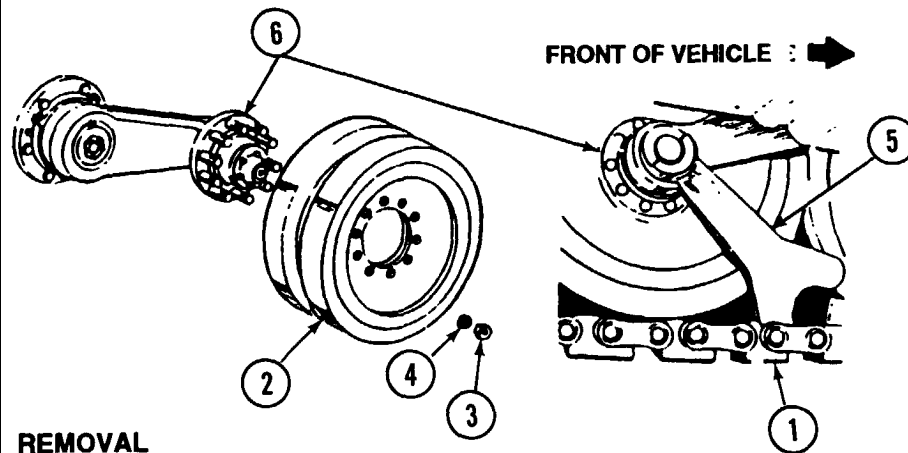
### INITIAL SETUP

#### Test Equipment/Special Tools:

Crowbar (item 40, Appx B)  
General mechanic's tool kit (item 52, Appx B)  
Jack, 12 ton (item 40, Appx B)  
Lifter, roadwheel (item 12, Appx B)  
Socket wrench adapter, 1/2 in. dr to 3/4 in. dr (item 40, Appx B)  
Wrench, torque, 3/4 m. dr, 0-600 lb-ft (item 40, Appx B)

#### Materials/Parts:

Grease (item 41, Appx D)



### REMOVAL

#### NOTE

This procedure applies to roadwheels 2 through 6 only.

A Disconnect track (1) (p 8-5).

- B Using crowbar, pull track away from top of roadwheel (2).
- C Loosen (Do NOT remove) 10 nuts (3) and 10 washers (4).
- D Place lifter (5) on roadwheel arm hub (6) and on inner side of track.

### CAUTION

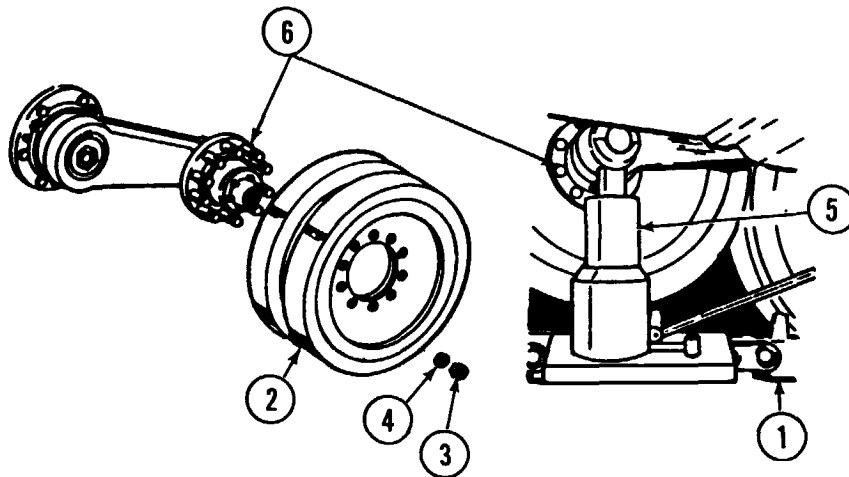
When driving vehicle on or off lifters, clear the area. Lifters may fly out from under the vehicle and cause serious injury to personnel.

- E Drive M992 forward slowly only far enough to lift roadwheel off track.
- F Remove 10 nuts (3) and 10 washers (4).
- G Remove roadwheel (2) tapping lightly with hammer.

### INSTALLATION

- A Lubricate all threads with oil or grease.
- B Reverse removal instructions.
- C Torque 10 nuts (3) to 170-180 lb-ft.

## ROADWHEELS: REMOVAL AND INSTALLATION (CONTINUED)

**REMOVAL**

This procedure applies to roadwheels 1 and 7 only.

- A Disconnect track (1) (p 8-5).
- B Pull track away from top of roadwheel (2).
- C Loosen (do NOT remove) 10 nuts (3) and 10 washers (4).

**WARNING**

Use extreme caution when using hydraulic jack. Carelessness can result in damage to equipment or injury to personnel.

- D Position jack (5) with base on track (1) and head under arm hub (6).
- E Jack up until roadwheel clears track.
- F Remove 10 nuts (3) and 10 washers (4).
- G Remove roadwheel (2).

**INSTALLATION****CAUTION**

When driving vehicle on or off lifters, clear the area. Lifters may fly from under the vehicle and cause serious injury to personnel.

- A Reverse removal procedure.
- B Torque 10 nuts (3) to 170 to 180 lb-ft.

## ROADWHEEL HUBS: REMOVAL, CLEANING, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Handle, hinged 3/4 in. dr (item 11, Appx B)  
Installer, seal (item 37, Appx B)  
Socket, 2 in., 3/4 in. dr (item 60, Appx B)  
Wrench, torque, 3/4 in. dr, 0-600 lb-ft (item 75, Appx B)  
Wrench, torque, 1/2 in. dr, 0-170 lb-ft. (item 74, Appx B)  
Replacer, bearing, inner (item 16, Appx B)  
Replacer, bearing, outer (item 17, Appx B)

#### Materials/Parts:

Dry-cleaning solvent (item 19, Appx D)

#### References:

LO 9-2350-267-12

#### Equipment Conditions:

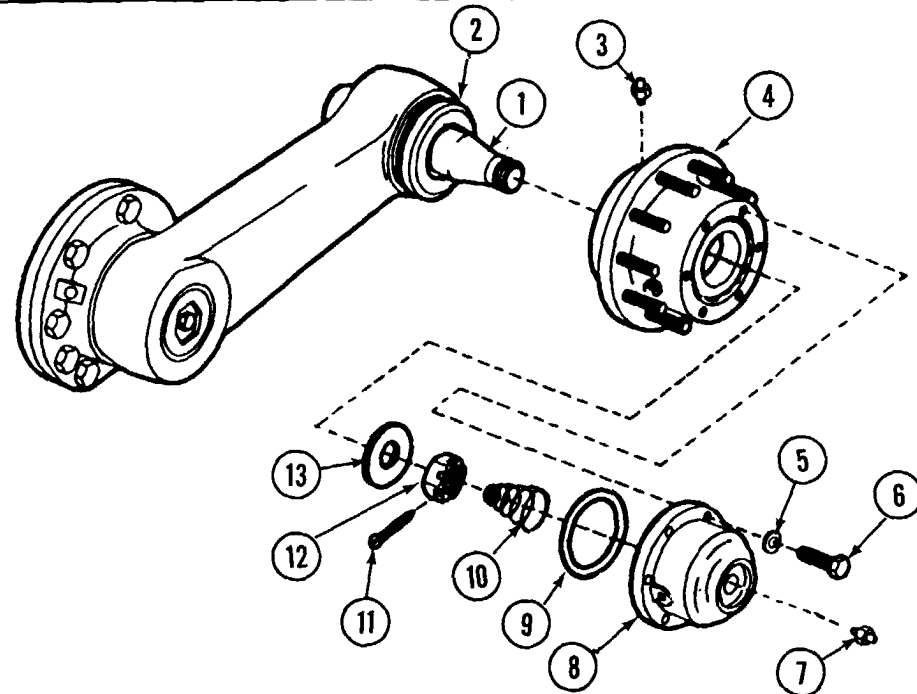
Vehicle blocked.  
Roadwheels removed (p 8-11).

### NOTE

- If vehicle has an oil hub and hub damaged, order conversion kit 57K0962-1.
- Send roadwheel hub to Direct Support maintenance for application of rework kit 57K0963.

### REMOVAL

A Remove grease fitting (7) from cap (8).



- B Remove relief valve (3) from hub (4). Remove six screws (6) and six flat washers (5).
- C Remove cap (8).
- D Remove static spring (10), coter pin (11), nut (12), flat washer (13) and packing (9). Discard coter pin and packing.

### WARNING

Roadwheel hub is heavy. Use two hands and remove carefully to prevent possible injury.

E Slide roadwheel hub (4) off roadwheel arm spindle (1) and seal (2).

**ROADWHEEL HUBS: REMOVAL, DISASSEMBLY, CLEANING, ASSEMBLY AND INSTALLATION (CONTINUED)****DISASSEMBLY**

- A Remove and discard seal (2).
- B Remove bearing cones (14 and 17).
- C Remove bearing cups (15 and 16) if damaged.

**CLEANING****WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy, get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F(38°C); for Type II it is 138°(50°C). Do not use near open flame or excessive heat.

Clean bearing cones with dry-cleaning solvent.

**ASSEMBLY****NOTE**

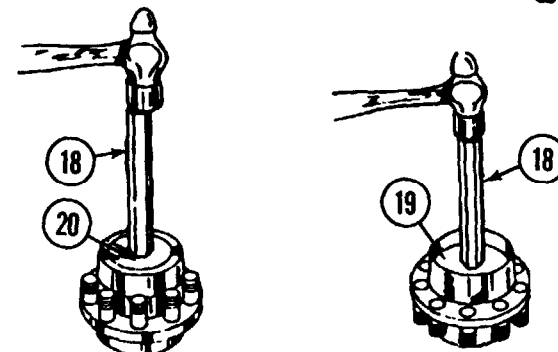
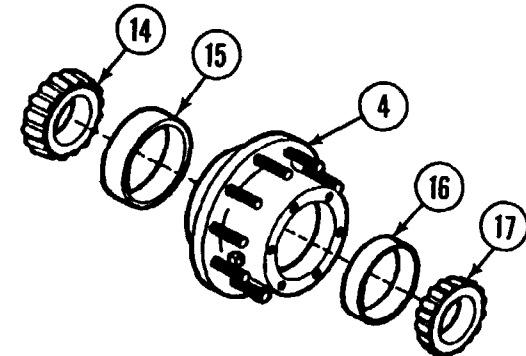
Inspect and clean bearing cones before assembly.

- A Install new inner bearing cup (15) using inner bearing cup replacer (19) and handle (18).
- B Install new outer bearing cup (16) using outer bearing cup replacer (20) and handle (18).

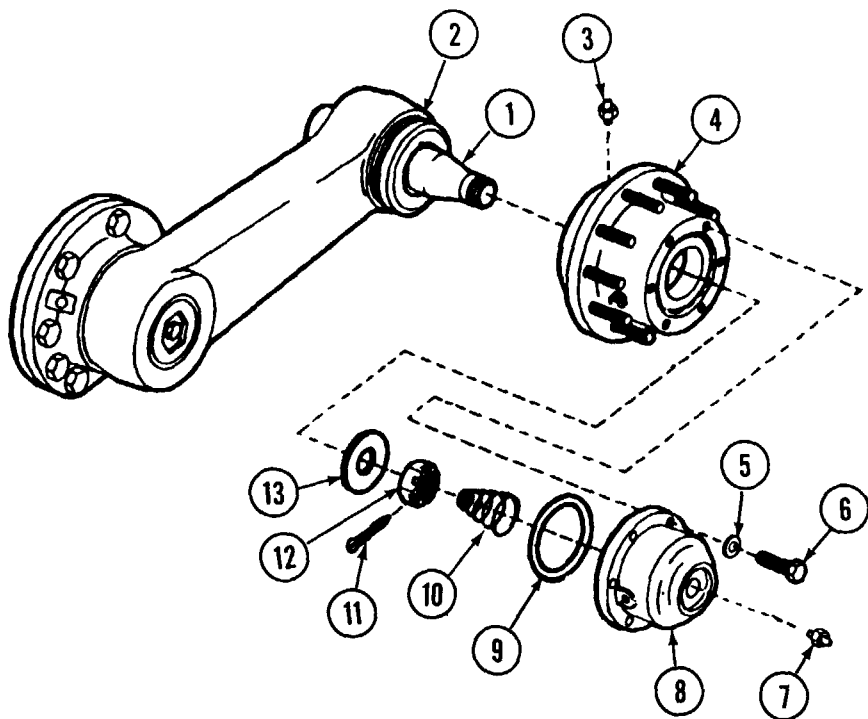
- C Install bearing cones (14 and 17) in bearings cups (15 and 16).

**NOTE**

- When installing new roadwheel seal with seal installer, it is pressed in flush with face of hub.
  - Seal mating surface must be clear of grease, oil and dirt prior to installation.
  - Be careful not to damage seal or seal lips, and do not press on pins when installing seal in hub.
- D Using seal installer, install new seal (2) in roadwheel hub (4) flush with face of hub (4).



## ROADWHEEL HUBS: REMOVAL, DISASSEMBLY, CLEANING, ASSEMBLY AND INSTALLATION (CONTINUED)



### INSTALLATION

- A Assemble roadwheel hub (4) with flat washer (13) and nut (12) onto roadwheel arm spindle (1).
- B Torque nut (12) as follows:
  - 1 Torque nut to 100 lb-ft.
  - 2 Back off one full turn.
  - 3 Torque to 30 lb-ft while rotating roadwheel hub (4).
  - 4 Aline hole in nut (12) with hole in roadwheel arm spindle (1). If necessary, back off nut (12) until holes are alined.

### NOTE

After alinement of holes and insertion of cotter pin, hub must rotate freely by hand.

- C Install new cotter pin (11).
- D Install new packing (9), static spring (10) and cap (8).
- E Install grease fitting (7) and relief valve (3). Install six screws (6) and six flat washers (5). Torque screws to 12 lb-ft.
- F Fill cap (8) with GAA grease (LO 9-2350-267-12) until grease flows from relief valve.

**ROADWHEEL ARM: REMOVAL AND INSTALLATION****INITIAL SETUP****Test Equipment/Special Tools:**

Wrench, torque, 0-600 lb-ft (item 75, Appx B)

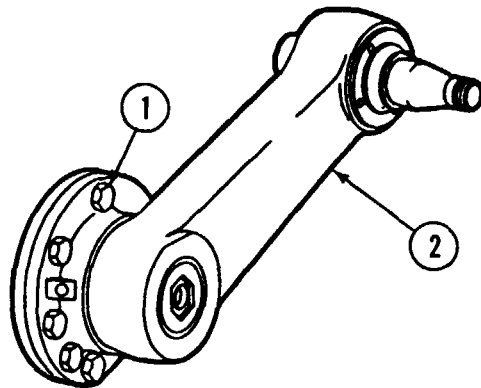
**Personnel Required:**

Two

**Equipment Conditions:**

Roadwheel hub removed (p 8-13).

Torsion bar removed (p 8-17)

**REMOVAL****NOTE**

Shock absorber must be disconnected to remove roadwheels 1 and 7.

- A Disconnect shock absorber if necessary (p 8-26).
- B Remove and discard eight screws (1).

**WARNING**

Roadwheel arm assembly is heavy (over 100 lb). Use two personnel to remove.

- C Lift off roadwheel arm assembly (2) and remove.

**INSTALLATION**

- A Position roadwheel arm assembly (2) on vehicle and secure with eight new screws (1). Torque screws to 170-180 lb-ft.
- B Connect shock absorber if necessary (p 8-26).

## TORSION BARS: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Puller, mechanical (item 14, Appx B)  
Wrench, torque, 0-175 lb-ft (item 74, Appx B)  
Adapter, mechanical puller (item 6, Appx B)

#### Materials/Parts:

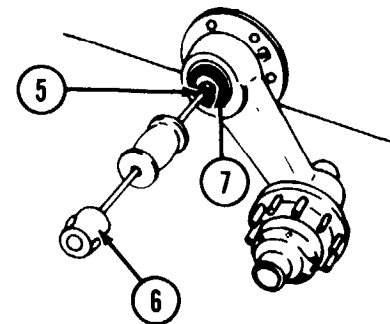
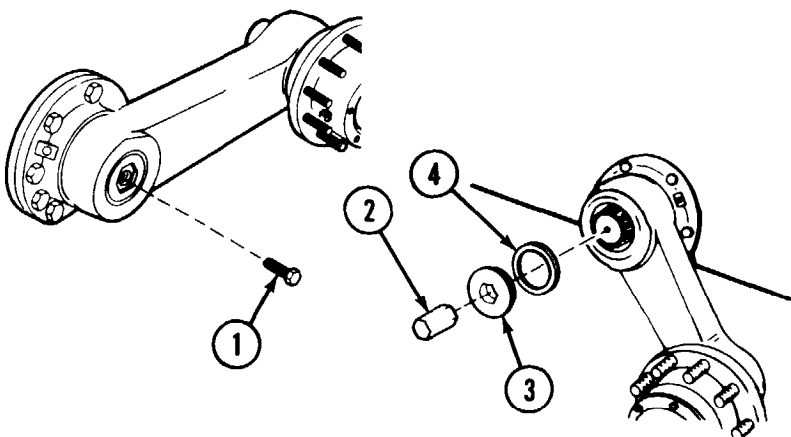
Grease, automotive (item 25, Appx B)

#### Personnel Required:

Two

#### Equipment Condition:

Vehicle blocked.  
Roadwheel removed (p 8-11).



### REMOVAL

- A Remove and discard self-locking bolt (1).
- B Insert plug wrench (2) in retainer (3) and turn counter-clockwise.
- C Remove retainer (3) and gasket (4) from end of torsion bar. Discard gasket.
- D Install adapter (5) and puller (6).

### NOTE

If torsion bar is broken and other end of torsion bar cannot be reached for removal, it may be necessary to remove torsion bar anchors of corresponding torsion bar (p 8-19).

- E Remove torsion bar (7).

TA312873

**TORSION BARS: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

- A Identify torsion bar data (p 8-10).
- B Coat each torsion bar spline end with grease (item 25, Appx B).

**CAUTIONS**

Do not remove tape from ground (unsplined) surface of torsion bars.

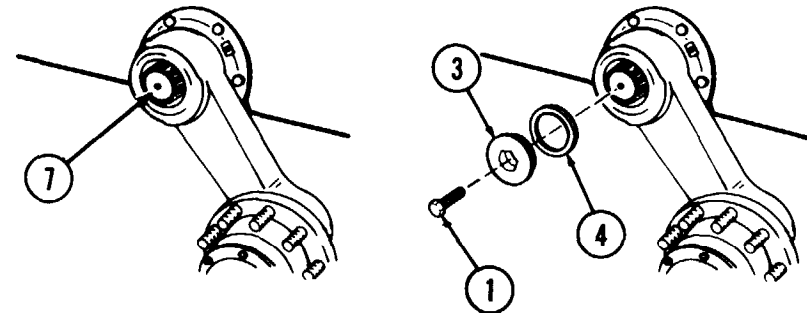
Never pound torsion bar with hammer. Torsion bar should slide in by hand.

**NOTES**

Hold roadwheel arm at 4 o'clock position on vehicle left side, and 8 o'clock on right side, while installing torsion bars.

Ensure that blind splines on both ends aline with blind splines on anchor and roadwheel arm.

- C Install torsion bar (7).
- D Install new gasket (4) and retainer (3).
- E Install new self-locking bolt (1). Torque bolt to 90 lb-ft.





# TORSION BAR ANCHORS: REMOVAL, CLEANING AND INSTALLATION

## INITIAL SETUP

### Test Equipment/Special Tools:

Torque wrench, 0-600 lb-ft (item 75, Appx B)

### Materials/Parts:

Dry-cleaning solvent (item 20, Appx D)  
 Sealer (item 51, Appx D)

### Equipment Condition:

Torsion bar removed (p 8-17).

## REMOVAL

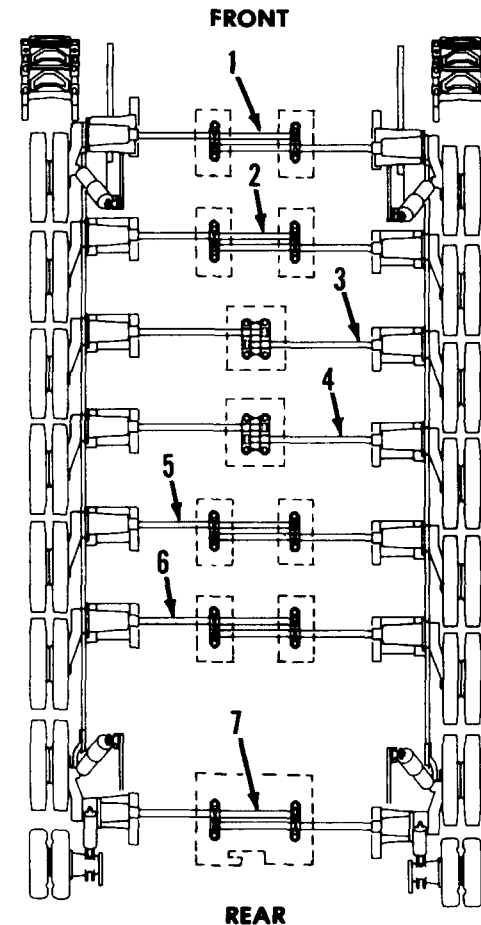
### COVER PLATE REMOVAL AND INSTALLATION

	TORSION BAR NO.						
	1	2	4	5	6	7	
Remove powerpack (p 3-1)	X	X					
No. of cover plate(s)	2	2	1	2	2	3	
No. of screws	20	20	8	20	20	24	
Remove heating and vent duct (p 14-62)			X	X			
Remove projectile rack base (p 11-3)			X	X			
Remove stacker wear strip (p 12-41)					X		

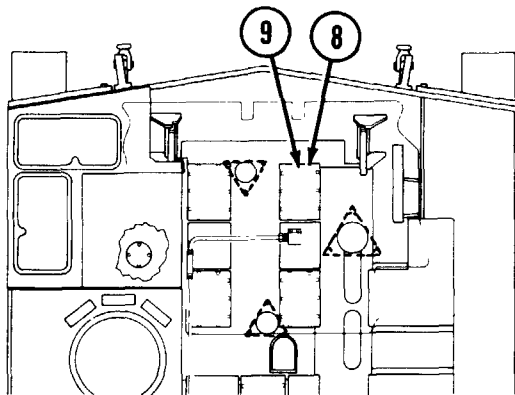
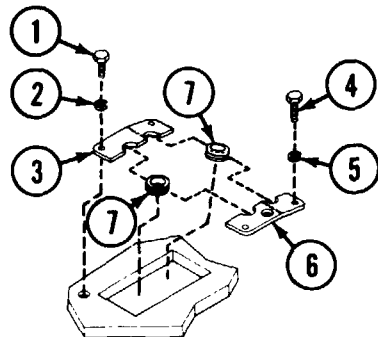
A Refer to table for access to cover plates.

## NOTE

Removal of torsion bar anchors for roadwheel No. 3 is a support maintenance function.



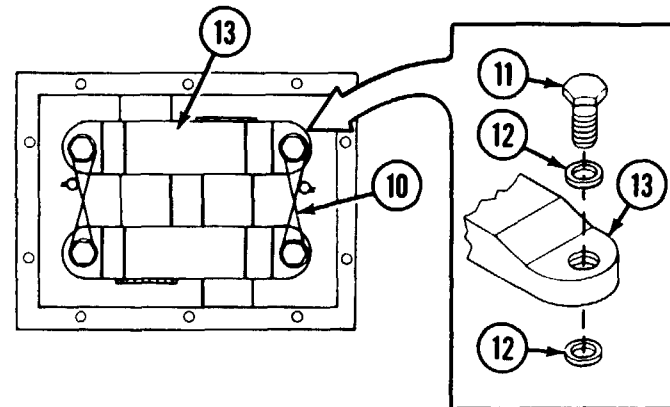
## ■ TORSION BAR ANCHORS: REMOVAL, CLEANING AND INSTALLATION (CONTINUED)



### NOTE

If removing torsion bar anchor No. 7, go to step B. If removing torsion bar anchors Nos. 1, 2, 4, 5 and 6, go to step D.

- B Remove two screws (1), two lockwashers (2) and plate (3) from crew compartment floor. Discard lockwashers.



- C Remove two screws (4), two lockwashers (5), plate (6) and two grommets (7) from crew compartment floor. Discard lockwashers.
- D Remove screws (8) and cover plate (9).
- E Remove and discard lockwire (10).
- F Remove two screws (11) and four flat washers (12) from each torsion bar anchor (13).
- G Remove torsion bar anchor (13).

### CLEANING

- A Clean torsion bar anchor cavity in hull. Remove dirt and water. Dry thoroughly.

## TORSION BAR ANCHORS: REMOVAL, CLEANING AND INSTALLATION (CONTINUED)

### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy, get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F(38°C); for Type II it is 138°(50°C). Do not use near open flame or excessive heat.

- B Clean cover plate using dry-cleaning solvent (item 20, Appx D).

### INSTALLATION

- A Install torsion bar anchor (13).  
B Install two screws (11) and four flat washers (12).  
C Torque screws (11) to 245 ± 15 lb-ft and install new lockwire (10).

### NOTE

- Apply sealer (item 51, Appx D) around entire edge of cover plates.
- Make sure conveyor hydraulic hoses and electrical lead are routed between two cover plates when installing.

- D Install cover plate (9) with screws (8).

### NOTE

If installing torsion bar anchor No. 7, go to step E. If installing torsion bar anchors Nos. 1, 2, 4, 5 and 6, go to step F.

- E Position two grommets (7) and plates (3 and 6) where hose assemblies pass through crew compartment floor. Secure plate (3) with two screws (1) and two new lockwashers (2). Secure plate (6) with two screws (4) and two new lockwashers (5).
- F Install items removed in table.

## TRACK ADJUSTER AND MOUNTING BRACKET REPLACEMENT

**INITIAL SETUP**Test Equipment/Special Tools:

General mechanic's tool kit (item 52, Appx B)  
Slide hammer-type puller (item 14, Appx B)

Materials/Parts:

Bleed plug  
Cotter pin, two  
Flat washer (item 66.1, Appx D)  
Grease (item 29, Appx D)  
Hexagon head cap screw (item 57.1, Appx D)  
Lubrication fitting  
Rag (item 50, Appx D)

Personnel Required: Two

Equipment Condition:

Vehicle parked on level ground (refer to TM 9-2350-267-10).  
Track removed (p 8-4)

**REMOVAL****WARNING**

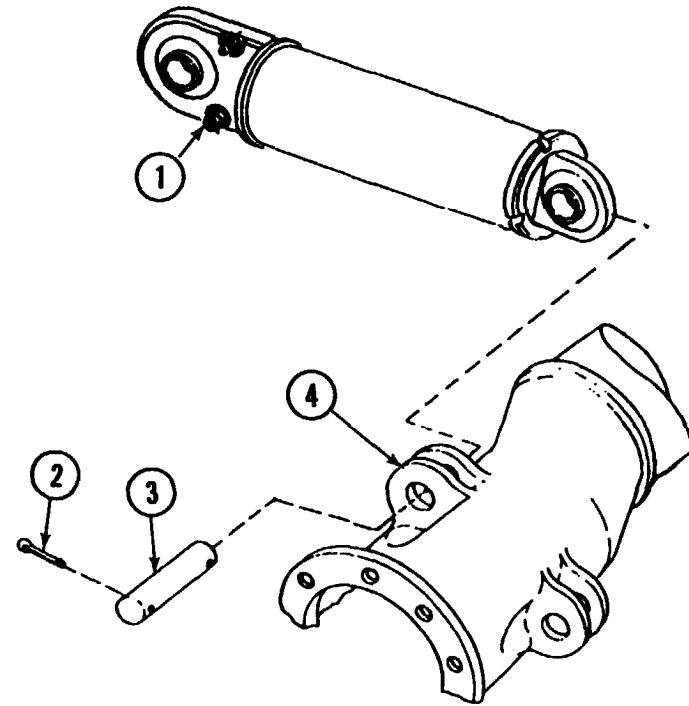
Lubricant is under high pressure. Loosen bleed plug slowly to avoid injury.

**NOTE**

- Replacement is the same for left- and right-side track adjuster and mounting bracket. Left side is shown here.

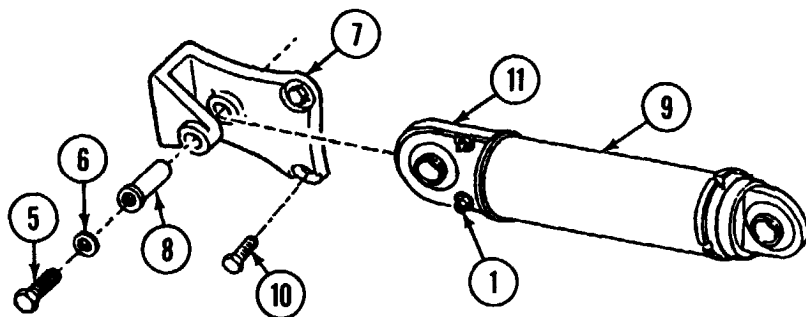
- If removing bleed plug or lubrication fitting only, go to step G.

- A Loosen bleed plug (1).
- B Remove two cotter pins (2) and pin (3) from idler arm assembly (4). Discard cotter pins.



## TRACK ADJUSTER AND MOUNTING BRACKET REPLACEMENT (CONTINUED)

- C Remove screw (5) and washer (6) from mounting bracket (7).
- D Install 7/8-inch NF thread bolt and 7/8-inch washer in pivot pin (8).
- E Using slide hammer-type puller, remove bolt, washer, pivot pin (8), and track adjuster (9) from mounting bracket (7).
- F Remove two screws (10) and mounting bracket (7) from hull.
- G Remove bleed plug (1) and lubrication fitting (11) from track adjuster (9). Discard bleed plug and lubrication fitting.



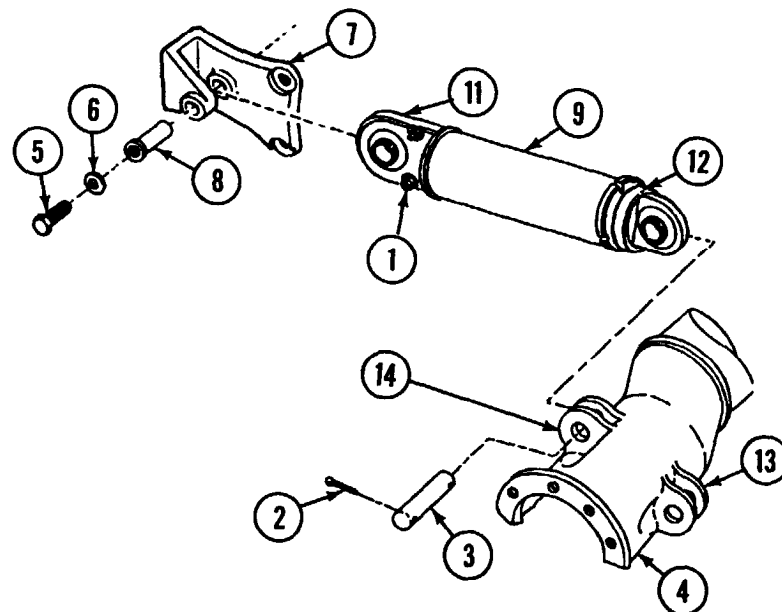
### INSTALLATION

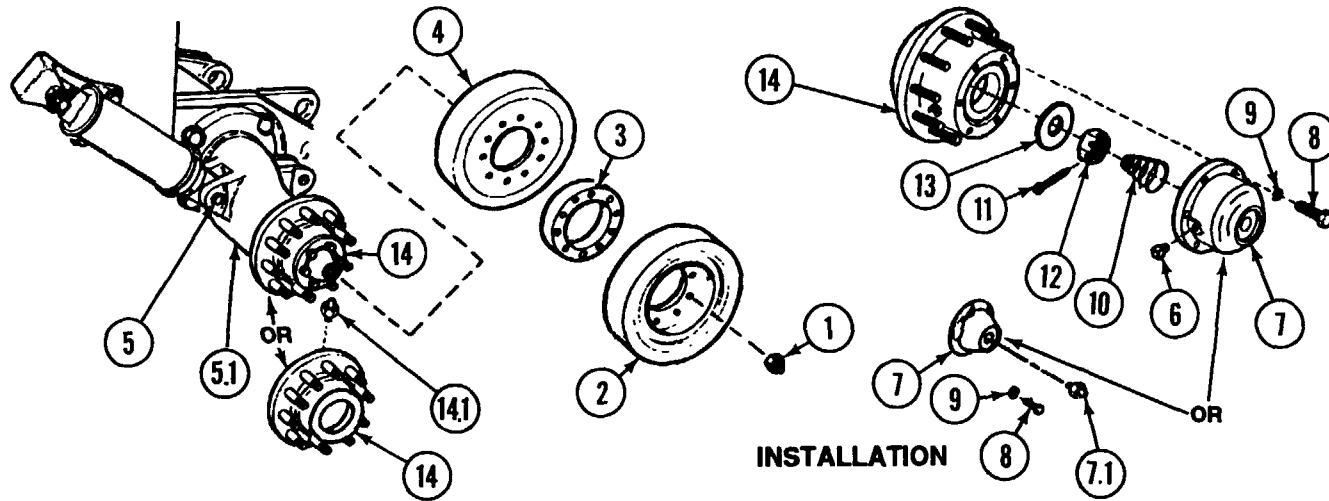
- A Install new bleed plug (1) and new lubrication fitting (11) on track adjuster (9).
- B Add grease to track adjuster (9) through lubrication fitting (11) until piston (12) is extended 1/2 to 1 inch.
- C Install mounting bracket (7) on hull with two screws (10).

### NOTE

An assistant is needed to hold track adjuster in place during installation of pins.

- D Install track adjuster (9) in mounting bracket (7) and idler arm assembly (4).
- E Install pivot pin (8) in mounting bracket (7).
- F Install pin (3) in lug hole (13) in idler arm assembly (4). Rotate idler arm assembly (4) counterclockwise with crow bar to line up track adjuster (9) with lug hole (14).
- G Remove pin (3) from lug hole (13).
- H Install pin (3) and two new cotter pins (2) in idler arm assembly (4).
- I Install screw (5) and washer (6) in pivot pin (8). Torque between 300 and 350 ft-lb.



**IDLER WHEELS AND HUBS: REMOVAL AND INSTALLATION****REMOVAL**

- A Loosen 10 nuts (1).
- B Remove track (p 8-5).
- C Remove 10 nuts (1).
- D Remove outer idler wheel (2), spacer (3), and inner idler wheel (4).
- E Remove track adjuster pin (5). Discard two cotter pins.
- F Remove capscrew (6) and drain oil from cap (7). Alternately, remove grease fitting (7.1) from cap (7).
- G If applicable, remove relief valve (14.1) from hub assembly (14).
- H Remove six screws (8), six lockwashers (9) and cap (7). Discard lockwashers.
- I Remove static spring (10), cotter pin (11), nut (12), washer (13), and hub assembly (14). Discard cotter pin (11).

**INSTALLATION****NOTE**

Replenish oil in cap (7) before installation on hub, if applicable.

- A Reverse removal procedures using new lockwashers and cotter pins.
- B Replace two cotter pins on track adjuster pin (5), and cotter pin (11) on hub assembly.
- C Torque six screws (8) to 12 lb-ft.
- D If grease fitting installed, static test idler arm assembly (5.1) and hub assembly (14). Idler arm assembly must hold  $50 \pm 5$  PSI under static air pressure for one minute.
- E Fill hub assembly (14) with GAA grease until air free fluid flows from relief valve (14.1)
- F Lubricate all threads with grease or oil (item 41, Appendix D). Torque ten nuts to 162-198 lb-ft.

## ■ IDLER ARM ASSEMBLY: REMOVAL AND INSTALLATION

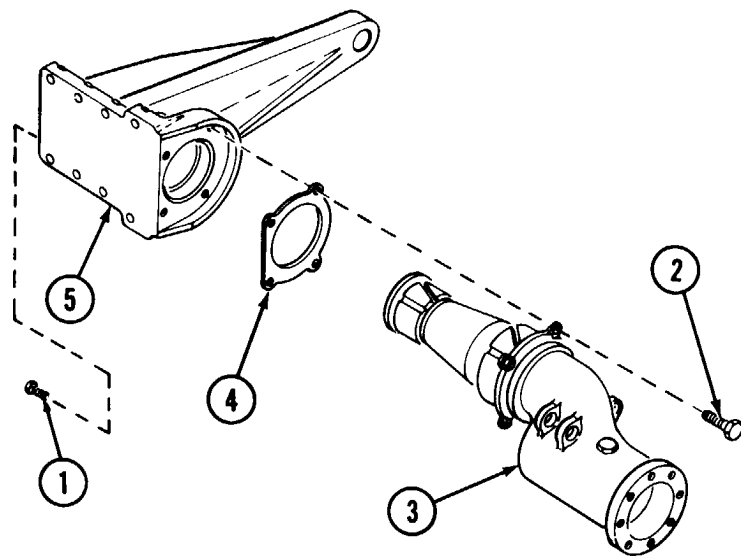
### INITIAL SETUP

#### Test Equipment/Special Tools:

Torque wrench, 0-175 lb-ft (item 74, Appx B)  
Socket, 3/4 in. dr, 1-1/8 in. (item 59, Appx B)

#### Equipment Condition:

Vehicle blocked.  
Track removed (p 8-5).  
Idler wheels and hub removed (p 8-22).  
Track adjuster disconnected (p 8-20.1).



### REMOVAL

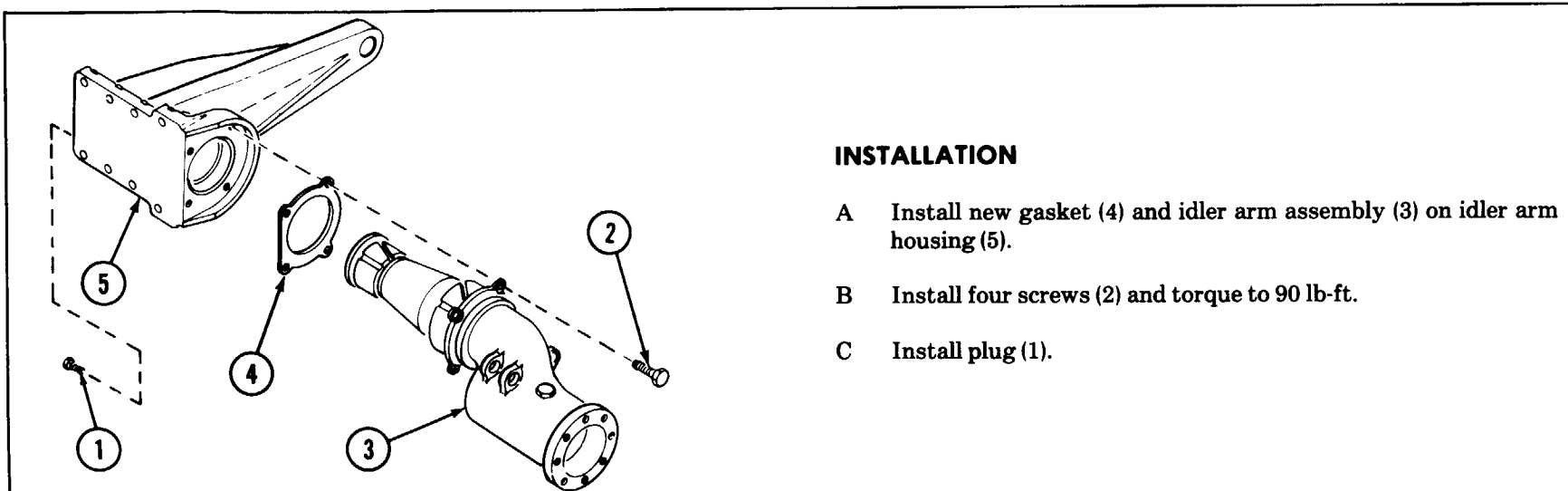
- A Remove plug (1).
- B Remove four screws (2).
- C Remove idler arm assembly (3) and gasket (4) from idler arm housing (5). Discard gasket.

TA312878





## ■ IDLER ARM ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



### INSTALLATION

- A Install new gasket (4) and idler arm assembly (3) on idler arm housing (5).
- B Install four screws (2) and torque to 90 lb-ft.
- C Install plug (1).

## ■ IDLER ARM HOUSING: REMOVAL AND INSTALLATION

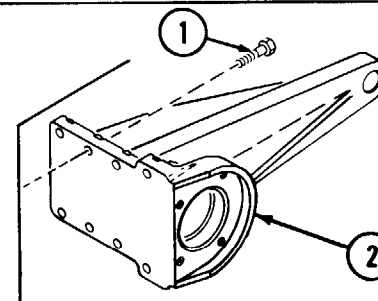
### INITIAL SETUP

#### Test Equipment/Special Tools:

Ratchet, 3/4 in. dr (item 56, Appx B)  
Socket, 1-1/8 in., 3/4 in. dr (item 59, Appx B)  
Torque wrench, 0-600 lb-ft (item 75, Appx B)

#### Equipment Condition:

Idler arm assembly removed (p 8-23).



### REMOVAL

Remove eight screws (1) and idler arm housing (2).

### INSTALLATION

Install idler arm housing (2) with eight screws (1). Torque screws to 320 lb-ft.

## SHOCK ABSORBER AND SUSPENSION BRACKET: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

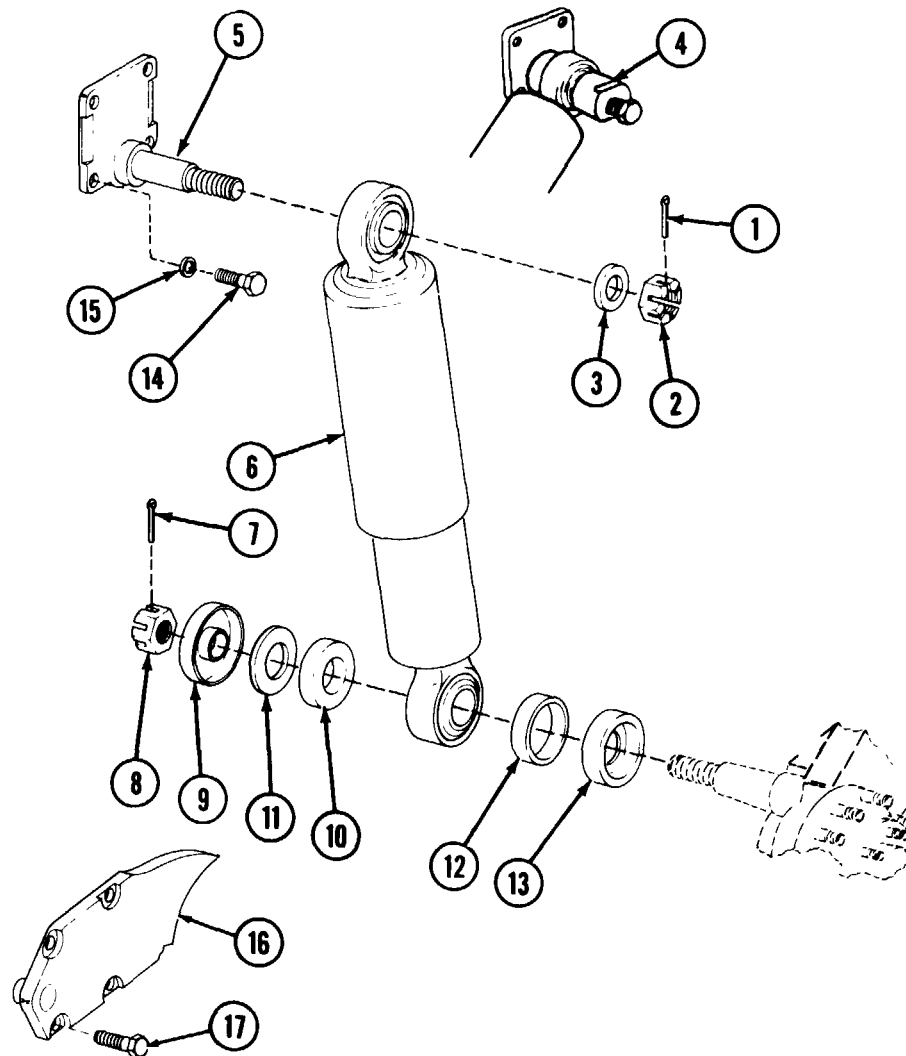
Puller, shock absorber (item 55, Appx B)  
Wrench, torque, 0-600 lb-ft (item 75, Appx B)

#### Materials/Parts:

Zinc chromate paste (item 46, Appx D)

#### Equipment Condition:

Vehicle blocked.  
Roadwheel removed (p 8-11).



■ **SHOCK ABSORBER AND SUSPENSION BRACKET: REMOVAL AND INSTALLATION (CONTINUED)**

**REMOVAL**

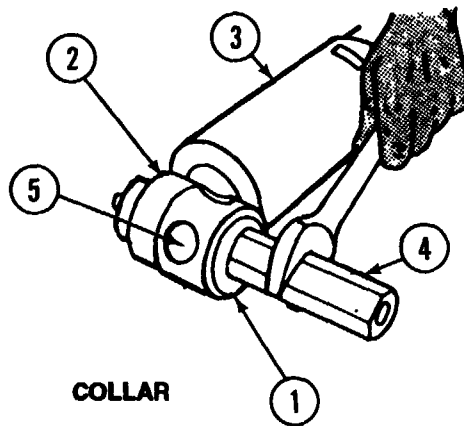
- A Remove cotter pin (1), nut (2) and washer (3). Discard cotter pin.
- B Install shock absorber puller (4) on threaded end of mount (5). Turn screw head with wrench to pull shock absorber (6) from arm spindle on mount (5).
- C Remove top eye of shock absorber (6) from mount (5).
- D Remove cotter pin (7), nut (8), retainer (9), seal (10) and washer (11). Discard cotter pin and seal.
- E Remove shock absorber (6), seal (12) and retainer (13) from lower spindle/mount. Use puller (4) if necessary. Discard seal.
- F Remove four screws (14), four flat washers (15) and mount (5).
- G Remove suspension bracket (16) by removing four screws (17).

**INSTALLATION**

- A Apply zinc chromate paste (item 46, Appx D) to suspension bracket (16) and install with four screws (17). Torque screws to 300-350 lb-ft.
- B Apply zinc chromate paste (item 46, Appx D) to mount (5) and install with four screws (14) and four flat washers (15). Torque screws to 90 lb-ft.
- C Install retainer (13), new seal (12), shock absorber (6), new seal (10), washer (11) and retainer (9) on lower spindle/mount with nut (8). Torque nut to 100 lb-ft and install new cotter pin (7).
- D Install shock absorber (6) on mount (5) with washer (3) and nut (2). Torque nut to 100 lb-ft and install new cotter pin (1).



## SHOCK ABSORBER BEARING: REMOVAL AND INSTALLATION

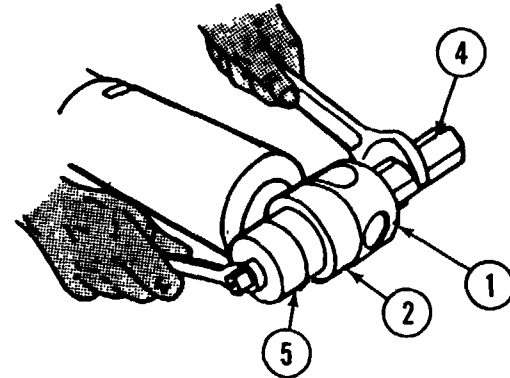


### REMOVAL

- A Install remover end and replacer tool (1) in shock absorber eye (2) of shock absorber (3).
- B Turn nut (4) clockwise to remove bearing (5). Discard bearing (5).

### NOTE

Bearing is pulled into collar of remover.



### INSTALLATION

- A Remove stake marks and burrs from shock absorber eye using fine mill file or stone.
- B Insert new bearing (5) by hand into shock absorber eye (2).
- C Insert remover end and replacer tool (1) through bearing (5).
- D Turn nut (4) clockwise to insert bearing (5).

### Section III FINAL DRIVE AND UNIVERSAL JOINTS

This section contains instructions on how to remove, disassemble, assemble and install the final drive and universal joints. This section consists of the following:

- Final drive sprocket and hub
- Final drive assembly
- Transmission output flange
- Universal joints

The maintenance procedures are given under the following headings:

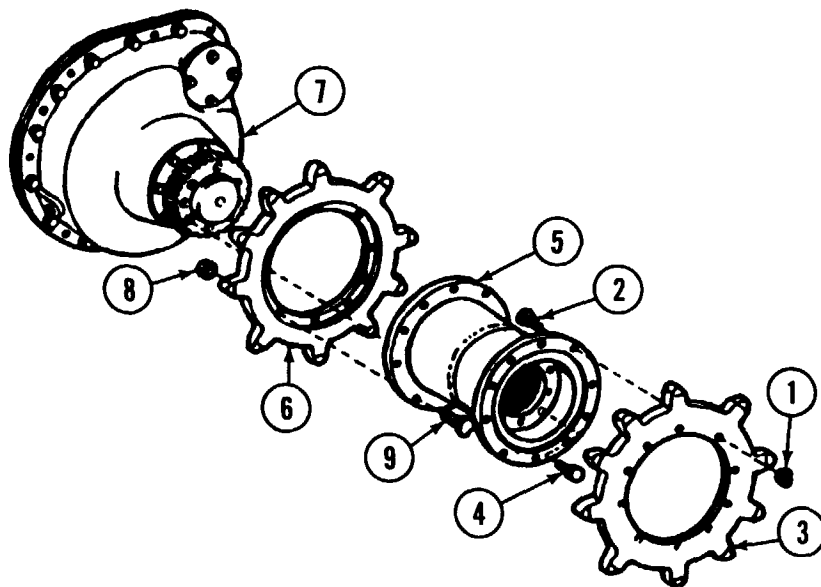
- Final drive sprocket and hub removal and installation (p 8-28)
- Final drive assembly: removal and installation (p 8-29)
- Transmission output flange: removal and installation (p 8-36)
- Universal joints removal, disassembly, inspection and repair, assembly and installation (p 8-37)

#### FINAL DRIVE SPROCKET AND HUB: REMOVAL AND INSTALLATION

##### INITIAL SETUP

##### Equipment condition:

Vehicle blocked.



##### REMOVAL

- A Disconnect track (p 8-5).
- B Remove 10 nuts (1), 10 screws (2), and outer sprocket (3).

##### WARNING

Hub is very heavy. Use at least two people when removing and installing.

##### NOTE

Hub with inner and outer sprockets attached may be removed as an assembly by removing eight screws (4).

- C Remove eight screws (4), hub (5), and inner sprocket (6) from drive assembly (7).
- D Insert two screws (4) in hub pilot holes. Tighten to pull hub away from drive assembly (7).
- E Remove 10 nuts (8), 10 screws (9), and inner sprocket (6) from hub (5).

## FINAL DRIVE SPROCKET AND HUB: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

- A Reverse removal procedures.
- B Torque 10 screws (9) to 90 lb-ft.
- C Torque eight screws (4) to 450 lb-ft.
- D Torque 10 screws (2) to 90 lb-ft.

## FINAL DRIVE ASSEMBLY: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Pin, guide (item 3, Appx B)  
Bolt, eye (item 1, Appx B)  
Sling, lifting (item 4, Appx B)  
Wrench, torque, 0-600 lb-ft (item 75, Appx B)

#### Materials/Parts:

Lubricating oil (item 32, Appx D)  
Zinc chromate paste (item 46, Appx D)

#### Personnel Required:

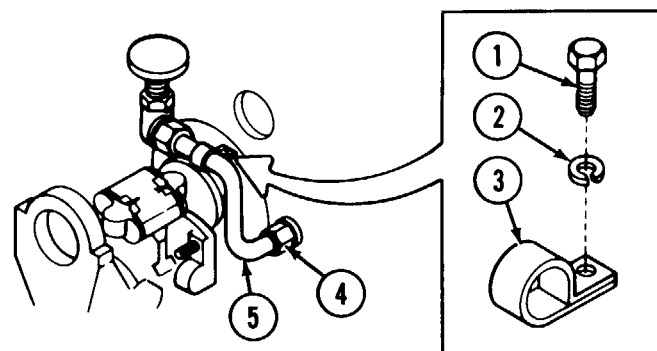
Two

#### References:

LO 9-2350-267-12

#### Equipment Conditions:

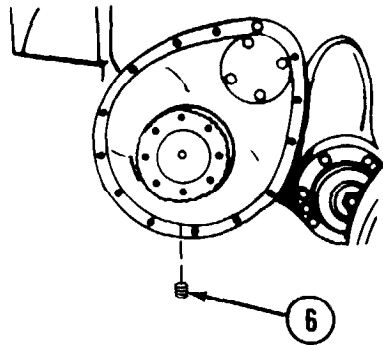
Vehicle parked and blocked.  
Final drive sprocket and hub removed (p 8-28).



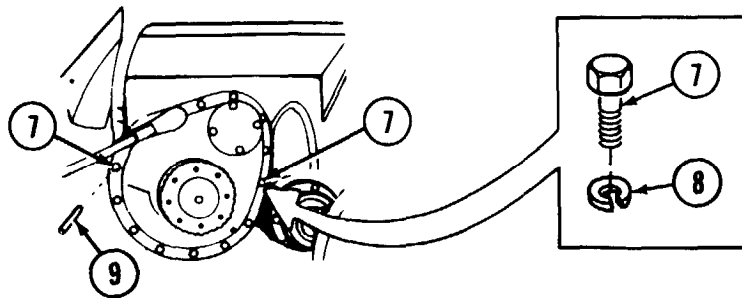
### REMOVAL

- A Remove screw (1), lockwashers (2) and clamp (3). Discard lockwashers.
- B Unscrew tube hexnut connector (4).
- C Remove vent tube (5).

## FINAL DRIVE ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



- D Remove drain plug (6). Drain oil from final drive assembly into suitable container.

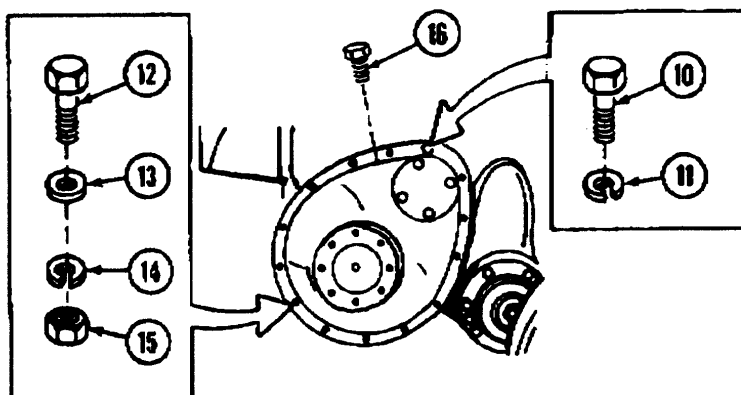


- E Remove two screws (7) and two lockwashers (8). Discard lockwashers.

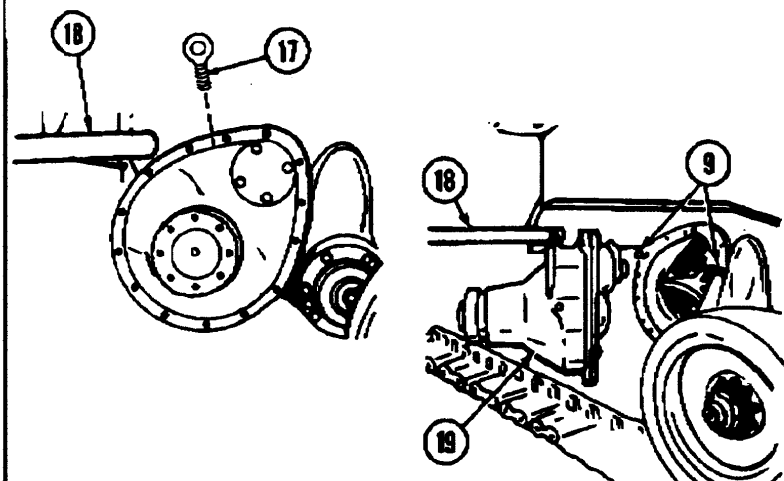
- F Install two guide pins (9) in screw holes.



## FINAL DRIVE ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)

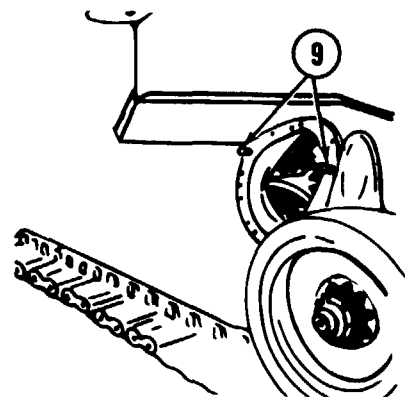


- G Remove seven screws (10) and seven lockwashers (11). Discard lockwashers.
- H Remove five screws (12), five flat washers (13), five lockwashers (14) and five nuts (15). Discard lockwashers.
- I Remove screw (16).



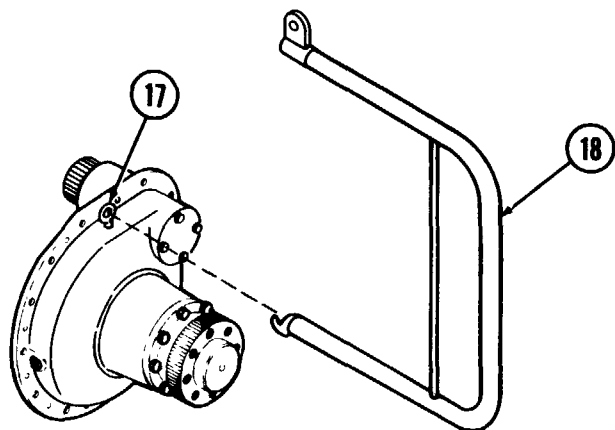
- J Install lifting eye bolt (17).
- K Attach lifting sling (18) to lifting eye bolt (17) and to suitable lifting device.
- L Remove final drive assembly (19) from vehicle. Place on suitable support and remove lifting sling (18).
- M Remove two guide pins (9).

**FINAL DRIVE ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)**



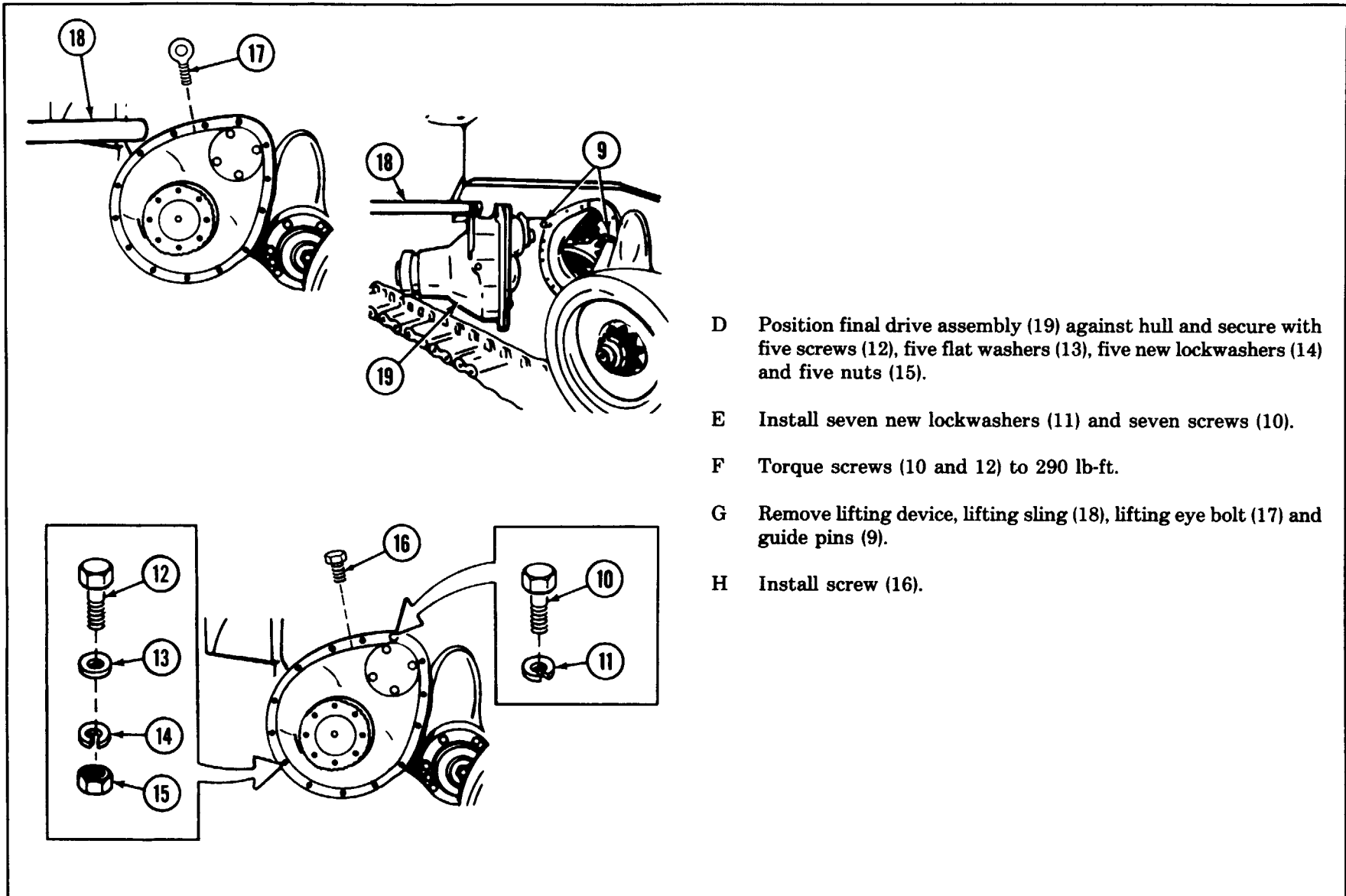
**INSTALLATION**

- A Install two guide pins (9).
- B Coat contact surfaces of hull and final drive assembly with zinc chromate paste (item 46, Appx D) before installation.



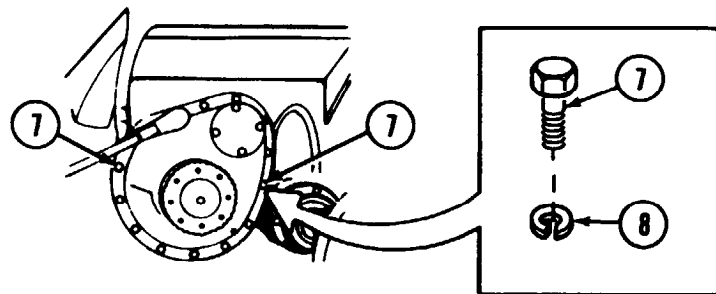
- C Attach lifting sling (18) to lifting eye bolt (17) and to suitable lifting device.

## FINAL DRIVE ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)

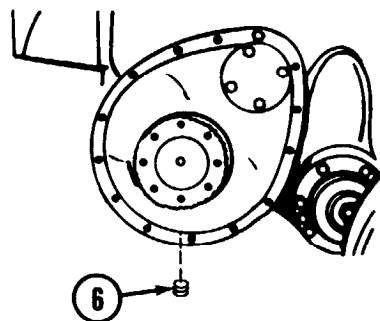


- D Position final drive assembly (19) against hull and secure with five screws (12), five flat washers (13), five new lockwashers (14) and five nuts (15).
- E Install seven new lockwashers (11) and seven screws (10).
- F Torque screws (10 and 12) to 290 lb-ft.
- G Remove lifting device, lifting sling (18), lifting eye bolt (17) and guide pins (9).
- H Install screw (16).

**FINAL DRIVE ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)**



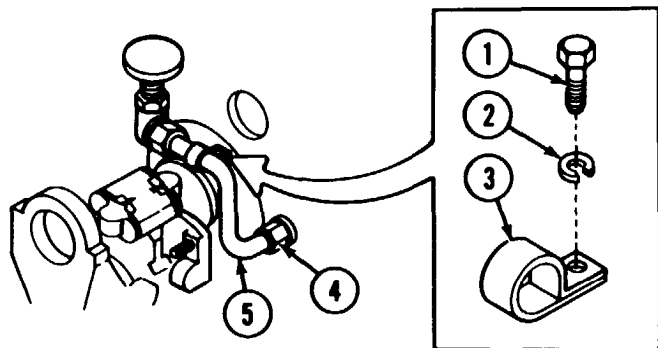
**I** Install two new lockwashers (8) and two screws (7). Torque screws (7) to 290 lb-ft.



**J** Install drain plug (6).

**K** Fill final drive assembly with oil (LO 9-2350-267-12).

**FINAL DRIVE ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)**



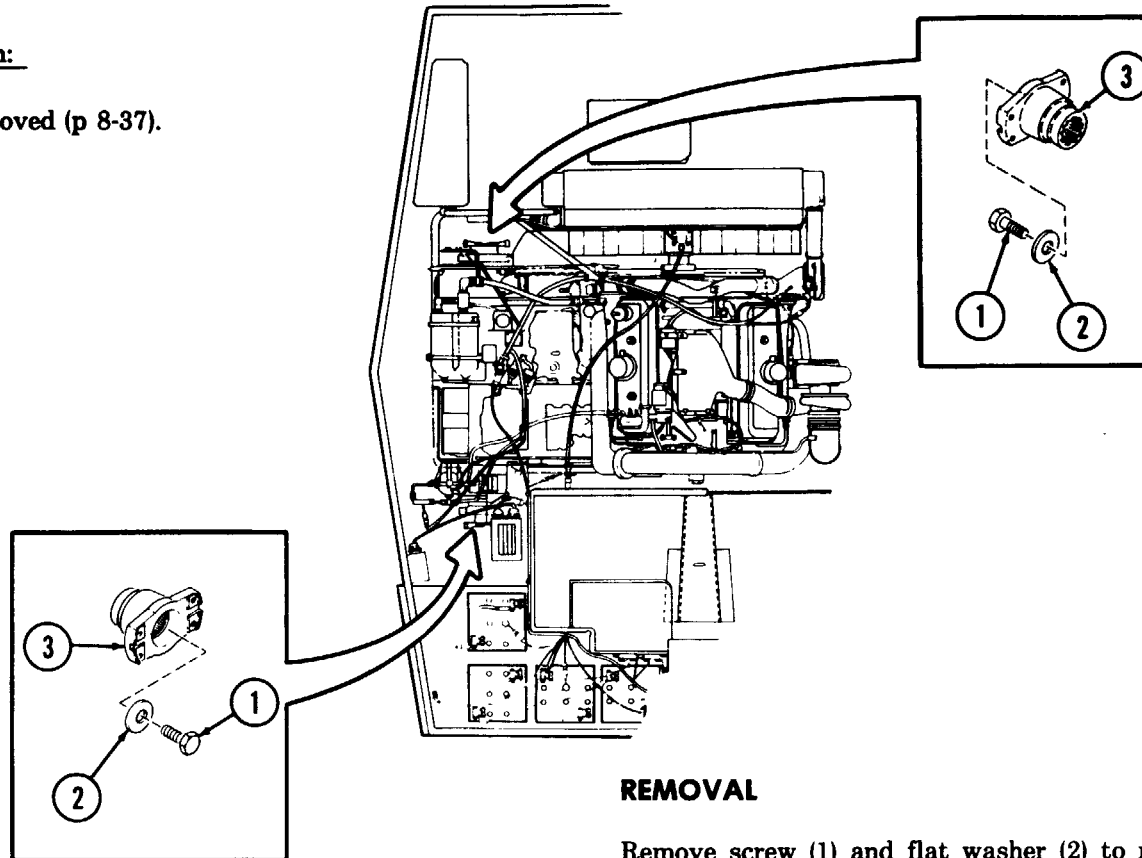
- L** Position vent tube (5).
- M** Screw in vent tube hexnut connector (4).
- N** Secure upper end of vent tube (5) with clamp (3), new lockwasher (2) and screw (1).

### TRANSMISSION OUTPUT FLANGE: REMOVAL AND INSTALLATION

#### **INITIAL SETUP**

Equipment Condition:

Universal joints removed (p 8-37).



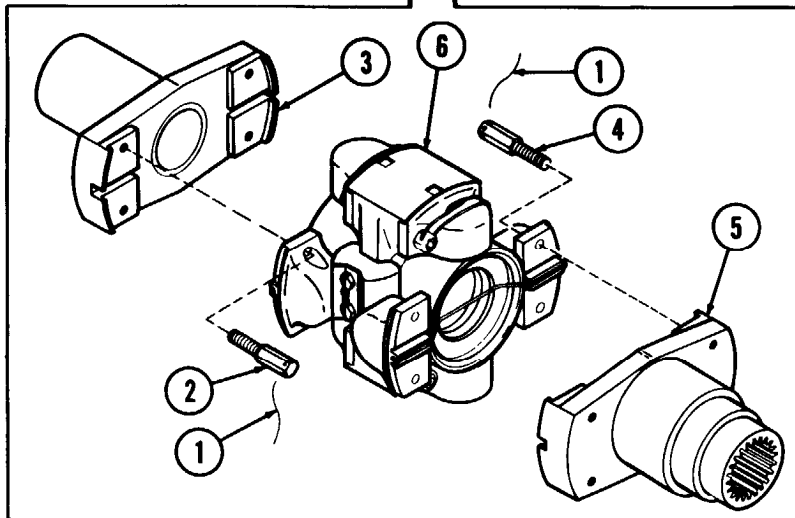
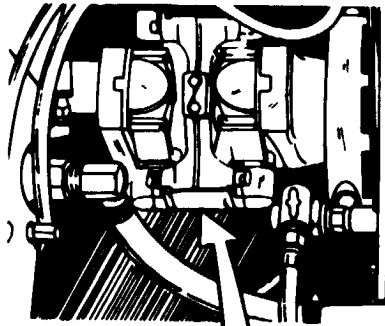
#### **REMOVAL**

Remove screw (1) and flat washer (2) to release flange (3) from transmission output shaft.

#### **INSTALLATION**

Install flange (3) on transmission output shaft and secure with flat washer (2) and screw (1).

## UNIVERSAL JOINTS: REMOVAL, DISASSEMBLY INSPECTION AND REPAIR, ASSEMBLY AND INSTALLATION



### INITIAL SETUP

#### Test Equipment/Special Tools:

Pliers, wire twisting (item 54, Appx B)

#### References:

LO 9-2350-267-12

#### Equipment Conditions:

Vehicle parked and blocked.

### REMOVAL

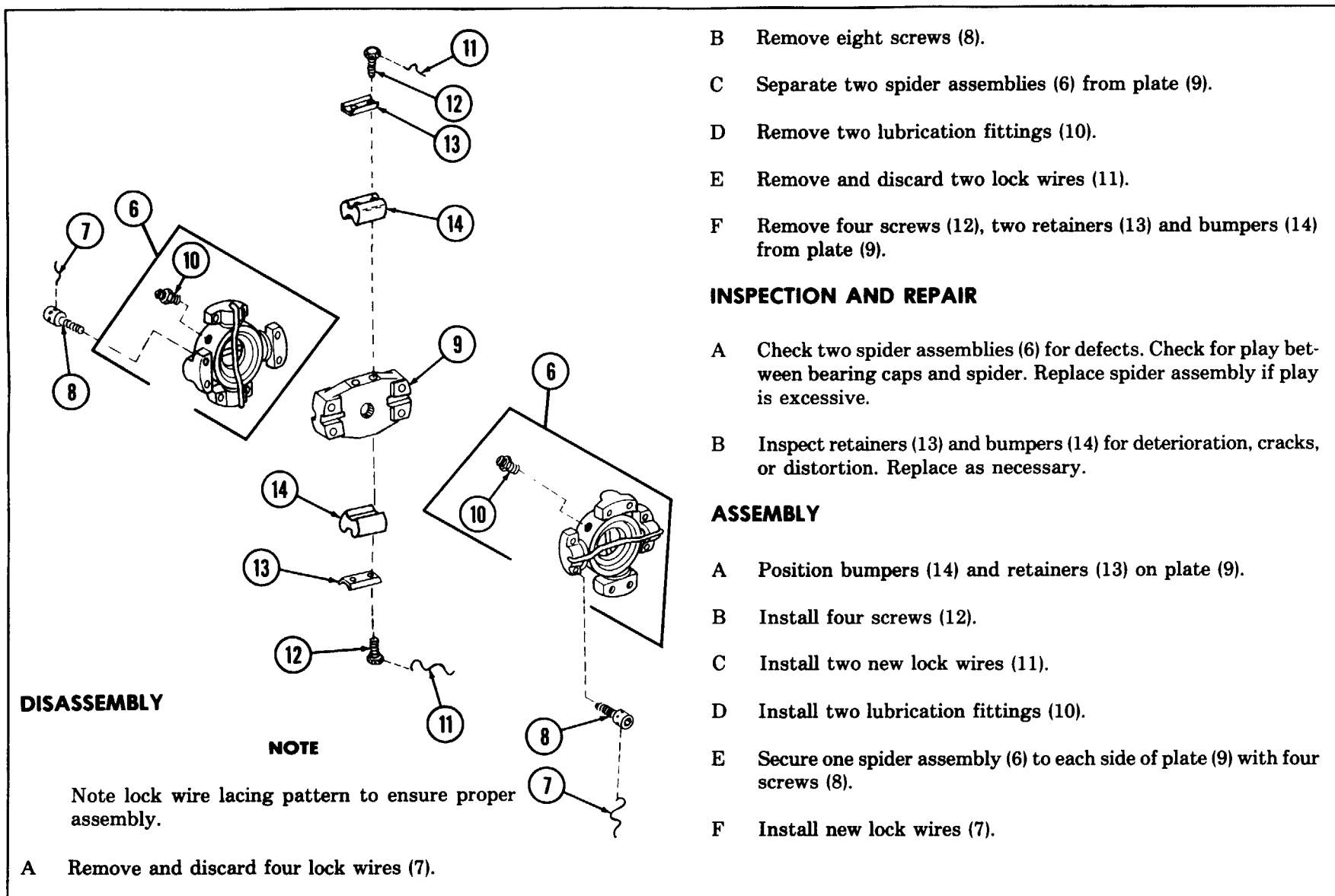
- A Open transmission access doors.
- B Remove and discard lock wires (1).

#### NOTE

If flange screws are blocked, place transmission shift lever in neutral (N). Tow vehicle until screws are accessible. Reblock vehicle.

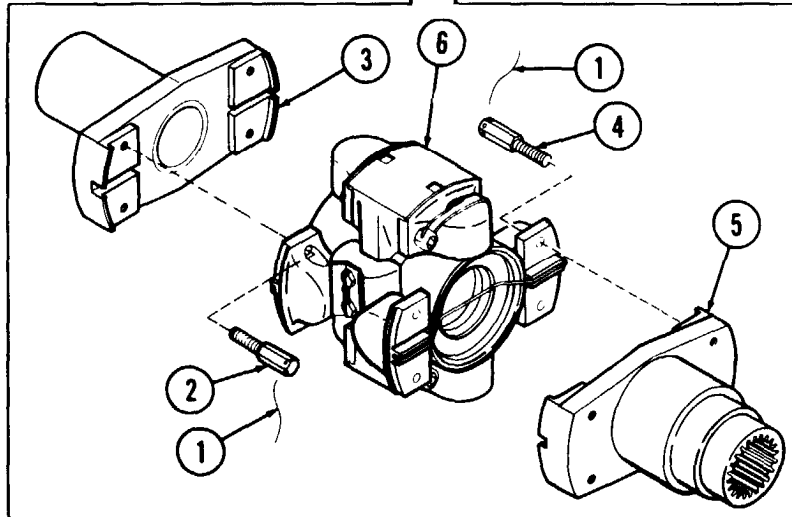
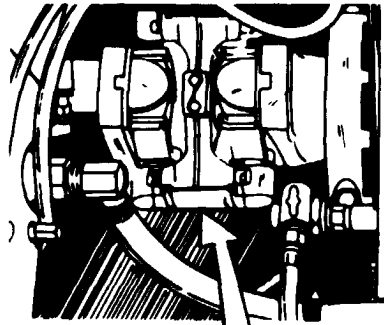
- C Remove four screws (2) at flange (3), and four screws (4) at flange (5).
- D Push flange (3) toward final drive and flange (5) toward transmission.
- E Lift spider assemblies (6) out of hull.

## UNIVERSAL JOINTS: REMOVAL, DISASSEMBLY, INSPECTION AND REPAIR, ASSEMBLY AND INSTALLATION (CONTINUED)





## UNIVERSAL JOINTS: REMOVAL, DISASSEMBLY, INSPECTION AND REPAIR, ASSEMBLY AND INSTALLATION (CONTINUED)



### INSTALLATION

- A Position spider assemblies (6) on flange (5) and secure with four screws (4).
- B Pull flange (3) into contact with spider assemblies (6) and secure with four screws (2).
- C Install new lock wire (1) on screws (2 and 4).
- D Lubricate universal joints (LO 9-2350-267-12).
- E Close transmission access doors.



## CHAPTER 9

### MAINTENANCE PROCEDURES: HULL RELATED COMPONENTS

#### CHAPTER OVERVIEW

This chapter contains illustrated maintenance procedures for removal, disassembly, assembly, installation and adjustment of hull related components.

Section I Driver's, Commander's and Crew Seat Assemblies  
Section II Hatches, Latches, Locks and Covers

Section III Doors  
Section IV Front Fenders, Rear Track Splash Guards and Towing Pintle  
Section V Telephone Hand Reel  
Section VI Machine Gun Mount-M2  
Section VII Deleted

#### Section I DRIVER'S, COMMANDER AND CREW SEAT ASSEMBLIES

##### DRIVERS SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

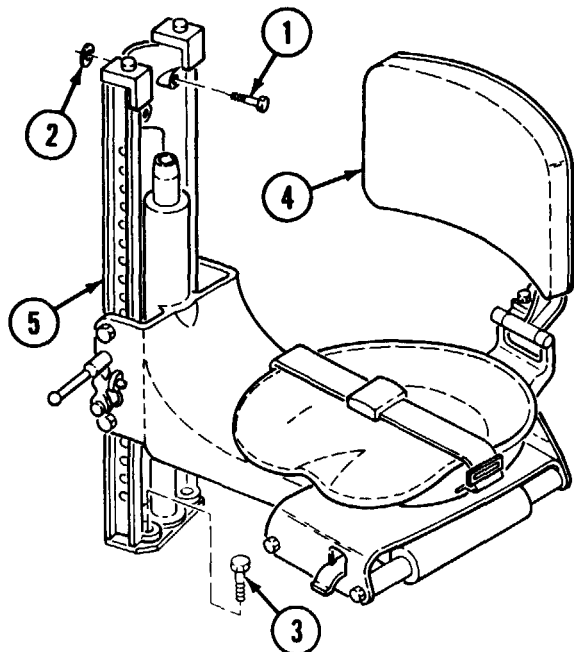
###### INITIAL SETUP

###### Materials/Parts:

Sealing compound  
(item 52, Appx D)

###### Personnel Required:

Two



###### REMOVAL

A Open and secure driver's hatch.

###### WARNING

Driver's seat is spring loaded. DO NOT raise adjusting lever without controlling seat.

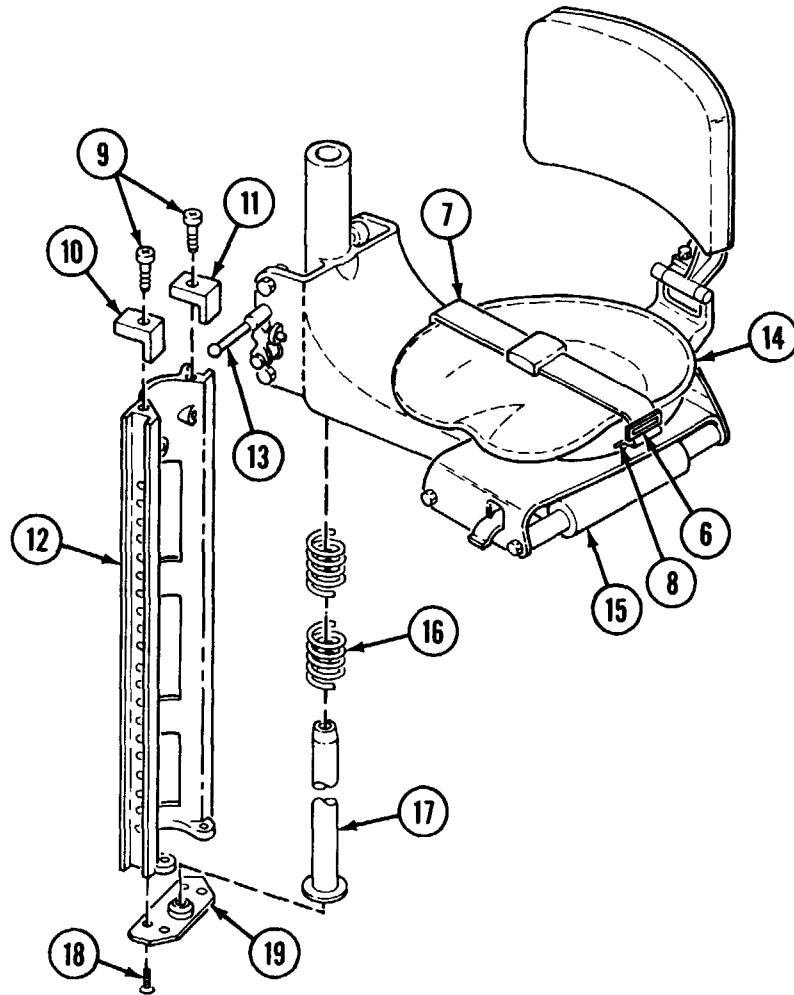
B Remove two screws (1) and two washers (2).

C Remove two screws (3).

D With assistant, lift seat assembly (4) including vertical support assembly (5) out of vehicle.

TA57244

## DRIVER'S SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

**DISASSEMBLY**

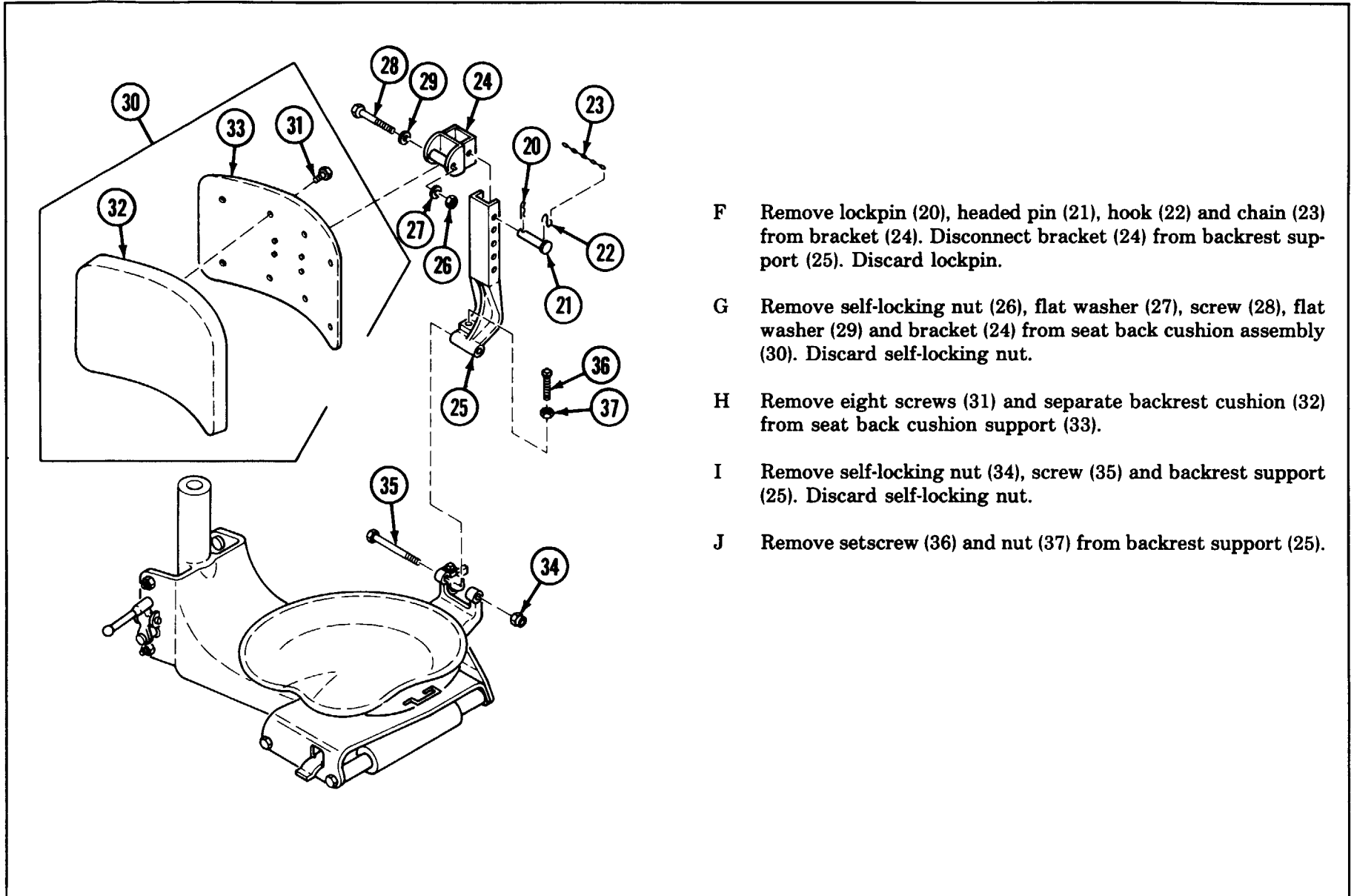
- A Remove slide (6) and pull ends of safety belt (7) through seat loops (8).
- B Remove two screws (9) releasing two pads (10 and 11) from vertical support (12).

**WARNING**

Driver's seat is spring loaded. DO NOT raise adjusting lever without controlling seat.

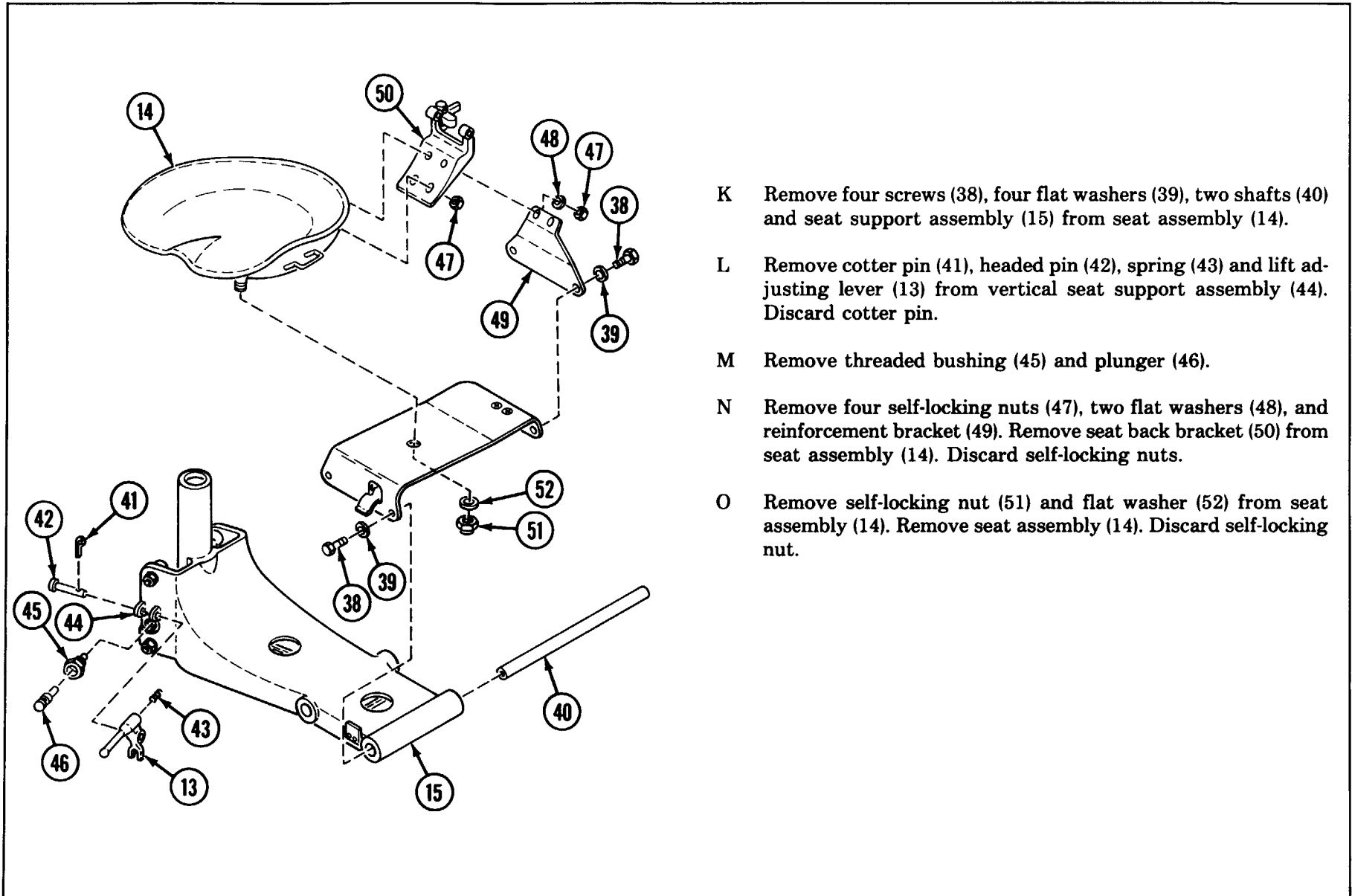
- C Have assistant lift adjusting lever (13) releasing seat assembly (14) and seat support assembly (15) from vertical support (12).
- D Lift spring (16) from vertical guide (17).
- E Remove two screws (18) releasing base plate (19) from vertical support (12).

## DRIVERS SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND



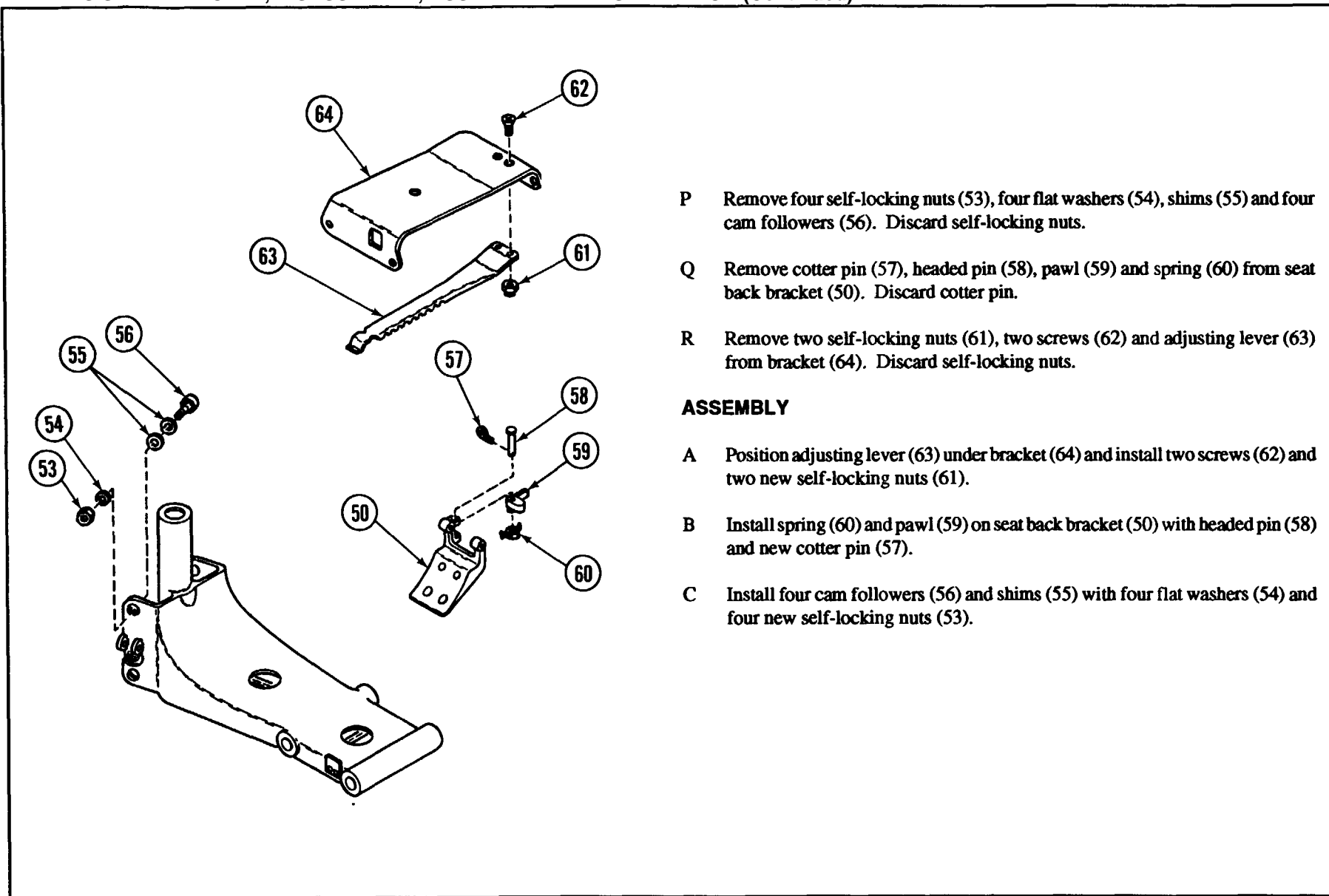
TA57246

## DRIVERS SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



- K Remove four screws (38), four flat washers (39), two shafts (40) and seat support assembly (15) from seat assembly (14).
- L Remove cotter pin (41), headed pin (42), spring (43) and lift adjusting lever (13) from vertical seat support assembly (44). Discard cotter pin.
- M Remove threaded bushing (45) and plunger (46).
- N Remove four self-locking nuts (47), two flat washers (48), and reinforcement bracket (49). Remove seat back bracket (50) from seat assembly (14). Discard self-locking nuts.
- O Remove self-locking nut (51) and flat washer (52) from seat assembly (14). Remove seat assembly (14). Discard self-locking nut.

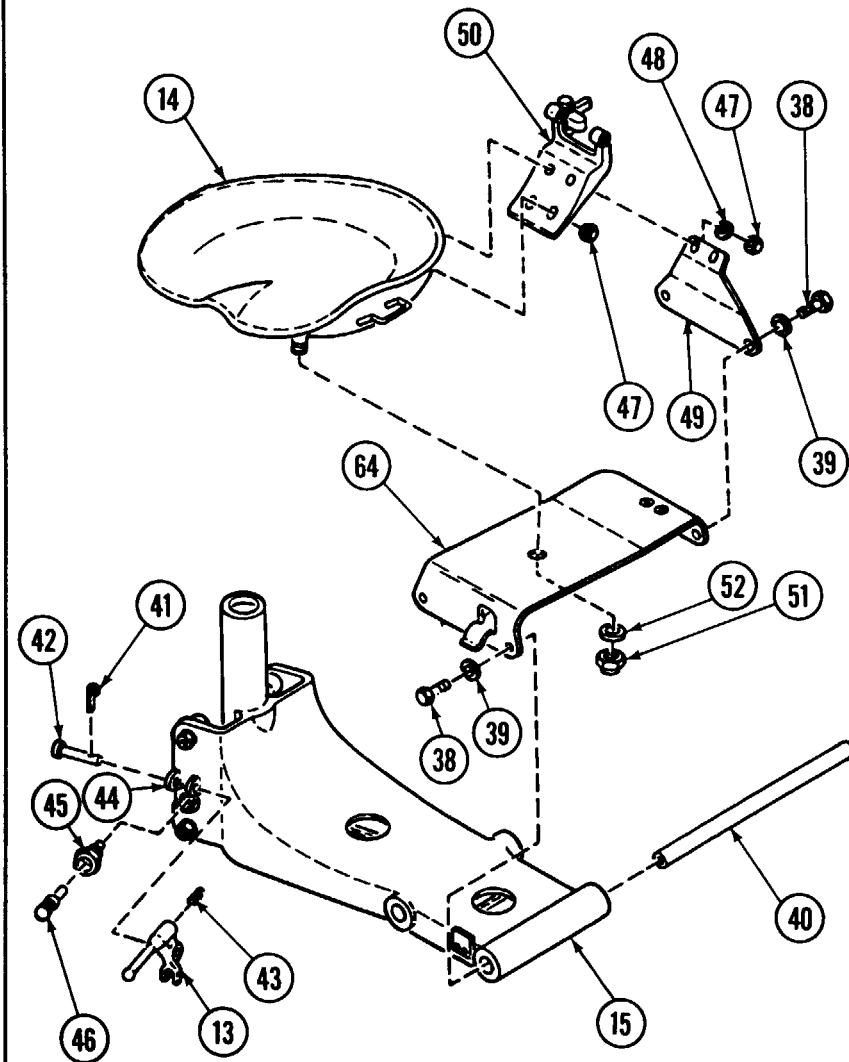
**DRIVER'S SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (Continued)**



- P Remove four self-locking nuts (53), four flat washers (54), shims (55) and four cam followers (56). Discard self-locking nuts.
- Q Remove cotter pin (57), headed pin (58), pawl (59) and spring (60) from seat back bracket (50). Discard cotter pin.
- R Remove two self-locking nuts (61), two screws (62) and adjusting lever (63) from bracket (64). Discard self-locking nuts.

**ASSEMBLY**

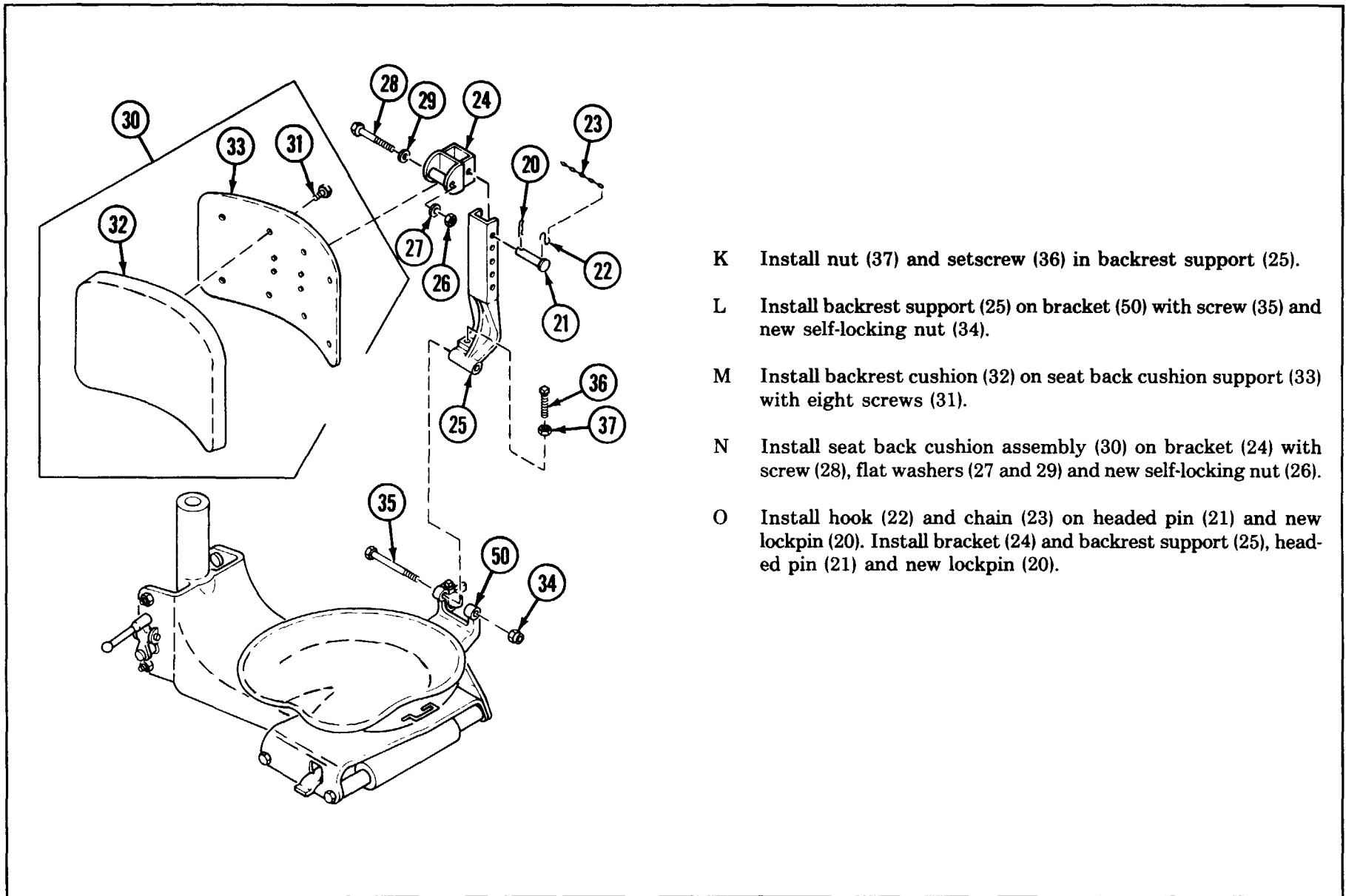
- A Position adjusting lever (63) under bracket (64) and install two screws (62) and two new self-locking nuts (61).
- B Install spring (60) and pawl (59) on seat back bracket (50) with headed pin (58) and new cotter pin (57).
- C Install four cam followers (56) and shims (55) with four flat washers (54) and four new self-locking nuts (53).

**DRIVER'S SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

- D Install seat assembly (14) on bracket (64) with flat washer (52) and new self-locking nut (51).
- E Install seat back bracket (50) on seat assembly (14) with two new self-locking nuts (47).
- F Install reinforcement bracket (49) on bracket (50) and seat assembly (14) with two flat washers (48) and two new self-locking nuts (47).
- G Lightly coat threads of threaded bushing (45) with sealing compound (item 52, Appx D). Install threaded bushing (45) and plunger (46).
- H Install adjusting lever (13) and spring (43) in seat support assembly (44) with headed pin (42) and new cotter pin (41).
- I Insert two shafts (40) in seat support assembly (15) and install seat assembly (14) and bracket (64) with four flat washers (39) and four screws (38).
- J Lightly coat threads of four screws (38) with sealing compound (item 52, Appx D).

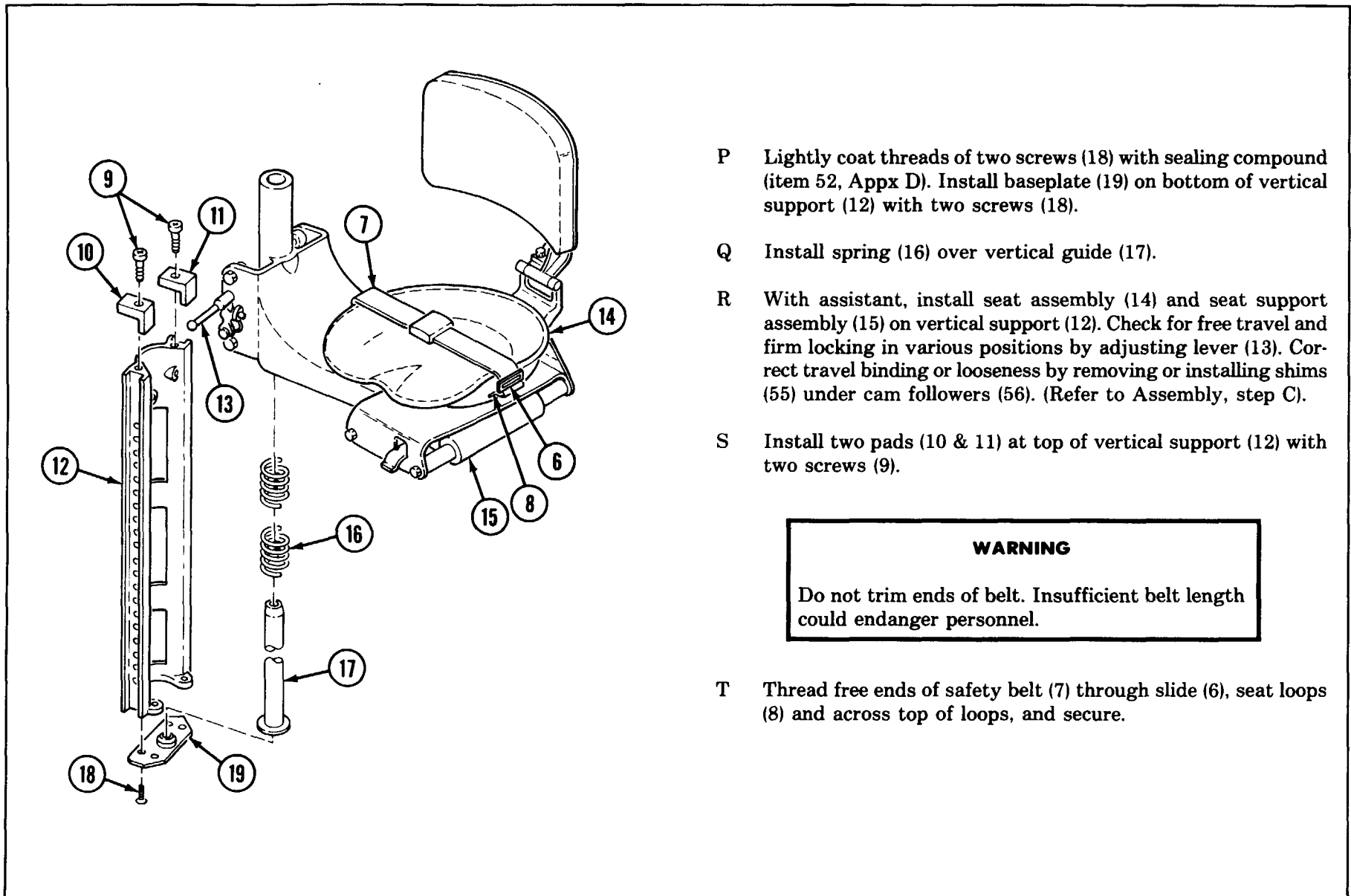


DRIVERS SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



TA57250

## DRIVER'S SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



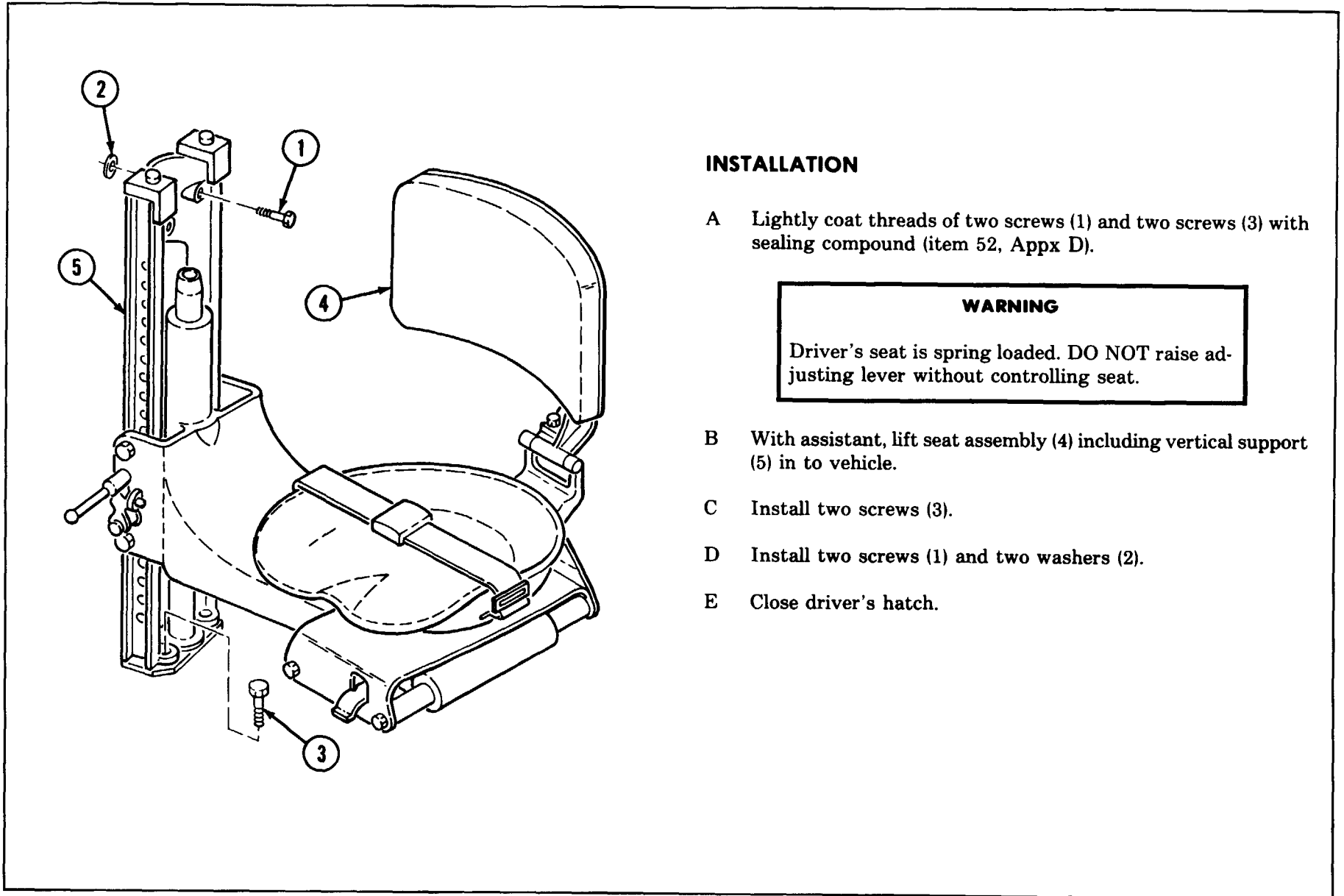
- P Lightly coat threads of two screws (18) with sealing compound (item 52, Appx D). Install baseplate (19) on bottom of vertical support (12) with two screws (18).
- Q Install spring (16) over vertical guide (17).
- R With assistant, install seat assembly (14) and seat support assembly (15) on vertical support (12). Check for free travel and firm locking in various positions by adjusting lever (13). Correct travel binding or looseness by removing or installing shims (55) under cam followers (56). (Refer to Assembly, step C).
- S Install two pads (10 & 11) at top of vertical support (12) with two screws (9).

**WARNING**

Do not trim ends of belt. Insufficient belt length could endanger personnel.

- T Thread free ends of safety belt (7) through slide (6), seat loops (8) and across top of loops, and secure.

## DRIVER'S SEAT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



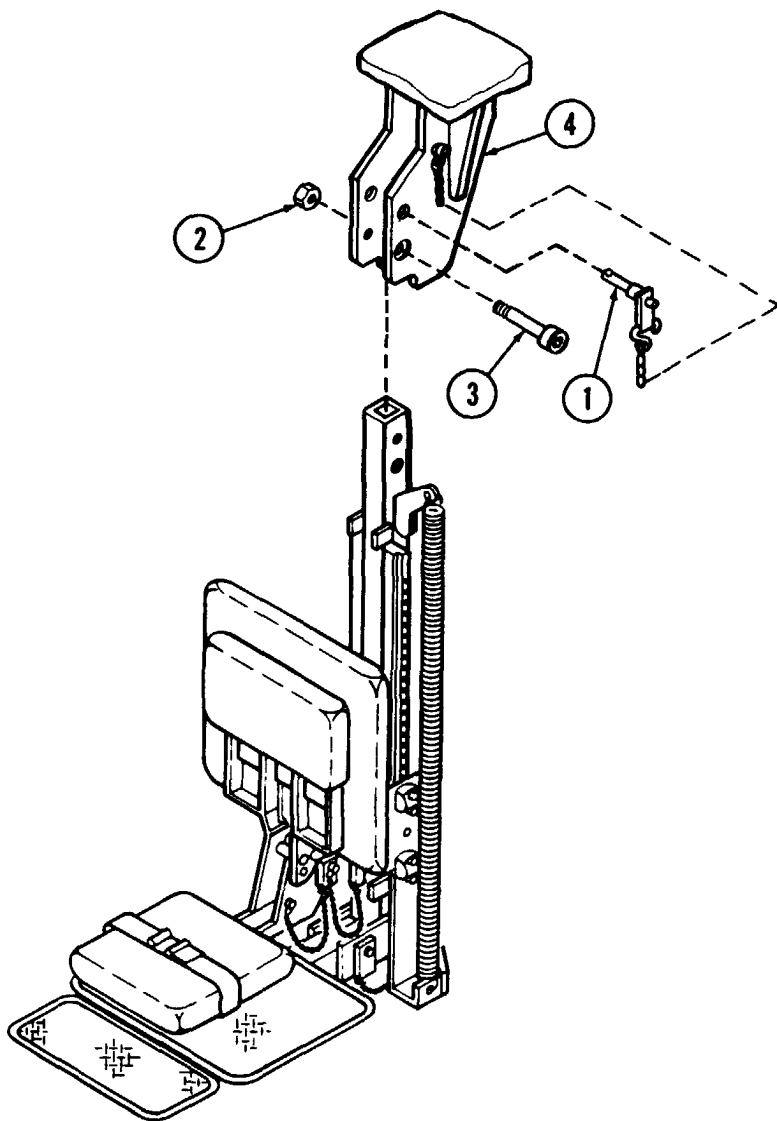
### INSTALLATION

- A Lightly coat threads of two screws (1) and two screws (3) with sealing compound (item 52, Appx D).

#### WARNING

Driver's seat is spring loaded. DO NOT raise adjusting lever without controlling seat.

- B With assistant, lift seat assembly (4) including vertical support (5) in to vehicle.
- C Install two screws (3).
- D Install two screws (1) and two washers (2).
- E Close driver's hatch.

**COMMANDER'S SEAT: REMOVAL AND INSTALLATION****REMOVAL****WARNING**

The commander's seat assembly is heavy. Three personnel are required to remove seat assembly from vehicle ceiling.

**NOTE**

Deploy commander's seat. Raise seat carriage to maximum UP position to relieve spring tension (TM 9-2350-267-10).

- A Pull quick-release pin (1).
- B Remove nut (2) from screw (3). With two personnel supporting seat assembly, remove screw (3).
- C Remove seat assembly from vehicle ceiling bracket (4).

**INSTALLATION**

Reverse removal procedures.

## COMMANDER'S SEAT CARRIAGE: DISASSEMBLY AND ASSEMBLY

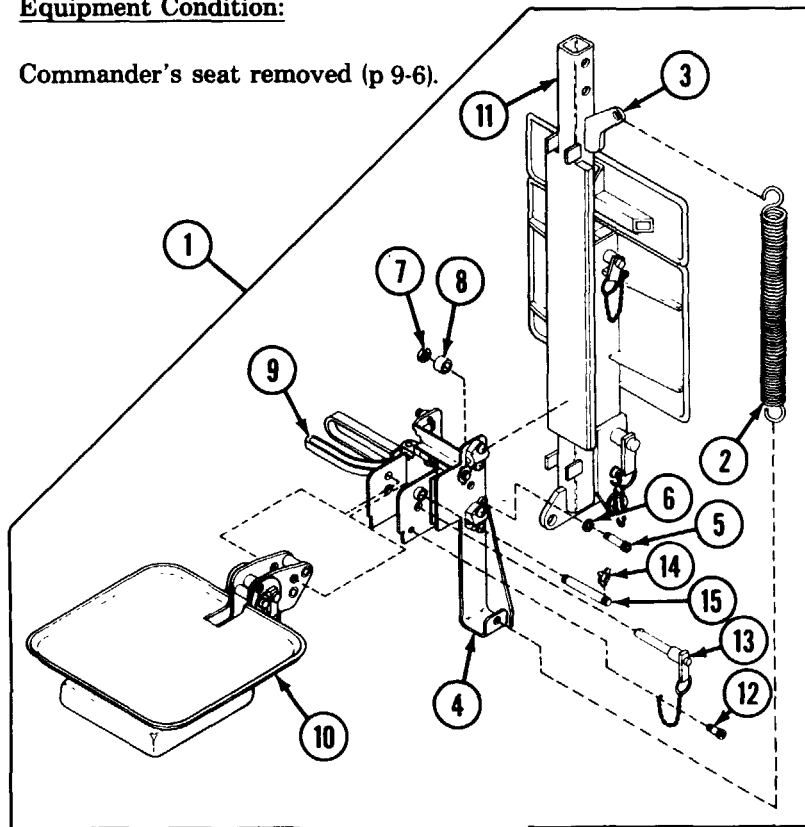
### INITIAL SETUP

#### Personnel Required:

Two

#### Equipment Condition:

Commander's seat removed (p 9-6).



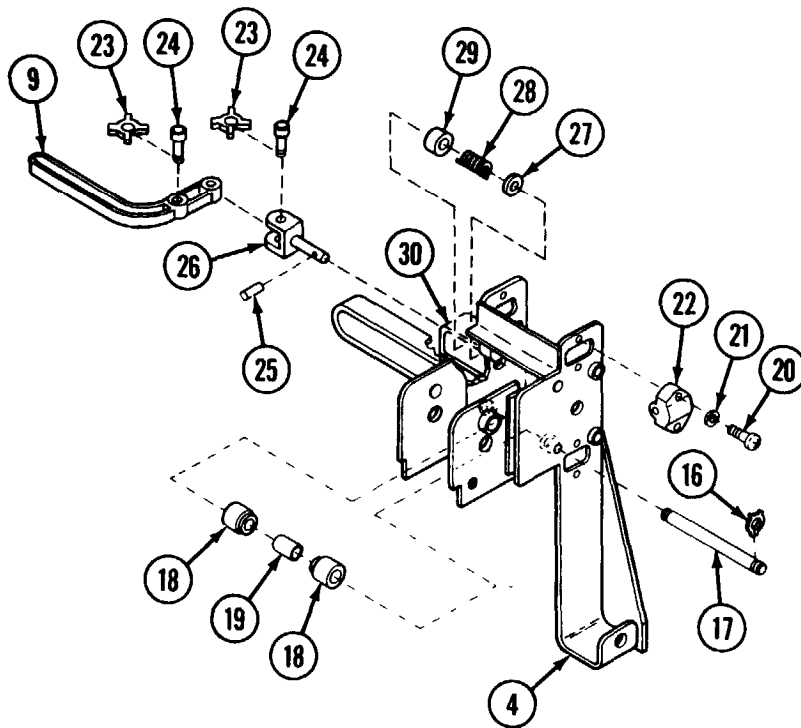
### DISASSEMBLY

- A Place seat assembly (1) on suitable work surface with spring (2) parallel to surface.
- B Remove spring (2) from post bracket (3) and carriage (4).
- C Remove four shouldered screws (5), four lockwashers (6), four locknuts (7) and four cam followers (8). Discard lockwashers and locknuts.

### WARNING

Have assistant support weight of seat and carriage.

- D Press locking handle (9) and remove carriage (4) and seat (10) from post (11).
- E Remove screw (12) and quick-release pin (13).
- F Remove two washers (14) and shaft (15). Separate carriage (4) and seat (10).

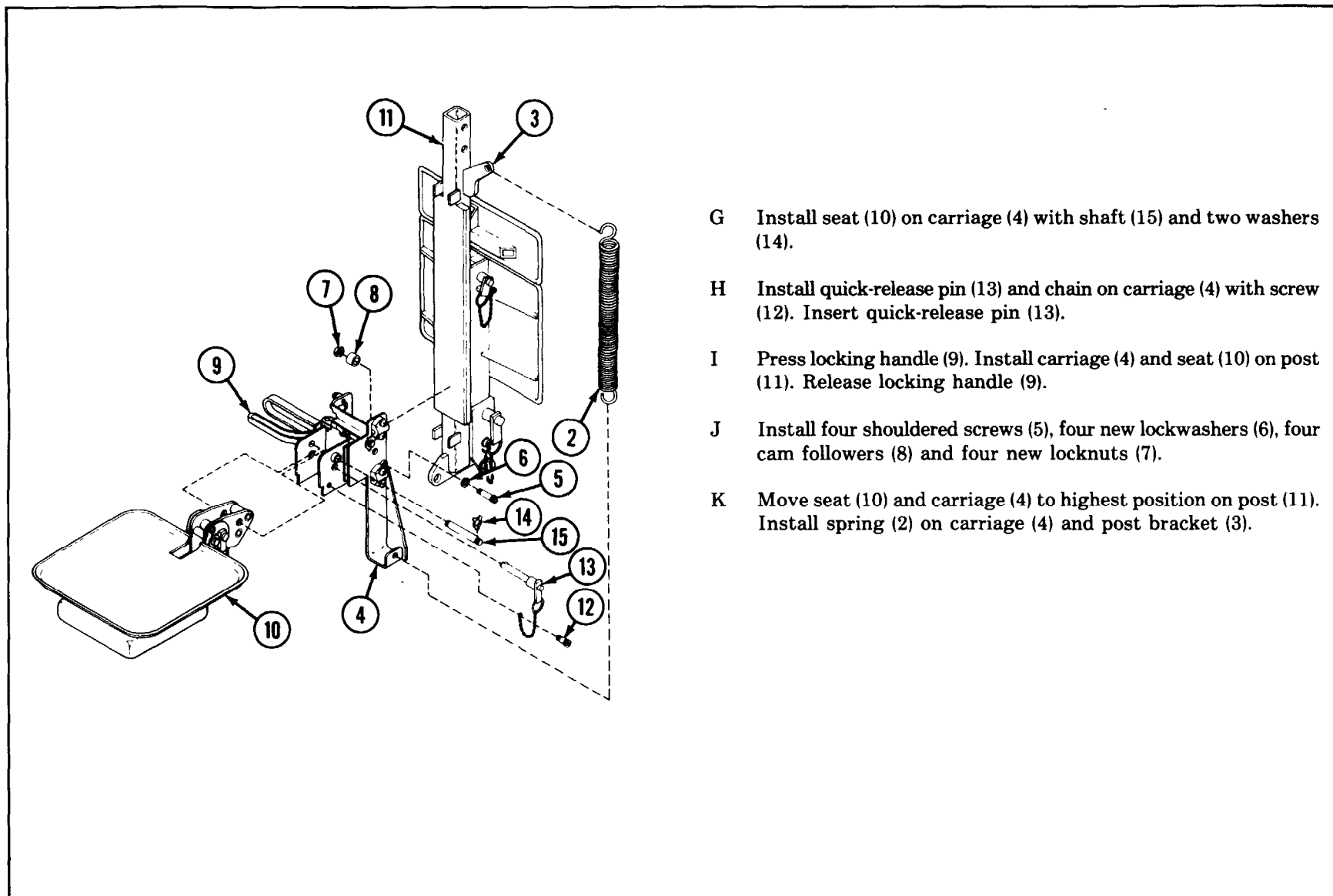
**COMMANDER'S SEAT CARRIAGE: DISASSEMBLY AND ASSEMBLY (CONTINUED)**

- G Remove four washers (16), two shafts (17), four cam followers (18) and two spacers (19).
- H Remove eight screws (20), eight lockwashers (21) and four roller assemblies (22). Discard lockwashers.
- I Remove two washers (23), two headed pins (24) and handle (9).
- J Drive out grooved pin (25) and remove pin assembly (26), washer (27), spring (28) and sleeve (29) from carriage (4).

**ASSEMBLY**

- A Insert pin assembly (26) into hole in pin housing (30).
- B Place sleeve (29) spring (28) and washer (27) in pin housing (30). Install pin assembly (26) and secure with grooved pin (25).
- C Install handle (9) with two headed pins (24) and two washers (23).
- D Install each of four roller assemblies (22) with two screws (20) and two new lockwashers (21).
- E Install four cam followers (18) separated by two spacers (19) on two shafts (17).
- F Secure two shafts (17) in carriage (4) with four washers (16).

## COMMANDERS SEAT CARRIAGE: DISASSEMBLY AND ASSEMBLY (CONTINUED)

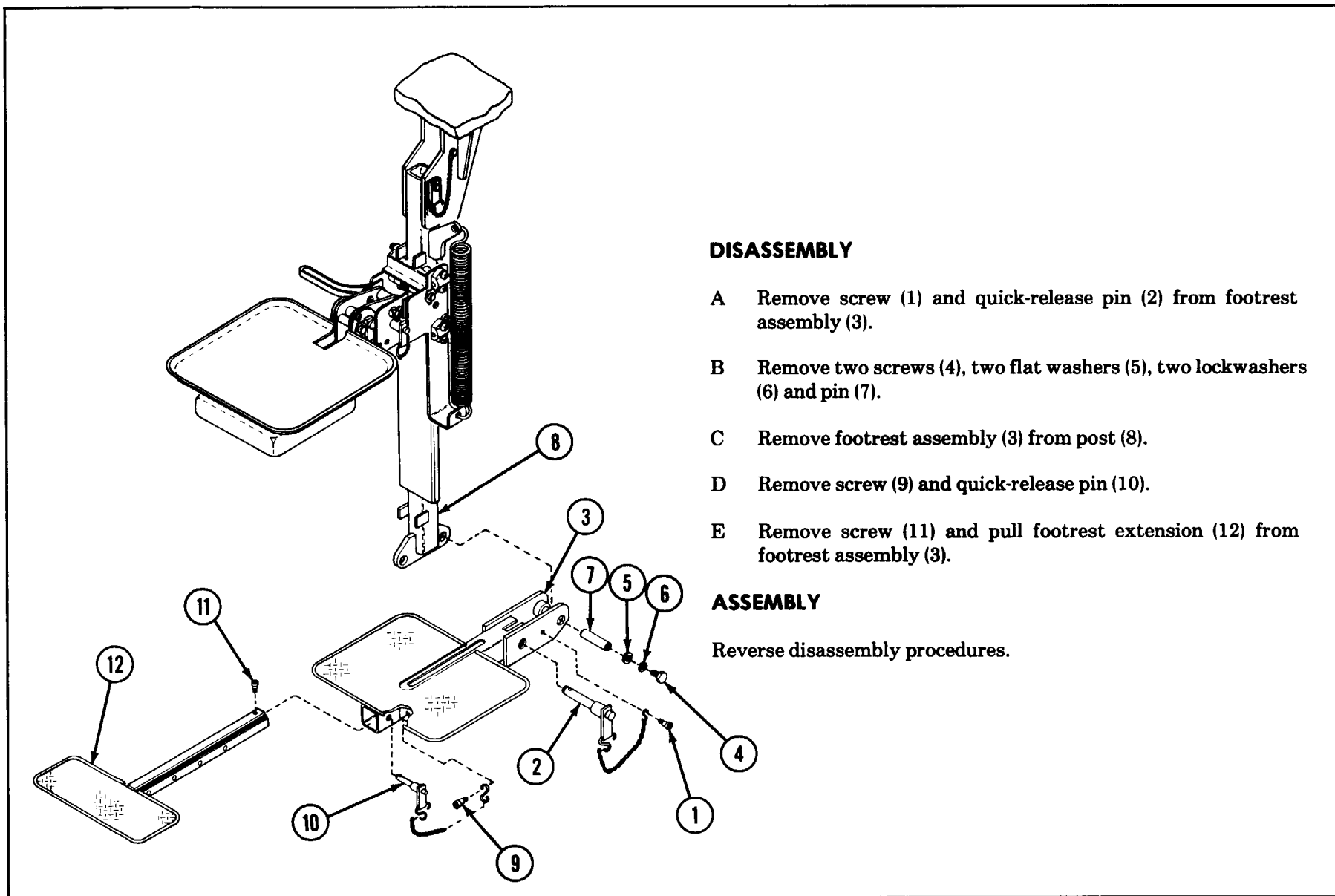


- G Install seat (10) on carriage (4) with shaft (15) and two washers (14).
- H Install quick-release pin (13) and chain on carriage (4) with screw (12). Insert quick-release pin (13).
- I Press locking handle (9). Install carriage (4) and seat (10) on post (11). Release locking handle (9).
- J Install four shouldered screws (5), four new lockwashers (6), four cam followers (8) and four new locknuts (7).
- K Move seat (10) and carriage (4) to highest position on post (11). Install spring (2) on carriage (4) and post bracket (3).





## COMMANDER'S SEAT POST AND FOOTREST: DISASSEMBLY AND ASSEMBLY



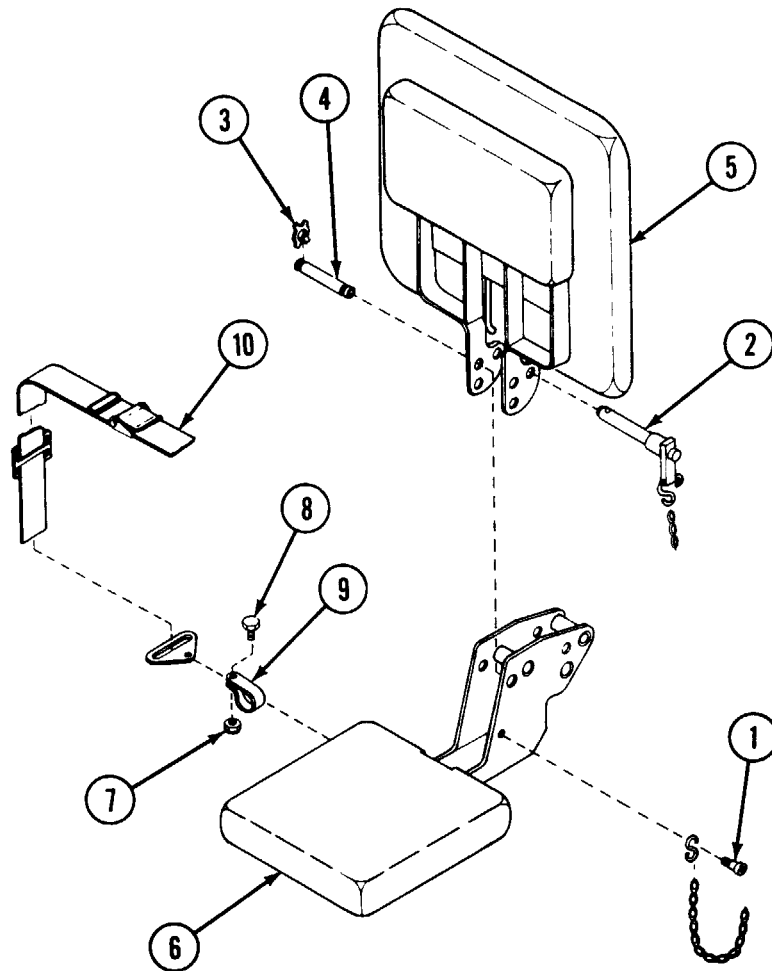
### DISASSEMBLY

- A Remove screw (1) and quick-release pin (2) from footrest assembly (3).
- B Remove two screws (4), two flat washers (5), two lockwashers (6) and pin (7).
- C Remove footrest assembly (3) from post (8).
- D Remove screw (9) and quick-release pin (10).
- E Remove screw (11) and pull footrest extension (12) from footrest assembly (3).

### ASSEMBLY

Reverse disassembly procedures.

### COMMANDER'S SEAT: DISASSEMBLY AND ASSEMBLY



#### DISASSEMBLY

- A Remove commander's seat assembly from carriage (p 9-7).
- B Remove screw (1) and quick-release pin (2).
- C Remove two washers (3) and shaft (4), and separate backrest (5) and seat (6).
- D Remove two nuts (7), two screws (8) and two clamps (9).
- E Remove belt (10).

#### ASSEMBLY

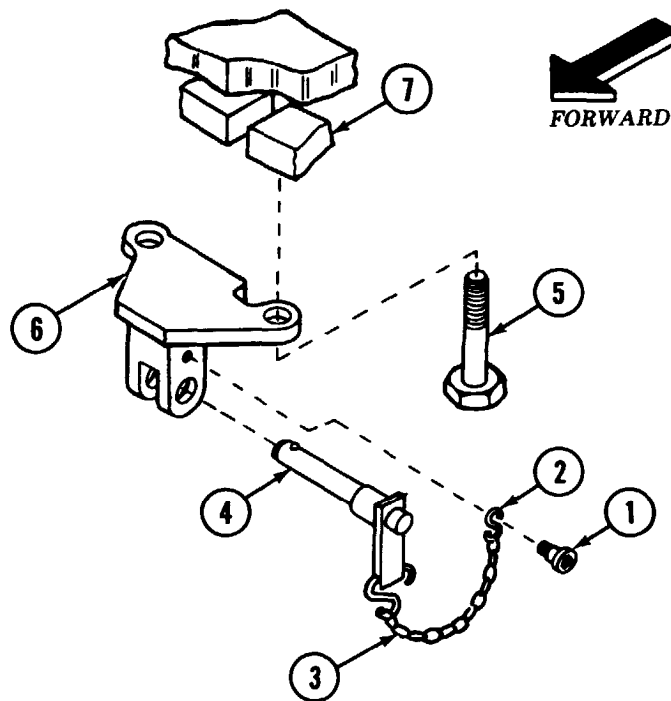
Reverse disassembly procedures.

## COMMANDERS SEAT CEILING BRACKET SUPPORT, FORWARD: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Equipment Condition:

Commander's seat deployed (TM 9-2350-267-10).



### REMOVAL

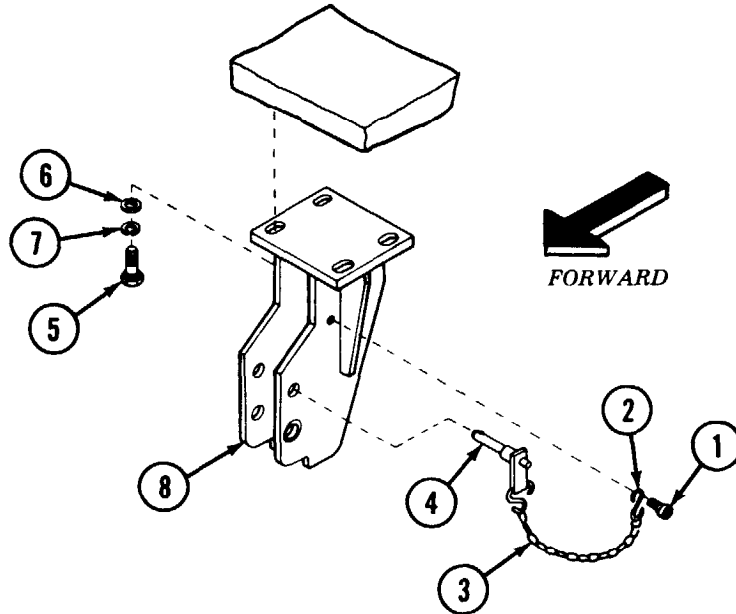
- A Remove screw (1), S-hook (2), chain (3), and quick-release pin (4).
- B Remove two self-locking bolts (5) and forward support bracket (6) from commander's cupola ring (7). Discard self-locking bolts.

### INSTALLATION

- A Install forward support bracket (6) on commander's cupola ring (7) with two new self-locking bolts (5).
- B Install quick-release pin (4), chain (3), S-hook (2), and screw (1).

**COMMANDER'S SEAT CEILING BRACKET SUPPORT, REAR: REMOVAL AND INSTALLATION****INITIAL SETUP****Equipment Condition:**

Commander's seat removed (p 9-6).

**REMOVAL**

- A Remove screw (1), S-hook (2), chain (3), and quick-release pin (4).
- B Remove four screws (5), four flat washers (6), four lockwashers (7) and rear support bracket (8) from vehicle ceiling. Discard lockwashers.

**INSTALLATION**

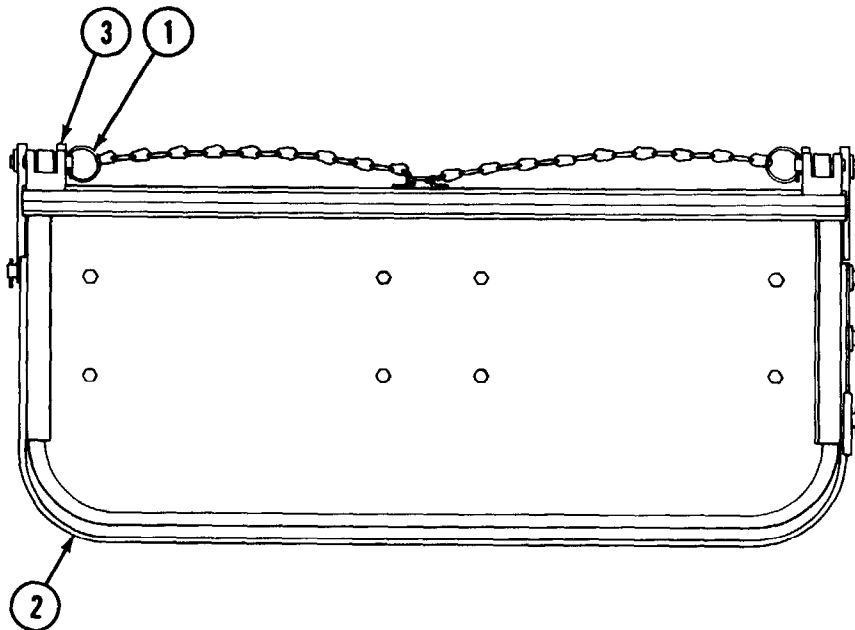
- A Install rear support bracket (8) with four new lockwashers (7), four flat washers (6), and four screws (5).
- B Install quick-release pin (4), chain (3), S-hook (2), and screw (1).

## CREW SEATS (RIGHT SIDE): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Personnel Required:

Two



### WARNING

Seats are heavy. Support seats before pulling quick-release pins. Hinged seats, backrests and support brackets may swing down, causing personal injury.

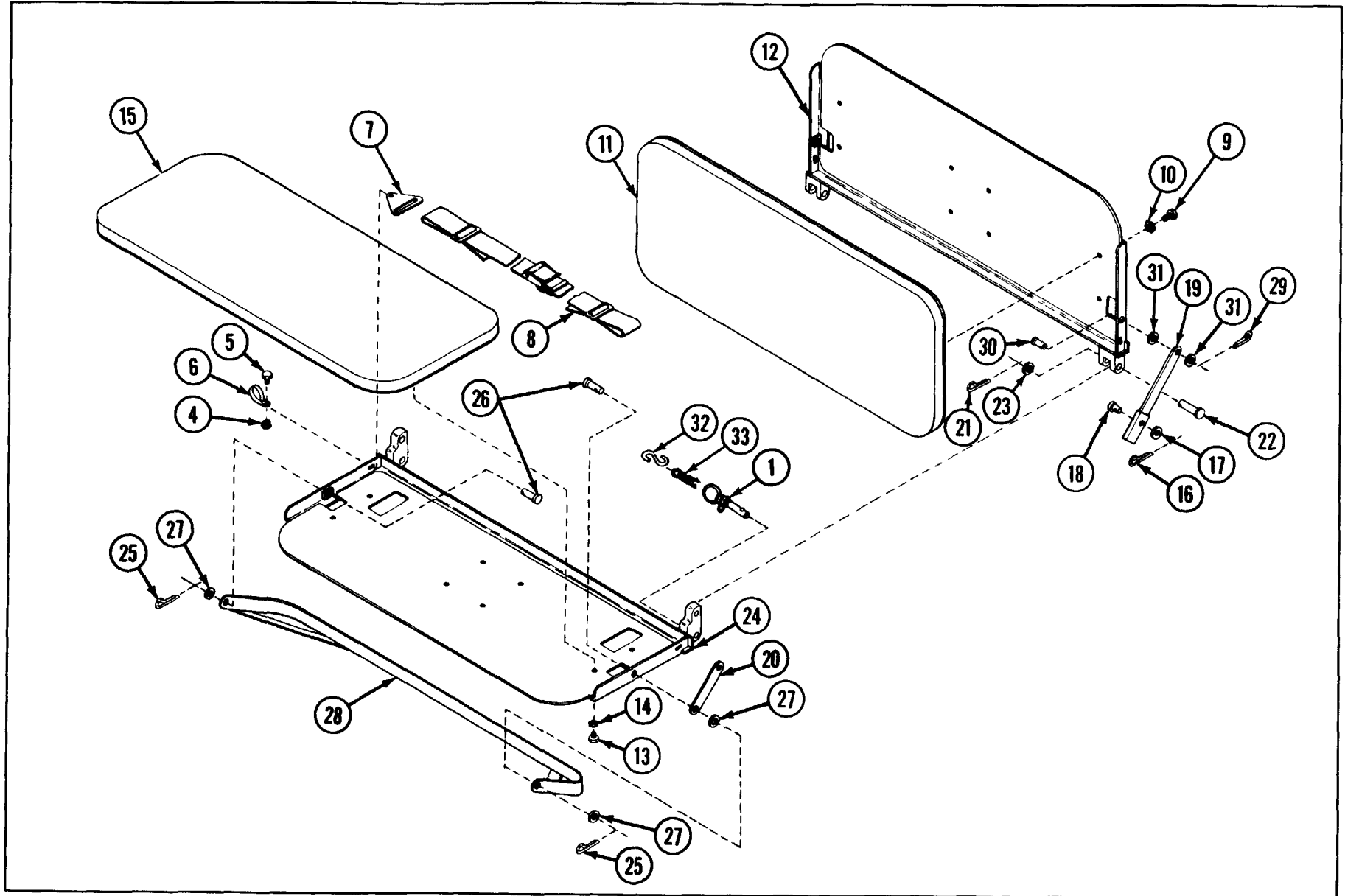
### DOUBLE SEAT

#### REMOVAL

- A Remove quick-release pins (1) which secure seat (2) to left-hand sponson (3).
- B Place seat (2) on clean flat surface.

TA57466

CREW SEATS (RIGHT SIDE): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



**CREW SEATS (RIGHT SIDE): REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)**

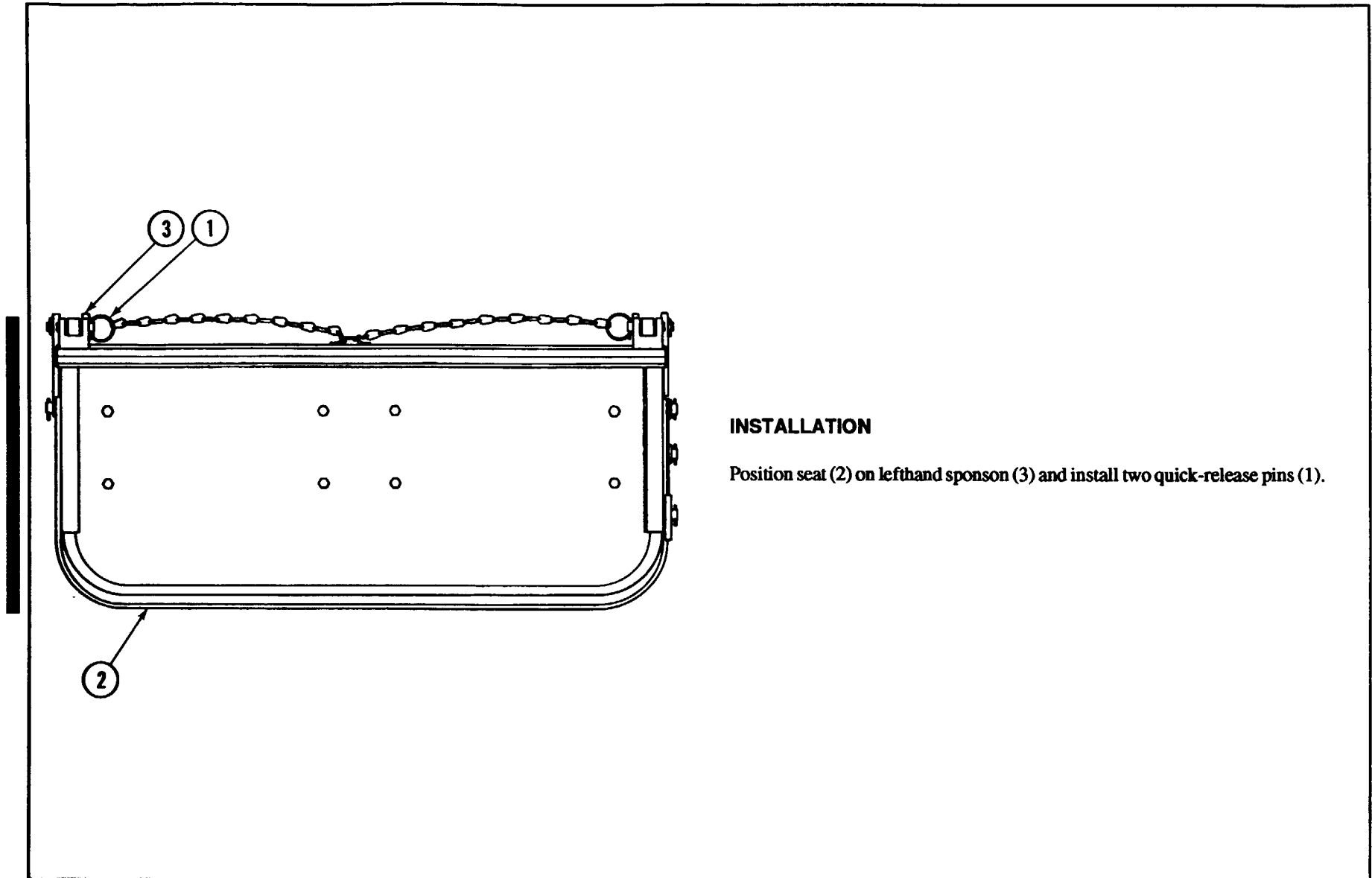
**DISASSEMBLY**

- A Remove two self-locking nuts (4), two screws (5), two clamps (6), two plates (7) and safety belt assembly (8). Detach ends of safety belt assembly (8) from slotted ends of plates (7). Discard self-locking nuts.
- B Remove eight screws (9), eight lockwashers (10) and backrest cushion assembly (11) from backrest (12). Discard lockwashers.
- C Remove eight screws (13), eight lockwashers (14) and seat cushion assembly (15). Discard lockwashers.
- D Remove two cotter pins (16), two washers (17) and two headed pins (18), and separate levers (19) from links (20). Discard cotter pins.
- E Remove two cotter pins (21), two headed pins (22) and two washers (23). Separate backrest assembly (12) from seat assembly (24). Discard cotter pins.
- F Remove two cotter pins (25), two headed pins (26), three flat washers (27), bracket assembly (28) and two links (20). Discard cotter pins.
- G Remove two cotter pins (29), two headed pins (30), four flat washers (31) and two levers (19) from backrest (12). Discard cotter pins.
- H Remove two S-hooks (32), releasing two chains (33) and two quick-release pins (1).

**ASSEMBLY**

- A Install two S-hooks (32) on cleat on backside of backrest (12) with two chains (33) and two quick-release pins (1).
- B Install two levers (19) and four flat washers (31) on backrest assembly (12) with two headed pins (30) and two new cotter pins (29).
- C Install bracket assembly (28) and two links (20) on seat assembly (24) with two headed pins (26), three flat washers (27) and two new cotter pins (25).
- D Install backrest assembly (12) on seat assembly (24) with two headed pins (22), two washers (23) and two new cotter pins (21).
- E Install links (20) on levers (19) with two headed pins (18), two washers (17) and two new cotter pins (16).
- F Install seat cushion assembly (15) on seat assembly (24) with eight new lockwashers (14) and eight screws (13).
- G Install backrest cushion assembly (11) on backrest assembly (12) with eight new lockwashers (10) and eight screws (9).
- H String ends of safety belt assembly (8) through slotted ends of two plates (7). Secure pointed ends of plates (7) to frame of seat assembly (24) with two clamps (6), two screws (5), and two new self-locking nuts (4).

CREW SEATS (RIGHT SIDE): REMOVAL DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

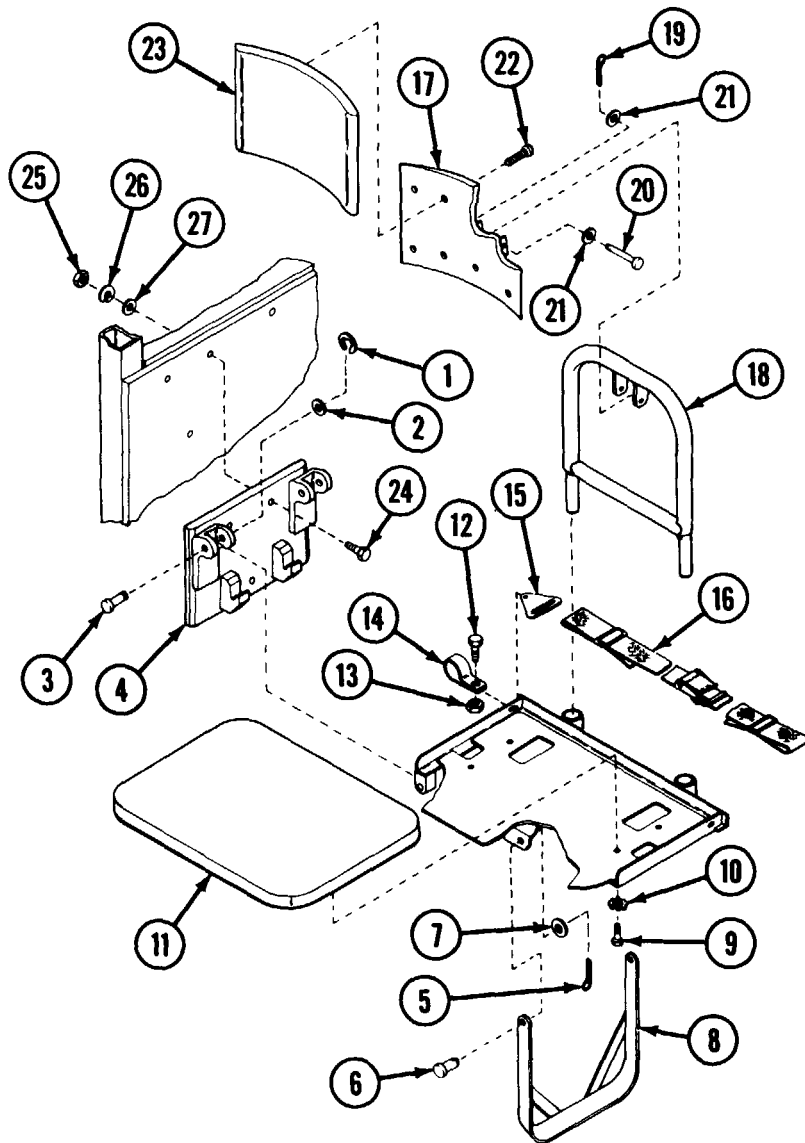


**INSTALLATION**

Position seat (2) on lefthand sponson (3) and install two quick-release pins (1).



CREW SEATS (RIGHT SIDE): REMOVAL, DISASSEMBLY , ASSEMBLY AND INSTALLATION (CONTINUED)



**SINGLE SEAT**

**REMOVAL**

Remove two retaining rings (1), two flat washers (2), two grooved pins (3) and remove seat assembly from support (4). Discard retaining rings.

**DISASSEMBLY**

- A Remove two cotter pins (5), two headed pins (6), two washers (7) and bracket (8). Discard cotter pins.
- B Remove four screws (9), four lockwashers (10) and seat cushion (11). Discard lockwashers.
- C Remove two screws (12), two self-locking nuts (13), two clamps (14), two plates (15) and safety belt assembly (16). Discard self-locking nuts.
- D Remove backrest (17) from backrest frame (18) by removing cotter pin (19), headed pin (20) and two washers (21). Discard cotter pin.
- E Remove eight screws (22) and cushion (23) from backrest (17).

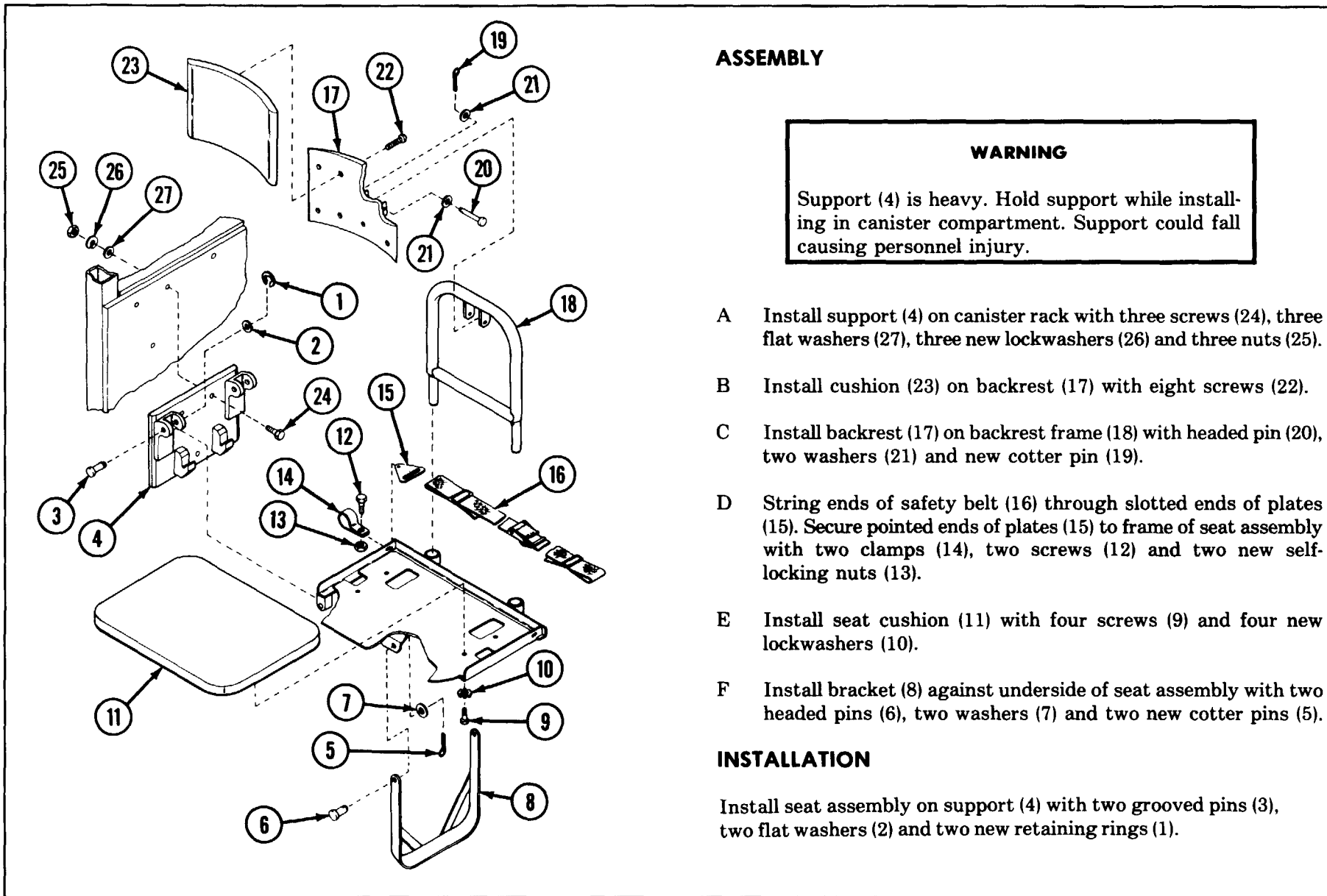
**WARNING**

Support (4) is heavy. Hold support while removing from canister compartment. Support could fall causing personnel injury.

- F Remove support (4) from vehicle by removing three screws (24), three nuts (25), three lockwashers (26) and three flat washers (27). Discard lockwashers.



CREW SEATS (RIGHT SIDE): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



**ASSEMBLY**

**WARNING**

Support (4) is heavy. Hold support while installing in canister compartment. Support could fall causing personnel injury.

- A Install support (4) on canister rack with three screws (24), three flat washers (27), three new lockwashers (26) and three nuts (25).
- B Install cushion (23) on backrest (17) with eight screws (22).
- C Install backrest (17) on backrest frame (18) with headed pin (20), two washers (21) and new cotter pin (19).
- D String ends of safety belt (16) through slotted ends of plates (15). Secure pointed ends of plates (15) to frame of seat assembly with two clamps (14), two screws (12) and two new self-locking nuts (13).
- E Install seat cushion (11) with four screws (9) and four new lockwashers (10).
- F Install bracket (8) against underside of seat assembly with two headed pins (6), two washers (7) and two new cotter pins (5).

**INSTALLATION**

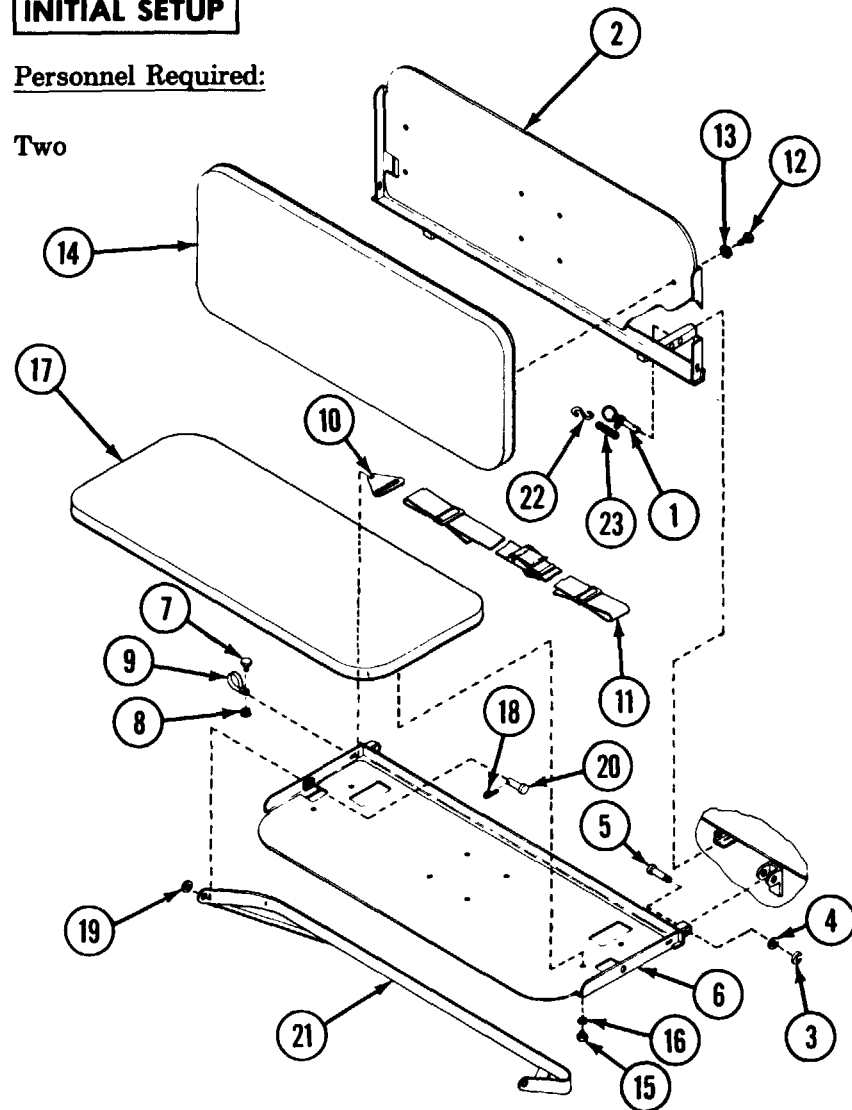
Install seat assembly on support (4) with two grooved pins (3), two flat washers (2) and two new retaining rings (1).

**CREW SEATS (LEFT SIDE): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**

**INITIAL SETUP**

Personnel Required:

Two



**WARNING**

Seats are heavy. Support seats before pulling quick-release pins. Hinged seats, backrests and support brackets may swing down, causing personal injury.

**DOUBLE SEAT**

**REMOVAL**

- A Remove two quick-release pins (1). Pull backrest (2) from rack assembly and remove from vehicle.
- B Remove two retaining rings (3), two flat washers (4) and two pins (5) and remove seat (6) from vehicle. Discard retaining rings (3).

**CREW SEATS (LEFT SIDE): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

**DISASSEMBLY**

- A Remove two screws (7), two self-locking nuts (8), two clamps (9), two plates (10) and safety belt assembly (11). Discard self-locking nuts.
- B Remove eight screws (12), eight lockwashers (13) and backrest cushion (14) from backrest (2). Discard lockwashers.
- C Remove eight screws (15), eight lockwashers (16) and cushion (17). Discard lockwashers.
- D Remove two cotter pins (18), two washers (19), two headed pins (20) and bracket (21). Discard cotter pins.
- E Open two S-hooks (22) and remove two quick-release pins (1) and two chains (23).

**ASSEMBLY**

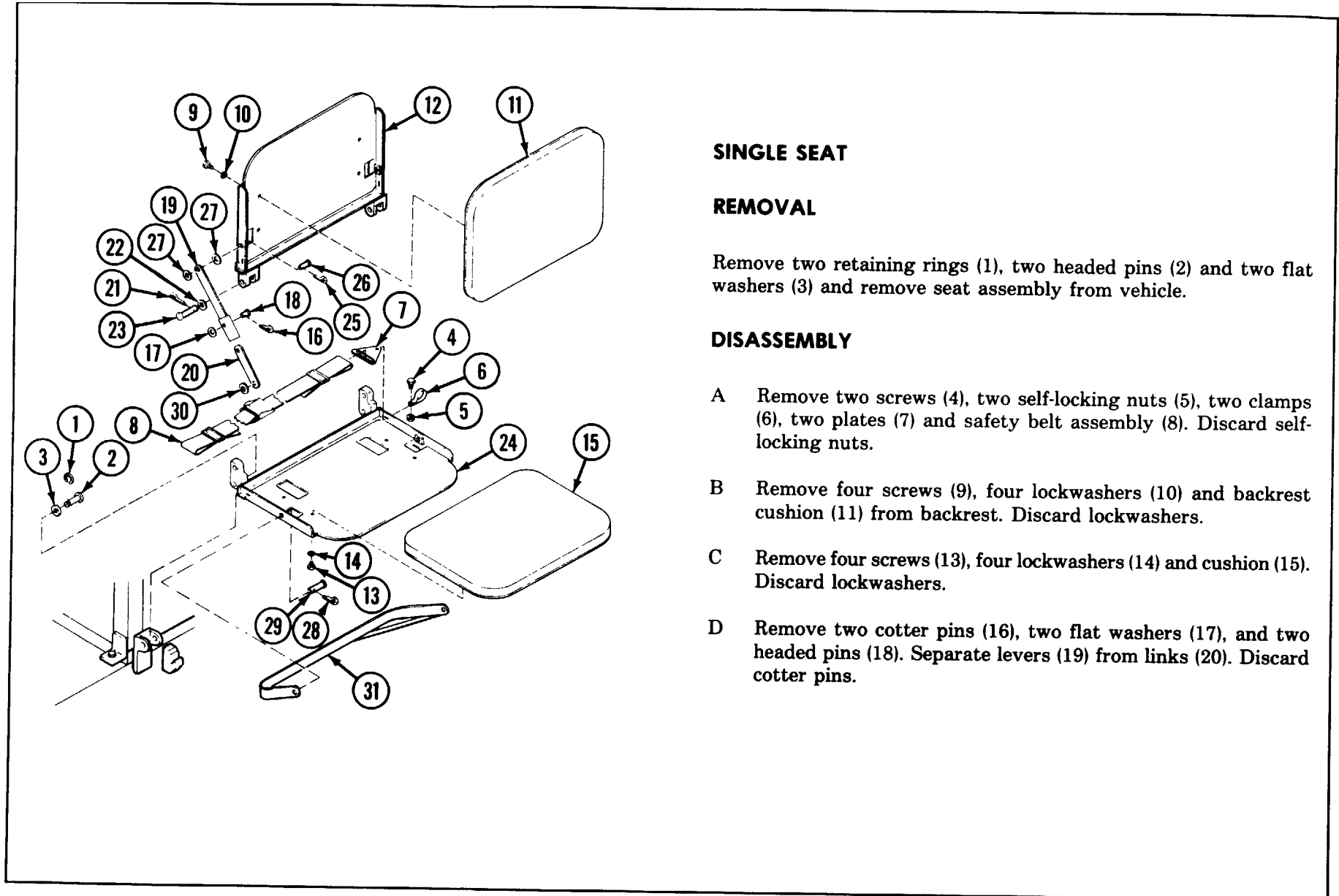
- A Install two S-hooks (22) on cleat on underside of seat (6), with two chains (23) and two quick-release pins (1).

- B Install bracket (21) on seat (6) with two headed pins (20), two washers (19) and two new cotter pins (18).
- C Install cushion (17) on seat (6) with eight new lockwashers (16) and eight screws (15).
- D Install backrest cushion (14) on backrest (2) with eight new lockwashers (13) and eight screws (12).
- E String ends of safety belt (11) through slotted holes in two plates (10). Secure pointed ends of plates (10) to frame of seat (6) with two clamps (9), two screws (7) and two new self-locking nuts (8).

**INSTALLATION**

- A Install seat (6) on mounts with two pins (5), two flat washers (4) and two new retaining rings (3).
- B Install backrest (2) on mounts with two quick-release pins (1).

## CREW SEATS (LEFT SIDE): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

**SINGLE SEAT****REMOVAL**

Remove two retaining rings (1), two headed pins (2) and two flat washers (3) and remove seat assembly from vehicle.

**DISASSEMBLY**

- A Remove two screws (4), two self-locking nuts (5), two clamps (6), two plates (7) and safety belt assembly (8). Discard self-locking nuts.
- B Remove four screws (9), four lockwashers (10) and backrest cushion (11) from backrest. Discard lockwashers.
- C Remove four screws (13), four lockwashers (14) and cushion (15). Discard lockwashers.
- D Remove two cotter pins (16), two flat washers (17), and two headed pins (18). Separate levers (19) from links (20). Discard cotter pins.

## CREW SEATS (LEFT SIDE): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

- E Remove two cotter pins (21), two washers (22) and two headed pins (23), and separate backrest (12) from seat (24). Discard cotter pins.

### NOTE

Tag left and right levers to ensure proper assembly.

- F Remove two cotter pins (25), two headed pins (26) and four washers (27), and remove levers (19) from backrest (12). Discard cotter pins.
- G Remove two cotter pins (28), two headed pins (29) and two washers (30), and remove links (20) and bracket (31) from seat (24). Discard cotter pins.

### ASSEMBLY

- A Install bracket (31) and links (20) on seat (24) with two headed pins (29), two washers (30) and two new cotter pins (28).
- B Install left and right levers (19) on backrest (12) with two headed pins (26), four washers (27) and two new cotter pins (25).

- C Install backrest (12) on seat (24) with two headed pins (23), two washers (22) and two new cotter pins (21).
- D Install links (20) on levers (19) with two headed pins (18), two flat washers (17) and two new cotter pins (16).
- E Install seat cushion (15) on seat (24) with four new lockwashers (14) and four screws (13).
- F Install cushion (11) on backrest (12) with four new lockwashers (10) and four screws (9).
- G String ends of safety belt (8) through slotted ends of two plates (7). Secure pointed ends of plates (7) to seat (24) with two clamps (6), two screws (4) and two new self-locking nuts (5).

### INSTALLATION

Install seat assembly in mounting brackets on canister racks with two headed pins (2). Secure with two flat washers (3) and two retaining rings (1).

TA312914

## Section II HATCHES, LATCHES, LOCKS AND COVERS

## DRIVERS HATCH COVER AND COMPONENTS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

**INITIAL SETUP**Test Equipment/Special Tools:

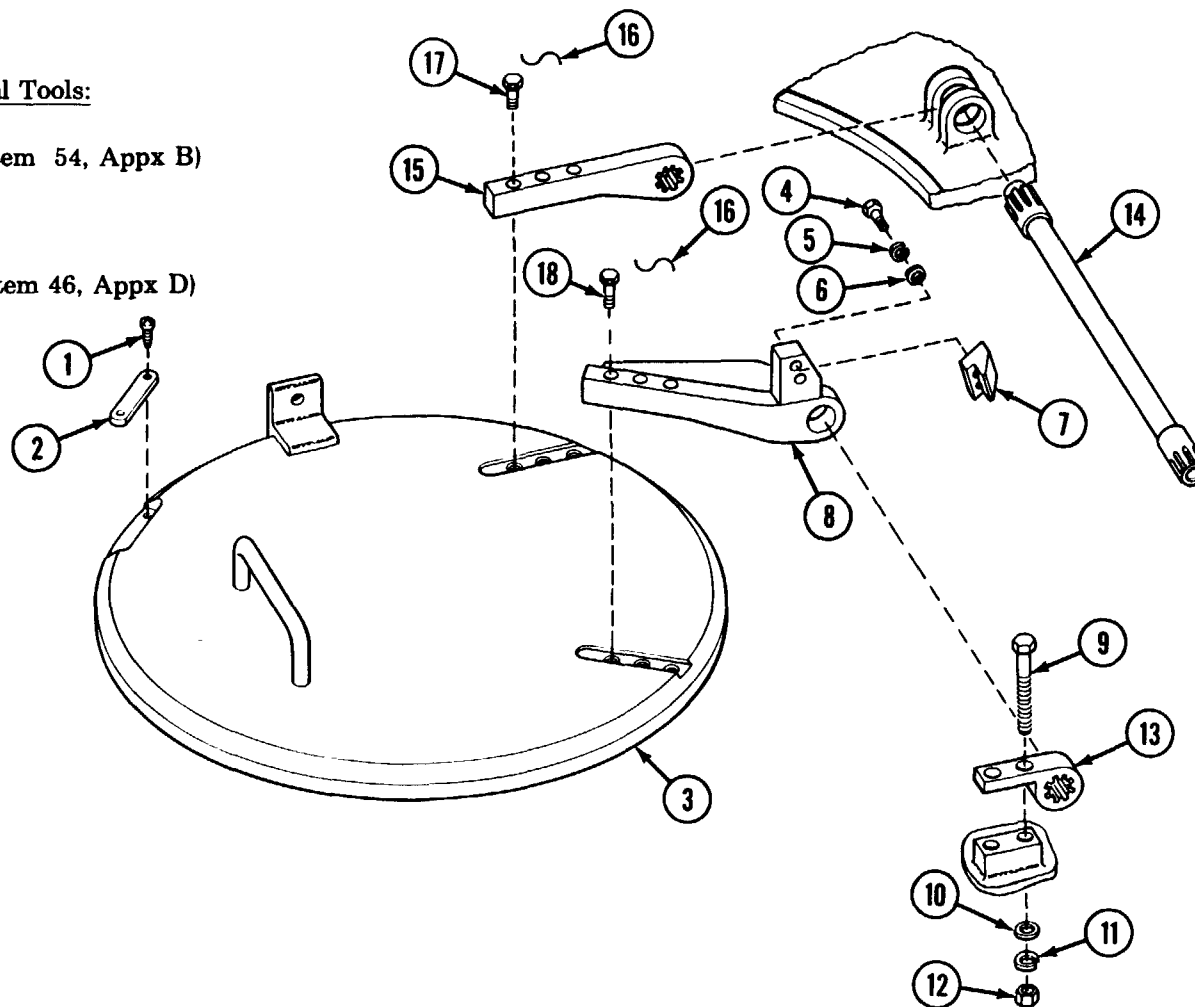
Pliers, wire twisting (item 54, Appx B)

Materials/Parts:

Zinc chromate paste (item 46, Appx D)

Personnel Required:

Two





## DRIVER'S HATCH COVER AND COMPONENTS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### REMOVAL

- A Remove two screws (1) and remove wear plate (2) from driver's hatch cover (3).
- B Remove two screws (4), two lockwashers (5), two flat washers (6) and strike (7) from outer hatch cover arm (8). Discard lockwashers.
- C Raise driver's hatch cover (3) to a neutral position (approximately 90 degrees), and have assistant hold.
- D Remove two screws (9), two flat washers (10), two lockwashers (11) and two nuts (12), holding torsion bar anchor (13) to vehicle. Discard lockwashers.
- E Tap anchor (13) free from torsion bar hinge (14).
- F Tap torsion bar hinge (14) free from hatch cover arms (8 and 15) and vehicle-mounted brackets.
- G Remove hatch cover (3) and attached arms (8 and 15) from vehicle.

### DISASSEMBLY

- A Remove and discard lockwire (16) from screws (17 and 18).
- B Remove three screws (17) holding inner arm (15) and three screws (18) securing outer arm (8) to hatch cover (3).

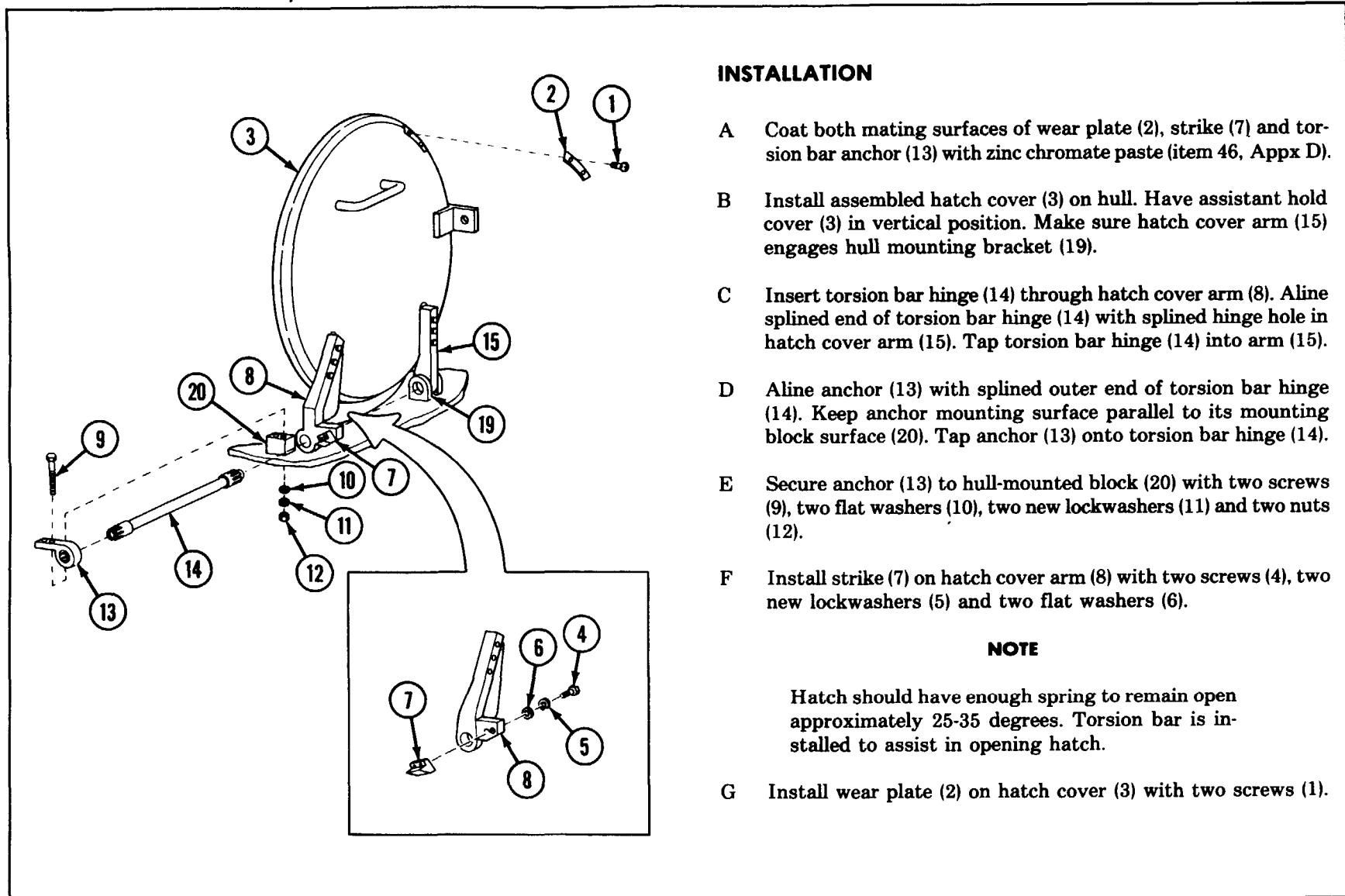
#### NOTE

For removal of pad and seal from cover, see page 9-22.

### ASSEMBLY

- A Apply zinc chromate paste (item 46, Appx D) to mating surfaces of hatch cover (3) and arms (8 and 15).
- B Install arm (8) on hatch cover (3) with three screws (18). Secure screws (18) with new lockwire (16).
- C Install arm (15) on hatch cover (3) with three screws (17). Secure screws (17) with wire new lockwire (16).

## DRIVER'S HATCH COVER AND COMPONENTS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

**INSTALLATION**

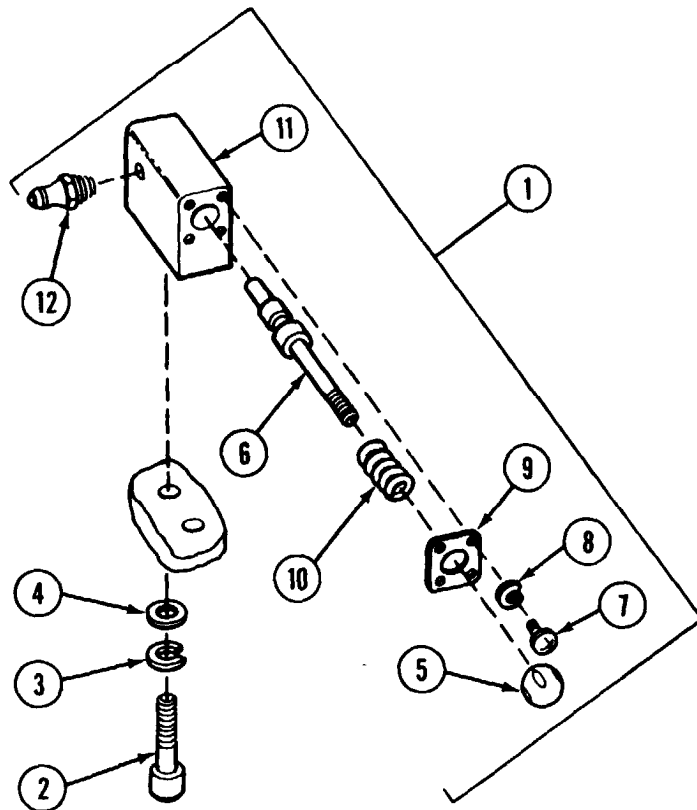
- A Coat both mating surfaces of wear plate (2), strike (7) and torsion bar anchor (13) with zinc chromate paste (item 46, Appx D).
- B Install assembled hatch cover (3) on hull. Have assistant hold cover (3) in vertical position. Make sure hatch cover arm (15) engages hull mounting bracket (19).
- C Insert torsion bar hinge (14) through hatch cover arm (8). Align splined end of torsion bar hinge (14) with splined hinge hole in hatch cover arm (15). Tap torsion bar hinge (14) into arm (15).
- D Align anchor (13) with splined outer end of torsion bar hinge (14). Keep anchor mounting surface parallel to its mounting block surface (20). Tap anchor (13) onto torsion bar hinge (14).
- E Secure anchor (13) to hull-mounted block (20) with two screws (9), two flat washers (10), two new lockwashers (11) and two nuts (12).
- F Install strike (7) on hatch cover arm (8) with two screws (4), two new lockwashers (5) and two flat washers (6).

**NOTE**

Hatch should have enough spring to remain open approximately 25-35 degrees. Torsion bar is installed to assist in opening hatch.

- G Install wear plate (2) on hatch cover (3) with two screws (1).

## DRIVER'S HATCH COVER LATCH: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### REMOVAL

Remove latch (1) by removing two screws (2), two lockwashers (3) and two flat washers (4).

### DISASSEMBLY

- A Unscrew knob (5) from pin (6).
- B Remove four screws (7) and four lockwashers (8) to release cover (9), spring (10) and pin (6) from latch body (11).
- C Remove fitting (12) from latch body (11).

### ASSEMBLY

- A Reverse disassembly procedures. Apply sealing compound (item 27, Appx D) to all threads prior to assembly.
- B Pack latch assembly (1) with grease (item 7, Appx D).

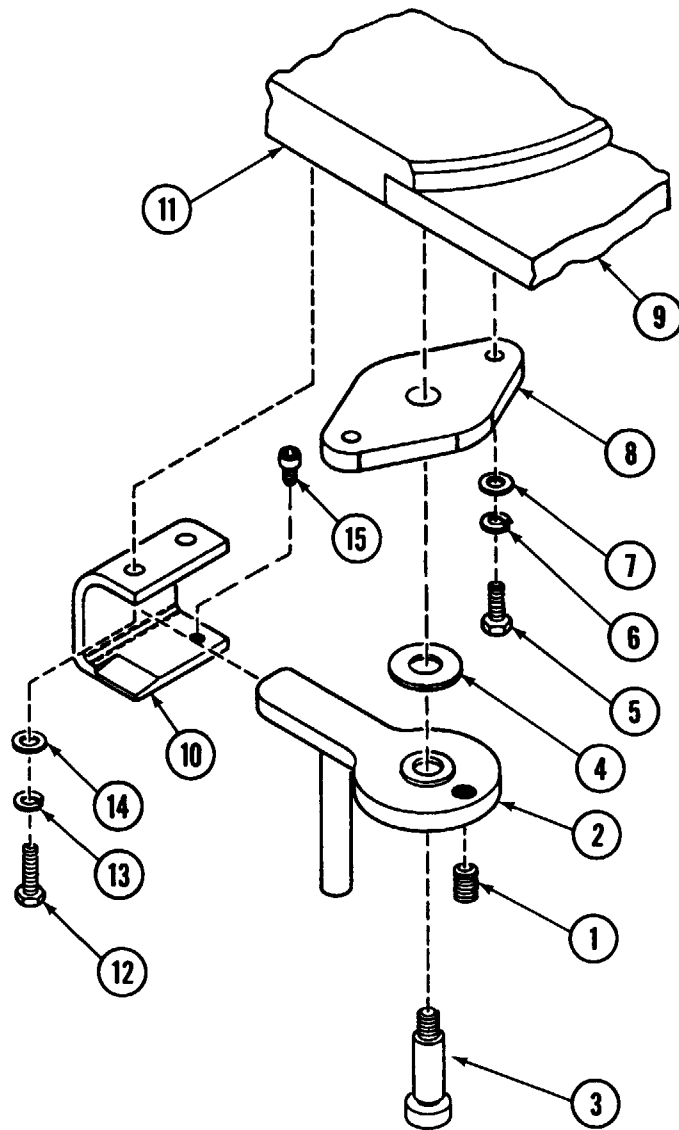
### INSTALLATION

Reverse removal procedure.

TA310006



## DRIVER'S HATCH SECURITY LATCH: REMOVAL AND INSTALLATION



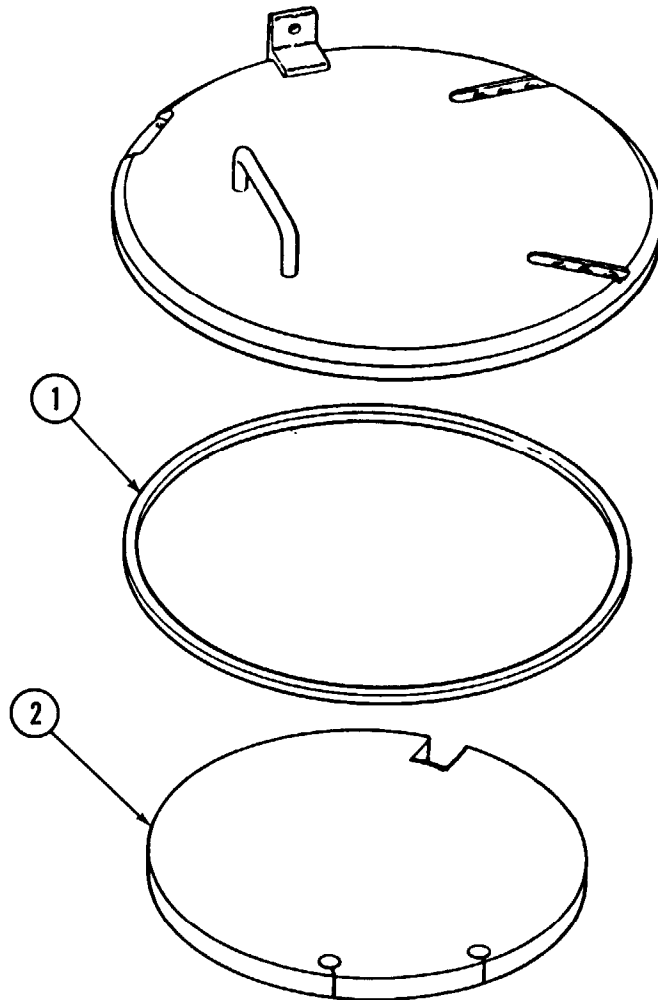
### REMOVAL

- A Unscrew ball plunger (1) and remove from latch assembly (2).
- B Remove screw (3). Remove latch assembly (2) and thrust bearing (4).
- C Remove two screws (5), two lockwashers (6) and two flat washers (7), and remove mounting plate (8) from inside hull (9). Discard lockwashers.
- D Remove latch hook (10) from hatch cover (11) by removing two screws (12), two lockwashers (13) and two flat washers (14). Discard lockwashers.
- E Remove stop screw (15) from latch hook (10).

### INSTALLATION

- A Install stop screw (15) in latch hook (10).
- B Install latch hook (10) on bottom of hatch cover (11) with two screws (12), two new lockwashers (13) and two flat washers (14).
- C Install mounting plate (8) on inside of hull (9) with indents facing down and secure with two screws (5), two new lockwashers (6) and two flat washers (7).
- D Install latch assembly (2) and thrust bearing (4) on mounting plate (8) with screw (3).
- E Adjust ball plunger (1) to latch assembly (2). Peen ball plunger threads.

## DRIVER'S HATCH COVER SEAL AND PAD: REMOVAL AND INSTALLATION

**REMOVAL**

- A Remove seal (1) and discard.
- B Remove pad (2) and discard.

**WARNING**

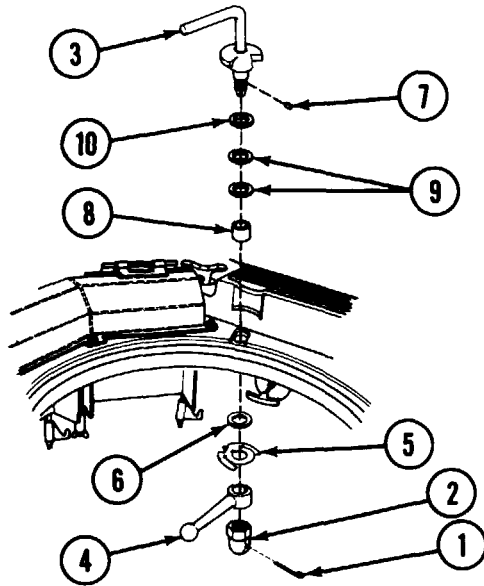
Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38° C); for Type II it is 140° F (60° C). Do not use near open flame or excessive heat.

- C Use solvent (item 19, Appx D) and clean rags (item 50, Appx D) to thoroughly clean and dry seal channel and underside of cover surface. Be sure to remove all particles.

**INSTALLATION**

- A Apply thin coating of adhesive (item 4, Appx D) to bottom of driver's hatch cover seal and to mounting surface of new seal (1). Allow adhesive to dry until tacky.
- B Install new seal (1) in seal channel of hatch cover. Avoid stretching or bunching of seal.
- C Apply thin coating of adhesive (item 4, Appx D) to bottom of driver's hatch cover and to mounting surface of pad (2). Allow adhesive to dry until tacky.
- D Install new pad (2) on driver's hatch cover.

## DRIVER'S HATCH COVER CAM LOCK: REMOVAL AND INSTALLATION



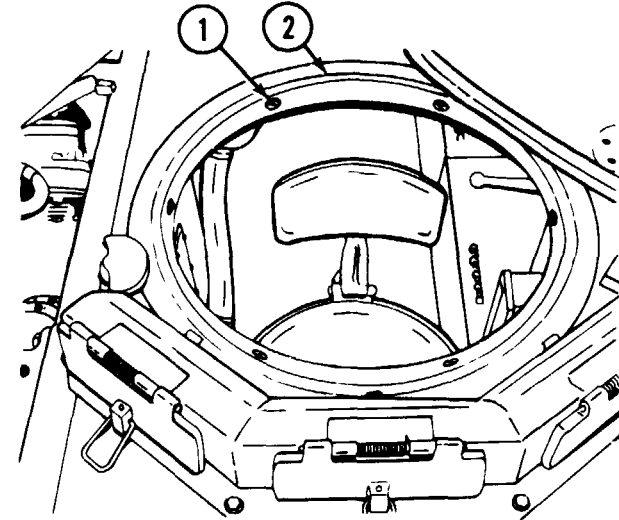
### REMOVAL

- A Remove cotter pin (1) from nut (2).
- B Remove nut (2) from cam lock (3).
- C Remove lever (4), spring (5), washer (6) and key (7) from inside hull.
- D Remove bearing (8), washers (9), spring washer (10) and cam lock (3) from outside hull.

### INSTALLATION

Reverse removal procedures.

## DRIVER'S HATCH SEAL: REMOVAL AND INSTALLATION



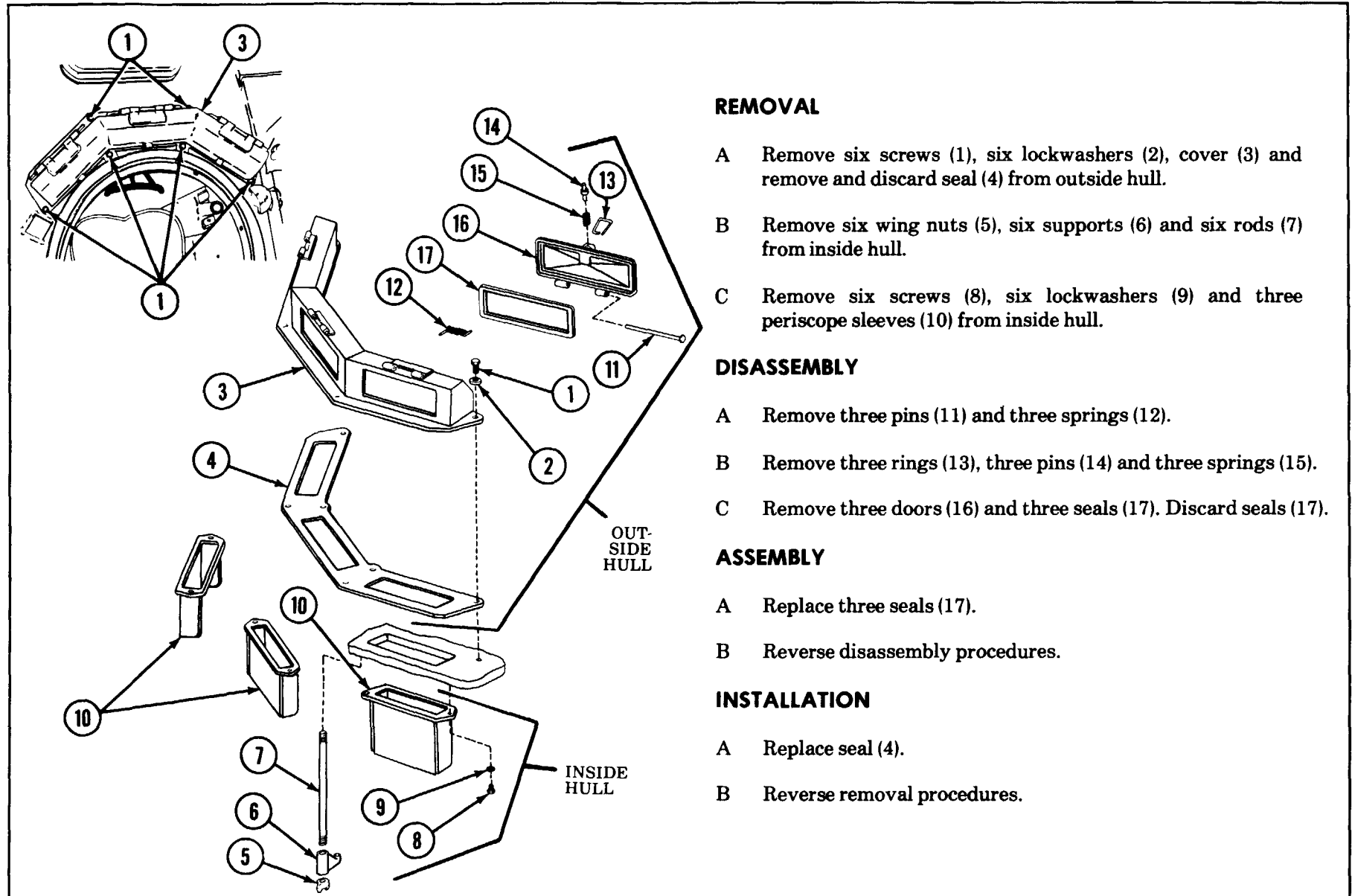
### REMOVAL

- A Remove six screws (1).
- B Remove hatch seal (2). Use solvent (item 19, Appx D) and thoroughly clean and dry area where seal is removed around hatchway.

### INSTALLATION

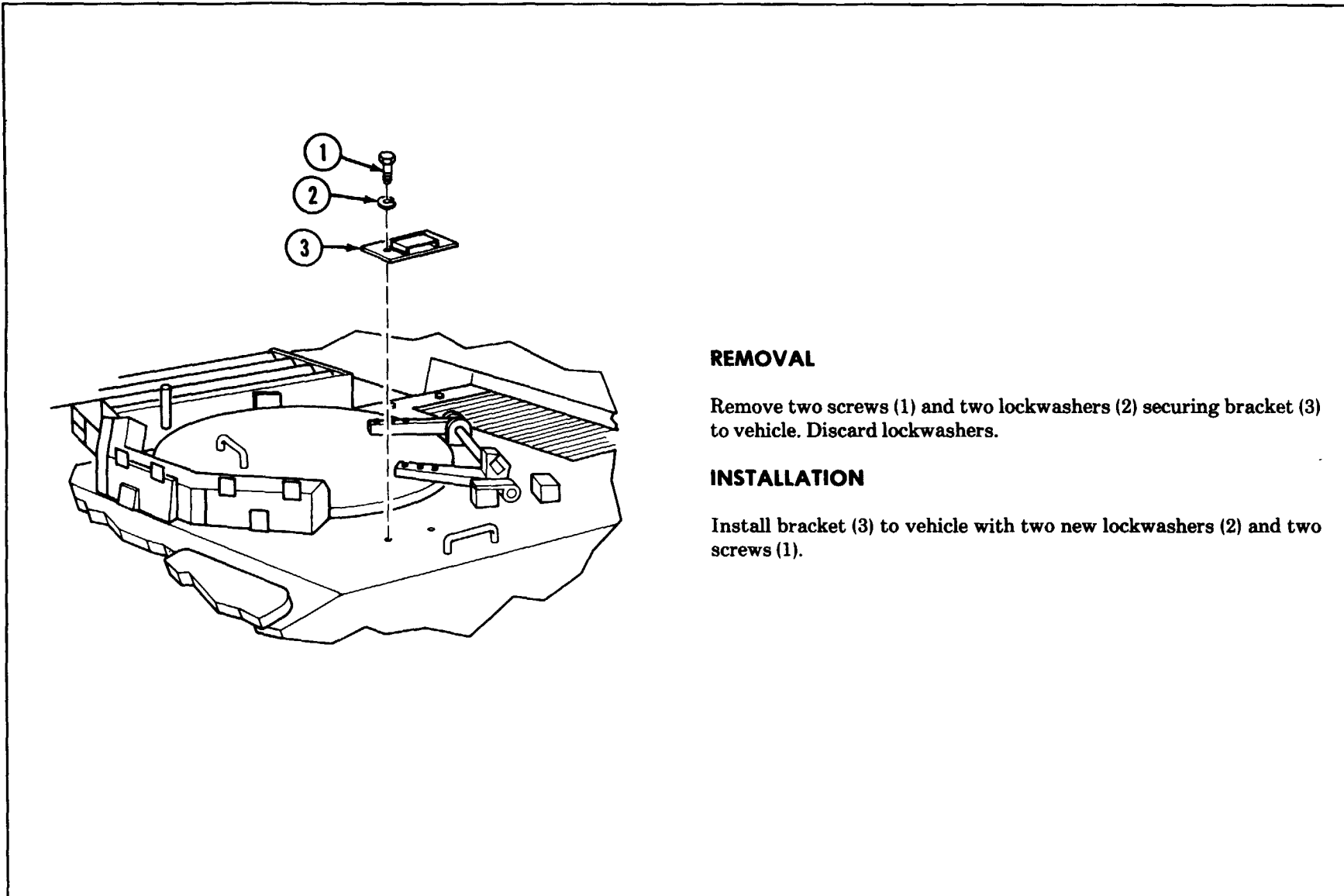
- A Apply thin coating of adhesive (item 4, Appx D) around hatchway seal mounting area, and to mounting surface of seal (2). Allow adhesive to dry until tacky.
- B Install seal (2).
- C Install six screws (1).

## PERISCOPE M45 COVER, DOORS AND SLEEVE ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION





## DRIVER'S PORTABLE INSTRUMENT PANEL MOUNTING BRACKET: REMOVAL AND INSTALLATION



### REMOVAL

Remove two screws (1) and two lockwashers (2) securing bracket (3) to vehicle. Discard lockwashers.

### INSTALLATION

Install bracket (3) to vehicle with two new lockwashers (2) and two screws (1).

## COMMANDERS CUPOLA PERISCOPE: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

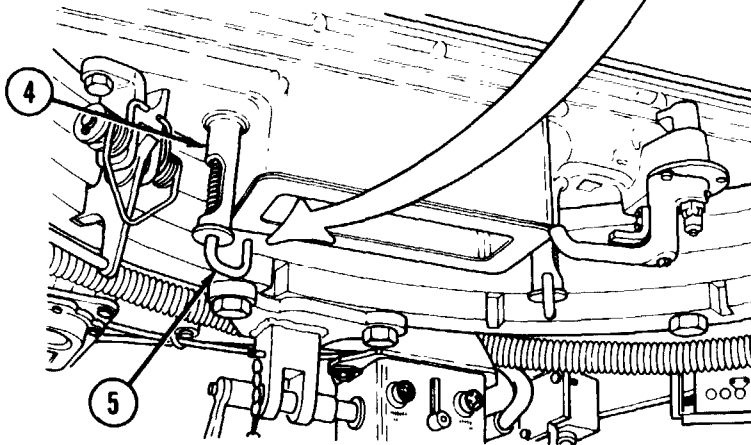
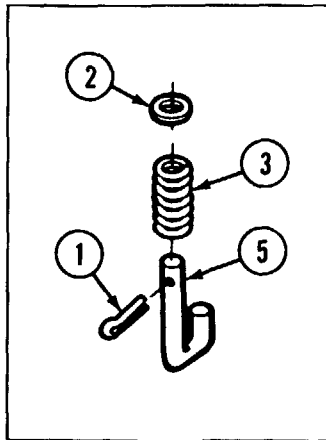
#### Materials/Parts:

Adhesive (item 4, Appx D)

Dry-cleaning solvent (item 19, Appx D)

#### Equipment Condition:

Commander's periscope removed.



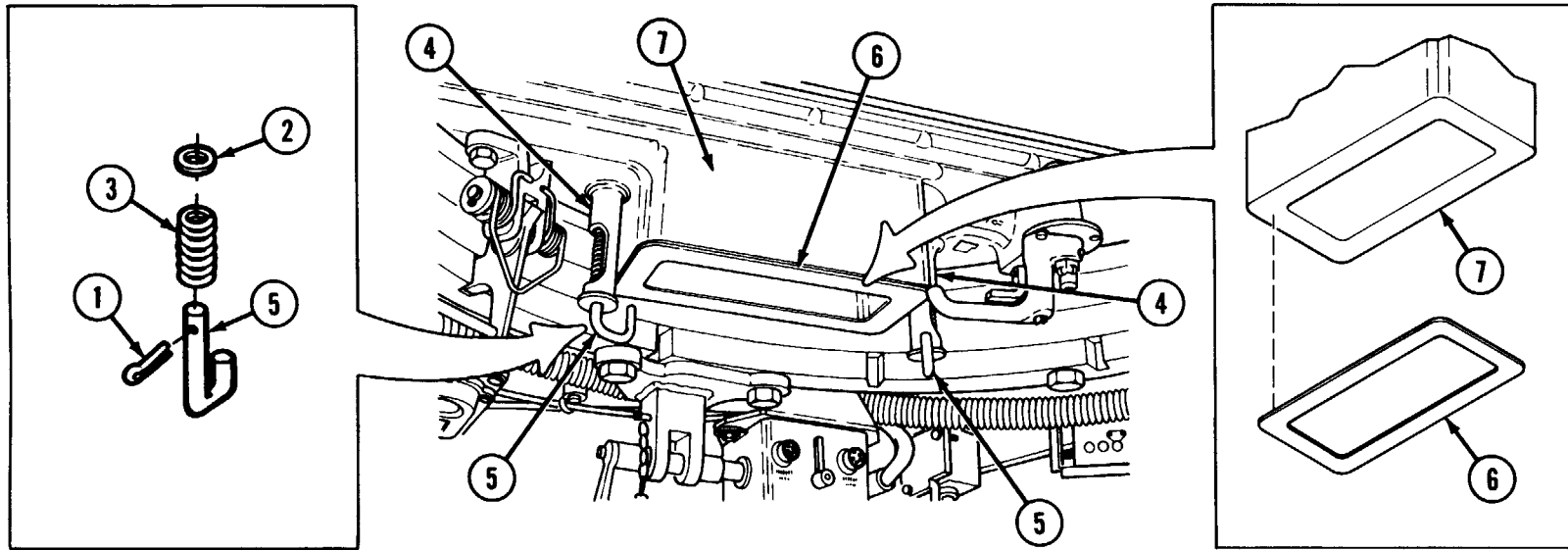
### REMOVAL

- A Remove and discard two cotter pins (1), releasing two flat washers (2) and two springs (3) from sides of housings (4) and two periscope hooks (5) from bottoms of housings (4).

### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100° F (38° C); for Type II it is 138° F (50° C). Do not use near open flame or excessive heat.

## COMMANDERS CUPOLA PERISCOPE: REMOVAL AND INSTALLATION (CONTINUED)



- B** Remove and discard seal (6). Clean dirt and adhesive from gasket seat. Use dry-cleaning solvent (item 19, Appx D) and wire brush (item 48, Appx B) if necessary.

### INSTALLATION

- A** Apply thin coating of adhesive (item 4, Appx D) to mounting surface of new seal (6) and cupola body (7). Allow to dry 5 minutes until tacky. Press seal (6) in place. Allow to cure for 30 minutes.
- B** Remove excess adhesive from face of seal (6). Use dry-cleaning solvent (item 19, Appx D), if necessary.
- C** Insert two springs (3) and two flat washers (2) into housings (4) from side.
- D** Insert two periscope hooks (5) up into housings (4) from bottom through springs (3) and flat washers (2).
- E** Compress flat washers (2) and springs (3) onto hooks (5), and secure with two new cotter pins (1).

### COMMANDER'S CUPOLA HATCH DOOR: DISASSEMBLY AND ASSEMBLY

#### INITIAL SETUP

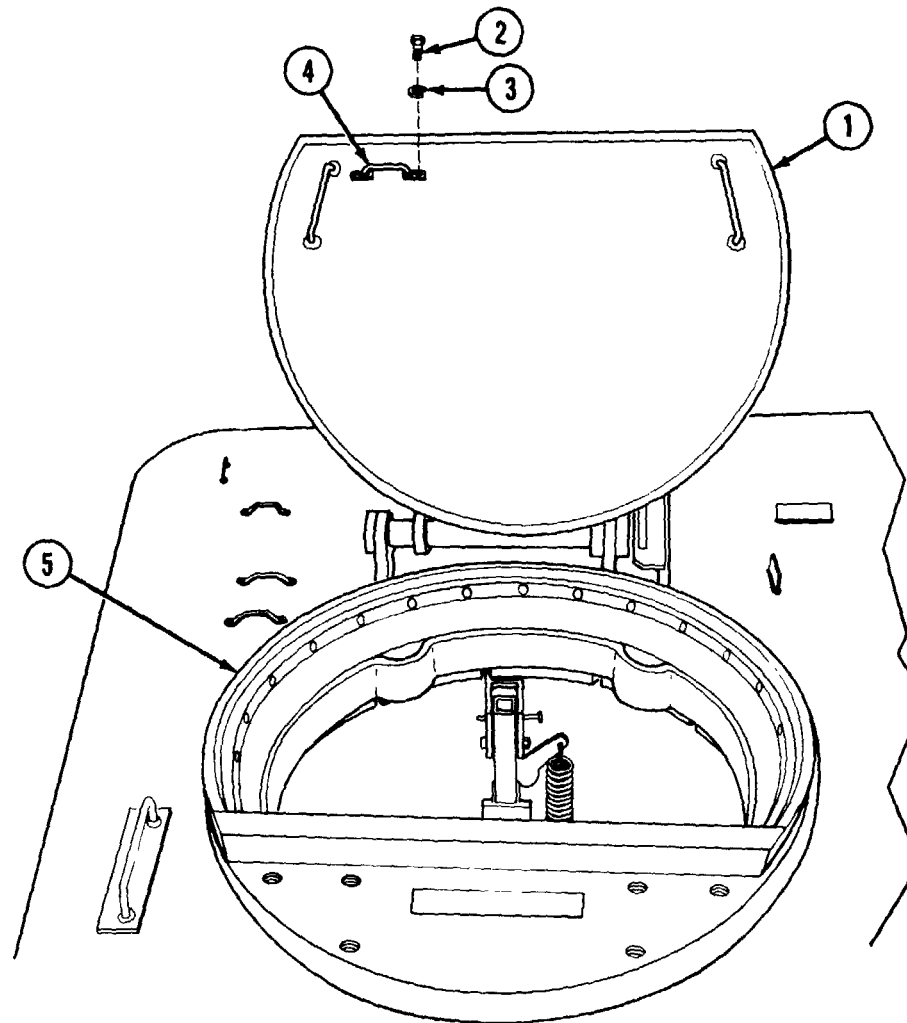
Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

Materials/Parts:

Adhesive (item 4, Appx D)

Dry-cleaning solvent (item 19, Appx D)



## COMMANDER'S CUPOLA HATCH DOOR: DISASSEMBLY AND ASSEMBLY

### DISASSEMBLY

- A Open and secure commander's hatch door (1).
- B Remove two screws (2) and two lockwashers (3). Discard lockwashers.
- C Remove locking cam seat (4).

#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- D Scrape defective seal (5) from seal channel in door frame. Use wire brush (item 48, Appx B) and dry-cleaning solvent (item 19, Appx D), if necessary. Discard seal.

### ASSEMBLY

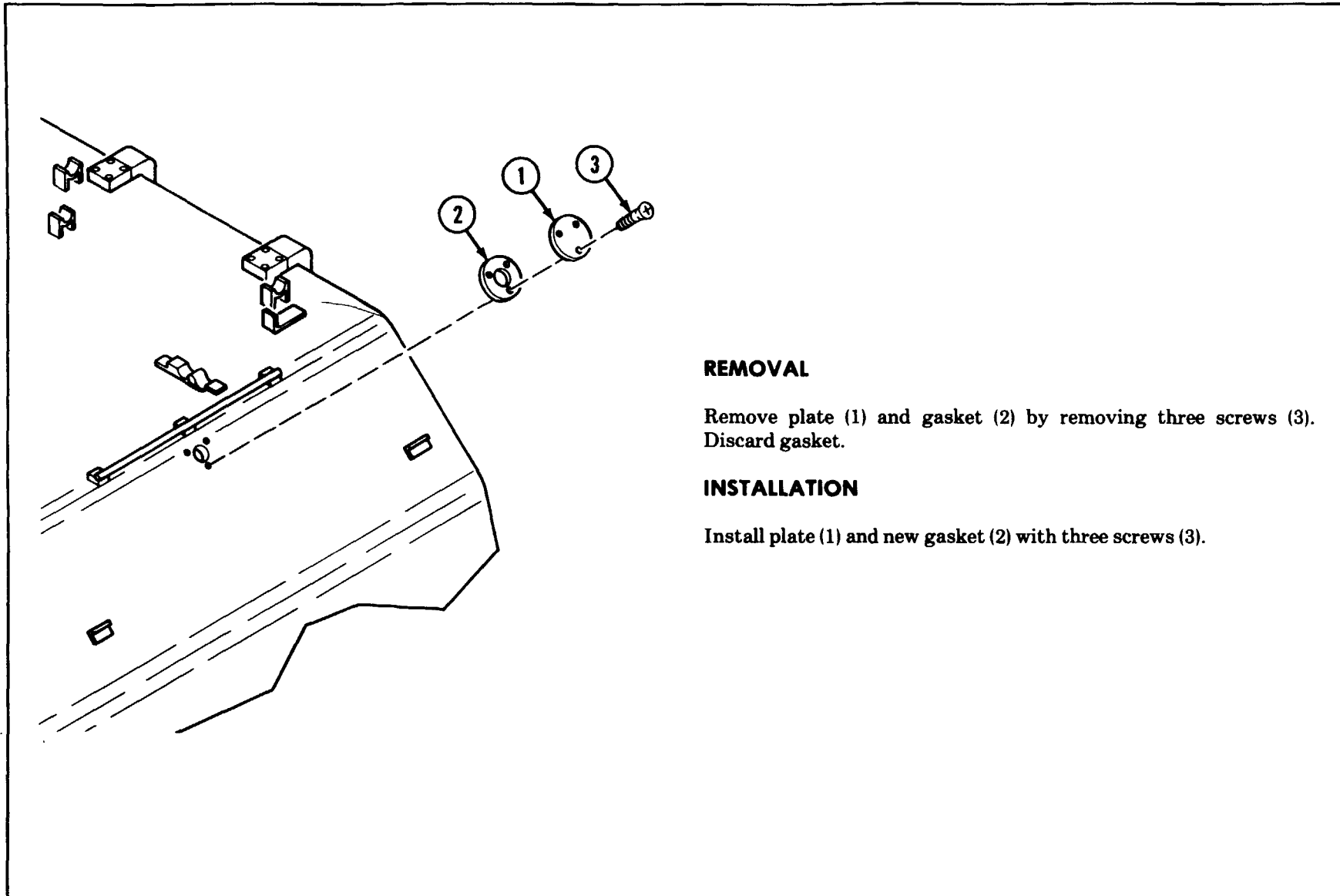
- A Apply thin coating of adhesive (item 4, Appx D) to seal channel in door frame, and to mating surfaces of new seal (5). Allow to dry 5 minutes until tacky.

#### NOTE

It is difficult to reposition seal once contact is made with seal channel. Avoid stretching or bunching seal.

- B Press seal (5) firmly into seal channel. Clean any excess adhesive from face of seal. Use dry-cleaning solvent (item 19, Appx D) if necessary. Allow adhesive to cure for 30 minutes.
- C Install locking cam seat (4) on underside of hatch door (1) using two new lockwashers (3) and two screws (2).
- D Close and secure commander's hatch door (1).

### ANTENNA MOUNTING COVER PLATE: REMOVAL AND INSTALLATION



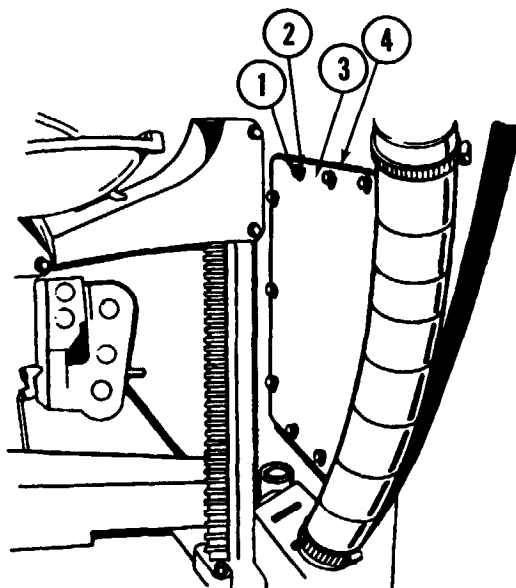
#### REMOVAL

Remove plate (1) and gasket (2) by removing three screws (3). Discard gasket.

#### INSTALLATION

Install plate (1) and new gasket (2) with three screws (3).

## ENGINE COMPARTMENT ACCESS COVER: REMOVAL AND INSTALLATION



### REMOVAL

Remove 12 screws (1), 12 lockwashers (2), access cover (3) and gasket (4). Discard gasket and lockwashers.

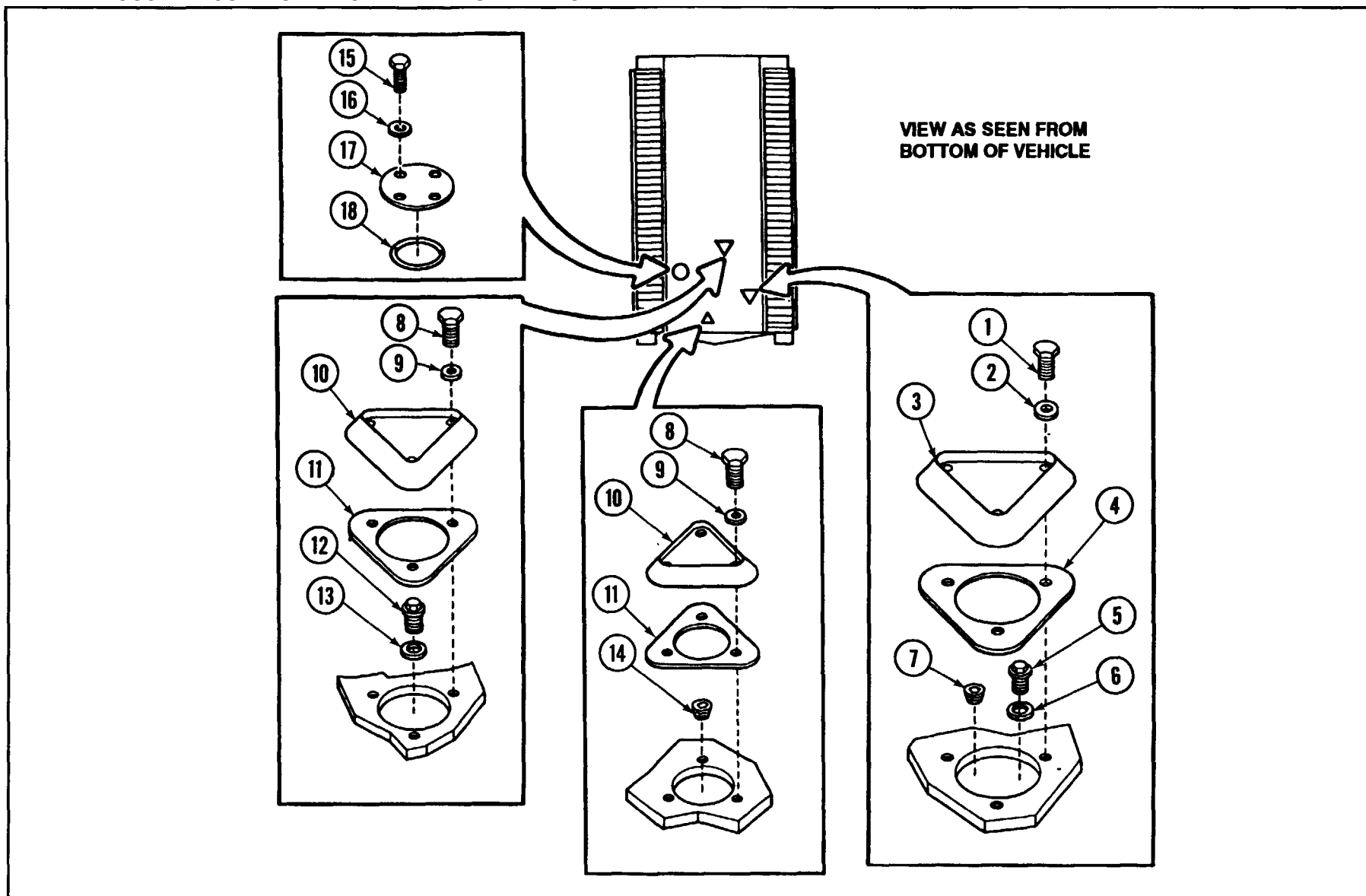
### INSTALLATION

#### WARNING

When installing engine compartment access cover, make sure that all screws are secured. Carbon monoxide poisoning could result if cover is loose.

Reverse removal procedures using new gasket and lockwashers.

DRAIN PLUGS AND COVERS: REMOVAL AND INSTALLATION





## DRAIN PLUGS AND COVERS: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### WARNING

When engine is hot, use caution when removing engine coolant drain plug, engine oil drain plug, and transmission oil drain plug.

#### NOTE

Provide adequate containers to catch fluids upon removal of drain plugs.

- A Remove three screws (1), three washers (2), large cover (3), and gasket (4). Discard gasket.
- B Remove engine coolant drain plug (5) and gasket (6). Discard gasket.
- C Remove fuel drain plug (7).
- D Remove six screws (8), six washers (9), two small covers (10), and two gaskets (11). Discard gaskets.
- E Remove engine oil drain plug (12) and gasket (13). Discard gasket.
- F Remove transmission oil drain plug (14).
- G Remove four screws (15) and four flat washers (16) releasing hull floor drain access cover (17) and preformed packing (18). Discard packing.

### INSTALLATION

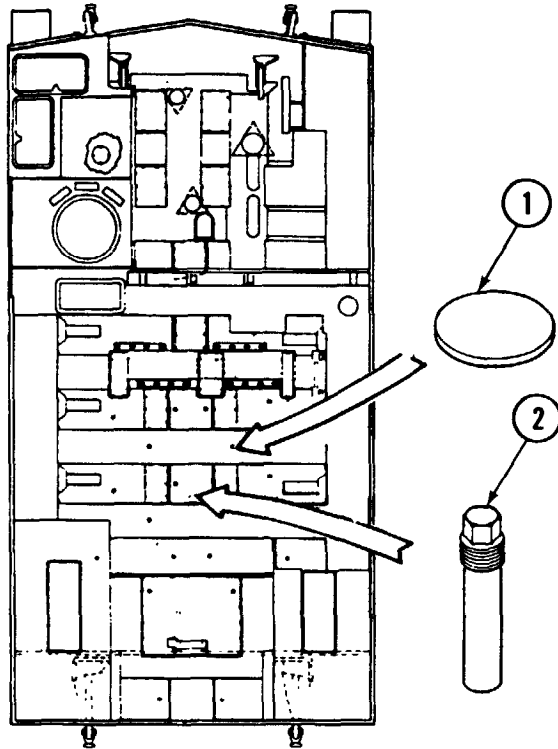
- A Install new packing (18) and hull floor drain access cover (17) on floor of hull directly below steering wheel with four screws (15) and four flat washers (16).
- B Install transmission oil drain plug (14), engine oil drain plug (12) and new gasket (13), engine coolant drain plug (5) and new gasket (6), and fuel drain plug (7).
- C Install two new gaskets (11) and two small covers (10) with six screws (8) and six washers (9).
- D Install new gasket (4) and large cover (3) with three screws (1) and three washers (2).

**CREW COMPARTMENT DRAIN AND EXPANSION PLUGS: REMOVAL AND INSTALLATION****INITIAL SETUP**Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

Materials/Parts:

Dry-cleaning solvent (item 19, Appx D)

**REMOVAL****NOTE**

Removal of any expansion plug will render it unusable. Remove plug only if necessary.

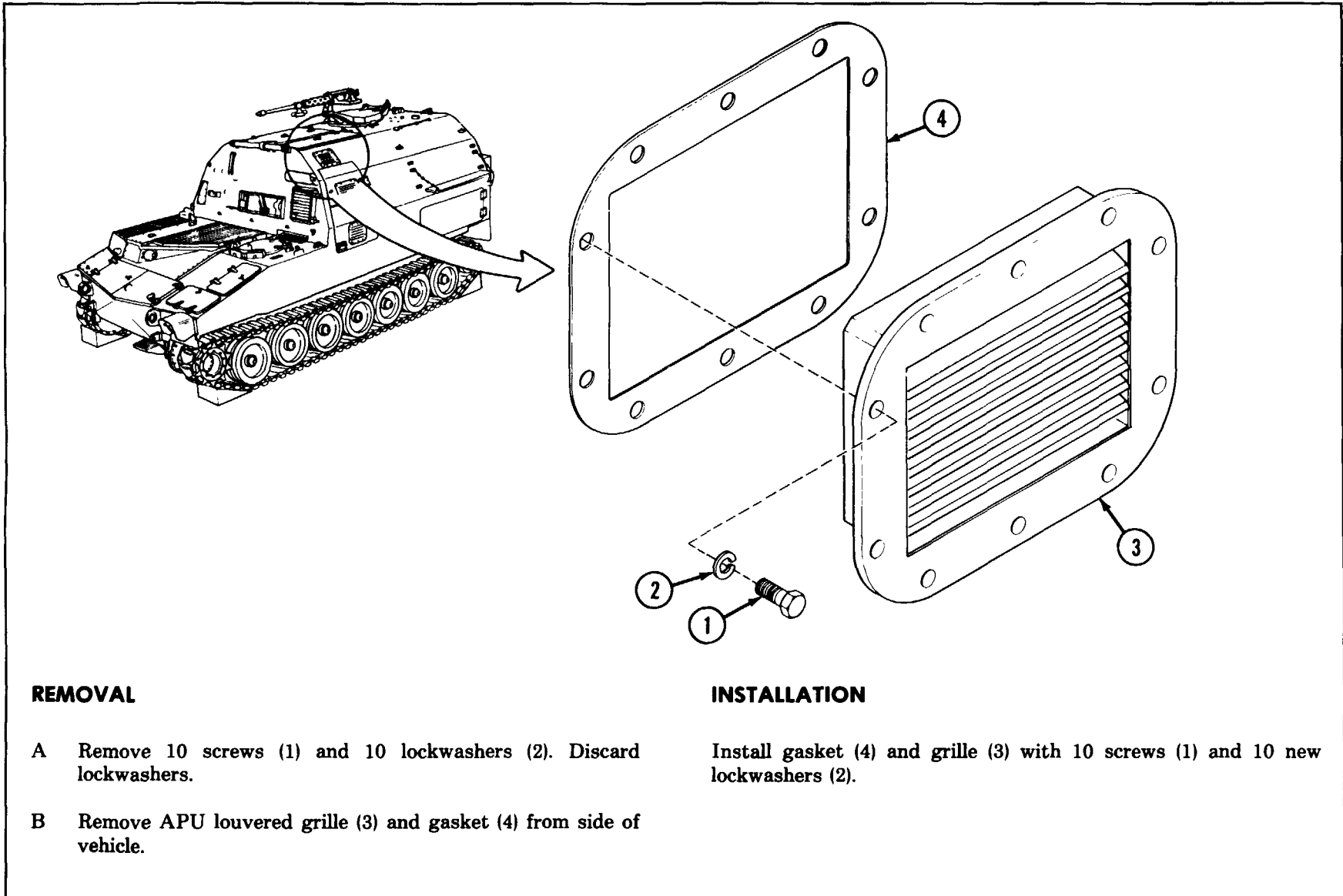
- A Remove any one of 24 expansion plugs (1) by cutting with a chisel.
- B Unscrew drain plug (2) and remove from vehicle floor.

**INSTALLATION****WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- A Clean holes for plugs with dry-cleaning solvent (item 19, Appx D) and a suitable wire brush (item 48, Appx B).
- B Screw drain plug (2) into mounting hole in floor.
- C Insert new expansion plug (1) into groove in mounting hole. Tap with hammer to seat assembly.

## APU COMPARTMENT LOUVERED GRILLE: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove 10 screws (1) and 10 lockwashers (2). Discard lockwashers.
- B Remove APU louvered grille (3) and gasket (4) from side of vehicle.

### INSTALLATION

Install gasket (4) and grille (3) with 10 screws (1) and 10 new lockwashers (2).

**PERSONNEL AIR VENTILATOR DOOR AND GRILLE: REMOVAL, REPAIR AND INSTALLATION**

**INITIAL SETUP**

Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

Materials/Parts:

Adhesive (item 4, Appx D)

Dry-cleaning solvent (item 20, Appx D)

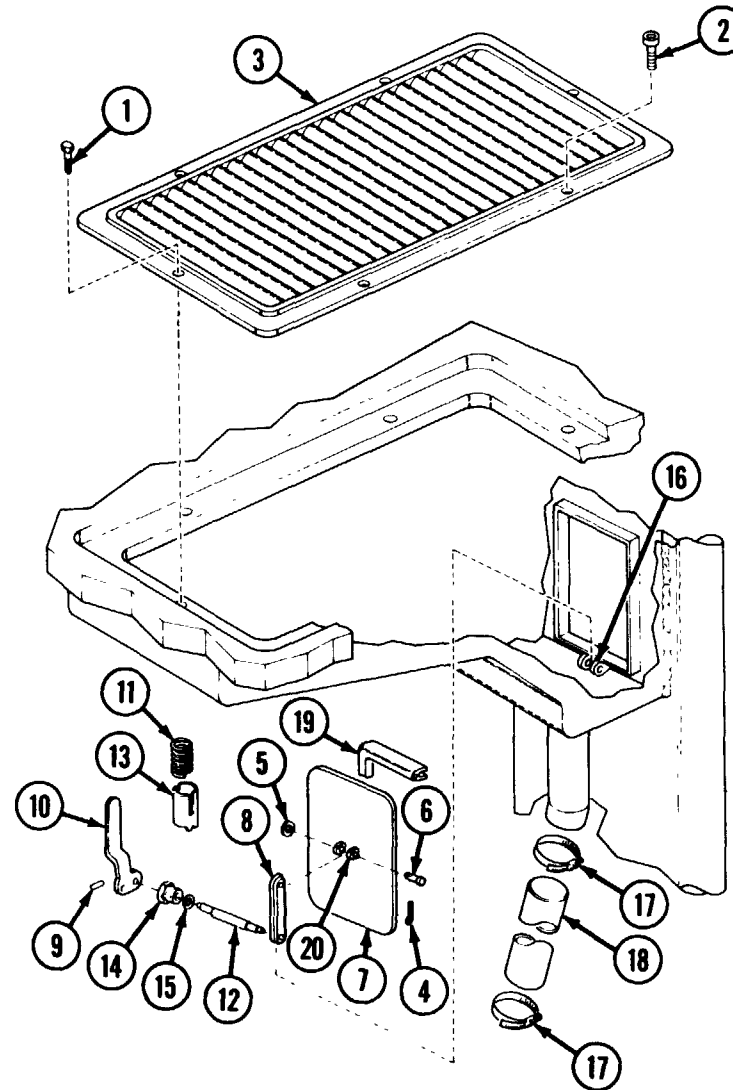
**REMOVAL**

- A Remove five hex head screws (1) and one hex socket screw (2) from grille (3) located behind driver's hatch.
- B Remove cotter pin (4) and flat washer (5). Discard cotter pin.
- C Pull headed pin (6) releasing door (7) from link (8).

**NOTE**

Handle assembly is spring-loaded; use care when removing spring pin.

- D Drive spring pin (9) from handle assembly (10). Discard spring pin.



## PERSONNEL AIR VENTILATOR DOOR AND GRILLE: REMOVAL, REPAIR AND INSTALLATION

- E Turn handle assembly (10) to relieve tension on spring (11). Pull handle assembly (10) from hinge pin (12), releasing spring (11) and spring retainer (13).
- F Unscrew and remove packing nut (14).
- G Remove and discard packing (15) from packing nut (14).
- H Pull hinge pin (12) releasing link (8) from hinge lugs (16), part of hull.
- I Loosen two clamps (17). Flex and remove hose (18).

### REPAIR

#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100 °F (38 °C); for Type II it is 138 °F (50 °C). Do not use near open flame or excessive heat.

- A If door seal (19) is defective, scrape it off with putty knife, clean contact areas with dry-cleaning solvent (item 20, Appx D) and wire brush (item 48, Appx B)

- B Install new seal with thin coating of rubber adhesive (item 4, Appx D) in areas of contact with hull.
- C If square hole in link (8) or square section of hinge pin (12) is deformed, replace link and/or pin.
- D If spring (11) is less than 3 inches long, replace it.

### INSTALLATION

- A Flex and install hose (18) with two clamps (17).
- B Install link (8) between hinge lugs (16) with hinge pin (12).
- C Install new packing (15) in packing nut (14). Install packing nut (14) on hinge pin (12).
- D Install spring (11) in spring retainer (13).
- E Position handle assembly (10) so pins engage slots in spring retainer (13).
- F Turn hinge pin (12) to aline hole with mounting hole in handle assembly (10). Install new spring pin (9).
- G Position door (7) so round hole in link (8) alines with holes in hinge lugs (20) on door. Install headed pin (6) from rear side.
- H Secure with flat washer (5) and new cotter pin (4).
- I Secure grille (3) to position behind driver's hatch with one hex socket screw (2) and five hex head screws (1).

## AFES FIRE EXTINGUISHER BOX ASSEMBLY (VEHICLES 345 AND ABOVE): REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Dry-cleaning solvent (item 20, Appx D)  
 Adhesive (item 3, Appx D)  
 Adhesive sealant (item 5, Appx D)

#### Test Equipment/Special Tools:

Sling, endless, 4 ft. (item 80, Appx B)  
 Shackle (item 81, Appx B)  
 Suitable lifting device

#### Personnel Required:

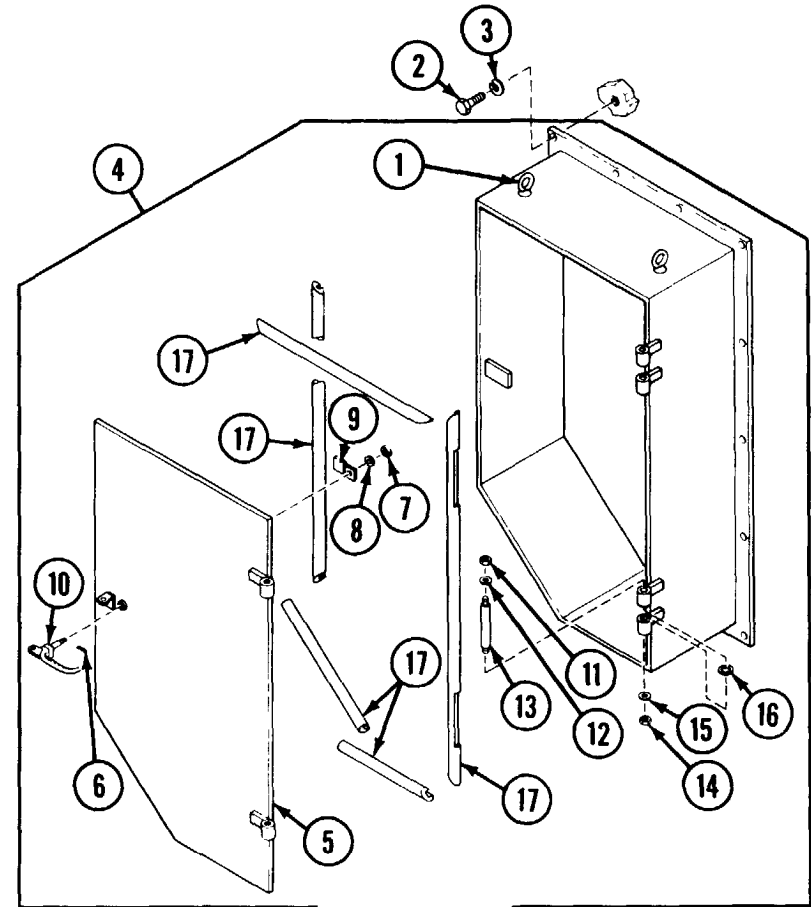
Two

### REMOVAL

#### CAUTION

Fire extinguisher valve and bottle assemblies are sensitive to damage. Use care when removing box assembly from hull. Failure to comply may cause equipment damage.

- A Attach sling (item 80, Appx B), using shackles (item 81, Appx B), to lifting eyes (1).
- B Attach suitable lifting device to sling.



**AFES FIRE EXTINGUISHER BOX ASSEMBLY (VEHICLES 345 AND ABOVE): REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)**

**WARNING**

Box assembly is heavy. Ensure box assembly is supported when screws are removed. Failure to comply may cause personnel injury.

- C Remove 13 screws (2), 13 lockwashers (3) and box assembly (4). Discard lockwashers.

**WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy, get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- D Clean mounting surfaces with dry-cleaning solvent (item 20, Appx D).

**DISASSEMBLY**

- A Open fire extinguisher box door (5).  
B Remove cotter pin (6), nut (7), flat washer (8), and latch plate (9). Discard cotter pin.  
C Remove door handle (10).

**NOTE**

Both hinge pins are removed following same procedure.

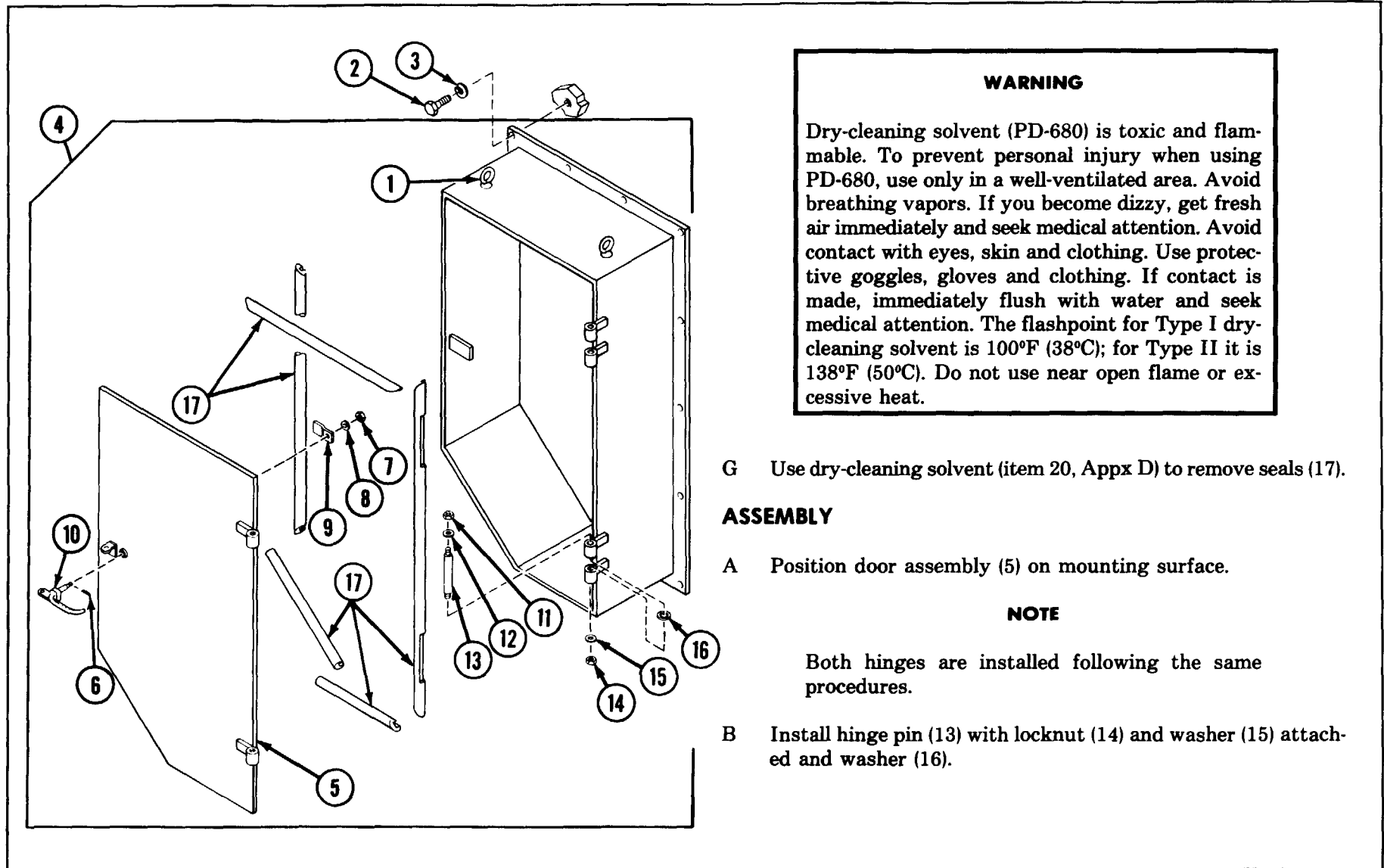
- D Remove locknut (11) and washer (12). Discard locknut.

**WARNING**

Door is very heavy. Ensure door is supported when pins are removed. Failure to comply may result in injury.

- E Support door assembly (5) and remove hinge pin (13) with locknut (14) and washer (15) attached. Remove washer (16) from mounting surfaces. Tap hinge pins lightly to prevent damage to threads.  
F Remove door assembly (5).

**AFES FIRE EXTINGUISHER BOX ASSEMBLY (VEHICLES 345 AND ABOVE): REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)**



**WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy, get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

G Use dry-cleaning solvent (item 20, Appx D) to remove seals (17).

**ASSEMBLY**

A Position door assembly (5) on mounting surface.

**NOTE**

Both hinges are installed following the same procedures.

B Install hinge pin (13) with locknut (14) and washer (15) attached and washer (16).



**AFES FIRE EXTINGUISHER BOX ASSEMBLY (VEHICLES 345 AND ABOVE): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

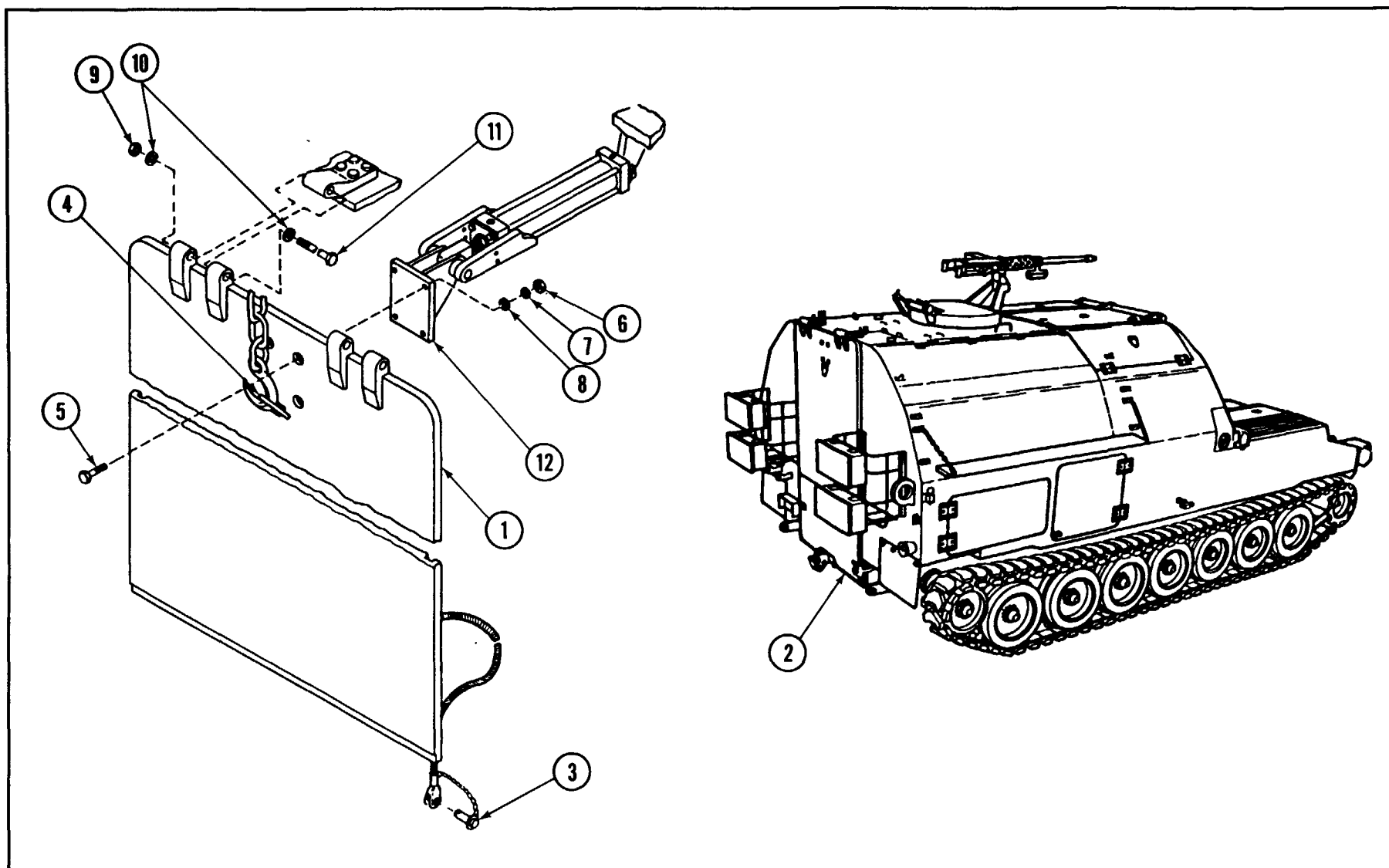
- C Install washer (12) and new locknut (11).
- D Apply adhesive (item 3, Appx D) to new seals (17) and mounting surface.
- E Install new seals (17) to mounting surface.
- F Install door handle (10).
- G Install latch plate (9), washer (8), and nut (7). Tighten nut (7) until latch plate (9) touches striker.

**INSTALLATION**

- A Apply adhesive sealant (item 5, Appx D) to mounting of hull and box assembly (4).
- B Using suitable lifting device and sling with shackles, lift box assembly.
- C Install with 13 new lockwashers (3) and 13 screws (2).
- D Remove lifting device, sling and shackles from lifting eyes (1).
- E Adjust nut (7) until handle (10) works smoothly while door fits securely against seals (17).
- F Install new cotter pin (6) in door handle (10).

Section III DOORS

UPPER REAR DOOR ASSEMBLY: REMOVAL AND INSTALLATION



## UPPER REAR DOOR ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTE

Make sure conveyor is stowed properly (TM 9-2350-267-10).

- A Close upper rear door (1) if open.
- B Open lower rear door (2).
- C Pull two quick-release pins (3) and disconnect two cables from conveyor.

#### WARNING

Do not make lifting device cable/chain taut. Remove only slack from cable/chain to guard against door dropping when hinge bolts are removed.

- D Attach suitable lifting device to upper rear door lifting lug (4). Remove slack from lifting device cable/chain.

#### CAUTION

To prevent upper rear door actuator from dropping, strap actuator to vehicle ceiling before proceeding to step E.

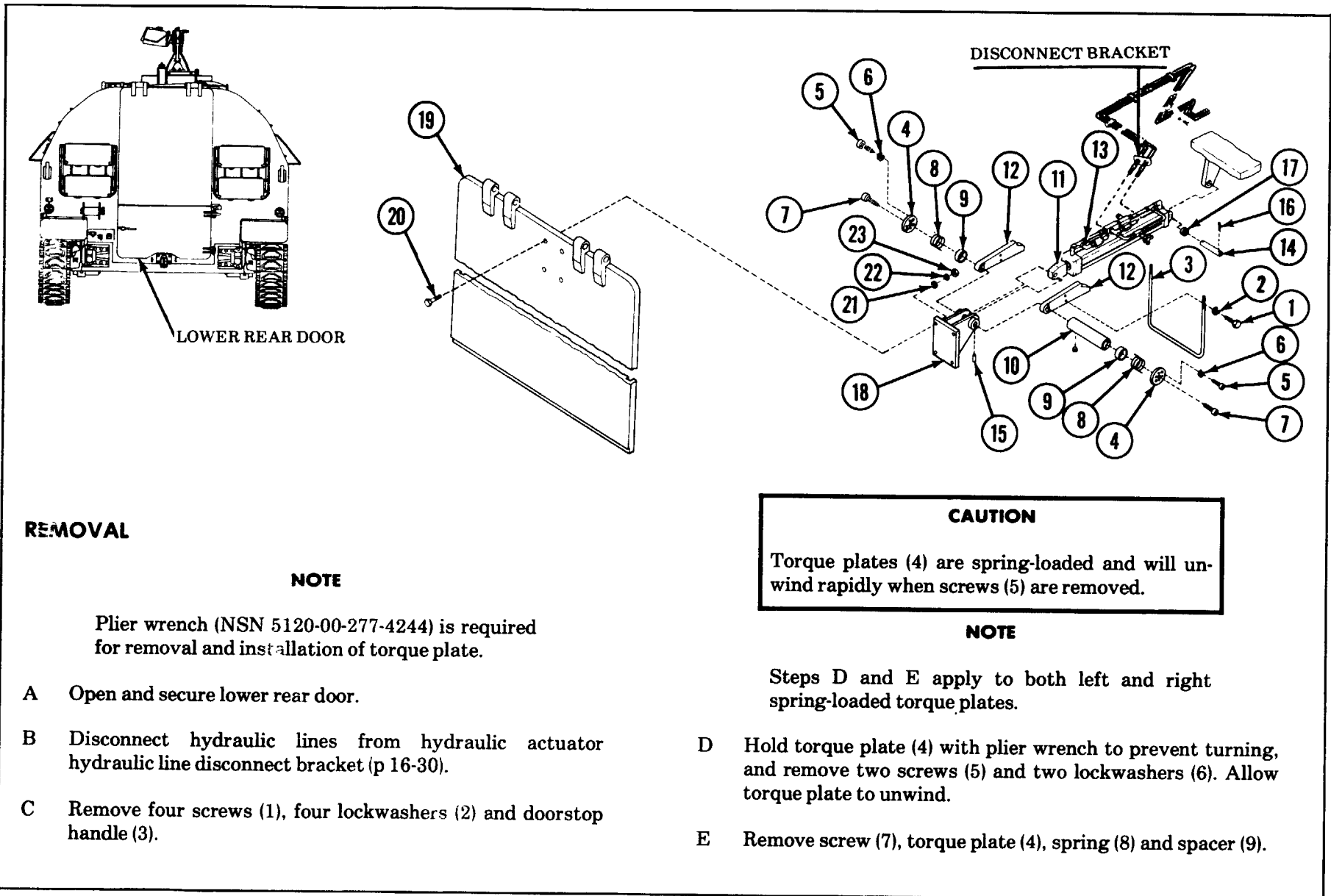
- E Remove four screws (5), four nuts (6), four lockwashers (7) and four flat washers (8).
- F From each hinge remove: one nut (9), two flat washers (10) and one bolt (11).
- G Remove upper rear door (1) from vehicle.

### INSTALLATION

- A Attach suitable lifting device to upper rear door lifting lug (4) and lift door (1) into position in vehicle opening.
- B Aline hinges and install in each hinge: one bolt (11), two flat washers (10) and one nut (9).
- C Install hydraulic actuator bracket (12) to upper rear door with four screws (5), four flat washers (8), four lockwashers (7) and four nuts (6).
- D Install two cables to conveyor and secure with two quick-release pins (3).
- E Remove lifting device from upper rear door lifting lug (4).
- F Close lower rear door (2).

TA310015

## UPPER REAR DOOR ACTUATOR MOUNTING BRACKET AND HYDRAULIC ACTUATOR: REMOVAL AND INSTALLATION



## UPPER REAR DOOR ACTUATOR MOUNTING BRACKET AND HYDRAULIC ACTUATOR: REMOVAL AND INSTALLATION (CONTINUED)

### CAUTION

When pivot pin (10) is removed from actuator rod eye (11) and doorstops (12), hydraulic actuator (13) will drop. Hold actuator to prevent damage. Allow actuator to hang from vehicle ceiling until actuator pin (14) is removed.

- F Remove right and left doorstops (12). Remove two setscrews (15) and drive pivot pin (10) from rod eye (11) while holding rod end of actuator.
- G Hold hydraulic actuator (13) and remove two cotter pins (16) from actuator pin (14). Drive actuator pin (14) free of hydraulic actuator (13) and ceiling-mounted support bracket. Remove two spacers (17) and hydraulic actuator (13).
- H Remove mounting bracket (18) from top rear door (19) by removing four screws (20), four flat washers (21), four lockwashers (22) and four nuts (23).
- I Unscrew actuator rod eye (11) from piston rod of hydraulic actuator (13).

### INSTALLATION

- A Install actuator rod eye (11) on piston rod end of actuator (13).
  - B Install mounting bracket (18) on inside of top rear door (19) by installing four screws (20), four flat washers (21), four lockwashers (22) and four nuts (23).
  - C Install hydraulic actuator (13) by installing actuator pin (14) and two spacers (17). Install two cotter pins (16) into actuator.
- NOTE**
- Flats on pivot pin (10) must lineup with setscrew holes in mounting bracket (18).
- D Install pivot pin (10) and secure with setscrews (15).
  - E Install on each end of pivot pin (10), one spacer (9) and one spring (8). Insert end of each spring into holes on left and right doorstops (12).
  - F Place one torque plate (4) on left and right ends of pivot pin (10) and press ends of springs (8) into small hole of each torque plate (4).
  - G Install screws (7) into center hole of torque plates (4) and pivot pin (10).
  - H Rotate each torque plate (4) (using plier wrench) approximately one rotation in clockwise direction to load springs (8). Hold springs in loaded position and install two screws (5) and two lockwashers (6) in each torque plate (4).
  - I Reconnect hydraulic lines to hydraulic actuator (13) (p 16-30).
  - J Close and latch lower rear door.

TA310017

**UPPER REAR DOOR HINGES: REMOVAL AND INSTALLATION**

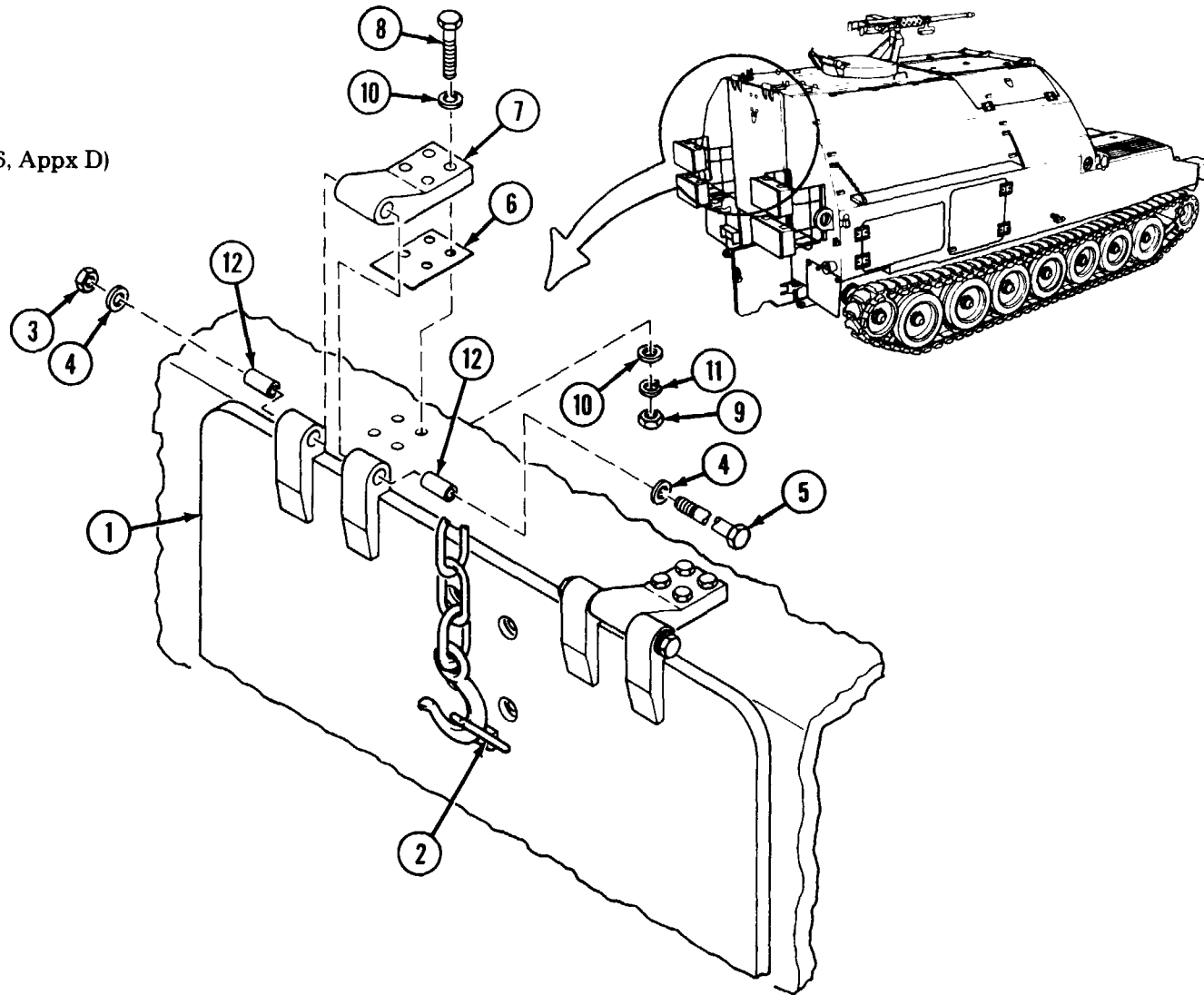
**INITIAL SETUP**

Materials/Parts:

Zinc chromate paste (item 46, Appx D)

Personnel Required:

Two



## UPPER REAR DOOR HINGES: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTE

This procedure applies to both upper rear door hinges.

A Open bottom rear door. Close top rear door (1).

---

#### WARNING

Do not remove both hinge screws at same time. Do not make lifting device cable/chain taut. Only remove slack from cable/chain to guard against door dropping when one hinge screw is removed.

---

B Attach suitable lifting device to door lifting lug (2). Remove slack from lifting device cable/chain.

C Remove one self-locking nut (3), two flat washers (4) and one hinge screw (5). Discard self-locking nut.

#### NOTE

Note location and number of shims during removal.

D With assistant inside crew compartment, remove one hinge (7) and shims (6) by removing four screws (8), four nuts (9), eight flat washers (10) and four lockwashers (11). Discard lockwashers.

E Drive sleeve bearings (12) from hinge bosses of door (1) using drive punch and hammer.

### INSTALLATION

A Install sleeve bearings (12) in hinge bosses of door (1).

B Apply zinc chromate paste (item 46, Appx D) between mating surfaces of hinge (7) and shims (6) and vehicle hull.

#### NOTE

Install same number of shims that were removed from under hinge.

C Install shims (6) and hinge (7) on vehicle hull with four screws (8), eight flat washers (10), four new lockwashers (11) and four nuts (9).

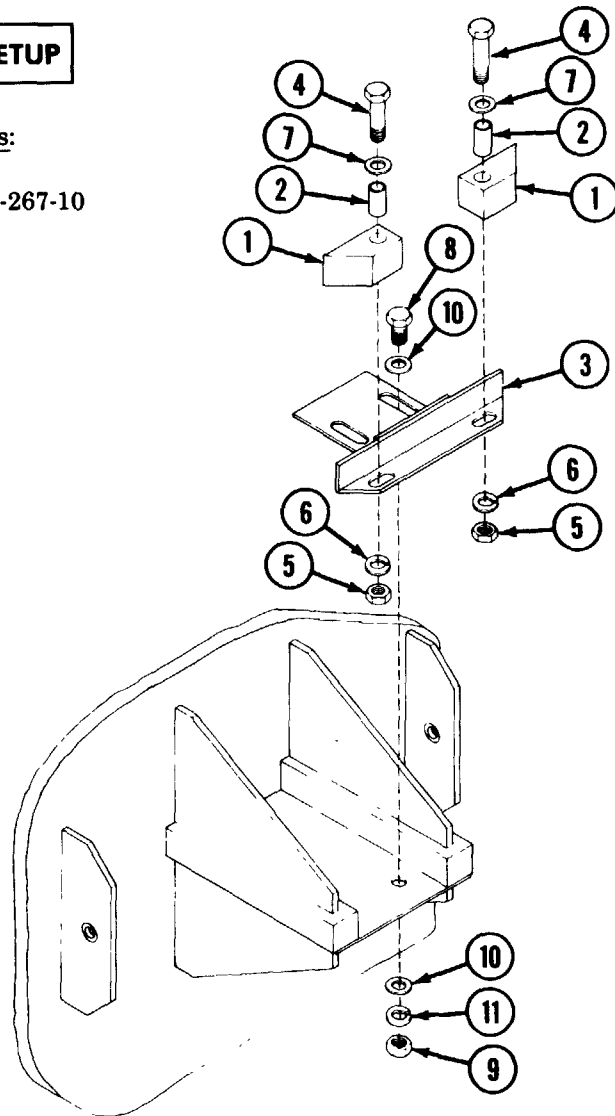
D Install hinge screw (5) with two flat washers (4) and new self-locking nut (3).

E Remove lifting device from lifting lug (2).

## UPPER REAR DOOR BUMPER STOP AND BRACKET: REMOVAL AND INSTALLATION

**INITIAL SETUP**References:

TM 9-2350-267-10

**REMOVAL**

- A Raise upper rear door to 45-degree stop (TM 9-2350-267-10).
- B Remove two bumpers (1) and spacers (2) from bracket (3) by removing from each, one screw (4), one nut (5), one lockwasher (6) and one flat washer (7). Discard lockwasher.
- C Remove two screws (8), two nuts (9), four flat washers (10), two lockwashers (11) and bracket (3). Discard lockwashers.

**INSTALLATION**

- A Insert spacers (2) in two bumpers (1).
- B Install two bumpers (1) in bracket (3) with two screws (4), two nuts (5), two new lockwashers (6) and two flat washers (7).
- C Install bracket (3) on door bracket mount with two screws (8), four flat washers (10), two new lockwashers (11) and two nuts (9). Do not tighten.
- D Close upper rear door (TM 9-2360-267-10).
- E Push bracket (3) firmly against conveyor assembly and tighten screws (8) and nuts (9).



## UPPER REAR DOOR SEAL: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Adhesive (item 4, Appx D)

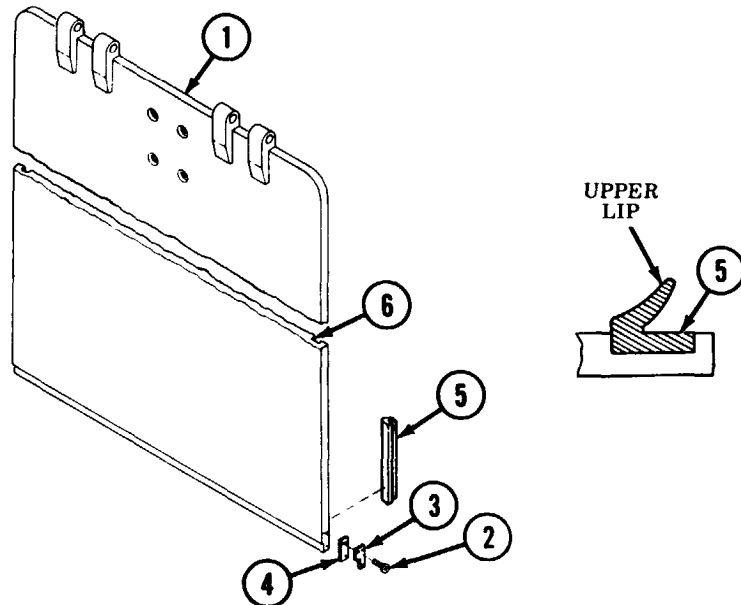
Dry-cleaning solvent (item 19, Appx D)

#### Personnel Required:

Two

#### References:

TM 9-2350-267-10



### REMOVAL

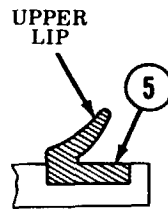
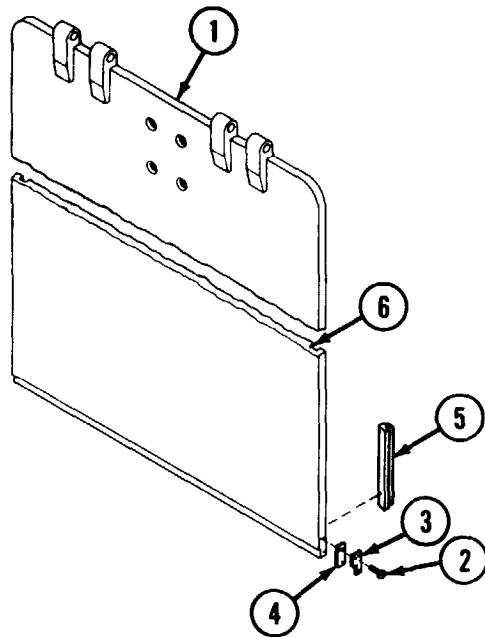
- A Open upper rear door (1) to 45-degree stop (TM 9-2350-267-10).
- B Remove three screws (2) releasing retainer (3) and seal (4) from door (1).
- C Scrape seal (5) from door seal channel (6).

### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- D Use dry-cleaning solvent (item 19, Appx D) and clean rags to thoroughly clean and dry door seal channel (6). Be sure to remove all seal particles.

## UPPER REAR DOOR SEAL: REMOVAL AND INSTALLATION (CONTINUED)

**INSTALLATION****NOTE**

Do not exceed 1/4-inch thick application of adhesive. Excessive amount will cause seal lip to adhere to seal channel outer wall, destroying effectiveness of seal.

- A Apply thin coating of adhesive (item 4, Appx D) to new seal (5) and door seal channel (6). Allow to dry until tacky.

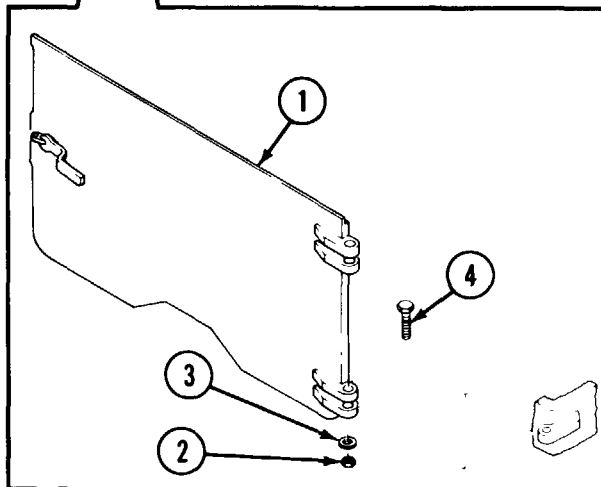
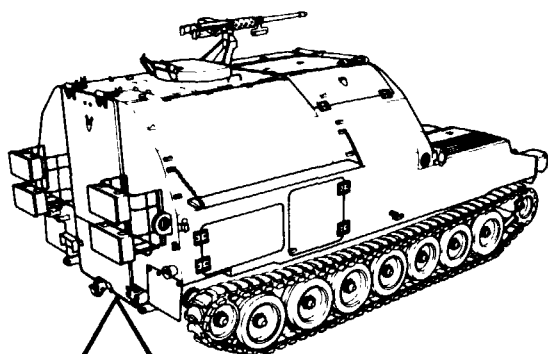
**NOTES**

Upper lip on seal must face door edge.

To obtain maximum sealing results, avoid stretching or bunching new seal during installation.

- B Install seal (5).  
 C Install seal (4) and retainer (3). Secure with three screws (2).  
 D Close upper door (1) (TM 9-2350-267-10).

## LOWER REAR DOOR: REMOVAL AND INSTALLATION



### REMOVAL

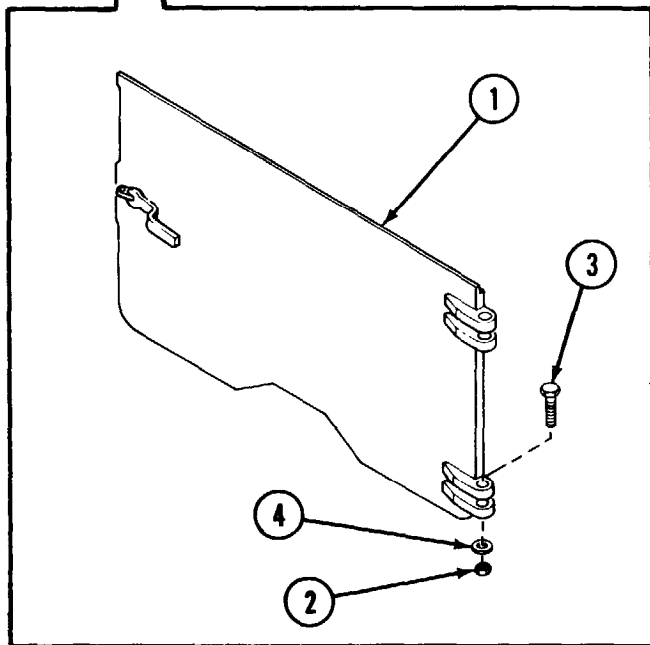
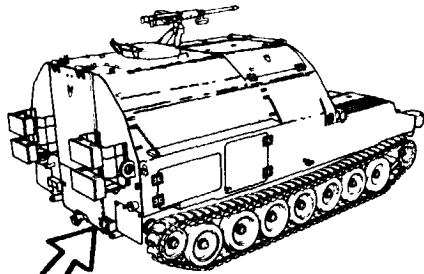
- A Open lower rear door (1) to approximately 45 degrees.
- B Remove fire extinguisher and flashlight from brackets on inside of door.
- C With two personnel holding door, remove two nuts (2), two flat washers (3) and two screws (4) from door hinges.
- D Lift lower rear door (1) away from vehicle and remove.

### INSTALLATION

Reverse removal procedures.



## LOWER REAR DOOR HINGE SCREWS: REMOVAL AND INSTALLATION



### REMOVAL

#### CAUTION

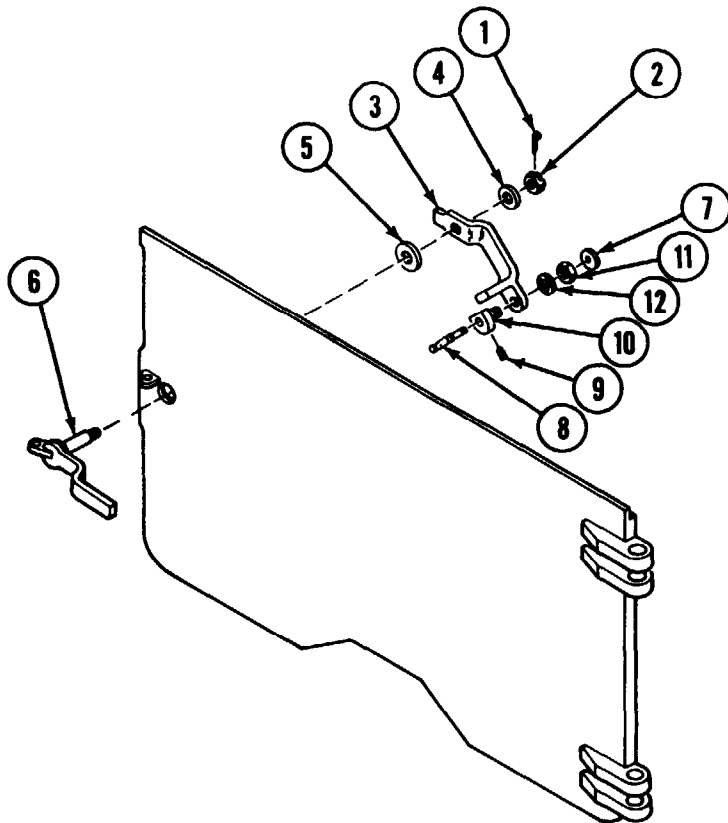
Only remove and install one hinge screw at a time to prevent door from moving out of place.

- A Open lower rear door (1) approximately 45 degrees and support door.
- B Remove one nut (2), one screw (3) and one flat washer (4).

### INSTALLATION

Reverse removal procedures.

### LOWER REAR DOOR HANDLE: REMOVAL. DISASSEMBLY. ASSEMBLY AND INSTALLATION



#### REMOVAL

- A Remove cotter pin (1) and slotted nut (2).
- B Remove inner door handle (3) and flat washers (4 and 5).
- C Remove outer handle (6).

#### DISASSEMBLY

- A Unscrew and remove knob (7) from plunger (8).
- B Turn out ball plunger (9) and remove plunger (8) from lock housing (10).
- C Remove nut (11), lockwasher (12) and lock housing (10) from handle (3).

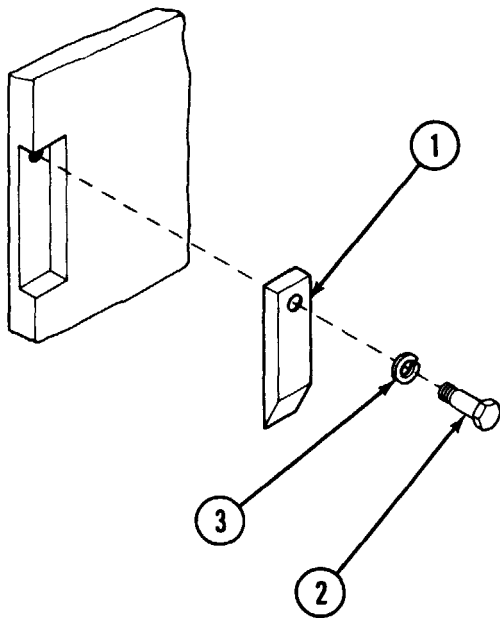
#### ASSEMBLY

Reverse disassembly procedures.

#### INSTALLATION

Reverse removal procedures.

## LOWER REAR DOOR HANDLE STRIKE: REMOVAL AND INSTALLATION



### REMOVAL

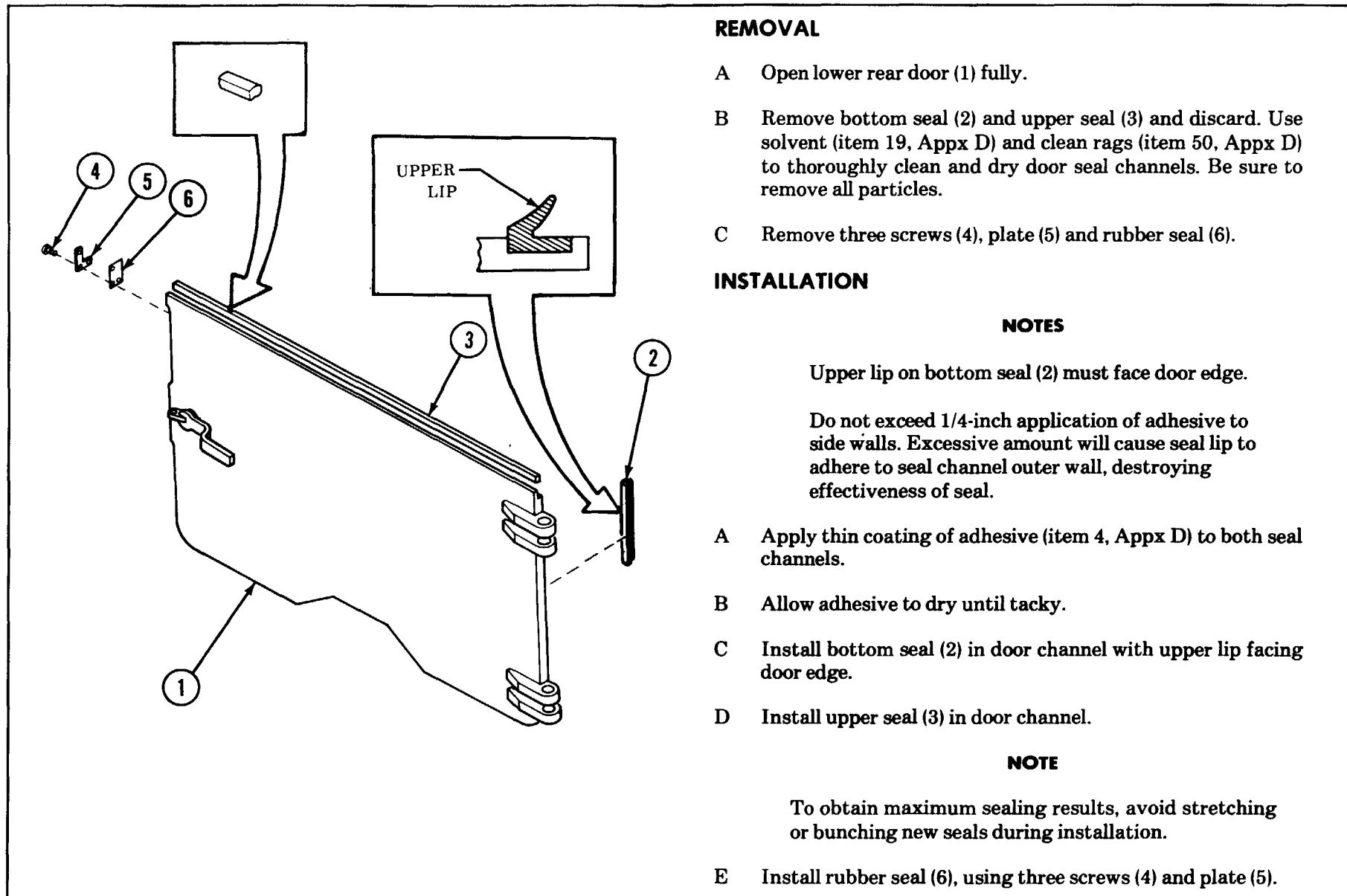
To remove door handle strike (1), remove two screws (2) and two lockwashers (3).

### INSTALLATION

A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of door handle strike (1) and hull.

B Reverse removal procedure.

TA310025

**LOWER REAR DOOR SEAL: REMOVAL AND INSTALLATION**



## PERSONNEL DOOR: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Sling, nylon (item 58, Appx B)

#### Materials/Parts:

Zinc chromate paste (item 46, Appx D)

#### Personnel Required:

Two

### REMOVAL

- A Open personnel door (1).
- B Install nylon sling on personnel door (1). Attach hook of suitable lifting device.
- C Remove six screws (2), six nuts (3), six lockwashers (4) and six flat washers (5). Discard lockwashers.

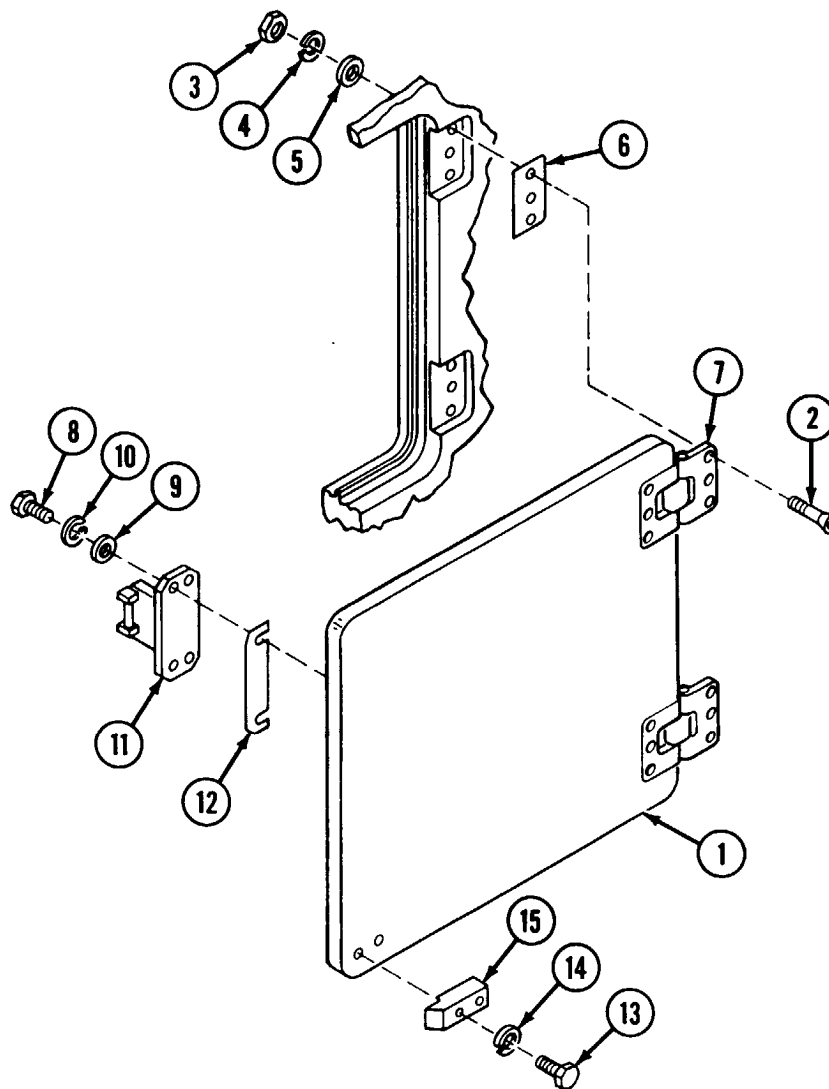
#### NOTE

Note number and position of shims to ensure proper installation.

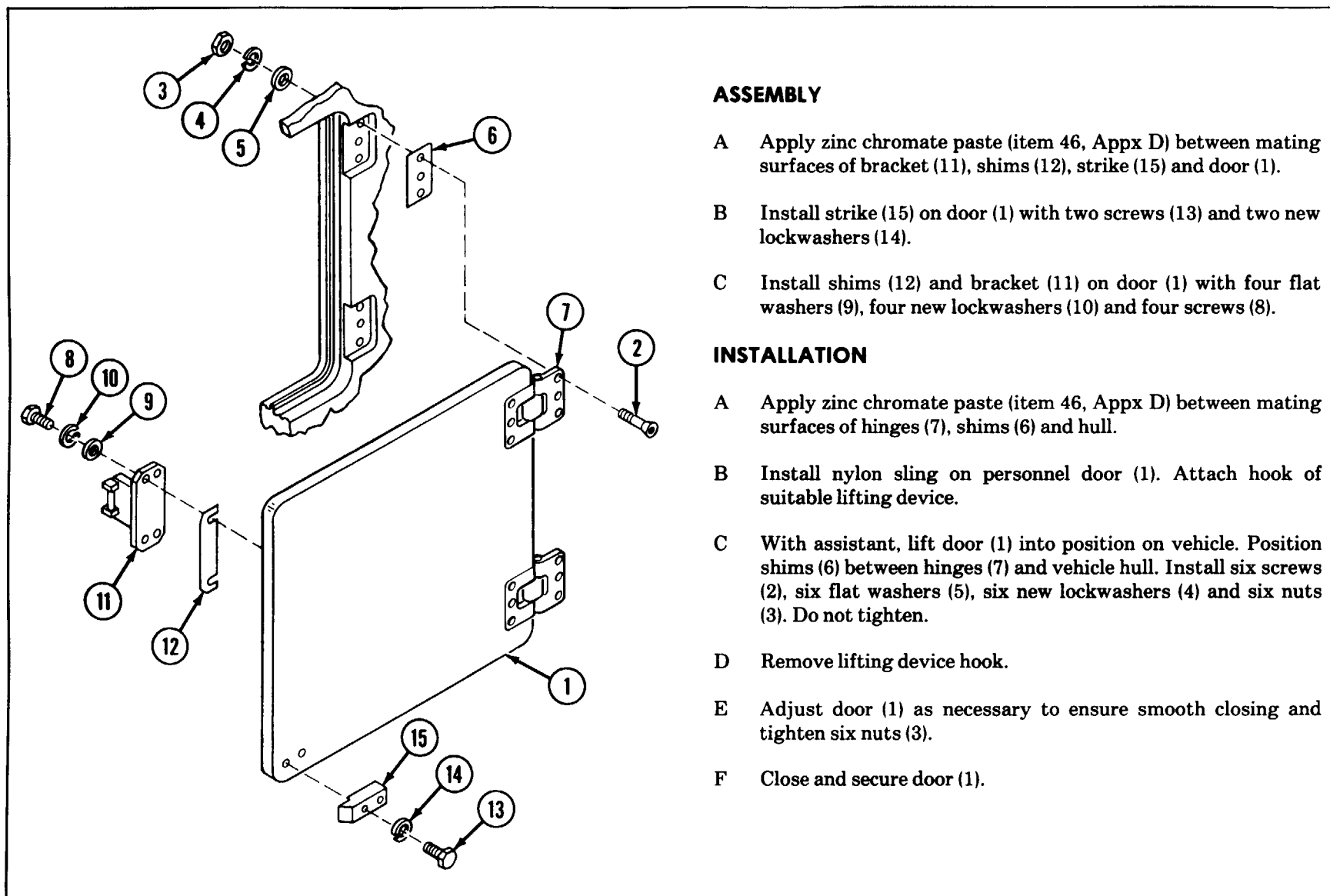
- D Remove door (1), shims (6) and hinges (7).

### DISASSEMBLY

- A Remove four screws (8), four flat washers (9), four lockwashers (10), bracket (11) and shims (12) from door (1). Discard lockwashers.
- B Remove two screws (13), two lockwashers (14) and strike (15) from door (1). Discard lockwashers.



■ **PERSONNEL DOOR: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**ASSEMBLY**

- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of bracket (11), shims (12), strike (15) and door (1).
- B Install strike (15) on door (1) with two screws (13) and two new lockwashers (14).
- C Install shims (12) and bracket (11) on door (1) with four flat washers (9), four new lockwashers (10) and four screws (8).

**INSTALLATION**

- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of hinges (7), shims (6) and hull.
- B Install nylon sling on personnel door (1). Attach hook of suitable lifting device.
- C With assistant, lift door (1) into position on vehicle. Position shims (6) between hinges (7) and vehicle hull. Install six screws (2), six flat washers (5), six new lockwashers (4) and six nuts (3). Do not tighten.
- D Remove lifting device hook.
- E Adjust door (1) as necessary to ensure smooth closing and tighten six nuts (3).
- F Close and secure door (1).



**CANISTER DOORS (VEHICLES 1 THRU 33): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**

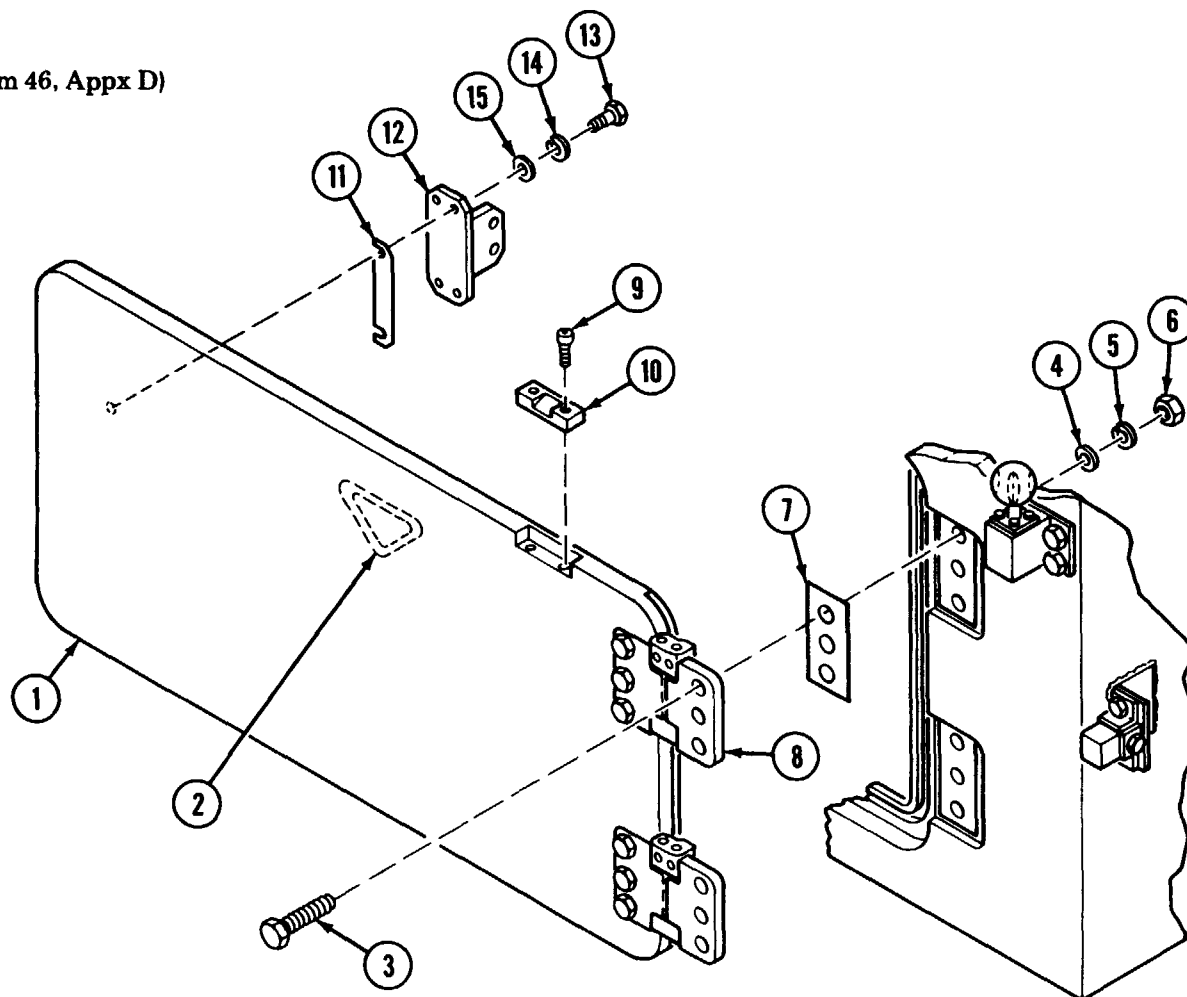
**INITIAL SETUP**

Materials/Parts:

Zinc chromate paste (item 46, Appx D)

Personnel Required:

Two



## CANISTER DOORS (VEHICLES 1 THRU 33): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTE

Right and left doors are removed in same manner. The following procedures apply to either door.

- A Open canister door (1).
- B Attach hook of suitable lifting device to lifting lug (2).

#### WARNING

Door is heavy. Support door before removing hinges. Door may swing causing personal injury.

- C Remove six screws (3), six flat washers (4), six lockwashers (5) and six nuts (6). Discard lockwashers.

#### NOTE

Note number and position of shims to ensure proper installation.

- D Remove door (1), shims (7) and hinges (8).

### DISASSEMBLY

- A Remove two screws (9) and strike (10) from door (1).

#### NOTE

Note number and position of shims to ensure proper assembly.

- B Remove bracket (12) and shims (11) by removing four screws (13), four lockwashers (14) and four flat washers (15). Discard lockwashers.

### ASSEMBLY

- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of strike (10), bracket (12), shims (11) and door (1).
- B Install bracket (12) and shims (11) with four screws (13), four new lockwashers (14) and four flat washers (15).
- C Install strike (10) on door (1) with two screws (9).

### INSTALLATION

- A Apply zinc chromate paste (item 46, Appx D) between mating surface of hinges (8), shims (7) and hull.
- B Attach hook of suitable lifting device to lifting lug (2).
- C With assistant, lift door (1) into position on vehicle. Position shims (7) between hinges (8) and vehicle hull. Install six screws (3), six flat washers (4), six new lockwashers (5) and six nuts (6). Do not tighten.
- D Remove lifting device hook.
- E Adjust door (1) as necessary to ensure smooth closing and tighten six nuts (6).
- F Close and secure door.

**CANISTER DOORS (VEHICLES 34 AND UP): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**

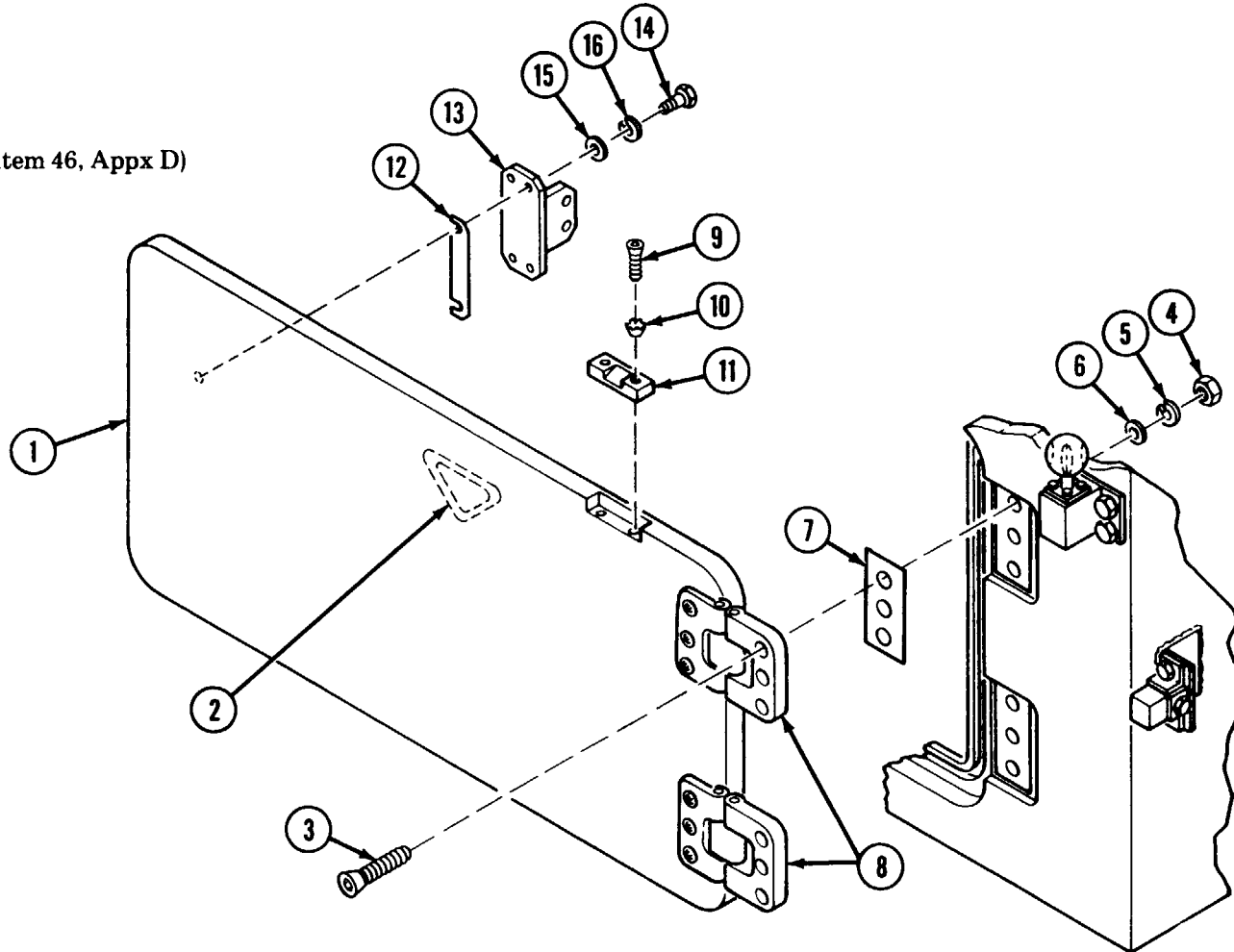
**INITIAL SETUP**

Materials/Parts:

Zinc chromate paste (item 46, Appx D)

Personnel Required:

Two



## CANISTER DOORS (VEHICLES 34 AND UP): REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTE

Right and left doors are removed in same manner. The following procedures apply to either door.

- A Open canister door (1).
- B Attach hook of suitable lifting device to lifting lug (2).

#### WARNING

Door is heavy. Support door before removing hinges. Door may swing causing personal injury.

- C Remove six screws (3), six nuts (4), six lockwashers (5) and six flat washers (6). Discard lockwashers.

#### NOTE

Note number and position of shims to ensure proper installation.

- D Remove door (1), shims (7) and hinges (8).

### DISASSEMBLY

- A Remove two screws (9), two lockwashers (10) and strike (11) from door (1). Discard lockwashers.

#### NOTE

Note number and position of shims to ensure proper assembly.

- B Remove bracket (13) and shims (12) by removing four screws (14), four flat washers (15) and four lockwashers (16). Discard lockwashers.

### ASSEMBLY

- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of strike (11), bracket (13), shims (12) and door (1).
- B Install bracket (13) and shims (12) with four screws (14), four new lockwashers (16) and four flat washers (15).
- C Install strike (11) on door (1) with two screws (9) and two new lockwashers (10).

### INSTALLATION

- A Apply zinc chromate paste (item 46, Appx D) between mating surface of hinges (8), shims (7) and hull.
- B Attach hook of suitable lifting device to lifting lug (2).
- C With assistant, lift door (1) into position on vehicle. Position shims (7) between hinges (8) and vehicle hull. Install six screws (3), six new lockwashers (5), six flat washers (6) and six nuts (4). Do not tighten.
- D Remove lifting device hook.
- E Adjust door (1) as necessary to ensure smooth closing and tighten six nuts (4).
- F Close and secure door.

**LEFT CANISTER DOOR LATCH ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION**

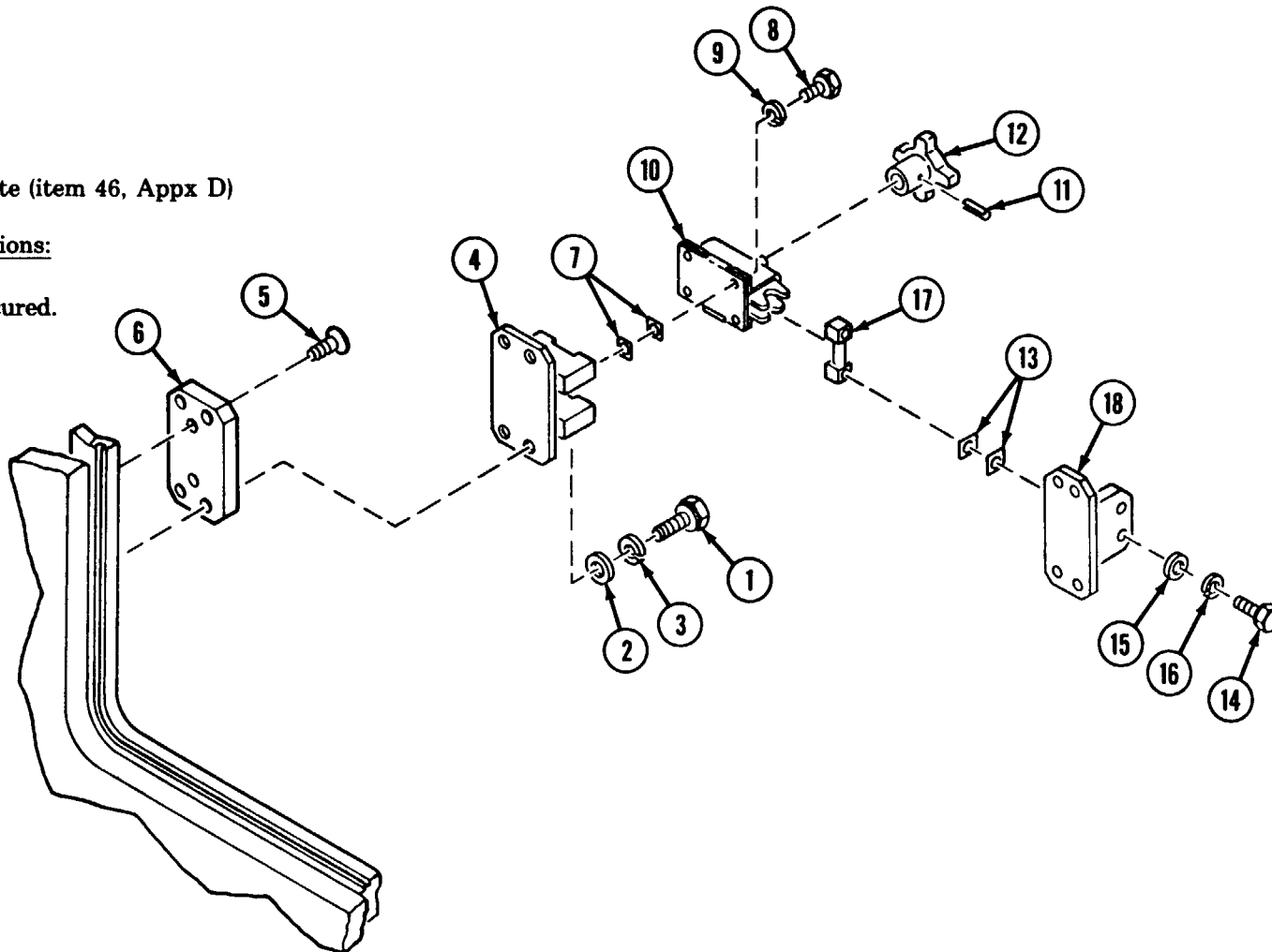
**INITIAL SETUP**

Materials/Parts:

Zinc chromate paste (item 46, Appx D)

Equipment Conditions:

Door open and secured.





## LEFT CANISTER DOOR LATCH ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### REMOVAL

- A Remove four screws (1), four flat washers (2), four lockwashers (3) and plate (4) from inside vehicle hull. Discard lockwashers.
- B For vehicles 34 and up only, remove two screws (5) releasing spacer (6) from hull.

### DISASSEMBLY

#### NOTE

Note number and position of shims to ensure proper assembly.

- A Remove four screws (8), four lockwashers (9), latch assembly (10) and shims (7) from plate (4). Discard lockwashers.
- B Remove spring pin (11) and handle (12) from latch assembly (10). Discard spring pin.
- C Remove two screws (14), two flat washers (15), two lockwashers (16), shims (13) and strike (17) from door-mounted bracket (18). Discard lockwashers.

### ASSEMBLY

- A Install shims (13) and strike (17) on door-mounted bracket (18) with two screws (14), two new lockwashers (16) and two flat washers (15).
- B Install handle (12) on latch assembly (10) with new spring pin (11).
- C Install latch assembly (10) and shims (7) on plate (4) with four screws (8) and four new lockwashers (9).

### INSTALLATION

- A Apply zinc chromate paste (item 46, Appx D) between mounting surfaces of plate (4) or spacer (6) and vehicle hull.
- B For vehicle 34 and up only, install spacer (6) on hull with two screws (5).
- C Install plate (4) and attached parts on hull or spacer (6) with four screws (1), four flat washers (2) and four new lockwashers (3).

### CANISTER DOOR LATCH ASSEMBLY (RIGHT SIDE) AND PERSONNEL SIDE DOOR: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

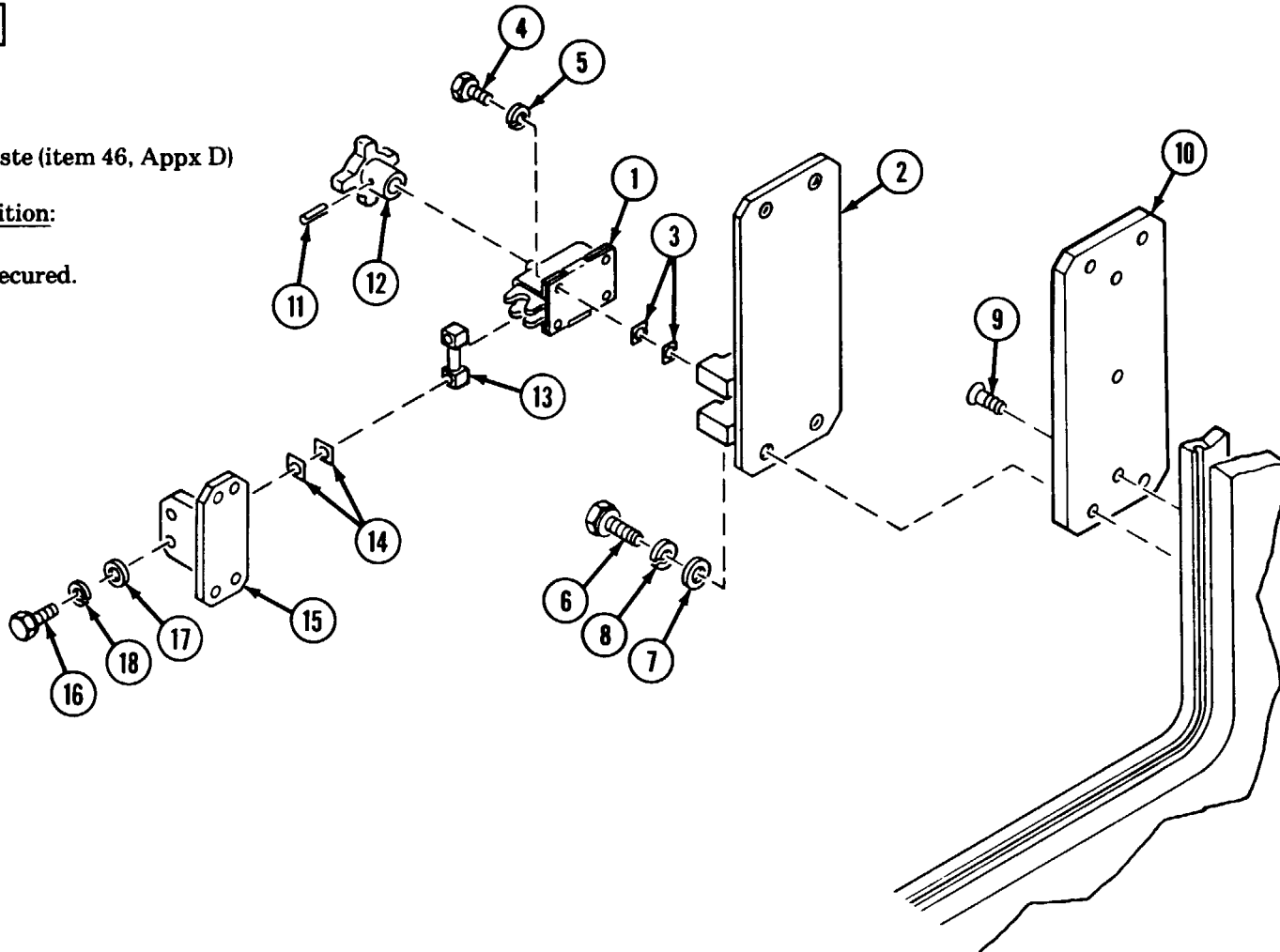
#### INITIAL SETUP

Materials/Parts:

Zinc chromate paste (item 46, Appx D)

Equipment Condition:

Doors open and secured.



## CANISTER DOOR LATCH ASSEMBLY (RIGHT SIDE) AND PERSONNEL SIDE DOOR: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTES

Latch for personnel door is mounted on top half of plate between right canister door and personnel door. Procedures are identical.

**Note** number and position of shims to ensure proper installation.

A Remove two latch assemblies (1) from plate (2) by removing from each, four screws (4) and four lockwashers (5). Remove and set aside shims (3). Discard lockwashers.

B Remove plate (2) from vehicle hull by removing four screws (6), four flat washers (7) and four lockwashers (8). Discard lockwashers.

C For vehicles 34 and up only, remove three screws (9), releasing spacer (10) from hull.

### DISASSEMBLY

A Remove spring pin (11) and handle (12) from each latch (1). Discard spring pin.

B Remove strike (13) and shims (14) from two door-mounted brackets (15) by removing from each bracket, two screws (16), two flat washers (17) and two lockwashers (18). Discard lockwashers.

### ASSEMBLY

A Install shims (14) and strike (13) on door-mounted brackets (15) with two screws (16), two flat washers (17) and two new lockwashers (18).

B Install handle (12) on each latch (1) with new spring pin (11).

### INSTALLATION

A Apply zinc chromate paste (item 46, Appx D) between mating surface of plate (2) or spacer (10) and vehicle hull.

B On vehicles 34 and up only, install spacer (10) on hull with three screws (9).

C Install plate (2) on hull or on spacer (10) with four screws (6), four flat washers (7) and four new lockwashers (8).

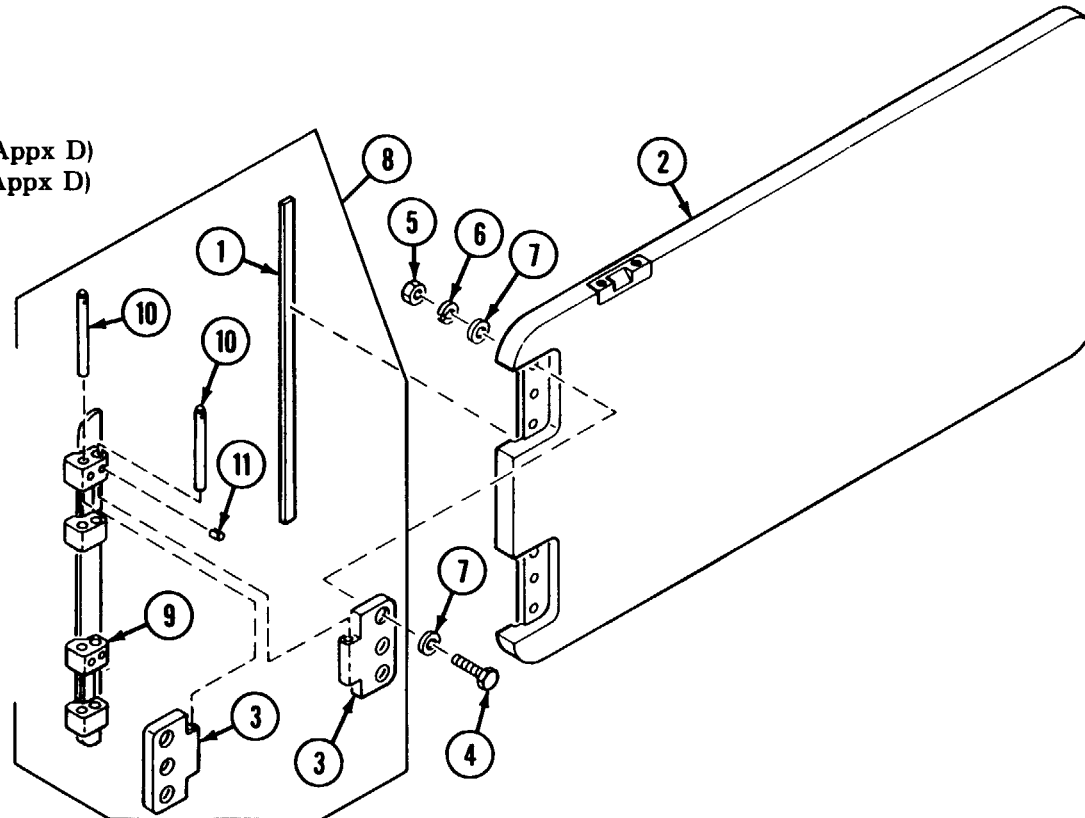
D Install shims (3) and latch assemblies (1) on plate (2) with four screws (4) and four new lockwashers (5).

**HINGES, CANISTER DOORS AND PERSONNEL DOOR (VEHICLES 1 TO 33): REMOVAL, ASSEMBLY AND INSTALLATION****INITIAL SETUP**Materials/Parts:

Adhesive (item 4, Appx D)  
 Dry-cleaning solvent (item 19, Appx D)  
 Zinc chromate paste (item 46, Appx D)

Personnel Required:

Two

**REMOVAL****NOTE**

Hinging of canister doors and personnel door is similar. The following procedures apply to all three doors.

A Remove appropriate door (p 9-41 or 9-42.2).

B Scrape hinge seal (1) from seal channel at hinge edge of door (2) and hinge leaves (3). Discard seal.

C Remove six screws (4), six nuts (5), six lockwashers (6), and 12 flat washers (7). Remove hinge assembly (8). Discard lockwashers.

## HINGES, CANISTER DOORS AND PERSONNEL DOOR (VEHICLES 1 TO 33): REMOVAL, ASSEMBLY AND INSTALLATION (CONTINUED)

### ASSEMBLY

#### NOTE

If new hinge is to be installed, assemble pieces as follows.

- A Install four hinge leaves (3) on bar (9) and drive pins (10) through links of bar and hinge leaves. Make sure holes in pins (10) are positioned to align with holes in links of bar (9).
- B Secure each of four pins (10) with spring pin (11).

### INSTALLATION

- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of each hinge leaf (3) and door (2).
- B Install hinge assembly (8) on door (2) with six screws (4), 12 flat washers (7), six new lockwashers (6) and six nuts (5).
- C Apply thin even coat of adhesive (item 4, Appx D) to new seal (1) and seal channel. Allow to dry until tacky (approximately 5 minutes).

- D **Press** middle of seal (1) onto hinge edge of door, then work toward top and bottom of door. Maintain pressure on seal (1) and on hinge leaves (3).

#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100° F (38° C); for Type II it is 138° F (50° C). Do not use near open flame or excessive heat.

- E Clean all adhesive from face of seal, using dry-cleaning solvent (item 19, Appx D).
- F Allow adhesive to cure for 30 minutes. Install appropriate door (p 9-41 or 9-42.2).

### HINGES, CANISTER DOORS AND PERSONNEL DOOR (VEHICLES 34 AND UP): REMOVAL, AND INSTALLATION

#### INITIAL SETUP

Test Equipment/Special Tools:

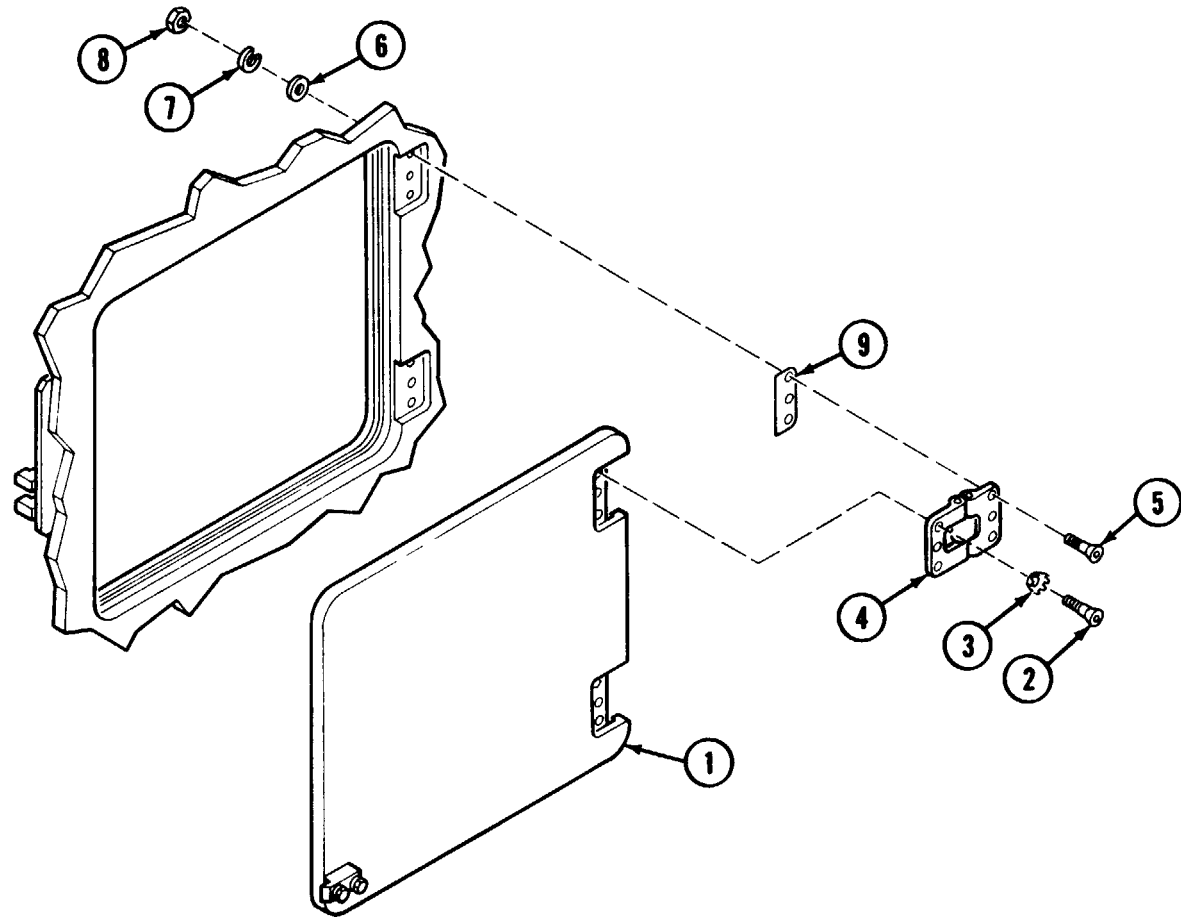
Sling, nylon (item 58, Appx B)

Materials/Parts:

Zinc chromate paste (item 46, Appx D)

Personnel Required:

Two



## HINGES, CANISTER DOORS AND PERSONNEL DOOR (VEHICLES 34 AND UP): REMOVAL, AND INSTALLATION

### REMOVAL

#### **WARNING**

**Remove only one hinge assembly at a time. With both hinges off, door could fall, inflicting serious injury.**

#### NOTE

Hinge assemblies for canister doors and personnel side door are similar. The following procedures apply to all three hinge assemblies.

- A Open appropriate door (1).
- B Install sling on door (1). Attach hook of suitable lifting device. Take up slack in sling to hold door taut.
- c Remove three screws (2) and (from personnel door only) three lockwashers (3) releasing hinge assemblies (4) from door (1). Discard lockwashers.

### NOTE

Note number and position of shims to ensure proper installation.

- D Remove three screws (5), three flat washers (6), three lockwashers (7) and three nuts (8). Remove hinge assemblies (4) and shims (9) from vehicle hull. Discard lockwashers.

### INSTALLATION

- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of hinge assemblies (4), shims (9), door (1) and vehicle hull.
- B Install hinge assemblies (4) and shims (9) with three screws (2) and (personnel door only) three new lockwashers (3).
- c Install hinge assemblies (4) and shims (9) on vehicle hull with three screws (5), three flat washers (6), three new lockwashers (7) and three nuts (8).
- D Remove sling from door (1) and suitable lifting device.
- E Close and secure appropriate door.



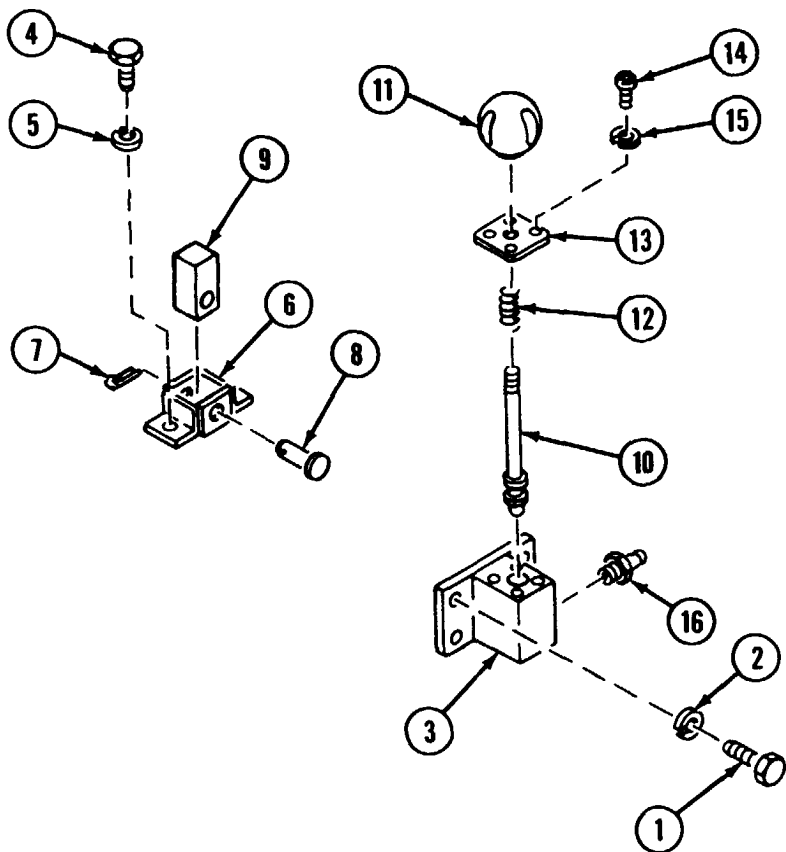


## CANISTER DOORS HOLD-OPEN LATCH AND BUMPER ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Zinc chromate paste (item 46, Appx D)



### REMOVAL

#### NOTE

Hold-open latches and bumper assemblies for right and left canister doors are removed and disassembled in same manner. The following procedures apply to both hold-open latches and bumper assemblies.

- A Remove four screws (1), four lockwashers (2) and latch body assembly (3) from vehicle hull. Discard lockwashers.
- B Remove two screws (4), two lockwashers (5), bumper bracket (6) from vehicle hull. Discard lockwashers.

### DISASSEMBLY

- A Remove cotter pin (7), headed pin (8) and rubber bumper (9) from bumper bracket (6). Discard cotter pin.
- B Hold pin (10). Unscrew knob (11).

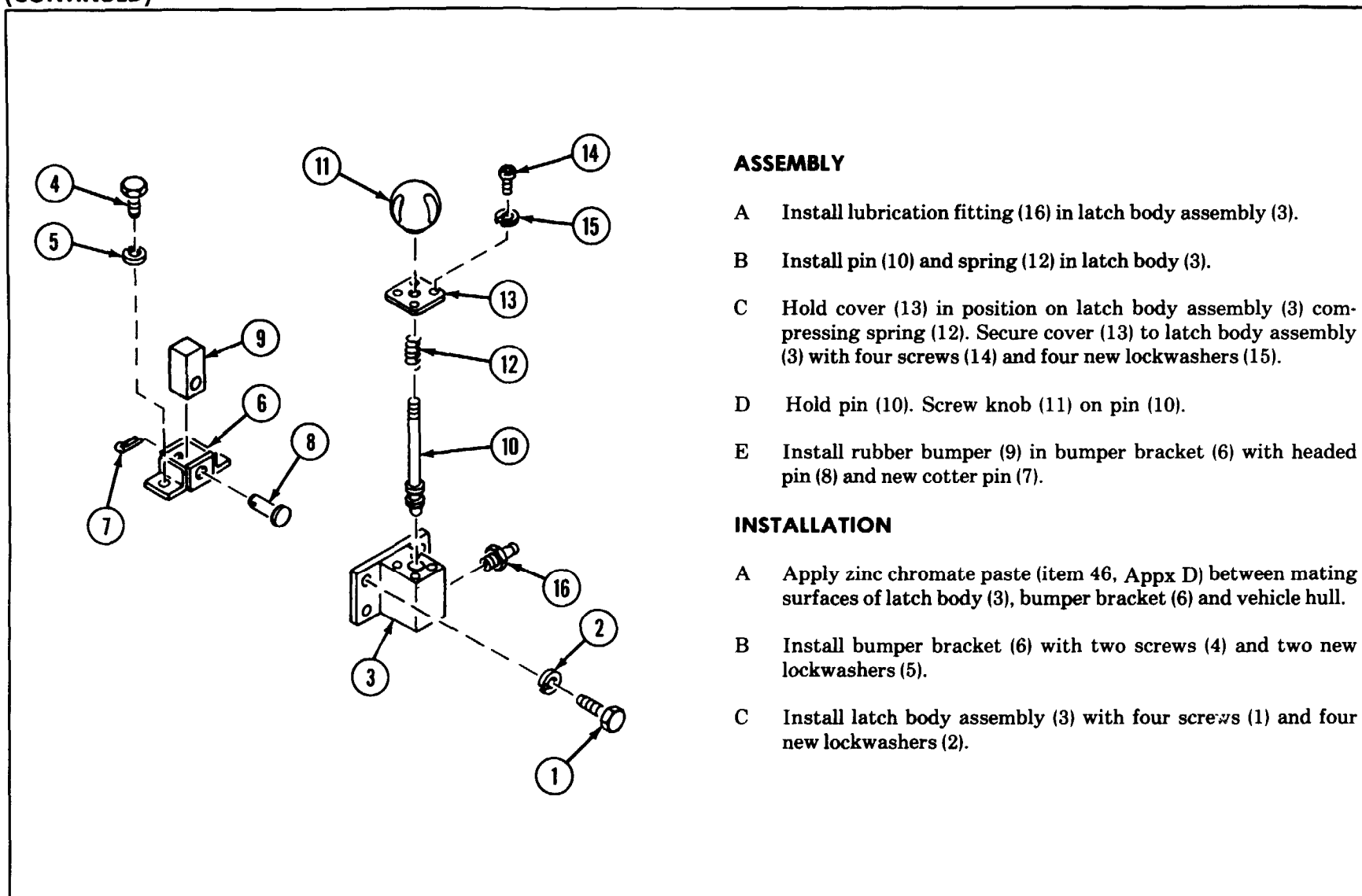
#### NOTE

Spring is under pressure. Hold cover until screws are removed.

- C Remove four screws (14) and four lockwashers (15). Remove cover (13) from latch body assembly (3). Discard lockwashers.
- D Remove spring (12) and pin (10) from inside latch body assembly (3).
- E Remove lubrication fitting (16) from latch body assembly (3).

TA312950

## CANISTER DOORS HOLD-OPEN LATCH AND BUMPER ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### ASSEMBLY

- A Install lubrication fitting (16) in latch body assembly (3).
- B Install pin (10) and spring (12) in latch body (3).
- C Hold cover (13) in position on latch body assembly (3) compressing spring (12). Secure cover (13) to latch body assembly (3) with four screws (14) and four new lockwashers (15).
- D Hold pin (10). Screw knob (11) on pin (10).
- E Install rubber bumper (9) in bumper bracket (6) with headed pin (8) and new cotter pin (7).

### INSTALLATION

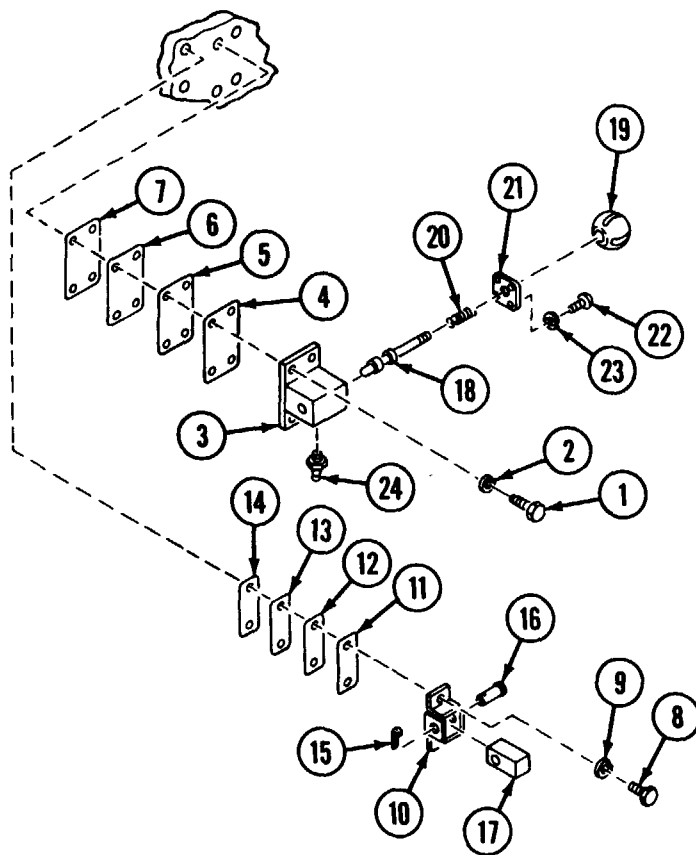
- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of latch body (3), bumper bracket (6) and vehicle hull.
- B Install bumper bracket (6) with two screws (4) and two new lockwashers (5).
- C Install latch body assembly (3) with four screws (1) and four new lockwashers (2).

## PERSONNEL DOOR HOLD-OPEN LATCH AND BUMPER ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Zinc chromate paste (item 46, Appx D)



### REMOVAL

- A Remove four screws (1), four lockwashers (2), latch body assembly (3) and shims (4, 5, 6 and 7) from vehicle hull. Discard lockwashers.
- B Remove two screws (8), two lockwashers (9), bumper bracket (10) and shims (11, 12, 13 and 14) from vehicle hull. Discard lockwashers.

### DISASSEMBLY

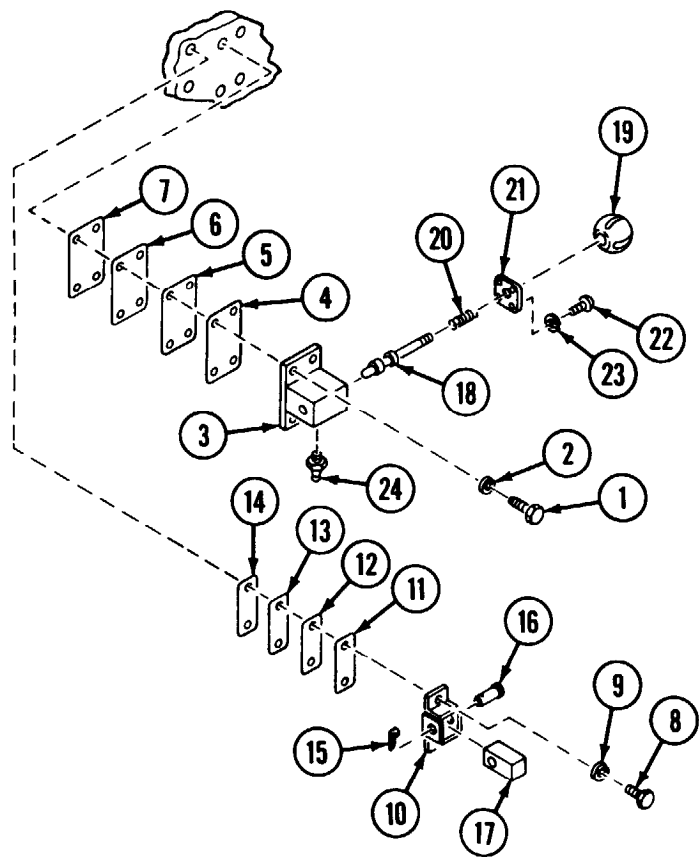
- A Remove cotter pin (15), headed pin (16) and rubber bumper (17) from bumper bracket (10). Discard cotter pin.
- B Hold pin (18). Unscrew knob (19).

### NOTE

Spring is under pressure. Hold cover until screws are removed.

- C Remove four screws (22) and four lockwashers (23). Remove cover (21) from latch body assembly (3). Discard lockwashers.
- D Remove spring (20) and pin (18) from inside latch body assembly (3).
- E Remove lubrication fitting (24) from latch body assembly (3).

**PERSONNEL DOOR HOLD-OPEN LATCH AND BUMPER ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION  
(CONTINUED)**



**ASSEMBLY**

- A Install lubrication fitting (24) in latch body assembly (3).
- B Install pin (18) and spring (20) in latch body assembly (3).
- C Hold cover (21) in position on latch body assembly (3) compressing spring (20). Secure cover (21) to latch body assembly (3) with four screws (22) and four new lockwashers (23).
- D Hold pin (18). Screw knob (19) on pin (18).
- E Install rubber bumper (17) in bumper bracket (10) with headed pin (16) and new cotter pin (15).

**INSTALLATION**

- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of latch body (3), shims (4, 5, 6 and 7) bumper bracket (10), shims (11, 12, 13 and 14) and vehicle hull.
- B Install bumper bracket (10) and shims (11, 12, 13 and 14) with two screws (8) and two new lockwashers (9).
- C Install latch body assembly (3) and shims (4, 5, 6 and 7) with four screws (1) and four new lockwashers (2).

## CANISTER DOORWAYS AND PERSONNEL SIDE DOORWAY SEALS: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

#### Materials/Parts:

Adhesive (item 4, Appx D)

Dry-cleaning solvent (item 19, Appx D)

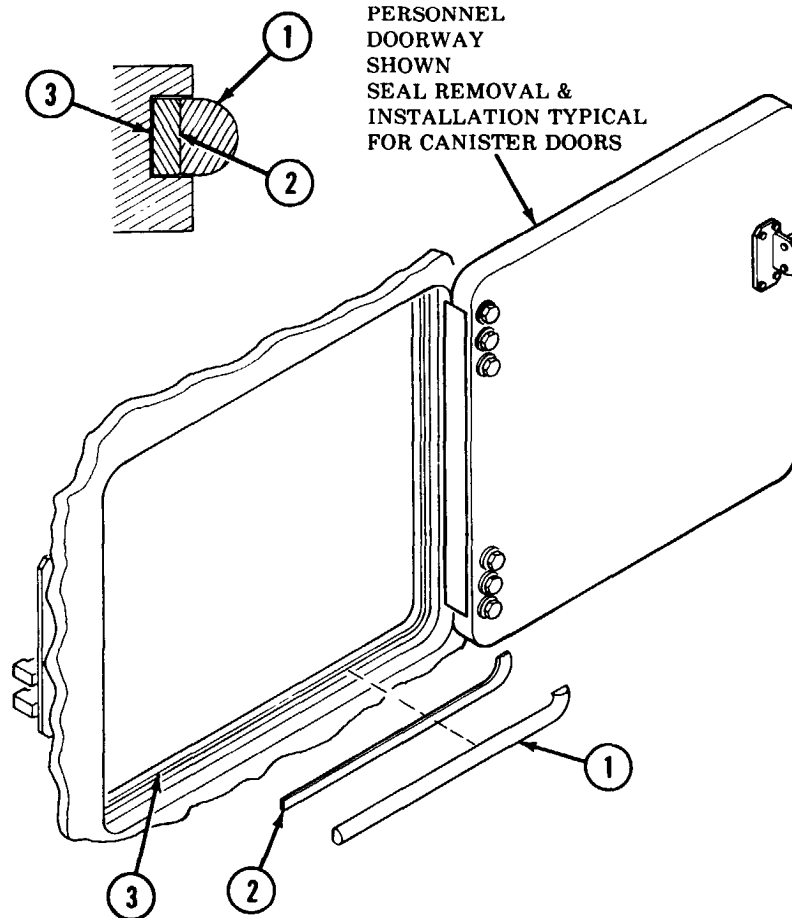
### REMOVAL

- A Open and secure appropriate door.
- B Pry up and remove old seal (1) and rubber shim (2) from doorway seal channel (3) of appropriate doorway. Discard seal and shim.

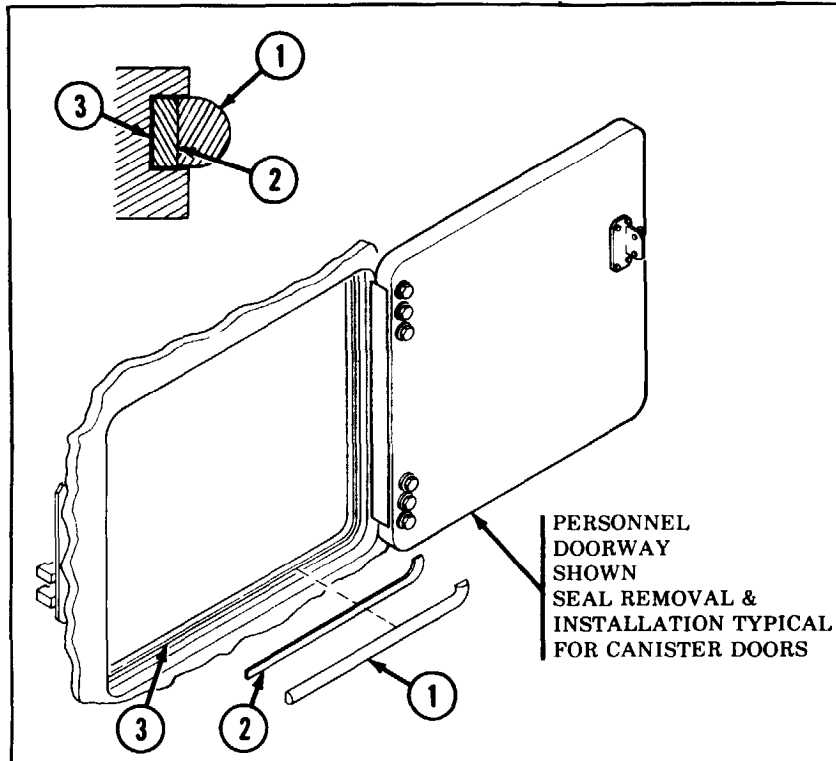
#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- C Use dry-cleaning solvent (item 19, Appx D) to thoroughly clean doorway seal channel (3). Use wire brush (item 48, Appx B) and rags, if necessary.



## CANISTER DOORWAYS AND PERSONNEL SIDE DOORWAY SEAL: REMOVAL AND INSTALLATION (CONTINUED)

**INSTALLATION**

- A Apply light coat of adhesive (item 4, Appx D) to mating surfaces of new shim (2) and doorway seal channel (3). Allow to dry until tacky (about 5 minutes).

**NOTE**

To obtain maximum sealing results, avoid stretching or bunching new shim or new seal during installation.

- B Install shim (2). Press in place, working with one end of shim (2) at bottom center of doorframe. Progress around doorframe until ends meet. Trim end if necessary for smooth tight fit.
- C Apply light coat of adhesive to front side of shim (2). Allow adhesive to set for about 1 minute.
- D Install new seal (1) with round side facing door. Start at bottom center of doorframe. Progress around doorframe as in step B.
- E Press seal (1) into firm contact. Start at top center of doorframe. Work away from center, down both sides at once toward ends of seal (1).

**WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- F Clean seal (1) with dry-cleaning solvent (item 19, Appx D). Any adhesive left on rounded surface will cause seal to stick to door.
- G Close and secure door. Allow adhesive to cure for about 30 minutes.

## PERSONNEL DOOR AND COMMANDER'S STATION ASSIST HANDLES: REMOVAL AND INSTALLATION

### INITIAL SETUP

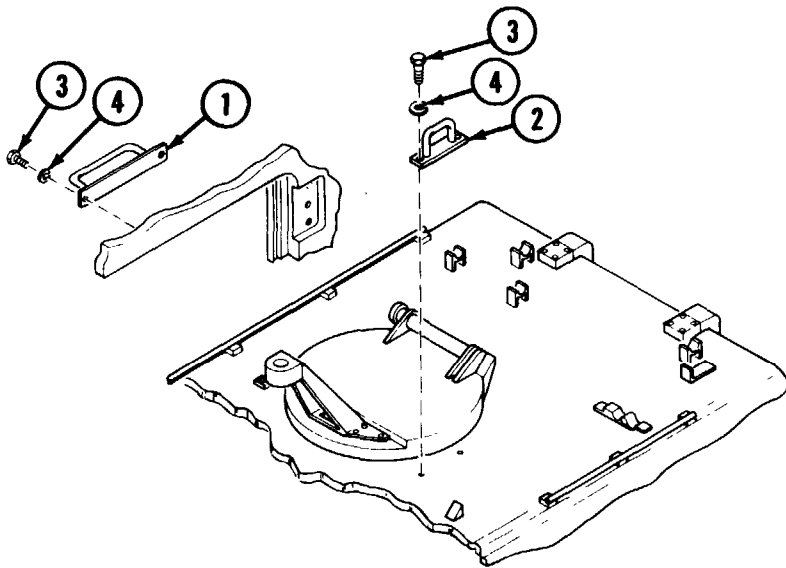
#### Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

#### Materials/Parts:

Dry-cleaning solvent (item 20, Appx D)

Zinc chromate paste (item 46, Appx D)



#### NOTE

Personnel door handle is located on interior wall above personnel door.

### REMOVAL

Remove personnel door handle (1) or commander's station assist handle (2) by removing two screws (3) and two lockwashers (4). Discard lockwashers.

### INSTALLATION

#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- A Clean handle (1 or 2) mounting surface and surface of hull with dry-cleaning solvent (item 20, Appx D) and wire brush (item 48, Appx B).
- B Apply zinc chromate paste (item 46, Appx D) between mating surfaces of handle (1 or 2) and hull.
- C Install personnel door handle (1) or commander's station assist handle (2) using two screws (3) and two new lockwashers (4).

**TOP LEFT DOOR: REMOVAL AND INSTALLATION**

**INITIAL SETUP**

Test Equipment/Special Tools:

Vise

Materials/Parts:

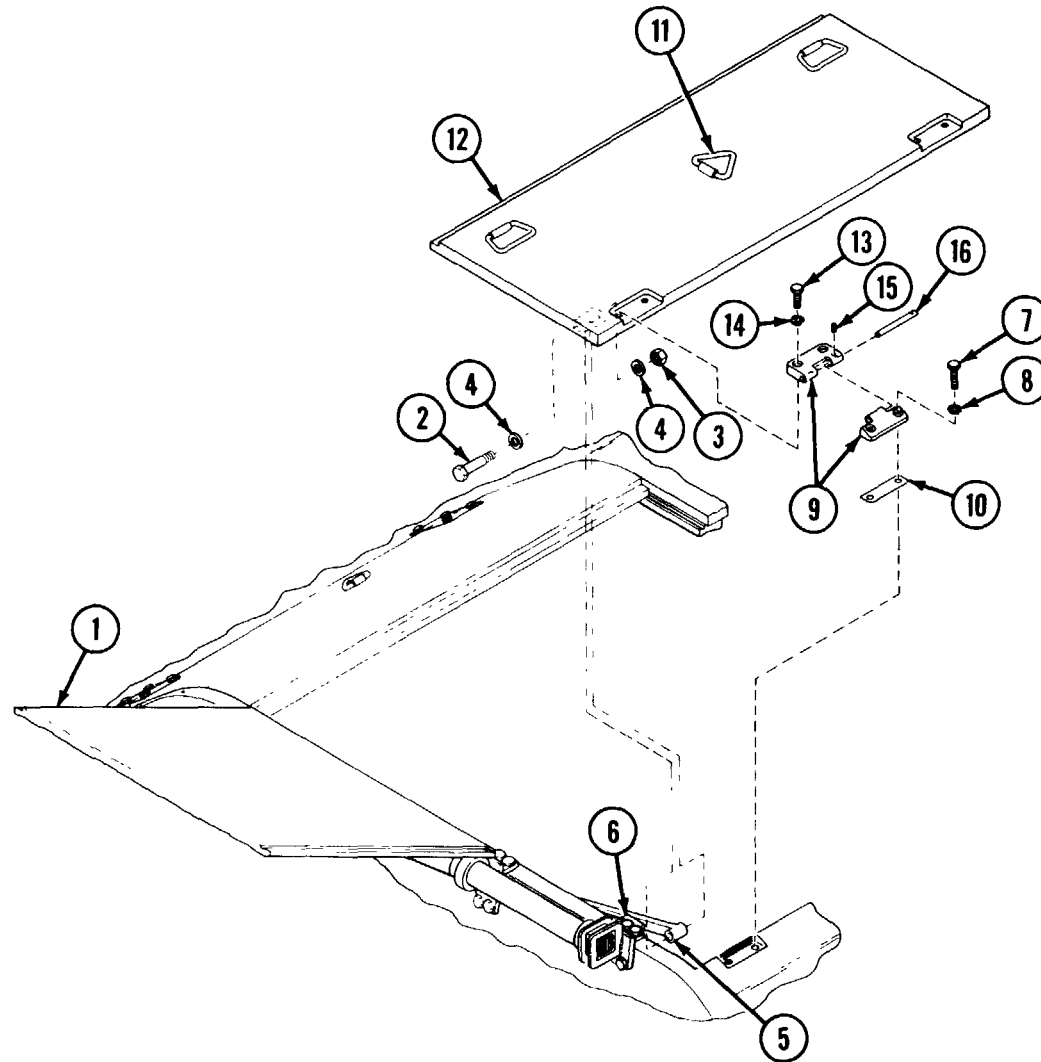
Zinc chromate paste (item 46, Appx D)

Personnel Required:

Two

Equipment Condition:

Outer seals and retainers removed (p 9-58.3).





## TOP LEFT DOOR: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

- A Open and secure top middle door (1).
- B Remove screw (2), self-locking nut (3) and two flat washers (4) and allow hold-open bar (5) to hang from support (6). Discard self-locking nut.

### NOTE

Note number and position of shims to ensure proper installation.

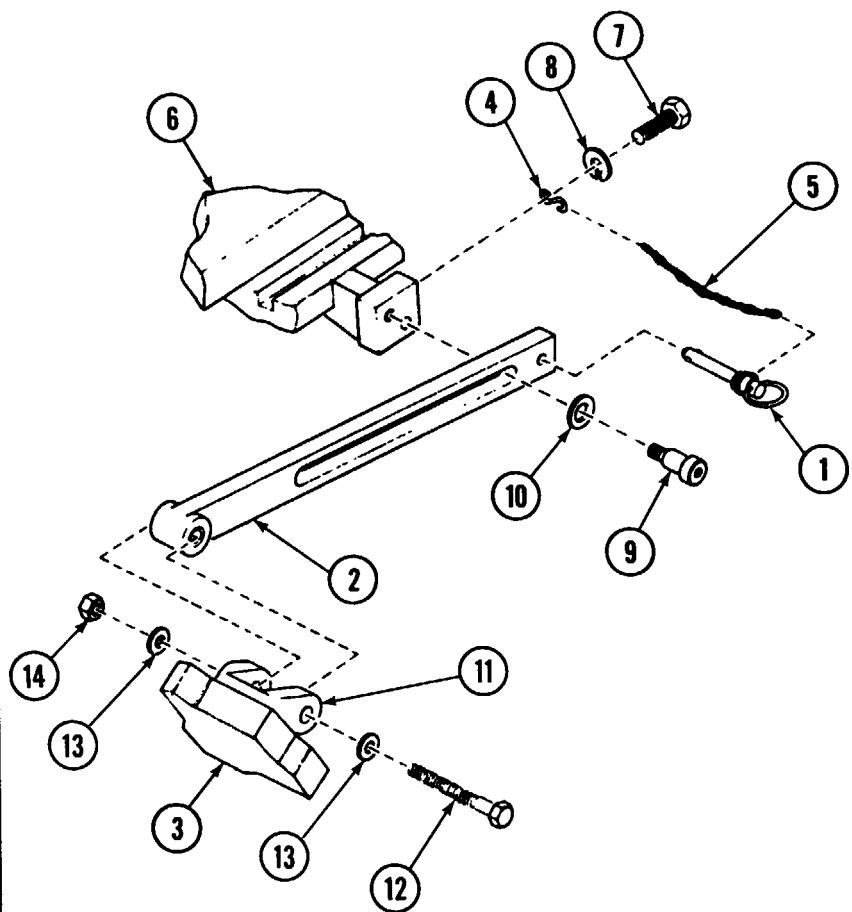
- C Remove four screws (7) and four lockwashers (8), releasing two hinges (9) and shims (10). Discard lockwashers.
- D Attach lifting hook of suitable lifting device to door lifting lug (11) and lift door (12) off vehicle.
- E Remove two hinges (9) from door (12) by removing four screws (13) and four lockwashers (14). Discard lockwashers.
- F Separate two hinge halves (9) by removing spring pin (15) and driving out hinge pin (16). Discard spring pin.

### INSTALLATION

- A Apply zinc chromate paste (item 46, Appx D) to mating surfaces between hinges (9), shims (10), door (12) and vehicle.
- B Hold one hinge half (9) in vise, with holes for spring pin (15) facing up. Position mating hinge half (9). Aline hinge pin holes. Drive hinge pin (16) into place, using care to aline holes for spring pin (15). Secure with new spring pin (15).
- C Attach lifting hook of suitable lifting device to door lifting lug (11). Lift door (12) into position on vehicle.
- D Install two hinges (9) on top left door (12) with four screws (13) and four new lockwashers (14). Position shims (10) between hinges (9) and vehicle hull and install four screws (7) and four new lockwashers (8).
- E Install hold-open bar (5) on door (12) bracket with screw (2), two flat washers (4) and new self-locking nut (3).
- F Close and secure top middle door (1).



## TOP LEFT DOOR HOLD-OPEN COMPONENTS: REMOVAL AND INSTALLATION



### REMOVAL

- A Move left projectile rack (TM 9-2350-267-10).
- B Pull quick-release pin (1) from bar (2).
- C Close top left door (3).
- D Remove S-hooks (4) that secure chain (5) to quick-release pin (1) and support (6). Remove screw (7) and lockwasher (8) from support (6). Discard lockwasher.
- E Remove shoulder screw (9) and flat washer (10) from support (6) to free bar (2).
- F Remove bar (2) from door-mounted bracket (11) by removing screw (12), two flat washers (13) and nut (14).

### INSTALLATION

Reverse removal procedures using new lockwasher.

### TOP RIGHT DOOR: REMOVAL AND INSTALLATION

#### INITIAL SETUP

Test Equipment/Special Tools:

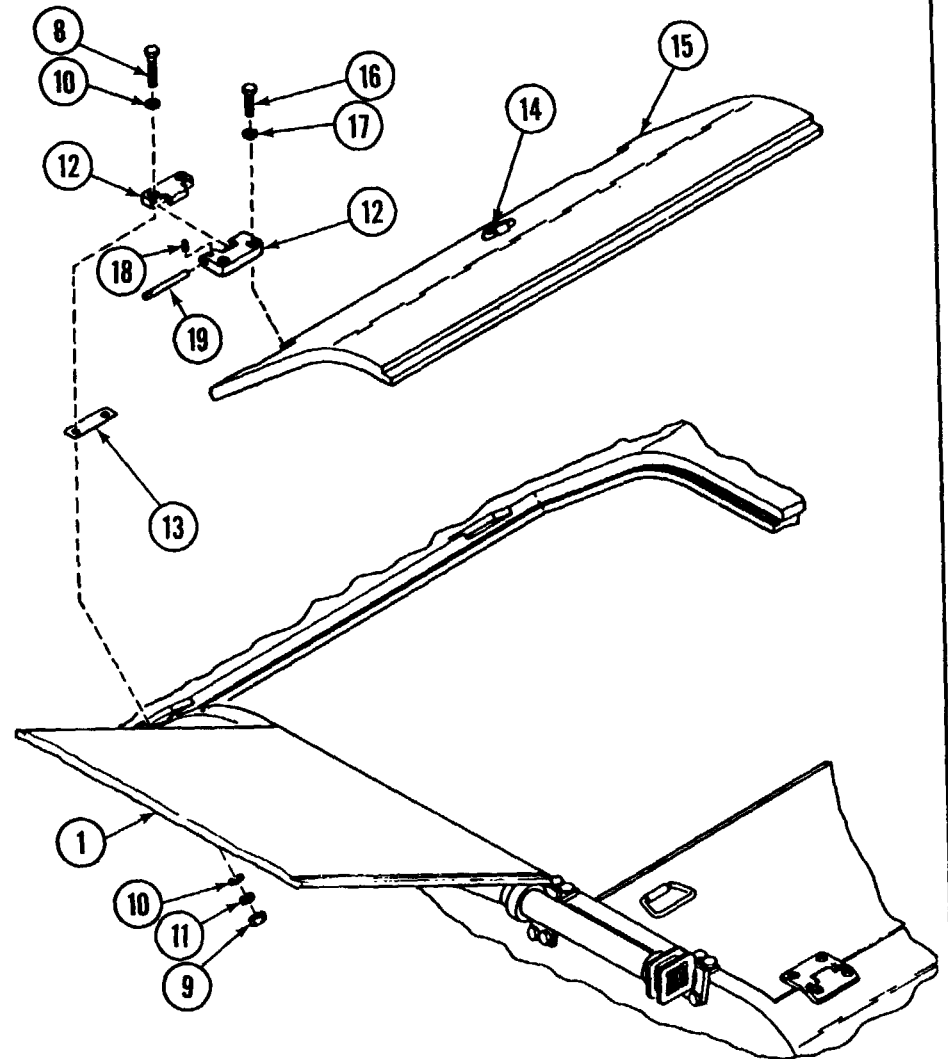
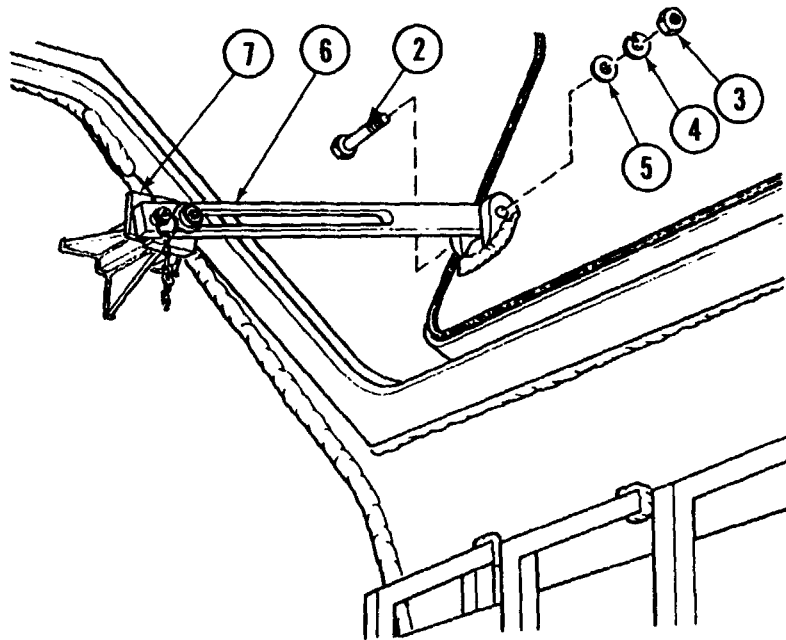
Vise

Materials/Parts:

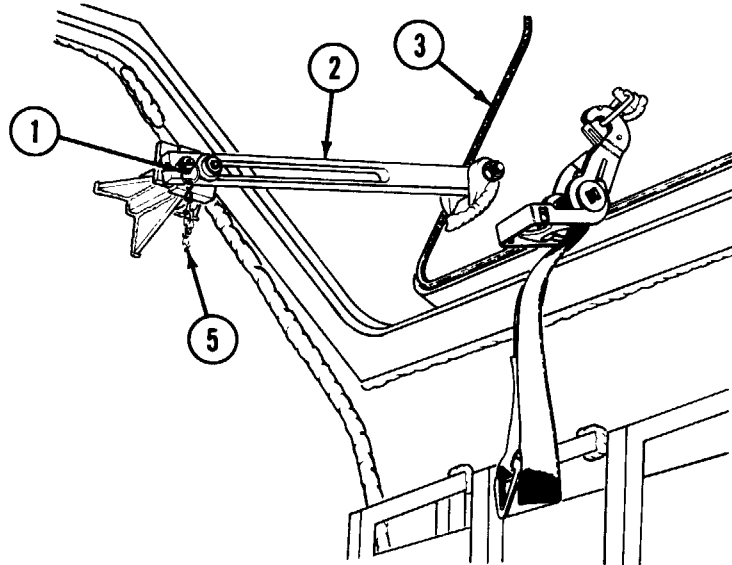
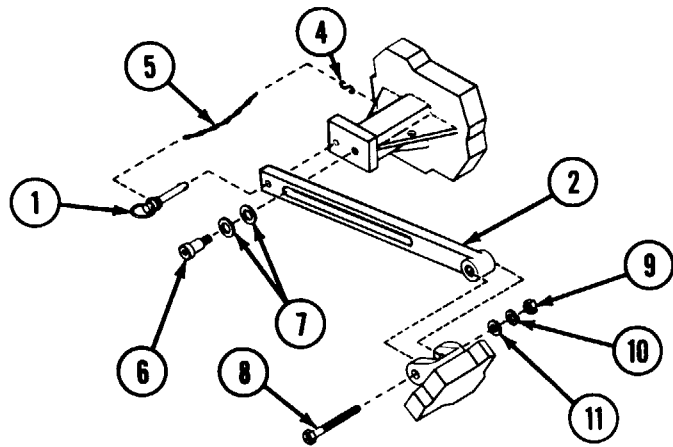
Zinc chromate paste (item 46, Appx D)

Personnel Required:

Two



## TOP RIGHT DOOR HOLD-OPEN COMPONENTS: REMOVAL AND INSTALLATION



### REMOVAL

- A Move right projectile rack (TM 9-2350-267-10).
- B Pull quick-release pin (1) from bar (2).
- C Close top right door (3).
- D Remove S-hooks (4) from vehicle-mounted bracket and quick-release pin (1).
- E Remove chain (5) from quick-release pin (1).
- F Remove shoulder screw (6) and two flat washers (7) from bar (2) and vehicle-mounted bracket.
- G Remove bar (2) from door-mounted bracket by removing screw (8), nut (9), lockwasher (10) and flat washer (11).

### INSTALLATION

Reverse removal procedures.

TA310039

**TOP MIDDLE DOOR: REMOVAL AND INSTALLATION****REMOVAL****NOTE**

This procedure requires two personnel.

- A Lift and hold top middle door (1) in open position perpendicular to roof of vehicle, and attach lifting hook (2) from suitable lifting device to top middle door lifting lug (3).
- B Remove four screws (4) and four lockwashers (5) that secure anchor (6) to vehicle. Remove anchor (6) and shield (7).
- C Pull 12 leaf springs (8) from assembly.

**CAUTION**

Make sure door latch is open before attempting to open door, or latch could be broken.

- D Close door (1) and remove three screws (9) and three lockwashers (10) that secure hinge (11) to vehicle. Remove hinge(n) and washer (12).
- E Remove shield (13).
- F To remove hinge (14), remove three screws (15) and three lockwashers (16).

G With lifting hook (2) attached to door lifting lug (3), carefully lift door (1) from vehicle. Remove washer (17).

H Remove two hinge arms (18) from door (1) by removing from each, four screws (19), four lockwashers (20), eight flat washers (21) and four nuts (22).

I Pry up and remove two rubber seals (23) from seal channels of door (1).

J Use solvent (item 19, Appx D) and clean rags (item 50, Appx D) to thoroughly clean and dry door seal channel. Remove old seal particles.

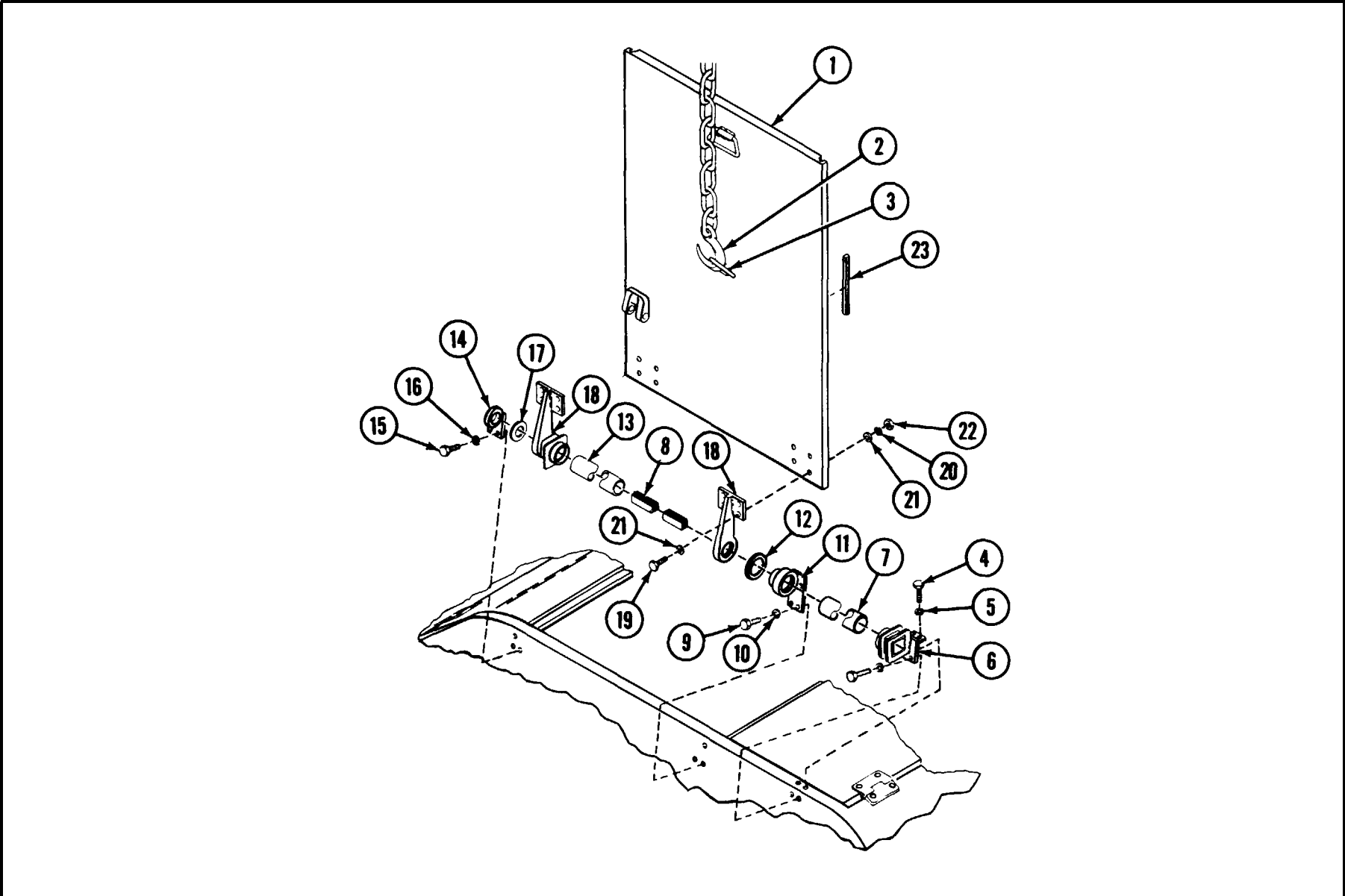
**INSTALLATION**

A Apply thin coating of adhesive (item 4, Appx D) to door seal channels and rubber seal (23). Allow adhesive to dry until tacky before seal installation. Position and install seal (23) with flat side toward seal channel and rounded side out.

B Apply zinc chromate paste (item 46, Appx D) between mounting surfaces of hinge arms (18) and door (1), and between mounting surfaces of anchors (6), hinges (11 and 15) and vehicle hull.

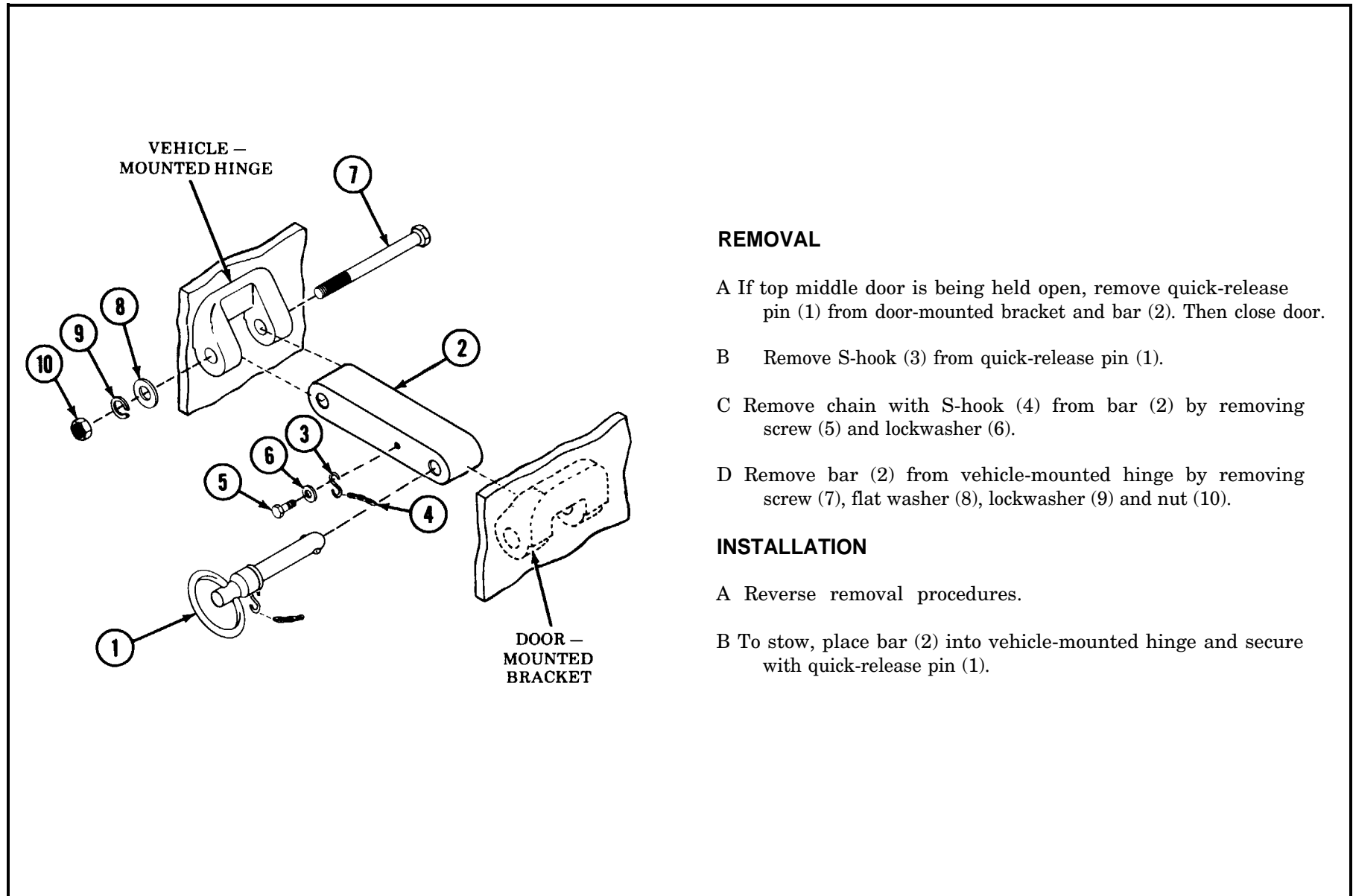
C Reverse removal procedures.

TOP MIDDLE DOOR: REMOVAL AND INSTALLATION (CONTINUED)



TA310041

## TOP MIDDLE DOOR HOLD-OPEN COMPONENTS: REMOVAL AND INSTALLATION



### REMOVAL

- A If top middle door is being held open, remove quick-release pin (1) from door-mounted bracket and bar (2). Then close door.
- B Remove S-hook (3) from quick-release pin (1).
- C Remove chain with S-hook (4) from bar (2) by removing screw (5) and lockwasher (6).
- D Remove bar (2) from vehicle-mounted hinge by removing screw (7), flat washer (8), lockwasher (9) and nut (10).

### INSTALLATION

- A Reverse removal procedures.
- B To stow, place bar (2) into vehicle-mounted hinge and secure with quick-release pin (1).



## TOP MIDDLE DOOR: DISASSEMBLY AND ASSEMBLY

### INITIAL SETUP

#### Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

#### Materials/Parts:

Adhesive (item 4, Appx D)

Dry-cleaning solvent (item 19, Appx D)

Zinc chromate paste (item 46, Appx D)

#### Personnel Required

Two

#### Equipment Condition:

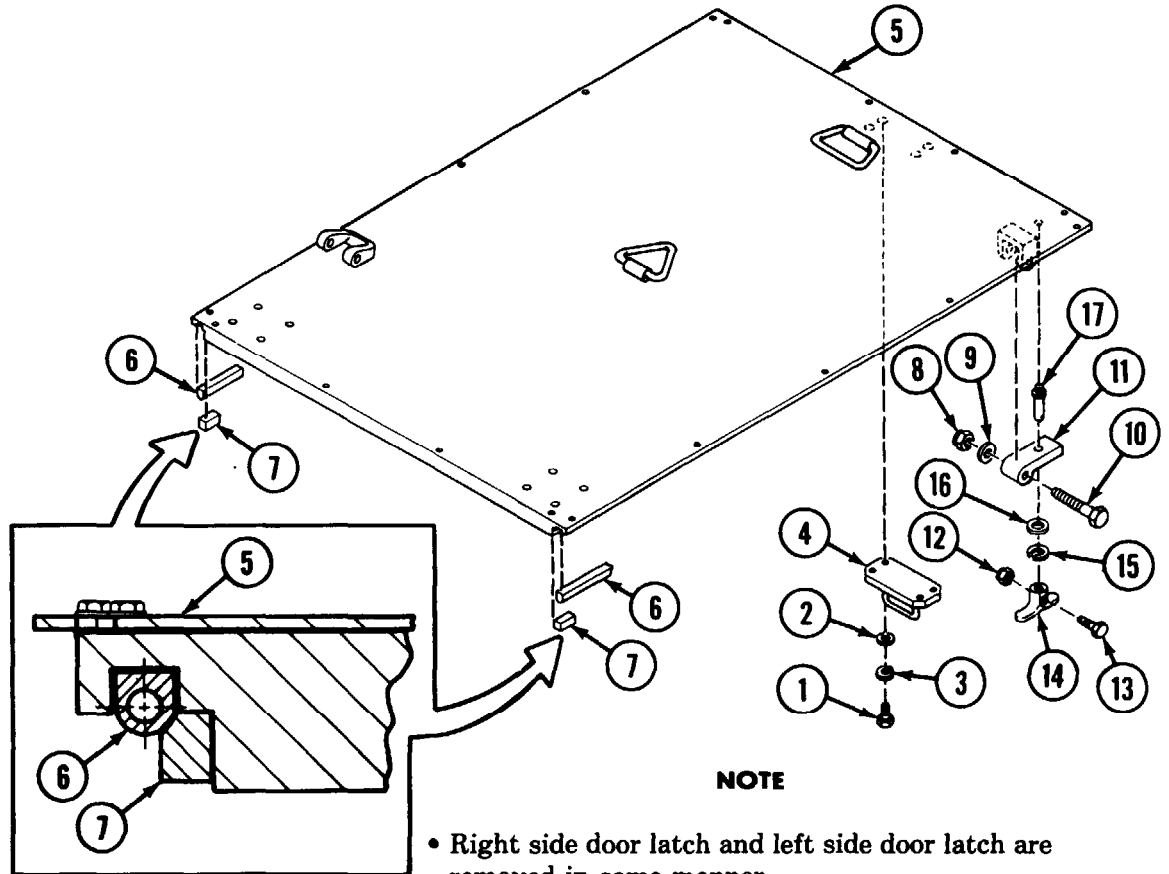
Top middle door open and secured.

Outer seals and retainers removed (p 9-58.3).

### DISASSEMBLY

A Remove four screws (1), four flat washers (2), four lockwashers (3) and bracket (4) from door (5). Discard lockwashers.

B Pry up and remove two rubber seals (6 and 7) from bottom left side channel and from bottom right side channel of door (5).



#### NOTE

- Right side door latch and left side door latch are removed in same manner.

- Note number of flat washers (16) removed to ensure proper installation.

C Remove nut (8), flat washer (9), screw (10) and latch (11) from door (5). Remove nut (12) and screw (13) releasing handle (14) lockwasher (15), flat washers (16) and stud (17) from latch (11). Discard lockwasher .

TA57262

## TOP MIDDLE DOOR: DISASSEMBLY AND ASSEMBLY (CONTINUED)

## ASSEMBLY

## WARNING

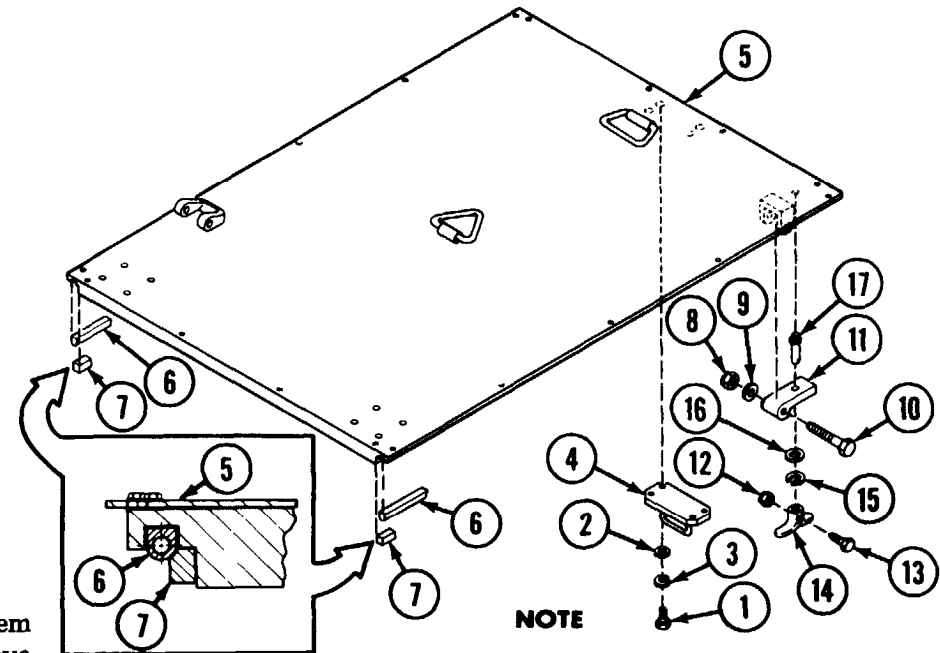
Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- A Use dry-cleaning solvent (item 19, Appx D) and wire brush (item 48, Appx B) to thoroughly clean door seal channels. Remove all traces of old seals and adhesive.
- B Apply thin coating of adhesive (item 4, Appx D) to door seal channels and to seals (6 and 7). Allow adhesive to dry until tacky before installing seals.

## CAUTION

Be careful to avoid stretching or bunching seals. Sealing will be inadequate.

- C Press seals (6 and 7) into firm contact with seal channels at left and right edges of door (5).



## NOTE

Right side door latch and left side door latch are installed in same manner.

- D Install stud (17) through latch (11). Place same number of flat washers (16) as removed, new lockwasher (15), and handle (14) on stud (17) and secure with screw (13) and nut (12).
- E Install latch (11) on bracket on door (5) with screw (10), flat washer (9) and nut (8).
- F Coat mating surfaces of bracket (4) and door (5) with zinc chromate paste (item 46, Appx D).
- G Install bracket (4) on underside of door (5) with four screws (1), four flat washers (2) and four new lockwashers (3).

## TOP DOOR INNER SEALS: REMOVAL AND INSTALLATION

### INITIAL SETUP

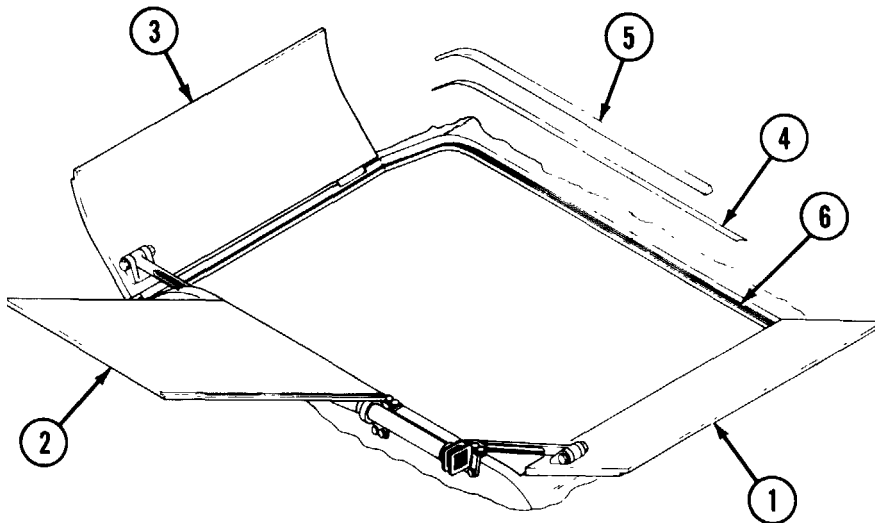
#### Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

#### Materials/Parts:

Adhesive (item 4, Appx D)

Dry-cleaning solvent (item 19, Appx D)



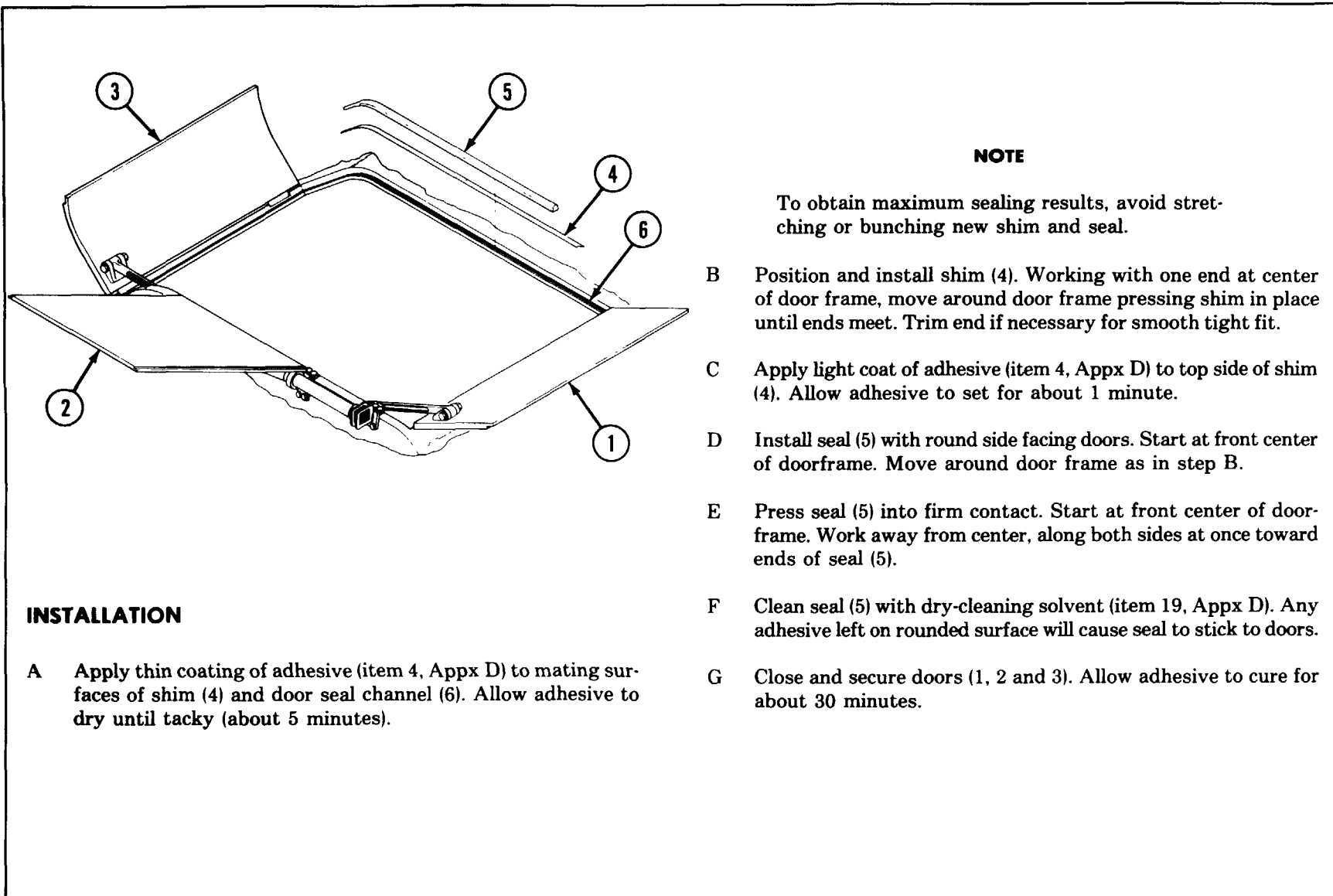
### REMOVAL

- A Open and secure top doors (1, 2 and 3).
- B Pry up, remove and discard shim (4) and seal (5).

#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138° F (50°C). Do not use near open flame or excessive heat.

- C Use dry-cleaning solvent (item 19, Appx D) to clean and dry door seal channel thoroughly. Be sure to remove all old seal particles. Use wire brush (item 48, Appx B) and rags, if necessary.

**TOP DOOR INNER SEALS: REMOVAL AND INSTALLATION (CONTINUED)****NOTE**

To obtain maximum sealing results, avoid stretching or bunching new shim and seal.

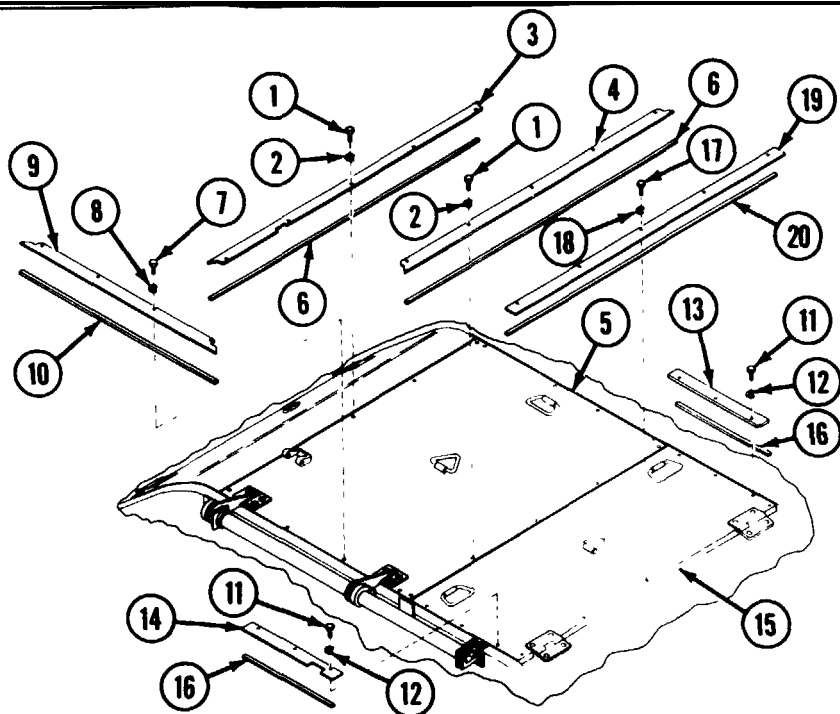
**INSTALLATION**

**A** Apply thin coating of adhesive (item 4, Appx D) to mating surfaces of shim (4) and door seal channel (6). Allow adhesive to dry until tacky (about 5 minutes).

- B** Position and install shim (4). Working with one end at center of door frame, move around door frame pressing shim in place until ends meet. Trim end if necessary for smooth tight fit.
- C** Apply light coat of adhesive (item 4, Appx D) to top side of shim (4). Allow adhesive to set for about 1 minute.
- D** Install seal (5) with round side facing doors. Start at front center of doorframe. Move around door frame as in step B.
- E** Press seal (5) into firm contact. Start at front center of doorframe. Work away from center, along both sides at once toward ends of seal (5).
- F** Clean seal (5) with dry-cleaning solvent (item 19, Appx D). Any adhesive left on rounded surface will cause seal to stick to doors.
- G** Close and secure doors (1, 2 and 3). Allow adhesive to cure for about 30 minutes.

## TOP DOOR OUTER SEALS: REMOVAL AND INSTALLATION

TM 9-2350-267-20



### REMOVAL

#### NOTE

Top right door has no outer seals.

- A Remove five screws (1) and five lockwashers (2) from each seal retainer (3 and 4). Lift seal retainers (3 and 4) from sides of top middle door (5), releasing two seals (6). Discard lockwashers.

- B Remove four screws (7) and four lockwashers (8) from each seal retainer (9). Lift two retainers (9) from ends of top middle door (5) releasing two seals (10). Discard lockwashers.
- C Remove three screws (11) and three lockwashers (12) from each seal retainer (13 and 14). Lift seal retainers (13 and 14) from ends of top left door (15), releasing two seals (16). Discard lockwashers.
- D Remove five screws (17) and five lockwashers (18) from seal retainer (19). Lift seal retainer (19) from left side of top left door (15), releasing seal (20). Discard lockwashers.

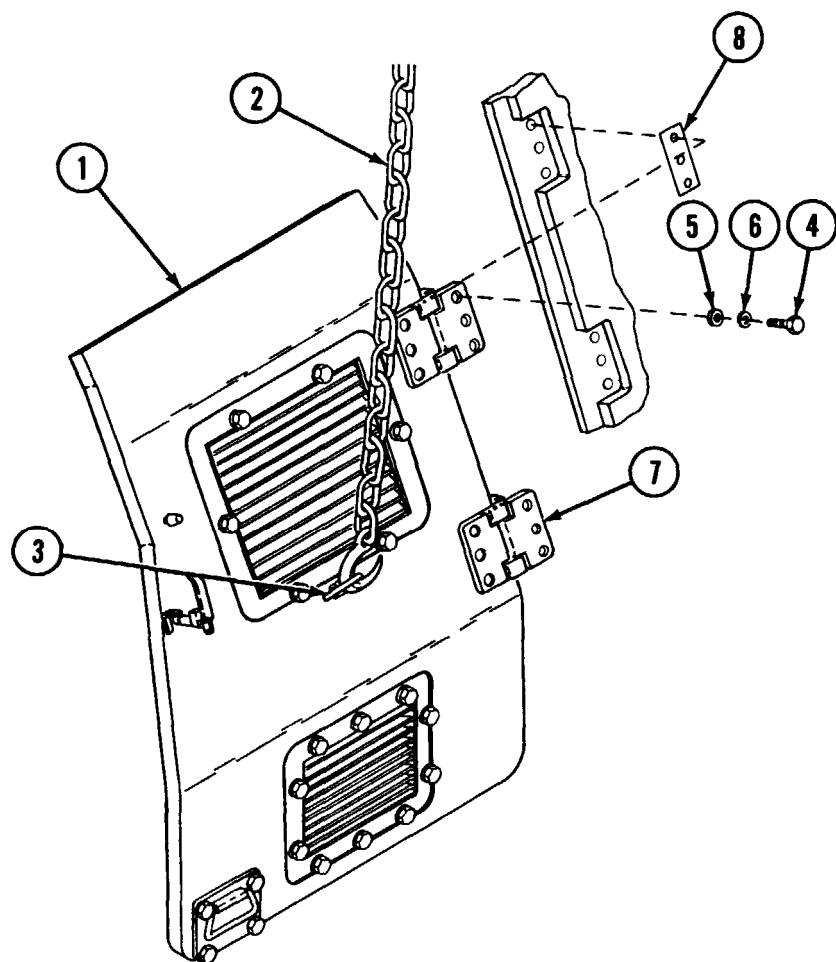
### INSTALLATION

- A Install seal (20) and seal retainer (19) at left edge of top left door (15) with five screws (17) and five new lockwashers (18).
- B Install two seals (16) and two seal retainers (13 and 14) at front and back edges of top left door (15) with three screws (11) and three new lockwashers (12) for each.
- C Install two seals (10) and two seal retainers (9) at front and back edges of top middle door (5) with four screws (7) and four new lockwashers (8) for each.
- D Install two seals (6) and two seal retainers (3 and 4) at left and right edges of top middle door (5) with five screws (1) and five new lockwashers (2) for each.

TA312965



## APU COMPARTMENT SIDE DOOR: REMOVAL AND INSTALLATION



### REMOVAL

- A Close APU compartment side door (1).
- B Secure suitable lifting device (2) to lifting eye (3).

### CAUTION

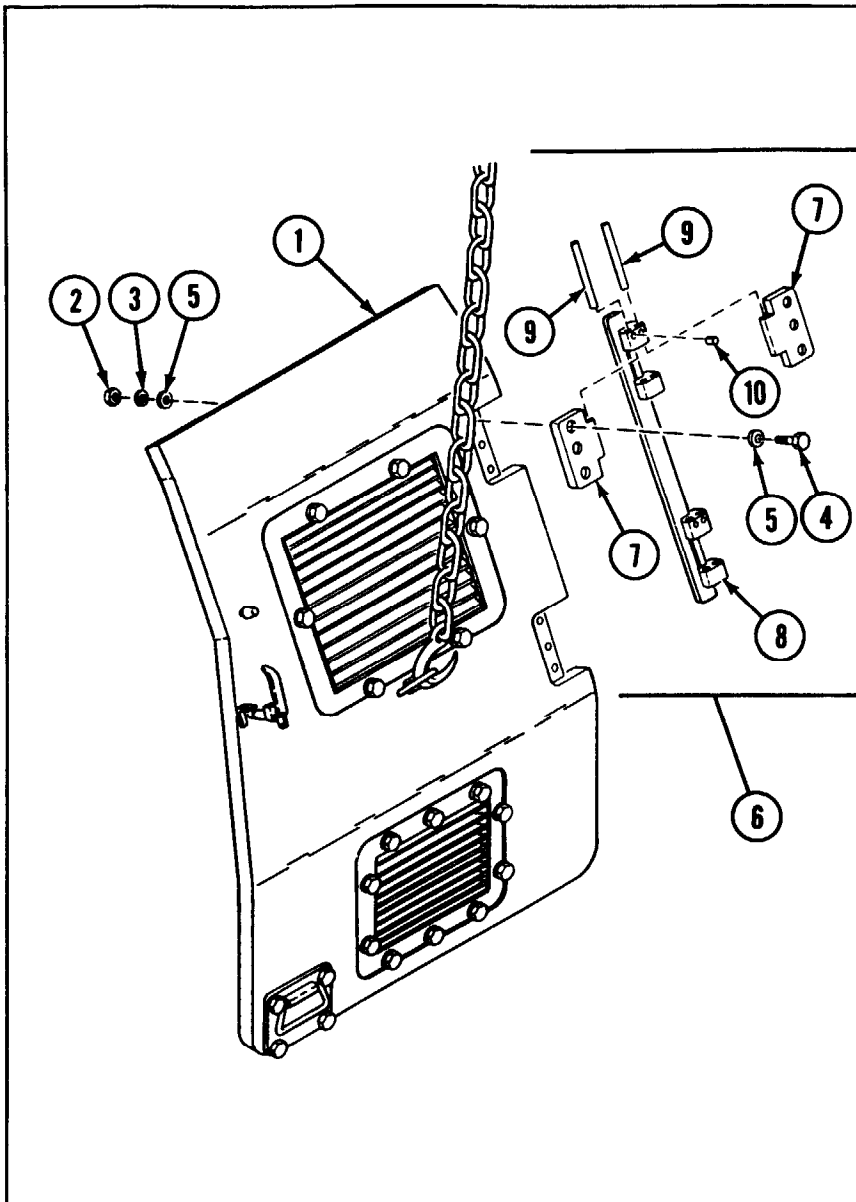
Keep lifting cable taut while performing step C to prevent door from dropping out of place.

- C Remove six hinge screws (4), six flat washers (5) and six lockwashers (6) that secure hinge assemblies (7) to side of vehicle.
- D Remove any shims (8).
- E Open APU door handle and lift APU compartment side door (1) free of vehicle, and remove lifting device (2) from lifting eye (3).

### INSTALLATION

- A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of hinge assemblies (7), vehicle door (1) and hull.
- B Reverse removal procedures,

TA310045

**APU COMPARTMENT DOOR HINGE: REMOVAL, ASSEMBLY AND INSTALLATION****REMOVAL**

- A Remove APU compartment door (1) from vehicle.
- B Remove six nuts (2), six lockwashers (3), six hinge screws (4) and 12 flat washers (5), and remove hinge (6) from APU compartment door (1).

**ASSEMBLY****NOTE**

If new hinge is to be installed, assemble pieces as follows.

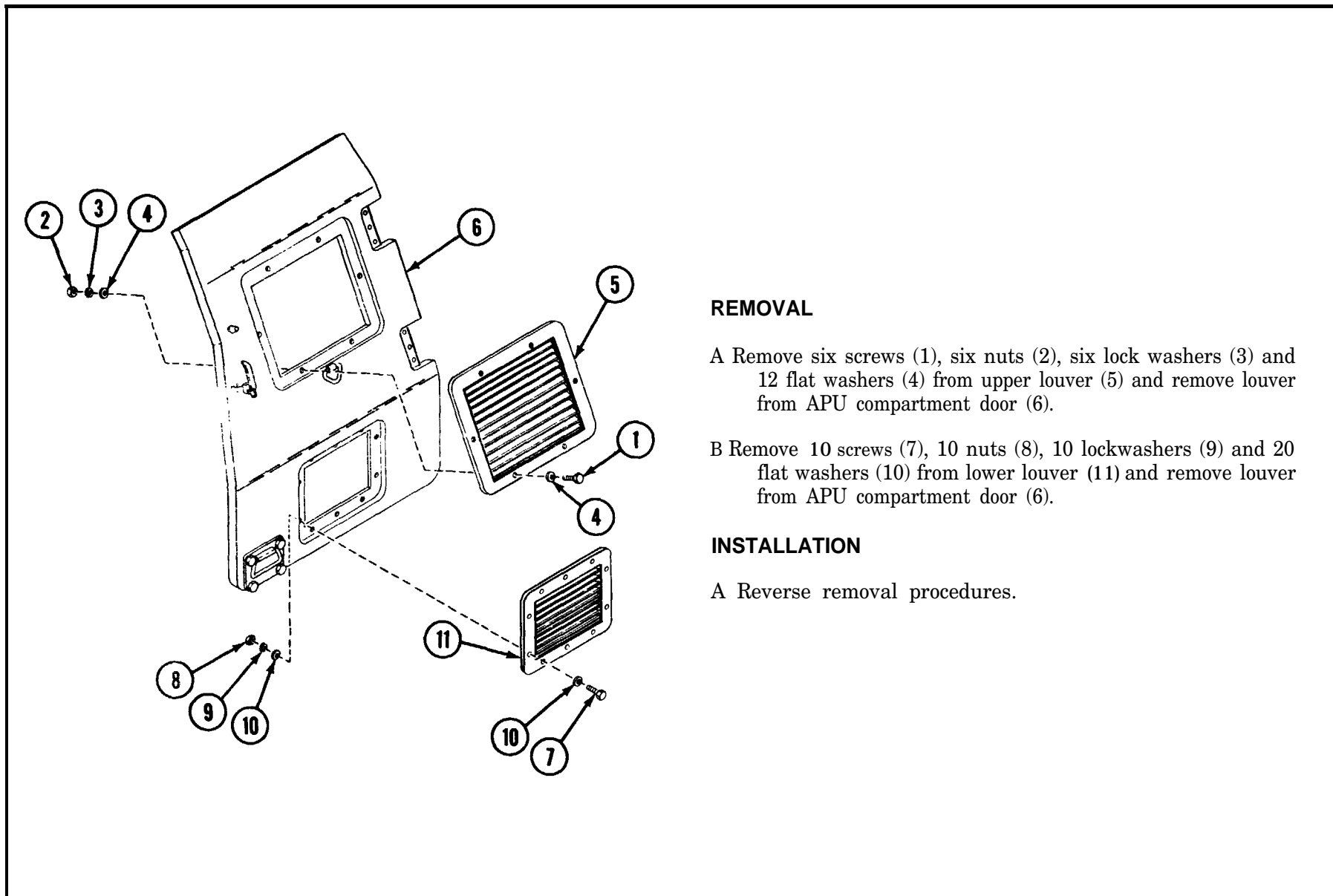
- A Install four hinge halves (7) on bar assembly (8) and drive four pins (9) through links of bar assembly and hinge halves. Make sure holes in pins (9) are positioned to align with holes in links of bar assembly (8).
- B Secure each of four pins (9) with spring pin (10).

**INSTALLATION**

- A Apply zinc chromate paste (item 46, Appx D) to mating surfaces of hinge (6) and vehicle hull.
- B Reverse removal procedures.



## APU COMPARTMENT UPPER AND LOWER LOUVERS: REMOVAL AND INSTALLATION



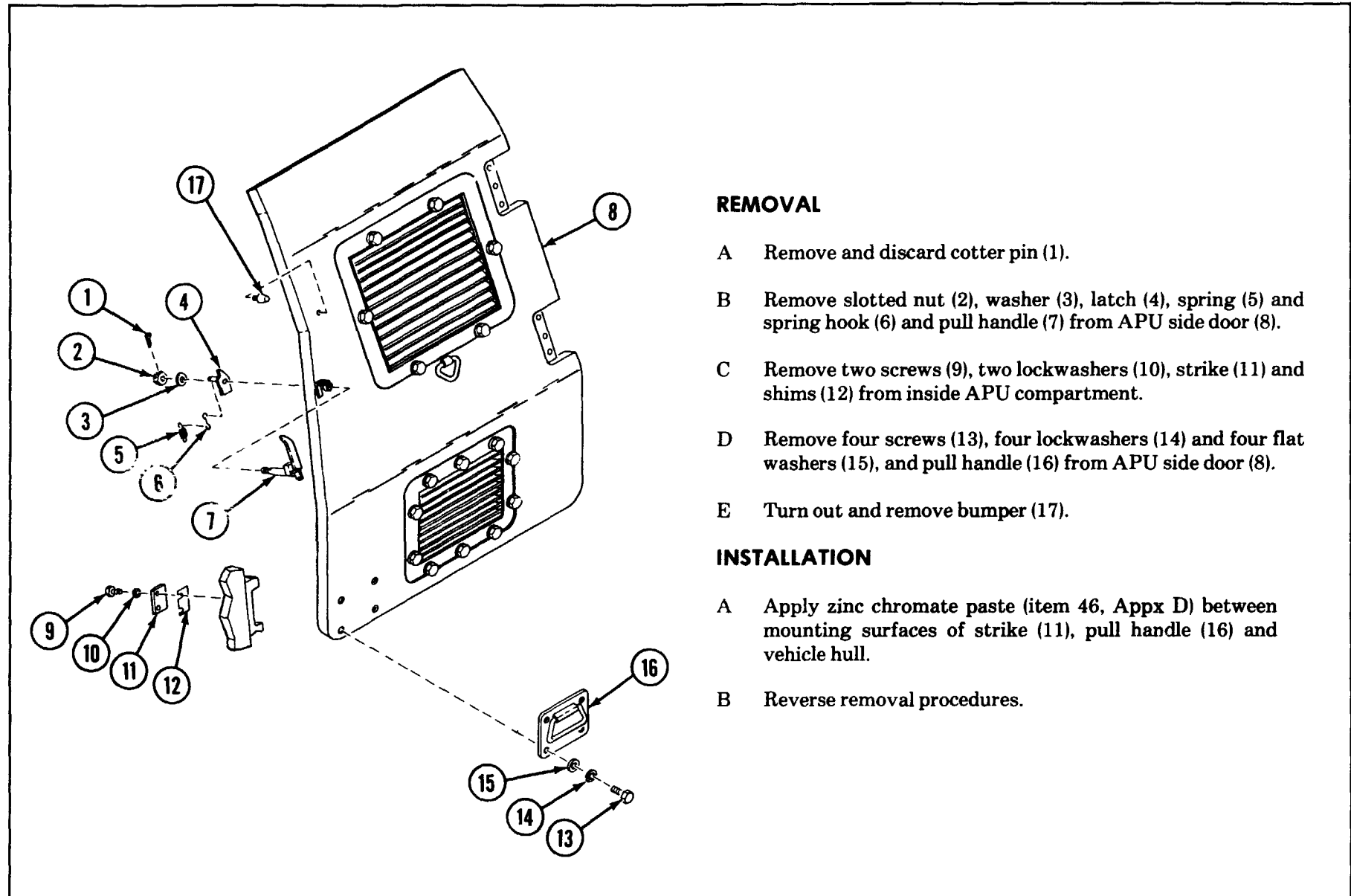
### REMOVAL

- A Remove six screws (1), six nuts (2), six lock washers (3) and 12 flat washers (4) from upper louver (5) and remove louver from APU compartment door (6).
- B Remove 10 screws (7), 10 nuts (8), 10 lockwashers (9) and 20 flat washers (10) from lower louver (11) and remove louver from APU compartment door (6).

### INSTALLATION

- A Reverse removal procedures.

## APU COMPARTMENT SIDE DOOR LATCH, STRIKE, BUMPER AND PULL HANDLE: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove and discard cotter pin (1).
- B Remove slotted nut (2), washer (3), latch (4), spring (5) and spring hook (6) and pull handle (7) from APU side door (8).
- C Remove two screws (9), two lockwashers (10), strike (11) and shims (12) from inside APU compartment.
- D Remove four screws (13), four lockwashers (14) and four flat washers (15), and pull handle (16) from APU side door (8).
- E Turn out and remove bumper (17).

### INSTALLATION

- A Apply zinc chromate paste (item 46, Appx D) between mounting surfaces of strike (11), pull handle (16) and vehicle hull.
- B Reverse removal procedures.

# APU COMPARTMENT LOUVERED FRONT DOOR: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

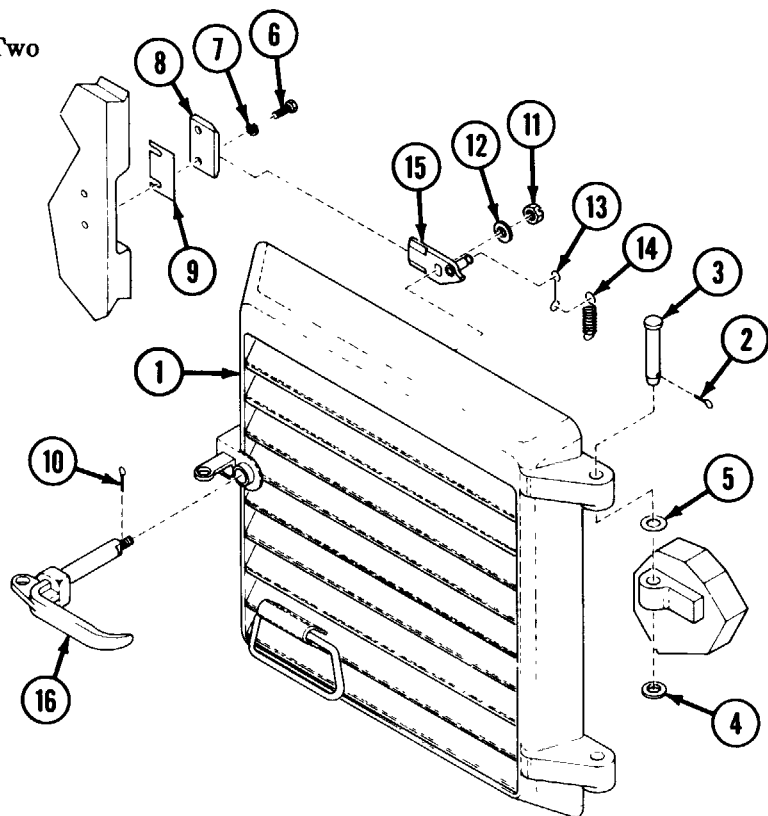
## INITIAL SETUP

### Materials/Parts:

Grease (item 32, Appx D)  
Zinc chromate paste (item 46, Appx D)

### Personnel Required:

Two

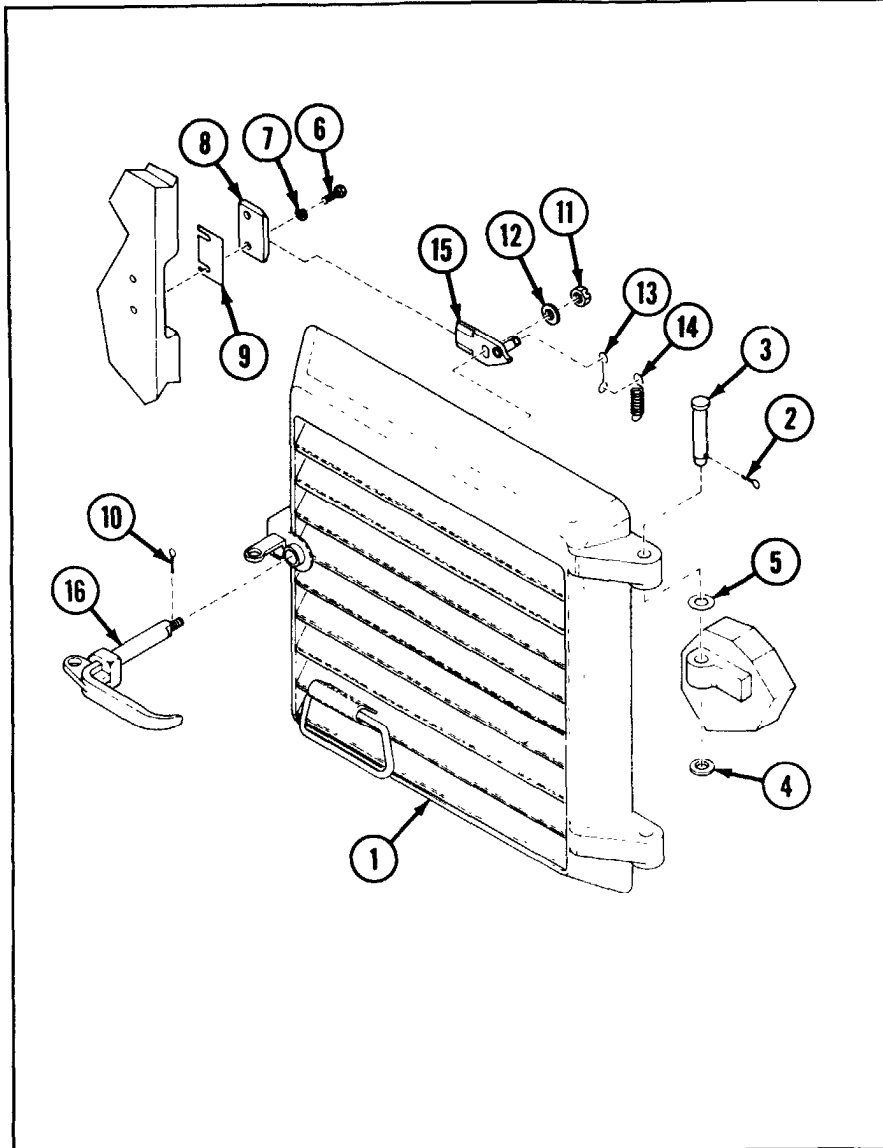


## REMOVAL

- A Open door (1).
- B Have assistant support door (1). Remove two cotter pins (2), two headed pins (3), two flat washers (4) and two bronze bearing washers (5). Discard cotter pins.
- C Remove door (1) from vehicle.
- D Remove two screws (6), two lockwashers (7), strike (8) and shim (9) from inside APU compartment wall. Discard lockwashers.

## DISASSEMBLY

- A Remove cotter pin (10), slotted nut (11), flat washer (12), spring link (13), spring (14) and latch (15). Discard cotter pin.
- B Pull handle (16) from door (1).

**APU COMPARTMENT LOUVERED FRONT DOOR: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION****ASSEMBLY**

- A Insert handle (16) in door (1).
- B Install latch (15) on stud of handle (16) with flat washer (12), slotted nut (11) and new cotter pin (10).
- C Turn handle (16) counterclockwise until latch (15) hits stop. Connect spring link (13) and spring (14) to latch (15) and to stud weldment on door.

**INSTALLATION**

- A Apply zinc chromate paste (item 46, Appx D) between strike (8), shim (9) and vehicle hull.
- B Install strike (8) and shim (9) on inside of APU compartment with two screws (6) and two new lockwashers (7).
- C Install door (1) on hull with bronze bearing washer (5) between each door hinge and its mating hinge boss on vehicle hull. Aline hinge pin holes.
- D Apply thin coating of grease (item 32, Appx D) to two pins (3). Install two headed pins (3), two flat washers (4) and two new cotter pins (2).
- E Close and secure door (1).

## FUEL FILL DOOR: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

Zinc chromate paste (item 46, Appx D)

### REMOVAL

- A Open fuel fill door (1).
- B Remove nut (2), lockwasher (3) and flat washers (4). Support door (1) and remove hinge screw (5), flat washer (4) and two bronze bearing washers (6). Remove door (1). Discard lockwashers.

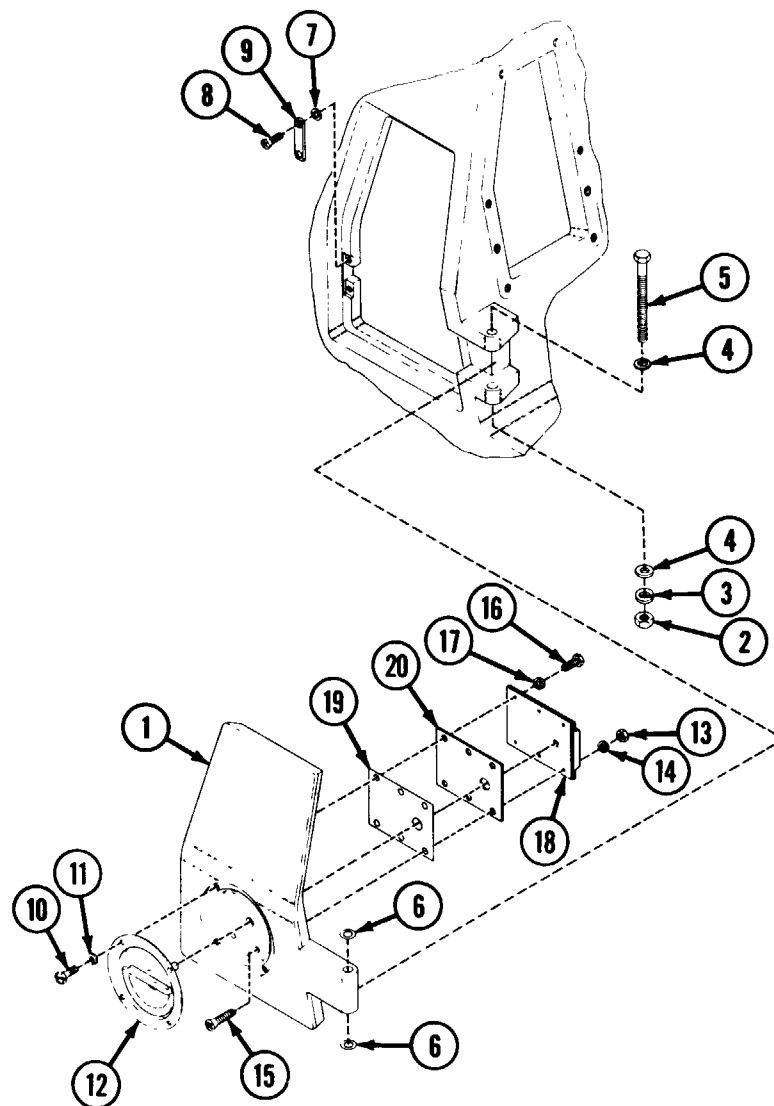
#### NOTE

Note position and number of flat washers to ensure proper installation.

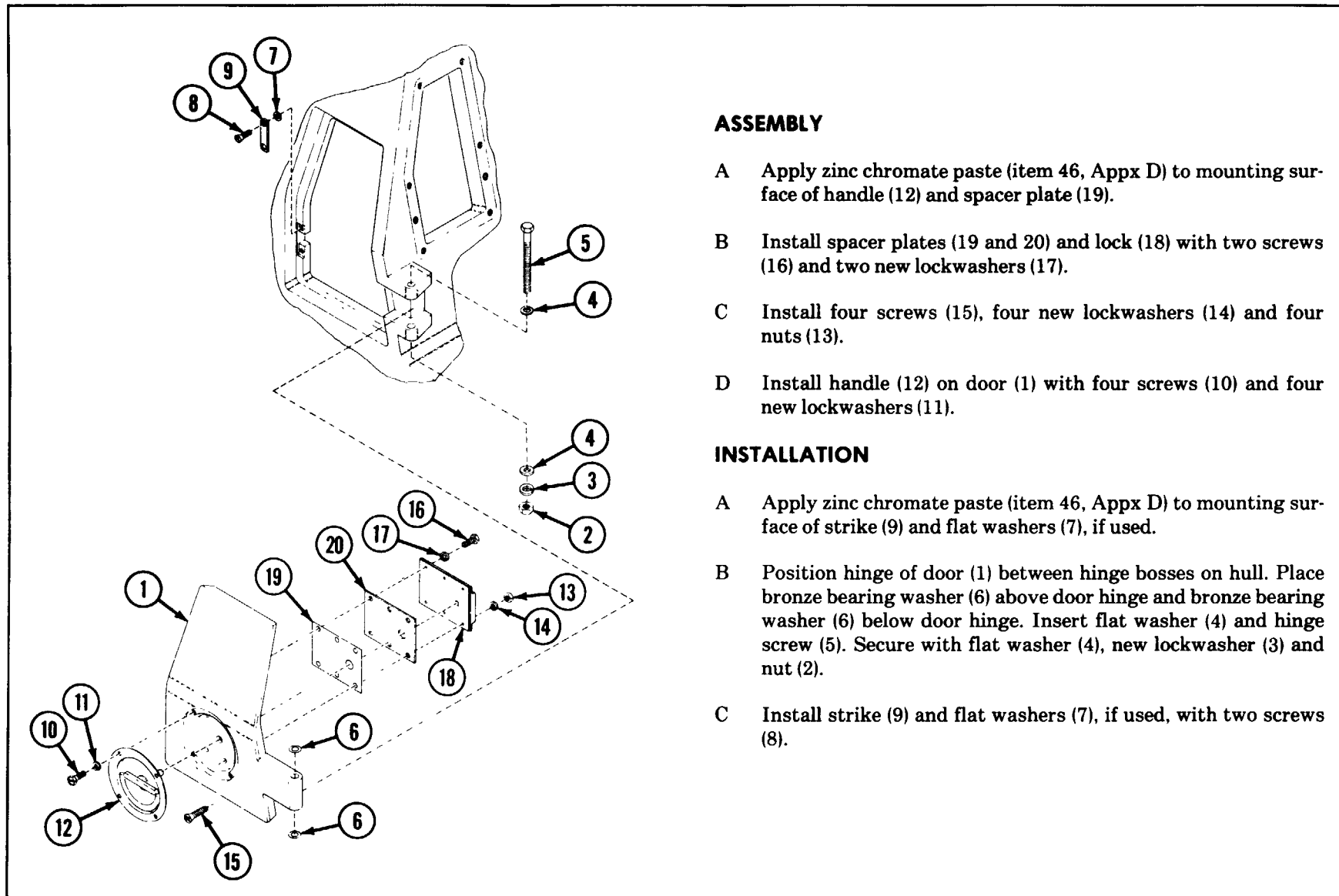
- C Remove two screws (8), strike (9) and two flat washers (7), if used.

### DISASSEMBLY

- A Remove four screws (10) and four lockwashers (11), and pull handle (12) from door (1). Discard lockwashers.
- B Remove four nuts (13), four lockwashers (14) and four screws (15). Discard lockwashers.
- C Remove two screws (16), two lockwashers (17), lock (18) and spacer plates (19 and 20) from door (1). Discard lockwashers.



TA312968

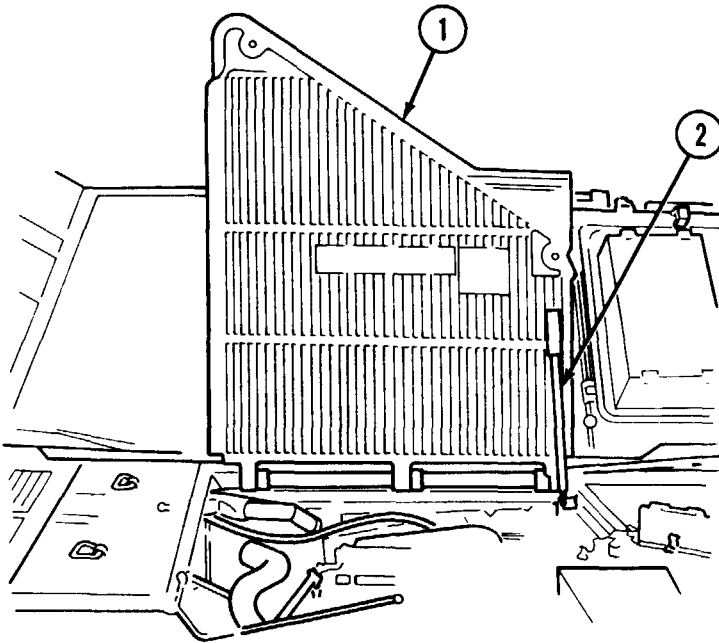
**FUEL FILL DOOR: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****ASSEMBLY**

- A Apply zinc chromate paste (item 46, Appx D) to mounting surface of handle (12) and spacer plate (19).
- B Install spacer plates (19 and 20) and lock (18) with two screws (16) and two new lockwashers (17).
- C Install four screws (15), four new lockwashers (14) and four nuts (13).
- D Install handle (12) on door (1) with four screws (10) and four new lockwashers (11).

**INSTALLATION**

- A Apply zinc chromate paste (item 46, Appx D) to mounting surface of strike (9) and flat washers (7), if used.
- B Position hinge of door (1) between hinge bosses on hull. Place bronze bearing washer (6) above door hinge and bronze bearing washer (6) below door hinge. Insert flat washer (4) and hinge screw (5). Secure with flat washer (4), new lockwasher (3) and nut (2).
- C Install strike (9) and flat washers (7), if used, with two screws (8).

## AIR INTAKE GRILLE: REMOVAL AND INSTALLATION



### INITIAL SETUP

#### Test Equipment/Special Tools:

4 ft × 6 in. × 6 in. wooden supports.  
Hex key socket, 3/8 in. (item 61, Appx B)

#### Personnel Required:

Two

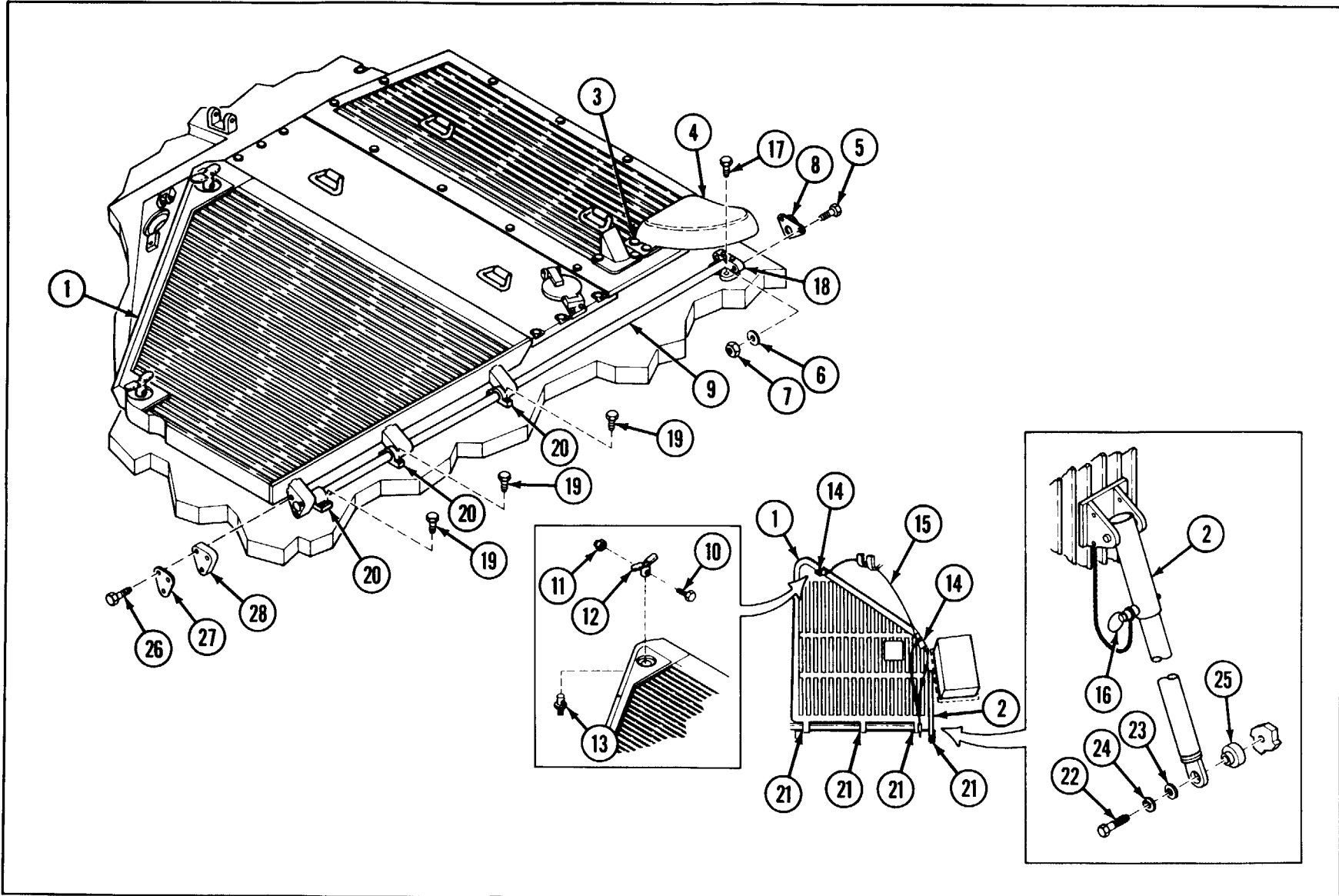
### REMOVAL

#### **WARNING**

Open air intake grille to relieve tension on torsion bar and prevent injury to personnel.

A Open air intake grille (1) and secure with hold-open support (2).

**AIR INTAKE GRILLE: REMOVAL AND INSTALLATION (CONTINUED)**





## AIR INTAKE GRILLE: REMOVAL AND INSTALLATION (CONTINUED)

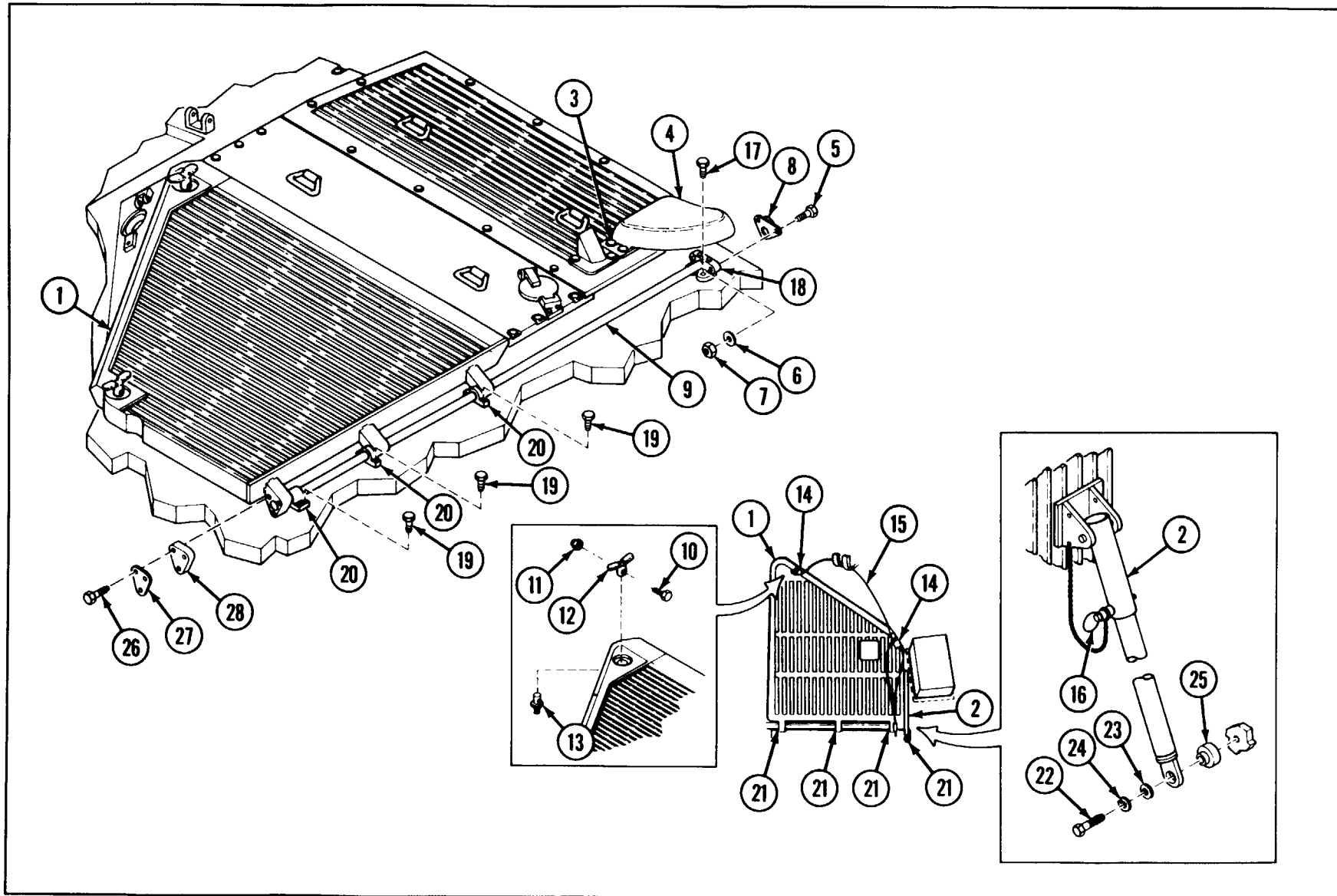
### CAUTION

Use caution when removing exhaust deflector to prevent damage to gasket.

- B Remove four screws (3) and exhaust deflector (4).
- C Remove two screws (5), two flat washers (6), two nuts (7) and anchor and shield (8) from right end of torsion bar (9).
- D Remove two screws (10), two self-locking nuts (11), two handles (12) and two studs (13). Discard self-locking nuts.
- E Install two eyebolts (14) in grille (1). Attach sling (15) and suitable lifting device. Take up slack in sling (15).
- F Remove pin (16) from intake grille support (2) and lower air intake grille (1).
- G Remove torsion bar (9) from right side of vehicle.
- H Remove four hex key screws (17) from right end cap (18).
- I Remove four hex key screws (19) from rear of torsion bar clamps (20).
- J Open air intake grille (1) and maintain tension with lifting device.
- K Remove four hex key screws (21) from front of torsion bar tube clamps (20).
- L Remove screw (22), flat washer (23) and lockwasher (24). Remove bearing (25) from end of intake grille support (2). Discard lockwasher.
- M Lift air intake grille (1) off vehicle and position on 6" × 6" timbers. Remove two eyebolts (14).
- N Remove three screws (26), shield (27) and adapter (28) from left end of torsion bar (9).

TA312972

**AIR INTAKE GRILLE: REMOVAL AND INSTALLATION (CONTINUED)**



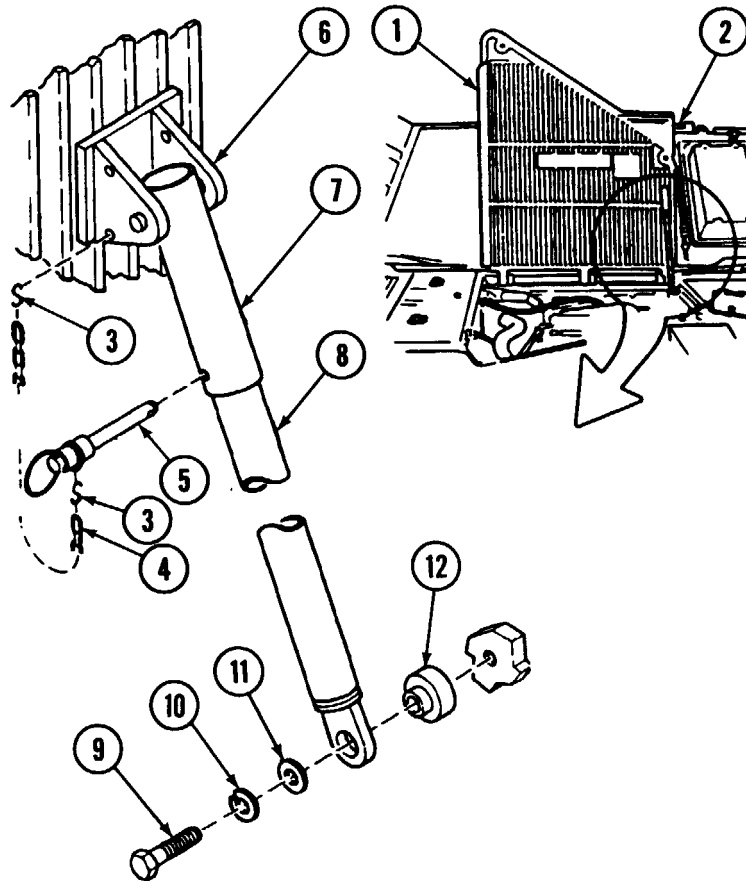
## AIR INTAKE GRILLE: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

- A Install two eyebolts (14) in grille (1). Attach sling (15) and a suitable lifting device. Lift grille (1) into position and align mounting holes.
- B Install four hex key screws (21) in front of torsion bar tube clamps (20).
- c** Insert bearing (25) in end of intake grille support (2). **Secure bearing (25) and support (2) with** screw (22), flat washer (23) and new lockwasher (24).
- D Lower air intake grille (1).
- E Install four hex key screws (19) in rear of torsion bar tube clamps **(20)**.
- F Install four hex key screws (17) in right end cap (18).

### NOTE

- Install torsion bar with grille at 90- to 95-degree open position in no-load condition.
- G Raise air intake grille (1) and insert torsion bar (9) from right side of vehicle.
- H Position shield (27) and adapter (28) at left end of torsion bar (9) and secure with three Screws (26).
- I Install shield and anchor (8) at right end of torsion bar (9) with two screws (5), two flat washers (6) and two **nuts (7)**.
- J Install exhaust deflector (4) with four screws (3).**
- K Lower air intake grille (1) to closed position. Disconnect lifting device and sling (15). Remove eyebolts (14).
- L Insert two studs (13) from bottom side of grille (1). Install two handles (12) with two screws (10) and two new self-locking nuts (11).

**AIR INTAKE GRILLE SUPPORT: REMOVAL AND INSTALLATION****REMOVAL****WARNING**

Failure to secure air intake grille may result in serious personal injury.

A Open air intake grille (1). Secure to top center door torsion bar housing (2) with rope or a **strap**.

B Disconnect two S-hooks (3) and remove chain (4) from quick-release pin (5) and grille (1).

**NOTE**

Sleeve mount and sleeve are inseparable parts of air intake grille.

C Remove quick-release pin (5) from stowage hole in sleeve mount (6), or from deploy hole at bottom end of sleeve (7).

D Release support (8) from hull by removing screw (9), lockwasher (10), washer (11) and bearing (12). Discard lockwasher.

E Slide support (8) **out of sleeve (7)**.

**INSTALLATION**

A Slide support (8) into sleeve (7). Secure bottom end of support (8) to hull with screw (9), **new** lockwasher (10), washer (11) and bearing (12).

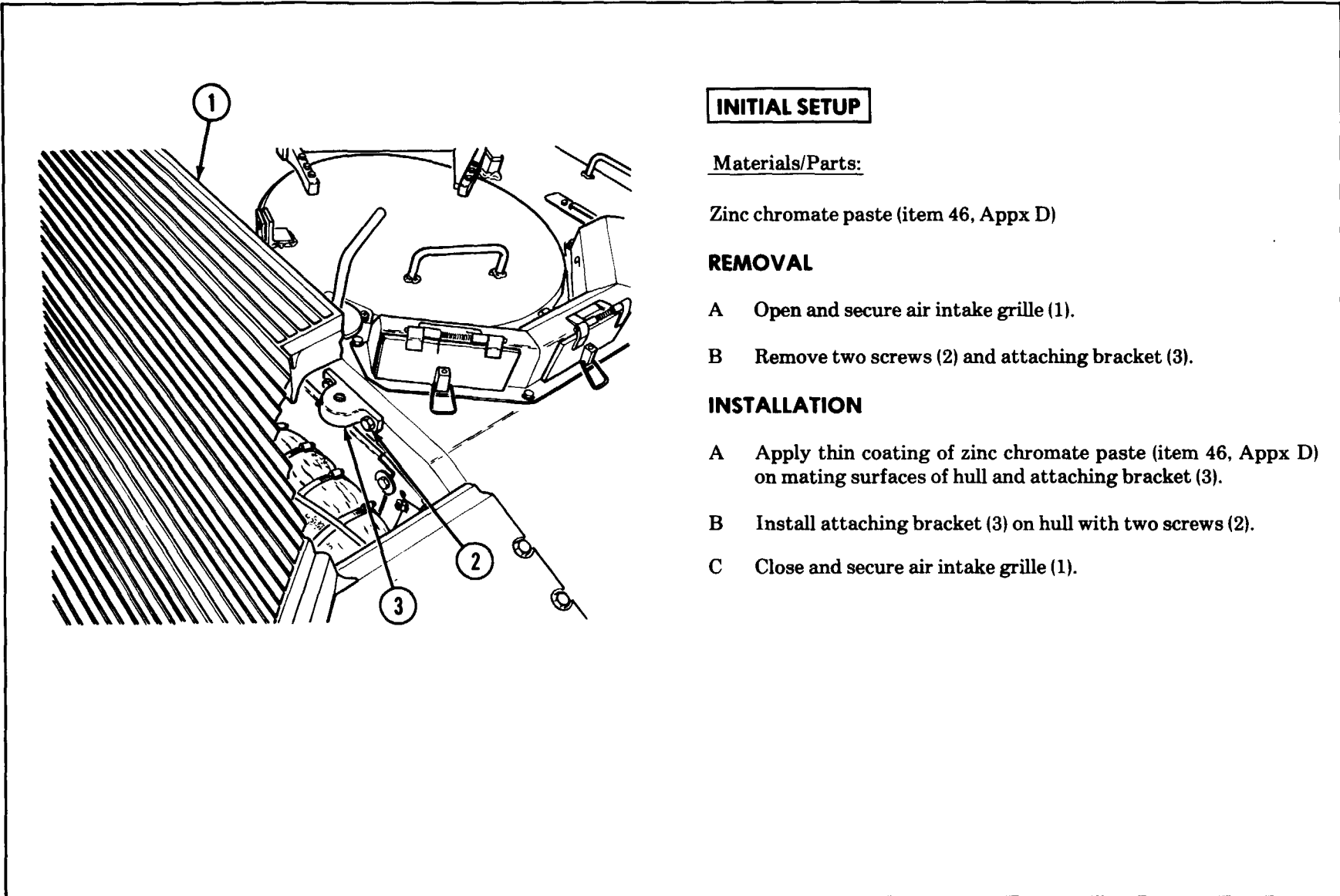
B Insert quick-release pin (5) into deploy hole at bottom of sleeve (7) or into stowage hole in sleeve mount (6).

C Secure chain (4) to grille (1) and quick-release pin (5) with two S-hooks (3).

D Remove rope or strap securing air intake grille (1) to top center door torsion bar housing (2).

E Close and secure air intake grille (1).

## INTAKE GRILLE ATTACHING BRACKET: REMOVAL AND INSTALLATION



### INITIAL SETUP

#### Materials/Parts:

Zinc chromate paste (item 46, Appx D)

### REMOVAL

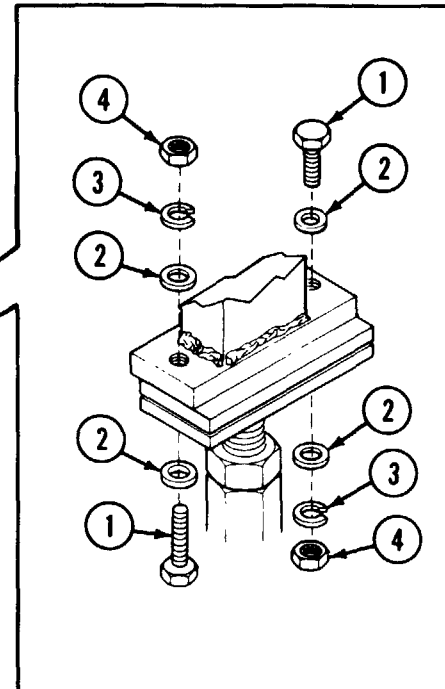
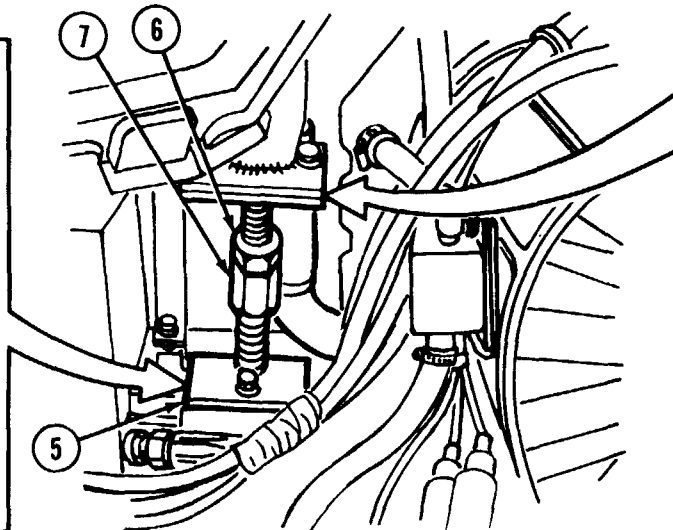
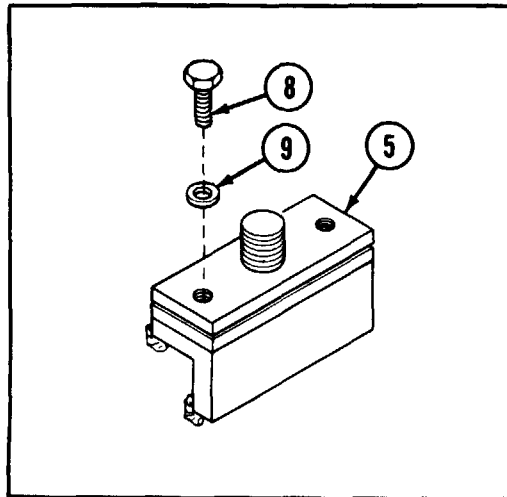
- A Open and secure air intake grille (1).
- B Remove two screws (2) and attaching bracket (3).

### INSTALLATION

- A Apply thin coating of zinc chromate paste (item 46, Appx D) on mating surfaces of hull and attaching bracket (3).
- B Install attaching bracket (3) on hull with two screws (2).
- C Close and secure air intake grille (1).

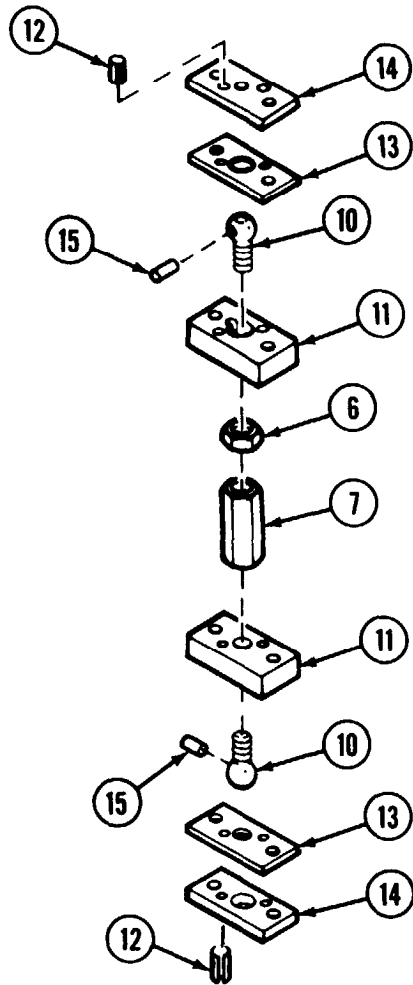
**GRILLE ADJUSTABLE SUPPORT ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION****INITIAL SETUP****Test Equipment/Special Tools**

Vise  
Vise jaw caps

**REMOVAL**

- A Open and secure right transmission access door.
- B Remove two screws (1), four flat washers (2), two lockwashers (3) and two nuts (4) from grille adjustable support assembly (5). Discard lockwashers.
- C Loosen jamnut (6) and turn grille support adjustment bar (7) counterclockwise to relieve load on adjustable support assembly (5).
- D Remove two screws (8), two flat washers (9) and remove adjustable support assembly (5) from vehicle.

## GRILLE ADJUSTABLE SUPPORT ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

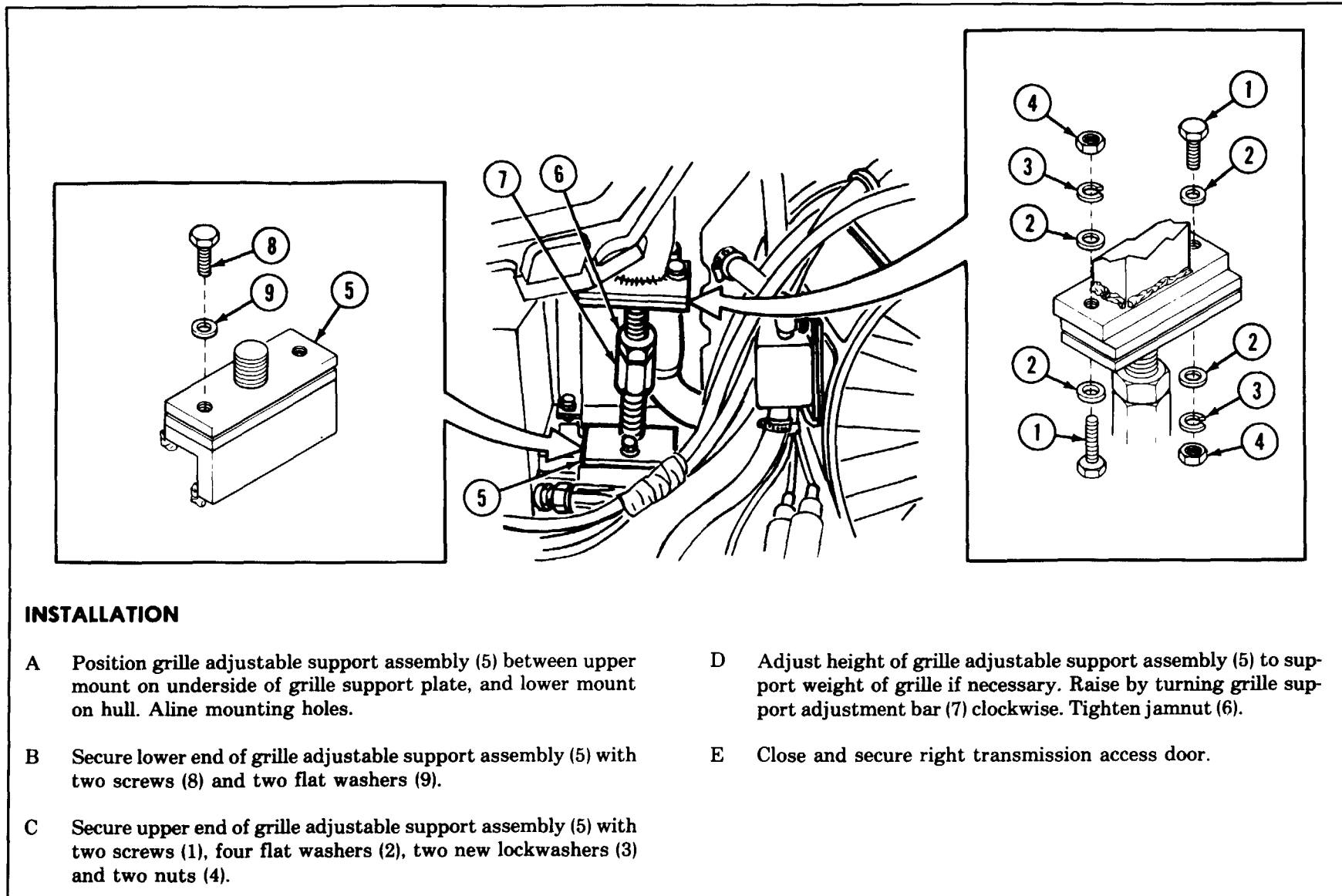


### DISASSEMBLY

- A Unscrew jamnut (6) and grille support adjustment bar (7) fully, to disengage adjustable screws (10). Remove jamnut (6) and adjustment bar (7). Separate adjustable screws (10) and mounting plates (11) with attached parts.
- B Clamp mounting plate (11) in vise. Drive out and discard two spring pins (12), releasing plate (11), shim (13) and plate (14).
- C Lift ball portion of adjustable screw (10) from plate (11).
- D Pull pin (15) from ball portion of adjustable screw (10).

### ASSEMBLY

- A Install pin (15) in ball portion of adjustable screw (10).
- B Install ball portion of adjustable screw (10) in plate (11).
- C Connect plate (14), shim (13) and plate (11) with two spring pins (12).
- D Install jamnut (6) and adjustment bar (7) on adjustable screws (10). Tighten jamnut (6).

**GRILLE ADJUSTABLE SUPPORT ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



## FAN ACCESS DOOR: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

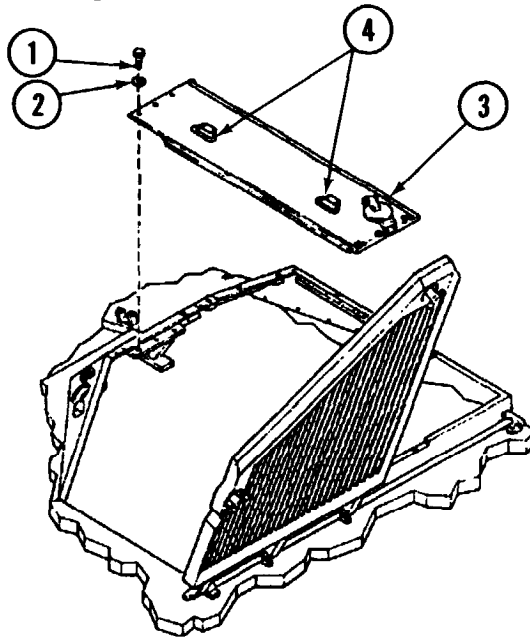
Slings, nylon (item 58, Appx B)  
Suitable lifting device

#### Personnel Required:

Two

#### Equipment Condition:

Exhaust deflectors removed (p 9-66.13).  
Exhaust deck removed (p 9-66.12).



### REMOVAL

- A Open and secure intake grille.

#### WARNING

Before disconnecting AFES sensors, thoroughly understand how to deactivate the fire suppression system. Accidental discharge can cause serious injury.

- B Disconnect fire sensing element couplings (p 14-20).

#### NOTE

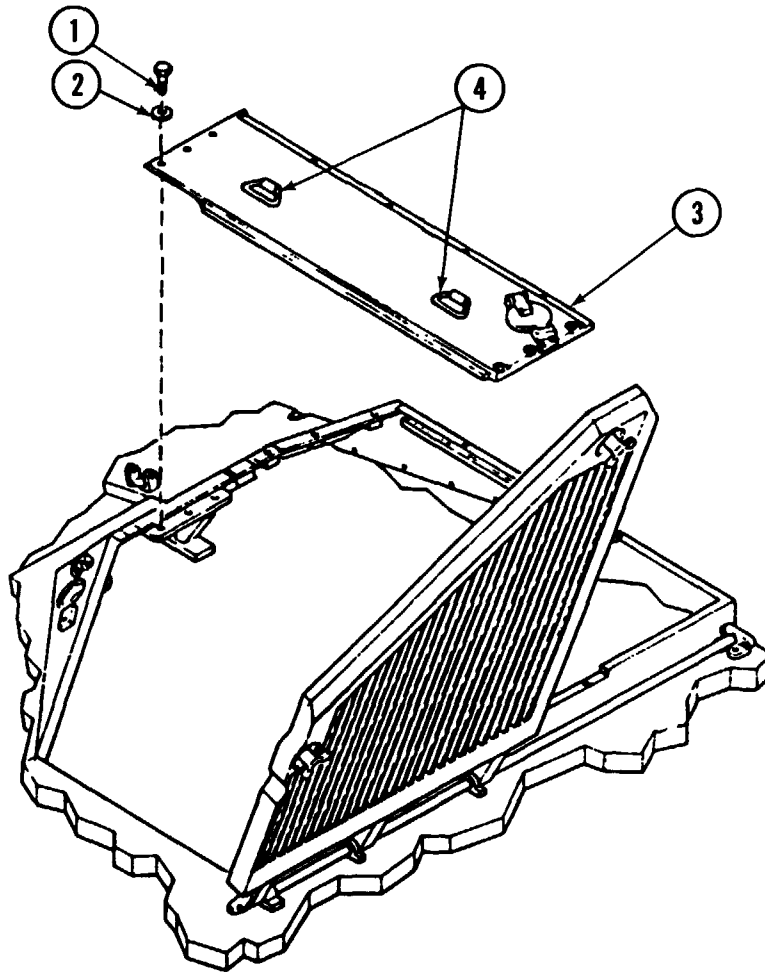
Make sure plastic caps are secure to protect opened couplings from dirt and moisture.

- C Remove six screws (1) and six flat washers (2), releasing fan access door (3).

#### CAUTION

When setting door on bench or other work surface, make sure weight does not fall on fire sensor components, causing damage.

- D Install suitable lifting device and sling to lifting handles (4). Lift fan access door (3) from vehicle to a suitable work area.
- E Remove fire sensing element, as necessary (p 14-21).

**FAN ACCESS DOOR: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

- A Install fire sensing element on fan access door as necessary (p 14-21).
- B Install suitable lifting device and sling on lifting handles (4). Raise door (3) into position on vehicle and secure with six screws (1) and six flat washers (2).
- C Connect fire sensing element couplings (p 14-21).
- D Close and secure intake grille.

## RADIATOR CAP ACCESS COVER: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

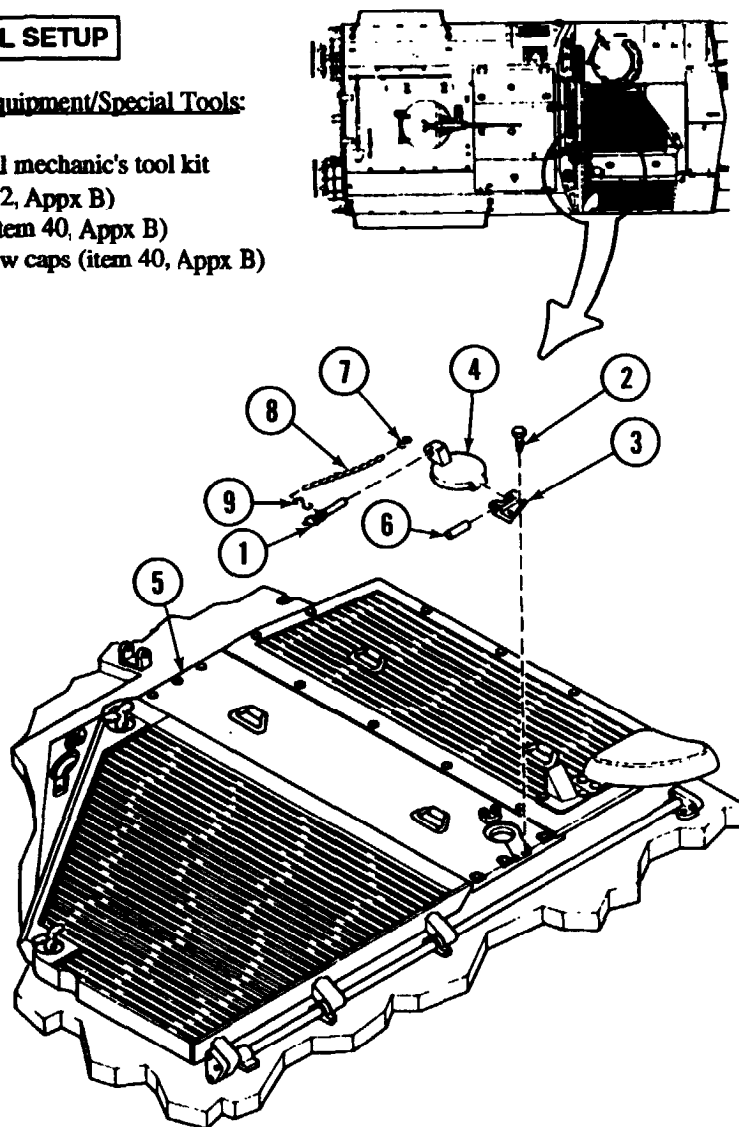
### INITIAL SETUP

#### Test Equipment/Special Tools:

General mechanic's tool kit  
(item 52, Appx B)

Vise (item 40, Appx B)

Vise jaw caps (item 40, Appx B)



### REMOVAL

- A Remove quick-release pin (1).
- B Remove two screws (2) releasing hinge latch (3) and radiator cap access cover (4) from fan access door (5).

### DISASSEMBLY

- A Place access cover (4) in capped vise. Drive out spring pin (6), releasing access cover (4) from hinge latch (3). Discard spring pin.
- B Remove S-hook (7) from welded eyelet on access cover (4) and from chain (8).
- C Remove S-hook (9) from quick-release pin (1) and chain (8).

### ASSEMBLY

- A Install access cover (4) in hinge latch (3) with new spring pin (6).
- B Connect chain (8) to quick-release pin (1) and to welded eyelet of access cover (4) with S-hooks (7 and 9).
- C Remove cover (4) from capped vise.

### INSTALLATION

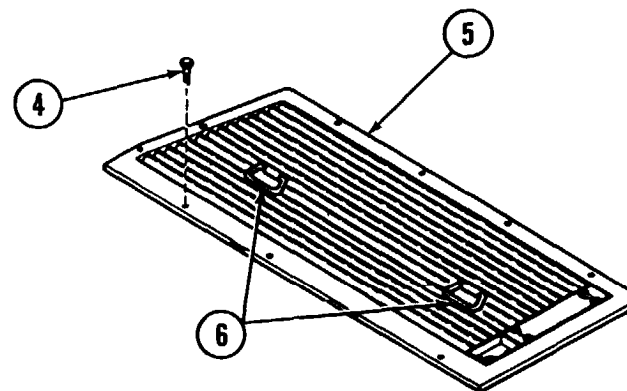
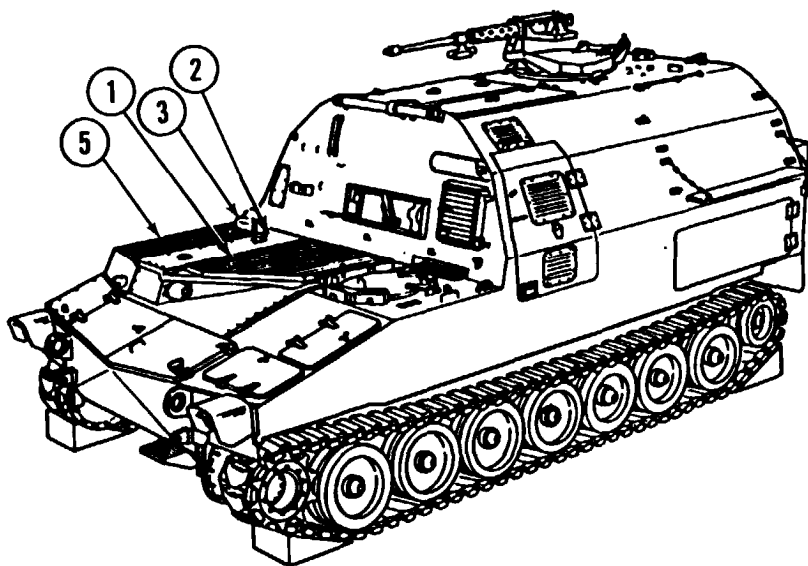
- A Install hinge latch (3) and radiator cap access cover (4) on fan access door (5) with two screws (2).
- B Close access cover (4). Secure with quick-release pin (1).

**EXHAUST DECK: REMOVAL AND INSTALLATION****INITIAL SETUP****Test Equipment/Special Tools:**

General mechanic's tool kit (item 52, Appx B)  
 Sling, nylon (item 58, Appx B)  
 Suitable lifting device

**Personnel Required:**

Two

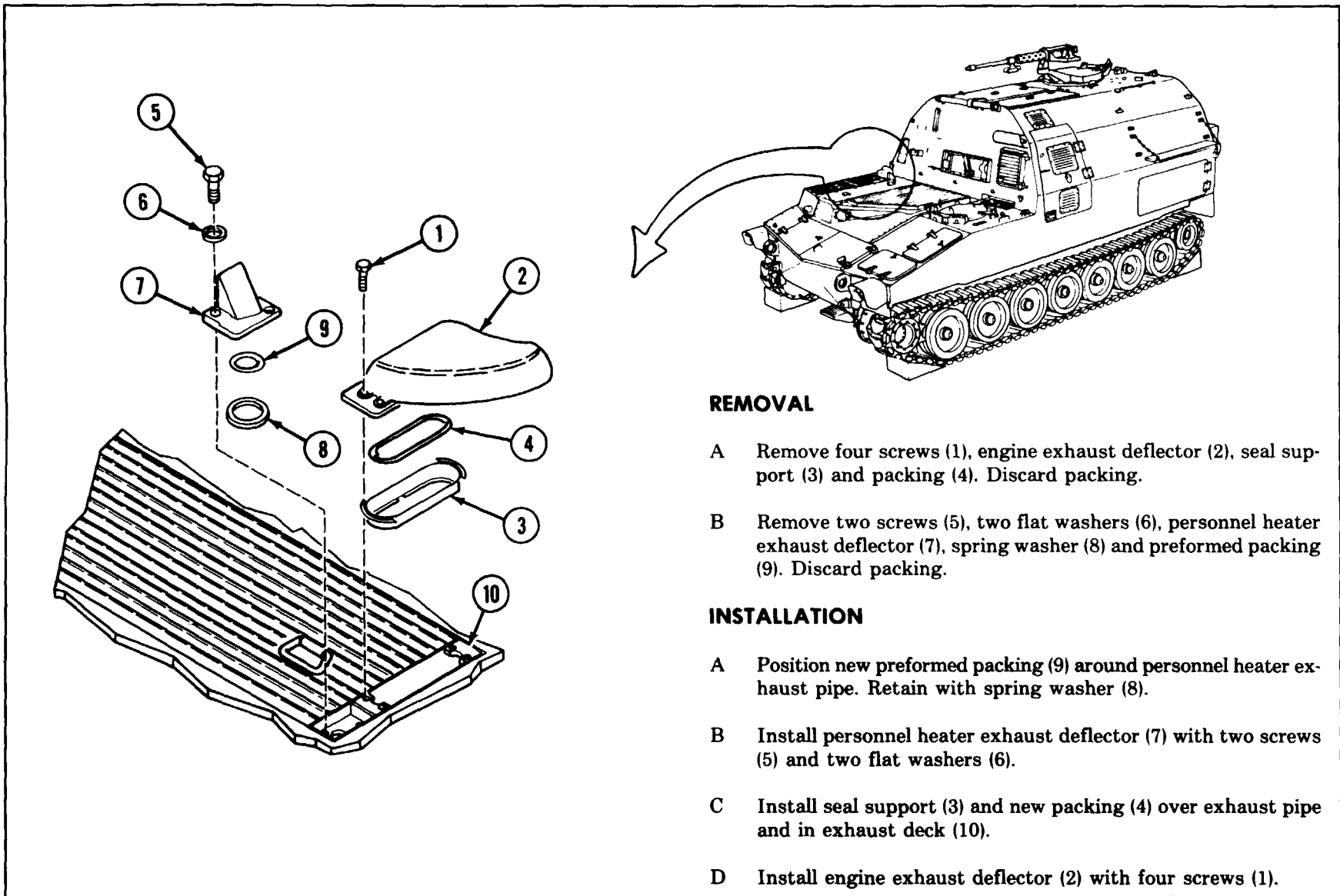
**REMOVAL**

- A Open and secure intake grille (1).
- B Remove exhaust deflectors (2 and 3) (p 9-66.13).
- C Remove 14 screws (4) releasing exhaust deck (5).
- D Install suitable lifting device and sling on exhaust deck lifting handles (6). Remove exhaust deck (5) from vehicle.

**INSTALLATION**

- A Install suitable lifting device and sling on exhaust deck lifting handles (6).
- B Lift exhaust deck (5) into position and secure with 14 screws (4).
- C Install exhaust deflectors (2 and 3) on exhaust deck (5) (p 9-66.13).
- D Close and secure intake grille.

## EXHAUST DEFLECTORS: REMOVAL AND INSTALLATION

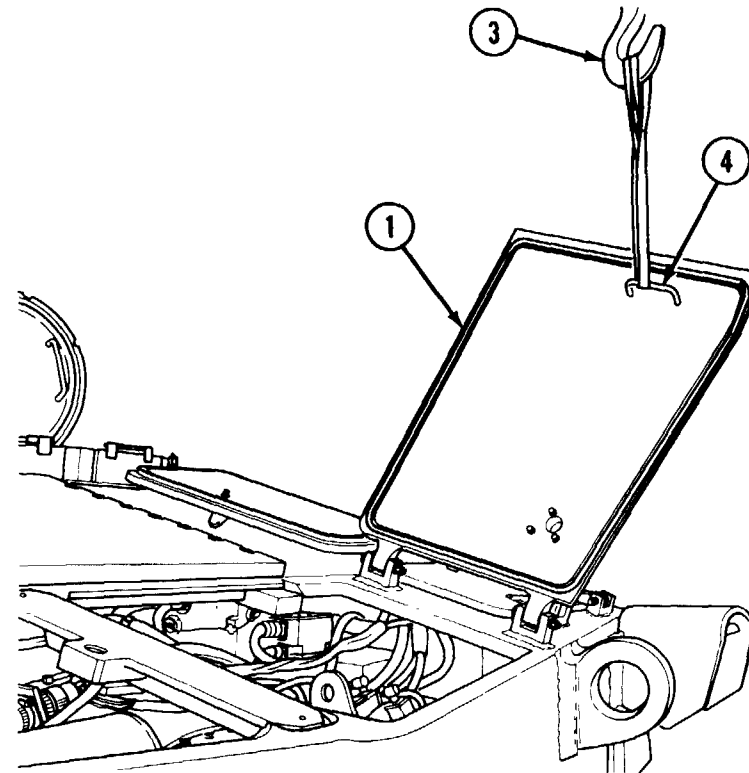
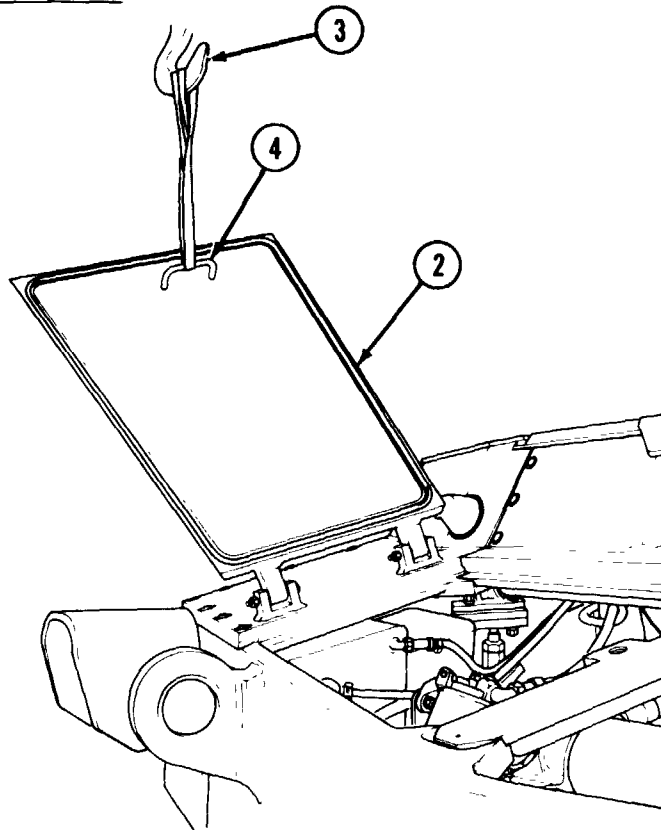


**TRANSMISSION ACCESS DOORS: REMOVAL AND INSTALLATION****INITIAL SETUP****Test Equipment/Special Tools:**

Sling, nylon (item 58, Appx B)

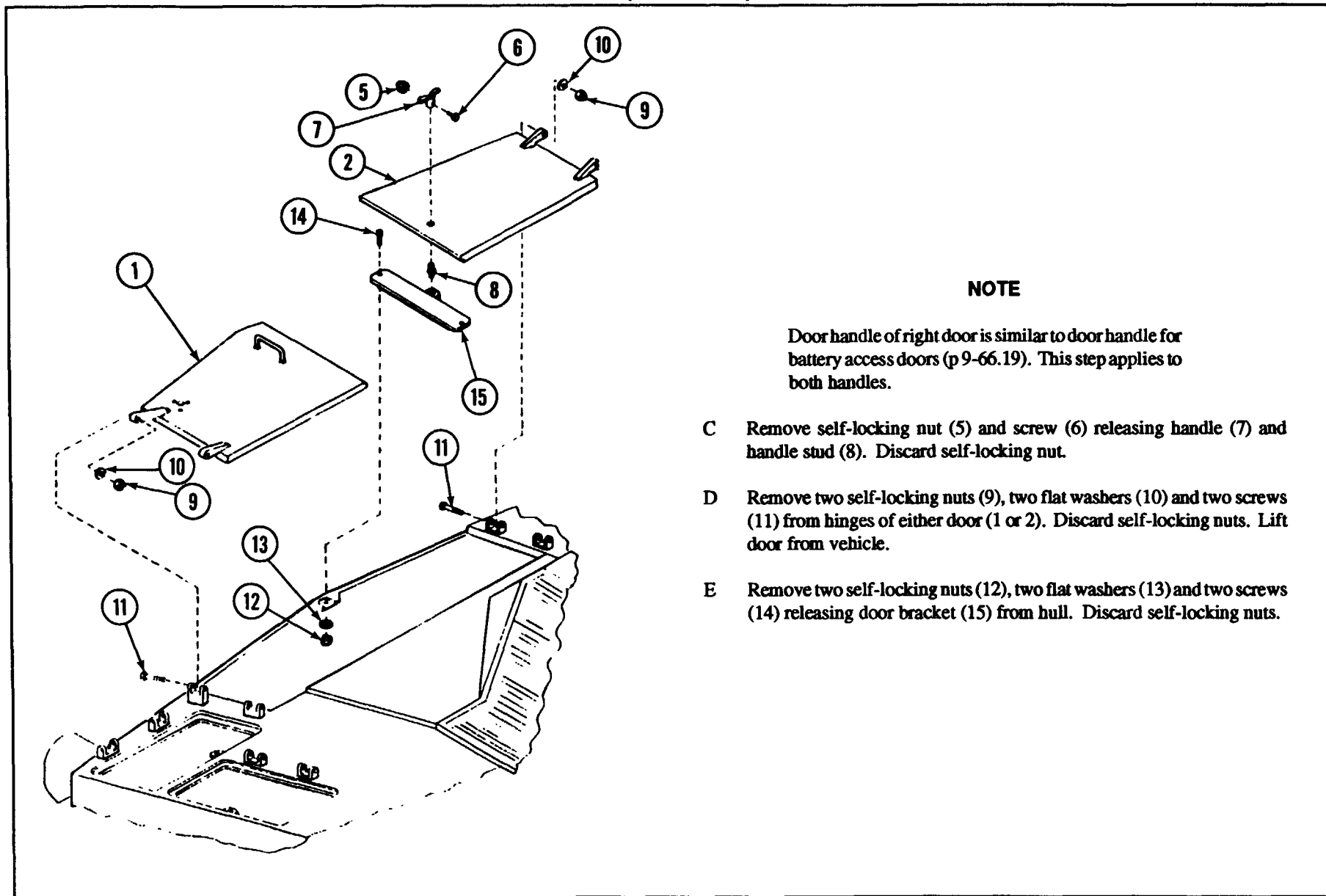
**Personnel Required:**

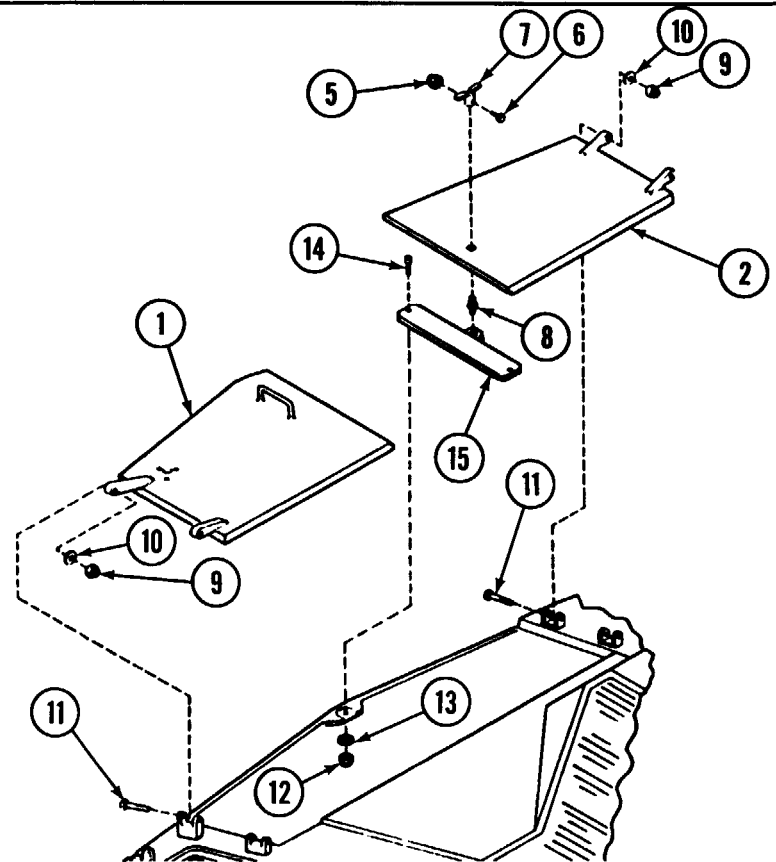
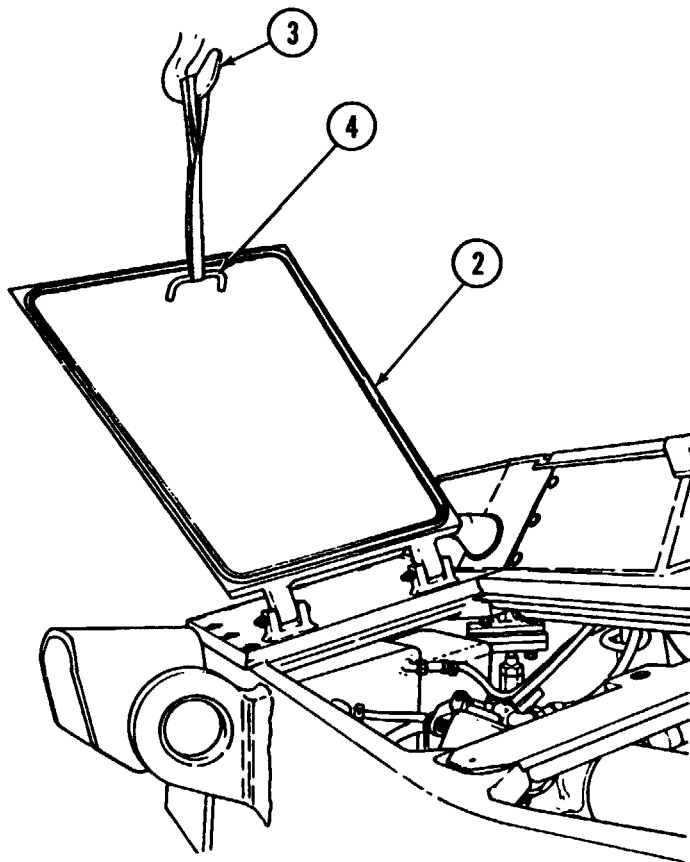
Two

**REMOVAL**

- A Open left or right transmission access door (1 or 2).
- B Attach hook (3) of suitable lifting device to nylon sling wrapped around handle (4) of either door (1 or 2). Lift door (1 or 2) to upright position.

## TRANSMISSION ACCESS DOORS: REMOVAL AND INSTALLATION (CONTINUED)

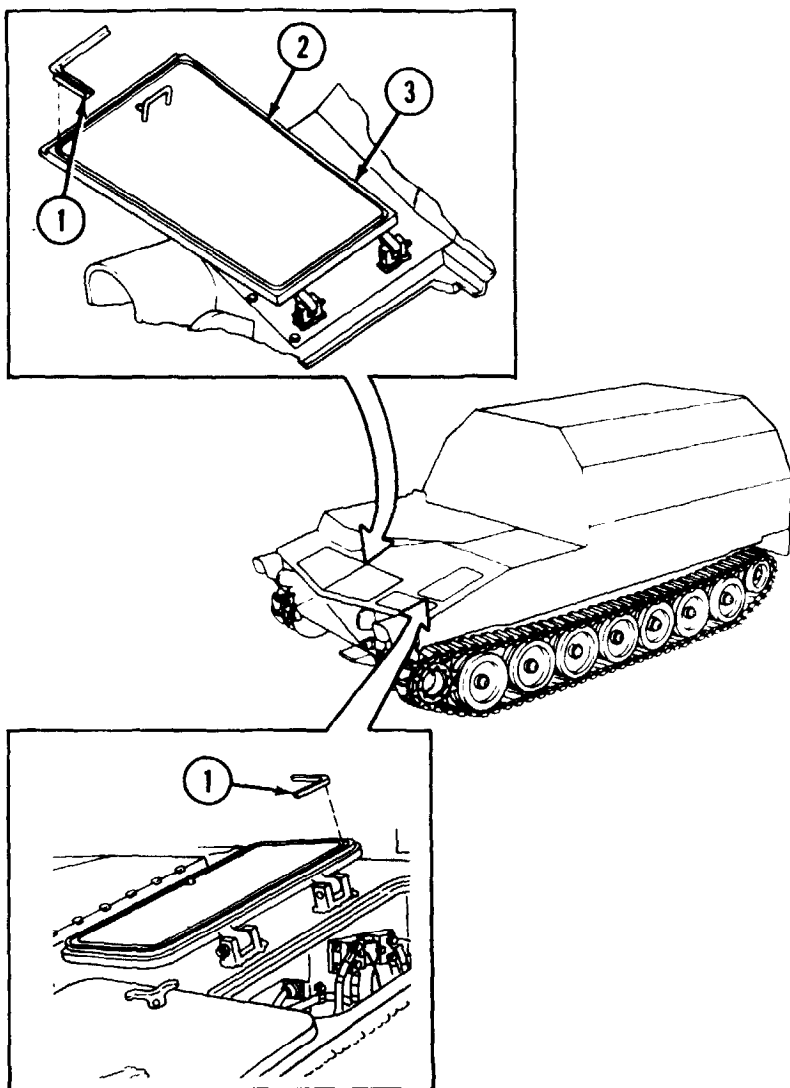


**TRANSMISSION ACCESS DOORS: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

- A** Install door bracket (15) on hull with two screws (14), two flat washers (13) and two new self-locking nuts (12).
- B** Attach hook (3) of suitable lifting device to nylon sling wrapped around handle (4) of either door (1 or 2). Lift door into position on hull and install two screws (11), two flat washers (10) and two new self-locking nuts (9).
- C** Insert stud (8) through door (2). Install handle (7) on stud (8) with screw (6) and new self-locking nut (5).
- D** Remove nylon sling from door (1 or 2).
- E** Close and secure transmission access door (1 or 2).



## TRANSMISSION ACCESS DOORS' AND BATTERY ACCESS DOORS' SEALS: REMOVAL AND INSTALLATION



### INITIAL SETUP

#### Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

#### Material/Parts:

Adhesive (item 4, Appx D)

Dry-cleaning solvent (item 19, Appx D)

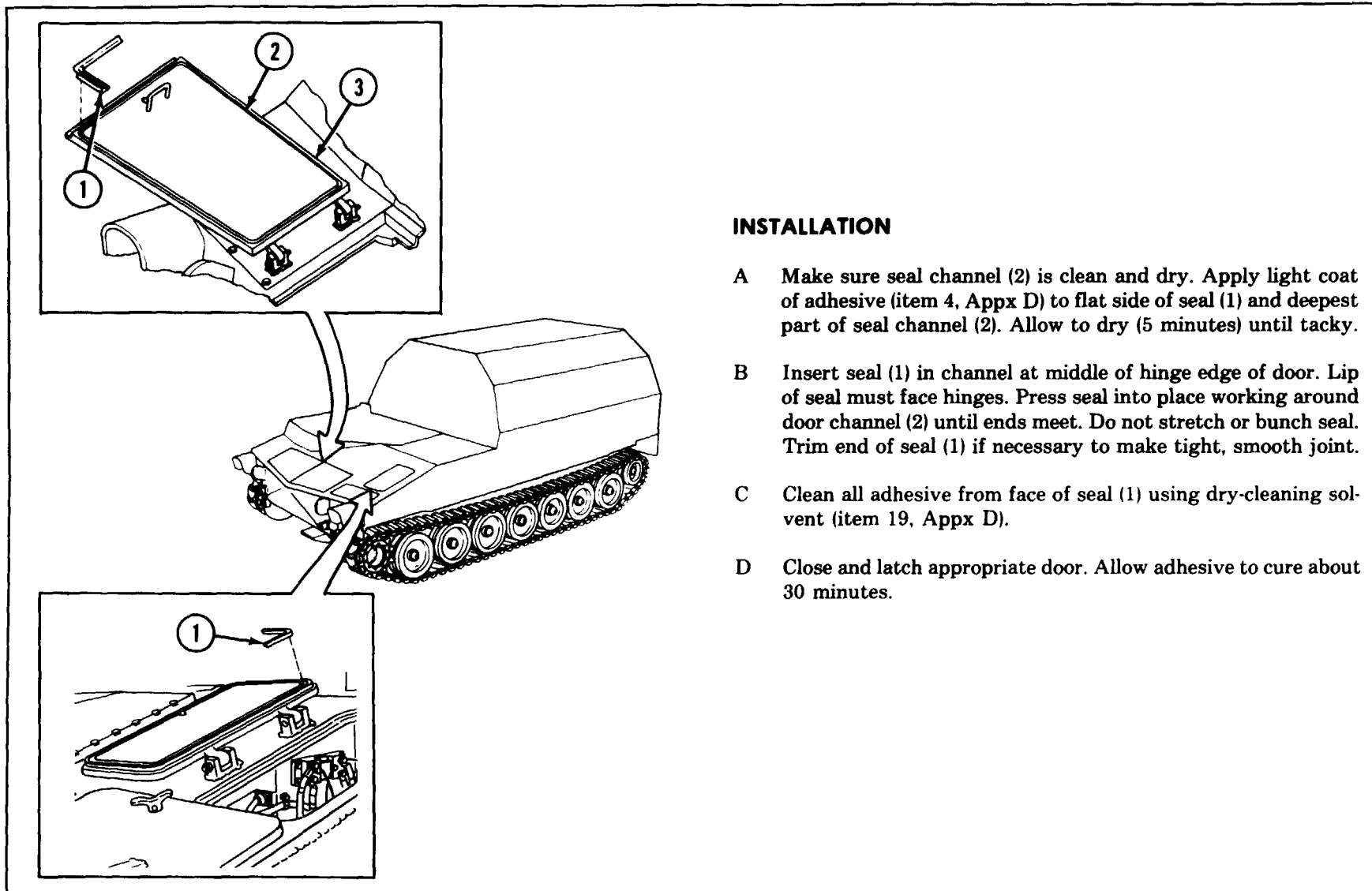
### REMOVAL

- A Open appropriate door.

#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- B Scrape seal (1) from seal channel (2) on underside of door (3). Use dry-cleaning solvent (item 19, Appx D) and wire brush (item 48, Appx B), as necessary. Remove all debris from seal channel (2).

**TRANSMISSION ACCESS DOORS' AND BATTERY ACCESS DOORS' SEALS: REMOVAL AND INSTALLATION  
(CONTINUED)**

## BATTERY ACCESS DOORS: REMOVAL AND INSTALLATION

### INITIAL SETUP

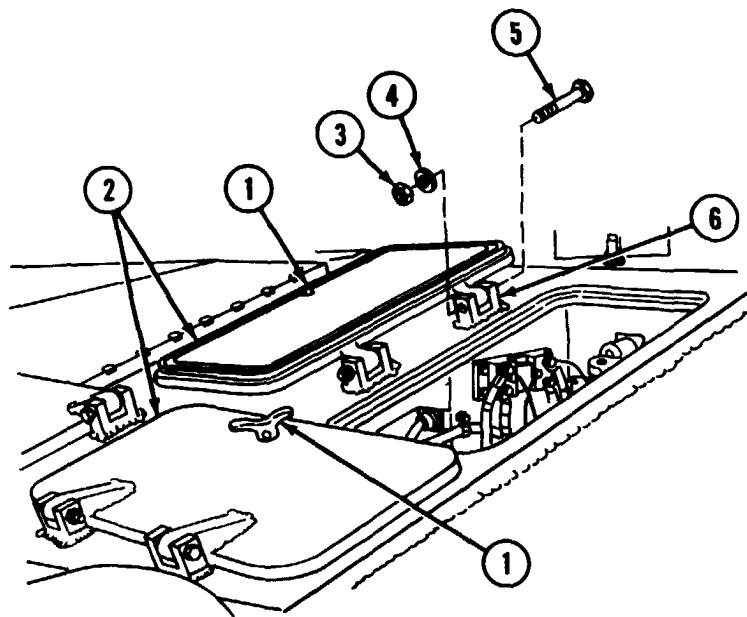
#### General Safety Instructions:

Batteries can explode. Do not smoke, have open flames, or make sparks around a battery. Battery acid and corrosion can burn your skin, eyes and clothing. Wear protective attire.

#### WARNING

Turn MASTER switch OFF. Disconnect battery ground cables.

When working around batteries wear eye protection. Remove all jewelry, dog tags and metal items.



#### REMOVAL

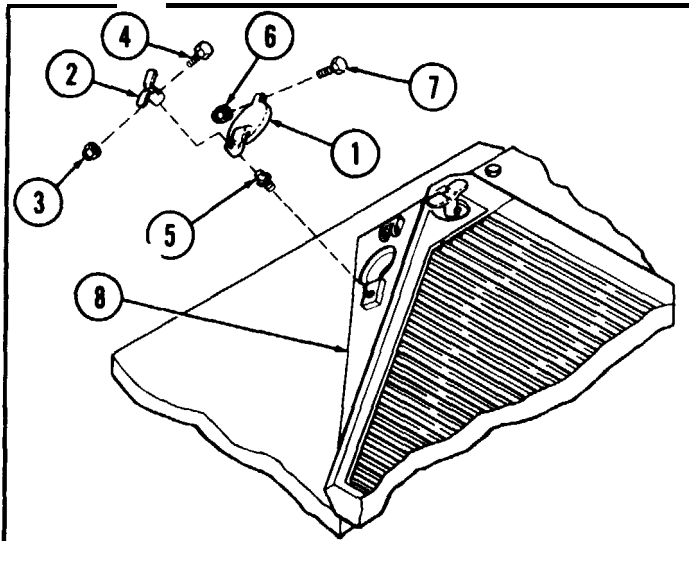
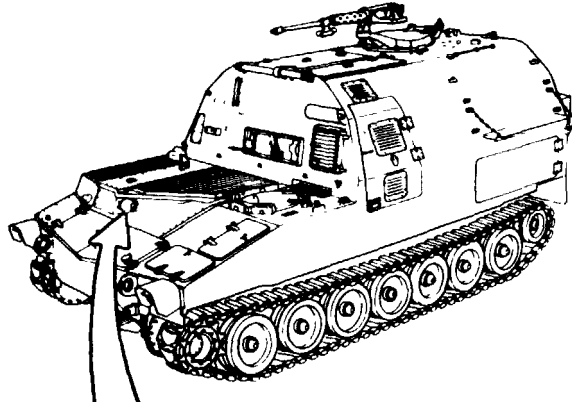
- A Unscrew handles (1) and open battery access doors (2).
- B Remove two self-locking nuts (3), two flat washers (4) and two screws (5) releasing each battery access door (2) from hull-mounted hinge bases (6). Discard self-locking nuts.
- C Remove handles (1), if necessary (p 9-66.15).

#### INSTALLATION

- A Install handles (1), if necessary (p 9-66.15).
- B Install door (2) on hull-mounted hinge bases (6) with two screws (5), two flat washers (4) and two new self-locking nuts (3).
- F Close and secure doors (2).

TA312990

## ENGINE DIPSTICK ACCESS DOOR: REMOVAL AND INSTALLATION

**REMOVAL**

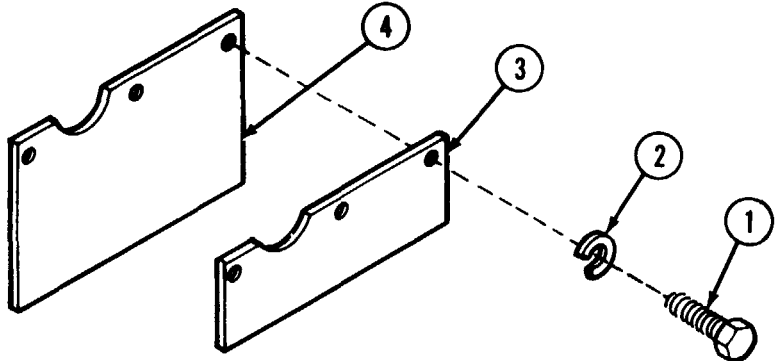
- A Open engine dipstick access door (1) **by turning handle (2) counterclockwise.**
- B Remove and discard self-locking nut (3). Remove screw (4).
- c Pull handle (2) from stud (5).
- D Remove and discard self-locking nut (6). Remove screw (7), releasing engine dipstick access door (1) from front slope plate (8).

**INSTALLATION**

- A Install engine dipstick access door (1) on front slope plate (8) with screw (7) and new self-locking nut (6).
- B Insert stud (5) through from underside of engine dipstick access door (1). Install handle (2) on stud (5) with screw (4) and self-locking nut (3).
- C Close and secure engine dipstick access door(1).

## Section IV FRONT FENDERS, REAR TRACK SPLASH GUARDS AND TOWING PINTLE

### FRONT FENDER: REMOVAL AND INSTALLATION



**NOTE**

This procedure applies to both front fenders and retainers.

**REMOVAL**

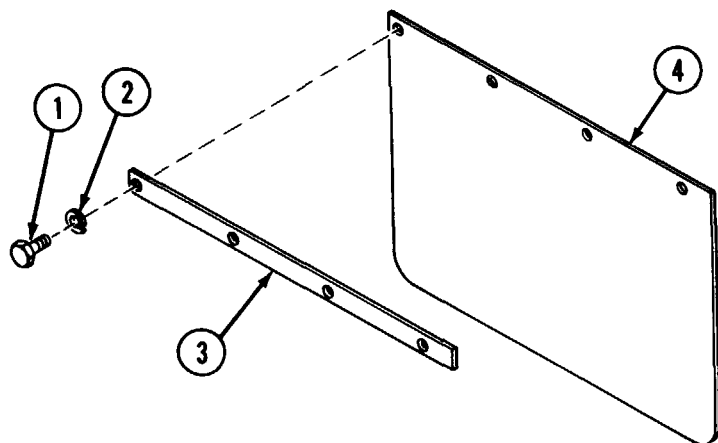
A Remove three screws (1), three lockwashers (2) and fender retainer (3).

B Remove front fender (4) from vehicle.

**INSTALLATION**

Reverse removal procedures.

### REAR TRACK SPLASH GUARD: REMOVAL AND INSTALLATION



**NOTE**

This procedure applies to both rear track splash guards and strips.

**REMOVAL**

A Remove four screws (1), four lockwashers (2) and splash guard strip (3).

B Remove rear track splash guard (4) from vehicle.

**INSTALLATION**

Reverse removal procedures.

## PINTLE ASSEMBLY AND TOWING ATTACHMENTS: REMOVAL AND INSTALLATION

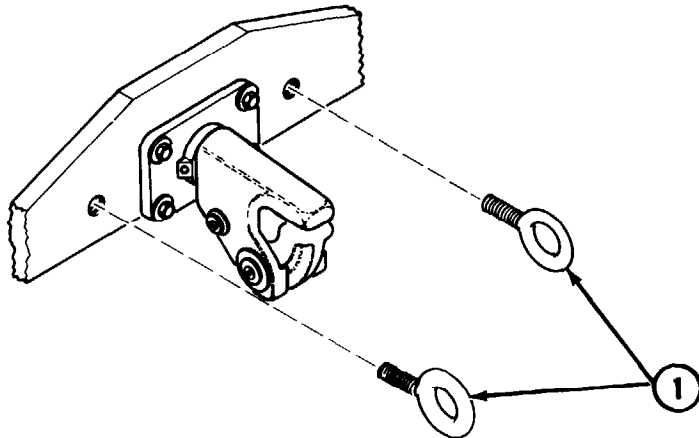
### INITIAL SETUP

#### Materials/Parts:

Grease (item 27, Appx D)

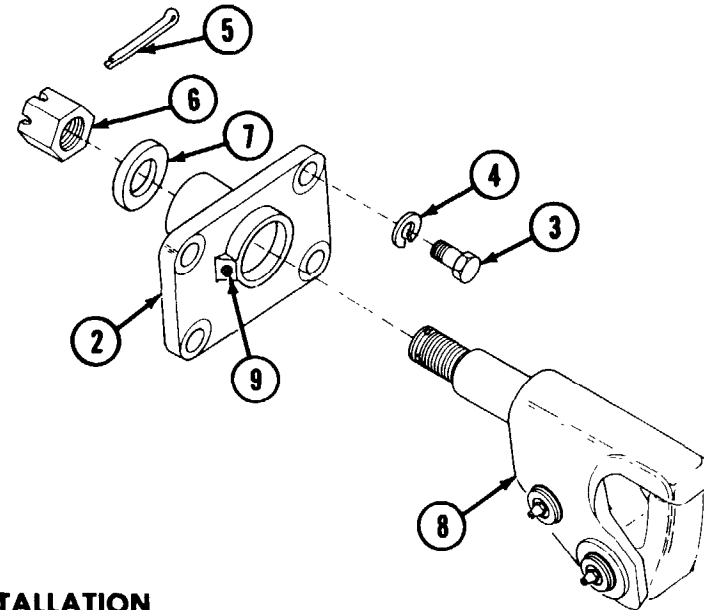
#### References:

LO 9-2350-267-12



### REMOVAL

- A Remove two eyebolts (1).
- B Remove bracket (2) by removing four screws (3) and four lockwashers (4). Discard lockwashers.
- C Remove and discard cotter pin (5). Remove slotted nut (6) and bearing (7). Pull pintle assembly (8) from bracket (2).



### INSTALLATION

- A Apply liberal coating of grease (item 27, Appx D) to shaft and threads of pintle assembly (8).
- B Insert pintle assembly (8) through bracket (2).
- C Install bearing (7), nut (6) and a new cotter pin (5).
- D Install bracket (2) with four screws (3) and four new lockwashers (4).
- E Apply grease (item 27, Appx D) through fitting (9) to fill bracket (2) (LO 9-2350-267-12).
- F Install two eyebolts (1).

## PINTLE ASSEMBLY: DISASSEMBLY, REPAIR AND ASSEMBLY

### INITIAL SETUP

#### Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)  
Pliers, snapping (item 53, Appx B)

#### Materials/Parts:

Dry-cleaning solvent (item 19, Appx D)

#### References:

LO 9-2350-267-12

#### Equipment Condition:

Pintle assembly and bracket removed from vehicle (p 9-68).

### DISASSEMBLY

- A Remove two retaining rings (1) using snapping pliers. Slide pin (2) from pintle body (3) releasing jaw (4).
- B Remove fitting (5) from pin (2).

#### NOTE

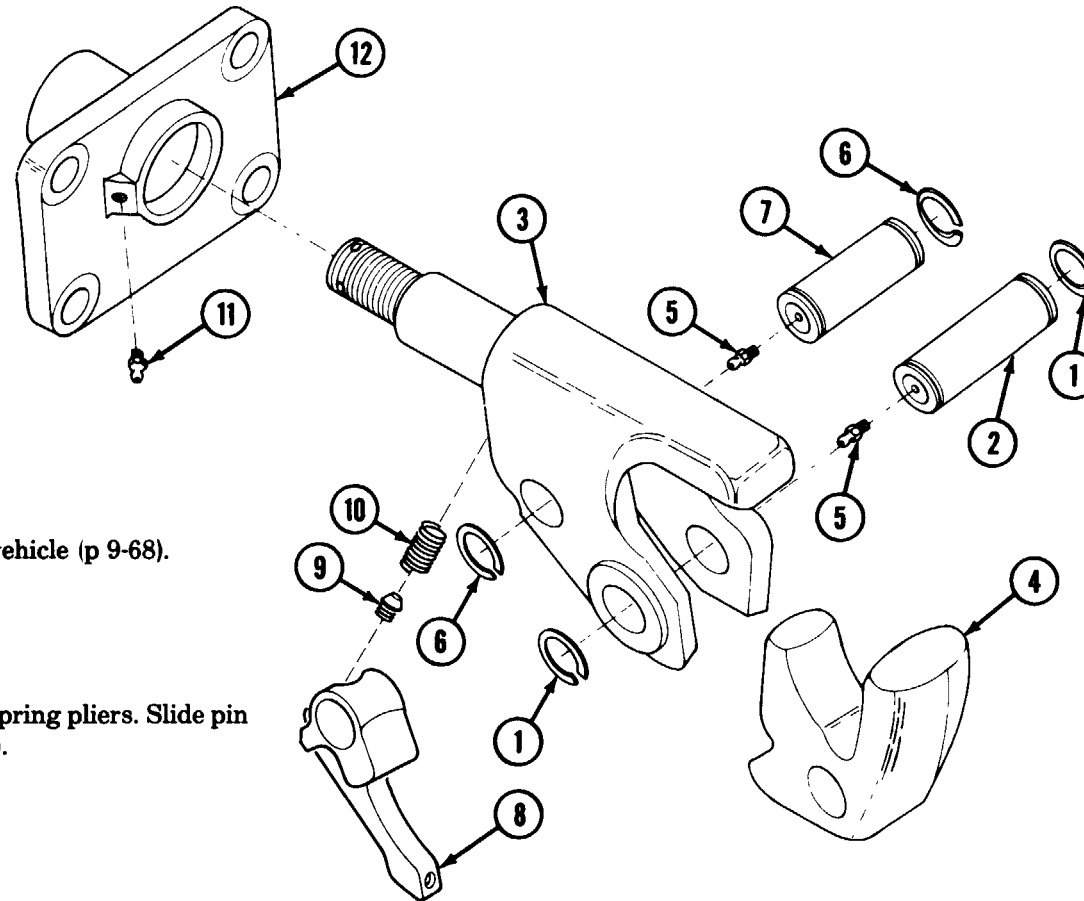
Spring will drop out of pintle body when latch is removed. Set aside.

- C Remove two retaining rings (6) using snapping pliers. Slide pin (7) from pintle body (3) releasing latch (8).

D Remove pin (9) and spring (10).

E Remove fitting (5) from pin (7).

F Remove fitting (11) from bracket (12).



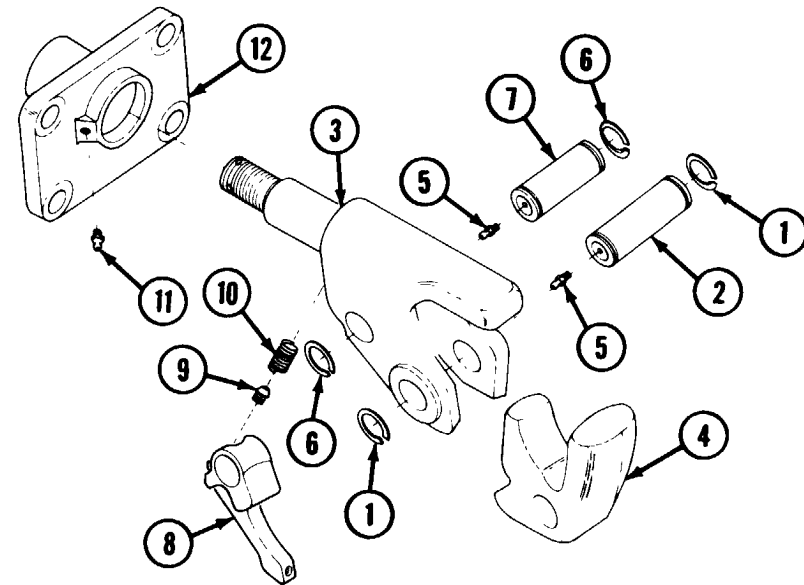
**PINTLE ASSEMBLY: DISASSEMBLY, REPAIR AND ASSEMBLY (CONTINUED)****REPAIR****WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- A Clean all parts with dry-cleaning solvent (item 19, Appx D) and wire brush (item 48, Appx B).
- B If spring (10) is less than 3 inches long, replace it.
- C Clean grease holes in pins (2 and 7) and in bracket (12).

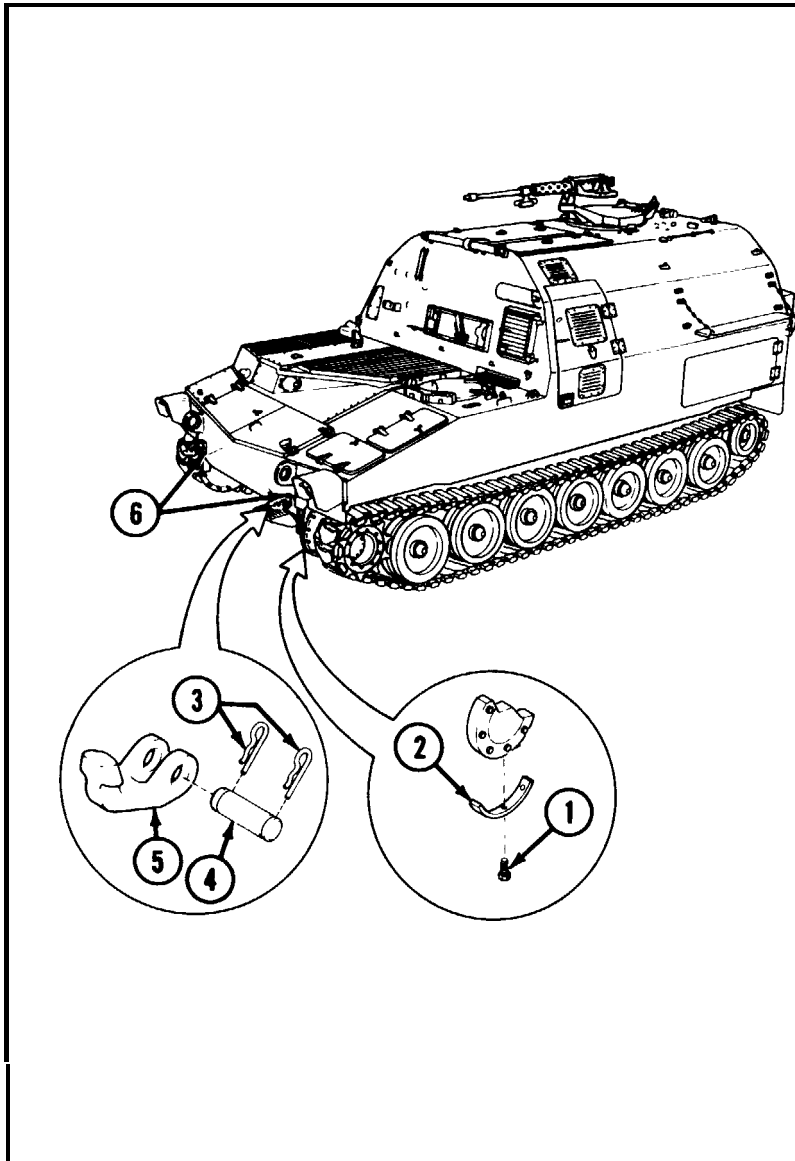
**ASSEMBLY**

- A Install fitting (11) in bracket (12).
- B Insert spring (10) into hole on underside of pintle body (3). Install pin (9) in latch (8) with pin (7) and two retaining rings (6).
- C Insert fitting (5) in pin (2).
- D Position jaw (4) in closed position on pintle body (3) and secure with pin (2) and two retaining rings (1).
- E Grease fittings (5 and 11) to expel all air (LO 9-2350-267-12).





## TOW CABLE HOOKS AND FINAL DRIVE SKID PLATES: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove three screws (1) and skid plate (2) from left or right final drive assembly.

### NOTE

All tow cable hooks are removed in same manner.

- B Remove two lock pins (3) from pin (4). Drive lock pin (4) from hook (5), releasing hook from bracket (6).

### INSTALLATION

### NOTE

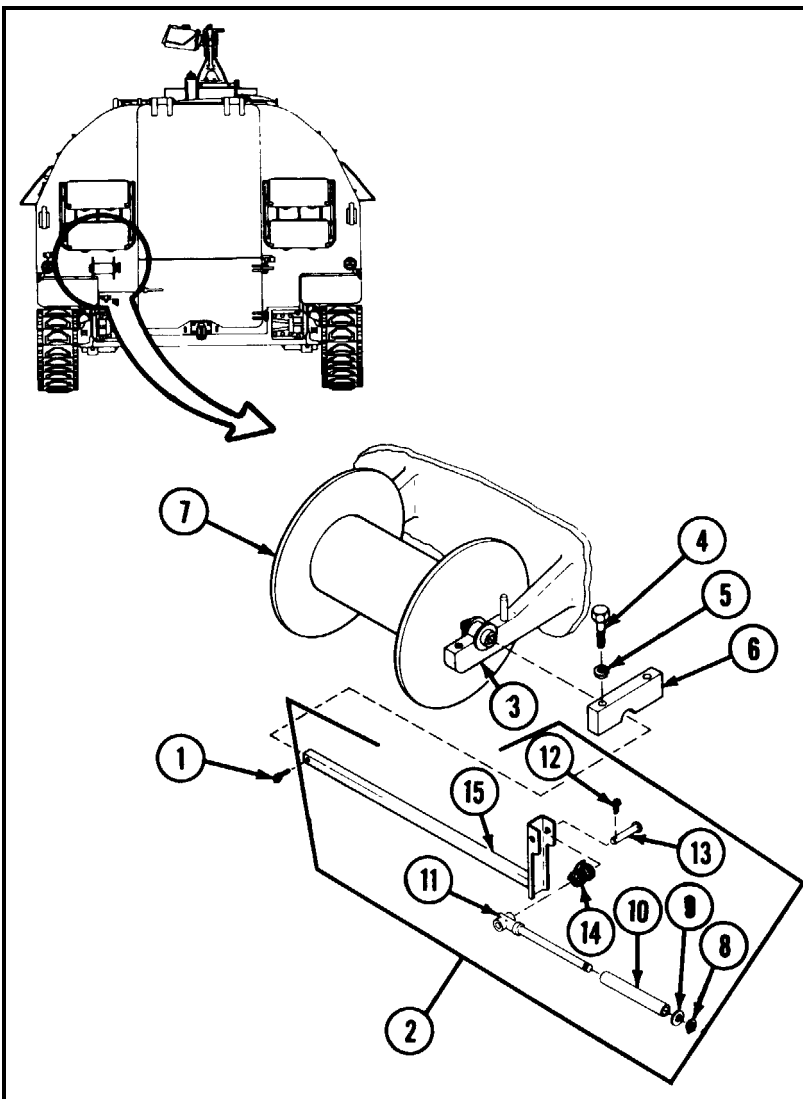
All tow cable hooks are installed in same manner.

- A Install hook (5) on bracket (6) with pin (4) and two lock pins (3).
- B Install skid plate (2) on left or right final drive assembly with three screws (1).



## Section V TELEPHONE HAND REEL

### TELEPHONE HAND REEL: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



#### REMOVAL

- A Remove pin (1) and pull hand crank assembly (2) from mount (3).
- B Remove two screws (4), two lockwashers (5) and two clamps (6).
- c Remove reel assembly (7).

#### DISASSEMBLY

- A Remove ring (8) and washer (9), and pull sleeve (10) from crank handle (11).
- B Remove cotter pin (12) from pin (13).
- C Remove pin (13), spring (14) and handle (11) from crank (15).

#### ASSEMBLY

Reverse disassembly procedures.

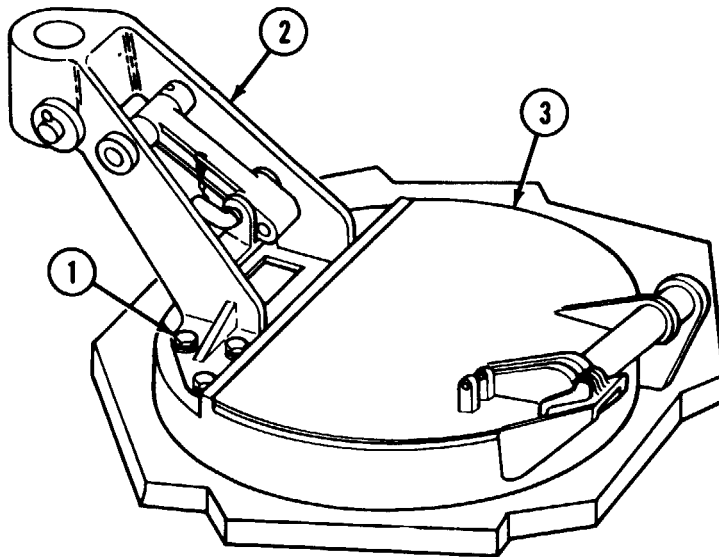
#### INSTALLATION

Reverse removal procedures.

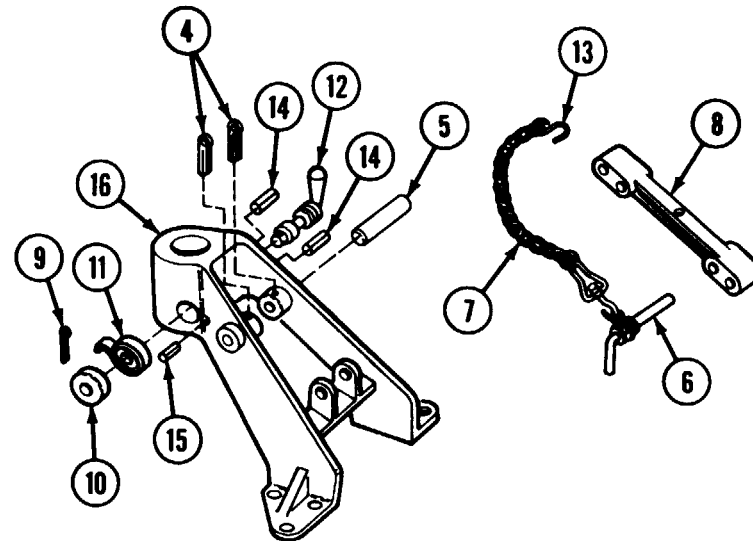
TA310055

## Section VI MACHINE GUN MOUNT-M2

## MACHINEGUN SUPPORT ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

**REMOVAL**

- A Remove six screws (1), releasing support assembly (2).
- B Lift support assembly (2) from commander's cupola (3).

**DISASSEMBLY**

- A Remove and discard two cotter pins (4).
- B Drive out straight pin (5) using punch and hammer.

## ■ MACHINE GUN SUPPORT ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

C Remove quick-release pin (6), chain (7), and connecting link (8).

D Remove and discard cotter pin (9).

E Remove cover (10), spring (11) and lock (12).

F Remove S-hook (13), chain (7) and quick-release pin (6) from connecting link (8).

G Drive out spring pins (14) using punch and hammer. Discard spring pins.

H Drive out spring pin (15) using punch and hammer. Discard spring pin.

### ASSEMBLY

A Install new spring pin (15) in support (16).

B Install two new spring pins (14).

C Install S-hook (13), chain (7) and quick-release pin (6) on connecting link (8).

D Install lock (12) on right-hand side of support (16). Position spring (11) to engage slotted end of lock (12). Anchor tang of spring (11) on spring pin (15).

E Check travel of lock handle (12). Spring load should cause lock (12) to partially close pintle hole in support (16). One-finger pressure to rotate lock (12) should fully open pintle hole.

F Install cover (10) over spring (11) with new cotter pin (9).

G Install connecting link (8) in support (16) with straight pin (5). Secure straight pin (5) and two new cotter pins (4).

H Secure connecting link (8) with quick-release pin (6).

### INSTALLATION

Install support assembly (2) on commander's cupola (3) with six screws (1).

TA312997



## CHAPTER 10 MAINTENANCE PROCEDURES: STOWAGE

### CHAPTER OVERVIEW

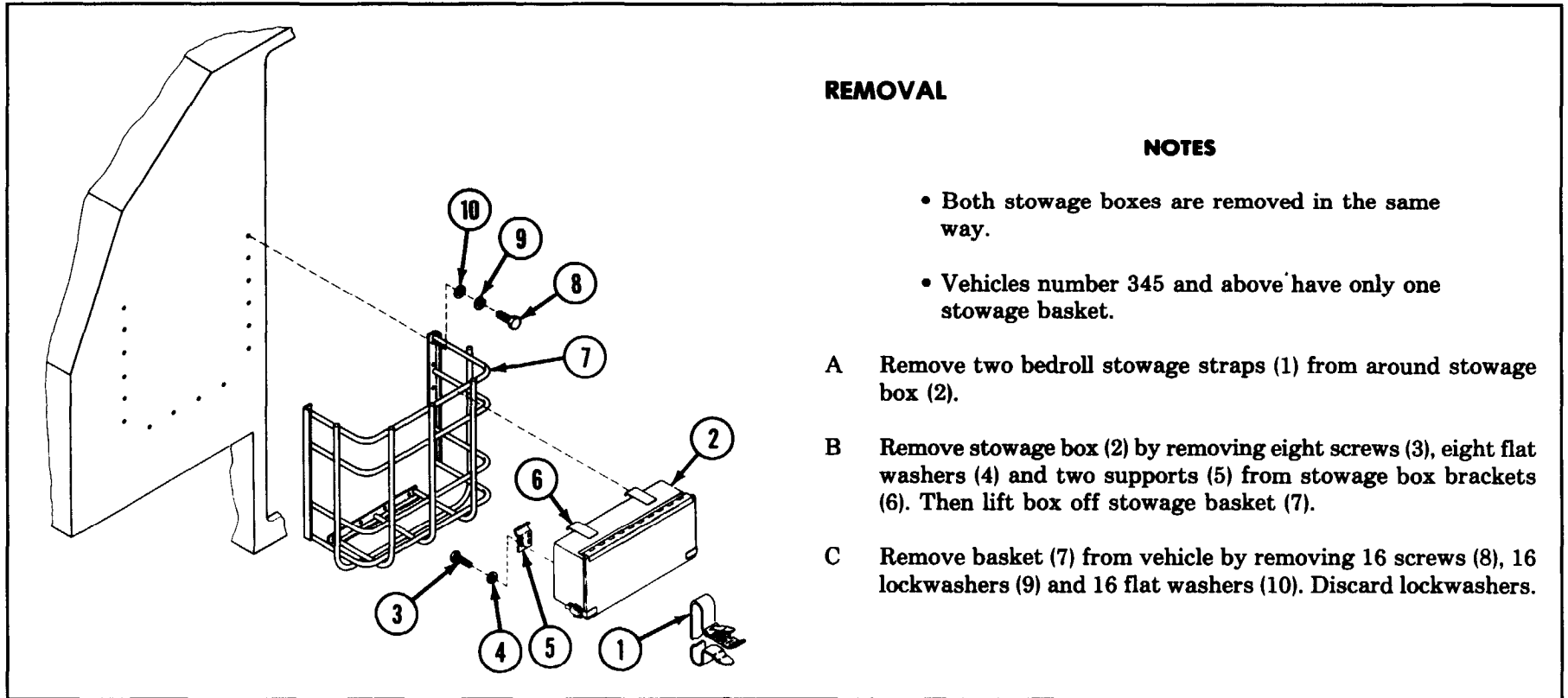
This chapter contains instructions for removal and installation of major components required for mounting and securing stowage items inside and outside the M992 cargo compartment.

Section I Outside Stowage

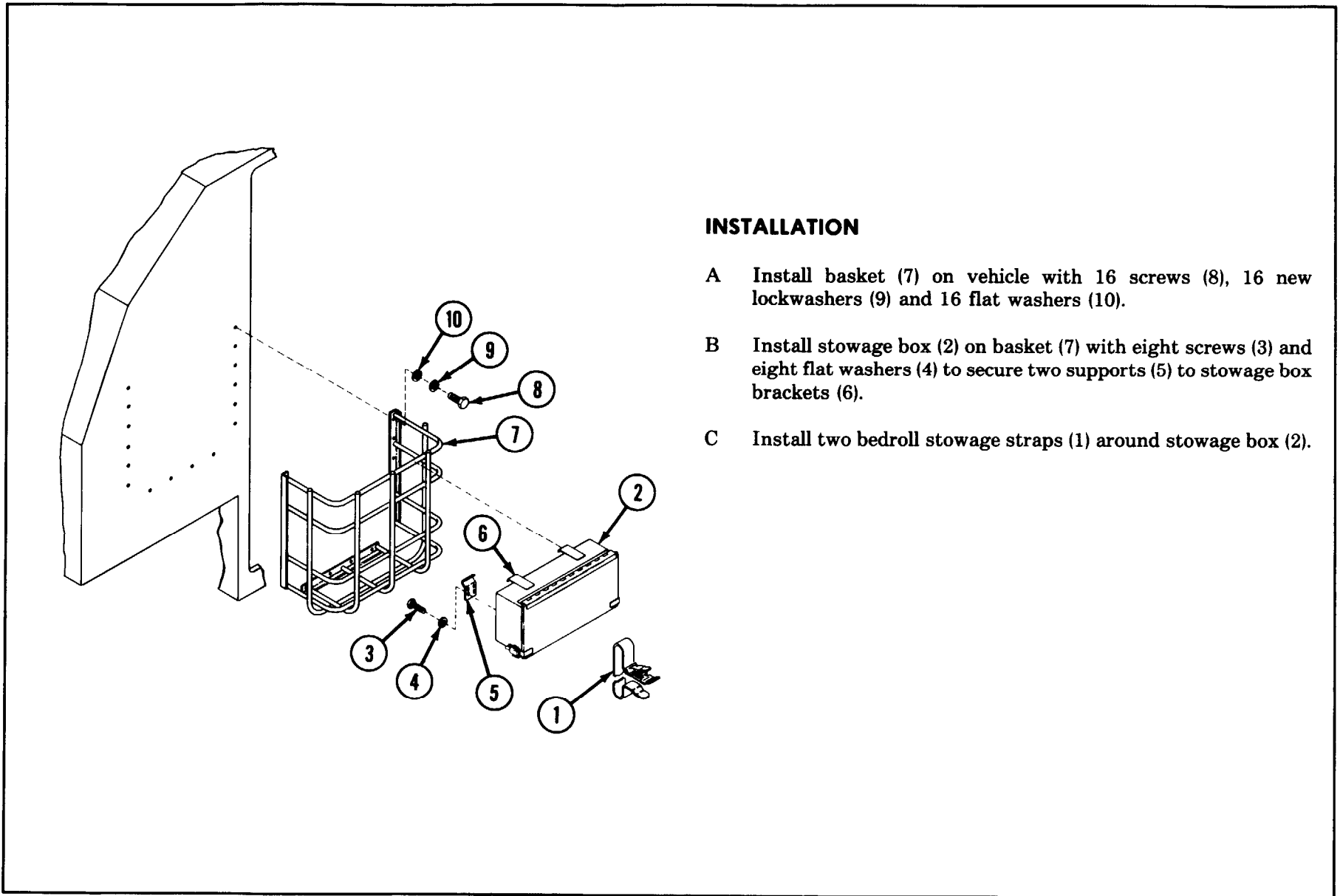
Section II Inside Stowage

### Section I OUTSIDE STOWAGE

#### STOWAGE BOXES AND BASKETS: REMOVAL AND INSTALLATION



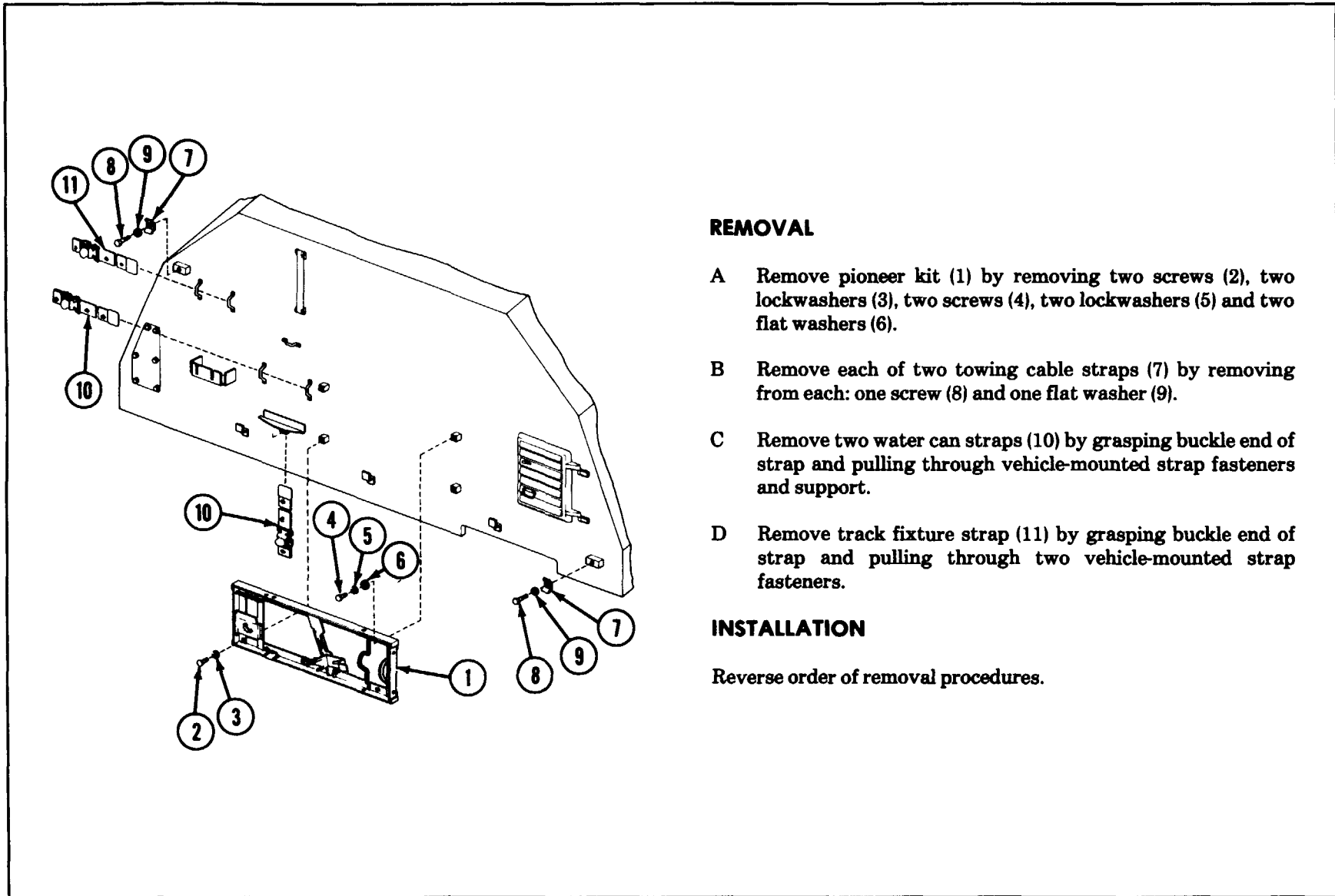
TA57264

**STOWAGE BOXES AND BASKETS: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

- A Install basket (7) on vehicle with 16 screws (8), 16 new lockwashers (9) and 16 flat washers (10).
- B Install stowage box (2) on basket (7) with eight screws (3) and eight flat washers (4) to secure two supports (5) to stowage box brackets (6).
- C Install two bedroll storage straps (1) around stowage box (2).



## PIONEER KIT, TOWING CABLE STRAPS, WATER CAN STRAPS AND TRACK FIXTURE STRAP: REMOVAL AND INSTALLATION



### REMOVAL

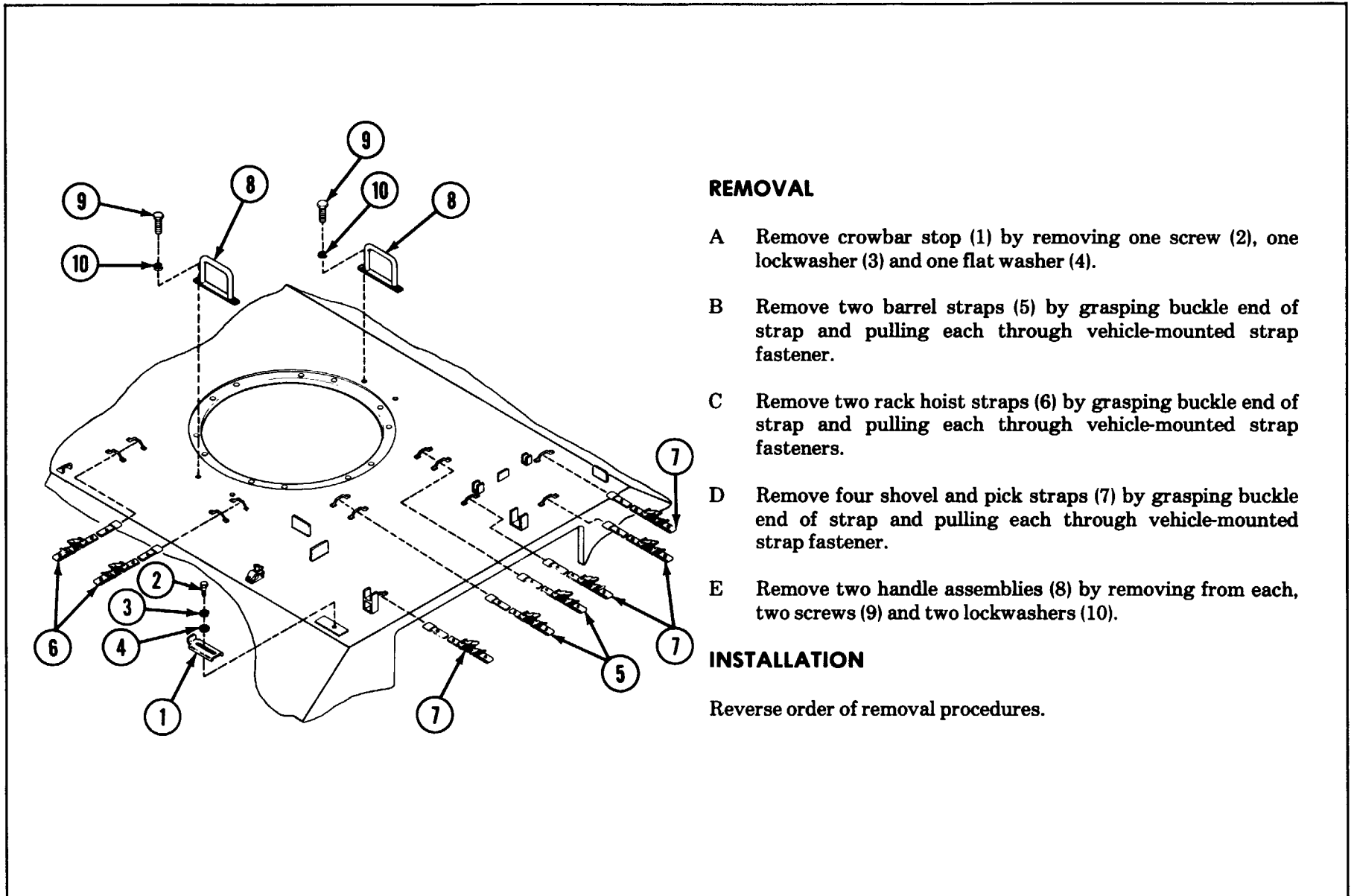
- A Remove pioneer kit (1) by removing two screws (2), two lockwashers (3), two screws (4), two lockwashers (5) and two flat washers (6).
- B Remove each of two towing cable straps (7) by removing from each: one screw (8) and one flat washer (9).
- C Remove two water can straps (10) by grasping buckle end of strap and pulling through vehicle-mounted strap fasteners and support.
- D Remove track fixture strap (11) by grasping buckle end of strap and pulling through two vehicle-mounted strap fasteners.

### INSTALLATION

Reverse order of removal procedures.



## CROWBAR STOP, BARREL STRAPS, RACK HOIST STRAPS: REMOVAL AND INSTALLATION

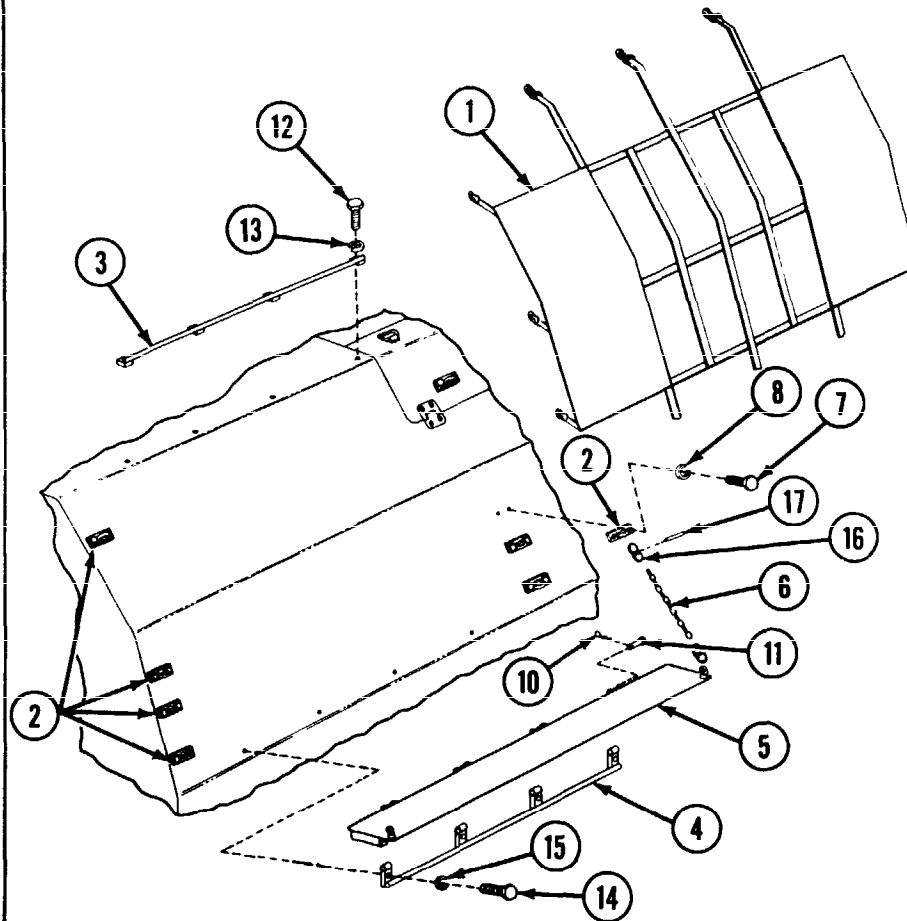


### REMOVAL

- A Remove crowbar stop (1) by removing one screw (2), one lockwasher (3) and one flat washer (4).
- B Remove two barrel straps (5) by grasping buckle end of strap and pulling each through vehicle-mounted strap fastener.
- C Remove two rack hoist straps (6) by grasping buckle end of strap and pulling each through vehicle-mounted strap fasteners.
- D Remove four shovel and pick straps (7) by grasping buckle end of strap and pulling each through vehicle-mounted strap fastener.
- E Remove two handle assemblies (8) by removing from each, two screws (9) and two lockwashers (10).

### INSTALLATION

Reverse order of removal procedures.

**DUFFLE BAG STOWAGE (RIGHT SIDE): REMOVAL AND INSTALLATION****(RIGHT SIDE): REMOVAL AND INSTALLATION****REMOVAL**

- A Unhook and remove net (1) from duffle bag stowage eyelets (2) and bar assemblies (3 and 4).
- B Fold up shelf assembly (5) to relieve tension on two support chains (6). Remove 16 screws (7) and 16 lockwashers (8), and remove eight eyelets (2).
- C Holding shelf (5) and remove four cotter pins (10) and four pins (11) and remove shelf (5) from side of vehicle hull.
- D Remove four screws (12) and four lockwashers (13), and remove bar (3) from topside of vehicle hull.
- E Remove four screws (14) and four lockwashers (15), and remove bar (4) from side of vehicle hull.

**NOTE**

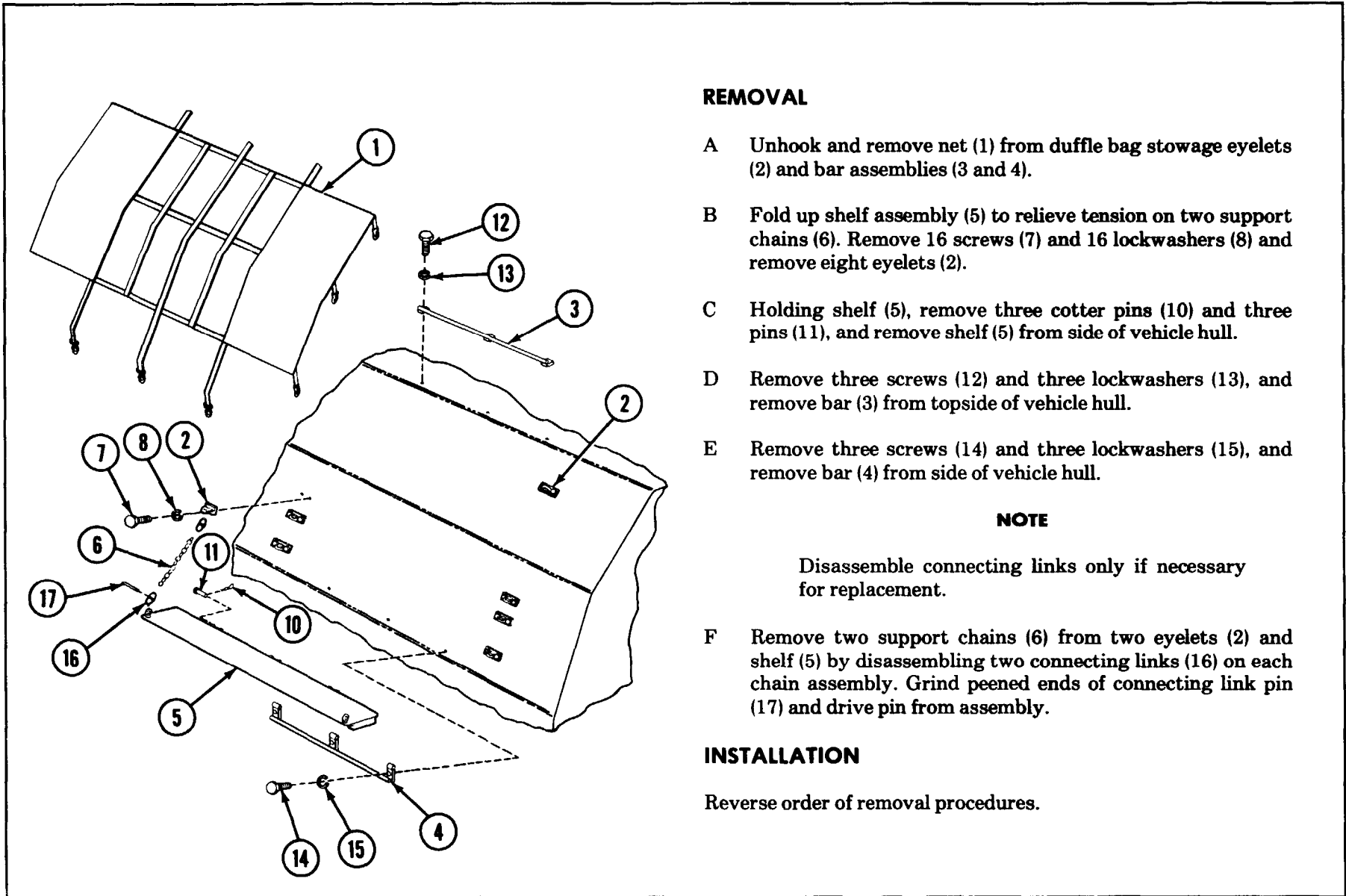
Disassemble connecting links only if necessary for replacement.

- F Remove two support chains (6) from two eyelets (2) and shelf (5), by disassembling two connecting links (16) on each chain assembly. Grind peened ends of connecting link pin (17) and drive pin from assembly.

**INSTALLATION**

Reverse order of removal procedures.

## DUFFLE BAG STOWAGE (LEFT SIDE): REMOVAL AND INSTALLATION



### REMOVAL

- A Unhook and remove net (1) from duffle bag stowage eyelets (2) and bar assemblies (3 and 4).
- B Fold up shelf assembly (5) to relieve tension on two support chains (6). Remove 16 screws (7) and 16 lockwashers (8) and remove eight eyelets (2).
- C Holding shelf (5), remove three cotter pins (10) and three pins (11), and remove shelf (5) from side of vehicle hull.
- D Remove three screws (12) and three lockwashers (13), and remove bar (3) from topside of vehicle hull.
- E Remove three screws (14) and three lockwashers (15), and remove bar (4) from side of vehicle hull.

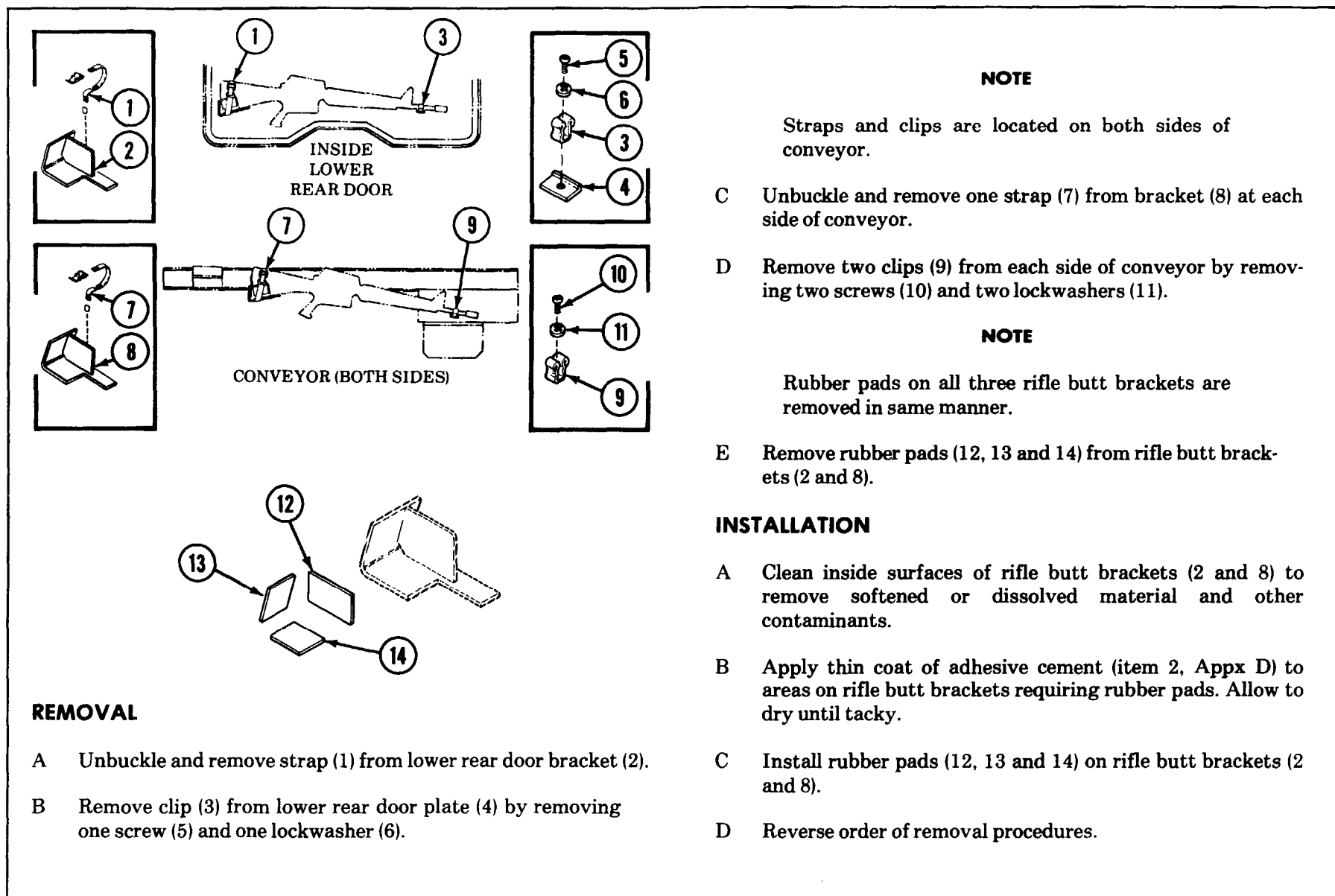
### NOTE

Disassemble connecting links only if necessary for replacement.

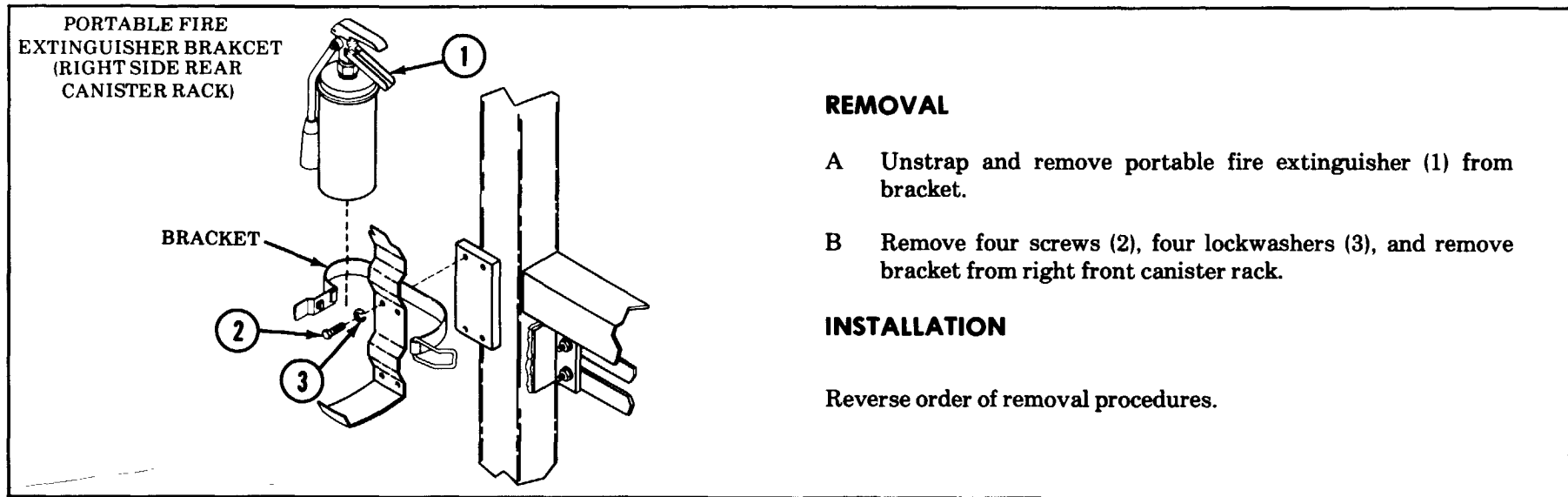
- F Remove two support chains (6) from two eyelets (2) and shelf (5) by disassembling two connecting links (16) on each chain assembly. Grind peened ends of connecting link pin (17) and drive pin from assembly.

### INSTALLATION

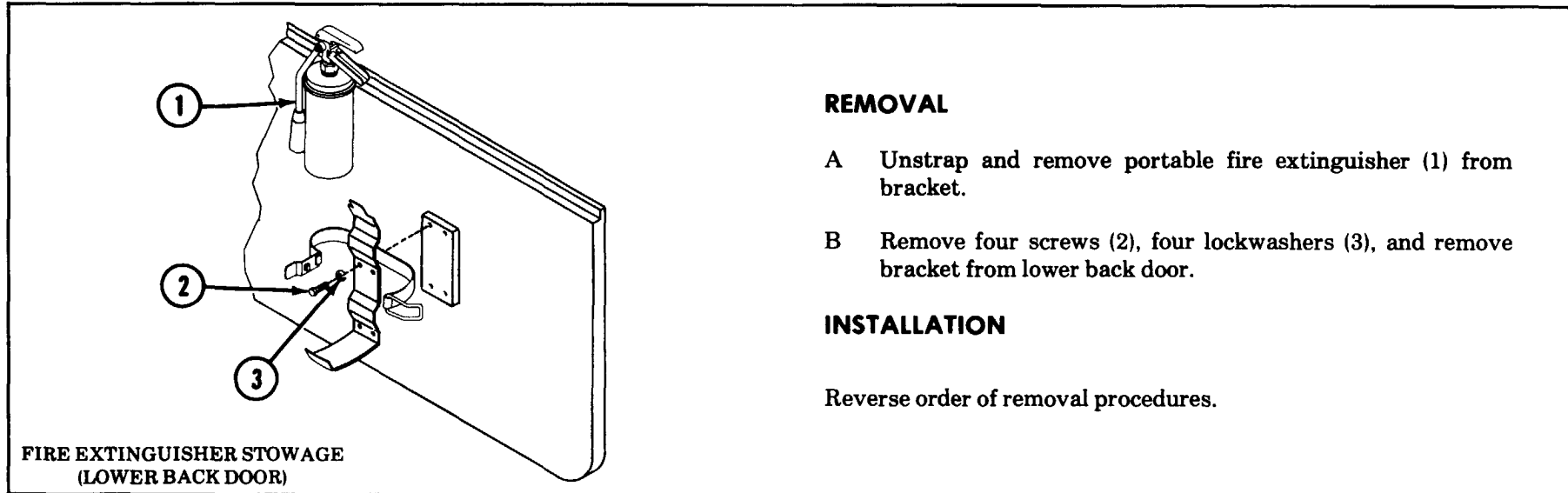
Reverse order of removal procedures.

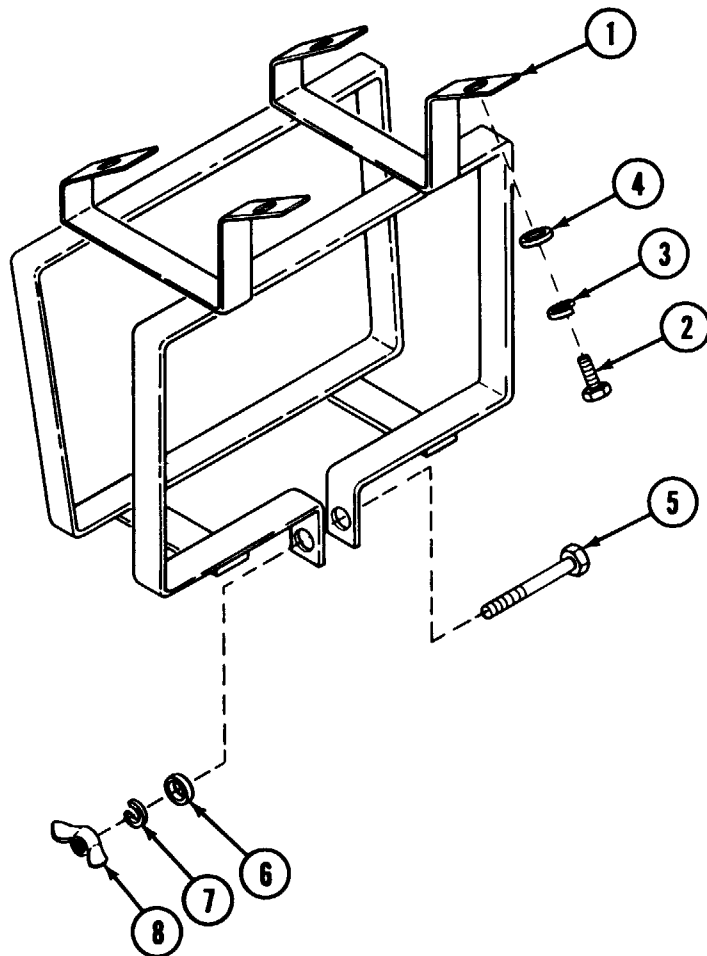
**RIFLE STOWAGE CLIPS: REMOVAL AND INSTALLATION**

## PORTABLE FIRE EXTINGUISHER AND BRACKET (RIGHT SIDE REAR CANISTER RACK): REMOVAL AND INSTALLATION



## PORTABLE FIRE EXTINGUISHER BRACKET (LOWER REAR DOOR): REMOVAL AND INSTALLATION



**NIGHT VISION GOGGLES CARRYING CASE BRACKET: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION****REMOVAL**

Remove carrying case bracket (1) by removing four screws (2), four lockwashers (3) and four flat washers (4).

**DISASSEMBLY**

Remove from each bracket (1) strap, one screw (5), one flat washer (6), one lockwasher (7) and one wing nut (8).

**ASSEMBLY**

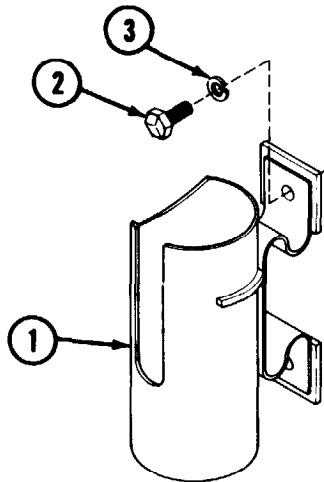
Reverse order of disassembly procedure.

**INSTALLATION**

Reverse order of removal procedure.



## FLASHLIGHT HOLDERS, COMMANDER'S STATION, DRIVER'S BULKHEAD AND LOWER REAR DOOR: REMOVAL AND INSTALLATION



### NOTE

All three flashlight holders are mounted in same way. The following procedures cover removal of only one holder.

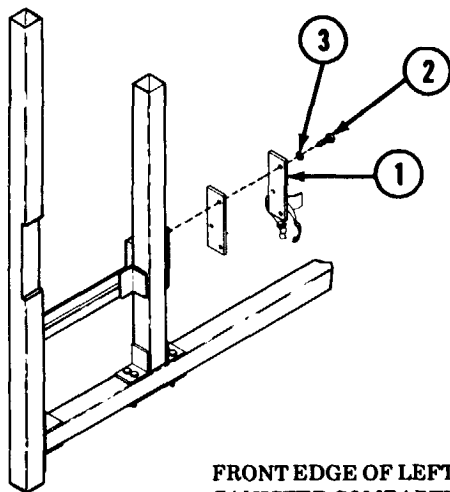
### REMOVAL

Remove flashlight holder (1) by removing two screws (2) and two lockwashers (3).

### INSTALLATION

Reverse order of removal procedure.

## DECONTAMINATION APPARATUS BRACKET: REMOVAL AND INSTALLATION



FRONT EDGE OF LEFT REAR  
CANISTER COMPARTMENT

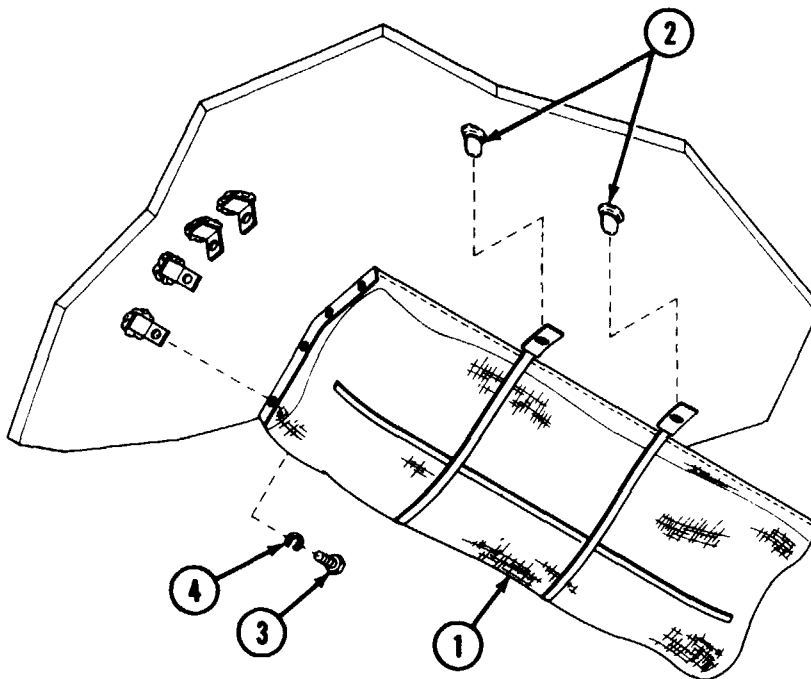
### REMOVAL

Remove decontamination apparatus bracket (1) by removing three screws (2) and three lockwashers (3).

### INSTALLATION

Reverse order of removal procedure.

TA310331

**LEFT AND RIGHT STOWAGE NETS: REMOVAL AND INSTALLATION****REMOVAL**

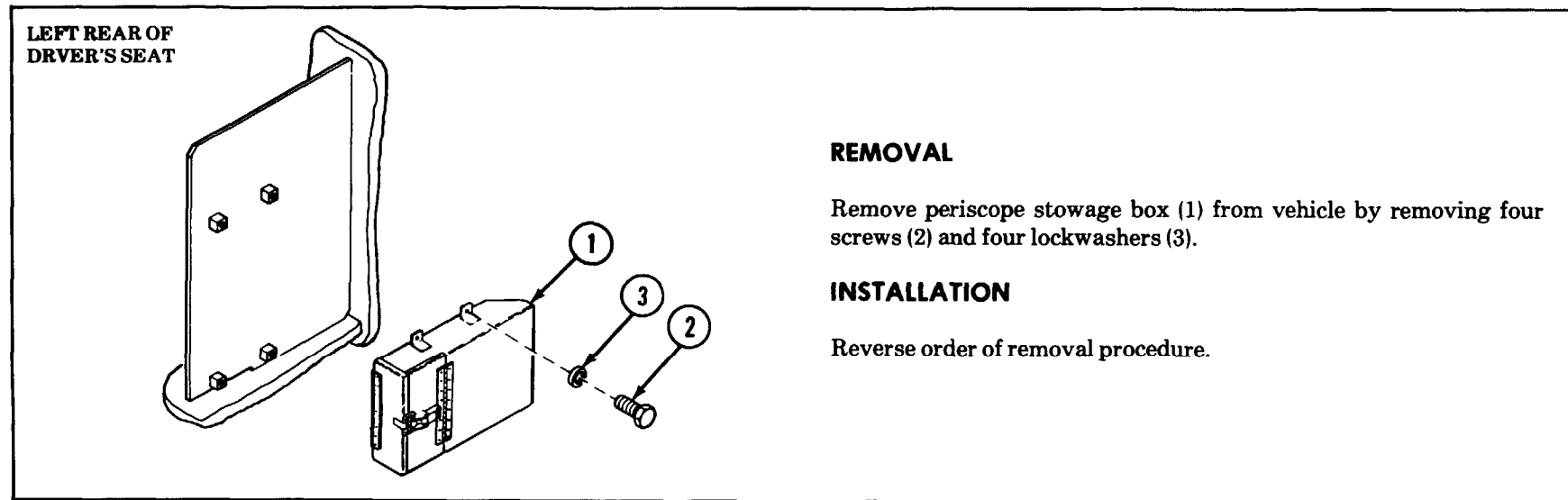
- A Release right rear and left rear stowage nets (1) from vehicle ceiling by turning two stud fasteners (2).
- B Remove 17 screws (3) and 17 lockwashers (4) from each net. Discard lockwashers.

**INSTALLATION****NOTE**

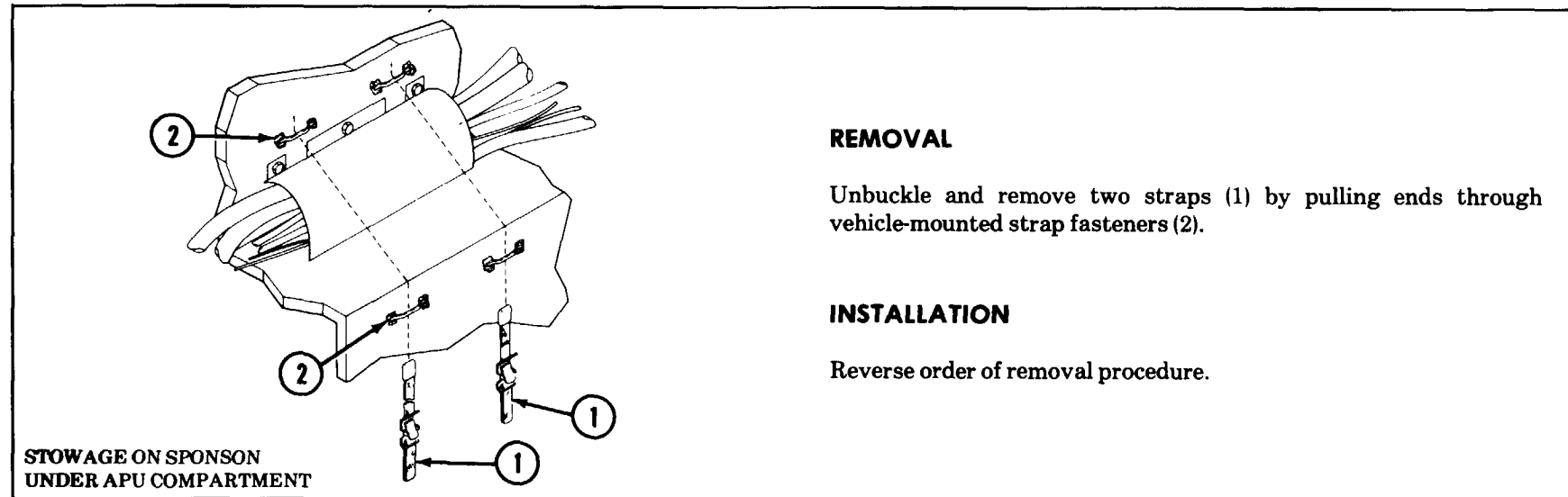
When installing net, avoid overstretching net. Make sure screws are inserted properly and not cocked.

- A Install right rear and left rear stowage nets (1) with 17 screws (3) and 17 new lockwashers (4).
- B Secure nets (1) to vehicle ceiling by turning two stud fasteners (2).

## M45 PERISCOPE STORAGE BOX: REMOVAL AND INSTALLATION



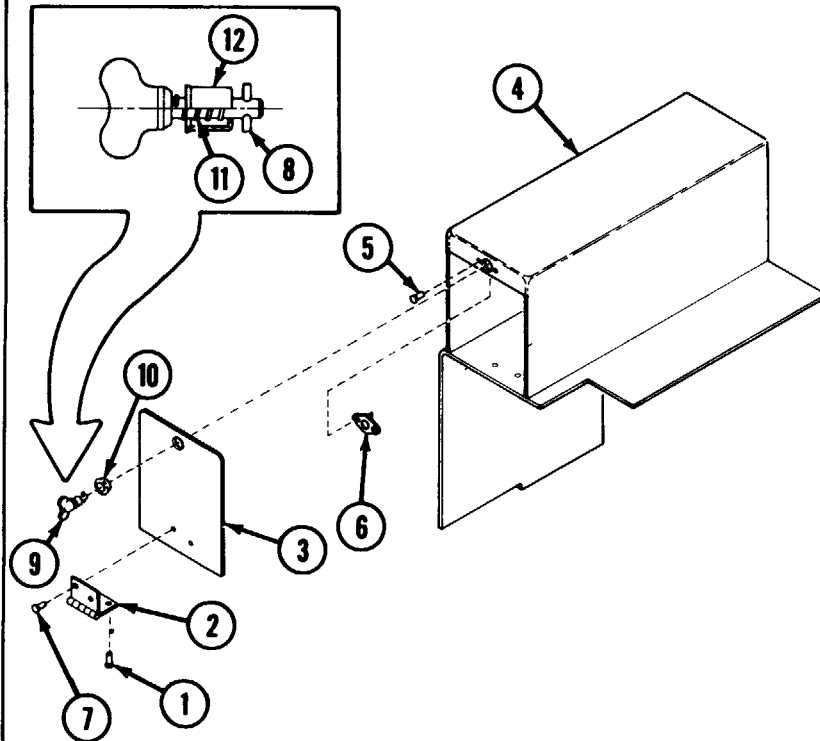
## STOWAGE STRAPS, FUZES: REMOVAL AND INSTALLATION



TA310333

**DRIVER'S STOWAGE BOX: DISASSEMBLY AND ASSEMBLY****INITIAL SETUP**Test Equipment/Special Tools:

Blind hand riveter (item 47, Appx B)  
 Bit, drill, 3/16 in. (item 46, Appx B)  
 Drill, portable electric (item 50, Appx B)

**DISASSEMBLY**

- A Drill out two rivets (1) releasing hinge (2) and door (3) from stowage box (4).
- B Drill out two rivets (5) releasing turnlock receptacle (6) from box (4).
- C Take door (3) and attached parts to suitable workbench.
- D Drill out two rivets (7) releasing hinge (2) from door (3).
- E Drive cross pin (8) from stud assembly (9). Pull stud assembly (9) from turnlock eyelet (10). Reinsert cross pin (8) into stud assembly (9) to avoid losing spring (11) and spring cup (12).
- F Drive turnlock eyelet (10) from door (3).

**ASSEMBLY**

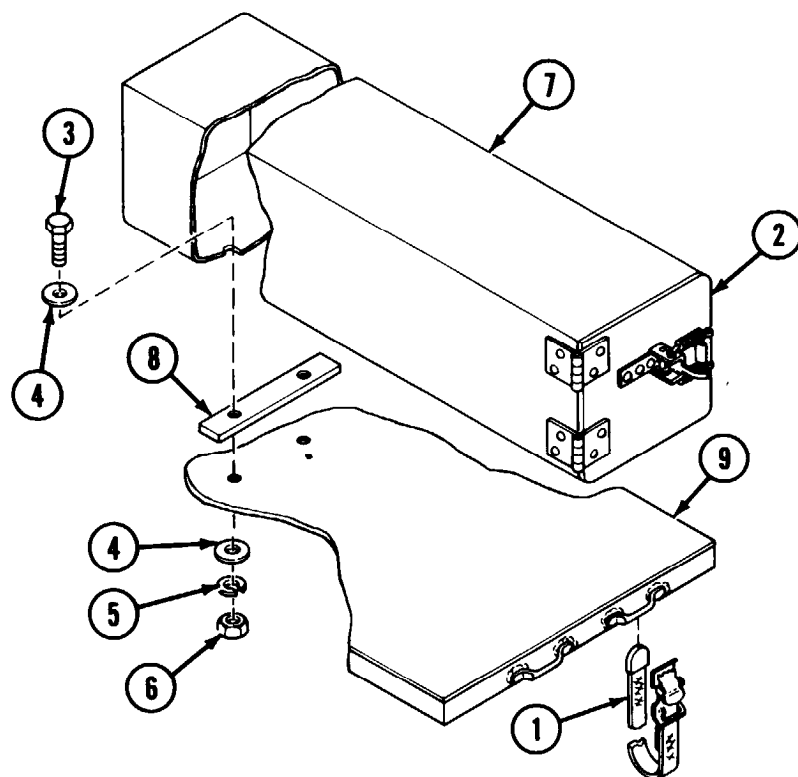
- A Drive turnlock eyelet (10) into door (3).
- B Remove cross pin (8). Press stud assembly (9) through turnlock eyelet (10) to compress spring cup (12) and spring (11). Insert cross pin (8).
- C Install hinge (2) on door (3), with two rivets (7).
- D Return to driver's compartment.
- E Install turnlock receptacle (6) on stowage box (4), with two rivets (5).
- F Install hinge (2) and attached parts on stowage box (4) with two rivets (1).
- G Close door (3). Check fit and engagement of turnlock parts.

## NBC STOWAGE BOX: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Personnel Required:

Two



### REMOVAL

- A Open and secure personnel side door.
- B Remove restraint straps (1) (p 11-22).
- C Open NBC storage box door (2).
- D Remove four screws (3), eight flat washers (4), four lockwashers (5) and four nuts (6). Discard lockwashers.
- E Remove storage box (7) and two spacers (8) from right front canister shelf (9).

### INSTALLATION

- A Position two spacers (8) and storage box (7) on right front canister shelf (9).
- B Install four screws (3), eight flat washers (4), four new lockwashers (5) and four nuts (6).
- C Close and secure NBC storage box door (2).
- D Install restraint straps (1) (p 11-22).
- E Close and secure personnel side door.

TA57455



# CHAPTER 11

## AMMUNITION STOWAGE RACKS MAINTENANCE PROCEDURE

---

### CHAPTER OVERVIEW

This chapter contains instructions for removal and installation of projectile rack, rack supports and restraints, and canister compartment components.

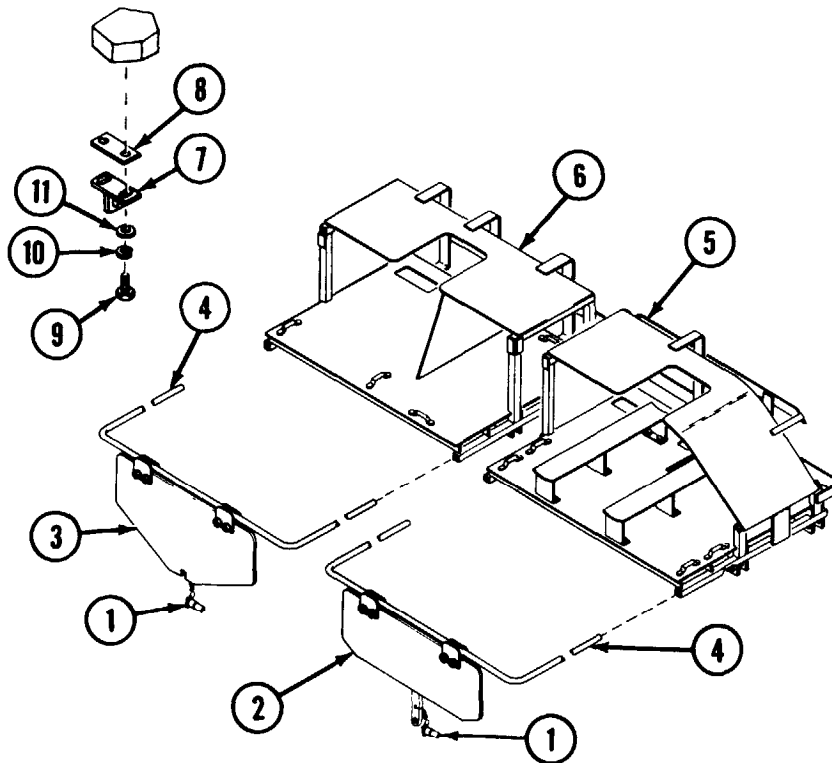
Section I Projectile Racks  
Section II Canister Compartments  
Section III Canister Restraints

## Section I PROJECTILE RACKS

## PROJECTILE RACK STORAGE BOX GUARD PLATE ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

**INITIAL SETUP**Equipment Conditions:

Both projectile racks removed from vehicle (p 11-5).  
Stowage boxes empty.

**REMOVAL**

- A Pull two quick-release pins (1) and fold down two guard plates (2 and 3).
- B Grasp pivot bar (4) of each guard plate (2 and 3) and pull straight out, and remove from projectile stowage boxes (5 and 6).

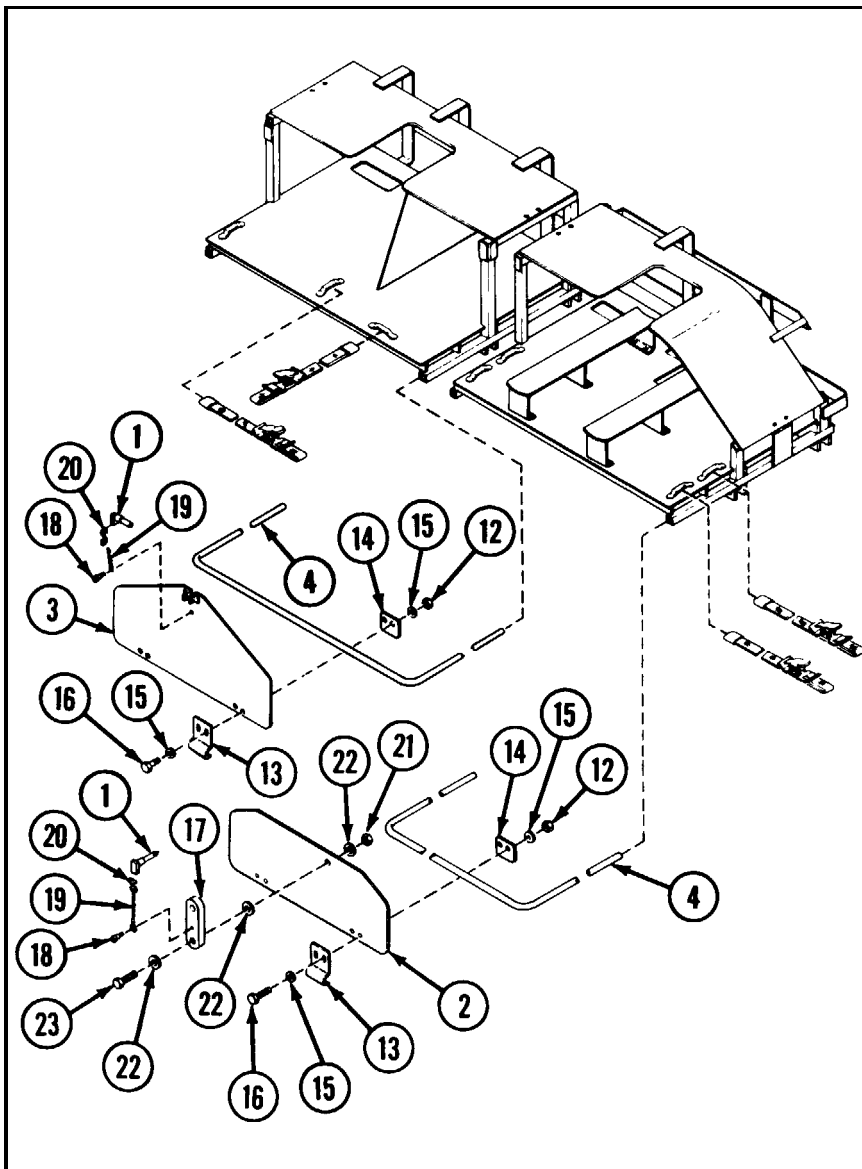
**NOTE**

Note number, thickness and position of shims to ensure proper installation.

- C Remove two brackets (7) and shims (8) from vehicle top doors by removing two screws (9), two lockwashers (10) and two flat washers (11) from each bracket (7). Discard lockwashers.



**PROJECTILE RACK STOWAGE BOX GUARD PLATE ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION  
(CONTINUED)**



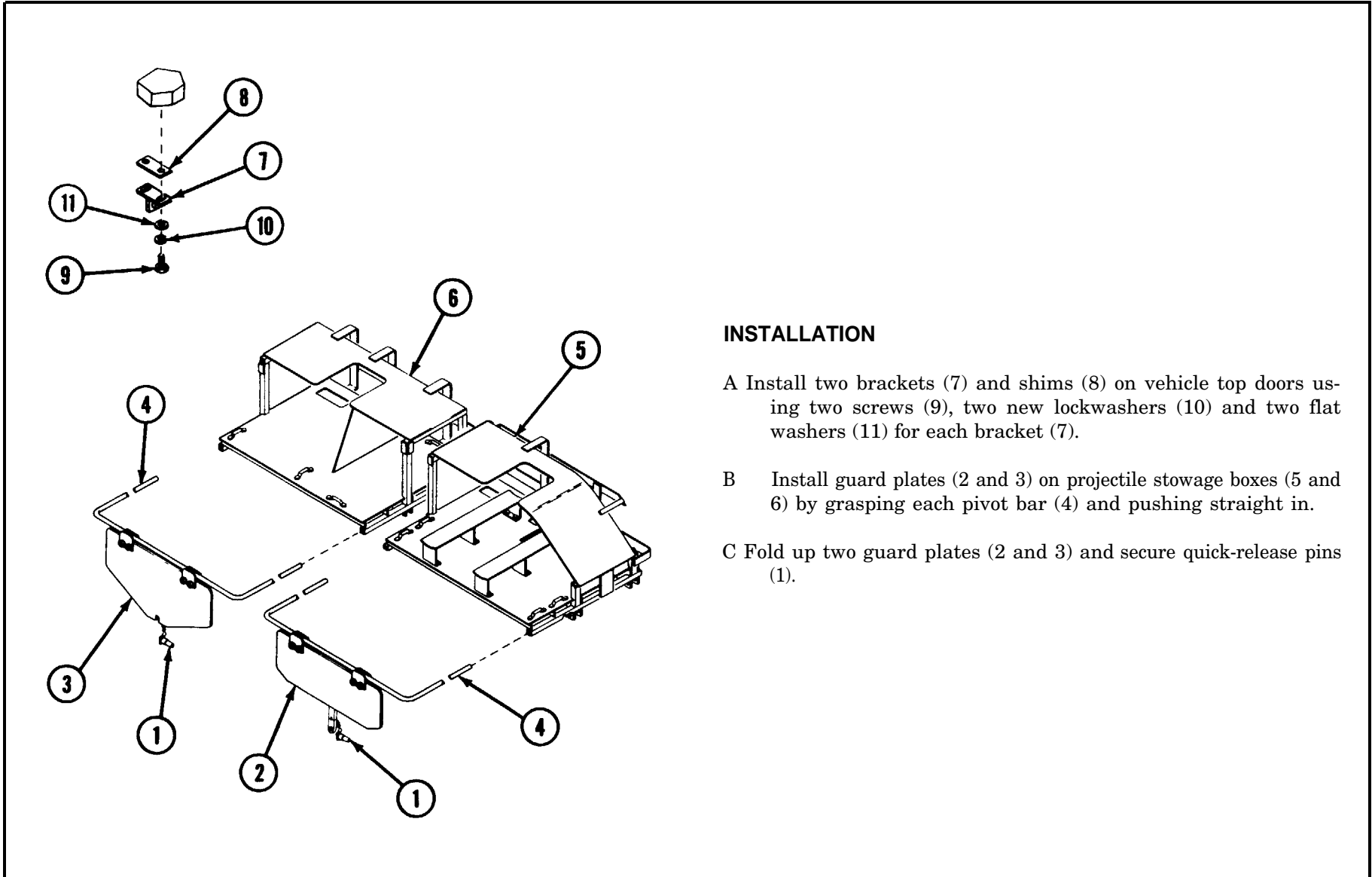
**DISASSEMBLY**

- A Remove guard plates (2 and 3) from pivot bars (4) by removing eight nuts (12), four supports (13), four plates (14), 16 flat washers (15), and eight screws (16).
- B Remove quick-release pin (1) from guard plate (2) and bar (17) by removing screw (18). Remove other quick-release pin (1) from guard plate (3) by removing screw (18).
- C Remove chain (19) and S-hook (20) from pins (1).
- D Remove nut (21) three flat washers (22) bar (17) and screw (23) from guard plate (2).

**ASSEMBLY**

- A Install S-hook (20) and chain (19) on each of two quick-release pins (1).
- B Install quick-release pins (1) on guard plate (3) and on bar (17) using screw (18) at each place.
- C Install guard plates (2 and 3) on pivot bars (4) using eight screws (16), two supports (13) two plates (14), eight flat washers (15) and eight nuts (12).
- D Install screw (23), bar (17), three flat washers (22) and nut (21) on guard plate (2).

**PROJECTILE RACK STORAGE BOX GUARD PLATE ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION  
(CONTINUED)**



**INSTALLATION**

- A Install two brackets (7) and shims (8) on vehicle top doors using two screws (9), two new lockwashers (10) and two flat washers (11) for each bracket (7).
- B Install guard plates (2 and 3) on projectile stowage boxes (5 and 6) by grasping each pivot bar (4) and pushing straight in.
- C Fold up two guard plates (2 and 3) and secure quick-release pins (1).

## PROJECTILE RACK BASE, SUPPORTS AND VEHICLE WALL-MOUNTED RESTRAINTS: REMOVAL AND INSTALLATION

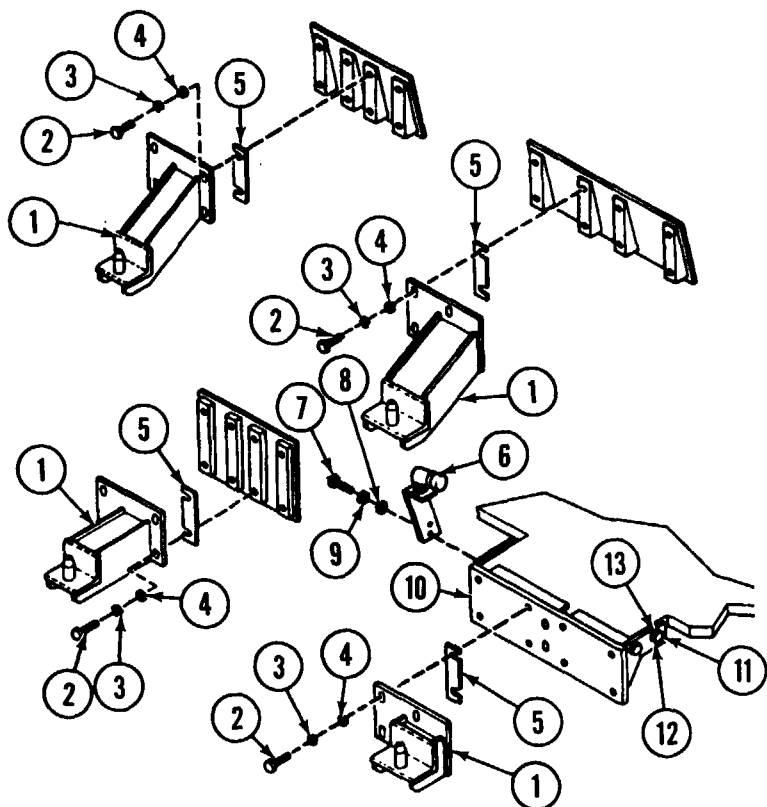
### INITIAL SETUP

#### Materials/Parts:

Zinc chromate paste (item 46, Appx D)

#### Equipment Condition:

Heating and ventilating distribution hoses removed (p 14-61).  
Both projectile racks removed (p 11-5).



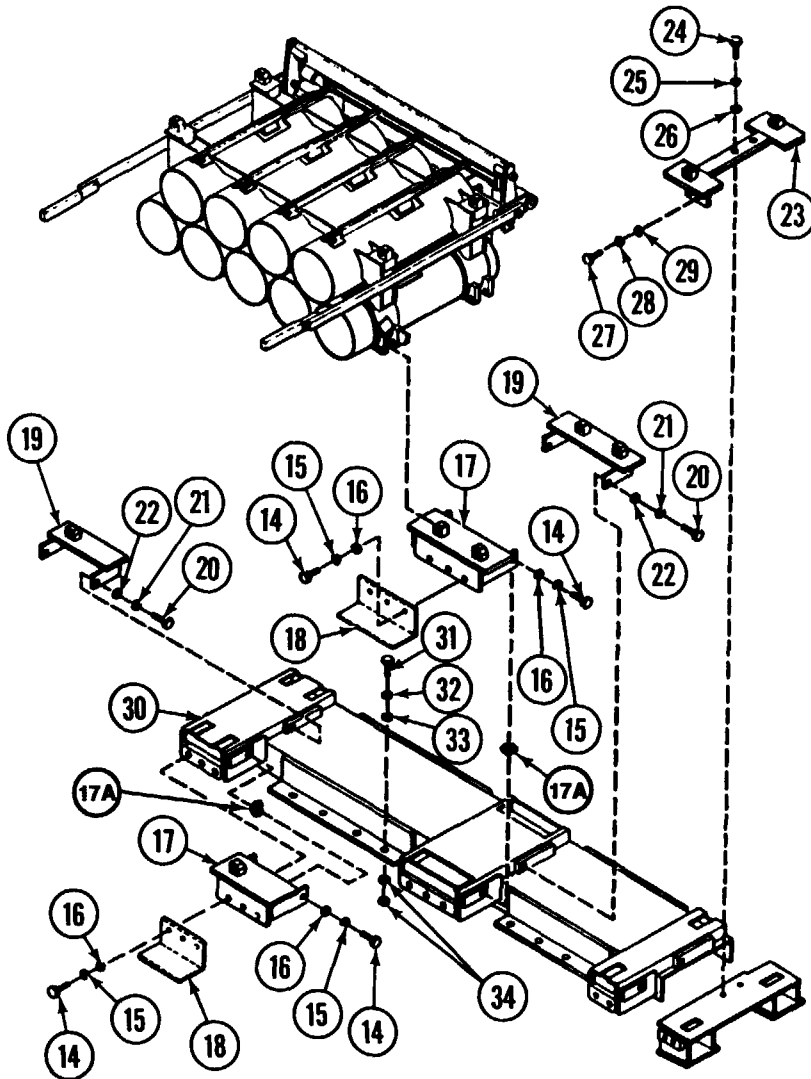
### REMOVAL

### NOTE

Projectile rack restraints, supports and adapter are adjustable. Scribe marks are required before removal for correct installation of projectile racks. Note number of shims and install same number at installation.

- A Remove four rear rack restraints (1) from vehicle wall by removing from each, four screws (2), four lockwashers (3), four flat washers (4) and shims (5). Discard lockwashers.
- B Remove air cleaner indicator and bracket (6) by removing screw (7), flat washer (8) and lockwasher (9). Discard lockwasher.
- C Remove bracket (10) from forward bulkhead by removing four screws (11), four lockwashers (12) and four flat washers (13). Discard lockwashers.

## PROJECTILE RACK BASE, SUPPORTS AND VEHICLE WALL-MOUNTED RESTRAINTS: REMOVAL AND INSTALLATION (CONTINUED)



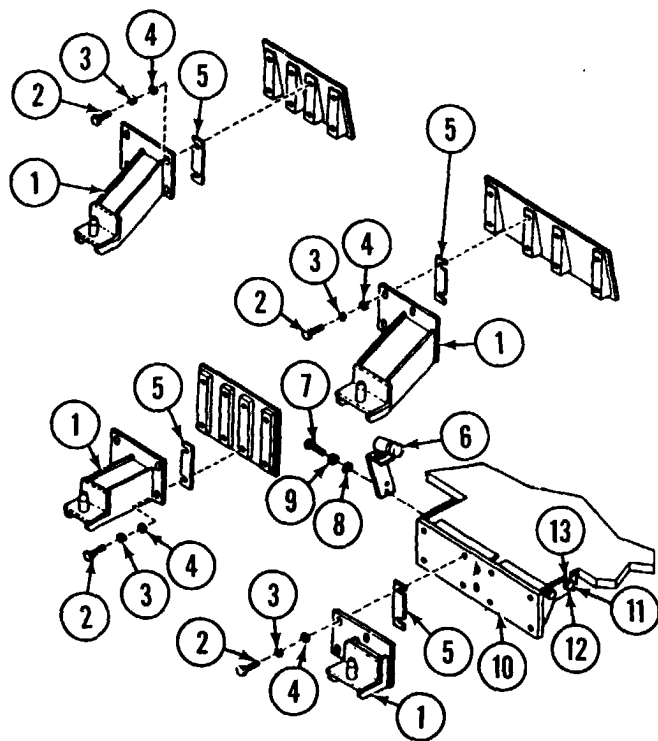
- D Remove five screws (14), five lockwashers (15) and five flat washers (16) from both right and left front base supports (17). Remove supports (17), shims (17A) and angles (18) from vehicle floor. Discard lockwashers.
- E Remove right and left rear base supports (19) by removing from each, two screws (20), two lockwashers (21) and two flat washers (22). Discard lockwashers.
- F Remove adapter (23) from vehicle floor by removing two screws (24), two lockwashers (25) and two flat washers (26) from the top; and two screws (27), two lockwashers (28), and two flat washers (29) from the end. Discard lockwashers.

**NOTE**

Record number and location of flat washers used to shim rack base to ensure proper installation

- G Remove rack base (30) from vehicle floor by removing 16 screws (31), 16 lockwashers (32), 16 flat washers (33), and 32 flat washers shim (34). Discard lockwashers.

**PROJECTILE RACK BASE, SUPPORTS AND VEHICLE WALL-MOUNTED RESTRAINTS REMOVAL AND INSTALLATION (CONTINUED)**



**INSTALLATION**

**NOTES**

- Aline restraints, supports and adapter with scribe marks for correct positioning at installation.
- Apply zinc chromate paste (item 46, Appx D) between all steel and aluminum mating surfaces.
- Ensure that shims are installed in proper number and location.

- A Install rack base (30) on vehicle hull floor with 16 screws (31), 16 new lockwashers (32), 16 flat washers (33), and 32 flat washers shims(34).
- B Install adapter (23) on vehicle floor with two screws (24), two new lockwashers (25) and two flat washers (26) from the top; and two screws (27), two new lockwashers (28), and two flat washers (29) from the end.
- C Install right and left rear base supports (19) with two screws (20), two new lockwashers (21) and two flat washers (2) for each support.
- D Install right and left front base supports (17), shims (17A) and angles (18) on vehicle floor with five screws (14), five new lockwashers (5) and five flat washers (16) for each support.

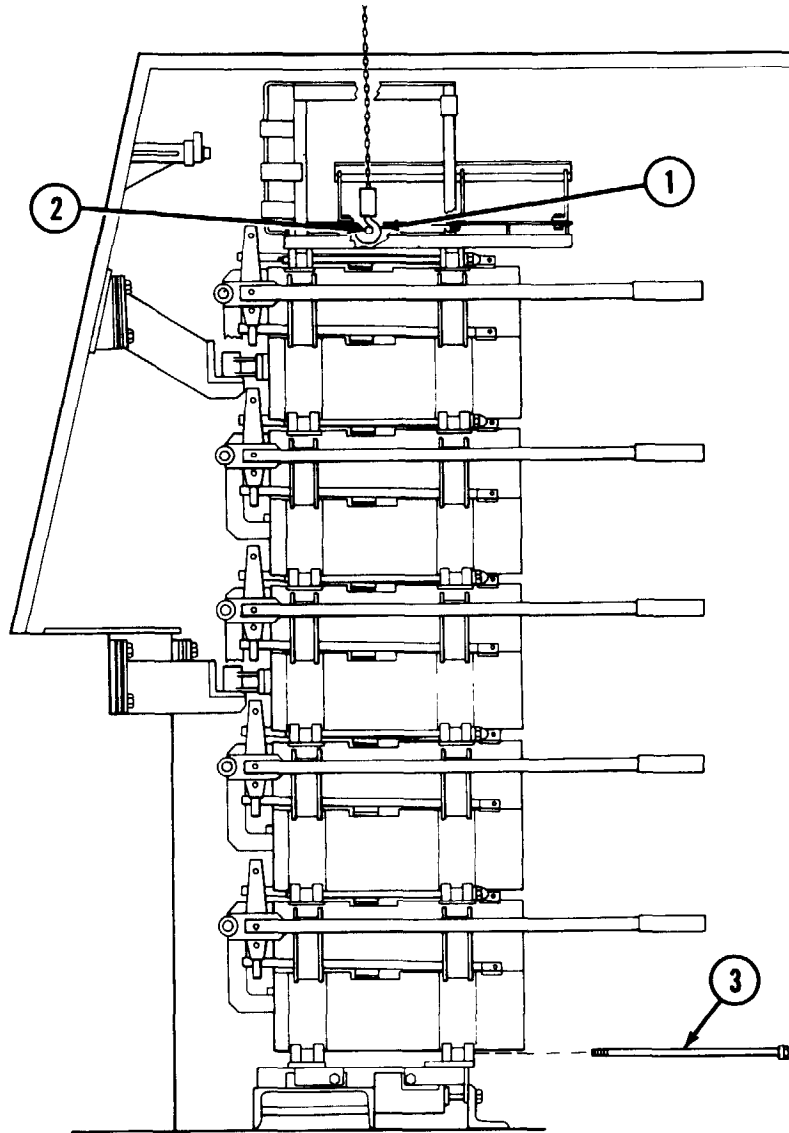
**NOTE**

Install correct restraints in marked positions. Install correct number of shims between each restraint and bulkhead mounting area.

- E Install bracket (10) on forward bulkhead with four screws (11), four new lockwashers (12) and four flat washers (13).
- F Install air cleaner indicator and bracket assembly (6) with screw (7), flat washer (8) and new lockwasher (9).
- G Install four rear rack restraints (1) and shims (5) on vehicle wall with four screws (2), four new lockwashers (3) and four flat washers (4) for each.



## PROJECTILE RACK: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### INITIAL SETUP

#### Materials/Parts:

Zinc chromate paste (item 46, Appx D)

#### Personnel Required:

Two

#### Test Equipment/Special Tools:

Torque wrench, 0-175 lb-ft (item 74, Appx B)

Suitable lifting device

### CAUTION

Stowage boxes and projectile racks must be empty before attempting to move rack assembly.

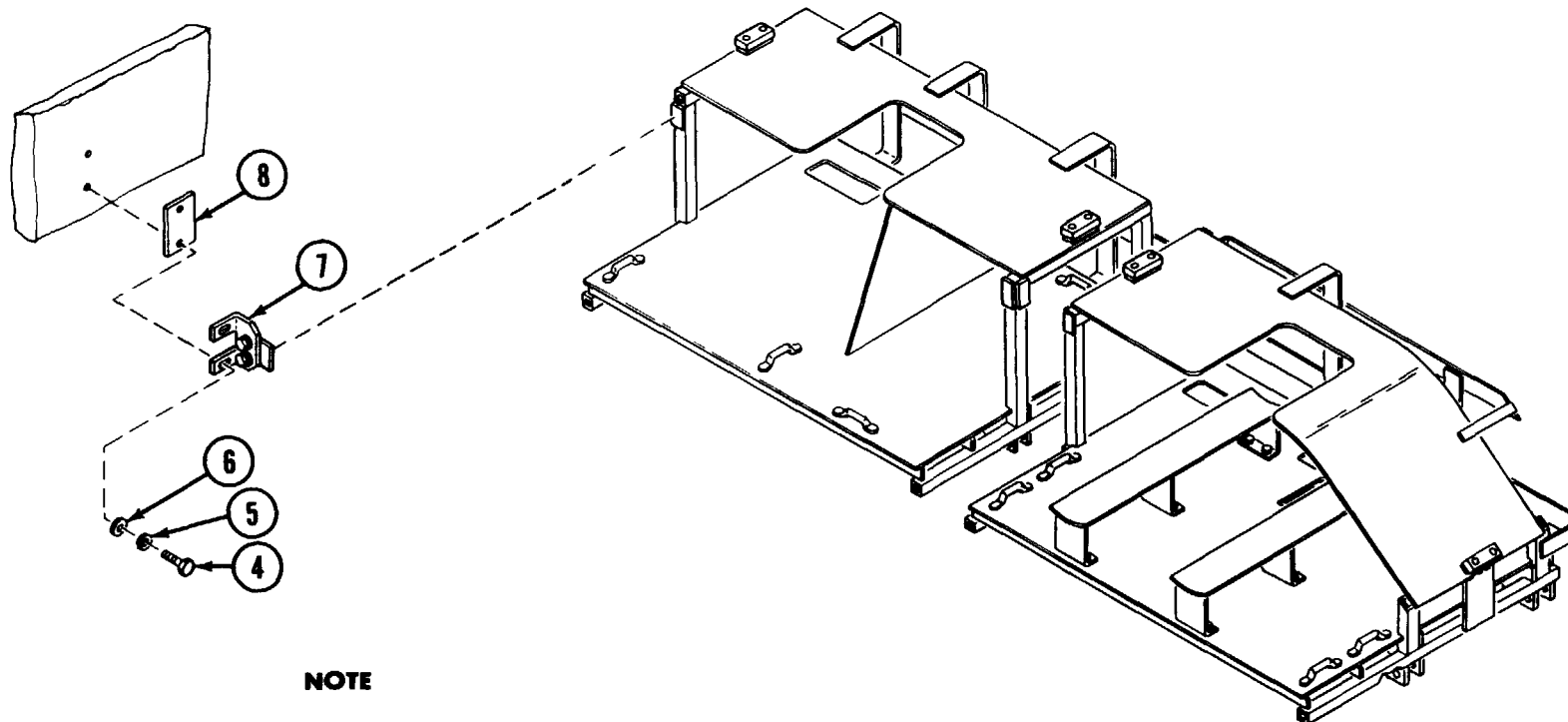
### NOTE

Projectile racks are removed from vehicle through top doors.

### REMOVAL

- A Use suitable lifting device and place hook (1) on bar (2) of projectile rack assembly.
- B Remove two rods (3).

TA57472

**PROJECTILE RACK: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****NOTE**

Step C applies to left projectile rack only.

- C Remove two screws (4), two lockwashers (5) and two flat washers (6) that secure bracket (7) and spacer (8) to outside APU compartment wall. Discard lockwashers.

**WARNING**

Stand clear of projectile racks during removal from vehicle to prevent possible personal injury.

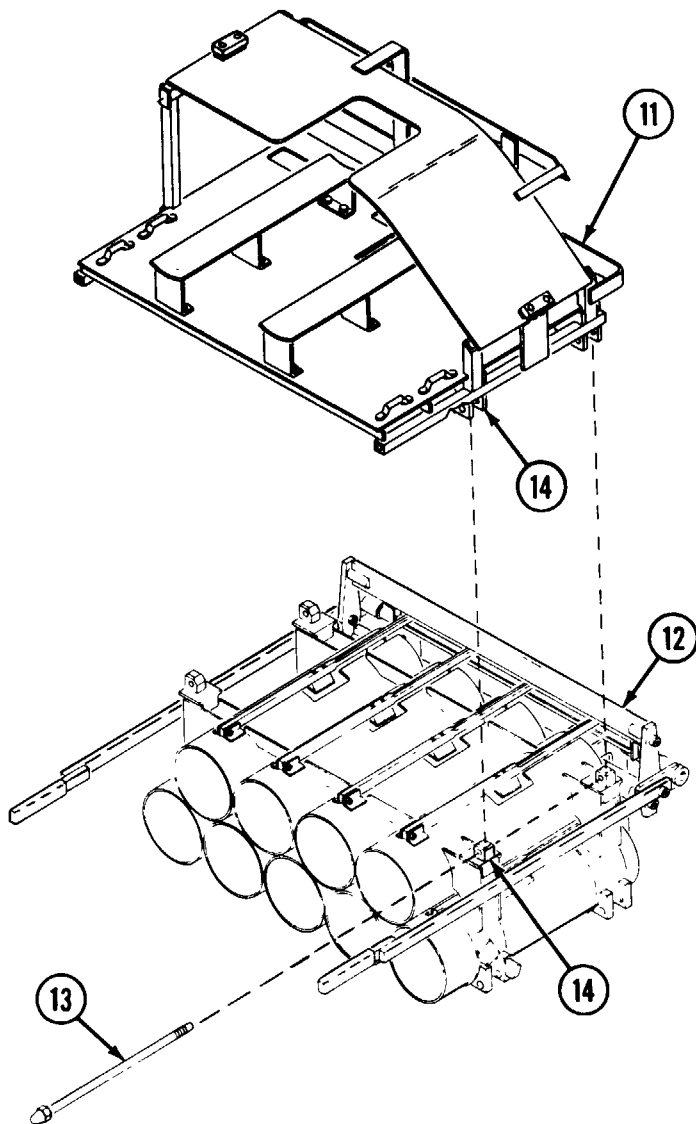
**CAUTION**

Place bottom two handles of each unit in up position before setting rack on flat surface to avoid equipment damage.

- D Lift rack assembly from vehicle and place on a solid floor in a suitable work area for further disassembly. Remove lifting device.



## PROJECTILE RACK: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### DISASSEMBLY

- A Remove stowage box (11) from top projectile rack (12) by unscrewing and removing two rods (13).
- B Lift stowage box (11) from rack assembly.

### NOTE

Note order of rack removal. Make sure racks are stacked in same order as removed to assure rack restraints will engage properly.

- C Separate projectile racks (12) by removing two rods (13) from each rack (12).

### ASSEMBLY

### NOTE

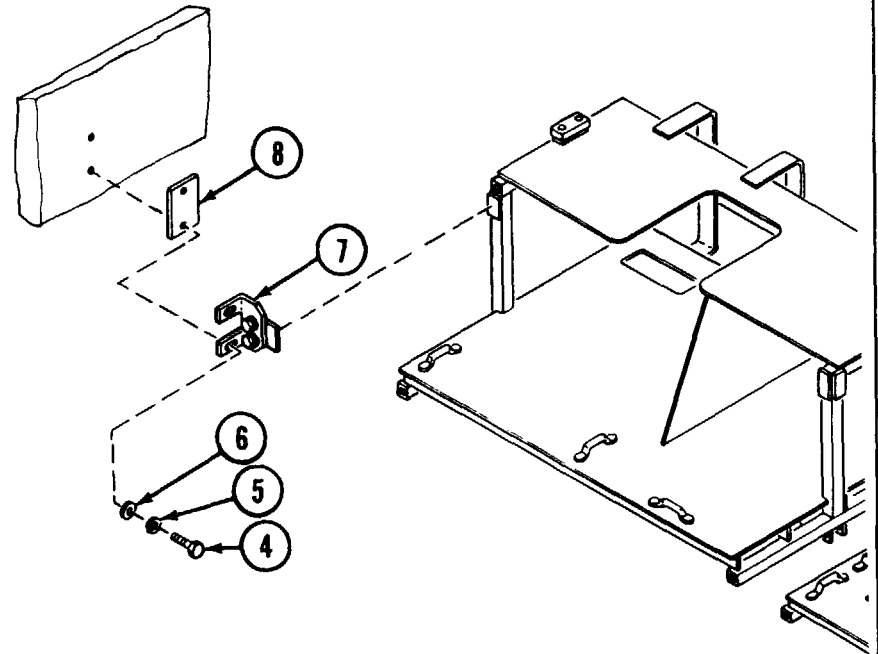
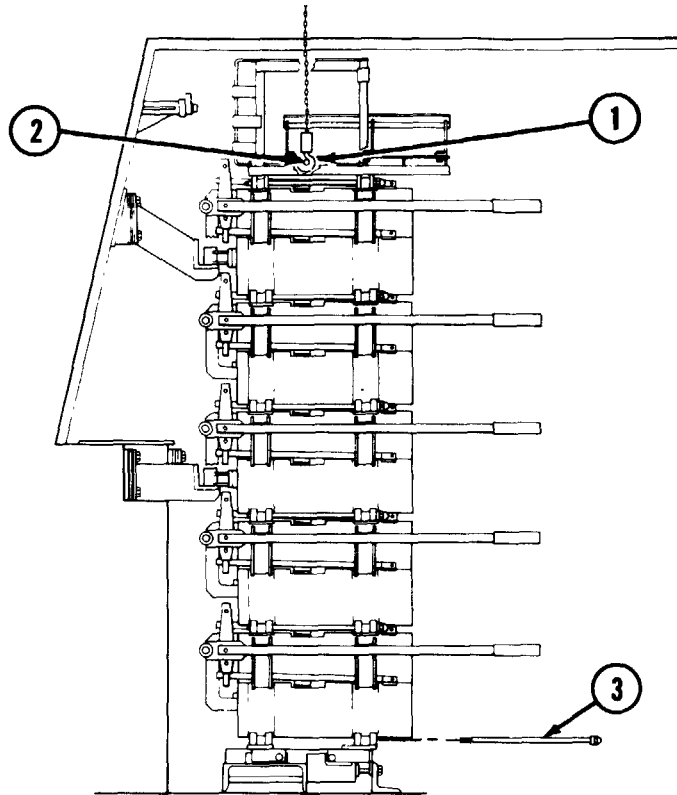
Make sure rack restraint is on third and fifth racks from bottom.

- A Stack racks (12), making sure interlocking blocks (14) properly engage, and install two rods (13).
- B Install stowage box (11) on top rack (12) and secure interlocking blocks (14) together with two rods (13).

TA57474

TM 9-2350-267-20

**PROJECTILE RACK: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**INSTALLATION**

**NOTE**

Apply zinc chromate paste (item 46, Appx D) between all steel and aluminum mating surfaces.

A Install hook (1) on bar (2) of projectile rack assembly and use suitable lifting device to lift rack into vehicle.

**NOTE**

Step B applies to left projectile rack only.

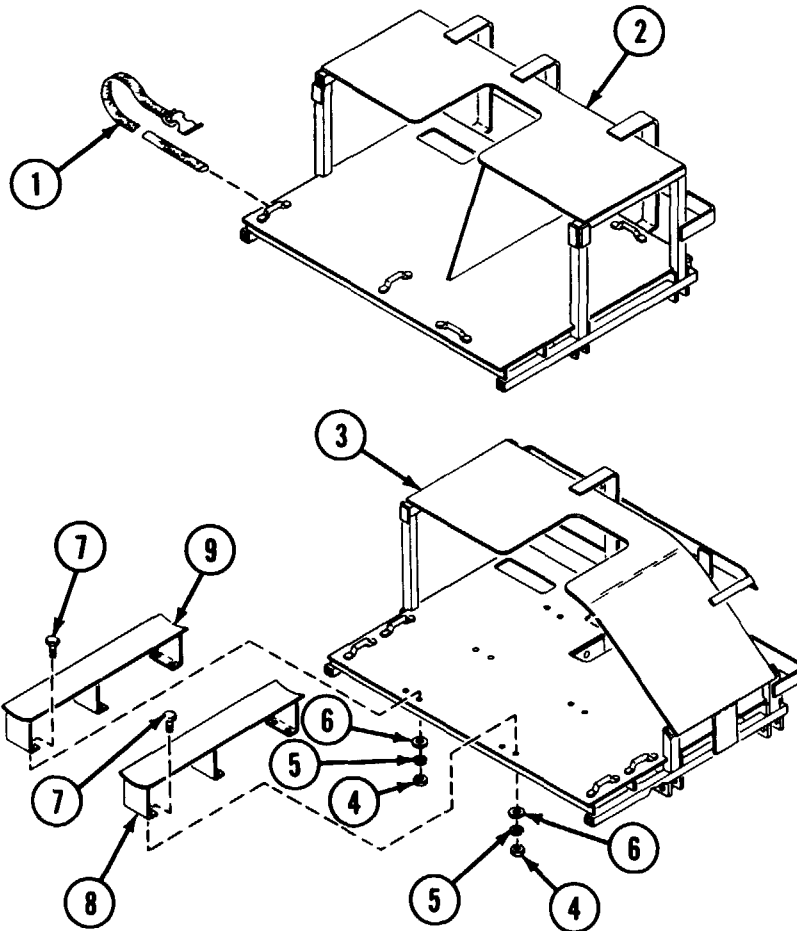
- B Install bracket (7) and spacer (8) to outside APU compartment wall with two screws (4), two new lockwashers (5) and two flat washers (6).
- C Install two rods (3). Tighten to 50 lb-ft.
- D Remove lifting device.

## PROJECTILE RACK CANISTER STORAGE BOXES: DISASSEMBLY AND ASSEMBLY

### INITIAL SETUP

#### Equipment Condition:

Projectile rack assembly removed (p 11-5).



### DISASSEMBLY

- A Unbuckle and remove four straps (1) from two storage boxes (2 and 3).
- B Remove from right storage box (3), 12 nuts (4), 12 flat washers (5), 12 lockwashers (6), 12 screws (7) and two trays (8 and 9). Discard lockwashers.

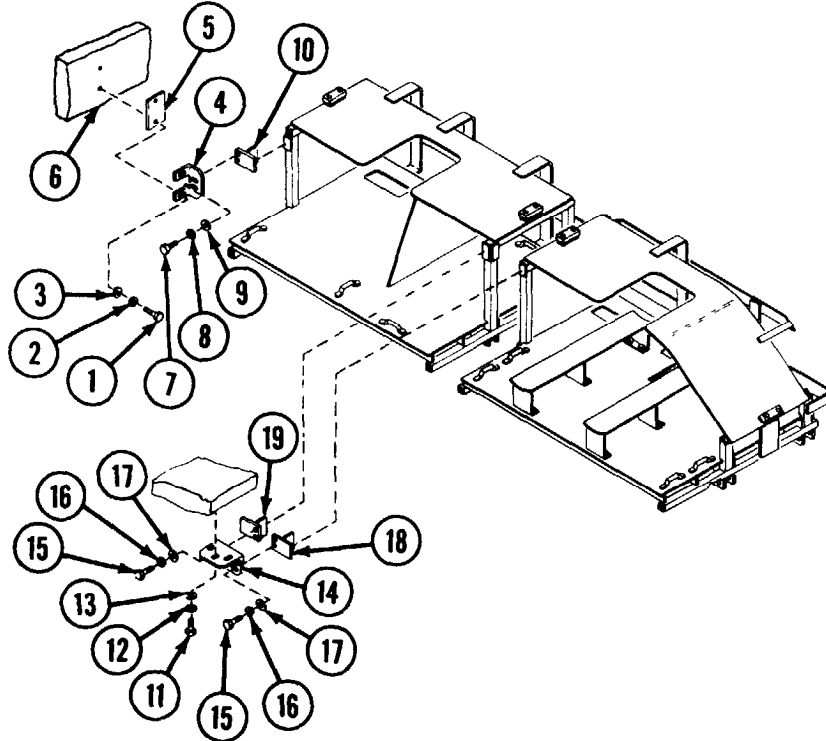
### ASSEMBLY

- A Install trays (8 and 9) in right storage box (3) using six screws (7), six flat washers (5) six new lockwashers (6) and six nuts (4) on each tray.
- B Install four straps (1) to storage boxes (2 and 3).

TA57476

**PROJECTILE RACK ASSEMBLY BRACES: REMOVAL AND INSTALLATION****INITIAL SETUP**Materials/Parts:

Zinc chromate paste (item 46, Appx D).

**REMOVAL**

- A Remove two screws (1), two lockwashers (2) and two flat washers (3), and remove angle (4) and spacer (5) from outside APU wall (6). Discard lockwashers.

- B Remove two screws (7), two lockwashers (8) and two flat washers (9) and remove brace (10) from angle (4). Discard lockwashers.
- C Remove three screws (11), three lockwashers (12) and three flat washers (13), and remove angle (14) from middle top door. Discard lockwashers.
- D Remove four screws (15), four lockwashers (16) and four flat washers (17), and remove two braces (18 and 19) from angle (14). Discard lockwashers.

**INSTALLATION**

- A Apply zinc chromate paste (item 46, Appx D) between the following mating surfaces: spacer (5) and support angle (4); angle (14) and middle top door.
- B Adjust braces (10, 18 and 19) to provide snug fit on projectile racks.
- C Install two braces (18 and 19) on angle (14) using four screws (15), four new lockwashers (16) and four flat washers (17).
- D Install angle (14) on middle top door using three screws (11), three new lockwashers (12), and three flat washers (13).
- E Install brace (10) on angle (4) using two screws (7), two new lockwashers (8), and two flat washers (9).
- F Install angle (4) and spacer (5) on APU wall (6) using two screws (1), two new lockwashers (2) and two flat washers (3).

## PROJECTILE RACK REMOVAL AID: DISASSEMBLY, INSPECTION AND REPAIR, AND ASSEMBLY

### INITIAL SETUP

#### Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

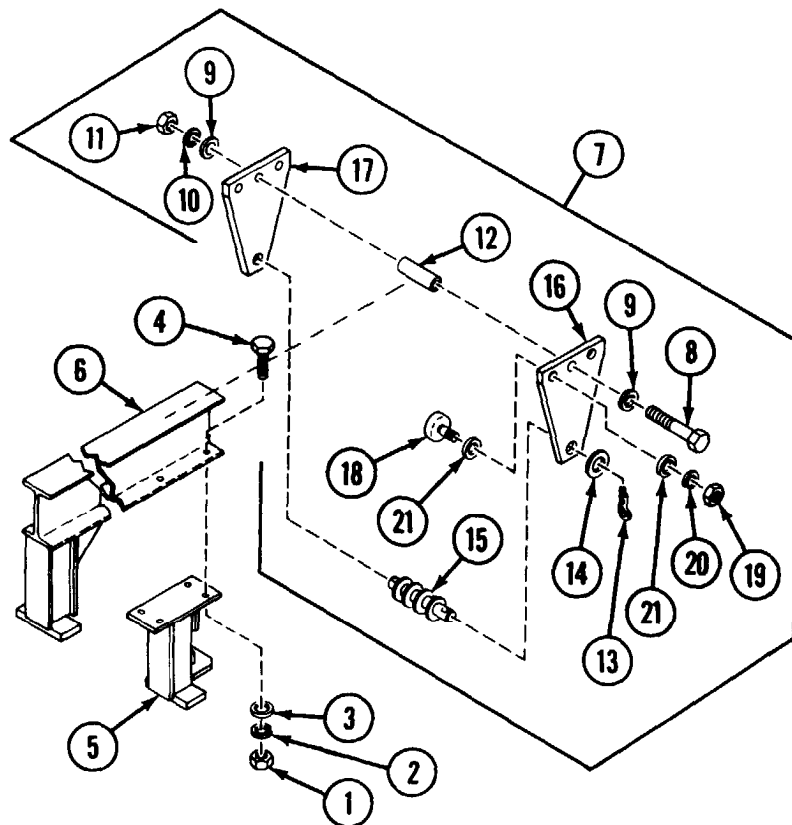
#### Materials/Parts:

Adhesive (item 4, Appx D)

Dry-cleaning solvent (item 20, Appx D)

#### References:

TM 9-214



### DISASSEMBLY

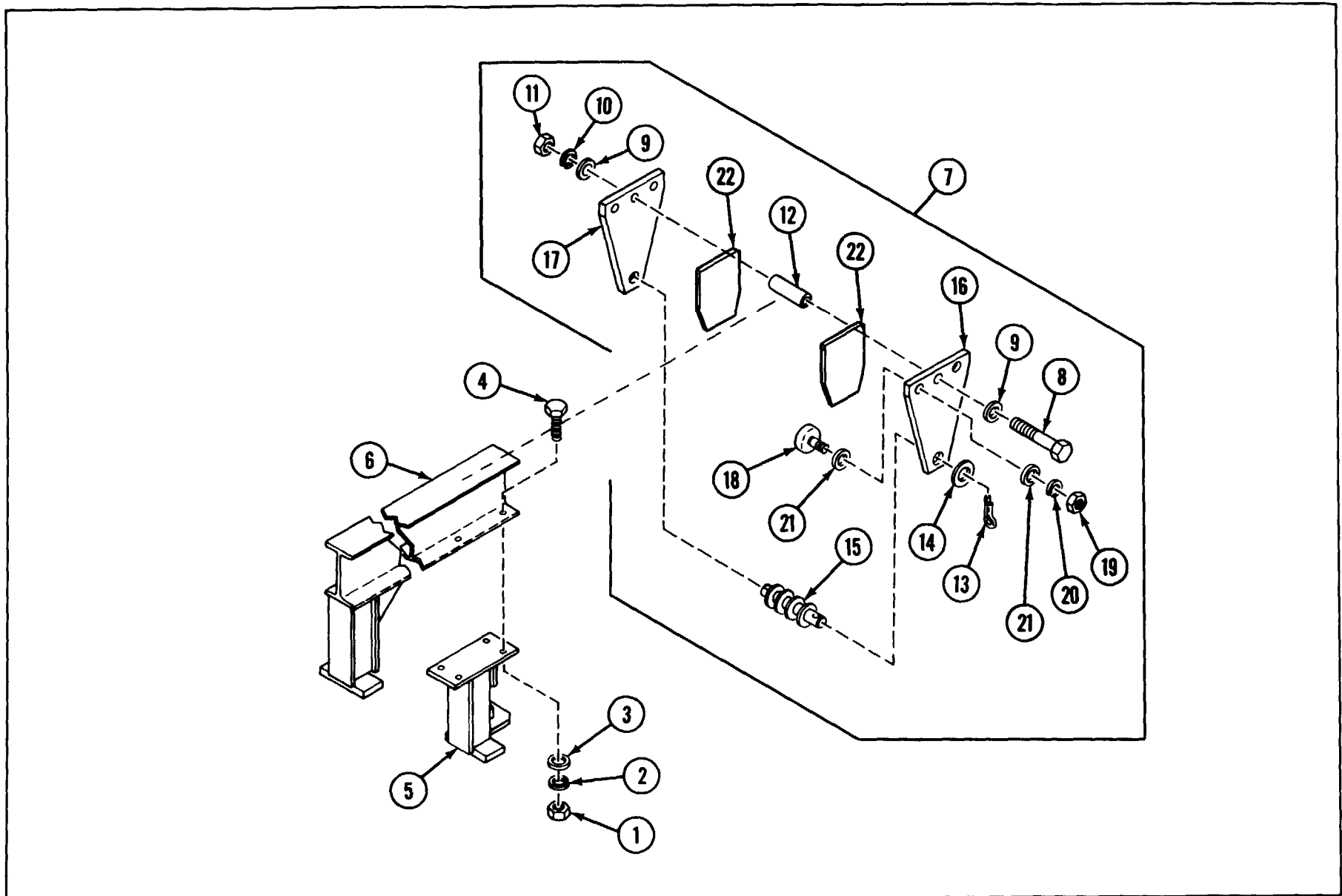
- A Remove four nuts (1), four lockwashers (2), four flat washers (3) and four screws (4) releasing extension (5) from beam (6). Discard lockwashers.
- B Slide trolley assembly (7) from end of beam (6).
- C Remove screw (8), two flat washers (9), lockwasher (10), nut (11) and spacer (12). Discard lockwasher.
- D Remove two cotter pins (13) and two flat washers (14) from shaft (15), and separate plates (16 and 17). Discard cotter pins.
- E Remove each of four cam followers (18) by removing nut (19), lockwasher (20) and two flat washers (21). Discard lockwasher.

### INSPECTION AND REPAIR

- A Inspect shaft (15) extension (5), beam (6) and plates (16 and 17) for cracks, bends or damage. Replace defective parts.
- B Inspect four cam followers (18) in accordance with TM 9-214.

TA57478

PROJECTILE RACK REMOVAL AID: DISASSEMBLY, REPAIR AND ASSEMBLY (CONTINUED)



## PROJECTILE RACK REMOVAL AID: DISASSEMBLY, INSPECTION AND REPAIR, AND ASSEMBLY (CONTINUED)

### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy, get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100° F (38° C); for Type II it is 138° F (50° C). Do not use near open flame or excessive heat.

- c** Inspect nylon wear strips (22) for cracks, tears and gouges. If defective, remove from-plate (16 or 17) with wire brush (item 48, Appx B) and dry-cleaning solvent (item 20, Appx D).
- D** Apply adhesive (item 4, Appx D) to rough side of new wear strip (22). Allow to dry until tacky (5 minutes). Press onto plate (16 or 17).

### ASSEMBLY

- A** Install each of four cam followers (18) on plate (16 or 17) with two flat washers (21), new lockwasher (20) and nut (19).
- B** Install shaft (15) between plates (16 and 17) with two flat washers (14) and two new cotter pins (13).
- c** Connect plate (16), spacer (12) and plate (17) with screw (8), two flat washers (9), one new lockwasher (10) and nut (11).
- D** Slide trolley assembly (7) onto beam (6).
- E** Install extension (5) on beam (6) with four screws (4), four flat washers (3), four new lockwashers (2) and four nuts (1).

## Section II CANISTER COMPARTMENTS

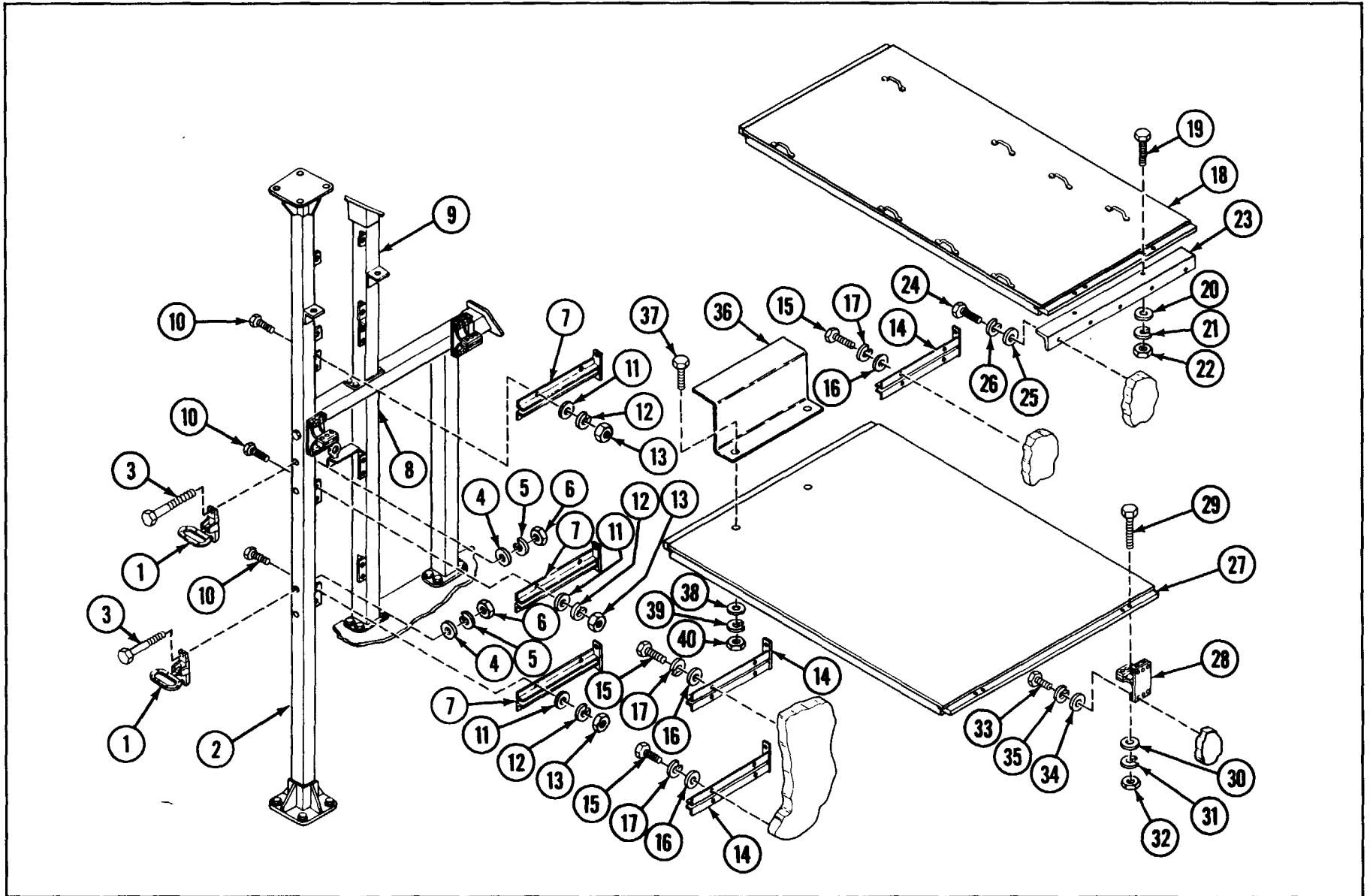
### RIGHT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION

#### REMOVAL

- A Remove portable fire extinguisher and bracket from front of canister rack (p 10-7).
- B Remove NBC hose and air outlet orifice connector (p 14-8).
- C Remove AFES cylinder bottle No. 2 (p 14-28) and disconnect AFES harness wire secured to canister rack.
- D Remove AFES cylinder bottle No. 2 bracket (p 14-30).
- E Remove decontamination apparatus and bracket from front of canister rack (p 10-9).
- F Remove all restraint bars and restraint straps (p 11-21).
- G Remove two folding steps (1) from front post (2) by removing from each, two screws (3), two flat washers (4), two lockwashers (5) and two nuts (6).
- H Remove three guides (7) from front post (2) and middle and top posts (8 and 9) by removing from each, four screws (10), four flat washers (11), four lockwashers (12) and four nuts (13).
- I Remove three guides (14) from vehicle hull rear by removing from each, four screws (15), four flat washers (16) and four lockwashers (17).
- J Remove top shelf (18) by removing four screws (19), four flat washers (20), four lockwashers (21) and four nuts (22).
- K Remove angle (23) from vehicle hull rear by removing five screws (24), five flat washers (25) and five lockwashers (26).
- L Remove shelf (27) from isolators (28) by removing eight screws (29), eight flat washers (30), eight lockwashers (31) and eight nuts (32).
- M Remove two isolators (28) from vehicle hull rear by removing from each, four screws (33), four flat washers (34) and four lockwashers (35).
- N Remove angle (36) from shelf (27) by removing two screws (37), two flat washers (38), two lockwashers (39) and two nuts (40).

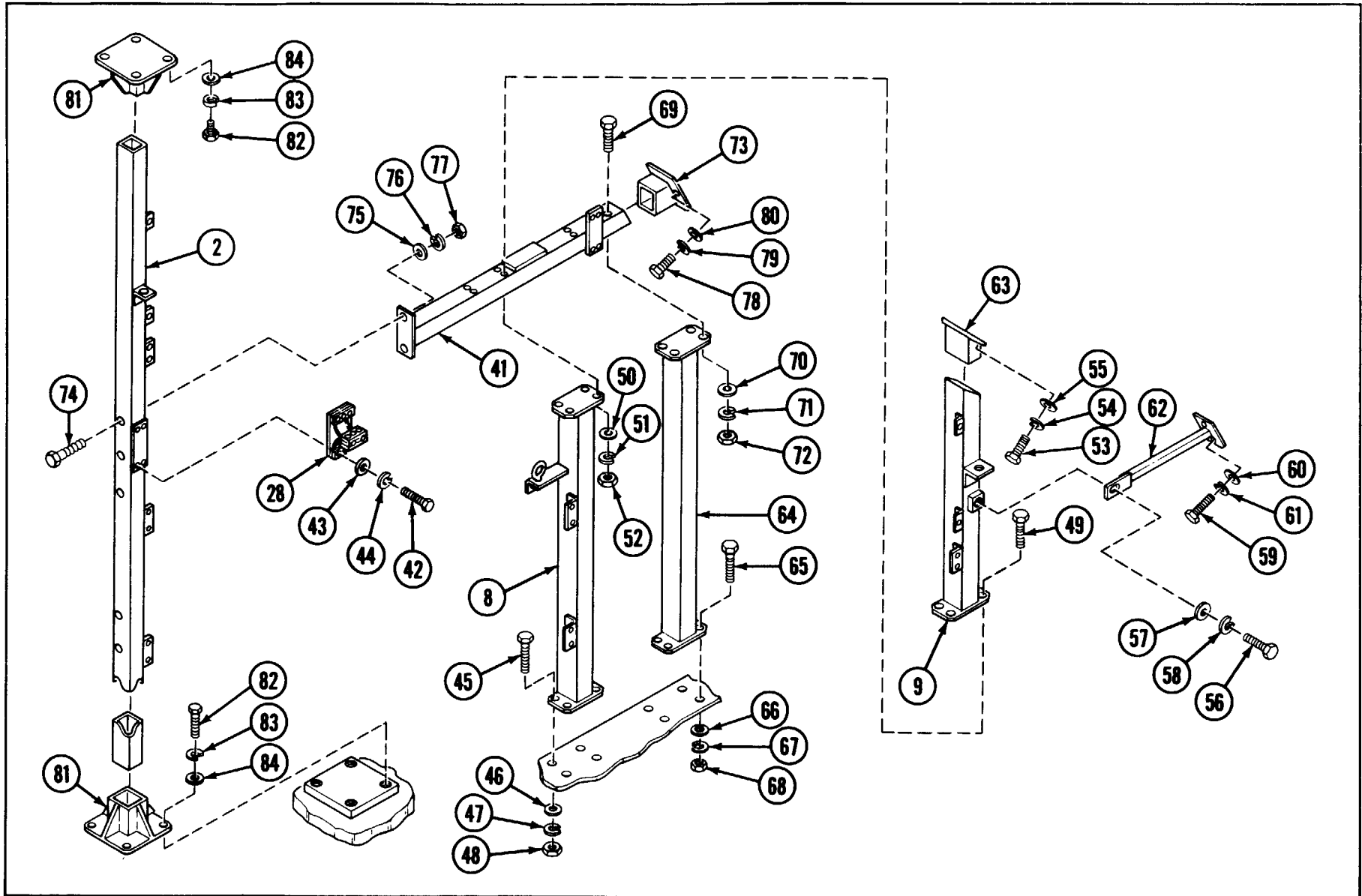


**RIGHT REAR CANISTER COMPARTMENT, SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)**



TA310189

**RIGHT REAR CANISTER COMPARTMENT, SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)**



## RIGHT REAR CANISTER COMPARTMENT, SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)

N Remove two isolators (28) from front post (2) and support (41) by removing from each, four screws (42), four flat washers (43) and four lockwashers (44).

O Remove middle post (8) by removing four screws (45), four flat washers (46), four lockwashers (47) and four nuts (48) at bottom, and four screws (49), four flat washers (50), four lockwashers (51) and four nuts (52) at top.

P Remove top post (9) by removing two screws (53), two lockwashers (54), two flat washers (55), screw (56), flat washer (57), lockwasher (58), two screws (59), two flat washers (60), two lockwashers (61) and bracket (62). Remove top post (9), and remove bracket (63) from vehicle ceiling.

Q Remove rear post (64) by removing four screws (65), four flat washers (66), four lockwashers (67) and four nuts (68) at bottom, and four screws (69), four flat washers (70), four lockwashers (71) and four nuts (72) at top.

R Remove support (41) from front post (2) and bracket (73) by removing one screw (74), one flat washer (75), one lockwasher (76) and one nut (77). Remove bracket (73) held by two screws (78), two lockwashers (79) and two flat washers (80). Remove support (41) from bracket (73).

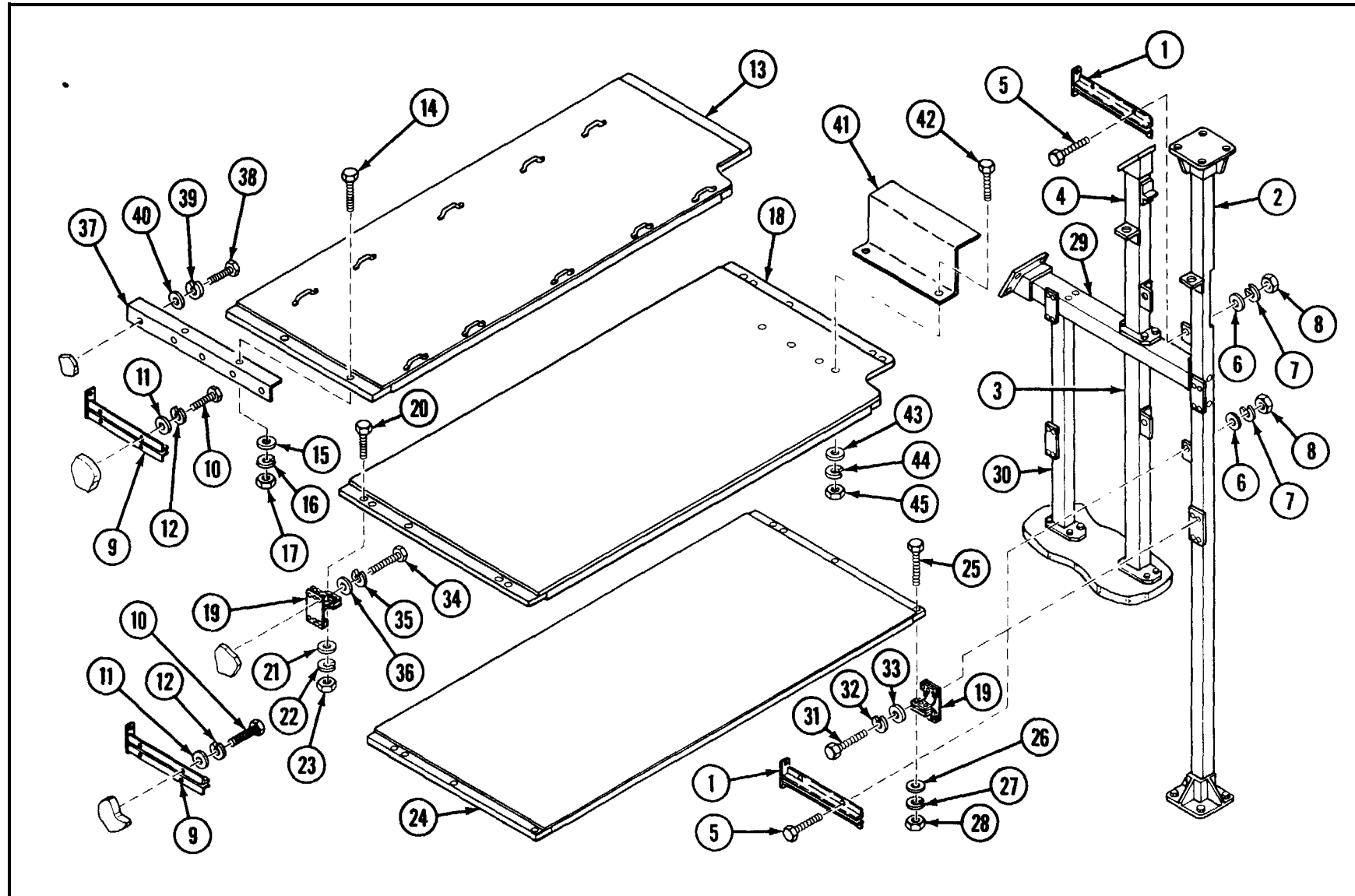
S Remove front post (2) by removing two brackets (81) each held by four screws (82), four lockwashers (83) and four flat washers (84). Remove brackets (81) from front post (2).

### INSTALLATION

A Apply zinc chromate paste (item 46, Appx D) between mating surfaces of canister rack and vehicle hull.

B Reverse order of removal procedures.

### LEFT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION



## LEFT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)

### INITIAL SETUP

#### Materials/Parts

Zinc chromate paste (Item 46, Appx D)

#### Personnel Required

Two

#### Equipment Condition:

Crew seat removed (p 9-16).

Ventilated facepiece hose guard removed (p 14-3).

Stacker bar removed (p 12-45).

All restraint bars and restraint straps removed (p 11-22.1).

### REMOVAL

#### WARNING

Before conducting any repairs, make sure that propellant charges and any powder pellets are removed from work area. Failure to do so may result in death or injury of personnel.

A Disconnect VFP hoses.

B Remove two guides (1) from front post (2) and middle and top posts (3 and 4) by removing four screws (5), four flat washers (6), four lockwashers (7) and four nuts (8) from each guide. Discard lockwashers.

C Remove two guides (9) from vehicle hull rear by removing four screws (10), four flat washers (11) and four lockwashers(12) from each guide. Discard lockwashers.

D Remove top shelf ( 13) by removing four screws (14), four flat washers (15), four lockwashers (16) and four nuts (17). Discard lockwashers.

E Remove shelf (18) from isolators (19) by removing eight screws (20), eight flat washers (21), eight lockwashers (22) and eight nuts (23). Discard lockwashers.

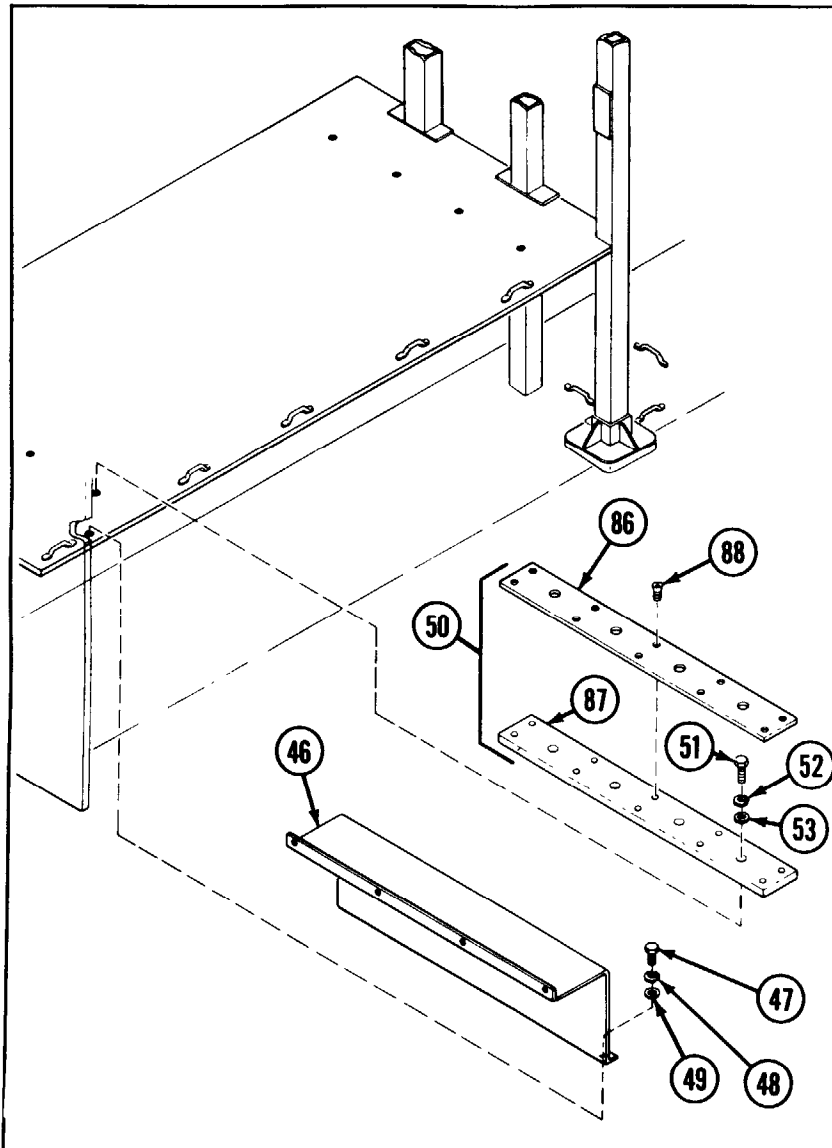
F Remove shelf (24) from isolators (19) by removing eight screws (25), eight flat washers (26), eight lockwashers (27) and eight nuts (28). Discard lockwashers.

G Remove four isolators (19) from front post (2), support (29) and rear post (30) by removing from each, four screws (31), four lockwashers (32) and four flat washers (33). Discard lockwashers.

H Remove four isolators (19) from vehicle hull rear by removing four screws (34), four lockwashers (35) and four flat washers (36) from each isolator (19).

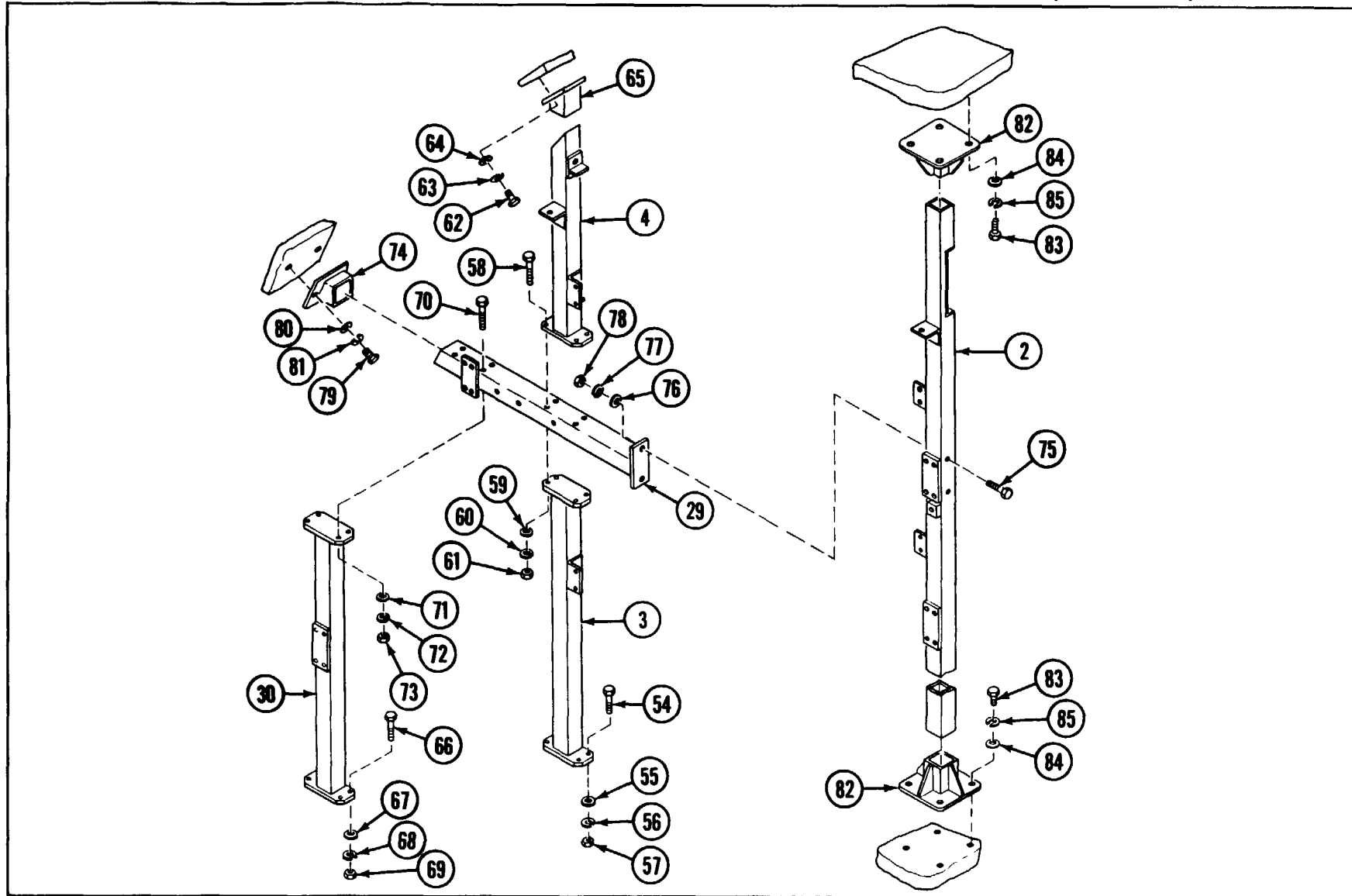
I Remove angle (37) from hull by removing five screws (38), five lockwashers (39) and five flat washers (40). Discard lockwashers.

J Remove angle (41) from shelf (18) by removing two screws (42), two flat washers (43), two lockwashers (44) and two nuts (45). Discard lockwashers.

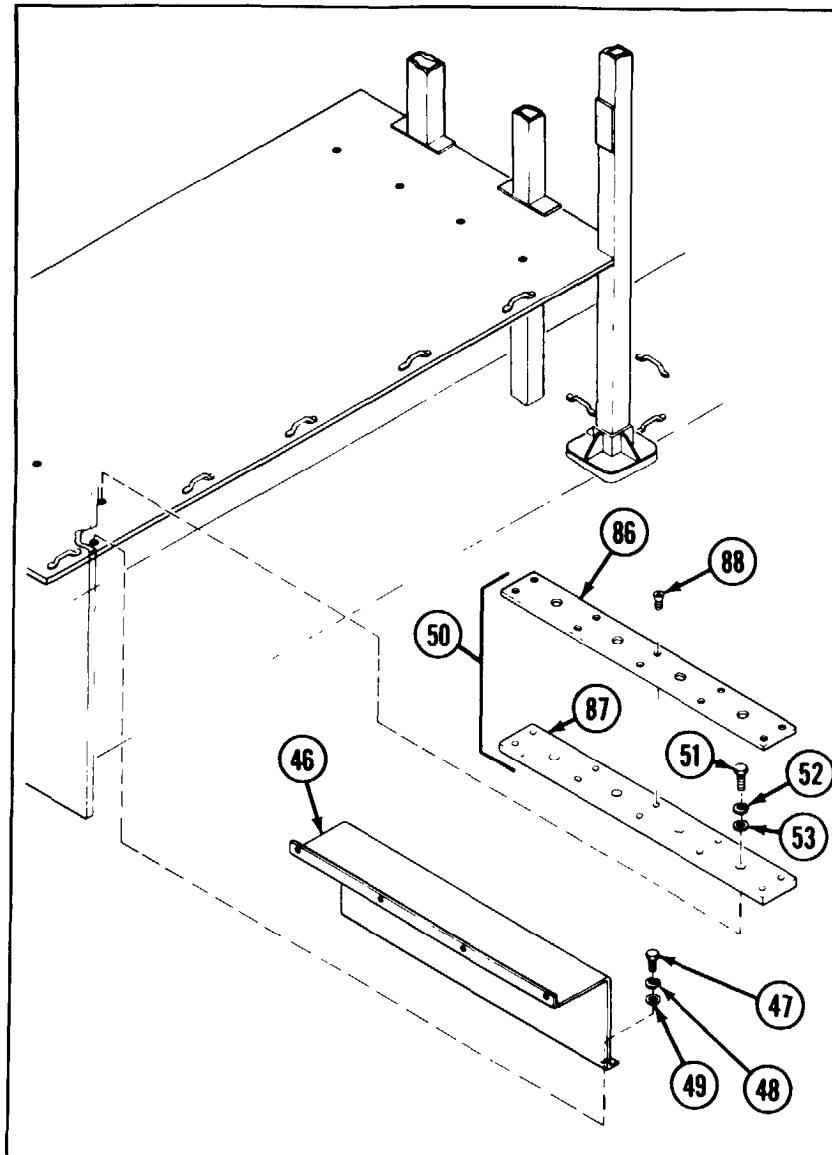
**LEFT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)**

- K** Remove guard (46) by removing eight screws (47), eight lockwashers (48) and eight flat washers (49). Discard lockwashers.
- L** Remove two wear strip assemblies (50) by removing four screws (51), four lockwashers (52) and four flat washers (53) from each assembly. Discard lockwashers.
- M** Remove middle post (3) by removing four screws (54), four flat washers (55), four lockwashers (56) and four nuts (57) at bottom, and four screws (58), four flat washers (59), four lockwashers (60) and four nuts (61) at top. Discard lockwashers.
- N** Remove top post (4) by removing two screws (62), two lockwashers (63), two flat washers (64). Remove top post (4), and remove bracket (65) from vehicle ceiling. Discard lockwashers.
- O** Remove rear post (30) by removing four screws (66), four flat washers (67), four lockwashers (68) and four nuts (69) at bottom, and four screws (70), four flat washers (71), four lockwashers (72) and four nuts (73) at top. Discard lockwashers.
- P** Remove support (29) from front post (2) and bracket (74) by removing two screws (75), two flat washers (76), two lockwashers (77) and two nuts (78). Remove bracket (74) held by two screws (79), two flat washers (80) and two lockwashers (81). Remove support (29) from bracket (74). Discard lockwashers.
- Q** Remove front post (2) by removing two brackets (82) each held by four screws (83), four flat washers (84) and four lockwashers (85). Remove brackets (82) from front post (2). Discard lockwashers.
- R** Remove wear strips (86) from supports (87) by removing 10 screws (88).

**LEFT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)**



## LEFT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)



### INSTALLATION

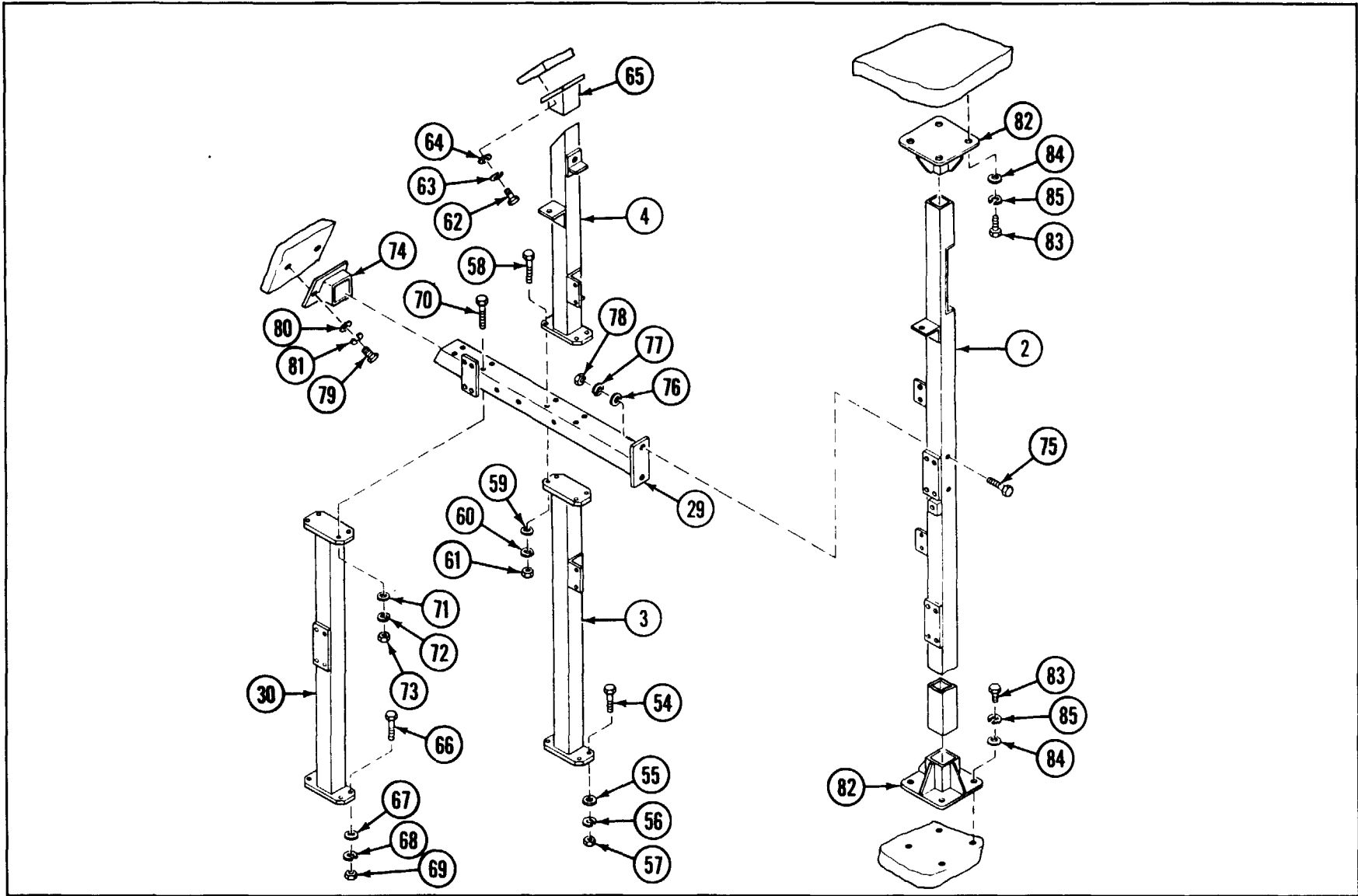
#### NOTE

Apply zinc chromate paste (item 46, Appx D) between mating surfaces of steel rack supports, brackets and vehicle hull.

- A Install wear strip (86) to supports (87) with 10 screws (88).
- B Install two brackets (82) on front post (2). Install two brackets (82) and post (2) with eight screws (83), eight flat washers (84) and eight new lockwashers (85).
- C Install support (29) in bracket (74). Install bracket (74) with two screws (79), two flat washers (80) and two new lockwashers (81). Install support (29) on front post (2) with two screws (75), two flat washers (76), two new lockwashers (77) and two nuts (78).
- D Install rear post (30) by installing four screws (66), four flat washers (67), four new lockwashers (68) and four nuts (69) at bottom and four screws (70), four new lockwashers (72), four flat washers (71) and four nuts (73) at top.
- E Install top post (4) by installing two screws (62), two new lockwashers (63), two flat washers (64) and bracket (65) to vehicle ceiling.
- F Install middle post (3) by installing four screws (54), four flat washers (55), four new lockwashers (56) and four nuts (57) at bottom and four screws (58), four flat washers (59), four new lockwashers (60) and four nuts (61) at top.
- G Install wear strip assemblies (50) to bottom shelf by installing four screws (51), four new lockwashers (52) and four flat washers (53) in each assembly.
- H Install guard (46) by installing eight screws (47), eight new lockwashers (48) and eight flat washers (49).

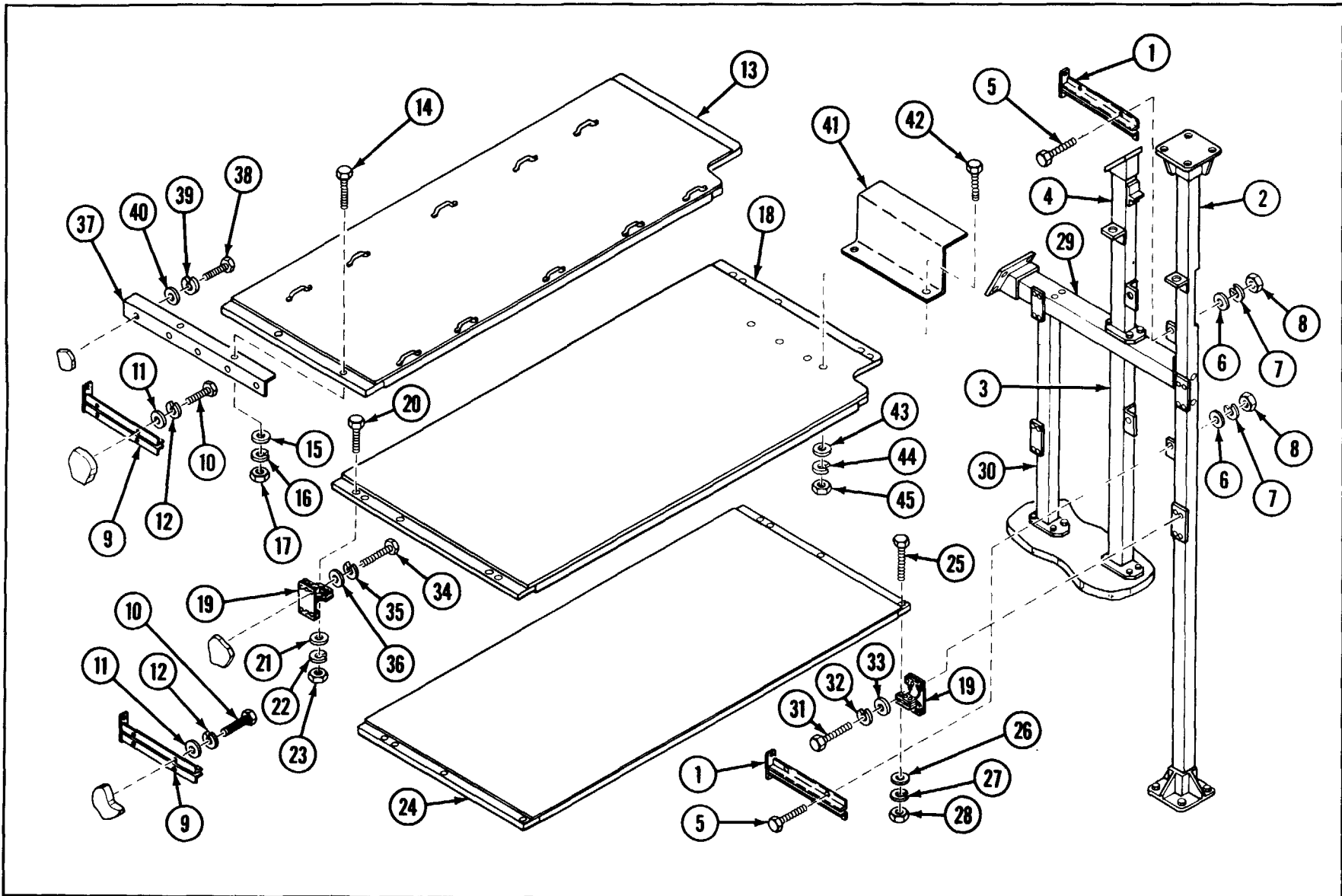


**LEFT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)**



**TA313022**

**LEFT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION (CONTINUED)**



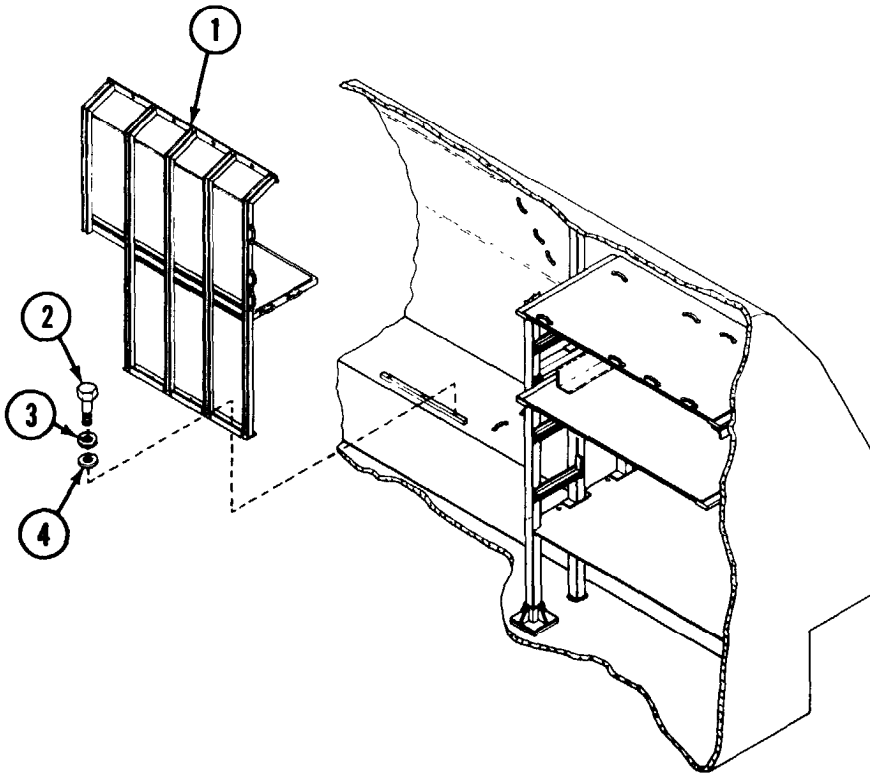
## LEFT REAR CANISTER COMPARTMENT SHELVES AND SUPPORTS: REMOVAL AND INSTALLATION

- I Install angle (41) to shelf (18) by installing two screws (42), two flat washers (43), two new lockwashers (44) and two nuts (45).
- J Install angle (37) to hull by installing five screws (38), five new lockwashers (39) and five flat washers (40).
- K Install four isolators (19) to vehicle hull rear by installing four screws (34), four new lockwashers (35) and four flat washers (36) to each isolator (19).
- L Mount four isolators (19) to front post (2), support (29) on rear post (30) installing in each, four screws (31), four new lockwashers (32) and four flat washers (33).
- M Mount shelf (24) to isolators (19) by installing eight screws (25), eight flat washers (26), eight new lockwashers (27) and eight nuts (28).
- N Mount shelf (18) to isolators (19) by installing eight screws (20), eight flat washers (21), eight new lockwashers (22) and eight nuts (23).
- O Mount top shelf (13) by installing four screws (14), four flat washers (15), four new lockwashers (16) and four nuts (17).
- P Mount two guides (9) to vehicle hull rear by installing four screws (10), four flat washers (11) and four new lockwashers (12).
- Q Mount two guides (1) to front post (2), middle post (3) and top post (4) by installing four screws (5), four flat washers (6), four new lockwashers (7) and four nuts (8) to each.
- R Connect VFP hoses.

**RIGHT FRONT CANISTER COMPARTMENT SHELF ASSEMBLY: REMOVAL AND INSTALLATION****INITIAL SETUP**Equipment Condition:

Right projectile rack removed (p 11-5).

Canister rack restraint straps removed (p 11-21).

**REMOVAL**

Remove shelf assembly (1) from right front side of vehicle by removing 10 screws (2), 10 lockwashers (3) and 10 flat washers (4). Discard lockwashers.

**INSTALLATION**

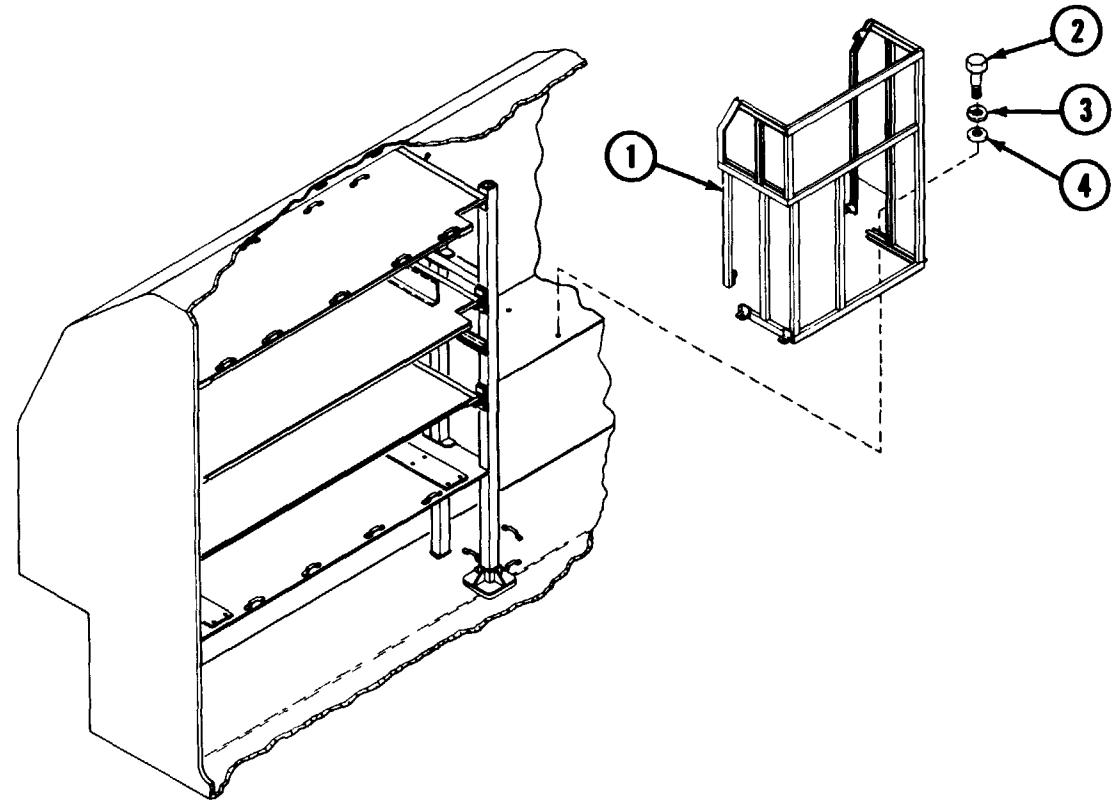
Install shelf assembly (1) to right front side of vehicle using 10 flat-washers (4), 10 new lockwashers (3) and 10 screws (2).

## LEFT FRONT CANISTER COMPARTMENT SHELF ASSEMBLY: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Equipment Condition:

Canister rack restraint straps removed (p 11-22.1).



### REMOVAL

Remove shelf assembly (1) from left front side of vehicle by removing eight screws (2), eight lockwashers (3) and eight flat washers (4). Discard lockwashers.

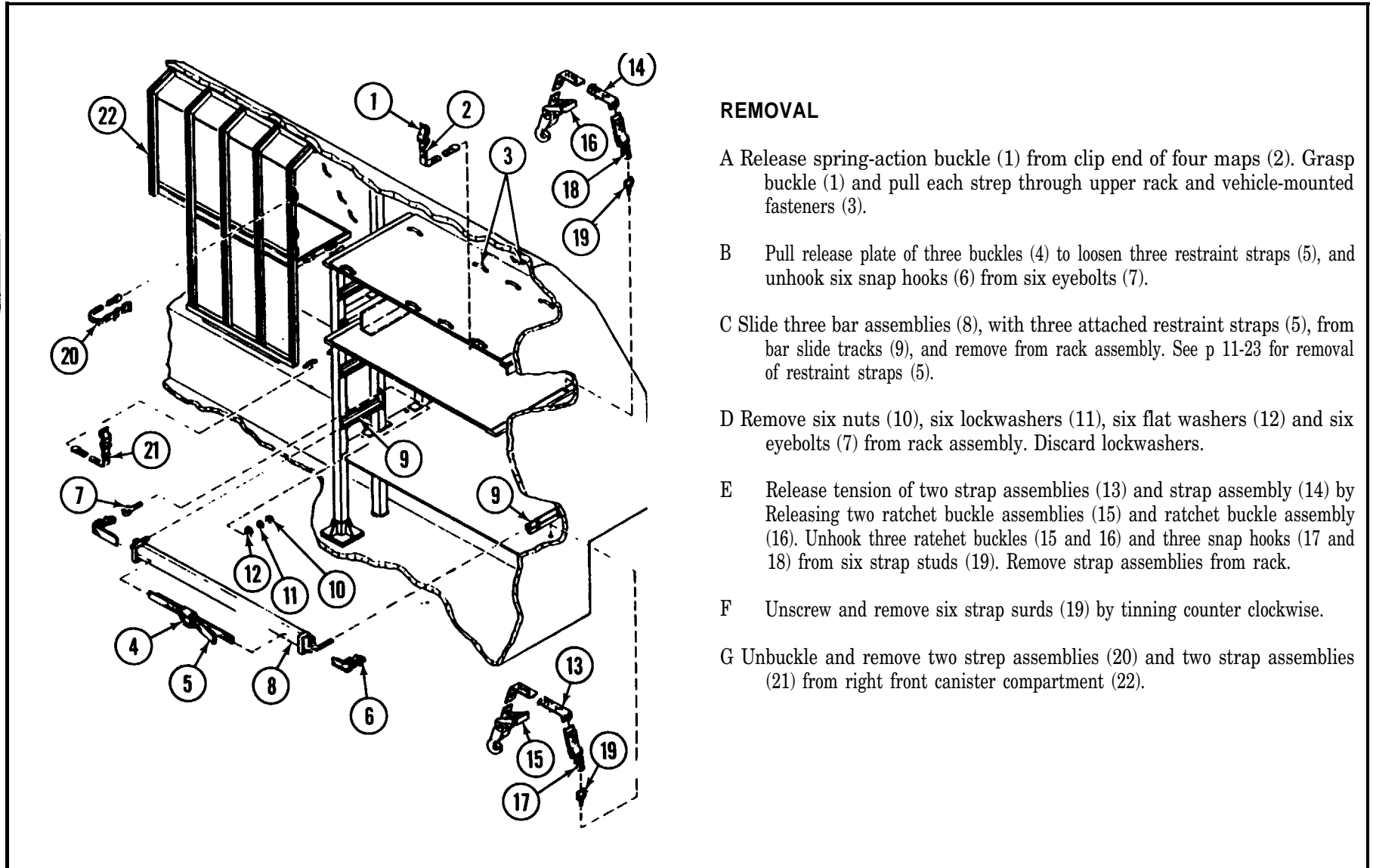
### INSTALLATION

Install shelf assembly (1) to left front side of vehicle by installing eight flat washers (4), eight new lockwashers (3) and eight screws (2).



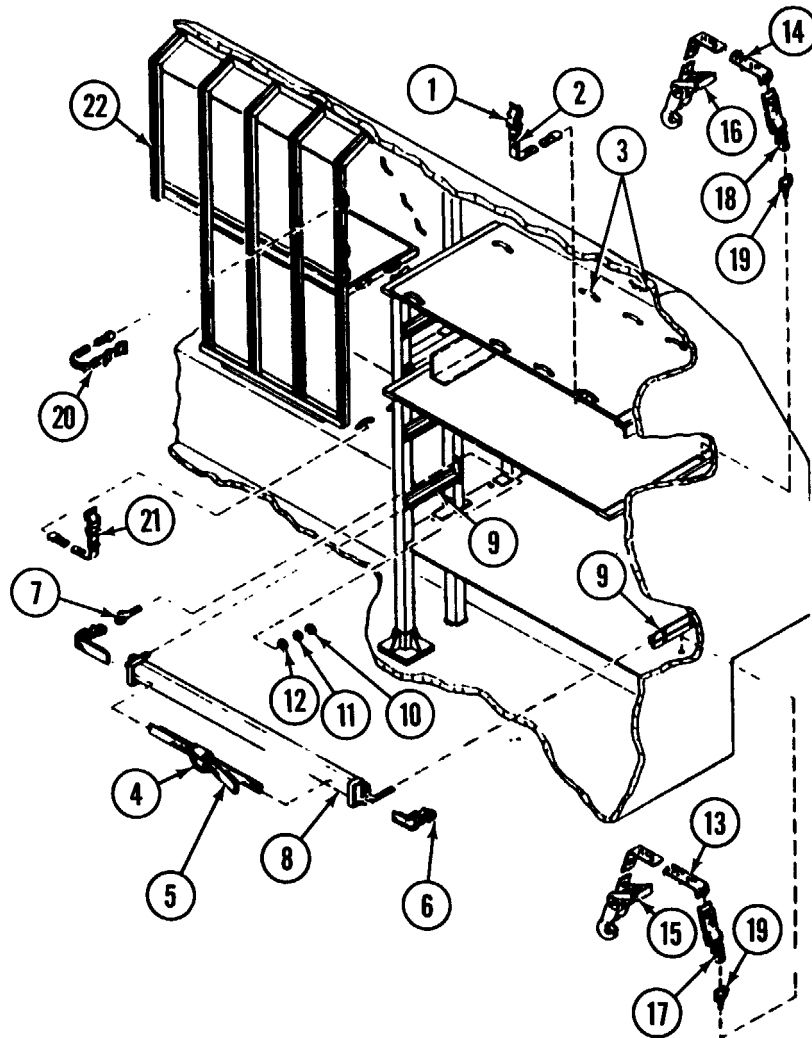
### Section III CANISTER Restraints

#### CANISTER Restraints (RIGHT SIDE): REMOVAL AND INSTALLATION



#### REMOVAL

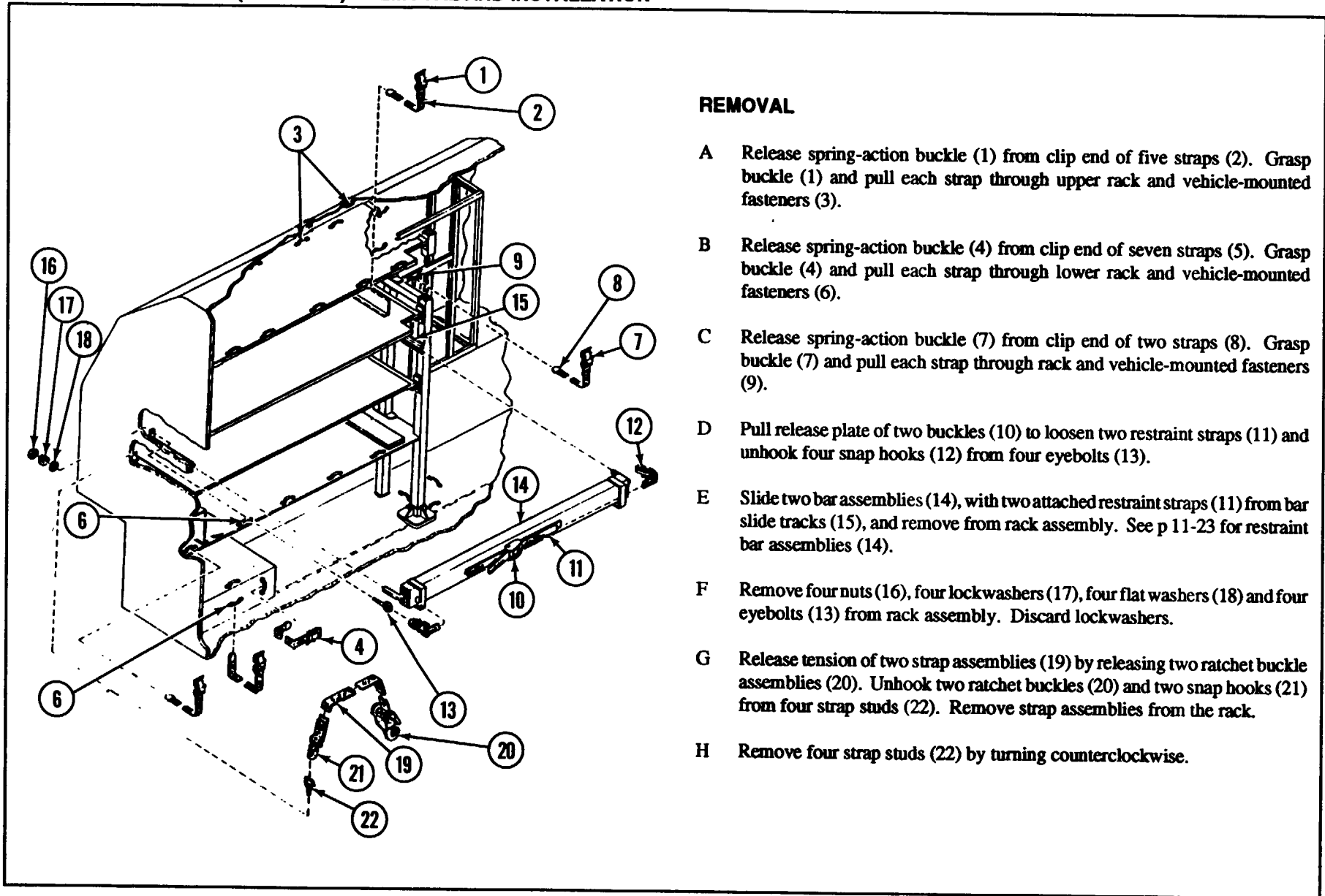
- A Release spring-action buckle (1) from clip end of four maps (2). Grasp buckle (1) and pull each strep through upper rack and vehicle-mounted fasteners (3).
- B Pull release plate of three buckles (4) to loosen three restraint straps (5), and unhook six snap hooks (6) from six eyebolts (7).
- C Slide three bar assemblies (8), with three attached restraint straps (5), from bar slide tracks (9), and remove from rack assembly. See p 11-23 for removal of restraint straps (5).
- D Remove six nuts (10), six lockwashers (11), six flat washers (12) and six eyebolts (7) from rack assembly. Discard lockwashers.
- E Release tension of two strap assemblies (13) and strap assembly (14) by Releasing two ratchet buckle assemblies (15) and ratchet buckle assembly (16). Unhook three ratchet buckles (15 and 16) and three snap hooks (17 and 18) from six strap studs (19). Remove strap assemblies from rack.
- F Unscrew and remove six strap surds (19) by tinning counter clockwise.
- G Unbuckle and remove two strep assemblies (20) and two strap assemblies (21) from right front canister compartment (22).

**CANISTER RESTRAINTS (RIGHT SIDE): REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

- A Install and buckle two strap assemblies (20) and two strap assemblies (21) on right front canister compartment (22).
- B Install six strap studs (19) by turning clockwise.
- C Hook three snap hooks (17 and 18) and three ratchet buckles (15 and 16) to tighten three strap assemblies (13 and 14). Secure three ratchet buckle assemblies (15 and 16).
- D Install six eyebolts (7) on rack assembly with six flat washers (12), six new lockwashers (11) and six nuts (10).
- E Install restraint straps (5) on bar assemblies (8) (p 11-23).
- F Slide three bar assemblies (8), with attached restraint straps (5) onto bar slide hacks (9).
- G Hook six snap hooks (6) to six eyebolts (7) and tighten three restraint straps (5) by pushing release plate of three buckles (4).
- H Insert clip end of four straps (2) through upper rack and vehicle-mounted fasteners (3) and secure spring-action buckle (1).



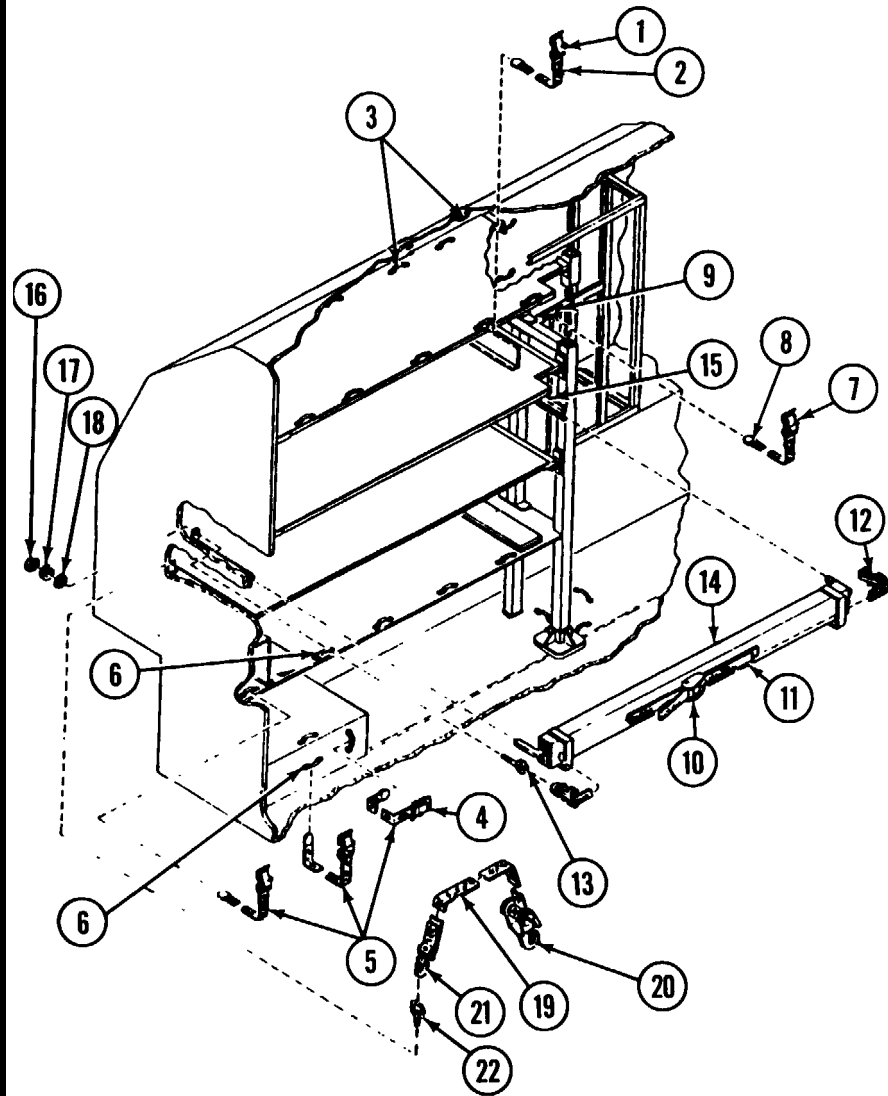
## CANISTER RESTRAINTS (LEFT SIDE): REMOVAL AND INSTALLATION



### REMOVAL

- A Release spring-action buckle (1) from clip end of five straps (2). Grasp buckle (1) and pull each strap through upper rack and vehicle-mounted fasteners (3).
- B Release spring-action buckle (4) from clip end of seven straps (5). Grasp buckle (4) and pull each strap through lower rack and vehicle-mounted fasteners (6).
- C Release spring-action buckle (7) from clip end of two straps (8). Grasp buckle (7) and pull each strap through rack and vehicle-mounted fasteners (9).
- D Pull release plate of two buckles (10) to loosen two restraint straps (11) and unhook four snap hooks (12) from four eyebolts (13).
- E Slide two bar assemblies (14), with two attached restraint straps (11) from bar slide tracks (15), and remove from rack assembly. See p 11-23 for restraint bar assemblies (14).
- F Remove four nuts (16), four lockwashers (17), four flat washers (18) and four eyebolts (13) from rack assembly. Discard lockwashers.
- G Release tension of two strap assemblies (19) by releasing two ratchet buckle assemblies (20). Unhook two ratchet buckles (20) and two snap hooks (21) from four strap studs (22). Remove strap assemblies from the rack.
- H Remove four strap studs (22) by turning counterclockwise.

## CANISTER RESTRAINTS (LEFT SIDE): REMOVAL AND INSTALLATION (CONTINUED)



## INSTALLATION

- A Install four straps studs (22) by tinning clockwise.
- B Hook two ratchet buckles (20) and two strep hooks (21) on four strap studs (22). Secure ratchet buckle assemblies (20) by tightening two strap assemblies (19).
- C Install four eyebolts (13) on rack assembly with four flat washers (18), and four new lockwashers (17) and four nuts (16).
- D Install restraint straps (11) on restraint bar assemblies (14) (p 11-23).
- E Slide two bar assemblies (14), with two attached straps (11), onto bar slide tracks (15).
- F Hook four snap hooks (12) onto four eyebolts (13) and tighten two restraint straps (11) by pushing release plate of two buckles (10).
- G Insert clip end of two straps (8) through rack and vehicle-mounted fasteners (6) and secure spring-action buckles (4).
- H Insert clip end of seven straps (5) through lower rack and vehicle-mounted fasteners (6) and secure spring-action buckles (4).
- I Insert clip end of five straps (2) through upper rack and vehicle-mounted fasteners (3) and secure spring-action buckles (1).

## CANISTER COMPARTMENT RESTRAINT BAR ASSEMBLY: DISASSEMBLY AND ASSEMBLY

### DISASSEMBLY

#### NOTE

These procedures apply to both ends of right and left rear compartment restraint bar assemblies.

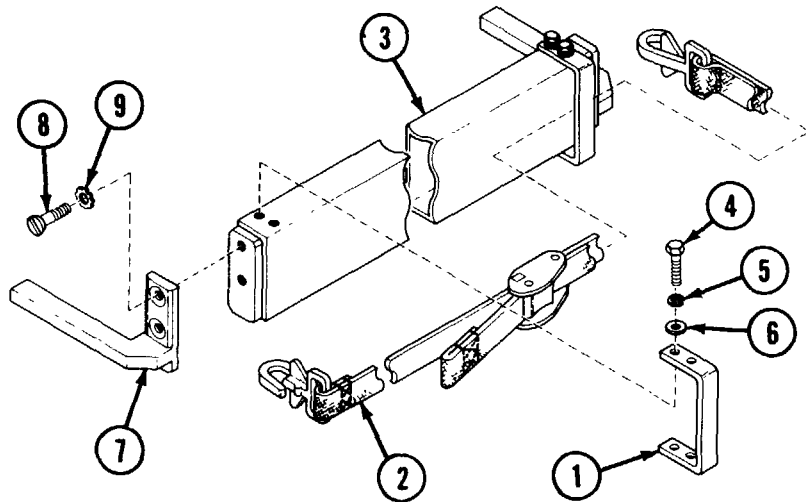
A Remove two fasteners (1) and restraint strap (2) from bar assembly (3) by removing from each, four screws (4), four lockwashers (5) and four flat washers (6). Discard lockwashers.

B Remove two slides (7) from bar assembly (3) by removing from each, two screws (8) and two lockwashers (9). Discard lockwashers.

### ASSEMBLY

A Install two slides (7) on bar assembly (3) using two screws (8) and two new lockwashers (9) for each slide.

B Install restraint strap (2) and two fasteners (1) on bar assembly (3), using four screws (4), four new lockwashers (5) and four flat washers (6) for each fastener.



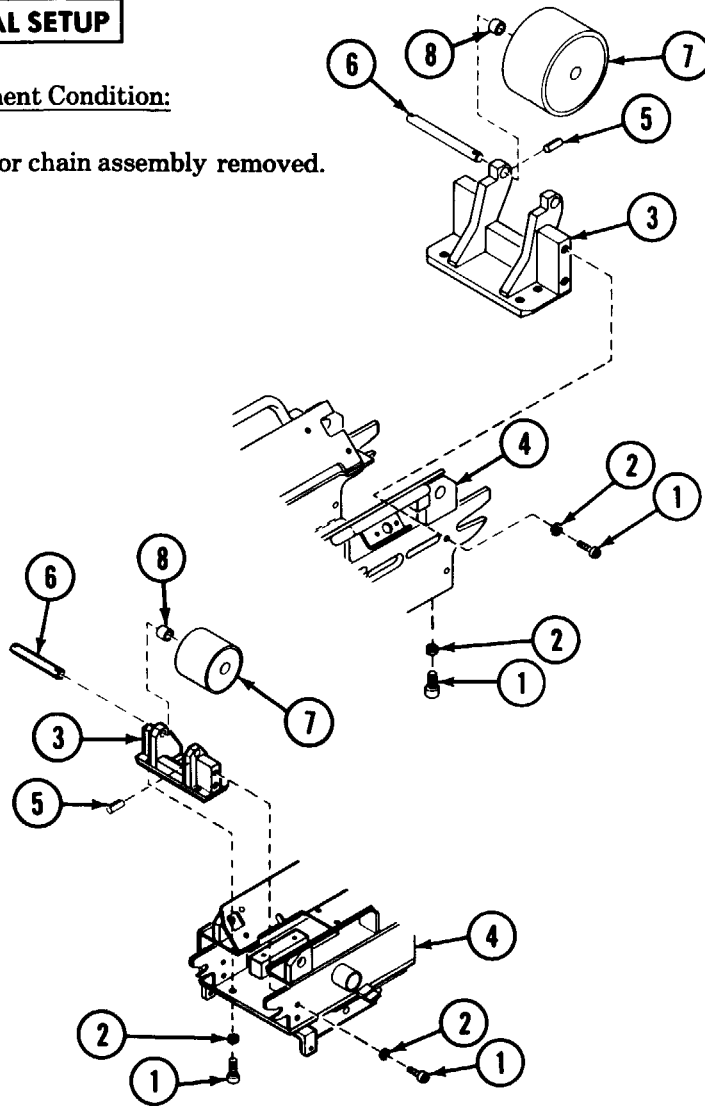


## ROLLER ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Equipment Condition:

Conveyor chain assembly removed.



### REMOVAL

#### NOTE

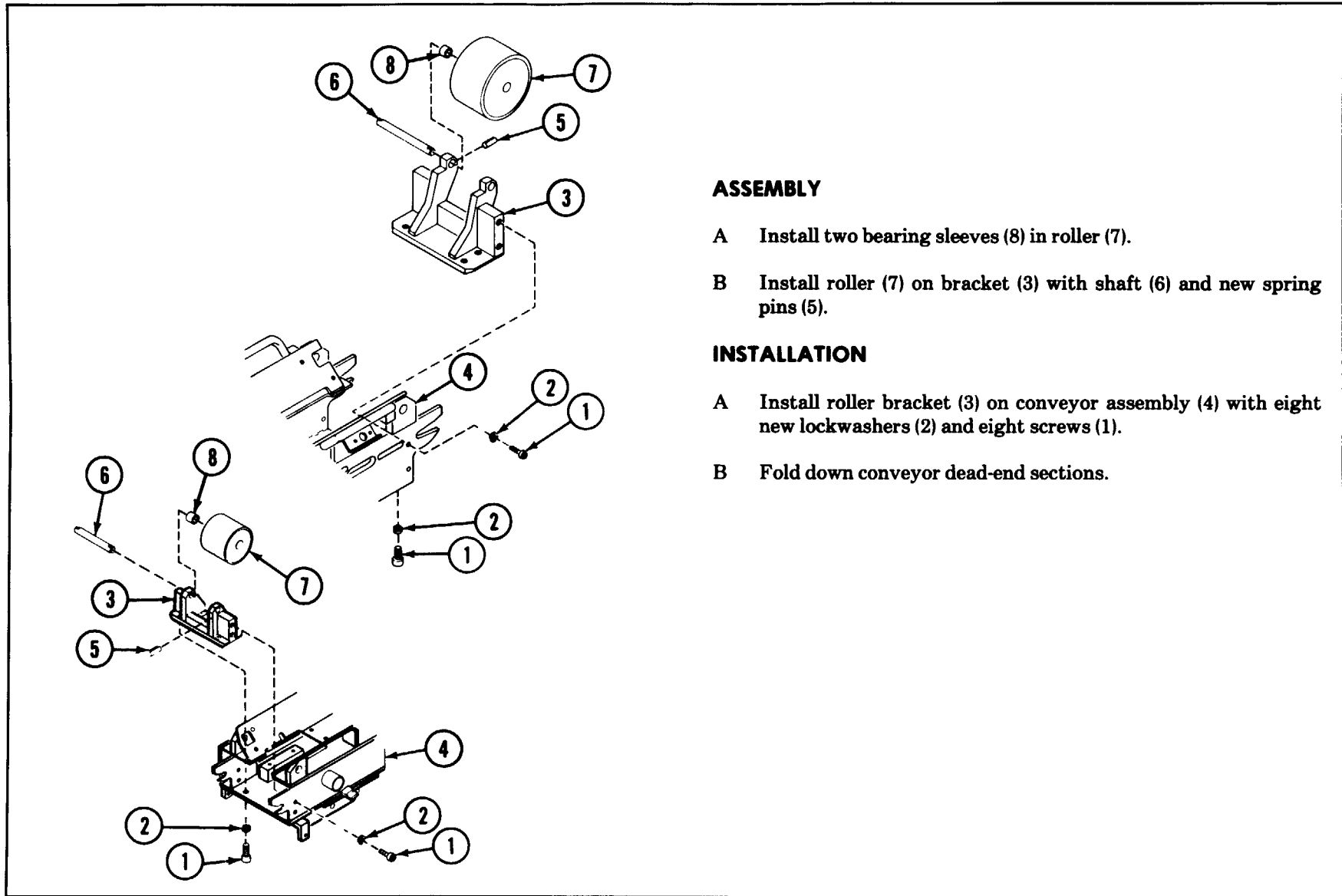
This procedure applies to roller assemblies in both drive-end and take-up end conveyor sections.

- A Fold up conveyor dead-end sections to gain access to roller assembly.
- B Remove eight screws (1) and eight lockwashers (2) and remove roller bracket (3) from conveyor assembly (4). Discard lockwashers.

### DISASSEMBLY

- A Drive out spring pins (5) from roller shaft (6) and bracket (3) using punch and hammer. Discard spring pins.
- B Drive roller shaft (6) through bracket (3) and roller (7).
- C Remove shaft (6) and roller (7).
- D Remove two bearing sleeves (8) from roller (7).

TA313032

**ROLLER ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****ASSEMBLY**

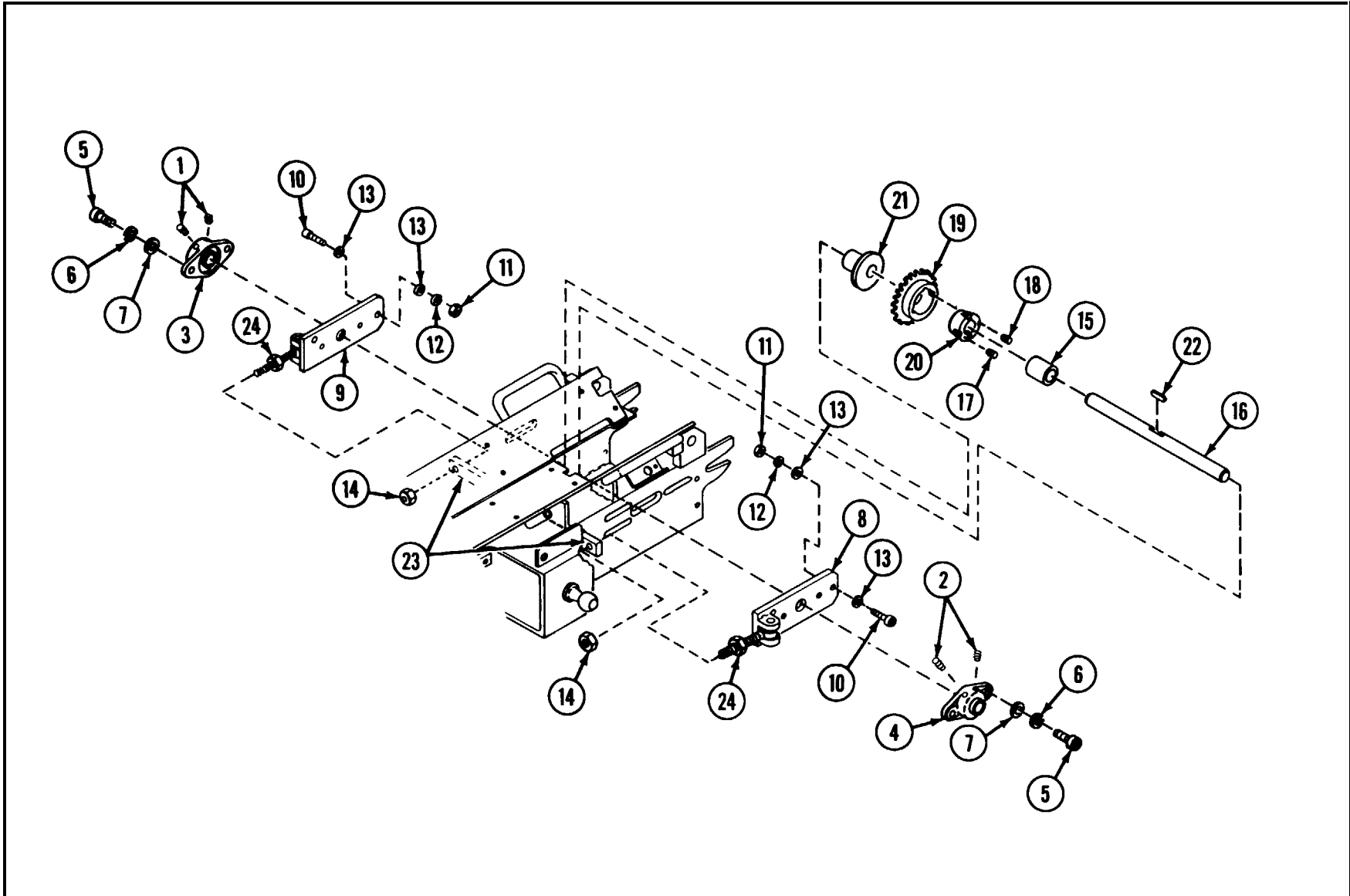
- A Install two bearing sleeves (8) in roller (7).
- B Install roller (7) on bracket (3) with shaft (6) and new spring pins (5).

**INSTALLATION**

- A Install roller bracket (3) on conveyor assembly (4) with eight new lockwashers (2) and eight screws (1).
- B Fold down conveyor dead-end sections.



### IDLER SPROCKET ASSEMBLY: REMOVAL AND INSTALLATION





## IDLER SPROCKET ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

- A Remove conveyor chain assembly (TM 9-2350-267-10).
- B Loosen two setscrews (1 and 2) from each flanged bearing assembly (3 and 4).
- c Remove two screws (5), two lockwashers (6) and two flat washers (7) from each flanged bearing (3 and 4).
- D Remove two flanged bearings (3 and 4).
- E Remove two takeup plates (8 and 9) by removing from each, three screws (10), three nuts (11), three lockwashers (12), six flat washers (13) and nut (14).
- F Remove spacer (15) from shaft (16).
- G Remove two lockscrews (17 and 18), and tap sprocket (19) loose from hub (20).
- H Remove shaft (16), with sprocket (19), spacer (21) and hub (20) from conveyor assembly.
- I Remove spacer (21) and sprocket (19) from shaft.
- J Drive hub (20) from shaft (16), and remove key (22).

### INSTALLATION

- A Install hub (20) and key (22) on shaft (16).
- B Position sprocket (19) on shaft (16) but do not secure to hub (20). Position spacer (21) on shaft (16).

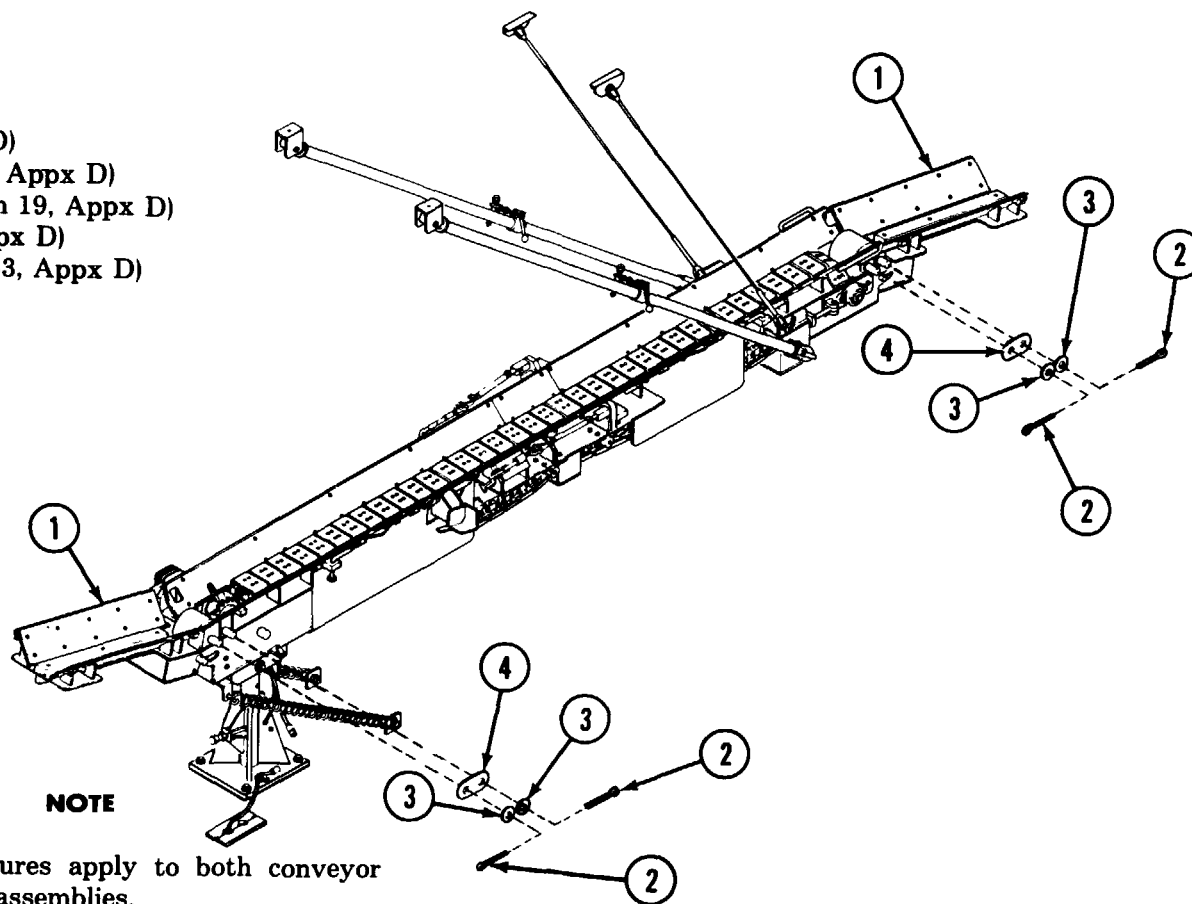
- c Install shaft (16) with spacer (21) and sprocket (19) positioned on shaft in conveyor assembly. Once in position, install sprocket (19) on hub (20) and secure with lockscrews (17 and 18). Do not tighten lockscrews.
- D Install spacer (15) on shaft (16).
- E Install nut (24) on adjusting rod of both takeup plates (8 and 9). Insert rod through bracket (23) and install nut (14).
- F Insert ends of shaft (16) through takeup plates (8 and 9) and secure each plate to conveyor assembly by installing three screws (10), three lockwashers (12), six flat washers (13) and nut (14).
- G Insert ends of shaft (16) through each flanged bearing assembly (3 and 4) and secure each bearing to takeup plate with two screws (5), two lockwashers (6) and two flat washers (7).
- H Aline sprocket (19) with center of conveyor and tighten two lockscrews (17 and 18).
- I Install and tighten four setscrews (1 and 2).
- J Install conveyor chain assembly (TM 9-2350-267-10).
- K Adjust conveyor chain tension (TM 9-2350-267-10).

## DEAD-END SECTION ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

- Adhesive (item 1, Appx D)
- Adhesive, rubber (item 4, Appx D)
- Dry-cleaning solvent (item 19, Appx D)
- Rag, wiping (item 50, Appx D)
- Sealing compound (item 53, Appx D)



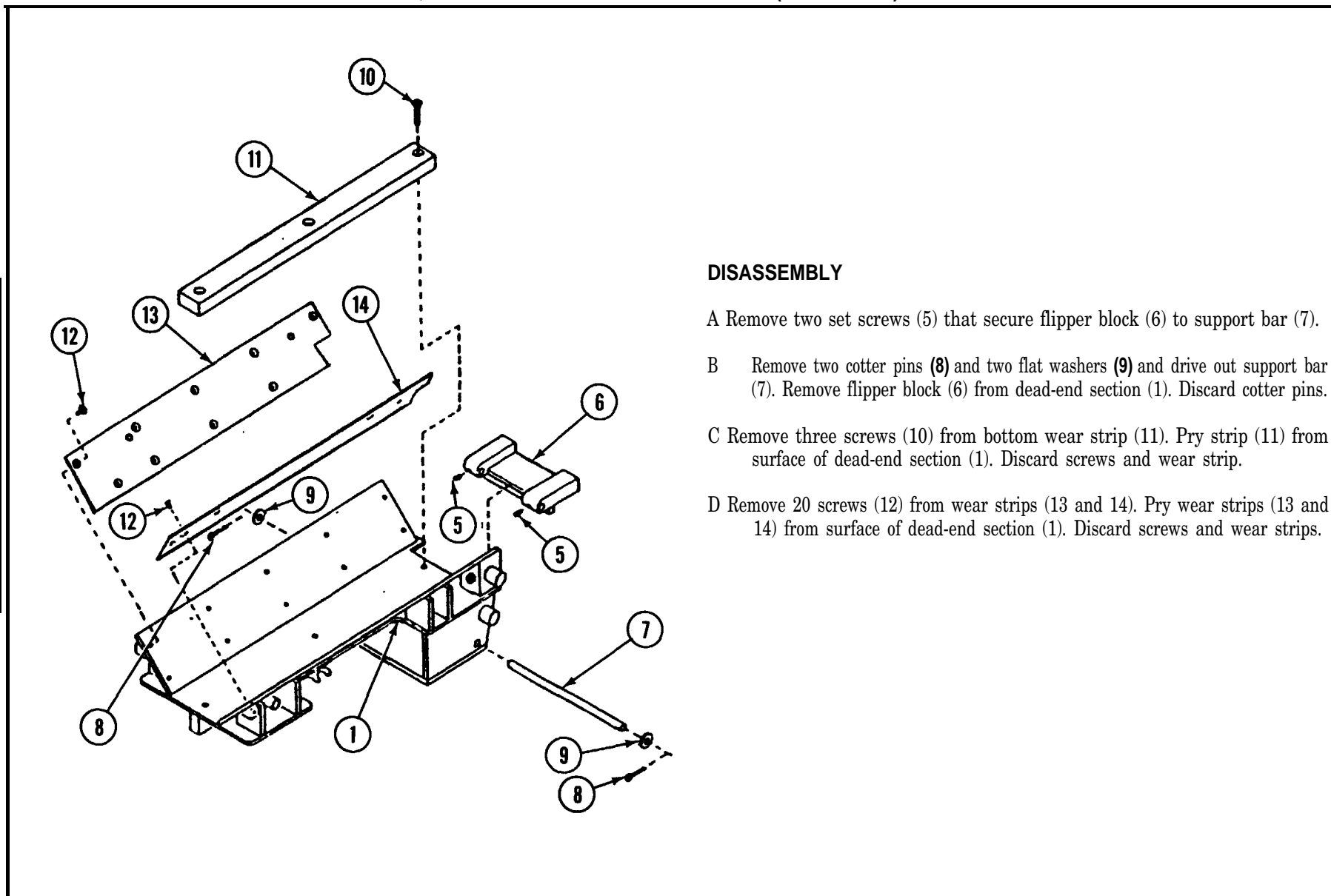
#### NOTE

Following procedures apply to both conveyor dead-end section assemblies.

### REMOVAL

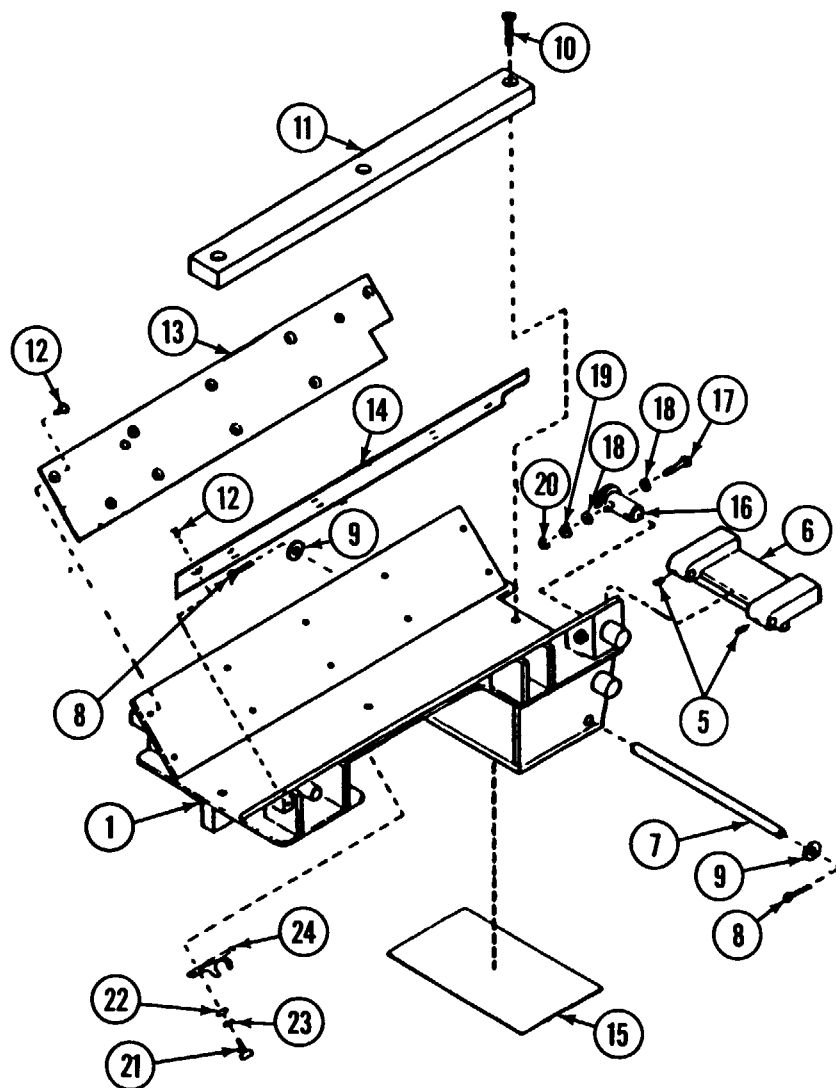
- A Fold up conveyor dead-end section (1) and from each side remove two cotter pins (2), two flat washers (3) and one connecting link (4). Discard cotter pins.
- B Firmly grasp conveyor dead-end section assembly (1) and pull away from adjoining conveyor section.

## DEAD-END SECTION ASSEMBLY: REMOVAL, DISASSEMBLY AND INSTALLATION (CONTINUED)



### DISASSEMBLY

- A Remove two set screws (5) that secure flipper block (6) to support bar (7).
- B Remove two cotter pins (8) and two flat washers (9) and drive out support bar (7). Remove flipper block (6) from dead-end section (1). Discard cotter pins.
- C Remove three screws (10) from bottom wear strip (11). Pry strip (11) from surface of dead-end section (1). Discard screws and wear strip.
- D Remove 20 screws (12) from wear strips (13 and 14). Pry wear strips (13 and 14) from surface of dead-end section (1). Discard screws and wear strips.

**DEAD-END SECTION ASSEMBLY: REMOVAL, DISASSEMBLY AND INSTALLATION (CONTINUED)**

E Pry rubber strip (15) from underside surface of dead-end section (1). Discard rubber strip.

F Remove two pins (16) by removing two screws (17), four flat washers (18), two lockwashers (19) and two nuts (20). Discard lockwashers.

G Remove two screws (21), two flat washers (22), two lockwashers (23) and latch (24). Discard lockwashers.

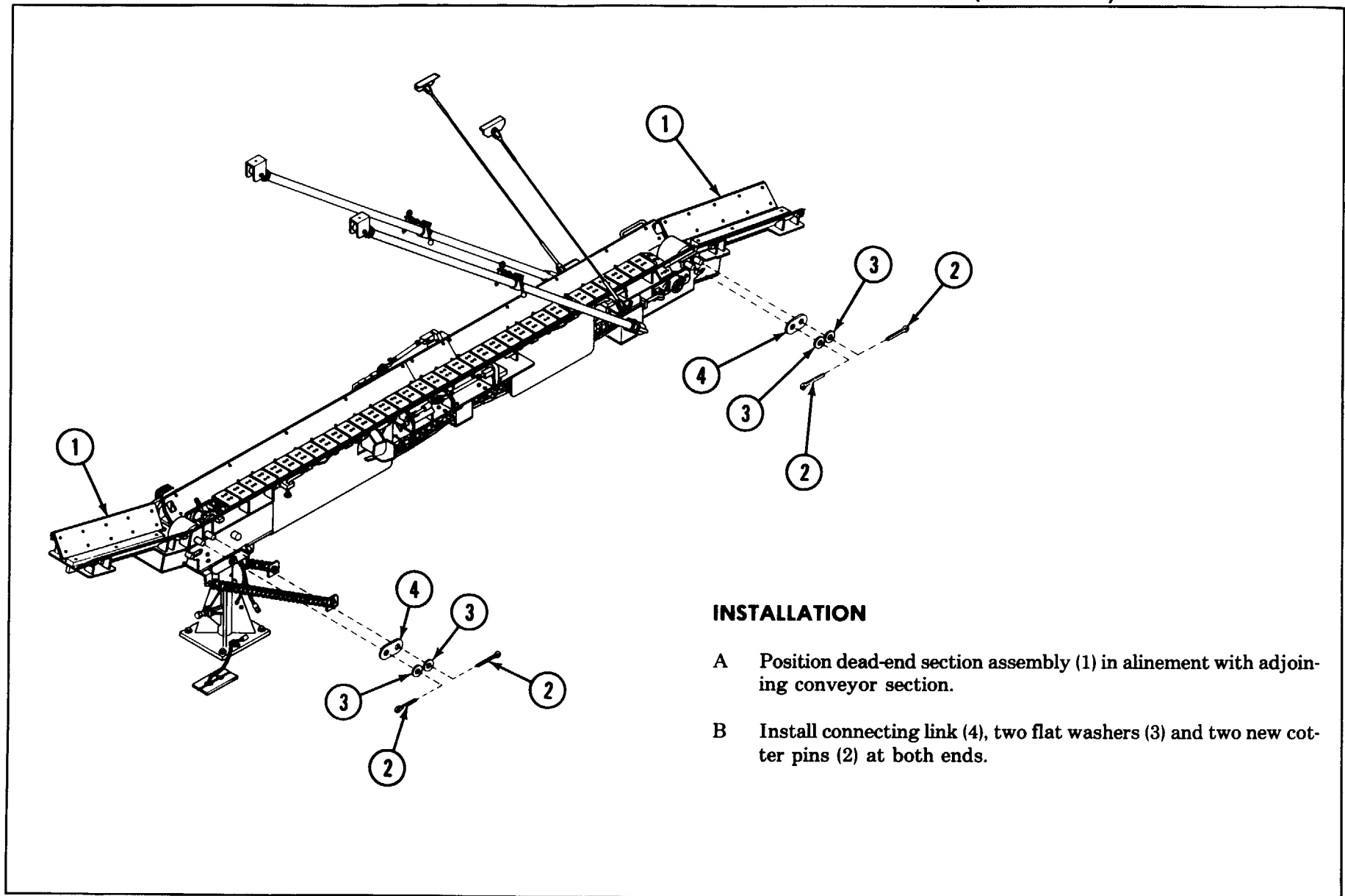
**ASSEMBLY****WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy, get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F(38°C); for Type II it is 140°F (60°C). Do not use near open flame or excessive heat

## DEAD-END SECTION ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

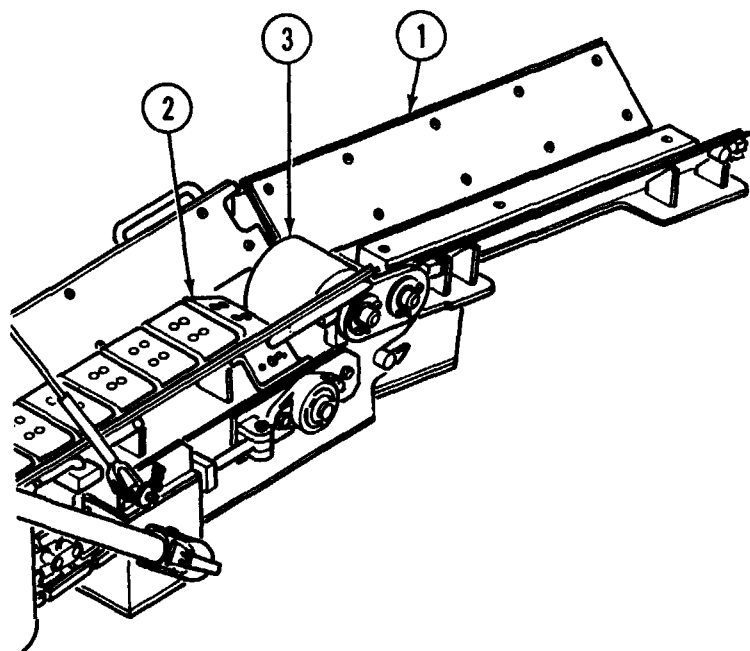
- A Thoroughly clean wear strip mounting surfaces of section (1) with dry-cleaning solvent (item 19, Appx D) and clean, dry rags (item 50, Appx D). Remove all particles.
- B Roughen underside surface of new wear strips (11, 13 and 14); apply adhesive (item 1, Appx D) to roughened side of wear strips and mounting surface of section (1). Allow adhesive to dry until tacky before assembly.
- C Apply a thin coat of adhesive (item 4, Appx D) to new rubber strip (15), and to mounting surface of end section (1). Allow adhesive to dry until tacky before installing rubber strip. Install new rubber strip (15) to mounting surface of dead-end section (1).
- D Install latch (24) on side of dead-end section (1) using two screws (21), two new lockwashers (23) and two flat washers (22).
- E Install two pins (16) to dead-end section (1) and secure using two screws (17), four flat washers (18), two new lockwashers (19) and two nuts (20).
- F Apply sealing compound (item 53, Appx D) to threads of 20 new screws (12). Install wear strips (13 and 14) to surface of dead-end section (1) using 20 new screws (12).
- G Apply sealing compound (item 53, Appx D) to threads of screws (10). Assemble bottom wear strip (11) to surface of dead-end section (1) using three new screws (10).
- H Position and align flipper block (6) with holes in dead-end section (1). Drive support bar (7) into position and secure using two flat washers (9) and two new cotter pins (8).
- I Install two setscrews (5) to secure flipper block (6) to support bar (7). Tighten setscrews (5).

TA57269

**DEAD-END SECTION ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****INSTALLATION**

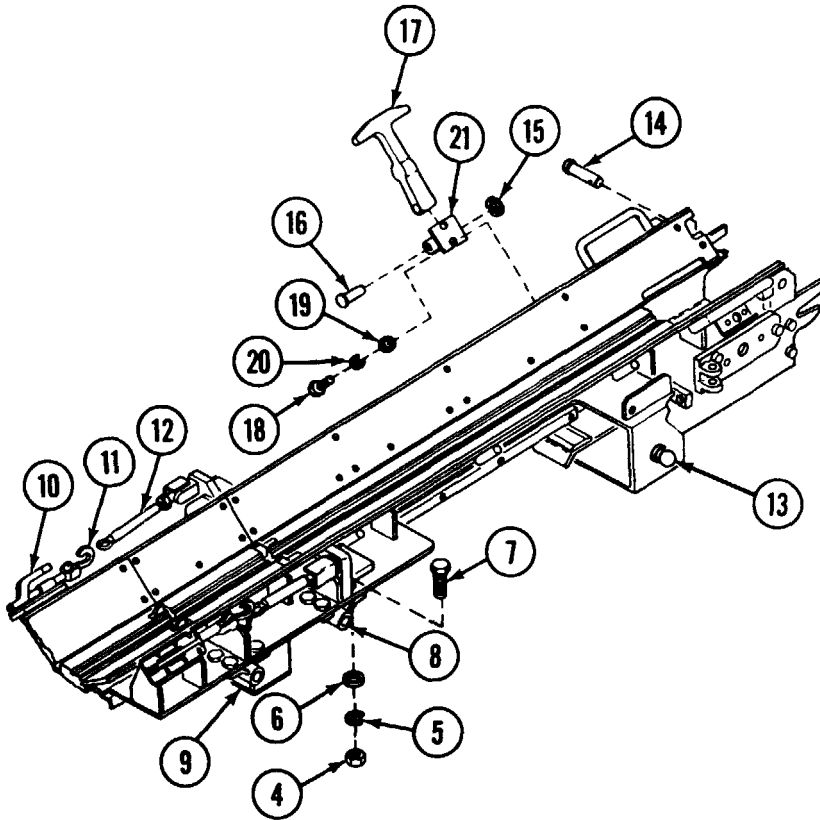
- A Position dead-end section assembly (1) in alignment with adjoining conveyor section.
- B Install connecting link (4), two flat washers (3) and two new cotter pins (2) at both ends.

## TAKE-UP END SECTION ASSEMBLY: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove conveyor assembly from vehicle (p 12-27).
- B Remove conveyor dead-end section assembly (1) (p 12-12).
- c Remove electrical wiring harness from conveyor (p 6-121).
- D Remove conveyor chain assembly (2) (p 12-19). Do not remove chain assembly from conveyor.
- E Remove roller assembly (3) (p 12-9).
- F Remove idler sprocket assembly (p 12-10).

**TAKE-UP END SECTION ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)**

G Remove three nuts (4), three lockwashers (5), three flat washers (6) and three screws (7), that secure hinge halves (8) to take-up end section. Allow hinges to remain attached to conveyor center section (9).

H Raise toggle clamps (10) to release safety hooks (11) from tube assemblies (12).

I Remove tube assemblies (12) (p 12-20), and ball assemblies (13) (p 12-17).

J Remove wear strips (p 12-18).

K Remove two pins (14) from take-up end section.

L Remove clip (15) and pin (16). Remove rubber latch (17). Remove two screws (18), two flat washers (19), two lockwashers (20), and bracket (21).

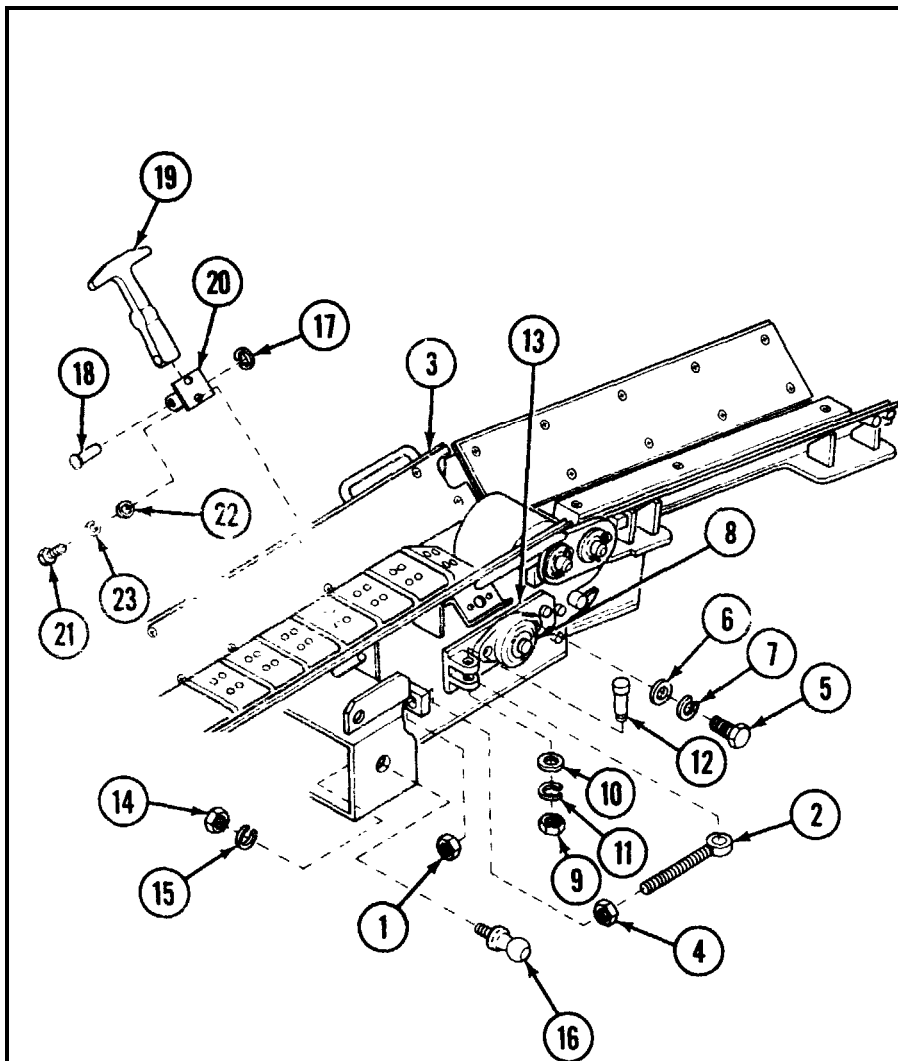
M Remove take-up end section from center section.

**INSTALLATION**

Reverse order of removal procedures.



## ROD ENDS, BALL ASSEMBLIES AND LATCH: REMOVAL AND INSTALLATION



### REMOVAL

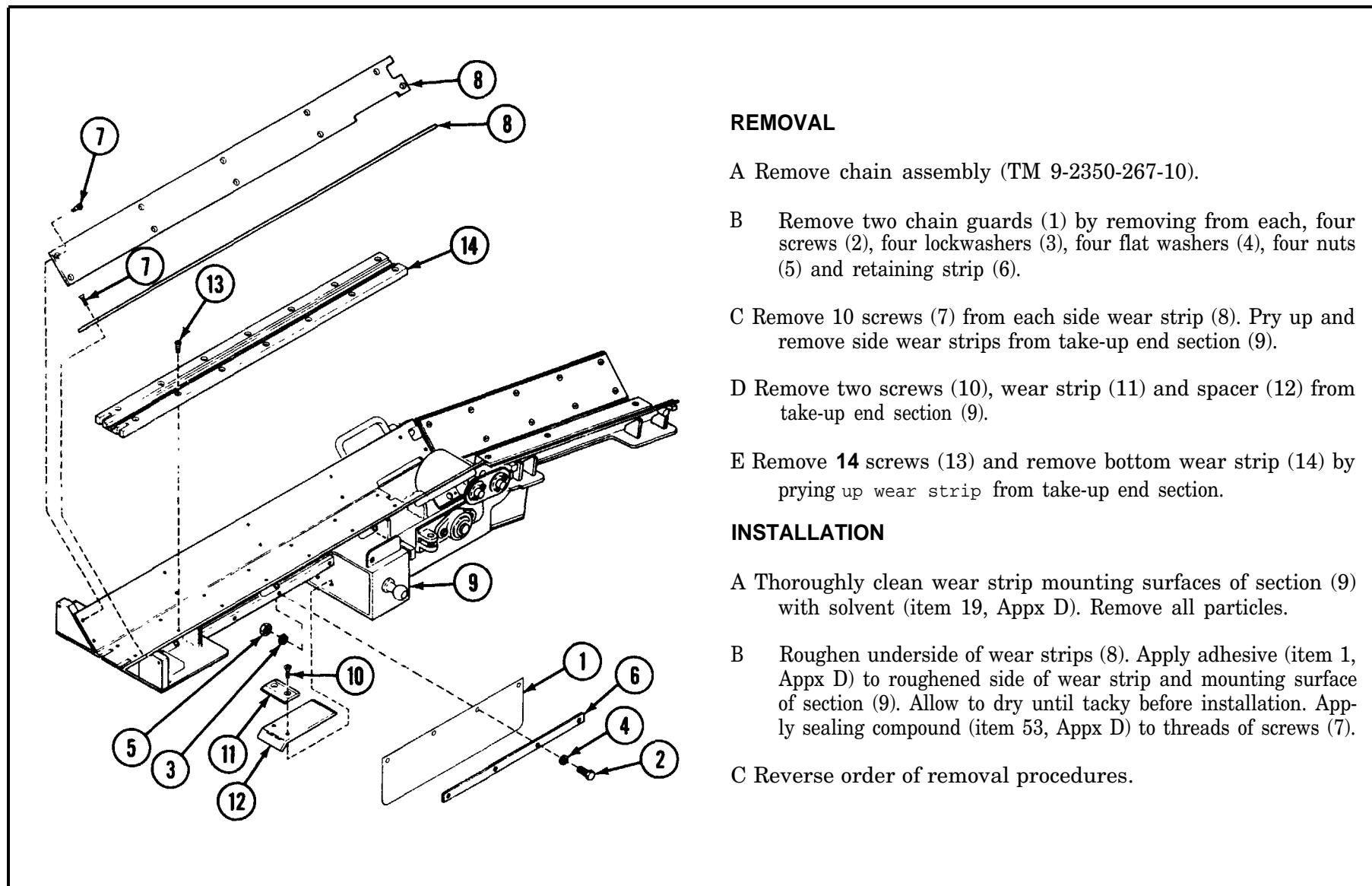
- A Remove two nuts (1) from each rod end (2) located on each side of conveyor take-up section (3), and back off nut (4).
- B Remove one screw (5), one flat washer (6), and one lockwasher (7), from each of two pillow blocks (8).
- C Remove nut (9), flat washer (10), lockwasher (11), screw (12) and remove rod end (2) from take-up plates (13).
- D Back off nut (4) from rod end (2). Remove rod end (2) from take-up plates (13) and remove nut (4) from rod end (2).
- E Remove nut (14), lockwasher (15) and remove ball assembly (16) from each side of conveyor take-up section (3).
- F Remove clip (17), pin (18), and rubber latch (19) from bracket (20).
- G Remove two screws (21), two flat washers (22), two lockwashers (23) and bracket (20) from take-up section (3).

### INSTALLATION

Reverse order of removal procedures.

TA310217

## SIDE WEAR STRIPS, BOTTOM WEAR STRIP, CHAIN RETURN WEAR STRIPS AND CHAIN GUARD, TAKE-UP END ASSEMBLY: REMOVAL AND INSTALLATION



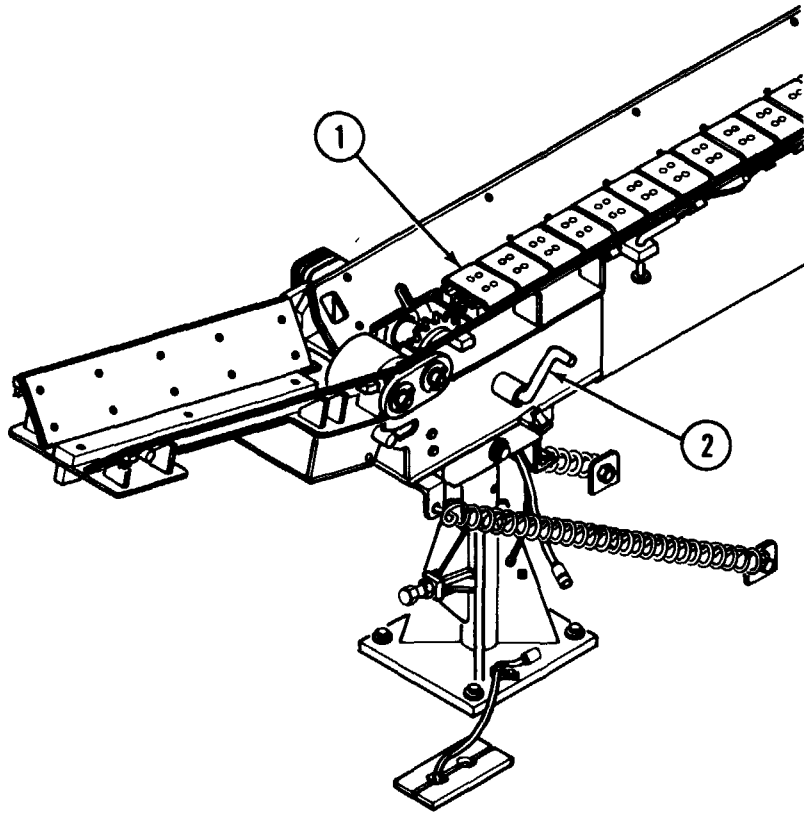
### REMOVAL

- A Remove chain assembly (TM 9-2350-267-10).
- B Remove two chain guards (1) by removing from each, four screws (2), four lockwashers (3), four flat washers (4), four nuts (5) and retaining strip (6).
- C Remove 10 screws (7) from each side wear strip (8). Pry up and remove side wear strips from take-up end section (9).
- D Remove two screws (10), wear strip (11) and spacer (12) from take-up end section (9).
- E Remove 14 screws (13) and remove bottom wear strip (14) by prying up wear strip from take-up end section.

### INSTALLATION

- A Thoroughly clean wear strip mounting surfaces of section (9) with solvent (item 19, Appx D). Remove all particles.
- B Roughen underside of wear strips (8). Apply adhesive (item 1, Appx D) to roughened side of wear strip and mounting surface of section (9). Allow to dry until tacky before installation. Apply sealing compound (item 53, Appx D) to threads of screws (7).
- C Reverse order of removal procedures.

## CONVEYOR CHAIN ASSEMBLY: REMOVAL AND INSTALLATION



### REMOVAL

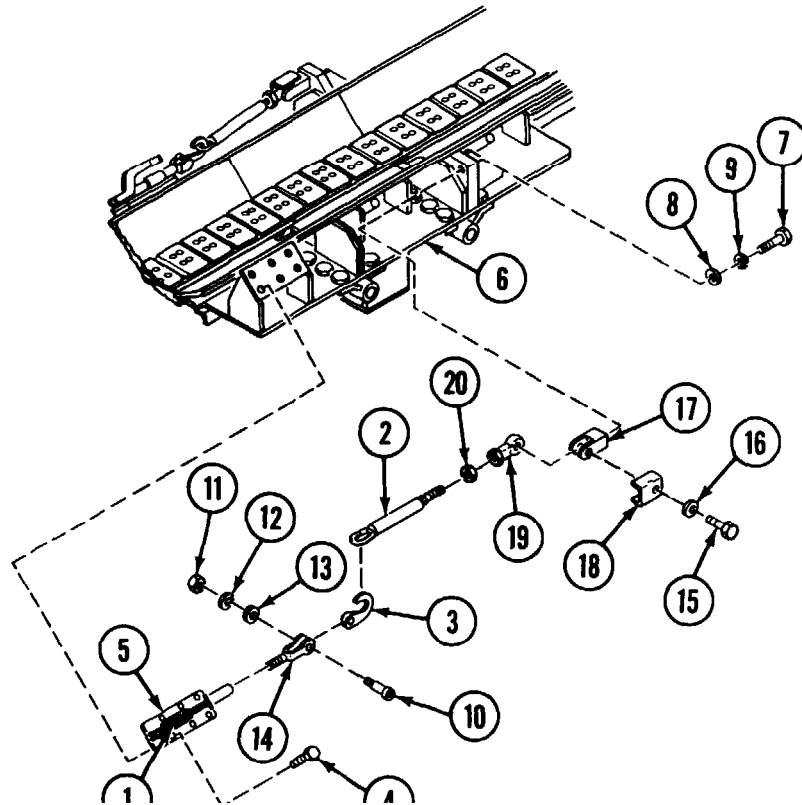
- A Loosen chain tension and break chain at master link (TM 9-2350-267-10).
- B Remove chain (1) from conveyor by rotating conveyor manual hand crank (2) until chain is free of drive sprockets.

### INSTALLATION

- A Adjust conveyor chain tension (TM 9-2350-267-10).
- B Reverse removal procedures.

TA310219

## CONVEYOR TOGGLE CLAMP AND TUBE ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### REMOVAL

#### NOTE

The following procedures apply to both toggle clamps and tube assemblies.

#### WARNING

Do not attempt to remove or release both toggle clamps at the same time. Conveyor could collapse and cause injury to personnel.

- A Raise toggle clamp handle (1) to release tension on tube assembly (2). Remove tube eye from hook (3).
- B Remove six screws (4) and toggle clamp (5) from conveyor center section (6).
- C Remove screw (7), flat washer (8), lockwasher (9) and tube assembly (2).

### DISASSEMBLY

- A Remove screw (10), nut (11), lockwasher (12), flat washer (13) and hook (3),
- B Turn out and remove clevis (14) from toggle assembly (5).
- C Remove screw (15), flat washer (16) and remove clevis (17) and brace (18) from rod end (19).
- D Back off jam nut (20) and remove rod end (19). Remove jam nut (20) from tube assembly (2).

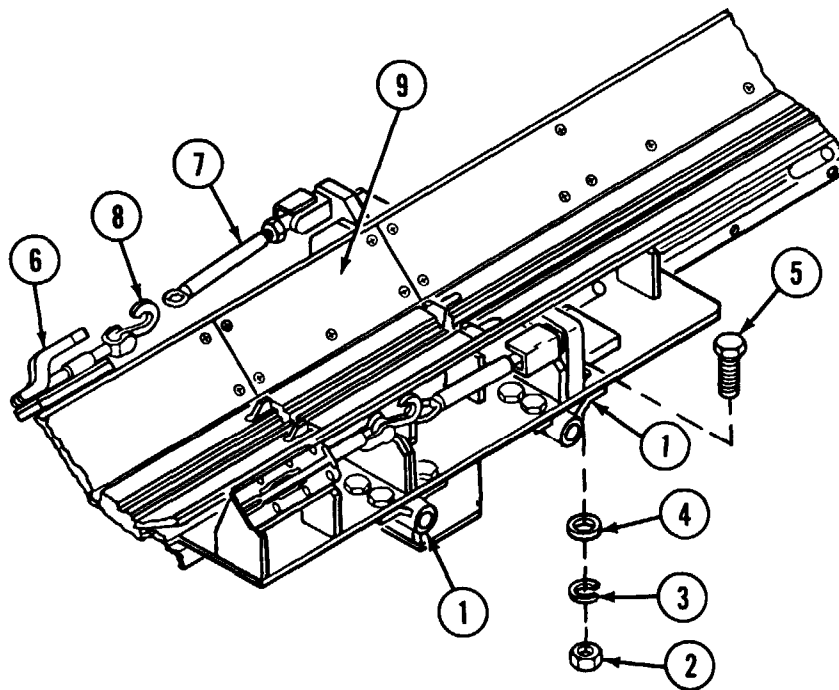
### ASSEMBLY

Reverse order of disassembly procedures.

### INSTALLATION

Reverse order of removal procedures.

## CONVEYOR CENTER SECTION ASSEMBLY: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove conveyor from vehicle (p 12-27).
- B Remove conveyor chain assembly (TM 9-2350-267-10).
- C Remove conveyor electrical wiring harness (p 6-121).
- D Remove from each hinge half (1), three nuts (2), three lockwashers (3), three flat washers (4) and three screws (5).

### WARNING

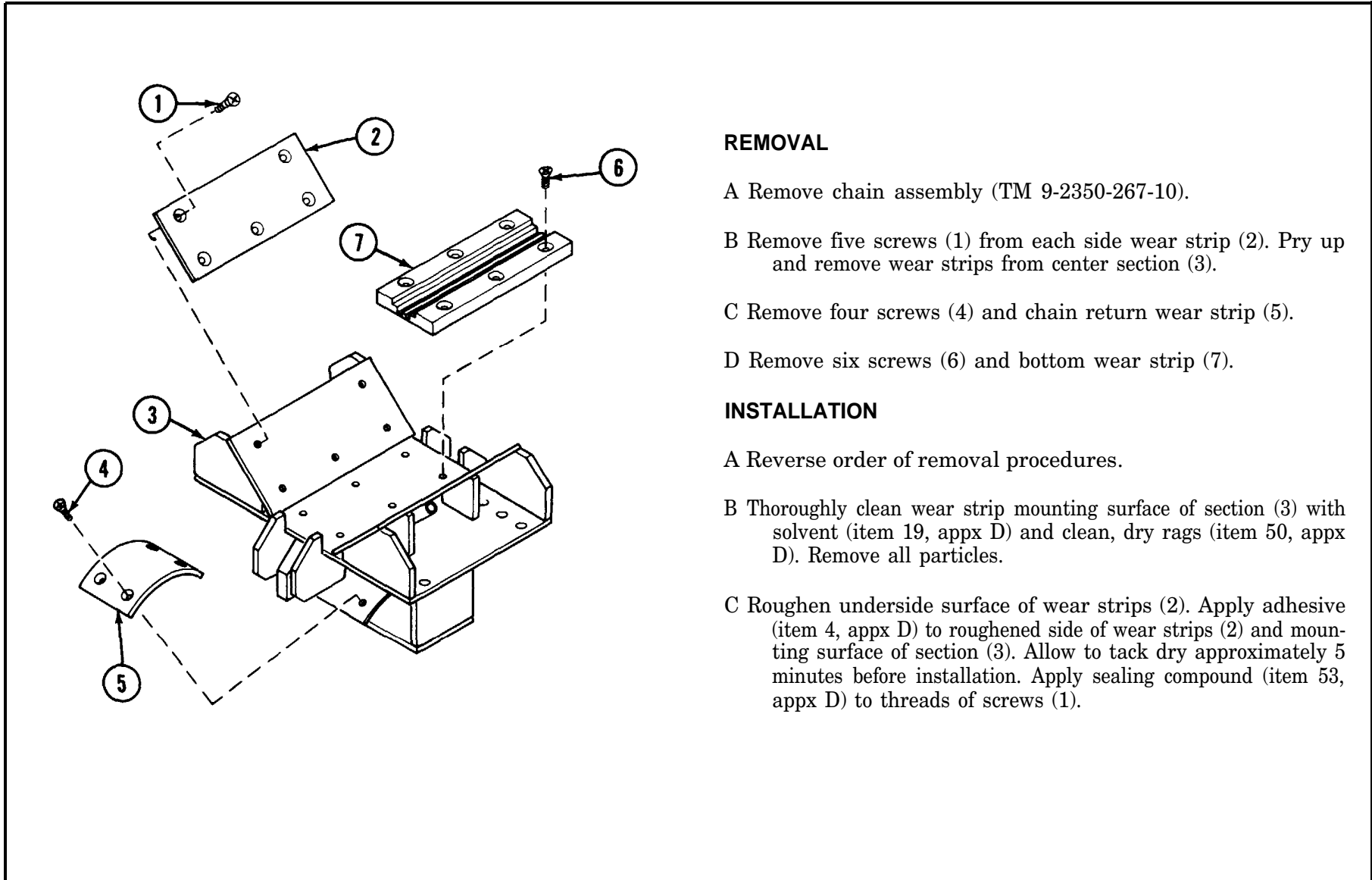
Be sure to support center section when hardware is removed and toggle clamps are raised to prevent injury to personnel.

- E Raise both toggle clamps (6) to release tension on tube assemblies (7), and remove tube eye from hooks (8).
- F Remove center section (9).

### INSTALLATION

- A Reverse order of removal procedures.
- B Reinstall chain assembly (TM 9-2350-267-10).
- C Reinstall conveyor wiring harness (p 6-121).

**CENTER SECTION ASSEMBLY SIDE WEAR STRIPS, CHAIN RETURN WEAR STRIP AND BOTTOM WEAR STRIP:  
REMOVAL AND INSTALLATION**



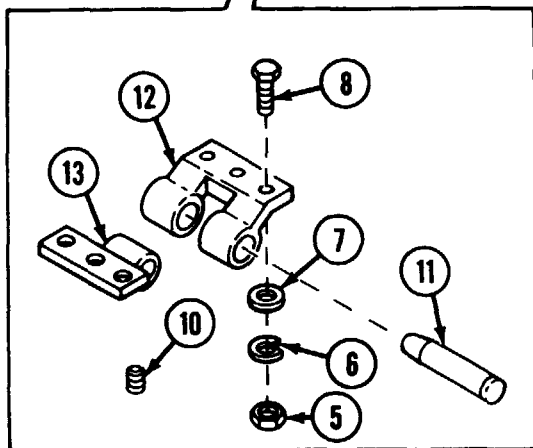
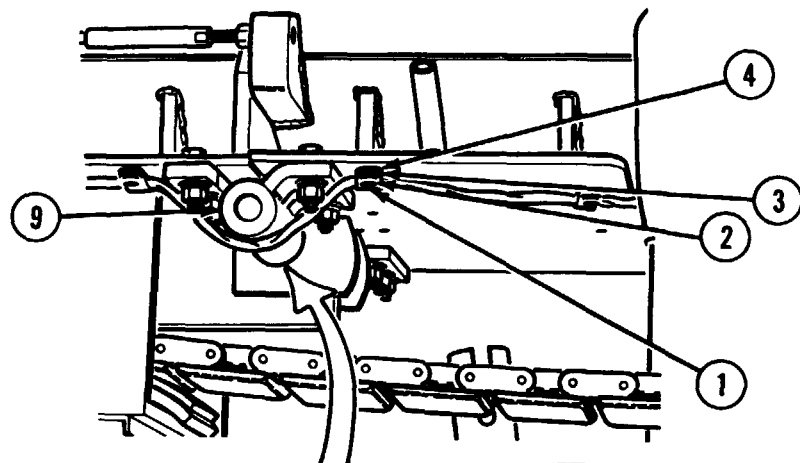
**REMOVAL**

- A Remove chain assembly (TM 9-2350-267-10).
- B Remove five screws (1) from each side wear strip (2). Pry up and remove wear strips from center section (3).
- C Remove four screws (4) and chain return wear strip (5).
- D Remove six screws (6) and bottom wear strip (7).

**INSTALLATION**

- A Reverse order of removal procedures.
- B Thoroughly clean wear strip mounting surface of section (3) with solvent (item 19, appx D) and clean, dry rags (item 50, appx D). Remove all particles.
- C Roughen underside surface of wear strips (2). Apply adhesive (item 4, appx D) to roughened side of wear strips (2) and mounting surface of section (3). Allow to tack dry approximately 5 minutes before installation. Apply sealing compound (item 53, appx D) to threads of screws (1).

## CONVEYOR HINGE ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### NOTE

The following procedures apply to all four hinge assemblies.

### WARNING

Do not remove more than one hinge at a time. Conveyor could collapse and injure personnel. Do not operate or stow conveyor with hinge removed.

### NOTE

Do step A for left side hinge removal only. Otherwise start at step B.

### REMOVAL

- A Remove cable clamps (1) on both sides of hinge by removing from each, one screw (2), one lockwasher (3) and one flat washer (4).
- B Remove six nuts (5), six lockwashers (6), six flat washers (7) and six bolts (8).
- C Remove hinge assembly (9) from conveyor sections.

### DISASSEMBLY

- A Loosen setscrew (10) and drive out hinge pin (11).
- B Separate hinge halves (12 and 13).

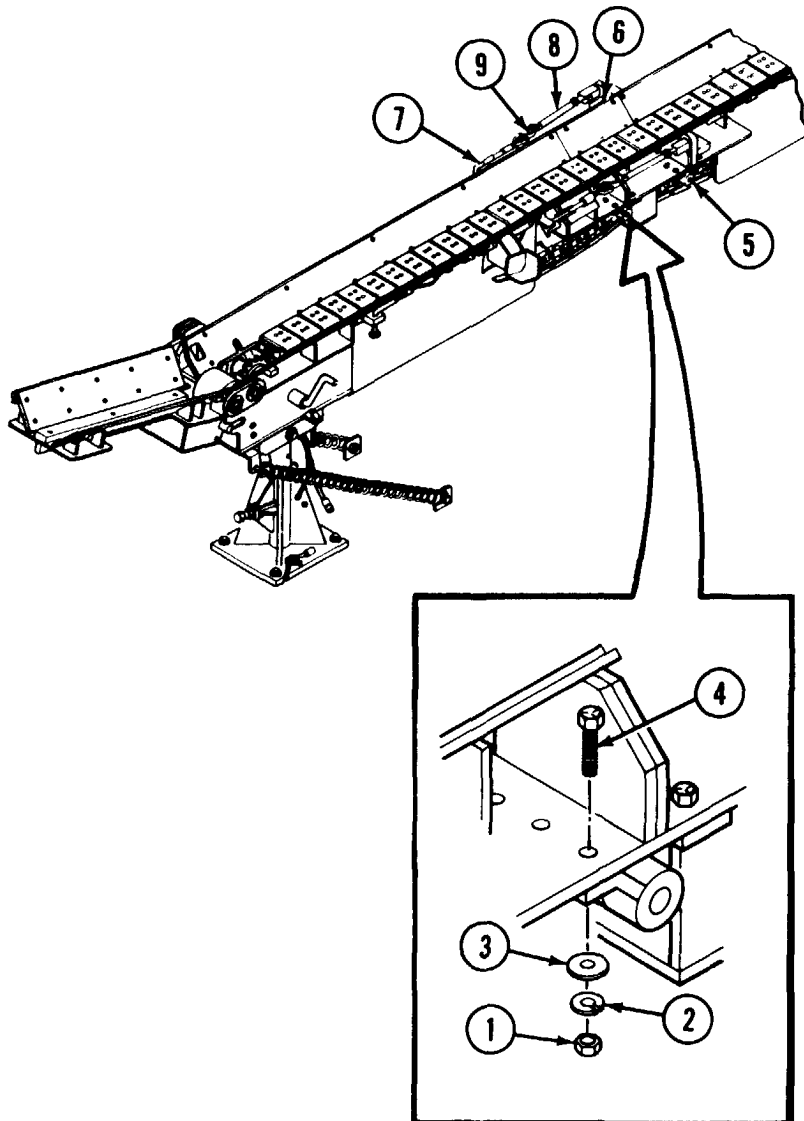
### ASSEMBLY

Reverse disassembly procedures.

### INSTALLATION

Reverse removal procedures.

## DRIVE END SECTION ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### REMOVAL

- A Remove conveyor assembly from vehicle (p 12-27).
- B Remove conveyor chain assembly (TM 9-2350-267-10).
- C Remove electrical wiring harness (p 6-121).
- D Remove dead-end section from drive-end section (p 12-12).
- E Remove three nuts (1), three lockwashers (2), three flat washers (3) and three screws (4) from two hinge halves (5).

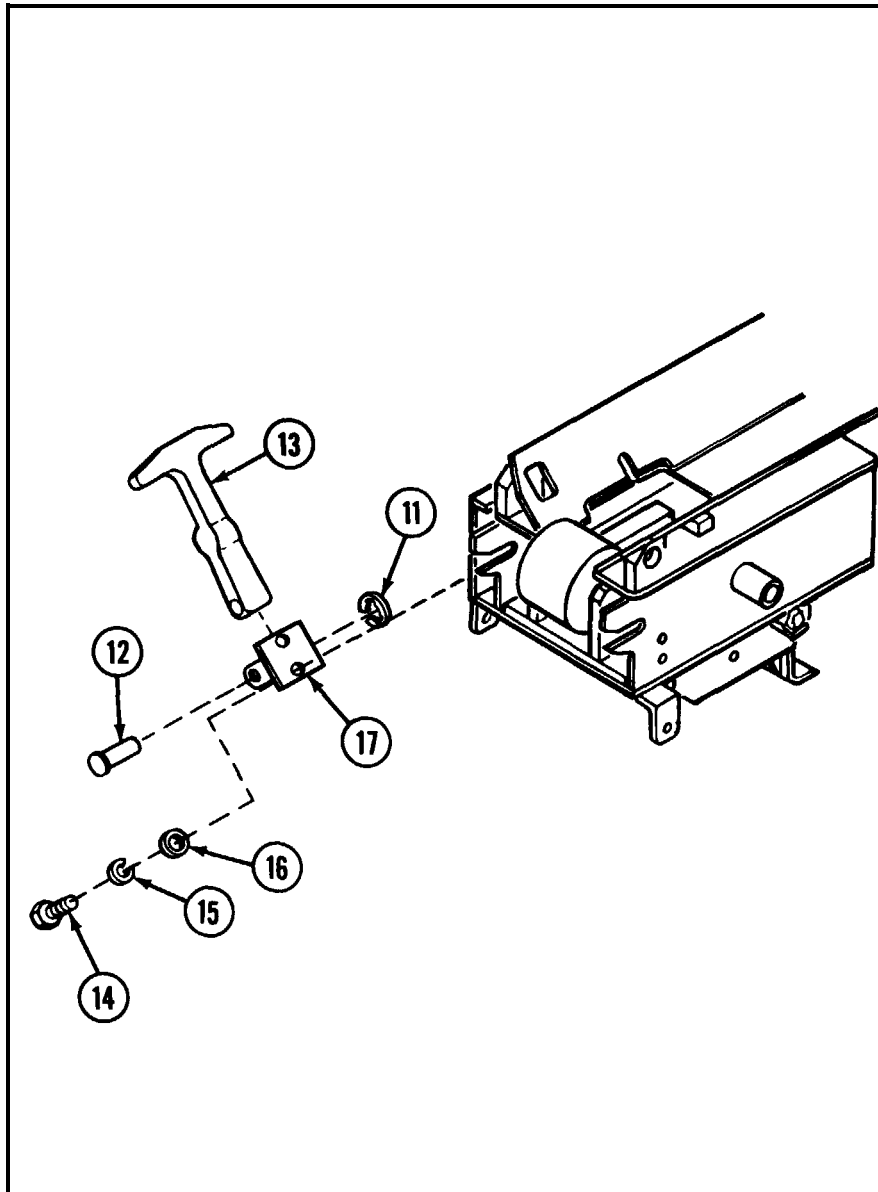
### NOTE

Allow hinge halves to remain secured to center section (6).

- F Release toggle clamps (7) and disconnect tube assembly (8) from safety hooks (9) and remove drive-end section from conveyor assembly.



## DRIVE-END SECTION ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### DISASSEMBLY

- A Remove hydraulic motor (p 12-29).
- B Remove drive-end section coupling sprocket, pillow blocks and drive sprocket assembly (p 12-7).
- C Remove toggle clamps (p 12-20).
- D Remove wear strips (p 12-26).
- E Remove clip (11), pin (12) and rubber latch (13).
- F Remove two screws (14), two lockwashers (15), two flat washers (16) and bracket (17).

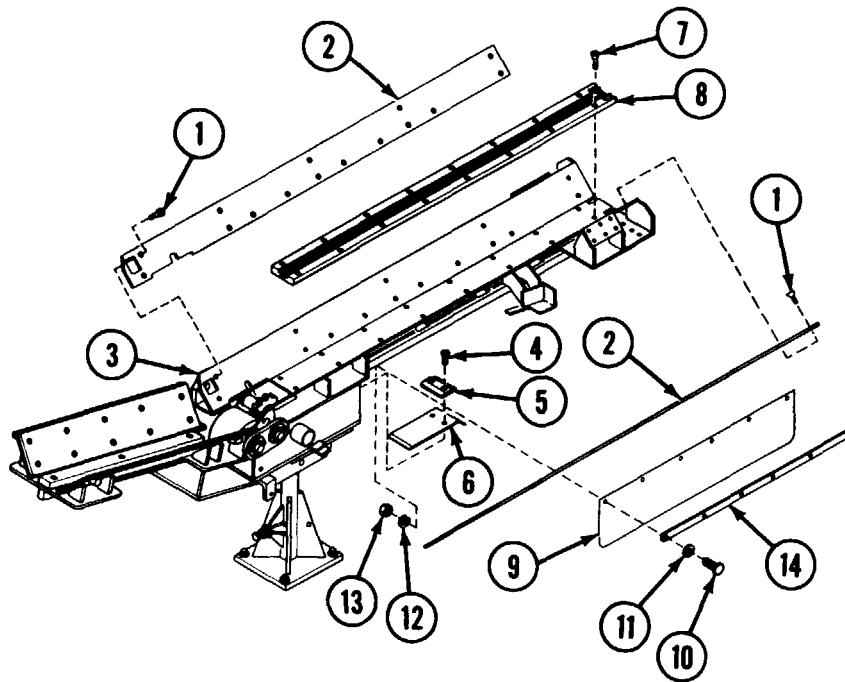
### ASSEMBLY

Reverse order of disassembly procedures.

### INSTALLATION

Reverse order of removal procedures.

## DRIVE-END SECTION SIDE WEAR STRIPS, CHAIN RETURN WEAR STRIP, BOTTOM WEAR STRIP, CHAIN GUARDS: REMOVAL AND INSTALLATION



### REMOVAL

#### NOTE

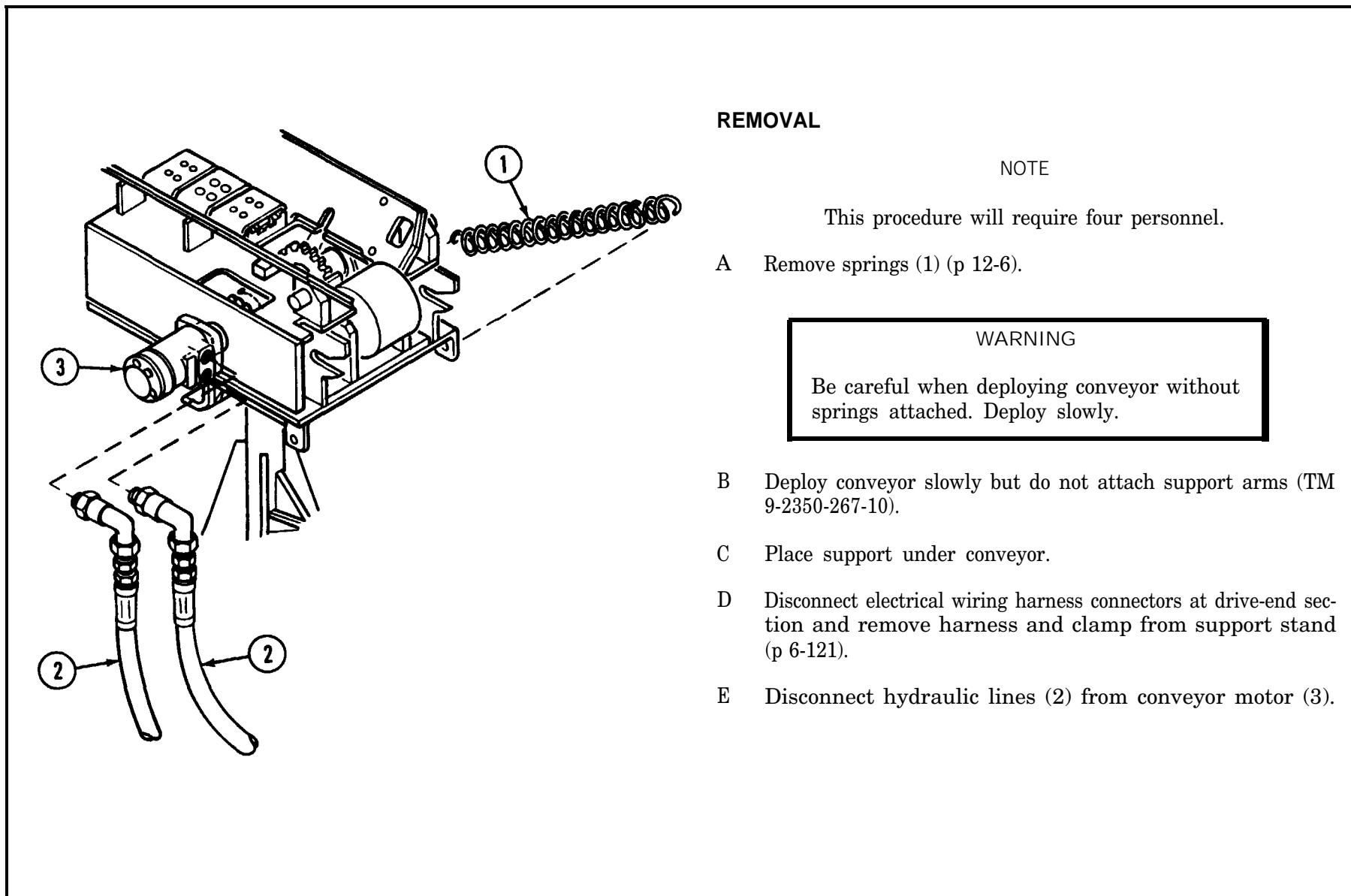
Do not remove chain from around take-up end section.

- A Remove chain assembly from work area (TM 9-2350-267-10).
- B Remove 10 screws (1) from each side wear strip (2). Pry up and remove wear strips from drive-end section (3).
- C Remove two screws (4), wear strip (5) and spacer (6) from conveyor section.
- D Remove 16 screws (7) and bottom wear strip (8).
- E Remove chain guard (9) by removing from each, six screws (10), six flat washers (11), six lockwashers (12), six nuts (13) and retaining strip (14).

### INSTALLATION

- A Reverse order of removal procedures.
- B Thoroughly clean wear strip mounting surface of section (3) with solvent (item 19, Appx D) and clean, dry rags (item 50, Appx D). Remove all particles.
- C Roughen underside surface of wear strips (2). Apply adhesive (item 1, Appx D) to roughened side of wear strips (2) and mounting surface of section (3). Allow to dry until tacky before installation. Apply sealing compound (item 53, Appx D) to threads of screws (1).

## CONVEYOR ASSEMBLY AND SUPPORT STAND: REMOVAL AND INSTALLATION



### REMOVAL

#### NOTE

This procedure will require four personnel.

- A Remove springs (1) (p 12-6).

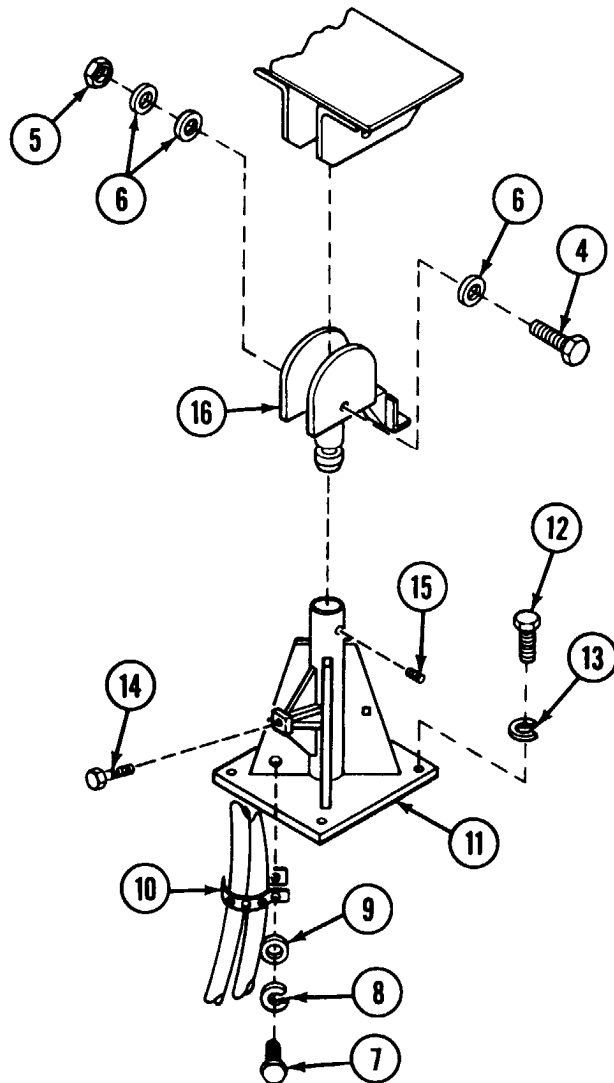
#### WARNING

Be careful when deploying conveyor without springs attached. Deploy slowly.

- B Deploy conveyor slowly but do not attach support arms (TM 9-2350-267-10).
- C Place support under conveyor.
- D Disconnect electrical wiring harness connectors at drive-end section and remove harness and clamp from support stand (p 6-121).
- E Disconnect hydraulic lines (2) from conveyor motor (3).

TA310227

### CONVEYOR ASSEMBLY AND SUPPORT STAND: REMOVAL AND INSTALLATION (CONTINUED)



F Remove bolt (4), nut (5) and three washers (6).

G Disconnect conveyor support cables by removing quick-disconnect pins (p 12-2).

H Lift and remove conveyor assembly from vertical support and move from work area.

I Remove screw (7), lockwasher (8), flat washer (9) and strap (10) that secure two hydraulic hoses to support stand (11).

J Remove four bolts (12) and four lockwashers (13) and remove support stand (11).

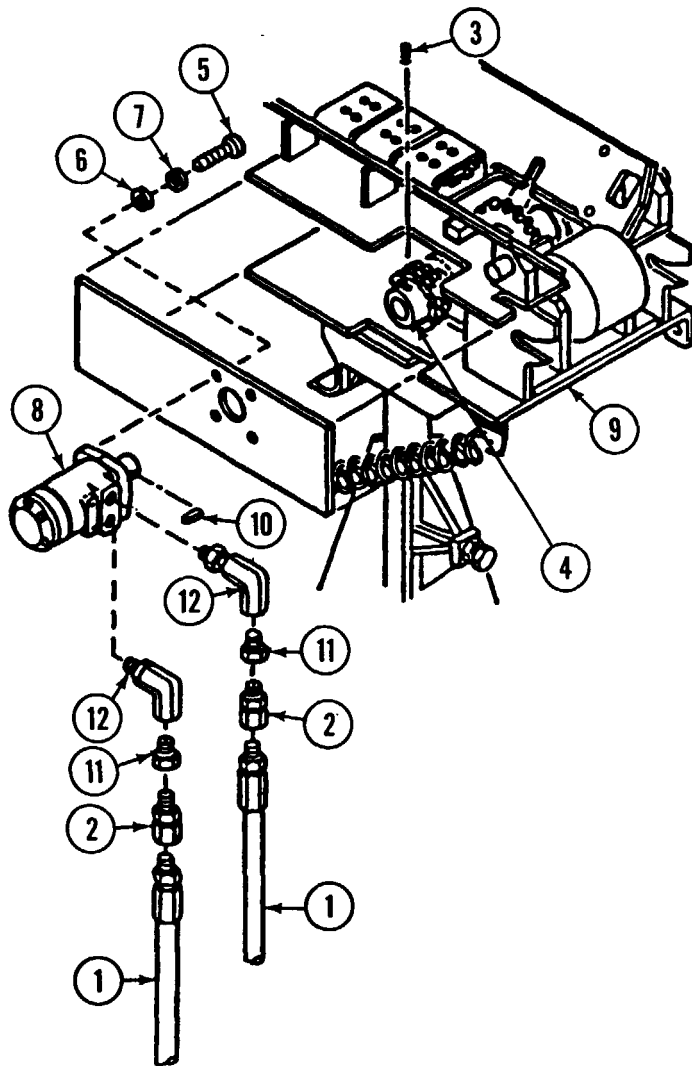
K Unscrew and remove support stand stop (14).

L Loosen two setscrews (15) securing top support (16) to support stand (11) and remove top support (16).

#### INSTALLATION

Reverse order of removal procedures.

## HYDRAULIC MOTOR: REMOVAL AND INSTALLATION



### NOTE

Tag hydraulic lines for reinstallation.

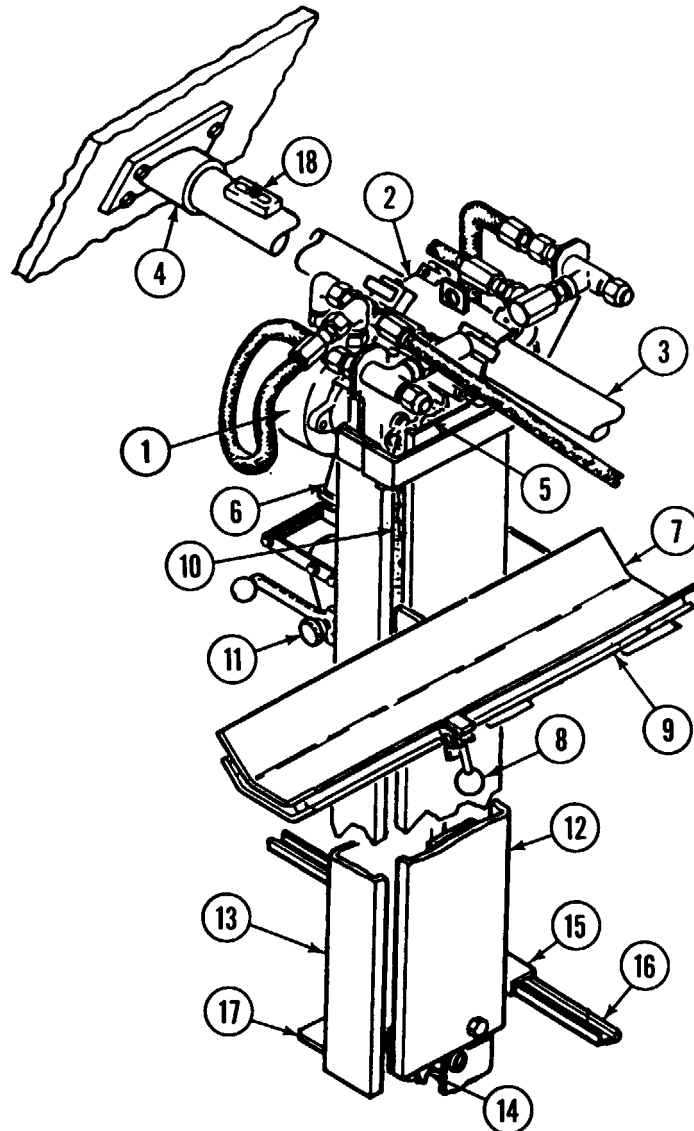
### REMOVAL

- A Disconnect two motor hydraulic lines (1) from two adapters (2).
- B Loosen setscrew (3) in coupling sprocket (4).
- C Remove four screws (5), four flat washers (6), and four lockwashers (7) that secure motor (8) to conveyor drive-end section (9). Pull motor (8) from conveyor drive-end section (9) and coupling sprocket (4).
- D Remove key (10) from shaft of motor (8).
- E Remove two adapters (2), two reducers (11) and two elbows (12) from motor (8).

### INSTALLATION

Reverse enter of removal procedures.

## Section II STACKER ASSEMBLY



## LEGEND

- 1 Hydraulic motor and brake.
- 2 Support Assembly
- 3 Upper cross member
- 4 Support bracket
- 5 Drive sprocket
- 6 Motor support bracket
- 7 Sliding tray
- 8 Knob assembly
- 9 Carrier
- 10 Roller chain
- 11 Winch assembly
- 12 Outer guard
- 13 Inner guard
- 14 Idler sprocket
- 15 Sprocket support and floor brake
- 16 Wear strip
- 17 Foot brake pedal
- 18 Crossmember plate (vehicles 471 and above)

## STACKER ASSEMBLY REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

Stacker/crane lifting device (item 1, Appx G)  
Suitable lifting device

#### Materials/Parts:

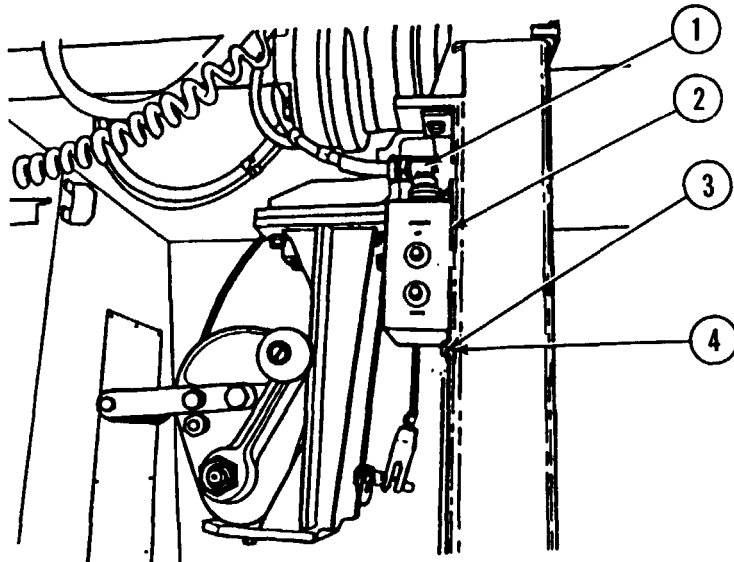
Zinc chromate paste (item 46, Appx D)

#### Personnel Required:

Two

#### References:

TM 9-2350-267-10



### REMOVAL

#### WARNING

High pressure hydraulic fluid is used to operate stacker. Serious injury may result when high pressure fluid comes in contact with skin. Shutoff all hydraulic components before performing any maintenance.

#### CAUTION

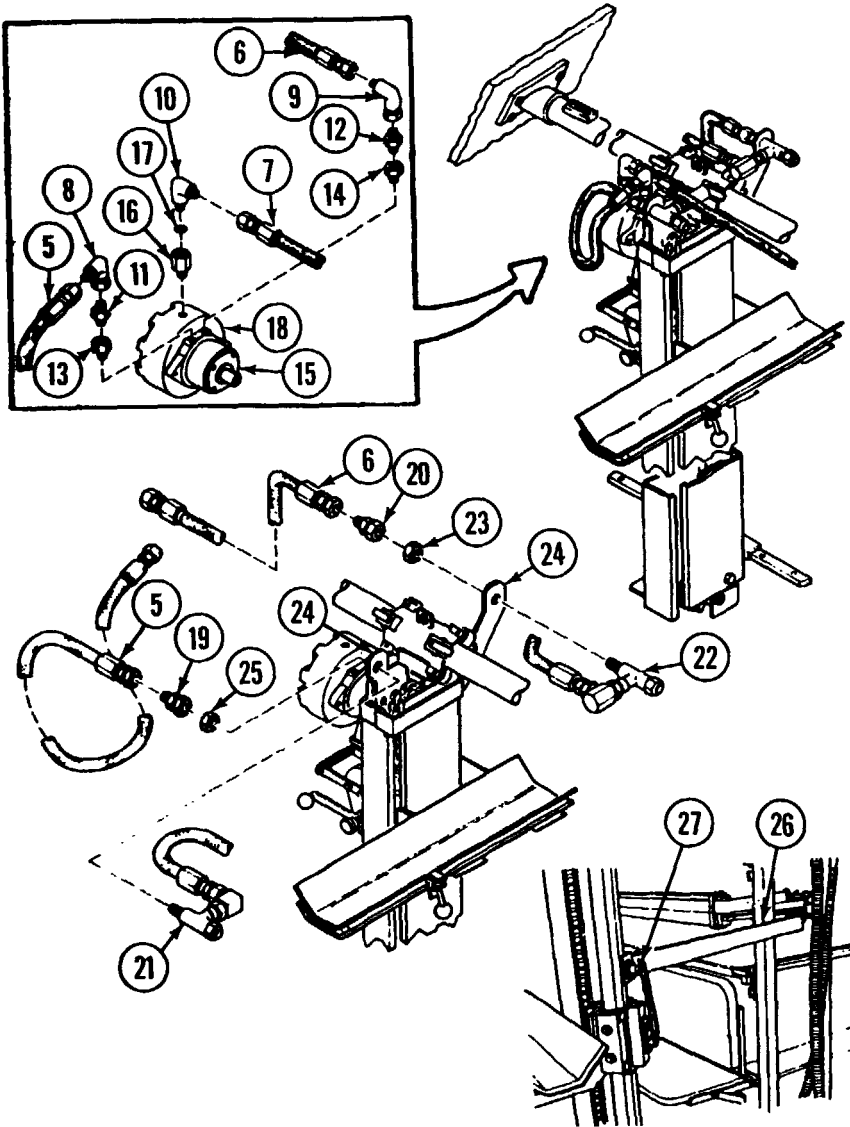
Cap hydraulic lines and ports immediately after disconnecting to prevent contaminants from entering hydraulic system and hydraulic components.

#### NOTE

Note location and muting of hoses prior to removal. Tag hoses and fittings upon removal to ensure proper installation.

- A Disconnect electrical connector (1) from stacker control switch box (2).
- B Remove stacker control switch box (2) by removing four screws (3) and four lockwashers (4). Discard lockwashers.

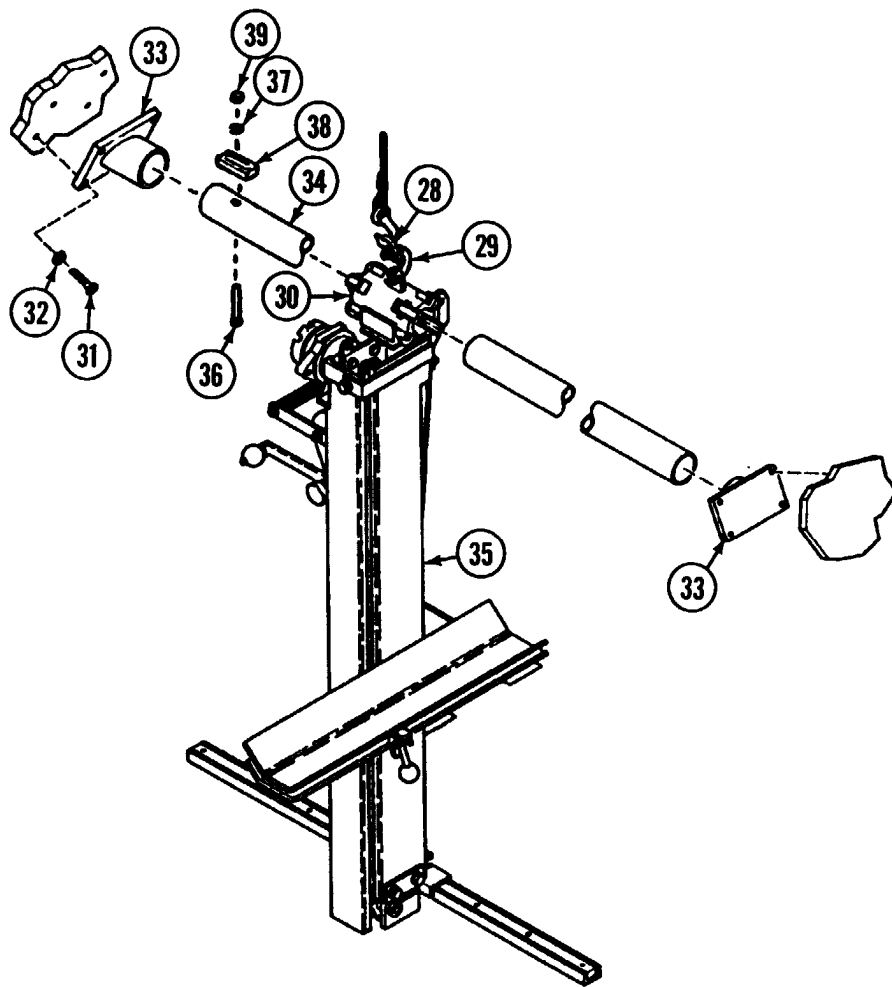
## STACKER ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



- C Disconnect three hydraulic hoses (5, 6, and 7) from elbows (8, 9, and 10).
- D Remove elbows (8 and 9) from adapters (11 and 12).
- E Remove elbows (8 and 9) from adapters (11 and 12).
- F Remove adapters (13 and 14) from ports of hydraulic motor (15).
- G Remove elbow (10) from expander (16).
- H Remove preformed packing (17) from elbow (10) and discard.
- I Remove expander (16) from port of hydraulic brake (18).
- J Remove hose (5) from reducer assembly (19) and remove hose (6) from reducer assembly (20).
- K Remove reducer assembly (19) from tee assembly (21) and remove reducer assembly (20) from tee assembly (22).
- L Remove nut (23) and tee assembly (22) from stacker motor support bracket (24).
- M Remove nut (25) and tee assembly (21) fro stacker motor support bracket (24).
- N Disconnect bar assembly (26) from stacker motor support bracket (24) by pulling quick-disconnect pin (27).



## STACKER ASSEMBLY REMOVAL AND INSTALLATION (CONTINUED)



- O Open and secure vehicle top doors (TM 9-2350-267-10).
- P Secure clevis (28) to stacker/crane lifting device (29).

### CAUTION

**Make sure stacker is supported. Do not allow stacker to fall.**

### NOTE

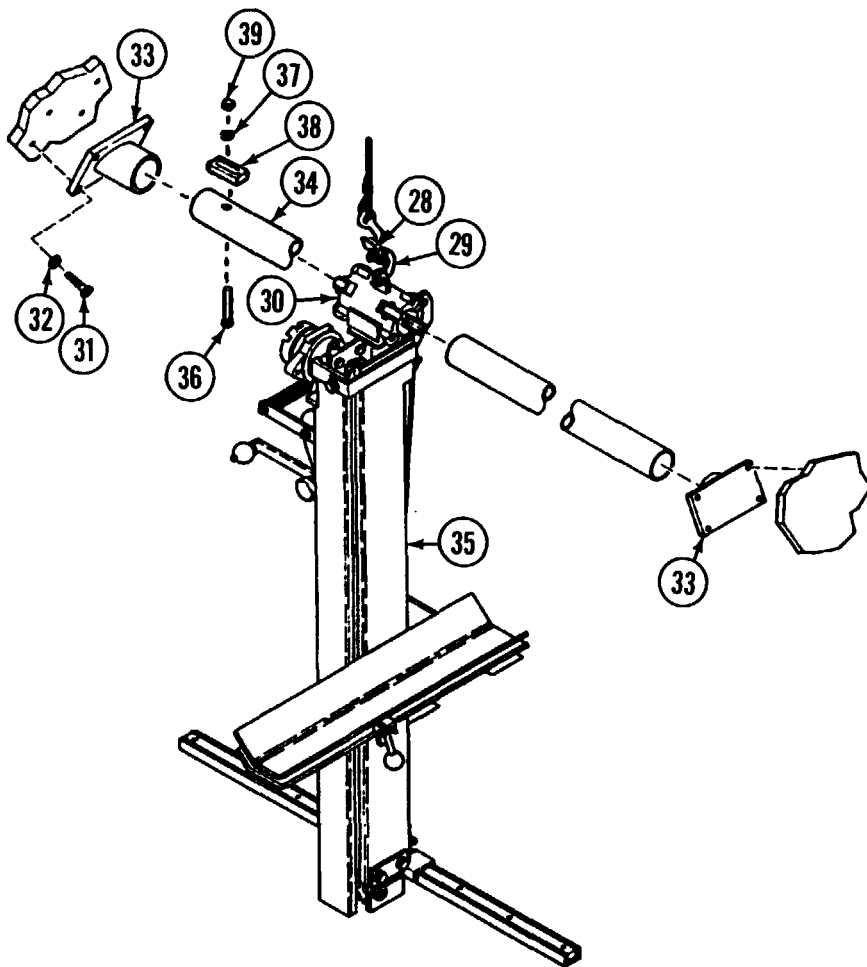
After attaching suitable lifting device to clevis, pay in cable to take slack out. Lifting device must support stacker and upper crossmember assembly.

- Q Attach stacker/crane lifting device (29) to lifting eye on top of roller support (30). Attach suitable lifting device to clevis (28).
- R Remove eight screws (31) and eight lockwashers (32) that secure two upper crossmember supports (33) to vehicle ceiling. Discard lockwashers.
- S Remove upper crossmember supports (33) from upper crossmember (34).

### NOTE

Step T applies to vehicles 471 and above.

- T Remove screw (36), plate (38), washer (37), and locknut (39) from upper crossmember (34). Discard locknut.
- U Slide upper crossmember (34) out of stacker roller support (30).
- V Lift stacker assembly (35) from vehicle and remove stacker/crane lifting device (29) from lifting eye on top of roller support (30).

**STACKER ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

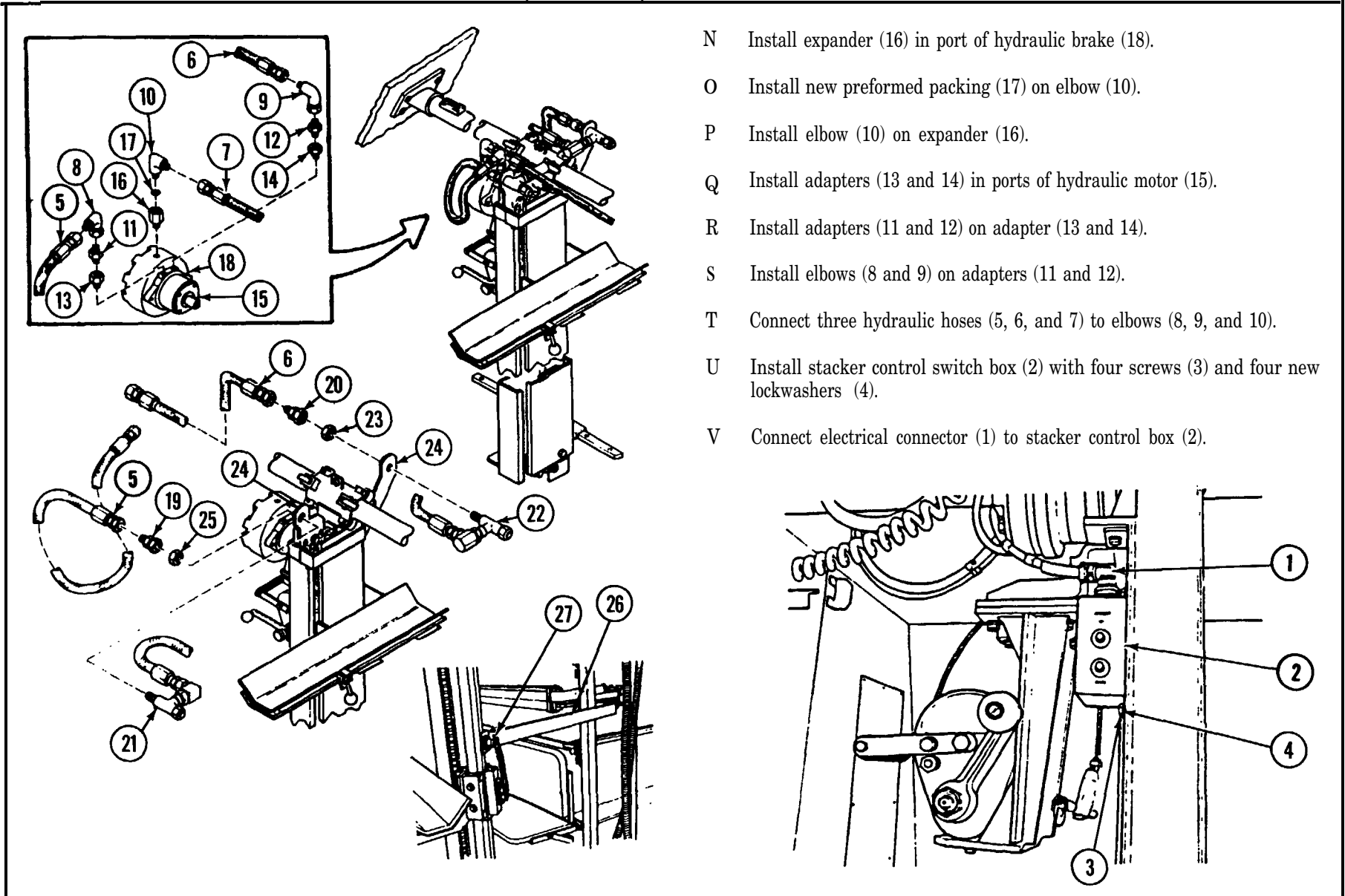
- A Install stacker/crane lifting device (29) in lifting eye on top of roller support (30) and lift stacker assembly (35) into vehicle.
- B Slide upper crossmember (34) through stacker roller support (30).

**NOTE**

Step C applies to vehicles 471 and above.

- C Install screw (36), plate (38), washer (37), and new locknut (39) on stacker crossmember (34).
- D Install upper crossmember supports (33) on upper crossmember (34).
- E Secure two upper crossmember supports (33) to vehicle ceiling with eight screws (31) and eight new lockwashers (32).
- F Remove lifting device from clevis (28) and remove stacker/crane lifting device (29) from lifting eye on top of roller support (30).
- G Remove clevis (28) from stacker/crane lifting device (29).
- H Close and secure vehicle top doors (TM 9-2350-267-10).
- I Connect bar assembly (26) to stacker motor support bracket (24) with quick-disconnect pin (27).
- J Install tee assembly (21) on stacker motor support bracket (24) and secure with nut (25).
- K Install tee assembly (22) on stacker motor support bracket (24) and secure with nuts (23).
- L Install reducer assemblies (19 and 20) on tee assemblies (21 and 22).
- M Install hoses (5 and 6) on reducer assemblies (19 and 20).

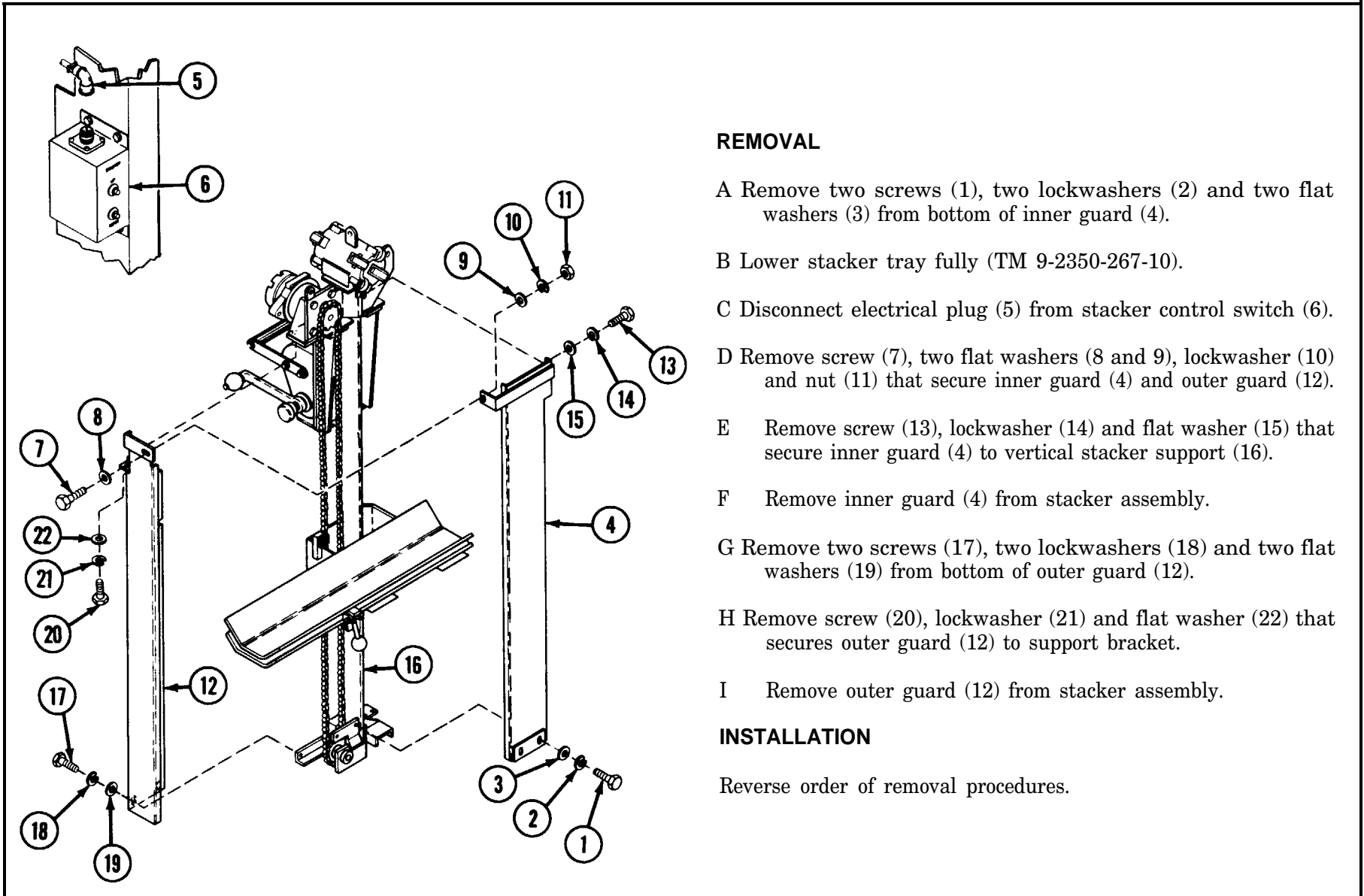
## STACKER ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



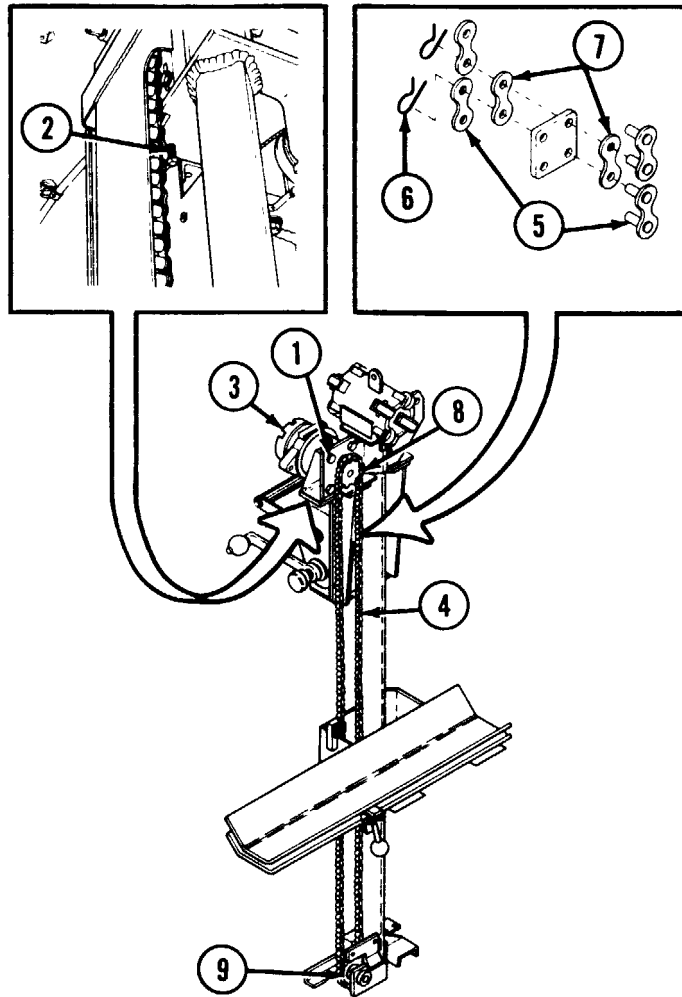
- N Install expander (16) in port of hydraulic brake (18).
- O Install new preformed packing (17) on elbow (10).
- P Install elbow (10) on expander (16).
- Q Install adapters (13 and 14) in ports of hydraulic motor (15).
- R Install adapters (11 and 12) on adapter (13 and 14).
- S Install elbows (8 and 9) on adapters (11 and 12).
- T Connect three hydraulic hoses (5, 6, and 7) to elbows (8, 9, and 10).
- U Install stacker control switch box (2) with four screws (3) and four new lockwashers (4).
- V Connect electrical connector (1) to stacker control box (2).



## OUTER AND INNER GUARDS: REMOVAL AND INSTALLATION



TA310231

**ROLLER CHAIN: REMOVAL AND INSTALLATION****REMOVAL**

- A Lower sliding tray (TM 9-2350-267-10).
- B Remove inner and outer guards (p 12-31).
- C Loosen four screws (1) and setscrew (2), and lower motor drive assembly (3), releasing tension on roller chain (4).
- D Remove two master links (5) from carrier by removing four cotter pins (6), and remove two connecting links (7).
- E Remove chain (4) from around drive sprocket (8) and idler sprocket (9).

**INSTALLATION**

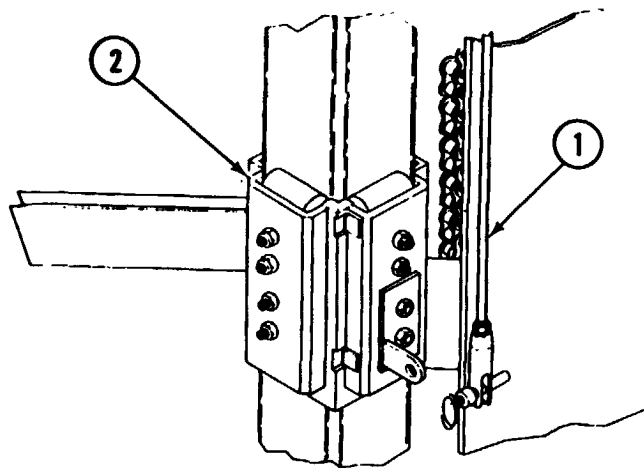
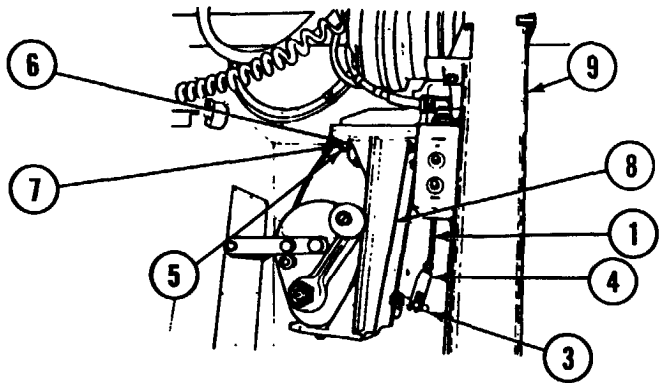
Reverse order of removal procedures. Adjust chain tension (TM 9-2350-267-10).

## WINCH ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

General mechanic's tool kit (item 52, Appx B)  
Soft-jawed vise (item 40, Appx B)



#### Material/Parts:

Lubricating grease (item 27, Appx D)  
Wiping rag (item 50, Appx D)

#### References:

TM 9-2350-267-10

#### REMOVAL

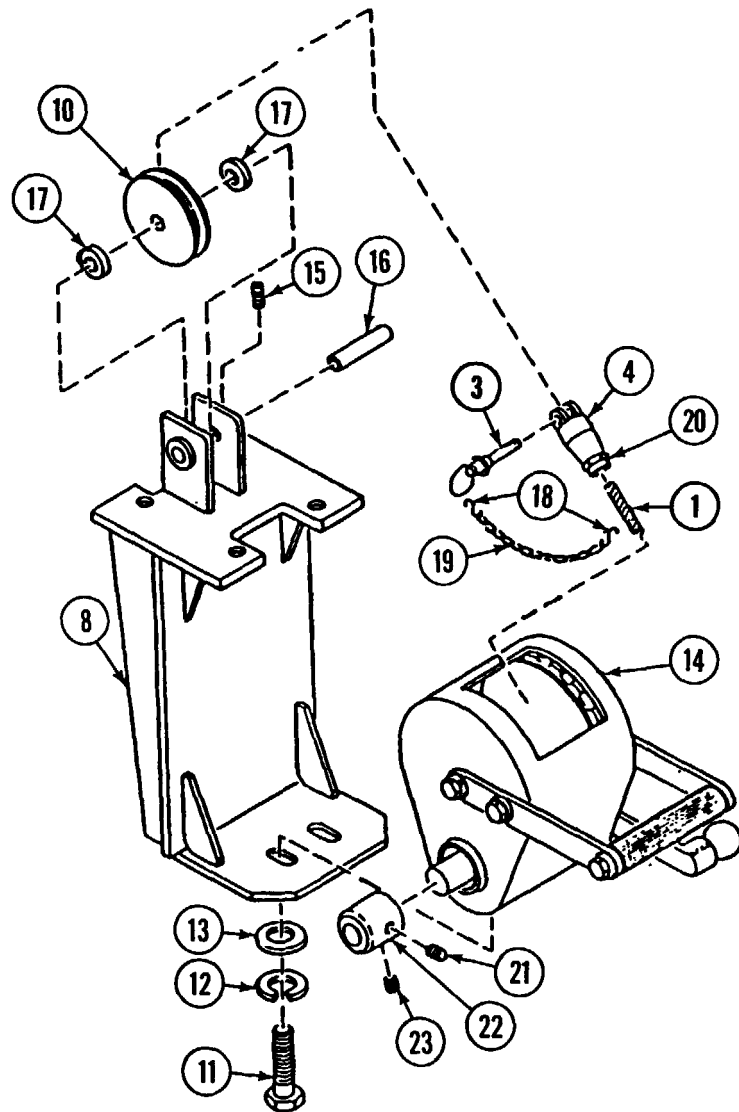
#### WARNING

If winch cable (1) is supporting weight of carrier (2), do step B. Falling carrier (2) could cause serious injury.

#### NOTE

If winch cable (1) is connected to, but not supporting carrier (2), do step B. If not go to step C.

- A Lower carrier (2) to vehicle floor by slowly playing out winch cable (1) (TM 9-2350-267-10).
- B Remove quick-release pin (3) from winch cable clevis (4) and disconnect cable (1) from carrier (2).
- C Remove four screws (5), four flat washers (6), and four lockwashers (7) that secure winch bracket (8) to stacker support (9). Discard lockwashers.

**WINCH ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)****DISASSEMBLY**

- A Remove winch cable (1) from around sheave (10) and winch drum.
- B Remove two bolts (11), two lockwashers (12), two flat washers (13) and winch (14) from winch bracket (8). Discard lockwashers.
- C Remove setscrew (15).
- D Tap shaft (16) from bracket (8) and remove two spacers (17) and sheave (10).
- E Open two S-hooks (18) and remove quick-release chain (19) from cable (1).

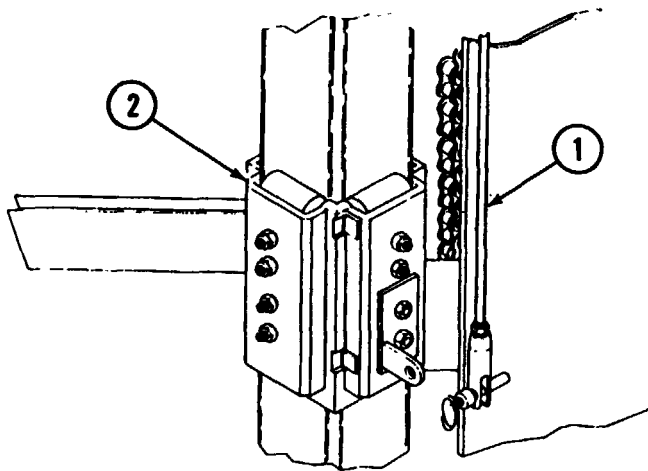
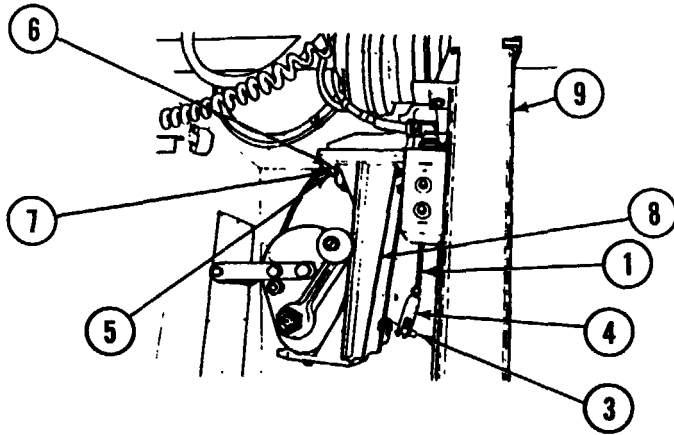
**CAUTION**

Position clevis (4) in soft jawed vise so that it will not be bent or closed when vice jaws are tightened.

- F Place clevis (4) in soft jawed vise and loosen locknut (20). Pull cable (1) from clevis (4).
- G Rotate winch (14) crank until setscrew (21) in sleeve (22) is accessible. Loosen setscrew (21). Do not remove unless damaged.
- H Rotate winch (14) crank until setscrew (23) in sleeve (22) is accessible. Loosen setscrew (23). Do not remove unless damaged.
- I Remove sleeve (22) from winch (14) crank.



## WINCH ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)



### ASSEMBLY

A Install sleeve (22) on winch (14) crank and secure by tightening two setscrews (21 and 23).

B Insert cable (1) in clevis (4) and secure by tightening locknut (20).

C Install quick-release pin (3) and chain (19) on cable (1) with two S-hooks (18).

D Install two spacers (17) and sheave (10) on winch bracket (8) with shaft (16).

E Install setscrew (15).

F Install winch (14) on bracket (8) with two bolts (11), two new lockwashers (12) and two flat washers (13).

G Install winch cable (1) around sheave (10) and winch drum.

### INSTALLATION

A Install winch bracket (8) to stacker support (9) with four screws (5), four flat washers (6) and four new lockwashers (7).

B Connect cable (1) to carrier (2) by inserting quick-release pin (3) in winch cable clevis (4).

C Raise carrier (2) from vehicle floor.

### CARRIER ASSEMBLY AND MOTOR SUPPORT BRACKET: REMOVAL INSTALLATION AND ADJUSTMENT

#### INITIAL SETUP

##### Parts/Materials:

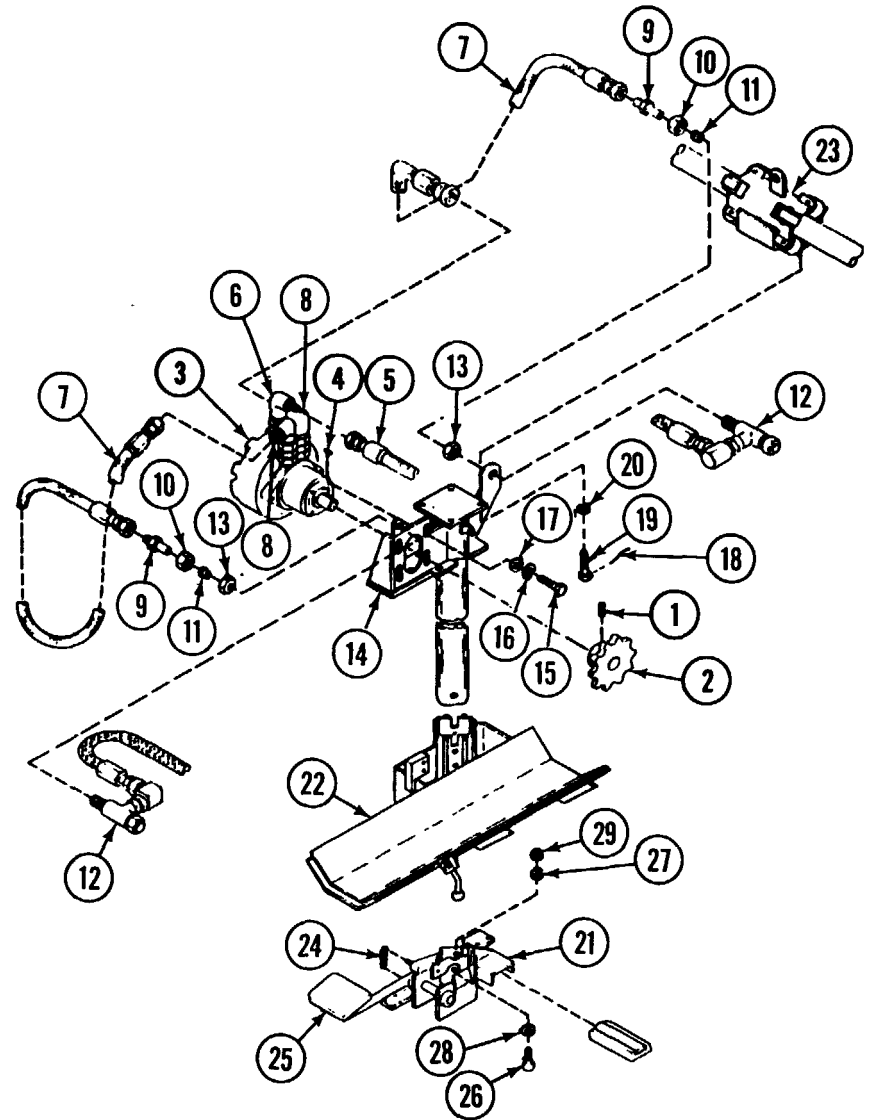
Wire, nonelectrical

##### Personnel Required:

Two

##### Equipment Condition:

Outer and inner stacker guards remove (p 12-31).  
 Winch assembly removed (p 12-32.1).  
 Roller chain removed (p 12-32)



# CARRIER ASSEMBLY AND MOTOR SUPPORT BRACKET: REMOVAL, INSTALLATION AND ADJUSTMENT (CONTINUED)

## REMOVAL

### WARNING

- Make sure all systems are shut down and MASTER switch if OFF. Hydraulic fluid may be HOT.
- Do not perform removal procedures until backup hydraulic gage has been visually checked. Gage must show 0 psi.

### CAUTION

Cap hydraulic lines and ports immediately after disconnecting to prevent contaminants from entering hydraulic system and hydraulic components.

### NOTE

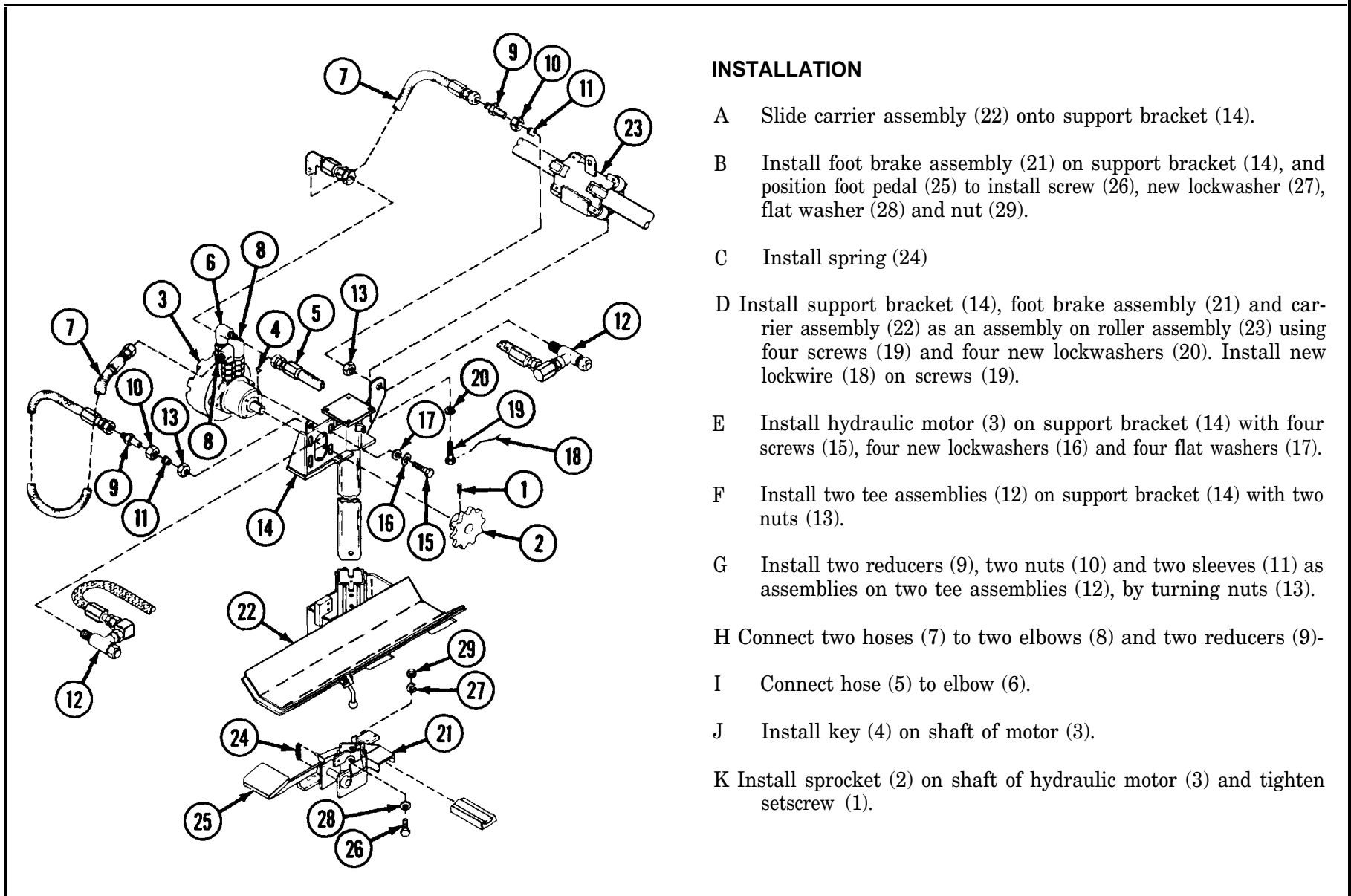
Note location of sprocket on motor shaft to ensure proper assembly.

- A Loosen setscrew (1) and remove sprocket (2) from shaft of hydraulic motor (3).
- B Remove key (4) from shaft of motor (3).

### NOTE

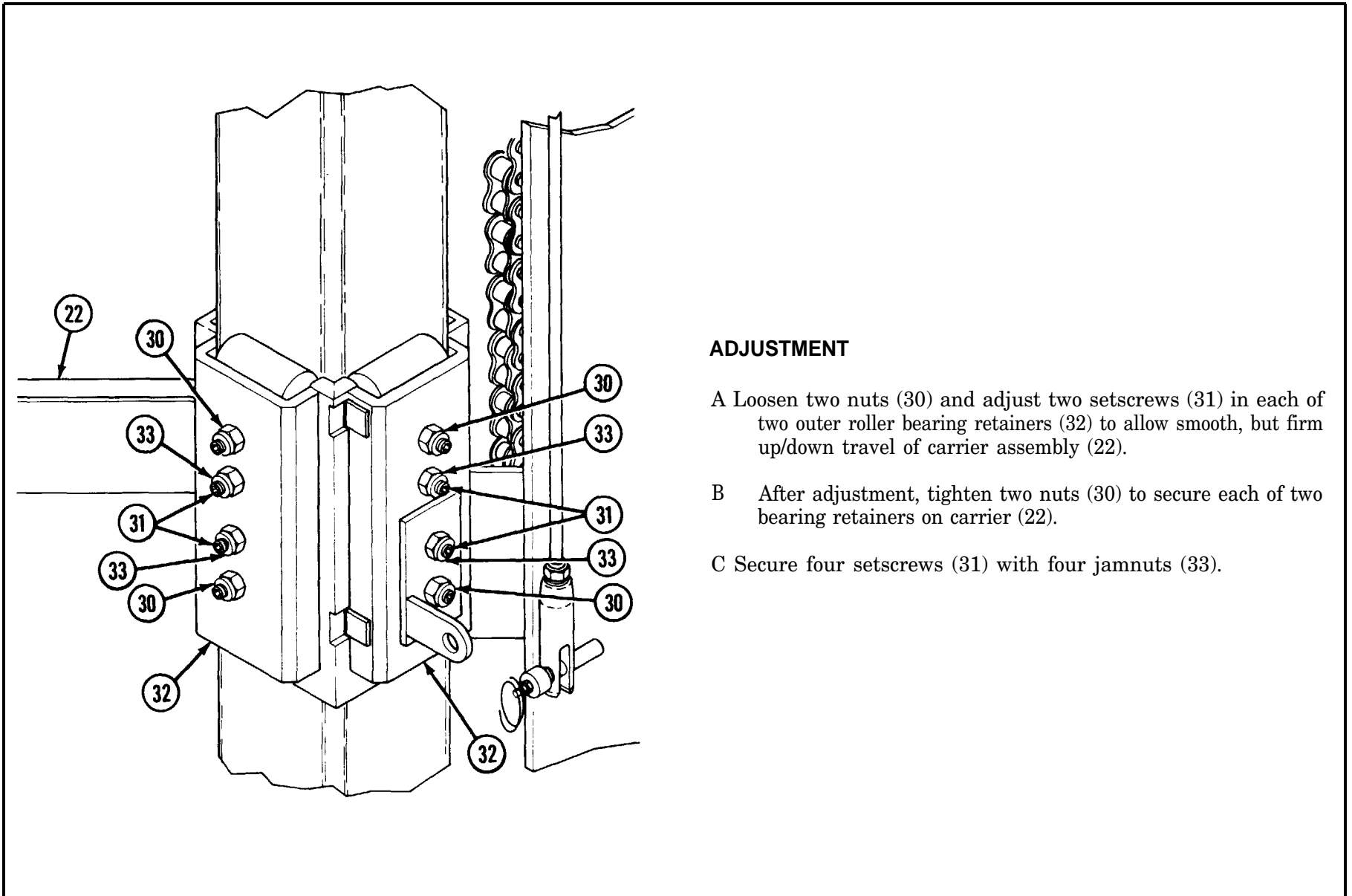
Note location and routing of hoses before removal to ensure proper installation.

- C Disconnect hose (5) from elbow (6).
- D Disconnect two hoses (7) from two elbows (8) and reducers (9).
- E Remove two reducers (9), two nuts (10) and two sleeves (11) as assemblies from two tee assemblies (12) by turning nuts (13).
- F Remove two nuts (13) and pull two tee assemblies (12) from support bracket (14).
- G While helper holds hydraulic motor (3), remove four screws (15), four lockwashers (16), four flat washers (17), and hydraulic motor (3) from support bracket (14). Discard lockwashers. Cut and discard lockwire.
- H Cut and discard lockwasher (18).
- I Remove four screws (19) and four lockwashers (20) to remove support bracket (14), foot brake assembly (21 ) and carrier assembly (22) as an assembly from roller assembly (23). Have helper assist to move assembly to suitable workplace. Discard lockwashers.
- J Remove spring (24) and position foot pedal (25) to remove screw (26), lockwasher (27), flat washer (28) and nut (29), and remove foot brake assembly (21) from support bracket (14). Discard lockwasher.
- K Slide carrier assembly (22) off support bracket (14).

**CARRIER ASSEMBLY AND MOTOR SUPPORT BRACKET: REMOVAL, INSTALLATION AND ADJUSTMENT (CONTINUED)****INSTALLATION**

- A Slide carrier assembly (22) onto support bracket (14).
- B Install foot brake assembly (21) on support bracket (14), and position foot pedal (25) to install screw (26), new lockwasher (27), flat washer (28) and nut (29).
- C Install spring (24)
- D Install support bracket (14), foot brake assembly (21) and carrier assembly (22) as an assembly on roller assembly (23) using four screws (19) and four new lockwashers (20). Install new lockwire (18) on screws (19).
- E Install hydraulic motor (3) on support bracket (14) with four screws (15), four new lockwashers (16) and four flat washers (17).
- F Install two tee assemblies (12) on support bracket (14) with two nuts (13).
- G Install two reducers (9), two nuts (10) and two sleeves (11) as assemblies on two tee assemblies (12), by turning nuts (13).
- H Connect two hoses (7) to two elbows (8) and two reducers (9)-
- I Connect hose (5) to elbow (6).
- J Install key (4) on shaft of motor (3).
- K Install sprocket (2) on shaft of hydraulic motor (3) and tighten setscrew (1).

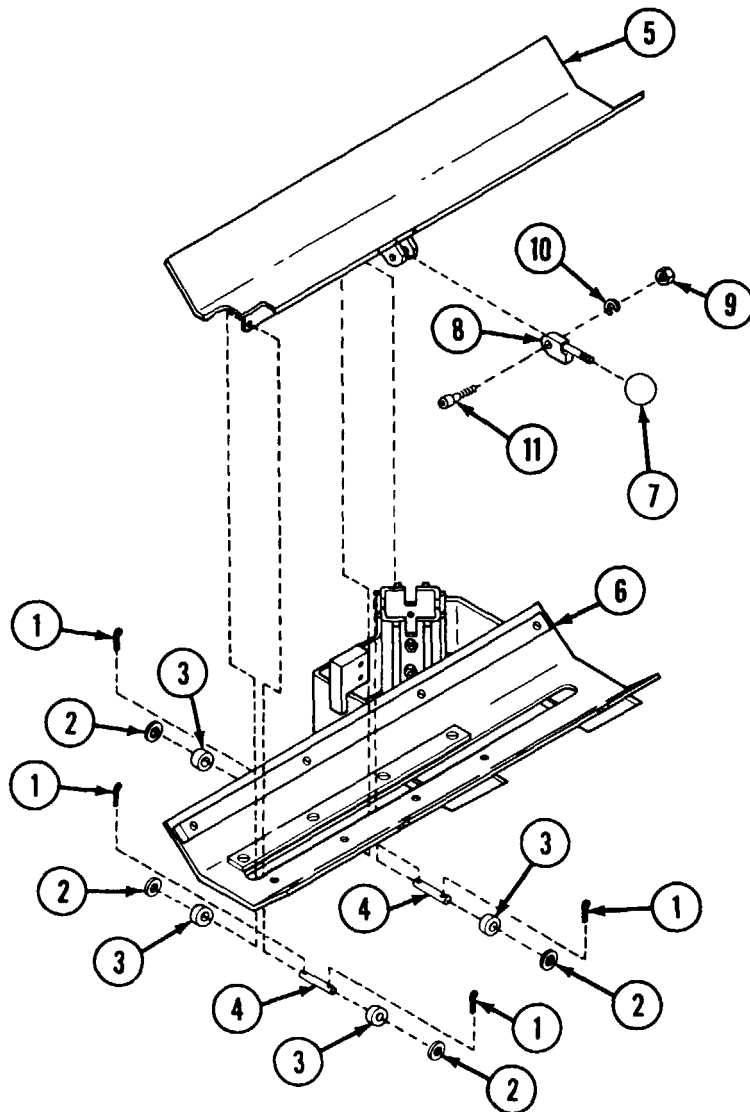
## CARRIER ASSEMBLY AND MOTOR SUPPORT BRACKET: REMOVAL, INSTALLATION AND ADJUSTMENT (CONTINUED)



### ADJUSTMENT

- A Loosen two nuts (30) and adjust two setscrews (31) in each of two outer roller bearing retainers (32) to allow smooth, but firm up/down travel of carrier assembly (22).
- B After adjustment, tighten two nuts (30) to secure each of two bearing retainers on carrier (22).
- C Secure four setscrews (31) with four jamnuts (33).

TA57275

**SLIDING TRAY ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION****REMOVAL**

A Remove four cotter pins (1), four washers (2), four roller bearings (3) and two pins (4) from tabs at bottom of sliding tray assembly (5).

B Lift sliding tray assembly (5) from carrier (6).

**DISASSEMBLY**

A Unscrew knob (7) from handle (8).

B Remove nut (9), lockwasher (10) and bolt (11) securing handle (8) to sliding tray (5).

**ASSEMBLY**

Reverse disassembly procedures.

**INSTALLATION**

A Place sliding tray (5) on carrier (6) so that tab on tray bottom protrudes through slot in carrier.

B Place two pins (4) through tray tab and two roller bearings (3) on either side. Then secure both ends of each pin with one washer (2) and one cotter pin (1).

## STACKER CARRIER SLIDE BARS AND GUIDES: REMOVAL AND INSTALLATION

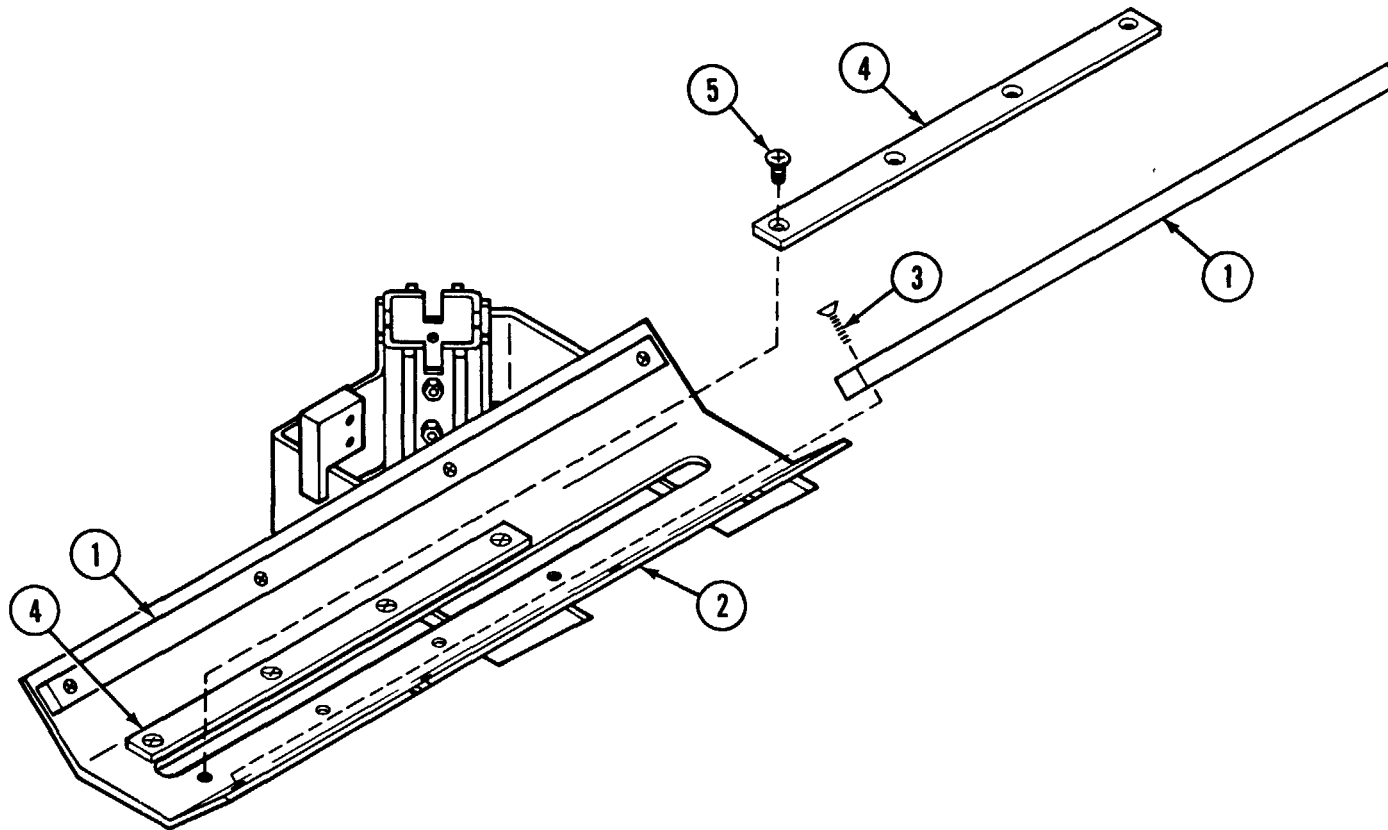
### REMOVAL

- A Remove sliding tray assembly (p 12-36).
- B Remove two slide bars (1) from carrier (2) by removing eight screws (3).

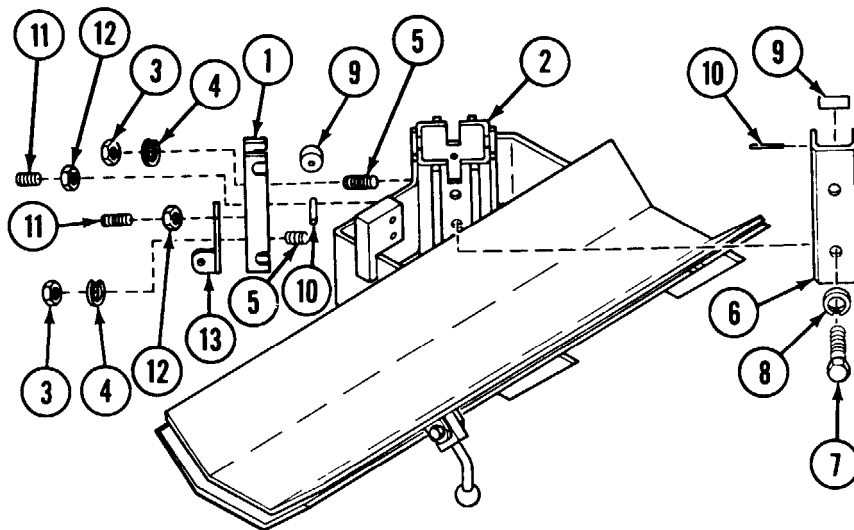
- C Remove two guides (4) from carrier (2) by removing eight screws (5).

### INSTALLATION

Reverse order of removal procedures.



TA310237

**CARRIER ASSEMBLY: DISASSEMBLY AND ASSEMBLY****DISASSEMBLY**

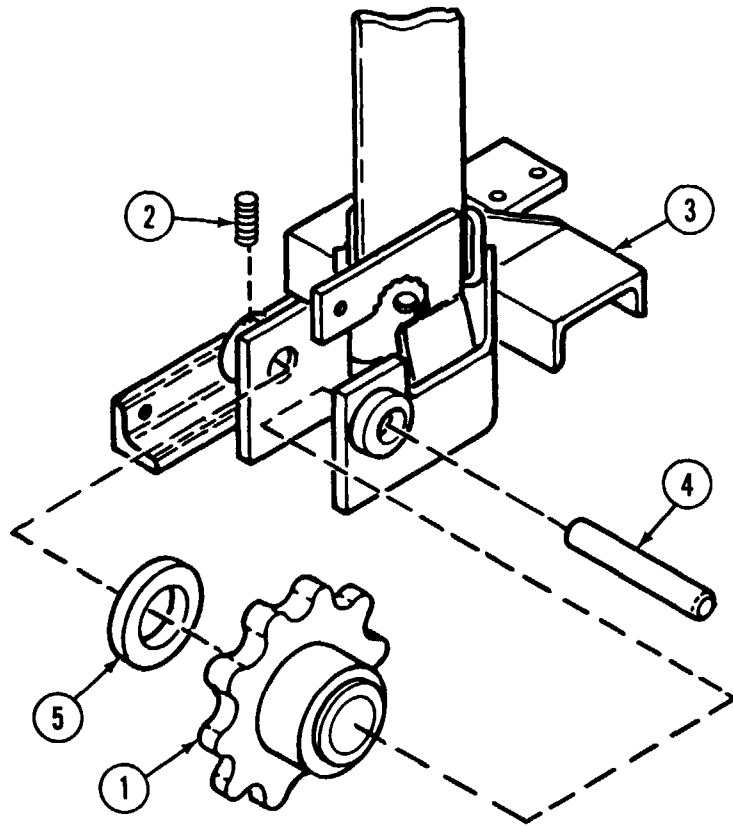
- A Remove two outer bearing support retainer assemblies (1) from carrier assembly (2) by removing from each, two nuts (3) and two lockwashers (4) from two studs (5).
- B Remove two inner bearing support retainer assemblies (6) from carrier assembly (2) by removing from each, two screws (7) and two lockwashers (8).
- C Remove from each retainer assembly, two roller bearings (9) and two shafts (10).
- D Remove from both outer retainer assemblies (1), two adjusting screws (11) and two jam nuts (12).
- E Remove from one outer retainer assembly (1), cable attachment (13).

**ASSEMBLY**

- A At installation, loosen two nuts (3) and adjust two setscrews (11) in each of two outer roller bearing retainers (1) to allow smooth, but firm up/down travel of carrier assembly (2). After adjustment, tighten two nuts (3) to secure each of two roller bearing retainers on carrier (2). Secure four setscrews (11) with four jam nuts (12).
- B Reverse disassembly procedures.



## IDLER SPROCKET ASSEMBLY: REMOVAL AND INSTALLATION



### REMOVAL

A Remove roller chain from around idler sprocket (1) (p 12-32).

### NOTE

Hook winch assembly cable to carrier tray and raise carrier to gain access to idler sprocket assembly (TM 9-2350-267-10).

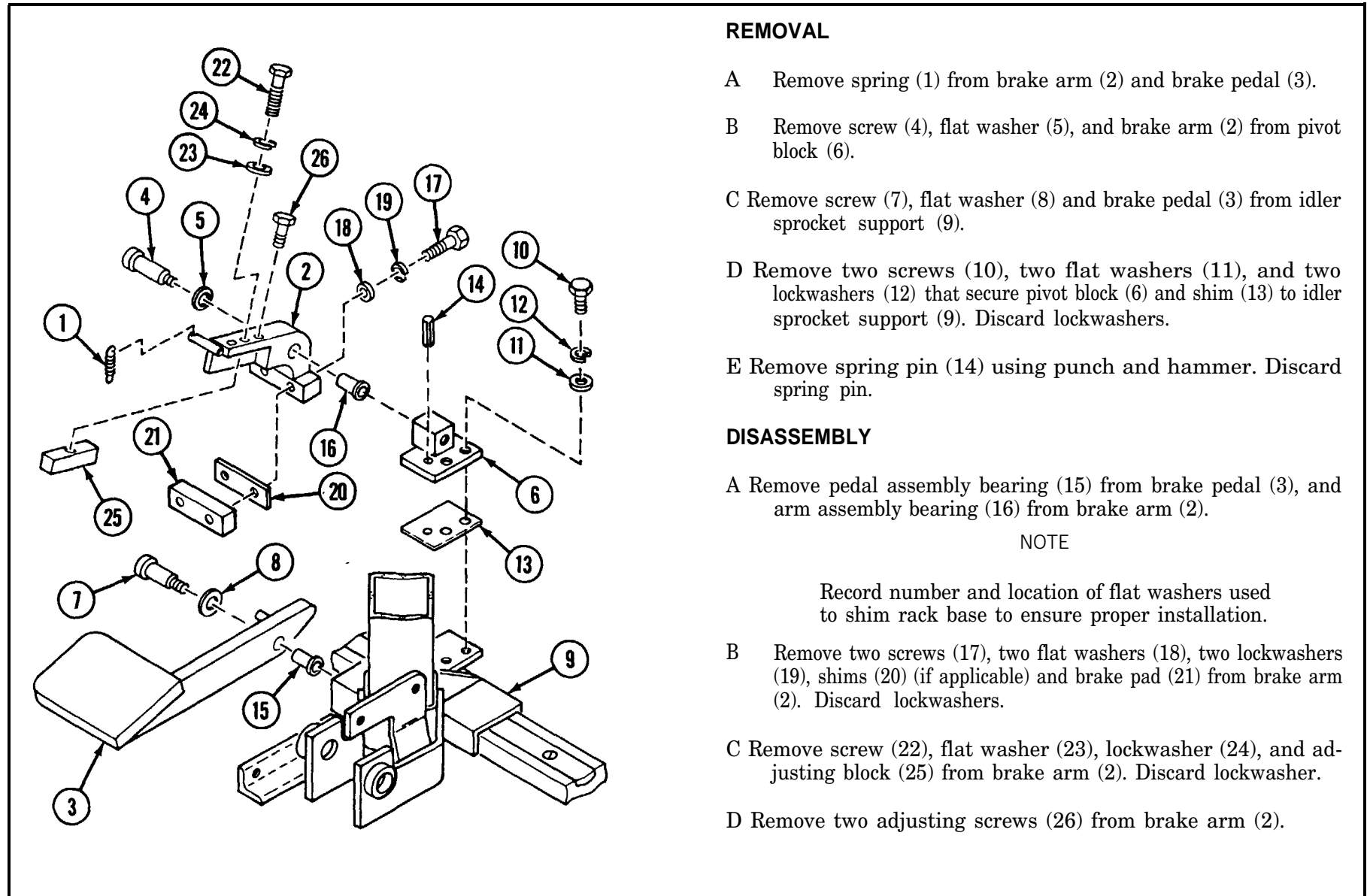
B Remove setscrew (2) from idler sprocket support bracket (3).

C Tap shaft (4) out of idler sprocket assembly and support bracket (3), and remove shaft (4), sprocket and bearing (1) and spacer (5).

### INSTALLATION

Reverse removal procedures.

TA310239

**STACKER FOOT BRAKE: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT****REMOVAL**

- A Remove spring (1) from brake arm (2) and brake pedal (3).
- B Remove screw (4), flat washer (5), and brake arm (2) from pivot block (6).
- C Remove screw (7), flat washer (8) and brake pedal (3) from idler sprocket support (9).
- D Remove two screws (10), two flat washers (11), and two lockwashers (12) that secure pivot block (6) and shim (13) to idler sprocket support (9). Discard lockwashers.
- E Remove spring pin (14) using punch and hammer. Discard spring pin.

**DISASSEMBLY**

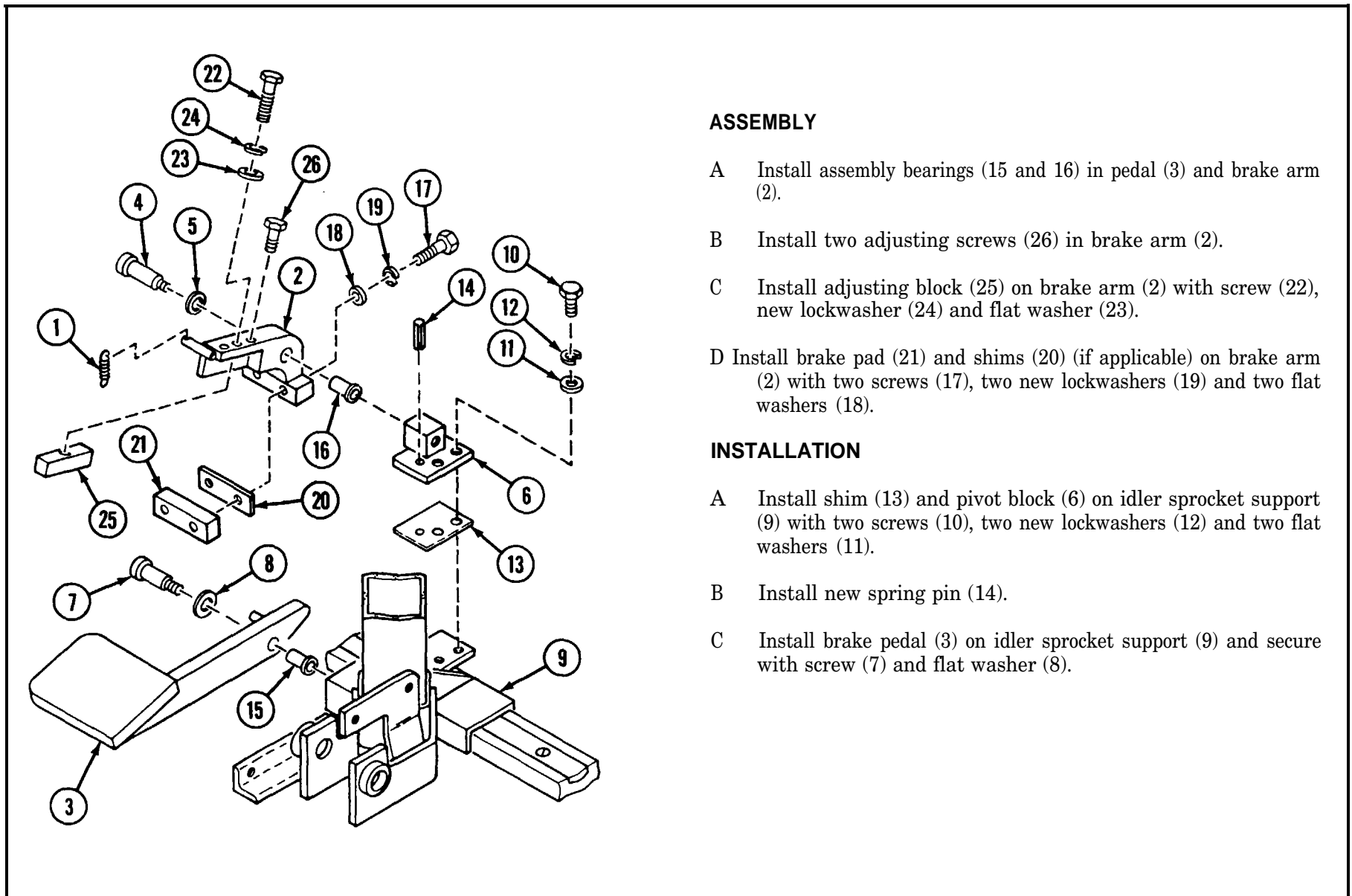
- A Remove pedal assembly bearing (15) from brake pedal (3), and arm assembly bearing (16) from brake arm (2).

**NOTE**

Record number and location of flat washers used to shim rack base to ensure proper installation.

- B Remove two screws (17), two flat washers (18), two lockwashers (19), shims (20) (if applicable) and brake pad (21) from brake arm (2). Discard lockwashers.
- C Remove screw (22), flat washer (23), lockwasher (24), and adjusting block (25) from brake arm (2). Discard lockwasher.
- D Remove two adjusting screws (26) from brake arm (2).

## STACKER FOOT BRAKE: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT (CONTINUED)



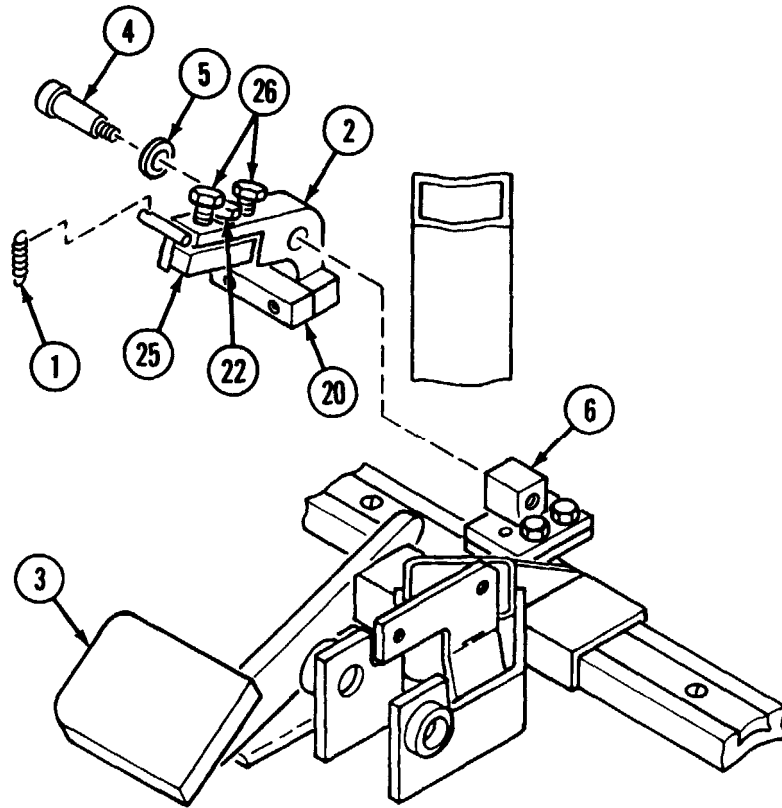
### ASSEMBLY

- A Install assembly bearings (15 and 16) in pedal (3) and brake arm (2).
- B Install two adjusting screws (26) in brake arm (2).
- C Install adjusting block (25) on brake arm (2) with screw (22), new lockwasher (24) and flat washer (23).
- D Install brake pad (21) and shims (20) (if applicable) on brake arm (2) with two screws (17), two new lockwashers (19) and two flat washers (18).

### INSTALLATION

- A Install shim (13) and pivot block (6) on idler sprocket support (9) with two screws (10), two new lockwashers (12) and two flat washers (11).
- B Install new spring pin (14).
- C Install brake pedal (3) on idler sprocket support (9) and secure with screw (7) and flat washer (8).

TA57481

**STACKER FOOT BRAKE: REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION AND ADJUSTMENT (CONTINUED)**

D Install brake arm (2) on pivot block (6) and secure with screw (4) and flat washer (5).

E Install spring (1) on brake arm (2) and brake pedal (3).

**ADJUSTMENT**

A Back off screw (22) enough to allow free play in adjusting block (25).

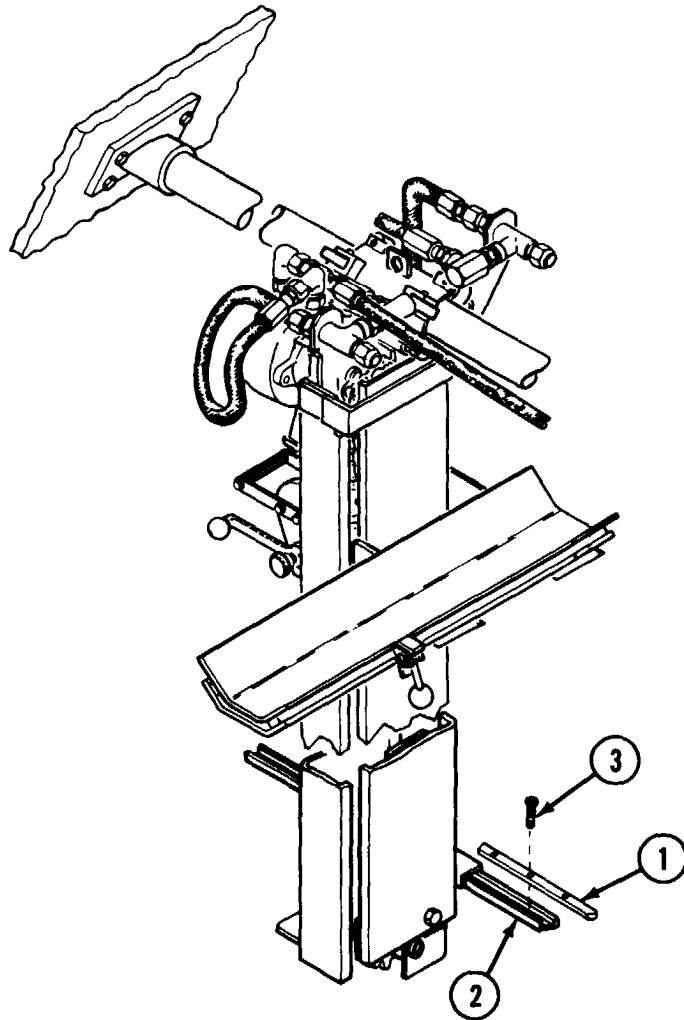
**NOTES**

- It may be necessary to use longer adjusting screws and more shims. Adjusting screws should be turned equally so adjusting block will not be cocked in brake arm.
- Turning two adjusting screws clockwise will decrease travel of brake pad to wear strip.

B Turn two adjusting screws (26) to position adjusting block (25) to hold stacker when brake pedal (3) is depressed.

C After proper adjustment is achieved, secure adjusting block (25) to brake arm (2) by tightening screw (22).

## STACKER WEAR STRIP: REMOVAL AND INSTALLATION



### NOTE

Move stacker to right and left to gain access to all seven lock screws.

### REMOVAL

Remove wear strip (1) and wear strip plate (2) by removing seven lock screws (3) that secure wear strip and wear strip plate to vehicle floor. Discard lock screws.

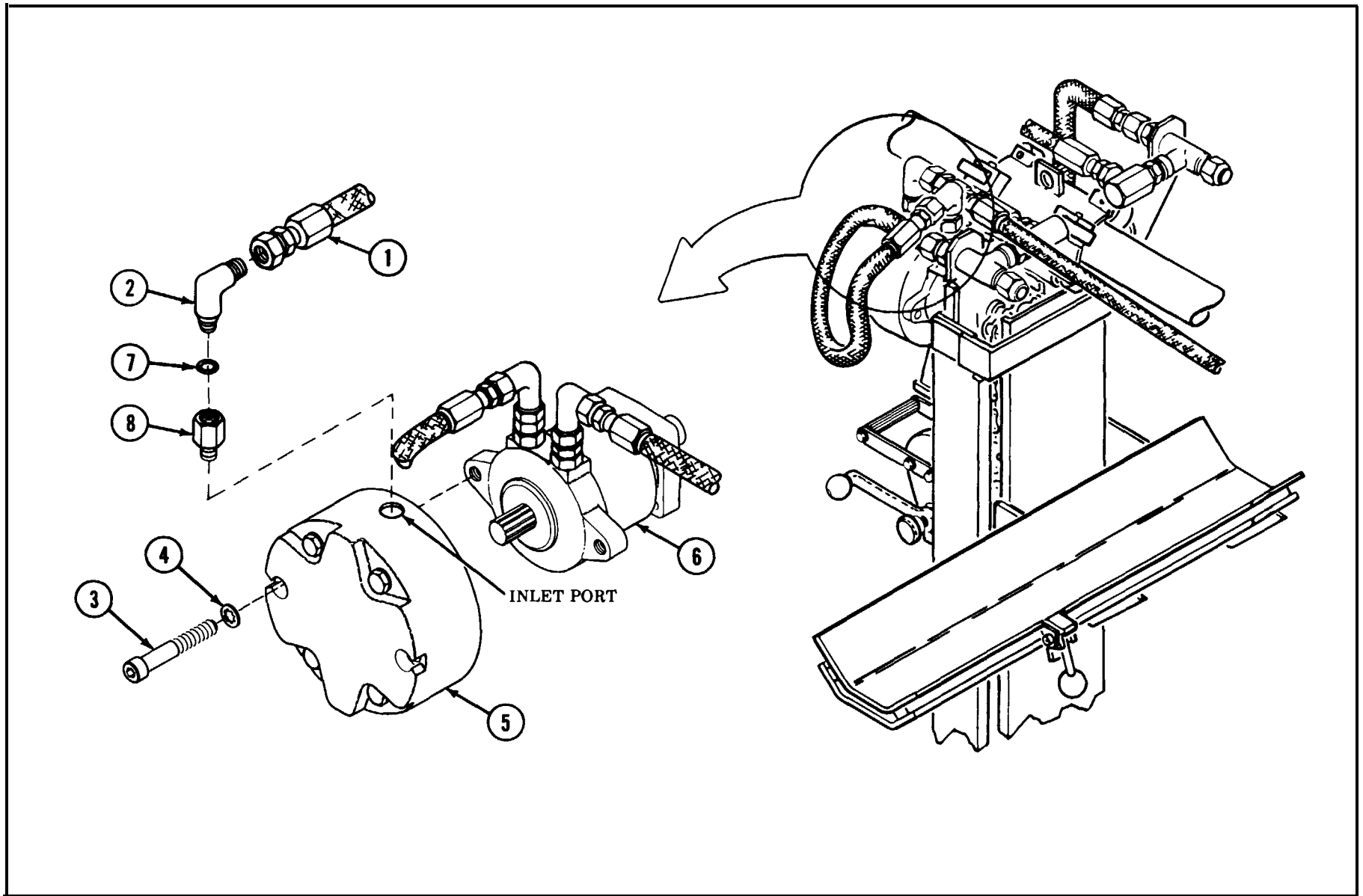
### INSTALLATION

A Install wear strip (1) and wear strip plate (2) with seven new lock screws (3).

B Adjust stacker brake pedal as described in adjustment, stacker brake pedal assembly (p 12-40.2)

TA57483

### STACKER HYDRAULIC BRAKE: REMOVAL AND INSTALLATION



## STACKER HYDRAULIC BRAKE: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### WARNINGS

Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid maybe HOT.

Do not perform removal of procedures until backup hydraulic gage has been checked visually. Gage must show 0 psi.

#### CAUTION

Cap hydraulic lines and ports immediately after disconnecting to prevent contaminants from entering hydraulic system and hydraulic components.

- A Disconnect hydraulic hose (1) from elbow (2).
- B Remove two screws (3) and two lockwashers (4). Discard lockwashers.
- C Pull brake (5) from motor (6).
- D Remove elbow (2), packing (7) and expander (8) from brake (5). Discard packing.

### INSTALLATION

- A Install expander (8), new packing (7) and elbow (2) on brake (5).
- B Position brake (5) on motor (6) and turn brake (5) until screw mounting holes aline.
- C Secure brake (5) on motor (6) with two screws (3) and two new lockwashers (4).
- D Connect hydraulic hose (1) to elbow (2).

### HYDRAULIC MOTOR AND DRIVE SPROCKET: REMOVAL AND INSTALLATION

#### INITIAL SETUP

Materials/Parts:

Teflon tape (item 62, Appx D)

Personnel Required:

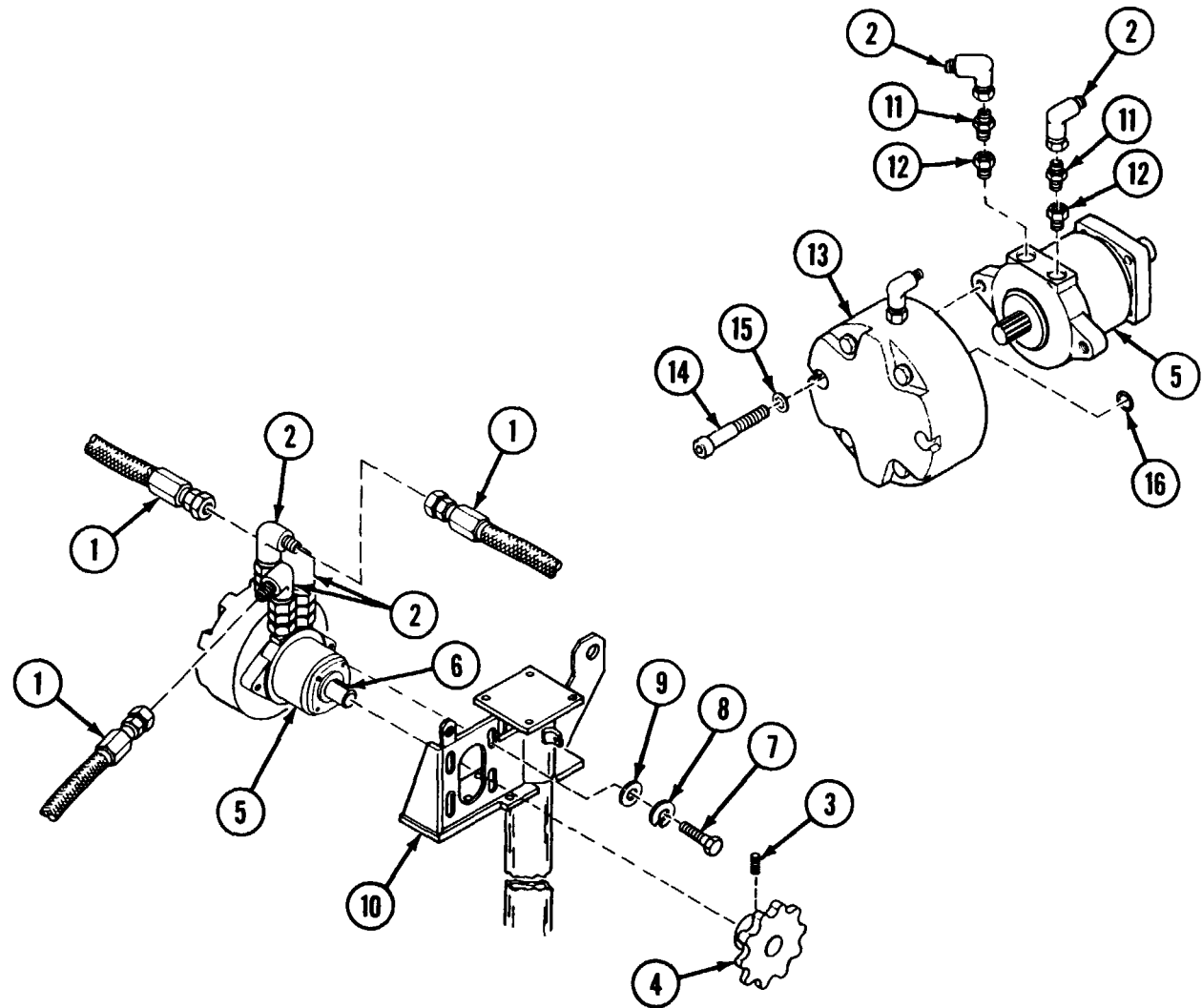
Two

References:

TM 9-2350-267-10  
LO 9-2350-267-12

Equipment Condition:

Roller chain removed (p 12-32).





## HYDRAULIC MOTOR AND DRIVE SPROCKET: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### WARNING

- Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid may be HOT.
- Do not perform removal procedures until backup hydraulic gage has been visually checked. Gage must show 0 psi.

#### CAUTION

Cap hydraulic lines and ports immediately after disconnecting to prevent contaminants from entering hydraulic system and hydraulic components.

#### NOTE

Tag lines for proper installation.

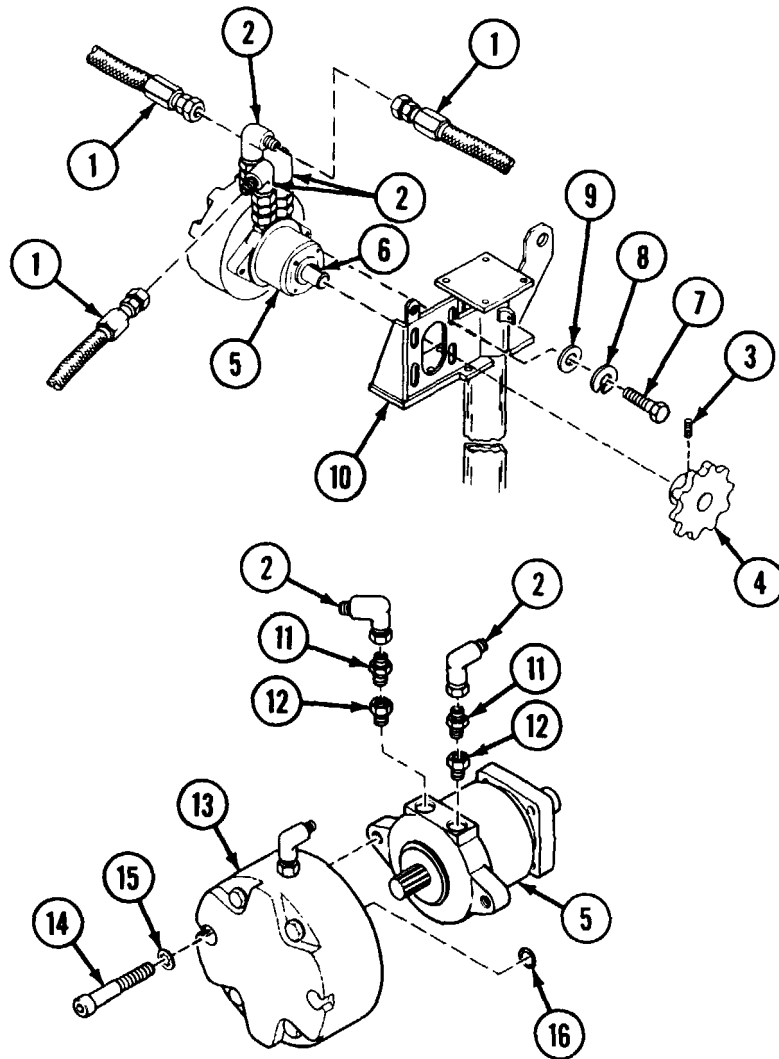
- A Disconnect three hydraulic lines (1) from three elbows (2).

#### NOTE

Note location of sprocket on shaft to ensure proper assembly.

- B Loosen setscrew (3) and tap sprocket (4) free from shaft of motor (5).
- C Remove key (6) from shaft of motor (5).
- D Remove four screws (7), four lockwashers (8), four flat washers (9), and motor (5) from support bracket (10). Discard lockwashers.
- E Remove two elbows (2), two adapters (11) and two adapters (12) from motor (5).
- F Separate brake (13) from motor (5) by removing two screws (14) and two lockwashers (15). Discard lockwashers.
- G Remove and discard packing (16).

## HYDRAULIC MOTOR AND DRIVE SPROCKET: REMOVAL AND INSTALLATION (CONTINUED)



## INSTALLATION

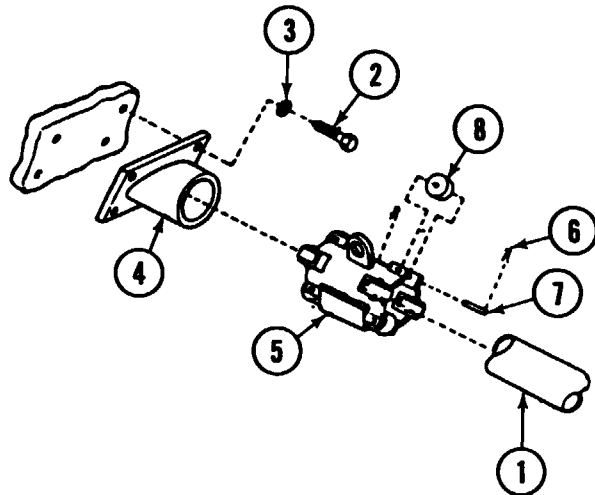
- A Install new packing (16).
- B Install brake (13) on motor (5) with two screws (14) and two new lockwashers (15).

## NOTE

Apply Teflon tape (item 62, Appx D) to all male pipe threads prior to installation.

- C Install two adapters (12), two adapters (11) and two elbows (2) on motor (5).
- D Install motor (5) on support bracket (10) with four screws (7), four new lockwashers (8) and four flat washers (9).
- E Install key (6) in shaft of motor (5).
- F Install sprocket (4) on shaft of motor (5), hub side first, aligning key (6) to slotted groove.
- G Tighten setscrew (3).
- H Connect three hydraulic lines (1) to three elbows (2).
- I Check hydraulic fluid level in reservoir and add if necessary (LO 9-2350-267-12).
- J Activate APU and operate stacker controls to check motor operation (TM 9-2350-267-10).

## SUPPORT ASSEMBLY, UPPER CROSSMEMBER AND SUPPORT BRACKETS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### INITIAL SETUP

#### Materials/Parts:

Lubricating oil (item 35, Appx D)  
Zinc chromate paste (item 46, Appx D)

#### Personnel Required:

Two

#### Equipment Condition:

Carrier assembly and motor support bracket removed (p 12-34).

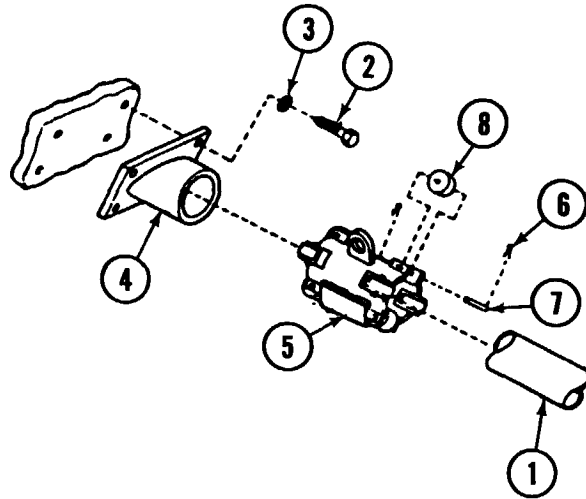
### REMOVAL

- A Support upper crossmember (1) and remove four screws (2) and four lockwashers (3) from each of two support brackets (4). Discard lockwashers.
- B Remove upper crossmembers (1) from vehicle and remove two support brackets (4).
- C Slide support assembly (5) from crossmember (1).

### DISASSEMBLY

- A Remove two cotter pins (6) from each of eight bearing shafts (7). Discard cotter pins.
- B Remove eight bearing shafts (7) from support assembly (5). Remove eight roller bearings (8).

**SUPPORT ASSEMBLY, UPPER CROSSMEMBER AND SUPPORT BRACKETS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**ASSEMBLY**

- A Coat each of eight bearing shafts (7) lightly with lubricating oil (item 35, Appx D).
- B Install each of eight roller bearings (8) on support assembly (5) with bearing shaft (7) and two new cotter pins (6).

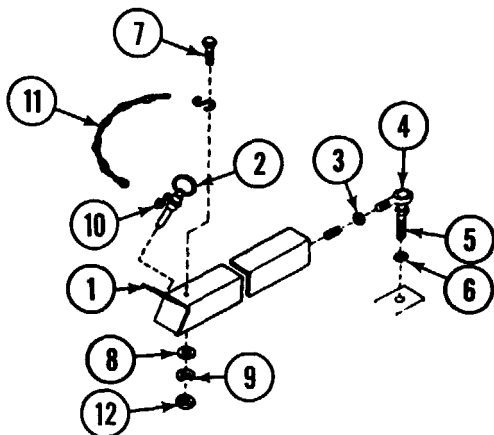
**INSTALLATION**

- A Slide support assembly (5) onto crossmember (1).
- B Install two support brackets (4) on crossmember (1).
- C Apply zinc chromate paste (item 46, Appx D) to mounting surfaces of two brackets (4) and vehicle ceiling.
- D Support crossmember (1) and install support brackets (4) using four screws (2) and four new lockwashers (3).

**FOLLOW-ON TASKS:**

Install carrier assembly and motor support bracket (p 12-34).

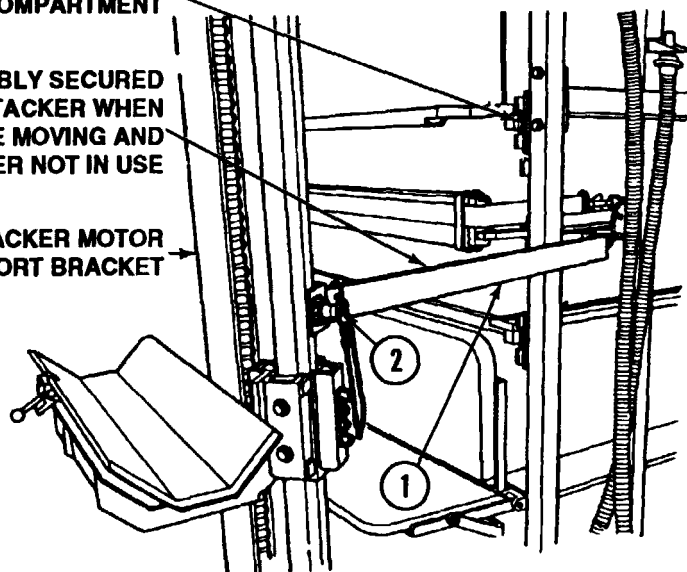
## STACKER BAR ASSEMBLY REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



**LEFT REAR CANISTER COMPARTMENT**

**BAR ASSEMBLY SECURED TO STACKER WHEN VEHICLE MOVING AND STACKER NOT IN USE**

**STACKER MOTOR SUPPORT BRACKET**



### REMOVAL

- A Disconnect bar assembly (1) from stacker motor support bracket by pulling quick-disconnect pin (2).
- B Loosen jam nut (3) on flexible rod end (4).
- C Remove bar (1) from flexible rod end (4).
- D Loosen jam nut (6) on flexible rod end (4).
- E Turn nut (5) to remove flexible rod end (4) from left rear canister compartment cross member.

### DISASSEMBLY

- A Remove quick-disconnect pin (2) from bar assembly (1) by removing screw (7), flat washer (8), lockwasher (9), and nut (12). Discard lockwasher.
- B Remove chain (11) from quick-disconnect pin (2) by bending S-hook (10).

### ASSEMBLY

Reverse disassembly procedures using new lockwasher.

### INSTALLATION

Reverse removal procedures.

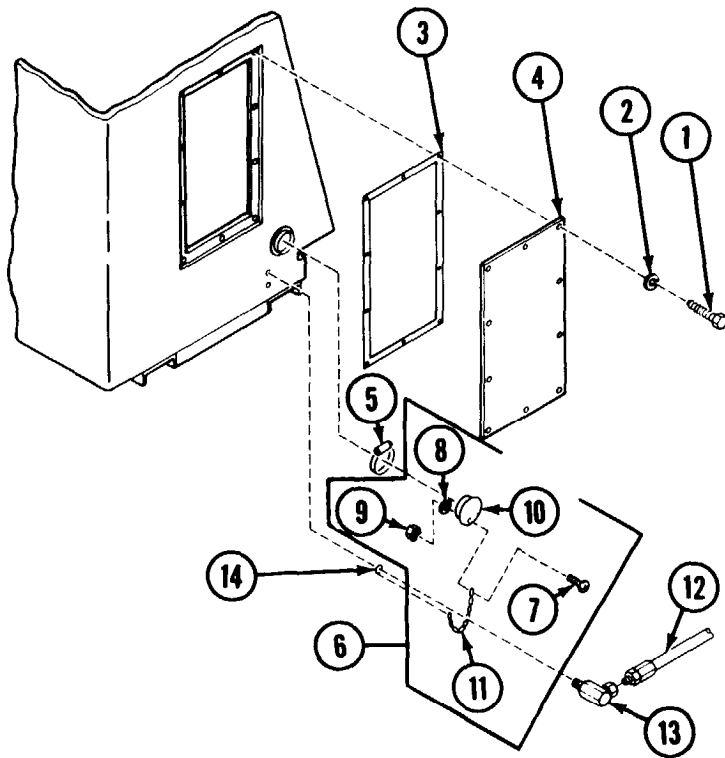


## ■ APU COMPARTMENT ACCESS PLATE AND CAP ASSEMBLY: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Equipment Condition:

Left projectile rack moved to rear of vehicle (TM 9-2350-267-10).



### REMOVAL

#### APU COMPARTMENT ACCESS PLATE

A Remove 10 screws (1), 10 lockwashers (2), gasket (3) and access plate (4). Discard lockwashers.

#### CAP ASSEMBLY

B Loosen hose clamp (5).

C Pull off cap assembly (6) from connector.

D Remove hose clamp (5).

E Remove screw (7), lockwasher (8), and nut (9) to release cap (10) from chain (11). Discard lockwasher.

F Disconnect hydraulic line (12).

G Remove fitting (13) to release ring (14) and chain (11).

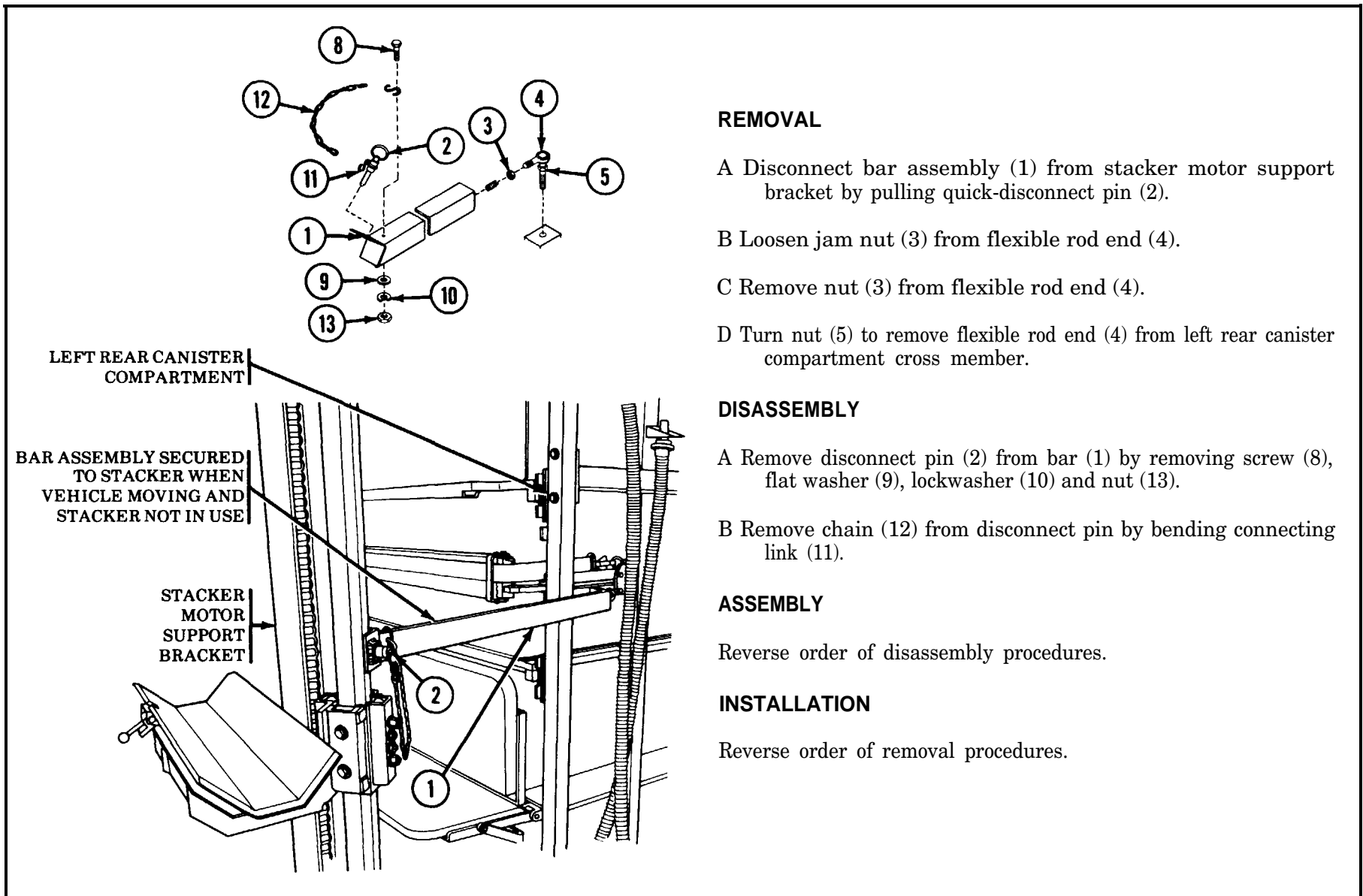
H Remove chain (11) from ring (14).

TA58079





## STACKER BAR ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION





## CHAPTER 13

### AUXILIARY POWER UNIT (APU) MAINTENANCE INSTRUCTIONS

---

#### CHAPTER OVERVIEW

This chapter illustrates and describes organizational level maintenance procedures for the Auxiliary Power Unit (APU).

It consists of three sections:

Section I APU Removal and Installation  
Section II APU Oil Filter  
Section III APU Power Unit Control Box

---

#### Section I APU REMOVAL AND INSTALLATION

##### APU: REMOVAL AND INSTALLATION

###### INITIAL SETUP

###### Test Equipment/Special Tools:

Wrench, pipe, 18 in. (item 73, Appx B)

###### Materials/Parts:

Tape, pressure sensitive (item 60, Appx D)

###### Personnel Required

Three

###### References:

TM 9-2350-267-10

###### REMOVAL

###### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

###### NOTE

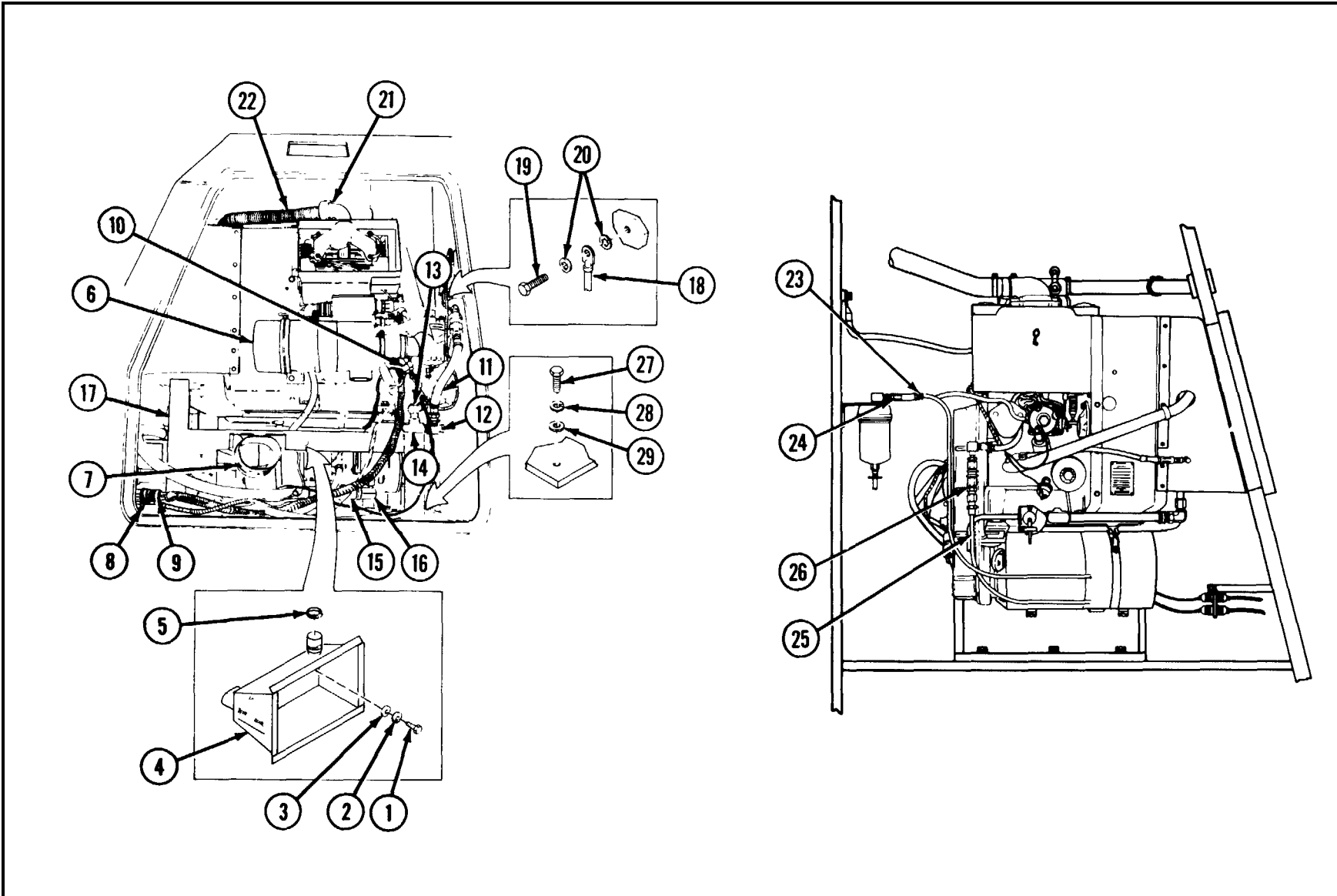
Cables, lines, tubes and harnesses which are disconnected for APU removal must be taped to sides of APU to prevent damage while APU is removed from compartment.

A Remove APU compartment access plate (p 13-13).

B Open APU compartment side door.

TA313055

**APU: REMOVAL AND INSTALLATION (CONTINUED)**



## APU: REMOVAL AND INSTALLATION (CONTINUED)

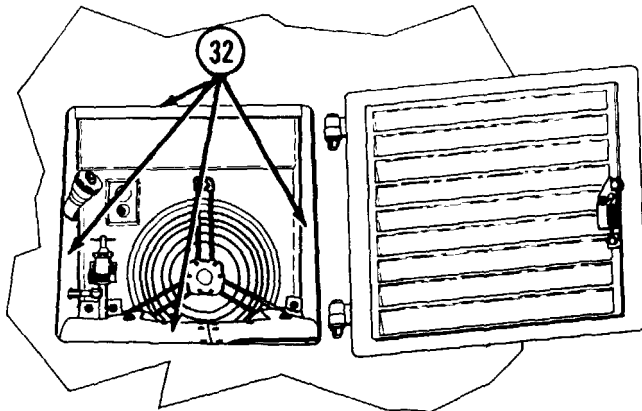
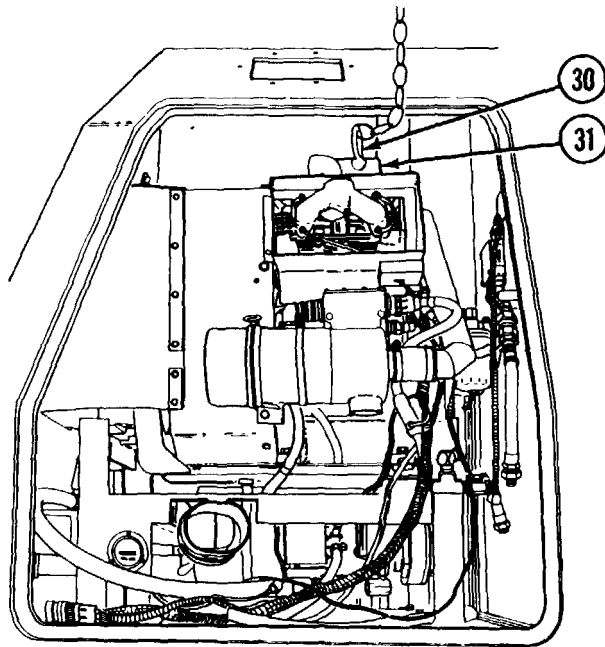
- C Remove two screws (1), two lockwashers (2) and two flat washers (3) from air-intake plenum (4). Discard lockwashers.
- D Remove one hose clamp (5) securing hose to air cleaner housing (6).
- E Loosen plenum box generator hose clamp (7) and remove plenum (4) and attached air cleaner intake hose.
- F Disconnect electrical wiring harness connectors (8 and 9) from APU compartment-wall connections.
- G Disconnect two hydraulic pressure switch electrical connectors (10).
- H Close hydraulic reservoir ball valve (p 16-3).
- I Disconnect hydraulic pump outlet hose coupling (11) from elbow (12). Allow hose to drain into suitable container.
- J Disconnect hydraulic pressure line (13) from hydraulic T-connection (14). Allow hose to drain into suitable container.
- K Disconnect hydraulic pump inlet hose coupling (15) from elbow (16). Allow hose to drain into suitable container.
- L Place hose through APU support stand (17) and allow hose to lie straight against forward APU compartment bulkhead.
- M Disconnect ground lead (18) at bulkhead by removing screw (19) and two lockwashers (20). Discard lockwashers.
- N Remove clamp (21) and tube assembly (22) from exhaust outlet. Remove and discard gasket (hidden). Push tube in upward position for clearance.
- O Disconnect secondary filter outlet line (23) at quick-disconnect fitting (24).
- P Disconnect fuel return line (25) at quick-disconnect coupling (26).

### NOTE

Pull fuel return line through opening and let hang inside vehicle. Also pull fuel filter drain hoses through APU support stand and allow to hang out of APU doorway.

- Q Remove six screws (27), six lockwashers (28) and six flat washers (29) securing support stand (17) to APU compartment floor. Discard lockwashers.

**APU: REMOVAL AND INSTALLATION (CONTINUED)**



- R Secure clevis (30) to APU lifting bracket (31).
- S Open APU front door and separate APU panels (32) at hook-and-pile fasteners
- T Remove APU panels (32) (p 13-30).

**WARNING**

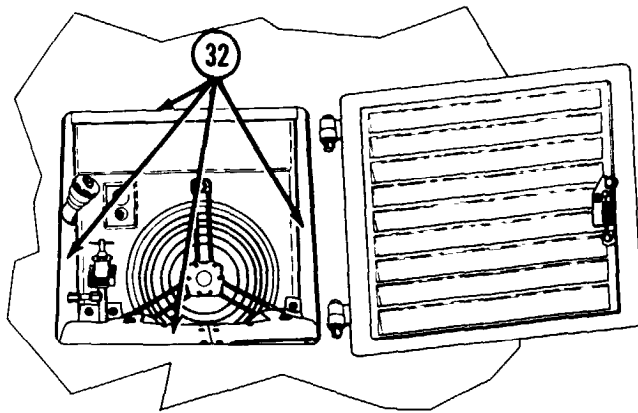
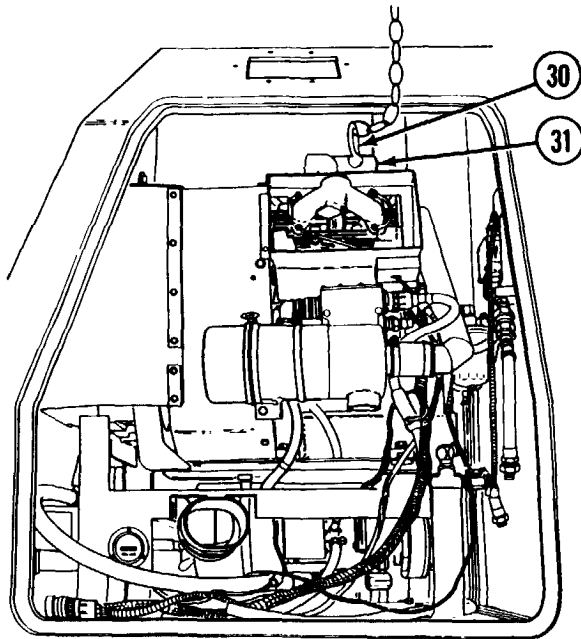
APU and APU compartment clearance is minimal Use care at removal to avoid injury to hands and fingers.

**CAUTION**

Use care when removing APU from vehicle to prevent damaging cables, lines, tubes and harnesses.

- U Attach suitable lifting device to clevis (30).
- V Remove APU with attached support stand from APU compartment.
- W Remove lifting device from clevis (30).

APU: REMOVAL AND INSTALLATION (CONTINUED)



**INSTALLATION**

- A Using suitable lifting device, install APU with attached support stand in APU compartment.

**WARNING**

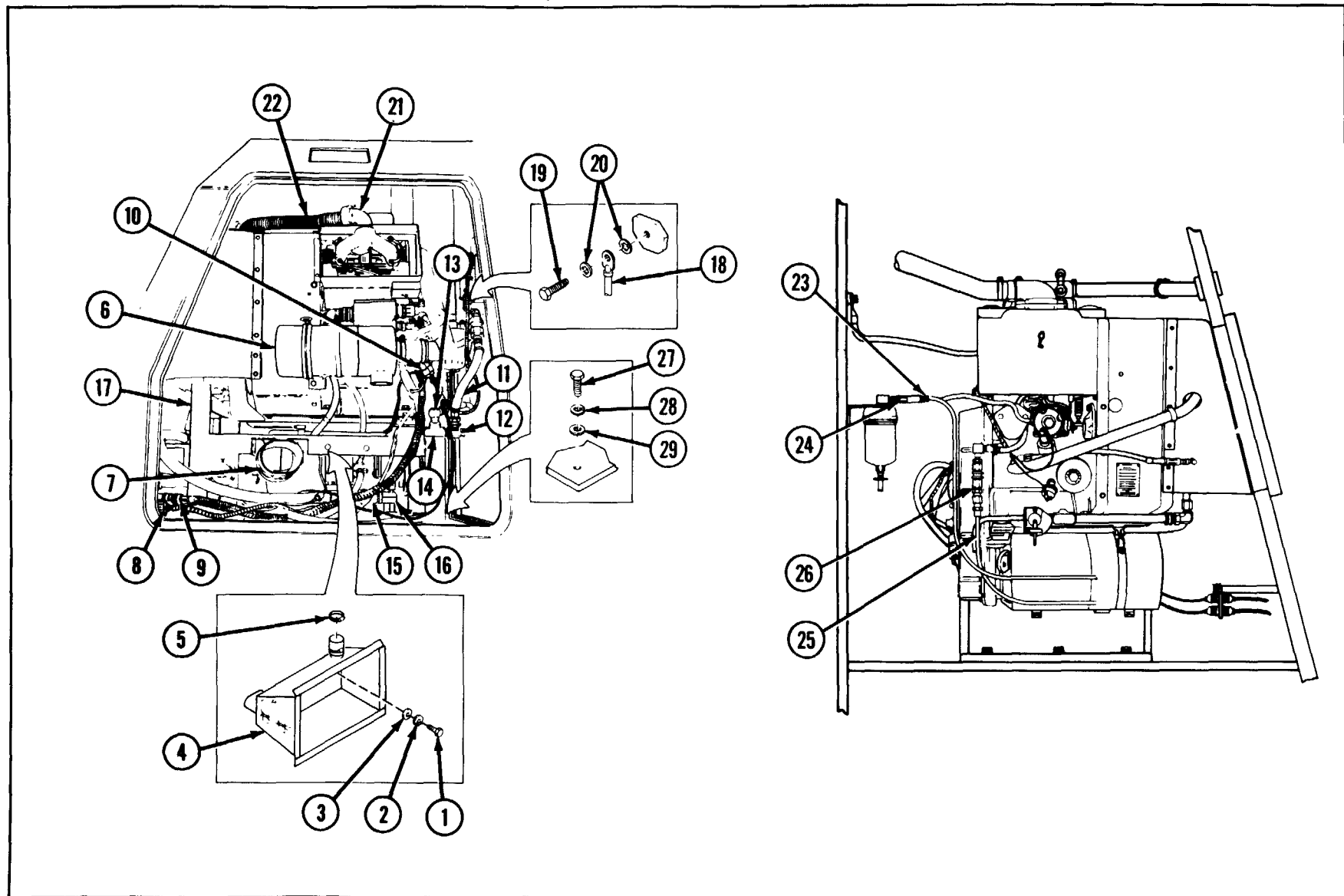
APU and APU compartment clearance is minimal. Use care at installation to avoid injury to hands and fingers.

**CAUTION**

Use care when installing APU in vehicle to prevent damaging cables, lines, tubes and harnesses.

- B Install APU panels (32) (p 13-32).
- C Secure APU panels (32) at hook-and-pile fasteners and close APU front door.
- D Remove clevis (30) from APU lifting bracket (31).

APU: REMOVAL AND INSTALLATION (CONTINUED)





APU: REMOVAL AND INSTALLATION (CONTINUED)

E Secure support stand (17) to APU compartment floor with six screws (27), six new lockwashers (28) and six flat washers (29).

F Connect fuel return line (25) at quick-disconnect coupling (26) and install lockring.

G Connect secondary filter outlet line (23) at quick-disconnect fitting (24) and install locking.

H Install new gasket (hidden) and secure exhaust tube (22) to exhaust outlet with clamp (21).

I Connect ground lead (18) to bulkhead with screw (19) and two new lockwashers (20).

J Connect hydraulic pump inlet hose coupling (15) to elbow (16).

K Connect hydraulic pressure line (13) to hydraulic T-connection (14).

L Connect hydraulic pump outlet hose coupling (11) to elbow (12).

M Open hydraulic reservoir bell valve (p 16-3).

N Connect two hydraulic pressure switch electrical connectors (10).

O Connect electrical wiring harness connectors (8 and 9) to APU compartment-wall connections.

P Start APU (TM 9-2350-267-10). Check for hydraulic leaks.

Q Install plenum (4) and attached air cleaner intake hose and secure with plenum box generator hose clamp (7).

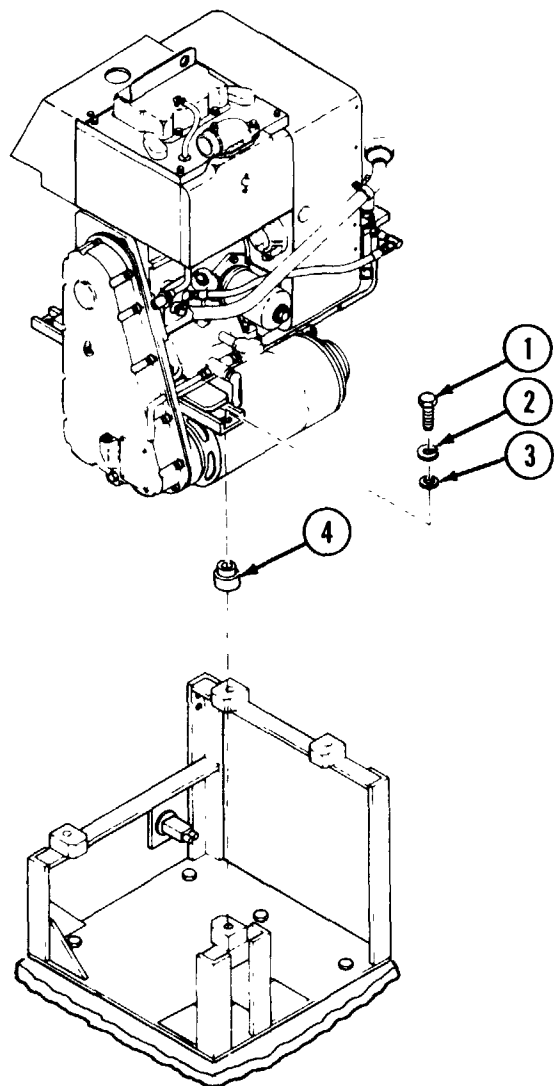
R Secure air cleaner intake hose to air cleaner housing (6) with one hose clamp (5).

S Install sir-intake plenum (4) with two screws (1), two new lockwashers (2) and two flat washers (3).

T Close APU compartment side door.

U Install APU compartment access plate (p 13-13).

V Connect battery ground leads.

**APU SUPPORT MOUNTS: REMOVAL AND INSTALLATION****NOTE**

Remove APU compartment access plate (p 13-13) or open APU compartment side door as necessary to gain access to mounts.

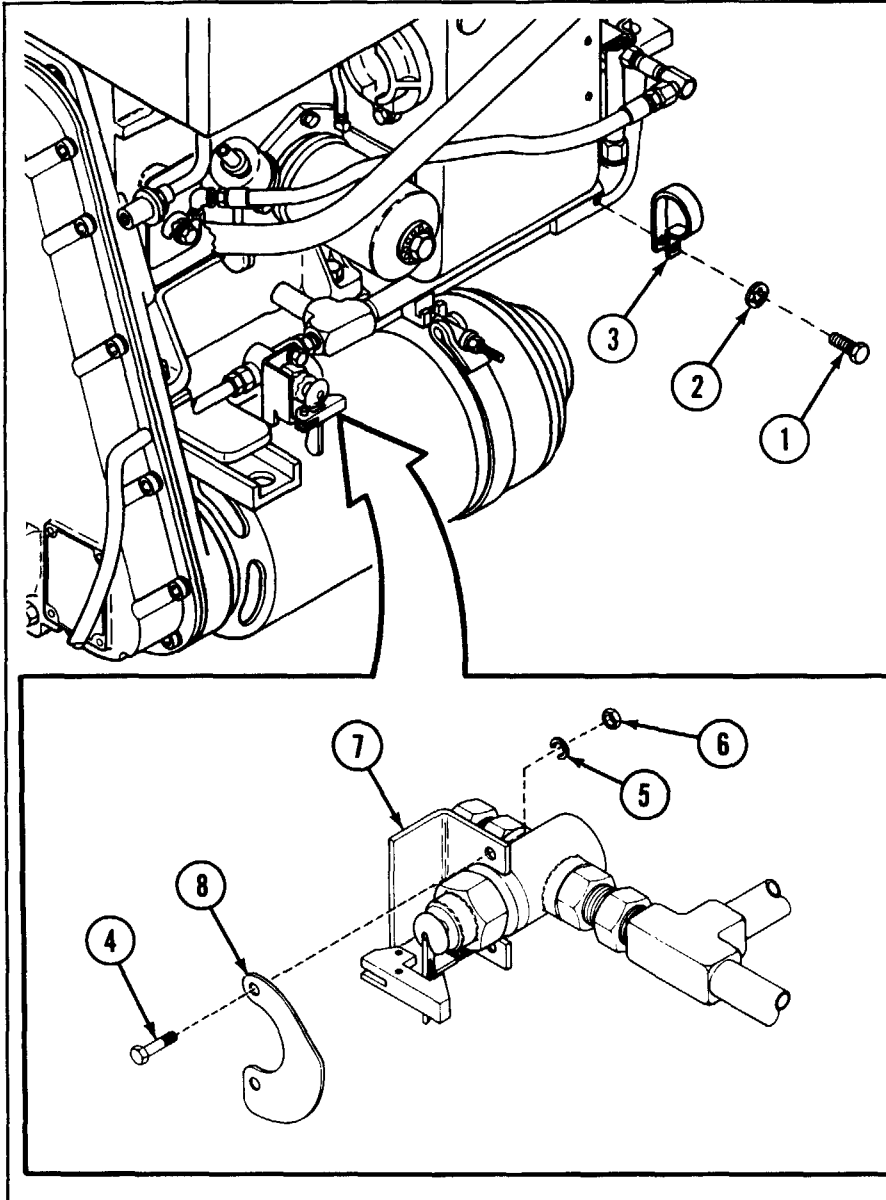
**REMOVAL**

- A Remove screw (1), lockwasher (2) and flat washer (3) at location where mount (4) is to be replaced. Discard lockwasher.
- B Pry up support and engine enough to push mount (4) out of hole in support. Discard mount.

**INSTALLATION**

- A Pry up support and engine enough to insert new mount (4) in hole in support.
- B Install screw (1), new lockwasher (2) and flat washer (3) at location of new mount (4).

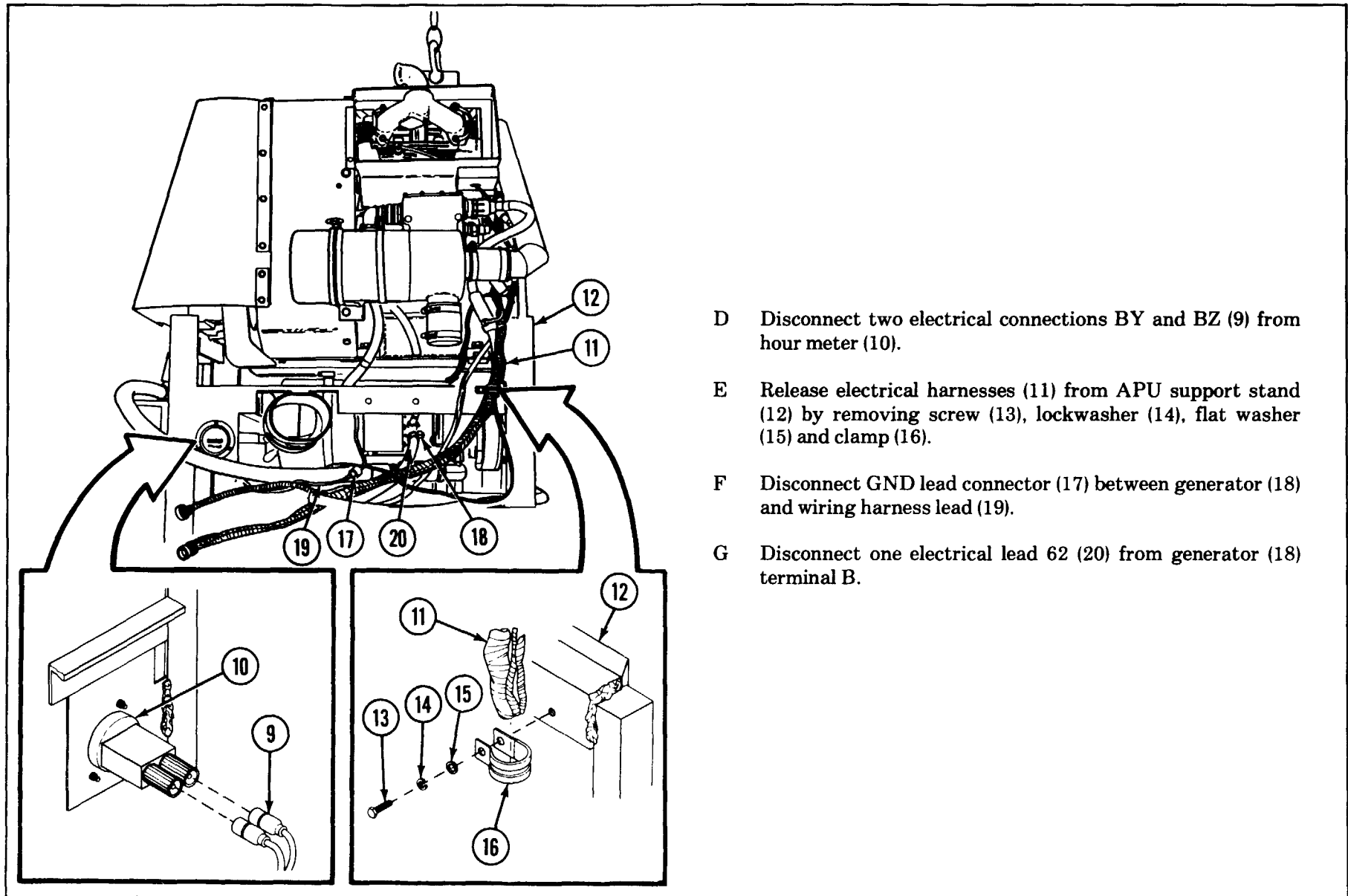
## APU ENGINE SUPPORT STAND AND SUPPORT ASSEMBLY: REMOVAL AND INSTALLATION



### REMOVAL

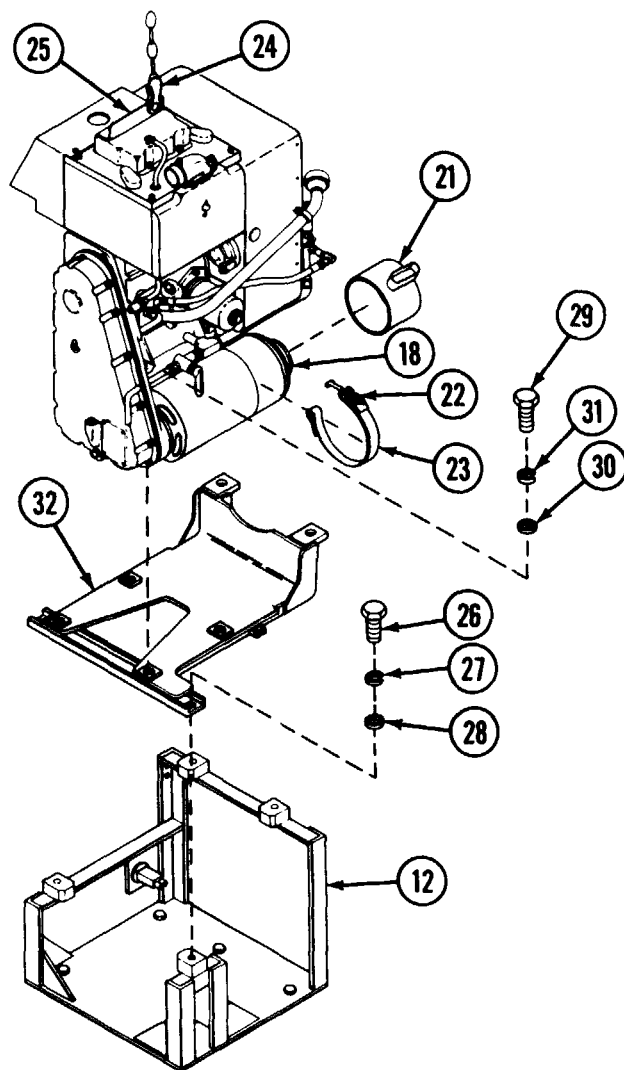
- A Remove APU from vehicle (p 13-1).
- B Remove screw (1), lockwasher (2) and clamp (3).
- C Remove two screws (4), two lockwashers (5), two nuts (6), catch assembly (7) and data plate (8).

### APU ENGINE SUPPORT STAND AND SUPPORT ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



- D Disconnect two electrical connections BY and BZ (9) from hour meter (10).
- E Release electrical harnesses (11) from APU support stand (12) by removing screw (13), lockwasher (14), flat washer (15) and clamp (16).
- F Disconnect GND lead connector (17) between generator (18) and wiring harness lead (19).
- G Disconnect one electrical lead 62 (20) from generator (18) terminal B.

## APU ENGINE SUPPORT STAND AND SUPPORT ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



H Remove generator air duct (21) from generator (18) by turning nut (22) and releasing clamp (23).

I Attach lifting clevis (24) in APU lifting eye plate (25) and attach suitable lifting device to clevis.

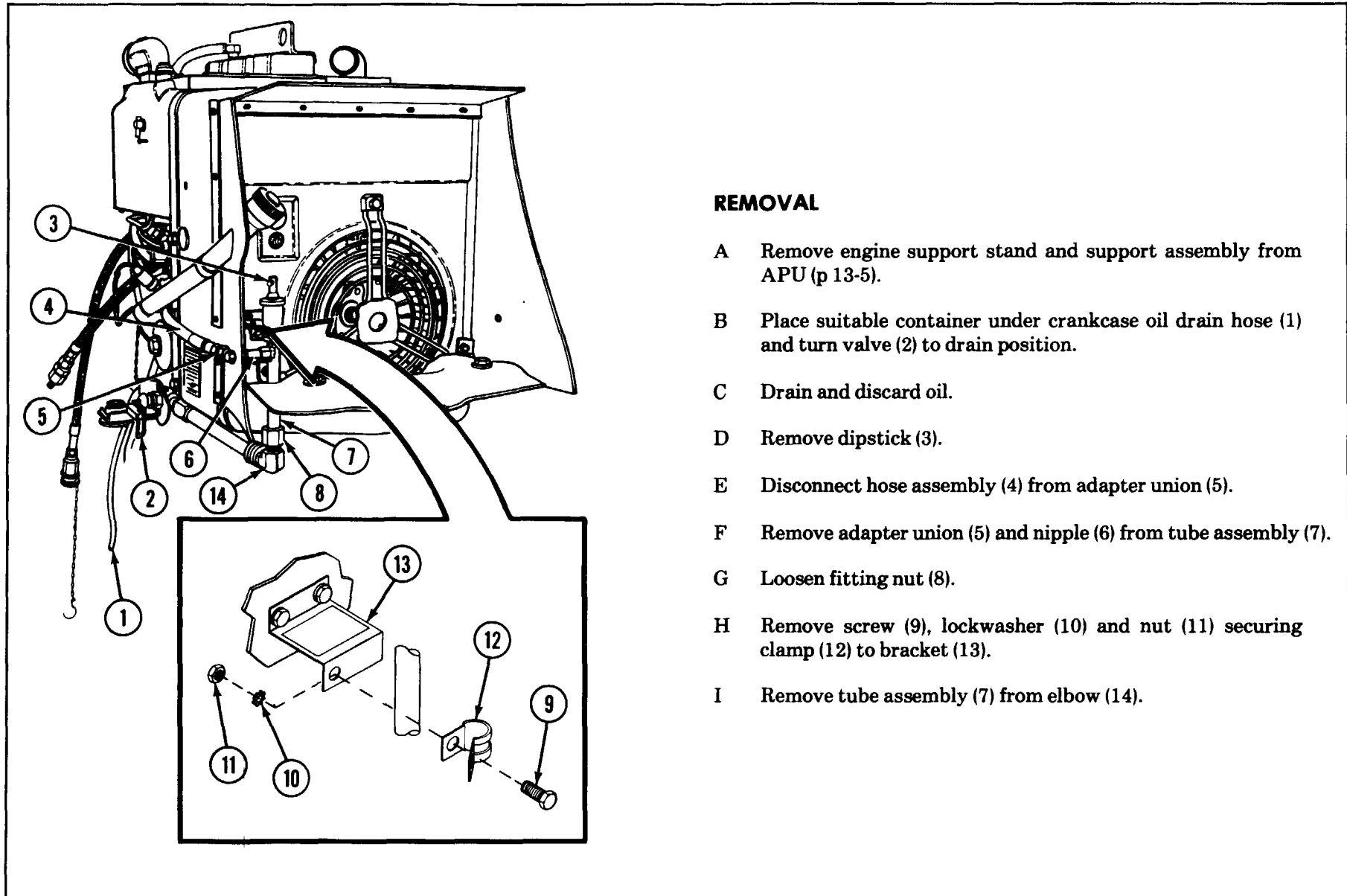
J Remove four screws (26), four lockwashers (27) and four flat washers (28). Using suitable lifting device, lift APU from support stand (12).

K Remove four screws (29), four flat washers (30) and four lockwashers (31) and remove support assembly (32) from APU.

### INSTALLATION

Reverse removal procedures.

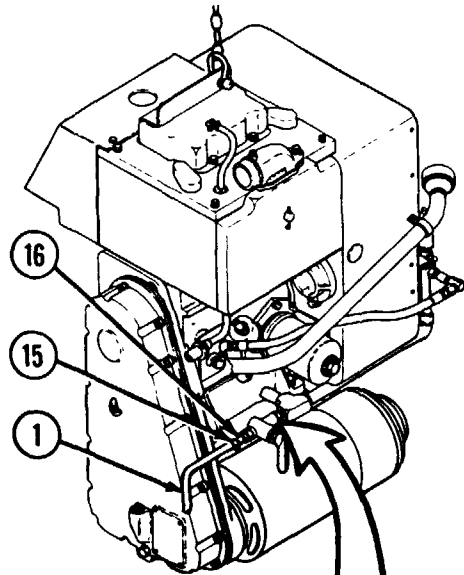
## APU OIL DRAIN TUBING AND FITTINGS: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove engine support stand and support assembly from APU (p 13-5).
- B Place suitable container under crankcase oil drain hose (1) and turn valve (2) to drain position.
- C Drain and discard oil.
- D Remove dipstick (3).
- E Disconnect hose assembly (4) from adapter union (5).
- F Remove adapter union (5) and nipple (6) from tube assembly (7).
- G Loosen fitting nut (8).
- H Remove screw (9), lockwasher (10) and nut (11) securing clamp (12) to bracket (13).
- I Remove tube assembly (7) from elbow (14).

## APU OIL DRAIN TUBING AND FITTINGS: REMOVAL AND INSTALLATION (CONTINUED)



J Loosen clamp (15) and pull hose (1) from tube (16). Remove tube (16) from valve assembly (2) by turning nut portion of tube.

K Remove screw (17) and handle (18).

L Remove valve (2) and bushing (19) from tee (20).

M Remove elbow (14) from pipe (21).

N Remove pipe (21) from tee (20).

O Remove tee (20) and nipple (22) from APU.

P Remove nipple (22) from tee (20).

### INSTALLATION

Reverse removal procedures.

TA309955

TM 9-2350-267-20

## APU OIL PRESSURE TRANSMITTER AND BREATHER HOSE: REMOVAL AND INSTALLATION

**INITIAL SETUP**Materials/Parts:

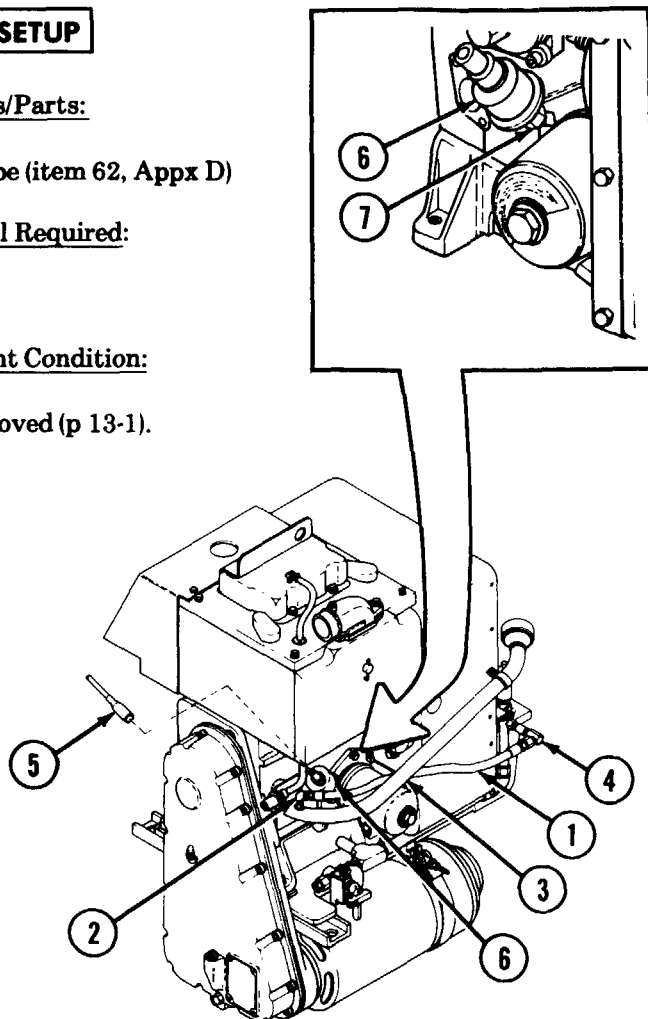
Teflon tape (item 62, Appx D)

Personnel Required:

Two

Equipment Condition:

APU removed (p 13-1).

**REMOVAL**

- A Remove breather hose (1) from elbow (2) at base of oil filler tube assembly (3) and from saber gage tube assembly (4).
- B Disconnect lead 420 (5) from oil pressure transmitter (6).
- C Remove oil pressure transmitter (6) and adapter (7) from engine block.
- D Remove adapter (7) from oil pressure transmitter (6).

**INSTALLATION****NOTE**

Use Teflon tape (item 62, Appx D) on all male pipe fittings prior to installation.

- A Install adapter (7) on oil pressure transmitter (6).
- B Install oil pressure transmitter (6) and adapter (7) on engine block.
- C Connect lead 420 (5) to oil pressure transmitter (6).
- D Install breather hose (1) to elbow (2) at base of oil filler tube assembly (3) and on saber gage tube assembly (4).



## APU OIL FILL TUBE: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

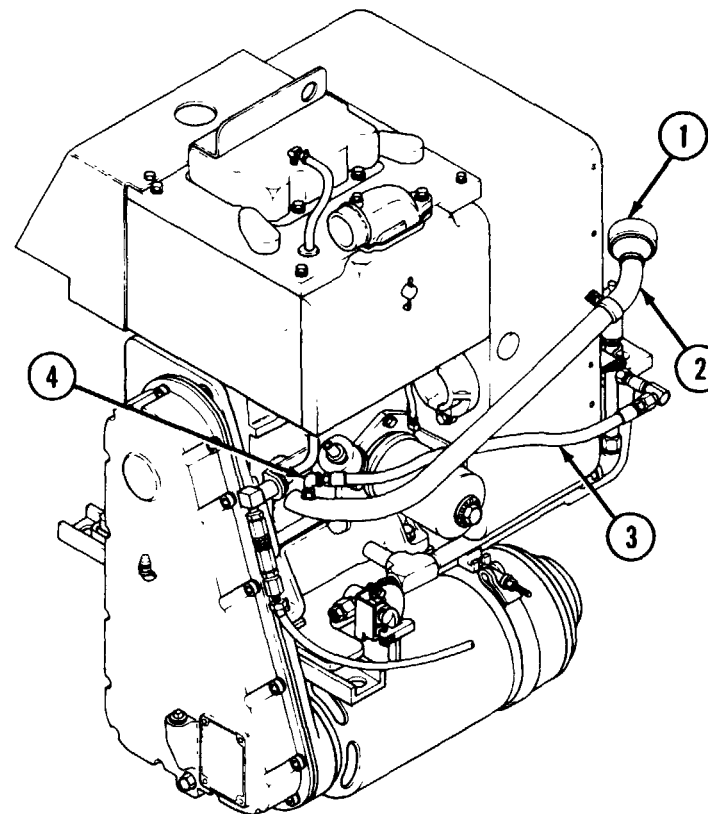
Adhesive sealant (item 5, Appx D)  
Dry-cleaning solvent (item 20, Appx D)  
Engine lubricating oil (item 38, Appx D)  
Teflon tape (item 62, Appx D)

#### Personnel Required:

Two

#### Equipment Condition:

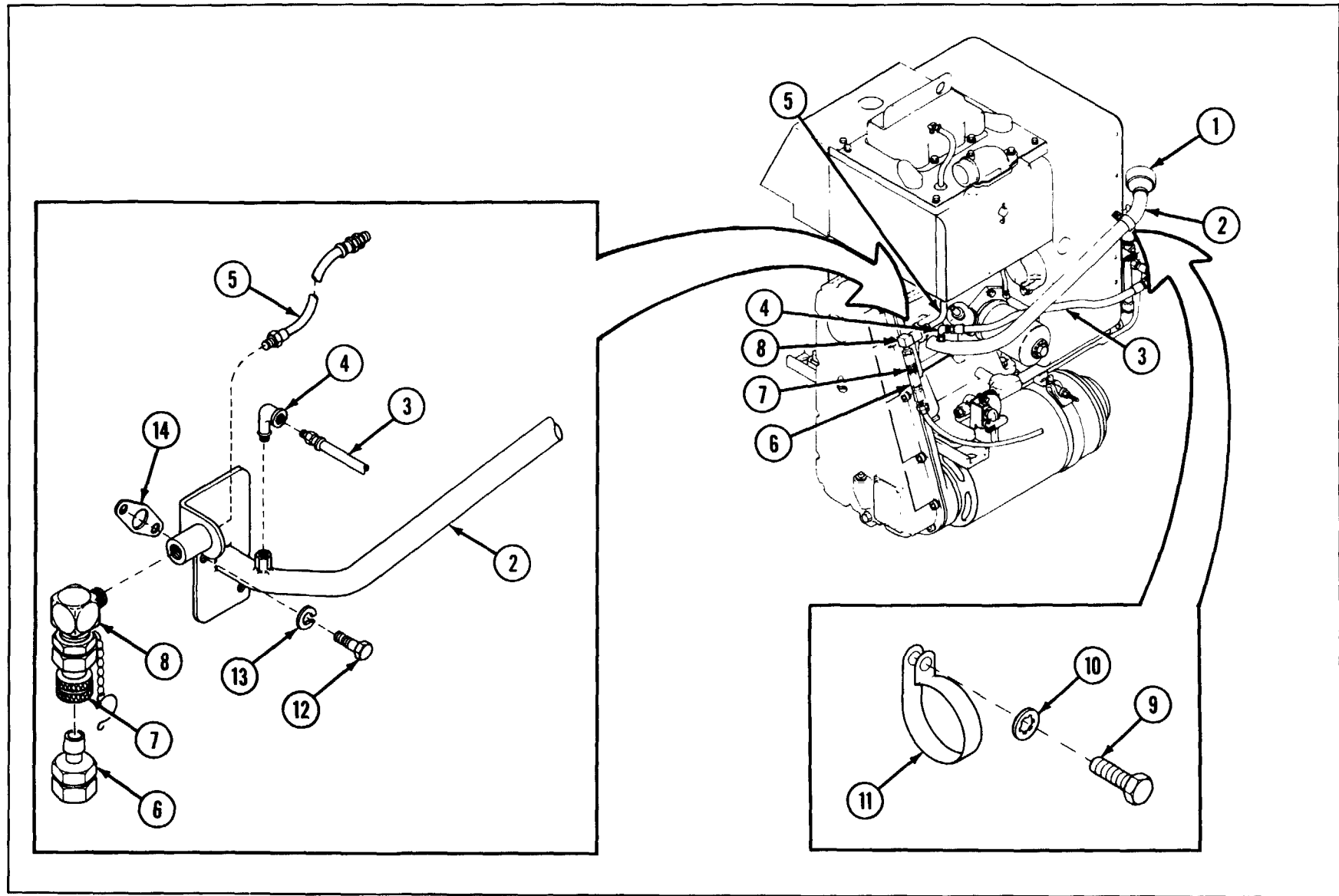
APU removed (p 13-1).



### REMOVAL

- |  |  |
|--|--|
| <p>A Remove cap (1) with gasket (hidden) from oil filler tube assembly (2).</p> <p>B Check gasket for damage. If gasket is damaged, remove from cap (1) and discard.</p> | <p>C Remove breather hose (3) from elbow (4) at base of oil filler tube assembly (2).</p> <p>D Remove elbow (4) from oil filler tube assembly (2).</p> |
|--|--|

APU OIL FILL TUBE: REMOVAL AND INSTALLATION (CONTINUED)



## APU OIL FILL TUBE: REMOVAL AND INSTALLATION (CONTINUED)

- E Disconnect fuel return line (5) from bracket on oil filler tube assembly (2).
- F Disconnect fuel return line quick-disconnect coupling (6) from coupling half (7) in elbow (8).
- G Remove elbow (8) from bracket on oil filler tube assembly (2).
- H Remove screw (9), lockwasher (10) and clamp (11) from oil filler tube assembly (2). Discard lockwasher.
- I Remove two screws (12), two lockwashers (13) and oil filler tube assembly (2). Discard lockwashers. Screw two screws (12) back in housing.

### INSTALLATION

- A Secure clean rags in oil port opening where oil filler tube assembly (2) was removed.

#### WARNING

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well-ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

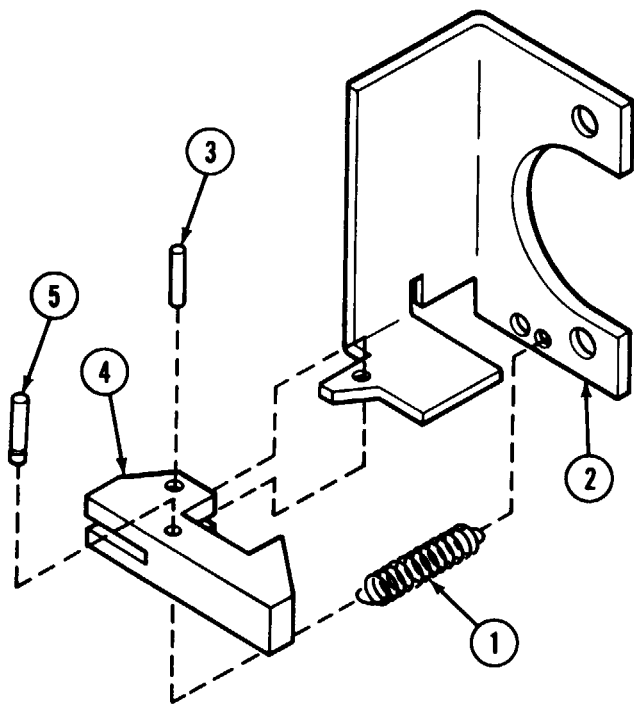
- B Scrape old gasket (14) from housing and clean housing mating surface with dry-cleaning solvent (item 20, Appx D).
- C Remove rags from oil port opening. Remove two screws (12) from housing.
- D Apply sealant adhesive (item 5, Appx D) to housing mating surface, to mating surface of oil filler tube assembly (2) and to both surfaces of new gasket (14).
- E Position gasket (14) on housing mating surface and install oil filler tube assembly (2) on housing with two screws (12) and two new lockwashers (13).
- F Install clamp (11) on oil filler tube assembly (2) with screw (9) and new lockwasher (10).

### NOTE

Use Teflon tape (item 62, Appx D) on all male pipe fittings prior to installation.

- G Install elbow (8) to bracket on oil filler tube assembly (2).
- H Connect fuel return line quick-disconnect coupling (6) to coupling half (7) in elbow (8).
- I Connect fuel return line (5) to bracket on oil filler tube assembly (2).
- J Install elbow (4) on oil filler tube assembly (2). Connect breather hose (3) to elbow (4).
- K If gasket (hidden) was removed from cap (1), install new gasket in cap (1).
- L Install cap (1) on oil filler tube assembly (2).

APU OIL DRAIN VALVE CATCH ASSEMBLY: DISASSEMBLY AND ASSEMBLY



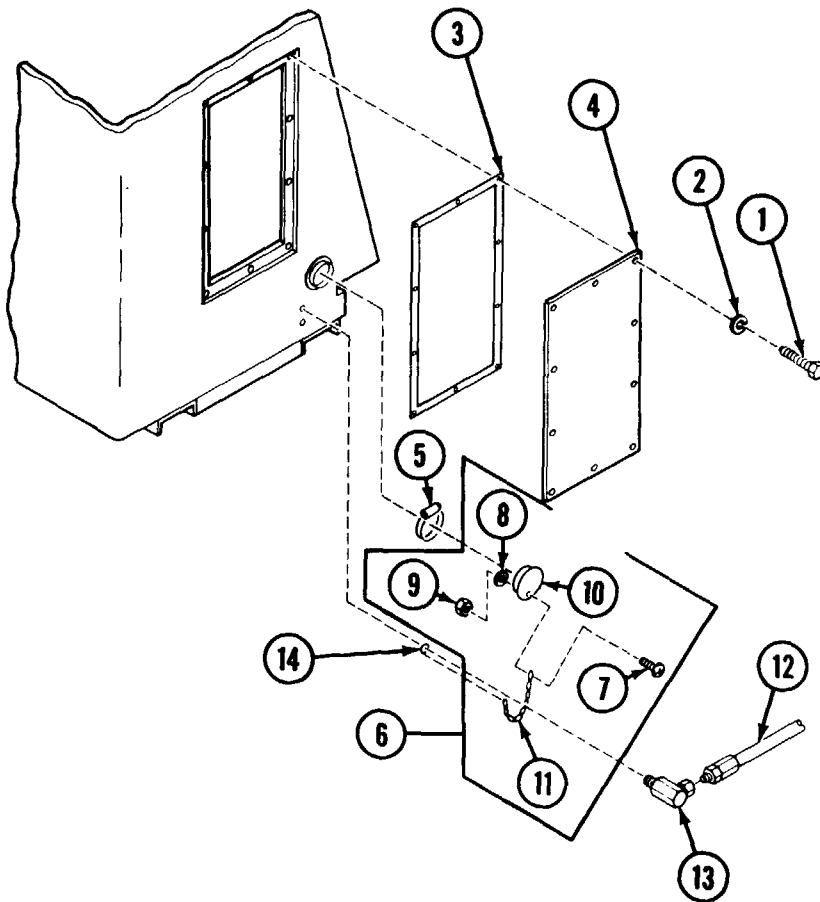
**DISASSEMBLY**

- A Remove spring (1) from bracket (2).
- B Remove pin (3) and catch (4) from bracket (2).
- C Remove pin (5) from catch (4).

**ASSEMBLY**

Reverse disassembly procedures.

## APU COMPARTMENT ACCESS PLATE AND CAP ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



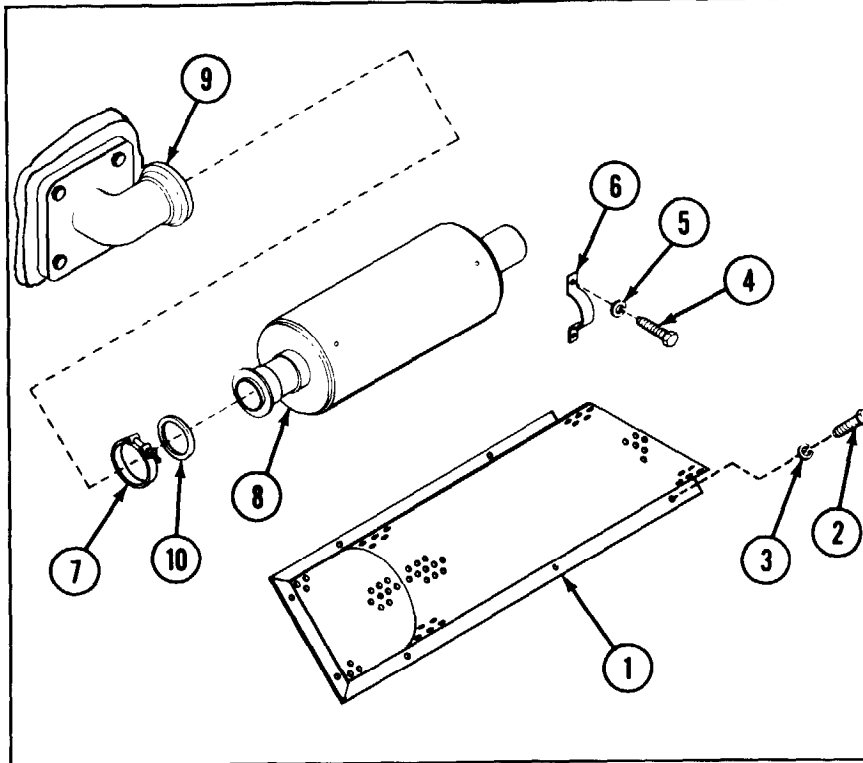
### INSTALLATION

#### CAP ASSEMBLY

- A Connect ring (14) to one end of chain (11).
- B Mount ring (14) to wall using fitting (13).
- C Connect hydraulic line (12).
- D Secure cap (10) to free end of chain (11) using screw (7), new lockwasher (8), and nut (9).
- E Position hose clamp (5) on cap (10).
- F Press cap (10) onto connector.
- G Tighten hose clamp (5) on cap (10).

#### APU COMPARTMENT ACCESS PLATE

- H Install access plate (4) and gasket (3) with 10 screws (1) and 10 new lockwashers (2).

**APU MUFFLER: REMOVAL AND INSTALLATION****REMOVAL****WARNING**

Do not touch muffler until it has cooled down.

- A Remove muffler shield (1) by removing seven screws (2) and seven lockwashers (3). Discard lockwashers.
- B Remove two screws (4), two lockwashers (5) and clamp (6). Discard lockwashers.
- C Remove clamp (7) and pull muffler (8) from elbow (9). Remove and discard gasket (10).

**INSTALLATION****NOTE**

Install new gasket during installation.

Reverse removal procedures.

**APU EXHAUST MUFFLER OUTLET ELBOWS: REMOVAL AND INSTALLATION****INITIAL SETUP****References:**

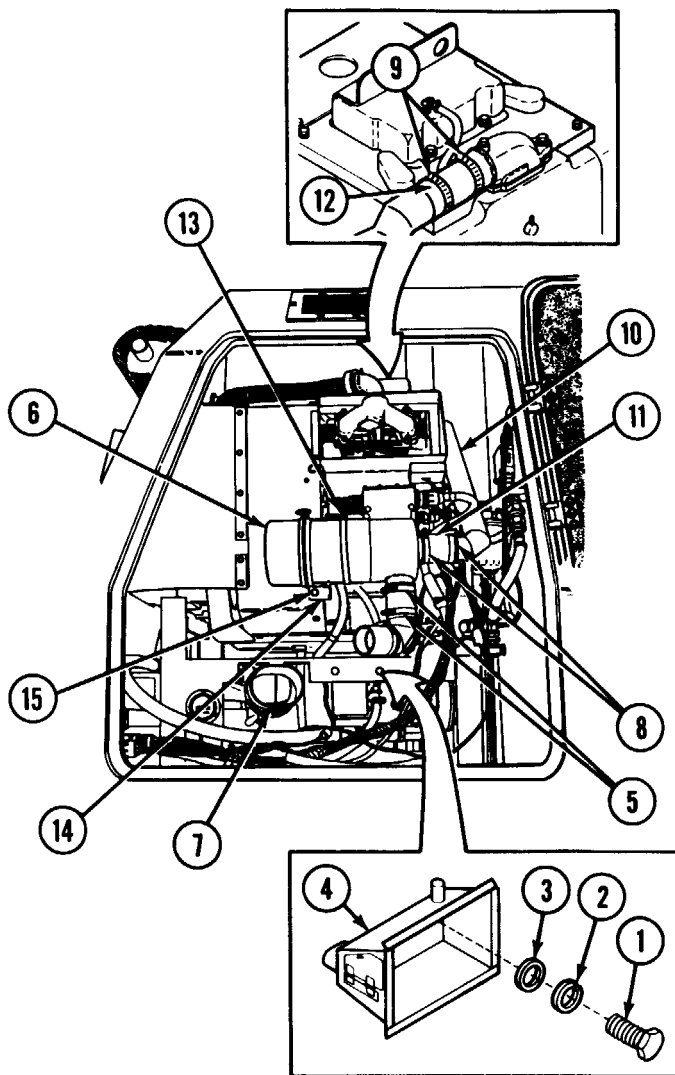
TM 9-2350-267-10

**REMOVAL**

- A Remove APU muffler (p 13-14).

- B Open APU compartment side door (1).
- C Remove clamp (2) and pull flexible pipe (3) from tube assembly (4).
- D Remove and discard shim (5).
- E Remove four nuts (6), four lockwashers (7), four flat washers (8) and four screws (9). Discard lockwashers.
- F Remove tube assembly (4) and outside elbow (10).

## APU AIR CLEANER, INLET AND OUTLET HOSES AND TUBES: REMOVAL AND INSTALLATION



### REMOVAL

#### NOTE

Air cleaner assembly contains a replaceable, reusable filter element which may be removed by opening the housing (TM 9-2350-267-10).

- A Remove two screws (1), two lockwashers (2) and two flat washers (3) from air-intake plenum (4).
- B Remove two hose clamps (5) securing hose to air cleaner (6).
- C Loosen plenum box generator hose clamp (7) and remove plenum (4) and attached air cleaner intake hose.
- D Loosen four clamps (8 and 9) and remove tube (10), two hoses (11 and 12) and clamps (8 and 9).
- E Loosen clamp (13) and remove air cleaner assembly (6) from bracket (14).
- F Remove bracket (14) from APU by removing two screws (15).

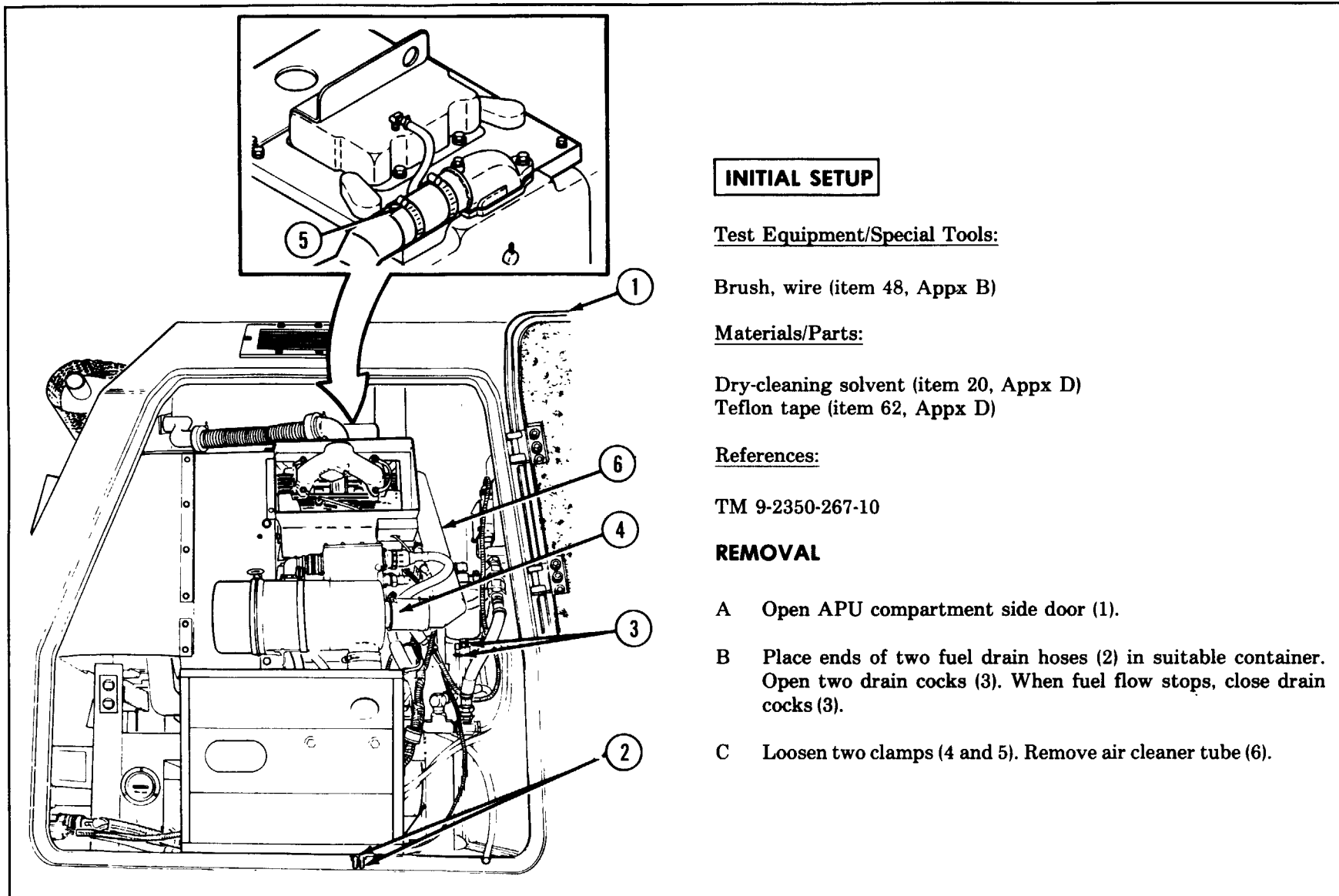
### INSTALLATION

Reverse removal procedures.

#### NOTE

Apply sealing compound (item 53, Appx D) to screw threads.

APU PRIMARY AND SECONDARY FUEL FILTERS: REMOVAL AND INSTALLATION



**INITIAL SETUP**

Test Equipment/Special Tools:

Brush, wire (item 48, Appx B)

Materials/Parts:

Dry-cleaning solvent (item 20, Appx D)

Teflon tape (item 62, Appx D)

References:

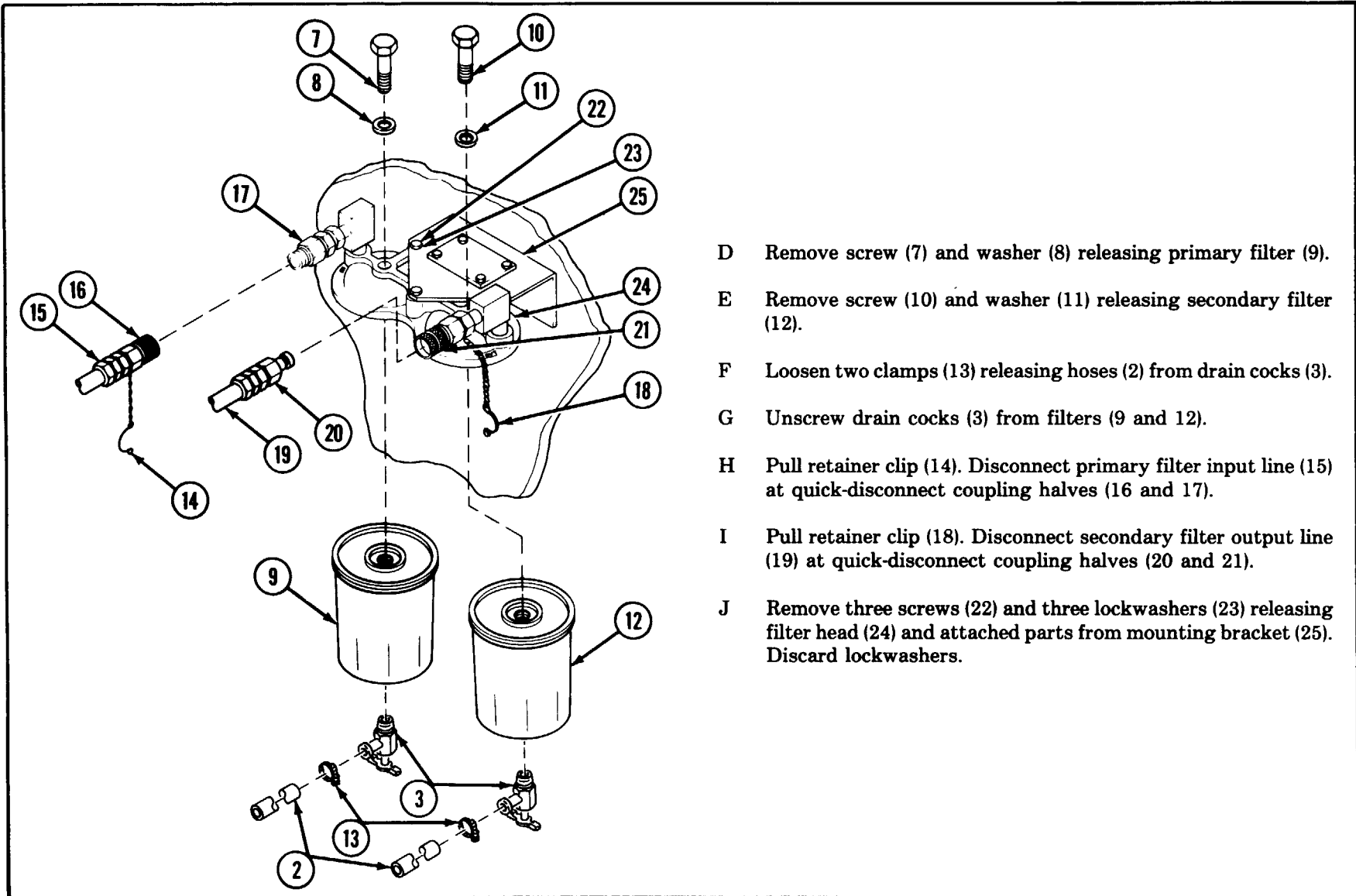
TM 9-2350-267-10

**REMOVAL**

- A Open APU compartment side door (1).
- B Place ends of two fuel drain hoses (2) in suitable container. Open two drain cocks (3). When fuel flow stops, close drain cocks (3).
- C Loosen two clamps (4 and 5). Remove air cleaner tube (6).

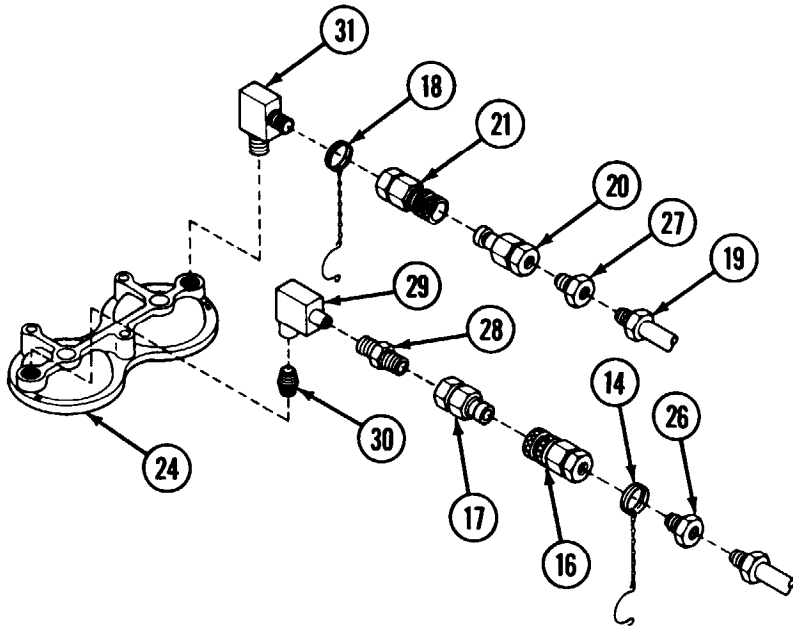


## APU PRIMARY AND SECONDARY FUEL FILTERS: REMOVAL AND INSTALLATION (CONTINUED)



- D Remove screw (7) and washer (8) releasing primary filter (9).
- E Remove screw (10) and washer (11) releasing secondary filter (12).
- F Loosen two clamps (13) releasing hoses (2) from drain cocks (3).
- G Unscrew drain cocks (3) from filters (9 and 12).
- H Pull retainer clip (14). Disconnect primary filter input line (15) at quick-disconnect coupling halves (16 and 17).
- I Pull retainer clip (18). Disconnect secondary filter output line (19) at quick-disconnect coupling halves (20 and 21).
- J Remove three screws (22) and three lockwashers (23) releasing filter head (24) and attached parts from mounting bracket (25). Discard lockwashers.

## APU PRIMARY AND SECONDARY FUEL FILTERS: REMOVAL AND INSTALLATION (CONTINUED)



- K Remove coupling half (16) from connector (26), releasing retainer clip (14).
- L Remove coupling half (20) from connector (27).
- M Remove connector (27) from secondary filter output line (19).
- N Remove coupling half (17) from nipple (28).
- O Remove nipple (28) from elbow (29).
- P Remove elbow (29) from nipple (30).
- Q Remove coupling half (21) from elbow (31), releasing retaining clip (18).
- R Remove elbow (31) from filter head (24).

**WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100° F (38° C); for Type II it is 138° F (50° C). Do not use near open flame or excessive heat.

- S Clean all threads using dry-cleaning solvent (item 20, Appx D) and suitable wire brush (item 48, Appx B).

## APU PRIMARY AND SECONDARY FUEL FILTERS: REMOVAL AND INSTALLATION (CONTINUED)

The diagram shows an exploded view of the fuel filter assembly. At the top is the filter head (24) with two ports. On the left, a screw (7) and washer (8) are shown for the primary filter. On the right, a screw (10) and washer (11) are shown for the secondary filter. Below the head are two cylindrical filters: the primary filter (9) and the secondary filter (12). At the bottom are two drain cocks (3). Various fittings and hoses are shown between the head and filters, including elbows (29, 31), nipples (28, 30), coupling halves (17, 21), and a retainer clip (18). A note at the top right of the diagram area says 'INSTALLATION'.

**INSTALLATION**

**NOTE**

Apply Teflon tape (item 62, Appx D) to all male threads of items being installed.

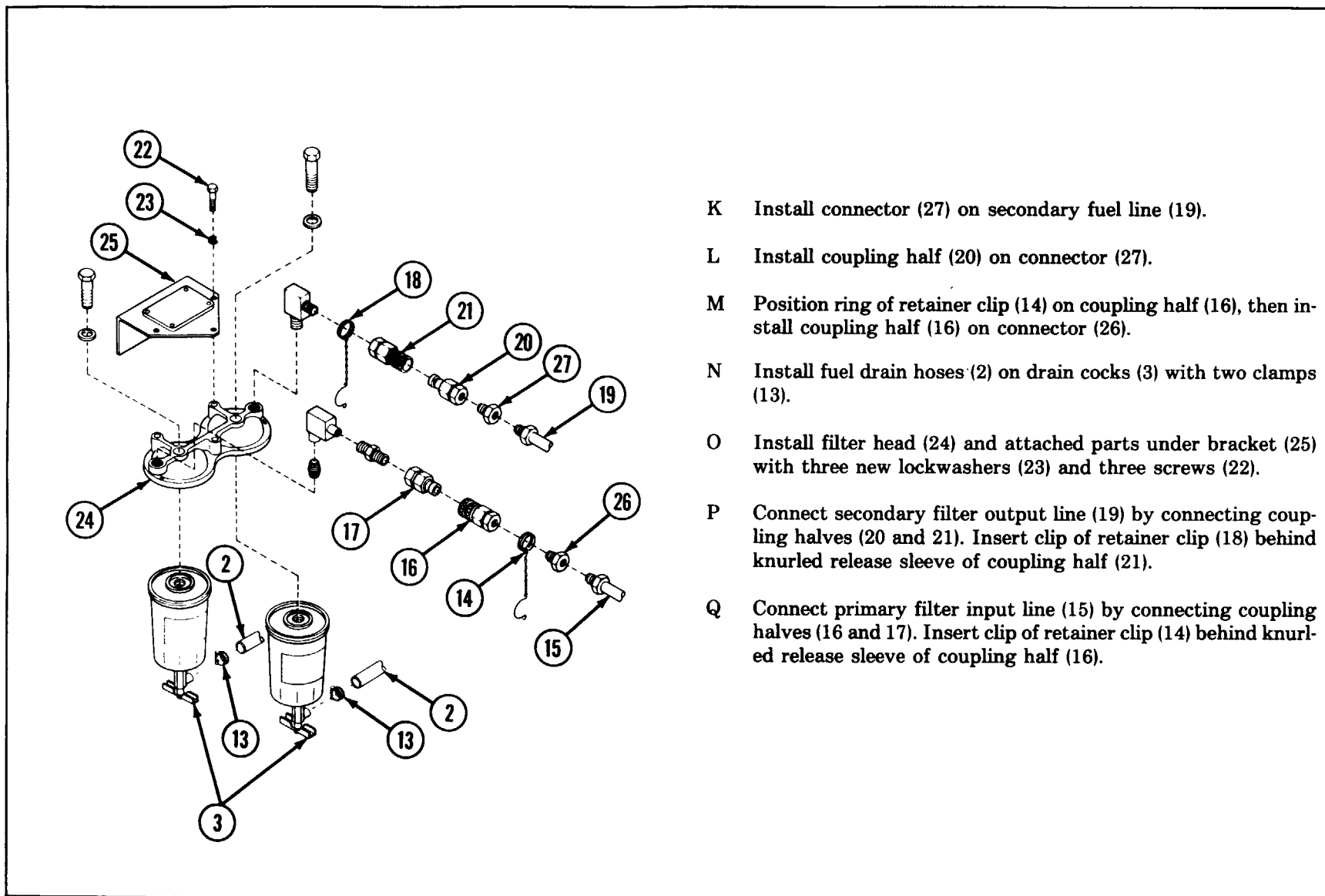
- A Install elbow (31) in filter head (24).
- B Position ring of retainer clip (18) and install coupling half (21) on elbow (31).
- C Install nipple (30) in filter head (24).
- D Install elbow (29) and nipple (28).
- E Secure coupling half (17) on nipple (28).
- F Moisten washers (8 and 11) and seals at top of filters (9 and 12) with diesel fuel.

**NOTE**

Make sure filter seating areas of filter head are clean.

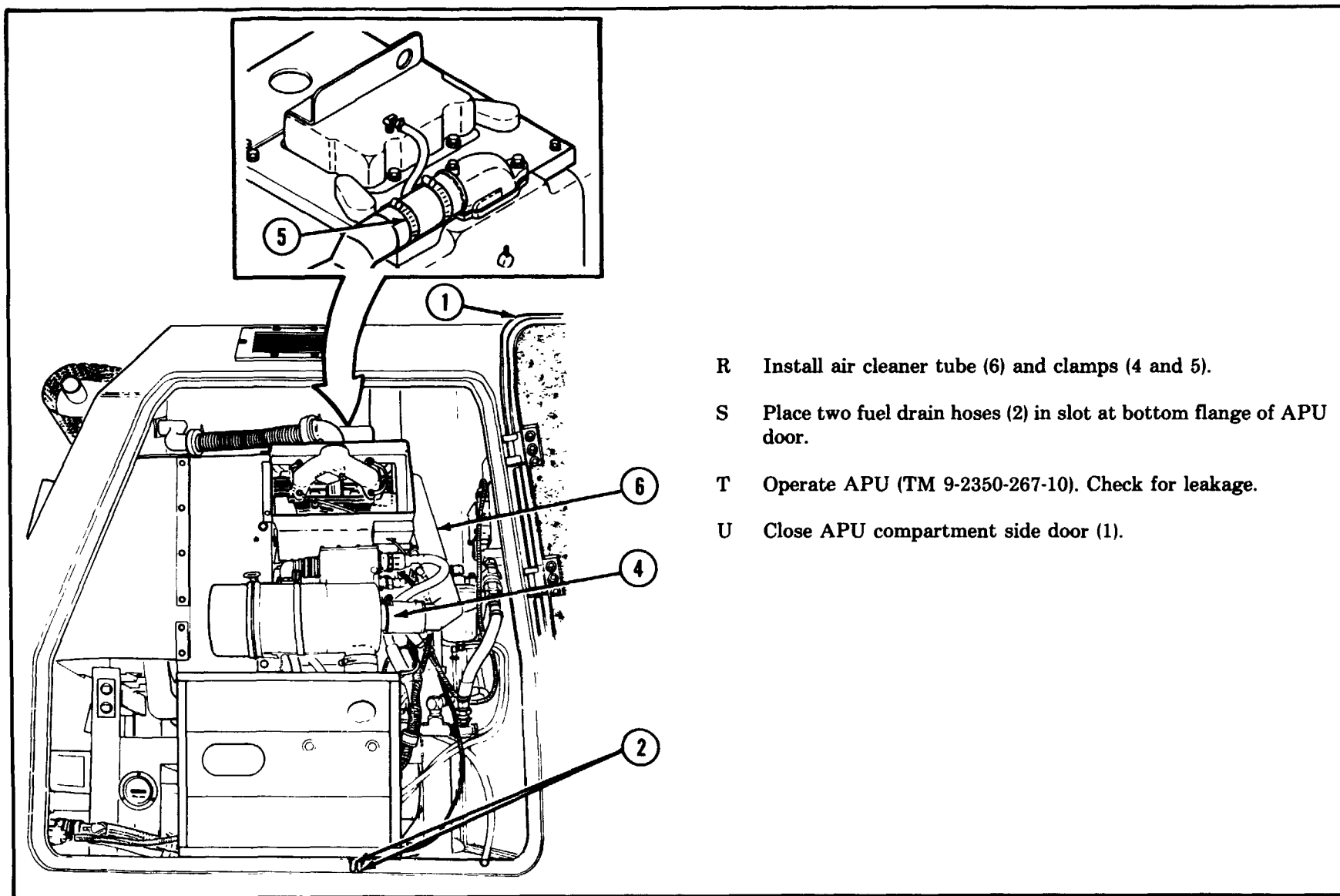
- G Install primary filter (9) against IN side of filter head (24) with washer (8) and screw (7). Finger-tighten screw (7).
- H Install secondary filter (12) against OUT side of filter head (24) with washer (11) and screw (10). Finger-tighten screw (10).
- I Tighten screws (7 and 10) one and one-half additional turns to compress seals at top of filters (9 and 12).
- J Install and close two drain cocks (3).

## APU PRIMARY AND SECONDARY FUEL FILTERS: REMOVAL AND INSTALLATION (CONTINUED)



- K Install connector (27) on secondary fuel line (19).
- L Install coupling half (20) on connector (27).
- M Position ring of retainer clip (14) on coupling half (16), then install coupling half (16) on connector (26).
- N Install fuel drain hoses (2) on drain cocks (3) with two clamps (13).
- O Install filter head (24) and attached parts under bracket (25) with three new lockwashers (23) and three screws (22).
- P Connect secondary filter output line (19) by connecting coupling halves (20 and 21). Insert clip of retainer clip (18) behind knurled release sleeve of coupling half (21).
- Q Connect primary filter input line (15) by connecting coupling halves (16 and 17). Insert clip of retainer clip (14) behind knurled release sleeve of coupling half (16).

## APU PRIMARY AND SECONDARY FUEL FILTERS: REMOVAL AND INSTALLATION (CONTINUED)



R Install air cleaner tube (6) and clamps (4 and 5).

S Place two fuel drain hoses (2) in slot at bottom flange of APU door.

T Operate APU (TM 9-2350-267-10). Check for leakage.

U Close APU compartment side door (1).



## APU HYDRAULIC PRESSURE SWITCH ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

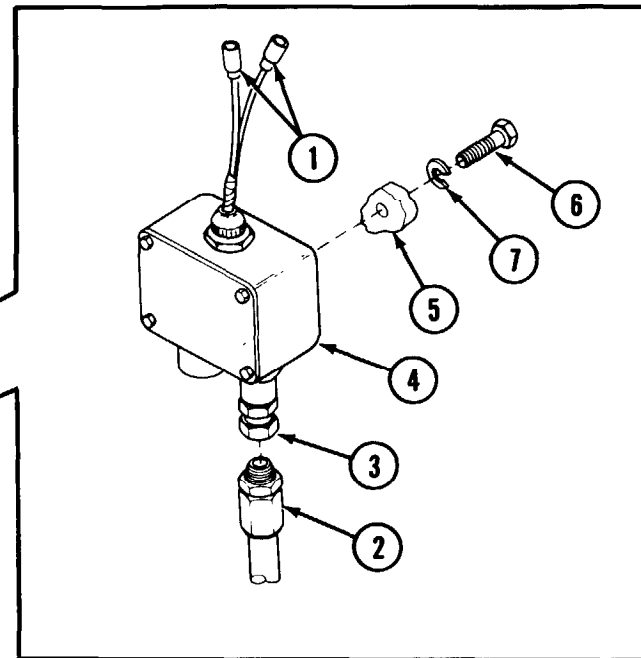
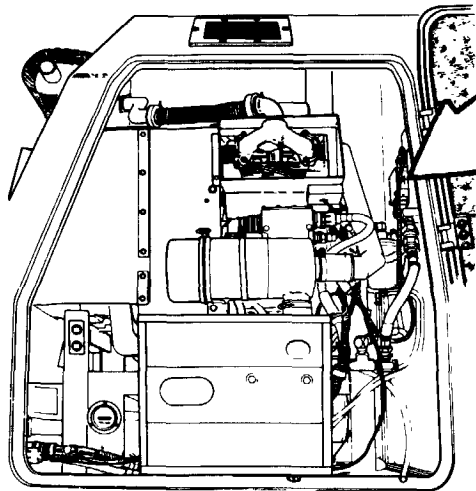
Wrench, adjustable, 12-in. (item 66, Appx B)  
Wrench, open end, 1-1/8 in. (item 71, Appx B)

#### References:

TM 9-2350-267-10

#### Personnel Required:

Two



### REMOVAL

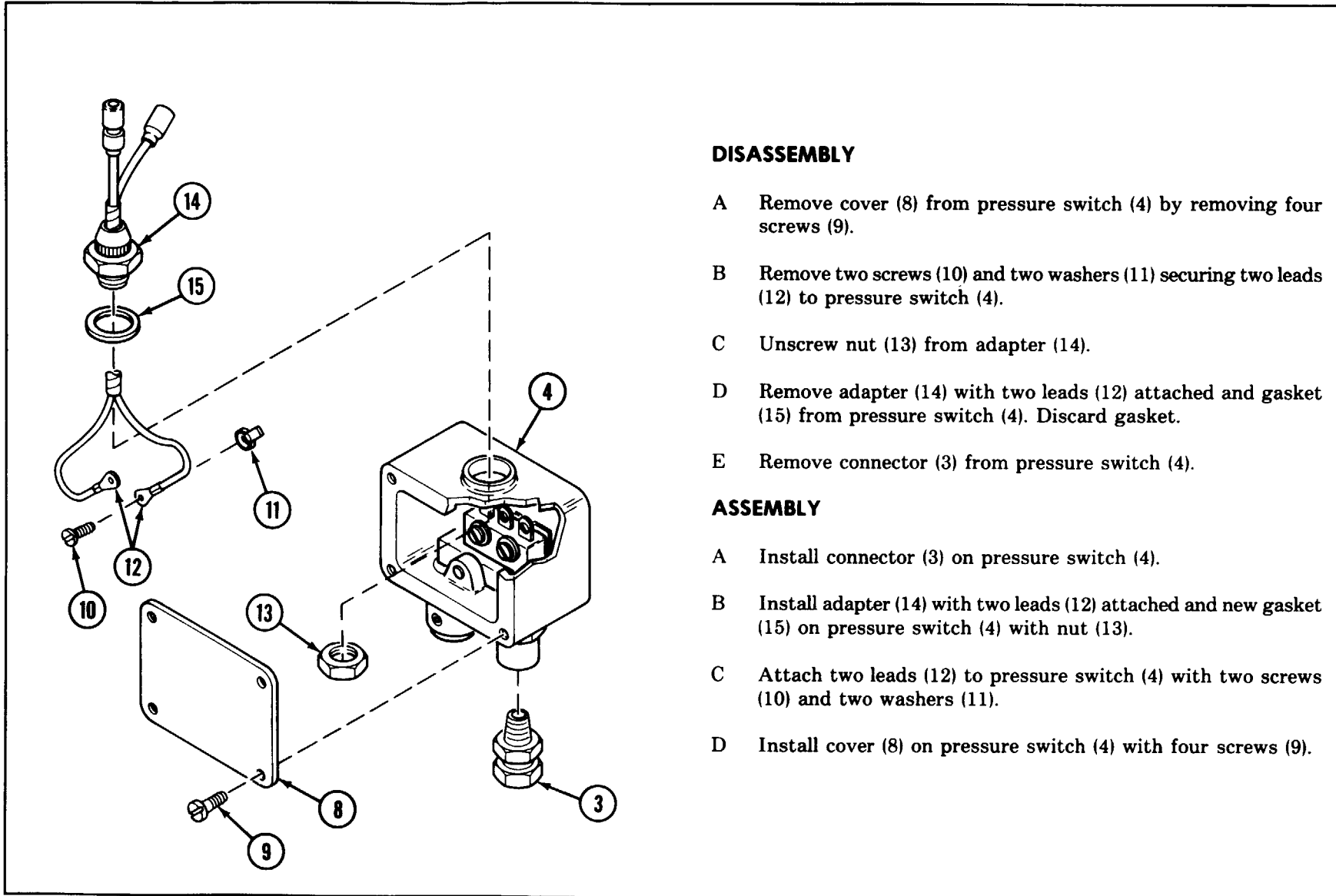
#### WARNING

Turn MASTER switch OFF. Disconnect battery ground cables.

A Open APU compartment side door.

- B Disconnect two electrical hydraulic pressure switch connectors (1) from APU wiring harness.
- C Disconnect APU pressure hose (2) at connector (3).
- D Remove hydraulic pressure switch assembly (4) from APU compartment wall (5) by removing four screws (6) and four lockwashers (7) located on outside of APU compartment wall. Discard lockwashers.

## APU HYDRAULIC PRESSURE SWITCH ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

**DISASSEMBLY**

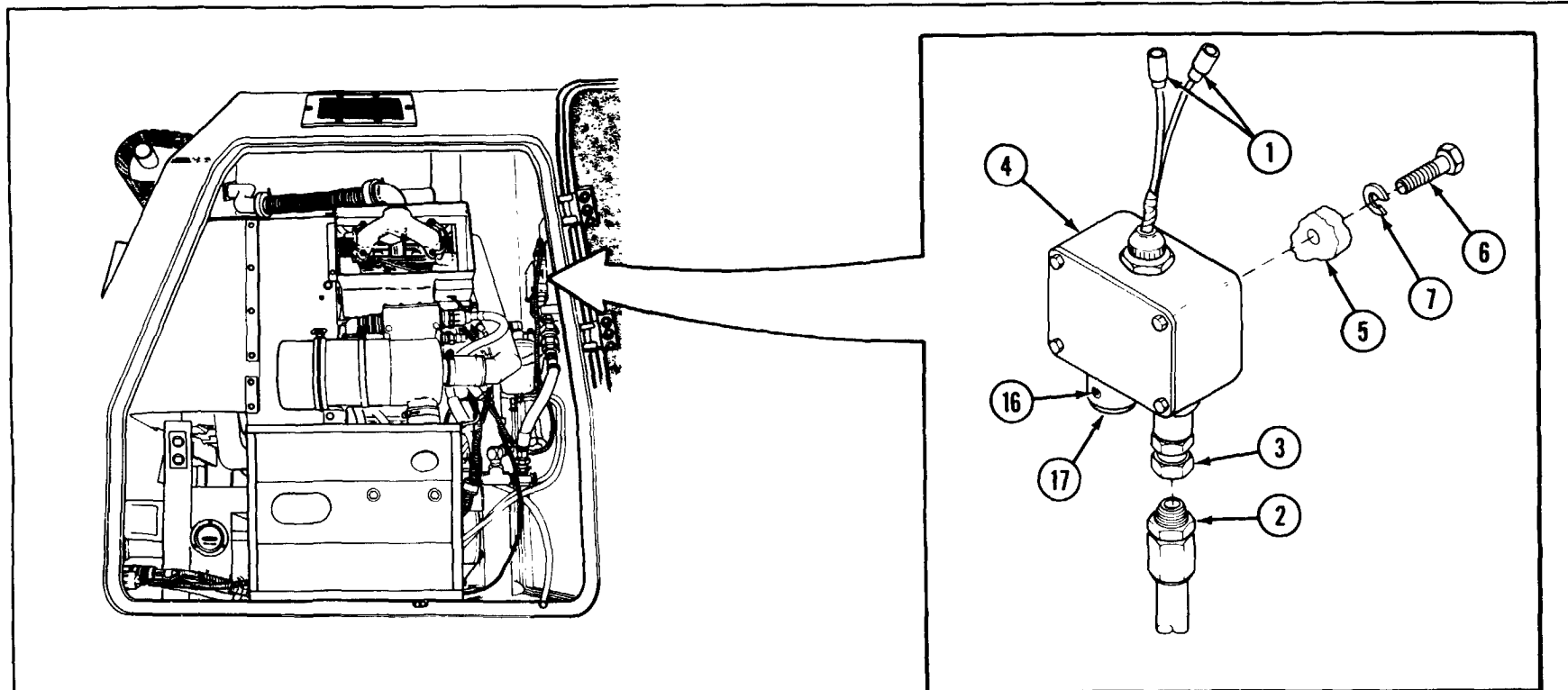
- A Remove cover (8) from pressure switch (4) by removing four screws (9).
- B Remove two screws (10) and two washers (11) securing two leads (12) to pressure switch (4).
- C Unscrew nut (13) from adapter (14).
- D Remove adapter (14) with two leads (12) attached and gasket (15) from pressure switch (4). Discard gasket.
- E Remove connector (3) from pressure switch (4).

**ASSEMBLY**

- A Install connector (3) on pressure switch (4).
- B Install adapter (14) with two leads (12) attached and new gasket (15) on pressure switch (4) with nut (13).
- C Attach two leads (12) to pressure switch (4) with two screws (10) and two washers (11).
- D Install cover (8) on pressure switch (4) with four screws (9).



## APU HYDRAULIC PRESSURE SWITCH ASSEMBLY: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)

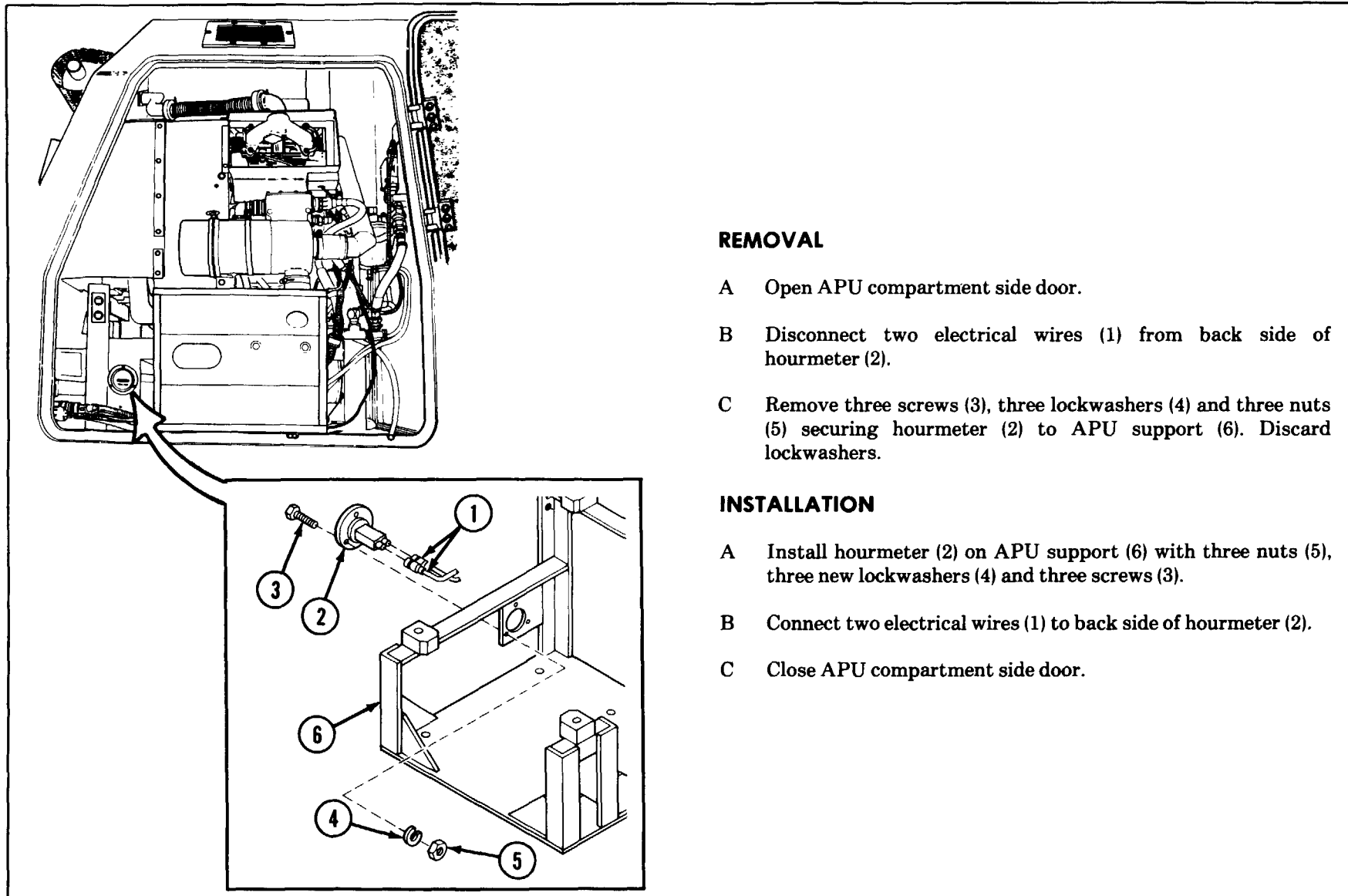


### INSTALLATION

- A Install hydraulic pressure switch assembly (4) on APU compartment wall (5) with four new lockwashers (7) and four screws (6).
- B Connect APU pressure hose (2) to connector (3).
- C Connect two electrical hydraulic pressure switch connectors (1) to APU wiring harness.
- D Connect battery ground cables.
- E Turn on APU fuel switch and MASTER switch and run APU (TM 9-2350-267-10). Check for proper operation of pressure switch (4). If adjustment is necessary, loosen setscrew (16) and turn screw (17).
- F Check for oil leaks at pressure switch (4) and pressure hose (2). Shut down APU.
- G Close APU compartment side door.

TA313077

## APU HOURMETER: REMOVAL AND INSTALLATION

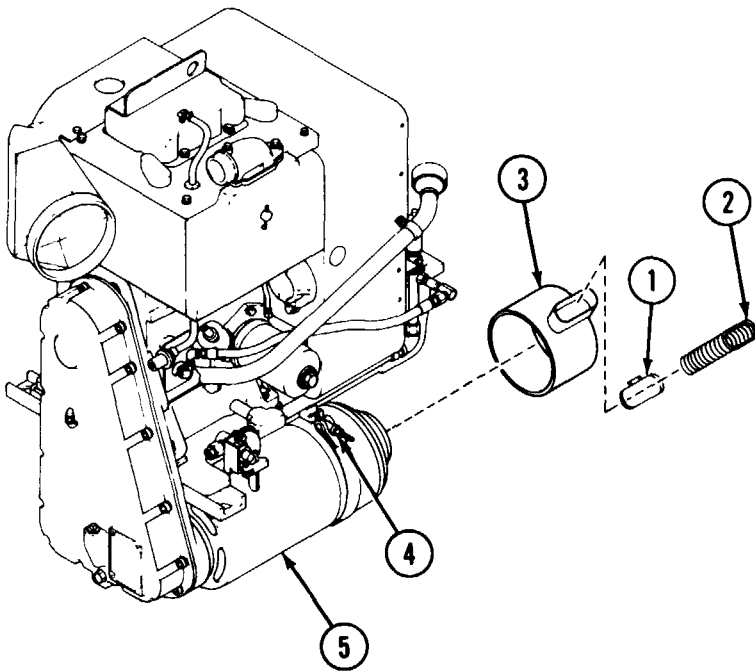
**REMOVAL**

- A Open APU compartment side door.
- B Disconnect two electrical wires (1) from back side of hourmeter (2).
- C Remove three screws (3), three lockwashers (4) and three nuts (5) securing hourmeter (2) to APU support (6). Discard lockwashers.

**INSTALLATION**

- A Install hourmeter (2) on APU support (6) with three nuts (5), three new lockwashers (4) and three screws (3).
- B Connect two electrical wires (1) to back side of hourmeter (2).
- C Close APU compartment side door.

## APU GENERATOR AIR DUCT AND ATTACHING HARDWARE: REMOVAL AND INSTALLATION



### REMOVAL

- A Remove plenum (p 13-1).
- B Remove APU compartment access plate (p 13-13).
- C Loosen clamp (1).
- D Pull hose (2) free of air duct (3).
- E Release strap (4) to allow air duct (3) to slide off generator (5).
- F Remove air duct (3).

### INSTALLATION

Reverse removal procedures.



## APU GENERATOR: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

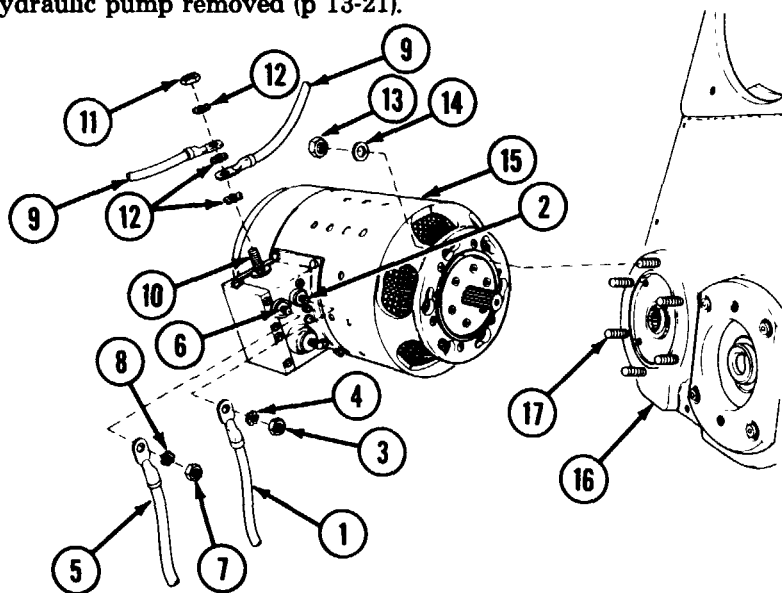
Adhesive sealant (item 5, Appx D)  
Dry-cleaning solvent (item 20, Appx D)

#### Personnel Required:

Two

#### Equipment Condition:

APU removed (p 13-1).  
Support stand and support assembly removed (p 13-5).  
Generator air duct removed (p 13-18.3).  
Hydraulic pump removed (p 13-21).



### REMOVAL

#### WARNING

Turn MASTER switch OFF. Disconnect battery ground cables.

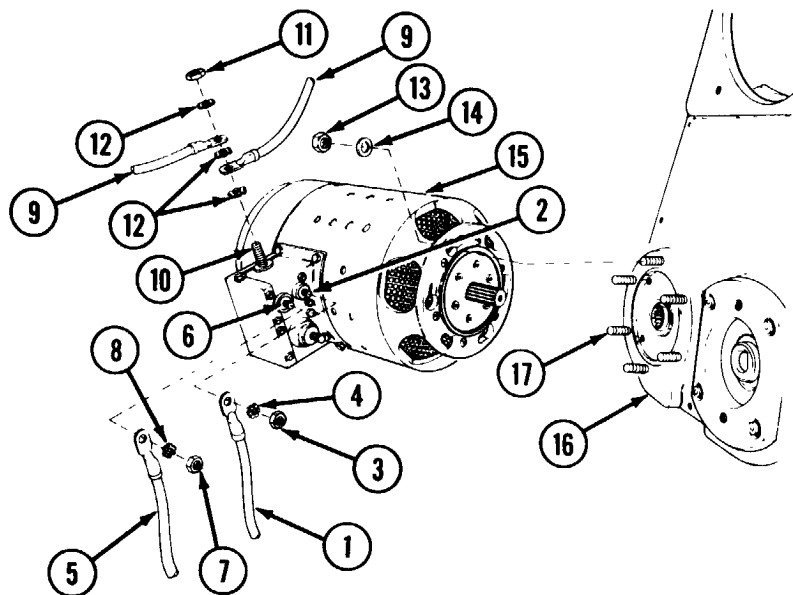
- A Remove electrical lead 78A (1) from terminal D (2) by removing nut (3) and washer (4). Discard lockwasher.
- B Remove electrical lead 61 (5) from terminal A (6) by removing nut (7) and lockwasher (8). Discard lockwasher.
- C Remove two electrical ground leads (9) from terminal E (10) by removing nut (11) and three lockwashers (12). Discard lockwashers.

#### NOTE

One person should support generator when mounting nuts are loosened.

- D Remove six self-locking nuts (13) and six washers (14). Discard self-locking nuts.
- E With an assistant, remove generator (15) by turning counterclockwise then pulling from APU chaincase (16).
- F Replace any damaged studs (17) (p 13-20.1).

## APU GENERATOR: REMOVAL AND INSTALLATION (CONTINUED)

**INSTALLATION**

A With an assistant, position generator (15) on chain housing mounting studs (17) so terminal box is at 2 o'clock.

- B Make sure all washers (14) are inside generator endbell, then turn generator clockwise to lock in place.
- C Install six new self-locking nuts (13).

**WARNING**

Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

- D Remove any traces of old sealant from terminals (2, 6 and 10) with dry-cleaning solvent (item 20, Appx D).
- E Install two electrical ground leads (9) on terminal E (10) with three new lockwashers (12), and nut (11).
- F Install electrical lead 61 (5) on terminal A (6) with new lockwasher (8) and nut (7).
- G Install electrical lead 78A (1) on terminal D (2) with new lockwasher (4) and nut (3).
- H Seal terminals (2, 6 and 10) and connected leads with adhesive sealant (item 5, Appx D).

## APU GENERATOR MOUNTING STUD: REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Test Equipment/Special Tools:

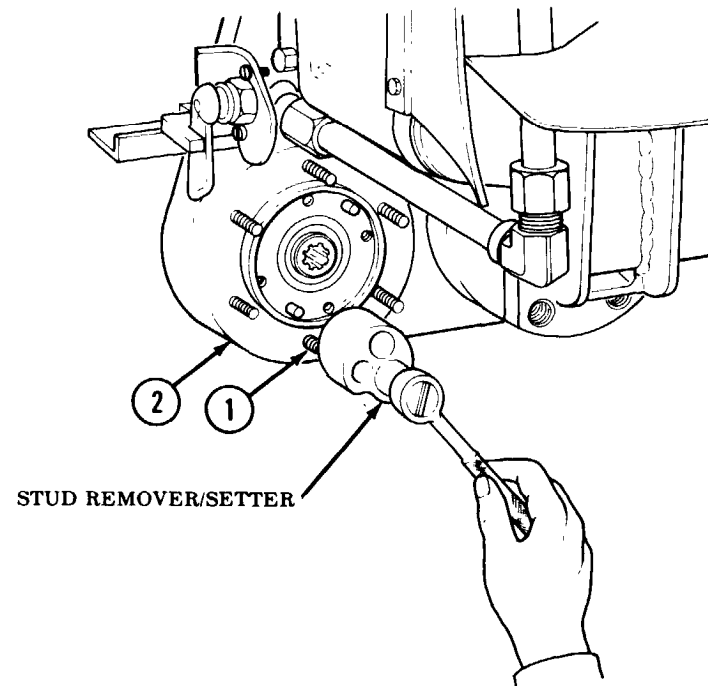
Drill, portable electric (item 50, Appx B)  
Deepwell socket (item 49, Appx B)  
Screw extractor (item 57, Appx B)  
Stud remover/setter (item 63, Appx B)  
Twist drill, 1/4-in. (item 64, Appx B)

#### Materials/Parts:

Teflon tape (item 61, Appx D)

#### Equipment Condition:

APU generator removed (p 13-19).



### REMOVAL

#### NOTE

If stud to be removed is bent, broken, or stripped, do step A only. If stud to be removed is broken off flush with case, do steps B and C.

- A Using a stud remover and setter, remove stud (1) from gear-case (2).

**APU GENERATOR MOUNTING STUD: REMOVAL AND INSTALLATION (CONTINUED)****CAUTION**

Do not drill into stud more than 3/4-inch deep. Wrap tape around drill bit 3/4 inch from tip of bit to insure proper depth. Damage to gearcase will result if drill bit is allowed to penetrate stud more than 3/4 inch.

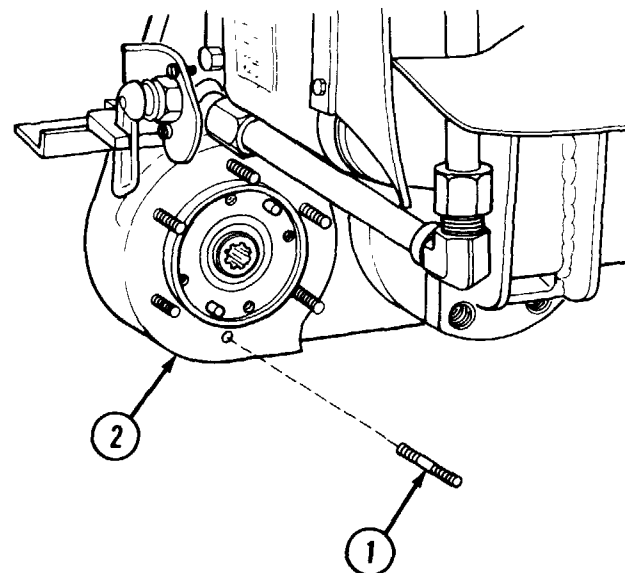
**NOTE**

Use center punch and hammer to mark center of stud to assure centering of drill bit.

- B Drill pilot hole 3/4-inch deep in center of stud (1).
- C Tap screw extractor into pilot hole of stud (1). Remove and discard stud.

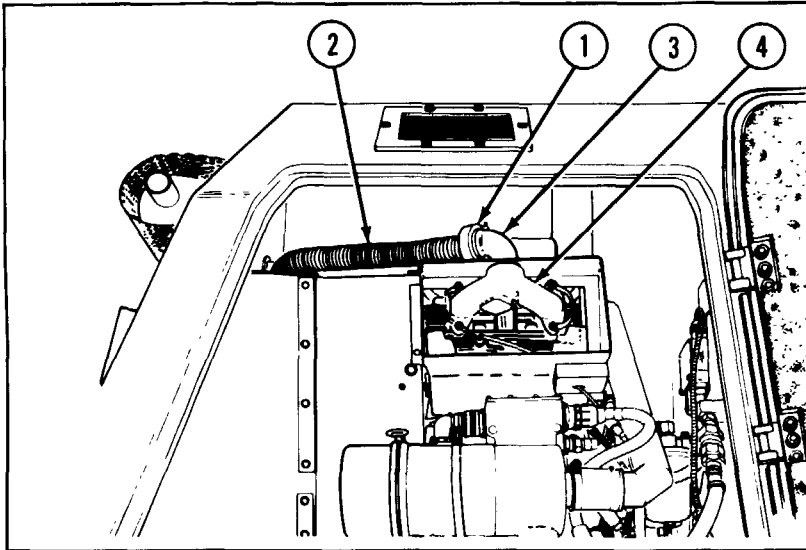
**INSTALLATION**

- A Wrap Teflon tape (item 61, Appx D) around end of new stud (1) is to be inserted in gearcase (2).
- B Install stud (1) in gearcase (2) using a stud remover and setter.





## APU EXHAUST MANIFOLD ELBOW: REMOVAL AND INSTALLATION



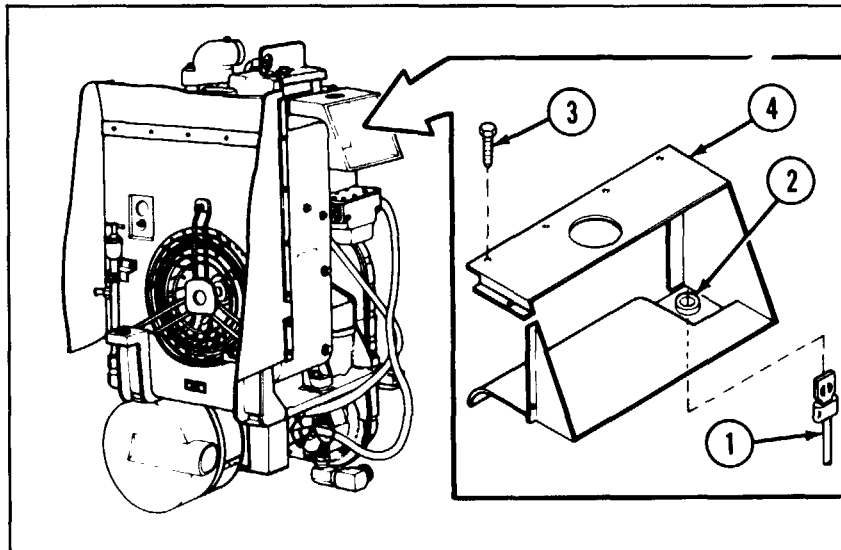
### REMOVAL

- A Remove clamp (1) and pull flexible hose (2) from elbow (3).
- B Unscrew and remove elbow (3) from exhaust manifold (4).

### INSTALLATION

Reverse removal procedures.

## APU COOLING AIR DUCT: REMOVAL AND INSTALLATION



### REMOVAL

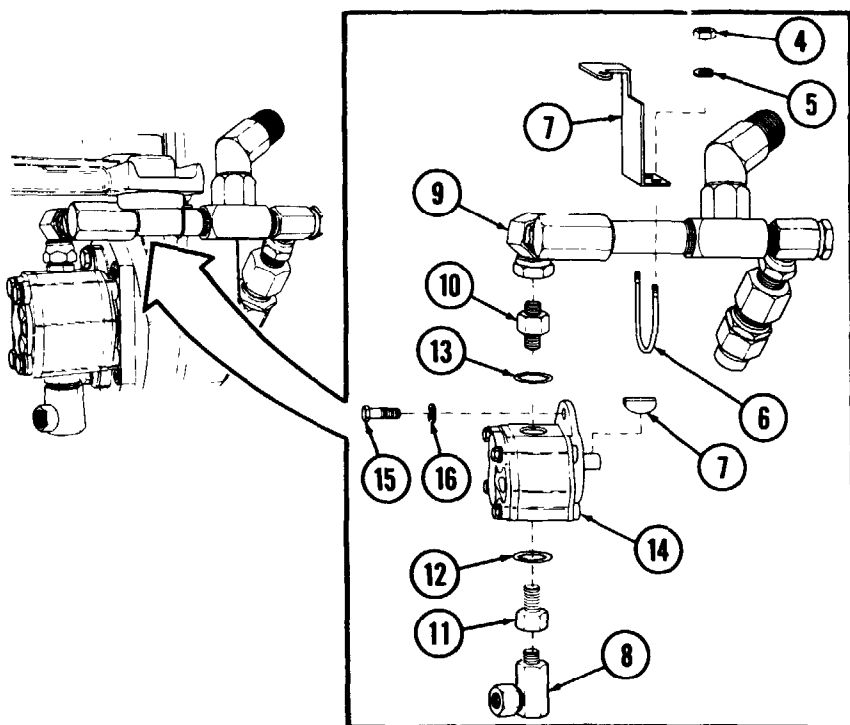
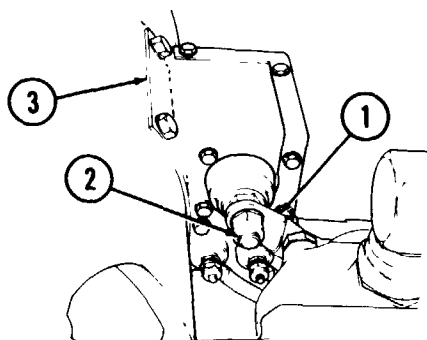
- A Remove APU exhaust manifold elbow (p 13-20.3).
- B Disconnect ground lead wire 493 (1) from high-temperature switch and pull through grommet (2).
- C Remove six screws (3) from air duct (4), and remove air duct (4) from APU.

### INSTALLATION

Reverse removal procedures.



## APU HYDRAULIC PUMP: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

Turn OFF MASTER switch. Disconnect battery ground cables.

- A Remove APU with support stand from APU compartment (p 13-1).
- B Disconnect one electrical cable terminal 66 (1) from terminal B (2) of generator (3).
- C Remove two nuts (4) and two lockwashers (5) securing U-bolt (6) to bracket (7).
- D Remove elbows (8 and 9) from adapters (10 and 11).
- E Remove adapters (10 and 11) and packings (12 and 13) from pump (14). Discard packings.
- F Remove pump (14) by removing two screws (15) and two lockwashers (16).
- G Remove woodruff key (17) from shaft of pump (14).

### INSTALLATION

#### NOTE

Install new packings in step E.

Reverse order of removal procedures.

TA309967

## APU HYDRAULIC PUMP INLET AND OUTLET FITTINGS AND U-BOLT ASSEMBLY: REMOVAL AND INSTALLATION

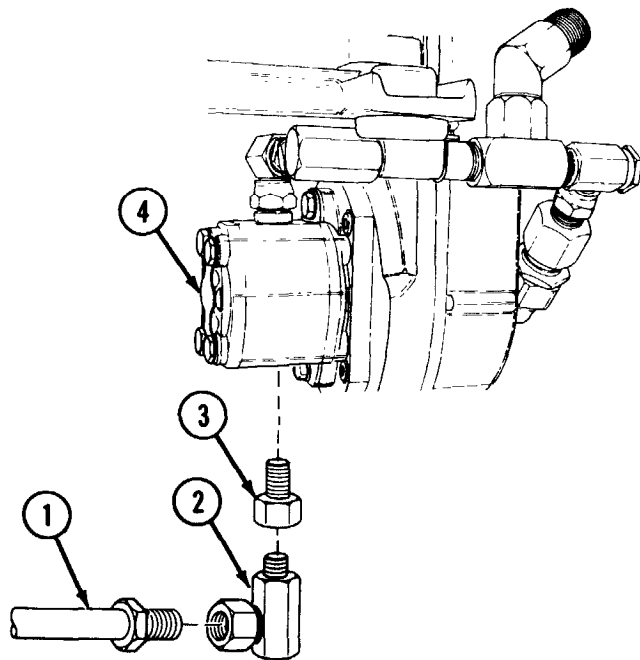
### INITIAL SETUP

#### Materials/Parts:

Teflon tape (item 62, Appx D)

#### Equipment Condition:

Air-intake plenum removed (p 13-1).  
Hydraulic reservoir ball valve closed (p 16-2).



### REMOVAL

#### WARNING

Make sure all hydraulic systems are shut down, and MASTER switch is OFF.

#### CAUTION

Cap hydraulic lines and ports immediately after disconnecting to prevent contaminants from entering hydraulic system and hydraulic components.

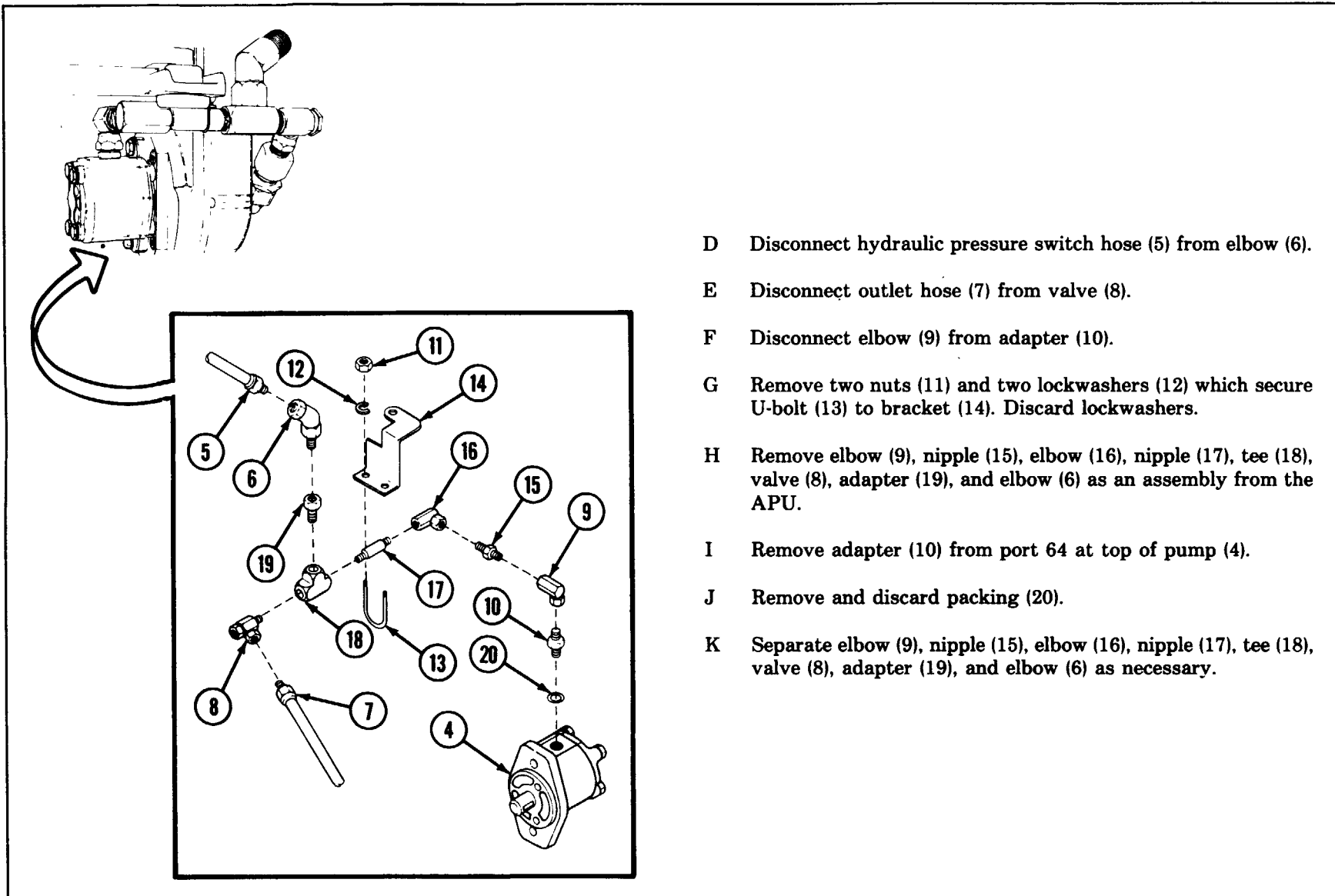
#### NOTES

Tag hoses and fittings for identification at installation.

Provide a suitable container under hydraulic pump and hoses for oil spills.

- A Disconnect hydraulic pump inlet hose (1) from elbow (2).
- B Remove elbow (2) from adapter (3).
- C Remove adapter (3) from port 63 at bottom of pump (4).

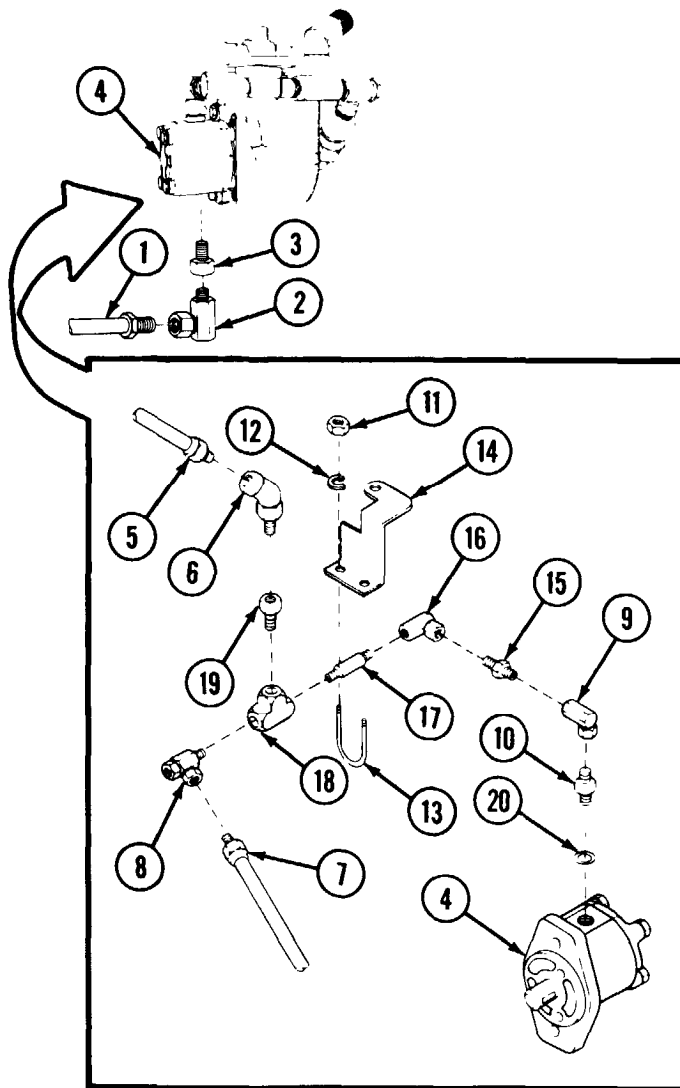
**APU HYDRAULIC PUMP INLET AND OUTLET FITTINGS AND U-BOLT ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)**



- D Disconnect hydraulic pressure switch hose (5) from elbow (6).
- E Disconnect outlet hose (7) from valve (8).
- F Disconnect elbow (9) from adapter (10).
- G Remove two nuts (11) and two lockwashers (12) which secure U-bolt (13) to bracket (14). Discard lockwashers.
- H Remove elbow (9), nipple (15), elbow (16), nipple (17), tee (18), valve (8), adapter (19), and elbow (6) as an assembly from the APU.
- I Remove adapter (10) from port 64 at top of pump (4).
- J Remove and discard packing (20).
- K Separate elbow (9), nipple (15), elbow (16), nipple (17), tee (18), valve (8), adapter (19), and elbow (6) as necessary.



## APU HYDRAULIC PUMP INLET AND OUTLET FITTINGS AND U-BOLT ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)

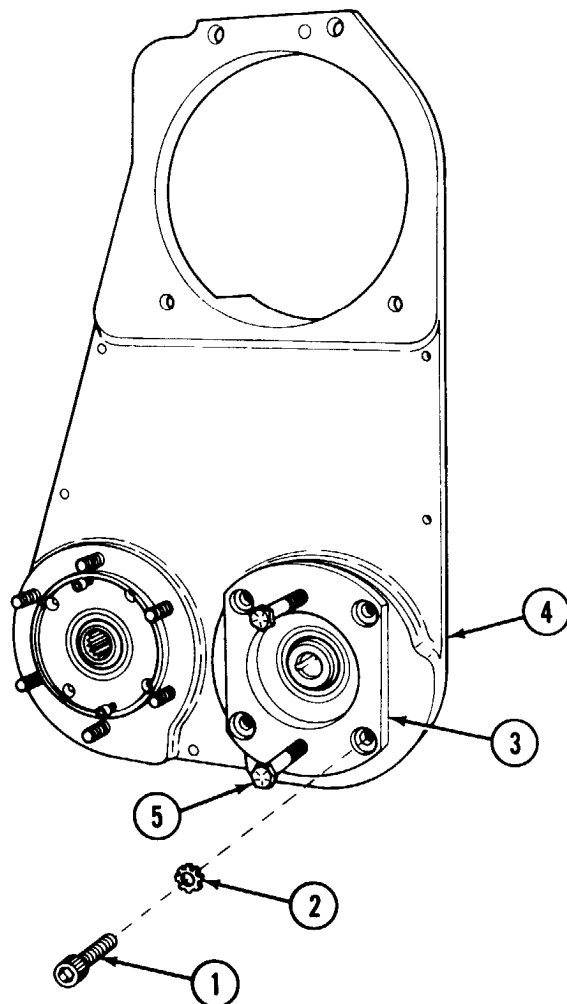


### INSTALLATION

#### NOTE

Apply Teflon tape (item 62, Appx D) to all male pipe fittings prior to installation.

- A Connect elbow (6), adapter (19), valve (8), tee (18), nipple (17), elbow (16), nipple (15) and elbow (9) as necessary.
- B Install new packing (20).
- C Install adapter (10) in port 64 at top of pump (4).
- D Position assembled fittings on bracket (14) and secure with U-bolt (13), two new lockwashers (12), and two nuts (11).
- E Connect elbow (9) to adapter (10).
- F Connect outlet hose (7) to valve (8).
- G Connect hydraulic pressure switch hose (5) to elbow (6).
- H Install adapter (3) in port 63 at bottom of pump (4).
- I Connect elbow (2) to adapter (3).
- J Connect hydraulic pump inlet hose (1) to elbow (2).

**APU HYDRAULIC PUMP ADAPTER PLATE: REMOVAL AND INSTALLATION****REMOVAL**

- A Remove hydraulic pump (p 13-21).
- B Remove four screws (1) and four lockwashers (2) from adapter plate (3) and gear case (4).
- C Install two 3/8-16NC-2B puller screws (5) in adapter plate (3) puller holes.
- D Using puller screws (5), remove adapter plate (3) from gear case (4).
- E Remove puller screws (5) from adapter plate (3).

**INSTALLATION**

- A Position and secure adapter plate (3) on gear case (4) with four screws (1) and four lockwashers (2).
- B Install hydraulic pump (p 13-21).



## APU INLET FUEL LINE (BULKHEAD TO PRIMARY FILTER): REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Materials/Parts:

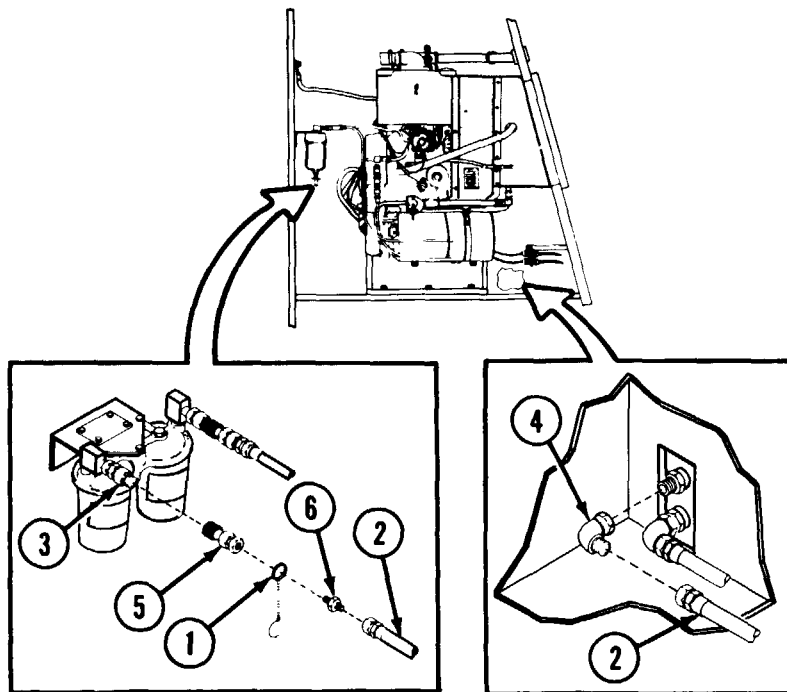
Teflon tape (item 62, Appx D)

#### References:

TM 9-2350-267-10

#### Equipment Condition:

APU compartment access plate removed (p 13-13).



### REMOVAL

- A Pull retainer clip (1) and disconnect inlet fuel hose (2) at primary filter quick-disconnect coupling half (3).
- B Disconnect inlet fuel hose (2) from bulkhead elbow (4) and remove inlet hose (2) from vehicle.
- C Remove quick-disconnect coupling half (5) and adapter (6) from hose (2) and remove retainer clip (1).
- D Remove elbow (4) from bulkhead.

### INSTALLATION

#### NOTE

Use Teflon tape (item 62, Appx D) on all male pipe fittings prior to installation.

- A Install elbow (4) in bulkhead.
- B Install retainer clip (1), adapter (6) and quick-disconnect coupling half (5) on fuel inlet hose (2).
- C Connect fuel inlet hose (2) to bulkhead mounted elbow (4).
- D Connect quick-disconnect coupling half (5) to primary filter quick-disconnect coupling half (3).
- E Run APU (TM 9-2350-267-10). Check for fuel leaks.

### APU FUEL RETURN LINE (APU TO BULKHEAD): REMOVAL AND INSTALLATION

#### INITIAL SETUP

##### Materials/Parts:

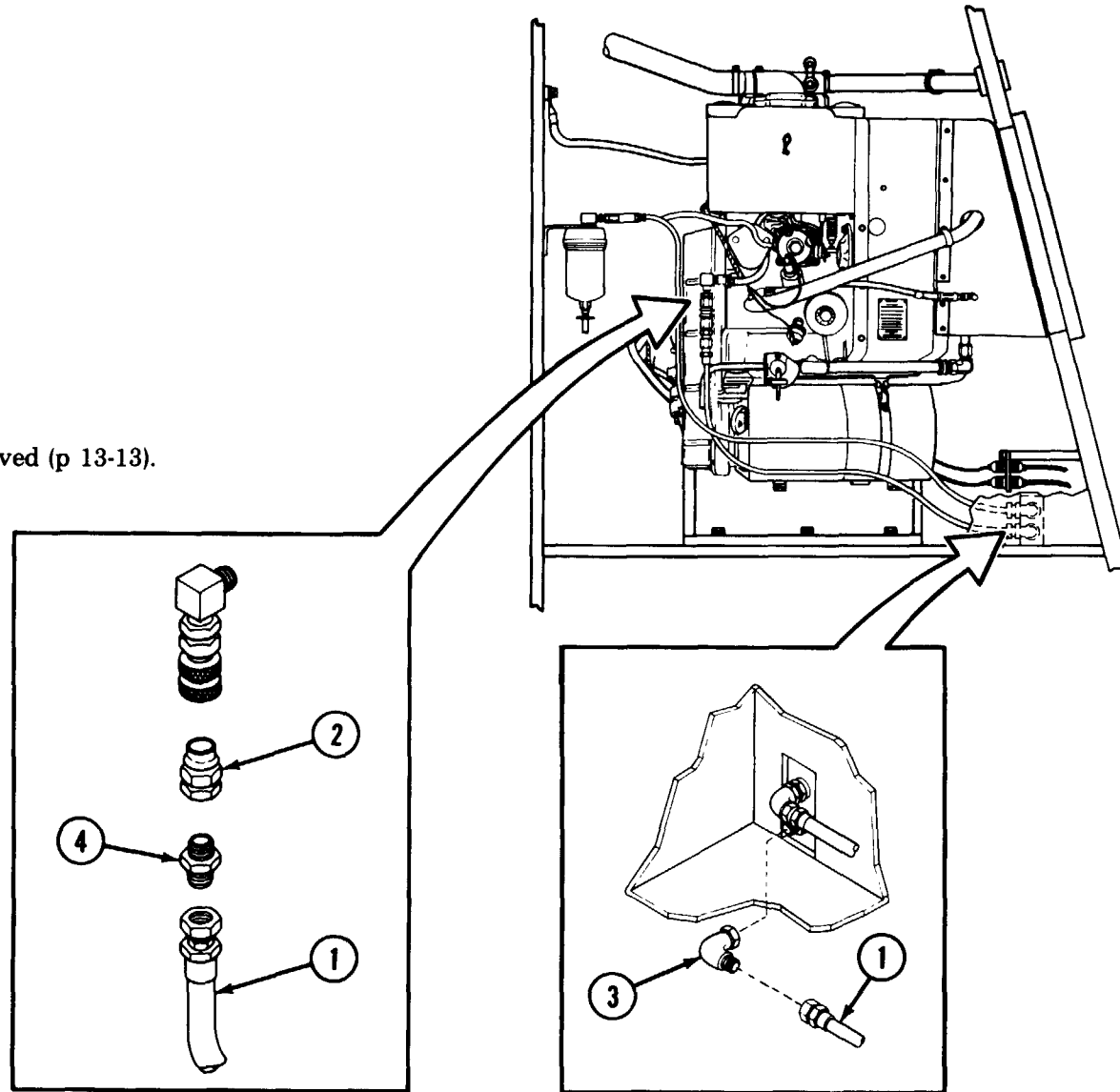
Protective caps/plugs  
Teflon tape (item 62, Appx D)

##### References:

TM 9-2350-267-10

##### Equipment Condition:

APU compartment access plate removed (p 13-13).



## APU FUEL RETURN LINE (APU TO BULKHEAD): REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTE

- Use protective caps/plugs on all disconnected hoses and fittings.
- Use wiping rags to remove leaked fuel.

- A Disconnect APU fuel return hose (1) at quick-disconnect coupling half (2).
- B Disconnect APU fuel return hose (1) from bulkhead elbow (3) and remove hose (1).
- C Remove quick-disconnect connector half (2) and adapter (4) from hose (1).
- D Remove elbow (3) from bulkhead.

### INSTALLATION

#### NOTE

Use Teflon tape (item 62, Appx D) on all male pipe fittings prior to installation.

- A Install elbow (3) in bulkhead.
- B Install hose (1) on elbow (3).
- C Install quick-disconnect coupling half (2) and adapter (4) on hose (1).
- D Connect quick-disconnect coupling half (2).
- E Run APU (TM 9-2350-267-10). Check for fuel leaks.



## APU INLET FUEL LINE (SECONDARY FILTER TO APU: REMOVAL AND INSTALLATION)

### INITIAL SETUP

#### Materials/Parts:

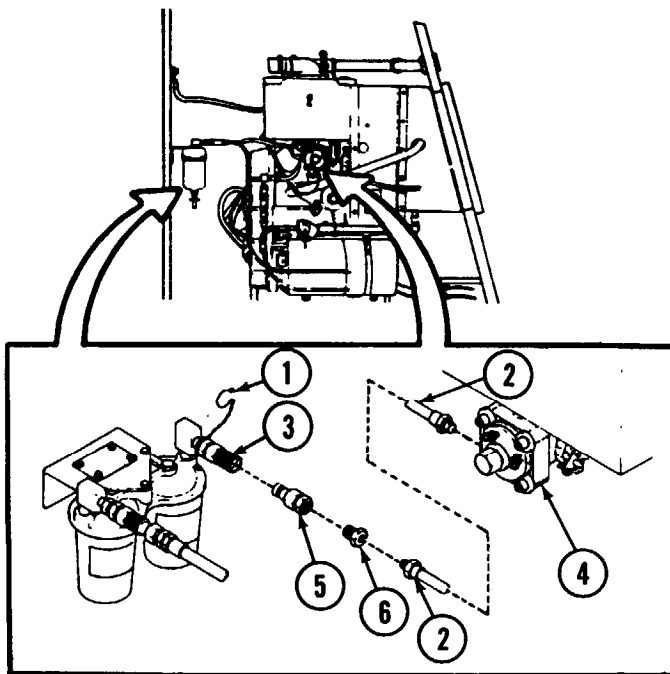
Teflon tape (item 62, Appx D)

#### References:

TM 9-2350-267-10

#### Equipment Conditions:

APU compartment access plate removed (p 13-13).



### REMOVAL

- A Pull retainer clip (1) and disconnect inlet fuel hose (2) at secondary filter quick disconnect coupling half (3).
- B Disconnect inlet fuel hose (2) from APU fuel injection pump assembly (4).
- C Remove quick-disconnect half (5) from adapter (6).
- D Remove adapter (6) from hose (2).

### INSTALLATION

#### NOTE

Use teflon tape (item 62, Appx D) on all male pipe fittings prior to installation.

- A Install adapter (6) on hose (2). Install quick-disconnect connector half (5) on adapter (6).
- B Connect hose (2) to fuel injection pump assembly (4).
- C Connect quick-disconnect coupling halves (5 and 3).
- D Place retainer clip (1) behind knurled release sleeve of quick-disconnect coupling half (3).
- E Run APU (TM 9-2350-267-10). Check for fuel leaks.

# APU FUEL LINES, PUMPS AND ASSOCIATED FITTINGS (CARGO COMPARTMENT): REMOVAL AND INSTALLATION

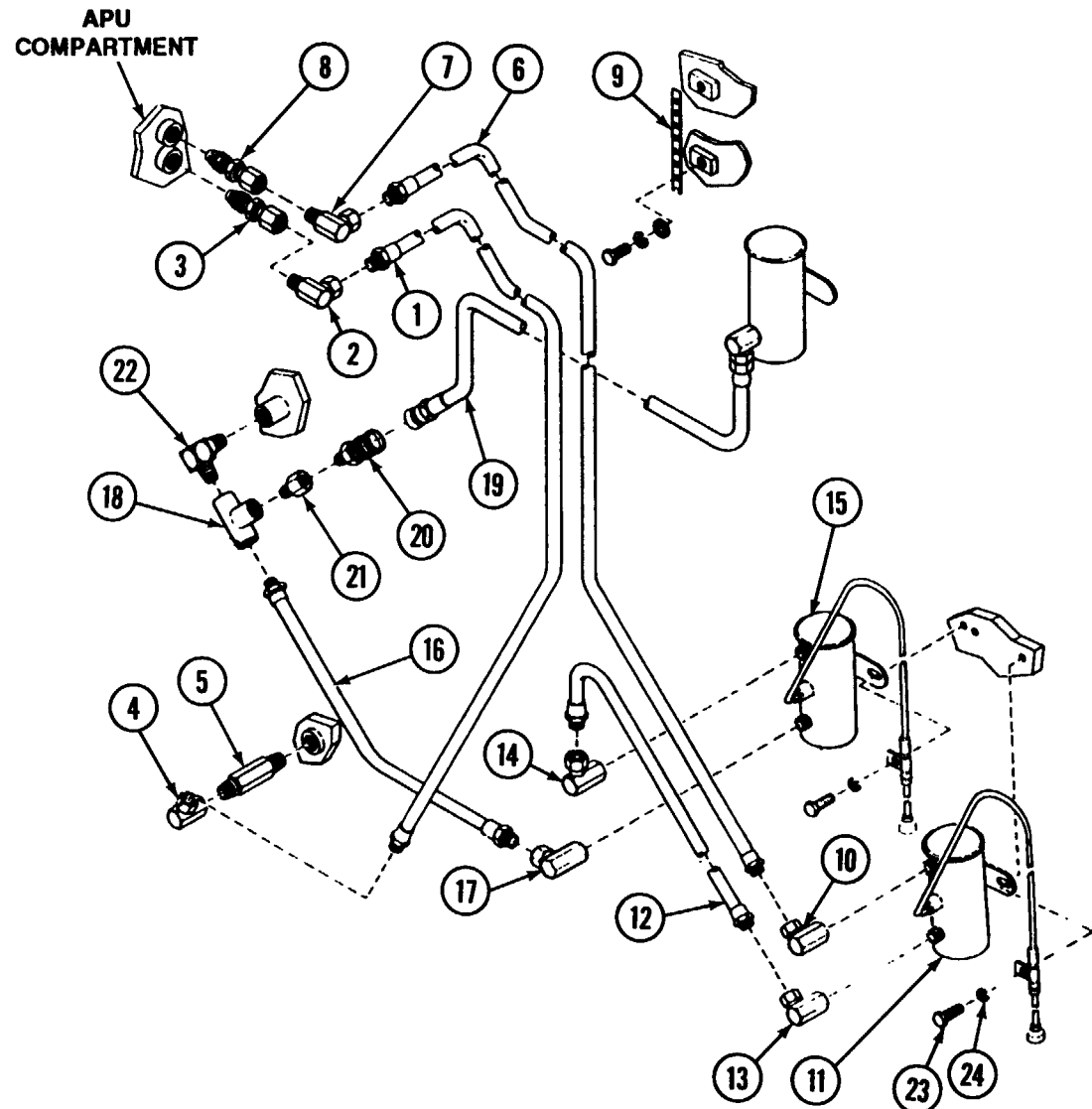
## INITIAL SETUP

### Materials/Parts:

Protective caps/plugs  
 Tape, Teflon (item 62, Appx D)  
 Primer, coating (item 71, Appx D)  
 Sealant (item 57, Appx D)

### Equipment Condition:

Left projectile rack removed (p 11-5).  
 Ventilation blower duct removed (p 14-62).



## APU FUEL LINES, PUMPS AND ASSOCIATED FITTINGS (CARGO COMPARTMENT): REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### NOTE

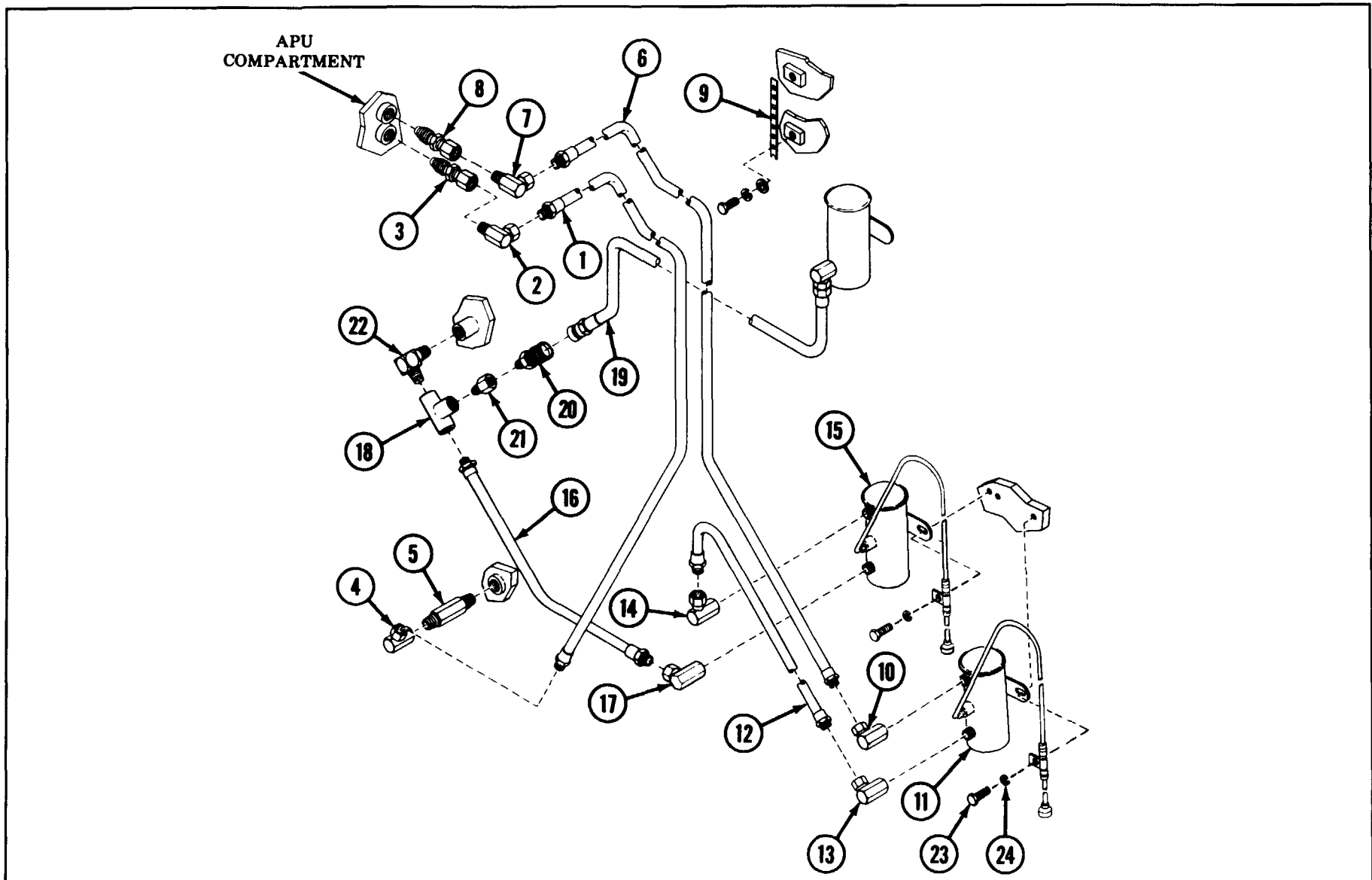
- Use protective caps/plugs on all disconnected hoses and fittings.
- Use wiping rags to remove leaked fuel.

- A Remove hose assembly (1) from elbow (2). Remove elbow (2) and adapter (3) from APU compartment bulkhead.
- B Remove hose assembly (1) from elbow (4). Remove elbow (4) from nipple (5).
- C Remove hose assembly (6) from elbow (7). Remove elbow (7) and adapter (8) from APU compartment bulkhead.
- D Remove strap (9). Remove hose assembly (6) from elbow (10). Remove elbow (10) from fuel pump assembly (11).

- E Remove hose assembly (12) from elbows (13 and 14). Remove elbows (13 and 14) from fuel pumps (11 and 15).
- F Remove hose assembly (16) from elbow (17). Remove elbow (17) from pump (15).
- G Remove hose assembly (16) from tee (18).
- H Disconnect hose assembly (19) at quick-disconnect half (20).
- I Remove quick-disconnect half (20) from adapter (21).
- J Remove adapter (21) from tee (18).
- K Remove tee (18) from elbow (22) and remove elbow (22) from bulkhead.
- L Disconnect electrical connections and remove fuel pumps (11 and 15) from bulkhead by removing from each, two screws (23), and two lockwashers (24). Discard lockwashers.

TA57279

### APU FUEL LINES, PUMPS AND ASSOCIATED FITTINGS (CARGO COMPARTMENT): REMOVAL AND INSTALLATION (CONTINUED)





**APU FUEL LINES, PUMPS AND ASSOCIATED FITTINGS (CARGO COMPARTMENT): REMOVAL AND INSTALLATION  
(CONTINUED)**

**INSTALLATION**

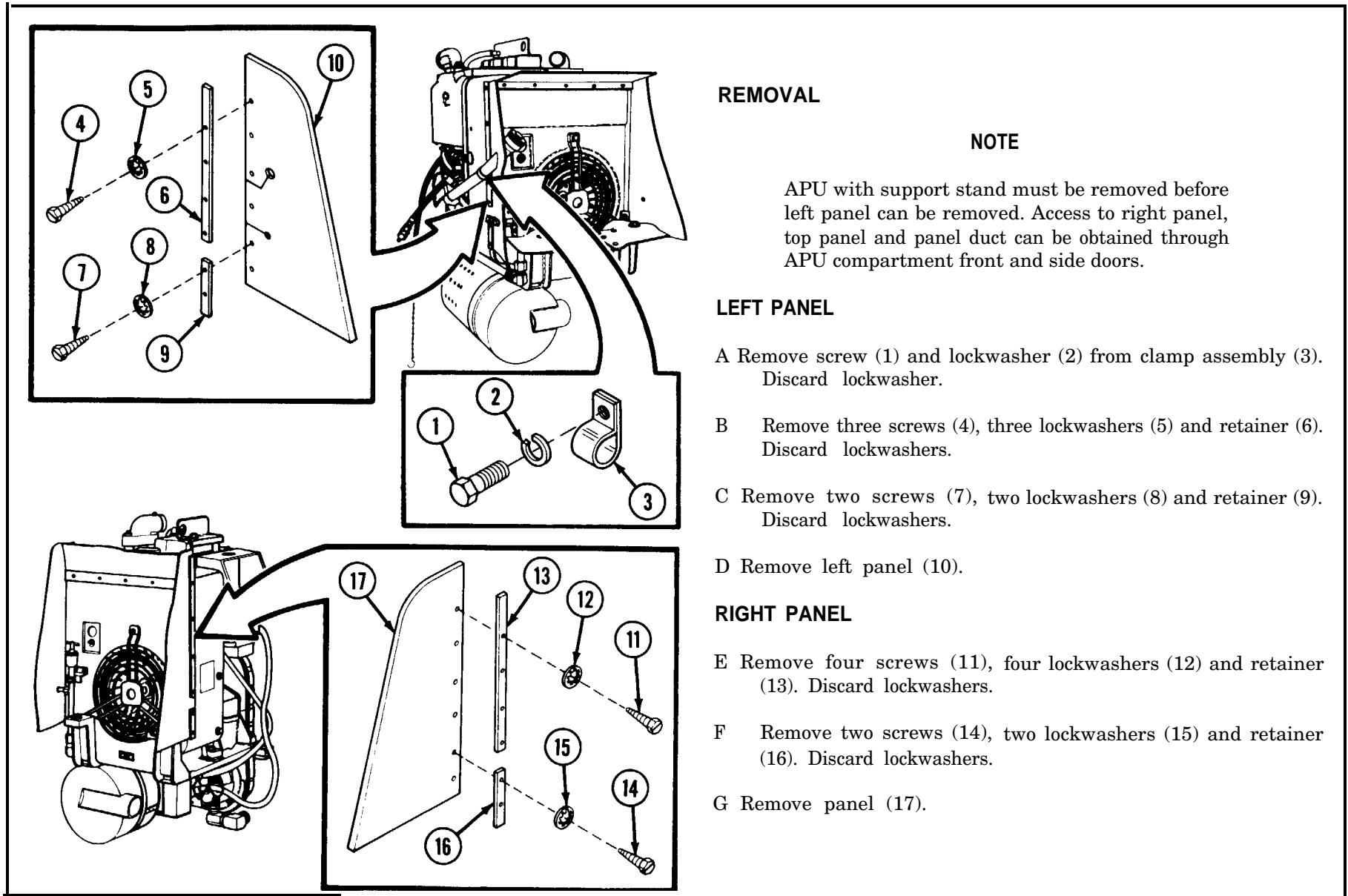
**NOTE**

- Apply sealant (item 57, Appx D) to all male pipe threads.
- Apply coating primer (item 71, Appx D) to contacting surfaces of adapters (3 and 8).

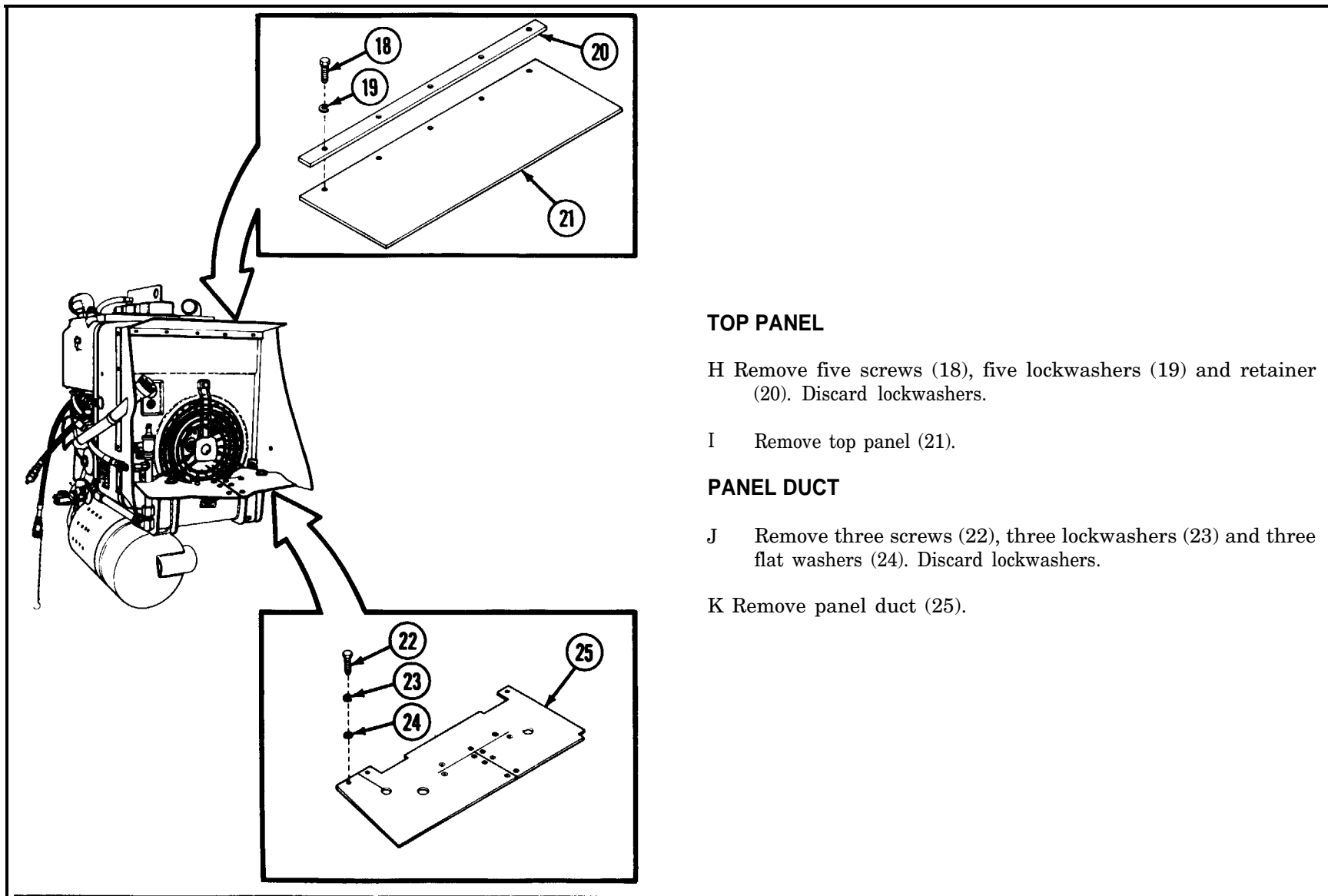
- A Install fuel pump (11), two new lockwashers (24), and two screws (23).
- B Install fuel pump (15), two new lockwashers (24), and two screws (23).
- C Connect electrical connections to fuel pumps (11 and 15).
- D Install elbow (22) and tee (18).
- E Install adapter (21) to tee (18).
- F Connect quick-disconnect half (20) to adapter (21).
- G Connect hose assembly (19) to quick-disconnect half (20).
- H Connect hose assembly (16) to tee (18).
- I Install elbow (17) in pump (15) and attach hose assembly (16) in elbow (17).
- J Install elbows (13 and 14) in pumps (11 and 15).
- K Connect hose assembly (12) to elbows (13 and 14).
- L Install elbow (10) in pump assembly (11).
- M Connect hose assembly (6) to elbow (10).
- N Secure hose assembly (6) to bulkhead by installing strap (9).
- O Install adapter (8) and elbow (7) to APU compartment bulkhead.
- P Attach hose assembly (6) to elbow (7).
- Q Install elbow (4) on nipple (5).
- R Connect hose assembly (1) to elbow (4).
- S Install adapter (3) and elbow (2) to APU compartment bulkhead.
- T Connect hose assembly (1) to elbow (2).

TA57282

## APU PANELS: REMOVAL AND INSTALLATION



## APU PANELS: REMOVAL AND INSTALLATION (CONTINUED)



### TOP PANEL

H Remove five screws (18), five lockwashers (19) and retainer (20). Discard lockwashers.

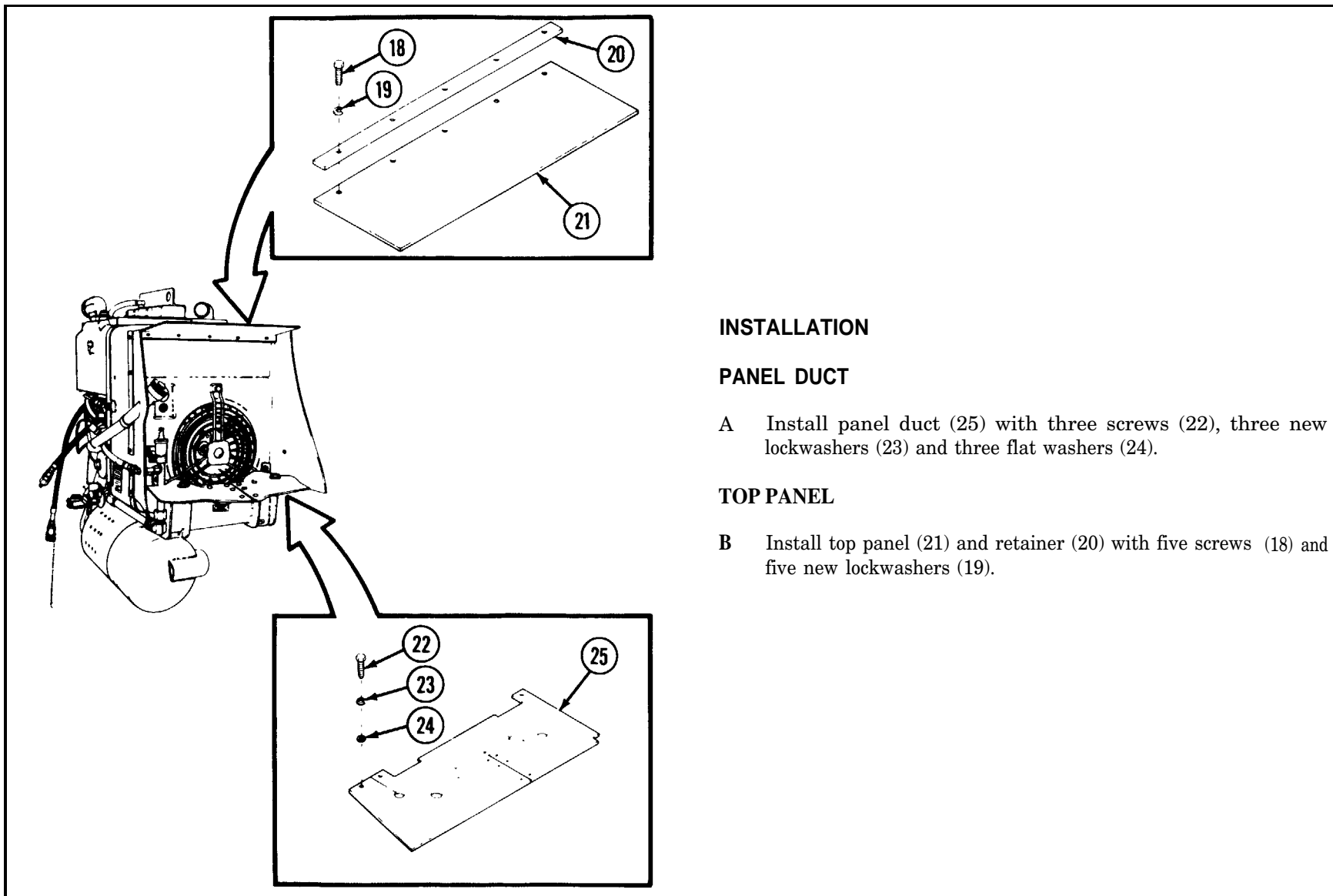
I Remove top panel (21).

### PANEL DUCT

J Remove three screws (22), three lockwashers (23) and three flat washers (24). Discard lockwashers.

K Remove panel duct (25).

APU PANELS: REMOVAL AND INSTALLATION (CONTINUED)



**INSTALLATION**

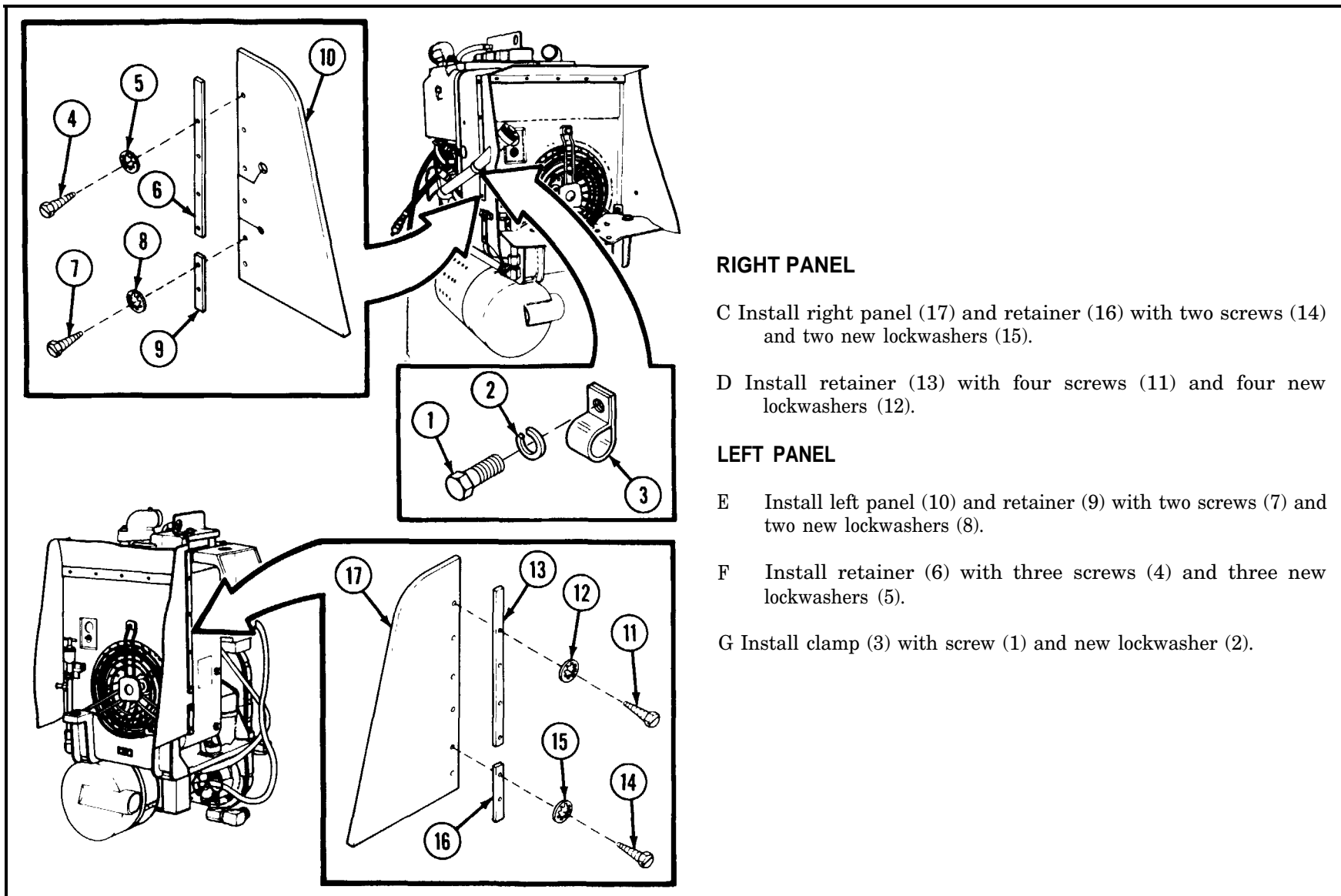
**PANEL DUCT**

A Install panel duct (25) with three screws (22), three new lockwashers (23) and three flat washers (24).

**TOP PANEL**

B Install top panel (21) and retainer (20) with five screws (18) and five new lockwashers (19).

## APU PANELS: REMOVAL AND INSTALLATION (CONTINUED)



### RIGHT PANEL

C Install right panel (17) and retainer (16) with two screws (14) and two new lockwashers (15).

D Install retainer (13) with four screws (11) and four new lockwashers (12).

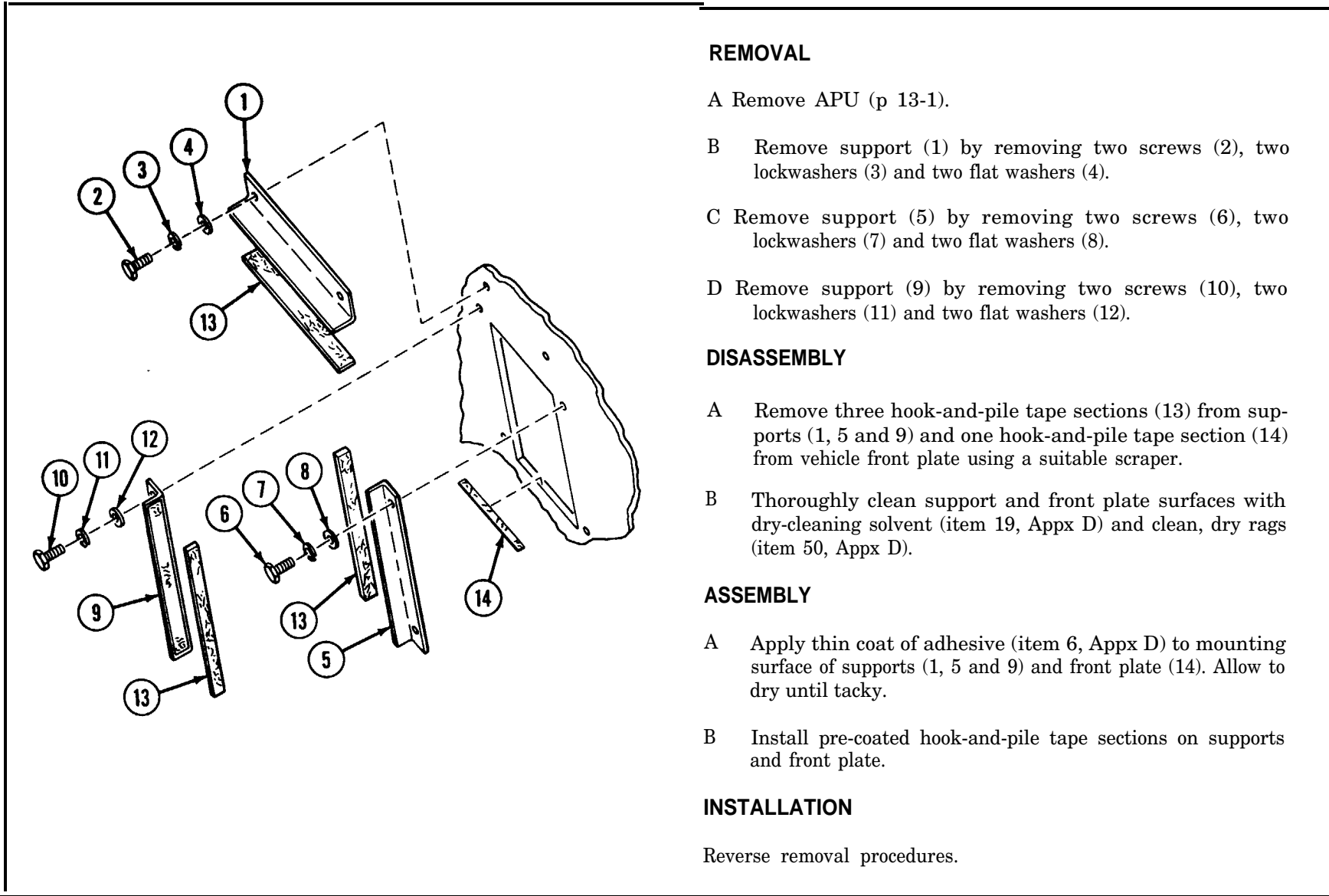
### LEFT PANEL

E Install left panel (10) and retainer (9) with two screws (7) and two new lockwashers (8).

F Install retainer (6) with three screws (4) and three new lockwashers (5).

G Install clamp (3) with screw (1) and new lockwasher (2).

## APU PANEL SUPPORTS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



### REMOVAL

- A Remove APU (p 13-1).
- B Remove support (1) by removing two screws (2), two lockwashers (3) and two flat washers (4).
- C Remove support (5) by removing two screws (6), two lockwashers (7) and two flat washers (8).
- D Remove support (9) by removing two screws (10), two lockwashers (11) and two flat washers (12).

### DISASSEMBLY

- A Remove three hook-and-pile tape sections (13) from supports (1, 5 and 9) and one hook-and-pile tape section (14) from vehicle front plate using a suitable scraper.
- B Thoroughly clean support and front plate surfaces with dry-cleaning solvent (item 19, Appx D) and clean, dry rags (item 50, Appx D).

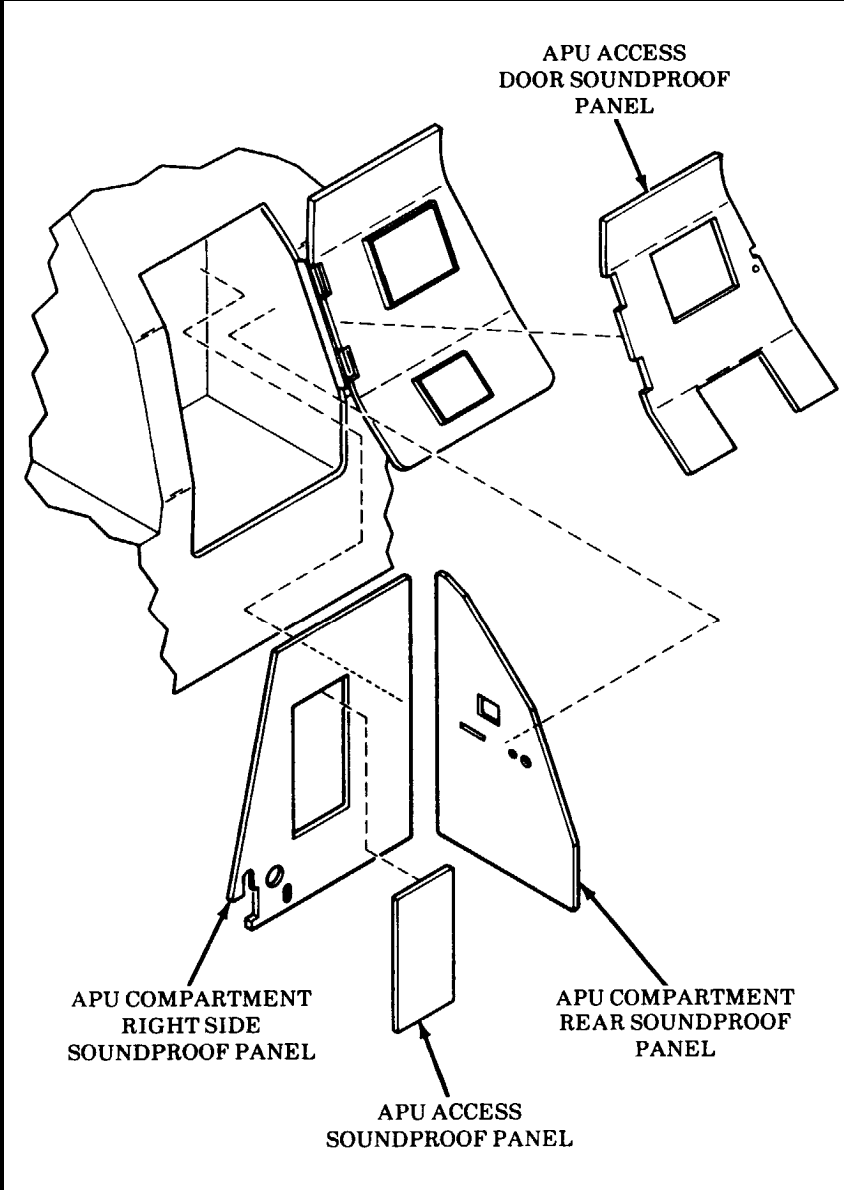
### ASSEMBLY

- A Apply thin coat of adhesive (item 6, Appx D) to mounting surface of supports (1, 5 and 9) and front plate (14). Allow to dry until tacky.
- B Install pre-coated hook-and-pile tape sections on supports and front plate.

### INSTALLATION

Reverse removal procedures.

## APU COMPARTMENT SOUNDPROOF PANELS: REMOVAL AND INSTALLATION



The diagram illustrates the removal and installation of soundproof panels in the APU compartment. It shows a perspective view of the compartment with dashed lines indicating the location of the panels. Four panels are shown separately with arrows pointing to their respective locations:

- APU ACCESS DOOR SOUNDPROOF PANEL**: Located on the top of the APU access door.
- APU COMPARTMENT RIGHT SIDE SOUNDPROOF PANEL**: Located on the right side wall of the compartment.
- APU ACCESS SOUNDPROOF PANEL**: Located on the bottom of the APU access door.
- APU COMPARTMENT REAR SOUNDPROOF PANEL**: Located on the rear wall of the compartment.

**REMOVAL**

**NOTES**

To remove rear panel remove: APU fuel filters (p 13-16), hydraulic pressure switch (p 13-17), APU ground lead (p 13-1) and hydraulic lines and elbows (p 13-1).

To remove right side panel remove: APU fuel lines and elbows (p 13-26).

The following procedures apply to all soundproof panels in APU compartment. Do not remove APU to replace APU door soundproof panel.

A Remove APU from vehicle (p 13-1).

B Pull and scrape defective panel off interior wall or side door of APU compartment.

C Thoroughly clean adhesive from wall or door area with dry-cleaning solvent (item 19, Appx D) and clean, dry rags (item 50, Appx D). Be sure to remove all particles.

**INSTALLATION**

A Apply thin coat of adhesive (item 4, Appx D) to back (smooth, non-matted) side of soundproof panel.

B Allow adhesive to dry until tacky.

C Mount panel to wall or door panel.

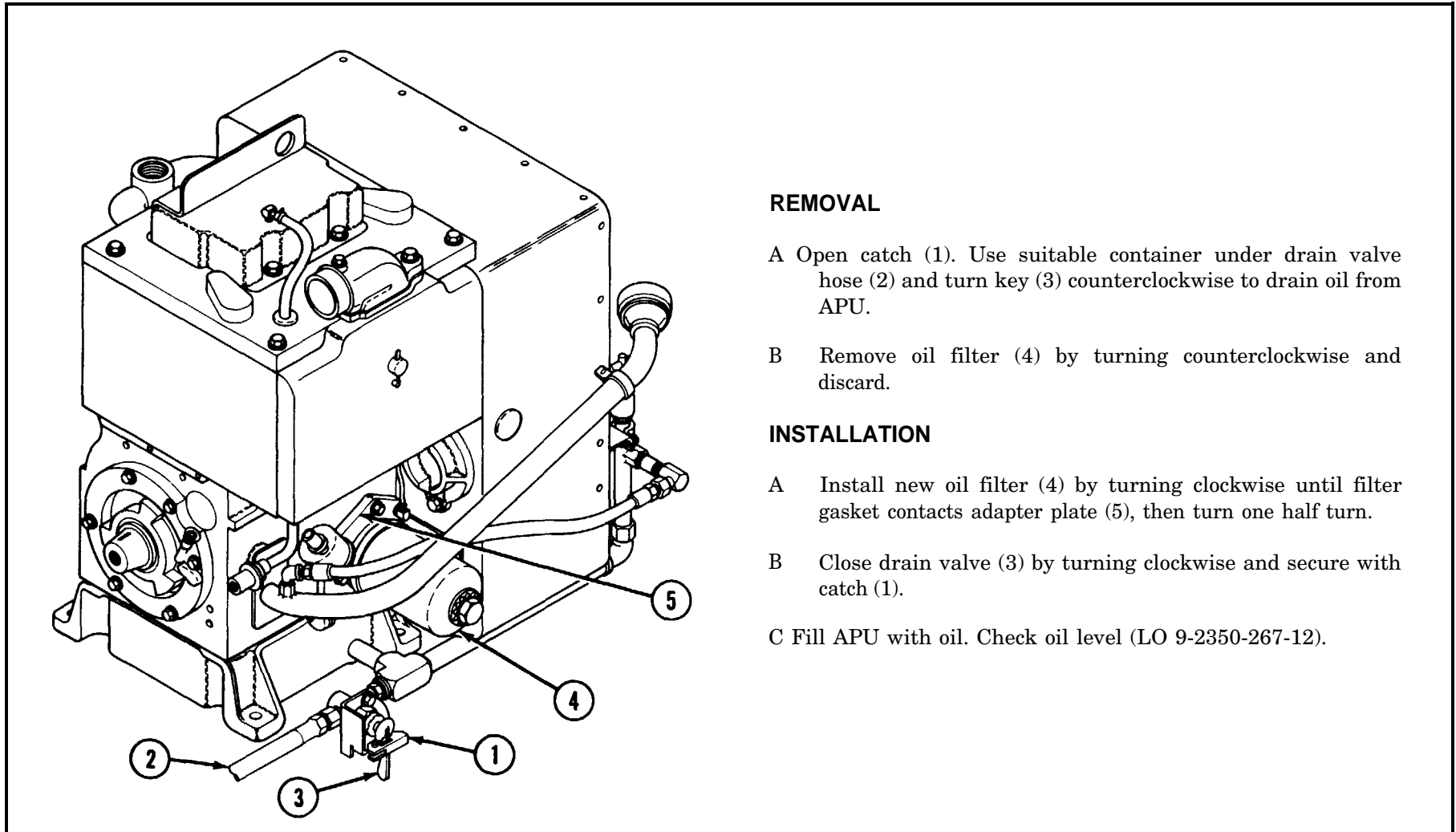
**NOTE**

For best installation results, pressure should be applied evenly to all outside surfaces.

## Section II APU OIL FILTER

This section contains removal and installation instructions for the APU oil filter.

### APU OIL FILTER: REMOVAL AND INSTALLATION



#### REMOVAL

- A Open catch (1). Use suitable container under drain valve hose (2) and turn key (3) counterclockwise to drain oil from APU.
- B Remove oil filter (4) by turning counterclockwise and discard.

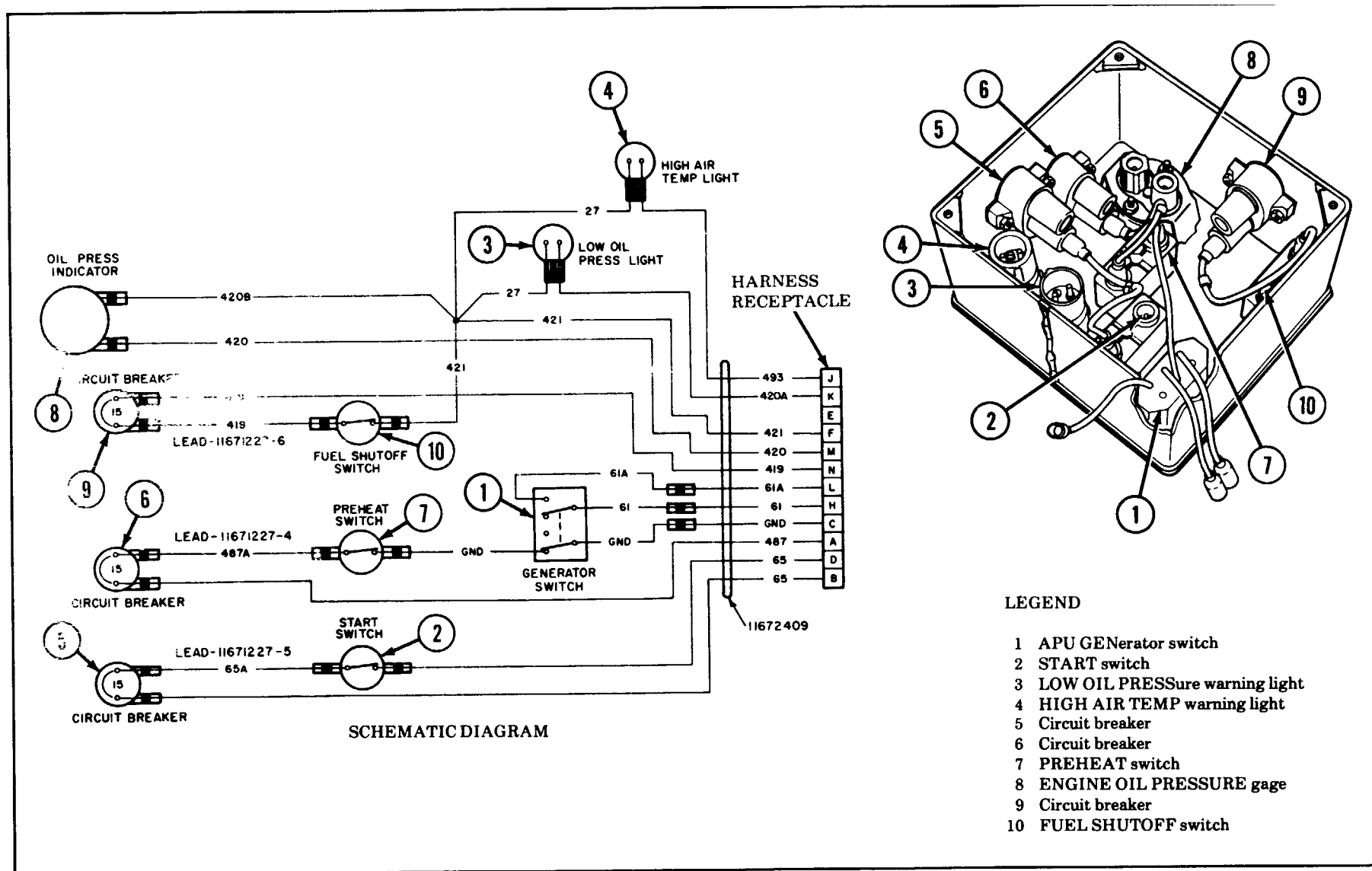
#### INSTALLATION

- A Install new oil filter (4) by turning clockwise until filter gasket contacts adapter plate (5), then turn one half turn.
- B Close drain valve (3) by turning clockwise and secure with catch (1).
- C Fill APU with oil. Check oil level (LO 9-2350-267-12).

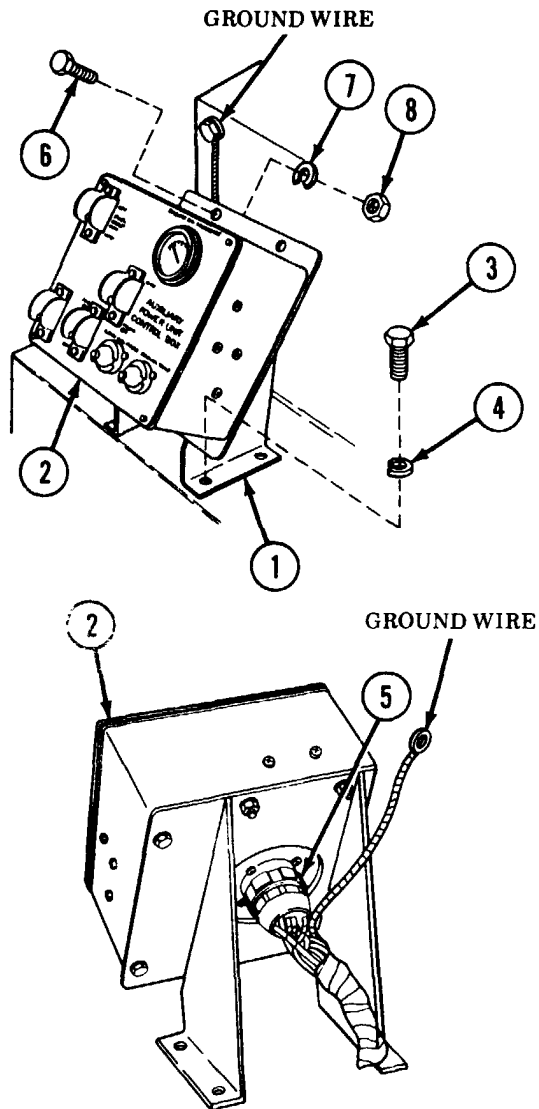


### Section III APU POWER UNIT CONTROL BOX

#### APU CONTROL BOX: DISASSEMBLY, ASSEMBLY, CIRCUIT TEST AND INSTALLATION



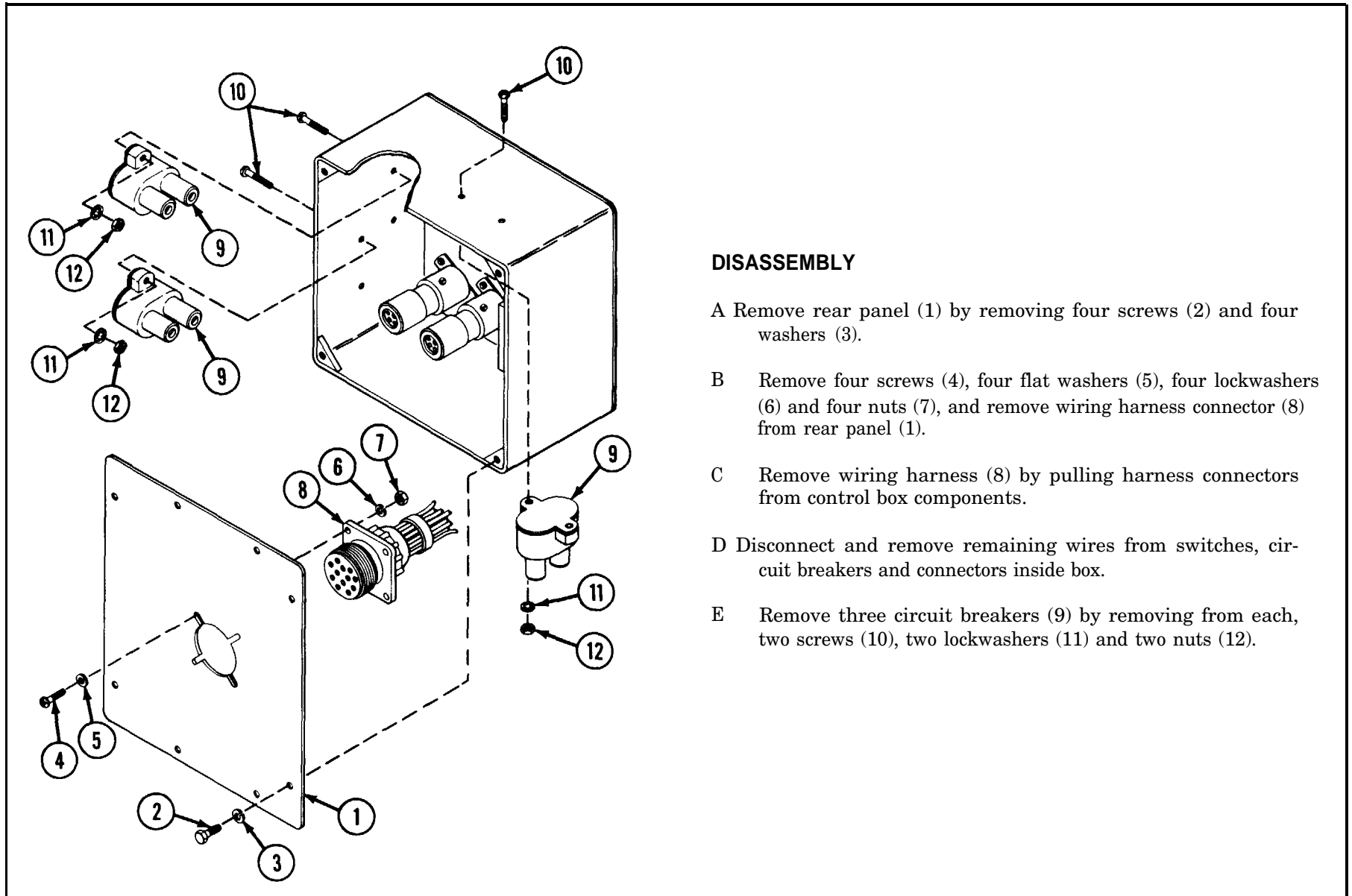
## APU CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY, CIRCUIT TEST AND INSTALLATION (CONTINUED)

**REMOVAL****WARNING**

Turn OFF MASTER switch. Disconnect battery ground cables.

- A Remove M2A2 air purifier (p 14-3).
- B Remove bracket (1) with attached APU control box (2) by removing four screws (3) and four washers (4). Disconnect harness ground wire.
- C Disconnect electrical wiring harness connector (5) from APU control box (2).
- D Remove APU control box (2) from bracket (1) by removing four screws (6), four lockwashers (7) and four nuts (8).
- E Do circuit continuity test (p 13-39) and short circuit test (p 13-40). Replace any defective components during disassembly.

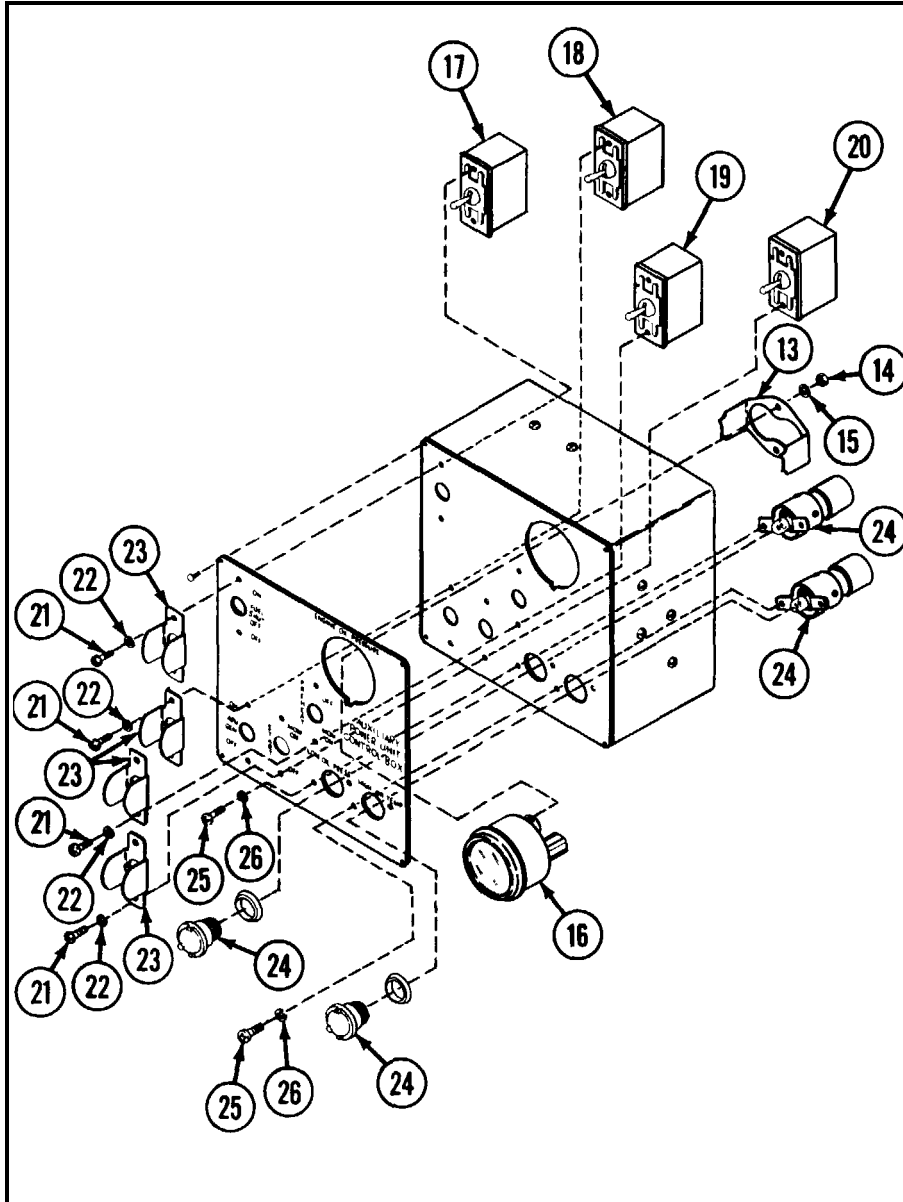
## APU CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY, CIRCUIT TEST AND INSTALLATION (CONTINUED)



### DISASSEMBLY

- A Remove rear panel (1) by removing four screws (2) and four washers (3).
- B Remove four screws (4), four flat washers (5), four lockwashers (6) and four nuts (7), and remove wiring harness connector (8) from rear panel (1).
- C Remove wiring harness (8) by pulling harness connectors from control box components.
- D Disconnect and remove remaining wires from switches, circuit breakers and connectors inside box.
- E Remove three circuit breakers (9) by removing from each, two screws (10), two lockwashers (11) and two nuts (12).

### APU CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY, CIRCUIT TEST AND INSTALLATION (CONTINUED)



- F Remove engine oil pressure gage bracket (13) by removing two nuts (14) and two lockwashers (15) from rear of gage box.
- G Remove ENGINE OIL PRESSURE gage (16) from front of control box.
- H Remove FUEL SHUTOFF switch (17), APU GENERATOR switch (18), PREHEAT switch (19) and START switch (20) by removing from each, two screws (21), two lockwashers (22) and one guard (23).
- I Remove LOW OIL PRESSURE and HIGH AIR TEMPERATURE lights (24) by removing from each, two screws (25) and two lockwashers (26).

#### ASSEMBLY

- A Reverse disassembly procedures.
- B For wiring harness installation/connection use diagram on p 13-35.

APU CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY, CIRCUIT TEST AND INSTALLATION (CONTINUED)

<b>NO. 1 Ohmmeter Connect</b>	<b>No. 2 Switch and Position</b>	<b>No. 3 Resistance (Ohms)</b>	<b>No. 4 Using a Digital Multi- Meter (Ohms)</b>
A to C	PREHEAT – ON APU GENERATOR – OFF	0	0
A to C	PREHEAT – OFF	Infinity	Infinity
B to D	START – ON	0	0
B to D	START – OFF	Infinity	Infinity
F to K	None	115 to 150 (bulb resistance)	30 to 35
F to J	None	115 to 150 (bulb resistance)	30 to 35
F to M	None	175±5	175±5
L to H	APU GENERATOR – ON	0	0
L to H	APU GENERATOR – OFF	Infinity	Infinity
F to N	FUEL SHUTOFF – ON	0	0
F to N	FUEL SHUTOFF – OFF	Infinity	Infinity
M to box ground	None	32±5	32±5

**CIRCUIT CONTINUITY TEST**

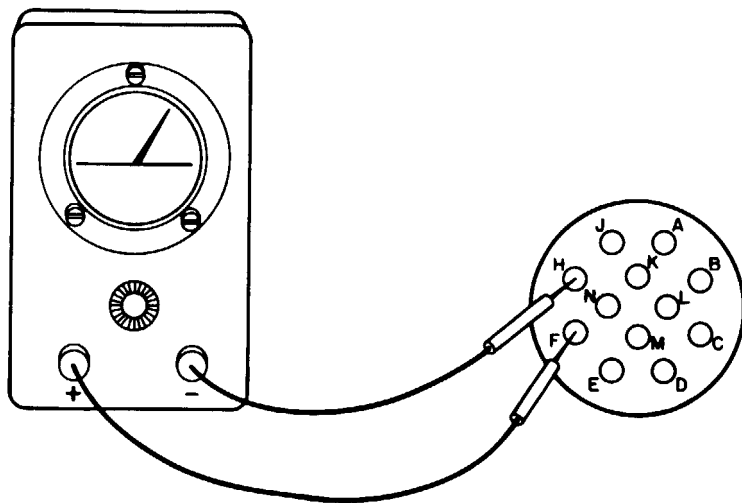
A Connect an ohmmeter between pins indicated in column 1.

B Set switches in positions indicated in column 2.

C Ohmmeter should indicate resistance shown in column 3.

D If meter doesn't indicate readings in column 3 or 4, check each circuit wire, switch and circuit breaker using schematic and illustration on p 13-35 as guide. Replace any defective components.

## APU CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY, CIRCUIT TEST AND INSTALLATION (CONTINUED)



### SHORT CIRCUIT TEST

- A Place all switches in OFF position.
- B Check for continuity between points listed below. Multimeter should indicate continuity. Points that should not indicate continuity are listed under Exceptions column.

RED PROBE	BLACK PROBE	EXCEPTIONS
A	ALL OTHER PINS	NONE
B	ALL OTHER PINS	NONE
C	ALL OTHER PINS	NONE
D	ALL OTHER PINS	NONE
F	ALL OTHER PINS	F TO K, F TO J, F TO M
H	ALL OTHER PINS	NONE
J	ALL OTHER PINS	J TO M, J TO F, J TO K
K	ALL OTHER PINS	K TO F, K TO GROUND
L	ALL OTHER PINS	NONE
M	ALL OTHER PINS	M TO J, M TO K, M TO F
N	ALL OTHER PINS	NONE
CONNECTOR BODY	ALL OTHER PINS	BODY TO F, BODY TO M

- C If meter indicates short circuit, use schematic and illustration (p 13-35) to check internal wiring, circuit breakers and switches.

### INSTALLATION

Reverse removal procedures.

# CHAPTER 14 MAINTENANCE PROCEDURES NUCLEAR, BIOLOGICAL, CHEMICAL (NBC), AUTOMATIC FIRE EXTINGUISHER SYSTEM (AFES), VENTILATING SYSTEM, AND BILGE PUMP

## CHAPTER OVERVIEW

This chapter illustrates and describes procedures for removal, disassembly, assembly, and installation of the following systems:

Section I NBC Ventilated Face Piece and Detection/Alarm System  
Section II Automatic Fire Extinguisher System (AFES)  
Section III Personnel Ventilation, Blower, Heating and Ventilating Hoses and Ducts  
Section IV Personnel Heater  
Section V Bilge Pump

## GENERAL INSPECTION AND REPAIR PROCEDURES

The mechanic will perform a visual inspection of personnel heater, fire extinguisher and ventilation systems during removal and disassembly.

During inspection, look for the following conditions and take the appropriate indicated action.

- Check for cracked, damaged or deteriorated hose, tubes and ducts.

Replace if necessary.

- Check for leaks at personnel heater fuel line connector.

Replace connector assemblies if needed.

- Check for frayed, deteriorated or broken electrical leads.

Notify Support Maintenance as required.

- Check for broken, damaged or loose-fitting retainer straps and brackets.

Repair or replace; notify Support Maintenance as required.

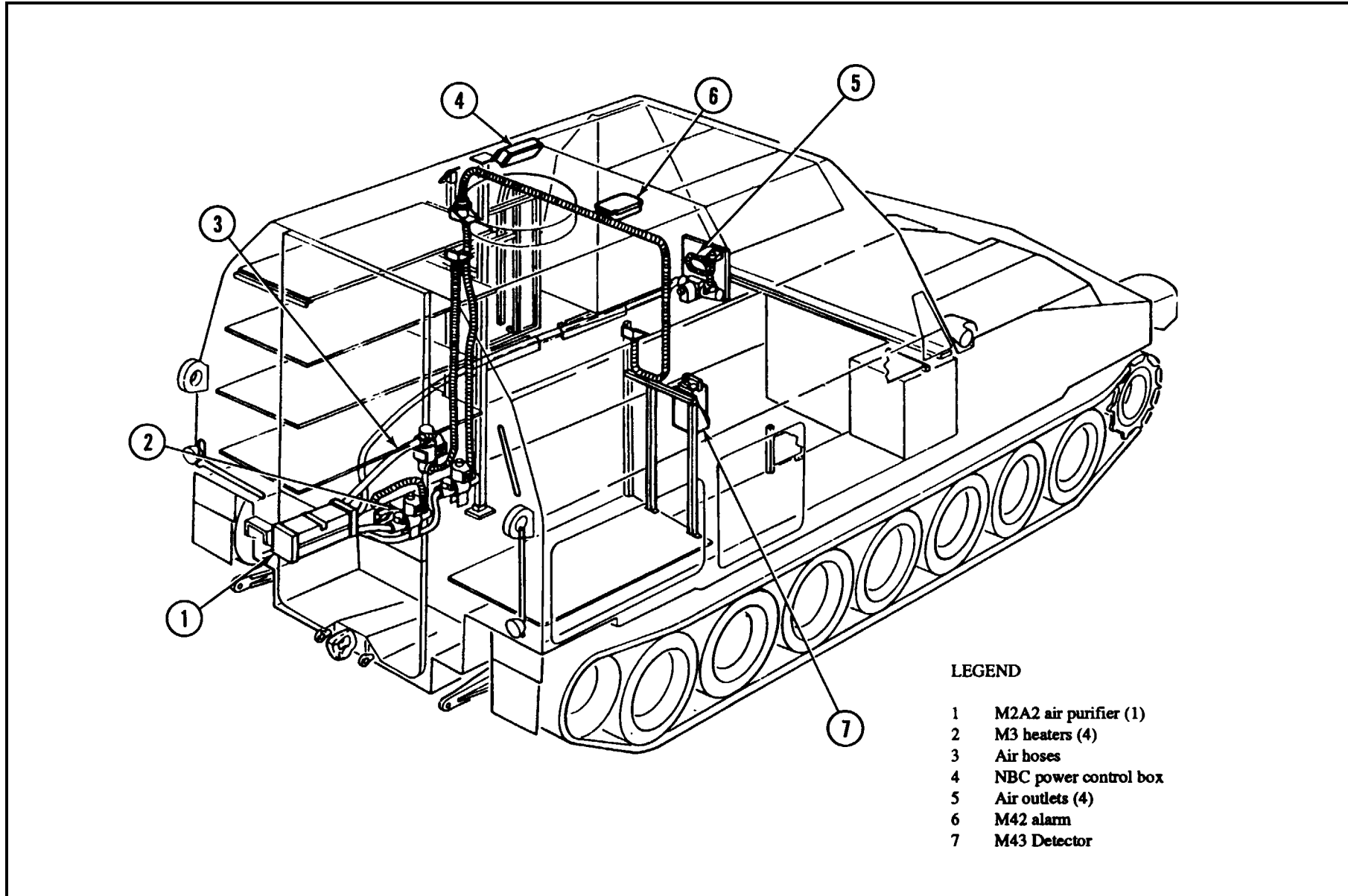
- Check for signs of shorted electrical circuits at terminal board/connector assemblies.

Repair lead terminals, replace terminal boards or notify Support Maintenance as required.

- Check for signs of burns, heat discoloration, or damaged heater housing and components.

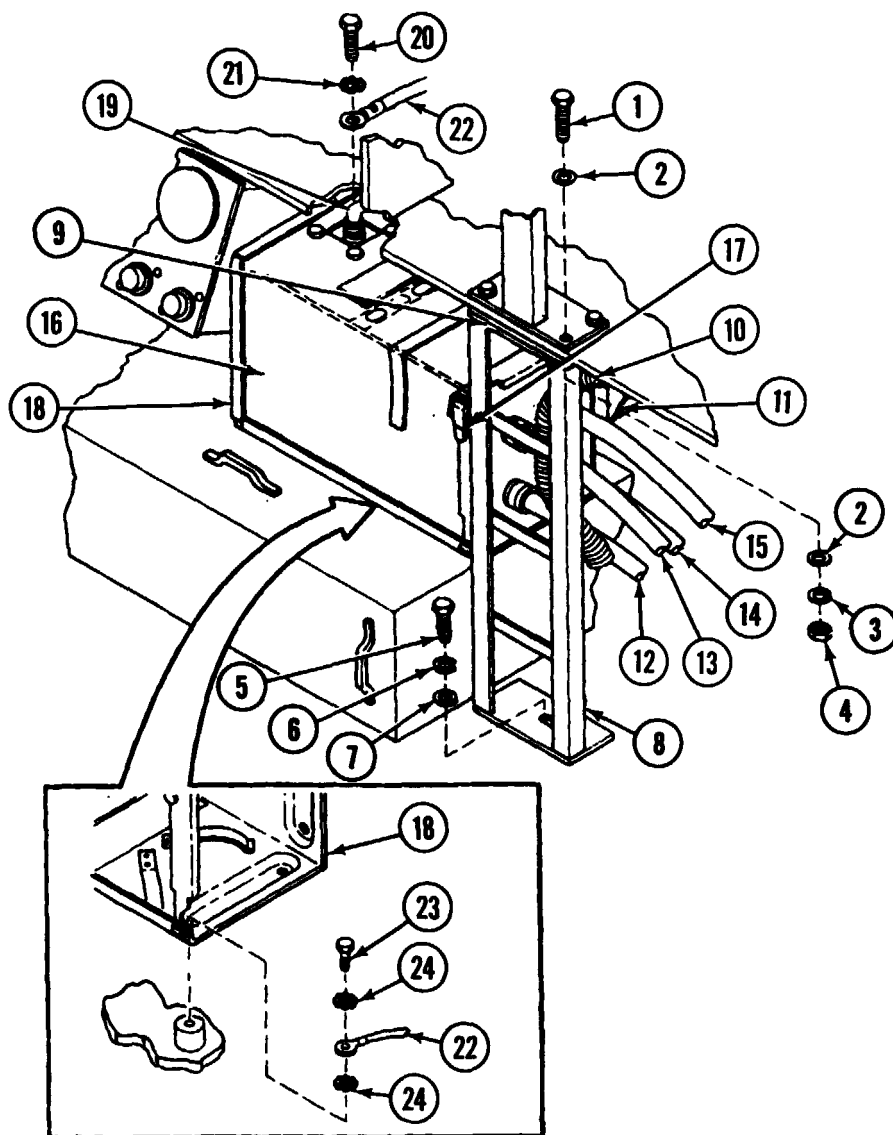
Notify Support Maintenance as required.

## Section I NBC VENTILATED FACE PIECE AND DETECTION/ALARM SYSTEM





## M2A2 AIR PURIFIER: REMOVAL, DISASSEMBLY, CLEANING, INSPECTION, AND REPAIR, ASSEMBLY AND INSTALLATION



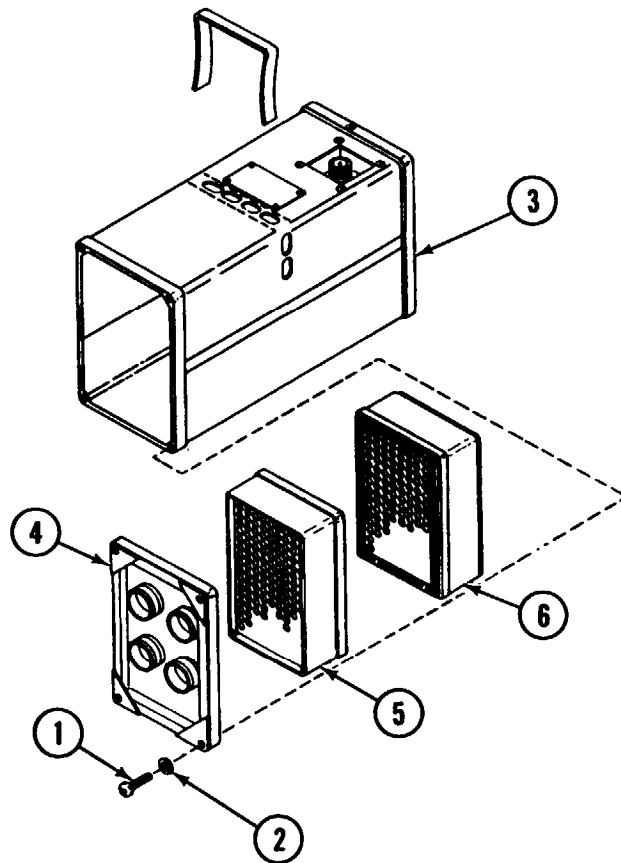
### REMOVAL

- A Remove two screws (1), four flat washers (2), two lockwashers (3) and two nuts (4). Discard lockwashers.

### NOTE

Note number of shims to ensure proper installation.

- B Remove screw (5), lockwasher (9), flat washer (7), guard (8) and shims (9) (if applicable) from vehicle floor and canister rack. Discard lockwasher.
- C Disconnect air hose (10) from air outlet connector (11).
- D Remove quick-disconnect hoses (12, 13, 14 and 15) from manifold air purifier assembly (16).
- E Release strap (17).
- F Remove air purifier assembly (16) from bracket (18).
- G Disconnect electrical elbow connector (19) from air purifier assembly (16).
- H Remove screw (20) and lockwasher (21), and disconnect ground lead (22). Discard lockwasher.
- I Remove four screws (23), five lockwashers (24), ground wire (22) and bracket (18). Discard lockwashers.

**M2A2 AIR PURIFIER: REMOVAL, DISASSEMBLY, CLEANING, INSPECTION AND REPAIR, ASSEMBLY AND INSTALLATION (CONTINUED)****CAUTION**

Do not allow moisture to come in contact with filter material.

C Tilt housing (3) and remove gas filter (5) and particulate filter (6).

**NOTE**

If filters are to be reused, mark arrow on side showing direction of air flow.

**WARNING**

To prevent possible chemical or biological agent casualties, contaminated gas and particulate filters must be removed and disposed of only by adequately trained personnel (FM 21-40). 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 (TM 10-277) to be worn during this operation. The officer must also prescribe necessary safety measures, including decontamination, that must be performed before new gas filters are installed in housing assembly (TM 3-220).

**DISASSEMBLY**

A Remove four screws (1) and four lockwashers (2) from housing (3). Discard lockwashers.

B Remove manifold (4).

**CLEANING**

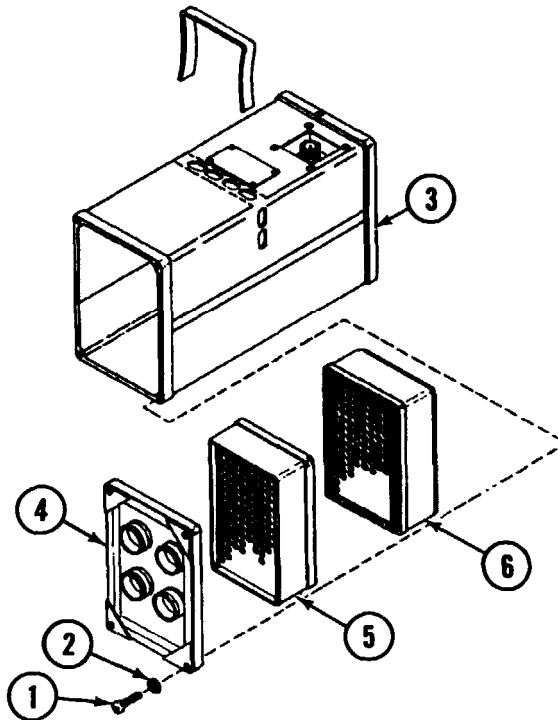
Clean manifold, housing and filters with clean, damp cloth (item 16, Appx D).

## M2A2 AIR PURIFIER: REMOVAL, DISASSEMBLY, CLEANING, INSPECTION AND REPAIR, ASSEMBLY, AND INSTALLATION (CONTINUED)

### INSPECTION AND REPAIR

- A Inspect housing for damage and replace if damaged.
- B Inspect manifold air outlet sockets and socket packings for damage. Replace manifold if damaged.

- C Inspect filters for damage and replace if damaged.



### ASSEMBLY

#### NOTE

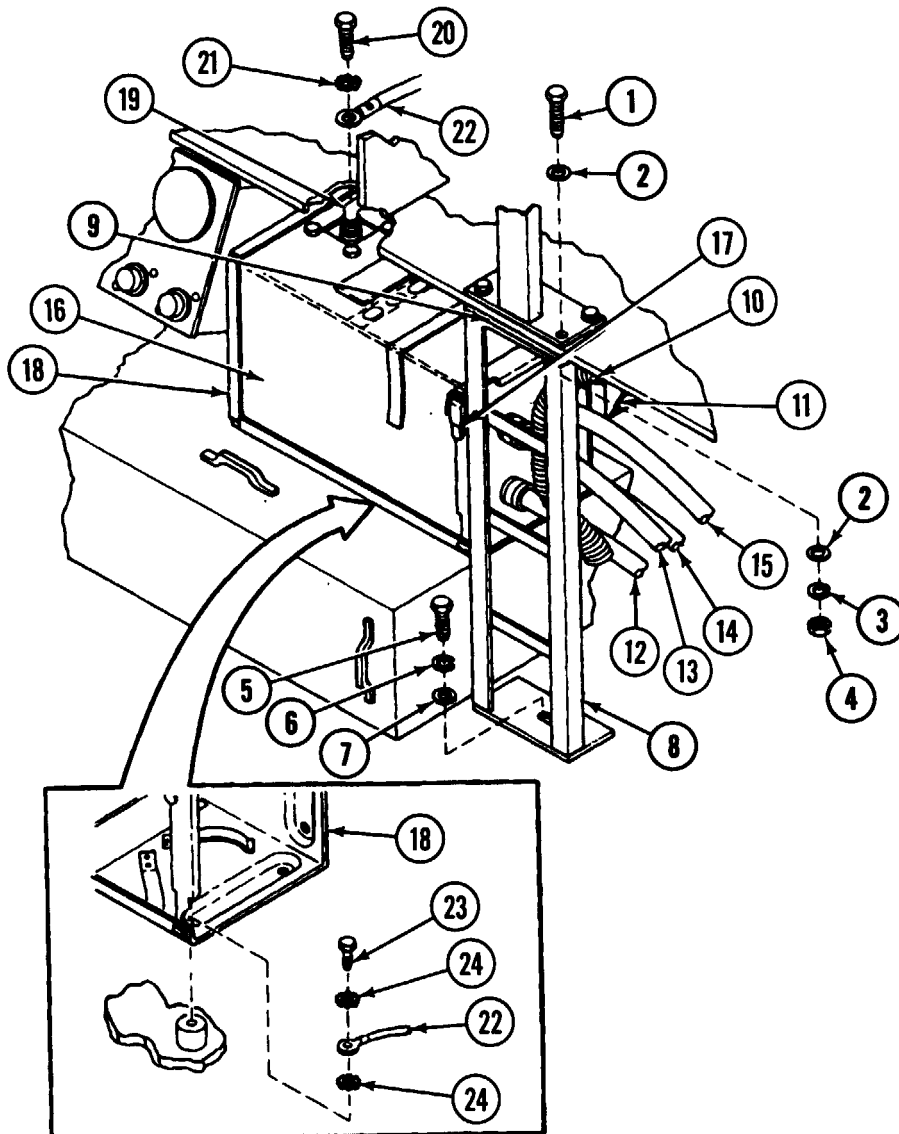
Make sure filter rests against bulkhead inside housing.

- A Install particulate filter (6) in housing (3) so air will flow through it in direction marked on filter housing.

#### NOTE

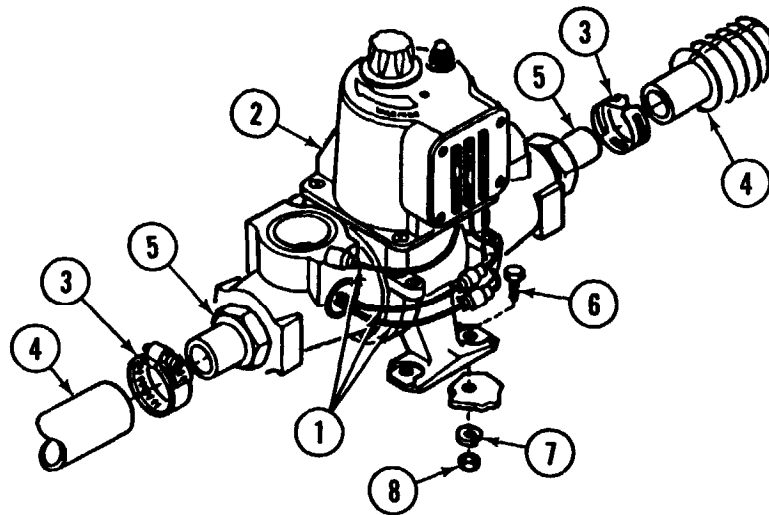
Make sure felt gasket side of gas filter is toward manifold assembly end of purifier.

- B Install gas filter (5) in housing (3) so it rests on gasket of particulate filter (6) surface.
- C Install manifold (4) in housing (3) with four screws (1) and four new lockwashers (2).

**M2A2 AIR PURIFIER: REMOVAL, DISASSEMBLY, CLEANING, INSPECTION AND REPAIR, ASSEMBLY AND INSTALLATION (CONTINUED)**

**INSTALLATION**

- A Install bracket (18) and one end of ground lead (22) with four screws (23) and five new lockwashers (24).
- B Place purifier assembly (16) on bracket (18) and install ground wire (22) terminal with new (20) and new lockwasher (21).
- C Lift strap (17) and install air purifier assembly (16) in bracket (18) and secure with strap (17).
- D Install elbow connector (19) in purifier assembly (16).
- E Install hoses (12, 13, 14 and 15) on manifold connection of air purifier (16).
- F Reconnect air hose (10) to air outlet connector (11).
- G Install shims (9) (if applicable) and guard (8) to vehicle floor with screw (5), new lockwasher (6) and flat washer (7).
- H Secure guard (8) and shims (9) to canister rack with two screws (1), four flat washers (2), two new lockwashers (3) and two nuts (4).

## M3 AIR ELECTRIC HEATER: REMOVAL AND INSTALLATION



### REMOVAL

- A Disconnect three wires (1) from heater (2).
- B Loosen two clamps (3). Slide clamps (3) back over two hoses (4).
- C Pull two hoses (4) free from two adapters (5).

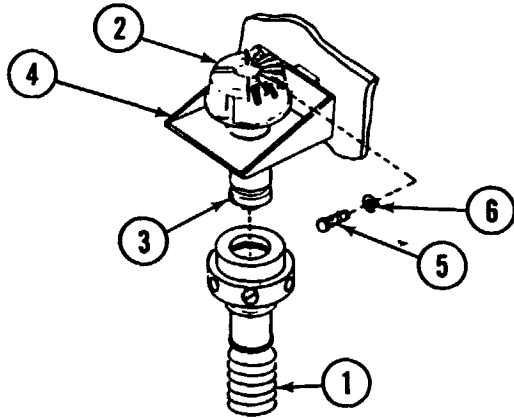
### NOTE

Heater at commanders's station has four screws and four lockwashers.

- D Remove four screws (6), four lockwashers (7) and four nuts (8). Discard lockwashers.
- E Remove heater (2).

### INSTALLATION

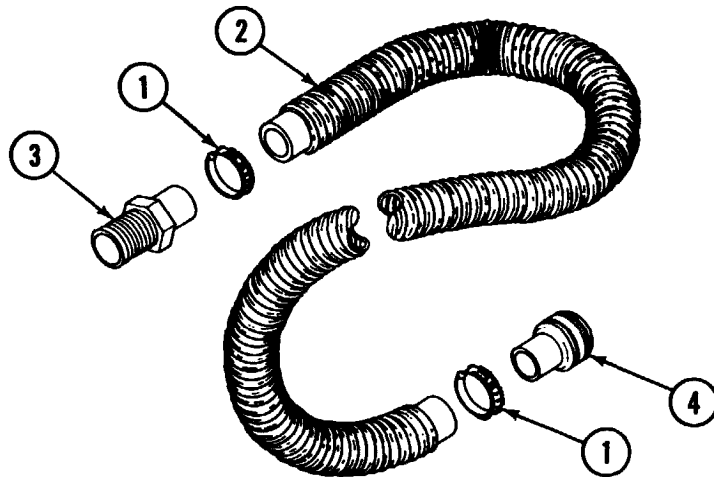
- A Install heater (2) with four screws (6), four new lockwashers (7) and four nuts (8).
- B Apply thin coat of adhesive sealant (item 2, Appx D) to inside surface of hose (4) ends. Install two hoses (4) on two adapters (5).
- C Slide two clamps (3) over two adapters (5).
- D Tighten two clamps (3).
- E Connect three wires (1) to heater (2).

**AIR OUTLET ORIFICE CONNECTOR: REMOVAL AND INSTALLATION****REMOVAL**

- A Remove hose assembly (1) from connector (2).
- B Remove external retaining ring (3) (hidden).
- D Remove screw (5) and lockwasher (6). Discard lockwasher.
- E Remove bracket (4).

**INSTALLATION**

Reverse removal procedure using new lockwasher.

**HOSE ASSEMBLIES: REMOVAL, CLEANING, INSPECTION AND INSTALLATION****REMOVAL**

- A Loosen two clamps (1)
- B Pull hose (2) free from adapter (3) and coupling half (4).

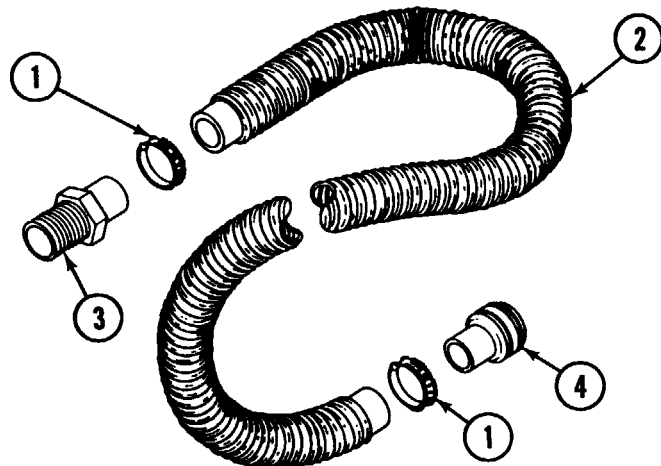
**CLEANING**

Clean hose (2) with warm soapy water. Wipe or air-dry.

**INSPECTION**

- A Inspect hose clamps (1) and coupling halves (4) for damage and wear.
- B Inspect hose (2) for damage, deterioration and evidence of dry rot.

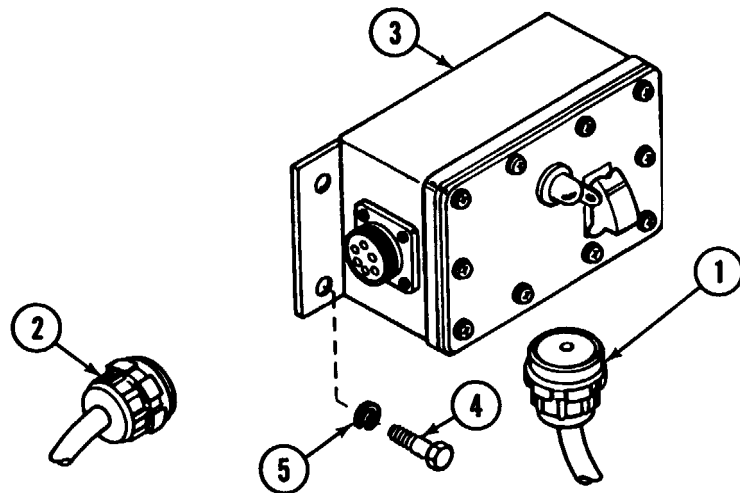
## HOSE ASSEMBLIES: REMOVAL, CLEANING, INSPECTION AND INSTALLATION (CONTINUED)



### INSTALLATION

- A Apply thin coat of adhesive sealant (item 5, Appx D) to inside surface of hose (2) ends.
- B Insert coupling half (4) and adapter (3) into ends of hose (2).
- C Tighten two clamps (1).

## NBC POWER CONTROL BOX: REMOVAL, DISASSEMBLY AND INSTALLATION



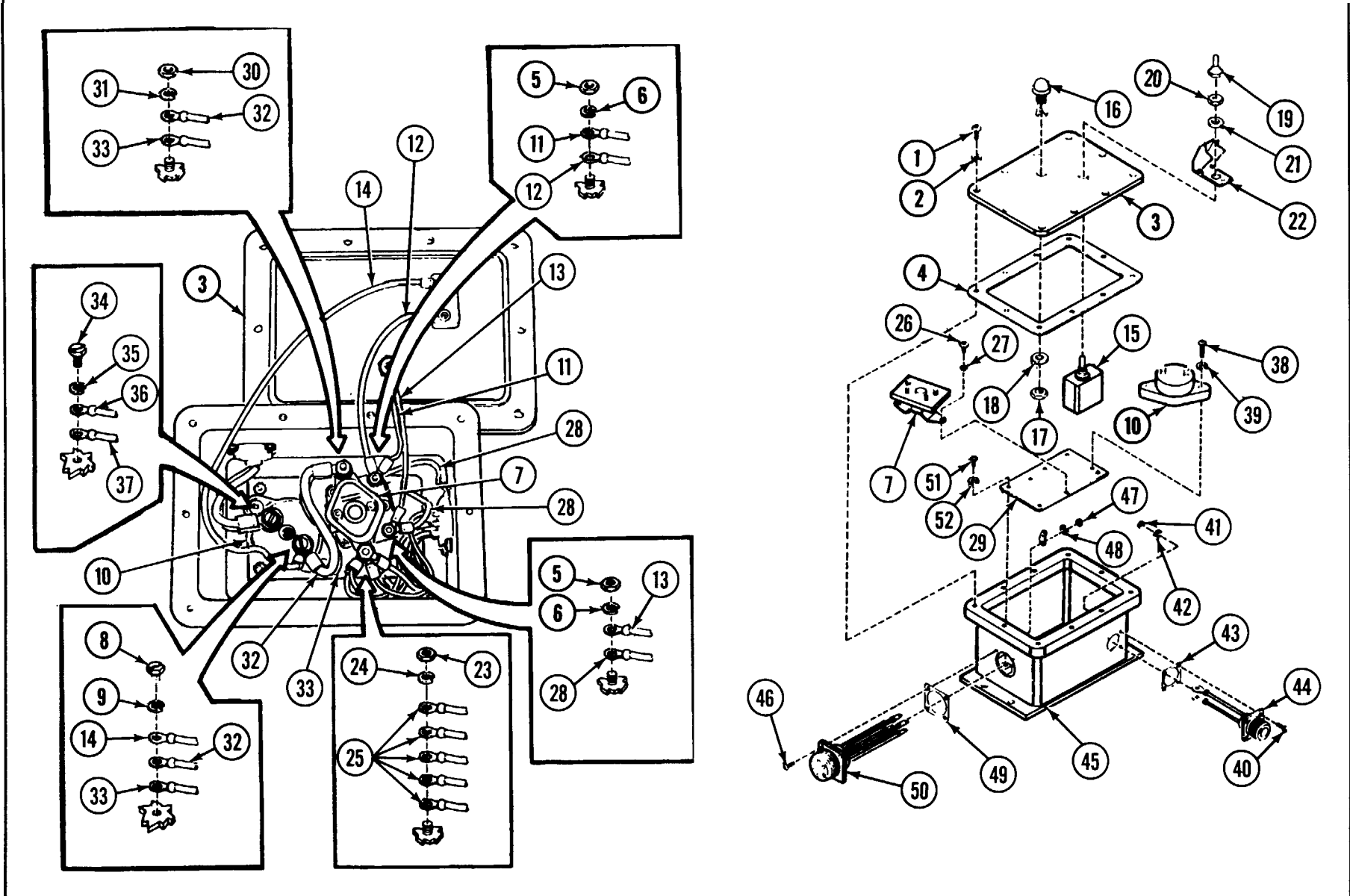
### REMOVAL

#### WARNING

Disconnect battery ground leads before performing maintenance on NBC power control box.

- A Remove two plugs (1 and 2) from control box (3).
- B Remove four screws (4) and four lockwashers (5). Discard lockwashers.
- C Remove control box (3).

INBC POWER CONTROL BOX: REMOVAL, DISASSEMBLY AND INSTALLATION (CONTINUED)





## NBC POWER CONTROL BOX: REMOVAL, DISASSEMBLY AND INSTALLATION (CONTINUED)

### DISASSEMBLY

#### NOTE

Connectors J1, J2 and lamp are removed with soldered wires intact.

- A Remove ten screws (1) and ten lockwashers (2) and tilt cover (3) and gasket (4) aside. Discard lockwashers.

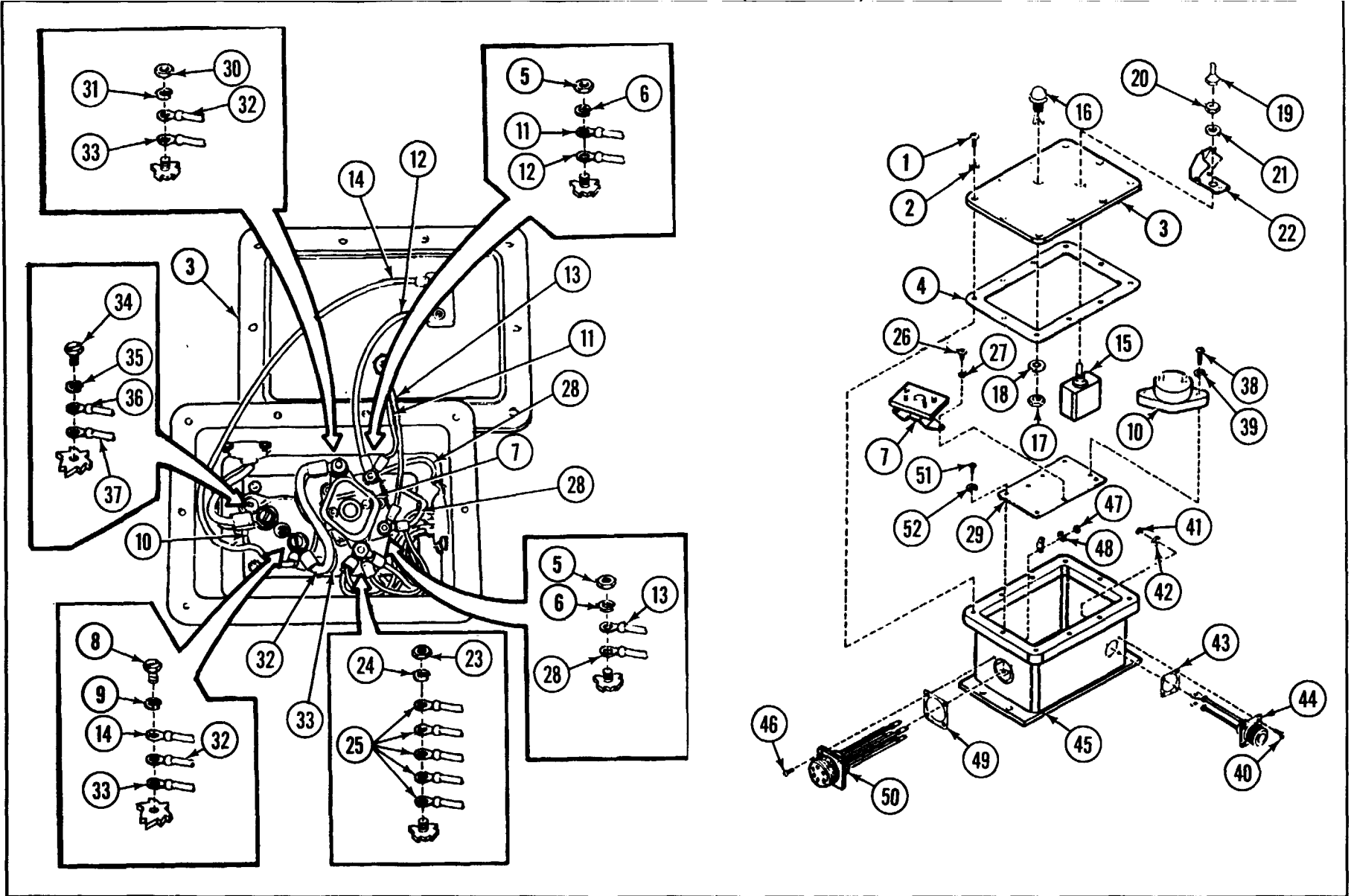
#### NOTE

Tag all wire leads upon removal to ensure proper assembly.

- B Remove two nuts (5) and two lockwashers (6) from relay (7) terminals X-1 and X-2 and one hex screw (8) and one lockwasher (9) from circuit breaker (10) terminal B. Discard lockwashers.
- C Remove two wires (11 and 12) from relay (7) terminal X-1, one wire (13) from relay (7) terminal X-2 and one wire (14) from circuit breaker (10) terminal B.
- D Remove front cover (3) with switch (15) and lamp assembly (16) attached and gasket (4). Discard gasket.
- E Remove panel hexnut (17) and washer (18) from rear of cover (3) and remove lamp assembly (16).
- F Unscrew boot (19) from switch (15).
- G Remove panel hexnut (20), washer (21), switch (15) and guard (22) from cover (3).

- H Remove nut (23), lockwasher (24) and five wire leads (25) from relay (7) terminal A2. Discard lockwasher.
- I Remove two mounting screws (26), two lockwashers (27), two ground wires (28) and relay (7) from mounting plate (29). Discard lockwashers.
- J Remove hexnut (30) and lockwasher (31) from relay (7) terminal A1 and remove two wire leads (32 and 33). Discard lockwasher.
- K Remove one hex screw (34), lockwasher (35) and two wire leads (36 and 37) from circuit breaker (10) terminal A. Discard lockwasher.
- L Remove two mounting screws (38), two lockwashers (39) and circuit breaker (10) from mounting plate (29). Discard lockwashers.
- M Remove four screws (40), four nuts (41), four lockwashers (42), gasket (43) and connector J1 (44) from control box body (45). Discard gasket and lockwashers.
- N Remove four screws (46), four nuts (47), four lockwashers (48), gasket (49) and connector J2 (50) from control box body (45). Discard gasket and lockwashers.
- O Remove four screws (51), four lockwashers (52) and mounting plate (29). Discard lockwashers.

NBC POWER CONTROL BOX: REMOVAL, DISASSEMBLY AND INSTALLATION (CONTINUED)

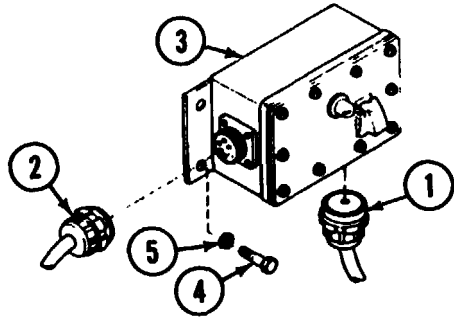


## ■ NBC POWER CONTROL BOX: REMOVAL, DISASSEMBLY AND INSTALLATION (CONTINUED)

### ASSEMBLY

- A Install mounting plate (29) with four new lockwashers (52) and four mounting screws (51).
- B Install connector J2 (50) and new gasket (49) with four screws (46), four new lockwashers (48) and four nuts (47).
- C Install connector J1 (44) and new gasket (43) on control box body (45) with four screws (40), four new lockwashers (42) and four nuts (41).
- D Install circuit breaker (10) on mounting plate (29) with two mounting screws (38) and two new lockwashers (39).
- E Install relay (7) and two ground wires (28) on mounting plate (29) with two mounting screws (26) and two new lockwashers (27).
- F Install two wires (36 and 37) on circuit breaker terminal A with one hex screw (34) and new lockwasher (35).
- G Install two wires (32 and 33) on relay (7) terminal A1 and circuit breaker (10) terminal B. Install hexnut (30) and new lockwasher (31) on relay (7) terminal A1.
- H Install five wires (25) on relay (7) terminal A2 with hexnut (23) and new lockwasher (24).
- I Install switch (15) and guard (22) on front cover (3) with panel hexnut (20) and washer (21).
- J Install boot (19) on switch (15).
- K Install lamp assembly (16) on front cover (3) with panel hexnut (17) and washer (18).
- L Hold front cover (3) and new gasket (4) in a tilted position over control box body (45).
- M Connect wire (14) to circuit breaker terminal B and install hex screw (8) and new lockwasher (9).
- N Connect two wires (11 and 12) to relay (7) terminal X-1 and wire (13) to relay (7) terminal X-2. Install two hexnuts (5) and two new lockwashers (6).
- O Install new gasket (4) and front cover (3) with ten screws (1) and ten new lockwashers (2).

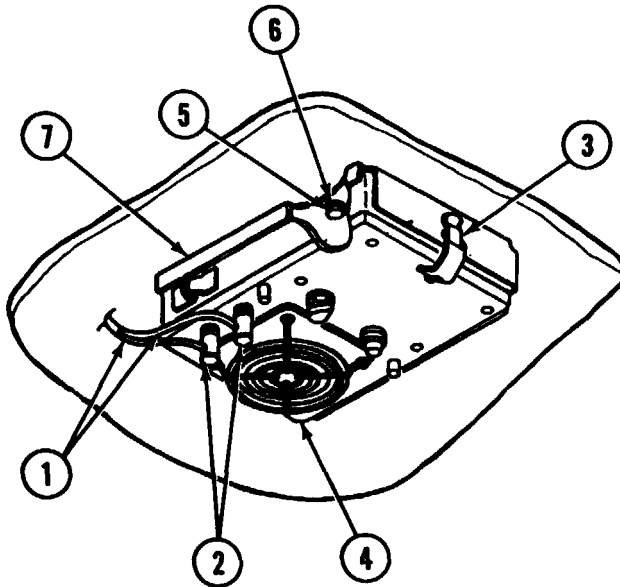
**NBC POWER CONTROL BOX: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**



**INSTALLATION**

- A Install control box (3) with four screws (4) and four new lockwashers (5).
- B Install two plugs (1 and 2) on control box (3).

**M42 ALARM AND MOUNT: REMOVAL AND INSTALLATION**



**WARNING**

Disconnect battery ground leads before performing maintenance.

**NOTE**

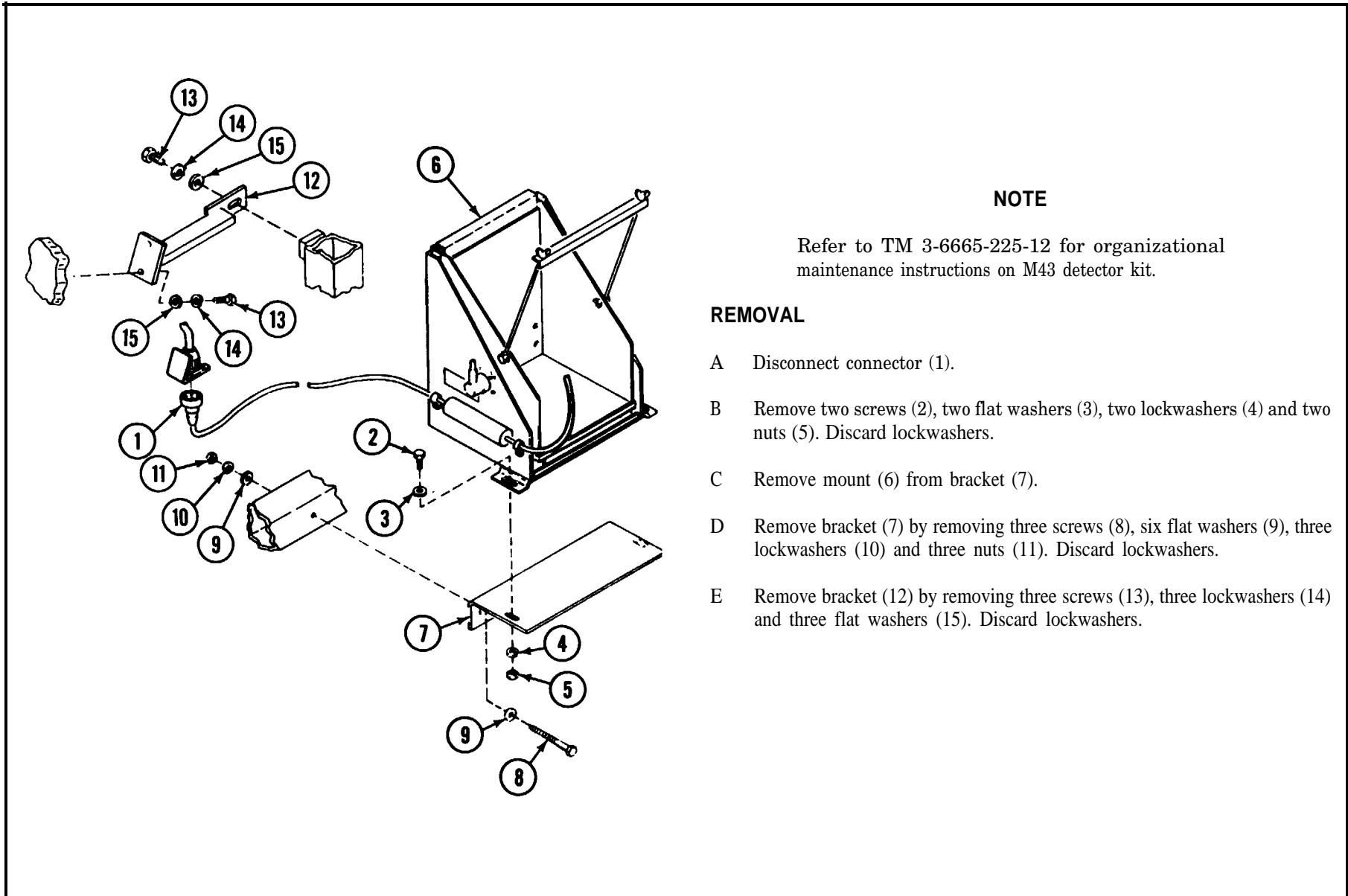
Refer to TM 9-6665-225-12 for organizational maintenance instructions on M42 alarm unit.

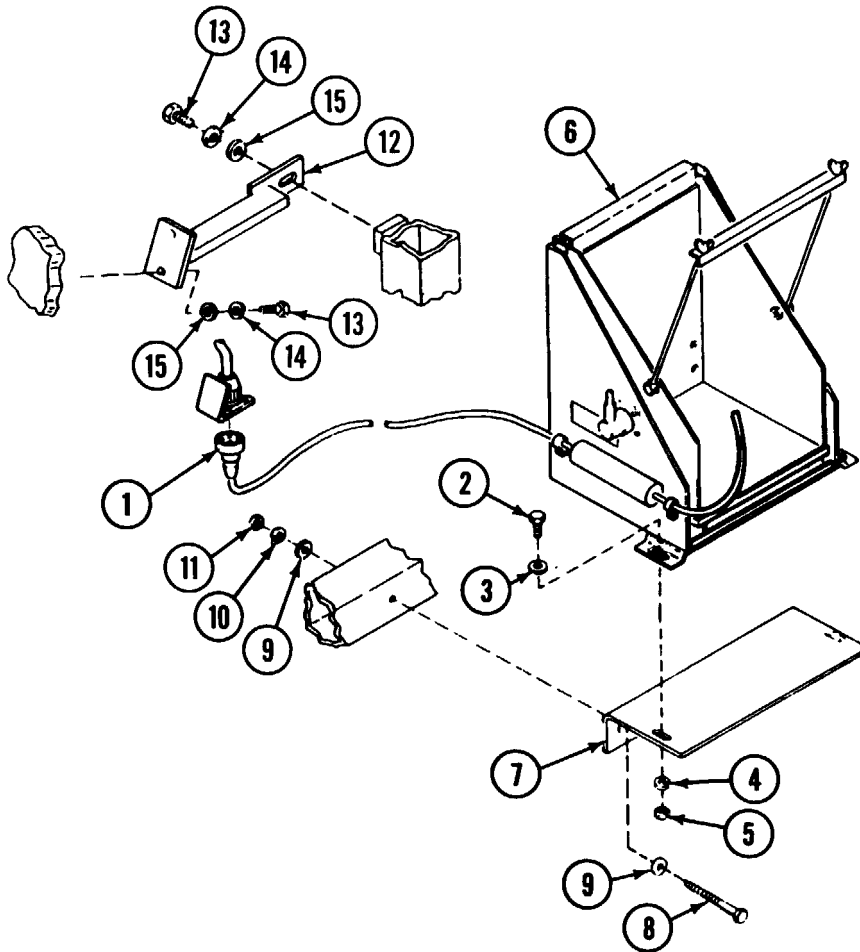
- A Disconnect two wires (1) from binding pints (2).
- B Loosen two latches (3) and remove M42 alarm unit (4).
- C Remove four screws (5) and lockwashers (6). Discard lockwashers.
- D Remove bracket (7).

**INSTALLATION**

Reverse order of removal using new lockwashers.

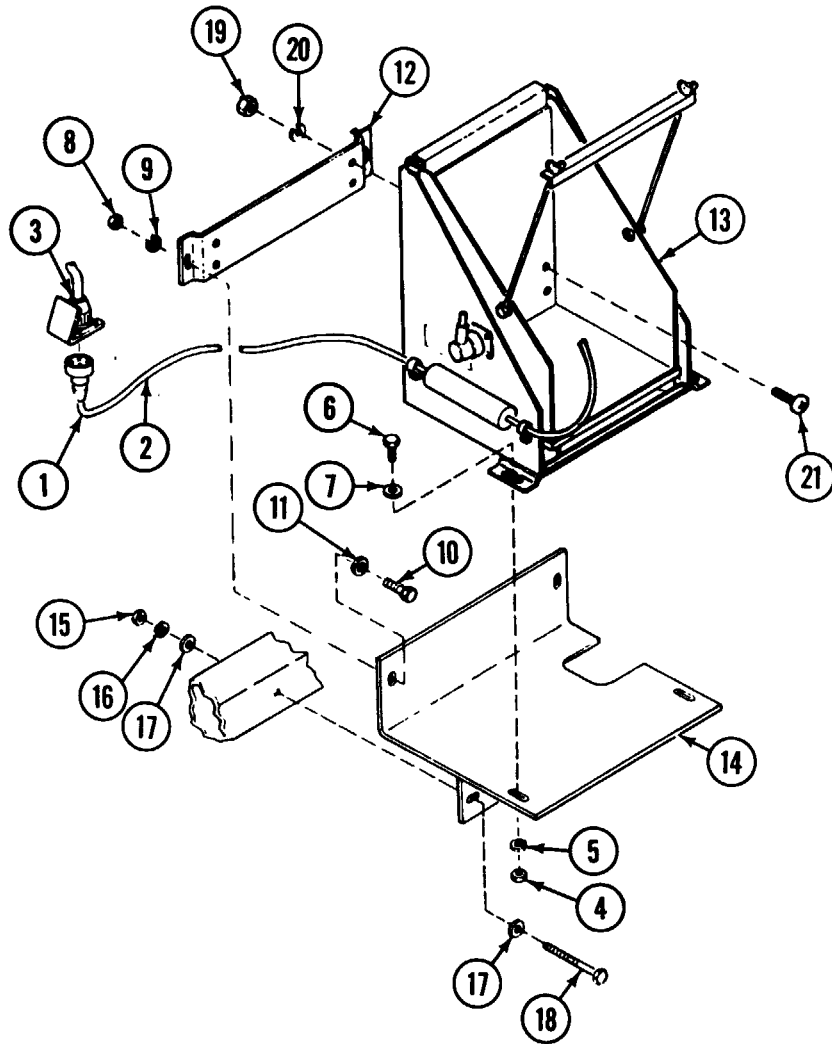
## M43 DETECTOR MOUNT AND BRACKETS (VEHICLES 1 THRU 377): REMOVAL AND INSTALLATION



**M43 DETECTOR MOUNT AND BRACKETS (VEHICLES 1 THRU 377): REMOVAL AND INSTALLATION**

**INSTALLATION**

- A Install bracket (12) with three screws (13), three new lockwashers (14) and three flat washers (15).
- B Install bracket (7) with three screws (8), six flat Washers (9), three new lockwashers (10) and three nuts (11).
- C Install mount (6) on bracket (7) with two screws (2), two flat washers (3), two new lockwashers (4) and two nuts (5).
- D Connect connector (1).

## ■ M43 DETECTOR MOUNT AND BRACKETS (VEHICLES 378 AND ABOVE): REMOVAL AND INSTALLATION



### NOTE

Refer to TM 3-6665-225-12 for organizational maintenance instructions on M43 detector unit.

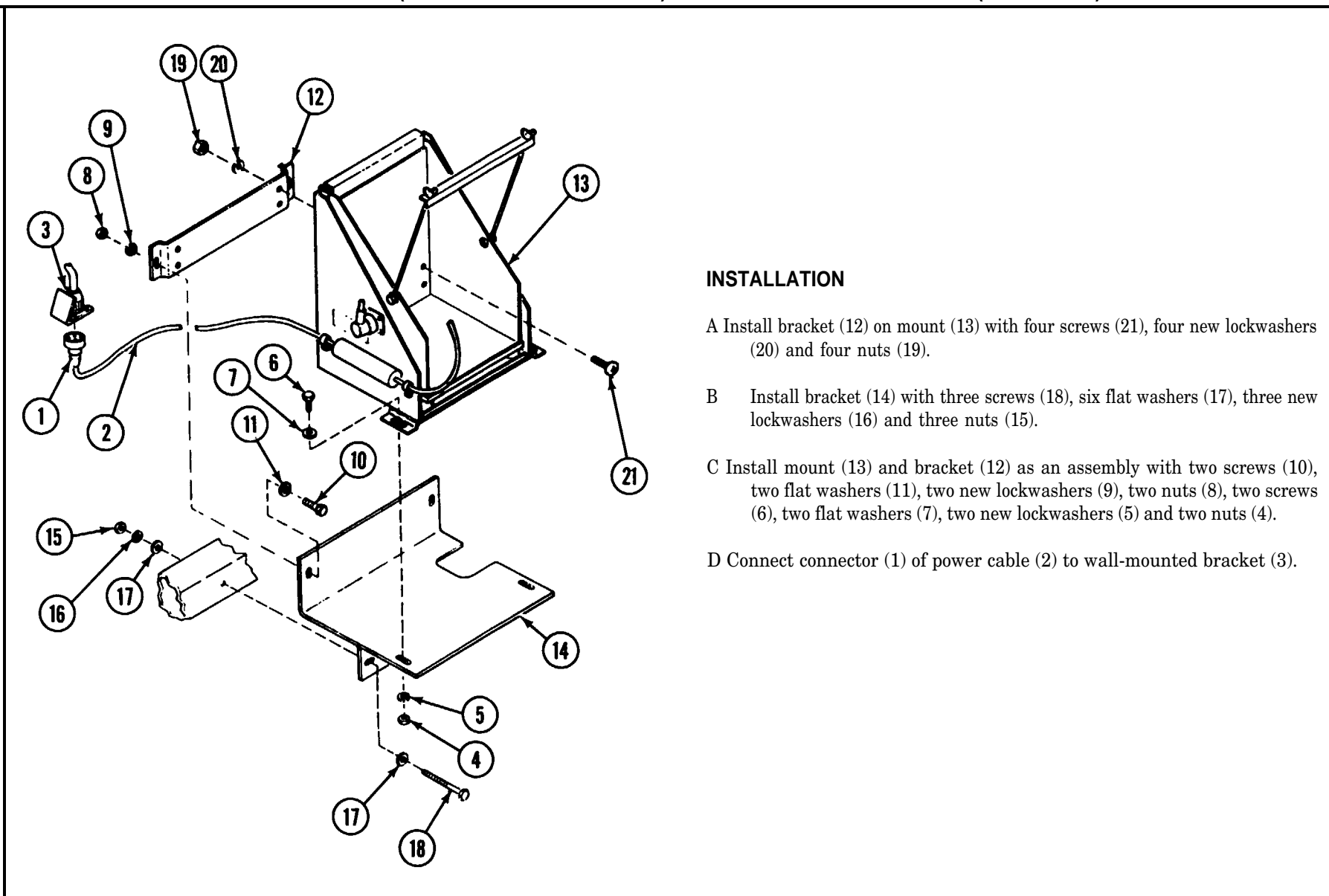
### REMOVAL

- A Disconnect connector (1) of power cable (2) at wall-mounted bracket (3).
- B Remove two nuts (4), two lockwashers (5), two screws (6) and two flat washers (7). Discard lockwashers.
- C Remove two nuts (8), two lockwashers (9), two screws (10) and two flat washers (11) from bracket (12) and remove mount (13) and bracket (12) as an assembly. Discard lockwashers.
- D Remove bracket (14) by removing three nuts (15), three lockwashers (16), six flat washers (17) and three screws (18). Discard lockwashers.
- E Remove bracket (12) from mount (13) by removing four nuts (19), four lockwashers (20) and four screws (21). Discard lockwashers.





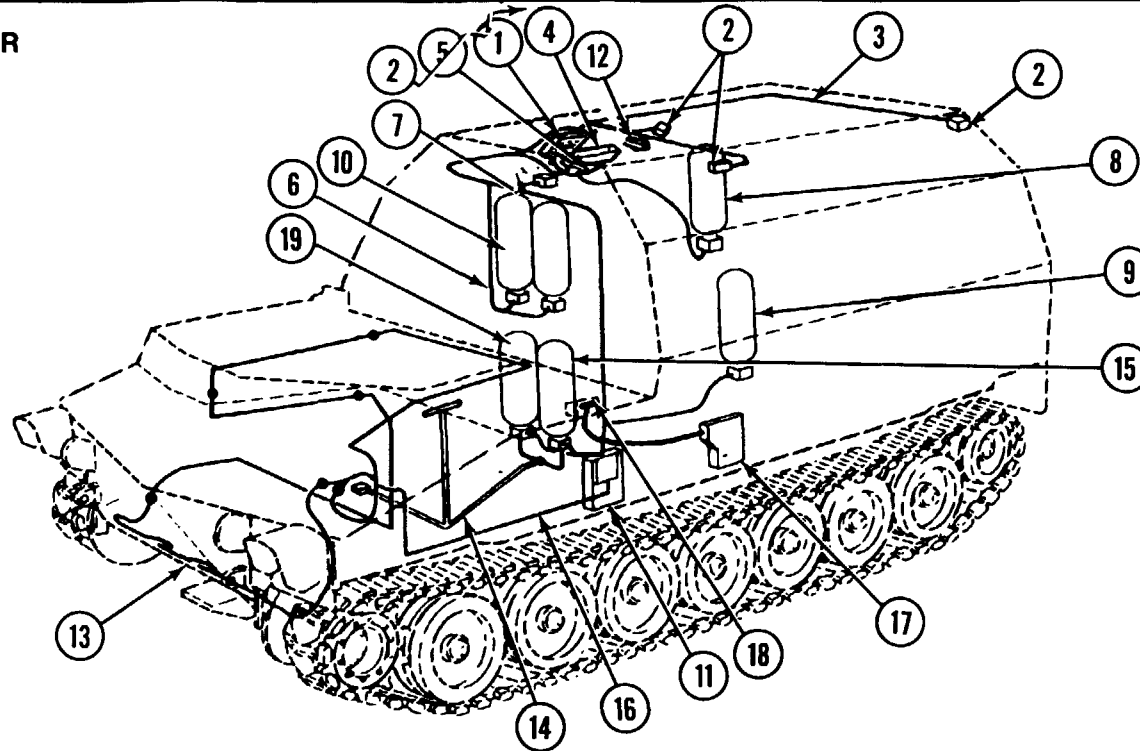
■ M43 DETECTOR MOUNT AND BRACKETS (VEHICLES 378 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)



**INSTALLATION**

- A Install bracket (12) on mount (13) with four screws (21), four new lockwashers (20) and four nuts (19).
- B Install bracket (14) with three screws (18), six flat washers (17), three new lockwashers (16) and three nuts (15).
- C Install mount (13) and bracket (12) as an assembly with two screws (10), two flat washers (11), two new lockwashers (9), two nuts (8), two screws (6), two flat washers (7), two new lockwashers (5) and two nuts (4).
- D Connect connector (1) of power cable (2) to wall-mounted bracket (3).

## SECTION II: AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)

AFES CONFIGURATION FOR  
VEHICLES 1 THRU 344

AUTOMATIC FIRE EXTINGUISHING SYSTEM  
(AFES)

AFES MANUAL DISCHARGE SYSTEM  
(AFES/MDS)

CREWENGINEMANUAL

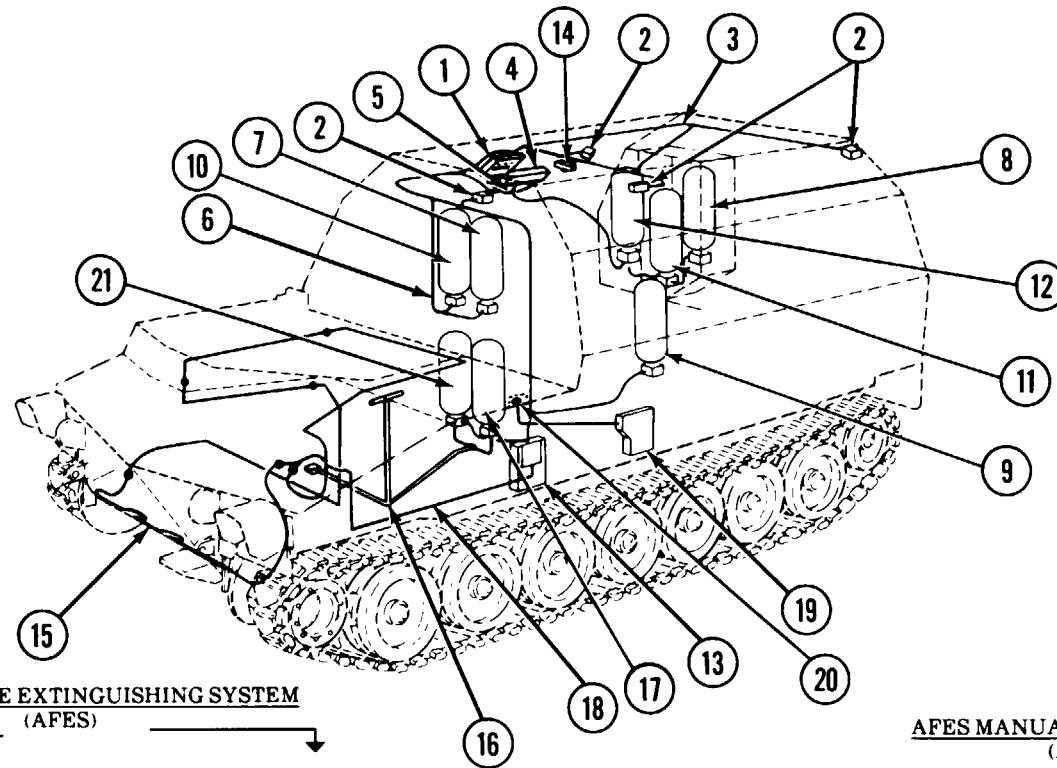
- 1 Crew T/A Panel
- 2 OFSA
- 3 OFSA Wire Harness W1
- 4 SCEA
- 5 SCEA Wire Harness W2
- 6 Extinguisher Wire Harness W3
- 7 Crew Fire Extinguisher No. 1
- 8 Crew Fire Extinguisher No. 2
- 9 Crew Fire Extinguisher No. 3\*
- 10 Crew Fire Extinguisher No. 4\*

- 11 Engine T/A Panel
- 12 RSI
- 13 Thermal Detection System
- 14 Halon Distribution System
- 15 Engine Fire Extinguisher No. 1
- 16 Extinguisher Wire Harness W4

- 17 Lanyard Assembly
- 18 Lanyard Cable Pull Handle
- 19 Engine Fire Extinguisher No. 2

\* Activated either by crew AFES or AFES/MDS

**AFES CONFIGURATION FOR  
VEHICLES 345 AND ABOVE**



**AUTOMATIC FIRE EXTINGUISHING SYSTEM  
(AFES)**

**CREW**

- 1 Crew T/A Panel
- 2 OFSA
- 3 OFSA Wire Harness W1
- 4 SCEA
- 5 SCEA Wire Harness W2
- 6 Extinguisher Wire Harness W3
- 7 Crew Fire Extinguisher No. 1
- 8 Crew Fire Extinguisher No. 2
- 9 Crew Fire Extinguisher No. 3\*
- 10 Crew Fire Extinguisher No. 4\*
- 11 Crew Fire Extinguisher No. 5
- 12 Crew Fire Extinguisher No. 6

**ENGINE**

- 13 Engine T/A Panel
- 14 RSI
- 15 Thermal Detection System
- 16 Halon Distribution System
- 17 Engine Fire Extinguisher No. 1
- 18 Extinguisher Wire Harness W4

**AFES MANUAL DISCHARGE SYSTEM  
(AFES/MDS)**

**MANUAL**

- 19 Lanyard Assembly
- 20 Lanyard Cable Pull Handle
- 21 Engine Fire Extinguisher No. 2

\*Activated either by crew AFES or AFES/MDS



## ENGINE AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE

### INITIAL SETUP

#### Test Equipment/Special Tools:

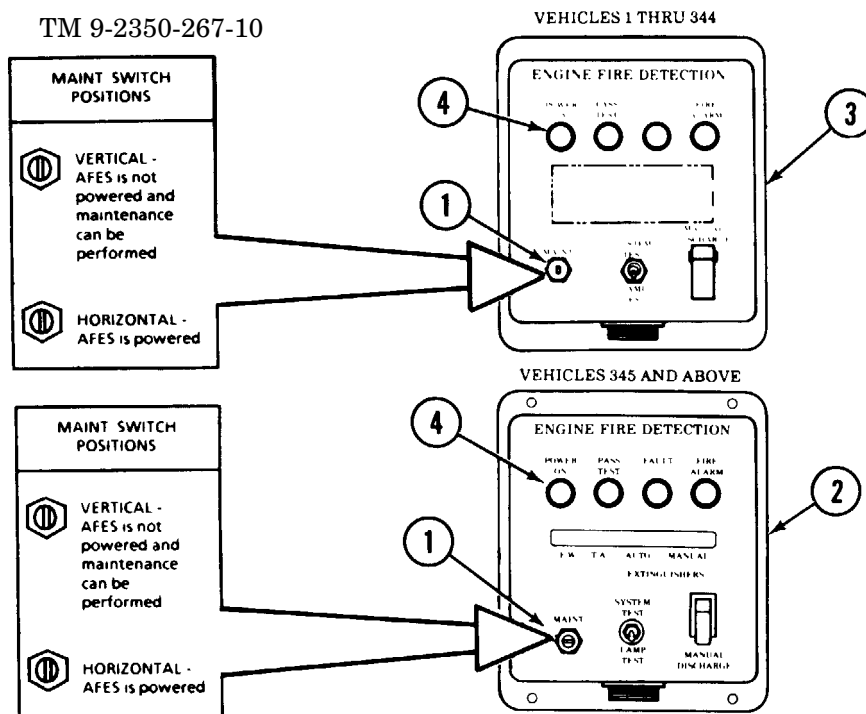
Wrench, adjustable 15" (item 67, Appx B)

#### Personnel Required:

Two

#### References:

TM 9-2350-267-10



#### General Safety Instructions:

Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge.

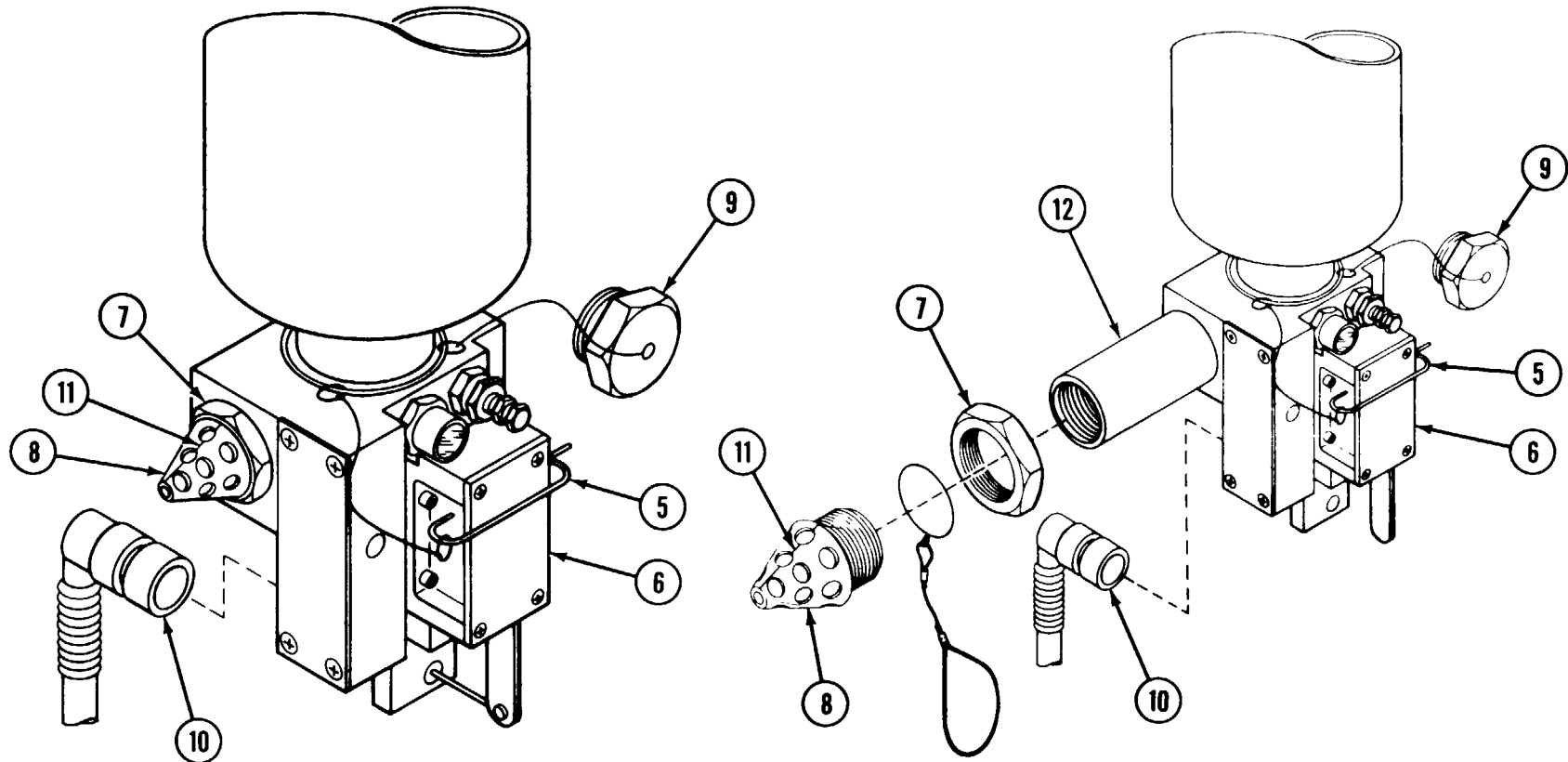
### DEACTIVATION

#### WARNING

AFES is designed to provide 2 to 4 hours of fire protection AFTER vehicle shutdown. Turning MASTER switch OFF does NOT deactivate AFES. Working on AFES when active may cause serious injury to personnel.

- A Turn Maintenance switch (1) on engine T/A panel (2 or 3) to vertical position. Make sure all lights, including POWER ON light (4), go off.
- B Move projectile racks to rear of vehicle (TM 9-2350-267-10).

ENGINE AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE (CONTINUED)



FOR SIX FIRE  
EXTINGUISHERS  
INSIDE VEHICLE  
(FOUR CREW COMPARTMENT AFES  
AND TWO ENGINE AFES)

FOR TWO REAR  
BOX CREW  
FIRE EXTINGUISHERS  
(FOUND ONLY ON VEHICLES 345  
AND ABOVE)

## ENGINE AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE (CONTINUED)

- C Ensure locking pin (5) in valve actuator guard (6) is installed in both engine cylinder bottles.

### REACTIVATION

- A Remove locking pin (5) from valve actuator guard (6) of engine cylinder bottle no. 2.
- B Turn MASTER switch ON.
- C Move Maintenance switch to horizontal position. Verify successful BITE test. (Step F, p 14-57 for vehicles 1 thru 344 or step F, p 14-60.2 for vehicles 345 and above.)
- D Turn MASTER switch OFF.
- E Move projectile racks to front of vehicle (TM 9-2350-267-10).





## CREW AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE

### INITIAL SETUP

#### Test Equipment/Special Tools:

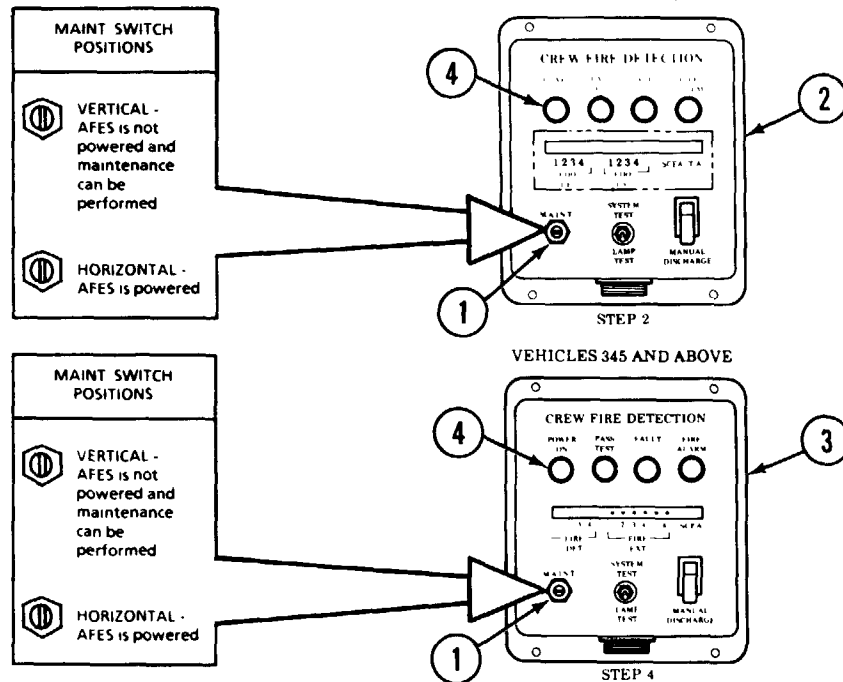
Wrench, open-end, 1-1/8 in. (item 71, Appx B)

#### Personnel Required:

Two

#### References:

TM 9-2350-267-10



### General Safety Instructions

Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge,

### DEACTIVATION

#### WARNING

AFES is designed to provide 2 to 4 hours of fire protection AFTER vehicle shutdown. Turning MASTER switch OFF does NOT deactivate AFES. Working on AFES when active may cause serious injury to personnel.

A Turn Maintenance switch (1) on crew T/A panel (2 or 3) to vertical position. Make sure all lights, including POWER ON light (4), go off.

B Move projectile racks to rear of vehicle (TM 9-2350-267-10)

**CREW AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE (CONTINUED)****NOTE**

See p 14-14.4 for illustration for steps C thru F.

- C Ensure locking pin (5) is installed in valve actuator guard (6) on four crew compartment cylinder bottles in vehicles 1 thru 344 or on four crew compartment cylinder bottles and two fire extinguishers (located in rear fire extinguisher box assembly) in vehicles 345 and above.
- D Loosen nut (7) and unscrew dispersion nozzle (8) from four crew compartment cylinder bottles in vehicles 1 thru 344 or from four crew compartment cylinder bottles and two rear cylinder bottle extenders (12) in vehicles 345 and above.
- E Remove four anti-recoil plugs (9) from bulkhead in vehicles 1 thru 344 or four from bulkhead and two from rear extinguisher box assembly in vehicles 345 and above.

**CAUTION**

Install anti-recoil plugs on each cylinder bottle immediately after removing each nozzle.

- F Install and tighten four anti-recoil plugs (9) on four crew compartment cylinder bottles in vehicles 1 thru 344 or on four crew compartment cylinder bottles and two rear cylinder bottle extenders (12) in vehicles 345 and above.

**REACTIVATION****NOTE**

See p 14-14.4 for illustration for steps A thru F.

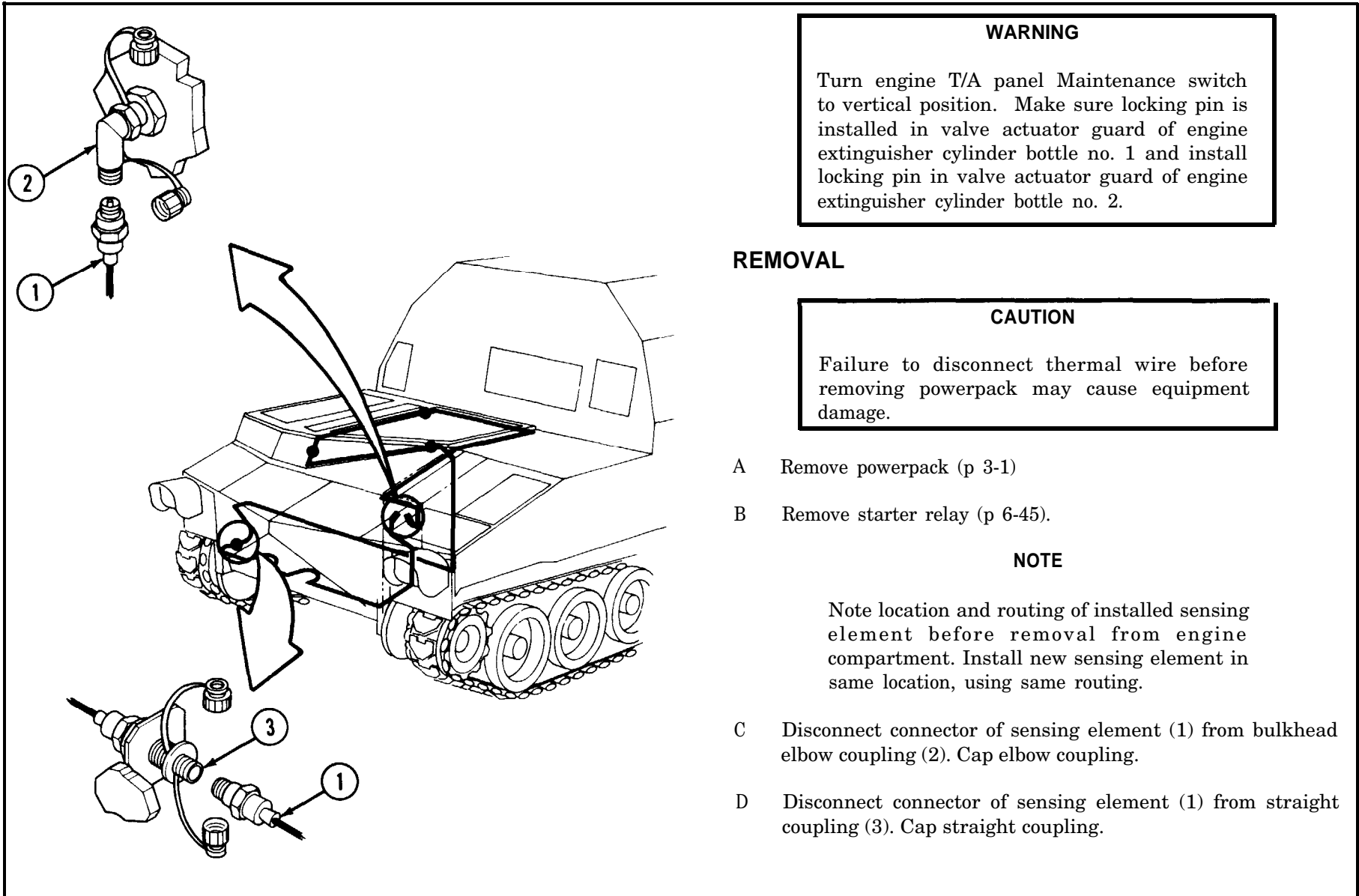
- A Remove anti-recoil plugs (9) from four crew compartment cylinder bottles in vehicles 1 thru 344 or from four crew compartment cylinder bottles and two rear cylinder bottle extenders (12) in vehicles 345 and above.
- B Replace and tighten anti-recoil plugs in holding fixtures located next to four crew cylinder bottles on vehicles 1 thru 344, or next to four crew cylinder bottles and two rear cylinder bottles on vehicles 345 and above.
- C Fully screw nut (7) onto nozzle (8). Back off nut (7) no more than one turn. Never fully remove nut from nozzle.

**CAUTION**

Install nozzles on each cylinder bottle immediately after removing each anti-recoil plug.

- D Install and tighten nozzle (8) on four crew compartment cylinder bottles in vehicles 1 thru 344 or four crew compartment cylinder bottles and two rear extinguisher extenders (12) in vehicles 345 and above. Back off nozzle (8) (no more than one turn) until engraved line (11) is in up (vertical) position.
- E Tighten nut (7).
- F Remove locking pin (5) from valve actuator guards (6) of crew extinguishers no. 3 and no. 4. Do not remove any other locking pins.
- G Turn MASTER switch ON.
- H Move Maintenance switch to horizontal position. Verify successful BITE test (step F, p 14-57 for vehicles 1 thru 344 and step F, p 14-60.2 for vehicles 345 and above).
- I Move projectile racks to front of vehicle (TM 9-2350-267-10).

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION



### WARNING

Turn engine T/A panel Maintenance switch to vertical position. Make sure locking pin is installed in valve actuator guard of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2.

### REMOVAL

### CAUTION

Failure to disconnect thermal wire before removing powerpack may cause equipment damage.

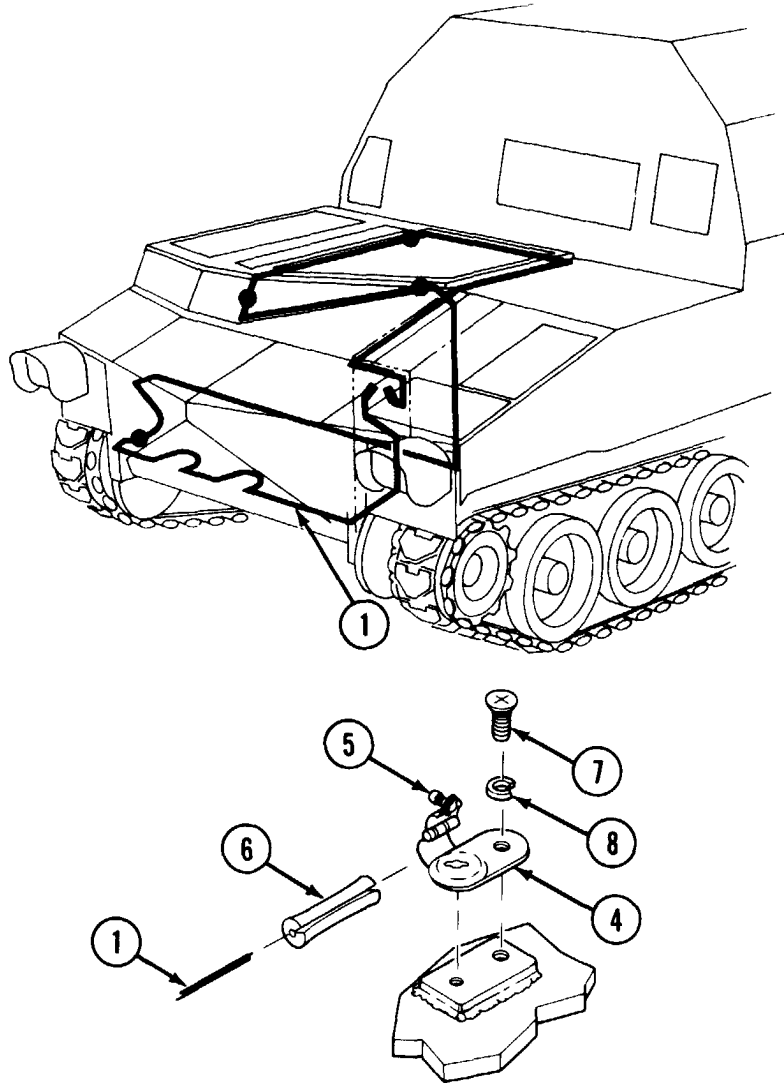
- A Remove powerpack (p 3-1)
- B Remove starter relay (p 6-45).

### NOTE

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in same location, using same routing.

- C Disconnect connector of sensing element (1) from bulkhead elbow coupling (2). Cap elbow coupling.
- D Disconnect connector of sensing element (1) from straight coupling (3). Cap straight coupling.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)



E To remove sensing element (1) from 24 mounting and clip assemblies (4), release quarter-turn fasteners (5) and open clip assembly. Remove sensing element (1) with attached rubber bushings (6).

F To remove 24 mounting and clip assemblies (4), remove from each: one screw (7) and one lockwasher (8). Discard lockwashers.

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation, do not damage sensing element by crushing or too much bending (allowable radius - 6 inches minimum). Ensure 1/2-inch to 3/4-inch clearance between sensing element and personnel heater exhaust tube.

A Install 24 rubber bushings (6) spacing equally along length of sensing element (1).

B If removed, install 24 mounting and clip assemblies (4) on 24 engine compartment clip assembly mounts, securing each with one screw (7) and one new lockwasher (8).

C Install sensing element. Shape sensing element (1) by hand to fit in engine compartment. Route sensing element correctly through front portion of engine compartment.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

- D After sensing element is installed, move rubber bushings (6) on sensing element (1) so each will engage one mounting and clip assembly (4).
- E Secure sensing element (1) in each mounting and clip assembly (4) by flipping clip over each rubber bushing (6) installed on sensing element (1). Secure clip using quarter-turn fastener (5).

### CAUTION

Before installation, clean connector fittings thoroughly with electrical contact cleaner (item 74, Appx D).

- F Remove cap from straight coupling. Join connector of sensing element (1) to straight coupling (3) and tighten.

- G Remove cap from elbow coupling. Join connector of sensing element (1) to bulkhead elbow coupling (2) and tighten.
- H Install starter relay (p 6-45).
- I Install powerpack (p 3-1)

### WARNING

Remove locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

### WARNING

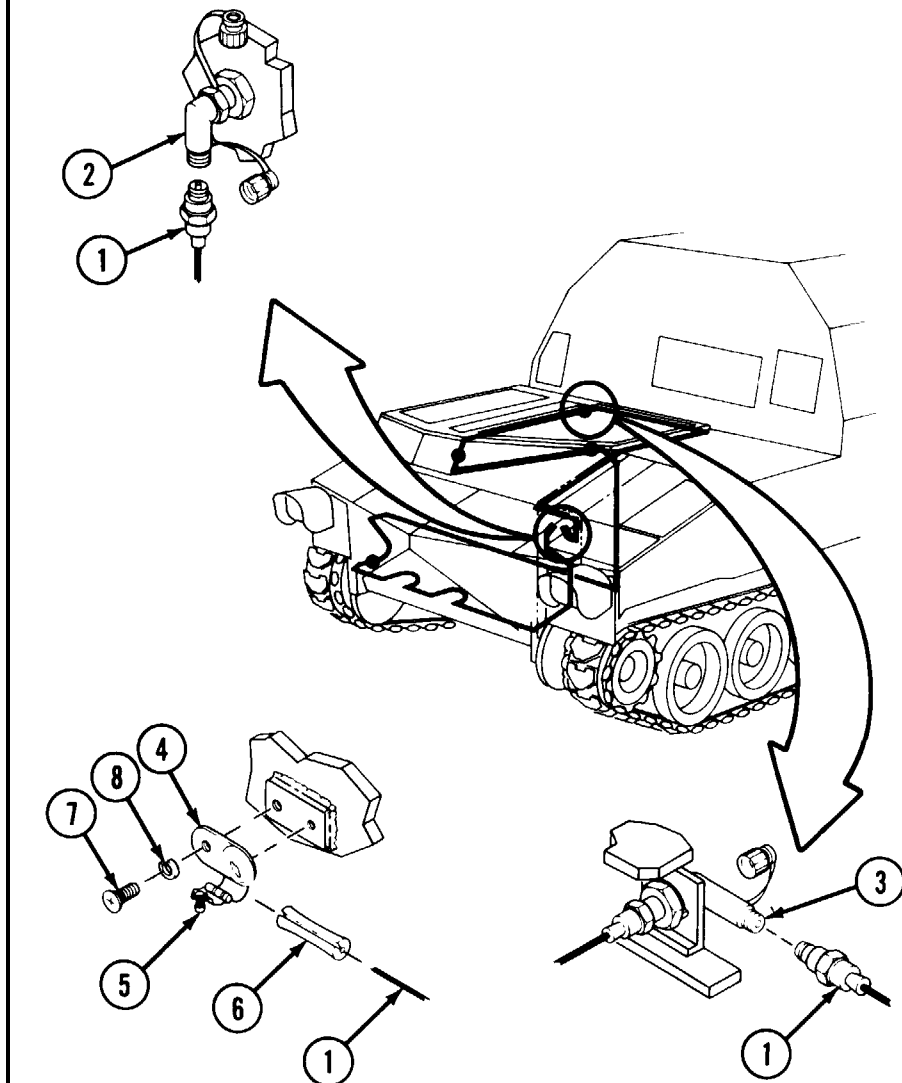
Turn engine T/A panel Maintenance switch to vertical position. Make sure locking pin is installed in valve actuator guard of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2.

### REMOVAL

### NOTE

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in same location using same routing.

- A Open forward battery compartment door and louvered engine access door.
- B Disconnect connector of sensing element (1) from bulkhead elbow coupling (2). Cap elbow coupling.
- C Disconnect connector of sensing element (1) from elbow coupling (3). Cap elbow coupling.
- D To remove sensing element (1) from 24 mounting and clip assemblies (4), release quarter-turn fasteners (5) and open clip assembly. Remove sensing element (1) with attached rubber bushings (6).
- E To remove 24 mounting and clip assemblies (4), remove from each: one screw (7) and one lockwasher (8). Discard lockwashers.



## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation, do not damage sensing element by crushing or too much bending (allowable radius - 6 inches minimum). Ensure 1/2-inch to 3/4-inch clearance between sensing element and personnel heater exhaust tube.

- A Install 24 rubber bushings (6) spacing equally along length of sensing element (1).
- B If removed, install 24 mounting and clip assemblies (4) on 24 engine compartment clip assembly mounts, securing each with one screw (7) and one new lockwasher (8).
- C Install sensing element. Shape sensing element (1) by hand to fit in engine compartment. Route sensing element correctly through front portion of engine compartment.
- D After sensing element is installed, move rubber bushings (6) on sensing element (1) so each will engage one mounting and clip assembly (4).

- E Secure sensing element (1) in each mounting and clip assembly (4) by flipping clip over each rubber bushing (6) installed on sensing element (1). Secure clip using quarter-turn fastener (5).

---

#### CAUTION

Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74, Appx D).

---

- F Remove cap from elbow coupling. Join connector of sensing element (1) to elbow coupling (3) and tighten.
- G Remove cap from elbow coupling. Join connector of sensing element (1) to bulkhead elbow coupling (2) and tighten.

Close battery and louvered engine access doors.

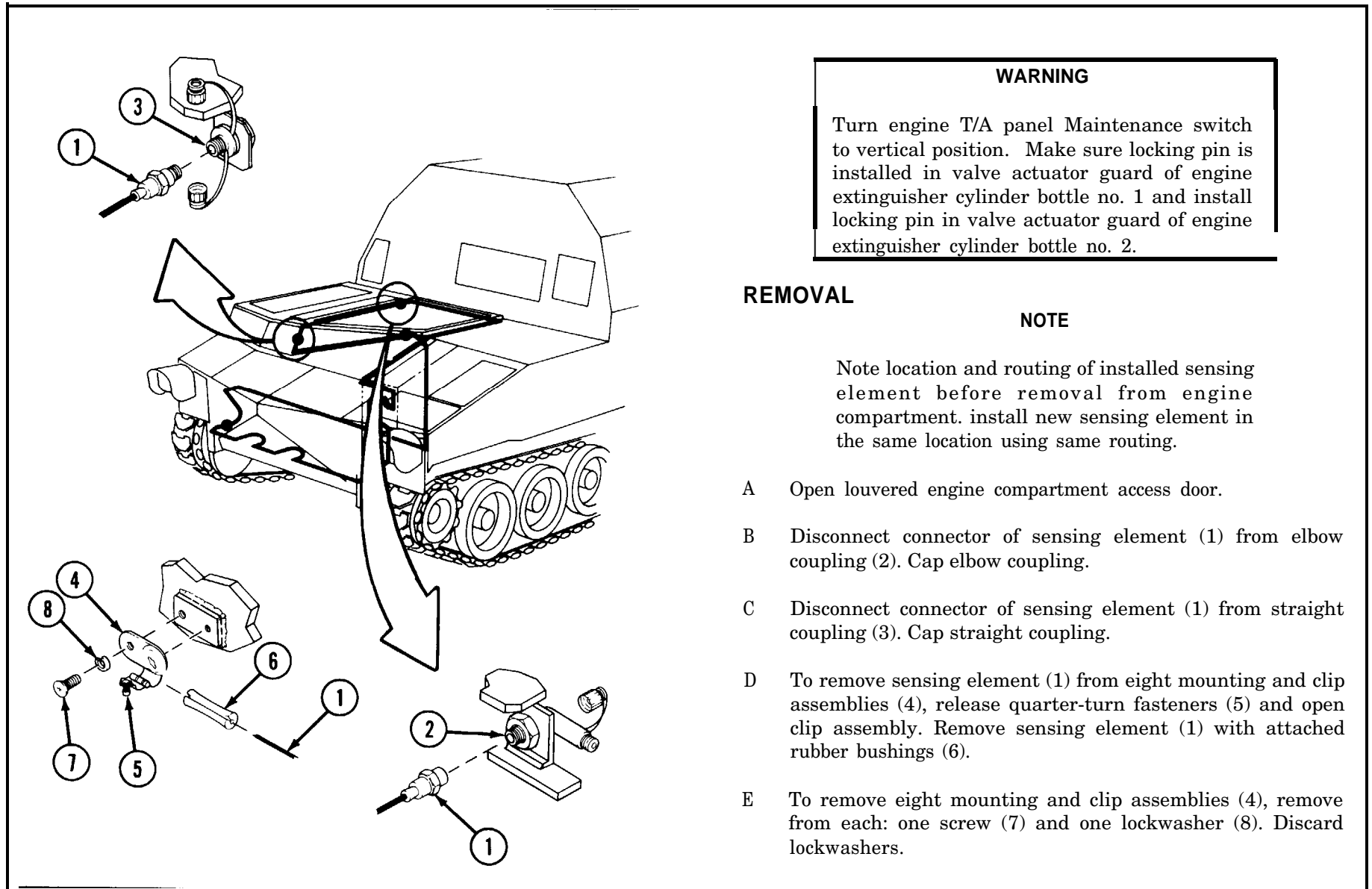
---

#### WARNING

Remove locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

---

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)



### WARNING

Turn engine T/A panel Maintenance switch to vertical position. Make sure locking pin is installed in valve actuator guard of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2.

### REMOVAL

### NOTE

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in the same location using same routing.

- A Open louvered engine compartment access door.
- B Disconnect connector of sensing element (1) from elbow coupling (2). Cap elbow coupling.
- C Disconnect connector of sensing element (1) from straight coupling (3). Cap straight coupling.
- D To remove sensing element (1) from eight mounting and clip assemblies (4), release quarter-turn fasteners (5) and open clip assembly. Remove sensing element (1) with attached rubber bushings (6).
- E To remove eight mounting and clip assemblies (4), remove from each: one screw (7) and one lockwasher (8). Discard lockwashers.



## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation, do not damage sensing element by crushing or too much bending (allowable radius - 6-inches minimum). Ensure 1/2-inch to 3/4-inch clearance between sensing element and personnel heater exhaust tube.

- A Install eight rubber bushings (6) spacing equally along length of sensing element (1).
- B If removed, install eight mounting and clip assemblies (4) on eight engine compartment clip assembly mounts, securing each with one screw (7) and one new lockwasher (8).
- C Install sensing element. Hand shape sensing element (1) to fit in engine compartment. Route sensing element correctly through front portion of the engine compartment.
- D After sensing element is installed, move rubber bushings (6) on sensing element (1) so each will engage one mounting and clip assembly (4).
- E Secure sensing element (1) in each mounting and clip assembly (4) by flipping clip over each rubber bushing (6) installed on sensing element (1). Secure clip using quarter-turn fastener (5).
- F Remove cap from straight coupling. Join connector of sensing element (1) to straight coupling (3) and tighten.
- G Remove cap from elbow coupling. Join connector of sensing element (1) to elbow coupling (2) and tighten.
- H Close louvered engine access doors.

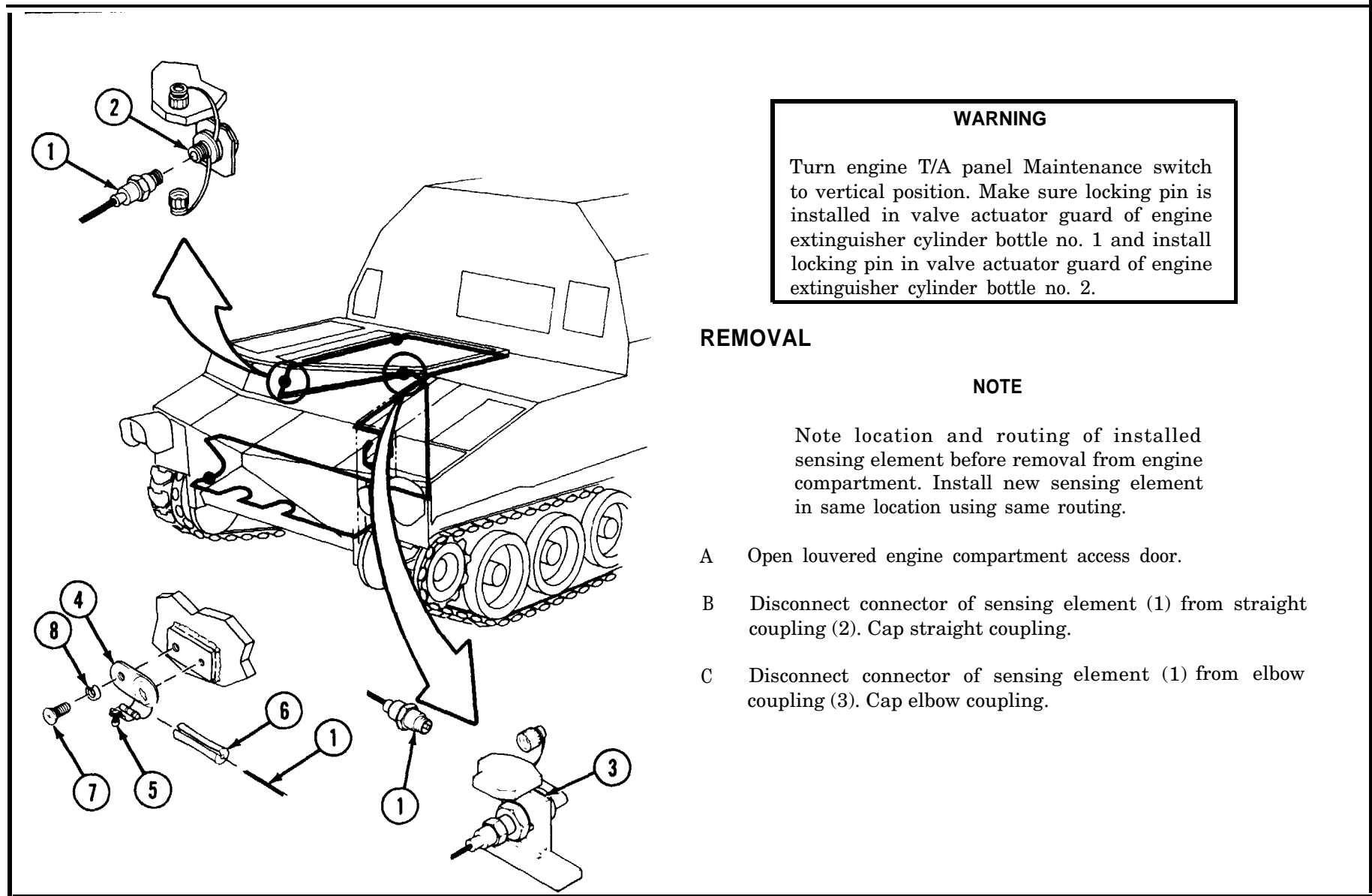
#### CAUTION

Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74, Appx D).

#### WARNING

Remove locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2. Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)



### WARNING

Turn engine T/A panel Maintenance switch to vertical position. Make sure locking pin is installed in valve actuator guard of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2.

### REMOVAL

### NOTE

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in same location using same routing.

- A Open louvered engine compartment access door.
- B Disconnect connector of sensing element (1) from straight coupling (2). Cap straight coupling.
- C Disconnect connector of sensing element (1) from elbow coupling (3). Cap elbow coupling.

## ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

D To remove sensing element (1) from 10 mounting and clip assemblies (4), release quarter-turn fasteners (5) and open clip assembly. Remove sensing element (1) with attached 10 rubber bushings (6).

E To remove 10 mounting and clip assemblies (4), remove from each: one screw (7) and one lockwasher (8). Discard lockwashers.

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation, do not damage sensing element by crushing or too much bending (allowable radius - 6-inches minimum). Ensure 1/2-inch to 3/4-inch clearance between sensing element and personnel exhaust tube.

A Install 10 rubber bushings (6) spacing equally along length of sensing element (1).

B If removed, install 10 mounting and clip assemblies (4) on eight engine compartment clip assembly mounts. Secure each with one screw (7) and one new lockwasher (8).

C Install sensing element. Hand shape sensing element (1) to fit in engine compartment. Route sensing element correctly through front portion of engine compartment.

D After sensing element is installed, move rubber bushings (6) on sensing element (1) so each will engage one mounting and clip assembly (4).

E Secure sensing element (1) in each mounting and clip assembly (4) by flipping clip over each rubber bushing (6) installed on sensing element. Secure clip using quarter-turn fastener (5).

#### CAUTION

Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74, Appx D).

F Remove cap from elbow coupling. Join connector of sensing element (1) to elbow coupling (3) and tighten.

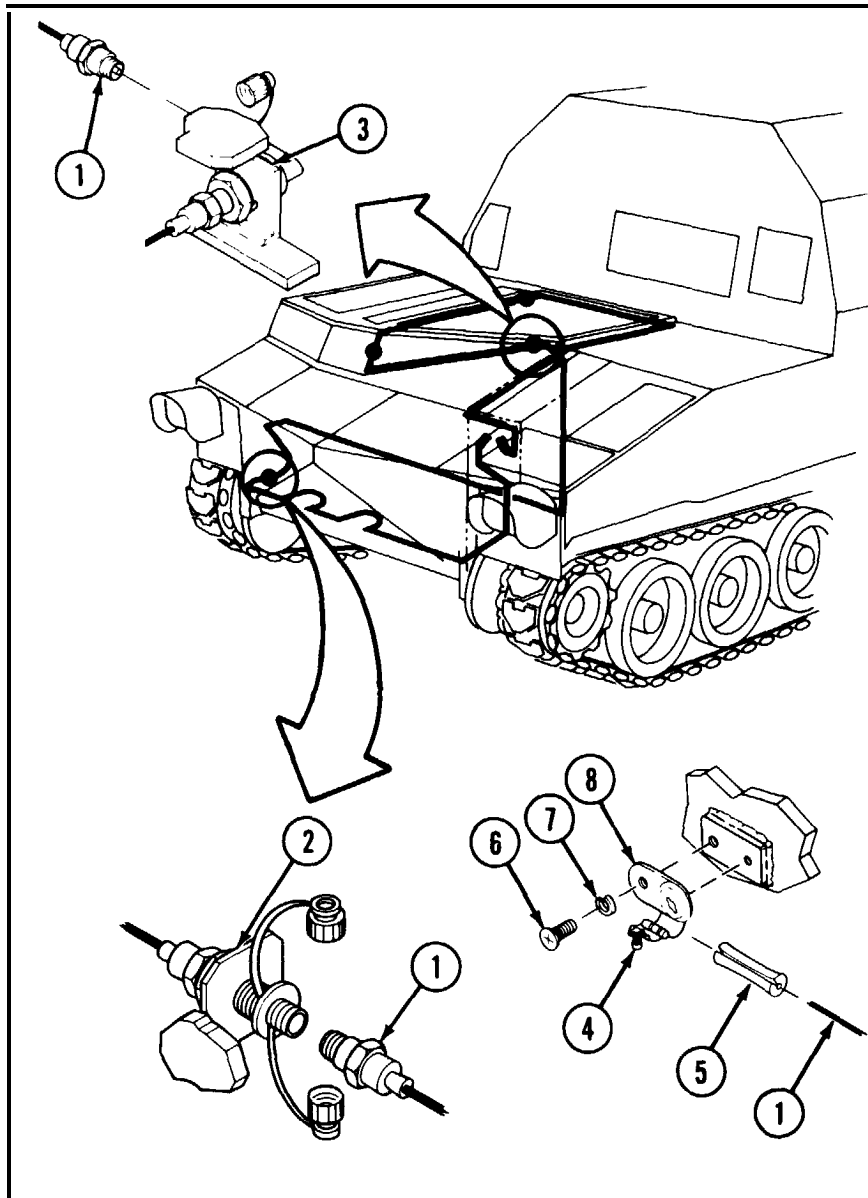
G Remove cap from straight coupling. Join connector of sensing element (1) to straight coupling (2) and tighten.

H Close louvered engine access door.

#### WARNING

Remove locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)



### WARNING

Turn engine T/A panel Maintenance switch to vertical position. Make sure locking pin is installed in valve actuator guard of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2.

### REMOVAL

### NOTE

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in same location using same routing.

- A Remove powerpack (p 3-1).
- B Disconnect connector of sensing element (1) from straight coupling (2). Cap straight coupling.
- C Disconnect connector of sensing element (1) from elbow coupling (3). Cap elbow coupling.
- D To remove sensing element (1) from 22 mounting and clip assemblies (8), release quarter-turn fasteners (4) and open clip assembly. Remove sensing element (1) with attached rubber bushings (5).
- E To remove 22 mounting and clip assemblies (3), remove from each: one screw (6) and one lockwasher (7). Discard lockwashers.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation, do not damage sensing element by crushing or too much bending (allowable radius - 6-inches minimum). Ensure 1/2-inch to 3/4-inch clearance between sensing element and personnel heater exhaust tube.

- A Install 22 rubber bushings (5) spacing equally along length of sensing element (1).
- B If removed, install 22 mounting and clip assemblies (3) on 22 engine compartment clip assembly mounts, securing each with one screw (6) and one new lockwasher (7).
- C Install sensing element. Hand shape sensing element (1) to fit in engine compartment. Route sensing element correctly through front portion of engine compartment.
- D After sensing element is installed, move rubber bushings (5) on sensing element (1) so each will engage one mounting and clip assembly (3).
- E Secure sensing element (1) in each mounting and clip assembly (3) by flipping clip over each rubber bushing (5) installed on sensing element (1). Secure clip using quarter-turn fastener (4).

#### CAUTION

Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74, Appx D).

- F Remove cap from straight coupling. Join connector of sensing element (1) to straight coupling (2) and tighten.
- G Remove cap from elbow coupling. Join connector of sensing element (1) to elbow coupling (3) and tighten.
- H Install powerpack (p 3-1).

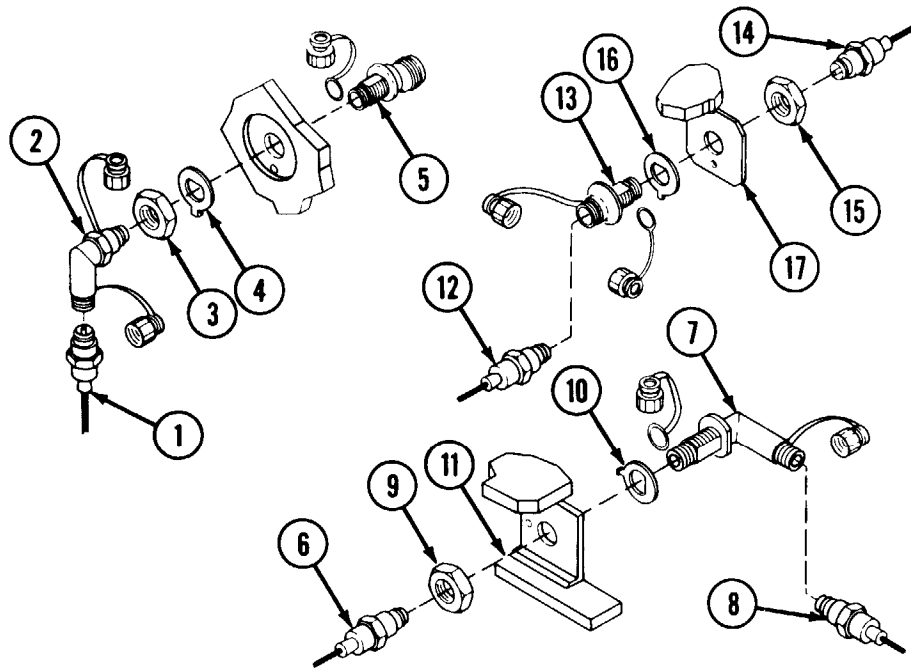
---

#### CAUTION

Remove locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

---

## ENGINE AFES - ENGINE COMPARTMENT AFES SENSING ELEMENT COUPLINGS: REMOVAL AND INSTALLATION



### REMOVAL

#### WARNING

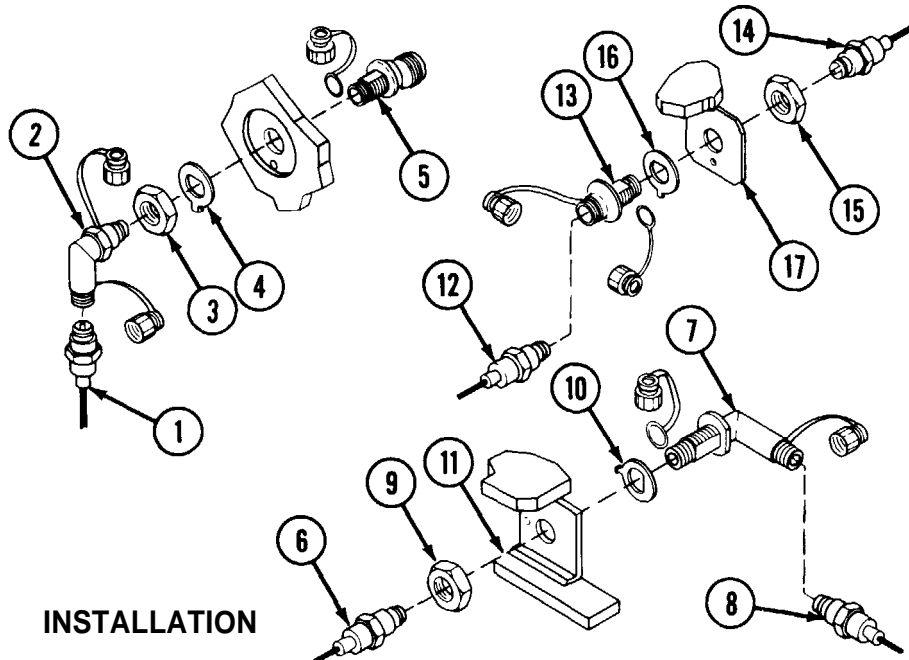
Turn engine T/A panel Maintenance switch to vertical position. Make sure locking pin is installed in valve actuator guard of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2.

#### NOTE

When removing bulkhead couplings, remove starter relay (p 6-45) to gain access to coupling.

- A Disconnect sensing element (1) from elbow coupling (2). Pull sensing element away from elbow coupling (p 14-15 or 14-18).
- B Loosen locknut (3). Remove elbow coupling (2) and flat washer (4) from adapter (5) at bulkhead. Cap both ends of elbow coupling (2).
- C Disconnect sensing element (6). Pull sensing element away from elbow coupling (7) (p 14-15, 14-20 or 14-22).
- D Disconnect sensing element (8). Pull sensing element (8) away from elbow coupling (7) (p 14-18, 14-20 or 14-24).
- E Remove hex nut (9) and remove washer (10). Pull elbow coupling (7) from bracket (11). Cap both ends of elbow coupling (7).
- F Disconnect sensing element (12) from straight coupling (13) and pull sensing element (12) away from straight coupling.
- G Disconnect sensing element (14) from straight coupling (13) and pull sensing element (14) away from straight coupling.
- H Remove locknut (15) and washer (16) from straight coupling (13). Pull straight coupling (13) from bracket (17). Cap both ends of straight coupling (13).

## ENGINE COMPARTMENT AFES SENSING ELEMENT COUPLINGS: REMOVAL AND INSTALLATION (CONTINUED)



### INSTALLATION

#### CAUTION

Before installation, clean connector fittings thoroughly with electrical contact cleaner (item 74, Appx D).

- A Remove caps from straight coupling (13). Install straight coupling onto bracket (17) using locknut (15) and washer (16).
- B Join sensing element (14) to straight coupling (13) and tighten.
- C Join sensing element (12) to straight coupling (13) and tighten.

D Remove caps from elbow coupling (7). Install elbow coupling onto bracket (11) using hex nut (9) and washer (10).

E Join sensing element (8) to elbow coupling (7) and tighten (p 14-15, 14-20 or 14-24).

F Join sensing element (6) to elbow coupling (7) and tighten (p 14-15, 14-20 or 14-24).

G Remove caps from elbow coupling (2). Install elbow coupling (2) onto bulkhead adapter (5) using locknut (3) and washer (4).

H Join sensing element (1) to elbow coupling (2) and tighten (p 14-15 or 14-18).

#### WARNING

Remove locking pin from valve actuator guard of engine extinguisher cylinder bottle no. 2 (7, p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.





## ENGINE AFES SENSING ELEMENT DISCONNECT POINTS FOR ENGINE DECK REMOVAL: DISCONNECT AND RECONNECT

### DISCONNECT

#### WARNING

Turn engine T/A panel Maintenance switch to vertical position. Make sure locking pin is installed in valve actuator guard of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator guard of engine extinguisher cylinder bottle no. 2.

- A Disconnect sensing element (1) from elbow coupling (2). Pull sensing element away from elbow coupling. Cap elbow coupling (2).
- B Disconnect sensing element (3) from straight coupling (4). Pull sensing element away from straight coupling. Cap straight coupling (4).
- C Disconnect sensing element (5) from elbow coupling (6). Pull sensing element away from elbow coupling. Cap elbow coupling (6).

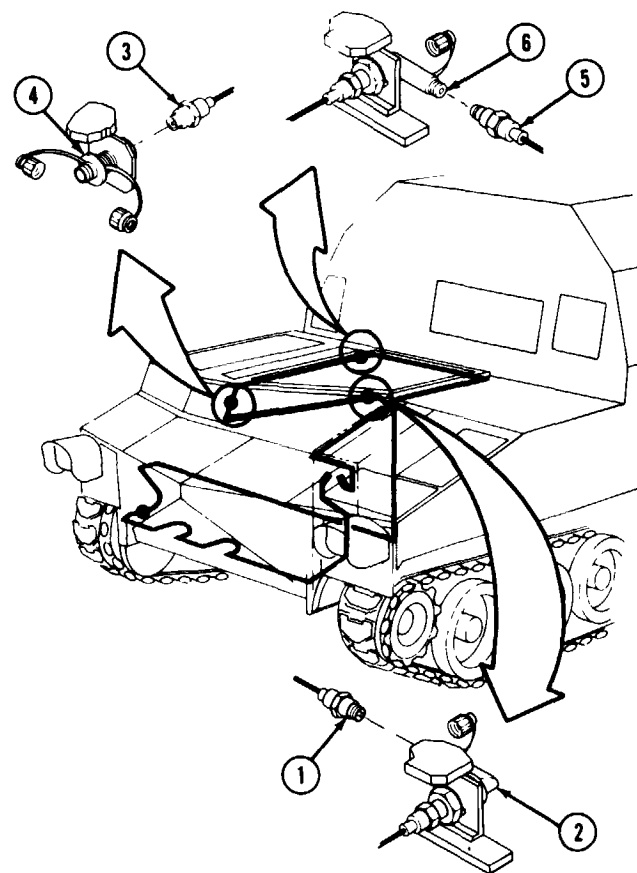
### RECONNECT

#### CAUTION

Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74. Appx D).

- A Remove cap from elbow coupling (6). Connect sensing element (5) to elbow coupling (6) and tighten.
- B Remove cap from straight coupling (4). Connect sensing element (3) to straight coupling (4) and tighten.

- C Remove cap from elbow coupling (2). Connect sensing element (1) in elbow coupling (2) and tighten. Remove locking pin (15) (p 14-28.1) from valve actuator guard of engine extinguisher cylinder bottle no. 2. Turn engine T/A panel Maintenance switch to horizontal position.



**ENGINE AFES CYLINDER BOTTLES: REMOVAL AND INSTALLATION (VEHICLES 1 THRU 344)**

**INITIAL SETUP**

Equipment Condition:

Engine AFES deactivated (p 14-14.3).

General Safety Instructions:

Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge.

## ENGINE AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE

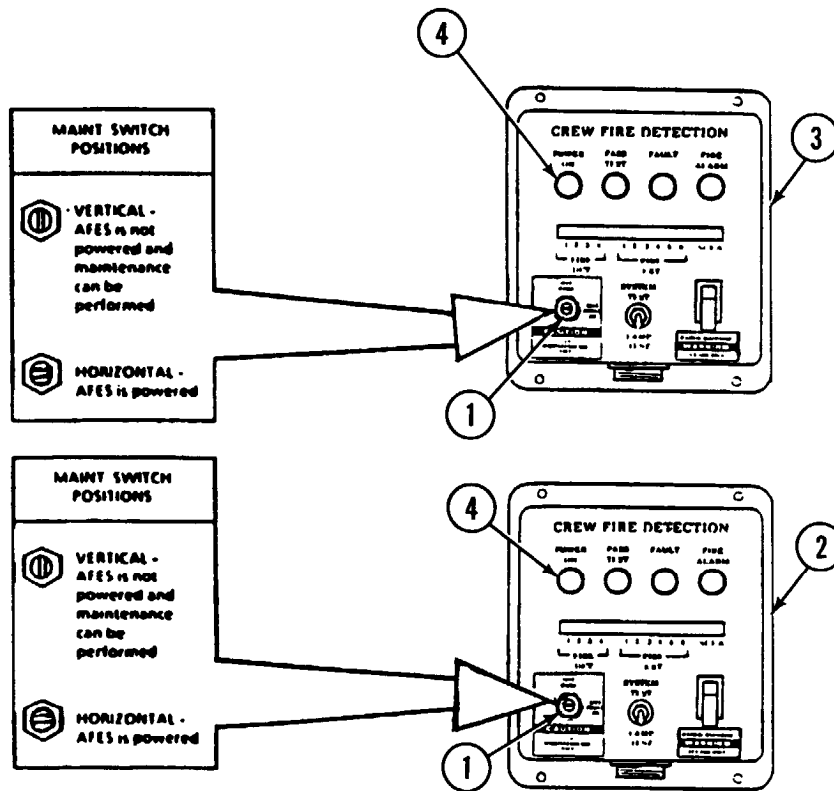
### INITIAL SETUP

#### Personnel Required:

Two

#### References:

TM 9-2350-267-10



#### General Safety Instructions:

Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be Careful when handling cylinder bottles to prevent accidental discharge.

#### DEACTIVATION

##### WARNING

AFES is designed to provide 2 to 4 hours of fire protection AFTER vehicle shutdown. Turning MASTER switch OFF does NOT deactivate AFES. Working on AFES when active may cause serious injury to personnel.

A Turn Maintenance switch (1) on engine T/A panel (2 or 3) to vertical position. Make sure all lights, including POWER ON light (4), go off.

B Move projectile racks to rear of vehicle (TM 9-2350-267-10).

**ENGINE AFES DEACTIVATION FOR SAFE MAINTENANCE (CONTINUED)**

C Ensure locking pin (5) in valve actuator (6) is installed in both engine cylinder bottles.

**REACTIVATION**

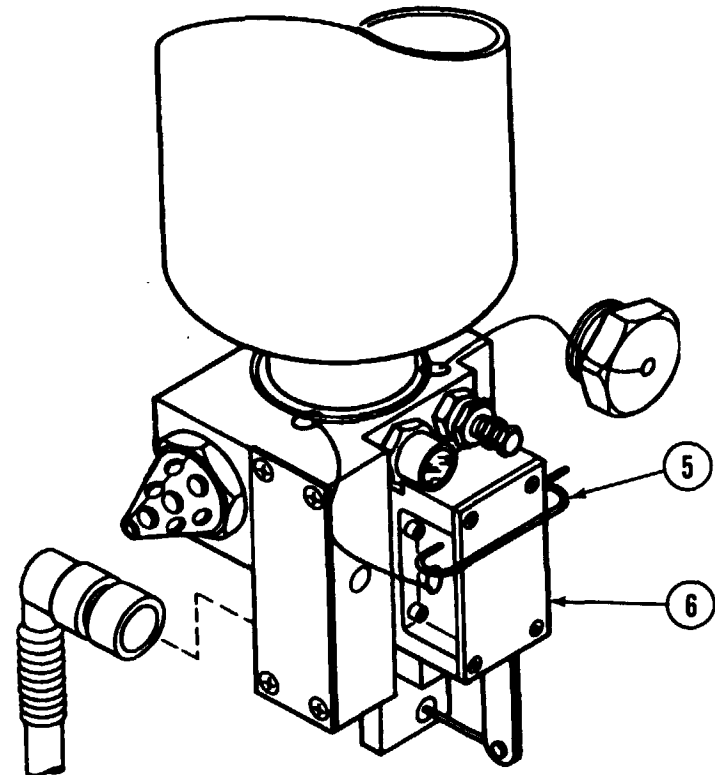
A Remove locking pin (5) from valve actuator (6) of engine cylinder bottle no. 2.

B Turn MASTER switch ON.

C Move MAINTenance switch to horizontal position. Verify successful BITE tests. (STEP F, p 14-57 for vehicles 1 thru 344 or step F, p 14-60.2 for vehicles 345 and shove.)

D Turn MASTER switch OFF.

E Move projectile recks to front of vehicle (TM 9-2350-267-10).



**FOR SIX FIRE  
EXTINGUISHERS  
INSIDE VEHICLE  
(FOUR CREW COMPARTMENT AFES  
AND TWO ENGINE AFES)**

## CREW AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE

### INITIAL SETUP

Test Equipment/Special Tools:

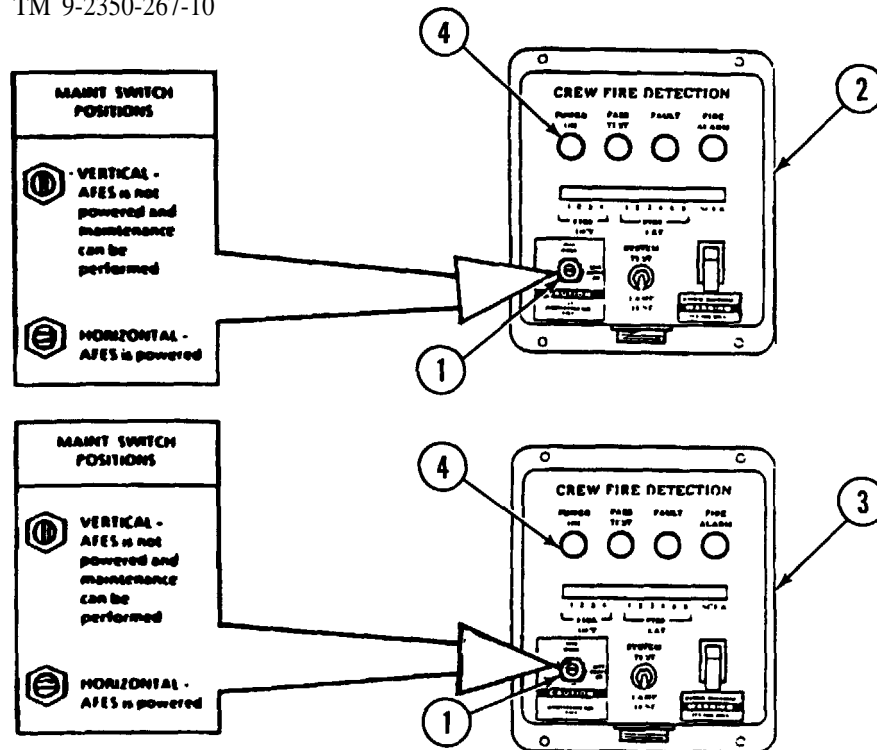
Wrench, open-end 1-1/8 in. (item 71, Appx B)

### Personnel Required:

Two

### References:

TM 9-2350-267-10



### General Safety Instructions:

Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge.

### DEACTIVATION

#### WARNING

AFES is designed to provide 2 to 4 hours of fire protection AFTER vehicle shutdown. Turning MASTER switch OFF does NOT deactivate AFES. Working on AFES when active may cause serious injury to personnel.

- Turn Maintenance switch (1) on engine T/A panel (2 or 3) to vertical position. Make sure all lights, including POWER ON light (4), go off.
- Move projectile racks to rear of vehicle (TM 9-2350-267-10).

**CREW AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE (CONTINUED)**

- C Ensure locking pin (5) is installed in valve actuator (6) on four crew compartment cylinder bottles in vehicles 1 thru 344 or on four crew compartment cylinder bottles and two fire extinguishers (located in rear fire extinguish box assembly) in vehicles 345 and above.
- D Loosen nut (7) and unscrew dispersion nozzle (8) from four crew compartment cylinder bottles in vehicles 1 thru 344 or from four crew cylinder bottles and two rear cylinder bottle extenders (12) in vehicles 345 and above.
- E Remove four anti-recoil plugs (9) from bulkhead in vehicles 1 thru 344 or four from bulkhead and two from rear extinguisher box assembly in vehicles 345 and above.

**CAUTION**

Install anti-recoil plugs on each cylinder bottle immediately after removing each nozzle.

- F Install and tighten four anti-recoil plugs (9) on four crew compartment cylinder bottles in vehicles 1 thru 344 or on four crew compartment cylinder bottles and two rear cylinder bottle extenders (12) in vehicles 345 and above.

**REACTIVATION**

- A Remove anti-recoil plugs (9) from four crew compartment cylinder bottles in vehicles 1 thru 344 or from four crew compartment cylinder bottles and two rear cylinder bottle extenders (12) in vehicles 345 and above.

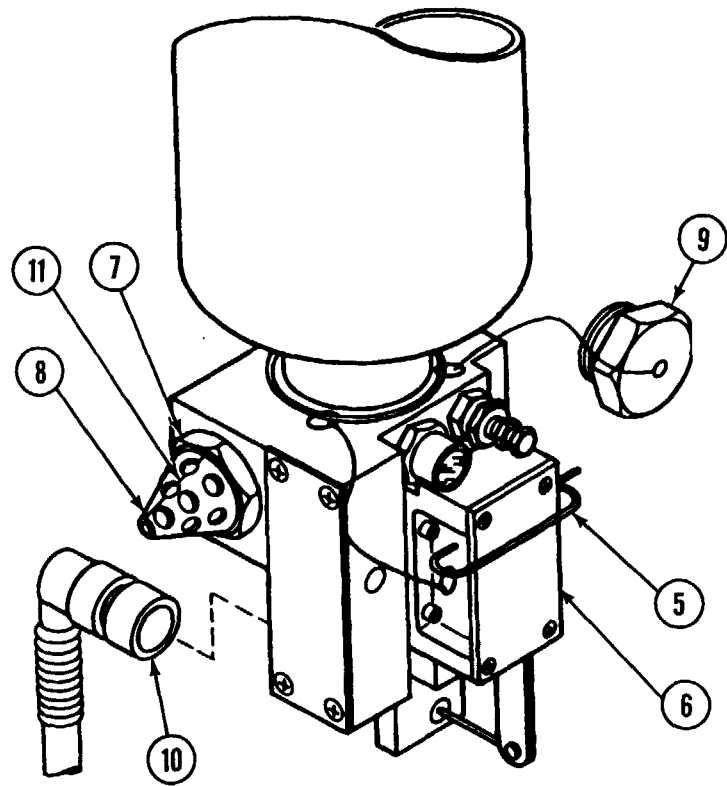
- B Replace and tighten anti-recoil plugs in holding fixtures located next to four cm-w cylinder bottles on vehicles 1 thru 344 or next to four crew cylinder bottles and two rear cylinder bottles on vehicles 345 and above.
- C Fully screw nut (7) onto nozzle (8). Back off nut (7) no more than one turn. Never fully remove nut from nozzle.

**CAUTION**

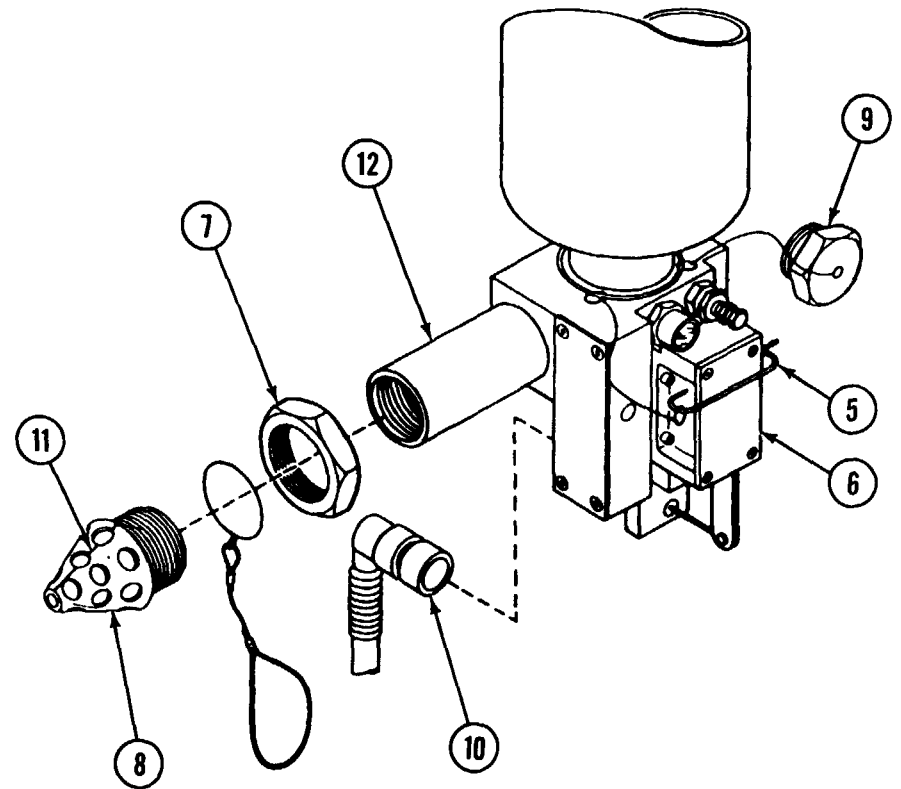
Install nozzles on each cylinder bottle immediately after removing each anti-recoil plug.

- D Install and tighten nozzle (8) on four crew compartment cylinder bottles in vehicles 1 thru 344 or four crew compartment cylinder bottles and two rear cylinder bottle extenders (12) in vehicles 345 and above. Back off nozzle (8) (no more than one turn) until engraved line (11) is in up (vertical) **position.**
- E Tighten nut (7).
- F Remove locking pin (5) from valve actuators (6) of crew extinguisher no. 3 and no. 4. Do not remove any other locking pins.
- G Turn MASTER switch ON.
- H Move Maintenance switch to horizontal position. Verify successful BITE test (step F, p 14-57 for vehicles 1 thru 344 and step F, p. 14-60.2 for vehicles 345 and above).
- I Move projectile racks to front of vehicle (TM 9-2350-267-10).

CREW AFES DEACTIVATION/REACTIVATION FOR SAFE MAINTENANCE (CONTINUED)



FOR SIX FIRE  
EXTINGUISHERS  
INSIDE VEHICLE  
(FOUR CREW COMPARTMENT AFES  
AND TWO ENGINE AFES)

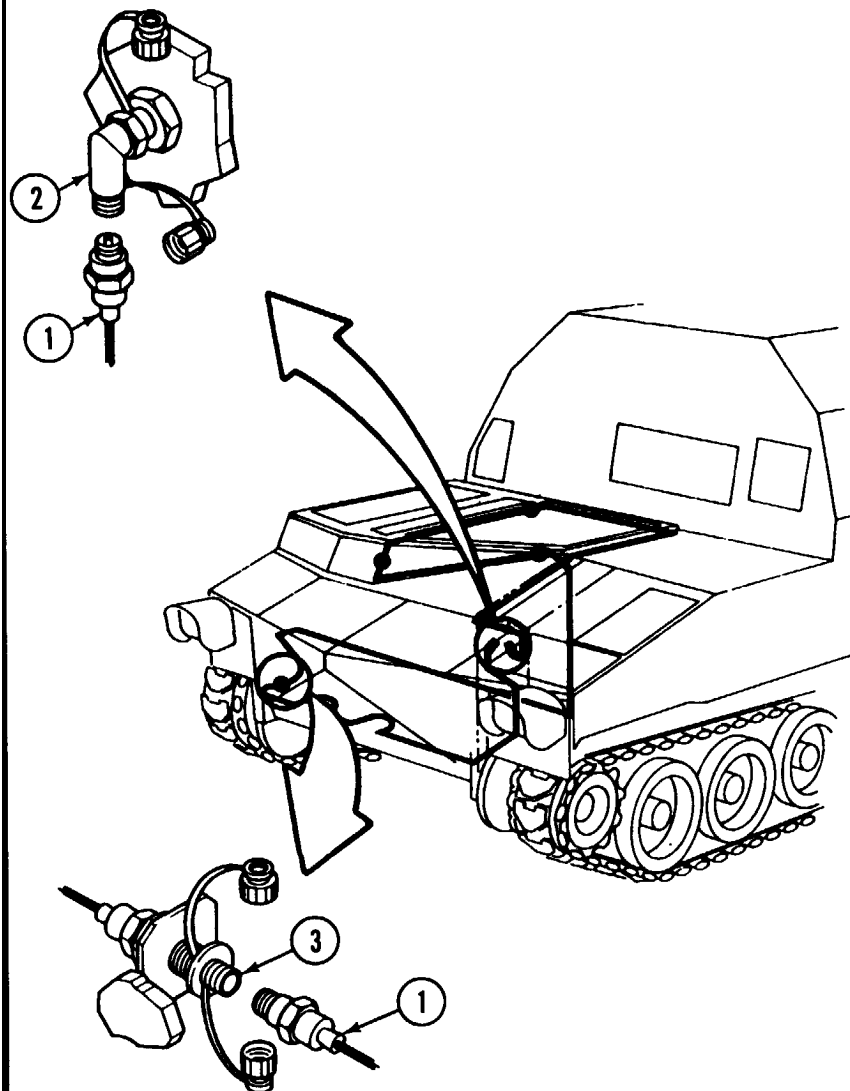


FOR TWO REAR  
BOX CREW  
FIRE EXTINGUISHERS  
(FOUND ONLY ON VEHICLES 345  
AND ABOVE)





## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION



### WARNING

Turn engine T/A panel MAINTenance switch to vertical position. Make sure locking pin is intalled in valve acuator of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator of engine extinguisher cylinder bottle no. 2.

### REMOVAL

### CAUTION

Failure to disconnect thermal wire before removing powerpack may cause equipment damage.

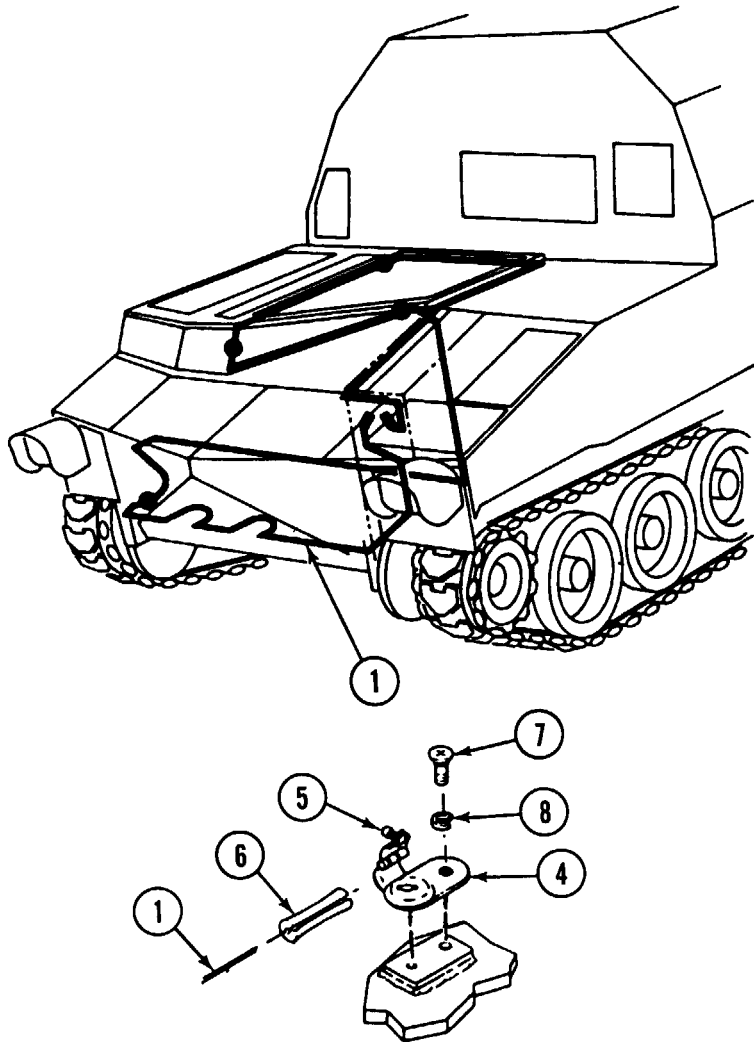
- A Remove powerpack (p 3-1).
- B Remove master relay (p 6-45).

### NOTE

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in same location, using same routing.

- C Disconnect connector of sensing element (1) from bulkhead elbow coupling (2). Cap elbow coupling.
- D Disconnect connector of sensing element (1) from straight coupling (3). Cap straight coupling.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION



- E To remove sensing element (1) from 24 mounting and clip assemblies (4), release quarter-turn fasteners (5) and open clip assembly. Remove sensing element (1) with attached rubber bushings (6).
- F To remove 24 mounting and clip assemblies (4), remove from each: one screw (7) and one lockwasher (8). Discard lockwashers.

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation, do not damage sensing element by crushing or too much bending (allowable radius - 6 inches minimum). Ensure 1/2 inch to 3/4 inch clearance between sensing element and personnel heater exhaust tube.

- A Install 24 rubber bushings (6) spacing equally along length of sensing element (1).
- B If removal install 24 mounting and clip assemblies (4) on 24 engine compartment clip assembly mounts, securing each one screw (7) and one new lockwasher (8).
- C Install sensing element. Shape sensing element (1) by hand to fit in engine compartment. Route sensing element correctly through front portion of engine compartment.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION

D After sensing element is installed move rubber bushings (6) on sensing element (1) so each will engage one mounting and clip assembly (4).

E Secure sensing element (1) in each mounting and clip assembly (4) by flipping clip over each rubber bushing (6) installed on sensing element(1). Secure clip using quarter-turn fastener (5).

### CAUTION

Before installation, clean connector fittings thoroughly with electrical contact cleaner (item 74, Appx D).

F **Remove cap from straight coupling. Join connector of sensing element (1) to straight coupling (3) and wrench tighten. Do not overtighten.**

G Remove cap from elbow coupling. Join connector of sensing element (1) to bulkhead elbow coupling (2) and wrench tighten. Do not overtighten.

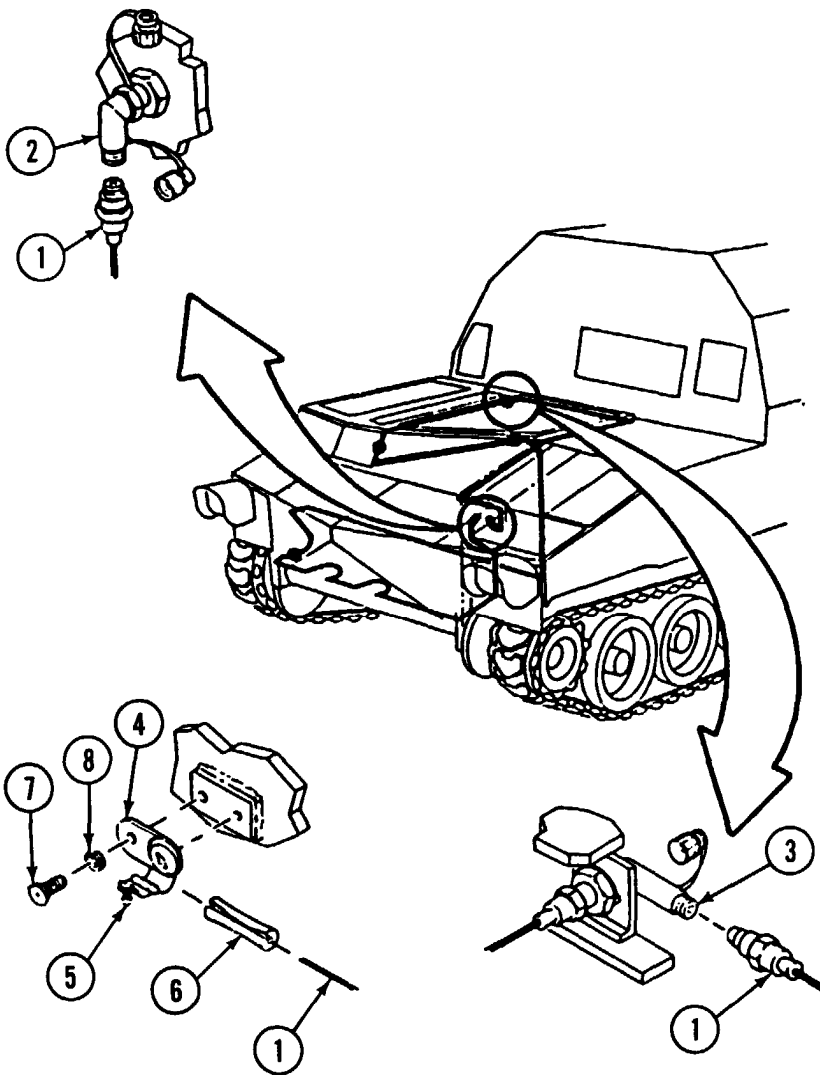
H Install master relay (p 6-45).

I Install powerpack (p 3-4).

### WARNING

Remove locking pin in valve actuator of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

**ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)**



**WARNING**

Turn engine T/A panel MAINTenance switch to vertical position. Make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator of engine extinguisher cylinder bottle no. 2.

**REMOVAL**

**NOTE**

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in same location using same routing.

- A Open forward battery compartment door and louvered engine access door.
- B Disconnect connector of sensing element (1) from bulkhead elbow coupling (2). Cap elbow coupling.
- C Disconnect connector of sensing element (1) from elbow coupling (3). Cap elbow coupling.
- D To remove sensing element (1) from 24 mounting and clip assemblies (4), release quarter-turn fasteners (5) and open clip assembly. Remove sensing element (1) with attached rubber bushings (6).
- E To remove 24 mounting and clip assemblies (4), remove from each one screw (7) and one lockwasher (8). Discard lockwashers.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation do not damage sensing element by crushing or too much bending (allowable radius -6 inches minimum). Ensure 1/2-inch to 3/4-inch clearance between sensing element and personnel heater exhaust tube.

- A Install 24 rubber bushings (6) spacing equally along length of sensing element (1).
- B If removed, install 24 mounting and clip assemblies (4) on 24 engine compartment clip assembly mounts, securing each with one screw (7) and one new lockwasher (8).
- C Install sensing element. Shape sensing element (1) by hand to fit in engine compartment. Route sensing element correctly through front portion of engine compartment.
- D After sensing element is installed, move rubber bushings (6) on sensing element (1) so each will engage one mounting and clip assembly (4).
- E Secure sensing element (1) in each mounting and clip assembly (4) by flipping clip over each rubber bushing (6) installed on sensing element(1). Secure clip using quarter-turn fastener.
- F Remove cap from elbow coupling. Join connector of sensing element (1) to elbow coupling (3) and wrench tighten. Do not overtighten.
- G Remove caption elbow coupling. Join connector of sensing element (1) to bulkhead elbow coupling (2) and wrench tighten. Do not overtighten.
- H Close battery and louvered engine access doors.

#### CAUTION

Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74, Appx D).

#### WARNING

Remove locking pin in valve actuator of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

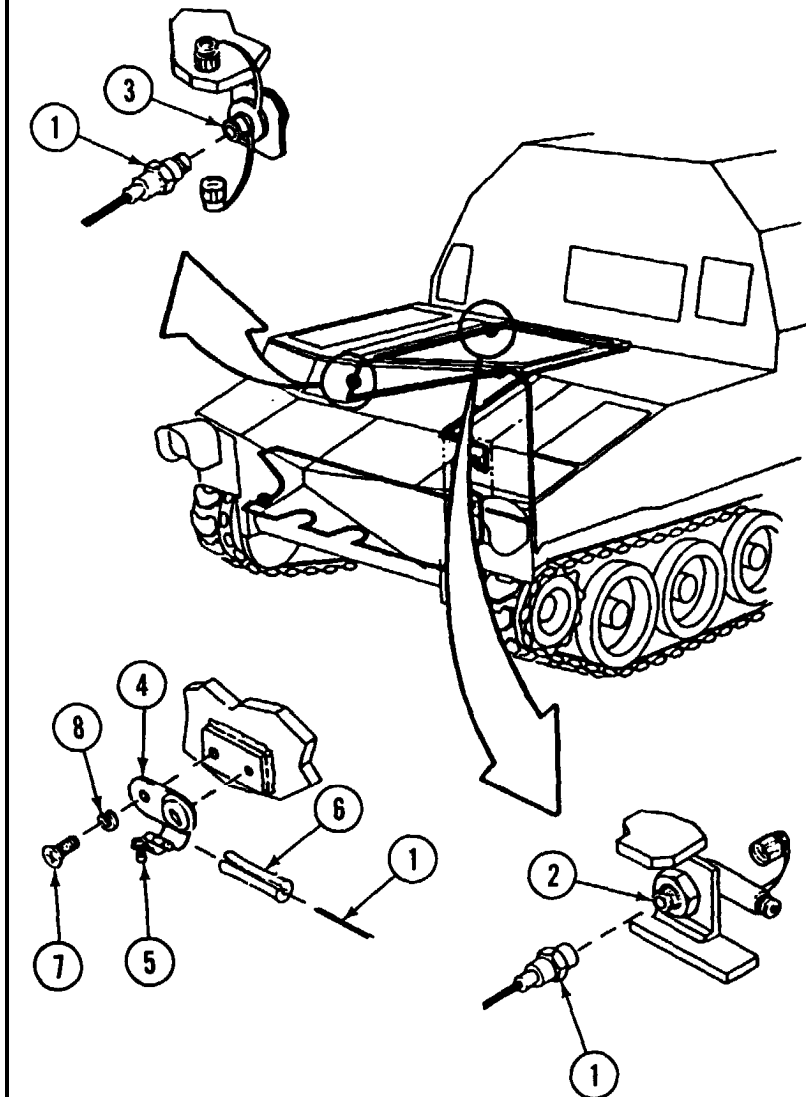
**WARNING**

Turn engine T/A panel MAINTenance switch to vertical position. Make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 and install locking pin in valve at or of engine extinguisher cylinder bottle no. 2.

**REMOVAL****NOTE**

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in the same location using same routing.

- A open louvered engine compartment access door.
- B Disconnect connector of sensing element (1) from elbow coupling (2). Cap elbow coupling.
- C Disconnect connector of sensing element (1) from straight coupling (3). cap straight coupling.
- D To remove sensing element (1) from eight mounting and clip assemblies (4), release quarter-turn fasteners (5) and open clip assembly. Remove sensing element (1) with attached rubber bushings (6).
- E To remove eight mounting and clip assemblies (4), remove from each: one screw (7) and one lockwasher (8). Discard lockwashers.



ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

**INSTALLATION**

**CAUTION**

When hand shaping sensing element for installation do not damage sensing element by crushing or too much bending (allowable radius - 6 inches minimum). Ensure 1/2-inch to 3/4-inch clearance between sensing element and personnel hearer exhaust tube.

- A Install eight rubber bushings (6) spacing equally along length of sensing element (1).
- B If removed, install eight mounting and clip assemblies (4) on eight engine compartment clip assembly mounts, securing each with one screw (7) and one new lockwasher (8).
- C Install sensing element. Hand shape sensing element (1) to fit in engine compartment. Route sensing element correctly through front portion of the engine compartment.
- D After sensing element is installed, move rubber bushings (6) on sensing element (1) so each will engage one mounting and clip assembly (4).

- E Secure sensing element (1) in each mounting and clip assembly (4) by flipping clip over each rubber bushing (6) installed on sensing element (1).

**CAUTION**

**Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74, Appx D).**

- Remove cap from straight coupling. Join connector of sensing element (1) to straight coupling (3) and wrench tighten. Do not overtighten.

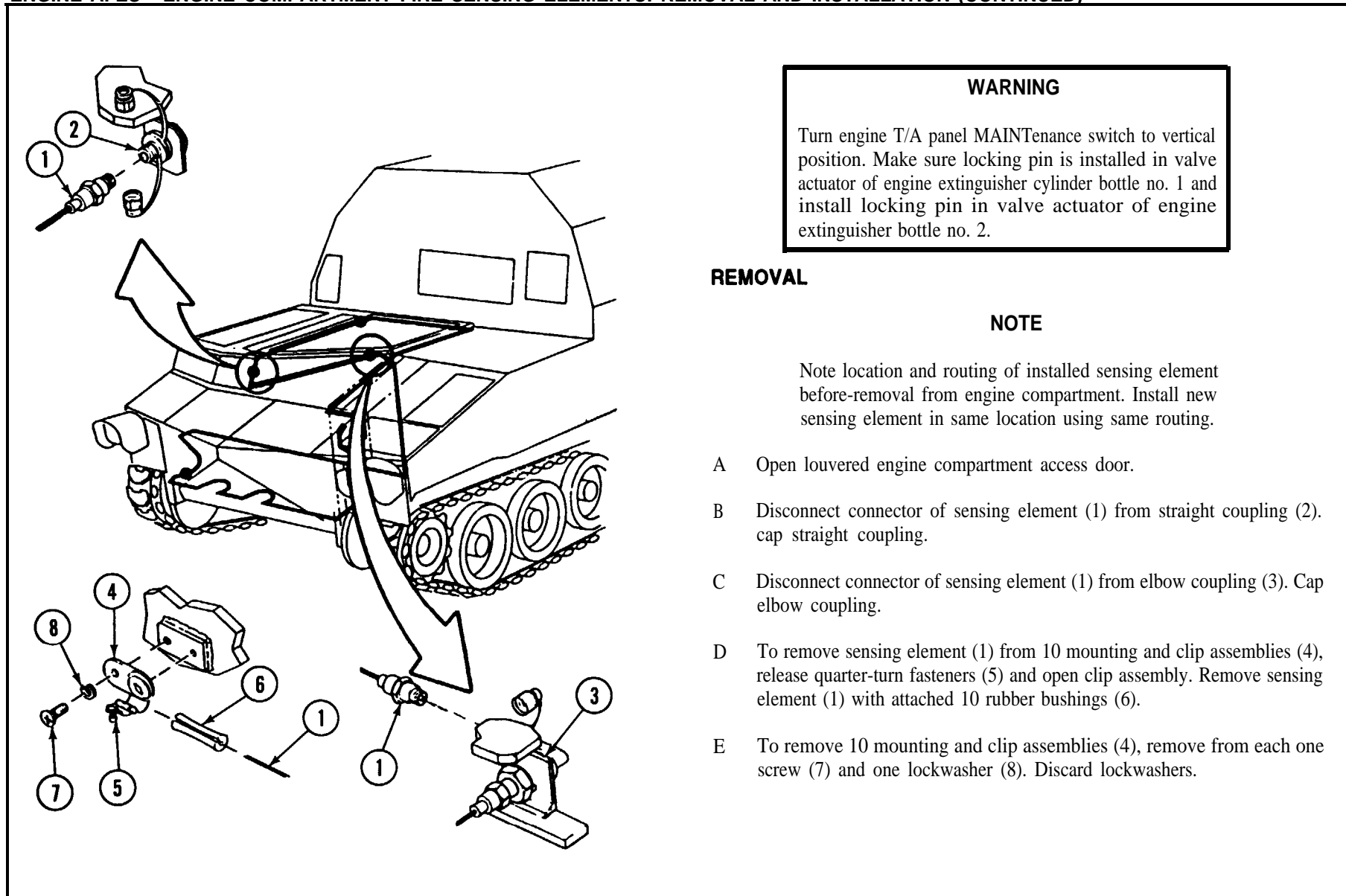
- G Remove cap from elbow coupling. Join connector of sensing element (1) to elbow coupling (2) and wrench tighten. Do not overtighten.

- H Close louvered engine access doors.

**WARNING**

Remove locking pin in valve actuator of engine extinguisher cylinder bottle no. 2. Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

**WARNING**

Turn engine T/A panel MAINTenance switch to vertical position. Make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator of engine extinguisher bottle no. 2.

**REMOVAL****NOTE**

Note location and routing of installed sensing element before-removal from engine compartment. Install new sensing element in same location using same routing.

- A Open louvered engine compartment access door.
- B Disconnect connector of sensing element (1) from straight coupling (2). Cap straight coupling.
- C Disconnect connector of sensing element (1) from elbow coupling (3). Cap elbow coupling.
- D To remove sensing element (1) from 10 mounting and clip assemblies (4), release quarter-turn fasteners (5) and open clip assembly. Remove sensing element (1) with attached 10 rubber bushings (6).
- E To remove 10 mounting and clip assemblies (4), remove from each one screw (7) and one lockwasher (8). Discard lockwashers.



## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation, do not damage sensing element by crushing or too much bending (allowable radius 6-inches minimum). Ensure 1/2-inch to 3/4-inch clearance between sensing element and personnel exhaust tube.

- A Install 10 rubber bushings (6) spacing equally along length of sensing element (1).
- B If removed, install 10 mounting and clip assemblies (4) on eight engine compartment clip assembly mounts. Secure each with one screw (7) and one new lockwasher (8).
- C Install sensing element. Hand shape sensing element (1) to fit in engine compartment. Route sensing element correctly through front portion of engine compartment.
- D After sensing element is installed, move rubber bushings (6) on sensing element (1) so each will engage one mounting and clip assembly (4).
- E Secure sensing element (1) in each mounting and clip assembly (4) by flipping clip over each rubber bushing (6) installed on sensing element. Secure clip using quarter-turn fastener (5).

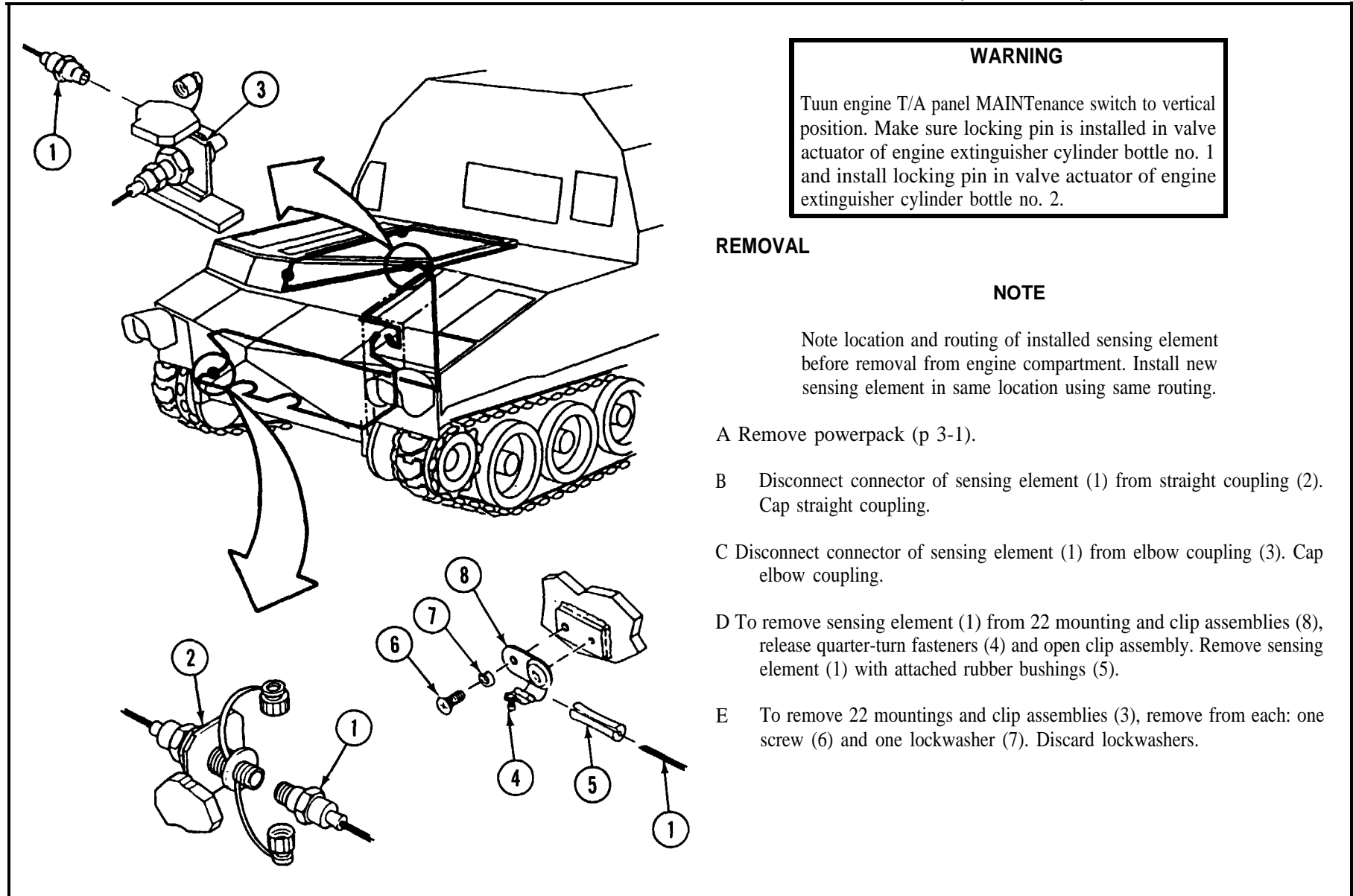
#### CAUTION

Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74, Appx D).

- F Remove cap from elbow coupling. Join connector of sensing element (1) to elbow coupling (3) and wrench tighten. Do not overtighten.
- G Remove cap from straight coupling. Join connector of sensing element (1) to straight coupling (2) and wrench tighten. Do not overtighten.
- H Close louvered engine access door.

#### WARNING

Remove locking pin in valve actuator of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

**ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)****WARNING**

Turn engine T/A panel MAINTenance switch to vertical position. Make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator of engine extinguisher cylinder bottle no. 2.

**REMOVAL****NOTE**

Note location and routing of installed sensing element before removal from engine compartment. Install new sensing element in same location using same routing.

- A Remove powerpack (p 3-1).
- B Disconnect connector of sensing element (1) from straight coupling (2). Cap straight coupling.
- C Disconnect connector of sensing element (1) from elbow coupling (3). Cap elbow coupling.
- D To remove sensing element (1) from 22 mounting and clip assemblies (8), release quarter-turn fasteners (4) and open clip assembly. Remove sensing element (1) with attached rubber bushings (5).
- E To remove 22 mountings and clip assemblies (3), remove from each: one screw (6) and one lockwasher (7). Discard lockwashers.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

#### CAUTION

When hand shaping sensing element for installation do not damage sensing element by crushing or too much bending (allowable radius 6-inches minimum). Ensure 1/2 inch to 3/4-inch clearance between sensing element and personnel heater exhaust tube.

- A Install 22 rubber bushings (6) spacing equally along length of sensing element (1).
- B Install sensing element. Hand shape sensing element (1) to fit in engine compartment. Route sensing element correctly through front portion of engine compartment.
- C After sensing element is installed move rubber bushings (6) on sensing element (1) so each will engage one mounting and loop clamp (4).
- D After sensing element is installed, move rubber bushings (5) on sensing element (1) so each will engage one mounting and clip assembly (3).
- E Secure sensing element (1) in each mounting and clip assembly (3) by flipping clip over each rubber bushing (5) installed on sensing element(1). Secure clip using quarter-turn fastener (4).

#### CAUTION

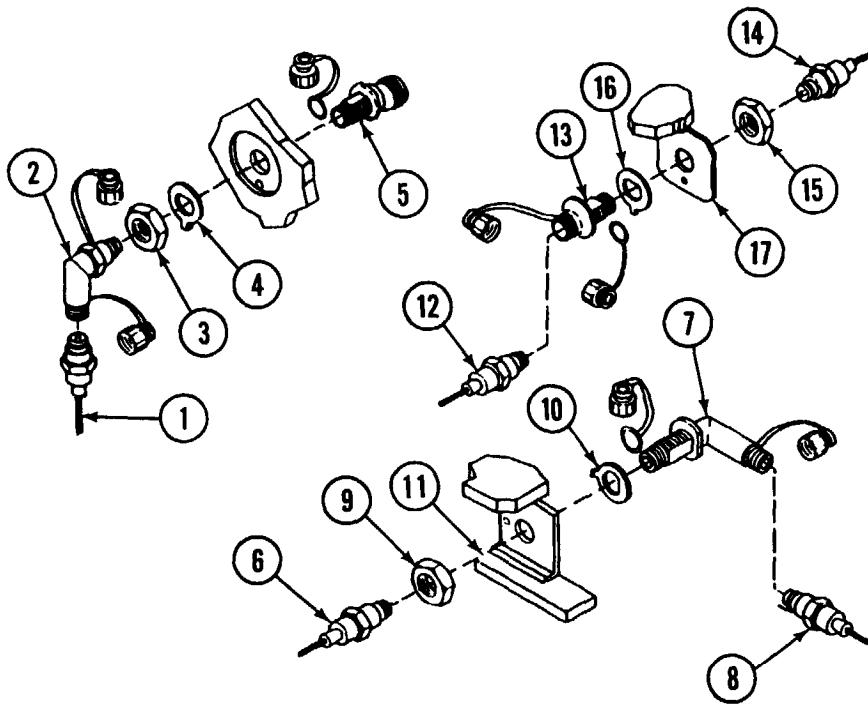
Before installation, clean connector fittings thoroughly with an electrical contact cleaner (item 74, Appx D).

- F Remove cap from straight coupling. Join connector of sensing element (1) to straight coupling (2) and wrench tighten. Do not overtighten.
- G Remove cap from elbow coupling. Join connector of sensing element (1) to elbow coupling (3) and wrench tighten. Do not overtighten.
- H **Install powerpack (p 3-1).**

#### WARNING

Remove locking pin in valve actuator of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

## ENGINE AFES - ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)



## REMOVAL

**WARNING**

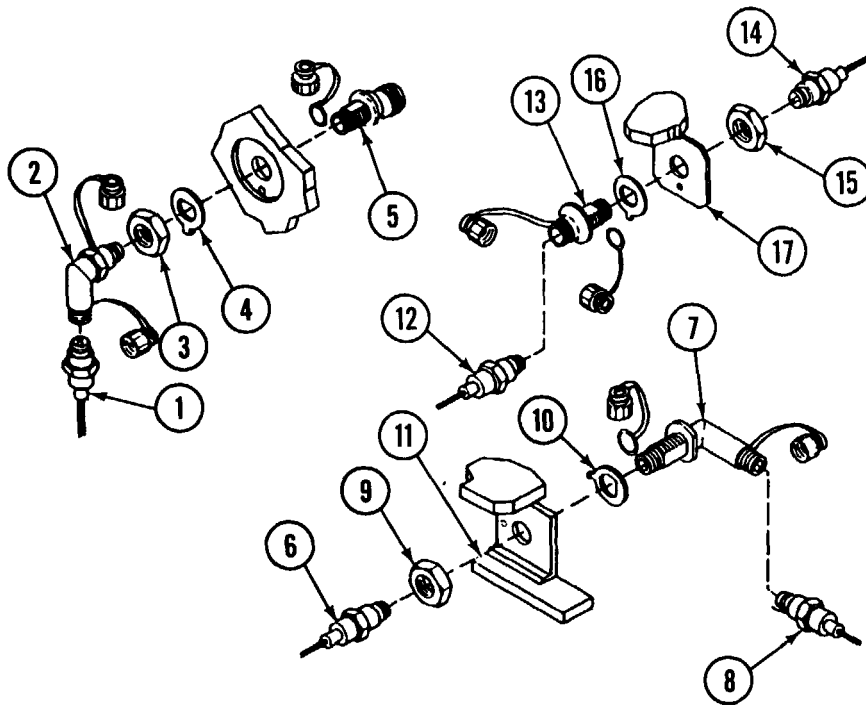
Turn engine T/A panel MAINTenance switch to vertical position. Make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator of engine extinguisher cylinder bottle no. 2.

**NOTE**

When removing bulkhead couplings, remove master relay (p 6-45) to gain access to coupling

- A Disconnect sensing element (1) from elbow coupling (2). Pull sensing element away from elbow coupling (p 14-15 or 14-18).
- B Loosen locknut (3). Remove elbow coupling (2) and flat washer (4) from adapter (5) at bulkhead. Cap both ends of elbow coupling (2).
- C Disconnect sensing element (6). Pull sensing element away from elbow coupling (7) (p 14-15, 14-20 or 14-22).
- D Disconnect sensing element (8). Pull sensing element away from elbow coupling (7) (p 14-18, 14-20 or 14-24).
- E Remove hex nut (9) and remove washer (10). Pull elbow coupling(7) from bracket (11). Cap both ends of elbow coupling (7).
- F Disconnect sensing element (12) from straight coupling (13) and pull sensing element (12) away from straight coupling.
- G Disconnect sensing element (14) from straight coupling (13) and pull sensing element (14) away from straight coupling.
- H Remove locknut (15) and washer (16) from straight coupling (13). Pull straight coupling (13) from bracket (17). Cap both ends of straight coupling (13).

## ENGINE AFES-ENGINE COMPARTMENT FIRE SENSING ELEMENTS: REMOVAL AND INSTALLATION (CONTINUED)



- D Remove caps from elbow coupling (7). Install elbow coupling onto bracket (11) using hex nut (9) and washer (10).
- E Join sensing element (8) to elbow coupling (7) and tighten (p 14-18, 14-20 or 14-24).
- F Join sensing element (6) to elbow coupling (7) and tighten (p 14-15, 14-20 or 14-22).
- G Remove caps from elbow coupling (2). Install elbow coupling (2) onto bulkhead adapter (5) using locknut (3) and flat washer (4).
- H Join sensing element (1) to elbow coupling (2) and tighten (p 14-15 or 14-18).

### WARNING

Remove locking pin from valve actuator of engine extinguisher cylinder bottle no. 2 (p 14-28). Turn engine T/A panel MAINTenance switch to horizontal position. Turn MASTER switch ON to activate engine AFES.

### INSTALLATION

#### CAUTION

Before installation, clean connector fittings thoroughly with electrical contact cleaner (item 74, Appx D).

- A Remove caps from straight coupling (13). Install straight coupling onto bracket (17) using knockout (15) and washer (16).
- B Join sensing element (14) to straight coupling (13) and tighten.
- C Join sensing element (12) to straight coupling (13) and tighten.

**ENGINE AFES SENSING ELEMENT DISCONNECT POINTS FOR ENGINE DECK REMOVAL: DISCONNECT AND RECONNECT****DISCONNECT****WARNING**

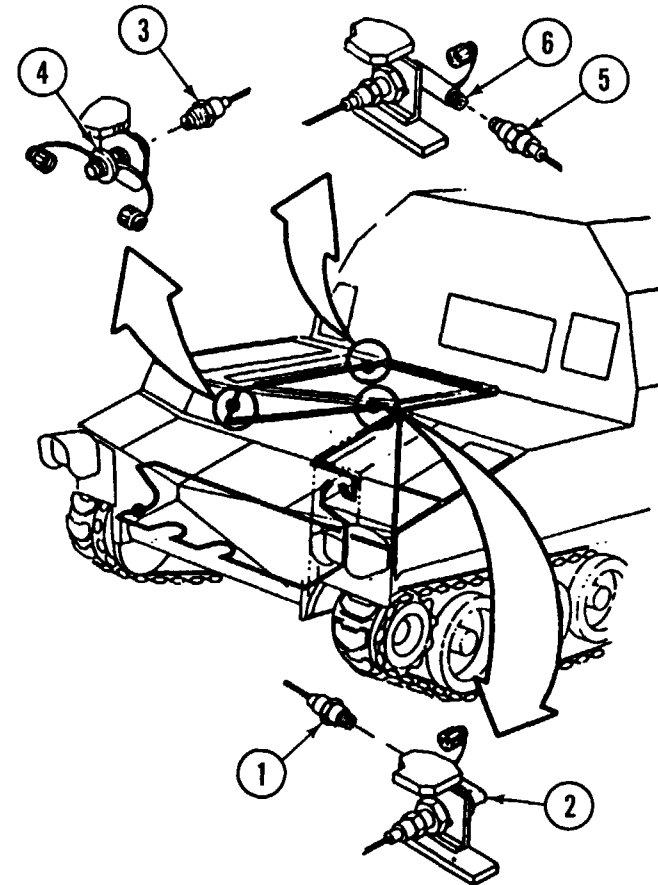
Turn engine T/A panel MAINTtmance switch to vertical position. Make sure locking pm is installed in valve actuator of engine extinguisher cylinder bottle no. 1 and install locking pin m valve actuator of engine extinguished cylinder bottle no. 2.

- A Disconnect sensing element (1) from elbow coupling (2). Pull sensing element away from elbow coupling. Cap elbow coupling (2).
- B Disconnect sensing element (3) from straight coupling (4). Full sensing element away from straight coupling. Cap straight coupling (4).
- C Disconnect sensing element (5) from elbow coupling (6). Pull sensing element away from elbow coupling. Cap elbow coupling (6).

**RECONNECT****CAUTION**

Before installation, clean connect or fittings thoroughly with electrical contact cleaner (item 74, Appx D).

- A Remove cap from elbow coupling (6). Connect sensing element (5) to elbow coupling (6) and tighten.
- B Remove cap from straight coupling (4). Connect sensing element (3) to straight coupling (4) and tighten.
- C Remove cap from elbow coupling (2). Connect sensing element (1) in elbow coupling (2) and tighten. Remove locking pin (15) (p 14-28) from valve actuator of engine extinguisher cylinder bottle no. 2. Turn engine T/A panel Maintenance switch to horizontal position.



## ENGINE AFES CYLINDER BOTTLES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION

### Equipment Condition:

Engine AFES deactivated (p 14-14.3).

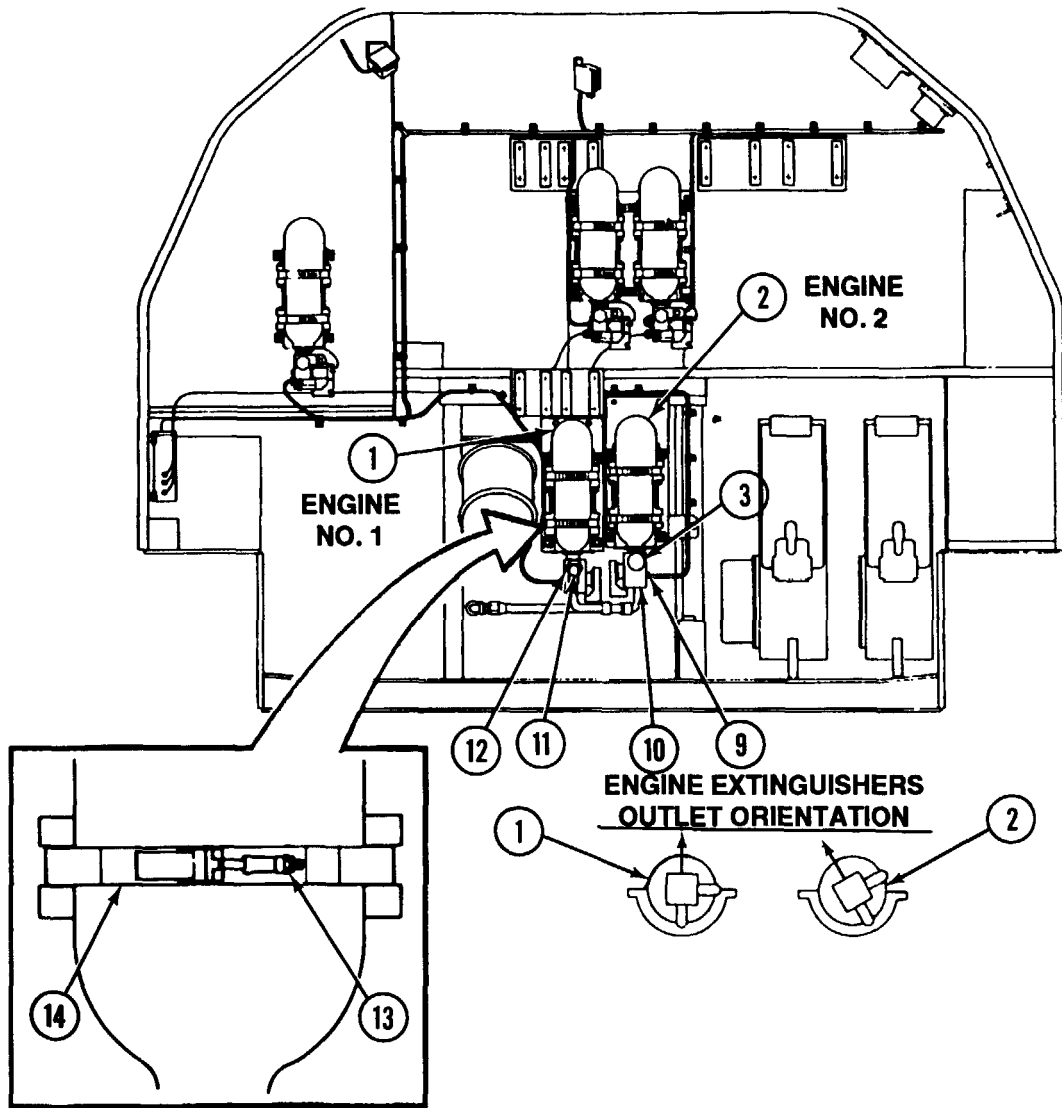
### General Safety Instructions:

#### **WARNING**

Any AFES in need of maintenance or repairs more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small particles or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

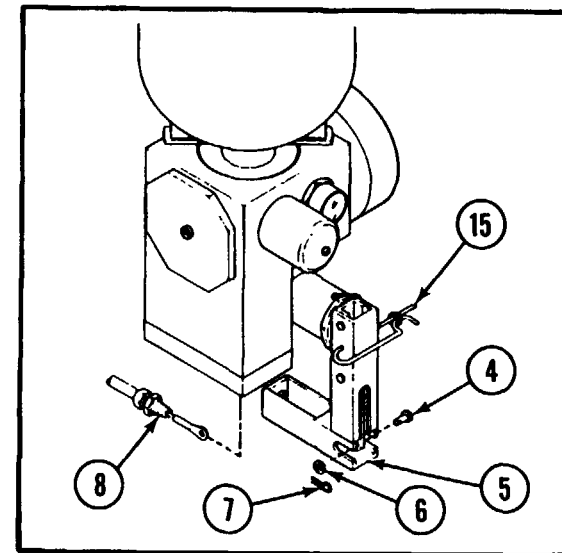
Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge.

**ENGINE AFES CYLINDER BOTTLES (VEHICLES 1 THRU 344: REMOVAL AND INSTALLATION (CONTINUED))**



**NOTE**

Engine AFES cylinder bottle no. 2 is activated by the AFES/MDS.





## ENGINE AFES CYLINDER BOTTLES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

- A Deactivate engine AFES (p 14-14.3).

#### WARNING

Install locking pin (15) in valve actuator of engine extinguisher cylinder bottle no. 2 and make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 before attempting to remove cylinder bottle assemblies.

- B Disconnect elbows (10 and 12) and plug adapters (3 and 11) from discharge ports of engine compartment cylinder bottle assemblies (1 and 2).
- C Install anti-recoil plugs (9) in discharge port of cylinder bottle assemblies (1 and 2).
- D Loosen cable at actuator assembly (p 14-52.20), then remove cotter pin (7), pin (4) and washer (6) to disconnect cable assembly (8) from manual valve actuator of engine cylinder bottle assembly no. 2 (2). Discard cotter pin.
- E Disconnect and remove cable assembly (8) from manual valve actuator (5) of cylinder bottle assembly no. 2 (2).
- F Loosen two hex nuts (13) and release strap (14) to remove each cylinder bottle assembly (1 and 2) from its bracket.
- G Disconnect electrical cable from bottle assembly.

### INSTALLATION

#### WARNING

Push up red valve flow indicator before installing extinguisher cylinder bottles in correct position. Failure to reset valve may discharge extinguisher and incorrect position may render extinguisher useless in putting out engine compartment fires, causing serious injury to personnel and equipment.

- A Install each cylinder bottle assembly (1 and 2) in its bracket and secure by tightening two hex nuts (13) on straps (14).
- B Install and connect cable assembly (8) to manual valve actuator (5) of engine cylinder bottle assembly no. 2 (2).
- C Connect cable assembly (8) to manual valve actuator of cylinder bottle assembly no. 2 (2) with washer (6), pin (4) and new cotter pin (7).
- D Readjust cable at actuator assembly (p 14-55).
- E Remove anti-recoil plugs (9) from discharge port of cylinder bottle assemblies (1 and 2).
- F Connect elbows (10 and 12) and plug adapters (3 and 11) to discharge ports of engine compartment cylinder bottle assemblies (1 and 2). Remove locking pin (15) from valve actuator of engine extinguisher cylinder bottle no. 2.
- G Reactivate engine AFES (p 14-14.5).



## CREW AFES CYLINDER BOTTLES: REMOVAL AND INSTALLATION (VEHICLES 1 THRU 344)

### INITIAL SETUP

#### Equipment Condition:

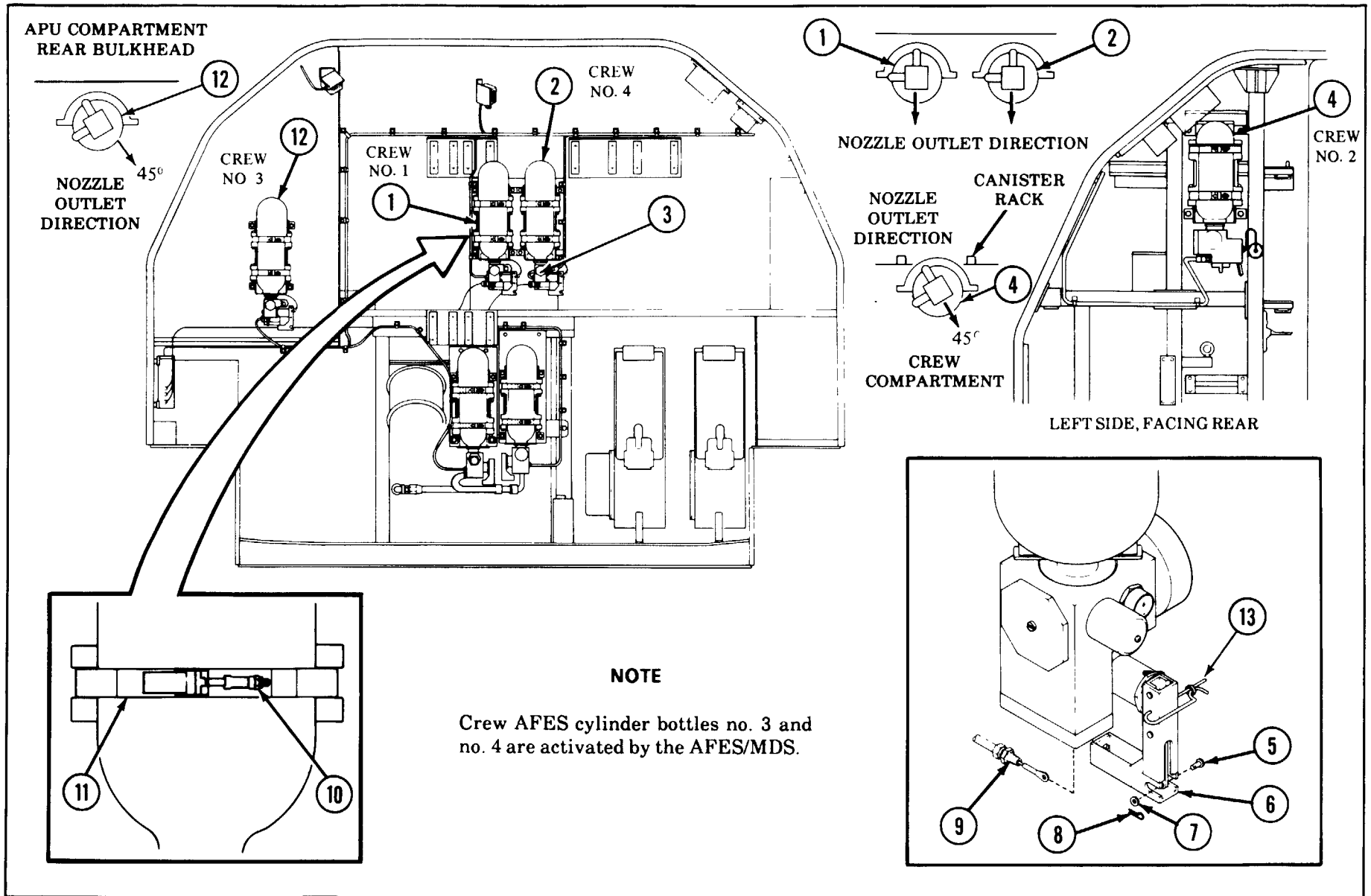
Crew AFES deactivated (p 14-14.7).

#### General Safety Instructions:

Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small parts or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge.

**CREW AFES CYLINDER BOTTLES: REMOVAL AND INSTALLATION (VEHICLES 1 THRU 344) (CONTINUED)**



## CREW AFES CYLINDER BOTTLES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

- A Deactivate crew AFES (p 14-14.5).

#### WARNING

Install locking pin (13) in valve actuators of crew extinguisher cylinder bottles no. 3 and no. 4 and make sure locking pins are installed in valve actuators of crew extinguisher cylinder bottles no. 1 and no. 2 before attempting to remove bottle assemblies.

- B Install anti-recoil plugs (3) in discharge port of cylinder bottle assemblies (1, 2, 4 and 12).
- C Loosen cable actuator assembly (p 14-52.20), then remove cotter pin (8), pin (5) and washer (7) to disconnect cable assembly (9) from manual valve actuators (6) of crew cylinder bottle assemblies no. 3 and no. 4 (2 and 12). Discard Cotter pin.
- D Disconnect and remove cable assembly (9) from manual valve actuators (6) of cylinder bottle assemblies no. 3 and no. 4 (2 and 12).
- E Loosen two nuts (10) and release straps (11) to remove each cylinder bottle assembly (1, 2, 4 and 12) from its bracket.
- F Disconnect electrical cable from cylinder bottle assembly.

### INSTALLATION

#### WARNING

Push up red valve flow indicator before installing extinguisher cylinder bottles in correct position. Failure to reset valve may discharge extinguisher and incorrect position may render extinguisher useless inputting out engine compartment from, causing serious injury to personnel and equipment.

- A Install each cylinder bottle assembly (1, 2, 4 and 12) in its bracket and secure by tightening two hex nuts (10) on straps (11).
- B Install and connect cable assembly (9) to manual valve actuators (6) of crew cylinder bottle assemblies no. 3 and no. 4 (2 and 12).
- C Connect cable assembly (9) to manual valve actuator of cylinder bottle assemblies no. 3 and no. 4 (2 and 12) with washer (7), pin (5) and new cotter pin (8).
- D Readjust cable at actuator assembly (p 14-55).
- E Remove anti-recoil plugs (3) from discharge port of cylinder bottle assemblies (1, 2, 4 and 12). Remove locking pin (13) from valve actuators of crew extinguisher cylinder bottles no. 3 and no. 4 (2 and 12).
- F Reactivate crew AFES (p 14-14.6).



## ENGINE AFES Cylinder BOTTLES (Vehicles 345 AND ABOVE): REMOVAL AND INSTALLATION

### INITIAL SETUP

#### Equipment Condition:

Engine AFES deactivated (p 14-14.3)

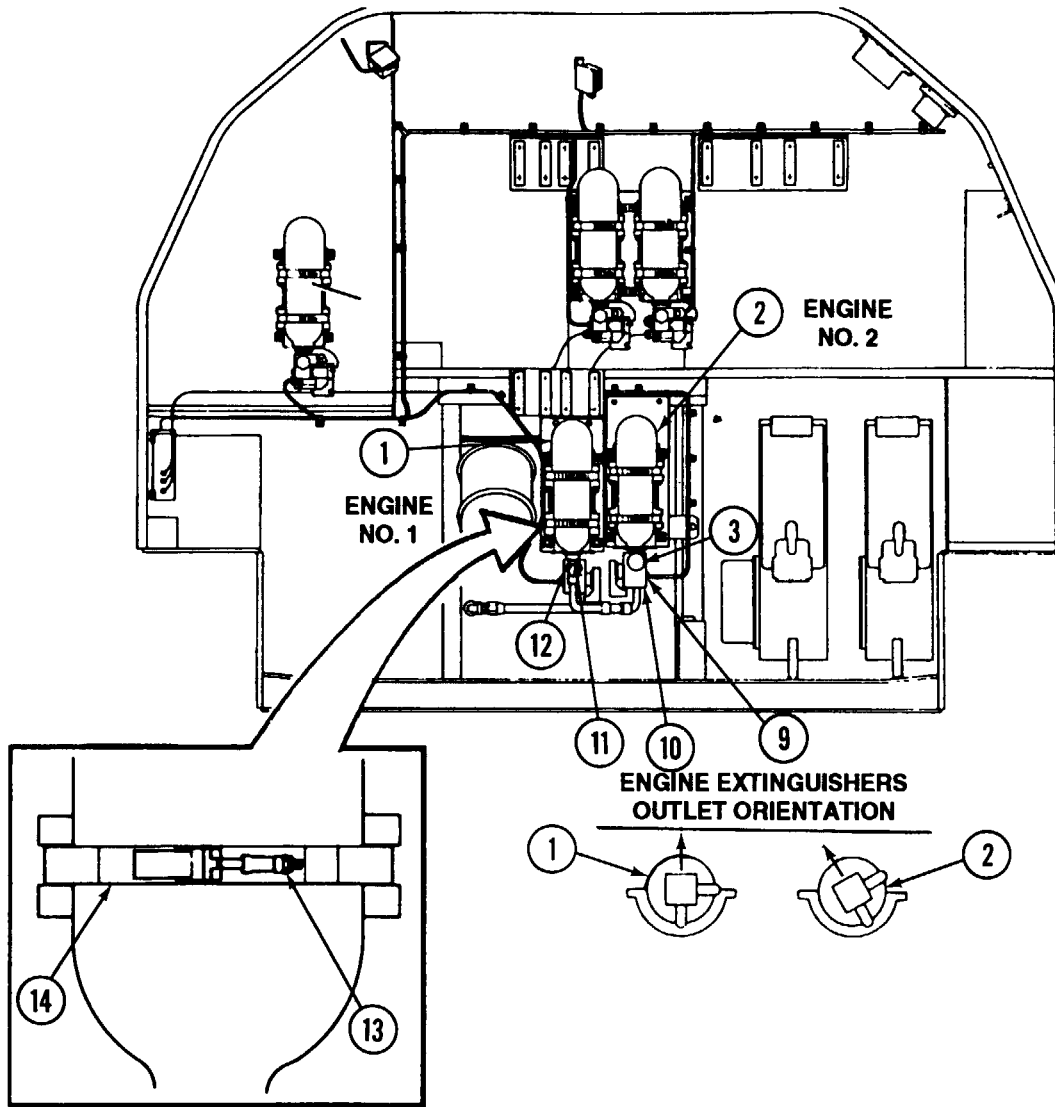
#### General Safety Instructions:

#### **WARNING**

Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small particles or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

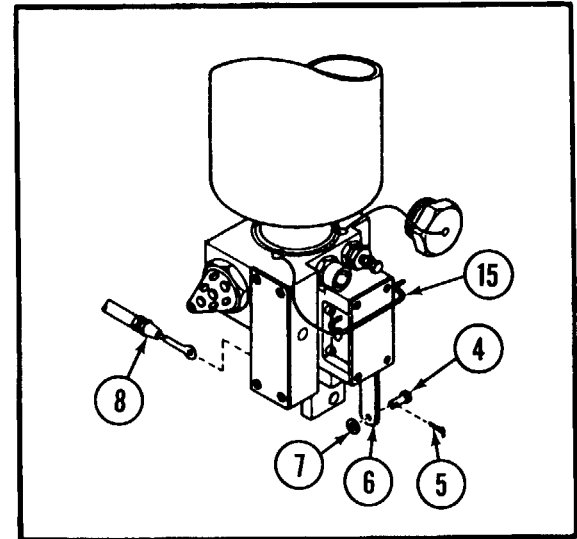
Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge.

**ENGINE AFES CYLINDER BOTTLES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**



**NOTE**

Engine AFES cylinder bottle no. 2 is activated by the AFES/MDS.





## ENGINE AFES CYLINDER BOTTLES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

A Deactivate engine AFES (p 14-14.3).

#### WARNING

Install locking pin (15) in valve actuator of engine extinguisher cylinder bottle no. 2 and make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 before attempting to remove cylinder bottle assemblies.

B Disconnect elbows (10 and 12) and plug adapters (3 and 11) from discharge ports of engine compartment cylinder bottles assemblies (1 and 2).

C Install anti-recoil plug (9) in discharge port of cylinder bottle assemblies (1 and 2).

D Loosen cable at actuator assembly (p 14-52.20) then remove cotter pin (5), pin (4) and washer (7) to disconnect cable assembly (8) from manual valve actuator of engine cylinder bottle assembly.

E Disconnect and remove cable assembly (8) from manual valve actuator (6) of cylinder bottle assembly no. 2. (2).

F Loosen two hex nuts (13) and release strap (14) to remove each cylinder bottle assembly (1 and 2) from its bracket.

### INSTALLATION

#### WARNING

Install extinguisher cylinder bottles in correct position. Failure to do so may render extinguisher useless in putting out engine compartment fires, causing serious injury to personnel and equipment.

A Install each cylinder bottle assembly (1 and 2) in its bracket and secure by tightening two hex nuts (13) on straps (14).

B Install and connect cable assembly (8) to manual valve actuator (6) of engine cylinder bottle assembly no. 2 (2).

C Connect cable assembly (8) to manual valve actuator of cylinder bottle assembly (2) with washer (7), pin (4) and new cotter pin (5).

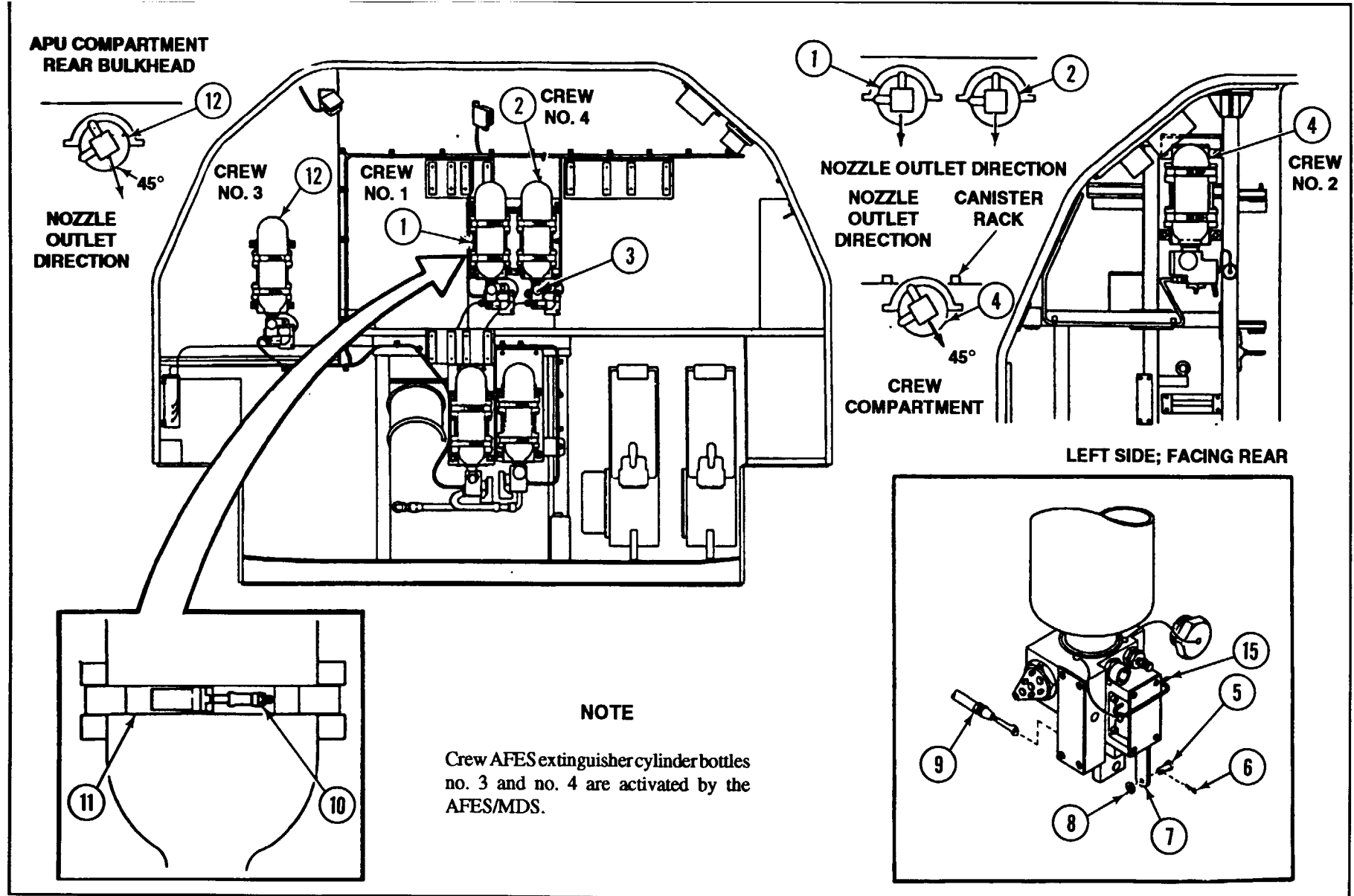
D Readjust cable at actuator assembly (p 14-55).

E Remove anti-recoil plug (9) from discharge port of cylinder bottle assemblies (1 and 2).

F Connect elbows (10 and 12) and plug adapters (3 and 11) to discharge ports of engine compartment cylinder bottle assemblies (1 and 2). Remove locking pin (15) from valve actuator of engine extinguisher cylinder bottle no. 2.

G Reactivate engine AFES (p 14-14.4).

**CREW AFES CYLINDER BOTTLES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION**



## CREW AFES CYLINDER BOTTLES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)

### INITIAL SETUP

#### Equipment Condition:

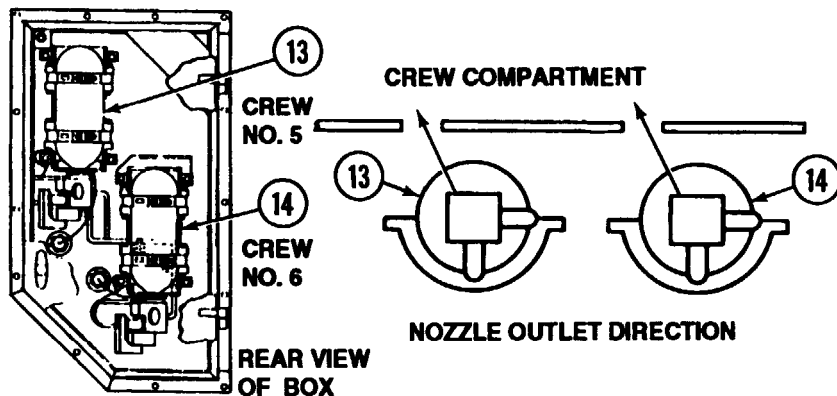
Crew AFES deactivated (p 14-14.5).

#### General Safety Instructions:

#### WARNING

Any AFES in need of maintenance or repair is more prone to accidental discharge. Accidental discharge could lead to frostbite or other injury. Small particles or tools become dangerous projectiles when propelled by Halon discharging at 750 psi.

Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles to prevent accidental discharge.



### REMOVAL

- A Deactivate crew AFES (p 14-14.5).

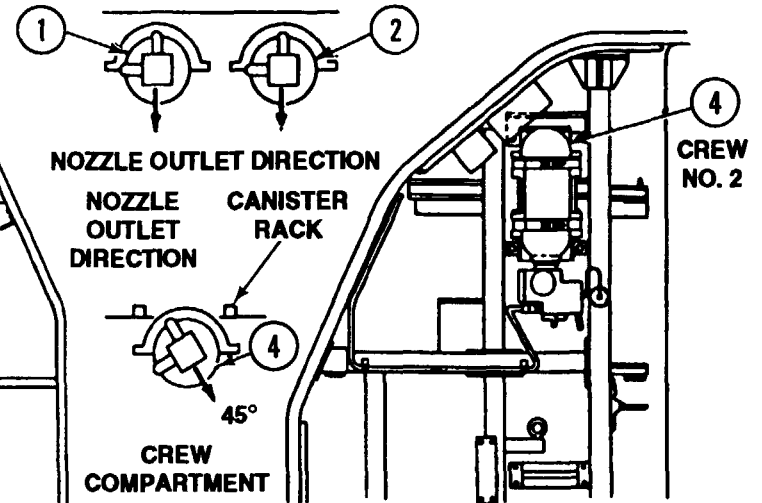
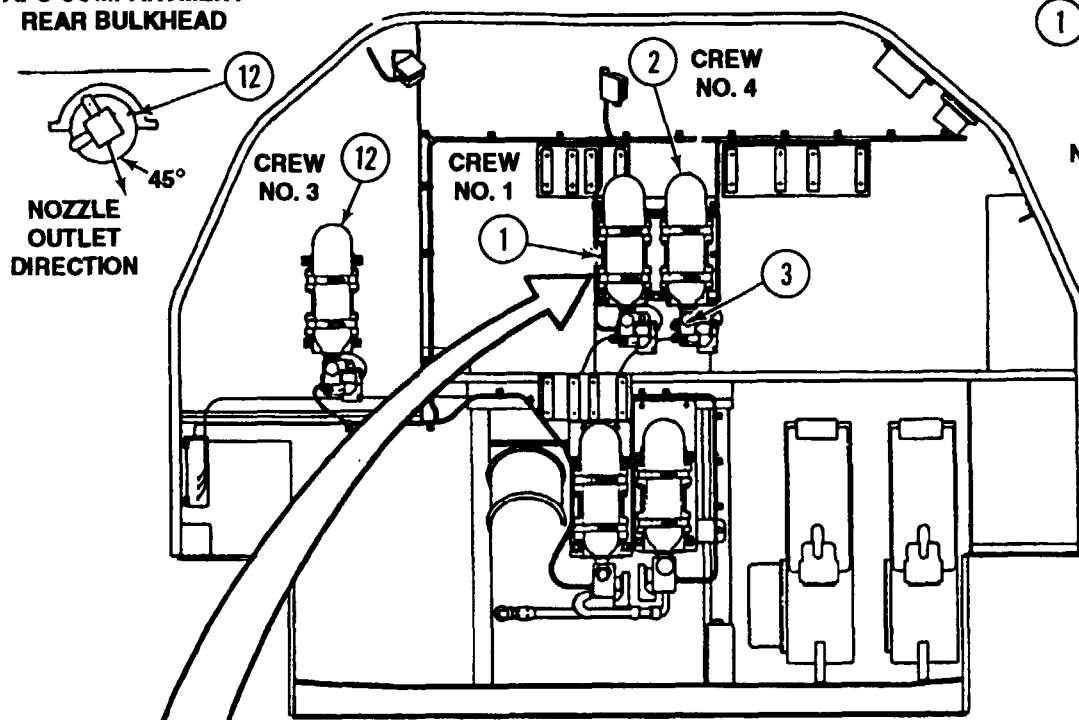
#### WARNING

Install locking pin (15) in valve actuator of engine extinguisher cylinder bottle no. 2 and make sure locking pin is installed in valve actuator of engine extinguisher cylinder no. 1 before attempting to remove cylinder bottle assemblies.

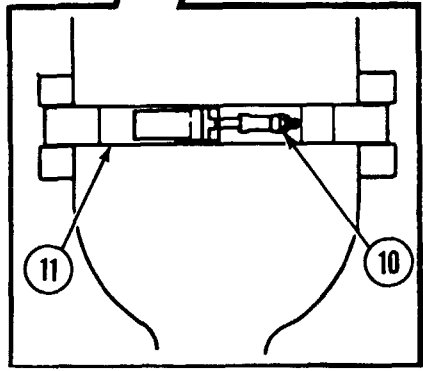
- B Install anti-recoil plugs (3) in discharge put of cylinder bottle assemblies (1, 2, 4, 12, 13 and 14).
- C Loosen cable at actuator assembly (p 14-52.20), then remove cotter pin (6), pm (5) and washer (8) to disconnect cable assemble (9) from manual valve actuator of cylinder bottle assemblies no. 3 and no. 4 (2 and 12). Discard cotter pin.
- D Disconnect and remove cable assembly (9) from manual valve actuators (7) of crew cylinder bottle assemblies no. 3 and no. 4 (2 and 12).
- E Loosen two hex nuts (10) and release strap (11) to remove each cylinder bottle assembly (1, 2, 4, 12, 13 and 14) from its bracket.
- F Remove nozzles from cylinder bottle assemblies no. 5 and no. 6 (13 and 14) extenders (12) (p 14-14.7) and replace with anti-recoil plugs (3).

CREW AFES CYLINDER BOTTLES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)

APU COMPARTMENT  
REAR BULKHEAD

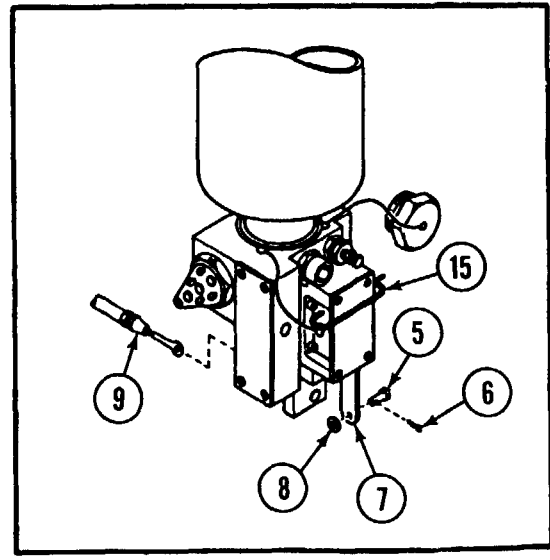


LEFT SIDE; FACING REAR



NOTE

Crew AFES extinguisher cylinder bottles no. 3 and no. 4 are activated by the AFES/MDS.



## CREW AFES CYLINDER BOTTLES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)

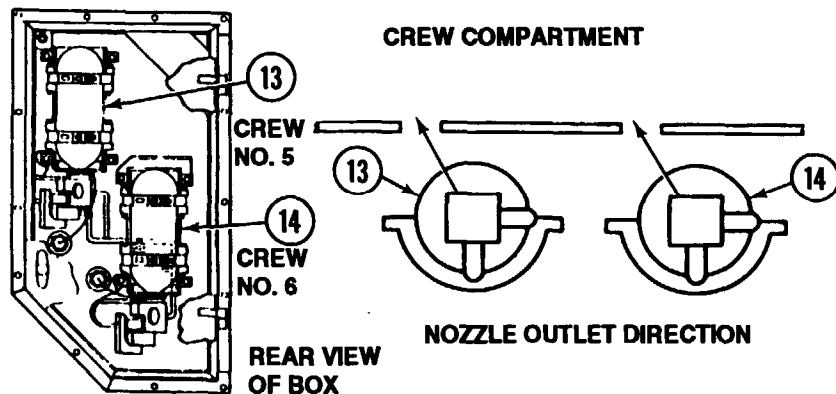
### INSTALLATION

#### WARNING

Push up red valve flow indicator before installing extinguisher cylinder bottles in correct position. Failure to reset valve may discharge extinguisher and incorrect position may render extinguisher useless in putting out engine compartment fires, causing serious injury to personnel and equipment.

#### NOTE

The two engine compartment cylinder bottles are larger than the crew compartment cylinder bottles.



A Install each cylinder bottle assembly (1, 2, 4, 12, 13 and 14) in its bracket and secure by tightening two hex nuts (10) on straps (11).

B Install and connect cable assembly (9) to manual valve actuators (7) of crew cylinder bottle assemblies no. 3 and no. 4 (2 and 12).

C Connect cable assembly (9) to manual valve actuator of cylinder bottle assemblies no. 3 and no. 4 (2 and 12) with washer (8), pin (5) and new cotter pin (6).

D Readjust cable at actuator assembly (p 14-55).

E Remove anti-recoil plug(3) from discharge port of cylinder bottle assemblies (1, 2, 4, 12, 13 and 14). Remove locking pin (15) from valve actuator of engine extinguisher cylinder bottle no. 2.

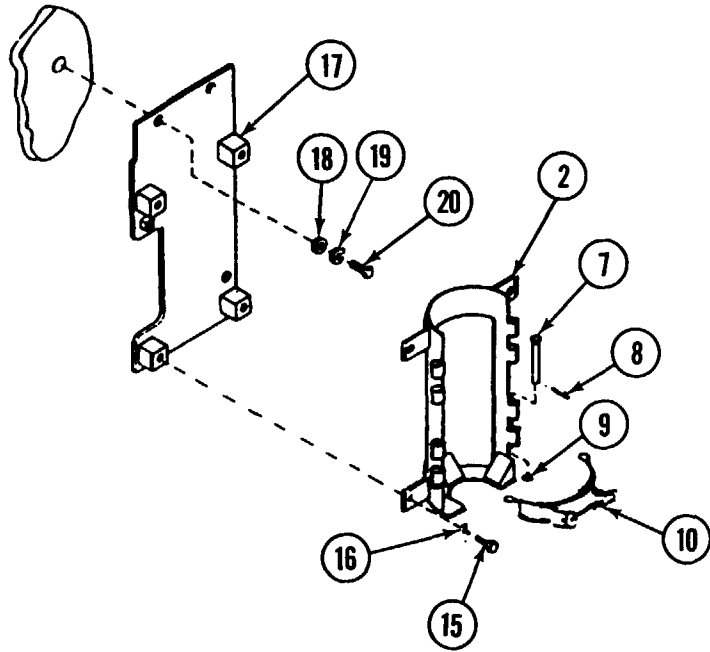
F Install extender (12) (p 14-14.7) in discharge port of cylinder bottles no. 5 and no. 6 (13 and 14).

#### WARNING

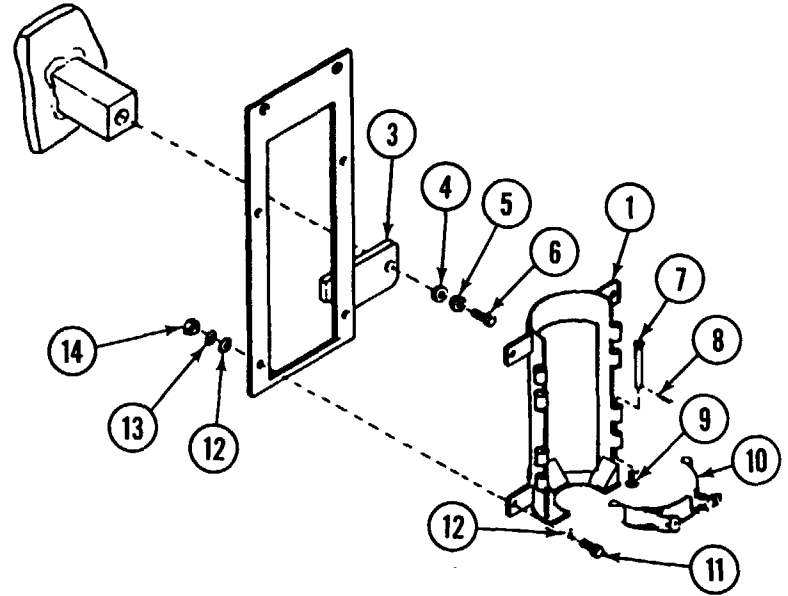
Remove locking pins (15) from valve actuators of crew extinguisher cylinder bottles no. 3 and no. 4 before reactivating crew AFES.

G Reactivate crew AFES (p 14-14.6).

ENGINE AFES CYLINDER BOTTLE BRACKET STRAPS, BRACKETS AND MOUNTS (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION



ENGINE NO. 1



ENGINE NO. 1

## ENGINE AFES TUBING AND NOZZLES: REMOVAL AND INSTALLATION (CONTINUED)

### WARNING

- Turn Maintenance switch on engine T/A panel to vertical position.
- To prevent injury from accidental discharge of cylinders, install locking pin in valve actuator of each cylinder. Also, install and hand tighten anti-recoil plug in each valve discharge port.
- Use caution when working near fire extinguisher nozzles. When nozzles discharge, frostbite may occur to personnel, and small objects may become projectiles causing **SERIOUS INJURY** or damage.
- Do not strike cylinder bottles with tools. Do not drop cylinder bottles. Be careful when handling cylinder bottles.

### CREW COMPARTMENT

#### NOTE

Tubing for engine AFES is located in both the engine and crew compartments. Nozzles are located only in the engine compartment.

### REMOVAL

#### NOTE

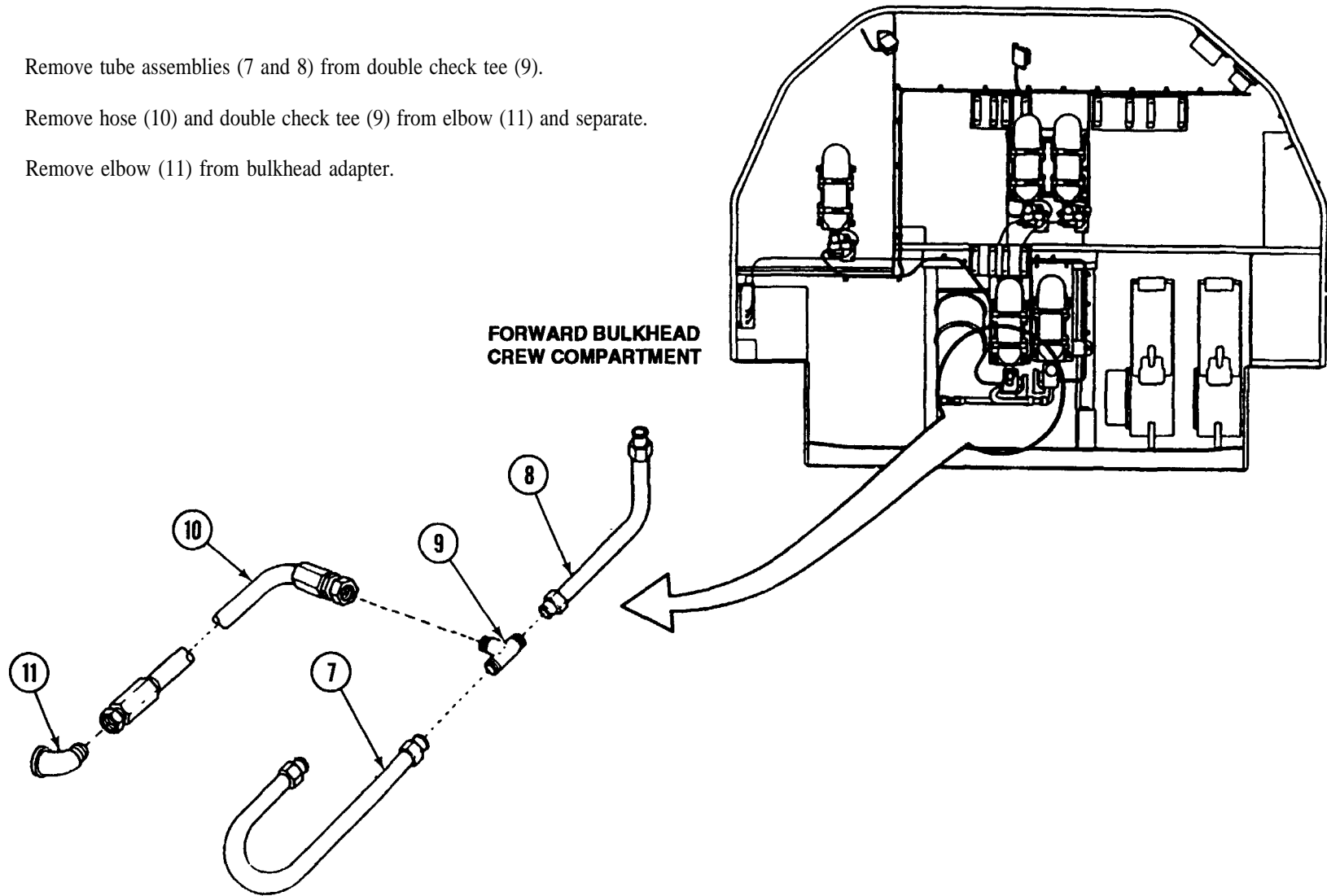
Loosen right-side engine AFES bottle straps and rotate bottle to provide access for removing elbow (p 14-28.1).

- A Disconnect tubes at elbows (1 and 2) and remove elbows (1 and 2) from discharge plug adapters (3 and 4).
- B Remove plug adapters (3 and 4) and install anti-recoil plugs in discharge ports of cylinder bottles (5 and 6).

**ENGINE AFES TUBING AND NOZZLES: REMOVAL AND INSTALLATION (CONTINUED)**

- C Remove tube assemblies (7 and 8) from double check tee (9).
- D Remove hose (10) and double check tee (9) from elbow (11) and separate.
- E Remove elbow (11) from bulkhead adapter.

**FORWARD BULKHEAD  
CREW COMPARTMENT**



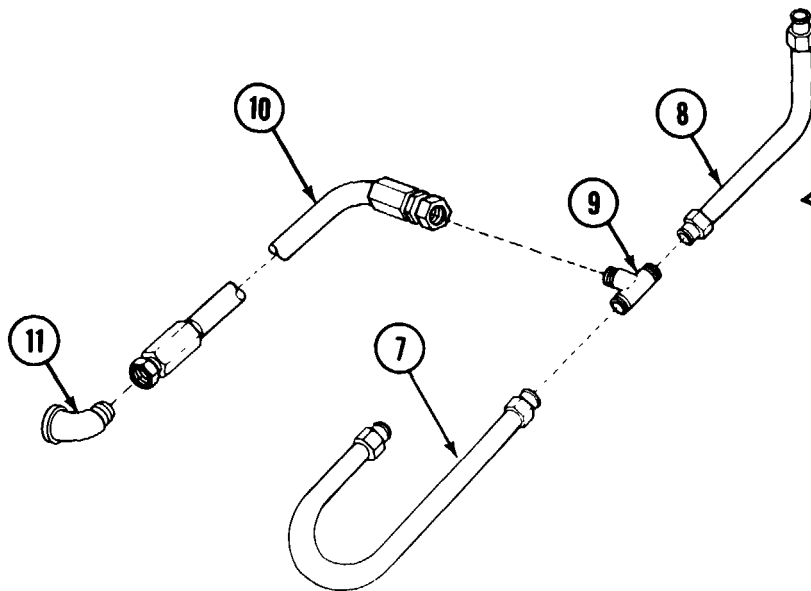
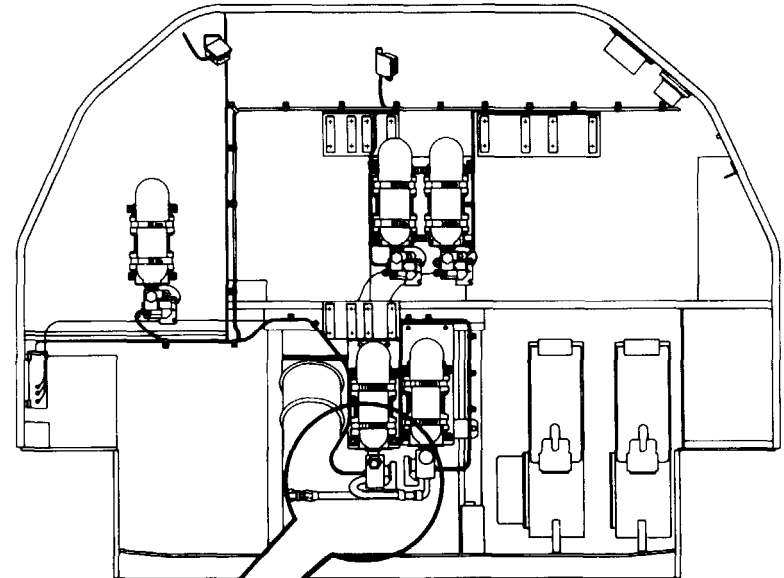


## ENGINE AFES TUBING AND NOZZLES: REMOVAL AND INSTALLATION (CONTINUED)

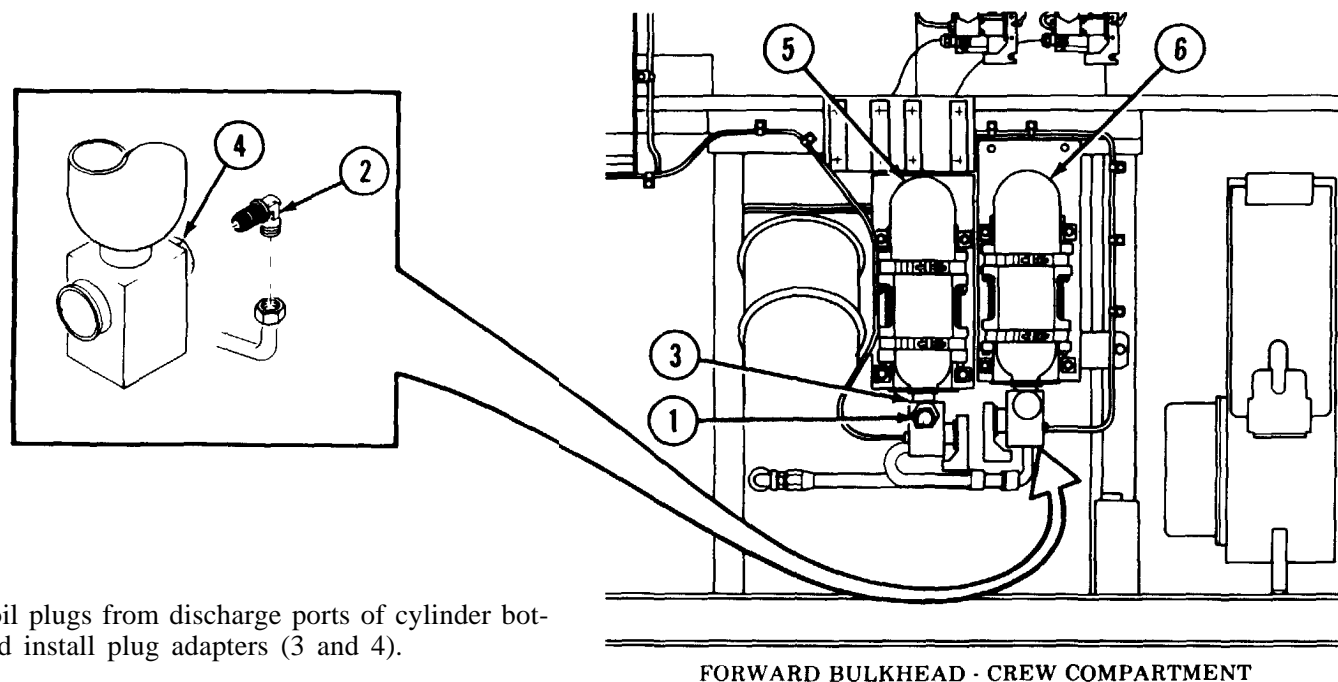
### INSTALLATION

- A Install elbow (11) on bulkhead adapter.
- B Connect hose (10) and double check tee (9) and install on elbow (11).
- C Install tube assemblies (7 and 8) on double check tee (9).

FORWARD BULKHEAD  
CREW COMPARTMENT



## ENGINE AFES TUBING AND NOZZLES: REMOVAL AND INSTALLATION (CONTINUED)

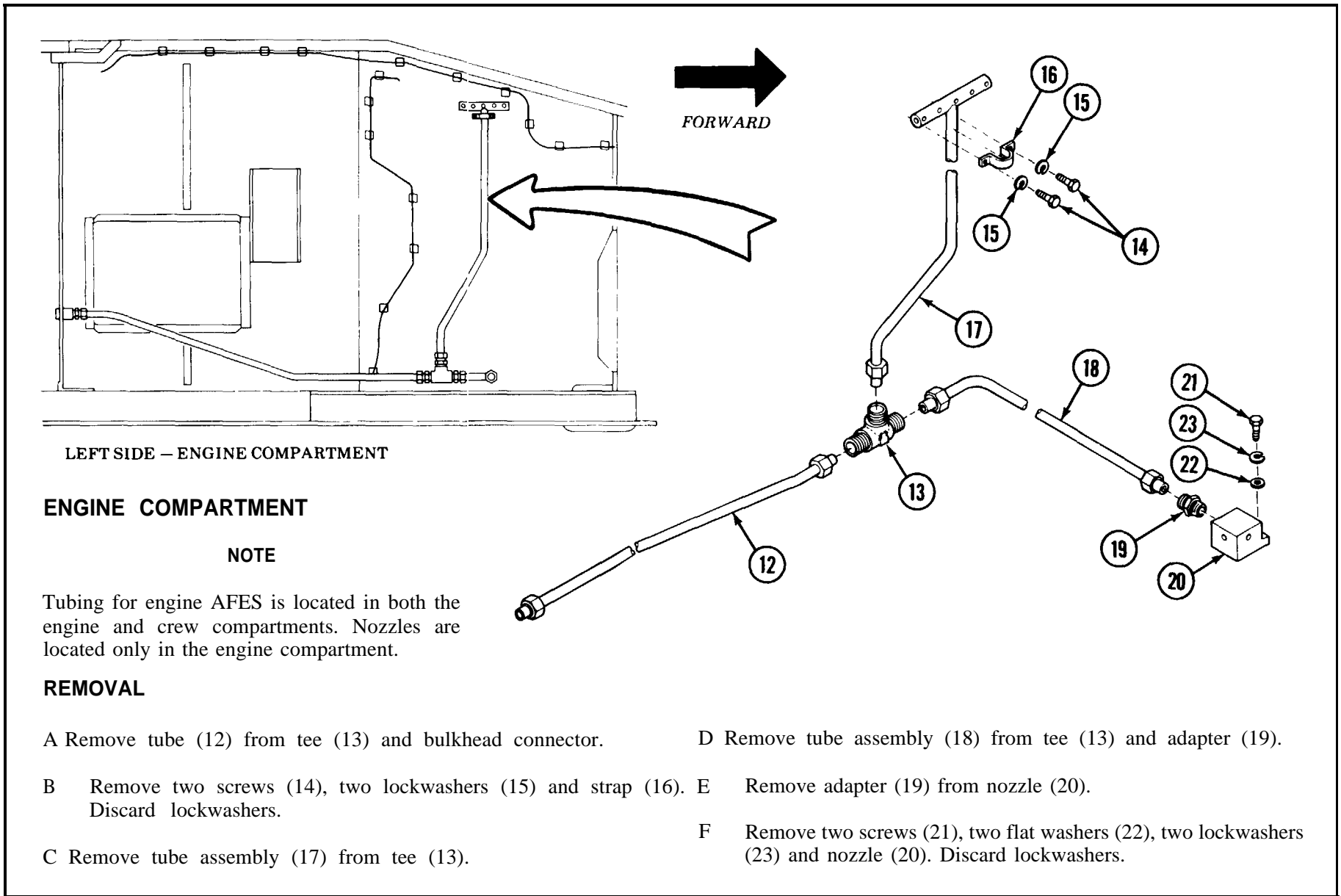


- D Remove anti-recoil plugs from discharge ports of cylinder bottles (5 and 6) and install plug adapters (3 and 4).
- E Install elbows (1 and 2) on discharge plug adapters (3 and 4).
- F Connect tubes to elbows (1 and 2).

**NOTE**

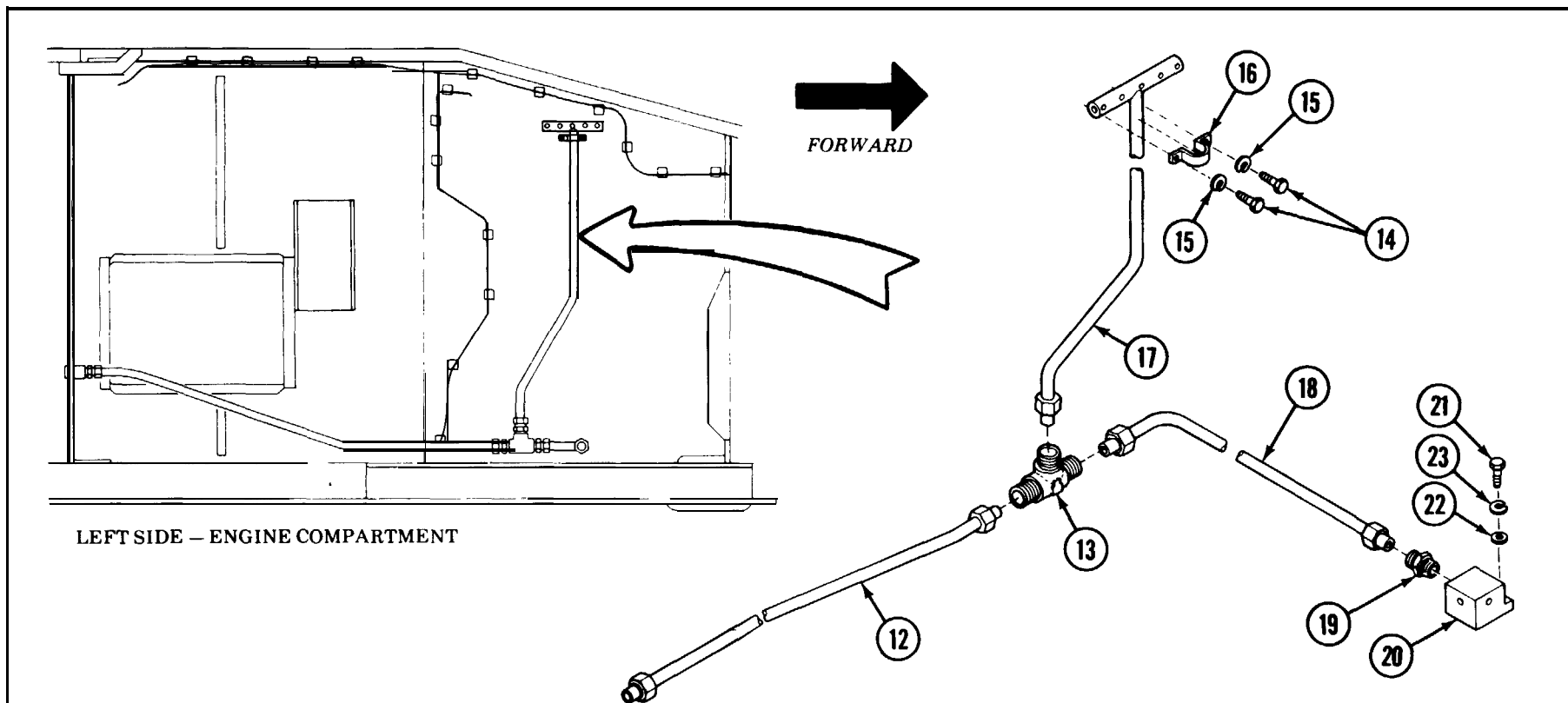
Reposition right side engine AFES bottle to correct position and tighten bottle straps (p 14-28.1).

## ENGINE AFES TUBING AND NOZZLES: REMOVAL AND INSTALLATION (CONTINUED)





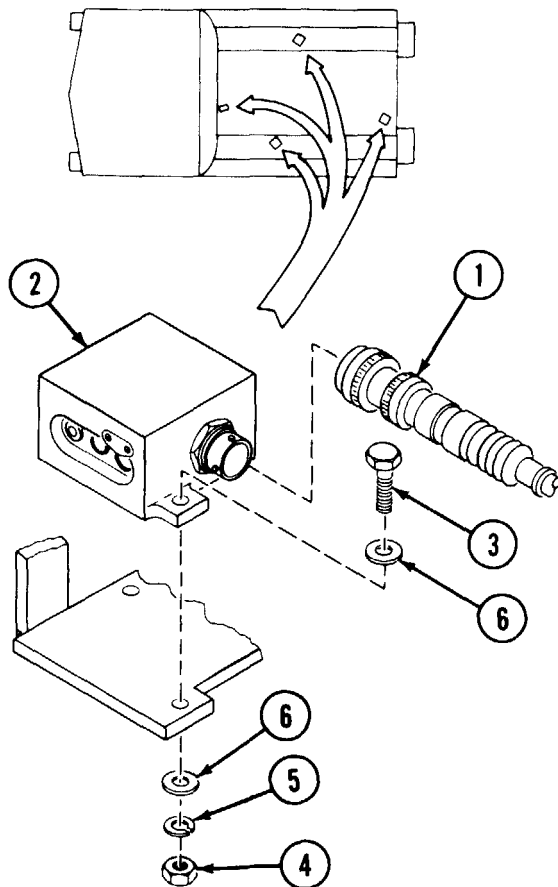
■ ENGINE AFES TUBING AND NOZZLES: REMOVAL AND INSTALLATION (CONTINUED)



**ENGINE COMPARTMENT**

**INSTALLATION**

- A Install two screws (21), two flat washers (22), two new lockwashers (23) and nozzle (20).
- B Install adapter (19) on nozzle (20).
- C Install tube assembly (18) on tee (13) and adapter (19).
- D Install tube assembly (17) on tee (13).
- E Install two screws (14), two new lockwashers (15) and strap (16).
- F Install tube (12) on tee (13) and bulkhead connector.

**CREW AFES - OPTICAL FIRE SENSING APPARATUS (OFSA): REMOVAL AND INSTALLATION****REMOVAL****WARNING**

Turn crew T/A panel MAINTenance switch to vertical position before removing an OFSA detector.

**CAUTION**

Note position of OFSA before removal. Installed position of OFSA is critical - install in correct position.

**NOTE**

Removal procedures for all four fire sensing apparatuses are the same.

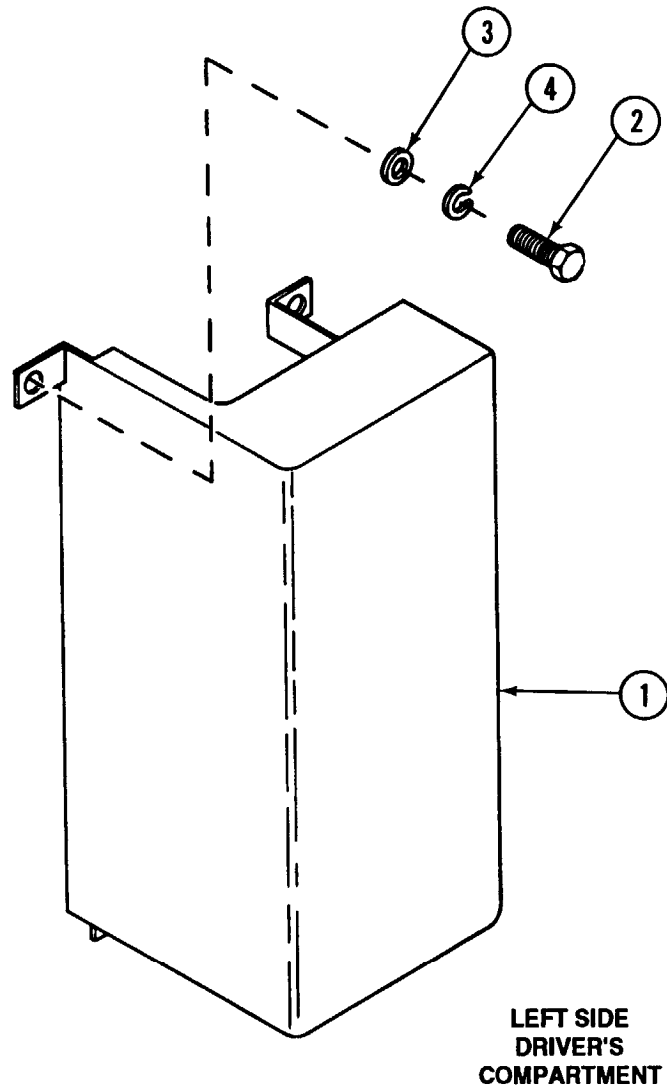
- A Disconnect electrical cable (1) from OFSA (2).
- B Remove two screws (3), two nuts (4), two lockwashers (5) and four flat washers (6). Discard lockwashers.
- c Remove OFSA (2) from bracket.

**INSTALLATION****WARNING**

Install OFSA in same position as noted at removal. If installed in wrong position, OFSA will not be effective in detecting fires.

- A Clean OFSA lenses (TM 9-2350-267-10).
- B Reverse order of removal procedures using new lockwashers. When installing electrical cable (1), turn clockwise until cable snaps in place.
- C Turn crew T/A panel Maintenance switch to horizontal position.

## ENGINE AFES RELAYS COVER: REMOVAL AND INSTALLATION (CONTINUED)



### REMOVAL

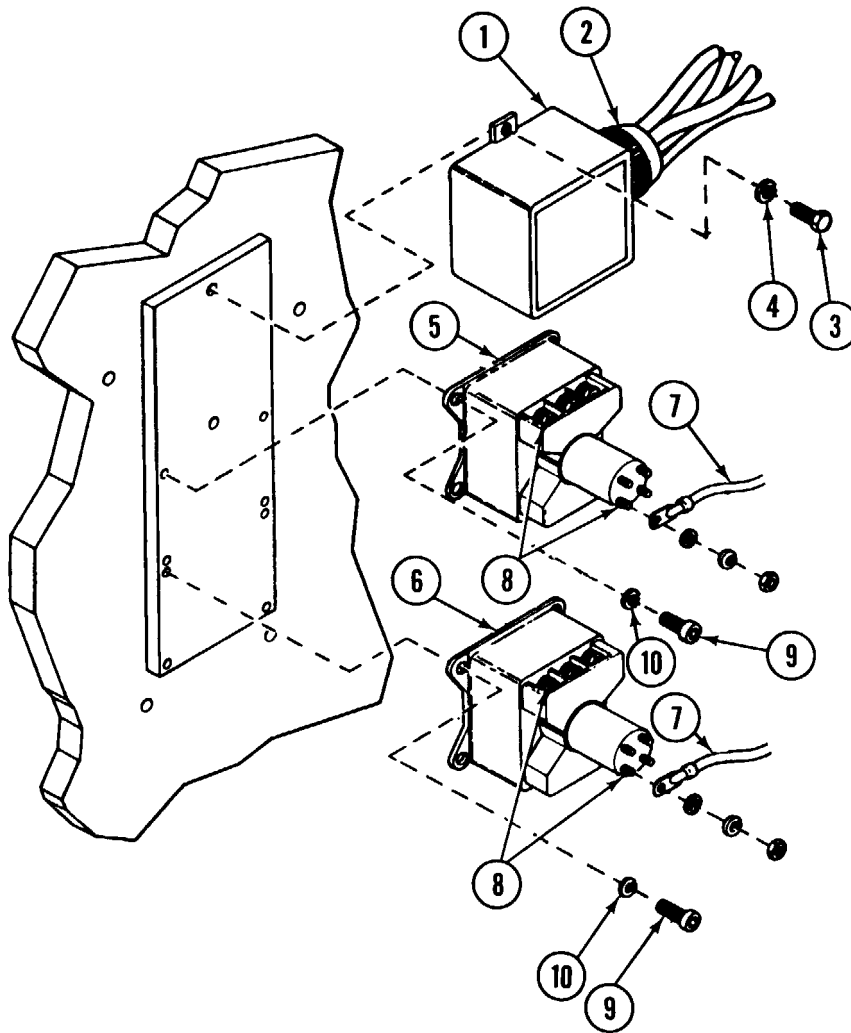
#### WARNING

Do not allow metal objects (screwdriver, wrench, etc.) to cross any relay terminals. Crossing terminals may cause accidental discharge of AFES extinguisher bottles.

- A Remove engine T/A panel bracket (p 14-39).
- B Remove AFES relays cover (1) by removing four screws (2), four flat washers (3) and four lockwashers (4). Discard lockwashers.

### INSTALLATION

- A Install AFES relays cover (1) using four screws (2), four flat washers (3) and four new lockwashers (4).
- B Replace engine T/A panel bracket (p 14-39).



## REMOVAL

### WARNING

Turn engine T/A panel Maintenance switch to vertical position. Turn MASTER switch OFF. Disconnect battery ground cables before disconnecting cable assembly.

- A Remove engine AFES relays cover (p 14-35).
- B To remove relay no. 1 (1) disconnect plug (2) and remove two mounting screws (3) and two lockwashers (4). Discard lockwashers.

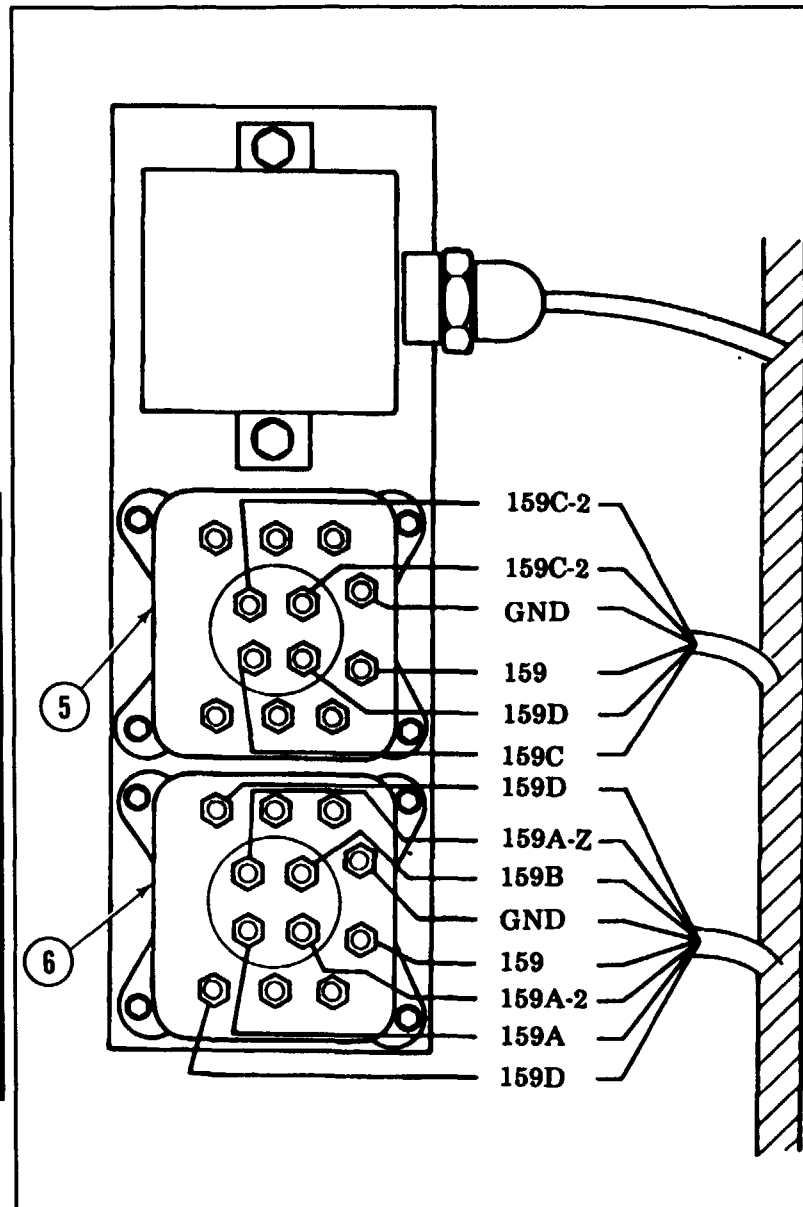
### NOTE

There are six wires connected to relay no. 2 and eight wires connected to relay no. 3.

- C To remove relay no. 2 (5) and relay no. 3 (6) from plate, disconnect wires (7) from terminals (8), and remove four mounting screws (9) and four lockwashers (10). Discard lockwashers.
- D Remove relay from vehicle



**ENGINE AFES ELECTRICAL RELAYS: REMOVAL AND INSTALLATION (CONTINUED)**



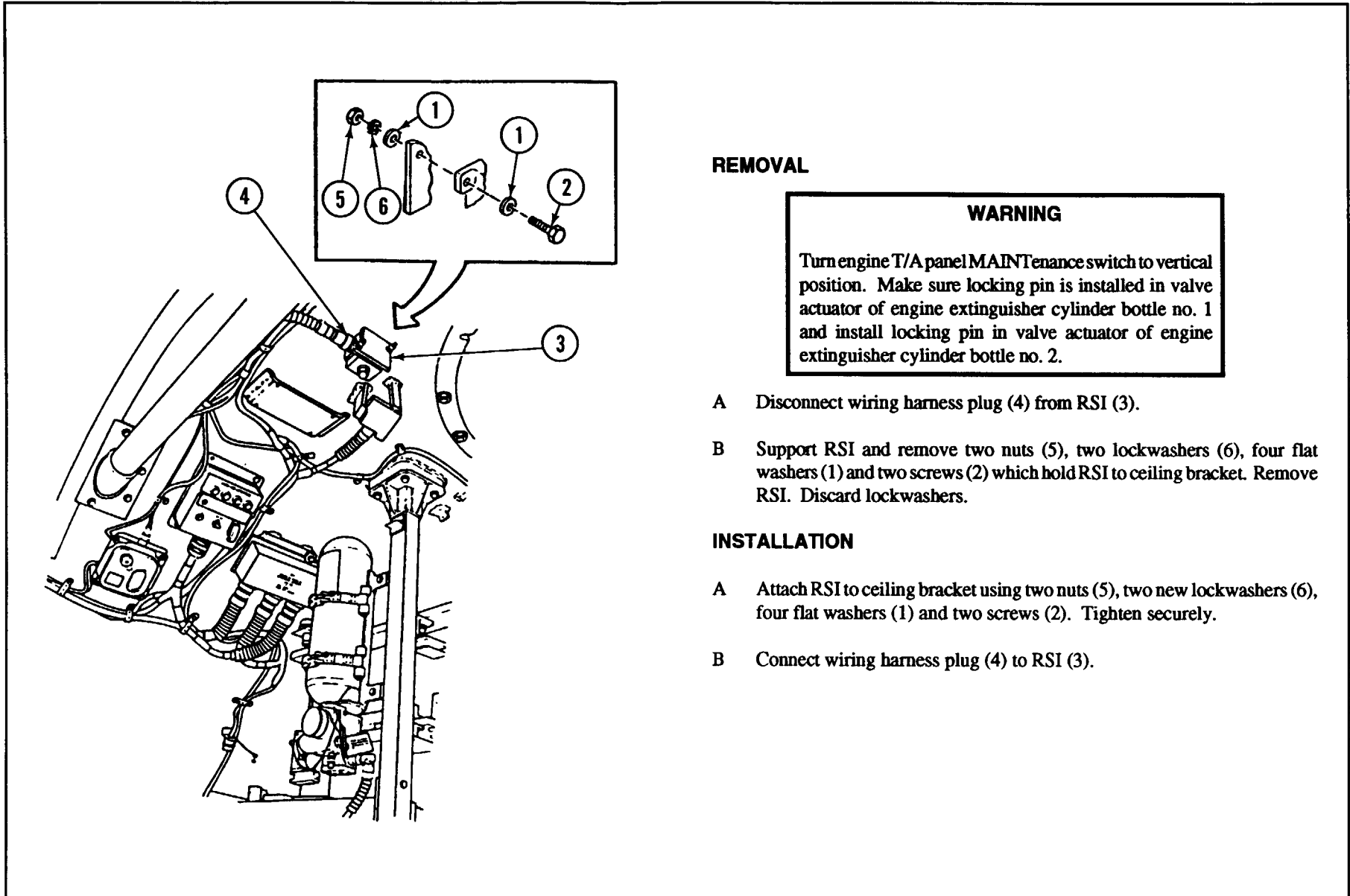
**HARNESS  
12351461**

**INSTALLATION**

**NOTE**

There are six wires connected to relay no. 2 and eight wires connected to relay no. 3. Reconnect wires from harness 12351461 to terminals of two relays (5 and 6), using diagram.

- A Attach relay no. 2 (5) and relay no. 3 (6) to plate using four mounting screws (9) and four new lockwashers (10). Connect wires (7) to terminals (8).
- B Install relay no. 1 (1) using two mounting screws (3) and two new lockwashers (4). Connect plug (2).
- C Replace engine AFES relays cover (p 14-35).
- D Turn engine T/A panel MAINTenance switch to horizontal position.

**ENGINE AFES REMOTE STATUS INDICATOR (RSI): REMOVAL AND INSTALLATION****REMOVAL****WARNING**

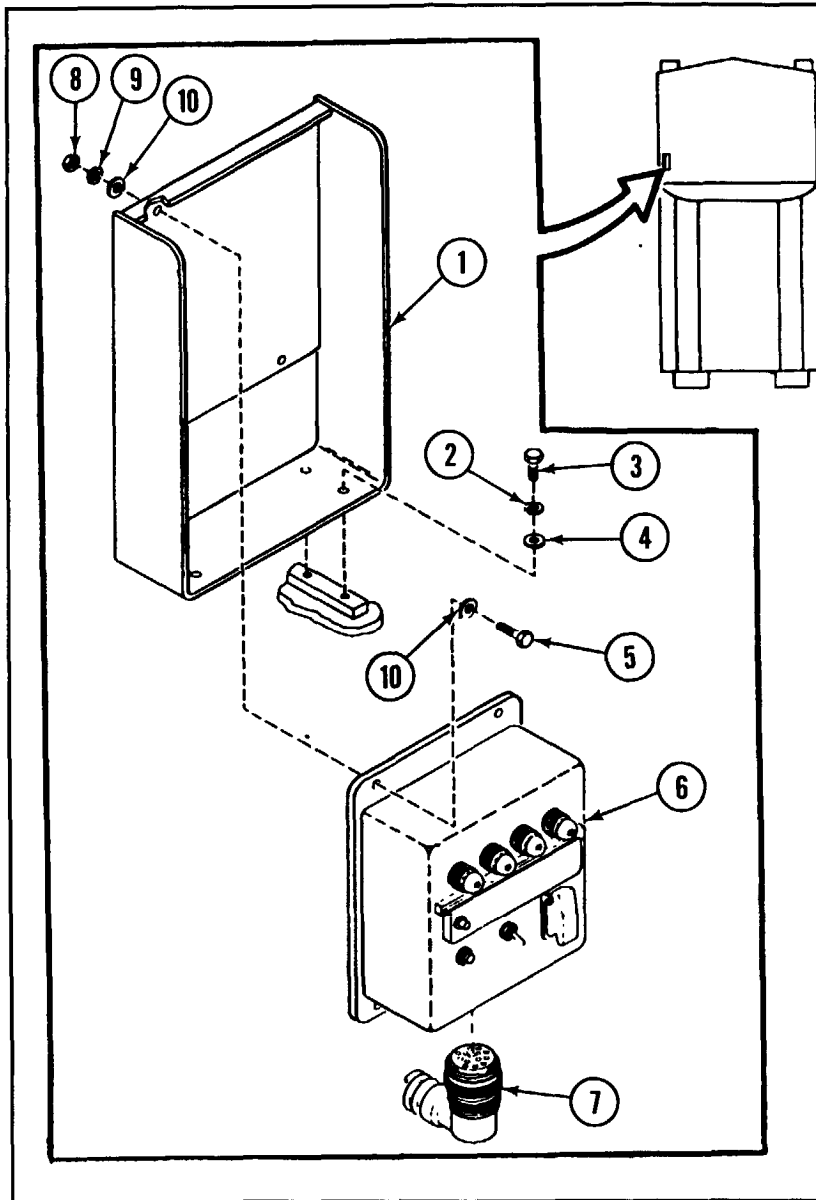
Turn engine T/A panel MAINTenance switch to vertical position. Make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator of engine extinguisher cylinder bottle no. 2.

- A Disconnect wiring harness plug (4) from RSI (3).
- B Support RSI and remove two nuts (5), two lockwashers (6), four flat washers (1) and two screws (2) which hold RSI to ceiling bracket. Remove RSI. Discard lockwashers.

**INSTALLATION**

- A Attach RSI to ceiling bracket using two nuts (5), two new lockwashers (6), four flat washers (1) and two screws (2). Tighten securely.
- B Connect wiring harness plug (4) to RSI (3).

## ENGINE AFES TEST AND ALARM (T/A) PANEL: REMOVAL AND INSTALLATION



### REMOVAL

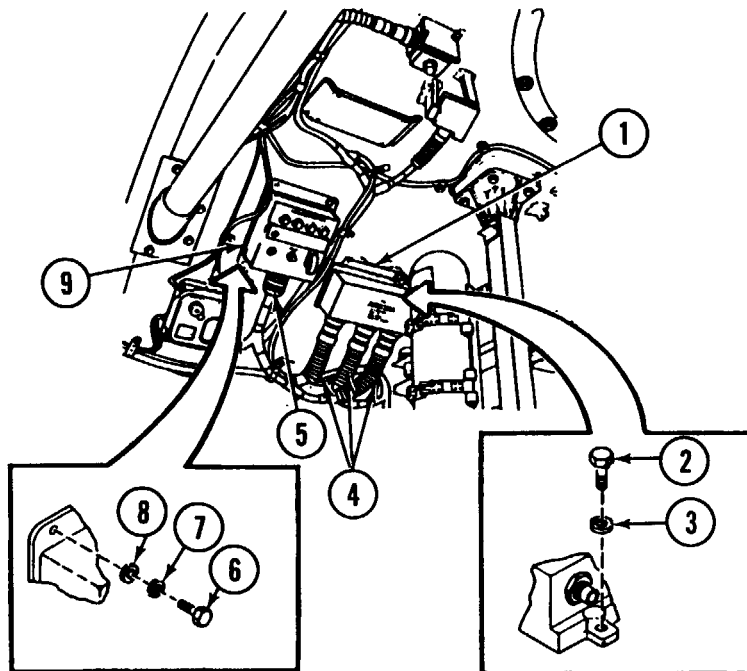
#### WARNING

Turn engine T/A panel MAINTenance switch to vertical position. Make sure locking pin is installed in valve actuator of engine extinguisher cylinder bottle no. 1 and install locking pin in valve actuator of engine extinguisher cylinder bottle no. 2.

- A Disconnect wiring harness plug (7) from engine T/A panel (6).
- B Support engine T/A panel and remove four nuts (8), four lockwashers (9), eight flat washers (10) and four screws (5) which hold panel to bracket (1). Remove panel and discard lockwashers.
- C Remove four screws (3), four lockwashers (2) and four flat lockwashers (4) which hold bracket to sponson. Remove bracket and discard lockwashers.

### INSTALLATION

- A Attach bracket (1) securely to sponson using four flat washers (4), four new lockwashers (2) and four screws (3).
- B Attach engine T/A panel (6) to bracket using four screws (5), eight flat washers (10), four new lockwashers (9) and four nuts (8). Tighten securely.
- C Connect wiring harness plug (7) to engine T/A panel..
- D Turn engine T/A panel MAINTenance switch to horizontal position.

**CREW AFES TEST AND ALARM (T/A) PANEL AND STANDARD CONTROL ELECTRONIC AMPLIFIER (SCEA): REMOVAL AND INSTALLATION****REMOVAL****WARNING**

Turn crew T/A panel MAINTenance switch to vertical position. Make sure locking pins are installed in valve actuators of crew extinguisher cylinder bottles no. 1 and no. 2 (vehicles 1 thru 344) and no. 1, no. 5 and no. 6 (vehicles 345 and above). Install locking pins in valve actuators of extinguisher cylinder bottles no. 3 and no. 4. Install anti-recoil plugs in discharge port of each crew compartment extinguisher bottle.

**CREW T/A PANEL: REMOVAL**

- A Disconnect wiring harness plug (5) from crew T/A panel (9).
- B Support crew T/A panel and remove four screws (6), four lockwashers (7) and four flat washers (8) which hold panel to hull. Remove panel and discard lockwashers.

**SCEA UNIT: REMOVAL**

- A Disconnect three wiring harness plugs (4) from SCEA unit (1).
- B Support SCEA and remove two screws (2) and two lockwashers (3) which hold panel to hull. Remove SCEA and discard lockwashers.

**CREW AFES TEST AND ALARM (T/A) PANEL AND STANDARD CONTROL ELECTRONIC AMPLIFIER (SCEA):  
REMOVAL AND INSTALLATION (CONTINUED)**

**INSTALLATION**

**WARNING**

Turn crew T/A panel MAINTenance switch to vertical position. Make sure locking pins are installed in valve actuators of crew extinguisher cylinder bottles no. 1 and no. 2 (vehicles 1 thru 344) and no. 1, no. 2, no. 5 and no. 6 (vehicles 345 and above). Install locking pins in valve actuators of extinguisher cylinder bottles no. 3 and no. 4. Install anti-recoil plugs in discharge port of each crew compartment extinguisher bottle.

**CREW T/A PANEL: INSTALLATION**

- A Attach crew T/A panel (9) to hull using four screws (6), four new lockwashers (7) and four flat washers (8). Tighten securely.
- B Connect wiring harness plug (5) to crew T/A panel (9).

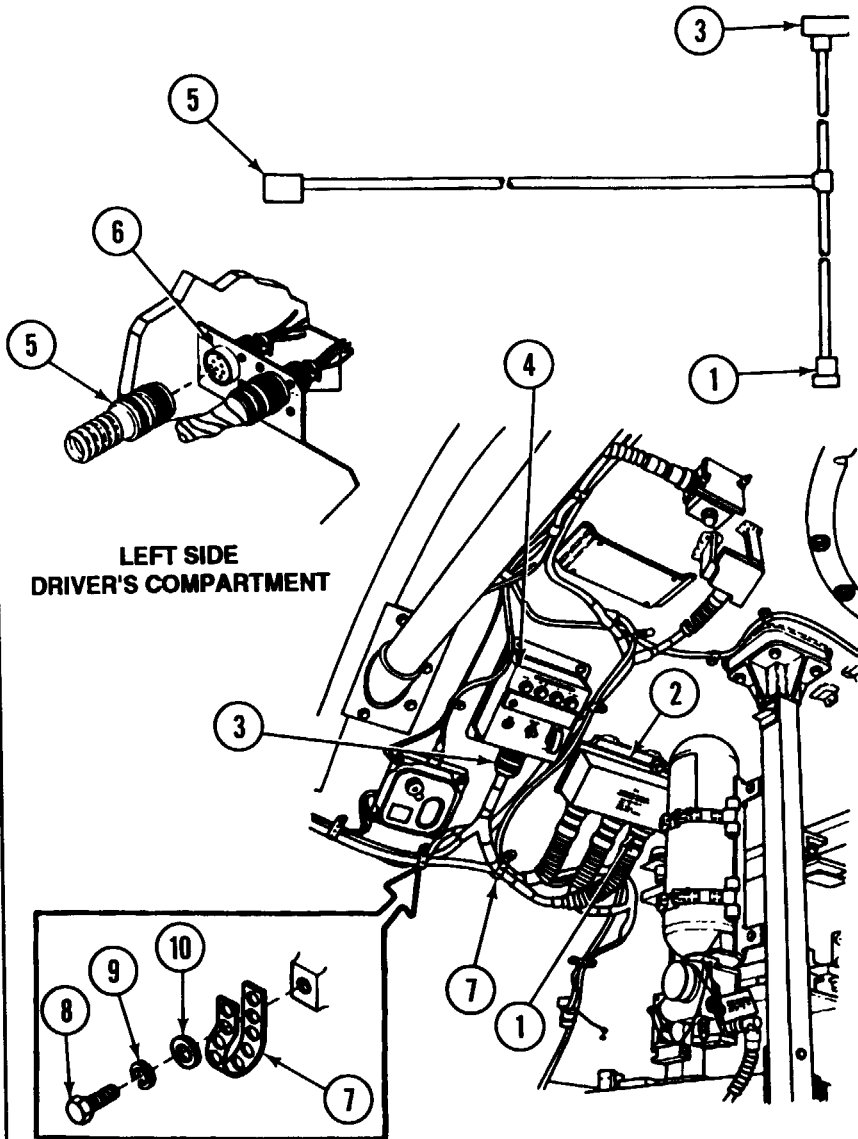
**SCEA UNIT: INSTALLATION**

- A Attach SCEA unit (1) to hull using two screws (2) and two new lockwashers (3). Tighten securely.
- B Connect three wiring harness plugs (4) to SCEA unit (1).

**WARNING**

Turn Crew T/A panel MAINTenance switch to horizontal position. Remove locking pins from valve actuators of crew extinguisher cylinder bottles no. 3 and no. 4. Remove anti-recoil plugs from discharge port of each crew compartment cylinder bottle and replace dispersion nozzles.

**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION**



**INITIAL SETUP**

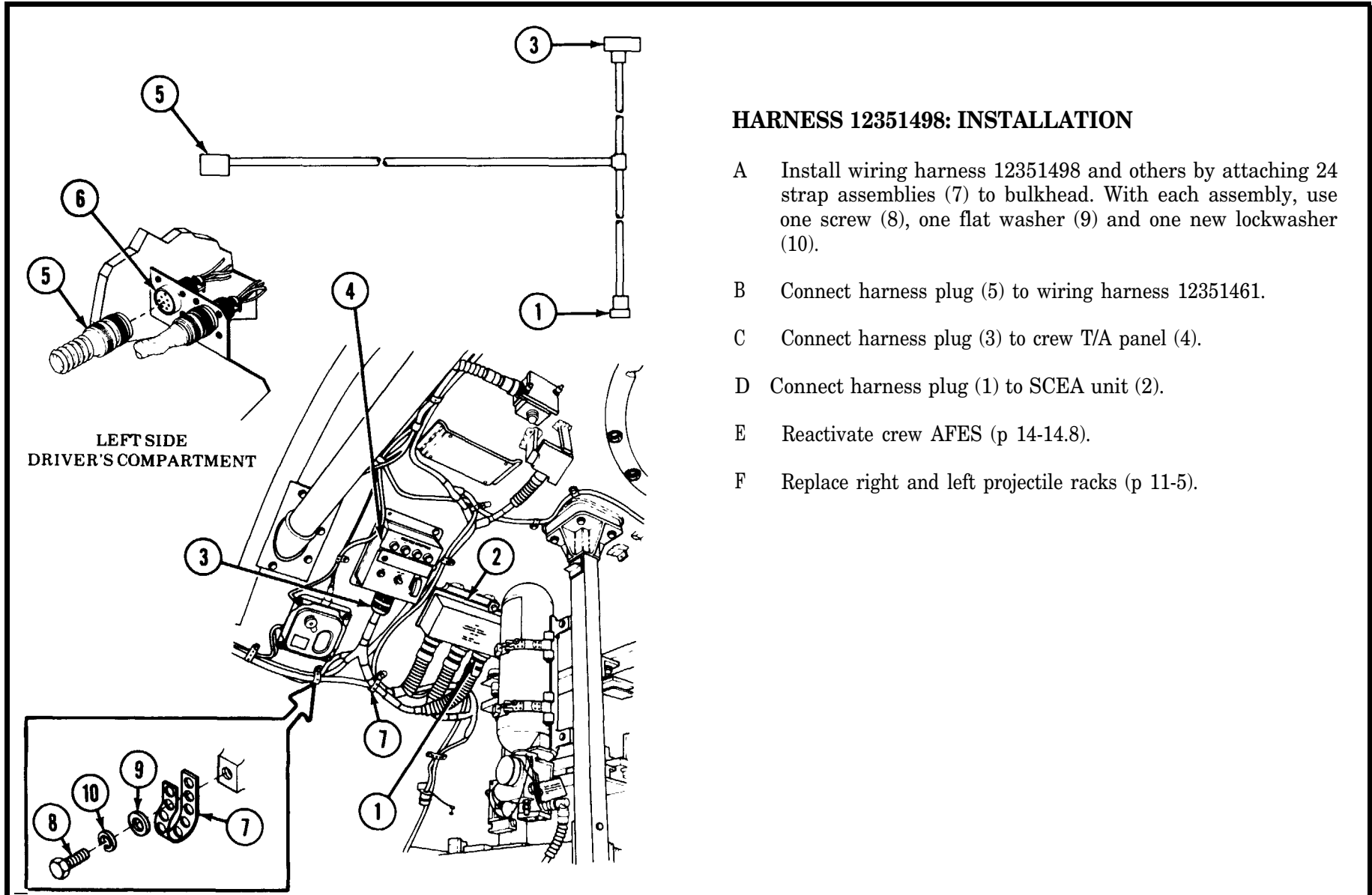
Equipment Condition:

Right and left projectile racks removed (p 11-5).  
Crew AFES deactivated (p 14-14.5).

**HARNESS 12351498: REMOVAL**

- A Disconnect harness plug (1) from SCEA unit (2).
- B Disconnect harness plug (3) from crew T/A panel (4).
- C Disconnect harness plug (5) from connector (6) of harness 12351461.
- D From each of 24 strap assemblies (7) remove one screw (8), one flat washer (9) and one lockwasher (10). Separate and remove wiring harness 123511498 from other harnesses. Secure remaining harnesses by reinstalling strap assemblies.

## CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)



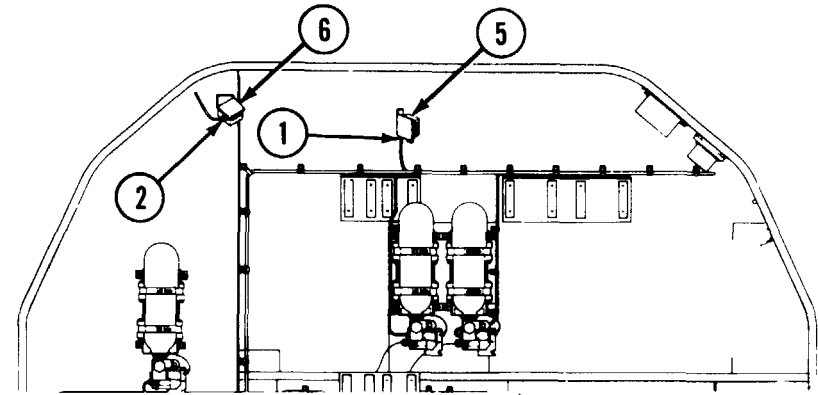
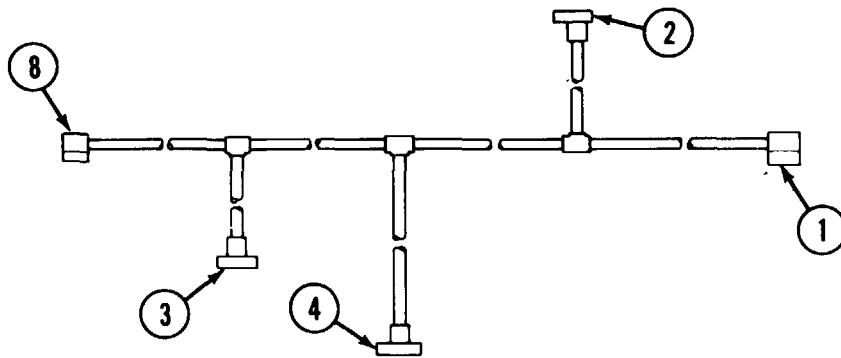
**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344):REMOVAL AND INSTALLATION  
(CONTINUED)**

**INITIAL SET UP**

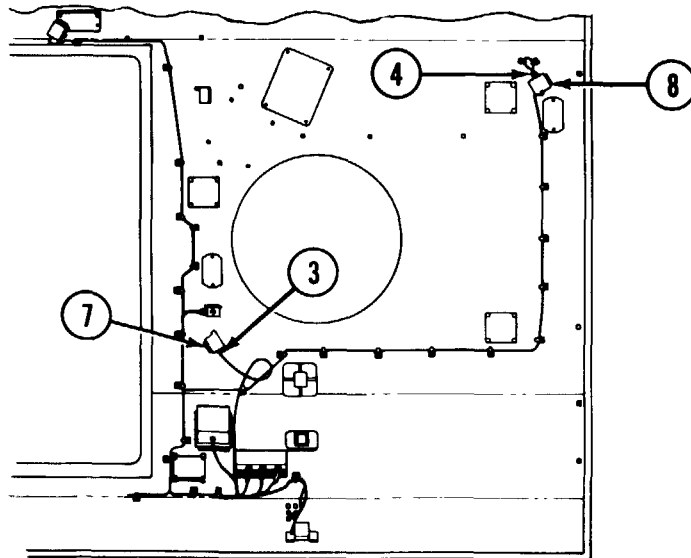
Equipment Condition:

Crew AFES deactivated (p 14-14.7).

Crew compartment top doors open (TM 9-2350-267-10).



FORWARD BULKHEAD – CREW COMPARTMENT



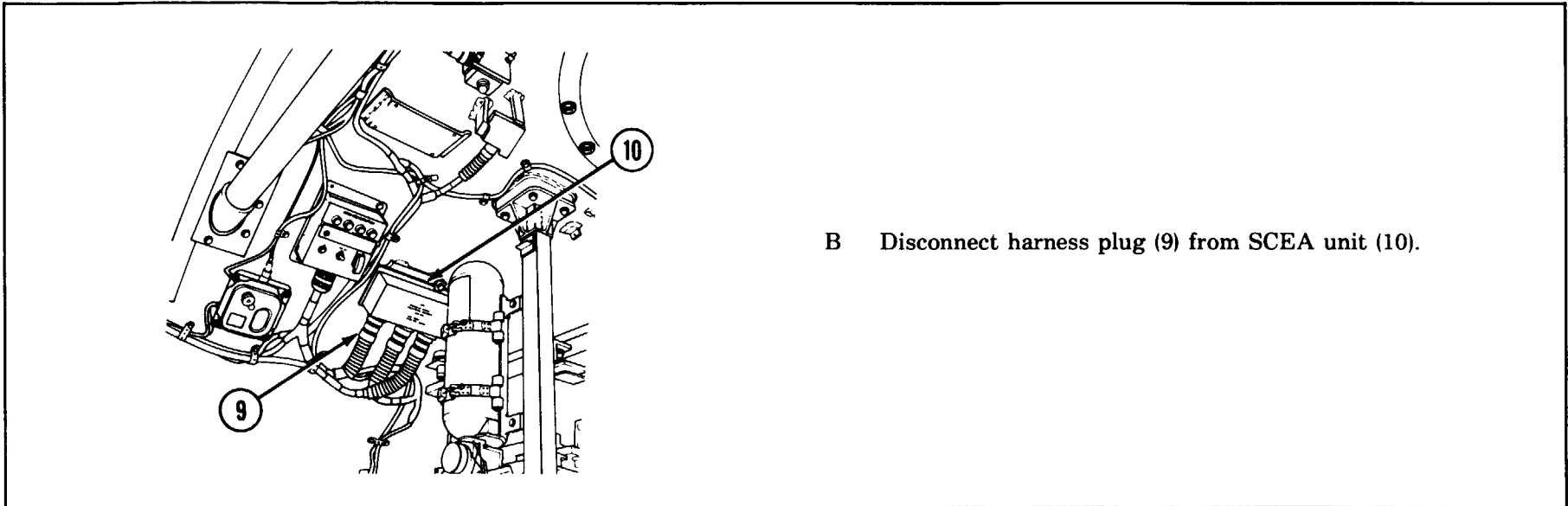
IN VEHICLE LOOKING UP - CREW COMPARTMENT

**HARNESS 12351499: REMOVAL**

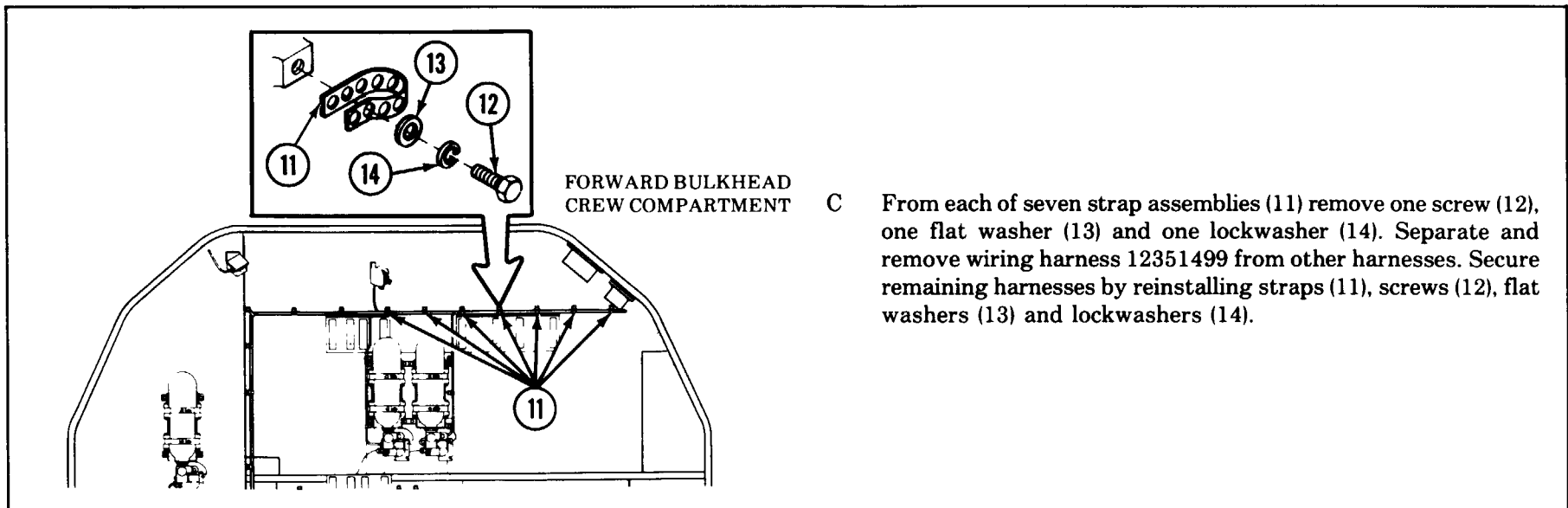
- A Disconnect harness plugs (1, 2, 3 and 4) from four OFSA units (5, 6, 7 and 8).



**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**

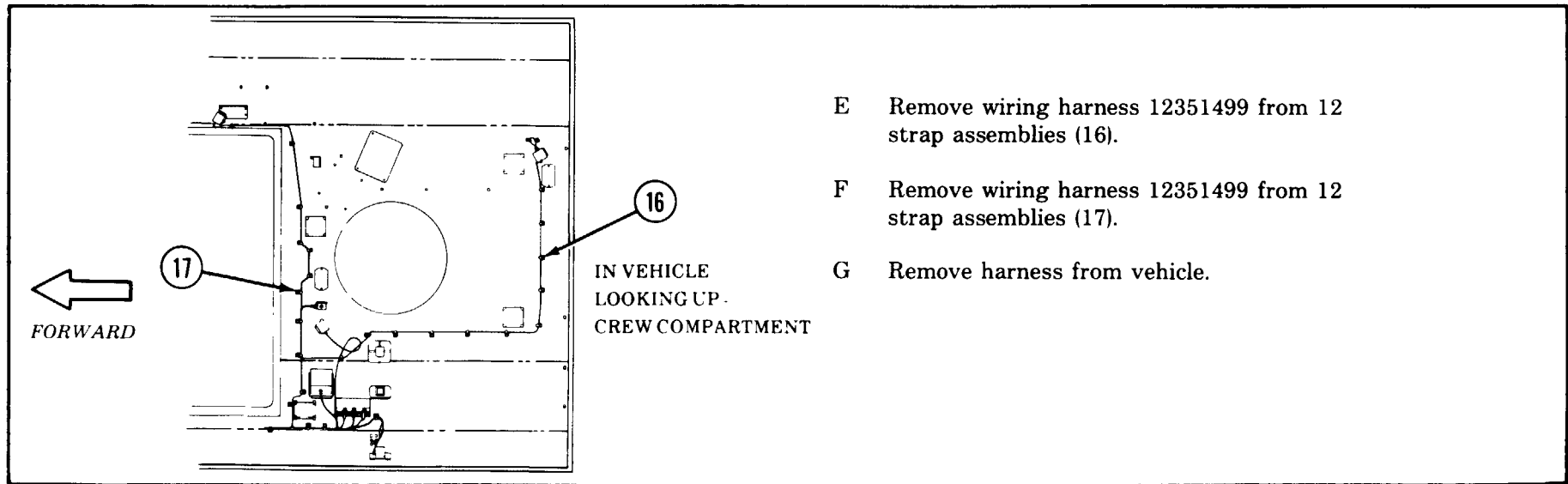
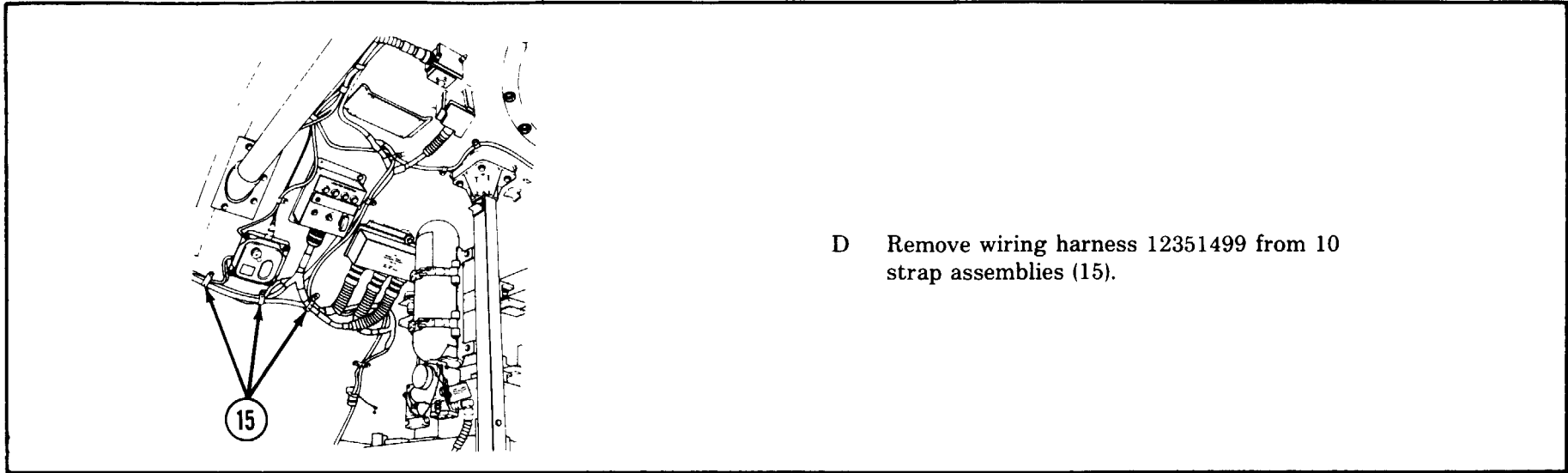


**B** Disconnect harness plug (9) from SCEA unit (10).

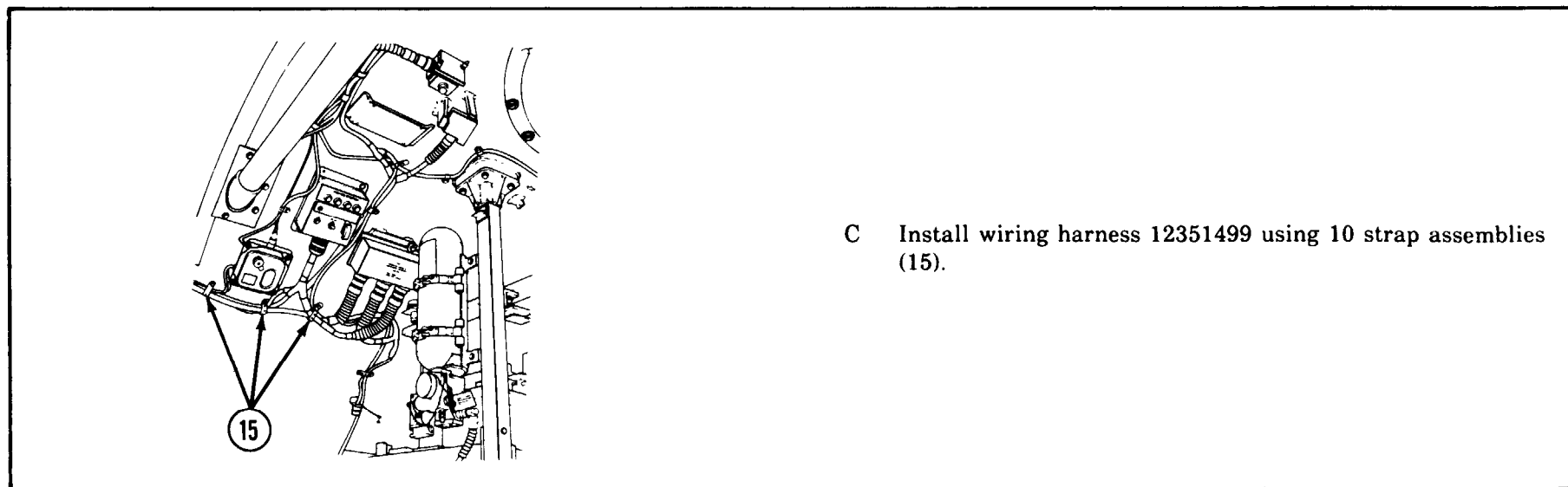
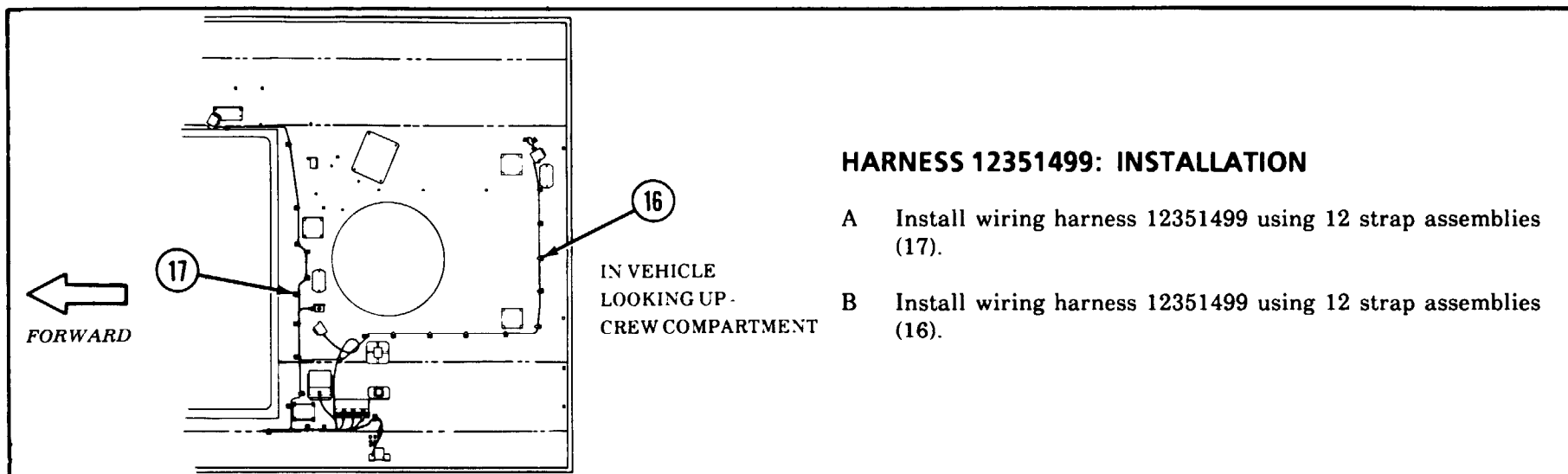


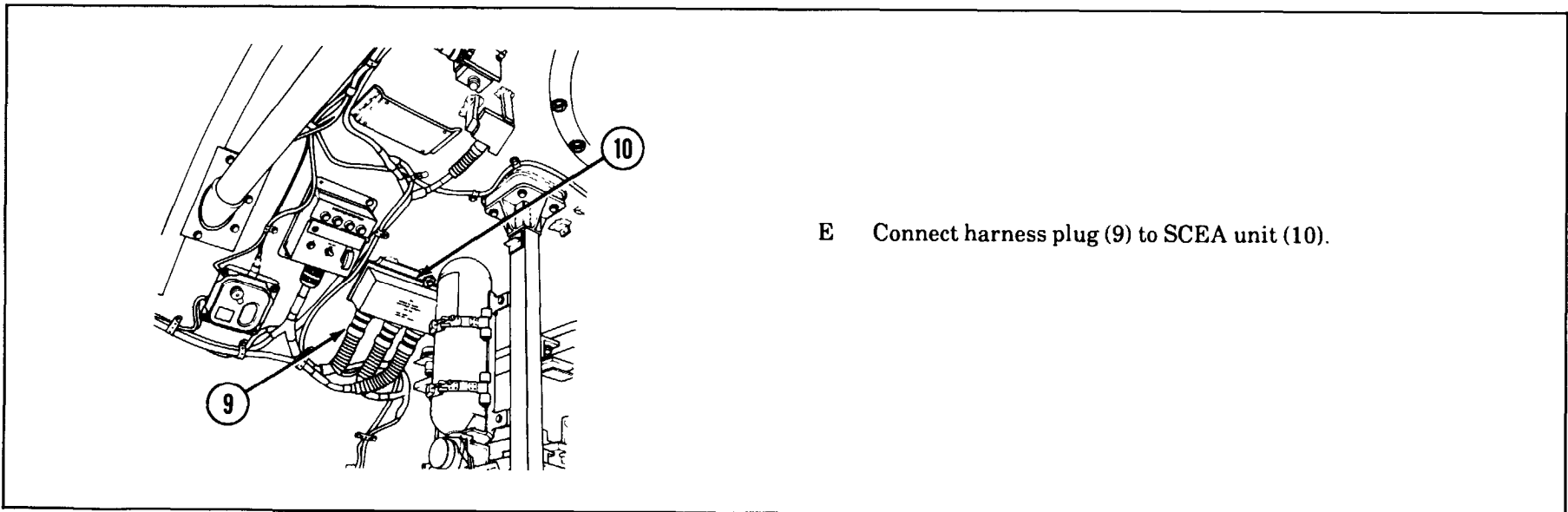
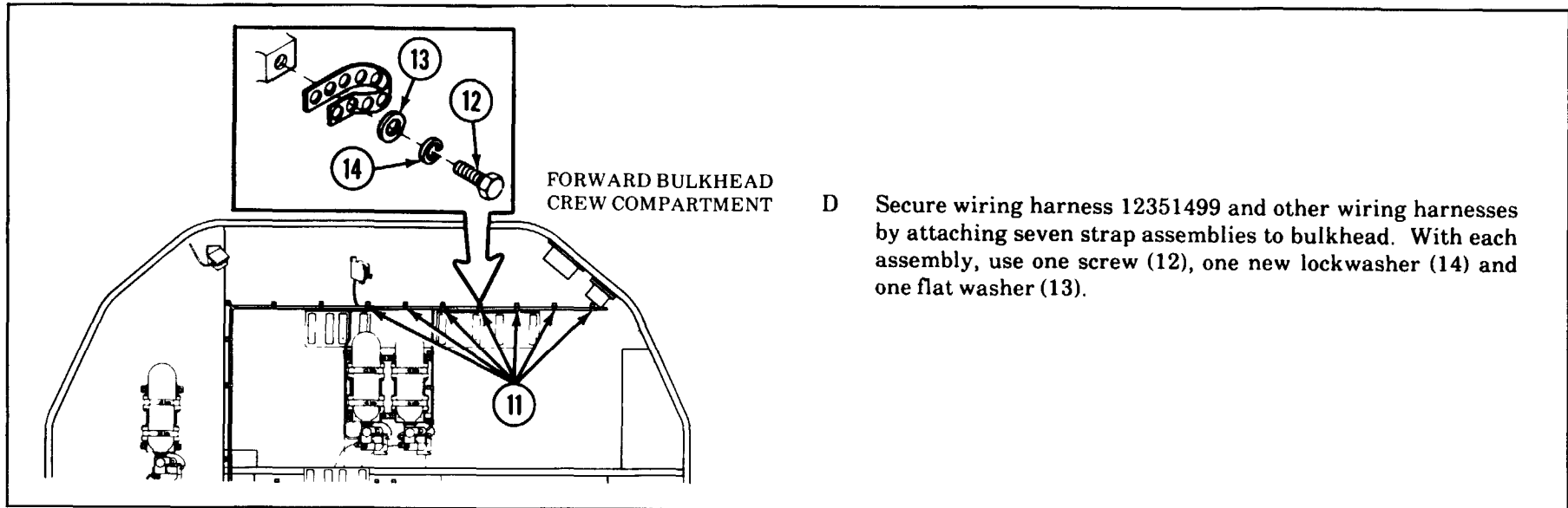
**C** From each of seven strap assemblies (11) remove one screw (12), one flat washer (13) and one lockwasher (14). Separate and remove wiring harness 12351499 from other harnesses. Secure remaining harnesses by reinstalling straps (11), screws (12), flat washers (13) and lockwashers (14).

**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)**

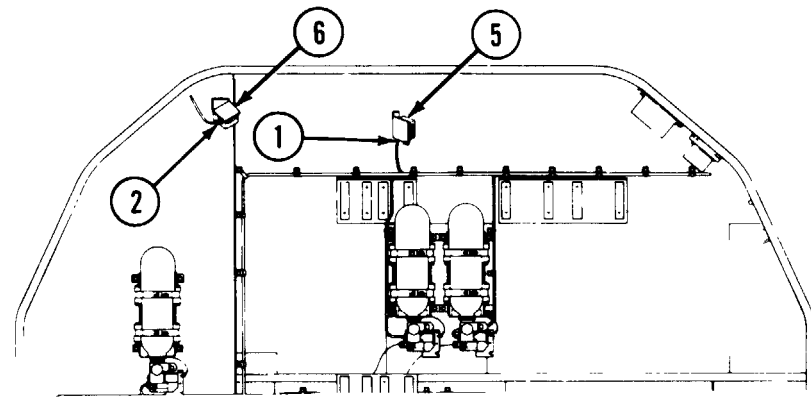
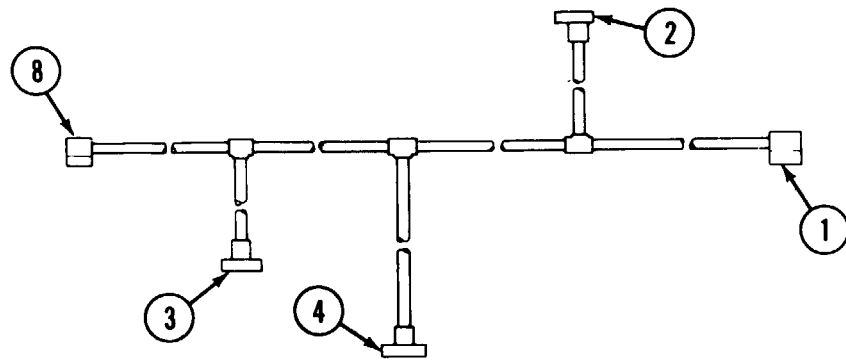


**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**

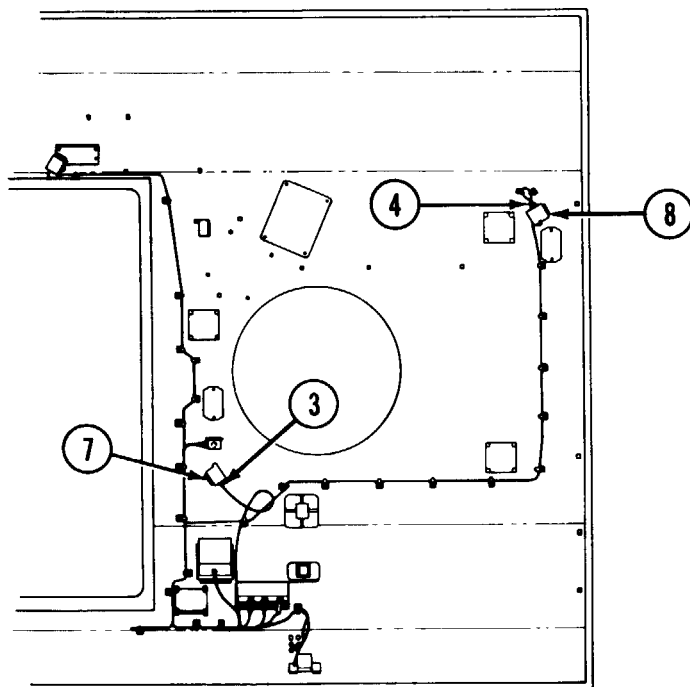


**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**

**CREW AFES ELECTRICAL WIRING HARNESES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**



**FORWARD BULKHEAD - CREW COMPARTMENT**



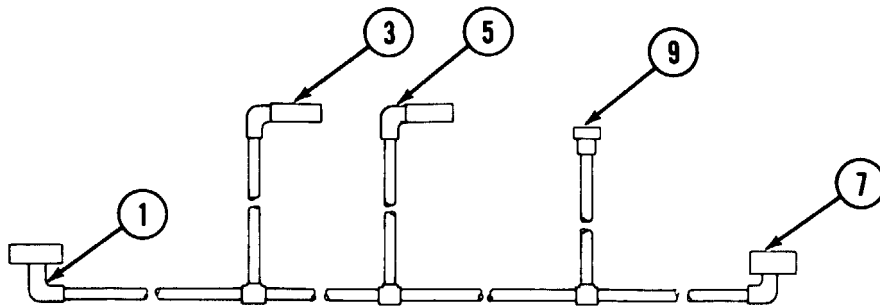
**IN VEHICLE LOOKING UP - CREW COMPARTMENT**

F Connect harness plugs (1, 2,3 and 4) to four OFSA units (5,6, 7 and 8).

G Close crew compartment top doors (TM 9-2350-267-10).

H Reactivate crew AFES (p 14-14.7).

## CREW AFES ELECTRICAL WIRING HARNESSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)



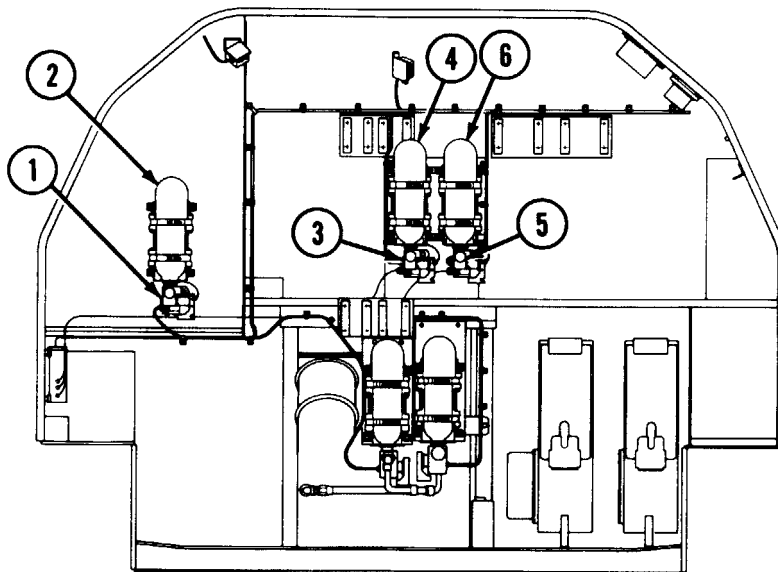
### INITIAL SET UP

#### Equipment Condition:

Right and left projectile racks removed (p 11-5).  
 Crew AFES deactivated (p 14-14.7).  
 Extinguisher bottles and brackets no. 1 and no. 4 removed (p 14-28.3).

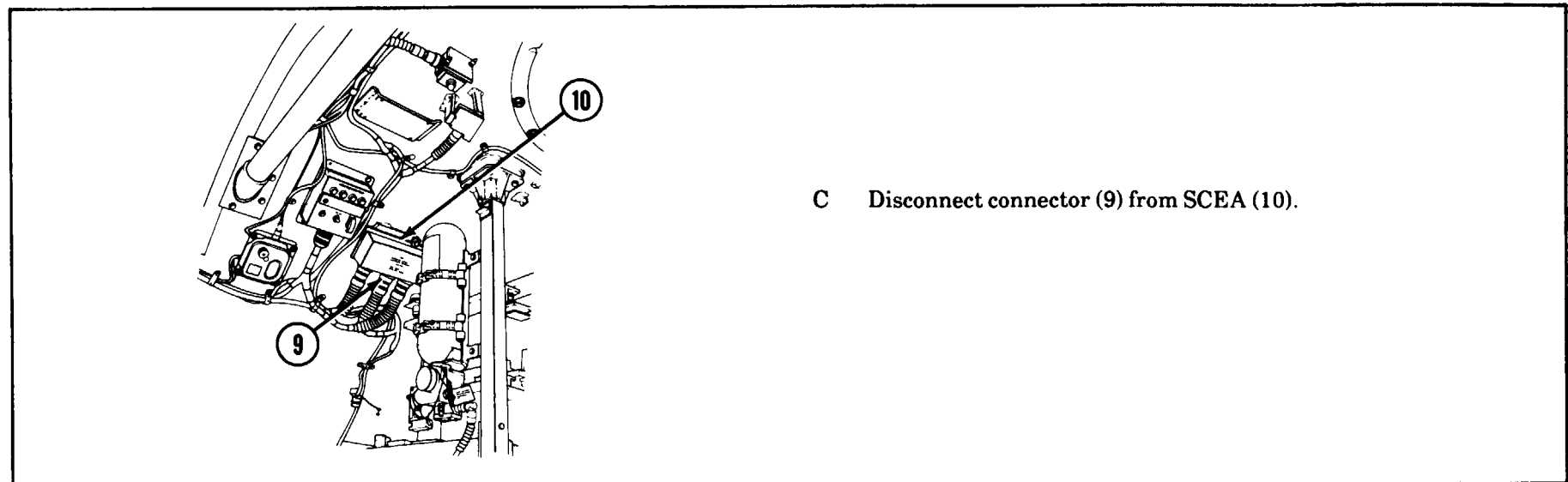
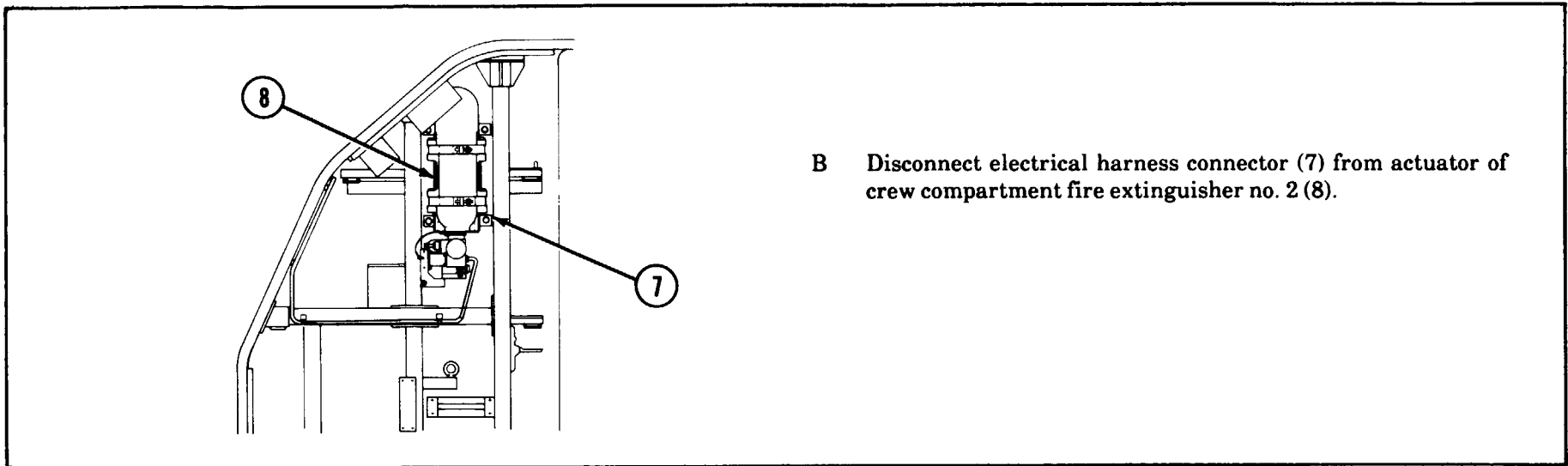
#### HARNESS 12351501: REMOVAL

A Disconnect electrical harness connector (1) from actuator of crew compartment fire extinguisher no. 3 (2).

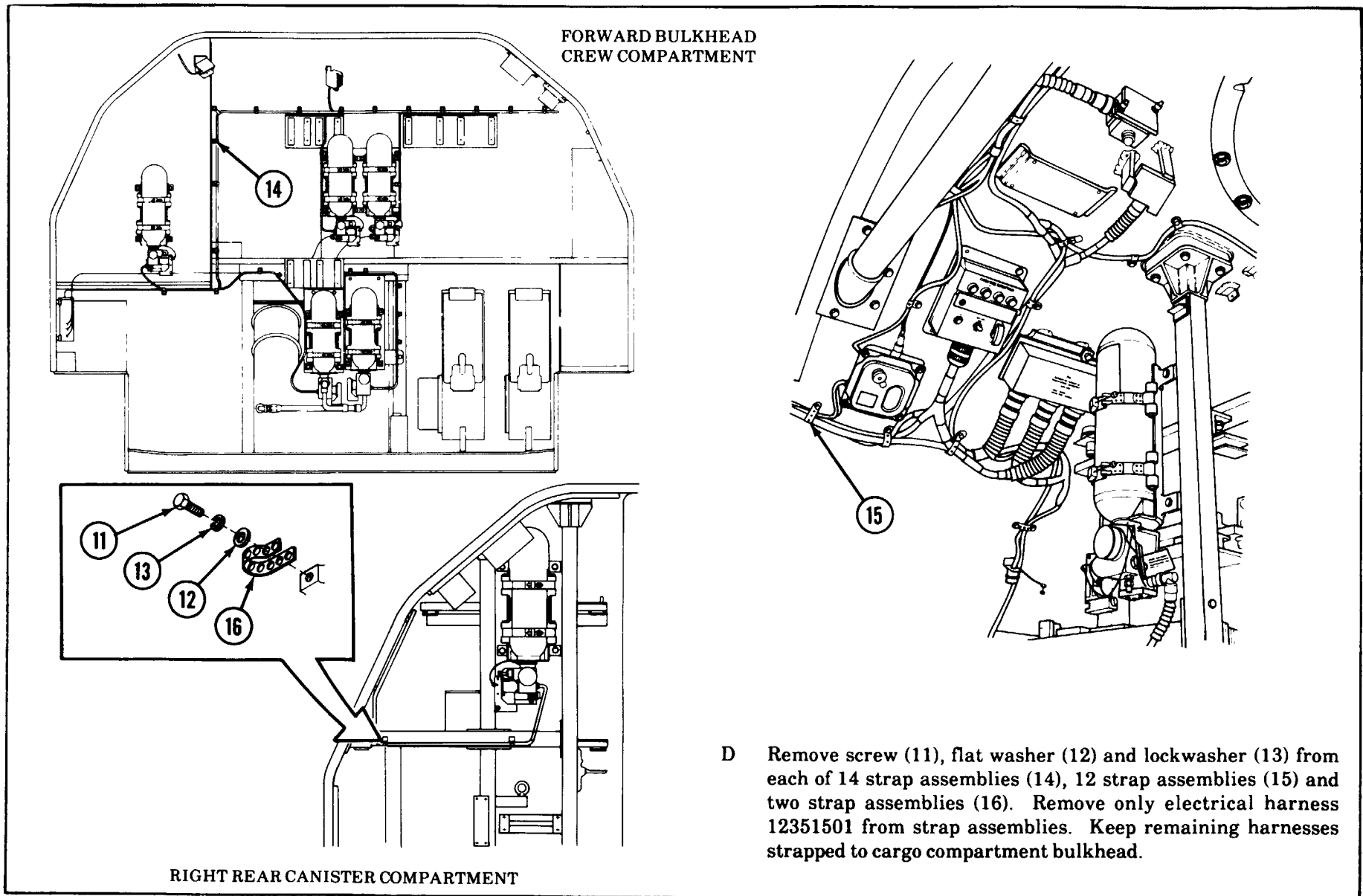


FORWARD BULKHEAD—CREW COMPARTMENT

**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**

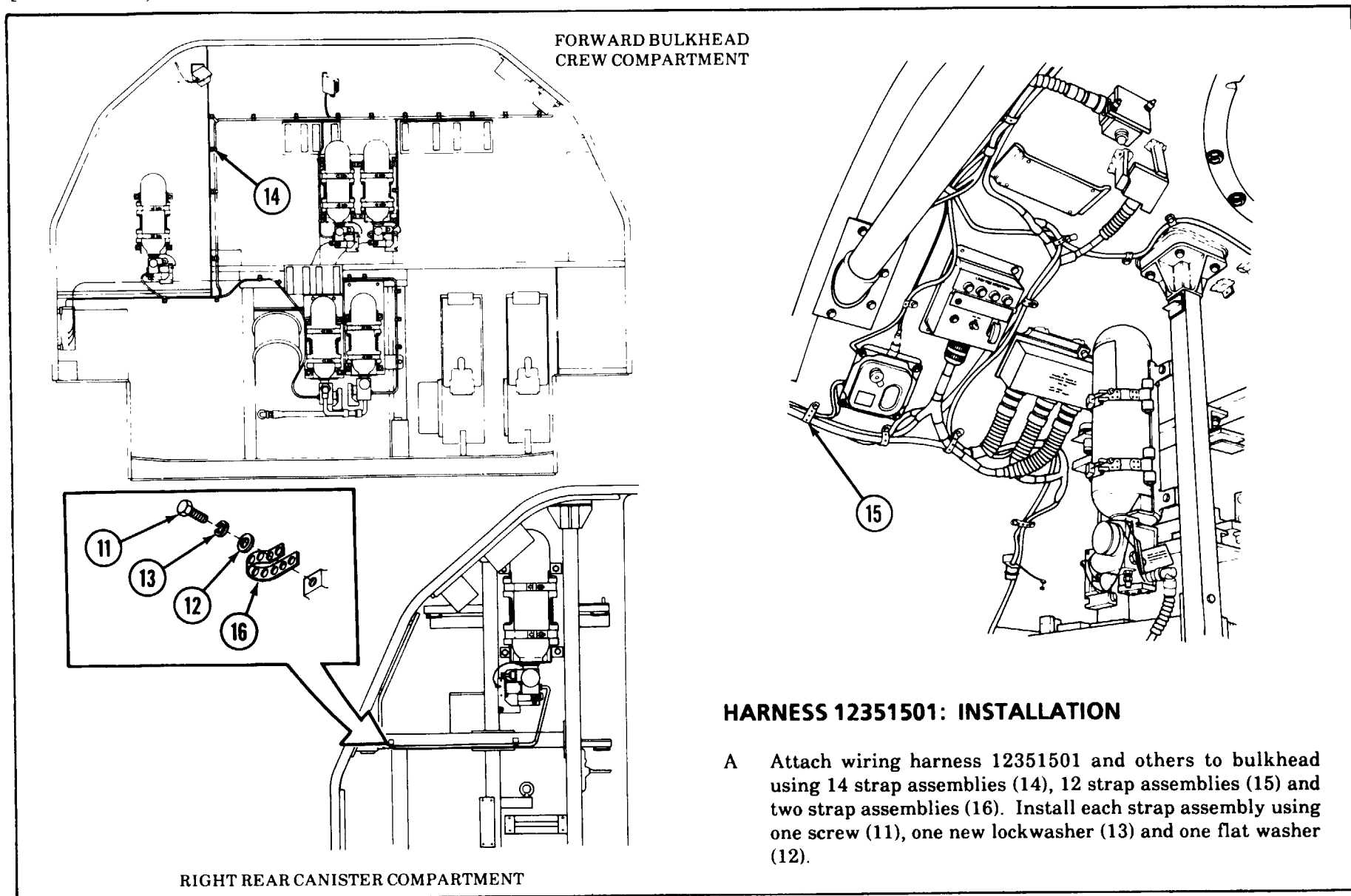


**CREW AFES ELECTRICAL WIRING HARNESSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**





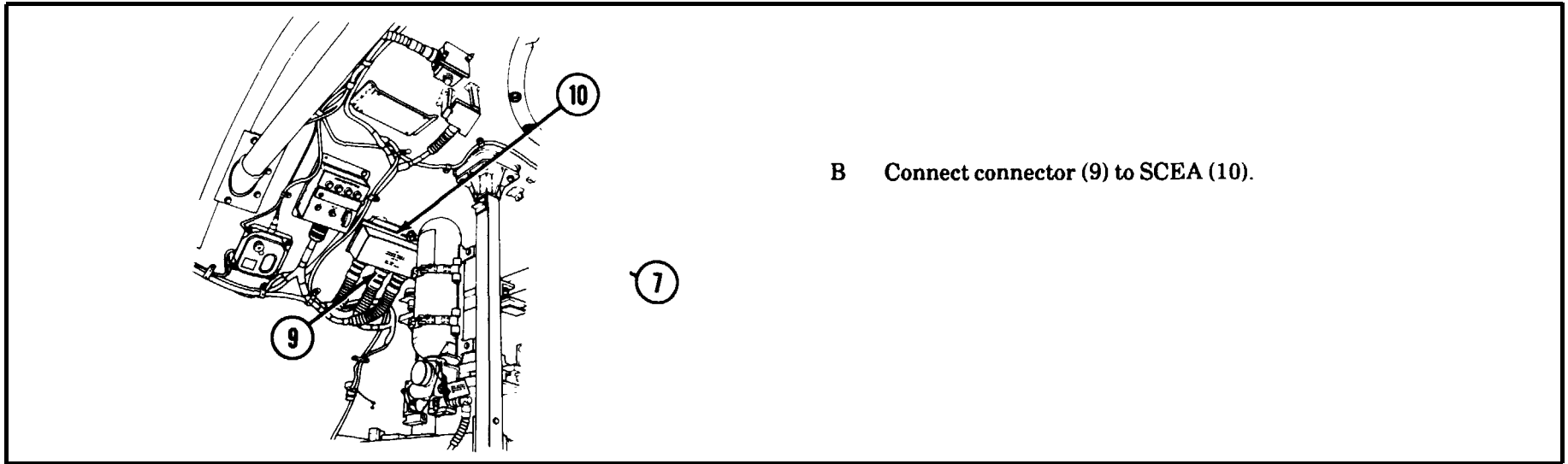
**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
[CONTINUED]**



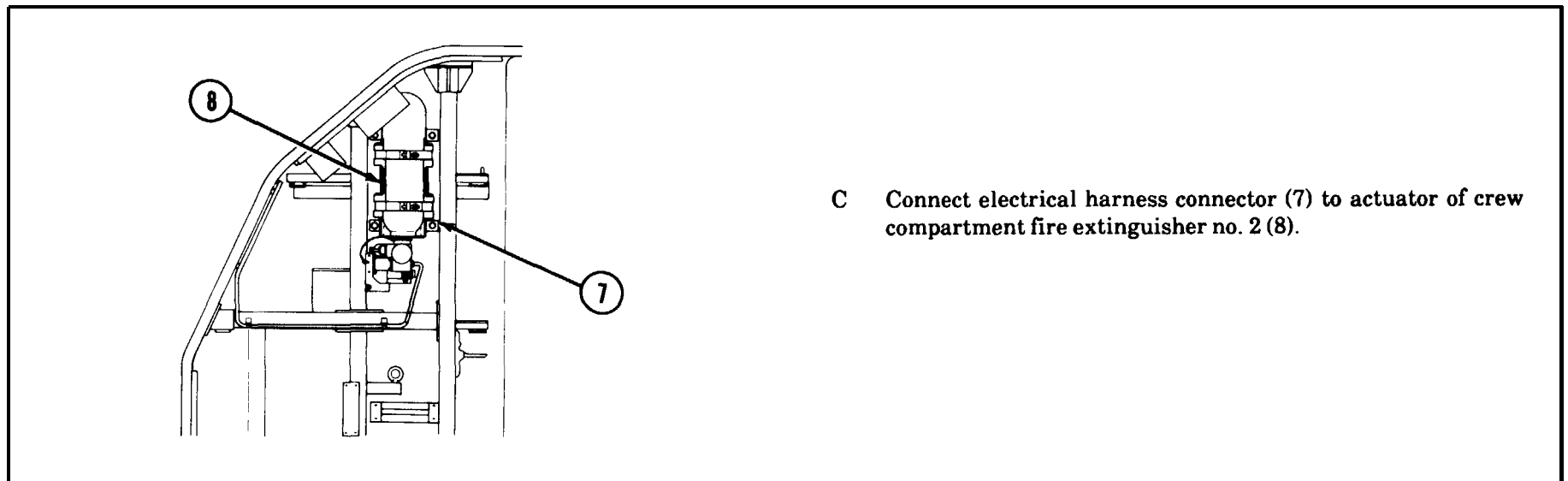
**HARNESS 12351501: INSTALLATION**

- A Attach wiring harness 12351501 and others to bulkhead using 14 strap assemblies (14), 12 strap assemblies (15) and two strap assemblies (16). Install each strap assembly using one screw (11), one new lockwasher (13) and one flat washer (12).

**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**

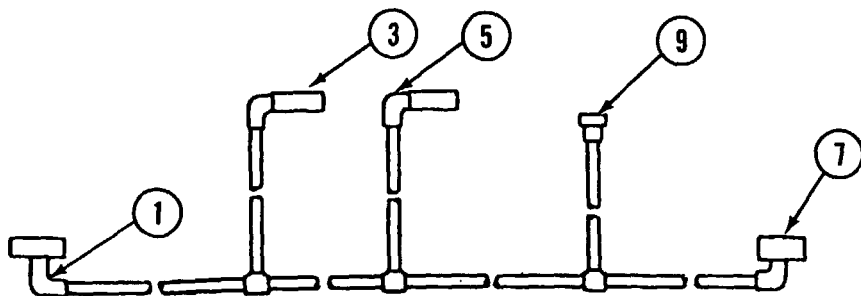


**B Connect connector (9) to SCEA (10).**

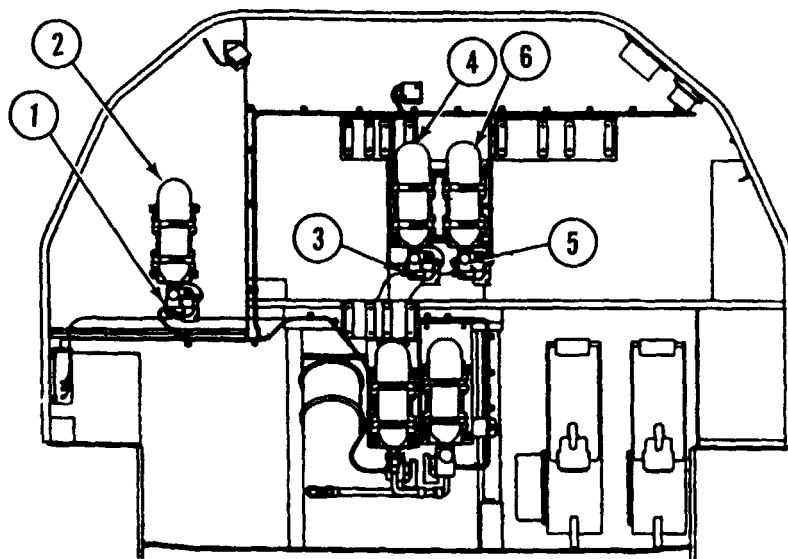


**C Connect electrical harness connector (7) to actuator of crew compartment fire extinguisher no. 2 (8).**

CREW AFES ELECTRICAL WIRING HARNESSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)

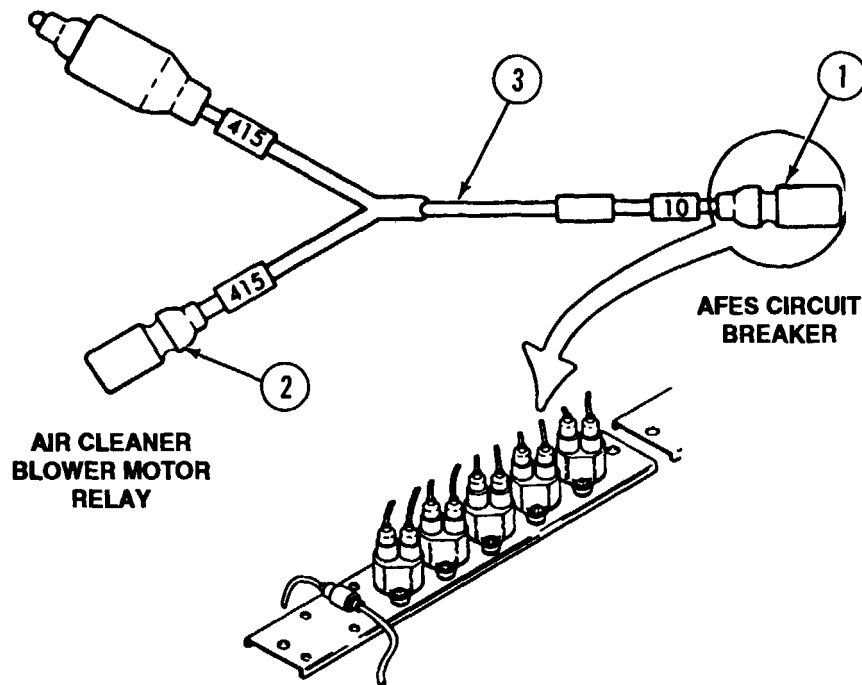


- D Connect electrical harness connector (1) to actuator of crew compartment fire extinguisher no. 3 (2).
- E Install extinguisher bottles and brackets no. 1 and no. 4 (p 14-28.3).
- F Reactivate crew AFES (p 14-14.6).
- G Install right and left projectile racks (p 11-5).



IN VEHICLE LOOKING UP - CREW COMPARTMENT

## CREW AFFS ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)

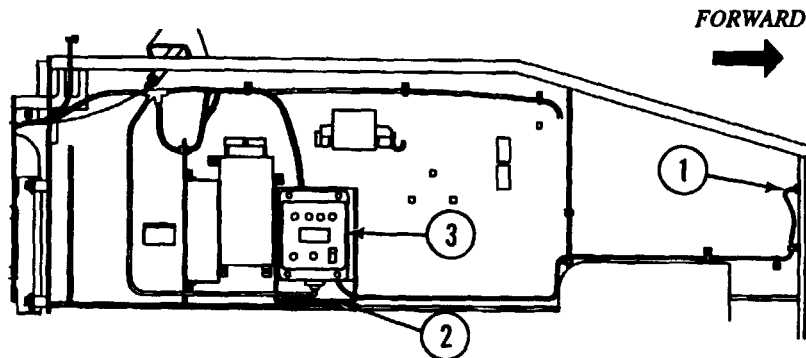
**CABLE 12351754: REMOVAL**

- A Disconnect cable lead no. 10 (1) from no. 6 circuit breaker of panel no. 2.
- B Disconnect cable lead no. 415 (2) from air cleaner blower motor relay.
- C Remove cable 12351754 (3) from vehicle.

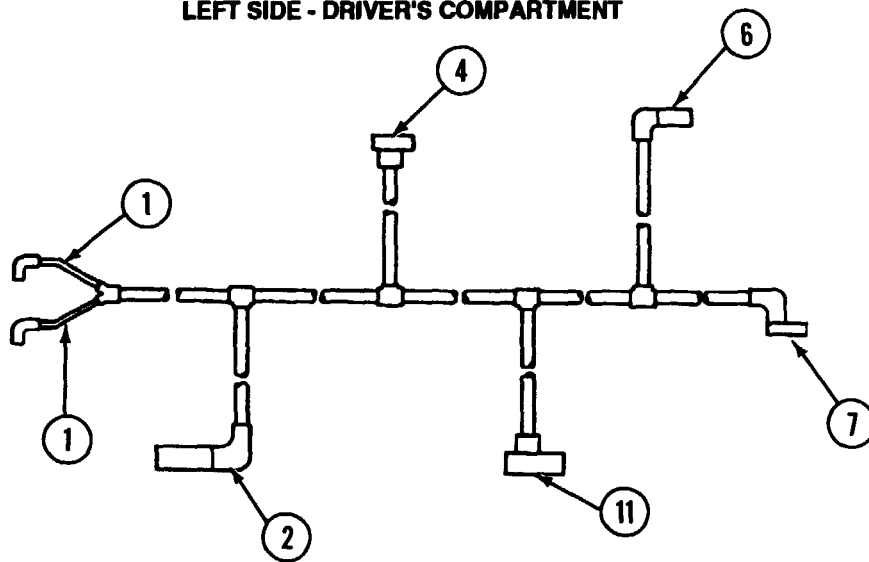
**CABLE 12351754: INSTALLATION**

- A Install cable 12351754 (3) in vehicle.
- B Connect cable lead no. 415 (2) to air cleaner blower motor.
- C Connect cable lead no. 10 (1) to no. 6 circuit breaker of panel no. 2.

**ENGINE AFES ELECTRICAL WIRING HARNESSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION**



**LEFT SIDE - DRIVER'S COMPARTMENT**



**INITIAL SET UP**

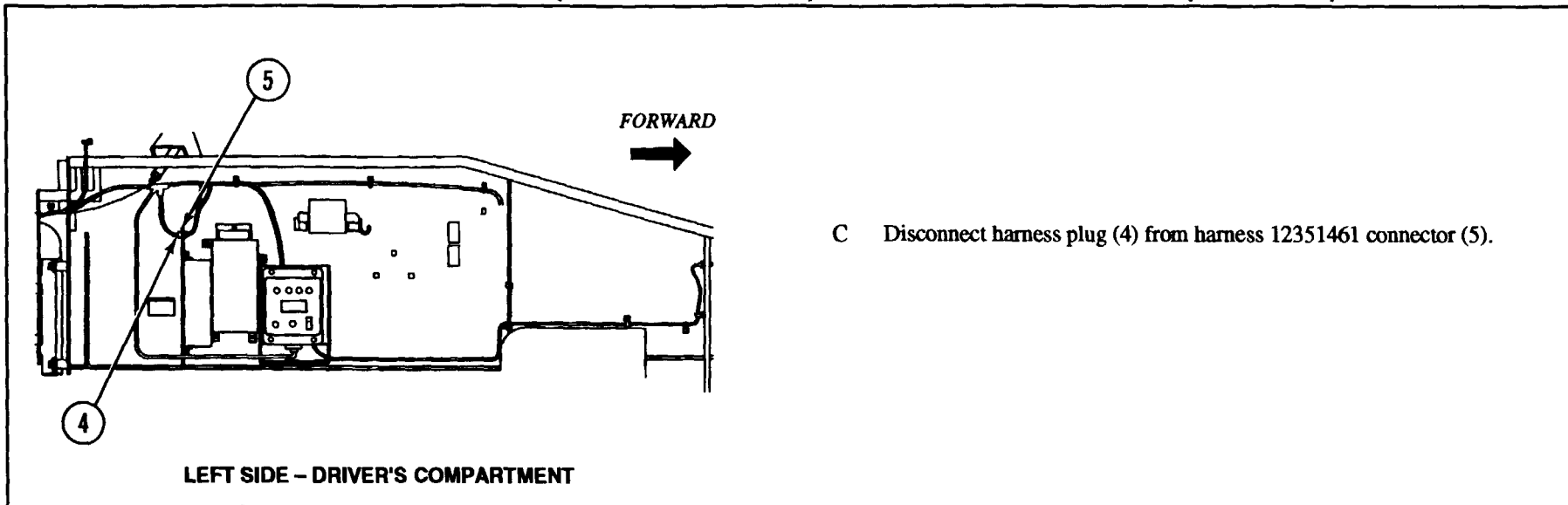
**Equipment Condition:**

- Engine AFES deactivated (p 14-14.3).
- Left projectile rack removed (p 11-5).
- Engine compartment extinguisher bottle brackets removed (p 14-30.1).

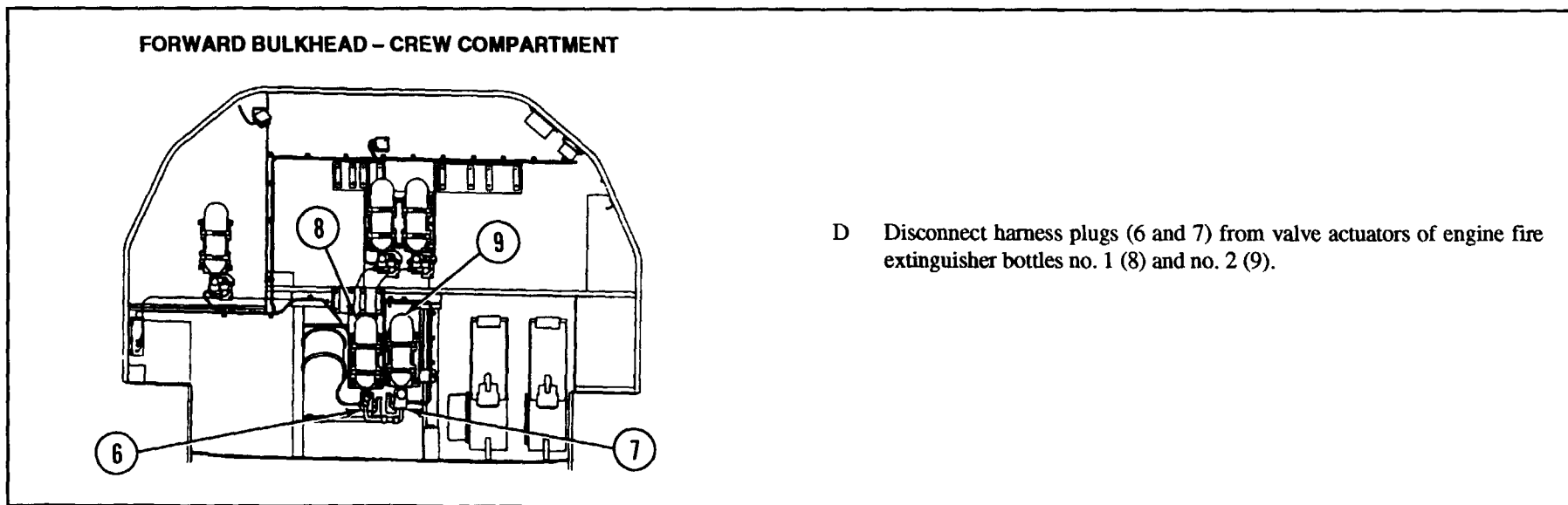
**HARNESS 12351500: REMOVAL**

- A Disconnect harness plugs (1) from driver's compartment forward bulkhead.
- B Disconnect harness plug (2) from engine T/A panel (3).

**ENGINE AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)**

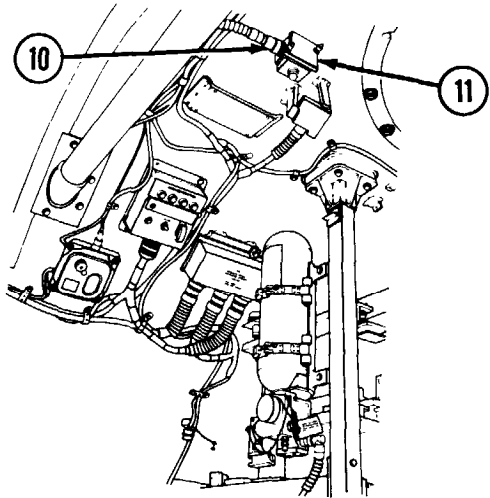


C Disconnect harness plug (4) from harness 12351461 connector (5).

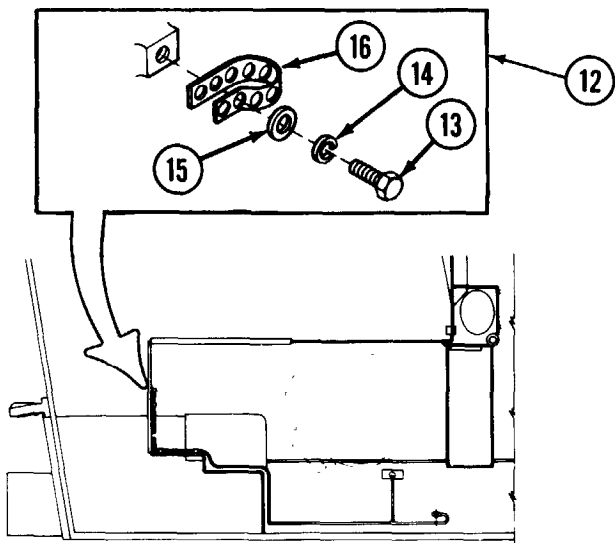


D Disconnect harness plugs (6 and 7) from valve actuators of engine fire extinguisher bottles no. 1 (8) and no. 2 (9).

**ENGINE AFES ELECTRICAL WIRING HARNESSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**

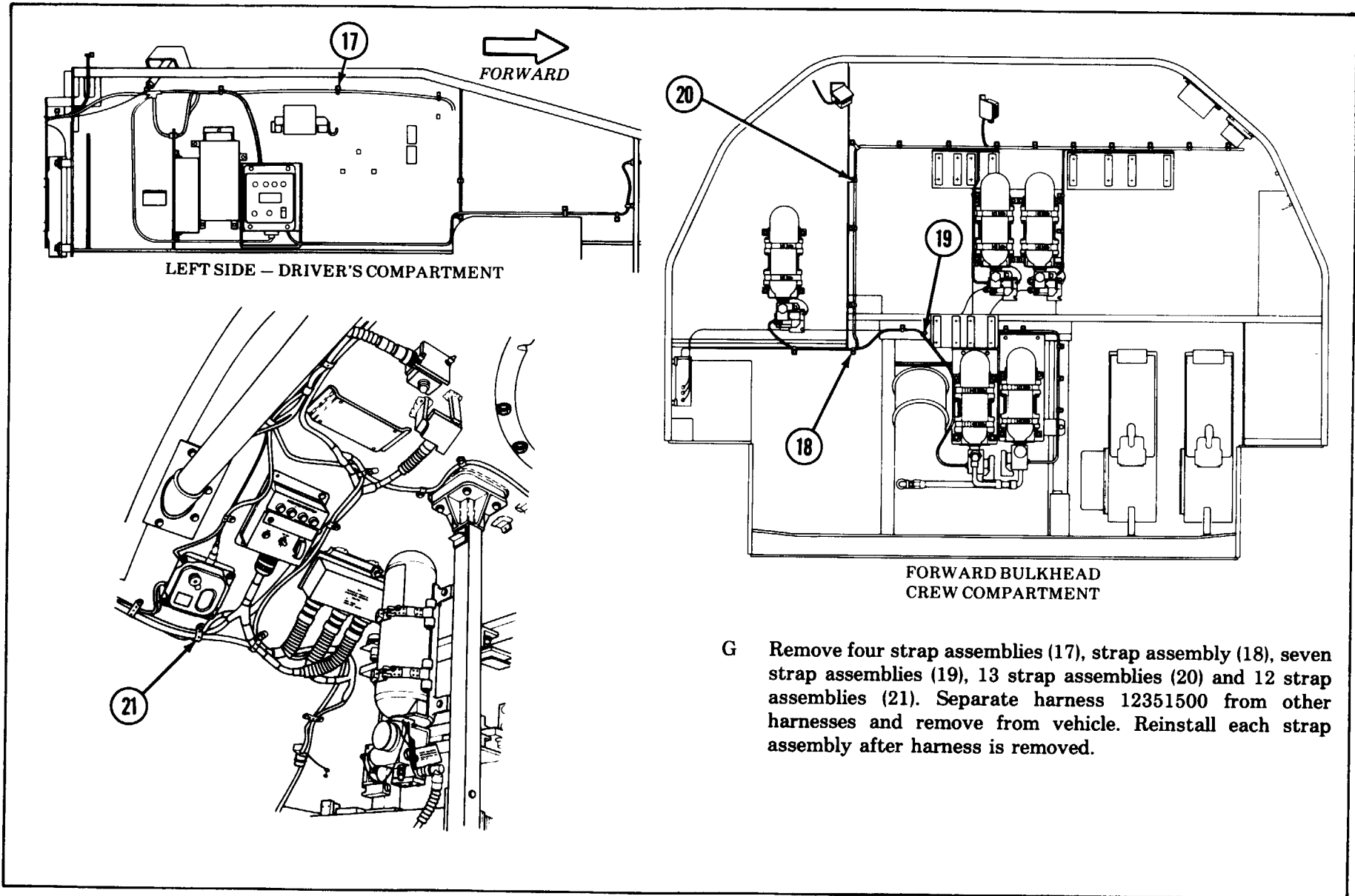


**E** Disconnect harness plug (10) from RSI (11).



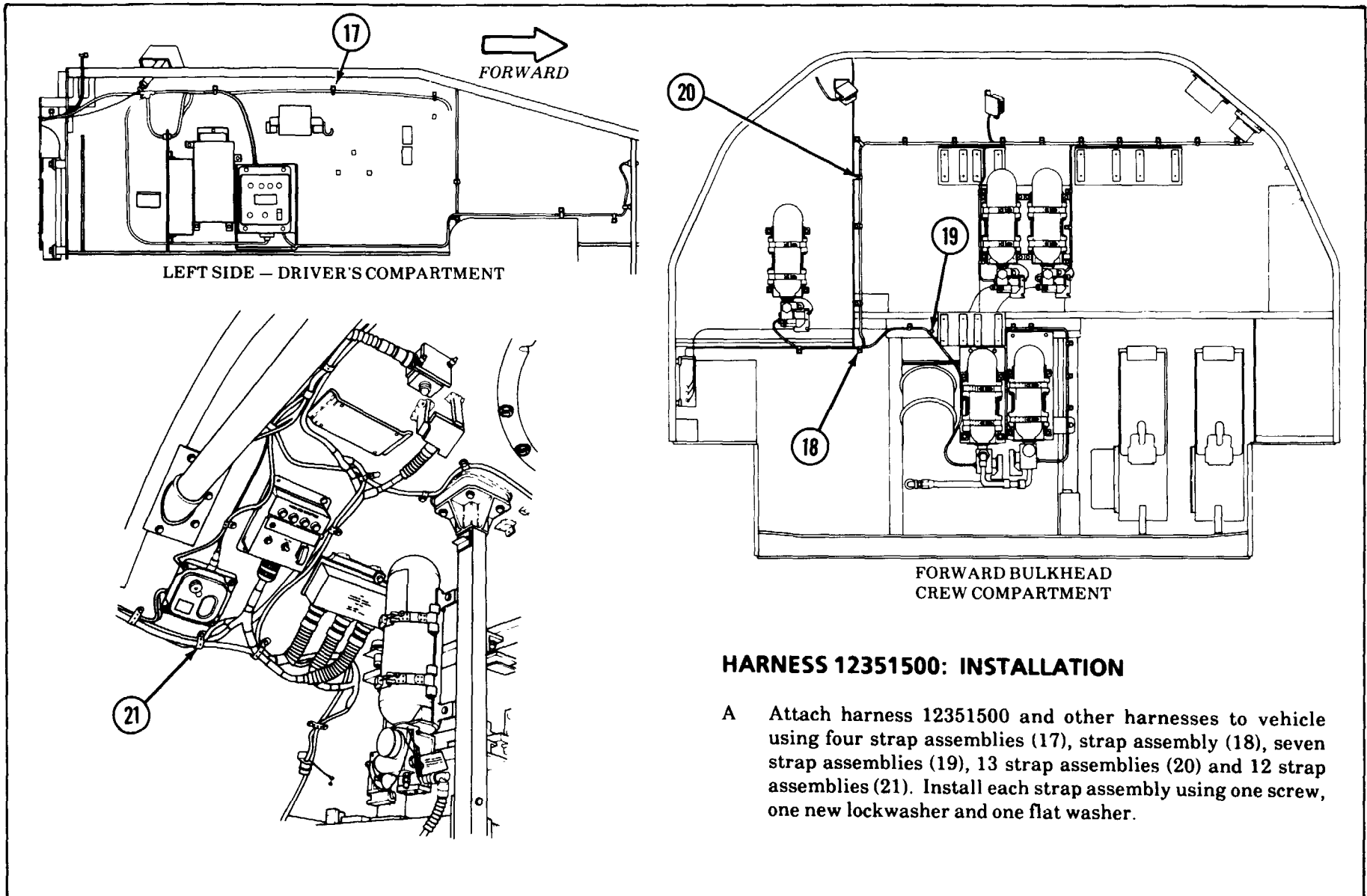
**F** Remove nine strap assemblies (12) by removing from each: one screw (13), one lockwasher (14), one flat washer (15) and one strap (16). Remove harness 12351500. Install strap assemblies.

**ENGINE AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**



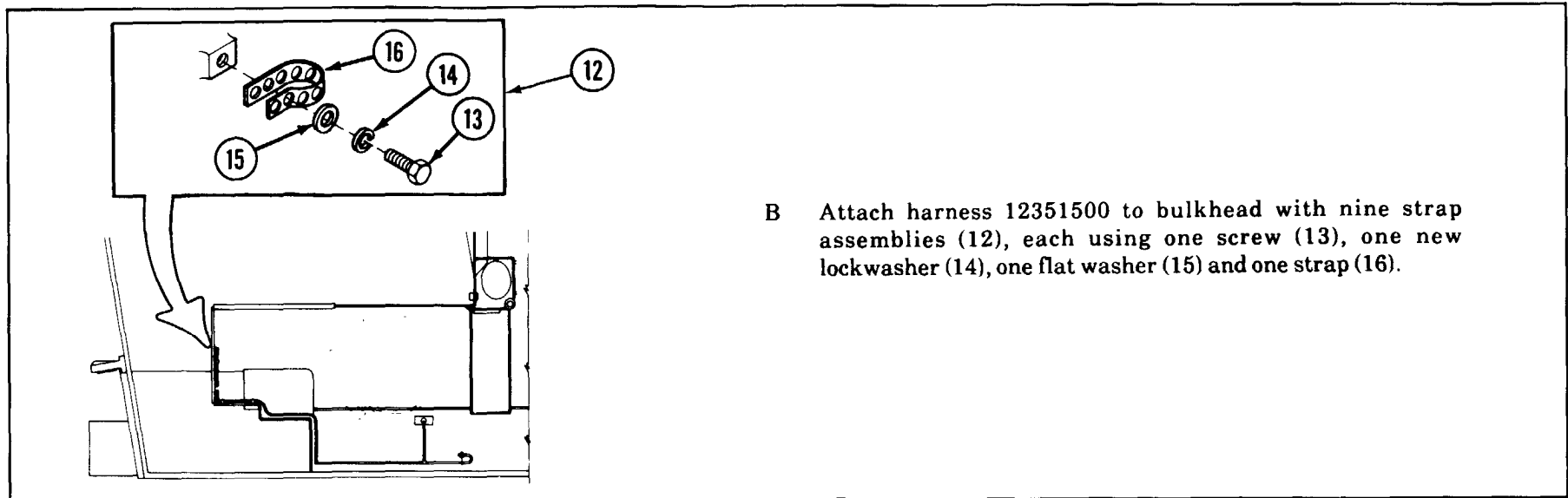


**ENGINE AFES ELECTRICAL WIRING HARNESS (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**

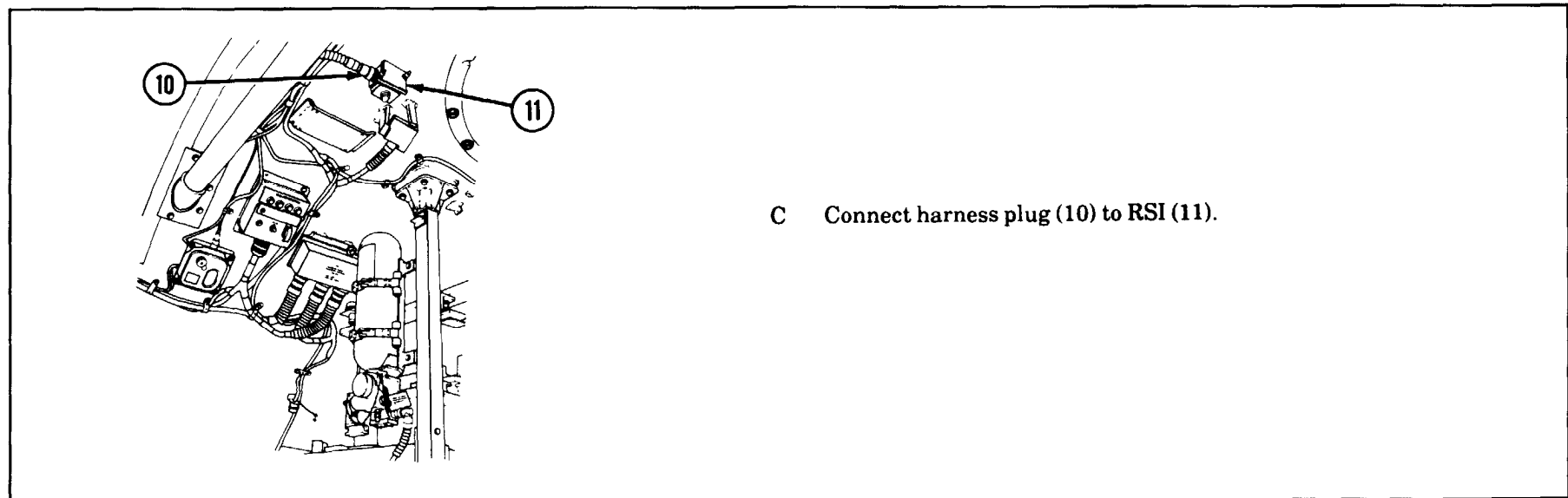


**HARNESS 12351500: INSTALLATION**

- A Attach harness 12351500 and other harnesses to vehicle using four strap assemblies (17), strap assembly (18), seven strap assemblies (19), 13 strap assemblies (20) and 12 strap assemblies (21). Install each strap assembly using one screw, one new lockwasher and one flat washer.

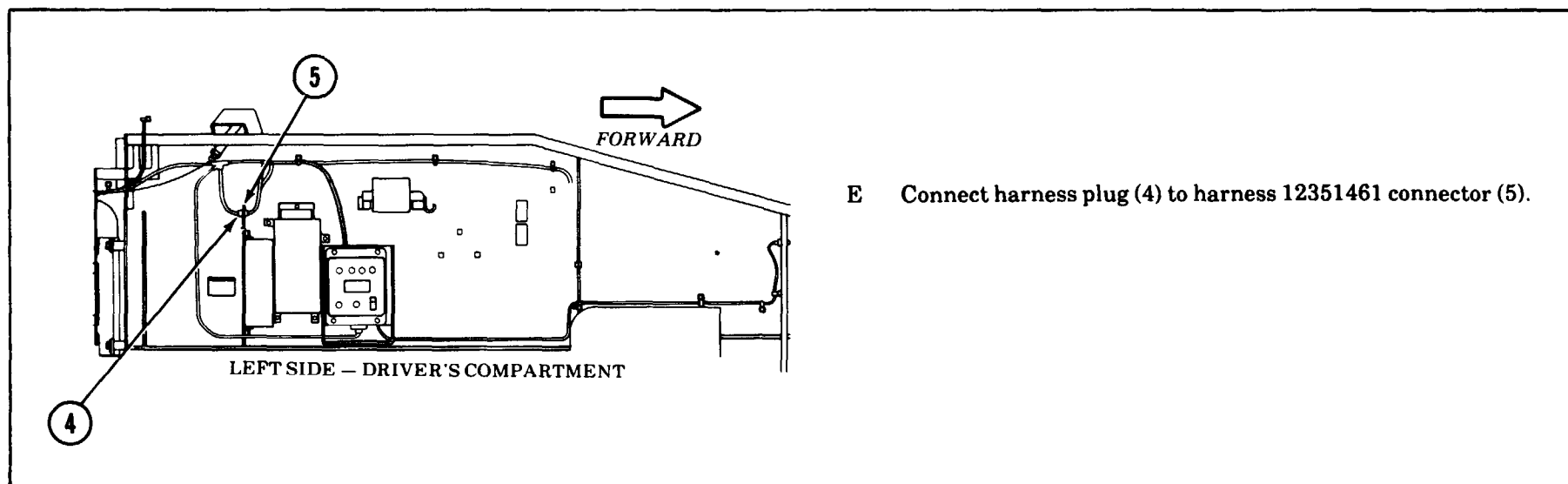
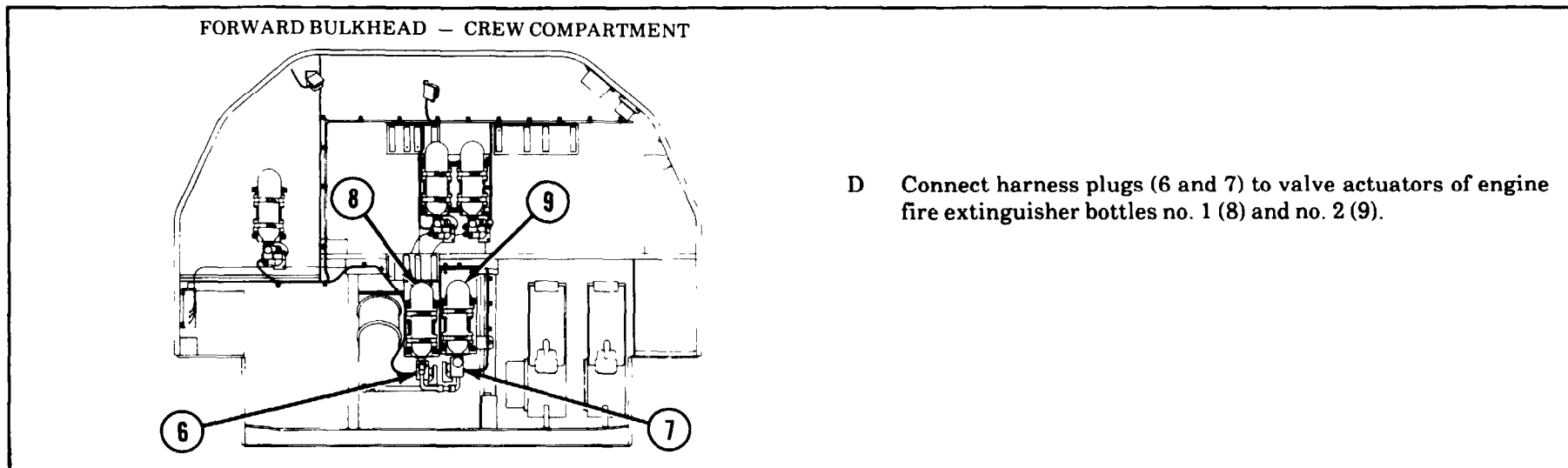
**ENGINE AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**

- B** Attach harness 12351500 to bulkhead with nine strap assemblies (12), each using one screw (13), one new lockwasher (14), one flat washer (15) and one strap (16).



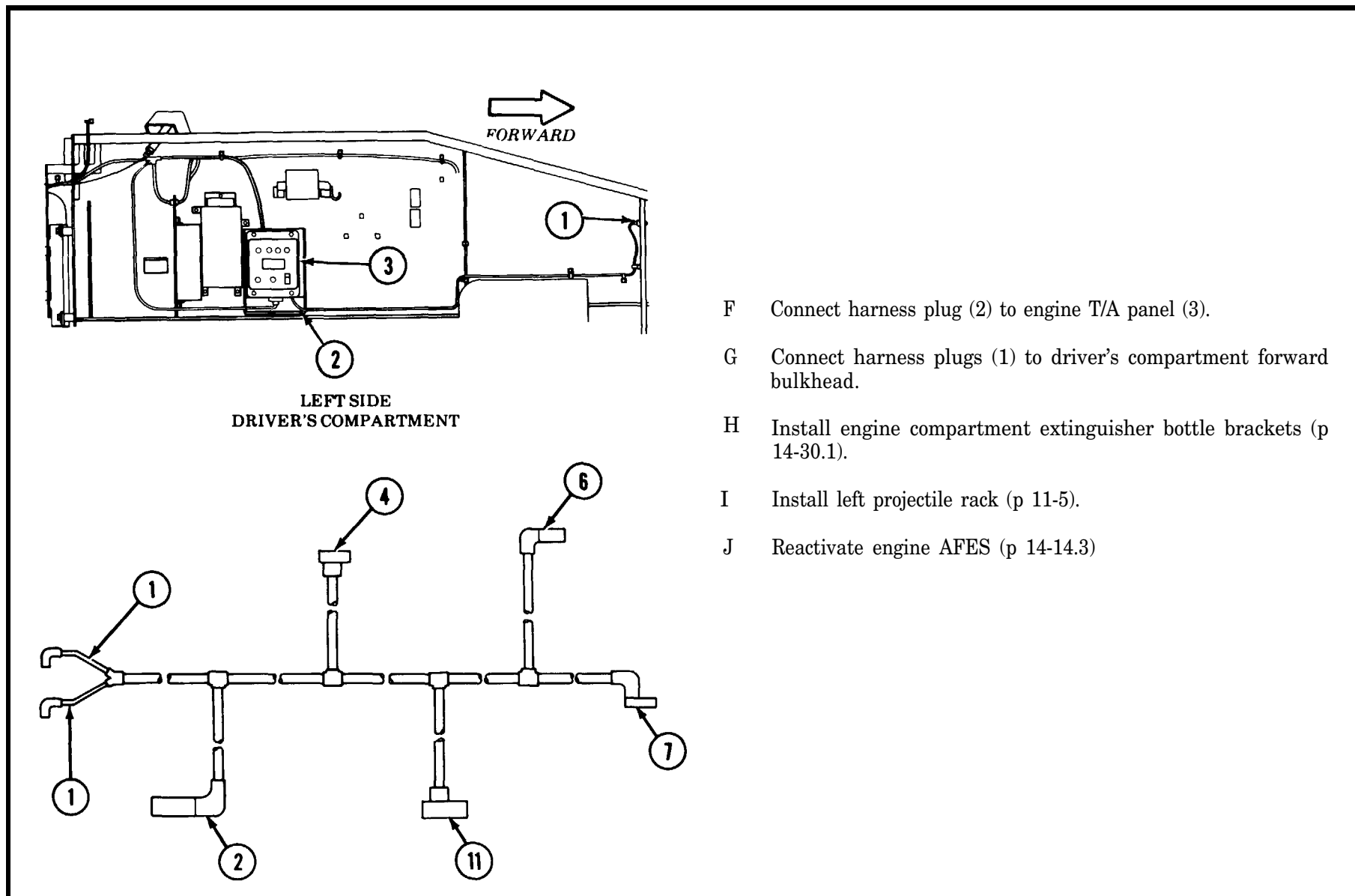
- C** Connect harness plug (10) to RSI (11).

**ENGINE AFES ELECTRICAL WIRING HARNESES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION  
(CONTINUED)**





**ENGINE AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 1 THRU 344): REMOVAL AND INSTALLATION (CONTINUED)**



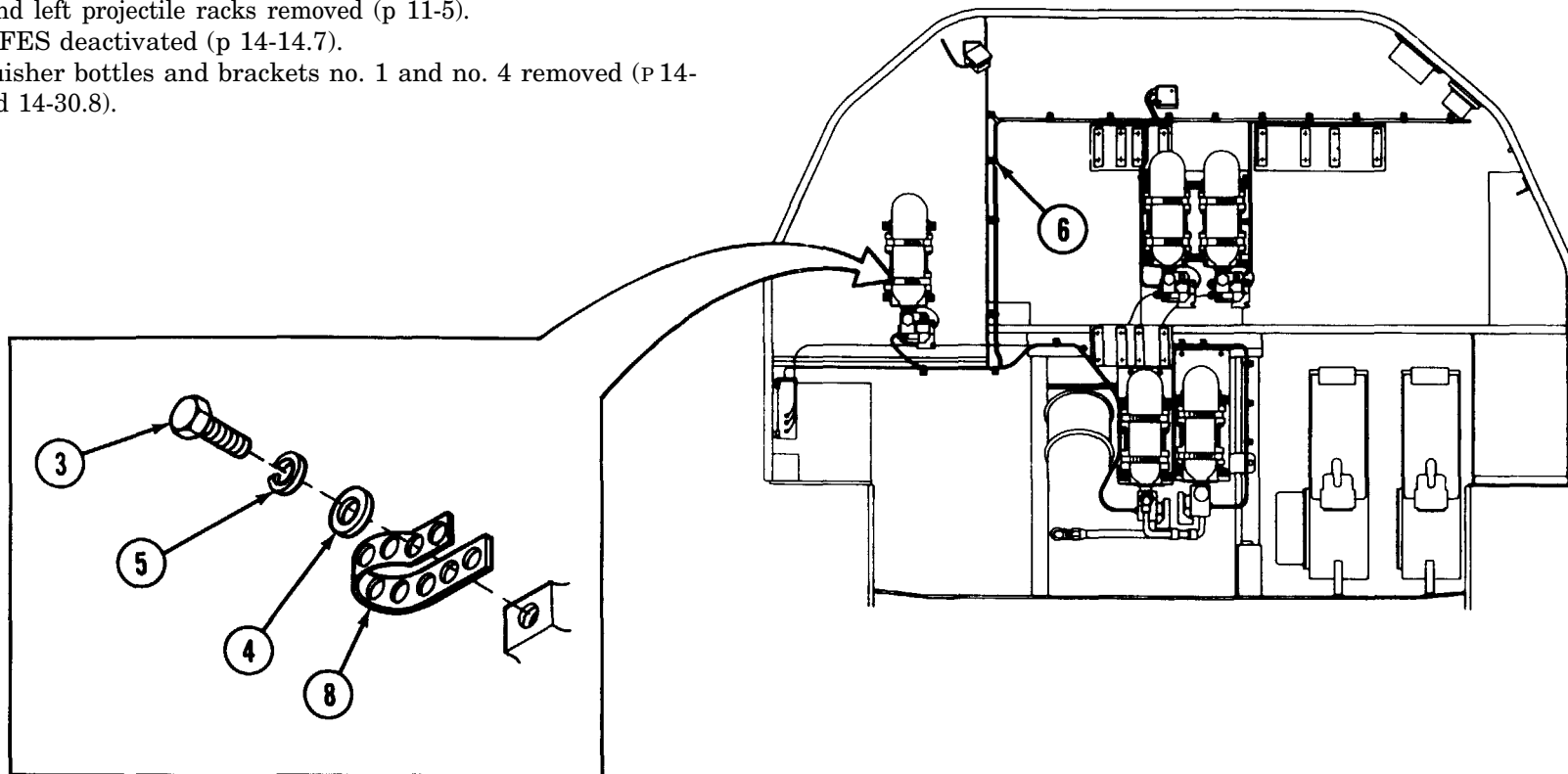
- F Connect harness plug (2) to engine T/A panel (3).
- G Connect harness plugs (1) to driver's compartment forward bulkhead.
- H Install engine compartment extinguisher bottle brackets (p 14-30.1).
- I Install left projectile rack (p 11-5).
- J Reactivate engine AFES (p 14-14.3)

**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION****INITIAL SETUP****Equipment Condition:**

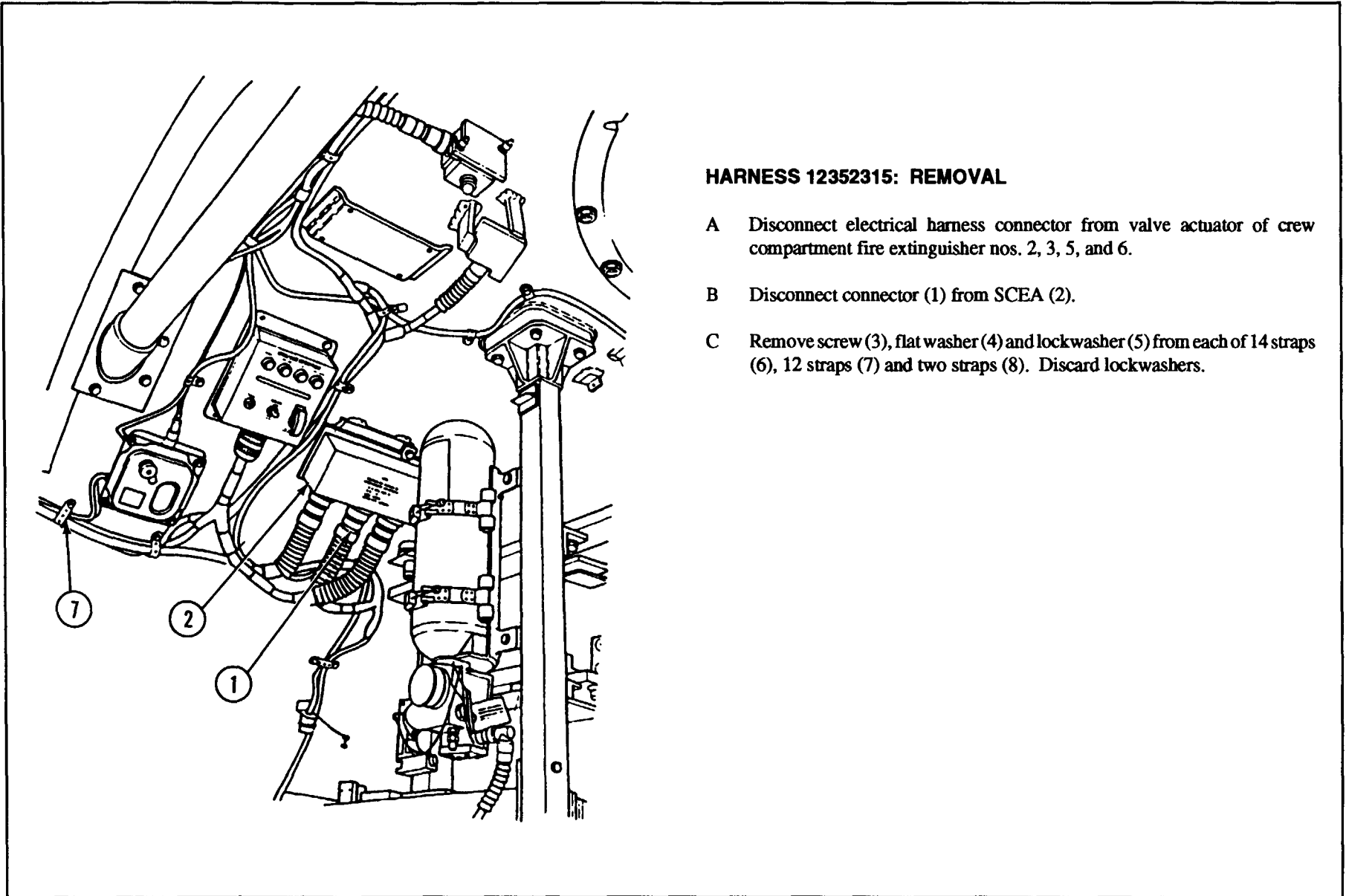
Right and left projectile racks removed (p 11-5).

Crew AFES deactivated (p 14-14.7).

Extinguisher bottles and brackets no. 1 and no. 4 removed (P 14-28.9 and 14-30.8).

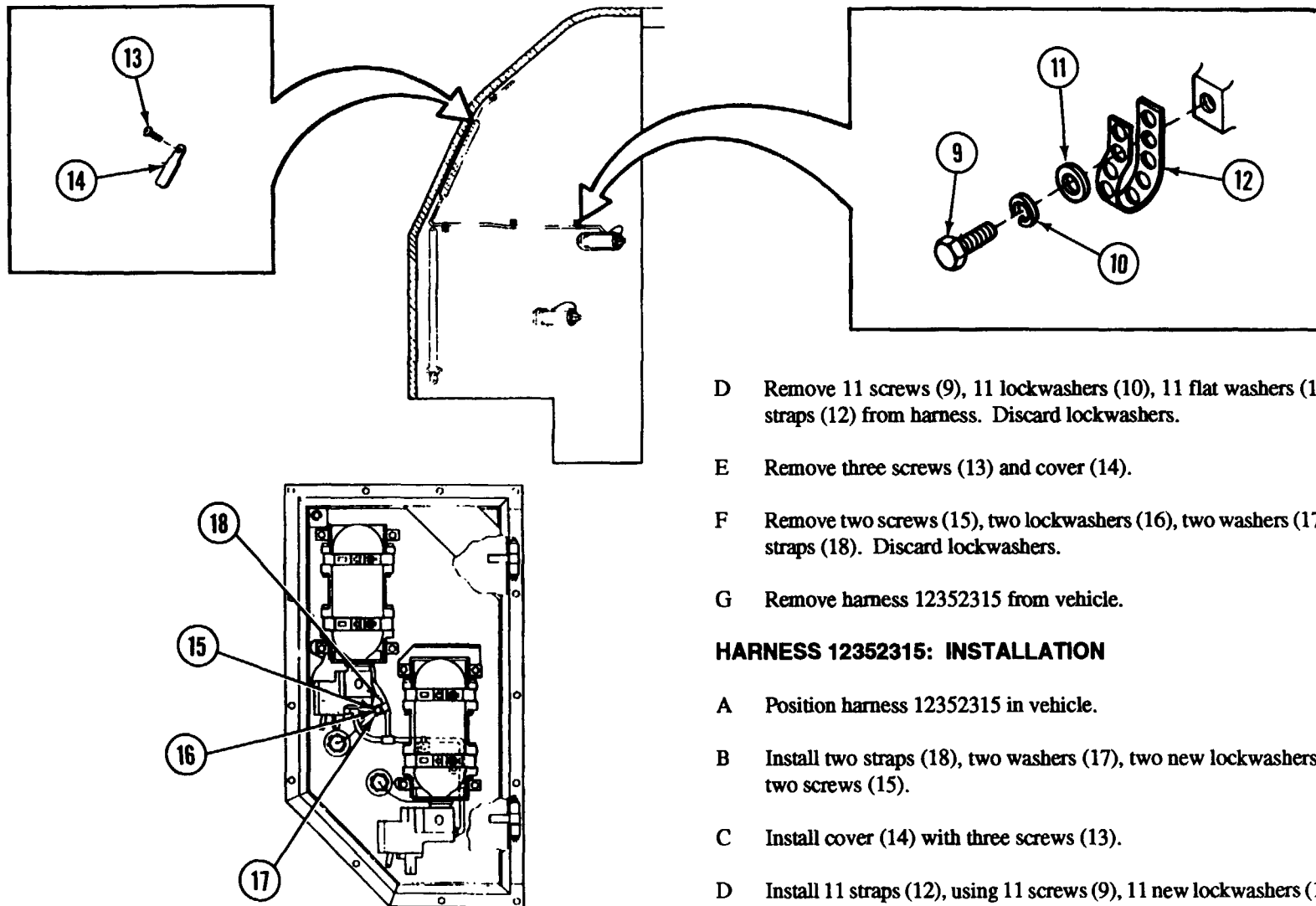
**FORWARD BULKHEAD  
CREW COMPARTMENT**

CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)



**HARNESS 12352315: REMOVAL**

- A Disconnect electrical harness connector from valve actuator of crew compartment fire extinguisher nos. 2, 3, 5, and 6.
- B Disconnect connector (1) from SCEA (2).
- C Remove screw (3), flat washer (4) and lockwasher (5) from each of 14 straps (6), 12 straps (7) and two straps (8). Discard lockwashers.

**CREW AFES ELECTRICAL WIRING HARNESSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**

- D Remove 11 screws (9), 11 lockwashers (10), 11 flat washers (11) and 11 straps (12) from harness. Discard lockwashers.
- E Remove three screws (13) and cover (14).
- F Remove two screws (15), two lockwashers (16), two washers (17) and two straps (18). Discard lockwashers.
- G Remove harness 12352315 from vehicle.

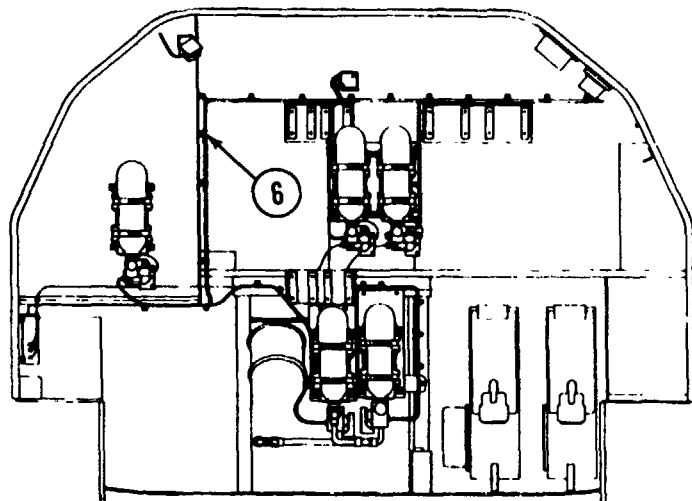
**HARNESS 12352315: INSTALLATION**

- A Position harness 12352315 in vehicle.
- B Install two straps (18), two washers (17), two new lockwashers (16), and two screws (15).
- C Install cover (14) with three screws (13).
- D Install 11 straps (12), using 11 screws (9), 11 new lockwashers (10) and 11 flat washers (11).

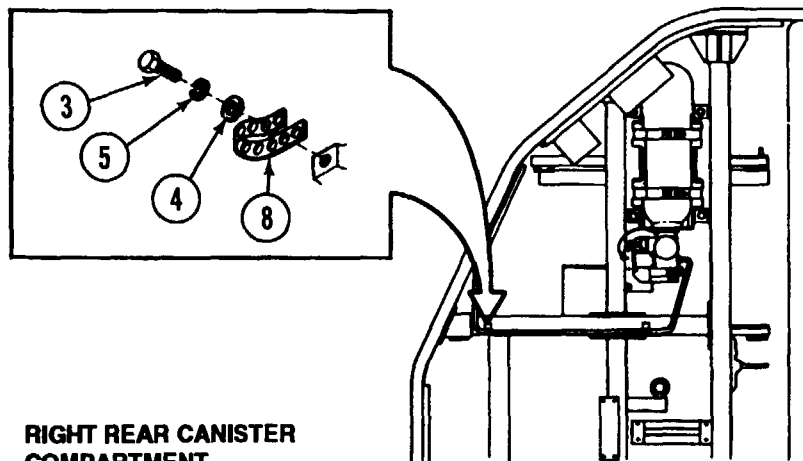


**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**

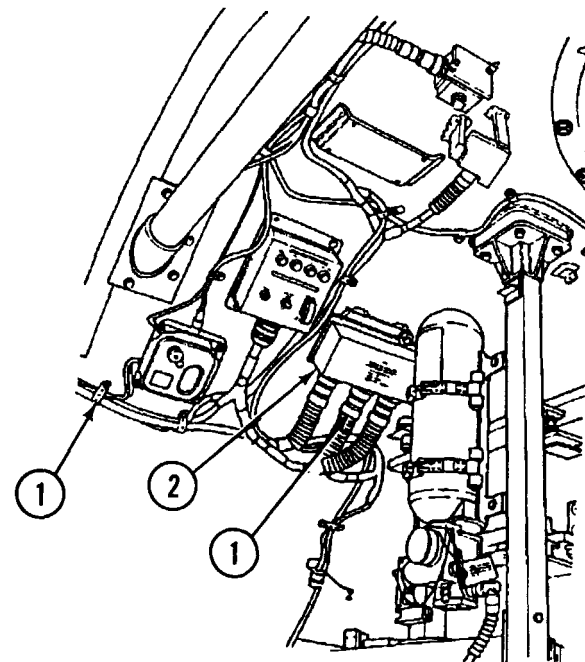
**FORWARD BULKHEAD  
CREW COMPARTMENT**



- E Install 14 straps (6), 12 straps (7) and two straps (8) using one screw (3), one flat washer (4) and one new lockwasher (5).
- F Connect connector (1) to SCEA (2).
- G Connect connectors to fire extinguisher nos. 2, 3, 5, and 6.
- H Install engine extinguisher bottles and brackets no. 1 and no. 4 (p 14-28.9 and 14-30.8) .
- I Reactivate crew AFES (p 14-14.6).
- J Install right and left projectile racks (p 11-5).



**RIGHT REAR CANISTER  
COMPARTMENT**

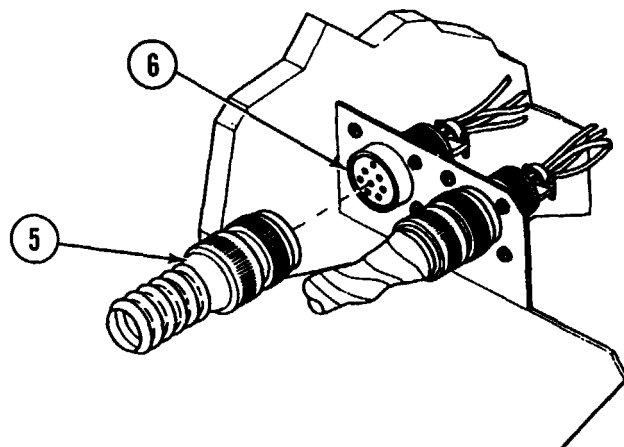


**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**

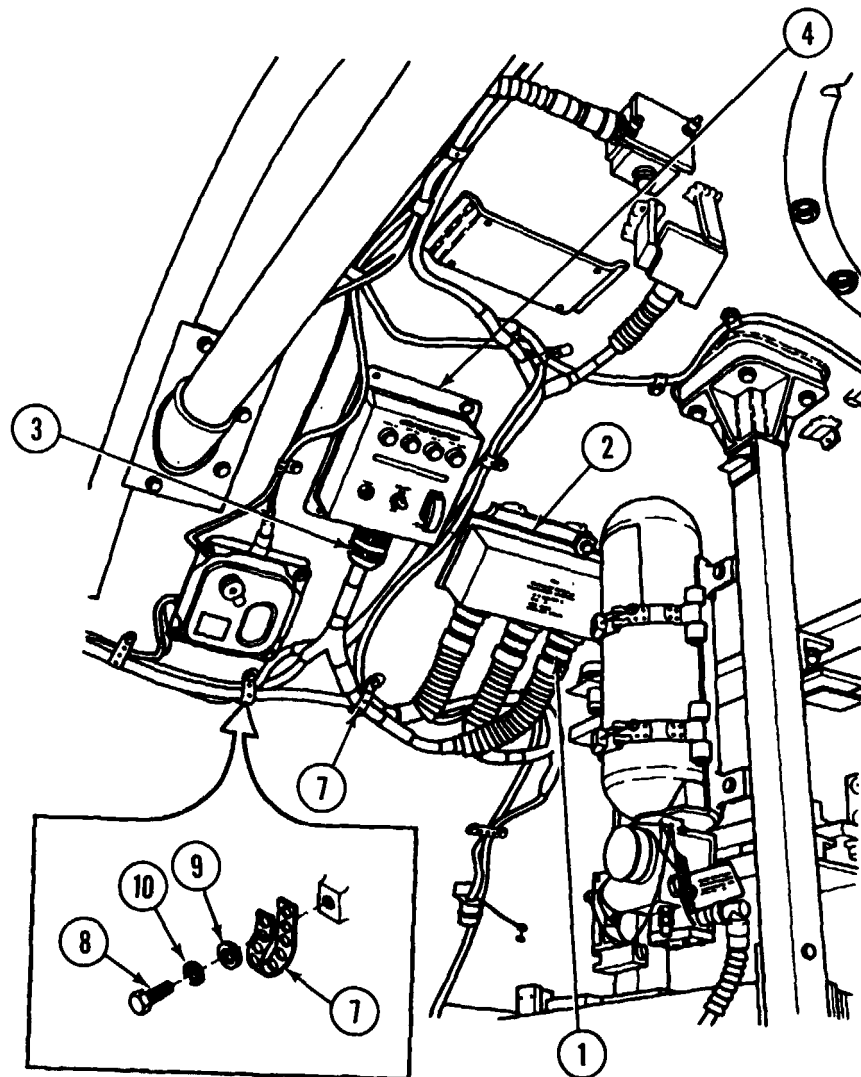
**INITIAL SETUP**

**Equipment Condition:**

Right and left projectile racks removed (p 11-5).  
 Crew AFES deactivated (p 14-14.5).



**HARNESS 12352316  
 LEFT SIDE  
 DRIVER'S COMPARTMENT**



**CREW AFES ELECTRICAL WIRING HARNESES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**

**HARNESS 12352316: REMOVAL**

- A Disconnect harness plug (1) from SCEA unit (2).
- B Disconnect harness plug (3) from crew T/A panel (4).
- C Disconnect harness plug (5) from connector (6) of harness 12351461.
- D From each of 25 strap assemblies (7) remove one screw (8), one flat washer (9) and one lockwasher (10). Discard lockwashers, and separate and remove wiring harness 12352316 from other harnesses.

**HARNESS 12352316: INSTALLATION**

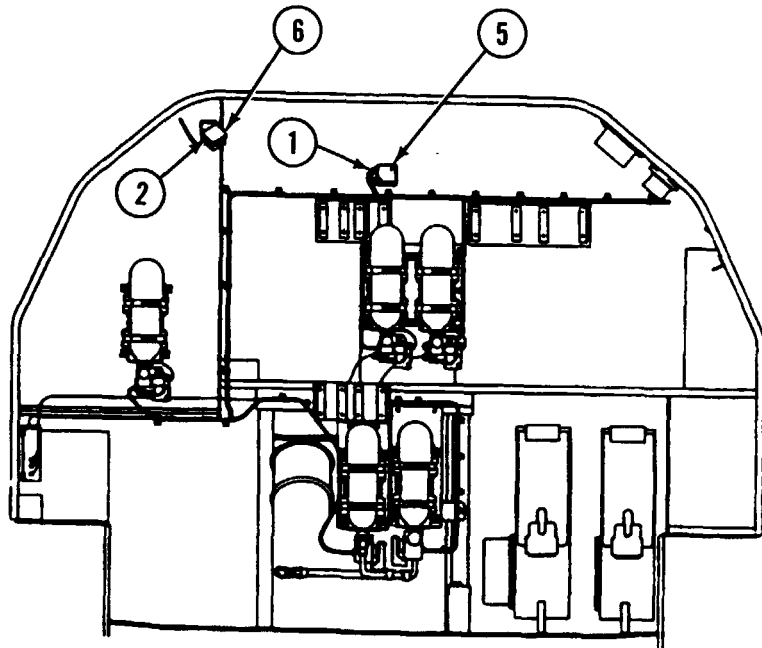
- A Install wiring harness 12352316 on vehicle using 25 strap assemblies (7), 25 screws (8), 25 flat washers (9) and 25 new lockwashers (10).
- B Connect harness plug (5) to connector (6) of harness 12351461.
- C Connect harness plug (3) to crew T/A panel (4).
- D Connect harness plug (1) to SCEA unit (2).
- E Reactivate crew AFES (p 14-14.6).
- F Install right and left projectile racks (p 11-5).

**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**

**INITIAL SETUP**

**Equipment Condition:**

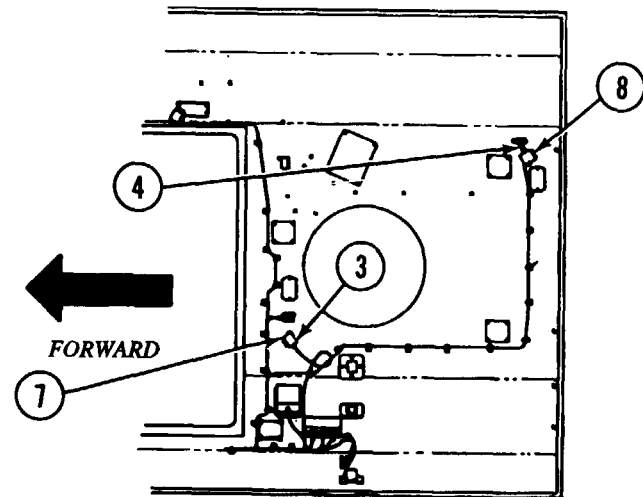
Crew AFES deactivated (p 14-14.5).  
 Cargo compartment top doors open (TM 9-2350-267-10).



**FORWARD BULKHEAD - CREW COMPARTMENT**

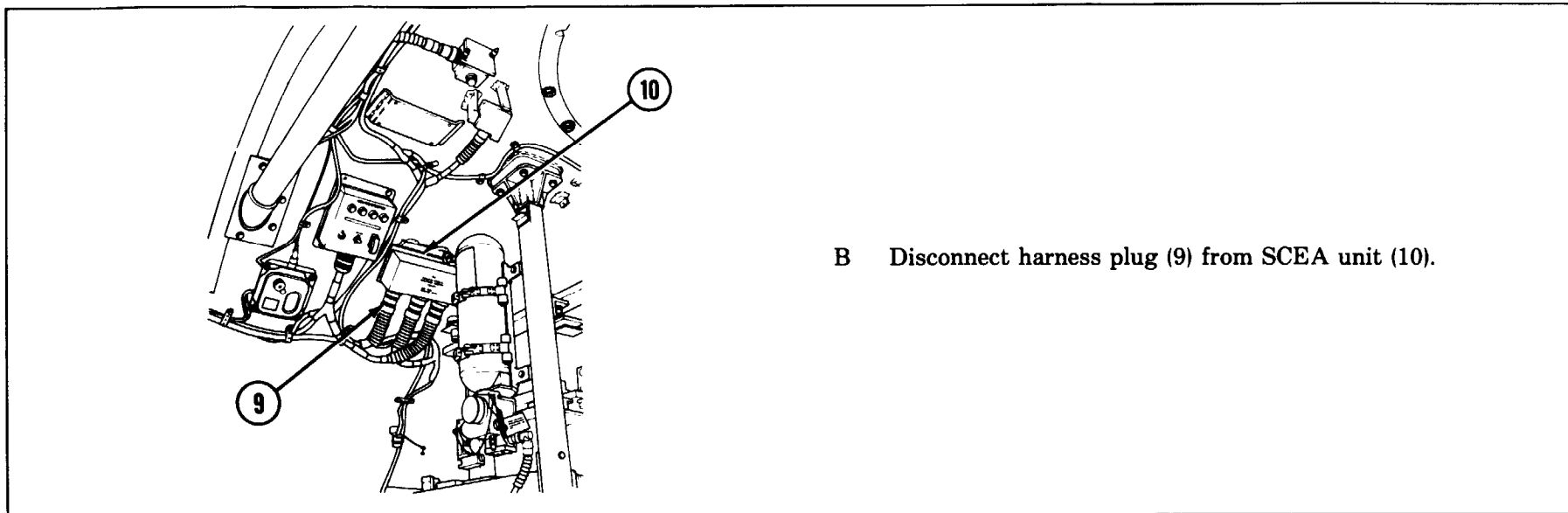
**HARNESS 12352353: REMOVAL**

A Disconnect harness plugs (1, 2, 3 and 4) from four OFSA units (5, 6,7 and 8).

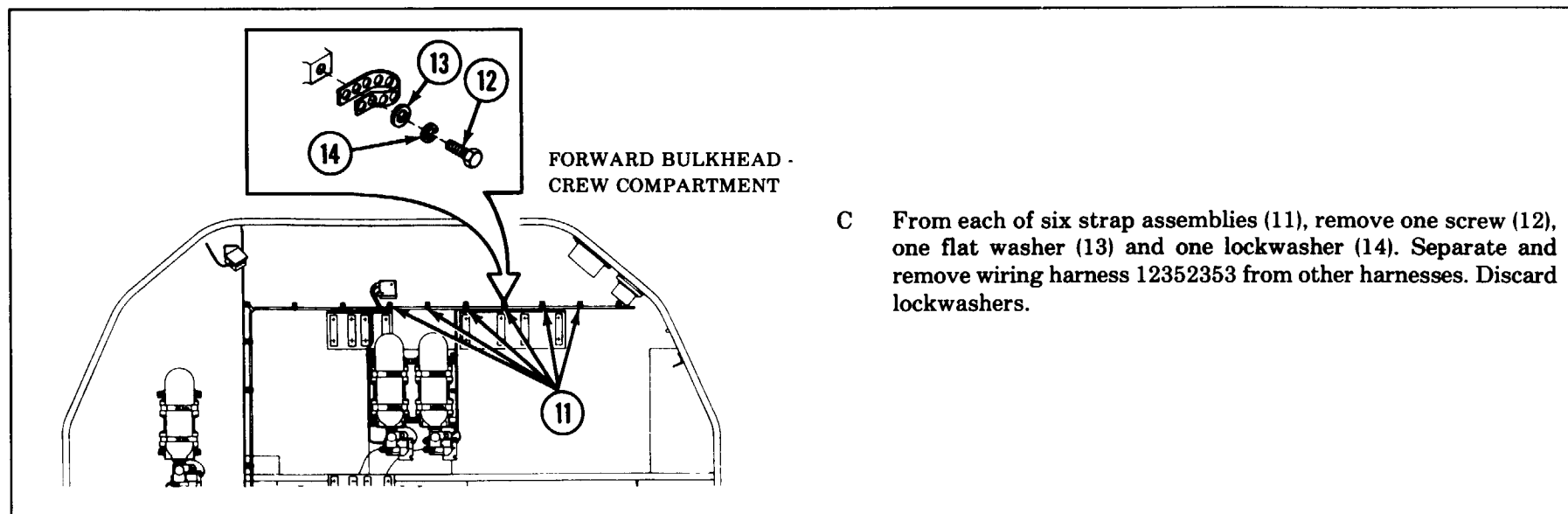


**IN VEHICLE LOOKING UP - CREW COMPARTMENT**

## CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)

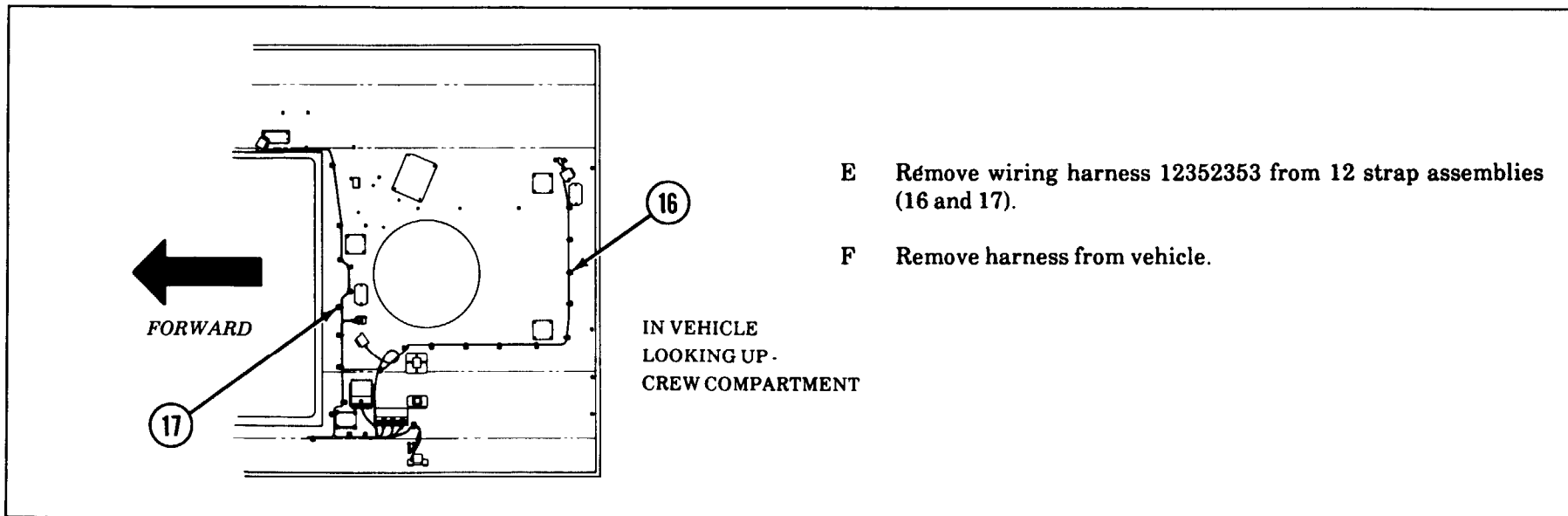
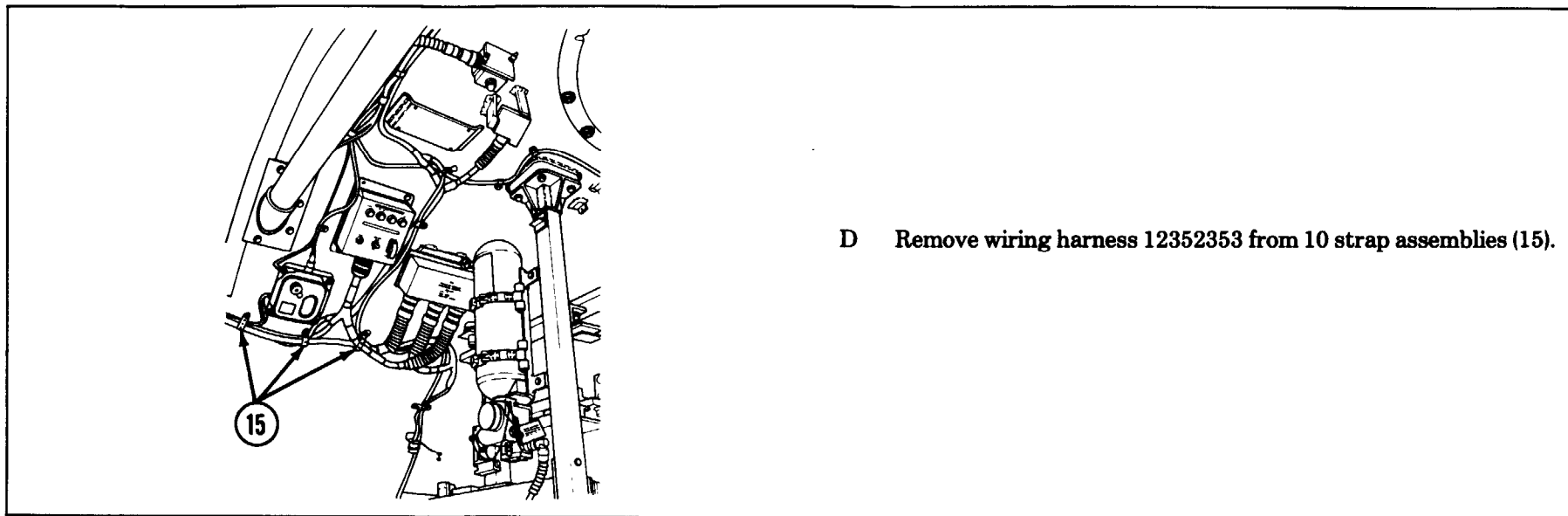


**B** Disconnect harness plug (9) from SCEA unit (10).

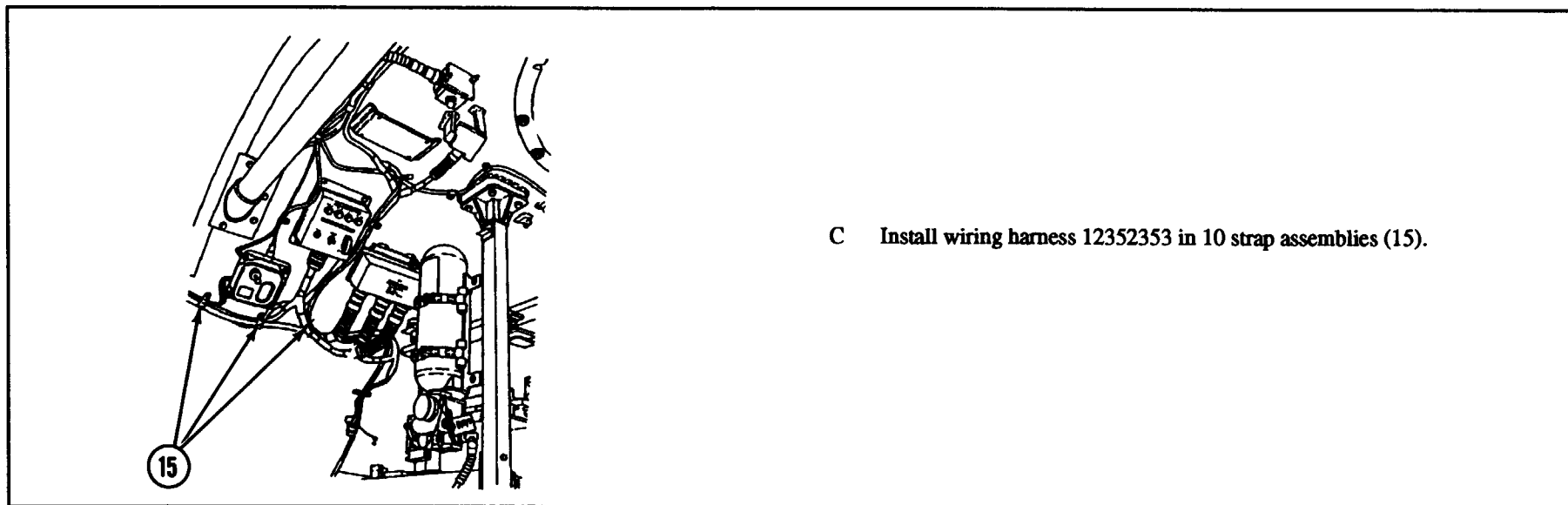
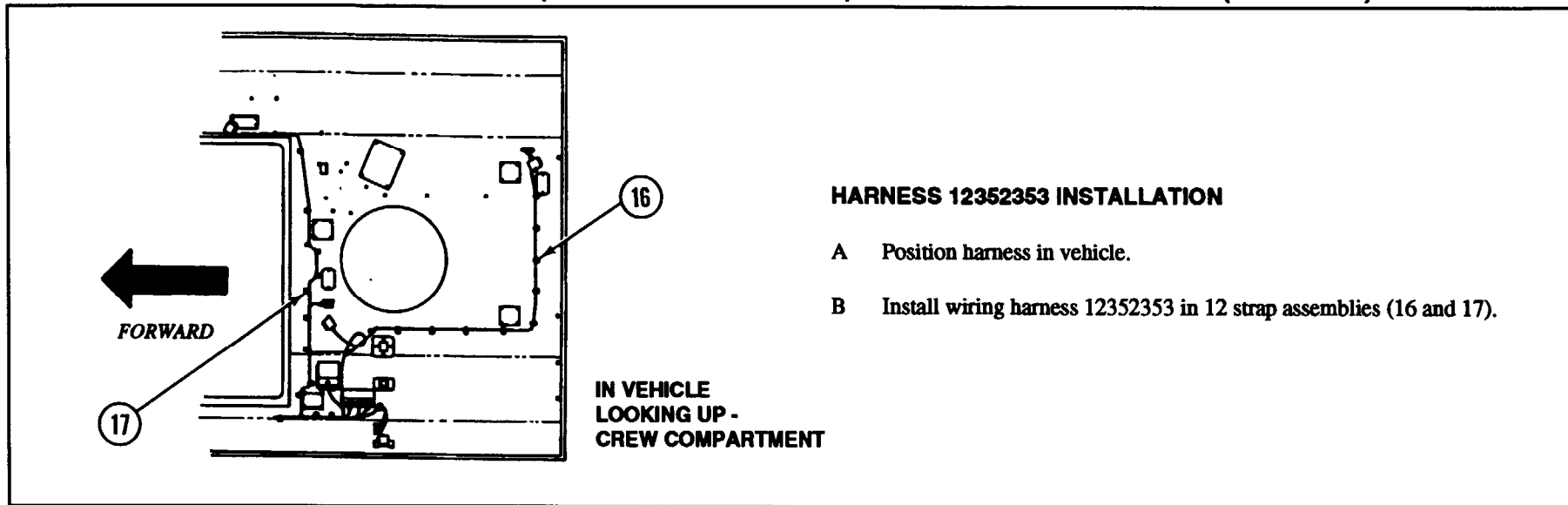


**C** From each of six strap assemblies (11), remove one screw (12), one flat washer (13) and one lockwasher (14). Separate and remove wiring harness 12352353 from other harnesses. Discard lockwashers.

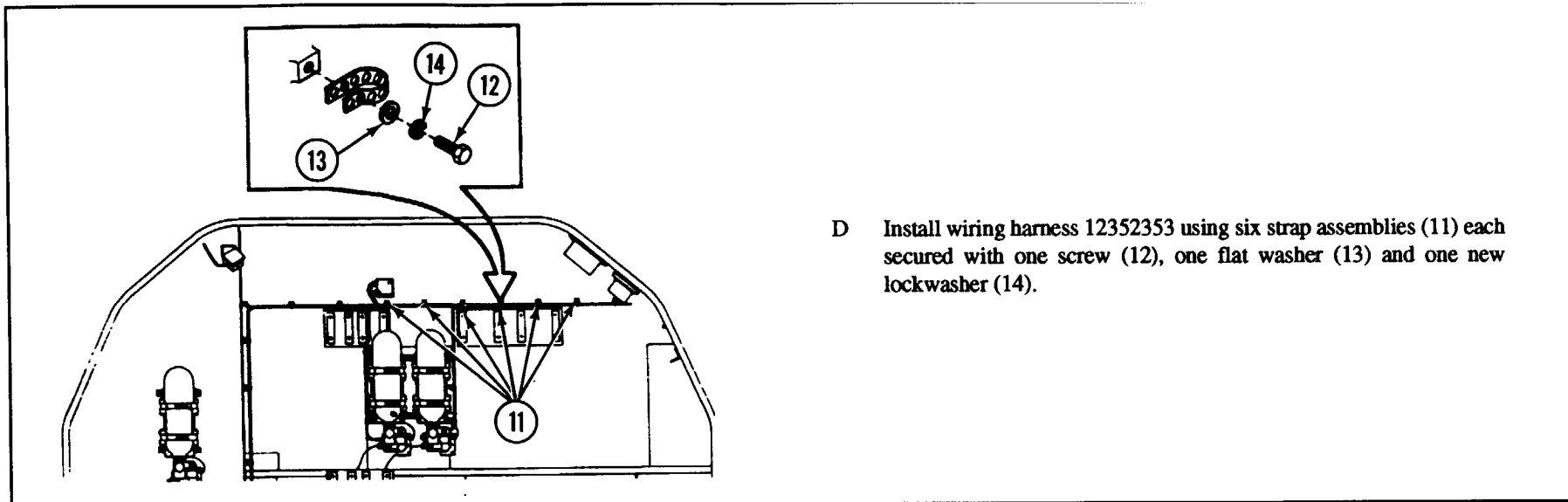
**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION  
CONTINUED)**



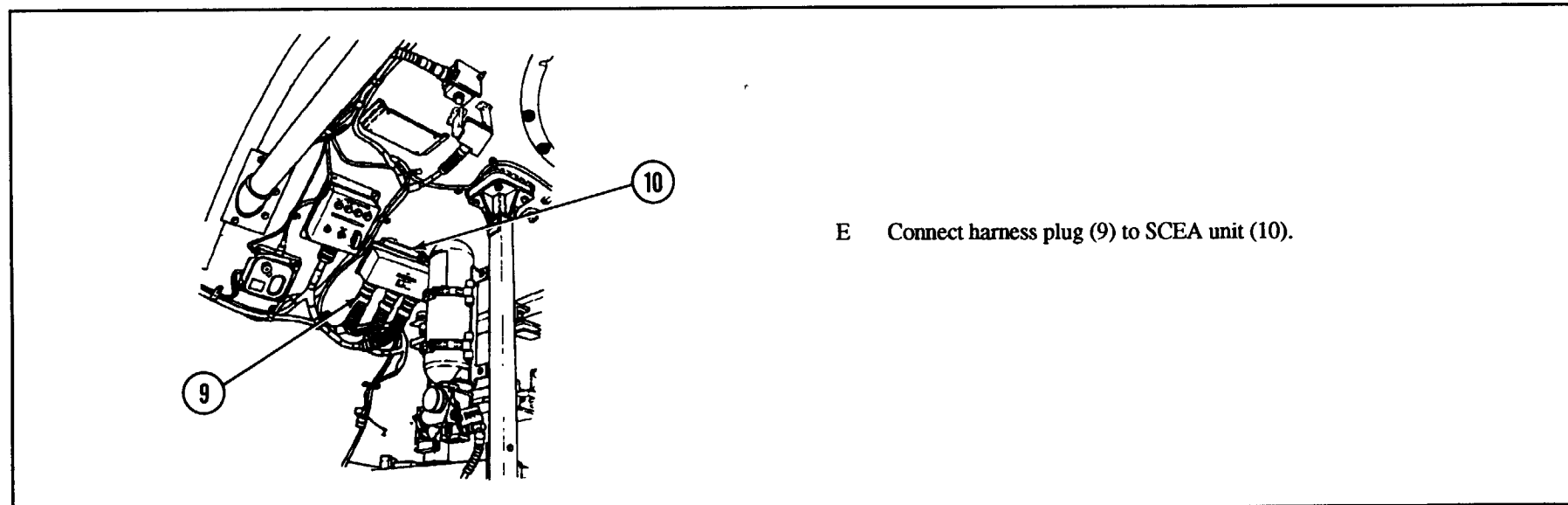
**CREW AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**



## CREW AFES ELECTRICAL WIRING HARNESES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)



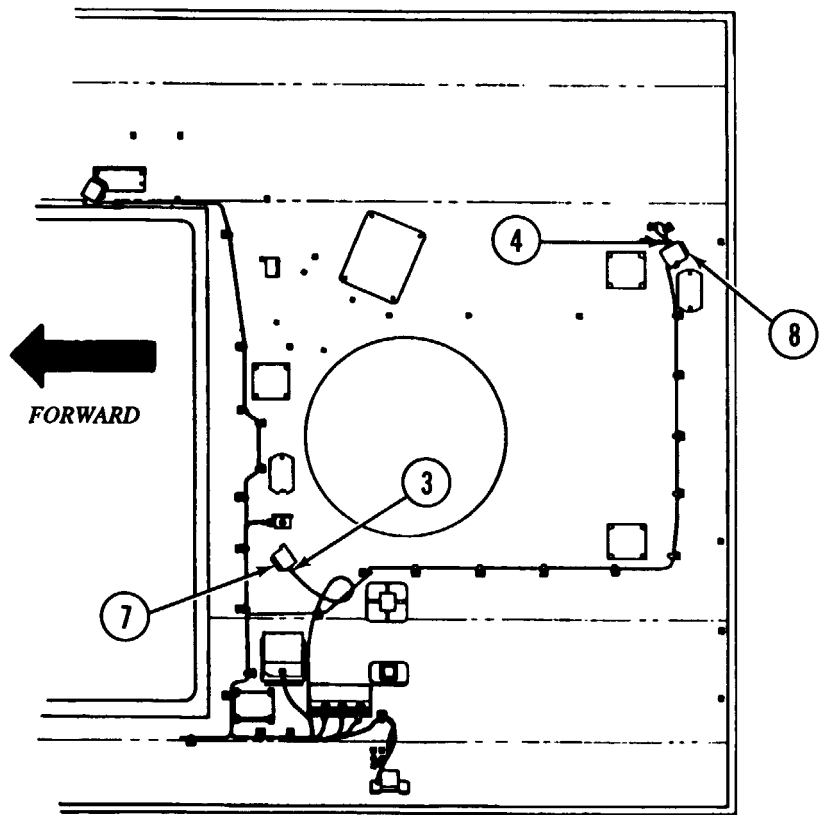
- D Install wiring harness 12352353 using six strap assemblies (11) each secured with one screw (12), one flat washer (13) and one new lockwasher (14).



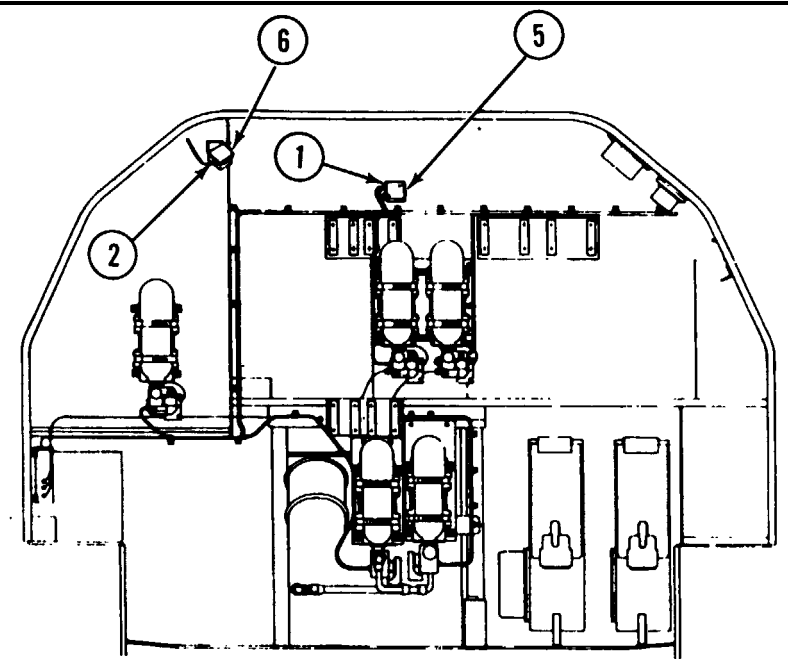
- E Connect harness plug (9) to SCEA unit (10).



**CREW AFES ELECTRICAL WIRING HARNESES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**



**IN VEHICLE LOOKING UP - CREW COMPARTMENT**

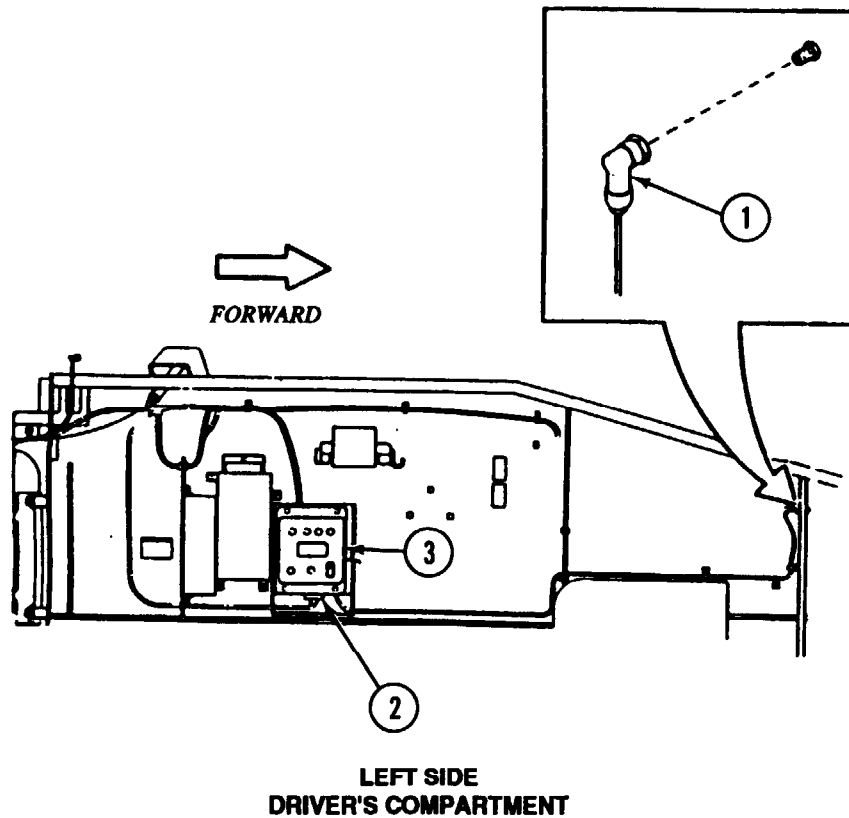


**FORWARD BULKHEAD - CREW COMPARTMENT**

- F Connect harness plugs (1, 2, 3 and 4) to four OFSA units (5, 6, 7 and 8).
- G Reactivate crew AFES (p 14-14.6).
- H Close crew compartment top doors (TM 9-2350-267-10).

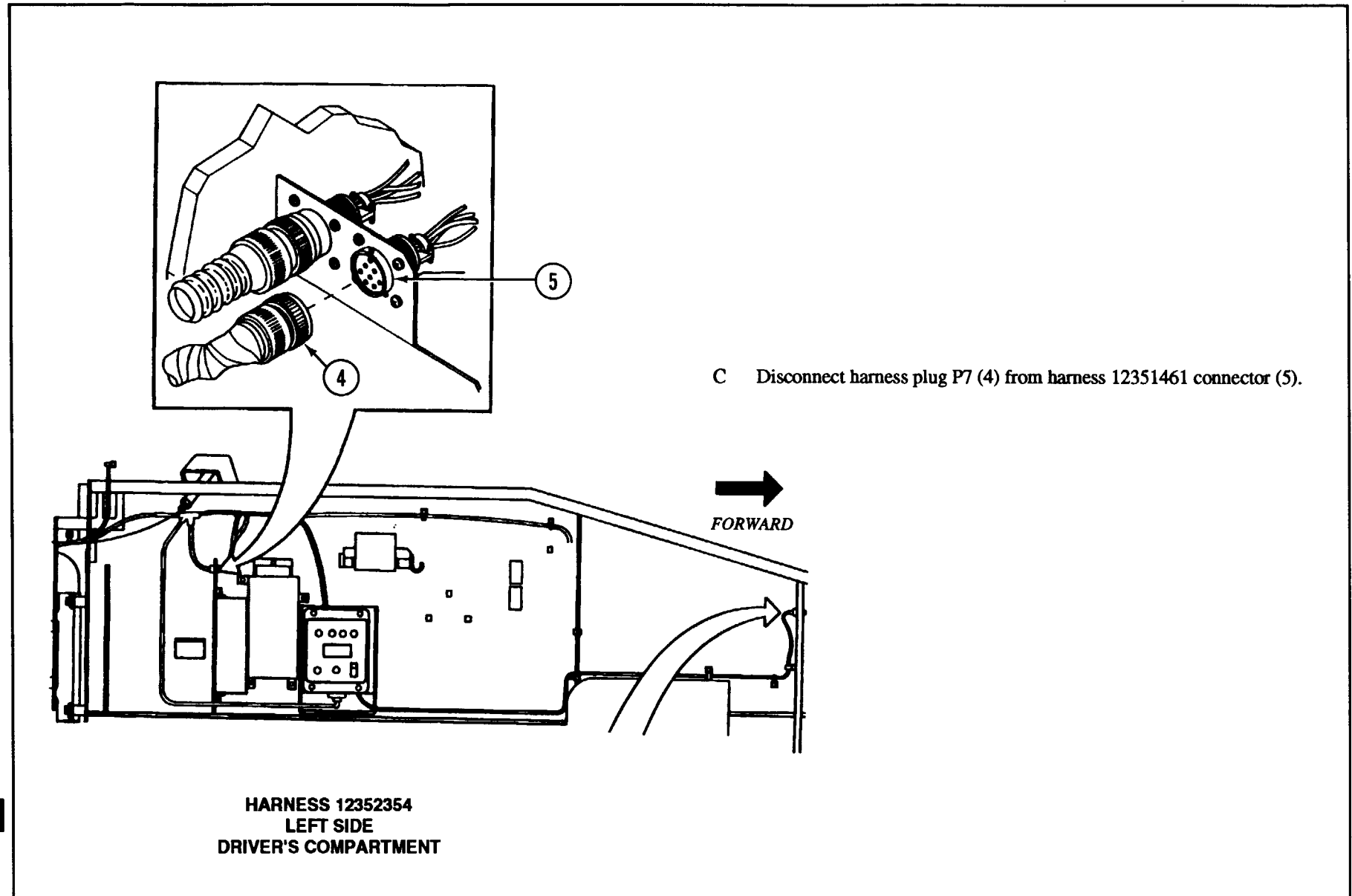
**ENGINE AFES ELECTRICAL WIRING HARNESES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION****INITIAL SETUP****Equipment Condition:**

- Engine AFES deactivated (p 14-14.3).
- Left projectile rack removed (p 11-5).
- Engine compartment extinguisher bottle brackets removed (p 14-30.4).

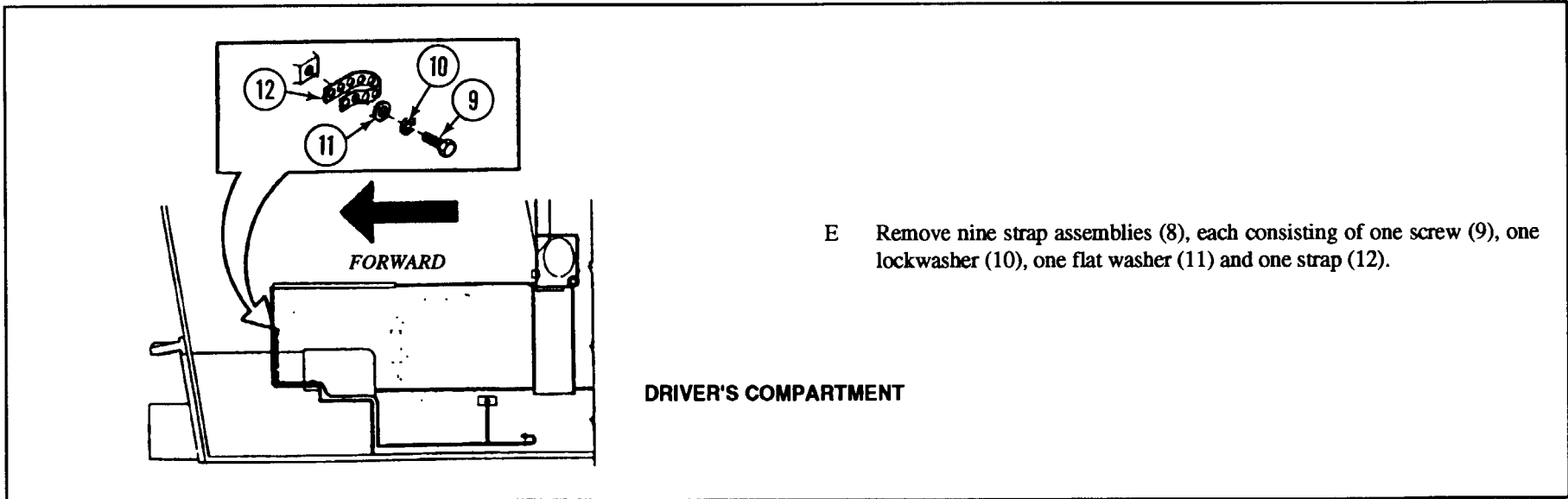
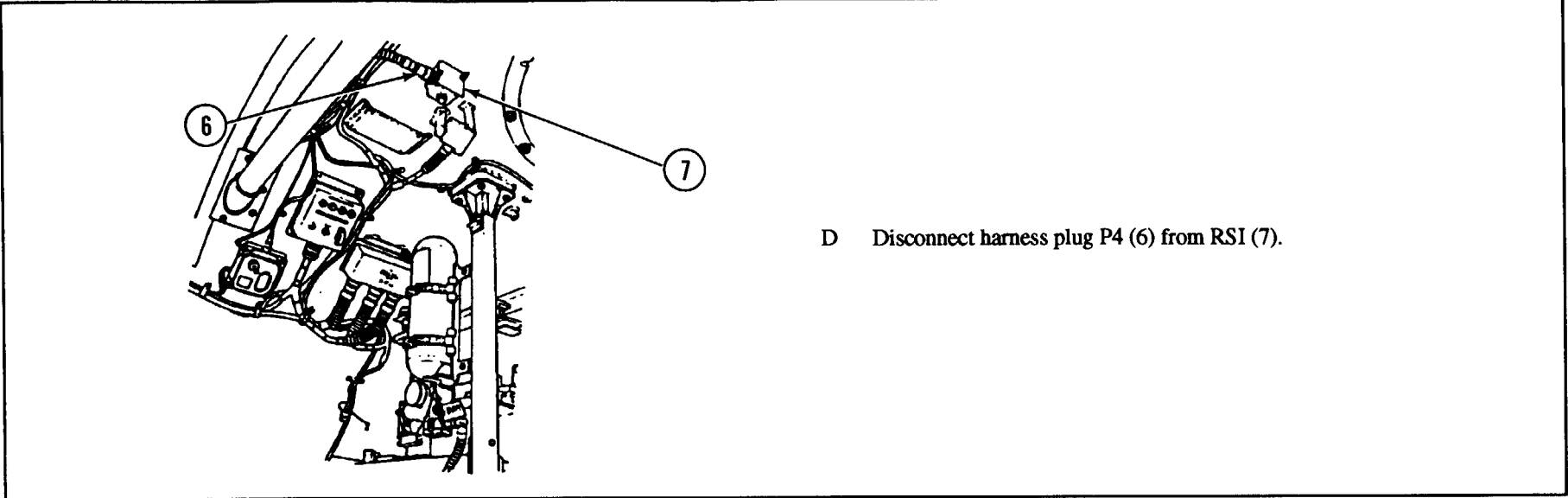
**HARNESS 12352354: REMOVAL**

- A Disconnect harness plugs P6 and P5 (1) from driver's compartment forward bulkhead.
- B Disconnect harness plug P1 (2) from engine T/A panel (3).

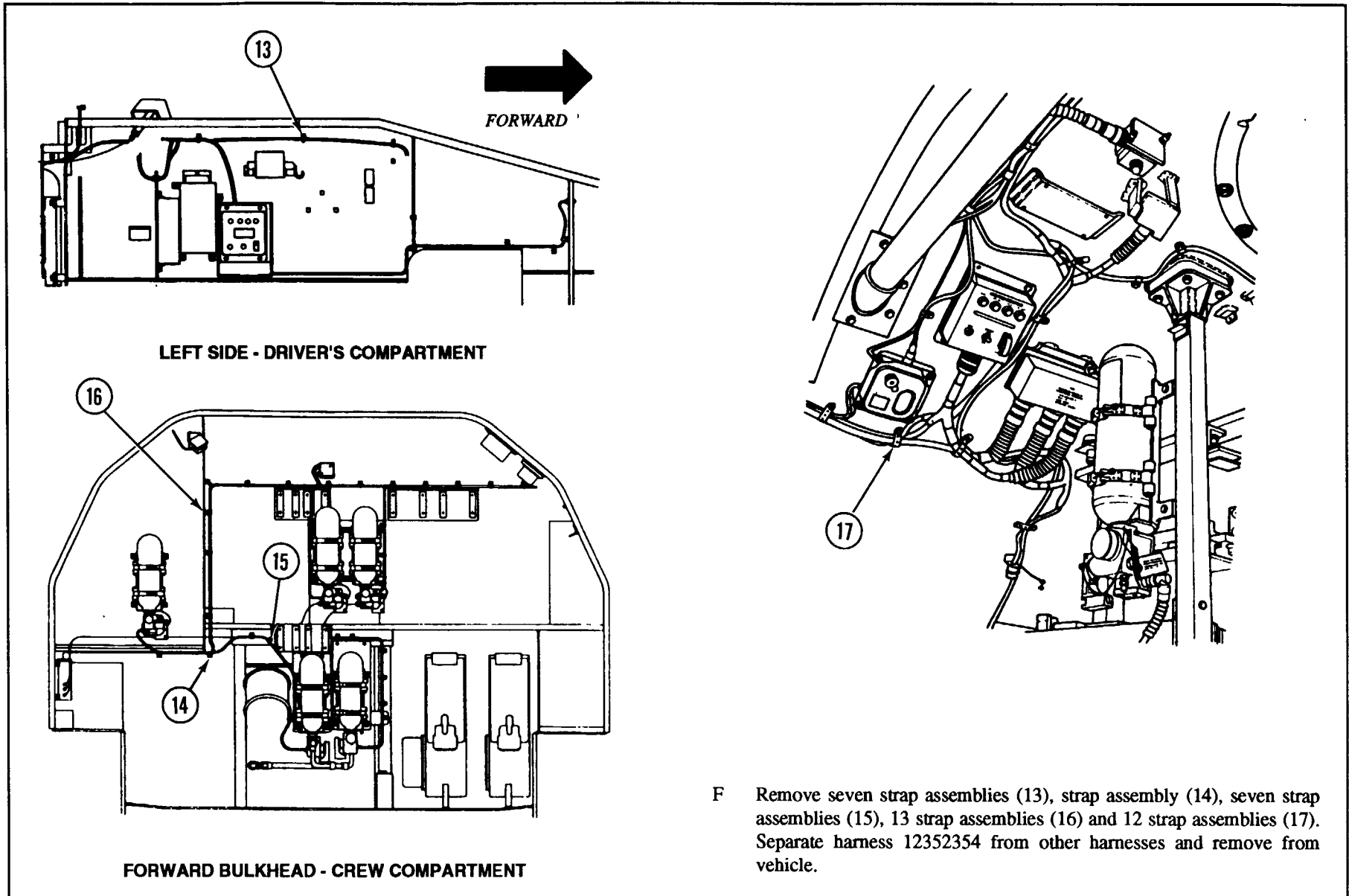
ENGINE AFES Electrical WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)



**ENGINE AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**

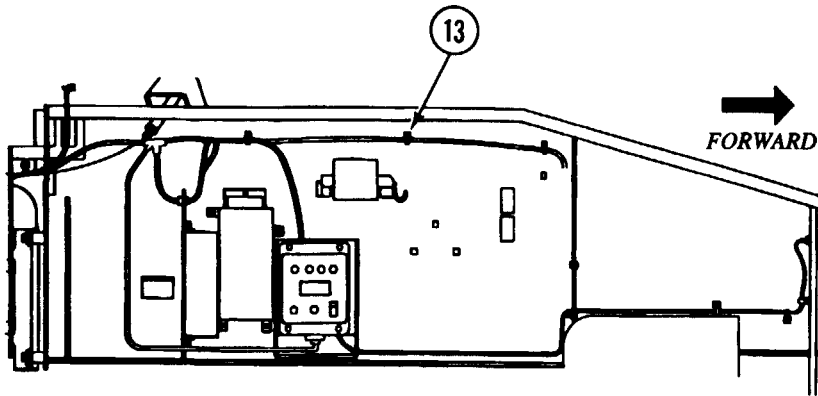


**ENGINE AFES ELECTRICAL WIRING HARNESSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**

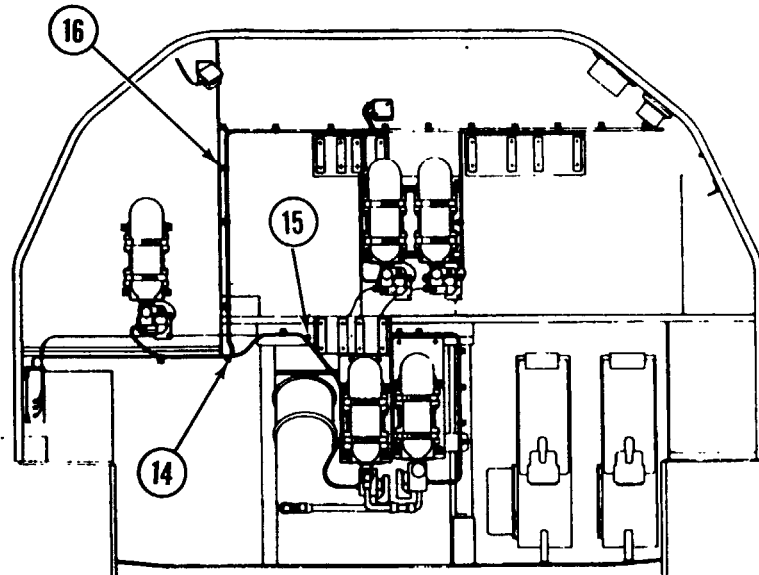


- F Remove seven strap assemblies (13), strap assembly (14), seven strap assemblies (15), 13 strap assemblies (16) and 12 strap assemblies (17). Separate harness 12352354 from other harnesses and remove from vehicle.

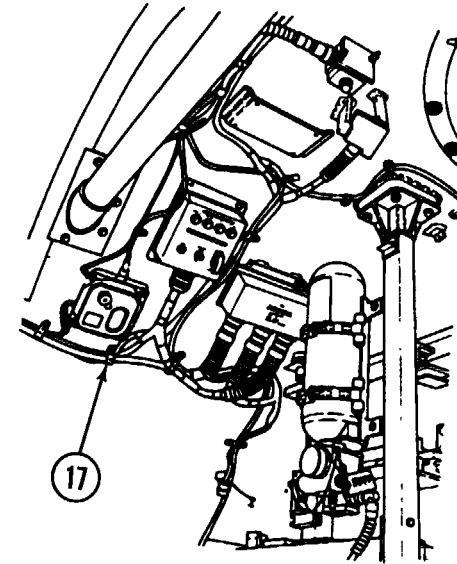
**ENGINE AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)**



**LEFT SIDE - DRIVER'S COMPARTMENT**



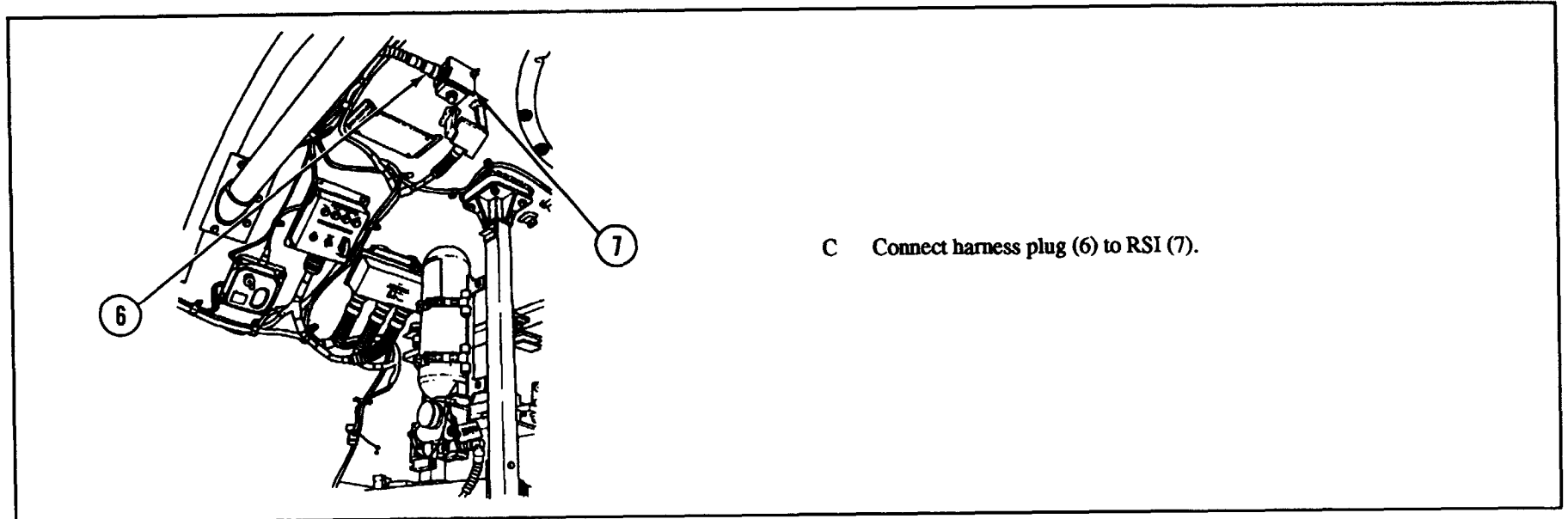
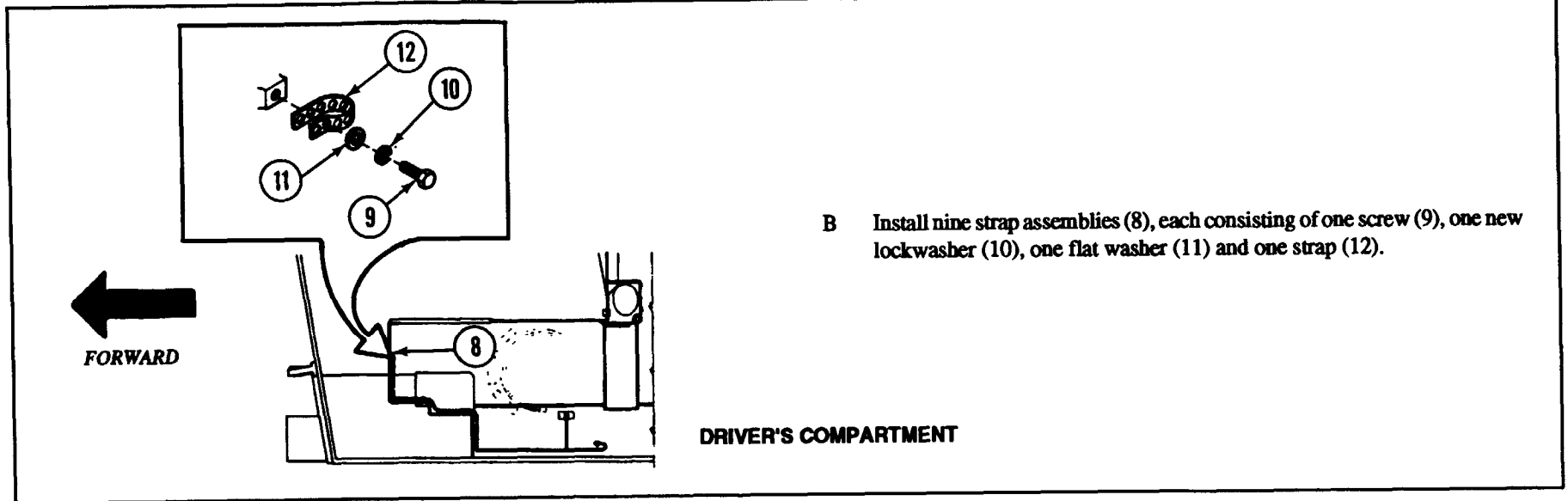
**FORWARD BULKHEAD - CREW COMPARTMENT**



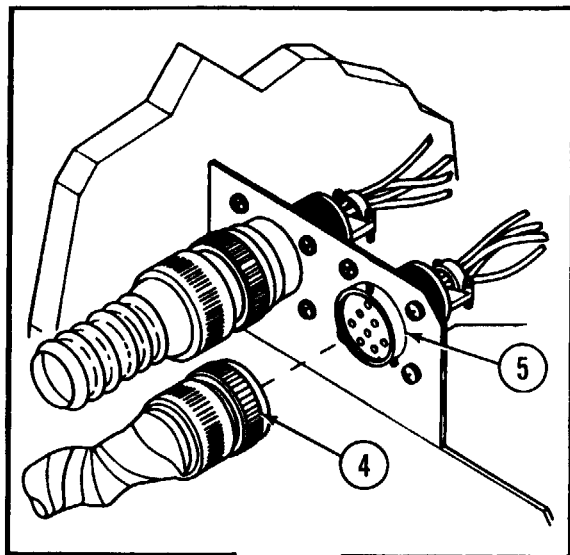
**HARNESS 12352354: INSTALLATION**

- A Position harness 12352354 in vehicle. Install seven strap assemblies (13), strap assembly (14), seven strap assemblies (15), 13 strap assemblies (16) and 12 strap assemblies (17).

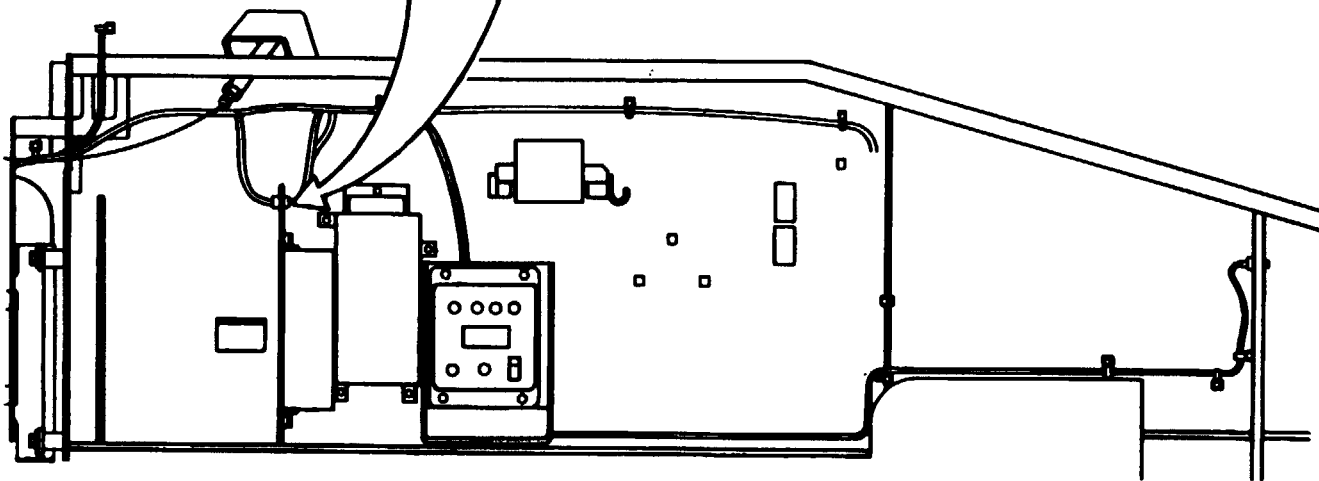
ENGINE AFES ELCTRICAL WIRING HARNESSSES (VHCLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)



ENGINE AFES ELECTRICAL WIRING HARNESSSES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)



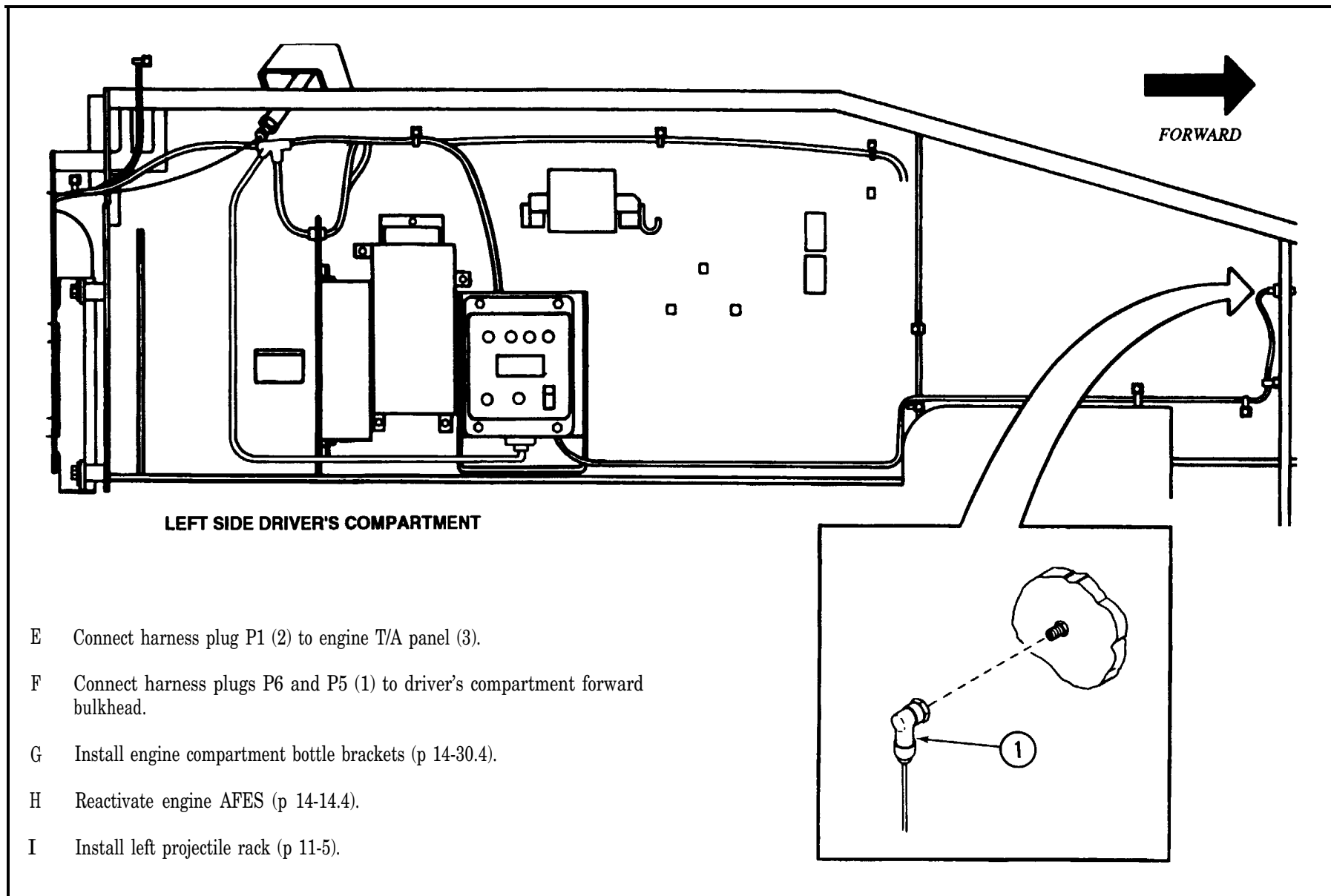
D Connect harness plug P7 (4) to harness 12351461 connector (5).



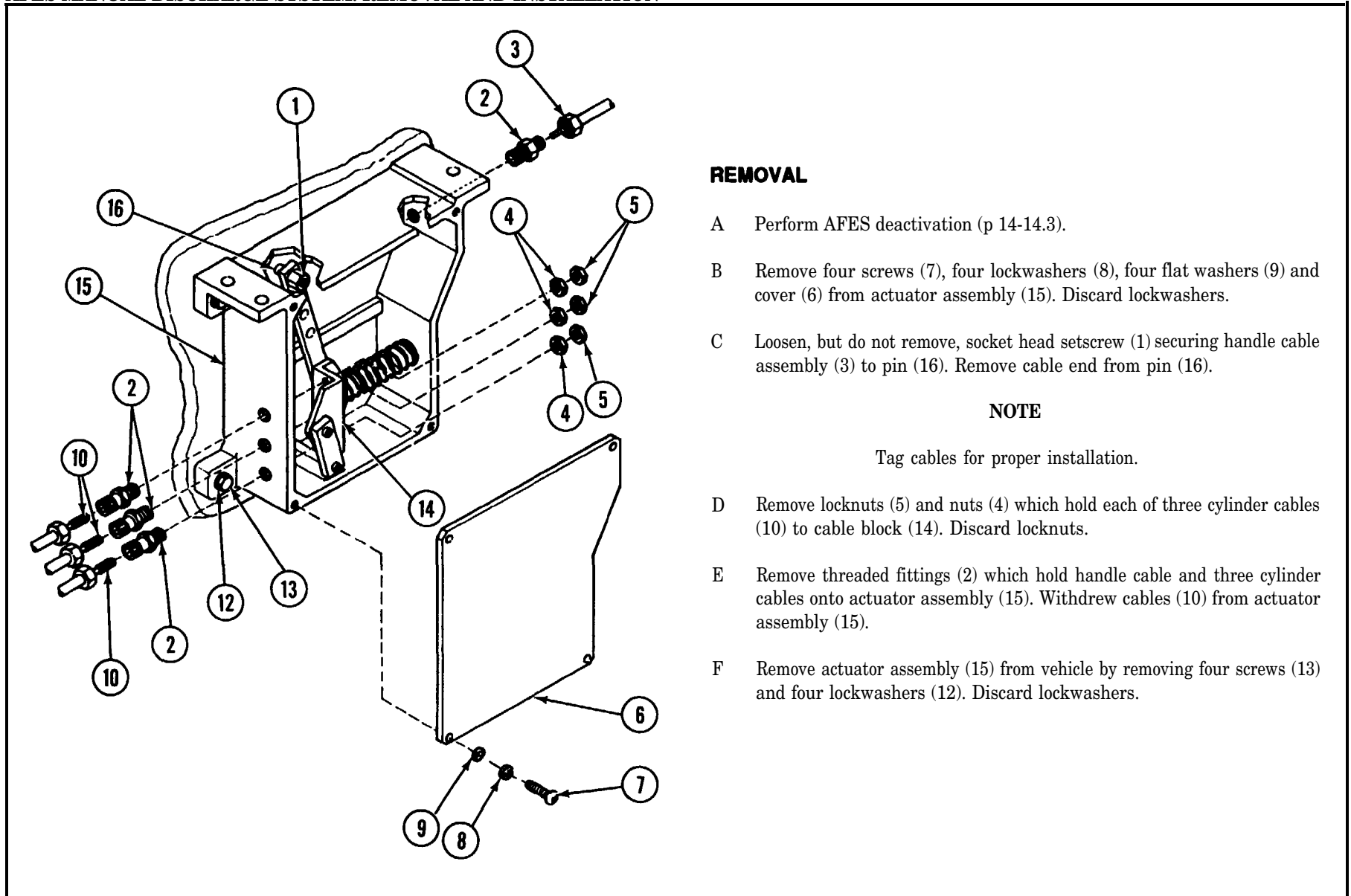
HARNESS 12352354 LEFT SIDE DRIVER'S COMPARTMENT



ENGINE AFES ELECTRICAL WIRING HARNESES (VEHICLES 345 AND ABOVE): REMOVAL AND INSTALLATION (CONTINUED)



## AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION

**REMOVAL**

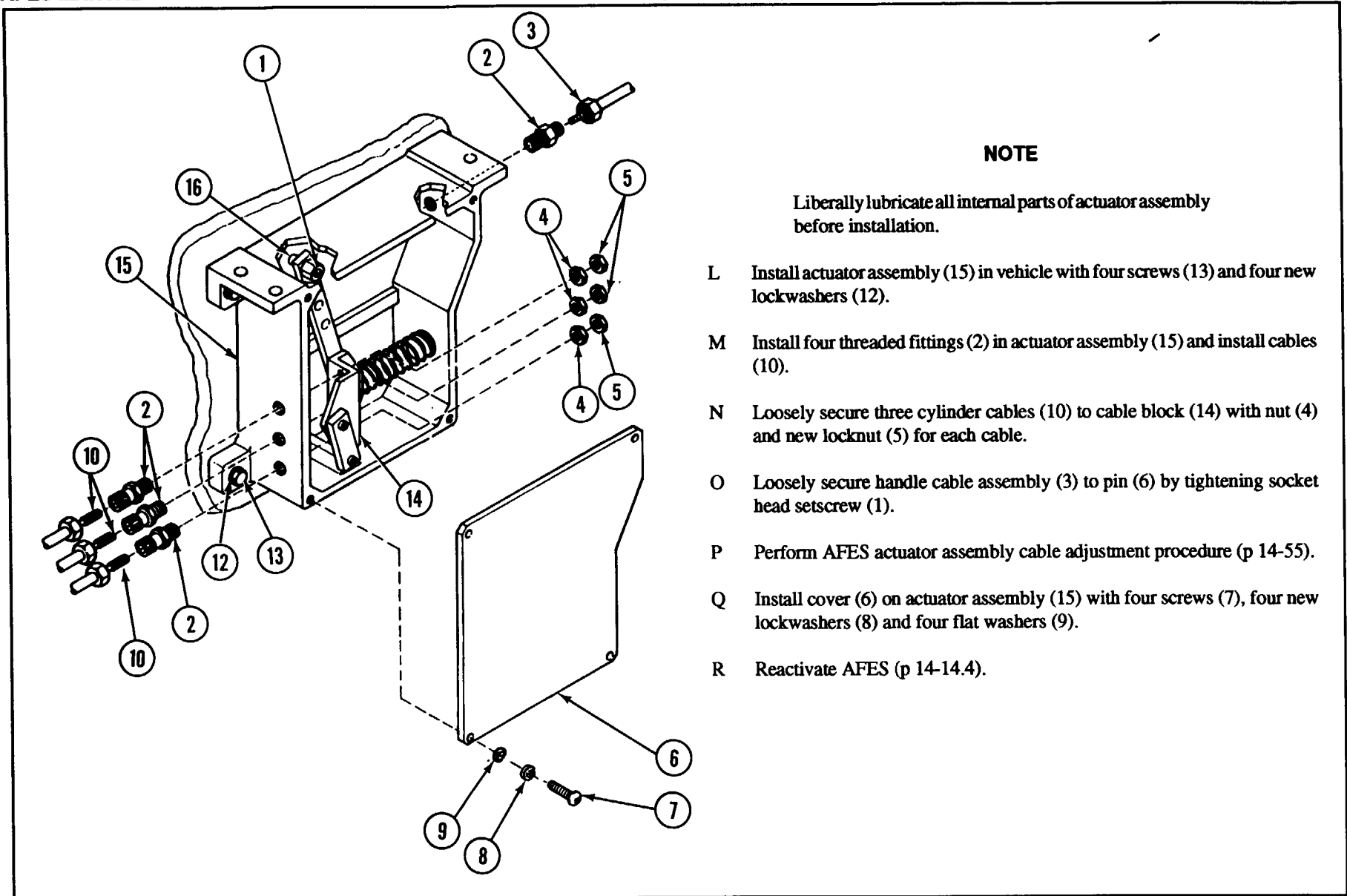
- A Perform AFES deactivation (p 14-14.3).
- B Remove four screws (7), four lockwashers (8), four flat washers (9) and cover (6) from actuator assembly (15). Discard lockwashers.
- C Loosen, but do not remove, socket head setscrew (1) securing handle cable assembly (3) to pin (16). Remove cable end from pin (16).

**NOTE**

Tag cables for proper installation.

- D Remove locknuts (5) and nuts (4) which hold each of three cylinder cables (10) to cable block (14). Discard locknuts.
- E Remove threaded fittings (2) which hold handle cable and three cylinder cables onto actuator assembly (15). Withdraw cables (10) from actuator assembly (15).
- F Remove actuator assembly (15) from vehicle by removing four screws (13) and four lockwashers (12). Discard lockwashers.

## AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)



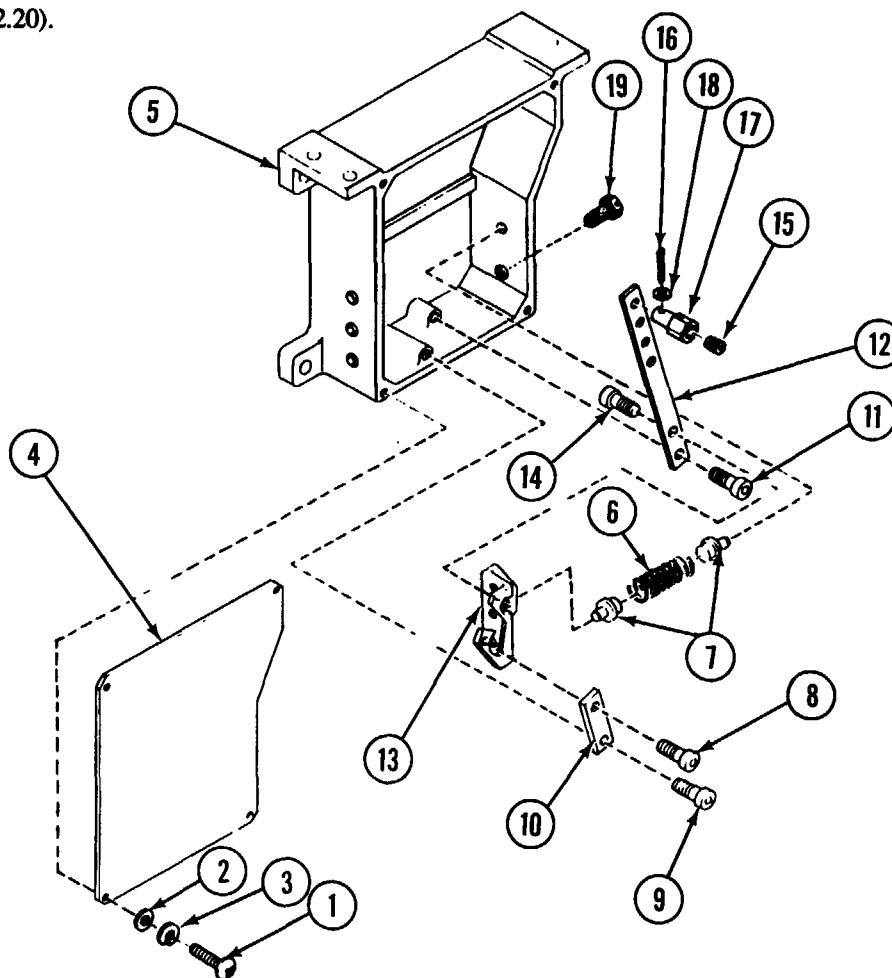
### NOTE

Liberalily lubricate all internal parts of actuator assembly before installation.

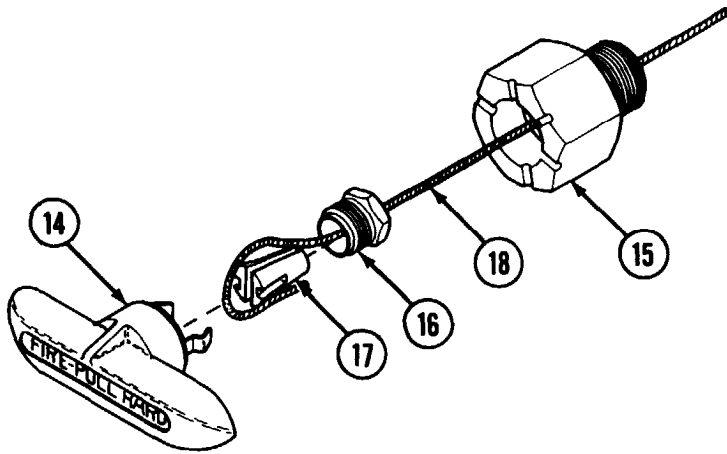
- L Install actuator assembly (15) in vehicle with four screws (13) and four new lockwashers (12).
- M Install four threaded fittings (2) in actuator assembly (15) and install cables (10).
- N Loosely secure three cylinder cables (10) to cable block (14) with nut (4) and new locknut (5) for each cable.
- O Loosely secure handle cable assembly (3) to pin (6) by tightening socket head setscrew (1).
- P Perform AFES actuator assembly cable adjustment procedure (p 14-55).
- Q Install cover (6) on actuator assembly (15) with four screws (7), four new lockwashers (8) and four flat washers (9).
- R Reactivate AFES (p 14-14.4).

**AFES MANUAL DISCHARGE SYSTEM: DISASSEMBLY AND ASSEMBLY****INITIAL SETUP**Equipment Condition:

Actuator assembly removed from vehicle (p 14-52.20).



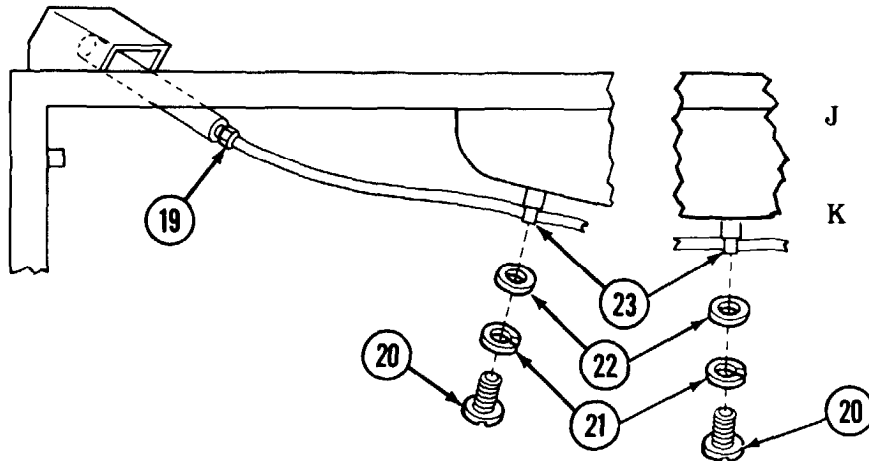
## AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)



G Pull handle (14) free of nut (15).

H Back fastener assembly (16) from handle (14). Pull wedge (17) from fastener (16) and remove cable (18).

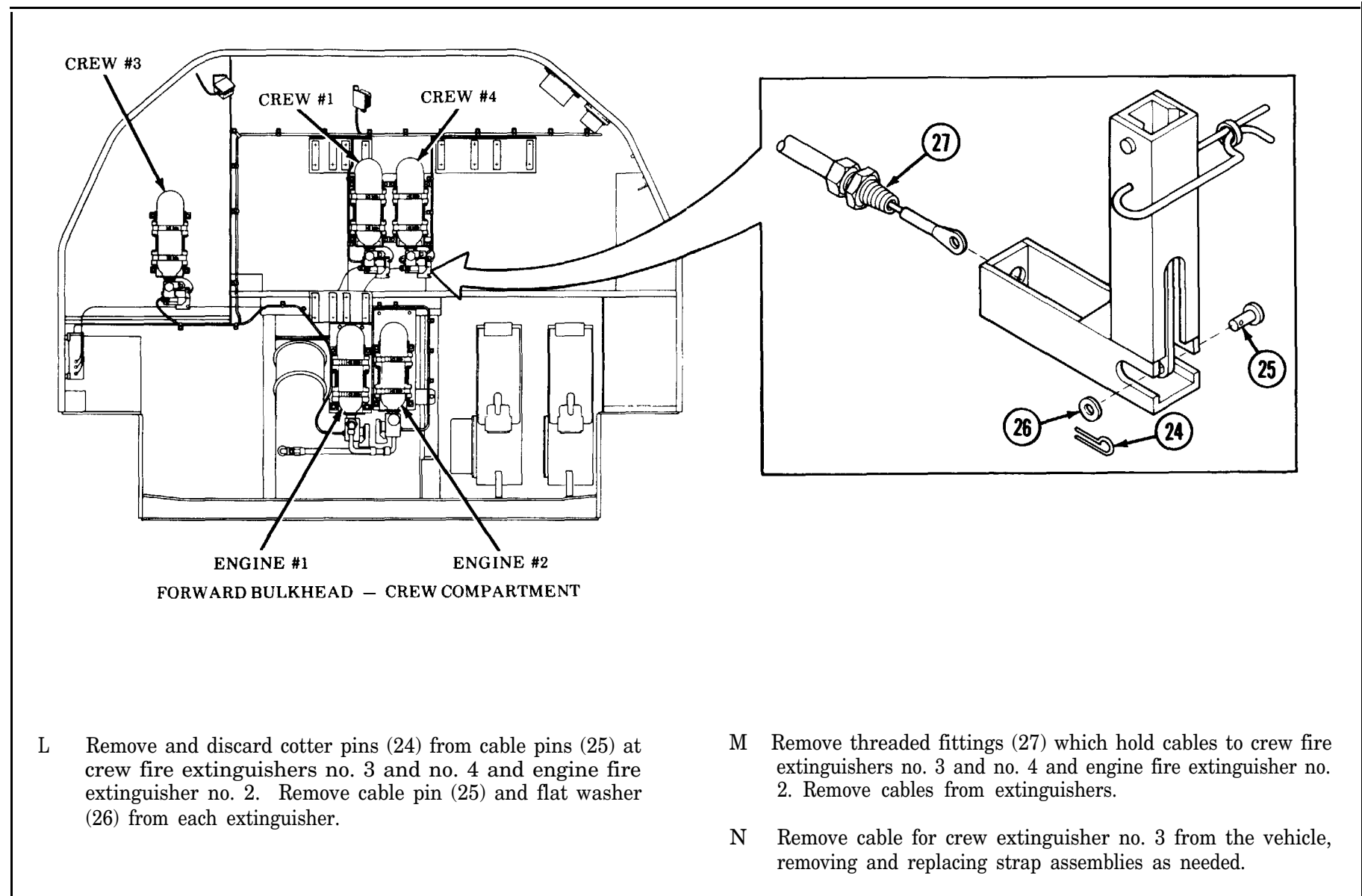
I Remove nut (15) from outside end of handle tube.



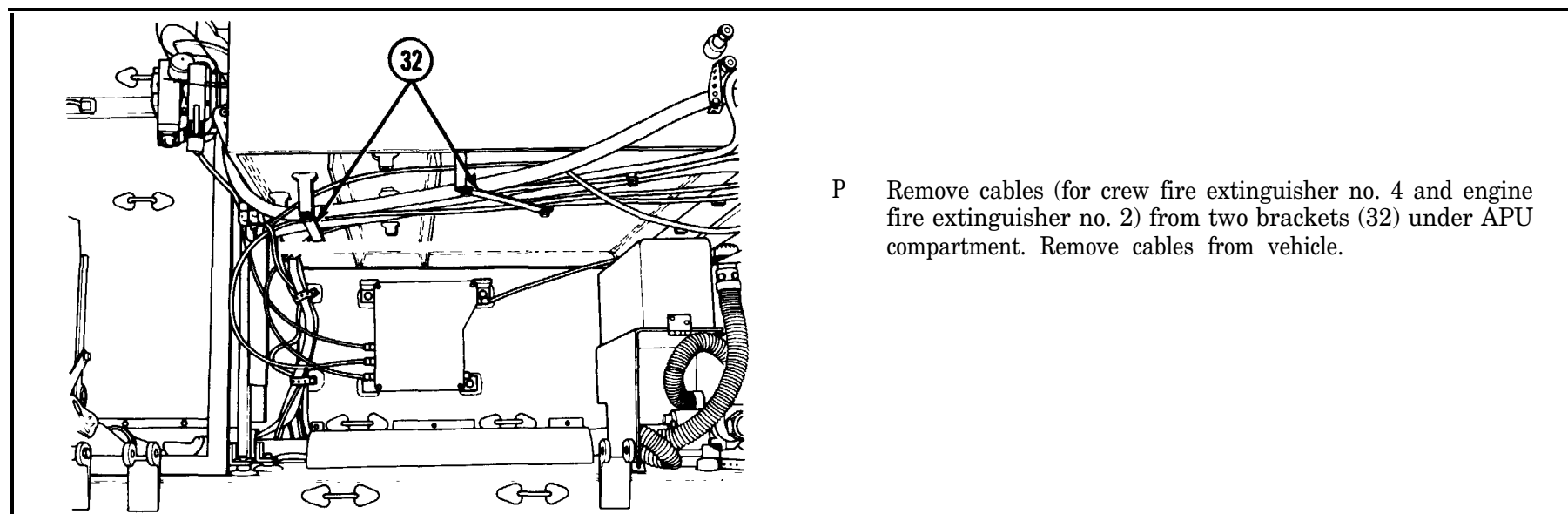
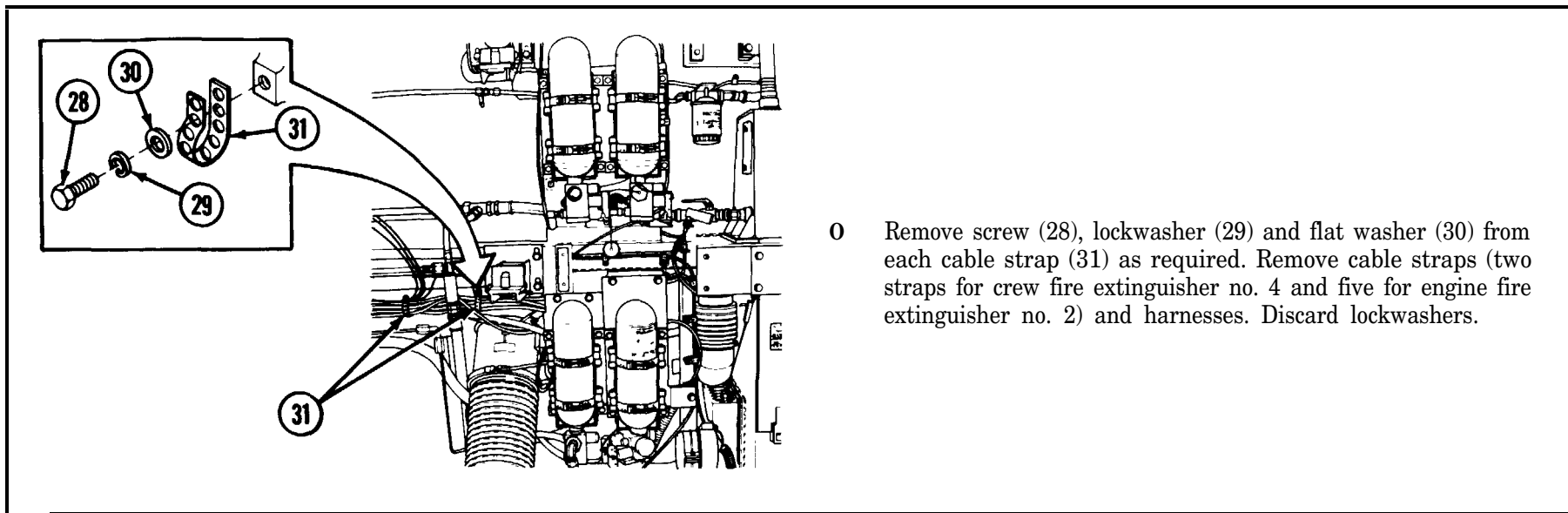
J Remove adapter (19) from inside end of handle tube, and pull cable free of tube from inside vehicle.

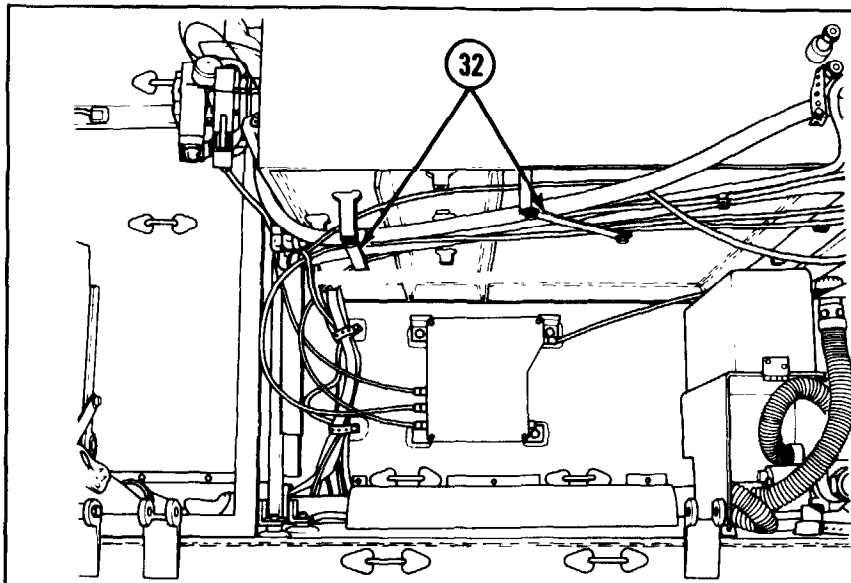
K Remove screws (20), lockwashers (21) and flat washers (22) from cable straps (23). Remove cable straps from cable. Remove cable from vehicle. Discard lockwashers.

## AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)

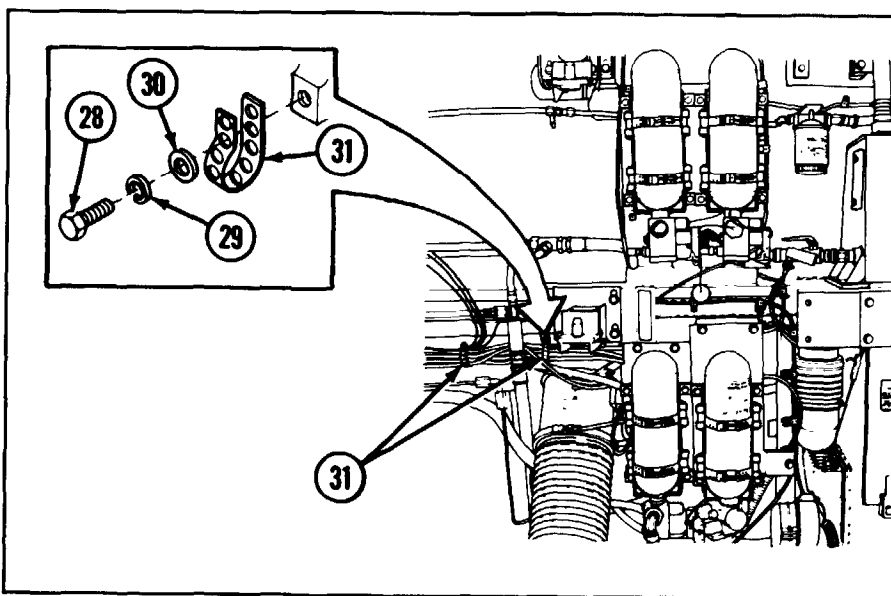


AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)



**AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

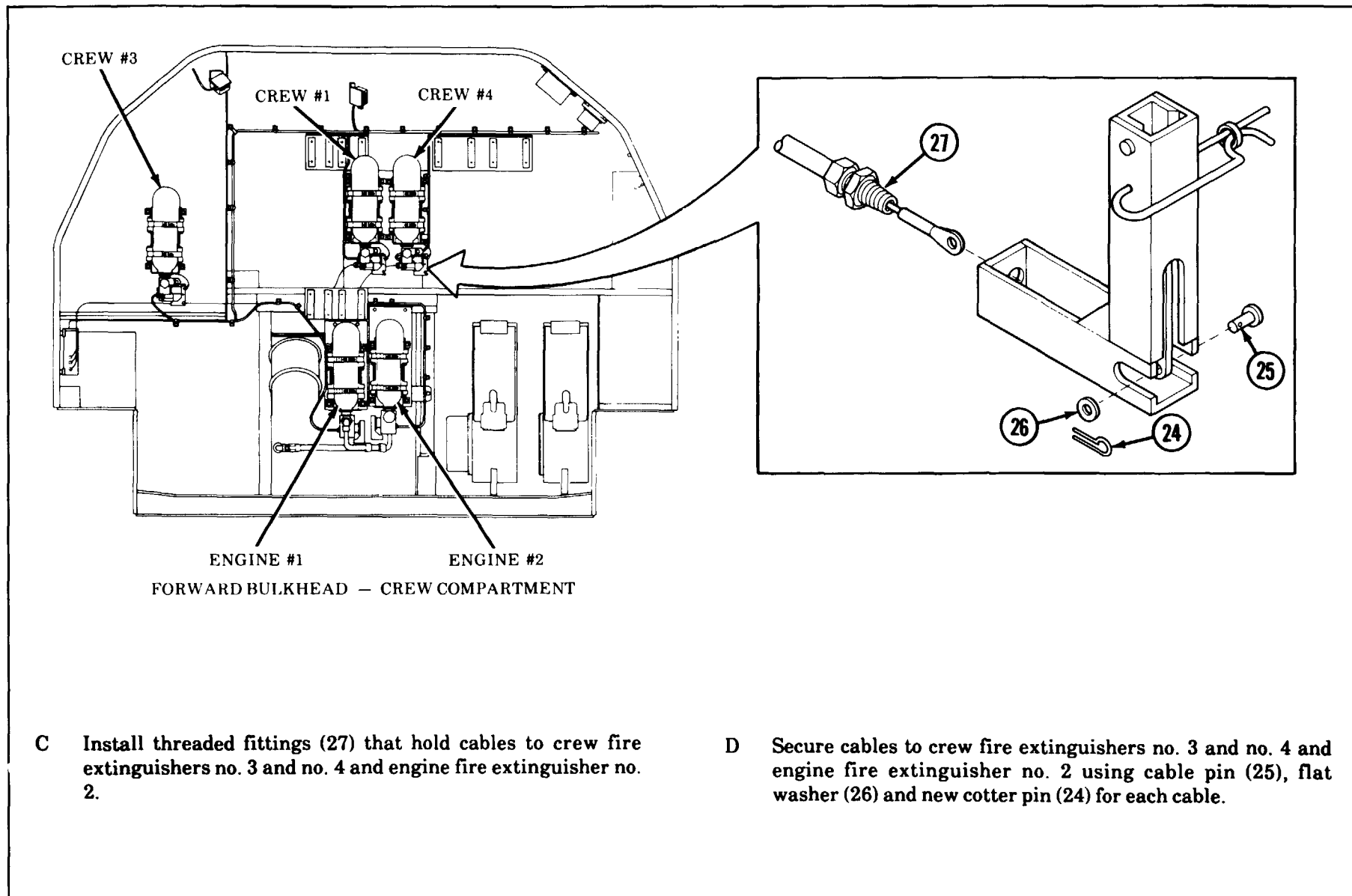
- A Install cables (for crew fire extinguisher no. 4 and engine fire extinguisher no. 2) in two brackets (32) under APU compartment.



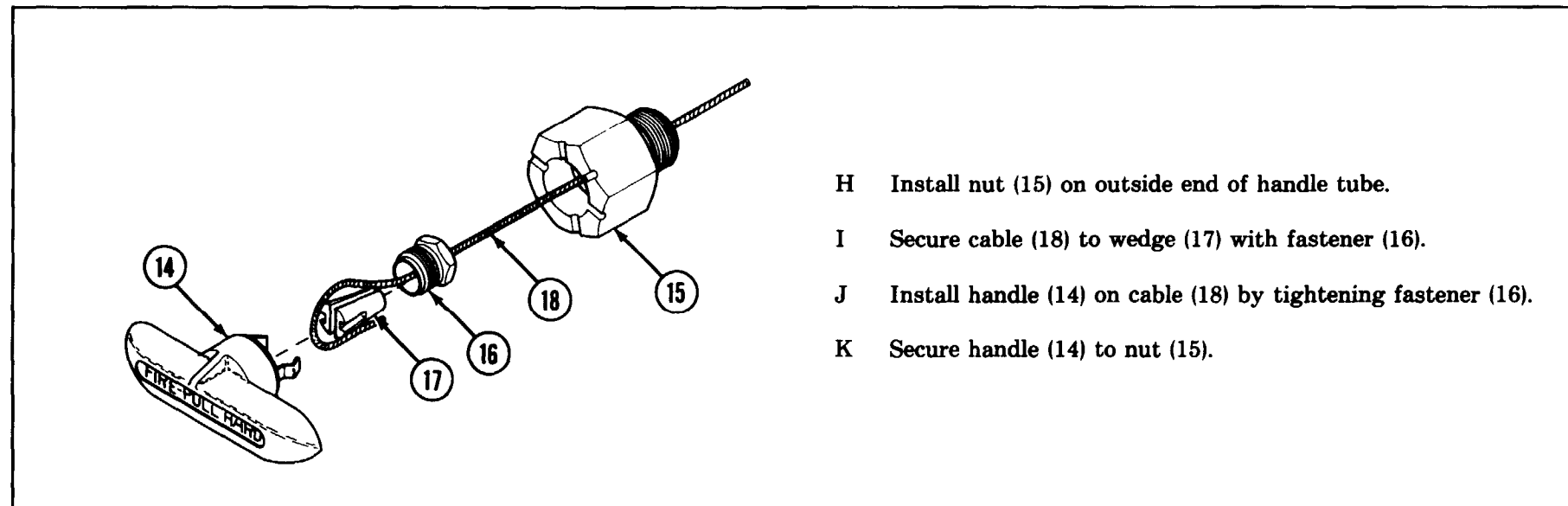
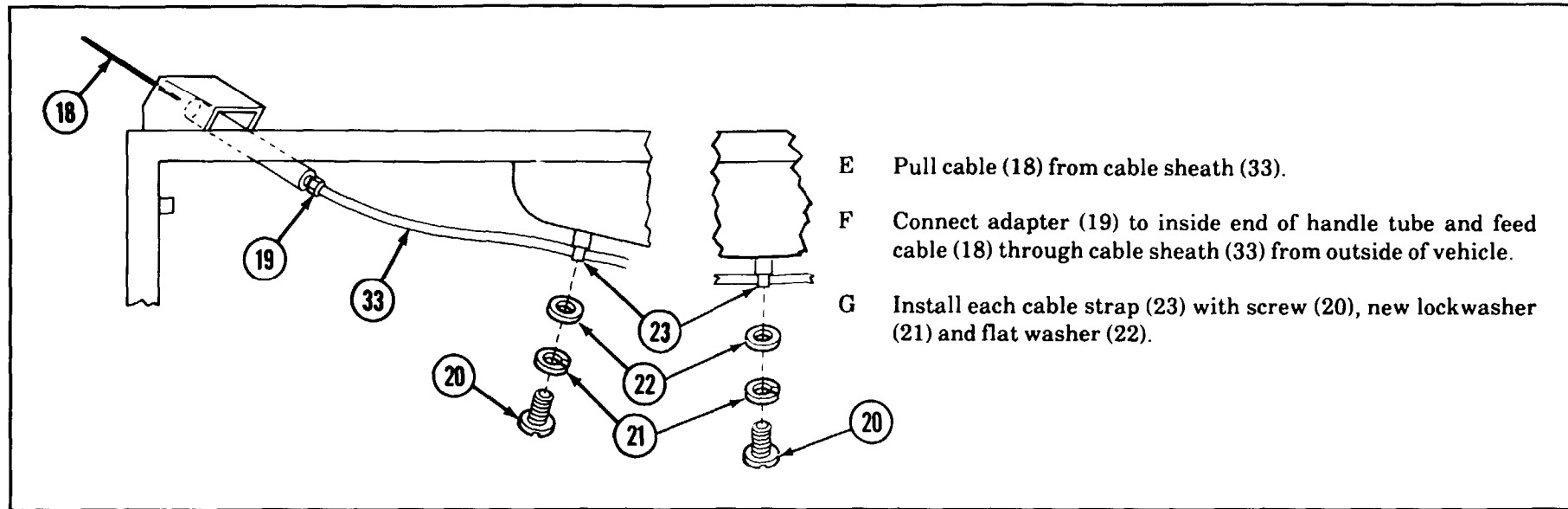
- B Install cable straps (31) securing cables and harnesses with screw (28), new lockwasher (29) and flat washer (30) for each strap (two straps needed for crew fire extinguisher no. 4 and five for engine fire extinguisher no. 2).



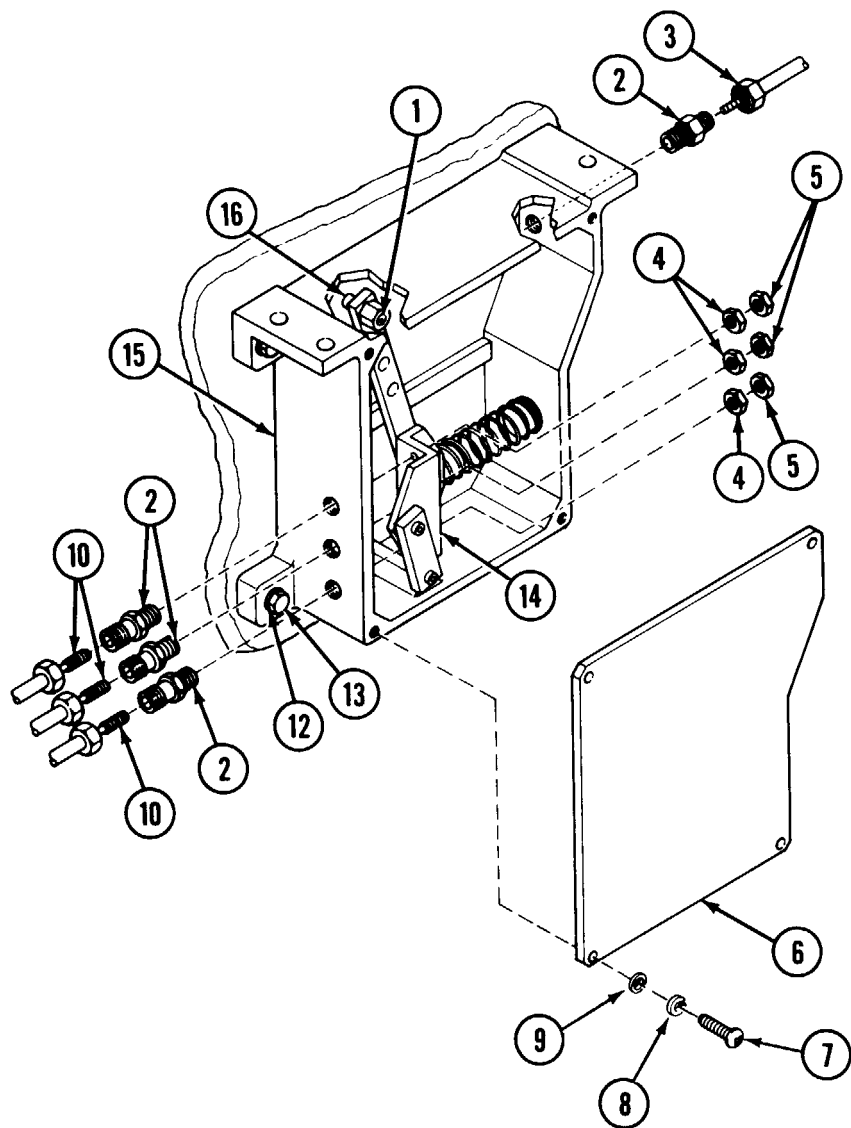
## AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)



## AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)



## AFES MANUAL DISCHARGE SYSTEM: REMOVAL AND INSTALLATION (CONTINUED)



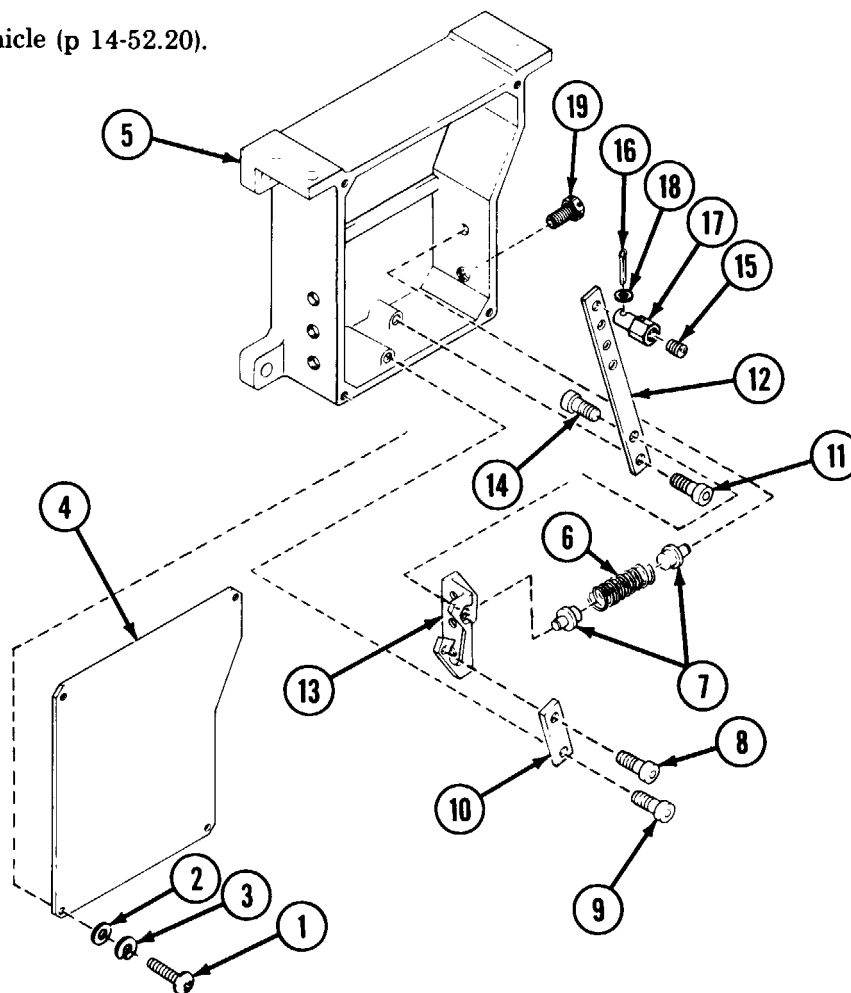
### NOTE

Liberalily lubricate all internal parts of actuator assembly before installation.

- L Install actuator assembly (15) in vehicle with four screws (13) and four new lockwashers (12).
- M Install four threaded fittings (2) in actuator assembly (15) and install cables (10).
- N Loosely secure three cylinder cables (10) to cable block (14) with nut (5) and new locknut (4) for each cable.
- O Loosely secure handle cable assembly (3) to pin (6) by tightening socket head setscrews (1).
- P Perform AFES actuator assembly cable adjustment procedure (p 14-55).
- Q Install cover (6) on actuator assembly (15) with four screws (7), four new lockwashers (8) and four flat washers (9).
- R Perform AFES reactivation (p 14-14.5 and 14-14.8).

**AFES MANUAL DISCHARGE SYSTEM: DISASSEMBLY AND ASSEMBLY****INITIAL SETUP**Equipment Condition:

Actuator assembly removed from vehicle (p 14-52.20).



## AFES MANUAL DISCHARGE SYSTEM: DISASSEMBLY AND ASSEMBLY (CONTINUED)

### DISASSEMBLY

- A Remove four screws (1), four lockwashers (3), four flat washers (2) and cover (4) from actuator housing (5). Discard lockwashers.
- B Compress and remove spring (6). Remove two spring guides (7).
- C Remove two shouldered screws (8 and 9) and arm (10).
- D Remove shouldered screw (11), arm (12) and block (13).
- E Remove shouldered screw (14) and arm (12) from block (13).
- F Remove setscrew (15) and cotter pin (16) from pin (17). Discard cotter pin.
- G Remove pin (17) and flat washer (18) from arm (12).
- H Remove plug (19) from housing (5).

### ASSEMBLY

- A Install plug (19) in housing (5).
- B Install flat washer (18) and pin (17) in arm (12). Secure with new cotter pin (16).
- C Loosely install setscrew (15) in pin (17).
- D Install arm (12) on block (13) with shouldered screw (14).
- E Install arm (12) with block (13) in housing (5) with shouldered screw (11).
- F Install arm (10) on block (13) and housing (5) with shouldered screws (8 and 9).
- G Install two spring guides (7); one in housing (5) and one on block (13).
- H Install spring (6) between two spring guides (7).
- I Install cover (4) on housing (5) with four screws (1), four new lockwashers (3) and four flat washers (2).



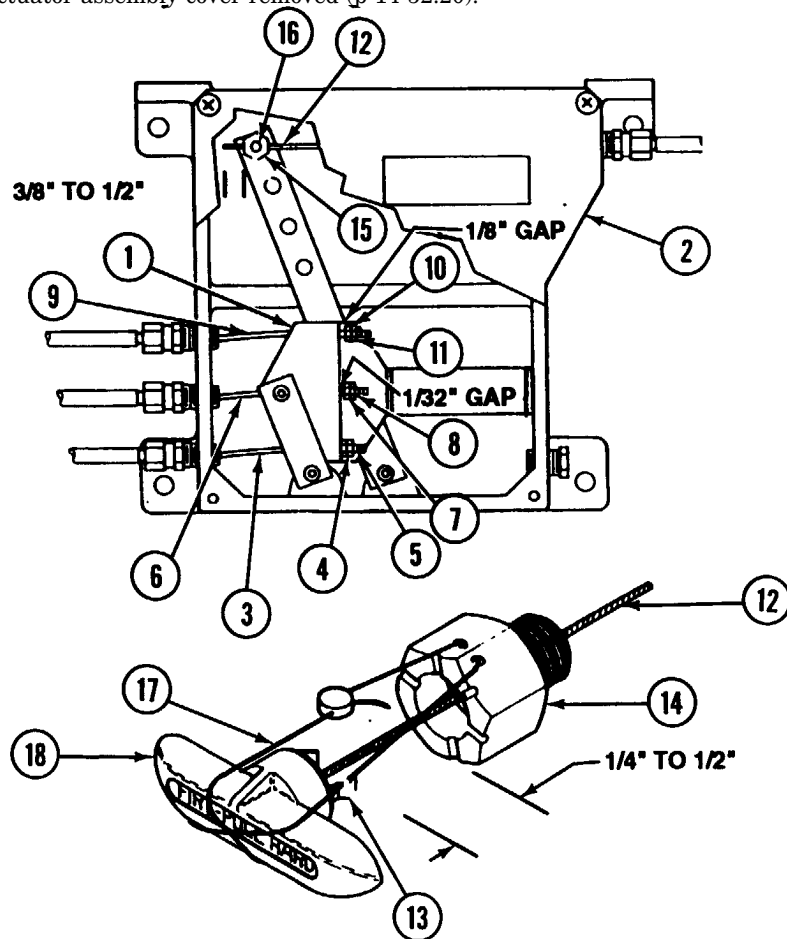
## AFES MANUAL DISCHARGE SYSTEM: CABLE ADJUSTMENT PROCEDURE

### INITIAL SETUP

#### Equipment Condition:

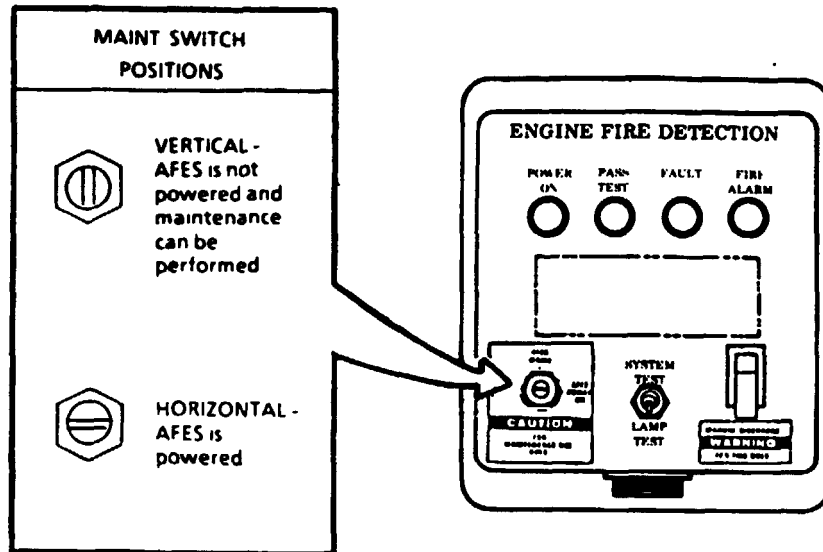
AFES deactivated (p 14-14.3).

Actuator assembly cover removed (p 14-52.20).



### ADJUSTMENT

- A Remove slack from bottom cable (3) at actuator block (1) actuator assembly (2). Set adjustment nut (4) against actuator block (1). Turn locking nut (5) until flush against adjustment nut.
- B Remove slack from middle cable (6). Set adjustment nut (7) for a 1/32-inch gap to actuator block (1). Tighten locking nut (8).
- C Remove slack from top cable (9). Set adjustment nut (10) for a 1/8-inch gap to actuator block (1). Tighten locking nut (11).
- D Remove slack from handle cable (12). Adjust cable length for a 1/4 to 1/2-inch gap between the handle retaining springs (13) and packing nut (14). Secure actuator assembly end of cable to pin (15) by tightening setscrew (16).
- E Cut off excess handle cable (12) length inside actuator assembly (2) to leave 3/8 to 1/2 inch beyond pin (15).
- F Install fire extinguisher seal (17) through nut (14) and around handle (18).

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 1 THRU 344)****WARNING**

Install anti-recoil plugs in all four crew compartment fire extinguishers. Turn MASTER switch OFF.

**CREW FIRE DETECTION SYSTEM TEST**

A Make sure all system components are connected.

B Turn MASTER switch OFF.

**WARNING**

If T/A POWER ON lamp does not go out when T/A panel MAINTenance switch is turned to vertical position, disconnect battery ground lead. DO NOT CONTINUE TEST. Troubleshoot AFES (P 2-296).

C Turn crew T/A panel Maintenance switch to vertical position.

**WARNING**

Electrical connectors must be disconnected from AFES extinguisher actuators or discharge of Halon will occur during test.

**NOTE**

Optional method. Disconnect center connector (J2) on SCEA instead of connectors on bottles. This disconnects all bottles at once and saves time by not having to move projectile racks to access bottles behind rack.

D Disconnect electrical connectors from four crew AFES extinguishers.

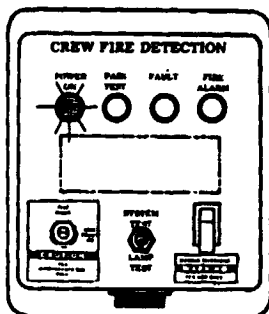
E Turn crew T/A panel Maintenance switch to horizontal position.



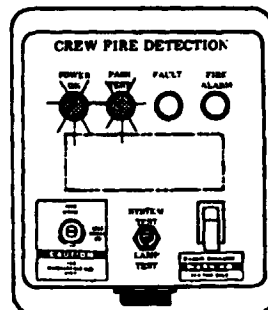
## CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 1 THRU 344) (CONTINUED)

F Turn MASTER switch ON and observe crew T/A panel lights. Check for the following sequence:

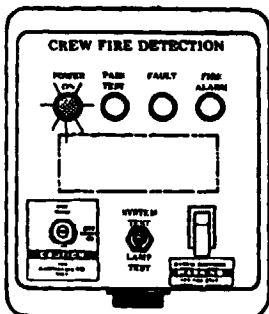
- 1 Green POWER ON light comes ON immediately and stays lit.
- 2 Within 6 seconds, green PASS TEST light comes on.
- 3 PASS TEST light will go out.
- 4 Yellow FAULT light will come on and remain lit.



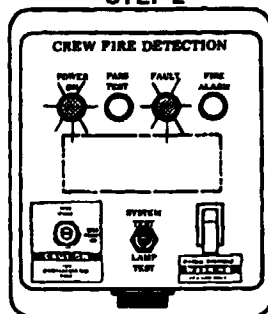
STEP 1



STEP 2



STEP 3



STEP 4

G Press LAMP TEST toggle switch down and inspect all four lamps and 10 LED's located under fault identification access cover. Replace any lamp that is burned out. If any LED does not light, replace crew T/A panel (p 14-40).

### WARNING

Make sure anti-recoil plugs are installed in crew AFES extinguisher discharge ports. Make sure extinguisher electrical connectors are disconnected; see steps A thru D.

H Lift red guard covering crew T/A panel MANUAL DISCHARGE toggle switch. Push toggle switch up to discharge position and release. The personnel ventilation system will automatically turn on in the exhaust mode 8 to 10 seconds after actuating system. If not, troubleshoot personnel ventilation blower system (p 2-177).

I Press ventilator blower RESET switch, located on accessory control panel, to shut off personnel ventilation blower.

J Lower red guard cover to cover MANUAL DISCHARGE switch.

K Turn crew T/A panel MAINTenance switch to vertical position.


**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 1 THRU 344) (CONTINUED)****WARNING**


**Make sure crew T/A panel MAINTenance switch is turned to vertical position.**

- L Reconnect electrical connectors to crew compartment AFES extinguisher.
- M Turn crew T/A panel Maintenance switch to horizontal position.
- N Light sequence should repeat as in step F except yellow FAULT light should not come on. If it does, troubleshoot crew fire detection system (p 2-296).
- O Press SYSTEM TEST switch up to activate system test. Light sequence should repeat as in step F except yellow FAULT light should not come on.
- P Turn MASTER switch OFF and observe crew T/A panel. Green POWER ON light will remain on. If not troubleshoot crew fire detection system (p 2-296).
- Q Turn crew T/A panel Maintenance switch to vertical position and observe crew T/A panel. All lights should go out. If not, troubleshoot AFES (p 2-296).
- R Turn crew T/A panel Maintenance switch to horizontal position.

## ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM (VEHICLES 1 THRU 344)

**MAINT SWITCH POSITIONS**

 **VERTICAL - AFES is not powered and maintenance can be performed**

 **HORIZONTAL - AFES is powered**

### ENGINE FIRE DETECTION SYSTEM TEST

- A Make sure all system components are connected.
- B Turn MASTER switch OFF.
- C Turn engine T/A panel MAINTenance switch to vertical position.

**WARNING**

If T/A panel POWER ON lamp does not go out when T/A panel MAINTenance switch is turned to vertical position, disconnect battery ground lead. DO NOT CONTINUE TEST. Troubleshoot AFES (p 2-281).

**WARNING**

Electrical connectors must be disconnected from AFES extinguisher.

- D Disconnect electrical connectors from both engine AFES extinguishers.
- E Turn engine T/A panel MAINTenance switch to horizontal position.

## ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM (VEHICLES 1 THRU 344) (CONTINUED)

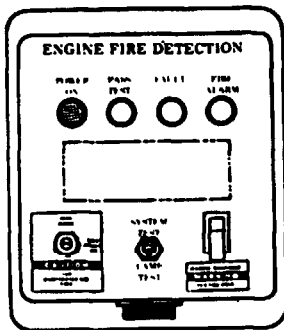
F Turn MASTER switch ON and observe engine T/A panel lights. Check for following Sequence:

1 Green POWER ON light comes on immediately and stays lit.

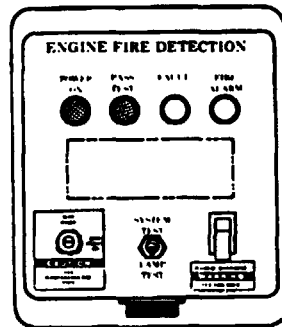
2 Within 6 seconds, green PASS TEST light comes on.

3 PASS TEST light will go out.

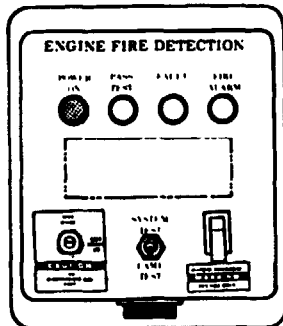
4 Yellow FAULT light will come on and remain on.



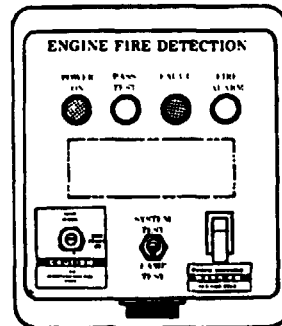
STEP 1



STEP 2



STEP 3



STEP 4

G Press LAMP TEST toggle switch down and inspect all four lamps. Replace defective bulbs.

H Lift fault identifications access cover. If any LED does not light when LAMP TEST toggle switch is pressed, replace engine T/A panel (p 14-39).

**WARNING**

If T/A panel POWER ON lamp does not go out when T/A panel MAINTenance switch is turned to vertical position, disconnect battery ground lead. DO NOT CONTINUE TEST. Troubleshoot AFES (p 2-281).

I Turn engine T/A panel MAINTenance switch to vertical position. All lights on T/A panel should go out.

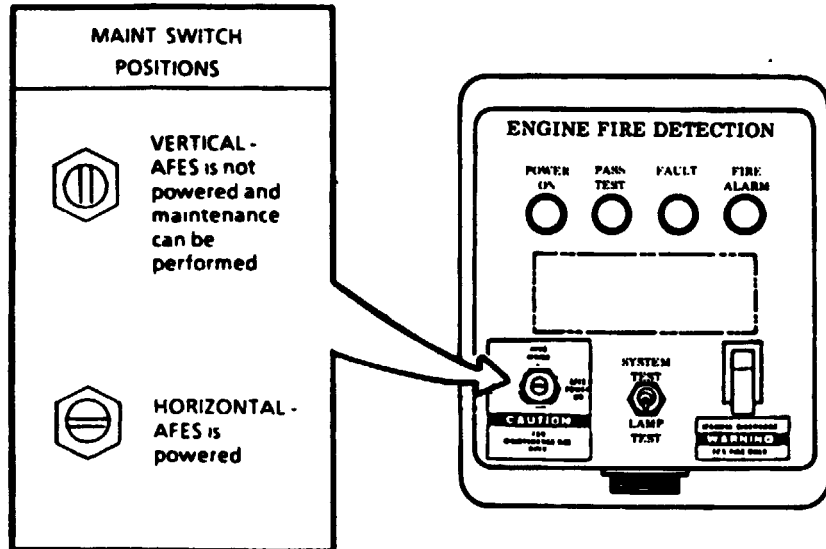
J Connect electrical connectors to engine AFES extinguisher bottle actuators.

K Turn engine T/A panel MAINTenance switch to horizontal position and observe panel lights. Sequence will be the same as in step F, except yellow FAULT light will not come on. If it does, troubleshoot engine fire detection system (p 2-281).

L Turn vehicle MASTER switch OFF. Observe engine T/A panel lights. Green POWER ON lamp should remain lit. If not troubleshoot engine fire detection system (p 2-281).

M Turn engine T/A panel MAINTenance switch to horizontal position.

## CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 346 AND ABOVE)



### WARNING

If T/A panel POWER ON light does not go out when T/A panel Maintenance switch is turned to vertical position, disconnect battery ground lead. DO NOT CONTINUE TEST. Troubleshoot AFES (p 2-306.18).

- C Turn crew T/A panel Maintenance switch to vertical position.

### WARNING

Electrical connectors must be disconnected from AFES extinguisher actuators or discharge of Halon will occur during test.

### NOTE

Optional method - Disconnect center connector (J2) on SCEA instead of connectors on bottles. This disconnects all bottles at once and saves time by not having to move projectile racks to access bottles behind racks.

- D Disconnect electrical connectors from six crew compartment AFES extinguishers.

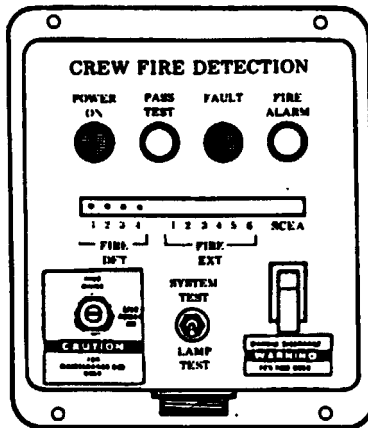
### WARNING

Make sure anti-recoil plugs are installed in all six crew compartment fire extinguishers. Make sure MASTER switch is OFF.

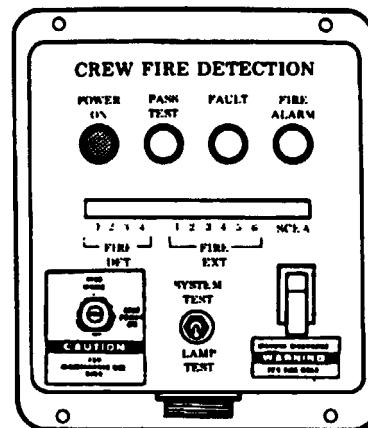
### CREW FIRE DETECTION SYSTEM TEST

- A Make sure all system components are connected.  
B Turn MASTER switch OFF.

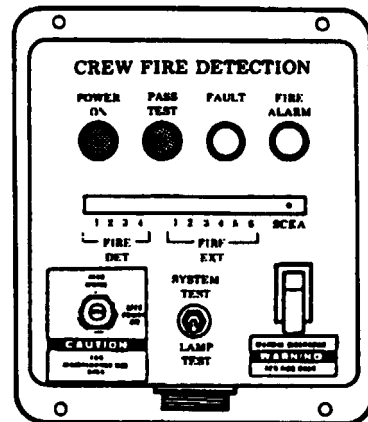
## CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 345 AND ABOVE)(CONTINUED)



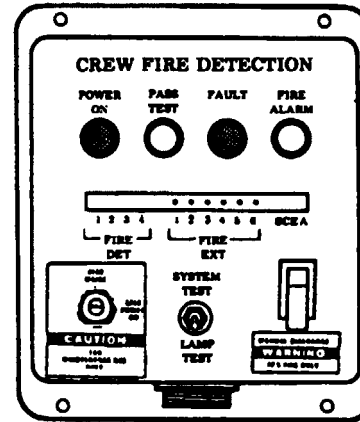
STEP 1



STEP 2



STEP 3



STEP 4

## CREW FIRE DETECTION SYSTEM TEST (CONTINUED)

- E Turn MASTER switch ON.
- F Turn crew T/A panel MAINTenance switch to horizontal position. The following events will occur:
- 1 Crew T/A panel green POWER ON light, yellow FAULT light and all red FIRE DET LED's will immediately illuminate and remain on.
  - 2 After approximately 2 seconds, the yellow FAULT light and all red FIRE DET LED's will extinguish. The green POWER ON light will remain on.
  - 3 After approximately 7 seconds, the green PASS TEST light will illuminate and remain on. At the same time, the red SCEA LED will briefly flash on one time.
  - 4 After approximately 12 seconds, the green PAST TEST light will extinguish. When the PASS TEST light goes out the yellow FAULT light and all six red FIRE EXT LED's will illuminate and remain on.
- G Press LAMP TEST toggle switch down and check that all four lamps and 11 LED's are lit. Replace any lamp that is burned out. If any Led does not light, replace crew T/A panel (p 14-40).

## CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 345 AND ABOVE) (CONTINUED)

### CREW FIRE DETECTION SYSTEM TEST (CONTINUED)

#### WARNINGS

- If red FIRE ALARM lamp remains on, or flashes on and off after completion of self test do not reconnect Halon bottles. Do not continue test.
- Make sure anti-recoil plugs are installed in crew AFES extinguisher discharge ports. Make sure extinguisher electrical connectors are disconnected (see steps A thru D).

- H Lift red guard covering T/A panel MANUAL DISCHARGE toggle switch. Press toggle switch up to discharge position. The personnel ventilation blower system will automatically turn on in the exhaust mode 8 to 10 seconds after actuating system. If not, troubleshoot personnel ventilation blower system (p 2-177).
- I Press ventilator blower RESET switch, located on accessory control panel, to shut off personnel ventilator blower.
- J Lower red guard cover to cover MANUAL DISCHARGE switch.

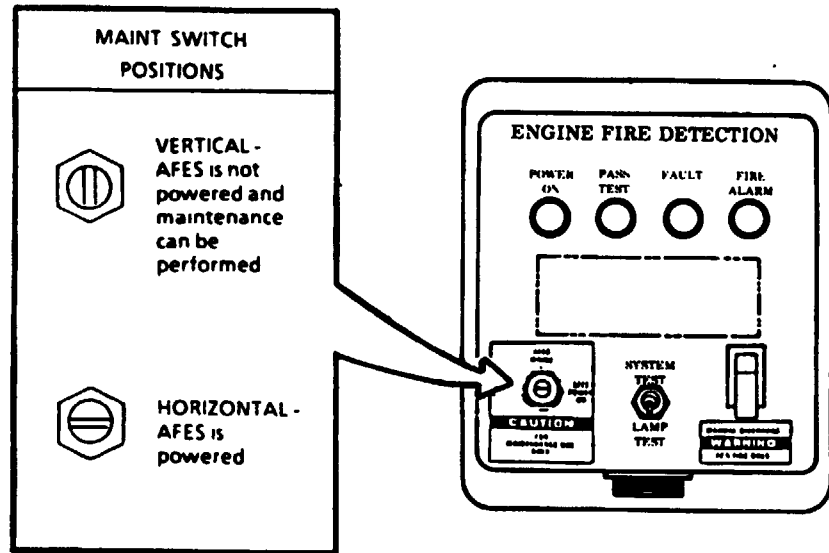
- K Turn crew T/A panel Maintenance switch to vertical position.
- L Turn MASTER switch OFF. Reconnect electrical connector(s) for all six crew system Halon bottles or, if optional method in note above is used, reconnect J2 connector in SCEA.
- M Turn crew T/A panel Maintenance switch to horizontal position. Turn MASTER switch ON. Light sequence on crew T/A panel shall repeat as in step F, except that when the green PASS TEST light goes out at end of BITE test, all six red FIRE EXT LED's will briefly flash on one time. The yellow FAULT light will not illuminate this time. After completion of BITE test, the only light illuminated will be green POWER ON light.
- N Press SYSTEM TEST switch up to activate system test. The following light sequence will occur:
- 1 Crew T/A panel green POWER ON light will already be illuminated
  - 2 After approximately 5 seconds, the PASS TEST light will illuminate and remain on. At the same time, the red SCEA LED will briefly flash on one time.

**CREW AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 345 AND ABOVE) (CONTINUED)**

- 3 After approximately 10 seconds, the green PASS TEST light will extinguish. As the PASS TEST light goes out, all six red FIRE EXT LED's will briefly flash on one time. Upon completion of the system test, the only light illuminated will be the green POWER ON light.
- O Turn MASTER switch OFF and observe crew T/A panel. Omen POWER ON light will remain on. If not, troubleshoot crew fire detection system (p 2-306.18).
- P Turn crew T/A panel Maintenance switch to vertical position and observe crew T/A panel. All lights will go out. If not, troubleshoot AFES (p 2-306.18).
- Q Turn crew T/A panel MAINTenance switch to horizontal position.



ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 345 AND ABOVE)



**WARNING**

If T/A POWER ON lamp does not go out when T/A panel MAINTenance switch is turned to vertical position, disconnect battery ground lead. DO NOT CONTINUE TEST. Troubleshoot AFES (p 2-306.2.1).

- C Turn engine T/A panel MAINTenance switch to vertical position.

**WARNING**

Electrical connectors must be disconnected from AFES extinguisher actuators or discharge of Halon will occur during test.

- D Disconnect two engine AFES bottles. Electrical connectors are located behind ammunition racks between personnel heater and ventilation blower.
- E Turn MASTER switch ON.
- F Turn engine T/A panel MAINTenance switch to horizontal position.

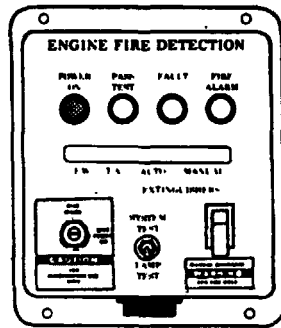
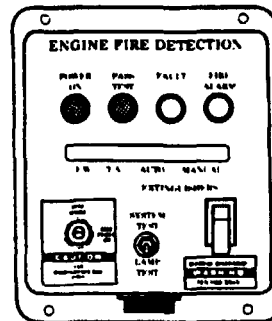
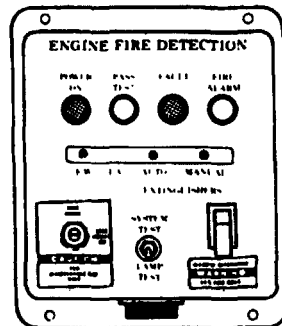
**ENGINE FIRE DETECTION SYSTEM TEST**

- A Make sure all system components are connected.
- B Turn MASTER switch OFF.

**ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 345 AND ABOVE) (CONTINUED)**

Check for following sequence

- 1 Green POWER ON light comes on immediately and stays lit.
- 2 Within 6 seconds, green PASS TEST light comes on.
- 3 After a few more seconds, the PASS light should extinguish. When the PASS light goes out the yellow FAULT light and the red LED for both MANUAL and AUTO extinguisher should illuminate and remain on. The red F/W LED may illuminate during the BITE test.

**STEP 1****STEP 2****STEP 3**

- G Press LAMP TEST toggle switch down and check that all four lamps, four LED's and RSI come on. Replace any lamp that is burned out. If any LED does not light, replace engine T/A panel (p 14-39).

**WARNING**

If T/A panel POWER ON lamp does not go out when T/A panel MAINTenance switch is tinned to vertical position, disconnect battery ground lead. DO NOT CONTINUE TEST. Troubleshoot AFES (p 2-306.2.1).

- H Turn engine T/A panel Maintenance switch to vertical position. All lights on engine T/A panel will go out.
- I Turn MASTER switch OFF. Connect electrical connectors to engine AFES extinguisher bottle actuators.

## ENGINE AUTOMATIC FIRE EXTINGUISHING SYSTEM TEST (VEHICLES 345 AND ABOVE) (CONTINUED)

J Turn MASTER switch ON. Turn engine T/A panel Maintenance switch to horizontal position and observe panel lights. Sequence will be the same as in step F except MANUAL, AUTO and yellow FAULT light will not come on. If it does, troubleshoot engine fire detection system (p 2-306.2).

K Turn SYSTEM TEST/LAMP TEST switch on engine T/A panel to SYSTEM TEST position. Sequence will be as follows:

1 T/A LED flickers.

2 PASS TEST light and F/W LED come on for approximately 6 seconds and then go out.

L Turn MASTER switch OFF. Observe engine T/A panel lights. Green POWER ON lamp will remain lit. If not, troubleshoot engine fire detection system (p 2-306.2).

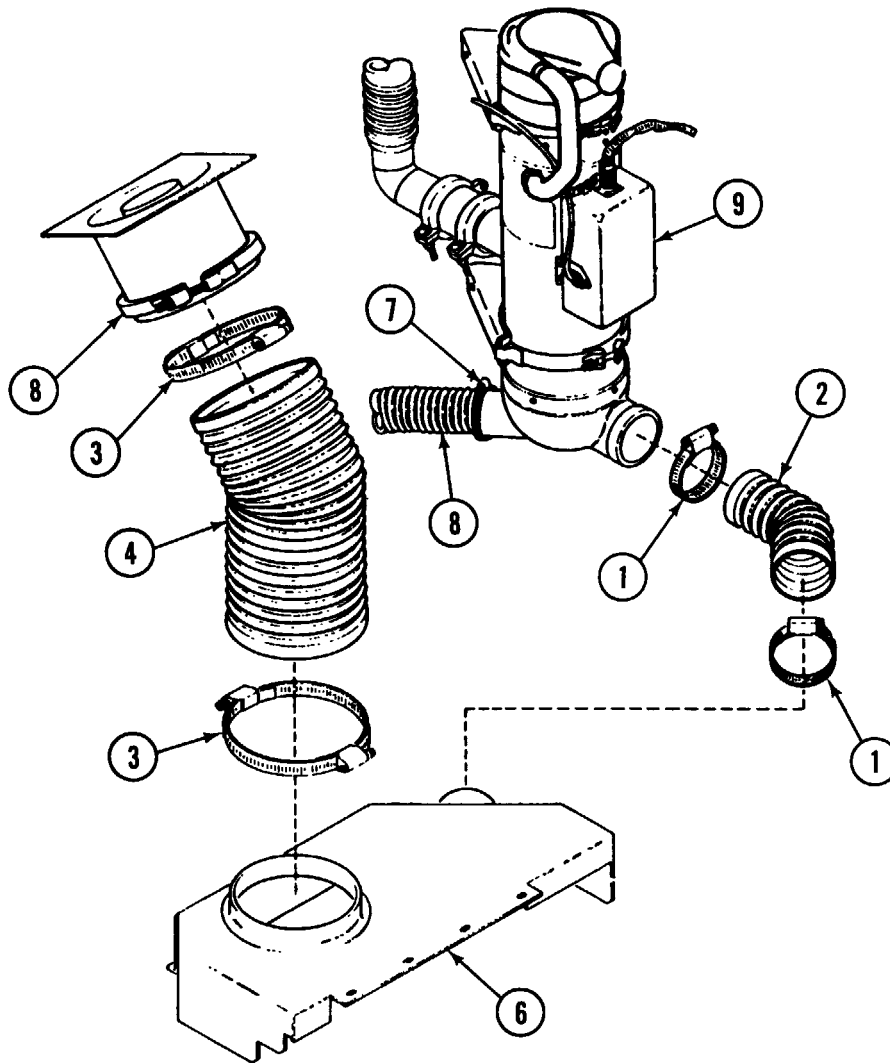
M Turn engine T/A panel Maintenance switch to vertical position. All lights on engine T/A panel will be off.

N Turn engine T/A panel Maintenance switch to horizontal position.



Section III PERSONNEL VENTILATION, BLOWER, HEATING AND VENTILATING HOSES AND DUCTS

HEATING AND VENTILATING DISTRIBUTION HOSES: REMOVAL AND INSTALLATION



**REMOVAL**

A Remove fire extinguisher #1 and #3 support brackets (p 14-30).

B Loosen two clamps (1) on flexible hose (2) and remove hose.

**NOTE**

Clamps (3) are actually two identical small clamps joined end-to-end to clamp a larger hose.

C Remove two tandem clamps (3) releasing flexible hose (4) from ventilation blower (5) and floor duct (6).

D Loosen two clamps (7) releasing flexible hose (8) from heater (9).

**INSTALLATION**

A Secure flexible hose (8) to heater (9) and tee with two clamps (7).

B Secure flexible hose (4) to ventilation blower (5) and floor duct (6) with two tandem clamps (3).

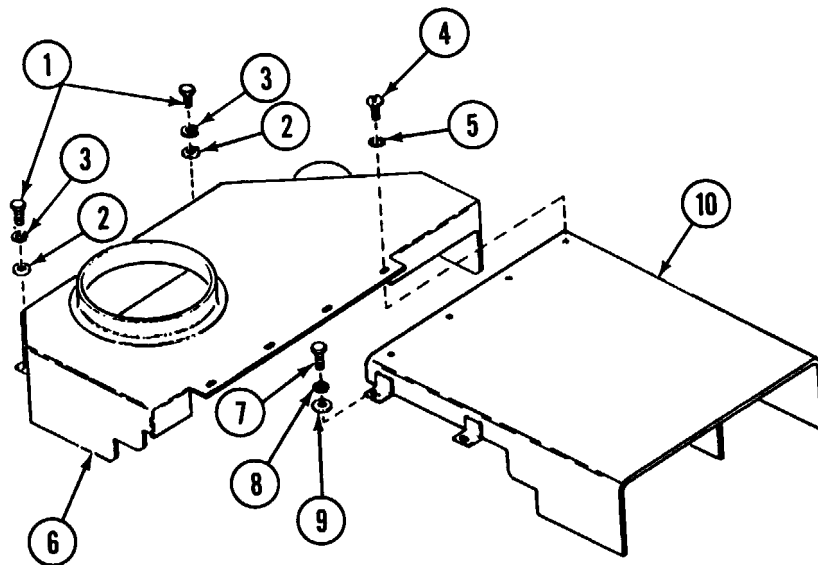
**NOTE**

Clamps (3) are actually two identical small clamps joined end-to-end to clamp a larger hose.

C Secure flexible hose (2) to heater (9) and floor duct (6) with two clamps (1).

D Install #1 and #3 fire extinguisher support brackets (p 14-30.1).

E Install #1 and #3 fire extinguisher bottles (p 14-28).

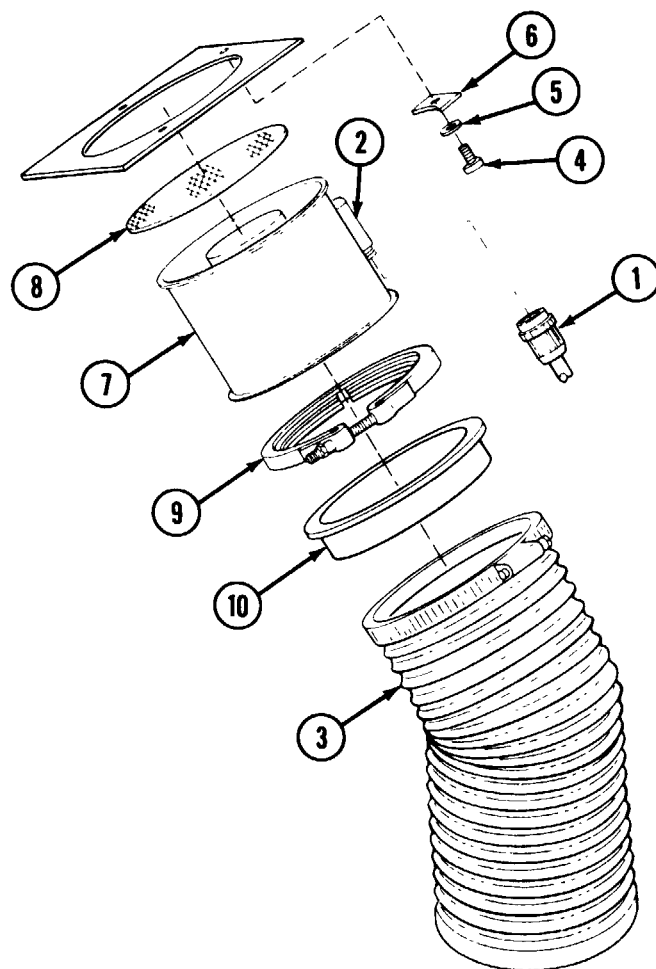
**HEATING AND VENTILATING DUCT AND HEAT SHIELDS: REMOVAL AND INSTALLATION****REMOVAL**

- A Remove flexible hoses from personnel heater and personnel ventilating fan (p 14-61).
- B Remove two screws (1), two flat washers (2) and two lockwashers (3).
- C Remove four screws (4) and four lockwashers (5). Discard lockwashers.
- D Remove duet (6).
- E Remove four screws (7), four lockwashers (8) and four flat washers (9). Discard lockwashers.
- F Remove duet (10).

**INSTALLATION**

Reverse order of removal using new lockwashers.

## PERSONNEL VENTILATION BLOWER: REMOVAL, CLEANING AND INSTALLATION



### INITIAL SETUP

#### Materials/Parts:

Dry-cleaning solvent (item 19, Appx D)

#### References:

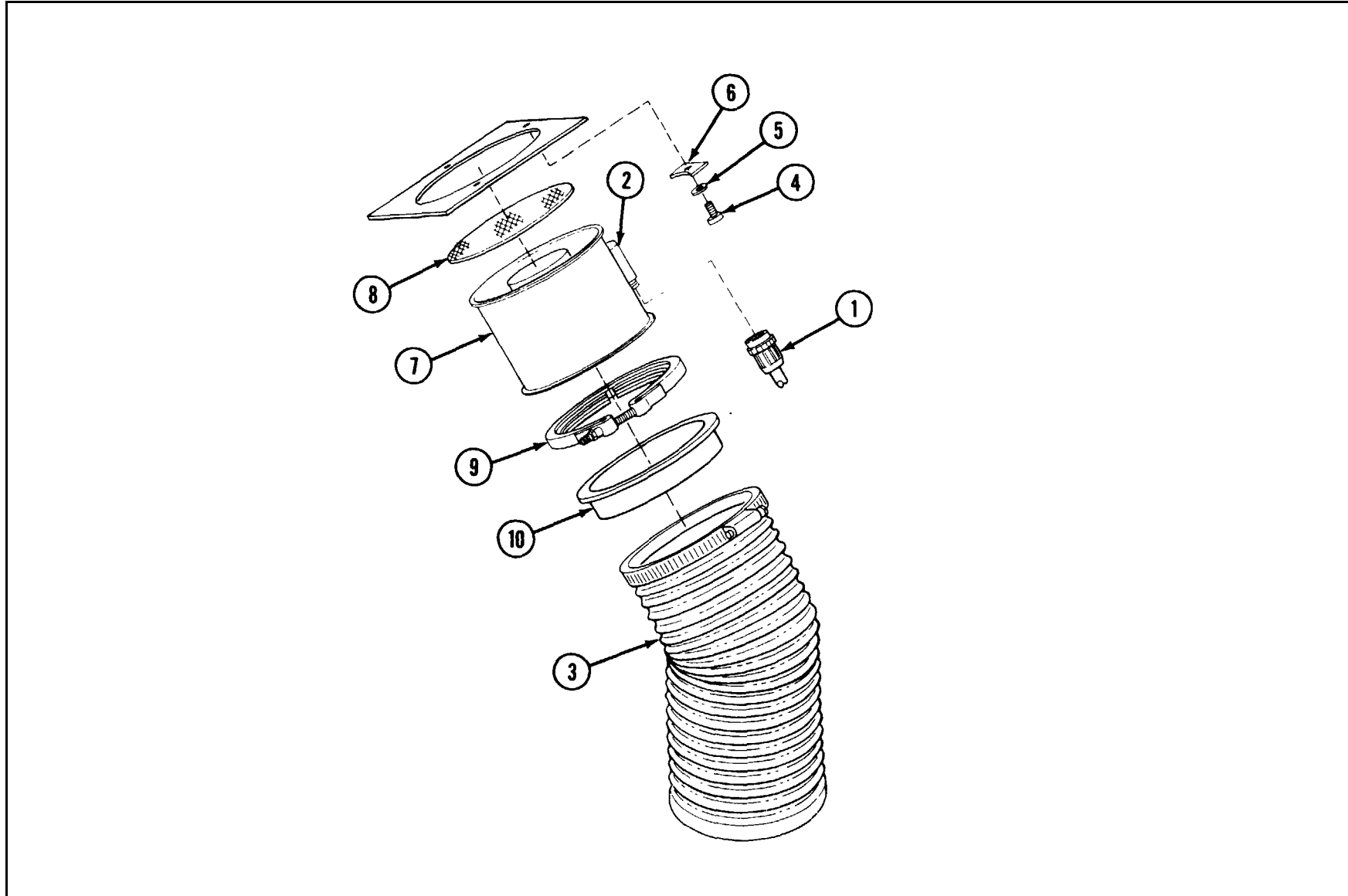
TM 9-2350-267-10

### REMOVAL

- A Remove fire extinguisher #1 and #3 support brackets (p 14-30).
- B Disconnect electrical connector (1) at receptacle (2).
- C Remove flexible hose (3) (p 14-61).
- D Remove three screws (4), three flat washers (5) and three plates (6).
- E Remove fan assembly (7) and screen (8).
- F Open coupling (9) releasing connector (10).

TA313126

PERSONNEL VENTILATION BLOWER: REMOVAL, CLEANING AND INSTALLATION (CONTINUED)





## PERSONNEL VENTILATION BLOWER: REMOVAL, CLEANING AND INSTALLATION (CONTINUED)

### CLEANING

#### WARNING

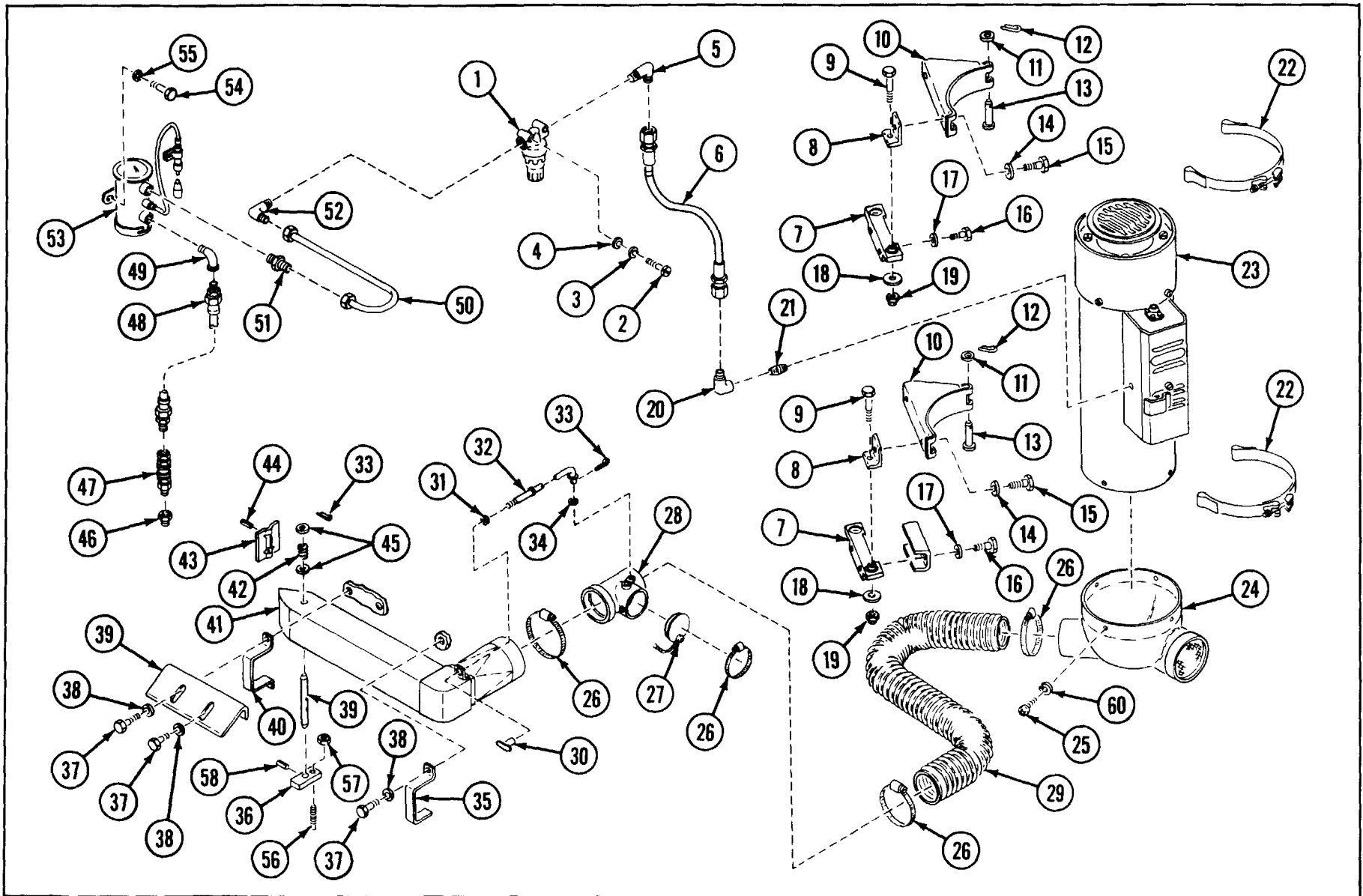
Dry-cleaning solvent (PD-680) is toxic and flammable. To prevent personal injury when using PD-680, use only in a well ventilated area. Avoid breathing vapors. If you become dizzy get fresh air immediately and seek medical attention. Avoid contact with eyes, skin and clothing. Use protective goggles, gloves, and clothing. If contact is made, immediately flush with water and seek medical attention. The flashpoint for Type I dry-cleaning solvent is 100°F (38°C); for Type II it is 138°F (50°C). Do not use near open flame or excessive heat.

Clean screen (8) with dry-cleaning solvent (item 19, Appx D).

### INSTALLATION

- A Install connector (10) on motor end of fan assembly (7). Secure with coupling (9).
- B Install screen (8) on fan assembly (7).
- C Install fan assembly (7) on mounting surface of bulkhead with three plates (6), three flat washers (5) and three screws (4).
- D Install flexible hose (3) (p 14-61).
- E Connect electrical connector (1) to receptacle (2).
- F Place MASTER switch in ON position. Check operation of personnel ventilation blower (TM 9-2350-267-10).
- G Install fire extinguisher #1 and #3 support brackets (p 14-30).
- H Install fire extinguisher bottles #1 and #3 (p 14-28).

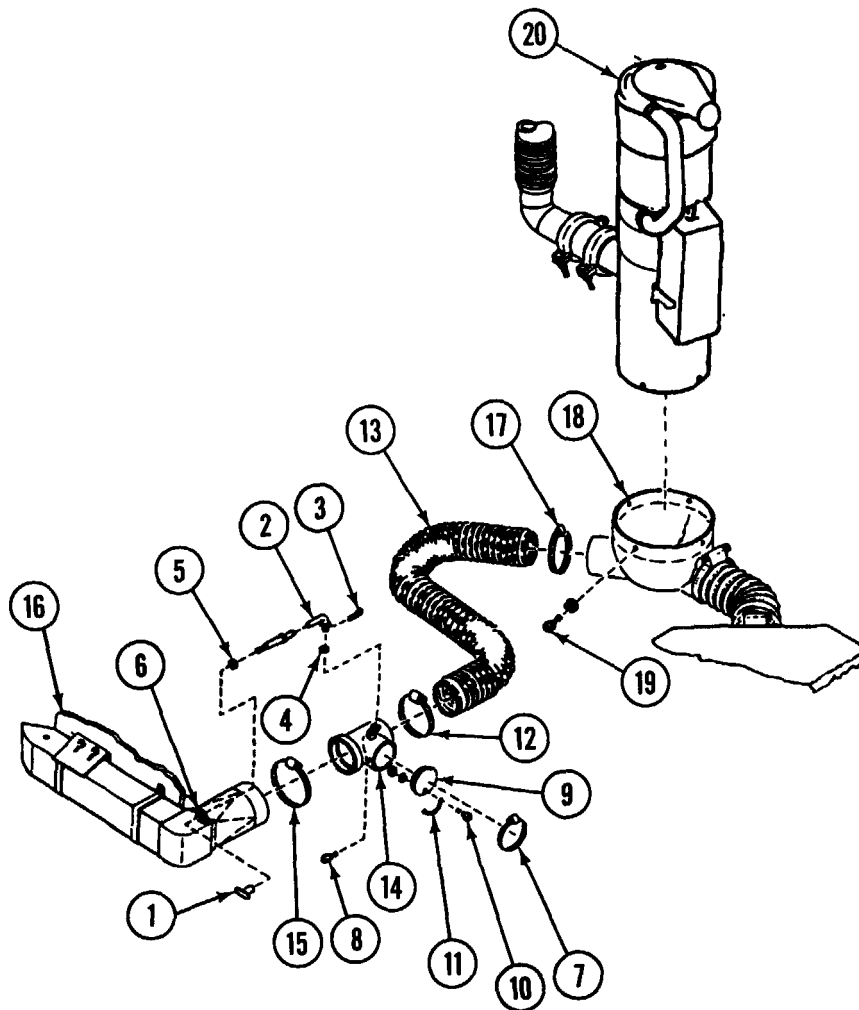
PERSONNEL HEATER MOUNTING CLAMP, SADDLE DUCTS, HOSES, TUBES AND DEFLECTORS



PERSONNEL HEATER MOUNTING CLAMP, SADDLE DUCTS, HOSES, TUBES AND DEFLECTORS (CONTINUED)

LEGEND

- |                                       |                             |
|---------------------------------------|-----------------------------|
| 1 Fuel Filter                         | 33 Cotter pin               |
| 2 Screw (2)                           | 34 Flat washer              |
| 3 Lockwasher (2)                      | 35 Bracket                  |
| 4 Flat washer (2)                     | 36 Outlet duct valve handle |
| 5 Elbow                               | 37 Screw (4)                |
| 6 Fuel filter to heater hose assembly | 38 Flat washer (3)          |
| 7 Support assembly (2)                | 39 Heater duct guard        |
| 8 Angle bracket (4)                   | 40 Retaining strap          |
| 9 Screw (4)                           | 41 Duct                     |
| 10 Saddle bracket (2)                 | 42 Spring                   |
| 11 Flat washer (4)                    | 43 Gate valve               |
| 12 Cotter pin (4)                     | 44 spring pin               |
| 13 Pin (4)                            | 45 Flat washer (2)          |
| 14 Flat washer (4)                    | 46 Screw                    |
| 15 Screw (4)                          | 47 Coupling assembly        |
| 16 Screw (4)                          | 48 Hose assembly            |
| 17 Flat washer (4)                    | 49 Elbow                    |
| 18 Flat washer (4)                    | 50 Tube assembly            |
| 19 Nut (4)                            | 51 Adapter                  |
| 20 Elbow                              | 52 Elbow                    |
| 21 Nipple                             | 53 Electrical fuel pump     |
| 22 Clamp (2)                          | 54 Screw (2)                |
| 23 Personnel heater                   | 55 Lockwasher (2)           |
| 24 Duet                               | 56 Handle screw             |
| 25 Screw (4)                          | 57 Nut                      |
| 26 clamp (4)                          | 58 Spring pin               |
| 27 Cap assembly                       | 59 Valve shaft              |
| 28 Tee assembly                       | 60 Lockwasher (4)           |
| 29 Hose                               |                             |
| 30 Tee handle                         |                             |
| 31 Grommet                            |                             |
| 32 Rod                                |                             |

**PERSONNEL HEATER OUTLET HOSE, TEE ASSEMBLY AND CONTROLS: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION**

**REMOVAL**

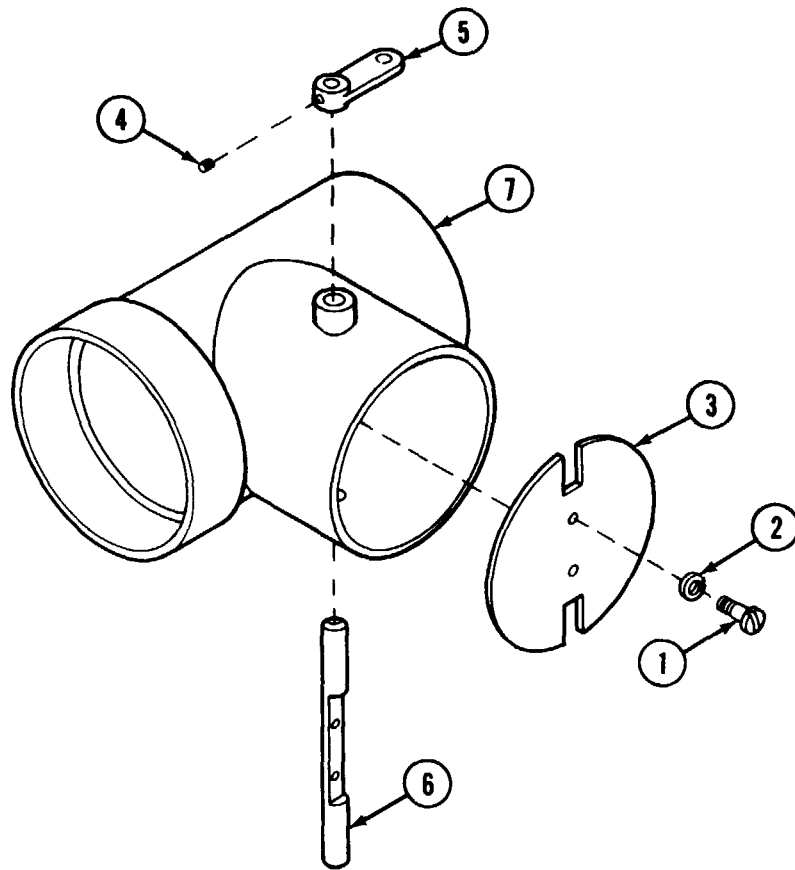
- A Unscrew tee handle (1) from rod (2).
- B Remove and discard cotter pin (3).
- C Remove rod (2) and washer (4).
- D Remove grommet (5) from bracket (6).
- E Loosen clamp (7).
- F Remove screw (8) and cap (9).
- G Remove screw (10) and chain (11)
- H Loosen clamp (12) and pull hose (13) from tee assembly (14).
- I Loosen clamp (15) and remove tee assembly (14) from duct (16).
- J Remove personnel heater (p 14-68.2).
- K Remove four screws (19).
- L Remove duct (18) from personnel heater (20).
- M Loosen clamp (17) and remove hose (13) from duct (18).

**INSTALLATION**

Reverse removal procedures using new Cotter pin.

**PERSONNEL HEATER OUTLET HOSE, TEE ASSEMBLY AND CONTROLS: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION  
(CONTINUED)**

**PERSONNEL HEATER OUTLET HOSE TEE ASSEMBLY**



**DISASSEMBLY**

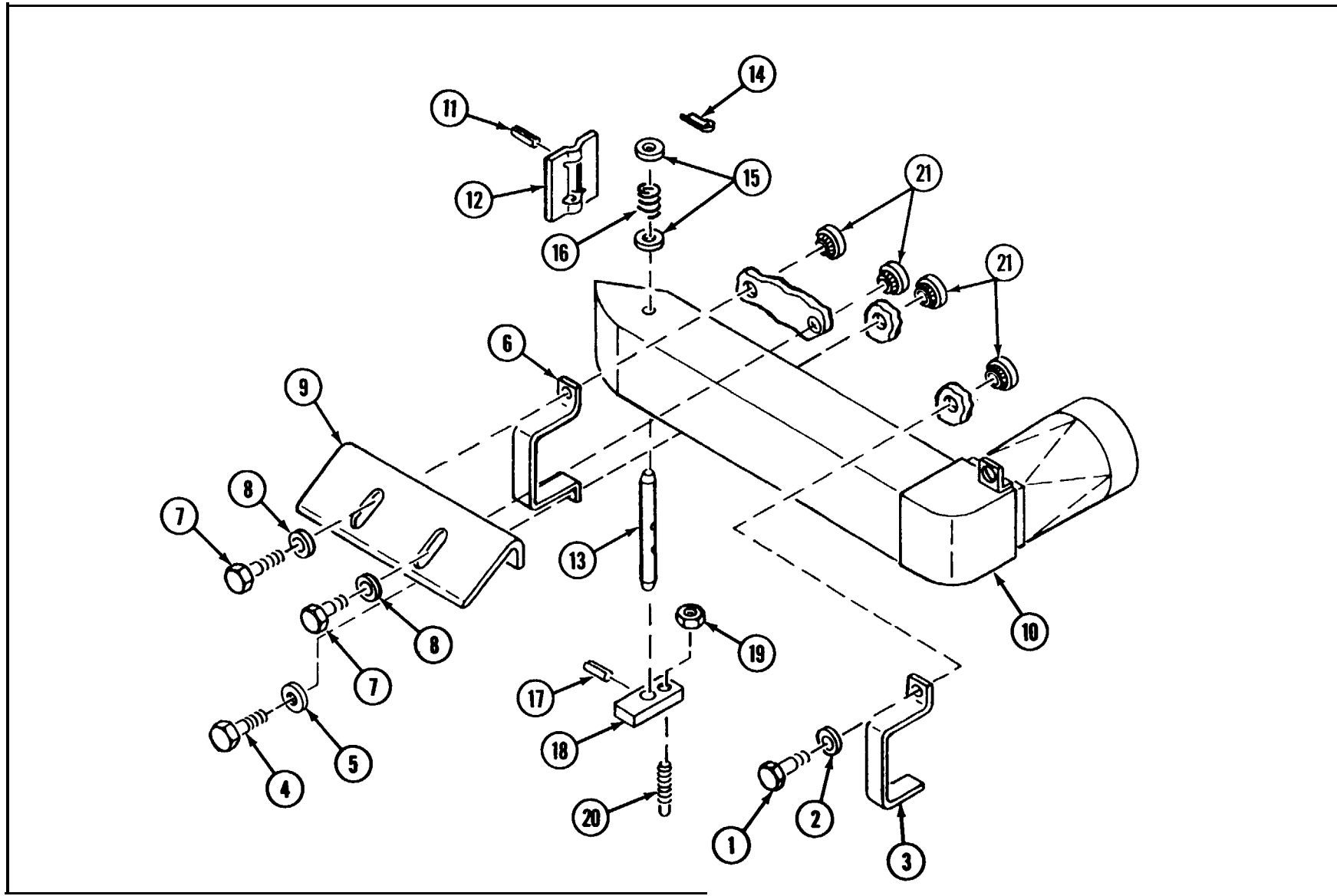
- A Remove two screws (1) and two lockwashers (2).
- B Remove baffle (3).
- C Loosen setscrew (4) and remove arm (5).
- D Slide shaft (6) out of tee (7).

**ASSEMBLY**

Reverse order of disassembly.

TA310741

PERSONNEL HEATER DUCT: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



## PERSONNEL HEATER OUTLET HOSE, TEE ASSEMBLY AND CONTROLS: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION

### REMOVAL

- A Remove personnel heater outlet hose tee (p 14-66).
- B Remove screw (1) and flat washer (2) releasing bracket (3).
- C Remove screw (4) and flat washer (5) from lower end of retaining strap (6).
- D Remove two screws (7) and two flat washers (8) releasing retaining strap (6) and duct guard (9).
- E Remove duet (10) and assembled parts.

### DISASSEMBLY

- A Drive out two spring pins (11) releasing valve (12) from shaft (13). Discard spring pins.
- B Remove and discard cotter pin (14) releasing two flat washers (15) and spring (16).
- C Drop shaft (13) and attached parts from duct releasing valve (12).
- D Drive out and discard spring pin (17) releasing valve handle (18) and shaft (13).
- E Remove jamnut (19) and detent screw (20) from handle (18).

### ASSEMBLY

- A Install handle (18) on shaft (13). Secure with new spring pin (17).
- B Insert detent screw (20) in handle (18). Secure finger-tight with jamnut (19).

- C Insert shaft (13) up through duct (10) and valve (12).
- D Secure valve (12) to shaft (13) with two new spring pins (11).
- E Install two flat washers (15) and spring (16) on top of shaft (13). Secure with new cotter pin (14).
- F Check detent action valve (12) and valve handle (18). Adjust detent screw (20). Lock in place with jamnut (19).

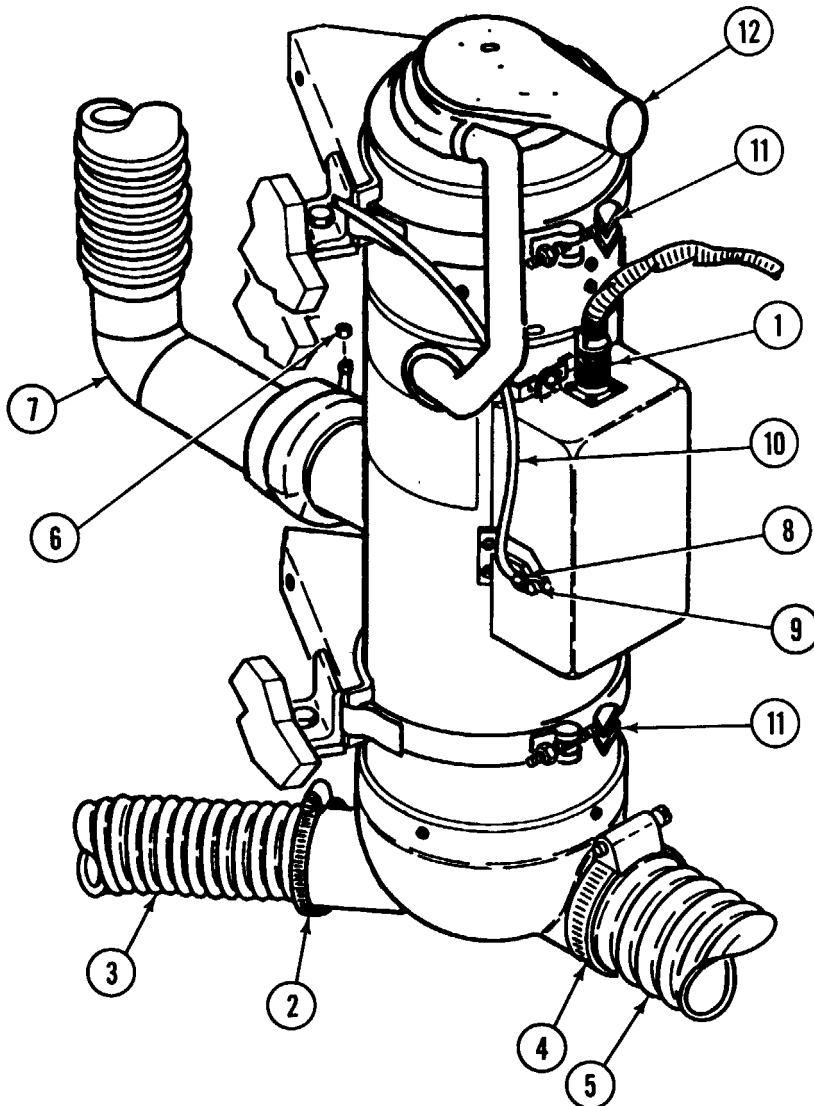
### INSTALLATION

- A Install personnel heater outlet hose tee assembly (14-66).
- B Position duet (10) and assembled parts against drive/engine bulkhead. Aline holes in bracket (3), retaining strap (6), and duct guard (9) with holes in bulkhead.

### NOTE

Splined nuts (21) are force-fit nested on engine side of bulkhead. If nuts have fallen out or are damaged, notify support maintenance.

- C Position bracket (3) on duct (10). Secure with flat washer (2) and screw (1); finger-tighten.
- D Position strap (6) on ducts (10). Secure bottom of strap (6) with flat washer (5) and screw (4); finger-tighten.
- E Position duet guard (9) and secure forward end and strap (6) with flat washer (8) and screw (7). Secure rear end of duct guard (9) with flat washer (8) and screw (7).
- F Tighten screws (1, 4, and 7). Make sure splined nuts (21) are secure.



### REMOVAL

A Remove fire extinguisher mountings #1 and #2 (p 14-30).

B Disconnect electrical connector (1).

### NOTE

If hoses in steps C and D cannot be removed from personnel heater, disconnect hoses at other end.

C Loosen clamp (2) and disconnect hose (3).

D Loosen clamp (4). Disconnect hose (5).

### NOTE

Use a suitable container to catch fuel that will drain from disconnected lines.

E Unscrew nut (8) from elbow (9). Remove fuel line (10). Catch drained fuel.

F Loosen two clamps (11).

G Remove personnel heater (12), loosen nut (6) and disconnect exhaust tube (7).



## PERSONNEL HEATER: REMOVAL AND INSTALLATION (CONTINUED)

### INSTALLATION

- A Position personnel heater (12) and connect exhaust tube (7). Torque nut (6) to 65-75 lb-in.
- B Secure personnel heater (12) with two clamps (11).
- C Screw nut (8) onto elbow (9) to connect fuel line (10).

#### **WARNING**

**Exhaust piping will seal in carbon monoxide. Any leaks will endanger vehicle crew.**

- D Connect hose (5). secure Clamp (4).
- E Connect hose (3). secure clamp (2).

- F Connect electrical connector (1).

#### **WARNING**

**In case of fire, AFES system must be manually activated**

Check operation of personnel heater (TM 9-2350-267-10).

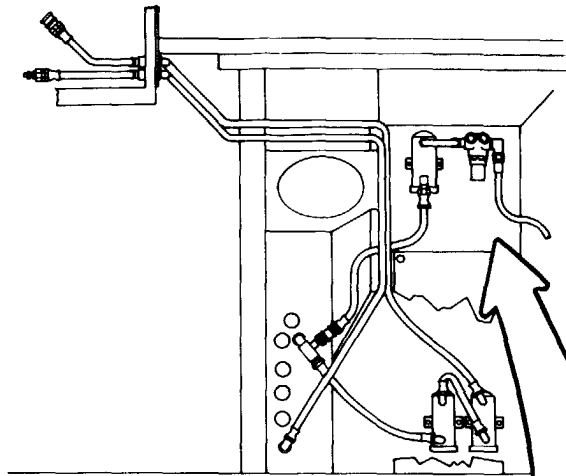
Re-torque nut (4) to 65-75 lb-in.

Install fire extinguisher mountings #1 and #3 (p 14-30).

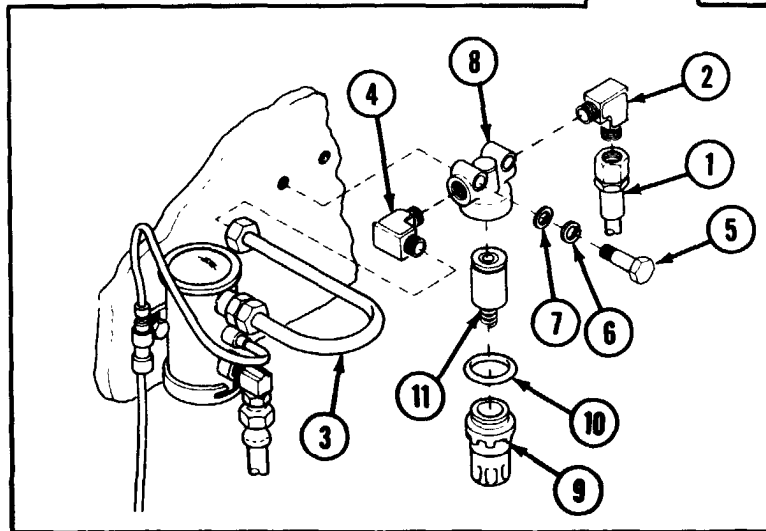
Install fire extinguisher bottles #1 and #3 (p 14-28).



## HEATER FUEL FILTER AND TUBES: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION



FORWARD BULKHEAD  
CREW COMPARTMENT



### INITIAL SETUP

#### Materials/Parts:

Teflon tape (item 60, Appx D)

### REMOVAL

A Remove fire extinguisher mountings #1 and #3 (p 14-30).

#### NOTE

When opening fuel system, use a suitable container to catch a few ounces of fuel.

B Disconnect personnel heater fuel inlet hose (1) at elbow (2).

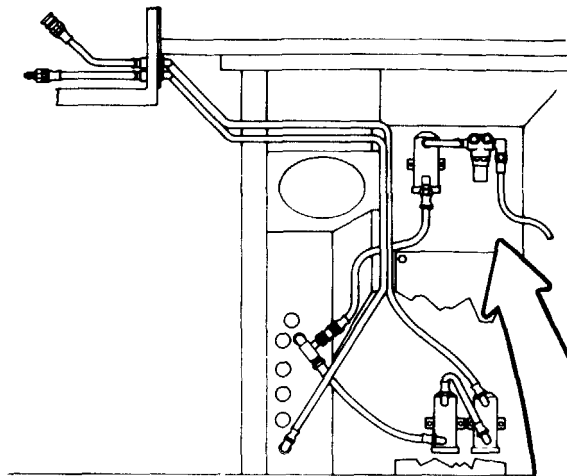
C Disconnect fuel pump to filter tube (3) at elbow (4).

D Remove two screws (5), two lockwashers (6), two flat washers (7) and fuel filter head (8) with attached parts. Discard lockwashers.

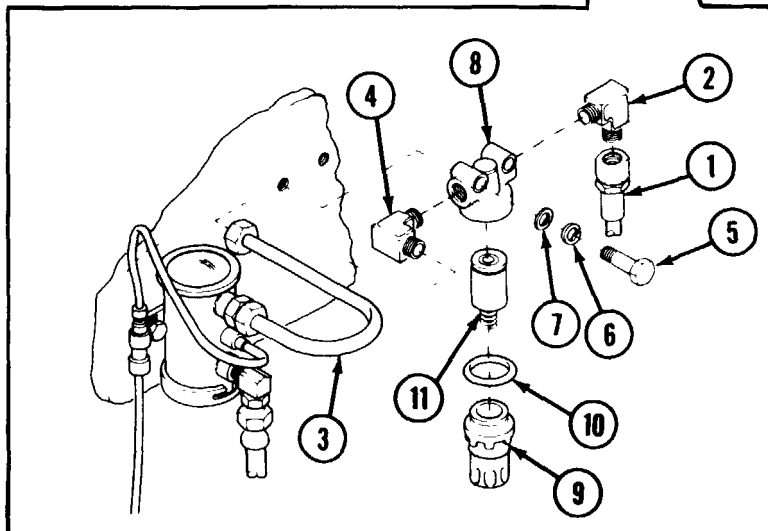
E Remove elbows (2 and 4) from filter head (8).

### DISASSEMBLY

Unscrew bowl (9), releasing preformed packing (10) and filter element (11). Discard packing.

**HEATER FUEL FILTER AND TUBES: REMOVAL, DISASSEMBLY, ASSEMBLY AND INSTALLATION (CONTINUED)**

**FORWARD BULKHEAD  
CREW COMPARTMENT**

**ASSEMBLY**

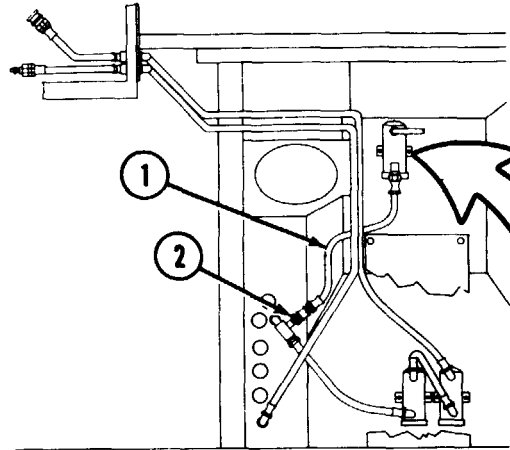
- A Insert filter element (11) in bowl (9), spring end down.
- B Moisten new preformed packing (10) with fuel and install.
- C Install bowl (9) on filter head (8).

**INSTALLATION****NOTE**

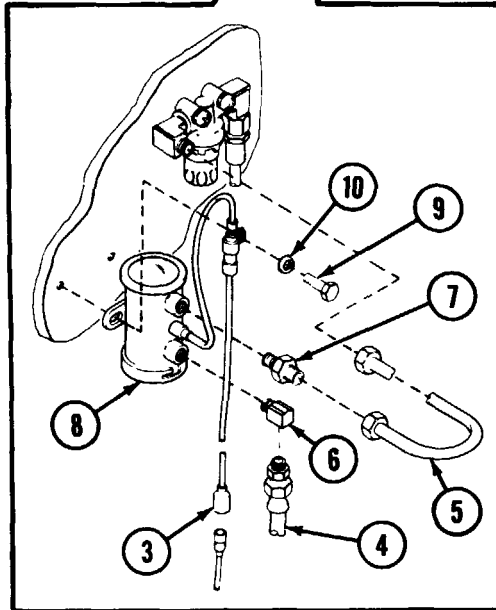
Apply Teflon tape (item 60, Appx D) to all threads of elbows.

- A Install elbows (2 and 4) into filter head (8).
- B Install filter head (8) with two screws (5), two lockwashers (6) and two flat washers (7).
- C Connect fuel pump to filter tube (3) to elbow (4).
- D Connect heater fuel inlet hose (1) to elbow (2).
- E Install fire extinguisher mountings #1 and #3 (p 14-30).
- F Install fire extinguisher bottles #1 and #3 (p 14-28).

## HEATER FUEL PUMP: REMOVAL AND INSTALLATION



FORWARD BULKHEAD  
CREW COMPARTMENT



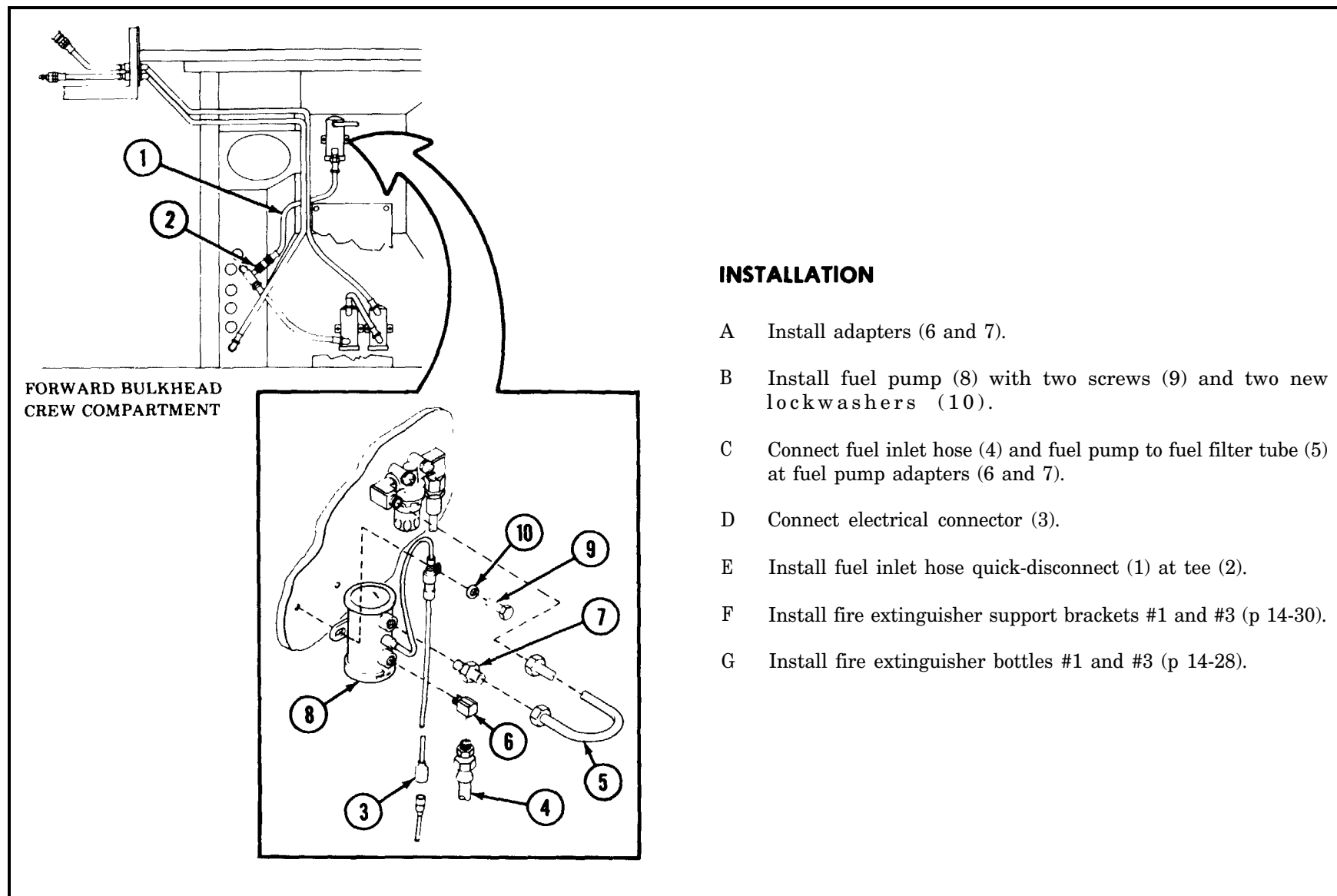
### REMOVAL

- A Remove fire extinguisher #1 and #3 support brackets (p 14-30).

### NOTE

When disconnecting fuel lines, use suitable container to catch excess fuel.

- B Disconnect fuel inlet hose quick-disconnect 1) at tee (2).
- C Disconnect electrical connector (3).
- D Disconnect fuel inlet hose (4) and fuel pump to fuel filter tube (5) at fuel pump adapters (6 and 7).
- E Remove fuel pump (8) by removing two screws (9) and two lockwashers (10). Discard lockwashers.
- F Remove adapters (6 and 7).

**HEATER FUEL PUMP: REMOVAL AND INSTALLATION (CONTINUED)**

## PERSONNEL HEATER MOUNTINGS CLAMPS AND BRACKETS: REMOVAL AND INSTALLATION

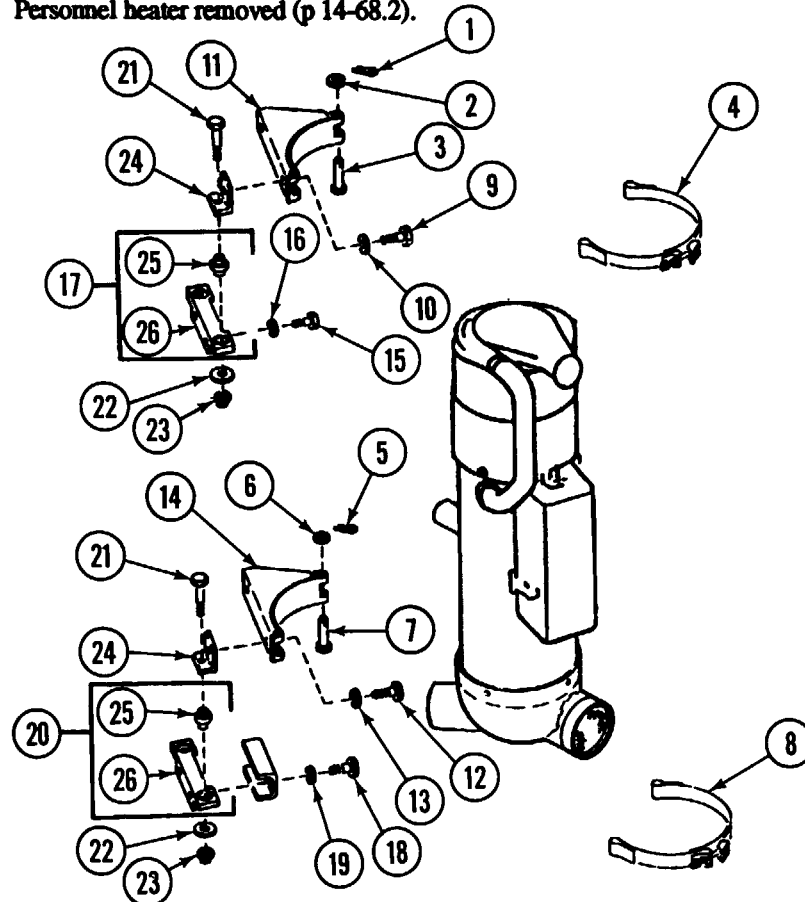
### INITIAL SETUP

#### Personnel required:

Two

#### Equipment Condition:

Personnel heater removed (p 14-68.2).



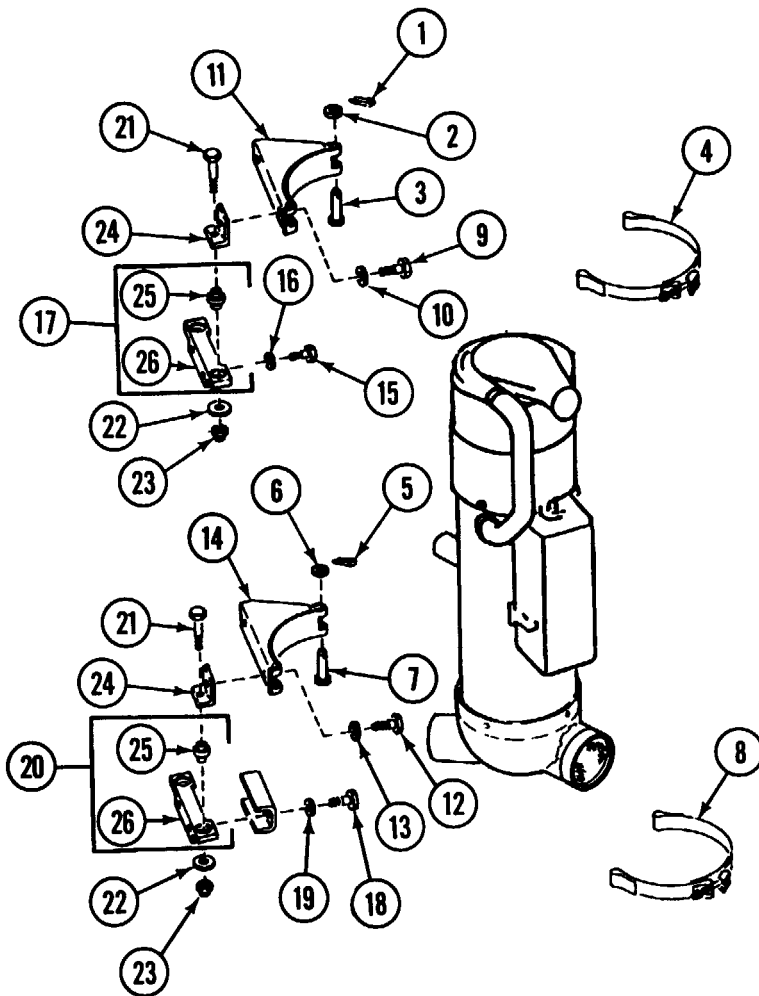
### REMOVAL

- A Remove two cotter pins (1), two flat washers (2), two straight pins (3) and upper clamp (4). Discard cotter pins.
- B Remove two cotter pins (5), two flat washers (6), two straight pins (7) and lower clamp (8). Discard cotter pins.
- C Remove two screws (9), two flat washers (10) and upper saddle bracket (11).
- D Remove two screws (12), two flat washers (13) and lower saddle bracket (14).

### NOTE

Removal of support assemblies requires removal of powerpack (p 3-4). Support assembly removal should be scheduled when powerpack is removed for another task.

- E Remove powerpack (p 3-4).
- F Remove two screws (15), two flat washers (16) and upper support assembly (17).
- G Remove two screws (18), two flat washers (19) and lower support assembly (20).
- H Remove four screws (21), four flat washers (22), four nuts (23) and four angles (24) from two support assemblies (17 and 20).
- I Remove four resilient mounts (25) from two supports (26).

**PERSONNEL HEATER MOUNTINGS CLAMPS AND BRACKETS: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

- A Insert four resilient mounts (25) in two supports (26).
- B Secure four angles (24) on two support assemblies (17 and 20) with four screws (21), four flat washers (22) and four nuts (23).
- C Install lower support assembly (20) with two flat washers (19) and two screws (18). Finger-tighten.
- D Install upper support-assembly (17) with two flat washers (16) and two screws (15). Finger-tighten.
- E Install lower saddle bracket (14) with two flat washers (13) and two screws (12).
- F Install upper saddle bracket (11) with two flat washers (10) and two screws (9).
- G Tighten four nuts (23) and four screws (21).
- H Install powerpack (p 3-24).
- I Install lower clamp (8) with two straight pins (7), two flat washers (6) and two new cotter pins (5).
- J Install upper clamp (4) with two straight pins (3), two flat washers (2), and two new cotter pins (1).



## PERSONNEL HEATER EXHAUST PIPE AND HOSE: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION

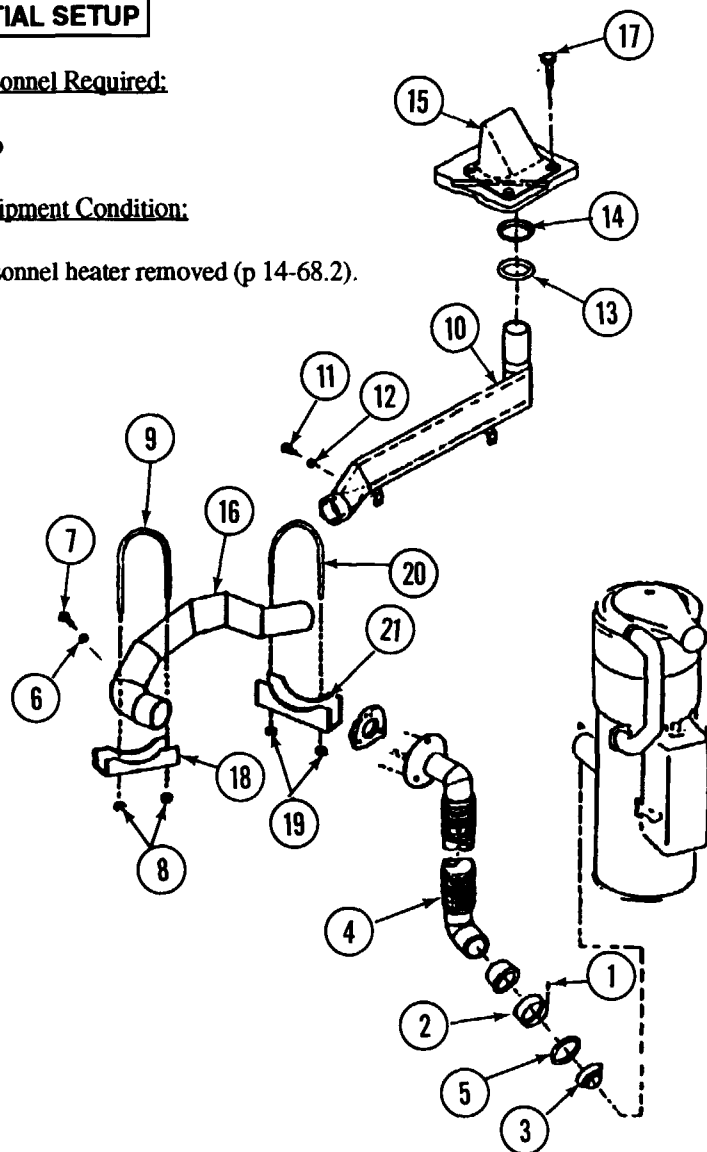
### INITIAL SETUP

#### Personnel Required:

Two

#### Equipment Condition:

Personnel heater removed (p 14-68.2).



### REMOVAL AND DISASSEMBLY

- A Loosen self-locking nut (1) and remove v-band clamp (2).

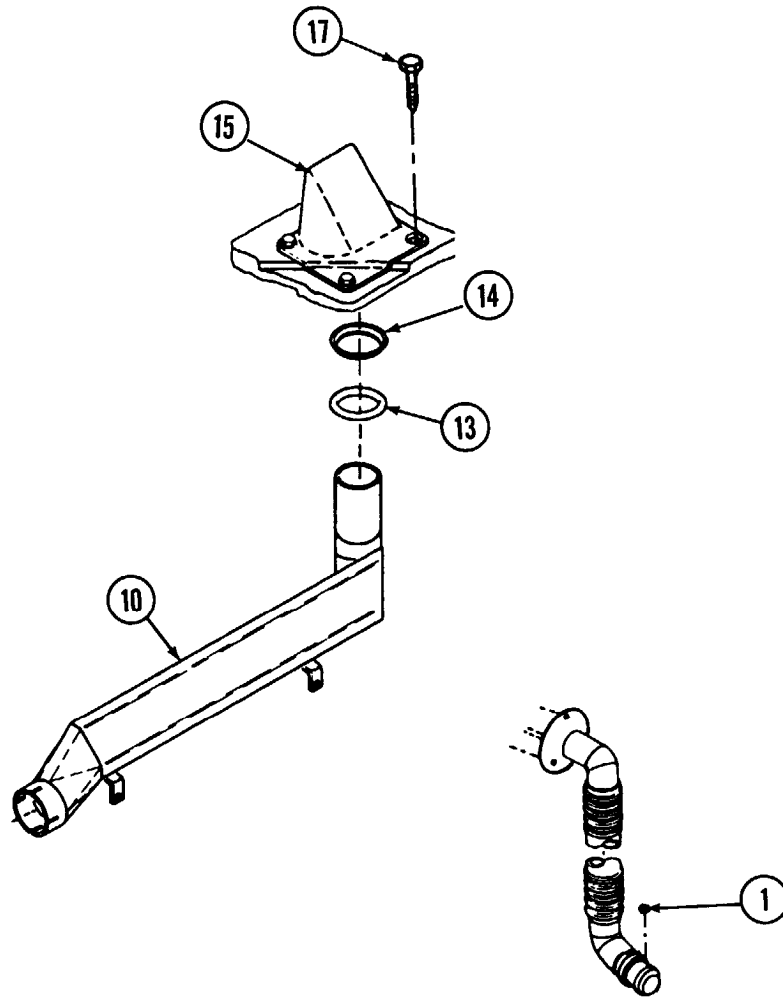
#### NOTE

Clamp assembly consists of a v-band (2), a flange (3) and a sleeve (5).

- B Remove two nuts (8), u-bolt (9) and saddle (18).  
 C Remove three nuts (7) and three lockwashers (6).  
 D Remove hose assembly (4).  
 E Slide sleeve (5) and flange (3) off heater exhaust tube.  
 F Remove two nuts (19), u-bolt (20) and saddle (21).  
 G Slide exhaust tube (16) off tube (10).  
 H Remove two bolts (17) from heater exhaust deflector (15). Remove special washer (13) and preformed packing (14) from tube (16) and exhaust deflector (15). Discard special washer (13) and preformed packing (14).  
 I Remove engine exhaust grille (p 3-5).  
 J Remove two screws (11) and two lockwashers (12).



PERSONNEL HEATER EXHAUST PIPE AND HOSE: REMOVAL, DISASSEMBLY, ASSEMBLY, AND INSTALLATION (CONTINUED)



K Remove tube (10) through deck plate opening.

**ASSEMBLY AND INSTALLATION**

A Replace special washer (13) and preformed packing (14).

B Reverse order of disassembly.

C Reverse order of removal using new lockwashers.

D Torque self-locking nut (1) to 65-75 lb-in.

## Section V BILGE PUMP

## BILGE PUMP AND STRAINER: REMOVAL AND INSTALLATION

**INITIAL SETUP**Test Equipment/Special Tools:

Pipe wrench, 10 in. (item 72, Appx B)

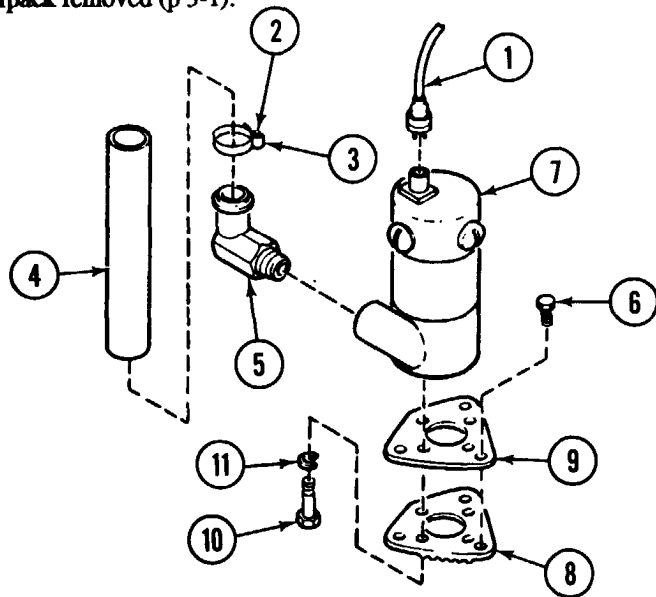
Materials/Parts:

Anti-seize compound (item 69, Appx D)

Sealing compound (item 52, Appx D)

Equipment Condition:

Powerpack removed (p 3-1).

**REMOVAL**

- A Remove electrical connector (1).
- B Loosen screw (2) and remove clamp (3) and hose (4) from elbow (5).

**NOTE**

Note position of bilge pump before removal to ensure proper installation.

- C Remove three screws (6) and remove bilge pump (7) from vehicle.
- D Remove elbow (5) from bilge pump (7).
- E Remove strainer (8) and stiffener (9) from bilge pump (7) by removing four screws (10) and four lockwashers (11). Discard lockwashers.

## CHAPTER 15

### MAINTENANCE PROCEDURES WINTERIZATION KIT

---

#### CHAPTER OVERVIEW

This chapter illustrates and describes procedures for removal, disassembly, assembly, and installation of the M992 Winterization Kit.

---

#### GENERAL INSPECTION AND REPAIR PROCEDURES

The mechanic will perform visual inspection of winterization kit components during installation. Look for the following conditions and take appropriate indicated actions

- Cracked, damaged or deteriorated hoses, tubes and ducts.

Replace or notify Support Maintenance.

- Leaks at fuel line and coolant line connectors.

Repair or replace as appropriate or notify Support Maintenance as required.

- Signs of burns, heat discoloration or damaged winterization kit housing and components.

Notify Support Maintenance.

- Damaged electrical leads and connectors.

Repair, repair or notify Support Maintenance.

- Torn, deteriorated or damaged tarpaulins and tiedown straps.

Repair or replace as appropriate.

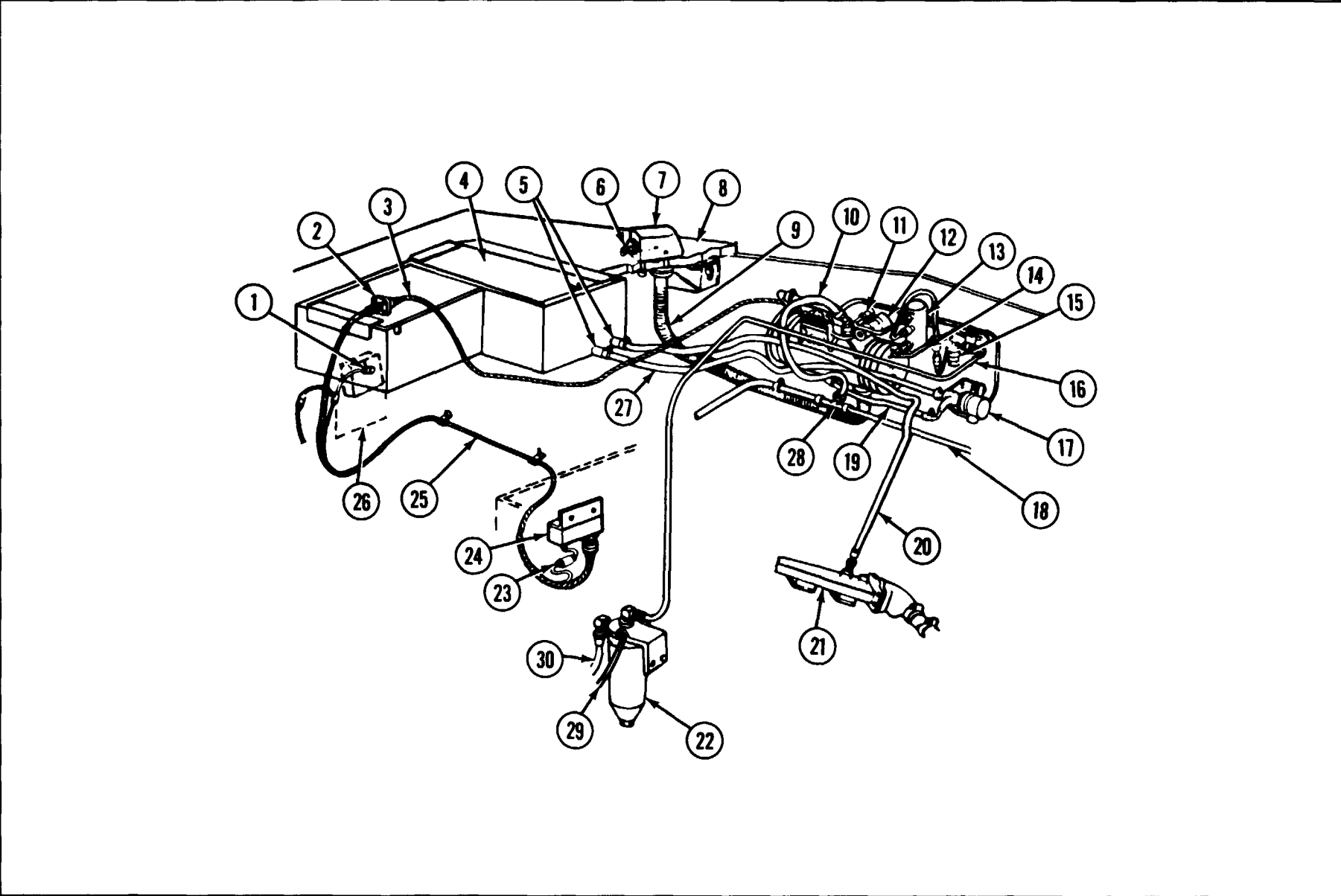
**ENGINE AND BATTERY WINTERIZATION KIT****NOTE**

The following installed view of the winterization kit identifies all items in kit. Those items which only need to be disconnected during powerpack removal are identified by a single \*. Those items that need to be removed during powerpack removal are identified by a \*\*.

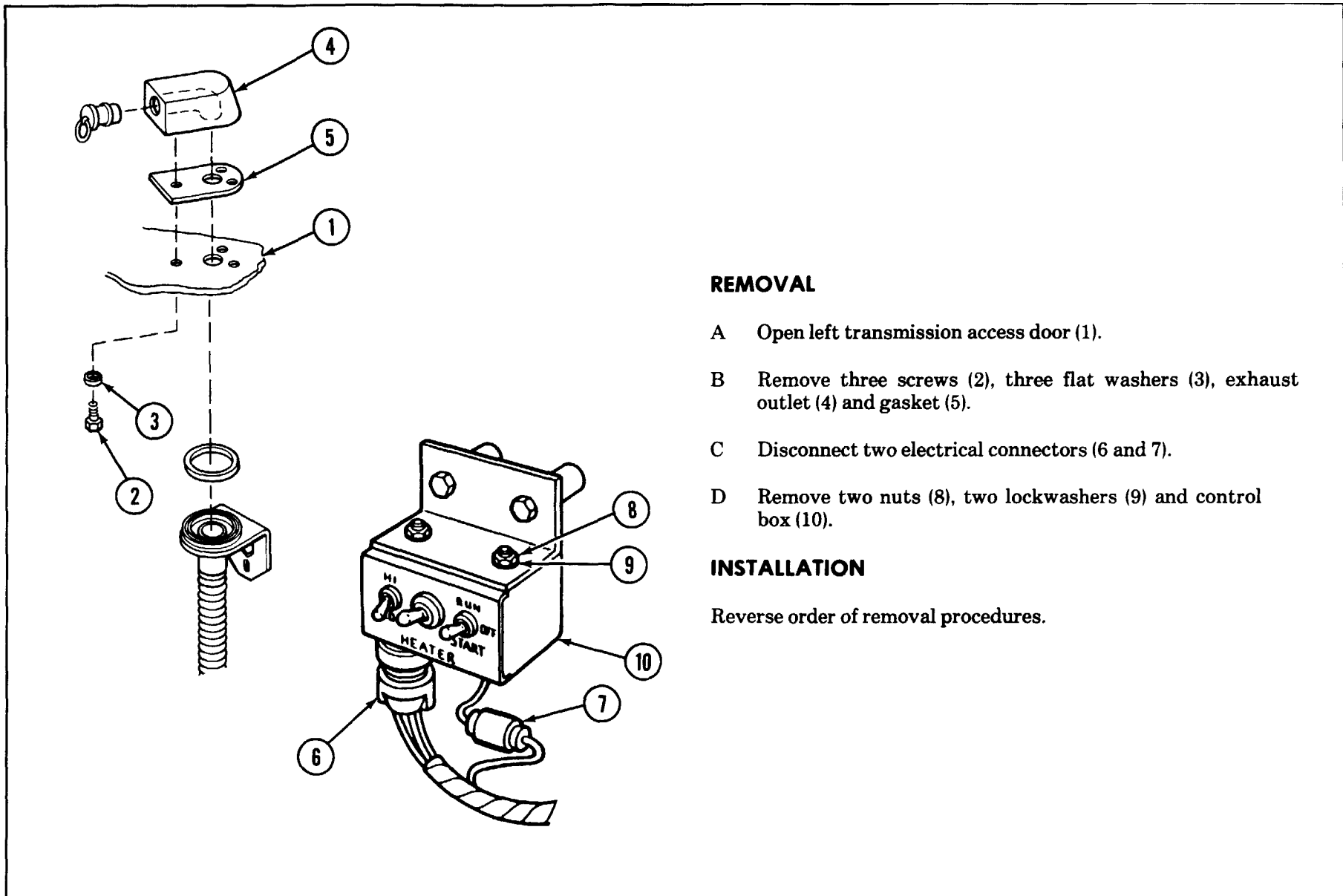
**LEGEND:**

- |      |  |      |  |
|------|--|------|--|
| 1    | Connector wire (459B) to master switch   | *16  | Engine fuel strainer (primary fuel filter) to fuel filter fuel hose                      |
| 2    | Receptacle at driver's compartment bulkhead  | **17 | Coolant pump (electric)  |
| *3   | Bulkhead to heater, fuel-pump and coolant-pump harness(wires 402B, 403B, 403C, 406 and ground) | 18   | Engine coolant surge tank hose   |
| 4    | Battery insulation box   | 19   | Coolant pump-to-heater hose  |
| 5    | Battery heater plate parts   | *20  | Engine coolant manifold-to-battery heater inlet hose                                     |
| 6    | Exhaust outlet plug  | 21   | Engine manifold  |
| 7    | Exhaust outlet   | 22   | Engine fuel strainer (primary filter)  |
| 8    | Transmission left access door  | 23   | Heater lead (wire 400)   |
| ** 9 | Exhaust tube   | 24   | Heater control box   |
| *10  | Heater-to-surge tank hose connector tube   | 25   | Control box-to-master switch and bulkhead harness (wires 400, 402B, 402C, 406, and 459B) |
| *11  | Fuel pump-to-heater fuel tank  | 26   | master switch (reference)  |
| **12 | Coolant heater   | *27  | Battery heater outlet-to-coolant pump hose   |
| **13 | Fuel pump (electric)   | 28   | Heater hose-to-surge tank hose Y-connector tube  |
| **14 | Fuel filter-to-fuel pump fuel tube   | 29   | Engine fuel strainer (primary filter) to engine fuel tube                                |
| **15 | Fuel filter  | *30  | Fuel strainer (primary filter) hose  |

ENGINE AND BATTERY WINTERIZATION KIT (CONTINUED)



## EXHAUST OUTLET ASSEMBLY AND HEATER CONTROL BOX: REMOVAL AND INSTALLATION

**REMOVAL**

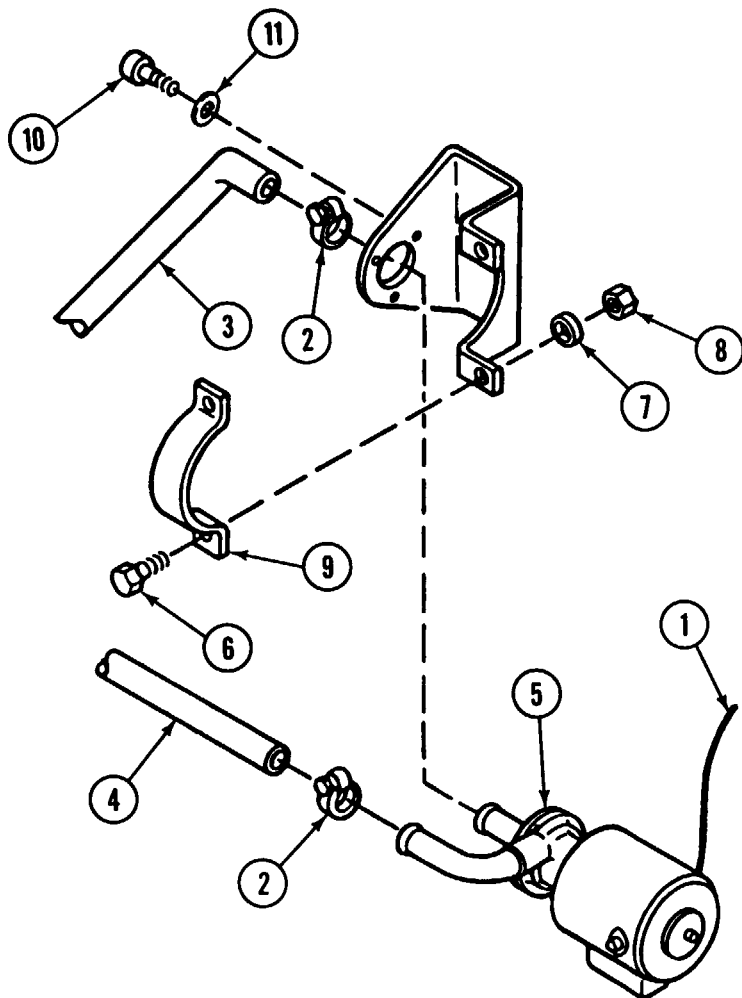
- A Open left transmission access door (1).
- B Remove three screws (2), three flat washers (3), exhaust outlet (4) and gasket (5).
- C Disconnect two electrical connectors (6 and 7).
- D Remove two nuts (8), two lockwashers (9) and control box (10).

**INSTALLATION**

Reverse order of removal procedures.



## COOLANT PUMP REMOVAL AND INSTALLATION



### REMOVAL

- A Disconnect electrical lead (1).
- B Loosen two hose clamps (2).
- C Disconnect coolant inlet hose (3) and outlet hose (4) from pump (5).

### NOTE

Install 5/8-inch plugs in hoses (3 and 4). If plugs are unavailable, drain coolant system (TM 9-2350-267-10).

- D Remove two screws (6), two flat washers (7), two nuts (8) and clamp (9).
- E Remove two screws (10), washers (11), and coolant pump (5).

### INSTALLATION

- A Position pump (5) against bracket (8) so that pump suppressor (on bottom of pump) is 30° forward from vertical. Secure pump using three screws (10) and washers (11).
- B Install clamp (9) using two screws (6), two flat washers (7) and two nuts (8).
- C Remove plugs (if used) from coolant inlet hose (3) and outlet hose (4). Connect hoses to pump using two clamps (2).
- D Connect electrical lead (1).

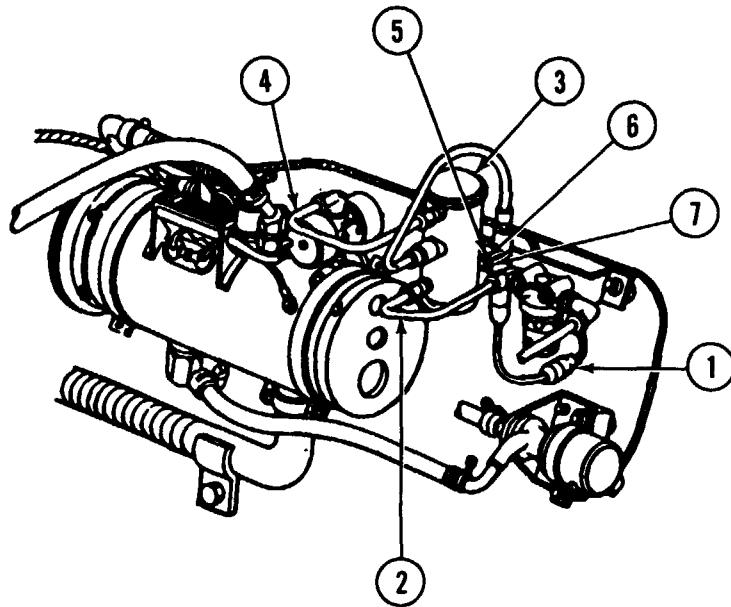
**FUEL PUMP: REMOVAL AND INSTALLATION****REMOVAL****NOTE**

Disconnect fuel inlet to fuel tank hose quickdisconnect and engine primary fuel filter (p 4-11).

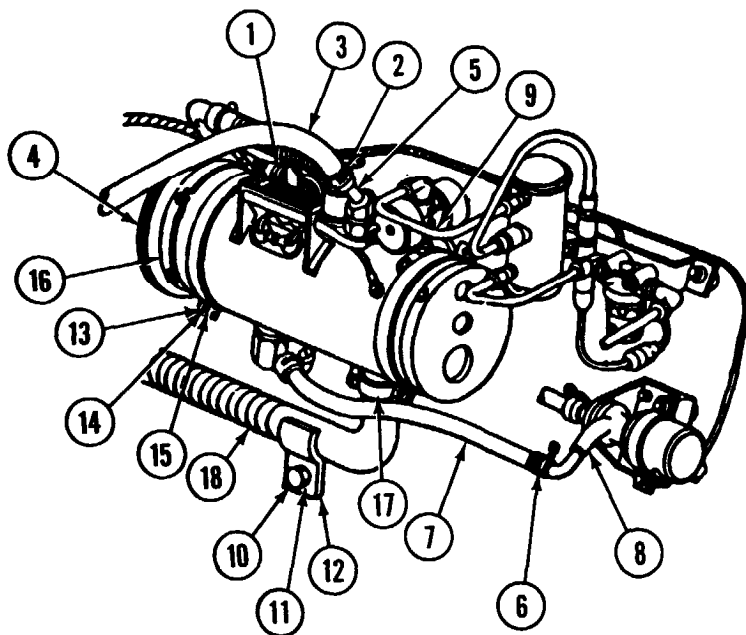
- A Disconnect electrical connector (1).
- B Disconnect fuel filter to fuel pump tube (2) from fuel pump (3).
- C Disconnect fuel pump to heater tube (4) at fuel pump (3).
- D Remove two nuts (5), two lockwashers (6), two flat washers (7) and fuel pump (3). Discard lockwashers.

**INSTALLATION**

Reverse removal procedures using new lockwashers.



## COOLANT HEATERS: REMOVAL AND INSTALLATION



### NOTE

Disconnect fuel inlet to fuel tank hose quickdisconnect at engine primary fuel filter (p 4-11).

### REMOVAL

- A Disconnect wiring harness coolant heater plug (1).
- B Loosen clamp (2) and disconnect hose (3) from coolant heater (4).

### NOTE

Install 5/8-inch plug in hose (3). If no plug is available, coolant system must be drained (TM 9-2350-267-10).

- C Install short 5/8-inch outside diameter hose on coolant hose outlet (5) and plug with 5/8-inch outside diameter plug.
- D Loosen clamp (6) and disconnect hose (7) from coolant pump (8).

### NOTE

Install 5/8-inch plugs in inlet hose (7) and coolant pump (8).

- E Disconnect fuel pump to coolant heater tube (9).
- F Remove screw (10), lockwasher (11), and clamp (12). Discard lockwasher.
- G Remove four screws (13), four nuts (14), four flat washers (15) and remove two brackets (16).

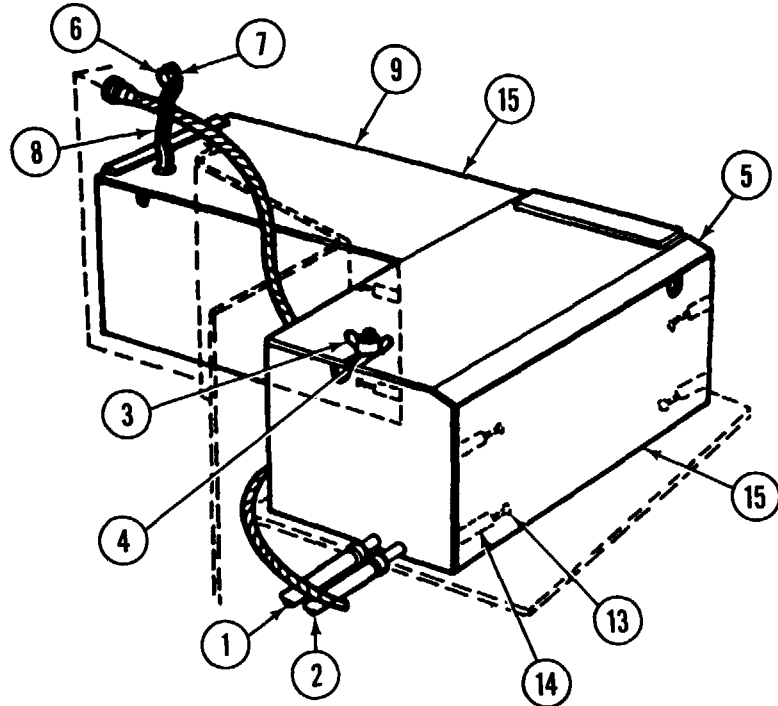
### NOTE

Lift heater unit to reach clamp (17).

- H Loosen clamp (17) and disconnect heater exhaust hose (18).
- I Remove coolant heater (4) from vehicle.

### INSTALLATION

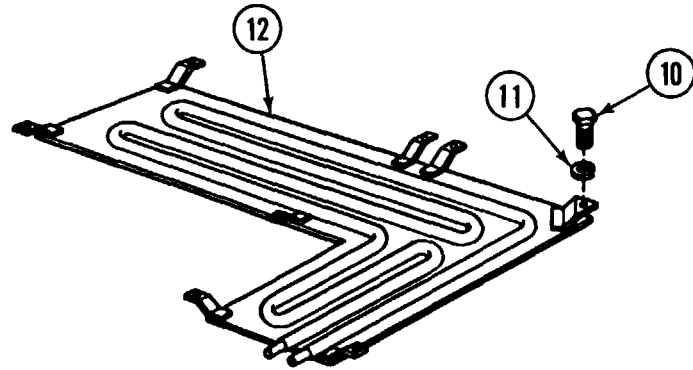
Reverse removal procedures using new lockwasher.

**BATTERY HEATER AND INSULATION BOXES: REMOVAL AND INSTALLATION****REMOVAL**

- A Open all battery access doors.
- B Disconnect two hoses (1 and 2).
- C Remove wing nut (3) and flat washer (4) and remove top insulation blanket (5).
- D Remove screw (6), lockwasher (7) and battery ground cable (8).
- E Remove top insulation blanket (9).
- F Disconnect and remove batteries (P ????????)
- G Remove eight screws (10), eight lockwashers (11) and battery heater plate (12).
- H Remove lockwire (13), six retaining pins (14) and two winterization boxes (15).

**INSTALLATION**

Reverse order of removal procedures.



# HEATER CONTROL BOX: DISASSEMBLY AND ASSEMBLY

## DISASSEMBLY

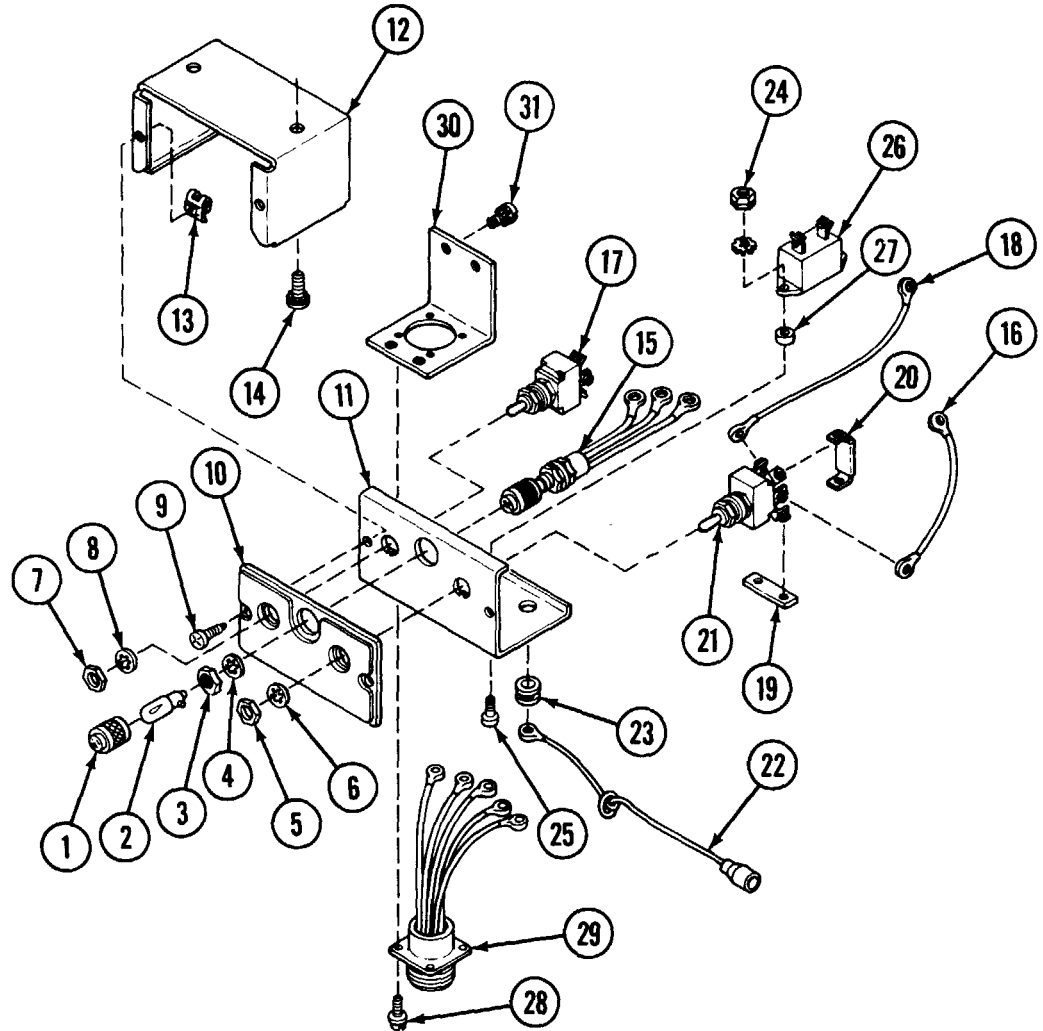
Disassemble items in numerical order.

## ASSEMBLY

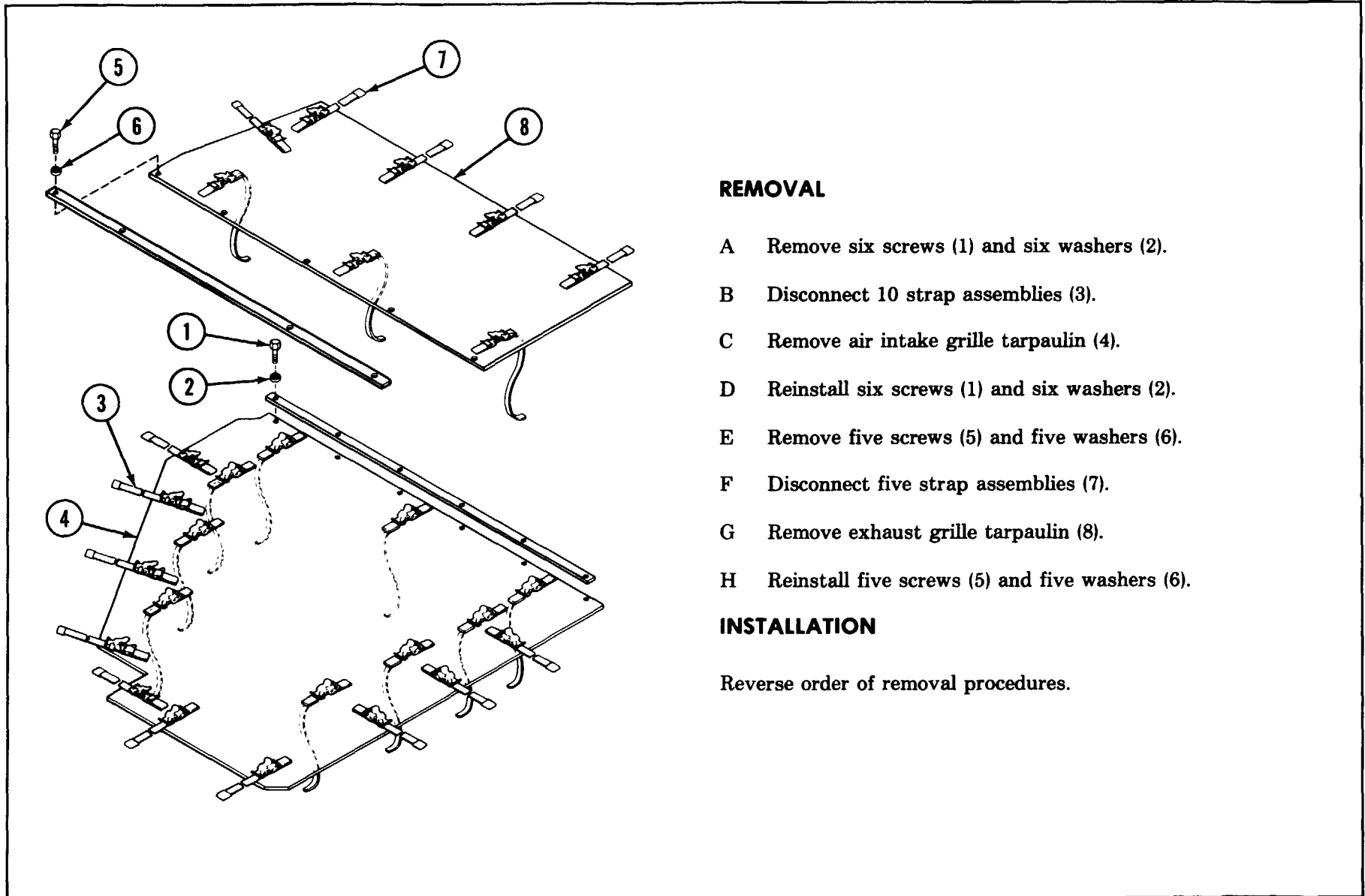
Assemble items in reverse numerical order.

### LEGEND

- 1 Lens assembly
- 2 Incandescent lamp
- 3 Nut
- 4 Washer
- 5 Nut
- 6 Washer
- 7 Nut
- 8 Washer
- 9 Screw (2)
- 10 Switch panel
- 11 Panel
- 12 Case assembly
- 13 Nut (2)
- 14 Screw (2)
- 15 Indicator assembly with leads
- 16 Lead assembly
- 17 Switch
- 18 Lead assembly
- 19 Connector
- 20 Jumper assembly
- 21 Switch
- 22 Lead assembly
- 23 Grommet
- 24 Nut (2)
- 25 Screw (2)
- 26 Circuit breaker
- 27 Spacer (2)
- 28 Screw (4)
- 29 Receptacle assembly
- 30 Bracket
- 31 Screw (2)



## TARPAULIN GRILLE COVERS: REMOVAL AND INSTALLATION



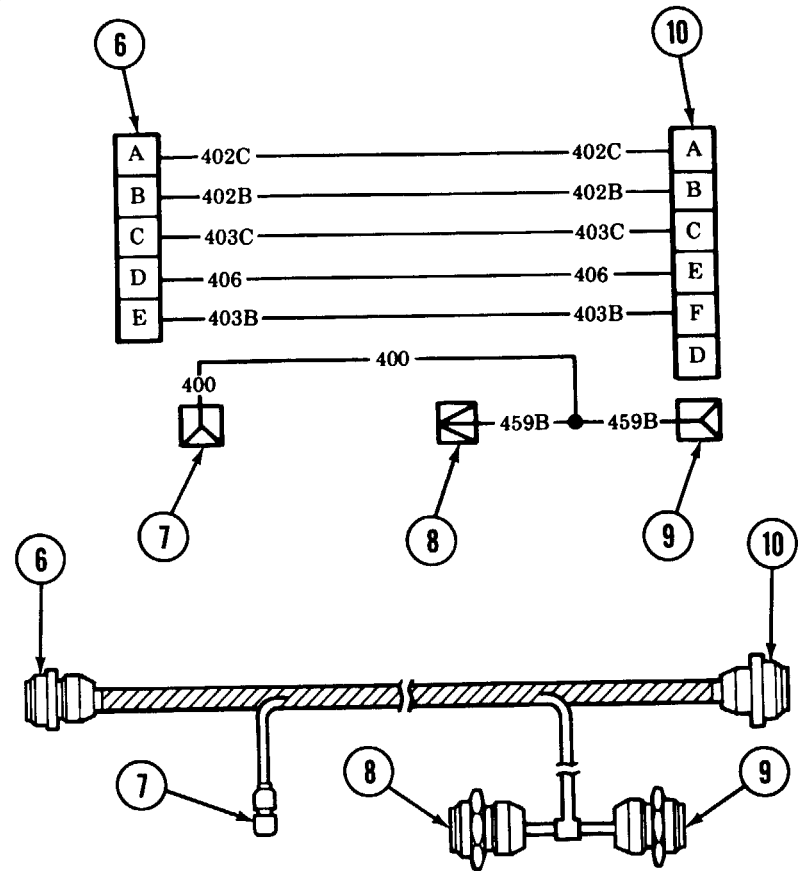
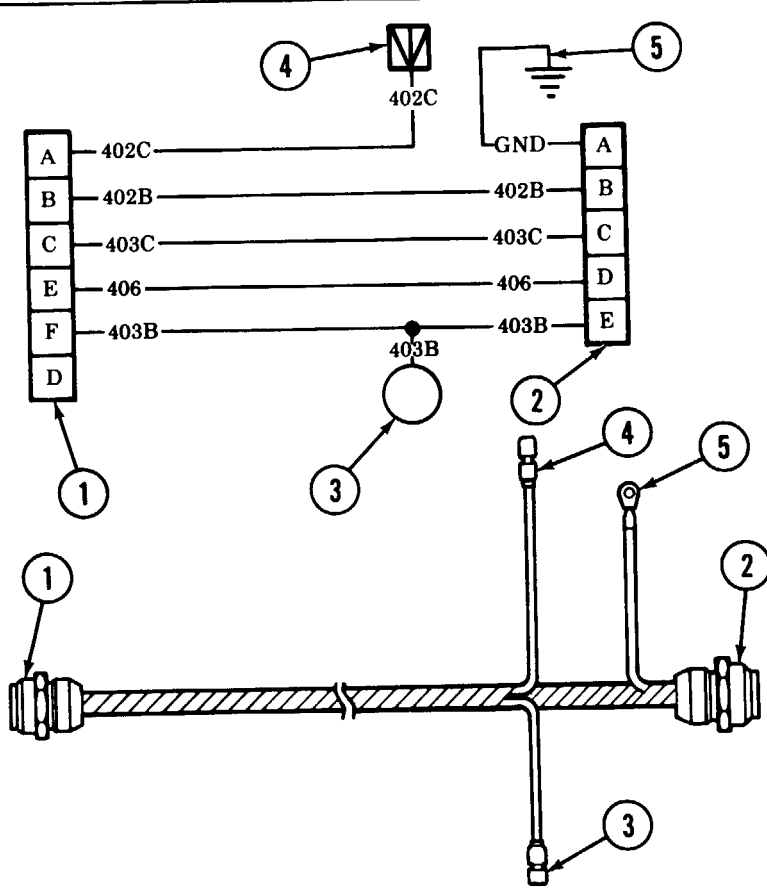
### REMOVAL

- A Remove six screws (1) and six washers (2).
- B Disconnect 10 strap assemblies (3).
- C Remove air intake grille tarpaulin (4).
- D Reinstall six screws (1) and six washers (2).
- E Remove five screws (5) and five washers (6).
- F Disconnect five strap assemblies (7).
- G Remove exhaust grille tarpaulin (8).
- H Reinstall five screws (5) and five washers (6).

### INSTALLATION

Reverse order of removal procedures.

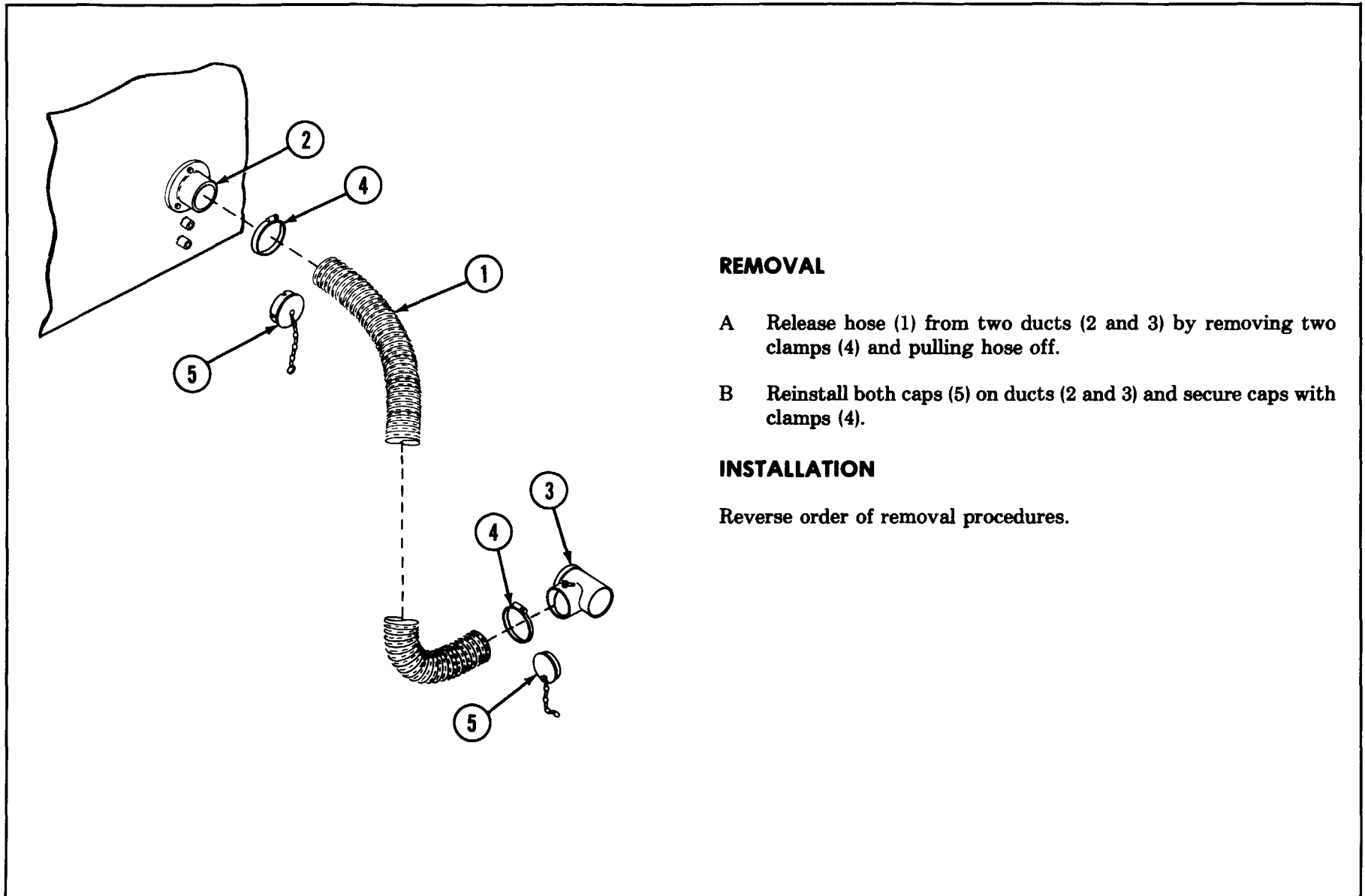
# COOLANT HEATER WIRING HARNESS: REMOVAL AND INSTALLATION



## LEGEND

- 1 Connector, driver's compartment bulkhead
- 2 Connector, coolant heater
- 3 Terminal, circulating pump
- 4 Connector, fuel pump
- 5 Terminal, ground

- 6 Connector, heater control box
- 7 Connector, heater control box (wire 400)
- 8 Connector, harness 10930473 to MASTER switch
- 9 Connector, control circuit rectifier
- 10 Connector, driver's compartment bulkhead

**APU COMPARTMENT HEATING DUCTS: REMOVAL AND INSTALLATION****REMOVAL**

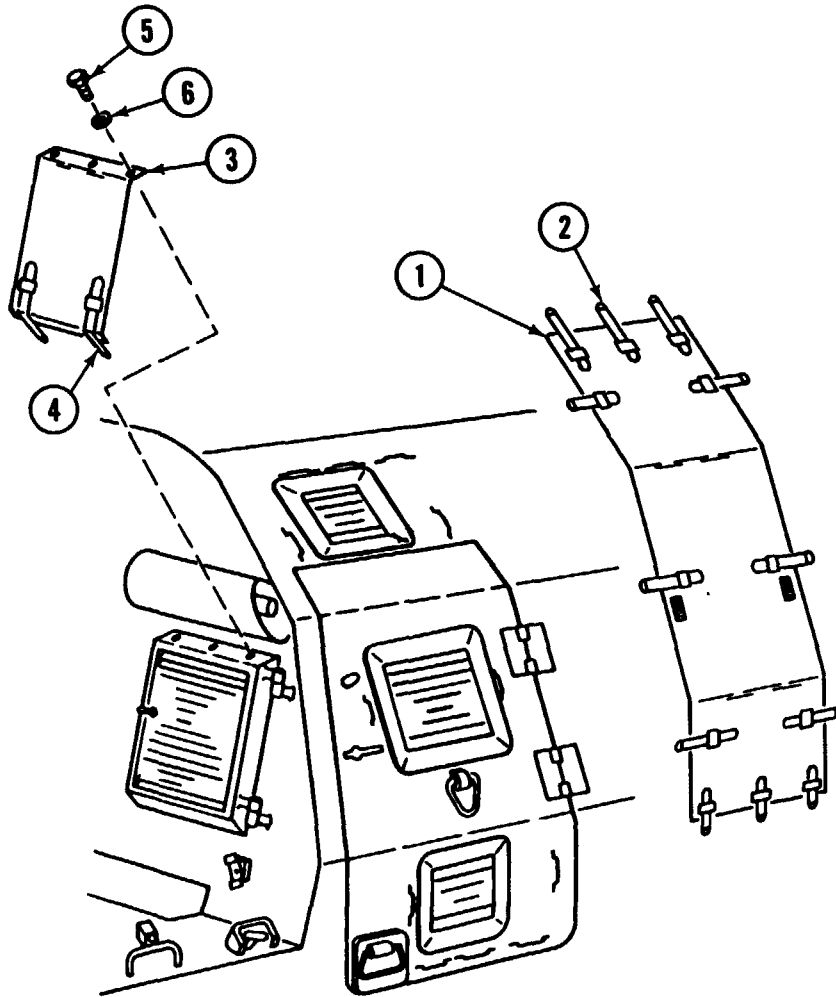
- A Release hose (1) from two ducts (2 and 3) by removing two clamps (4) and pulling hose off.
- B Reinstall both caps (5) on ducts (2 and 3) and secure caps with clamps (4).

**INSTALLATION**

Reverse order of removal procedures.



## APU FRONT DOOR AND SIDE DOOR COVERS REMOVAL AND INSTALLATION



### REMOVAL

- A Remove APU side fore cover (1) from APU side door by unfastening 12 strap assemblies (2).
- B Remove APU front door cover (3) from APU front door by unfastening two strap assemblies (4), and removing three screws (5) and three flat washers (6).

### INSTALLATION

Reverse removal procedures.



## CHAPTER 16

### MAINTENANCE PROCEDURES: HYDRAULIC SYSTEM

---

#### CHAPTER OVERVIEW

This chapter contains illustrated maintenance procedures for the removal, disassembly, assembly and installation of hydraulic system components.

Section I Hydraulic Reservoir and Filter

Section II Hydraulic Control Panel Assembly

Section III Hydraulic Suction and Return Lines, and Associated Parts

Section IV Backup Hydraulic System

Section V Hand Pump Assembly and Selector Valve

Section VI Upper Rear Door Hydraulic Actuator

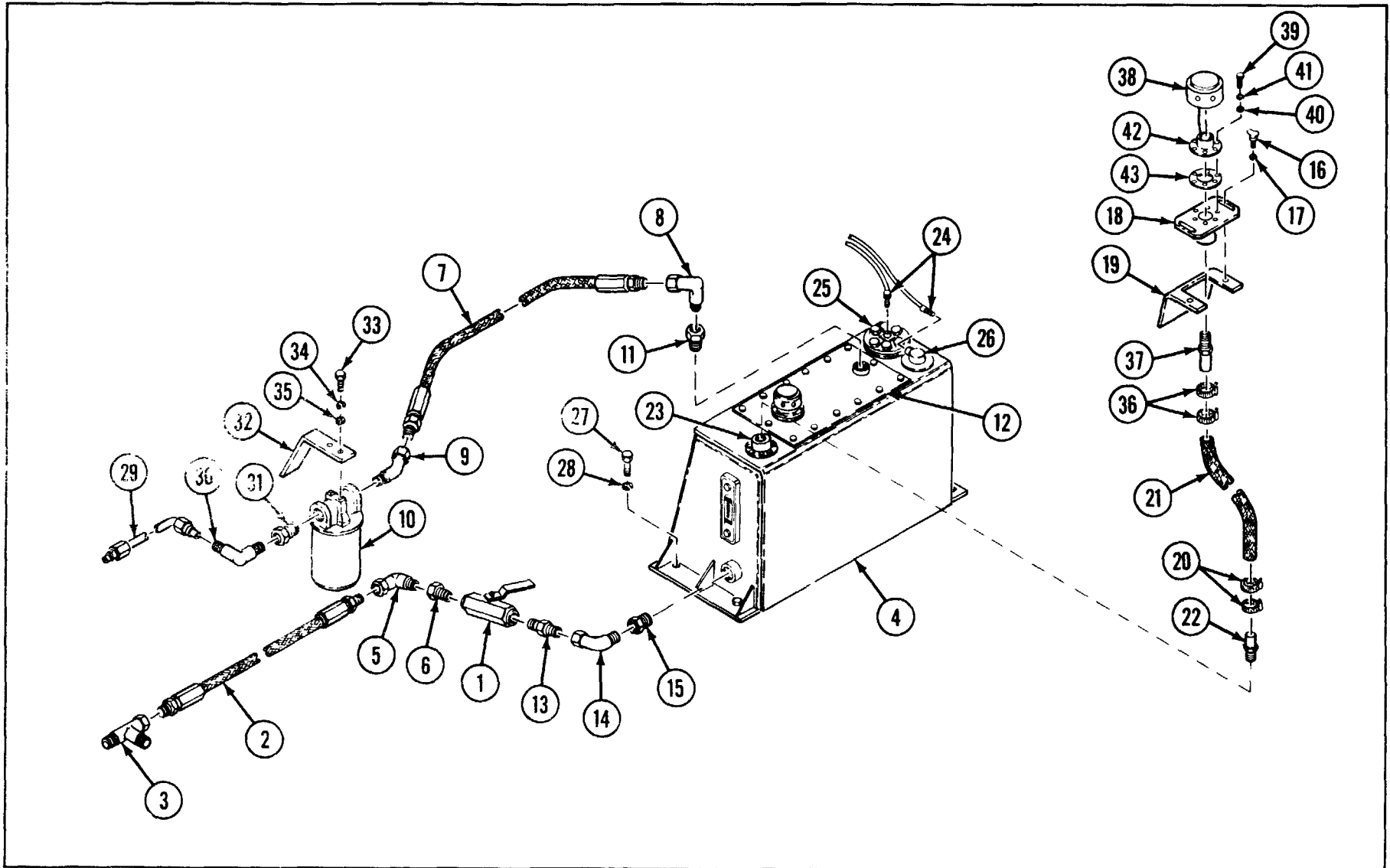
Section VII Ammunition Handling Equipment (AHE)

Section VIII Auxiliary Power Unit (APU) Compartment

Reference Appendix E for hydraulic system description and schematic diagrams.

Section I HYDRAULIC RESERVOIR AND FILTER

HYDRAULIC RESERVOIR, FILTER AND FILLER CAP: REMOVAL AND INSTALLATION



## HYDRAULIC RESERVOIR, FILTER AND FILLER CAP: REMOVAL AND INSTALLATION (CONTINUED)

### WARNING

Make sure all systems are shut down and MASTER switch is OFF.

### CAUTION

Take necessary precautions to prevent entry of contaminants into hydraulic system. Hydraulic lines and ports should be capped immediately after disconnection lines to avoid entry of contaminants into system.

### NOTE

Remove right projectile rack to gain access (p 11-5).

### REMOVAL

- A Close ball valve (1).
- B Disconnect hose assembly (2) from tee (3).
- C Place a suitable 15-gallon container under hose to catch hydraulic fluid from reservoir (4).
- D Open ball valve (1) and allow hydraulic fluid to drain into container.
- E Remove hose assembly (2), elbow (5) and reducer (6) from ball valve (1).
- F Disconnect hose assembly (7) from elbows (8 and 9). Remove elbow (9) from filter (10).
- G Remove elbow (8) and reducer bushing (11) from hydraulic reservoir (4) cover plate (12).
- H Remove ball valve (1), nipple (13), elbow (14) and bushing reducer (15) from hydraulic reservoir (4).

Remove two screws (16), two flat washers (17) and remove plate (18) from

Remove clamps (20) and pull hose (21) from fitting (22).

K Remove fitting (22) from flange (23).

L Disconnect electrical harness 12330252 connectors (24) from electrical connector on housing assembly (25) and electrical connector to transmitter (26).

M Remove hydraulic reservoir (4) by removing four screws (27) and four lockwashers (28) from hydraulic reservoir mounting plate (not shown). Discard lockwashers.

N Remove tube (29), elbow (30) and reducer bushing (31) from filter (10).

O Remove filter (10) from bracket (32) by removing two screws (33), two lockwashers (34) and two flat washers (35). Discard lockwashers.

P Remove two clamps (36) and pull hose (21) from fitting (37).

Q Pull off cap (38) and remove six screws (39), six flat washers (40), six lockwashers (41) and remove filler flange (42) and gasket (43) from plate (18). Discard lockwashers.

R Remove fitting (37) from plate (18).

### INSTALLATION

A Apply tip sealant (item 57, Appxx D) to all male pipe threads.

B Reverse removal procedures using new lockwashers.

### NOTE

Refer to LO 9-2350-267-12 for hydraulic fluid refill procedures.

**HYDRAULIC RESERVOIR AND ASSOCIATED COMPONENTS: DISASSEMBLY AND ASSEMBLY****INITIAL SETUP****Test Equipment/Special Tools:**

- General mechanic's tool kit (item 52, Appx B)
- Wrench, adjustable, 10 in. (item 40, Appx B)
- Wrench, pipe, 10 in. (item 40, Appx B)

**Materials/Parts**

Pipe Sealant (item 57, Appx D)

**Equipment Condition:**

Hydraulic reservoir removed (p 16-2).

**WARNING**

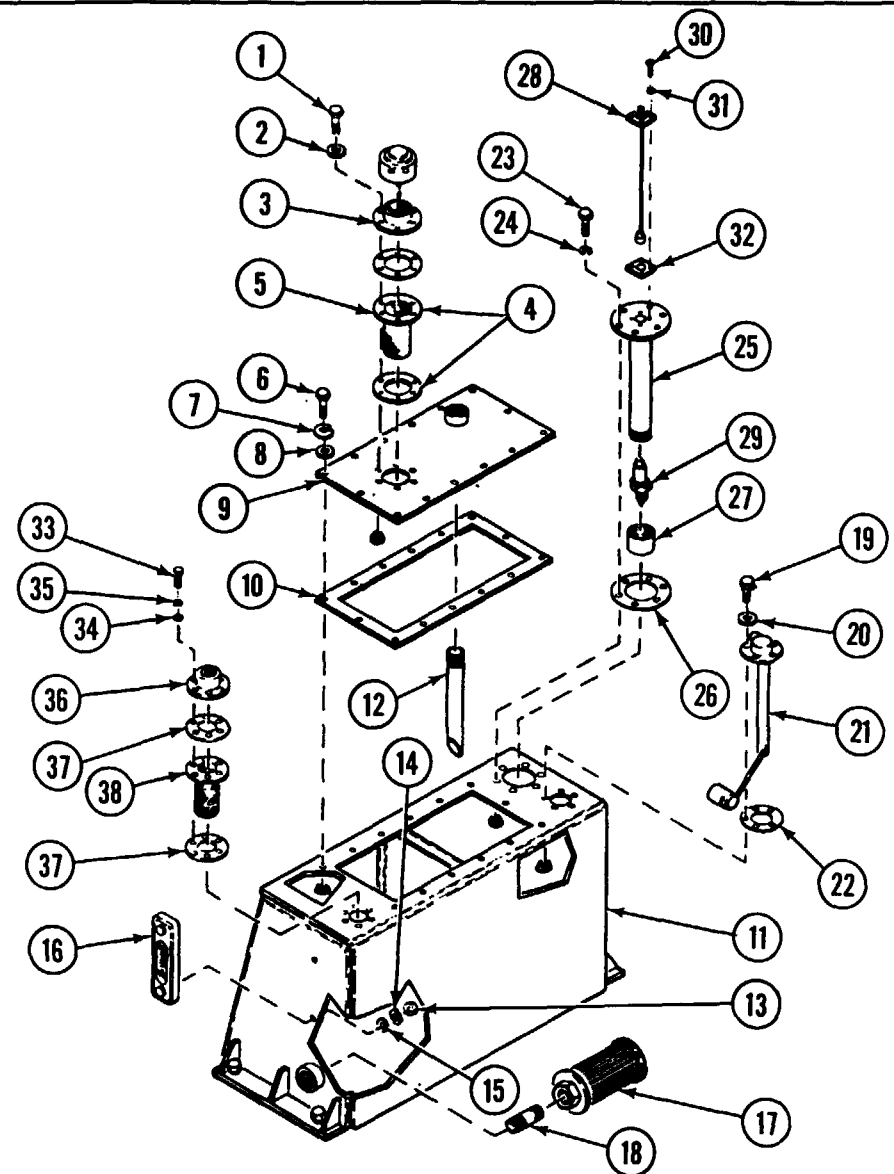
Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid may be HOT.

**CAUTION**

Take necessary precautions to prevent entry of contaminants into hydraulic system. Hydraulic lines and ports should be capped immediately after disconnecting lines to avoid entry of contaminants into system.

**DISASSEMBLY**

- A Remove six screws (1), six flat washers (2), filler flange (3), two gaskets (4) and strainer (5).



## HYDRAULIC RESERVIOR AND ASSOCIATED COMPONENTS: DISASSEMBLY AND ASSEMBLY (CONTINUED)

**B** Remove 14 screws (6), 14 lockwashers (7) and 14 flat washers (8). Remove cover plate assembly (9) and gasket (10) from top of reservoir (11). Discard lockwashers.

**c** Remove pipe (12) and cover plate (9).

### NOTE

Do step D for vehicles 1-344. For vehicles 345 and above, go to step E.

**D** Reach through reservoir tank cover plate opening and remove two nuts (13), two lockwashers (14) and two washer (15) from hollow bolts of level gage (16). Remove level gage (16) from reservoir (11). Discard lockwashers.

**E** Unscrew filter (17) from nipple (18) and remove filter (17) from inside of reservoir (11).

### NOTE

Nipple will be damaged during removal. Do not remove unless necessary.

**F** Remove and discard nipple (18) from inside wall of reservoir (11).

**G** Remove five screws (19) and five flat washers (20). Carefully remove transmitter (21) and gasket (22) from reservoir (11). Discard gasket.

**H** Remove six screws (23) and six lockwashers (24). Carefully remove housing assembly (25) and gasket (26) from reservoir (11). Discard lockwashers.

**I** Unscrew housing cap (27) from housing assembly (25).

**J** Disconnect electrical lead (28) from transmitter (29).

**K** Unscrew transmitter (29) and remove housing cap (27).

**L** Remove four screws (30) and four lockwashers (31). Discard lockwashers.

**M** Remove lead (28) and gasket (32) from housing (25).

**N** Remove six screws (33), six flat washers (34), six lockwashers (35), filler flange (36), two gaskets (37) and strainer (38). Discard lockwashers.

### ASSEMBLY

### NOTE

Apply pipe sealant (item 57, Appx D) to all male pipe threads prior to installation.

**A** Install strainer (38), two gaskets (37) and filler flange (36) with six new lockwashers (35), six flat washers (34) and six screws (33).

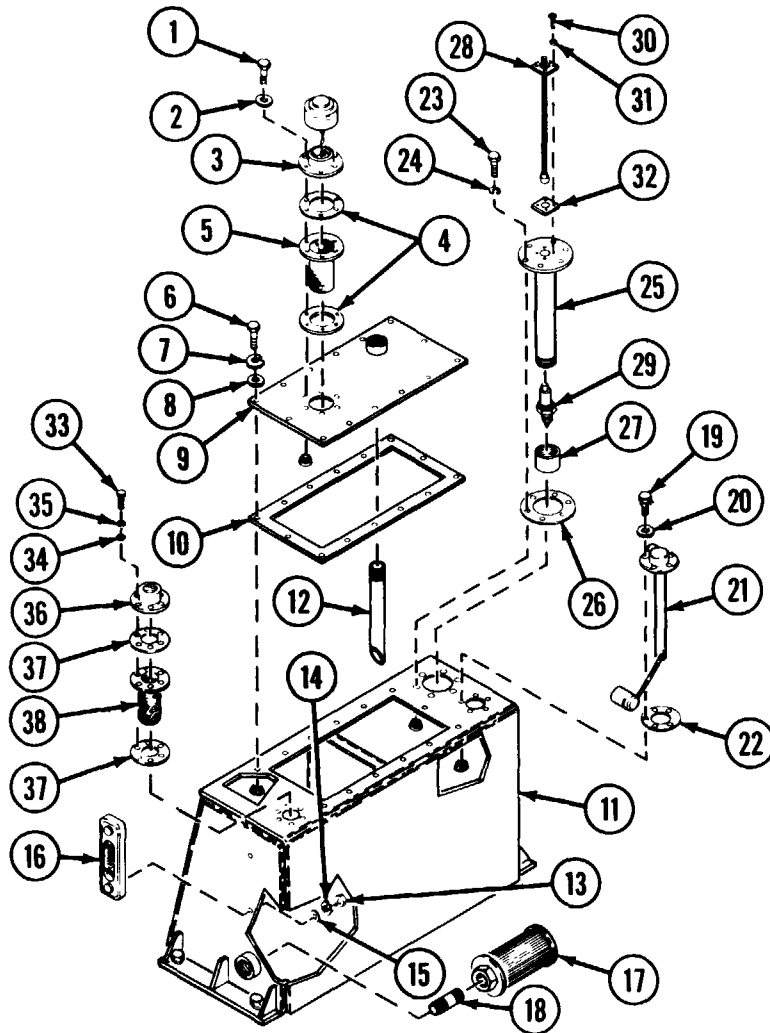
**B** Install lead (28) and gasket (32) on housing (25) with four screws (30) and four new lockwashers (31).

**C** Screw transmitter (29) into housing cap (27).





## HYDRAULIC RESERVOIR AND ASSOCIATED COMPONENTS: DISASSEMBLY AND ASSEMBLY (CONTINUED)



D Connect electrical lead (28) to transmitter (29).

E Screw housing cap (27) into housing assembly (25).

F Install housing assembly (25) and gasket (26) in reservoir (11) with six screws (23) and six new lockwashers (24).

G Install transmitter (21) and new gasket (22) in reservoir (11) with five screws (19) and five flat washers (20).

H Install new nipple (18) on inside wall of reservoir (11).

I Screw filter (17) onto nipple (18).

### NOTE

Do step J for vehicles 1-344. For vehicles 345 and above, go to step K.

J Install level gage (16) on reservoir (11) with two washers (15), two new lockwashers (14), and two nuts (13).

K Install pipe (12) on cover plate (9).

### CAUTION

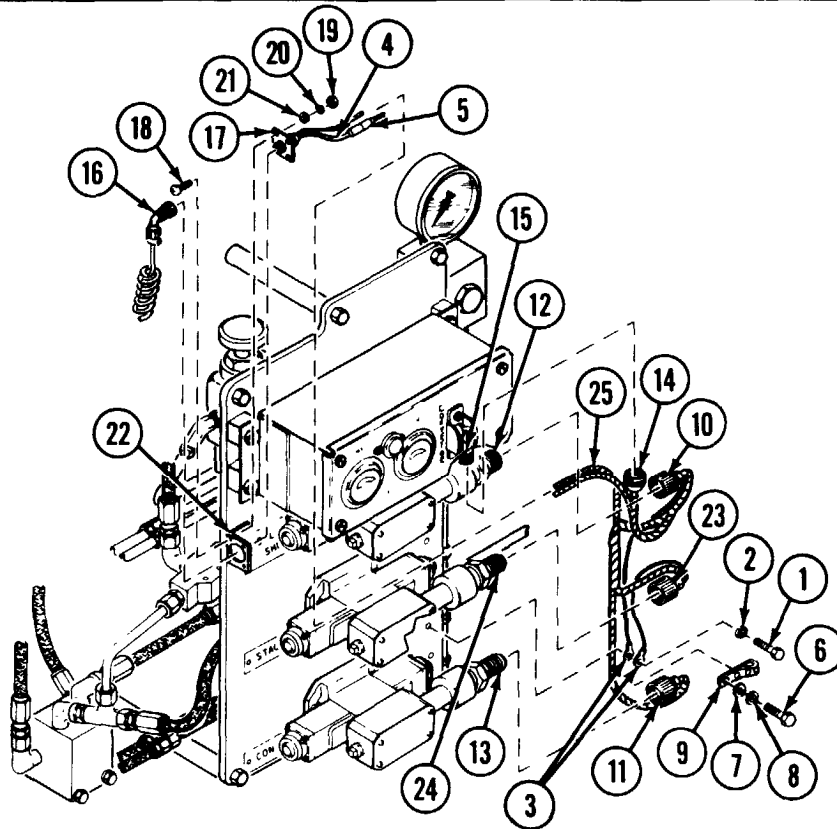
Make sure inside of reservoir is clean and free of foreign material prior to cover plate installation.

L Install cover plate assembly (9) and gasket (10) on top of reservoir (11) with 14 screws (6), 14 new lockwashers (7) and 14 flat washers (8).

M Install strainer (5), two gaskets (4) and filler flange (3) with six screws (1) and six flat washers (2).

## Section II HYDRAULIC CONTROL PANEL ASSEMBLY

## HYDRAULIC CONTROL PANEL ASSEMBLY: REMOVAL AND INSTALLATION

**CAUTION**

Take necessary precautions to prevent entry of contaminants into hydraulic system. Hydraulic lines and ports should be capped immediately after disconnecting lines to avoid entry of contaminants into system.

**NOTE**

Tag all electrical leads, and hydraulic tubes and hoses for identification at installation.

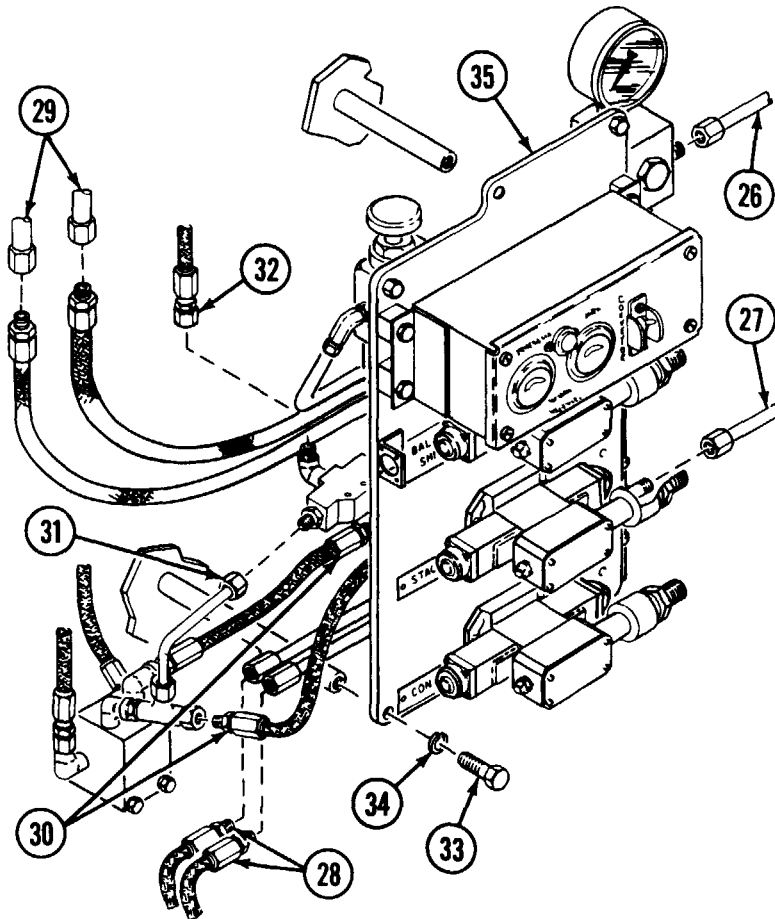
**REMOVAL**

- A Remove screw (1) and lockwasher (2), and disconnect two ground wires (3).
- B Disconnect stacker power lead wire No. 10 (4) from harness (12330252) lead 10 connector (5).
- C Remove three straps (9) by removing screw (6), flat washer (7) and lockwasher (8).
- D Remove two electrical connectors (10 and 11) from ballistic shield solenoid valve (12) and conveyor solenoid valve (13).
- E Disconnect electrical connector (14) from hydraulic gage panel (15).
- F Disconnect stacker control switch cable (16) from harness receptacle (17).
- G Remove four screws (18), four nuts (19), four lockwashers (20) and four flat washers (21), and remove receptacle (17) from bracket (22).
- H Disconnect stacker solenoid valve connector (23) from stacker solenoid valve (24) and remove harness (25).

**WARNING**

Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid may be HOT.

## HYDRAULIC CONTROL PANEL ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



- I Disconnect hydraulic fluid inlet line (26).
- J Disconnect hydraulic reservoir return line (27).
- K Disconnect two conveyor hydraulic lines (28).
- L Disconnect two ballistic shield hydraulic lines (29).
- M Disconnect two stacker hydraulic lines (30) and shuttle valve hydraulic lines (31 and 32).

### NOTE

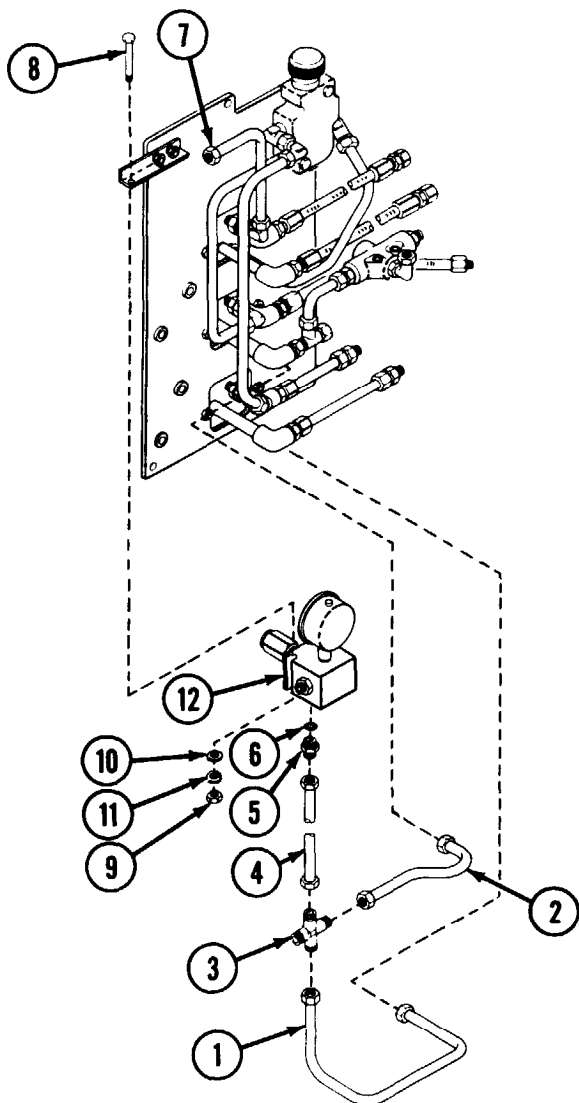
Loosen opposite end of hydraulic tube (31) and turn tube toward wall so panel will clear at removal.

- N Remove three screws (33) and three lockwashers (34), and carefully remove hydraulic control panel assembly (35).

### INSTALLATION

- A Apply pipe sealant (item 57, Appx D) to all male pipe threads at installation.
- B Reverse removal procedures.

## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY

**WARNING**

Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid may be HOT.

**CAUTION**

Take necessary precautions to prevent entry of contaminants into hydraulic system. Hydraulic lines and ports should be capped immediately after disconnecting lines to avoid entry of contaminants into system.

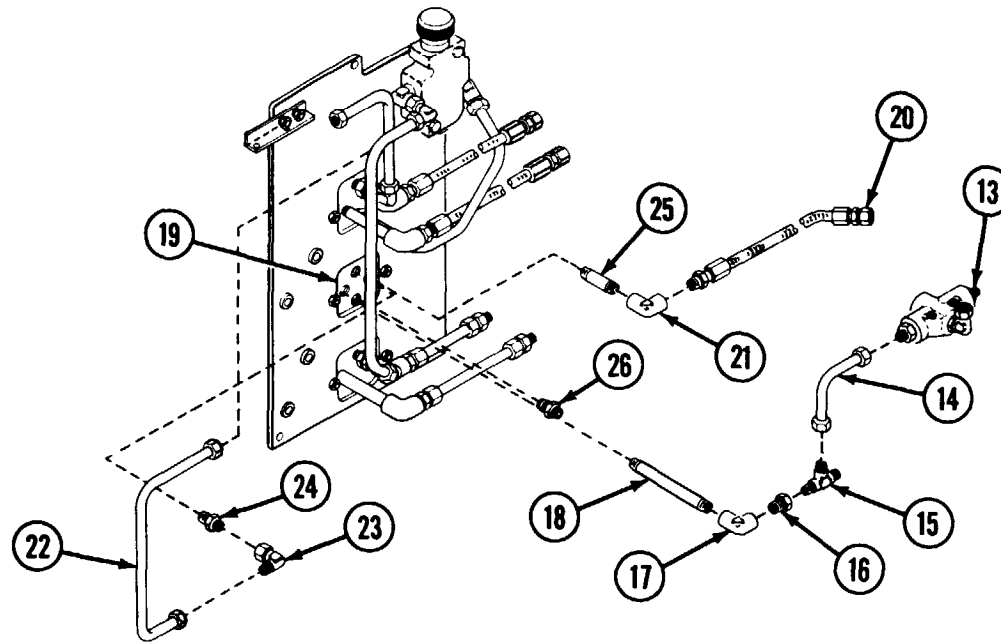
**NOTE**

Tag all hydraulic components for identification at installation.

**DISASSEMBLY**

- A Remove hydraulic control panel assembly (p 16-6).
- B Remove tube assembly (1).
- C Remove tube assembly (2).
- D Remove union cross (3).
- E Remove tube assembly (4).
- F Remove adapter (5) and packing (6). Discard packing (6).
- G Loosen connectors of tube assembly (7).
- H Remove two screws (8), two nuts (9), two flat washers (10) and two lockwashers (11), and remove pressure gage assembly (12) from panel.

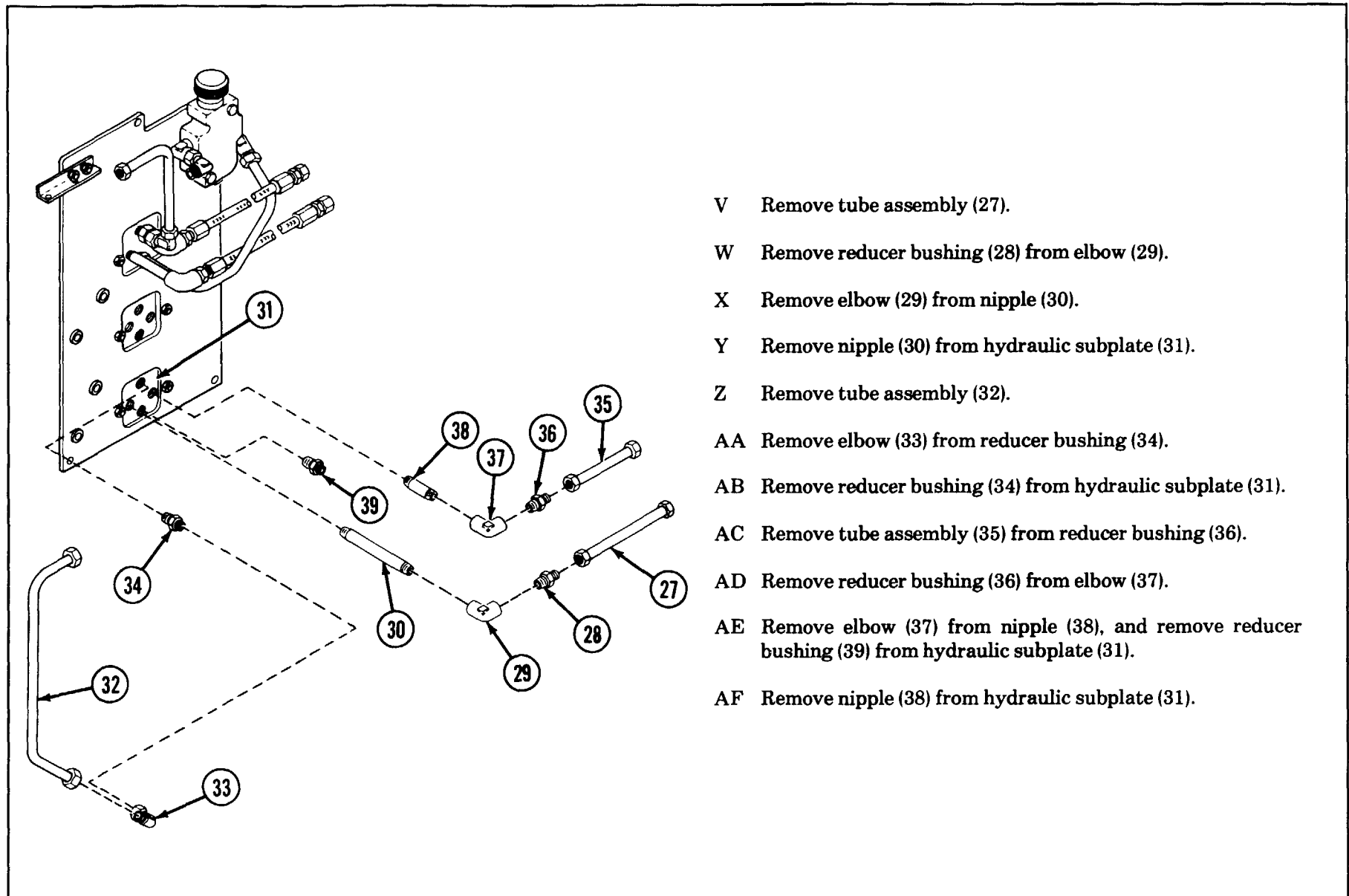
## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



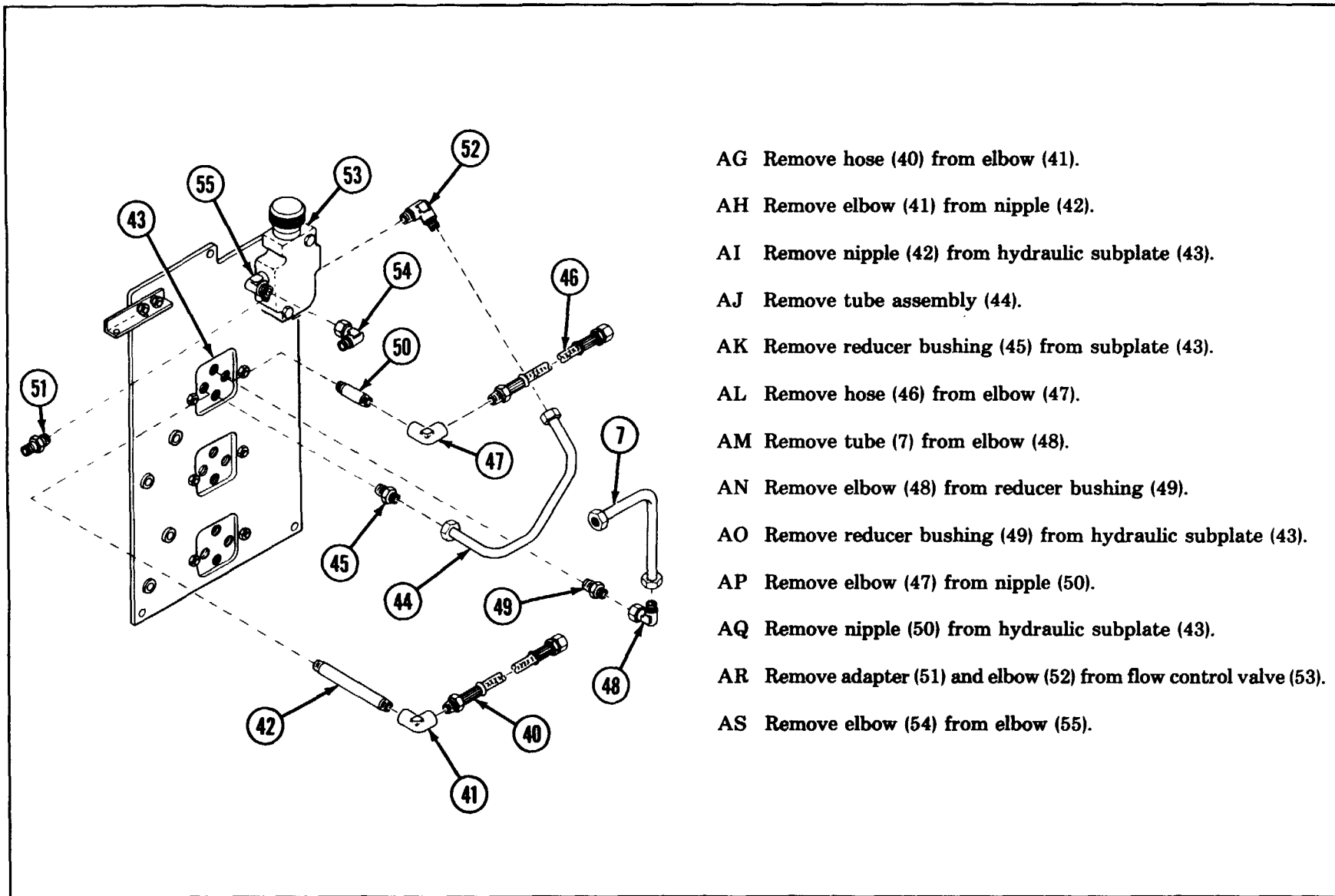
- I Remove shuttle valve (13) from tube assembly (14).
- J Remove tube assembly (14) from tee (15).
- K Remove tee (15) from reducer bushing (16).
- L Remove reducer bushing (16) from elbow (17).
- M Remove elbow (17) from nipple (18).
- N Remove nipple (18) from hydraulic subplate (19).
- O Remove hose (20) from elbow (21).

- P Remove tube assembly (22).
- Q Remove elbow (23) from adapter (24).
- R Remove adapter (24) from hydraulic subplate assembly (19).
- S Remove elbow (21) from nipple (25).
- T Remove adapter (26) from subplate assembly (19).
- U Remove nipple (25) from subplate assembly (19).

## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



AG Remove hose (40) from elbow (41).

AH Remove elbow (41) from nipple (42).

AI Remove nipple (42) from hydraulic subplate (43).

AJ Remove tube assembly (44).

AK Remove reducer bushing (45) from subplate (43).

AL Remove hose (46) from elbow (47).

AM Remove tube (7) from elbow (48).

AN Remove elbow (48) from reducer bushing (49).

AO Remove reducer bushing (49) from hydraulic subplate (43).

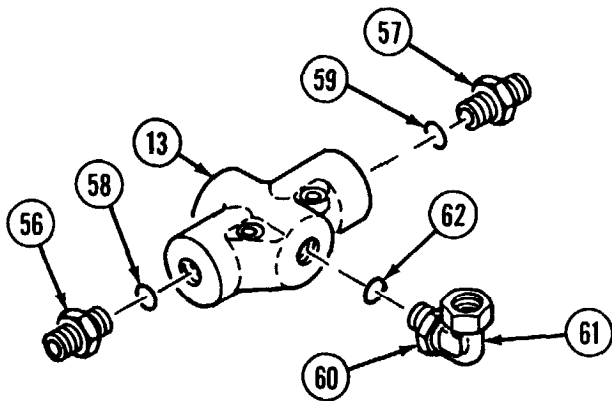
AP Remove elbow (47) from nipple (50).

AQ Remove nipple (50) from hydraulic subplate (43).

AR Remove adapter (51) and elbow (52) from flow control valve (53).

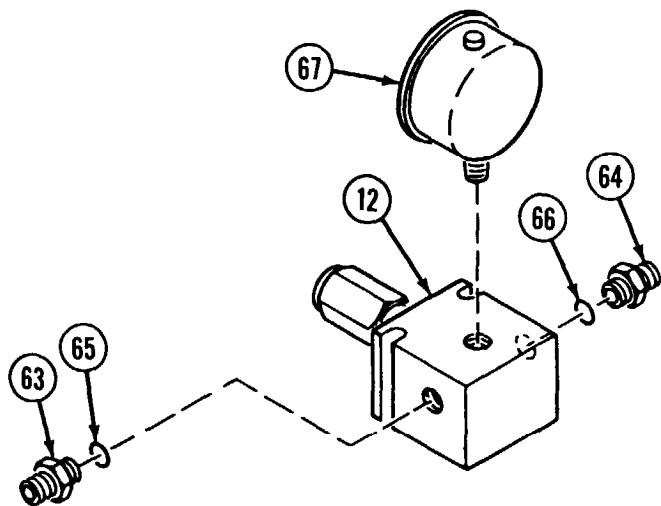
AS Remove elbow (54) from elbow (55).

## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



AT Remove two fittings (56 and 57) and two packings (58 and 59) from shuttle valve (13). Discard packings.

AU Loosen jamnut (60) and remove elbow (61) and packing (62) from shuttle valve (13). Discard packing.

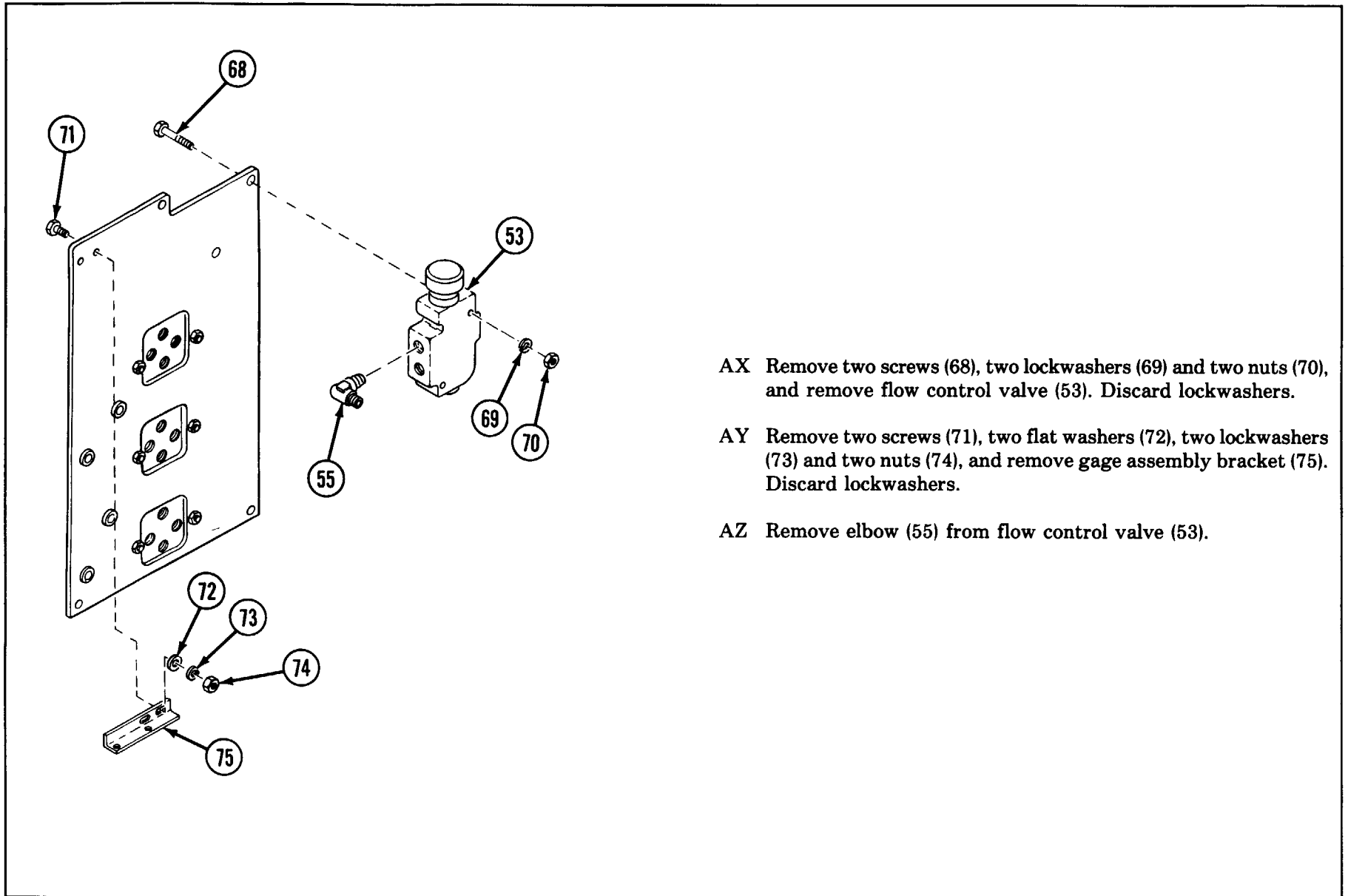


AV Remove two adapters (63 and 64) from gage assembly (12), and remove two packings (65 and 66). Discard packings.

AW Remove gage (67) from gage assembly (12).



## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)

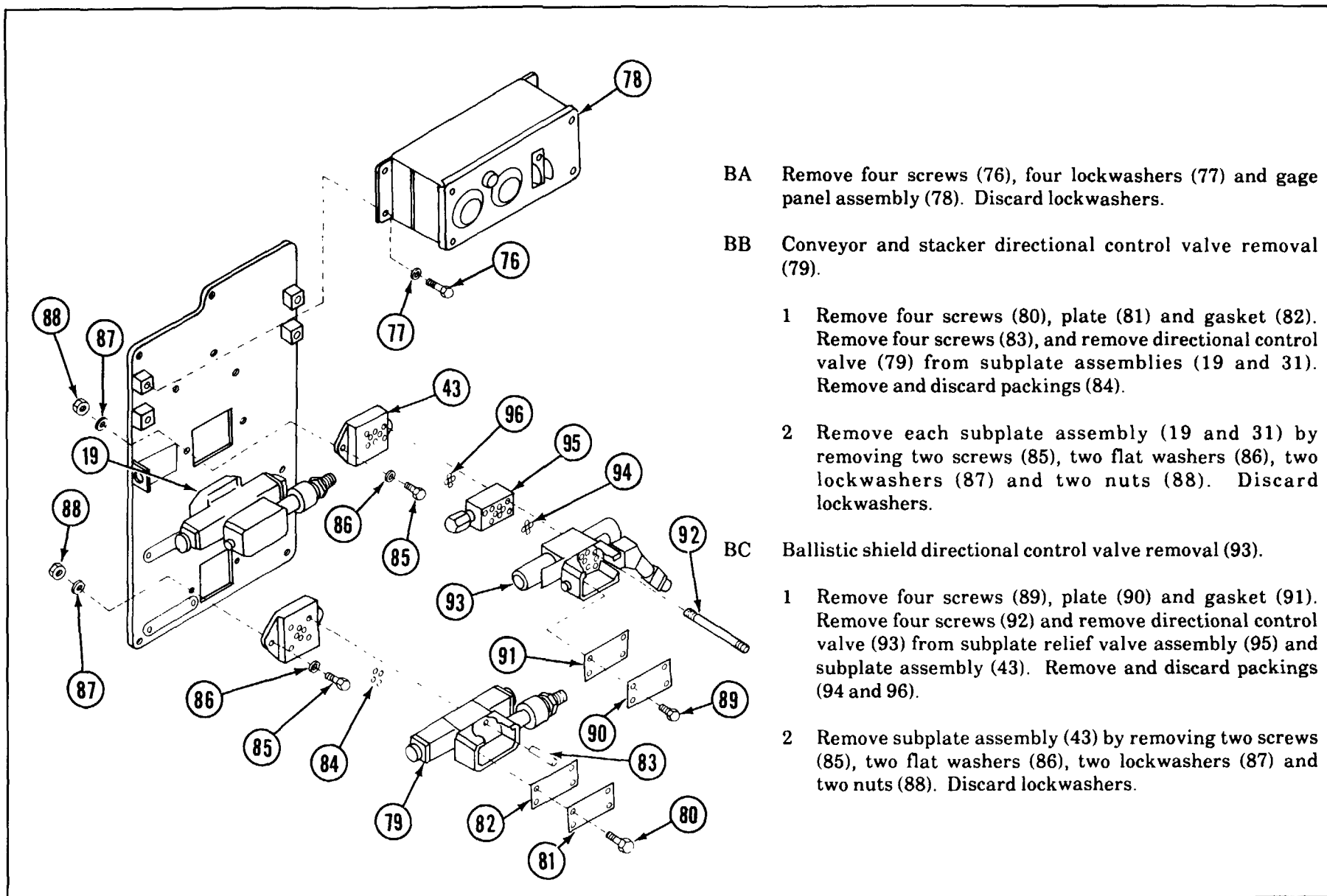


AX Remove two screws (68), two lockwashers (69) and two nuts (70), and remove flow control valve (53). Discard lockwashers.

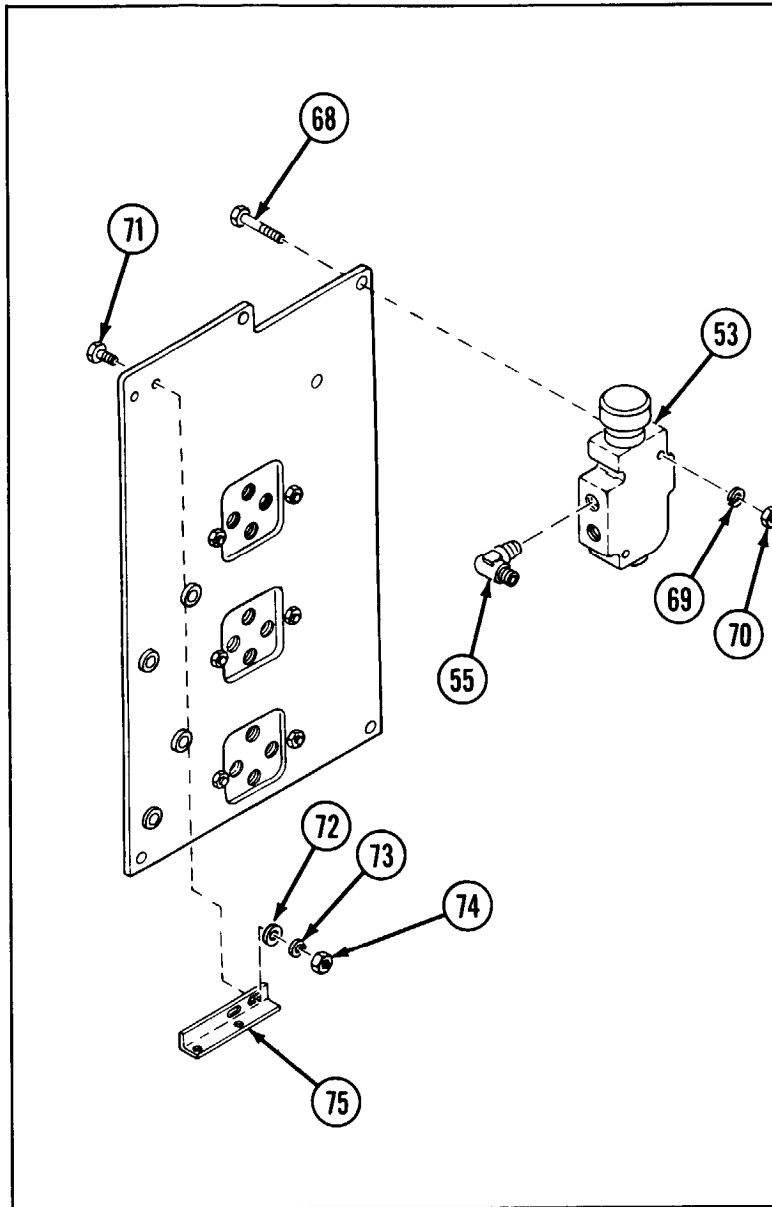
AY Remove two screws (71), two flat washers (72), two lockwashers (73) and two nuts (74), and remove gage assembly bracket (75). Discard lockwashers.

AZ Remove elbow (55) from flow control valve (53).

## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



### ASSEMBLY

#### A Ballistic shield directional control valve installation (93).

- 1 Install subplate assembly (43) with two screws (85), two flat washers (86), two new lockwashers (87) and two nuts (88).
- 2 Install directional control valve (93) and subplate relief valve assembly (95) onto subplate assembly (43) with four screws (92) and new packings (94 and 96). Install four screws (89), plate (90) and gasket (91).

#### B Conveyor and stacker directional control valve installation (79).

- 1 Install each subplate assembly (19 and 43) with two screws (85), two flat washers (86), two new lockwashers (87) and two nuts (88).
- 2 Install directional control valve (79) onto each subplate assembly (19 and 43) with four screws (83) and new packings (84). Install four screws (81), plate (82) and gasket (82).

#### C Install gage panel assembly (78) with four screws (76) and four new lockwashers (77).

### NOTE

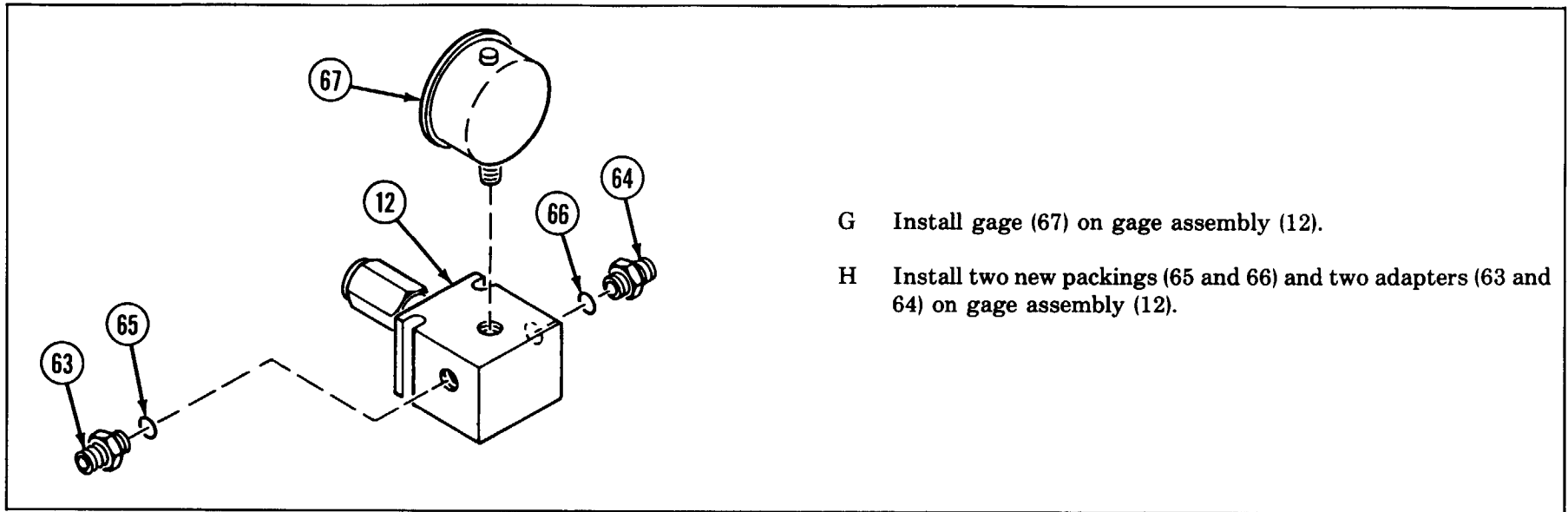
Apply pipe sealant (item 57, Appx D) to all male pipe threads prior to assembly.

#### D Install elbow (55) on flow control valve (53).

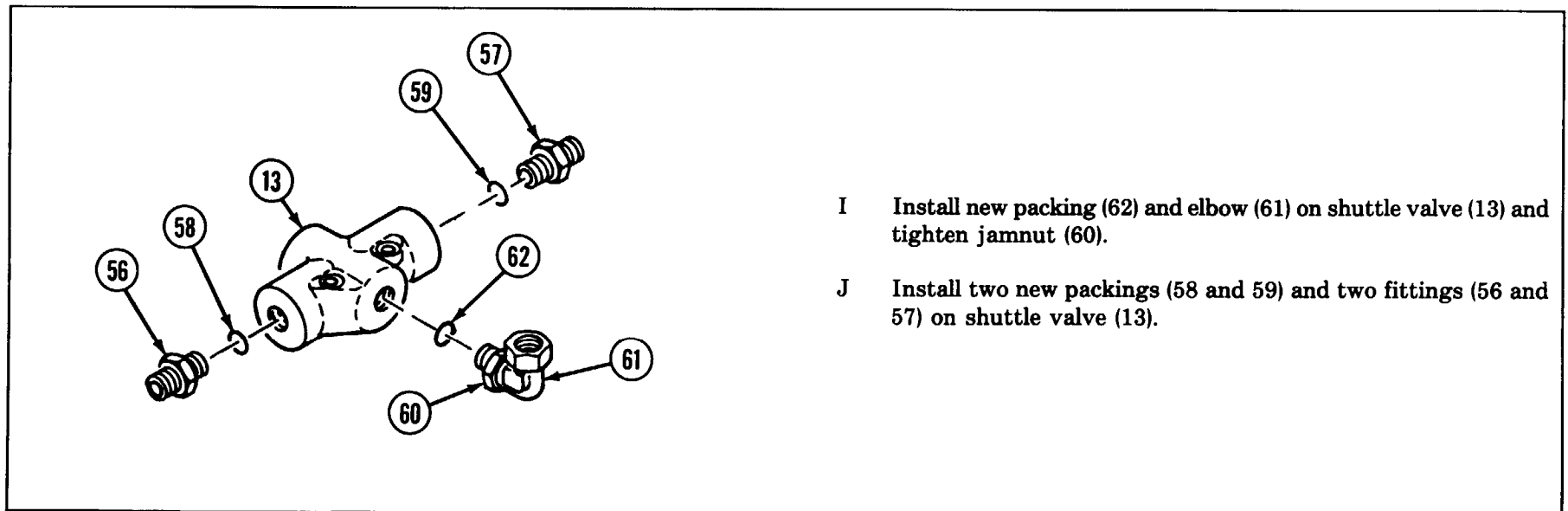
#### E Install gage assembly bracket (75) with two screws (71), two flat washers (72), two new lockwashers (73) and two nuts (74).

#### F Install flow control valve (53) with two screws (68), two new lockwashers (69) and two nuts (70).

## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)

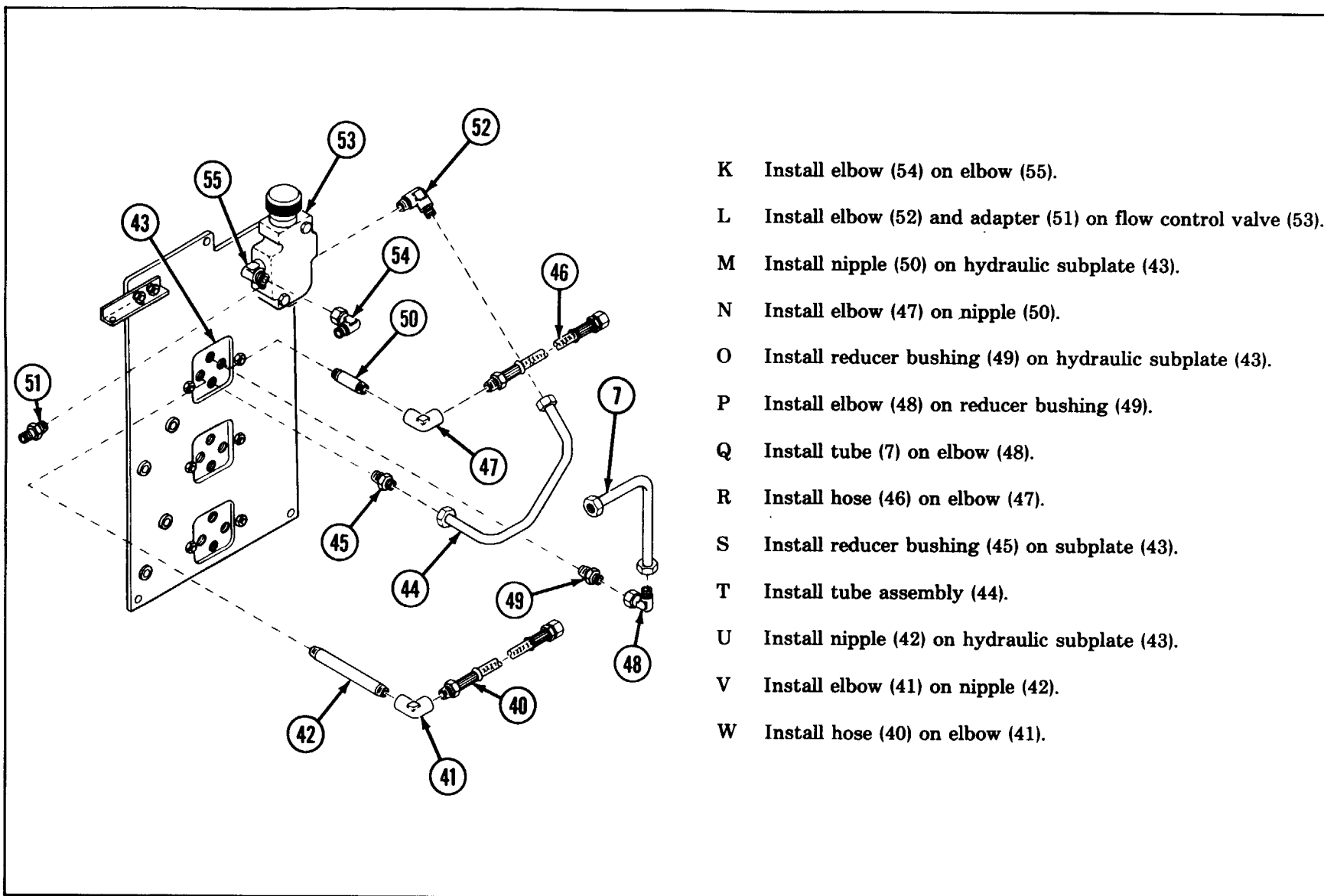


- G Install gage (67) on gage assembly (12).
- H Install two new packings (65 and 66) and two adapters (63 and 64) on gage assembly (12).



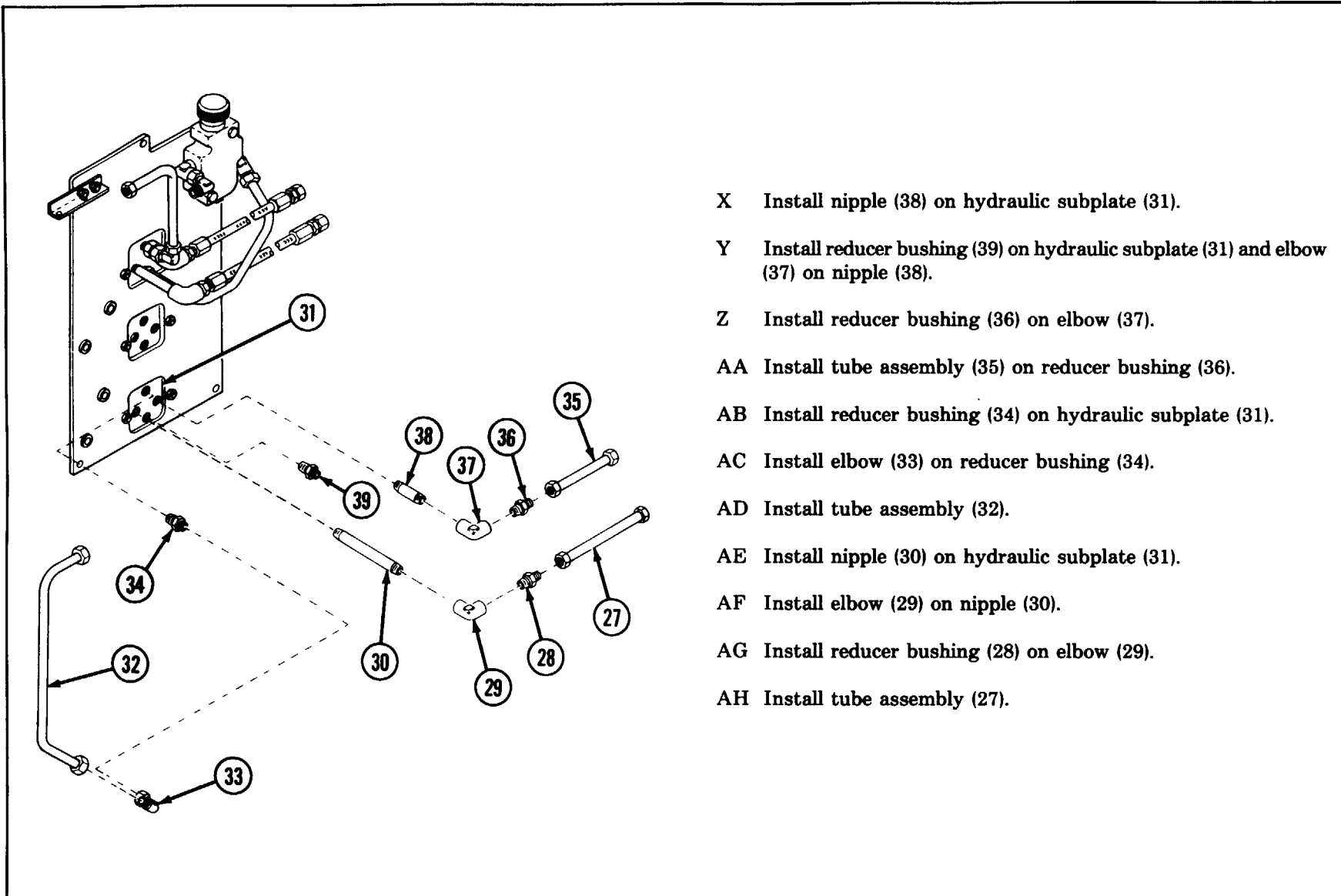
- I Install new packing (62) and elbow (61) on shuttle valve (13) and tighten jamnut (60).
- J Install two new packings (58 and 59) and two fittings (56 and 57) on shuttle valve (13).

## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



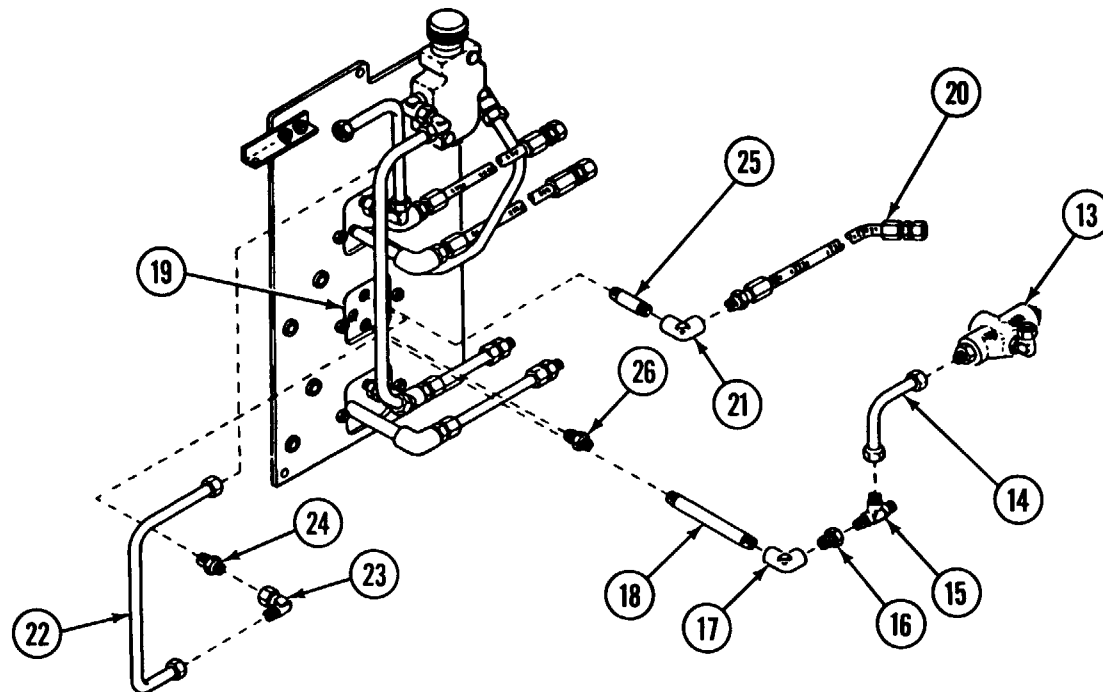
- K Install elbow (54) on elbow (55).
- L Install elbow (52) and adapter (51) on flow control valve (53).
- M Install nipple (50) on hydraulic subplate (43).
- N Install elbow (47) on nipple (50).
- O Install reducer bushing (49) on hydraulic subplate (43).
- P Install elbow (48) on reducer bushing (49).
- Q Install tube (7) on elbow (48).
- R Install hose (46) on elbow (47).
- S Install reducer bushing (45) on subplate (43).
- T Install tube assembly (44).
- U Install nipple (42) on hydraulic subplate (43).
- V Install elbow (41) on nipple (42).
- W Install hose (40) on elbow (41).

## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



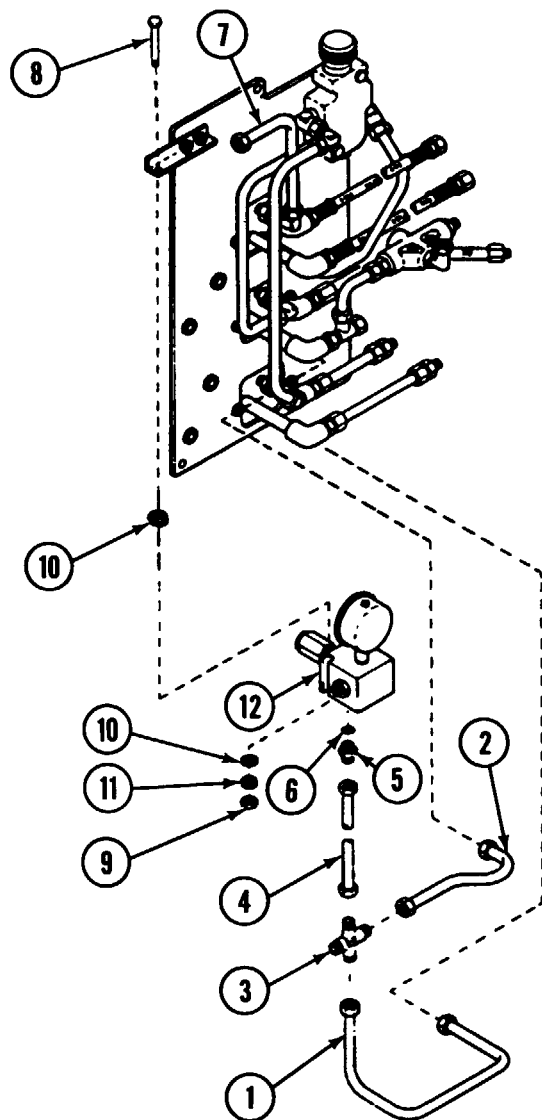
- X Install nipple (38) on hydraulic subplate (31).
- Y Install reducer bushing (39) on hydraulic subplate (31) and elbow (37) on nipple (38).
- Z Install reducer bushing (36) on elbow (37).
- AA Install tube assembly (35) on reducer bushing (36).
- AB Install reducer bushing (34) on hydraulic subplate (31).
- AC Install elbow (33) on reducer bushing (34).
- AD Install tube assembly (32).
- AE Install nipple (30) on hydraulic subplate (31).
- AF Install elbow (29) on nipple (30).
- AG Install reducer bushing (28) on elbow (29).
- AH Install tube assembly (27).

## HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



- AI Install nipple (25) on hydraulic subplate assembly (19).
- AJ Install adapter (26) on hydraulic subplate assembly (19).
- AK Install elbow (21) on nipple (25).
- AL Install adapter (24) on hydraulic subplate assembly (19).
- AM Install elbow (23) on adapter (24).
- AN Install tube assembly (22).
- AO Install hose (20) on elbow (21).

- AP Install nipple (18) on hydraulic subplate (19).
- AQ Install elbow (17) on nipple (18).
- AR Install reducer bushing (16) on elbow (17).
- AS Install tee (15) on reducer bushing (16).
- AT Install tube assembly (14) on tee (15).
- AU Install shuttle valve (13) on tube assembly (14).

**HYDRAULIC CONTROL PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)**

AV Install pressure gage assembly (12), four flat washers (10), two new lockwashers (11) and two nuts (9).

AW Connect tube assembly (7).

AX Install new packing (6) and adapter (5).

AY Install tube assembly (4).

AZ Install union cross (3).

BA Install tube assembly (2).

BB Install tube assembly (1).

BC Install hydraulic control panel assembly (p 16-6).

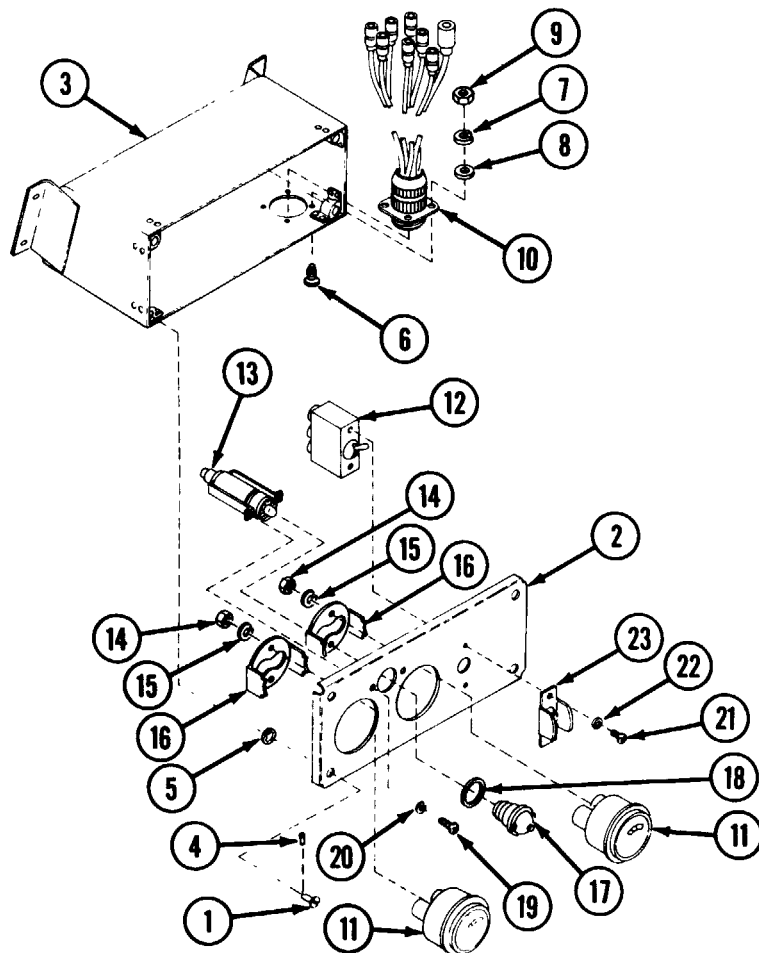


## HYDRAULIC CONTROL GAGE PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY

### INITIAL SETUP

#### Equipment Conditions:

Hydraulic control gage panel removed (p 16-14).



### DISASSEMBLY

#### WARNING

When working on vehicle's electrical system, turn vehicle MASTER power switch OFF. Remove dog tags, rings and other jewelry. Disconnect batteries by removing ground cables first. Connect ground cables last when connecting batteries.

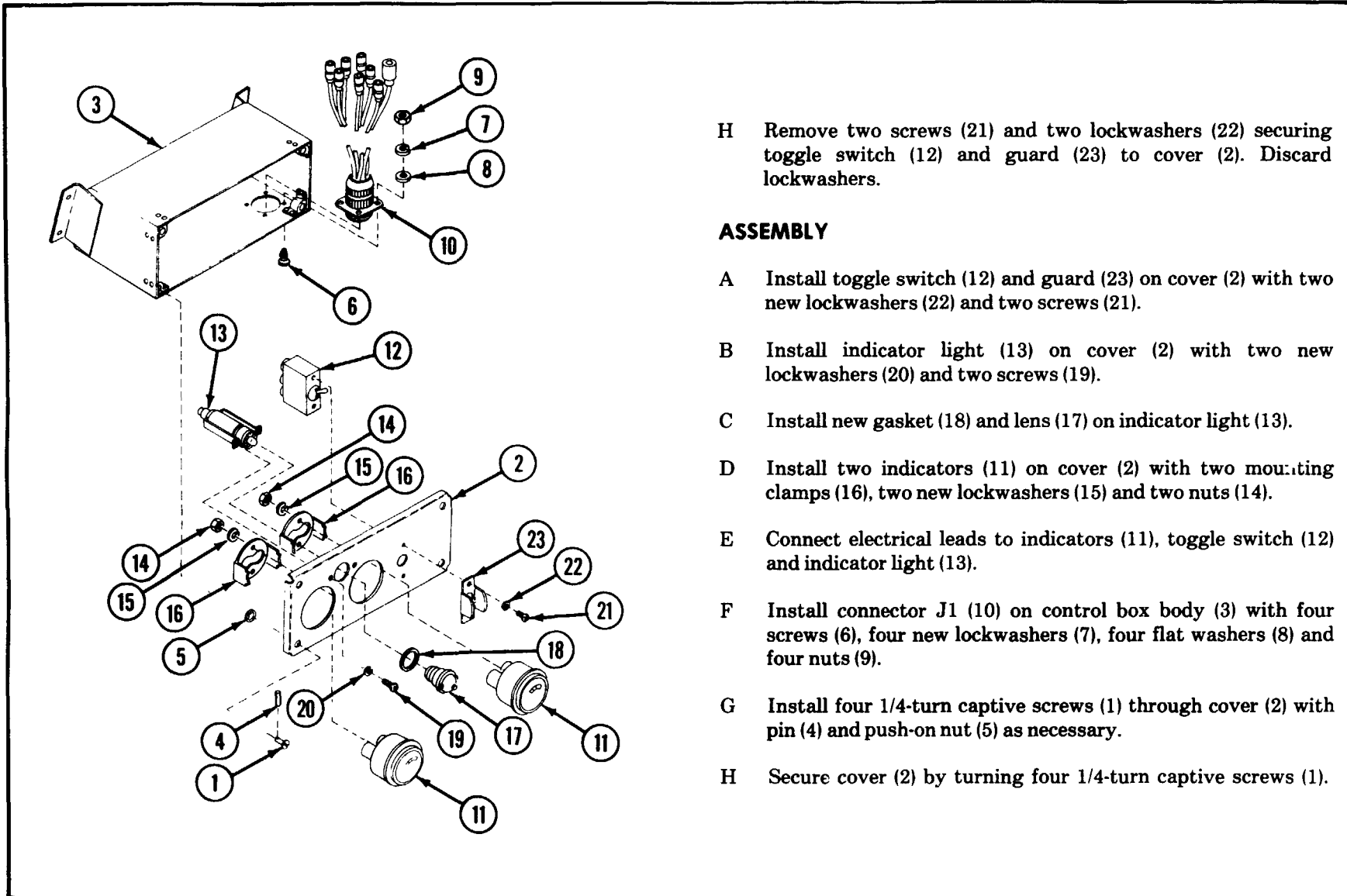
- A Turn four 1/4-turn captive screws (1) securing cover (2) to control box body (3).
- B Remove pin (4) and push-on nut (5) from screw (1) as necessary.
- C Remove four screws (6), four lockwashers (7), four flat washers (8) and four nuts (9) and remove connector J1 (10).

#### NOTE

Tag electrical leads upon removal to ensure proper installation.

- D Disconnect electrical leads from rear of two indicators (11), toggle switch (12) and indicator light (13).
- E Remove two nuts (14), two lockwashers (15) and two mounting clamps (16) securing indicators (11) to cover (2). Discard lockwashers.
- F Remove lens (17) and gasket (18) from indicator light (13). Discard gasket.
- G Remove two screws (19) and two lockwashers (20) securing indicator light (13) to cover (2). Discard lockwashers.

## HYDRAULIC CONTROL GAGE PANEL ASSEMBLY: DISASSEMBLY AND ASSEMBLY (CONTINUED)



H Remove two screws (21) and two lockwashers (22) securing toggle switch (12) and guard (23) to cover (2). Discard lockwashers.

**ASSEMBLY**

A Install toggle switch (12) and guard (23) on cover (2) with two new lockwashers (22) and two screws (21).

B Install indicator light (13) on cover (2) with two new lockwashers (20) and two screws (19).

C Install new gasket (18) and lens (17) on indicator light (13).

D Install two indicators (11) on cover (2) with two mounting clamps (16), two new lockwashers (15) and two nuts (14).

E Connect electrical leads to indicators (11), toggle switch (12) and indicator light (13).

F Install connector J1 (10) on control box body (3) with four screws (6), four new lockwashers (7), four flat washers (8) and four nuts (9).

G Install four 1/4-turn captive screws (1) through cover (2) with pin (4) and push-on nut (5) as necessary.

H Secure cover (2) by turning four 1/4-turn captive screws (1).

## Section III HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS

### HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION

#### INITIAL SETUP

##### Parts/materials:

Pipe sealant (item 57, Appx D).

##### References:

LO 9-2350-267-12

##### Equipment Condition:

Left and right projectile racks removed (p 11-5).  
Ventilation blower duct removed (p 14-61).

##### General Safety Instructions:

Make sure hydraulic systems are shut down and MASTER switch is OFF. Hydraulic fluid may be HOT.

Hydraulic lines and ports should be capped immediately after disconnecting lines to avoid entry of contaminants into hydraulic system.

#### NOTE

Tag hydraulic components for proper installation.

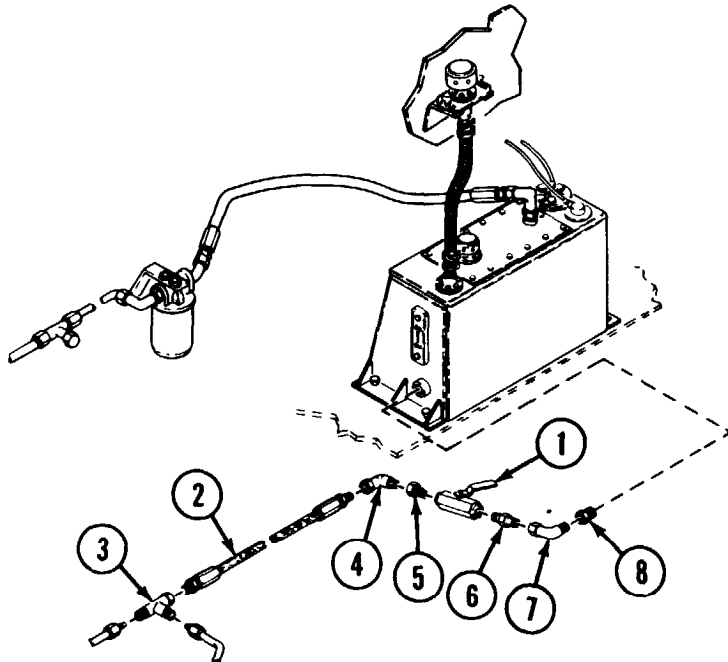
#### REMOVAL

- A Close ball valve (1).
- B Disconnect hose assembly (2) from tee (3) and elbow (4).

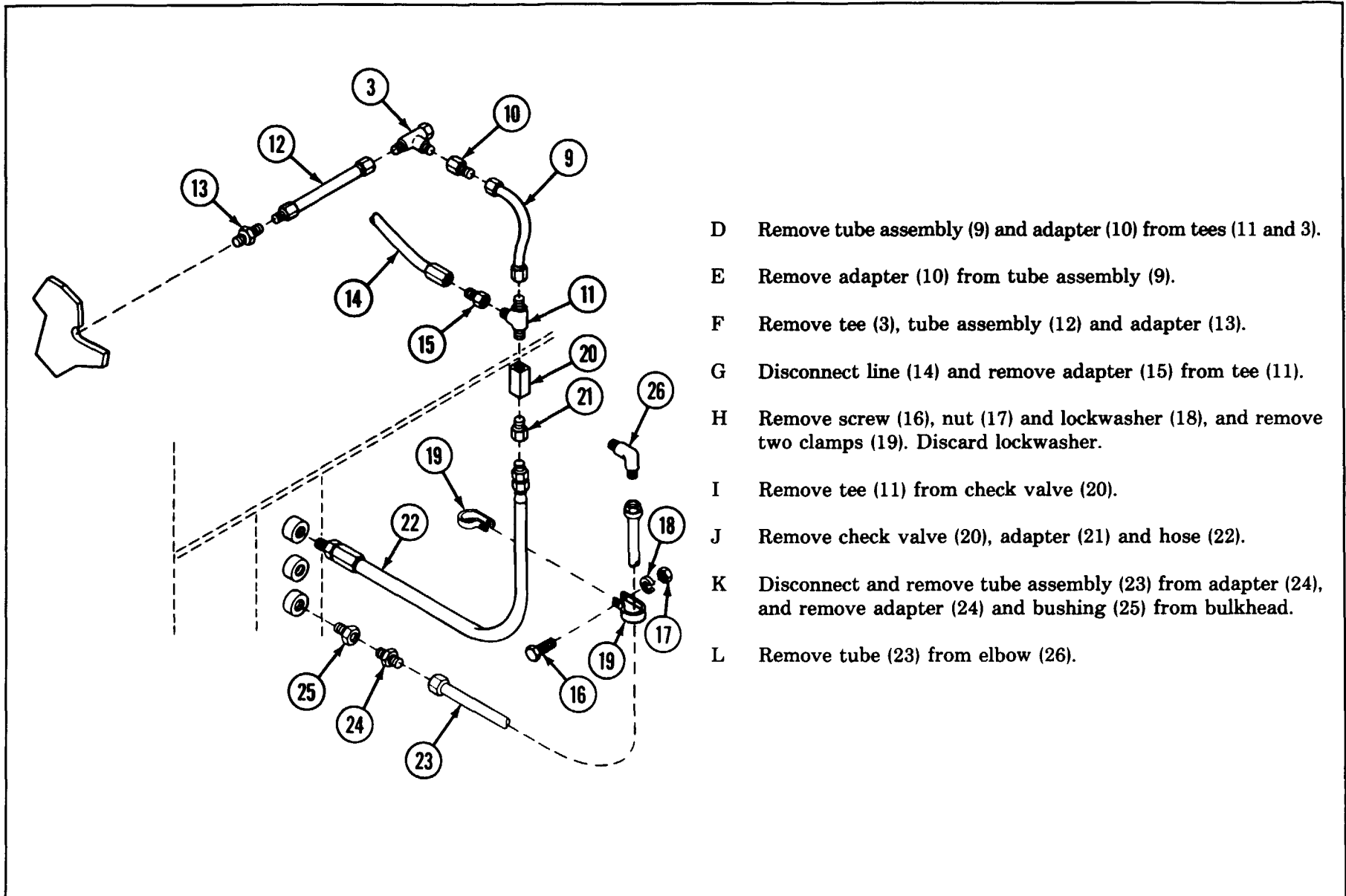
#### NOTE

Before doing step C, drain hydraulic reservoir (p 16-2 and 16-3, steps A through D). If disassembly is not necessary, go to step D.

- C Remove elbow (4), reducer (5), ball valve (1), nipple (6), elbow (7) and bushing (8).

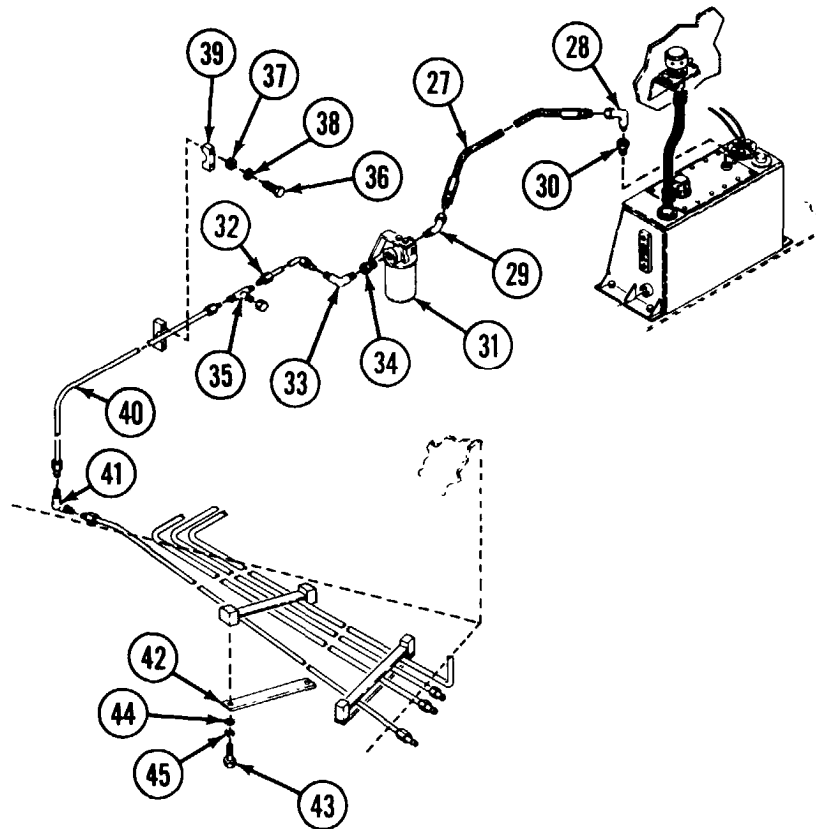


## HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



- D Remove tube assembly (9) and adapter (10) from tees (11 and 3).
- E Remove adapter (10) from tube assembly (9).
- F Remove tee (3), tube assembly (12) and adapter (13).
- G Disconnect line (14) and remove adapter (15) from tee (11).
- H Remove screw (16), nut (17) and lockwasher (18), and remove two clamps (19). Discard lockwasher.
- I Remove tee (11) from check valve (20).
- J Remove check valve (20), adapter (21) and hose (22).
- K Disconnect and remove tube assembly (23) from adapter (24), and remove adapter (24) and bushing (25) from bulkhead.
- L Remove tube (23) from elbow (26).

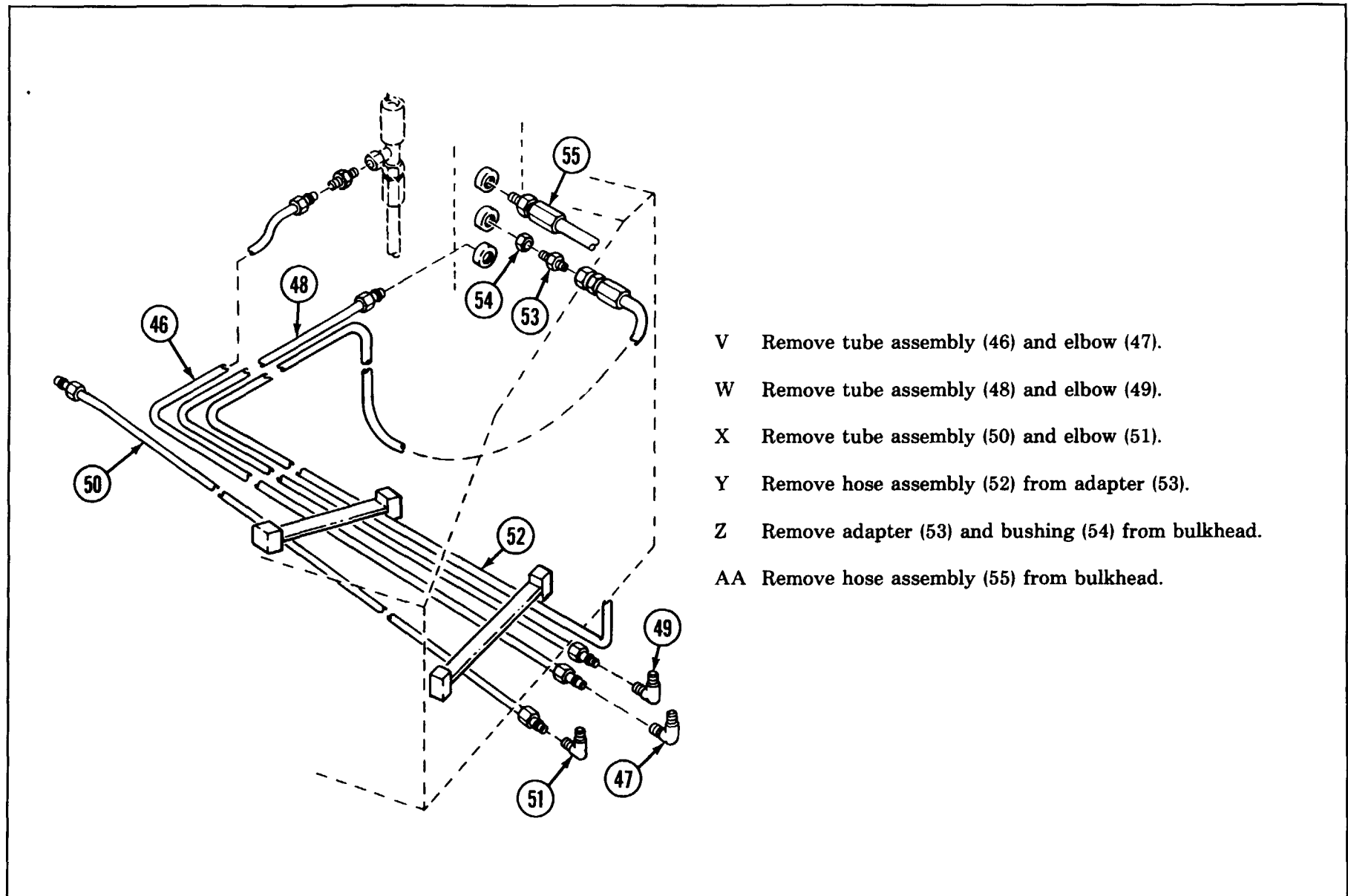
## HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



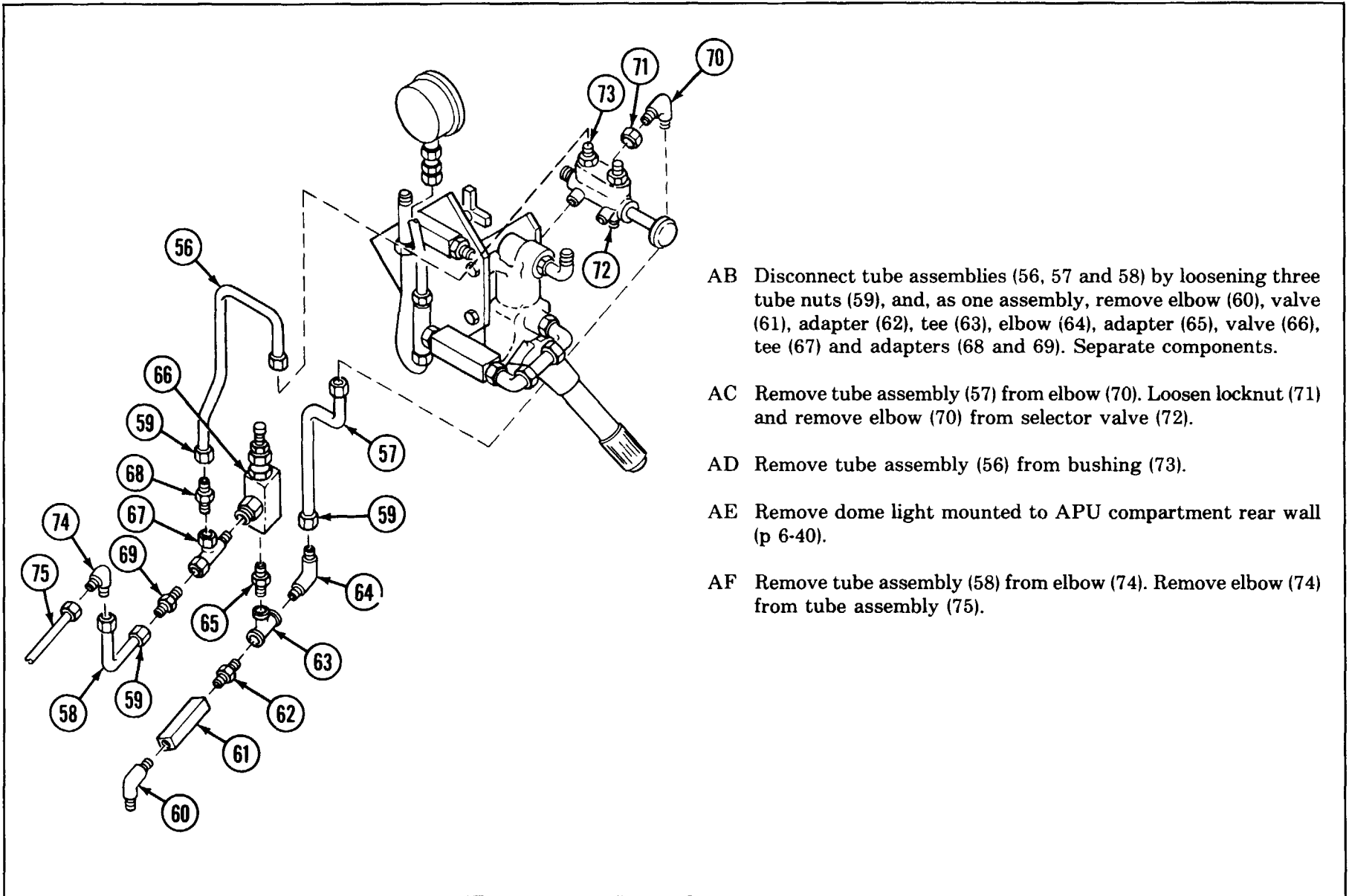
- M Remove hose assembly (27) from elbows (28 and 29).
- N Remove elbow (28) and bushing (30).
- O Remove elbow (29) from filter unit (31).
- P Remove tube assembly (32).
- Q Remove elbow (33) and bushing (34) and remove tee (35) from tube assembly (32).
- R Remove two screws (36), two flat washers (37), two lockwashers (38) and clamp (39). Discard lockwashers.
- S Remove tube assembly (40) at elbow (41).
- T Remove elbow (41).
- U Remove two brackets (42) from underneath APU compartment by removing from each two screws (43), two flat washers (44) and two lockwashers (45). Discard lockwashers.

TA57522

## HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



## HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



AB Disconnect tube assemblies (56, 57 and 58) by loosening three tube nuts (59), and, as one assembly, remove elbow (60), valve (61), adapter (62), tee (63), elbow (64), adapter (65), valve (66), tee (67) and adapters (68 and 69). Separate components.

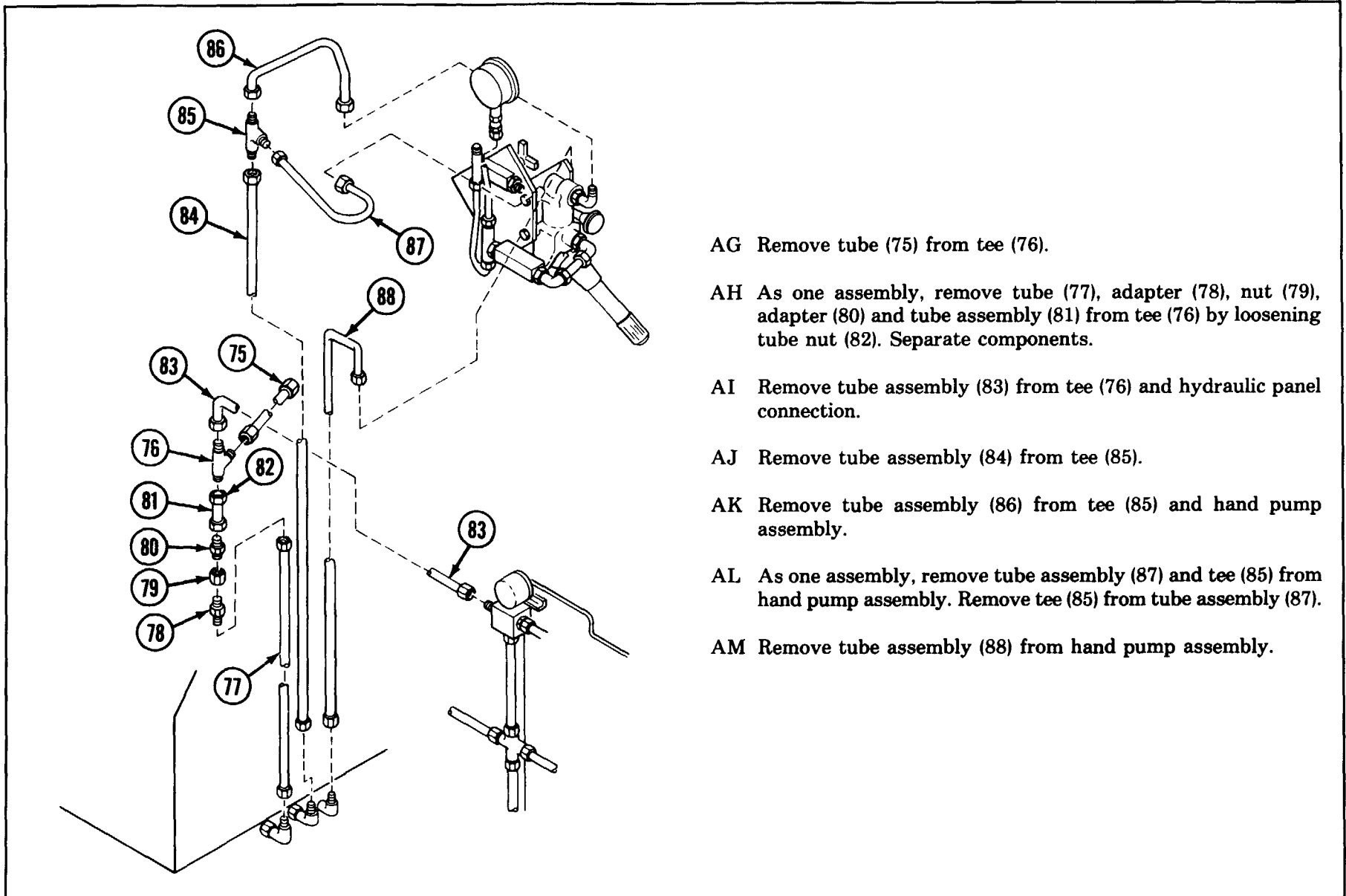
AC Remove tube assembly (57) from elbow (70). Loosen locknut (71) and remove elbow (70) from selector valve (72).

AD Remove tube assembly (56) from bushing (73).

AE Remove dome light mounted to APU compartment rear wall (p 6-40).

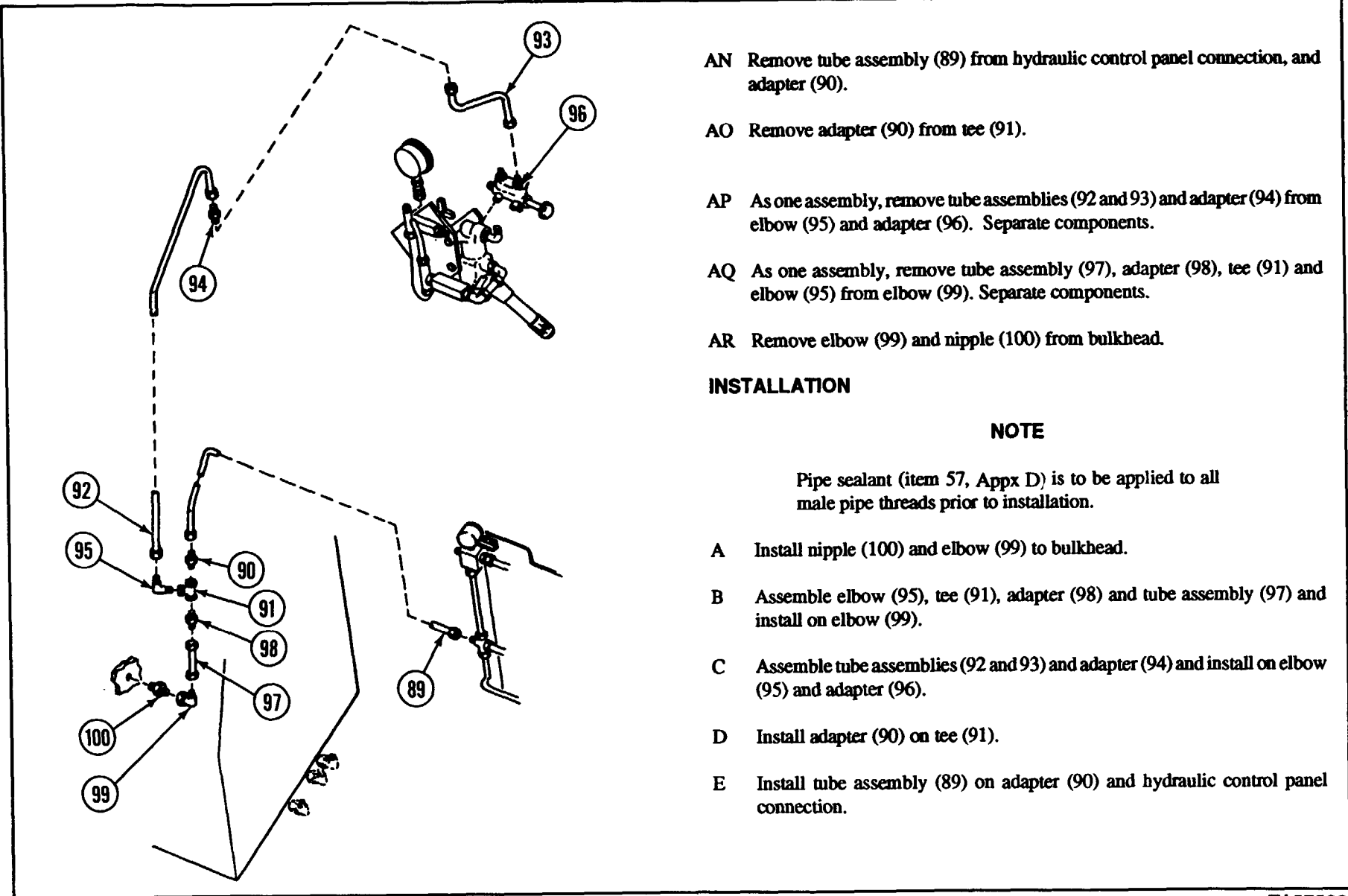
AF Remove tube assembly (58) from elbow (74). Remove elbow (74) from tube assembly (75).

TA57524

**HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)**




HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



AN Remove tube assembly (89) from hydraulic control panel connection, and adapter (90).

AO Remove adapter (90) from tee (91).

AP As one assembly, remove tube assemblies (92 and 93) and adapter (94) from elbow (95) and adapter (96). Separate components.

AQ As one assembly, remove tube assembly (97), adapter (98), tee (91) and elbow (95) from elbow (99). Separate components.

AR Remove elbow (99) and nipple (100) from bulkhead.

**INSTALLATION**

**NOTE**

Pipe sealant (item 57, Appx D) is to be applied to all male pipe threads prior to installation.

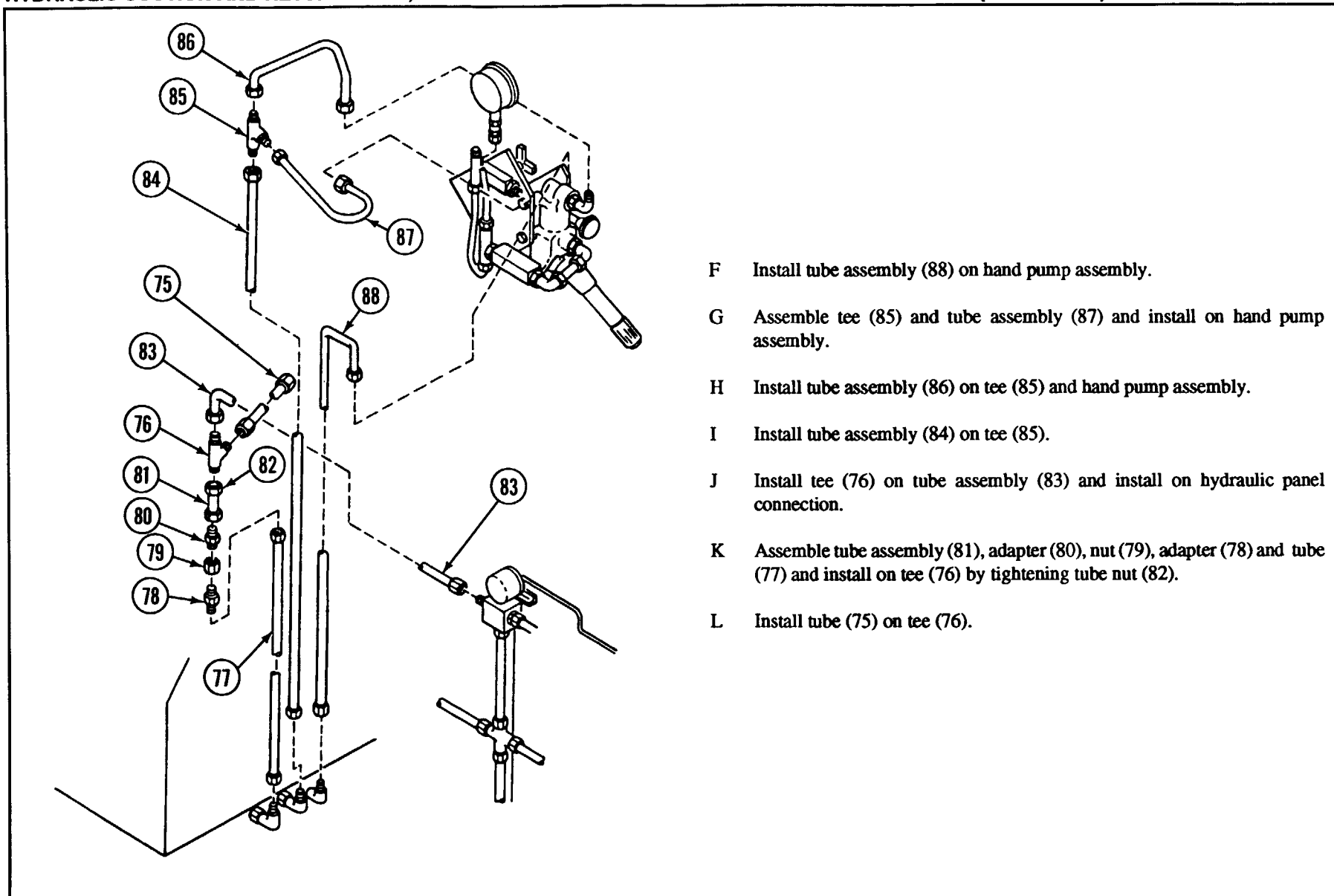
A Install nipple (100) and elbow (99) to bulkhead.

B Assemble elbow (95), tee (91), adapter (98) and tube assembly (97) and install on elbow (99).

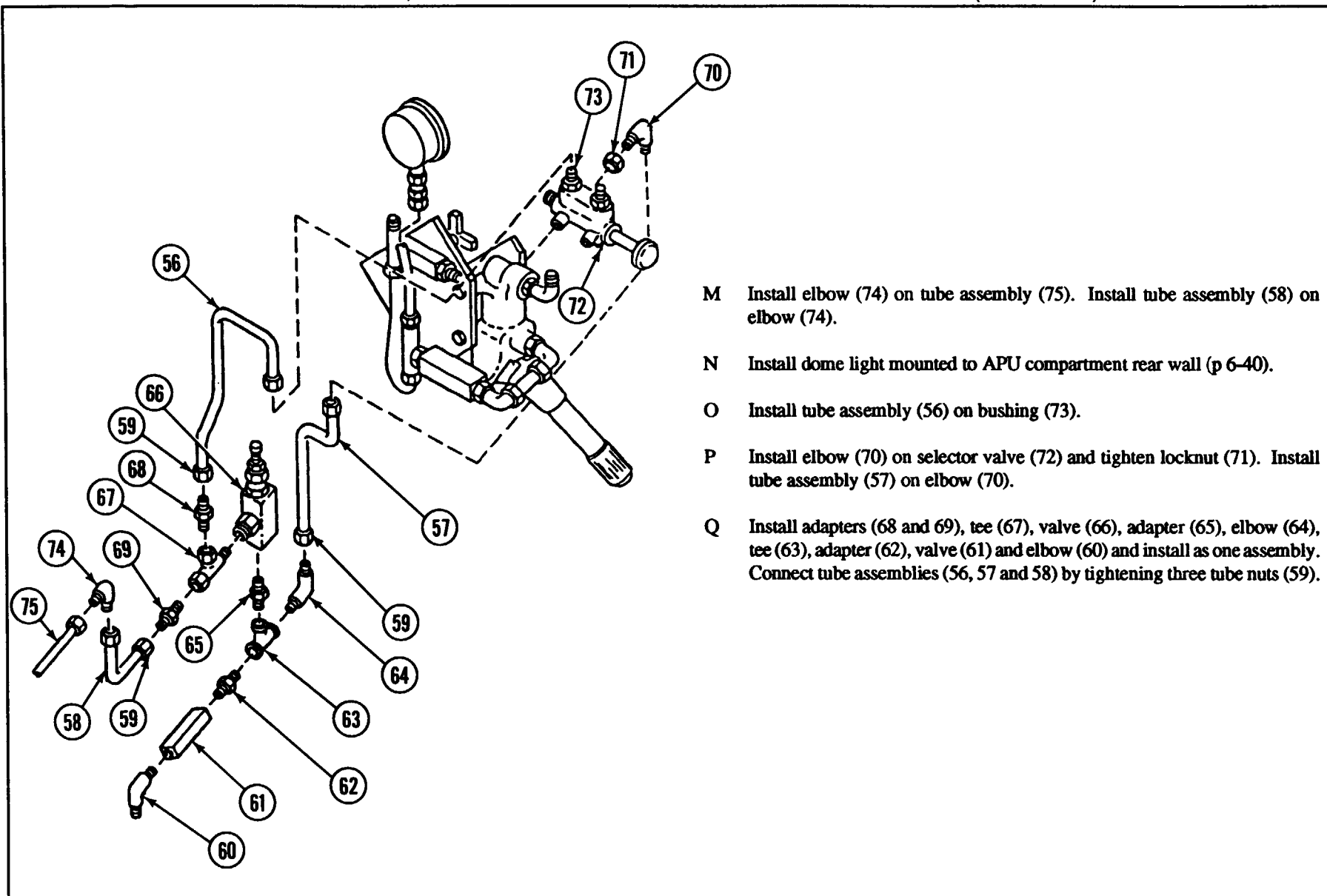
C Assemble tube assemblies (92 and 93) and adapter (94) and install on elbow (95) and adapter (96).

D Install adapter (90) on tee (91).

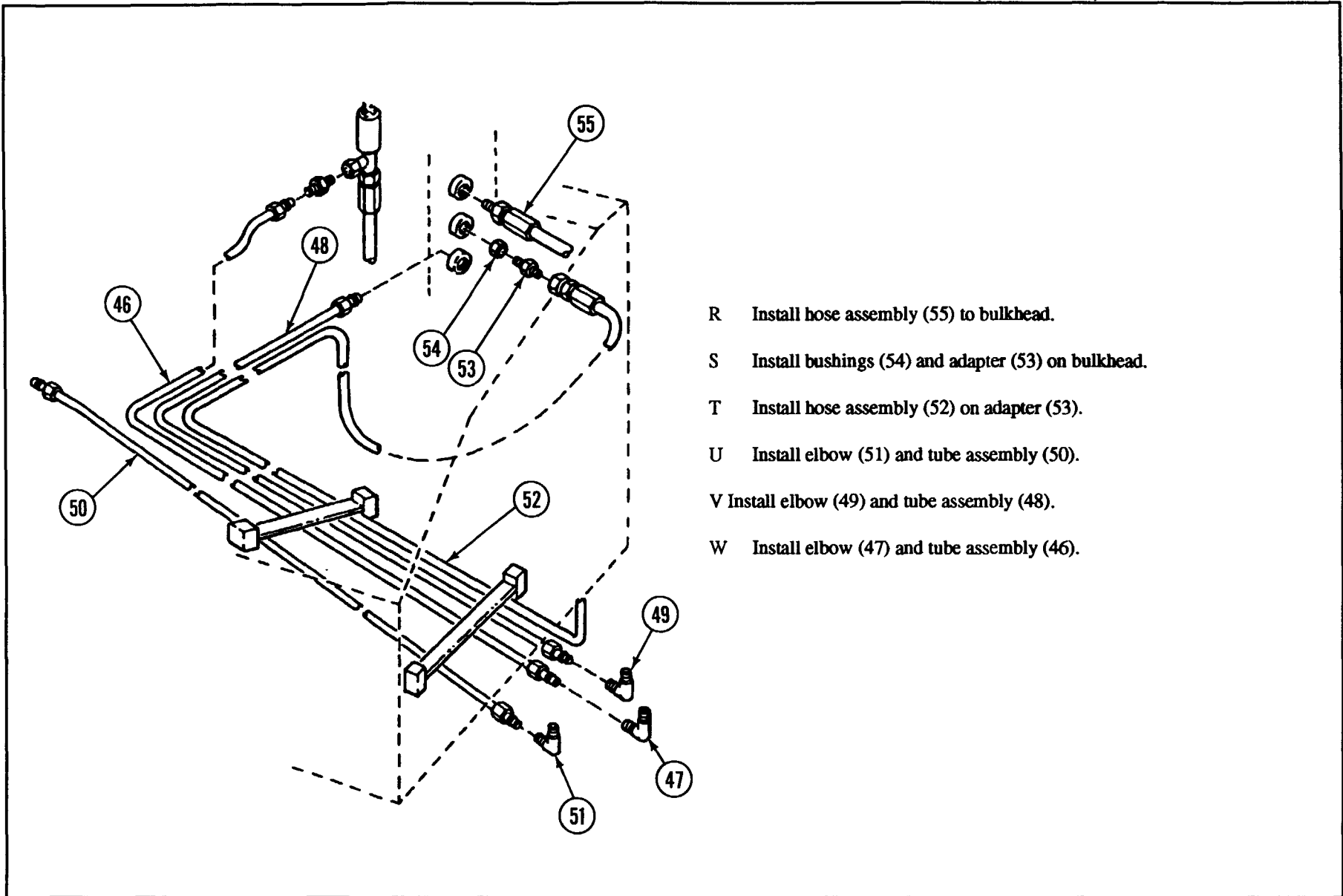
E Install tube assembly (89) on adapter (90) and hydraulic control panel connection.

**HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)**


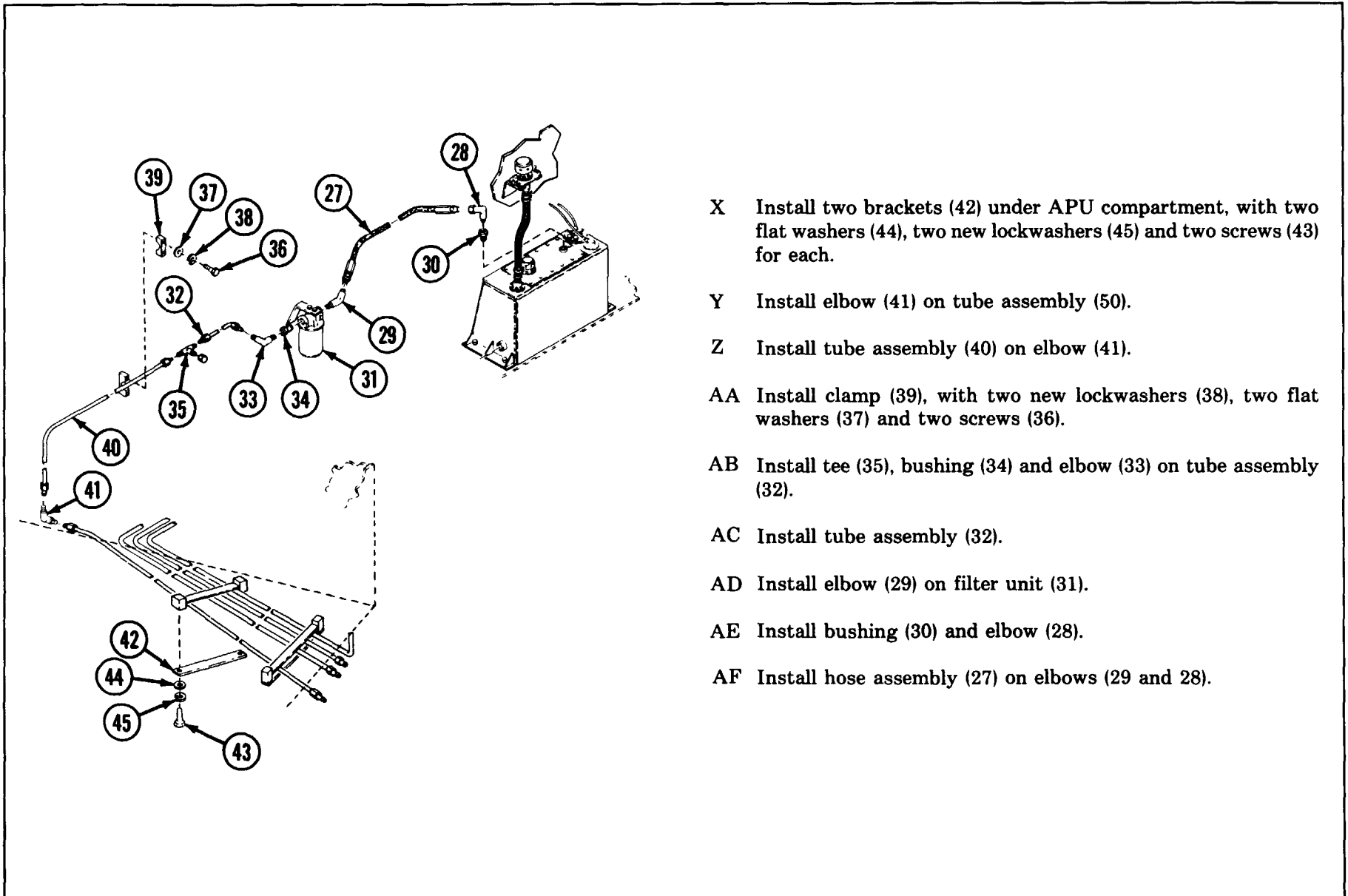
HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



## HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



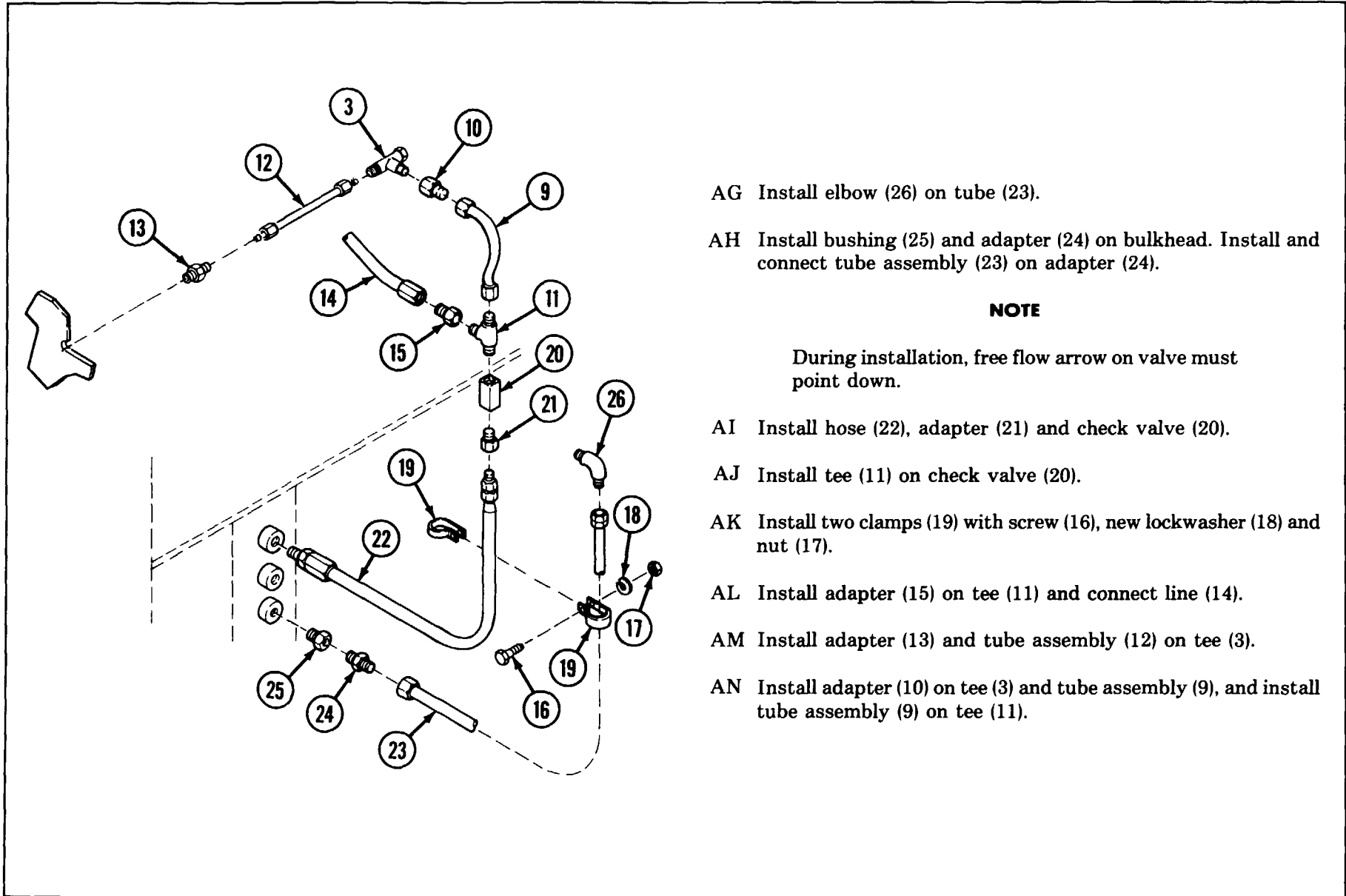
## HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



- X Install two brackets (42) under APU compartment, with two flat washers (44), two new lockwashers (45) and two screws (43) for each.
- Y Install elbow (41) on tube assembly (50).
- Z Install tube assembly (40) on elbow (41).
- AA Install clamp (39), with two new lockwashers (38), two flat washers (37) and two screws (36).
- AB Install tee (35), bushing (34) and elbow (33) on tube assembly (32).
- AC Install tube assembly (32).
- AD Install elbow (29) on filter unit (31).
- AE Install bushing (30) and elbow (28).
- AF Install hose assembly (27) on elbows (29 and 28).

TA57530

## HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



AG Install elbow (26) on tube (23).

AH Install bushing (25) and adapter (24) on bulkhead. Install and connect tube assembly (23) on adapter (24).

**NOTE**

During installation, free flow arrow on valve must point down.

AI Install hose (22), adapter (21) and check valve (20).

AJ Install tee (11) on check valve (20).

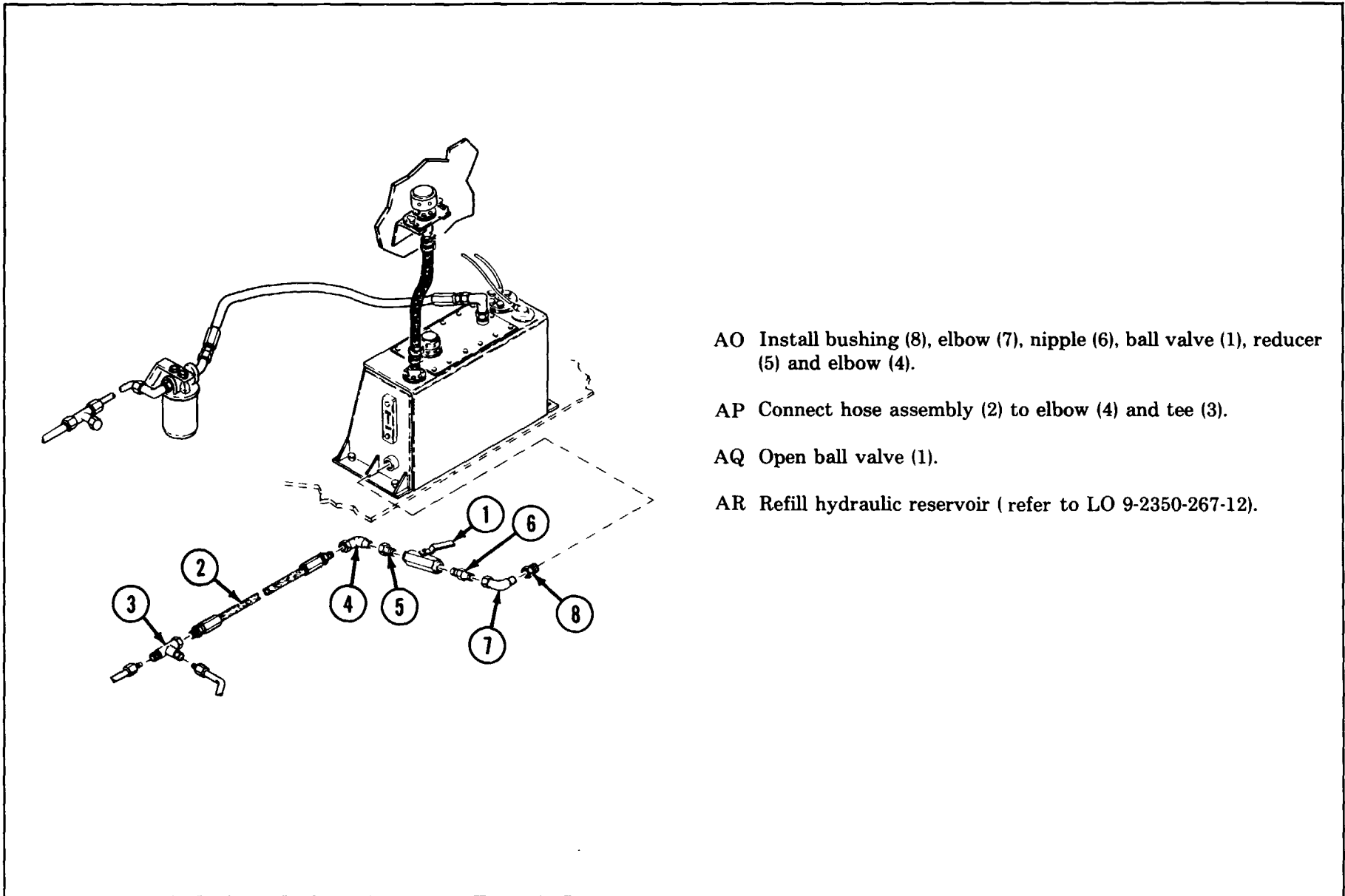
AK Install two clamps (19) with screw (16), new lockwasher (18) and nut (17).

AL Install adapter (15) on tee (11) and connect line (14).

AM Install adapter (13) and tube assembly (12) on tee (3).

AN Install adapter (10) on tee (3) and tube assembly (9), and install tube assembly (9) on tee (11).

HYDRAULIC SUCTION AND RETURN LINES, AND ASSOCIATED PARTS: REMOVAL AND INSTALLATION (CONTINUED)



AO Install bushing (8), elbow (7), nipple (6), ball valve (1), reducer (5) and elbow (4).

AP Connect hose assembly (2) to elbow (4) and tee (3).

AQ Open ball valve (1).

AR Refill hydraulic reservoir (refer to LO 9-2350-267-12).

## Section IV BACKUP HYDRAULIC SYSTEM

## BACKUP HYDRAULIC PUMP ASSEMBLY HOSES AND CONNECTING PARTS: REMOVAL AND INSTALLATION

**INITIAL SETUP**Materials/Parts:

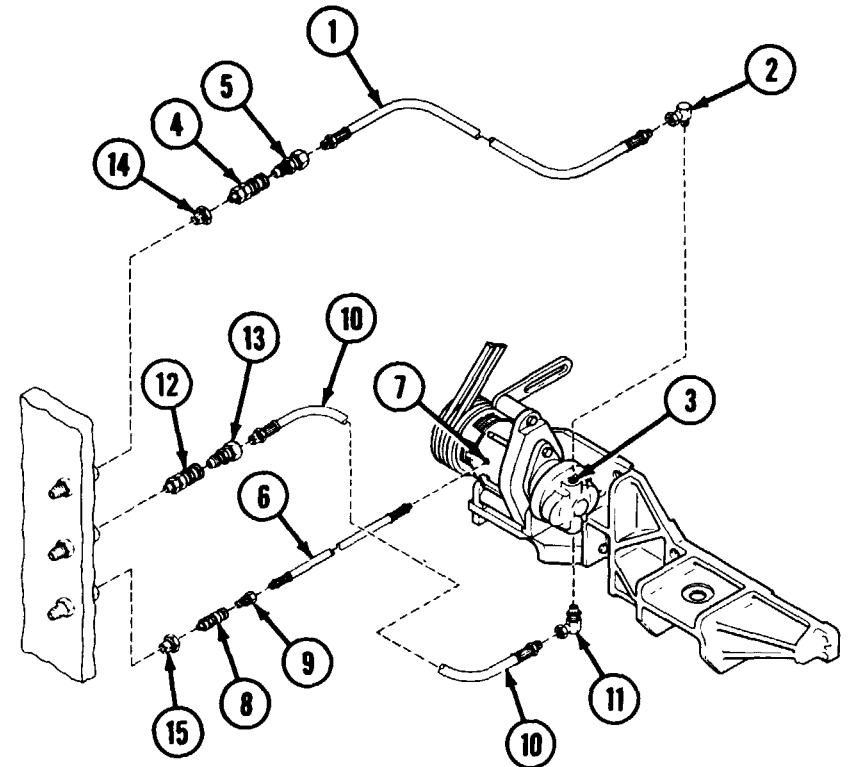
Teflon Tape (item 62, Appx D)

Equipment Condition:

Engine compartment access cover removed (p 9-25).

**WARNING**

- Make sure all systems are shut down and MASTER switch if OFF. Hydraulic fluid may be HOT.
- Do not perform removal procedures until backup hydraulic gage has been visually checked. Gage must show 0 psi.





## BACKUP Hydraulic PUMP ASSEMBLY HOSES AND Connecting PARTS: REMOVAL AND INSTALLATION (CONTINUED)

### REMOVAL

#### CAUTION

Take necessary precautions to prevent entry of contaminants into hydraulic system. Hydraulic lines and ports should be capped immediately after disconnecting lines to avoid entry of contaminants into system.

- A Remove hose (1) from elbow (2).
- B Remove elbow (2) from pump inlet port (3).
- C Disconnect hose (1) from bulkhead quick-disconnect end (4).
- D Remove quick-disconnect end (5) from hose (1).
- E Remove hose (6) from clutch hydraulic port (7).
- F Disconnect hose (6) from bulkhead quick-disconnect end (8).
- G Remove quick-disconnect end (9) from hose (6).
- H Remove hose (10) from elbow (11).
- I Disconnect hose (10) from bulkhead quick-disconnect end (12).
- J Remove quick-disconnect end (13) from hose (10).
- K Remove quick-disconnect ends (4,8, and 12) from bushings (14 and 15) and adapters.
- L Remove bushings (14 and 15) from adapters.

### INSTALLATION

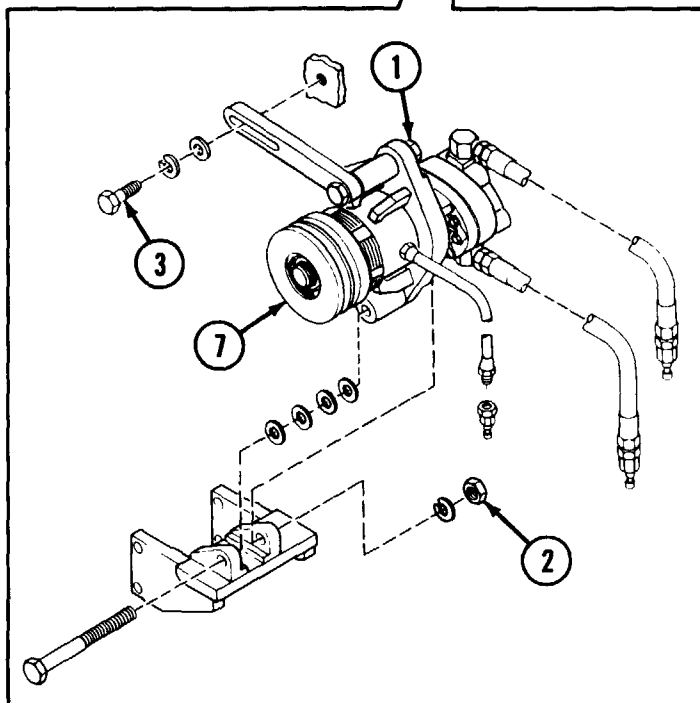
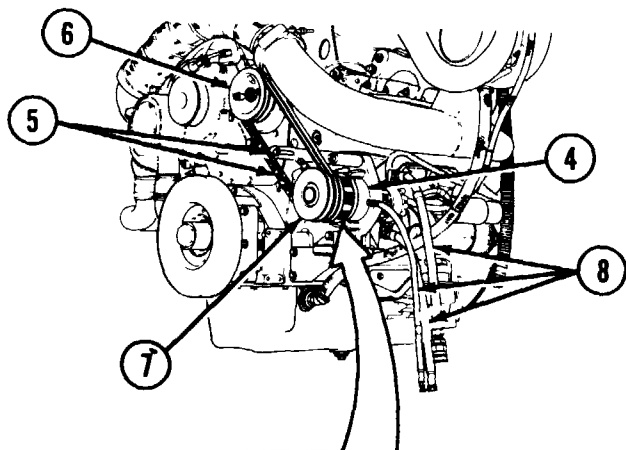
#### NOTE

Apply Teflon tape (item 62, Appx D) or Teflon pipe sealant (item 57, Appx D) to all male threads during installation.

- A Install bushings (14 and 15) in adapters.
- B Install quick-disconnect ends (4, 8 and 12) on bushings (14 and 15) and adapters.
- C Install quick-disconnect end (13) on hose (10).
- D Connect hose (10) to bulk head quick-disconnect end (12).
- E Install hose (10) on elbow (11).
- F Install quick-disconnect end (9) on hose (6).
- G Connect hose (6) to bulkhead quick-disconnect end (8).
- H Install hose (6) on clutch hydraulic port (7).
- I Install quick-disconnect end (5) on hose (1).
- J Connect hose (1) to bulkhead quick-disconnect end (4).
- K Install elbow (2) in pump inlet port (3).
- L Install hose (1) on elbow (2).



## BACKUP HYDRAULIC SYSTEM, CLUTCH SUPPORT AND PUMP ASSEMBLY: REMOVAL AND INSTALLATION



### INITIAL SETUP

#### References:

TM 9-2350-267-10

#### Equipment Condition:

MASTER switch turned OFF.  
Engine access cover removed (p 9-25).

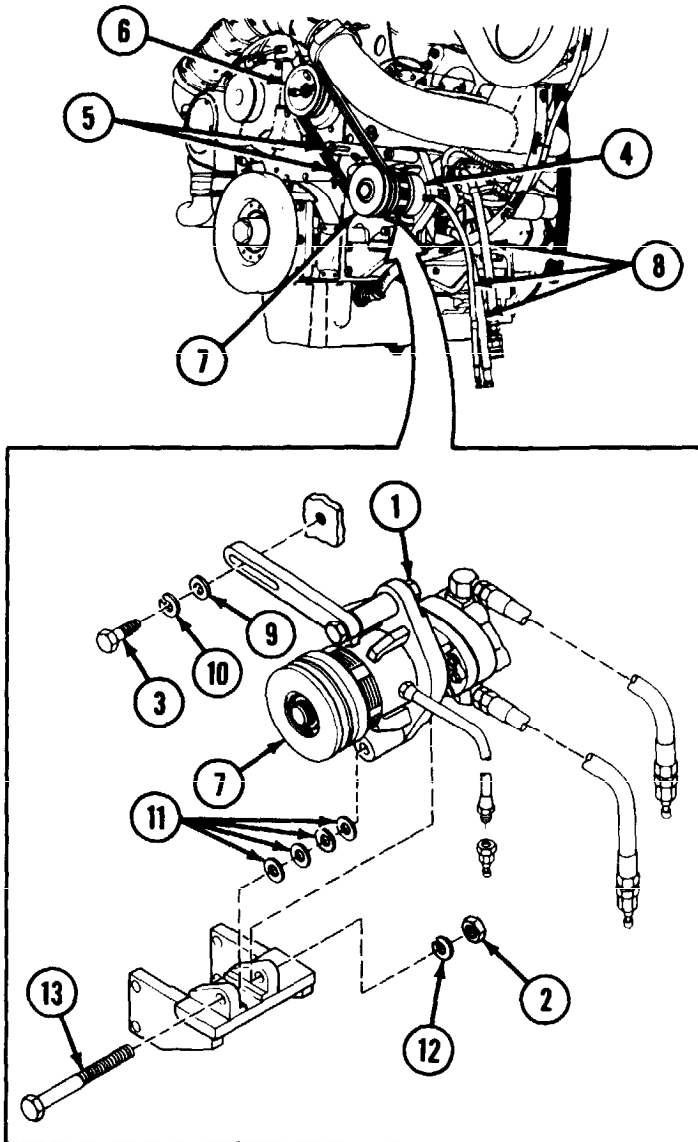
#### General Safety Instructions:

Check hydraulic hand pump pressure gage. Gage must indicate 0 psi. If not, relieve hand pump system pressure before disconnecting backup hydraulic pump hoses (TM 9-2350-267-10).

### REMOVAL

- A Loosen two nuts (1 and 2) and screw (3).
- B Move pump (4) to left, releasing tension on two V-belts (5).
- C Remove V-belts (5) from around engine crankshaft pulley (6) and pump sheave (7).
- D Disconnect three hydraulic hoses (8) from engine compartment wall quick-disconnect fittings.

## BACKUP HYDRAULIC SYSTEM, CLUTCH SUPPORT AND PUMP ASSEMBLY: REMOVAL AND INSTALLATION (CONTINUED)



### CAUTION

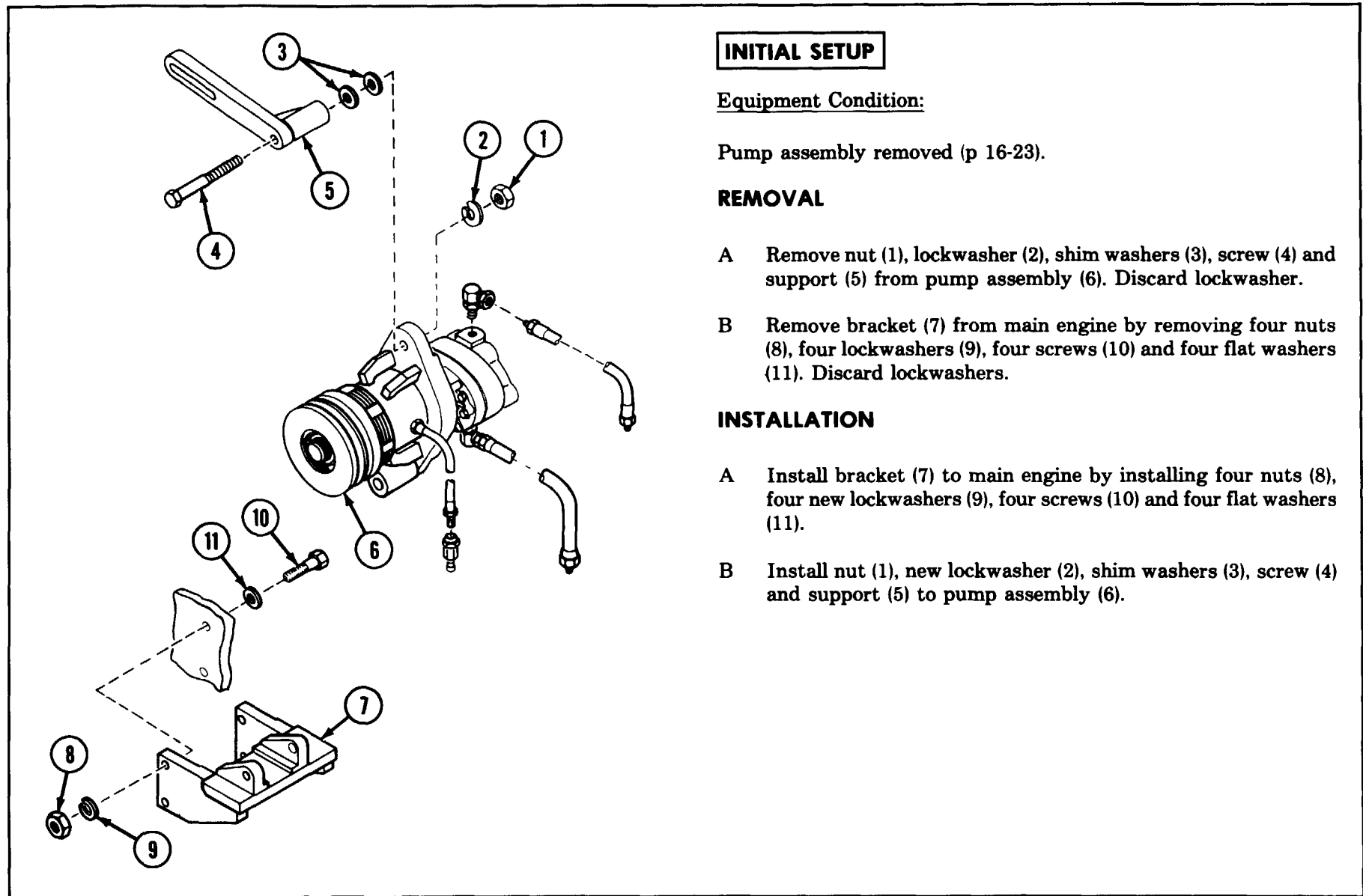
The pump assembly weighs approximately 55 pounds. Wood blocking should be placed under it to prevent it from falling out of place when mounting screws are removed.

- E Remove screw (3), shim washers (9) and lockwasher (10). Discard lockwasher.
- F Remove nut (2), shim washers (11), lockwashers (12) and screw (13). Discard lockwashers.
- G Remove pump assembly (4) from vehicle.

### INSTALLATION

- A Install pump assembly (4) to vehicle.
- B Install screw (13), shim washers (11), new lockwashers (12) and nut (2).
- C Install screw (3), new lockwasher (10) and shim washers (9).
- D Connect three hydraulic hoses (8) to engine compartment wall quick-disconnect fittings.
- E Install V-belts (5) around engine crankshaft pulley (6) and pump sheave (7).
- F Aline V-belts (5) (p 16-26).
- G Tighten two nuts (1 and 2) and screw (3).

## BACKUP HYDRAULIC PUMP BRACKET AND SUPPORT: REMOVAL AND INSTALLATION



TA57537

## BACKUP HYDRAULIC SYSTEM SHEAVE, CLUTCH, SUPPORT AND HYDRAULIC PUMP: DISASSEMBLY AND ASSEMBLY

### INITIAL SETUP

#### Test Equipment/Special Tools:

Pliers, snapping (item 53, Appx B)

#### Materials/Parts:

Adhesive, type I (item 73, Appx D)

Adhesive, sealant (item 5, Appx D)

#### Equipment Condition:

Clutch, support and pump assembly removed (p 16-23).

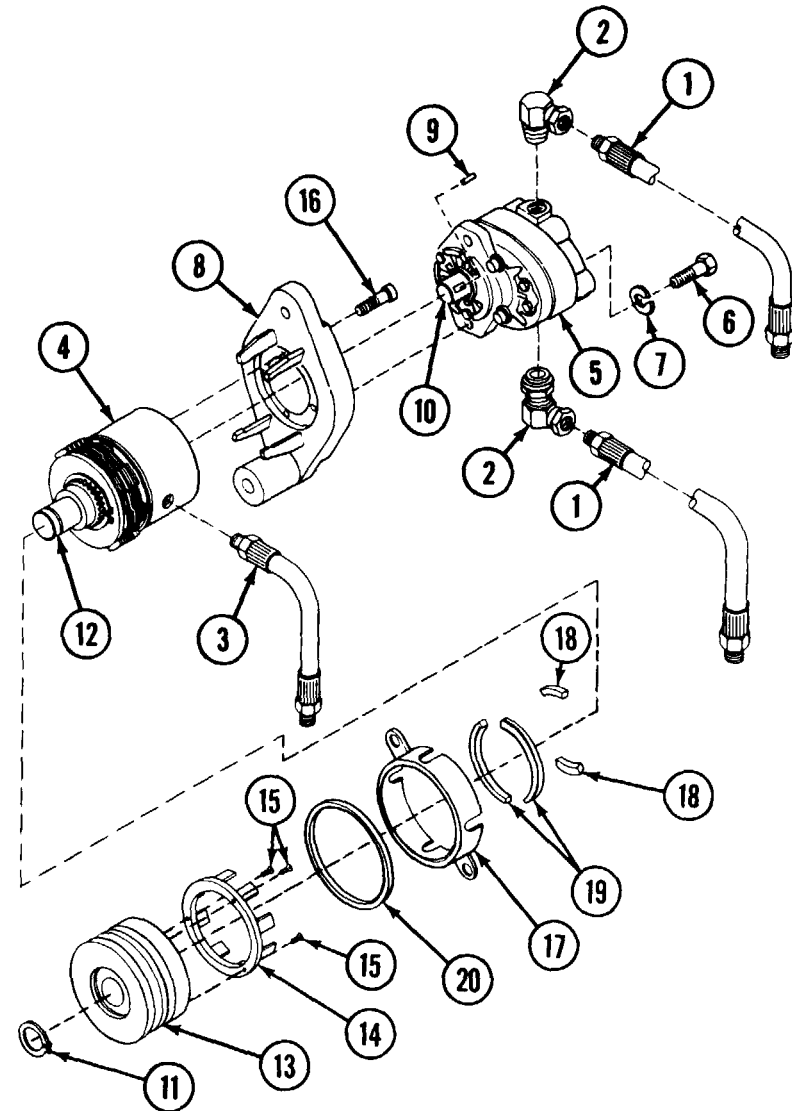
### DISASSEMBLY

- A Disconnect two hydraulic lines (1) from elbows (2).
- B Remove hydraulic line (3) from port connection of clutch (4).
- C Remove two elbows (2) from pump (5).
- D Remove two screws (6), two lockwashers (7) and pump (5) from support (8). Discard lockwashers.
- E Remove key (9) from pump shaft (10).
- F Remove snapping (11) from sheave mounting shaft (12).
- G Remove sheave (13) with attached cup (14) from sheave mounting shaft (12).
- H Remove three screws (15) and cup (14) from sheave (13).
- I Remove support (8) from clutch (4) by removing four self-locking screws (16). Discard self-locking screws.

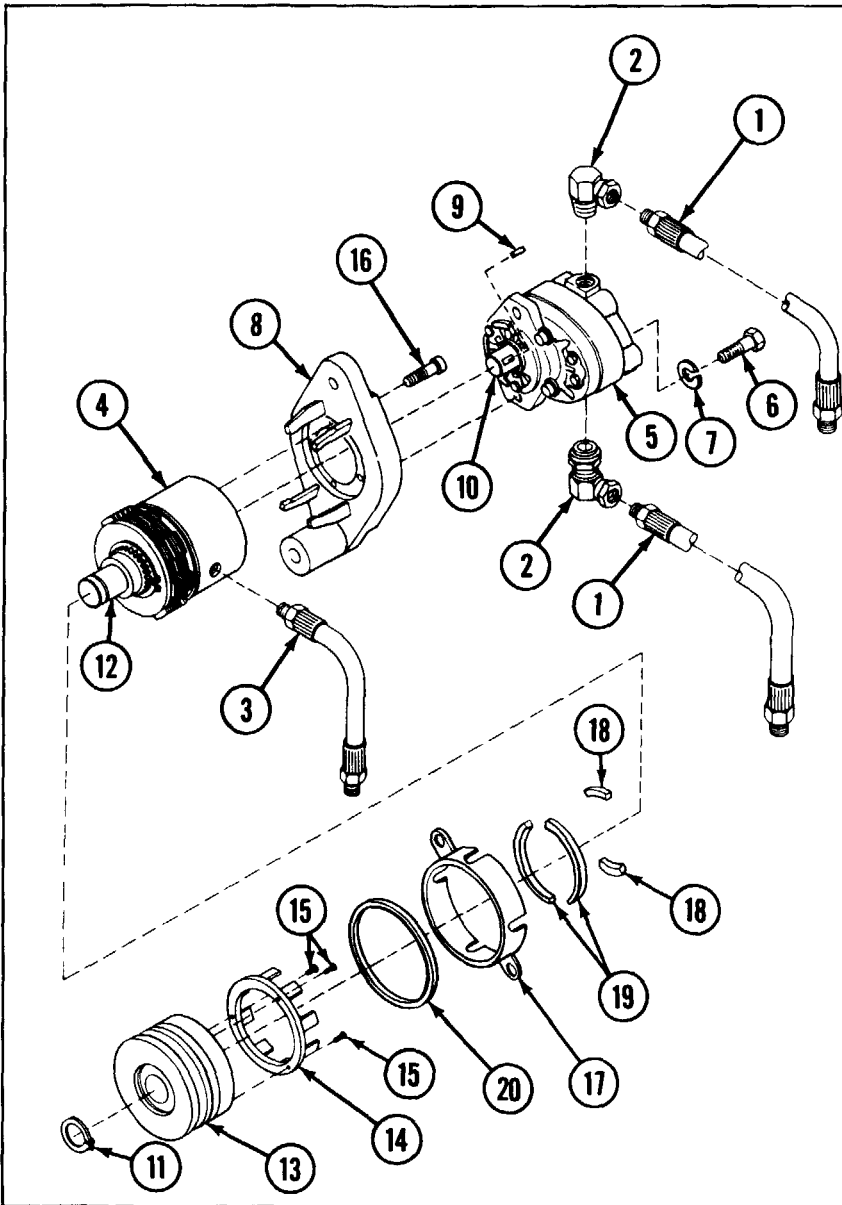
#### NOTE

Steps J and K only apply to vehicles 487 and above.

- J Remove cover assembly (17) from clutch (4).
- K Remove and discard five seals (18, 19, 20).



BACKUP HYDRAULIC SYSTEM SHEAVE, CLUTCH, SUPPORT AND HYDRAULIC PUMP: DISASSEMBLY AND ASSEMBLY (CONTINUED)



**ASSEMBLY**

**NOTE**

Do step A for vehicles 487 and above. For vehicles 1-486 go to step B.

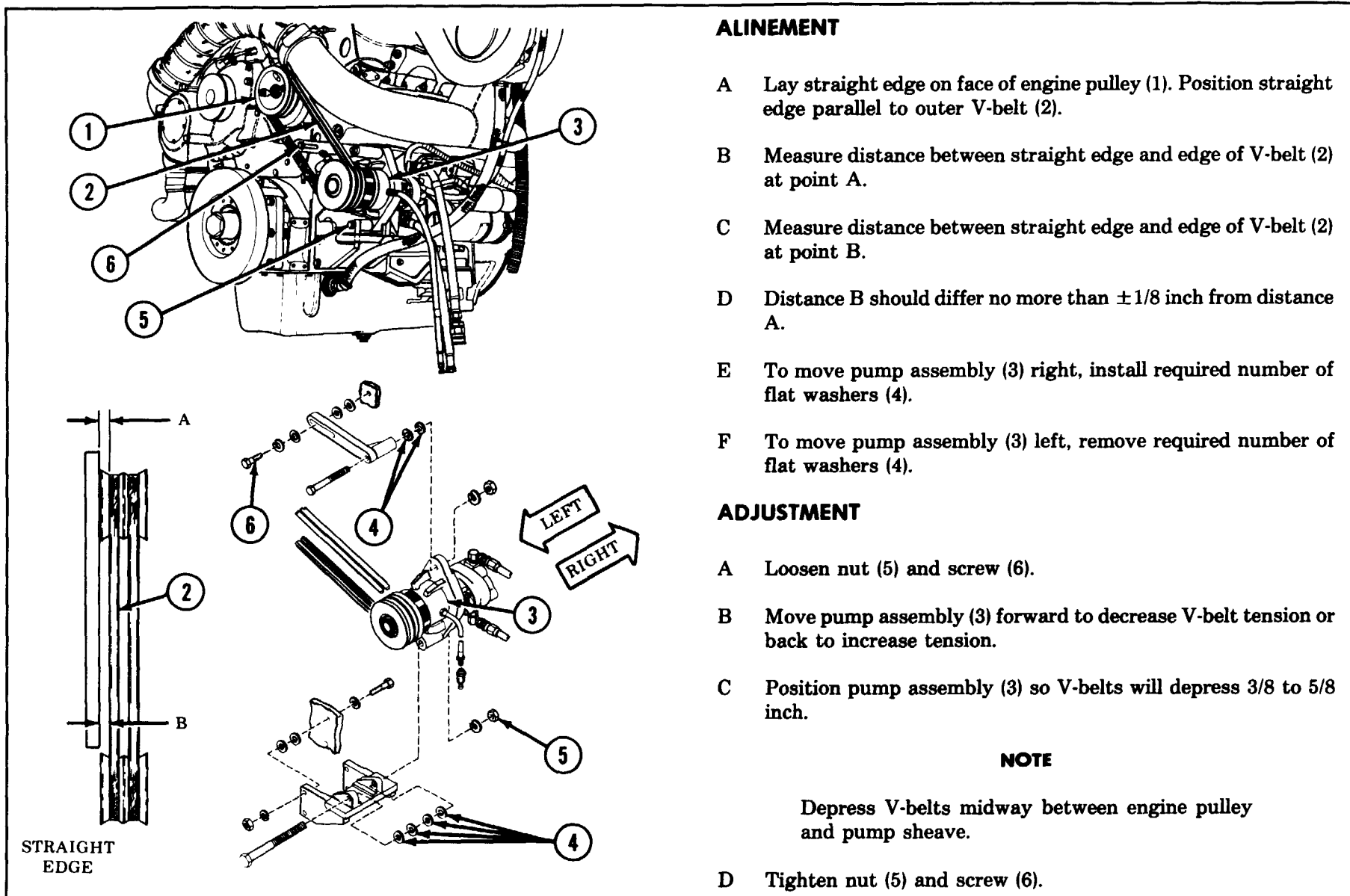
- A Install new seal (20) on cover assembly (17) using adhesive, type I (item 73, Appx D).
- B Install support (8) on clutch (4) with four new self-locking screws (16).
- C Install cup (14) on sheave (13) with three screws (15).
- D Install sheave (13) with cup (14) on sheave mounting shaft (12) and secure with snapping (11).
- E Install key (9) in keyway of pump shaft (10) and insert pump shaft (10) in shaft of clutch (4), making sure key engages keyway of clutch shaft.
- F Install pump (5) on support (8) with two screws (6) and two new lockwashers (7).

**NOTE**

Do steps G and H for vehicles 487 and above. For vehicles 1-486 go to step I.

- G Install cover assembly (17) on clutch (4).
- H Install four new seals (18, 19) using sealant adhesive (item 5, Appx D) to bond seals to clutch (4) and cover assembly (17). Close all holes and gaps with sealant.
- I Install two elbows (2) in ports of pump (5).
- J Install hydraulic line (3) in port connection of clutch (4).
- K Connect two hydraulic lines (1) to elbows (2).

## BACKUP HYDRAULIC PUMP ASSEMBLY V-BELT: ALINEMENT AND TENSION ADJUSTMENT





## Section V HAND PUMP ASSEMBLY AND SELECTOR VALVE

### HAND PUMP ASSEMBLY AND SELECTOR VALVE: REMOVAL AND INSTALLATION

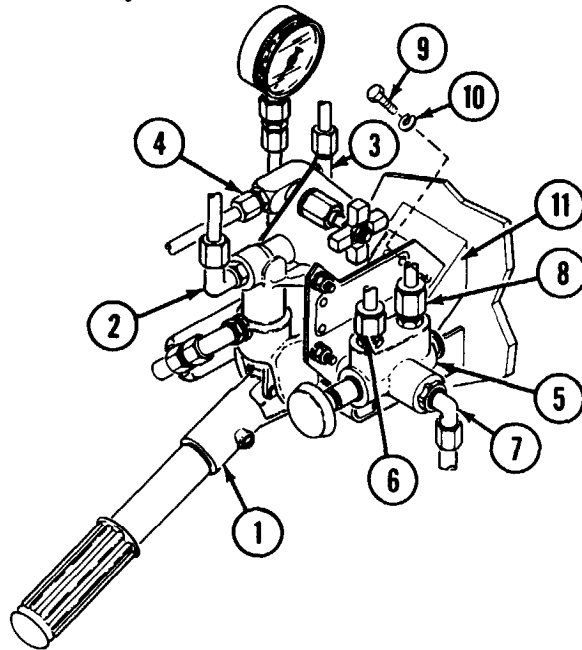
#### INITIAL SETUP

##### Materials/Parts:

Pipe sealant, (item 57, Appx D)  
Nonhygroscopic tape (item 61, Appx D)

##### General Safety Instructions:

Make sure all systems are shut down and MASTER switch is OFF.  
Hydraulic fluid may be HOT.



#### CAUTION

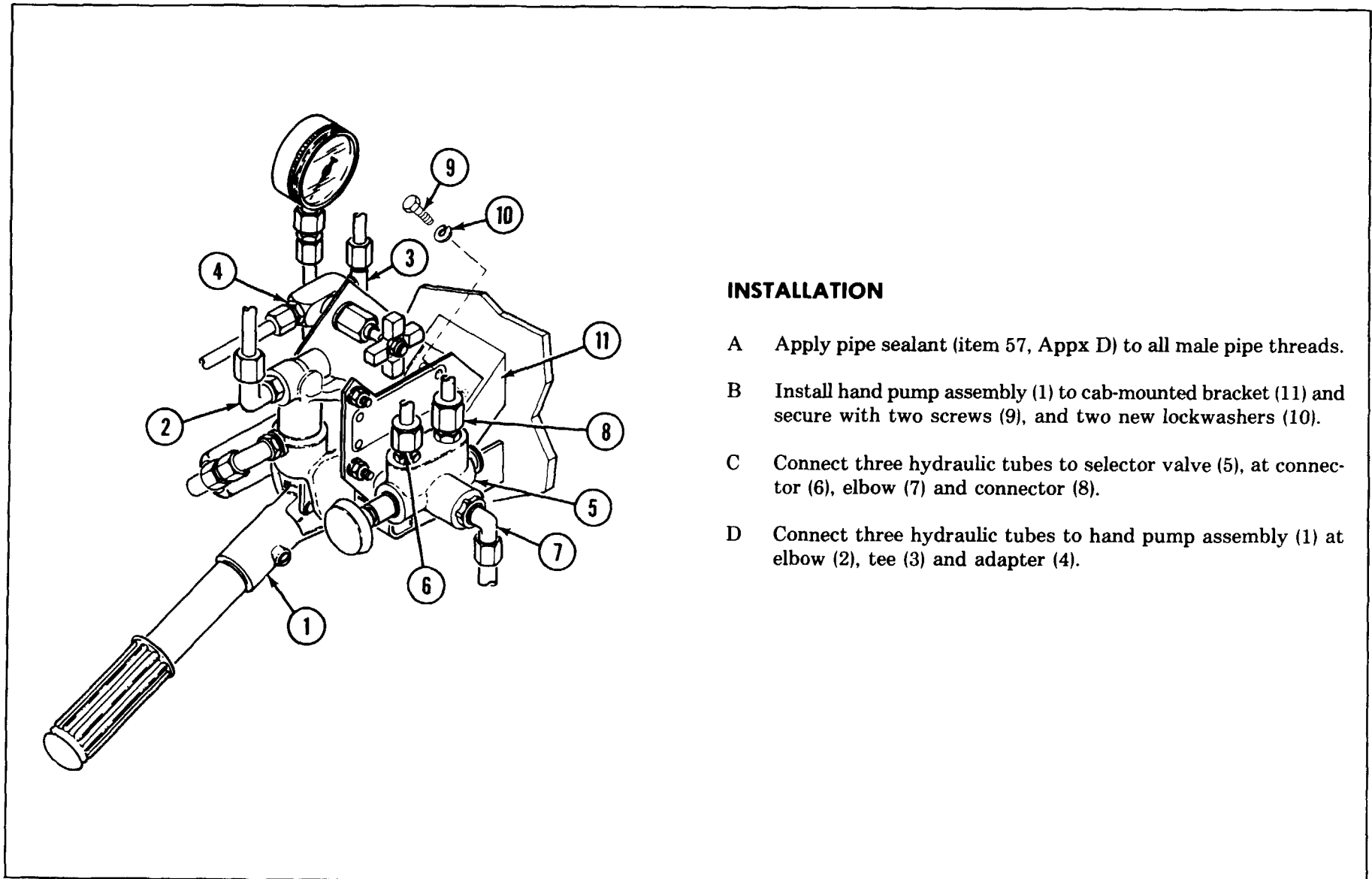
Take necessary precautions to prevent entry of contaminants into hydraulic system. Hydraulic lines and ports should be capped immediately after disconnecting lines to avoid entry of contaminants into system.

#### NOTE

Do not perform removal procedures until backup hydraulic gage has been checked visually. Gage must show 0 psi.

#### REMOVAL

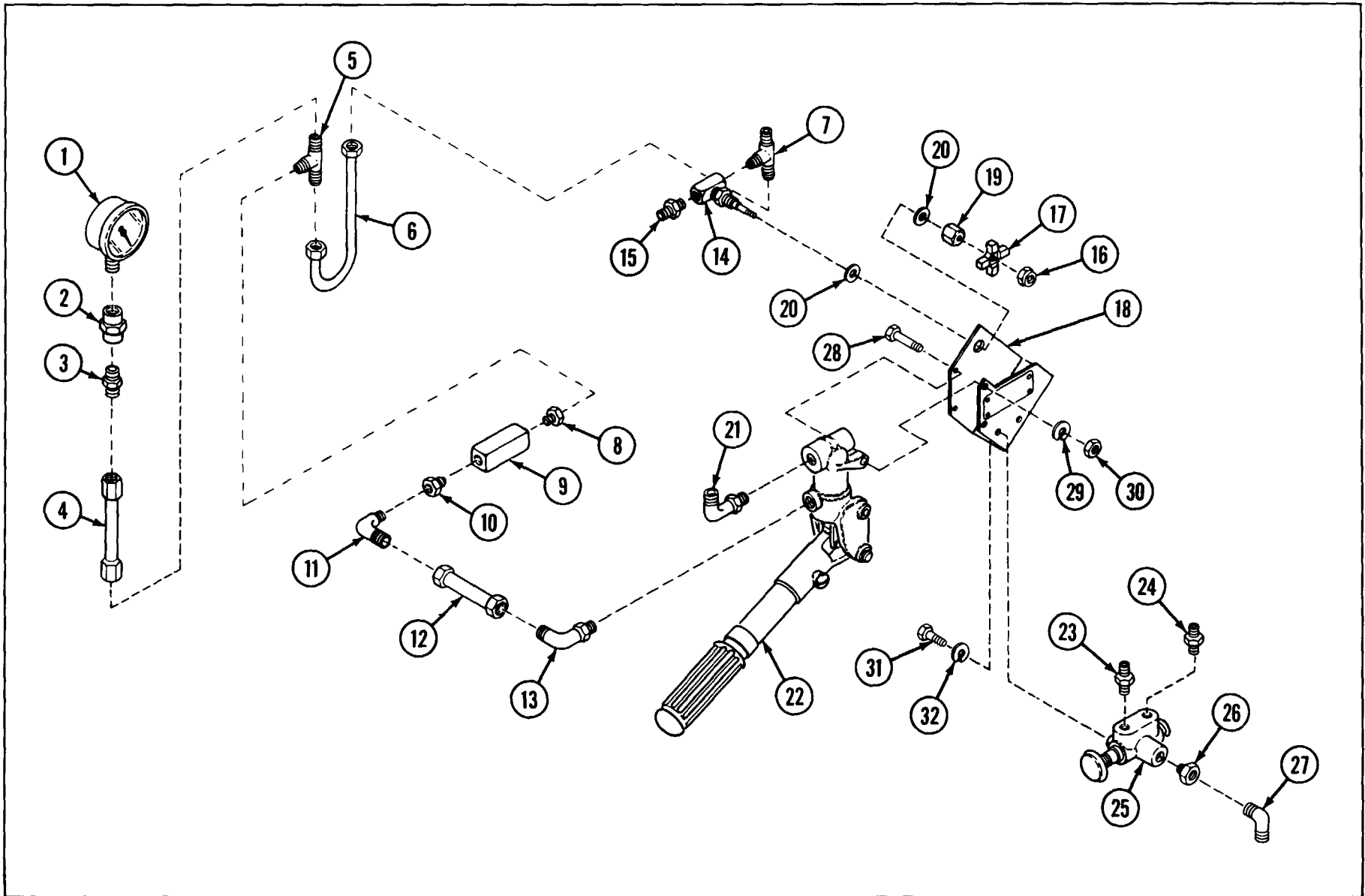
- A Disconnect three hydraulic tubes from hand pump assembly (1) at elbow (2), tee (3) and adapter (4).
- B Disconnect three hydraulic tubes to selector valve (5) at connector (6), elbow (7) and connector (8).
- C Remove two screws (9) and two lockwashers (10) that secure hand pump assembly (1) to cab-mounted bracket (11). Discard lockwashers.
- D Seal off all openings to hand pump (1), selector valve (5) and tubing with nonhygroscopic tape (item 61, Appx D).

**HAND PUMP ASSEMBLY AND SELECTOR VALVE: REMOVAL AND INSTALLATION (CONTINUED)****INSTALLATION**

- A Apply pipe sealant (item 57, Appx D) to all male pipe threads.
- B Install hand pump assembly (1) to cab-mounted bracket (11) and secure with two screws (9), and two new lockwashers (10).
- C Connect three hydraulic tubes to selector valve (5), at connector (6), elbow (7) and connector (8).
- D Connect three hydraulic tubes to hand pump assembly (1) at elbow (2), tee (3) and adapter (4).



**HAND PUMP ASSEMBLY AND SELECTOR VALVE: DISASSEMBLY AND ASSEMBLY**



## HAND PUMP ASSEMBLY AND SELECTOR VALVE: DISASSEMBLY AND ASSEMBLY (CONTINUED)

### NOTE

Tag all components for identification at installation.

### DISASSEMBLY

- A Remove gage (1) from connector (2).
- B Remove connector (2), adapter (3) and tube (4) from tee (5).
- C Remove tube (6) from tees (5 and 7).
- D Remove tee (5), reducer (8), check valve (9), reducer (10), elbow (11), tube (12) and elbow (13).
- E Remove tee (7) from valve (14).
- F Remove adapter (15) from valve (14).
- G Remove nut (16) and handle (17) from valve (14).

- H Remove valve (14) from bracket (18) by removing nut (19) and two washers (20).
- I Remove elbow (21) from pump (22).
- J Remove connectors (23 and 24) from selector valve (25).
- K Remove nut (26) and elbow (27) from selector valve (25).
- L Remove hand pump (22) from bracket (18) by removing two screws (28), two lockwashers (29) and two nuts (30).
- M Remove selector valve (25) from bracket (18) by removing two screws (31) and two lockwashers (32).

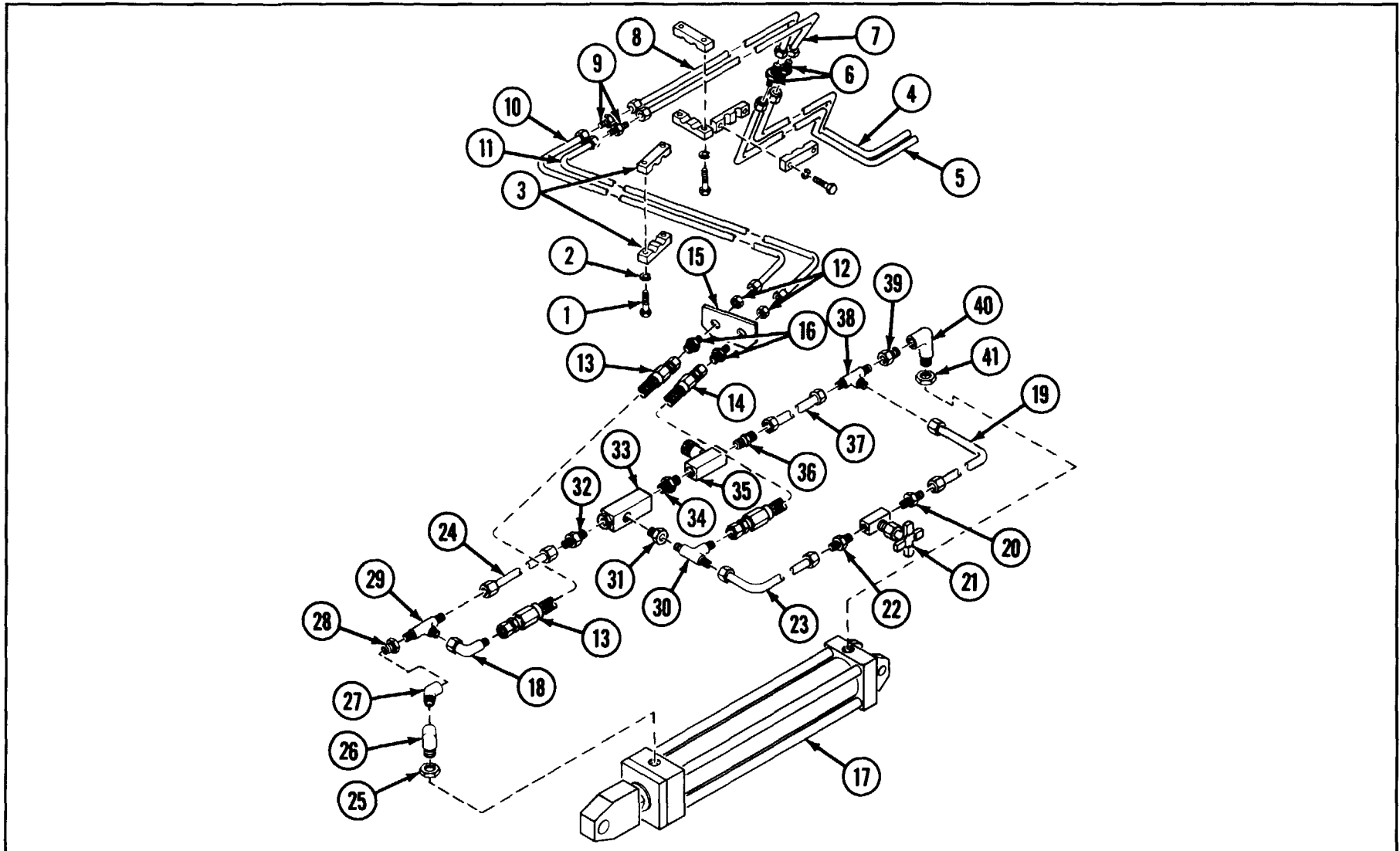
### ASSEMBLY

- A Apply pipe sealant (item 57, Appx D) to all male pipe threads.
- B Reverse disassembly procedures.

TA310778

### Section VI UPPER REAR DOOR HYDRAULIC ACTUATOR

#### UPPER REAR DOOR HYDRAULIC ACTUATOR TUBES, HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION.



**UPPER REAR DOOR HYDRAULIC ACTUATOR TUBES, HOSES AN ASSOCIATED CONNECTING PARTS:  
REMOVAL AND INSTALLATION (CONTINUED)**

**NOTE**

Tag all parts for proper identification at assembly.

**REMOVAL**

**WARNING**

Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid may be HOT.

**CAUTION**

Take necessary precautions to prevent entry of contaminants into hydraulic system. Hydraulic lines and ports should be capped immediately after disconnection lines to avoid entry of contaminants into system.

- A Remove two screws (1) and two lockwashers (2) from each of two clamps (3).
- B Remove clamps (3).
- C Disconnect hoses (4 and 5) from two adapters (6).
- D Remove adapters (6).

**NOTE**

Remove stowage net to gain access to components (p 10-10).

- E Remove two tube assemblies (7 and 8).
- F Remove two adapters (9).
- G Remove two tube assemblies (10 and 11).
- H Remove two nuts (12) and disconnect hose assemblies (13 and 14) from ceiling bracket (15).

- I Remove two nipples (16) from hose assemblies (13 and 14).

**NOTE**

If necessary, remove actuator (17) if maintenance procedure requires complete disassembly (p 9-30).

- J Remove two hose assemblies (13 and 14).
- K Remove elbow (18).
- L Remove tube assembly (19), adapter (20), valve (21), adapter (22) and tube assembly (23) as an assembly (24). Remove tube assembly (24), elbow (26 and 27), adapter (28) and tee (29) as an assembly. Separate components if necessary.
- M Loosen tube assembly (24). Loosen locknut (25) and turn elbow (26) to disconnect tube assembly (24). Remove tube assembly (24), elbows (26 and 27), adapter (28) and tee (29) as an assembly. Separate components if necessary.
- N Remove tee (30) and adapters (31).
- O Remove adapter (32), pilot check valve (33), adapter (34), flow control valve (35), connector (36), tube assembly (37), tee (38), adapter (39) and elbow (40).
- P Remove nut (41) from elbow (40).

**INSTALLATION**

- A Install control valve (35) with metered flow arrow pointing toward rear of vehicle.
- B Install pilot check valve (33) with free flow arrow pointing toward front of vehicle.
- C Apply pipe sealant (item 57, Appx D) to all male pipe threads.
- D Reverse removal procedures.

## Section VII AMMUNITION HANDLING EQUIPMENT (AHE)

## STACKER HYDRAULIC TUBING, HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION

**WARNING**

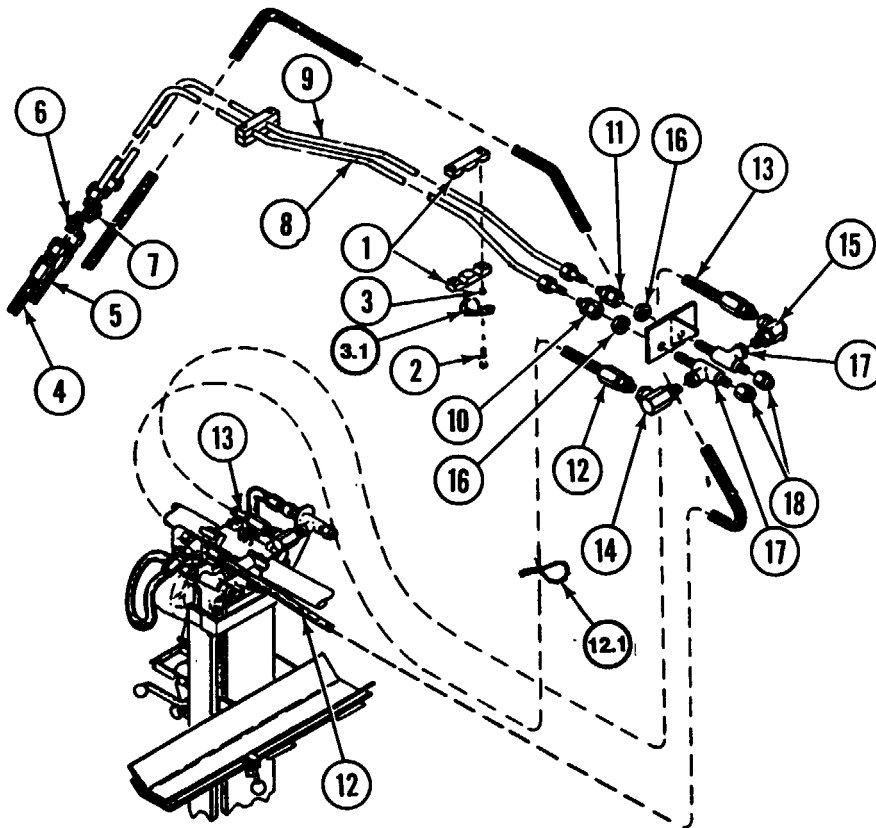
Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid may be HOT.

**CAUTION**

Take necessary precautions to prevent entry of contaminants into hydraulic system. Hydraulic lines and ports should be capped immediately after disconnecting lines to avoid entry of contaminants into system.

**NOTE**

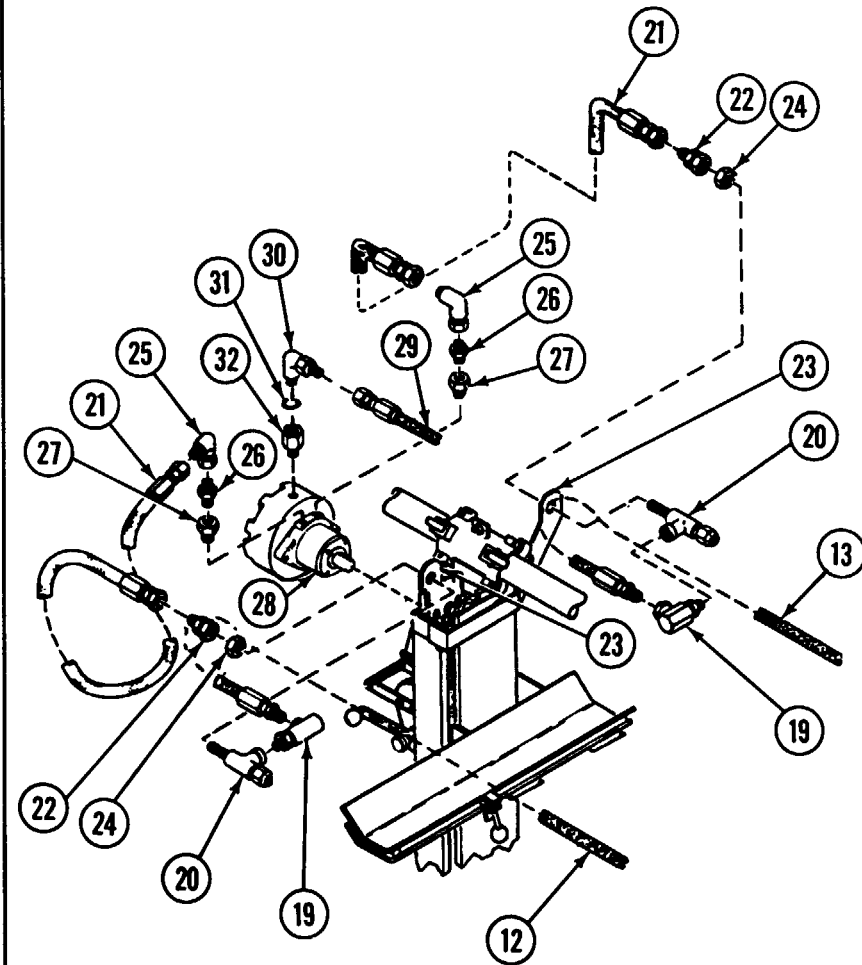
Tag all hydraulic components for identification at installation.

**REMOVAL**

- A Remove two clamps (1) by removing four screws (2), four lockwashers (3), and loop clamp (3.1). Discard lockwashers.
- B Disconnect hoses (4 and 5) from nipples (6 and 7). Remove nipples (6 and 7) from tube (8 and 9).
- C Disconnect tubes (8 and 9) from reducers (10 and 11). Remove reducers (10 and 11).
- D Remove tiedown straps (12.1) from hose (12). Disconnect hoses (12 and 13) from elbows (14 and 15). Remove elbows (14 and 15).

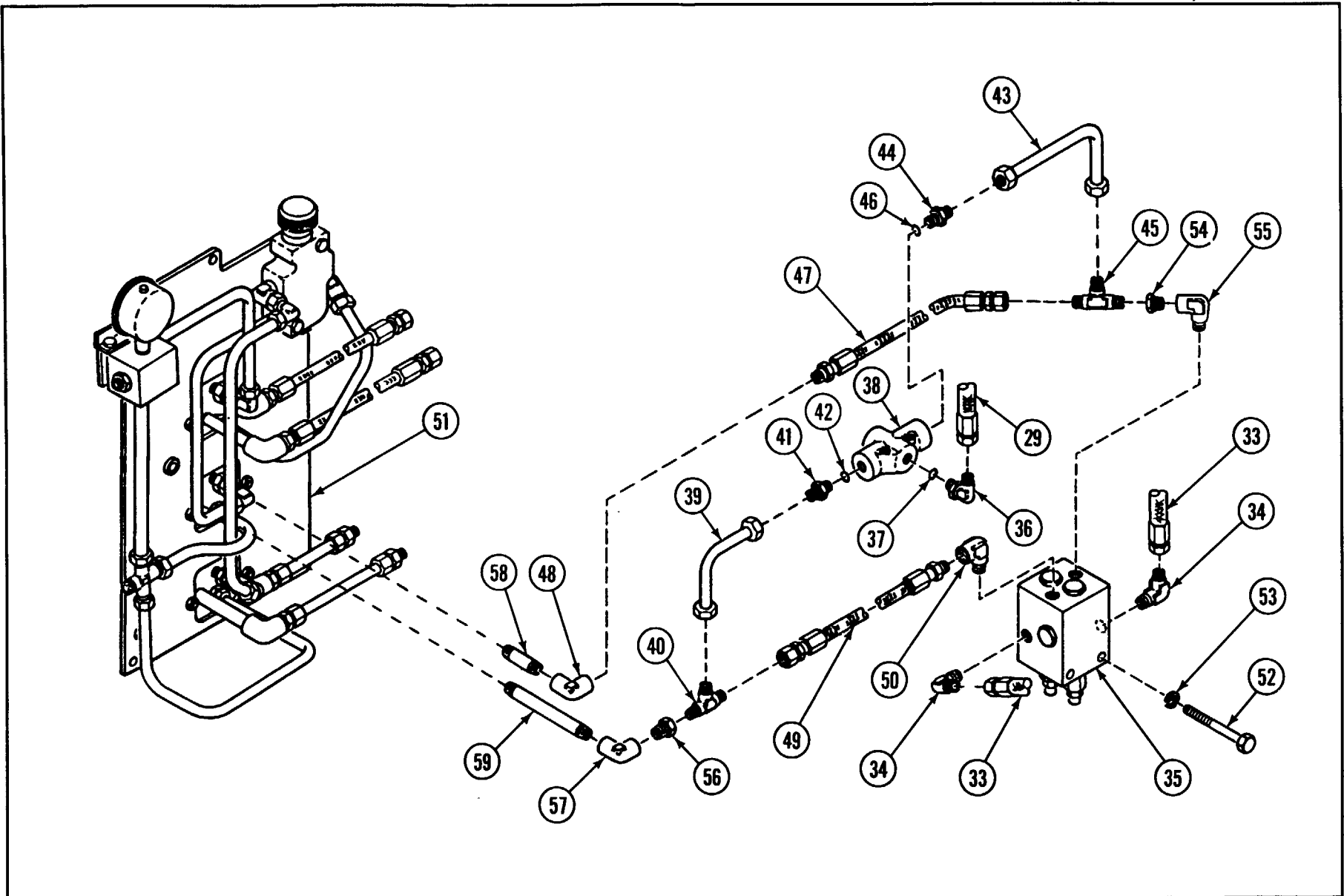


STACKER HYDRAULIC TUBING, HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION (CONTINUED)



- E Remove two nuts (16), two tees (17), and two caps (18).
- F Disconnect hoses (12 and 13) from elbows (19).
- G Remove elbows (19) from tee fittings (20).
- H Disconnect two hoses (21) from two reducers (22).
- I Remove two reducers (22).
- J Disconnect two tee fittings (20) from stacker assembly bracket (23) by removing two nuts (24).
- K Remove two hoses (21), two elbows (25), two adapters (26), and two reducers (27) from hydraulic motor assembly (28).
- L Disconnect hose (29) from elbow (30). Remove elbow (30), packing (31) and expander (32) from hydraulic motor assembly (28). Discard packing. If replacing hose (29), remove loop clamp securing hose to clamp (p 13-32).

STACKER HYDRAULIC TUBING. HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION (CONTINUED)



## STACKER HYDRAULIC TUBING, HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION (CONTINUED)

- M Disconnect two hoses (33) from elbows (34). Remove elbows (34) from counterbalance valve (35).
- N Disconnect hose (29) from elbow (36). Remove elbow (36) and packing (37) from shuttle valve (38). Discard packing.
- O Disconnect tube (43) from adaptex (44) and tee (45). Remove adapter (41) and packing (42) from shuttle valve (38). Discard packing.
- P Disconnect tube (43) from adapter (44) and tee (45). Remove adapter (44) and packing (46) from shuttle valve (38). Discard packing.
- Q Disconnect hose (47) from tee (45) and elbow (48).
- R Disconnect hose (49) from elbow (50) and tee (40).
- S Remove counterbalance valve (35) by removing two screws (52) and two lockwashers (53). Discard lockwashers.
- T Remove tee (45), bushing (54) and elbows (50 and 55) from counterbalance valve (35).
- U Remove tee (40) and bushing (56) from elbow (57).
- V Remove elbows (48 and 57) from nipples (58 and 59).
- W Remove nipples (58 and 59) from back of hydraulic control panel (51).

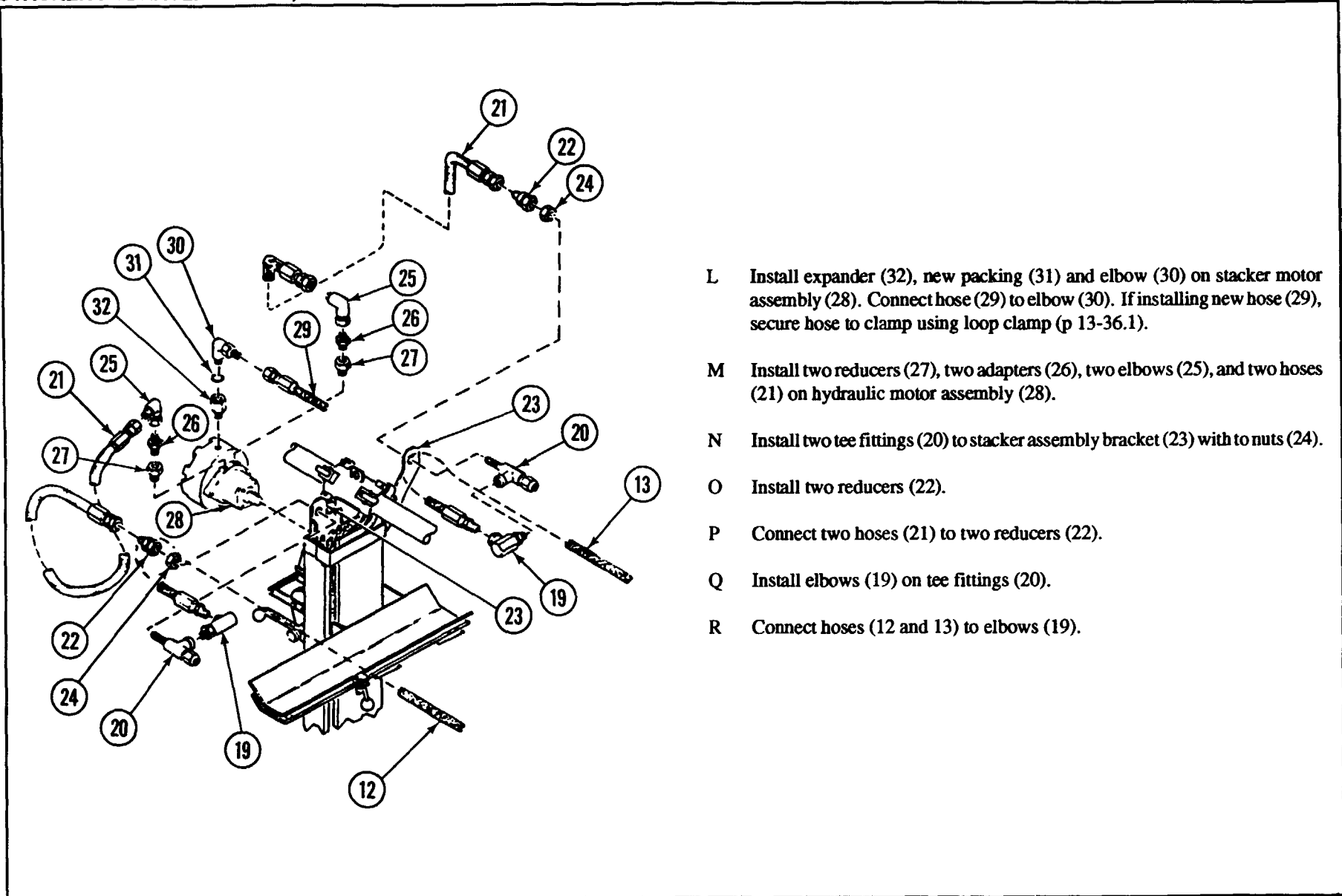
### INSTALLATION

#### NOTE

Apply pipe sealant (item 57, Appx D) to all male pipe threads prior to installation.

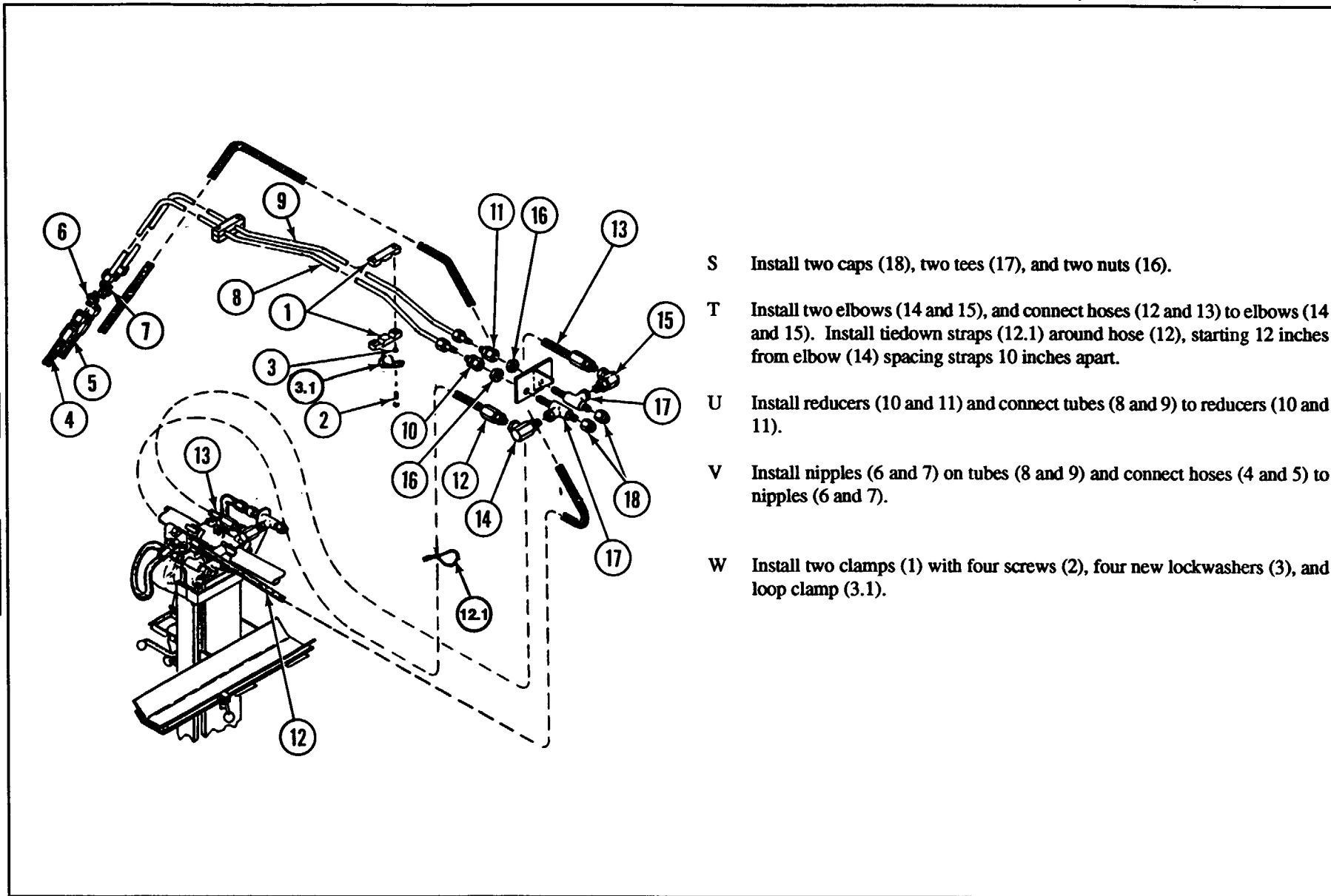
- A Install nipples (58 and 59) to back of hydraulic control panel (51).
- B Install elbows (48 and 57) on nipples (58 and 59).
- C Install busing (56) and tee (40) on elbow (57).
- D Install elbows (50 and 55), bushing (54) and tee (45) on counterbalance valve (35).
- E Install counterbalance valve (35) with two screws (52) and two new lockwashers (53).
- F Connect hose (49) to elbow (50) and tee (40).
- G Connect hose (47) to tee (45) and elbow (48).
- H Install new packing (46) and adapter (44) on shuttle valve (38). Connect tube (43) to adapter (44) and tee (45).
- I Install new packing (42) and adapter (41) on shuttle valve (38). Connect tube (39) to adapter (41) and tee (40).
- J Install new packing (37) and elbow (36) on shuttle valve (38). Connect hose (29) to elbow (36).
- K Install two elbows (34) on counterbalance valve (35). Connect two hoses (33) to two elbows (34).

## STACKER HYDRAULIC TUBING, HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION (CONTINUED)



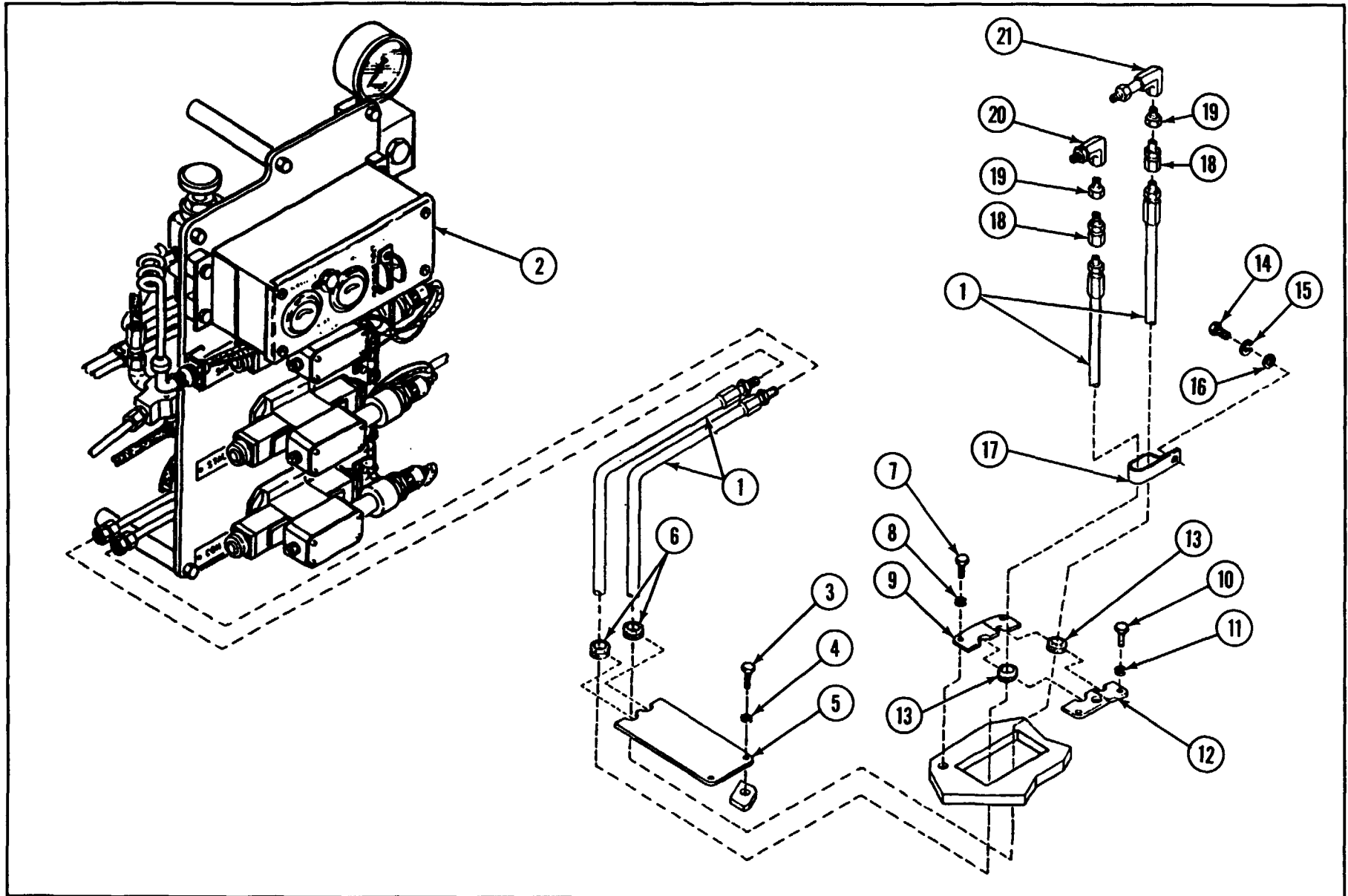
- L Install expander (32), new packing (31) and elbow (30) on stacker motor assembly (28). Connect hose (29) to elbow (30). If installing new hose (29), secure hose to clamp using loop clamp (p 13-36.1).
- M Install two reducers (27), two adapters (26), two elbows (25), and two hoses (21) on hydraulic motor assembly (28).
- N Install two tee fittings (20) to stacker assembly bracket (23) with to nuts (24).
- O Install two reducers (22).
- P Connect two hoses (21) to two reducers (22).
- Q Install elbows (19) on tee fittings (20).
- R Connect hoses (12 and 13) to elbows (19).

STACKER HYDRAULIC TUBING, HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION (CONTINUED)



- S Install two caps (18), two tees (17), and two nuts (16).
- T Install two elbows (14 and 15), and connect hoses (12 and 13) to elbows (14 and 15). Install tiedown straps (12.1) around hose (12), starting 12 inches from elbow (14) spacing straps 10 inches apart.
- U Install reducers (10 and 11) and connect tubes (8 and 9) to reducers (10 and 11).
- V Install nipples (6 and 7) on tubes (8 and 9) and connect hoses (4 and 5) to nipples (6 and 7).
- W Install two clamps (1) with four screws (2), four new lockwashers (3), and loop clamp (3.1).

CONVEYOR HYDRAULIC HOSES AND FITTINGS: REMOVAL AND INSTALLATION



## CONVEYOR HYDRAULIC HOSES AND FITTINGS: REMOVAL AND INSTALLATION (CONTINUED)

### WARNINGS

Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid maybe HOT.

Do not perform removal procedures until backup hydraulic gage has been checked visually. Gage must show 0 psi.

### CAUTION

Cap hydraulic lines and ports immediately after disconnecting lines, to avoid entry of contaminants into system.

### REMOVAL

- A Disconnect two hose assemblies (1) from hydraulic control panel (2).
- B Remove two screws (3), two lockwashers (4), plate (5) and two grommets (6) from crew compartment floor. Discard lockwashers.
- C Remove two screws (7), two lockwashers (8) and plate (9) from crew compartment floor. Discard lockwashers.
- D Remove two screws (10), two lockwashers (11), plate (12) and two grommets (13) from crew compartment floor. Discard lockwashers.
- E Remove one screw (14), one lockwasher (15), one flat washer (16) and strap (17). Discard lockwasher.

- F Disconnect hose assemblies (1) from two adapters (18) and remove from vehicle.
- G Remove two adapters (18) from two bushings (19).
- H Remove two bushings (19) from elbows (20 and 21).
- I Remove elbows (20 and 21) from hydraulic motor.

### INSTALLATION

- A Install elbows (20 and 21) in hydraulic motor.
- B Install two bushings (19) in elbows (20 and 21).
- C Install two adapters (18) in two bushings (19).
- D Connect hose assemblies (1) to two adapters (18).
- E Install strap (17) to secure hose assemblies to conveyor pedestal, with one screw (14), one new lockwasher (15) and one flat washer (16).
- F Position two grommets (13) and plates (9 and 12) where hose assemblies (1) pass through crew compartment floor. Secure plate (9) with two screws (7) and two new lockwashers (8). Secure plate (12) with two screws (10) and two new lockwashers (11).
- G Position plate (5) and two grommets (6) where hose assemblies pass through crew compartment floor and secure plate with two screws (3) and two new lockwashers (4).
- H Install two tube assemblies (1) on hydraulic control panel (2).

## Section VIII AUXILIARY POWER UNIT (APU) COMPARTMENT

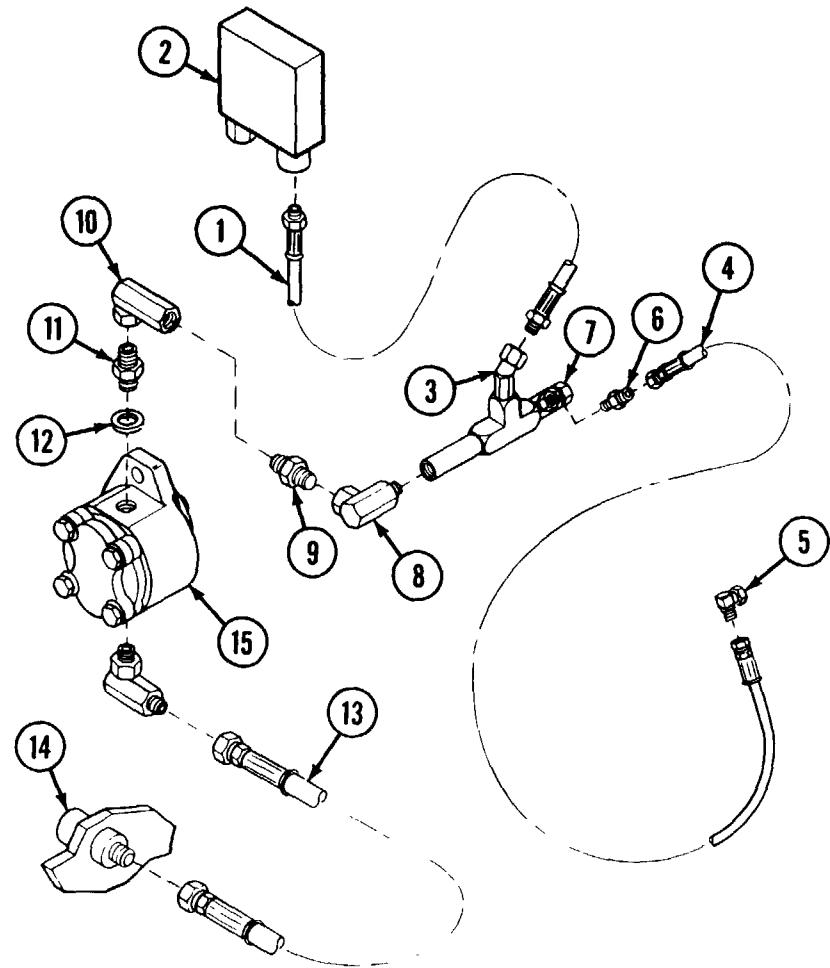
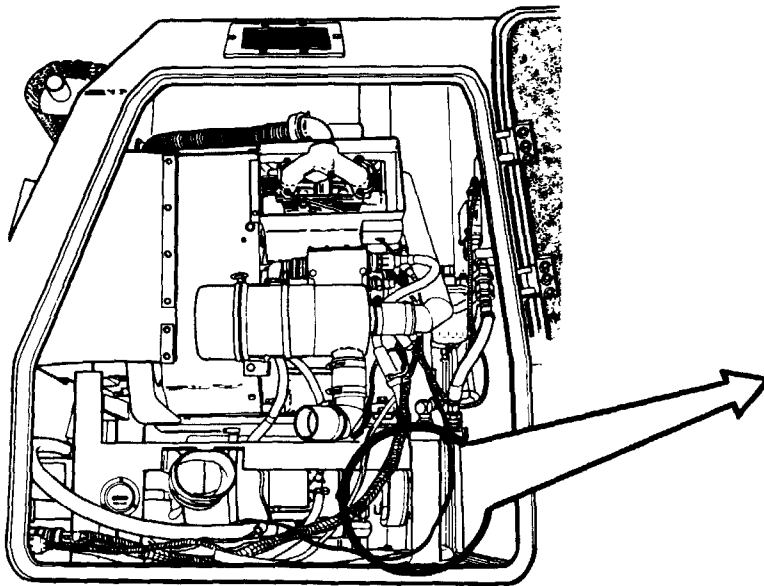
## COMPARTMENT HYDRAULIC HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION

**INITIAL SETUP**Parts/Materials:

Pipe sealant (item 57, Appx D)

Equipment Condition:

Plenum box removed (p 13-15)





## COMPARTMENT HYDRAULIC HOSES AND ASSOCIATED CONNECTING PARTS: REMOVAL AND INSTALLATION (CONTINUED)

---

### WARNING

Make sure all systems are shut down and MASTER switch is OFF. Hydraulic fluid maybe HOT.

---

---

### CAUTION

Hydraulic lines and ports should be capped after disconnecting lines to avoid entry of contaminants into system.

---

### REMOVAL

- A Disconnect hose (1) from pressure switch (2) and elbow (3).
- B Disconnect hose (4) from elbow (5) and adapter (6).
- C Remove elbow (5) from APU wall coupling.
- D Remove adapter (6) from valve (7).

### NOTE

APU must be removed to perform steps E through I (see p 13-1).

- E Remove elbow (8) from nipple (9).

- F Remove nipple (9) from elbow (10).
- G Remove elbow (10) from adapter (11).
- H Remove preformed packing (12). Discard packing.
- I Disconnect hose (13) from APU bulkhead nipple (14) and adapter (15).

### INSTALLATION

- A Apply pipe sealant (item 57, Appx D) to all male pipe threads.
- B Connect hose (13) to APU bulkhead nipple (14) and adapter (15).
- c Install new preformed packing (12).
- D Install elbow (10) on adapter (11).
- E Install nipple (9) on elbow (10).
- F Install elbow (8) on nipple (9).
- G Install adapter (6) on valve (7).
- H Install elbow (5) in APU wall coupling.
- I Connect hose (4) to elbow (5) and adapter (6).
- J Connect hose (1) to pressure switch (2) and elbow (3).



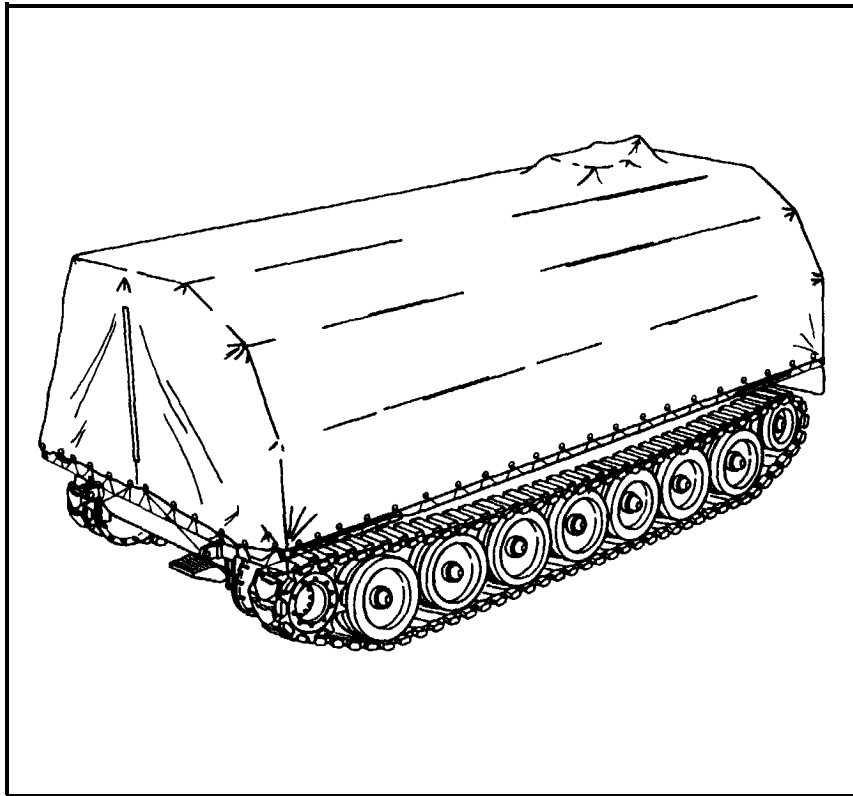
## CHAPTER 17 REPROCESSING AND COMBAT LOADING OF VEHICLE

---

### Section I REPROCESSING THE VEHICLE

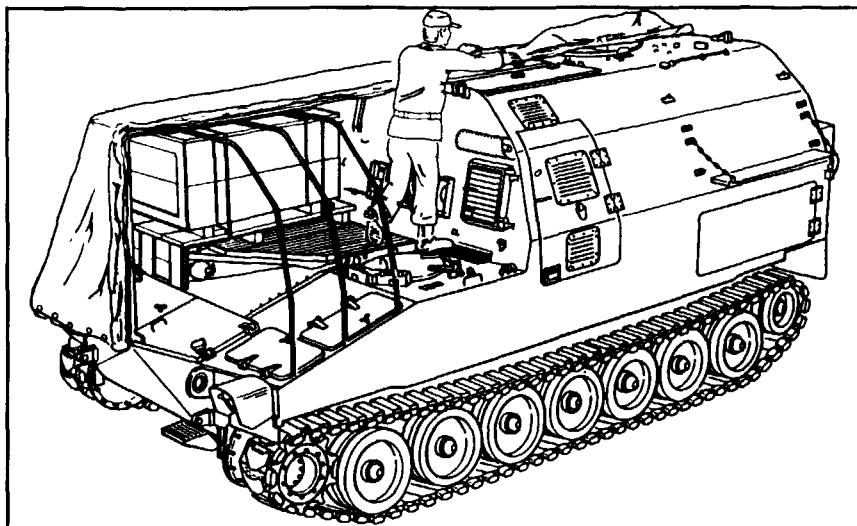
#### GENERAL

This section illustrates and describes removal of the vehicle closure kit, padding from the extending points, basic issue item boxes, tape and hull bottom ventilation screens.

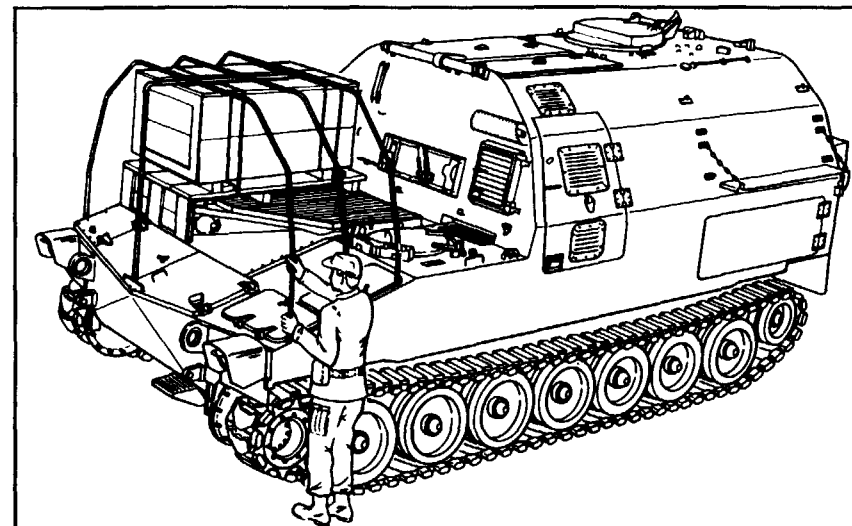


#### CLOSURE KIT: STORAGE AND REMOVAL

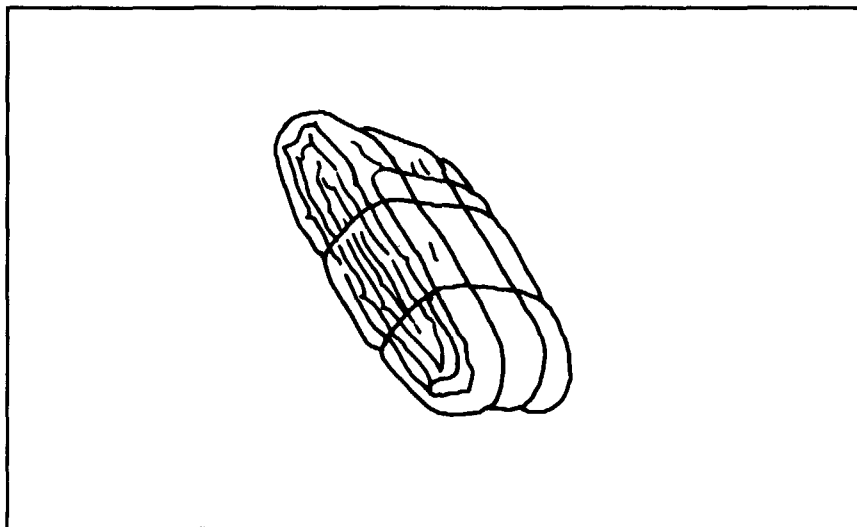
- A Loosen side ropes (two on each side).
- B Remove tiedown ropes at rear of vehicle.
- c Remove corner ropes at rear of vehicle.
- D Untie front corner ropes.
- E Remove vehicle front ropes.
- F Unlace ropes from front eyelets.
- G Unlace ropes from eyelets on front corners.
- H Remove guide ropes from side wire struts.
- I Remove all ropes from eyelets.

**CLOSURE KIT: STORAGE AND REMOVAL (CONTINUED)**

- J** Fold cover on sides to center point of frame assembly, and remove.

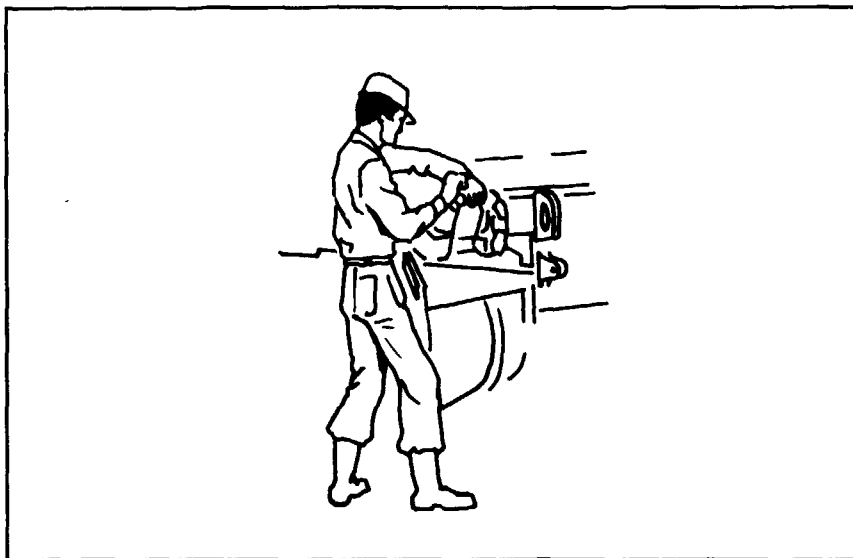


- K** Remove frame assembly.

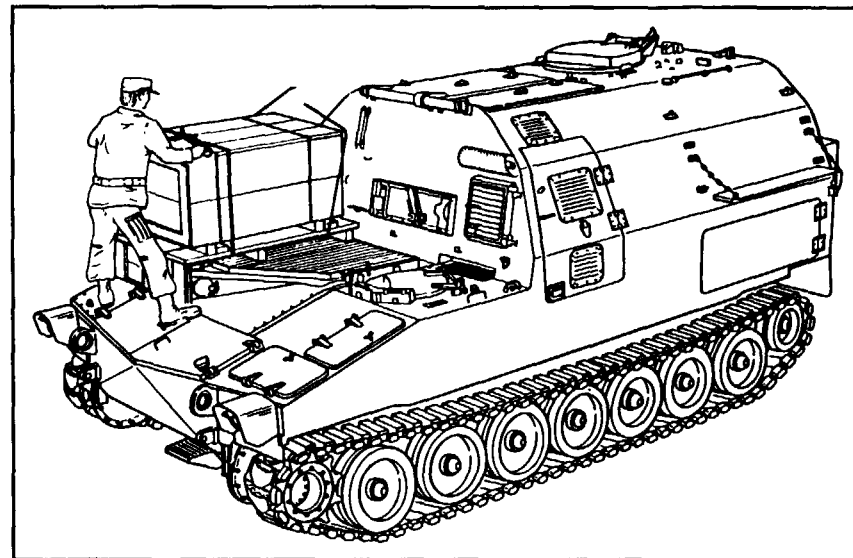


- L** Fold vehicle covers and stow in cab right stowage basket.

**PADDING , BASIC ISSUE ITEM BOXES: REMOVAL**

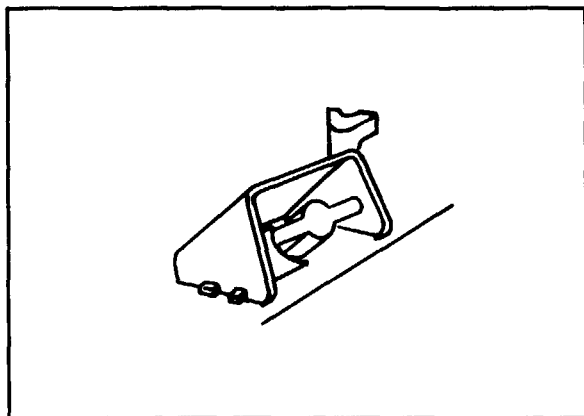


**A Remove padding from extending points.**

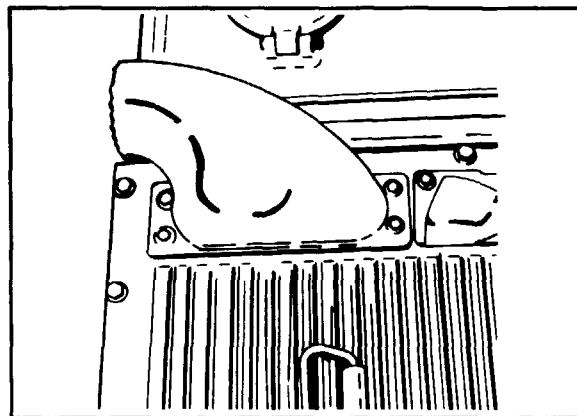


**B Remove basic issue item boxes from hull compartment.**

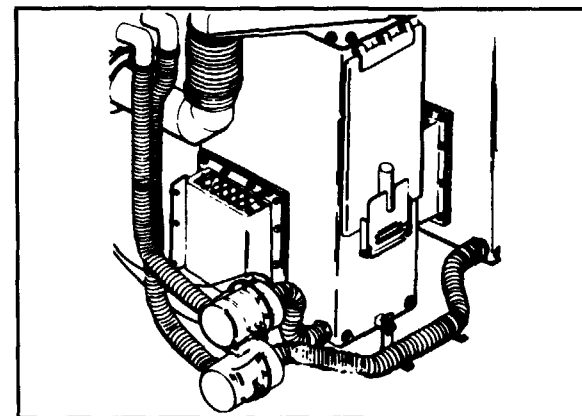
**TAPE: REMOVAL**



**A Remove tape from fire extinguisher bracket.**

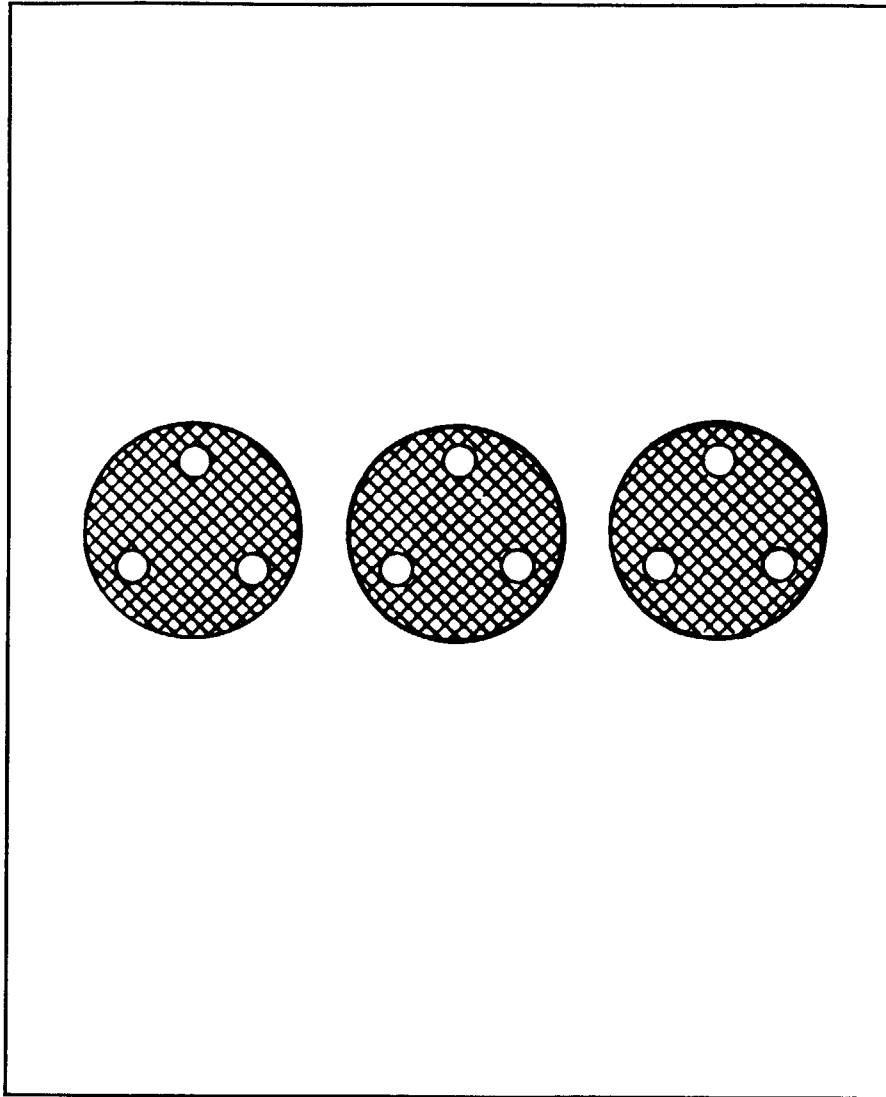


**B Remove tape from engine exhaust outlet.**

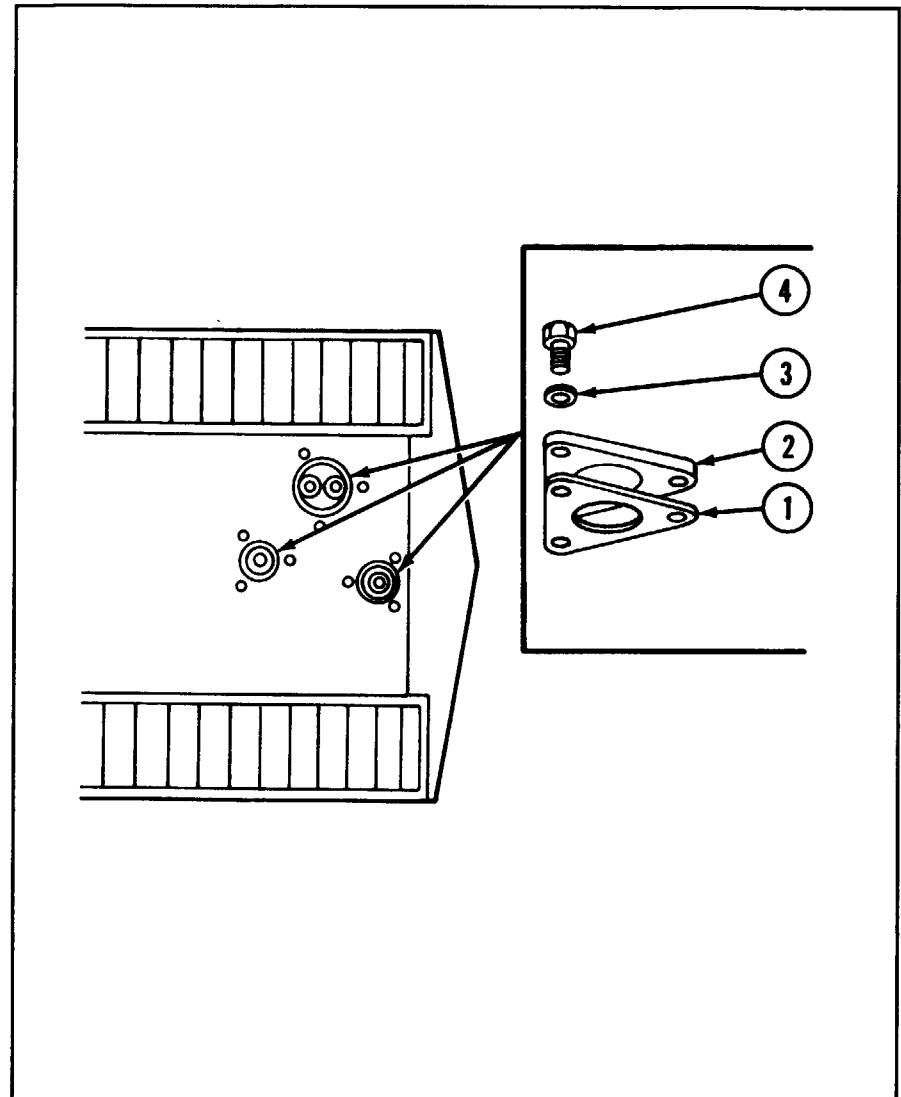


**C Remove sealing tape from air cleaner inlet in crew compartment.**

## VENTILATION SCREEN REMOVAL AND ACCESS COVER INSTALLATION



A Remove three screens from bottom of hull.



B To install access covers, place gasket (1) on hull, and place cover (2) on gasket. Install washer (3) and screw (4).

**Section II REPROCESSING OF BASIC ISSUE ITEMS  
COMBAT LOADING OF VEHICLE**

---

**GENERAL**

The reprocessing of basic issue items and combat loading should be accomplished with crew present.

**REPROCESSING BASIC ISSUE ITEMS**

Open all large containers and inventory contents with packing slip furnished. Record each item missing. Compare contents with TM 9-2350-267-10 Basic Issue Item List to make sure all items are present.

Install fire control equipment as is. No cleaning is required.

Clean all other tools and equipment.

As required, store all basic issue items in their respective vehicle storage facilities as indicated in TM 9-2350-267-10.

**COMBAT LOADING**

Combat loading of the vehicle is primarily a crew responsibility and should be done as described in TM 9-2350-267-10.





**CHAPTER 18**  
**PREPARATION FOR SHIPMENT, STORAGE AND**  
**DESTRUCTION TO PREVENT ENEMY USE**

---

**Section I SHIPMENT AND STORAGE**

**SHIPPING INSTRUCTIONS**

■ When shipping M992 Carrier, Ammunition, Tracked, the officer in charge of preparing the shipment will be responsible for furnishing the material in serviceable condition, properly cleaned, processed, packaged, and packed. Transport M992 FAASV in accordance with TM 55-2350-267-14.

**REMOVAL OF PRESERVATIVES PRIOR TO SHIPMENT**

Personnel removing vehicle from storage for shipment must not remove preservatives other than to make sure material is complete and serviceable. If preservatives have been removed they must be restored to a prescribed level of preservation prior to shipment.

**ARMY SHIPPING DOCUMENTS**

Prepare all Army shipping documents in accordance with AR 55-355.

**LIMITED STORAGE INSTRUCTIONS**

When received for storage and already processed for domestic shipment by manufacturer, as indicated on DD Form 1397, vehicle will not be reprocessed unless inspection performed on receipt of material reveals corrosion, deterioration, etc.

Upon receipt from manufacturing facilities, if processing data on tag indicates that preservation has been rendered ineffective by operation or by freight shipping damage, completely process vehicle in accordance with MIL-H-46709.

Vehicle to be prepared for administrative storage must be given limited technic-at inspection and processed as prescribed on DD Form 1397. The results of the inspection and classification will be entered on DA Form 2404.

**RECEIVING INSPECTION**

Immediately upon receipt of vehicle for storage, it must be inspected and serviced as prescribed. Perform systematic inspection. Replace or repair all missing or broken parts. If repairs are beyond scope of unit, and material will be inactive for and appreciable length of time, place material in limited storage and attach tags specifying repairs needed. The report of these conditions will be submitted by the unit commander for action by an ordnance maintenance unit.

**SHIPMENT AND STORAGE (CONTINUED)**

When material is inactive for a limited time (not to exceed 90 days), process in accordance with TM 740-90-1.

Prepare DD Form 6 for all shipments received in damaged or otherwise unsatisfactory condition due to deficiencies in preservation packaging, marking, handling, loading, or storage, and for apparently excessive preservation.

Preferred storage site for vehicle is in dry covered sheds. When it is necessary to stem material outdoors protect it against the elements as prescribed in SB 740-1 and TM 743-200.

**INSPECTION DURING STORAGE**

Perform visual inspection periodically to determine general condition. If corrosion is found, remove it and clean, paint and treat vehicle with prescribed preservatives.

**NOTE**

Touch-up painting will be in accordance with TM 43-0139.

**REMOVAL FROM LIMITED STORAGE**

If vehicle is not shipped or issued upon expiration of limited storage period, process as applicable in accordance with MIL-H-46709.

If vehicle to be shipped will reach its destination within limited storage period, it need not be reprocessed when removed from storage, unless necessary because of anticipated in transit weather conditions.

When vehicle is to be placed into service, immediately deprocess in accordance with instructions on DD Form 1397.

**LOADING**

---

**CAUTION**

Height and width of vehicle, when prepared for rail transportation, must not exceed limitations prescribed for particular railroad lines. Whenever possible, local transportation officers must be consulted about limitations of particular railroad lines to be used for movement in order to avoid delays, dangerous conditions or damage to equipment.

---

When vehicle is shipped by rail, every precaution must be taken to see that it is properly loaded, blocked and securely fastened to flatcar floor.

Inspect flatcar prior to loading. Make sure it is in suitable condition to carry loads safely.

## SHIPMENT AND STORAGE (CONTINUED)

Prepare flatcar for loading by removing debris, previous blocking, nails and other obstructions. Inspect flatcar for loose or broken floor planks. If found unsatisfactory, reject car for use.

If suitable hoisting equipment, permanent loading ramps and handling equipment are not available for loading or unloading material, improvised runways, ramps and spanning platforms can be constructed.

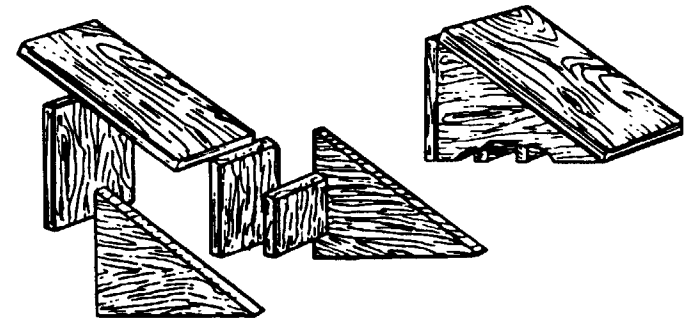
Loading must be governed by the capacity and length of flatcars available at time of shipment, as well as requirements of bill of lading and shipping instructions.

Position vehicle as far from brake wheel end of flatcar as space permits. Provide minimum clearance of 4 inches below and 6 inches above, behind, and to each side of flatcar brake wheel.

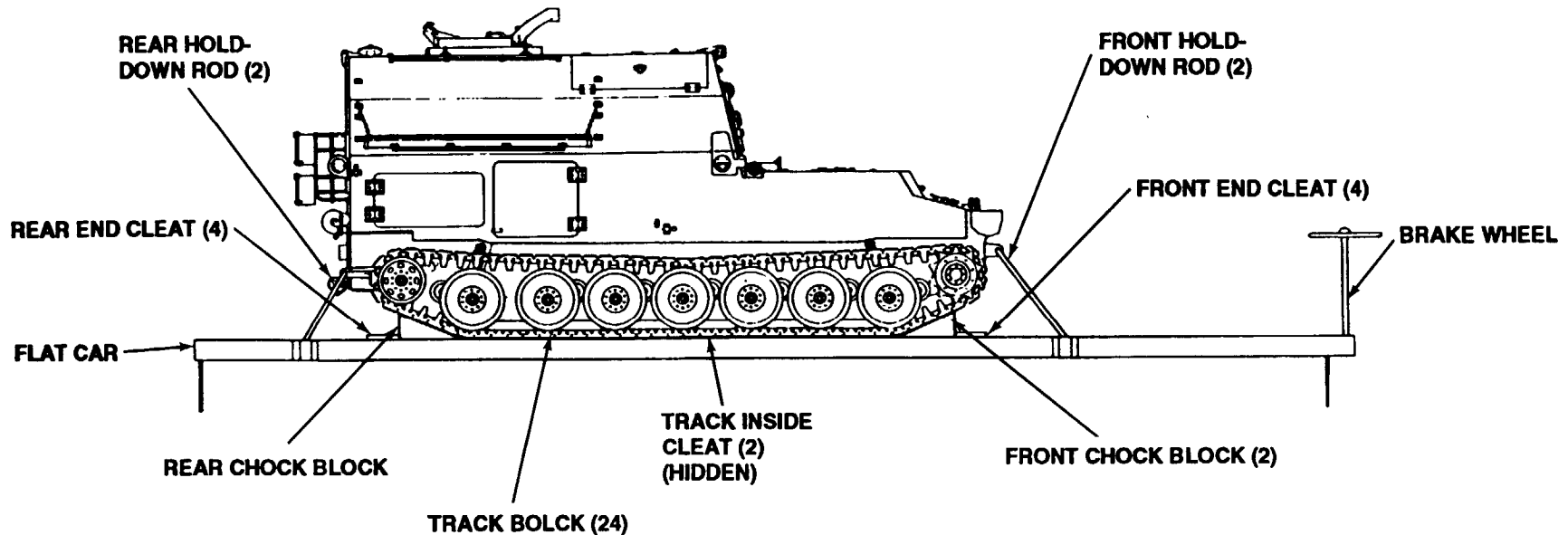
### BLOCKING

General. All blocking instructions specified herein are minimum and are in accordance with the Association of American Railroads pamphlet Section No. 6 (Rule Governing the Loading of Department of Defense Material on Open-Top Cars). Additional blocking may be added at discretion of officer in charge.

**CHOCK BLOCK.** Construct for chock blocks: Two to fit angle between tracks and car deck at front of vehicle, and two to tit angle between track and car deck at rear of vehicle. Using 1-5/8-inch-thick lumber, make chock blocks 12 inches wide and minimum of 18 inch high. Nail pieces together with 20-penny nails. Place one chock block against front of each track, and one against rear of each track. Toenail check blocks to car floor with 40-penny nails.



**CHOCK BLOCK-EXPLODED AND ASSEMBLED VIEWS**

**SHIPMENT AND STORAGE (CONTINUED)**

**BLOCKING AND TIEDOWN FOR THE M992 FAASV ON A GENERAL PURPOSE FLATCAR. TRANSPORT IN ACCORDANCE WITH TM 55-2350-267-14.**

**END CLEATS.** Place on cleat (2 x 4 x 12 inches, eight required) against end of each chock block and secure to car deck with 30-penny nails. Place upper cleat on top of lower cleat and secure to lower cleat with 30-penny nails.

**TRACK INSIDE CLEATS.** Place cleats (6 in. x 6 in. x 14 ft, two required) along inside of left and right tracks. Nail to car floor with 30-penny nails, staggered approximately every inches.

**SIDE CLEATS.** Locate one cleat (2 x 3 x 10 inches, eight required) against inside and outside of each chock block. Secure each to car deck with 20-penny nails.

**TRACK BLOCKS.** Cut blocks (24 required) to conform with shape of roadwheels. Locate blocks on tracks between wheels. Place wedges under block to ensure snug fit against wheels, if required. Nail 2 in. x 4 in. cleat (length to suit) across top blocks to prevent track blocks from sliding out of position.

**HOLD-DOWN RODS.** Thread both ends of rod (1-1/4-inch diameter, length to suit). Insert one end of rod through lifting eye on front of vehicle. Bend rod and insert other end through stake pocket on opposite side of flatcar. Repeat operation with second rod and lifting eye on front of vehicle. Repeat operation with two rods on rear of vehicle.

TRANSPORTATION. When transporting the M992 FAASV on the following vehicles: M87D Semitrailer, M172A1 Semitrailer and other transportation vehicles, transport in accordance with TM 55-2350-267-14.

### **Section II DESTRUCTION ON MATERIAL TO PREVENT ENEMY USE**

Destruction of vehicle armament and equipment when subject to capture or abandonment in a combat zone, will be undertaken only when unit commander decides such action is necessary.

Read TM 750-244-6 for information on destruction of all mechanical equipment. In general, destruction of essential parts, followed by burning, will usually be sufficient to render vehicle, armament and equipment useless. Time is usually critical.

Material must be damaged so that it cannot be restored to usable condition by either repair or cannibalization. If lack of time or personnel prevents destruction of all parts, give priority to destruction of parts hardest to replace. It is important the same parts be destroyed on all units to prevent construction of one complete unit from several damaged ones.



## APPENDIX A REFERENCES

---

### GENERAL

The following is a listing of publications applicable to Organizational Maintenance for materiel covered in this technical manual. Appropriate indexes should be consulted frequently for latest applicable changes, revisions, and additions.

### REGULATIONS

AR 310-25 ..... Dictionary of United States Army Terms  
AR 310-50 ..... Authorized Abbreviations and Brevity Codes  
AR 385-40 ..... Accident Reporting and Records  
AR 385-55 ..... Prevention of Motor Vehicle Accidents  
AR 55-355 ..... Military Traffic Management Regulation  
AR 746-1 ..... Packaging of Army Materiel for Shipment and Storage  
AR 75-1 ..... Malfunctions Involving Ammunition and Explosives

### MANUALS

DA PAM 738-750 ..... The Army Maintenance Management System  
(TAMMs)  
DA PAM 25-30 ..... Consolidated Index of Army Publications and Blank  
Forms  
FM 5-25 ..... Explosives and Demolition  
TM 10-277 ..... Chemical, Toxicological and Missile Fuel Handlers  
Protective Clothing  
TM 11-5830-340-12 ..... Operator's and Organizational Maintenance Manual  
Including Repair Parts and Special Tools Lists:  
Intercommunication Set AN/VIC-1(V)

TM 11-6625-366-15 ..... Operator's Organizational, DS, GS and Depot  
Maintenance Manual: Multimeter TS-352 B/U  
FM 3-5 ..... Nuclear, Biological and Chemical (NBC)  
Decontamination  
TM 38-230-1 ..... Packaging of Materiel: Preservation (VOL I)  
TM 38-230-2 ..... Packaging of Materiel: Packing (VOL II)  
TM 43-0139 ..... Painting Instructions for Field Use  
TM 5-4210-218-13&P.. Halon 1301 Recharging System  
TM 55-2350-267-14 ..... Transportability Guidance Carrier, Cargo, Full-Track, 7-Ton,  
Ammunition, M992/(2350-01-110-4660)  
TM 750-116 ..... Organizational, Direct Support and General Support  
Maintenance Procedures for Purging and Charging  
of Fire Control Instruments  
TM 750-244-3 ..... Procedures for Destruction of Equipment to Prevent  
Enemy Use  
TM 9-1005-213-10 ..... Operator's Manual: Machine Gun, .50-cal. Browning,  
M2, Heavy Barrel, Flexible  
TM 9-1005-213-25 ..... Organizational, DS, GS, and Depot Maintenance Manual  
Including Repair Parts and Special Tools Lists:  
Machine Gun, .50-cal. Browning, M2, Heavy  
Barrel, Flexible

- TM 9-1005-213-25 . . . . . Organizational, DS, GS and Depot Maintenance Manual Including Repair Parts and Special Tools Lists: Machine Gun, .50-cal. Browning, MZ, Heavy Barrel, Flexible
- TM 9-1005-245-14 . . . . . Operator, Organizational, DS and GS Maintenance Manual Including Repair Parts and Special Tool Lists (Including Depot Maintenance Repair Parts and Special Tools): Various Machine Gun Mounts and Combinations Used on Tactical and Armored Vehicles
- TM 9-2350-267-10 . . . . . Operator's Manual: Carrier, Ammunition, Tracked M992 (2350-01-110-4660)
- TM 9-2350-267-20P . . . . . Organizational Maintenance Repair Parts and Special Tools List: For Hull, Powerpack, Drive Controls, Tracks, Suspension and Associated Components Carrier, Ammunition, Tracked M992/(2350-01-110-4660)
- TM 9-2350-200-2A . . . . . Organizational, Direct Support and General Support Maintenance Manual: Standards for Inspection and Classification of Tracks, Track Components and Solid-Rubber Tires (FSC 2530)
- TM 9-6140-200-14 . . . . . Operator and Organizational Maintenance Manual for Lead-Acid Storage Batteries

- TM 3-6665-225-12 . . . . . Operator's and organizational Maintenance Manual: Alarm, Chemical Agent, Automatic, Portable
- TM 9-2540-205-24&P.. Personnel Heater Maintenance
- TM 9-4910-571-12&P . . Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List, Simplified Test Equipment for Internal Combustion Engines (STE-ICE) (NSN 4910-00-124-2554)

**BULLETINS**

- SB 740-1 . . . . . Storage and Supply Activities: Covered and Open Storage
- SB 740-98-1 . . . . . Storage, Serviceability Standard Tracked Vehicle, Wheeled Vehicles and Component Parts
- TB SIG 222 . . . . . Solder and Soldering
- TB 43-0210 . . . . . Nonaeronautical Equipment Army Oil Analysis Program (AOAP)
- TB 750-651 . . . . . Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems

**LUBRICATION ORDER**

- LO 9-2350-267-12 . . . . . Carrier, Ammunition, Tracked M992 (2350-01-110-4660)



# APPENDIX B MAINTENANCE ALLOCATION CHART

## Section I. INTRODUCTION

Paragraph Title	Page No.,
Explanation of Columns in Remarks, Section IV . . . . .	B-4
Explanation of Columns in the MAC, Section II . . . . .	B-2
Explanation of Columns in Tool and Test Equipment Requirements, Section III . . . . .	B-3
General . . . . .	B-1
Maintenance Functions . . . . .	B-1

### B-1. GENERAL.

- a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.
- b. The Maintenance Allocation Chart (MAC) in section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.
- c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.
- d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

### B-2. MAINTENANCE FUNCTIONS

- a. INSPECT. To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination (e.g. by sight, sound, or feel).
- b. TEST. To verify serviceability by measuring the mechanical, pneumatic, hydraulic or electrical characteristics of an item and comparing those characteristics with prescribed standards.

**B-2. MAINTENANCE FUNCTIONS (Con't).**

- c. SERVICE. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontamination, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.
- d. ADJUST. To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.
- e. ALINE. To adjust specified variable elements of an item to bring about optimum or desired performance.
- f. CALIBRATE. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
- g. REMOVE/INSTALL. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
- h. REPLACE. To remove an unserviceable item and install a serviceable counterpart, in its place. "Replace" is authorized by the MAC and is shown as the 3d position code of the SMR code.
- i. REPAIR. The application of maintenance services, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.
- j. OVERHAUL. That maintenance effort (service/action) required to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.
- k. REBUILD. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

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

- a. COLUMN 1, GROUP NUMBER. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00."

### **B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II (Con't).**

- b. COLUMN 2, COMPONENT/ASSEMBLY. Column 2 contains the name 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.
- d. COLUMN 4, MAINTENANCE CATEGORY. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

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, TMDE, and support equipment required to perform the designated function.
- f. COLUMN 6, REMARKS. This column shall, when applicable, contain a lettercode, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

### **B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.**

- a. COLUMN 1, REFERENCE CODE. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.
- b. COLUMN 2, MAINTENANCE CATEGORY. The lowest level of maintenance authorized to use the tool or test equipment.
- c. COLUMN 3, NOMENCLATURE. Name or identification of the tool or test equipment.

**B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III (Con't).**

- d. COLUMN 4, NATIONAL STOCK NUMBER. The national stock number of the tool or test equipment.
- e. COLUMN 5, TOOL NUMBER. The manufacturer's part number

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

- a. COLUMN 1, REFERENCE CODE. The code recorded in Column 6, Section II.
- b. COLUMN 2, REMARKS. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
00	Power Pack	Remove Replace		4.5 4.5					
01	<b>ENGINE</b>								
0100	Engine and Container Assembly	Inspect Test Service Adjust Replace Repair Overhaul	1.0	0.5 0.2 3.0	8.0	20.5	**	23,24,25,26,27, 28,29,30,31,32, 33,36	
	Mount, Engine Base Assembly	Inspect Replace Repair		0.1 1.0 2.0				34	
0106	Filter, Oil, Engine	Inspect Service Replace Repair		0.1 0.1 0.2 0.3					
0109	Drive Assembly, Accessory	Replace Repair		0.5	1.0				
03	<b>FUEL SYSTEM</b>								
0302	Pump and Hanger Assembly (Fuel Tanks, Left/Right)	Inspect Test Replace Repair Overhaul		0.2 0.2 0.2	1.0 1.5				

Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
0304	Pump, Fuel, Electrical	Inspect		0.2					
		Test		0.2					
		Replace		0.09					
		Repair		0.10					
		Overhaul		1.0					
	Fuel Pump, Engine	Inspect			0.1				
		Replace			1.0				
		Repair			1.0				
	Air Cleaner Assembly	Inspect	0.1						
		Service	0.1						
Replace				1.0					
Repair				1.0					
Air Cleaner Fan Assembly	Inspect	0.1							
	Replace			1.0					
	Repair				1.0				
Motor, Direct Current	Replace				0.5				
	Repair				1.5				
0306	Upper and Lower Tank, Fuel	Inspect	0.2						
		Service	0.3						
		Replace			10.0				
0309	Filter, Fuel (Primary and Secondary)	Repair				6.0			
		Inspect	0.1						
		Service	0.2						
		Replace		0.3					
		Repair		0.5					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
0312	Controls and Linkage, Accelerator and Throttle	Adjust Replace		0.2 2.0				35	
	Shut-off Control Fuel, Engine	Inspect Replace Repair		0.1 0.7 0.5					
04	<b>EXHAUST SYSTEM</b>								
0401	Pipe, Exhaust	Inspect Replace	0.2	0.5					
05	<b>COOLING SYSTEM</b>								
0501	Radiator	Inspect Service Replace Repair Overhaul	0.2 0.1	1.5	1.0	8.0			
	Aeration Detector Assembly and Wiring Harness	Replace Repair		1.0 0.5					
	Surge Tank	Inspect Replace Repair	0.2	0.3	0.5				
0502	Engine Coolant Shroud	Inspect Replace Repair	0.2	2.2	0.5				

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
0503	Water, Manifolds, Heaters, Thermostats, and Housing Gaskets	inspect	0.1					37, 38	
		Replace		0.3					
0505	Engine Cooling Fan Drive Assembly	Inspect	0.1						
		Service			0.2				
		Replace			3.5				
	Engine Cooling Vane Axial Fan	Repair			3.0				
		Inspect	0.1						
		Replace			0.3				
06	<b>ELECTRICAL SYSTEM</b>								
0601	Generator/Alternator	Repair			0.3				
		Inspect			0.3				
		Test			0.2				
		Replace			1.0				
		Repair				0.3			
	Voltage/Regulator	Overhaul			2.4				
0602		Adjust			1.0				
	Rectifier Assembly	Replace			0.3				
		Inspect			0.3				
		Test			0.3				
		Replace			0.5				
		Repair				1.0			
0603	Engine Electrical Starting Assembly	Repair							
		Inspect			0.2				
		Test			0.5				
		Replace			1.0				
		Repair				2.0			
		Overhaul			3.0				



**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
0607	Driver's Portable Instrument Panel Assembly	Inspect Test Replace Repair	0.1	0.3					
	Driver's Portable Instrument Panel Wiring Harness	Replace Repair		1.0	0.8				
	Accessory Control Box Assembly	Replace Repair		0.04 1.0					
	Accessory Control Box Cable Assembly	Replace Repair		1.0 0.5					
	Accessory Control Box Wiring Harness	Replace Repair		1.0 0.5					
	Accessory Control Box Power Lead	Replace Repair		1.0 0.5					
	Accessory Control Box Ventilator Blower Switch Lead Assembly	Replace Repair		0.5 0.5					
	Accessory Control Box Assembly, Electrical Leads	Replace Repair		0.5 0.5					
	Circuit Breaker Panel and Chemical Agent Detector Circuit Breaker	Replace Repair		0.05 0.5					
	Circuit Breaker Panel Hull Electrical	Replace Repair		0.05 0.5					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
	Hydraulic Control Gage Panel Assembly	Replace Repair		0.5 1.0					
	Low Coolant Indicator Light Assembly and Wiring Harness	Replace Repair		0.3 0.5					
	Hydraulic Control Gage Panel Wiring Harness	Replace Repair		1.0 0.5					
	Driver's Instrument Panel Assembly	Inspect Replace Repair	0.02	0.08 0.15					
	Driver's Instrument Panel Support Assembly	Replace Repair		0.5 0.5					
	NBC Power Control Box	Inspect Replace Repair	0.03	0.10 0.17					
	NBC Power Control Box Harness Assemblies	Replace Repair		0.5 0.5					
	Stacker Control Switch Box Assembly	Inspect Replace Repair	0.01	0.1 0.04					
	STE/ICE Resistor Box Assembly	Replace Repair		0.5	1.0				
	STE/ICE Control Box Wiring Harness	Replace Repair		0.5 0.5					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
0608	APU Control Box Assembly	Replace Repair		0.22 1.0					
	APU Control Box High Air Temperature and Low Oil Pressure Indicator Lights	Inspect Test Replace Repair	0.1	0.2 0.2 0.2					
	APU Control Box Wiring Harness Assembly	Replace Repair		1.0 0.5					
	Parking Brake Light Switch Assembly	Replace Repair		0.3 0.2					
0609	Dome Light Assembly	Replace Repair		0.5 0.2					
	Headlight Assembly and Mount Assembly	Adjust Replace Repair		0.5 0.5 0.5					
	Service Taillight, Stop and Blackout Taillight	Replace Repair		0.5 0.5					
	Headlight Resilient Mount Wiring Harness	Replace Repair		0.5 0.5					
	Master Warning Light Assembly	Replace Repair		0.5 0.5					
0610	Powerplant Pressure and Temperature Switches	Test Replace		0.2 0.3					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
0612	Battery, Storage	Inspect	0.1						
		Test		0.2					
		Service	0.1	0.2					
		Replace		1.0					
		Repair			1.0				
	Cable, Battery	Inspect	0.1						
0613	Engine Electrical Ground Lead	Test		0.2					
		Service	0.1	0.2					
		Replace		0.6					
		Repair		0.3					
		Replace		0.3					
	Repair		0.5						
	Wiring Harness, Hull Front	Inspect	0.3						
		Test		2.0					
		Replace		15.0					
		Repair		12.0					
		Inspect		0.2					
	Wiring Harness, Engine Disconnect Bracket to Driver's Bulkhead	Test		1.0					
		Replace		2.0					
		Repair		2.0					
		Inspect		0.2					
Wiring Harness, Engine Bracket to Driver's Bulkhead	Test		1.0						
	Replace		2.0						
	Repair		2.0						
	Inspect		0.2						
Powerpack Wiring Harness	Replace		2.0						
	Repair		2.0						
	Inspect		0.2						

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
	Rectifier-to-Regulator Wiring Harness	Inspect Replace Repair		0.1 0.5 1.0					
	Passive Night Viewer Cable Assembly	Inspect Replace Repair	0.1	0.1 0.1					
	Battery to Driver's Bulkhead Cable Assembly	Inspect Replace Repair		0.1 1.5 1.0					
	Bulkhead to Portable Instrument Panel Wiring Harness	Inspect Replace Repair		0.1 0.8 0.5					
	Cargo Compartment Power Cable Assembly (12330252)	Inspect Replace Repair		1.0		12.0 15.0			
	Cargo Compartment Wiring Harness	Inspect Replace Repair		0.5 1.0 2.0					
	Driver's Bulkhead to APU Voltage Regulator Wiring Harness	Inspect Replace Repair		0.1 0.5 1.5					
	Driver's Instrument Panel Wiring Harness	Replace Repair		0.5 1.0					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
	Lead, Flame Heater Master Switch	Replace Repair		0.5 1.0					
	Air Cleaner Blower Motor Relay Lead Assembly	Replace Repair		0.5 1.0					
	Circuit Breaker to "Y" Connector Lead Assembly	Replace Repair		0.5 1.0					
	NBC Air Purifier Filter/Blower Wiring Harness	Replace Repair		1.0 0.5					
	Chemical Agent Detector Wiring Harness	Replace Repair		1.0 0.5					
	Rear NATO Intervehicular Slave Connector	Inspect Replace Repair	0.08	0.5 1.0					
	Front NATO Intervehicular Slave Connector	Inspect Replace Repair	0.08	0.5 1.0					
	NATO Intervehicular Slave Connector Ground Lead	Inspect Replace Repair		0.1 0.1 0.3					
	NBC Power Control Box to NBC Heaters and Air Purifier Wiring Harness	Inspect Replace Repair		0.05 0.2 0.5					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
	Conveyor Control Switch to Override Switch Cable Assembly	Inspect Replace Repair	0.1	0.1 0.2					
	Accessory Control Box to AFES Harness, AFES Relays and Personnel Ventilation Blower Wiring Harness	Inspect Replace Repair		0.2 2.0 2.0					
	Stacker Control Switch Cable Assembly	Inspect Replace Repair	0.1	0.1 0.1					
	Stacker Solenoid to Stacker Disconnect Wiring Harness	Inspect Replace Repair	0.1	0.1 0.3					
	APU Control Box to APU Voltage Regulator Cable Assembly	Inspect Replace Repair		0.1 0.4 2.0					
	Intervehicular Ground Cable Assembly	Inspect Replace Repair		0.1 0.1 0.3					
	Hull Lighting, Accessory Control Box, Personnel Heater, Air Cleaner Blower Wiring Harness	Inspect Replace Repair		0.1 0.8 0.7					
	Telephone Wiring Harness	Inspect Replace Repair	0.1	0.2 0.1					

Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
0616	Trailer Receptacle and Cable Assembly	Inspect Replace Repair		0.1 0.1 1.5					
	STE/ICE Wiring Harness DCA to Driver's Bulkhead	Inspect Replace Repair		0.1 0.5	0.1				
	STE/ICE Wiring Harness, Driver's Bulkhead to Engine Disconnect	Inspect Replace Repair		0.1 0.1 0.1					
	STE/ICE Wiring Harness, Engine Transducers to Engine Electrical Disconnect	Inspect Replace	4.0	0.3					
	SCEA Cable Assembly	Replace Repair		0.1	0.2				
	OFSA Cable Assembly	Replace Repair		0.1	0.1				
	AFES Engine Cable Assembly	Replace Repair		0.1	0.8				
	Crew Fire Extinguisher Cable Assembly	Replae Repair		0.5	0.4				
	AFES Circuit Breaker Cable Assembly	Replace Repair		0.5 0.4					
	Personnel Ventilating Air Duct Fan (NOAAH)	Test Replace Repair		0.2 0.5	1.0				



**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
07	<b>TRANSMISSION</b>								
0705	Transmission Shift Control Linkage and Neutral Safety Switch	Inspect Service Adjust Replace Repair	0.2 0.2	0.2 3.6 2.0					
	Transmission Shift Control Quadrant Assembly	Inspect Replace Repair		0.2 1.0 1.0					
0710	Transmission and Shipping Container	Inspect Test Service Adjust Replace Repair Overhaul	0.2 0.2	0.3 0.2	5.0	9.0	2 33	**	
0721	Transmission Supports, Pressure Check Plugs, Oil Screen, Gage Rod and Inspection Plates	Inspect Replace Repair		0.1 2.0		1.0			
08	<b>TRANSFER FINAL DRIVE ASSEMBLY</b>								
0801	Power Transfer and Shipping Container Assembly	Inspect Replace Repair Overhaul	0.1		1.0	2.0		**	

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
12  1201  1206  13  1301  1303	Universal Joint	Inspect Service Replace Repair	0.1 0.1						
	Final Drive With Shipping Container Assembly	Inspect Service Replace Repair Overhaul	0.1 0.1	1.0 1.2 2.5	5.0	2.0	**	1, 3, 4, 5	
	<b>BRAKES</b>								
	Parking Brake Control Linkage and Latch Assembly	Inspect Adjust Replace Repair	0.1	0.2 1.5 1.0					
	Service Brake Control Linkage	Inspect Service Adjust Replace	0.2 0.2	0.5 1.0				39,40	
	<b>WHEELS AND TRACKS</b>								
	Suspension Arms, Hub Assemblies and Roadwheel	Inspect Service Replace Repair Overhaul	0.1 0.2	1.0	2.0	2.1		6,8,10,11,12 14,16,17,18 19,20,21,22	
	Track Adjusting Idler Arm and Hub Assembly Support and Wheels	Inspect Service Replace Repair	0.1 0.2	2.0	3.0				

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
1304	Track Adjuster Assembly	Inspect Adjust Replace Repair	0.1 0.3	1.5 1.0				9, 10	
	Track Drive Sprockets and Hub	Inspect Replace	0.2	2.0					
1305	Double Pin Track Shoe Assembly	Inspect Adjust Replace Repair	1.0 1.0	4.0 1.5				7, 8,13	
14	<b>STEERING</b>								
1401	Steering Control Linkage	Inspect Service Adjust Replace	0.3 0.2	0.2 2.0					
15	<b>FRAME, TOWING ATTACHMENTS, AND DRAWBARS</b>								
1503	Pintle Assembly, Towing	Inspect Service Replace Repair	0.1 0.1	0.5 0.5					
16	<b>SPRINGS AND SHOCK ABSORBERS</b>								
1604	Shock Absorber Suspension	Inspect Replace	0.1	1.0				15	

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
18	BODY AND HULL								
1801	Transmission and Battery Access Doors	Replace Repair		0.5 0.5					
	Engine Compartment Bulkhead Insulation, Shields and Engine Access Cover Assembly	Replace Repair		10.0 1.0					
	Hull Front Plates	Inspect Replace Repair		0.1 0.5 0.5					
	Top Right and Top Left Doors	Replace Repair		0.27 0.23					
	Top Center Door	Inspect Replace Repair	0.02	0.1 0.1					
	Right Side Canister Door	Inspect Replace Repair	0.02	0.20 1.6					
	Left Side Canister Door	Inspect Replace Repair	0.02	0.20 1.6					
	Upper Rear Door Assembly	Inspect Replace Repair	0.02	0.46 0.24					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
1802	Lower Rear Door Assembly with Lock Handle	Inspect Replace Repair	0.02	0.3 0.7					
	Personnel Door	inspect Replace Repair	0.02	0.5 0.7					
	APU Compartment Front Door	Inspect Replace Repair	0.1	0.1 0.2					
	APU Compartment Access Plate and Cap Assembly	Inspect Replace Repair	0.1	0.1 0.5					
	AFES Fire Extinguisher Box	Inspect Replace		0.01 1.0					
	Commander Cupola, Machine Gun Support and Ring Assemblies	Inspect Replace Repair		0.5	0.4 0.2				
	Commander's Cupola Hatch Door	Inspect Replace Repair		0.01	1.0 0.5				
1802	Front Fenders and Retaining Plates	Inspect Replace	0.2	1.0					
1803	Driver's Hatch Cover, Latch and Torsion Bar	Inspect	0.5						
		Service	0.2						
		Replace Repair		1.0 0.1					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
1804	Engine/Crew Hull Floor Plates and Drain Plugs	Inspect Replace	0.1	0.2					
1806	Driver's Seat Assembly	Inspect Replace Repair	0.1	0.1 0.1					
	Commander's Seat	Inspect Replace Repair	0.1	0.1 0.1					
	Right Side Single/Double Crew Seat	Inspect Replace Repair	0.1	0.3 0.1					
	Left Side Single/Double Crew Seat	Inspect Replace Repair	0.1	0.3 0.1					
1808	Right and Left Top Stowage Boxes	Inspect Service Replace Repair	0.1 0.1	0.5 0.5					
	Right and Left Bottom Stowage Boxes	Inspect Service Replace Repair	0.1 0.1	0.5 0.5					
	Pioneer Kit, Towing Cable Straps, Water Can Straps and Track Fixture Strap	Inspect Replace Repair	0.1	0.1	0.1				

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
22	Right and Left Side Duffle Bag Stowage	Inspect Replace Repair	0.1 0.1		0.4			54	
	NBC Stowage Box	Inspect Replace Repair		0.01 0.5 0.5					
	Projectile Rack	Inspect Replace Repair	0.1	1.0	0.5				
	Projectile Rack Canister Stowage Boxes, Braces, and Rack Removal Aid	Inspect Replace Repair		0.1 0.8 0.5					
	Left Rear Top and Bottom Canister Compartment Restraint Bar Assembly	Inspect Replace Repair	0.1	0.1 0.2					
	Right Rear Top and Bottom Canister Compartment Restraint Bar Assembly	Inspect Replace Repair	0.1	0.1 0.2					
	Telephone Cable Reel and Guide with Hand Crank	Inspect Replace Repair		0.01 0.3 0.5					
	<b>BODY, CHASSIS, AND HULL WITH ASSOCIATED ITEMS</b>								
2201	Shroud Assembly	Inspect Replace Repair	0.04 0.2		0.3				

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
2205	Bilge Pump	Inspect Replace Repair		0.2 0.5	1.0				
2207	Personnel Heater Assembly	Inspect Test Service Adjust Replace Repair	0.2	0.2 0.2 0.2 2.0	3.0				
	Personnel Heater Mounting Clamps, Saddle, Ducts, Hoses, Fuel Pumps and Fitter	Inspect Replace Repair	0.2	1.0 1.0					
2210	Data Plates	Inspect Replace	0.2	0.1					
24	HYDRAULIC FLUID SYSTEM								
2400	Conveyor Support Stand	Inspect Replace Repair	0.1	0.3 0.1					
	Conveyor Dead-End Sections and Latch Assemblies	Inspect Replace Repair		0.1 1.0 0.8					
	Conveyor Drive End Section Assembly	Inspect Replace Repair	0.1	1.0 0.3					
	Conveyor Center Section Assembly	inspect Replace Repair	0.1	1.0 0.3					



**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
	Conveyor Take-up End Section Assembly	Inspect Replace Repair	0.1	0.7 0.2					
	Conveyor Subassembly	Inspect Replace Repair	0.1	0.8 0.1					
	Stacker Assembly	Inspect Replace Repair	0.1	0.2 0.1					
	Stacker Manual Winch Assembly	Inspect Replace Repair	0.1	0.2 0.2					
	Stacker Carrier Sliding Tray, Sliding Bars and Sliding Guides	Inspect Replace Repair		0.01 0.5 0.5					
	Stacker Wear Strips, Plate and Bar Assembly	Inspect Replace Repair		0.01 0.5 0.5					
	Stacker Support Assembly	Inspect Replace Repair	0.1	0.3 0.5					
	Hydraulic Reservoir Assembly	Inspect Replace Repair	0.3	0.3 0.1					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
2401	Stacker Hydraulic Brake	Inspect Replace Repair	0.1	0.5	0.2				
	Backup Hydraulic System Clutch Support and Pump Assembly	Inspect Replace Repair		0.4 0.4	1.0				
	Backup Hydraulic System Clutch	Inspect Replace Repair		0.1 0.5	0.3				
	Backup Hydraulic System Hand Pump Assembly and Selector Valve	Inspect Replace Repair		0.1 0.2 0.2					
2402	Hydraulic Control Panel Tube Assemblies, Flow Regulator, and Relief Valve	Inspect Replace Repair	0.1	0.1 0.3					
	Hydraulic Control Panel Directional Valve Assemblies, Subplates and Bracket	Inspect Replace Repair		0.1 0.5 0.5					
	Upper Rear Door Hydraulic Actuator	Inspect Replace Repair	0.1	0.5	1.0				
2406	Hydraulic Filler and Cap, Return Line Filter, Hoses, Suction Ball Valve and Associated Parts	Inspect Replace Repair		0.1 0.5 0.5					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
29	<b>AUXILIARY GENERATOR AND ENGINE AND CONTROLS</b>								
2901	Auxiliary Power Unit Assembly, APU Support Assembly and Resilient Mounts	Inspect Test Service Replace Repair Overhaul		0.5 1.5 1.5 1.2	20.0		40.0	41, 42	
2916	APU Oil Drain Line Extension	Inspect Service Replace		0.1 0.5 0.2				41	
2937	APU Air Cleaner and Air Intake Ducting	Inspect Service Replace Repair	0.1 0.1	0.1 0.1					
2938	APU Fuel Lines and Fittings	Inspect Replace	0.3	0.1					
2941	APU Exhaust Muffler, Pipes and Shield	Inspect Replace	0.3	0.2					
2952	APU Exhaust Cooling Ducts and Engine Sounds	Inspect Replace	0.1	0.6					
2961	APU Generator Air Duct and Plenum	Test Replace		0.3 0.2					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
2963	APU Hydraulic Pressure Switch Assembly	Replace		0.2					
		Repair		0.2					
	APU Cable Assembly	Inspect		0.1					
		Replace		0.2					
	APU High Air Temperature Switch Lead	Inspect		0.1					
		Replace		0.2					
	APU Branched Wiring Harness	Inspect	0.1						
		Replace	0.5						
		Repair	0.8						
	APU Sending Units Wiring Harness (12329650)	Inspect	0.1						
Replace		0.5							
Repair		0.8							
APU Generator Ground Lead	inspect		0.1						
	Replace		0.2						
	Repair		0.2						
APU Hourmeter Wiring Harness	Inspect		0.1						
	Replace		0.4						
	Repair		0.4						
Plunger Assembly, Fuel Shutoff Solenoid	Adjust			1.0					
	Replace			0.8					
	Repair			1.0					
APU Ground Leads	Inspect		0.1						
	Replace		0.2						
	Repair		0.3						

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
33	<b>SPECIAL PURPOSE KITS</b>								
3301	Final Drive Shipping Container	Replace Repair Overhaul			** 2.0	**			
3303	Hose and Cap Assembly	inspect Replace Repair	0.2	0.3	0.3				
	APU Doors	Replace Repair		0.2 0.5					
3307	Ventilation Kit	Replace		0.1					
42	<b>ELECTRICAL EQUIPMENT</b>								
4209	STE/ICE Current Shunt	Inspect Replace		0.1 0.1					
47	<b>WEIGHING AND MEASURING DEVICES</b>								
4701	Tachometer/Speedo- meter Drive Shafts, Adapters and Fittings	Inspect Test Service Replace Repair	0.2	0.5 0.5 1.0 1.0					

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
76	<b>FIRE FIGHTING EQUIPMENT COMPONENTS</b>								
7639	Engine Compartment Test and Alarm (T/A) Panel	Inspect Test Replace Repair Overhaul	0.1	0.1 0.1			* * **		
	Crew Compartment Test and Alarm (T/A) Panels	Inspect Test Replace Repair Overhaul	0.1	0.1 0.1			* * *		
	Fire Extinguisher Bottles	Inspect Test Replace Repair Overhaul	0.1	0.1 0.2	* *				
	Optical Fire Sensing Assembly (OFSA)	Inspect Test Replace Repair Overhaul	0.1	0.1 0.1			** *		
	Crew AFES Standard Control Electronic Amplifier (SCEA)	Inspect Test Replace Repair Overhaul	0.1	0.1 0.2			* *		

**Section II. MAINTENANCE ALLOCATION CHART FOR  
CARRIER, AMMUNITION, TRACKED M992**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Component/Assembly					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
7645	Engine AFES Remote Status Indicator (RSI)	Replace		0.1					
	AFES Manual Discharge Actuator Assembly	Inspect		0.1					
		Replace		1.0					
	Repair		0.5						
91	AFES Bottle Warning Labels	Replace		0.2					
9111	CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL (CBR) EQUIPMENT	Inspect	0.1						
		Replace		0.3					
		Repair			0.1				
9130	NBC Ventilated Face Piece System, M2A2 Air Purifier	Inspect	0.2						
	NBC Ventilated Face Piece System, M3 Electrical Air Air Heater and Adapters	Replace		0.5					
		Repair		0.5					
	NBC Ventilated Face Piece System, M43 NBC Alarm Detector Mounting Bracket	Inspect	0.01						
		Replace		0.5					
		Repair		0.5					

## Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS				
Tool or Test Equipment Number Reference Code	Maintenance Category	Item Name	National Stock Number	Tool Number
		<b>TRANSMISSION</b>		
1	O	<b>BOLT, EYE:</b> Used with sling, 5120-00-034-0875, to remove or install final drive assembly	5306-00-050-0347	MS51937-5 (96906)
2	O	<b>GAGE, PRESSURE, DIAL INDICATING:</b> Used to check engine and transmission oil pressure	4910-00-572-8612	8356176
3	O	<b>PIN, GUIDE:</b> Used to install final drive assembly	5120-00-034-0833	10914195
4	O	<b>SLING, LIFTING, FINAL DRIVE:</b> Used with eyebolt, 5306-00-050-0347, to remove or install final drive assembly	5120-00-034-0875	10914179
5	O	<b>WRENCH, STRAP:</b> Used to aline transmission output shaft and final drive input shaft	5120-00-357-9154	7676003 41-W-3382
		<b>SUSPENSION</b>		
6	O	<b>ADAPTER, MECHANICAL PULLER:</b> Used with puller, 5120-00-557-3615, to remove or install torsion bars	5120-00-322-5953	708370
7	O	<b>FIXTURE, TRACK CONNECTING:</b> Used to disconnect or connect track (with bar)	5120-00-605-3926	8741739



**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS**

<b>TOOL AND TEST EQUIPMENT REQUIREMENTS</b>				
<b>Tool or Test Equipment Number Reference Code</b>	<b>Maintenance Category</b>	<b>Item Name</b>	<b>National Stock Number</b>	<b>Tool Number</b>
8	C	<b>GAGE AND CASE ASSEMBLY:</b> Roadwheel wear plate	4910-00-034-0874	10911904
9	C	<b>GAGE, SPROCKET TOOTH:</b> Used to check wear on sprocket teeth	5120-00-757-2745	10941458
10	C	<b>GAGE, WEAR SPROCKET:</b> Used to check wear on final drive sprocket	4910-00-908-7344	10954499
11	O, F	<b>HANDLE REPLACER:</b> Used with bearing cup and oil seal replacers	5120-00-034-0884	10914196
12	O	<b>LIFTER, ROADWHEEL:</b> Used to raise roadwheel	4910-00-912-4469	11593605
13	O	<b>PULLER, END CONNECTOR, TRACK:</b> Used to remove double pin track end connector	5120-00-918-0596	10955156
14	O	<b>PULLER, SLIDE HAMMER-TYPE:</b> Used with adapter, 5120-00-322-5953, to remove or install torsion bar	5120-00-447-3615	5573615
15	O	<b>REPLACER, BEARING:</b> Used to remove and replace shock absorber bearing	5120-00-084-7627	C-DTA-94390 10925993
16	O	<b>REPLACER, BEARING CUP:</b> Used with handle, 5120-00-034-0884, to replace roadwheel hub inner bearing cup	5120-00-034-0880	10914187

## Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS				
Tool or Test Equipment Number Reference Code	Maintenance Category	Item Name	National Stock Number	Tool Number
17	O, F	REPLACER, BEARING CUP: Used with handle, 5120-00-034-0884, to replace roadwheel hub outer bearing cup	5120-00-034-0885	10914197
18	F	REPLACER SEAL: Upper spindle arm support housing oil seal; used with 10914196 handle	5120-00-034-0878	10914185
19	F	REPLACER SEAL: Upper spindle arm retainer oil seal; used with 10914196	5120-00-034-0881	10914188
20	O, F	REPLACER SEAL: Wheel hub inner oil seal; used with 10914196	5120-00-034-0879	10914186
21	F	WRENCH, PRONG: Used on spindle arm support bearing adjusting nut	5120-00-034-0867	10914193
22	O	WRENCH, TORSION BAR RETAINING NUT: Used to remove or install torsion bar retaining nut  POWER PACK	5120-00-708-3642	7083642
23	O	ADAPTER, STRAIGHT, PIPE TO TUBE: Used with hose assembly, 4720-00-080-8586, to operate powerpack out of vehicle.	4730-01-094-9018	5262058 (19207)
24	O	CABLE ASSEMBLY, GROUND: Powerpack-to-vehicle ground to operate powerpack out of vehicle	4910-00-084-0789	10913655

**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS**

<b>TOOL AND TEST EQUIPMENT REQUIREMENTS</b>				
<b>Tool or Test Equipment Number Reference Code</b>	<b>Maintenance Category</b>	<b>Item Name</b>	<b>National Stock Number</b>	<b>Tool Number</b>
25	O	<b>CABLE ASSEMBLY, POWER, ELECTRICAL:</b> Rectifier-to-generator (alternator) to operate powerpack out of vehicle	4910-00-930-8764	11605054
26	O	<b>CABLE ASSEMBLY, POWER, ELECTRICAL:</b> Starter and master warning circuit to operate powerpack out of vehicle	2590-01-115-2276	12268162
27	O	<b>COUPLING ASSEMBLY, QUICK-DISCONNECT:</b> Used with hose assembly, 4720-00-080-8588, to operate powerpack out of vehicle	4730-00-738-8571	7388571
28	O	<b>HOSE ASSEMBLY, NONMETALLIC:</b> Used for fuel supply and fuel return to operate powerpack out of vehicle	4720-00-080-8588	8708306
28.1	O	<b>SCREEN ASSEMBLY, PROTECTIVE:</b> Used for fan protection during maintenance	4910-01-247-2976	12268262
29	O	<b>SCREEN, SAFETY:</b> Turbocharger inlet to operate powerpack out of vehicle	4910-00-981-2766	10930717
30	F	<b>SLING, ENGINE LIFTING:</b> Used for lifting engine during and after separation of engine and transmission	4910-00-977-7398	10930560
31	O	<b>SLING, POWERPACK LIFTING:</b> Used to remove or install powerpack	4910-00-084-0890	10913779

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS				
Tool or Test Equipment Number Reference Code	Maintenance Category	Item Name	National Stock Number	Tool Number
32	O	STALL CHECK KIT: Used to stall check engine and/or transmission (powerpack removed from vehicle)	4910-00-757-1962	8351309
33	O	WRENCH, SOCKET Used to remove or install powerpack mount support	5120-00-051-5567	11605662
<b>MISCELLANEOUS</b>				
34	C, O	CLEANING TOOL, RADIATOR: Used to remove sand, oil, and other debris from radiator cooler fins	2815-00-494-8257	11641959
35	O	GAGE: Used for brake adjusting	5120-00-733-5005	8351213 (19207)
36	O	HANDLE, INSTALLER: Used with installer, 5120-00-977-5579, to install thermostat housing seal	5120-00-977-5578	KM-J-7079-2
37	O	INSTALLER, SEAL: Used with handle, 5120-00-977-5578, to install thermostat housing seal	5120-00-977-5579	KM-J-8550
38	O	WRENCH, SPLINED BRAKE ADJUSTMENT: Used to check right brake adjustment	5120-00-733-8909	8351386
39	O	WRENCH, SPLINED BRAKE ADJUSTMENT: Used to check left brake adjustment	5120-00-733-8912	8351387

**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS**

<b>TOOL AND TEST EQUIPMENT REQUIREMENTS</b>				
<b>Tool or Test Equipment Number Reference Code</b>	<b>Maintenance Category</b>	<b>Item Name</b>	<b>National Stock Number</b>	<b>Tool Number</b>
		<b>AUXILIARY POWER UNIT</b>		
40	O	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR: Organizational maintenance, common No. 1, less power	4910-00-754-0654	
41	O	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR: Organizational maintenance, common No. 2, less power	4910-00-754-0650	
42	F	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR: Field maintenance, basic, less power	4910-00-754-0705	
43	F	SHOP EQUIPMENT, FUEL AND ELECTRICAL MAINTENANCE AND REPAIR: Field maintenance	4910-00-754-0714	
		<b>AUXILIARY POWER UNIT</b>		
44	F	GAGE ALINEMENT: APU drive sprocket	5120-00-613-6779	11671961
45	F	PULLER, MECHANICAL: APU flywheel and sprocket	5120-00-613-6675	11671731
		<b>ADDITIONAL TOOLS</b>		
46	O	BIT, DRILL: 3/16 in.	5133-00-227-9654	

## Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS				
Tool or Test Equipment Number Reference Code	Maintenance Category	Item Name	National Stock Number	Tool Number
47	O	BLIND HAND RIVETER (KIT)	5120-00-017-2849	
48	O	BRUSH, WIRE	7920-00-291-5815	
49	O	DEEPWELL SOCKET	5120-00-235-5898	
50	O	DRILL, PORTABLE ELECTRIC: 1/4 in., 90 degree drive	5130-00-204-2728	
51	O	ELECTRICAL TOOL KIT: Automotive	5180-00-422-8594	
52	O, F	GENERAL MECHANICS TOOL KIT: Automotive	5180-00-177-7033	
53	O	PLIERS, SNAPRING	5120-00-789-0492	
54	O	PLIERS, WIRE, TWISTING	5120-00-542-4171	
55	O	PULLER, SHOCK ABSORBER	5120-00-084-7526	
56	O	RATCHET: 3/4 in. drive	5120-00-249-1076	
57	O	SCREW EXTRACTOR	5120-00-240-5221	
58	O	SLING, NYLON: 25 ft	3940-00-675-5003	
59	O	SOCKET: 3/4 in. drive, 1-1/8 in.	5120-00-239-0021	
60	O	SOCKET: 3/4 in. drive, 2 in.	5120-00-199-7770	
61	O	SOCKET, HEX KEY: 3/8 in.	5120-00-198-5390	

**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS**

<b>TOOL AND TEST EQUIPMENT REQUIREMENTS</b>				
<b>Tool or Test Equipment Number Reference Code</b>	<b>Maintenance Category</b>	<b>Item Name</b>	<b>National Stock Number</b>	<b>Tool Number</b>
62	O	SOLDER IRON	3439-00-465-1649	
63	O	STUD REMOVER/SETTER	5120-00-596-0980	
64	O	TWIST DRILL: 1-1/4 in.	5133-00-227-9658	
65	O	WRENCH, ADJUSTABLE: 10 in.	5120-00-449-8083	
66	O	WRENCH, ADJUSTABLE: 12 in.	5120-00-264-3796	
67	O	WRENCH, ADJUSTABLE: 15 in.	5120-00-423-6728	
68	O	WRENCH, COMBINATION: 1-1/8 in.	5120-00-895-9577	
69	O	WRENCH, OPEN END: 1-1/2 in.	5120-00-277-2323	
70	O	WRENCH, OPEN END: 1-1/4 in.	5120-00-277-2322	
71	O	WRENCH, OPEN END: 1-1/8 in.	5180-00-187-7133	
72	O	WRENCH, PIPE: 10 in.	5120-00-227-1485	
73	O	WRENCH, PIPE: 18 in.	5120-00-277-1461	
74	O	WRENCH, TORQUE: 1/2 in. dr, 0-175 lb-ft	5120-00-640-6364	
75	O	WRENCH, TORQUE: 3/4 in. dr, 0-600 lb-ft	5120-00-221-7983	
76	O	WRENCH, OPEN-END 1-3/16 in.	5120-00-555-9367	
77	O	WRENCH, OPEN-END 1-3/8 in.	5120-00-184-8563	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS				
Tool or Test Equipment Number Reference Code	Maintenance Category	Item Name	National Stock Number	Tool Number
78	O	PUNCH, DRIVE PIN, 1/16 in.	5120-00-240-6082	
79	O	WRENCH, OPEN END, 3/16 in.	5120-00-892-6089	
80	O	SLING, ENDLESS	3940-00-675-5002	
81	O	SHACKLE	4030-00-149-3514	



## APPENDIX C

### TORQUE VALUES FOR THREADED FASTENERS

---

#### GENERAL

Follow torque values as specified in maintenance procedures throughout this manual. When no torque value is given, use the following guides. The guides are based on using clean, dry threads.

#### NOTE

Reduce torque by 10 percent when lubricating oil is used on threads (wet torque).

#### NOTE

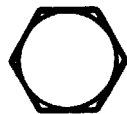
Reduce torque by 20 percent when installing new threaded fasteners.

Reduce torque by 30 percent when threading screw into aluminum, unless inserts are used.

STANDARD  
TORQUE VALUE GUIDE (POUND-FEET)

SCREW DIAMETER	TORQUE LBS-FT A NO DASHES (SAE GRADE 2)	TORQUE LBS-FT B 3 DASHES (SAE GRADE 5)	TORQUE LBS-FT C 6 DASHES (SAE GRADE 8)	SOCKET SIZE
1/4 - 20 UNC	3 - 5	6 - 8	10-12	7/16
1/4 - 28 UNF	4 - 6	8 - 10	9 - 14	7/16
5/16 - 18 UNC	7 - 11	13-17	19-24	1/2
5/16 - 24 UNF	7 - 11	14 - 19	23-28	1/2
3/8 - 16 UNC	14 - 18	26-31	39-44	9/16
3/8 - 24 UNF	15 - 19	30-35	46-51	9/16
7/16 - 14 UNC	23-28	44-49	65-70	5/8
7/16 - 20 UNF	23-28	44-54	69-79	5/8
1/2 - 13 UNC	32-37	65-75	95-105	3/4
1/2 - 20 UNF	34-41	73-83	113-123	3/4
9/16 - 12 UNC	46-55	100-110	145-155	13/16
9/16 - 19 UNF	47-57	107-117	165-175	13/16
5/8 - 11 UNC	62-72	140-150	200-210	15/16
5/8 - 18 UNF	67-77	153-163	235-245	15/16
3/4 - 10 UNC	106-116	260-270	365-375	1-1/4
3/4 - 16 UNF	115-125	268-278	417-427	1-1/4
7/8 - 9 UNC	165-175	385-395	595-605	1-5/16
7/8 - 14 UNF	178-188	424-434	663-673	1-5/16
1 - 8 UNC	251-261	580-590	900-910	1-1/2
1 - 14 UNF	255-265	585-634	943-993	1-1/2
1-1/4 - 7 UNC	451-461	1070 - 1120	1767-1817	1 - 7/8
1-1/4 - 12 UNF	488-498	1211 - 1261	1963-2013	1 - 7/8
1-1/2 - 6 UNC	727-737	1899 - 1949	3111-3161	2-1/4
1-1/2 - 12 UNF	916-826	2144 - 2194	3506-3556	2-1/4

A



B



C



METRIC  
TORQUE VALUE GUIDE (NEWTON-METERS)

SCREW DIAMETER	TORQUE N-m A NO DASHES (SAE GRADE 2)	TORQUE N-m B 3 DASHES (SAE GRADE 5)	TORQUE N-m C 6 DASHES (SAE GRADE 8)	SOCKET SIZE
1/4 -20 UNC	4 - 7	8-11	14-16	7/16
1/4 -28 UNF	5 - 8	11-14	12-19	7/16
5/16 - 18 UNC	9-15	18-23	26-33	1/2
5/16 -24 UNF	9-15	19-26	31-38	1/2
3/8 -16 UNC	19-24	35-42	53-60	9/16
3/8 -24 UNF	20-26	41-47	62-69	9/16
7/16 -14 UNC	31-38	60-66	88-95	5/8
7/16 -20 UNF	31-38	60-73	94-107	5/8
1/2 - 13 UNC	43-50	88-102	129-142	3/4
1/2 -20 UNF	46-56	99-113	153-167	3/4
9/16 - 12 UNC	62-76	136-149	197-210	13/16
9/16 - 18 UNF	64-77	145-159	224-237	13/16
5/8 -11 UNC	84-98	190-203	271-285	15/16
5/8 -18 UNF	91-104	207-221	319-332	15/16
3/4 -10 UNC	144 - 157	353-366	495-508	1-1/4
3/4 -16 UNF	156-169	363 - 377	565-579	1-1/4
7/8 - 9 UNC	224-237	522-536	807-820	1-5/16
7/8 -14 UNF	241-255	575-588	899-912	1-5/16
1 - 8 UNC	340-354	786-800	1220-1234	1-1/2
7/8 -14 UNF	346-359	793-860	1279-1346	1-1/2
1-1/4 - 7 UNC	611-625	1451-1518	2396-2463	1-7/8
1-1/4 - 12 UNF	662-675	1642-1710	2661-2729	1-7/8
1-1/2 - 8 UNC	986-999	2575-2642	4218-4286	2-1/4
1-1/2 - 12 UNF	1106-1120	2907-2975	4753-4821	2-1/4

A



B



C





## 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 M992. 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, eg “Use cleaning compound (item 5, Appx D).”

B Column (2) – Level. This column identifies the lowest level of maintenance that requires the listed items:

- 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 two-character alphabetical abbreviation (such as 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

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)
1	0	8040-00-809-8252	ADHESIVE, MMM-A-121 (81348) 5-OZ TUBE	OZ
2	0	8040-00-290-4301	ADHESIVE, CEMENT, 1 QT MIL-A-5092 (81349)	EA
3	0	8040-00-664-4318	ADHESIVE, CEMENT, 1 PT MIL-A-5092 (81349)	EA
4	0	8040-00-664-4318	ADHESIVE, RUBBER, MMM-A-1617, TYPE II (80244)	EA
5	0	8040-00-148-7207	ADHESIVE, SEALANT, SILICON RTV, MIL-A-46106	OZ
6	0	8040-01-006-1685	ADHESIVE, TAN, SPECIAL PURPOSE, #V-45	OZ
7	0	6850-00-181-7929	ANTIFREEZE, PERM O-A-548, 1-GAL. CAN MIL-46153 (81349)	GL
8	0	6850-00-181-7933	ANTIFREEZE, PERM O-A-548, 1-GAL. CAN MIL-A-46153 (81349)	GL
9	0	6850-00-174-1806	ANTIFREEZE, ARCTIC-TYPE 55-GAL. DRUM MIL-A-11755 (81349)	DR
10	0	6850-00-598-7328	CLEANING COMPOUND, 2 CCMP CAN MIL-C-10597 (81349)	QT
11	0	6850-00-227-1887	CLEANING COMPOUND MIL-C-43454 (81349)	QT

**Section II EXPENDABLE SUPPLIES AND MATERIALS LIST (CONTINUED)**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)
12	0	6850-00-224-6665	CLEANING COMPOUND MIL-C-11090 (81349)	CN
13	0	6850-00-224-6657	CLEANING COMPOUND, RIFLE MIL-C-372 (81349)	CN
14	0	6850-00-224-6663	CLEANING COMPOUND, RIFLE MIL-C-372 (81349)	GL
15	0	5350-00-221-0872	CLOTH, ABRASIVE CROCUS .50 SHEETS PC458 (81348)	PG
16	0	7920-00-044-9281	CLOTH, CLEANING, LOW-LINT, MIL-C-85043	LB
17	0	8030-00-597-5367	COMPOUND, ANTISEIZE MIL-A-907 (81349)	LB
18	0	6850-00-901-0591	DEICING-DEFROSTING COMPOUND 5-GAL. CAN MIL-A-8243 (81349)	CN
19	0	6850-00-281-1985	DRY-CLEANING SOLVENT PS-661 (02978)	GL
20	0	6850-00-281-3061	DRY-CLEANING SOLVENT, 4-OZ CAN PD-680 (81348)	DR
21	0	8010-01-120-8382	ENAMEL, FOREST GREEN, TYPE II MIL-E-52798	QT
22	0	8010-00-527-2050	ENAMEL, GLOSS, BLACK 1-GAL. CAN TTE-489 CLASS A (81348)	PT

## Section II EXPENDABLE SUPPLIES AND MATERIALS LIST (CONTINUED)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)
23	0	8010-00-527-2053	ENAMEL, GLOSS, BLACK 1-QT CAN TTE-489 CLASS A (81348)	QT
24	0	8010-00-133-5706	ENAMEL, INSULATING, MIL-E-22118	PT
25	0	8010-00-664-7653	ENAMEL, SYN, GLOSS, WHITE TT-E-489 (81349)	QT
26	0	9110-00-391-7813	FUEL, JELLIED, ALCOHOL 2.625-OZ CAN 4006 (94745)	CN
27		9150-00-935-1017	GREASE, AUTOMOTIVE ART 14-OZ CAN MIL-G-10924 (81349)	TY
28		9150-00-190-0904	GREASE AUTOMOTIVE ART MIL-G-10924 BRAYCOTTE610 (98308)	LB
29		9150-00-190-0905	GREASE AUTOMOTIVE ART MIL-G-10924 BRAYCOTE610 (98308)	LB
30		9150-00-935-9808	HYDRAULIC FLUID, PET, OHT MIL-H-6083 BRAYCO783C (98308)	GL
31		9150-00-935-9807	HYDRAULIC FLUID, PET, OHT MIL-H-6083 BRAYCO783C (98308)	QT



**Section II EXPENDABLE SUPPLIES AND MATERIALS LIST (CONTINUED)**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)
32		6850-00-753-4967	INHIBITOR, CORROSION 0-I-00490B (81348)	OZ
33	0		LUBRICANT, DRY FILM, MIL-L-8937	TB
34	0	9150-00-231-6689	LUBRICATING OIL, GEN PURPOSE, PL, SPC VVL800 (8348)	QT
35		9150-00-189-6727	LUBRICATING OIL MIL-L-2104B (81349)	QT
36		9150-00-188-9858	LUBRICATING OIL MIL-L-2104B (81349)	CN
37		9150-00-186-6668	LUBRICATING OIL ENG: MIL-L-2104B (81349)	CN
38		9150-00-186-6681	LUBRICATING OIL ENG: MIL-L-2104B (81349)	QT
39		9150-00-231-9062	LUBRICATING OIL, GEN, 5-GAL. CAN VVL800 (81348)	GL
40		9150-00-231-2361	LUBRICATING OIL, GEN MIL-L-3150 (81349)	QT
41		9150-00-231-2356	LUBRICATING OIL, GEN MIL-L-3150 (81349)	CN

TA310387

## Section II EXPENDABLE SUPPLIES AND MATERIALS LIST (CONTINUED)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)
42		9150-00-402-2372	LUBRICATING OIL, OES, 5-GAL. CAN CONOCODN600 FLUID TYPE 1 (15445)	CN
43		9150-00-402-4478	LUBRICATION OIL, OES, 1-QT CAN CONOCODN600 FLUID (15445)	QT
44			PAINT, RUST INHIBITOR PRIMER, TT-P-659	QT
45		6640-00-285-4694	PAPER, LENS MNNP40 (81348)	HD
46			PASTE, ZINC CHROMATE, TT-P-1757, COMP E, COLOR Y	QT
47		9150-00-250-0926	PETROLATUM, TECHNICAL, 5-LB CAN VVP236 (81348)	LB
48		9150-00-250-0933	PETROLATUM, TECHNICAL, 5-LB CAN VVP236 (81348)	LB
49			PLASTIC PLASTISOL, TYPE I OR II, CLASS 2, COLOR BLACK, MIL-P-20689	PT
50		7920-00-205-1711	RAG, WIPING, DD-R-30 (81348)	LB
51			SEALER, TYPE I OR II, MIL-S-11030	PT

Section II EXPENDABLE SUPPLIES AND MATERIALS LIST (CONTINUED)

(1)	(2)	(3)	(4)	(5)
ITEM NUMBER	LEVEL	NATIONAL STOCK NUMBER	DESCRIPTION	(U/M)
52		8030-00-823-7917	SEALING, COMPOUND, GRADE C MIL-S	BT
53		8030-01-104-5392	SEALING, COMPOUND, TYPE II, GRADE N MIL-S-46163	BT
54		8030-00-159-8176	SEALING, COMPOUND MIL-S-45180 (81349)	TU
55		8030-00-275-8115	SEALING, COMPOUND, SYNTHETIC GLASS, TYPE II, MIL-S-7124 (11030)	PT
56		8030-00-252-3391	SEALING, COMPOUND AGASKETNO2 (77247)	OZ
57		1015-01-255-4144	SEALING COMPOUND, TEFLON PIPE SEALANT (AST) 12297953	TU
57.1		5305-00-066-8130	SCREW, CAP, HEXAGON HEAD	EA
58		6850-00-880-7616	SILICON COMPOUND, DC-4	OZ
59		5970-00-926-7219	TAPE, INSULATION, ELECTRICAL HH-T-595 (81349)	RL
60		5970-00-188-5477	TAPE, INSULATION, ELECTRICAL 22 3-4 IN (75037)	RL
61			TAPE, PACKAGING, WATERPROOF PPP-T-60, TYPE 4	RL
62		8030-00-889-3535	TAPE, ANTISEIZE, TEFLON 1/2 IN. WE, PER MIL-T-27730	RL

## Section II EXPENDABLE SUPPLIES AND MATERIALS LIST (CONTINUED)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)
63	0	8030-00-889-3535	TAPE, ANTISEIZE, SIZE I PER MIL-T-27730	RL
64	0	8010-00-242-2089	THINNER PAINT MIXER TT-T-291GR1 (81348)	GL
65	0	8010-00-558-7026	THINNER, PAINT MINERAL TT-T-291 (81348)	CN
66	0	5610-00-141-7838	WALKWAY COMPOUND MIL-W-5044 TYPE 2 (81349)	GL
66.1	0	5310-00-809-9514	WASHER FLAT	EA
67	0	8010-01-160-6744	COATING, ALIPHATIC POLYURETHANE, CHEMICAL RESISTANT, BROWN MIL-C-46168	KT
68	0	8010-01-160-6741	COATING, ALIPHATIC POLYURETHANE, CHEMICAL RESISTANT, GREEN MIL-C-46168	KT
69	0	9150-00-543-7220	LUBRICATING OIL, MOLY-SIL DOD-L-25681	LB
70	0	3439-00-555-4629	SOLDER, TIN ALLOY	LB
71	0	8010-00-582-5318	PRIMER, COATING TT-P-1757	
72	0	9150-00-702-7100	LUBRICANT, SOLID, WAX BASE NYLUBE 150 (07161)	LB

**Section II EXPENDABLE SUPPLIES AND MATERIALS LIST (CONTINUED)**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)
73	0	8040-00-262-9026	ADHESIVE, RUBBER, MMM-A-1617, TYPE 1 (80244)	EA
74	0	6850-00-105-3084	CLEANING, COMPOUND PER MIL-C-81302	CN
75	0	8030-00-163-5792	SEALING, COMPOUND, TYPE II, GRADE N PER MIL-S-46163	BT
76	0	5310-00-762-6248	NUT, HEX P/N MS51967-29	EA
77	0	5305-00-929-4038	CAP SCREW P/N MS90725-209	EA
78	0	8030-00-087-8630	ANTISEIZE COMPOUND, MIL-T-03483 (81349)	EA



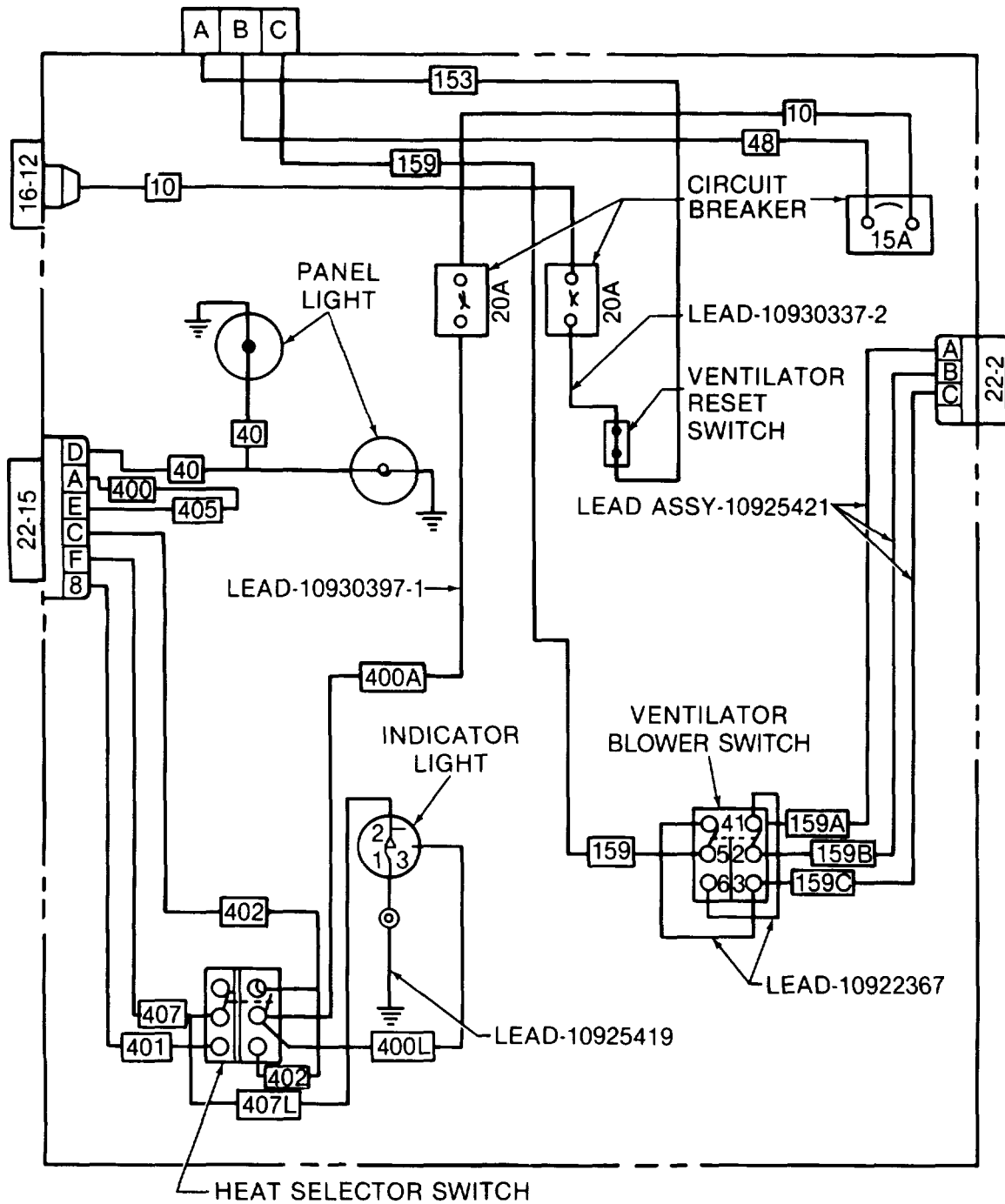
**APPENDIX E**  
**HYDRAULIC SYSTEM SCHEMATIC**  
(located in back of manual)



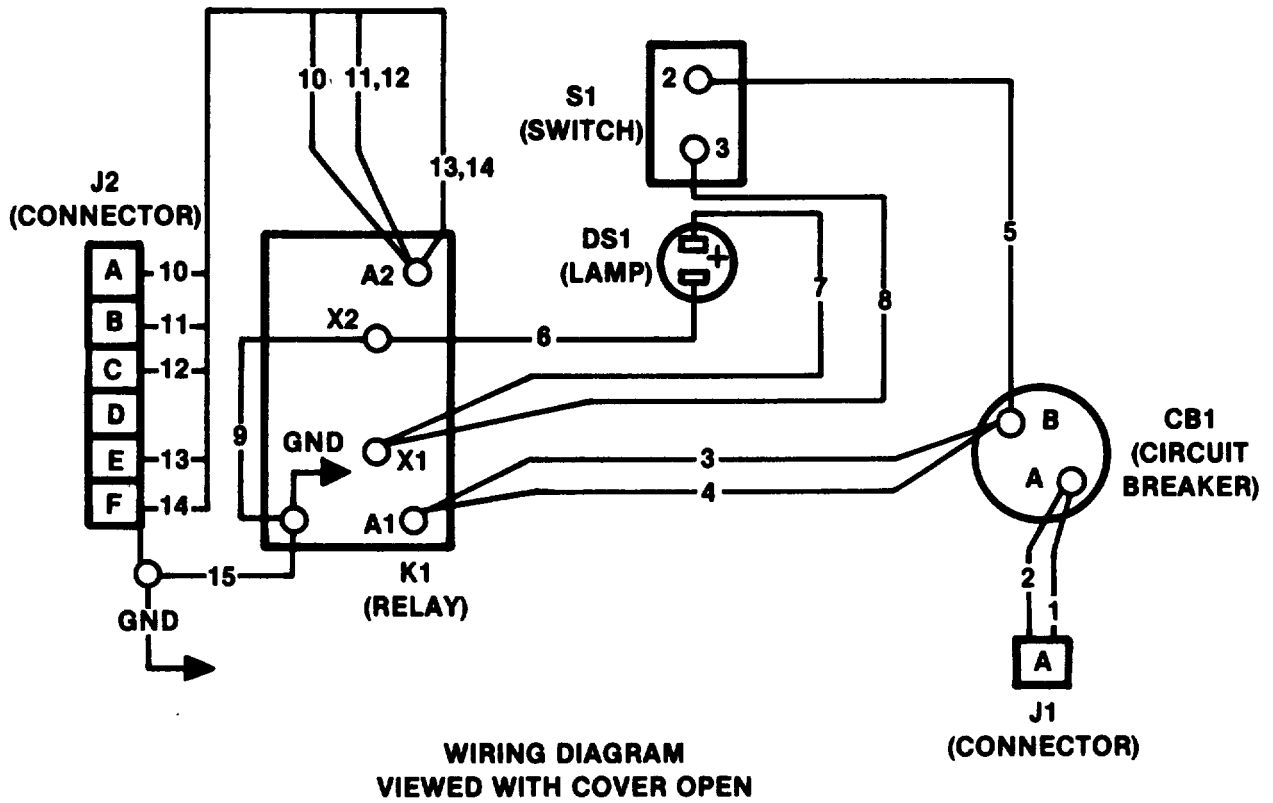




**APPENDIX F**  
**ELECTRICAL SYSTEM SCHEMATICS**  
(located in back of manual)



**ACCESSORY CONTROL BOX ELECTRICAL SCHEMATIC DIAGRAM**



**NBC CONTROL BOX ELECTRICAL SCHEMATIC DIAGRAM**



APPENDIX G  
ILLUSTRATED LIST OF MANUFACTURED ITEMS

---

**Section I INTRODUCTION**

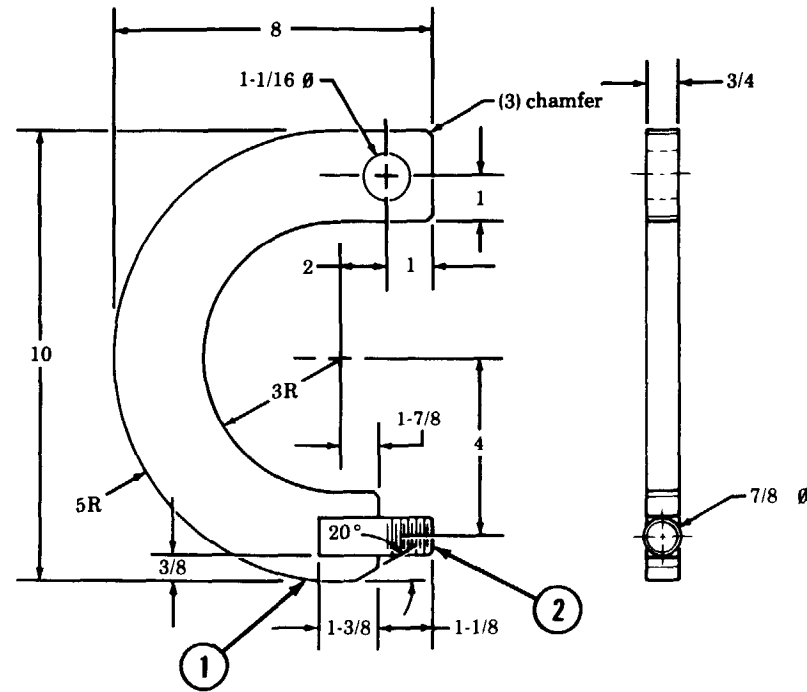
**GENERAL**

This appendix includes complete instructions for making items authorized to be manufactured or fabricated at organizational maintenance.

A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

Section II ILLUSTRATED LIST OF MANUFACTURED ITEMS



**NOTES**

1. Fabricate lifting device from 3/4 structural steel, ASTM-A-36.
2. Fabricate stud from machine bolt, P/N 90444-720.
3. Stud welded to lifting device.
4. Hexnut, P/N MS51967-27, to be installed on stud.
5. All dimensions given in inches.

**PARTS LIST**

NO.	AMT	NAME	PART NUMBER / SPECIFICATIONS
1	1	Lifting device	3/4 structural steel ASTM-A-36
2	1	Stud	90444-720
3	1	Hexnut	MS51967-27

Figure G-1. Stacker/Crane Lifting Device

## INDEX

	Page		Page
A			
Absorber, Shock and Suspension Bracket .....	8-26		
Accelerator Pedal and Throttle Control Lever .....	7-24		
Accelerate, Throttle and Engine Control Governor .....	7-22.2		
Accessory Control Box .....	6-26		
Accessory Control Box to AFES Harnesses AFES Relays and Personnel Ventilation Blower Wiring Harness (12351461) .....	6-93		
■ Accessory Drive Adapter .....	6-4.1		
Actuator Assembly, AFES Manual Discharge System: Disassembly/Assembly .....	14-54.6		
Remove/Installation .....	14-52.20/15-54.2		
Adjustment			
Accelerator Pedal .....	7-48		
AFES Manual Discharge System Cable .....	14-55		
Backup Hydraulic Pump Assembly V-belt .....	16-26		
Engine Throttle Governor Control Rod .....	7-46		
Hand Throttle Control Rod and Accelerator Pedal .....	7-47		
Headlight Dimmer and Stoplight Switch .....	3-38		
Headlights .....	6-30		
Neutral Safety Switch .....	6-16		
Parking Brake Linkage .....	7-42		
Service Brake Linkage .....	7-40		
Shift Control Linkage .....	7-34		
Stacker Carrier Assembly and Motor Support Bracket .....	12-35		
Stacker Foot Brake .....	12-40.2		
Steering Control Linkage .....	7-44		
Stoplight Switch .....	7-49		
Track Tension .....	8-8		
Transmission Internal Brake .....	7-38		
Transmission Throttle Valve .....	7-43		
Warning Light Switch .....	7-49		
Aeration Detector .....	6-18		
AFES:			
Actuator Assembly, AFES Manual Discharge system .....	14-52.20		
Cable Assembly (12351754) .....	14-50.4		
Crew AFES Test and Alarm (T/A) Panel .....	14-40.1		
AFES (continued):			
Cylinder Bottle Bracket Straps, Brackets and Mounts:			
Crew AFES (Vehicles 1 thru 344) .....	14-30.2		
(Vehicles 345 and above) .....	14-30.8		
Engine AFES (Vehicles 1 thru 344) .....	14-30		
(Vehicles 345 and above) .....	14-30.4		
Cylinder Bottles:			
Crew AFES (Vehicles 1 thru 344) .....	14-28.3		
(Vehicles 345 and above) .....	14-28.9		
Engine AFES (Vehicles 1 thru 344) .....	14-28		
(Vehicles 345 and above) .....	14-28.6		
Deactivation/Reactivation:			
Crew AFES .....	14-14.5	■	
Engine AFES .....	14-14.3		
Electrical Relays .....	14-36		
Electrical Wiring Harness:			
Crew AFES (Vehicles 1 thru 344)			
12351498 .....	14-40.2		
12351499 .....	14-42		
12351501 .....	14-48		
Crew AFES (Vehicles 345 and above)			
12352315 .....	14-52.1		
12352316 .....	14-52.4		
12352353 .....	14-52.6		
Engine AFES (Vehicles 1 thru 344)			
12351500 .....	14-50.5		
Engine AFES (Vehicles 345 and above)			
12352354 .....	14-52.12		
Engine Compartment Fire Sensing Couplings, Engine AFES .....	14-26		
Engine Compartment Fire Sensing Elements, Engine AFES .....	14-15		
Engine AFES Test and Alarm (T/A) Panel .....	14-39		
Fire Extinguisher Box Assembly (Vehicles 345 and above) .....	9-28.2		
General Inspection and Repair Procedures .....	14-1		
Manual Discharge System, Cable Adjustment .....	14-55		
Optical Fire Sensing Apparatus (OFSA), Crew AFES .....	14-34		
Relays Cover .....	14-35		
Remote Status Indicator (RSI), Engine AFES .....	14-38		

	Page		Page
AFES (continued):			
Sensing Element Disconnect Points for Engine Deck Removal,			
Engine AFES .....	14-27		
Standard Control Electronic Amplifier (SCEA), Crew AFES .....	14-40		
System Test:			
Crew AFES (vehicles 1 thru 344) .....	14-56		
(Vehicles 345 and above) .....	14-60.1		
Engine AFES (Vehicles 1 thru 344) .....	14-59		
(Vehicles 345 and above) .....	14-60.5		
Tubing and Nozzles, Crew and Engine Compartments,			
Engine AFES .....	14-30.12		
Air Cleaner .....	4-25		
Air Cleaner Blower Motor Relay .....	6-51		
Air Cleaner Blower Motor Relay Wiring Harness (10897991) .....	6-92		
Air Cleaner Blower Motors .....	6-52		
Air Cleaner Box Assembly .....	4-26.8		
Air Electric Heater, M3 .....	14-7		
Air Filter .....	4-28		
Air Intake Grille .....	9-65		
Air Intake Grille Attaching Bracket .....	9-66.5		
Air Intake Grille Support .....	9-66.4		
Air Intake System			
Air Cleaner .....	4-25		
Air Cleaner Box Assembly .....	4-26.8		
Air Filter .....	4-28		
Ducts and Hoses .....	4-29		
General .....	4-24		
Air Outlet Orifice Connector .....	14-8		
Air Purifier, M2A2 .....	14-3		
Alarm and Mount, M42 .....	14-12.1		
Alinement:			
Backup Hydraulic Pump Assembly V-belt .....	16-26		
Headlights .....	6-29		
Ammunition Handling Equipment (AHE):			
Conveyor Assembly .....	12-1		
Conveyor Hydraulic Hoses and Fittings .....	16-36.2		
		Stacker Assembly .....	12-30.1
		Stacker Hydraulic Tubing, Hoses and Associated	
		Connecting Parts .....	16-32
		Antenna Mounting Cover Plate .....	9-24.5
		APU:	
		Air cleaner, Inlet and outlet Hoses and Tubes .....	13-15
		APU Compartment Access Plate .....	13-12.3
		APU Control Box .....	13-35
		APU Control Box to APU Voltage Regulator Cable	
		Assembly (12330248) .....	6-113
		Branched Wiring Harness (12329640) .....	6-132
		Cable Assembly (11671371) .....	6-139
		Cable Assembly (11671380-1) .....	6-140
		Cable Assembly (11671380-2) .....	6-141
		Cable Assembly (12332833) .....	6-136
		Cooling Air Duct .....	13-20.3
		Diode .....	6-48
		Exhaust Manifold Elbow .....	13-20.3
		Exhaust Muffler Outlet/Elbows .....	13-14
		Fuel Lines, pumps and Associated Fittings (Cargo	
		Compartment) .....	13-28
		Fuel Return Line (APU to Bulkhead) .....	13-26
		Generator .....	13-19
		Generator Air Duct and Attaching Hardware .....	13-18.3
		Generator Ground Cable .....	6-145
		Generator Mounting Stud .....	13-20.1
		Ground Cables (11671369-1) .....	6-142
		Hourmeter .....	13-18.2
		Hourmeter Wiring Harness .....	6-143
		Hydraulic Hoses and Associated Connecting Parts .....	16-38
		Hydraulic Pressure Switch .....	13-17
		Hydraulic Pump .....	13-21
		Hydraulic Pump Adapter Plate .....	13-24
		Hydraulic pump Inlet and Outlet Fittings and U-bolt	
		Assembly .....	13-22
		Inlet Fuel Line (Bulkhead to Primary Falter) .....	13-25



	Page
APU (continued):	
Inlet Fuel Line (Secondary Falter to APU) .....	13-27
Louvered Front Door .....	9-63
Louvered Grille .....	9-27
Muffler .....	13-14
Oil Drain Tubing and Fittings .....	13-8
Oil Drain Valve Catch Assembly .....	13-12.2
Oil Fill Tube .....	13-11
Oil Falter .....	13-34
Oil Pressure Transmitter and Breather Hose .....	13-10
Panel Supports .....	13-32.2
Panels .....	13-30
Primary and Secondary Fuel Filter .....	13-16
Removal/Installation .....	13-1
■ Sending Units Wiring Harness (12329650) .....	6-132
Side Door .....	5-59
Side Door Hinge .....	9-60
Side Door Latch, Strike, Bumper and Pull Handle .....	9-62
Side Door Upper and Lower Lower .....	9-61
Soundproof Panels .....	13-33
Starter Relay .....	6-49
Support Mounts .....	13-44
Support Stand and Support Assembly .....	13-5
Voltage Regulator .....	6-50
Automatic Fire Extinguishing System .....	SEE AFES
Auxiliary Power Unit .....	SEE APU

## B

Backup Hydraulic System	
Clutch Support and Pump Assembly .....	16-23
Pump Assembly Hoses and Connecting Parts .....	16-22.6
Pump Assembly, V-belt Alinement and Tension	
Adjustment .....	16-26
Pump Bracket and Support .....	16-24.1
Sheave Clutch, Support and Hydraulic Pump .....	16-24.2

## Page

	Page
Baffle Assembly .....	4-26.6
Barrel Straps, Crowbar Stop, Rack Hoist Straps .....	10-3
Basic Issue Item Deprocessing .....	17-5
Batteries:	
Removal/Installation .....	6-44
Servicing and Connecting .....	2-4.2
Battery Access Doors .....	9-66.19
Battery Access Doors and Transmission Access Doors Seals .....	9-66.7
Battery Cables (10897992 10897993, 12330348) .....	6-126
Battery to Driver's Bulkhead Wiring Harness (12330317) .....	6-120
Bilge Pump and Strainer .....	14-74
Blackout and Service Taillights, Stoplights and Lamps .....	6-36
Brake Assembly in Driver's Compartment .....	7-15
Adjustment Stoplight Switch .....	7-49
Adjustment Warning Light Switch .....	7-49
Brake Linkage in Powerpack Compartment .....	7-21
Breather Tube, Filter and Mount .....	7-10
Bulkhead to Portable Instrument Panel Wiring	
Harness (12660287) .....	6-84
Bypass Thermostat and Housing .....	5-26

## C

Canister Compartments	
Left Front .....	11-20.1
Left Rear .....	11-16
Right Front .....	11-20
Right Rear .....	11-12
Canister Doors:	
Hinges (Vehicles 1 thru 33) .....	9-46
Hinges (Vehicles 34 and above) .....	9-46.2
Hold-Open Latch and Bumper Assembly .....	9-47
Latch Assembly (Left Side) .....	9-44
Latch Assembly (Right Side) .....	9-44.2
Removal/Installation (Vehicles 1 thru 33) .....	9-42.2
Removal/Installation (Vehicles 34 and up) .....	9-42.4
Seals .....	9-48.3

	Page		Page
Canister Restraints:		Roller Assembly .....	12-9
Left Side .....	11-22.1	Supports and Support Brackets .....	12-4
Restraint Bar Assemblies .....	11-23	Support Cables .....	12-2
Right Side .....	11-21.1	Support Strep Assembly and Cable Support Clips .....	12-3
■ Cargo Compartment Wiring Harness (12330257) .....	6-77	Takeup Section Assembly .....	12-15
Circuit Breaker Panels and Circuit Breakers .....	6-54	Takeup Section Side Wear Strips, Bottom Wear Strips, Chain Return Wear Strips and Chain Guard .....	12-18
Cleaning, Radiator .....	5-20	Toggle Clamp and Tube Assembly .....	12-20
Combat Loading .....	17-5	Upper Support, Quick-Release Pin and Handle .....	12-5
Commanders Cupola:		Conveyor Control Switch .....	6-62
Hatch Door .....	9-24.4	Conveyor Control Switch to Conveyor Override Safety Switch Wiring Harness (12330244) .....	6-120.2 ■
.....	9-24.2	Conveyor override Safety Switch .....	6-63
Commander's Seat:		Coolant Pump .....	5-28
Carriage .....	9-7	Cooling System Hoses and Tubes .....	5-29
Ceiling Bracket Support Forward .....	9-11	Crankcase and Gear Train Breather Tubes .....	5-6
Ceiling Bracket Support Rear .....	9-12	Crew and Engine Compartments, Engine AFES Tubing and Nozzles .....	14-30.12
Disassembly/Assembly .....	9-10	Crew compartment Drain and Expansion Plugs .....	9-26.2
Post and Foot Rest .....	9-9	Crew seats:	
Removal/Installation .....	9-6	Left Side, Double .....	9-16
Commander's Station Assist Handle .....	9-49	Left Side, Single .....	9-16.2
conveyor Assembly		Right Side, Double .....	9-12.1
Center Section Assembly .....	12-21	Right Side, Single .....	9-14.1
Center Section Side Wear Strips, Chain Return Wear Strip and Bottom Wear Strip .....	12-22	Crew AFES Test and Alarm (T/A) .....	14-38
Chain Assembly .....	12-19	Crowbar Stop, Barrel Straps, Rack Hoist Straps .....	10-3
Conveyor Assembly and Support Stand .....	12-27	Cylinder Bottles	
Conveyor Springs .....	12-6	Crew AFES (Vehicles 1 thru 344) .....	14-28.3
Deal-end Section Assembly .....	12-12	(Vehicles 345 and above) .....	14-28.9
Drive End Section Assembly .....	12-24	Engine AFES (Vehicles 1 thru 344) .....	14-28
Drive End Section Side Wear Strips, Chain Return Wear Strip, Bottom Wear Strip, and Chain Guards .....	12-26	(Vehicles 345 and above) .....	14-28.6
Drive End Section Coupling Sprocket, Pillow Blocks and Drive Sprocket Assembly .....	12-7	Cylinder Bottle Bracket Straps, Brackets and Mounts:	
Hinge Assembly .....	12-23	Crew AFES (Vehicles 1 thru 344) .....	14-30.2
Hydraulic Hoses and Fittings .....	16-36.2	(Vehicles 345 and above) .....	14-30.8
Hydraulic Motor .....	12-29	Engine AFES (Vehicles 1 thru 344) .....	14-30
Idle Sprocket Assembly .....	12-10.2	(Vehicles 345 and above) .....	14-30.4
Rod-ends, Ball Assemblies and Latch .....	12-17		

	Page
<b>D</b>	
Decontamination Apparatus Bracket .....	10-9
Reprocessing the Vehicle .....	17-1
Description and Data .....	1-3
Destruction of Materiel to Prevent Enemy Use .....	18-5
Disconnect Points, Engine AFES Sensing Elements for	
Engine Deck Removal .....	14-27
Distribution Hoses, Heating and Ventilating .....	14-61
Dome Light .....	6-40
Doors:	
Air Intake Grille .....	9-65
Air Intake Grille Attaching Bracket .....	9-66.5
Air Intake Grille Support .....	9-66.4
APU Compartment Door Hinge .....	9-60
APU Compartment Louvered Front Door .....	9-63
APU Compartment Side Door .....	9-59
APU Compartment Side Door Latch, Strike, Bumper and Pull Handle .....	9-62
APU Compartment Side Door Upper and Lower Louvers .....	9-61
Battery Access Doors .....	9-66.19
Canister Door (Right Side) and Personnel Door Latch Assemblies .....	9-44.2
Canister Door Latch Assembly (Left Side) .....	9-44
Canister Doors (Vehicles 1 thru 33) .....	9-42.2
Canister Doors (Vehicles 34 and up) .....	9-42.4
Canister Doors and personnel Door Hinges (Vehicles 1 thru 33) .....	9-46
Canister Doors and Personnel Door Hinges (Vehicles 34 and up) .....	9-46.2
Canister Doors Hold-Open Latch and Bumper Assembly .....	9-47
Canister Doorways and personnel Side Doorway Seals .....	9-48.3
Engine Dipstick Access Door .....	9-66.20
Exhaust Deck .....	9-66.12
Exhaust Deflectors .....	9-66.13
Fan Access Door .....	9-66.9
Fuel fill Door .....	9-64.1
Grille Adjustable Support Assembly .....	9-66.6
Lower Rear Door .....	9-36.1
Lower Rear Door Handle .....	9-38

	Page
Lower Rear Door Handle Strike .....	9-39
Lower Rear Door Hinge Screws .....	9-37
Lower Rear Door Seal .....	9-40
Personnel Door .....	9-41
Personnel Door and Commander's Station Assist Handles .....	9-49
Personnel Door Hold-Open Latch and Bumper Assembly .....	9-48.1
Radiator Cap Access Cover .....	9-66.11
Top Door Inner Seals .....	9-58.1
Top Door Outer Seals .....	9-58.3
Top Left Door .....	9-50
Top Left Door Hold-Open Components .....	9-51
Top Middle Door Disassembly/Assembly .....	9-57
Top Middle Door Hold-Open Components .....	9-56
Top Middle Door Removal/Installation .....	9-54
Top Right Door .....	9-52
Top Right Door Hold-Open Components .....	9-53
Transmission Access Doors .....	9-66.14
Transmission Access Doors and Battery Access Door Seals .....	9-66.17
Upper Rear Door Actuator Mounting Bracket and Hydraulic Actuator .....	9-30
Upper Rear Door Assembly .....	9-28.6
Upper Rear Door Bumper Stop and Bracket .....	9-34
Upper Rear Door Hinges .....	9-32
Upper Rear Door Seal .....	9-35
Draining of Fuel System	
Drain Plugs and Cover	
Driver's Bulkhead to APU Voltage Regulator Wiring Harness (12330256)	6-118
Driver's Hatch:	
Cover and Components .....	9-18
Cover Cam Lock .....	9-23
Cover Latch .....	9-20.1
Cover Seal and Pad .....	9-22
Seal .....	9-23
Security Latch .....	9-21
Driver's Portable Instrument Panel Mounting Bracket .....	9-24.1
Driver's Portable Instrument Panel Wiring Harness (12260298) .....	6-89
Driver's Seat .....	9-1
Driver's Stowage Box .....	10-12

	Page		Page
Duct and Heat Shields, Heating and Ventilating . . . . .	14-62	Upper Rear Door Control Switches . . . . .	6-61
Ducts and Hoses, Air Intake System . . . . .	4-29	Ventilation Blower Relay . . . . .	6-53
Duffle Bag Stowage		Electrical system, Powerpack:	
Left Side . . . . .	10-5	Air Cleaner Blower Motor Switch . . . . .	6-10
Right Side . . . . .	10-4	Bilge Pump Relay . . . . .	6-5
		Engine Coolant High Temperature Switch . . . . .	6-9
		Engine Coolant Temperature Transmitter . . . . .	6-8
		Engine oil Low Pressure Switch . . . . .	6-10
		Engine Oil Pressure Transmitter . . . . .	6-10
		General Inspection and Repair Procedures . . . . .	6-2
		Generator (Alternator) . . . . .	6-4
		Neutral Safety Switch . . . . .	6-16
		Powerpack Wiring Harness Mounting Bracket . . . . .	6-18.1
		Rectifier . . . . .	6-7
		Stinter Clutch Drive . . . . .	6-16
		Starter Motor . . . . .	6-14
		Starter Relay . . . . .	6-5
		Starter Solenoid . . . . .	6-15
		Transmission Oil Pressure Transmitter and Oil Low	
		Pressure Switch . . . . .	6-12
		Transmission Oil Temperature Transmitter and Oil High	
		Temperature Switch . . . . .	6-11
		Voltage Regulator, Circuit Breaker and Mounting Brackets . . . . .	6-5
		Electrical system Schematics . . . . .	F-1
		Engine Bracket to Driver's Bulkhead Wiring Harness (11593782) . . . . .	6-67
		Engine Compartment Access Cover . . . . .	9-25
		Engine Compartment Fire sensing couplings, Engine AFES . . . . .	14-26
		Engine Compartment Fire Sensing Elements, Engine AFES . . . . .	14-15
		Engine Components:	
		Crankcase and Gear Train Breather Tubes . . . . .	5-6
		Engine Inspection . . . . .	5-2
		Engine Mount Release Bar . . . . .	5-8.1
		Fuel Shutoff Assembly . . . . .	5-1
		General . . . . .	5-1
		Oil Cooler Hoses . . . . .	5-4
		Oil Filter . . . . .	5-4.3

## E

Electrical Relays AFES . . . . .	14-36
Electrical Systems, Hull:	
Accessory Control Box . . . . .	6-26
Air Cleaner Blower Motor Relay . . . . .	6-51
APU Cleaner Blower Motor . . . . .	6-52
APU Diode . . . . .	6-48
APU Starter Relay . . . . .	6-49
APU Voltage Regulator . . . . .	6-50
Batteries . . . . .	6-42
Circuit Breaker Panels and Circuit Breakers . . . . .	6-54
Conveyor Control Switch . . . . .	6-62
Conveyor Override Safety Switch . . . . .	6-63
Dome Light . . . . .	6-40
Headlight Assembly . . . . .	6-32.1
Headlight Body . . . . .	6-34
Headlight Dimmer and Stoplight Switch . . . . .	6-38
Headlight Mount . . . . .	6-35
Headlight Sealed-Beam and Incandescent Lamp . . . . .	6-31
Headlights . . . . .	6-30
Intercom Power Supply Bracket . . . . .	6-58.1
Intercom Terminals . . . . .	6-57
Left Tail Lamp Assembly . . . . .	6-36.2
Master Relay Box . . . . .	6-45
NATO Intervehicle Slave Connectors . . . . .	6-56
Portable and Driver's Instrument Panels . . . . .	6-19
Remote Chemical Detector Alarm Terminals . . . . .	6-58
Right Tail Lamp Assembly . . . . .	6-36
Stacker Control Switch Box . . . . .	6-59

	Page
Engine Components (continued):	
Oil Filter Bracket .....	5-5
Oil Sampler System .....	5-4.1
Shock Mount and Bracket .....	5-9
Engine Coolant High Temperature Switch .....	6-9
Engine Coolant Lower Tube .....	5-15
Engine Coolant Main Tube Assembly .....	5-14
Engine Coolant Temperature Transmitter .....	6-8
Engine Cooling System	
Aeration Detector .....	5-19
Bypass Thermostat and Housing .....	5-26
Coolant Pump .....	5-28
Engine Coolant Lower Tube .....	5-15
Engine Coolant Main Tube Assembly .....	5-14
General .....	5-12
Hoses and Tubes .....	5-29
Inlet Thermostat and Housing .....	5-24
Pressure Relief Valve and Block Mount .....	5-18
Radiator and Mounts .....	5-21
Radiator, Cleaning .....	5-20
Surge Tank .....	5-16.2
Surge Tank Hoses and Fittings .....	5-16.5
Engine Deck Removal, Disconnect Points for Fire Sensing	
Elements, AFES .....	14-27
Engine Dipstick Access Door .....	9-66.20
■ Engine Disconnect Bracket to Driver's Bulkhead Wiring	
Harness (12268100) .....	6-68
Engine AFES Test and Alarm (T/A) Panel .....	14-39
Exhaust Desk .....	9-66.12
Exhaust Deflectors .....	9-66.13
Exhaust Duct .....	4-32
Expendable supplies and Materials List .....	D-1
Engine Mount Release Bar .....	8-1
Engine Oil Pressure Transmitter, Engine Oil Low Pressure	
Switch and Air Cleaner Blower Motor Switch .....	6-10
Exhaust Pipe .....	4-32

	Page
Exhaust System:	
Engine Crossover Tube Insulation .....	4-34
Exhaust Duct .....	4-32
Exhaust Duct and Pipe Insulation .....	4-33
Exhaust Pipe .....	4-32
General .....	4-31
Exterior Stowage:	
Crowbar Stop, Barrel Straps, Rack Hoist Straps .....	10-3
Duffle Bag Stowage (Left Side) .....	10-5
Duffle Bag Stowage (Right Side) .....	10-4
Pioneer Kit, Towing Cable Straps, Water Can Straps and	
Track Fixture Straps .....	10-2.1
Stowage Boxes and Baskets .....	10-1

## F

Fan Access Door .....	9-66.9
Filler Neck .....	4-6.1
Filler Neck Assembly Seal .....	4-6
Final Drive Assembly .....	8-29
Final Drive Skid Plates and Tow Cable Hooks .....	9-68.3
Final Drive Sprocket and Hub .....	8-28
Fire Sensing Element Disconnect Points for Engine Deck	
Removal Engine AFES .....	14-27
Final Skid Plates and Tow Cable Hooks .....	9-68.3
Flashlight Holders .....	10-9
Front Fender .....	9-67
Fuel Check Valve (Right and Left) .....	4-9
Fuel Fill Access Plate, Fuel Fill Cap and Fuel Strainer .....	4-5
Fuel Fill Door .....	9-64.1
Fuel Filter Assembly:	
Primary .....	4-11
Secondary .....	4-13
Fuel Filter Lifting Bracket	
Primary .....	4-12
Secondary .....	4-14.2

	Page
Fuel Flow Test .....	4-22
Fuel Hoses Lines and Fittings .....	4-29
Fuel Pumps:	
Electric .....	4-16
Engine Drives .....	4-15
Fuel Shutoff Assembly .....	5-10.2
Fuel System	
Draining of Fuel System .....	4-2
Electric Fuel Pump .....	4-16
Engine Driven Fuel .....	4-15
Filler Neck .....	4-6.1
Filler Neck Assembly Seal .....	4-6
Fuel Check Valve (Right and Left) .....	4-9
Fuel Fill Access Plate, Fuel Fill Cap and Fuel Strainer .....	4-5
Fuel Filter Assembly (Primary) .....	4-11
Fuel Filter Assembly (Secondary) .....	4-13
Fuel Flow Test .....	4-22
Fuel Hoses, Lines and Fittings .....	4-2.10
Fuel Tank Level Transmittter (Lower) .....	4-8
Fuel Tank Level Transmitter (Upper) .....	4-6.2
General .....	4-1
Heat Shield .....	4-2.1
■ Left and Right Electric Fuel Pump .....	4-10
Powerpack Fuel Hoses, Tubes and Connectors .....	4-20
Primary Fuel Filter Lifting Bracket .....	4-12
Relief Valve .....	4-17
Secondary Fuel Fuel Filter Lifting Bracket .....	4-14.2
Fuze Stowage Straps .....	10-11

G

General Maintenance Procedures	
Chapter Overview .....	2-1
Preventive maintenance Checks and Services (PMCS) .....	2-6
Repair Parts, Special Tools, Test, Measurement and Diagnostic Equipment and Support Equipment .....	2-1

	Page
Service Upon Receipt .....	2-2
STE/ICE Troubleshooting .....	2-48.1
Troubleshooting .....	2-49
Wiring Harness and Cable Repairs .....	2-307
Generator (Alternator) .....	6-4
Grille Adjustable Support Assembly .....	9-66.6
Guard, Wiring Harness .....	2-315

H

Hand Pump Assembly and Selector Valve:	
Disassembly/Assembly .....	16-28.2
Removal/Installation .....	16-27
Hatches, Latches, Locks and Covers:	
Antenna Mounting Cover Plate .....	9-24.6
APU Compartment Louvered Grille .....	9-27
Commander's Cupola Hatch Door .....	9-24.4
Commander's Cupola Periscope .....	9-24.2
Crew Compartment Drain and Expansion Plugs .....	9-26.2
Drain Plugs and Covers .....	9-26
Driver's Hatch Cover and Components .....	9-18
Driver's Hatch Cover Cam Lock .....	9-23
Driver's Hatch Cover Latch .....	9-20.1
Driver's Hatch Cover Seal and Pad .....	9-22
Driver's Hatch Seal .....	9-23
Driver's Hatch Security Latch .....	9-21
Driver's Portable Instrument Panel Mounting Bracket .....	9-24.1
Driver's Portable Instrument Panel Wiring Harness (122260298) .....	6-89 ■
Engine Compartment Access Cover .....	9-25
Periscope M45 Cover, Doors and Sleeve Assembly .....	9-24
Personnel Air Ventilator Door and Grille .....	9-28
Headlights .....	6-30
Headlight Assembly .....	6-32.1
Headlight Body .....	6-34
Headlight Dimmer and Stoplight Switches .....	6-38
Headlight Mount .....	6-35

	Page
Headlight Sealed Beam and Incandescent Lamp .....	6-31
Heating and Ventilating Distribution Hoses .....	14-61
Hearing and Ventilating Duet and Heat Shields .....	14-62
Heat Shield .....	4-2.1
Hull Electrical System .....	SEE ELECTRICAL SYSTEM, HULL
■ Hull Front Wiring Harness .....	6-72
Hydraulic Actuator and Mounting Bracket .....	9-30
Hydraulic Actuator Tubes Hoses and Associated Connecting Parts .....	16-30
Hydraulic Control Gage Panel Assembly .....	16-14.7
Hydraulic Control Panel Assembly Disassembly/Assembly .....	16-8
Removal/Installation .....	16-6
Hydraulic Gage Panel Wiring Harness (12333555) .....	6-142.2
Hydraulic Reservoir and Filter Disassembly/Assembly .....	16-4
Removal/Installation .....	16-2
Hydraulic Suction and Return Lines and Associated Pars .....	16-15
Hydraulic System Schematic .....	E-1

## I

Idler Arm Assembly .....	8-23
Idler Arm Housing .....	8-25
Idler Wheels and Hubs .....	8-22
Illustrated List of Manufactured Items .....	G-1
Inlet Thermostat and Housing .....	5-24
Inside Stowage .....	SEE INTERIOR STOWAGE
Inspection:	
Automatic Fire Extinguishing System General .....	14-1
Control and Drive Components .....	3-25
Engine .....	5-2
Personnel Heater, General .....	14-1
Ventilation System, General .....	14-1
Winterization Kit General .....	15-1

	Page
Instrument Panels:	
Driver's .....	6-19
Portable .....	6-19
Insulation:	
Engine Crossover Tube .....	4-34
Exhaust Duet and Pipe .....	4-33
Intercom Cables	
CX 4723/VRC, 4 ft .....	6-105
CX 4723/VRC, 6 ft .....	6-104
CX 4723/VRC, 20 ft .....	6-106
Power Cable CX 13089/VRC, 2 ft .....	6-103
Telephone Wiring Harness (12330024) .....	6-107
Intercom Power Supply Bracket .....	6-58.1
Intercom Terminals .....	6-57
Interior Stowage	
Decontamination Apparatus Bracket .....	10-9
Driver's Stowage Box .....	10-12
Flashlight Holders .....	10-9
Left and Right Stowage Nets .....	10-10
M45 Periscope Stowage Box .....	10-11
NBC Stowage Box .....	10-13
Night Vision Goggles Carrying Case Bracket .....	10-8
Portable Fire Extinguisher Brackets .....	10-7
Rifle Stowage Clips .....	10-6
Stowage Straps, Fuzes .....	10-11
Intervehicular Grounding Cable Assembly .....	6-131 ■
Introduction .....	1-1

## K

Kit, Closure .....	17-1
--------------------	------

## L

Left and Right Fuel Pump Test .....	4-10 ■
-------------------------------------	--------

	Page
Left Front Canister Compartment Shelf Assembly .....	11-20.1
Left Rear Canister Compartment Shelves and Supports .....	11-16
Left Tail Lamp Assembly .....	6-36.2
Location and Description of Major components and system	
Auxiliary Power Unit APU .....	1-18
Conveyor System .....	1-21
Driver's Instrument Panels .....	1-25
Electrical Supply Systems and Components .....	1-17
Engine Cooling System .....	1-13
Fuel System .....	1-14
Hydraulic System, Primary and Backup .....	1-19
NBC Ventilated Face Piece System .....	1-24
Powerpack .....	1-9
Stacker System .....	1-22
Top Rear Door .....	1-23
Transmission Assembly and Drive Control Assemblies .....	1-10
Location of vehicle Components:	
Exterior .....	1-4
Interior .....	1-6
Suspension and Final Drive .....	1-8
Lower Rear Door:	
Handle .....	9-38
Handle Strike .....	9-39
Hinge Screws .....	9-37
Removal/Installation .....	9-36.1
Seal .....	9-40
<b>M</b>	
M2A2 Air Purifier .....	14-3
M3 Air Electric Heater .....	14-7
M42 Alarm and Mount .....	14-12
M43 Detector Mount and Brackets:	
Vehicles 1 thru 377 .....	14-12.1
Vehicles 378 and up .....	14-12.3
M45 Periscope Stowage Box .....	10-11

	Page
Machine Gun Support Assembly .....	9-70
Maintenance Allocation Chart:	
Introduction .....	B-1
MAC Chart .....	B-4
Remarks .....	B-53
Tool and Test Equipment Requirements .....	B-46
Master Relay Box .....	6-45
Master Warning Light (Steering Shaft) .....	7-53
<b>N</b>	
NATO Intervehicular Grounding Cable and Stowage Straps .....	6-131
NATO Intervehicular Slave Connector Ground Cable (12332678) .....	6-130
NATO Intervehicular Slave Connectors .....	6-56
NBC Power Control Box to NBC Heater and Air Purifier Wiring	
<b>Harness</b> .....	6-109
NBC Stowage Box .....	10-13
NBC Ventilated Face Piece and Detection/Alarm System:	
Air Outlet Orifice Connection .....	14-8
General Inspection and .....	14-1
Hose Assemblies .....	14-8
M2A2 Air Purifier .....	14-3
M3 Air Electric Heater .....	14-7
M42 Alarm and Mount .....	14-12
M43 Detector Mount and Brackets (Vehicles 1 thru 377) .....	14-12.1
M43 Detector Mount and Brackets (Vehicles 378 and up) .....	14-12.3
NBC Power Control Box .....	14-9
Neutral Safety Switch .....	6-16
Night Vision Goggles carrying Case Bracket .....	10-8
<b>O</b>	
Oil Cooler Hoses .....	5-4
Oil Filter .....	5-4.3
Oil Filter and Oil Cooler Tubes, Transmission .....	7-7
Oil Filter Bracket .....	5-5



	Page
Oil Falter, Transmission .....	7-9
Oil Sampler System .....	5-4.1
Optical Fire Sensing Sensing (OFSA) .....	14-34
Outside Stowage .....	SEE EXTERIOR STOWAGE

**P**

Pads, Track .....	8-2
Parking Brake Light Switch and Bracket .....	7-19
Parking Brake Linkage .....	7-18
Adjustment .....	7-42
■ Passive Viewer Cable Assembly (12332740) .....	6-112
Periscope, M45, Cover, Doors and Sleeve Assembly .....	9-24
Personnel Air Ventilator Door and Grille .....	9-28
Personnel Door:	
Assist Handle .....	9-49
Hinges (Vehicles 1 thru 33) .....	9-46
■ Hinges (Vehicles 34 and up) .....	9-46.2
Hold-Open Latch and Bumps Assembly .....	9-48.1
Latch Assembly .....	9-44.2
Removal Installation .....	9-41
Seal .....	9-48.3
Personnel Heater:	
<b>Duct</b> .....	14-68
Exhaust Tube .....	14-72.3
Fuel Filter and Tubes .....	14-69
Fuel Pump .....	14-71
General Inspection and Repair .....	14-1
Heater Duct .....	14-68
Mounting Clamp, Saddle Ducts, Hoses, Tubes and Deflectors .....	14-64.2
Mounting Clamps and Brackets .....	14-72.1
Outlet Hose, Tee Assembly and Controls .....	14-66
Removal/Installation .....	14-68.2
Personnel Ventilation Blower .....	14-63
Pintle Assembly	
Disassembly/Assembly .....	9-68.1

	Page
Removal/Installation .....	9-68
Repair .....	9-68.2
Pioneer Kit, Towing Cable Strops, Watercan Straps and Track Fixture Strap .....	10-2.1
Portable Fire Extinguisher Brackets .....	10-7
Powerpack	
Disconnect Points .....	3-10
Fuel Hoses, Tubes and Connectors .....	4-20
Hookup for Operation Outside of Vehicle .....	3-25
Hull (Exterior) Access Doors and Grilles .....	3-5
Hull Preparation for Powerpack Installation .....	3-32
Installation .....	3-24
Preliminary Removal Procedures .....	3-4
Removal .....	3-24
Stall Test with Powerpack Removed .....	3-29
Wiring Harness (12268102) .....	6-64
Wiring Harness Mounting Bracket .....	6-18.1
Powerpack Electrical System .....	SEE ELECTRICAL SYSTEM, POWERPACK
Pressure Relief Valve and Block Mount .....	5-18.2
Preventive Maintenance Cheeks and Services (PMCS) .....	2-6
Air Cleaner Filter .....	2-24
APU Compartment Front and Side Doors .....	2-36
APU Fuel Filters .....	2-41
Auxiliary Power Unit .....	2-40
Backup Hydraulic System .....	2-40
Batteries .....	2-15
Bilge Pump .....	2-28
Brakes .....	2-31
Bump Stop Brackets .....	2-10
Canister Racks and Fuze Containers .....	2-45
Chemical Detector and Alarm System .....	2-46
Commander's Cupola .....	2-36
Commander's, Driver's and Crew Seats .....	2-37
Conveyor .....	2-43
Coolant .....	2-22
Cooling System Pressure Relief Valve .....	2-21

	Page
Preventive Maintenance Checks and Services (PMCS) (continued):	
Cooling System Radiator Hoses and Pump	2-19
Decals, Instructions Plates and Paint	2-32
Dome Lights	2-46
Drain Covers and Plugs	2-14
Drive Sprocket and Hubs	2-12
Driver's Hatch	2-37
Electrical System Wiring Harness and Cables	2-45
Engine	2-27
Engine Fan Drive System	2-18
Engine Governed Speed and Performance	2-31
Exhaust Ducts	2-28
Fenders and Rear Splash Guards	2-36
Final Drive Universal Joints	2-28
Final Road Test	2-32
Fire Extinguisher System	2-24
Fuel Fill Door	2-35
Fuel Fill Strainer	2-17
Hydraulic System	2-39
Instrument Panel	2-29
Leakage from Powerpack	2-32
Left and Right Side Doors	2-35
Lubrication	2-9
NBC Equipment	2-47
Neutral Safety Switch	2-27
Personnel Side Door	2-35
Projectile Racks	2-45
Rear Door	2-33
Roadwheels and Idler Wheels	2-9
Shock Absorbers	2-11
Stacker	2-42
Steering Control	2-31
Stowage Boxes	2-38
Temperature of Hubs and Shock Absorbers	2-32
Top Doors	2-34
Torsion Bar	2-11
Tracks	2-13

	Page
Transmission	2-24
Projectile Rack Assembly	
Canister Stowage Boxes	11-9
Rack Assembly Braces	11-10
Rack Base, Supports and Vehicle Wall-mounted Restraints	11-3
Removal Aid	11-10.1
Removal/Disassembly/Assembly/Installation	11-5
Repair	11-8.1
Stowage Box Guard Plate Assembly	11-2
Pulse Tachometer, STE/ICE	6-161

**Q**

Quick Guide to Troubleshooting	2-51
--------------------------------	------

**R**

Rack Hoist Strops, Crowbar Stop, Barrel Straps	10-3
<b>Radiator</b>	<b>5-21</b>
Radiator Cap Access Cover	9-66.11
Radiator Cleaning	5-20
Radiator Fan Protective Screens	2-5
Radiator Mounts	<b>5-23</b>
Radiator Shroud	5-18
Rear Track Splash Guard	9-67
Rectifier	6-7
Rectifier to Regulator Wiring Harness (12330342)	6-76
References	A-1
Relay Cover, AFES	14-34
Relief Valve	4-17
Remote Chemical Detector Alarm Terminals	6-58
Remote Status Indicator (RSI)	14-38
Resistor Box (STE/ICE)	6-162
Rifle Stowage Clips	10-6
Right Front Canister Compartment Shelf Assembly	11-12
Right Rear Canister Compartment Shelves and Supports	11-12
Right Tail Light Assembly	6-36

	Page
Roadwheel Arm .....	8-16
Roadwheel Hubs .....	8-13
Roadwheels .....	8-11
<b>S</b>	
<b>Seat Assemblies</b>	
Commanded Seat Carriage .....	9-7
Commander's Seat Ceiling Bracket Supports .....	9-11
Commander's Seat Post and Footrest .....	9-9
Commander's Seat, Disassembly/Assembly .....	9-10
Commander's Seat, Removal/Installation .....	9-6
Crew Seats, Left Side .....	9-16
Crew Seats, Right Side .....	9-12
Driver's Seat .....	9-1
Service and Parking Brake Linkage .....	7-18
Adjustment Parking Brake .....	7-42
Adjustment, Service Brake .....	7-40
Service Upon Receipt .....	2-3
Shift Control Linkage .....	7-29
Adjustment .....	7-34
Base Assembly .....	7-33
Quadrant Assembly .....	7-31
Rod Assemblies .....	7-31
Support Assembly .....	7-32
<b>Shipment and Storage</b>	
Army Shipping Documents .....	18-1
Blocking .....	18-3
Inspection During Storage .....	18-2
Limited Storage Instructions .....	18-1
Loading .....	18-2
Receiving Inspection .....	18-1
Removal from Limited Storage .....	18-2
Removed of Preservatives Prior to Shipment .....	18-1
Shipping Instructions .....	18-1
Shock Absorber and Suspension Bracket .....	8-26

	Page
Shock Absorber Bearing .....	8-27
Shock Mount and Bracket .....	5-9
Shoes, Track .....	8-3
<b>Simplified Test Equipment for Internal Combustion:</b>	
<b>Engine Powered Materiel (STE/ICE):</b>	
Air Box Transducer .....	6-159
Air Cleaner Transducer .....	6-159
DCA to Driver's Bulkhead Harness (12329996) .....	6-147
Driver's Bulkhead to Engine Disconnect Harness (12329994) .....	6-155
Engine Transducers to Engine Electrical Disconnect Harness (12329990) .....	6-151
Fuel Pressure Transducer and Differential Switch .....	6-158
Pulse Tachometer .....	6-161
Resistor Box .....	6-162
Troubleshooting .....	2-48.1
Vehicle Test Card .....	2-48.47
Speedometer and Tachometer Systems .....	7-50
<b>Stacker Assembly:</b>	
Carrier Assembly .....	12-38
Carrier Assembly and Motor Support Bracket .....	12-34
Carrier Wide Bars and Guides .....	12-37
Foot Brake .....	12-40
Hydraulic Brake .....	12-42
Hydraulic Motor and Drive Sprocket .....	12-42.2
Hydraulic Tubing, Hoses and Associated Connecting Parts .....	16-32
Idle Sprocket Assembly .....	12-39
Outer and Inner Guards .....	12-31
Removal/Installation .....	12-30.1
Roller Chain .....	12-32
Sliding Tray Assembly .....	12-36
Stacker Bar Assembly .....	12-45
Support Assembly, Upper Crossmember and Support Brackets .....	12-44.1
Wear Strip .....	12-41
Winch Assembly .....	12-33
Stacker Control Switch Box .....	6-59
Stacker Control Switch Cable Assembly (12330259) .....	6-122

	Page
Stacker Solenoid Wiring Harness (12332677-1) .....	6-123
Standard Control Electronic Amplifier (SCEA) .....	14-40
Starter Motor .....	6-13
Steering Control Linkage .....	7-11
Adjustment .....	7-44
Housing Assembly .....	7-13
Rod Assemblies .....	7-14
Rod Assembly and Shaft .....	7-14
Steeling Shaft .....	7-12
STE/ICE .....	SEE SIMPLIFIED TEST EQUIPMENT FOR INTERNAL COMBUSTION ENGINES
Stoplight and Headlight Dimmer Switches .....	6-38
Stowage Boxes and Baskets .....	10-1
Stowage Nets, Left and Right .....	10-10
Stowage Straps, Fuzes .....	10-11
Surge Tank .....	5-16.2
Surge Tank Hoses and Fittings .....	5-16.5
Suspension System:	
Idle Arm Assembly .....	8-23
Idle Arm Housing .....	8-25
Idle Wheels and Hubs .....	8-22
Roadwheel Arm .....	8-16
Roadwheel Hubs .....	8-13
Roadwheels .....	8-11
Shock Absorber .....	8-26
Shock Absorber Bearing .....	8-27
Suspension Bracket .....	8-26
Torsion Bar Anchors .....	8-19
Torsion Bar, Anchor and Roadwheel Arm Hub Assembly	
Identification Charts .....	8-10
Torsion Bar .....	8-17
Track Adjuster and Mounting Bracket .....	8-20.2

T

Tachometer and Speedometer Systems .....	7-50
--	------

	Page
Telephone Hand Reel .....	9-69
Telephone Wiring Harness (12330024) .....	6-107
Test and Alarm Panels (T/A), AFES:	
Crew .....	14-38
Engine .....	14-39
Tests	
APU Control Box Circuit Continuity Test .....	13-39
APU Control Box Short Circuit Test .....	13-40
Automatic Fire Extinguisher System Test .....	14-56
Battery Specific Gravity Check .....	6-42
Fuel Flow .....	4-22
Left and Right Electric Fuel Pump .....	4-10
Main and Lubricating Oil Pressure and Oil Temperature Check .....	7-2
Stall Test .....	7-6
Stall Test, Powerpack Removed .....	3-29
Systems Test, AFES:	
crew AFES (Vehicles 1 thru 344) .....	14-56
(Vehicles 345 and above) .....	14-60.1
Engine AFES (Vehicles 1 thru 344) .....	14-59
(Vehicles 345 and above) .....	14-60.5
Transmission Pressure Checks .....	7-1
Transmission, Transfer and Drive Control Assemblies	
Pressure Checks .....	7-2
Throttle Control Lever and Accelerator Pedal .....	7-24
Adjustment, Hand Throttle .....	7-47
Adjustment Pedal .....	7-48
Bracket Assembly .....	7-26
Bracket Support Assembly .....	7-26
Bracket Support Assembly .....	7-26.1
Hand Throttle Control Assembly .....	7-27
Pedal and Shaft Assembly .....	7-27
Pedal Stop .....	7-27
Rod Assemblies .....	7-25
Thrown Track and Track Replacement .....	8-5
Top Doors:	
Inner Seals .....	9-58.1

	Page
Top Doors (continued):	
Left Door Hold-Open Components .....	9-51
Left Door Removal/Installation .....	9-50
Middle Door Disassembly/Assembly .....	9-57
Middle Door Hold-Open Compels .....	9-56
Middle Door Removal/Installation .....	9-54
Outer Seals .....	9-58.3
Right Door Hold-Open Components .....	9-53
Right Door Removal/Installation .....	9-52
Torque Values for Threaded Fasteners .....	C-1
Torsion Bar, Anchor and Roadwheel Hub Assembly	
Identification Charts .....	8-10
Torsion Bar Anchors .....	8-19
Torsion Bars .....	8-17
Tow Cable Hooks and Final Drive Skid Plates .....	9-68.3
Towing Attachments and Pintle Assembly .....	9-68
Towing Cable Straps, Pioneer Kit, Water Can Straps and	
Track Fixture Strap .....	10-2.1
Track Adjuster and Mounting Bracket .....	8-20.2
Tracks:	
Thrown Track and Track Replacement .....	8-5
Track Pads .....	8-2
Track Shoes .....	8-3
Track Tension, Checking and Adjusting .....	8-8
Trailer Receptacle Wiring Harness (12330246) .....	6-128
Transducers, STE/ICE	
Air Box Transducer .....	6-159
Air Cleaner Transducer .....	6-160
Fuel Pressure Transducer and Differential Switch .....	6-158
Pulse Tachometer .....	6-161
Transmission Access Doors .....	9-66.14
Transmission Access Doors and Battery Access Doors Seals .....	9-66.17
Transmission Oil pressure Transmitter and Oil Low	
Pressure Switch .....	6-12
Transmission Oil Temperature Transmitter and Oil High	
Temperature Switch .....	6-11

	Page
Transmission Output Flange .....	8-36
Transmission, Transfer and Drive Control Assemblies:	
Accelerator, Throttle and Engine Control Governor .....	7-22.2
Brake Assembly in Driver's Compartment .....	7-15
Breather Tube, Filter and Mount .....	7-10
General .....	7-1
Linkage in Powerpack Compartment .....	7-21
Master Warning Light (Steering Shaft) .....	7-53
Oil Falter .....	7-9
Oil Filter and Oil Cooler Hoses .....	7-7
Parking Brake Light Switch and Bracket .....	7-19
Pressure Checks .....	7-2
Service and Parking Brake Linkage .....	7-18
Shift Control Linkage .....	7-11
Speedometer and Tachometer Systems .....	7-50
Stall Test .....	7-6
Steering Control Linkage .....	7-29
Throttle Control Lever and Accelerator Pedal .....	7-24
Troubleshooting:	
Quick Guide to Troubleshooting .....	2-51
STE/ICE .....	2-48.1
Troubleshooting Charts .....	2-61
Tubing and Nozzles, Crew and Engine Compartment	
Engine AFES .....	14-30.12

## U

Universal Joints .....	8-37
Upper Rear Door:	
Actuator Mounting Bracket and Hydraulic Actuator .....	9-30
Bumper Stop and Bracket .....	9-34
Hinges .....	9-32
Hydraulic Actuator Tubes, Hoses and Associated	
Connecting Parts .....	16-30
Removal/Installation .....	9-28.6
Seal .....	9-35
Upper Rear Door Control Switches .....	6-61

	Page
<b>V</b>	
Vehicle Reprocessing:	
Closure Kit .....	17-2
Padding, Basic Issue Item Boxes .....	17-3
Tape .....	17-3
Ventilation Screen Removal and Access Cover Installation .....	17-4
Vehicle Specifications .....	12-7
Vehicle Test Card STE/ICE .....	2-48.47
Ventilating and Heating Distribution Hoses .....	14-61
Ventilating and Heating Duct and Heat Shields .....	14-62
Ventilation Blower, Personnel .....	14-63
Ventilation Blower Relay .....	6-53
Voltage Regulator, Bilge Pump Relay, Starter Relay, Circuit Breaker and Mounting Brackets .....	6-5
<b>W</b>	
Water Can Straps, Pioneer Kit, Towing Cable Straps and Track Fixture Strap .....	10-2.1
<b>Winterization Kit:</b>	
APU Compartment Heating Ducts .....	5-12
APU Front Door and Side Door Covers .....	5-13
Battery Heater and Insulation Boxes .....	15-8
Coolant Heater Wiring Harness .....	5-11
Coolant Heater .....	15-7
Coolant Pump .....	15-5
Engine and Battery .....	15-2
Exhaust Outlet Assembly and Heater Control Box .....	15-4
Fuel Pump .....	15-6
General Inspection and Repair .....	15-1
Heater Control Box .....	15-9
Tarpaulin Grille Covers .....	15-10
Wiring Harness and Cable Repairs .....	2-307
Wiring Harness Guard .....	2-315

	Page
<b>Wiring Harness, AFES:</b>	
Crew AFES (Vehicles 1 thru 344)	
12351498 .....	14-40.2
12351499 .....	14-42
12351501 .....	14-48
Crew AFES (Vehicles 345 and above)	
12352315 .....	14-52
12352316 .....	14-52.4
12352353 .....	14-52.6
Engine AFES (vehicles 1 thru 344)	
12351500 .....	14-50.5
Engine AFES (Vehicles 345 and above)	
12352354 .....	14-52.12
<b>Wiring Harnesses, Powerpack and Hulk</b>	
Accessory Control Box to AFES Harnesses, AFES	
Relays and Personnel Ventilation Blower (12351461) .....	6-93
Air Cleaner Blower Motor Relay (10897991) .....	6-92
APU Branched Wiring Harness (12329640) .....	6-136 ■
APU Cable Assembly (11671371) .....	6-139
APU Cable Assembly (11671380-1) .....	6-140
APU Cable Assembly (11671380-2) .....	6-141
APU Cable Assembly (12332833) .....	6-138
APU Control Box to APU Voltage Regulator (12330248) .....	6-113
APU Generator Ground Lead (12329662) .....	6-145 ■
APU Ground Cables (11671369-1) .....	6-142
APU Hourmeter Wiring Harness (12329660) .....	6-143 ■
APU Sending Units Wiring Harness (12329650) .....	6-132 ■
Battery Cables (10897992 10897993, 12330348) .....	6-126
Battery to Driver's Bulkhead (12330317) .....	6-120
Bulkhead to Headlights/Bilge Pump (10921380) .....	6-73
cargo compartment (12330257) .....	6-77 ■
Conveyor Control Switch to Conveyor Override Safety	
Switch (12330244) .....	6-120.2
Driver's Bulkhead to APU Voltage Regulator (12330256) .....	6-118
Driver's Portable Instrument Panel (128260298) .....	6-89 ■

	Page
Wiring Harnesses, Powerpack and Hull (continued)	
Engine Bracket to Driver's Bulkhead (11593782) .....	6-67
Engine Disconnect to Bracket to Driver's Bulkhead (1226100) .....	6-68
■ Hull Front Wiring Harness .....	6-72
Hydraulic Gage Panel Harness (1233555) .....	6-124.2
Intercom Cable CX4723/VRC, 4 ft .....	6-105
Intercom Cable CX4723/VRC, 6 ft .....	6-104
Intercom Cable CX4723/VRC, 20 ft .....	6-106
Intercom Power Cable CX10389/VRC, 2 ft .....	6-103
NATO Intervehicular Slave Connector Ground Cable (12332678) .....	6-130
■ NBC Power Control Box to NBC Heater and Air Purifier Wiring Harness (12330296) .....	6-109
Powerpack (12268102) .....	6-64
Rectifier to Regulator (12330342) .....	6-76
Stacker Control Switch Cable (12330259) .....	6-122
Stacker Solenoid Valve Harness (12332677-1) .....	6-123
Telephone (12330024) .....	6-107
Telephone Wiring Harness (12330024) .....	6-107
Trailer Receptacle Harness (12330246) .....	6-128
Wiring Harness, STE/ICE:	
DCA to Driver's Bulkhead (12329996) .....	6-147
Driver's Bulkhead to Engine Disconnect (12329994) .....	6-155
Engine Transducers to Engine Electrical Disconnect (12329990) .....	6-151





RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



**SOMETHING WRONG WITH THIS PUBLICATION?**

*THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.*

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

(Your mailing address)

DATE SENT

PUBLICATION NUMBER

TM 9-2350-267-20

PUBLICATION DATE

28 October 1985

PUBLICATION TITLE

Organizational Maintenance Manual

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
400			
512			

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Change illustration. Reason: Tube end shown assembled on wrong side of lever cam.

Figure 191, item 3, has the wrong NSN. Supply rejects orders for this item. The NSN shown here is not listed in the AMDF or the MCRL. Please give us the correct NSN and P/N.

**SAMPLE**

TEAR ALONG DOTTED LINE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

John Doe, SSG/3 XX-XXXX

SIGN HERE

FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD 314



OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

Commander  
US Army Tank-Automotive Command  
ATTN: AMSTA-MB  
Warren, Michigan 48397-5000

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



**SOMETHING WRONG WITH THIS PUBLICATION?**

*THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL.*

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

TM 9-2350-267-20

PUBLICATION DATE

28 October 1985

PUBLICATION TITLE

Organizational Maintenance Manual

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

TEAR ALONG DOTTED LINE.....

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

**DA** FORM 1 JUL 79 **2028-2**

PREVIOUS EDITIONS ARE OBSOLETE

P.S — IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD 314



TEAR ALONG PERFORATED LINE

Commander  
US Army Tank-Automotive Command  
ATTN: AMSTA-MB  
Warren, Michigan 48397-5000

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



**SOMETHING WRONG WITH THIS PUBLICATION?**

*THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL.*

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

TM 9-2350-267-20

PUBLICATION DATE

28 October 1985

PUBLICATION TITLE

Organizational Maintenance Manual

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
---------	------------	-----------	----------

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

TEAR ALONG DOTTED LINE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S — IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD 314



TEAR ALONG PERFORATED LINE

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

Commander  
US Army Tank-Automotive Command  
ATTN: AMSTA-MB  
Warren, Michigan 48397-5000

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



**SOMETHING WRONG WITH THIS PUBLICATION?**

THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL.

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER  
TM 9-2350-267-20

PUBLICATION DATE  
28 October 1985

PUBLICATION TITLE  
Organizational Maintenance Manual

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

TEAR ALONG DOTTED LINE.....

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S. — IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD 314



TEAR ALONG PERFORATED LINE

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

Commander  
US Army Tank-Automotive Command  
ATTN: AMSTA-MB  
Warren, Michigan 48397-5000



RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL.

**SOMETHING WRONG WITH THIS PUBLICATION?**

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

TM 9-2350-267-20

PUBLICATION DATE

28 October 1985

PUBLICATION TITLE

Organizational Maintenance Manual

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
---------	------------	-----------	----------

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

TEAR ALONG DOTTED LINE.....

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S — IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

\_\_\_\_\_  
\_\_\_\_\_

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD 314



TEAR ALONG PERFORATED LINE

Commander  
US Army Tank-Automotive Command  
ATTN: AMSTA-MB  
Warren, Michigan 48397-5000

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

TM 9-2350-267-20

PUBLICATION DATE

28 October 1985

PUBLICATION TITLE

Organizational Maintenance Manual

BE EXACT PIN POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

TEAR ALONG DOTTED LINE

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

\_\_\_\_\_  
\_\_\_\_\_

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD 314



TEAR ALONG PERFORATED LINE

Commander  
US Army Tank-Automotive Command  
ATTN: AMSTA-MB  
Warren, Michigan 48397-5000



By Order of the Secretary of the Army:

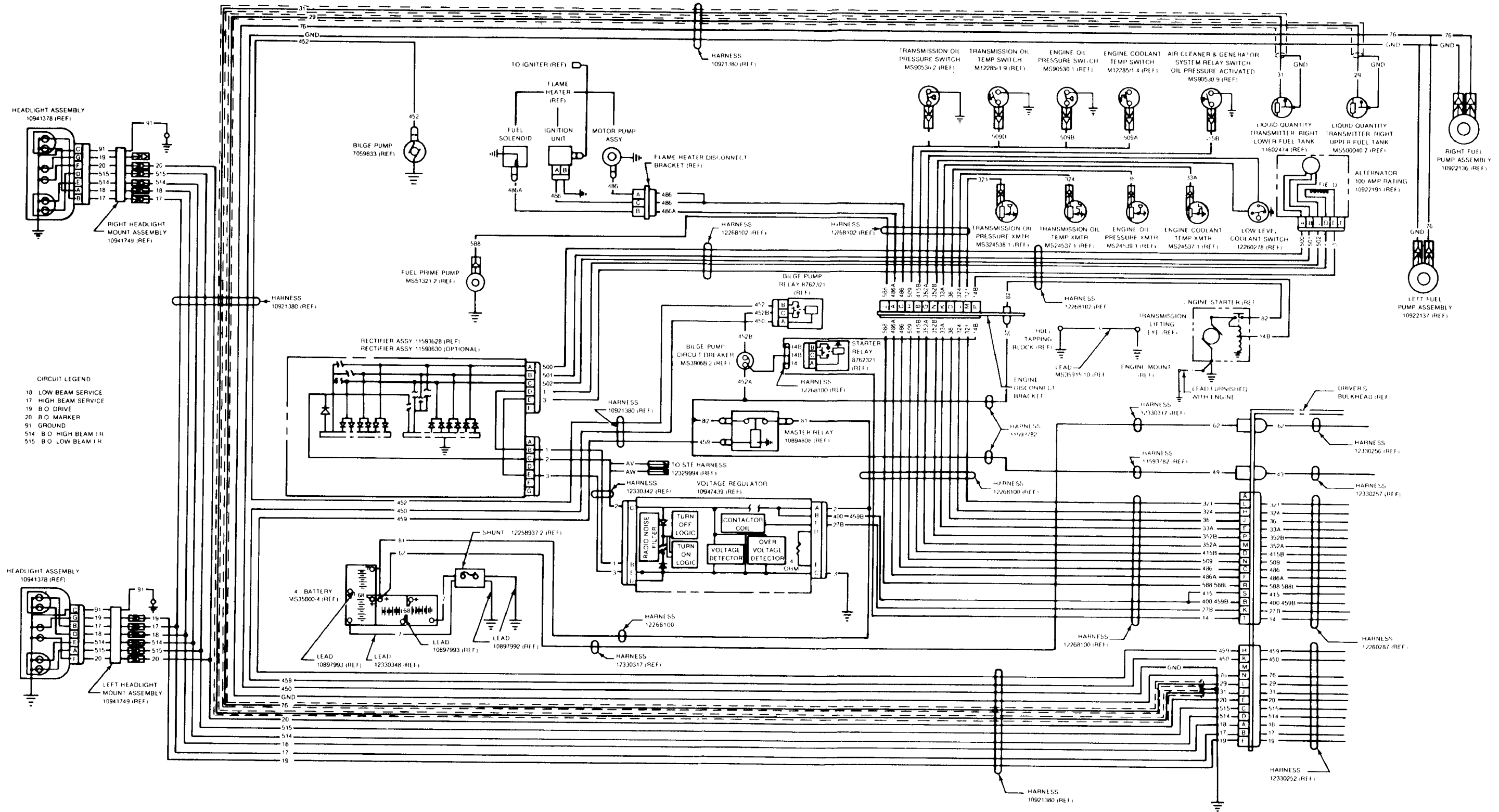
JOHN A. WICKHAM, Jr.  
*General United States Army*  
*Chief of Staff*

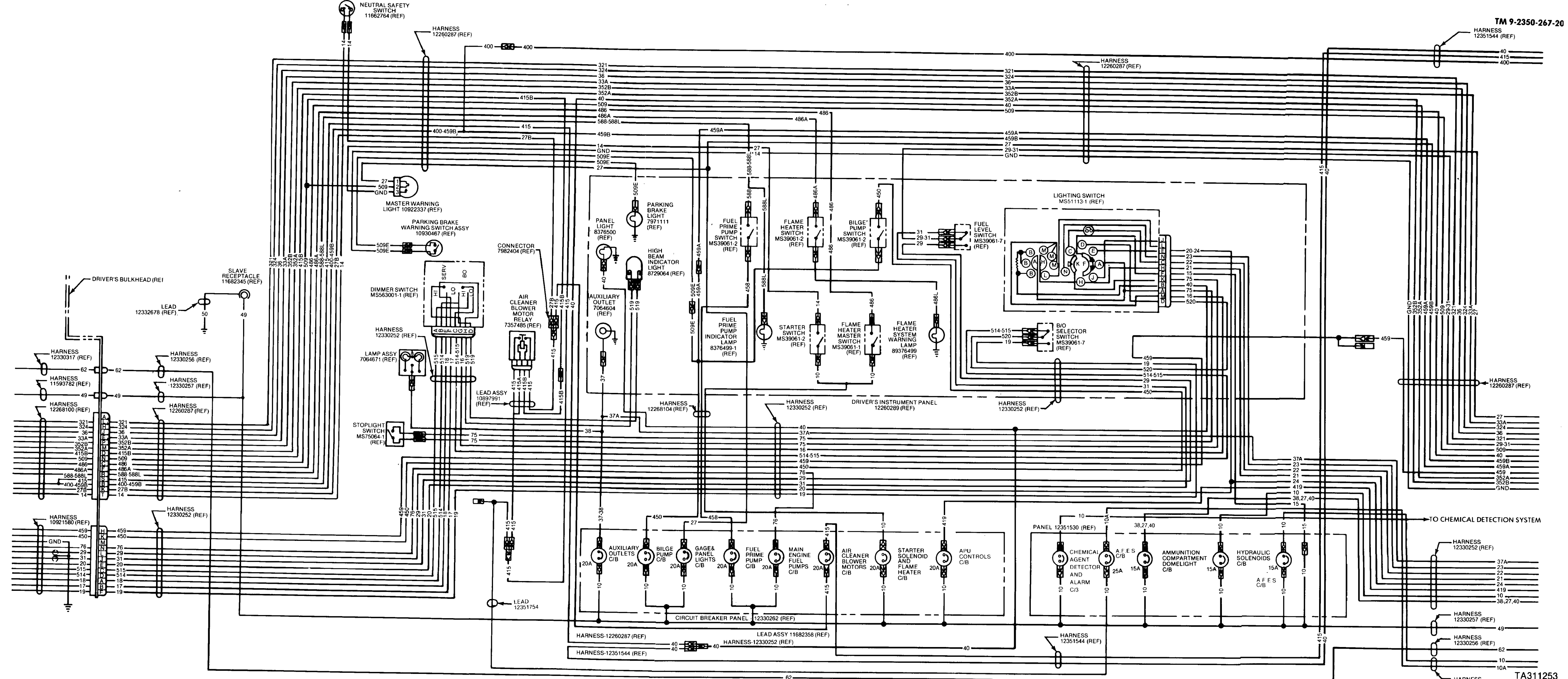
Official:

**MILDRED E. HEDBERG**  
*Brigadier General United States Army*  
*The Adjutant General*

Distribution:

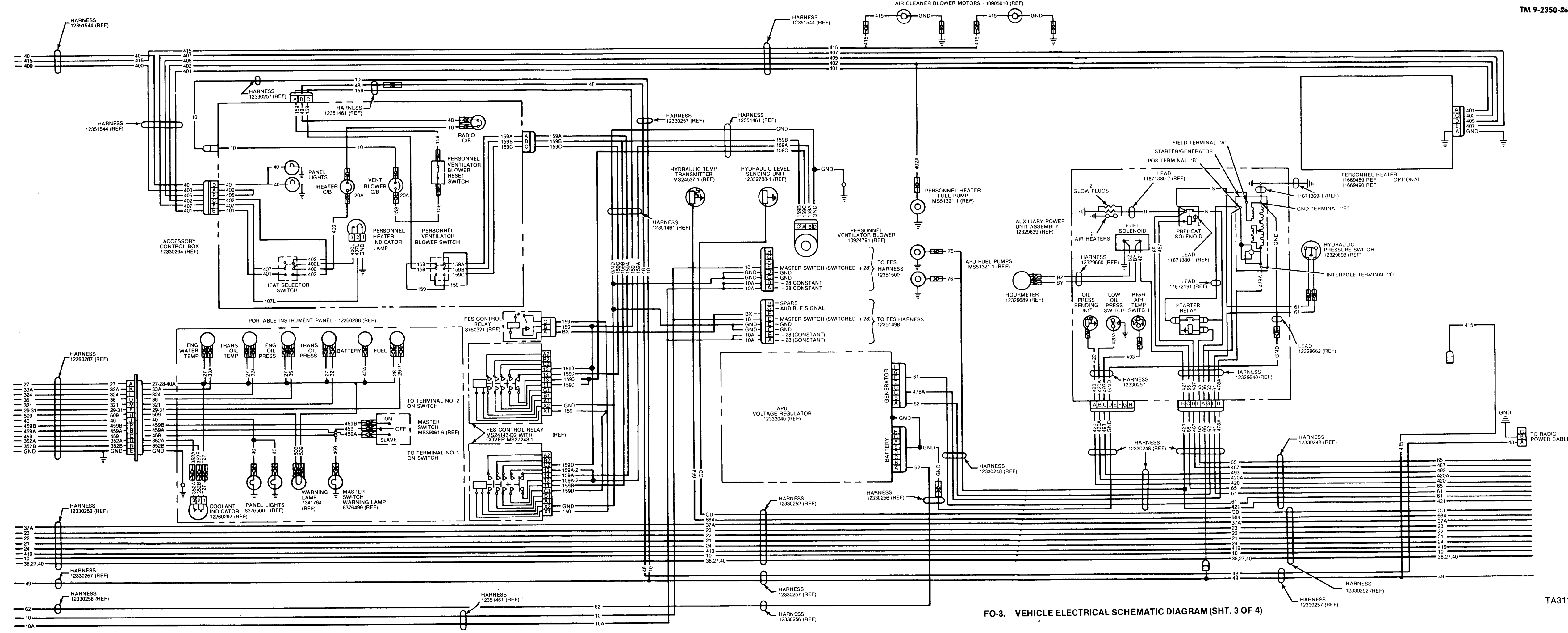
To be distributed in accordance with DA Form 12-37, organizational maintenance requirements for Carrier, Ammunition, Tracked, M992.



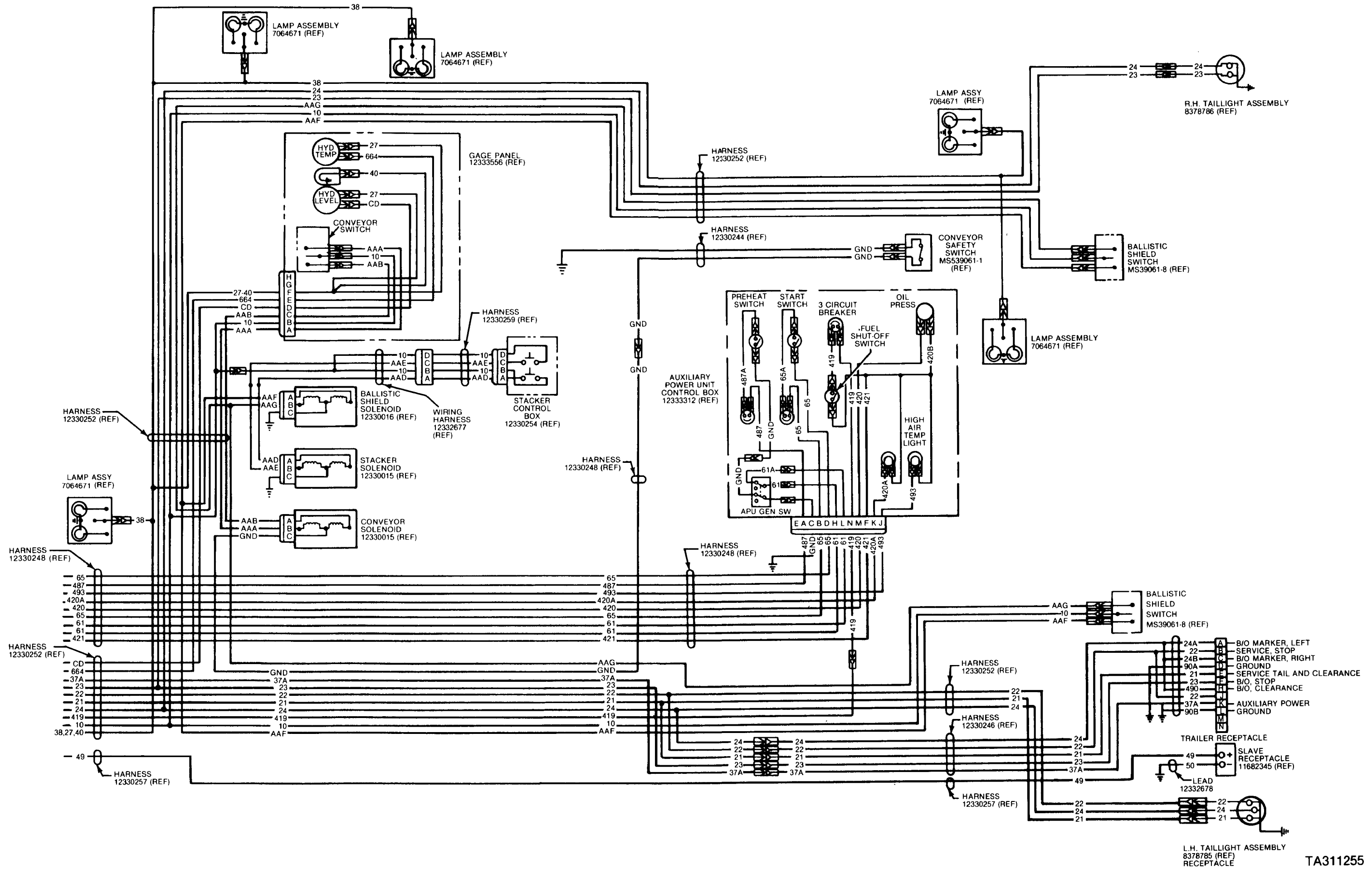


FO-2. VEHICLE ELECTRICAL SCHEMATIC DIAGRAM (SHT. 2 OF 4)

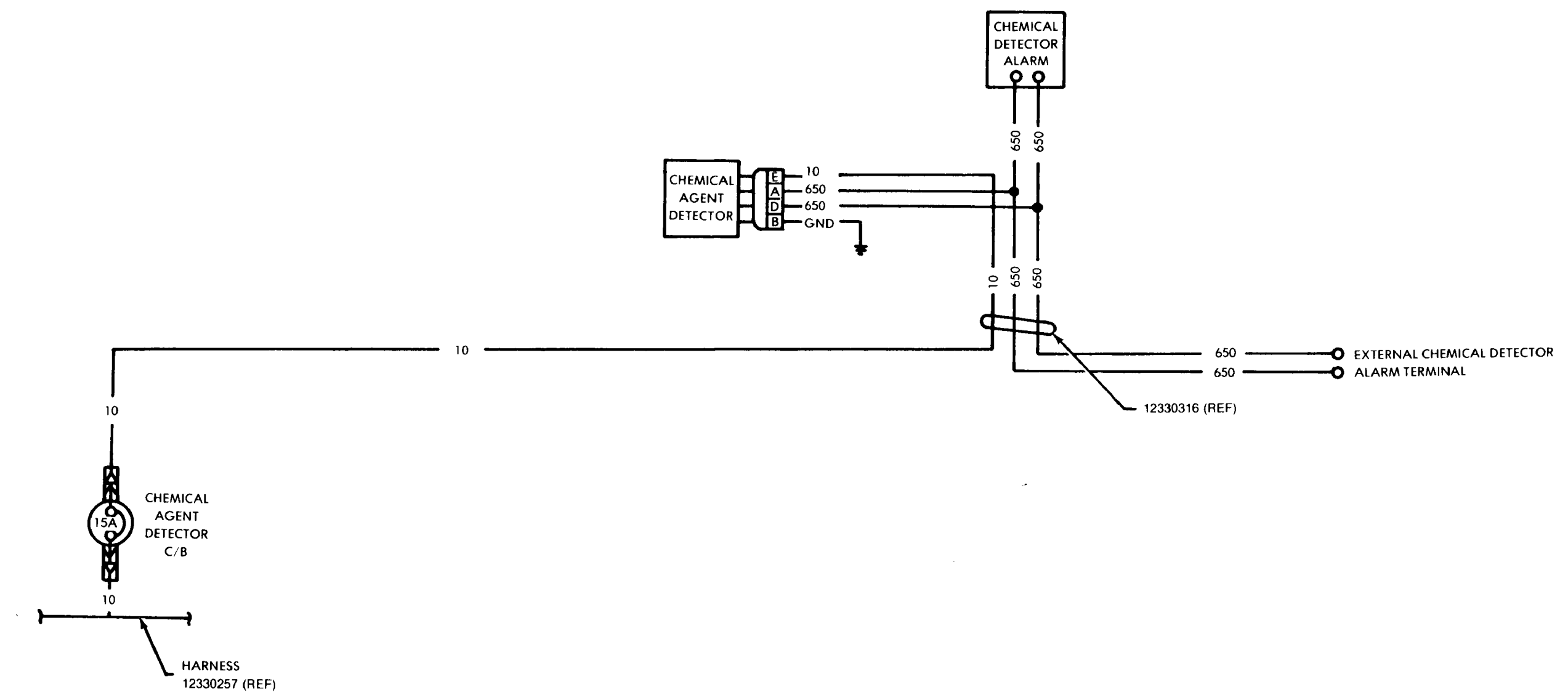




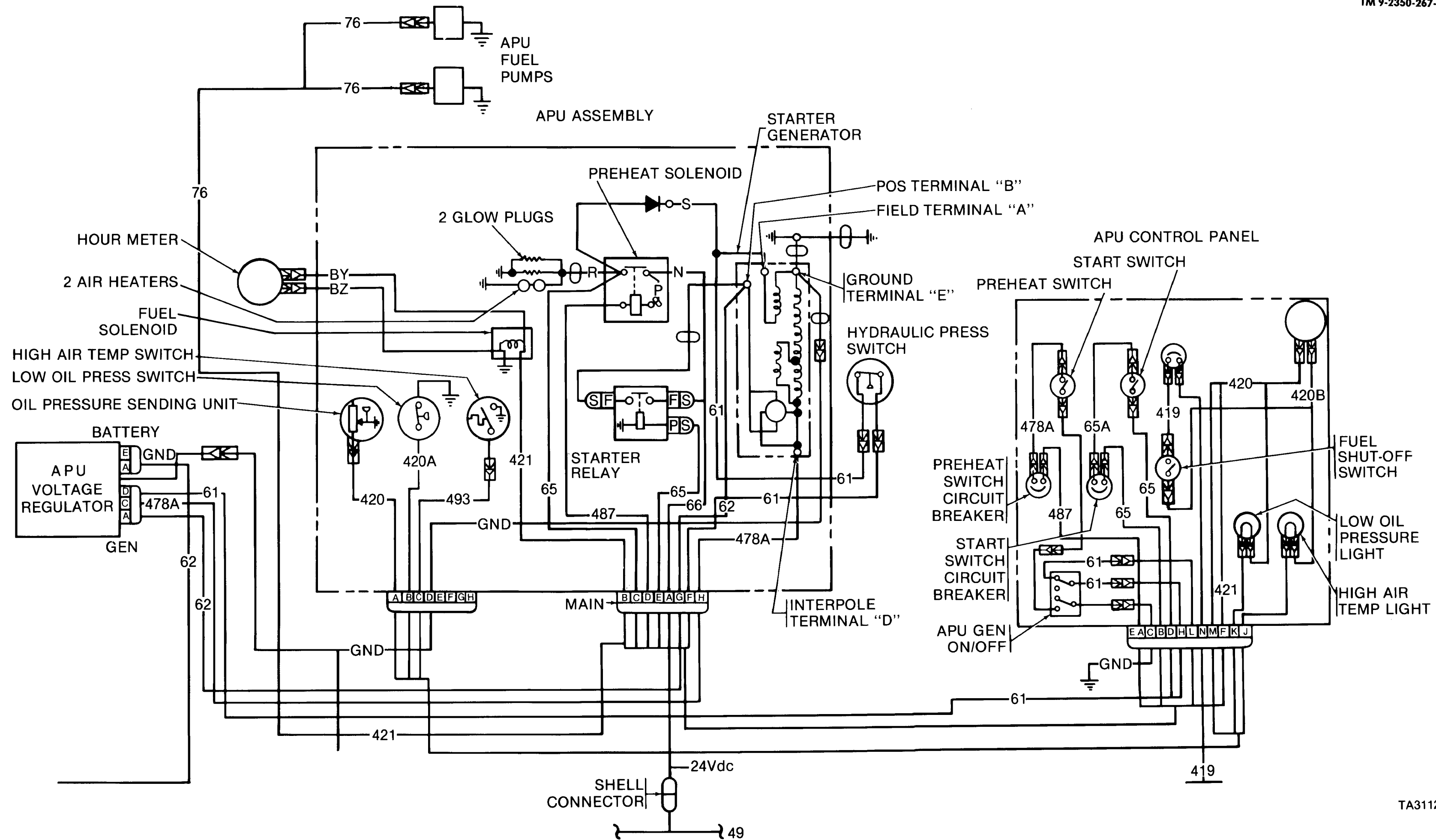
FO-3. VEHICLE ELECTRICAL SCHEMATIC DIAGRAM (SHT. 3 OF 4)



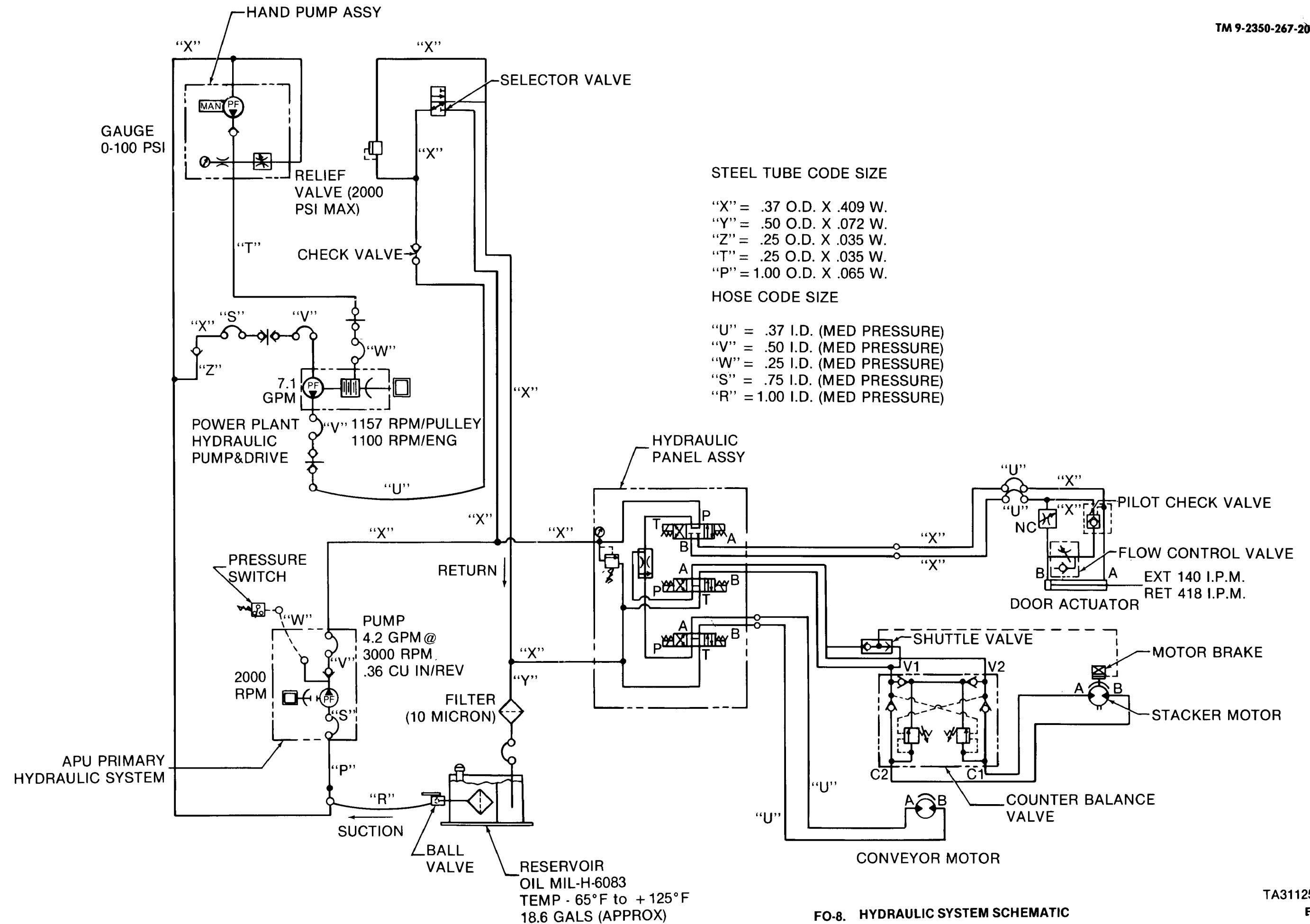
FO-4. VEHICLE ELECTRICAL SCHEMATIC DIAGRAM (SHT. 4 OF 4)



FO-5. CHEMICAL AGENT DETECTOR ALARM ELECTRICAL SCHEMATIC



FO-6. APU & APU CONTROL PANEL ELECTRICAL SCHEMATIC



FO-8. HYDRAULIC SYSTEM SCHEMATIC

By Order of the Secretary of the Army:

Official:

CARL E. VUONO  
*General, United States Army*  
*Chief of Staff*

R.L. DILWORTH  
*Brigadier General, United States Army*  
*The Adjutant General*

Distribution:

To be distributed in accordance with DA Form 12-37R, Unit Maintenance requirements for Carrier, Ammunition, Tracked M992.



PIN: 058892-001



## 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

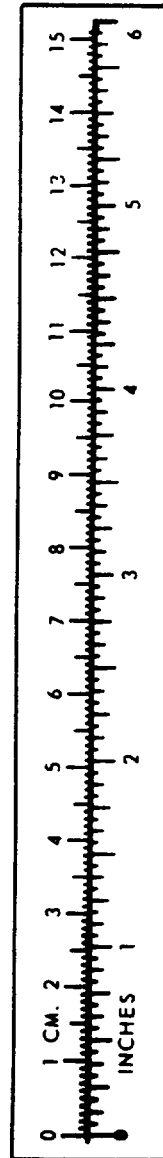
### TEMPERATURE

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

## 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



RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN... JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

**SOMETHING WRONG WITH THIS PUBLICATION?**

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT... PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
----------	------------	------------	-----------

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

DA FORM 2028-2 JUL 79

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

