

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

FOR

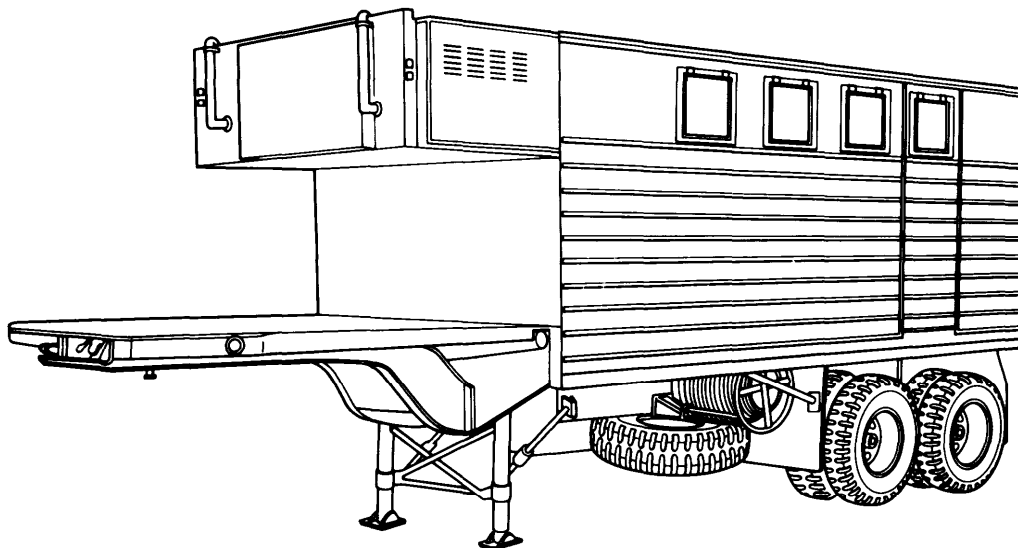
CHASSIS, SEMITRAILER: 6-TON, 4-WHEEL
M295A1 (NSN 2330-00-649-8124)

SEMITRAILER, VAN: EXPANSIBLE, 6-TON, 4-WHEEL
M313 (NSN 2330-00-772-5273)

SEMITRAILER, VAN: SHOP, FOLDING SIDES, 6-TON, 4-WHEEL
M447 (NSN 2330-00-542-5709)
M447C (NSN 2330-00-472-9999)

SEMITRAILER, VAN: REPAIR PARTS, SHOP EQUIPMENT,
6-TON, 4-WHEEL
M749 (NSN 2330-00-587-2454)

SEMITRAILER, VAN: REPAIR PARTS STORAGE,
6-TON, 4-WHEEL
M750 (NSN 2330-00-926-7035)



M313

This manual and TM 9-2330-238-24P supersede TM 9-2330-238-14&P dated 15 April 1976, and all changes.

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JULY 1992

Change
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 19 August 1993

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Current as of

TM 9-2330-238-14, 14 July 1992, 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.

Remove pages	Insert pages
a and b	a and b
i thru iii/(iv blank)	i thru iii/(iv blank)
1-3 thru 14	1-3 thru 1-4
1-31 and 1-32	1-31 and 1-32
2-9 thru 2-10	2-9 thru 2-10
2-21 thru 2-26	2-21 thru 2-26
4-191 thru 4-204	4-191 thru 4-204
B-7 thru B-9/(B-10 blank)	B-7 thru B-9/(B-10 blank)
E-1 thru E-4	E-1 thru E-4
Index 3 and Index 8	Index 3 and Index 8

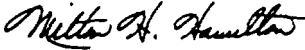
3. File this change sheet in front of the publication for reference purposes.

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By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:


MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
04946

Distribution:

To be distributed in accordance with DA Form 12-39-E (Block 1000) requirements for TM9-2330-238-14.

FOR INFORMATION ON FIRST AID, REFER TO FM 21-11.

WARNING

ASBESTOS HAZARD

- DO NOT handle brakeshoes, brakedrums, or other brake components unless area has been properly cleaned. There may be asbestos dust on these components which can be dangerous if you touch it or breathe it. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust may be removed using an industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.
- Asbestos can be dangerous if you touch it or breath it. Wear an approved mask and gloves. Never use compressed air or a dry brush to clean components containing asbestos. Dust maybe removed using an industrial-type vacuum cleaner. Clean dust or mud away from components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.

WARNING

COMPRESSED AIR

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

WARNING

COUPLING AND UNCOUPLING SEMITRAILER

All personnel must stand clear of towing vehicle and semitrailer during coupling and uncoupling operations. Failure to follow this warning may result in serious injury or death to personnel.

WARNING

DRY CLEANING SOLVENT

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

WARNING

ELECTRICAL SYSTEM

When troubleshooting an electrical malfunction or performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from towing vehicle. Failure to do so may result in injury or death due to electric shock.

WARNING

HANDLING HEAVY COMPONENTS

Stand clear of lifting device when raising or lowering van body or semitrailer chassis. Failure to follow this warning may result in serious injury or death to personnel.

WARNING

SECURING SEMITRAILER

If semitrailer is not coupled to towing vehicle, ensure that wheels are securely chocked. Failure to do so may cause semitrailer to roll, resulting in injury to personnel or damage to equipment.

WARNING

DRILLING OPERATION

Use safety goggles or glasses during drilling operations. Failure to follow this warning may result in serious injury to personnel.

TECHNICAL MANUAL

TM 9-2330-238-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 14 July 1992

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6-TON, 4-WHEEL
M750 (NSN 2330-00-926-7035)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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

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* This manual and TM 9-2330-238-24P supersede TM 9-2330-238-14&P, dated 15 April 1976, and all changes.

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CHAPTER 1 INTRODUCTION

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1-1. SCOPE.

a. This manual describes the operation and Organizational, Direct Support, and General Support Maintenance for:

- Chassis, Semitrailer: 6-Ton, 4-Wheel, M295A1.
- Semitrailer, Van: Expansible, 6-Ton, 4-Wheel, M313.
- Semitrailer, Van: Shop, Folding Sides, 6-Ton, 4-Wheel, M447 and M447C.
- Semitrailer, Van: Repair Parts, Shop, Equipment, 6-Ton, 4-Wheel, M749.
- Semitrailer, Van: Repair Parts, Storage, 6-Ton, 4-Wheel, M750.

b. Throughout this manual, the terms “curbside” and “roadside” are used to describe views of the semitrailers. As viewed from the rear, curbside is right side and roadside is left side.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, *The Army Maintenance Management System (TAMMS)*.

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE,

For destruction of Army materiel to prevent enemy use, refer to TM 750-244-6.

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

For information on preparing semitrailer for storage or shipment, refer to Chapter 4, Section XIV

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).

If your semitrailer needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell use what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF Form 368 (*Product Quality Deficiency Report*). Mail it to us at: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MP, Warren, MI 48397-5000. We will send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

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1-6. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

a. The semitrailers are designed to be towed by a 5-ton truck tractor.

b. The M295A1 Chassis, used with all of the van bodies mentioned in this manual, is a 6-ton, 4-wheel vehicle equipped with the following:

(1) A frame consisting of two siderails, ten crossmembers, channels, and a plate to support the kingpin. Angles, brackets, spring tensioners, and other attaching hardware on frame serve to mount the different van bodies.

(2) A 24-volt electrical system capable of operating under standard and blackout modes.

(3) Adjustable landing gear to support the front of the semitrailer when uncoupled from the towing vehicle.

(4) Leveling jacks to level and stabilize the semitrailer van in its parked position.

(5) Four dual wheels on two axles. The wheels are an offset disk-type rim with split-type retaining side ring.

(6) A spare wheel and tire carrier mounted on the side of the frame of the chassis.

(7) Standard 2 in. kingpin for use with fifth wheel of standard 5-ton or 2½-ton, 6 x 6, truck tractor.

(8) A pintle located at rear for towing purposes.

(9) A single point, two-spring, tandem axle suspension which utilizes parallelogram type linkage. There are two, eight-leaf springs which add extra support to the main springs under heavy loads.

(10) Dual-line air/hydraulic brake system which receives air pressure from the towing vehicle.

c. The M313 Expansible Van Body is a mobile, expansible van shop:

(1) The M313 is designed to house maintenance shop sets to be used by personnel maintaining and repairing equipment in the field.

(2) In expanded position, the M313's volume is approximately twice its volume in retracted position.

(3) In both expanded and retracted positions, body is sealed against water and light.

1-6 EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES (Con't).

d. The M447C Expansible Van Bodies function as mobile van shops and have the following features:

(1) Folding side doors which open and extend to become floor and roof, providing a large working area.

(2) The M447C is equipped with aluminum side panels. A canvas curtain kit is available to replace panels if desired.

(3) The M447C is equipped with an air conditioner. The M447 is not.

e. The M749 and M750 Expansible Van Bodies function as mobile repair parts vans and have the following features:

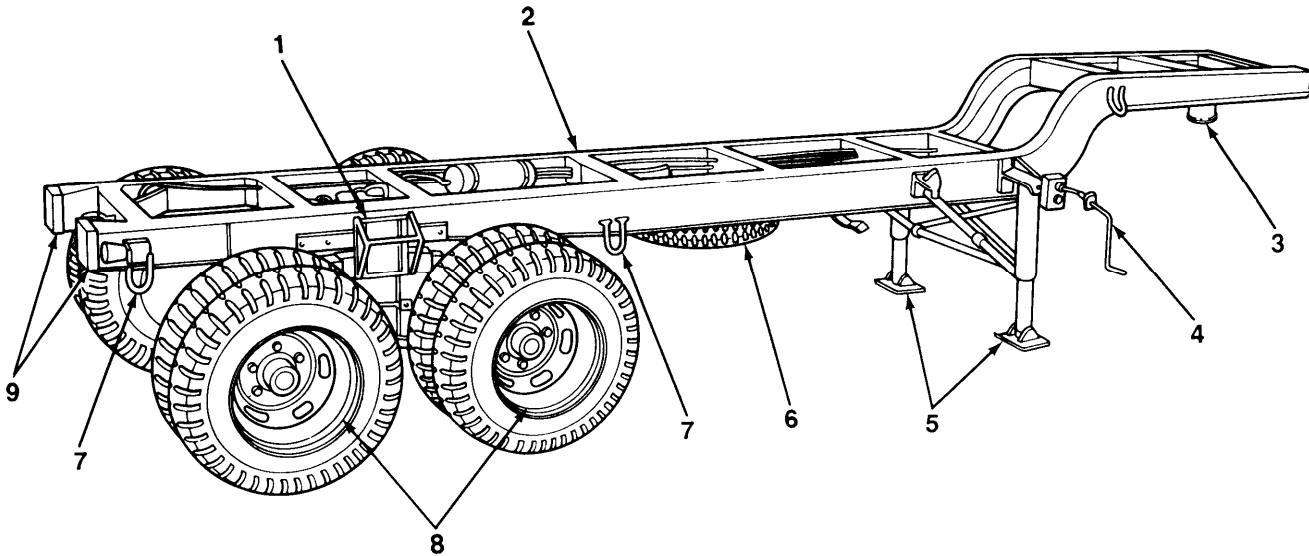
(1) Folding side doors which open and extend to become floor and roof, providing a large working area.

(2) Storage bins and shelves store repair parts and related material.

(3) Canvas curtains enclose the expanded van body in inclement weather.

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

a. M295A1 Chassis.

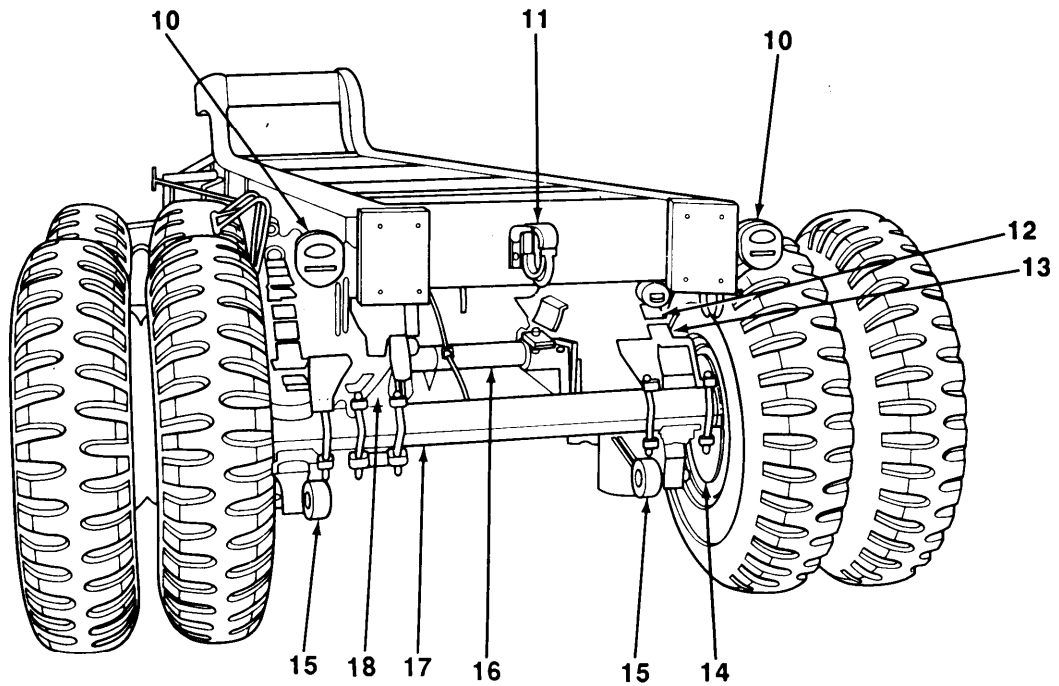


CURBSIDE VIEW

Key	Component	Description
1	Wheel Chocks	Prevent wheels from rolling when semitrailer is uncoupled.
2	Frame	Composed of two siderails reinforced by ten crossmembers, channels, and a plate to support the kingpin.
3	Kingpin	Couples semitrailer to towing vehicle.
4	Handcrank	Extends and retracts (ratchet-type) landing gear.
5	Landing Gear	Supports semitrailer and aids in raising or lowering semitrailer during coupling. Early model landing gear legs operate in unison using a curbside ratchet-type handcrank which can be operated in either direction. Late model landing gear legs operate independently of each other, using a handcrank on each side.
6	Spare Tire Assembly	Mounted in spare wheel and tire carrier. Provides emergency replacement for damaged tire.
7	Tie-down Brackets	Ties down semitrailer during shipment.
8	Wheel Assembly	Consists of offset disk-type rim and split-type retaining side ring.
9	Rubber Bumpers	Protect semitrailer during towing operation.

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1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

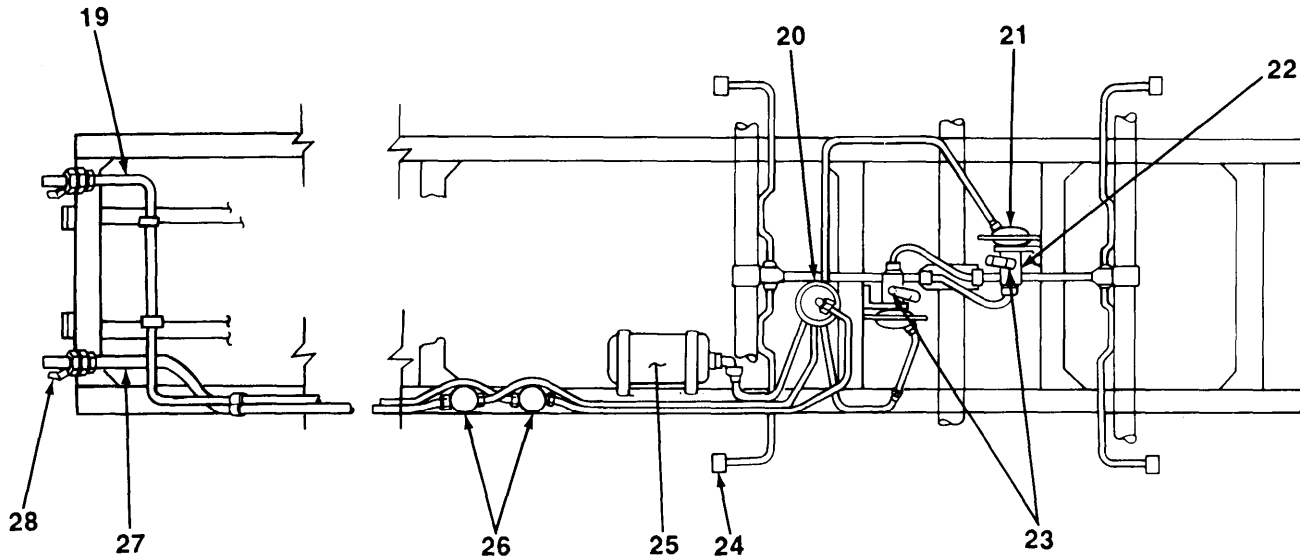


REAR VIEW

Key	Component	Description
10	Stoplight-taillight and Blackout Stoplight	Indicate presence of semitrailer to vehicles behind.
11	Pintle	Tows additional equipment behind semitrailer.
12	Helper Spring Assembly	Mounted directly over main spring. Provides extra support to main spring while under heavy load.
13	Main Spring Assembly	Provides support and absorbs shock from road during transit.
14	Brakedrum	Provides braking for semitrailer.
15	Torque Rods	Prevent horizontal movement of main axles.
16	Axle and Bracket Assembly	Connects entire suspension system to frame.
17	Main Axle	Provides mounting for wheel assemblies. Consists of rear and front axles.
18	Spring Bracket	Provides a mounting surface for main spring assembly and helper spring assembly.

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1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



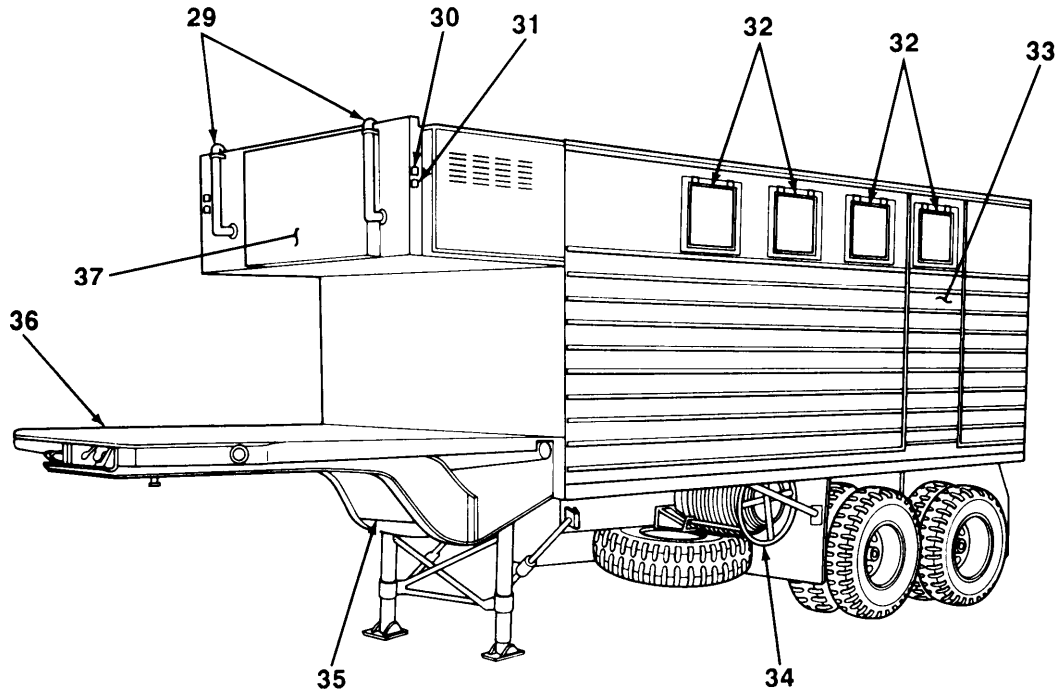
AIR/HYDRAULIC BRAKE SYSTEM

Key	Component	Description
19	Service Air Line	Receives compressed air from towing vehicle for braking purposes during towing operation.
20	Relay Valve	Directly controls the service brakes. Receives air from service air line which causes relay valve to release compressed air from air reservoir.
21	Airbrake Chamber	Receives air from air reservoir and actuates master cylinder.
22	Master Cylinder	Provides hydraulic pressure to move wheel cylinders in wheel brake mechanisms.
23	Filler Caps	Provide access hole for filling master cylinder with brake fluid.
24	Wheel Cylinder	Receives brake fluid from master cylinder and applies pressure to brake linings. Fitted with a bleeder valve at rear of cylinder to permit air to be bled from the system.
25	Air Reservoir	Stores compressed air to apply semitrailer chassis brakes. Equipped with a draincock for draining moisture and releasing air pressure if brakes are locked.
26	Air Filters	Prevent moisture and foreign material from passing through air system. Contain removable elements. Pipe plug at bottom of air filter may be removed to drain moisture.
27	Emergency Air Line	Receives compressed air from towing vehicle to engage emergency brakes.
28	Air Couplings	Connect emergency and service air lines of semitrailer to towing vehicle.

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1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

b. M313 Expansible Van Body.

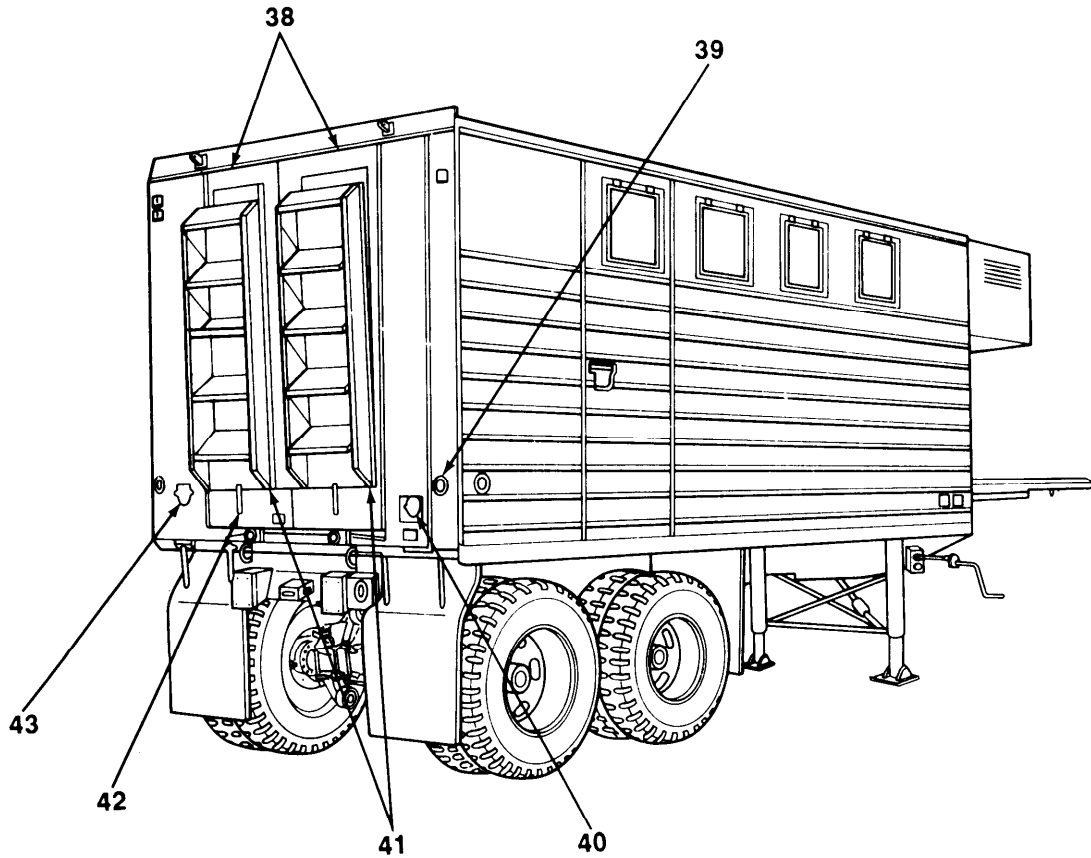


FRONT ROADSIDE VIEW

Key	Component	Description
29	Heater Exhaust Pipes	Provide exhaust capabilities for personnel heaters.
30	Clearance Lights	Indicate height and width of van body during normal operating conditions.
31	Blackout Clearance Lights	Indicate height and width of van body during blackout conditions.
32	Windows	Open to provide ventilation and light. Provided with blackout panel.
33	Side Door	Provides access to van body interior,
34	Cable Reel	Provides exterior storage for power cable.
35	Fuel Tank	Stores fuel for personnel heater.
36	Platform	Provides an external area for equipment storage.
37	Front Bonnet Door	Provides fresh air to air conditioner when open.

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1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

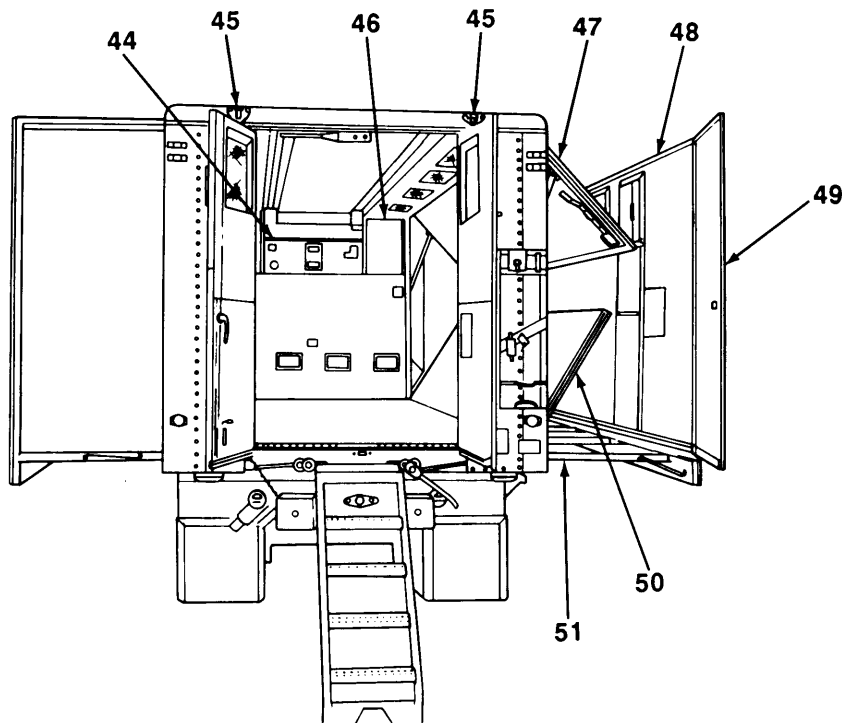


REAR CURBSIDE VIEW

Key	Component	Description
38	Rear Doors	Provide access to van body interior.
39	Reflector	Indicates presence of van body when disconnected from power supply.
40	Power Inlet Housing	Provides housing for external power supply connection to van body.
41	Ladders	Provide access to platform and van body interior.
42	Ladder Clamps	Store ladders during towing operations.
43	Outside Telephone Jack	Provides exterior telephone connection.

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1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

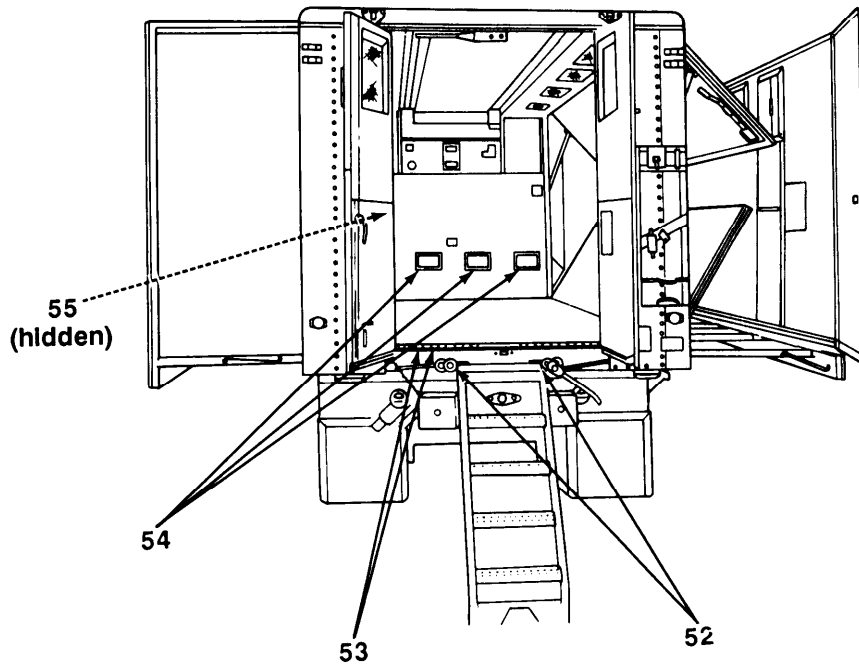


REAR INTERIOR VIEW

Key	Component	Description
44	Air Conditioner	Provides a controlled source of cooled or fresh air to van body interior.
45	Lifting Brackets	Lift van body during shipping.
46	Personnel Heaters	Provide a controlled source of heated air to van body interior. Located on curbside and roadside of inner front wall.
47	Hinged Roof	Opens simultaneously with hinged floor by means of a counterbalance mechanism. Serves as extension of van roof in expanded position.
48	Side Wall	Attached to outer ends of retractable beams. Serves as van outer wall in expanded position.
49	End Panel Door	In expanded position, serves as extension of front and rear walls, Folded against side wall in retracted position.
50	Hinged Floor	Opens simultaneously with hinged roof by means of a counterbalance mechanism. Serves as extension of van floor in expanded position.
51	Retractable Beam	Five equally spaced roller-mounted beams extend and retract from either side of underframe by means of five driving sprockets.

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1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

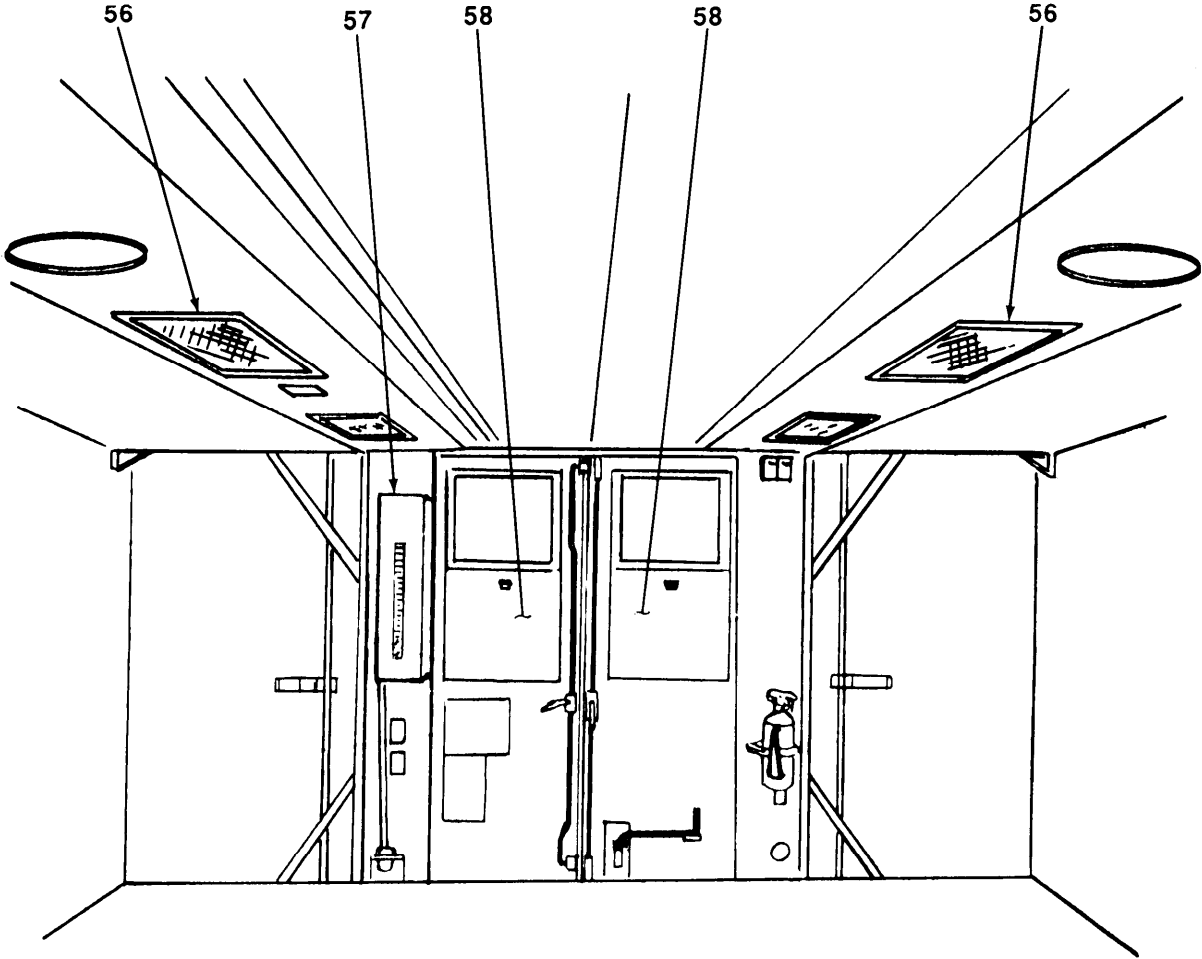


REAR INTERIOR VIEW

Key	Component	Description
52	Drive Shafts	Expand and retract van body by rotating and engaging driving sprockets for retractable beams.
53	Heater Ducts	incorporated into floor and covered by an aluminum tread plate which functions as a radiant heating surface. Provide air circulation during personnel heater operation.
54	Heat Registers	Provide openings for heat circulation when personnel heaters are in use. Control lever on left side of heat register controls opening and closing of louvers.
55	Fire Extinguisher	Mounted on roadside of inside front wall. Provides portable fire fighting capability.

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1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

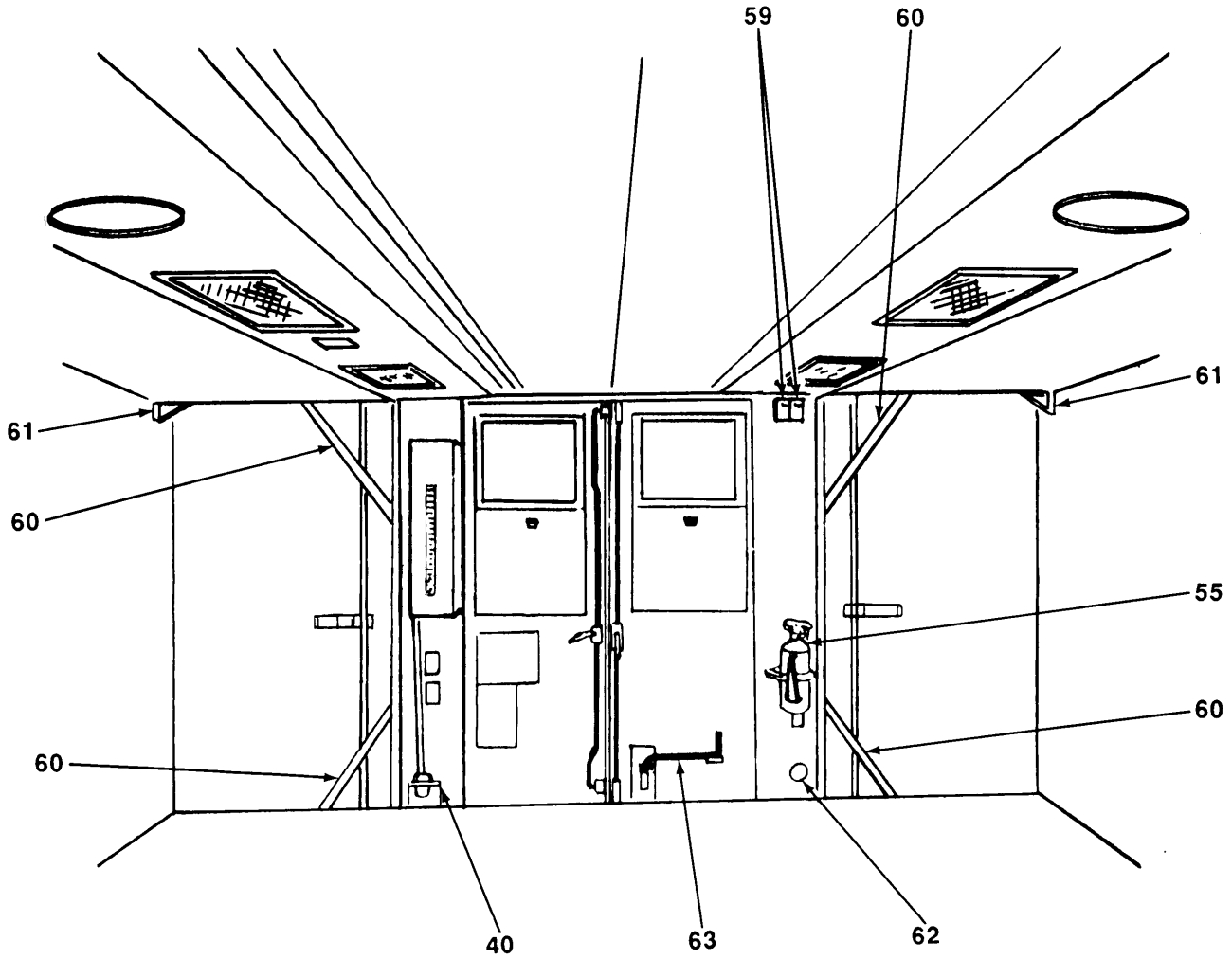


INNER REAR WALL

Key	Component	Description
56	Fluorescent Lighting Fixtures	Provide interior lighting for van body. Equipped with three push-type switches which can be operated without removing fixtures' mesh grille.
57	Junction Box	Contains distribution panel and circuit breakers for van body electrical circuits.
58	Blackout Panels	Close to provide blackout protection for rear door windows.

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1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



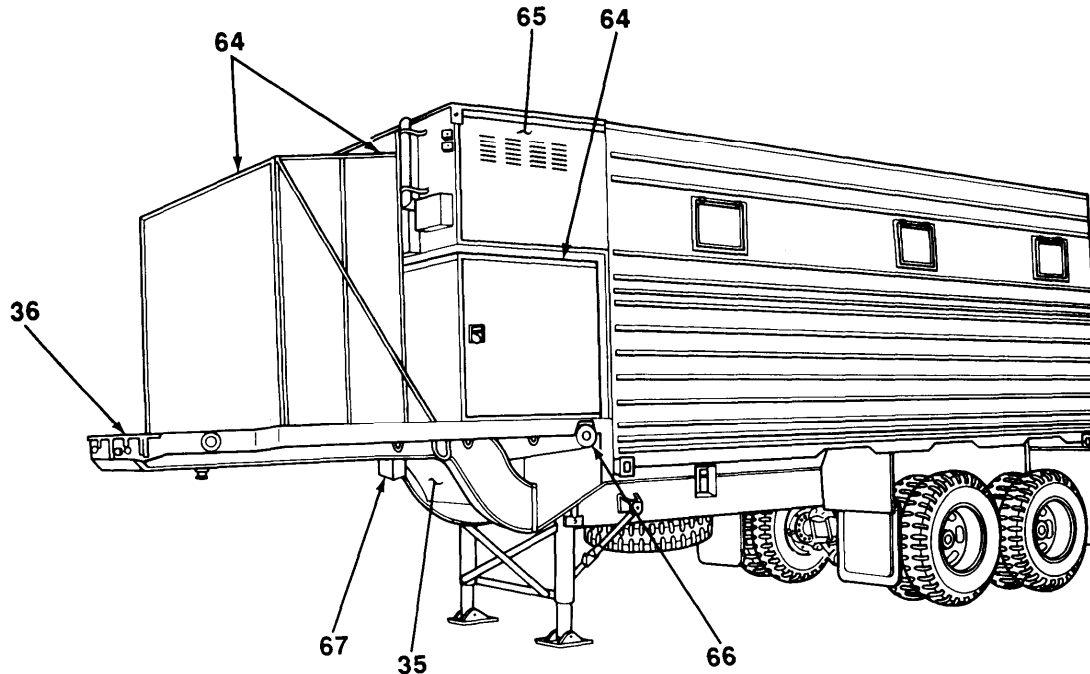
INNER REAR WALL

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

Key	Component	Description
59	Thermostats	Control temperature setting for personnel heaters.
60	Counterbalance Mechanism	Provides for simultaneous opening of hinged roof and hinged floor.
61	Swivel Hooks	Located along upper edge of side walls. When turned 90°, provide support for hinged roof in expanded position.
62	Power Cable Entrance Port	Located in lower roadside corner of rear wall. Provides a capped opening to van body interior for an auxiliary power cable.
63	Drive Shaft Wrench	Stowed on rear door. Operates drive shafts to expand and retract van body side walls.
40	Power Inlet Housing	Provides housing for power supply connection to van body.
55	Fire Extinguisher	Mounted on roadside of inner rear wall. Provides portable fire fighting capability.

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

c. M447 and M447C Expansible Van Bodies.

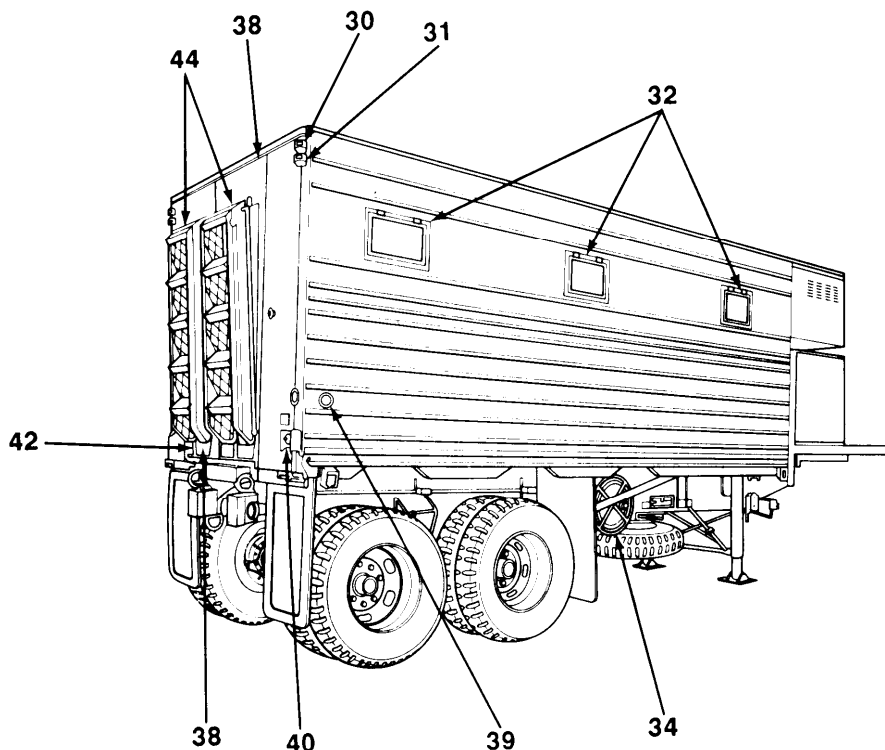


FRONT ROADSIDE VIEW

Key	Component	Description
64	Stowage Boxes	Provide additional stowage space for equipment.
65	Bonnet Door	Provides fresh air to air conditioner and personnel heater when open
66	Fuel Tank Filler Tube	Fills personnel heater fuel tank.
67	Flare Box	Provides exterior storage box for emergency flares.
35	Fuel Tank	Stores fuel for personnel heater.
36	Platform	Provides an external area for equipment storage.

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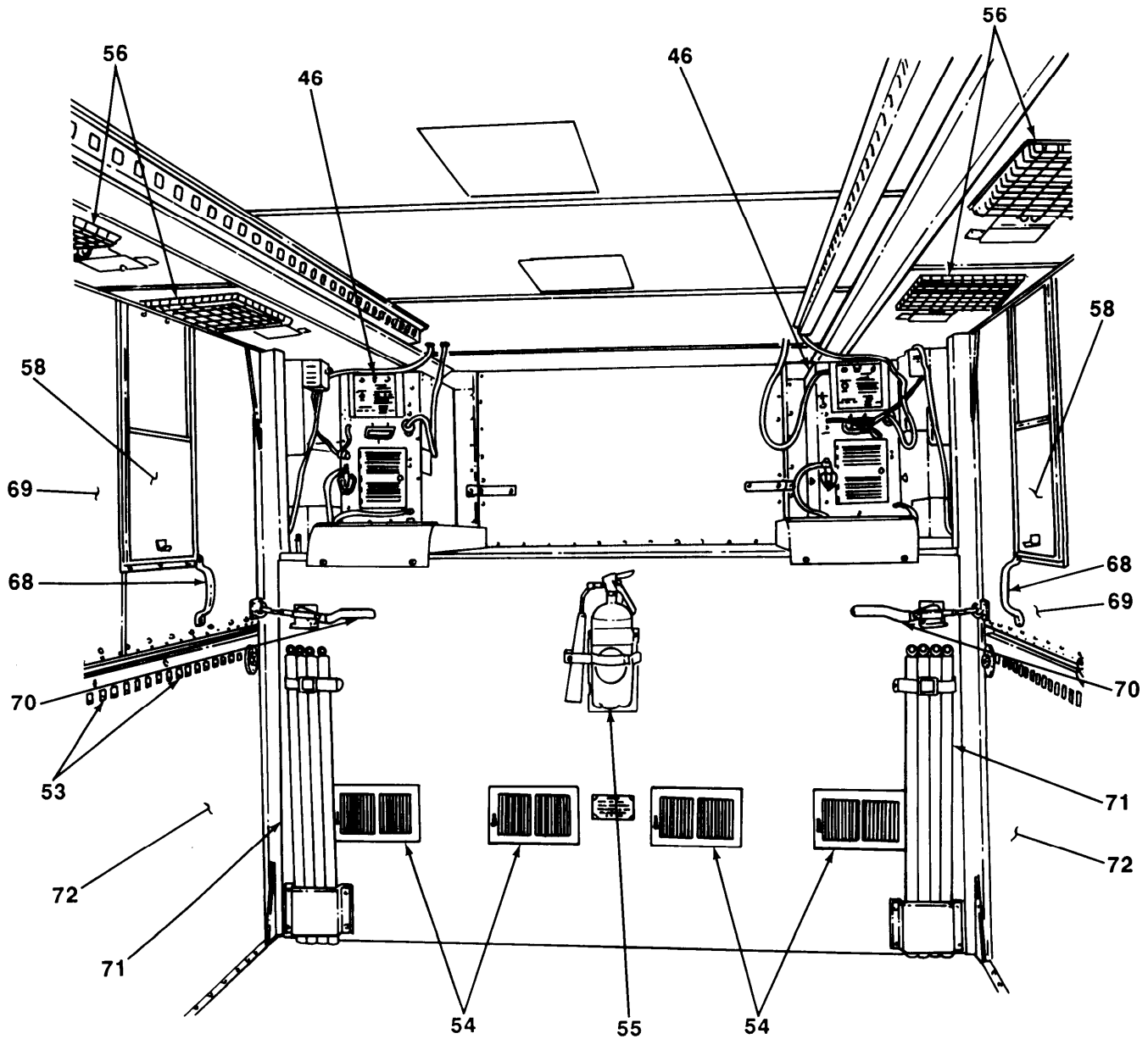
1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



REAR CURBSIDE VIEW

Key	Component	Description
30	Clearance Lights	Indicate height and width of van body during normal operating conditions.
31	Blackout Clearance Lights	Indicate height and width of van body during blackout conditions.
32	Windows	Open to provide ventilation and light. Provided with blackout panel.
34	Cable Reel	Provides exterior storage of power cable (M447 only).
38	Rear Doors	Provide access to van body interior.
39	Reflector	Indicates presence of van body when disconnected from power supply.
40	Power Inlet Housing	Provides housing for external power supply connection to van body.
41	Ladders	Provide access to platform and van body interior.
42	Ladder Clamps	Store ladders during towing operations.

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

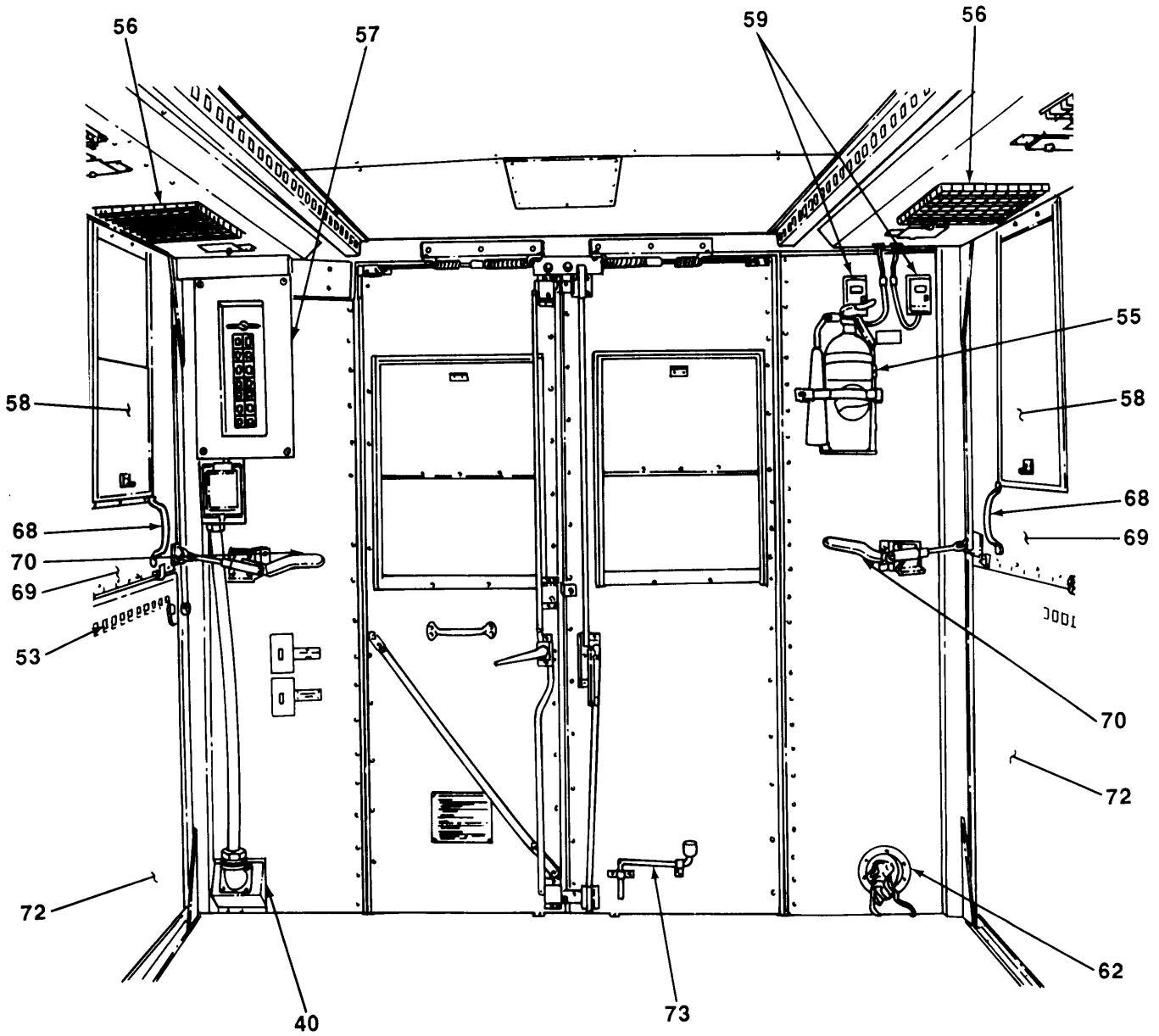


INNER FRONT WALL

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

Key	Component	Description
68	Handles	Mounted in upper folding side door. Push outward on handles to open upper and lower folding side doors.
69	Upper Folding Side Door	When open, provides roof for van body in expanded position.
70	Over Center Clamps	Provide means to secure upper folding side door in closed position.
71	Guard Rail Posts	Stowed in brackets on inner front wall. When van body is in expanded position, are mounted into floor flanges along edges of lower folding side doors to provide a guard rail.
72	Lower Folding Side Door	When open, provides floor for van body in expanded position.
46	Personnel Heaters	Provide a controlled source of heated air to van body interior.
53	Heater Ducts	Incorporated into lower folding side door. Provide air circulation during personnel heater operation.
54	Heat Registers	Provide openings for heat circulation when personnel heaters are in use. Control lever on left side of heat register controls opening and closing of louvers.
55	Fire Extinguisher	Provides portable fire fighting capability.
56	Fluorescent Lighting Fixtures	Provide interior lighting for van body. Equipped with three push-type switches which can be operated without removing fixtures' mesh grille.
58	Blackout Panels	Close to provide blackout protection for side windows.

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



INNER REAR WALL

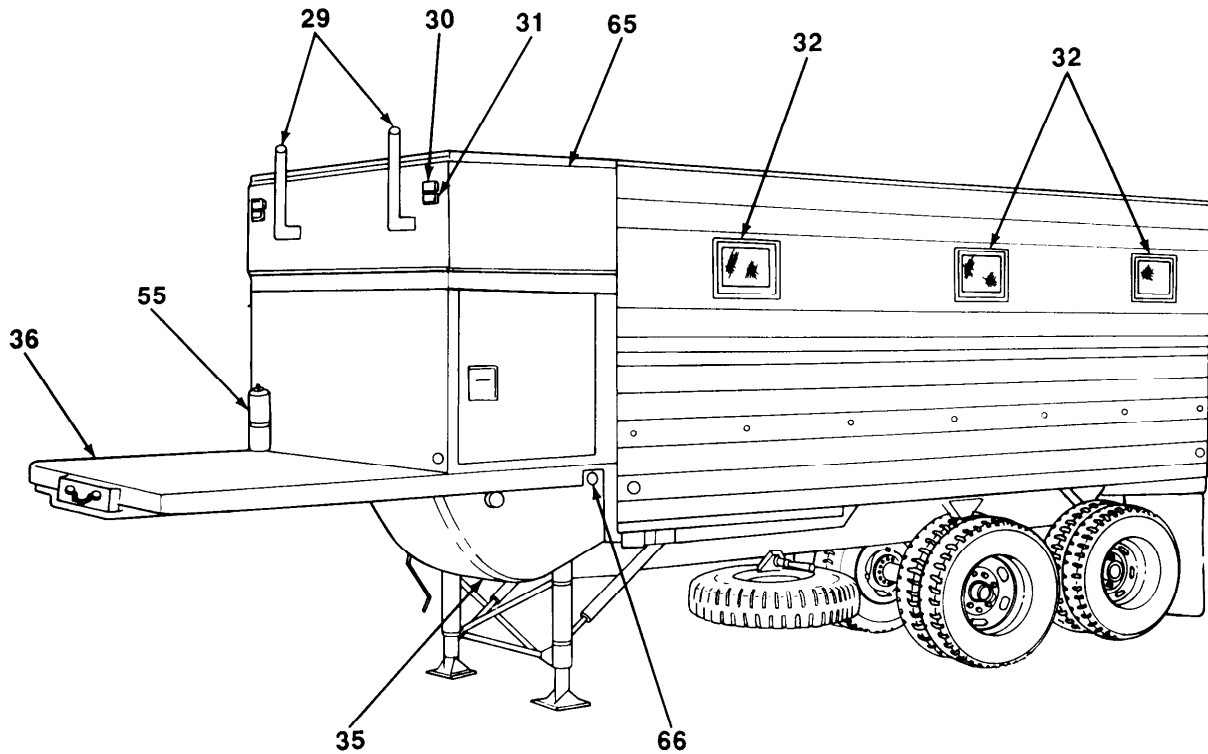
TA701898

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

Key	Component	Description
73	Handcrank	Operates cable reel for 220-volt power cable.
40	Power Inlet Housing	Provides housing for external power supply connection to van body,
53	Heater Ducts	Incorporated into lower folding side door, Provide air circulation during personnel heater operation.
55	Fire Extinguisher	Provides portable fire fighting capability.
56	Fluorescent Lighting Fixtures	Provide interior lighting for van body. Equipped with three push-type switches which can be operated without removing fixtures' mesh grille.
57	Junction Box	Contains distribution panel and circuit breakers for van body electrical circuits.
58	Blackout Panels	Close to provide blackout protection for side windows.
59	Thermostats	Control temperature setting for personnel heaters.
62	Power Cable Entrance Port	Located in lower roadside corner of rear wall. Provides a capped opening to van body interior for an auxiliary power cable. Canvas cable cover incorporated into entrance port keeps interior lights from being visible from outside during blackout conditions.
68	Handles	Mounted in upper folding side door. Push outward on handles to open upper and lower folding side doors.
69	Upper Folding Side Door	When open, provides roof for van body in expanded position.
70	Over Center Clamps	Provide means to secure upper folding side door in closed position.
72	Lower Folding Side Door	When open, provides floor for van body in expanded position.

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).

d. M749 and M750 Expansible Van Bodies.

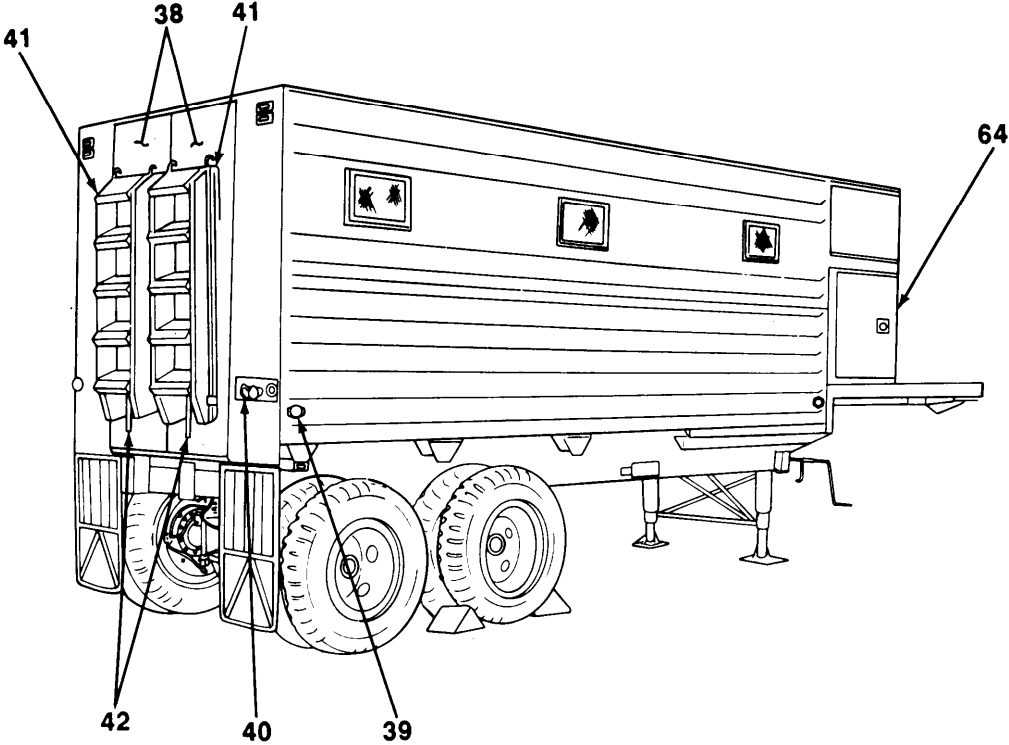


FRONT ROADSIDE VIEW

Key	Component	Description
29	Heater Exhaust Pipes	Provide exhaust capabilities for personnel heaters.
30	Clearance Lights	Indicate height and width of van body during normal operating conditions.
31	Blackout Clearance Lights	Indicate height and width of van body during blackout conditions.
32	Windows	Open to provide ventilation and light. Provided with blackout panel.
35	Fuel Tank	Stores fuel for personnel heater.
36	Platform	Provides an external area for equipment storage.
55	Fire Extinguisher	Provides portable fire protection. Located on curbside of platform.
65	Bonnet Door	Provides fresh air to the air conditioner when open.
66	Fuel Tank Filler Tube	Fills personnel heater fuel tank.

TA701899

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



REAR CURBSIDE VIEW

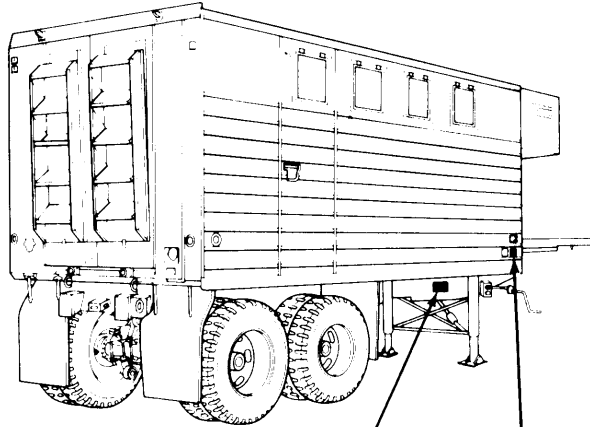
Key	Component	Description
38	Rear Doors	Provide access to van body interior.
39	Reflector	Indicates presence of van body when disconnected from power supply.
40	Power Inlet Housing	Provides housing for external power supply connection to van body.
41	Ladders	Provide access to the platform and van body interior.
42	Ladder Clamps	Store ladders during towing operations.
64	Stowage Boxes	Provide additional stowage space for equipment.

TA701900

1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES.

a. The following illustrations show the location and contents of all decals and data plates.

b. Maintain all decals and data plates so that all information remains legible. If any decal or data plate is missing or no longer legible, notify Organizational Maintenance.

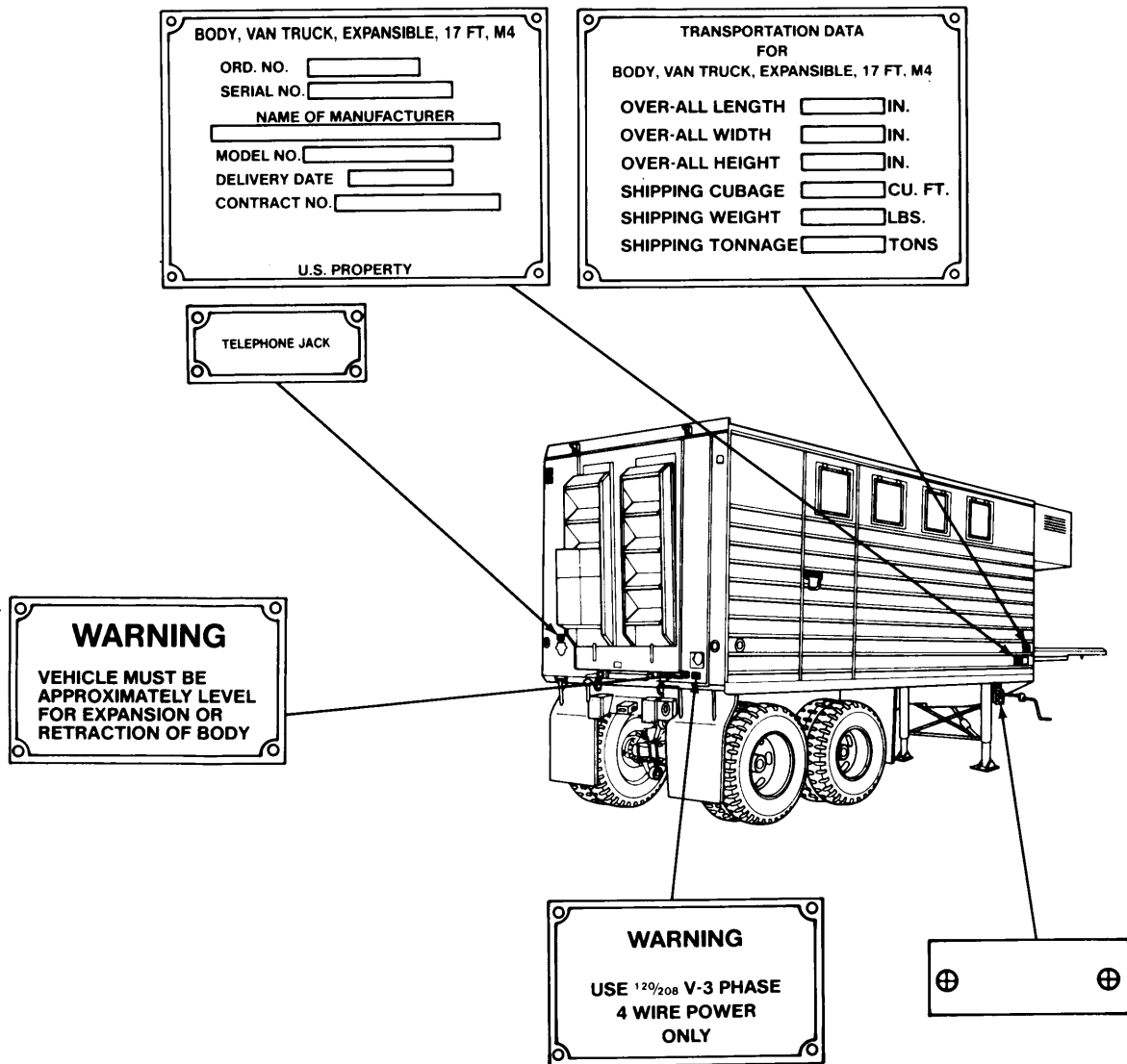


CHASSIS SEMITRAILER 6 TON 4 WHEEL M295A1		WEIGHT AND DIMENSION DATA (TRAILER EMPTY)																					
MFD BY: <input type="text"/> VEH IDENT NO: <input type="text"/> CONTRACT NO: <input type="text"/>																							
PUBLICATION TECHNICAL MANUAL		<table border="1"> <thead> <tr> <th>WEIGHTS</th> <th>EMPTY</th> <th>CROSSCOUNTRY</th> <th>HIGHWAY</th> </tr> </thead> <tbody> <tr> <td>PAYLOAD</td> <td>12 000</td> <td>15 000</td> <td></td> </tr> <tr> <td>WHEELS</td> <td>4 850</td> <td>14 400</td> <td>18 500</td> </tr> <tr> <td>KINGPIN</td> <td>1 310</td> <td>3 880</td> <td>4 480</td> </tr> <tr> <td>TOTAL</td> <td>8 260</td> <td>18 280</td> <td>21 780</td> </tr> </tbody> </table>		WEIGHTS	EMPTY	CROSSCOUNTRY	HIGHWAY	PAYLOAD	12 000	15 000		WHEELS	4 850	14 400	18 500	KINGPIN	1 310	3 880	4 480	TOTAL	8 260	18 280	21 780
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TOTAL	8 260	18 280	21 780																				
DELIVERY DATE: <input type="text"/> INSPECTED: <input type="text"/>		SHIPPING CUBAGE 1.056 CUBIC FEET																					

SEMITRAILER VAN EXPANSIBLE SIDE 6-TON M313		WEIGHT AND DIMENSION DATA (TRAILER EMPTY)																					
MFD BY: <input type="text"/> VEH IDENT NO: <input type="text"/> CONTRACT NO: <input type="text"/>																							
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WHEELS	12 210	19 880	23 090																				
KINGPIN	3 520	5 750	6 840																				
TOTAL	15 730	25 730	29 730																				
DELIVERY DATE: <input type="text"/> INSPECTED: <input type="text"/>		SHIPPING CUBAGE 2.800 CUBIC FEET																					

M313

1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES (Con't).



M313

1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES (Con't).

INSTRUCTIONS TO OPERATE AIR CONDITIONER

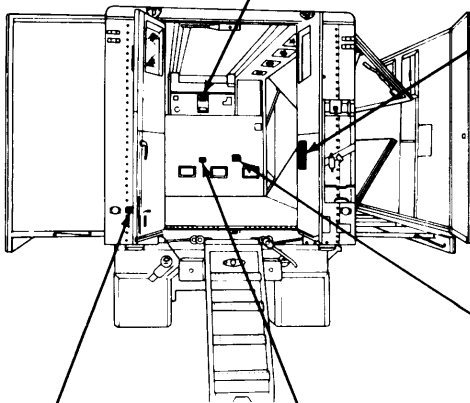
1. BE CERTAIN THAT CIRCUIT BREAKER SWITCH BUTTON MARKED "AIR CONDITIONER" IS PUSHED TO "ON" LOCATED RIGHT REAR OF BODY.
2. MOVE PANEL SWITCH TO FAN OR COOL AS DESIRED.
3. SELECT DESIRED TEMPERATURE USING TEMPERATURE CONTROL.
4. SEE INSTRUCTION MANUAL.

EARLY MODEL

INSTRUCTIONS TO OPERATE AIR CONDITIONER

1. BE CERTAIN THAT CIRCUIT BREAKER SWITCH BUTTON MARKED "AIR CONDITIONER" IS SWITCHED TO "ON" LOCATED RIGHT REAR OF BODY.
2. MOVE FRESH AIR SWITCHES TO MAX. OR MIN. AS DESIRED.
3. SELECT DESIRED TEMPERATURE USING TEMPERATURE CONTROL.
4. SEE INSTRUCTION MANUAL.

LATE MODEL



NOTICE

DO NOT ATTEMPT TO EXPAND VAN UNTIL THESE INSTRUCTIONS ARE READ AND FOLLOWED TO THE LETTER TO PREVENT POSSIBLE PERMANENT BODY DAMAGE.

1. BEFORE EXPANDING SIDE SECTIONS MAKE SURE VAN IS APPROXIMATELY LEVEL. SEE INSTRUCTIONS BELOW FOR LEVELING.
- NOTE: LEVELING JACKS SHALL BE USED REGARDLESS OF GROUND CONDITION TO IMPROVE STABILITY OF EXPANDED VAN.**
2. RELEASE FOUR (4) SIDEWALL CORNER LOCKS. LOCATED ONE (1) EACH LOWER CORNER.
3. USING SQUARE SOCKET WRENCH HANDLE PROVIDED, RELEASE FOUR (4) SIDE LOCKS ONE QUARTER (1/4) TURN COUNTERCLOCKWISE. LOCATED TWO (2) EACH SIDE IN MIDDLE OF SIDE PANELS MARKED "A".
4. USING RATCHET CRANK WITH THE KAGON SOCKET PROVIDED, RELEASE RATCHETS MARKED "B" LOCATED BELOW DOORS ON REAR. CRANK BOTH SIDES FULL OUT.
5. OPEN FOUR (4) SIDE END DOORS USING HOOK HOLDERS AT BOTTOM MARKED "C" TO HOLD ALL DOORS OPEN (2).
6. RELEASE LOCKS ON OUTSIDE OF UPPER CEILING PANELS MARKED "D" AND PULL PARTIALLY OUTWARD STANDING CLEAR ON GROUND. PULL ON GRAB HANDLE ATTACHED TO LOWER FLOOR PANELS AND RAISE COUNTER BALANCED CEILING PANELS.
7. LIFT HINGED ROOF AND TURN SIX (6) SWIVEL HOOKS 90° FROM SIDE MARKED "E". PULL SWIVEL HOOKS IN UNTIL HINGED ROOF CAN REST ON THEM.
8. RELEASE FOUR (4) HOOKS MARKED "C" (**BE SURE TO REPLACE IN CLIP HOLDERS**) FROM END PANEL DOORS AND PULL DOORS IN UNTIL THEY MAKE CONTACT WITH HINGED FLOOR AND ROOF SEALS. **NOTE: IT IS NECESSARY TO LIFT HINGED ROOF TO GET A SNUG FIT WITH SEALS.**
9. WITH END PANEL DOORS IN PLACE USE LARGE END OF SQUARE SOCKET WRENCH TO PUSH SLIDING BOLT INSIDE CORNER POST GUIDE MARKED "F" (**NOTE: FULLY EXTEND SLIDING BOLT**).
10. SWITCH RATCHET LOCKING MECHANISM MARKED "B" INTO ITS CLOSED POSITION AND PUT RATCHET CRANK "B" ARM INTO A HORIZONTAL POSITION.
11. BRING SIDE SECTION IN JUST ENOUGH TO ENGAGE EYE BOLTS ON TOGGLE CLAMPS MARKED "G". PULL SIDE PANEL STRAIGHT BY PARTIALLY CLOSING "G" WHILE DOING THIS, LIFT HINGED ROOF AT END PANEL DOORS SLIGHTLY TO INSURE SEAL ALIGNMENT. THE SIDE IS NOW READY TO BE COMPLETELY CLOSED.
12. FOR FINAL LOCKING OF SIDE, STEP INSIDE VAN AND JUMP LIGHTLY UP AND DOWN ON HINGED FLOOR TO FREE SAME FROM POSSIBLE BINDING OF ALIGNMENT PINS. NOW APPLY FULL WEIGHT ON CRANK TO INSURE A FINAL AND TIGHT SEAL. MAKE SURE THAT SEALS ON HINGED ROOF AND THE OPPOSITE RUBBER BLOCKS ARE LIBERALLY GREASED TO PREVENT BINDING. THIS IS ESPECIALLY IMPORTANT WHERE END PANEL DOOR MOVES INTO THE HINGED ROOF CORNER SEAL AT CORNER POST.
13. ENGAGE SIX (6) DRAW CLAMP LOCKS MARKED "H" IN GUIDE HOOKS MARKED "E" ON RAISED CEILING PANELS TO DRAW SIDES END DOORS AND CEILING PANELS TIGHT AGAINST SEALS (**CLOSE CENTER CLAMP FIRST**).
14. EXTEND SLIDING BOLTS TO FULLY EXTENDED POSITION IN CORNER POST GUIDE.
15. ENGAGE FOUR (4) SIDEWALL CORNER LOCKS IN EXTENSION RODS LOCATED ON FOUR (4) CORNER POSTS.

TO RETRACT VAN REVERSE PROCEDURE ABOVE. BE CERTAIN TO USE EXTREME PRESSURE ON RATCHET "B" TO LOCK SIDES TIGHT AGAINST BOTTOM SEALS BEFORE CLOSING FOUR (4) SIDE LOCKS "A"

INSTRUCTIONS FOR LEVELING VAN

1. SELECT LOCATION IF POSSIBLE TO PROVIDE NEAREST LEVEL OF VEHICLE. IF NECESSARY USE DUNNAGE UNDER APPROPRIATE WHEEL TO OBTAIN NEAR LEVEL FLOOR LINE.
2. REMOVE TWO (2) ADJUSTING JACKS AND BASE PLATES FROM COMPARTMENT UNDER REAR OF BODY AND REPLACE ONE EACH OF FOUR (4) SOCKETS MARKED "H" LOCATED AT THE FOUR (4) REAR CORNERS UNDER MAIN BODY SIDE SELLS.
3. USING CHAINED PINS ADJUST LENGTH OF JACKS AS REQUIRED.
4. RATCHET JACKS ARE TO RAISE ONE LOWER EACH CORNER OF VAN.
5. **DO NOT ATTEMPT TO JACK VAN CLEAR OF GROUND WITH LEVELING JACKS.**

ELECTRO MAGNETIC INTERFACE

NOTICE: EMI SHIELDING/FILTERING MAY BE REQUIRED FOR SENSITIVE ELECTRONIC EQUIPMENT. ATTENUATORS MUST BE PROVIDED AS PART OF ACCESSORY COMPONENTS AND INSTALLED MISSION EQUIPMENT

DANGER

GROUND BODY THRU
GROUND ROD BEFORE
CONNECTING POWER PLUG

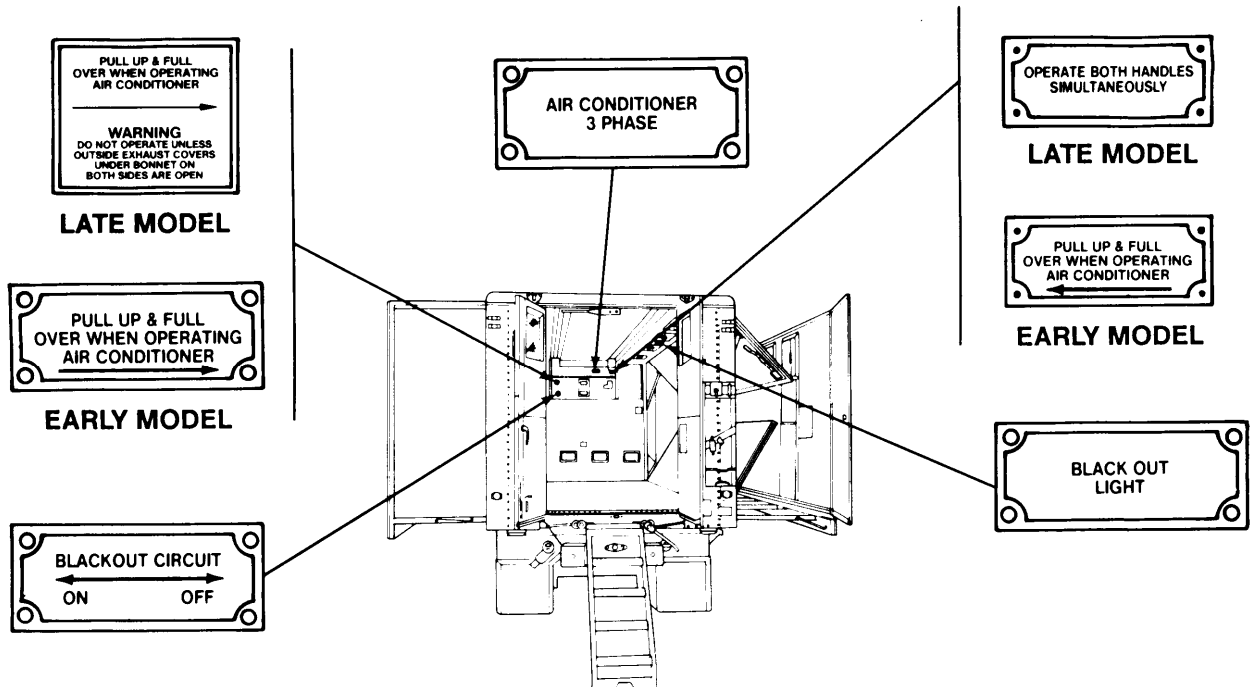
NOTE

OPEN REGISTERS FOR
QUICK WARM - UP OF ROOM
CLOSE REGISTERS FOR
RADIANT HEATING OF ROOM
PARTIALLY OPEN TO MAINTAIN
COMFORTABLE ROOM

M313

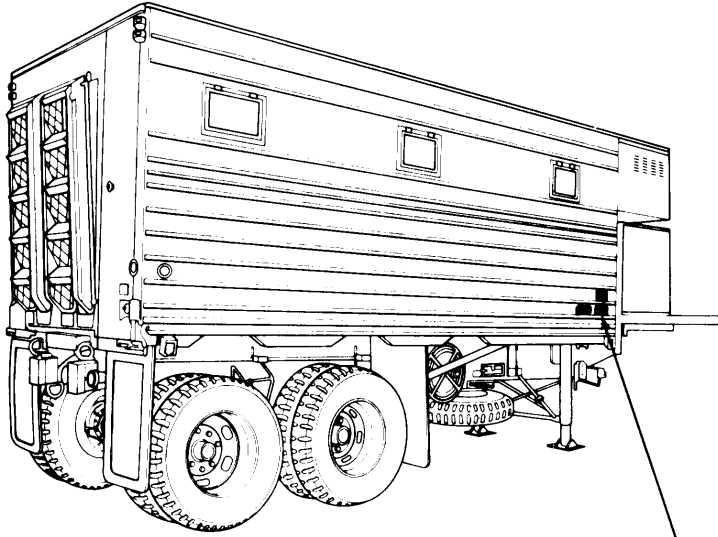
TA701903

1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES (Con't).



M313

1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES (Con't).

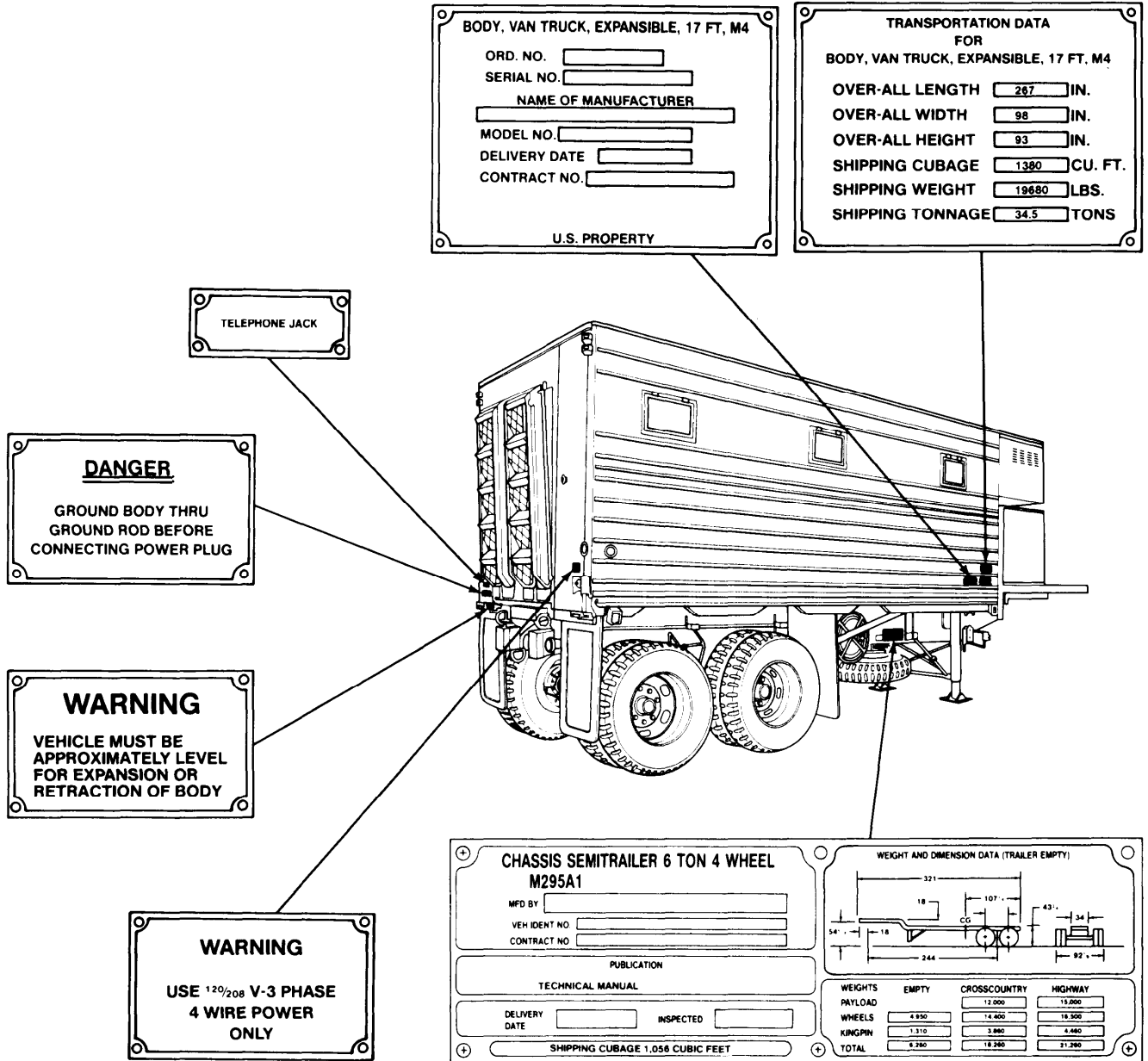


SEMITRAILER VAN SHOP FOLDING SIDES M447		WEIGHT AND DIMENSION DATA (TRAILER EMPTY)																					
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KINGPIN	4 270	5 786	6 666																				
TOTAL	14 090	19 090	21 990																				
DELIVERY DATE: _____ INSPECTED: _____		SHIPPING CUBAGE 2.344 CUBIC FEET																					

SEMITRAILER VAN 6 TON M447C W/AIR CONDITIONING		WEIGHT AND DIMENSION DATA (TRAILER EMPTY)																					
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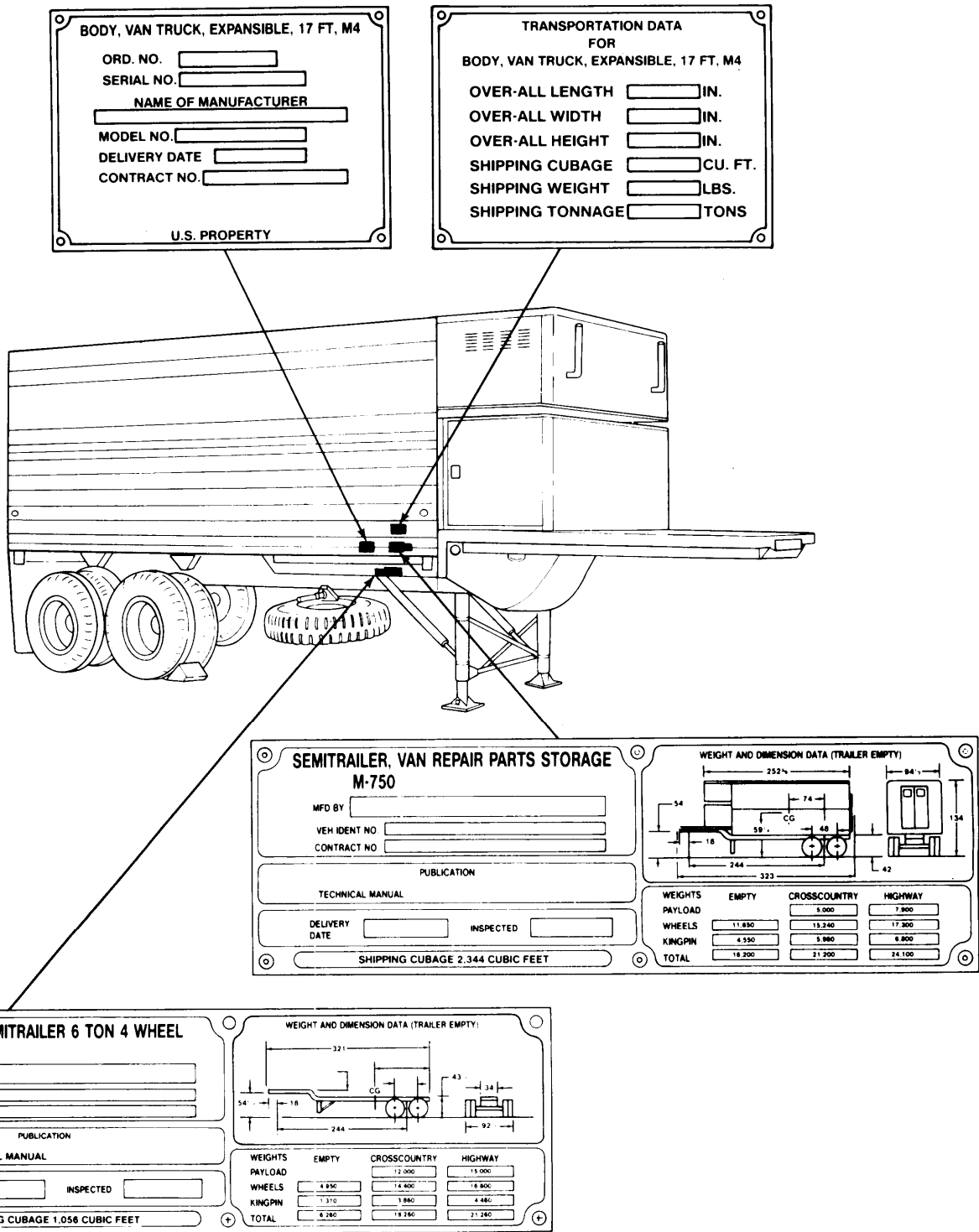
M447 AND M447C

1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES (Con't),



M447, M447C, AND M749

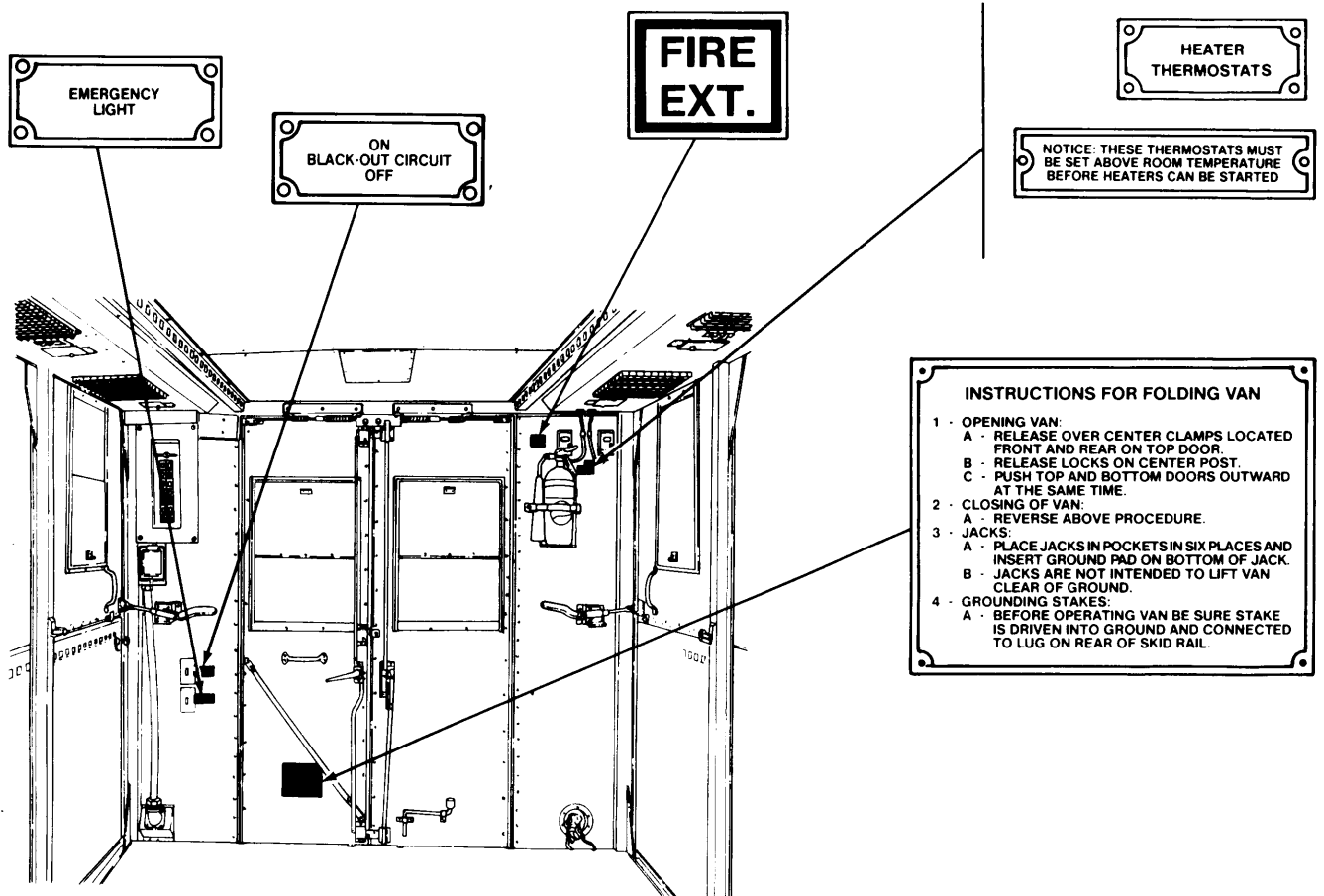
1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES (Con't).



M750

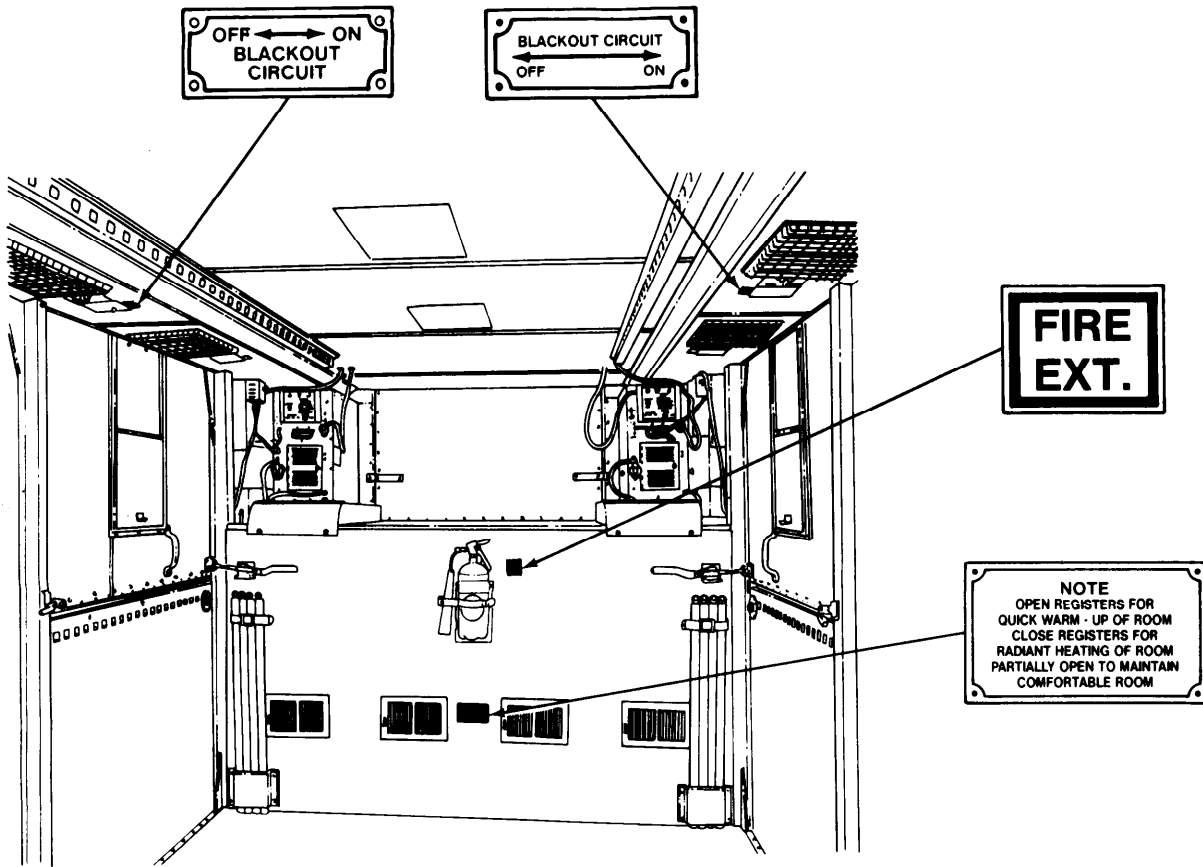
TA701907

1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES (Con't).



M447, M447C, M749, AND M750

1-8. LOCATION AND CONTENTS OF DECALS AND DATA PLATES (Con't).



M447, M447C, M749, AND M750

1-9. DIFFERENCES BETWEEN MODELS.

Component	M313	M447	M447C	M749			M750
				-V001 -V536	-V459 -V628	8929	
Electrical System:							
24-volt Electrical System	X	X	X	X	X	X	X
Light,:							
Blackout Stoplight and Stoplight-tailights (Two Each)-Early Models	X	X	X	X	X	X	X
Composite Stoplight-tailight-Late Models	X	X	X	X	X	X	X
Marker Lights	X	X	X	X	X	X	X
220-volt Power Cable and Reel	X	X	X	X	X	X	X
Doors:							
Rear Doors	X	X	X	X	X	X	X
Side Doors	X						
Hinged Folding Side Door		X	X	X	X	X	X
Canvas Side Curtains		X		X	X	X	X
Curtain Enclosure			X				
Aluminum Side Panels			X				
Heaters:							
Early Models:							
Hall, #600	X						
Hunter, UH68	X	X	X				X
Hunter, UH68-2				X			
Hunter, UH68-1A					X		
Perfection, MH60B4						X	
Late Models:							
Hunter, UH68-2			X				X
Hunter, UH68-4	X	X	X				X
Hunter, UH68D	X	X	X				X
Air Conditioners:							
Early Models:							
York, V-81	X						
York, MA3-F23A			X				
Therm-Air, CB-36-08-3-60			X				
Late Models:							
York, MA3-F23A	X		X				
Therm-Air, CB-36-08-3-60	X						

1-10. EQUIPMENT DATA.

<u>M295A1 Chassis</u>	
General:	
Towing Vehicle	Truck Tractor, 5-ton
Towing Facilities	Kingpin
Towing Speed (Maximum with Payload):	
Highway	45mi/h(72km/h)
Cross-country	20mi/h(32km/h)
Fording Capability	Hard Bottom, Running Gear Submerged
Dimensions:	
Overall Length	319 in. (810.26 cm)
Overall Width	92 ⁷ / ₁₆ in. (235.90 cm)
Kingpin to Front	18 in. (45.72 cm)
Kingpin to Center of Axle Bogie	244 in. (619.76 cm)
Tandem Axle Spacing	48 in. (121.92 cm)
Overall Height:	
Loaded	58 ¹⁵ / ₁₆ in. (149.70 cm)
Empty	62 ³ / ₁₆ in. (157.95 cm)
Weight	6260 lb (2842 kg)
Axle:	
Type	Tubular Ordnance Standard 10,000 lb (4540 kg)
Diameter	4 ¹ / ₂ in. (11.43 cm)
Service Brakes:	
Actuation	Air-over-hydraulic
Type of Brake Mechanism	Two Shoe, Anchor Support, Two Expanding Wheel Cylinders
Make	Wagner Electric
Size:	
Diameter	15 in. (38.10 cm)
Width	3 ¹ / ₃₂ in. (8.49 cm)
Operating Air Pressure	100 psi (690kPa)
Landing Gear:	
Early Models:	
Type	Folding and Adjustable
Make	Austin
Clearance Above Ground With Gear Retracted	20 ¹ / ₂ in. (52.07 cm)
Drop Below Ground Level With Gear Extended	4 ¹ / ₂ in. (11.43 cm)

1-10. EQUIPMENT DATA (Con't).

<u>M295A1 Chassis (Con't)</u>	
Late Models:	
Type	Retractable
Make	U.S. Government
Clearance Above Ground With Gear Retracted	12 in. (30.48 cm)
Drop Below Ground Level With Gear Extended	5 in. (12.70 cm)
Lights:	
Voltage	24 V dc
Tires:	
Number	8
Type	Military Pneumatic
Design	Cross-country Nondirectional
Number of Plies	8
Size	9.00 x 20
Inflation:	
Highway	48 psi (331 kPa)
Cross-country	40 psi (276 kPa)
Sand	32 psi (220 kPa)
Spare Wheel and Tire Carrier:	
Clearance Between Ground and Mounted Wheel	18½ in. (47 cm)
Operation of Raising Wheel Into Position	Hand Operated Winch with Wheel Wrench
<u>M313 Expansible Van Body</u>	
Dimensions (Inside):	
Height, to Ceiling	75 in. (190.50 cm)
Length	203 in. (515.62 cm)
Width:	
Retracted Position	82 in. (208.29 cm)
Expanded Position	153 in. (388.62 cm)
Dimensions (Overall):	
Height:	
Loaded	151 ¹¹ / ₁₆ in. (385.28 cm)
Empty	154 ¹⁵ / ₁₆ in. (393.54 cm)
Length:	
Including Bonnet	252½ in. (641.35 cm)
Excluding Bonnet	212½ in. (538.48 cm)

1-10. EQUIPMENT DATA (Con't).

<u>M313 Expansible Van Body (Con't)</u>	
Width:	
Retracted	96 in. (243.84 cm)
Expanded	167 in. (424.18 cm)
Weight:	
Weight	8820 lb (4004.28 kg)
Floor Load	5000 lb (2270 kg)
Bridge Classification:	
Unloaded	7
Loaded, Cross-country	11
Highway	14
<u>M447, M447C, and M750 Expansible Van Bodies</u>	
Dimensions (Overall):	
Height:	
Loaded	150 ¹ / ₁₆ in. (381.16 cm)
Empty	154 ⁵ / ₁₆ in. (391.95 cm)
Length	252 ³ / ₈ in. (641.03 cm)
Width:	
Retracted	94 ¹ / ₂ in. (240.03 cm)
Expanded	175 in. (444.50 cm)
Payload:	
Cross-country	12,000 lb (5448 kg)
Highway	15,000 lb (6810 kg)
Bridge Classification (M750):	
Unloaded	6
Loaded, Cross-country	11
Highway	13
<u>M749 Expansible Van Body (Southwest Model VRP)</u>	
Dimensions (Overall):	
Height:	
Loaded	142 ¹ / ₁₆ in. (362.42 cm)
Empty	145 ¹⁵ / ₁₆ in. (370.68 cm)
Length	267 in. (678.18 cm)
Width	96 in. (243.84 cm)

1-10. EQUIPMENT DATA (Con't).

M749 Expansible Van Body (Southwest Model VRP) (Con't)

Shipping:

Weight (including Chassis)	17,200 lb (7809 kg)
Cubage (Including Chassis)	2276 cu ft (63.72 cu m)
Tonnage (Including Chassis)	56.90 tons/113,800 lb (51.67 t/52.66 kg)

M749 Expansible Van Body (Concerto Model 8929)

Dimensions (Overall):

Height:

Loaded	147 ⁷ / ₁₆ in. (374.49 cm)
Empty	150 ¹ / ₁₆ in. (382.74 cm)

Length 267 in. (678.18 cm)

Width 96 in. (243.84 cm)

Shipping:

Weight (Including Chassis)	15,225 lb (6912 kg)
Cubage (Including Chassis)	2305 cu ft (64.54 cu m)
Tonnage (Including Chassis).....	58 tons/116,000 lb (52.66 t/52.66 kg)

CHAPTER 2 OPERATING INSTRUCTIONS

Section 1. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

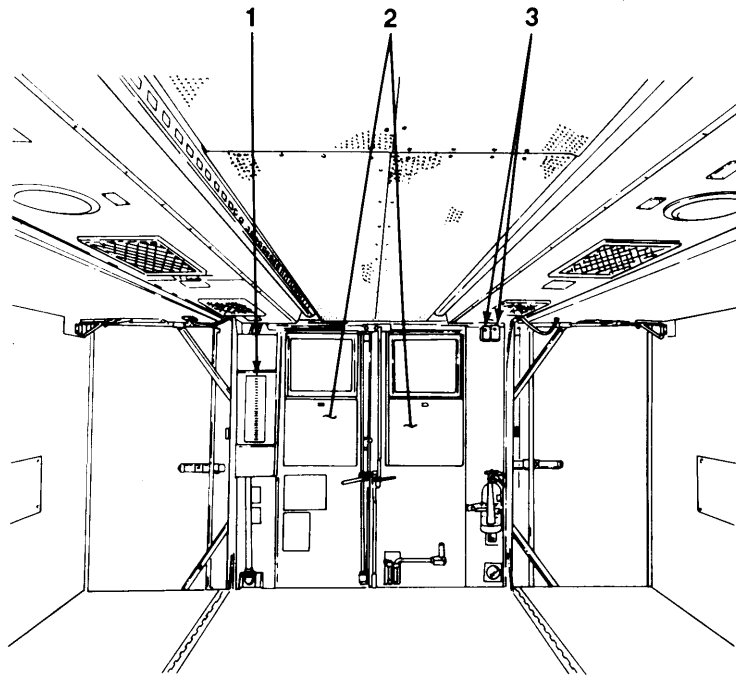
Paragraph Title	Page Number
Controls and indicators	2-1
General	2-1

2-1. GENERAL.

This section shows the location and function of all semitrailer controls and indicators. Review this section thoroughly before operating the semitrailer.

2-2. CONTROLS AND INDICATORS.

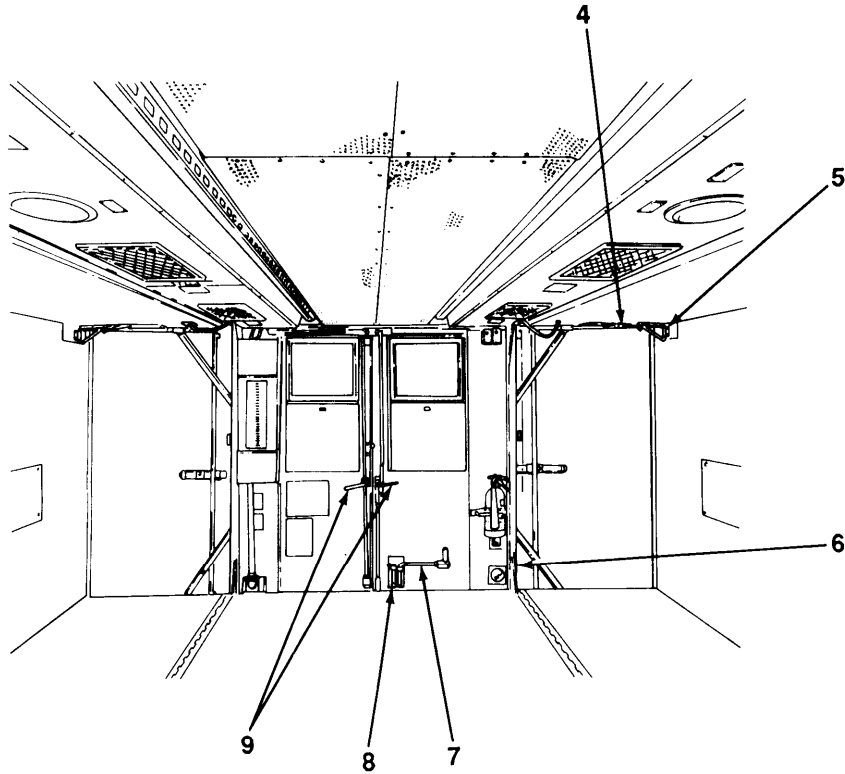
a. M313 Expansible Van Body.



Key	Control or Indicator	Description
1	Circuit Breaker Panel	Allows electrical power to reach the receptacles.
2	Blackout Panels	Block off windows during blackout conditions.
3	Heater Thermostats	Regulate interior temperature during heater operation.

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2-2. CONTROLS AND INDICATORS (Con't).

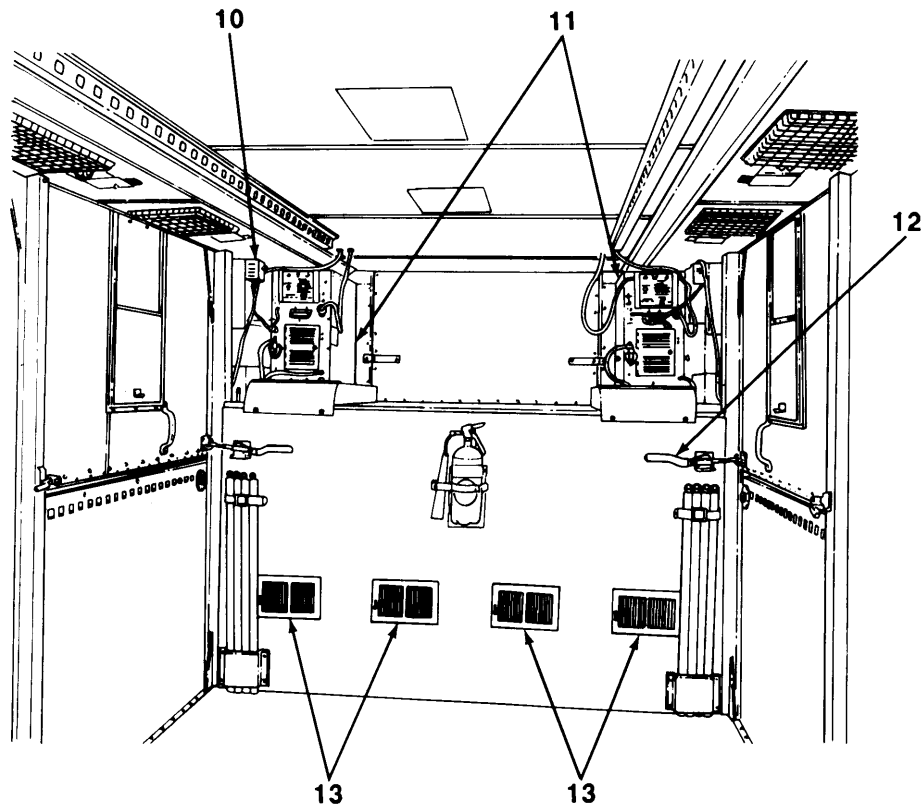


Key	Control or Indicator	Description
4	Toggle Clamp	Secures sidewall in expanded position.
5	Swivel Hook	Supports upper folding side door in expanded position.
6	Telephone Jack Post	Connects interior phones.
7	Drive Shaft Wrench	Expands and retracts van body.
8	Side Panel Lock Wrench	Locks side panels in retracted position.
9	Door Lock Handles	Secure van body interior.

TA701911

2-2. CONTROLS AND INDICATORS (Con't).

b. M447, M447C, M749, and M750.



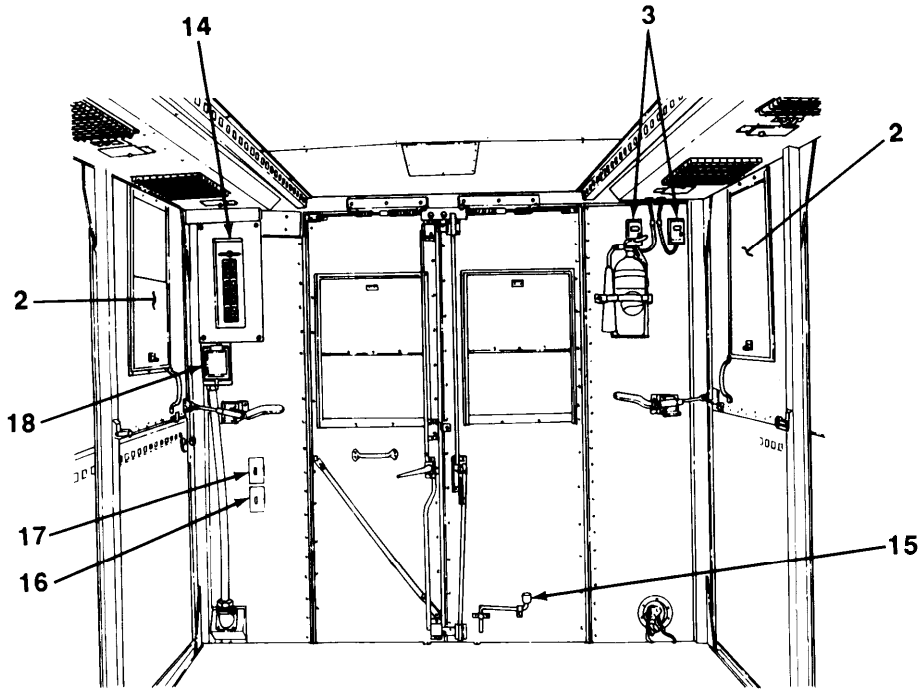
INNER FRONT WALL

Key	Control or Indicator	Description
10	Rectifier/Transformer	Supplies power to interior van body components.
11	Personnel Heaters	Heat interior of van body.
12	Upper Folding Side Door Over Center Clamps	Secure upper and lower folding side doors while in retracted position.
13	Warm Air Registers	Regulate and direct warm air flow on interior of van body during heater operation,

TA701912

2-2. CONTROLS AND INDICATORS (Con't).

c. M447, M447C, M749, and M750.



INNER REAR WALL

Key	Control or Indicator	Description
14	Power Panel	Allows electrical power to reach interior electrical components.
15	Cable Reel Crank	Rewinds power cable onto cable reel.
16	Emergency Circuit Switch	Disables or enables emergency circuit.
17	Blackout Circuit Switch	Disables or enables blackout capabilities.
18	Disconnect Switch	Disconnects exterior power source.
2	Blackout Panels	Block off windows during blackout conditions.
3	Heater Thermostats	Regulate interior temperature during heater operation.

TA701913

Section II. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Paragraph Title	Page Number
General	2-5
General PMCS Procedures	2-5
Leakage Definitions	2-6
Operator/Crew Preventive Maintenance Checks and Services (PMCS), Table 2-1	2-7
Reporting Repairs	2-5
Service Intervals	2-5
Specific PMCS Procedures	2-6

2-3. GENERAL.

a. To ensure that the semitrailers are ready for operation at all times, they must be inspected on a regular basis so that defects may be found before they result in serious damage, equipment failure, or injury to personnel. This section contains systematic instructions on inspections, adjustments, and corrections to be performed by the operator/crew.

b. While performing PMCS, read and follow all safety instructions found in the Warning Summary at the front of this manual. Keep in mind all WARNINGS and CAUTIONS.

2-4. SERVICE INTERVALS.

Perform PMCS, found in Table 2-1, at the following intervals:

- (1) Perform *Before* (B) PMCS just before operating the semitrailer.
- (2) Perform *During* (D) PMCS while operating the semitrailer.
- (3) Perform *After* (A) PMCS right after operating the semitrailer.

2-5. REPORTING REPAIRS.

All defects which the operator cannot fix must be reported on a DA Form 2404, *Equipment Inspection and Maintenance Worksheet*, immediately after completing PMCS. If a serious problem is found, IMMEDIATELY report it to your supervisor.

2-6. GENERAL PMCS PROCEDURES.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

a. Keep equipment clean. Dirt, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (item 14, Appendix E) on all metal surfaces. Use dishwashing compound (Item 6, Appendix E) and water on rubber, plastic, and painted surfaces.

2-6. GENERAL PMCS PROCEDURES (Con't).

b. While performing specific PMCS procedures, inspect the following components:

(1) **Bolts, Nuts, and Screws.** Ensure that they are not loose, missing, bent, or broken. Report loose or missing bolts, nuts, and screws to Organizational maintenance.

(2) **Welds.** Inspect for gaps where parts are welded together. Check for loose or chipped paint, rust, and cracks. Report bad welds to Organizational maintenance.

(3) **Electrical Conduit, Wires, or Connectors.** Inspect for cracked or broken conduit insulation, bare wires, and loose or broken connectors. Report loose connections and faulty wiring to Organizational maintenance.

(4) **Hoses, Lines, and Fittings.** Inspect for wear, damage, and leaks. Ensure that clamps and fittings are tight. Report any damage, leaks, or loose fittings and clamps to Organizational maintenance.

c. Check that components are adequately lubricated in accordance with Chapter 3, Section 1.

2-7. SPECIFIC PMCS PROCEDURES.

a. Operator/Crew PMCS procedures are provided in Table 2-1. Always perform PMCS in the order listed. Once it becomes a habit, anything that is not right can be spotted in a minute.

b. Before performing PMCS, read all the checks required for the applicable interval and prepare all the tools needed. Have several clean rags (Item 11, Appendix E) handy. Perform ALL inspections at the applicable interval.

c. If anything wrong is discovered through PMCS, perform the appropriate troubleshooting task in Chapter 3, Section II. If any component or system is not serviceable, or if a given service does not correct the problem, notify your supervisor.

d. The columns in Table 2-1 are defined as follows:

(1) **Item No.** Provides a logical sequence for PMCS to be performed and is used as a source of item numbers for the "TM ITEM NO" column when recording PMCS results on DA Form 2404.

(2) **Interval.** Specifies the interval at which PMCS is to be performed.

(3) **Item To Be Inspected.** Lists the system and common name of items that are to be inspected. Included in this column are specific servicing, inspection, replacement, or adjustment procedures to be followed.

NOTE

The terms "ready/available" and "mission-capable" refer to the same status: Equipment is on hand and is able to perform its combat mission (AR 700-138).

(4) **Equipment is Not Ready/Available if.** Explains when the semitrailer is nonmission-capable.

2-8. LEAKAGE DEFINITIONS.

a. It is important to know how fluid leakage affects the status of the semitrailer. Following are types/classes of leakage an operator must know to determine whether the semitrailer is mission-capable. Learn these leakage definitions. When in doubt, notify your supervisor.

Leakage Definitions for Operator/Crew PMCS

Class I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
Class II	Leakage of fluid great enough to form drops, but not great enough to cause drops to drip from item being inspected.
Class III	Leakage of fluid is great enough to form drops that fall from item being inspected.

2-8. LEAKAGE DEFINITIONS (Con't).

CAUTION

When operating with Class I or II leaks, continue to check fluid levels in addition to that required in PMCS. Parts without fluid will stop working or may be damaged.

- b. Equipment operation is allowed with minor (Class I or II) leakage. Fluid levels in an item/system affected with such leakage must be checked more frequently than required in PMCS. When in doubt, notify your supervisor.
- c. Report Class III leaks IMMEDIATELY to your supervisor.

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS).

B—Before		D—During		A—After							
ITEM NO.	INTERVAL			ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, or adjusted as needed.	EQUIPMENT IS NOT READY/ AVAILABLE IF:						
	B	D	A								
1				NOTE	Class III leakage is evident (no leakage allowed).						
				<ul style="list-style-type: none"> ● Perform <i>Before</i> PMCS if you are operating the semitrailer for the first time. ● Make the following walkaround checks. 							
				<p>EXTERIOR OF SEMITRAILER</p> <ul style="list-style-type: none"> a. Check for evidence of leakage (oil, fuel, or brake fluid) on or under semitrailer. b. Check tires for obvious damage such as cuts, bruises, bulges, flats, and unusual wear. Check tires for correct pressure. Correct pressure is: <table style="margin-left: 40px; border: none;"> <tr> <td>Highway</td> <td>48 psi (331 kPa)</td> </tr> <tr> <td>Cross-country</td> <td>40 psi (276 kPa)</td> </tr> <tr> <td>Sand</td> <td>32 psi (220 kPa)</td> </tr> </table> c. Check that fire extinguisher is in proper place and has proper pressure. d. Check for loose, missing, or damaged parts. e. Check electrical wiring for cuts, breaks, or any other damage. 		Highway	48 psi (331 kPa)	Cross-country	40 psi (276 kPa)	Sand	32 psi (220 kPa)
	Highway	48 psi (331 kPa)									
Cross-country	40 psi (276 kPa)										
Sand	32 psi (220 kPa)										
2				<p>WHEELS</p> <ul style="list-style-type: none"> ● Inspect wheel and stud nuts and hub cap bolts to see that they are present and secure. 							
3				<p>BRAKE LINES</p> <ul style="list-style-type: none"> ● Make certain that brake lines are securely connected and in good condition. 							
4				<p>LIGHTS</p> <ul style="list-style-type: none"> ● a. Check for proper operation. ● b. Inspect reflectors. 							

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, or adjusted as needed.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A		
5	•			AIR FILTER Remove pipe plug and drain filters. Replace plug.	
6	•			AIR RESERVOIR a. Open draincock and drain condensation. Close draincock. b. Check to see that air connections at air reservoir are secure.	
7	•		•	SPRINGS Inspect springs for abnormal sag, broken or shifted leaves, loose or missing rebound clips, pins, U-bolts, safety nuts, or bolts.	
8	•			HEATER FUEL SYSTEM a. Check water fuel level. b. Inspect for leaks in fuel line and around fuel pump.	
9		•		GENERAL OPERATIONS Be alert for any unusual noises or abnormal conditions that might indicate a shifting of the load or defective performance of the semitrailer.	
10		•	•	BRAKES a. Apply brakes several times. Check for unusual conditions. Note any unsatisfactory performance (grabbing, pulling, or slow brakes). b. At halts and after operations, carefully feel brakedrums and hubs for excessive heat. An overheated brakedrum or hub indicates an improperly adjusted, defective, or dry wheel bearing or a dragging brake.	
11		•		TRACKING Pull semitrailer straight ahead and check for any side pull, wander, or shimmy.	
12		•	•	OPERATING DEFICIENCIES a. Check counterbalance assembly for wear during each operation. b. Replace wire rope when three or more strands are broken.	

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before				D-During	A-After
Item NO.	INTERVAL			ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, or adjusted as needed.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A		
13			●	ENCLOSURE CURTAIN Inspect enclosure curtain for tears, holes, ragged/worn material. Notify unit level maintenance if deficiencies are found.	

Section III. OPERATION UNDER USUAL CONDITIONS

Paragraph Title	Page Number
Coupling Semitrailer to Towing Vehicle	2-9
Expanding and Retracting Van Bodies (M447, M447C, M749, and M760)	2-18
Expanding and Retracting Van Body (M313)	2-12
General	2-9
Leveling Van Body	2-30
Operating Air Conditioner	2-26
Operating Landing Gear	2-11
Operating Personnel Heater	2-26
Uncoupling Semitrailer from Towing Vehicle	2-10
Use of 220-volt Power Cable (M313, M447, M447C, and M750)	2-30

2-9. GENERAL.

This section contains instructions for safely operating the semitrailers under usual conditions. Unusual operating conditions are defined and described in Section IV of this chapter.

2-10. COUPLING SEMITRAILERS TO TOWING VEHICLE.

WARNING

All personnel must stand clear of towing vehicle and semitrailer during coupling operation. Failure to follow this warning may result in serious injury or death to personnel.

- a. Using landing gear, raise or lower front end of semitrailer until kingpin is slightly higher than rear of fifth wheel plate on towing vehicle (para 2-12).

CAUTION

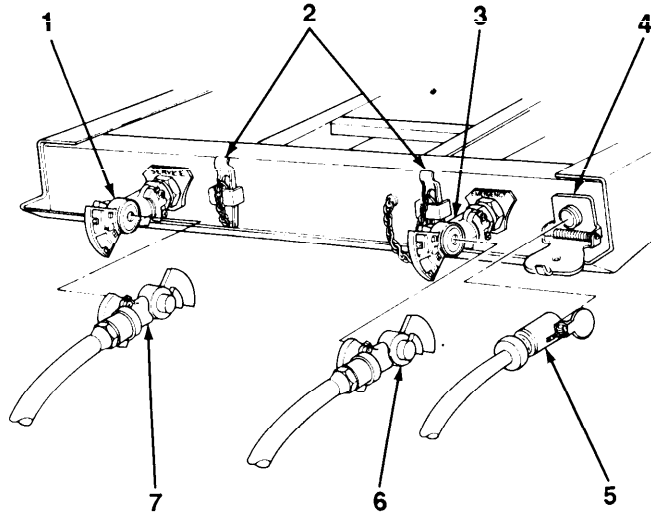
Have assistant direct you during backing operations. Damage to equipment may result if caution is not followed.

- b. Connect kingpin to towing vehicle fifth wheel plate by slowly backing towing vehicle until kingpin slides into notch on fifth wheel plate and locks into catch (refer to towing vehicle technical manual).

2-10. COUPLING SEMITRAILER TO TOWING VEHICLE (Con't).

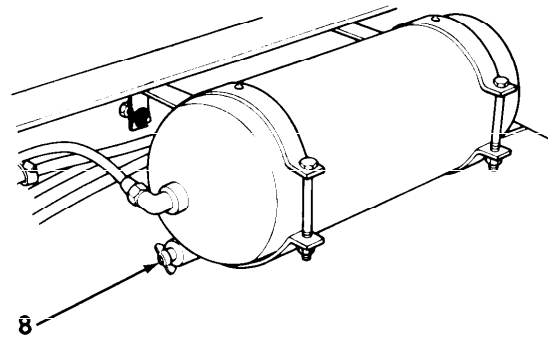
c. Remove dummy couplings (2) from semitrailer service air coupling (1) and semitrailer emergency air coupling (3).

d. Connect towing vehicle service air coupling (7) to semitrailer service air coupling (1). Connect towing vehicle emergency air coupling (6) to semitrailer emergency air coupling (3).



e. Ensure that air reservoir draincock (8) is closed. Turn on two towing vehicle air line shut-off valves to apply pressure as required (refer to towing vehicle technical manual).

f. Connect intervehicular cable (5) into semitrailer receptacle (4) on front of semitrailer. Ensure that all lights are working properly.



2-11. UNCOUPLING SEMITRAILER FROM TOWING VEHICLE.

WARNING

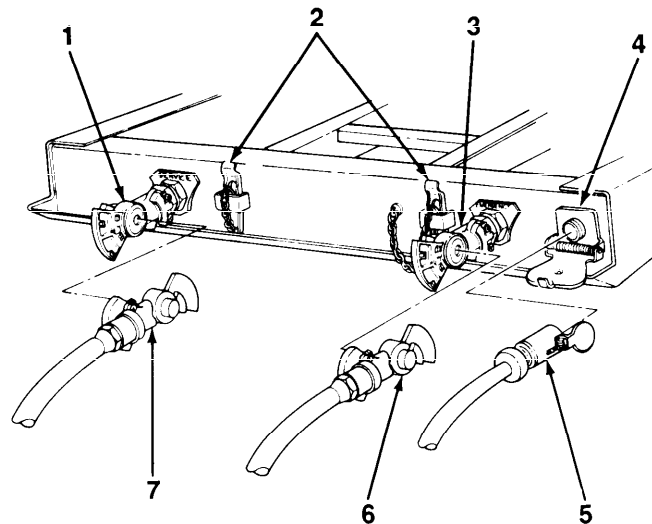
All personnel must stand clear of towing vehicle and semitrailer during uncoupling operation. Failure to follow this warning may result in serious injury or death to personnel.

a. Chock semitrailer wheels and raise front of semitrailer using landing gear (para 2-12).

b. Disconnect towing vehicle service air coupling (7) from semitrailer service air coupling (1) and disconnect towing vehicle emergency air coupling (6) from semitrailer emergency air coupling (3).

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2-11. UNCOUPLING SEMITRAILER FROM TOWING VEHICLE (Con't).



- c. Install dummy couplings (2) on semitrailer service air coupling (1) and semitrailer emergency air coupling (3).
- d. Disconnect intervehicular cable (5) from semitrailer receptacle (4).
- e. Release kingpin lock on towing vehicle fifth wheel plate and drive towing vehicle away from semitrailer (refer to towing vehicle technical manual).
- f. Perform all *After (A)* PMCS in Table 2-1.

2-12. OPERATING LANDING GEAR.

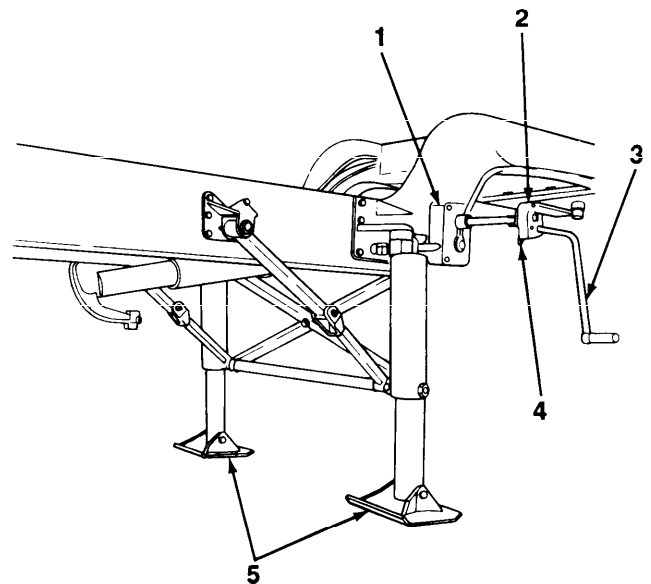
a. Early Model.

(1) Position lever (4) on semitrailer side of ratchet head (2) for direction of rotation desired.

(2) Landing gear contains a two-speed gearbox (1). Push in on crankhandle (3) to provide a slow-speed action, to be used when there is a load on the chassis. Pull out crankhandle to provide a high-speed action, to be used when there is no load on the chassis.

(3) Rotate crankhandle (3) on curbside of semitrailer counterclockwise to raise or clockwise to lower landing gear legs (5).

(4) Continue turning crankhandle (3) until landing gear legs (5) support front of semitrailer.



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2-12. OPERATING LANDING GEAR (Con't).

b. Late Model.

NOTE

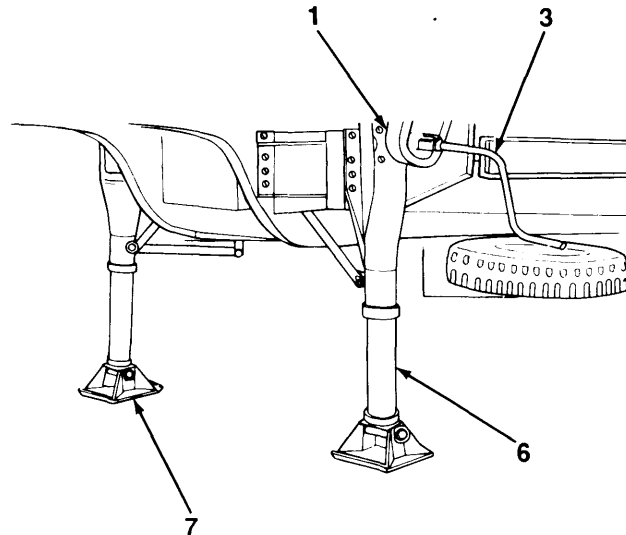
Late model semitrailers have a crankhandle for each landing gear leg.

(1) Each landing gear leg (6 or 7) contains a two-speed gearbox (1). Push crankhandle (3) all the way into gearbox to provide a slow-speed action. Push crankhandle part way into gearbox to provide a high-speed action.

(2) Rotate crankhandle (3) on roadside of semitrailer clockwise to lower or counterclockwise to raise roadside landing gear leg (6).

(3) Rotate crankhandle (3) on curbside of semitrailer counterclockwise to lower or clockwise to raise curbside landing gear leg (7).

(4) Continue turning crankhandles (3) until landing gear legs (6 and 7) support front of semitrailer.



2-13. EXPANDING AND RETRACTING VAN BODY (M313).

NOTE

Expanding and retracting the M313 van body is very complex and requires a thorough understanding of the location and function of controls and locking mechanisms.

a. Expanding Van Body (M313).

(1) Level van body (para 2-17). Release four corner locks (4) from clips (3).

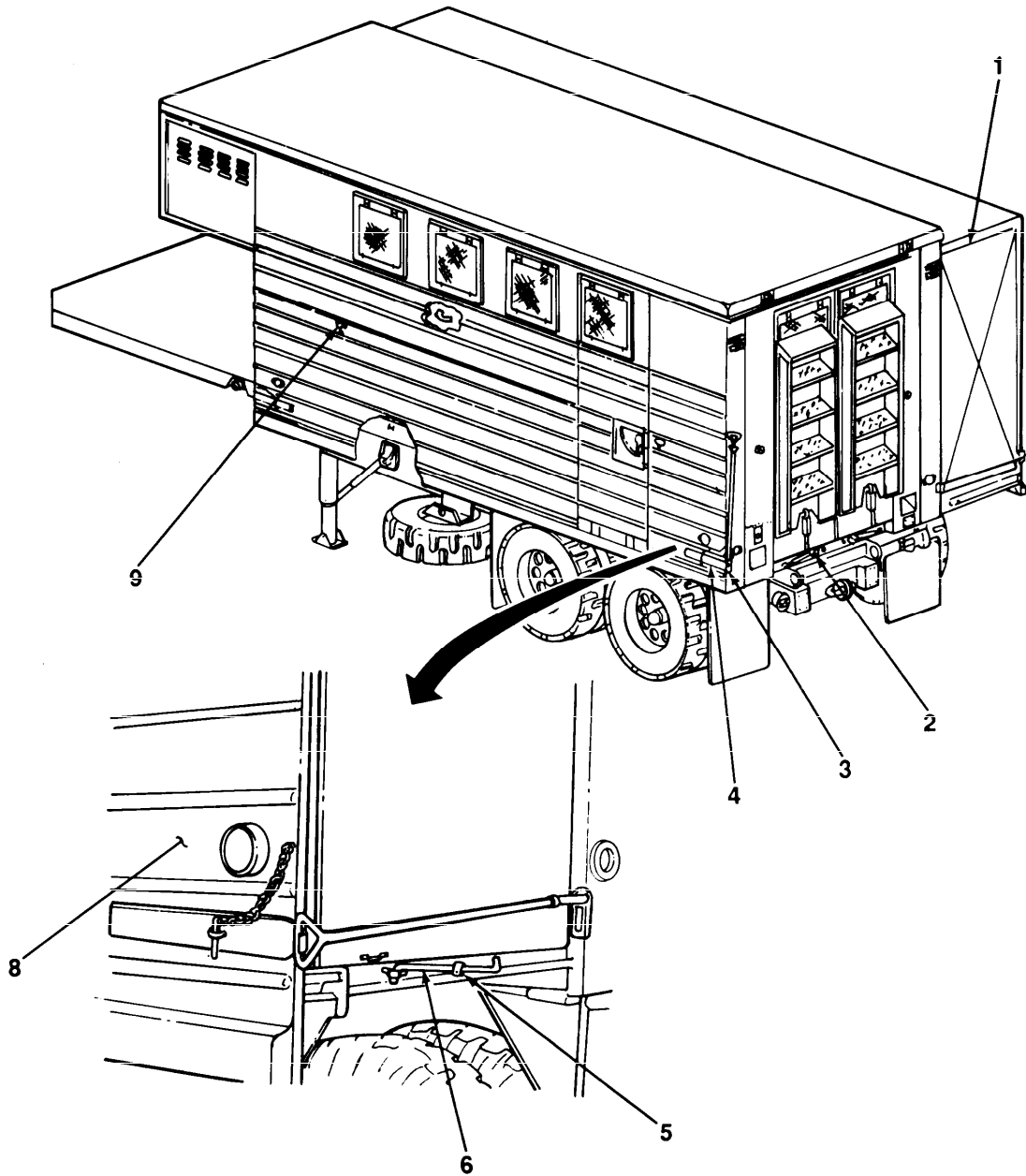
(2) Using lock wrench on four side locks (9) and two side locks on each side wall (8) of van body, release four side locks $\frac{1}{4}$ turn counterclockwise.

(3) Using ratchet wrench and hexagon socket on two ratchets, turn each retractable beam drive shaft (2) until side walls (8) are expanded to their outward limits.

(4) Open four end panel doors (1). Release hook holders (6) from clips (5) and hook holders to bottom of end panel doors to keep end panel doors open at 120° .

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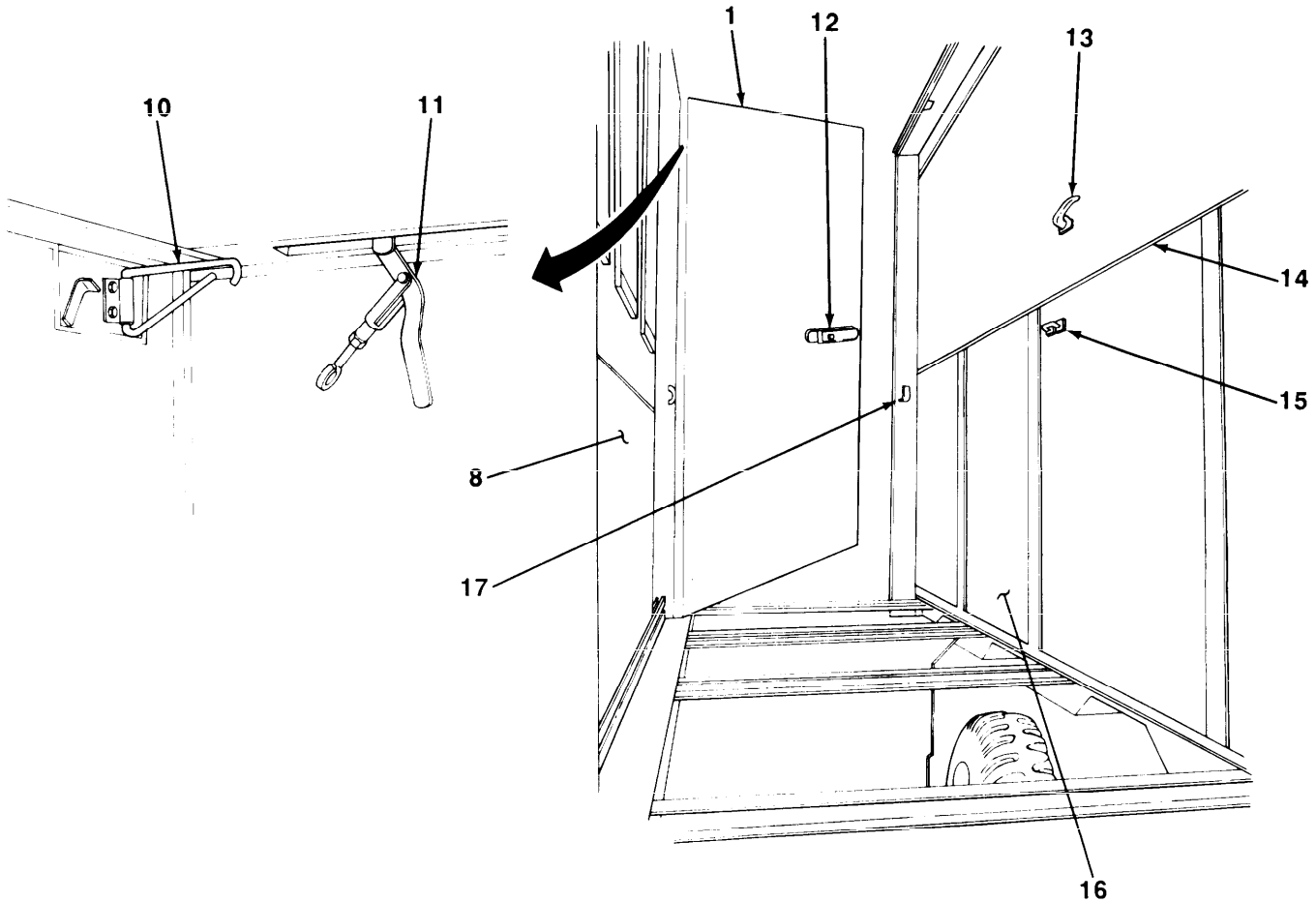
2-13. EXPANDING AND RETRACTING VAN BODY (M313) (Con't).



2-13. EXPANDING AND RETRACTING VAN BODY (M313) (Con't).

(5) Release lock (13) on outside of hinged roof (14), and pull partially outward. Standing clear on ground, pull on grab handle (15) attached to lower hinged floor (16). Ensure that floor panel area is clear. Move to inside van and push hinged roof and lower hinged floor outward at same time.

(6) Raise up hinged roof (14) until it clears three swivel hooks (10). Turn swivel hooks at 90° to side wall (8) and lower hinged roof to rest on swivel hooks.



NOTE

It is necessary to raise hinged roof to obtain snug fit between doors and seals.

(7) Release four hook holders (6) from end panel doors (1) and place hook holders in clips (5). Swing end panel doors inward until they contact hinged floor (16) and roof seals.

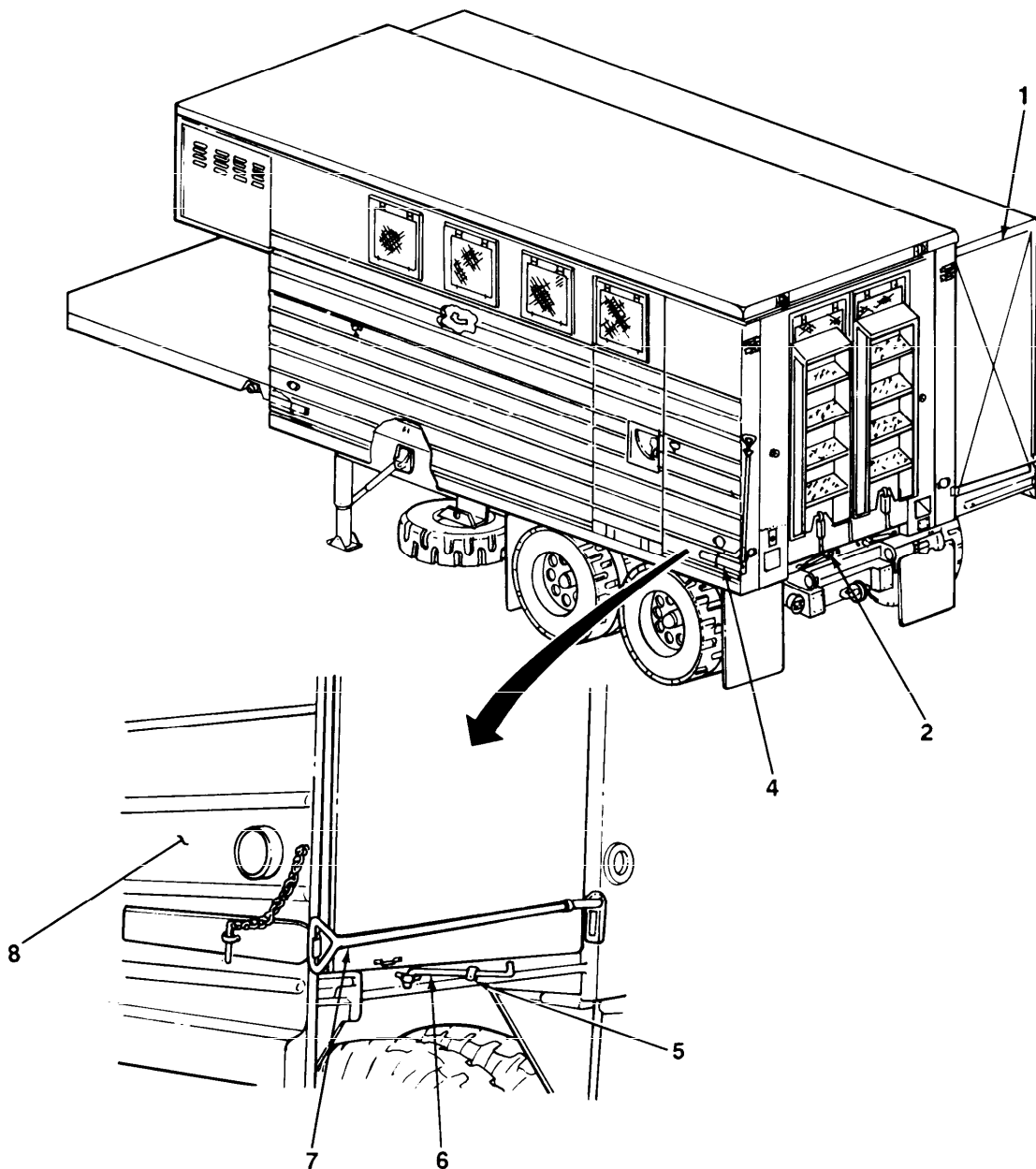
(8) Using large end of lock wrench, push sliding bolt (12) on end panel door (1) in latch (17). Ensure that sliding bolt is fully extended.

(9) Switch retractable beam drive shaft (2) to closed position and place crank arm in a horizontal position. Turn ratchet wrench while slightly lifting hinged roof (14) at end panel doors (1) to ensure proper seal alignment.

(10) Repeat steps 5 through 9 for opposite side of van.

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2-13. EXPANDING AND RETRACTING VAN BODY (M313) (Con't).



(11) Inside van, jump on both hinged floors (16) to ensure that no binding of alignment pins exists.

(12) Move outside of van and apply full weight on ratchet wrench to both retractable beam drive shafts (2) to ensure a tight seal.

(13) From inside van, engage six clamp locks (11) on swivel hooks (10) and draw side walls (8), end panel doors (1), and ceiling panels tight against seals. Start with center clamp lock on each side.

(14) Ensure that sliding bolt (12) on each end panel door (1) is fully extended into latch (17).

(15) Engage four side wall corner locks (4) in extension rods (7).

TA701919

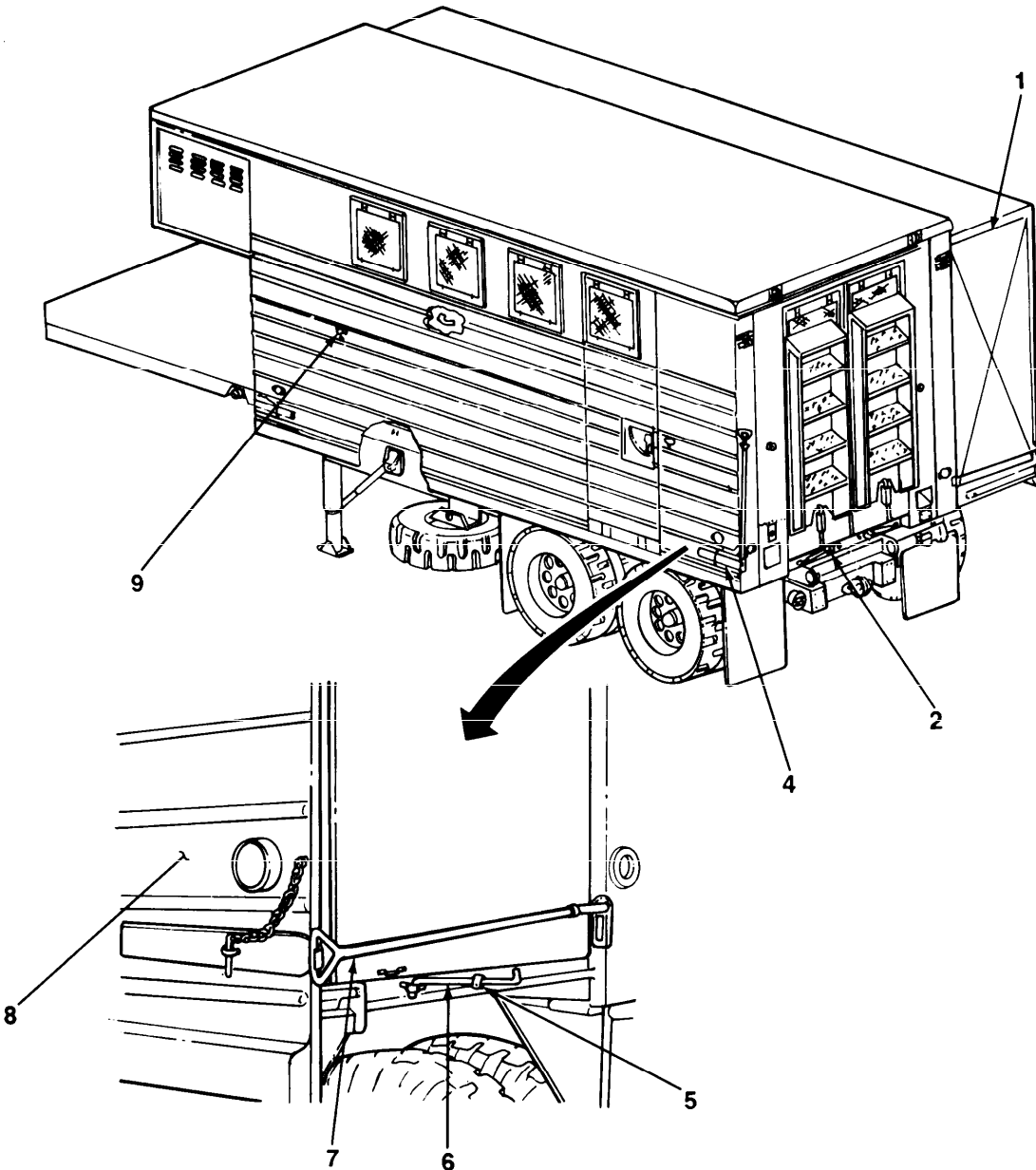
2-13. EXPANDING AND RETRACTING VAN BODY (M313) (Con't).

b. Retracting Van Body (M313).

CAUTION

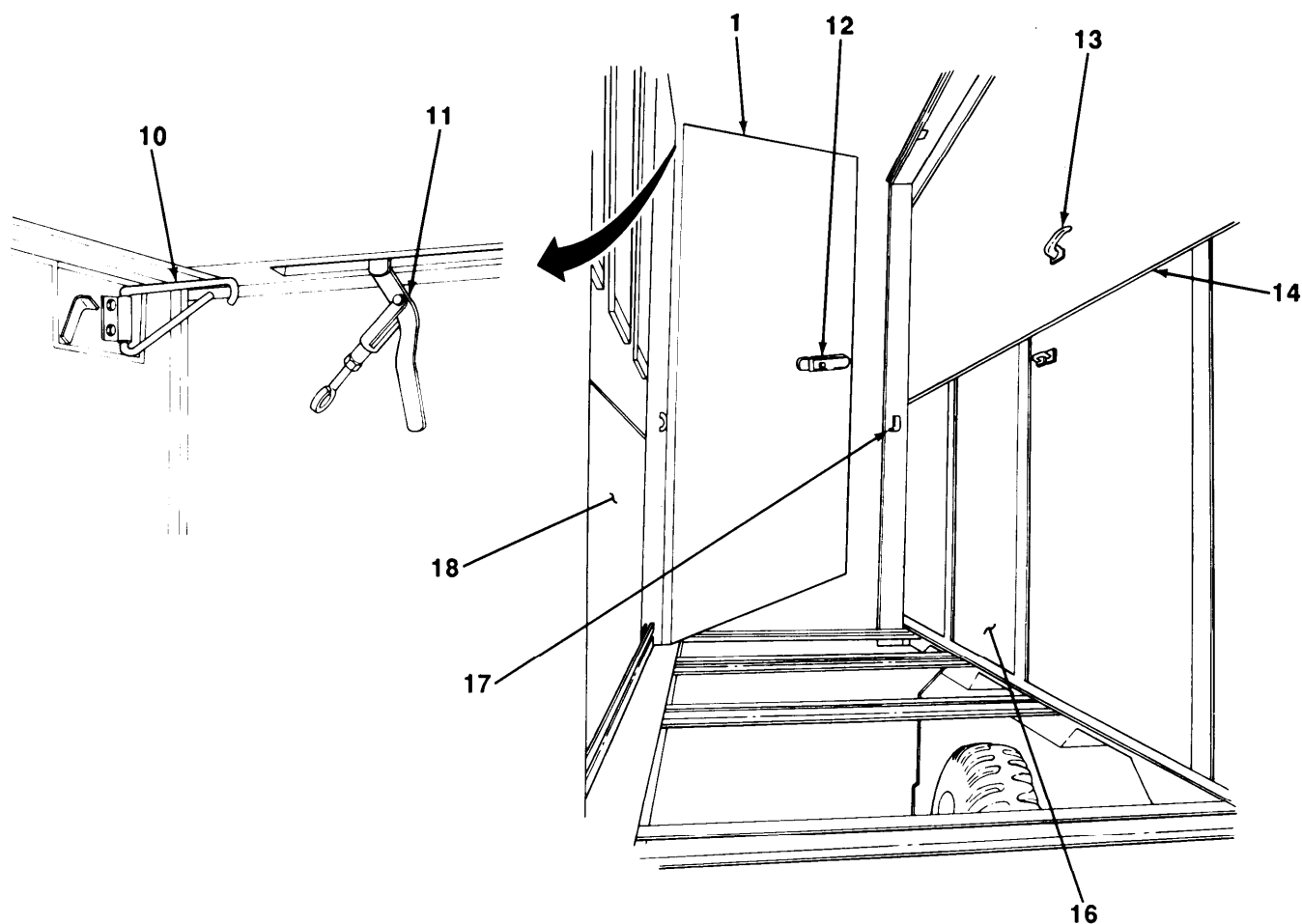
All side windows must be closed before retracting van body. Windows cannot be closed after van body is in retracted position.

- (1) Outside van, release four extension rods (7) from side wall corner locks (4).
- (2) Inside van, open six clamp locks (11) and remove six swivel hooks (10).



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2-13. EXPANDING AND RETRACTING VAN BODY (M313) (Con't).



- (3) Using ratchet wrench, release tension on both retractable beam drive shafts (2).
- (4) Retract sliding bolt (12) on end panel door (1) from latch (17).
- (5) Remove four hook holders (6) on end panel doors (1) from clips (5). Open end panel doors and use hook holders to keep end panel doors open at 120°.
- (6) Raise hinged roof (14) until it clears three swivel hooks (10). Turn swivel hooks until they are flush with side wall (8), then lower hinged roof.
- (7) Standing clear on ground, raise hinged floor (16) into vertical position. Pull hinged roof (14) partially out to clear hinged floor. Close hinged roof against hinged floor and engage lock (13) on hinged roof.
- (8) Repeat steps 5 through 7 for opposite side wall (8).
- (9) Close four end panel doors (1) against side wall (8) and place hook holders (6) in clips (5).
- (10) Using ratchet wrench and hexagon socket on two ratchets, turn retractable beam drive shaft (2) until side walls (8) are fully retracted against van body.
- (11) Using lock wrench on four side locks (9), engage four side locks $\frac{1}{4}$ turn clockwise.

TA701921

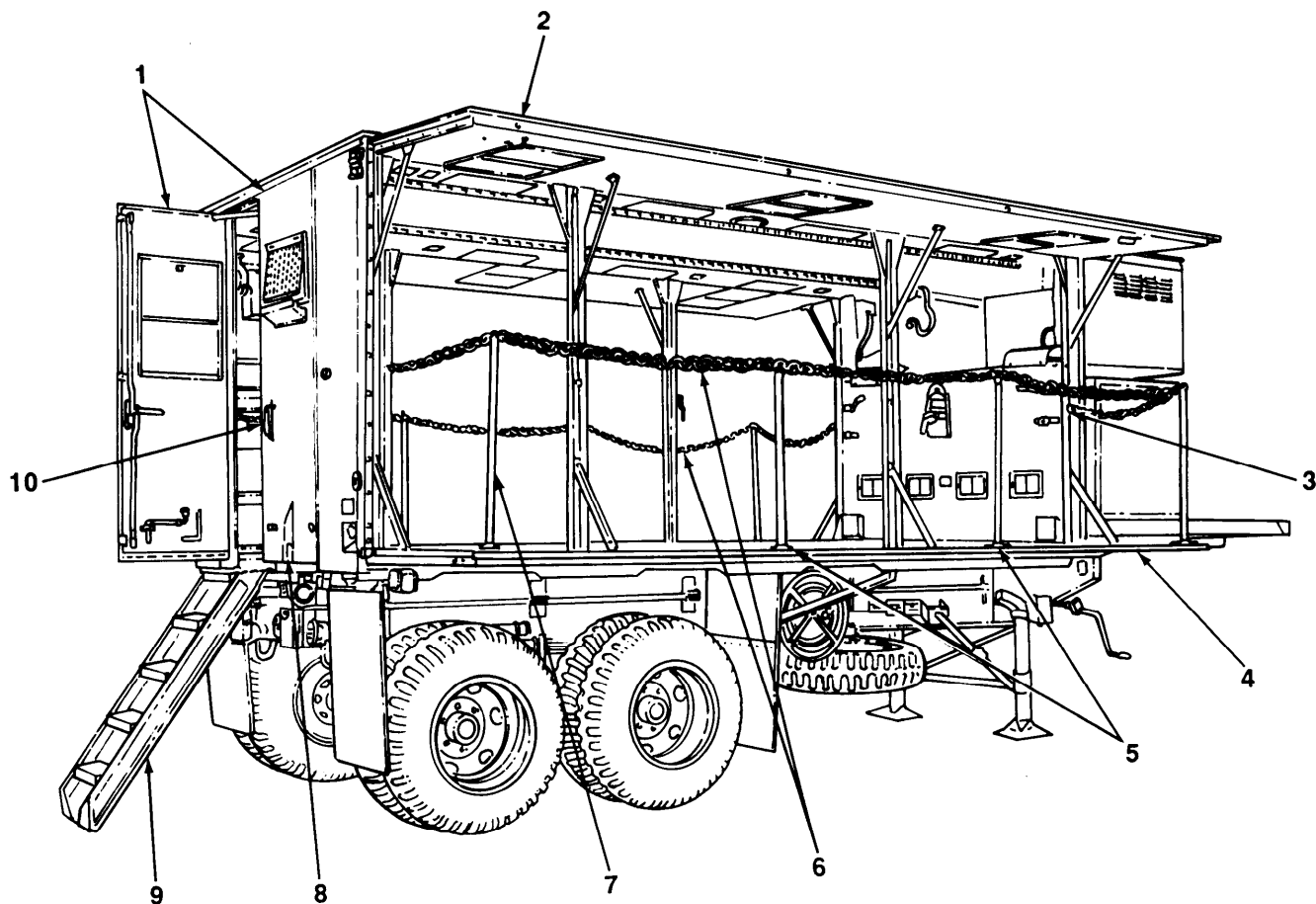
2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750).

a. Expanding Van Bodies (M447, M447C, M749, and M750).

NOTE

Instructions for expanding van bodies are the same for both sides.

- (1) Level van body (para 2-17).
- (2) Remove padlocks from two ladder clamps (8) and door handle (10). Release ladder clamps and remove ladders (9).
- (3) Position one ladder (9) below rear doors (1) in brackets located in frame.



NOTE

Right rear door opens from outside or inside. Left rear door can only be opened from inside semitrailer.

- (4) Release door handle (10) and open rear doors (1).
- (5) Position other ladder (9) on platform below stowage compartment door. Remove padlock and open stowage compartment door.

TA701922

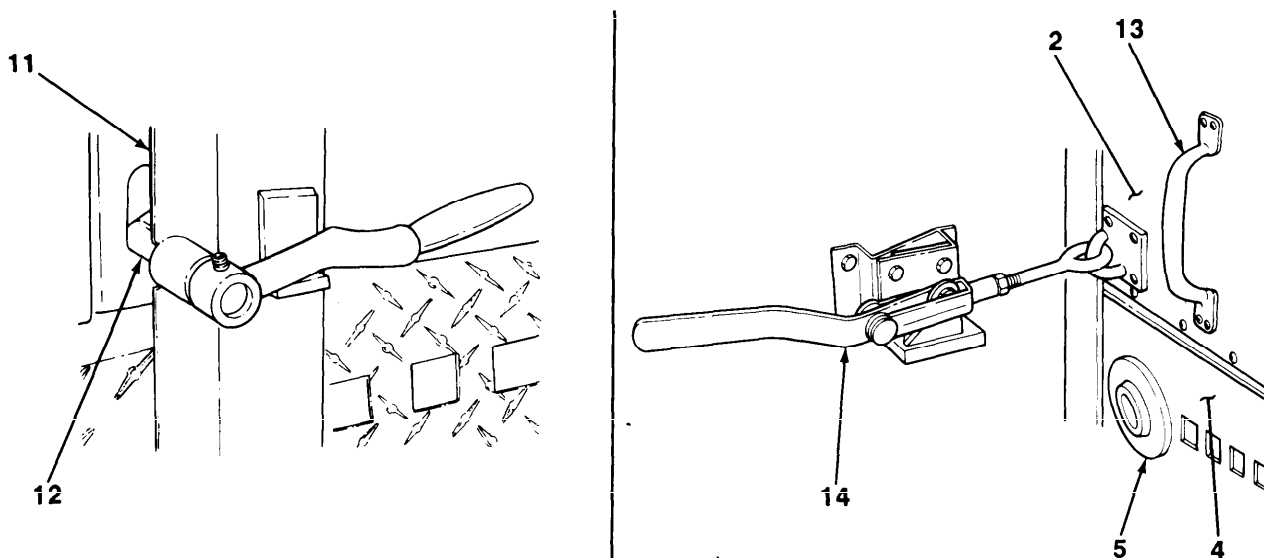
2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750) (Con't).

(6) Release lock (12) on each stake (11) and over center clamps (14) at front and rear of upper folding side door (2).

CAUTION

Do not let side doors fall free. Provide assistance from outside to slowly let down doors to prevent damage.

(7) Using handle (13), push upper folding side door (2) and lower folding side door (4) outward at the same time.



(8) Remove four guard rail posts (7) from two brackets on front wall. Screw threaded ends of guard rail posts into floor flanges (5).

(9) Attach chain (6) to loop (3) on front wall. Pull chain through top loops of guard rail posts (7) and attach to loop on rear wall.

b. Installing Van Body Curtains (M447 and M750).

NOTE

M447 and M750 van bodies are provided with two curtains, one for each side of van, marked R and L for right and left sides. Installing curtains requires two people.

- (1) Remove curtains from stowage box and unfold.
- (2) Fasten center of curtain to studs on upper folding side door. Fasten remainder of curtain top from center outward.
- (3) Fasten bottom of curtain, from center outward, to lower folding side door.
- (4) Repeat steps 2 and 3 to install curtain on opposite side of van.

TA701923

2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750) (Con't).

c. Installing Van Body Curtains (M749, Early Model).

NOTE

M749 early model van body has four curtain sections for each side.

- (1) Remove curtain sections from stowage box and unfold.
- (2) Fasten curtain sections to top folding side door and to each other with snap fasteners.

d. Installing Van Body Curtains (M749, Late Model).

NOTE

M749 late model van body has one curtain for each side.

- (1) Position one end of curtain over curtain mounting studs on rear corner of van body.
- (2) Install no. 1 curtain mounting bar over curtain and mounting studs. Secure mounting bar to van body by tightening captive mounting bar wingnuts.
- (3) Position curtain over mounting studs around edges of top folding side door. Install curtain mounting bars and secure by tightening captive mounting bar wingnuts.
- (4) Repeat steps 1 through 3 to secure curtain to lower folding side door.
- (5) Repeat steps 1 through 4 to install curtain on opposite side of van body.

e. Installing Van Body Side Panels (M447C).

WARNING

Installation of side panels requires at least three people to reduce the danger of personnel falling off vehicle or damaging side panels.

NOTE

M447C van body must be level before installing panel sets. Lower doors must be square with front and rear corner posts before installing panel sets.

- (1) Level van body (para 2-17).
- (2) Adjust counterbalance turnbuckles so lower doors are square with front and rear corner posts:
 - (a) Adjust tension on counterbalance turnbuckle wire rope assemblies. Turn turnbuckles in desired direction to loosen or tighten tension.
 - (b) When desired tension is obtained and lower doors are square, lock turnbuckles with nuts.

NOTE

Either curbside (right) or roadside (left) panels may be installed first. Panels on each side must be installed in the following order. Right side: start at rear body post and continue along perimeter of opened side doors to front body post. Left side: start at the front body post and continue along perimeter of open side doors to rear body post. Each panel is legibly stamped or lettered with a code on inner wall surface, adjacent to upper locks. The code is made up of a letter R or L to indicate side on which panel is to be installed, a vehicle manufacturer's unit code, and an Arabic number to indicate panel's position. Examples: R-VMVC-1, R-VMVC-2, etc. Panel R-VMVC-1 is installed on curbside at rear body post.

- (3) Remove side panel from stowage chests located on front platform of van body.

2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750) (Con't).

NOTE

Bottom of side panels are identified by edge containing deflector strip and seal.

(4) Position side panels, in numbered order, leaning against opened lower side doors with bottom of side panels facing down.

WARNING

Clean up all excess solutions or compounds from extrusions and side panels. Failure to do so could result in slippery surfaces which could result in injury to personnel.

NOTE

If silicone compound is not readily available, a solution of soapy water may be substituted.

- (5) Apply silicone compound (Item 12, Appendix E) to rubber seals of side panels to ease installation.
- (6) While facing ends of opened side doors, raise first panel into position. Leave about 1 in. (2.54 cm) between body post and side panel so pin on lower body door will enter clearance hole at bottom of side panel.
- (7) Tilt top of side panel inward until it contacts rubber seals along end of upper side door.
- (8) Push upward and inward on side panel until side panel is seated along top and bottom.
- (9) Slide side panel toward body post until pin in lower door engages hole in bottom of side panel.

CAUTION

Ensure that hexagonal wrench is fully engaged in male lock. DO NOT, under any circumstances, force engagement of male lock into female lock. Tighten locks only until a moderate positive pressure is obtained. Any attempts to pull side panels together will only shear teeth of male lock or pull it out of position.

NOTE

If engaging corner locks is difficult, grasp edge of upper side door and pull downward while locks are engaged. This causes weight of side panel to be partially transferred from lower to upper door through counterbalance system. This in turn causes upper door to deflect down enough to center locks. With clearance at top and bottom doors equal, corner locks along sides of doors may be tightened.

- (10) Remove locking wrench from jack storage box. Use wrench to partially engage male lock in mating case of end panel. Partially engage male locks on body post to mating cases in side panel.
- (11) Male locks near outer ends of upper door and lower door should be partially engaged in their mating cases in side panel.
- (12) While facing open van, lift up second side panel and position it as close as possible to previous side panel.
- (13) Tilt top of side panel inward until side panel contacts rubber seals along end of upper side door.
- (14) Ensure that pins align with clearance holes at bottom of side panel. Push upward and inward until side panel is seated top and bottom.
- (15) Partially engage locks along upper edge of side panel, then partially engage locks along previous side panel and finally along lower edge.
- (16) Loosen and/or tighten locks along previous side panel, until clearance is $\frac{3}{32}$ in. (2.38 mm) between two side panels.

**2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750)
(Con't).**

NOTE

Third, fourth, and fifth side panels are installed the same way as second side panel.

- (17) Repeat steps 12 through 16 and install third, fourth and fifth side panels.
- (18) Raise sixth side panel into position. Tilt top of side panel inward until it contacts rubber seals on upperdoor.

NOTE

If pin does not freely engage clearance hole, there is excessive clearance between two or more side panels. Perform step 16 to remove excess clearance. If pin freely engages, perform step 20.

- (19) Ensure that pin in lower door engages clearance hole in bottom of side panel by lifting upward and pushing inward on side panel until sealed.
- (20) Engage edge locks in previous side panel. Engage body post locks and upper and lower corner locks in their mating cases on side panel.

NOTE

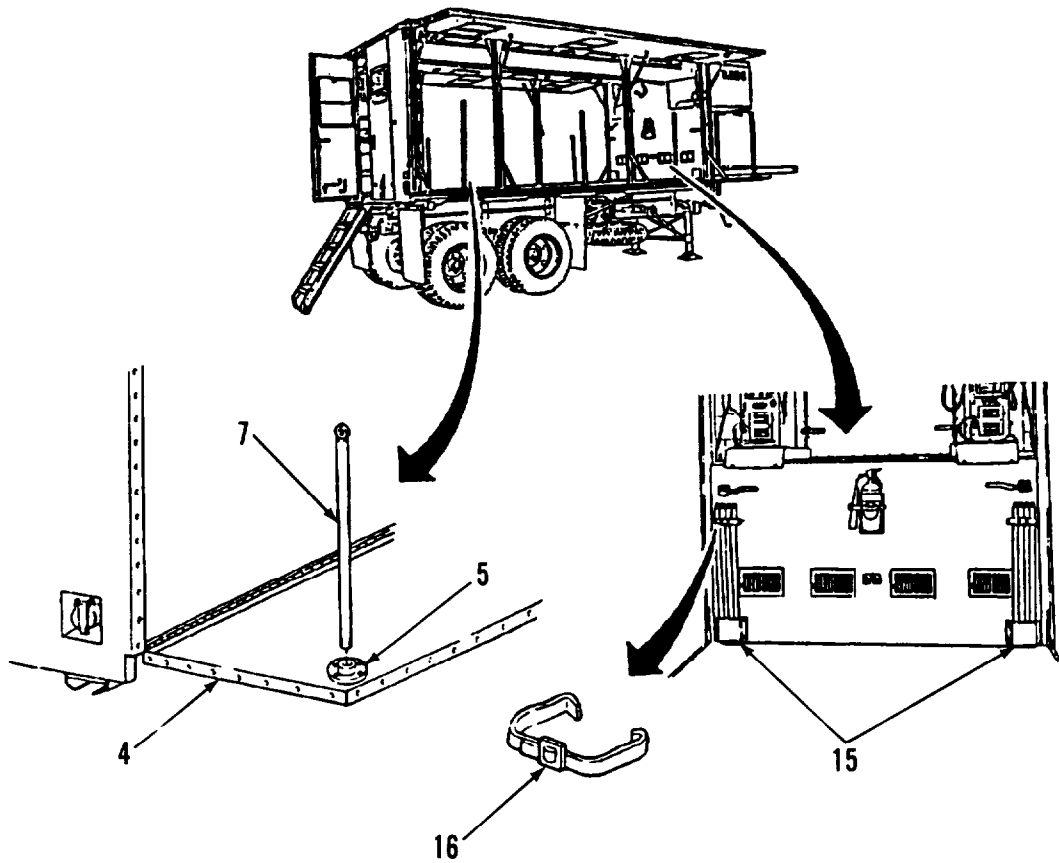
To ensure proper sealing between side panels and doors, all of upper and lower edge locks must be uniformly tightened.

- (21) Tighten locks to previous side panel, body post, and upper and lower corner locks.
- (22) Repeat steps 5 through 21 to install side panels on opposite side of van body.

f. Installing Van Body Curtains (M447C)

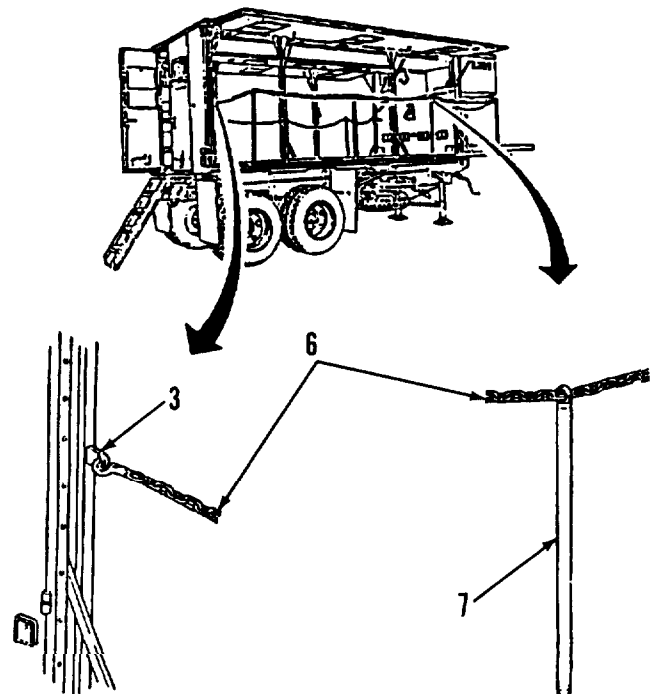
- (1) Remove eight chain-guard post assemblies (7) from brackets (15) by releasing two strap assemblies (16).
- (2) Install eight chain-guard post assemblies (7) in eight flanges (5) on left and right lower folding side doors (4).

**2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750)
(Con't).**



(3) Hook chain (6) to loop (3) on front end of van and pull chain (6) through post assembly (7) rings. Attach opposite end of chain (6) to loop (3) on rear end of van.

(4) Repeat step 3 for opposite side of trailer.



2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750) (Con't).

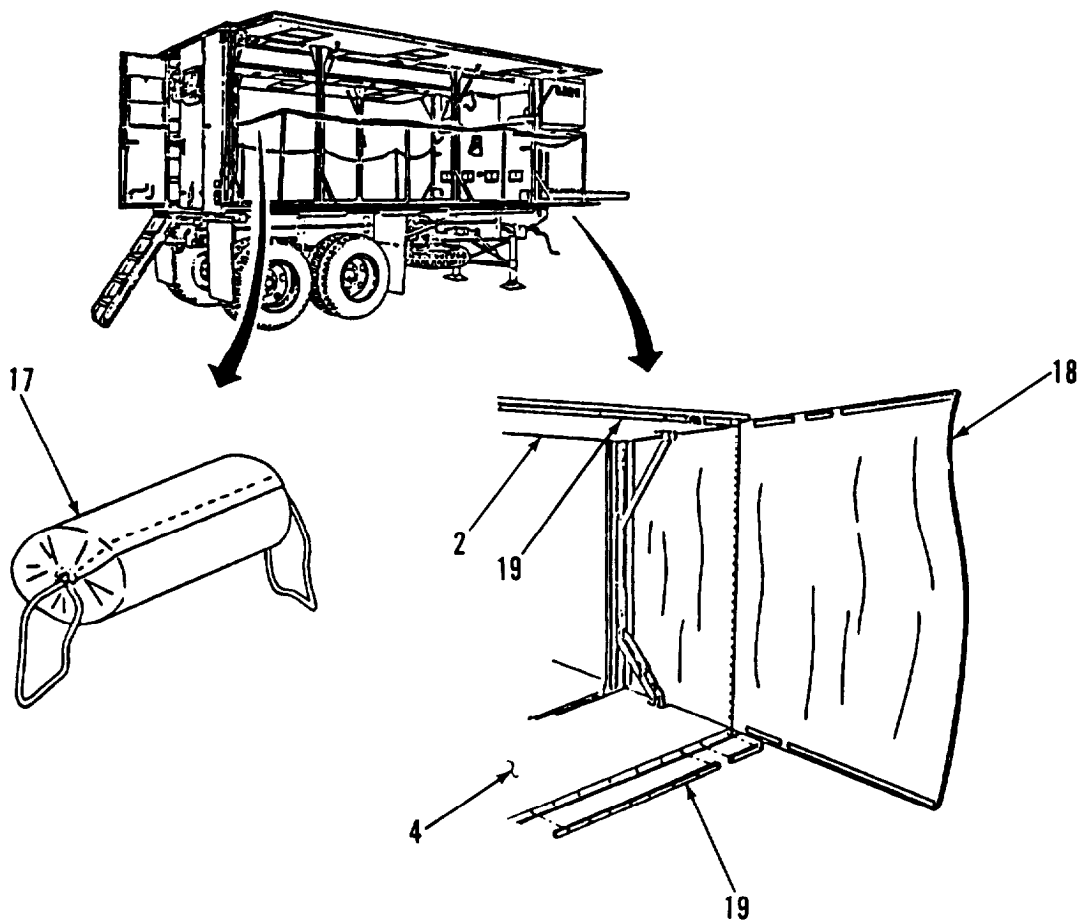
- (5) Remove two curtains (18) from storage bag (17).

NOTE

- Curtains will fit either side of trailer and are reversible.
- For ease of installation, rest curtain on lower folding door. Holes in bottom edge of curtain mate with pins on lower folding door.

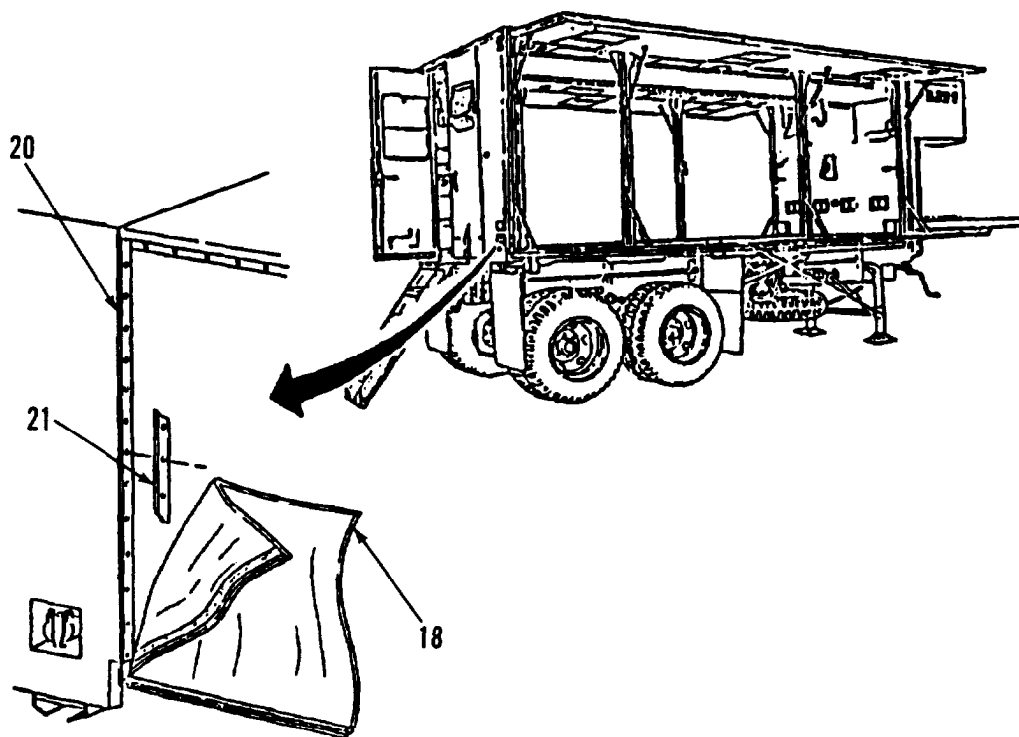
- (6) With help from an assistant, start on either side of trailer and install curtain (18). Attach top edge of curtain (18) to hook strip (19) on upper folding door (2).

- (7) Attach bottom edge of curtain (18) to hook strip (19) on lower folding door (4).



**2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750)
(Con't).**

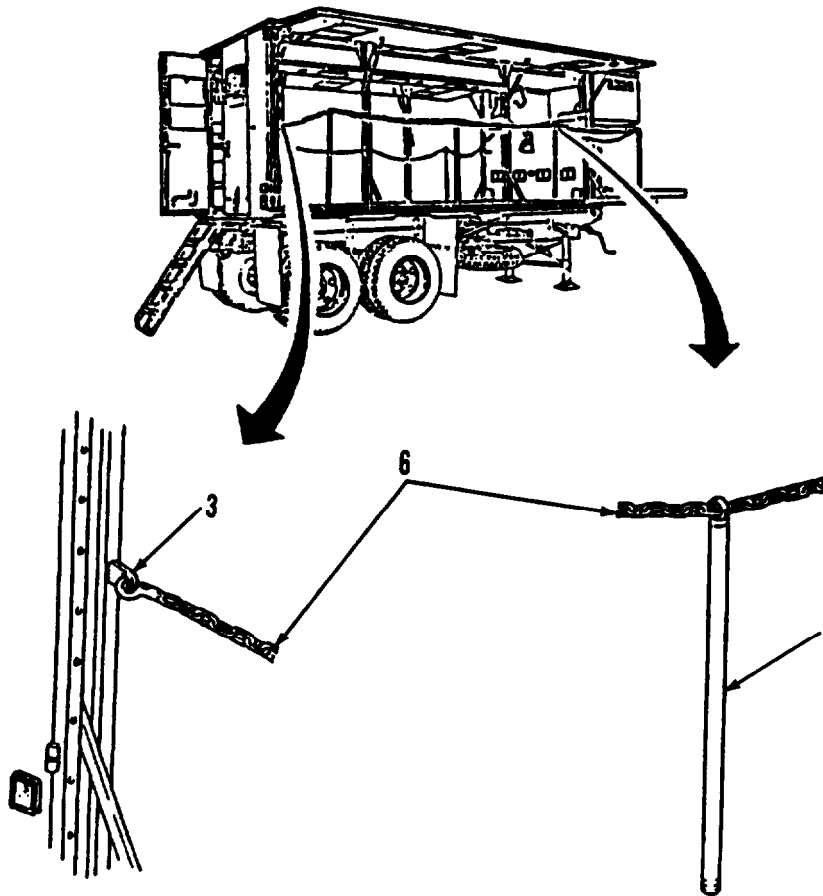
- (8) Attach curtain (18) to hook strip (21) on forward and rear corner posts (20).
- (9) Repeat steps 6-8 for opposite side of trailer.



**2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750)
(Con't).**

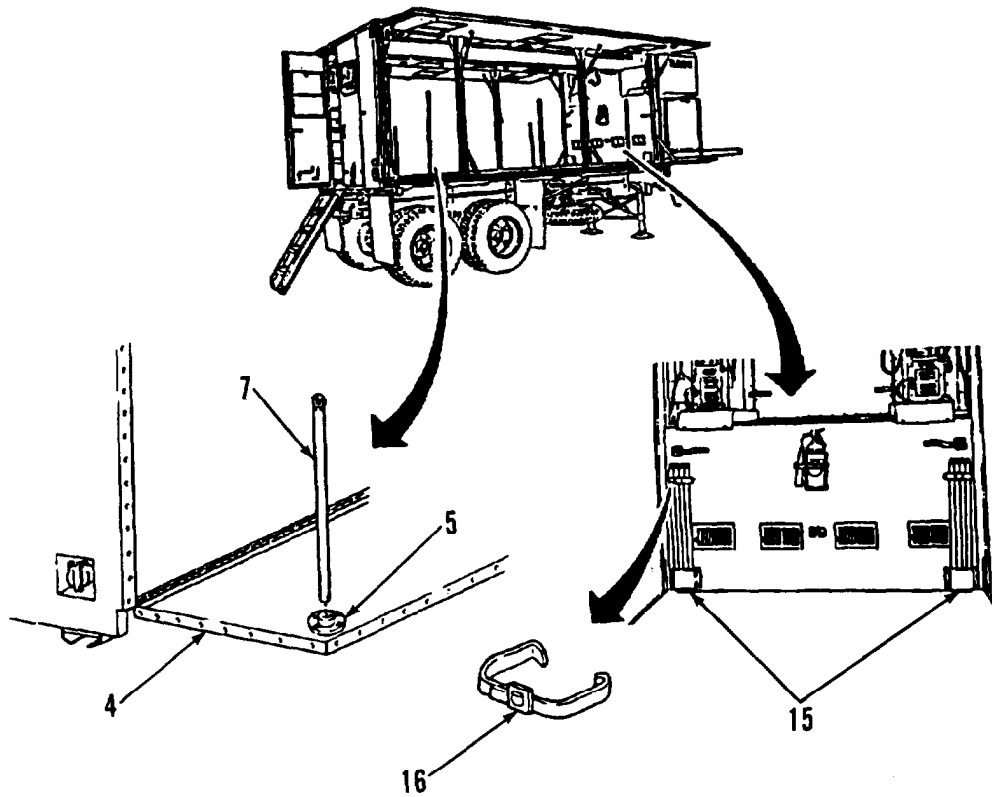
g. Removing Van Body Curtains (M447C).

(1) Disconnect chain (6) from loop (3) on front of trailer and slide chain (6) through post assembly (7) rings. Disconnect opposite end of chain (6) from loop (3) on rear of trailer. Stow chain (6) in storage box.

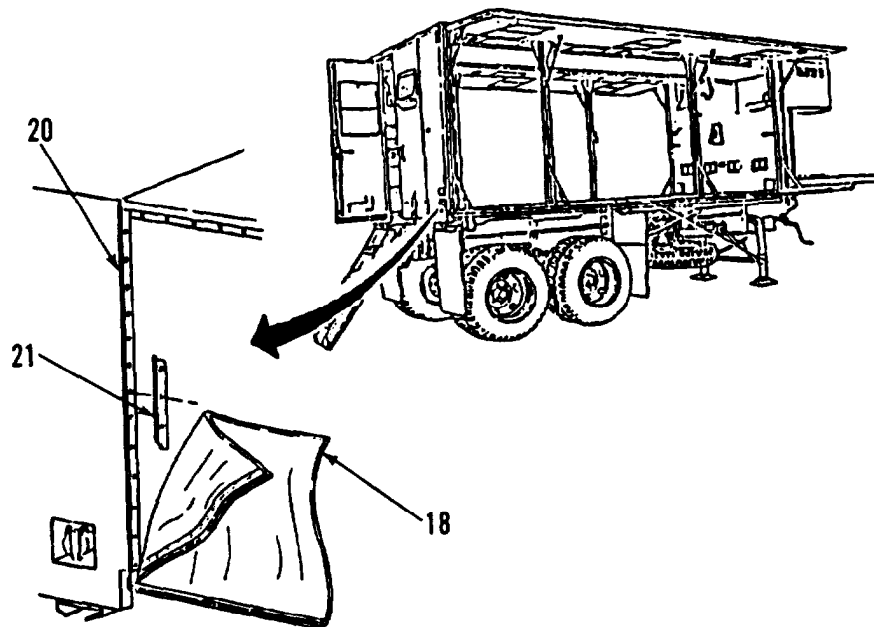


(2) Remove eight post assemblies (7) from eight flanges (5) on right and left lower doors (4). Stow in two brackets (15) on forward wall and secure with two straps (16).

**2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750)
(Con't).**

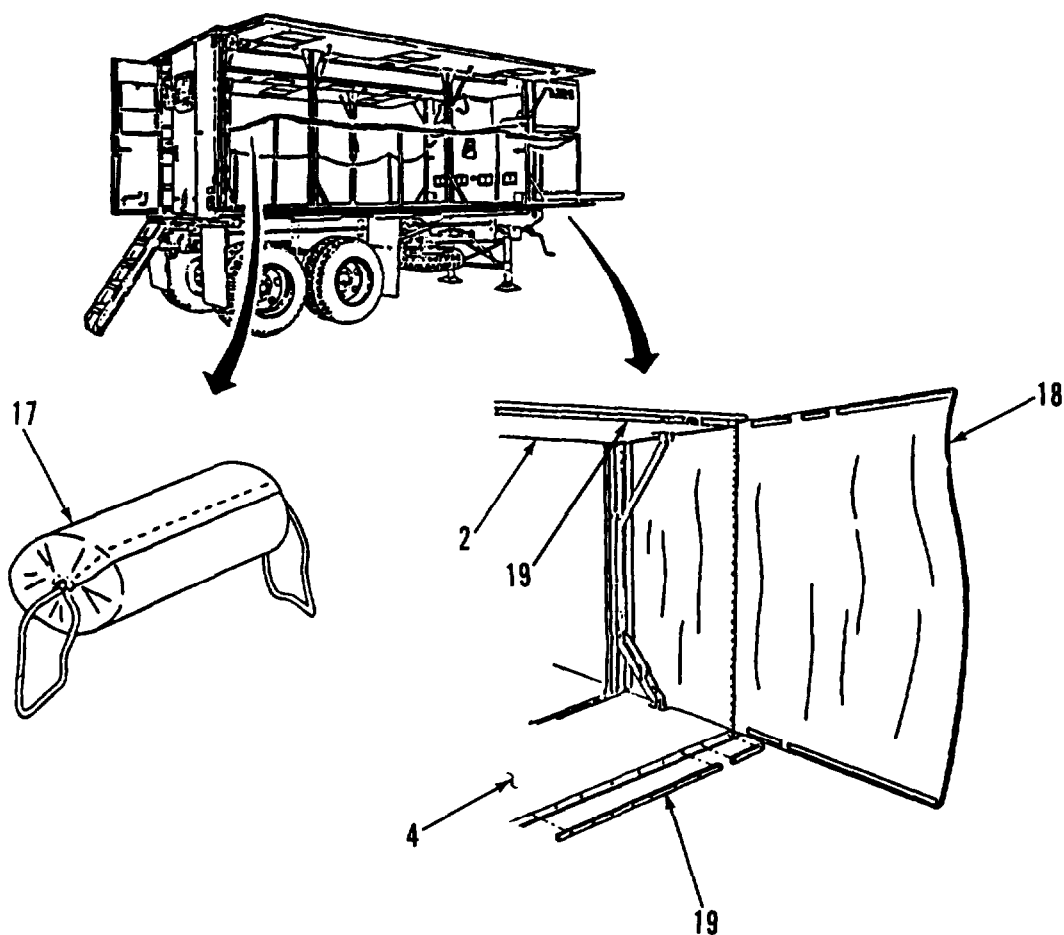


(3) Remove curtain (18) from hook strip (21) on front and rear corner posts (20).



**2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750)
(Con't).**

- (4) Remove curtain (18) from hook strip (19) on top edge of upper door (2).
- (5) Remove curtain (18) from hook strip (19) on lower folding door (4).
- (6) Repeat step 1-5 for opposite side of trailer.
- (7) Stow two curtains (18) in stowage bag (17) and store in trailer.



2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750) (Con't).

h. Removing Van Body Side Panels (M447C)

CAUTION

- When removing panels, upper edge locks should be released last so that a firm grip may be maintained on panel. If this procedure is not followed, panels may be dropped and damaged.
- Panels are removed in numerical order, starting at number six, working down to number one. Upon removal, panels should be immediately packed into storage chests to prevent damage. Shipping dividers should be placed securely between panels to limit motion and possible damage to panels.
 - (1) Loosen and releases locks on sixth side panel, body post, and upper and lower corner locks.
 - (2) Lift and remove sixth side panel from van body. Store side panel in stowage chest located on front platform of van.
 - (3) Repeat steps 1 and 2 to remove side panels five through one.
 - (4) Repeat steps 1 through 3 to remove side panels on opposite side of van body.

i. Removing Van Body Curtains (M749, Late Model).

NOTE

M749 late model van body has one curtain for each side.

- (1) Remove curtain mounting bar from lower rear corner of van body by loosening captive mounting bar wingnuts.
- (2) Remove curtain mounting bars from mounting studs along edge of lower folding side door.
- (3) Remove curtain from mounting studs along edge of lower side folding door.
- (4) Repeat steps 1 through 3 to remove curtain from top folding side door.
- (5) Repeat steps 1 through 4 to remove curtain on opposite side of van body.
- (6) Fold curtains and store in stowage box.

**2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750)
(Con't).**

j. Removing Van Body Curtains (M749, Early Model).

NOTE

M749 early model van body has for curtain sections for each side.

- (1) Remove snap fasteners securing curtain sections to each other.
- (2) Unfasten and remove curtain sections from top folding side door.
- (3) Fold curtain sections and store in stowage box.

k. Remove Van Body Curtains (M447 and M750).

NOTE

M447 and M750 vans have two canvas curtains, one for each side of van, marked R and L for right and left sides. Removing curtains requires two people.

- (1) Unfasten bottom of curtain from studs on lower folding side door.
- (2) Unfasten top of curtain from studs on upper folding side door.
- (3) Repeat steps 1 and 2 to remove curtain from opposite side of van body.
- (4) Fold curtains and store in stowage box.

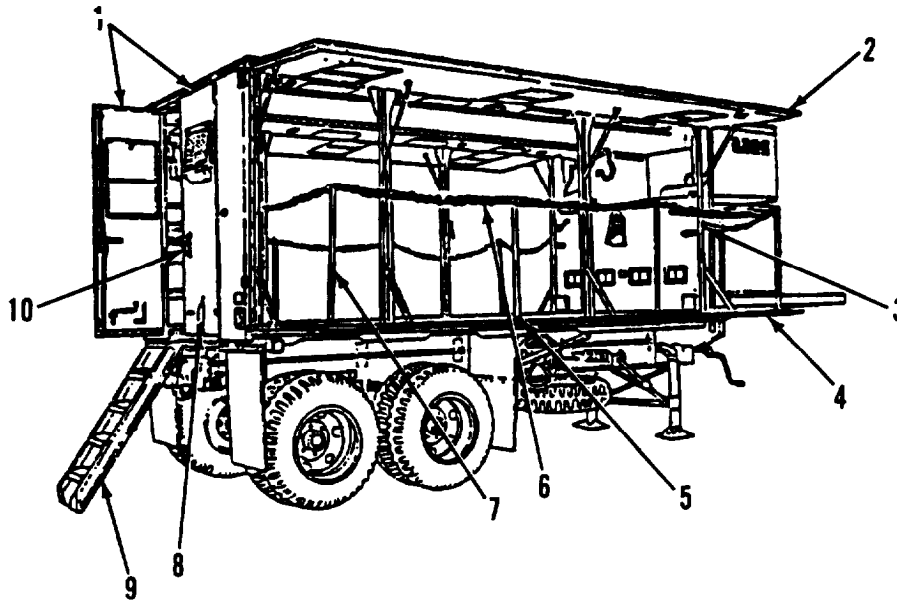
l. Retracting Van Bodies (M447, M447C, M749, and M750).

NOTE

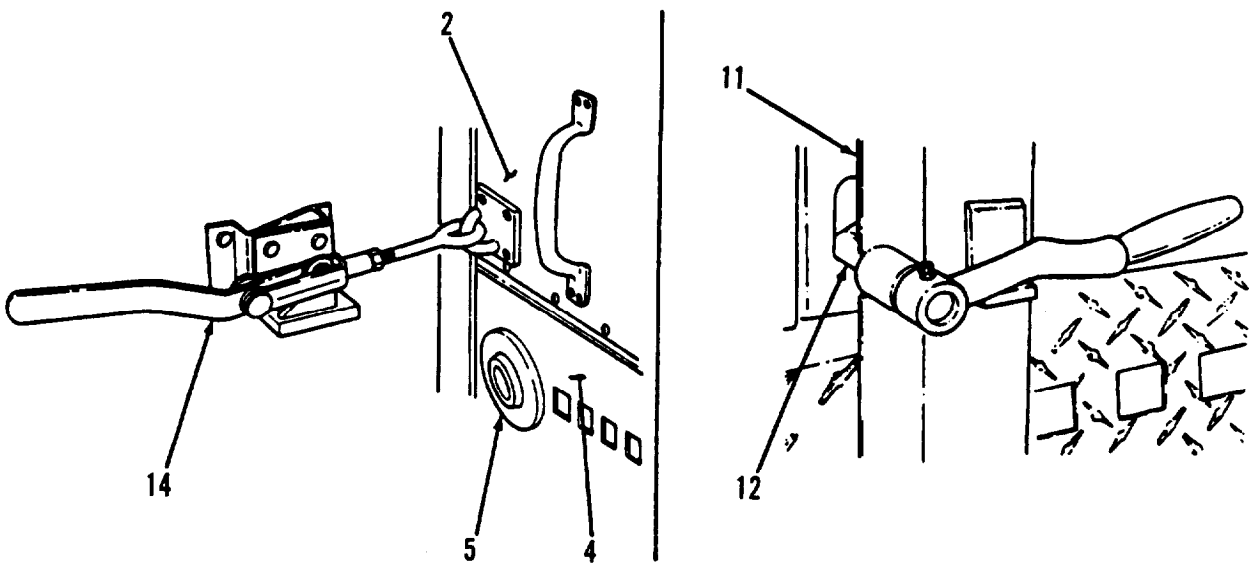
Instructions for retracting van bodies are the same for both sides.

- (1) Detach chain (6) from loop (3) on rear wall and pull chain out of top loops of guard rail posts (7). Remove chain from loop on front wall.
- (2) Unscrew threaded ends of four guards rail posts (7) from floor flanges (5). Install guard rail posts in bracket on front wall.

**2-14. EXPANDING AND RETRACTING VAN BODIES (M447, M447C, M749, AND M750)
(Con't).**



(3) Close upper and lower folding side doors (2 and 4) at same time. Engage lock (12) on each stake (11) and over center clamps (14) at front and rear of upper folding side door (2).



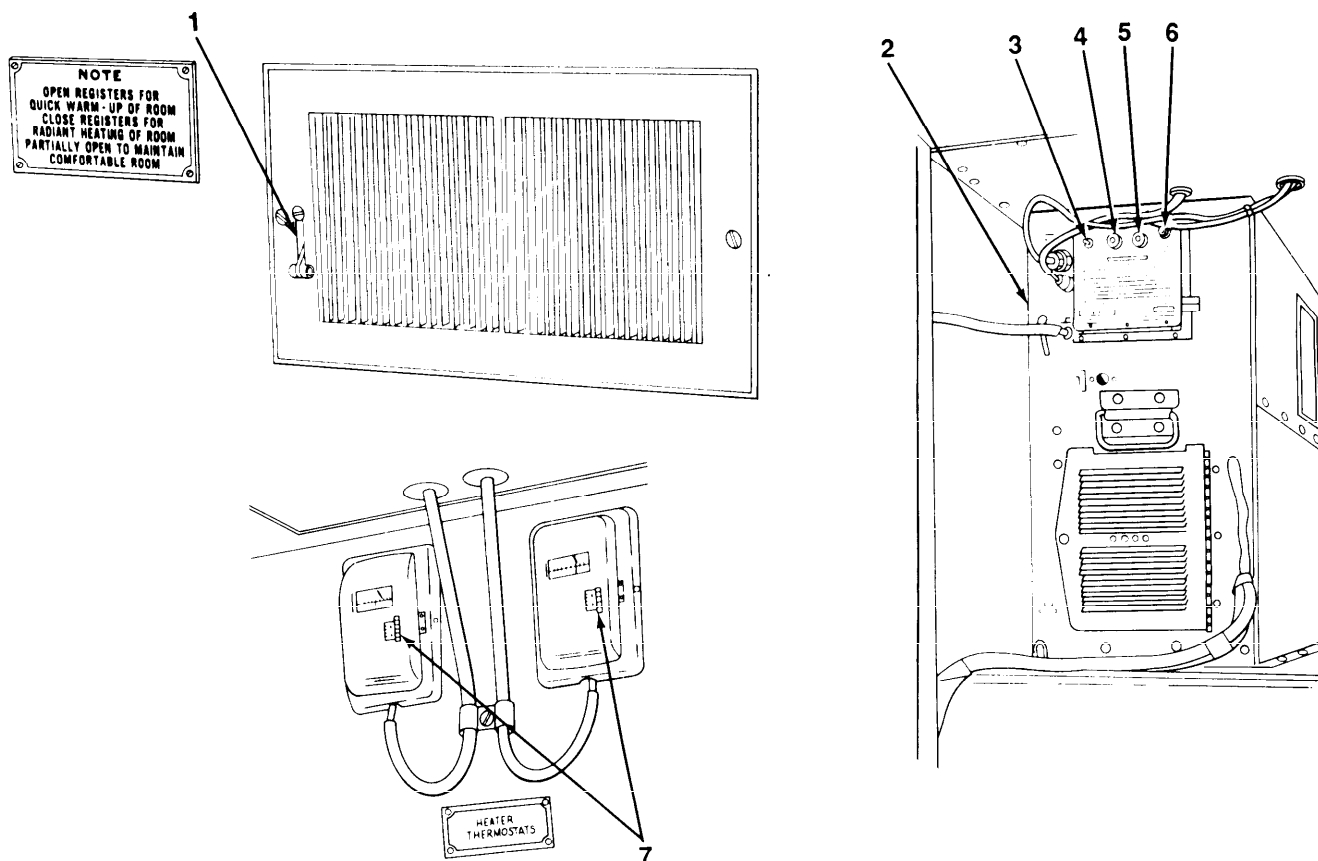
- (4) Close rear doors (1) and engage door handles (10).
- (5) Padlock stowage compartment door and remove ladder (9).
- (6) Position ladders (9) in two ladder clamps (8) on rear doors (1) and install padlocks.

2-15. OPERATING PERSONNEL HEATER.

NOTE

Heater models will vary. Operation of a typical heater, thermostat, and air register is shown. Refer to applicable heater manual (see Appendix A) for further instructions.

- a. Set thermostat (7) on rear wall of van body to desired temperature.
- b. Turn switch (3) to HEAT so white light (4) illuminates indicating normal operation.
- c. If red light (5) illuminates and heater (2) stops, check for fuel or ignition failure. Press reset button (6) to restart heater.
- d. To regulate air flow, adjust four heater register levers (1), up to open and down to close.
- e. To stop heater, turn switch (3) to OFF position. Heater will shut down after purge.
- f. To ventilate (unheated) air, turn switch (3) to FAN position.



2-16. OPERATING AIR CONDITIONER.

CAUTION

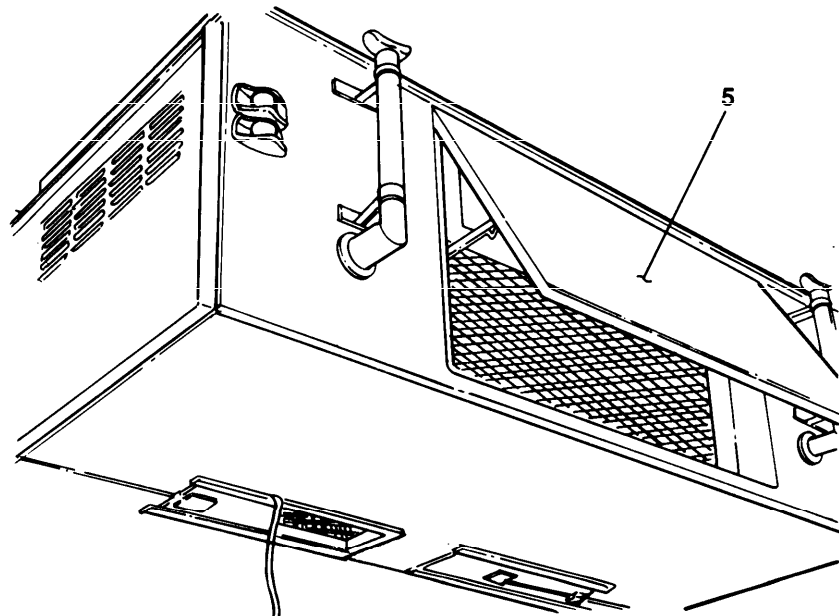
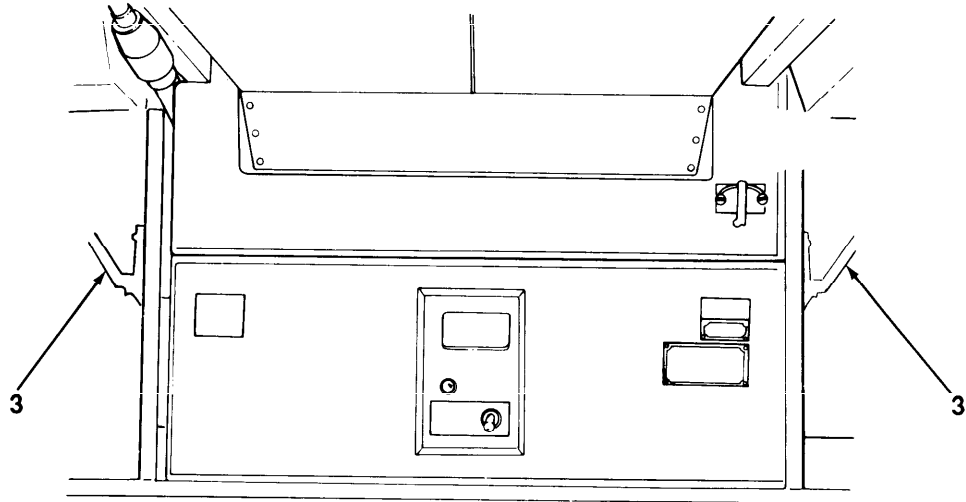
Do not operate air conditioner before opening bonnet front door and both air conditioner exhaust covers. Failure to follow this caution may result in overheating of air conditioner.

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2-16. OPERATING AIR CONDITIONER (Con't).

NOTE

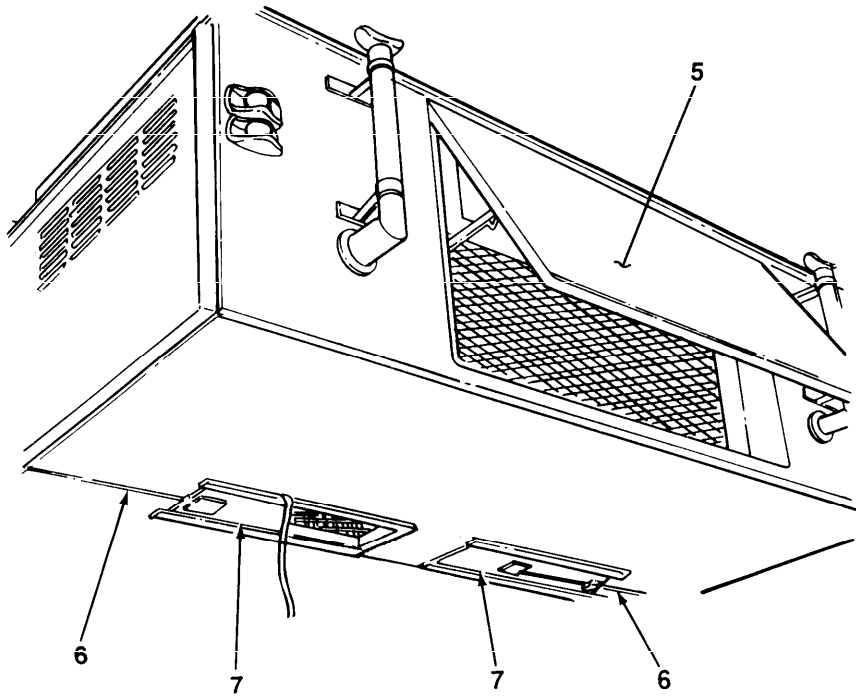
- Opening and closing bonnet front door on some early model M447C and M313 semitrailers automatically actuates air conditioner cutout switch which controls operation of air conditioner warning lamp.
 - On early model M313 semitrailers, there is only one bonnet front door control handle located on right side of air conditioner. On late model M313 and M447C semitrailers, there are two bonnet front door control handles, one located on each side of air conditioner.
- a. Push handle(s) (3) simultaneously upward and over to open air conditioner bonnet front door (5).



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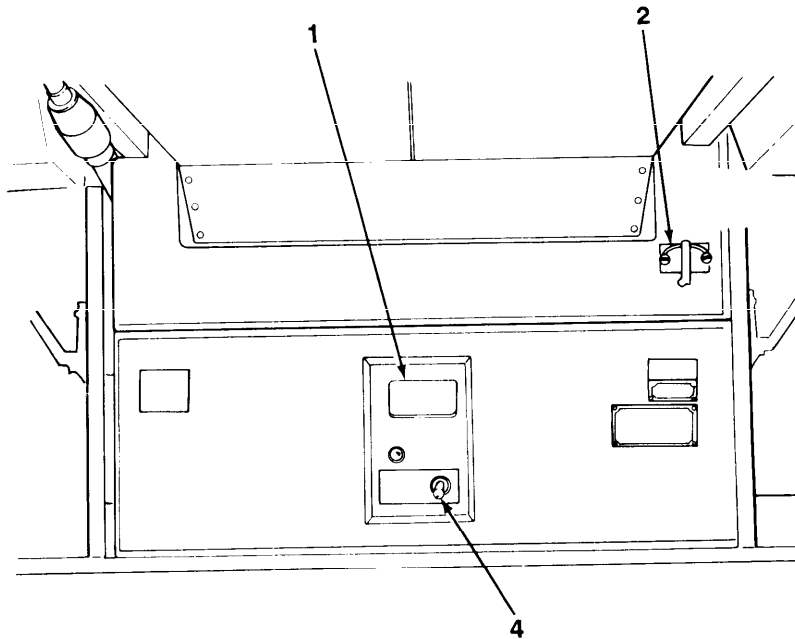
2-16. OPERATING AIR CONDITIONER (Con't).

b. Pull on attached rods (6) and slide open two air conditioner exhaust covers (7), located under bonnet on outside of van.



c. Set thermostat (1) to desired room temperature.

d. Set function selector switch (4) to COOL position.

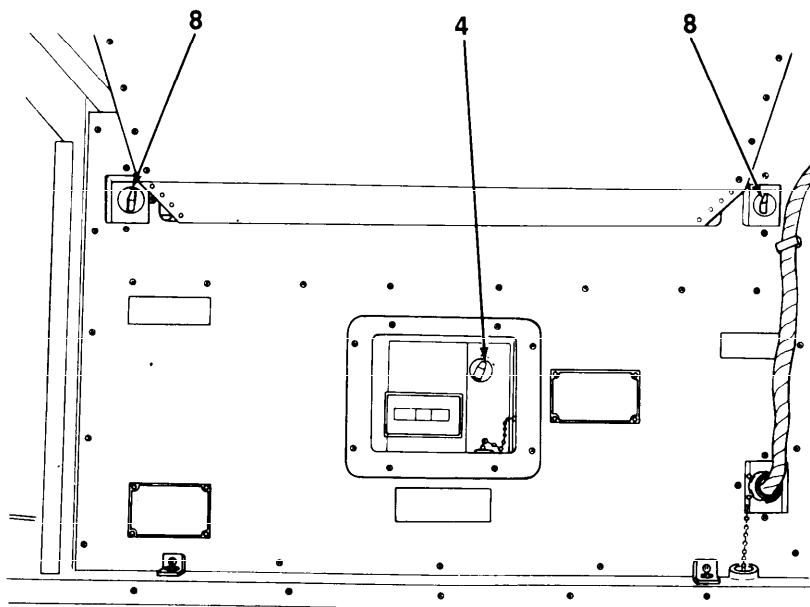


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2-16. OPERATING AIR CONDITIONER (Con't).

NOTE

- Damper control on early model M313 semitrailers will consist of a control lever and linkage. Damper control on late model M313 semitrailers will have two knobs located in upper right and left corners of air conditioner.
 - For maximum cooling capacity when outside temperature is high, set damper lever or control knobs at full MIN position.
- e. Set damper control lever (2) or knobs (8) to desired position, from MIN (100% return air) to MAX (100% fresh air).
- f. To stop air conditioner, place function selector switch (4) to OFF position and close air conditioner bonnet front door (5).



2-17. LEVELING VAN BODY.

NOTE

- Leveling jacks, six for M447, M447C, M749, M750 and four for M313, are provided to level and stabilize van body in its parked location.
- On late model van bodies incorporating late model landing gear, only two leveling jacks are provided for use at rear of van body.

a. Installing Leveling Jacks.

(1) Remove leveling jacks (2) from stowage box located under rear doors.

(2) Attach foot plates (6) to lower feet (7) of leveling jacks (2).

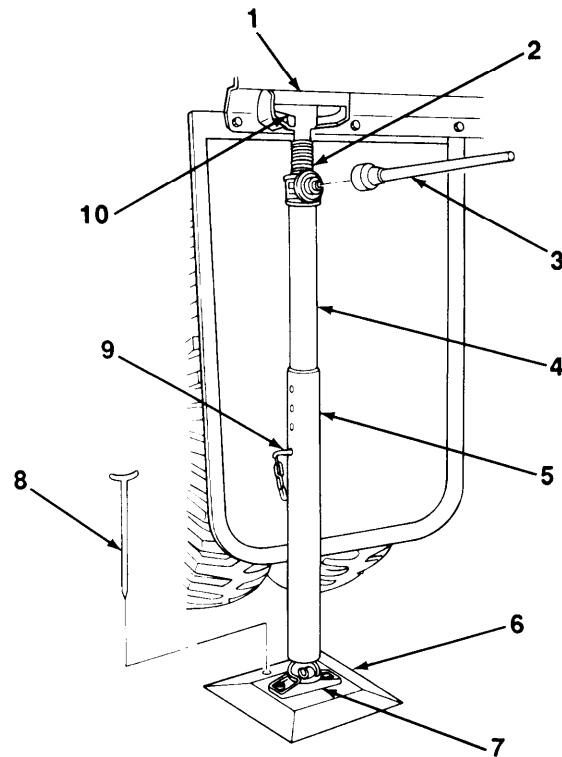
(3) Assemble jack inner and outer tubes (4 and 5), if necessary, to approximate height of van body jack holders (1) and secure with pin (9).

(4) Install upper plate (10) of leveling jacks (2) in jack holders (1) so leveling jacks are suspended vertically.

(5) Install jack handles (3) and operate leveling jacks (2) until all foot plates (6) are in contact with ground.

(6) Install two anchor spikes (8) in each foot plate (6), if ground permits.

(7) Raise or lower leveling jacks (2) as required until van body appears visually to be level.



b. Removing Leveling Jacks.

- (1) If used, remove anchor spikes (8) from each foot plate (6).
- (2) Operate leveling jacks (2) until all foot plates (6) are clear of ground. Remove jack handles (3).
- (3) Remove leveling jacks (2) from jack holders (1).
- (4) Disassemble jack inner and outer tubes (4 and 5).
- (5) Remove foot plates (6) from lower feet (7).
- (6) Store leveling jacks (2) in stowage box.

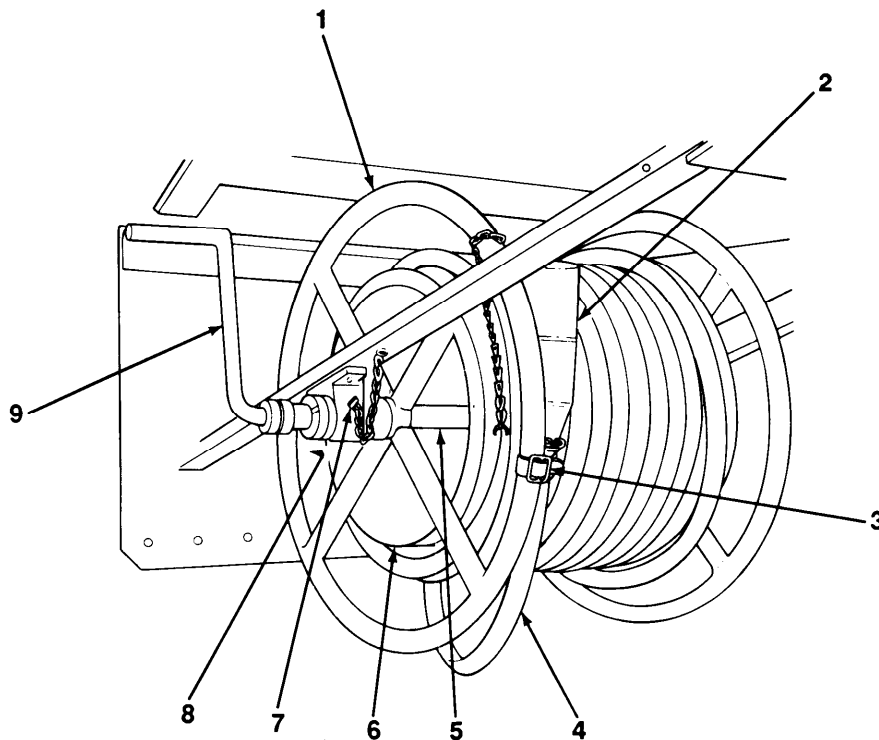
2-18. USE OF 220-VOLT POWER CABLE (M313, M447, M447C, AND M750).

a. Unreeling 220-volt Power Cable.

- (1) Remove canvas cover from cable reel (1).
- (2) Remove nylon cover (2) from end of power cable (4).
- (3) Remove cotter pin (7) from reel shaft collar (8) and reel shaft (5).

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2-18. USE OF 220-VOLT POWER CABLE (M313, M447, M447C, AND M750) (Con't).



- (4) Unbuckle strap (3) holding end of power cable (4) to cable reel (1).

NOTE

On M313, spring (Appendix C) must first be removed from end of power cable before it can be unreeled.

- (5) Unreel and remove power cable (4) from reel barrel (6).
 (6) Connect one end of power cable (4) to connector at power inlet housing at lower curbside corner of van body. Connect other end of power cable to external power source.

b. Reeling 220-volt Power Cable.

- (1) Disconnect power cable (4) from external power source and from connector at power inlet housing at lower curbside corner of van body.
 (2) Place end of power cable (4) in hole of reel barrel (6). Using handcrank (9) or drive shaft wrench (M313) rewind power cable onto cable reel (1). Secure free end of power cable to cable reel with strap (3).
 (3) Lock cable reel (1) by inserting cotter pin (7) through hole in reel shaft collar (8) and reel shaft (5).

NOTE

On M313, power cable is secured in stowed position with spring (Appendix C).

- (4) Install nylon cover (2) to end of power cable (4). Chain of nylon cover should be wrapped around cable reel (1) to help secure power cable.
 (5) Install canvas cover on cable reel (1).

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Section IV. OPERATION UNDER UNUSUAL CONDITIONS

Paragraph Title	Page Number
Fording	2-34
General	2-32
Operation in Extreme Cold	2-32
Operation in Extreme Heat	2-32
Operation in Mud and Snow	2-33
Operation in Saltwater Areas	2-33
Operation in Sandy or Dusty Areas	2-33
Operation Under Rainy or Humid Conditions	2-33

2-19. GENERAL.

- a. This section contains instructions for safely operating the semitrailers under unusual conditions. In addition to normal preventive maintenance service, special care must be taken to keep the semitrailers operational in extreme temperatures and humidity.
- b. For information on driver selection, training, and supervision, refer to FM 55-30.
- c. For information on special driving instructions for operating wheeled vehicles under unusual conditions, refer to FM 21-305.

2-20. OPERATION IN EXTREME COLD.

- a. Special care must be taken when operating semitrailers in extreme cold weather. Refer to FM 9-207 for information on operation in cold weather.
- b. Refer to Chapter 3, Section I for proper lubrication during extreme cold weather.
- c. Generally, extreme cold causes lubricants to thicken or freeze and various semitrailer construction materials to become hard and brittle, and easily damaged or broken. The operator must be alert to effects of extreme cold on semitrailers.
- d. Care must be taken when handling cables. Extreme cold weather can cause insulation material on electrical wire to crack, causing short circuits. Construction material may become hard, brittle, and easily broken or damaged.
- e. When parking for any period of time in temperatures below 0°F (-18°C), park in a sheltered area out of the wind and clean off any buildup of ice or snow. Place a footing of planks or brush under tires to prevent them from freezing to the ground. Ensure that tires are properly inflated (para 1-10). Underinflated tires will freeze, resulting in flat spots.
- f. Use caution when placing semitrailer in motion after a shutdown. Thickened lubricants may cause component failure. Free frozen brakeshoes, or tires frozen to ground, with care.

2-21. OPERATION IN EXTREME HEAT.

- a. Refer to Chapter 3, Section I for proper lubrication during high heat conditions.
- b. Do not park semitrailer in sunlight for long periods of time. Heat and sunlight shorten tire life.

2-21. OPERATION IN EXTREME HEAT (Con't).**CAUTION**

DO NOT use gasoline or dry cleaning solvent to remove oil or grease spots from tarpaulin. Use only water and a scrubbing brush. Failure to follow this caution will damage the tarpaulin.

c. Cover inactive semitrailers with tarpaulins if no other shelter is available. Tarpaulins are subject to deterioration from mildew and attacks by insects or animals. Shake out and air tarpaulins weekly for several hours. Clean mildewed tarpaulins with a dry scrubbing brush. DO NOT clean with water until mildew is removed. If mildew is found, examine tarpaulin to determine if it is rotted or weakened. Replace tarpaulin if damaged. If tarpaulin is not damaged, treat as outlined in FM 10-16.

d. Semitrailers, inactive for long periods in hot, humid weather, are subject to rusting and accumulation of fungi growth. Frequently inspect, clean, and lubricate to prevent deterioration.

2-22. OPERATION IN SANDY OR DUSTY AREAS.

a. Clean, inspect, and lubricate semitrailers more often in sandy or dusty areas (Chapter 3, Section I).

b. Maintain proper tire pressure:

(1) Reduce tire pressure to 32 psi (220 kPa) for operation in soft sand.

(2) Reduce tire pressure to 40 psi (276 kPa) for operation on cross-country terrain. Tire pressure must be returned to 48 psi (331 kPa) when operation resumes on hard-surface roads if tactical situation permits.

c. When uncoupling semitrailer in sandy areas, use ground boards to prevent landing gear from sinking in.

2-23. OPERATION IN MUD AND SNOW.

a. Reduce tire pressure to 32 psi (220 kPa) for operation in mud and snow.

b. Immediately after operation in mud, thoroughly clean, inspect, and lubricate if tactical situation permits (Chapter 3, Section I).

c. Pack wheel bearings as required (Chapter 3, Section I).

d. Refer to FM 21-305 for special instructions on driving hazards in snow.

e. After each operation, remove ice and snow from underneath semitrailer and from hoses, lines, tubes, and electrical connections.

2-24. OPERATION UNDER RAINY OR HUMID CONDITIONS.

a. Dampness increases chances of corrosion. Inspect all surfaces and electrical connections for signs of corrosion. Remove all signs of corrosion. Apply corrosion preventive compound (Item 5, Appendix E) to all electrical connections.

b. Protect semitrailer from direct rainfall whenever possible. During dry periods, open semitrailer to air to facilitate drying process.

c. Keep moisture from entering the fuel supply. Clean fuel filter before each operation to remove accumulated moisture.

2-25. OPERATION IN SALTWATER AREAS.

Clean, inspect, and lubricate the semitrailer more often when operating in saltwater areas (Chapter 3, Section I).

2-26. FORDING.

a. The M295A1 Chassis is designed for fording hard bottom water crossings deep enough to submerge the running gear.

b. Refer to the towing vehicle operating instructions for information on fording. Towing vehicle instructions are also applicable to the semitrailer.

c. Pack wheel bearings after each submersion (Chapter 3, Section I).

d. Reduce tire pressure to aid in amphibious landings.

CHAPTER 3 OPERATOR MAINTENANCE

Section I. LUBRICATION INSTRUCTIONS

Paragraph Title	Page Number
General	3-1
Lubrication Chart	3-2
Specific Lubrication Instructions	3-1

3-1. GENERAL.

NOTE

These instructions are MANDATORY.

- a. The semitrailers must receive lubrication with approved lubricants at recommended intervals in order to be mission-capable at all times.
- b. The KEY lists lubricants to be used in all temperature ranges and shows the intervals.
- c. The Lubrication Chart shows lubrication points, names items to be lubricated, the required lubricant, and recommended intervals for lubrication. Any special lubricating instructions required for specific components are contained in the NOTES section of the chart.
- d. Recommended intervals are based on normal conditions of operation, temperature, and humidity. When operating under extreme conditions, lubricants should always be changed more frequently. When in doubt, notify your supervisor.

3-2. SPECIFIC LUBRICATION INSTRUCTIONS.

- a. Keep all lubricants in a closed container and store in a clean, dry place away from extreme heat. Keep container covers clean and do not allow dust, dirt, or other foreign material to mix with lubricants. Keep all lubrication equipment clean and ready for use.
- b. Maintain a record of lubrication performed and report any problems noted during lubrication. Refer to DA Pam 738-750 for maintenance forms and procedures to record and report any findings.

WARNING

Wipe excess lubricant from the area of brakeshoe linings to avoid grease soaking the linings. If brakeshoe linings become soaked, have Organizational Maintenance replace them. Failure to follow this warning may cause brakes to malfunction, resulting in serious injury or death to personnel.

- c. Keep all external parts of equipment not requiring lubrication free of lubricants. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.
- d. Refer to FM 9-207 for lubrication instructions in cold weather.
- e. After operation in muddy, sandy, or dusty conditions, clean and inspect all points of lubrication for fouled lubricants. Change lubricants as required.

LUBRICATION CHART

CHASSIS, SEMITRAILER: 6-TON, 4-WHEEL, M295A1

SEMITRAILER, VAN: EXPANSIBLE, 6-TON, 4-WHEEL, M313

**SEMITRAILER, VAN: SHOP, FOLDING SIDES, 6-TON, 4-WHEEL,
M447 AND M447C**

**SEMITRAILER, VAN: REPAIR PARTS, SHOP EQUIPMENT, 6-TON,
4-WHEEL, M749**

**SEMITRAILER, VAN: REPAIR PARTS STORAGE, 6-TON, 4-WHEEL
M750**

Intervals (on-condition or hard time) and related man-hour times are based on normal operation. The man-hour time specified is the time you need to do all services prescribed for a particular interval. Decrease the intervals if your lubricants are contaminated, or if you are operating equipment under adverse conditions, including longer-than-usual operating hours. The intervals may be extended during periods of low activity. If extended, adequate preservation precautions must be taken.

Dotted leader lines indicate lubrication is required on both sides of the equipment.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated

area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

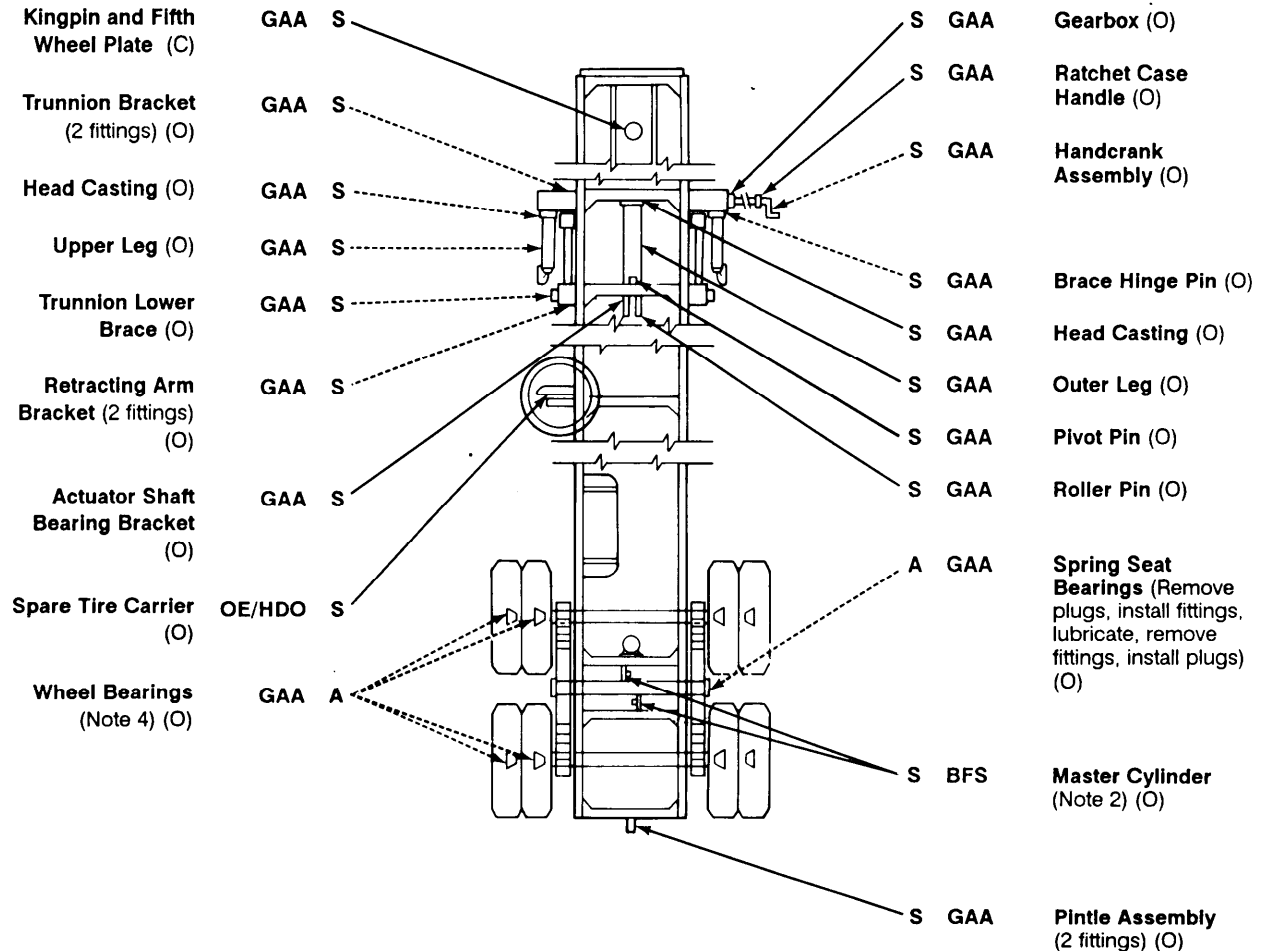
Clean all fittings and area around lubrication points with dry cleaning solvent (Item 14, Appendix E) or equivalent before lubricating equipment. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.

The lowest level of maintenance authorized to lubricate a point is indicated in parentheses by use of the following: (C) Operator/Crew; or (O) Organizational Maintenance.

M295A1, M313, M447, M447C, M749, AND M750

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT



TOTAL MAN-HOURS*

INTERVAL	MAN-HOUR
S	7
A	12

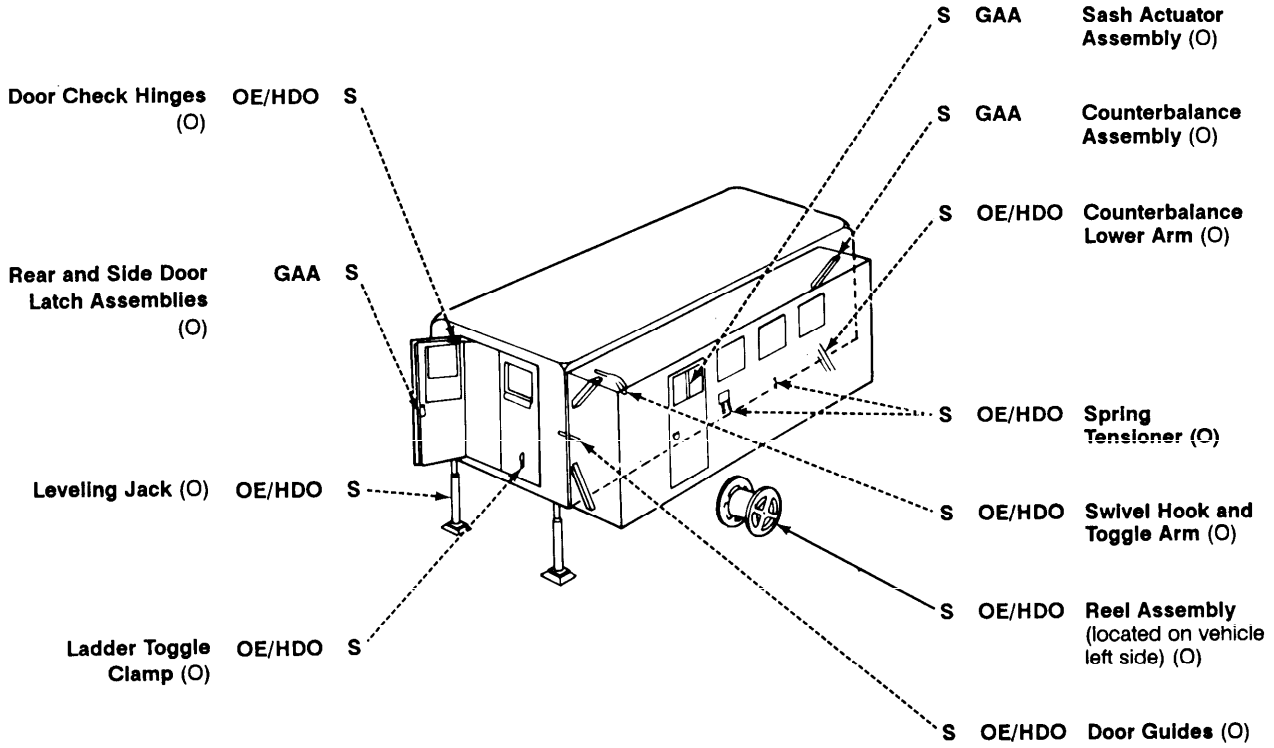
* The man-hour time specified is the time you need to do all services prescribed for a particular interval.

TA701932

M313 VAN BODY

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT



TOTAL MAN-HOURS*

INTERVAL	MAN-HOUR
S	7

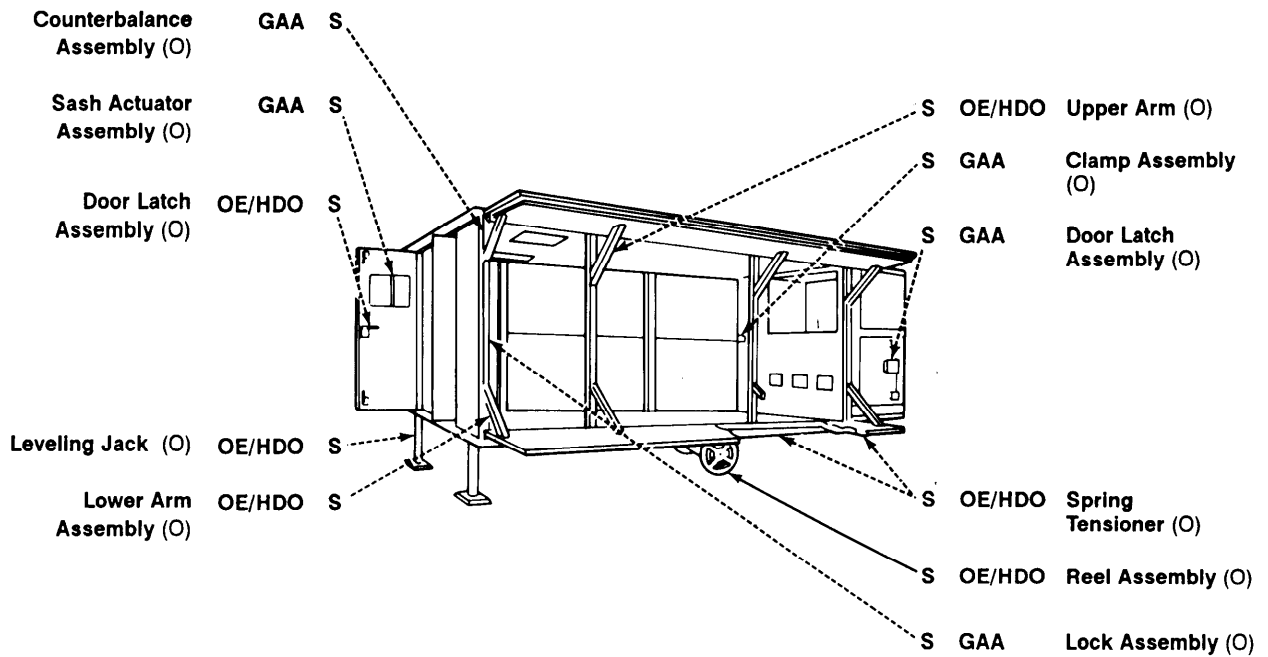
* The man-hour time specified is the time you need to do all services prescribed for a particular interval.

TA701933

M447, M447C, M749, AND M750 VAN BODIES

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT



TOTAL MAN-HOURS*

INTERVAL	MAN-HOUR
S	7

* The man-hour time specified is the time you need to do all services prescribed for a particular interval.

TA701934

- KEY -

LUBRICANTS	EXPECTED TEMPERATURES			FOR ARCTIC OPERATIONS, REFER TO FM 9-207	INTERVALS
	ABOVE +32°F (ABOVE 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-18°C to -54°C)		
GAA (MIL-G-10924) Grease, Automotive and Artillery	All Temperatures				S-Semiannual A-Annual
BFS (MIL-B-46176) Brake Fluid, Silicone, Automotive	All Temperatures				
OE/HDO (MIL-L-2104) Lubricating Oil, Internal Combustion Engine, Tactical Service	OE/HDO-30	OE/HDO-10	—		
OEA (MIL-L-46167) Lubricating Oil, Internal Combustion Engine, Arctic	—	—	OEA		

NOTES:

1. **DO NOT LUBRICATE** springs.
2. **MASTER CYLINDER.** Use brake fluid, silicone only (TB 43-0002-87). Add fluid to within ½ in. (13 mm) from top.
3. **OIL CAN POINTS.** Lubricate handbrake linkages, hinges, latches, and landing and leveling jack crank and feet pad assemblies semiannually with OE/HDO.
4. **WHEEL BEARINGS.** Every 12 months, remove, clean, and pack with GAA. Refer to TM 9-214, *Inspection, Care, and Maintenance of Antifriction Bearings*.

Section II. OPERATOR/CREW TROUBLESHOOTING PROCEDURES

Paragraph Title	Page Number
Explanation of Columns	3-7
General	3-7
Operator/Crew Troubleshooting, Table 3-1	3-8
Troubleshooting Symptom Index	3-8

3-3. GENERAL.

a. This section provides information for identifying and correcting malfunctions which may develop while operating your semitrailer.

b. The Troubleshooting Symptom Index in paragraph 3-5 lists common malfunctions which may occur and refers you to the proper page in Table 3-1 for a troubleshooting procedure.

c. If you are unsure of the location of an item mentioned in troubleshooting, refer to paragraph 1-7 or the maintenance task where the item is replaced.

d. Before performing troubleshooting, read and follow all safety instructions found in the Warning Summary at the front of this manual.

e. This section cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed, or is not corrected by the listed corrective actions, notify your supervisor.

f. When troubleshooting a malfunction:

(1) Locate the symptom or symptoms in the Troubleshooting Symptom Index in paragraph 3-5 that best describes the malfunction.

(2) Turn to the page in Table 3-1 where the troubleshooting procedures for the malfunction in question are described. Headings at top of each page show how each troubleshooting procedure is organized: MALFUNCTION, TEST OR INSPECTION (in step number order), and CORRECTIVE ACTION.

(3) Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

3-4. EXPLANATION OF COLUMNS.

The columns in Table 3-1 are defined as follows:

(1) **MALFUNCTION.** A visual or operational indication that something is wrong with the semitrailer.

(2) **TEST OR INSPECTION.** A procedure to isolate the problem in a component or system.

(3) **CORRECTIVE ACTION.** A procedure to correct the problem.

3-5. TROUBLESHOOTING SYMPTOM INDEX.

	Troubleshooting Procedure Page
BRAKES	
Brakes Are Slow to Engage or Release	3-10
Brakes Grab	3-10
Brakes Do Not Engage	3-9
Brakes Do Not Release	3-10
ELECTRICAL SYSTEM	
All 24-volt Lamps Fail to Light	3-8
All Chassis Lights Are On and Van Body Clearance Lights Are Off	3-9
Directional Signals Inoperative	3-9
One or More 24-volt Lamps (But Not All) Fail to Light	3-9
LEVELING JACKS	
Erratic Operation	3-11
SUSPENSION SYSTEM	
Semitrailer Sags to One Side	3-11
WHEELS AND TIRES	
Air Leakage from Tires	3-11
Excessively Worn, Scuffed, or Cupped Tires	3-10
Noisy or Wobbly Wheels	3-11

Table 3-1. Operator/Crew Troubleshooting.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

ELECTRICAL SYSTEM

1. ALL 24-VOLT LAMPS FAIL TO LIGHT.

- Step 1. Check that towing vehicle lights are turned on.
 Refer to towing vehicle technical manual for instructions.
- Step 2. Check intervehicular cable for proper connection.
 Connect intervehicular cable (para 2-10).
- Step 3. Check for dirty or corroded intervehicular cable terminals.
 If connectors, receptacles, and plugs are dirty or corroded, notify Organizational Maintenance.
- Step 4. Check for proper ground connections at light assemblies.
 Tighten ground connections as required.

Table 3-1. Operator/Crew Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
2. ONE OR MORE 24-VOLT LAMPS (BUT NOT ALL) FAIL TO LIGHT.		
	Step 1. Check for loose plug connectors at affected light assemblies.	Connect loose plug connector.
	Step 2. Check for dirty or corroded terminals on intervehicular cable.	If connections, receptacle, and plug are dirty or corroded, notify Organizational Maintenance.
	Step 3. Check to see if rear bumper junction connector is loose if van and forward chassis lights are On, but all rear lights are Off.	Remove, clean, and install connector, ensuring socket and contacts are clean.
3. ALL CHASSIS LIGHTS ARE ON AND VAN BODY CLEARANCE LIGHTS ARE OFF.		
	Step 1. Check for loose 24-volt connection at receptacle.	Remove, clean, and install plug, ensuring proper connection is made.
	Step 2. Check for dirty or corroded contacts in 24-volt light receptacle.	Clean contacts.
4. DIRECTIONAL SIGNALS INOPERATIVE.		
	Step 1. Check for dirty or corroded intervehicular cable socket and contacts.	Clean socket and contacts.
	Step 2. Check for loose plug connectors at affected light.	Connect loose plug connectors.

BRAKE SYSTEM

5. BRAKES DO NOT ENGAGE.		
	Step 1. Check to see if air reservoir draincock is open.	Close air reservoir draincock.
	Step 2. Check intervehicular air lines for proper connections.	Connect air lines properly (para 2-10).
	Step 3. Check for closed air valve on towing vehicle.	Open air valve. Refer to towing vehicle technical manual for instructions.
	Step 4. Check for low air pressure.	Inspect air supply and lines for leaks. Tighten connections where applicable.
	Step 5. Check master cylinder for proper level of brake fluid.	Fill master cylinder with brake fluid to proper level (Chapter 3, Section I).
	Step 6. Check for brake fluid leaks.	Open air valves. If brake fluid is leaking, notify Organizational Maintenance.

Table 3-1. Operator/Crew Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
--------------------	---------------------------	--------------------------

6. BRAKES DO NOT RELEASE.

- Step 1. Check to see if relay valve is in applied position.
 If semitrailer is coupled, wait until air pressure on towing vehicle reaches normal operating pressure. If semitrailer is uncoupled, open air reservoir draincock.
- Step 2. Check to see if air reservoir draincock is open.
 Close air reservoir draincock.
- Step 3. Check intervehicular air lines for loose connections.
 Connect intervehicular air lines properly (para 2-10).
- Step 4. Check to see if shut-off valves on towing vehicle are closed.
 Open shut-off valves on towing vehicle.
- Step 5. Check intervehicular air lines for restrictions.
 Straighten or remove any kinks, bends, or restrictions from intervehicular air lines.

7. BRAKES GRAB.

- Check air system for moisture.
 Open air reservoir draincock and drain moisture from system.

8. BRAKES ARE SLOW TO ENGAGE OR RELEASE.

- Check master cylinder for proper level of brake fluid.
 Fill master cylinder with brake fluid to proper level (Chapter 3, Section I).

WHEELS AND TIRES

9. EXCESSIVELY WORN, SCUFFED, OR CUPPED TIRES.

- Step 1. Check tires for proper inflation.
 Inflate tires to proper pressure (para 1-10).
- Step 2. Inspect wheels for looseness.
 Tighten wheel stud nuts.
- Step 3. Check tires to ensure that they are properly matched.
 Replace unmatched tire with one that matches.

Table 3-1. Operator/Crew Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
--------------------	---------------------------	--------------------------

10. NOISY OR WOBBLY WHEELS.

- Inspect wheels for looseness.
- Tighten wheel stud nuts.

11. AIR LEAKAGE FROM TIRES.

- Step 1. Check valve core for damage or looseness.
- Tighten or replace valve core.
- Step 2. Check tire for puncture.
- Notify Organizational Maintenance.

LEVELING JACKS

12. ERRATIC OPERATION.

- Check leveling jacks for adequate lubrication.
- Lubricate leveling jacks in accordance with Lubrication Instructions (Chapter 3, Section I).

SUSPENSION SYSTEM

13. SEMITRAILER SAGS TO ONE SIDE.

- Step 1. Check tires on low side to see if air pressure is low or uneven.
- Inflate tires to proper pressure (para 1-10).
- Step 2. Check load for uneven distribution.
- Distribute load evenly.

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**CHAPTER 4
ORGANIZATIONAL MAINTENANCE**

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

Paragraph Title	Page Number
Common Tools and Equipment	4-1
Repair Parts	4-1
Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment	4-1

4-1. COMMON TOOLS AND EQUIPMENT.

Refer to the *Modified Table of Organization and Equipment (MTOE)* for authorized common tools and equipment applicable to your unit.

**4-2. SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE);
AND SUPPORT EQUIPMENT.**

No special tools, TMDE, or support equipment are required to maintain the semitrailer.

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in TM 9-2330-238-24P.

Section II. SERVICE UPON RECEIPT

Paragraph Title	Page Number
General	4-2
Inspection Instructions	4-2
Servicing Instructions	4-2

4-4. GENERAL.

When a new, used, or reconditioned semitrailer, van body, or chassis is first received, determine whether it has been properly prepared for service and is in condition to perform its mission. Follow the inspection instructions in paragraph 4-5 and servicing instructions in paragraph 4-6.

4-5. INSPECTION INSTRUCTIONS.

- a. Refer to DD Form 1397 for procedures on unpacking the semitrailer, van body, or chassis.
- b. Remove all straps, plywood, tape, seals, and wrappings.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- c. Remove rust preventive compound from coated exterior parts of the semitrailer, van body, or chassis using dry cleaning solvent (Item 14, Appendix E) and rags (Item 11, Appendix E).
- d. Inspect the semitrailer, van body, or chassis for damage incurred during shipment. Check also to see if the equipment has been modified.
- e. Check the equipment against the packing list to ensure that the shipment is complete. Report any discrepancies in accordance with instructions in DA Pam 738-750.

4-6. SERVICING INSTRUCTIONS.

- a. Perform all Operator/Crew and Organizational PMCS. Schedule the next PMCS on DD Form 314.
- b. Lubricate all lubrication points as described in Chapter 3, Section I, regardless of interval.
- c. Report any problems on DA Form 2404.
- d. Perform a break-in road test of 25 miles (40 km) at a maximum speed of 50 mi/h (80 km/h).

Section III. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Paragraph Title	Page Number
General	4-3
General PMCS Procedures	4-3
Organizational Preventive Maintenance Checks and Services (PMCS), Table 4-1	4-4
Reporting Repairs	4-3
Service Intervals	4-3
Specific PMCS Procedures	4-4

4-7. GENERAL.

To ensure that the M313, M447, M447C, M749, and M750 semitrailers are ready for operation at all times, they must be inspected on a regular basis so that defects may be found before they result in serious damage, equipment failure, or injury to personnel. This section contains systematic instructions on inspections, adjustments, and corrections to be performed by organizational maintenance.

4-8. SERVICE INTERVALS.

Perform PMCS, found in Table 4-1, at the following intervals:

- (1) Perform *Quarterly* (Q) PMCS once every three months.
- (2) Perform *Semiannual* (S) PMCS once every six months.
- (3) Perform *Annual* (A) PMCS once each year.

4-9. REPORTING REPAIRS.

Report all defects and corrective actions on DA Form 2404. If a serious problem is found, IMMEDIATELY report it to your supervisor.

4-10. GENERAL PMCS PROCEDURES.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F–138°F (38°C–59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

- a. Keep equipment clean. Dirt, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (Item 14, Appendix E) on all metal surfaces. Use dishwashing compound (Item 6, Appendix E) and water on rubber, plastic, and painted surfaces.
- b. While performing PMCS, inspect the following components:
 - (1) **Bolts, Nuts, and Screws.** Ensure that they are not loose, missing, bent, or broken. Tighten any that are loose.
 - (2) **Welds.** Inspect for gaps where parts are welded together. Report bad welds to your supervisor.
 - (3) **Electrical Wires or Connectors.** Inspect for cracked or broken insulation, bare wires, and loose or broken connectors. Make repairs or replace as required.
 - (4) **Hoses, Lines, and Fittings.** Inspect for wear, damage, and leaks. Ensure that clamps and fittings are tight. If leak originates from a loose fitting or connector, tighten it. If a component is broken or worn, correct the problem if authorized by the Maintenance Allocation Chart (MAC) (Appendix B). If not authorized, report it to your supervisor.

4-11. SPECIFIC PMCS PROCEDURES.

a. Organizational PMCS are provided in Table 4-1. Always perform PMCS in the order listed. Once it becomes a habit, anything that is not right can be spotted in a minute. If anything wrong is discovered through PMCS, perform the appropriate troubleshooting task in Section IV of this chapter. If any component or system is not serviceable, or if given service does not correct the problem, notify your supervisor.

b. Before performing preventive maintenance, read all the checks required for the applicable interval and prepare tools needed to make all the checks. Have several clean rags (Item 11, Appendix E) handy. Perform ALL inspections at the applicable interval.

c. The columns in Table 4-1 are defined as follows:

(1) **Item No.** Provides a logical sequence for PMCS to be performed and is used as a source of item numbers for the "TM ITEM NO" column on DA Form 2404 in recording PMCS results.

(2) **Interval.** Specifies interval at which PMCS is to be performed.

(3) **Item To Be Inspected.** Lists the system and common name of items that are to be inspected. Included in this column are specific servicing, inspection, replacement, or adjustment procedures to be followed.

(4) **Procedure.** Tells you how to do the required check or service.

Table 4-1. Organizational Preventive Maintenance Checks and Services (PMCS).

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURES
	Q	S	A		
1	•			AIR RESERVOIR AND AIR LINES	Check air reservoir and air lines for damage and tight connections.
2		•		WHEELS, HUBS, AND BRAKEDRUMS	a. Check brakes. Replace damaged or worn parts (para 4-38). b. Rotate and match dual tires according to degree of wear (TM 9-2610-200-14).
3		•		SPRINGS AND SUSPENSION	a. Check springs for any evidence of damage. b. Check for shifted leaves. If evidence of shifting, sagging, or damage exists, replace springs (para 4-56).

Table 4-1. Organizational Preventive Maintenance Checks and Services (PMCS) (Con't).

Q—QUARTERLY

S—SEMIANNUAL

A—ANNUAL

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURES
	Q	S	A		
4		•		DATA PLATES	Ensure legibility and condition of data plates. Replace damaged or disfigured plates (para 4-67).
5		•		BODY	a. Check overall body for evidence for gouges and other damage. Repair as necessary. b. Examine folding side door canvas seals. Treat with preservative coating (Item 10, Appendix E). If deteriorated, notify Direct Support Maintenance.
6		•		FRAME	Look for cracks, bent members, and broken welds. If frame damage is seen, immediately notify Direct Support Maintenance.
7		•		KINGPIN AND FIFTH WHEEL PLATE	Inspect kingpin and fifth wheel plate. Look particularly for: a. Security of mounting and adequate lubrication. b. Cracks. Notify Direct Support Maintenance to replace kingpin if a crack of any size is noted anywhere on the kingpin or associated welds. c. Nicks, chips, or gouges. Notify Direct Support Maintenance to replace kingpin if nick, chip, or gouge is deeper than 1/8 in. (3.18 mm).
8		•		ROAD TEST	a. Perform road test. Give special attention to items that were repaired or adjusted. b. Be alert during road tests for any unusual noises.

Table 4-1. Organizational Preventive Maintenance Checks and Services (PMCS) (Con't).

Q—QUARTERLY

S—SEMIANNUAL

A—ANNUAL

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURES
	Q	S	A		
		•			<p style="text-align: center;"><u>WARNING</u></p> <p>A hot brake can cause serious burns. Exercise extreme caution before attempting to touch brakedrum after use. Slowly move hand toward brakedrum. If brakedrum is overheated, radiated heat will be felt before actually touching brakedrum.</p> <p style="text-align: center;">NOTE</p> <p>An overheated brakedrum and hub indicates an improperly adjusted or defective brake or wheel bearing. An abnormally cool condition indicates an inoperative brake.</p> <p>c. Immediately after road test, cautiously feel brakedrums and hubs for abnormal heat.</p>

Section IV. ORGANIZATIONAL TROUBLESHOOTING PROCEDURES

Paragraph Title	Page Number
Explanation of Columns	4-7
General	4-7
Organizational Troubleshooting, Table 4-2	4-9
Troubleshooting Symptom Index	4-8

4-12. GENERAL.

a. This section provides information for identifying and correcting malfunctions which may develop when operating or maintaining the semitrailers.

b. The Troubleshooting Symptom Index in paragraph 4-14 lists common malfunctions which may occur and refers you to the proper page in Table 4-2 for a troubleshooting procedure.

c. This section cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed, or is not corrected by the listed corrective actions, notify your supervisor.

d. When troubleshooting a malfunction:

(1) Question the operator to obtain any information that might help determine the cause of the problem. Before continuing, ensure that all applicable operator/crew troubleshooting was performed.

(2) Locate the symptom(s) in paragraph 4-14 that best describes the malfunction. If the appropriate system is not listed, notify your supervisor.

(3) Turn to the page in Table 4-2 where the troubleshooting procedures for the malfunction in question are described. Headings at top of each page show how each troubleshooting procedure is organized: MALFUNCTION, TEST OR INSPECTION (in step number order), and CORRECTIVE ACTION.

(4) Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

4-13. EXPLANATION OF COLUMNS.

The columns in Table 4-2 are defined as follows:

- (1) **MALFUNCTION.** A visual or operational indication that something is wrong with the semitrailer.
- (2) **TEST OR INSPECTION.** A procedure to isolate the problem in a component or system.
- (3) **CORRECTIVE ACTION.** A procedure to correct the problem.

4-14. TROUBLESHOOTING SYMPTOM INDEX.

	Troubleshooting Procedure Page
BRAKE SYSTEM	
Brakedrum Running Hot	4-14
Brakes Are Noisy	4-15
Brakes Are Slow to Engage or Release	4-13
Brakes Are Weak or Will Not Engage	4-12
Brakes Do Not Release	4-12
Brakes Grab	4-14
Braking is Uneven	4-15
ELECTRICAL SYSTEM	
All 24-volt Lamps Fail to Light	4-9
All 110-volt Lamps Fail to Light	4-10
Directional Signal Inoperative	4-9
Lights Do Not Go On When Side Door is Closed Under Blackout Conditions (M313)	4-11
Lights Do Not Go Out When Side Door is Opened Under Blackout Conditions (M313)	4-11
No Interior Lamps Will Light Except Blackout Lamp	4-11
No Power to Duplex Receptacles (All Models Except M749)	4-11
One or More Fluorescent Lamps Will Not Light	4-10
One or More 24-volt Lamps Will Not Light	4-9
One or More 110-volt Lamps Will Not Light	4-10
24-volt Lamps Are Dim or Flickering	4-9
FOLDING SIDE DOORS (M477, M447C, M749, and M750)	
Folding Side Door Hard to Operate	4-17
Folding Side Door Will Not Close Properly	4-18
LANDING GEAR (EARLY MODEL)	
Erratic Operation (Binding and Grinding)	4-16
LANDING GEAR (LATE MODEL)	
Erratic Operation (Binding and Grinding)	4-16
LEVELING JACKS	
Leveling Jack Foot Plate Will Not Set on Base	4-17
Leveling Jack is Hard to Operate	4-16
Leveling Jack Will Not Extend and Retract Properly	4-17
Ratchet Pawl Will Not Operate	4-17
SIDE WALLS (M313)	
Side Wall Will Not Lock in Retracted Position	4-18
Side Walls are Difficult to Expand and Retract	4-18
SUSPENSION SYSTEM	
Semitrailer Pulls to Left or Right	4-17
WHEELS, HUBS, AND TIRES	
Excessively Worn, Scuffed, or Cupped Tires	4-15
Noisy or Wobbly Wheels	4-15

Table 4-2. Organizational Troubleshooting.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

*ELECTRICAL SYSTEM***1. ALL 24-VOLT LAMPS FAIL TO LIGHT.**

Step 1. Check to see if towing vehicle service light switch is in ON position.

Place service light switch to ON position.

Step 2. Check wiring harness for short circuit.

Check cable for bare spots. Repair if necessary.

2. ONE OR MORE 24-VOLT LAMPS WILL NOT LIGHT.

Step 1. Check for burned-out lamp.

Replace defective lamp (para 4-26, 4-28, 4-29, 4-30, 4-32, or 4-33).

Step 2. Check for dirty or corroded cable contacts in sleeves or lamp sockets.

Remove lamps and clean contacts.

Step 3. Check for loose or broken connections.

Tighten, repair, or replace as necessary.

Step 4. Check to see if light assembly is defective.

Replace defective light assembly (para 4-26, 4-28, 4-29, 4-30, 4-32, or 4-33).

3. 24-VOLT LAMPS ARE DIM OR FLICKERING.

Step 1. Check for defective lamp.

Replace defective lamp (para 4-26, 4-28, 4-29, 4-30, 4-32, or 4-33).

Step 2. Check for loose ground connection.

Clean ground cable and tighten connections.

Step 3. Check for loose, dirty, or corroded terminals.

Clean and tighten terminals.

Step 4. Check for dirty or corroded lamp sockets, cable connectors, or harness contacts.

Clean as necessary.

4. DIRECTIONAL SIGNAL INOPERATIVE.

Step 1. Check for defective flasher or switch in towing vehicle.

Refer to towing vehicle technical manual and replace defective part if necessary.

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Step 2. Check for defective light assembly.

Replace defective light assembly (para 4-26, 4-28, 4-29, 4-30, 4-32, or 4-33).

Step 3. Check for dirty or corroded lamp sockets or contacts.

Remove lamp and clean socket and contacts.

5. ALL 110-VOLT LAMPS FAIL TO LIGHT.

Step 1. Check power cable connection.

Pull plug out and insert fully.

Step 2. Check to see if main switch is in ON position.

Place main switch to ON position.

Step 3. Check circuit breakers.

Place circuit breakers to ON position.

Step 4. Check to see if current is available from power source.

Check power source for failure.

6. ONE OR MORE 110-VOLT LAMPS WILL NOT LIGHT.

Step 1. Check for defective lamp.

Replace defective lamp (para 4-27 and 4-31).

Step 2. Check for broken or loose wire connections.

Tighten, repair, or replace wire.

Step 3. Check for dirty or corroded lamp socket or contacts.

Remove lamp and clean contacts.

Step 4. Check for defective light assembly.

Replace defective light assembly (para 4-27 and 4-31).

7. ONE OR MORE FLUORESCENT LAMPS WILL NOT LIGHT.

Step 1. Check for defective lamp.

Replace defective lamp (para 4-31).

Step 2. Check for defective starter.

Replace defective starter (para 4-31).

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 3.	Check for defective ballast. Replace defective ballast (para 4-31).
	Step 4.	Check for defective light fixture. Replace defective light fixture (para 4-31).
8. NO INTERIOR LAMPS WILL LIGHT EXCEPT BLACKOUT LAMP		
	Step 1.	Check to see if blackout light circuit switch is in ON position and door is open. Close door and place blackout light circuit switch in OFF position.
	Step 2.	Check for defective blackout light circuit switch or door switch. Replace defective switch (para 4-15 or 4-22).
	Step 3.	Check for defective electromagnetic relay. Replace defective electromagnetic relay (para 4-24).
9. LIGHTS DO NOT GO OUT WHEN SIDE DOOR IS OPENED UNDER BLACKOUT CONDITIONS (M313).		
	Step 1.	Check for short circuit in cable to hinged roof electrical contact. Remove hinged roof electrical contact (para 4-20). Wrap metal housing and wires leading to terminals with electrical tape (Item 17, Appendix E). Install hinged roof electrical contact.
	Step 2.	Check for short circuit at contact plate on solid side wall. Remove contact plate and wrap exposed parts of cable with electrical tape (Item 17, Appendix E). Install contact plate,
10. LIGHTS DO NOT GO ON WHEN SIDE DOOR IS CLOSED UNDER BLACKOUT CONDITIONS (M31 3).		
	Step 1.	Check to see if hinged roof electrical contact is making contact with plate. Screw turnbuckle eyebolt inward to shorten wire rope assembly (para 4-60). If malfunction persists, align hinged roof electrical contact with surface of contact plate.
	Step 2.	Check for loose connections. Remove hinged roof electrical contact and plates (para 4-20). Repair connections at terminals.
11. NO POWER TO DUPLEX RECEPTACLES (ALL MODELS EXCEPT M749).		
	Step 1.	Check to see if receptacle blackout switch is in ON position or main blackout switch is in ON position and door is open. Place receptacle blackout switch to OFF position, or main blackout switch to OFF, or close door.

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	Corrective ACTION
	Step 2.	Check to see if circuit breakers are in OFF position. Place circuit breakers to ON position.
	Step 3.	Check for defective receptacle. Replace defective receptacle (para 4-15).
	Step 4.	Check for defective receptacle blackout switch. Replace defective receptacle blackout switch (para 4-15).

BRAKE SYSTEM

12. BRAKES DO NOT RELEASE.

- Step 1. Check to see if relay valve is in applied position.
Build up air pressure in semitrailer brake system if coupled to towing vehicle. If uncoupled, open draincock in semitrailer air reservoir.
- Step 2. Check for restrictions in service and emergency air lines or intervehicular air lines.
Straighten kinks and bends in air lines.
- Step 3. Check brakeshoe return spring to determine if spring is weak or broken.
Replace brakeshoe return spring (para 4-38).

13. BRAKES ARE WEAK OR WILL NOT ENGAGE.

- Step 1. Check for lo-w air pressure.
Check air pressure gage on towing vehicle.
Remove any restrictions in air lines. Perform leakage test. With air couplings connected and brakes applied, coat air couplings with a soap and water solution and check for leaks.
- Step 2. On semitrailers with air filters, check for clogged filter.
Clean or replace air filter element (para 4-43).
- Step 3. Check for proper brake adjustments.
Adjust brakes (para 4-36).
- Step 4. Check for defective relay valve.
Perform operating test (para 4-44). Replace relay valve if necessary.

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 5.	Check for leaks in hydraulic brake system.	Tighten connections.
Step 6.	Check brake fluid level in master cylinder.	Fill master cylinder with brake fluid to proper level (Chapter 3, Section I).
Step 7.	Check for air in hydraulic brake system.	Bleed hydraulic brake system (para 4-37).
Step 8.	Check for contaminated brakeshoe linings.	Clean brakedrum and brake components. If necessary, replace brakeshoe (para 4-38) and oil seal (para 4-48).
Step 9.	Check worn brakeshoe linings.	Replace brakeshoe if lining is worn (para 4-38).
Step 10.	Check for defective master cylinder.	Replace defective master cylinder (para 4-41).
Step 11.	Check for defective wheel cylinder.	Replace defective wheel cylinder (para 4-39).

14. BRAKES ARE SLOW TO ENGAGE OR RELEASE.

- Step 1. Check for low air pressure.
- Check air pressure gage on towing vehicle.
- Remove any restrictions in air lines. Perform leakage test. With air couplings connected and brakes applied, coat air couplings with soap and water solution and check for leaks.
- Step 2. On semitrailers with air filters, check for clogged filter,
- Clean or replace air filter element (para 4-43).
- Step 3. Check for defective relay valve.
- Perform operating test (para 4-44). If necessary, replace relay valve (para 4-44).
- Step 4. Check brake fluid level in master cylinder.
- Fill master cylinder with brake fluid to proper level (Chapter 3, Section I).
- Step 5. Check for air in hydraulic brake system.
- Bleed hydraulic brake system (para 4-37).
- Step 6. Check for weak or broken brakeshoe return springs.
- Replace brakeshoe return springs (para 4-38).

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 7. Check for defective master cylinder.
 Replace defective master cylinder (para 4-41).

Step 8. Check for defective wheel cylinder.
 Replace defective wheel cylinder (para 4-39).

15. BRAKES GRAB.

Step 1. Check for moisture in air filters or air reservoir.
 Drain moisture from air filters or air reservoir.

Step 2. Check for proper brake adjustments.
 Adjust brakes (para 4-36).

Step 3. Check for defective relay valve.
 Perform operating test (para 4-44). If necessary, replace relay valve (para 4-44).

Step 4. Check for contaminated brakeshoe linings.
 Clean brakedrum and brake components. If necessary, replace brakeshoe (para 4-38) and oil seal (para 4-48).

Step 5. Check for cracked, scored, or deformed brakedrum.
 Replace defective brakedrum (para 4-48).

Step 6. Check for loose or worn brakeshoe linings.
 Replace defective brakeshoes (para 4-38).

Step 7. Check for loose or worn wheel bearings.
 Adjust wheel bearings (para 4-48). If wheel bearings cannot be adjusted, replace wheel bearings (para 4-48).

16. BRAKEDRUM RUNNING HOT.

Step 1. Check to see if brakes are adjusted properly.
 Adjust brakes (para 4-36).

Step 2. Check for weak or broken brakeshoe return springs.
 Replace defective brakeshoe return springs (para 4-38).

Step 3. Check for cracked, scored, or worn brakedrum.
 Replace defective brakedrum (para 4-48).

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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17. BRAKING IS UNEVEN.

- Step 1. Check to see if brakes are adjusted properly.
Adjust brakes (para 4-36).
- Step 2. Check for contaminated brakeshoe linings.
Clean brakedrum and brake components. If necessary, replace brakeshoe (para 4-38) and oil seal (para 4-48).
- Step 3. Check for defective wheel cylinder.
Replace defective wheel cylinder (para 4-39).

18. BRAKES ARE NOISY

- Step 1. Check for loose rivets or linings.
Replace defective brakeshoe (para 4-38).
- Step 2. Check for cracked, scored, or worn brakedrum.
Replace defective brakedrum (para 4-48).
- Step 3. Check for foreign material in brakedrum.
Clean brakedrum and brake components.

*WHEELS, HUBS, AND TIRES***19. EXCESSIVELY WORN, SCUFFED, OR CUPPED TIRES.**

- Step 1. Check for deformed wheel or rim.
Replace wheel (para 4-49).
- Step 2. Check for loose wheel bearings.
Adjust wheel bearings (para 4-48).

20. NOISY OR WOBBLY WHEELS.

- Step 1. Check for worn or damaged wheel bearings.
Replace wheel bearings (para 4-48).
- Step 2. Check for loose wheel bearings.
Adjust wheel bearings (para 4-48),

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

- Step 3.** Check for worn brakeshoe linings or linings that are too tight against brakedrum.
Adjust brakes (para 4-36) or replace brakeshoes (para 4-38).

LANDING GEAR (EARLY MODEL)

21. ERRATIC OPERATION (BINDING AND GRINDING).

- Step 1.** Raise and lower landing gear and check for dirt and grit on moving parts.
Clean moving parts.
- Step 2.** Check for adequate lubrication.
Lubricate in accordance with Chapter 3, Section 1.

LANDING GEAR (LATE MODEL)

22. ERRATIC OPERATION (BINDING AND GRINDING).

- Step 1.** Raise and lower landing gear and check for dirt and grit on moving parts.
Clean moving parts.
- Step 2.** Check operation after cleaning.
Replace gearbox if binding persists (para 4-55).

LEVELING JACKS

23. LEVELING JACK IS HARD TO OPERATE.

- Step 1.** Check lubrication.
Lubricate leveling jack in accordance with Chapter 3, Section i.
- Step 2.** Check for bent jack screw.
If bent, repair leveling jack (para 4-54).
- Step 3.** Check load on semitrailer.
Reduce amount of load during leveling procedure.

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****24. RATCHET PAWL WILL NOT OPERATE.**

Step 1. Check lubrication.

Lubricate in accordance with Chapter 3, Section 1.

Step 2. Check for damaged ratchet pawl.

Replace defective ratchet pawl (para 4-54).

25. LEVELING JACK WILL NOT EXTEND AND RETRACT PROPERLY

Step 1. Check lubrication.

Lubricate leveling jack in accordance with Chapter 3, Section 1.

Step 2. Check for bent or damaged inner housing.

Replace inner housing (para 4-54).

Step 3. Check for defective ratchet wheel.

Replace ratchet wheel (para 4-54).

26. LEVELING JACK FOOT PLATE WILL NOT SET ON BASE.

Check for defective foot plate.

Replace defective foot plate (para 4-54).

*SUSPENSION SYSTEM***27. SEMITRAILER PULLS TO LEFT OR RIGHT**

Step 1. Check to see if brakes are adjusted properly.

Adjust brakes (para 4-36).

Step 2. Check for improper wheel bearing adjustment.

Adjust wheel bearings (para 4-48).

Step 3. Check for loose suspension springs.

Tighten U-bolt nuts (para 4-56).

*FOLDING SIDE DOORS (M447, M447C, M749, AND M750)***28. FOLDING SIDE DOOR HARD TO OPERATE.**

Step 1. Check lubrication.

Lubricate in accordance with Chapter 3, Section 1.

Table 4-2. Organizational Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 2.	Check for bent arm on counterbalance assembly (para 4-61 or 4-62). Replace arm (para 4-61 or 4-62).
	Step 3.	Check for looseness of guide clip. Tighten screw securing guide clip (para 4-61 or 4-62).
	Step 4.	Check to see if wire rope is off pulley. Place wire rope on pulley and tighten wire rope (para 4-61 or 4-62).
	Step 5.	Check for unequal tension on wire ropes. Adjust wire ropes to equal tension (para 4-61 or 4-62).

29. FOLDING SIDE DOOR WILL NOT CLOSE PROPERLY

- Step 1. Check to see if lower folding side door closes first.
Lower folding side door must be closed first, with upper folding side door flange outside of lower side door.
- Step 2. Check for improper mating of lower folding door pins with sockets on upper folding door.
Aline pins with sockets by adjusting wire ropes on counterbalance.
- Step 3. Check adjustment of side door clamp.
Adjust clamps to pull folding side door tight against frame.

SIDE WALLS (M313)

30. SIDE WALLS ARE DIFFICULT TO EXPAND AND RETRACT

- Check for dirt or grit on rollers and sprockets of underframe retractable mechanism.
Remove covers and clean rollers and sprockets. Lubricate with grease (Item 10, Appendix E).

31. SIDE WALL WILL NOT LOCK IN RETRACTED POSITION.

- Step 1. Check to see if front edge of side wall is fully retracted.
Place a heavy wood block against rubrail at front edge of side wall. Strike wood block with hammer to position wall against frame.
 - Step 2. Check to see if top of side wall is too far out to engage edge of hinged roof.
Place a heavy wood block against flat surface of seal retainer opposite locking bar at top of side wall. Strike wood block with hammer to position side wall.
-

Section V. ELECTRICAL SYSTEM MAINTENANCE

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4-15. SWITCHES AND SERVICE RECEPTACLES REPLACEMENT.

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. 110-volt Service Receptacle Removal b. 110-volt Service Receptacle Installation c. Circuit Switch Removal d. Circuit Switch Installation | <ul style="list-style-type: none"> e. Blackout Circuit and Emergency Light Switch Removal f. Blackout Circuit and Emergency Light Switch Installation |
|--|---|

Initial Setup:

Equipment Conditions:

- External power supply cable disconnected.

Materials/Parts:

- Marker tags (Item 15, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit

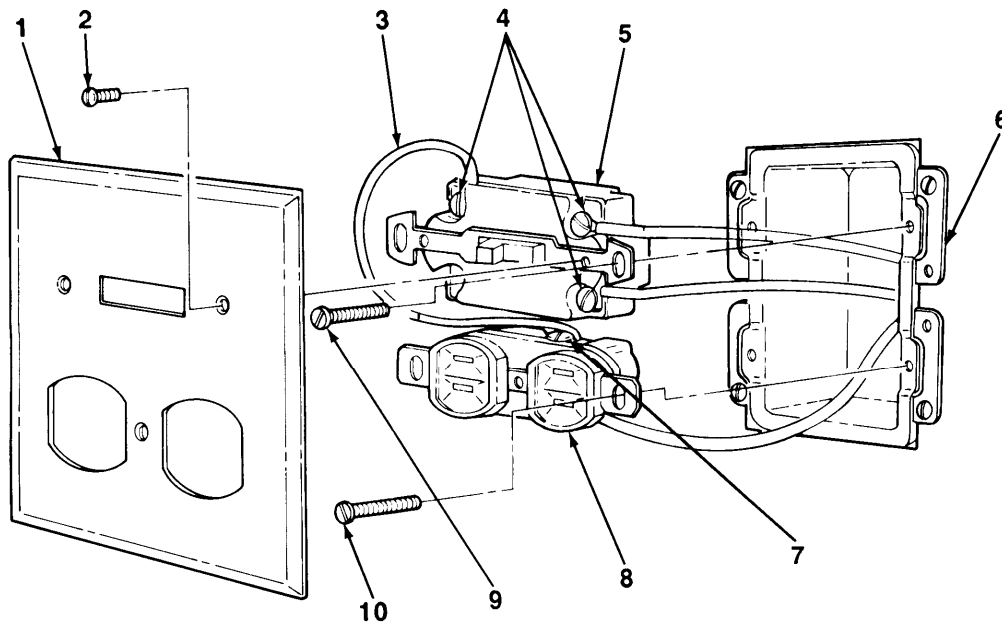
4-15. SWITCHES AND SERVICE RECEPTACLES REPLACEMENT (Con't).

NOTE

M749 van bodies have separate housings for service receptacles and switches.

a. 11 O-VOLT SERVICE RECEPTACLE REMOVAL

1. Remove three screws (2) and cover plate (1) from service receptacle (8) and switch (5).
2. Remove two screws (10) and pull service receptacle (8) from box (6).
3. Loosen two screws (7) and remove wires (3) from service receptacle (8). Tag wires.



b. 11 O-VOLT SERVICE RECEPTACLE INSTALLATION

1. Install wires (3) on service receptacle (8) and tighten two screws (7). Remove tags.
2. Position service receptacle (8) in box (6) and install two screws (10).
3. Position cover plate (1) in place on service receptacle (8) and switch (5) and install three screws (2).

c. CIRCUIT SWITCH REMOVAL

1. Remove three screws (2) and cover plate (1) from circuit switch (5) and service receptacle (8).
2. Remove two screws (9) and pull circuit switch (5) from box (6).
3. Loosen three screws (4) and remove wires (3) from circuit switch (5). Tag wires.

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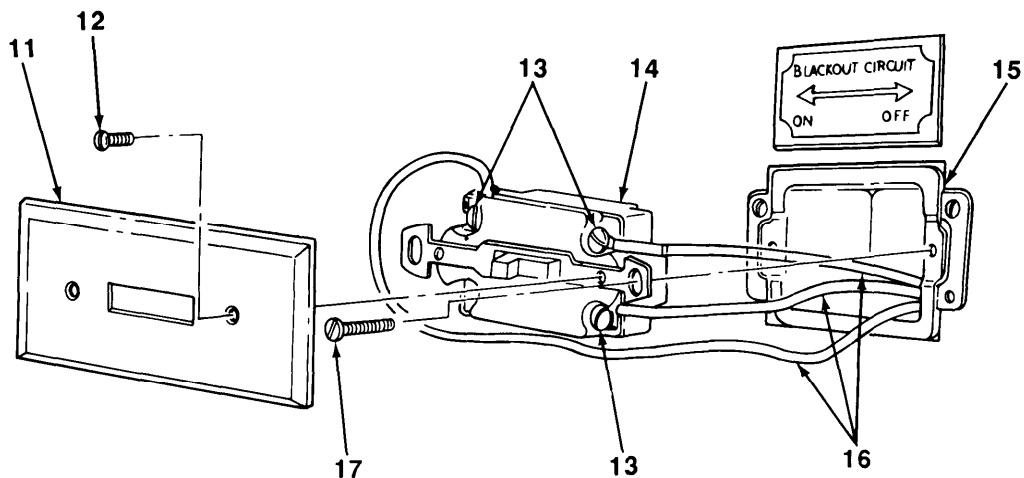
4-15. SWITCHES AND SERVICE RECEPTACLES REPLACEMENT (Con't).

d. CIRCUIT SWITCH INSTALLATION

1. Install wires (3) on circuit switch (5) and tighten three screws (4). Remove tags.
2. Install circuit switch (5) in box (6) and install two screws (9).
3. Position cover plate (1) in place on circuit switch (5) and install three screws (2).

e. BLACKOUT CIRCUIT AND EMERGENCY LIGHT SWITCH REMOVAL

1. Remove two screws (12) and cover plate (11) from switch (14).
2. Remove two screws (17) and switch (14) from box (15).
3. Loosen three screws (13) and remove wires (16) from switch (14). Tag wires.



f. BLACKOUT CIRCUIT AND EMERGENCY LIGHT SWITCH INSTALLATION

1. Install wires (16) on switch (14) and tighten three screws (13). Remove tags.
2. Install switch (14) in box (15), with OFF position facing down, and install two screws (17).
3. Position cover plate (11) in place on switch (14) and install two screws (12),

FOLLOW-ON TASKS:

- . Connect external power supply cable.

4-16. INTERVEHICULAR CABLE RECEPTACLE REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

- Towing vehicle intervehicular cable disconnected from semitrailer (para 2-11).

Tools/Test Equipment:

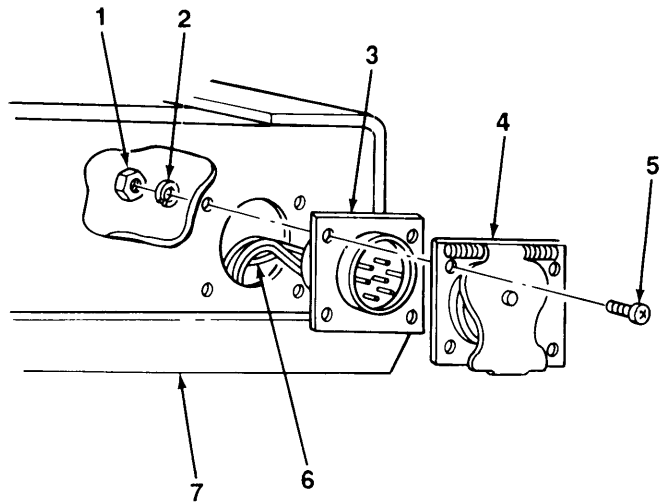
- General mechanic's tool kit
- Soldering gun

Materials/Parts:

- Solder (Item 13, Appendix E)
- Marker tags (Item 15, Appendix E)
- Electrical tape (Item 17, Appendix E)
- Four lockwashers

a. REMOVAL

1. Remove four screws (5), nuts (1), and lockwashers (2) from cover (4) and chassis frame (7). Discard lockwashers. Tag ground wire.
2. Remove cover (4) from receptacle (3).
3. Disassemble receptacle connector (3). Tag and unsolder wires (6).



b. INSTALLATION

1. Solder wires (6) to receptacle connector (3) and remove tags.
2. Wrap exposed wires with electrical tape.
3. Position cover (4) and receptacle connector (3) in recess and install three screws (5), new lockwashers (2), and nuts (1).
4. Install ground wire and remaining screw (5), new lockwasher (2), and nut (1). Discard tags.

FOLLOW-ON TASKS:

- Connect towing vehicle intervehicular cable to semitrailer (para 2-10).

4-17. POWER INLET HOUSING AND CABLE CONNECTOR REPLACEMENT.

This Task Covers:

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

Initial Setup:

Equipment Conditions:

- 220-volt power cable disconnected.

Tools/Test Equipment:

- General mechanic's tool kit
- Common no. 1 shop set

Personnel Required: Two

Materials/Parts:

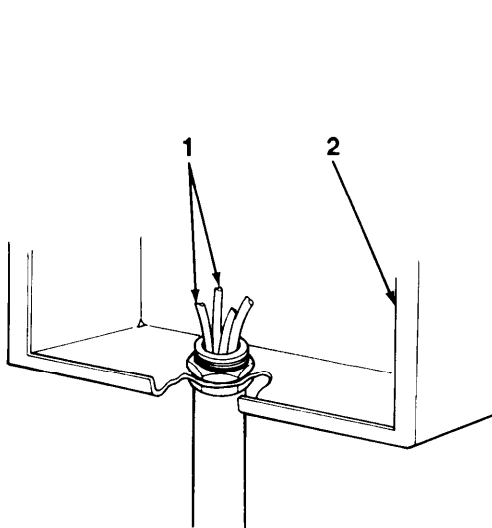
- Dishwashing compound (Item 6, Appendix E)
- Marker tags (item 15, Appendix E)
- Two lockwashers (M749 Southwest Model VRP Serial Numbers V001-V356 and Convento Model 8929)
- Four lockwashers (all except M749 Southwest Model VRP Serial Numbers V001-V356 and Convento Model 8929)

NOTE

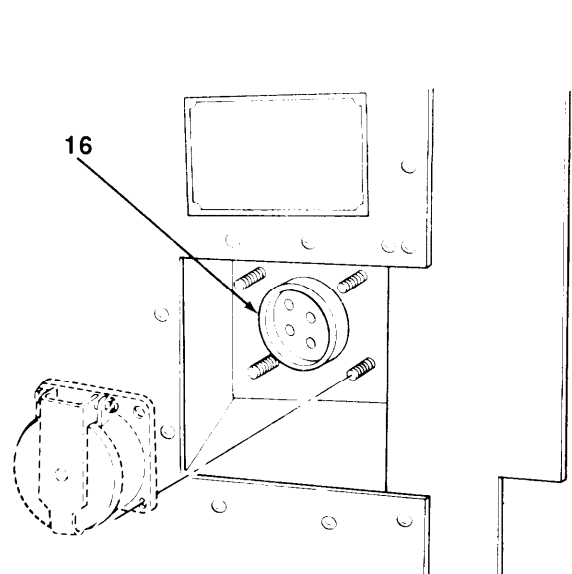
Replacement of power inlet housing and cable connector is similar for all models. Differences will be pointed out as they occur.

a. REMOVAL

1. Open electrical box (2) on rear curbside wall inside semitrailer. Tag and disconnect wires(1) of cable connector (16) from electrical components inside electrical box.



M447, M447C, M750, AND M313 (EARLY MODEL)



M447, M447C, M750, AND M313 (EARLY MODEL)

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4-17. POWER INLET HOUSING AND CABLE CONNECTOR REPLACEMENT (Con't).

- On late model M313, remove four screws (11) and access plate (12) from junction box(13) inside semitrailer.

NOTE

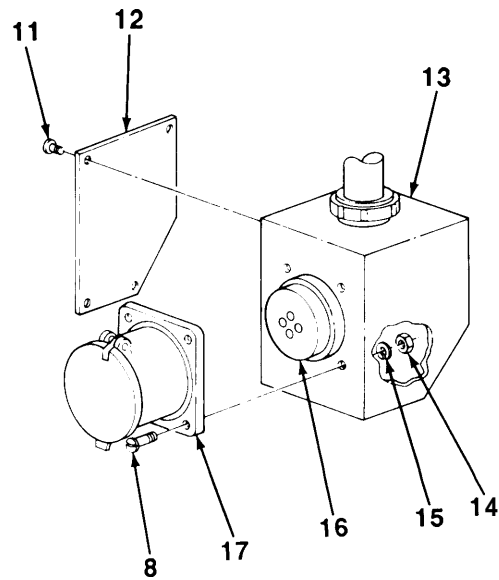
M749 Southwest Model VRP Serial Numbers V001-V356 (110-volt) and Serial Numbers V549-V628, and Convento Model 8929 have two nuts, lockwashers, and screws.

- Remove four nuts (14), lockwashers (15), screws (8), and cover (17) from cable connector (16) and van body (9), junction box (13), or power inlet housing (18). Discard lockwashers.

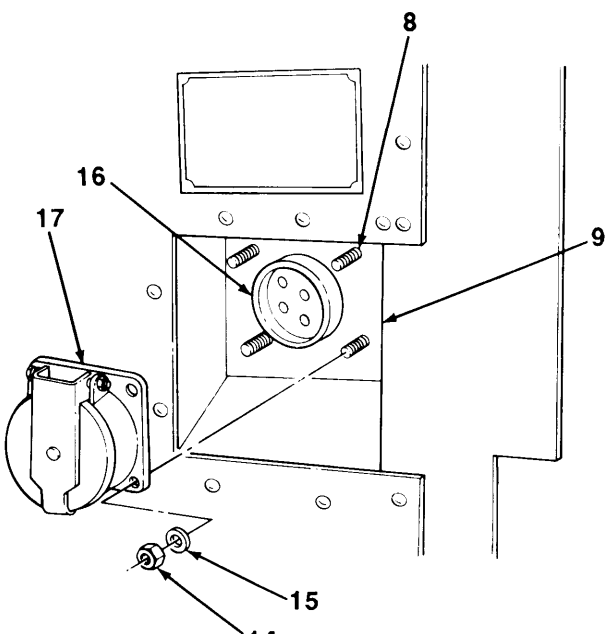
NOTE

Steps 4-6 describe removal of conduit and cable connector from between electrical box and receptacle, for M447, M447C, M750, and early model M313. Removal procedures are similar for all other models; only minor differences in configuration exist.

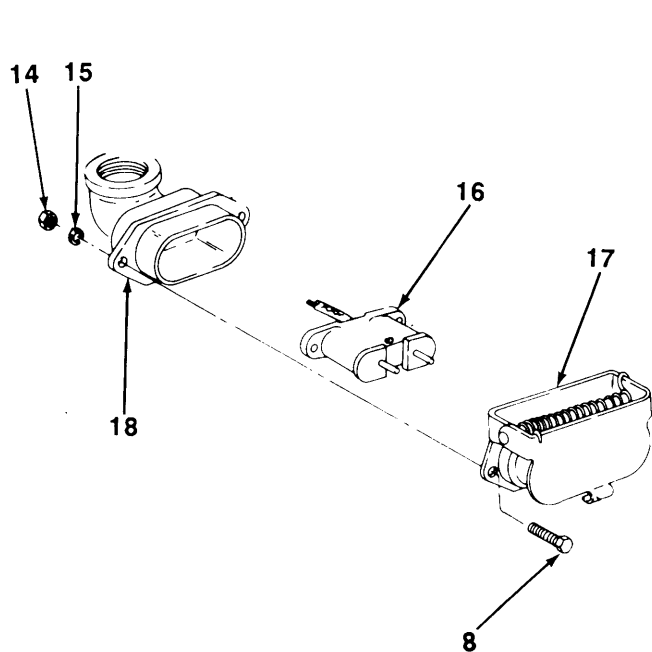
- Loosen nut (4) from box connector (3) at electrical box (2). Remove conduit (5) with assembled receptacle (7) and cable connector (16) with wires (1) from electrical box and van body (9).
- Loosen nut (6) and separate conduit (5) from box connector (10) at receptacle (7).



M313 (LATE MODEL)



M447, M447C, M750, AND M313 (EARLY MODEL)



M749 SOUTHWEST MODEL VRP SERIAL NUMBERS V001-V356 (110-VOLT)

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4-17. POWER INLET HOUSING AND CABLE CONNECTOR REPLACEMENT (Con't).

6. Remove cable connector (16) with wires (1) from inside receptacle (7). Remove box connector (10) from receptacle.

b. CLEANING AND INSPECTION

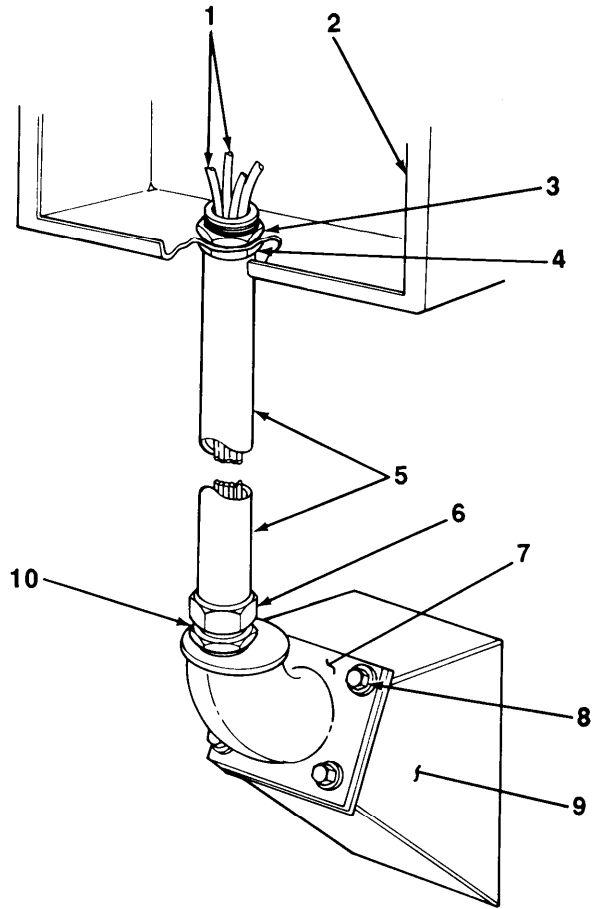
1. Clean all parts with a soap and water solution. Dry thoroughly.
2. Inspect for cracks, breaks, broken insulation, bare wires, or other damage.
3. Replace defective parts.

c. INSTALLATION

NOTE

Steps 1-4 describe installation of conduit and cable connector between electrical box and receptacle, for M447, M447C, M750, and early model M313. Installation procedures are similar for all other models; only minor differences in configuration exist.

1. Install box connector (10) on receptacle (7).
2. Feed cable connector (16) with wires (1) through conduit (5) and receptacle (7) and seat cable connector in receptacle end.
3. Tighten nut (6) to secure conduit (5) to box connector (10) at receptacle (7).
4. Secure conduit (5) to box connector (3) at electrical box (2) by tightening nut (4).



M447, M447C, M750, AND M313 (EARLY MODEL)

NOTE

M749 Southwest Model VRP Serial Numbers V001-V356 (100-volt) and Serial Numbers V549-V628, and Converto Model 8929 have two nuts, lockwashers, and screws.

5. Install cover (17) on cable connector (16) and van body (9), junction box (13), or power inlet housing (18) with four screws (8), new lockwashers (15), and nuts (14).
6. On late model M313, install access plate (12) on junction box (13) with four screws (11).
7. Connect wires (1) of cable connector (16), as tagged, to electrical components inside electrical box (2). Close electrical box.

4-18. INSIDE TELEPHONE JACK POSTS REPLACEMENT (M313).

This Task Covers:

- a. Removal b. Installation

Initial Setup:

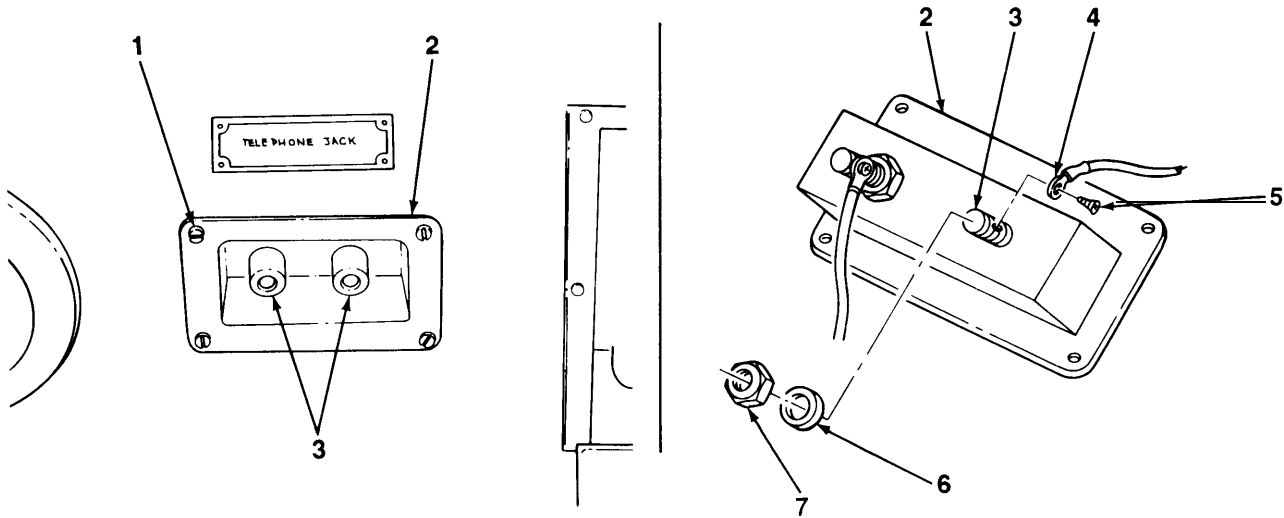
Materials/Parts:

- Marker tags (Item 15, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit

1. Remove four screws (1) and junction box (2) from base of rear wall.
2. Remove two screws (5) and leads (4) from terminal studs (3). Tag leads.
3. Remove two nuts (7), grommets (6), and terminal studs (3) from junction box (2).



b. INSTALLATION

1. install two telephone terminal studs (3) in junction box (2) with two nuts (7) and grommets (6).
2. Connect two leads (4) to terminal studs (3) with two screws (5). Remove tags.
3. Position junction box (2) in place on base of rear wail and install four screws (1).

4-19. OUTSIDE TELEPHONE JACK POSTS REPLACEMENT (M313).

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Materials/Parts:

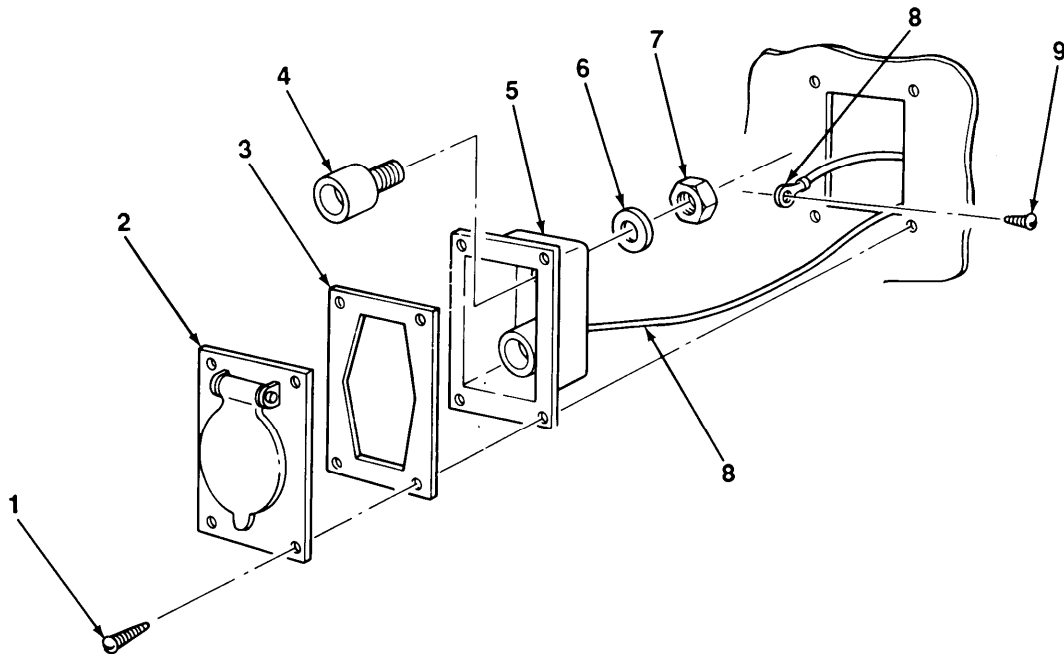
- Marker tags (Item 15, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit
-

a. REMOVAL

1. Working outside van body, remove four screws (1), cover (2), gasket (3), and junction box (5) from rear wall,
2. Remove two screws (9) and leads (8) from outside telephone terminal studs (4). Tag leads.
3. Remove two nuts (7), grommets (6), and outside telephone terminal studs (4) from junction box (5).



b. INSTALLATION

1. Working outside van body, install two outside telephone terminal studs (4) in junction box (5) and secure with nuts (7) and grommets (6).
2. Install two screws (9) and leads (8) to outside telephone terminal studs (4). Remove tags.
3. Install junction box (5), gasket (3), and cover (2), in rear wall with four screws (1).

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4-20. HINGED ROOF ELECTRICAL CONTACT REPLACEMENT (M313).

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- External power supply cable disconnected.

Materials/Parts:

- Marker tags (Item 15, Appendix E)

Tools/Test Equipment:

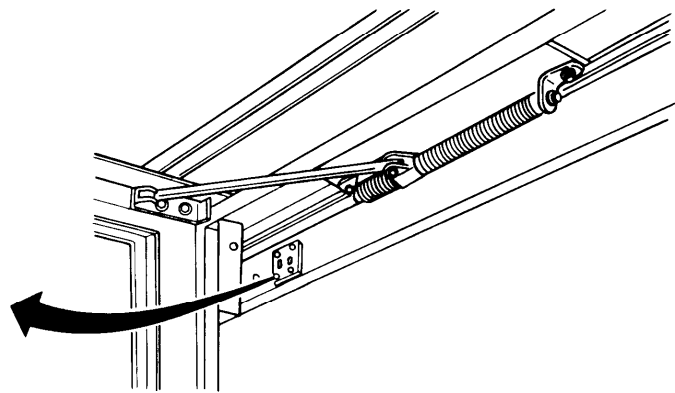
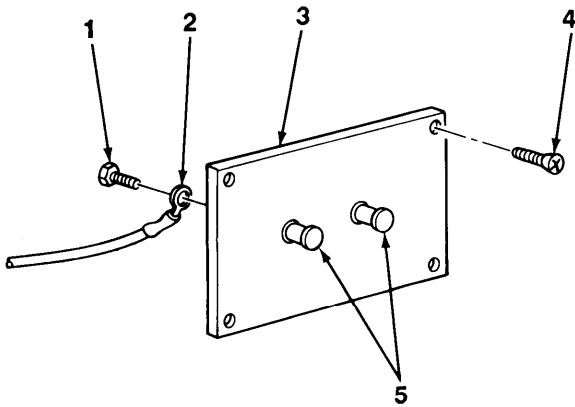
- General mechanic's tool kit

NOTE

Ensure that 220-volt main switch located in the distribution box is in the OFF position.

a. REMOVAL

1. Position van side wall in full expanded position and support hinged roof with swivel hooks (para 2-13).
2. Remove four screws (4) and contact (3) from edge of hinged roof.
3. Remove two screws (1) and electrical cables (2) from contact terminals (5). Tag electrical cables.



b. INSTALLATION

1. Install two screws (1) and electrical cables (2) on contact terminals (5). Remove tags.
2. Position contact (3) on edge of hinged roof and install four screws (4).
3. Retract the van side wall (para 2-13).

FOLLOW-ON TASKS:

- Connect external power supply cable.

TA701943

4-21. HINGED FLOOR CONDUCTOR PLATE REPLACEMENT (M313).

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|
-

Initial Setup:

Equipment Conditions:

- External power supply cable disconnected.

Materials/Parts:

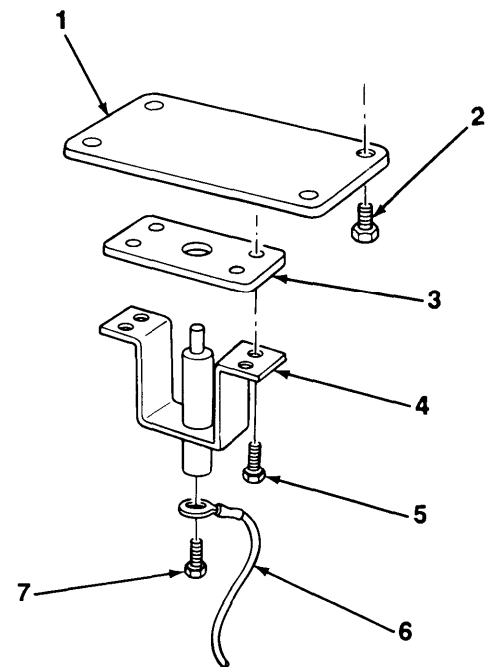
- Marker tags (Item 15, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit
-

a. REMOVAL

1. Remove two screws (7) and tag and disconnect two electrical wires (6) from contact assembly (4).
2. Remove four screws (5), contact assembly (4), and gasket (3) from conductor plate (1).
3. Remove four screws (2) and conductor plate (1).



b. INSTALLATION

1. Position conductor plate (1) and install four screws (2).
2. Position contact assembly (4) and gasket (3) on conductor plate (1) and install four screws (5).
3. Connect electrical wires (6) to contact assembly (4) with two screws (7). Remove tags.

FOLLOW-ON TASKS:

- Connect external power supply cable.

TA701944

4-22. DOOR-OPERATED BLACKOUT SWITCHES REPLACEMENT

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial/ Setup:

Equipment Conditions:

- External power supply cable disconnected.

Materials/Parts:

- Marker tags (Item 15, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit

NOTE

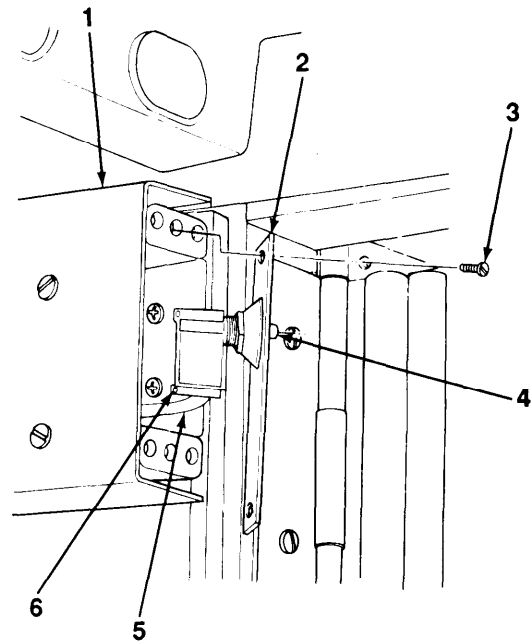
Replacement of all model door-operated blackout switches is similar. M447, M447C, M750, and early model M313 are illustrated.

a. REMOVAL

NOTE

- Ensure that 220-volt main switch located in junction box is in OFF position.
- Mounting screws for switch cover may vary between two and four for M447, M447C, M750, early model M313, and M749, serial numbers V001 through V356 vans. On M749, serial numbers V549 through V628, there are eleven mounting screws.

- 1.
2. Remove screws and disconnect electrical leads (5) from terminal board. Tag electrical leads.
3. Disconnect electrical leads (5) from switch terminals (6). Tag electrical leads.
4. Remove switch (4) from switch cover (2).



M447, M447C, M750, AND M313 (EARLY MODEL)

TA701945

4-22. DOOR-OPERATED BLACKOUT SWITCHES REPLACEMENT (Con't).

b. INSTALLATION

1. Install switch (4) in place on switch cover (2).

NOTE

Perform step 2 for late model M313 vans and step 3 for all other model vans.

2. Connect electrical leads (5) to terminal board and install screws. Remove tags.
3. Connect electrical leads (5) to switch terminals (6). Remove tags.

NOTE

Mounting screws for switch cover may vary between two and four for M447, M447C, M750, early model M313, and M749, serial numbers V001 through V356 vans. On M749, serial numbers V549 through V628, there are eleven mounting screws.

4. Install switch cover (2) on switch box (1) with mounting screws (3).

FOLLOW-ON TASKS:

- Connect external power supply cable,

4-23. CIRCUIT BREAKER REPLACEMENT.

This Task Covers:

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

initial Setup:

Equipment Conditions:

- External power supply cable disconnected.

Tools/Test Equipment:

- General mechanic's tool kit

Materials/Parts:

- Dishwashing compound (Item 6, Appendix E)
- Rags (Item 11, Appendix E)
- Marker tags (Item 15, Appendix E)

NOTE

All circuit breakers are replaced in the same manner. The number of screws holding cover plate on junction box will vary. M313 (Early Model) is shown.

a. REMOVAL

1. Remove four screws (2) and cover plate (3) from junction box (1).
2. Loosen terminal screw (6) and remove wire (5). Tag wire.
3. Remove terminal screw (6) and circuit breaker (4) from contact bar (7) by pulling outward and away from center strip.

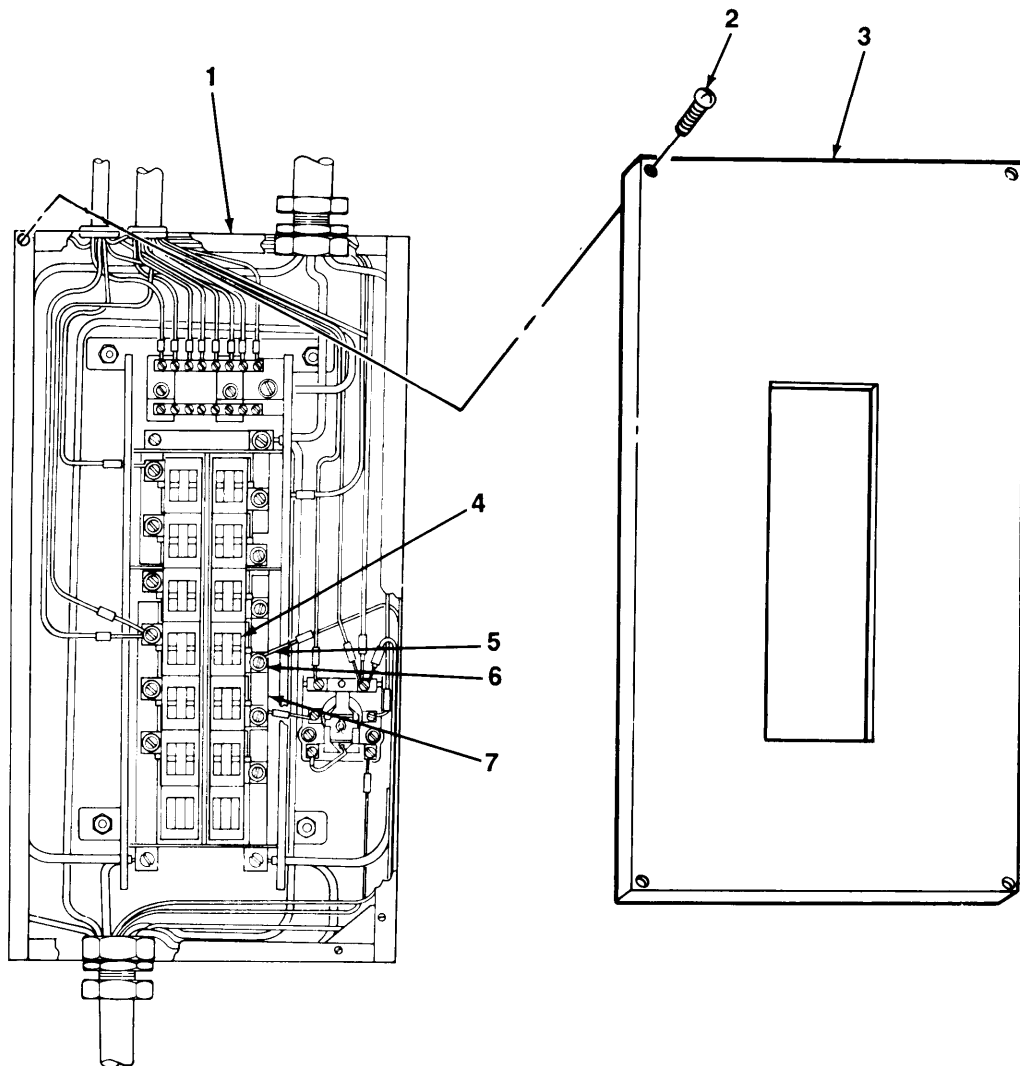
b. CLEANING AND INSPECTION

1. Clean all metal parts with soap and water and dry thoroughly. Wipe all other parts with clean dry cloth.
2. Check junction box for cracks or other damage.
3. Inspect circuit breakers for cracks or other damage.
4. Inspect all mounting hardware for defective threads.
5. Replace all defective parts.

c. INSTALLATION

1. Install circuit breaker (4) in junction box (1) by pushing inward at center strip.
2. Loosely install terminal screw (6) in circuit breaker (4).
3. Connect wire (5) to circuit breaker (4) and tighten terminal screw (6). Remove tag.
4. Position cover plate (3) in place on junction box (1) and install four screws (2).

4-23. CIRCUIT BREAKER REPLACEMENT (Con't).



FOLLOW-ON TASKS:

- Connect external power supply cable.

4-24. BLACKOUT LIGHT ELECTROMAGNETIC RELAY REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- External power supply cable disconnected.
- Circuit breakers removed (para 4-23).

Materials/Parts:

- Marker tags (item 15, Appendix E)
- Three lockwashers

Tools/Test Equipment:

- . General mechanic's tool kit
-

NOTE

All blackout light electromagnetic relays are replaced in the same manner.

a. REMOVAL

NOTE

- . To remove M313 (Late Model), M447, M447C, or M750 blackout light electromagnetic relay, perform steps 1 and 2.
- To remove M313 (Early Model) blackout light electromagnetic relay, perform steps 1 and 3.

1. Disconnect and tag electrical leads (2) from blackout light electromagnetic relay (5).
2. Remove two screws (3) and blackout light electromagnetic relay (5) from circuit breaker junction box (1).
3. Remove three screws (3), lockwashers (4) and blackout light electromagnetic relay (5) from circuit breaker junction box (1). Discard lockwashers.

b. INSTALLATION

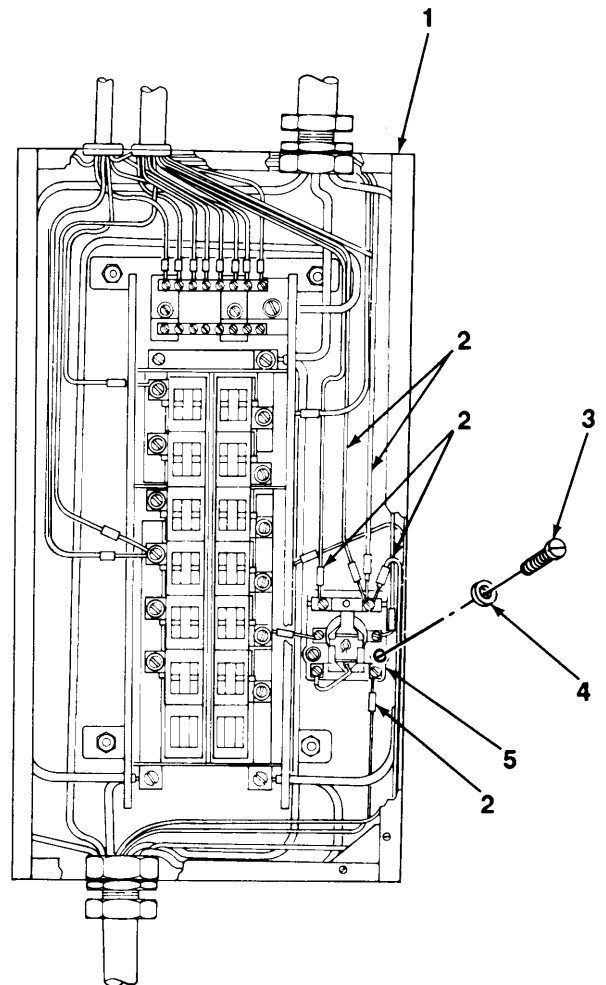
NOTE

- To install M313 (Late Model), M447, M447C, or M750 blackout light electromagnetic relay, perform steps 1 and 3.
- install M313 (Early Model) blackout light electromagnetic relay, perform steps 2 and 3.

1. Position blackout light electromagnetic relay (5) in place in circuit breaker junction box (1) and secure with two screws (3).

4-24. BLACKOUT LIGHT ELECTROMAGNETIC RELAY REPLACEMENT (Con't).

2. Position blackout light electromagnetic relay (5) in place in circuit breaker junction box (1) and secure with three screws (3) and new lockwashers (4),
3. Connect electrical leads (2) to blackout light electromagnetic relav (5). Remove tags.

**FOLLOW-ON TASKS:**

- Install circuit breakers (para 4-23).
- Connect external power supply cable.

4-25. CIRCUIT BREAKER JUNCTION BOX REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Circuit breakers removed (para 4-23).
- Blackout light electromagnetic relay removed (para 4-24).

Materials/Parts:

- Marker tags (Item 15, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit
-

NOTE

All circuit breaker junction boxes are replaced in the same manner. The quantities of mounting hardware, circuit breakers, wire leads, etc. will vary between models. M313 (Early Model) is shown.

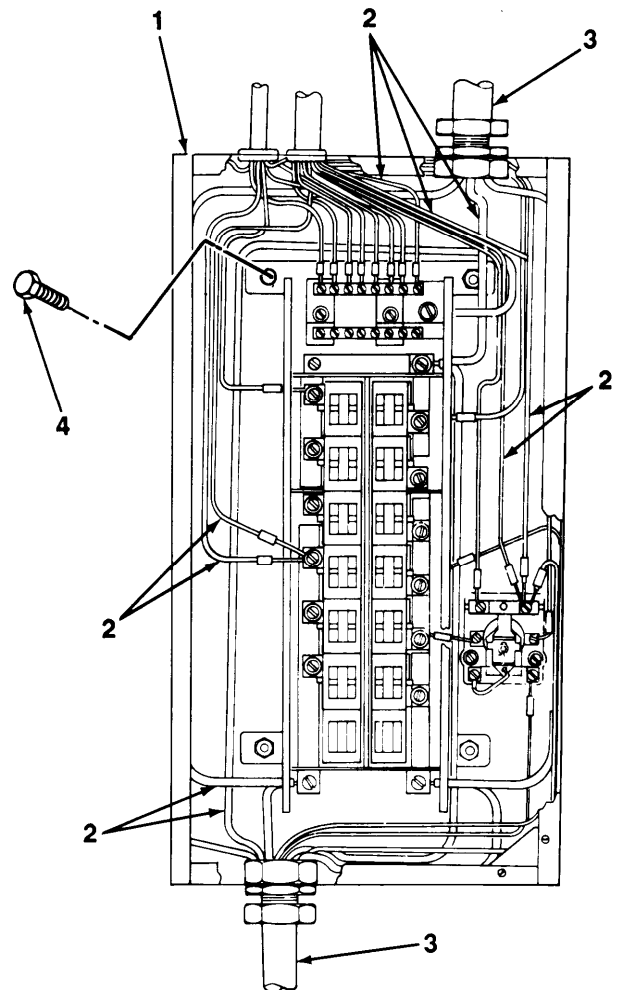
1. Disconnect and tag all internal electrical leads (2) from junction box (1).
2. Remove all external conduit connections (3) from junction box (1). Pull electrical leads (2) out of junction box.
3. Remove junction box attaching screws (4) as required, and then remove junction box (1) from rear wall of semitrailer.

b. INSTALLATION

1. Position junction box (1) in place on rear wall of semitrailer and line up mounting holes.
2. Install junction box attaching screws (4) as required, to secure junction box (1) to rear wall of semitrailer.

4-25. CIRCUIT BREAKER JUNCTION BOX REPLACEMENT (Con't).

3. Route all electrical leads (2) into junction box (1) and install external conduit connections (3) to junction box (1).
4. Connect all internal electrical leads (2) to junction box (1), Remove tags,

**FOLLOW-ON TASKS:**

- Install blackout light electromagnetic relay (para 4-24).
- Install circuit breakers (para 4-23).

4-26. BLACKOUT DOMELIGHT AND EMERGENCY DOMELIGHT MAINTENANCE (ALL EXCEPT M749).

This Task Covers:

- | | |
|---------------------|----------------------------|
| a. Lamp Replacement | c. Cleaning and Inspection |
| b. Removal | d. Installation |

Initial Setup:

Equipment Conditions:

- Towing vehicle intervehicular cable disconnected from semitrailer (para 2-11).

Materials/Parts:

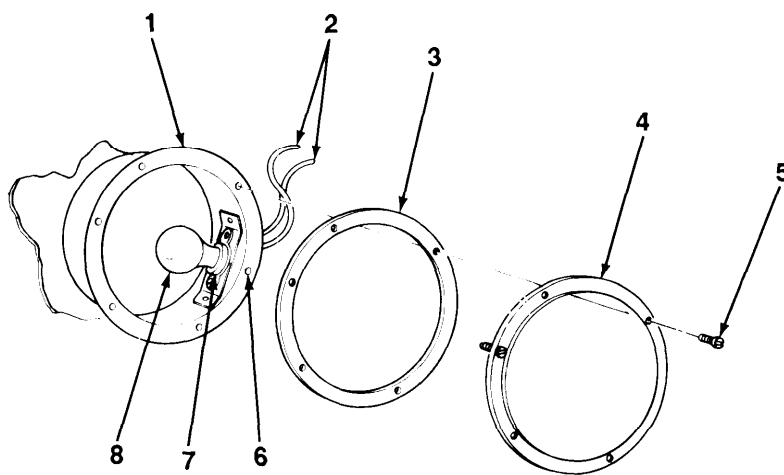
- Rags (Item 11, Appendix E)
- Marker tags (Item 15, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit

a. LAMP REPLACEMENT

1. Remove four screws (5) and lens (4) with preformed felt (3) from domelight body (1).
2. Remove lamp (8) from socket (7) by turning counterclockwise.
3. Install lamp (8) in socket (7) and turn clockwise.
4. Position lens (4) and preformed felt (3) in place on domelight body (1) and install four screws (5).



b. REMOVAL

1. Remove four screws (5) and lens (4) with preformed felt (3) from domelight body (1).
2. Remove four screws (6) and lower domelight body (1) from ceiling.
3. Disconnect and tag wires (2) from domelight terminals.

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4-6. BLACKOUT MELIGHT AND EMERGENCY DOMELIGHT MAINTENANCE (ALL EXCEPT M749) (Con't).

c. CLEANING AND INSPECTION

1. Clean all parts with a clean, dry cloth.
2. Inspect domelight body for dents in the reflector, and broken or chipped socket and socket retainer.
3. Inspect wiring for broken insulation or bare wire.
4. Replace all damaged parts.

d. INSTALLATION

1. Connect wires (2) to domelight terminals. Remove tags.
2. Position domelight body (1) in place in ceiling and install four screws (6).
3. Position lens (4) and preformed felt (3) in place on domelight body(1) and install four screws (5).

FOLLOW-ON TASKS:

- Connect towing vehicle intervehicular cable to semitrailer (para 2-10).
- Test operation of lockout dome light.

4-27. DOMELIGHT MAINTENANCE (M749).

This Task Covers:

- | | |
|---------------------|----------------------------|
| a. Lamp Replacement | c. Cleaning and Inspection |
| b. Removal | d. Installation |

Initial Setup:

Equipment Conditions:

- External power supply cable disconnected.

Tools/Test Equipment:

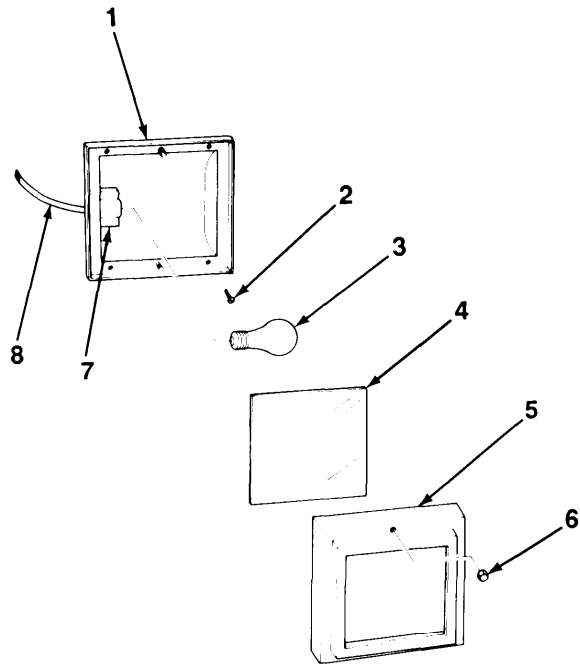
- General mechanic's tool kit

Materials/Parts:

- Rags (Item 11, Appendix E)
- Marker tags (Item 15, Appendix E)

a. LAMP REPLACEMENT

1. Remove two nuts (6) and fixture door (5) from light assembly (1).
2. Remove lamp (3) from socket (7) by turning counterclockwise.
3. Install lamp (3) in socket (7) and turn clockwise.
4. Position fixture door (5) in place on light assembly (1) and install two nuts (6).



b. REMOVAL

1. Remove two nuts (6), fixture door (5), and lamp (3) from light assembly (1).
2. Remove lens (4) from fixture door (5).
3. Remove four screws (2) and light assembly (1) from ceiling.
4. Tag and disconnect electrical leads (8) from back side of socket (7).

TA701950

4-27. DOMELIGHT MAINTENANCE (M749) (Con't).

c. CLEANING AND INSPECTION

1. Wipe all parts with a clean, dry cloth.
2. Inspect lens for cracks or breaks.
3. Inspect wiring for broken insulation or bare wires
4. Inspect all mounting hardware for damage.
5. Replace all defective parts as necessary.

d. INSTALLATION

1. Connect electrical leads (8) to back side of socket (7). Remove tags
2. Position light assembly (1) in ceiling and install four screws (2).
3. Position lens (4) in place in fixture door (5).
4. Install lamp (3) and fixture door (5) in light assembly (1) with two nuts (6).

FOLLOW-ON TASKS:

- Connect external power supply cable.
- Test operation of domelight.

4-28. BLACKOUT STOPLIGHT MAINTENANCE (EARLY MODEL).

This Task Covers:

- | | |
|---------------------|----------------------------|
| a. Lamp Replacement | d. Cleaning and Inspection |
| b. Removal | e. Assembly |
| c. Disassembly | f. Installation |
-

Initial Setup:

Equipment Conditions:

- Towing vehicle intervehicular cable disconnected from semitrailer (para 2-11).

Tools/Test Equipment:

- General mechanic's tool kit

Materials/Parts:

- Ž Adhesive (Item 1, Appendix E)
 - Dishwashing compound (Item 6, Appendix E)
 - Dry cleaning solvent (Item 14, Appendix E)
 - Ž One lockwasher
-

a. LAMP REPLACEMENT

1. Remove two screws (8), door assembly (7), and gasket (6) from housing (2).
2. Push in on lamp (5), turn counterclockwise, and remove from socket (4).
3. Install lamp (5) in socket (4), push in, and turn clockwise.
4. Position door assembly (7) and gasket (6) in place on housing (2) and install two screws (8).

b. REMOVAL

1. Disconnect connector (1) from housing (2).
2. Remove bolt (17), lockwasher (16), and housing (2) from rear crossmember of chassis frame. Discard lockwasher.

4-28. BLACKOUT STOPLIGHT MAINTENANCE (EARLY MODEL) (Con't).

c. **DISASSEMBLY**

1. Remove two screws (8), door assembly (7), and gasket (6) from housing (2).
2. Push in on lamp (5), turn counterclockwise, and remove from socket (4).
3. Remove two shoulder screws (9), grommets (1 O), ground strap (11), and lampholder (3) and wire (12) assembly from housing (2).

d. **CLEANING AND INSPECTION**

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean exterior of housing with dry cleaning solvent.
2. Clean interior of housing with soap and water, then dry thoroughly.
3. Inspect door assembly for cracks, warpage, cracked or broken lens, or evidence of leakage around door assembly gasket. If damaged, replace gasket or door assembly.
4. Inspect housing for cracks or evidence of leakage. Replace housing if damaged.
5. Inspect lampholder and wire assembly to ensure grommets, socket, ground strap (11), wire (12), and connector are in good condition and will make a good watertight electrical connection when installed. Replace blackout stoplight if parts of assembly are defective.
6. Inspect grommet at rear of assembly and terminal (15) at rear of lampholder and wire assembly to ensure they are adhered securely to housing and will make a good watertight seal. Add adhesive as required.

e. **ASSEMBLY**

1. Press ground strap (11) and lampholder (3) and wire (12) assembly into housing (2) until grommet(13) at rear of assembly is seated.
2. Aline holes in lampholder (3) and wire (12) assembly with mounting holes in housing (2) and install two shoulder screws (9) and grommets (10).
3. Install lamp (5) in socket (4), push in, and turn clockwise.
4. Position door assembly (7) and gasket (6) in place on housing (2) and install two screws (8).

f. **INSTALLATION**

1. Position housing (2) in place on rear crossmember and install bolt (17) and newlockwasher(16).
2. Connect connector (1) to housing (2).

FOLLOW-ON TASKS:

- Connect towing vehicle intervehicular cable to semitrailer (para 2-10).
- Test operation of blackout stoplight.

4-29. CEILING AND BLACKOUT LIGHT MAINTENANCE (M749 SOUTHWEST MODELVRP SERIAL NUMBERS V549 THROUGH V628).

This Task Covers:

- | | |
|---------------------|-----------------|
| a. Lamp Replacement | d. Assembly |
| b. Removal | e. Installation |
| c. Disassembly | |

Initial Setup:

Equipment Conditions:

- Towing vehicle intervehicular cable disconnected from semitrailer (para 2-11).

Materials/Parts:

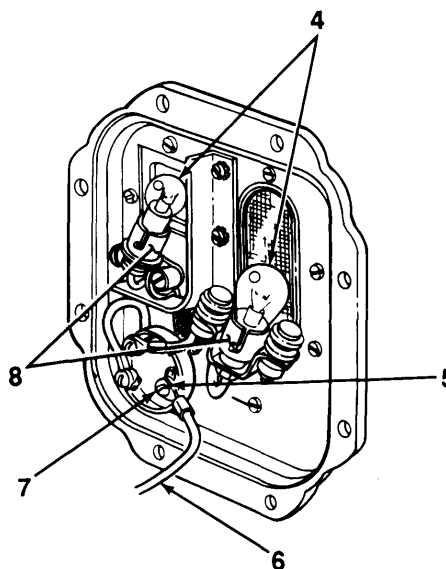
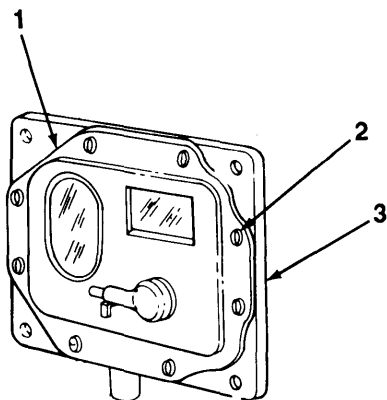
- One Incandescent lamp
- Two starwashers

Tools/Test Equipment:

- General mechanic's tool kit

a. LAMP REPLACEMENT

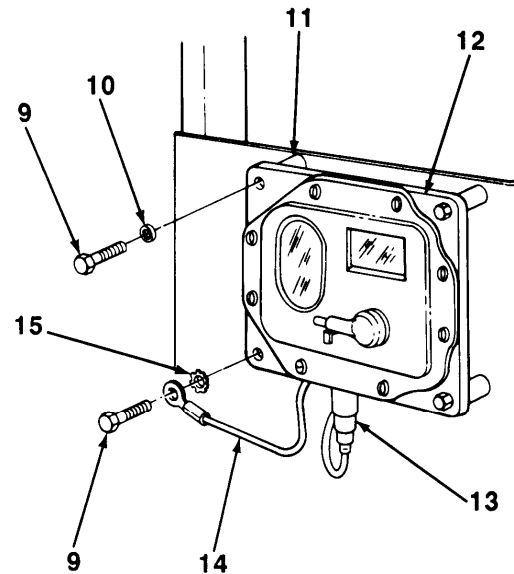
1. Loosen eight captive screws (2) and separate cover (1) from body (3) of light.
2. Push in on lamp (4), turn counterclockwise, and remove from socket (8).
3. Install lamp (4) in socket (8) and turn clockwise.
4. Install cover (1) on body (3) of light and tighten eight captive screws (2).



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4-29. CEILING AND BLACKOUT LIGHT MAINTENANCE (M749 SOUTHWEST MODEL VRP SERIAL NUMBERS V549 THROUGH V628) (Con't).

1. Disconnect connector (13) on ceiling and blackout light (12).
2. Remove four bolts (9), three washers (10), four spacers (11), ground wire (14), starwasher (15), and ceiling and blackout light (12), Discard starwasher.



c. DISASSEMBLY

1. Loosen eight captive screws (2) and separate cover (1) from body (3) of light.
2. Remove screw (7), starwasher (5), and wire (6). Discard starwasher.
3. Remove two lamps (4) from sockets (8).

d. ASSEMBLY

1. Install wire (6), new starwasher (5), and screw (7).
2. Install two lamps (4) in sockets (8),
3. Install cover (8) and tighten eight captive screws (2) on body (3) of lamp.

e. INSTALLATION

1. Install ceiling and blackout light (12) with four spacers (11), three washers (10), ground wire (14), new starwasher (15), and four bolts (9).
2. Connect connector (13) to ceiling and blackout light (1 2).

FOLLOW-ON TASKS:

- Connect towing vehicle intervehicular cable to semitrailer (para 2-10).
- Ž Check operation of ceiling and blackout light.

TA701953

4-30. COMPOSITE STOPLIGHT-TAILLIGHT MAINTENANCE (LATE MODEL).

This Task Covers:

- | | |
|---------------------|----------------------------|
| a. Lamp Replacement | d. Cleaning and Inspection |
| b. Removal | e. Assembly |
| c. Disassembly | f. Installation |

Initial Setup:

Equipment Conditions:

- Towing vehicle intervehicular cable disconnected from semitrailer (para 2-1 1).

Tools/Test Equipment:

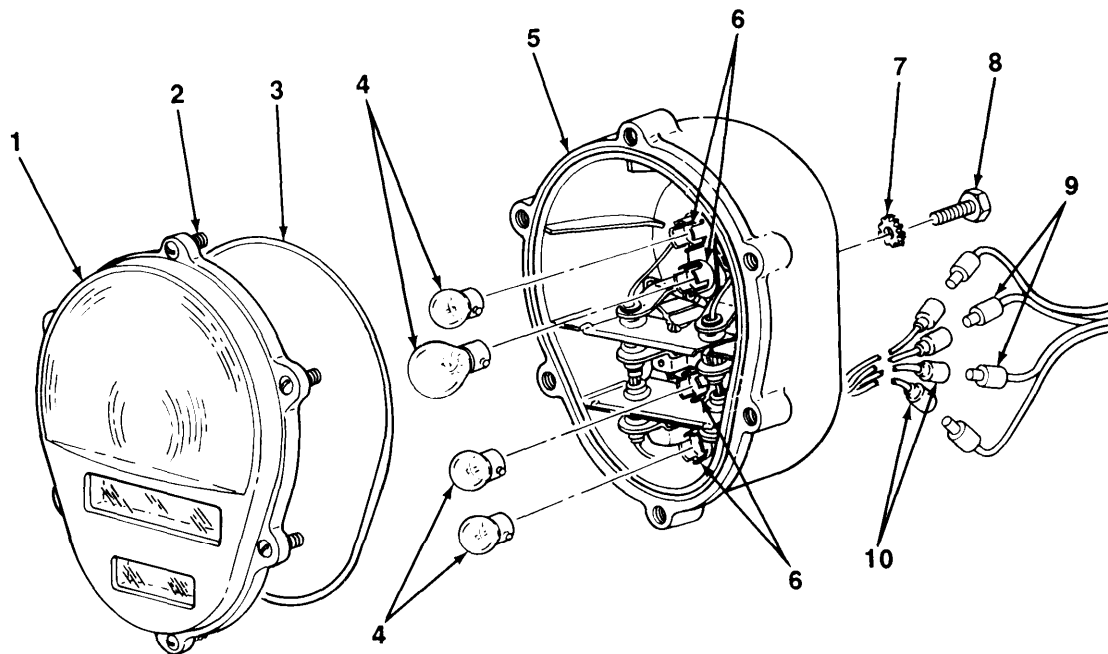
- General mechanic's tool kit

Materials/Parts:

- Dishwashing compound (Item 6, Appendix E)
- Marker tags (Item 15, Appendix E)
- Two lockwashers

a. LAMP REPLACEMENT

1. Loosen six captive screws (2) and remove lens (1) and preformed packing (3) from body assembly (5). Discard preformed packing if defective.
2. Push in on lamp (4), turn counterclockwise, and remove from socket (6).
3. Install lamp (4) in socket (6), push in, and turn clockwise.
4. Position lens (1) and preformed packing (3) in place on body assembly (5). Tighten six captive screws (2).



TA701954

4-30. COMPOSITE STOPLIGHT-TAILLIGHT MAINTENANCE (LATE MODEL) (Con't).

b. REMOVAL

1. Disconnect and tag four chassis wiring harness connectors (9) from composite stoplight-tailight connectors (10).
2. Remove two screws (8), lockwashers (7), and body assembly(5) from mounting bracket. Discard lockwashers.

c. DISASSEMBLY

Loosen six captive screws (2) and remove lens assembly (1) and preformed packing (3) from body assembly (5). Discard preformed packing if defective.

d. CLEANING AND INSPECTION**CAUTION**

To avoid damaging composite stoplight-tailight, do not use dry cleaning solvent or mineral spirits paint thinner to clean.

1. Clean exterior and interior of body assembly with soap and water, then dry thoroughly.
2. Inspect lens for cracks, breaks, or signs of warpage. Replace lens if defective.
3. Inspect sockets and wiring to ensure that they will make good electrical connections. Replace composite stoplight-tailight if defective.

e. ASSEMBLY

Position lens assembly (1) and preformed packing (3) in place on body assembly (5). Tighten six captive screws (2).

f. INSTALLATION

1. Position body assembly (5) in place on mounting bracket and install two screws (8) and new lockwashers (7).
2. Connect four chassis wiring harness connectors (9) to composite stoplight-tailight connectors (10). Remove tags.

FOLLOW-ON TASKS:

- Ž Connect towing vehicle intervehicular cable to semitrailer (para 2-10).
- Test operation of composite stoplight-tailight.

4-31. FLUORESCENT LIGHTING FIXTURE MAINTENANCE (ALL EXCEPT M749).

This Task Covers:

- | | |
|---------------------------------|------------------------|
| a. Lamp and Starter Replacement | d. Ballast Replacement |
| b. Removal | e. Filter Replacement |
| c. Cleaning and Inspection | f. Installation |

Initial Setup:

Equipment Conditions:

- External power supply cable disconnected.

Tools/Test Equipment:

- General mechanic's tool kit

Materials/Parts:

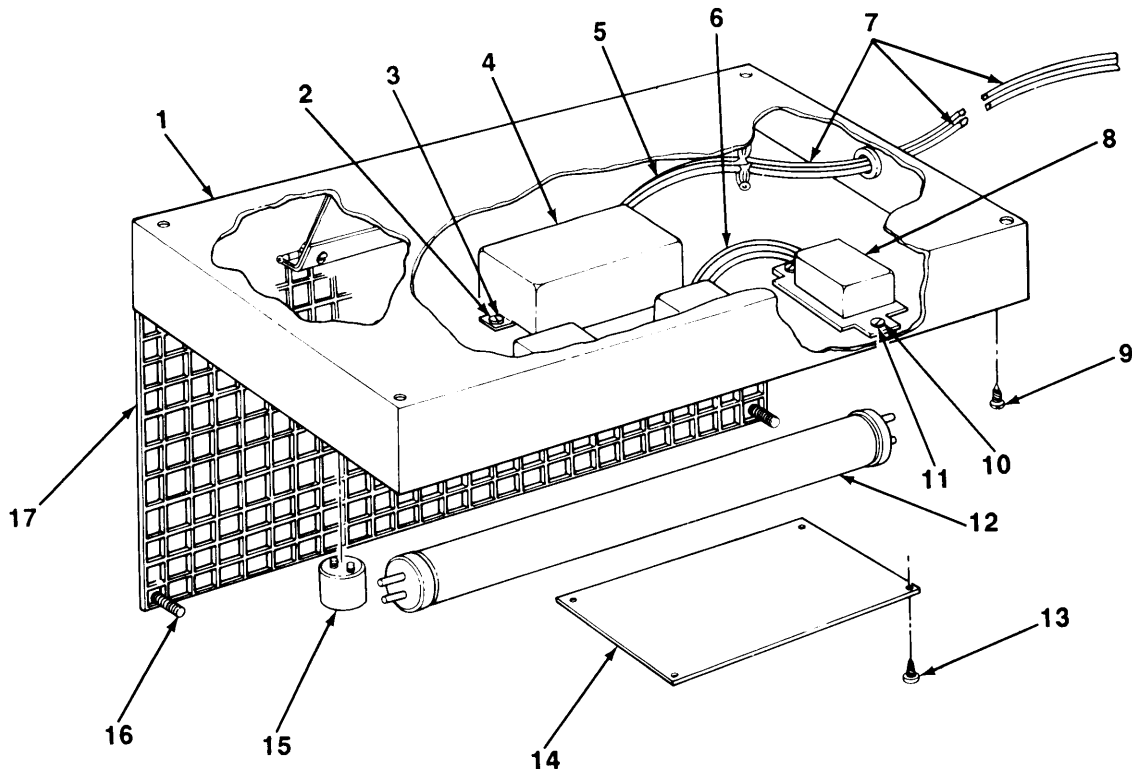
- Marker tags (Item 15, Appendix E)
- Electrical tape (Item 17, Appendix E)

a. LAMP AND STARTER REPLACEMENT

WARNING

When handling fluorescent lamps, use care to prevent breakage and possible injury to personnel.

1. Loosen two captive screws (16) and allow grille (17) to swing down from fixture (1).
2. Hold fluorescent lamp (12) and push terminal bracket away from end of lamp. Remove lamp.
3. Push in and turn starter (15) 1/4 turn counterclockwise, then remove from socket.



TA701955

4-31. FLUORESCENT LIGHTING FIXTURE MAINTENANCE (ALL EXCEPT M749) (Con't).

4. Install starter (15) in socket, push in, and turn 1/4 turn clockwise.
5. Insert fluorescent lamp (12) in fixture (1) with electrodes lined up with terminals at each end. Push lamp terminal out, snap in lamp, and release terminals which spring back over lamp electrodes.
6. Swing grille (17) back in place and tighten two captive screws (16).

b. REMOVAL

1. Loosen two captive screws (16) and allow grille (17) to swing down.
2. Remove fluorescent lamps and starters from fixture (subpara a).

NOTE

The number of fluorescent fixture mounting screws varies from semitrailer to semitrailer. The M313 has 16, M447, M447C, and M750 center fixture hasten, while the M750 outer fixtures have 14.

3. Remove screws (9) and fixture (1) from ceiling. Tag and disconnect wires (7).

c. CLEANING AND INSPECTION

1. Remove four screws (13) and cover (14) from fixture.
2. Inspect fixture for warpage, dents, scratches, or chipped paint. Remove dents, straighten any bent sections, and repaint if necessary.
3. Inspect fixture for defective lamp terminal bracket, filter, ballast, and starter. Replace defective components.

d. BALLAST REPLACEMENT

1. Remove two screws (10) and nuts (11) securing ballast (8) to fixture (1).
2. Tag and cut wires (6) on line and load sides of ballast (8) as close as possible to splices. Remove ballast.
3. Position ballast (8) in place on fixture (1) and install two screws (10) and nuts (11).
4. Splice wires (6) together between ballast (8) and fixture (1). Remove tags.

e. FILTER REPLACEMENT

NOTE

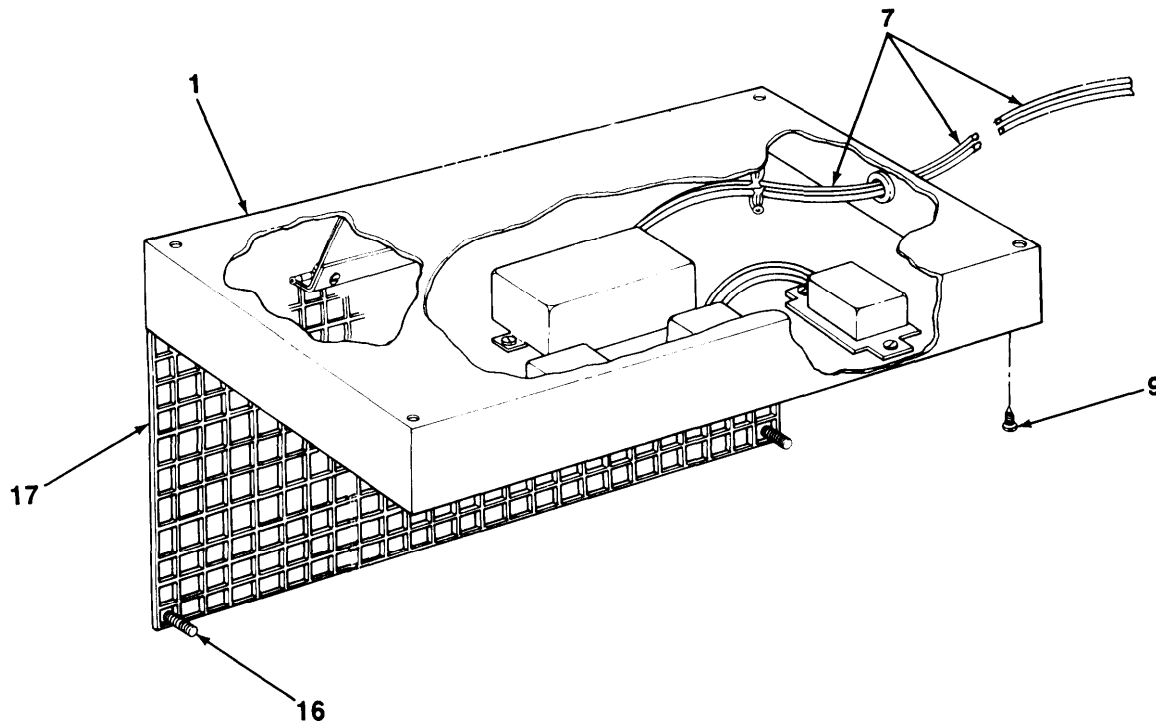
All fluorescent light fixtures have filters except the outer fixtures on the M750 vans.

1. Remove two screws (2) and nuts (3) securing filter (4) to fixture (1).
2. Tag and cut filter wires (5) as close as possible to splices in wire (7). Remove filter (4).
3. Position filter (4) in place on fixture (1) and install two screws (2) and nuts (3).
4. Splice wires (5) together between filter (4) and fixture (1). Remove tags.

4-31. FLUORESCENT LIGHTING FIXTURE MAINTENANCE (ALL EXCEPT M749) (Con't).

f. **INSTALLATION**

1. Connect wires (7) to fixture (1). Remove tags.
2. Position fixture (1) in place on ceiling and install screws (9).
3. Install starters and fluorescent lamps (subpara a).
4. Swing grille (17) up and tighten two captive screws (16).



FOLLOW-ON TASKS:

- Connect external power supply cable.
- Test operation of fluorescent light fixture.

4-32. MARKER CLEARANCE LIGHT MAINTENANCE.

This Task Covers:

- | | |
|---------------------|----------------------------|
| a. Lamp Replacement | c. Cleaning and Inspection |
| b. Removal | d. Installation |
-

Initial Setup:

Equipment Conditions:

- Towing vehicle intervehicular cable disconnected from semitrailer (para 2-11).

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit
-

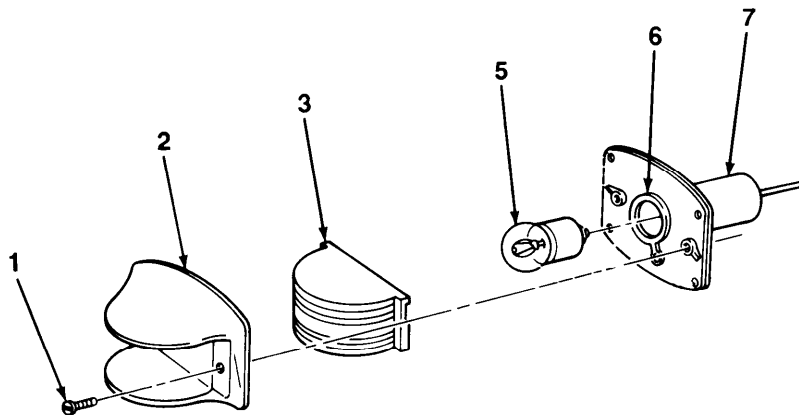
a. LAMP REPLACEMENT

1. Remove two screws (1), retainer (2), and lens (3) from plate (7).
2. Push in on lamp (5), turn counterclockwise, and remove from socket (6).
3. Install lamp (5) in socket (6) and turn clockwise.

NOTE

The word BOTTOM is printed on the blackout marker clearance light lens. Ensure lens is positioned properly when installed.

4. Position lens (3) and retainer (2) in place on plate (7) and install two screws (1).

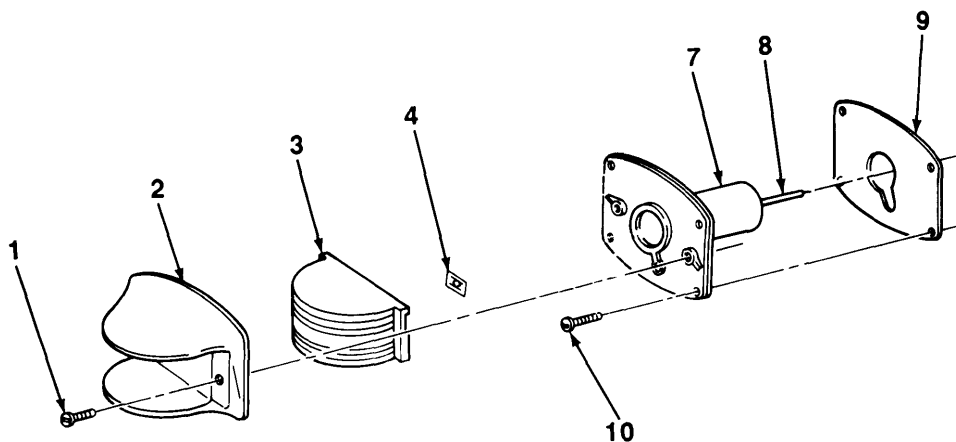


TA701957

4-32. MARKER CLEARANCE LIGHT MAINTENANCE (Con't).

b. REMOVAL

1. Remove two screws (1) from retainer (2) and plate (7). Remove retainer.
2. Remove four screws (10), plate (7), and preformed felt (9) from semitrailer.
3. Disconnect clearance light lead (8) from semitrailer chassis wiring harness.

**c. CLEANING AND INSPECTION****WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and **DO NOT** breathe vapors. **DO NOT** use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts, except rubber items and preformed felt, with dry cleaning solvent.
2. Inspect retainer for cracks, warpage, cracked or broken lens, or evidence of leakage. If defective, remove two nuts (4) and lens from studs on door. Install lens and nuts in door.
3. Check socket to ensure that all parts are in good condition and will make a good electrical and watertight connection.
4. Straighten any bent or dented parts. Sandpaper and paint as necessary. Replace light if internal parts are defective.

TA701958

4-32. MARKER CLEARANCE LIGHT MAINTENANCE (Con't).

d. INSTALLATION

1. Connect clearance light lead (8) to semitrailer chassis wiring harness.
2. Position preformed felt (9) and plate (7) in place on semitrailer and install four screws (10).

NOTE

The word BOTTOM is printed on the blackout marker clearance light lens. Ensure lens is positioned properly when installed.

3. Position retainer (2) with lens (3) in place on plate (7) and install two screws (1).

FOLLOW-ON TASKS:

- Ž Connect towing vehicle intervehicular cable to semitrailer (para 2-10).
- Test operation of marker clearance light.

4-33. STOPLIGHT-TAILLIGHT MAINTENANCE (EARLY MODEL).

This Task Covers:

- | | |
|---------------------|----------------------------|
| a. Lamp Replacement | d. Cleaning and Inspection |
| b. Removal | e. Assembly |
| c. Disassembly | f. Installation |

Initial Setup:

Equipment Conditions:

- Towing vehicle intervehicular cable disconnected from semitrailer (para 2-11).

Materials/Parts:

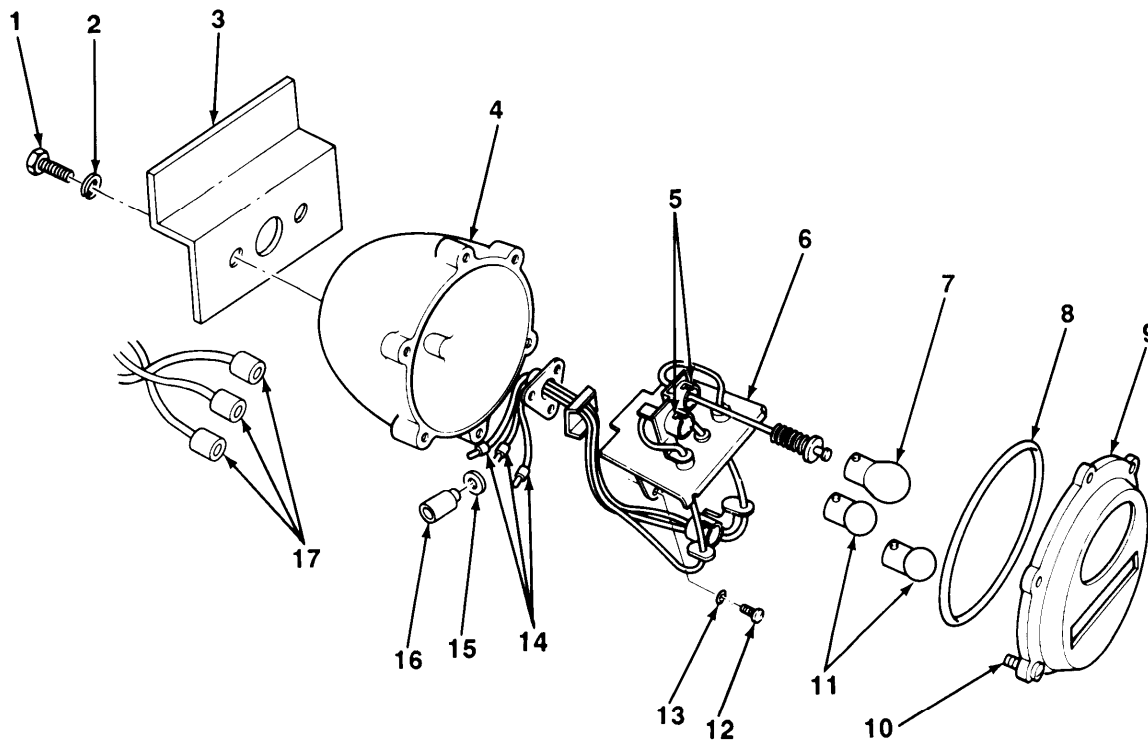
- Dishwashing compound (Item 6, Appendix E)
- Dry cleaning solvent (Item 14, Appendix E)
- Marker tags (Item 15, Appendix E)
- Four lockwashers

Tools/Test Equipment:

- Ž General mechanic's tool kit

a. LAMP REPLACEMENT

1. Loosen six captive screws (10) and remove door assembly (9) from body (4). Remove preformed packing (8) from door assembly and replace if defective.
2. Push in on lamp (7 or 11), turn counterclockwise, and remove from socket (5).
3. Install lamp (7 or 11) in socket (5), push in, and turn clockwise.
4. Position door assembly (9) in place on body (4) and tighten six captive screws (10).



TA701959

4-33. STOPLIGHT-TAILLIGHT MAINTENANCE (EARLY MODEL) (Con't).

b. REMOVAL

1. Tag and disconnect three connectors (14) from chassis wiring harness connectors (17).
2. Remove two screws (1), lockwashers (2), and body (4) from semitrailer mounting bracket (3), Discard lockwashers.

c. DISASSEMBLY

1. Loosen six captive screws (10) and remove door assembly (9) from body (4), Remove preformed packing (8) from door assembly and replace if defective.
2. Remove two screws (12), lockwashers (13), and socket and wiring assembly (6) from body (4). Discard lockwashers.
3. Remove three shells (16) and slotted washers (15) from connectors (14),

d. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). if you become dizzy while using cleaning solvent, immediately get fresh air and medical help. if solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean exterior of body and door assembly with dry cleaning solvent,
2. Clean interior of body and door assembly with soap and water. Dry parts thoroughly.
3. Inspect door assembly for cracks, breaks, cracked or broken lenses, or evidence of leakage. Replace door assembly if defective.
4. Inspect body for cracks, breaks, or evidence of leakage. Replace body if defective.
5. Inspect grommets, eyelets, sockets, cables, and connectors of socket and wiring assembly to ensure that they will make good electrical and watertight connections when installed. Replace socket and wiring assembly if defective.

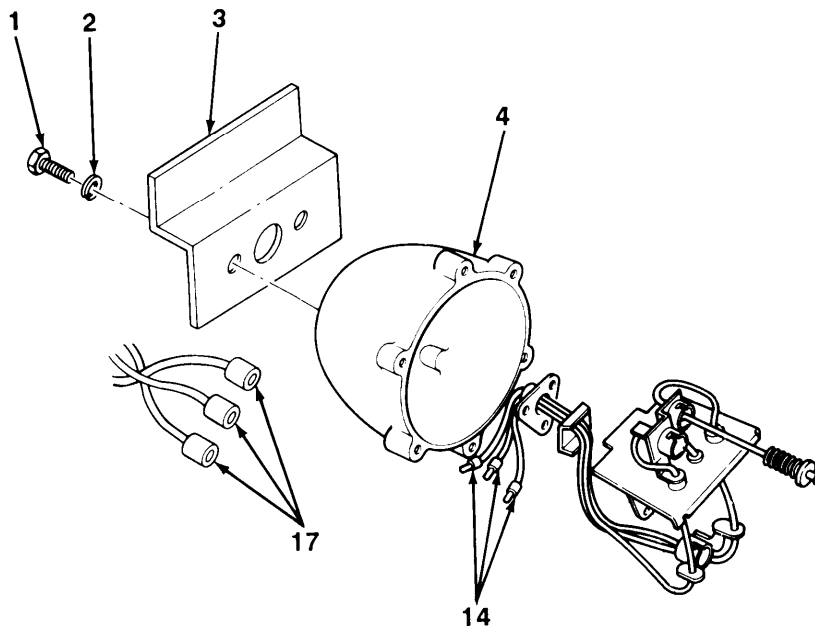
e. ASSEMBLY

1. Install three shells (16) and slotted washers (15) on connectors (14).
2. Position socket and wiring assembly (6) in place in body (4) and install two screws (12) and new lockwashers (13).
3. Position door assembly (9) and preformed packing (8) in place on body (4) and tighten six captive screws (10).

4-33. STOPLIGHT-TAILLIGHT MAINTENANCE (EARLY MODEL) (Con't).

f. INSTALLATION

1. Position body (4) in place on semitrailer mounting brackets (3) with three connectors (14) pulled through hole in bracket.
2. Install two screws (1) and new lockwashers (2) in body (4) and semitrailer mounting bracket (3).
3. Connect three connectors (14) to three matching chassis wiring harness connectors (17). Remove tags.



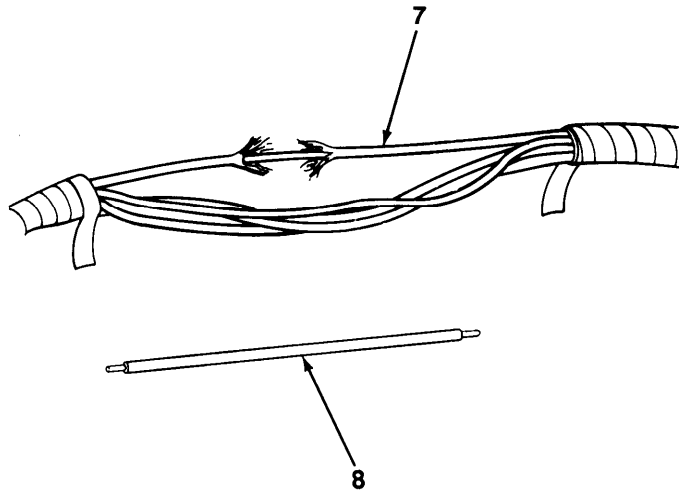
FOLLOW-ON TASKS:

- Connect towing vehicle intervehicular cable to semitrailer (para 2-10).
- Test operation of stoplight-tailight assembly.

4-34. CHASSIS OR VAN BODY WIRING HARNESS REPAIR (Con't).

b. HARNESS REPAIR

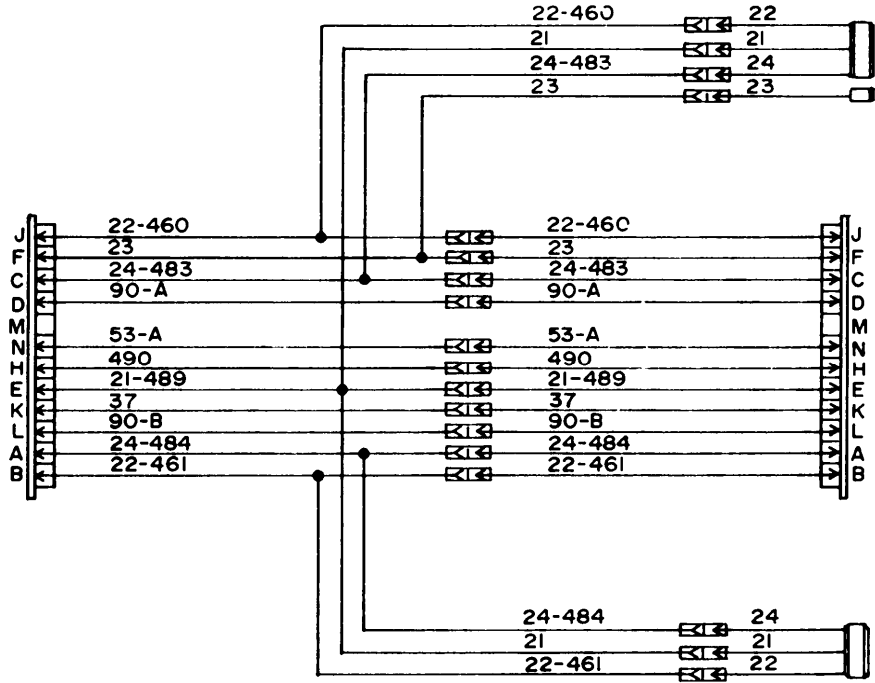
1. Remove and discard electrical insulation or tape from defective branch of wiring harness.
2. Remove defective wire lead or section (7) from branched wiring harness.
3. Cut new piece of wire (8) to same length, plus splice, of defective section (7).
4. Splice new wire (8) to branched wiring harness and tape with electrical tape.



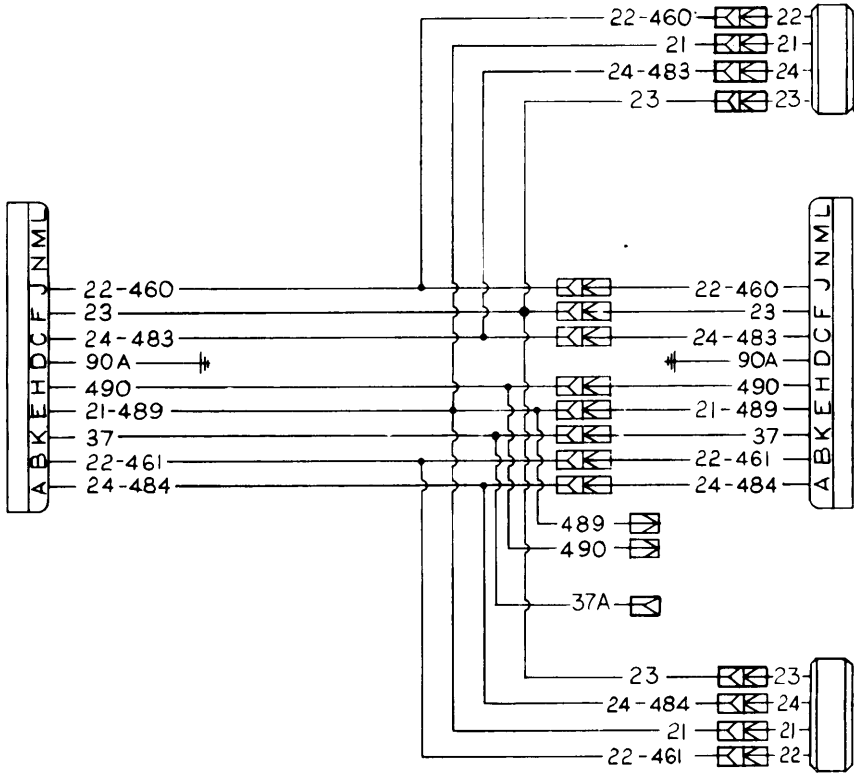
FOLLOW-ON TASKS:

- . Connect towing vehicle intervehicular cable to semitrailer (para 2-10).

4-35. WIRING DIAGRAMS.



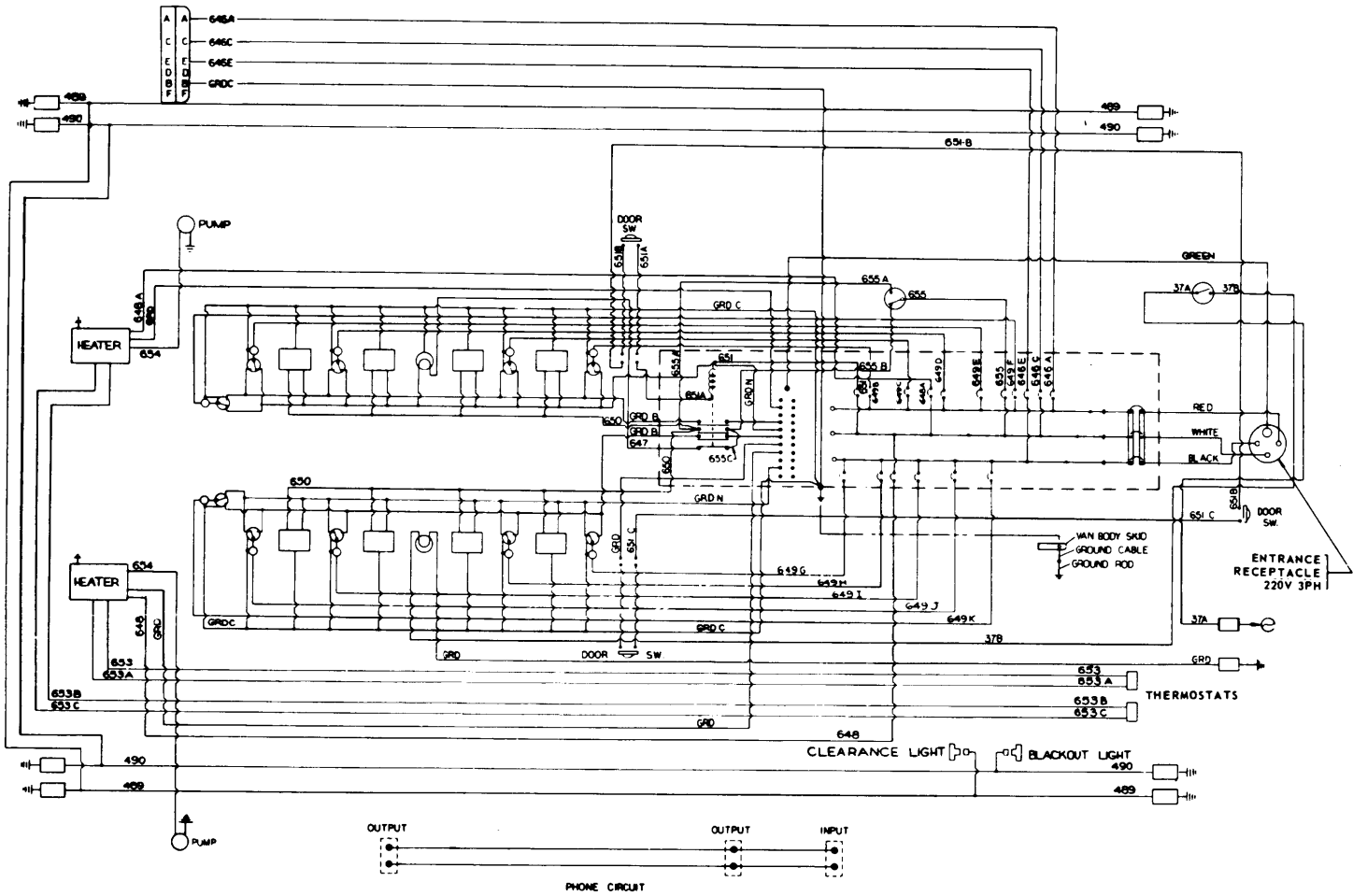
M295A1 (EARLY MODEL)



M295A1 (LATE MODEL)

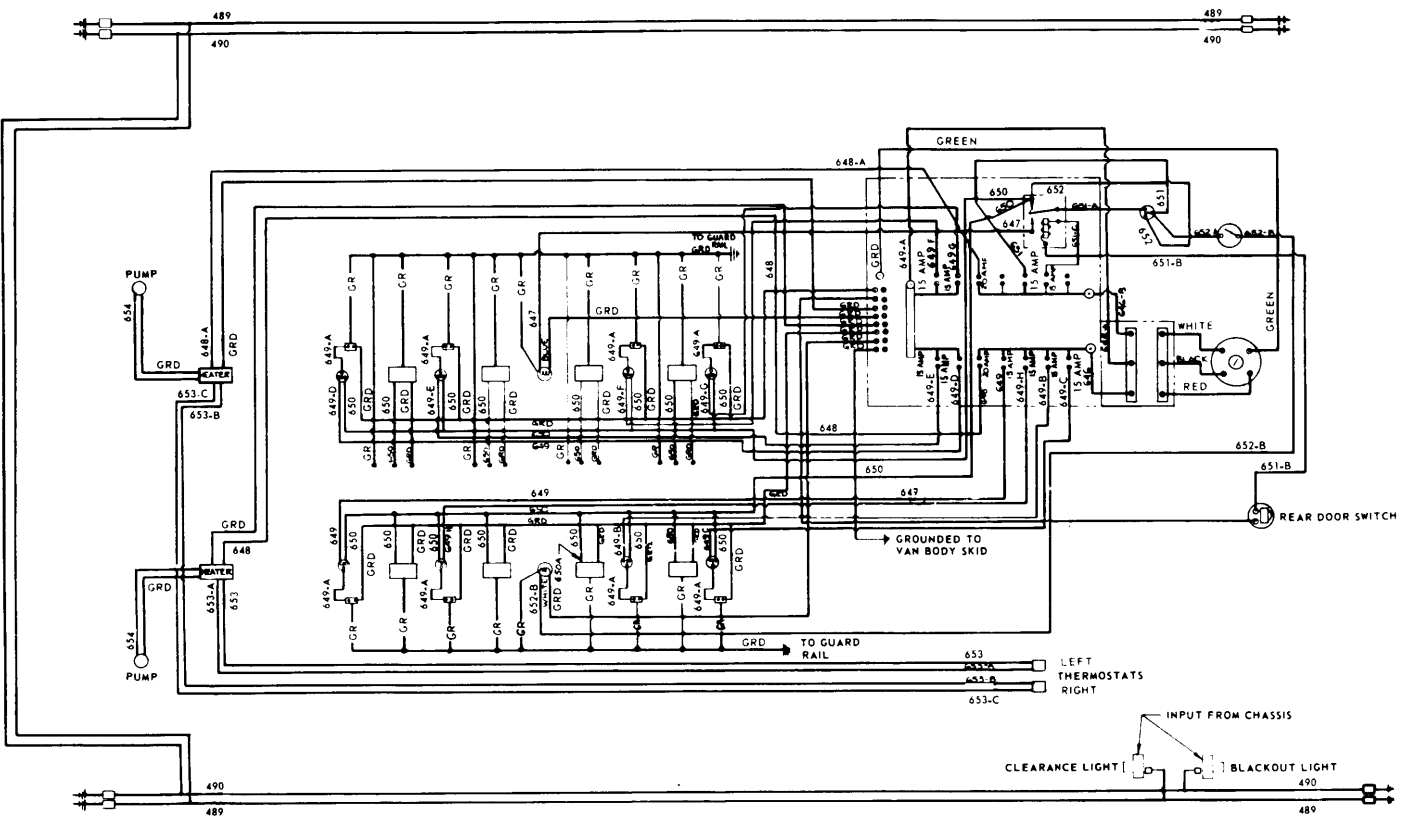
TA701963

4-35. WIRING DIAGRAMS (Con't).



M313 (LATE MODEL)

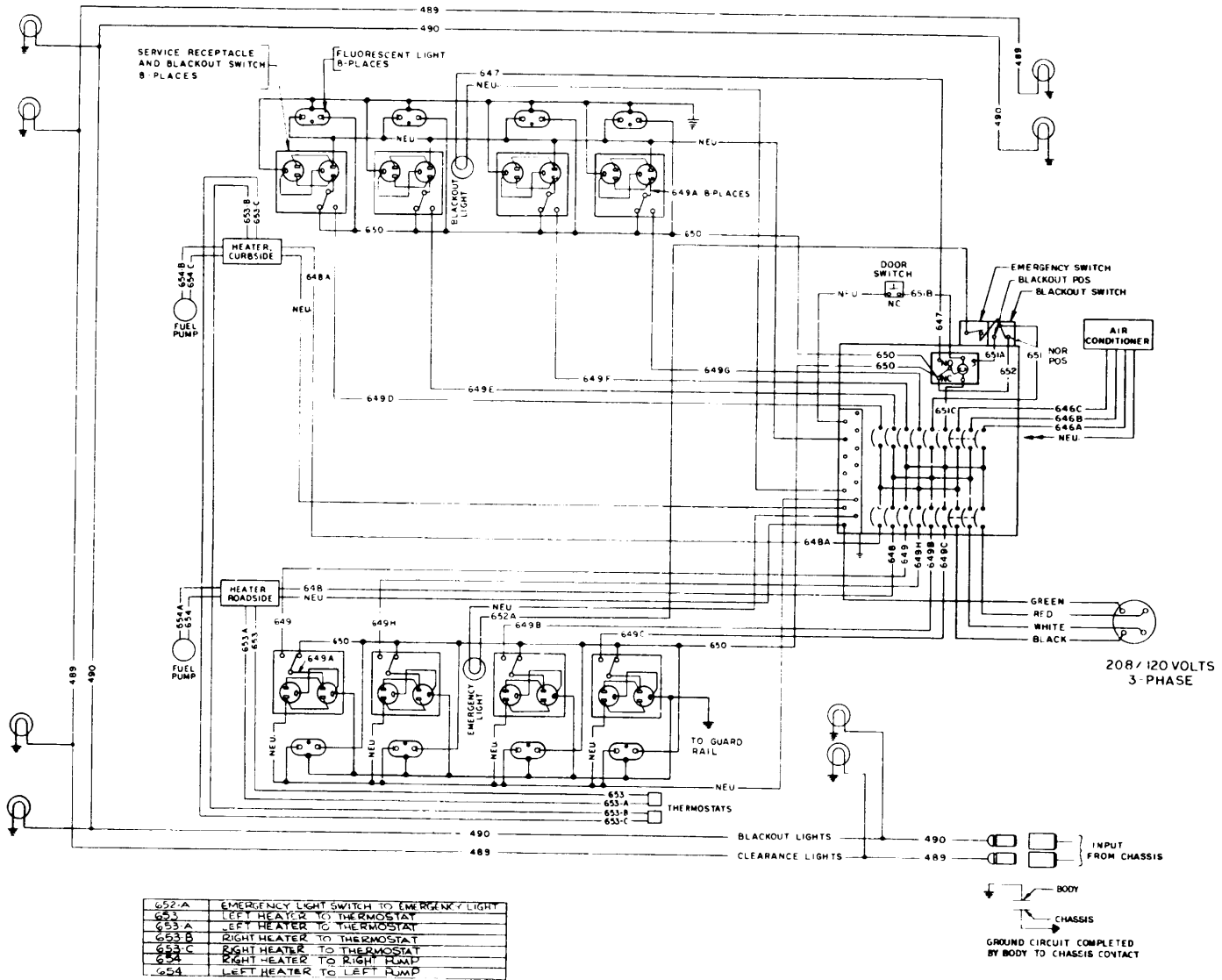
4-35. WIRING DIAGRAMS (Con't).



M447 (EARLY MODEL)

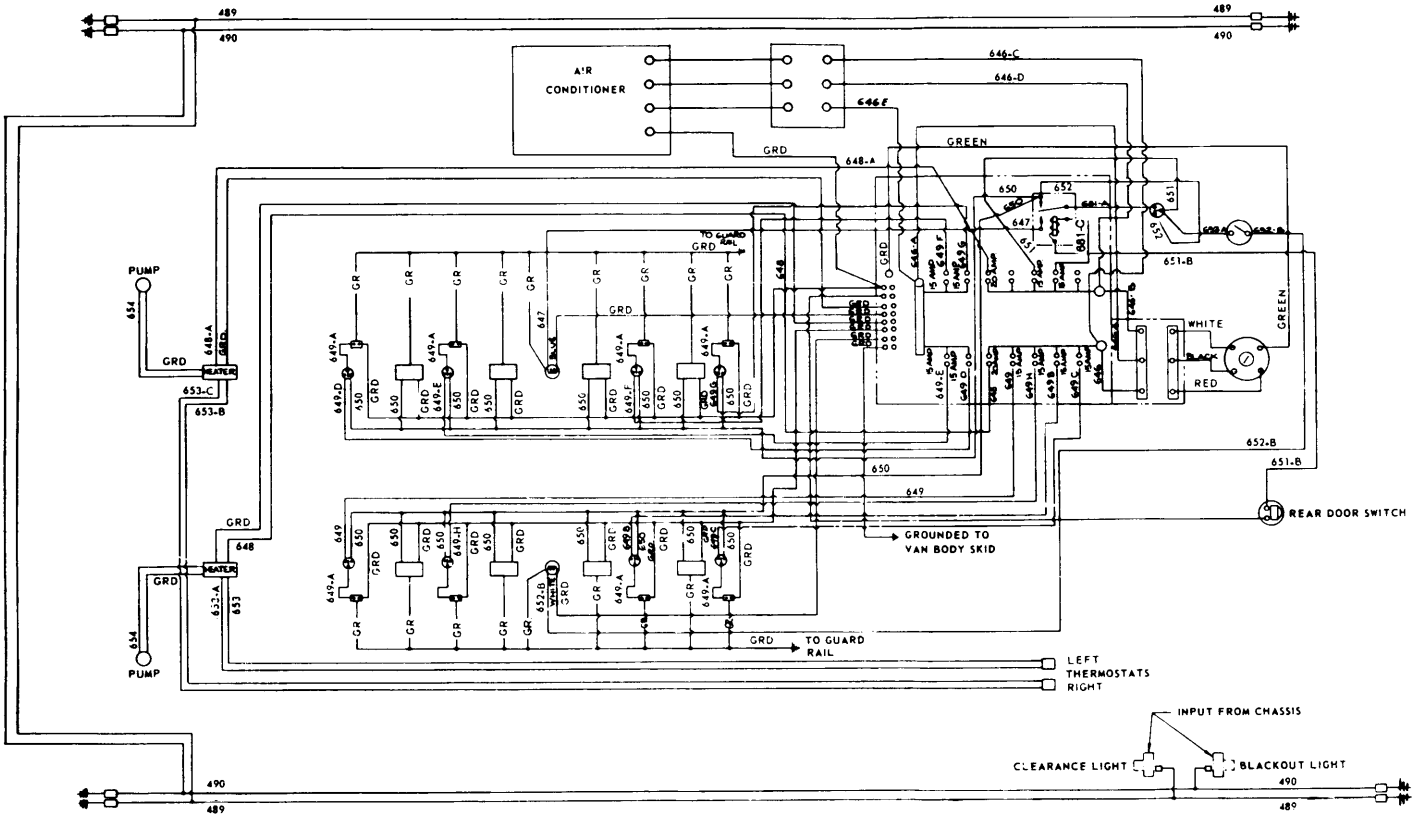
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4-35. WIRING DIAGRAMS (Con't).



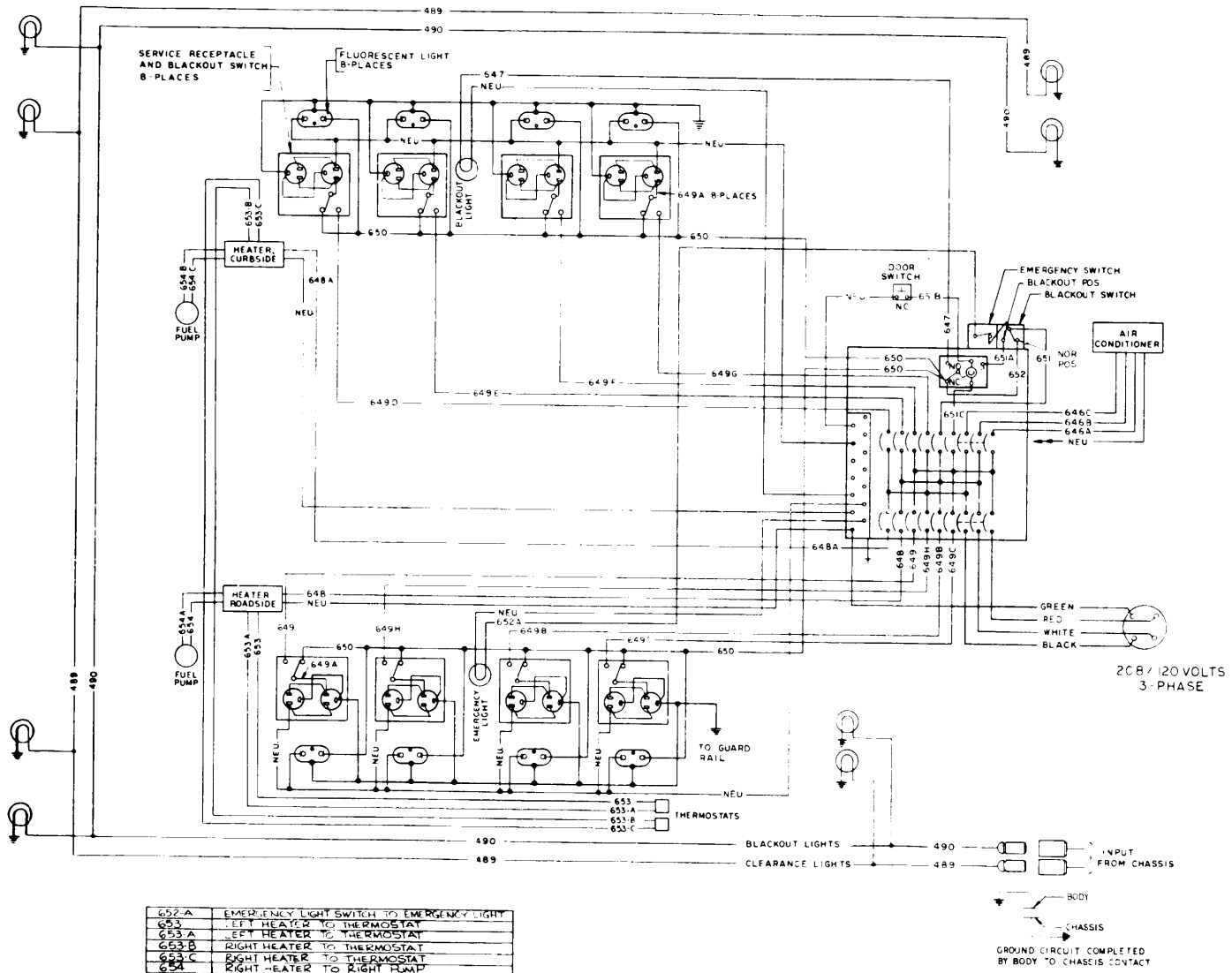
M447 (LATE MODEL)

4-35. WIRING DIAGRAMS (Con't).



M447C (EARLY MODEL)

4-35. WIRING DIAGRAMS (Con't).

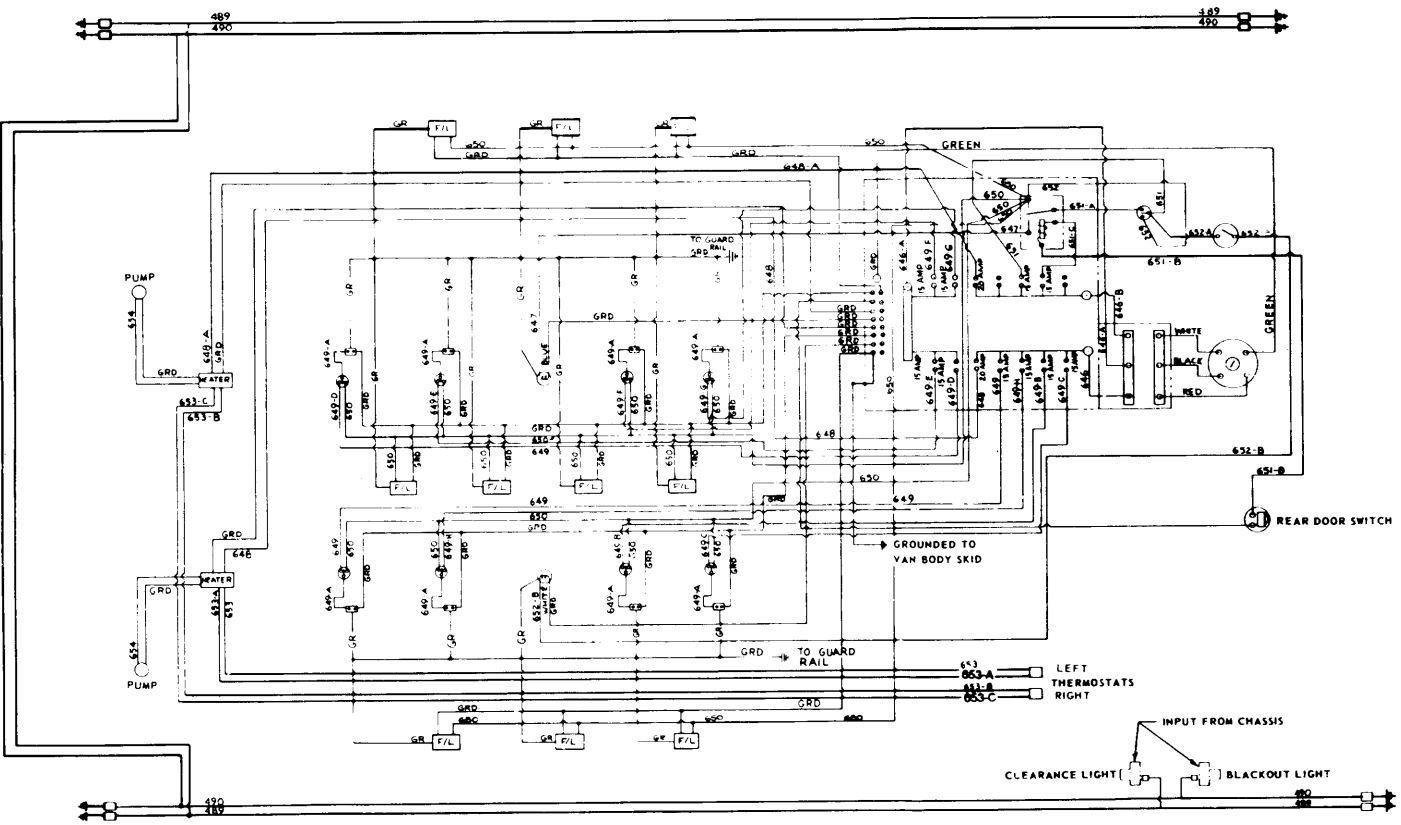


652-A	EMERGENCY LIGHT SWITCH TO EMERGENCY LIGHT
653	LEFT HEATER TO THERMOSTAT
653-A	LEFT HEATER TO THERMOSTAT
653-B	RIGHT HEATER TO THERMOSTAT
653-C	RIGHT HEATER TO THERMOSTAT
654	LEFT HEATER TO LEFT PUMP

BODY
 CHASSIS
 GROUND CIRCUIT COMPLETED BY BODY TO CHASSIS CONTACT

M447C (LATE MODEL)

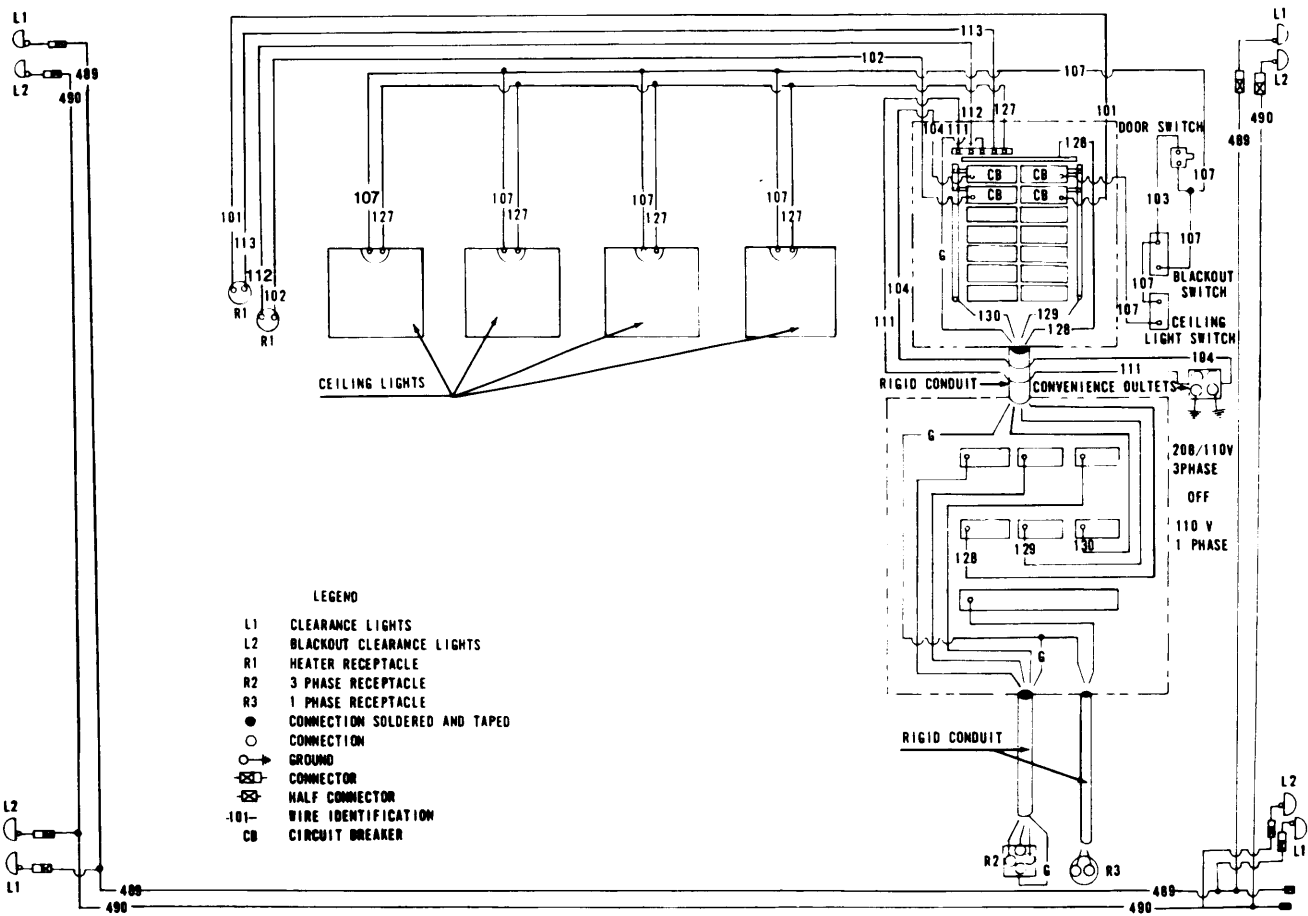
4-35. WIRING DIAGRAMS (Con't).



M750 (EARLY MODEL)

TA701970

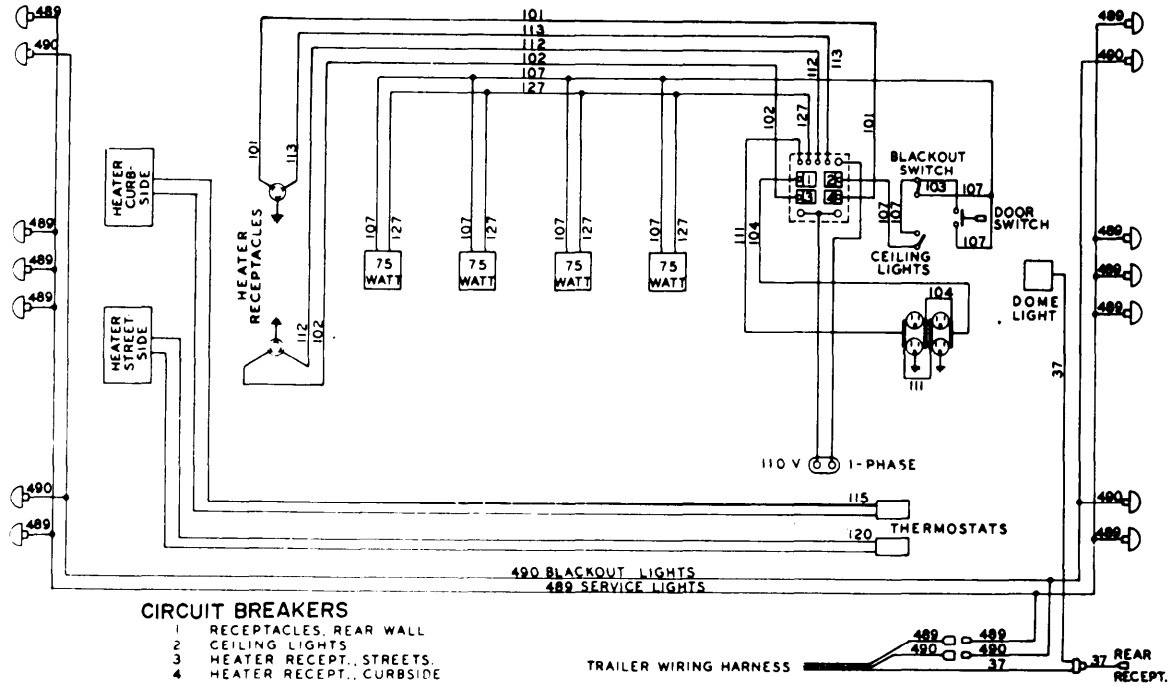
4.35. WIRING DIAGRAMS (Con't).



M749 SOUTHWEST MODEL VRP SERIAL NUMBERS V001-V328

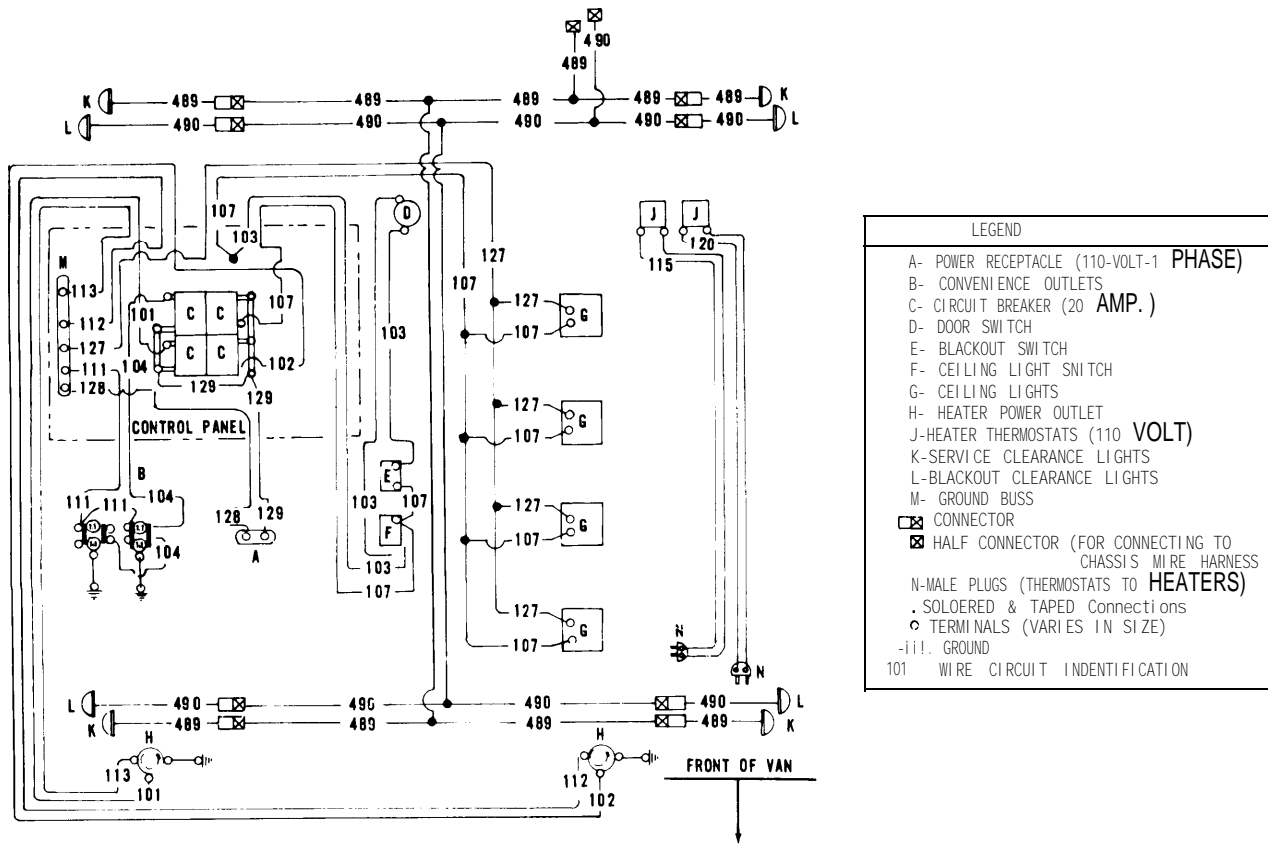
TA701972

4-35. WIRING DIAGRAMS (Con't).



M749 SOUTHWEST MODEL VRP SERIAL NUMBERS V549-V628

4-35. WIRING DIAGRAMS (Con't).



LEGEND	
A-	POWER RECEPTACLE (110-VOLT-1 PHASE)
B-	CONVENIENCE OUTLETS
C-	CIRCUIT BREAKER (20 AMP.)
D-	DOOR SWITCH
E-	BLACKOUT SWITCH
F-	CEILING LIGHT SWITCH
G-	CEILING LIGHTS
H-	HEATER POWER OUTLET
J-	HEATER THERMOSTATS (110 VOLT)
K-	SERVICE CLEARANCE LIGHTS
L-	BLACKOUT CLEARANCE LIGHTS
M-	GROUND BUSS
⊠	CONNECTOR
⊠	HALF CONNECTOR (FOR CONNECTING TO CHASSIS WIRE HARNESS)
N-	MALE PLUGS (THERMOSTATS TO HEATERS)
.	SOLDERED & TAPED CONNECTIONS
○	TERMINALS (VARIES IN SIZE)
-!!!	GROUND
101	WIRE CIRCUIT IDENTIFICATION

M749 CONVERTO MODEL 8929

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Section VI. BRAKE SYSTEM MAINTENANCE

Paragraph Title	Page Number
Air Coupling Replacement	4-94
Air Filter Maintenance (Early Model)	4-88
Air Lines and Fittings Maintenance	4-95
Air Reservoir Maintenance	4-92
Bleeding Hydraulic Brake System	4-73
Brake Backing Plate and Support and Adjuster Maintenance	4-81
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Hydraulic Lines and Fittings Maintenance	4-86
Master Cylinder and Airbrake Chamber Maintenance	4-84
Pushrod Travel Test and Brake Adjustment	4-71
Relay Valve Maintenance	4-90
Wheel Cylinder Replacement.	4-79

4-36. PUSHROD TRAVEL TEST AND BRAKE ADJUSTMENT.

This Task Covers:

- a. Pushrod Travel Test
- b. Brake Adjustment

Initial Setup:

Equipment Conditions:

- Semitrailer coupled to towing vehicle (para 2-10).

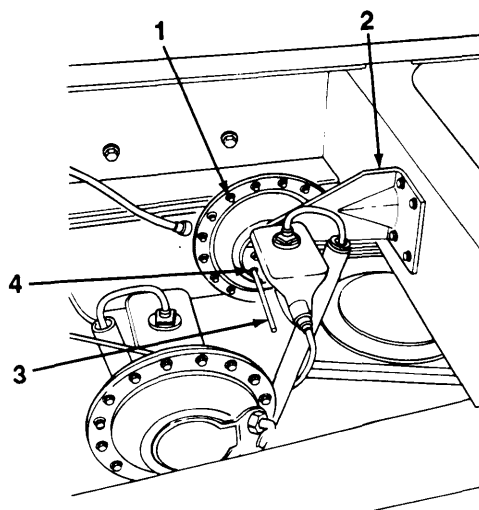
Personnel Required: Two

Tools/Test Equipment:

- General mechanic's tool kit
- Hydraulicjack
- Twojackstands

a. PUSHROD TRAVEL TEST

1. With service brakes released, insert a small rod (3) in one of two inspection holes (4) on airbrake chamber (1), until rod contacts pushrod.
2. Mark rod (3) at surface of mounting bracket (2).
3. Apply service brakes and hold, insert rod (3) in airbrake chamber (1) until it contacts pushrod, then mark rod at surface of mounting bracket (2).
4. Remove rod (3) from airbrake chamber (1) and measure distance between marks, which indicates amount of pushrod travel.
5. Pushrod travel should be between 1/2 in. (12.70 mm) minimum and 7/8 in. (22.23 mm) maximum. Adjust brakes if necessary.



TA701975

4-36. PUSHROD TRAVEL TEST AND BRAKE ADJUSTMENT (Con't).

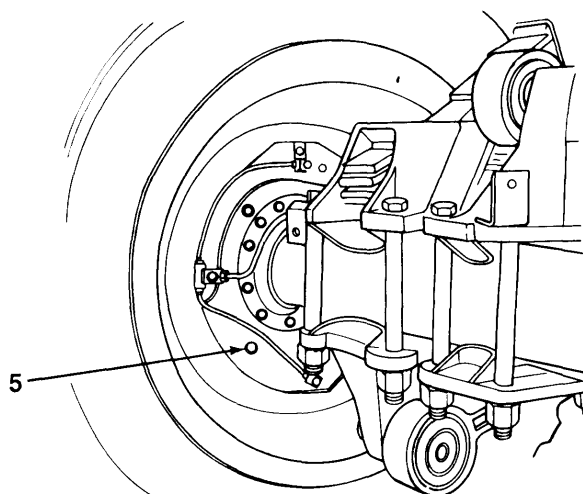
b. BRAKE ADJUSTMENT

1. Uncouple semitrailer from towing vehicle (para 2-11).
2. Open draincock on air reservoir and release air pressure.
3. Raise rear of semitrailer with jack until tires clear the ground. Support semitrailer with jackstands.

NOTE

Try to laterally rock wheel, hub, and brakedrum assembly on axle spindle. If rocking condition exists, perform step 4. If not, go to step 5.

4. Check wheel bearing adjustment (para 4-48).
5. Turn brakeshoe adjusting screw (5) clockwise, until front brake lining contacts brakedrum and wheel drags slightly when turned by hand.
6. Back off adjusting screw (5) just enough until wheel rotates freely.
7. Repeat steps 5 and 6 for adjusting screw (5) and rear brake lining.
8. Repeat steps 4 through 7 on all other wheels. Make both adjustments at each wheel as uniform as possible.
9. Close draincock on air reservoir. Raise semitrailer, remove jackstands, and lower semitrailer to the ground.



FOLLOW-ON TASKS:

- Couple semitrailer to towing vehicle (para 2-10).

4-37. BLEEDING HYDRAULIC BRAKE SYSTEM.

This Task Covers:

- | | |
|--------------------|----------------------------------|
| a. Manual Bleeding | b. Pressure Feed Filler Bleeding |
|--------------------|----------------------------------|
-

Initial Setup:

Equipment Conditions:

- Semitrailer coupled to towing vehicle (para 2-10).

Tools/Test Equipment:

- General mechanic's tool kit
- Pressure bleeder

Materials/Parts:

- Brake fluid (Item 3, Appendix E)
- One bleeder tube, 18 in.
- One glass jar

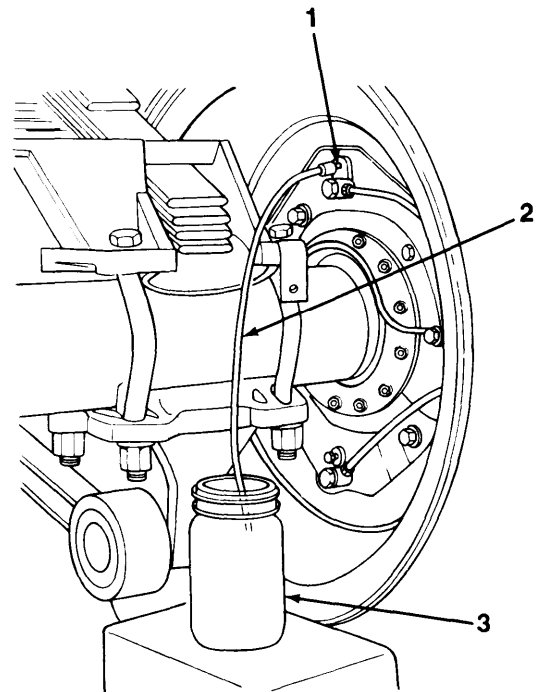
Personnel Required: Two

NOTE

This procedure covers only one of two master cylinders. Repeat task for other master cylinder.

a. MANUAL BLEEDING

1. Clean bleeder valve (1) and install bleeder tube (2).
2. Position opposite end of bleeder tube (2) in glass jar (3) partially filled with clean brake fluid.



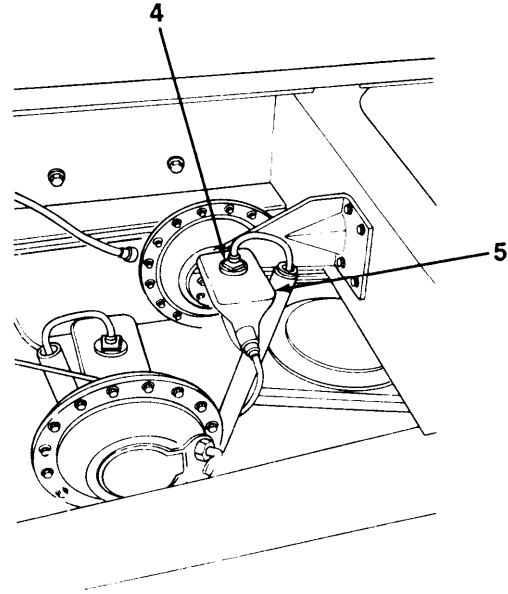
TA701977

4-37. BLEEDING HYDRAULIC BRAKE SYSTEM (Con't).

CAUTION

Do not reuse brake fluid when refilling master cylinder. Use only clean brake fluid to prevent contamination of brake system.

- Remove cap (4) and fill master cylinder (5) with brake fluid in accordance with Chapter 3, Section 1.



- Loosen bleeder valve (1) 3/4 turn counterclockwise.

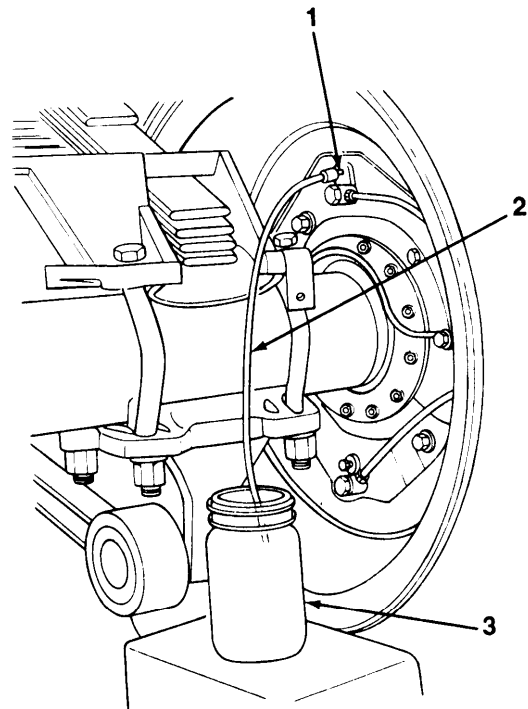
CAUTION

Do not pump master cylinder dry. Keep master cylinder filled with brake fluid in accordance with Chapter 3, Section I.

NOTE

Air in hydraulic brake system will appear as hubbles in brake fluid when expelled from tube.

- Depress and hold towing vehicle brake pedal until all air bubbles are expelled into jar.
- Tighten bleeder valve (1) and release towing vehicle brake pedal.
- Remove bleeder tube (2) and repeat steps 1 through 6 for remaining wheel cylinders, replenishing brake fluid in master cylinder (5) as necessary.
- Install cap (4) on master cylinder (5).
- Close towing vehicle shut-off valves and open air reservoir draincock to release air pressure,



TA701978

4-37. BLEEDING HYDRAULIC BRAKE SYSTEM (Con't).

b. PRESSURE FEED FILLER BLEEDING

1. Install pressure feed adapter in cap (4) hole in master cylinder (5). Connect air pressure hose to adapter.

NOTE

Air pressure should be maintained between 10-20 psi (69-138 kPa) and master cylinder should contain a constant level of brake fluid during bleeding.

2. Clean bleeder valve (1) and install bleeder tube (2).
3. Position opposite end of bleeder tube (2) in glass jar (3) partially filled with clean brake fluid.

CAUTION

Do not reuse brake fluid when refilling master cylinder. Use only clean brake fluid to prevent contamination of brake system.

4. Loosen bleeder valve (1) 3/4 turn counterclockwise.

NOTE

Air in hydraulic brake system will appear as bubbles in the brake fluid when expelled from tube.

5. Apply compressed air to master cylinder (5) and expel air from hydraulic brake system. Continue until air bubbles in brake fluid stop.
6. Tighten bleeder valve (1) and shut off compressed air. Remove bleeder tube (2) from bleeder valve (1).
7. Remove air pressure hose and pressure feed adapter from cap (4) hole in master cylinder (5).
8. Replenish brake fluid in accordance with Chapter 3, Section i and install cap (4).

FOLLOW-ON TASKS:

- **Uncouple** semitrailer from towing vehicle (para 2-11).

4-38. BRAKESHOE REPLACEMENT.

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Removal b. Cleaning and Inspection | <ul style="list-style-type: none"> c. Installation |
|--|---|
-

Initial Setup:

Equipment Conditions:

- **Wheels chocked.**
- Semitrailer uncoupled from towing vehicle (para 2-11).
- Wheel removed (para 4-49).
- Hub and brakedrum removed (para 4-48).

Materials/Parts:

- Rags (Item 11, Appendix E)
- Dry cleaning solvent (Item 14, Appendix E)
- Seven lockwashers

Tools/Test Equipment:

- General mechanic's tool kit
-

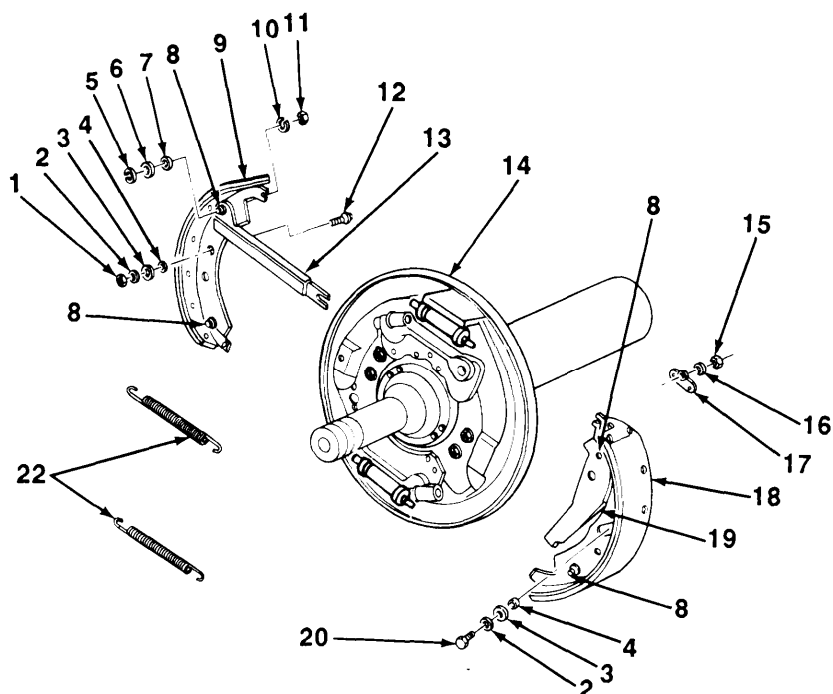
a. REMOVAL

WARNING

DO NOT handle brakeshoes, brakedrums, or other brake components unless area has been properly cleaned. There may be asbestos dust on these components which can be dangerous if you touch it or breathe it. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust may be removed using an industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.

1. Remove two brakeshoe return springs (22), slotted washers (5), flatwashers (6), and spring tension washers (7) from four spring pins (8).
2. Remove nut (1), lockwasher (2), flatwasher (3), sleeve spacer (4), and square neck bolt (12) from front brakeshoe (9). Discard lockwasher.
3. Remove front brakeshoe (9) and connecting link (13) from backing plate (14). Remove connecting link from front brakeshoe spring pin (8).
4. Remove capscrew (20), lockwashers (2 and 16), flatwasher (3), sleeve spacer (4), bracket (17), and nut (15) from rear brakeshoe (18). Discard lockwasher.
5. Remove rear brakeshoe (18) and internal lever (19) from backing plate (14). Remove internal lever from rear brakeshoe spring pin (8).
6. Remove four spring pins (8), lockwasher (10), and nuts (11) from brakeshoes (9 and 18) if replacement is required, Discard lockwasher.

4-38. BRAKESHOE REPLACEMENT (Con't).



b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100 °F-138°F (38° C-59° C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all metal parts with dry cleaning solvent, then dry thoroughly.
2. Inspect internal lever and connecting link for cracks, bends, or breaks. Replace if necessary.
3. Inspect brakeshoes and brakeshoe return springs for cracks, breaks, excessive wear, or other damage. Replace if necessary.

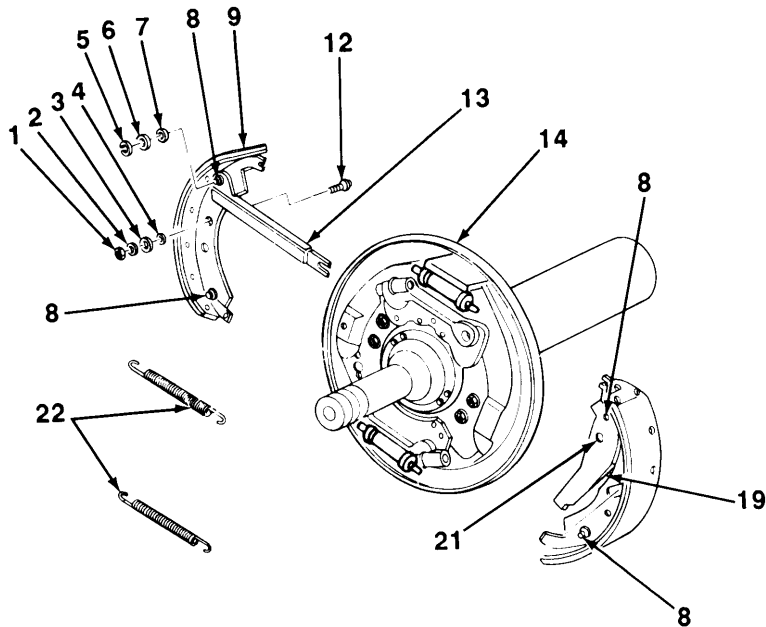
c. INSTALLATION

1. Install four spring pins (8), new lockwasher (10), and nuts (11) in brakeshoes (9 and 18) if previously removed.
2. Position rear brakeshoe (18) on backing plate (14) and install capscrew (20), new lockwasher (2 and 16), flatwasher (3), sleeve spacer (4), bracket (1 7), and nut (15).
3. Install internal lever (19) on rear brakeshoe spring pin (8).

TA701979

4-38. BRAKESHOE REPLACEMENT (Con't).

4. Position front brakeshoe (9) on backing plate (14) and install square neck bolt (12), sleeve spacer (4), flatwasher (3), new lockwasher (2), and nut (1).
5. Install connecting link (13) on front brakeshoe spring pin (8).
6. Engage slot of connecting link (13) with pin (21) on internal lever (1 9).
7. Install spring tension washer (7) and flatwasher (6) on both brakeshoe spring pins (8), then secure them with slotted washer (5) installed in groove of spring pins.
8. Bend ends of slotted washers (5) against spring pins (8) if necessary.
9. Install two brakeshoe return springs (22) on four spring pins (8).



FOLLOW-ON TASKS:

- install hub and brakedrum (para 4-48).
- Install wheel (para 4-49).
- Bleed hydraulic brake system (para 4-37).
- Adjust and test brakes (para 4-36).

4-39. WHEEL CYLINDER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation

Initial Setup:

Equipment Conditions:

- wheels chocked.
- Semitrailer uncoupled from towing vehicle (para 2-11).
- Wheel removed (para 4-49).
- Hub and brakedrum removed (para 4-48).

Materials/Parts:

- Rags (Item 11, Appendix E)
- Four lockwasher

Tools/Test Equipment:

- General mechanic's tool kit

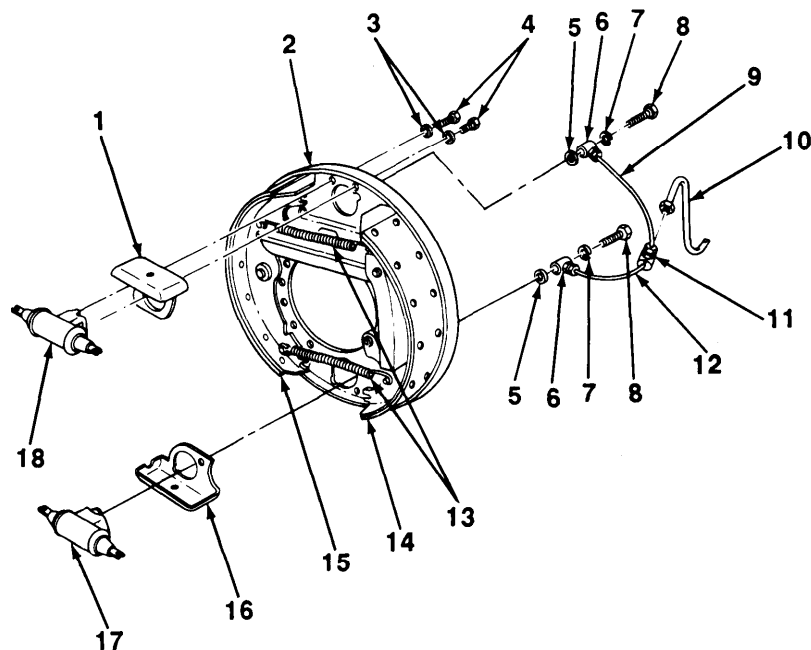
a. REMOVAL

1. Disconnect brake line (10) from multiple connector (11).
2. Remove two fluid passage bolts (8) and ring spacer (7) from two tube tees (6). Pull tube tees away from cylinder assemblies (17 and 18). Remove washers (5) from between tube tees and cylinder assemblies.
3. Remove tube assemblies (9 and 12) from rear of backing plate (2).

CAUTION

Do not allow brake fluid to contact brake linings.

4. Remove two brakeshoe return springs (13) and slide brakeshoes(14 and 15) away from wheel cylinder piston rods.
5. Remove four bolts (4), lockwasher (3), cylinder assemblies (17 and 18), and spark shields (1 and 16) from backing plate (2). Discard lockwasher,

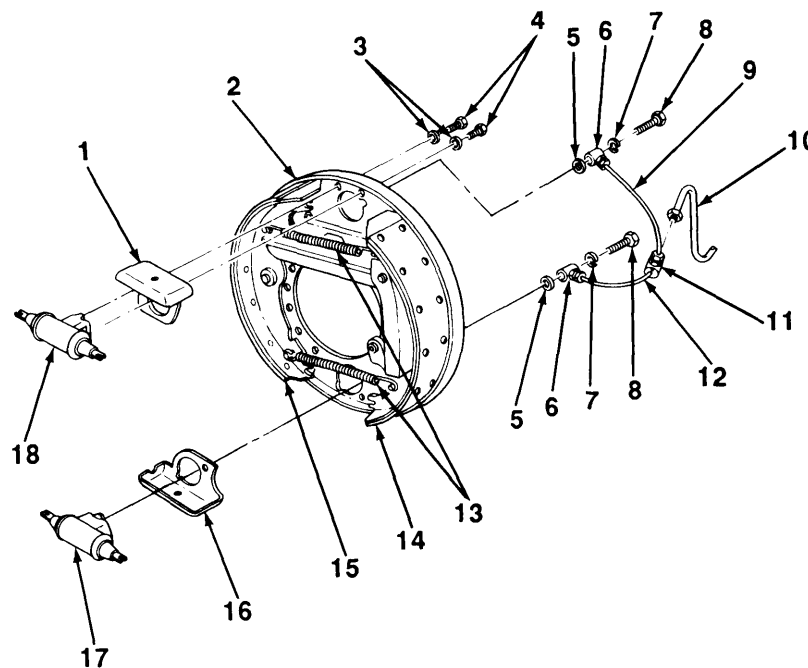


TA701981

4-39. WHEEL CYLINDER REPLACEMENT (Con't).

b. INSTALLATION

1. Position spark shields (1 and 16) over rear of each cylinder assembly (17 and 18).
2. Position cylinder assembly (17) between ends of brakeshoes(14 and 15) and through backing plate (2). Install two bolts (4) and new lockwasher (3) from rear of backing plate to secure cylinder assembly and spark shield (16).
3. Repeat step 2 for remaining cylinder assembly (18) and spark shield (1).
4. Install two brakeshoe return springs (13).
5. Position tube assemblies (9 and 12) against rear of backing plate (2).
6. Install two ring spacers (7) on fluid passage bolts (8). Install fluid passage bolts, tube tees (6), and washers (5) to cylinder assemblies (17 and 18).
7. Connect brake line (10) to multiple connector (11).



FOLLOW-ON TASKS:

- Install hub and brakedrum (para 4-48).
- Install wheel (para 4-49).
- Bleed hydraulic brake system (para 4-37).
- Adjust and test brakes (para 4-36).

TA701982

4-40. BRAKE BACKING PLATE AND SUPPORT AND ADJUSTER MAINTENANCE.

This Task Covers:

- a. Removal
- b. Inspection and Repair
- c. Installation

Initial Setup:

Equipment Conditions:

- Wheel cylinder removed (para 4-39).

Tools/Test Equipment:

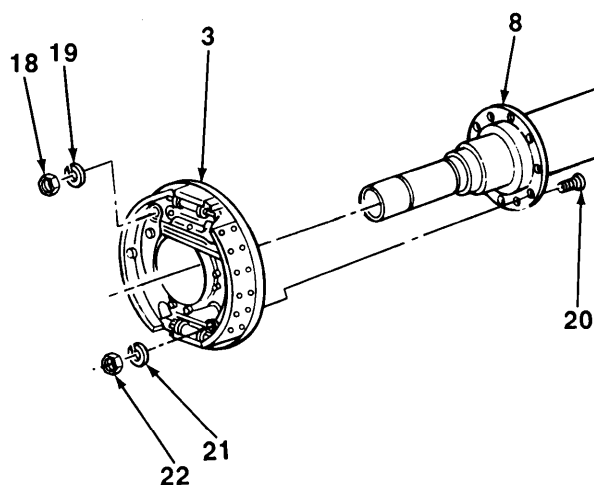
- Ž General mechanic's tool kit

Materials/Parts:

- Rags (Item 11, Appendix E)
- Fourteen lockwasher

a. REMOVAL

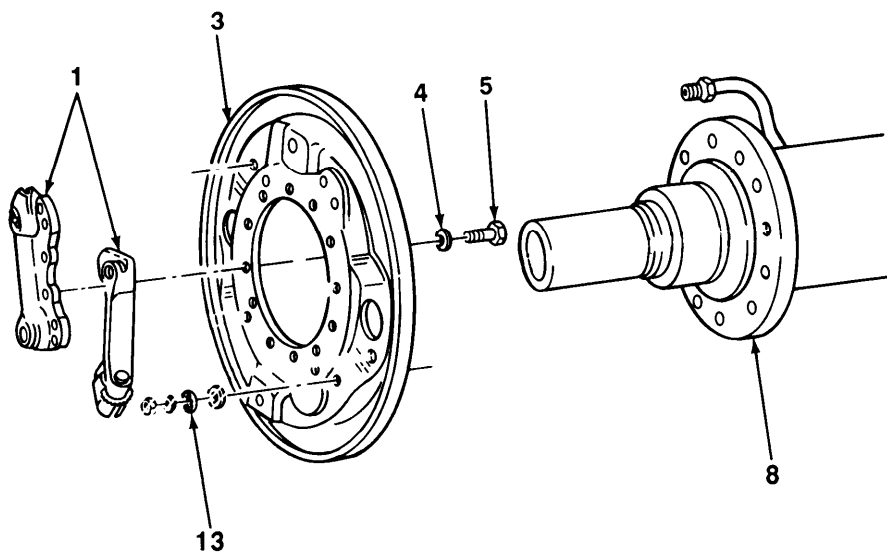
1. Scribe alignment marks on support and adjuster assembly (1), backing plate (3), and axle flange (8) to ensure proper installation.
2. Remove two nuts (18 and 22), lockwashers (19 and 21), and capscrews (20) from axle flange (8) and backing plate (3). Discard lockwasher.
3. Remove two capscrews (5) and lockwashers (4) from each support and adjuster assembly (1). Discard lockwashers.



CAUTION

To prevent damage to anchor pins, use care when removing support and adjuster assembly. Anchor pins can fall out when removed from backing plate.

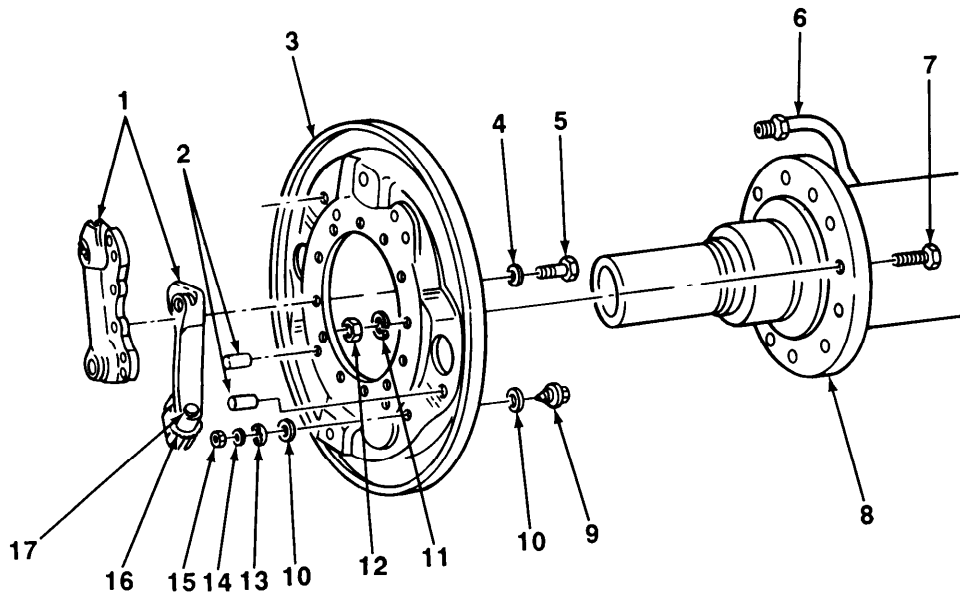
4. Lift support and adjuster assembly (1) from backing plate (3) and out of mesh with adjusting gear (1 3).



TA701983

4-40. BRAKE BACKING PLATE AND SUPPORT AND ADJUSTER MAINTENANCE (Con't).

5. Disconnect brake line (6) from rear of backing plate (3).
6. Remove eight nuts (12), capscrews (7), lockwasher (11), and backing plate (3) from axle flange (8). Discard lockwasher.
7. Remove two nuts (15), lockwasher (14), adjusting gears (13), four washers (10), and two spring and bolt assemblies (9) from backing plate (3). Discard lockwasher.



b. INSPECTION AND REPAIR

1. Inspect support and adjuster assembly for cracks or breaks. Replace if defective.
2. Inspect starwheels (16) for broken or missing teeth, and adjusting screws (17) for damaged threads. Replace defective parts as necessary.
3. Inspect anchor pins (2) for damage. Replace if necessary.
4. Inspect backing plate for cracks, bends, or brakes. Replace if defective.

c. INSTALLATION

1. Install one washer (10) each on threaded end of two spring and bolt assemblies (9) and install spring and bolt assemblies, threaded end first, through openings at rear of backing plate (3).
2. Install two washers (10), adjusting gears (13), new lockwasher (14), and nuts (15) on threaded ends of spring and bolt assemblies (9).
3. Position backing plate (3) in place against axle flange (8) and align scribe marks.
4. Install eight capscrews (7), new lockwashers (11), and nuts (12) in backing plate (3) and axle flange (8).
5. Ensure that adjusting screw (17) is properly positioned 1 in. (2.54 cm) below the rim of support and adjuster assembly (1). If not, rotate starwheel (16) to adjust adjusting screw to required depth.

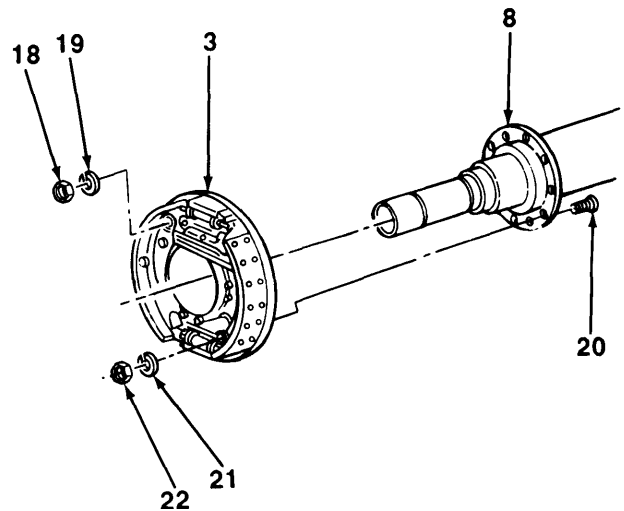
TA701984

4-40. BRAKE BACKING PLATE AND SUPPORT AND ADJUSTER MAINTENANCE (Con't).

NOTE

Ensure that anchor pins are in place in support and adjuster assembly before it is installed on brake backing plate.

6. Position each support and adjuster assembly (1) in place on backing plate (3) so starwheels (16) mesh with adjusting gears (13) and scribe marks aline.
7. Install two capscrews (5) and new lockwasher (4) to secure each support and adjuster assembly (1) to backing plate (3).
8. Install two capscrews (20) from rear of axle flange (8), through two center mounting holes, and secure with two nuts (18 and 22) and new lockwasher (19 and 21).

**FOLLOW-ON TASKS:**

- Install wheel cylinder (para 4-39).

4-41. MASTER CYLINDER AND AIRBRAKE CHAMBER MAINTENANCE.

This Task Covers:

- Air Chamber Leakage Test
- c. Installation
- b. Removal

Initial Setup:

Equipment Conditions:

- Semitrailer coupled to towing vehicle (para 2-10).

Tools/Test Equipment:

- General mechanic's tool kit

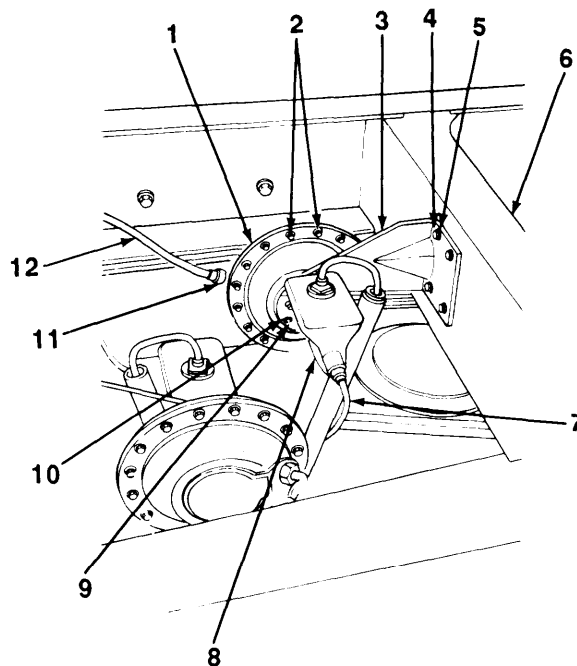
Personnel Required: Two

Materials/Parts:

- Brake fluid (Item 3, Appendix E)
- Dishwashing compound (Item 6, Appendix E)
- Rags (Item 11, Appendix E)
- Antiseizing tape (Item 16, Appendix E)
- Six lockwasher

a. AIR CHAMBER LEAKAGE TEST

1. With brakes applied, coat pressure side of airbrake chamber (1) with soap and water.
2. Inspect airbrake chamber (1) for bubbles, which indicate leakage. If leakage is detected, tighten flange nuts (2) evenly until leakage stops.
3. Coat holes on non-pressure side of airbrake chamber (1) with soap and water and inspect for leakage. If leakage is detected, replace airbrake chamber.



b. REMOVAL

1. Uncouple semitrailer from towing vehicle (para 2-11).
2. Open draincock on air reservoir and release air pressure.
3. Disconnect air line (12) from elbow (11) in airbrake chamber (1).

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4-41. MASTER CYLINDER AND AIRBRAKE CHAMBER MAINTENANCE (Con't).

4. Disconnect brake line (7) from master cylinder (8).
5. Remove three capscrews (4) and lockwasher (5) from mounting bracket (3) and frame crossmember (6). Remove airbrake chamber, master cylinder, and mounting bracket as an assembly. Discard lockwasher.
6. Remove three nuts (9) and lockwasher (10) and separate master cylinder (8), airbrake chamber (1), and mounting bracket (3). Discard lockwasher.
7. Remove elbow (11) from airbrake chamber (1) and install on new airbrake chamber.

c. INSTALLATION

1. Position master cylinder (8) and airbrake chamber (1) in place on mounting bracket (3) and install three nuts (9) and new lockwasher (10).
2. Position master cylinder (8), airbrake chamber (1), and mounting bracket (3) as an assembly in place on frame crossmember (6). Install three capscrews (4) and new lockwasher (5).
3. Connect brake line (7) to master cylinder (8).
4. Apply antiseizing tape to elbow (11), Connect air line (12) to elbow in airbrake chamber (1).
5. Close draincock on air reservoir.
6. Fill master cylinder according to Chapter 3, Section 1.

FOLLOW-ON TASKS:

- Bleed hydraulic brake system (para 4-37).
- ž Adjust and test brakes (para 4-36).

4-42. HYDRAULIC LINES AND FITTINGS MAINTENANCE.

This Task Covers:

- | | |
|-----------------------------------|----------------------------------|
| a. Inspection | d. Removal of Tube Fittings |
| b. Removal of Hydraulic Line | e. Installation of Tube Fittings |
| c. Installation of Hydraulic Line | |

Initial Setup:

Equipment Conditions:

- Semitrailer coupled to towing vehicle (para 2-10).

Materials/Parts:

- One compression sleeve

Tools/Test Equipment:

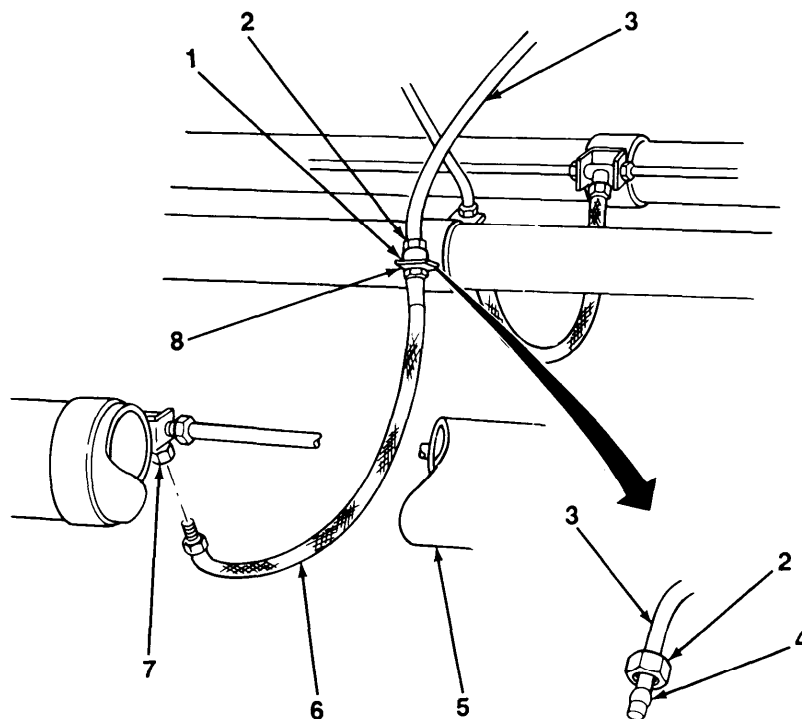
- General mechanic's tool kit

a. INSPECTION

Inspect hydraulic lines, flexible lines, and fittings. Tighten fittings if leakage is found. No leakage is permissible.

b. REMOVAL OF HYDRAULIC LINE

1. Unscrew tube fitting nut (2) from base (8) on tandem axle.
2. Work slotted clip (1) off line (6) and pull line through hole in base (8).
3. Unseat externally threaded end of line (6) from tee (7) on axle assembly (5) and unscrew line from fittings at both ends.



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4-42. HYDRAULIC LINES AND FITTINGS MAINTENANCE (Con't).

c. INSTALLATION OF HYDRAULIC LINE

1. Insert externally threaded end of line (6) in tee (7) on axle assembly (5) and tighten until snug.
2. Insert internally threaded end of line (6) through hole in base (8) on tandem axle.
3. Place slotted clip (1) in groove on end of line (6) and press down until clip stops.
4. Insert tube (3) in line (6) and screw tube fitting nut (2) into line until snug.
5. inspect for leaks (subpara a).

d. REMOVAL OF TUBE FITTINGS

1. Unscrew tube fitting nut (2) from tube fitting.
2. Cut tube (3) with hacksaw or tube cutter, making sure end is smooth and cut squarely with tube wall. Remove tube fitting nut (2) and compression sleeve (4) from tube. Discard compression sleeve.

e. INSTALLATION OF TUBE FITTINGS

1. Place tube fitting nut (2) and new compression sleeve (4) on tube (3) and insert end of tube in recess in fitting body.
2. Hold tube (3) at bottom of recess and tighten tube fitting nut (2) until sufficient pressure is placed on compression sleeve (4) to prevent leakage.
3. inspect for leaks (subpara a).

FOLLOW-ON TASKS:

- Bleed hydraulic brake system (para 4-37).

4-43. AIR FILTER MAINTENANCE (EARLY MODEL).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |

Initial Setup:

Equipment Conditions:

- Semitrailer uncoupled from towing vehicle (para 2-11).

Tools/Test Equipment:

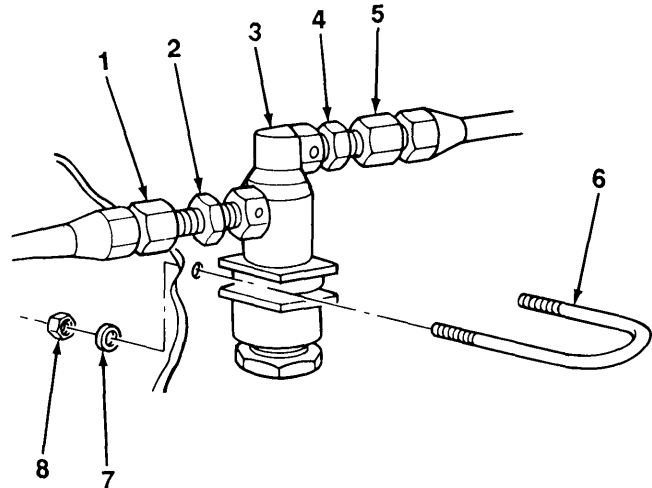
- General mechanic's tool kit

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
- Antiseizing tape (Item 16, Appendix E)
- One gasket

a. REMOVAL

1. Open draincock on air reservoir and release air pressure.
2. Disconnect two air tubes (1 and 5) from air filter fittings (2 and 4). Remove air filter fittings from air filter body (3).
3. Remove two nuts (8), washers (7), and air filter body (3) from U-bolt (6).



b. DISASSEMBLY

1. Remove pipe plug (14) from adapter bushing (13) and drain water from air filter body (3).
2. Secure air filter body (3) in vise and remove adapter bushing (13), gasket (12), spring (11), spring tension washer (10, and filter element (9). Discard gasket.

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4-43. AIR FILTER MAINTENANCE (EARLY MODEL) (Con't).

c. CLEANING AND INSPECTION

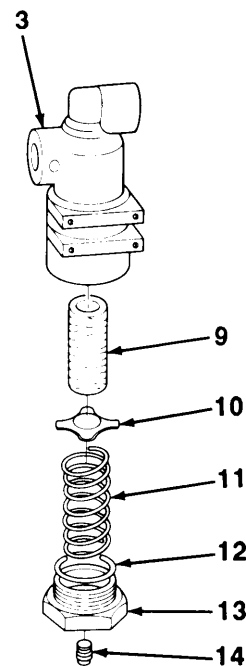
WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all metal parts, including air filter body and filter element with dry cleaning solvent.
2. Inspect parts for cracks, bends, breaks, or dents. Replace all defective parts.

d. ASSEMBLY

Position new gasket (12), spring (11), spring tension washer (10), and filter element (9) in place on adapter bushing (13). Apply antiseizing tape to adapter bushing threads and install adapter bushing and pipe plug (14) in air filter body (3).



e. INSTALLATION

1. Install air filter body (3) with U-bolt (6), two washers (7), and nuts (8).
2. Apply antiseizing tape to air filter fitting threads and install two air filter fittings (2 and 4) in air filter body (3). Connect two air tubes (1 and 5) to air filter fittings,
3. Close draincock on air reservoir,

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4-44. RELAY VALVE MAINTENANCE.

This Task Covers:

- | | |
|-------------------|-----------------|
| a. Operating Test | c. Removal |
| b. Leakage Test | d. Installation |

Initial Setup:

Equipment Conditions:

- Semitrailer coupled to towing vehicle with airbrake system fully charged (para 2-10).

Tools/Test Equipment:

- General mechanic's tool kit

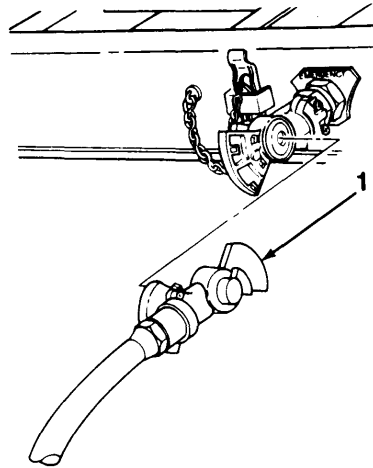
Personnel Required: Two

Materials/Parts:

- Dishwashing compound (Item 6, Appendix E)
- Marker tags (Item 15, Appendix E)
- Antiselzing tape (Item 16, Appendix E)
- Two lockwasher

a. OPERATING TEST

1. Depress and hold brake pedal in towing vehicle and check to see if brakes apply properly,
2. Release brake pedal and check to see if air pressure is released properly.
3. With semitrailer airbrake system fully charged, close shut-off valve in emergency line on towing vehicle.
4. Disconnect EMERGENCY air coupling (1) and check to see if semitrailer brakes apply automatically.
5. Connect EMERGENCY air coupling (1) to semitrailer and open shut-off valve in emergency line on towing vehicle. Check to see if semitrailer brakes release automatically.



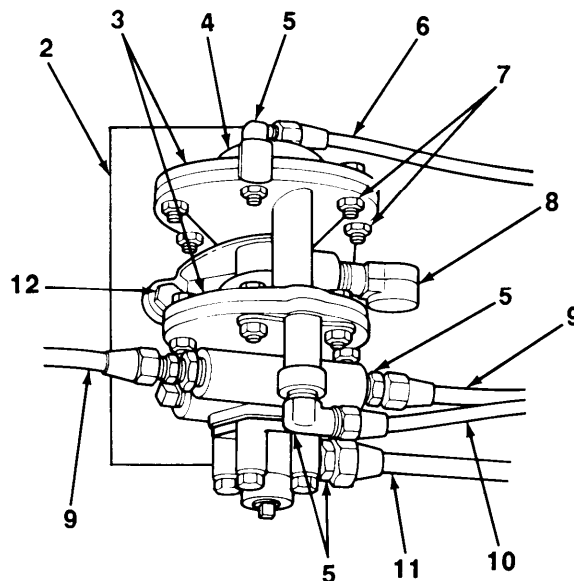
b. LEAKAGE TEST

1. Apply soap and water solution to relay valve cover flanges (3) and fittings (5).
2. If leakage is detected, tighten nuts (7) on cover flanges (3).
3. Apply soap and water solution to exhaust port (8). Depress towing vehicle brake pedal and check for leakage.
4. Apply soap and water solution to exhaust port (8). Release towing vehicle brake pedal and check for leakage.

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4-44. RELAY VALVE MAINTENANCE (Con't).

5. Close shut-off valve in emergency line on towing vehicle and disconnect EMERGENCY air coupling (1), Apply soap and water solution to exhaust port (8) and check for leakage.
6. If leakage is detected, replace relay valve (4).



c. REMOVAL

1. Uncouple semitrailer from towing vehicle (para 2-11).
2. Open draincock on air reservoir and release air pressure.
3. Disconnect and tag service and emergency air tubes (6 and 10), air reservoir air tube (11) and airbrake chamber air tubes (9) from relay valve (4).
4. Remove two capscrews (12), lockwasher, and relay valve (4) from mounting bracket (2). Discard lockwasher.
5. If replacing relay valve (4), remove fittings (5) from old relay valve.

d. INSTALLATION

1. If replacing relay valve (4), install fittings (5) in new relay valve with antiseizing tape.
2. Position relay valve (4) in place on mounting bracket (2) and install two capscrews (12) and new lockwasher.
3. Connect airbrake chamber air tubes (9), air reservoir air tube (11) and service and emergency air tubes (6 and 10) to relay valve (4). Remove tags.
4. Close draincock on air reservoir.

4-45. AIR RESERVOIR MAINTENANCE.

This Task Covers:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Leakage Test b. Removal | <ul style="list-style-type: none"> c. Cleaning and Inspection d. Installation |
|---|---|
-

Initial Setup:

Equipment Conditions:

- Semitrailer coupled to towing vehicle with airbrake system fully charged (para 2-10).

Tools/Test Equipment:

- General mechanic's tool kit

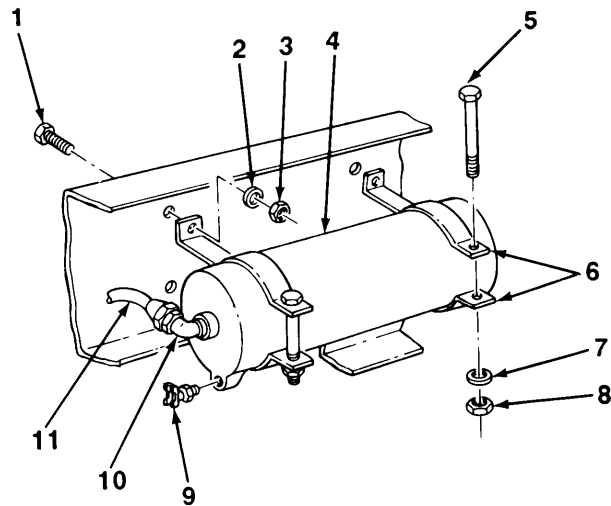
Personnel Required: Two

Materials/Parts:

- Dishwashing compound (Item 6, Appendix E)
- Dry cleaning solvent (Item 14, Appendix E)
- Antiseizing tape (Item 16, Appendix E)
- Six lockwasher

a. LEAKAGE TEST

1. Apply soap and water solution on draincock (9) and outside of air reservoir (4) and check for leakage.
2. Tighten any leaking connections.
3. If leaks cannot be corrected, replace air reservoir.



b. REMOVAL

1. Disconnect EMERGENCY and SERVICE air couplings from semitrailer.
2. Open draincock (9) on air reservoir (4) and release air pressure.
3. Disconnect air tube (11) from elbow (10) at air reservoir (4).
4. Remove two nuts (8), lockwasher (7), capscrews (5), and air reservoir (4) from brackets (6). Discard lockwasher.
5. Remove four nuts (3), lockwasher (2), and capscrews (1) from brackets (6) and chassis. Remove four brackets. Discard lockwashers.
6. Remove draincock (9) from air reservoir (4).

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4-45. AIR RESERVOIR MAINTENANCE (Con't).

c. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38° C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean draincock and air reservoir with dry cleaning solvent.
2. Inspect draincock and air reservoir for damage or corrosion. If damage or corrosion is found that would weaken air reservoir, replace draincock or air reservoir.

d. INSTALLATION

1. Apply antiseizing tape to threads of draincock (9). Install draincock in air reservoir (4).
2. install four brackets (6) on chassis with four capscrews (1), new lockwasher (2), and nuts (3).
3. Position air reservoir (4) in place in brackets (6) with draincock (9) on bottom.
4. Install two capscrews (5), new lockwasher (7), and nuts (8) in brackets (6).
5. Connect air tube (11) to elbow (10) on air reservoir (4).
6. Close draincock (9) on air reservoir (4).
7. Connect EMERGENCY and SERVICE air couplings to semitrailer.
8. Perform leakage test (subpara a).

4-46. AIR COUPLING REPLACEMENT.

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | c. Installation |
| b. Cleaning and Inspection | |

Initial Setup:

Equipment Conditions:

- . Semitrailer uncoupled from towing vehicle (para 2-11).

Tools/Test Equipment:

- . General mechanic's tool kit

Materials/Parts:

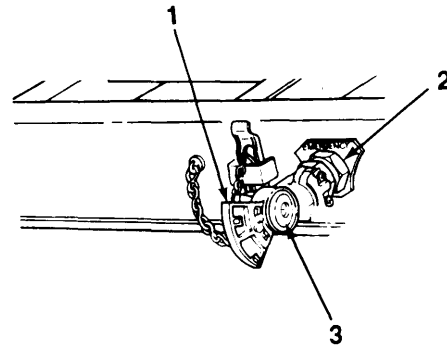
- Dry cleaning solvent (Item 14, Appendix E)
- Antiseizing tape (Item 16, Appendix E)
- One preformed packing

a. REMOVAL

NOTE

Use this task for either the **EMERGENCY** or **SERVICE** air coupling. **EMERGENCY** air coupling is shown.

1. Hold fitting (2) with wrench and remove air coupling (1).
2. Work preformed packing (3) out of air coupling (1). Discard preformed packing.



b. CLEANING AND INSPECTION

1. Clean mud and dirt from all exposed surfaces of air coupling with water and stiff brush.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and **DO NOT** breathe vapors. **DO NOT** use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

2. Remove grease from air coupling with dry cleaning solvent.
3. Inspect air coupling for damaged threads or cracks. Replace air coupling if defective.

c. INSTALLATION

1. Install new preformed packing (3) in air coupling (1).
2. Apply antiseizing tape to threads of air coupling (1). Install air coupling in fitting (2) until an airtight seal is made and air coupling face is vertical toward the left side of the semitrailer.

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4-47. AIR LINES AND FITTINGS MAINTENANCE.

This Task Covers:

- | | |
|-----------------|-----------------|
| a. Leakage Test | c. Inspection |
| b. Removal | d. Installation |
-

Initial Setup:

Materials/Parts:

- Dishwashing compound (Item 6, Appendix E)
- Marker tags (item 15, Appendix E)
- Ž Antiseizing tape (Item 16, Appendix E)
- Twenty-two lockwasher

Tools/Test Equipment:

- General mechanic's tool kit

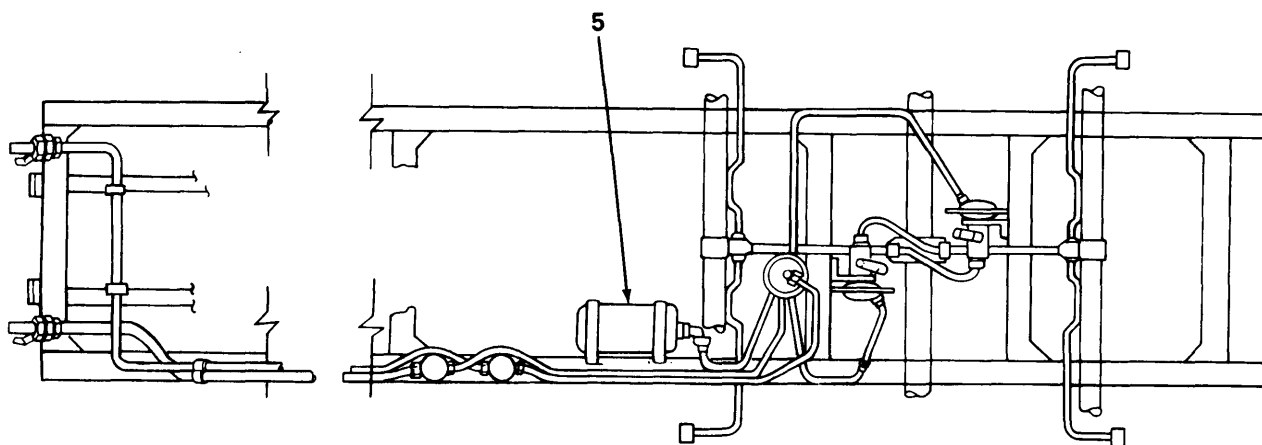
Personnel Required: Two

a. LEAKAGE TEST

1. Couple towing vehicle to semitrailer (para 2-10).
2. Apply brakes and coat air couplings, connectors, fittings, and emergency and service lines and tubes with soap and water solution.
3. Check for leakage. No leakage is allowed.
4. Tighten loose connections and fittings, or replace defective parts as necessary.

b. REMOVAL

1. Uncouple towing vehicle from semitrailer (para 2-11).
2. Open draincock on air reservoir (5) and release air pressure.



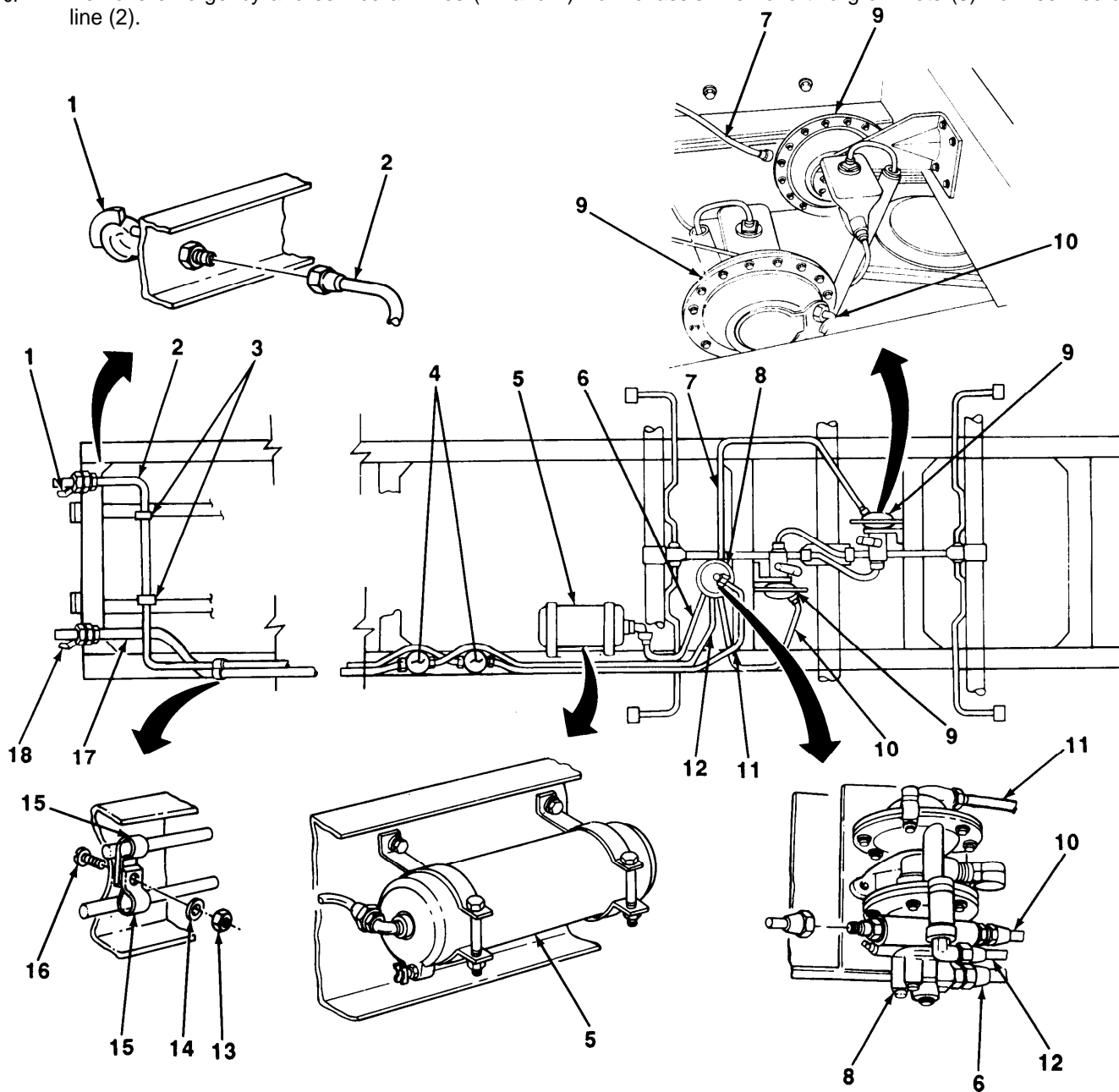
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4-47. AIR LINES AND FITTINGS MAINTENANCE (Con't).

NOTE

Tag air lines as required.

3. Remove 11 screws (16), lockwasher (14), nuts (13), and loop clamps (15) from each emergency and service air line as required. Discard lockwasher.
4. Disconnect emergency and service air lines (17 and 2) from emergency and service air couplings (18 and 1).
5. Disconnect emergency and service air lines (17 and 2) from air filter assemblies (4).
6. Remove emergency and service air lines (17 and 2) from chassis. Remove two grommets (3) from service air line (2).



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4-47. AIR LINES AND FITTINGS MAINTENANCE (Con't).

7. Disconnect emergency and service air lines (12 and 11) from air filter assemblies (4) and relay valve (8). Remove emergency and service air lines.
8. Disconnect air lines (7 and 10) from relay valve (8) and two airbrake chambers (9). Remove air lines.
9. Disconnect air line (6) from air reservoir (5) and relay valve (8). Remove air line.

c. INSPECTION

Inspect air line fittings for bends, cracks, and stripped or crossed threads. Replace as necessary.

d. INSTALLATION**NOTE**

Antiseizing tape is applied to threads of male fittings only.

1. Apply antiseizing tape to male fittings and install air line (6) on air reservoir (5) and relay valve (8).
2. Position air lines (7 and 10) on chassis and connect air lines to two airbrake chambers (9) and relay valve (8).
3. Position emergency and service air lines (12 and 11) on chassis and connect air lines to relay valve (8) and air filter assemblies (4).
4. Install two grommets (3) on service air line (2).
5. Position emergency and service air lines (17 and 2) on chassis and connect air lines to air filter assemblies (4) and emergency and service air couplings (18 and 1).
6. Install 11 loop clamps (15) on each emergency and service air line with 11 screws (16), new lockwasher (14), and nuts (13), as required.
7. Perform leakage test (subpara a).

Section VII. WHEELS, HUBS, AND BRAKEDRUMS MAINTENANCE

Paragraph Title	Page Number
Hub, Wheel Bearings, and Brakedrum Maintenance	4-98
Tire and Tube Maintenance	4-103
Wheel Replacement	4-102

4-48. HUB, WHEEL BEARINGS, AND BRAKEDRUM MAINTENANCE.

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Removal b. Disassembly c. Cleaning and inspection | <ul style="list-style-type: none"> d. Assembly e. Installation f. Adjustment |
|--|---|

/initia/ Setup:

Equipment Conditions:

- Wheels chocked.
- Wheel removed (para 4-49).

Tools/Test Equipment:

- General mechanic's tool kit
- Adjustment nut wrench

References:

- TM 9-214

Materials/Parts:

- Grease (Item 7, Appendix E)
- Drycleaning solvent (Item 14, Appendix E)
- . One gasket
- One oil seal
- Three lockwashers
- Eighteen self-locking nuts

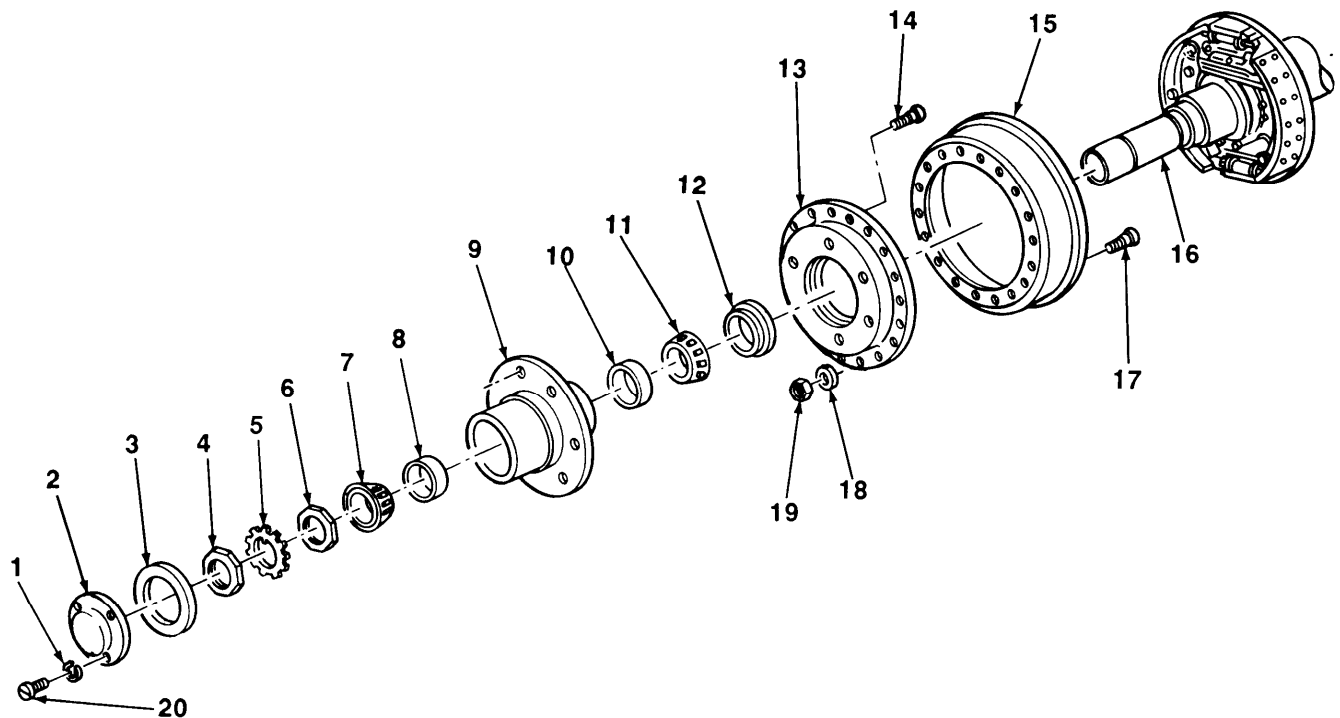
a. REMOVAL

1. Remove three screws (20), lockwasher (1), hubcap (2), and gasket (3) from hub (9). Discard lockwasher and gasket.
2. Remove outer bearing adjusting nut (4), keywasher (5), and inner bearing adjusting nut (6) from axle spindle (16).
3. Carefully move brakedrum(15) on axle spindle (16) to loosen outer bearing (7). Remove hub (9), outer bearing, and brakedrum from axle spindle.

b. DISASSEMBLY

1. Remove inner bearing (11) and oil seal (12) from axle spindle (16) or hub (9). Discard oil seal.
2. If ribbed neck bolts (17) are damaged, remove 18 self-locking nuts (19), washers (18), ribbed neck bolts, and brakedrum (15) from backing plate (13). Discard self-locking nuts.
3. If ribbed shoulder bolts (14) are damaged, remove six ribbed shoulder bolts and backing plate (13) from hub (9). _

 4-48. HUB, WHEEL BEARINGS, AND BRAKEDRUM MAINTENANCE (Con't).


c. CLEANING AND INSPECTION
WARNING

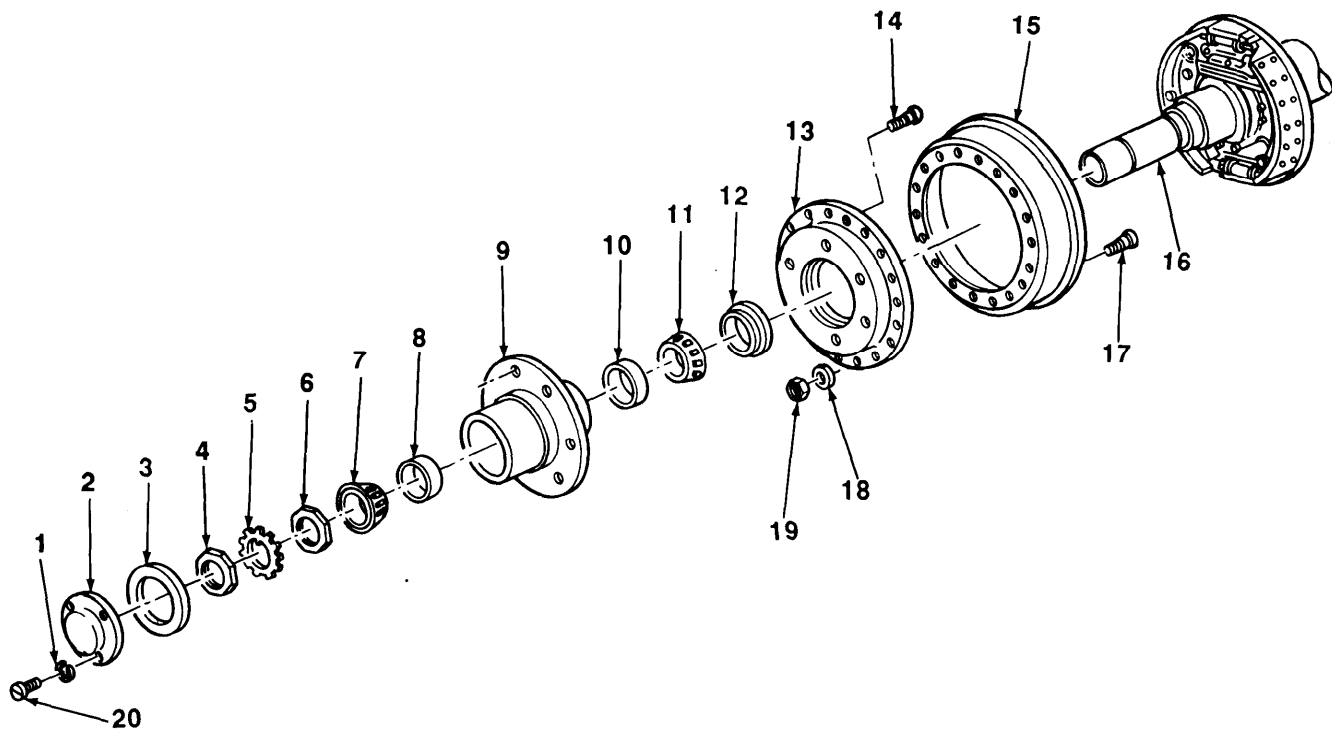
Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts thoroughly with dry cleaning solvent.
2. Inspect inner and outer bearings and inner and outer bearing cups (8 and 10) in accordance with TM 9-214. If inner and outer bearing cups need replacing, drive out of hubs with brass drift or punch.
3. Position inner and outer bearing cups (8 and 10) in hub (9), with large diameter facing outward. Drive inner and outer bearing cups in hub until seated, using soft faced hammer, brass drift, or wood block.
4. Inspect inside diameter of brakedrum for out-of-round condition or scoring.
5. Replace all defective parts.

4-48. HUB, WHEEL BEARINGS, AND BRAKEDRUM MAINTENANCE (Con't).

d. ASSEMBLY

1. If ribbed shoulder bolts (14) were removed, position backing plate (13) in place on hub (9) and install six ribbed shoulder bolts.
2. If ribbed neck bolts (17) were removed, position brakedrum (15) in place on backing plate (13) and install 18 ribbed neck bolts, washers (18); and new self-locking nuts (19).
3. Pack inner and outer bearings (11 and 7) with grease in accordance with TM 9-214.
4. Install inner bearing (11) and new oil seal (12) in hub (9). Gently tap with brass or wood drift until seated.



e. INSTALLATION

1. Position hub (9) and brakedrum (15) in place on axle spindle (16). Install outer bearing (7) on axle spindle and in hub.
2. Install, but do not tighten, inner bearing adjusting nut (6) on axle spindle (16).

f. ADJUSTMENT

1. While slowly turning hub (9), tighten inner bearing adjusting nut (6) with adjustment nut wrench until hub does not move with hand pressure, then back off nut about 1/4 turn.
2. Install keywasher (5) on axle spindle against inner bearing adjustment nut (6).

TA701997

4-48. HUB, WHEEL BEARINGS, AND BRAKEDRUM MAINTENANCE (Con't).

3. Install outer bearing adjusting nut (4) on axle spindle (16), tight against keywasher (5) with adjusting nut wrench.
4. Bend one or two tabs of keywasher (5) over inner and outer adjusting nuts (6 and 4).
5. Install hubcap (2) and new gasket (3) on hub (9) with three screws (20) and new lockwasher (1).

FOLLOW-ON TASKS:

- Install wheel (para 4-49).

4-49. WHEEL REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- Semitrailer uncoupled from towing vehicle (para 2-11).

Tools/Test Equipment:

- General mechanic's tool kit
- Hydraulic jack
- Jackstand
- Torque wrench

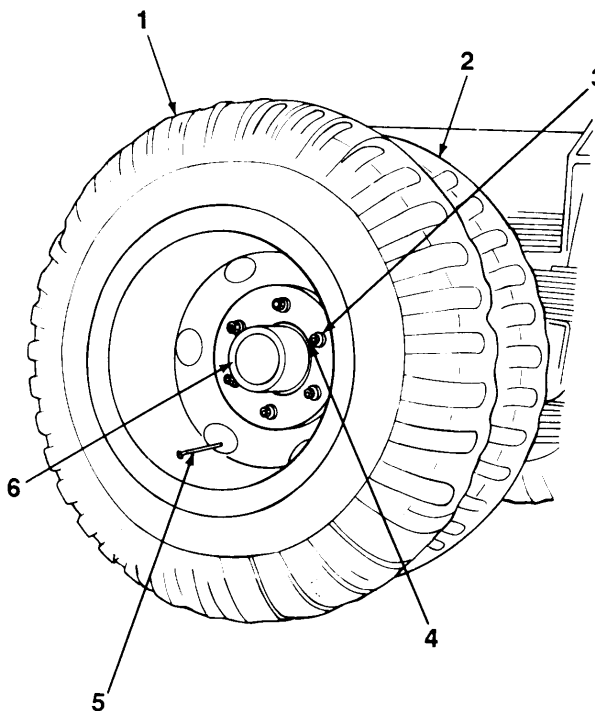
a. **REMOVAL**

1. Open draincock on air reservoir and release air pressure.

NOTE

Capnuts on right side of semitrailer are marked R and have right-hand threads. Those on left side of semitrailer are marked L and have left-hand threads. Nuts must be turned in opposite direction to normal forward rotation of wheel to be loosened or removed.

2. Loosen six outer capnuts (3).
3. Raise semitrailer with jack, support on jackstand, and remove six capnuts (3) and outer wheel (1).
4. Remove six inner capnuts (4) and remove inner wheel (2) from hub (6).



TA701998

4-49. WHEEL REPLACEMENT (Con't).

b. INSTALLATION

1. Slide inner wheel (2) on hub (6) and over six studs with convex side of wheel facing out.
2. Install six inner capnuts (4) on studs. Alternately tighten inner capnuts on opposite sides to ensure even tightness. Torque inner capnuts between 400-425 lb.-ft. (542-576 N•m).
3. Slide outer wheel (1) on hub and over six inner wheel studs with convex side of wheel facing in and against inner wheel. Ensure that valve stem (5) on outer wheel is 180° from valve stem of inner wheel.
4. Install six outer capnuts (3) and alternately tighten outer capnuts on opposite sides to ensure even tightness. Torque outer capnuts between 325-355 lb.-ft. (440-481 N•m).
5. Check capnuts for tightness. Raise semitrailer with jack, remove jackstand, and lower semitrailer to the ground. After wheels are on the ground, check torque of capnuts again.
6. Ensure that tires are properly inflated (para 1-10).
7. Close draincock on air reservoir.

4-50. TIRE AND TUBE MAINTENANCE.

Refer to TM 9-2610-200-14 for instructions on tire and tube maintenance.

Section VIII. FRAME AND TOWING ATTACHMENTS MAINTENANCE

Paragraph Title	Page Number
Bumper Replacement	4-104
Landing Gear Maintenance (Late Model)	4-112
Leveling Jack Repair	4-110
Spare Wheel and Tire Carrier Assembly Maintenance	4-107
Tow Pintle Replacement	4-106

4-51. BUMPER REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Materials/Parts:

- Four lockwasher

Tools/Test Equipment:

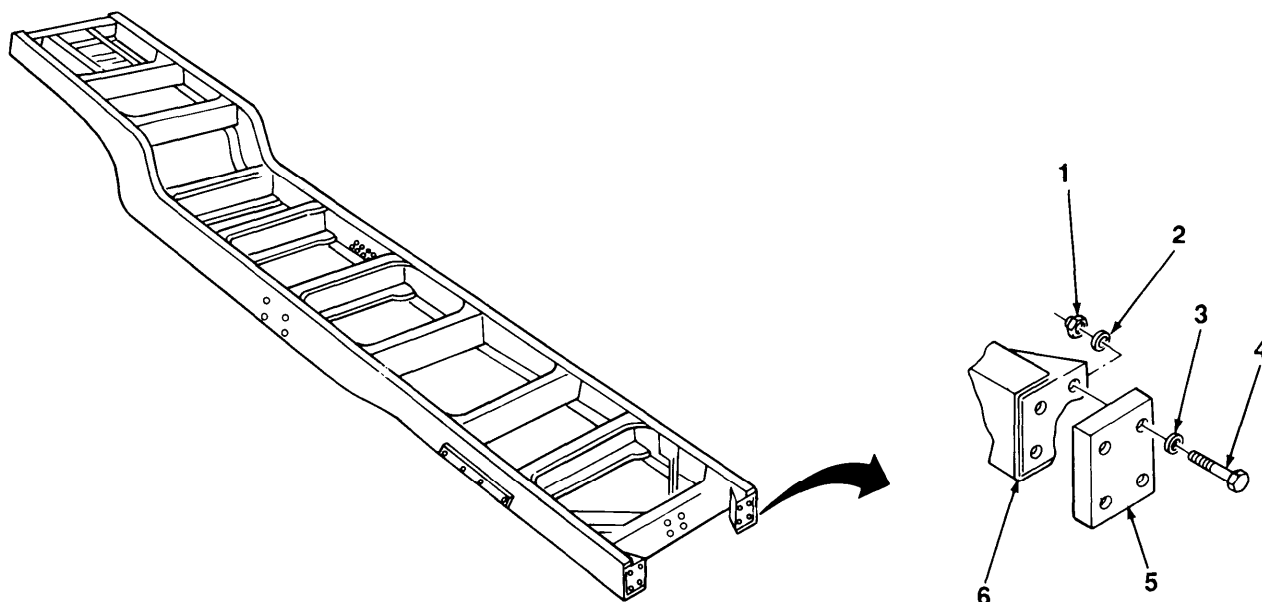
- General mechanic's tool kit

NOTE

Each semitrailer has two bumpers. Use this task to replace either bumper.

a. **REMOVAL**

Remove four capscrews (4), flatwashers (3), lockwasher (2), nuts (1), and bumper (5) from semitrailer frame (6). Discard lockwasher.



TA701999

4-51. BUMPER REPLACEMENT (Con't).

b. INSTALLATION

1. Position bumper (5) on semitrailer frame (6) and align mounting **holes**.
2. Secure bumper (5) to semitrailer frame (6) with four capscrews (4), flatwashers (3), new lockwasher (2), and nuts (1).

4-52. TOW PINTLE REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Materials/Parts:

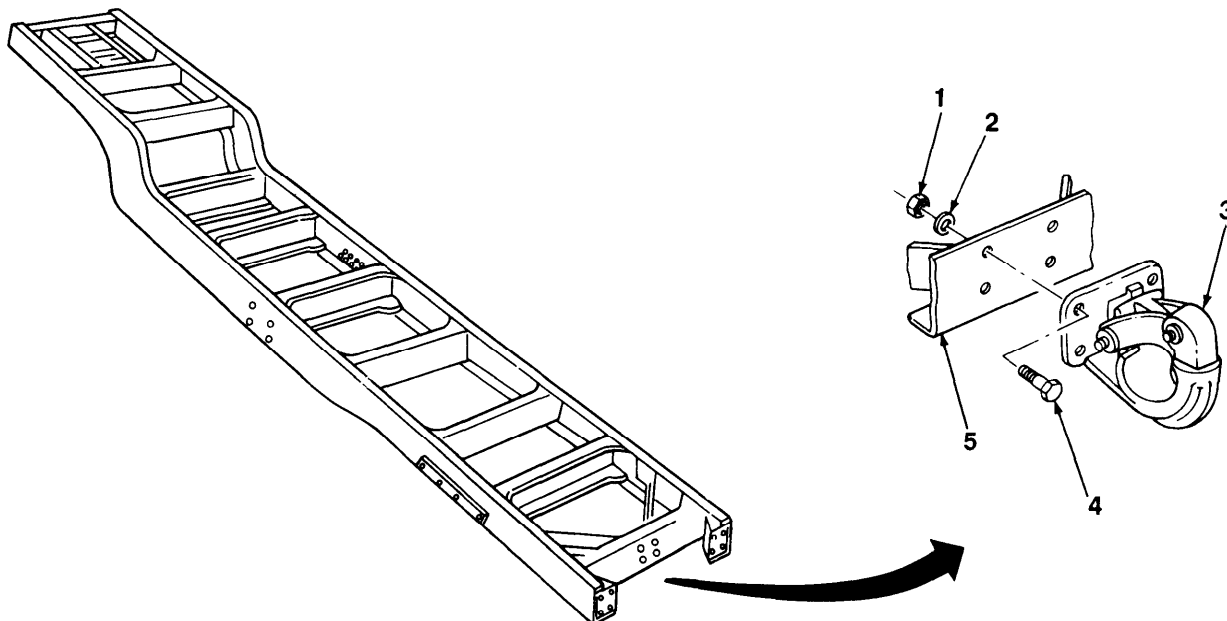
- Four lockwasher

Tools/Test Equipment:

- General mechanic's tool kit
-

a. REMOVAL

Remove four capscrews (4), lockwasher (2), nuts (1), and tow pintle (3) from semitrailer frame (5). Discard lockwasher.



b. INSTALLATION

Position tow pintle (3) in place on semitrailer frame (5) and install four capscrews (4), new lockwasher (2), and nuts (1). Tighten securely.

TA702000

4-53. SPARE WHEEL AND TIRE CARRIER ASSEMBLY MAINTENANCE.

This Task Covers:

- | | |
|----------------------------|--------------------------|
| a. Removal | Installation |
| b. Cleaning and Inspection | d. Wire Rope Replacement |
-

Initial Setup:

Materials/Parts:

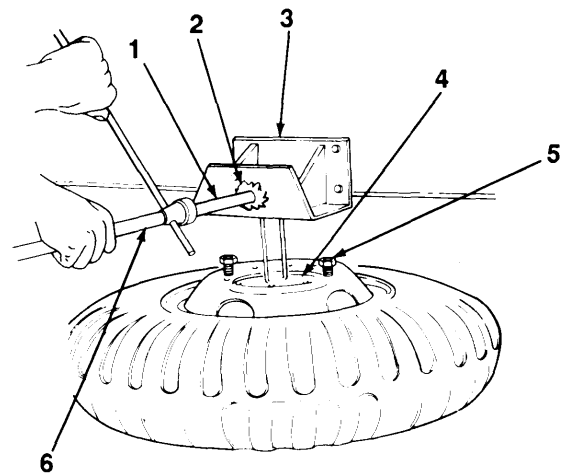
- Scrub brush (Item 4, Appendix E)
- One cotter pin
- Eight lockwasher

Tools/Test Equipment:

- General mechanic's tool kit
-

a. REMOVAL

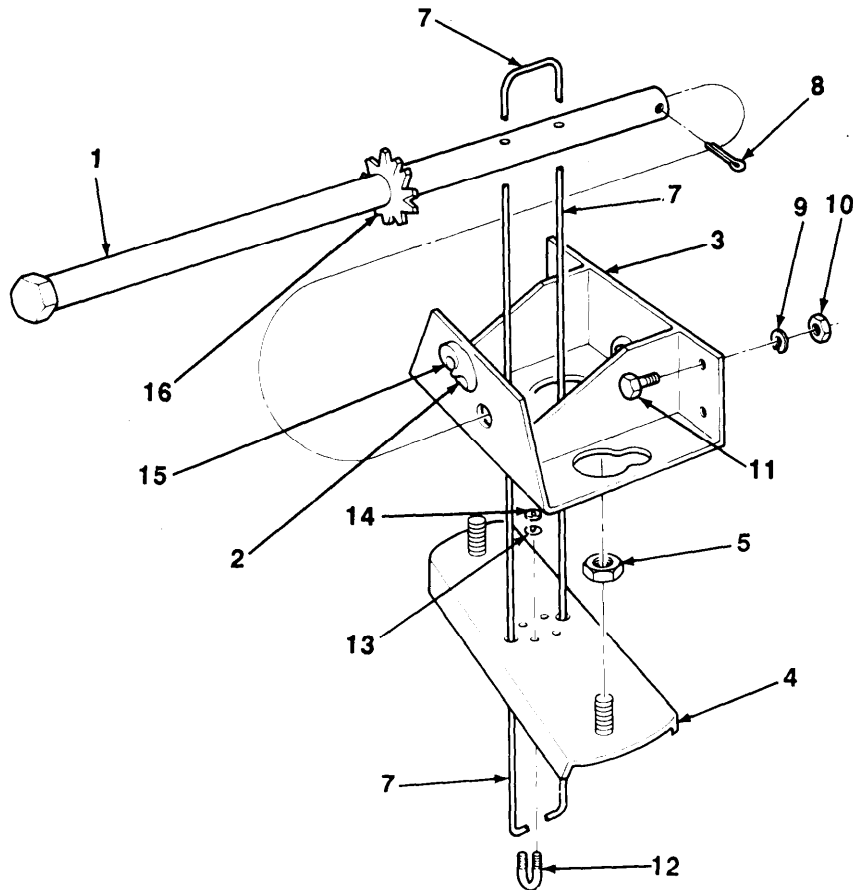
1. Loosen two nuts (5) holding wheel to upper member (3). Rotate wheel counterclockwise until nuts align with large holes in upper member.
2. Release pawl (2) and turn shaft (1) counterclockwise with wheel wrench (6) and lower wheel to the ground.
3. Remove two nuts (5) from studs and remove lower member (4) from wheel.



TA702001

4-53. SPARE WHEEL AND TIRE CARRIER ASSEMBLY MAINTENANCE (Con't).

4. Remove four nuts (10), lockwasher (9), capscrews (11), and upper member (3) from frame. Discard lockwasher.
5. Remove cotter pin (8) and wire rope (7) from shaft (1), Slide shaft out of upper member (3), Discard cotter pin.



b. CLEANING AND INSPECTION

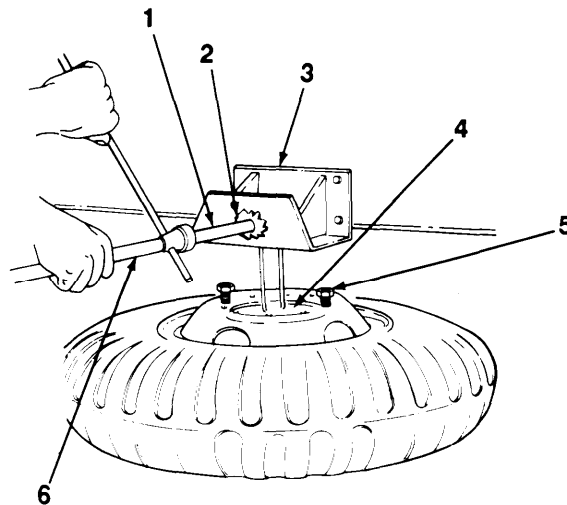
1. Remove all surface dirt from tire carrier assembly with water and stiff brush.
2. Inspect upper member for cracks, breaks, or twists. Straighten upper member if twisted or bent.
3. Inspect shaft for wear and alinement. Inspect ratchet (16) and nut on shaft for cracks or wear.
4. Inspect pawl for wear or looseness of rivet (15).
5. Inspect U-bolts for tightness. Inspect attaching capscrews and nuts for cracks or stripped threads,
6. Inspect wire rope for frayed wire or excessive wear,
7. Replace all damaged or worn parts. Repaint as necessary.
8. Lubricate all points according to Lubrication Instructions (Chapter 3, Section I).

TA702002

4-53. SPARE WHEEL AND TIRE CARRIER ASSEMBLY MAINTENANCE (Con't).

c. INSTALLATION

1. Slide shaft (1) in upper member (3) and install wire rope (7) and new cotter pin (8).
2. Position upper member (3) in place on frame with mounting holes alined. Install four capscrews (11), new lockwasher (9), and nuts (10).
3. Install lower member (4) through large hole in wheel with studs in any two holes. Install, but do not tighten two nuts (5).
4. Set pawl (2) in contact with ratchet (16) and nut and turn shaft (1) clockwise with wheel wrench (6) to raise wheel.
5. As wheel nears upper member (3), aline holes with nuts on studs. Turn shaft (1) until wheel is tight against upper member.
6. Rotate wheel clockwise and tighten nuts (5).



d. WIRE ROPE REPLACEMENT

1. Remove spare wheel and tire carrier assembly (subpara a).
2. Remove four nuts (14), lockwasher (13), two U-bolts (12), and wire rope (7) from lower member (4). Discard lockwasher.
3. Remove wire rope (7) from shaft (1).
4. Install new wire rope (7) in shaft (1) so both ends are equal in length. Thread ends of wire rope through lower member (4) and twist ends in a loose, single knot across lower member.
5. Install two U-bolts (12), four new lockwashers (13), and nuts (14) on lower member (4).
6. Install spare wheel and tire carrier assembly (subpara c).

4-54. LEVELING JACK REPAIR.

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Disassembly b. Inspection and Repair | <ul style="list-style-type: none"> c. Assembly |
|--|---|

Materials/Parts:

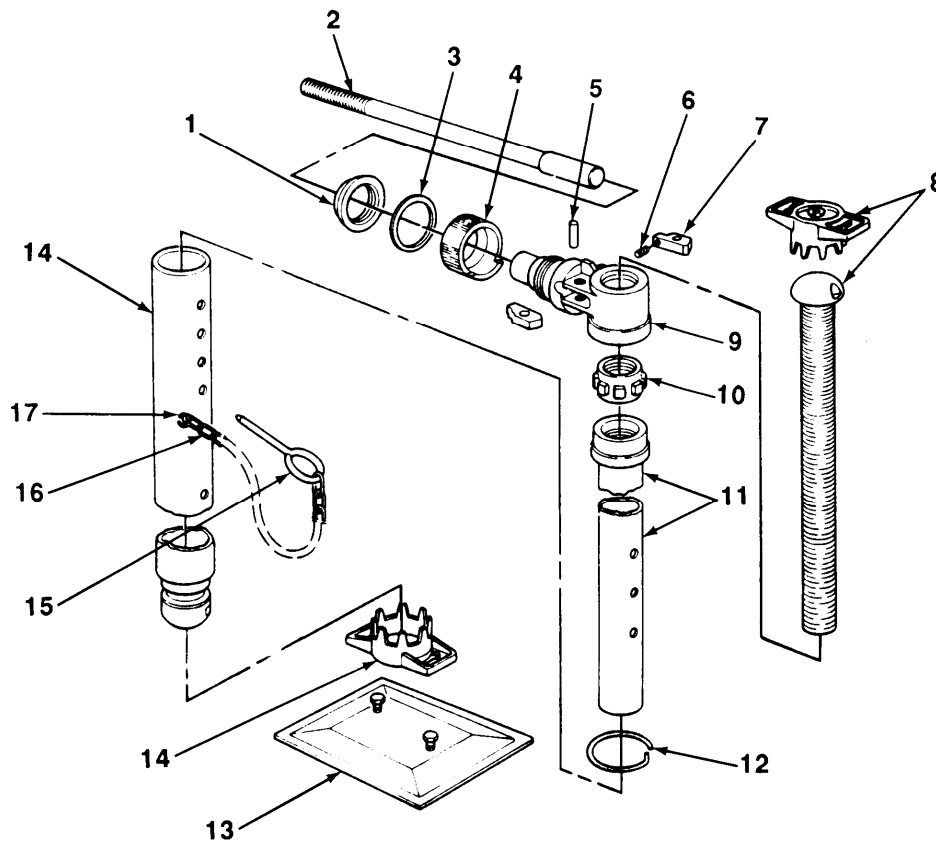
- One retaining ring

Tools/Test Equipment:

- Ž General mechanic's tool kit
- Retaining ring pliers

a. DISASSEMBLY

1. Remove nut (1), washer (3), locksleeve (4), two pins (5), lever (2), two ratchet pawls (7), and spring (6) from ratchet housing (9).
2. Unscrew and remove jackscrew assembly (8) from ratchet housing (9).
3. Remove retaining ring (12), inner housing (11), and ratchet wheel (10) from ratchet housing (9). Discard retaining ring.



TA702004

4-54. LEVELING JACK REPAIR (Con't).

4. Rotate foot plate (13) and remove from outer tube (14),
5. Remove lockpin (15) from chain (16). Remove chain from hook (17).

b. INSPECTION AND REPAIR

1. inspect foot plate for warpage or dents.
2. Inspect inner and outer housings for damage, or broken ears on feet.
3. Inspect lockpin and chain for wear or damage.
4. Inspect jackscrew assembly for damage and ratchet pawls for ease of operation.
5. Replace any parts damaged beyond repair. Lubricate as necessary in accordance with Lubrication Instructions (Chapter 3, Section I).

c. ASSEMBLY

1. Install chain (16) on hook (17) and lockpin (15).
2. Install foot plate (13) on outer tube (14).
3. Position ratchet wheel (10), inner housing (11), and new retaining ring (12) in ratchet housing (9).
4. Install jackscrew assembly (8) in ratchet housing (9) and ratchet wheel (10) by turning clockwise.
5. Install two ratchet pawls (7), spring (6), lever (2), two pins (5), locksleeve (4), washer (3), and nut (1) on ratchet housing (9).

4-55. LANDING GEAR MAINTENANCE (LATE MODEL).

This Task Covers:

- | | |
|-----------------------------------|--|
| <p>a. Removal
Disassembly</p> | <p>c. Assembly
d. Installation</p> |
|-----------------------------------|--|

Equipment Conditions:

- Semitrailer coupled to towing vehicle (para 2-10).

Materials/Parts:

- Two spring pins
- Twenty-five locknuts

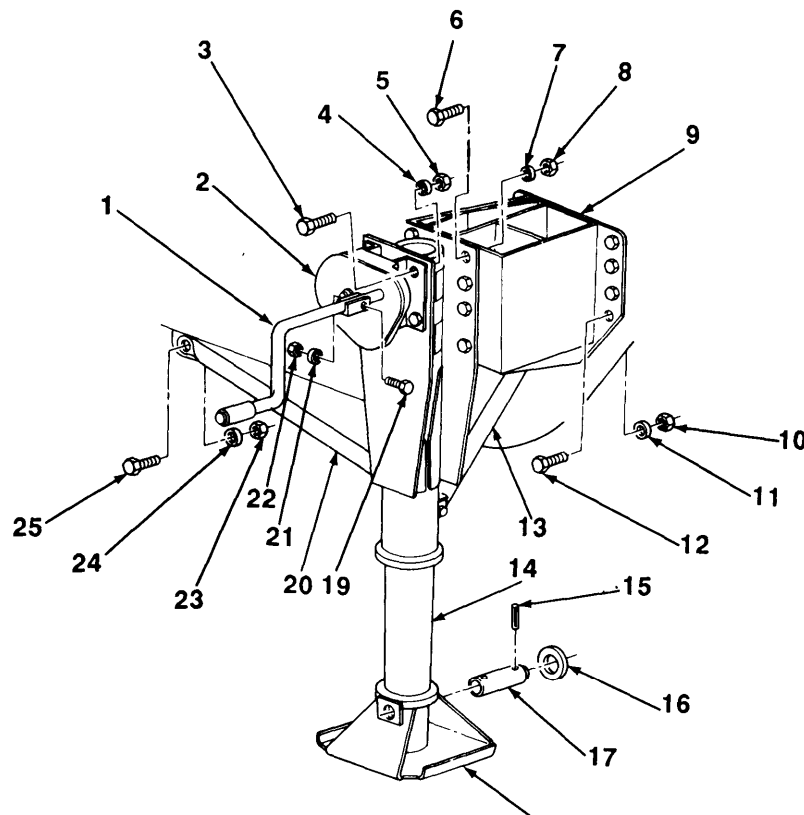
Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Two

a. REMOVAL

1. Turn handcrank (1) counterclockwise and raise landing leg (14) until shoe (18) is slightly off the ground.
2. Remove four locknuts (23), washers (24), capscrews (25), and braces (13 and 20). Discard locknuts.
3. Remove eight locknuts (1 O), washers (11), capscrews (12), and landing leg (14) from semitrailer. Discard locknuts.



TA702005

4-55. LANDING GEAR MAINTENANCE (LATE MODEL) (Con't).

b. DISASSEMBLY I

1. Drive out one spring pin (15) from shaft (17) with punch and hammer. Remove washer (16) from shaft. Discard spring pin.
2. Drive shaft (17) out of shoe (18) and landing leg (14) with drift and hammer. Remove shoe.
3. Remove remaining spring pin (15) and washer (16) from shaft (17). Discard spring pin.
4. Remove eight locknuts (8), washers (7), capscrews (6), and mounting bracket (9) from landing leg (14). Discard locknuts.
5. Remove four locknuts (5), washers (4), capscrews (3), and angle drive unit (2) from landing leg (14). Discard locknuts.
6. Remove locknut (22), washer (21), capscrew (19), and handcrank (1) from angle drive unit (2). Discard locknut.

c. ASSEMBLY

1. Position handcrank (1) on angle drive unit (2) and install capscrew (19), washer (21), and new locknut (22).
2. Position angle drive unit (2) with handcrank (1) on landing leg (14) and install four capscrews (3), washers (4), and new locknuts (5).
3. Position mounting bracket (9) on landing leg (14) and install eight capscrews (6), washers (7), and new locknuts (8).
4. Position shoe (18) on landing leg (14) and align holes.
5. Drive shaft (17) in shoe (18) and landing leg (14).
6. Install two washers (16), one on each end of shaft (17). Drive two new spring pins (15) in shaft.

d. INSTALLATION

1. Position landing leg (14) on semitrailer and align mounting holes. Install eight capscrews (12), washers (11), and new locknuts (10).
2. Position two braces (13 and 20) in place on landing leg (14) and semitrailer and install four capscrews (25), washers (24), and new locknuts (23).
3. Turn handcrank (1) clockwise and lower landing leg (14) until shoe (18) is firmly on the ground.

FOLLOW-ON TASKS:

1. Uncouple semitrailer from towing vehicle (para 2-1 1).

Section IX. SPRINGS AND SUSPENSION MAINTENANCE

Paragraph Title	Page Number
Springs Replacement	4-114
Torque Rod Replacement	4-118

4-56. SPRINGS REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- Semitrailer uncoupled from towing vehicle (para 2-1 1).

Materials/Parts:

- Four lockwashers

Tools/TestEquipment:

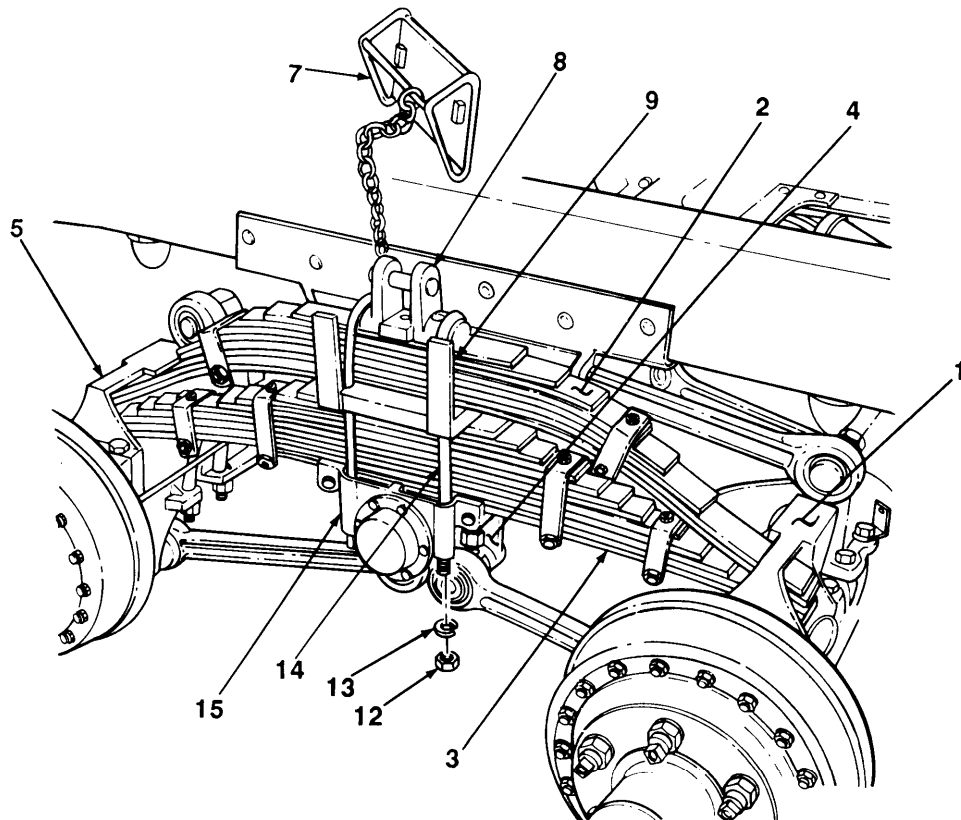
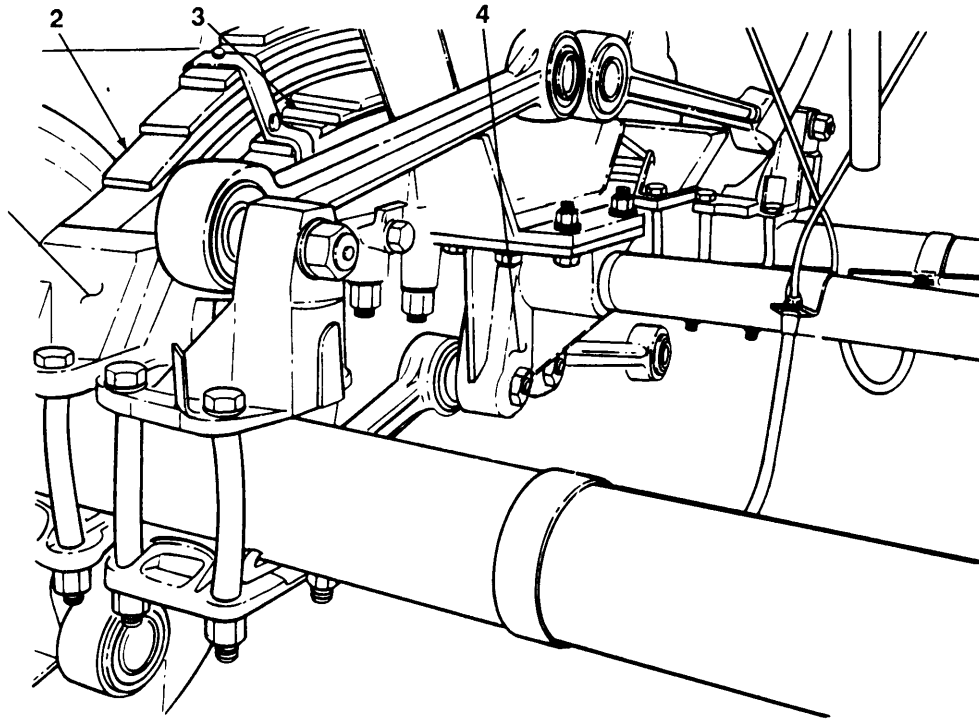
- General mechanic's tool kit
- Hydraulic jacks (as required)
- Socket set, 3/4 in. drive
- Torque wrench
- Two jackstands

Personnel Required: Two

a. REMOVAL

1. Raise rear of semitrailer with jacks until wheels just clear the ground. Support semitrailer with jackstands.
2. Remove wheels from side of semitrailer from which springs are to be removed (para 4-49).
3. Position jack under axle and bracket assembly (4). Raise jack until weight of main spring assembly (3) and helper spring (2) is off front and rear axle spring brackets (5 and 1).
4. Remove wheel chock (7) from wheel chock support (9).
5. Remove four nuts (12), lockwashers (1 3), two U-boits (14) and upper spring seat (8) from lower spring seat (15) and main and helper spring assemblies (3 and 2). Discard lockwashers.
6. Remove upper spring seat (8), retaining chain, and wheel chock (7).

4-56. SPRINGS REPLACEMENT (Con't).



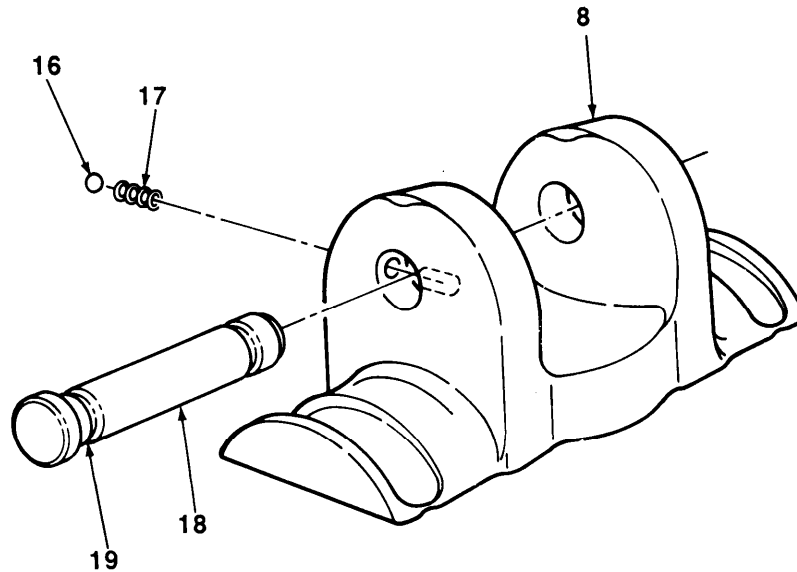
TA702006

4-56. SPRINGS REPLACEMENT (Con't).

NOTE

If upper spring seat is damaged, replace entire assembly.

7. inspect upper spring seat (8) for damage. If headed pin (18) is loose or damaged, drive out of upper spring seat. Remove ball bearing (16) and spring (17) from inside of spring seat. Replace ball bearing and spring if damaged.



8. Loosen, but do not remove, two capscrews (6) securing main spring assembly (3) to lower spring seat (15).

WARNING

Main spring assembly is heavy. Use care when handling mainspring assembly or injury to personnel may result.

9. Slide main spring assembly (3), spacer (1 O), and helper spring assembly (2), as a unit toward rear, until front ends of main and helper spring assemblies (3 and 2) clear front axle spring bracket (5).
10. Remove helper spring assembly (2) and spacer (1 O) with wheel chock support (9) from main spring assembly (3) and rear axle spring bracket (I).
Remove main spring assembly (3) from rear axle spring bracket (I).
12. If spring bumper (11) is damaged, remove two nuts, lockwashers, and spring bumper from frame.

b. INSTALLATION

1. If spring bumper (11) was removed, install spring bumper to frame with two new lockwashers and nuts.

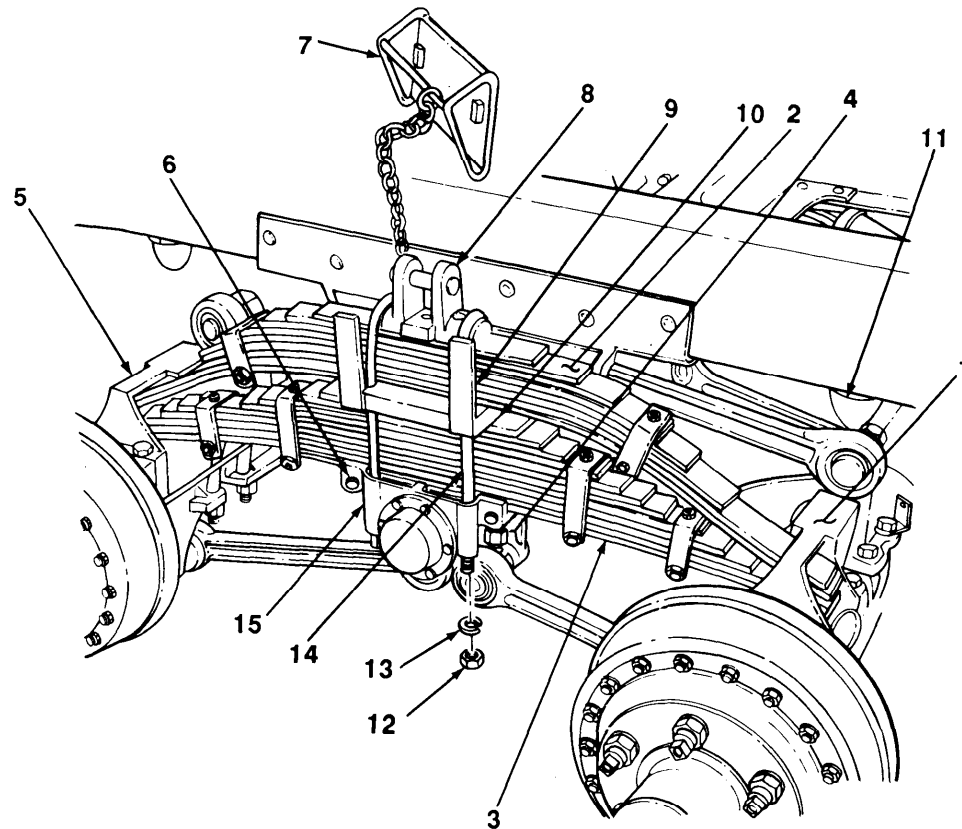
WARNING

Main spring assembly is heavy. Use care when handling main spring assembly or Injury to personnel may result.

2. Install main spring assembly (3) in place in rear axle spring bracket (I). Slide main spring assembly toward rear axle until front end can be lowered on front axle spring bracket (5).

TA702007

4-56. SPRINGS REPLACEMENT (Con't).



3. Install spacer (1 O) in place on main spring assembly (3) with wheel chock support (9) facing outward.
4. Install helper spring assembly (2) in place on spacer (1 O) with rear end of helper spring assembly in rear axle spring bracket (1).
5. Slide helper spring assembly (2) forward until front end is in place in front axle spring bracket (5).
6. Torque two capscrews (6) securing main spring assembly(3) to axle spring brackets (1 and 5) to 250-365 lb.-ft. (380-495 N•m).
7. If headed pin (18) was removed from upper spring seat (8), install spring (17) and ball bearing(16) into hole in upper spring seat. Install headed pin and fully seat with ball bearing lodged in headed pin groove (19).
8. Position upper spring seat (8) with wheel chock (7) in place on helper spring assembly (2).
9. Install two U-bolts (14), four new lockwashers (13), and nuts(12) to upper spring seat (8) and lower spring seat (15). Torque nuts between 255-280 lb.-ft, (346-380 N•m).
10. Lower and remove jack from under axle and bracket assembly (4).
11. Install wheel assemblies (para 4-49).
12. Raise semitrailer with jacks and remove jackstands, Lower and remove jacks from under semitrailer.

TA702008

4-57. TORQUE ROD REPLACEMENT.

This Task Covers:

- | | |
|----------------------------------|----------------------------------|
| a. Lower Torque Rod Removal | c. Upper Torque Rod Removal |
| b. Lower Torque Rod Installation | d. Upper Torque Rod Installation |
-

Initial Setup:

Equipment Conditions:

- Semitrailer uncoupled from towing vehicle (para 2-1 1).

Materials/Parts:

- Twelve lockwashers

Tools/Test Equipment:

- General mechanic's tool kit
 - Hydraulic jack
 - Torque wrench
 - Four jackstands
-

a. LOWER TORQUE ROD REMOVAL

1. Place jack under axle bracket assembly (7) and raise just enough to relieve spring tension from front and rear main axle brackets.
2. Remove two nuts (4) and lockwashers (3) from torque rod ball ends (1 O) connecting lower torque rod (9) to axle bracket assembly (7), and main axle lower torque rod mounting brackets (5). Discard lockwashers.

CAUTION

The rubber-mounted torque rod ball ends allow rods to be moved out of normal alinement for removal or installation. Extreme care must be taken to prevent damage to threads on ball ends.

3. Tap threaded ends of each torque rod ball end (1 O) with soft face hammer to loosen ball ends from axle bracket assembly (7) and main axle lower torque rod mounting bracket (5).
4. Work lower torque rod (9) from axle bracket assembly (7) and main axle lower torque rod mounting bracket (5).
5. Remove two torque rod ball ends (1 O) from torque rod (9).

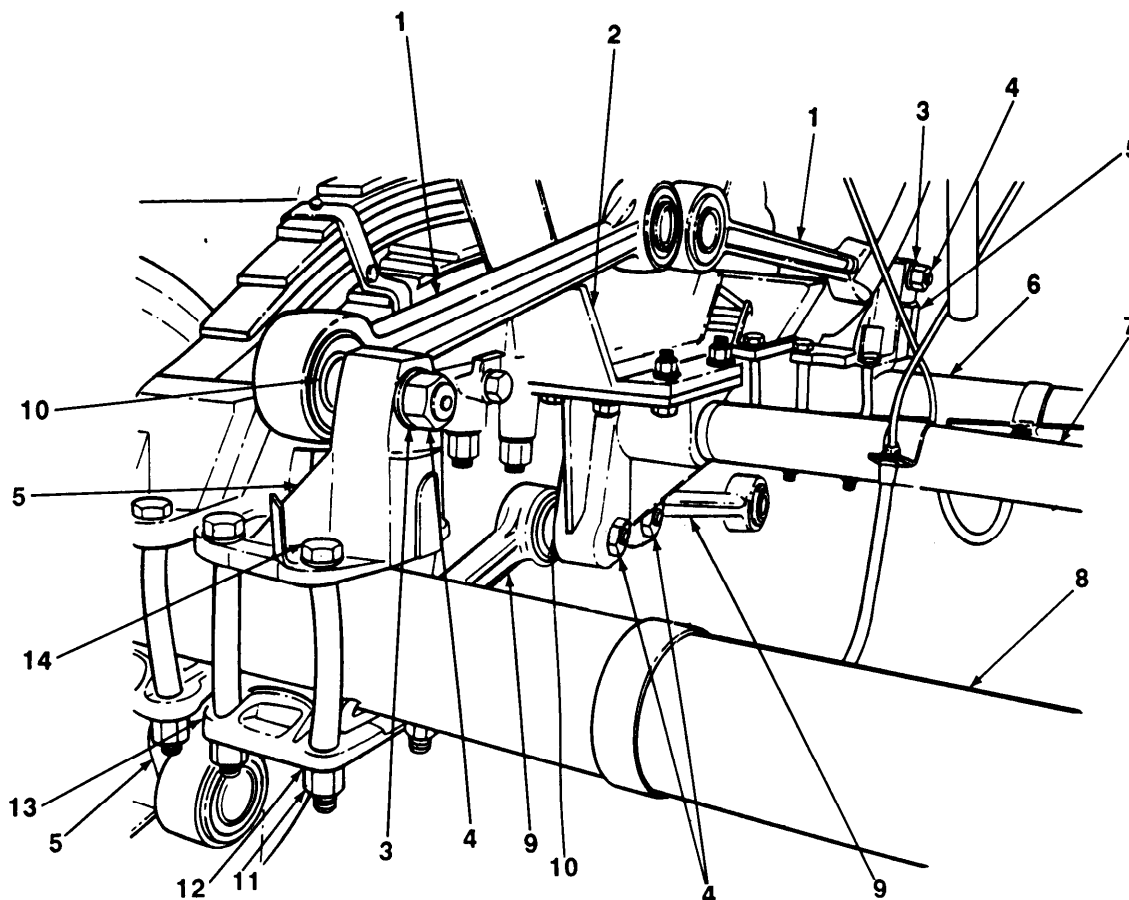
b. LOWER TORQUE ROD INSTALLATION

1. Install two torque rod ball ends (1 O) into torque rod (9).
2. Ensure that torque rod ball ends (1 O) and main axle lower torque rod mounting bracket (5) are free of dirt.
3. Install lower torque rod (9) in axle bracket assembly (7) and main axle lower torque rod mounting bracket (5).
4. Install two nuts (4) and new lockwashers (3) on torque rod ball ends (1 O). Torque nuts from 225-280 lb.-ft. (305-380 N•m).
5. Lower and remove jack from under semitrailer.

c. UPPER TORQUE ROD REMOVAL

1. Raise rear of semitrailer with jack until wheels clear ground. Support semitrailer with jackstands.
2. Remove wheel assemblies on same side as upper torque rod (1) to be removed (para 4-49).

4-57. TORQUE ROD REPLACEMENT (Con't).



3. Remove springs and spring seats on same side as upper torque rod (1) to be removed (para 4-56).
4. Raise front axle (6) until weight of axle is off upper torque rod (1). Support front axle with jackstands.
5. Remove two nuts (4) and lockwashers (3) from torque rod ball ends (1 O) connecting upper torque rod (1) to chassis suspension bracket (2) and upper torque rod brackets (5) on axle (6 or 8). Discard lockwashers.

CAUTION

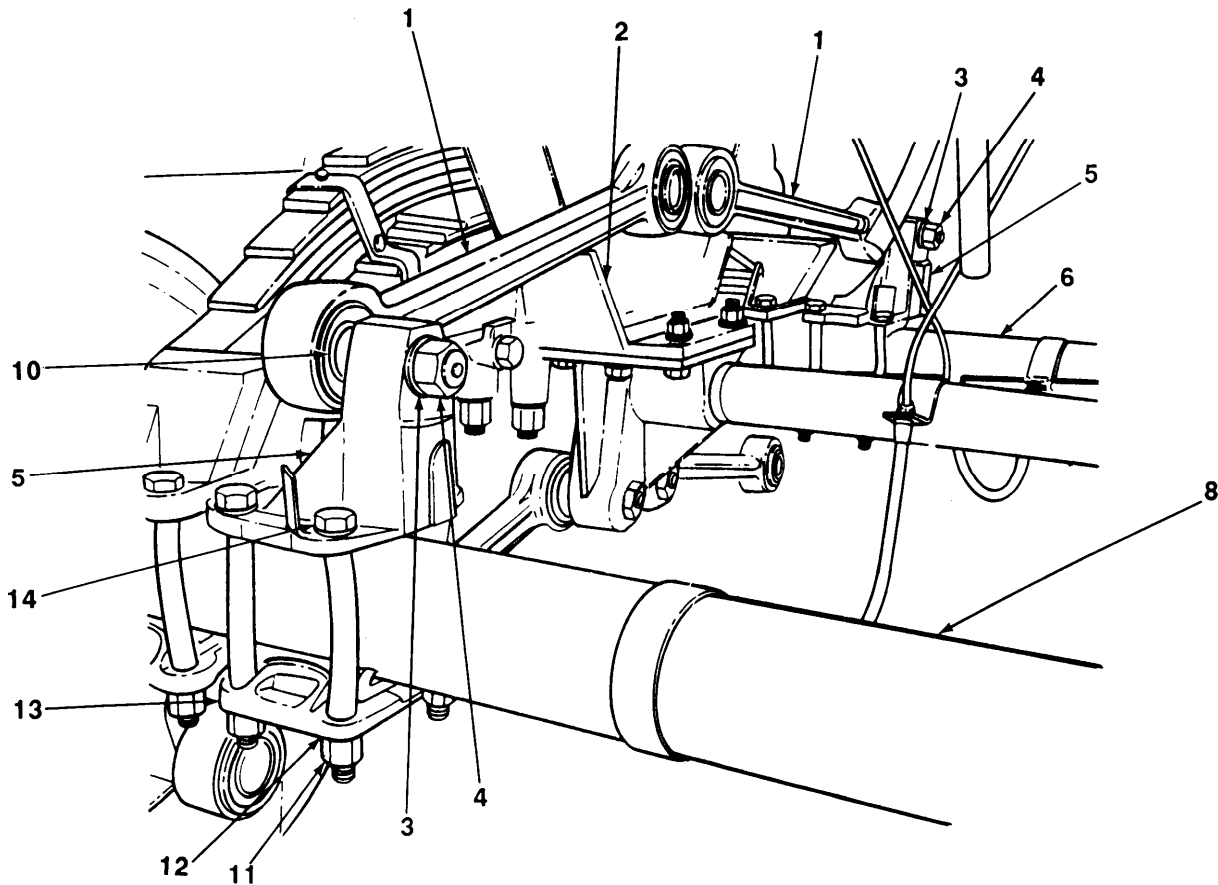
The rubber-mounted torque rod ball ends allow rods to be moved out of normal alinement for removal and installation. Extreme care must be taken to prevent damage to threads on ball ends.

6. Tap threaded ends of each torque rod ball end (1 O) with soft face hammer to loosen torque rod ball ends from chassis suspension bracket (2) and upper torque rod brackets (5).
7. Remove four nuts (11), lockwashers (1 2), and bolts (14) from upper torque rod bracket (5), bracket plate (1 3), and axle (6 or 8). Discard lockwashers.

TA702009

4-57. TORQUE ROD REPLACEMENT (Con't).

8. Work upper torque rod (1) from chassis suspension bracket (2). Remove upper torque rod and upper torque rod bracket (5) off locating pins on front axles (6 or 8).
9. Work upper torque rod (1) from upper torque rod bracket (5).
10. Remove two torque rod ball ends (1 O) from upper torque rod (1).



d. UPPER TORQUE ROD INSTALLATION |

1. Install two torque rod ball ends (10) into upper torque rod (1).
2. Ensure torque rod ball ends (1 O) and upper torque rod bracket (5) are free of dirt.
3. Install upper torque rod (1) in upper torque rod bracket (5).
4. Position upper torque rod bracket (5) and upper torque rod (1) in place over locating pins on axles (6 or 8).
5. Install upper torque rod (1) in chassis suspension bracket (2). Install two nuts (4) and new lockwashers (3) on torque rod ball ends (1 O). Torque nuts from 570-630 lb.-ft. (773-854 N•m).

TA702010

4-57. TORQUE ROD REPLACEMENT (Con't).

6. Install four bolts (14), new lockwashers (12), and nuts(11) in upper torque rod bracket (5), bracket plate (13), and axle (6 or 8).
7. Raise front axle (6) with jack and remove jackstand. Lower and remove jack.
8. Install spring assemblies (para 4-56).
9. Install wheel assemblies (para 4-49).
- 100 Raise rear of semitrailer with jack and remove jackstands. Lower and remove jack from under semitrailer.

Section X. BODY MAINTENANCE

Paragraph Title	Page Number
Bonnet Front Door Linkage Replacement (M313 and M447C)	4-148
Cable Reel Maintenance (All Models Except M749)	4-126
Counterbalance Maintenance (Model M313)	4-130
Counterbalance Maintenance (M447, M447C, and M750)	4-136
Counterbalance Maintenance (M749/Converto Model 8929)	4-140
Counterbalance Maintenance (M749 Southwest Model VRP)	4-144
Splashguard Replacement	4-122
Spring Tensioner Replacement	4-150

4-58. SPLASHGUARD REPLACEMENT.

This Task Covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Front Splashguard Removal (All models except M749) b. Front Splashguard Installation (All models except M749) c. Rear Splashguard Removal (All models except M313) | <ul style="list-style-type: none"> d. Rear Splashguard Installation (All models except M313) e. Rear Splashguard Removal (M313) f. Rear Splashguard installation (M313) |
|---|--|

Initial Setup:

Materials/Parts:

- Two locknuts
- Nineteen lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

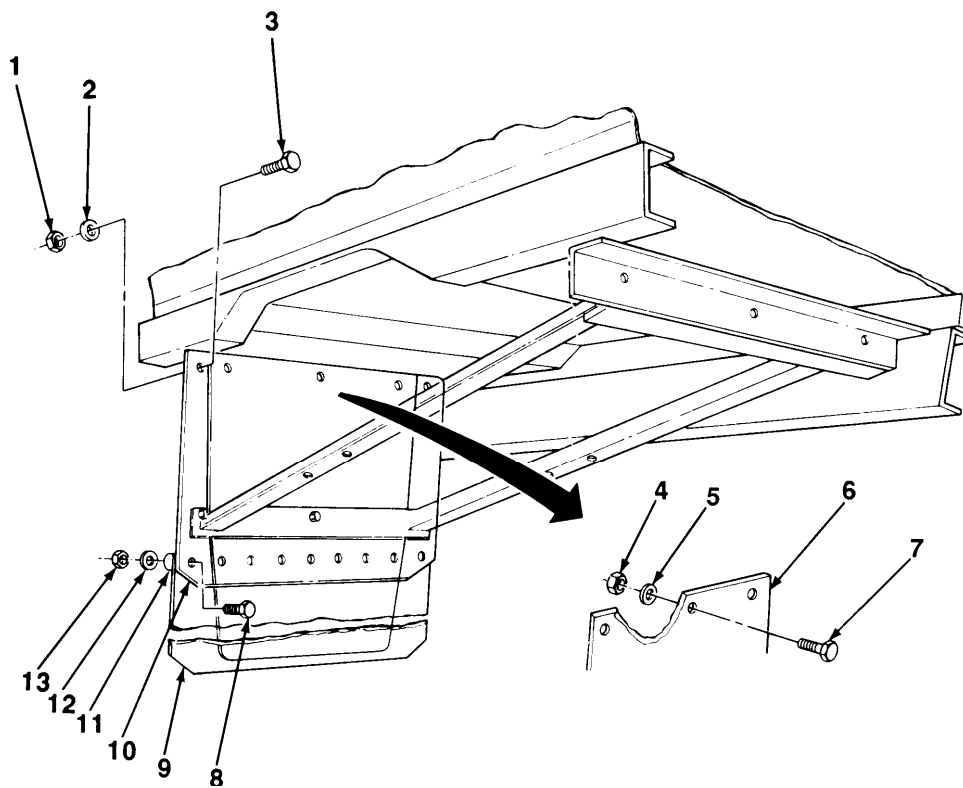
a. FRONT SPLASHGUARD REMOVAL (ALL MODELS EXCEPT M749)

1. Remove cable reel and mounting bracket assembly (para 4-59).
2. Remove two bolts (3), washers (2), and locknuts(1) from splashguard (9). Discard Locknuts.
3. Remove three capscrews (7), lockwashers (5), and nuts (4) from bracket (6) and splashguard (9). Discard lockwashers.
4. Remove nine capscrews (8), lockwashers (1 2), nuts (13), reinforcement bar (n), cable reel shield (10), and splashguard (9) from bracket (6) .Discard lockwashers.

b. FRONT SPLASHGUARD INSTALLATION (ALL MODELS EXCEPT M749)

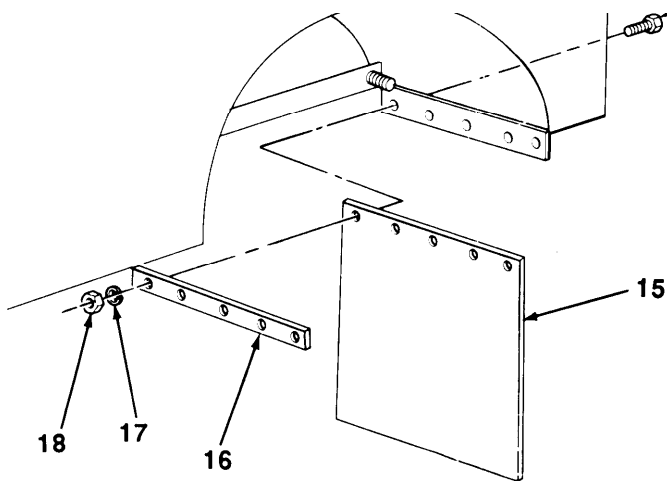
1. Position splashguard (9), cable reel shield (1 O), and reinforcement bar (11) in place on bracket (6) and secure with nine capscrews (8), new lockwashers (12), and nuts (13).
2. Install three capscrews (7), new lockwashers (5), and nuts (4) in bracket (6) and splashguard (9).
3. Install two bolts (3), washers (2), and new locknuts (1) on splashguard (9).
4. Install cable reel and mounting bracket assembly (para 4-59).

4-58. SPLASHGUARD REPLACEMENT (Con't).



c. REAR SPLASHGUARD REMOVAL (ALL MODELS EXCEPT M313)

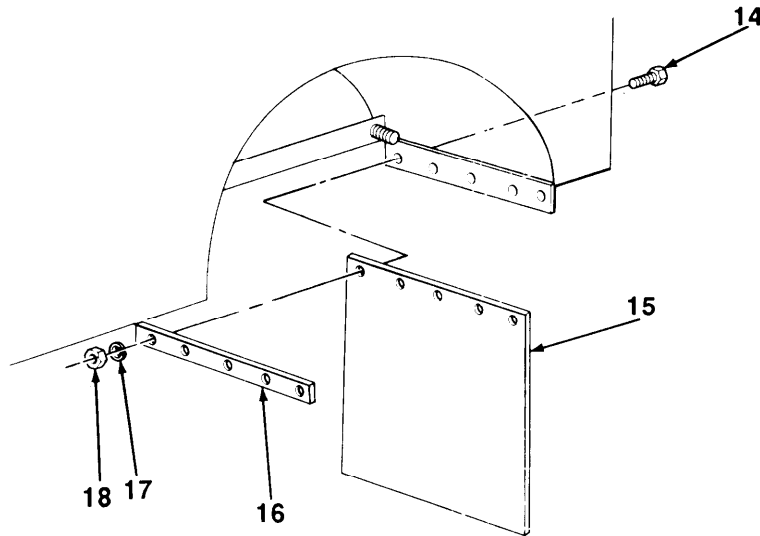
Remove five capscrews (1 4), lockwashers (1 7), nuts (1 8), retainer (1 6), and splashguard (15) from



4-58. SPLASHGUARD REPLACEMENT (Con't).

d. REAR SPLASHGUARD INSTALLATION (ALL MODELS EXCEPT M313) |

Position splashguard (15) and retainer (16) in place on semitrailer and secure with five capscrews (14), new lockwashers (17), and nuts (18).



e. REAR SPLASHGUARD REMOVAL (M313) |

1. Remove two capscrews (27) and nuts (30) from straps (23 and 24), retainer (21), and splashguards (19 and 28).
2. Remove eight capscrews (22), nuts (20), retainer (21) and splashguard (28) from splashguard (19).
3. Remove three screws (31) and splashguard (19) from semitrailer.

NOTE

For left side rear splashguards, perform step 4. For right side rear splashguards perform step 5.

4. Remove grommet (29) from splashguard (19).
5. Remove two nuts (26), lockwashers (25) and straps (23 and 24) from semitrailer. Discard lockwashers.

f. REAR SPLASHGUARD INSTALLATION (M313) |

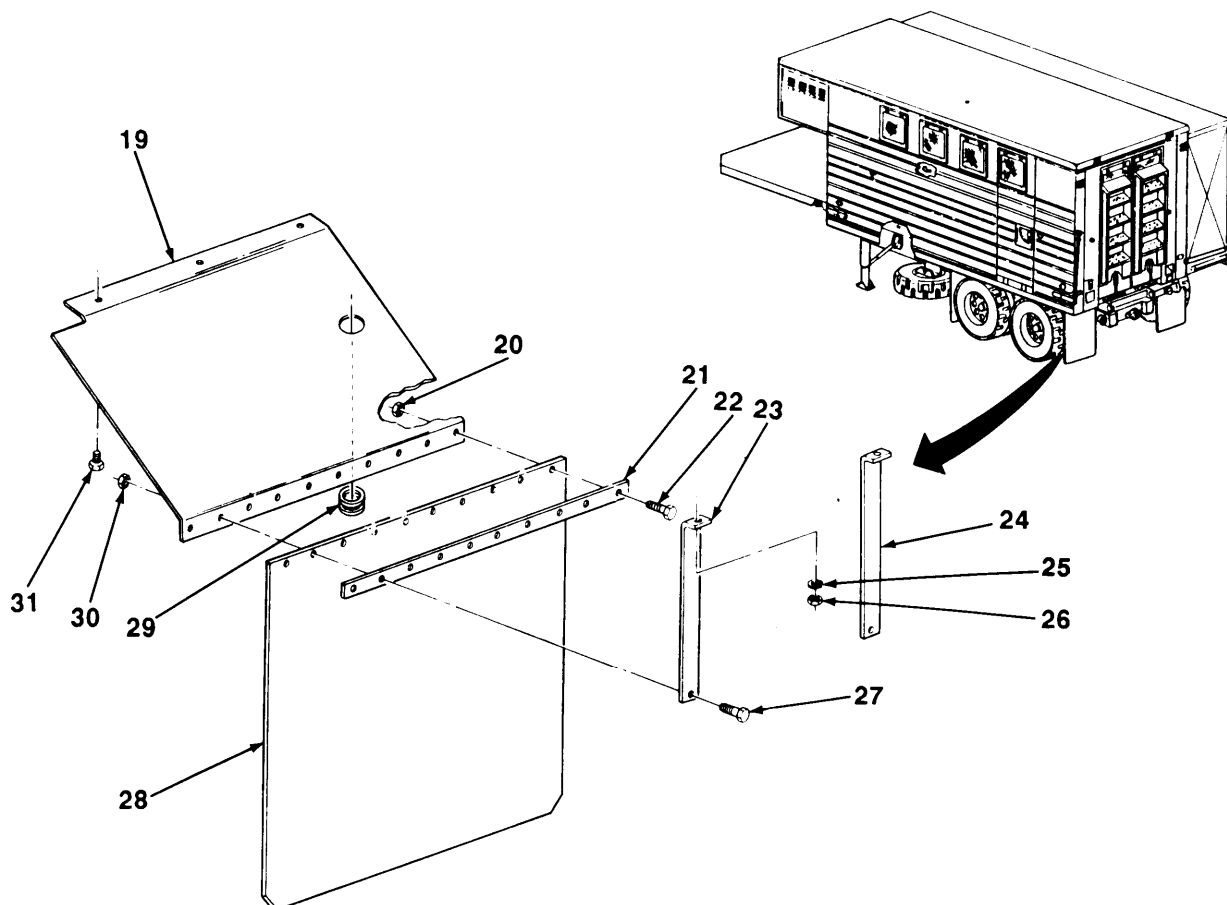
NOTE

For left side rear splashguards, perform step 1. For right side rear splashguards perform step 2.

1. Install two straps (23 and 24) to semitrailer with two nuts (26) and new lockwashers (25).
2. Install grommet (29) in splashguard (19).

TA702012

4-58. SPLASHGUARD REPLACEMENT (Con't).



3. Position splashguard (19) in place on semitrailer and secure with three screws (31).
4. Position splashguard (28) and retainer (21) in place on splashguard (19) and secure with eight cap screws (22)
5. Aline holes in splashguards (19 and 28), retainer (21) and straps (23 and 24) and install two cap screws (27) and nuts (30).

4-59. CABLE REEL MAINTENANCE (ALL MODELS EXCEPT M749).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |
-

Initial Setup:

Equipment Conditions:

- 220-volt power cable removed from cable reel (para 2-18).

Tools/Test Equipment:

- General mechanic's tool kit

Materials/Parts:

- Scrub brush (Item 4, Appendix E)
 - Dry cleaning solvent (Item 14, Appendix E)
 - One self-locking nut
 - Two cotter pins
 - Ten lockwashers
-

a. REMOVAL

1. Remove cotter pin (6) from collar (1 O) and shaft (14).
2. Remove four nuts (15), lockwashers (16), and capscrews (1) from two collars (1 O) and cable reel mounting bracket assembly (7). Remove cable reel assembly (13). Discard lockwashers.
3. Remove self-locking nut (2), washer (3), screw (4), and cotter pin retaining chain (5). Discard self-locking nut.
4. Remove six capscrews (20), lockwashers (18), nuts (19), and cable reel mounting bracket assembly (7) from semitrailer. Discard lockwashers.

b. DISASSEMBLY

1. Remove two cotter pins (11) from shaft (14), Discard cotter pins.
2. Remove shaft (14), two collars (1 O), four bushings (9), two spacers (8), spacer (1 2), and two ring spacers (17) from cable reel (13).

c. CLEANING AND inspection

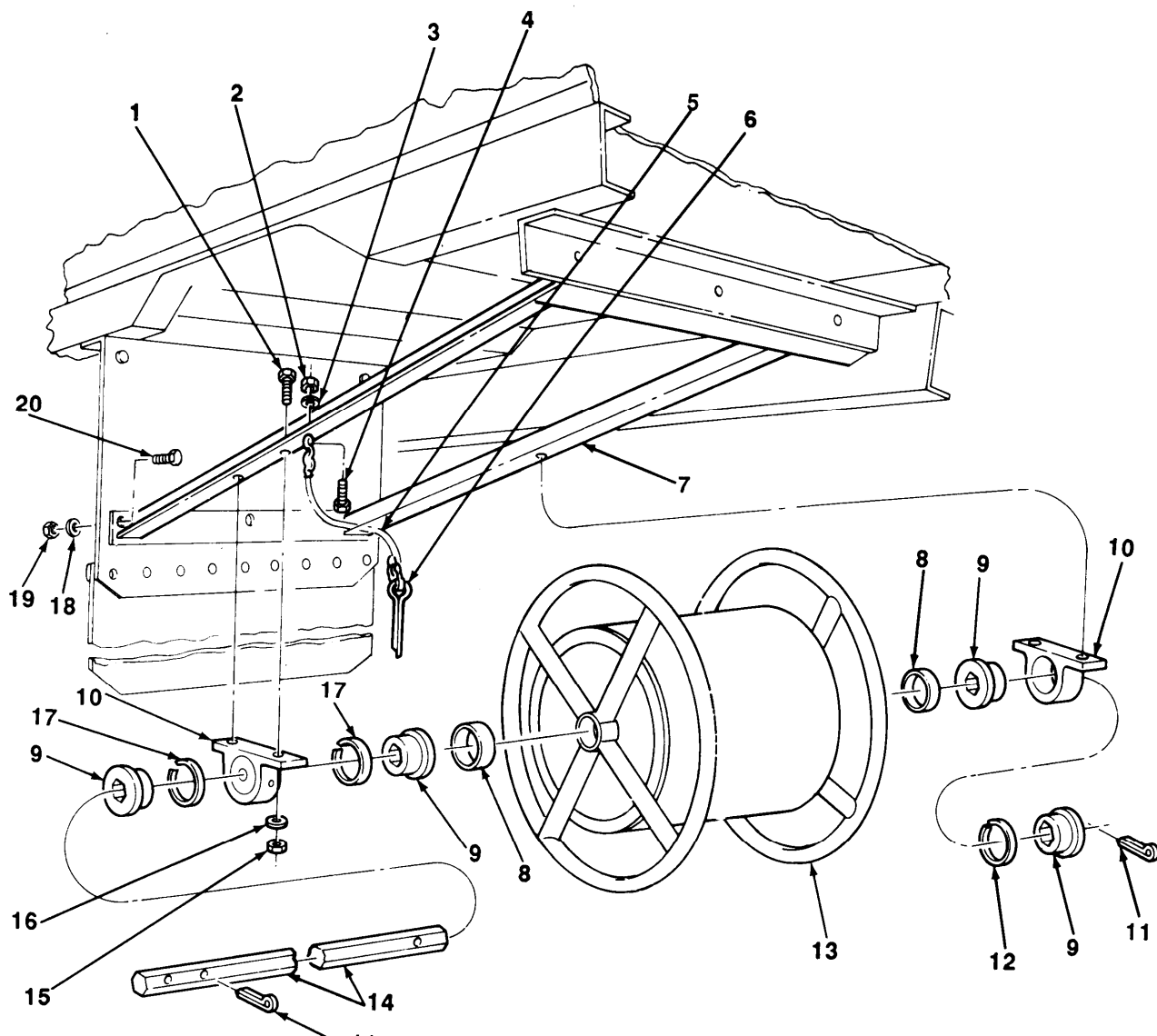
1. Remove dirt with water and stiff brush.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

2. Remove grease from parts with dry cleaning solvent.
3. Inspect all parts for cracks, bends, breaks, or warpage. Inspect supports, bushings, and spacers for wear. Replace defective parts.

4-59. CABLE REEL MAINTENANCE (ALL MODELS EXCEPT M749) (Con't).



d. ASSEMBLY

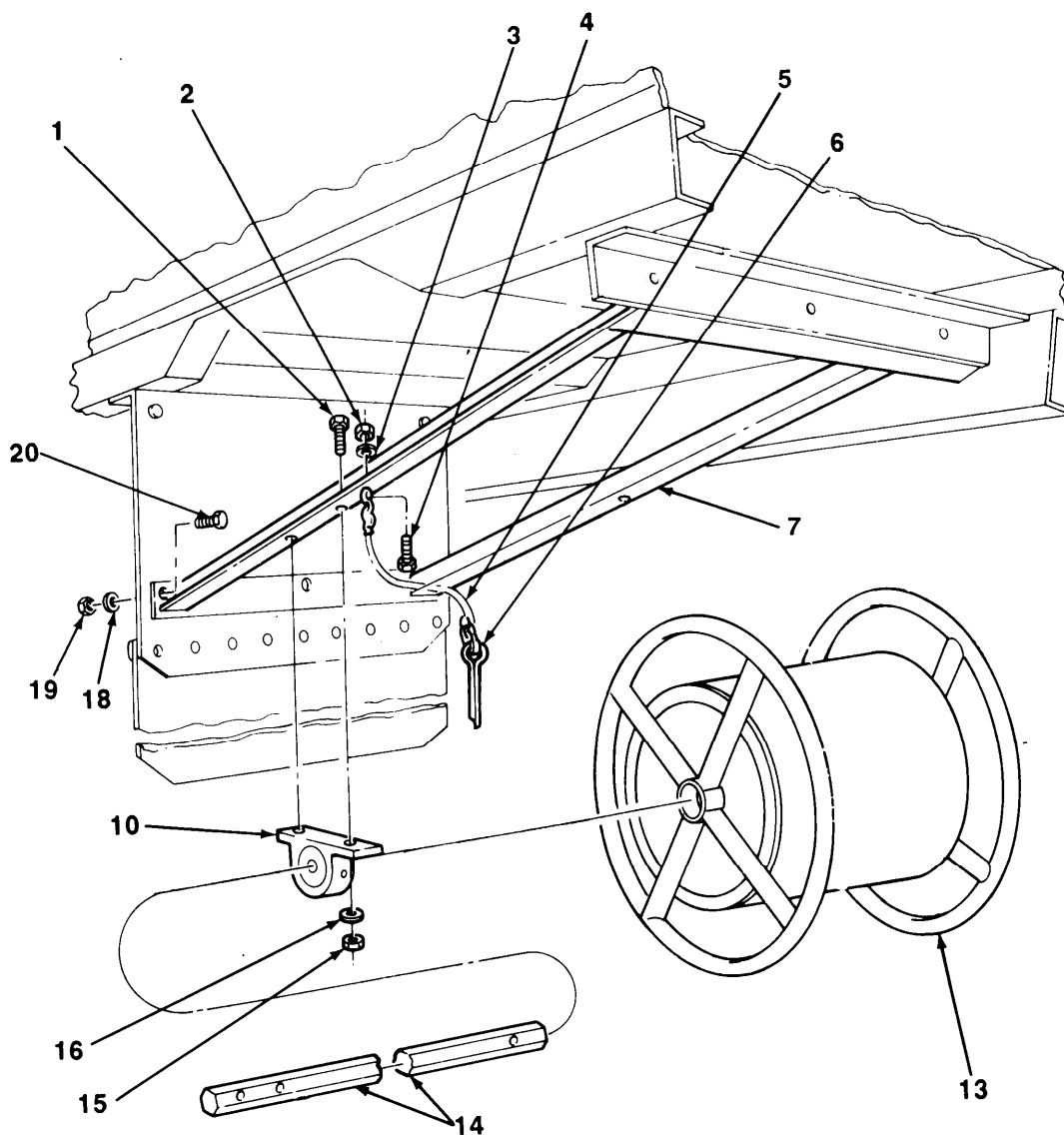
1. Install shaft (14), two spacers (8), four bushings (9), spacer (12), two ring spacers (17), and two collars (1 O) in cable reel assembly (13).
2. Install two new cotter pins (11) in shaft (14).

TA702014

4-59. CABLE REEL MAINTENANCE (ALL MODELS EXCEPT M749) (Con't).

e. INSTALLATION

1. Position cable reel mounting bracket assembly (7) in place on semitrailer with mounting hole alined. Install six capscrews (20), new lockwashers (18), and nuts (19).
2. Position cotter pin retaining chain (5) in place on cable reel mounting bracket assembly(7) and install screw(4), washer (3), and new self-locking nut (2).
3. Position cable reel assembly (13) in place on cable reel mounting bracket assembly (7) and install four capscrews (1), new lockwashers (16), and nuts (15).



TA702015

4-59. CABLE REEL MAINTENANCE (ALL MODELS EXCEPT M749) (Con't).

4. Insert cotter pin (6) in collar (10) and shaft (1 4).
5. Lubricate cable reel in accordance with Lubrication Instructions (Chapter 3, Section I).

FOLLOW-ON TASKS:

- Install 220-volt power cable (para 2-18).

4-60. COUNTERBALANCE MAINTENANCE (M313).

This Task Covers:

- | | |
|----------------------------|---------------|
| a. Removal | d. Assembly |
| b. Disassembly | Installation |
| c. Cleaning and inspection | f. Adjustment |
-

Initial Setup:

Equipment Conditions:

- Semitrailer parked on firm, level ground.

Tools/Test Equipment:

- General mechanic's tool kit

Materials/Parts:

- Dry cleaning solvent (item 14, Appendix E)
 - Three cotter pins
 - Five rivets
-

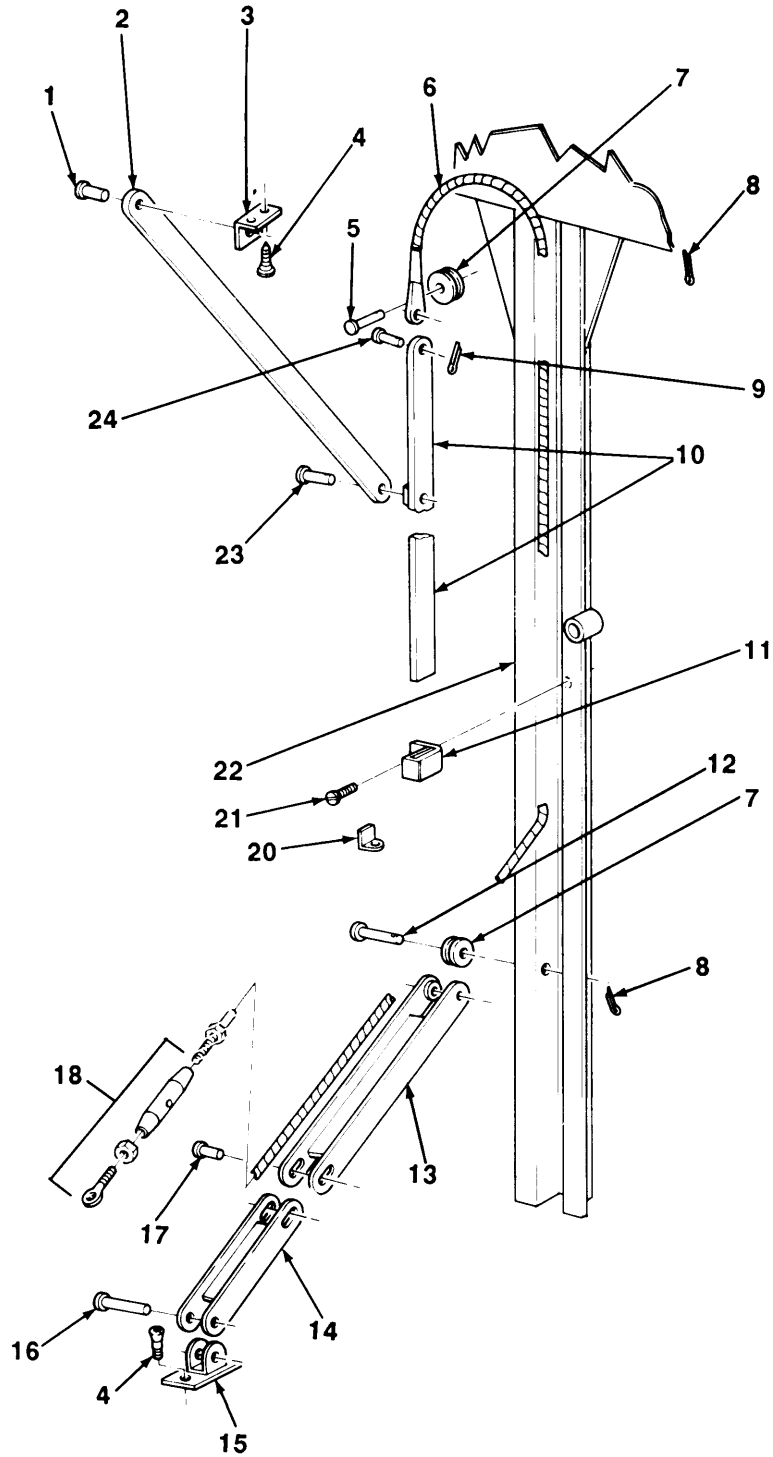
a. REMOVAL

1. Position side wall in fully expanded position and secure end panel doors in open position (para 2-13).
2. Open hinged roof and hinged floor. Support hinged roof with swivel hooks. Place one inch thick wood blocks between end swivel hook and hinged roof to release tension on wire rope assembly (6).
3. Remove cotter pin (9) and headed straight pin (24) from wire rope assembly (6) and upper end of counterbalance bar (10). Discard cotter pin.
4. Remove two cotter pins (8) and headed straight pins (5 and 12) from upper and lower groove pulleys(7). Discard cotter pins.
5. Unscrew turnbuckle assembly(18) from lower end of wire rope assembly (6).
6. Remove wire rope assembly (6) upward through four cable guides (20).
7. Remove four screws (4), two brackets (3 and 15), connecting link (2), and two adjusting arms (13 and 14) from hinged roof and floor.
8. Remove two screws (21), four guide clip assemblies (11), and counterbalance bar (1 O) from corner post (22).

b. DISASSEMBLY I

1. Remove rivet (1) and bracket (3) from connecting link (2). Discard rivet.
2. Remove rivet (23) and connecting link (2) from counterbalance bar (10). Discard rivet.
3. Remove rivet (16) and bracket (15) from adjusting arm (14). Discard rivet.
4. Remove two rivets (17) and separate adjusting arms (13 and 14). Discard rivets.

4-60. COUNTERBALANCE MAINTENANCE (M313) (Con't).



TA702016

4-60. COUNTERBALANCE MAINTENANCE (M313) (Con't).

c. **CLEANING AND INSPECTION**

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38° C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect wire rope assembly for wear, breaks, kinks, or frayed areas.
3. Inspect connecting link and adjusting arms for cracks, bends, or breaks. Straighten any minor bends.
4. Inspect groove pulleys for excessive wear or cracks.
5. Inspect counterbalance bar for cracks, bends, or breaks. Straighten any minor bends.
6. Inspect all mounting hardware for cracks or damaged threads.
7. Replace or repair all defective parts as necessary.

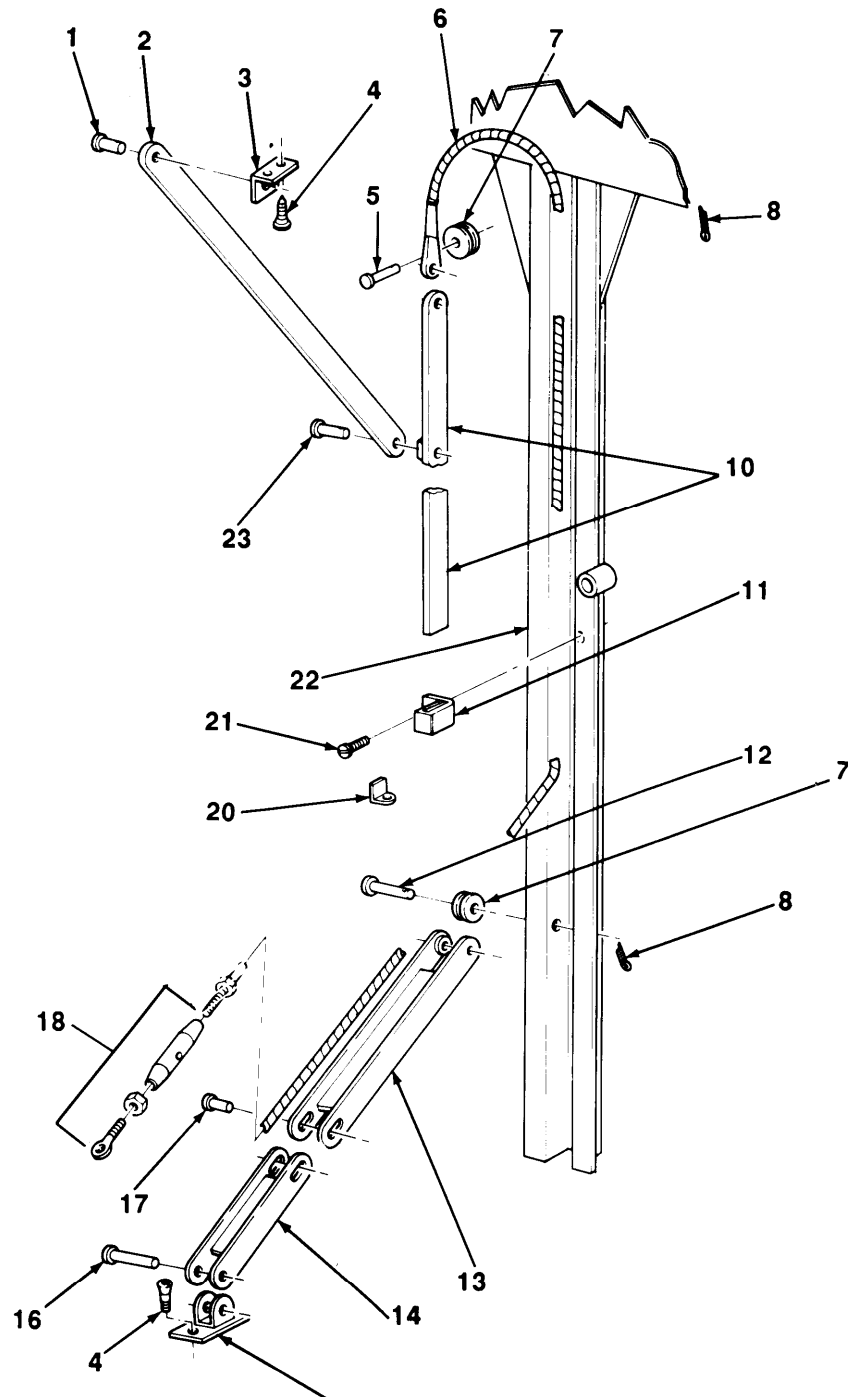
d. **ASSEMBLY**

1. Position adjusting arms (13 and 14) together with slotted holes aligned. Install two new rivets (17) in slotted holes.
2. Position bracket (15) in place on end of adjusting arm (14). Install new rivet (16) in bracket and adjusting arm.
3. Align hole in one end of connecting link (2) with middle hole in counterbalance bar (10). Install new rivet (23).
4. Position bracket (3) in place on end of connecting link (2) and install new rivet (1).

e. **Installation**

1. Position four guide clip assemblies (11) and counterbalance bar (10) in place on corner post (22) and install two screws (21).
2. Position two brackets (3 and 15) in place on hinged roof and floor, and install four screws (4).
3. Thread turnbuckle end of wire rope assembly (6) down through four cable guides (20).
4. Align holes in end of adjusting arm (13) with holes in corner post (22). Position lower groove pulley (7) in channel of adjusting arm with wire rope assembly (6) behind groove pulley.
5. Install headed straight pin (12) in corner post (22), adjusting arm (13), and groove pulley (7). Install new cotter pin (8) in headed straight pin.
6. Screw lower end of wire rope assembly (6) in turnbuckle assembly (18).
7. Position upper groove pulley (7) on corner post (22). Install headed straight pin (5) in upper groove pulley and secure with new cotter pin (8).

4-60. COUNTERBALANCE MAINTENANCE (M313) (Con't).



TA702017

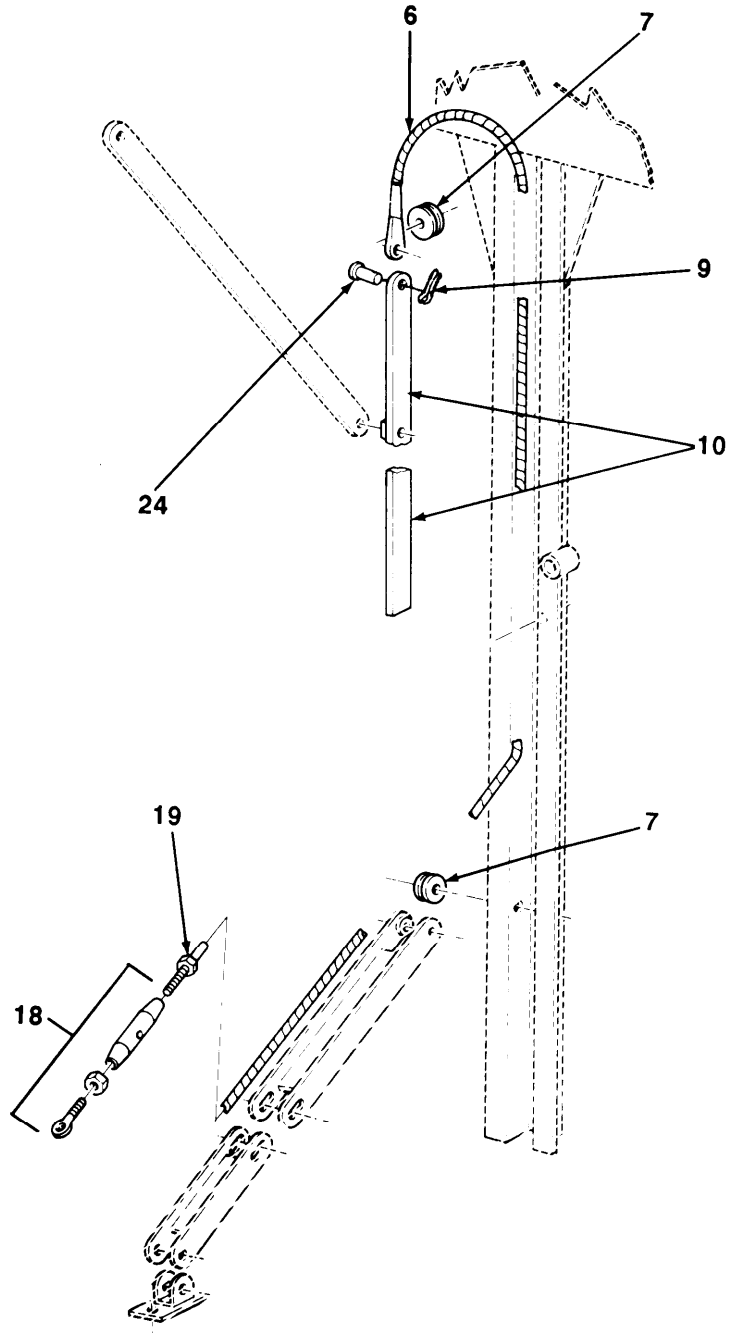
4-60. COUNTERBALANCE MAINTENANCE (M313) (Con't).

8. Pull wire rope assembly (6) over upper groove pulley (7) and align hole in end with hole on upper end of counterbalance bar (1 O).
9. Install headed straight pin (24) in wire rope assembly(6) and upper end of counterbalance bar (1 O). Secure with new cotter pin (9).
10. Remove one inch thick wood blocks and close hinged roof and door.
11. Retract side walls and close end panel doors (para 2-13).

f. ADJUSTMENT

1. Loosen nut in turnbuckle assembly (18) and nut (19).
2. Turn turnbuckle assembly (18) clockwise or counterclockwise until proper tension is obtained on wire rope assembly (6). Tighten nut in turnbuckle assembly and nut(19) on end of wire rope assembly to lock turnbuckle in position.
3. Lubricate turnbuckle assembly (18) and groove pulleys (7) in accordance with Lubrication Instructions (Chapter 3, Section I).

4-60. COUNTERBALANCE MAINTENANCE (M313) (Con't).



TA702018

4-61. COUNTERBALANCE MAINTENANCE (M447, M447C, AND M750).

This Task Covers:

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

Initial Setup:

Equipment Conditions:

- Semitrailer parked on firm, level ground.

Tools/Test Equipment:

- General mechanic's tool kit
- Hydraulic jacks

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
 - Three cotter pins
 - Four rivets
-

a. REMOVAL

1. Set jacks or blocking under lower folding side door to release tension on wire rope assembly (7).
2. Remove cotter pin (11) and headed straight pin (6) from wire rope assembly (7) and upper end of counterbalance bar (25). Discard cotter pin.
3. Remove two cotter pins (9), headed straight pins (5 and 22), washers (8), and upper and lower groove pulleys (10) from corner post (12).
4. Unscrew turnbuckle (14) from lower end of wire rope assembly (7).
5. Remove upper end of wire rope assembly (7) from corner post (12).
6. Remove four screws (4), two brackets (3 and 19), connecting link (2), arm assembly (16), and link (18) from upper and lower folding side doors.
7. Remove two screws (24), guide clip assemblies (23), and counterbalance bar (25) from corner post (12).

b. DISASSEMBLY

1. Remove rivet (1) and bracket (3) from connecting link (2). Discard rivet.
2. Remove rivet (26) and connecting link (2) from counterbalance bar (25). Discard rivet.
3. Remove headless straight pin (20), lower end of wire rope assembly (7), and bracket(19) from link (18).
4. Remove two rivets (21) and washers (17) from link (18) and arm assembly (16). Discard rivets.

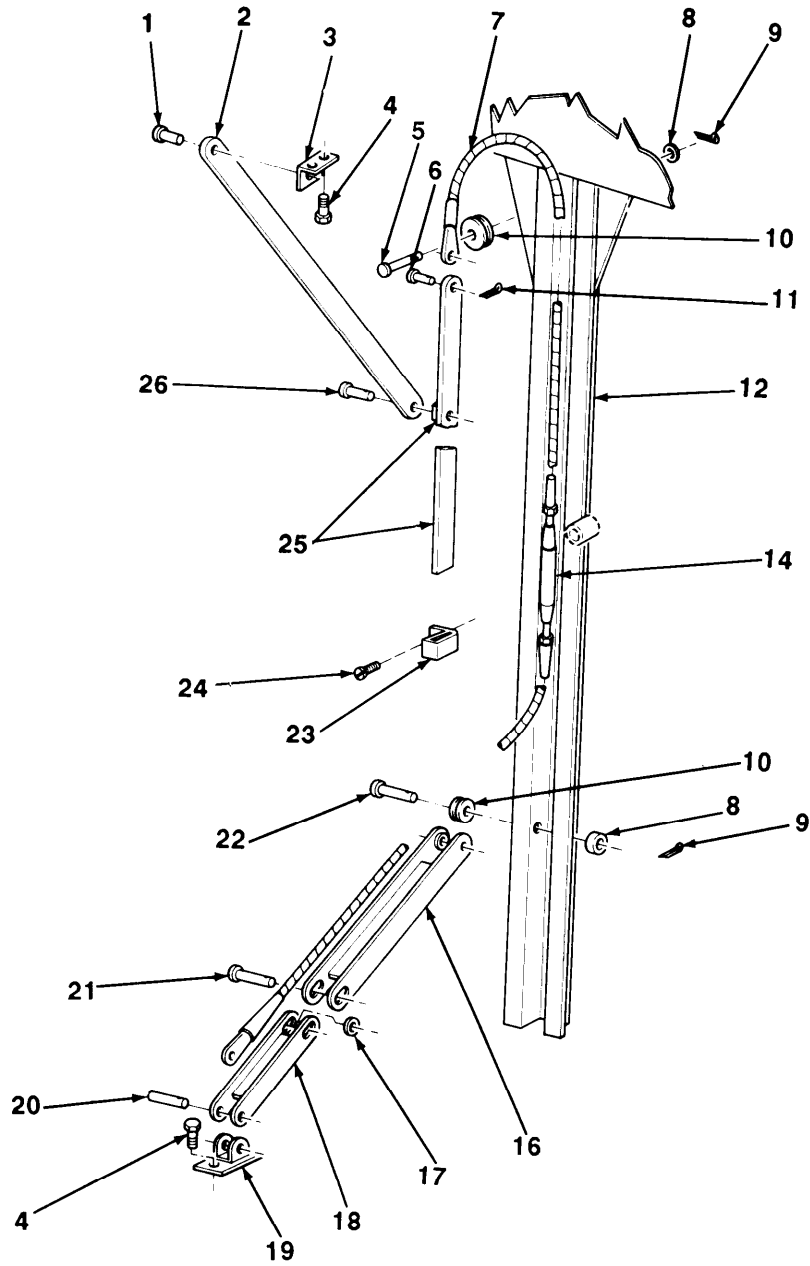
c. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect wire rope assembly for wear, breaks, kinks, or frayed areas.

4-61. COUNTERBALANCE MAINTENANCE (M447, M447C, AND M750) (Con't).



4-61. COUNTERBALANCE MAINTENANCE (M447, M447C, AND M750) (Con't).

3. Inspect connecting link, link, and arm assembly for cracks, bends, or breaks. Straighten any minor bends.
4. Inspect groove pulleys for excessive wear or cracks.
5. Inspect counterbalance bar for cracks, bends, or breaks. Straighten any minor bends.
6. Inspect all mounting hardware for cracks or damaged threads.
7. Replace or repair all defective parts as necessary.

d. ASSEMBLY

1. Position link (18) and arm assembly (16) together with slotted holes alined. Install two new rivets (21) and washers (17) in slotted holes.
2. Position bracket (19) in place on end of link (18). Install headless straight pin (20) in link and lower end of wire rope assembly (7).
3. Aline hole in one end of connecting link (2) with middle hole in counterbalance bar (25). Install new rivet (26).
4. Position bracket (3) in place on end of connecting link (2) and install new rivet (I).

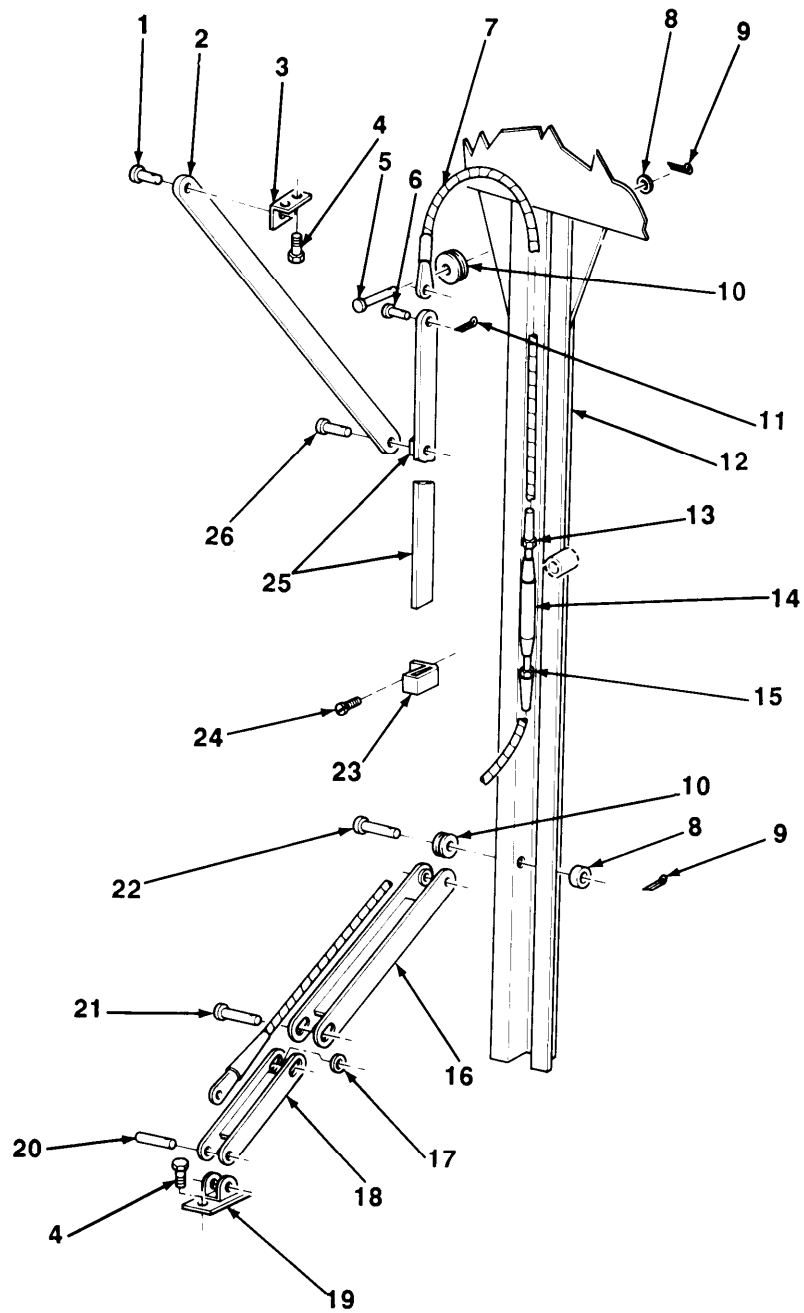
e. INSTALLATION

1. Position two guide clip assemblies (23) and counterbalance bar (25) in place on corner post(12) and install two screws (24).
2. Position two brackets (3 and 19) with connecting link (2), arm assembly (16), and link (18) on upper and lower folding side doors, and install four screws (4).
3. Screw turnbuckle (14) to lower end of wire rope assembly (7).
4. Aline holes in end of arm assembly (16) with holes in corner post (12). Position lower groove pulley (1 O) in channel of arm assembly with wire rope assembly (7) behind upper groove pulley (1 O).
5. Install headed straight pin (22) in corner post (12), arm assembly (16), and lower groove pulley (10). Install washer (8) and new cotter pin (9) on headed straight pin (22).
6. Position upper groove pulley (1 O) with wire rope assembly (7) behind in corner post (1 2). Install headed straight pin (5), washer (8), and new cotter pin (9).
7. Aline hole in upper end of wire rope assembly (7) with top hole in counterbalance bar (25). Install headed straight pin (6) and new cotter pin (11).
8. Remove jacks or blocking from lower folding side door.

f.. ADJUSTMENT

1. Loosen nuts (13 and 15).
2. Turn turnbuckle(14) clockwise or counterclockwise until proper tension is obtained on wire rope assembly(7). Tighten nuts (13 and 15) on each end of wire rope assembly to lock turnbuckle in position.
3. Lubricate turnbuckle (14) and groove pulleys (1 O) in accordance with Lubrication Instructions (Chapter 3, Section I).

4-61. COUNTERBALANCE MAINTENANCE (M447, M447C, AND M750) (Con't).



TA702020

4-62. COUNTERBALANCE MAINTENANCE (M749 CONVERTO MODEL 8929).

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> Removal Disassembly c. Cleaning and Inspection | <ul style="list-style-type: none"> d. Assembly Installation Adjustment |
|--|---|
-

Initial Setup:

Equipment Conditions:

- Semitrailer parked on firm, level ground.

Tools/Test Equipment:

- General mechanic's tool kit
- Hydraulic jacks

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
 - Two cotter pins
 - Three rivets
 - Eight lockwashers
-

a. REMOVAL I

1. Set jacks or blocking under lower folding side door to release tension on wire rope assembly **(9)**.
2. Remove screw (7), lockwasher(11), and nut(12) from wire rope assembly(9) and upper end of counterbalance bar (27). Discard lockwasher.
3. Remove two cotter pins (1 O) from headed straight pins (6). Remove headed straight pins and upper and lower groove pulleys (8) from corner post (15). Discard cotter pins.
4. Unscrew turnbuckle **(23)** from lower end of wire rope assembly(9) and remove upper end of wire rope assembly from corner post (15).
5. Remove four screws (5), lockwashers (4), two brackets (3 and 18), and three arms (2, 16, and 17) from upper and lower folding side doors. Discard lockwashers.
6. Remove two screws (25), guide clip assemblies (26), lockwashers (1 4), nuts (1 3), and counterbalance bar (27) from corner post (15). Discard lockwashers.

b. DISASSEMBLY

1. Remove two bolts (1), lockwashers(11), nuts (12), and arm (2) from bracket (3) and counterbalance bar (27). Discard lockwashers.
2. Remove rivet (19) and bracket (18) from arm (17) and eyebolt (21). Discard rivet.
3. Remove two rivets (20) and separate arms (16 and 17). Discard rivets.

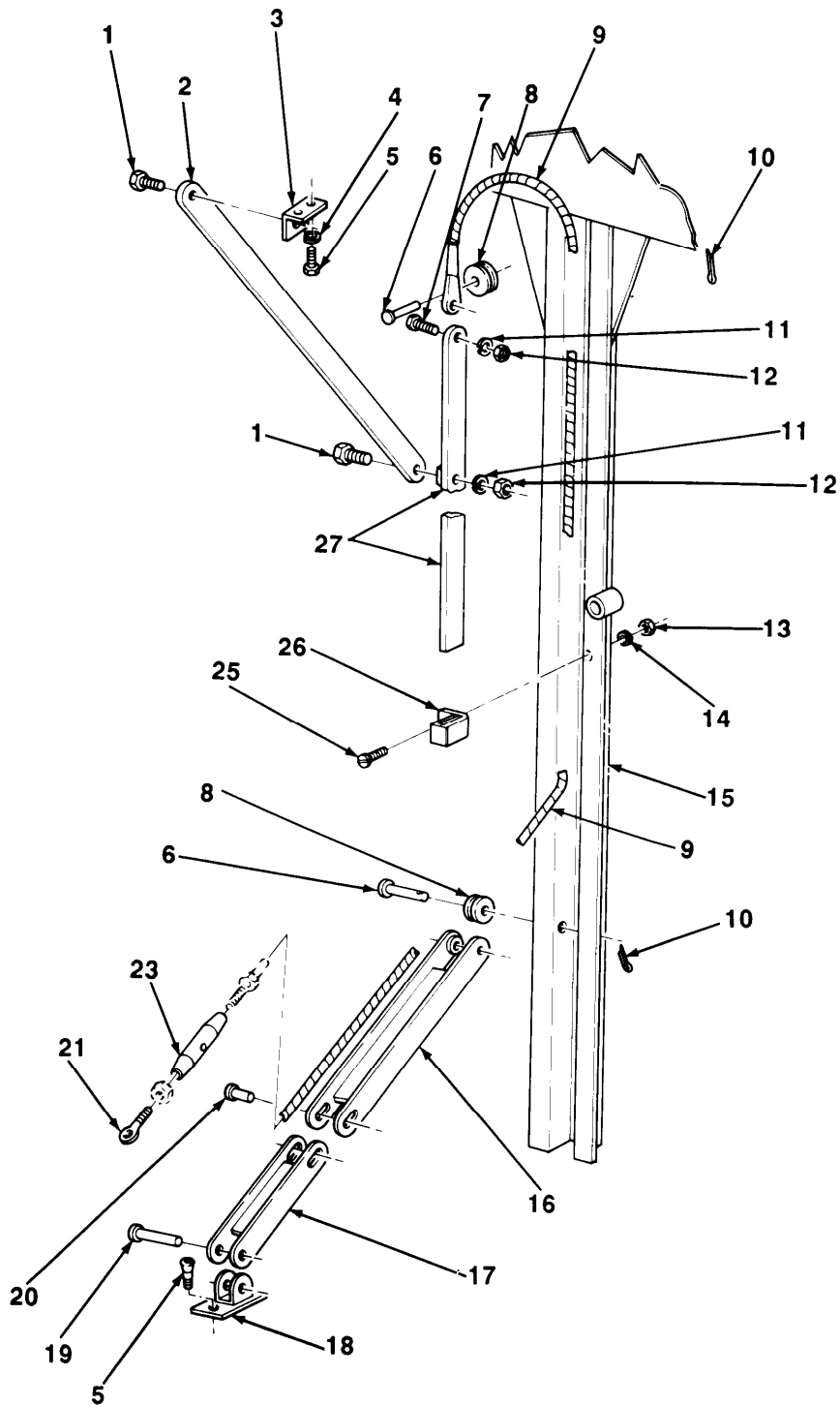
c. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). if you become dizzy while using cleaning solvent, immediately get fresh air and medical help. if solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.

4-62. COUNTERBALANCE MAINTENANCE (M749 CONVERTO MODEL 8929) (Con't).



TA702021

4-62. COUNTERBALANCE MAINTENANCE (M749 CONVERTO MODEL 8929) (Con't).

2. Inspect wire rope assembly for wear, breaks, kinks, or frayed areas.
3. Inspect arms for cracks, bends, or breaks. Straighten any minor bends.
4. Inspect groove pulleys for excessive wear or cracks.
5. Inspect counterbalance bar for cracks, bends, or breaks. Straighten any minor bends.
6. Inspect all mounting hardware for cracks or damaged threads.

Replace or repair all defective parts as necessary.

d. ASSEMBLY

1. Position two arms (16 and 17) together with slotted holes alined. Install two new rivets (20) in slotted holes.
2. Position bracket (18) on end of arm (17) and through eyebolt (21) and install new rivet (19).
3. Position bracket (3) and counterbalance bar (27) on arm (2) with holes alined. Install two bolts (I), new lockwashers (11), and nuts (12).

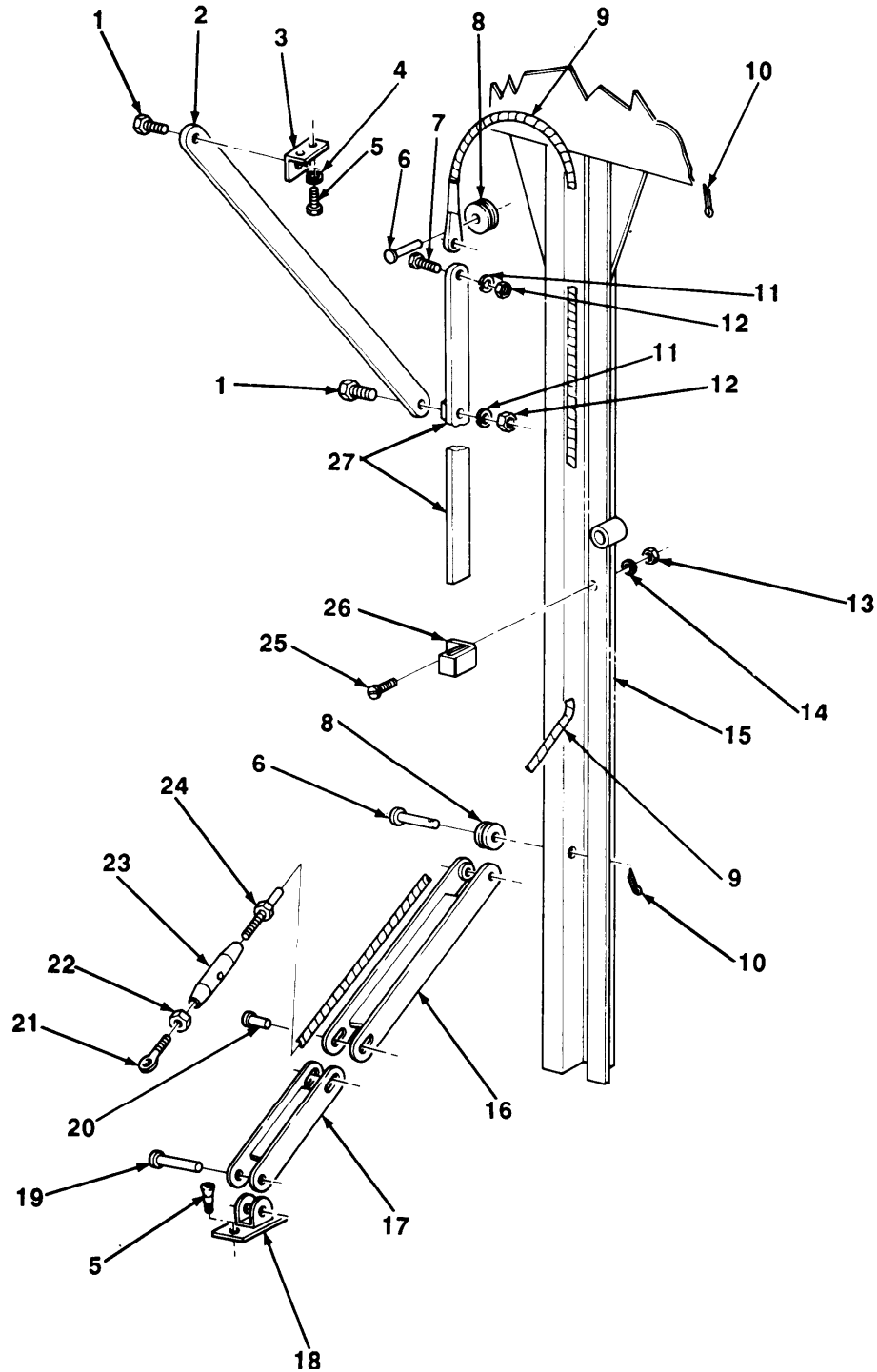
e. INSTALLATION

1. Position two guide clip assemblies (26) and counterbalance bar (27) in place on corner post(15) and install two screws (25), new lockwashers (14), and nuts (13).
2. Position two brackets (3 and 18) with arms (2, 16, and 17) attached on upper and lower folding side doors, and install four screws (5) and new lockwashers (4).
3. Screw turnbuckle (23) to lower end of wire rope assembly (9).
4. Aline holes in end of arm (16) with holes in corner post (15). Position lower groove pulley (8) with wire rope assembly (9) behind, in channel of arm. Install headed straight pin (6) and new cotter pin (1 O).
5. Position upper groove pulley (8) with wire rope assembly (9) behind, in corner post (1 5). Aline holes and install headed straight pin (6) and new cotter pin (1 O).
6. Aline hole in upper end of wire rope assembly(9) with top hole in counterbalance bar (27). Install screw(7), new lockwasher(11), and nut (12).
7. Remove jacks or blocking from lower folding side door.

f. ADJUSTMENT

1. Loosen nuts (22 and 24).
2. Turn turnbuckle (23) clockwise or counterclockwise until proper tension is obtained on wire rope assembly(9). Tighten nuts (22 and 24) on each end of wire rope assembly to lock turnbuckle in position.
3. Lubricate turnbuckle (23) and groove pulleys (8) in accordance with Lubrication Instructions (Chapter 3, Section I).

4-62. COUNTERBALANCE MAINTENANCE (M749 CONVERTO MODEL 8929) (Con't).



TA702022

4-63. COUNTERBALANCE MAINTENANCE (M749 SOUTHWEST MODEL VRP).

This Task Covers:

- | | |
|----------------------------|--------------|
| a. Removal | d. Assembly |
| b. Disassembly | Installation |
| c. Cleaning and Inspection | Adjustment |
-

Initial Setup:

Equipment Conditions:

- Semitrailer parked on firm, level ground.

Tools/Test Equipment:

- General mechanic's tool kit
- Hydraulic jacks

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
 - . Two cotter pins
 - Four lockwashers
-

a. REMOVAL

1. Set jacks or blocking under lower folding side door to release tension on wire rope assembly (9).
2. Remove screw (8), lockwasher (30), and nut (29) from wire rope assembly (9) and upper end of counterbalance bar (28). Discard lockwasher.
3. Remove screw (7), upper groove pulley (1 O), spacer (1 1), lockwasher (1 2), and nut(13) from corner post (27). Discard lockwasher.
4. Remove screw (7), lower groove pulley (1 O), spacer (1 8), and nut (19) from corner post (27).
5. Unscrew turnbuckle(16) from lower end of wire rope assembly(9) and remove upper end of wire rope assembly from corner post (27).
6. Remove four screws (6), two brackets (3 and 22), and arms (2, 20, and 21) from upper and lower folding side doors.
7. Remove two nuts (15), screws (25), guide clip assemblies (**26**), and counterbalance bar (28) from corner post (27).

b. DISASSEMBLY I

1. Remove two bolts (1), lockwashers (4), nuts (5), and arm (**2**) from bracket (3) and counterbalance bar (28). Discard lockwashers.
2. Remove headless straight pin (23) and bracket (22) from arm (21).
3. Remove rivet (24) and separate arms (20 and 21). Discard rivet.

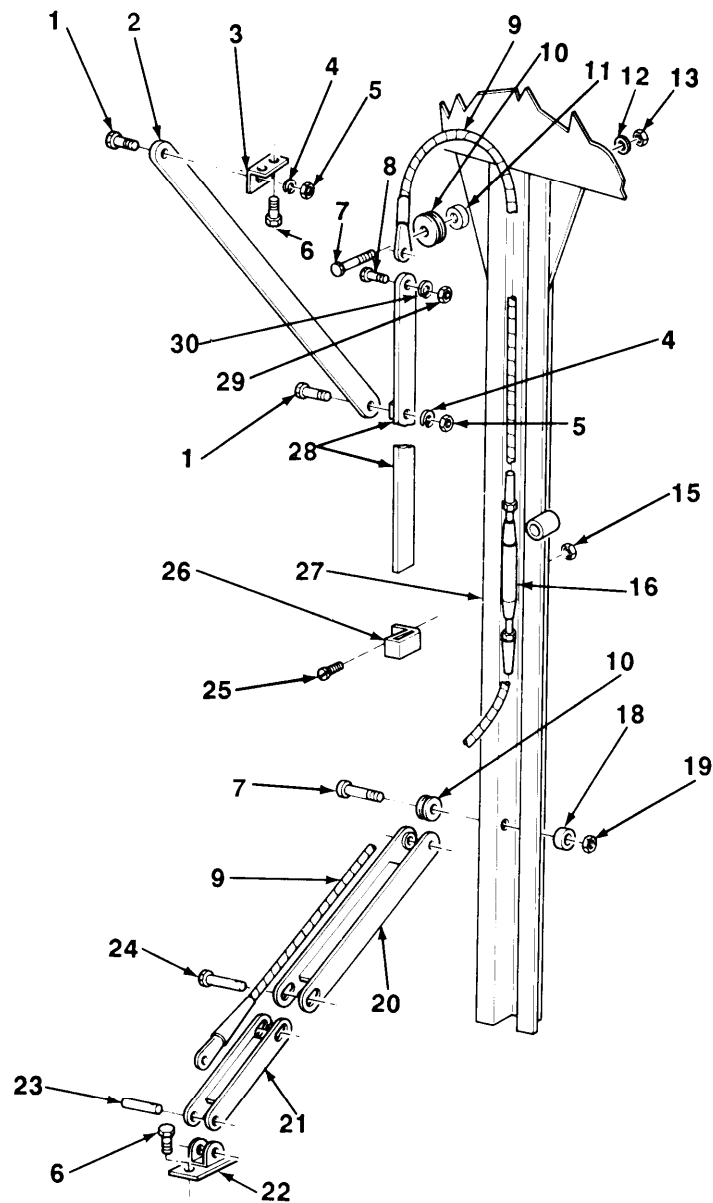
c. CLEANING AND inspection

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.

4-63. COUNTERBALANCE MAINTENANCE (M749 SOUTHWEST MODEL VRP) (Con't).

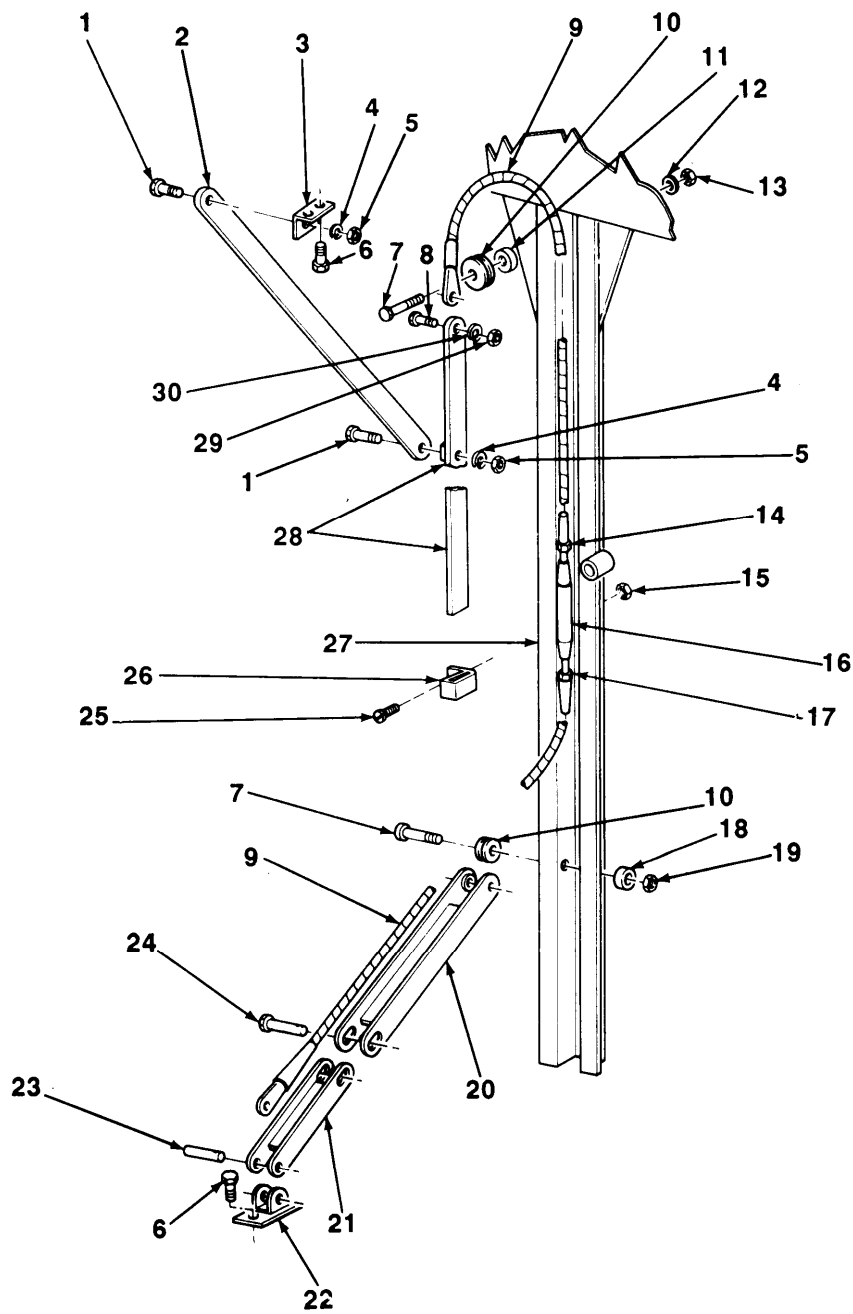


2. Inspect wire rope assembly for wear, breaks, kinks, or frayed areas.
3. Inspect arms for cracks, bends, or breaks. Straighten any minor bends,
4. Inspect groove pulleys for excessive wear or cracks.
5. Inspect counterbalance bar for cracks, bends, or breaks. Straighten any minor bends.

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4-63. COUNTERBALANCE MAINTENANCE (M749 SOUTHWEST MODEL VRP) (Con't).

6. Inspect all mounting hardware for cracks or damaged threads.
7. Replace or repair all defective parts as necessary.



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4-63. COUNTERBALANCE MAINTENANCE (M749 SOUTHWEST MODEL VRP) (Con't).

d. ASSEMBLY

1. Position arms (20 and 21) together with slotted holes alined. Install new rivet (24) through slotted holes.
2. Position bracket (22) on end of arm (21) and install headless straight pin (23).
3. Position bracket (3) and counterbalance bar (28) on arm (2) with holes alined. Install two bolts (1), new lockwashers (4), and nuts (5).

e. INSTALLATION

1. Position two guide clip assemblies (26) and counterbalance bar (28) in place on corner post (27) and install two screws (25) and nuts (15).
2. Position brackets (3 and 22) with arms (2,20, and 21) attached on upper and lowerfolding side doors, and install four screws (6).
3. Screw turnbuckle(16) to lower end of wire rope assembly (9).
4. Aline holes in end of arm (20) with holes in corner post (27). Position lower groove pulley (10) with wire rope assembly (9) behind, in channel of arm. Install screw (7), spacer (18), and nut (19).
5. Position upper groove pulley (1 O) with wire rope assembly behind, in corner post (27). Aline holes and install screw (7), spacer (1 1), new lockwasher (12), and nut (13).
6. Aline hole in upper end of wire rope assembly (9) with top hole in counterbalance bar (28). Install screw(8), new lockwasher (30), and nut (29).

f. ADJUSTMENT

1. Turn turnbuckle(16) clockwise or counterclockwise until proper tension is obtained on wire rope assembly(9). Tighten nuts (14 and 17) on each end of wire rope assembly to lock turnbuckle in position.
2. Lubricate turnbuckle (16) and groove pulleys (1 O) in accordance with Lubrication Instructions (Chapter 3, Section I).

4-64. BONNET FRONT DOOR LINKAGE REPLACEMENT (M313 AND M447C).

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Materials/Parts:

- . one lockwasher
- Three cotter pins

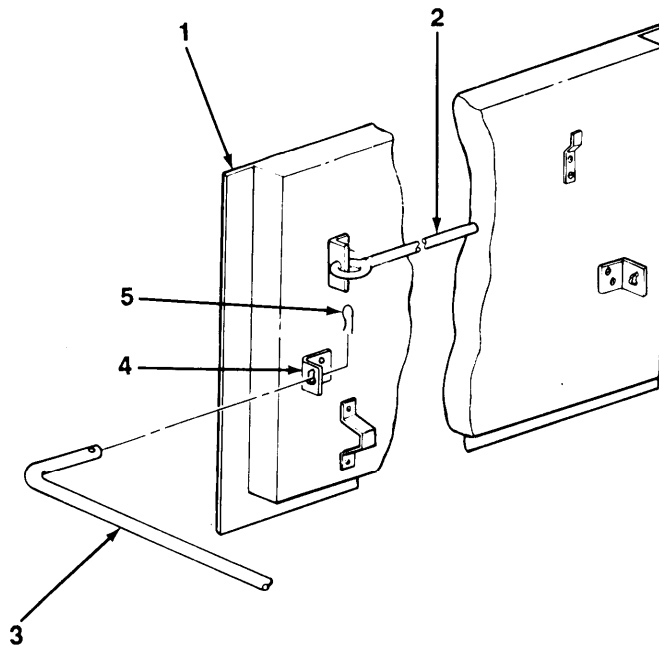
Tools/Test Equipment:

- General mechanic's tool kit
-

a. REMOVAL

NOTE

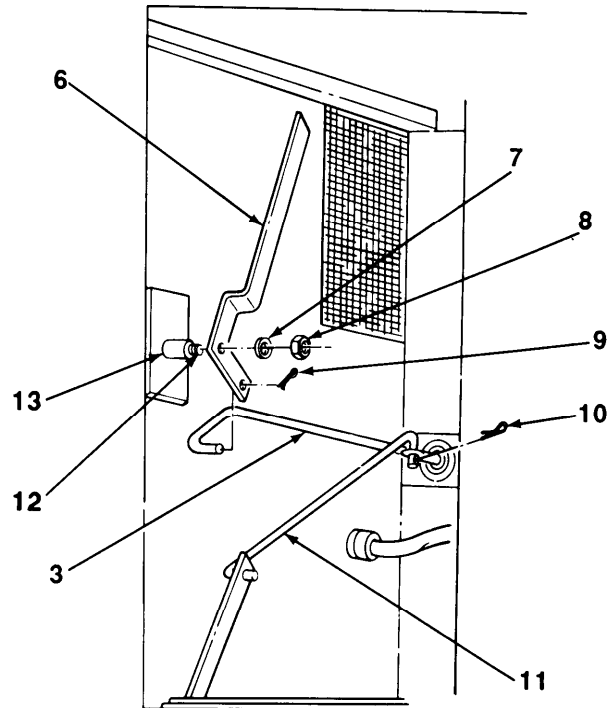
- Some M313 models have a connecting link and handle on each side of air conditioner enclosure. Late model M313 vans have only one on the right.
 - Early models also have a bonnet register control rod which is attached to the bonnet connecting link.
 - Later models have a pair of slides operated from outside which replace the lower connecting link.
1. Open bonnet front door (1) to full open position and support with door support rod (2).
 2. Remove cotter pin (5) and connecting link/control rod (3) from door angle bracket (4). Discard cotter pin.



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4-64. BONNET FRONT DOOR LINKAGE REPLACEMENT (M313 AND M447C) (Con't).

3. From inside van body, remove cotter pin (9) from rear end of connecting link/control rod (3). Remove connecting link/control rod from door handle (6). Discard cotter pin.
4. If bonnet register control rod (11) is present, remove cotter pin (10). Remove bonnet register control rod from connecting link/control rod (3). Discard cotter pin.
5. Remove connecting link/control rod (3) carefully through rubber bellows seal,
6. Remove nut (8), lockwasher (7), door handle (6), and spacer (13) from post assembly (12). Discard lockwasher.



b. INSTALLATION

1. Position spacer (13), door handle (6), and new lockwasher (7) on post assembly(12) and secure with nut (8).
2. Carefully insert connecting link/control rod (3) through rubber bellows seal.
3. Connect end of connecting link/control rod (3) through door handle (6) and install new cotter pin (9).
4. If removed, connect bonnet register control rod(11) to connecting link/control rod (3) and install new cotter pin (10).
5. Connect front end of connecting link/control rod (3) with door angle bracket (4) and install new cotter pin (5).
6. Close bonnet front door (I).

4-65. SPRING TENSIONER REPLACEMENT.

This Task Covers:

a. Removal

b. Installation

Initial Setup:

Materials/Parts:

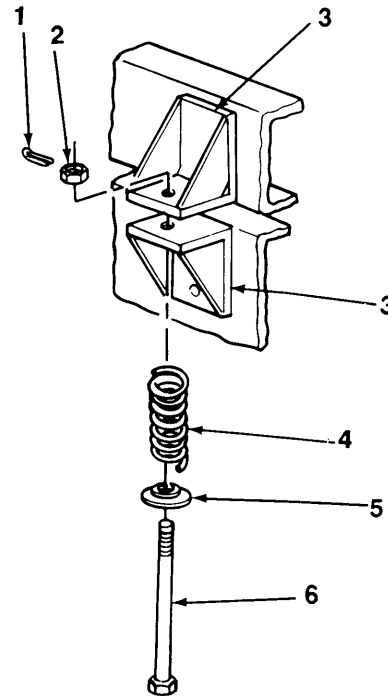
- One cotter pin

Tools/Test Equipment:

- . General mechanic's tool kit
-

a. REMOVAL

1. Remove cotter pin (1) from slotted nut (2) and screw (6). Discard cotter pin.
2. Remove slotted nut (2) from screw (6).
3. Remove screw (6) from brackets (3).
4. Remove spring (4) and spring retainer (5) from screw (6).



b. INSTALLATION

1. Assemble spring retainer (5) and spring (4) on screw (6). Ensure that spring fully seats on spring retainer.
2. Install screw (6) with assembled parts through holes in brackets (3).
3. Install slotted nut (2) on screw (6) with cotter pin (1) holes aligned.
4. Install new cotter pin (1) through holes in slotted nut (2) and screw (6). Bend back ends of cotter pin to lock slotted nut in place.

FOLLOW-ON TASKS:

- Lubricate spring tensioner (Chapter 3, Section 1)

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Section XI. ACCESSORY ITEMS MAINTENANCE

Paragraph Title	Page Number
Data Plates Replacement	4-152
Power Cable Entrance Port Maintenance (M447, M447C, and M750)	4-153
Reflector Replacement	4-151

4-66. REFLECTOR REPLACEMENT.

This Task Covers:

- a. Removal
- b. installation

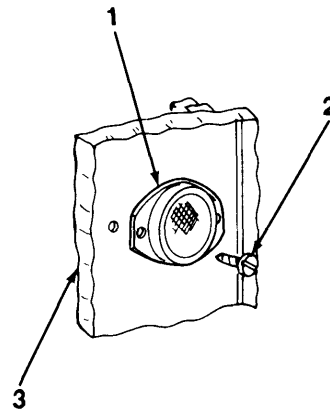
Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit

a. REMOVAL

1. Remove two screws (2) securing reflector (1) to body (3).
2. Remove reflector (1) from body (3).



b. INSTALLATION

1. Position reflector (1) in place on body (3).
2. Install two screws (2) in reflector (1) and body (3).

4-67. DATA PLATES REPLACEMENT.

This Task Covers:

- a. Removal
- b. Installation

Initial Setup:

Materials/Parts:

- Rivets (as required)

Tools/Test Equipment:

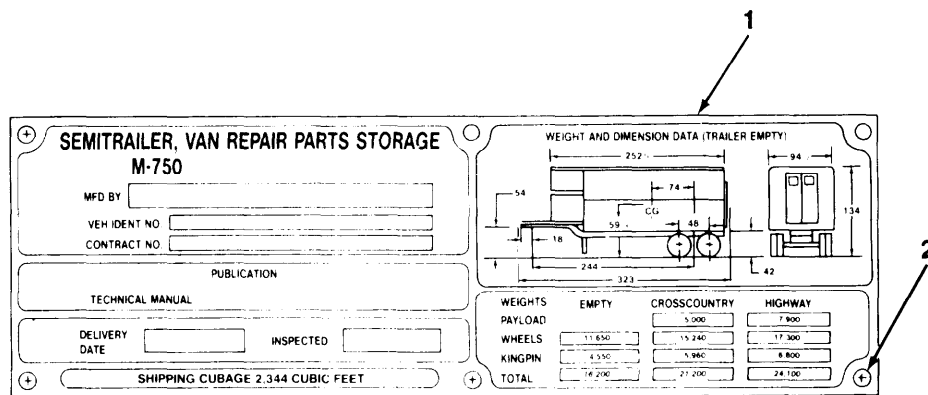
- General mechanic's tool kit

a. REMOVAL

NOTE

Use this task to replace any data plate. The type and quantity of attaching hardware may vary.

Remove rivets, drive screws, or self-tapping screws (2) and data plate (1). Discard rivets.



b. INSTALLATION

Position data plate (1) in place and install new rivets, drive screws, self-tapping screws (2).

4-68. POWER CABLE ENTRANCE PORT MAINTENANCE (M447,M447C, AND M750).

This Task Covers:

- | | |
|--------------------------|-----------------|
| a. Removal | c. Installation |
| b. Inspection and Repair | |
-

Initial Setup:

Tools/Test Equipment:

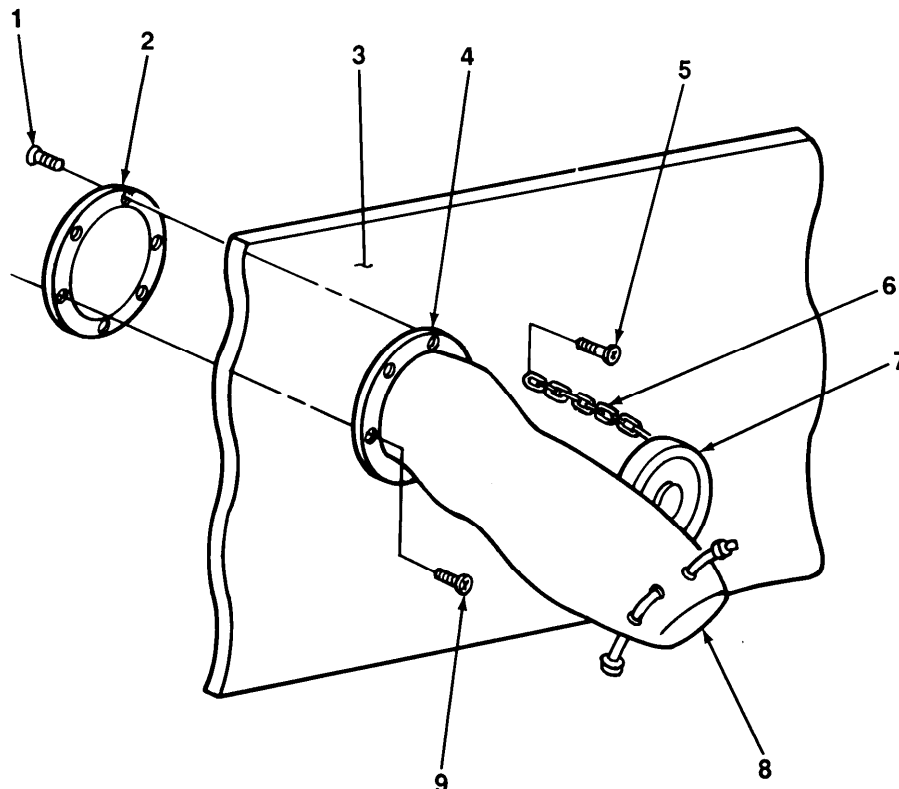
- General mechanic's tool kit

References:

- FM 10-16
-

a. REMOVAL

1. Working inside semitrailer, remove six screws (1) securing spacer plate (2) and cover (8) to left rear wall (3). Remove spacer plate and cover.
2. Working outside semitrailer, remove cap (7) from adapter (4).
3. Remove six screws (9) and adapter (4) from left rear wall (3).
4. If cap (7) or chain (6) are damaged, remove screw (5) from chain and remove cap and chain from left rear wall (3).

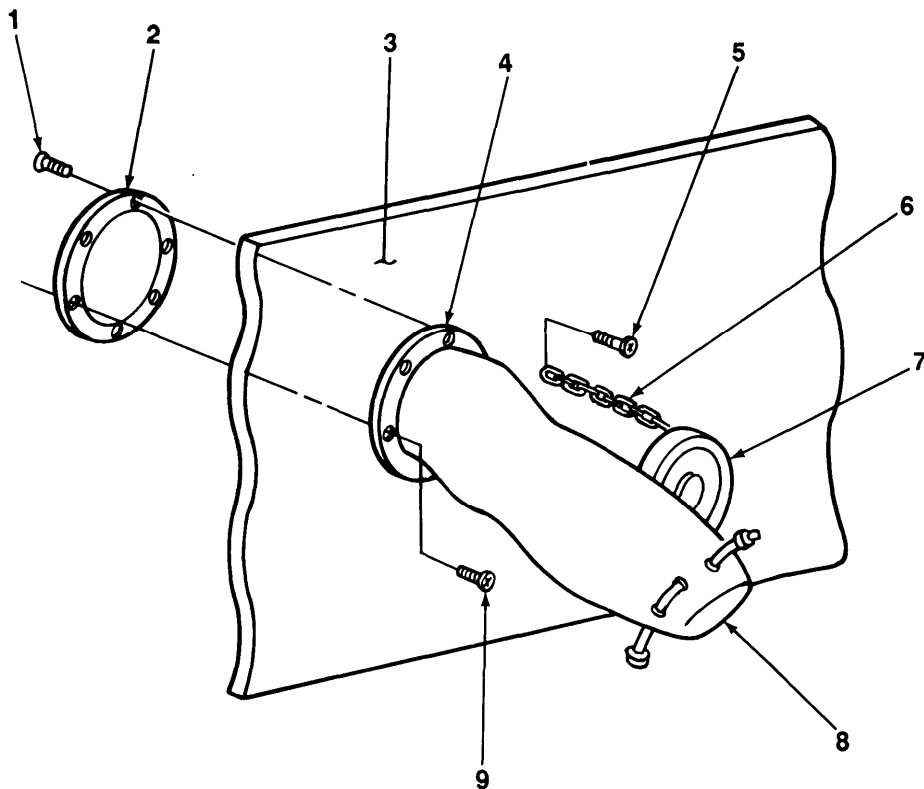


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4-68. POWER CABLE ENTRANCE PORT MAINTENANCE (M447,M447C, AND M750).

b. INSPECTION AND REPAIR

1. Inspect cover for tears, holes, mildew, and fungus.
2. Make minor fabric repairs to cover in accordance with FM 10-16,
3. Inspect all other parts for damage. Replace if damaged,



c. INSTALLATION

1. If removed, install chain (6) and cap (7) with screw (5) on left rear wall (3) outside semitrailer.
2. Install adapter (4) on left rear wall (3) with six screws (9).
3. Working inside semitrailer, push cover (8) through opening in left rear wall (3). Position flange of cover against inside opening in left rear wall. Install spacer plate (2) with six screws (1).

Section XII. AIR CONDITIONING COMPONENTS MAINTENANCE

4-69. AIR CONDITIONER AND DUCT ADAPTER REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Materials/Parts:

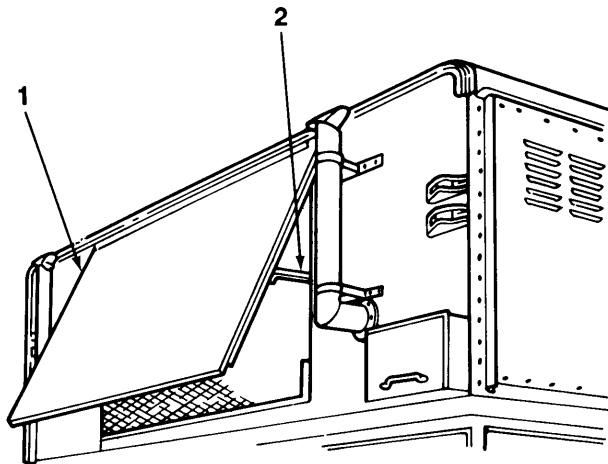
- One cotter pin

Tools/Test Equipment:

- General mechanic's tool kit
-

a. REMOVAL

1. Outside semitrailer, open bonnet front door (1) and hold in position with bonnet door support rod (2).



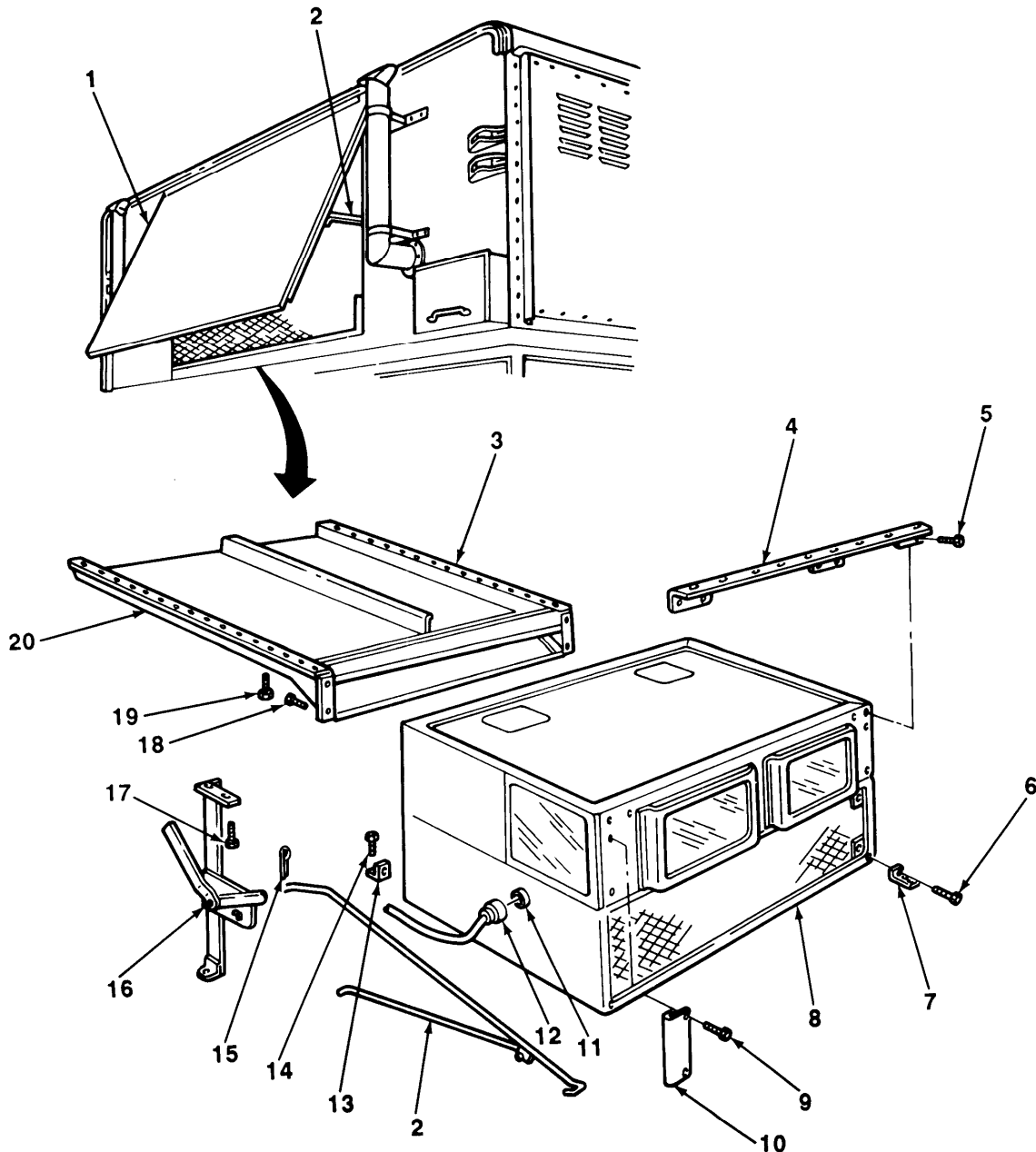
4-69. AIR CONDITIONER AND DUCT ADAPTER REPLACEMENT (Con't).

2. Remove four screws (9) and two filler plates (10) from air conditioner (8).
3. Remove two screws (6) from air conditioner (8) and two lower front angle brackets (7').

NOTE

Some models have eight screws.

4. Remove six screws (5) from top of air conditioner (8) and upper angle bracket (4).
5. Inside semitrailer, remove four screws (18) from front air conditioning duct adapter (3) and air conditioner (8).



TA702033

4-69. AIR CONDITIONER AND DUCT ADAPTER REPLACEMENT (Con't).

6. Remove 24 screws (19) from air conditioning duct adapter (3) and ceiling (20). Remove air conditioning duct adapter.
7. Disconnect electrical connector (12) from receptacle (1 1).
8. Remove cotter pin (15) from bonnet door support rod (2) and post assembly handle (16). Discard cotter pin.
9. Remove six screws (17) from two post assembly handles (16). Remove bonnet door (I).
10. Remove two screws (14) and rear angle bracket (13) from bonnet floor.
11. Outside semitrailer, disconnect condensate water drain from lower right side of air conditioner.
12. Remove air conditioner (8) from bonnet using suitable lifting device.

b. INSTALLATION

1. Position air conditioner (8) in place on bonnet using suitable lifting device.
2. Install rear angle bracket (13) to floor of bonnet with two screws (14).
3. Connect condensate water drain to lower right side of air conditioner.
4. Install two post assembly handles (16) to inside of bonnet with six screws (17).
5. Install bonnet door support rod (2) to post assembly handle (16) and install new cotter pin (15).
6. Position air conditioning duct adapter (3) in place in ceiling (20) and install 24 screws (19).
7. Secure air conditioning duct adapter (3) to air conditioner (8) with four screws (1 8).
8. Connect electrical connector (12) to receptacle (1 1).

NOTE

Some models have eight screws.

9. Outside semitrailer, secure top of air conditioner (8) to upper angle bracket (4) with six screws (5).
10. Secure bottom of air conditioner (8) to two lower front angle brackets (7) with two screws (6).
11. Position two filler plates (1 O) in place on air conditioner (8) and install four screws (9).
12. Stow bonnet door support rod (2) in holder and close bonnet front door (1).

Section XIII. HEATING UNITS MAINTENANCE

Paragraph Title	Page Number
Exhaust System Replacement.....	4-176
Fuel Lines and Electrical Fuel Pump Replacement.....	4-158
Fuel Tank Replacement.....	4-168
Heater Replacement.....	4-181

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT.

This Task Covers:

- | | |
|--|--|
| Removal (M313, M447, M447C, and M750)
Installation(M313, M447, M447C, and M750) | e. Removal (M749 Southwest Model VRP, serial numbers V549 through V628) |
| c. Removal (M749 Southwest Model VRP serial numbers V001 through V356) | f. Installation (M749 Southwest Model VRP serial numbers V549 through V628) |
| d. Installation (M749 Southwest Model VRP, serial numbersV001I throughV356) | g. Removal (M749 Converto Model 8929)
h. Installation(M749 Converto Mode 18929) |

Initial Setup:

Equipment Conditions:

- Fuel tank drained.

Tools/Test Equipment:

- General mechanic's tool kit

Materials/Parts:

- M749 Southwest Model VRP serial numbers V001 through V356
 - Two lockwashers
- M749 Southwest Model VRP, serial numbers V549 through V628
 - Four lockwashers
- M749 Converto Model 8929
 - Fourteen lockwashers

a. REMOVAL (M313, M447, M447C, AND M750)

NOTE

For fuel pump removal only perform steps 5 and 6.

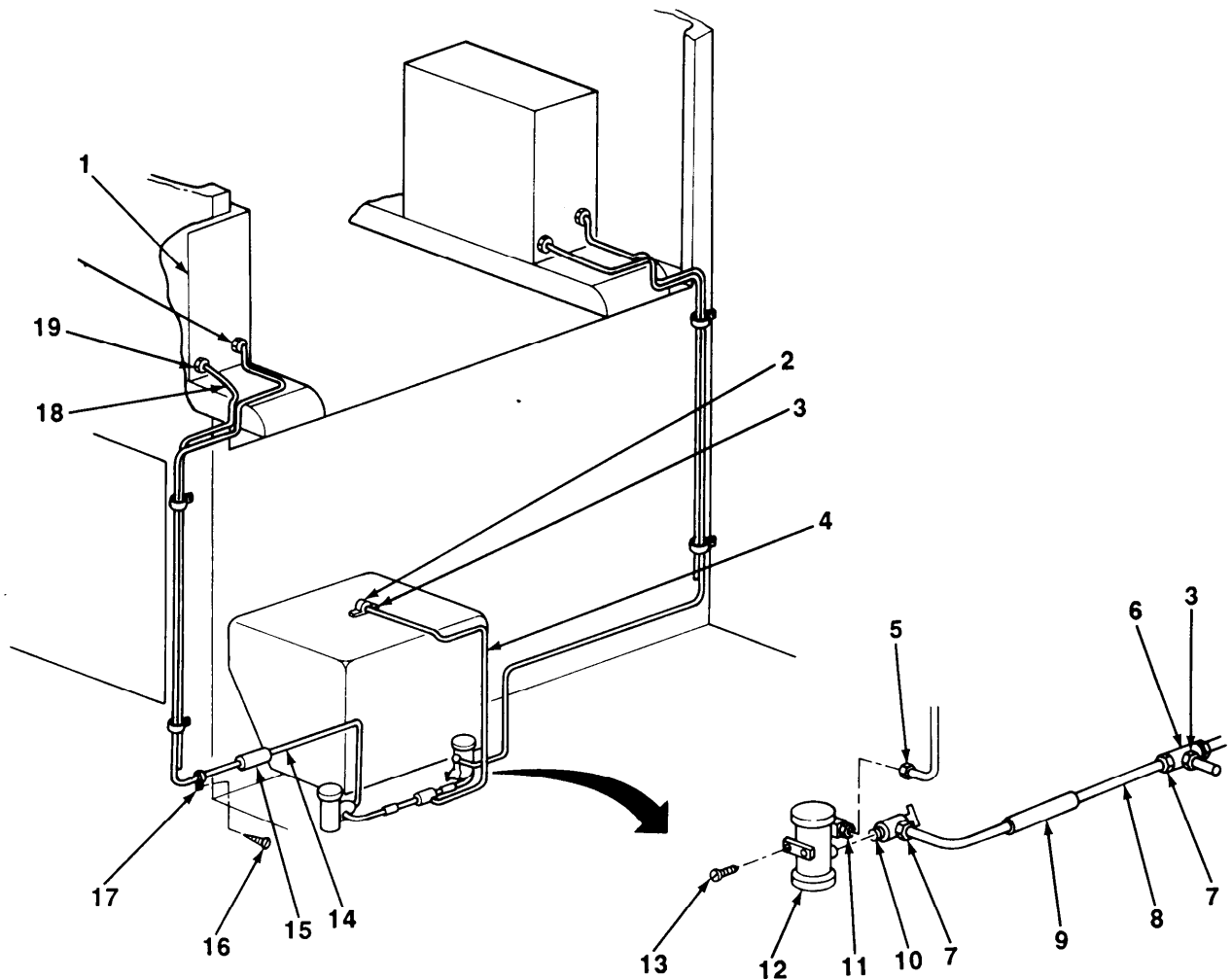
1. Loosen two tube nuts (3) and remove tube (4) from fuel tank elbow (2) and tube tee (6).

NOTE

Each van body contains two heaters with identical fuel lines. This task removes the fuel lines for only one heater. To remove the other fuel lines repeat steps 2 through 7.

2. Loosen two tube nuts (7) and remove tube (8) and nonmetallic conduit (9) from tube tee (6) and fuel pump shut-off cock (1 O).
3. Remove fuel pump shut-off cock (1 O) from fuel pump (12).
4. Remove three screws (16) and loop clamps (17) from tubes (14 and 18).
5. Remove two tube nuts (5), tube (14), and nonmetallic conduit (15) from fuel pump elbow (8) and heater (I).

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).



6. Remove fuel pump elbow (11) from fuel pump (12). Remove two screws (13) and fuel pump. Disconnect electrical lead from fuel pump.
7. Loosen tube nut (19) and remove tube (18) from heater (1).

b. INSTALLATION (M313, M447, M447C, AND M750)
NOTE

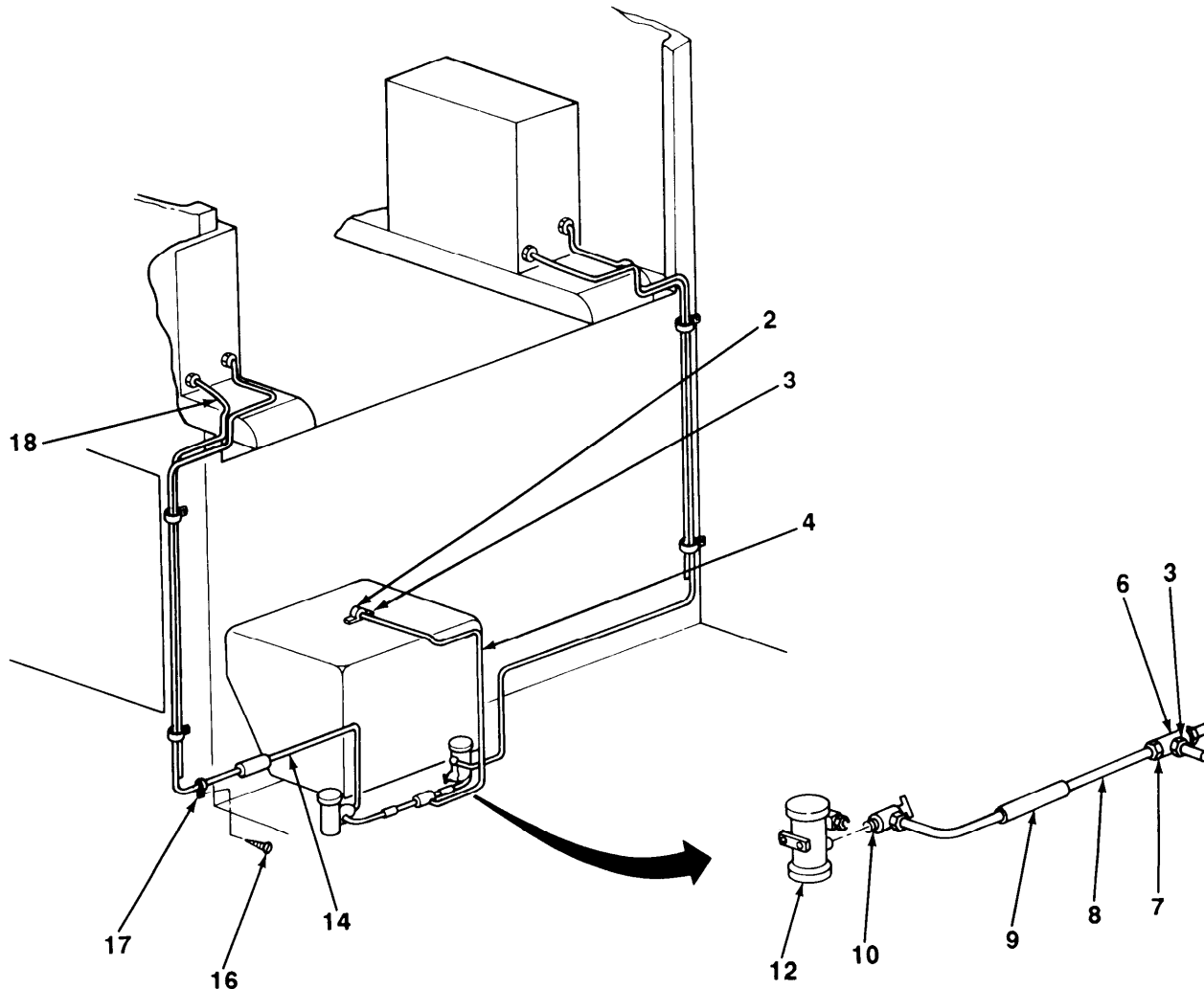
For fuel pump installation only perform steps 2 through 4.

1. Position tube (18) on heater (1) and tighten tube nut (19).
2. Connect electrical lead on fuel pump (12).
3. Position fuel pump (12) in place on mounting bracket and secure with two screws (13).
4. Install fuel pump elbow (11) in fuel pump (12), Position tube (14) and nonmetallic conduit (15) on heater (1) and fuel pump elbow. Tighten tube nuts (5).

TA702034

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).

5. Install two loop clamps (17) on tubes (14 and 18) and secure with three screws (16).
6. Install fuel pump shut-off cock (10) in fuel pump (12). Position tube (8) and nonmetallic conduit (9) on fuel pump shut-off cock and tube tee (6) and tighten tube nuts (7).
7. Position tube (4) on fuel tank elbow (2) and tube tee (6) and tighten two tube nuts (3).



c. REMOVAL (M749 SOUTHWEST MODEL VRP, SERIAL NUMBERS V001 THROUGH V356)

NOTE

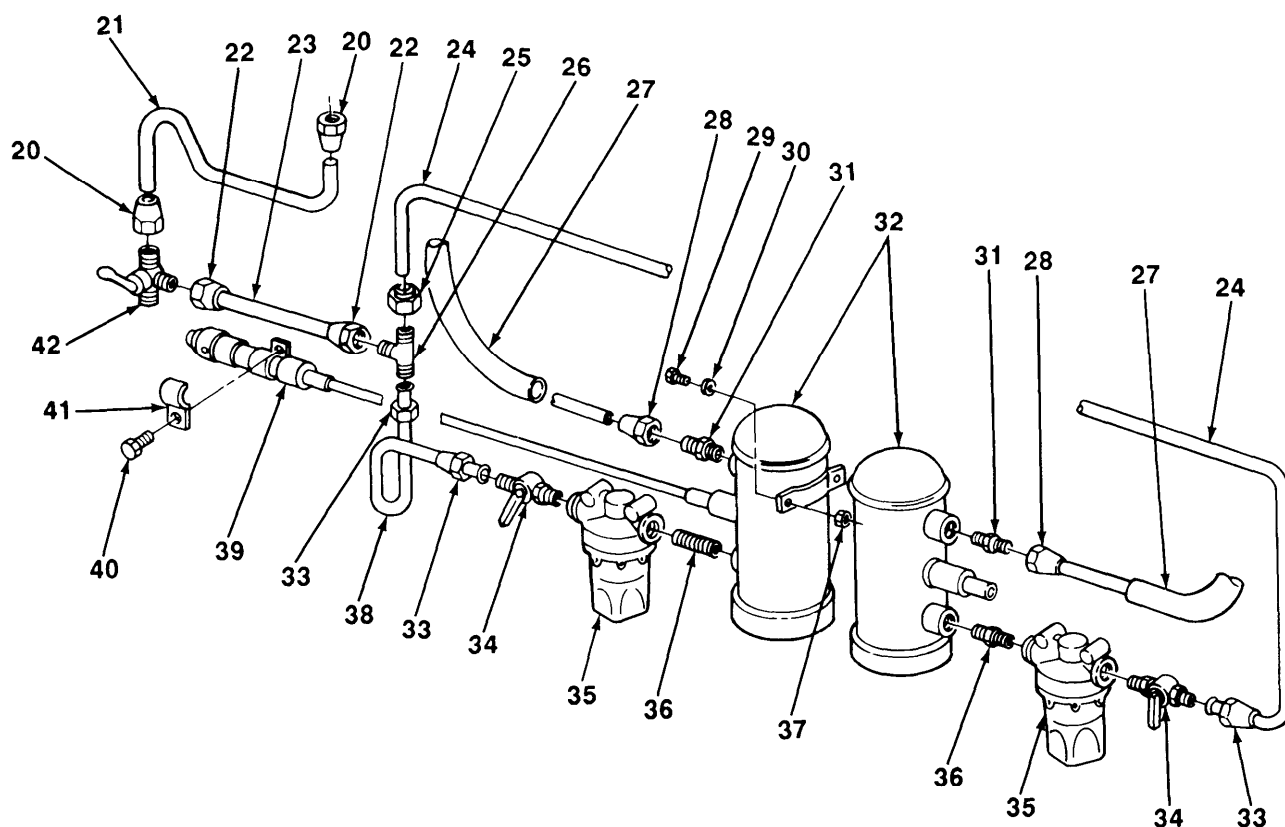
For fuel pump removal only perform steps 6 through 9.

1. Remove screw (40) and two loop clamps (41) from fuel pump electrical connectors (39) and tube (23). Disconnect fuel pump electrical connectors.
2. Loosen two tube nuts (20) and remove tube (21) from fuel shut-off valve (42) and fuel tank.
3. Loosen two tube nuts (22) and remove tube (23) from fuel shut-off valve (42) and tube tee (26).

TA702035

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).

4. Loosen tube nut (25) and remove tube (24) from tube tee (26).
5. Loosen two tube nuts (33) and remove tube (38) from tube tee (26) and shut-off cock (34).
6. Remove shut-off cocks (34) from fuel filters (35), Remove fuel filters from nipples (36).
7. Remove nipples (36) from fuel pumps (32).
8. Loosen two tube nuts (28) and remove nonmetallic fuel lines (27) from adapters (31) and heater. Remove adapters from fuel pumps (32).
9. Remove two screws (29), lockwashers (30), nuts (37), and fuel pumps (32) from mounting bracket. Discard lockwashers.



d. INSTALLATION (M749 SOUTHWEST MODEL VRP SERIAL NUMBERS V001 THROUGH V356)

NOTE

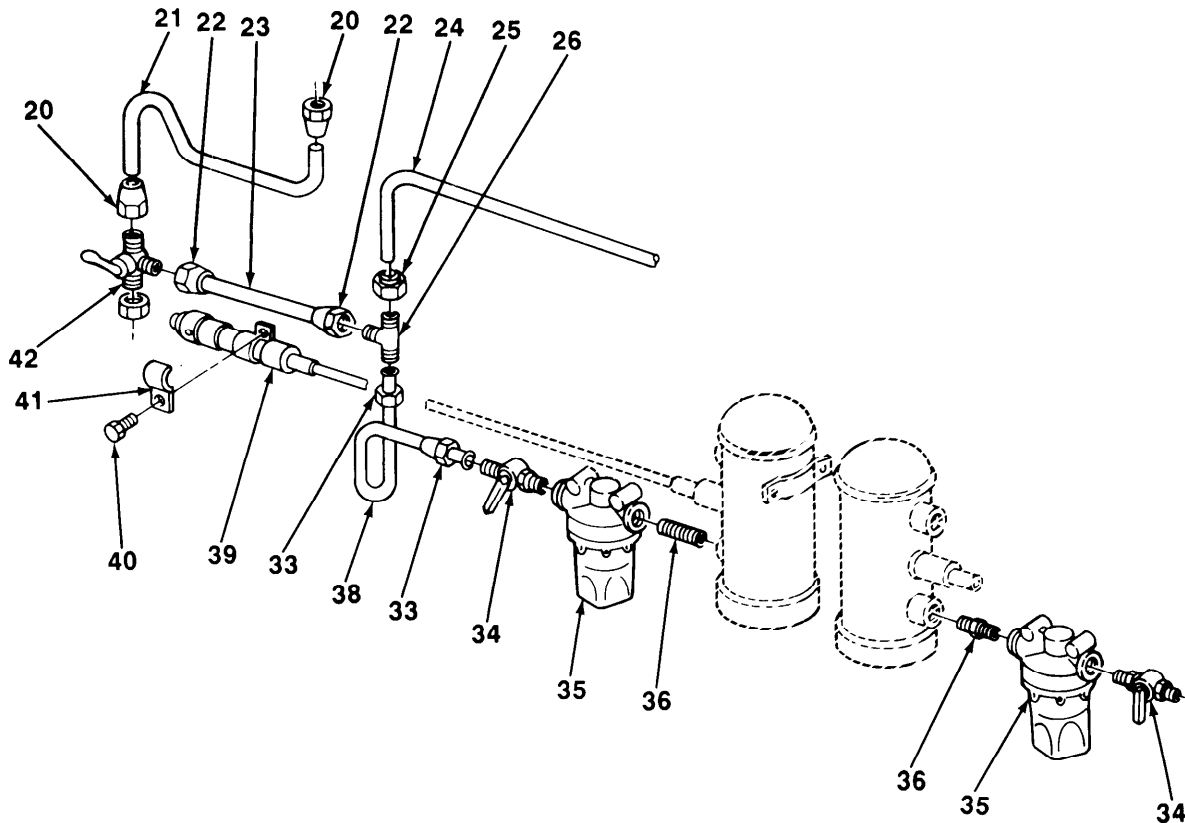
For fuel pump installation only perform steps 1 through 4.

1. Position fuel pumps (32) on mounting bracket and secure with two screws (29), new lockwashers (30), and nuts (37). Install adapters (31) in fuel pumps.
2. Position nonmetallic fuel lines (27) on adapters (31) and heater (1) and tighten tube nuts (28).
3. Install nipples (36) in fuel pumps (32).

TA702036

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).

4. Install fuel filters (35) on nipples (36). Install shut-off cocks (34) on fuel filters.
5. Position tube (38) on shut-off cock (34) and tighten two tube nuts (33). Install tube tee (26) on other end of tube and tighten tube nut.
6. Position tube (24) on tube tee (26) and tighten tube nut (25).
7. Position tube (23) on tube tee (26) and tighten tube nut (22). Install fuel shut-off valve (42) on other end of tube and tighten tube nut.
8. Position tube (21) on fuel shut-off valve (42) and fuel tank and tighten tube nuts (20).
9. Connect fuel pump electrical connectors (39). Install two loop clamps (41) on fuel pump electrical connectors and tube (23) and secure with screw (40).



e. REMOVAL (M749 SOUTHWEST MODEL VRP SERIAL NUMBERS V549 THROUGH V628)

NOTE

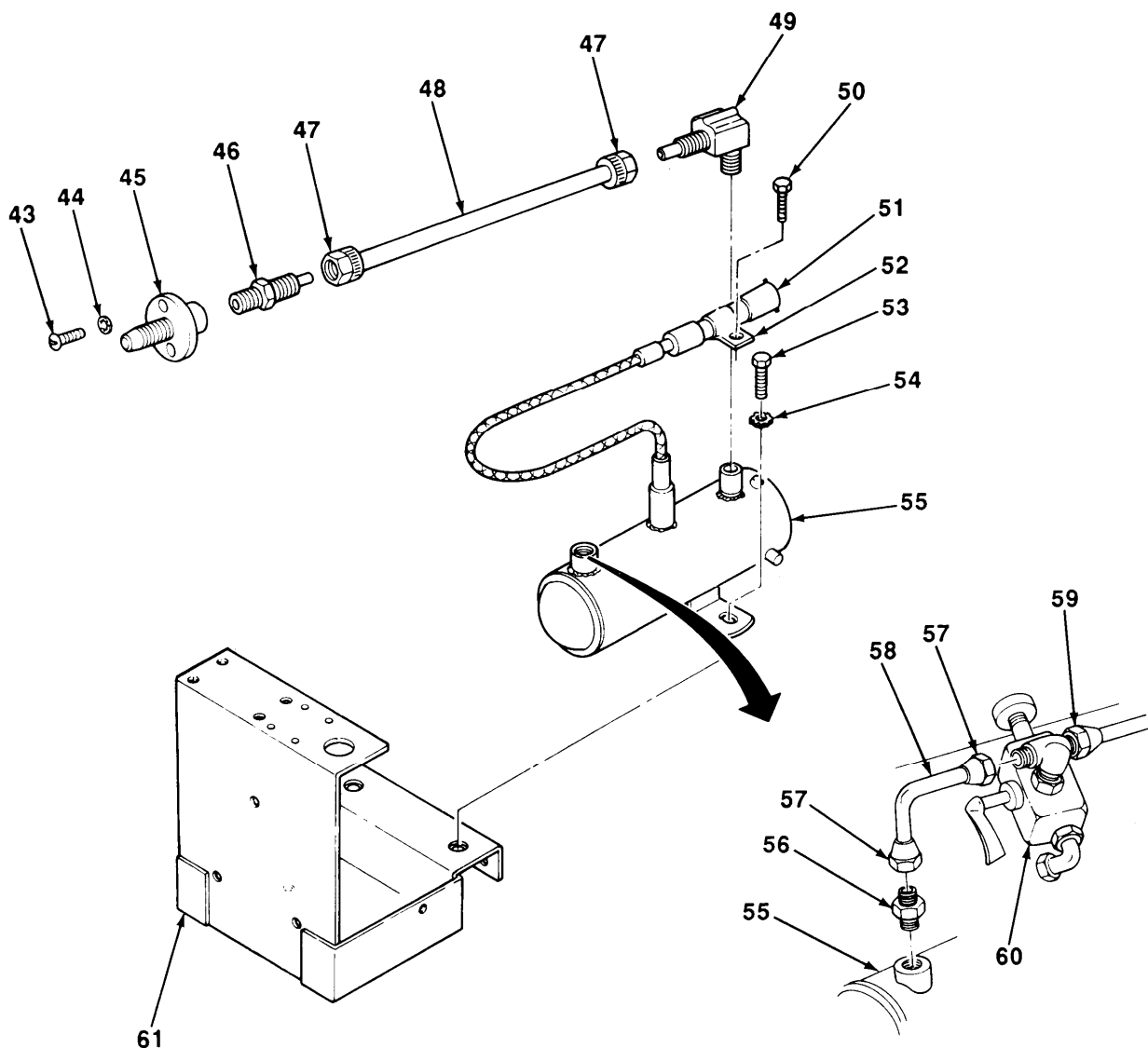
For fuel pump removal only perform steps 4 through 6.

1. Remove screw (50) and loop clamp (52) from electrical connectors (51). Disconnect electrical connectors.
2. Loosen two tube nuts (47) and remove tube (48) from elbow (49) and adapter (46). Remove adapter from connector (45).

TA702037

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).

3. Remove two screws (43), lockwashers (44), and connector (45) from heater. Discard lockwashers.
4. Remove elbow (49) from fuel pump (55).
5. Loosen two tube nuts (57) and remove tube (58) from fuel shut-off valve (60) and adapter (56). Remove adapter from fuel pump (55).
6. Remove two screws (53), lockwashers (54), and fuel pump (55) from mounting bracket (61). Discard lockwashers.
7. Loosen and remove tube nut (59) from fuel shut-off valve (60). Remove fuel shut-off valve from fuel tank.



TA702038

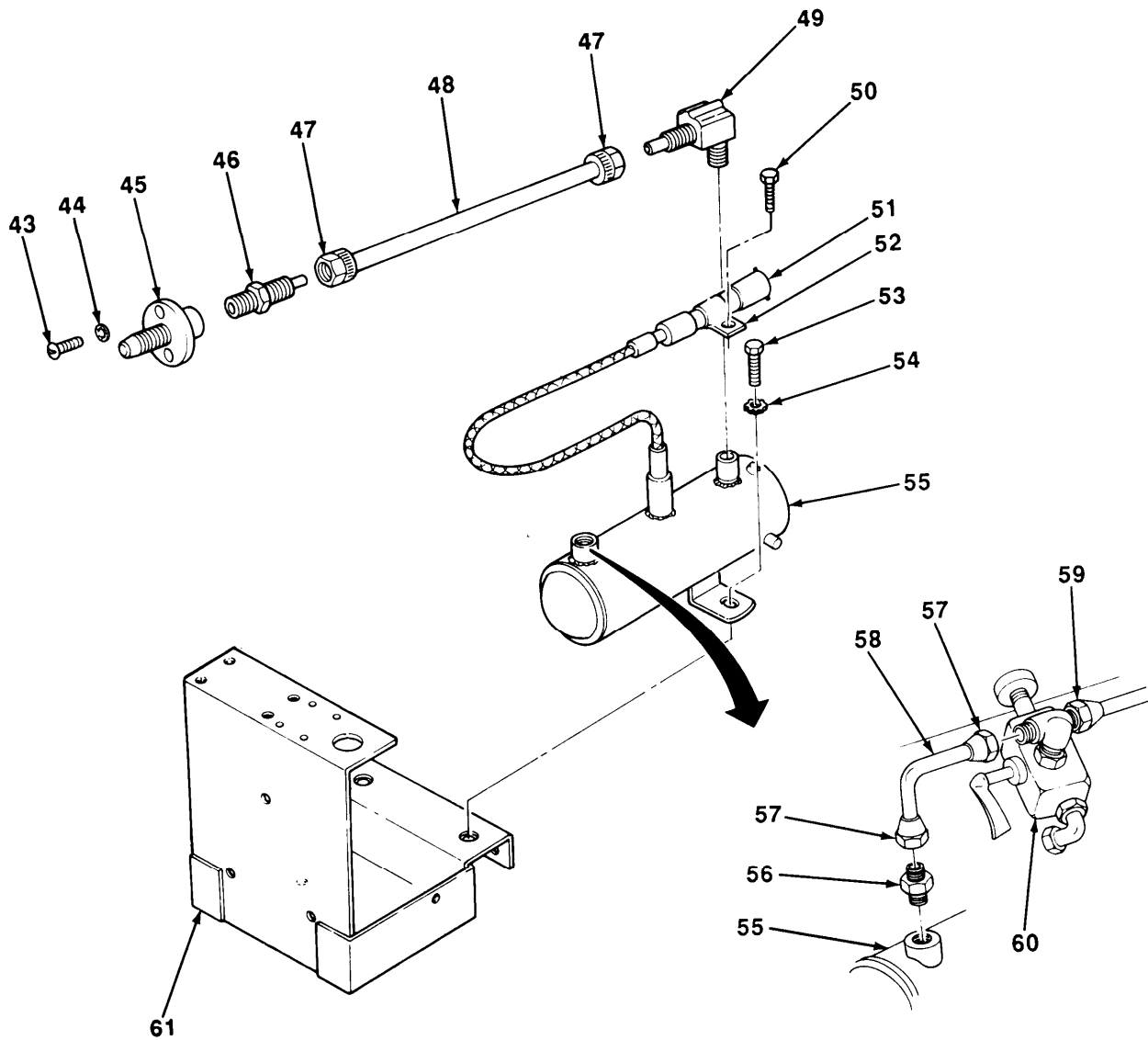
4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).

f. INSTALLATION (M749 SOUTHWEST MODEL VRP, SERIAL NUMBERS V549 THROUGH V628)

NOTE

For fuel pump installation only perform steps 2 through 4.

1. Install fuel shut-off valve (60) on fuel tank. Tighten tube nut (59) on fuel shut-off valve.
2. Position fuel pump (55) on mounting bracket (61) and secure with two screws (53) and new lockwashers (54).
3. Install adapter (56) in fuel pump (55). Position tube (58) on fuel shut-off valve (60) and adapter and tighten two tube nuts (57).



TA702039

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).

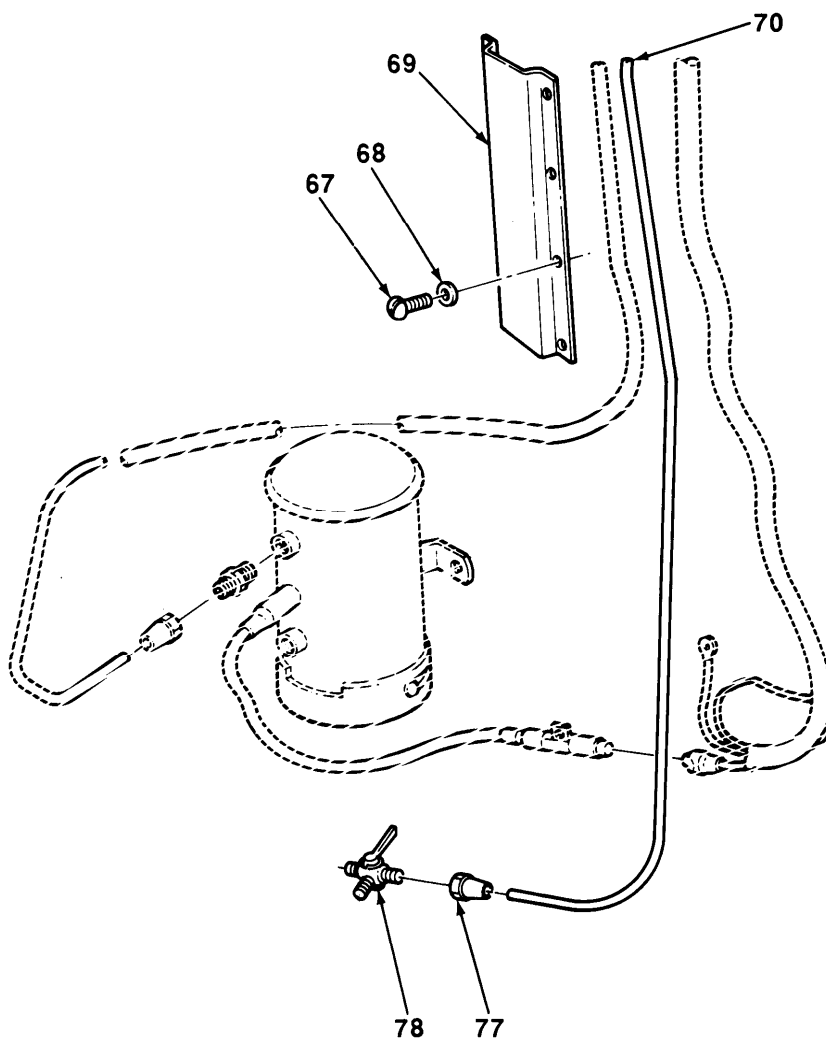
4. Install elbow (49) in fuel pump (55).
5. Install connector (45) on heater and secure with two screws (43) and new lockwashers (44).
6. Install adapter (46) in connector (45), Position tube (48) on elbow (49) and adapter and tighten two tube nuts (47).
7. Connect electrical connectors (51). Install loop clamp (52) on electrical connectors and secure with screw (50).

g. REMOVAL (M749 CONVERTO MODEL 8929)

NOTE

For fuel pump removal only perform steps 4 through 9.

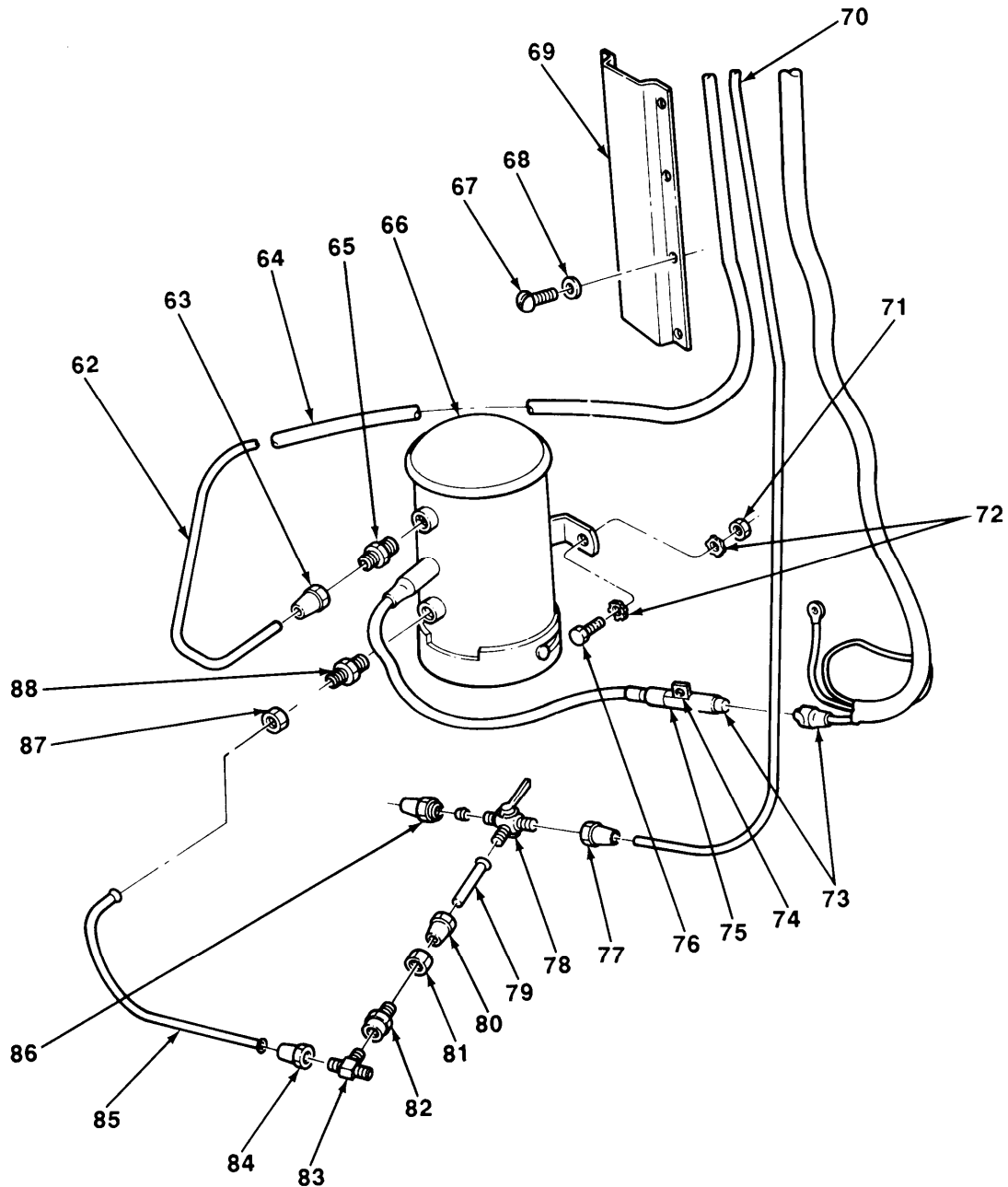
1. Remove 10 screws (67), lockwashers (68), and fuel line cover (69). Discard lockwashers.
2. Loosen two tube nuts (77) and remove tube (70) from fuel tank and fuel shut-off cock (78).



TA702040

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).

3. Loosen tube nuts (80 and 81) and remove tube (79) from fuel shut-off cock (78) and adapter (82). Remove adapter from tube tee (83).
4. Loosen two tube nuts (84 and 87) and remove tube (85) from adapter (88) and tube tee (83).
5. Remove adapter (88) from fuel pump (66).
6. Remove screw (74) and loop clamp (75) from electrical connectors (73). Disconnect electrical connectors.
7. Loosen tube nut (86) and remove shut-off cock (78).



TA702041

4-70. FUEL LINES AND ELECTRICAL FUEL PUMP REPLACEMENT (Con't).

8. Loosen two tube nuts (63) and remove tube (62) and nonmetallic conduit (64) from adapter (65) and heater. Remove adapter from fuel pump (66),
9. Remove two screws (76), nuts (71), four lockwashers (72), and fuel pump (66) from mounting bracket. Discard lockwashers.

h. INSTALLATION (M749 CONVERTO MODEL 8929)

NOTE

For fuel pump installation only perform steps 1 through 6.

1. Position fuel pump (66) in place on mounting bracket and install two screws (76), nuts (71), and four new lockwashers (72).
2. Install adapter (65) in fuel pump (66), Position tube (62) and nonmetallic conduit (64) in place on adapter and heater and tighten tube nuts (63).
3. Install fuel shut-off cock (78) on tube and tighten tube nut (86).
4. Connect electrical connectors (73). Install loop clamp (75) on electrical connectors and secure with screw (74).
5. Install adapter (88) in fuel pump (66).
6. Position tube (85) on adapter (88) and tighten tube nut (87). Install tube tee (83) on other end of tube and tighten tube nut (84).
7. Install adapter (82) on tube tee (83). Position tube (79) on adapter and fuel shut-off cock (78) and tighten tube nuts (80 and 81).
8. Position tube (70) on fuel tank and fuel shut-off cock (78) and tighten two tube nuts (77).
9. Install fuel line cover (69) and secure with 10 screws (67) and new lockwashers (68).

4-71. FUEL TANK REPLACEMENT.

This Task Covers:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Removal (M313, M447, M447C, and M750) b. Installation (M313, M447, M447C, and M750) c. Removal (M749 Southwest Model VRP, serial numbers V001 through V356) d. Installation (M749 Southwest Model VRP, serial numbers V001 through V356) | <ul style="list-style-type: none"> e. Removal (M749 Southwest Model VRP, serial numbers V549 through V628) f. Installation (M749 Southwest Model VRP, serial numbers V549 through V628) g. Removal (M749 Converto Model 8929) h. Installation (M749 Converto Model 8929) |
|--|--|
-

Initial Setup:

Equipment Conditions:

- Fuel tank drained.
- Fuel tank fuel lines disconnected (para 4-70).

Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Two

Materials/Parts:

- M313, M447, M447C, and M750
 - Three gaskets
 - Six lockwashers
 - M749 Southwest Model VRP, serial numbers V001 through V356
 - One gasket
 - Four lockwashers
 - M749 Southwest Model VRP, serial numbers V549 through V628
 - One gasket
 - Six lockwashers
 - M749 Converto Model 8929
 - One gasket
 - Ten lockwashers
-

a. REMOVAL (M313, M447, M447C, AND M750)

NOTE

Early model M313, M447, M447C, and M750 van body fuel tanks have been modified to reflect the late models. Use this task for both early and late model M313, M447, M447C, and M750 van body fuel tanks.

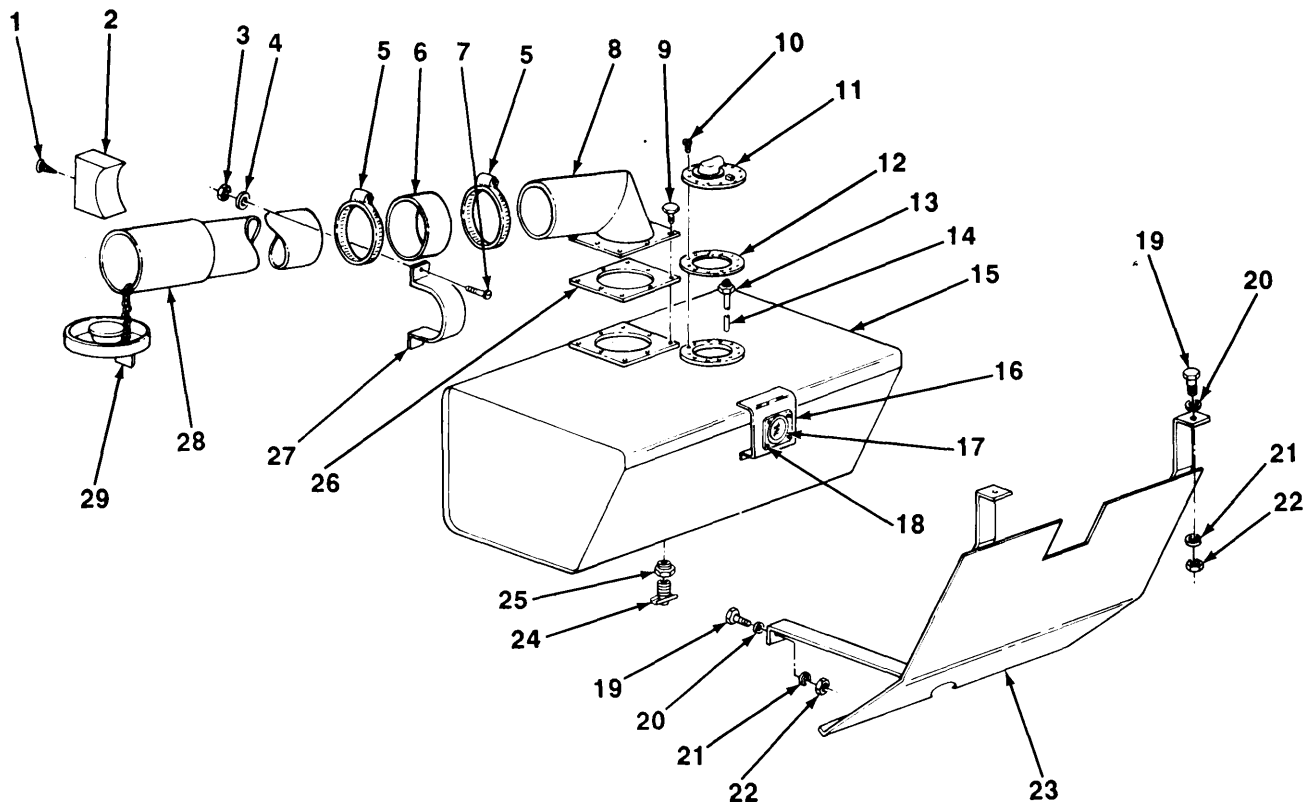
1. Remove two screws (7), lockwashers (4), nuts (3), and clamp (27) from filler neck (28) and chassis. Discard lockwashers.
2. Remove two screws (1) and block (2).

CAUTION

When lowering fuel tank to ground, do not rest fuel tank on draincock or draincock will be damaged.

3. Remove four screws (19), washers (20), lockwashers (21), and nuts (22) from shield assembly (23) and chassis. Carefully lower fuel tank (15) and shield assembly to ground. Discard lockwashers.
4. Loosen outer hose clamp (5) and remove filler neck tube (28) and filler neck opening cap (29) from rubber hose (6).
5. Loosen inner hose clamp (5) and remove rubber hose (6) from filler neck (8).

4-71. FUEL TANK REPLACEMENT (Con't).



6. Remove eight screws (9), filler neck (8), and gasket (26) from fuel tank (15). Discard gasket.
7. Remove 12 screws (10), access cover (11), gasket (12), and tube (14) from fuel tank (15). Discard gasket.
8. Loosen tube nut (13) and remove tube (14) from access cover (11).
9. Remove draincock (24) and bushing (25) from fuel tank (15).
10. Remove four screws (18), fuel gage (16), and gasket (17) from fuel tank (15). Discard gasket.

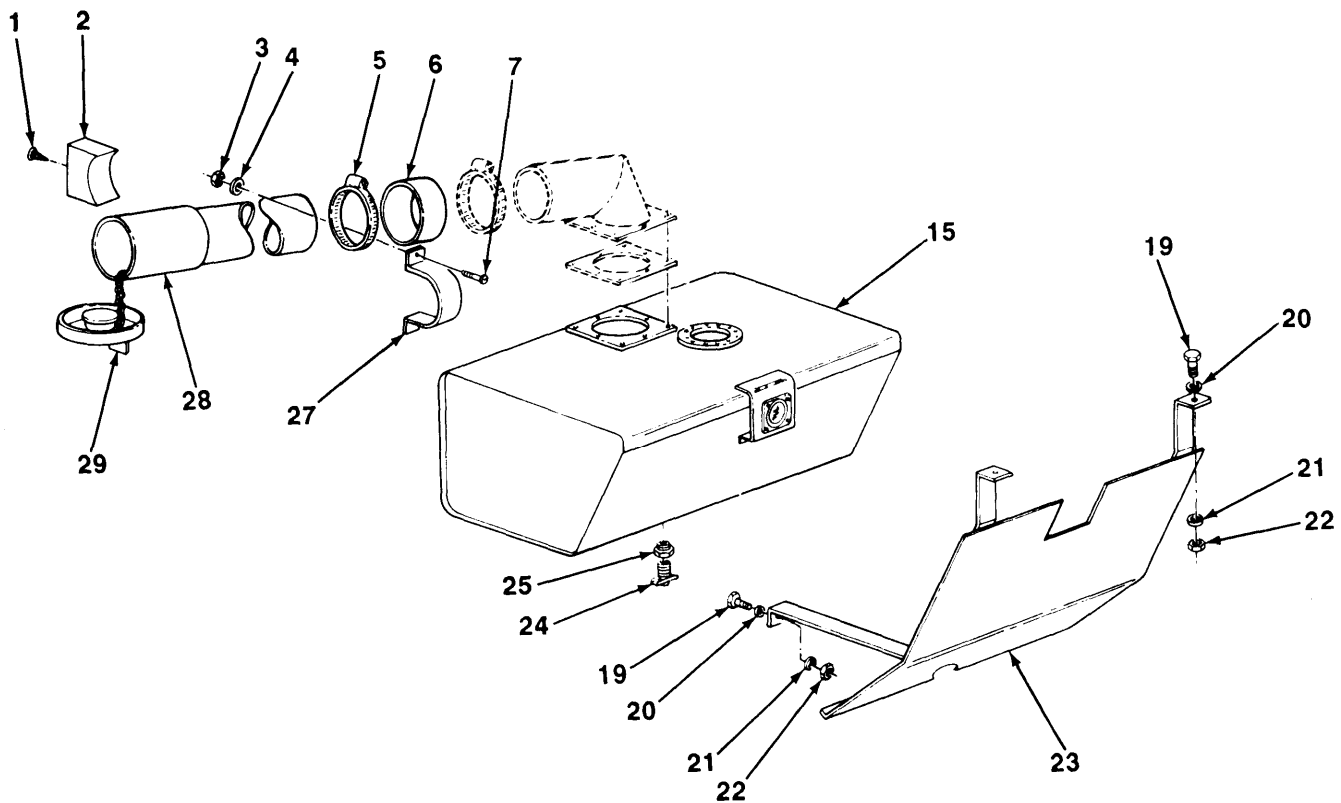
b. INSTALLATION (M313, M447, M447C, AND M750)

1. Position new gasket (17) and fuel gage (16) in fuel tank (15) and secure with four screws (18).
2. Install bushing (25) and draincock (24) in fuel tank (15).
3. Position tube (14) on underside of access cover (11) and tighten tube nut (13).
4. Position new gasket (12) and access cover (11) on fuel tank (15) and secure with 12 screws (10).
5. Position new gasket (26) and filler neck (8) on fuel tank (15) and secure with eight screws (9).
6. Position rubber hose (6) on end of filler neck (8) and secure with inner clamp (5).

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4-71. FUEL TANK REPLACEMENT (Con't).

7. Position filler neck tube (28) and filler neck opening cap (29) in rubber hose (6) and secure with outer clamp (5).
8. Carefully position fuel tank (15) and shield assembly (23) in place on chassis and secure with four screws (19), washers (20), new lockwashers (21), and nuts (22).
9. Position block (2) on chassis and install two screws (1).
10. Position clamp (27) on filler neck (28) and chassis and secure with two screws (7), new lockwashers (4), and nuts (3).

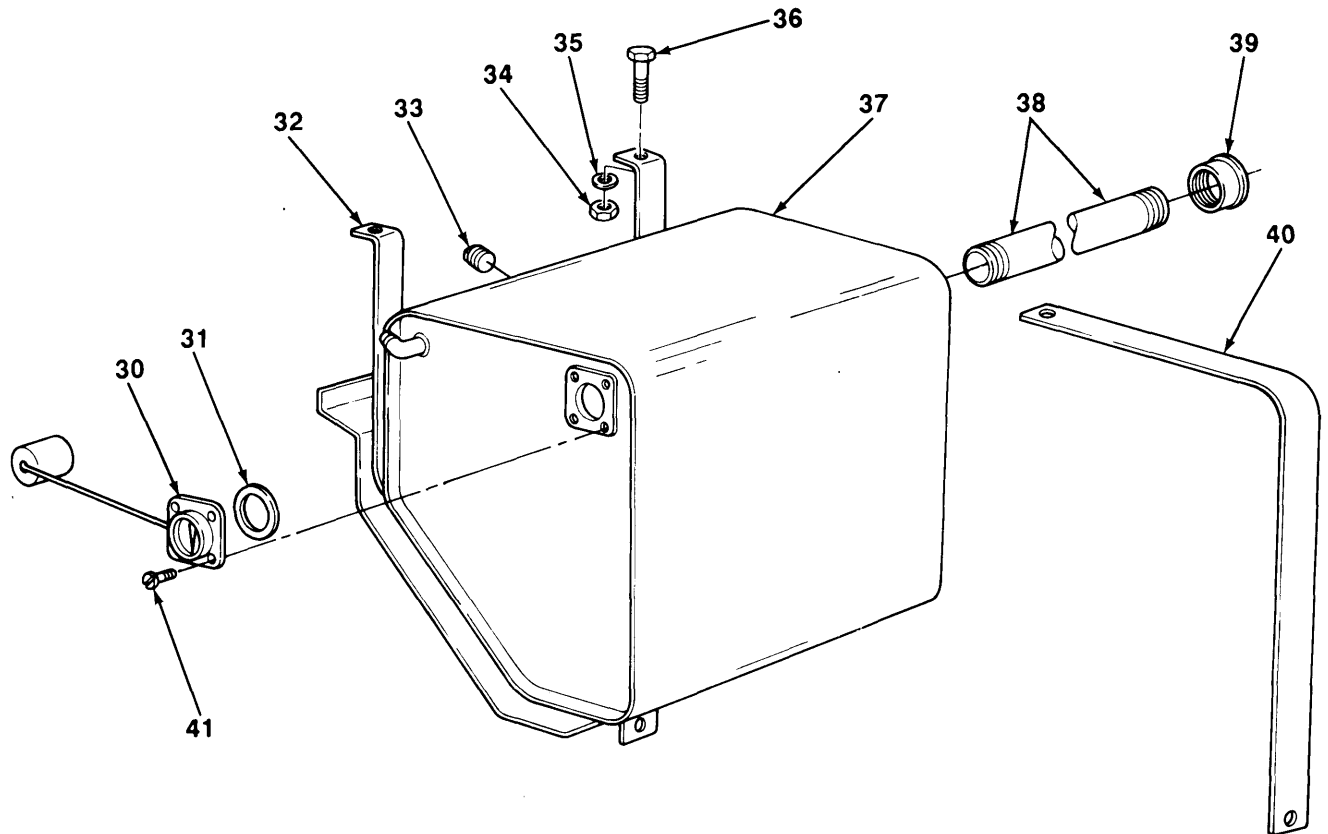


c. REMOVAL (M749 SOUTHWEST MODEL VRP, SERIAL NUMBERS V001 THROUGH V356)

1. Remove filler opening cap (39) and filler neck (38) from fuel tank (37).
2. Remove four screws (36), lockwashers (35), nuts (34), front support (32), rear support (40), and fuel tank (37) from chassis. Carefully lower front support, rear support, and fuel tank to ground. Discard lockwashers.
3. Remove four screws (41), fuel gage (30), and gasket (31) from fuel tank (37). Discard gasket.
4. Remove fuel tank drain plug (33) from fuel tank (37).

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4-71. FUEL TANK REPLACEMENT (Con't).



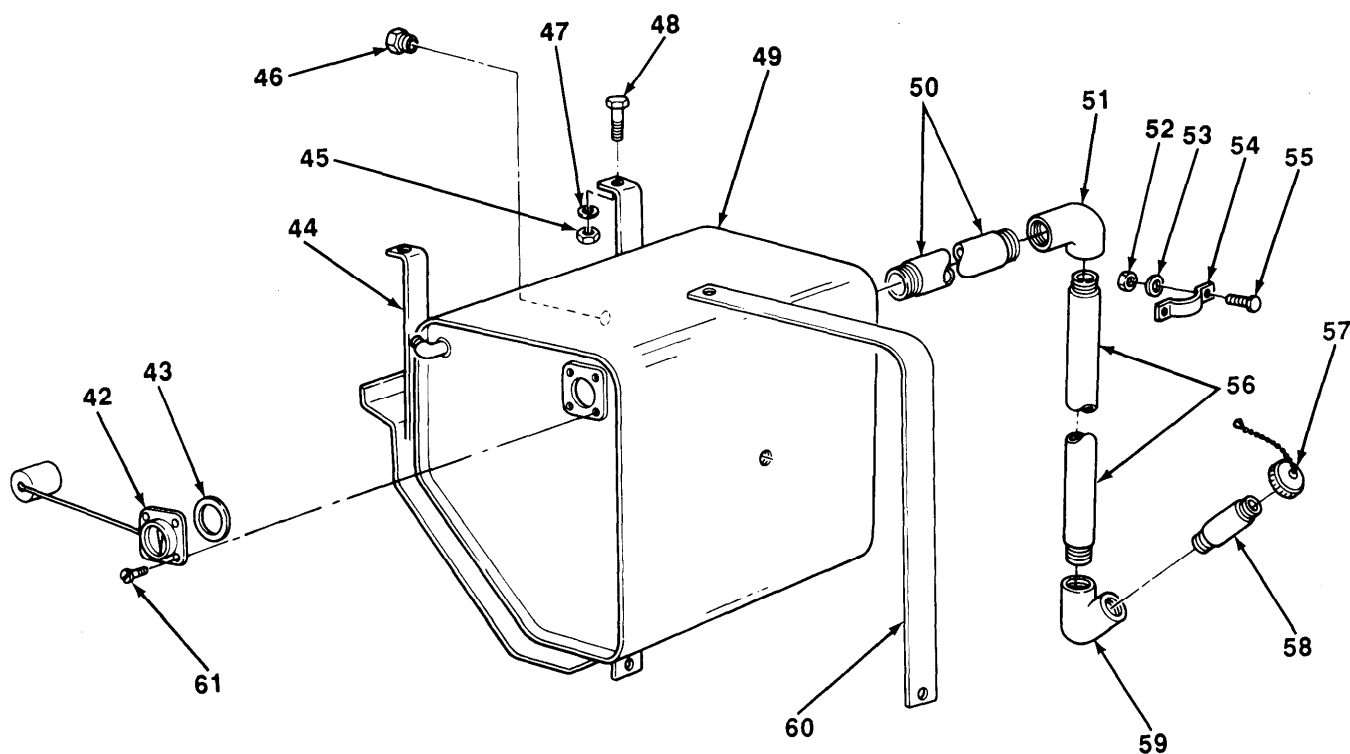
d. INSTALLATION (M749 SOUTHWEST MODEL VRP, SERIAL NUMBERS V001 THROUGH V356)

1. Install fuel tank drain plug (33) in fuel tank (37).
2. Position new gasket (31) and fuel gage (30) in fuel tank (37) and secure with four screws (41).
3. Carefully position fuel tank (37), rear support (40), and front support (32) on chassis and secure with four screws (36), new lockwashers (35), and nuts (34).
4. Install filler neck (38) and filler opening cap (39) on fuel tank (37).

4-71. FUEL TANK REPLACEMENT (Con't).

e. REMOVAL (M749 SOUTHWEST MODEL VRP, SERIAL NUMBERS V549 THROUGH V628)

1. Remove filler opening cap (57) and pipe nipple (58) from elbow (59).
2. Remove elbow (59) from pipe nipple (56). Remove two screws (55), pipe clamp (54), lockwashers (53), and nuts (52) from pipe nipple.
3. Remove pipe nipple (56) from elbow (51). Remove elbow from pipe nipple (50), and remove pipe nipple from fuel tank (49).
4. Remove four screws (48), lockwashers (47), nuts (45), front support (44), rear support (60), and fuel tank (49) from chassis.



5. Carefully lower front support (44), rear support (60), and fuel tank (49) to ground.
6. Remove four screws (61), fuel gage (42), and gasket (43) from fuel tank (49). Discard gasket.
7. Remove fuel tank drain plug (46) from fuel tank (49).

f. INSTALLATION (M749 SOUTHWEST MODEL VRP, SERIAL NUMBERS V549 THROUGH V628)

1. Install fuel tank drain plug (46) in fuel tank (49).
2. Position new gasket (43) and fuel gage (42) in fuel tank (49) and secure with four screws (61).

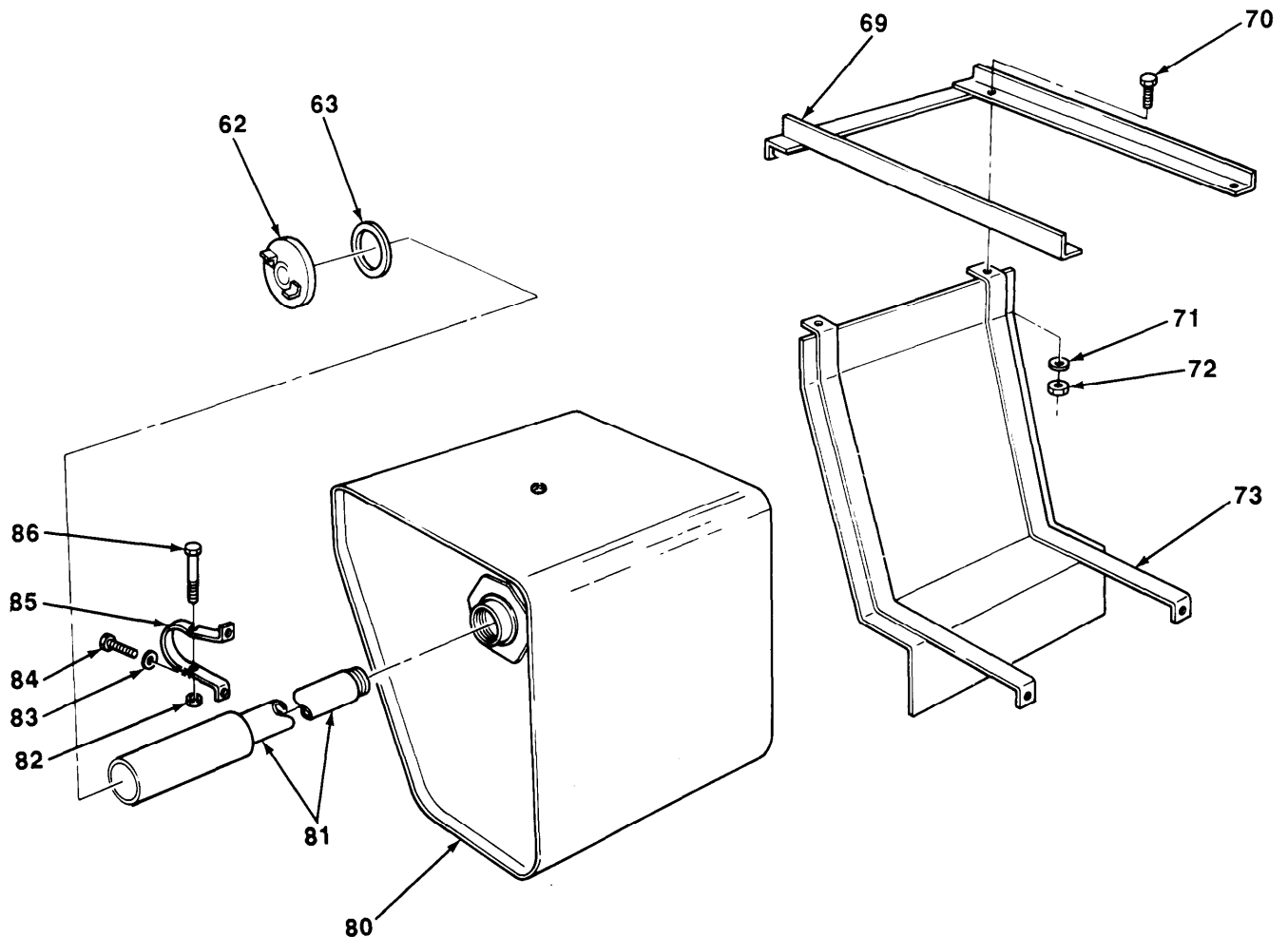
TA702045

4-71. FUEL TANK REPLACEMENT (Con't).

3. Carefully position fuel tank (49), rear support (60), and front support (44) on chassis and secure with four screws (48), new lockwashers (47), and nuts (45).
4. Install pipe nipple (50), elbow (51), pipe nipple (56), elbow (59), pipe nipple (58), and filler opening cap (57) on fuel tank (49).
5. Install pipe clamp (54) on pipe nipple (56) and secure with two screws (55), new lockwashers (53), and nuts (52).

g. REMOVAL (M749 CONVERTO MODEL 8929)

1. Remove filler cap (62) and gasket (63) from filler neck (81).
2. Remove screw (86) and nut (82) from clamp (85). Remove two screws (84), lockwashers (83), and clamp from filler neck (81). Discard lockwashers
3. Remove filler neck (81) from fuel tank (80).
4. Remove two screws (70), lockwashers (71), and nuts (72) from fuel tank shield (73) and frame assembly (69). Discard lockwashers.



TA702046

4-71. FUEL TANK REPLACEMENT (Con't).

4. Position frame assembly (69) in place on chassis and secure with four screws (66), new lockwashers (68), and nuts (67).
5. Position fuel tank (80) and fuel tank shield (73) in place on frame assembly (68) and secure with two screws (70), two screws (74), new lockwashers (71 and 75), and two nuts (72).
6. Install filler neck (81) on fuel tank (80).
7. Install clamp (85) on filler neck (81) and secure with two screws (84) and new lockwashers (83). Install screw (86) and nut (82) in clamp.
8. Install filler cap (62) and gasket (63) on filler neck (81).

FOLLOW-ON TASKS:

- Connect fuel tank fuel lines (para 4-70),

4-72. EXHAUST SYSTEM REPLACEMENT.

This Task Covers:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Removal (M313) b. Installation (M313) c. Removal (M447, M447C, and M750) d. Installation (M447, M447C, and M750) | <ul style="list-style-type: none"> e. Removal (M749 Southwest Model VRP) f. Installation (M749 Southwest Model VRP) g. Removal (M749 Converto Model 8929) h. Installation (M749 Converto Model 8929) |
|--|--|

Initial Setup:

Materials/Parts:

- M313
 - One seal
 - Six lockwashers
- M447, M447C, and M750
 - Two self-locking nuts
 - Four preformed packings
 - Sixteen lockwashers
- M749 Southwest Model VRP
 - One lockwasher

Materials/Parts (Con't) :

- M749 Converto Model 8929
 - Four seals
 - Twenty lockwashers

Tools/Test Equipment:

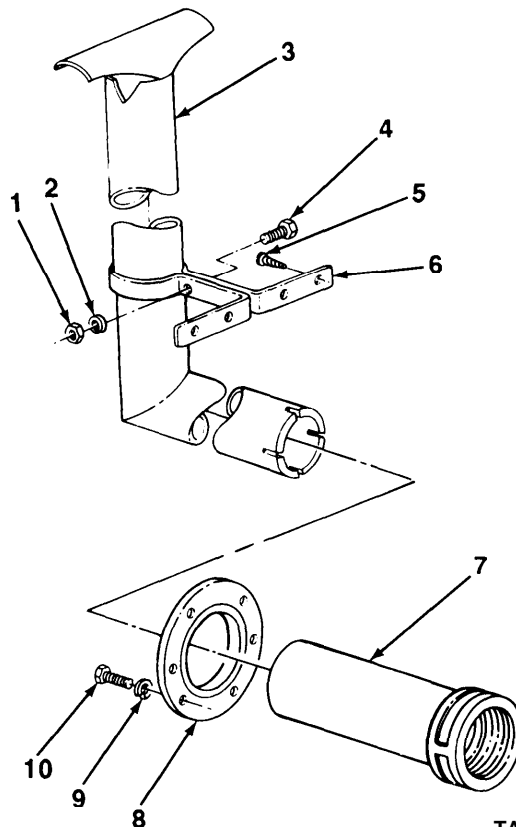
- . General mechanic's tool kit

WARNING

Exhaust system may be hot. Allow exhaust system to cool before replacing. Failure to follow this warning can result in serious burns to personnel.

a. REMOVAL (M313)

1. Remove eight screws (5) from two clamps (6) on exhaust pipe (3) and bonnet.
2. Remove exhaust pipe (3) and two clamps (6) from exhaust pipe (7) and bonnet.
3. Remove two screws (4), lockwashers (2), nuts (1), and clamps (6) from exhaust pipe (3). Discard lockwashers.
4. Remove four screws (10), lockwashers (9), and seal (8) from bonnet. Discard seal and lockwashers.
5. Remove exhaust pipe (7) from heater.



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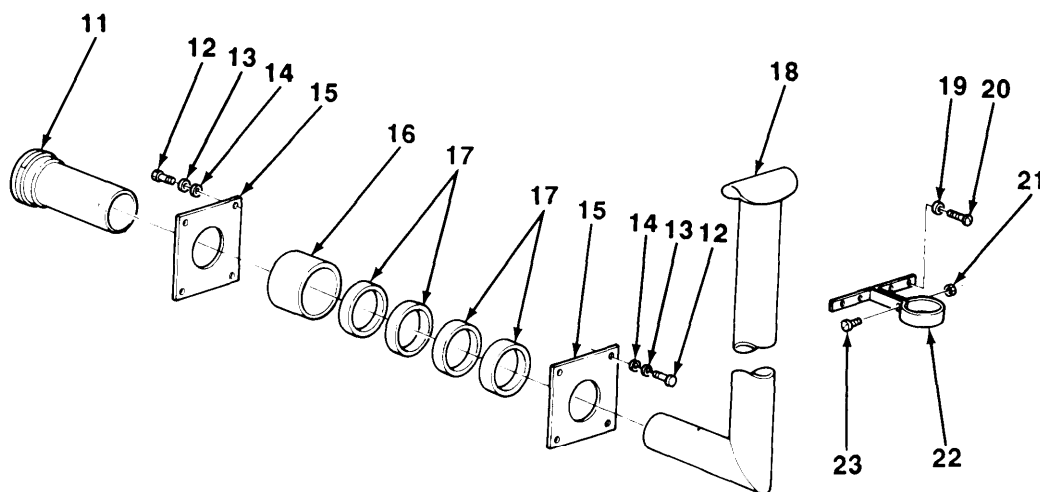
4-72. EXHAUST SYSTEM REPLACEMENT (Con't).

b. INSTALLATION (M313)

1. Install exhaust pipe (7) in heater.
2. Position new seal (8) on bonnet and secure with four screws (10) and new lockwashers (9).
3. Position two clamps (6) on exhaust pipe (3).
4. Install exhaust pipe (3) through seal (8) and mated with exhaust pipe (7).
5. Aline holes in two clamps (6) with holes in bonnet and secure with eight screws (5).
6. Secure two clamps (6) to exhaust pipe (3) with two screws (4), new lockwashers (2), and nuts (1).

c. REMOVAL (M447, M447C, AND M750)

1. Remove eight screws (20) and lockwashers (19) from two clamps (22) on exhaust pipe (18) and bonnet. Discard lockwashers.
2. Remove exhaust pipe (18) and two clamps (22) from spacer (16).
3. Open side bonnet doors.
4. Remove two screws (23) and self-locking nuts (21) from clamps (22) and remove clamps from exhaust pipe (18). Discard self-locking nuts.
5. Remove eight screws (12), washers (13), lockwashers (14), and two plates (15) from bonnet. Discard lockwashers.
6. Remove spacer (16) and four preformed packings (17) from bonnet and exhaust tube (11). Discard preformed packings.
7. Remove exhaust tube (11) from heater.

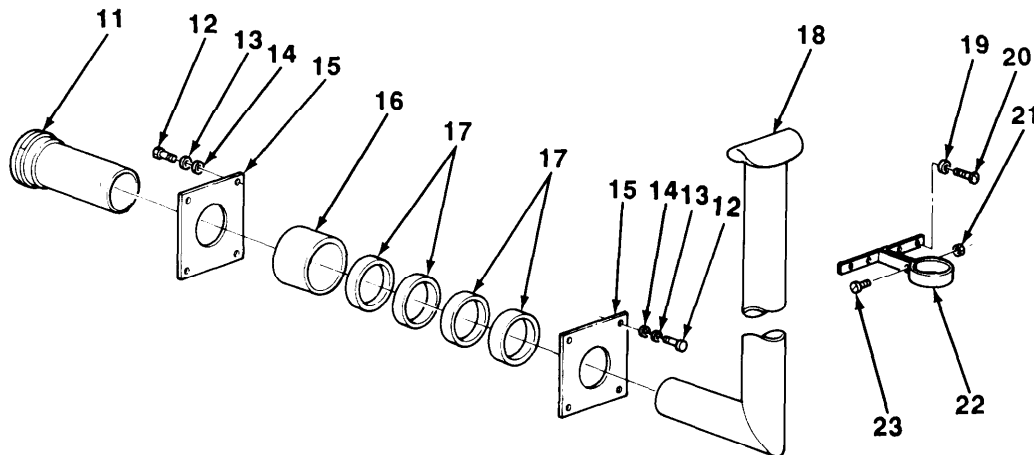


TA702049

4-72. EXHAUST SYSTEM REPLACEMENT (Con't).

d. INSTALLATION (M447, M447C, AND M750)

1. Install exhaust tube (11) in heater.
2. Position four new preformed packings (17) on spacer (16) and install in bonnet on exhaust tube (11).
3. Position two plates (15) on bonnet and secure with eight screws (12), new lockwashers (14), and washers (13).
4. Position two clamps (22) on exhaust pipe (18).
5. Install exhaust pipe (18) through plates (15) and aline holes in clamps (22) with holes in bonnet and secure with eight screws (20) and new lockwashers (19).
6. Secure clamps (22) to exhaust pipe (18) with two screws (23) and new self-locking nuts (21).
7. Close side bonnet doors.



e. REMOVAL (M749 SOUTHWEST MODEL VRP)

1. Remove four screws (31) from bracket (25) and bonnet,
2. Rotate stack assembly (24) counterclockwise and remove stack assembly from mounting ring (30).
3. Remove screw (32), lockwasher (26), nut (27), and bracket (25) from stack assembly (24). Discard lockwasher.
4. Remove four screws (28) and mounting ring (30) from nipple (29) and bonnet.
5. Remove nipple (29) from heater.

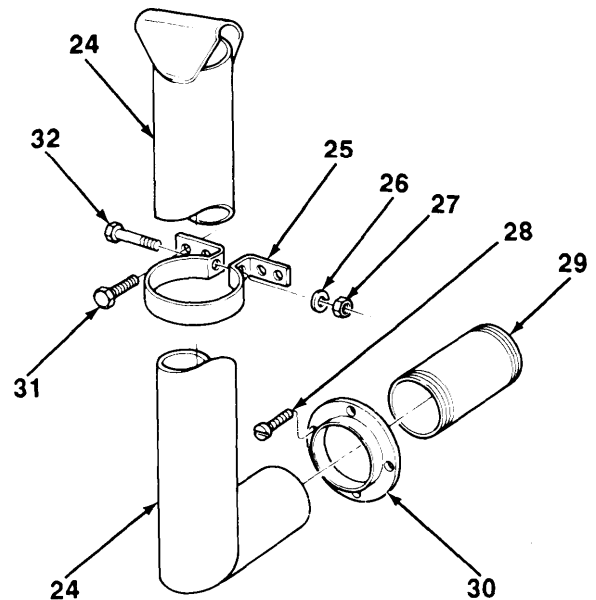
f. INSTALLATION (M749 SOUTHWEST MODEL VRP)

1. Install nipple (29) in heater.
2. Position mounting ring (30) on nipple (29) and Install four screws (28).

TA702050

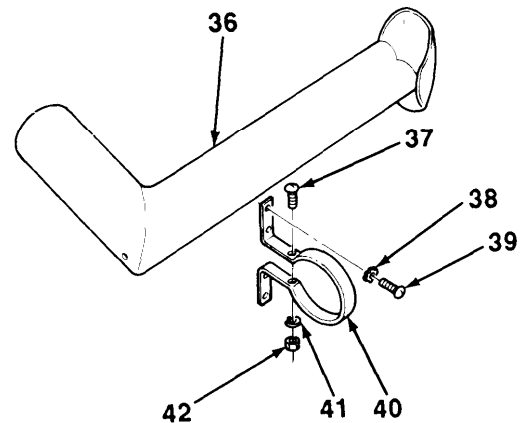
4-72. EXHAUST SYSTEM REPLACEMENT (Con't).

3. Install bracket (25) on stack assembly (24).
4. Install stack assembly (24) through mounting ring (30) and thread on nipple (29) by turning clockwise.
5. Aline holes in bracket (25) with holes in bonnet and secure with four screws (31).
6. Secure bracket (25) to stack assembly with screw (32), new lockwasher (26), and nut (27).



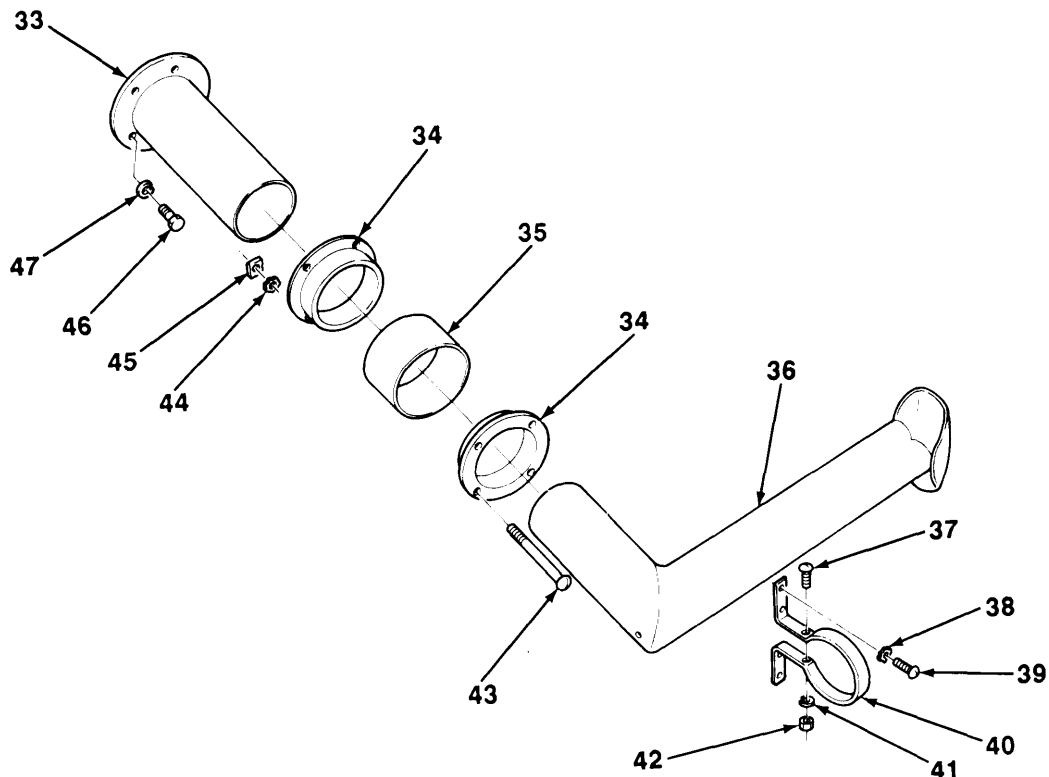
g. REMOVAL (M749 CONVERTO MODEL 8929)

1. Remove eight screws (39) and lockwashers (38) from two clamps (40) on upper exhaust pipe (36). Discard lockwashers.
2. Remove two screws (37), lockwashers (41), nuts (42), and clamps (40) from upper exhaust pipe (36). Discard lockwashers.



4-72. EXHAUST SYSTEM REPLACEMENT (Con't).

3. Pull upper exhaust pipe (36) out of seal (34) and inner pipe (35).
4. Open side bonnet doors.
5. Remove four screws (43), lockwashers (44), nuts (45), inner and outer seals (34), and inner pipe (35) from bonnet. Discard seals and lockwashers.
6. Remove six screws (46), lockwashers (47), and inner pipe assembly (33). Discard lockwashers.



h. INSTALLATION (M749 CONVERTO MODEL 8929)

1. Install inner pipe assembly (33) and secure with six screws (46) and new lockwashers (47).
2. Install new inner and outer seals (34) and inner pipe (35) in bonnet and secure with four screws (43), new lockwashers (44), and nuts (45).
3. Close side bonnet doors.
4. Install upper exhaust pipe (36) through seal (34), Install two clamps (40) on upper exhaust pipe and aline holes in clamps with holes in bonnet.
5. Secure clamps (40) to bonnet with eight screws (39) and new lockwashers (38).
6. Secure clamps (40) to upper exhaust pipe (36) with two screws (37), new lockwashers (41), and nuts (42).

4-73. HEATER REPLACEMENT.

This Task Covers:

- | | |
|---|--|
| a. Removal (M313) | f. Installation (M749 Southwest Model VRP) |
| b. Installation (M313) | g. Removal (M749 Convento Model 8929) |
| c. Removal (M447, M447C, and M750) | h. Installation (M749 Convento Model 8929) |
| d. Installation (M447, M447C, and M750) | i. Inspection (All models) |
| e. Removal (M749 Southwest Model VRP) | |

Initial Setup:

Equipment Conditions:

- Remove fuel lines (para 4-70).
- Remove exhaust system (para 4-72).
- Open side bonnet doors.

Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Two

Materials/Parts:

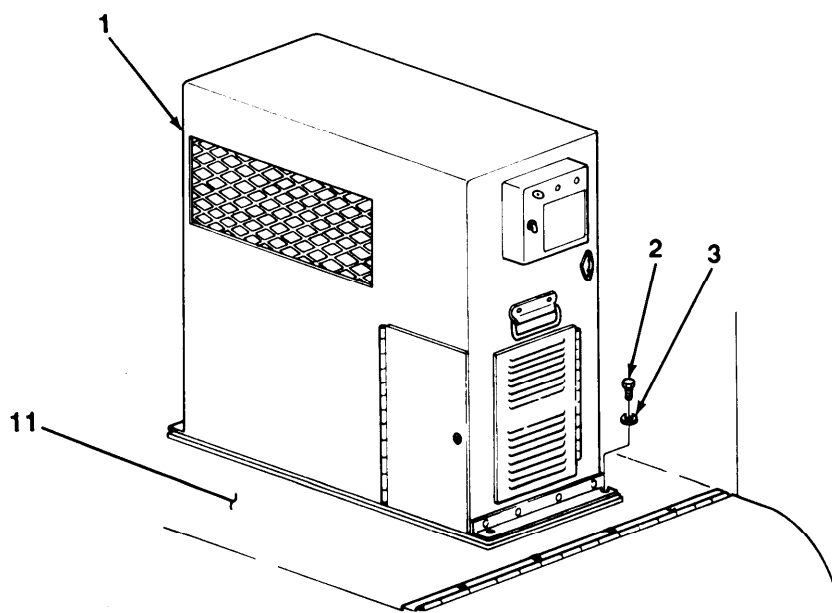
- Marker tags (Item 15, Appendix E)
- M313
 - Four lockwashers
- M447, M447C, and M750
 - Four lockwashers
 - Four rivets
 - Four self-locking nuts
- M749 Southwest Model VRP
 - Five lockwashers

WARNING

Heaters may be hot. Allow heaters to cool before attempting replacement. Failure to follow this warning can result in serious burns to personnel.

a. REMOVAL (M313)

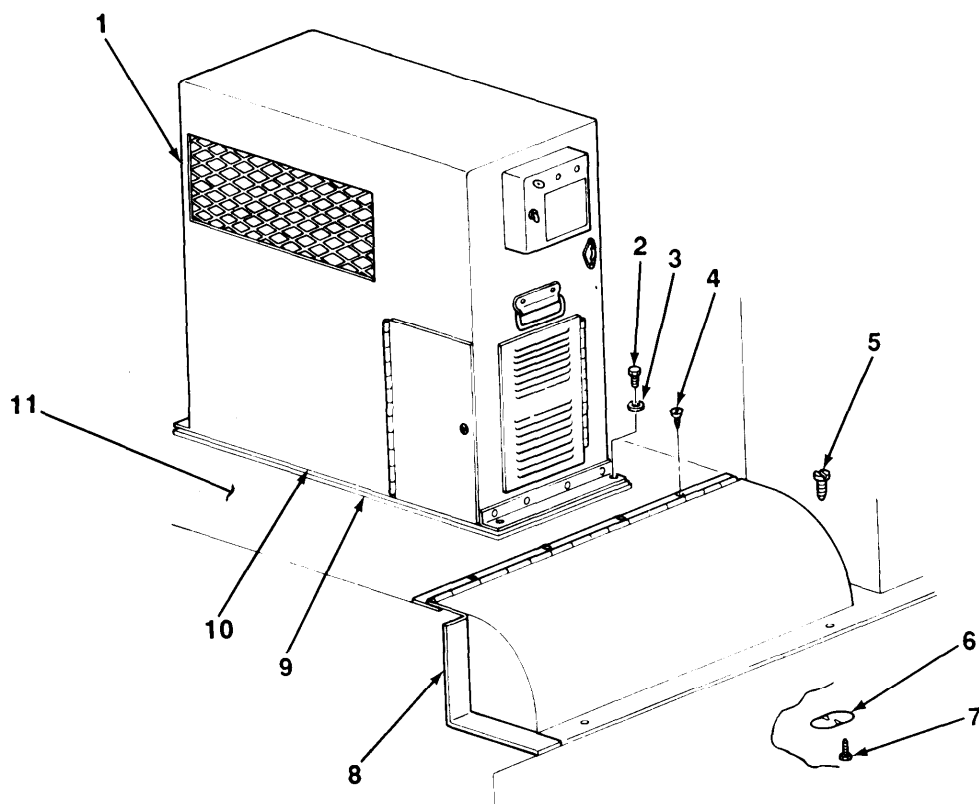
1. Disconnect all electrical leads to heater (1).
2. Remove four bolts (2) and lockwashers (3) from heater (1) and heater duct assembly (1 1). Discard lockwashers.



TA702053

4-73. HEATER REPLACEMENT (Con't).

3. Remove heater (1), plate (9), and gasket (10) from top of heater duct assembly (11). Discard gasket.
4. Remove two setscrews (5), four screws (4), and heater cover assembly (8) from heater duct assembly (11).
5. Remove four screws (7) and two sheet spring nuts (6).



b. INSTALLATION (M313)

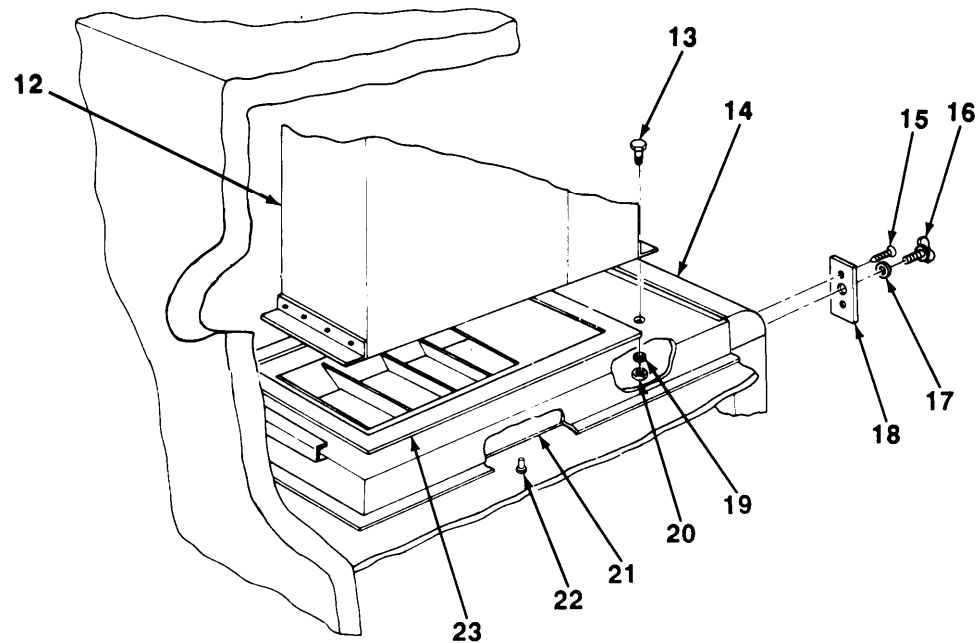
1. Position two sheet spring nuts (6) on heater duct assembly (11) and secure with four screws (7).
2. Install heater cover assembly (8) on heater duct assembly (11) and secure with four screws (4) and two setscrews (5).
3. Position heater (1), plate (9), and gasket (10) in place on heater duct assembly (11).
4. Secure heater (1) to heater duct assembly (11) with four bolts (2) and new lockwashers (3).
5. Connect all electrical leads to heater (1).

c. REMOVAL (M447, M447C, AND M750)

1. Disconnect all electrical leads to heater (12).
2. Remove four bolts (13), lockwashers (19), and self-locking nuts (20) from heater (12) and deflector assembly (14). Discard lockwashers and self-locking nuts.

TA702054

4-73. HEATER REPLACEMENT (Con't).



- Remove heater (12) and rubber strip (23) from deflector assembly (14).

WARNING

Asbestos can be dangerous if you touch it or breathe it. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean components containing asbestos. Dust may be removed using an industrial-type vacuum cleaner. Clean dust or mud away from components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.

- Remove four rivets (22) and asbestos (2) from deflector assembly (14). Discard rivets.
- Remove two screws (16), washers (17), four screws (15), and two sheet spring nuts (18) from deflector assembly (14).

d. INSTALLATION (M447, M447C, AND M750)

- Position two sheet spring nuts (18) on deflector assembly (14) and secure with four screws (15), and two screws (16), and washers (17).

WARNING

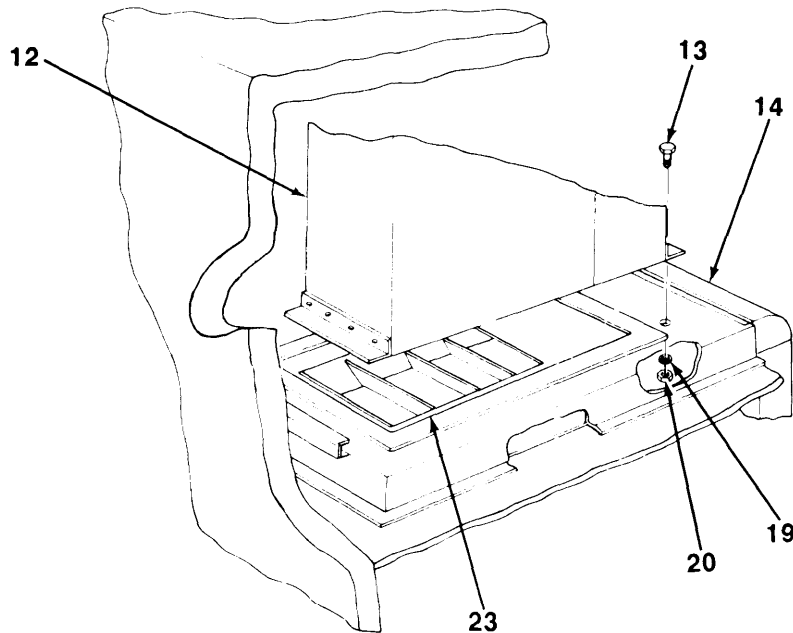
Asbestos can be dangerous if you touch it or breathe it. Wear an approved filter mask and gloves. Never use compressed air or a dry brush to clean components containing asbestos. Dust may be removed using an industrial-type vacuum cleaner. Clean dust or mud away from components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.

- Position asbestos (21) in place on deflector assembly (14) and secure with four new rivets (22).

TA702055

4-73. HEATER REPLACEMENT (Con't).

3. Position heater (12) and rubber strip (23) in place on deflector assembly (14).
4. Secure heater (12) to deflector assembly (14) with four bolts (13), new lockwashers (19), and new self-locking nuts (20).
5. Connect all electrical leads to heater (12).



e. REMOVAL (M749 SOUTHWEST MODEL VRP)

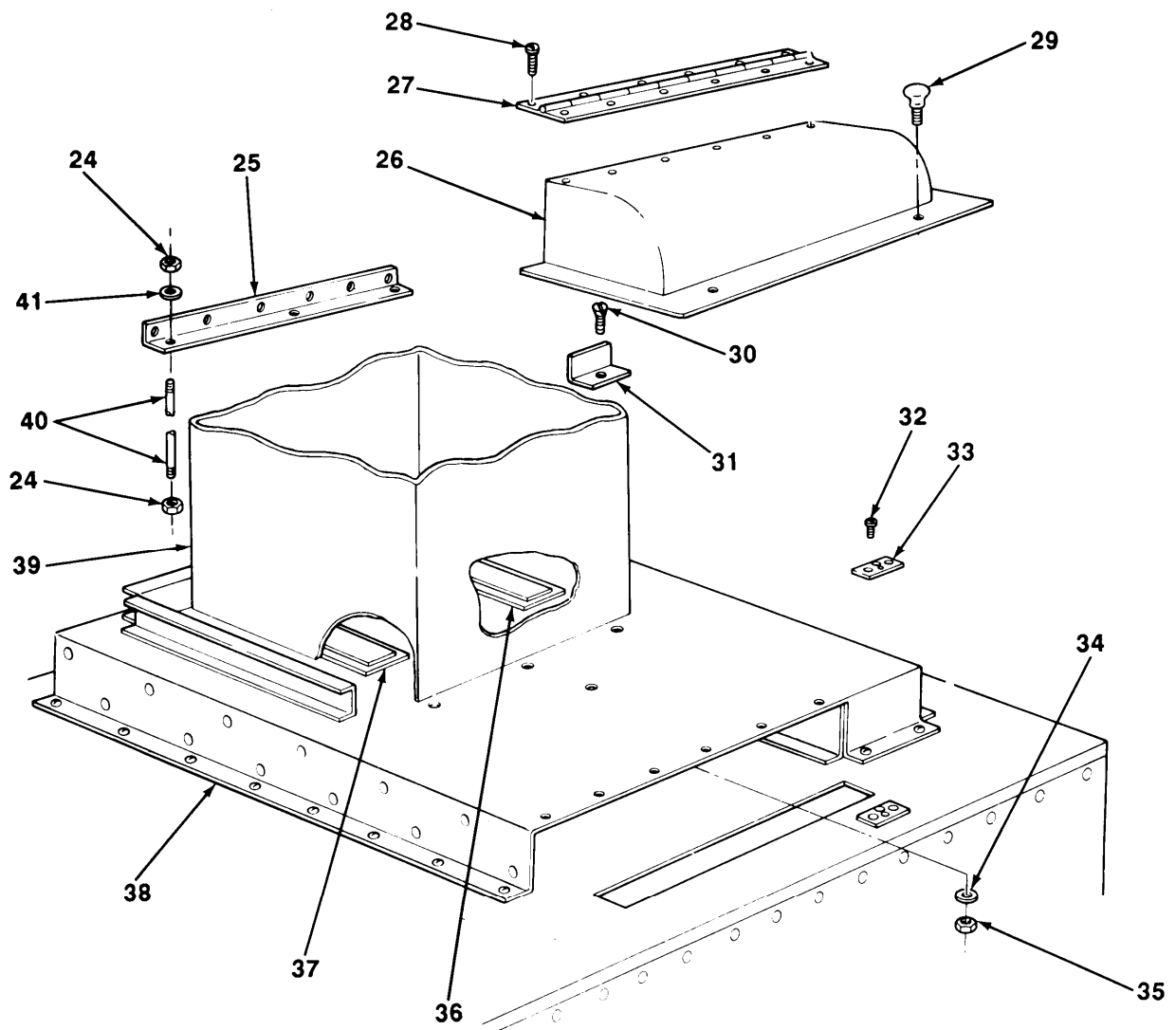
1. Disconnect all electrical leads to heater (39).
2. Remove eight nuts (24), four studs (40), four lockwashers (41), and bar (25) from heater (39) and heater duct assembly (38). Discard lockwashers.
3. Remove bolt (30), bar (31), lockwasher (34), and nut (35) from heater duct assembly (38). Discard lockwasher.
4. Remove heater (39) and two gaskets (36 and 37) from heater duct assembly (38).
5. Remove six screws (28) from hinge (27) and heater duct assembly (38).
6. Loosen two thumbscrews (29) and remove heater cover assembly (26).
7. Remove four screws (32) and two spring nuts (33).

f. INSTALLATION (M749 SOUTHWEST MODEL VRP)

1. Position bar (31) on heater duct assembly (38) and secure with bolt (30), new lockwasher (34), and nut (35).
2. Position two spring nuts (33) on heater duct assembly (38) and secure with four screws (32).

TA702056

4-73. HEATER REPLACEMENT (Con't).



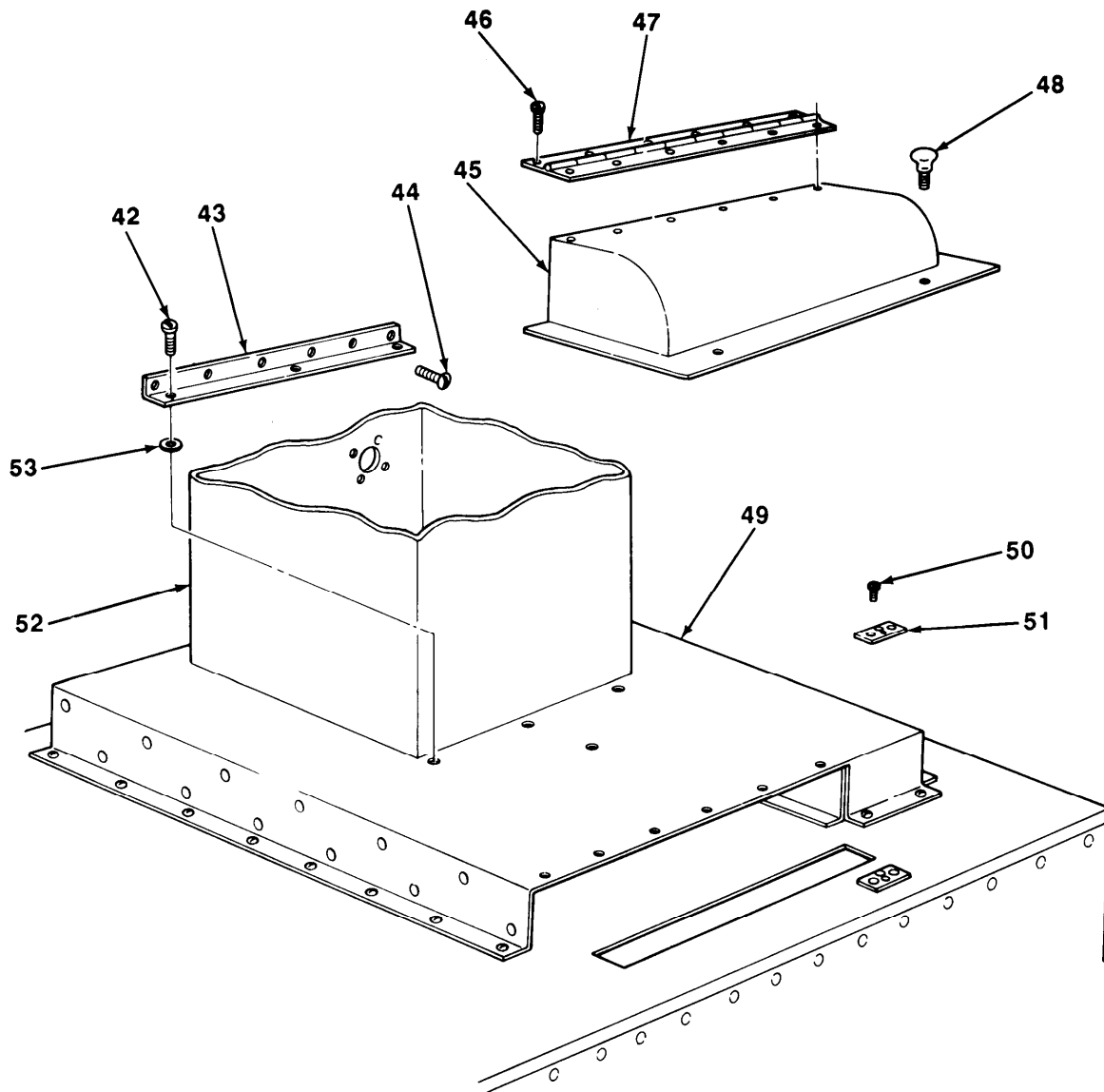
3. Install hinge (27) on heater cover assembly (26) with six screws (28).
4. Install cover (26) on heater duct assembly (38) and secure with six screws (32) and two thumbscrews (29).
5. Install two gaskets (36 and 37) and heater (39) on heater duct assembly (38).
6. Secure heater (39) to heater duct assembly (38) with bar (25), four studs (40), eight nuts (24), and four new lockwashers (41),
7. Connect all electrical leads to heater (39).

TA702057

4-73. HEATER REPLACEMENT (Con't).

g. REMOVAL (M749 CONVERTO MODEL 8929)

1. Disconnect and tag all electrical leads to heater (52).
2. Remove three screws (42) and three retainers (53) from heater mounting bracket (43) and heater duct assembly (49).
3. Remove four screws (44) and mounting bracket (43) from heater (52).
4. Remove heater (52) from heater duct assembly (49).



TA702058

4-73. HEATER REPLACEMENT (Con't).

5. Loosen two thumbscrews (48) and remove four screws (46), hinge (47), and heater cover assembly (45) from heater duct assembly (49).
6. Remove four screws (50) and two spring nuts (51) from heater duct assembly (49).

h. INSTALLATION (M749 CONVERTO MODEL 8929)

1. Position two spring nuts (51) on heater duct assembly (49) and secure with four screws (50).
2. Position hinge (47) and heater cover assembly (45) on heater duct assembly (49) and secure with four screws (46). Tighten two thumbscrews (48).
3. Position heater (52) in place on heater duct assembly (49).
4. Install mounting bracket (43) on heater (52) and heater duct assembly (49) with four screws (44), three screws (42) and three retainers (53).
5. Connect all electrical leads to heater (52). Remove tags.

i. INSPECTION (ALL MODELS)

1. Inspect seals, rubber strip, or gaskets for cracks, breaks, or deterioration. Replace as necessary.
2. Inspect heater cover assembly and hinge for cracks, bends, or breaks. Straighten any minor bends or dents. If damaged, remove rivets or screws and replace defective part.

FOLLOW-ON TASKS:

- Install exhaust system (para 4-72).
- Install fuel lines (para 4-70).
- Close side bonnet doors.
- Test heater operation.

Section XIV. PREPARATION FOR STORAGE OR SHIPMENT

Paragraph Title	Page Number
Care of Equipment in Administrative Storage	4-190
Definition of Administrative Storage.	4-188
General	4-188
Preparation of Equipment for Administrative Storage	4-188
Preparation of Equipment for Shipment	4-191
Procedures for Common Components and Miscellaneous items	4-190
Removal of Equipment from Administrative Storage	4-191

4-74. GENERAL.

a. This section contains requirements and procedures for administrative storage of equipment that is issued to and in use by Army activities worldwide.

b. The requirements specified herein are necessary to maintain equipment in administrative storage in such a way as to achieve the maximum readiness condition.

c. Equipment that is placed in administrative storage should be capable of being readied to perform its mission within a 24-hour period, or as otherwise maybe prescribed by the approving authority. Before equipment is placed in administrative storage, a current Preventive Maintenance Checks and Services (PMCS) should be completed and deficiencies corrected.

d. Report equipment in administrative storage as prescribed for all reportable equipment.

e. Perform inspections, maintenance services, and lubrication as specified herein.

f. Records and reports to be maintained for equipment in administrative storage are those prescribed by DA Pam 738-750, for equipment in use.

g. A 10% variance is acceptable on time, running hours, or mileage used to determine required maintenance actions.

h. Accomplishment of applicable PMCS as mentioned throughout this section, will be on a quarterly basis.

4-75. DEFINITION OF ADMINISTRATIVE STORAGE.

The placement of equipment in administrative storage can be for short periods of time when a shortage of maintenance effort exists. Items should be ready for use within the time factors as determined by the directing authority. During the storage period, appropriate maintenance records will be kept.

4-76. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE.

a. Storage Site.

(1) Select the best available site for administrative storage. Separate stored equipment from equipment in use. Conspicuously mark the area "Administrative Storage."

(2) Covered space is preferred.

(3) Open sites should be improved hardstand, If available. Unimproved sites should be firm, well-drained, and kept free of excessive vegetation.

4-76. PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE (Con't).**b. Storage Plan.**

(1) Store equipment so as to provide maximum protection from the elements and to provide access for inspection, maintenance, and exercising, Anticipate removal or deployment problems and take suitable precautions.

(2) Take into consideration environmental conditions, such as extreme heat or cold; high humidity; blowing sand, dust, or loose debris; soft ground; mud; heavy snows; earthquakes; or combinations thereof, and take adequate precautions.

(3) Establish a fire plan and provide for adequate firefighting equipment and personnel.

c. Maintenance Services and Inspection.

(1) **Maintenance Services.** Prior to storage, perform the next scheduled organizational PMCS.

(2) **Inspection.** inspect and approve equipment prior to storage. Do not place equipment in storage in a nonmission-capable condition.

d. Auxiliary Equipment and Basic issue items.

(1) Process auxiliary equipment and basic issue items simultaneously with the major item to which they are assigned.

(2) If possible, store auxiliary equipment and basic issue items with the major item.

(3) If stored apart from the major item, mark auxiliary equipment and basic issue items with tags indicating the major item, its registration or serial number and location, and store in protective type closures. In addition, place a tag or list indicating the location of the removed items in a conspicuous place on the major item.

e. **Correction of Shortcomings and Deficiencies.** Correct all shortcomings and deficiencies prior to storage, or obtain a deferment from the approving authority.

f. **Lubrication.** Lubricate equipment in accordance with instructions in Chapter 3, Section I.

g. General Cleaning, Painting, and Preservation.**CAUTION**

Do not direct water or steam, under pressure, against unsealed electrical systems, fire control instruments, or any exterior opening which will damage a component.

(1) **Cleaning.** Clean the equipment of dirt, grease, and other contaminants, but do not use vapor decreasing. Remove foreign objects that are wedged between wheels.

(2) **Painting.** Remove rust and damaged paint by scraping, wire brushing, sanding, or buffing. Sand to a smooth finish and spot paint as necessary (TB 43-0209).

(3) **Preservation.** After cleaning and drying, immediately coat unpainted metal surfaces with an oil or grease, as appropriate (Chapter 3, Section I).

CAUTION

Place a piece of barrier material (item 2, Appendix E) between desiccant bags and metal surfaces.

NOTE

Air circulation under draped covers reduces deterioration from moisture and heat.

(4) **Weatherproofing.** Sunlight, heat, moisture (humidity), and dirt tend to accelerate deterioration. install all covers (including vehicle protective closures) authorized for the equipment. Close and secure all openings except those required for venting and draining. Seal openings to prevent the entry of rain, snow, or dust. insert desiccant when complete seal is required. Place equipment and provide blocking or framing to allow for ventilation and water drainage. Support cover away from item surfaces which may rust, rot, or mildew,

4-77. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE.

a. **Maintenance Services.** After equipment has been placed in administrative storage, inspect, service, and exercise as specified herein.

b. **Inspection.** Inspection will usually be visual and must consist of at least a walkaround examination of all equipment to detect any deficiencies. Inspect equipment in open storage weekly and equipment in covered storage monthly. Inspect all equipment immediately after any severe storm or environmental change. The following are examples of things to look for during visual inspection:

- (1) Low or flat tires.
- (2) Leaks of coolant, fuel, or refrigerant.
- (3) Condition of preservatives, seals, and wraps.
- (4) Corrosion or other deterioration.
- (5) Missing or damaged parts.
- (6) Water in compartments.
- (7) Any other readily recognizable shortcomings or deficiencies.

c. **Repair During Administrative Storage.** Keep equipment in an optimum state of readiness. Accomplish required services and repairs as expeditiously as possible. Whenever possible perform all maintenance on-site.

d. **Exercising.** Exercise equipment in accordance with Table 4-3, Exercise Schedule, and the following instructions:

(1) **Vehicle Major Exercise.** Depreserve equipment by removing only that material restricting exercise. Remove all blocks and perform all before-operation checks. Couple semitrailer to towing vehicle, and drive for at least 25 mi (40 km). Make several right and left 90° turns. Make several hard braking stops without skidding. Do the following during exercising when it is convenient and safe: operate all other functional components and perform all during- and after-operation checks.

(2) **Scheduled Services.** Scheduled services will include inspection per subparagraph b above, and be conducted in accordance with Table 4-3. Lubricate in accordance with Lubrication Instructions (Chapter 3, Section I).

(3) **Corrective Action.** immediately take action to correct shortcomings and deficiencies noted. Record inspection and exercise results on DA Form 2404. Record and report all maintenance actions on DA Form 2407. After exercising, restore the preservation to original condition. Replenish lubricant used during exercising, and note amount on DA Form 2408.

Table 4-3. Exercise Schedule.

Weeks	2	4	6	8	10	12	14	16	18	20	22	24
PMCS						X						X
Scheduled Services		X		X		X		X		X		
Major Exercise												X

e. **Rotation.** Rotate items in accordance with any rotational plan that will keep equipment in an operational condition and reduce maintenance effort.

4-78. PROCEDURES FOR COMMON COMPONENTS AND MISCELLANEOUS ITEMS.

a. **Tires.** Visually inspect tires during each walkaround inspection. This inspection includes checking tires with a tire gage. Inflate repair, or replace as necessary, those found to be low, damaged, or excessively worn. Mark inflated and repaired tires with a crayon for checking at next inspection.

4-78. PROCEDURES FOR COMMON COMPONENTS AND MISCELLANEOUS ITEMS (Con't).

b. **Air Lines and Reservoirs.** Drain air lines and reservoirs of condensation, and leave draincocks open. Attach a caution tag, annotated to provide for closing of draincocks when equipment is exercised. Place tags in a conspicuous location.

c. **Seals.** Seals may develop leaks during storage, or shortly thereafter. If leaking persists, refer to the applicable maintenance section in this manual for corrective maintenance procedures.

4-79. REMOVAL OF EQUIPMENT FROM ADMINISTRATIVE STORAGE.

a. **Activation.** Restore equipment to normal operating condition in accordance with instructions contained in Chapter 4, Section II.

b. **Servicing.** Resume the maintenance service schedule in effect at the commencement of storage, or service the equipment before the scheduled dates in order to produce a staggered maintenance workload,

4-80. PREPARATION OF EQUIPMENT FOR SHIPMENT.

a. Refer to TM 55-21, TM 55-601, and TM 743-200-1 for additional instructions on processing, storage, and shipment of material.

b. Semitrailers that have been removed from storage for shipment do not have to be reprocessed if they will reach their destination within the administrative storage period. Reprocess only if inspection reveals any corrosion, or if anticipated in-transit weather conditions make it necessary.

c. When a semitrailer is received and has already been processed for domestic shipment, as indicated on DD Form 1397, the semitrailer does not have to be reprocessed for storage unless corrosion and deterioration are found during the inspection upon receipt. List on SF 364 all discrepancies found because of poor preservation, packaging, packing, marking, handling, loading, storage, or excessive preservation. Repairs that cannot be handled by the receiving unit must have tags attached listing needed repairs. A report of these conditions will be submitted by the unit commander for action by the ordnance maintenance unit.

SECTION XV. SPECIAL PURPOSE KITS

Paragraph Title	Page Number
M447C Curtain Kit Installation	4-192
Hook Strip Replacement	4-198
Chain-Guard Post Assembly Replacement	4-202
Enclosure Curtain Repair	4-203

4-81. M447C CURTAIN KIT INSTALLATION.

This task covers:

- a. Installation

Initial Setup:

Equipment Conditions:

- Van body expanded (para 2-14).

Materials/Parts:

- Dry cleaning solvent (Item 15, Appendix E)

Tools/Test Equipment:

- General mechanic's tool kit
- Common no. 1 shop equipment,
- Common no. 2 shop equipment, less power

Personnel Required: Two

a. INSTALLATION

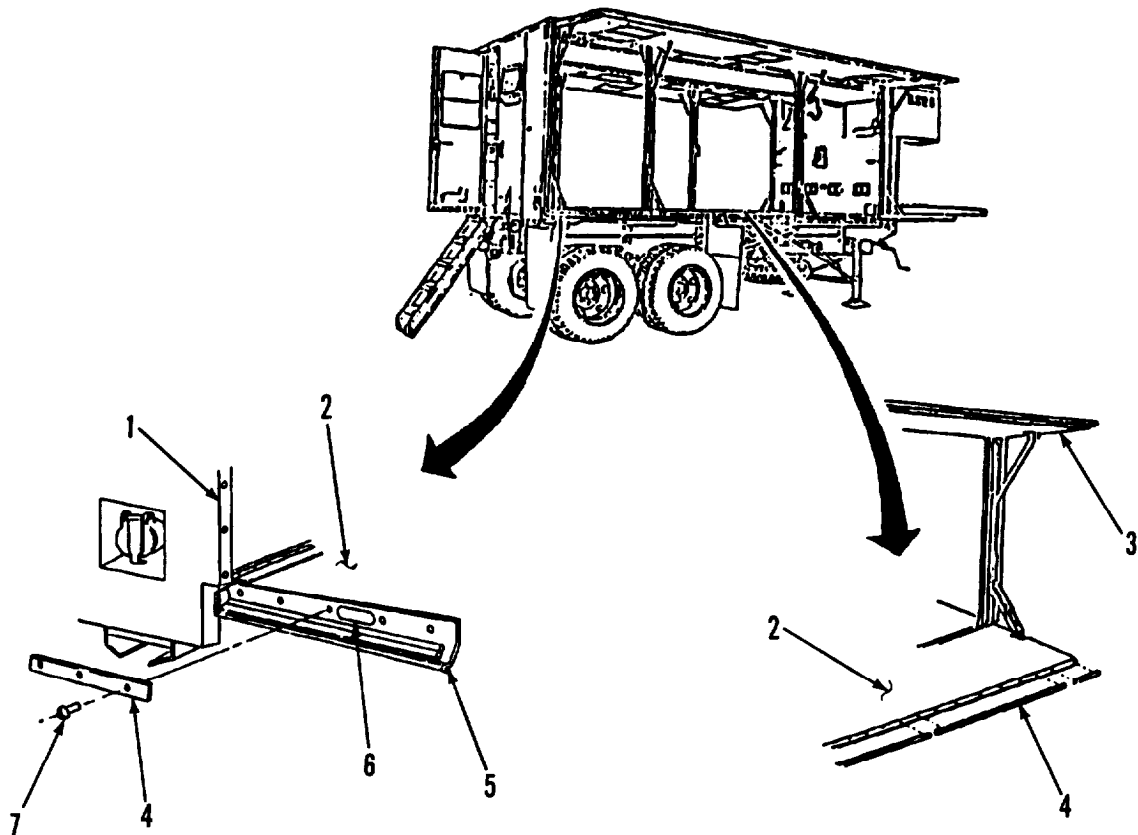
WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles and gloves, and use in a well ventilated area. Avoid contact with skin, eyes, and clothes, and do not breath vapors. Do not use near open flames or excessive heat. The solvent's flash point is 100°F-138°F (38°C - 59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid. Failure to follow this warning may result injury or death to personnel.

NOTE

Hook strips are adhesive backed and clean mounting surfaces are necessary for proper bonding.

4-81. M447C CURTAIN KIT INSTALLATION (Con't).



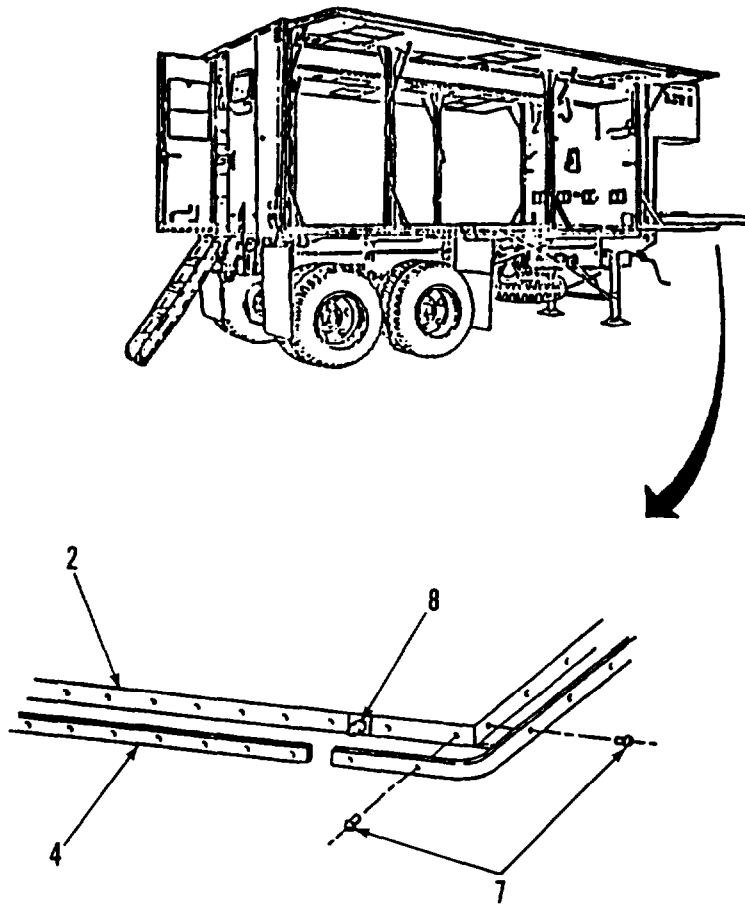
1. Clean upper folding side door (3) and lower folding side door (2) end-plates (5) and corner post (1) mounting surfaces with dry cleaning solvent.
2. Starting from rear corner of lower left door (2), align one 1-inch (2.54cm) wide hook strip (4) 1/16 (1.59mm) to 1/8-inch (3.18mm) down from top edge of lower door (2).

WARNING

Use safety goggles or glasses during drilling operations. Failure to follow this warning may result in serious injury to personnel.

3. Butt hook strip (4) against lower door (2) end-plate (5). Drill a 1/8-inch (3.18mm) diameter hole through hook strip (4) centerline and lower door (2) approximately 3/8 (9.53mm) to 1/2-inch (12.7mm) from edge of rear trailer corner.
4. Insert one blind rivet (7) in hole to secure hook strip (4) to lower door (2) end-plate (5). Continue drilling and inserting rivets (7) at 4-inch (10.16cm) intervals along lower door (2) covering panel lock (6) hardware.
5. Cover 10 panel locks (6) with hook strip (4). Insert one rivet (7) approximately 1/2-inch (12.7mm) from each side of panel lock (6).

4-81. M447C CURTAIN KIT INSTALLATION (Con't).



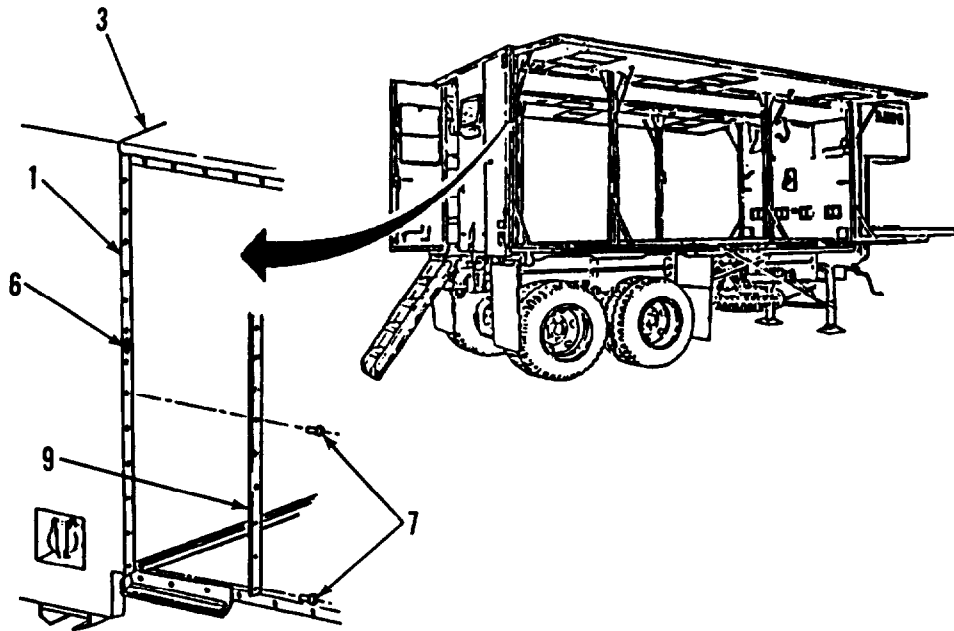
6. Fold hook strip (4) around corner of lower door (2) and insert one rivet (6) 1/2-inch (12.7 mm) from both sides of corner.
7. Trim hook strip (4) around eight locating pins (8) and insert rivets (6) 1/2-inch (12.7 mm) from each side of locating pins (8). Continue installing hook strips (4) until lower door (2) is completed.
8. Repeat steps 1-7 for upper door (3). Exception: trim hook strips (4) to clear locating pin holes. Repeat step 1-8 for opposite side of trailer.

WARNING

Use safety goggles or glasses during drilling operations. Failure to follow this warning may result in serious injury to personnel.

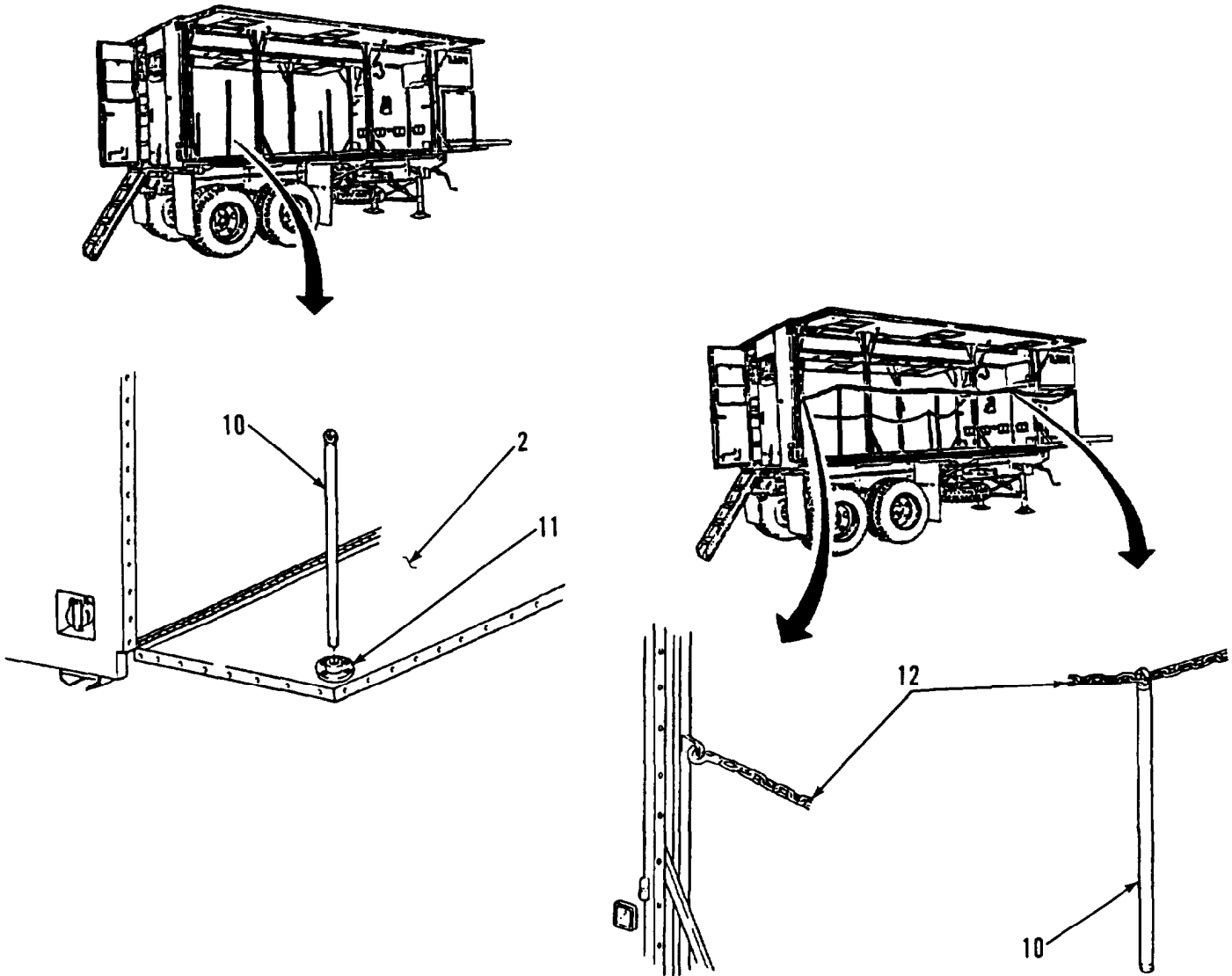
4-81. M447C CURTAIN KIT INSTALLATION (Con't)

9. Starting 1/2-inch (12.7 mm) down from top of left door (3), drill a 1/8-inch (3.18mm) hole through one 1-1/2 inch (3.81 cm) hook strip (9) centerline and corner post (1). Insert rivets (7) into hook strip (9) at 4-inch (10.16 cm) intervals. Cover existing panel locks (6) and space rivets (7) 1/2-inch (12.7 mm) from each side of panel lock (6).
10. Repeat step 9 for right corner post (1) and opposite side of trailer.



4-81. M447C CURTAIN KIT INSTALLATION (Con't).

11. Install one chain-guard post assembly (10) in flange (11) on lower left door(2). Make sure post assembly (10) is completely seated in flange (11).
12. Repeat step 11 for remaining three post assemblies (10) on lower left door (2).
13. Repeat steps 11 and 12 for opposite side of trailer.



14. Attach single-chain assembly (12) to front left wall.
15. Pull chain (12) through top loops of four post assemblies (10) and attach to rear wall.
16. Repeat steps 14 and 15 for opposite side of trailer.

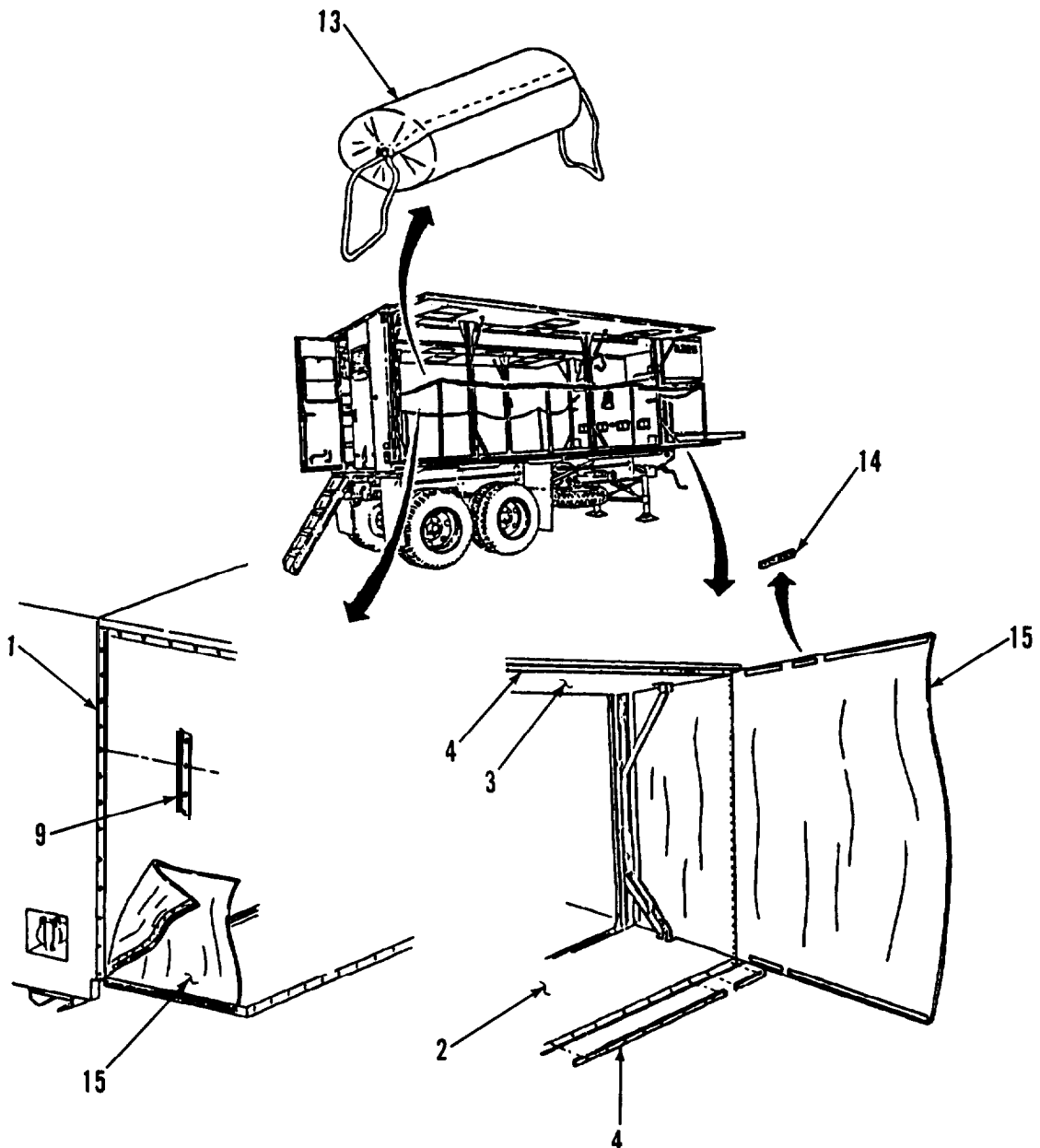
4-81. M447C CURTAIN KIT INSTALLATION (Con't).

17. Remove two curtains (15) from stowage bag (13).
18. With help from an assistant, start on either side of trailer and install curtain (15) on trailer. Attach trim (14) on top edge of curtain (15) to hook strip (4) on upper door (3).

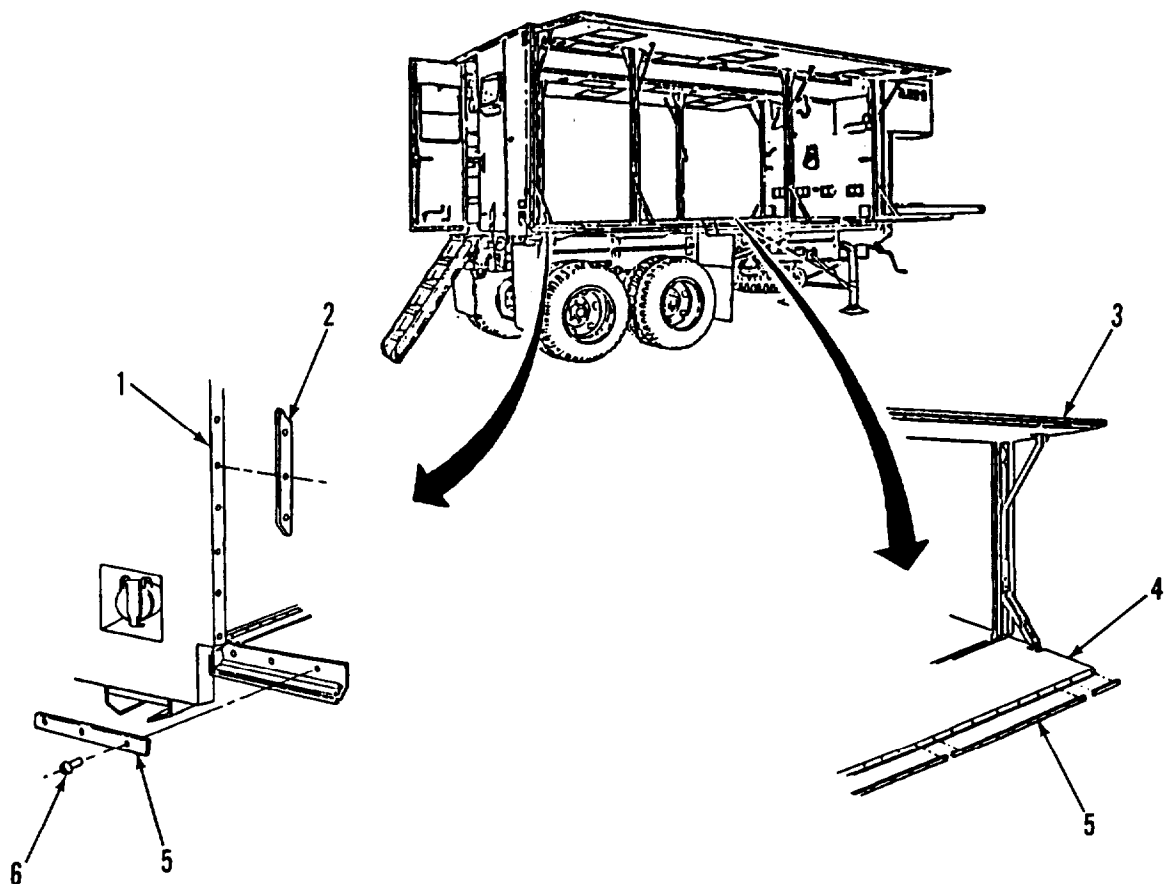
NOTE

Holes in bottom edge of curtain mate with pins on lower door.

19. Attach trim (14) on bottom and side edges of curtain (15) to hook strip (4) on lower door (2) and hook strip (9) on corner post (1).
20. Repeat steps 18 and 19 for opposite side of trailer.



4-82. HOOK STRIP REPLACEMENT (Con't).



1. Using a drill and starting with a 1/16-inch twist-drill bit, remove rivets (6) securing hookstrips (2 or 5) from doors (3 or 4) or corner posts (1) by drilling completely through rivet (6). Discard rivets.
2. If necessary, increase bit size in increments up to 1/8-inch until rivet (6) is removed from hole in doors (3 and 4) or corner posts (1).

NOTE

Hook strips are adhesive backed. For complete removal it may be necessary to scrape hook strip from door end plate or corner post.

3. Remove hook strips (2 or 5) from doors (3 and 4) or corner posts (1). Discard hook strips.

4-82. HOOK STRIP REPLACEMENT (Con't).

b. INSTALLATION

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles or glasses and wear gloves. Use in a well ventilated area. Avoid contact with skin, eyes, and clothes, and do not breath vapors. Do not use near open flames or excessive heat. The solvents flash point Is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent immediately get fresh air and medical help. If solvent contacts eyes, immediately flush your eyes and get medical aid. Failure to follow this warning may result In injury or death to personnel.

NOTE

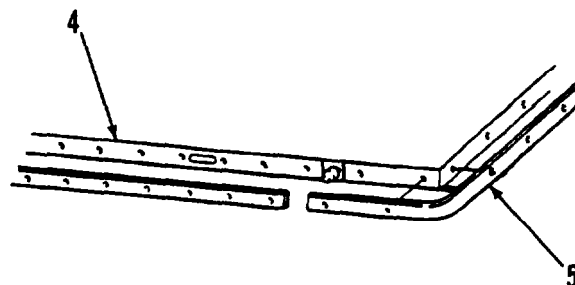
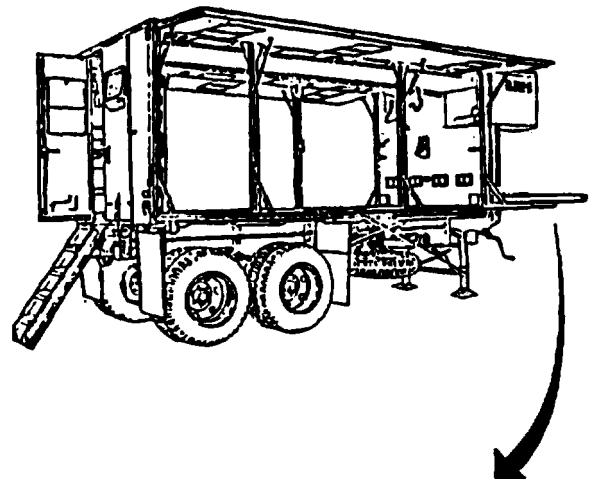
Make sure end-plate or corner post mounting surfaces are clean. Hook strips are adhesive backed, and clean mounting surfaces are necessary for proper bonding.

1. Clean all mounting surfaces with dry cleaning solvent.

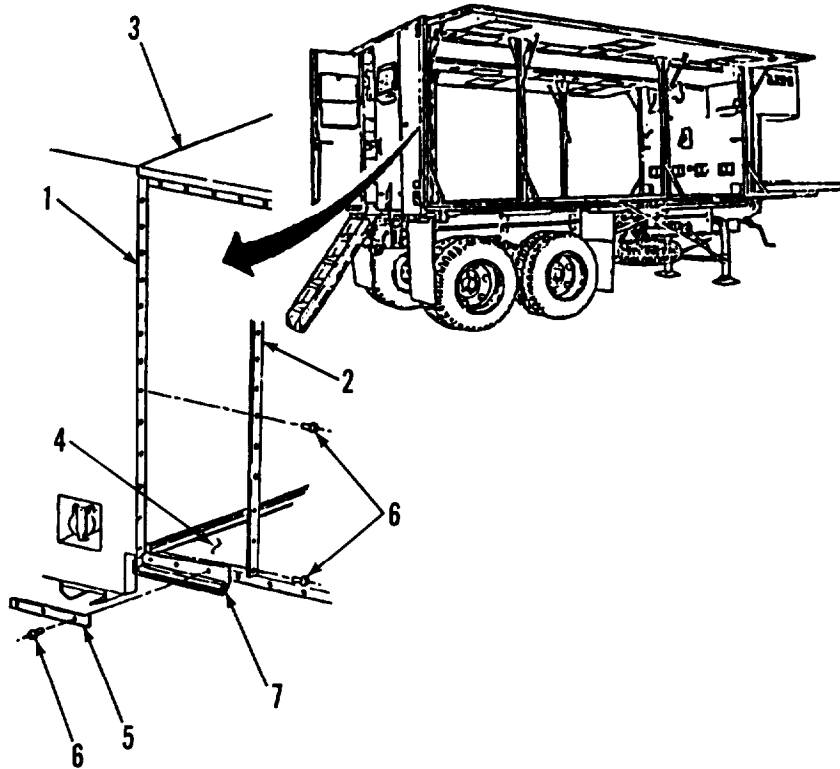
NOTE

Use existing rivet holes as a placement guide for installing new hook strip.

2. Aline new 1-inch (2.54 cm.) hook strip (5) 1/16 (1.59mm) to 1/8-inch (3.17mm) down from from top edge of lower door (4). Note position of rivet holes before covering with hook strip (5).



4-82. HOOK STRIP REPLACEMENT (Con't).



3. Align new 1-3/4 (4.45 cm.) inch hook strip (2) over corner post (1). Note position of rivet holes before covering with hook strip (2).
4. Butt new hook strips (2 and 5) against door end-plate (7) or corner post (1).
5. Using a center punch, puncture new hook strip (5) on doors (3 and 4) or hook strip (2) on corner post (1) to locate existing rivet holes.
6. To secure new hook strips (2 and 5) insert new rivets (6) in existing holes.

FOLLOW-ON TASKS:

- Install enclosure curtain (para 2-14).

4-83. CHAIN-GUARD POST ASSEMBLY REPLACEMENT.

This task covers:

- a. Removal
- b. Installation

Initial Setup:

Equipment Conditions:

- Van body expanded and single-chain assembly removed (para 2-14).

Tool/Test Equipment:

- General mechanic's tool kit
-

a. REMOVAL

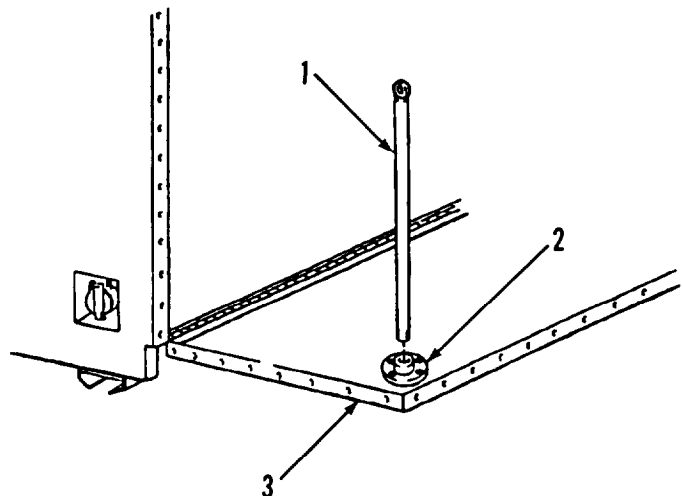
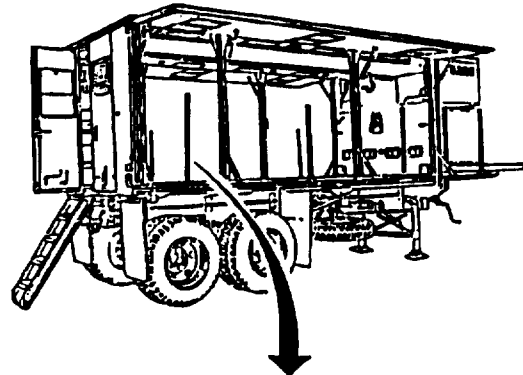
NOTE

Chain-guard post assembly is threaded at base.

Remove chain-guard post assembly (1) from flange (2) on lower folding side door (3). Discard post assembly.

b. INSTALLATION

Install new chain-guard post assembly (1) in flange (2) on lower folding side door (3). Make sure post assembly (1) is completely seated in flange (2).



FOLLOW ON TASK:

- Replace single-chain assembly (para 2-14).

CHAPTER 5 DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

Section L DIRECT SUPPORT AND GENERAL SUPPORT TROUBLESHOOTING PROCEDURES

Paragraph Title	Page Number
Direct Support and General Support Troubleshooting, Table 5-1	5-2
Explanation of Columns	5-1
General	5-1
Troubleshooting Symptom Index	5-2

5-1. GENERAL.

a. This section provides information for identifying and correcting malfunctions which may develop when operating or maintaining the semitrailers.

b. The Troubleshooting Symptom Index in paragraph 5-3 lists common malfunctions which may occur and refer you to the proper page in Table 5-1 for a troubleshooting procedure.

c. This section cannot list all malfunctions that may occur, nor all the tests or inspections and corrective actions. If a malfunction is not listed, or is not corrected by the listed corrective actions, notify your supervisor.

d. When troubleshooting a malfunction:

(1) Question the operator to obtain any information that might help determine the cause of the problem. Before continuing, ensure that all applicable operator/crew and unit troubleshooting was performed.

(2) Locate the symptom(s) in paragraph 5-3 that best describes the malfunction. If the appropriate system is not listed, notify your supervisor.

(3) Turn to the page in Table 5-1 where the troubleshooting procedures for the malfunction in question are described. Headings at the top of each page show how each troubleshooting procedure is organized: MALFUNCTION, TEST OR INSPECTION (in step number order), and CORRECTIVE ACTION.

(4) Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

5-2. EXPLANATION OF COLUMNS.

The columns in Table 5-1 are defined as follows:

(1) **MALFUNCTION.** A visual or operational indication that something is wrong with the semitrailer.

(2) **TEST OR INSPECTION.** A procedure to isolate the problem in a component or system.

(3) **CORRECTIVE ACTION.** A procedure to correct the problem.

5-3. TROUBLESHOOTING SYMPTOM INDEX.

Troubleshooting
Procedure
Page

DOORS

Door Hard to Open or Close... 5-3

LANDING GEAR (Early Model)

Handcrank Does Not Operate Landing Gear Freely 5-2

Legs Do Not Retract or Extend Freely 5-2

VAN BODY EXPANDING AND RETRACTING MECHANISM (M313)

Side Walls are Difficult to Expand and Retract 5-2

Table 5-1. Direct Support and General Support Troubleshooting.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

LANDING GEAR (EARLY MODEL)

1. HANDCRANK DOES NOT OPERATE LANDING GEAR FREELY.

Step 1. Check for broken gear in gear train.

Replace defective gear (para 5-11).

Step 2. Check to see if landing gear is out of alinement.

Adjust landing gear (para 5-11).

2. LEGS DO NOT RETRACTOR EXTEND FREELY

Step 1. Check for defective gear train in support leg.

Replace defective gear train part (para 5-11).

Step 2. Check for bent or damaged cross tube assembly and diagonal braces.

Straighten or replace defective parts.

VAN BODY EXPANDING AND RETRACTING MECHANISM (M313)

3. SIDE WALLS ARE DIFFICULT TO EXPAND AND RETRACT,

Step 1. Check for damaged sprocket.

Replace damaged sprocket (para 5-35).

Table 5-1. Direct Support and General Support Troubleshooting (Con't).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 2.	Check for damaged roller. Replace defective roller (para 5-35).
	Step 3.	Check for bent or broken shaft. Straighten or replace shaft (para 5-35).
	Step 4.	Check for defective bearing. Replace defective bearing (para 5-35).

DOORS

4. DOOR HARD TO OPEN OR CLOSE.

- Step 1. Check for bent or damaged hinge.
Straighten or replace hinge (para 5-17 or 5-18).
- Step 2. Inspect door check for bind or bent linkage to door.
Straighten to relieve bind or bent linkage (para 4-60, 4-61, 4-62, or 4-63).
- Step 3. Check for warped, bent, or twisted door and door frame.
Repair or replace door (para 5-17 or 5-18).

Section II. ELECTRICAL SYSTEM MAINTENANCE

5-4. CHASSIS WIRING HARNESS REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Equipment Conditions:

- Towing vehicle Intervehicular cable disconnected from semitrailer (para 2-11).

Materials/Parts:

- Marker tags (item 15, Appendix E)
- Eight lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

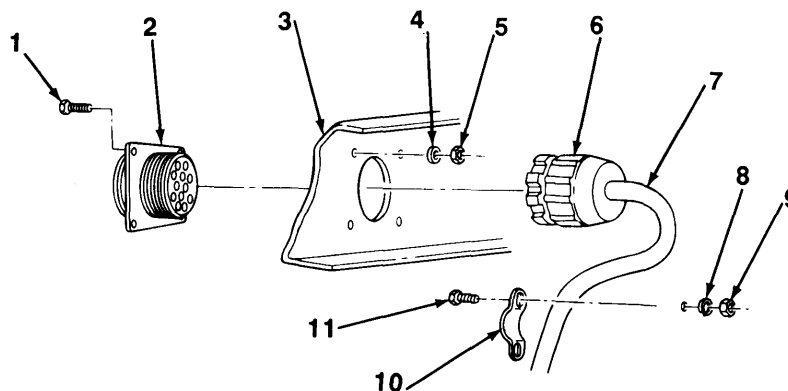
a. REMOVAL

1. Tag and disconnect connector (6) and all cable connectors from receptacle (2).
2. Remove four nuts (5), lockwashers (4), and screws (1) securing receptacle (2) to crossmember (3). Remove receptacle. Discard lockwashers.

NOTE

Number of clamps and screws will vary between models.

3. Remove nuts (9), lockwashers (8), screws (11), and clamps (10) securing harness (7) to frame. Remove harness. Discard lockwashers.



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5-4. CHASSIS WIRING HARNESS REPLACEMENT (Con't).

b. INSTALLATION

NOTE

Number of clamps and screws will vary between models.

1. Position wiring harness (7) on frame and secure with screws (11) and clamps (10), new lockwashers (8), and nuts (9) as necessary.

NOTE

Ground wire terminal is secured with one of four screws.

2. Position receptacle (2) on crossmember (3). Install four screws (1), new lockwashers (4), and nuts (5).
3. Connect connector (6) to receptacle (2).
4. Connect all cable connectors to receptacle.

Section III. REAR AXLE MAINTENANCE

Paragraph Title	Page Number
Axle Maintenance	5-6
Axle and Bracket Assembly Replacement	5-10
Axle and Bracket Assembly Spring Seat Maintenance	5-12

5-5. AXLE MAINTENANCE.

This Task Covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Removal b. Disassembly c. Cleaning, inspection, and Repair | <ul style="list-style-type: none"> d. Assembly e. Installation |
|---|--|

Initial Setup:

Equipment Conditions:

- Hubs and brakedrums removed (para 4-48).

Tools/Test Equipment:

- General mechanic's tool kit
- Hydraulic jack
- Ž Two jackstands
- Ž Micrometer

Materials/Parts:

- Ž Rags (Item 11, Appendix E)
- Ž Dry cleaning solvent (Item 14, Appendix E)
- Ž Seventeen lockwashers

Personnel Required: Two

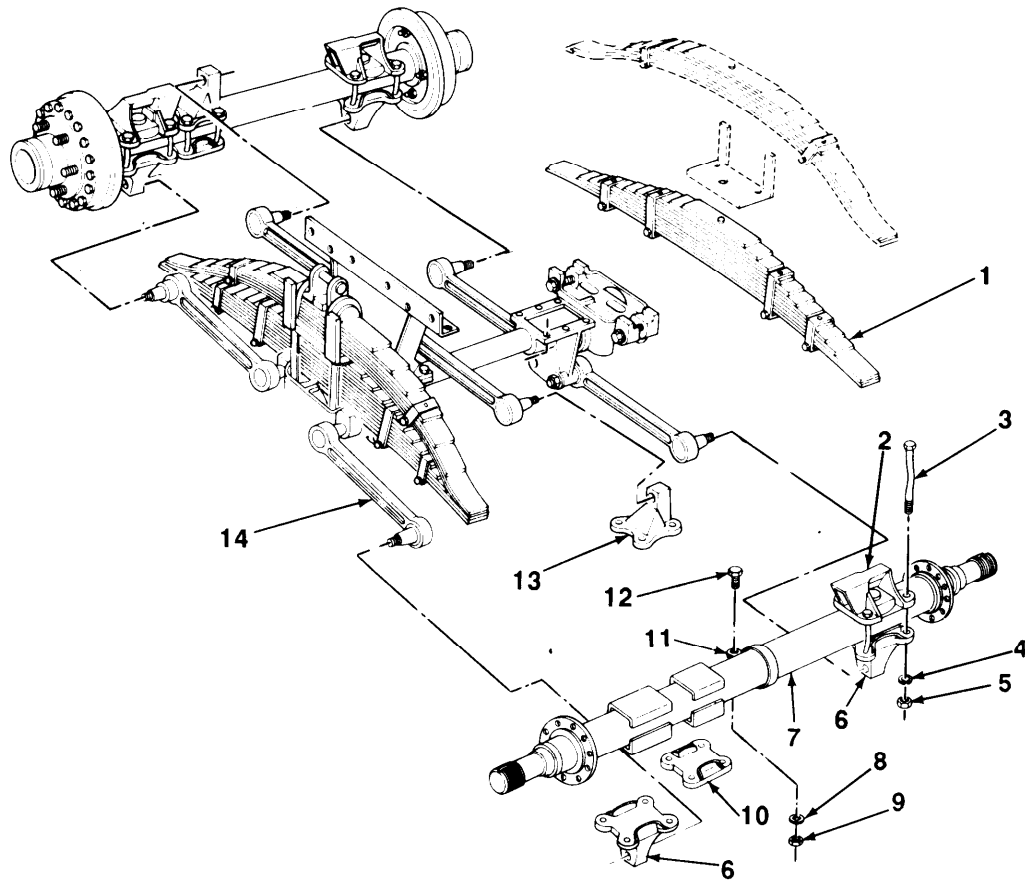
a. REMOVAL

1. Raise axle (7) with jack and place two jackstands under each corner of rear crossmember, lower jack, until weight of semitrailer is on jackstands.
2. Disconnect hydraulic hose from tee at center of axle to be removed (para 4-42).
3. Disconnect torque rods (14) from axle to be removed (para 4-57).
4. Raise jack under axle (7) until springs (1) are free from spring guide bracket assemblies (2).
5. Remove axle (7) out from under semitrailer.

b. DISASSEMBLY

1. Remove nut (9), lockwasher (8), and capscrew (12) securing hydraulic line connector (11) to band on axle (7). Remove connector. Discard lockwasher.
2. Remove two fluid passage bolts, ring spacers, and hydraulic line from each wheel cylinder (para 4-39).
3. Remove eight nuts (5), lockwashers (4), and bolts (3) which secure two spring guide bracket assemblies (2) and lower torque rod brackets (6) to axle (7). Remove spring guide bracket assemblies and lower torque rod brackets from axle. Discard lockwashers.

5-5. AXLE MAINTENANCE (Con't).



4. Remove eight nuts (5), lockwashers (4), and bolts (3) which secure two upper torque rod brackets (13) and bracket plate (10) to axle (7). Remove torque rod brackets and bracket plates from axle. Discard lockwashers.
5. Remove brakeshoe assemblies (para 4-38).

c. **CLEANING, INSPECTION, AND REPAIR**

WARNING

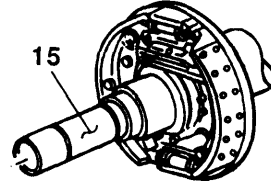
Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all exposed parts with dry cleaning solvent.
2. Inspect for broken or cracked bracket plates, spring guide bracket assemblies, and torque rod brackets. Replace broken or cracked parts.

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5-5. AXLE MAINTENANCE (Con't).

3. Inspect bearing seating surfaces (15) for wear. Minimum diameter of 2.6245 inches (6.404 cm) allowed.
4. Inspect threads of axle spindles for wear, crossed threads, or damage. Remove burrs with fine file or hand chase threads if necessary.



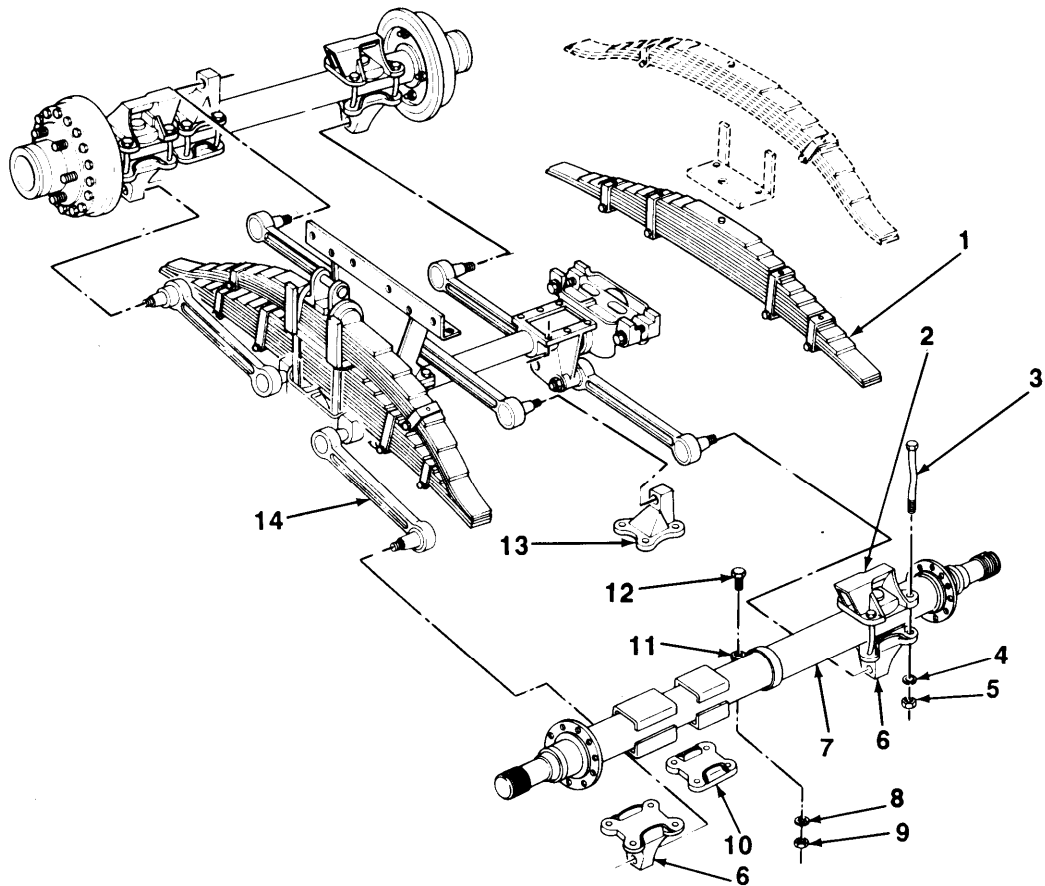
d. ASSEMBLY

1. Install brakeshoe assemblies (para 4-38).
2. Install eight bolts (3) in two spring guide bracket assemblies (2). Position spring guide brackets in place on axle (7). Turn bolts until they hang freely without binding against axle.
3. Position lower torque rod brackets (6) under axle (7) and align holes with bolts (3). Install new lockwashers (4) and nuts (5) on each bolt.
4. Position upper torque rod brackets (13) on axle (7). Install eight bolts (3) in upper torque rod bracket and turn bolts until they hang freely without binding against axle.
5. Position bracket plate (10) under axle (7) with eight bolts (3) in mounting holes. Install eight new lockwashers (4) and nuts (5) on bolts.
6. Install hydraulic lines to each wheel cylinder with two fluid passage and ring spacers bolts (para 4-39).
7. Install hydraulic line connector (11) to band on axle (7) with nut (9), new lockwasher (8), and capscrew (12).

e. INSTALLATION

1. Position axle (7) on jack and move in place under semitrailer. Align spring guide bracket assemblies (2) with springs (1).
2. Connect torque rods (14) to correct torque rod brackets on axle (para 4-57).
3. Connect hydraulic hose to tee at center of axle (para 4-42)

5-5. AXLE MAINTENANCE (Con't).



FOLLOW-ON TASKS:

- Install hubs and brakedrums (para 4-48).

5-6. AXLE AND BRACKET ASSEMBLY REPLACEMENT.

This Task Covers:

- a. Removal b. Installation
-

Initial Setup:

Equipment Conditions:

- Wheels removed (para 4-49).
- Springs removed (para 4-56).

Tools/Test Equipment:

- General mechanic's tool kit
- Floor jacks (as required)
- Jackstands (as required)
- Torque wrench

Materials/Parts:

- Twenty lockwashers

Personnel Required: Two

a. REMOVAL

1. Remove hydraulic lines (6) from connection on bases (8) of tandem axle (para 4-42).
2. Raise front and rear axles (7) just enough to relieve weight of each axle from lower torque rods (1). Support each axle in raised position with a suitable jackstand.
3. Provide a suitable support for each end of axle and bracket assembly (12).
4. Remove eight nuts (9) and lockwashers (10) securing four lower torque rods (1) to each end of axle and bracket assembly (12) and to four lower torque rod brackets (13). Discard lockwashers.

CAUTION

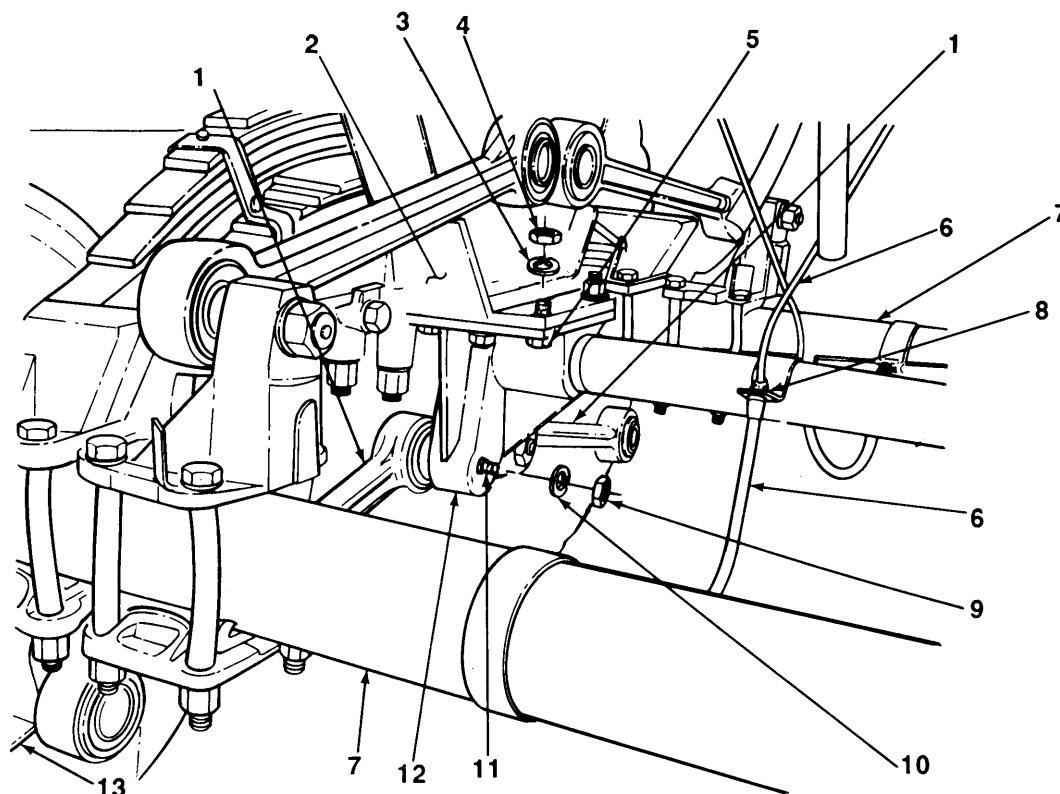
Rubber-mounted torque rod ball ends allow torque rods to be moved out of normal alignment for removal. Use caution to prevent damage to threads on ball ends.

5. Use a soft-faced hammer to tap threaded end of each torque rod ball end (11) to loosen ball ends from their respective mountings.
6. Remove four lower torque rods (1) from each end of axle and bracket assembly (12) and from four lower torque rod brackets (13).
7. With axle and bracket assembly (12) suitably supported, remove 12 nuts (4), lockwashers (3), and screws (5) from each end of axle and bracket assembly and two tandem suspension brackets (2). Discard lockwashers.
8. Lower axle and bracket assembly (12) and remove from under semitrailer.

b. INSTALLATION

1. Raise axle and bracket assembly (12) into position under two tandem suspension brackets (2).
2. Secure each end of axle and bracket assembly (12) to two tandem suspension brackets (2) with 12 screws (5), new lockwashers (3), and nuts (4).
3. Ensure that threads of eight torque rod ball ends (11) and mounting holes in axle and bracket assembly (12) and lower torque rod brackets (13) are clean.

5-6. AXLE AND BRACKET ASSEMBLY REPLACEMENT (Con't).

**CAUTION**

Rubber-mounted torque rod ball ends allow torque rods to be moved out of normal alignment for installation. Use caution to prevent damage to threads on ball ends.

4. Install four lower torque rods (1) in each end of axle and bracket assembly (12) and four lower torque rod brackets (13) by working torque rod ball ends (11) into mounting holes and tapping with a soft-faced hammer. Front and rear axles (7) may be raised or lowered as required to aid in installation.
5. Install eight new lockwashers (10) and nuts (9) on torque rod ball ends (11). Torque nuts to 225-280 lb.-ft. (305-380 N-m),
6. Remove jackstands from under front and rear axles (7) and lower until weight of axles is supported by lower torque rods (1).
7. Install hydraulic lines (6) to connection on bases (8) of tandem axle (para 4-42).

FOLLOW-ON TASKS:

- Install springs (para 4-56).
- Ž Install wheels (para 4-49).

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5-7. AXLE AND BRACKET ASSEMBLY SPRING SEAT MAINTENANCE.

This Task Covers:

- | | |
|-------------------------------------|-----------------|
| a. Removal | c. Installation |
| b. Cleaning, Inspection, and Repair | |
-

Initial Setup:

Materials/Parts:

- Brush (Item 4, Appendix E)
- Grease (Item 7, Appendix E)
- Lubricating oil (Item 8, Appendix E)
- One gasket
- One oil seal
- One oil seal washer
- Twelve lockwashers

Tools/Test Equipment:

- Ž General mechanic's tool kit
- Field automotive supplemental no. 1 shop set
- One jackstand
- Three floor jacks
- Torque wrench

Personnel Required: Two

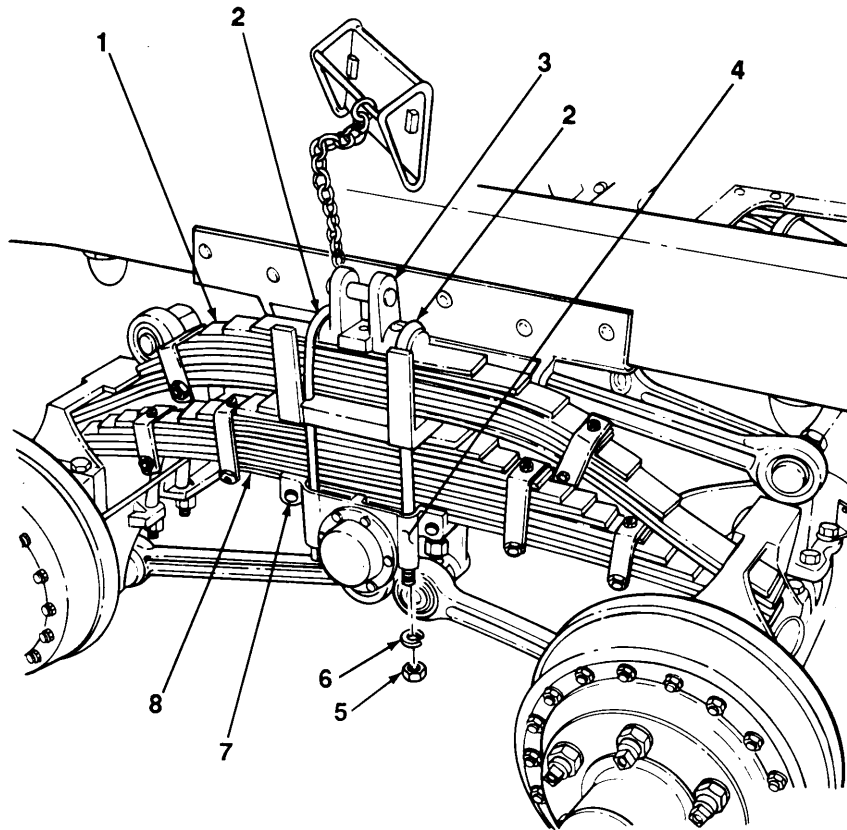
References:

- TM 9-214
-

a. REMOVAL

1. Support weight of semitrailer by raising axle and bracket assembly at end from which spring seat (4) is to be removed. Support axle and bracket assembly with a suitable jackstand.
2. Remove four nuts (5) and lockwashers (6) from two U-bolts (2). Remove U-bolts and upper spring seat (3) from main spring assembly (8), helper spring assembly (I), and spring seat (4). Discard lockwashers.
3. Loosen two bolts (7) from inner face of spring seat (4). Raise ends of front and rear axles until bottom of main spring assembly (8) and spring center bolt are clear of spring seat.

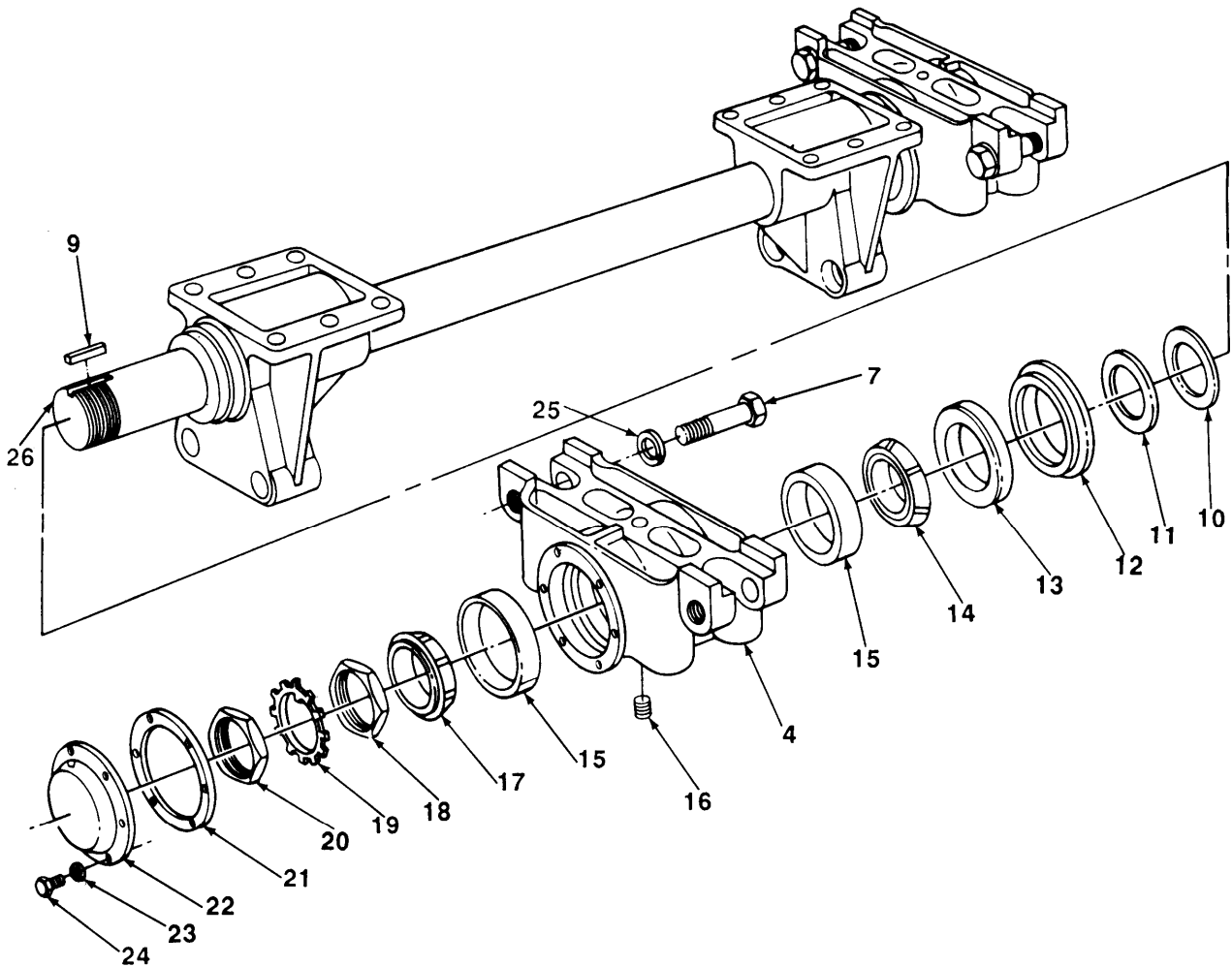
5-7. AXLE AND BRACKET ASSEMBLY SPRING SEAT MAINTENANCE (Con't).



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5-7. AXLE AND BRACKET ASSEMBLY SPRING SEAT MAINTENANCE (Con't).

4. Remove six bolts (24), lockwashers (23), access cover (22), and gasket (21) from spring seat (4). Discard lockwashers and gasket.
5. Unbend tangs of keywasher (19). Remove outer adjusting nut (20), keywasher, and inner adjusting nut (18) from spindle (26) of tandem axle. Remove outer tapered bearing (17).
6. Remove spring seat (4) from spindle (26) of tandem axle by rocking spring seat left and right and carefully sliding spring seat off. Remove machine key (9) from spring seat.
7. Remove inner tapered bearing (14), oil seal (13), packing retainer (12), oil seal washer (11), and flatwasher (10). Discard oil seal and oil seal washer.
8. Remove two bolts (7) and lockwashers (25) from spring seat (4). Discard lockwashers.



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5-7. AXLE AND BRACKET ASSEMBLY SPRING SEAT MAINTENANCE (Con't).

b. CLEANING, INSPECTION, AND REPAIR

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

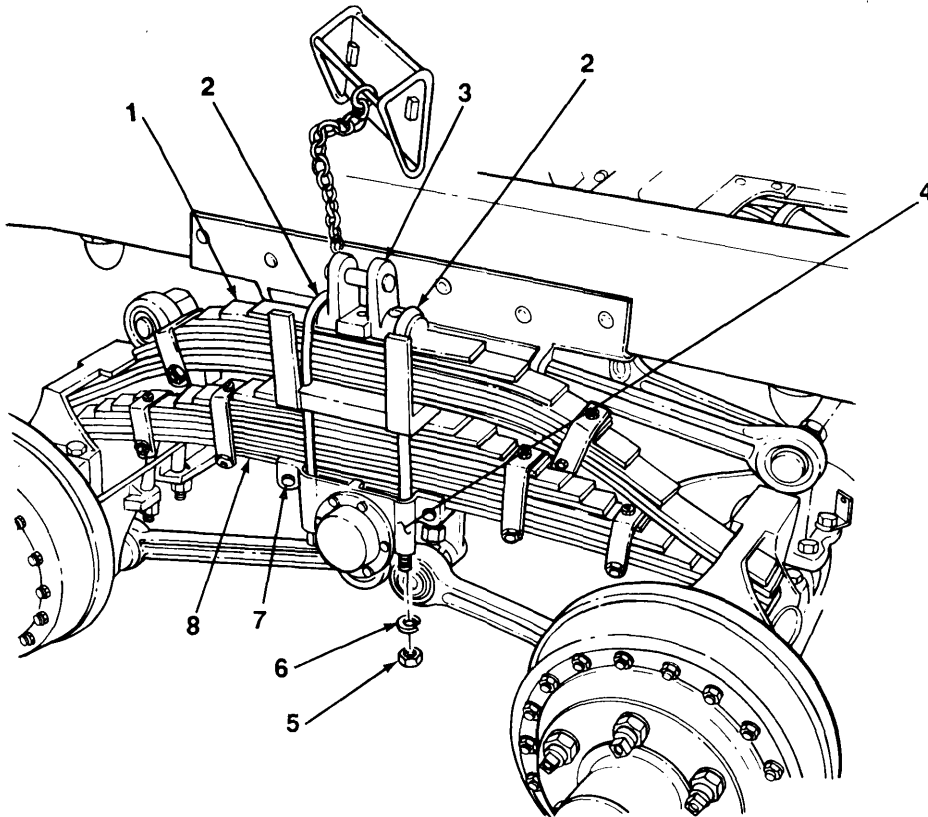
1. Clean mud and dirt off exposed surfaces of spring seat with water and scrub brush. Remove grease from all parts with dry cleaning solvent.
2. Inspect for broken or cracked parts and damaged threads. Replace any damaged parts.
3. Clean and inspect outer and inner tapered bearings in accordance with TM 9-214. If tapered bearings are damaged, bearing cups (15) must also be removed from spring seat and replaced.
4. Inspect bearing seats and oil seal surfaces for roughness or damage. File or grind smooth high spots, burrs, or roughness.
5. Measure inside diameter of spring seat bearing surfaces. Inside diameter should be 4.4345-4.4365 in. (112.6363-112.6871 mm). Replace spring seat if bearing surfaces are worn beyond wear limit.
6. Inspect plug (16) for damage. Replace if damaged.

c. INSTALLATION

1. Loosely install two new lockwashers (25) and bolts (7) in spring seat (4).
2. Coat new oil seal (13) and new oil seal washer (11) with lubricating oil. Pack outer and inner tapered bearings (17 and 14) with grease in accordance with TM 9-214.
3. Install flatwasher (10), new oil seal washer (11), packing retainer (12), new oil seal (13), and inner tapered bearing (14) on spindle (26) of tandem axle.
4. Install machine key (9) inside spring seat (4).
5. Install spring seat (4) on spindle (26) of tandem axle. Ensure that machine key (9) is fully seated in machine key groove of spindle.
6. Install outer tapered bearing (17) and inner adjusting nut (18). Torque inner adjusting nut to 70 lb.-ft. (95 N-m). Back off inner adjusting nut approximately ¼ turn. Spring seat (4) should turn freely without lateral movement.
7. Install outer adjusting nut (20) on spindle (26) of tandem axle. Torque outer adjusting nut to 150 lb.-ft. (203 N-m). Bend over two tangs of keywasher (19) on each adjusting nut (18 and 20).
8. Install new gasket (21) and access cover (22) on spring seat (4) with six bolts (24) and new lockwashers (23).

5-7. AXLE AND BRACKET ASSEMBLY SPRING SEAT MAINTENANCE (Con't).

9. Lower ends of front and rear axles until bottom of main spring assembly (8) and spring center bolt are seated in spring seat (4).
10. Position upper spring seat (3) on helper spring assembly (1). Install two U-bolts (2), upper spring seat, helper spring assembly, main spring assembly (8), and spring seat (4) with four new lockwashers (6) and nuts (5). Torque nuts to 255-280 lb.-ft. (346-380 N-m).
11. Torque two bolts (7) on inner face of spring seat (4) to 280-365 lb.-ft. (380-495 N-m).
12. Remove jackstand and lower axle and bracket assembly.



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Section IV. WHEELS, HUBS, AND BRAKEDRUMS MAINTENANCE

Paragraph Title	Page Number
Brakedrum Repair	5-17
Tire Repair	5-18

5-8. BRAKEDRUM REPAIR.

This Task Covers:

- | | |
|---------------|-----------|
| a. Inspection | b. Repair |
|---------------|-----------|

Initial Setup:

Equipment Conditions:

- Hub and brakedrum removed (para 4-48).

Tools/Test Equipment:

- Field automotive shop set
- Brakedrum lathe
- Dial indicator
- Inside micrometer, with extension

a. INSPECTION

WARNING

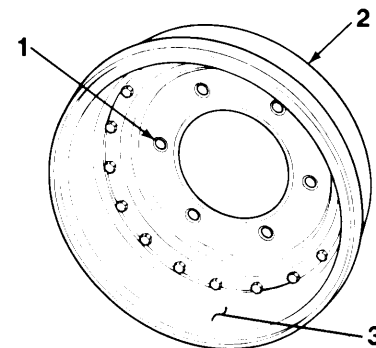
DO NOT handle brakeshoes, brakedrums, or other brake components unless area has been properly cleaned. There maybe asbestos dust on these components which can be dangerous if you touch it or breathe it. Wear unapproved filter mask and gloves. Never use compressed air or a dry brush to clean brake components. Dust maybe removed using an industrial-type vacuum cleaner. Clean dust or mud away from brake components with water and a wet, soft brush or cloth. Failure to follow this warning may result in serious illness or death to personnel.

1. Inspect stud holes (1) for cracks or out-of-round condition. Discard brakedrum (2) if cracks are present.

WARNING

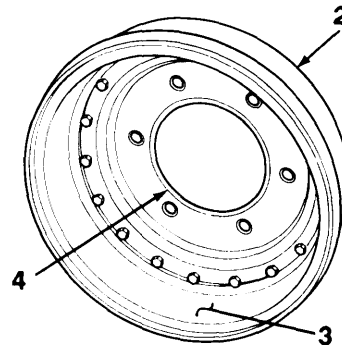
DO NOT use brakedrum that exceeds maximums wear specifications. Failure to follow this warning may result in brake failure and serious injury or death.

2. Measure inside diameter of braking surface (3). Discard brakedrum (2) if inside diameter exceeds 15.005 in. (38,1 127 cm).



5-8. BRAKEDRUM REPAIR (Con't).

3. Inspect braking surface (3) for cracks, heat checking, and scoring. Reface braking surface if damaged (subpara b).
4. Inspect braking surface (3) for out-of-round condition at 45° intervals. Out-of-round condition should not exceed 0.006 in. (0, 15 mm). If out-of-round condition exceeds 0.006 in. (0.15 mm), reface braking surface (subpara b).
5. Measure inside diameter of hub location hole (4). Discard brakedrum if inside diameter exceeds 6.192 in. (15.727 cm).



b . REPAIR

WARNING

DO NOT use a brakedrum that exceeds maximum wear specifications. Failure to follow this warning may result in brake failure and serious injury or death.

1. Reface braking surface (3) with brakedrum lathe, removing a maximum of 0.01 in. (0.25 mm) per cut.
2. Measure inside diameter of braking surface (3). Discard brakedrum (2) if inside diameter exceeds 15,005 in. (38.1 127 cm).

FOLLOW-ON TASKS:

- Install hub and brakedrum (para 4-48).

5-9. TIRE REPAIR.

Refer to TM 9-2610-200-14 for instructions on tire repair.

Section V. FRAME AND TOWING ATTACHMENTS MAINTENANCE

Paragraph Title	Page Number
Kingpin Replacement	5-19
Landing Gear Actuating Leg Assembly Repair (Early Model)	5-39
Landing Gear Gearbox Repair (Early Model)	5-31
Landing Gear Leg Assembly Maintenance (Early Model)	5-34
Landing Gear Maintenance (Early Model)	5-20
Landing Gear Ratchet Maintenance (Early Model)	5-43

5-10. KINGPIN REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Materials/Parts:

- One kingpin (P/N MS53036-1)

References:

- TM 9-237

Tools/Test Equipment:

- General mechanic's toolkit
- 90 psi supply of shop air
- 300 amp welder
- 100,000 psi electrode or wire

a. REMOVAL

CAUTION

Care must be taken to minimize damage to bolster plate. Damage to kingpin being removed is of no consequence.

1. Remove weld from outside 12 in. (30.48 mm) diameter and four plug welds from kingpin "mushroom" top, using air-arc process (TM 9-237).
2. Remove kingpin.
3. Grind area of bolster plate under kingpin "mushroom" flush so that new kingpin will lie flat on bolster plate.

b. INSTALLATION

1. Install new kingpin. Aline holes in kingpin top in same manner as the one removed.
2. Preheat kingpin and bolster plate to 150°F (66°C) and maintain throughout welding process.
3. Weld kingpin "mushroom" to bolster plate with 3/8 in. (9.53 mm) fillet weld on outside diameter and 1/2 in. (12.7 mm) plug welds in holes in "mushroom", Welds must be in accordance with MIL-STD-1261, Class 3 and TM 9-237.
4. Inspect weld with dye penetrant or magnetic particles. No cracks are allowed. Any cracks found must be repaired.
5. Prime top of kingpin and bolster plate per TT-P-636 or TT-P-664. Paint with enamel per MI L-E-52798 (color: forest green).

5-11. LANDING GEAR MAINTENANCE (EARLY MODEL).

This Task Covers:

- | | |
|-----------------|---------------|
| a. Removal | c. Adjustment |
| b. Installation | |
-

Initial Setup:

Equipment Conditions:

- Semitrailer uncoupled from towing vehicle (para 2-11).

Tools/Test Equipment:

- General mechanic's tool kit
- Hydraulic jack
- Jackstands
- Retaining ring pliers

Materials/Parts:

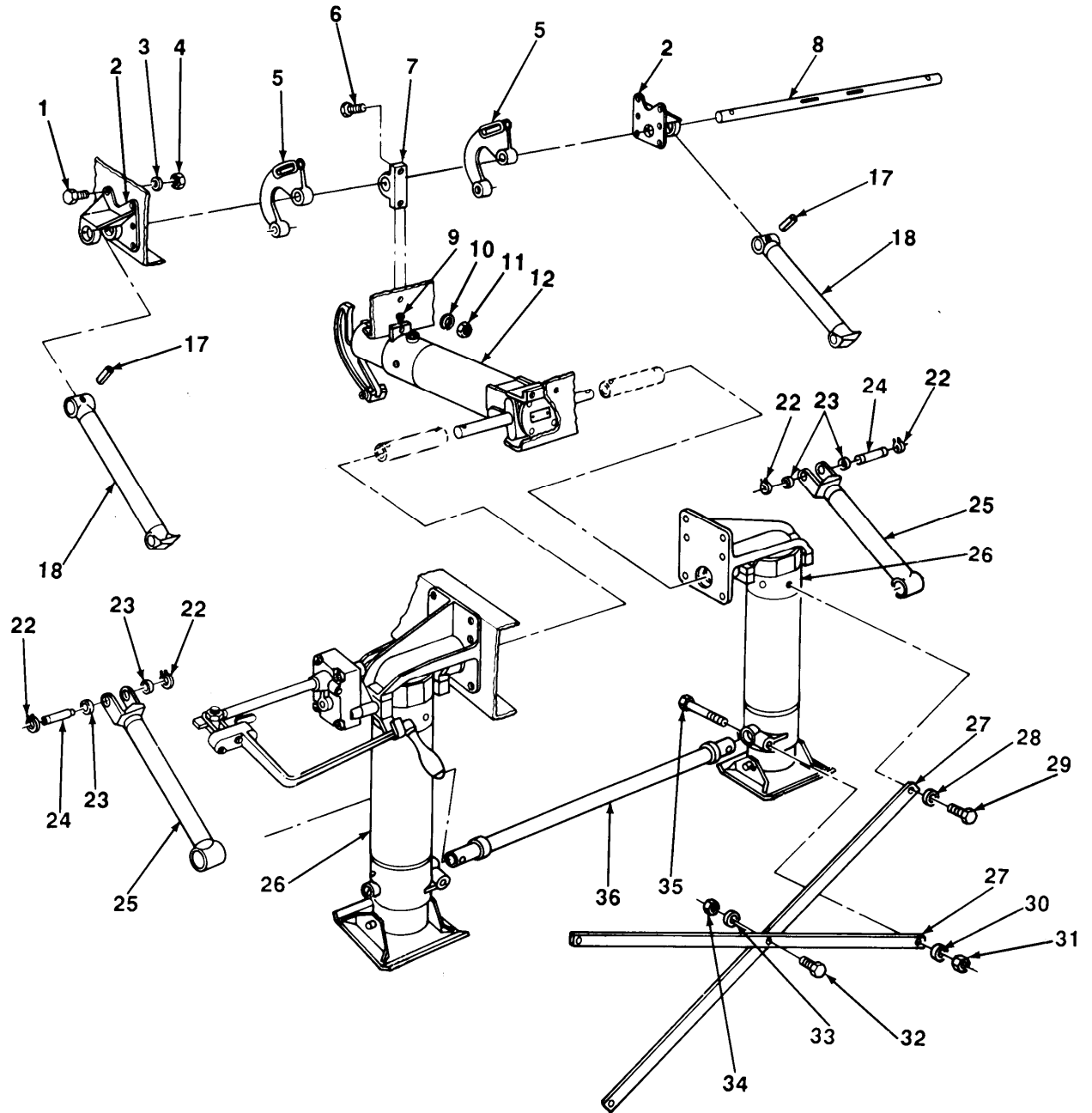
- Two spring pins
- Four self-locking nuts
- Six retaining rings
- Ten lubrication fittings
- Thirty-seven lockwashers

Personnel Required: Two

a. REMOVAL

1. Chock wheels and raise front of chassis at front crossmember with jack until weight of semitrailer is off support leg assemblies (26). Position jackstands under frame and lower semitrailer onto jackstands.
2. Remove four retaining rings (22), bearing sleeves (23), and two brace hinge pins (24) from left and right upper and lower brace assemblies (18 and 25). Discard retaining rings.
3. Drive out two spring pins (17) securing upper braces (18) to cross shaft (8) of actuator assembly (12). Discard spring pins.
4. Remove 12 nuts (4), lockwashers (3), and capscrews (1) from two semitrailer brackets (2) on each side of frame. Discard lockwashers.
5. Slide two semitrailer brackets (2) and upper braces (18) away from frame and off cross shaft (8).
6. Turn socket head setscrew (9) counterclockwise a minimum of two complete turns. DO NOT remove setscrew.
7. Block rear of actuating leg assembly (12).
8. Remove two capscrews (6), lockwashers (10), and nuts (11) from bearing block (7) and frame crossmember. Discard lockwashers.
9. Remove cross shaft (8), two roller arms (5) and bearing block (7) as a unit by sliding the cross shaft to the left as far as possible, then down to the right until unit is out of the frame holes.
10. Remove two nuts (31), lockwashers (30), and capscrews (35) from lower ends of diagonal braces (27), cross tube assembly (36) and support leg assemblies (26), Discard lockwashers.
11. Remove two capscrews (29) and lockwashers (28) from upper ends of diagonal braces (27) and support leg assemblies (26). Remove diagonal braces. Discard lockwashers.
12. Remove capscrew (32), lockwasher (33), and nut (34) and separate diagonal braces (27). Discard lockwashers.

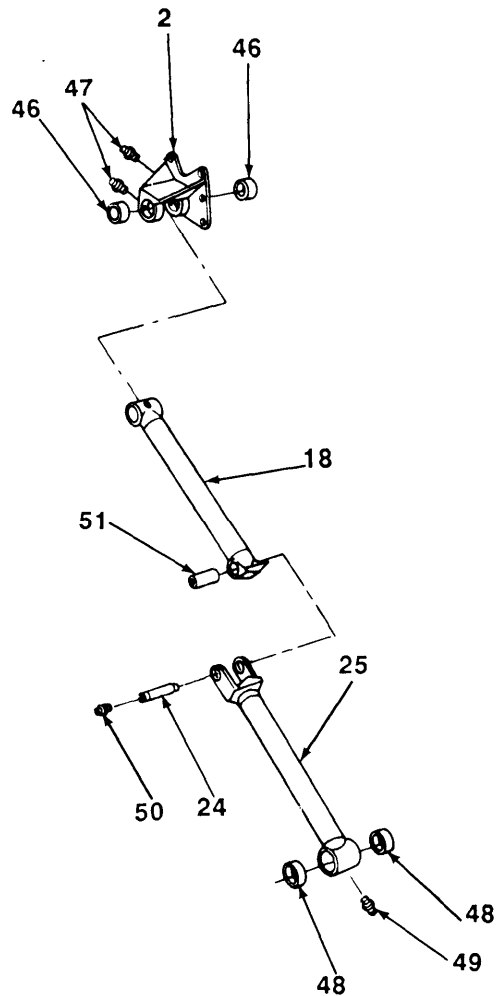
5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).



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5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).

13. Remove two capscrews (45) and self-locking nuts (43) from intermediate drive shafts (16) on each side of actuating leg assembly (12). Discard self-locking nuts.
14. Remove six nuts (21), lockwashers (20), two spacers (19), and six capscrews (42) from support leg bracket (37) and frame. Discard lockwashers.
15. Slide support leg assembly (26), support leg bracket (37), and intermediate drive shaft (16) away from frame until intermediate drive shaft clears hole in frame and cross tube assembly (36) is disengaged.
16. Remove cross tube assembly (36) and two lower braces (25). Remove lower braces from ends of cross tube assembly.
17. Repeat steps 14 and 15 for remaining support leg assembly (26).
18. Remove two nuts (15), lockwashers (14), and capscrews (13) from forward end of actuating leg assembly (12) and frame crossmember. Discard lockwashers.
19. Lower actuating leg assembly (12) until drive shaft (44) is clear of frame crossmember and remove from semitrailer.
20. Remove two sleeve bearings (46) and separate upper brace (18) from semitrailer bracket (2).
21. Remove two lubrication fittings (47) from semitrailer bracket (2). Discard lubrication fittings.
22. Remove sleeve bearing (51) from upper brace (18).
23. Remove lubrication fitting (50) from brace hinge pin (24). Discard lubrication fitting.
24. Remove two sleeve bearings (48) from lower brace (25).
25. Remove lubrication fitting (49) from lower brace (25). Discard lubrications fitting.
26. Repeat steps 20-25 for semitrailer bracket (2) and upper and lower braces (18 and 25) on other side.



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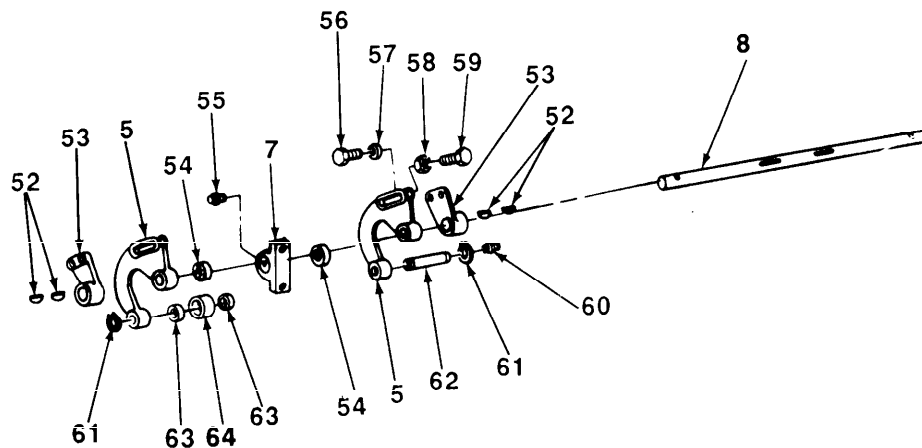
5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).

27. Remove two retaining rings (61) and lubrication fitting (60) from pin (62). Discard retaining rings and lubrication fittings.

NOTE

Note position of pin for installation. Lubrication fitting end of pin is roadside.

28. Drive out pin (62) and remove roller (64) with two bearing sleeves (63) assembled.
29. Remove four capscrews (56) and lockwashers (57) from two remote control levers (53) and roller arms (5). Discard lockwashers.



30. Work two remote control levers (53) away from roller arms (5) and past four woodruff keys (52).
31. Remove four woodruff keys (52) from cross shaft (8).
32. Remove two roller arms (5) from cross shaft (8).
33. Remove bearing block (7) with two assembled sleeve bearings (54) from cross shaft (8). Remove lubrication fittings (55) from bearing block and discard.
34. Remove capscrew (59) and nut (58) from each roller arm (5).
35. If damaged, remove two sleeve bearings (54) from bearing block (7) and two sleeve bearings (63) from roller (64).

b. INSTALLATION

1. If removed, install two sleeve bearings (63) in roller (64) and two sleeve bearings (54) in bearing block (7).
2. Install new lubrication fitting (55) in bearing block (7). Install bearing block on cross shaft (8). Install two roller arms (5) on cross shaft, one on each side of bearing block.

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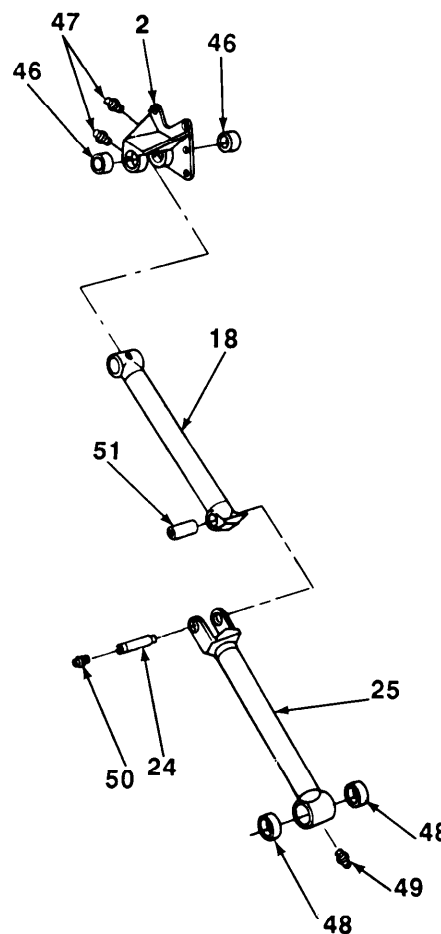
5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).

3. Position four woodruff keys (52) on cross shaft (8) in their respective slots.
4. Install two remote control levers (53), with bosses toward the outside, on each end of cross shaft (8) past woodruff keys (52).

NOTE

Four capscrews will be fully tightened during adjustment of landing gear (subpara c).

5. Secure two remote control levers (53) to roller arms (5) with four new lockwashers (57) and capscrews (56). DO NOT fully tighten capscrews.
6. Install capscrew (59) and nut (58) in each roller arm (5).
7. Position roller (64) with assembled sleeve bearings (63) between two roller arms (5).
8. Install pin (62), in position noted during removal, through two roller arms (5) and roller (64). Install two new retaining rings (61) on ends of pin.
9. Install new lubrication fitting (60) in roadside end of pin (62).
10. Install new lubrication fitting (49) in lower brace (25).
11. Install two sleeve bearings (48) in lower brace (25).
12. Install new lubrication fitting (50) in brace hinge pin (24).
13. Install sleeve bearing (51) in upper brace (18).
14. Install two new lubrication fittings (47) in semitrailer bracket (2).
15. Position upper brace (18) at semitrailer bracket (2) and install two sleeve bearings (46).
16. Repeat steps 10-15 for semitrailer bracket (2) and upper and lower braces (18 and 25) on other side.

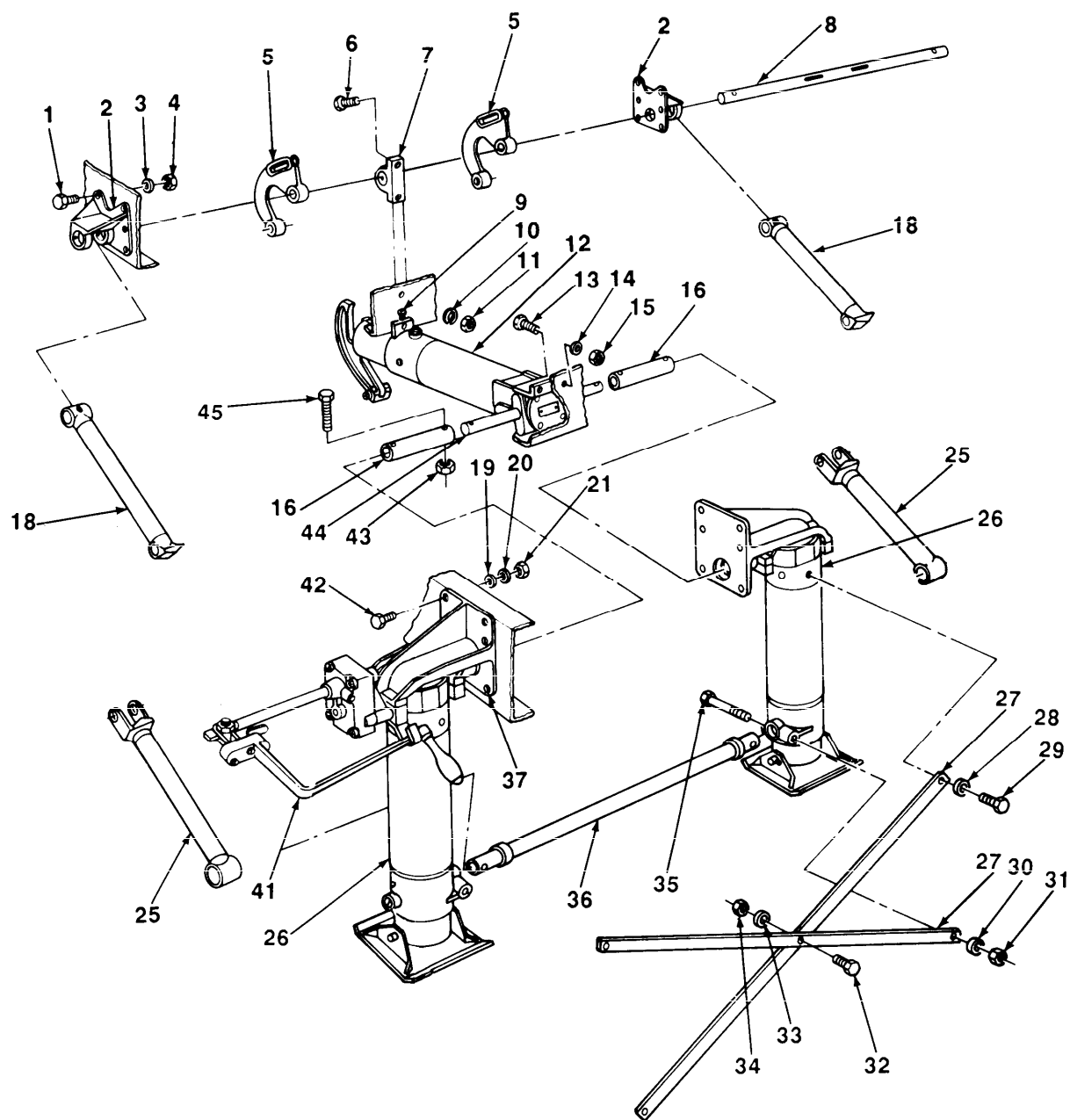


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5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).

17. Turn drive shaft (44) of actuating leg assembly (12) by hand until distance from ends of inner and outer actuating legs is 5 in. (12.70 cm).
18. Position actuating leg assembly (12) and drive shaft (44) in frame with forward end against crossmember. Aline mounting holes and install, hand tight, two capscrews (13), new lockwashers (14), and nuts (15).
19. Support rear of actuating leg assembly (12) on blocks.
20. Install cross shaft (8), roller arms (5) and bearing block (7) as a unit in frame holes.
21. Aline mounting holes in bearing block (7) and rear mounting bracket of actuating leg assembly (12) with holes in crossmember. Install, hand tight, two capscrews (6), new lockwashers (10), and nuts (11).
22. Slide semitrailer brackets (2) and upper braces (18) on ends of cross shaft (8) with flat surface of braces, hinge end facing down.
23. Aline holes in two semitrailer brackets (2) with holes in frame and install, hand tight, twelve capscrews (1), new lockwashers (3), and nuts (4).
24. Aline drive shaft (44) in actuating leg assembly (12) parallel with crossmember and tighten two nuts (15) and capscrews (13) securing forward end of actuating leg assembly to crossmember.
25. Tighten socket head setscrew (9) until flat surface at top of inner leg of actuating leg assembly (12) is snug against bottom of crossmember.
26. Aline cross shaft (8) parallel with crossmember and tighten two nuts (11) and capscrews (6) securing bearing block (7) and rear mounting bracket of actuating leg assembly (12) to crossmember.
27. Tighten 12 nuts (4) and capscrews (1) securing two semitrailer brackets (2) to frame. Check to ensure cross shaft (8) turns freely after securing each bracket.
28. Position and install left support leg assembly (26) with intermediate drive shaft (16) through hole in frame and over end of drive shaft (44).
29. Secure support leg assembly (26) and support leg bracket (37) to frame with six capscrews (42), two spacers (19), new lockwashers (20), and nuts (21). Ensure that weight is relieved from intermediate drive shaft (16) before securing support leg assembly.
30. Install two lower braces (25) on cross tube assembly (36) with flat surface of brace hinge ends facing down.
31. Install end of cross tube assembly (36) into left support leg assembly (26).
32. Repeat steps 28 and 29 and install right support leg assembly (26). Ensure right end of cross tube assembly (36) is installed in right support leg assembly before securing it to frame.
33. Aline holes in upper ends of diagonal braces (27) with mounting holes in support leg assemblies (26). Install two capscrews (29) and new lockwashers (28).
34. Install two capscrews (35), new lockwashers (30), and nuts (31) in lower ends of diagonal braces (27) and cross tube assembly (36).
35. Install capscrew (32), new lockwasher (33), and nut (34) in diagonal braces (27).
36. Using handcrank (41), turn intermediate drive shaft (16) until holes in shafts on right side of actuating leg assembly (12) are alined. Install capscrew (45) and new self-locking nut (43).
37. Repeat step 36 to install capscrew (45) and new self-locking nut (43) on left side of actuating leg assembly (12).

5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).



TA702074

5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).

38. Remove plug retaining clips (39), gib retaining plugs (40), and gibs (38) from each support leg assembly (26).
39. Aline holes in ends of cross shaft (8) with holes in upper braces (18) and install two new spring pins (17).
40. Position support leg assemblies (26) so upper and lower braces (18 and 25) are in line.

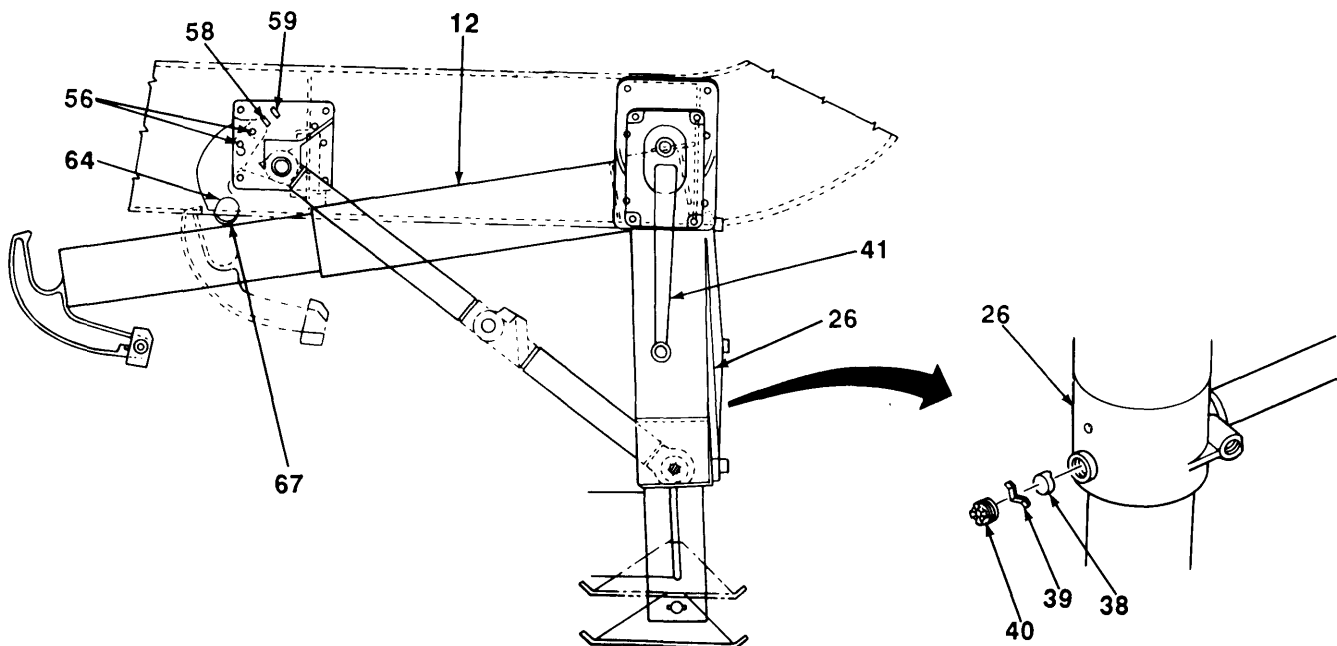
NOTE

Center of pin in brace hinge must be a minimum of $\frac{1}{8}$ in. (3.18 mm) below normal center line of brace with surface of lower brace at contact point. If necessary, hand file or machine upper brace surface and/or surface of lower brace.

41. Install pins (24) at hinge point of each brace and secure each pin with two bearing sleeves (23) and two new retaining rings (22).

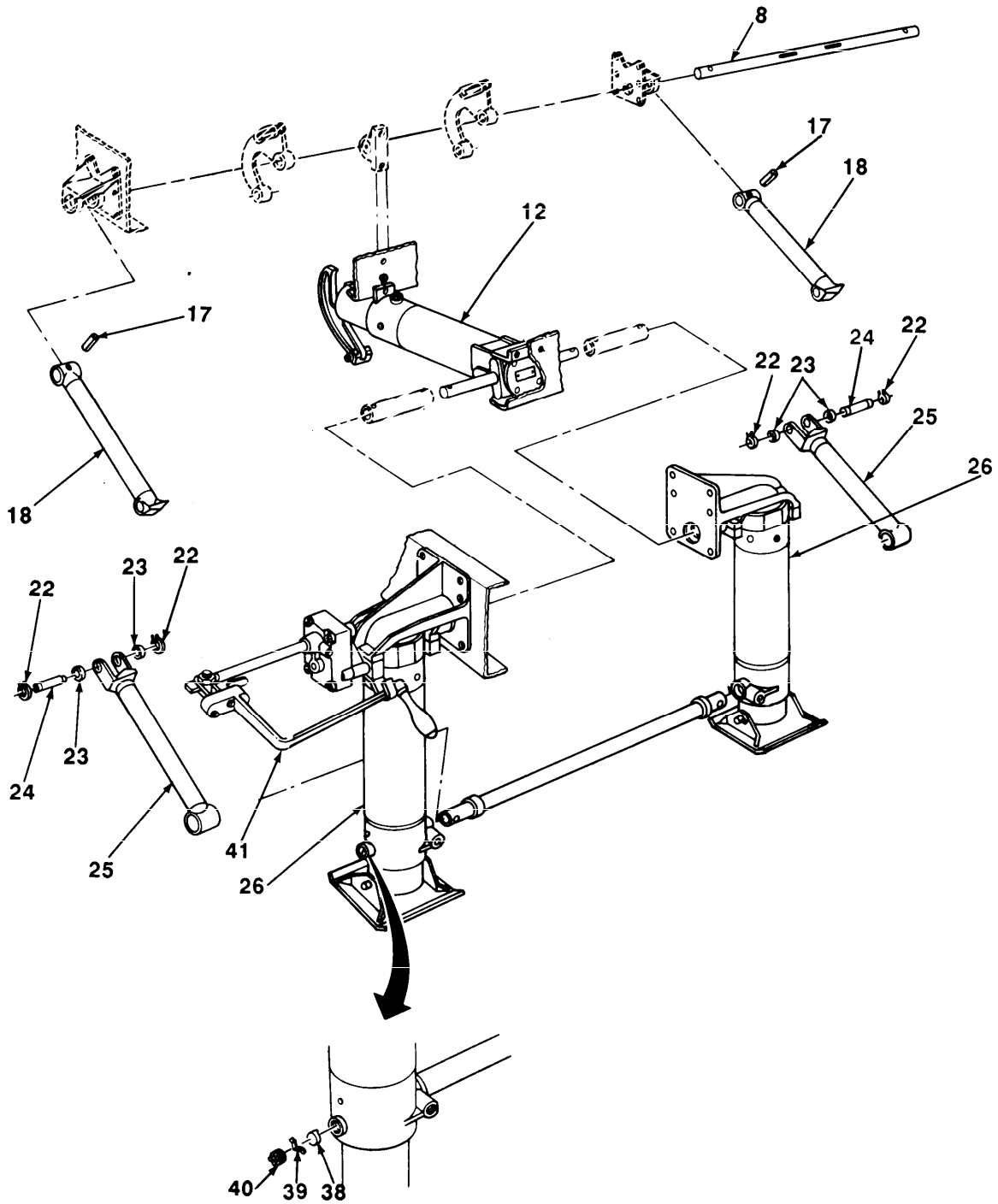
c. ADJUSTMENT

1. Turn handcrank (41) until distance from ends of inner and outer legs of actuating leg assembly (12) is 7 in. (15.78 cm).
2. Loosen four capscrews (56) and two nuts (58).
3. If roller (64) is too high, turn two capscrews (59) counterclockwise until roller can be forced down on flat surface (67) of inner leg of actuating leg assembly (12).
4. Turn two capscrews (59) clockwise until snug and tighten two nuts (58). Tighten four capscrews (56).
5. Turn handcrank (41) until roller (64) just makes contact with inner leg of actuating leg assembly (12).



TA702075

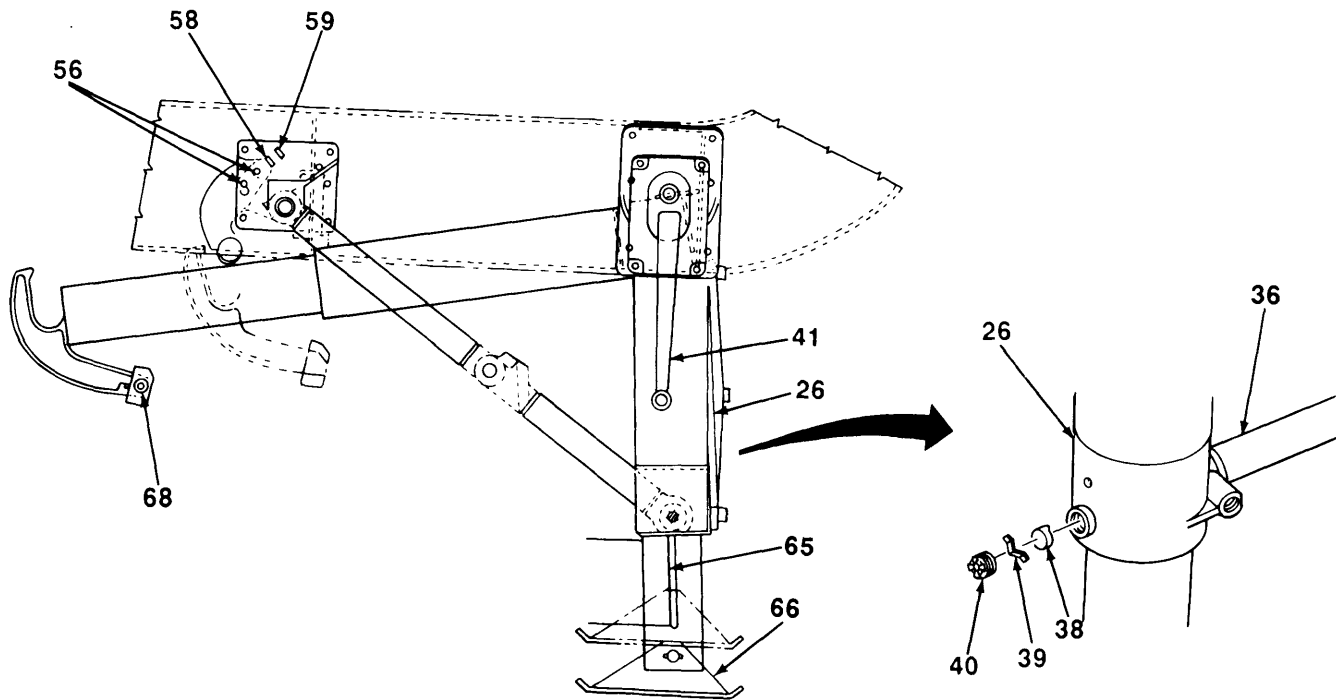
5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).



TA702076

5-11. LANDING GEAR MAINTENANCE (EARLY MODEL) (Con't).

6. Rotate each lower support leg (26) and shoe (66) until exposed matching groove (65) of lower support leg is 7¼ in. (18.42 cm) long, plus or minus 5/16 in. (7.94 mm), with both slots in line with semitrailer.
7. Install gibs (38), gib retaining plugs (40), and plug retaining clips (39) in each support leg assembly (26) and matching groove (65). Ensure that gibs are snug but do not bind in matching groove.
8. Lubricate in accordance with Lubrication Instructions (Chapter 3, Section I).
9. Check to ensure that latch (68) operates freely under spring load of about five pounds of pressure.
10. Push handcrank (41) in for low gear operations. Turn handcrank counterclockwise and raise lower support legs (26) until cross tube assembly (36) slides over latch (68).
11. If cross tube assembly (36) does not raise high enough to slide over latch (68), loosen four capscrews (56) and two nuts (58). Turn two capscrews (59) evenly clockwise until cross tube assembly slides over latch. Tighten four capscrews (56) and two nuts.
12. Check for satisfactory operation. If necessary, repeat step 11 to achieve proper operation.
13. Lower support leg assemblies (26) to support semitrailer. Remove jack and wheel chocks. Store wheel chock in stowage supports.



TA702077

5-12. LANDING GEAR GEARBOX REPAIR (EARLY MODEL).

This Task Covers:

- | | |
|----------------------------|-------------|
| a. Disassembly | c. Assembly |
| b. Cleaning and Inspection | |
-

Initial Setup:

Materials/Parts:

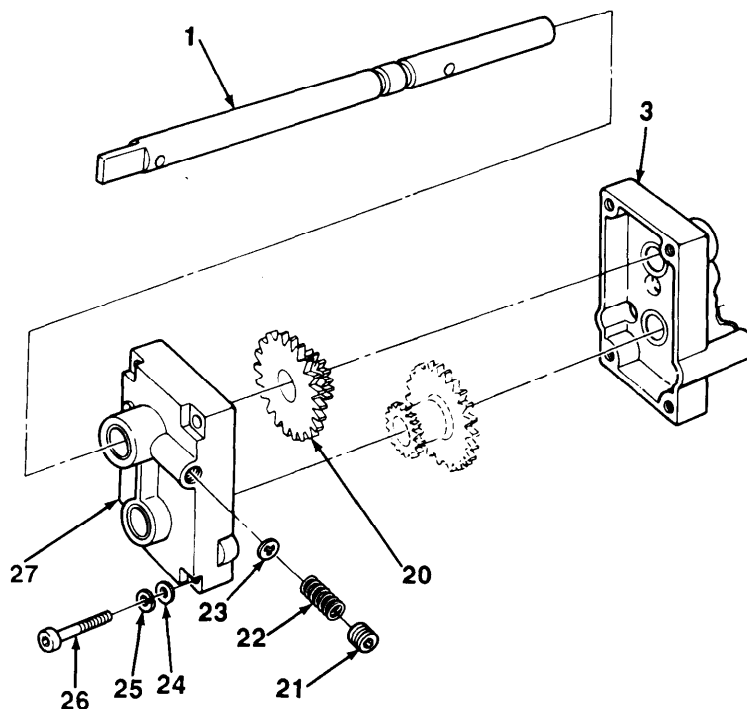
- Dry cleaning solvent (Item 14, Appendix E)
- One plain encased seal
- Seven lockwashers

Tools/Test Equipment:

- General mechanic's tool kit
 - Arbor press
-

a. DISASSEMBLY

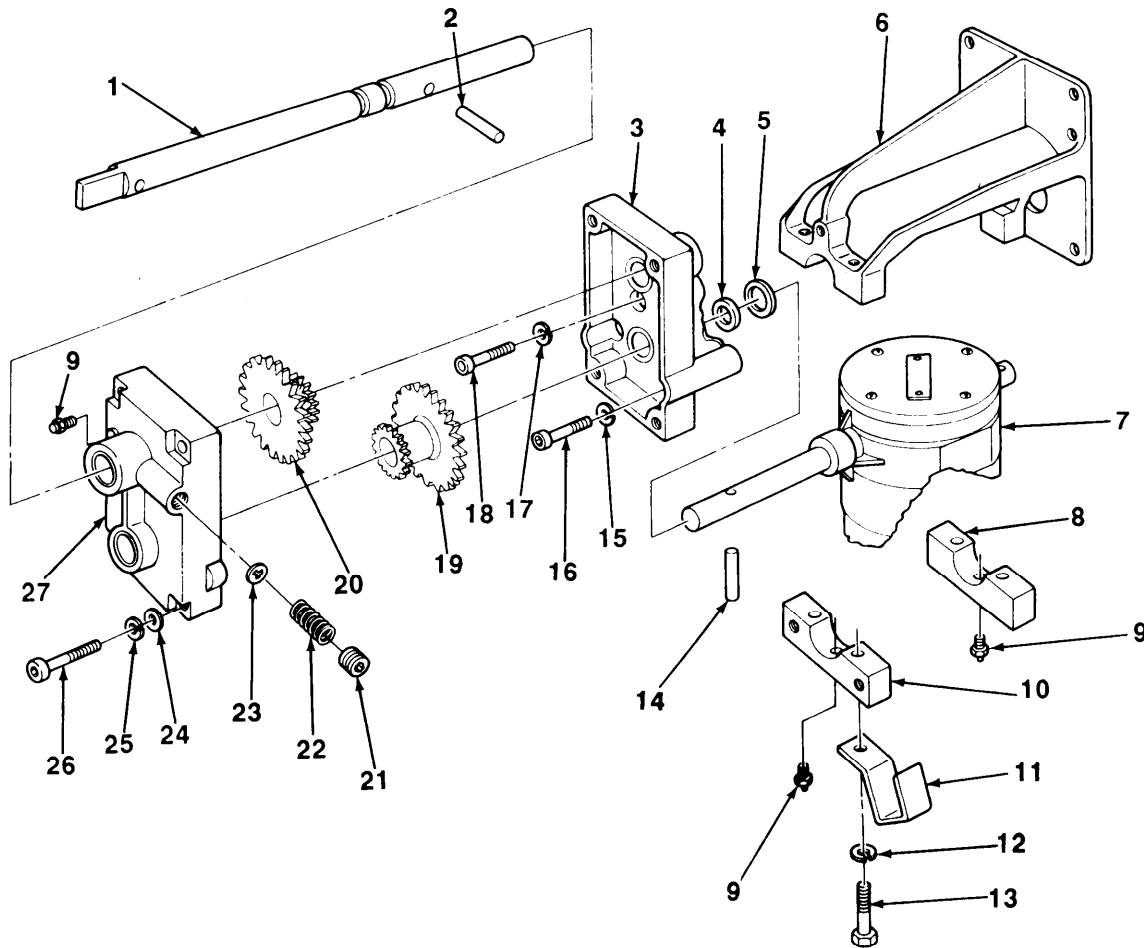
1. Remove ratchet from crankshaft (para 5-15).
2. Remove plug (21), spring (22), and bearing ball (23) from access cover (27).
3. Remove four capscrews (26), lockwashers (25), washers (24), and access cover (27) from gearbox base assembly (3). Discard lockwashers.
4. Remove crankshaft (1) and attached gear cluster (20) from gearbox base assembly (3).



TA702078

5-12. LANDING GEAR GEARBOX REPAIR (EARLY MODEL) (Con't).

5. Drive out pin (2) and remove gear cluster (20) from crankshaft (1).
6. Block or support end of leg assembly (7). Drive out pin (14) and remove gear cluster (19) from shaft of leg assembly.
7. Remove two capscrews (16), lockwashers (15), capscrew (18), lockwasher (17), and gearbox base assembly (3) from support leg bracket (6) and leg assembly (7). Discard lockwashers.
8. Using arbor press, remove bearing (4) and seal (5) from gearbox base assembly (3). Discard seal.
9. Remove two capscrews (13), lockwashers (12), outer bearing block (10), and handcrank holder (11) from support leg bracket (6). Discard lockwashers.
10. Remove two capscrews (13), lockwashers (12), and inner bearing block (8) from support leg bracket (6). Discard lockwashers.



TA702079

5-12. LANDING GEAR GEARBOX REPAIR (EARLY MODEL) (Con't).

b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F–138°F (38°C–59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect bearing for rust, pits, or excessive wear.
3. Inspect lubrication fittings (9) for cracks or bends.
4. Inspect gear clusters for cracks, breaks, or chipped gear teeth.
5. Inspect access cover and gearbox base assembly for cracks or breaks.
6. Inspect all mounting hardware for cracks, bends, or stripped threads.
7. Replace all defective parts as necessary.

c. ASSEMBLY

1. Position inner bearing block (8) in place on support leg bracket (6) and install two capscrews (13) and new lockwashers (12).
2. Position outer bearing block (10) and ratchet handcrank holder (11) in place on support leg bracket (6) and install two capscrews (13) and new lockwashers (12).
3. Using arbor press, install bearing (4) and new seal (5) in gearbox base assembly (3).
4. Position gearbox base assembly (3) in place on support leg bracket (6) and over shaft of leg assembly (7). Install two capscrews (16), new lockwashers (15), capscrew (18), and lockwasher (17).
5. Install gear cluster (19) on shaft of leg assembly (7) and secure with pin (14).
6. Install gear cluster (20) on crankshaft (1) and secure with pin (2). Slide round end of crankshaft through upper hole of gearbox access cover (27).
7. Lubricate gear clusters (19 and 20) in accordance with Lubrication Instructions (Chapter 3, Section I).
8. Position access cover (27) and crankshaft (1) in place on gearbox base assembly (3), ensuring that crankshaft and shaft of leg assembly (7) are aligned with their respective holes.
9. Install four capscrews (26), new lockwasher (25), and washers (24) and secure access cover (27) to gearbox base assembly (3).
10. Install bearing ball (23), spring (22), and plug (21) in access cover (27).
11. Install ratchet on crankshaft (para 5-15).
12. Check operation of landing leg.

5-13. LANDING GEAR LEG ASSEMBLY REPAIR (EARLY MODEL).

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Disassembly b. Cleaning and Inspection | <ul style="list-style-type: none"> c. Assembly |
|--|---|
-

Initial Setup:

Equipment Conditions:

- Landing gear removed (para 5-11).
- Landing gear gearbox removed (para 5-12).

Tools/Test Equipment:

- General mechanic's tool kit

References:

- TM 9-214

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
 - One gasket
 - Two lubrication fittings
 - Two self-locking nuts
 - Six spring pins
-

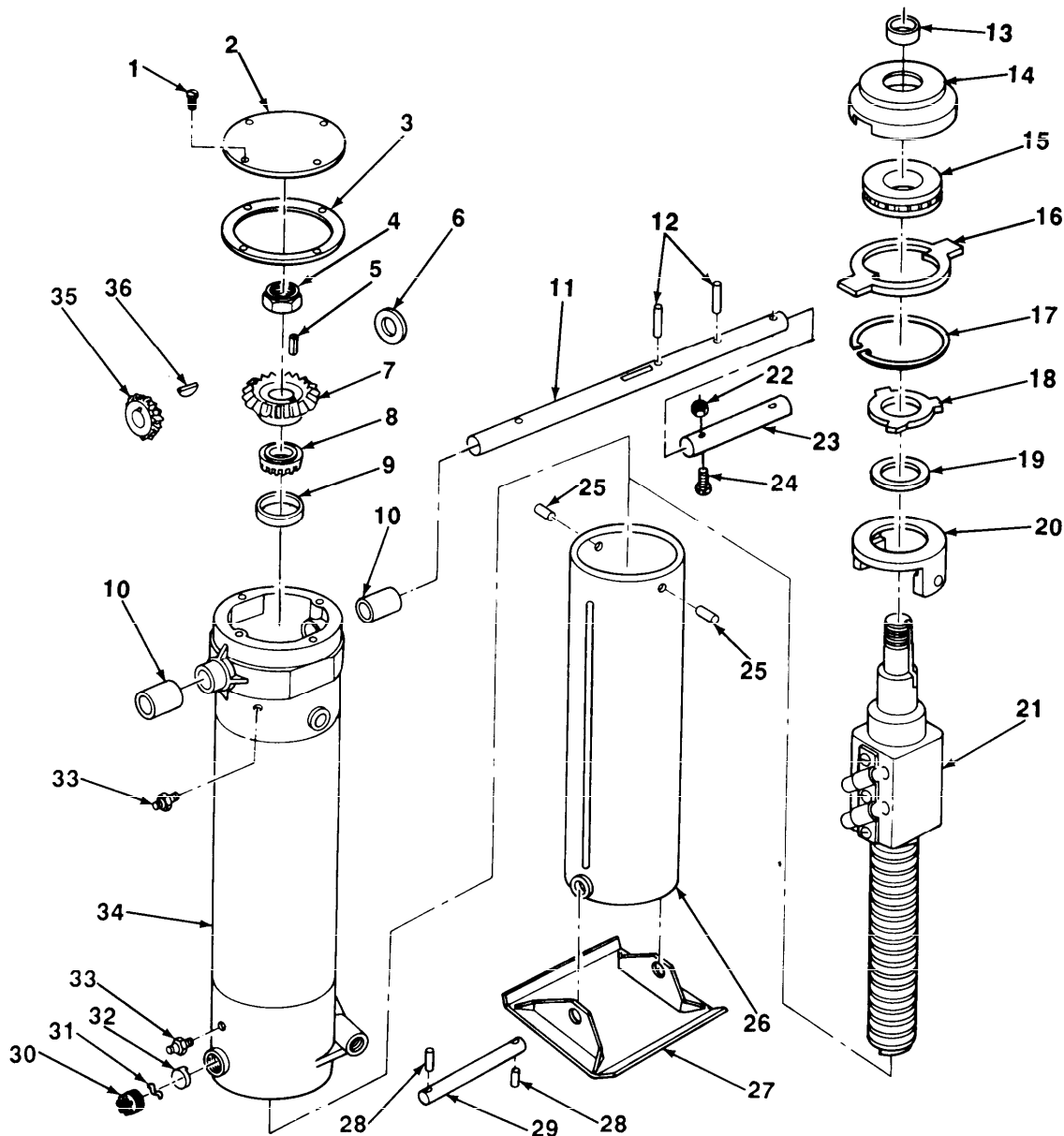
a. DISASSEMBLY

NOTE

Use this task to disassemble left or right landing gear leg assemblies. Right leg assembly is shown.

1. Remove two spring pins (28) from headless straight pin (29). Drive pin out of jack support shoe (27) and remove shoe from lower leg assembly (26). Discard spring pins.
2. Remove four screws (1), access cover (2), and gasket (3) from top of upper leg assembly (34). Discard gasket.
3. Remove self-locking nut (22), capscrew (24), and intermediate drive shaft (23) from drive shaft (11). Discard self-locking nut.
4. Remove two spring pins (12) from drive shaft (11). Discard spring pins.
5. Hold bevel gear (35), and turn drive shaft (11) until woodruff key (36) can be removed.
6. Drive drive shaft (11) out of upper leg assembly (34) and remove bevel gear (35) and washer (6).
7. Hold bevel gear (7), and remove self-locking nut (4) from screw leg assembly (21). Discard self-locking nut.
8. Remove plug (30), spring tension clip (31), and leveling gib (32) from upper leg assembly (34).
9. Using a soft-face hammer, drive screw leg assembly (21) down until machine key (5) and bevel gear (7) can be removed.
10. Remove lower leg assembly (26) to include sleeve bearing (13), screw leg assembly (21), nut retainer (20), thrust washer bearing (19), ratchet wheel (18), retaining ring (17), control cam (16), thrust roller bearing (15), and clutch case (14).
11. Remove sleeve bearing (13), clutch case (14), thrust roller bearing (15), control cam (16), and retaining ring (17) as a unit from screw leg assembly (21).
12. Remove retaining ring (17), control cam (16), and thrust roller bearing (15) from clutch case (14).
13. Remove ratchet wheel (18) and thrust washer bearing (19) from screw leg assembly (21).

5-13. LANDING GEAR LEG ASSEMBLY REPAIR (EARLY MODEL). (Con't).



14. Drive out two spring pins (25) from lower leg assembly (26) and nut retainer (20). Remove nut retainer and screw leg assembly (21) from lower leg assembly. Discard spring pins.
15. Remove two sleeve bearings (10) and lubrication fittings (33) from upper leg assembly (34). Discard lubrication fittings.
16. Remove tapered cone and rollers (8) and tapered roller cup (9) from upper leg assembly (34).

TA702080

5-13. LANDING GEAR LEG ASSEMBLY REPAIR (EARLY MODEL) (Con't).

b. CLEANING AND INSPECTION**WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F–138°F (38°C–59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect screw leg assembly for damage, wear, or corrosion.
3. Inspect roller bearings for pits, corrosion, or wear and replace if unserviceable (Refer to TM 9-214 for care and maintenance of bearings).
4. Inspect bevel gears for cracked, chipped, or worn gear teeth.
5. Inspect drive shaft and intermediate drive shaft for cracks, bends, or breaks.
6. Check contact surface of leveling gib on lower leg assembly is smooth. If not, remove burrs with fine file and abrasive.
7. Inspect all mounting hardware for cracks, bends, or stripped threads.
8. Replace all defective parts as necessary.

c. ASSEMBLY

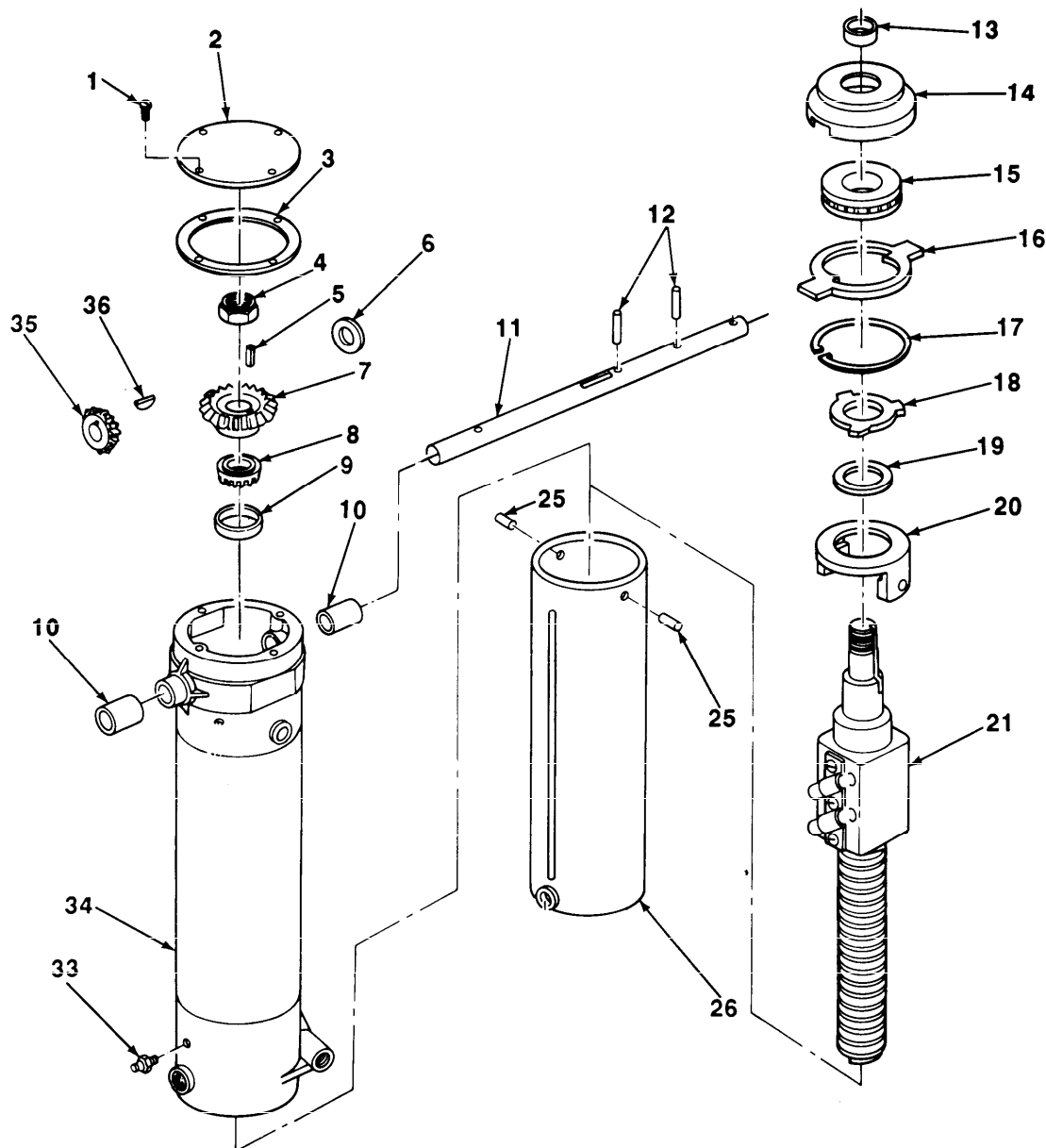
1. Install two sleeve bearings (10) and new lubrication fittings (33) in upper leg assembly (34).
2. Position screw leg assembly (21) in lower leg assembly (26) and install nut retainer (20). Secure nut retainer with two new spring pins (25).
3. Install thrust washer bearing (19) and ratchet wheel (18) on screw leg assembly (21).

NOTE

Control cam is stamped with the letter T on one side to indicate the top. Ensure control cam is assembled accordingly.

4. Install thrust roller bearing (15) and control cam (16) in clutch case (14) and secure with retaining ring (17).
5. Install clutch case (14) on screw leg assembly (21).
6. Install lower leg assembly (26) and screw leg assembly (21) in upper leg assembly (34), taking care not to damage threads on screw leg assembly.
7. Install sleeve bearing (13), tapered roller cup (9), tapered cone and rollers (8), machine key (5), and bevel gear (7) on screw leg assembly (21) and secure with new self-locking nut (4).
8. Tighten self-locking nut (4) just enough to allow screw leg assembly (21) to turn freely with a minimum of end play.

5-13. LANDING GEAR LEG ASSEMBLY REPAIR (EARLY MODEL) (Con't).

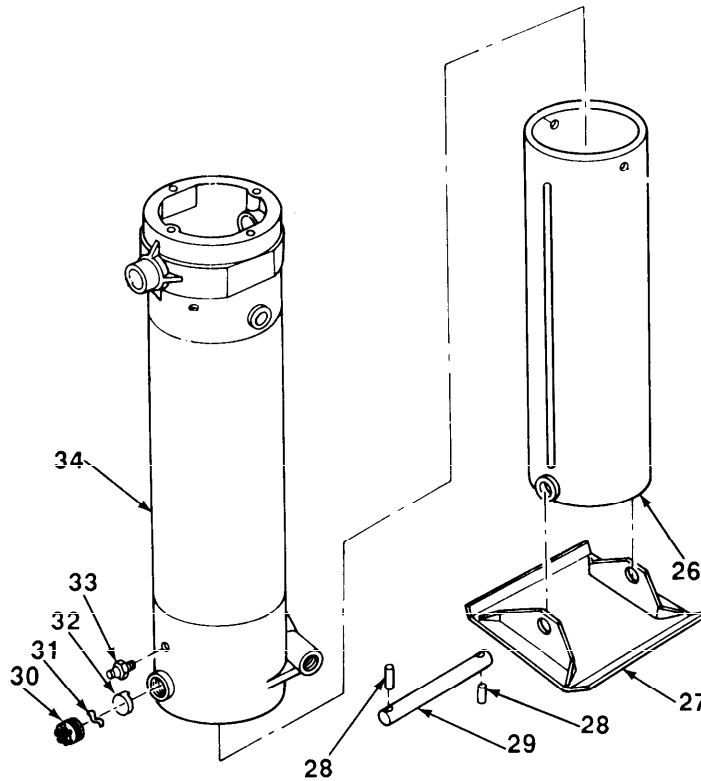


9. Start drive shaft (11) in opening on top of upper leg assembly (34) with end of drive shaft that contains three holes facing mounting side of leg assembly.
10. Install washer (6) and bevel gear (35) over woodruff key (36) on drive shaft (11), then slide drive shaft in place in upper leg assembly (34) and secure with two new spring pins (12).
11. Install intermediate drive shaft (23) on drive shaft (11) with capscrew (24) and new self-locking nut (22).
12. Lubricate bevel gears (7 and 35) in accordance with Lubrication Instructions (Chapter 3, Section I).
13. Position new gasket (3) and access cover (2) in place on top of upper leg assembly (34) and install four screws (1).

TA702081

5-13. LANDING GEAR LEG ASSEMBLY REPAIR (EARLY MODEL) (Con't).

14. Position jack support shoe (27) in place on lower leg assembly (26) with holes alined.
15. Install headless straight pin (29) in jack support shoe (27) and lower leg assembly (26) and secure with two new spring pins (28).
16. Install leveling gib (32), spring tension clip (31), and plug (30) in lower end of upper leg assembly (34).



FOLLOW-ON TASKS:

- Install landing gear gearbox (para 5-12).
- Install and adjust landing gear (para 5-11).

5-14. LANDING GEAR ACTUATING LEG ASSEMBLY REPAIR (EARLY MODEL).

This Task Covers:

- | | |
|----------------------------|-------------|
| a. Disassembly | c. Assembly |
| b. Cleaning and Inspection | |

Initial Setup:

Equipment Conditions:

- Landing gear removed (para 5-11).

Tools/Test Equipment:

- General mechanic's tool kit

References:

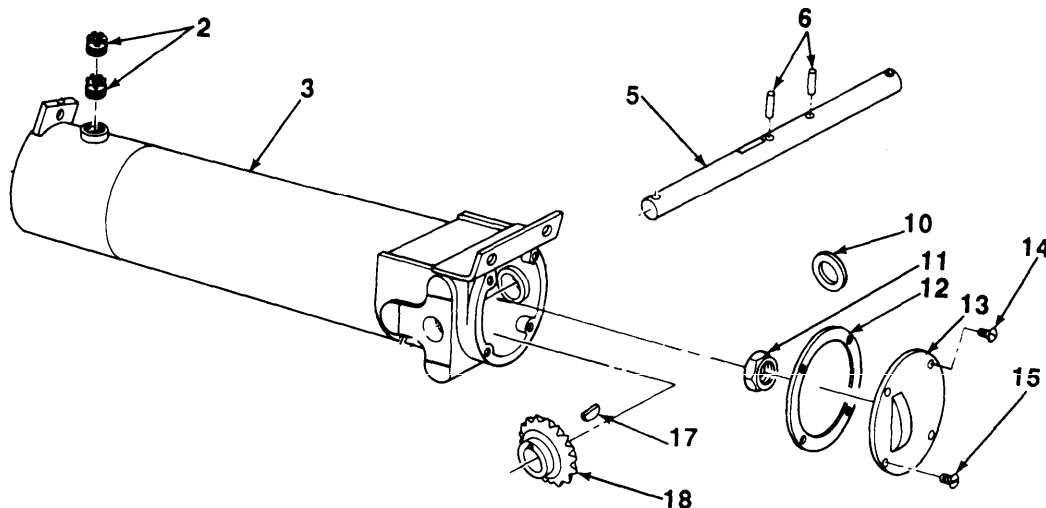
- TM 9-214

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
- One gasket
- One self-locking nut
- Three lubrication fittings
- Four spring pins

a. DISASSEMBLY

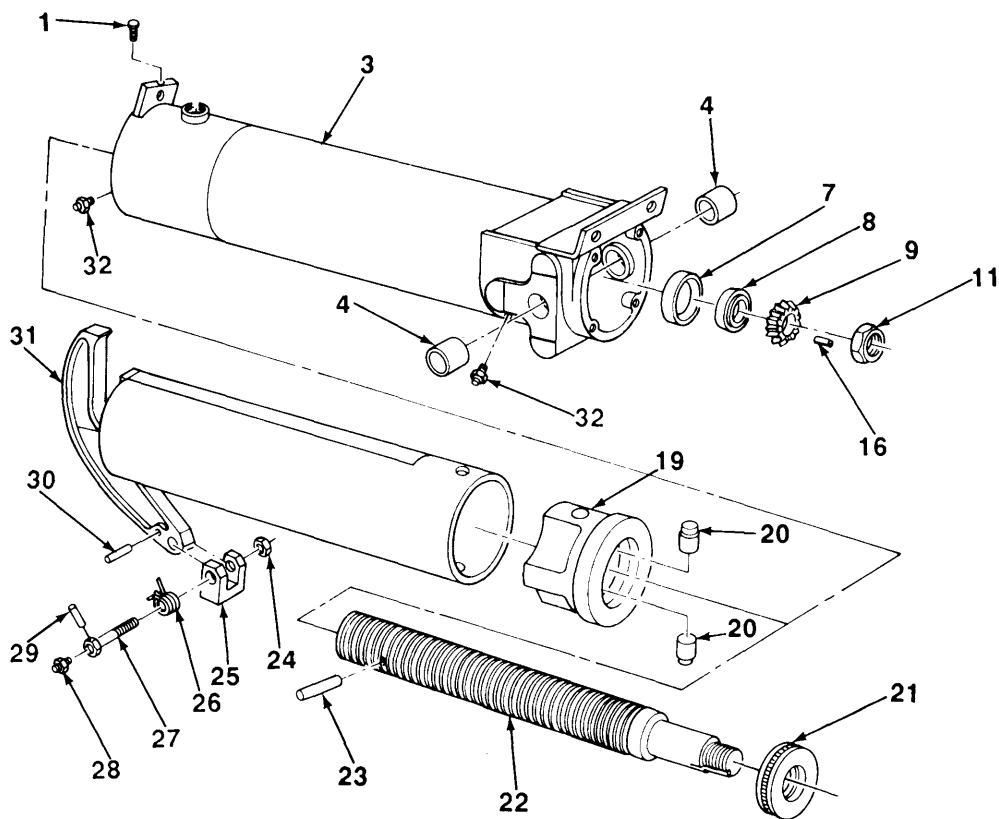
1. Remove two screws (14), two screws (15), access cover (13), and gasket (12) from outer leg assembly (3). Discard gasket.
2. Remove two spring pins (6) from drive shaft (5). Discard spring pins.
3. Hold bevel gear (18) and drive drive shaft (5) out until woodruff key (17) can be removed.
4. Drive drive shaft (5) from outer leg assembly (3) and remove washer (10) and bevel gear (18).
5. Remove two plugs (2) from outer leg assembly (3).



TA702083

5-14. LANDING GEAR ACTUATING LEG ASSEMBLY REPAIR (EARLY MODEL) (Con't).

6. Hold bevel gear (9) and remove self-locking nut (11) from actuator screw (22).
7. Remove bevel gear (9) and machine key (16) from actuator screw (22).
8. Using soft-faced hammer, drive actuator screw (22) and inner leg (31) as a unit from outer leg assembly (3).
9. Remove tapered cone and rollers (8) and tapered roller cup (7) from outer leg assembly (3).
10. Remove thrust roller bearing (21) and actuator screw (22) from inner leg (31).



11. Remove headless grooved pin (23) from actuator screw (22).
12. Drive two shoulder pins (20) inward from inner leg (31) and elevating nut (19). Remove elevating nut from inner leg.
13. Remove two sleeve bearings (4), cap screw (1), and two lubrication fittings (32) from outer leg assembly (3). Discard lubrication fittings.
14. Remove nut (24), internally relieved bolt (27), spring (26), and latch (25) from inner leg (31). Remove spring pin (29) and lubrication fitting (28). Discard spring pin and lubrication fitting.
15. Remove spring pin (30) from inner leg (31). Discard spring pin.

TA702084

5-14. LANDING GEAR ACTUATING LEG ASSEMBLY REPAIR (EARLY MODEL) (Con't).

b. CLEANING AND INSPECTION**WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F–138°F (38°C–59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

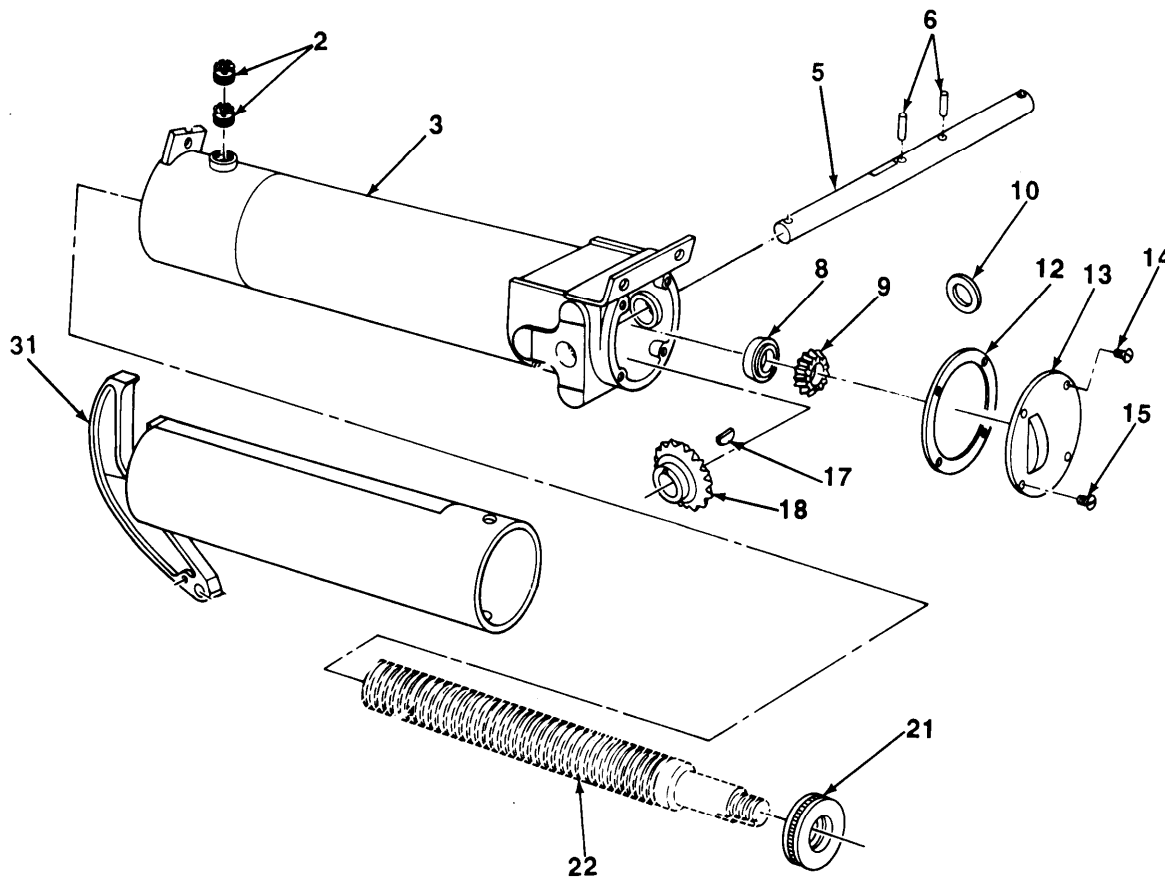
1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect all parts for wear, distortion, or cracks.
3. Check threads of elevating nut for damage or wear.
4. Check actuator screw for straightness by rolling on flat surface.
5. Inspect tapered cone and rollers and thrust roller bearing for pits, corrosion, or wear and replace if unserviceable (refer to TM 9-214 for care and maintenance of bearings).
6. Inspect bevel gears for cracked, chipped, or worn gear teeth.
7. Inspect drive shaft for cracks, bends, or breaks.
8. Inspect all mounting hardware for cracks, bends, or stripped threads. Replace all defective parts as necessary.

c. ASSEMBLY

1. Install new spring pin (30) in inner leg (31).
2. Install new spring pin (29) and new lubrication fitting (28) in internally relieved bolt (27).
3. Position latch (25) over hook of inner leg (31) and install spring (26), internally relieved bolt (27), and nut (24).
4. Install capscrew (1), two new lubrication fittings (32), and two sleeve bearings (4) in outer leg (3).
5. Position elevating nut (19) in open end of inner leg (31) and install two shoulder pins (20).
6. Install headless grooved pin (23) in actuator screw (22).
7. Install actuator screw (22) in inner leg (31).
8. Install thrust roller bearing (21) on actuator screw (22) and install inner leg (31) and actuator screw in bottom opening of outer leg assembly (3).
9. Install tapered roller cup (7) and tapered cone and rollers (8) in outer leg assembly (3).
10. Install machine key (16) and bevel gear (9) on actuator screw (22) and secure with new self-locking nut (11).
11. Tighten self-locking nut (11) just enough to allow actuator screw (22) to turn freely, but with a minimum of end play.

5-14. LANDING GEAR ACTUATING LEG ASSEMBLY REPAIR (EARLY MODEL) (Con't).

12. Install two plugs (2) in end of outer leg assembly (3), with first plug against flat surface of inner leg (31). The inner plug should be loose enough to allow the inner leg to move in and out freely, but tight enough to keep in from rotating.
13. Start drive shaft (5) through opening in outer leg (3) and install woodruff key (17), bevel gear (18), and flat washer (10) on drive shaft.
14. Push drive shaft (5) in outer leg assembly (3) so approximately same length of the shaft extends on each side of outer leg assembly.
15. Install one new spring pin (6) to secure bevel gear (18), then install other new spring pin (6) against washer (10).
16. Lubricate bevel gears (9 and 18) and bearings (8 and 21) in accordance with Lubrication Instructions (Chapter 3, Section I).
17. Install new gasket (12) and access cover (13) on top of outer leg (3) with two screws (14) and two screws (15).



FOLLOW-ON TASKS:

- Install and adjust landing gear (para 5-11).

TA702085

5-15. LANDING GEAR RATCHET MAINTENANCE (EARLY MODEL).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |

Initial Setup:

Materials/Parts:

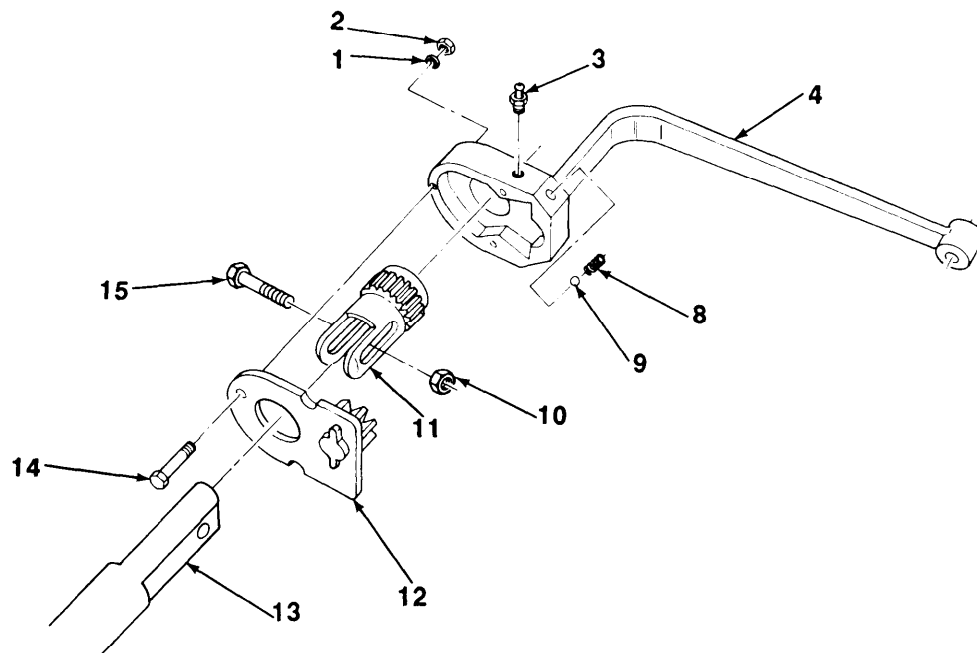
- Dry cleaning solvent (Item 14, Appendix E)
- One self-locking nut
- Three lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

a. REMOVAL

Remove self-locking nut (10) and capscrew (15) from ratchet wheel (11) and crankshaft (13). Remove handcrank (4). Discard self-locking nut.



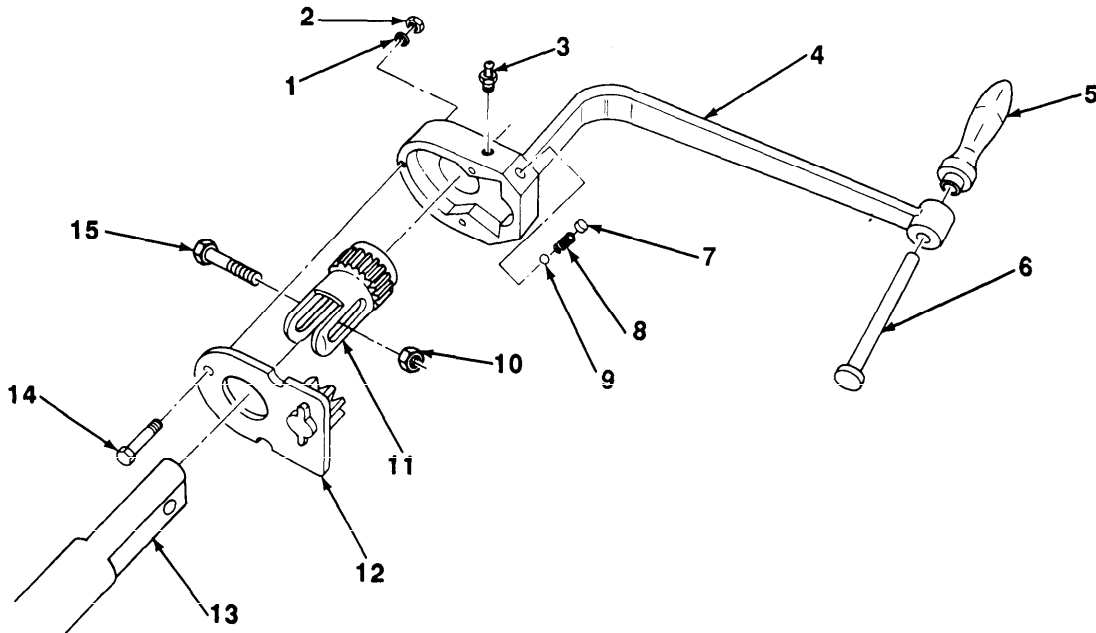
b. DISASSEMBLY

1. Remove three nuts (2), lockwashers (1), and capscrews (14) securing plate and lever assembly (12) and ratchet wheel (11), to handcrank (4). If damaged, remove lubrication fitting (3) from handcrank. Discard lockwashers.
2. Remove plate and lever assembly (12), bearing ball (9), spring (8), and ratchet wheel (11).

TA702086

5-15. LANDING GEAR RATCHET MAINTENANCE (EARLY MODEL) (Con't).

3. If damaged, drill out expansion plug (7) with $\frac{5}{16}$ in. (3.12 mm) diameter drill.
4. If handle (5) is damaged, file or grind peened end of rivet (6) and remove rivet and handle from handcrank (4).



c. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect handcrank and crank handle for cracks or wear.
3. Check for broken or worn spring.
4. Inspect plate and lever assembly for nicks, cracks, or worn parts.
5. Inspect ratchet wheel for cracks, nicks, or chipped gear teeth.
6. Replace all defective parts as necessary.

TA702087

5-15. LANDING GEAR RATCHET MAINTENANCE (EARLY MODEL) (Con't).

d. ASSEMBLY

1. If handle (5) was removed, install new rivet (6) through handle and ratchet handcrank (4). Peen rivet end over handcrank, ensuring a minimum $\frac{1}{16}$ in. (6.25 mm) end play is allowed between rivet head and handle.
2. Install ratchet wheel (11), gear end first, in handcrank (4).
3. Install plate and lever assembly (12) over ratchet wheel (11) and on handcrank (4).
4. Install three capscrews (14), new lockwashers (1), and nuts (2) in plate and lever assembly (12) and handcrank (4). If removed, install lubrication fitting (3) in handcrank.
5. Install bearing ball (9), spring (8), and expansion plug (7), if removed, in handcrank (4).
6. Lubricate in accordance with Lubrication Instructions (Chapter 3, Section I).

e. INSTALLATION

Install handcrank (4) on crankshaft (13) with capscrew (15) and new self-locking nut (10).

Section VI. SUSPENSION MAINTENANCE

5-16. TANDEM SUSPENSION BRACKET REPLACEMENT.

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | b. Installation |
|------------|-----------------|

Initial Setup:

Materials/Parts:

- Ten rivets
- Twelve lockwashers

Tools/Test Equipment:

- General mechanic's tool kit
- Field automotive supplemental no. 1 shop set

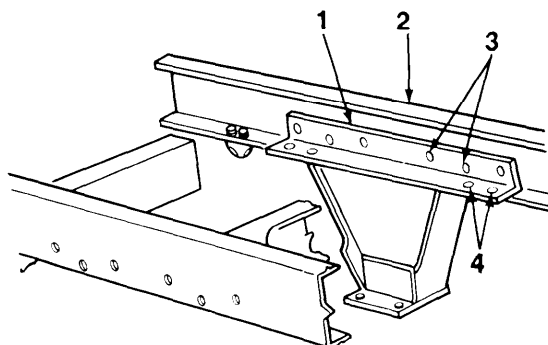
References:

- TB 9-2300-247-40

Personnel Required: Two

a. REMOVAL

1. Remove hydraulic lines from connection on bases of tandem axle (para 4-42).
2. Raise rear of semitrailer slightly and support with suitable jackstands. Tires should remain in contact with ground.
3. Remove six nuts, lockwashers, and screws from each end of axle and bracket assembly and tandem suspension brackets (1) (para 5-6). Remove bogie assembly from under semitrailer. Discard lockwashers.
4. Inspect area of tandem suspension bracket (1) and framerail (2). If cracks in framerail are found, refer to instructions in TM 9-2300-247-40 to determine serviceability.
5. Mark location of tandem suspension bracket (1) in relation to framerail (2).
6. Provide a suitable support for tandem suspension bracket (1).
7. Remove six rivets (3) and four rivets (4) from tandem suspension bracket (1) and framerail (2) in accordance with instructions in TB 9-2300-247-40. Remove tandem suspension bracket from framerail. Discard rivets.



b. INSTALLATION

NOTE

Prior to installation of tandem suspension bracket, area of framerail must be repaired as required. It may be necessary to use new bolts and new locknuts instead of new rivets to install tandem suspension bracket (TB 9-2300-247-40).

1. Place tandem suspension bracket (1) on a suitable support and position on framerail (2) as noted during removal.

TA702088

5-16. TANDEM SUSPENSION BRACKET REPLACEMENT (Con't).

2. Install six new rivets (3) and four new rivets (4) or new bolts and new locknuts in tandem suspension bracket (1) and framerail (2).
3. Position bogie assembly under semitrailer. Install six screws, new lockwashers, and nuts on each end of axle and bracket assembly and tandem suspension brackets (1) (para 5-6).
4. Remove jackstands from rear of semitrailer and lower semitrailer.
5. Install hydraulic lines to connection on bases of tandem axle (para 4-42).

Section VII. BODY MAINTENANCE

Paragraph Title	Page Number
Bonnet Front Door Maintenance (M313 and M447C)	5-30
Bonnet Side Door Replacement (M313, M447, M447C, M749, and M750)	5-88
Door Maintenance (M313, M447, M447C, and M750)	5-48
Door Maintenance (M749)	5-55
End Panel Door Replacement (M313)	5-80
Folding Side Door Maintenance (M447, M447C, M749, and M750)	5-82
Hinged Floor Maintenance (M313)	5-72
Hinged Roof Maintenance (M313)	5-74
Left and Right Rear Door Lock Replacement (M447, M447C, M749, and M750)	5-66
Left Rear Door Lock Replacement (M313, Early Model)	5-64
Left Rear Door Lock Replacement (M313, Late Model)	5-62
Panel Stowage Chest Maintenance (M447C)	5-96
Right Rear Door and Side Door Locks Replacement (M313, Early Model)	5-60
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Sash Assembly Maintenance (M313)	5-70
Solid Side Assembly Maintenance (M313)	5-78
Stowage Compartment Box Door Maintenance (M749)	5-90
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Underframe Retractable Mechanism Maintenance (M313)	5-100

5-17. DOOR MAINTENANCE (M313, M447, M447C, AND M750).

This Task Covers:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Removal b. Disassembly c. Cleaning and Inspection | <ul style="list-style-type: none"> d. Assembly e. Installation |
|--|--|

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
- Eight lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Three

a. REMOVAL

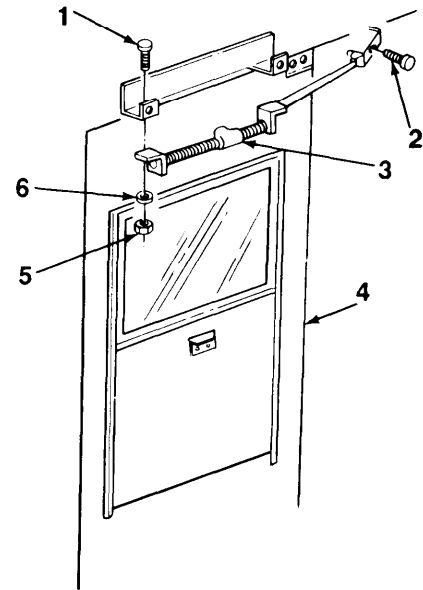
NOTE

Use this task to remove either the left or right rear door on M313, M447, M447C, and M750 or the side door on M313. Quantity of screws, lockwashers, etc. may vary between models. M750 is shown.

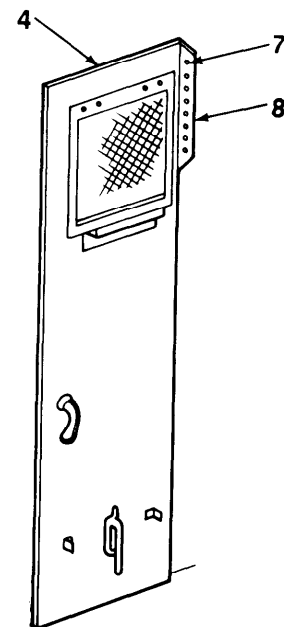
1. Remove two nuts (5), lockwashers (6), and bolts (1) from door check assembly (3) and door frame. Discard lockwashers.

5-17. DOOR MAINTENANCE (M313, M447, M447C, AND M750) (Con't).

2. Remove two screws (2) and door check assembly (3) from door (4).



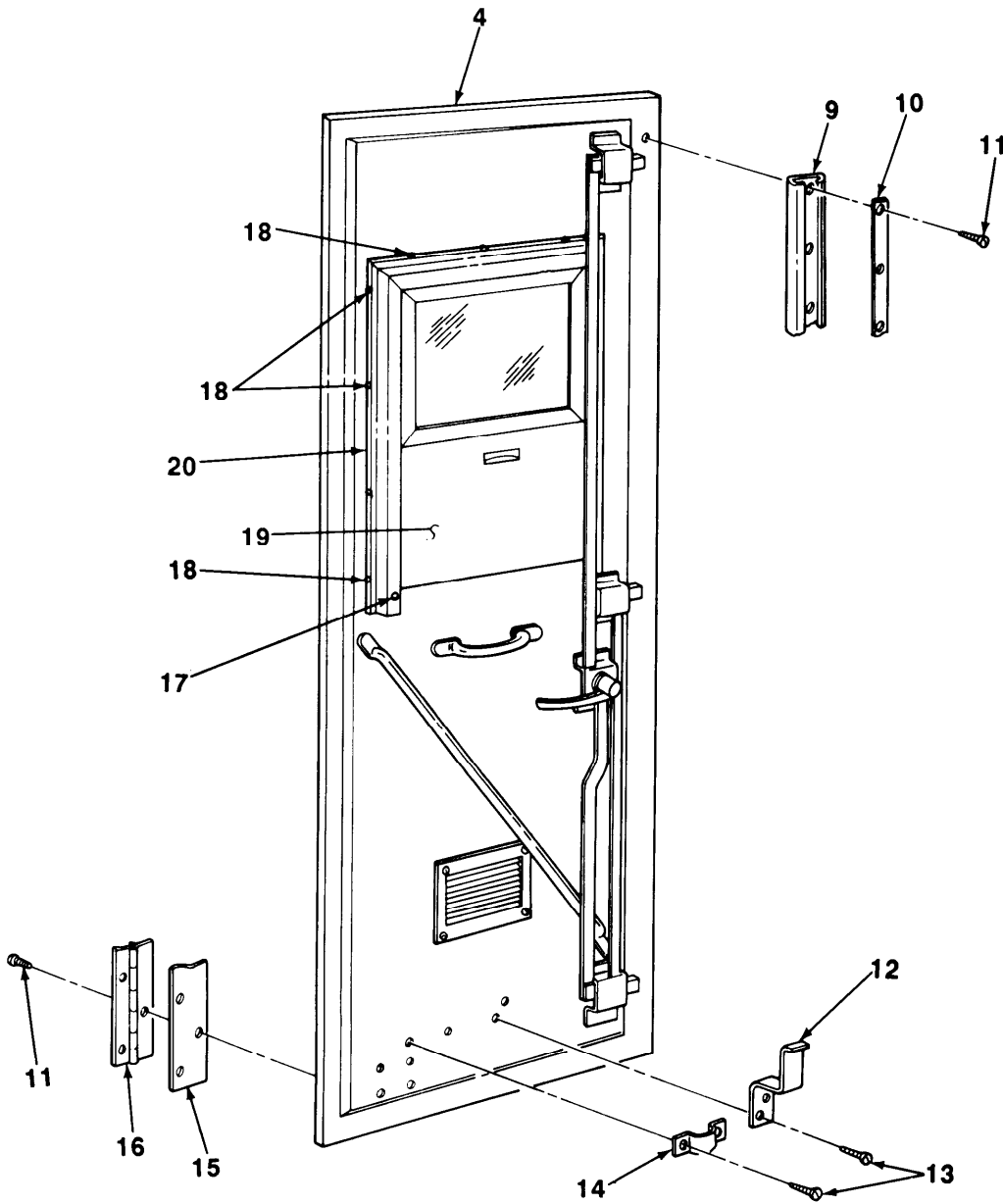
3. Open door (4) and support weight with two people.
4. Remove screws (7) securing door hinge (8) to van body and remove door (4).



5-17. DOOR MAINTENANCE (M313, M447, M447C, AND M750) (Con't).

b. DISASSEMBLY

1. Lift rubber seal (9) and remove screws or rivets (11), seal retainer (10), seal, hinge (16), and rubber strip (15) from door (4).



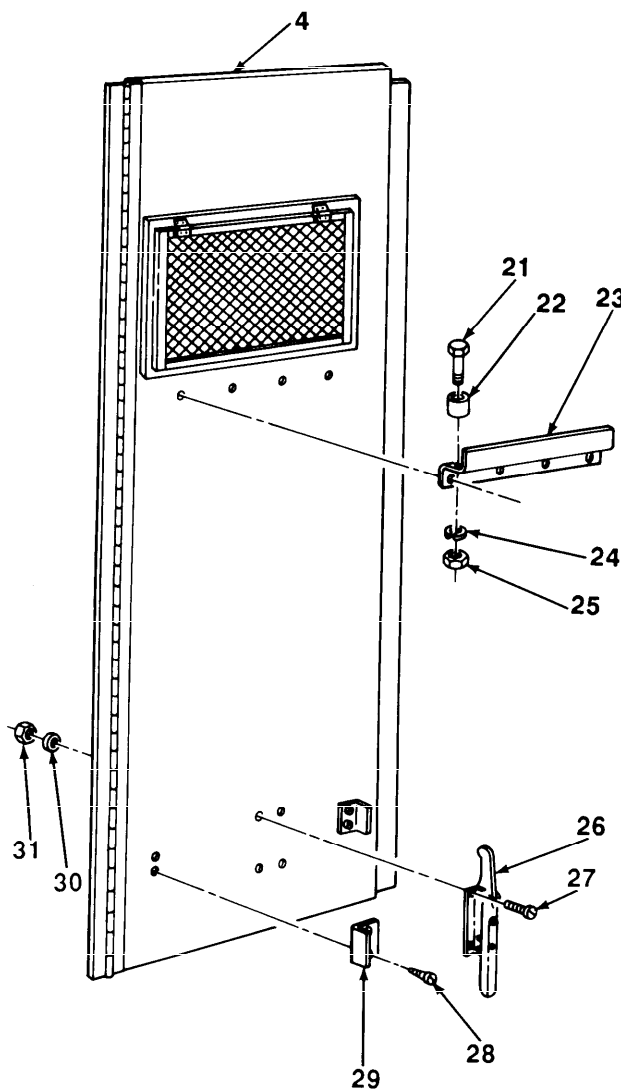
TA702090

5-17. DOOR MAINTENANCE (M313, M447, M447C, AND M750) (Con't).

NOTE

M313 ladder clamps are mounted with screws and lockwashers only.

2. Remove four screws (27), lockwashers (30), nuts (31) if present, and ladder clamps (26) from door (4). Discard lockwashers.
3. Remove two nuts (25), lockwashers (24), and square neck bolts (21) securing rubber bumpers (22) on ladder bracket (23). Discard lockwashers.
4. Remove two screws (28) and rubber bumpers (29) from door (4).
5. Remove door lock assembly from door (para 5-19, 5-20, 5-21, 5-22, or 5-23).
6. For M313, remove sash assembly from door (para 5-24).



NOTE

For M447, M447C, and M750, perform steps 7 and 8.

7. If blackout panel (19) is damaged, remove two bottom screws (17) and remove blackout panel from window (20).
8. Remove 13 screws (18) and window (20) from door (4).

NOTE

For M313 left rear door, perform step 9.

9. Remove four screws (13), ratchet wrench clip (14), and angle bracket (12) from left rear door (4).

c. CLEANING AND INSPECTION

1. Clean dirt from door with steam or water.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

2. Clean all parts with dry cleaning solvent to remove grease and dry thoroughly.

5-17. DOOR MAINTENANCE (M313, M447, M447C, AND M750) (Con't).

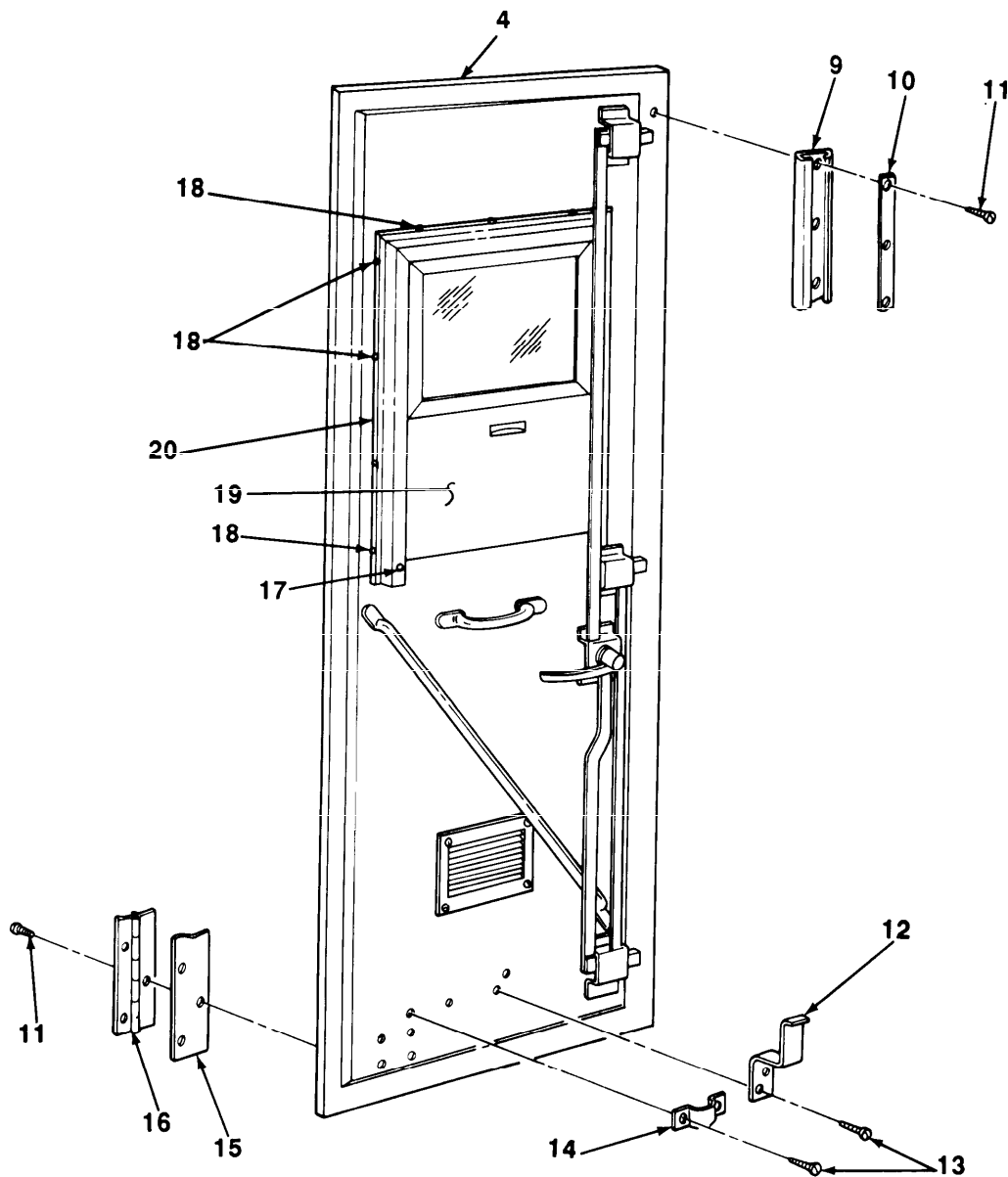
3. Inspect door panels for cracks, bends, dents, or tears. Straighten any minor bends or dents.
4. Check all mounting hardware for cracks or stripped threads. Replace defective parts as necessary.

d. ASSEMBLY

NOTE

For M313 left rear door, perform step 1.

1. Position ratchet wrench clip (14) and angle bracket (12) in place on left rear door (4) and install four screws (13).



TA702092

5-17. DOOR MAINTENANCE (M313, M447, M447C, AND M750) (Con't).

NOTE

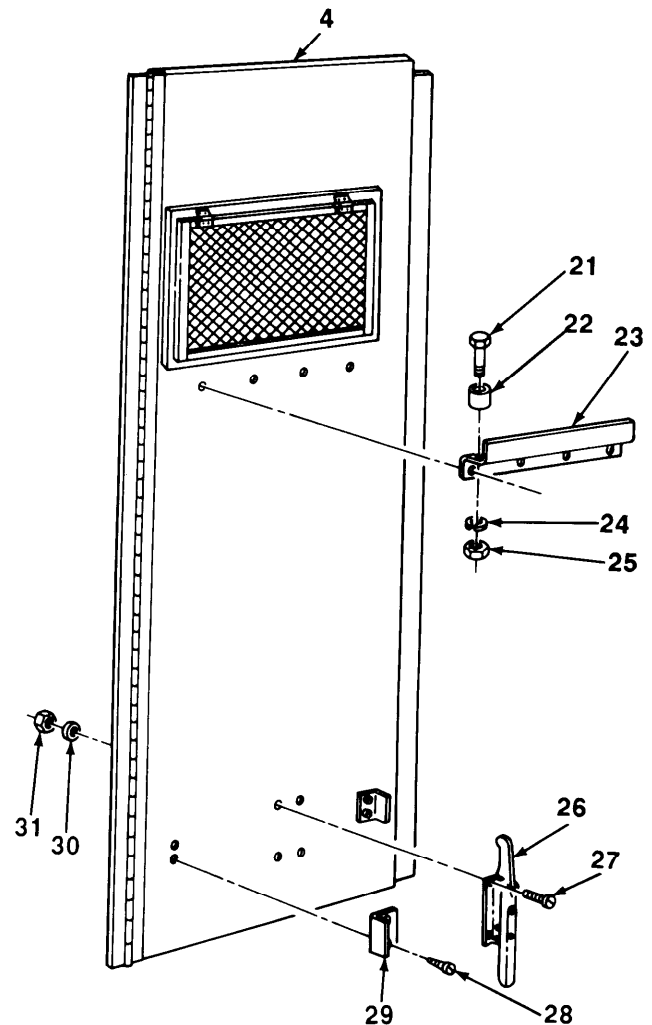
For M447, M447C, and M750, perform steps 2 and 3.

2. Install window (20) on door (4) with 13 screws (18).
3. If removed, install blackout panel (19) in window (20) and install two bottom screws (17).
4. For M313, install sash assembly (para 5-24).
5. Install door lock assembly (para 5-19, 5-20, 5-21, 5-22, or 5-23).
6. Install two rubber bumpers (29) and screws (28) on door (4).
7. Install two rubber bumpers (22) on ladder bracket (23) with two square neck bolts (21), new lockwashers (24), and nuts (25).

NOTE

M313 ladder clamps are mounted with screws and lockwashers only.

8. Position ladder clamp (26) in place on door (4) and install four screws (27), new lockwashers (30), and nuts (31).
9. Position rubber strip (15) and hinge (16) against door (4) with edge of hinge leaf flush with edge of rubber strip. Install screws (11) to secure.
10. Position seal (9) and seal retainer (10) on door (4) and align holes. Install screws or new rivets (11) to secure.

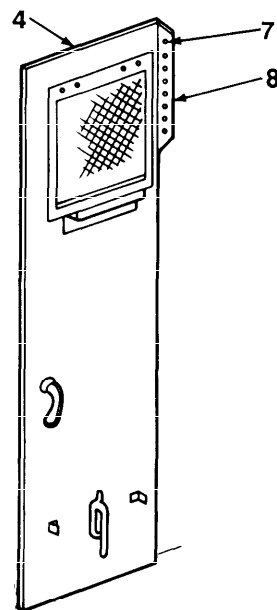


TA702093

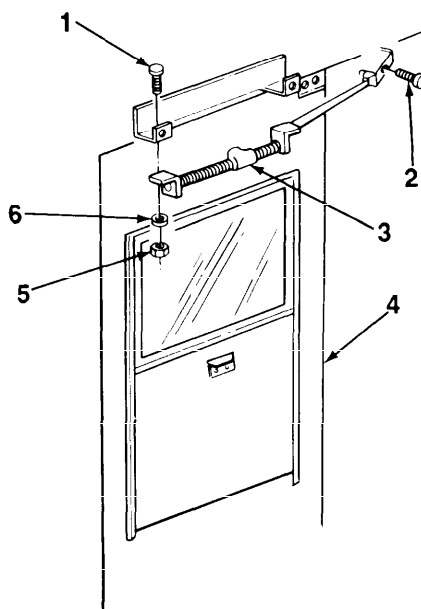
5-17. DOOR MAINTENANCE (M313, M447, M447C, AND M750) (Con't).

e. INSTALLATION

1. Position door (4) in van body door opening and support with two people.
2. Aline holes in door hinge (8) with holes in van body. install screws (7) to secure.



3. Position door check assembly (3) on door frame above door and aline holes. Install two bolts (1), new lockwashers (6), and nuts (5).
4. Position closure end of door check assembly (3) on door (4) and install two screws (2).



TA702094

5-18. DOOR MAINTENANCE (M749).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |
-

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (item 14, Appendix E)
- Seventy-four lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

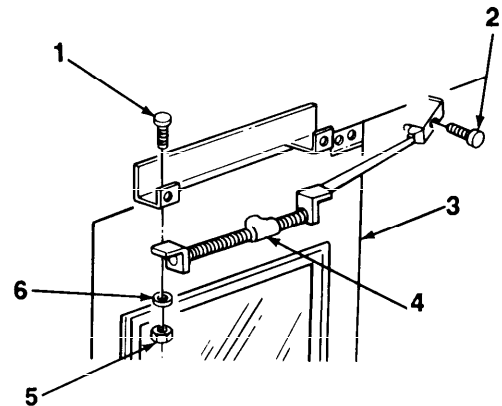
Personnel Required: Three

a. REMOVAL

NOTE

Use this task to remove either the left or right M749 rear doors.

1. Remove two nuts (5), lockwashers (6), and bolts (1) from door check assembly (4) and door frame. Discard lockwashers.
2. Remove two screws (2) and door check assembly (4) from door (3).

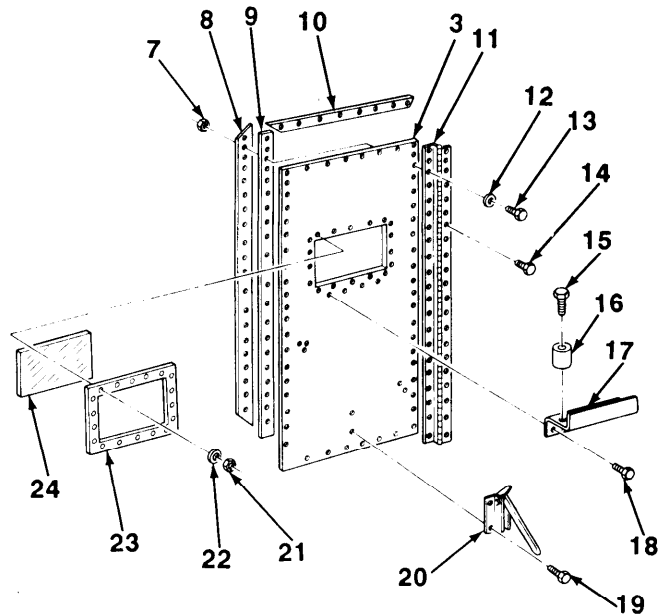


5-18. DOOR MAINTENANCE (M749) (Con't).

3. Open door (3) and support weight with two people.
4. Remove 21 screws (14) securing door hinge (11) to van body and remove door (3).

b. DISASSEMBLY

1. Remove 54 screws (13), lockwashers (12), nuts (7), four seals (9 and 10), seal retainers (8), and hinge (11) from door (3). Discard lockwashers.
2. Remove four screws (19) and ladder clamp (20) from door (3).
3. Remove two screws (15) and bumpers (16) from ladder hanger (17) or right rear door (3).
4. Remove four screws (18) and ladder hanger (17) from right rear door (3).
5. Remove eighteen screws (21), lockwashers (22), retainer (23), and window (24) from door (3). Discard lockwashers.
6. Remove lock assembly from door (para 5-23).



c. CLEANING AND INSPECTION

1. Clean dirt from door with steam or water.

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

2. Clean all parts with dry cleaning solvent to remove grease and dry thoroughly.
3. Inspect door panels for cracks, bends, dents, or tears. Straighten any minor bends or dents.
4. Check all mounting hardware for cracks or stripped threads. Replace defective parts as necessary.

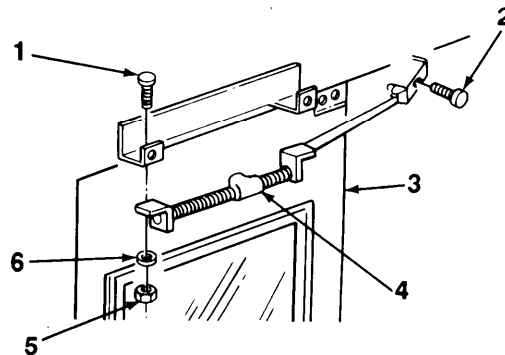
5-18. DOOR MAINTENANCE (M749) (Con't).

d. ASSEMBLY

1. Install lock assembly in door (para 5-23).
2. Install eighteen screws (21), new lockwashers (22), retainer (23), and window (24) on door (3).
3. Position ladder hanger (17) in place on rear door (3) and install four screws (18).
4. Install two screws (15) and bumpers (16) on ladder hanger (17) or right rear door.
5. Position ladder clamp (20) in place on door (3). and install four screws (19).
6. Position hinge (11), four seals (9 and 10), and seal retainers (8) in place around edges of door (3), and install 54 screws (13), new lockwashers (12), and nuts (7).

e. INSTALLATION

1. Position door (3) in van body door opening and support with two people.
2. Aline holes in hinge (11) with holes in van body. Install 21 screws (14) to secure door (3) to van body.
3. Position door check assembly (4) on door (3) and install two screws (2).
4. Position door check assembly (4) in place on door frame and install two bolts (1), new lockwashers (6), and nuts (5).



TA702097

5-19. RIGHT REAR DOOR AND SIDE DOOR LOCKS REPLACEMENT (M313, LATE MODEL).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | c. Installation |
| b. Cleaning and Inspection | |

Initial Setup:

Materials/Parts:

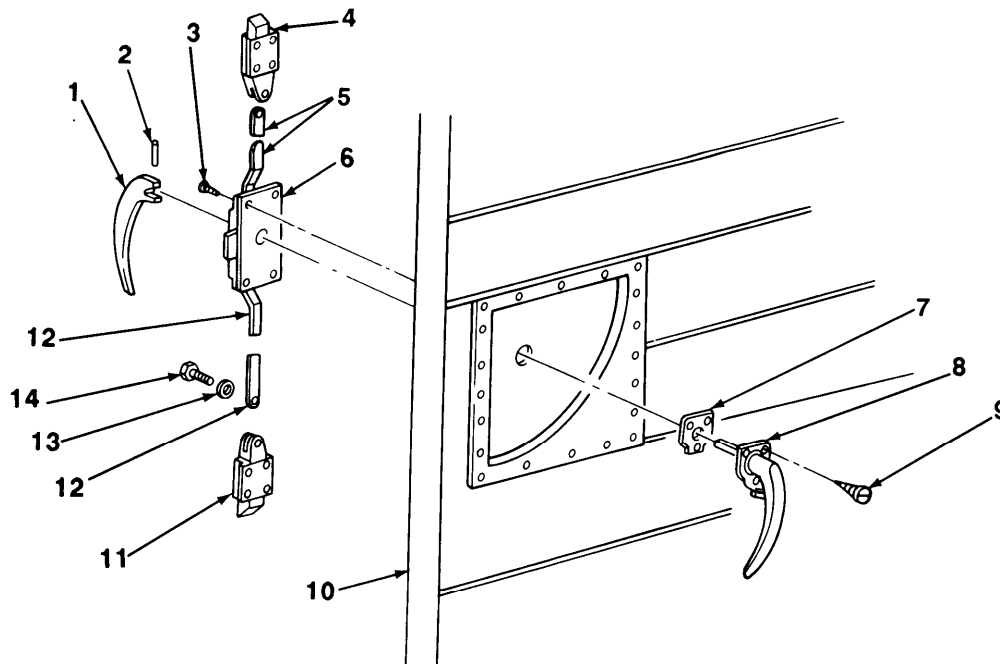
- Dry cleaning solvent (Item 14, Appendix E)
- One gasket
- Two lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

a. REMOVAL

1. From inside of door (10), drive out grooved headless pin (2) and remove door handle (1).
2. Remove two capscrews (14) and lockwashers (13) securing upper and lower connecting links (5 and 12) to flush bolt (4) and exit bolt (11). Discard lockwashers.
3. Remove connecting links (5 and 12) from flush bolt (4), and exit bolt (11).
4. Remove twelve screws (3), exit bolt (11), flush bolt (4), latch (6), and connecting links (5 and 12) from door (10).
5. From outside of door (10), remove three screws (9), outer door handle (8), and gasket (7). Discard gasket.



TA702098

5-19. RIGHT REAR DOOR AND SIDE DOOR LOCKS REPLACEMENT (M313, LATE MODEL) (Con't).

b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F–138°F (38°C–59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect latch and door bolts for ease of operation.
3. Inspect connecting links for cracks, bends, or breaks. Straighten any minor bends.
4. Replace any defective parts.

c. INSTALLATION

1. From outside of door (10), position new gasket (7) and outer door handle (8) in place on door and install three screws (9).
2. From inside of door (10), position latch (6) and connecting links (5 and 12) in place and install four screws (3).
3. Position exit bolt (11) and flush bolt (4) in place on door (10) and install eight screws (3).
4. Install connecting links (5 and 12) in place on exit bolt (11) and flush bolt (4) and secure with two capscrews (14) and new lockwashers (13).
5. Position door handle (1) in place on shaft with holes aligned and install grooved headless pin (2).
6. Lubricate latch (6) and bolts (4 and 11) in accordance with Lubrication Instructions (Chapter 3, Section I).

5-20. RIGHT REAR DOOR AND SIDE DOOR LOCKS REPLACEMENT (M313, EARLY MODEL).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | c. Installation |
| b. Cleaning and Inspection | |

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
- One gasket
- Five cotter pins

Tools/Test Equipment:

- General mechanic's tool kit

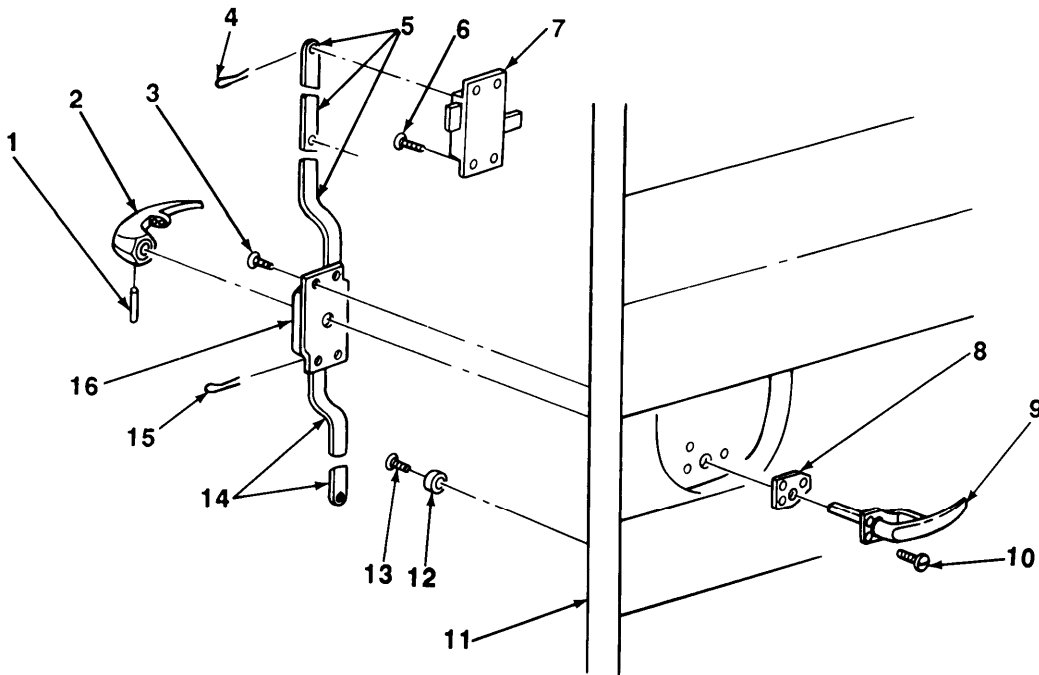
a. REMOVAL

1. From inside of right door, drive out headless straight pin (1) and remove door handle (2).

NOTE

For right rear door perform step 2. For side door perform step 3.

2. Remove two cotter pins (15) and upper and lower door locking bars (5 and 14) from door case assembly (16). Discard cotter pins.
3. Remove three cotter pins (4) from three latch assemblies (7) and upper and lower door locking bars (5 and 14). Discard cotter pins.



TA702099

5-20. RIGHT REAR DOOR AND SIDE DOOR LOCKS REPLACEMENT (M313, EARLY MODEL) (Con't).

4. Remove two screws (13) and locking bar grommets (12) from door (11).
5. Remove 12 screws (6) and three latch assemblies (7) from door (11).
6. Remove four screws (3) and door case assembly (16) from door (11).
7. Remove three screws (10), outside door handle (9), and gasket (8) from door (11). Discard gasket.

b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F–138°F (38°C–59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect door case assembly and latch assemblies for ease of operation.
3. Inspect locking bars from cracks, bends, or breaks. Straighten any minor bends.
4. Replace any defective parts.

c. INSTALLATION

1. Position outside door handle (9) and new gasket (8) in place on door (11) and install three screws (10).
2. Position door case assembly (16) in place on inside of door (11) and install four screws (3).
3. Position three latch assemblies (7) in place on inside of door (11) and install 12 screws (6).
4. Install two screws (13) and locking bar grommets (12) on inside of door (11).

NOTE

For right rear door perform step 5. For side door go to step 6.

5. Position upper and lower door locking bars (5 and 14) on door case assembly (16) and install two new cotter pins (15).
6. Position upper and lower locking bars (5 and 14) in place on three latch assemblies (7) and install three new cotter pins (4).
7. Position inside door handle (2) in place on shaft with holes aligned and install headless straight pin (1).
8. Lubricate door case assembly (16) and latch assemblies (7) in accordance with Lubrication Instructions (Chapter 3, Section I).

5-21. LEFT REAR DOOR LOCK REPLACEMENT (M313, LATE MODEL).

This Task Covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Removal b. Cleaning and Inspection | <ul style="list-style-type: none"> c. Installation |
|--|---|

Initial Setup:

Materials/Parts:

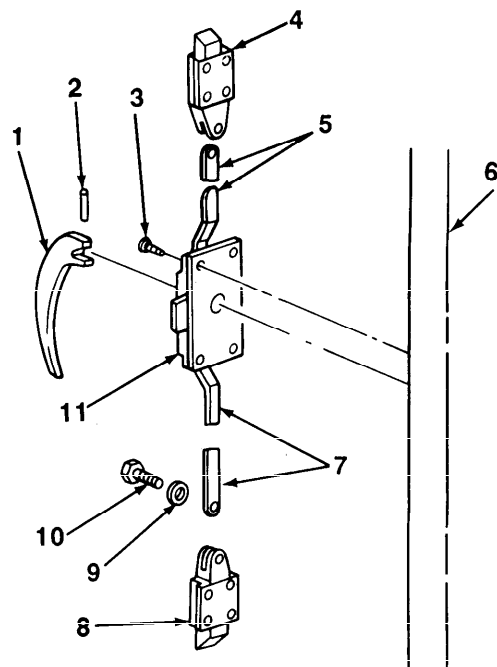
- Dry cleaning solvent (Item 14, Appendix E)
- Two lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

a. REMOVAL

1. Remove two capscrews (10) and lockwashers (9) from upper and lower connecting links (5 and 7) and upper and lower door bolts (4 and 8). Discard lockwashers.
2. Drive out grooved headless straight pin (2) and remove door handle (1) from center case (11).
3. Remove twelve screws (3), center case (11), and upper and lower door bolts (4 and 8) from door (6).



b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.

TA702100

5-21. LEFT REAR DOOR LOCK REPLACEMENT (M313, LATE MODEL) (Con't).

2. Inspect center case and door bolts for ease of operation.
3. Inspect connecting links for cracks, bends, or breaks. Straighten any minor bends.
4. Replace any defective parts.

c. INSTALLATION

1. Position center case (11) and upper and lower door bolts (4 and 8) in place on door (6) and install twelve screws (3).
2. Position door handle (1) in place on center case shaft and align holes. Install grooved headless straight pin (2).
3. Position upper and lower connecting links (5 and 7) on upper and lower door bolts (4 and 8).
4. Install two capscrews (10) and new lockwashers (9) to secure upper and lower connecting links (5 and 7).
5. Lubricate center case (11) and upper and lower door bolts (4 and 8) in accordance with Lubrication Instructions (Chapter 3, Section I).

5-22. LEFT REAR DOOR LOCK REPLACEMENT (M313, EARLY MODEL).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | c. Installation |
| b. Cleaning and Inspection | |

Initial Setup:

Materials/Parts:

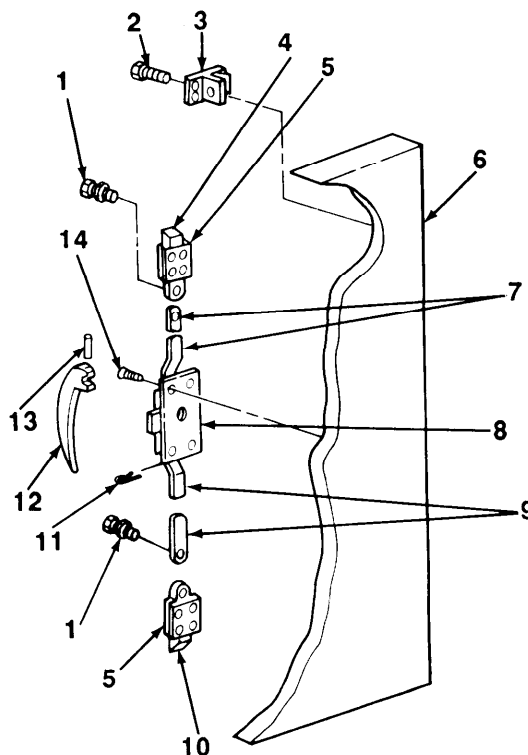
- Dry cleaning solvent (Item 14, Appendix E)
- Two cotter pins

Tools/Test Equipment:

- General mechanic's tool kit

a. REMOVAL

1. Remove two cotter pins (11) and disconnect upper and lower locking rods (7 and 9) from case assembly (8). Discard cotter pins.
2. Remove two screws (1) with assembled washers from upper and lower locking rods (7 and 9) and locking bolts (4 and 10). Remove locking rods and bolts.
3. Drive out grooved headless straight pin (13) from door handle (12). Remove door handle from case assembly (8).
4. Remove twelve screws (14), case assembly (8), and two guide brackets (5) from door (6).
5. Remove six screws (2) and three catch strikes (3) from door (6).



b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.

TA702101

5-22. LEFT REAR DOOR LOCK REPLACEMENT (M313, EARLY MODEL) (Con't).

2. Inspect case assembly for ease of operation.
3. Inspect locking rods, locking bolts, and guide brackets for cracks, bends, or breaks. Straighten any minor bends.
4. Inspect catch strikes for cracks or excessive wear.
5. Replace any defective parts.

c. INSTALLATION

1. Position three catch strikes (3) in place on door (6) and install six screws (2).
2. Position case assembly (8) and two guide brackets (5) in place on door (6) and install twelve screws (14).
3. Position door handle (12) in place on shaft of case assembly (8) and install grooved headless straight pin (13).
4. Position upper and lower locking rods (7 and 9) on upper and lower locking bolts (4 and 10). Install two screws (1) with assembled washers.
5. Install upper and lower locking bolts (4 and 10) in guide brackets (5) and upper and lower locking rods (7 and 9) on case assembly (8).
6. Connect upper and lower locking rods (7 and 9) in case assembly (8) with two new cotter pins (11).
7. Lubricate case assembly (8) in accordance with Lubrication Instructions (Chapter 3, Section I).

5-23. LEFT AND RIGHT REAR DOOR LOCK REPLACEMENT (M447, M447C, M749, AND M750).

This Task Covers:

- | | |
|----------------------------|------------------------------|
| a. Removal (Left Door) | d. Installation (Right Door) |
| b. Removal (Right Door) | e. Installation (Left Door) |
| c. Cleaning and Inspection | |
-

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
- One seal
- One spring pin
- Two cotter pins
- Twenty-six lockwashers

Tools/Test Equipment:

- General mechanic's tool kit
-

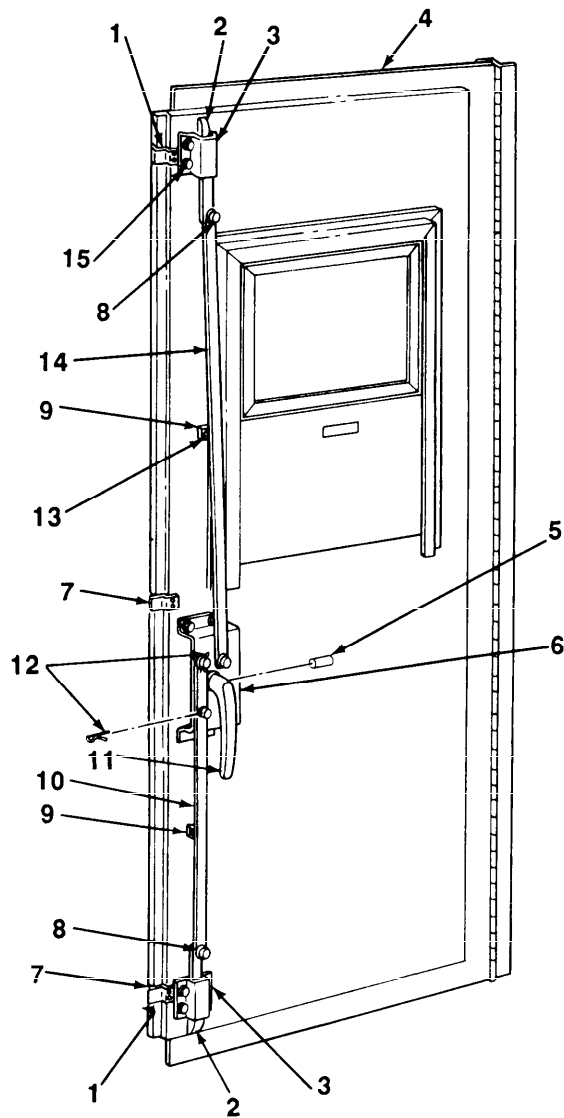
a. REMOVAL (LEFT DOOR)

1. Remove two cotter pins (12), connecting link and locking rod (10 and 14), and bolts (2) from case assembly (6) and two guides (3). Discard cotter pins.
2. Remove two screws (8), lockwashers, and connecting link and locking rod (10 and 14) from two bolts (2). Discard lockwashers.
3. Remove twelve screws (15), lockwashers, case assembly (6), and two guides (3) from door (4). Discard lockwashers.
4. Drive out headless straight pin (5) from handle (11) and case assembly (6). Remove handle.
5. Remove two screws (13) and locking bar bumpers (9) from door (4).
6. Remove nine screws (7) and three latch strikes (1) from edge of door (4).

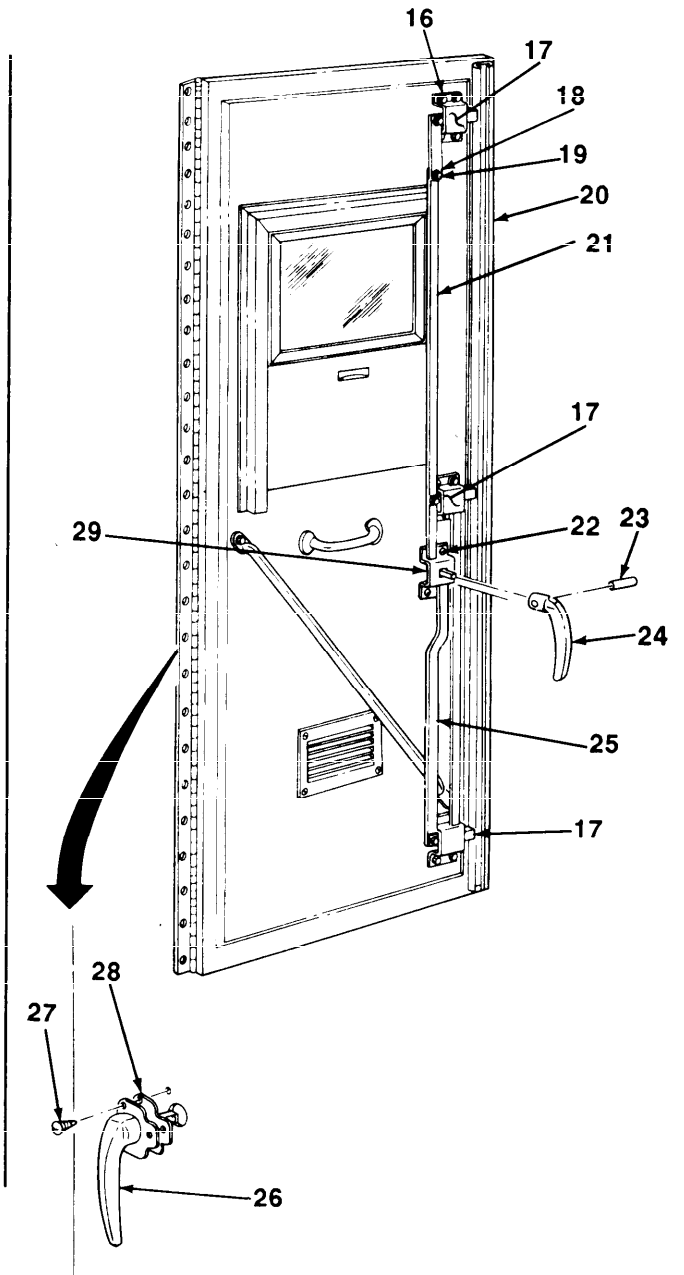
b. REMOVAL (RIGHT DOOR)

1. Drive out spring pin (23) from inside handle (24) and case assembly (29). Remove inside handle. Discard spring pin.
2. Remove twelve screws (16), lockwashers, three latch assemblies (17), and upper and lower locking rods (21 and 25) from door (20). Discard lockwashers.
3. Remove four screws (22) and case assembly (29) from door (20).
4. Remove two screws (18) and locking bar bumpers (19) from door (20).
5. Remove three screws (27), outside handle (26), and seal (28) from exterior side of door (20). Discard seal.

5-23. LEFT AND RIGHT REAR DOOR LOCK REPLACEMENT (M447, M447C, M749, AND M750) (Con't).



M749 LEFT REAR DOOR



M749 RIGHT REAR DOOR

5-23. LEFT AND RIGHT REAR DOOR LOCK REPLACEMENT (M447, M447C, M749, AND M750) (Con't).

c. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F–138°F (38°C–59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect case assembly and latch assemblies for ease of operation.
3. Inspect locking bars for cracks, bends, or breaks. Straighten any minor bends.
4. Replace defective parts as necessary.

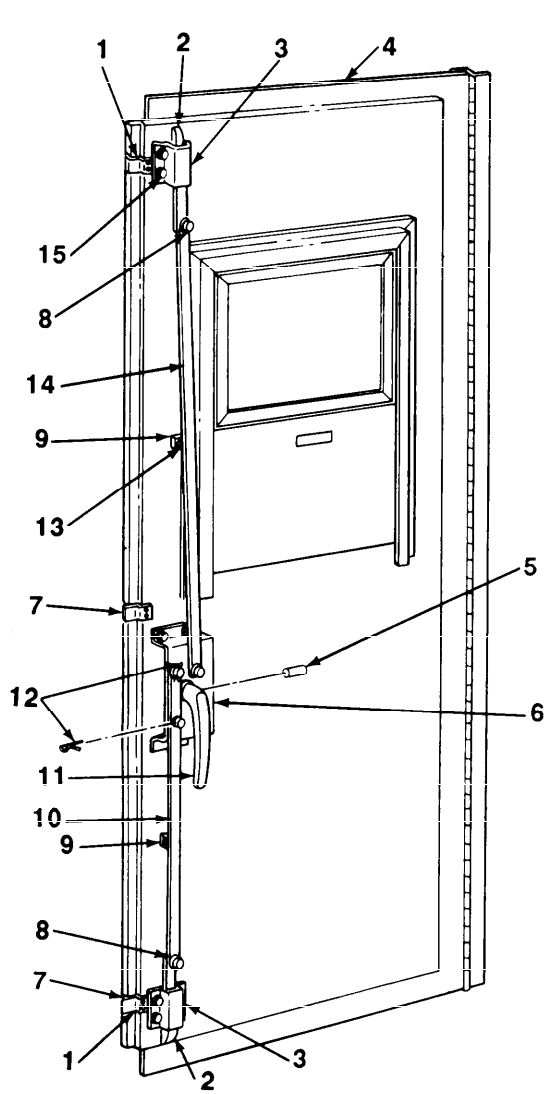
d. INSTALLATION (RIGHT DOOR)

1. Position outside handle (26) and new seal (28) in place on exterior side of door (20) and install three screws (27).
2. Install two screws (18) and locking bar bumpers (19) on door (20).
3. Position case assembly (29) in place on door (20) and install four screws (22).
4. Position three latch assemblies (17) and upper and lower locking rods (21 and 25) in place and install twelve screws (16) and new lockwashers on door (20).
5. With outside handle (26) in a vertical position, install inside handle (24) on case assembly (29) horizontal to floor.
6. Aline holes in inside handle (24) and case assembly shaft and install with new spring pin (23).

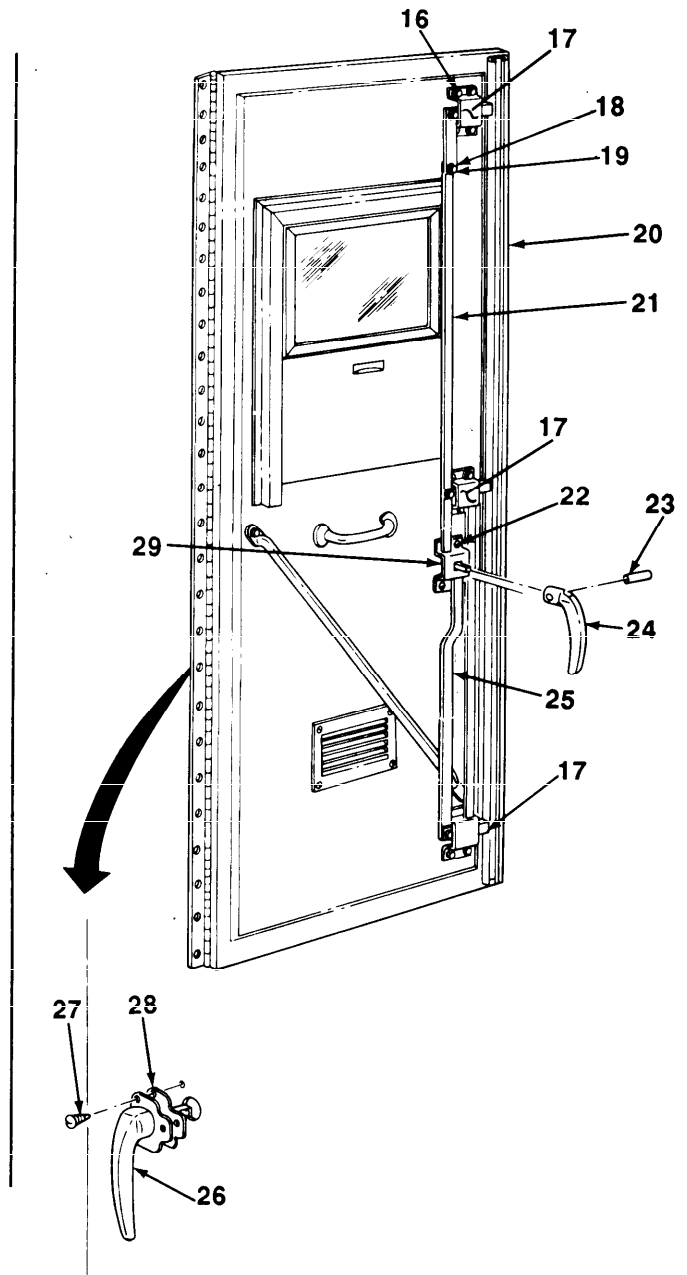
e. INSTALLATION (LEFT DOOR)

1. Position three latch strikes (1) in place on door (4) and install nine screws (7).
2. Install two screws (13) and locking bar bumpers (9) on door (4).
3. Position handle (11) in place on shaft of case assembly (6) and install headless straight pin (5).
4. Position case assembly (6) and two guides (3) in place on door (4) and install twelve screws (15) and new lockwashers.
5. Install two bolts (2) on ends of connecting link and locking rod (10 and 14) with two screws (8) and new lockwashers.
6. Position bolts (2) in guides (3) and connecting link and locking rod (10 and 14) on case assembly (6). Install two new cotter pins (12) to secure.

5-23. LEFT AND RIGHT REAR DOOR LOCK REPLACEMENT (M447, M447C, M749, AND M750) (Con't).



M749 LEFT REAR DOOR



M749 RIGHT REAR DOOR

5-24. SASH ASSEMBLY MAINTENANCE (M313).

This Task Covers:

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

Initial Setup:

Materials/Parts:

- Adhesive (Item 1, Appendix E)
- One sash seal
- Four rivets

Tools/Test Equipment:

- General mechanic's tool kit
-

a. REMOVAL

1. Remove eighteen screws (11) and window and frame assembly (18) from door (3).
2. Remove 15 screws (1), guide (2), and blackout panel (9) from inside of door (3).

b. DISASSEMBLY

1. Remove screws (10), separate window glass (14), and frame assembly (18). Remove seal (16) from window glass.
2. Turn two latches (17) holding lower end of brush screen (15) to frame assembly (18) 180° and remove brush screen.
3. Remove plastic cord retainer (4) from edge of screen (5) and remove screen from frame assembly (18).
4. Open window and remove sash seal (19) with knife. Discard sash seal.
5. Remove four rivets (13) securing hinge (12) and remove hinge. Discard rivets.
6. Remove four screws (7), nuts (8), and window operator (6) from frame assembly (18).

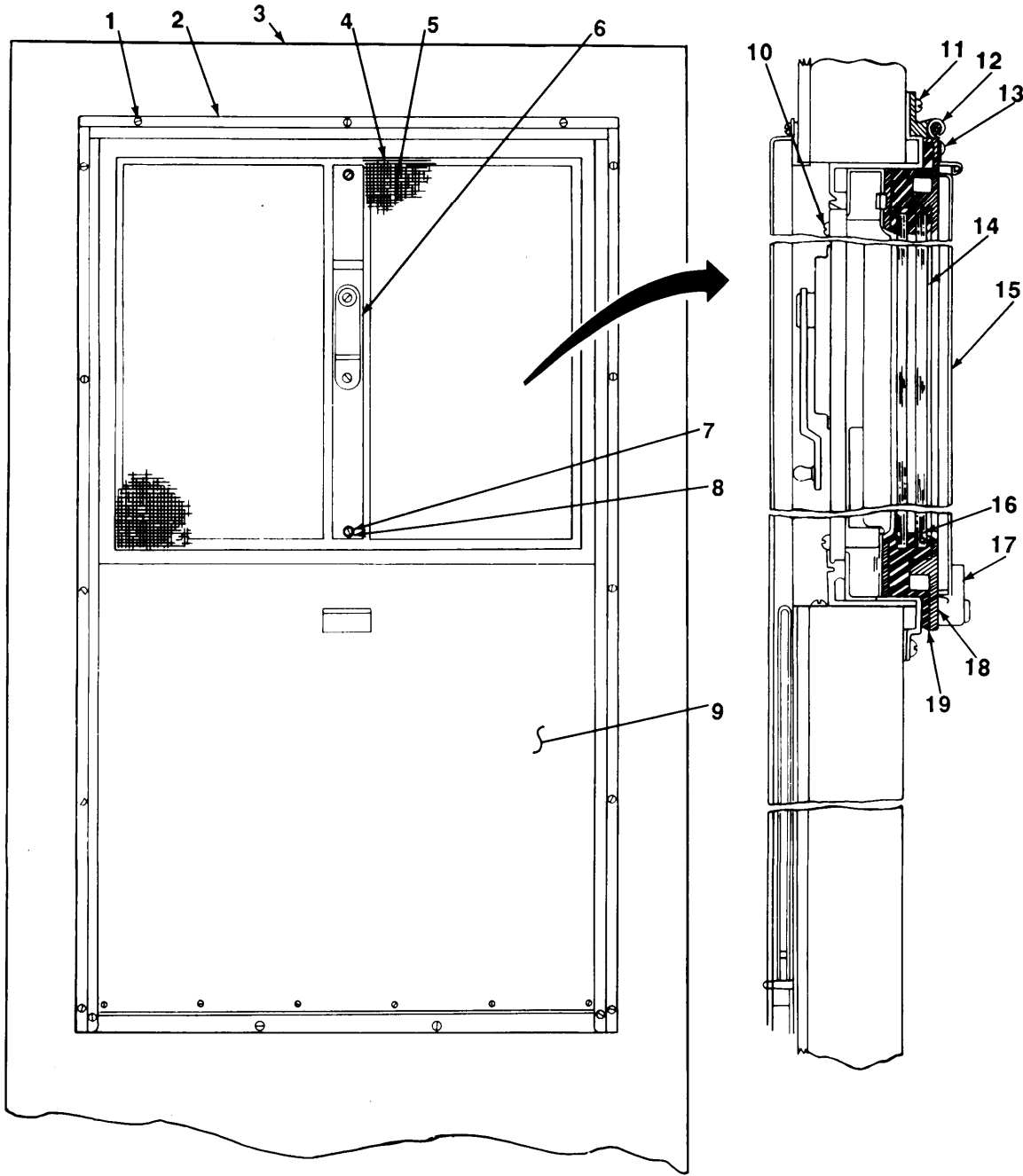
c. ASSEMBLY

1. Position window operator (6) in place in frame assembly (18) and install four screws (7) and nuts (8).
2. Position hinge (12) in place and install four new rivets (13).
3. Install new sash seal (19) with adhesive on window.
4. Position screen (5) in place on frame assembly (18) and install plastic cord retainer (4).
5. Position brush screen (15) in place on frame assembly (18), and turn two latches (17) 180° to secure lower end of brush screen.
6. Install seal (16) on window glass (14). Position window glass in frame assembly (18) and install screws (10).

d. INSTALLATION

1. Position blackout panel (9) and guide (2) in place on inside of door (3). Install 15 screws (1) to secure.
2. Install window and frame assembly (18) in place in window opening of door (3) and secure with eighteen screws (11).

5-24. SASH ASSEMBLY MAINTENANCE (M313) (Con't).



5-25. HINGED FLOOR MAINTENANCE (M313).

This Task Covers:

- | | |
|------------|-----------------|
| a. Removal | c. Installation |
| b. Repair | |
-

Initial Setup:

Equipment Conditions:

- Van body expanded (para 2-13).

Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Three

a. REMOVAL

1. While two people support hinged roof, disconnect wire rope assembly from counterbalance (para 4-60). Carefully lower hinged roof.
2. Remove eight screws (7) from four pivot assemblies (6) and hinged floor (8).
3. Remove 118 screws (11) from hinge (10), van body, and hinged floor (8). Remove rubber strip (9).
4. Remove hinged floor (8) from retractable beams.
5. Remove 60 screws (5), four seal retainers (4), and seals (3) from hinged floor (8).

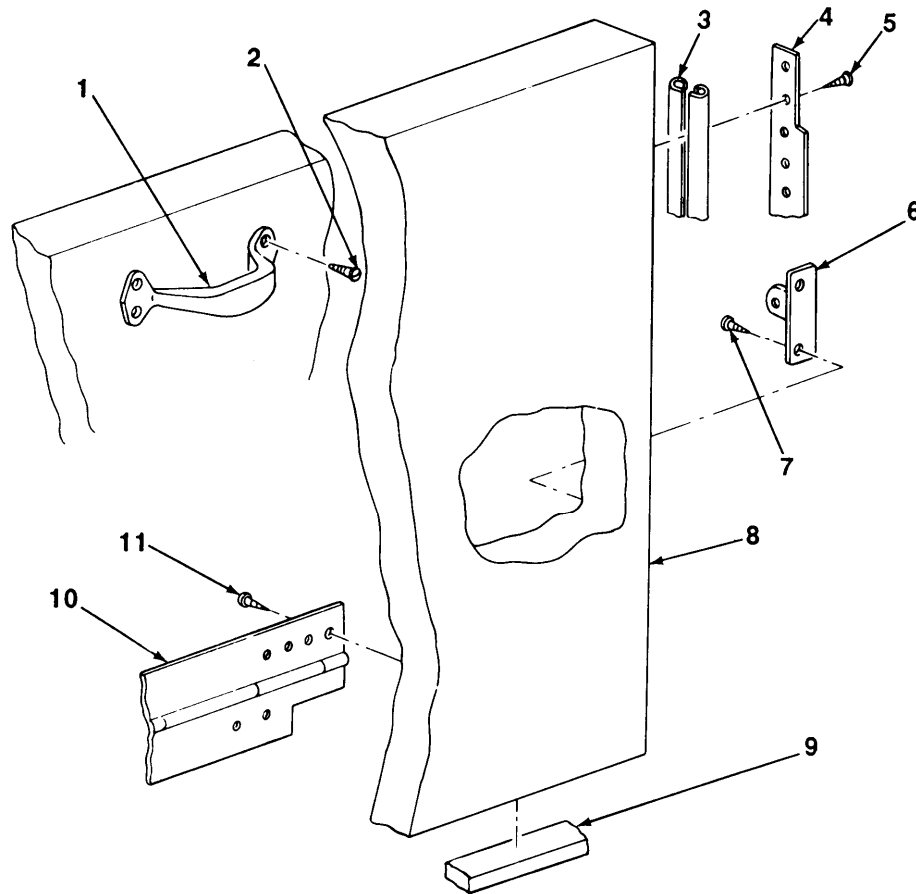
b. REPAIR

1. inspect seals (3) and seal retainers (4) for cracks, breaks, or tears.
2. Inspect handle (1) for cracks, bends, or breaks. If defective, remove two screws (2) and replace handle.
3. Replace any badly damaged parts. Straighten bent metal parts if possible.

c. INSTALLATION

1. Position four seals (3) and seal retainers (4) on hinged floor (8) and install 60 screws (5).
2. Position hinged floor (8) in place on retractable beams with hinged side toward van body.
3. Position rubber strip (9) and hinge (10) in place on hinged floor (8). Install 118 screws (11) in hinge, van body, and hinged floor.
4. Aline holes in pivot assembly (6) and hinged floor (8) and install eight screws (7).
5. While two people carefully raise hinged roof, connect wire rope assembly to counterbalance assembly (para 4-60).

5-25. HINGED FLOOR MAINTENANCE (M313) (Con't).



FOLLOW-ON TASKS:

- Retract van body (para 2-13).

5-26. HINGED ROOF MAINTENANCE (M313).

This Task Covers:

- | | |
|-------------------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning, Inspection, and Repair | |
-

Initial Setup:

Equipment Conditions:

- Van body expanded (para 2-13).

Tools/Test Equipment:

- General mechanic's tool kit
- Hoist
- Sling

Materials/Parts:

- Two gaskets
- Six cotter pins

Personnel Required: Three

a. REMOVAL

1. Support hinged roof (18) in open position with sling and hoist.
2. Disconnect wire rope assembly from counterbalance (para 4-60).
3. Remove eight screws (11) and four pivot assemblies (10) from hinged roof (18).
4. Remove 75 screws (2) from hinge (1) and van body and lower hinged roof (18) to ground.

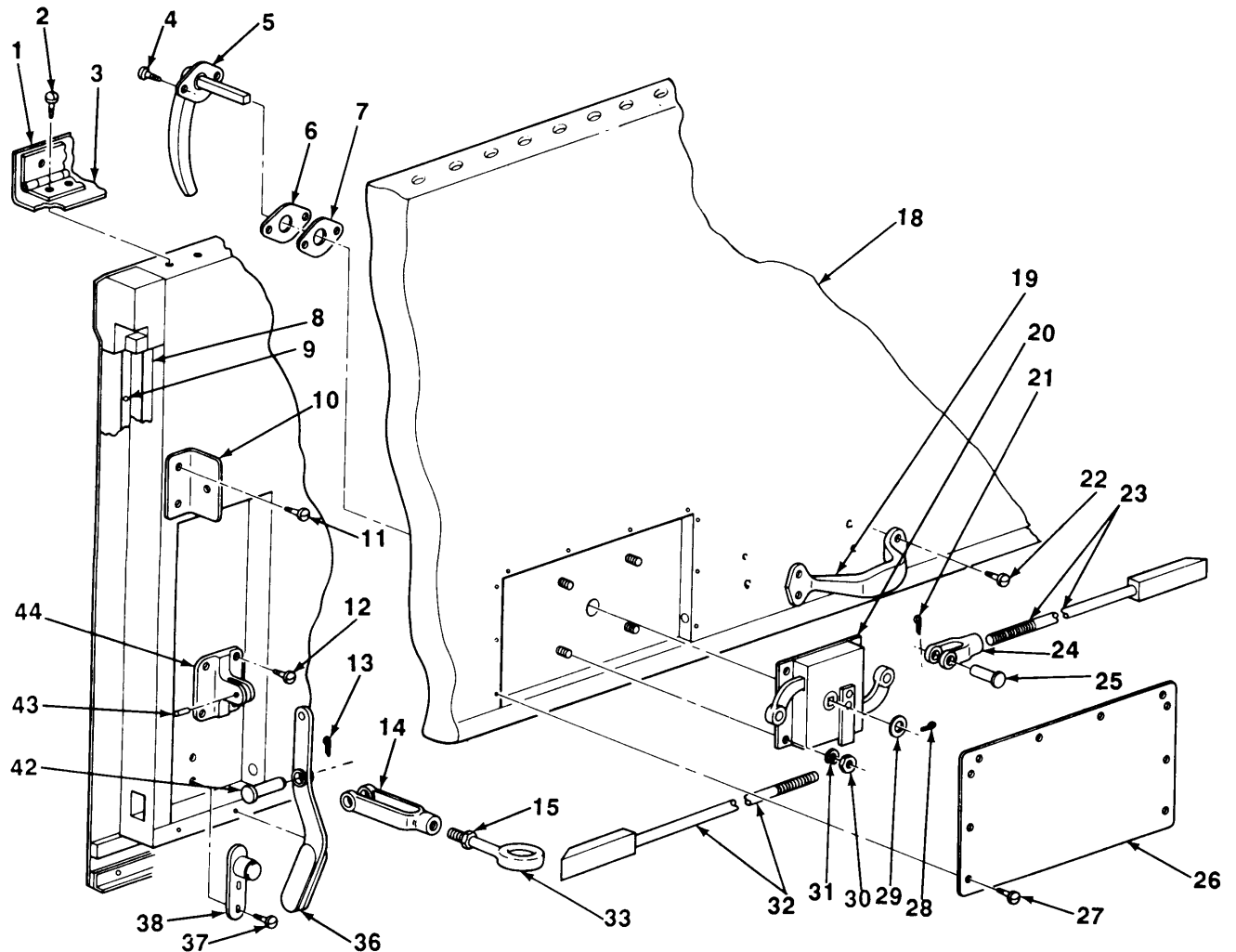
b. DISASSEMBLY I

1. Remove 75 screws (2), hinge (1), and rubber strip (3) from hinged roof (18).
2. Remove 20 screws (27) and two access covers (26) from hinged roof (18).
3. Remove two cotter pins (21) and headed straight pins (25) from two locking bar rod end clevises (24) and latch (20). Remove locking bar rod end clevises from latch. Discard cotter pins.
4. Perform step 3 for remaining two clevises (24) and latches (20).
5. Remove eight nuts (30), lockwashers (31), and two latches (20) from hinged roof (18).
6. Slide four locking bars (23 and 32) out of hinged roof (18).
7. Remove cotter pins (28), washers (29), two screws (4), handle (5), and two gaskets (6 and 7) from hinged roof (18). Discard gaskets and cotter pins.
8. Remove 12 screws (12) and three clamp assembly yolks (44) with assembled handles (36), clevises (14), eyebolts (33), and nuts (15) from hinged roof (18).
9. Remove four screws (22) and handle (19) from hinged roof (18).

c. CLEANING, INSPECTION, AND REPAIR

1. Clean parts with steam or water.
2. Inspect latch for ease of operation.
3. Inspect locking bars for cracks, bends, or breaks.

5-26. HINGED ROOF MAINTENANCE (M313) (Con't).

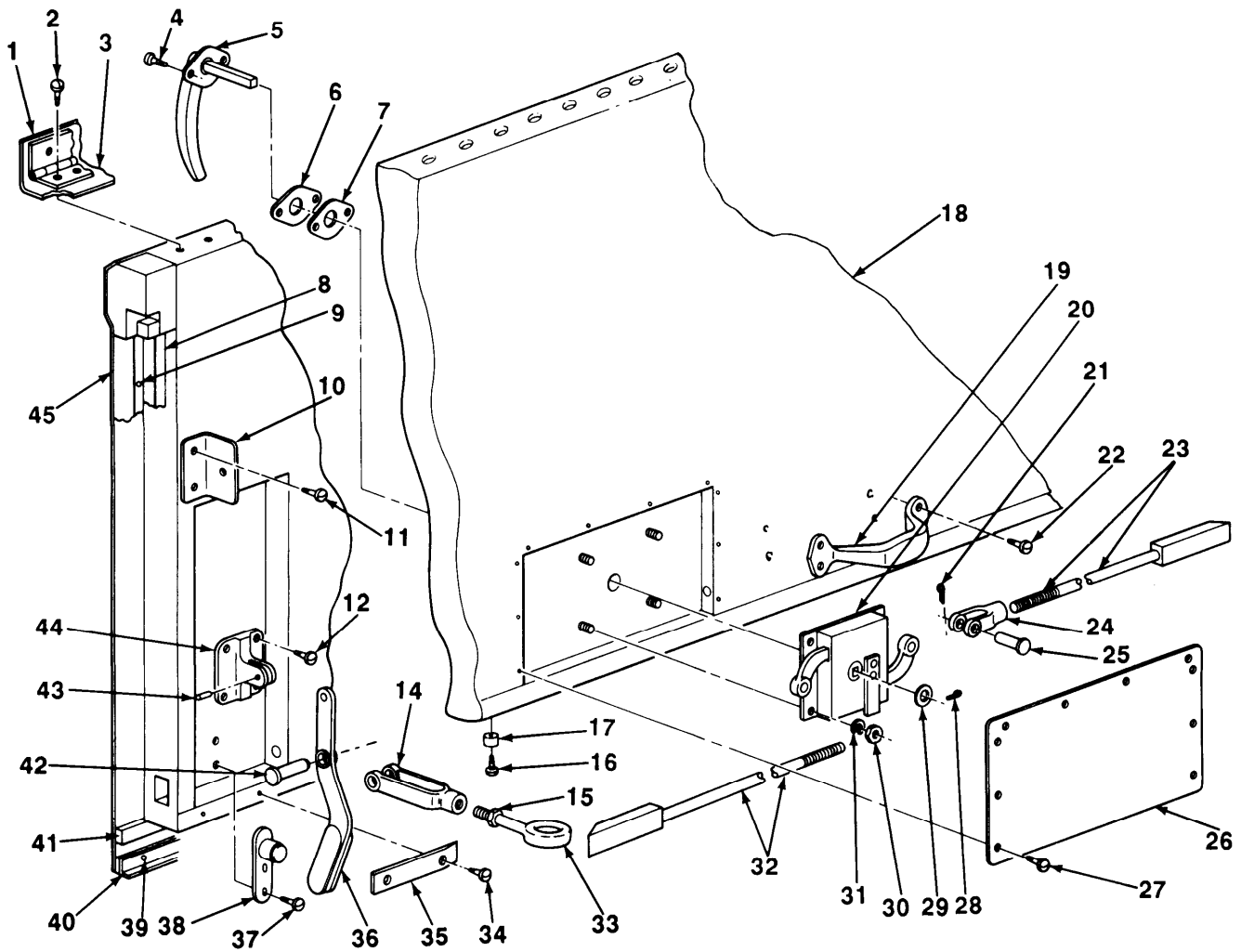


4. Inspect clamp assemblies for cracks, bends or breaks. If defective, perform steps 5-8. If okay, go to step 9.
5. Remove cotter pin (13) and headed straight pin (42) from handle (36). Remove handle, eyebolt (33), and nut (15) from clevis (14) and discard cotter pin.
6. Inspect holder assemblies (38) for cracks, bends, or breaks. If defective, remove two screws (37) and replace holder assemblies.
7. Drive out pin (43) and remove handle (36) from yoke (44). Discard pin (43) and replace damaged parts.
8. Position handle (36) on yoke (44) and install new pin (43). Position handle, eyebolt (33), and nut (15) on clevis (14) and install headed straight pin (42) and new cotter pin (13).

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5-26. HINGED ROOF MAINTENANCE (M313) (Con't).

9. Inspect seals (8, 40, 41, and 45) and retainers (9 and 35) for cracks, bends, or tears. If defective, remove rivets (34 and 39) as necessary and replace damaged parts.
10. Inspect bumpers (17) for damage. If defective, remove screw (16) and replace bumper.
11. Replace any badly damaged parts. Straighten bent metal parts if possible.



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5-26. HINGED ROOF MAINTENANCE (M313) (Con't).

d. ASSEMBLY

1. Position handle (19) in place on hinged roof (18) and install four screws (22).
2. Position three clamp assembly yolks (44) with assembled handles (36), clevises (14), eyebolts (33), and nuts (15) in place on hinged roof (18) and install 12 screws (12).
3. Position two new gaskets (6 and 7) and handle (5) in place on outside of hinged roof (18) and install two screws (4), washers (29), and new cotter pins (28).
4. Slide three locking bars (23 and 32) in place through ends of hinged roof (18).
5. Position two latches (20) in place on hinged roof (18) and install eight nuts (30) and new lockwashers (31).
6. Position four locking bar rod end clevises (24) in place on two latches (20) and install four headed straight pins (25) and new cotter pins (21).
7. Position two access covers (26) in place on hinged roof (18) and install 20 screws (27).
8. Position rubber strip (3) and hinge (1) in place on edge of hinged roof (18) and install 75 screws (2).

e. INSTALLATION

1. Using sling and hoist, raise hinged roof (18) in place on van body and install 75 screws (2) in hinge (1) and van body.
2. Aline mounting holes in four pivot assemblies (10) and hinged roof (18) and install eight screws (11).
3. Connect wire rope assembly to counterbalance assembly (para 4-60).
4. Remove sling and hoist.

FOLLOW-ON TASKS:

- Retract van body (para 2-13).

5-27. SOLID SIDE ASSEMBLY MAINTENANCE (M313).

This Task Covers:

- a. Cleaning and Inspection
- b. Disassembly
- c. Assembly

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
- Two cotter pins
- Two gaskets
- Four lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

a. CLEANING AND INSPECTION

1. Expand side wall of van body, but do not lower hinged floor or raise hinged roof (para 2-13).
2. Clean side wall (1) of van body with steam or water.
3. Inspect seals (4, 9, and 12), strap (8), and angle bracket (2) around edge of side wall for cracks, breaks, or tears. If defective, remove screws (10) and nuts (7) or rivets (3) as required, and replace defective parts.
4. Inspect eight hook assemblies (6) for cracks, bends, or breaks. If defective, remove two bolts (5) and replace hook assemblies.
5. Inspect four sash assemblies for ease of operation or visual damage. If defective, replace sash assembly (para 5-24).
6. Inspect side door assembly for cracks, bends, breaks, or other damage. If defective, replace side door assembly (para 5-17).
7. Replace any badly damaged parts. Straighten bent metal parts if possible.

b. Disassembly

NOTE

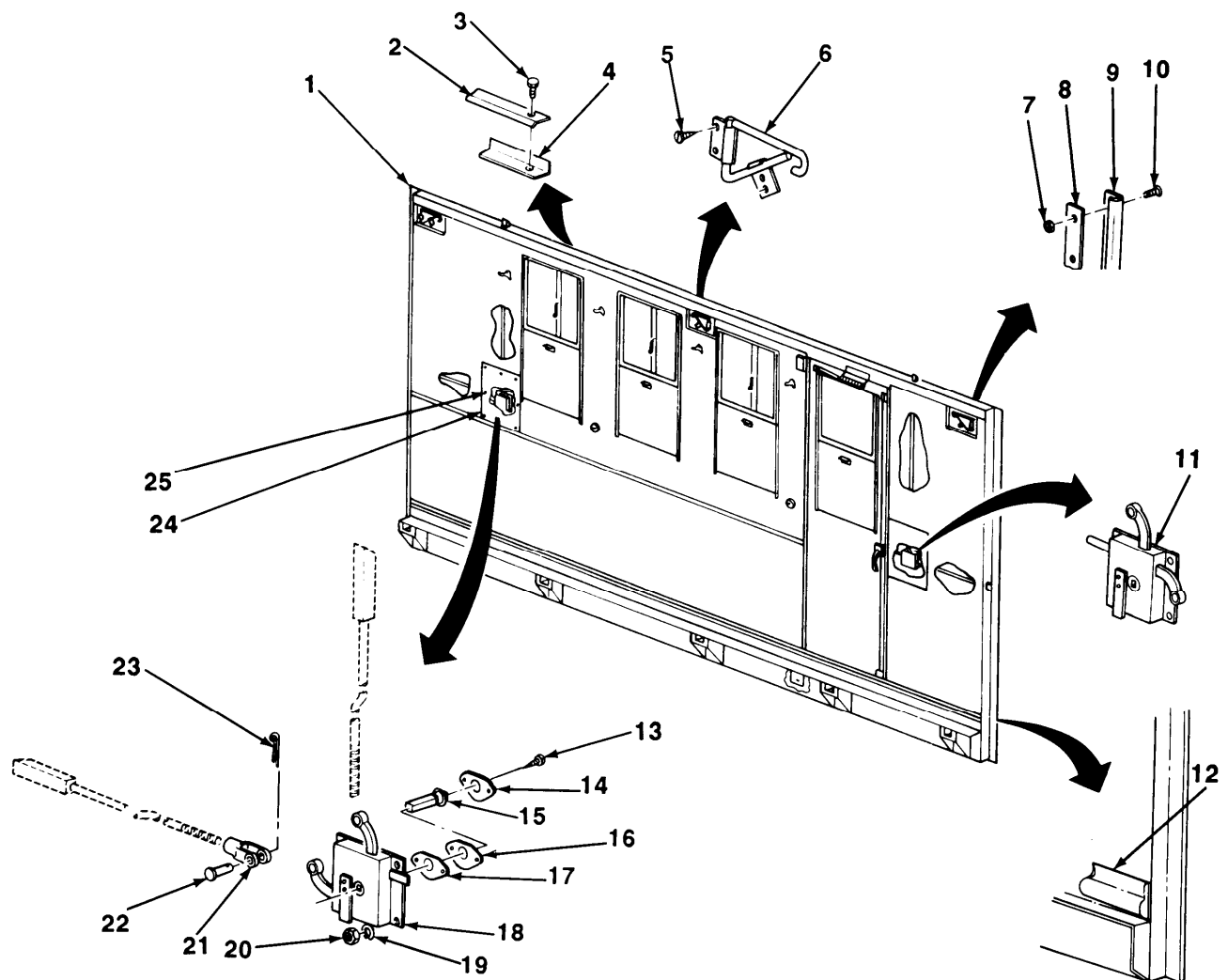
Use steps 1 through 3 to remove left or right, front or rear, latch assemblies. Right front latch assembly is shown.

1. Remove eight screws (25) and access cover (24) from inside of side wall (1).
2. Remove two cotter pins (23) and straight headed pins (22) from two locking bar rod end clevises (21). Discard cotter pins.
3. Remove four nuts (20), lockwashers (19), and latch assembly (11 or 18) from sidewall (1). Discard lockwashers.
4. Remove two screws (13), retaining plate (14), bolt (15), and gaskets (16 and 17). Discard gaskets.
5. Inspect latch assembly (11 or 18) for ease of operation.

c. ASSEMBLY

1. Lubricate latch assembly in accordance with Lubrication Instructions (Chapter 3, Section I).
2. Position two new gaskets (16 and 17), bolt (15), and retaining plate (14) in place on exterior of sidewall (1) over latch hole and secure with two screws (13).

5-27. SOLID SIDE ASSEMBLY MAINTENANCE (M313) (Con't).



3. Position latch assembly (11 or 18) in place on inside of side wall (1) and secure with four new lockwashers (19) and nuts (20).
4. Aline two locking bar rod end clevises (21) with holes in latch assembly (11 or 18) and install two straight headed pins (22) and new cotter pins (23).
5. Position access cover (24) in place on inside of side wall (1) and install eight screws (25).
6. Retract van body side wall (para 2-13).

5-28. END PANEL DOOR REPLACEMENT (M313).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | c. Installation |
| b. Cleaning and Inspection | |
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit
-

Personnel Required: Three

a. REMOVAL

NOTE

Use this task to remove either left or right front, and rear end panel doors.

1. Expand side of van body where end panel door (8) is to be removed (para 2-13).
2. Support end panel door (8) with two people and remove 32 screws (10) and end panel door from van body.
3. Remove 32 screws (12), hinge (11), and rubber strip (13) from end panel door (8).

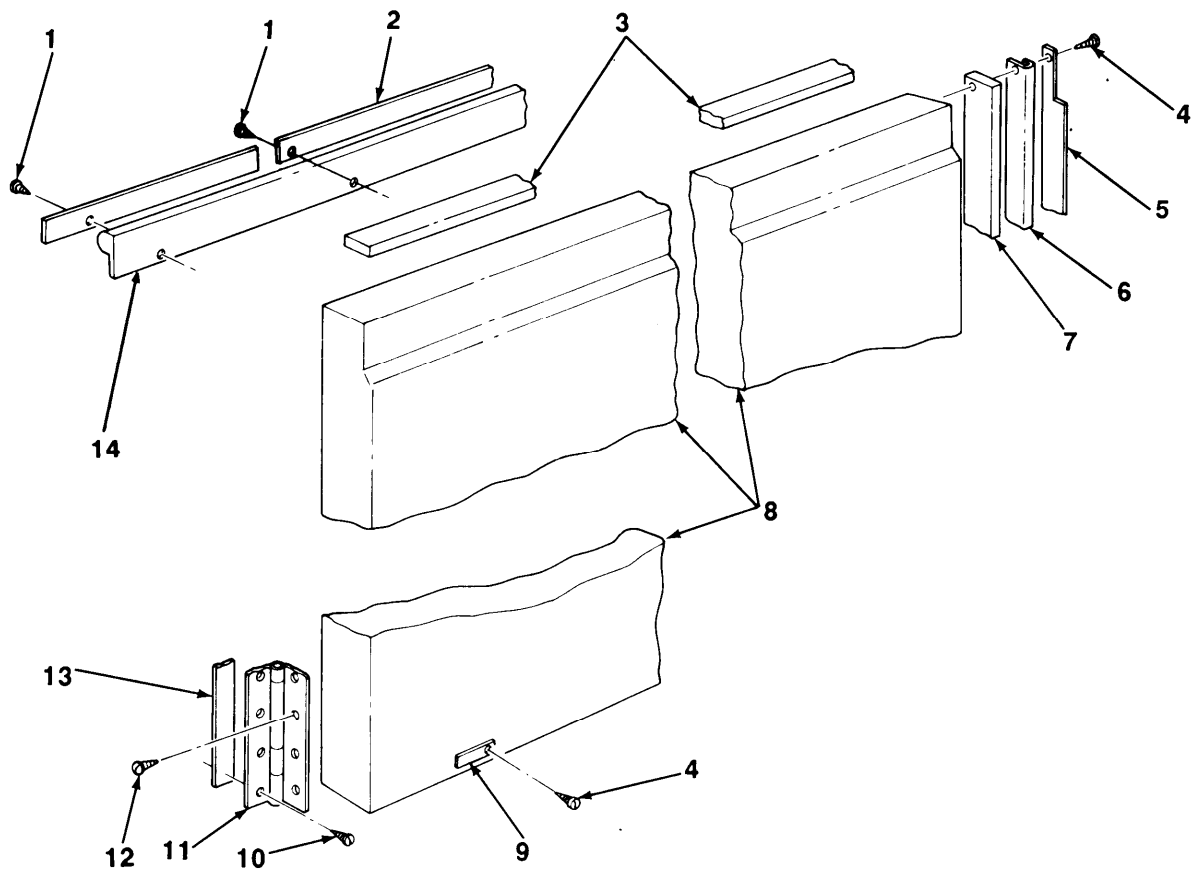
b. CLEANING AND INSPECTION

1. Clean end panel door with steam, or water.
2. Inspect seal (6), rubber strips (3 and 7), nonmetallic special shaped section (14), and retainers (2,5, and 15) for cracks, bends, breaks or tears. If defective, remove screws (1 or 4) as necessary and replace defective parts.
3. Inspect end panel door for cracks, bends or dents. Straighten any minor bends.
4. Inspect strap (9) for cracks, bends, or breaks.
5. Replace any badly damaged parts.

c. INSTALLATION

1. Position hinge (11) and rubber strip (13) in place on edge of end panel door (8) and secure with 32 screws (12).
2. Position end panel door (8) in place on van body and support with two people.
3. Secure end panel door (8) to van body with 32 screws (10).
4. Retract van body (para 2-13).

5-28. END PANEL DOOR REPLACEMENT (M313) (Con't).



5-29. FOLDING SIDE DOOR MAINTENANCE (M447, M447C, M749, AND M750).

This Task Covers:

- | | |
|---|---|
| a. Upper Folding Side Door Removal | d. Lower Folding Side Door Removal |
| b. Upper Folding Side Door Repair | e. Lower Folding Side Door Repair |
| c. Upper Folding Side Door Installation | f. Lower Folding Side Door Installation |
-

Initial Setup:

Tools/Test Equipment:

- General mechanic's tool kit
- Hoist
- Sling
- Two jackstands

Personnel Required: Three

a. UPPER FOLDING SIDE DOOR REMOVAL

1. Open upper and lower folding side doors (para 2-14).
2. Support lower folding side door with jackstands.
3. Using sling and hoist to support upper folding side door (4), disconnect wire rope assembly from counterbalance assembly (para 4-61, 4-62, or 4-63).
4. Remove eight screws (6) from pivot assemblies (5) and upper folding side door (4).
5. Remove 52 screws (10) from hinge (12), door seal (11), and van body. Remove upper folding side door (4) from van body with hoist.
6. Remove 52 screws (10), hinge (12), and door seal (11) from upper folding side door (4).

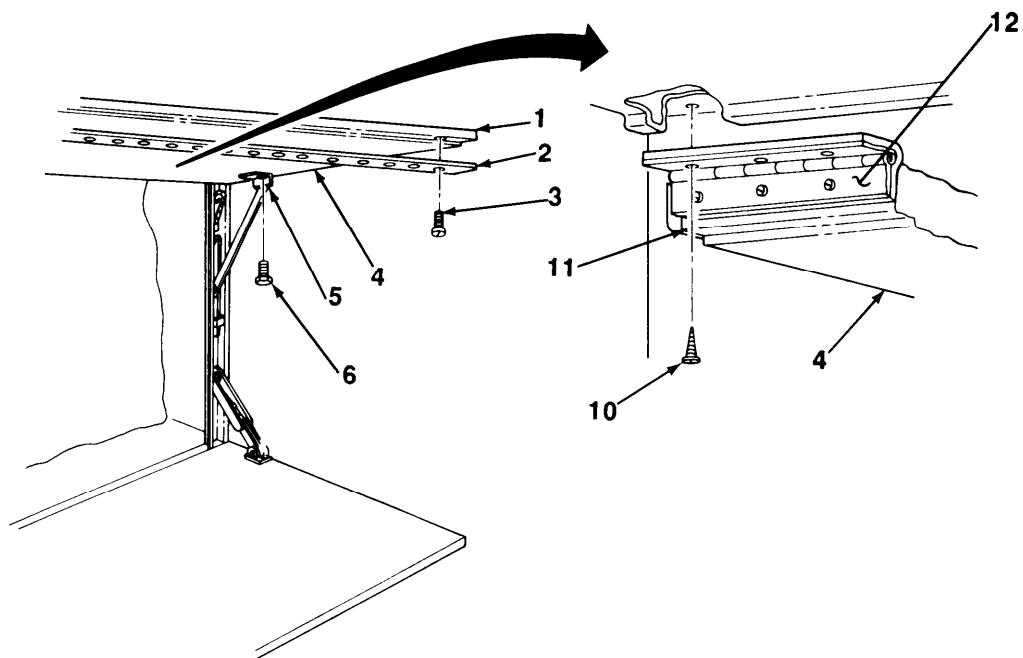
b. UPPER FOLDING SIDE DOOR REPAIR

1. Inspect three sash assemblies for cracks or breaks. If defective, replace sash assembly (para 5-24).
2. Inspect seals (1) and retainers (2) around edge of upper folding side door (4) for cracks, breaks or tears. If defective, remove rivets (3) as required and replace damaged parts.
3. Replace any badly damaged parts. Straighten bent metal parts if possible.

c. UPPER FOLDING SIDE DOOR INSTALLATION

1. Position door seal (11) and hinge (12) in place on upper folding side door (4) and install 52 screws (10).
2. Using chain and hoist, raise upper folding side door (4) into position on van body.
3. Install 52 screws (10) in hinge (12), door seal (11), and van body.
4. Aline mounting holes in pivot assemblies (5) and upper folding side door (4) and install eight screws (6).
5. Connect wire rope assembly to counterbalance assembly (para 4-61, 4-62, or 4-63). Remove chain, hoist, and jackstands.
6. Close upper and lower folding side doors (para 2-14).

5-29. FOLDING SIDE DOOR MAINTENANCE (M447, M447C, M749, AND M750) (Con't).



5-29. FOLDING SIDE DOOR MAINTENANCE (M447, M447C, M749, AND M750) (Con't).

d. LOWER FOLDING SIDE DOOR REMOVAL I

NOTE

Use this task to remove M447, M447C, M749, and M750 folding side doors. M447 model van is shown.

1. Remove 70 screws (20), retainer (19), and canvas seal (18) from lower folding side door (9).
2. Remove eight blind rivets (23), four retainers (22), and seal ends (21) from van body.
3. Remove 70 screws (17), retainer (16), and nonmetallic seal (18) from van body.
4. Open upper and lower folding side doors (para 2-14).
5. Support lower folding side door with jackstands.
6. While two people support upper folding side door, disconnect wire rope assembly from counterbalance assembly (para 4-61, 4-62, or 4-63).
7. Carefully lower upper folding side door to closed position.
8. Remove eight screws (7) from pivot assemblies (8) and lower folding side door (9).
9. Remove 50 screws (15) from hinge (14) and van body. Remove lower folding side door (9).
10. Remove 50 screws (13) and hinge (14) from lower folding side door (9).

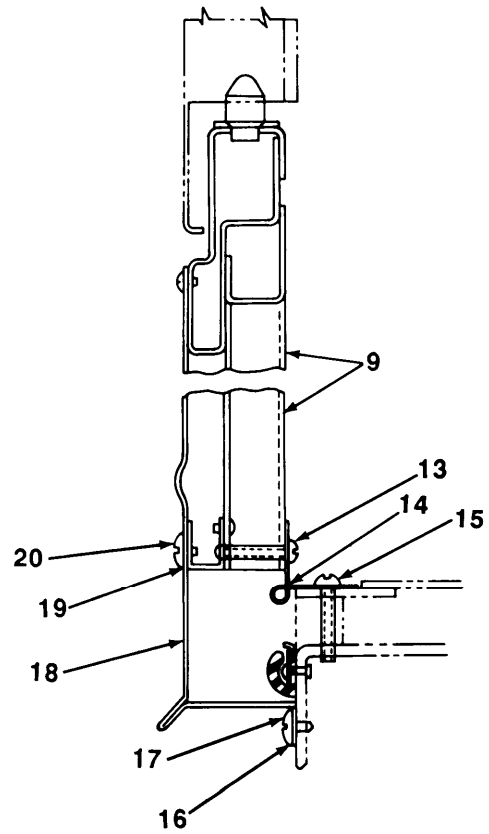
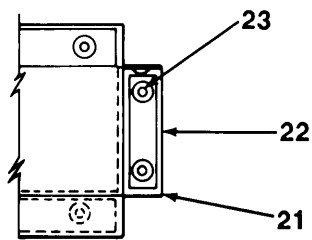
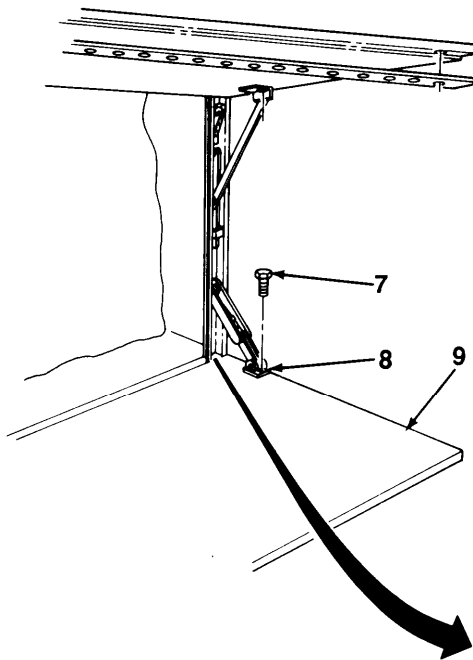
e. LOWER FOLDING SIDE DOOR REPAIR

Replace any badly damaged parts. Straighten bent metal parts if possible.

f. LOWER FOLDING SIDE DOOR INSTALLATION

1. Position hinge (14) in place on lower folding side door (9) and install 50 screws (13).
2. Position lower folding side door (9) in place on van body supported with jackstands.
3. Install 50 screws (15) in hinge (14) and van body.
4. Aline mounting hole in pivot assemblies (8) and lower folding side door (9) and install eight screws (7).
5. While two people support upper folding side door in open position, connect wire rope assembly to counterbalance assembly (para 4-61, 4-62, or 4-63).
6. Close upper and lower folding side doors (para 2-14).
7. Position nonmetallic seal (18) and retainer (16) in place on van body and install 70 screws (17).
8. Position seal ends (21) and four retainers (22) in place on van body and install eight blind rivets (23).
9. Install canvas seal (18), retainer (19), and 70 screws (20) in lower folding side door (9).

5-29. FOLDING SIDE DOOR MAINTENANCE (M447, M447C, M749, AND M750) (Con't).



5-30. BONNET FRONT DOOR MAINTENANCE (M313 AND M447C).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |

Initial Setup:

Equipment Conditions:

- Bonnet front door linkage removed (para 4-64).

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)

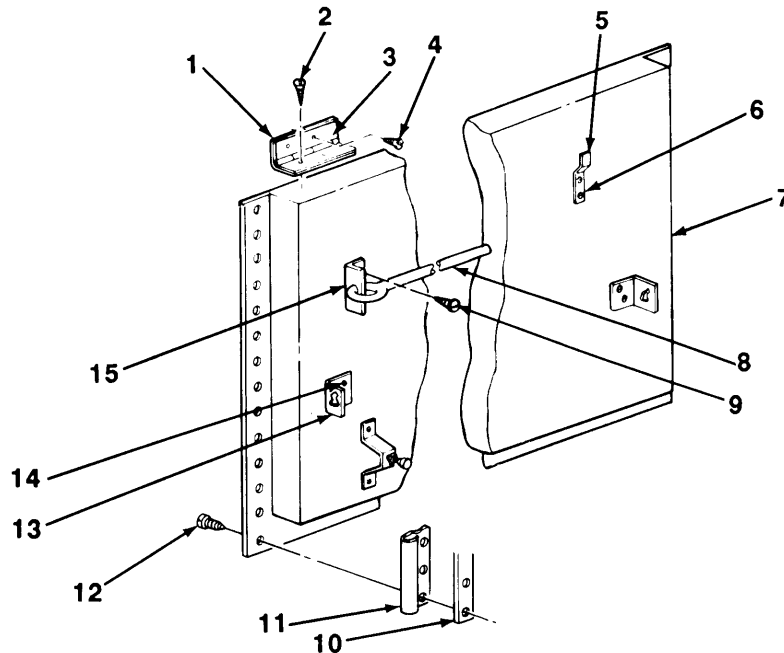
Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Three

a. REMOVAL

1. With two people supporting bonnet front door (7), remove 19 screws (4), hinge (3), and rubber strip (1) from bonnet front door.
2. Remove bonnet front door (7) from air conditioner enclosure and set on clean work surface.



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5-30. BONNET FRONT DOOR MAINTENANCE (M313 AND M447C) (Con't).

b. DISASSEMBLY

1. Remove two screws (6) and support rod holder bracket (5) from bonnet front door (7).
2. Remove two screws (9), support rod (8), and bracket (15) from bonnet front door (7).
3. Remove four screws (14) and two control rod brackets (13) from bonnet front door (7).
4. Remove 19 screws (2), hinge (3), and rubber strip (1) from bonnet front door (7).
5. If seal (11) is damaged, remove rivets (12) as required, seal, and retainer (10). Discard seal.

c. CLEANING AND INSPECTION**WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect bonnet front door for cracks, bends, or tears.
3. Inspect parts for cracks, bends, breaks, or excessive wear. Straighten any minor bends.
4. Replace defective parts as necessary.

d. ASSEMBLY

1. If removed, position new seal (11) and retainer (10) in place on bonnet front door (7) and secure with new rivets (12).
2. Install rubber strip (1) and hinge (3) on bonnet front door (7) with 19 screws (2).
3. Position two control rod brackets (13) in place on bonnet front door (7) and install four screws (14).
4. Position support rod (8) and bracket (15) in place on bonnet front door (7) and install two screws (9).
5. Position support rod holder bracket (5) in place on bonnet front door (7), with open end toward hinge side of door. Install two screws (6) to secure.

e. INSTALLATION

1. Position bonnet front door (7) in place on air conditioner enclosure and support with two people.
2. Install 19 screws (4), rubber strip (1), and hinge (3) on bonnet front door (7) and air conditioner enclosure.

FOLLOW-ON TASKS:

- Install bonnet front door linkage (para 4-64).

5-31. BONNET SIDE DOOR REPLACEMENT (M313, M447, M447C, M749, AND M750).

This Task Covers:

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

Initial Setup:

Materials/Parts:

- Two lockwashers

Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Two

NOTE

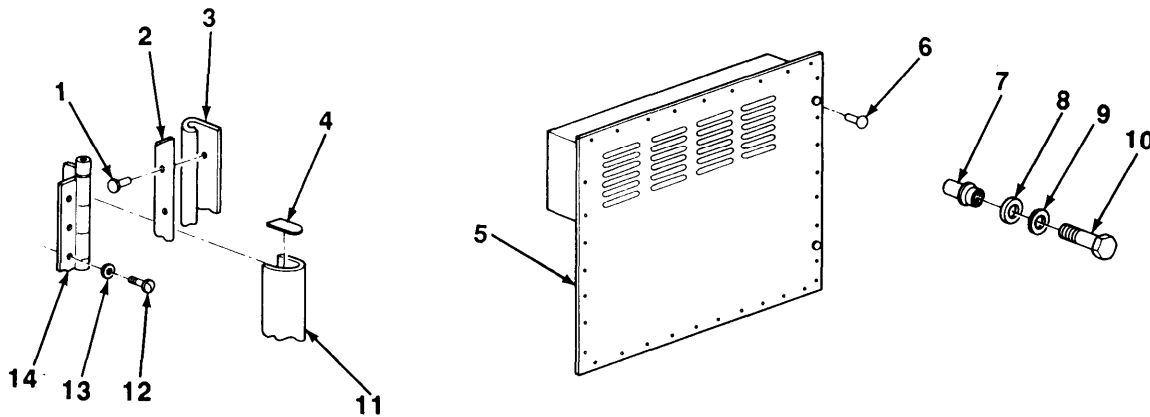
Use this task for replacement of the left and right bonnet side doors. Quantities of parts may vary between models. Right side of M447, M447C, and M750 is shown.

a. REMOVAL

NOTE

M313, M447, M447C, and M750, perform step 1. M749, perform step 2.

1. Remove two screws (10), lockwashers (9), and grommets (8) from rivet nuts (7) and door assembly (5). Discard lockwashers.
2. Remove two screws (10) and lockwashers (9) from door assembly (5). Discard lockwashers.
3. Remove screws (12) and lockwashers (13) from hinge (14), rubber strip (11), and gasket (4), and remove door assembly (5). Discard lockwashers.



b. CLEANING AND INSPECTION

1. Clean door assembly with steam or water.
2. Inspect door assembly for cracks, bends, or breaks.

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**5-31. BONNET SIDE DOOR REPLACEMENT (M313, M447, M447C, M749, AND M750)
(Con't).**

3. Inspect seal (2), seal strip (3), rubber strip, and gasket. If defective, drill out rivets (1 or 6) as required and replace.
4. Inspect rivet nuts for damage or stripped threads. If defective, drill out and replace as required.

I c. INSTALLATION |

1. Position hinge (14), rubber strip (11), gasket (4), and door assembly (5) in place and install screws (12) and new lockwashers (13) to secure door assembly.

NOTE

M313, M447, M447C, and M750, perform step 2. M749, perform step 3.

2. Close door assembly (5) and install two screws (10), new lockwashers (9), and grommets (8) in rivet nuts (7).
3. Close door assembly (5) and install two screws (10) and new lockwashers (9).

5-32. STOWAGE COMPARTMENT BOX DOOR MAINTENANCE (M749).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (item 14, Appendix E)
- Two cotter pins
- Forty-three lockwashers

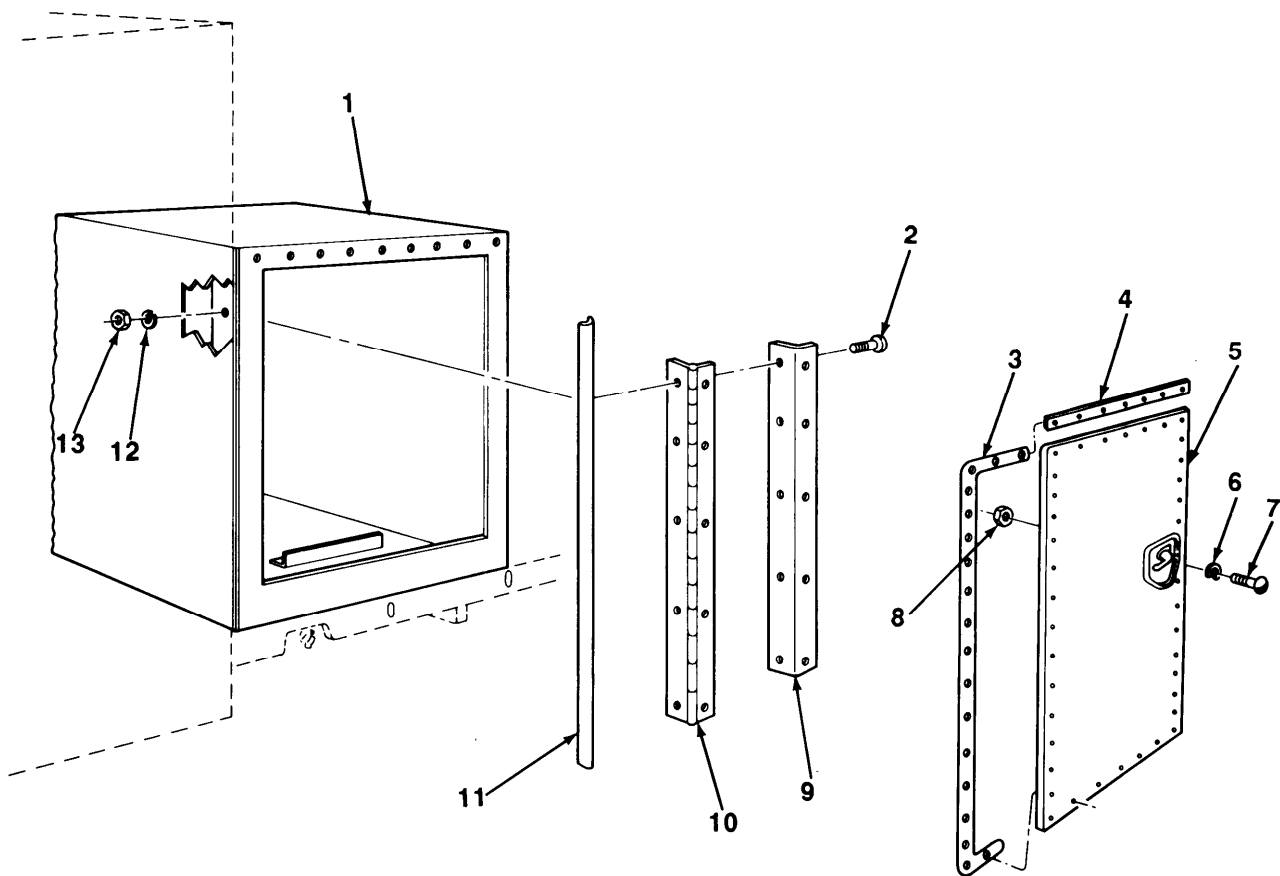
Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Two

a. REMOVAL

1. Open stowage compartment box door (5).
2. Remove five screws (2), lockwashers (12), nuts (13), stowage compartment box door (5), and seal (11) from stowage compartment box (1). Discard lockwashers.

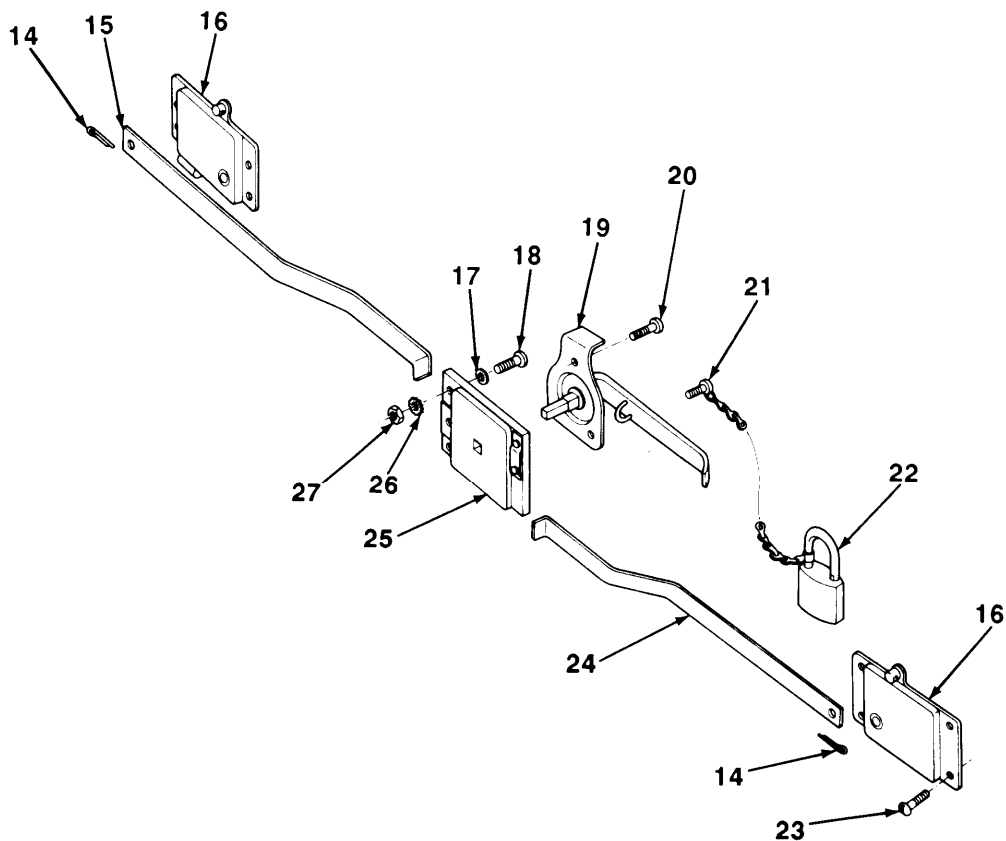


TA702114

5-32. STOWAGE COMPARTMENT BOX DOOR MAINTENANCE (M749) (Con't).

b. DISASSEMBLY I

1. Remove 30 screws (7), lockwashers (6), nuts (8), seal (3), two retainers (4), seal (9), and hinge (10) from stowage compartment box door (5). Discard lockwashers.
2. Remove two cotter pins (14) and upper and lower locking arms (15 and 24) from two latches (16). Discard cotter pins.
3. Remove four screws (18), lockwashers (17), lockwashers (26), nuts (27), and tumbler case subassembly (25) from stowage compartment box door (6). Discard lockwashers.
4. Remove eight screws (23) and two latches (16) from stowage compartment box door (5).
5. Remove three screws (20) and door handle (19) from stowage compartment box door (5).
6. Remove screw (21) and padlock (22).



TA702115

5-32. STOWAGE COMPARTMENT BOX DOOR MAINTENANCE (M749) (Con't).

c. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean parts with dry cleaning solvent and dry thoroughly.
2. Inspect tumbler case subassembly and latches for ease of operation.
3. Inspect locking arms for cracks, bends, or breaks. Straighten any minor bends.
4. Inspect door for cracks, bends, dents, or tears.
5. Inspect mounting hardware for cracks or stripped threads. Replace defective parts as necessary.

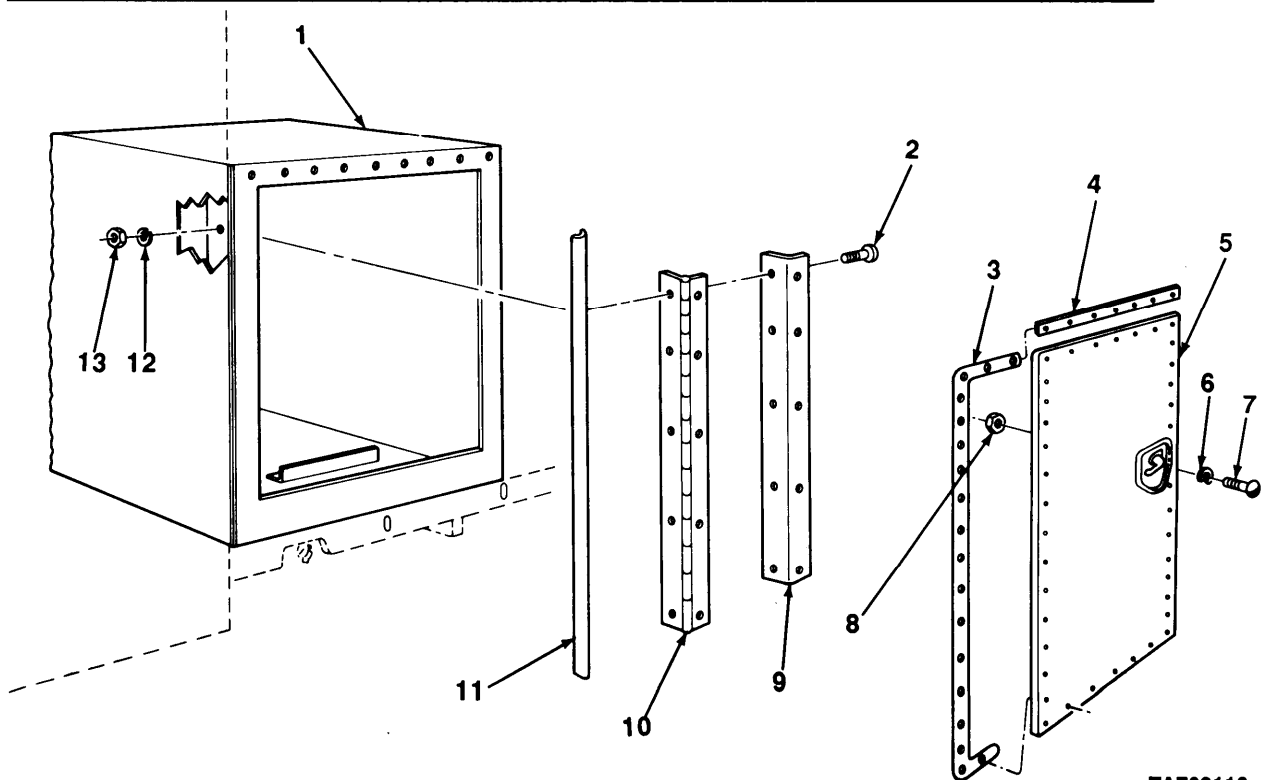
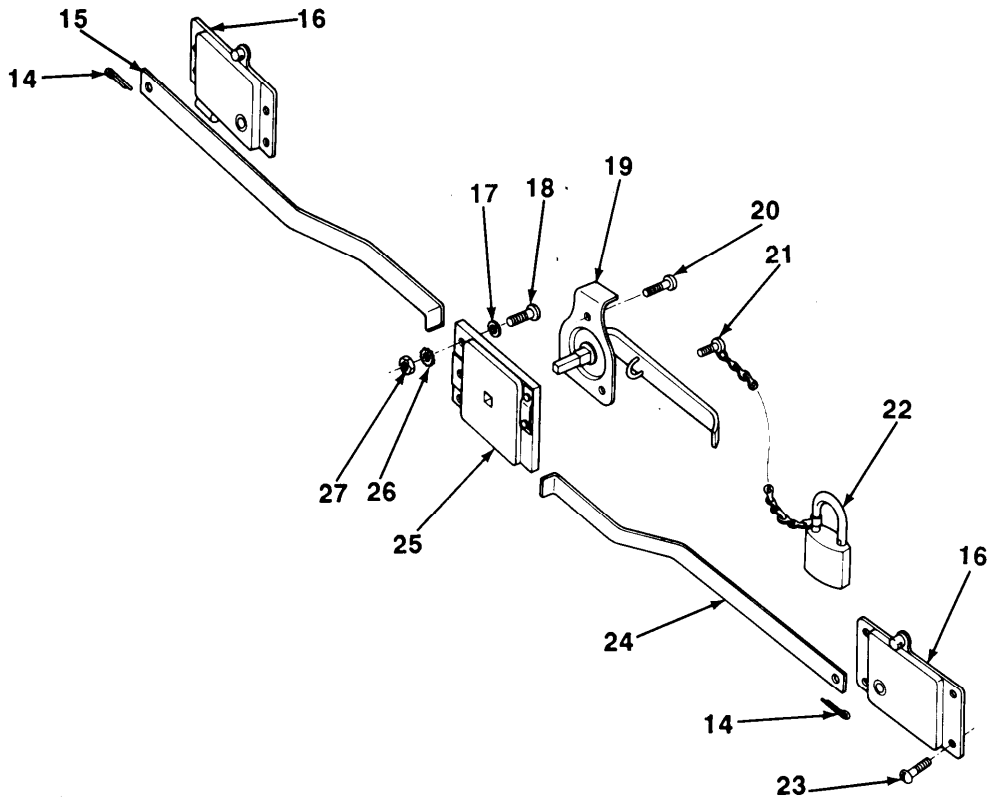
d. ASSEMBLY

1. Position door handle (19) in place on outer side of stowage compartment box door (5) and install three screws (20).
2. Install screw (21) and padlock (22) on stowage compartment box door (5).
3. Position two latches (16) in place on inside of stowage compartment box door (5) and install eight screws (23).
4. Position tumbler case subassembly (25) and upper and lower locking arms (15 and 24) in place on stowage compartment box door (5) and install four screws (18), new lockwashers (17), new lockwashers (26), and nuts (27).
5. Position locking arms (15 and 24) in place on two latches (16) and install two new cotter pins (14).
6. Position seal (9), hinge (10), seal (3), and two retainers (4) in place on stowage compartment box door (5) and install 30 screws (7), new lockwashers (6), and nuts (8).

e. INSTALLATION

1. Position seal (11) and stowage compartment box door (5) in place in stowage compartment box (1) and install five screws (2), new lockwashers (12), and nuts (13).
2. Close and latch stowage compartment box door (5).

5-32. STOWAGE COMPARTMENT BOX DOOR MAINTENANCE (M749) (Con't).



TA702116

5-33. STOWAGE COMPARTMENT BOX DOOR MAINTENANCE (M447, M447C, AND M750).

This Task Covers:

- | | |
|-------------------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning, Inspection, and Repair | |
-

Initial Setup:

Materials/Parts:

- Dry cleaning solvent (Item 14, Appendix E)
- Two cotter pins
- Twenty-four rivets

Tools/Test Equipment:

- General mechanic's tool kit

Personnel Required: Two

a. REMOVAL

1. Open stowage compartment box door (4).
2. Remove 12 rivets and remove stowage compartment box door (4) from stowage compartment box. Discard rivets.

b. DISASSEMBLY

1. Remove two cotter pins (6) and upper and lower lock-release levers (7 and 13) from rim latch sets (8). Discard cotter pins.
2. Remove 12 screws (12), case assembly (14), and two rim latch sets (8) from stowage compartment box door (4).
3. Remove six rivets (10) and two rivets (11) and remove door handle assembly (9). Discard rivets.

c. CLEANING, INSPECTION, AND REPAIR

WARNING

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes-and get medical aid.

1. Clean all parts with dry cleaning solvent and dry thoroughly.
2. Inspect case assembly and two rim latch sets for ease of operation.
3. Inspect lock-release levers for cracks, bends, or breaks. Straighten any minor bends.
4. Inspect door for cracks, bends, dents, or tears.
5. Inspect door seals (2) and retainers (1 and 5) for cracks, rips, or tears. If defective, drill out rivets (3) as necessary, and replace defective parts.
6. Inspect door hinge (16) for cracks, bends, or breaks. If defective, drill out 12 rivets (15), and remove hinge, gasket (18), and rubber strip (17). Replace defective parts as necessary.

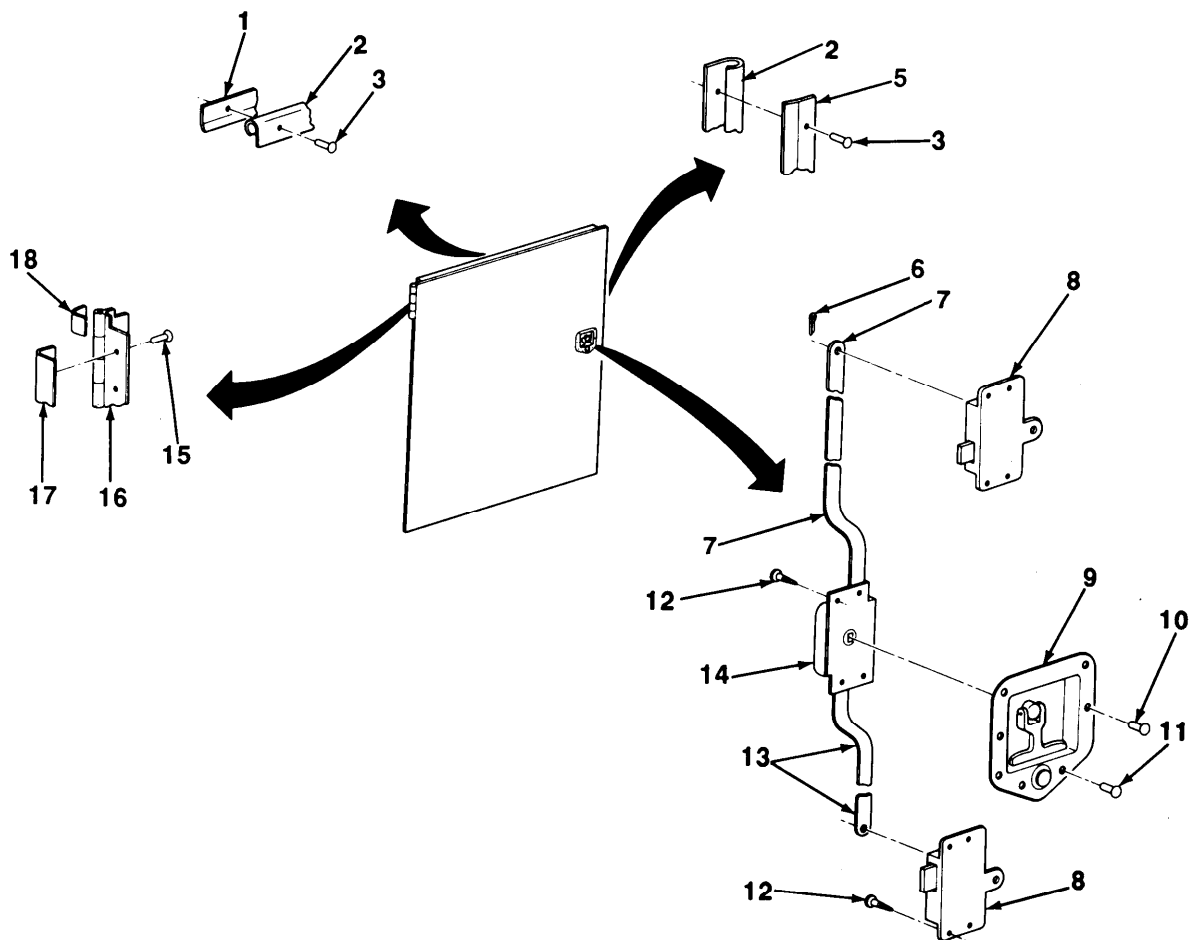
5-33. STOWAGE COMPARTMENT BOX DOOR MAINTENANCE (M447, M447C, AND M750) (Con't).

d. ASSEMBLY

1. Position door handle assembly (9) in place on outside of stowage compartment box door (4) and install six new rivets (10) and two new rivets (11).
2. Position case assembly (14) and two rim latch sets (8) in place on inside of stowage compartment box door (4) and install 12 screws (12).
3. Position upper and lower lock-release levers (7 and 13) in place on two rim latch sets (8) and install two new cotter pins (6).

e. INSTALLATION

1. Position stowage compartment box door (4) in place on stowage compartment box and install 12 new rivets.
2. Close and latch stowage compartment box door (4).



TA702117

5-34. PANEL STOWAGE CHEST MAINTENANCE (M447C).

This Task Covers:

- | | |
|----------------------------|-----------------|
| a. Removal | d. Assembly |
| b. Disassembly | e. Installation |
| c. Cleaning and Inspection | |
-

Initial Setup:

Materials/Parts:

- Twelve lockwashers

Tools/Test Equipment:

- General mechanic's tool kit
- Hoist

Personnel Required: Two

a. REMOVAL

NOTE

M447C van bodies have two panel stowage chests that are removed in the same manner.

1. Remove two screws (4), lockwashers (5), and nuts (6) from two strap assemblies (3 and 11) and two mounting angles (18). Discard lockwashers.
2. Remove six screws (1), lockwashers (2), and strap assemblies (3 and 11) from two panel stowage chests (12). Discard lockwashers.
3. Remove four screws (17), lockwashers (19), nuts (20), and mounting angles (18) from semitrailer. Discard lockwashers.
4. Remove eight screws (31) and nuts (29) from four angle mounting brackets (30).
5. Using hoist connected to two ring assemblies (7), lift panel stowage chest (12) from semitrailer and set on suitable work surface.
6. Repeat steps 4 and 5 for remaining panel stowage chest (12).

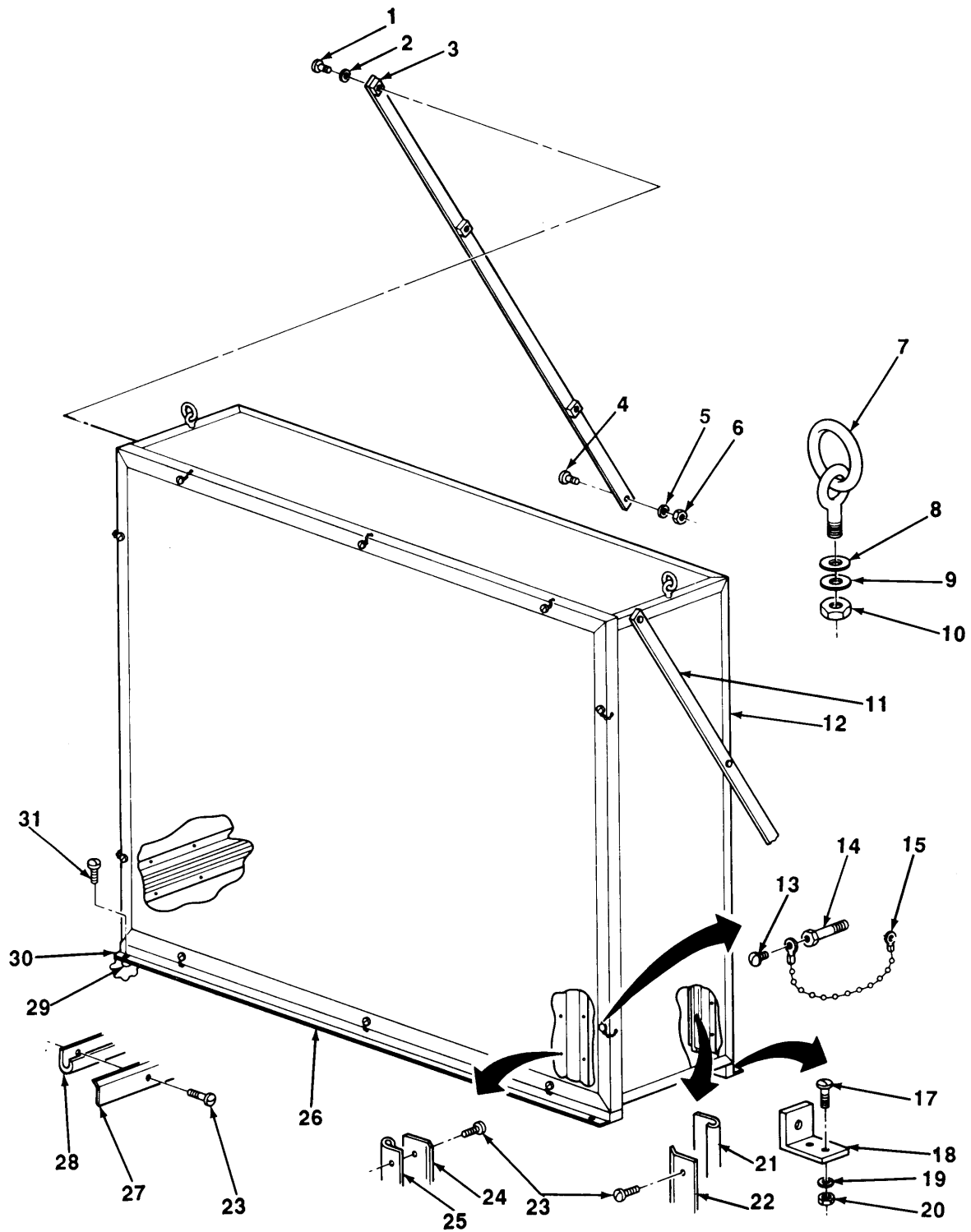
b. DISASSEMBLY

1. Remove ten bolts (14), screws (13), chains (15), and lid assembly (26) from panel stowage chest (12).
2. Remove two nuts (10), lockwashers (9), washers (8), and ring assemblies (7) from panel stowage chest (12). Discard lockwashers.

c. CLEANING AND INSPECTION

1. Clean panel stowage chest and lid assembly with steam or water.
2. Inspect panel stowage chest and lid assembly for cracks, bends, or dents. Straighten any minor bends or dents.
3. Inspect nonmetallic special seals (21, 25, and 28) and retainers (22, 24, and 27) for cracks, bends, or breaks. If defective, remove screws (23) as required and replace defective parts.

5-34. PANEL STORAGE CHEST MAINTENANCE (M447C) (Con't).



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5-34. PANEL STOWAGE CHEST MAINTENANCE (M447C) (Con't).

4. Inspect chains (15) for damage. If bad, remove rivet (16) and replace as necessary.
5. Inspect mounting hardware for cracks or stripped threads. Replace defective parts as necessary.

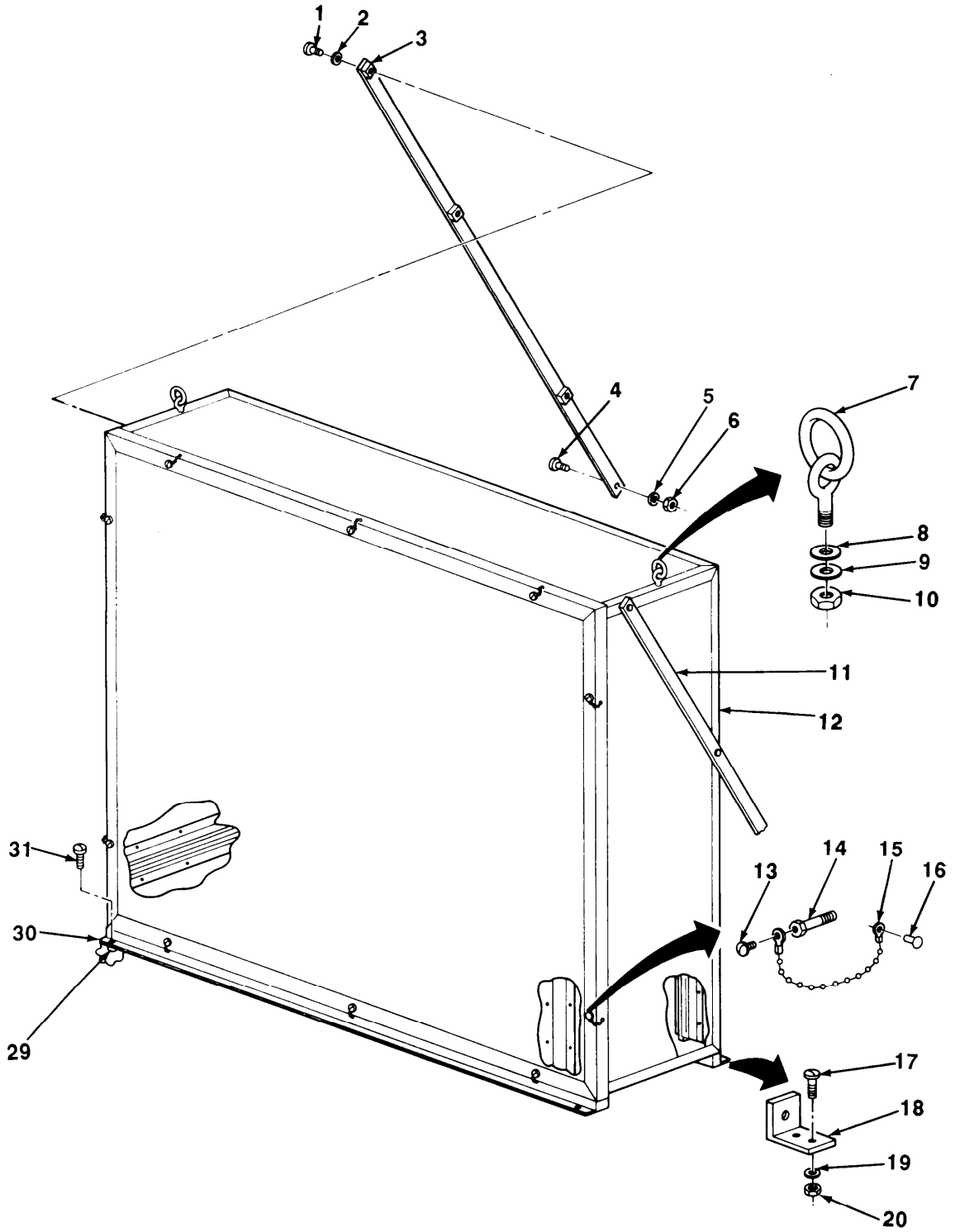
d. ASSEMBLY

1. Position two ring assemblies (7) in place on top of panel stowage chest (12) and Install washers (8), new lockwashers (9), and nuts (10).
2. Position lid assembly (26) in place on panel stowage chest (12). Install ten bolts (14), screws (13), and chains (15) to secure lid assembly (26).

e. INSTALLATION

1. Using hoist connected to two ring assemblies (7), lift panel stowage chest (12) in place on semitrailer,
2. Install eight screws (31) and nuts (29) in four angle mounting brackets (30).
3. Repeat steps 1 and 2 for remaining panel stowage chest (12).
4. Position two angle mounting brackets (18) in place on semitrailer and install four screws (17), new lockwashers (19), and nuts (20).
5. Position two strap assemblies (3 and 11) in place on mounting angles (18) and install two screws (4), new lockwashers (5), and nuts (6).
6. Aline holes in strap assemblies (3 and 11) with holes in panel stowage chests (12) and install six screws (1) and new lockwashers (2).

5-34. PANEL STOWAGE CHEST MAINTENANCE (M447C) (Con't).



TA702119

5-35. UNDERFRAME RETRACTABLE MECHANISM MAINTENANCE (M313).

This Task Covers:

- | | |
|--|---|
| a. Body Frame Beam and Guide Rollers Removal | d. Sprocket Assembly Installation |
| b. Sprocket Assembly Removal | e. Body Frame Beam and Guide Rollers Installation |
| c. Cleaning and Inspection | |
-

Initial Setup:

Equipment Conditions:

- Semitrailer parked on flat level surface with wheels chocked.

Tools/Test Equipment:

- General mechanic's tool kit

Materials/Parts:

- Grease (Item 7, Appendix E)
 - Dry cleaning solvent (Item 14, Appendix E)
 - One self-locking nut
 - Forty cotter pins
-

a. BODY FRAME BEAM AND GUIDE ROLLERS REMOVAL

1. Expand both side walls of semitrailer about 12 inches (30.48 cm) (para 2-13).
2. Remove 64 screws (20) and ten outer access covers (19, 23, and 24) from under semitrailer frame (1).
3. Remove 20 cotter pins (6) from ten beam shafts (7). Discard cotter pins.
4. Remove ten beam shafts (7) and beam rollers (14) from retractable beams (2).
5. Remove 20 cotter pins (3) from ten guide roller shafts (4). Discard cotter pins.
6. Remove ten guide roller shafts (4) and body frame guide rollers (5) from retractable beams (2).

b. SPROCKET ASSEMBLY REMOVAL

NOTE

Use this task to remove the left or right side sprocket assembly. Right sprocket assembly is shown.

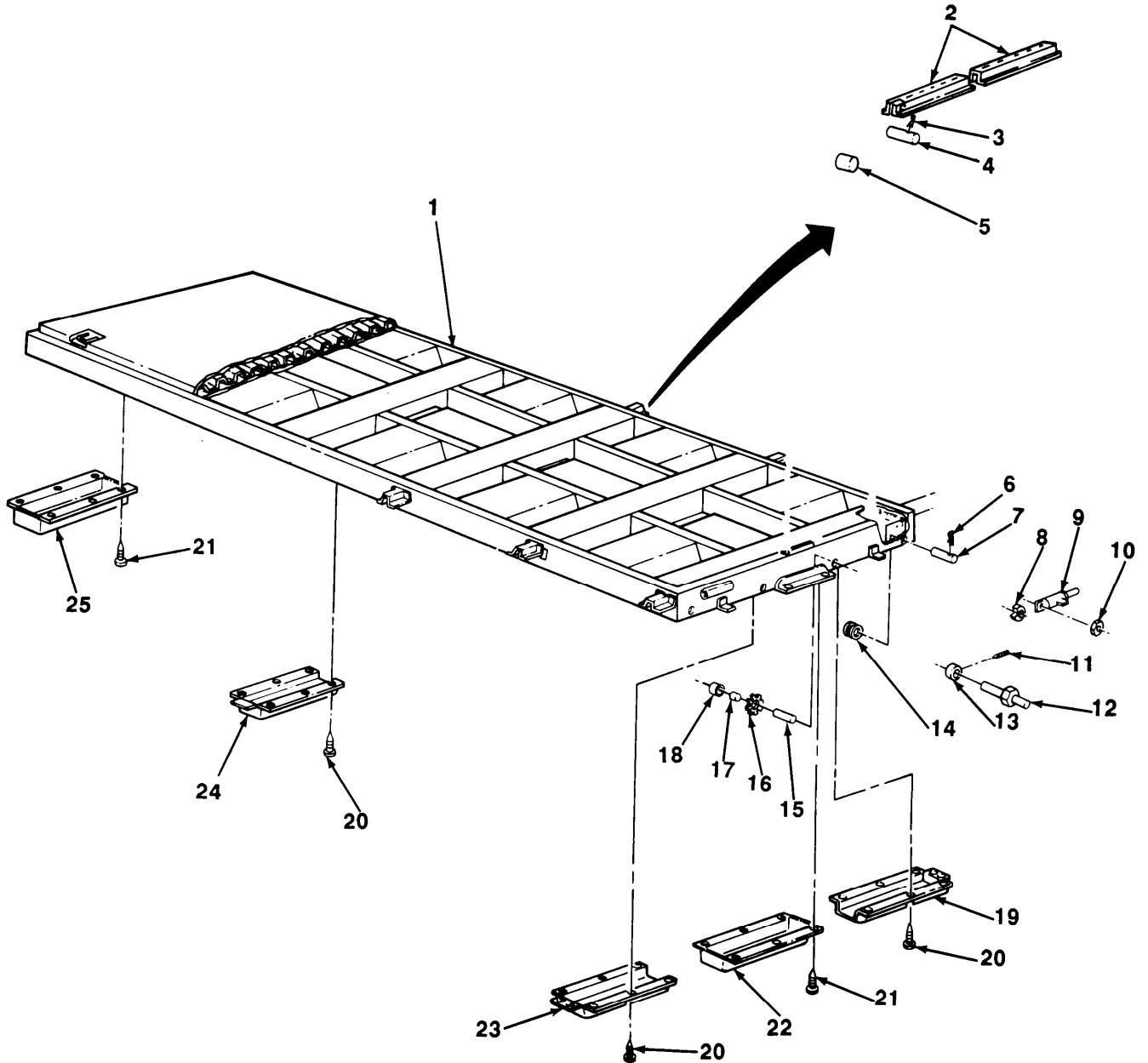
1. Remove self-locking nut (10) from lock assembly (9) and rear mechanism box.
2. Disengage and remove lock assembly (9) from ratchet pawl (8).
3. Remove 30 screws (21) and five inner access covers (22 and 25) from semitrailer frame (1).
4. Loosen five setscrews (11) securing shaft collars (13) to ratchet drive shaft (12).

NOTE

As ratchet drive shaft is removed, note order and position of collars, spacers, sprocket assemblies and bushings to ensure proper installation.

5. Remove ratchet drive shaft (12) by sliding shaft towards rear of the semitrailer frame(1). As the front end of the ratchet drive shaft passes through each of the five mechanism boxes and four crossmembers, remove shaft collars (13) with setscrews (11), sleeve spacers (15 and 17), sprocket assembly (16), and sleeve bushings (18).

5-35. UNDERFRAME RETRACTABLE MECHANISM MAINTENANCE (M313) (Con't).



5-35. UNDERFRAME RETRACTABLE MECHANISM MAINTENANCE (M313) (Con't).

C. CLEANING AND INSPECTION**WARNING**

Dry cleaning solvent, P-D-680, is toxic and flammable. Always wear protective goggles and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes and get medical aid.

1. Clean parts with dry cleaning solvent and dry thoroughly.
2. Inspect shafts, rollers and roller bushings, collars and bushings for excessive wear. Check that spacers are free of dents and burrs.
3. Inspect sprocket assembly for broken teeth and excessive wear.
4. Ensure all parts slide freely on shafts. Replace all defective parts.

d. SPROCKET ASSEMBLY INSTALLATION**NOTE**

Use this task to install the left or right side sprocket assembly. Right sprocket assembly is shown.

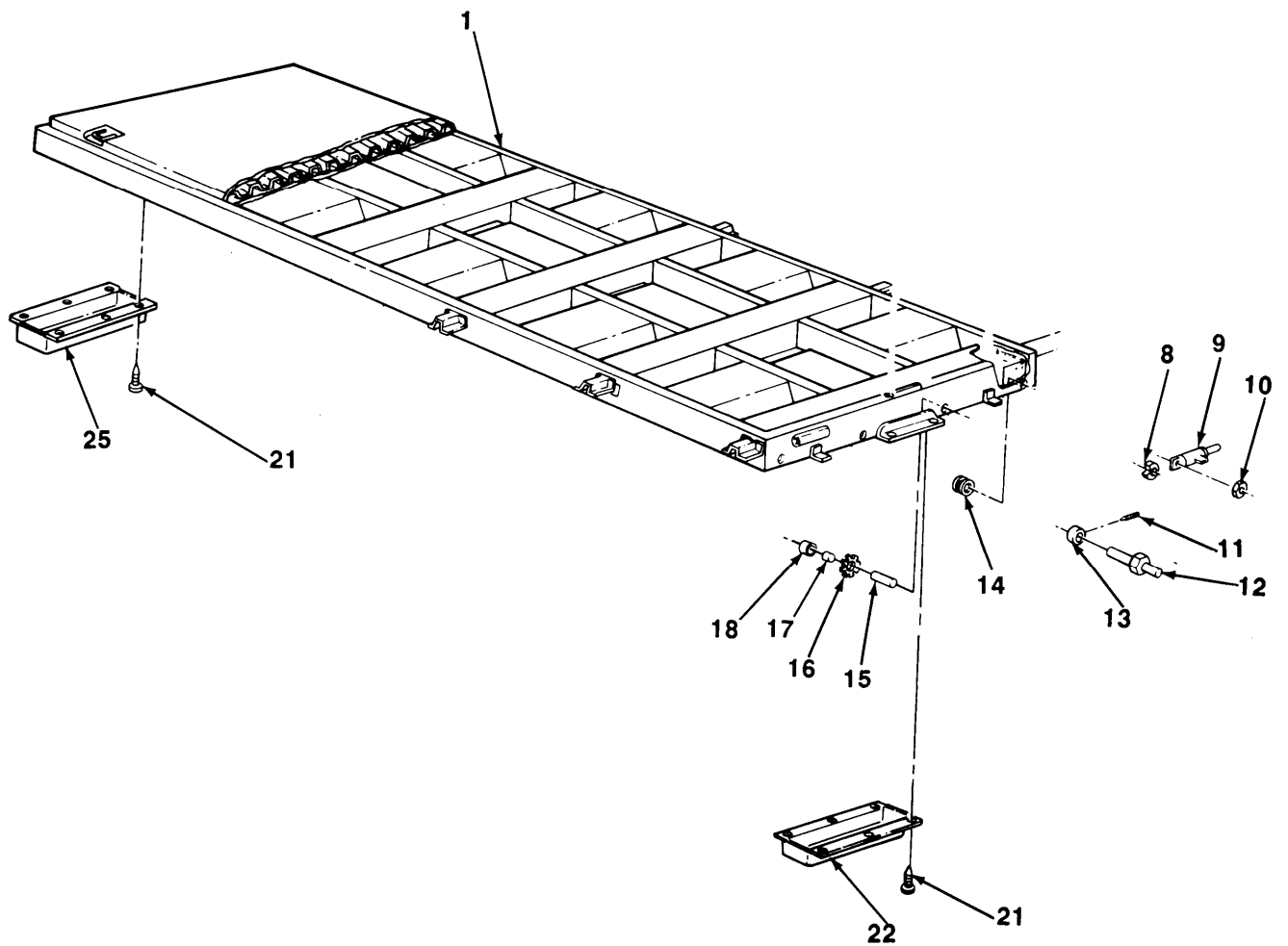
1. Lubricate all bearing surfaces of shaft collars (14) and sleeve bushings (18) with grease.

NOTE

Ensure sprocket teeth mesh properly in slots of each retractable beam as sprocket assembly is installed on ratchet drive shaft.

2. Install ratchet drive shaft (12) into hole in rear mechanism box and slide forward.
3. Install sleeve spacers (15 and 17), sprocket assembly (16), sleeve bushings (18) over the end of the ratchet drive shaft (12).
4. Continue to slide ratchet drive shaft (12) forward and install shaft collars (13) into bearing holes with shoulder of each collar against the inside face of each crossmember and front mechanism box, with the exception of the crossmember just in front of the rear mechanism box.
5. Install shaft collar (13) in crossmember just in front of rear mechanism box with shoulder against collar of crossmember.
6. With ratchet drive shaft (12) set firmly against rear mechanism box, position shaft collar (13) in crossmember just in front of the rear mechanism box, to allow a maximum of $\frac{1}{16}$ in. (1.58 mm) end play. Tighten setscrew (11).
7. Tighten remaining setscrews (11) in shaft collars (13), so the shoulders of each collar will not bind against crossmember or front mechanism box.
8. Position lock assembly (9) on rear mechanism box so lock assembly is engaged with ratchet pawl (8).
9. Install new self-locking nut (10) to secure lock assembly (9), but do not overtighten.
10. Position five inner access covers (22 and 25) on semitrailer frame (1) and secure with 30 screws (21).

5-35. UNDERFRAME RETRACTABLE MECHANISM MAINTENANCE (M313) (Con't).



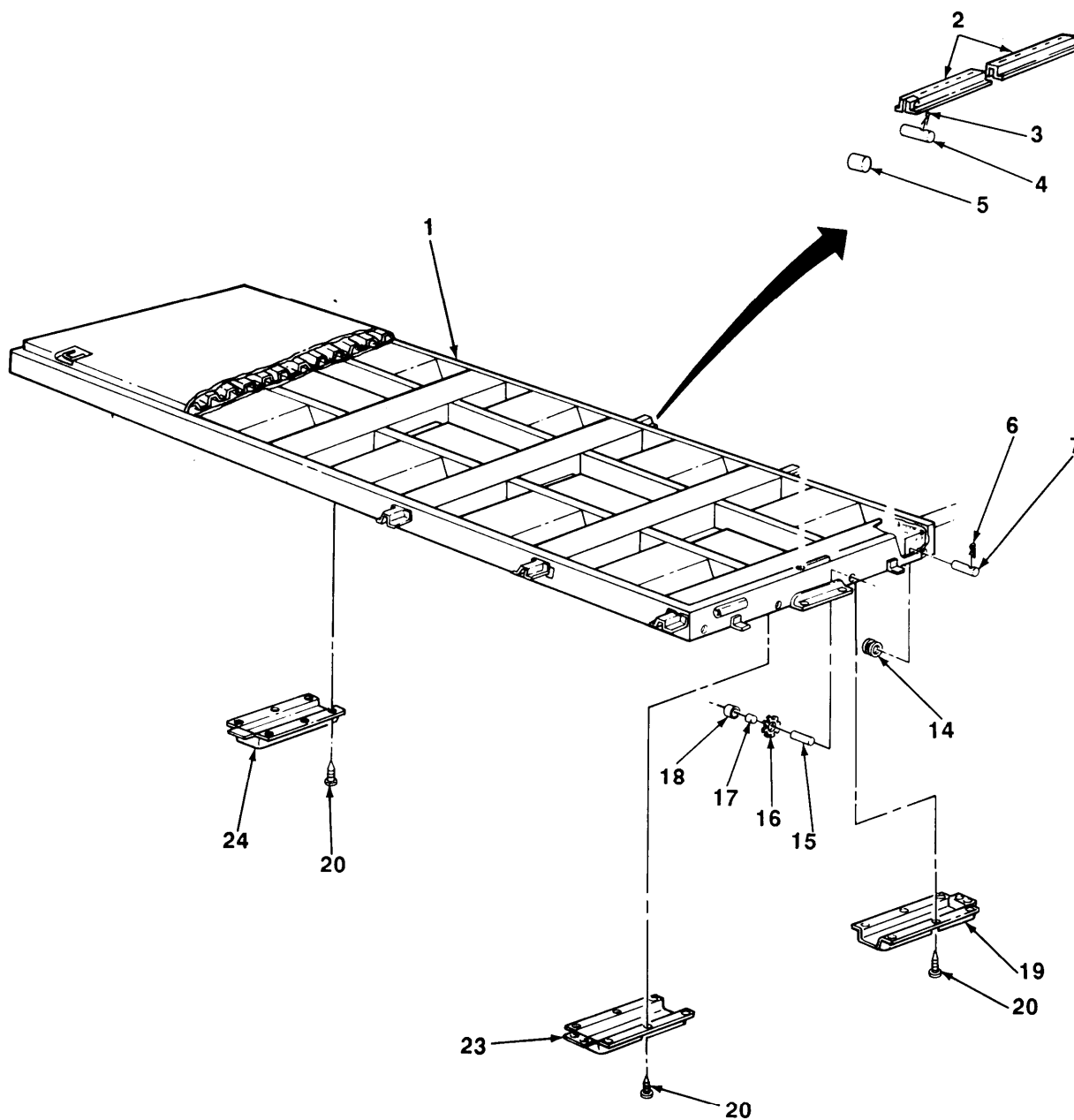
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5-35. UNDER FRAME RETRACTABLE MECHANISM MAINTENANCE (M313) (Con't).

e. BODY FRAME BEAM AND GUIDE ROLLERS INSTALLATION

1. Lubricate guide rollers (5) and shafts (4 and 7) with grease.
2. Position ten beam rollers (14) in slotted end of retractable beams (2). Install ten beam shafts (7) through retractable beams and beam rollers.
3. Install 20 new cotter pins (6) in beam shafts (7).
4. Position ten body frame guide rollers (5) into retractable beams (2) and install ten guide roller shafts (4) in semitrailer frame (1) and guide rollers.
5. Install 20 new cotter pins (3) in guide roller shafts (4).
6. Position ten outer access covers (19, 23, and 24) in place under semitrailer frame (1) and secure with 64 screws (20).

5-35. UNDERFRAME RETRACTABLE MECHANISM MAINTENANCE (M313) (Con't).



FOLLOW-ON TASKS:

- Expand and retract side walls to check operation of retractable mechanism (para 2-13).

Section VIII, HEATING UNITS MAINTENANCE

5-36. HEATER REPAIR.

Repair heaters in accordance with instructions in appropriate heater technical manual (Appendix A).

APPENDIX A REFERENCES

A-1. SCOPE.

This appendix lists all forms, field manuals, technical manuals, and other publications referenced in this manual and which may apply to the operation, unit, direct support, and general support maintenance of the M295A1 Chassis and the M313, M447, M447C, M749, and M750 Semitrailers.

A-2. PUBLICATION INDEX.

DA Pam 25-30, *Consolidated Index of Army Publications and Blank Forms*, should be consulted frequently for latest changes or revisions and for new publications relating to materiel covered in this technical manual.

A-3. FORMS.

Refer to DA Pam 738-750, *The Army Maintenance Management System (TAMMS)*, for instructions on the use of maintenance forms.

Equipment Inspection and Maintenance Worksheet	DA Form 2404
Equipment Log Assembly (Records)	DA Form 2408
Maintenance Request Form	DA Form 2407
Organizational Control Record for Equipment	DA Form 2401
Preventive Maintenance Schedule and Record	DD Form 314
Processing and Reprocessing Record for Shipment, Storage and Issue of Vehicles and Spare Engines	DD Form 1397
Product Quality Deficiency Report.	SF Form 368
Recommended Changes to Equipment Technical Publications	DA Form 2028-2
Recommended Changes to Publications and Blank Forms	DA Form 2028
Report of Discrepancy (ROD)	SF Form 364

A-4. FIELD MANUALS.

Army Motor Transport Units and Operation	FM 55-30
Basic Cold Weather Manual	FM 31-70
Camouflage	FM 5-20
First Aid for Soldiers	FM 21-11
General Fabric Repair	FM 10-16
Manual for the Wheeled Vehicle Driver	FM 21-305
NBC Contamination Avoidance	FM 3-3
NBC Decontamination	FM 3-5
NBC Protection	FM 3-4
Northern Operations	FM 31-71
Operation and Maintenance of Ordnance Materiel in Cold Weather (0°F to -65°F)	FM 9-207

A-5. SUPPLY BULLETINS.

Storage Serviceability Standard: Tracked Vehicles, Wheeled Vehicles, and Component Parts	SB 740-98-1
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A-6. TECHNICAL BULLETINS.

Brake Fluid, Silicone (BFS), Conversion Procedures for
Tank-Automotive Equipment TB 43-0002-87

Color, Marking, and Camouflage Painting of Military Vehicles,
Construction Equipment, and Materiel Handling Equipment TB 43-0209

Description, Use, Bonding Techniques, and Properties of Adhesives TB ORD 1032

Equipment Improvement Report and Maintenance Digest
(US. Army Tank-Automotive Command) Tank-Automotive Equipment TB 43-0001-39 Series

Maintenance in the Desert TB 43-0239

Soldering Methods and Equipment TB SIG 222

Tactical Wheeled Vehicles: Repair of Frames TB 9-2300-247-40

A-7. TECHNICAL MANUALS.

Inspection, Care, and Maintenance of Antifriction Bearings TM 9-214

Materials Used for Cleaning, Preserving, Abrading, and Cementing
Ordnance Materiel and Related Items including Chemicals TM 9-247

Operator's Manual for Welding Theory and Application TM 9-237

Operator's, Organizational, Direct and General Support
Maintenance Manual: Heater, Space, Multi-fuel W/Blower,
60,000 BTU/HR (Heater Models UH-68D and UH-68E) TM 5-4520-233-14

Operator's, Unit, Direct Support, and General Support Maintenance Manual
for Care, Maintenance, Repair and inspection of Pneumatic Tires and Inner Tubes . . . TM 9-2610-200-14

Painting instructions for Army Materiel TM 43-0139

Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use TM 750-244-6

Railcar Loading Procedures TM 55-601

Railway Operating and Safety Rules TM 55-21

Storage and Materials Handling TM 743-200-1

Unit, Direct Support, and General Support Repair Parts and Special Tools Lists
for M295A1, M313, M447, M749, and M750 Semitrailers TM 9-2330-238-24P

A-8. OTHER PUBLICATIONS.

Army Logistics Readiness and Sustainability AR 700-138

Army Medical Department Expendable/Durable items CTA 8-100

Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items) CTA 50-970

APPENDIX B MAINTENANCE ALLOCATION CHART

Section 1. INTRODUCTION

B-1. GENERAL.

- a. This section provides a general explanation of all maintenance and repair functions authorized at the various maintenance levels.
- b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.
- c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.
- d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows:

- a. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).
- b. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.
- c. **Service.** Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.
- d. **Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.
- e. **Aline.** To adjust specified variable elements of an item to bring about optimum or desired performance.
- f. **Calibrate.** To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic 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 third position 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.

B-2. MAINTENANCE FUNCTIONS (Con't).

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

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

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

a. **Column 1, Group Number.** Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00."

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

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

d. **Column 4, Maintenance Level.** Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. 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 levels are as follows:

c *Unit (Operator or Crew)*
 0 *Unit (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 letter code, 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, Tool or Test Equipment 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 Level.** The lowest level of maintenance authorized to use the tool or test equipment.

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

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III (Con't).

d. Column 4, National/NATO Stock Number. The National or NATO Stock Number of the tool or test equipment.

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

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

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

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

Section II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level				(5) Tools and Equipment	(6) Remarks	
			Unit		DS	GS			Depot
			c	o	F	H			D
06	ELECTRICAL SYSTEM								
0608	Miscellaneous Items								
	Plugs and Switches, Miscellaneous (110V)	Replace		0.2				1	
	Bar, Contact, Circuit Breaker	Replace		0.5				1	
	Breaker, Circuit, Fuses	Replace		0.5				1	
0609	Lights								
	Lamps, Incandescent	Replace		0.1				1	
	Light Assemblies	Replace		0.2				1	
		Repair		0.2				1	
0613	Hull or Chassis Wiring Harness								
	Harness, Electrical, Chassis	Replace			2.0			1	
		Repair		2.0				1,2	
	Van Body Harness	Repair		2.0				1	
	Receptacle, Intervehicular Cable	Replace		0.5				1,2	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		DS	GS	Depot		
			c	o	F	H	D		
11	REAR AXLE								
1100	Rear Axle Assembly	Replace			8.0			1,3	
		Repair			8.0			1,3	
12	BRAKES								
1202	Service Brakes								
	Shoe Assemblies and Adjusting Parts	Adjust		0.2				1	
		Replace		4.0				1,2	
1204	Hydraulic Brake System								
	Master and Wheel Cylinder Assemblies	Replace		1.0				1,2	
	Hydraulic System Lines and Fittings	Replace		2.0				1	
1208	Airbrake System								
	Coupling, Air Line	Replace		0.5				1	
	Lines and Fittings, Air Chamber, Airbrake	Replace		1.0				1	
	Valve, Relay	Replace		2.0				1	
	Reservoir, Air	Replace		2.0				1	
	Draincock, Air Reservoir	Replace		0.5				1	
13	WHEELS AND TRACKS								
1311	Wheel Assembly								
	Bearing, Hub	Adjust		1.5				1,2	
		Replace		2.0				1,2	
	Brakedrum	Replace		3.0				1,2	
		Repair			4.0			1,3	
	Hub, Wheel	Replace		3.0				1,2	
	Seal, Oil	Replace		2.0				1,2	
	Wheels	Replace		0.5				1,2	
	Wiper, Oil Seal	Replace		2.0				1,2	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		DS	GS	Depot		
			c	o	F	H	D		
1313	<i>Tires, Tubes, Tire Chains</i>								
	Tires	Service Replace Repair	0.1	1.0	1.5			1,2	
	Tubes	Replace Repair		1.0 1,0				1,2 1,2	
15	FRAME, TOWING ATTACHMENTS, DRAW-BARS, AND ARTICULATION SYSTEMS								
1501	<i>Frame Assembly</i>								
	Bumper and Mounting Hardware	Replace		0.5				1	
1503	<i>Pintles and Towing Attachments</i>								
	Tow Pintle	Replace		0.5				1	
	Kingpin	Replace			10.0			1,4	
1504	<i>Spare Wheel Carrier and Tire Lock</i>								
	Carrier, Spare Wheel	Replace Repair		0.5 1.0				1 1	
	Wire Rope, Spare Wheel Carrier	Replace		0.5				1	
1507	<i>Landing Gear, Leveling Jacks</i>								
	Gear, Landing (Late Model)	Replace Repair		1.0 1.0				1 1	
	Gear, Landing (Early Model)	Replace Repair			4.0 6.0			1,3 1,3	
	Leg Assembly, Support (Early Model)	Replace Repair			1.0 1.5			1,3 1,3	
	Leg Assembly, Actuator (Early Model)	Replace Repair			1.0 1.5			1,3 1,3	
	Jack, Leveling	Repair		1.0				1,2	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		DS	GS	Depot		
			c	o	F	H	D		
16	SPRINGS AND SHOCK ABSORBERS								
1601	<i>Springs</i>	Replace		8.0				1,2	
	Spring Seats	Replace		4.0				1,2	
1605	<i>Torque, Radius, and Stabilizer Rods</i>	Replace		3.5				1,2	
18	BODY, CAB, HOOD, AND HULL								
1801	<i>Body, Cab, Hood and Hull Assemblies</i>								
	Door Assemblies	Replace			1.0			1	
		Repair			1.0			1	
	Weatherseal, Door	Replace			1.0			1	
	Hinged Floor, Hinged Roof	Replace			2.0			1,3	
	Folding Side Doors	Repair			2.0			1,3	
	Splashguard	Replace		0.5				1	
1808	<i>Stowage Racks, Boxes, Straps, Carrying Cases, Cable Reels, Hose Reels, Etc.</i>								
	Reel, Cable	Replace		1.0				1	
		Repair		1.0				1	
	Chest, Stowage	Replace			1.0			1,3	
		Repair			1.0			1,3	
1812	<i>Special Purpose Bodies</i>								
	Counterbalance Assembly	Adjust		0.5				1	
		Replace		1.0				1,2	
		Repair		1.0				1	
	Retractable Mechanism	Replace			2.0			1	
		Repair			2.0			1	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		DS	GS	Depot		
			C	O	F	H	D		
22	BODY, CHASSIS, AND HULL ACCESSORY ITEMS								
2202	Accessory Items								
	Reflectors	Replace		0.1				1	
2210	Data Hates and Instruction Holders								
	Data Plates	Replace		0.1				1	
33	SPECIAL PURPOSE KITS								
3307	M447C Enclosure Kit/ Enclosure Curtain								
	M447C Enclosure Kit	Install		4.6				1,2,5	
	Enclosure Curtain	Inspect Remove and Replace Repair	0.1						
				0.5				1,2,3	
				0.8					
52	REFRIGERATION, AIR CONDITIONER HEATER, AND AIR CONDITIONING COMPONENTS								
5200	Air Conditioner/Heater Assembly and Gas Compressor Assembly								
	Air Conditioner	Replace		1.0				1,2	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		DS	GS	Depot		
			C	O	F	H	D		
60	STEAM BOILERS, WATER HEATERS, HEATING UNITS, BURNERS								
6004	Fuel System								
	Fuel Pumps	Replace		0.5				1	
	Fuel Lines	Replace		1.0				1	
6007	Fuel Tank	Replace		2.0				1	
6010	Exhaust System	Replace		2.0				1	
6014	Unit Heater								
	Heaters	Replace Repair		1.0	2.0			1	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Tool or Test Equipment Number	(2) Maintenance Level	(3) Nomenclature	(4) National/NATO Stock Number	(5) Tool Number
1	O,F	Tool Kit, General Mechanic's, Automotive	5180-00-177-7033	
2	O	Shop Equipment, Automotive Main- tenance and Repair: Organzational Maintenance, Common No. 1	4910-00-754-0654	
3	F	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Supplemental No. 1, Less Power	4910-00-754-0706	
4	F	Shop Equipment, Welding: Field Maintenance (SC 3470-954X-08)	3470-00-357-7268	T16714
5	O	Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 2, Less Power	4910-00-754-0650	

Section IV. REMARKS

Not Applicable.

APPENDIX C COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section 1. INTRODUCTION

C-1. SCOPE.

This appendix lists Components of End Item and Basic Issue Items for the M313, M447, M447C, M749, and M750 Semitrailers to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. **Section ii. Components of End item (COEI).** This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. **Section iii. Basic issue items (BII).** These are the minimum essential items required to place the semitrailer in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the semitrailer during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement BII, based upon TOE/MTOE authorizations of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listing:

a. **Column (1) – Illustration Number (Illus Number).** This column indicates the number of the illustration in which the item is shown,

b. **Column (2) – National Stock Number.** Indicates the National Stock Number (NSN) assigned to the item and will be used for requisitioning purposes.

c. **Column (3) - Description.** Indicates the Federal Item Name and, if required, a description to identify and locate the item. The last line for each item indicates the Commercial and Government Entity (CAGE) Code in parentheses, followed by the part number. If item needed differs for different models of this equipment, the model is shown under the “Usable On Code” heading in this column. These codes are identified as:

<i>Code</i>	<i>Used On</i>
290	M313
852	M447
854	M447C
855	M749
856	M750

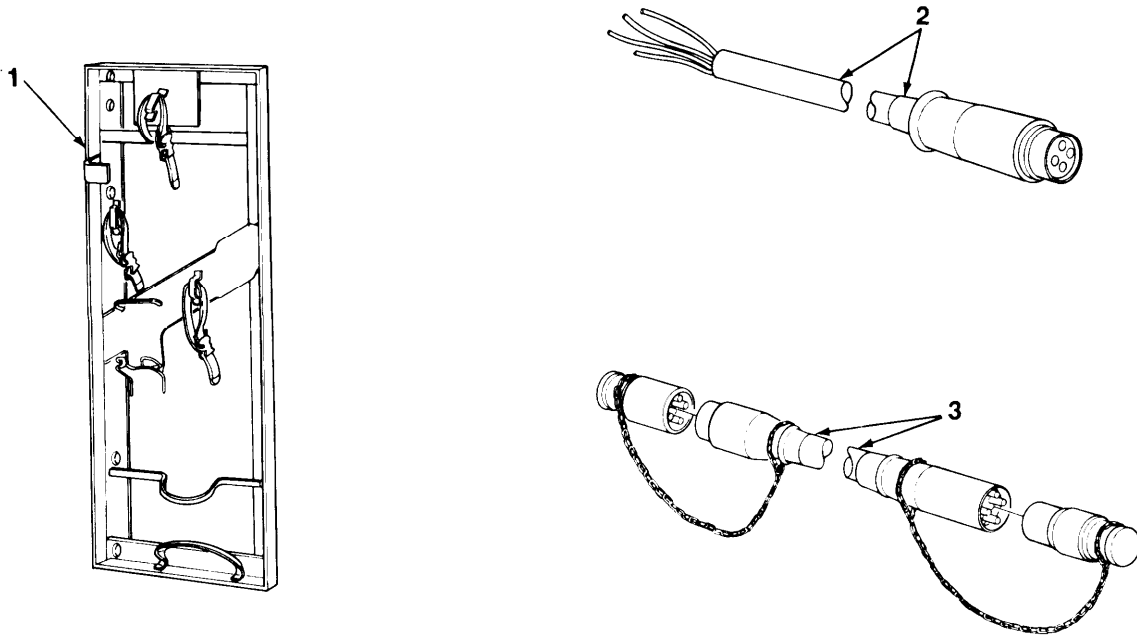
d. **Column (4) - Unit of Measure (U/M).** indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

e. **Column (5) - Quantity Required (Qty Req'd).** indicates the quantity of the Item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

There currently is no Components of End Item List assigned to the M313, M447, M447C, M749, and M750 Semitrailers.

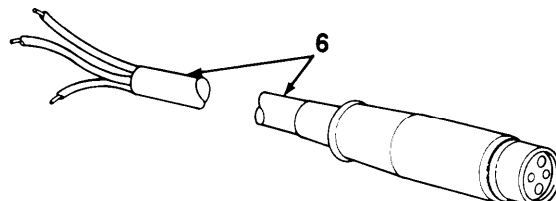
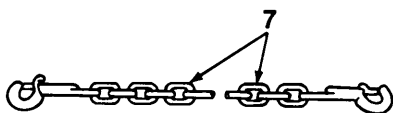
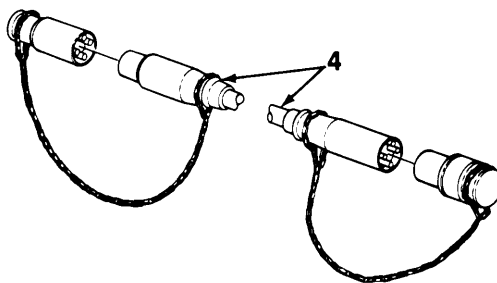
Section III. BASIC ISSUE ITEMS



(1) Illus No.	(2) National Stock Number	(3) Description CAGE & Part Number	Usable On Code	(4) U/M	(5) Qty Req'd
1	2540-00-357-5494	Bracket Assembly, Tool, Pioneer Tool Set (19200) 7346922	290	ea	1
2	2590-00-870-9935	Cable Assembly, Power Electrical 220 v, 39¼ in. (Used on M313 with 2-ton Air Conditioning Unit) (19207) 7059246	290	ea	1
3	6150-00-134-0847	Cable Assembly, Power Electrical 220 v, 100 ft Cable Reel (Used with 3-ton Air Conditioning Unit) (19207) 11601643	290	ea	1

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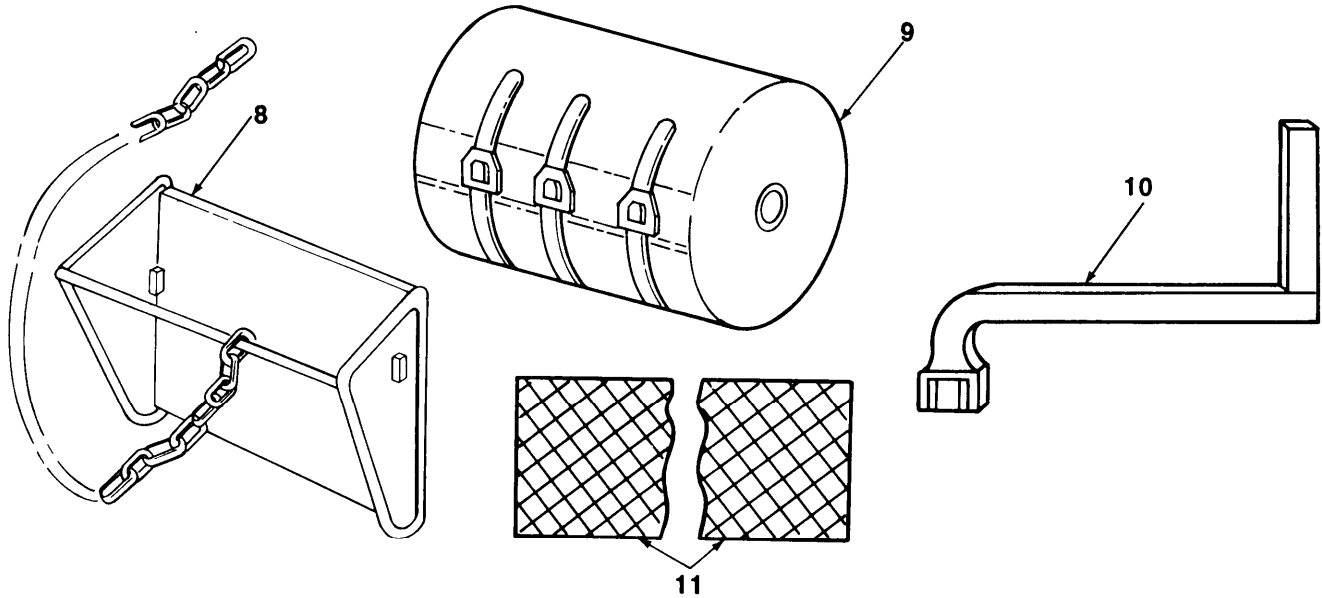
Section III. BASIC ISSUE ITEMS (Con't)



(1) Illus No.	(2) National Stock Number	(3) Description CAGE & Part Number	Usable On Code	(4) U/M	(5) Qty Req'd
4	2590-00-679-1423	Cable Assembly, Special Purpose, Electrical, 220 v, 100 ft Cable Reel Connector Assembly, Male (19207) 7045796-1 and Connector Assembly, Female (19207) 7045796-2 (Used on M313 with 2-ton Air Conditioning Unit) (19207) 7045796	290,852, 854,856	ea	1
5	2920-01-076-6150	Cable Assembly, Special Purpose, Electrical Power Inlet, 50 ft (AE) (Not Illustrated) (98255) 5K 1657	855	ea	1
6	6150-00-134-0848	Cable Assembly, Special Purpose Electrical 220 v, 39 1/4 in. lg (Used With 3-ton Air Conditioning Unit) (19207) 11601641	290	ea	1
7	4010-00-961-9791	Chain Assembly, Single Leg (Guard Rail Posts) (19207) 10869596	852,854, 856	ea	2

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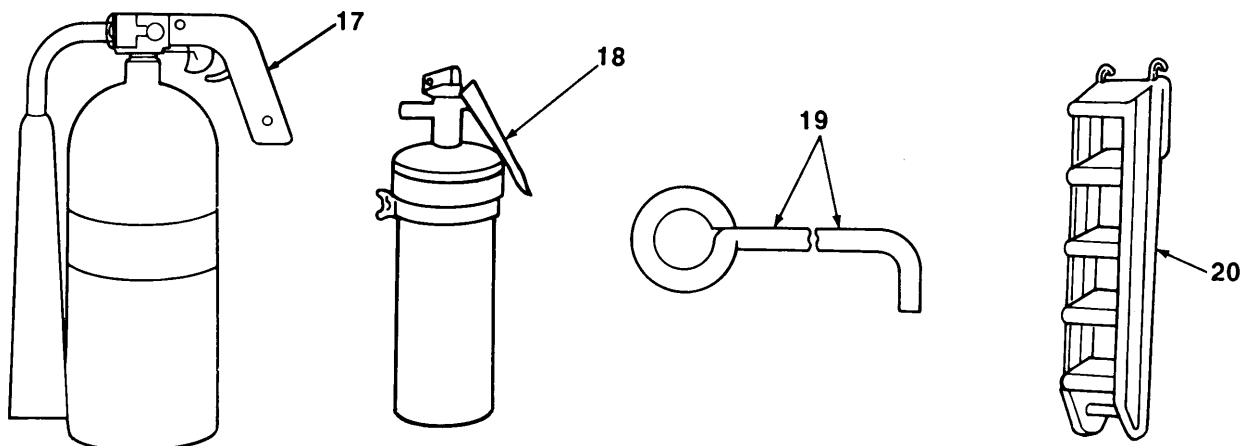
Section III. BASIC ISSUE ITEMS (Con't)



(1) Illus No.	(2) National Stock Number	(3) Description CAGE & Part Number	Usable On Code	(4) U/M	(5) Qty Req'd
8	2540-00-678-3469	Chock, Wheel with Chain and Clevis (96906) MS52127-3	290,852, 854,855, 856	ea	2
9	3950-00-870-9939	Cover, Winch, Cable Reel (19207) 8735021	290,852, 854,856	ea	1
10	5340-00-961-9795	Crank, Cable Reel (19207) 10869588	852,854, 856	ea	1
11	2540-01-066-6107	Curtain Assembly, Van Enclosure, Left or Right (2 supplied) (Mounted with Fasteners) (19207) 10926091	852,856	ea	1
12		Curtain Assembly, Vehicular, Van Enclosure (AB) (Mounted with Fasteners) (Not Illustrated) (98255) PA I	855	ea	1
13	2540-00-937-4125	Curtain, Van Enclosure (AC) (Not Illustrated) (15814) 8929-64	855	ea	2
14	2540-00-930-9428	Curtain Assembly, Vehicular, Van Enclosure (AD) (Not Illustrated) (14422) 8929-64C	855	ea	2

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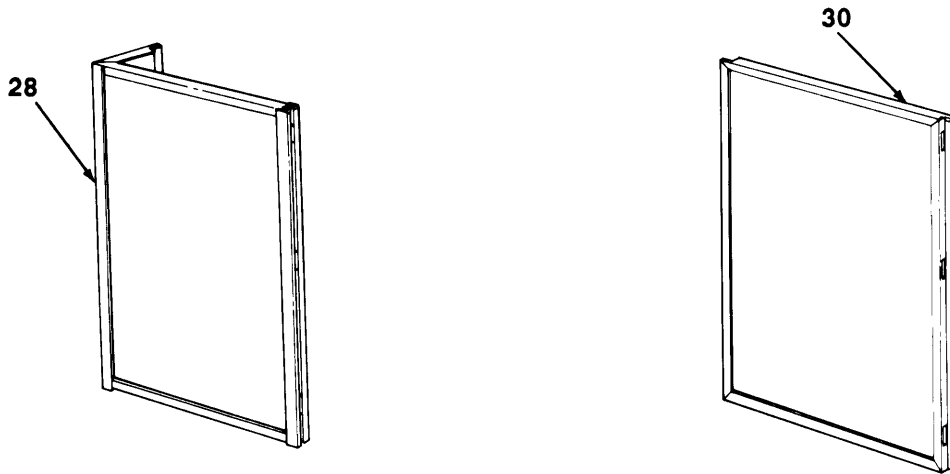
Section III. BASIC ISSUE ITEMS (Con't)



(1) Illus No.	(2) National Stock Number	(3) Description CAGE & Part Number	Usable On Code	(4) U/M	(5) Qty Req'd
15	4210-00-202-7858	Extinguisher, Fire, Hand Held, CO ₂ (Some Models) (Not Illustrated) (81348) OE910	852,854, 856	ea	2
16	4210-00-555-8837	Extinguisher, Fire, Hand Held, Halon, with Bracket (Not Illustrated) (19207) 10916537	290,852, 854,856	ea	2
17	4210-00-270-4512	Extinguisher, Fire, Hand Held, CO ₂ (Some Models) (1 9207) 7714780	852,854, 856	ea	2
18	4210-01-149-1356	Extinguisher, Fire, Hand Held, CO ₂ 4 for (AD), 2 for (AE) (1 9207) 12255633-1	855	ea	4
19	5340-00-961-9790	Eye, Hook, Door Stop Holder (1 9207) 10869521	290,852	ea	2
20	2540-00-957-5068	Ladder, Vehicle Boarding, on Rear Door (19207) 8759434	290,852, 854,856	ea	2
21		Ladder, Vehicle Boarding, on Rear Door (AD) (Not Illustrated) (1 4422) 10642-2	855	ea	2
22		Ladder, Vehicle Boarding, on Rear Door (AE) (Not Illustrated) (98255) JDI	855	ea	2

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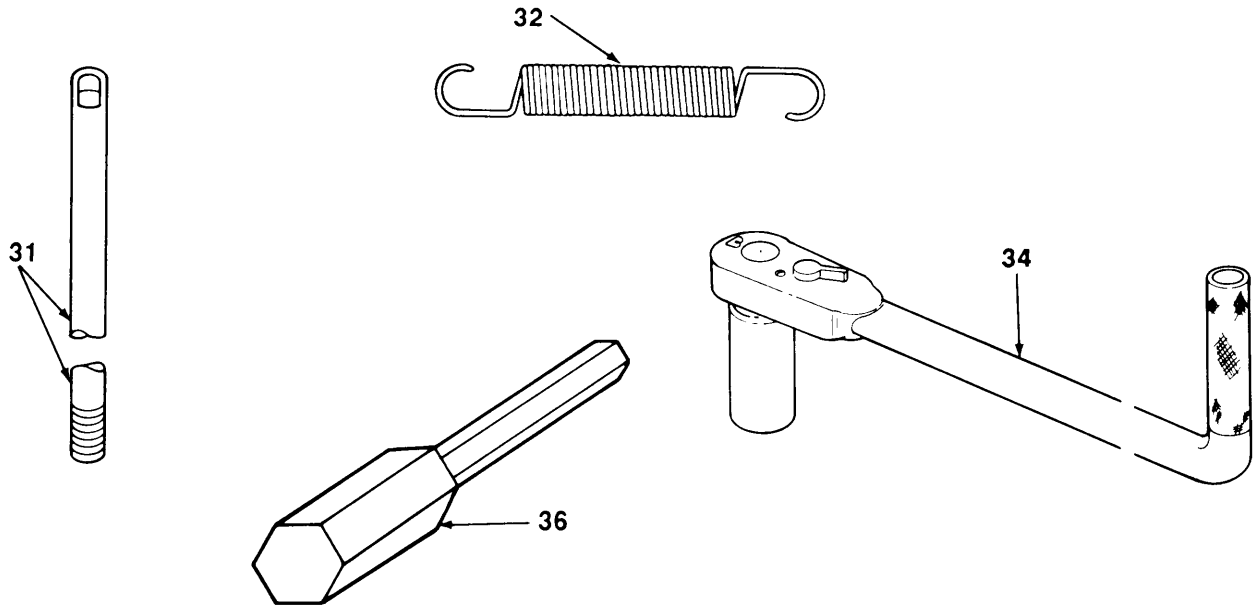
Section III. BASIC ISSUE ITEMS (Con't)



(1) US No.	(2) National Stock Number	(3) Description CAGE & Part Number	Usable On Code	(4) U/M	(5) Qty Req'd
23	6230-00-239-3518	Light, Extension, 25 ft lg (AD) (Not Illustrated) (81 348) VV-L-661	855	ea	1
24		Light, Extension, 25 ft lg (AB) (Not Illustrated) (98255) PP154	855	ea	1
25		Light, Extension, 25 ft lg (AC) (Not Illustrated) (98255) PP309	855	ea	1
26	5340-00-912-4089	Padlock Set, Composed of 6 padlocks, 3 Keys (Not Illustrated) (96906) MS2131 3-163	290	ea	1
27	5340-00-912-4088	Padlock Set, with Chain and Clevis (Not Illustrated) (96906) MS2131 3-162	852,854, 856	ea	1
28	2590-00-321-8539	Panel, Van Enclosure, Left Rear and Right Front (1 9207) 11637895	854	ea	2
29	2590-00-321-8538	Panel, Van Enclosure, Left Front and Right Rear (Not Illustrated) (1 9207) 11637894	854	ea	2
30	2590-00-320-9405	Panel, Van Enclosure, Side (1 9207) 11637893	854	ea	8

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Section III. BASIC ISSUE ITEMS (Con't)



(1) Illus No.	(2) National Stock Number	(3) Description CAGE & Part Number	Usable On Code	(4) U/M	(5) Qty Req'd
31	4010-00-072-0707	Post, Guard Rail (1 9207) 1086590	852,854, 856	ea	8
32	5360-01-054-6118	Spring, Helical, Extension, Cable-to-Cable Reel Retaining (1 9207) 11607461	290	ea	1
33	5340-00-543-3172	Strap, Webbing Guard Rail Post Stowage (Not Illustrated) (1 9207) 8690514	852,854, 856	ea	2
34	5120-00-650-7830	Wrench, Ratchet, 1 in. Hex Opening (1 9207) 7759181	290	ea	1
35	5120-00-650-7829	Wrench, Socket, 90 Degree Offset, ½ in. Square Opening (Not Illustrated) (1 9207) 8380406	290	ea	1
36	5120-00-347-2583	Wrench Assembly, Adapter, Panel Installation (1 9207) 10944729	854	ea	1

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APPENDIX D ADDITIONAL AUTHORIZATION LIST

Section 1. INTRODUCTION

D-1. SCOPE.

a. This appendix lists additional items you are authorized for support of the M313, M447, M447C, M749, and M750 Semitrailers.

b. This list identifies items that do not have to accompany the semitrailer and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-2. EXPLANATION OF LISTING.

National Stock Numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i .e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you. if the item required differs for different models of this equipment, the model is shown under the" usable on code" heading in the description column. These codes are identified as:

<i>Code</i>	<i>Used On</i>
290	M313
852	M447
854	M447C
855	M749
856	M750

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGE and Part Number	Usable On Code	(3) U/M	(4) Qty Auth
6140-00-851-4573	Lead, Storage Battery (Vehicle Ground, 48 in. lg) (19207) 7017575	852,854, 855,856	ea	1
	Lead, Electrical (Vehicle Ground) (AE) (77060) 12-3	855	ea	1
2510-00-790-2296	Rod Assembly, Trailer (Vehicle Ground) (1 9207) 8380403	290,852, 854,856	ea	1
	Rod Assembly, Traller (Vehicle Ground) (AE) (98255) ND8	855	ea	1
	Rod Assembly, Trailer (Vehicle Ground) (AD) (1 4422) 8929-5C405	855	ea	1
2590-00-870-9936	Spike (1 9207) 7534689	290	ea	8
		852,854,856	ea	12

APPENDIX E EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section 1. INTRODUCTION

E-1. SCOPE.

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the M295A1 Chassis and M313, M447, M447C, M749, and M750 Semitrailers. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, *Expendable/Durable Items (Except Medical, Class V, Repair Parts and Heraldic Items)*, or CTA 8-100, *Army Medical Department Expendable/Durable Items*,

E-2. EXPLANATION OF COLUMNS.

a. **Column (1)-Item Number.** This number is assigned to the entry in the listing and is referenced in the Initial Setup” of maintenance paragraphs or narrative instructions to identify the material needed (e.g., Dry cleaning solvent, item 14, Appendix E).

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

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

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

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

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

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description (CAGE) Part Number	(5) U/M
1	0	8040-00-754-2685 8040-00-058-2399 8040-00-779-9595 8040-00-095-5379 8040-00-934-3371	Adhesive (81348) MMM-A-130 1 Gallon Can 1 Quart Can 1 Pint Can 3 Ounce Tube 0.75 Ounce	gl pt qt oz oz
2	0	8040-00-225-4548	Adhesive (81349) MIL-A-46106 12 Ounce Tube	oz
3	0	8135-00-171-0930	Barrier Material, Greaseproof-Waterproof, Flexible (81349) MIL-B-121 100 Yard Roll	yd
4	0	9150-01-159-2568	Brake Fluid Silicone, Automotive (81349) MIL-B-4617 1 Gallon Can	gl
5	0	7920-00-061-0038	Brush, Scrub (81346) H-B-1490	ea
6	C	8030-00-033-4291 8030-00-033-4293	Corrosion Preventive Compound (81349) MIL-C-82594 10 Ounce Can 1 Gallon Can	oz gl
7	0	7930-00-899-9534	Dishwashing Compound, Hand (81348) P-D-410 5 Gallon Can	gl
8	C	9150-01-197-7693 9150-01-197-7690 9150-01-197-7689	Grease, Automotive and Artillery (81349) MIL-G-10924 14 Ounce Can 1.75 Pound Can 6.50 Pound Can	oz lb lb

**Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST
(Con't)**

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description (CAGE) Part Number	(5) U/M
9	O		Lubricating Oil, Engine, OE/HDO-36 (81349) MIL-L-2104	
		9150-00-186-6681	1 Quart Can	qt
		9150-00-188-9858	5 Gallon Can	gl
		9150-00-189-6729	55 Gallon Can	gl
10	O		Lubricating Oil, Engine, OEA (81349) MIL-L-46167	
		9150-00-402-4478	1 Quart Can	
		9150-00-402-2372	5 Gallon Can	qt
		9150-00-491-7197	55 Gallon Can	gl
11	O		Preservative Coating, Canvas (81348) TT-P-595	
		8030-00-664-4944	1 Gallon Can	lb
12	C		Rag, Wipping (58536) A-A-531	
		7920-00-205-1711	50 Pound Bale	lb
13	C		Silicone Compound (18876) MIS-30997 1 GLCN	
		6850-01-223-9038	1 Gallon Can	gl
14	O		Solder, Lead Alloy (81348) QQ-S-571	
		3439-00-265-7102	1 Pound Roll	lb
15	C		Solvent, Dry Cleaning (81348) P-D-680, Type II	
		6850-00-664-5685	1 Quart Can	
		6850-00-281-1985	1 Gallon Can	qt
		6850-00-265-8011	55 Gallon Can	gl
16	O		Tag, Marker (81349) MIL-T-12755	
		9905-00-537-8954	50 Each	ea

**Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST
(Con't)**

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description (CAGE) Part Number	(5) U/M
17	O	8030-00-067-7368	Tape, Antiseizing: 1/4 Inch Wide (71843) TEMPRTH 54 Feet Long	ft
18	O	8030-00-889-3535	1/2 Inch Wide (76381) 4B 260 Inches Long	in
		5970-01-144-8969	Tape, Electrical (76831) 1194 180 Foot Roll	ft

APPENDIX F TORQUE LIMITS

F-1 . SCOPE.

a. This appendix lists standard torque values, as shown in Table F-1, and provides general information for applying torque.

b. Special torque values and tightening sequences are indicated in the maintenance procedures for applicable components.

F-2. GENERAL.

a. Always use the torque values listed in Table F-1 when the maintenance procedure does not give a specific torque value.

b. Unless otherwise indicated, standard torque tolerance shall be $\pm 10\%$.

c. Torque values listed are based on clean, dry threads. Reduce torque by 10% when engine oil is used as a lubricant.

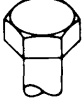


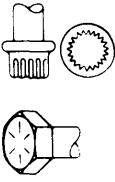

d. Reduce torque by 20% if new plated capscrews are used.

e. Capscrews threaded into aluminum may require reductions in torque of 30% or more of Grade 5 capscrews torque. Capscrew threaded into aluminum must also attain two capscrew diameters of thread engagement.

CAUTION

If replacement capscrews are of higher grade than originally supplied, use torque specifications for the original. This will prevent equipment damage due to overtorquing.

Table Table F-1. Torque Limits.

Current Usage	Much Used	Much Used	Used at Times	Used at Times
Quality of Material	Indeterminate	Minimum Commercial	Medium Commercial	Best Commercial
SAE Grade Number	1 or 2	5	6 or 7	8
Capscrew Head Markings				
Manufacturer's marks may vary				
These are all SAE Grade 5 (3 line)				
Capscrew Body Size Inches - Thread	Torque lb.-ft. (N•m)	Torque lb.-ft. (N•m)	Torque lb.-ft. (N•m)	Torque lb.-ft. (N•m)
¼ 20	5 (7)	8 (11)	10 (14)	12 (16)
28	6 (8)	10 (14)		14 (19)
⅝ 18	11 (15)	17 (23)	19 (26)	24 (33)
24	13 (18)	19 (26)		27 (37)
⅜ 16	18 (24)	31 (42)	34 (46)	44 (60)
24	20 (27)	35 (47)		49 (66)
⅞ 14	28 (38)	49 (66)	55 (75)	70 (95)
20	30 (41)	55 (75)		78 (106)
½ 13	39 (53)	75 (102)	85 (115)	105 (142)
20	41 (56)	85 (115)		120 (163)
⅝ 12	51 (69)	110 (149)	120 (163)	155 (210)
18	55 (75)	120 (163)		170 (231)
⅝ 11	83 (113)	150 (203)	167 (226)	210 (285)
18	95 (129)	170 (231)		240 (325)
¾ 10	105 (142)	270 (366)	280 (380)	375 (508)
16	115 (156)	295 (400)		420 (569)
⅞ 9	160 (217)	395 (536)	440 (597)	605 (820)
14	175 (237)	435 (590)		675 (915)
1 8	235 (319)	590 (800)	660 (895)	910 (1234)
14	250 (339)	660 (895)		990 (1342)

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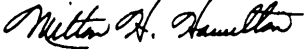
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Maintenance Manual for M295A1, M313,
M447, M447C, M749 and M750

BE EXACT. PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
5-33	5-13		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Item 10 is called a rubber strip. It should be a seal retainer.

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

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

WEIGHTS

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

LIQUID MEASURE

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

SQUARE MEASURE

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

CUBIC MEASURE

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

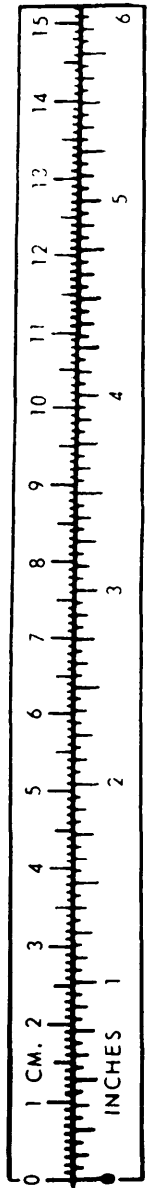
TEMPERATURE

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

APPROXIMATE CONVERSION FACTORS

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

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
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



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(FOR REFERENCE ONLY)

