

TM 5-3895-371-24 & P

TECHNICAL MANUAL

**ORGANIZATIONAL,
DIRECT SUPPORT,
AND GENERAL SUPPORT
MAINTENANCE MANUAL
WITH REPAIR PARTS AND
SPECIAL TOOLS LIST**

BITUMINOUS DISTRIBUTOR BODY

M918, MODEL D-63

NSN 3895-01-028-4390

E.D. ETNYRE & CO.

(MANUAL PREPARED BY AM GENERAL C)

DAAE07-77-C-4211

HEADQUARTERS, DEPARTMENT OF THE ARMY

March 1981

WARNING

Operation of a deadlined vehicle without a preliminary examination can cause further damage to a disabled component and possible injury to personnel. By careful inspection and troubleshooting, such damage and injury can be avoided. In addition, the causes of faulty operation of a vehicle or component can often be determined without extensive disassembly.

WARNING

Before attempting welding repairs on the asphalt tank, make sure that the tank is thoroughly clean. Use Detrox process, or equal.

WARNING

Compressed air used for cleaning purposes will not exceed 36 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

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MAINTENANCE MANUAL WITH REPAIR PARTS
AND SPECIAL TOOLS LIST
BITUMINOUS DISTRIBUTOR BODY
M918 (MODEL D-63)
NSN 3895-01-028-4390

TM 5-3895-371-24&P, dated 1 March 1981, is changed as follows:

1. Appendix C, Repair Parts and Special Tools Lists (RPSTL), pages C-1 through C-167 of this manual, have been replaced by TM 5-3895-371-24P, *Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (including Depot Maintenance Repair Parts and Special Tools Lists)*. All references to this appendix should be changed to read TM 5-3895-371-24P.
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Remove Pages
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M918 (MODEL D-63)
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Remove Pages

i and ii
1-1 and 1-2
A-1 and A-2
C-39 and C-40

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NO. 1

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ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST BITUMINOUS DISTRIBUTOR BODY M918, MODEL D-63 (NSN 3895-01-028-4390)

TM 5-3895-371-24&P 1 March 1981 is changed as follows:

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The reporting of errors and recommending improvements statement is superseded as follows: You can help us improve this manual. If you find any mistakes or if you know of any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Tank-Automotive Command, ATTN: DRSTA-MB. Warren, MI 48090. A reply will be furnished to you.

Page C-9. Fig. number 1, item number 13, SMR code column. Change "XDOZZ" to*"PAOZZ."

Page C-19. Fig. number 5, item number 1, SMR code column. Change "XDFZZ" to "PAFZZ."

Page C-20. Fig. number 5, item number 41, SMR code column. Change "XDF2Z" to "PAFZZ."

Page C-28. Fig. number 6, item number 47, national stock number column. Add "9905-01-107-4926."

Page C-31. Fig. number 7, item number 6, national stock number column. Change "3895-00-714-5186" to "4730-01-023-2659."

Part number column. Change "6600278" to "MS27024-8."

FSCM column. Change "80195" to "96906."

Item number 19, national stock number column. Add "5340-01-117-6594."

Page C-49. Fig. number 12, item number 10, national stock number column. Add "2520-00-530-7544."

Part number column. Change "3170013" to "121406R92."

FSCM column. Change "80195" to "92679."

Page C-51. Fig. number 13, item number 1, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 32, national stock number column. Change "5305-00-068-0502" to "5310-00-809-4059."

Part number column. Change "MS15795.213" to "MS27183-10."

Page C-59. Fig. number 14, item number 16, national stock number column. Add "4730-00-965-6538."

Item number 21, national stock number column. Add "4730-00-965-6538."

Page C-60. Fig. number 14, item number 44, national stock number column. Add "4730-00-965-6538."

Item number 53, national stock number column. Add "4730-00-965-6538."

Page C-63. Fig. number 15, item number 8, SMR code column. Change "KFOZZ" to "PAOZZ."

Immediately after item number 15, add the following:

Column	Added Data
Fig No.	15
Item No.	16
SMR Code	PCOZZ
National Stock Number	4330-00-355-7750
Part Number	K23005
FSCM	02249
Description	Filter, Element with seals

Column	Added Data •
U/M	EA
Qty Inc In Unit	1

Page C-65. Fig. number 16, item number 16, national stock number column. Add "5306-01-116-1160."

Page C-67. Fig. number 17, immediately after item number 19, add the following:

Column	Added Data
Fig. No.	17
Item No.	20
SMR Code	PAOZZ
National Stock Number	5920-00.356-28&2
Part Number	SC-B-62930
FSCM	80063
Description	Fuse Holder, Spray Bar Control
U/M	EA
Qty Inc In Unit	1

Page C-74. Fig. number 18, item number 47, part number column. Change "ASTM-A-47" to "MA 207-23040."

FSCM column. Change "14448" to "34623."

Page C-75. Fig. number 18, item number 91, part number column. Change "115193" to "144152."

Page 0-77. Fig. number 19. item number 2, national stock number column. Add "3040-01-108-7401."

Item number 5, national stock number column. Add "5340-01-111-2427."

Item number 16, national stock number column. Add "5305-01-111-2772."

Page C-79. Fig. number 20, item number 18, national stock number column. Add "5365-01-108-4372."

Page C-81. Fig. number 21, item number 25, national stock number column. Add "5365-01-108-4373."

Item number 31) FSCM column. Change "40342" to "06721."

Page C-89. Fig. number 24, item number 7, SMR code column. Change "XDOZZ" to "PAOZZ."

Page C-93. Fig. number 25, item number 9, national stock number column. Add "3895-01-107-9090."

Item number 23 national stock number column. Add "5306-01-111-1160."

Page C-97. Fig. number 26, item number 9, SMR code column. Change "XDOFF" to "PAOFF."

Item number 10, national stock number column. Change "5310-00-761-6882" to "5315.00-221-6006."

Part number column. Change "120375" to "103564."

Item number 21, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 24. SMR code column. Change "XDOZZ" to "PAOZZ."

Page C101. Fig. number 28, item number 1, SMR code column. Change "XDOOO" to "PAOOO."

Item number 10, SMR code column. Change "XDOZZ" to "PAOZZ."

Page C-103. Fig. number 29, item number 6, SMR code column. Change "XDFZZ" to "PAFZZ."

Item number 20, SMR code column. Change "XDFZZ" to "PAFZZ."

Item number 23, national stock number column. Add "5340-01-109-8042."

Immediately after item number 24, add the following:

Column	Added Data
Fig. No.	29
Item No.	25
SMR Code	PAFZZ
National Stock Number	5305-00-406-9282
Part Number	6600310
FSCM	80195
Description	Packing, Preformed
U/M	EA
Qty Inc In Unit	5

Page C-111. Fig. number 33, item number 8, SMB code column. Change "XDOFF" to "PAOFF."
 Page C-112. Fig. number 33, item number 37 SMR code column. Change "PAFZZ" to "PAFZZA."
 Page C-115. Fig. number 34, immediately after item number 25, add the following:

Column	Added Data
Fig. No.	34
Item No.	26
SMR Code	PAOZZ
National Stock Number	4730-00-196-1490
Part Number	MS51953-56
FSCM	96906
Description	Nipple, Pipe 3/8" x 2 1/2" NPT
U/M	EA
Qty Inc In Unit	2

Immediately after item number 27, add the following:

Column	Added Data
Fig. No.	34
Item No.	28
SMR Code	PAOZZ
National Stock Number	4730-00.278-4240
Part Number	120063
FSCM	24617
Description	Elbow, Street 3/8" NPT
U/M	EA
Qty Inc In Unit	2

Item number 31, national stock number column. Add "4730-00-044.4587."
 Immediately after, item number 32, add the following:

Column	Added Data
Fig. No.	34
Item No.	33
SMR Code	PAOZZ
National Stock Number	4730-00-254-6377

Part Number	144152
FSCM	24617
Description	Cross, Pipe 3/8" NPT
U/M	EA
Qty Inc In Unit	1

Page C-125. Fig. number 38, item number 11, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 13, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 29, national stock number column. Add "5307-01-122.0804."

Page C-126. Fig. number 38, item number 38, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 46, national stock number column. Add "5320-01-111-9099."

Item number 50, national stock number column. Add "5S20-01-111-90&9."

Item number 54, national stock number column. Add "5365-01-108.4360."

Page C-127. Fig. number 38, item number 75, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 77, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 78, SMR code column. Change "XDOZZ" to "PAOZZ."

Page C-128. Fig. number 38, item number 102, SMR code column. Change "XAOZZ" to "PAOZZ."

Item number 117, national stock number column. Add "5315.01.114-8911."

Page C-129. Fig. number 38, item number 150, national stock number column. Add "5320.01-111-9099."

Page C-131. Fig. number 39, item number 11, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 14, national stock number column. Add "5930-01.107.8683." ;

Page C-139. Fig. number 41, item number 7 national stock number column. Add "5330-01-109-1370."

Item number 20, SMR code column. Change "XDOZZ" to "PAOZZ."

Item number 26, SMR code column. Change "XDOZZ" to "PAOZZ."

Page C-143. Fig. number 42, item number 14, SMR code column. Change "XDHZZ" to "PAHZZ."

Page C-147. Fig. number 44, item number 8, national stock number column. Add "5330-01-108-4323."

Item number 9, national stock number column. Add "4320-01-107-5479."

Item number 17, national stock number column. Add "5365-01-108-4348."

Item number 18, national stock number column. Add "5330-00-150-1767. "

Page C-149. Fig. number 45, item number I, national stock number column. Add "5305-01-109-5072."

Page C-152. All changes, additions **or deletions of** national stock numbers, manufactures code numbers and manufactures part numbers should be appropriately reflected in the parts listing and index of the manual.

By Order of the Secretary of the Army :

JOHN A. WICKHAM, JR.
General, United States Army
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Major General, United States Army
The Adjutant General

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**ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT
 MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST**

**BITUMINOUS DISTRIBUTOR BODY
 M918 (MODEL D-63)
 NSN 3895-01-028-4390**

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 or DA Form 2028 (Recommended Changes to Publications *and Blank Forms*) direct to: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished to you.

Current As Of 1 February 1989

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CHAPTER 1

INTRODUCTION

HOW TO USE THIS MANUAL.

This manual is designed to help you maintain and repair the M918 Bituminous Distributor Body. Listed below are special features which have been included to make it easier to locate and to use the information you need.

- a. A Table of Contents is provided, giving you a quick reference to chapters and sections that you will be using often.
- b. Warnings, subject headings, procedural steps, and certain other modules of information are highlighted in bold print as a visual aid for you.
- c. Upper case type is used to separate basic instructions from the more detailed procedural material.

FOLLOW THESE GUIDELINES WHEN YOU USE THIS MANUAL:

- a. Read all warnings and cautions.
- b. If you need a quick reference on a procedure, or if you need to refresh your memory, read the information which is printed in upper case type. This should help you get the information you need without having to read an entire passage of text.
- c. When you need more complete information on a subject, read all the material pertaining to that subject, including information printed in both upper and lower case type.
- d. Throughout this manual, illustration callout numbers are sequential, starting with Arabic numeral 1, in clockwise rotation wherever possible. In cases where the same part is used in more than one place in an illustration, it will generally have the same callout number. Where detail illustrations are needed to further identify parts of a larger exploded view illustration, like items will have the same callout number for ease of identification.

Section I. GENERAL

1-1. Scope.

- a. This technical manual is for your use in performing Organizational Direct Support and General Support maintenance of the Etnyre Bituminous Distributor mounted on the M918 truck chassis. The instructions in this manual are divided in accordance with the Maintenance Allocation Chart (MAC) (Appendix B) to define responsibilities for Organizational Maintenance personnel (Chapter 2) and Direct Support and General Support maintenance personnel (Chapter 3 thru 12).

NOTE

See TM 9-2320-27320 for maintenance support of the M918 truck chassis.

b. The user of this technical manual may find additional information by referring to the technical manuals, technical bulletins, and other publications listed in Appendix A.

c. Appendix C contains an illustrated list of all service parts and special tools with the estimated quantities of component parts and tools authorized for Organizational, Direct Support, and General Support Maintenance of the Etnyre Bituminous Distributor.

1-2. Maintenance Forms and Records. Equipment maintenance forms and procedures for their use are contained in DA PAM 738-750, The Army Maintenance Management System (TAMMS),

1-3. Destruction of Army Material to Prevent Enemy Use. Procedures outlined in TM 750-244-6 (Procedures for Destruction of Tank-Automotive to Prevent Enemy Use) are applicable to this equipment.

1-4. Administrative Storage. Storage information is given in TM 740-90-1) Administrative Storage.

1-5. Reporting Equipment Improvement Recommendations (EIRs). If your Bituminous Distributor needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MP, Warren, MI 48397-5000. We'll send you a reply.

1-6. Quality Assurance/Quality Control (QA/QC). No particular quality assurance or quality control pertains specifically to the Etnyre Bituminous Distributor.

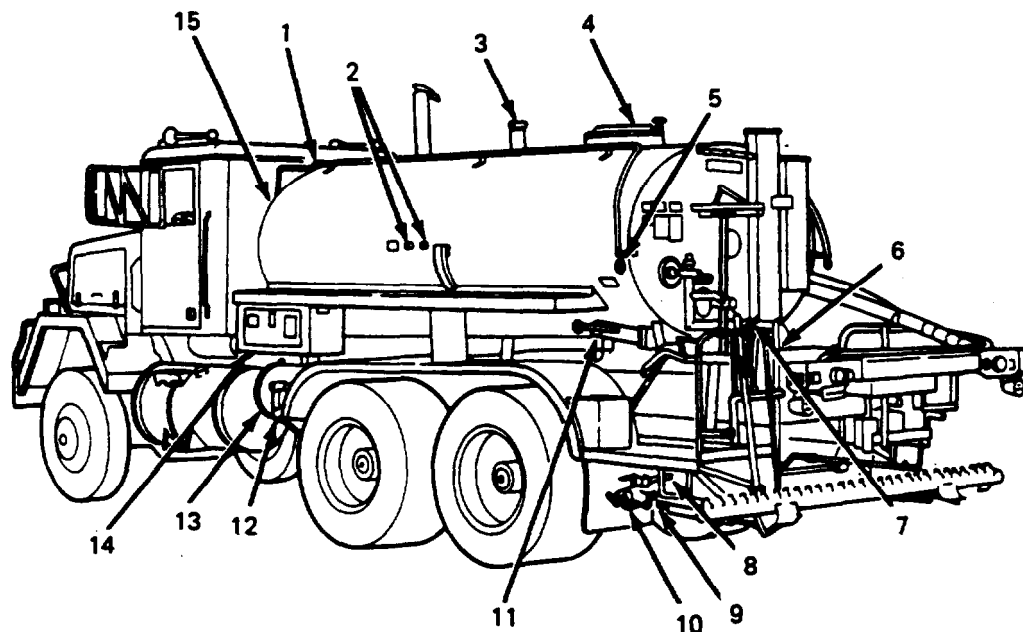
1-7. Calibration Procedures. There are no calibration procedures authorized at Organizational, Direct Support or general Support maintenance levels.

Section II. DESCRIPTION AND DATA

1-8. Description.

a. The Etnyre Bituminous Distributor consists of a storage tank with a low pressure heating system, a hydraulic-powered pumping unit, and an adjustable spray bar for distributing bituminous material (see fig. 1-1). The equipment is mounted on an M918 truck chassis. It is normally operated by a crew of two men; a driver in the cab, and an operator stationed on the rear platform.

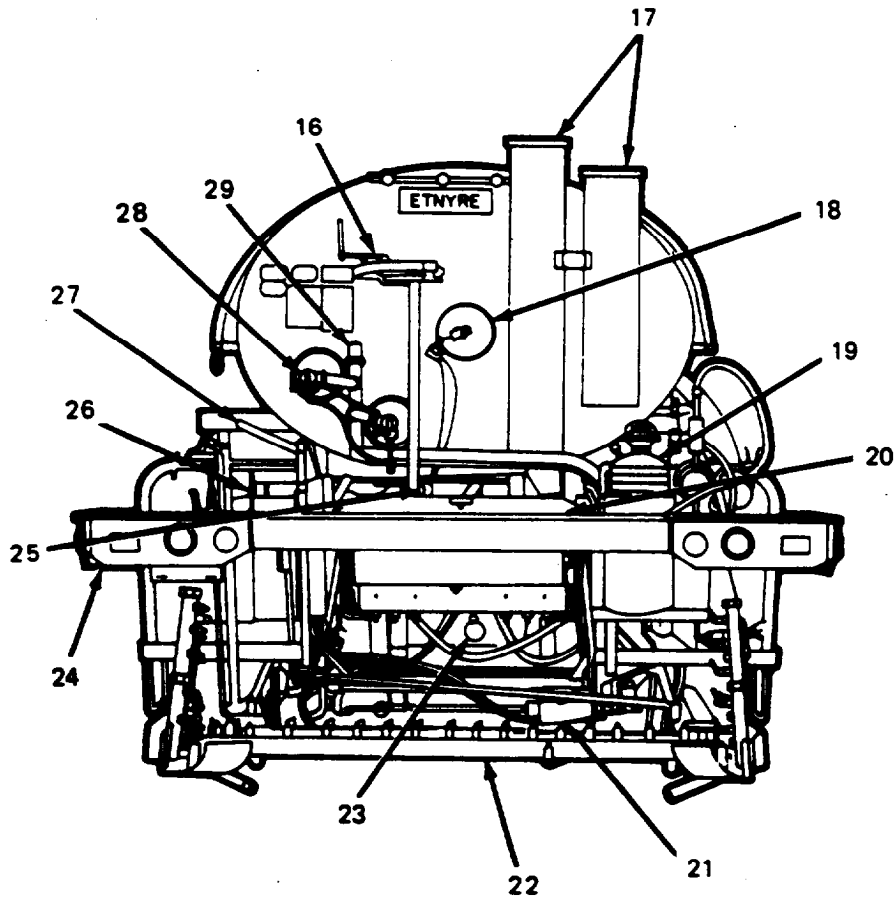
b. The maintenance paragraphs of this manual contain descriptions of the Bituminous Distributor major components.

**LEGEND:**

- | | | |
|-------------------------------|--------------------------|---------------------------|
| 1. SIGNAL BELL | 6. AIR CONTROL BOX | 11. FILL LINE CAP |
| 2. THERMOMETER AND WELL (DRY) | 7. BAR TURN UP LEVER | 12. HYDRAULIC FILTER |
| 3. OVERFLOW AND VENT COVER | 8. TRANSFER VALVE LEVER | 13. HYDRAULIC RESERVOIR |
| 4. MANHOLE | 9. HAND SPRAY CONNECTION | 14. TOOL BOX |
| 5. SIGNAL BELL PULL RING | 10. TRANSFER VALVE COVER | 15. MATERIAL STORAGE TANK |

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Figure 1-1. Major Components and Their Locations (Sheet 1 of 3).

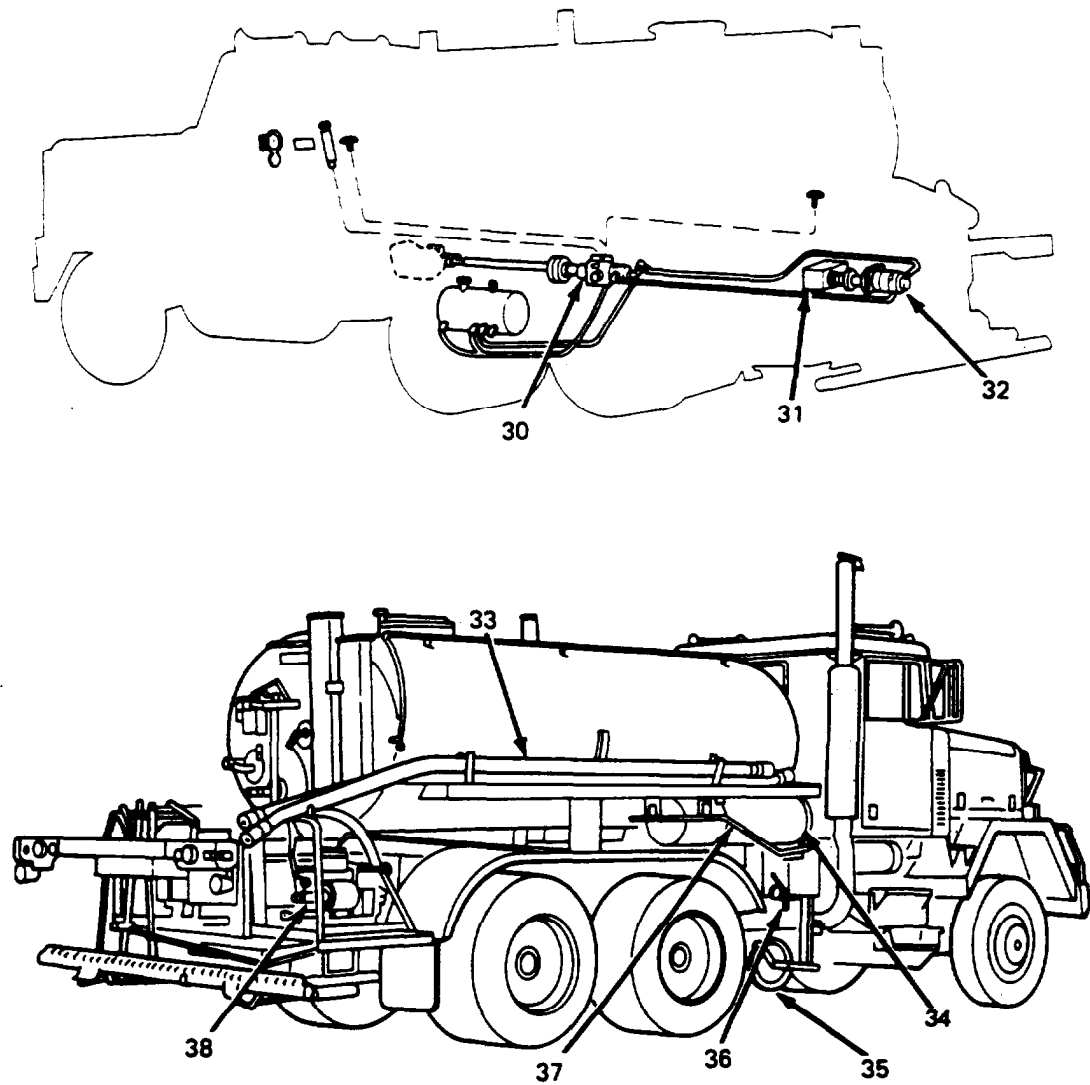


LEGEND:

- | | |
|-------------------------------|------------------------------------|
| 16. QUADRANT CONTROL LEVER | 23. DISCHARGE HEADER STRAINER |
| 17. EXHAUST STACKS | 24. LOOM BUMPER |
| 18. TANK GAGE | 25. VACU-FLO VALVE LEVER |
| 19. PORTABLE BURNER | 26. BUTTERFLY VALVE LEVER |
| 20. EXTENSION BAR STOWAGE BOX | 27. INTAKE VALVE LEVER |
| 21. AIR CYLINDER | 28. LOW PRESSURE ATOMIZING BURNERS |
| 22. SPRAY BAR | 29. AIR RELIEF VALVE |

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Figure, 1-1. Major Components and Their Locations (Sheet 2 of 3).



LEGEND:

- | | |
|------------------------|-------------------------|
| 30. HYDRAULIC PUMP | 35. BITUMETER WHEEL |
| 31. BITUMEN PUMP | 36. AIR LINE LUBRICATOR |
| 32. HYDRAULIC MOTOR | 37. HAND SPRAY GUN |
| 33. AUXILIARY HOSE (2) | 38. BURNER FUEL PUMP |
| 34. BURNER FUEL TANK | |

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Figure 1-1. Major Components and Their Locations (Sheet 3 of 3).

TM 5-3895371-24 & P

1-9. Tabulated Data.

Manufacturer: E.D. Etnyre & Co., Inc.

Model: D-63

a. *Dimensions and Weight - Distributor and Truck.*

Overall Length : 335 inches (8.51m)

Overall Width: 97 inches (2.46m)

Overall Height: 116 inches (2.95m)

Net Weight, Empty: 26,000 pounds (11,804 Kg)

Net Weight, Filled: 39,000 pounds (17,706 Kg)

Shipping Volume: 224 cubic yards (171 cu m)

Shipping Tonnage: 13 tons

b. *Burners.*

Manufacturer: Houck Manufacturing Co.

Model No.: 580A

Type: Low Pressure Atomizing

c. *Material Storage Tank.*

Capacity: 1,500 gallons (5677.5l)

Overage for Expansion: 9 percent

Manhole: 20 inch (50.8 cm) diameter

overflow: 3 inch (7.62 cm) pipe

Tank Gage: Mechanical Float Type

Thermometer: Armored Pencil 600⁰ F (315.6°C)

d. *Spray Bar.*

Length of Center Section: 8 feet (2.44 m)

Length of Extensions: 1 foot (.305 m) and 2 foot (.61 m)

Total Length: 24 feet (7.32 m)

e. *Nozzles.*

Type:	Fan
Thread:	1/2 inch national pipe thread
Slot:	1/8 inch (.32 cm)
Spacing :	4 inch (10.16 cm)

f. *Bituminous Pump Data.*

Make:	ED. Etnyre & Co., Inc.
Model:	P 15T
Operating Pressure:	20 pounds per square inch (6.89 kPa)
Output Capacity:	400 gallons (1514 l) per minute

g. *Burner System.*

Fuel Consumption (Maximum) :	12 gallons (45.42 l) per hour
Fuel Consumption (Minimum):	1-1/2 gallons (5.68 l) per hour
Each Burner:	3/4 gallons (2.84 l) per hour

h. *Capacities.*

Fuel Tank, Burner:	36 gallons (136.26 l)
Material Storage Tank:	1500 gallons (5677.5 l)
Portable Burner Tank:	4 gallons (15.14 l)
Hydraulic Reservoir:	20 gallons (75.7 l)

CHAPTER 2

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. Scope. This chapter contains the Organizational Maintenance Instructions for inspecting, servicing, checkout, and troubleshooting the M918 Etnyre Bituminous Distributor Body,

2-2. Inspection and Service.

- a. Check for leaks and damage in the lubricating oil, hydraulic system, and air lines.
- b. Lubricate the distributor as specified in LO 53895-371-12.
- c. Check meters and gages for damage and loose connections.
- d. Check all tools and equipment assigned to the distributor to make sure they are serviceable, clean, and properly stowed or mounted.

Section II. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

2-3. Special Tools and Equipment. The special tools for organizational level personnel are listed and illustrated in Appendix C of this manual.

2-4. Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tool list covering Organizational Maintenance for this equipment in Appendix C of this manual.

Section III. LUBRICATION INSTRUCTIONS

2-5. Lubrication. Refer to LO 5-3895371-12 for lubrication and services performed at organizational level.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-6. Organizational Preventive Maintenance Checks and Services. To insure that the distributor is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. Table 2-1 contains a tabulated listing of preventive maintenance checks and services to be performed by organizational maintenance personnel. All deficiencies and shortcomings will be recorded as well as the corrective action taken on DA Form 2404 at the earliest possible opportunity.

a. The item numbers of Table 2-1 indicate the sequence of the PMCS. Perform at the intervals shown below:

(1) Do your (Q) PREVENTIVE MAINTENANCE once each 3 months.

(2) Do your (S) PREVENTIVE MAINTENANCE twice a year, or each 6 months.

(3) Do your (A) PREVENTIVE MAINTENANCE once each year.

(4) Do your (B) PREVENTIVE MAINTENANCE once each two years.

(5) Do your (H) PREVENTIVE MAINTENANCE at the hour interval listed.

(6) Do your (MI) PREVENTIVE MAINTENANCE when the mileage of the vehicle reaches the amount listed.

b. If something doesn't work, troubleshoot it with the instructions in this manual or notify your supervisor.

c. Always do your preventive maintenance in the same order, so it gets to be a habit. Once you've had some practice you'll spot anything wrong in a hurry.

d. If anything looks wrong and you can't fix it, write it down on your DA Form 2404. If you find something seriously wrong, report it to direct support as soon as possible.

WARNING

Dry cleaning solvent SD-2, used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 138⁰ F.

(1) *Keep it clean:* Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (SD-2) to clean metal surfaces. Use soap and water when you clean rubber or plastic material.

(2) *Bolts, nuts, and screws:* Check that they are not loose, missing, bent, or broken. You can't try them all with a tool, of course, but look for chipped paint, bare metal, or rust around bolt heads. Tighten any that you find loose.

(3) *Welds:* Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to direct support.

(4) *Electric wires and connectors:* Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connections and make sure the wires are in good condition.

(5) *Hoses and fluid lines:* Look for wear, damage, and leaks. Make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, either correct it or report it to direct support (refer to MAC chart).

e. It is necessary for you to know how fluid leaks affect the status of your equipment. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of your equipment. Learn and be familiar with them and REMEMBER - When in doubt, notify your supervisor!

Leakage definitions for Organization 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 enough to cause drops to drip from the item being checked/inspected.

CLASS III Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

Table 2-1. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES												
Q--Quarterly		S-Semiannually		A-Annually		B-Biennially		H-Hours		M-Miles		
ITEM NO.	INTERVAL						ITEM TO BE INSPECTED					
	Q	S	A	B	H	M	PROCEDURE :Check for and have repaired, filled, or adjusted as needed.					
							NOTE					
							PERFORM OPERATOR/CREW PMCS PRIOR TO OR IN CONJUNCTION WITH ORGANIZATIONAL PMCS IF:					
							a. There is a delay between the daily operation of the equipment and the organizational PMCS.					
							b. Regular operator is not assisting/participating.					
							ELECTRICAL SYSTEM					
1		●					Check wiring harness for corrosion and bare wires. Replace defective wiring.					
2	●						Check all lights for proper operation. Replace defective lamps and lights.					
							DISTRIBUTOR BODY					
3		●					Check material storage tank, subframe, tie downs and fasteners for obvious damage, weld breaks. Notify DS Maintenance for repair.					
4		●					Check that manhole cover seals properly. Repair as needed.					
5	●						Check overflow pipe. Clean any material buildup in pipe.					
							UNIVERSAL DRIVE					
6	●						Check universal drive and U-joints. Check for wear and cracks. Replace damaged U-joints.					
							HYDRAULIC SYSTEM					
7		●					Check all hydraulic lines and fittings. If damaged, replace.					
							BURNER FUELSYSTEM					
8		●					Check fuel lines and fittings. If damaged, replace.					
9			●				Check burner fuel tank holding straps. If damaged, repair or replace.					
10		●					Check burner assembly air hose for leaks. Replace if damaged.					

Table 2-1. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Continued)												
Q-Quarterly		S-Semiannually		A-Annually		B-Biennially		H-Hours		M-Miles		
ITEM NO.	INTERVAL						ITEM TO BE INSPECTED					
	Q	S	A	B	H	M	PROCEDURE: Check for and have repaired, filled, or adjusted as needed.					
11		●					BURNER FUEL SYSTEM (Continued) Check smoke stack cover spring for damage and check operation. Replace spring if necessary.					
12		●					BITUMETER WHEEL ASSEMBLY Check air lines and fittings. If damaged, replace.					
13		●					Check power line and ground on solenoid for corrosion and bare wires, replace defective wires.					
14		●					Check that bitumeter positions itself when activated. Adjust or repair as needed.					
15		●					SPRAY BAR Check that spray bar positions itself whenever control switches are activated. Adjust as needed.					
16		●					Check chains. Replace as necessary.					
17		●					Check power lines to solenoids for corrosion and bare wires. Replace defective wires.					
18	●						Check relation of quadrant lever position with nozzle lever position. Adjust linkage as needed.					
19			●				Check recording bitumeter cable operation and service it.					
20			●				Check pump tachometer cable and service it.					
21	●						Check air control reservoir. Open drain cock to let out condensation.					

Section V. TROUBLESHOOTING

2-7. General. Information in this chapter is for use of supporting maintenance personnel in conjunction with and as a supplement to the troubleshooting procedures in TM 9-2320273-20. It provides a continuation of instructions given in TM 9-2320-273-20.

WARNING

Operation of a deadlined vehicle without a preliminary examination can cause further damage to a disabled component and possible injury to personnel. By careful inspection and troubleshooting, such damage and injury can be avoided. In addition, the causes of faulty operation of a vehicle or component can often be determined without extensive disassembly.

2-8. General Instructions and Procedures. Table 2-2 lists possible malfunctions that may be experienced during the operation of the component or subassembly. Each malfunction is followed by a list of probable causes that may be considered in determining their corrective action.

Table 2-2. Troubleshooting.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
1. BURNERS INOPERATIVE OR OPERATING IMPROPERLY:
Step 1. Clogged fuel lines.
Drain and clean the lines.
Step 2. Faulty valves.
No repair, replace valves (para 10-1).
Step 3. Fuel pump inoperative.
Repair fuel pump (para 2-35).
2. BITUMETER WHEEL FAILS TO RAISE:
Step 1. Wheel frame binding or bent.
Repair the wheel frame.
step 2. Loose air connection.
Tighten connections.
Step 3. Defective solenoid.
Replace solenoid (para 2-23).
Step 4. Defective wiring.
Check all connections and tighten as needed.
step 5. Defective cylinder daiphragm.
Replace diaphragm (para 8-1) .
3. BITUMETER WHEEL FAILS TO LOWER:
step 1. Wheel fork binding or bent.
Repair or replace the wheel fork (para 2-23).
step 2. Loose air connection.
Tighten connections.

Table 2-2. Troubleshooting (Continued).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
3. BITUMETER WHEEL FAILS TO LOWER (Continued).
Step 3. Defective solenoid.
Replace solenoid (para 2-23).
Step 4. Defective wiring.
Check connections and tighten as needed.
4. BITUMETER COUNTER INOPERATIVE:
step 1. Drive cable broken.
Replace drive cable (para 2-25).
step 2. Defective adapter.
Replace adapter (para 2-25).
Step 3. Faulty tachometer.
Replace tachometer (para 2-25).
5. BITUMETER COUNTER POINTER WHIPS:
Step 1. Bitumeter wheel broken.
Replace bitumeter wheel (para 2-23).
step 2. Defective recording bitumeter.
Replace the bitumeter (para 2-25).
step 3. Drive cable binding.
Lubricate or replace drive cable (para 2-25).
6. QUADRANT LEVER SLOWS OR STOPS PUMP WHEN MOVING FROM "CIRCULATE IN TANK" TO "CIRCULATE IN BAR":
step 1. Butterfly valve partially closed.
Open butterfly by pulling on control link.

Table 2-2. Troubleshooting (Continued).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
<p>6. QUADRANT LEVER SLOWS OR STOPS PUMP WHEN MOVING FROM "CIRCULATE IN TANK" TO "CIRCULATE IN BAR" (Continued):</p>
<p>Step 2. Linkage out of adjustment.</p> <p style="padding-left: 40px;">Check relation of quadrant lever position with nozzle lever position and adjust as needed (para 2-29).</p>
<p>Step 3. Transfer valve in hand spray position.</p> <p style="padding-left: 40px;">Set transfer valve to distribute position.</p>
<p>7. SPRAY FOGS:</p>
<p>step 1. Pump speed too fast for size of nozzle.</p> <p style="padding-left: 40px;">Check "Circulating in Tank" in TM 53895371-10 for proper relationship.</p>
<p>8. SPRAY STREAKS:</p>
<p>step 1. Pump speed too slow.</p> <p style="padding-left: 40px;">Check "Circulating in Tank" in TM 53895371-10 for proper relationship.</p>
<p>Step 2. Nozzles not at proper angle.</p> <p style="padding-left: 40px;">Adjust with nozzle wrench (refer to TM 5-3895-371-10).</p>
<p>step 3. Spray bar at improper height above ground.</p> <p style="padding-left: 40px;">Adjust spray bar to give nozzle height 12 in. (30.48 cm) above road.</p>
<p>step 4. Material temperature too low.</p> <p style="padding-left: 40px;">Heat material to highest temperature recommended for spraying material.</p>
<p>9. SPRAY LACKS PRESSURE:</p>
<p>step 1. Pump speed too slow.</p> <p style="padding-left: 40px;">Check "Circulating in Tank" (refer to TM 5-3895-371-10) for proper relationship.</p>
<p>step 2. One of control valves in incorrect position.</p> <p style="padding-left: 40px;">Lift quadrant and turn valve plugs to position relative to levers (refer to TM 5-3895-371-10).</p>

Table 2-2. Troubleshooting (Continued).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
9. SPRAY LACKS PRESSURE (Continued):
step 3. Discharge strainer plugged.
Remove and clean (para 12-6).
10. APPLICATION RATE VARIES:
Step 1. Improper reading of tank contents.
Use measuring stick for accurate readings. Tank must be level when reading measuring stick.
Step 2. Defective pump tachometer.
Repair or replace (para 2-25).
step 3. Defective recording bitumeter.
Repair or replace (para 2-25).
step 4. Catch lever on quadrant not pulled.
Pull catch lever out.
step 5. Discharge strainer plugged.
Remove and clean discharge strainer on pump outlet (para 12-6).
Step 6. Hydrostatic control not firmly positioned.
Adjust and tighten (TM 5-3895-371-10).
step 7. Hydrostatic override control partially engaged.
Return override to neutral position.
11. DIFFICULTY IN RAISING SPRAY BAR END SECTIONS IN VERTICAL POSITIONS:
step 1. Hinge joint inoperative.
Adjust or replace retaining rings and packing (para 2-38).
step 2. Damaged linkage
Repair or replace linkage (para 2-38).

Table 2-2. Troubleshooting (Continued).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
<p>12. ALL NOZZLES DO NOT CUT OFF:</p> <p>Step 1. Linkage out of adjustment or worn.</p> <p style="padding-left: 40px;">Repair or replace linkage so that all spray bar levers are in appropriate position (para 2-38).</p>
<p>13. SPRAY BAR DOES NOT SHIFT PROPERLY:</p> <p>Step 1. Loose connections.</p> <p style="padding-left: 40px;">Tighten connections.</p> <p>Step 2. Defective solenoid.</p> <p style="padding-left: 40px;">Replace solenoid (para 2-20).</p> <p>Step 3. Defective wiring.</p> <p style="padding-left: 40px;">Check connections and tighten as needed.</p> <p>Step 4. Shift lock engaged.</p> <p style="padding-left: 40px;">Disengage shift lock.</p> <p>Step 5. Linkage damaged.</p> <p style="padding-left: 40px;">Repair linkage (para 2-38).</p>
<p>14. SPRAY BAR DOES NOT RAISE & TURN UP PROPERLY:</p> <p>Step 1. Loose connections.</p> <p style="padding-left: 40px;">Tighten.</p> <p>Step 2. Defective solenoid.</p> <p style="padding-left: 40px;">Replace solenoid (para 2-20).</p> <p>step 3. Defective wiring.</p> <p style="padding-left: 40px;">Check connections.</p>

Table 2-2. Troubleshooting (Continued).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
15. INSUFFICIENT FLOW THROUGH SPRAY BAR:
step 1. Pump fails.
Repair pump (para 9-1).
step 2. Damaged lines.
Replace lines (para 2-38).
16. SPRAY BAR DOES NOT CIRCULATE:
step 1. Spray bar full of cold material.
Heat spray bar with portable burner (refer to TM 5-3895-371-10).
step 2. Valve lever in wrong position.
Adjust valve lever (para 2-38).
step 3. Damaged inner circulating tube.
Replace damaged section (para 2-37).
step 4. Inner circulating tubes out of round.
Check inner circulating tubes, particularly where they join at sections.
17. SPRAY BAR DOES NOT TURN UP PROPERLY:
step 1. Loose air connections.
Tighten connections.
step 2. Linkage damaged or need cleaning.
Clean with an approved solvent or replace.
step 3. Defective solenoid.
Replace solenoid (para 2-20).
step 4. Defective wiring.
Check connections and tighten as needed.

Table 2-2. Troubleshooting (Continued).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
<p>18. LEFT CONTROL VALVE LEAKS AT TOP:</p>
<p>Step 1. Worn packing.</p>
<p style="padding-left: 40px;">Replace packing (para 2-32).</p>
<p>Step 2. Circulating in bar at too great pump speed.</p>
<p style="padding-left: 40px;">Pump speed should not exceed 160 rpm when circulating in bar.</p>
<p>19. INTAKE VALVE LEAKS:</p>
<p>Step 1. Insufficient spring tension.</p>
<p style="padding-left: 40px;">Tighten spring on operating shaft (para 2-30).</p>
<p>Step 2. Scratched or scored valve.</p>
<p style="padding-left: 40px;">Replace valve (para 2-30).</p>
<p>20. NOZZLE VALVE STUCK OR LEAKS:</p>
<p>Step 1. Bar pressure seems to keep them tight.</p>
<p style="padding-left: 40px;">To loosen, rap end of plug stem.</p>
<p>Step 2. Valves scratched or scored.</p>
<p style="padding-left: 40px;">Replace valve (para 2-38).</p>
<p>Step 3. Insufficient clearance between plug and case.</p>
<p style="padding-left: 40px;">Loosen adjusting nut.</p>

Section VI. MAINTENANCE OF ELECTRICAL SYSTEM

2-9. Loom Bumper and Marker Lamps.

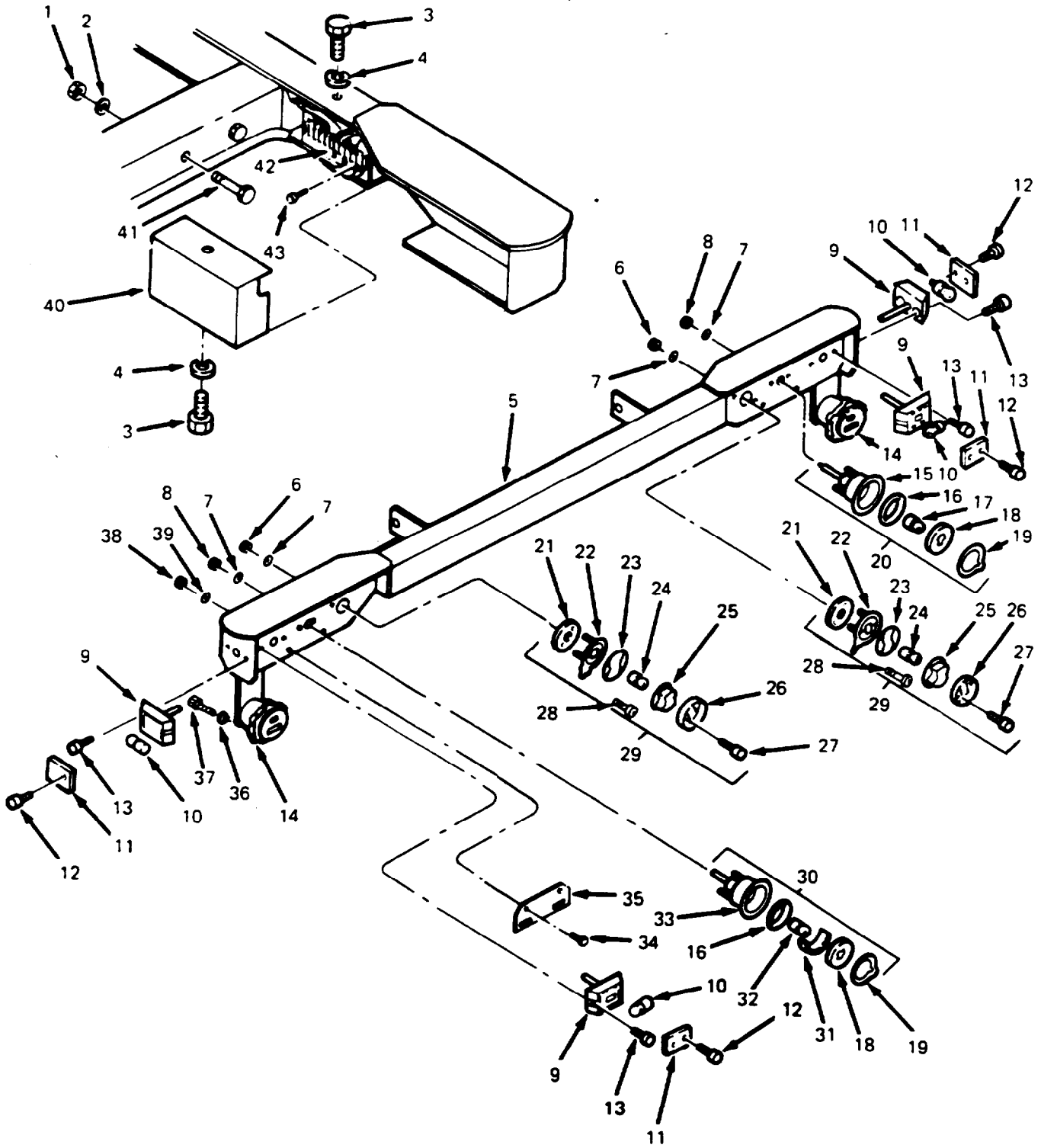
NOTE

For ease in installation, check diagram showing wire color code and terminal location before removing wires in step (2). (See fig. 2-2.)

a. *Removal.*

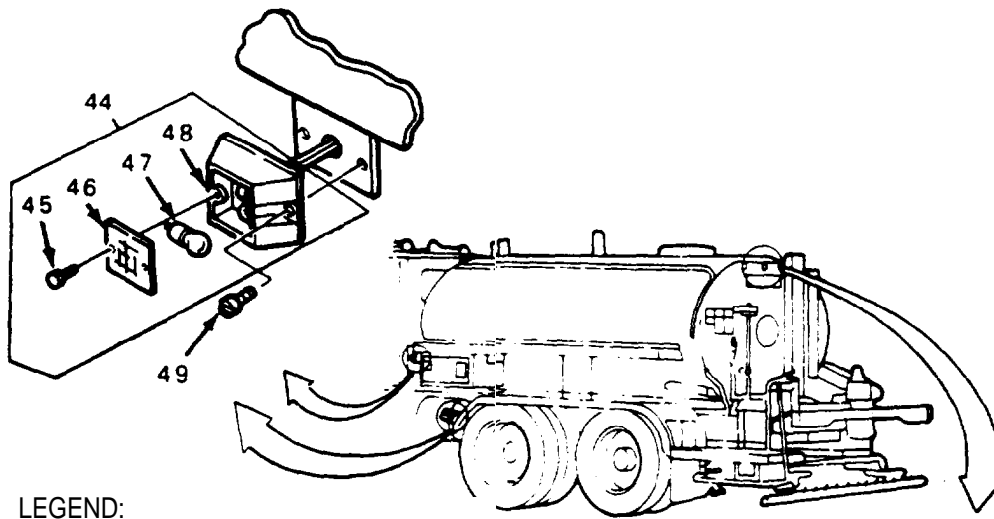
- (1) Remove terminal board cover (40, fig. 2-1) by removing two capscrews (3) and lock-washers (4).
- (2) Disconnect wires from terminal board (42).
- (3) Remove two screws (43) and remove terminal board (42).
- (4) Remove retaining ring (19), lens (18), and gasket (16) from right hand taillamp assembly (20).
- (5) Depress bulb (17), turn counterclockwise, and remove.
- (6) Remove two nuts (8) and washers (7) from base (15). Cut electrical wires and remove right hand taillamp assembly (20).
- (7) Remove retaining ring (19), lens (18), and gasket (16) from left hand taillamp assembly (30).
- (8) Depress bulb (32), turn counterclockwise, and remove.
- (9) Remove two nuts (8) and washers (7) from base (33). Cut electrical wires and remove left hand taillamp assembly (30).
- (10) Remove license lamp window (31) from base (33).
- (11) Remove two nuts (38), washers (39), capscrews (34), and bracket (35).
- (12) Remove two screws (27), lens rim (26), lens (25) and gasket (23).

- (13) Depress bulb (24), turn counterclockwise, and remove.
- (14) Remove two screws (28), nuts (6), washer (7), base (22) and gasket (21). Cut wire and remove two backup lamps (29).
- (15) Remove two screws (12) and lens (11).
- (16) Depress bulb (10) and turn counterclockwise to remove.
- (17) Remove two screws (131), cut electrical wire, and remove four clearance lamps (9).
- (18) Remove two capscrews (37) and lockwashers (36). Cut wire and remove blackout lamp (14) at both ends of bumper.
- (19) For repair of blackout lamps (14) see manual TM 9-2320-273-20.
- (20) Remove four capscrews (52) and two capscrews (55) with two washers (56) and nuts (57) from bracket (51). Remove lamp assembly (50).
- (21) Remove lens (53). Depress bulb (54) and turn counterclockwise to remove.
- (22) Remove two screws (45) and lens (46).
- (23) Depress bulb (47) and turn counterclockwise to remove.
- (24) Remove two capscrews (49), cut electrical wire, and remove housing (48) (four lamps).
- (25) Remove twelve screws holding wiring loom and remove left and right harness assemblies (3) and (4). (See fig. 2-3.)
- (26) Remove four capscrews (41), nuts (1), washers (2), and bumper (5).



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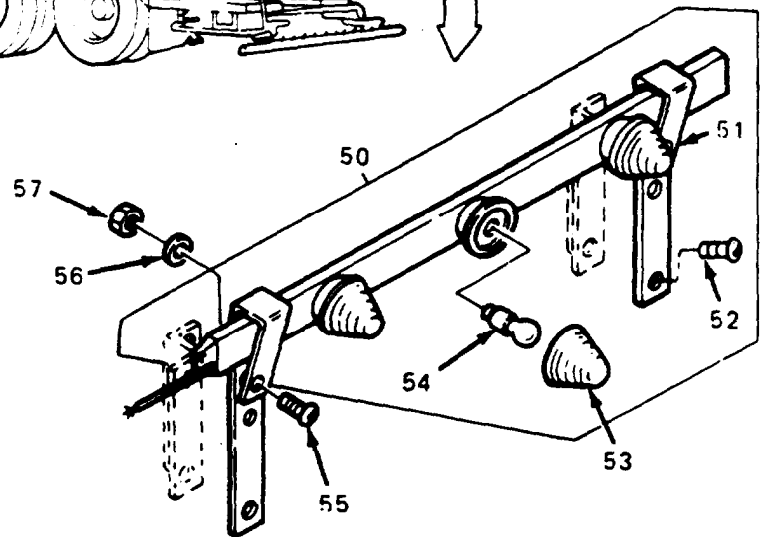
Figure 2-1. Remove/Install Loom Bumper and Marker Lamps (Sheet 1 of 2).



LEGEND:

- 1. NUT (4)
- 2. WASHER (4)
- 3. CAPSCREW (2)
- 4. LOCKWASHER (2)
- 5. BUMPER
- 6. NUT (4)
- 7. WASHER (8)
- 8. NUT (4)
- 9. CLEARANCE LAMP (4)
- 10. BULB (4)
- 11. LENS (4)
- 12. SCREW (8)
- 13. SCREW (8)
- 14. BLACKOUT LAMP (2)
- 15. BASE
- 16. GASKET (2)
- 17. BULB
- 18. LENS (2)
- 19. RETAINING RING (2)
- 20. TAILLAMP ASSEMBLY (RH)
- 21. GASKET (2)
- 22. BASE (2)
- 23. GASKET (2)
- 24. BULB (2)
- 25. LENS (2)
- 26. LENS RIM (2)
- 27. SCREW (4)
- 28. SCREW (4)
- 29. BACKUP LAMP (2)
- 30. TAILLAMP ASSEMBLY (LH)
- 31. LICENSE LAMP WINDOW
- 32. BULB
- 33. BASE
- 34. CAPSCREW (2)

- 35. BRACKET
- 36. LOCKWASHER (4)
- 37. CAPSCREW (4)
- 38. NUT (12)
- 39. WASHER (2)
- 40. TERMINAL BOARD COVER
- 41. CAPSCREW (4)
- 42. TERMINAL BOARD
- 43. SCREW (2)
- 44. LAMP ASSEMBLY (4)
- 45. SCREW (8)
- 46. LENS (4)
- 47. BULB (4)
- 48. HOUSING (4)
- 49. CAPSCREW (8)
- 50. LAMP ASSEMBLY
- 51. BRACKET
- 52. CAPSCREW (4)
- 53. LENS (3)
- 54. BULB (13)
- 55. CAPSCREW (2)
- 56. WASHER (2)
- 57. NUT (2)



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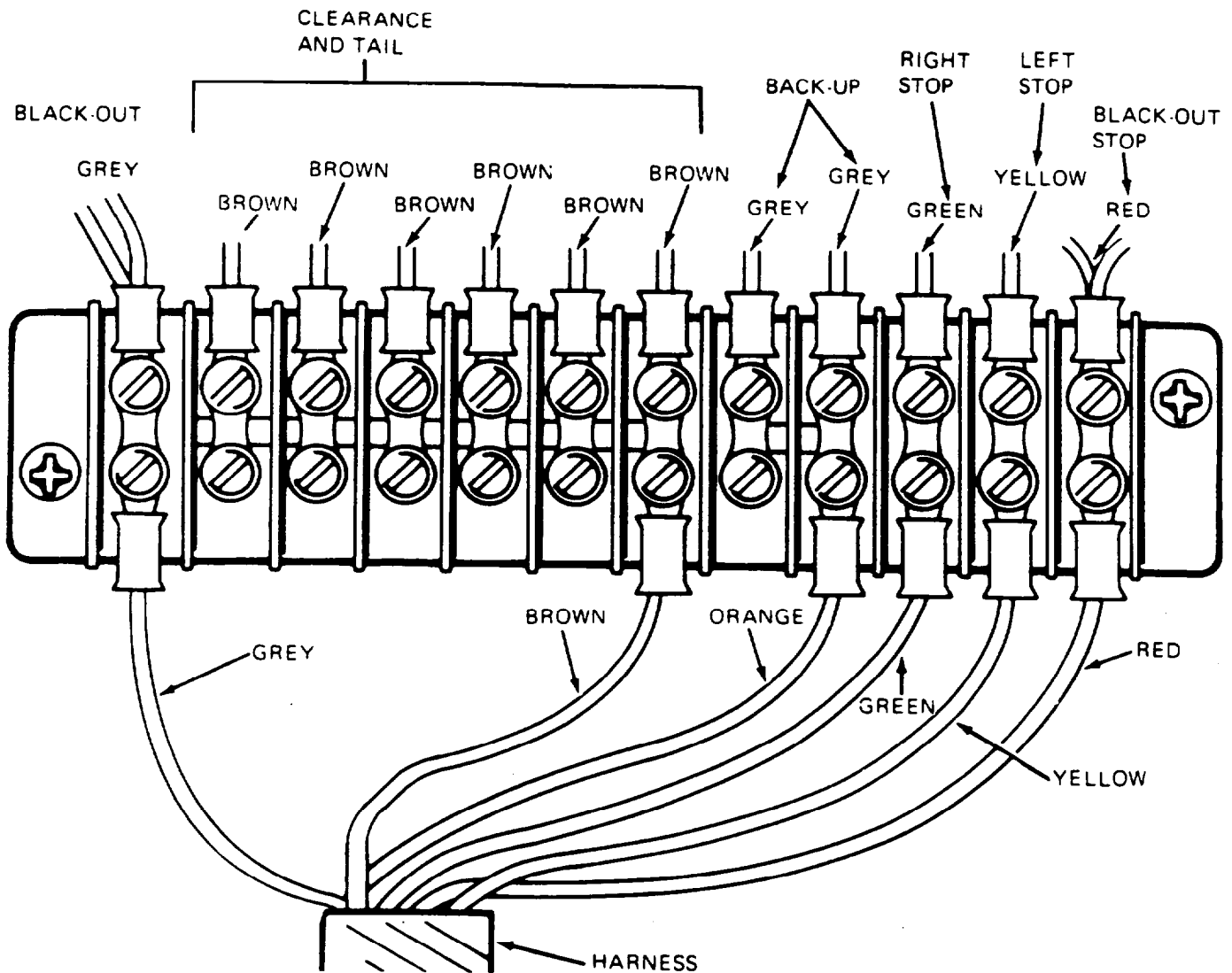
Figure 2- 1. Remove/Install Loom Bumper and Marker Lamps (Sheet 2 of 2).

TM 5-3895-371-24 & P

b. Installation.

- (1) Install bumper (5) with four capscrews (41), nuts (1), and washers (2).
- (2) Install wiring loom and secure with twelve screws and clips.
- (3) Install blackout lamps (14) to bumper (5) with two capscrews (37) and lockwashers (36). Connect wires to wiring loom with solderless connectors and tape.
- (4) Install housing (48) with two capscrews (49). Connect wires to wiring loom with solderless connectors and tape.
- (5) Insert bulb (47) into socket and turn clockwise to secure.
- (6) Install lens (46) with two screws (45).
- (7) Install lamp assembly (50) with four capscrews (52) and two capscrews (55), two washers (56) and two nuts (57).
- (8) Insert bulb (54) into socket and turn clockwise to secure. Snap on lens (53).
- (9) Install clearance lamp (9) with two screws (13). Connect wires to wiring loom with solderless connectors and tape.
- (10) Insert bulb (10) into socket and turn clockwise to secure.
- (11) Install lens (11) with two screws (12).
- (12) Install backup lamp (29) with two screws (28), washers (7), nuts (6), base (22) and gasket (21). Connect wires to wiring loom with solderless connectors and tape.
- (13) Insert bulb (24) into socket and turn, clockwise to secure.
- (14) Install lens (25), lens rim (26) and gasket (23) with two screws (27).
- (15) Install bracket (35) with two capscrews (34), washers (39) and nuts (38).

- (16) Insert license lamp window (31) into base (33).
- (17) Install left hand taillamp assembly (30) with two nuts (8) and washers (7). Connect wires to wiring loom with solderless connectors and tape:
 - (18) Insert bulb (32) into socket and turn clockwise to secure.
 - (19) Install lens (18), retaining ring (19), and gasket (19).
- (20) Install base (15) with two washers (7) and nuts (8). Connect wires to wiring loom with solderless connectors and tape.
 - (21) Insert bulb (17) into socket and turn clockwise to secure.
 - (22) Install lens (18), retaining ring (19), and gasket (16).
- (23) Install terminal board (42) with two screws (43) and connect wires.
- (24) Install terminal board cover (40) with two capscrews (3) and lockwashers (4).



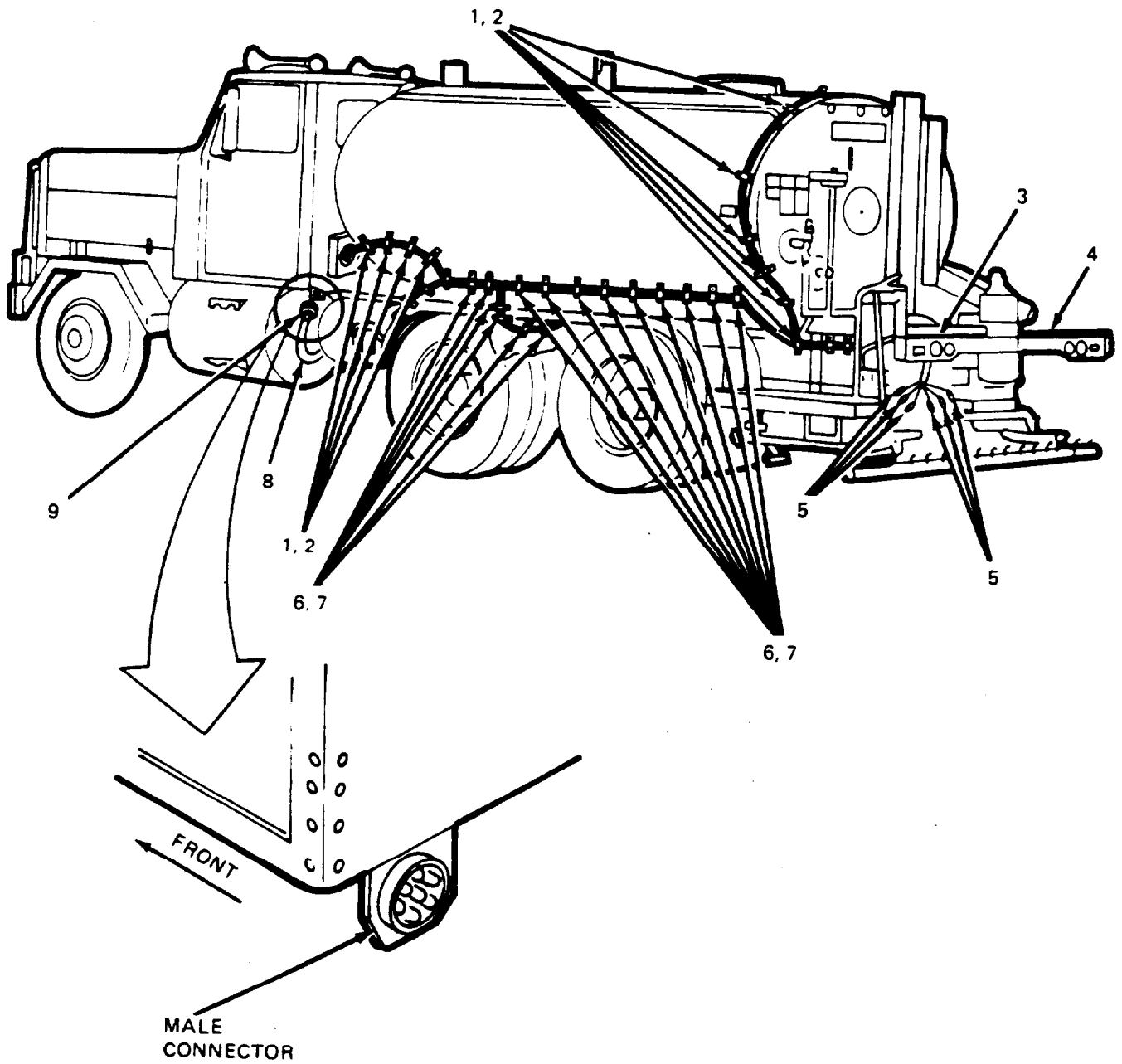
TA 075805

Figure 2-2. Bumper Terminal Board Wiring Connectors.

2-10. Body Lamps Wire Harness Routing.

a. Removal of Harness. (See fig. 2-3.)

- (1) Remove connector (9) from male connector on lower left rear corner of body by pushing in and turning locking to the left.
- (2) Drop connector (9) with body lamps harness (8) down over frame rail.
- (3) Remove six wire clips (1) and screws (2).
- (4) On front of walkway at amber clearance lamps, snip off brown wire at each lamp.



LEGEND:

- 1. WIRE CLIP, 3/8"
- 2. SCREW
- 3. HARNESS, BUMPER LEFT
- 4. HARNESS, BUMPER RIGHT
- 5. WIRE TERMINAL (6)
- 6. WIRE CLIP, 1/2"
- 7. SCREW
- 8. BODY LAMPS HARNESS
- 9. CONNECTOR

TA 075806

Figure 2-3. Body Wiring Harness Routing.

(5) Remove eleven wire clips (6) and screws (7).

(6) At the two side facing amber clearance lamp assemblies, snip off brown wire at each lamp.

(7) Remove fourteen wire clips (6) with screws (7).

(8) Remove five wire clips (1) and screws (2).

(9) At the upper rear tank clearance lamp, snip off brown wire.

(10) Unscrew and remove six wire terminals (5).

b. *Inspection and Repair of Harness.*

(1) Inspect all outer harness and exposed wire insulation for damage or cracks.

Inspect all terminal ends for tight crimp.

(3) Resolder terminal ends as necessary.

(4) Replace badly cracked or corroded wires. Slight punctures in the outer insulation may be wrapped securely with electrical tape.

c. *Installation of Harness.* (Refer to fig. 2-3.)

(1) Screw on six wire terminals (5).

(1) Install new crimp connector to brown wire on lamp bar at the upper rear tank clearance lamp and tape connection with waterproof electricians tape.

(3) Install five wire clips (1) and screws (2).

(4) Install fourteen wire clips (6) with screws (7).

(5) Install new crimp connector to brown wire on side clearance lamps and tape connection with waterproof electricians tape.

(6) Install eleven wire clips (6) and screws (7).

(7) Install new wire crimp connector to two forward facing clearance lamps and tape connection with waterproof electricians tape.

(8) Install six wire clips (1) and screws (2).

(9) Route connector (9) with body lamps harness (8) up over left side frame rail.

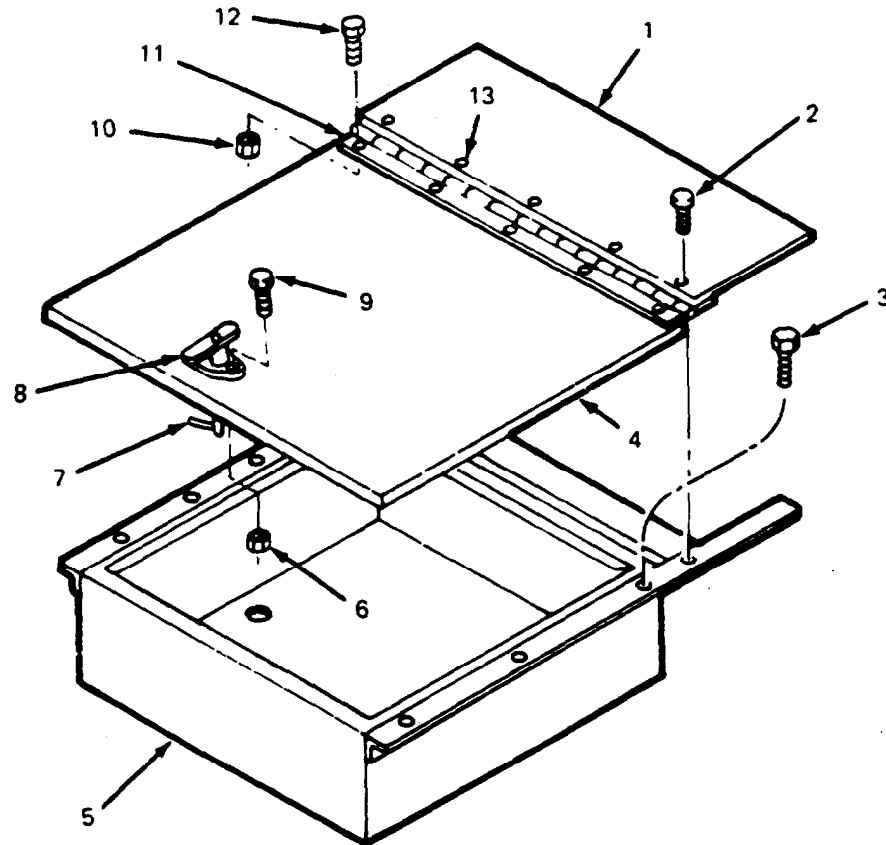
(10) Push connector (9) into male connector on lower left hand corner of body and turn to the right until ring locks in place.

(11) Test exterior body lamps for proper function.

Section VII. MAINTENANCE OF STOWAGE BOX

12-11. Stowage Box.

- a. *Removal.* (Refer to fig. 2-4.)
- (1) Remove five capscrews (2) and lift off lid (4) and cover (1) as an assembly.
 - (2) Remove six capscrews (3) and lift out stowage box (5).

**LEGEND:**

- | | |
|------------------|---------------|
| 1. COVER | 7. LOCK ARM |
| 2. CAPSCREW (15) | 8. HANDLE |
| 3. CAPSCREW (6) | 9. CAPSCREW |
| 4. LID | 10. NUT (5) |
| 5. STOWAGE BOX | 11. HINGE |
| 6. LOCKNUT (2) | 12. BOLT (5) |
| | 13. RIVET (5) |

TA 075807

Figure 24. Remove/Install Stowage Box.

b. *Disassembly.* Loosen set screw and remove lock arm (7), remove two nuts (6) and capscrews (9) from handle (8) and remove handle. Drill out rivets (13) from hinge (11) and remove hinge from lid (4).

c. *Assembly.* Install hinge (11) to lid (4) with five bolts (12) and nuts (10). Install handle (8) and secure with two nuts (6) and capscrews (9). Install lock arm (7) and tighten set screw.

d. *Installation.* (Refer to fig. 2-4.)

(1) Set stowage box (5) on rear frame rails and secure with six capscrews (3).

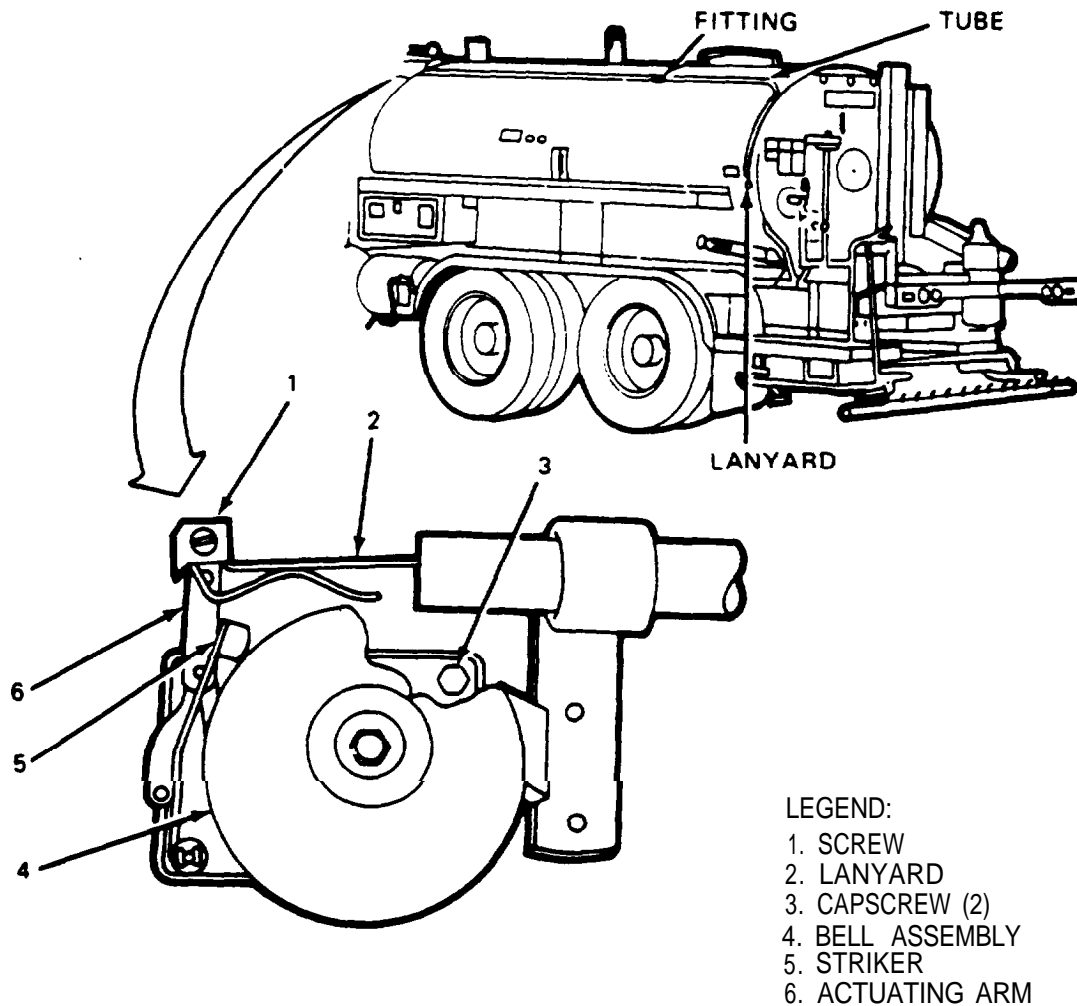
(2) Position lid (4) on stowage box (5) and secure with five capscrews (2).

Section VIII. MAINTENANCE OF BELL

2-12. Bell.

a. *Removal.* (Refer to fig. 2-5.)

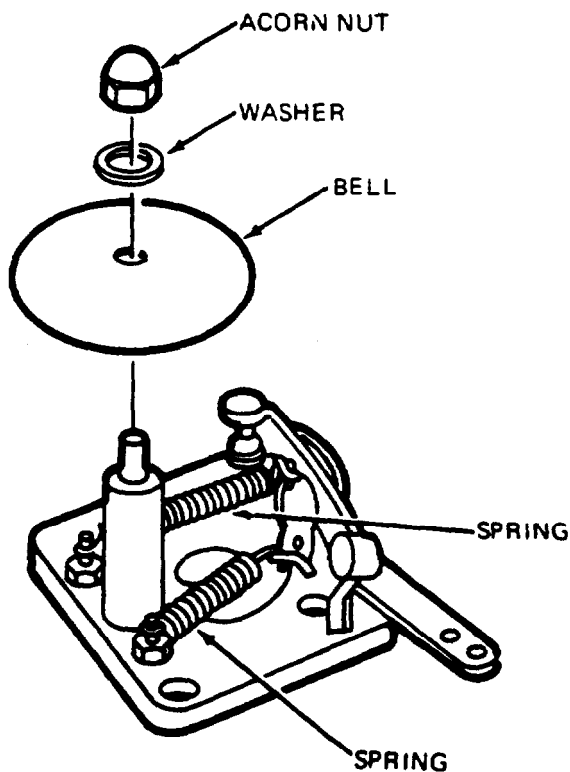
(1) Loosen screw (1) and pull out lanyard (2).



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Figure 2-5. Remove/Install Bell Mechanism and Lanyard.

- (2) Remove acorn nut and washer (fig. 26) then lift off bell and washer,
 - (3) Remove bell assembly (4, fig. 2-5) by removing two capscrews (3), nuts, and washers.
- b. *Disassembly.* (Refer to fig. 2-6.)
- (1) Remove acorn nut and washer; then lift off bell (if not previously removed).
 - (2) Remove two springs by unhooking from their retaining posts.
- c. *Reassembly.* (Refer to fig. 26.) Connect both springs to their retaining posts.
- d. *Installation.* (Refer to fig. 2-5.)
- (1) Mount bell (4) on support bracket and secure with two capscrews (3) with washers and nuts,
 - (2) Install bell, washer, and secure with acorn nut (fig. 26). Make sure that there is no gap between the actuating arm striker (5) and the bell (4) (fig. 2-5).
 - (3) Connect lanyard to actuating arm (6) and secure with screw (1).
 - (4) Pull lanyard at rear of vehicle to check operation of bell.



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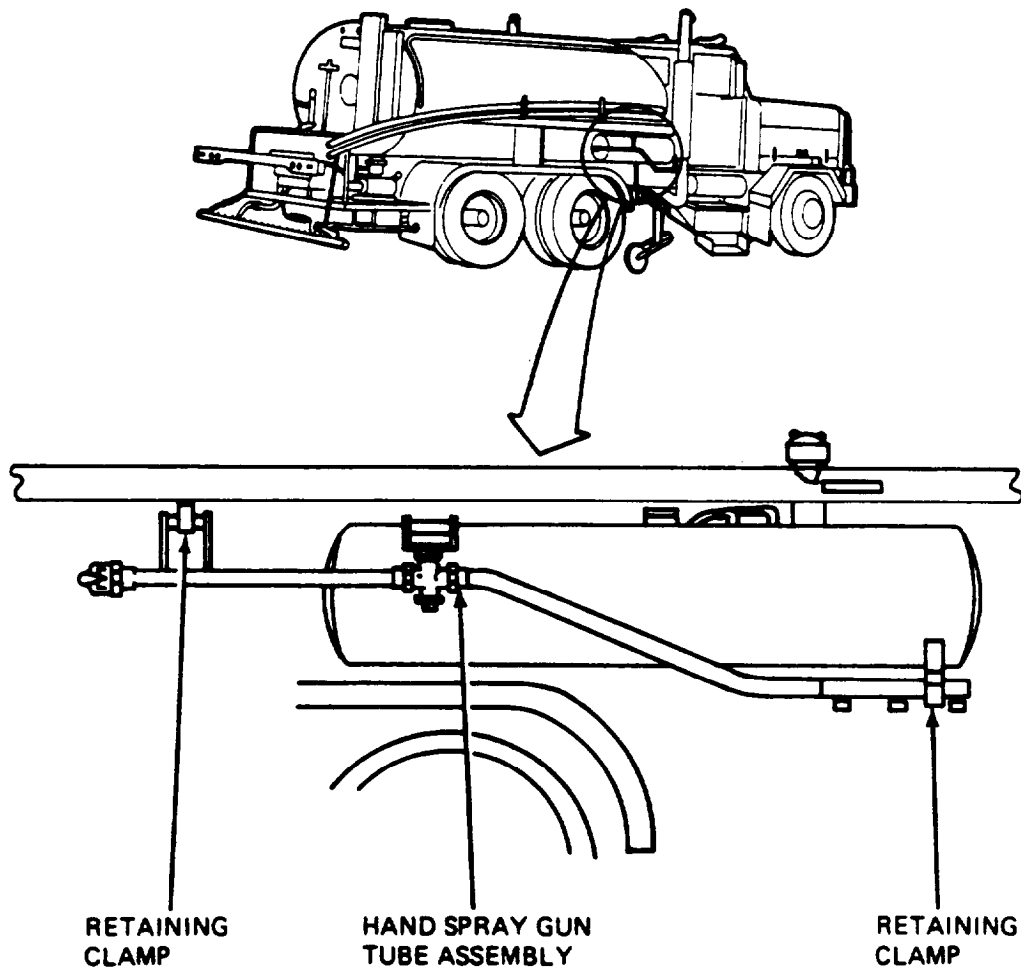
Figure 2-6. Disassemble/Assemble Bell Mechanism.

- e. *Replace Lanyard.* (Refer to fig. 2-5.)
 - (1) Disconnect lanyard at bell by loosening screw (1); then pull old lanyard out of vehicle.
 - (2) Disconnect fitting on lanyard tube, located near the tank manhole cover.
 - (3) Pass new lanyard cord up through tube from rear of vehicle.
 - (4) Connect lanyard to bell actuating arm (6) and secure with screw (1).
 - (5) Connect fitting on lanyard tube (removed in step (2)).
 - (6) Check operation of bell.

Section IX. MAINTENANCE OF HAND SPRAY GUN ASSEMBLY

2-13. Hand Spray Gun Assembly.

- a. *Removal.* (Refer to fig. 2-7). To remove the hand spray gun tube assembly, lift it out of the two retaining clamps on vehicle.



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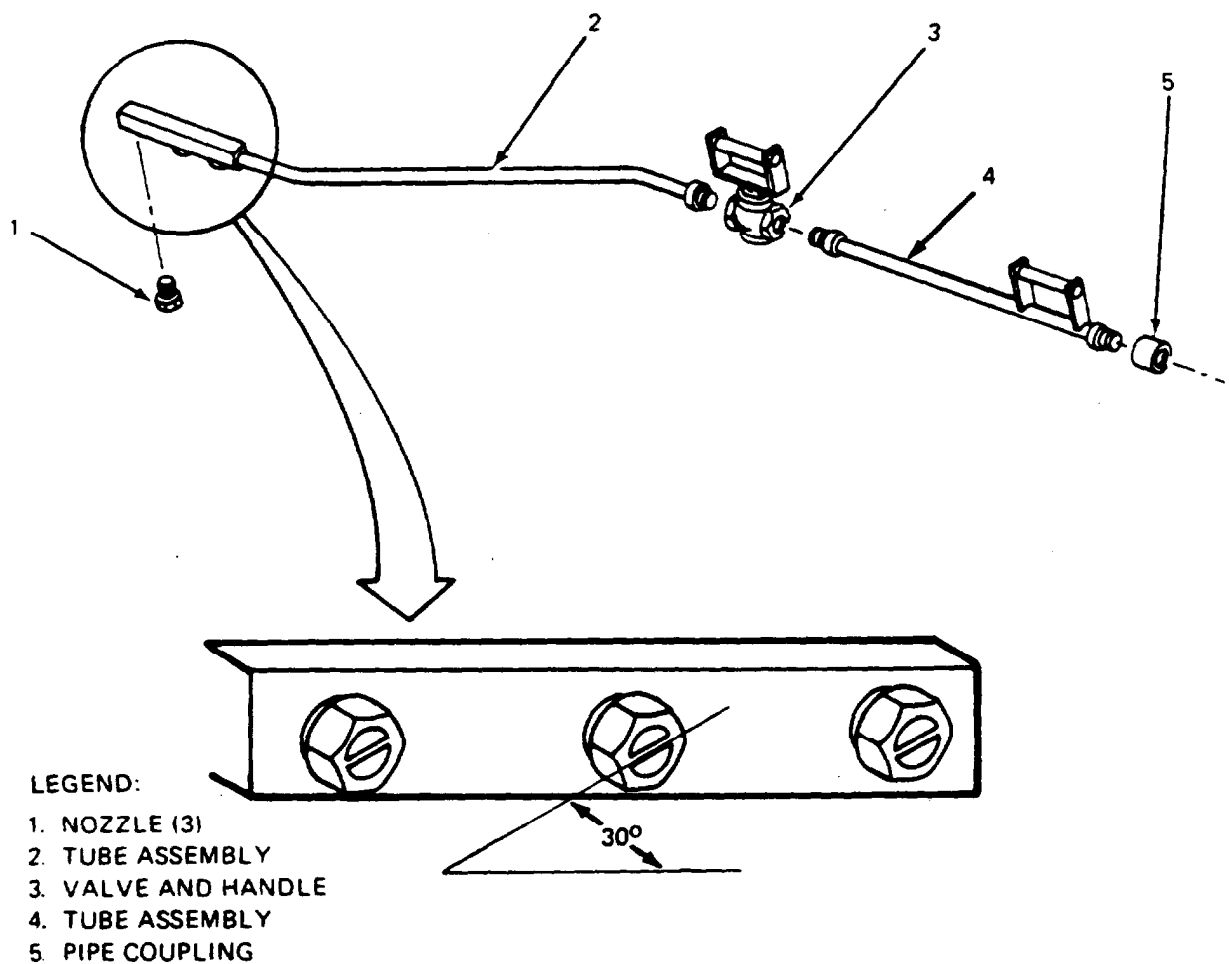
Figure 2-7. Remove/Install Hand Spray Gun.

b. *Disassembly.* (Refer to fig. 2-8.)

- (1) Unscrew pipe coupling (5) from tube assembly (4).
- (2) Unscrew tube assembly (4) from valve and handle (3).
- (3) Unscrew tube assembly (2) from valve and handle (3).
- (4) Remove three nozzles (1) from tube assembly (2).

c. *Reassembly.* (Refer to fig. 2-8.)

- (1) Install three nozzles (1) into tube assembly (2), adjust slot to approximately 30° angle.
- (2) Screw tube assembly (2) into valve and handle (3).



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Figure 2-8. Disassemble/Assemble Hand Spray Gun.

(3) Screw tube assembly (4) into valve and handle (3).

(4) Screw pipe coupling (5) into tube assembly (4).

d. *Installation.* To install the assembly (fig. 2-7), insert it into the two retaining clamps on the vehicle.

Section X. MAINTENANCE OF HYDRAULIC PUMP PROPELLER SHAFT

2-14. Hydraulic Pump Propeller Shaft.

a. *Removal.* (Refer to fig. 2-9.)

(1) Remove four capscrews (8) and washers (7) from rear yoke (9). Loosen set screw (17) in front yoke (18) at PTO.

(2) Disconnect bracket (6) from vehicle frame by removing two capscrews (4), large washers (3), washers (2), and nuts (1). Remove hydraulic pump propeller shaft with attached bracket (6). Shaft may be disassembled into two sections by disconnecting the splined gear in the center of the shaft (14).

(3) Press out bearing assembly (5) from bracket (6) and propshaft (14) with a suitable Press.

(4) Pulley (10) can be removed by removing four capscrews (12) and washers (7) and separate pulley (10) from yoke (11).

(5) Slide rear yoke (9) out of pump shaft. For replacing of journal bearing (13) and propshaft (16), see para 2-14 c.

b. *Installation.*

(1) Press new bearing assembly (5) on propshaft (14) and into bracket (6).

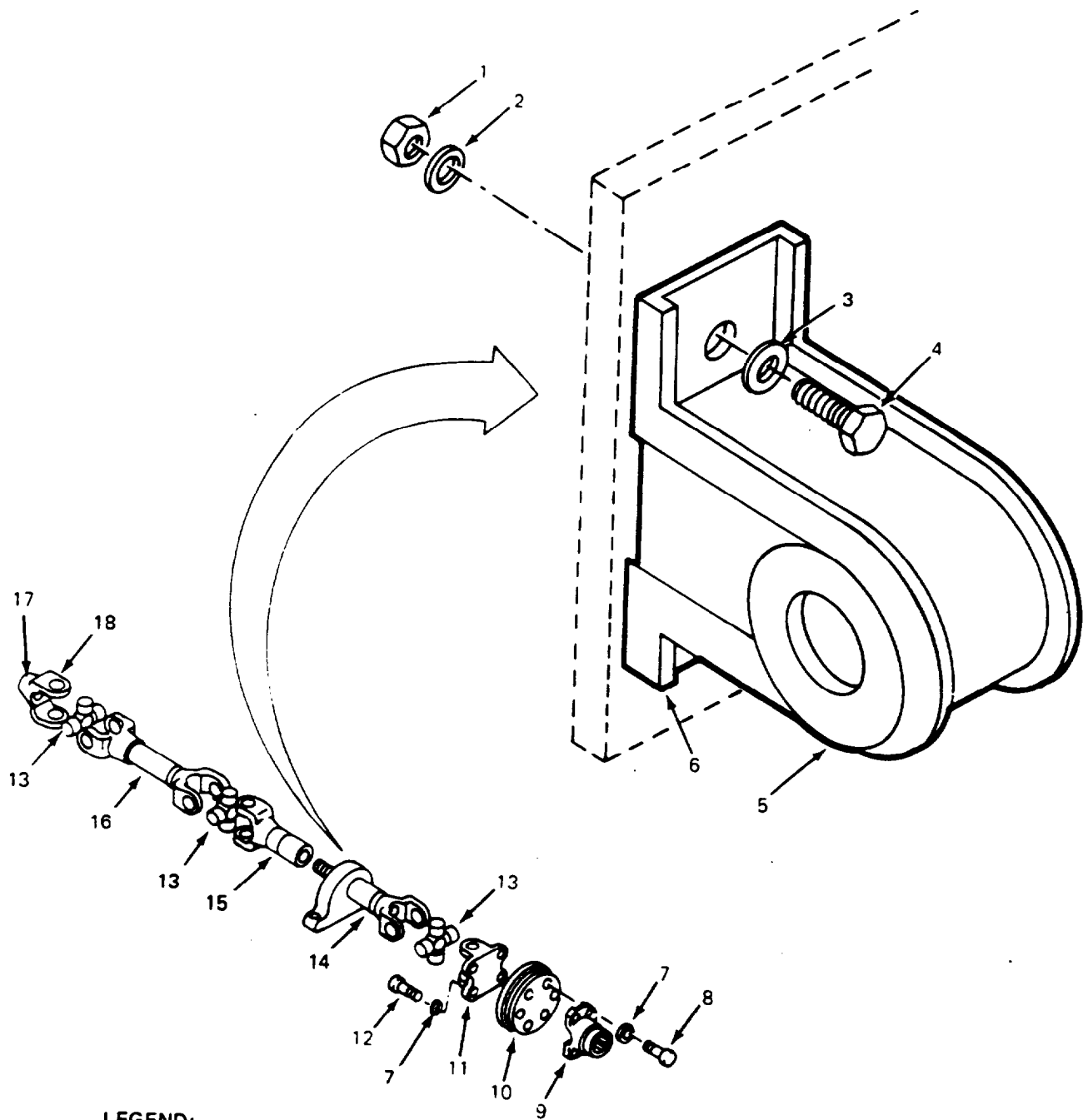
(2) Connect the two sections of the shaft with yokes in alinement, by inserting the splined gear of propshaft (14) into the yoke (15).

(3) Assemble yoke (11) to pulley (10) and secure with four capscrews (12) and washer (7).

(4) Slide rear yoke (9) on to pump shaft.

(5) Mount assembled hydraulic pump propeller shaft with bracket (6) on vehicle and secure the bracket to frame with two capscrews (4), large washers (3), washers (2), and nuts (1).

(6) Install washers (7) and capscrews (8). Tighten sat screw (17) in front yoke (18) at PTO.



LEGEND:

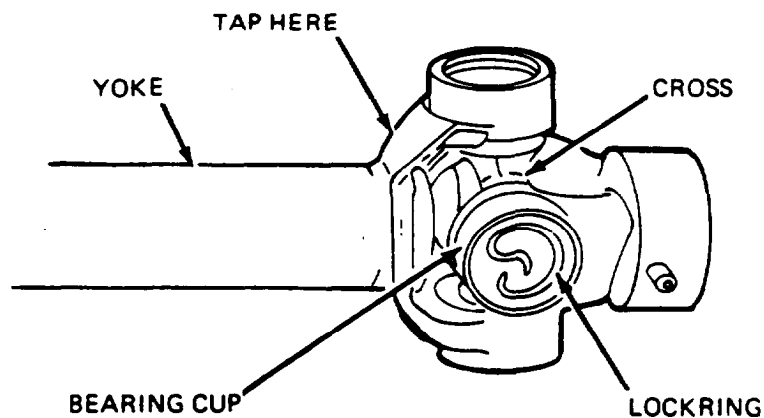
- | | | |
|---------------------|---------------------|----------------|
| 1. NUT (2) | 9. REAR YOKE | 17. SET SCREW |
| 2. WASHER (2) | 10. PULLEY | 18. FRONT YOKE |
| 3. LARGE WASHER (2) | 11. YOKE | |
| 4. CAPSCREW (2) | 12. CAPSCREW (4) | |
| 5. BEARING ASSEMBLY | 13. JOURNAL BEARING | |
| 6. BRACKET | 14. PROP SHAFT | |
| 7. WASHER (8) | 15. YOKE | |
| 8. CAPSCREW (4) | 16. PROP SHAFT | |

TA 075813

Figure 2-9. Remove/Install Hydraulic Pump Propeller Shaft.

c. Repair of Universal Joint. (Refer to fig. 2-10.)

- (1) To remove shaft refer to para 2-14 a.
- (2) Place drive shaft section in a suitable vise.
- (3) Remove four lockrings.
- (4) Tap on top of yoke (as shown in illustration) to drive upper bearing out until cross bottoms on shaft.
- (5) Turn drive shaft section over and repeat step (4).
- (6) Lift out cross and remove two bearing cups, one from the top and one from the bottom.
- (7) Repeat steps 3, 4 and 5 above to remove the other two bearing cups.
- (8) Position cross in yoke.



TA 075814

Figure 2-10. Replace Drive Shaft Universal.

(9) Tap in two bearing cups, one at the top and one at the bottom. Secure each bearing cup with a lockring.

(10) Rotate drive shaft in vise 90° and repeat step 9 above for the other two bearing cups.

Section XI. MAINTENANCE OF HYDRAULIC PUMP CONTROL
AND FRONT OVERRIDE CONTROL

2-15. Hydraulic Pump Control.

a. Removal. (Refer to fig. 2-11.)

(1) Screw down vernier (3) to gain access to nut (2); then loosen nut (2) and remove shifting knob (1).

(2) Unscrew and remove shifting knob and nut (2), vernier (3), and knurled nut (4).

(3) Remove two nuts (5) and washers (7) from cable (6).

(4) From underneath vehicle, remove nut (48) that fastens lock assembly (47) to vehicle frame.

(5) Loosen locknut (45); then unscrew spring body (40) from control cable (6). Pull out control cable (6) with attaching parts; then remove lock nuts (45), bellows (46) and lock assembly (47). Loosen three lock nuts (9) and remove connector (8) and joint (12).

(6) Remove nut (44) from rod (41) and remove gland (43), spring (42) and spring body (40).

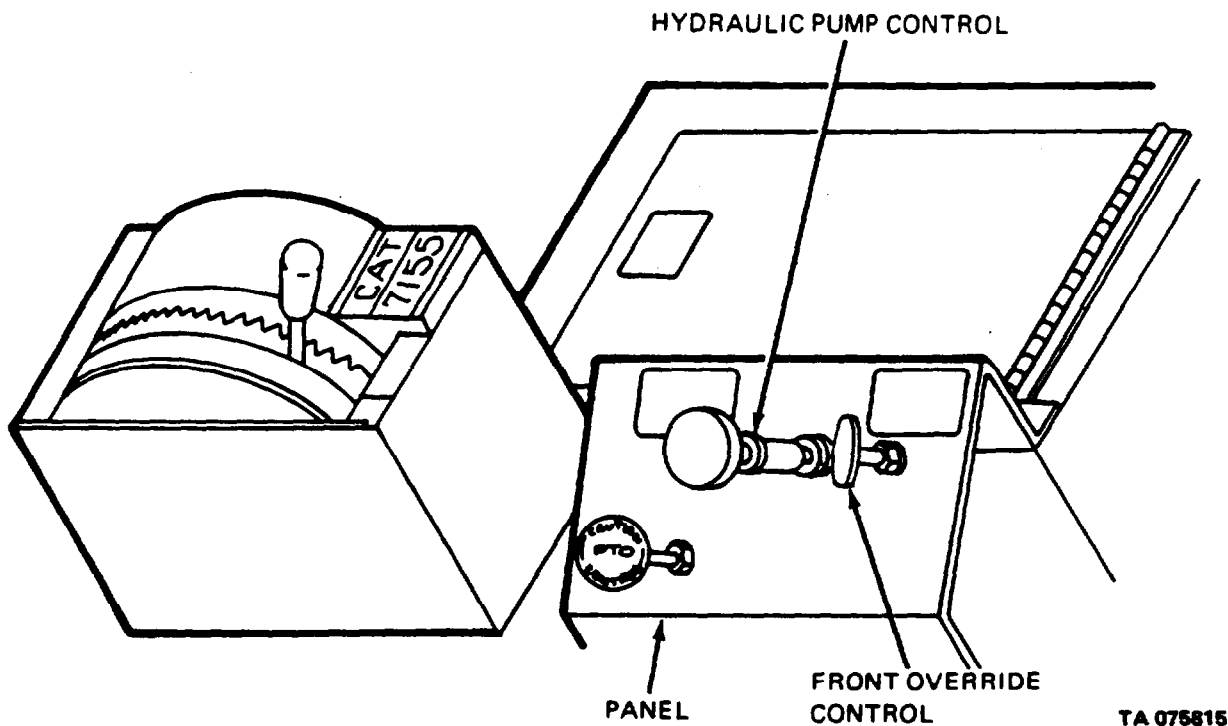
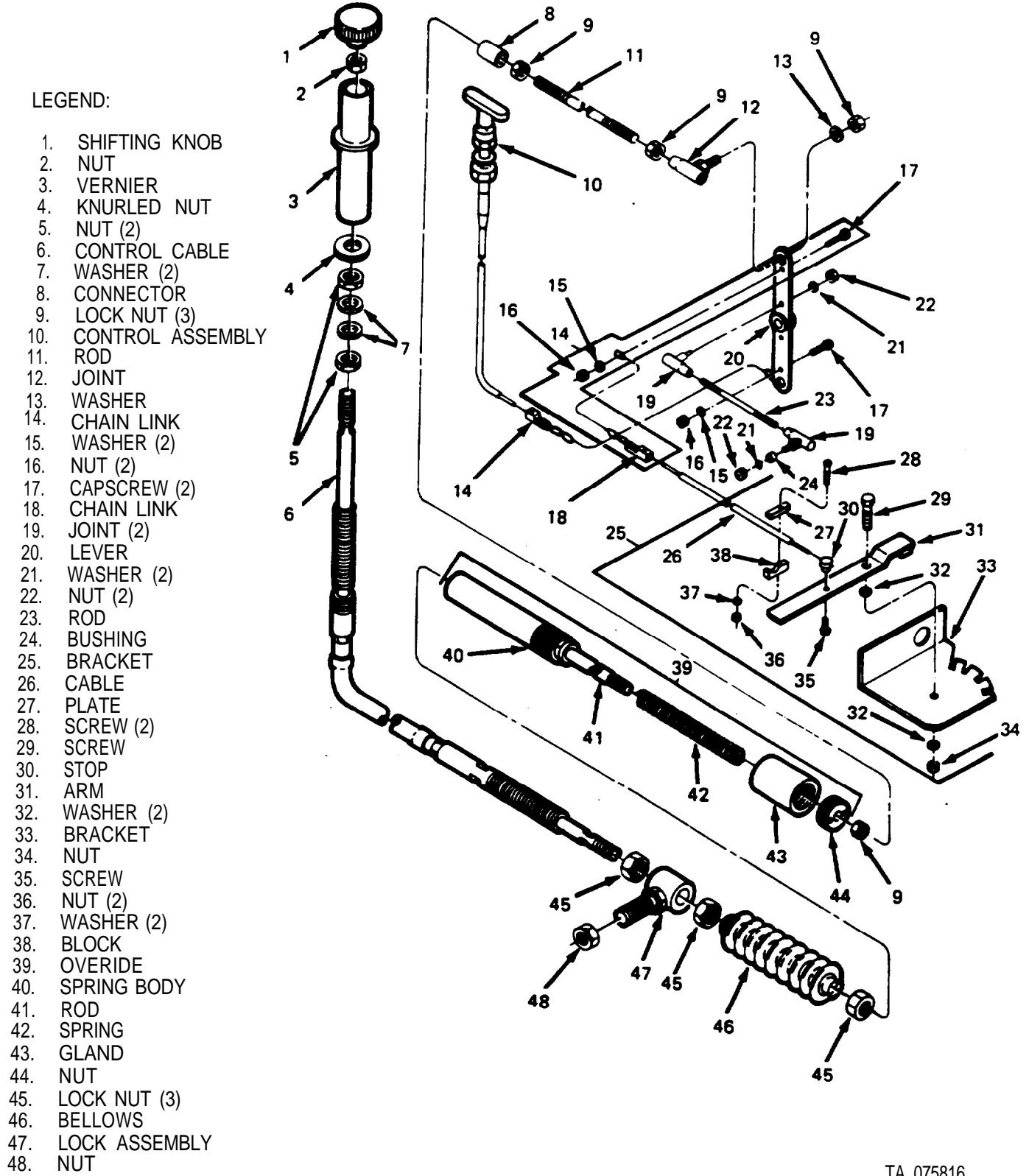


Figure 2-11. Hydraulic Pump Controls (Sheet 1 of 2).



TA 075816

Figure 2-11. Hydraulic Pump Controls (Sheet 2 of 2).

b. Installation. (Refer to fig. 2-11.)

- (1) From underneath vehicle, push assembled control cable (6) up through panel. (The panel is shown in detail on sheet 1 of illustration).
- (2) Attach control cable (6) to panel with two nuts (5) and washers (7).
- (3) Install knurled nut (4), vernier (3), nut (2) and knob (1).
- (4) Screw three nuts (45) on to control cable (6) with lock assembly (47) and bellows (46). Secure with spring body (40), spring (42), gland (43) and lock nut (44).
- (5) Push lock assembly (47) through vehicle frame and secure with nut (48).
- (6) Add lock nuts (9), connector (8) and joint (12) to rod (11) and secure with washer (13) and lock nut (9).

c. Removal of Front Override Control. (Refer to fig. 2-11.)

- (1) From underneath vehicle, disconnect chain connector from vehicle mounting bracket by removing two screws (17), washers (15), nuts (16), two set screws in chain link (14) and (18).
- (2) Remove cable (26) by removing screw (35), two screws (28), washers (37) and nuts (36). Remove plate (27), block (38), screw (29), two washers (32) and nut (34) from arm (31).
- (3) Remove rod (23) by removing nuts (22), washers (21) and joints (19).
- (4) Remove control assembly (10) by removing lock nut and pull cable assembly (10) out.

d. Installation of Front Override Cable. (Refer to fig. 2-11.)

- (1) Push control assembly (10) through panel and secure with, lock nut. Install rod (23) with joints (19) and secure with nuts (22) and washers (21).
- (2) Install cable (26) with plate (27) and block (38). Secure with two screws (28), washers (37) and nuts (36). Install arm (31) with screw (29), two washers (32) and nut (34). Install screw (35) into stop (30).
- (3) Attach cable to vehicle mounting bracket with set screw in chain link (14), two cap-screws (17), washers (15) and nuts (16).

Section XII. MAINTENANCE OF HYDRAULIC TANK AND FILTER

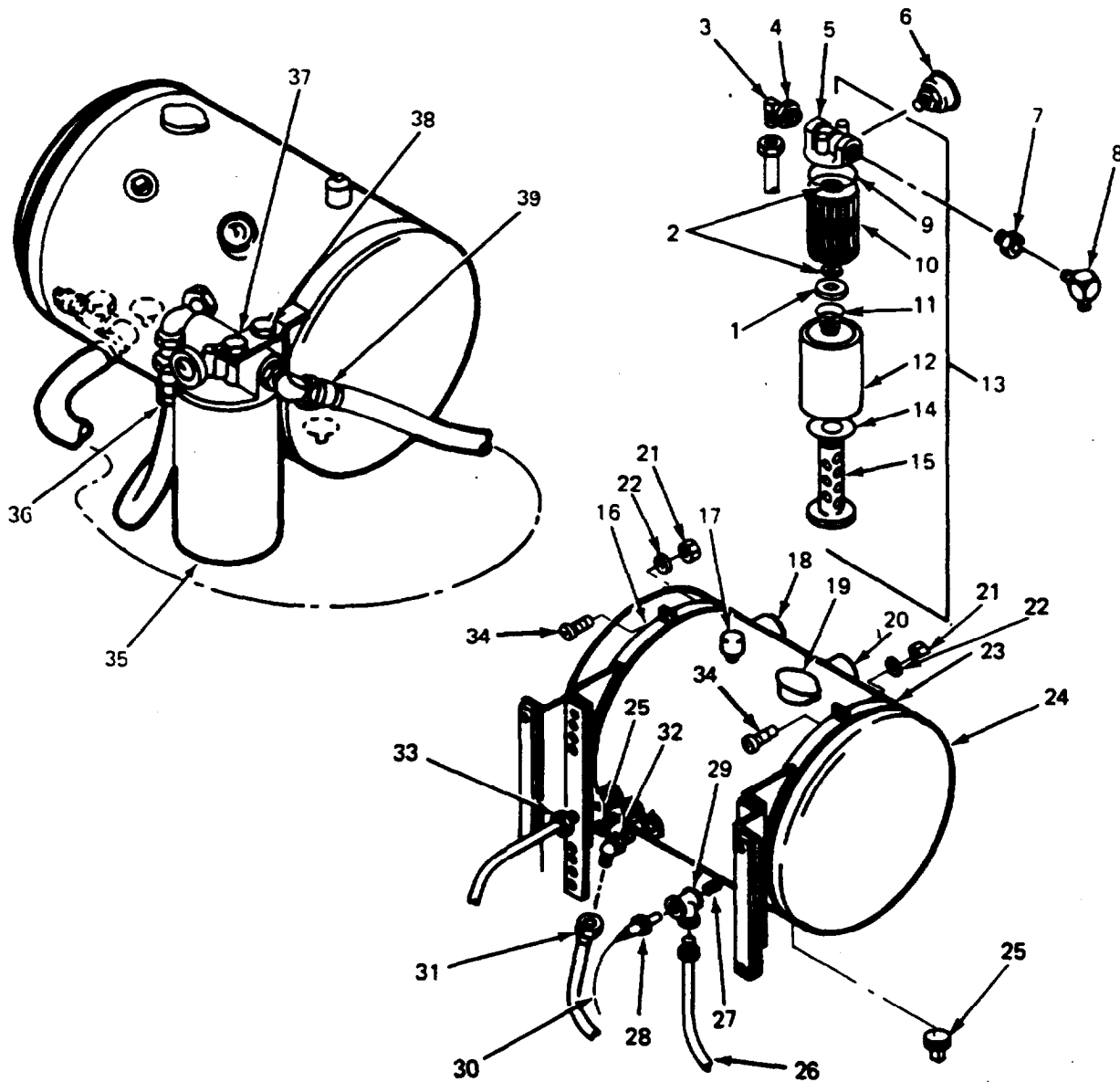
2-16. Hydraulic Tank and Filter.

a. Hydraulic Filter Removal. (Refer to fig. 2-12.)

NOTE

In step (1), a clean 20-gallon (76 l) container is required.

- (1) Drain oil from hydraulic tank (24) by removing one of the drain plugs (25) at bottom of the hydraulic tank.
- (2) Disconnect hydraulic lines (39) and (36) at filter assembly (35) and remove elbows (3) and (8).
- (3) Remove hydraulic filter assembly (35) by removing two capscrews (38).



LEGEND:

- | | | |
|-----------------------|----------------------|------------------------|
| 1. WASHER | 14. SEAL | 27. NIPPLE 1/2 x 1-3/8 |
| 2. SEAL (2) | 15. CENTER POST | 28. THERMO SWITCH |
| 3. ELBOW | 16. MOUNTING CLAMP | 29. PIPE TEE 3/4 |
| 4. BUSHING | 17. BREATHER | 30. ELECTRICAL WIRE |
| 5. HEAD | 18. THERMOMETER | 31. HYDRAULIC LINE |
| 6. INDICATOR | 19. CAP - NON VENTED | 32. ELBOW |
| 7. BUSHING | 20. OIL LEVEL GLASS | 33. HYDRAULIC LINE |
| 8. STREET ELBOW - 3/4 | 21. NUT (4) | 34. CAPSCREW (4) |
| 9. O-RING | 22. LOCKWASHER (4) | 35. FILTER ASSEMBLY |
| 10. FILTER ELEMENT | 23. MOUNTING CLAMP | 36. HYDRAULIC LINE |
| 11. SPRING | 24. HYDRAULIC TANK | 37. BRACKET |
| 12. HOUSING | 25. DRAIN PLUG (2) | 38. CAPSCREW (2) |
| 13. FILTER ASSEMBLY | 26. HYDRAULIC LINE | 39. HYDRAULIC LINE |

EXPLODED VIEW
FROM UNDER LEFT SIDE OF VEHICLE

Figure 2-12. Hydraulic Tank and Filter.

TA 075817

- b. Hydraulic Filter Disassembly. (Refer to fig. 2-12.)
 - (1) Unscrew center post (15) and pull out the following:
 - (a) Seal (14).
 - (b) Housing (12).
 - (c) Washer (1).
 - (d) Spring (11).
 - (e) Filter element (10) with two seals (2).
 - (f) O-ring (9).
 - (2) Unscrew indicator (6) from head (5).
 - (3) Remove two bushings (4 and 7) from head (5).
 - (4) Discard O-ring (9), filter element (10), and seal (14).
- c. Hydraulic Filter Assembly Reassembly. (Refer to fig. 2-12.)
 - (1) Install two bushings (4 and 7) into head (5).
 - (2) Install indicator (6) into head (5).
 - (3) Insert spring (11), washer (1), and new filter element (10) with two seals (2) into housing (12).
 - (4) Place new O-ring (9) on head (5) and mount assembled housing (12) to head (5).
 - (5) Install new seal (14) and secure assembly to head (5) with center post (15).
- d. Hydraulic Filter Installation.
 - (1) Mount assembled filter assembly (35) on bracket (37) and secure with two capscrews (38).
 - (2) Connect hydraulic lines (39) and (36) to filter assembly (35) and elbows (3) and (8).
 - (3) Install drain plug (25) and fill hydraulic tank (24) with hydraulic fluid, refer to LO 5-3895-371-12.
- e. Hydraulic Tank Removal.
 - (1) Remove filter and oil as described in paragraph a.
 - (2) Loosen fittings and remove three hydraulic lines (26), (31), and (33), (fig. 2-12) from hydraulic tank assembly (24).
 - (3) Disconnect electrical wire (30) from thermo switch (28); than unscrew thermo switch (28) from hydraulic tank assembly (24). Remove breather (17), thermometer (18), cap (19), oil level glass (20), pipe tee (29), nipple (27), and elbow (32).

NOTE

In step (4), two men are required to remove the tank.

(4) Loosen mounting clamps (23) and (16) by removing one nut (21), capscrew (34) and lockwasher (22) on top and one on bottom of each clamp; then remove hydraulic tank (24).

f. Hydraulic Tank Installation.

(1) Mount hydraulic tank (24) into two mounting clamps (23) and (16); then tighten clamps by installing one nut (21), capscrew (34) and lockwasher (23) on top and one on bottom of each clamp.

(2) Install nipple (27), pipe tee (29), plug (25) and elbow (32).

(3) Install thermo switch (28) in hydraulic tank (24) and connect electrical wire (30).

(4) Connect three hydraulic lines (26), (31), and (33) to hydraulic tank (24).

(5) Install hydraulic filter as described in paragraph d.

(6) Install breather (17), thermometer (18), cap (19), and oil level glass (20).

Section XIII. MAINTENANCE AND ROUTING OF HYDRAULIC LINES

2-17. Routing of Hydraulic Lines.

a. Removal. (Refer to fig. 2-13.)

NOTE

Plug all lines and orifices as removed.

(1) Drain hydraulic tank (4) (See para 2-16 a).

(2) Loosen hose clamps (3) and (7); remove hydraulic line (17).

(3) Loosen hose clamps (5) and (12); remove hydraulic line (15).

(4) Unscrew hydraulic fittings (1) and (9); remove hydraulic line (8).

(5) Unscrew hydraulic fitting (2) to free hydraulic line (16) from tank (4).

(6) Remove eight bolts and washers from pipe flange blocks (14) on either side of hydraulic pump (10); remove hydraulic lines (11) right side and (13) from hydraulic pump (10) left side.

(7) Cut nylon hose ties (21) from hydraulic line (16), along inside of LH frame rail; unscrew fitting from 'T' at bottom of hydraulic motor (19); remove hydraulic line (16) from vehicle.

(8) Remove hydraulic lines (11) and (13) from 'U' holders (20) and (22); cut nylon ties.

(a) Remove four bolts and washers from pipe flange block at side of hydraulic motor (19); remove hydraulic line (11) from vehicle.

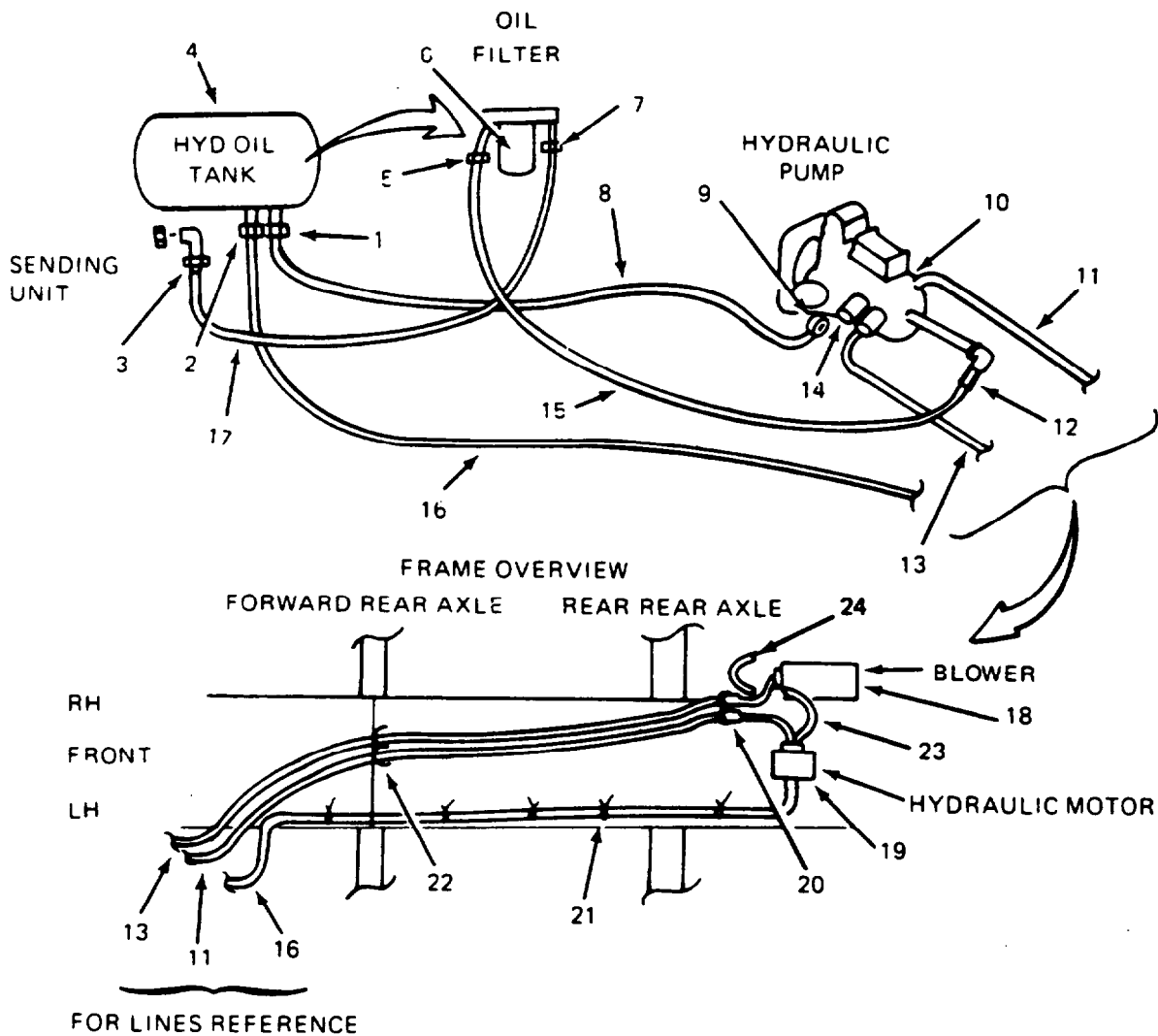
(b) Remove four bolts and washers from pipe flange block at side of blower (18); remove hydraulic line (13) from vehicle.

- (c) Remove hydraulic line (23) from hydraulic motor (19) and hydraulic drive motor at blower (18).
 - (d) Remove short hydraulic line from hydraulic drive blower motor to control valve.
- b. Installation. (Refer to fig. 2-13.)

NOTE

Remove plugs as connections are made.

- (1) Install hydraulic line (23) to hydraulic drive motor at blower (18) and hydraulic motor (19).
- (2) Install hydraulic line (13) at side of blower (18) with four bolts and washers thru pipe flange block.
- (3) Install hydraulic line (11) at right side of hydraulic motor (19) with four bolts and washers thru pipe flange block.
- (4) Route hydraulic lines (11) and (13) thru 'U' holders (20) and (22) over frame cross rails and down to hydraulic pump (10). Install new nylon ties around hydraulic lines to 'U' holders.
- (5) Install hydraulic line (16) to 'T' on bottom of hydraulic motor (19); tighten fitting.
- (6) Route hydraulic line (16) along inside of LH frame rail, thru hole in main cross brace and down to hydraulic tank (4). Install new nylon ties around hydraulic line (16) to electrical harness inside frame rail; space approximately every two feet.
- (7) Install and tighten hydraulic fitting (2) on hydraulic line (16) to bottom of hydraulic tank (4).
- (8) Install hydraulic lines (11) right side and (13) on left side of hydraulic pump (10) as illustrated, with eight bolts and washers thru two pipe flange blocks (14).
- (9) Install one end of hydraulic line (8) to bottom of hydraulic pump (10); tighten hydraulic fitting (9).
- (10) Install other end of hydraulic line (8) to bottom of hydraulic tank (4) as illustrated; tighten hydraulic fitting (1).
- (11) Install one end of hydraulic line (17) to oil filter (6), as illustrated; tighten hose clamp (7).
- (12) Install other end of hydraulic line (17) to elbow on 'T' at hydraulic tank (4); tighten hose clamp (3).
- (13) Install hydraulic line (15) to oil filter (6) and rear of hydraulic pump (10); tighten hose clamps (5) and (12).
- (14) Refill hydraulic tank (4) and test for leaks.



LEGEND:

- | | |
|----------------------|---------------------------|
| 1. HYDRAULIC FITTING | 13. HYDRAULIC LINE |
| 2. HYDRAULIC FITTING | 14. PIPE FLANGE BLOCK (2) |
| 3. HOSE CLAMP | 15. HYDRAULIC LINE |
| 4. HYDRAULIC TANK | 16. HYDRAULIC LINE |
| 5. HOSE CLAMP | 17. HYDRAULIC LINE |
| 6. OIL FILTER | 18. BLOWER |
| 7. HOSE CLAMP | 19. HYDRAULIC MOTOR |
| 8. HYDRAULIC LINE | 20. 'U' HOLDER |
| 9. HYDRAULIC FITTING | 21. NYLON HOSE TIES (V) |
| 10. HYDRAULIC PUMP | 22. 'U' HOLDER |
| 11. HYDRAULIC LINE | 23. HYDRAULIC LINE |
| 12. HOSE CLAMP | 24. HYDRAULIC LINE |

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Figure 2-13. Maintenance and Routing of Hydraulic Lines.

Section XIV. MAINTENANCE OF HYDRAULIC CONTROL BOX

2-18. Hydraulic Control Box.**a. Disassembly. (Refer to fig. 2-14.)**

(1) Remove two capscrews (44) and lockwashers (40) from bottom of cover (8) and displace as far as attaching wires permit.

(2) As you disconnect each wire, mark with the call out number referenced.

(3) Remove five hex nuts (16) on faceplate (9) and pull five toggle switches loose.

(4) Loosen screws for purple wire (20), red wire (19) and red/white wire (18); remove wires and toggle switch (17) for "TURN UP" control.

(5) Loosen screws for blue wire (25), black wire (23), and red wires (19) and (24); remove wires and toggle switch (22) for "SHIFT" control.

(6) Loosen screws for white wire (27), red wire (30), and black wires (29) and (31); remove wires and toggle switch (26) for "ON-OFF" control.

(7) Loosen screws for orange wire (33), and red wires (30) and (32); remove wires and toggle switch (34) for "Bitumeter wheel" "UP DOWN" control.

(8) Loosen screws for black wire (7) and red wires (36) and (5); remove wires and toggle switch (6) for "MATERIAL LOW LEVEL ON OFF" control.

(9) Remove bolt (1) and two lock nuts (4) from wire clip and flasher assembly (2) and black ground wire (3). Remove other end by removing capscrew and nut (43).

(10) Cut flasher wire (37) at connector and remove flasher unit.

(11) Unscrew fuse connector (28) to remove and check fuse.

(12) Pull out bulb connections (12) and (14) from two indicator lamps (11); inspect bulbs. If it is necessary/ to replace two indicator lamps (11) unscrew and remove two hex nuts and washers (35).

(13) If new toggle switches are to be installed, remove spacer (21) and install on new switch.

b. Removal. (Refer to fig. 2-14.)

(7) Remove wire (42) from box (47) by cutting wire at crimp connector, if not already done; pull wire (42) thru box (47) at bottom.

(2) Remove harness clamp (46) and pull wire harness (45) thru bottom of box (47).

(3) Remove two each bolt (41), lockwasher (40), and nut (39) from box (47) and support plate (38); box is now removed from vehicle.

c. Installation.

(1) Set box (47) in position, aline mounting holes, and install to support plate (38) with two each bolts (41), lockwashers (40) and nuts (39).

(2) Push wire harness (45) up thru bottom of box (47) and fasten with harness clamp (46).

(3) Push wire (42) up thru bottom of box (47); rejoin wires with new crimp connector.

d. Assembly. (Refer to fig. 2-14.)

(1) If new toggle switches are being installed, screw on spacer (21) taken from old switch,

(2) If indicator lamps (11) are being installed screw on two hex nuts and washers (35).

(3) Snap in bulb connections (12) and (14) to lamps (11).

(4) Install new fuse if necessary and screw fuse connector (28) together.

(5) Rejoin flasher wire (37) with new crimp connector.

(6) Install ground wire (3) to clip (2) and flasher with bolt (1) and two lock nuts (4). Connect other end with capscrew and nut (43).

(7) Install black wire (7) and red wires (36) and (5) to toggle switch (6) "MATERIAL LOW LEVEL ON OFF" control; tighten screws.

(8) Install orange wire (33) and red wires (30) and (32) to toggle switch (34) "BITUMETER WHEEL UP DOWN"; tighten screws.

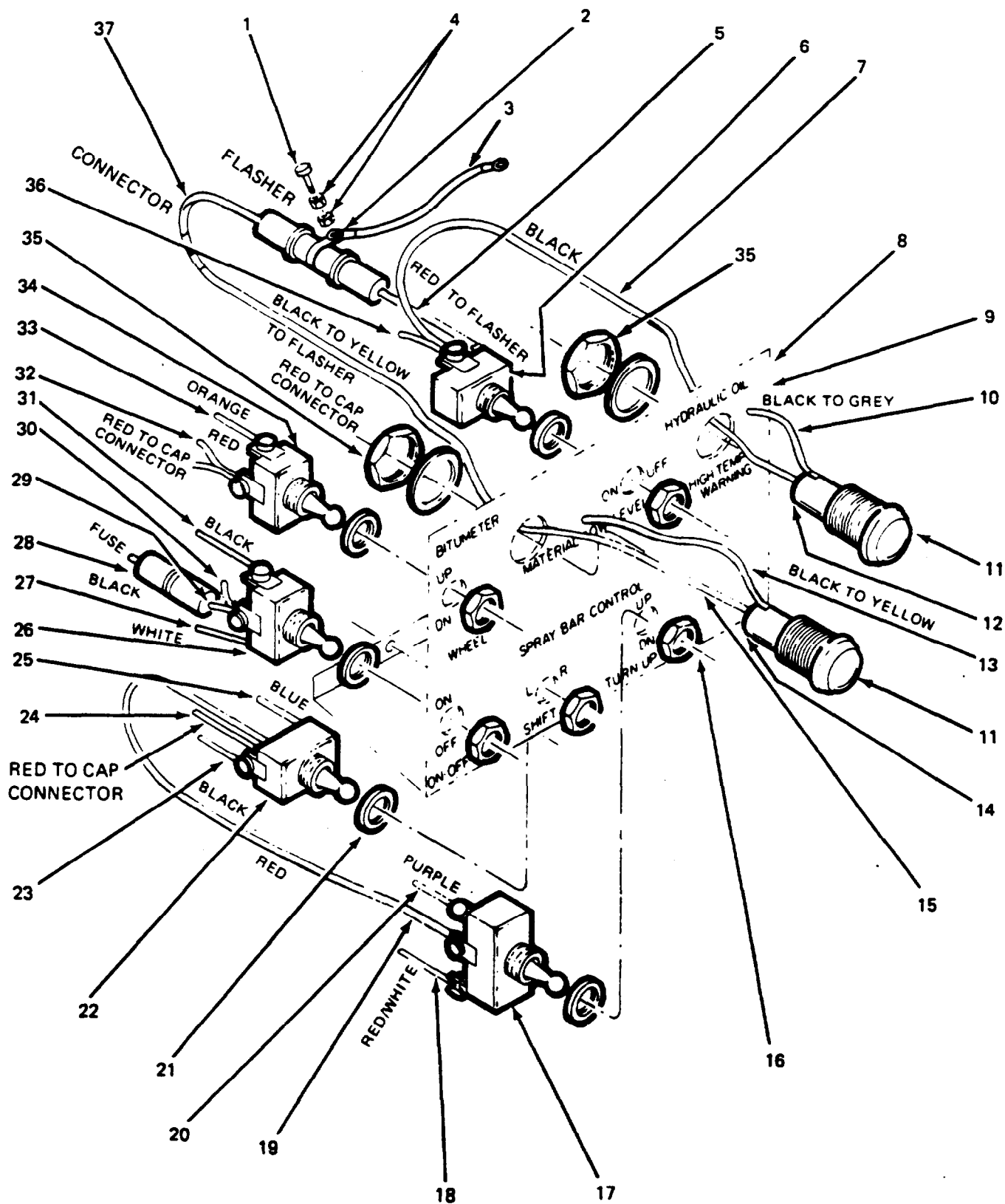
(9) Install white wire (27), red wire (30) and black wires (29) and (31) to toggle switch (26) "ON OFF"; tighten screws.

(10) Install blue wire (25), black wire (23), and red wires (19) and (24) to toggle switch (22) "SHIFT"; tighten screws.

(11) Install purple wire (20), red wire (19), and red/white wire (18) to toggle switch (17) "TURN UP"; tighten screws.

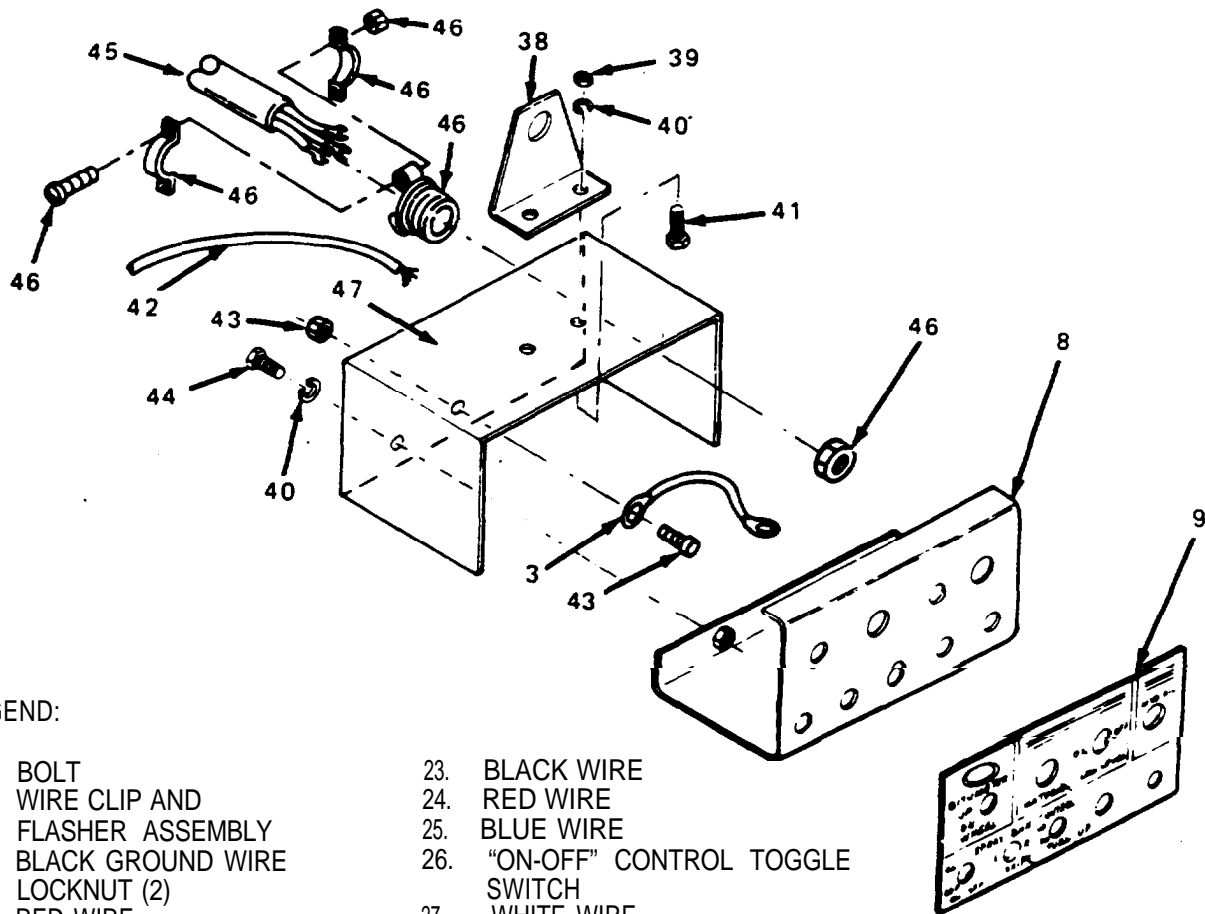
(12) Insert five toggle switches thru panel faceplate (9) from back in positions illustrated; install hex nuts (16) to affix.

(13) Install panel faceplate (9) to box (47); aline holes at bottom front edge and mount with two screws (44) and lockwasher (40). As panel faceplate is set in position take care that no wires are caught between the box and panel faceplate.



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Figure 2-14. Hydraulic Control Box (Sheet 1 of 2).



LEGEND:

- | | |
|---|--|
| 1. BOLT | 23. BLACK WIRE |
| 2. WIRE CLIP AND
FLASHER ASSEMBLY | 24. RED WIRE |
| 3. BLACK GROUND WIRE | 25. BLUE WIRE |
| 4. LOCKNUT (2) | 26. "ON-OFF" CONTROL TOGGLE
SWITCH |
| 5. RED WIRE | 27. WHITE WIRE |
| 6. "MATERIAL LOW LEVEL
ON-OFF" TOGGLE SWITCH | 28. FUSE CONNECTOR |
| 7. BLACK WIRE | 29. BLACK WIRE |
| 8. COVER | 30. RED WIRE |
| 9. FACEPLATE | 31. BLACK WIRE |
| 10. GREY WIRE | 32. RED WIRE |
| 11. INDICATOR LAMP (2) | 33. ORANGE WIRE |
| 12. BULB CONNECTION | 34. "BITUMETER WHEEL UP-DOWN"
TOGGLE SWITCH |
| 13. YELLOW WIRE | 35. HEX NUT WITH WASHER (2) |
| 14. BULB CONNECTION | 36. RED WIRE |
| 15. BLACK WIRE | 37. FLASHER WIRE |
| 16. HEX NUT (5) | 38. SUPPORT PLATE |
| 17. "TURN UP" CONTROL
TOGGLE SWITCH | 39. NUT |
| 18. RED/WHITE WIRE | 40. LOCKWASHER |
| 19. RED WIRE | 41. BOLT |
| 20. PURPLE WIRE | 42. WIRE |
| 21. SPACER | 43. CAPSCREW AND NUT |
| 22. "SHIFT" CONTROL TOGGLE
SWITCH | 44. CAPSCREW (2) |
| | 45. WIRE HARNESS |
| | 46. HARNESS CLAMP |

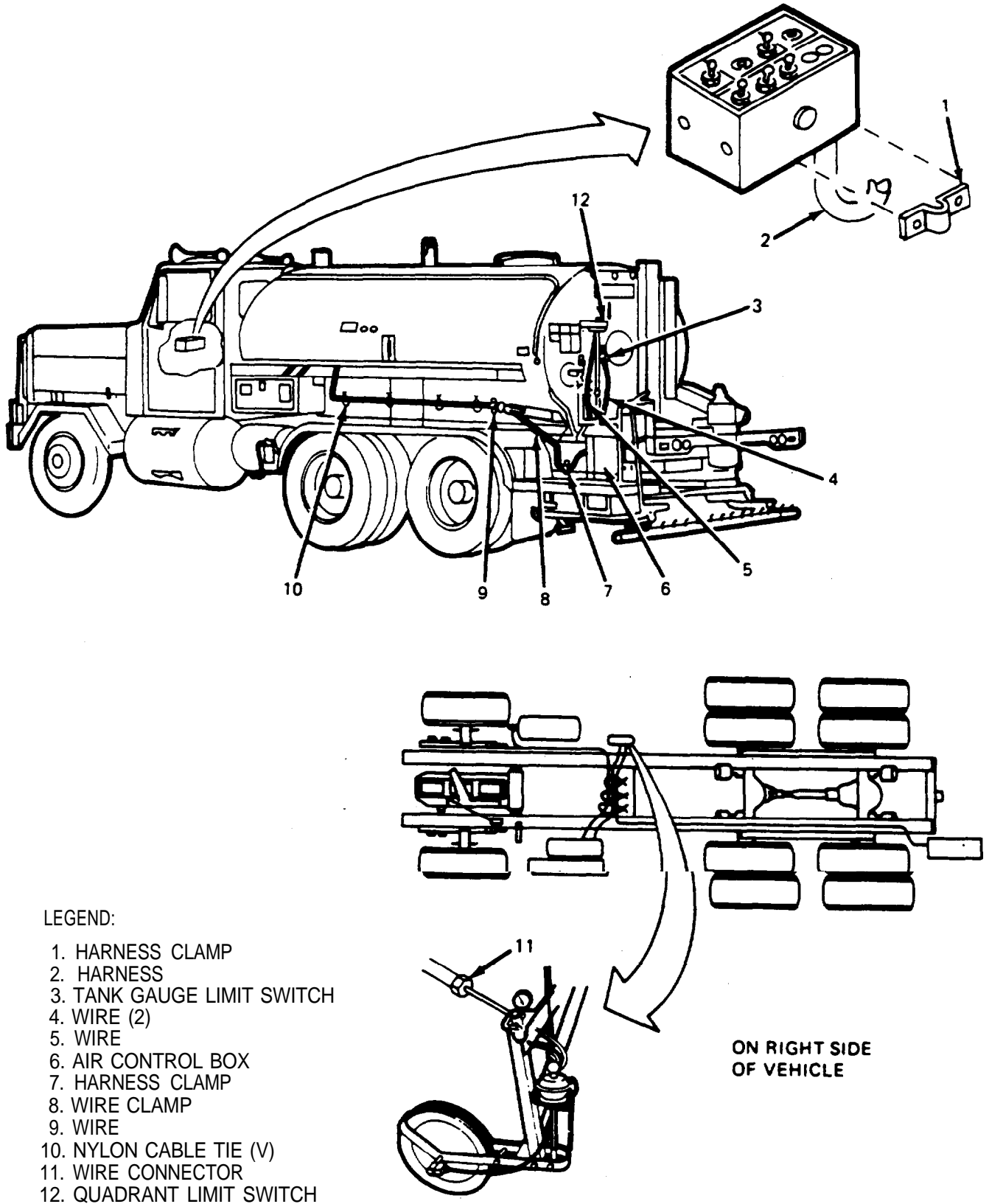
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Figure 2-14. Hydraulic Control Box (Sheet 2 of 2).

Section XV. ROUTING OF CAB HYDRAULIC CONTROL BOX TO AIR CONTROL BOX HARNESS

2-19. Air Control Box Harness.

- a. Removal. (Refer to fig. 2-15.)
 - (1) Unscrew and remove harness clamp (1) at bottom of hydraulic control box in cab.
 - (2) Disconnect harness wires at box per figure 2-14.
 - (3) Push harness (2) thru hole in cab floor under the PTO console.
 - (4) Unplug wire connector (11) at bitometer wheel assembly.
 - (5) Snip all nylon cable ties (10) from harness which is routed along inside of left hand frame rail.
 - (6) Remove wire clamp (8) by unscrewing bolt, two nuts, washer, and wire (9).
 - (7) Remove wire (5) from quadrant limit switch (12).
 - (8) Remove two wires (4) from tank gage limit switch (3).
 - (9) Remove harness clamp (7) from front side of air control box (6).
 - (10) Disconnect harness wires at air control box (6) per figure 2-18.
- b. Inspection.
 - (1) Inspect all outer harness and exposed wire insulation for damage or cracks.
 - (2) Inspect all terminal ends for tight crimp.
 - (3) Resolder terminal ends as necessary.
 - (4) Replace badly cracked or corroded wires. Slight punctures in the outer insulation may be wrapped securely with electrical tape.
- c. Installation.
 - (1) Connect all harness wires at air control box per figure 2-18.
 - (2) Install harness clamp (7) to front side of box (fig. 2-15).
 - (3) Install two wires (4) to tank gage limit switch (3).
 - (4) Install wire (5) to quadrant limit switch (12).
 - (5) Install wire (9) with bolt, washer, and two nuts to wire clamp (8).
 - (6) Install new nylon cable ties (10) around harness along inside of left hand frame rail. Ties should be spaced approximately every two feet where possible. Tie to other harness or lines.
 - (7) Plug in wire connector (11) at bitometer wheel assembly.
 - (8) Push harness (2) up thru cab floor hole under the PTO console.
 - (9) Connect harness wires at box per figure 2-14.



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Figure 2-15. Routing of Cab Hydraulic Control Box to Air Control Box Harness.

- (10) Install harness clamp (1) at bottom of hydraulic control box in cab.
- (11) Start engine, activate control box switches and have second mechanic check for proper functions.

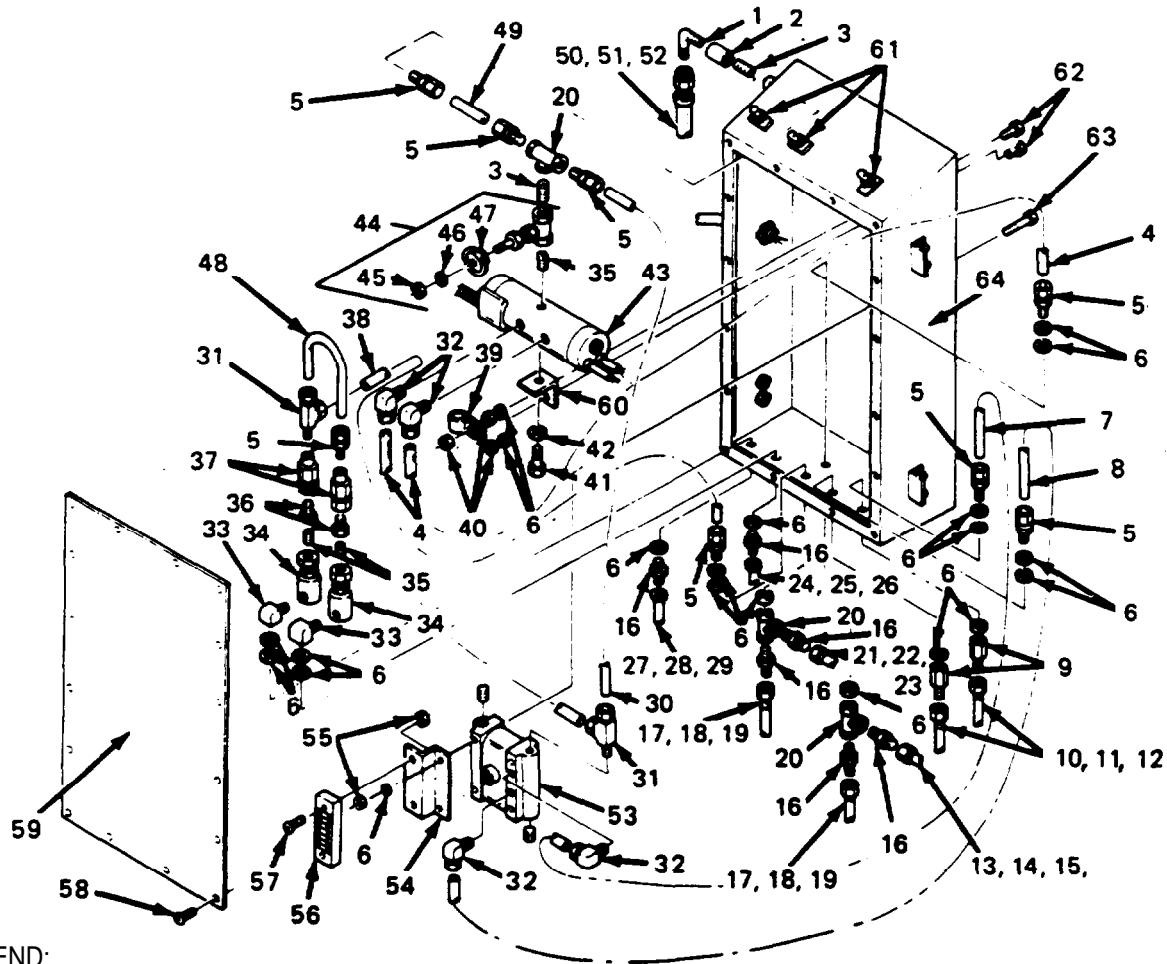
Section XVI. MAINTENANCE OF AIR CONTROL BOX

2-20. Air Control Box.

NOTE

If a known solenoid does not function and the air pressure is normal, first check for proper voltage at the solenoid terminal with the switch applied. If no voltage is present repair electrical failure. If voltage is present and solenoid does not function, replace the solenoid.

- a. Removal of Bar On-Off Solenoid Valve. (Refer to fig. 2-16.)
 - (1) Remove air control box assembly cover (59) as follows:
 - (a) Remove hex nut (45) and flat washer (46) that fastens knob (47) to control valve; then pull knob straight off.
 - (b) Remove cover (59) by removing sixteen screws (58).
 - (2) Remove center toggle switch (61) on top of air control box (64).
 - (3) Disconnect two lines (4) and remove two elbows (32).
 - (4) Remove two bolts (62), two washers (6), three nuts (40), tubing clamp (39), and carefully remove solenoid valve (43) as far as attaching wires permit.
 - (5) Disconnect nylon tubes (30) and (49), two male connectors (5), pipe tee (20), pipe nipple (3), globe valve assembly (44) and nipple (35).
 - (6) Disconnect solenoid wires at terminal strip (56). Tag wires to aid in reassembly. (Refer to fig. 2-18.)
 - (7) Remove capscrew (41) and washer (42); then separate bracket (60) from solenoid valve (43).
- b. Installation of Bar On-Off Solenoid Value. (Refer to fig. 2-16, 2-17, and 2-18.)
 - (1) Install solenoid valve (43) on bracket (60) and fasten with capscrew (41) and washer (42).
 - (2) Install two tubing elbows (32), nipple (35), globe valve assembly (44), pipe nipple (3), pipe tee (20) and two male connectors (5).
 - (3) Connect nylon tubes (30) and (49).
 - (4) Connect wires to terminal strip (56). (Refer to fig. 2-18.)
 - (5) Connect two nylon tubes (4) to tubing elbows (32) on solenoid valve (43).
 - (6) Install center toggle switch (61) on top of air control box (64).

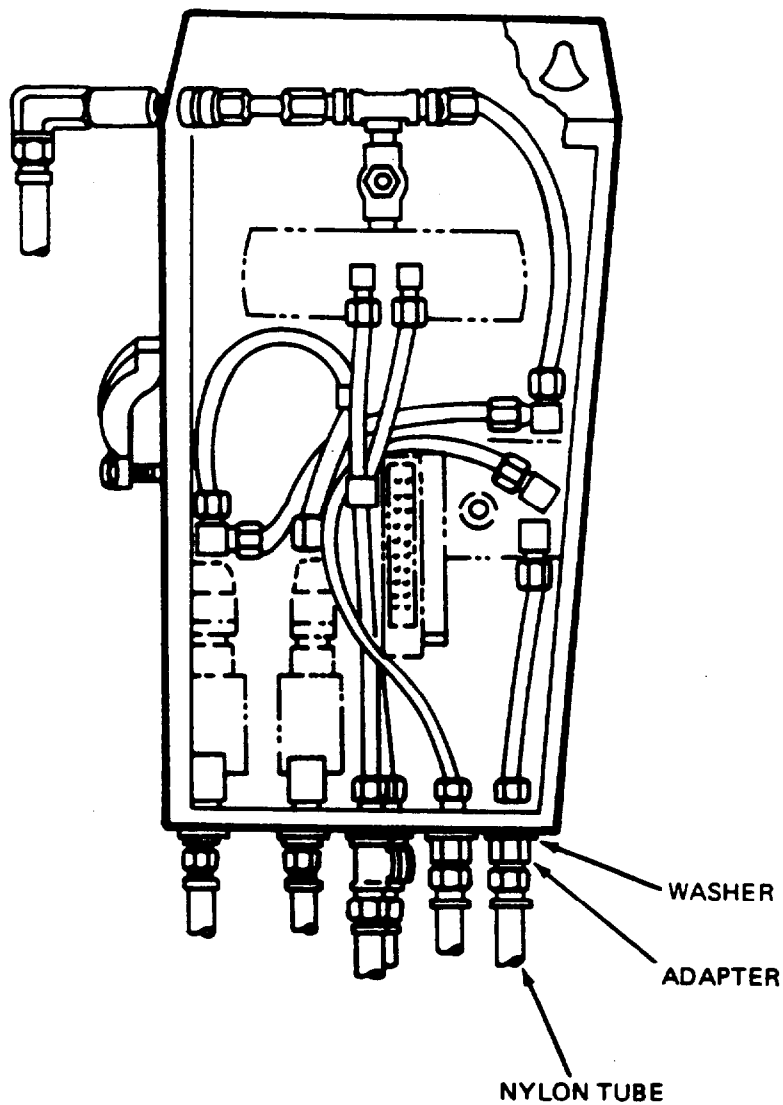


LEGEND:

- | | | |
|--------------------------|----------------------------------|----------------------------|
| 1. ELBOW | 22. MALE CONNECTOR | 43. SOLENOID ON-OFF VALVE |
| 2. PIPE COUPLING | 23. MALE CONNECTOR | 44. GLOBE VALVE ASSEMBLY |
| 3. PIPE NIPPLE (2) | 24. NYLON TUBE | 45. HEX NUT |
| 4. NYLON TUBE (2) | 25. MALE CONNECTOR | 46. FLAT WASHER |
| 5. MALE CONNECTOR (8) | 26. SWIVEL CONNECTOR | 47. KNOB |
| 6. FLAT WASHER (21) | 27. NYLON TUBE | 48. NYLON TUBE |
| 7. NYLON TUBE | 28. MALE CONNECTOR | 49. NYLON TUBE |
| 8. NYLON TUBE | 29. SWIVEL CONNECTOR | 50. NYLON TUBE |
| 9. ADAPTER (2) | 30. NYLON TUBE | 51. MALE CONNECTOR |
| 10. NYLON TUBE (2) | 31. MALE RUN TEE (2) | 52. SWIVEL CONNECTOR |
| 11. MALE CONNECTOR | 32. TUBING ELBOW (4) | 53. SOLENOID TURN-UP VALVE |
| 12. SWIVEL CONNECTOR (2) | 33. PIPE ELBOW (2) | 54. BRACKET |
| 13. NYLON TUBE | 34. SOLENOID CENTERING VALVE (2) | 55. NUT (4) |
| 14. MALE CONNECTOR | 35. NIPPLE (3) | 56. TERMINAL STRIP |
| 15. SWIVEL CONNECTOR | 36. REDUCER BUSHING (2) | 57. SCREW (2) |
| 16. ADAPTER (4) | 37. CHECK VALVE (2) | 58. SCREW (16) |
| 17. NYLON TUBE (2) | 38. NYLON TUBE | 59. COVER |
| 18. MALE CONNECTOR (2) | 39. TUBING CLAMP | 60. BRACKET |
| 19. SWIVEL CONNECTOR (2) | 40. HEX NUT (3) | 61. TOGGLE SWITCH (3) |
| 20. PIPE TEE (3) | 41. CAPSCREW | 62. BOLT (2) |
| 21. NYLON TUBE | 42. LOCKWASHER | 63. CAPSCREW (2) |
| | | 64. AIR CONTROL BOX |

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Figure 2-16. Disassemble/Reassemble Air Control Box.



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Figure 2-17. Air Control Box Piping Diagram.

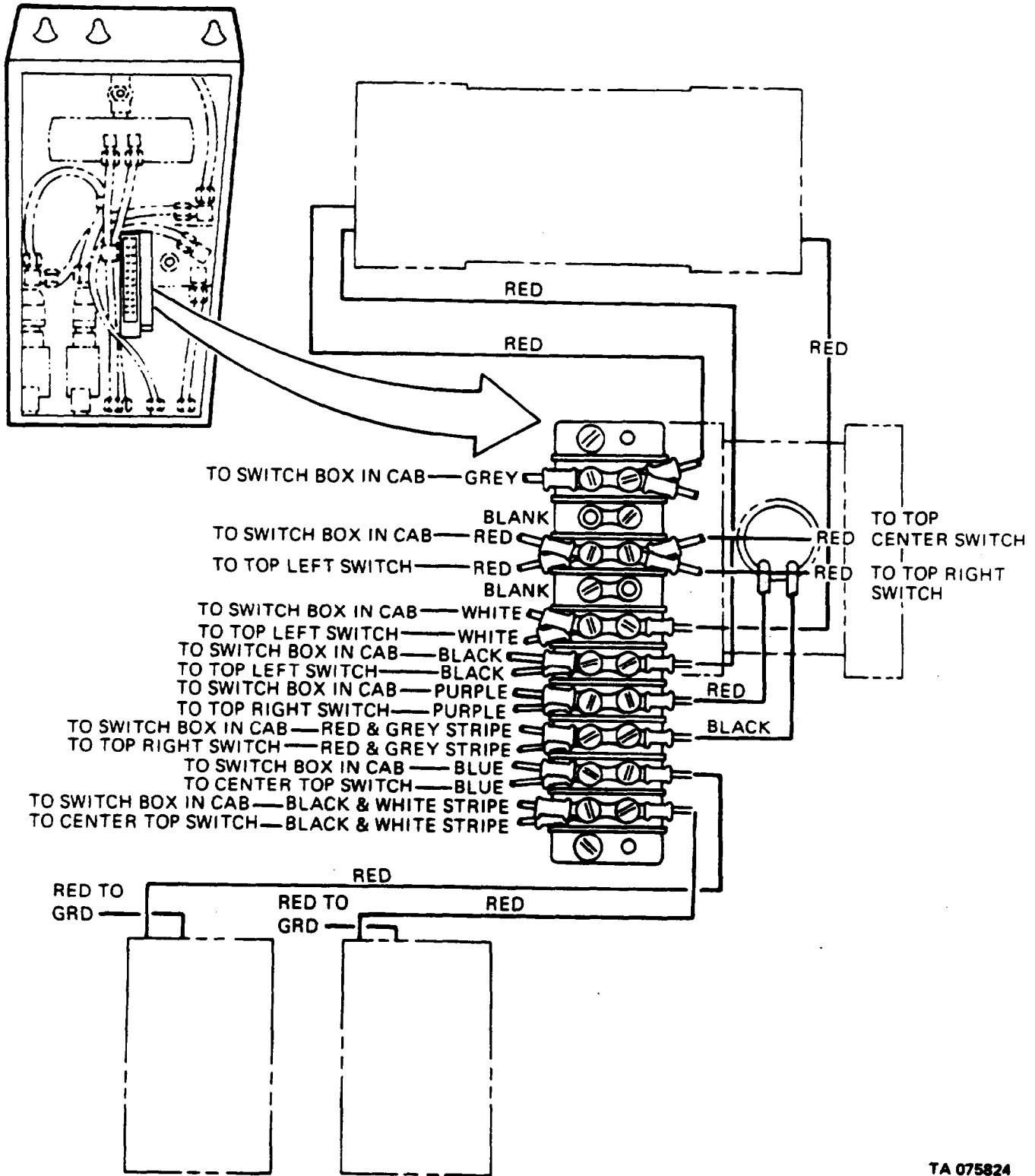


Figure 2-18. Air Control Box Wiring Connections.

- (7) Install cover (59) and secure with sixteen screws (58).
- (8) Install knob (47) and secure with hex nut (45) and flat washer (46).
- c. Removal of 12-Volt Solenoid Valve. (Refer to fig. 2-16.)
 - (1) Remove control box cover (59) and knob (47) as described in paragraph 2-20 a, step (1).
 - (2) Disconnect nylon tubes (30) and (38) from male run tee (31).
 - (3) Disconnect nylon tubes (7) and (8) from two tubing elbows (32).
 - (4) Remove two capscrews (63), nuts (55), and washers (6) that fasten solenoid valve (53) to air control box (64). Remove bracket (54) with attached terminal strip (56); then pull out solenoid valve (53) as far as attaching wires permit.
 - (5) Disconnect wires. Tag wires to aid in reassembly. (Refer to fig. 2-18.)
- d. Installation of 12-Volt Solenoid Valve. (Refer to fig. 2-16, 2-17, and 2-18.)
 - (1) Mount solenoid valve (53) in air control box (64) and position terminal strip bracket (54) on the solenoid valve with mounting holes lined up. Fasten with two capscrews (63), washers (6), and nuts (55).
 - (2) Connect solenoid wires. (See fig. 2-18.)
 - (3) Connect nylon tubes (7) and (8) to tubing elbows (32) on solenoid valve (Refer to fig. 2-16.)
 - (4) Connect nylon tubes (30) and (38) to solenoid valve (53).
 - (5) Install cover (59) and secure with sixteen screws (58).
 - (6) Install control knob (47) and secure with nut (45) and washer (46).
- e. Removal of Circular Solenoid Valve. (Refer to fig. 2-16.)
 - (1) Remove control box cover (59) and knob (47) as described in paragraph 2-20 a, step (1).
 - (2) Disconnect nylon tube (27) with male connector (28) and swivel connector (29) from bottom of air control box; then remove adapter (16) and washer (6).
 - (3) Disconnect nylon tube (24) with male connector (25) and swivel connector (26) from bottom of air control box (64); then remove adapter (16) and washer (6).
 - (4) Disconnect nylon tubes (38) and (48) from male run tee (31) and male connector (5).
 - (5) Disconnect wires from terminal strip (56).
 - (6) Remove two assembled solenoid valves (34) and four washers (6).
 - (7) Disassemble solenoid valves (34) by removing pipe elbows (33), nipples (35), reducer bushings (36), one male connector (5), male run tee (31), and check valves (37).
- f. Installation of Circular Solenoid Valves. (Refer to fig. 2-16, 2-17, and 2-18.)
 - (1) Assemble two solenoid valves (34) by installing two pipe elbows (33), nipples (35), reducer bushings (36), check valves (37), one male connector (5) and male run tee (31) as shown.

- (2) Install two assembled solenoid valves (34) and four washers (6).
- (3) At bottom of air control box (64), install two flat washers (6), adapters (16), nylon tubes (24) and (27) with male connectors (25) and (28) and swivel connectors (26) and (29).
- (4) Connect wires to terminal strip (56). (Refer to fig. 2-18.)
- (5) Connect nylon tubes (38) and (48) as shown.
- (6) Install control box cover (59) and secure with sixteen screws (58).
- (7) Install control knob (47) and secure with nut (45) and washer (46).

NOTE

For maintenance of other tubes, fittings, fasteners and wiring within the air control box, use standard shop practices and follow figures 2-16, 2-17, and 2-18.

Section XVII. MAINTENANCE AND ROUTING OF AIR LINES

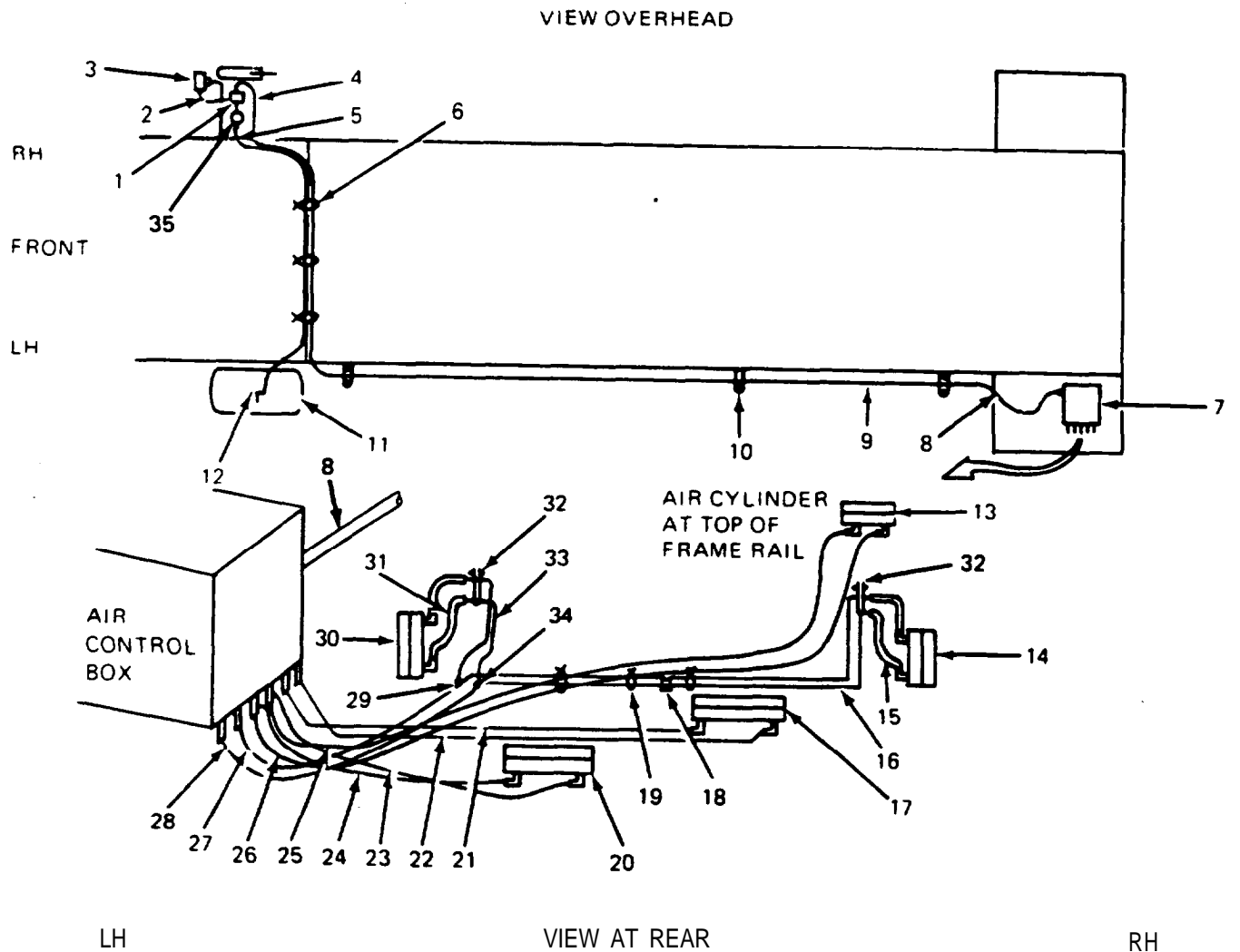
2-21. Routing of Air Lines.

- a. Removal. (Refer to fig. 2-19.)

NOTE

Bleed air reservoirs and tag each hose as removed with the call out number.

- (1) Unscrew fittings at either end of hose (2) between air lubricator (1) and solenoid air valve (3); remove hose (2).
- (2) Unscrew fitting of hose (5) at connection to gage on air lubricator (1) and unscrew air pressure gage (35).
- (3) Unscrew fitting of hose (4) at air lubricator (1).
- (4) Cut nylon ties (6) along top of frame cross angle.
- (5) Unscrew fitting of hose (5) at 'T' fitting (12) on back of air reservoir (11) located behind stowage box; remove hose (5).
- (6) Unscrew fitting of hose (4) at connection to tubing (9); remove hose (4).
- (7) Unscrew fitting of hose (8) at connection to air control box (7).
- (8) Unscrew fitting of hose (8) at connection to tubing (9) and remove hose (8).
- (9) Unscrew bolt, washer, and nut from three tubing retainers (10); remove tubing (9) from outer LH frame rail.



LEGEND:

- | | | |
|-----------------------|---------------------|-----------------------|
| 1. AIR LUBRICATOR | 13. AIR CYLINDER | 24. HOSE |
| 2. HOSE | 14. AIR CYLINDER | 25. HOSE |
| 3. SOLENOID AIR VALVE | 15. HOSE (2) | 26. HOSE |
| 4. HOSE | 16. TUBING (2) | 27. HOSE |
| 5. HOSE | 17. AIR CYLINDER | 28. HOSE |
| 6. NYLON TIE | 18. TUBING RETAINER | 29. 'T' FITTING |
| 7. AIR CONTROL BOX | 19. NYLON TIE | 30. AIR CYLINDER |
| 8. HOSE | 20. AIR CYLINDER | 31. HOSE (2) |
| 9. TUBING | 21. HOSE | 32. TUBING RETAINER |
| 10. TUBING RETAINER | 22. HOSE | 33. TUBING (2) |
| 11. AIR RESERVOIR | 23. HOSE | 34. 'T' FITTING |
| 12. 'T' FITTING | | 35. AIR PRESSURE GAGE |

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Figure 2-19. Maintenance and Routing of Air Lines.

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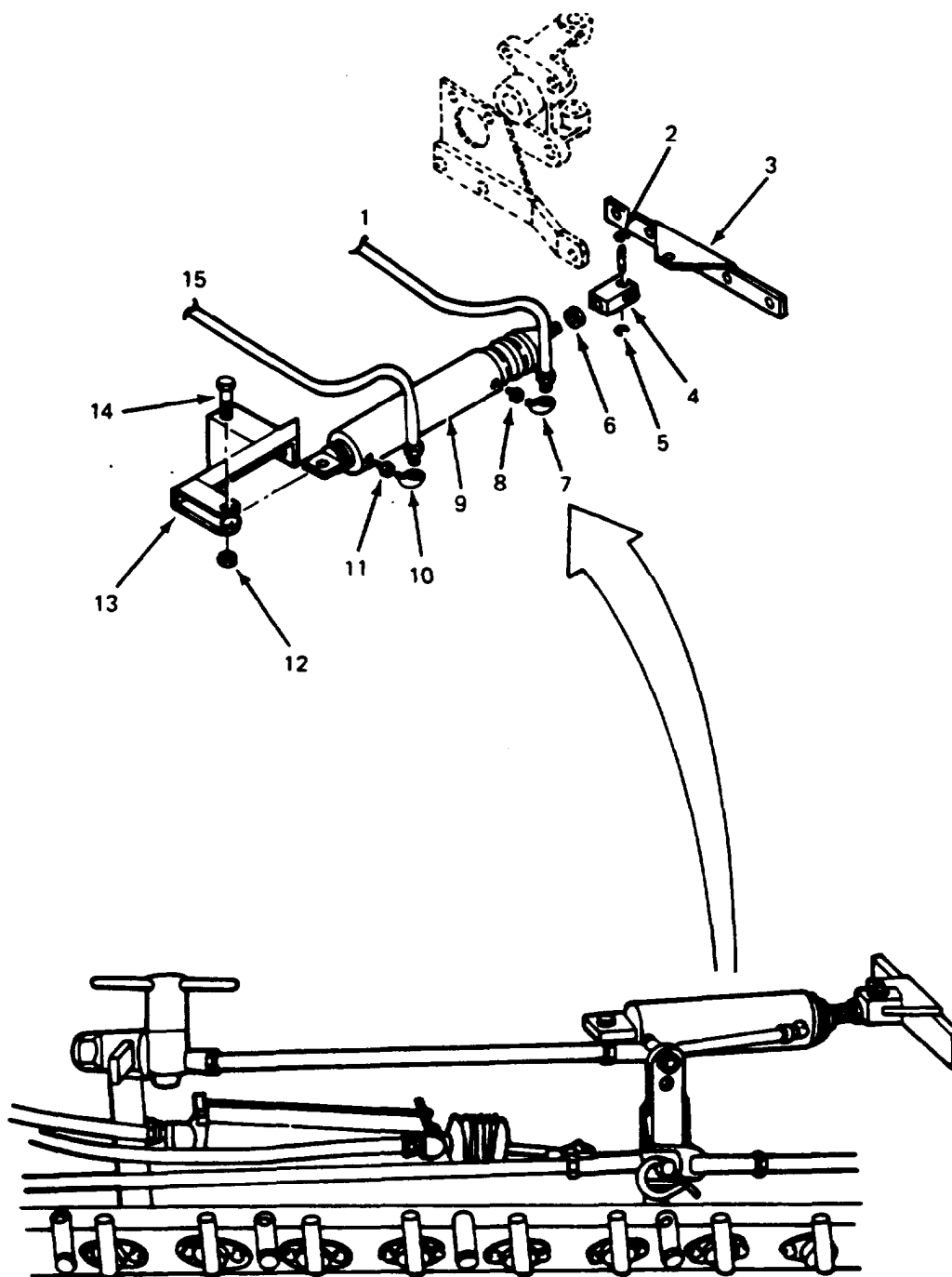
- (10) Cut nylon ties (19) securing hoses to tubes above rear crossbrace.
 - (11) Unscrew bolt, washer, and nut from tubing retainer (18) at rear crossbrace.
 - (12) Unscrew fittings of hose (21) from air control box (7) and air cylinder (17); remove hose (21).
 - (13) Unscrew fittings of hose (22) from air control box (7) and air cylinder (17); remove hose (22).
 - (14) Unscrew fittings of hose (23) from 'T' fitting on air control box (7) and air cylinder (20); remove hose (23).
 - (15) Unscrew fittings of hose (25) from bottom of 'T' fitting on air control box (7) and 'T' fitting (34); remove hose (25).
 - (16) Unscrew fittings of hose (24) from 'T' fitting on air control box (7) and air cylinder (20); remove hose (24).
 - (17) Unscrew fittings of hose (26) from bottom of 'T' fitting on air control box (7) and air cylinder (13); remove hose (26).
 - (18) Unscrew fittings of hose (27) from bottom of air control box (7) and 'T' fitting (29); remove hose (27).
 - (19) Unscrew fittings of hose (28) from air control box (7) and air cylinder (13); remove hose (28).
 - (20) Unscrew fittings of two hoses (31) from air cylinder (30) and two tubes (33); remove two hoses (31).
 - (21) Unscrew bolt, washer, and nut from tubing retainer (32).
 - (22) Unscrew bolt, washer, and nut from tubing retainer (32) at air cylinder (14).
 - (23) Unscrew fittings of two hoses (15) from air cylinder (14) and two tubes (16); remove two hoses (15).
 - (24) Remove as an assembly two tubes (16); 'T' fittings (34) and (29), and two tubes (33); lift assembled tubes up and out of tubing retainers (18), and (32).
 - (25) Unscrew two tubes (16) and two tubes (33) from two 'T' fittings (34) and (29).
- b. Installation. (Refer to fig. 2-19.)
- (1) Screw two tubes (16) and two tubes (33) to two 'T' fittings (34) and (29).
 - (2) Set into tube retainers (18), and (32), as an assembly of two tubes (16), two 'T' fittings (34) and (29) and two tubes (33).
 - (3) Install bolt, nut, washer to tube retainers (18), and (32).
 - (4) Install fittings of two hoses (15) to air cylinder (14) and two tubes (16).
 - (5) Install fittings of two hoses (31) to air cylinder (30) and two tubes (33).

- (6) Install hose (28) to air control box (7) and air cylinder (13).
- (7) Install hose (27) to bottom of air control box (7) and 'T' fitting (29).
- (8) Install hose (26) to bottom of 'T' fitting on air control box (7) and air cylinder (13).
- (9) Install hose (24) to 'T' fitting on air control box (7) and air cylinder (20).
- (10) Install hose (25) to bottom of 'T' fitting on air control box (7) and 'T' (34).
- (11) Install hose (23) to 'T' fitting on air control box (7) and air cylinder (20).
- (12) Install hose (22) to air control box (7) and air cylinder (17).
- (13) Install hose (21) to air control box (7) and air cylinder (17).
- (14) Install new nylon ties (19) securing hoses to tubes above rear crossbrace.
- (15) Install hose (8) to side of air control box (7).
- (16) Set tubing (9) into three tubing retainers (10) on outer LH frame rail; secure with three each bolts, washers, and nuts.
- (17) Install hose (8) to tubing (9).
- (18) Install hoses (4) to tubing (9).
- (19) Install hose (5) to 'T' fitting (12) on back of air reservoir (11) located behind stowage box.
- (20) Route hoses (4) and (5) along top of front crossbrace and secure to other lines with new nylon ties (6).
- (21) Install hose (4) to air lubricator (1).
- (22) Install hose (5) to gage on air lubricator (1) and reinstall air pressure gage (35).
- (23) Install hose (2) to air lubricator (1) and solenoid air valve (3).
- (24) Start engine, pressurize air system and check for leaks.

Section XVIII. MAINTENANCE OF SPRAY BAR CONTROL CYLINDERS

2-22. Spray Bar Control Cylinders.

- a. Removal of Bar Sifting Control Cylinder. (Refer to fig. 2-20.)
 - (1) Disconnect air lines (15) and (1) from elbows (10) and (7). Tag each line to aid in reassembly.



LEGEND:

- | | |
|-------------|--------------|
| 1. AIR LINE | 9. CYLINDER |
| 2. CAPSCREW | 10. ELBOW |
| 3. BRACKET | 11. BUSHING |
| 4. CLEVIS | 12. NUT |
| 5. NUT | 13. BRACKET |
| 6. LOCKNUT | 14. CAPSCREW |
| 7. ELBOW | 15. AIR LINE |
| 8. BUSHING | |

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Figure 2-20. Remove/Install Bar Shifting Control Cylinder.

- (2) Remove capscrew (2) and nut (5).
 - (3) Remove capscrew (14) and nut (12); then lift out cylinder (9).
 - (4) Loosen locknut (6) and remove clevis (4); then remove locknut (6).
 - (5) Remove elbows (10) and (7) and bushings (11) and (8).
- b. Installation of Bar Shifting Control Cylinder. (Refer to fig. 2-20.)
- (1) Position cylinder as shown.
 - (2) Install capscrew (14) and nut (12).
 - (3) Install locknut (6) and clevis (4).
 - (4) Adjust length of clevis (4) to line up its mounting hole with hole in bracket (3); then install capscrew (2) and nut (5).
 - (5) Tighten locknut (6) against clevis (4).
 - (6) Connect air lines (15) and (1) to elbows (10) and (7).
- c. Removal of Bottom Bar On-Off Cylinder. (Refer to fig. 2-21.)
- (1) Disconnect air line from each fitting (9).
 - (2) Remove two cotter pins (2); then remove pins (1) and (6).
 - (3) Remove cylinder (4).

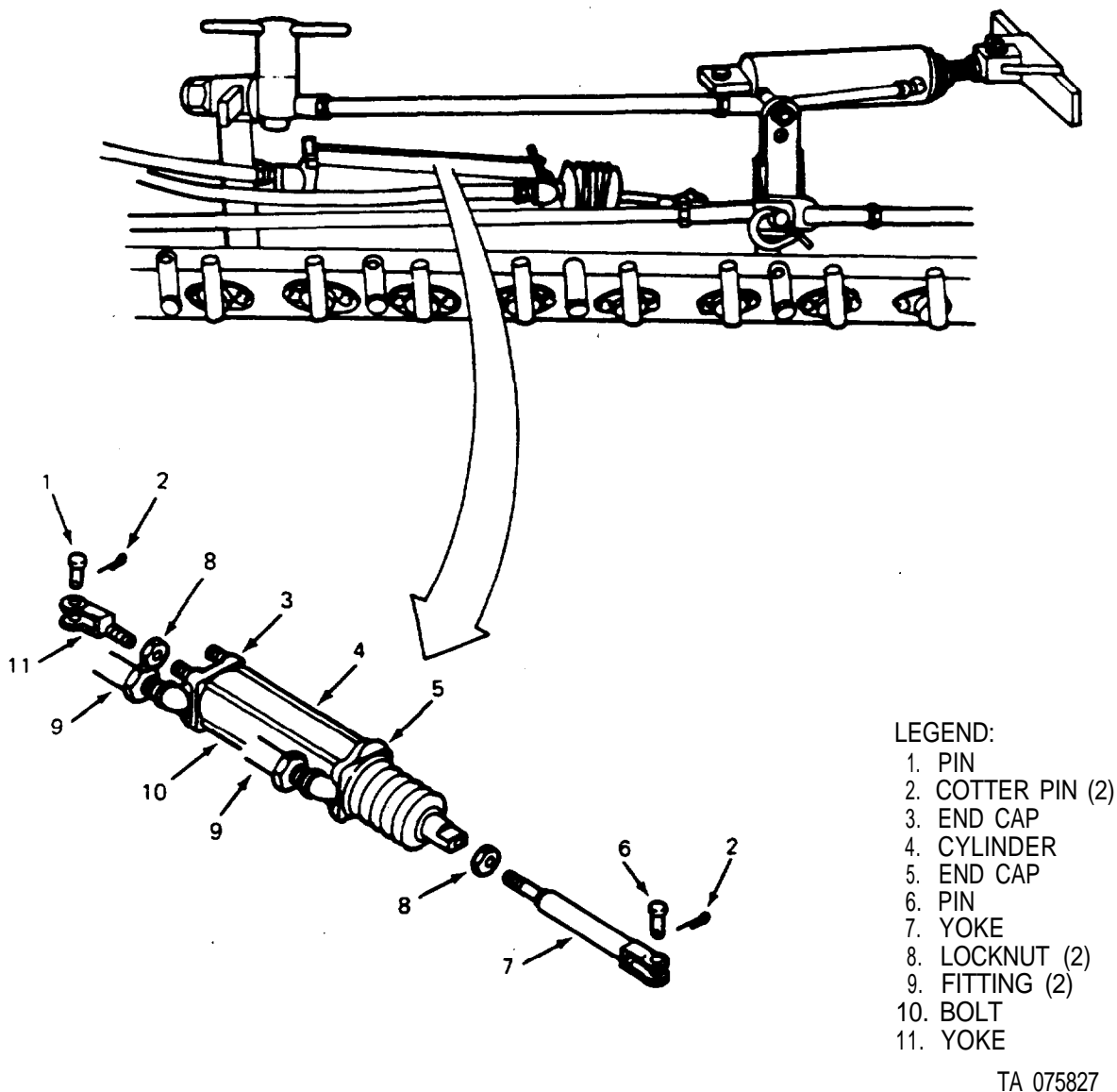


Figure 2-21. Remove/Install Bottom Bar On-Off Cylinder.

d. Installation of Bottom Bar On-Off Cylinder. (Refer to fig. 2-21.)

- (1) Connect yoke (7) to control linkage and secure with pin (6) and cotter pin (2).
- (2) Adjust length of yoke (11) to line up holes in yoke with hole in control linkage; then install pin (1) through yoke (11) and secure with cotter pin (2).
- (3) Tighten locknut (8) on yokes (11) and (7).
- (4) Reconnect two air line fittings (9).

- e. Removal of Top Bar On-Off Cylinder. (Refer to fig. 2-22.)
 (1) Disconnect two air lines from cylinder.

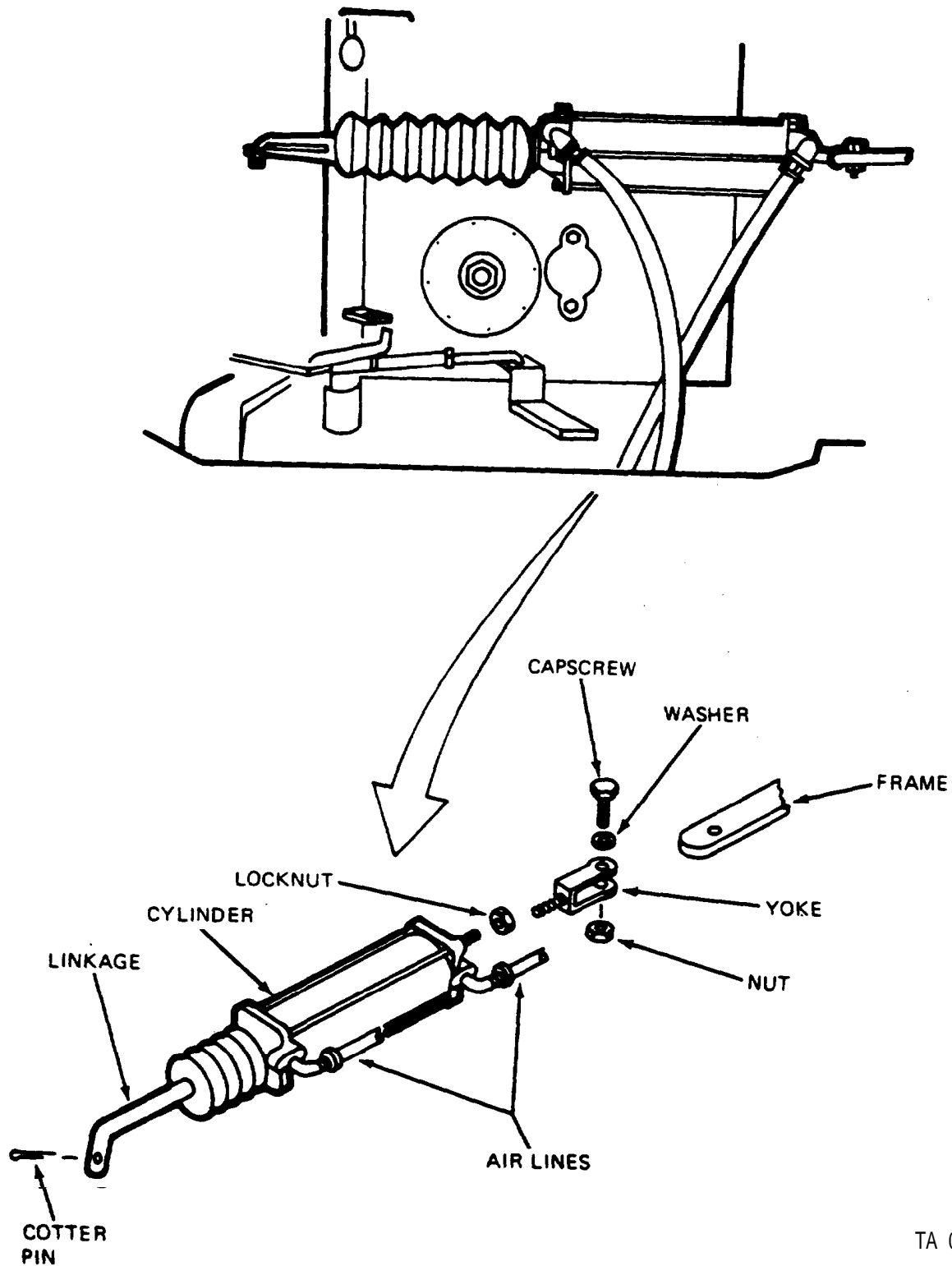


Figure 2-22. Remove/Install Top Bar On-Off Cylinder.

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(2) Remove cotter pin and disconnect linkage at left side of cylinder.

(3) At opposite end of cylinder, remove capscrew, washer, and nut; then lift out cylinder.

f. Installation of Top Bar On-Off Cylinder. (Refer to fig. 2-22.)

(1) Position cylinder on vehicle frame and connect linkage at left side of cylinder. Secure with cotter pin.

(2) Adjust length of yoke at opposite end of cylinder to line up holes in yoke with hole in frame.

(3) Install capscrew, washer, and nut; then tighten locknut.

(4) Reconnect air lines to cylinder.

g. Removal of Bar Turn-Up Cylinders. (Refer to fig. 2-23.)

NOTE

Procedures for removing and installing the left and right side cylinders are identical.

(1) Disconnect two air lines from cylinder.

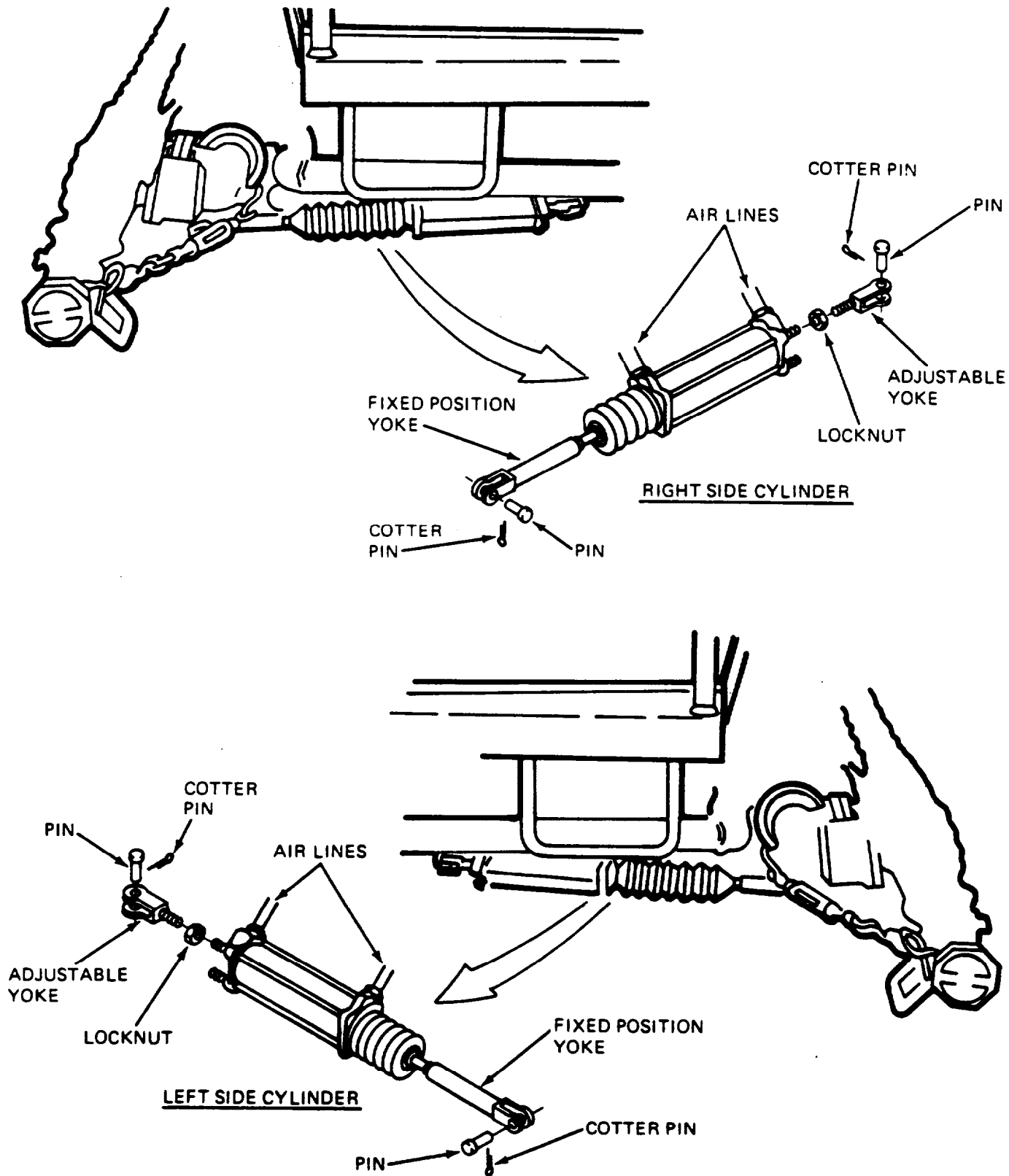


Figure 2-23. Removal of Bar Turn-Up Cylinders.

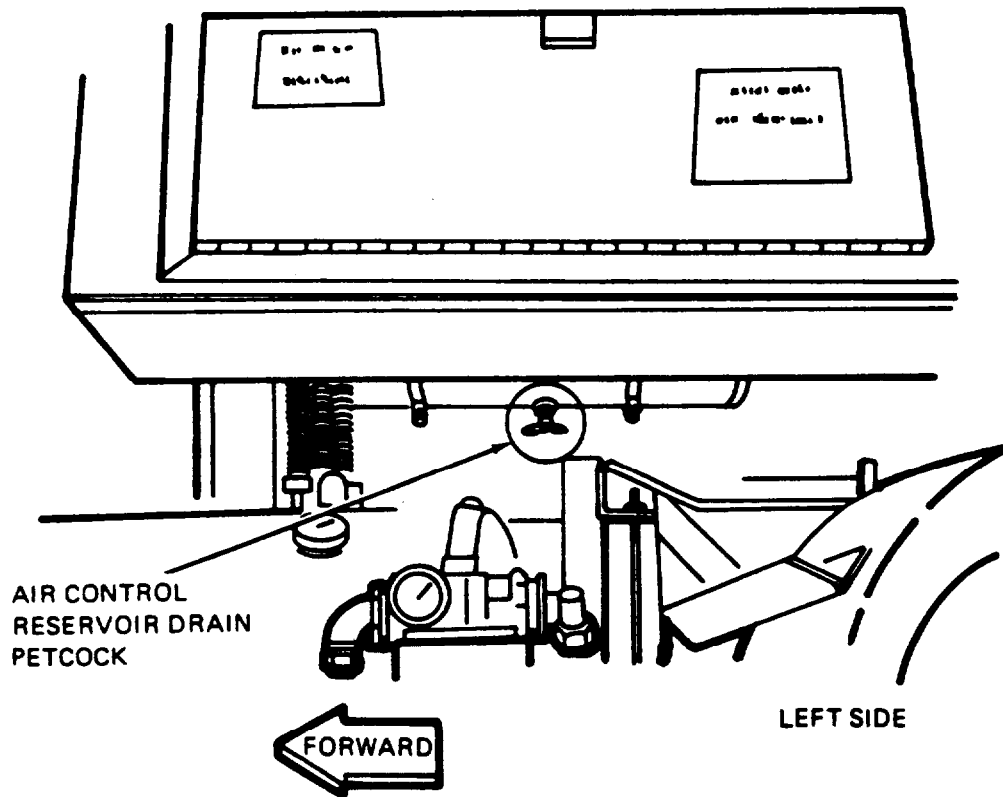
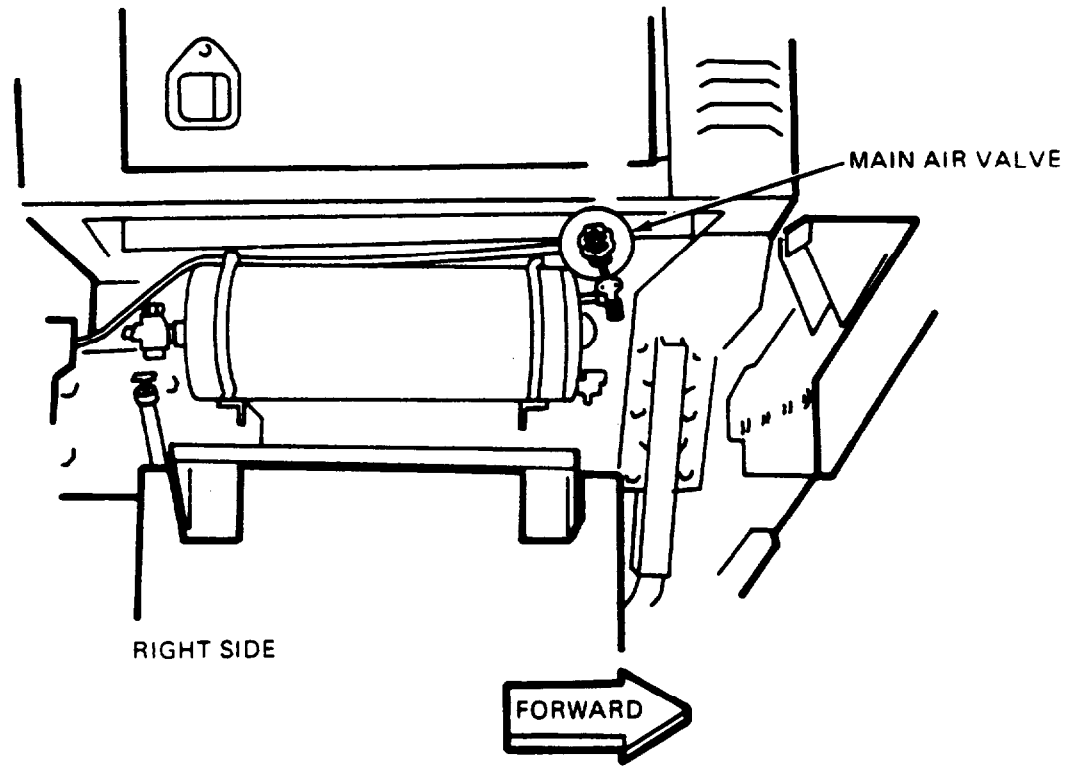
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- (2) Remove cotter pin and pin from each end of cylinder; then lift out cylinder.
- h. Installation of Bar Turn-Up Cylinders. (Refer to fig. 2-23.)
 - (1) Connect fixed position yoke to control linkage and secure with pin and cotter pin.
 - (2) Adjust length of yoke at opposite end of cylinder to line up holes in yoke with hole in connecting linkage; then install pin and cotter pin.
 - (3) Tighten locknut.
 - (4) Reconnect two air lines to cylinder.
 - (5) Repeat steps above for removal and replacement of opposite side cylinder.

Section XIX. MAINTENANCE OF BITUMETER WHEEL ASSEMBLY

2-23. Bitumeter Wheel Assembly.

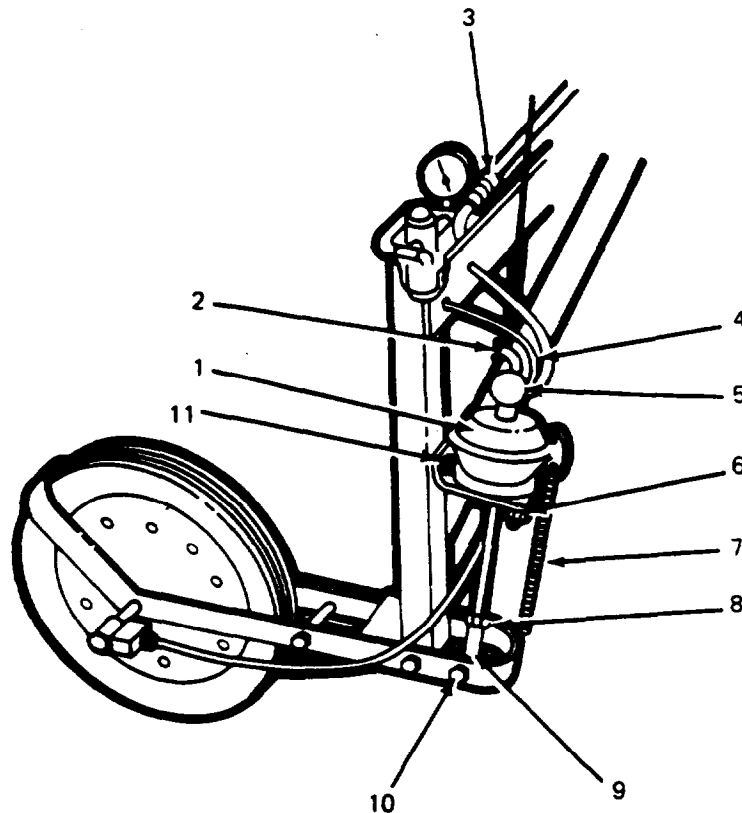
- a. Removal of Bitumeter Wheel Solenoid Valve and Air Chamber. (Refer to fig. 2-24.)
 - (1) Close main air valve; then exhaust air pressure from bituminous supply tank by opening drain petcock.



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Figure 2-24. Main Air Valve and Bituminous Supply Tank Petcock.

- (2) Disconnect air supply line (2, fig. 2-25) from solenoid valve (5).



LEGEND:

- | | |
|-------------------------|----------------------|
| 1. AIR CHAMBER | 6. NUTS |
| 2. AIR SUPPLY LINE | 7. SPRING |
| 3. QUICK DISCONNECT | 8. YOKE LOCKNUT |
| 4. SOLENOID GROUND WIRE | 9. AIR CHAMBER YOKE |
| 5. SOLENOID VALVE | 10. CAPSCREW |
| | 11. MOUNTING BRACKET |

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Figure 2-25. Remove/Install Bitometer Wheel Solenoid Valve and Air Chamber.

(3) Disconnect solenoid ground wire (4) by removing capscrew, nut and washer. Pull apart power line at quick-disconnect (3) and remove air line (2) from solenoid valve (5).

- (4) Unscrew solenoid valve (5) from air chamber (1).
- (5) Disconnect spring (7) from air chamber (1).
- (6) Remove two nuts (6) and washers that fasten air chamber (1) to mounting bracket (11).
- (7) Remove capscrew (10) and nut that fasten air chamber yoke (9) to wheel fork.
- (8) Loosen yoke locknut (8); then unscrew the yoke from air chamber (1).
- (9) Pull air chamber (1) out of mounting bracket (11).

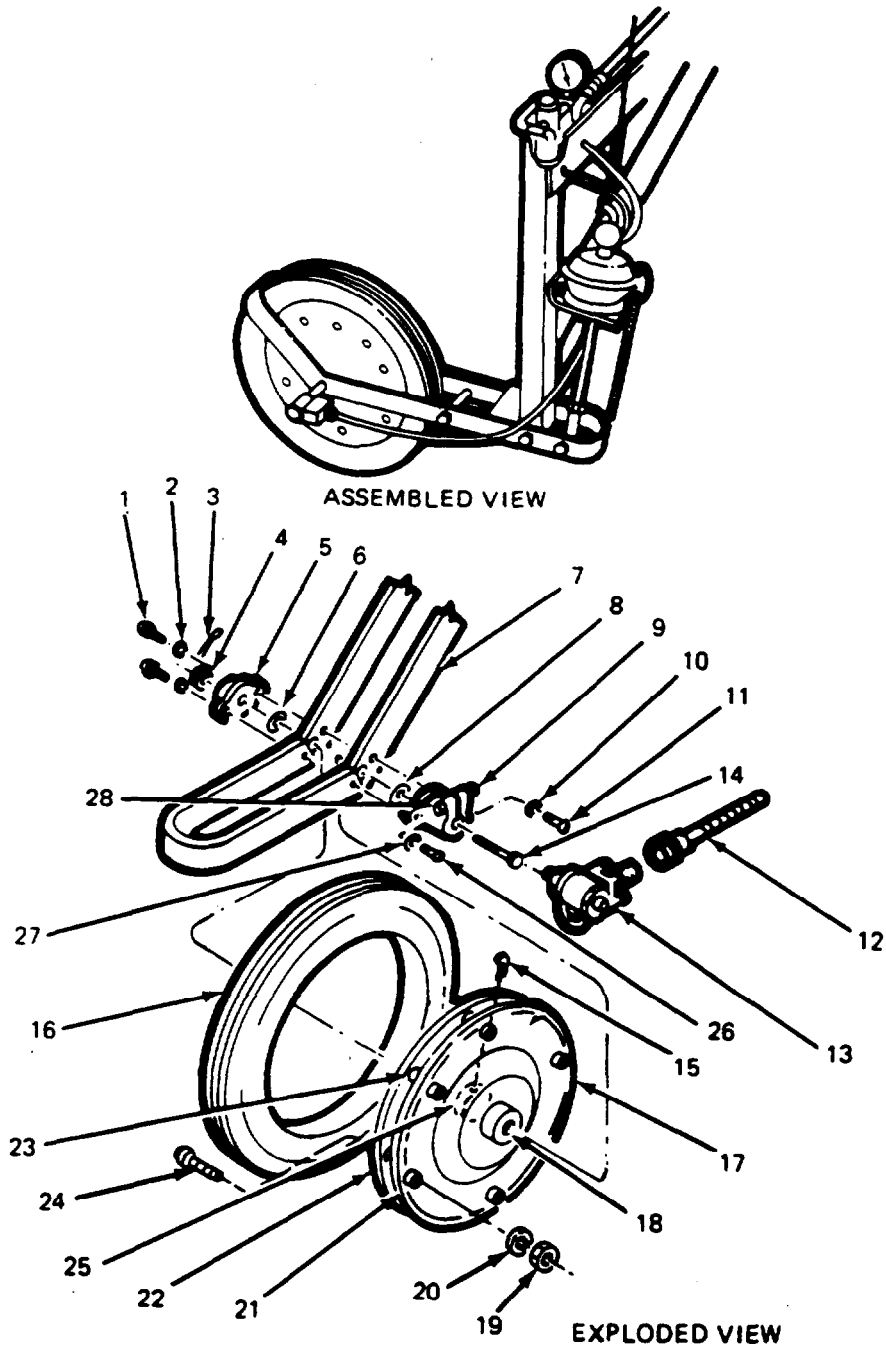
- b. Installation of Bitumeter Wheel Solenoid Valve and Air Chamber. (Refer to fig. 2-25.)
- (1) Mount air chamber (1) on bracket (11). Long threaded shaft should pass through center hole of bracket.
 - (2) Install two nuts (6) and washers that fasten air chamber (1) to mounting bracket (11).
 - (3) Install yoke locknut (8) and air chamber yoke (9). Screw the yoke on to the air chamber (1) until hole in yoke lines up with hole in wheel fork; then tighten yoke locknut (8).
 - (4) Install capscrew (10) and nut that fasten the air chamber yoke (9) to the wheel fork.
 - (5) Connect spring (7) to air chamber (1).
 - (6) Screw solenoid valve (5) into top of air chamber (1).
 - (7) Connect air supply line (2) to solenoid valve (5).
 - (8) Connect solenoid ground wire (4) to bracket and secure with capscrew, washer, and nut.
 - (9) Connect solenoid power line to quick-disconnect (3).
 - (10) Close petcock and open main air valve. (Refer to fig. 2-24.)
- c. Servicing of Oiler Lubricator.
- (1) Close gate valve (main air valve, fig. 2-24) then exhaust air supply from bituminous tank by opening air control reservoir drain petcock.
 - (2) Remove glass cup from oiler lubricator.
 - (3) Add OE 10 oil to cup and replace cup.
 - (4) Close petcock on air supply tank and open main air valve.
 - (5) Start engine to replenish air supply.

NOTE

The safety valve located just below the main air valve at the main air tank will allow air to pass through the bituminous air tank only after the pressure is above 65 lbs. This provides a safety factor so the truck will not be starved of air pressure for the service brakes.

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- d. Removal of Bitumeter Wheel, Tires, and Bearings. (Refer to fig. 2-26.)
 - (1) Loosen capscrew (28); then pull tachometer adapter (13) off.
 - (2) Remove cotter pin (15).
 - (3) Remove cotter pin (3); then hex nut (4) and spindle (14).
 - (4) Remove two screws (1) and washers (2); then pull off outer bearing (5) with bearing (6).
 - (5) Remove screws (26) and (11) and washers (27) and (10); then pull bearing clamp (9) with bearing (8).
 - (6) Remove assembled tire (16) and wheel (17) from fork assembly (7).
 - (7) Separate tire and wheel by removing six nuts (19), lockwashers (20), and capscrews (24). Remove wheel disks (21) and (22) and spacers (23).
- e. Installation of Bitumeter Wheel, Tire, and Bearings. (Refer to fig. 2-26.)
 - (1) Inspect bushings (25) and (18). Replace wheel if bushings are worn or defective.
 - (2) Inspect ball bearings (6) and (8). Replace if defective.
 - (3) Assemble tire and wheel as follows:
 - (a) Insert six capscrews (24) through wheel disk (22). Lay disk on bench so that it rests on the capscrews.
 - (b) Place a spacer (23) on each capscrew.
 - (c) Place tire (16) on top of disk (22).
 - (d) Install disk (21), lockwashers (20) and nuts (19). Tighten capscrews (24) and nuts (19) securely.
 - (4) Mount assembled tire and wheel in fork assembly (7).
 - (5) Mount assembled bearing clamp (9) on fork assembly (7) and secure with screws (26) and (11) and washers (27) and (10).
 - (6) Mount assembled outer bearing (5) on fork assembly (7) and secure with two screws (1) and washers (2).
 - (7) Install spindle (14). Turn the spindle to line up hole in wheel for cotter pin (15), then install cotter pin (15).
 - (8) Install hex nut (4) and cotter pin (3).
 - (9) Install tachometer adapter (13), making sure that the drive pin on the adapter seats into the slot of spindle (14). Tighten capscrew (28).



- | | | |
|------------------|------------------------|--------------------|
| LEGEND: | | |
| 1. SCREW (2) | 9. BEARING CLAMP | 19. NUT (6) |
| 2. WASHER (2) | 10. WASHER | 20. LOCKWASHER (6) |
| 3. COTTER PIN | 11. SCREW | 21. WHEEL DISK |
| 4. HEX NUT | 12. CABLE HOUSING | 22. WHEEL DISK |
| 5. OUTER BEARING | 13. TACHOMETER ADAPTER | 23. SPACER (6) |
| 6. BEARING | 14. SPINDLE | 24. CAPSCREW (6) |
| 7. FORK ASSEMBLY | 15. COTTER PIN | 25. BUSHING |
| 8. BEARING | 16. TIRE | 26. SCREW |
| | 17. WHEEL | 27. WASHER |
| | 18. BUSHING | 28. CAPSCREW |
| | | |

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Figure 2-26. Remove/Install Bitumter Wheel, Tire and Bearing.

Section XX. MAINTENANCE OF BITUMETER AIR CONTROL RESERVOIR

2-24. Bitumeter Air Control Reservoir.

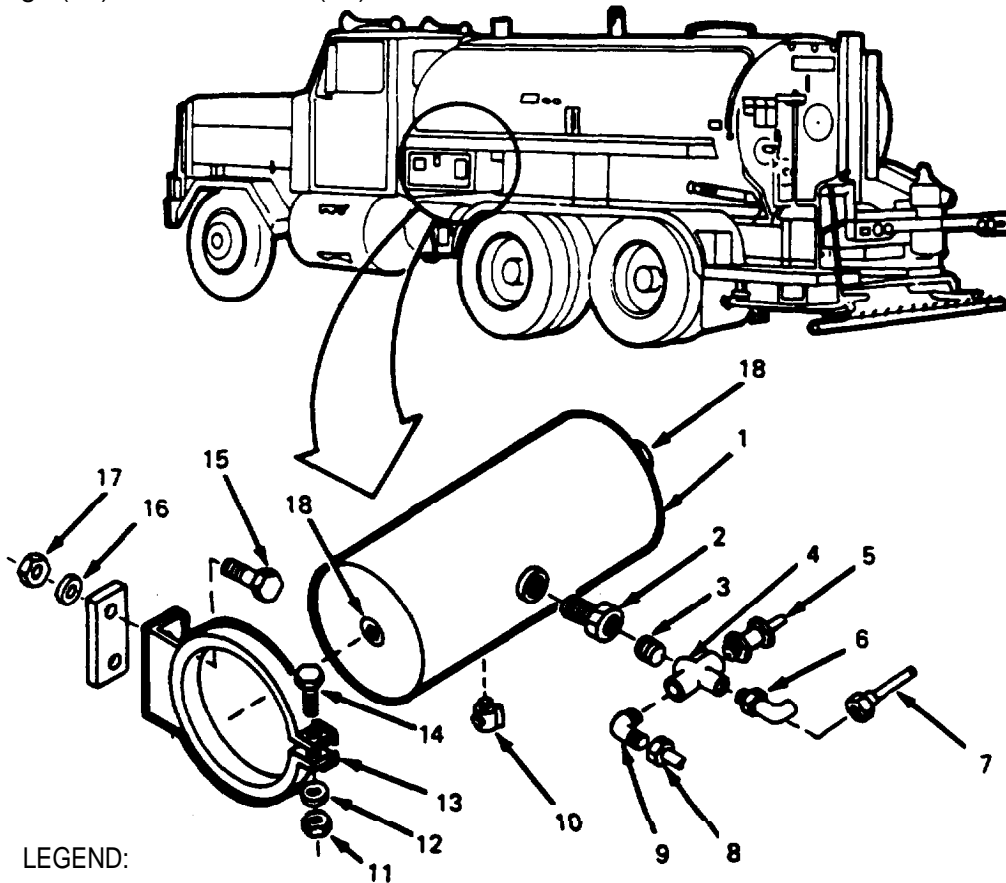
NOTE

Close off main air pressure at supply tank and drain off air pressure by opening drain cock. Refer to TM 5-3895-371-10.

a. Removal. (Refer to fig. 2-27.)

- (1) Disconnect two air lines (7) and (8) at elbows (6) and (9).
- (2) Remove two nuts (11), lockwashers (12), and capscrews (14) from brackets (13).
- (3) Spread air reservoir brackets (13) and remove air reservoir (1).

(4) If air reservoir (1) is to be replaced, transfer all fittings to the new reservoir including two pipe plugs (18) and drain cock (10).



LEGEND:

- | | | |
|----------------------|--------------------|--------------------|
| 1. BUSHING RESERVOIR | 7. AIR LINE | 13. BRACKET (2) |
| 2. BUSHING | 8. AIR LINE | 14. CAPSCREW (2) |
| 3. NIPPLE | 9. ELBOW | 15. CAPSCREW (2) |
| 4. CROSS PIPE | 10. DRAIN COCK | 16. LOCKWASHER (2) |
| 5. VALVE | 11. NUT (2) | 17. CAPSCREW (2) |
| 6. ELBOW | 12. LOCKWASHER (2) | 18. PIPE PLUG (2) |

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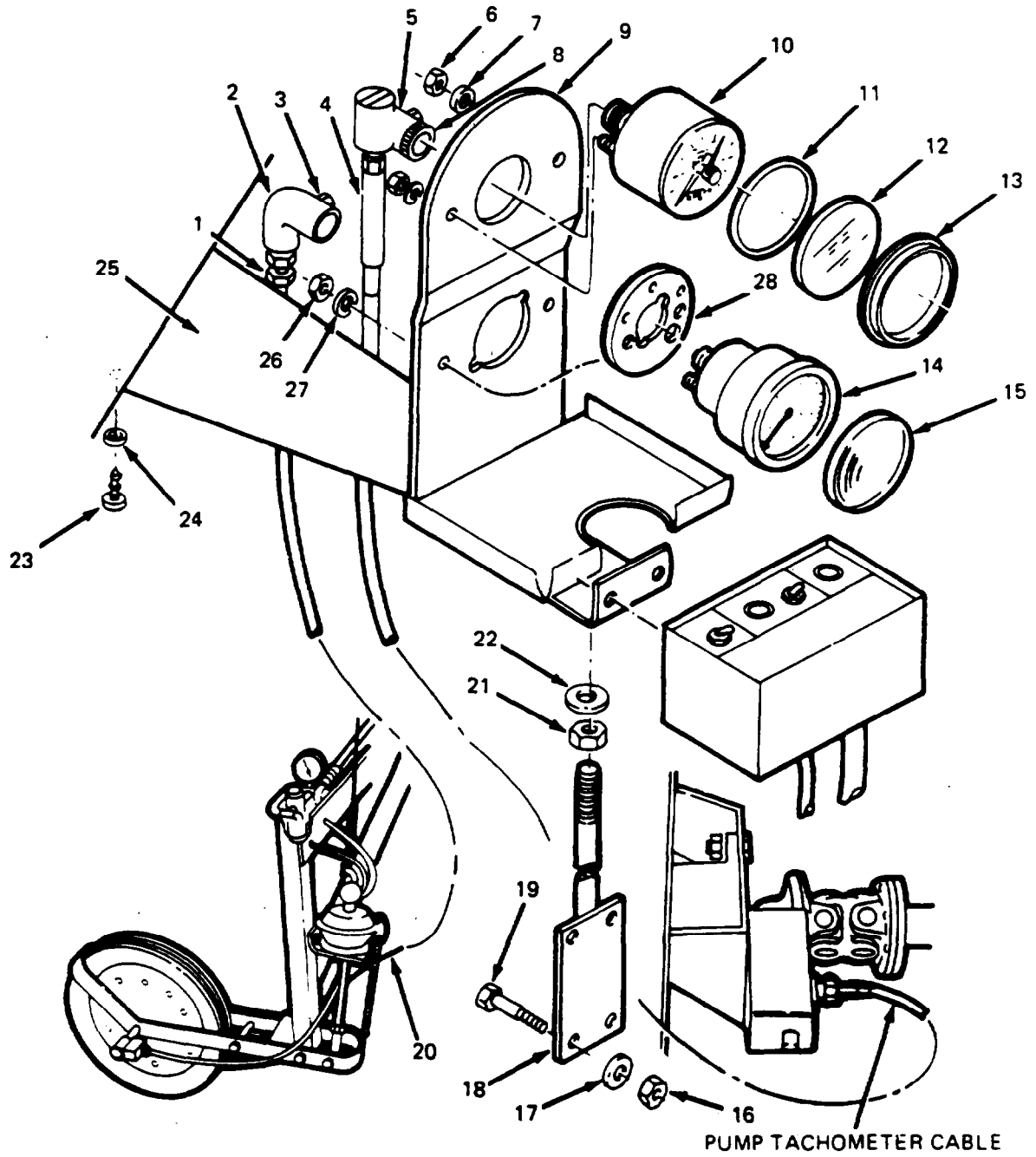
Figure 2-27. Remove/Install Air Control Reservoir.

- b. Installation. (Refer to fig. 2-27.)
 - (1) Install air reservoir (1) in air reservoir brackets (13).
 - (2) Aline bolt holes in air reservoir brackets (13) and install two capscrews (14), lockwashers (12) and nuts (11).
 - (3) Tighten nuts (11).
 - (4) Connect two air lines (7) and (8) to elbow (6) and (9).

Section XXI. MAINTENANCE OF PUMP TACHOMETER AND RECORDING BITUMETER

2-25. Pump Tachometer and Recording Bitumeter.

- a. Removal of Pump Tachometer. (Refer to fig. 2-28.)
 - (1) Remove adapter (5) by loosening knurled nut (8).
 - (2) Disconnect cable (4) from adapter (5).
 - (3) Remove the pump tachometer (10) by removing two nuts (6) and lockwashers (7).
 - (4) Replace lens (12) if broken by cutting or prying off bezel (13) and remove lens (12) and packing (11).
 - (5) Install new packing (11) and new lens (12) and roll or crimp on new bezel (13).
- b. Installation of Pump Tachometer. (Refer to fig. 2-28.)
 - (1) Mount pump tachometer (10) in bracket (9) and secure with two lockwashers (7) and nuts (6).
 - (2) Install adapter (5) and secure to pump tachometer (10) with knurled nut (8).
 - (3) Connect cable (4) to adapter (5).
- c. Removal of Pump Tachometer and Recording Bitumeter Cables. (Refer to fig. 2-28.)
 - (1) Disconnect the pump tachometer cable (4) and the recording bitumeter cable (1) from their respective adapters (2) and (5).
 - (2) Trace the cables through holes in floor to their termination. (See lower views of illustration.) Cut all tie wraps that secure the cables.
 - (3) Disconnect cable from adaptor on bitumeter wheel and the cable to the drive housing off of the hydrostatic pump.
 - (4) Pull cables down through hole in floor to remove.
 - (5) Remove bracket (25) by removing screw (23), lockwasher (24), capscrew (19), lockwasher (17), and nut (16). Loosen nut (21) and turn stand (18) counterclockwise from bracket (9). Remove washer (22).



LEGEND:

- | | | |
|---------------------|-------------------------------|--------------------|
| 1. CABLE | 12. LENS | 22. WASHER |
| 2. ADAPTER | 13. BEZEL | 23. SCREW |
| 3. LOCKSCREW | 14. HEAD | 24. LOCKWASHER |
| 4. CABLE | 15. GLASS | 25. BRACKET |
| 5. ADAPTER | 16. NUT | 26. NUT (2) |
| 6. NUT (2) | 17. LOCKWASHER | 27. LOCKWASHER (2) |
| 7. LOCKWASHER (2) | 18. STAND | 28. PLATE |
| 8. KNURLED NUT | 19. CAPSCREW | |
| 9. BRACKET | 20. RECORDING BITUMETER CABLE | |
| 10. PUMP TACHOMETER | | |
| 11. PACKING | 21. NUT | |

PUMP TACHOMETER CABLE

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Figure 2-28. Remove/Install Pump Tachometer, Recording Bitometer, and Cables.

- d. Installation of Pump Tachometer and Recording Bitumeter Cables. (Refer to fig. 2-28.)
- (1) Feed the pump tachometer cable (4) and the recording bitumeter cable (1) up through holes in floor at rear of cab.
 - (2) Connect cables to their respective adapters (2) and (5).
 - (3) Connect recording bitumeter cable (1) to adapter on bitumeter wheel.
 - (4) Connect pump tachometer cable (4) to drive housing off of the hydrostatic pump.
 - (5) Trace each cable through, from hole in floor to its termination. Secure as necessary with tie wraps.
 - (6) Install bracket (25) to dash panel with screws (23) and lockwashers (24). Thread mounting stand (18) with nut (21) and washer (22) thru bracket (25) into bracket (9). Install capscrew (19), lockwasher (17) and nut (16). Tighten lock nut (21).
- e. Removal of Recording Bitumeter. (Refer to fig. 2-28.)
- (1) Disconnect cable (1) from adapter (2).
 - (2) Remove adapter (2) by removing lock screw (3).
 - (3) Remove the recording bitumeter by removing two nuts (26) and plate (28).
 - (4) Replace glass (15) if broken by prying off bezel from head (14) and install new glass (15) and re-crimp on bezel (13).
- f. Installation of Recording Bitumeter. (Refer to fig. 2-28.)
- (1) Mount recording bitumeter in bracket (9) and secure with two nuts (26) and lockwashers (27).
 - (2) Install adapter (2) and secure to recording bitumeter with lock screw (3).
 - (3) Connect cable (1) to adapter.

Section XXII. MAINTENANCE OF HYDRAULIC MOTOR UNIVERSAL DRIVE

2-26. Hydraulic Motor Universal Drive.

- a. Removal. (Refer to fig. 2-29.)
- (1) Remove two capscrews (16) and lockwashers (17) and slide back chain guard (5).
 - (2) Remove nuts (14), lockwashers (15), and capscrews (3).
 - (3) Remove hex nuts (12), lockwashers (11), and capscrews (10).
 - (4) Lift the universal drive from between the two mounting plates and remove two spacers (2).
- b. Installation. (Refer to fig. 2-29.)
- (1) Place universal drive between the two mounting plates and align bolt holes
 - (2) Place two spacers (2) between motor mounting plate and install three capscrews (3), lockwashers (15), and hex nuts (14).

NOTE

Install only three capscrews even though there are four bolt holes.

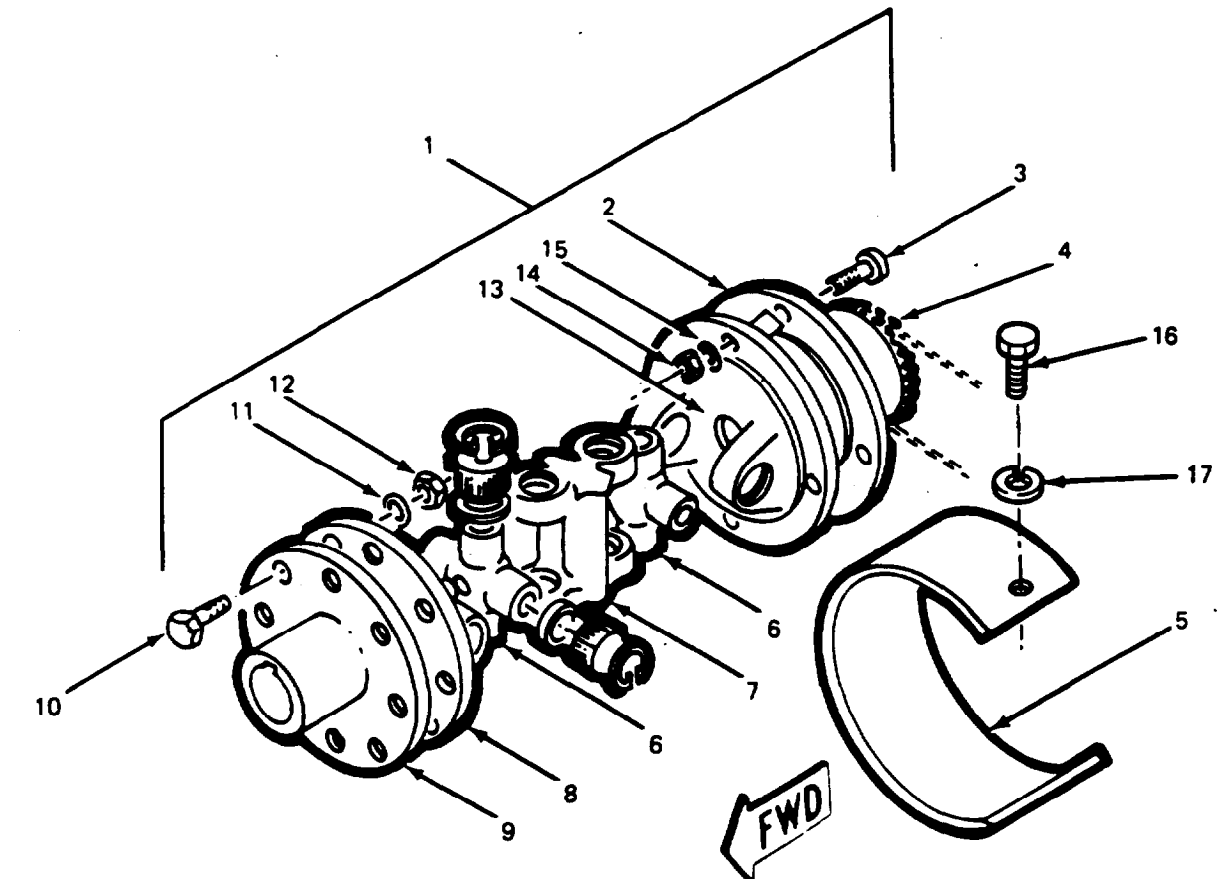
(3) Tighten hex nuts (14) evenly.

(4) Install capscrews (10), lockwashers (11) and hex nuts (12).

(5) Tighten hex nuts (12) evenly.

(6) Slide chain guard (5) over mounting plate and install two capscrews (16) and lockwashers (17); one above and one below.

c. Universal Joint Replacement. (Refer to para 2-14.)



- | | | |
|-------------------------|--------------------------------|--------------------|
| LEGEND: | | |
| 1. UNIVERSAL DRIVE | 6. JOURNAL AND BEARING KIT (2) | 12. HEX NUT (8) |
| 2. SPACER (2) | 7. DOUBLE CENTER | 13. FLANGE |
| 3. CAPSCREW (3) | 8. FLANGE YOKE | 14. HEX NUT (3) |
| 4. FLANGE WITH SPROCKET | 9. COMPANION FLANGE | 15. LOCKWASHER (3) |
| 5. CHAIN GUARD | 10. CAPSCREW (8) | 16. CAPSCREW (2) |
| | 11. LOCKWASHER (8) | 17. LOCKWASHER (2) |

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Figure 2-29. Remove/Install Pump Universal Drive.

Section XXIII. MAINTENANCE OF BURNER FUEL TANK

2-27. Burner Fuel Tank.**a. Removal. (Refer to fig. 2-30.)**

- (1) Open two draincocks and drain fuel.
- (2) Remove two capscrews and remove access plate.

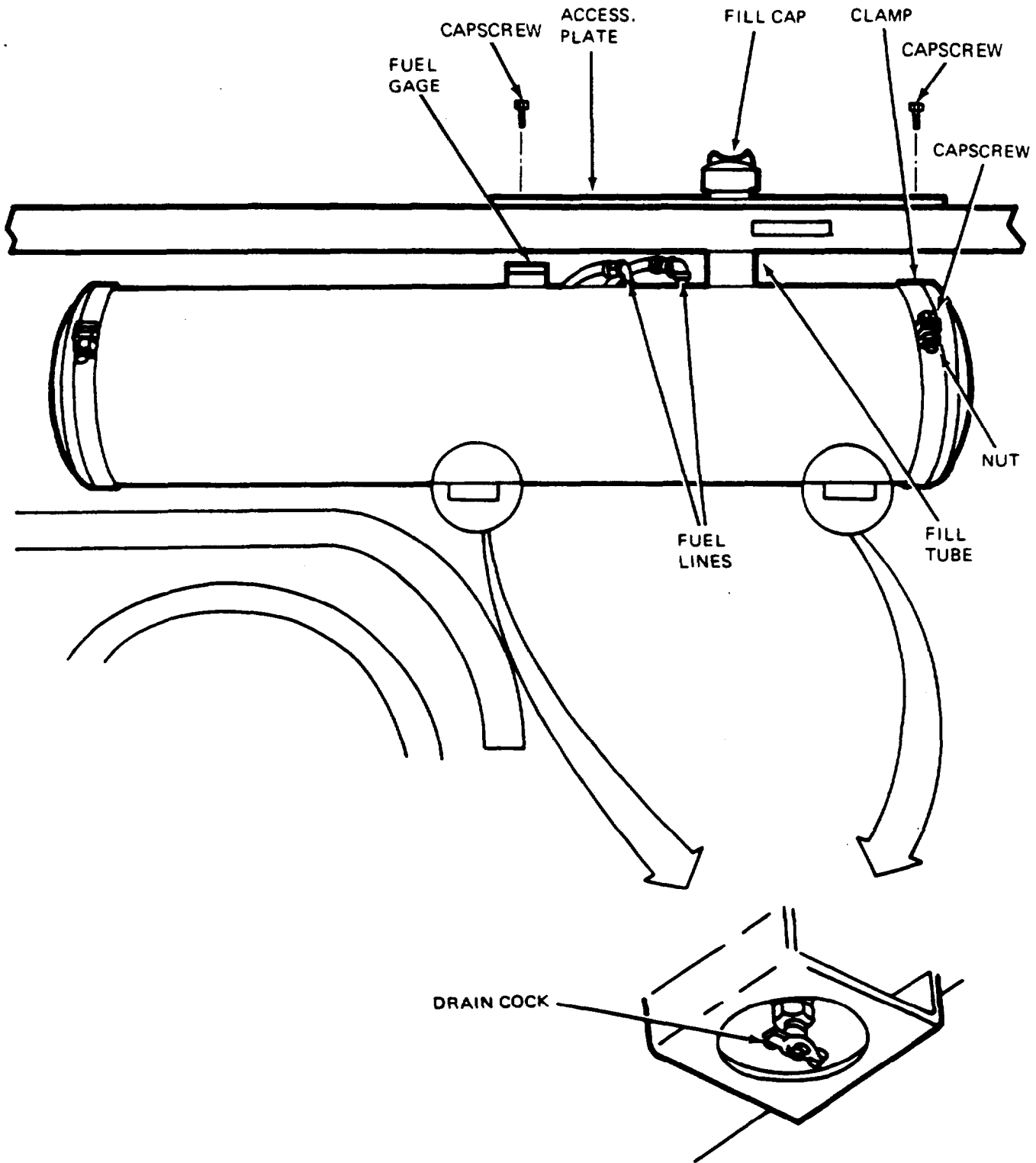
NOTE

Mark fuel lines for re-installation identification.

- (3) Disconnect two fuel lines at fuel tank.
- (4) Loosen two clamps that support the tank by removing capscrew, nut, and lockwasher from each; then remove tank.

b. Installation. (Refer to fig. 2-30.)

- (1) Place fuel tank in clamps and secure each clamp with a capscrew, nut, and lockwasher, but not tight at this time.
- (2) Connect two fuel lines to tank.
- (3) Tighten clamp capscrews and nuts.
- (4) Install access plate and secure with two capscrews.



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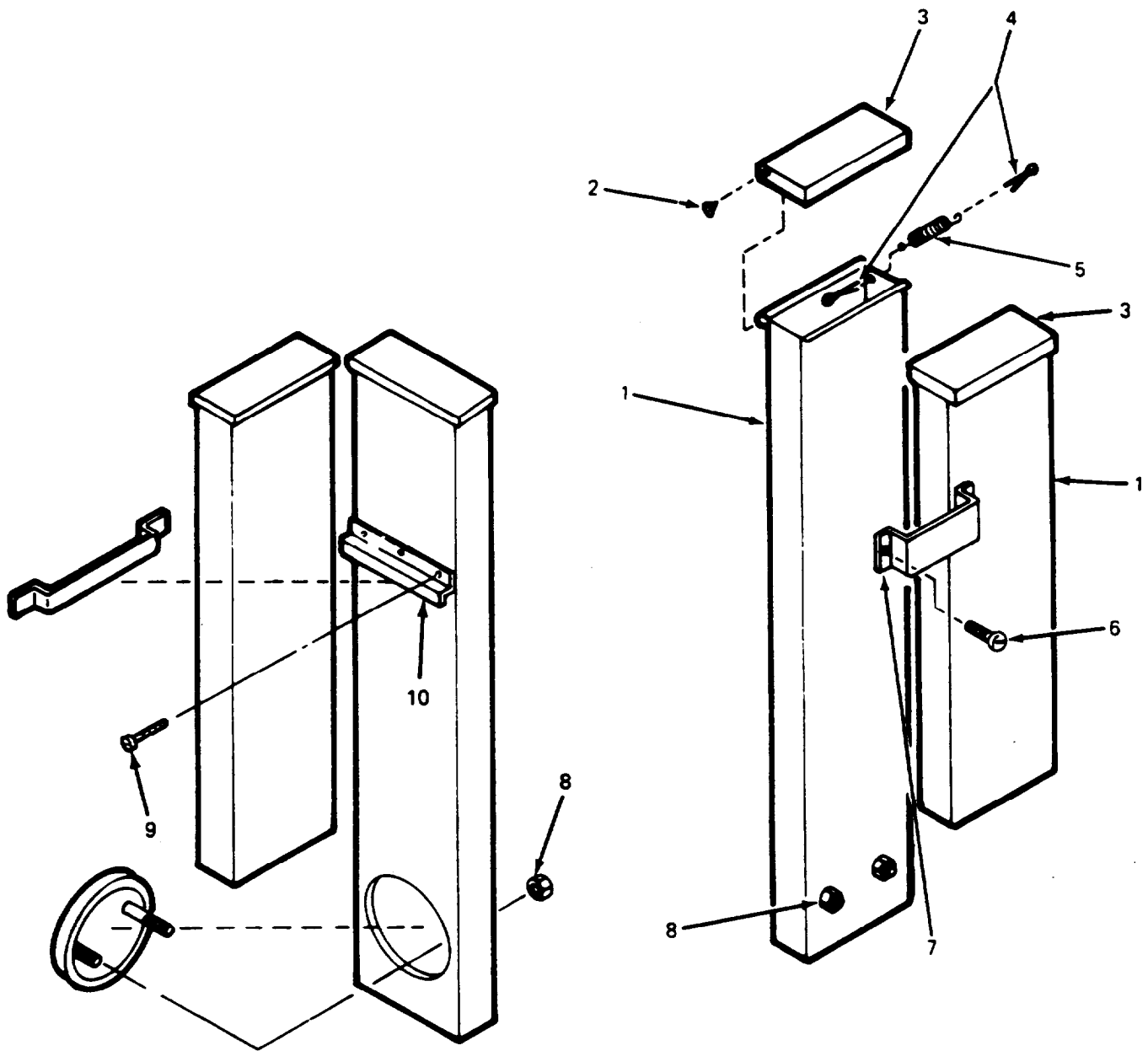
Figure 2-30. Remove/Install Burner Fuel Tank.

Section XXIV. MAINTENANCE OF EXTERNAL SMOKE STACKS

2-28. External Smoke Stacks.**NOTE**

Removal and Maintenance procedures are identical for both smoke stacks.

- a. Removal. (Refer to fig. 2-31.)
 - (1) Remove two self tapping screws (6) and remove bracket (7) from smoke stacks.
 - (2) Remove two hex nuts (8).
 - (3) Lift off smoke stack.
- b. Disassembly.
 - (1) Remove spring (5) and two cotter pins (4).
 - (2) Remove two screws (2).
 - (3) Remove cover (3).
 - (4) Remove three screws (9) and mounting hook (10).
- c. Inspection. Inspect both smoke stack chambers (1) and covers (3) for holes, cracks, and thin or deteriorated areas. Replace if defective.
- d. Reassembly. (Refer to fig. 2-31.)
 - (1) Install cover (3) and secure with screws (2).
 - (2) Install two cotter pins (4) and spring (5).
 - (3) Install mounting hook (10) and secure with three screws (9).
- e. Installation.
 - (1) Install smoke stack chamber (1) and secure with hex nuts (8).
 - (2) Install bracket (7) and secure with two sheet metal self tapping screws (6).



LEGEND:

- | | |
|-------------------|---------------------------|
| 1. STACK CHAMBER | 6. SELF TAPPING SCREW (2) |
| 2. SCREW (2) | 7. BRACKET |
| 3. COVER | 8. HEX NUT (2) |
| 4. COTTER PIN (2) | 9. SCREW (3) |
| 5. SPRING | 10. MOUNTING HOOK |

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Figure 2-31. Remove/Install Smoke Stacks.

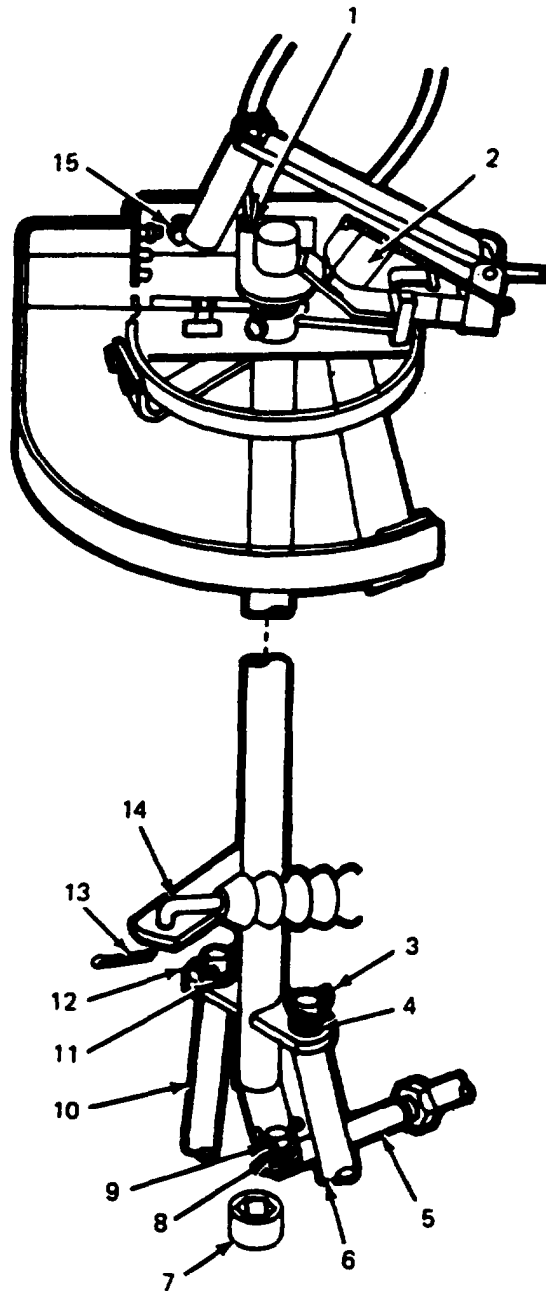
Section XXV. MAINTENANCE OF QUADRANT

2-29. Quadrant.**a. Removal. (Refer to fig. 2-32.)**

- (1) Remove cotter pin (13) and disconnect piston rod (14).
- (2) Remove cotter pins (3), (9), and (12); then disconnect links (5), (6), and (10). Remove washers (4), (11), and (8).
- (3) Remove micro actuating switch (2) from its mounting bracket by removing two cap-screws; then remove two screws and cover from bottom of micro actuating switch (2) to gain access to wires.
- (4) Disconnect both wires from the micro actuating switch (2); then remove fitting at the end of micro actuating switch (2) and pull out wire cable.
- (5) Pull micro actuating switch cable out through hole leaving the grommet (1).
- (6) Remove two capscrews (15) and lift off the complete quadrant.
- (7) Remove coupling (7).

b. Installation. (Refer to fig. 2-32.)

- (1) Install coupling (7).
- (2) Mount quadrant into coupling (7). Secure quadrant to tank with two capscrews (15).
- (3) Pull cable for micro actuating switch (2) through grommet (1).
- (4) Connect both wires to micro actuating switch terminals and install fitting at the end of micro actuating switch (2). Install cover on micro actuating switch and secure with two screws.
- (5) Install micro actuating switch (2) on its mounting bracket and Secure with two cap screws.
- (6) Connect links (5), (6), and (10) to quadrant and secure with washers (11), (4), and (8) and cotter pins (3), (9), and (12).
- (7) Connect piston rod (14) to quadrant and secure with cotter pin (13).



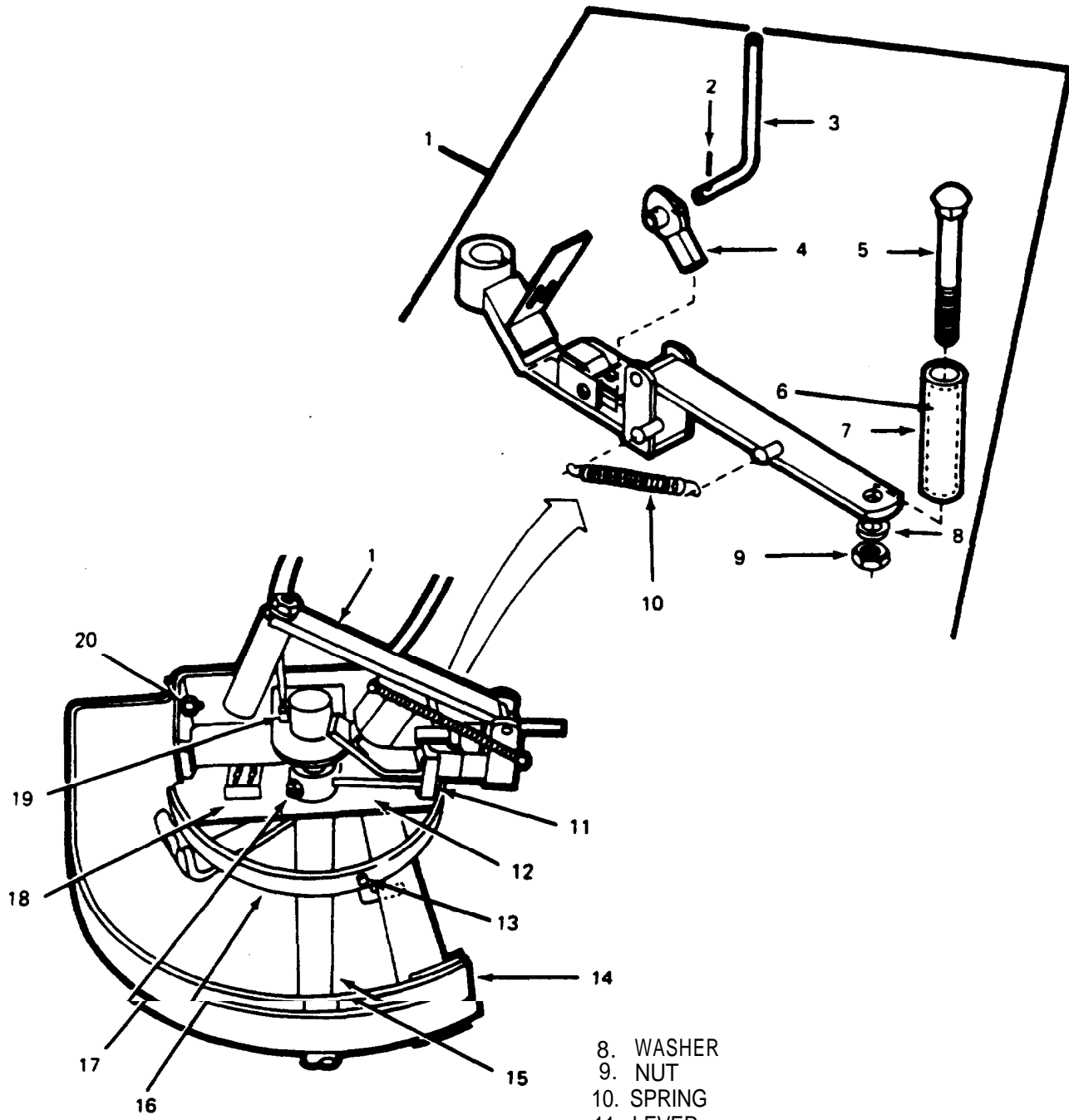
LEGEND:

- | | |
|-------------------------------------|------------------|
| 1. GROMMET | 8. WASHER |
| 2. MICRO ACTUATING SWITCH | 9. COTTER PIN |
| 3. COTTER PIN | 10. LINK |
| 4. WASHER | 11. WASHER |
| 5. LINK | 12. COTTER PIN |
| 6. LINK | 13. COTTER PIN |
| 7. QUADRANT TANK AND COVER COUPLING | 14. PISTON ROD |
| | 15. CAPSCREW (2) |

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Figure 2-32. Remove/Install Quadrant.

- c. Disassembly. (Refer to fig. 2-33.)
- (1) Loosen square set screw (19); then lift off handle assembly (1).
 - (2) Loosen two locknuts (17); then remove two screws and remove shaft from lever (11) and control assembly (16).
 - (3) Remove hub (7) with bushing (6) by removing capscrew (5), washer (8) and nut (9).
 - (4) Remove bushing (6) from hub (7).
 - (5) Tap out pin (2); then remove handle (3) and disk (4).
 - (6) Remove spring (10).
 - (7) Remove quadrant guard (14) by removing nuts (12) and (20) and capscrews (13).
 - (8) Remove spring retainer (18).
- d. Reassembly, (Refer to fig. 2-33.)
- (1) Install spring retainer (18).
 - (2) Install quadrant guard (14) and secure to quadrant control assembly (16) using nuts (12) and (20) and capscrews (13).
 - (3) Install spring (10).
 - (4) Mount disk (4) and handle (3) in handle assembly (1); then secure with pin (2).
 - (5) Install bushing (6) in hub (7).
 - (6) Mount hub (7) onto handle assembly (1) and secure with capscrew (5), washer (8) and nut (9).
 - (7) Mount control assembly (16) and lever (11) on column (15). Locate centering hole for lock screw; then install lock screws and secure with lock nut (17).
 - (8) Mount handle assembly (1) on column (15) and secure with square set screws (19).



LEGEND:

- 1. HANDLE ASSEMBLY
- 2. PIN
- 3. HANDLE
- 4. DISC
- 5. CAPSCREW
- 6. BUSHING
- 7. HUB

- 8. WASHER
- 9. NUT
- 10. SPRING
- 11. LEVER
- 12. NUT
- 13. CAPSCREW
- 14. QUADRANT GUARD
- 15. COLUMN
- 16. CONTROL ASSEMBLY
- 17. LOCKNUT (2)
- 18. SPRING RETAINER
- 19. SQUARE SET SCREW
- 20. NUT

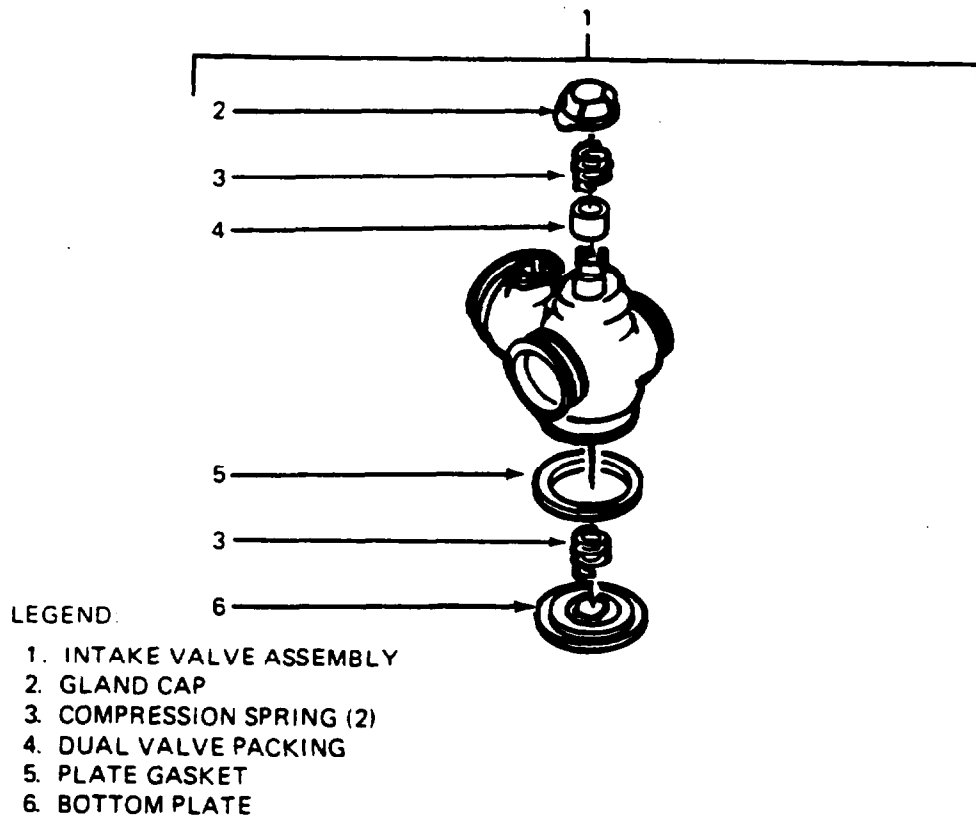
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Figure 2-33. Disassemble/Reassemble Quadrant.

Section XXVI. VACU-FLO, INTAKE, AND CONTROL VALVES MAINTENANCE

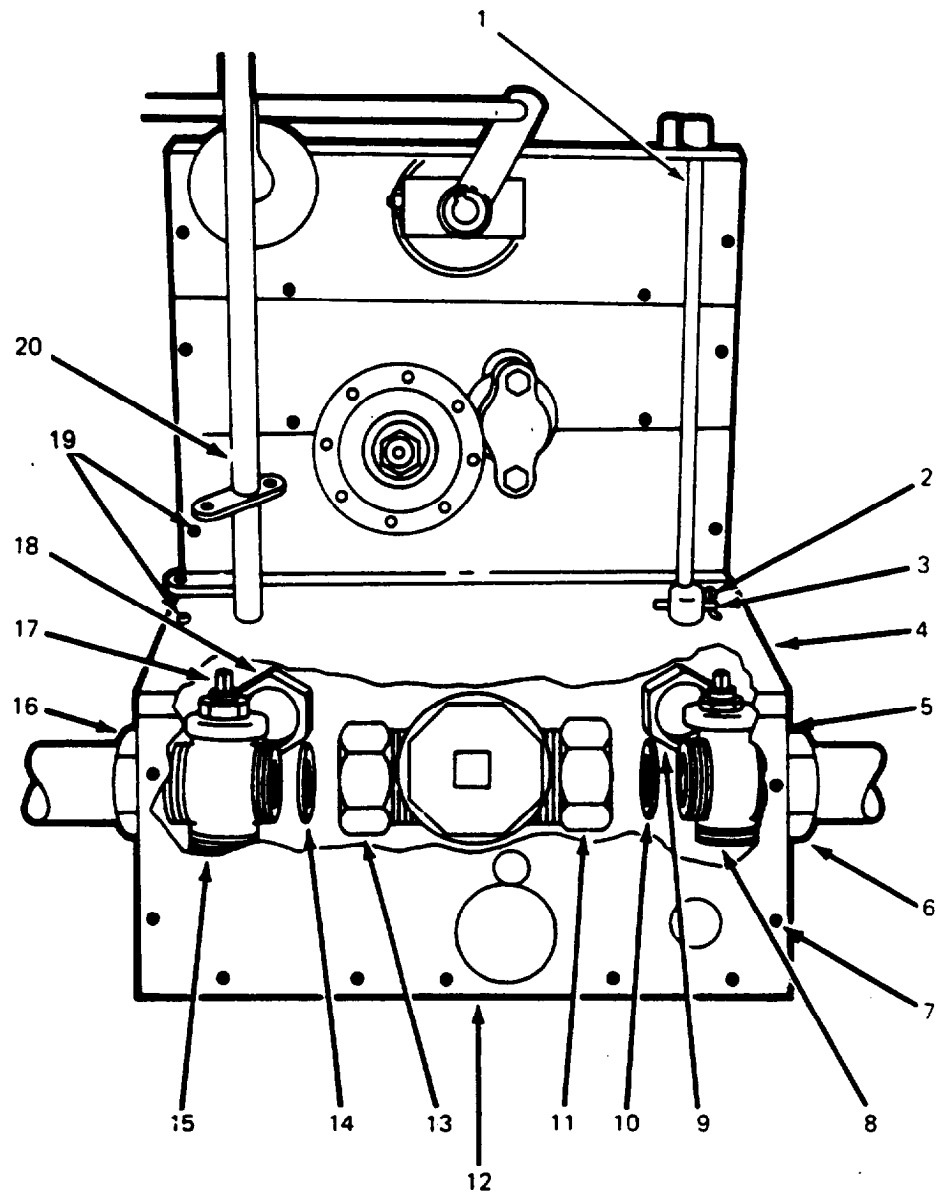
2-30. Vacu-Flo, Intake, and Control Valves.

- a. *Removal/Disassembly.* (Refer to fig. 2-34 and 2-35.)
- (1) Remove end cover (5, fig. 2-35) by removing thirteen capscrews (7).
 - (2) Remove bottom cover (12) by removing attaching capscrews.
 - (3) Remove top cover (4) by removing twenty capscrews (19).
 - (4) Remove cotter pin (2) and taper pin (3).
 - (5) Loosen pipe nuts (6), (9), and (11) on the right hand intake valve (8), and pipe nuts (13), (18), and (16) on the left hand intake valve (15).
 - (6) Remove left hand intake valve (15) and gasket (14); or right hand intake valve (8) and gasket (10) by disconnecting the pipe nuts completely on the valve being removed.
 - (7) To disassemble remove four bolts and lockwashers from valve bottom plate (6, fig. 2-34).
 - (8) Remove plate gasket (5) and compression spring (3); throw gasket away.
 - (9) Remove two capscrews and washers from large gland cap (2).
 - (10) Remove compression spring (3) and dual valve packing (4).
- b. *Assembly/Installation.* (Refer to fig. 2-34 and 2-35.)
- (1) Assemble compression spring (3, fig. 2-34) and new dual valve packing (4).
 - (2) Assemble large gland cap (2) with two capscrews and washers.
 - (3) Assemble compression spring (3) and new plate gasket (5).
 - (4) Assemble valve bottom plate (6) using four bolts and lockwashers.
 - (5) Install left hand intake valve (15, fig. 2-35) or right hand intake valve (8), making sure that the top of the valve connects to drive linkages above.
 - (6) Install new gaskets (10) or (14) and connect pipe nuts (13), (18) and (16) for left hand intake valve (15); connect pipe nuts (6), (9), and (11) for right hand intake valve (8).
 - (7) Tighten all six pipe nuts.
 - (8) Rotate right hand intake valve (8) so that holes for tapered pin (3) line up; then install tapered pin (3) and cotter pin (2).
 - (9) Install top cover (4) with twenty capscrews (19).
 - (10) Install bottom cover (12) with capscrews.
 - (11) Install end cover (5) with thirteen capscrews (7).



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Figure 2-34. Valves - Intake, Vacu-Flo and Control.



LEGEND:

- | | |
|-----------------------|-----------------------|
| 1. LINKAGE | 11. PIPE NUT |
| 2. COTTER PIN | 12. BOTTOM COVER |
| 3. TAPER PIN | 13. PIPE NUT |
| 4. TOP COVER | 14. GASKET |
| 5. END COVER | 15. L.H. INTAKE VALVE |
| 6. PIPE NUT | 16. PIPE NUT |
| 7. CAPSCREW (13) | 17. STEM |
| 8. R. H. INTAKE VALVE | 18. PIPE NUT |
| 9. PIPE NUT | 19. CAPSCREW (20) |
| 10. GASKET | 20. QUADRANT COLUMN |

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Figure 2-35. Remove/install Intake Valves.

Section XXVII. MAINTENANCE OF FILLING LINE

2-31. Filling Line.

a. Removal. (Refer to fig. 2-36.)

(1) Remove clamp screw (8) and two cotter pins (3); then spread hinge clamps (7) to remove it from the clamping ring (13).

(2) Remove nut washer and capscrew holding clamping ring (13) and fill cap chain.

(3) Remove fill cap (9) and slide clamping ring (13) off end of fill line (6).

(4) Using strainer hook (10), remove strainer (12), from connector (11).

(5) Remove U-bolt (2) by removing two washers and nuts (1).

(6) Remove bracket (4) by removing four screws.

(7) Unscrew fill line (6) from tank and remove gasket (5).

b. *Installation.* (Refer to fig. 2-36.)

(1) Install gasket (5) and fill line (6).

(2) Install bracket (4) and secure with four screws.

(3) Install U-bolt (2) and secure with two washers and nuts (1).

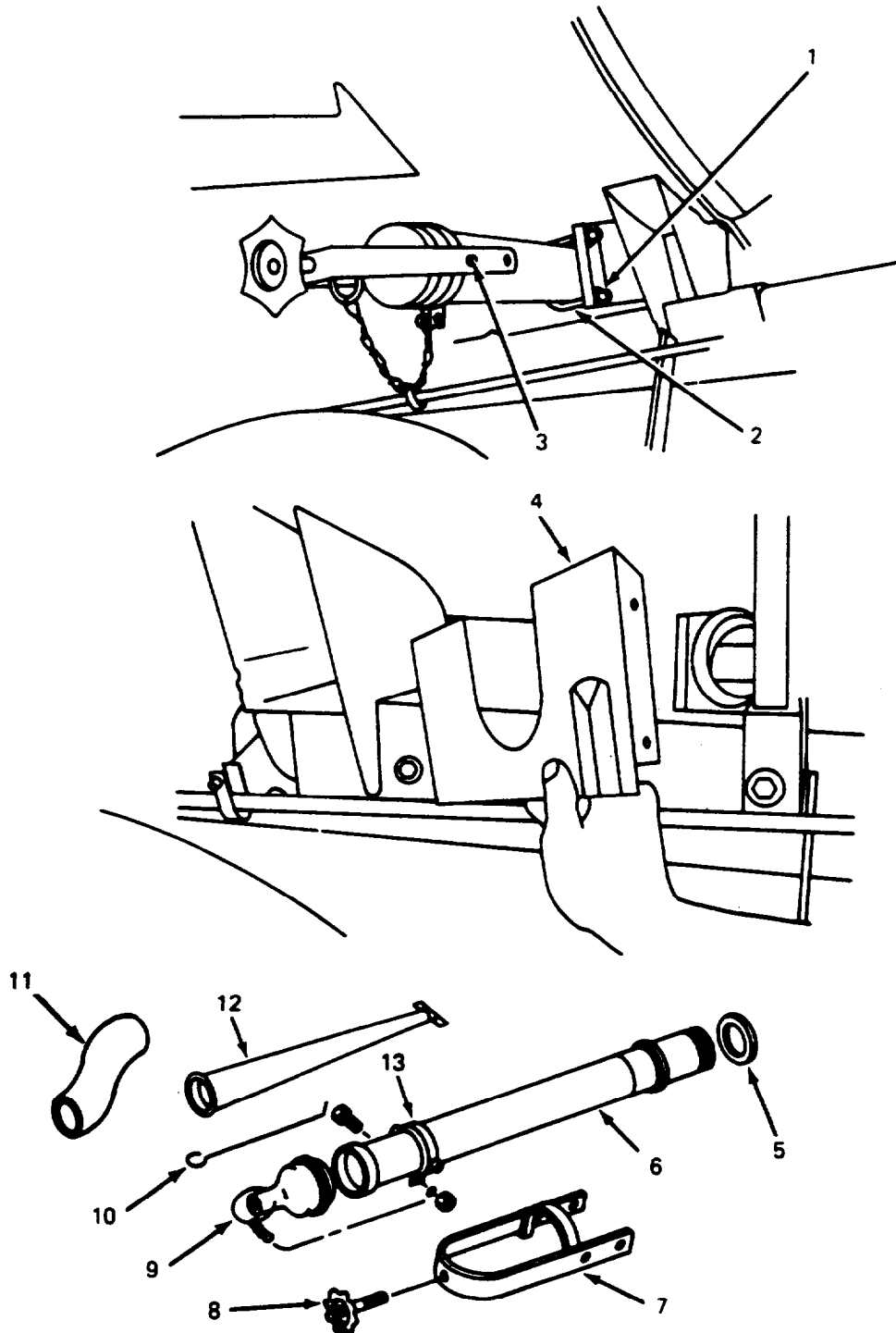
(4) Install clamping ring (13) and fill cap chain with capscrew, washer, and nut.

(5) Insert strainer (12) into connector (11).

(6) Install fill cap (9).

(7) Install hinge clamp (7) over pins on clamping ring (13) and install two, cotter pins (3).

(8) Install clamp screw (8) in hinge clamp (7) and fill cap (9).



LEGEND:

- | | | |
|-----------------------|----------------|-------------------|
| 1. WASHER AND NUT (2) | 5. GASKET | 9. FILL CAP |
| 2. U-BOLT | 6. FILL LINE | 10. STRAINER HOOK |
| 3. COTTER PIN (2) | 7. HINGE CLAMP | 11. CONNECTOR |
| 4. BRACKET | 8. CLAMP SCREW | 12. STRAINER |
| | | 13. CLAMPING RING |

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Figure 2-36. Remove/Install Filling Line and Strainer.

Section XVIII. MAINTENANCE OF TRANSFER VALVES

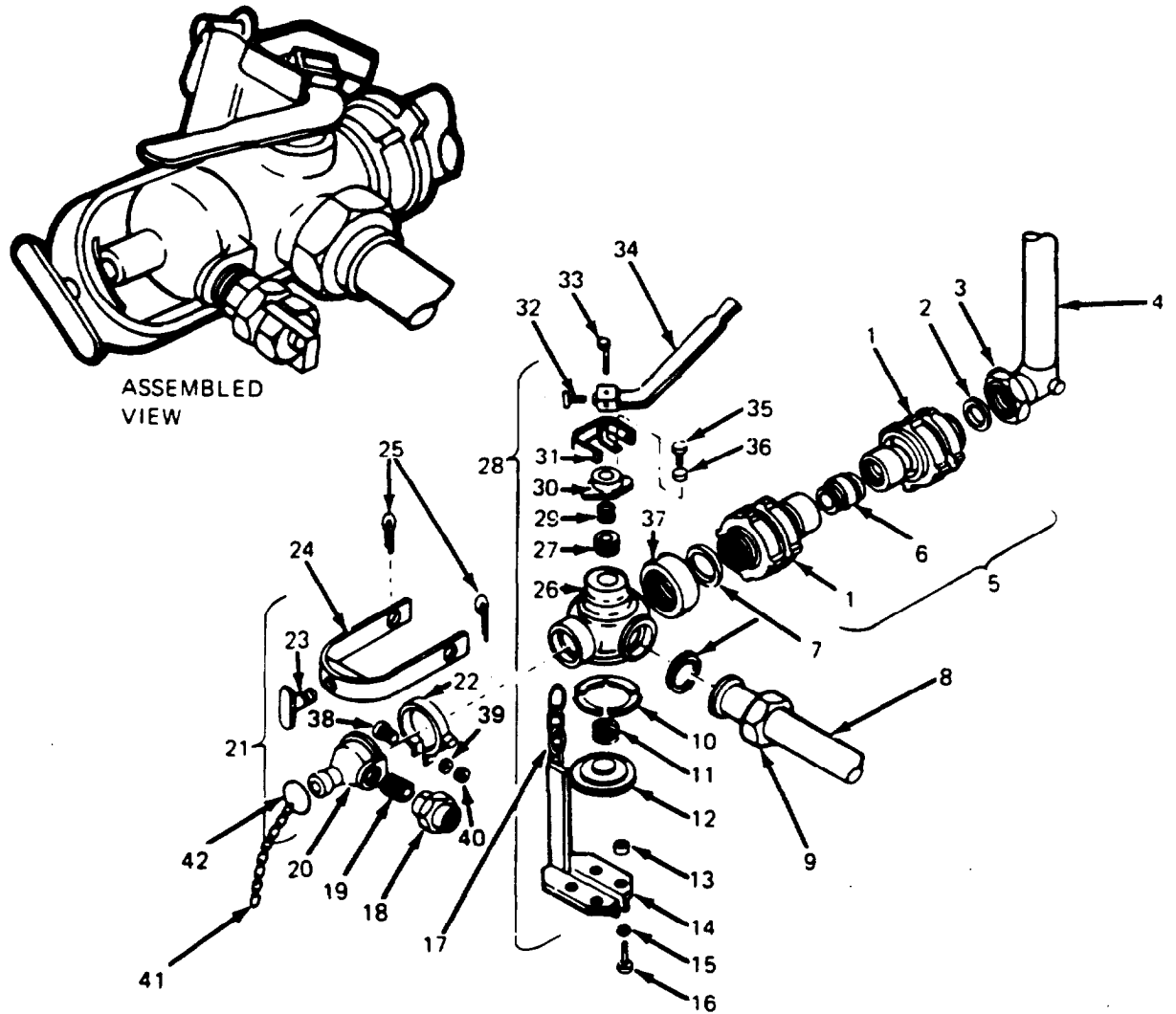
2-32. Transfer Valve.

a. Removal. (Refer to fig. 2-37.)

- (1) Disconnect chain (17) with support bracket (14) from valve body (26) by removing four capscrews (16) and lockwashers (15).
- (2) Disconnect pipe nut (9) and remove one gasket (7).
- (3) Disconnect drop pipe nut (3) and remove complete three-way valve assembly (28) with attaching piping and adapter assembly (21).
- (4) Unscrew coupling (37) and remove gasket (7).
- (5) Loosen handle (23) and move hinge clamp (24) to gain access to clamp ring (22).
- (6) Remove clamp ring (22) by removing capscrew (38), nut (40), washer (39), and two cotter pins (25) from clamp ring (22); remove hinge clamp (24) and spread clamp ring (22) to remove. Lift out hand spray adapter (20) with attached nipple (19) and union (18). Spread ring (42) and remove chain (41).

b. Installation. (Refer to fig. 2-37.)

- (1) Mount hand spray adapter (20) with attached nipple (19) and union (18) on valve body (26) and secure with clamp ring (22). Tighten clamp ring (22) with capscrew (38), nut (40) and washer (39).
- (2) Install hinge clamp (24) on valve body (26) and secure with two cotter pins (25).
- (3) Attach coupling (37) with new gasket (7) to valve body (29).
- (4) Mount valve body (26) with pipe assembly (5) and gasket (7) on drop pipe (4). Secure with drop pipe nut (3).
- (5) Install gasket (7) and connect pipe (8) to valve body (26). Secure with pipe nut (9).
- (6) Connect chain (17) with support bracket (14) to valve body and secure with, four capscrews (16) and lockwashers (15).
- (7) Install chain (41) to ring (42) and attach to handspray adapter (20).



LEGEND :

- | | | | |
|-------------------|-----------------------|--------------------------|------------|
| 1. BALL JOINT (2) | 14. SUPPORT BRACKET | 27. PACKING | 39. WASHER |
| 2. GASKET | 15. LOCKWASHER (4) | 28. 3-WAY VALVE ASSEMBLY | 40. NUT |
| 3. DROP PIPE NUT | 16. CAPSCREW (4) | 29. SPRING | 41. CHAIN |
| 4. DROP PIPE | 17. CHAIN | 30. GLAND | 42. RING |
| 5. PIPE ASSEMBLY | 18. UNION | 31. LEVER STOP | |
| 6. SHORT NIPPLE | 19. NIPPLE | 32. SETSCREW | |
| 7. GASKET (2) | 20. HANDSPRAY ADAPTER | 33. COTTER PIN | |
| 8. PIPE | 21. ADAPTOR ASSEMBLY | 34. HAND LEVER | |
| 9. PIPE NUT | 22. CLAMP RING | 35. CAPSCREW | |
| 10. GASKET | 23. HANDLE | 36. LOCKWASHER | |
| 11. SPRING | 24. HINGE CLAMP | 37. COUPLING | |
| 12. PLATE | 25. COTTER PIN (2) | 38. CAPSCREW | |
| 13. NUT | 26. VALVE BODY | | |

EXPLODED VIEW

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Figure 2-37. Remove/Install Transfer Valve.

Section XXIX. MAINTENANCE OF CONTROL VALVE

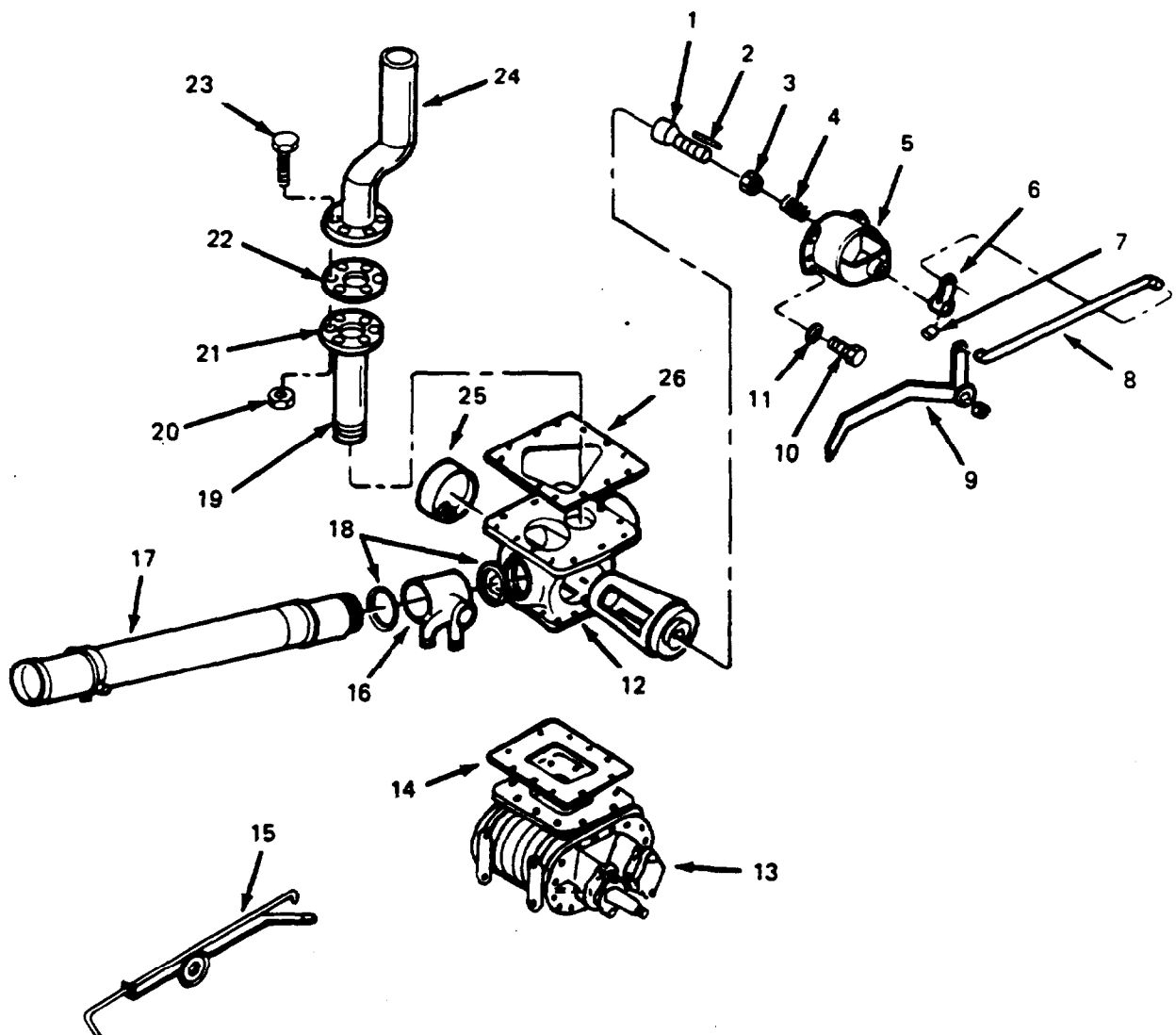
2-33. Control Valve.

a. *Removal.* (Refer to fig. 2-38.)

- (1) Remove asphalt pump. (Refer to para 3-7.)
- (2) Remove filling line (17, fig. 2-38), gaskets (18) and vacu-flo valve (16).
- (3) Remove vacu-flo linkage (15) by removing four capscrews.
- (4) Remove cotter pin from rod (8) and remove from lever (6).
- (5) Loosen set screw and nut (7) on lever (6) and remove lever.
- (6) Remove six capscrews (10) and washers (11) from housing (5) and remove housing.
- (7) Remove two capscrews and remove cover (25).
- (8) Remove nuts securing valve (12) to tank and remove.
- (9) Remove gasket (26).
- (10) Unscrew vent pipe (24) from valve (12).
- (11) Remove six capscrews (23), nuts (20), and separate vent pipe (24), from flanged pipe (21) and remove gasket (22).

b. *Installation.* (Refer to fig. 238.)

- (1) Screw flanged pipe (21) into valve (12).
- (2) Install new gasket (26) and add sealer to gasket surfaces.
- (3) Raise valve (12) into place and secure with one nut and washer and twelve capscrews, nuts and washers.
- (4) Install gasket (22) onto flanged pipe (21) and place vent pipe (24) on to gasket (22), align holes and install capscrews (23) and nuts (20).
- (5) Install cover (25) and secure with two, capscrews.
- (6) Install housing (5) and secure with six capscrews.
- (7) Install lever (6) and tighten set screw and nut (7).
- (8) Install rod (8) and cotter pin.
- (9) Install filling line (17) with gasket (18) and vacu-flo valve (16).
- (10) Install vacu-flo valve linkage (15) and secure with four capscrews.
- (11) Install asphalt pump. (See para 3-7.)



LEGEND:

- | | |
|----------------------|----------------------|
| 1. STEM | 13. ASPHALT PUMP |
| 2. KEY | 14. GASKET |
| 3. NUT | 15. VAC FLOW LINKAGE |
| 4. SPRING | 16. VAC FLOW VALVE |
| 5. HOUSING | 17. FILLING LINE |
| 6. LEVER | 18. GASKETS |
| 7. SET SCREW AND NUT | 19. PIPE |
| 8. ROD | 20. NUT (6) |
| 9. LEVER | 21. FLANGED PIPE |
| 10. CAPSCREW (6) | 22. GASKET |
| 11. LOCKWASHER (6) | 23. CAPSCREW (6) |
| 12. VALVE | 24. VENT PIPE |
| | 25. COVER |
| | 26. GASKET |

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Figure 2-38. Control Valve Maintenance.

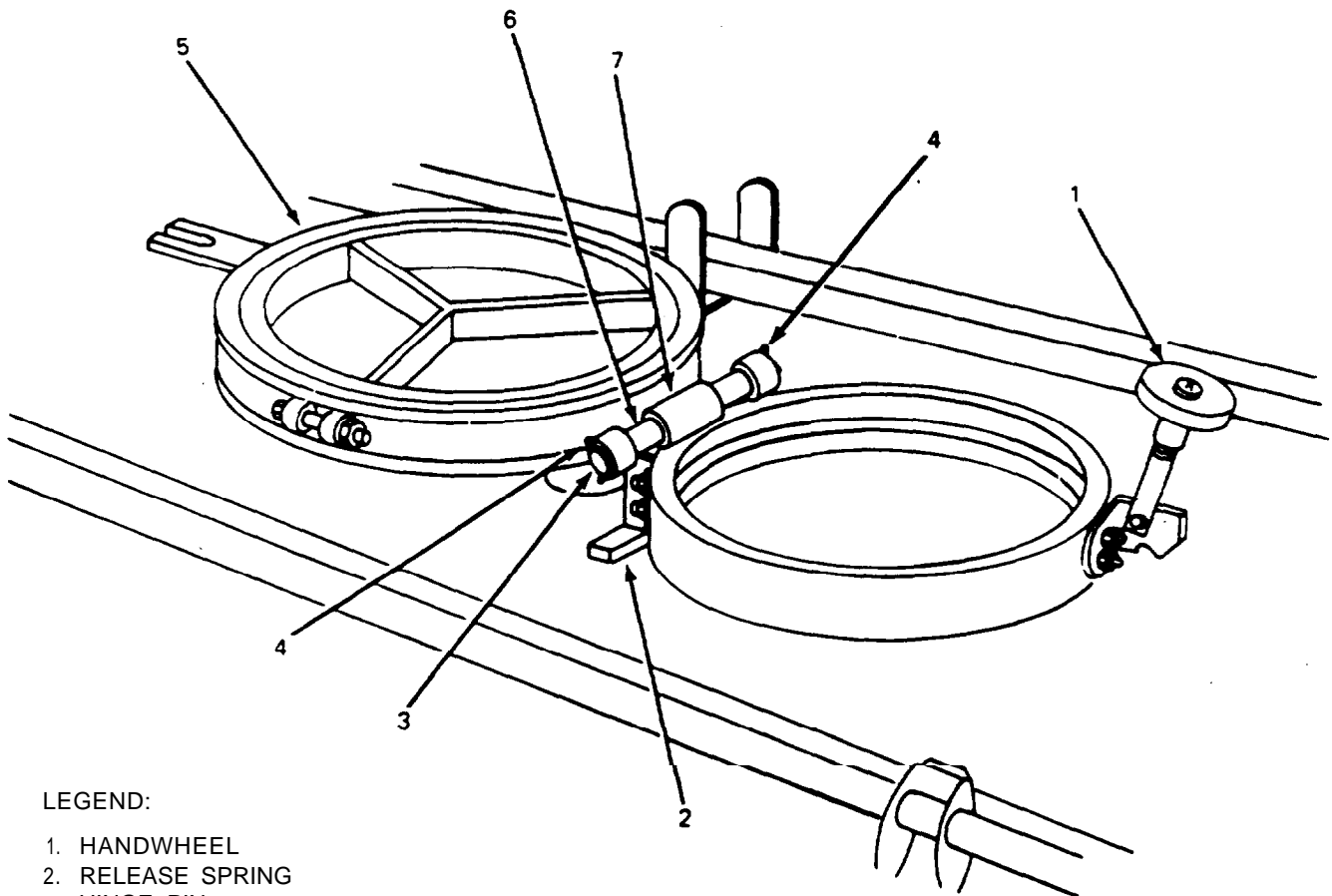
Section XXX. MAINTENANCE OF MANHOLE COVER

2-34. Manhole Cover.

a. *Removal.* (Refer to fig. 2-39.)

(1) Unscrew handwheel (1) to release manhole cover (5).

(2) Remove cotter pin (4) from hinge pin (3), then drive out hinge pin (3) and remove release spring (2) with sleeve yoke (7); remove manhole cover (5).



LEGEND:

- 1. HANDWHEEL
- 2. RELEASE SPRING
- 3. HINGE PIN
- 4. COTTER PIN(2)
- 5. MANHOLE COVER
- 6. PIN RETAINER
- 7. SLEEVE YOKE

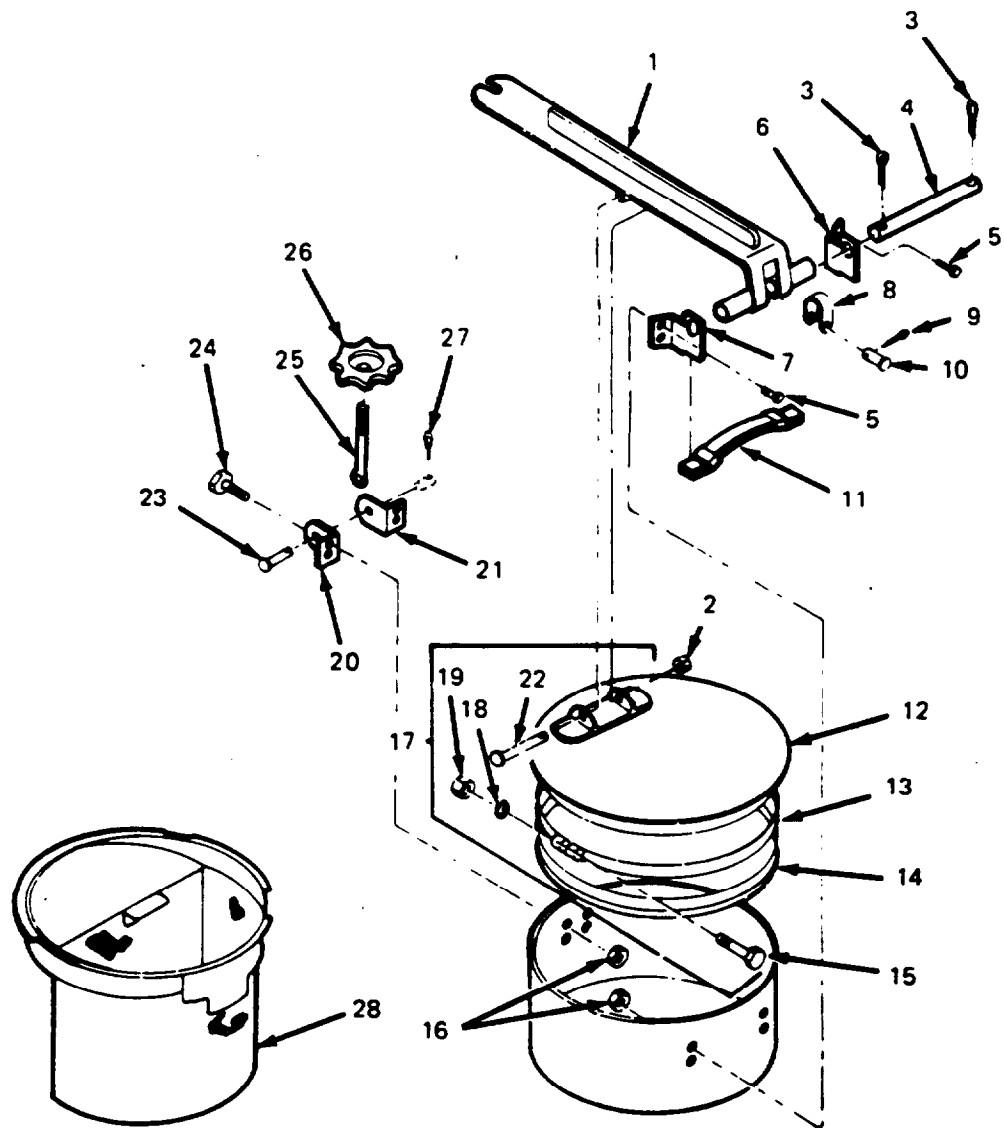
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Figure 2-39. Remove/Install Manhole Cover.

A Disassembly. (Refer to fig. 2-40.)

(1) Loosen nut (19), washer (18), and capscrew (15) on ring assembly (13).

(2) Remove gasket (14).



LEGEND:

- | | | |
|------------------------|--------------------|-------------------------|
| 1. COVER TONGUE | 10. PIN | 20. RIGHT LATCH BEARING |
| 2. NUT | 11. RELEASE SPRING | 21. LEFT LATCH BEARING |
| 3. COTTER PIN (2) | 12. COVER | 22. BOLT |
| 4. HINGE PIN | 13. RING ASSEMBLY | 23. PIN |
| 5. CAPSCREW (4) | 14. GASKET | 24. CAPSCREW (4) |
| 6. LEFT HINGE BRACKET | 15. CAPSCREW | 25. LATCH BOLT |
| 7. RIGHT HINGE BRACKET | 16. NUT (4) | 26. HAND WHEEL |
| 8. SLEEVE YOKE | 17. COVER ASSEMBLY | 27. COTTER PIN |
| 9. COTTER PIN | 18. WASHER | 28. STRAINER |
| | 19. NUT | |

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Figure 2-40. Disassemble/Assemble Manhole Cover.

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(3) To remove sleeve yoke (8) from release spring (11), remove cotter pin (9) from pin (10) and remove from sleeve yoke (8).

(4) Lift sleeve yoke (8) from release spring (11).

(5) Remove cotter pin (27).

(6) Remove pin (23) to free latch bolt (25).

(7) Unscrew four capscrews (24) and nuts (16); remove right latch bearing (20) and left latch bearing (21).

(8) Remove cover tongue (1) by unscrewing bolt (22) from nut (2). Slide bolt (22) from cover tongue (1).

(9) Lift cover tongue (1) from cover (12).

(10) Remove four capscrews (5) and nuts (16); then remove left hinge bracket (6) and right hinge bracket (7).

(11) Remove strainer (28), inspect for damage; replace if necessary.

c. *Reassembly.* (Refer to fig. 2-40.)

(1) Replace strainer (28).

(2) Install left hinge bracket (6) and right hinge bracket (7); secure with four capscrews (5) and nuts (16).

(3) Replace cover tongue (1) on cover (12); secure with bolt (22) and nut (2).

(4) Install right latch bearing (20) and left latch bearing (21); secure with four capscrews (24) and nuts (16).

(5) Secure latch bolt (25) in position with pin (23).

(6) Replace cotter pin (27) to secure pin (23) in position.

(7) Replace sleeve yoke (8) on release spring (11).

(8) Install pin (10) through sleeve yoke (8).

(9) Secure pin (10) in position with cotter pin (9).

(10) Replace gasket (14) on cover (12).

(11) Secure ring assembly (13) by tightening capscrew (15) and nut (19).

d. *Installation.* (Refer to fig. 2-40.)

(1) Set manhole cover assembly (17) on the cover opening on top of tank.

(2) Position release spring (11) below the hinge, with sleeve yoke (8) in center of hinge pin (4) as shown.

(3) Install two cotter pins (3).

(4) Secure with handwheel (26).

Section XXXI. MAINTENANCE OF BLOWER ASSEMBLY

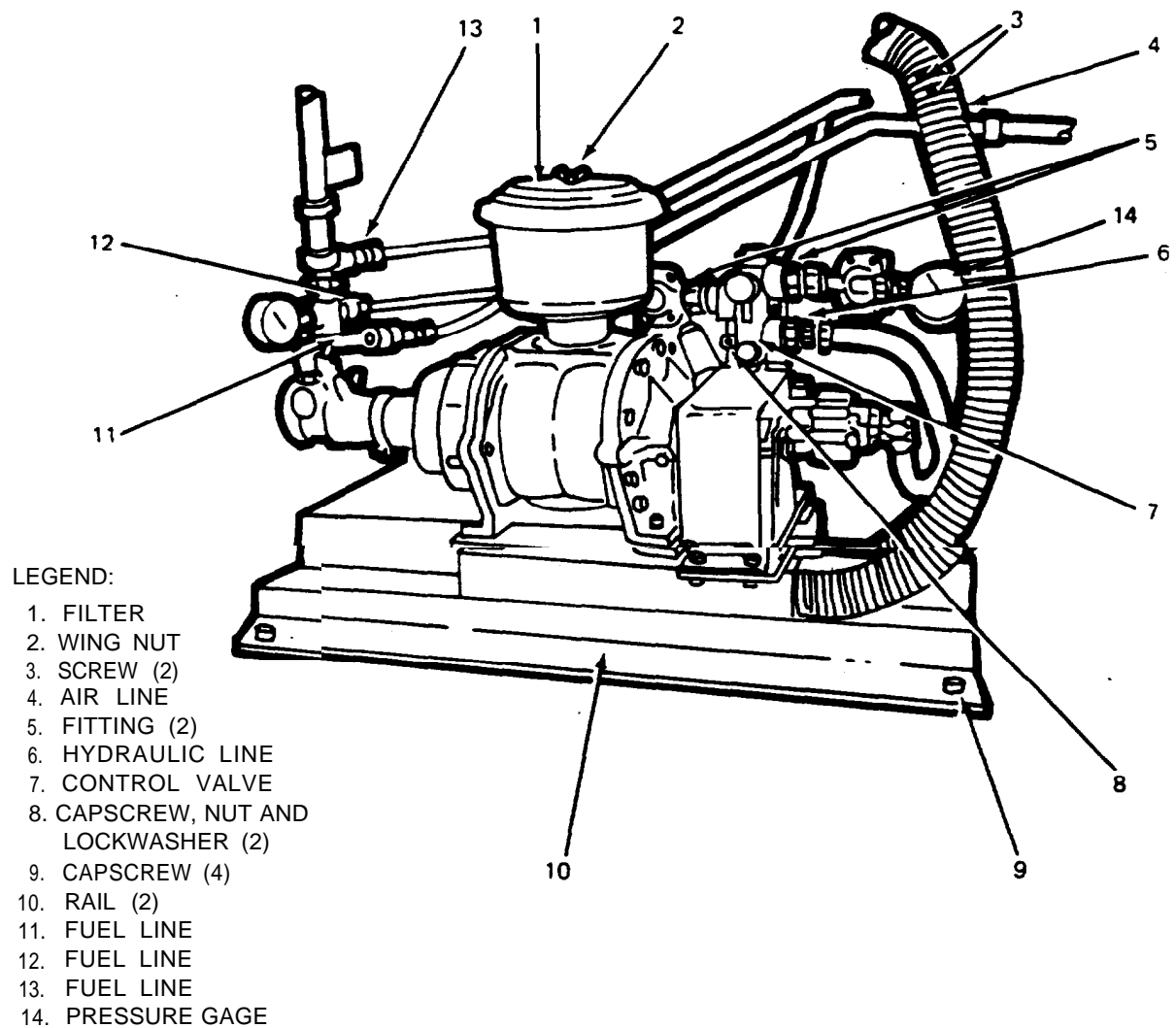
2-35. Blower Assembly.

a. *Removal of Blower Assembly.* (Refer to fig. 2-41.)

(1) Disconnect two fittings (5) and lines (11), (12) and (13).

(2) Disconnect air line (4) by removing two screws (3).

(3) Remove four capscrews (9) and nuts that fasten, two rails (10) to platform; then lift off complete blower assembly.



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Figure 2-41. Remove/Install Blower Assembly.

b. Removal of Blower Motor Control Valve. (Refer to fig. 2-41.)

(1) Loosen fittings (5) to remove from control valve (7) if not previously removed and unscrew pressure gage (14).

(2) Loosen and remove hydraulic line (6).

(3) Remove two capscrews, nuts and lockwashers (8).

(4) Remove control valve (7).

c. installation of Motor Control Valve. (fig. 2-41.1

(1) Install new control valve (7) in place.

(2) Secure control valve (7) to bracket with two capscrews, nuts and lockwashers (8).

(3) Install and secure hydraulic line (6) and install pressure gage (14).

(4) Set complete blower assembly onto platform; attach rails (10) with capscrews (9).

(5) Install and secure fittings (5) and fuel lines (11), (12), and (13).

(6) Start motor and test for leaks and for blower operation.

d. Removal of Drive Motor and Fuel Pump. (Refer to fig. 2-42.)

(1) Remove burner blower drive motor (28).

la Disconnect lines (25) and (26) from motor; then remove two O-rings (27).

lb Remove two capscrews (24) and locknuts (23) with washers that fasten motor to bracket and remove motor. Loosen setscrew (20) and remove half coupling (30).

(2) Remove air filter (36) by removing win nut (37). Lift out filter element and unscrew the assembly from blower (16).

(3) Remove blower (16) as follows:

a Disconnect two lines from fuel pump (35) with attached fittings and unscrew pressure gage (5).

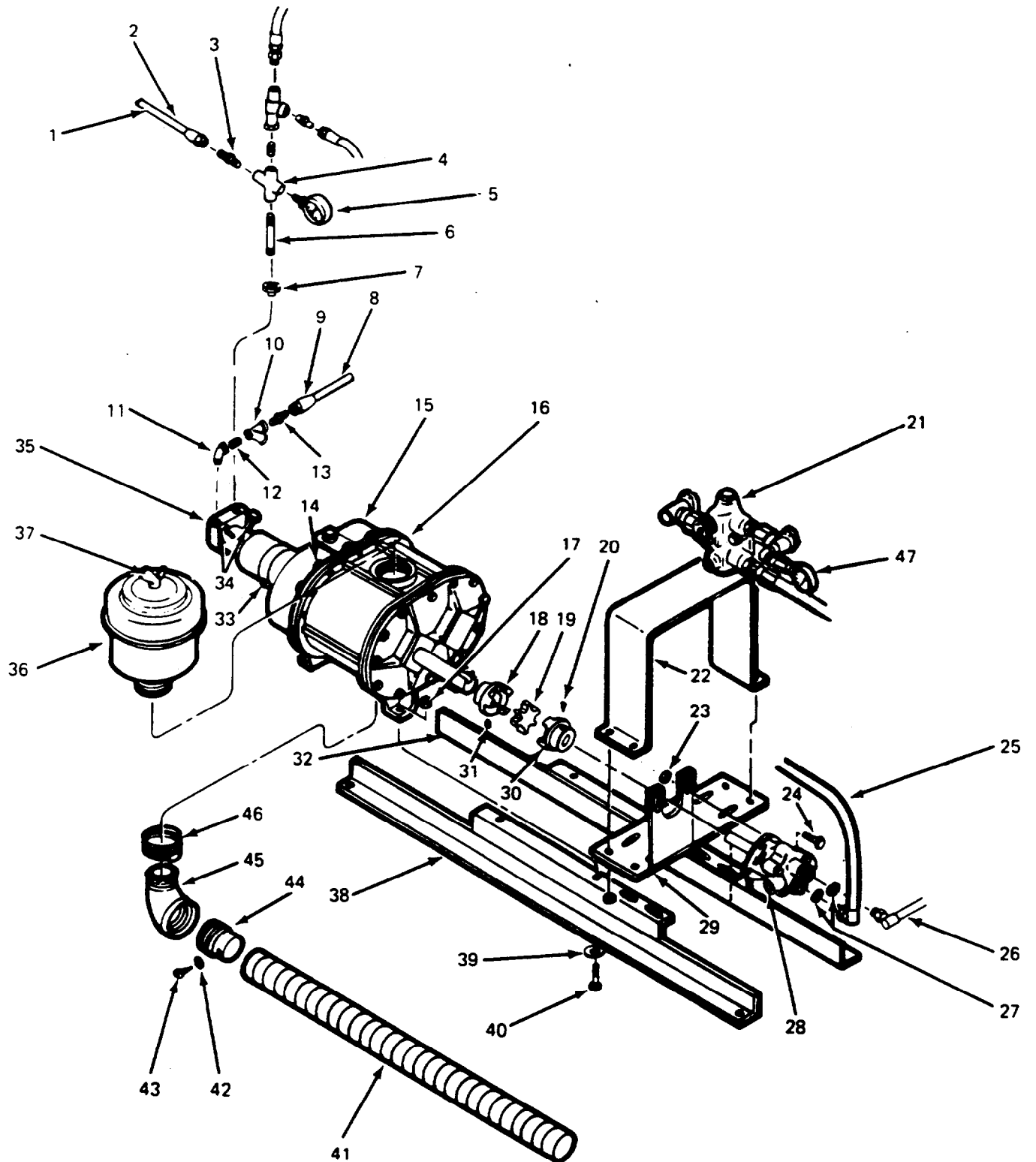
b Remove four capscrews (40), lockwashers (39) and nuts (17) that fasten blower to mounting rails and lift off the blower and fuel pump assembly.

c Remove air hose (41) by removing tap screw (43) and washer (42). Remove adapter (44), elbow (45) and bushing (46).

d Remove setscrew (31) from coupling (18) and remove coupling (18) with spider (19).

(4) Remove fuel pump (35) as follows:

a Drain grease from assembly by removing drain plug, located below blower end cap (15); then reinstall drain plug.



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Figure 2-42. Disassemble/Reassemble Blower Assembly (Sheet 1 of 2).

LEGEND:

- | | |
|----------------------|------------------------|
| 1. TUBE | 24. CAPSCREW (2) |
| 2. FLARED NUT | 25. LINE |
| 3. CONNECTOR | 26. LINE |
| 4. CROSS-PIPE | 27. O-RING (2) |
| 5. PRESSURE GAGE | 28. BLOWER DRIVE MOTOR |
| 6. NIPPLE | 29. MOUNTING ASSEMBLY |
| 7. BUSHING | 30. HALF COUPLING |
| 8. TUBE | 31. SET SCREW |
| 9. FLARED NUT | 32. SUPPORT ASSEMBLY |
| 10. 'Y' FITTING | 33. PLUG |
| 11. ELBOW | 34. SETSCREW (2) |
| 12. NIPPLE | 35. FUEL PUMP |
| 13. CONNECTOR | 36. AIR FILTER |
| 14. CAPSCREW (10) | 37. WING NUT |
| 15. BLOWER END CAP | 38. SUPPORT ASSEMBLY |
| 16. BLOWER | 39. LOCKWASHER (4) |
| 17. NUT (4) | 40. CAPSCREW (4) |
| 18. COUPLING | 41. AIR HOSE |
| 19. SPIDER | 42. FLAT WASHER |
| 20. SET SCREW | 43. TAP SCREW |
| 21. CONTROL VALVE | 44. ADAPTER |
| 22. BRACKET ASSEMBLY | 45. ELBOW |
| 23. LOCKNUT (2) | 46. BUSHING |
| | 47. PRESSURE GAGE |

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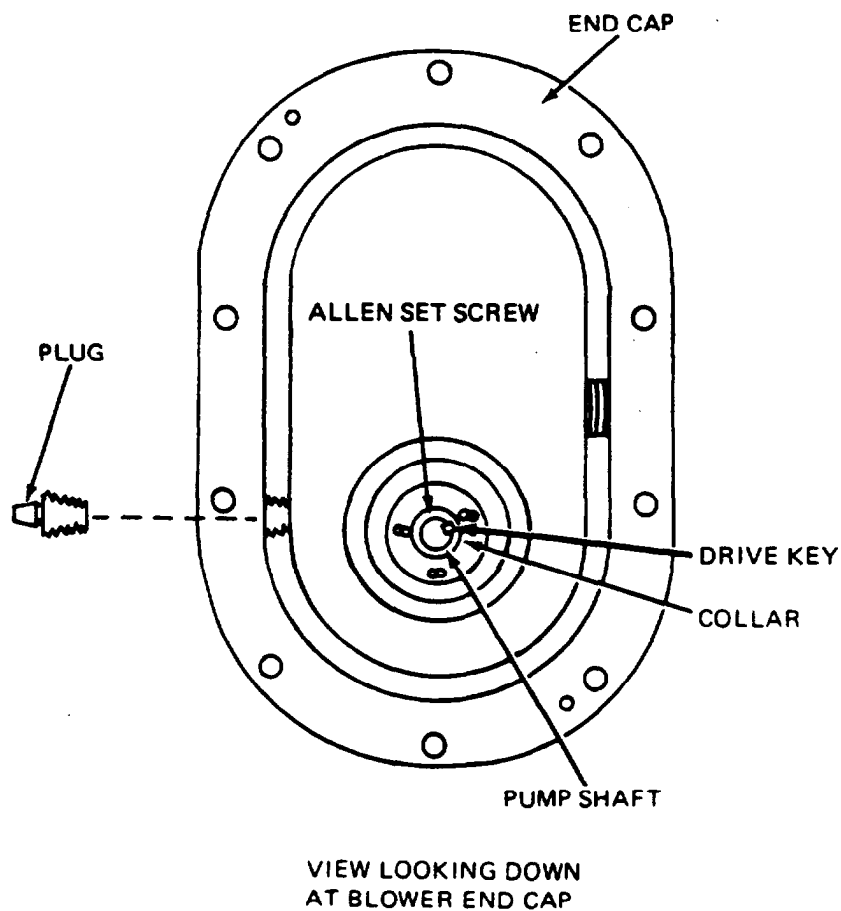
Figure 2-42. *Disassemble/Reassemble Blow Assembly (Sheet 2 of 2).*

(b) Remove ten capscrews (14) that fasten blower end cap (15) to blower housing and remove the end cap with attached fuel pump (35) and gasket.

(c) Loosen two setscrews (34) and tap fuel pump (35) out approximately one fourth inch.

(d) Remove plug (refer to fig. 2-43) and locate an Allen head setscrew through hole for plug; then loosen the setscrew. It may be necessary to rotate fuel pump (35, fig. 2-42) for access to setscrew.

(e) Tap pump shaft out of collar from inside end cap. (Refer to fig. 2-43.) Remove drive key and remove pump assembly.



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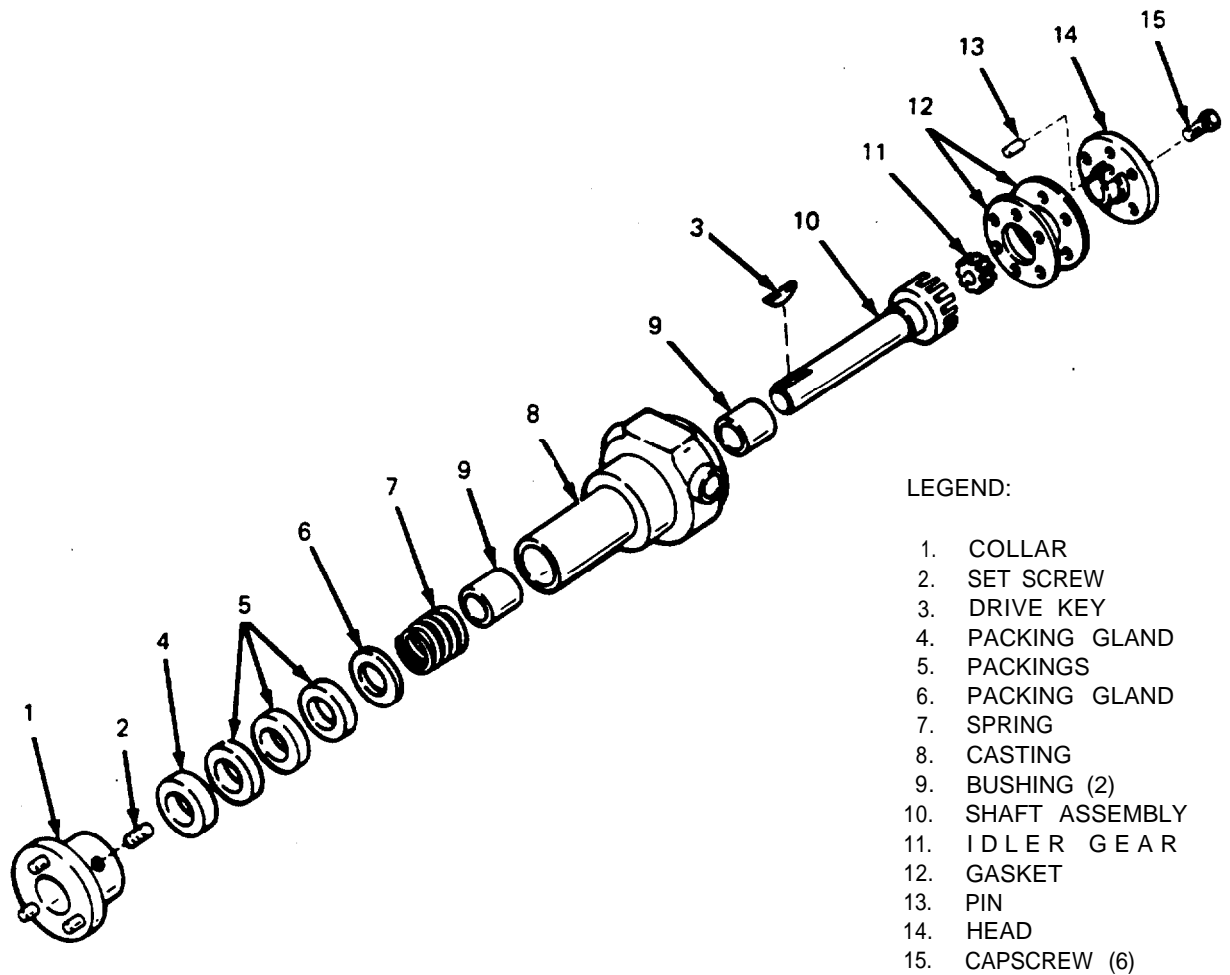
Figure 2-43. Remove/Install Fuel Pump From Blower End Cap.

e. *Repair of Fuel Pump.* (Refer to fig. 2-44.)

- (1) Remove six capscrews (15) from end head (14) and remove head assembly,
- (2) Remove idler gear (11) from pin (13) on head (14).
- (3) Remove gaskets (12) from casting (8).
- (4) Pull out idler gear (11) and shaft assembly (10) from casting (8).
- (5) Remove packing glands (4) and (6), packings (5) and spring (7) from casting (8).
- (6) Press out bushings (9) from casting (8).

f. *Reassembly of Fuel Pump.* (Refer to fig. 2-44.)

- (1) Press in two pre-fit bushings (9) into pump casting (8).
- (2) Install idler gear (11) and shaft assembly (10) into bushings (9).
- (3) Install spring (7), packing gland (6), packings (5) and packing gland (4) on shaft assembly (10) and push into place.
- (4) Install gaskets (12) onto head (14) and idler gear (11) on head pin (13).
- (5) Install head (14) and secure with six capscrews (15).
- (6) There should be no end play in the shaft assembly (10) and very little to no drag on shaft while turning by hand.
- (7) If shaft binds add one more gasket (12) until the binding is eliminated with no end play.



LEGEND:

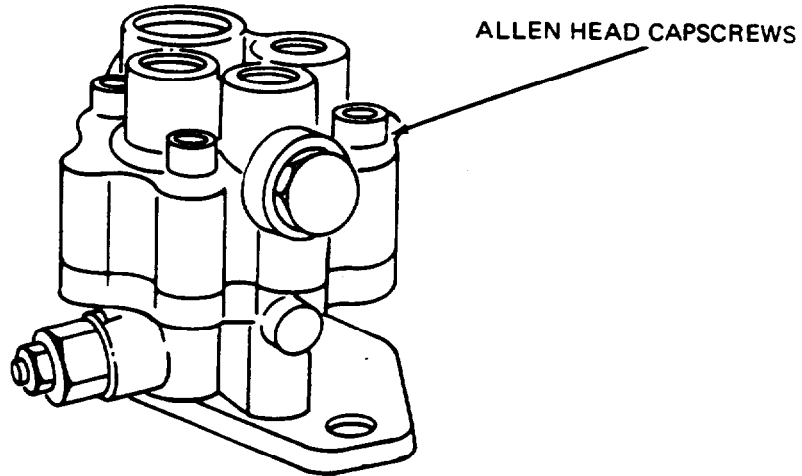
- 1. COLLAR
- 2. SET SCREW
- 3. DRIVE KEY
- 4. PACKING GLAND
- 5. PACKINGS
- 6. PACKING GLAND
- 7. SPRING
- 8. CASTING
- 9. BUSHING (2)
- 10. SHAFT ASSEMBLY
- 11. IDLER GEAR
- 12. GASKET
- 13. PIN
- 14. HEAD
- 15. CAPSCREW (6)

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Figure 2-44. Fuel Pump.

9. *Disassembly of Burner Blower Drive Motor.*

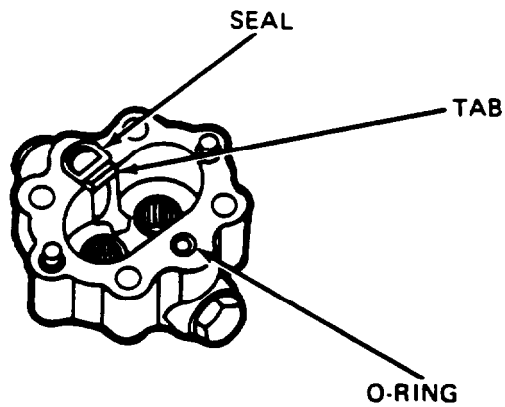
- (1) Separate motor case halves (fig. 2-45) by removing four Allen head capscrews.



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Figure 2-45. *Remove/install Case Halves.*

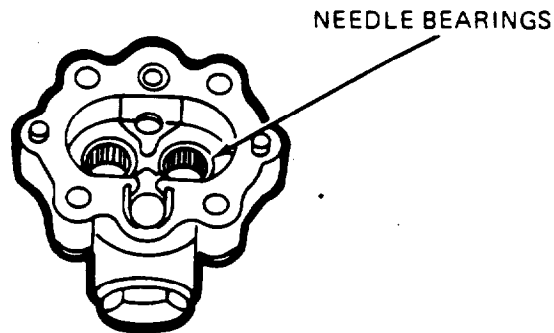
- (2) From top case half (fig. 2-46), remove O-ring, seal and tab.



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Figure 2-46. *Remove/Install Top Case Tab, seal, and O-ring.*

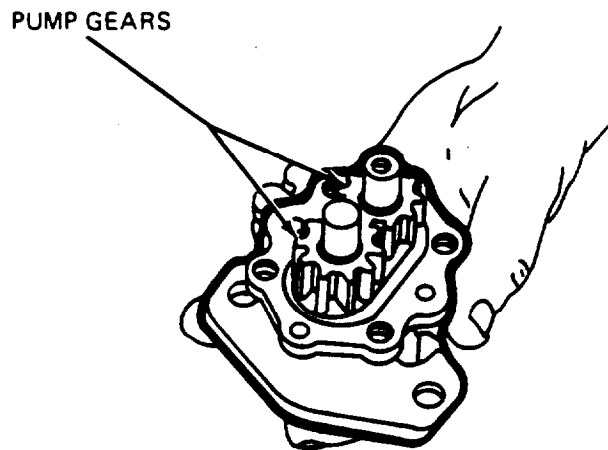
- (3) Remove the two needle bearings (fig. 2-47) in the top case with a suitable puller or press, only if the bearings need replacing.



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Figure 2-47. Remove/Install Top Case Bearings.

- (4) Remove two pump gears (fig. 2-48) from the lower case half.



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Figure 2-48. Remove/Install Pump Gears.

- (5) Remove plate and seal (fig. 2-49) from the lower case half.

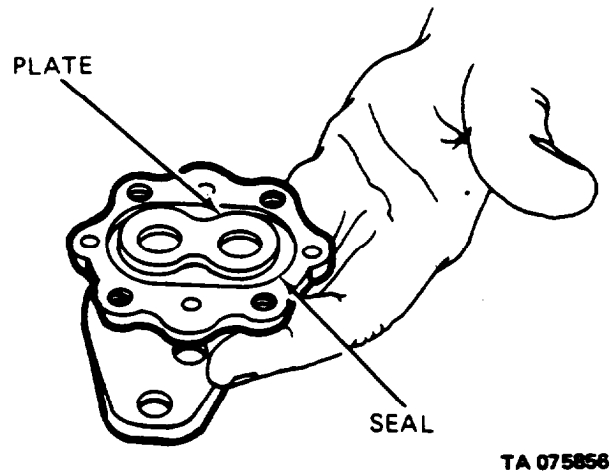


Figure 2-49. Remove/Install Lower Case Plate and Seal.

- (6) Remove tab (fig. 2-50).

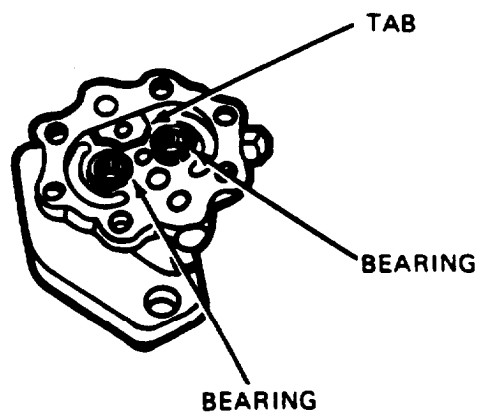
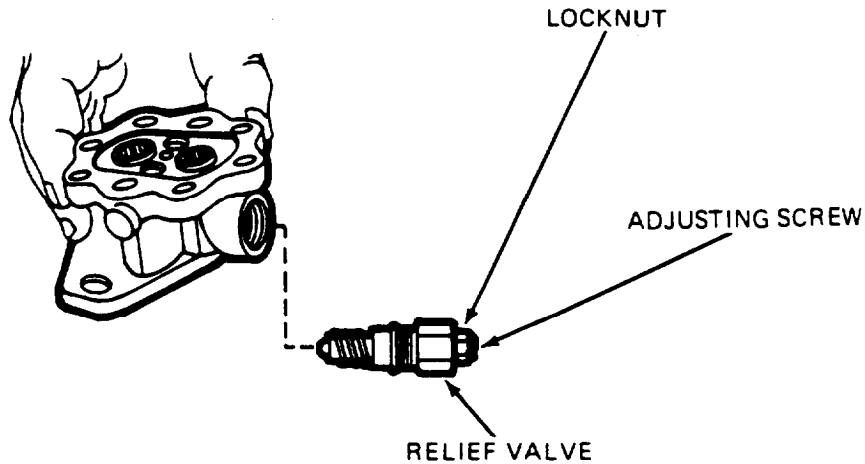


Figure 2-50. Remove/Install Lower Case Tab and Bearings.

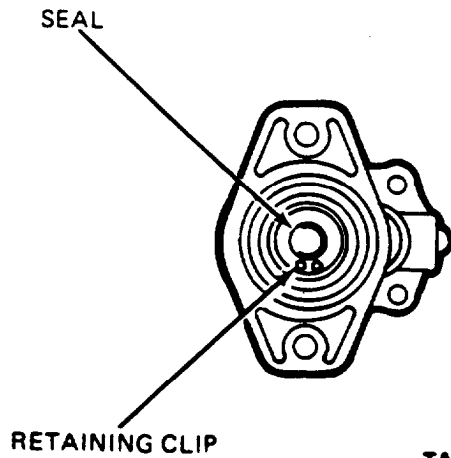
- (7) Remove the two bearings in the lower case with a suitable puller or press, only if the bearings need replacing.
- (8) Remove relief valve (fig. 2-51).



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Figure 2-51. Remove/Install Relief Valve.

- (9) Remove retainer clip and seal (fig. 2-52) from bottom of lower case.



TA 075859

Figure 2-52. Remove/Install Lower Case Seal.

h. Cleaning and Inspection of Burner Blower Drive Motor.

- (1) Clean all parts in dry cleaning solution.
- (2) Inspect needle bearings. Replace bearings if scored.
- (3) Inspect motor gears and plate (fig. 2-48 and 2-49). Replace motor if these parts are gouged or otherwise defective.

i. Reassembly of Burner Blower Drive Motor.

- (1) Install new seal (fig. 2-52) in lower case and secure with retainer clip.
- (2) Install relief valve (fig. 2-51). If the same valve is being reinstalled, do not change setting.
- (3) Install bearings (fig. 2-50) into lower case half. Install tab, as shown in illustration.
- (4) Install new seal (fig. 2-49) and install plate, as shown in illustration.
- (5) Install two pump gears (fig. 2-48).
- (6) Install needle bearings in top case half (fig. 2-47).
- (7) Install O-ring (fig. 2-46), tab, and seal.
- (8) Mate the motor case halves (fig. 2-45) and secure the four Allen head screws.
- (9) Test pump relief valve setting as follows:
 - (a) Reinstall motor. (Refer to para 2-35.)
 - (b) Start motor, engage PTO and hydraulic pump control.
 - (c) Apply 2600 psi pressure to motor inlet port and observe that relief valve cracks at 2250 psi \pm 250.
 - (d) If adjustment to relief valve (fig. 2-51) is necessary, loosen locknut and turn adjusting screw.

j. Installation of Fuel Pump and Blower. (Refer to fig. 2-42.)

- (1) Install fuel pump (35) as follows:
 - (a) Position pump shaft in blower end cap as shown in figure 2-43, install drive key; then drive collar on flush with shaft end.
 - (b) Tighten setscrew through access hole for plug; then install plug.
 - (c) Drive the pump in from outside end cap until pump is fully seated.
 - (d) Tighten two setscrews (34, fig. 2-42).
 - (e) Mount blower end cap (15) and gasket on blower housing and secure with ten one fourth inch capscrews (14).
 - (f) Install grease (8 oz. No. 30 engine oil).
- (2) Install blower (16) as follows:
 - (a) Mount coupling (18) on blower shaft and secure with setscrew (31); install spider (10).
 - (b) Install bushing (46), elbow (45), adapter (44), and air hose (41) and secure with tap screw (43) and flat washer (42).

- (c) Mount blower on support assembly (38) and secure with four capscrews (40), lockwashers (39), and nuts (17).
- (d) Connect two lines with attached fittings and gage to fuel pump (35).
- (3) Screw air filter (36) into blower. Install filter element into blower base and secure with wing nut (37).
- (4) Install blower drive motor (28) as follows:
 - (a) Insert motor shaft into half coupling (30).
 - (b) Mate half coupling (30) to spider (19).
 - (c) Install two capscrews (24) and locknuts (23) that fasten motor to bracket and secure. Slide half coupling (30) forward until half coupling is fully seated with spider (19) and tighten setscrew (20).
 - (d) Install two O-rings (27) and connect lines (25) and (26) to motor.

k. *Installation of Blower Assembly.* (Refer to fig. 2-41.)

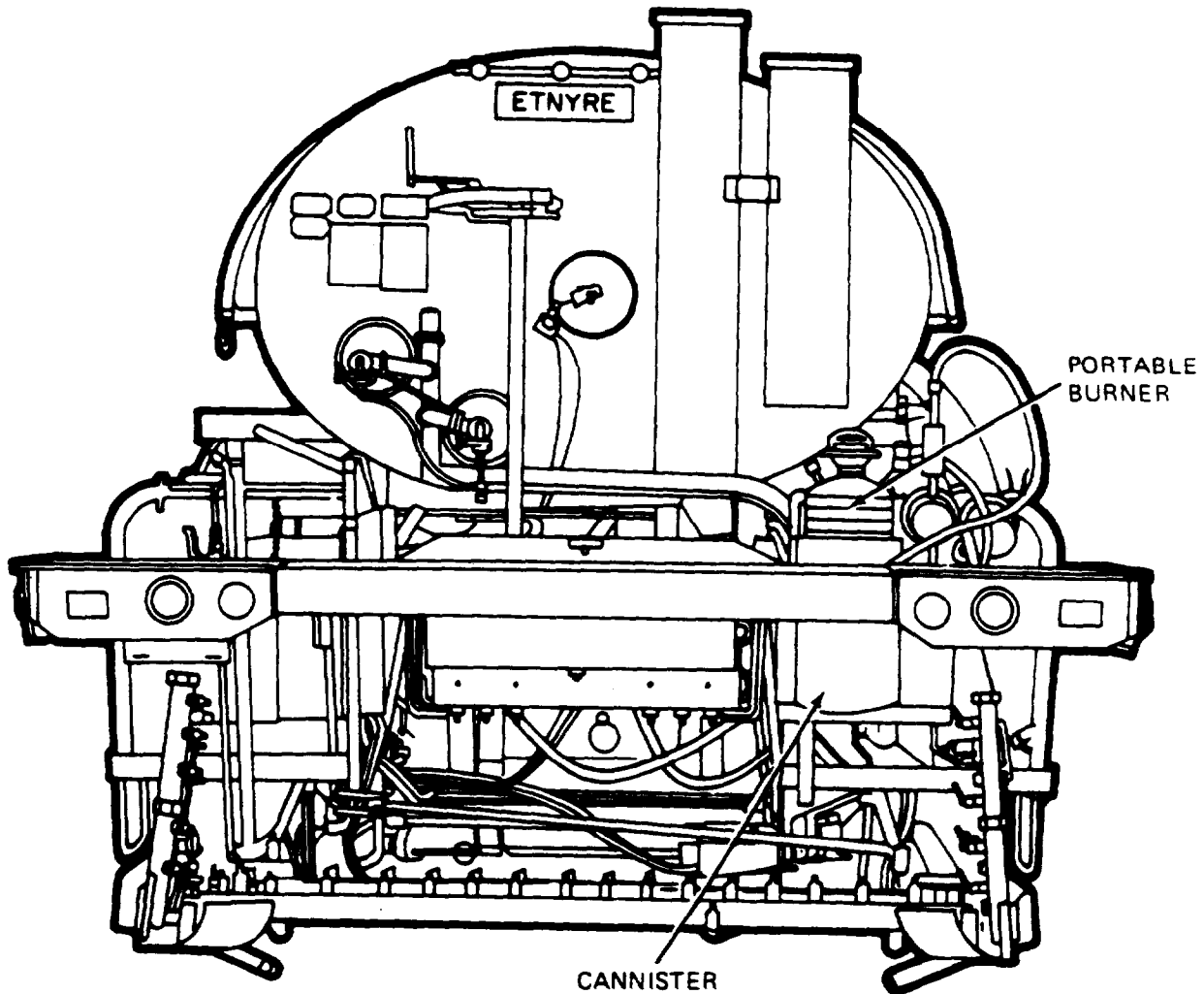
Mount rails (10) with assembled blower on platform and secure with four capscrews (9) and nuts.

- (2) Connect air line (4) and secure with two screws (3).
- (3) Connect fitting (5), and lines (6), (11), (12), and (13); then install pressure gage (47, fig 2-42).

Section XXXII. MAINTENANCE OF PORTABLE BURNER

2-36. Portable Burner.

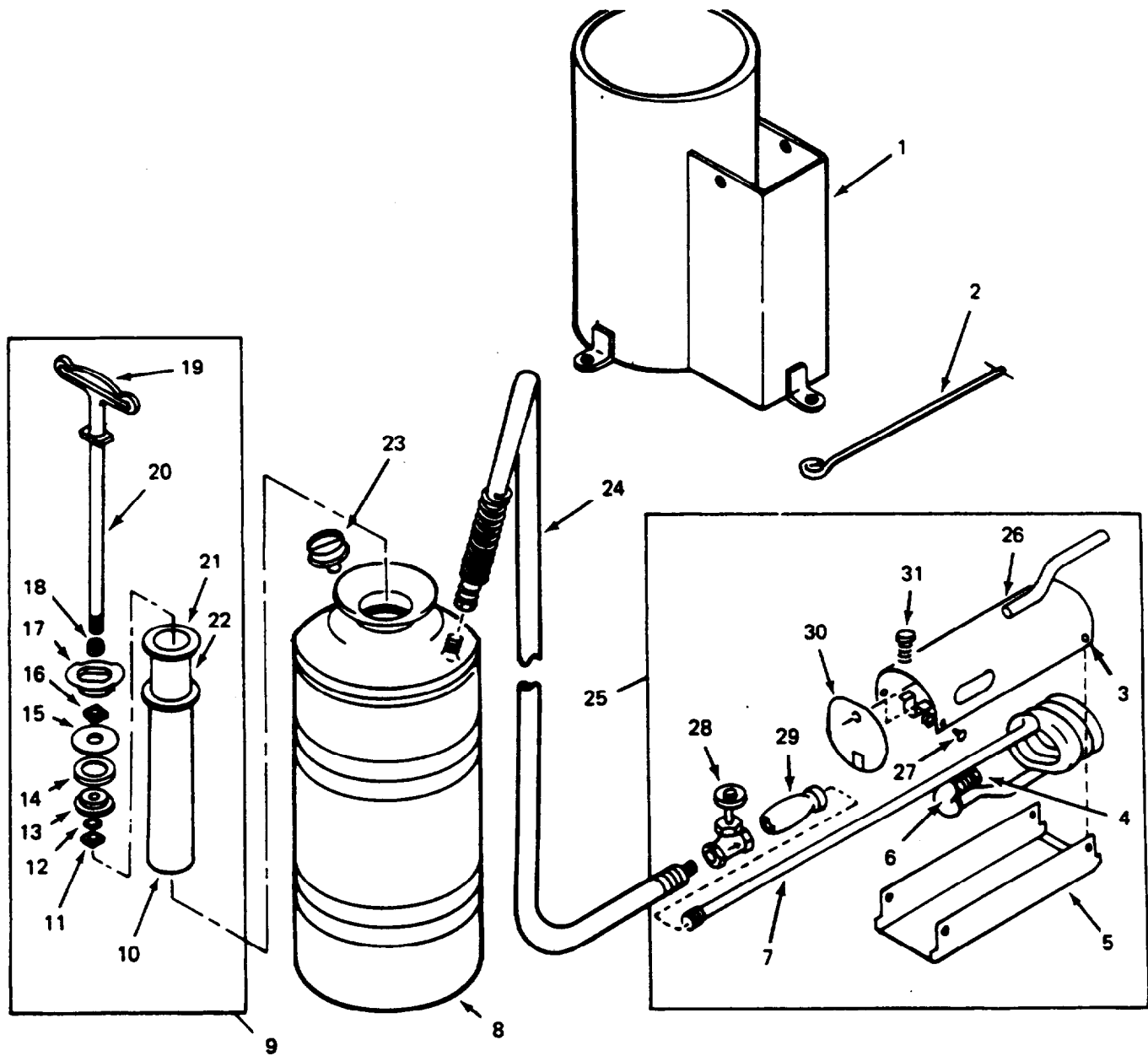
a. *Removal.* (Refer to fig. 2-53.) The portable burner is contained in a canister on the vehicle right rear frame rail. To remove it, simply lift it out.



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Figure 2-53. *Portable Burner.*

- b. *Disassembly.* (Refer to fig. 2-54.)
- (1) Unscrew burner hose (24) from valve (28).
 - (2) Remove valve (28) from shaft of coil (7) and handgrip (29).
 - (3) Remove two machine screws and nuts (27); then lower pan (5).
 - (4) Remove sheetmetal screw (31) from slip inside shell (26) and remove the coil (7) and plate (30).
 - (5) Remove nozzle (4) from plug holder (6).
 - (6) Remove air pump (9) from tank by using a twisting motion.
 - (7) Remove gasket (22).



LEGEND:

- | | | |
|----------------------------|---------------|-------------------------------|
| 1. BURNER CARRIER ASSEMBLY | 12. WASHER | 23. PRESSURE GAGE |
| 2. NEEDLE | 13. WASHER | 24. BURNER HOSE |
| 3. RIVET | 14. WASHER | 25. PORTABLE BURNER ASSEMBLY |
| 4. NOZZLE | 15. WASHER | 26. SHELL |
| 5. PAN | 16. UPPER NUT | 27. MACHINE SCREW AND NUT (2) |
| 6. PLUG HOLDER | 17. CAP | 28. VALVE |
| 7. COIL | 18. SPRING | 29. HANDGRIP |
| 8. PORTABLE BURNER | 19. HANDLE | 30. PLATE |
| 9. AIR PUMP | 20. ROD | 31. SHEET METAL SCREW (2) |
| 10. VALVE | 21. BARREL | |
| 11. LOWER NUT | 22. GASKET | |

Figure 2-54. Disassemble/Reassemble Portable Burner.

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TM 5-3895-371-24&P

- (8) Remove rod (20) from barrel (21).
 - (9) Remove lower nut (11); then pull off washers (12), (13), (14), and (15).
 - (10) Remove upper nut (16); then pull off cap (17) and spring (18).
 - (11) Unscrew handle (19) from rod (20).
 - (12) Remove pressure gage (23) from portable burner (8).
- c. *Reassembly.* (Refer to fig. 2-54.)
- (1) Install pressure gage (23) in portable burner (8).
 - (2) Attach handle (19) to rod (20).
 - (3) Install spring (18) and cap (17) on rod (20). Secure with upper nut (16).
 - (4) Install washers (15), (14), (13), and (12). Secure with lower nut (11).
 - (5) Install assembled rod (20) in barrel (21).
 - (6) Install gasket (22).
 - (7) Insert complete air pump assembly into tank and use a twisting motion to fully set it.
 - (8) Install nozzle (4) into plug holder (6).
 - (9) Install coil (7) in shell (26) and secure with sheetmetal screws (31).
 - (10) Close pan (5) and secure to shell (26) with two machine screws and nuts (27).
 - (17) Connect shaft of coil (7) through hand grip (29) to valve (28).
 - (12) Connect burner hose (24) to valve (28).
- d. *Installation.* (Refer to fig. 2-53.) Install portable burner in canister.

Section XXXIII. MAINTENANCE OF SPRAY BAR DISTRIBUTING LINES

2-37. Spray Bar Distributing Lines.

- a. *Disassembly.* (Refer to fig. 2-55.)

NOTE

Following are procedures for disassembly and re-assembly of the left side distributing lines and components. The right side is similar and no additional detailed procedures are necessary.

CAUTION

Hinge section ball joints are spring loaded.

(1) Apply pressure on line (30) to contain spring (29); then remove nut (25), copper gasket (26), rubber gasket (27), ball (28), and spring (29).

(2) Remove line (30) and gasket (32) by disconnecting lock nut (31).

(3) Disconnect ball joint (37) from drop pipe (40) by removing lock nut (39) and removing gasket (38).

(4) Disconnect coupling (33) from transfer valve by unscrewing pipe thread; then remove gasket (34), unscrew nipple (36) and ball joints (35) and (37).

(5) Remove drop pipe (40) by disconnecting it from intake valve, nuts (42 and 41).

(6) Pry drain valve (24) free from cross shaft (23).

(7) Disconnect drain valve (24) from drop pipe (40).

b. Reassembly.

(1) Connect drain valve (24) to drop pipe (40).

(2) Connect drain valve (24) to cross shaft (23).

(3) Connect drop pipe (40) to intake valve with nuts (42 and 41).

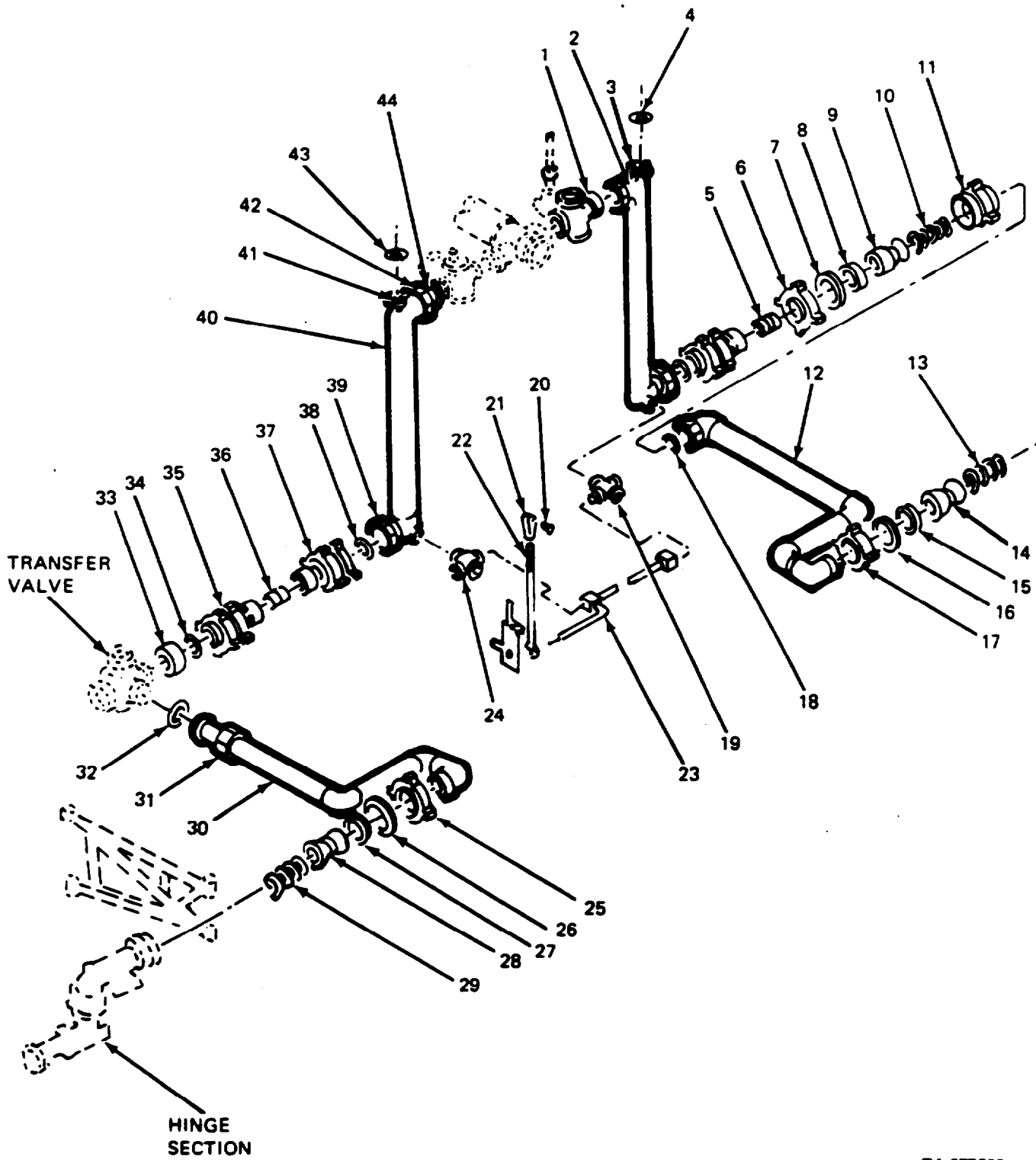
(4) Assemble ball joints (35 and 37) with nipple (36).

(5) Mate gasket (34) to ball joint (35) nearest the transfer valve; then connect ball joint (35) to transfer valve with coupling (33).

(6) Connect ball joint (37) with gasket (38) to drop pipe (40) by tightening locknut (39).

(7) Connect line (30) with gasket (32) to transfer valve by tightening locknut (31).

(8) Insert spring (29) and ball (28) into hinge section; then set rubber gasket (27) and copper gasket (26) in assembly position. Apply pressure to line (30) to compress spring (29); then install nut (25).



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Figure 2-55. Remove/Install Spray Bar Distributing Lines and Component Parts (Sheet 1 of 2).

LEGEND:

- | | |
|---------------------|-------------------|
| 1. GASKET | 23. CROSS SHAFT |
| 2. DROP PIPE | 24. DRAIN VALVE |
| 3. DROP PIPE | 25. NUT |
| 4. GASKET | 26. COPPER GASKET |
| 5. NIPPLE | 27. RUBBER GASKET |
| 6. NUT | 28. BALL |
| 7. COPPER GASKET | 29. SPRING |
| 8. RUBBER GASKET | 30. LINE |
| 9. BALL | 31. LOCKNUT |
| 10. SPRING | 32. GASKET |
| 11. BALL JOINT | 33. COUPLING |
| 12. LINE | 34. GASKET |
| 13. SPRING | 35. BALL JOINT |
| 14. BALL | 36. NIPPLE |
| 15. RUBBER GASKET | 37. BALL JOINT, |
| 16. COPPER GASKET | 38. GASKET |
| 17. NUT | 39. LOCKNUT |
| 18. GASKET | 40. DROP PIPE |
| 19. DRAIN VALVE | 41. NUT |
| 20. CLEWS PIN | 42. NUT |
| 21. CLEVIS | 43. GASKET |
| 22. CONNECTING LINK | 44. GASKET |

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Figure 2-55. *Remove/Install Spray Bar Distributing Lines and Component Parts (Sheet 2 of 2).*

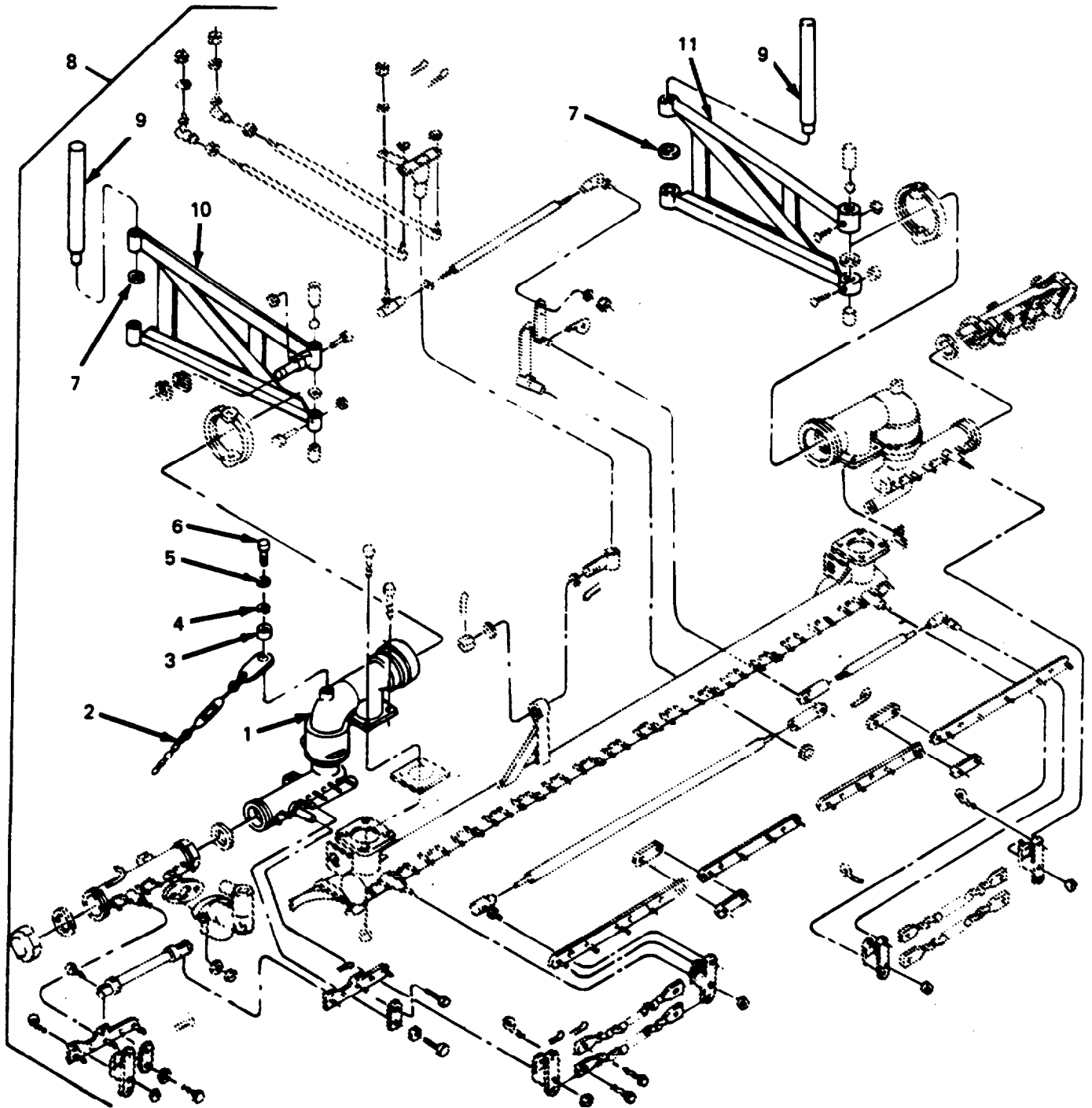
Section XXXIV. MAINTENANCE OF SPRAY BAR

2-38. Spray Bar.

NOTE

Following are procedures for disassembly and re-assembly of the spray bar and component parts on the left side of the spray bar. The right side is similar and no additional procedures are necessary.

- a. *Disassembly.* (Refer to 2-56.)



LEGEND:

- | | |
|-----------------------|------------------------------|
| 1. LEFT HINGE SECTION | 7. THRUST WASHER |
| 2. CHAIN | 8. SPRAY BAR ASSEMBLY |
| 3. SLEEVE | 9. PIN |
| 4. WASHER | 10. LEFT CARRY ARM ASSEMBLY |
| 5. LOCKWASHER | 11. RIGHT CARRY ARM ASSEMBLY |
| 6. CAPSCREW | |

Figure 2-56. Remove/Install Spray Bar Lines and Component Parts.

TA 075864

(1) Remove left carry arm assembly (10) and left hinge section (1) as follows:

(a) Disconnect chain (2) from left hinge section (1) by removing capscrew (6), sleeve (3), washer (4), and lockwasher (5).

(b) Disconnect adjusting link (4, fig. 2-57) by removing cotter pin and clevis pin (7).

(c) Disconnect two chains (1) by removing a cotter pin and clevis pin (2) from each.

(d) Disconnect spring link (11) by removing cotter pin and clevis pin (12).

(e) Remove three nuts (13) and lockwashers that fasten the two halves of hinge section (10) together; then remove the lower half with spacer ring (5) and packing (6).

(f) Disconnect pipe nut (9) that fastens end tube assembly (8) to hinge section (10) and remove the end tube assembly (8).

(g) Support spray bar with floor jack.

(h) Remove four capscrews (17) and flange gasket (18).

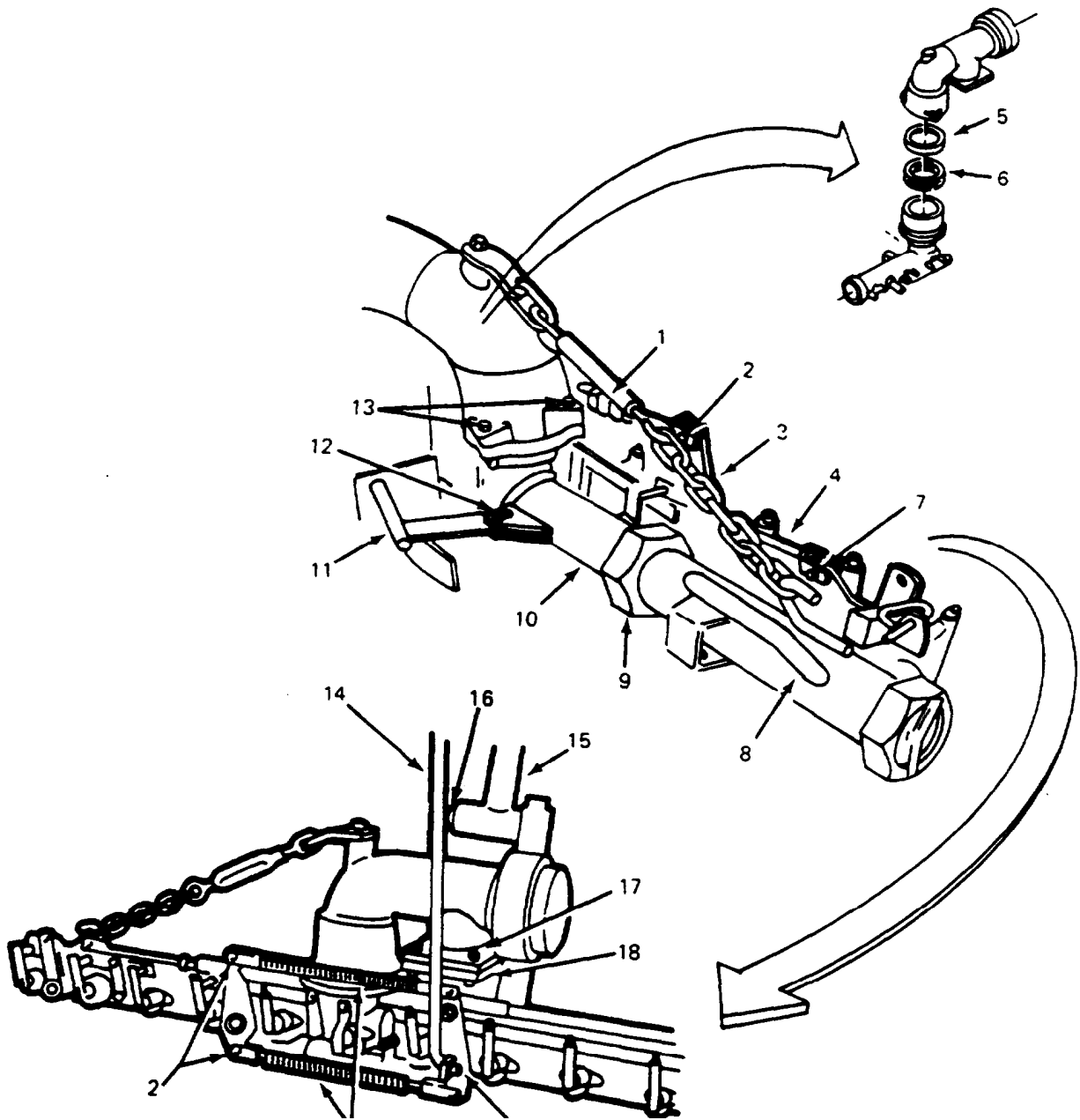
(i) Disconnect line (30, fig. 2-55) from transfer valve by removing locknut (31). Remove gasket (32).

(j) Remove hand lift lever (14, fig. 2-57) by removing cotter pin (19).

(k) Remove snap ring (16); then take off arm (15).

(l) Remove two cotter pins from swivel pin (9, fig. 2-56); then drive out pin (9) and remove thrust washer (7).

(m) Remove left carry arm assembly (10) with attached tubing and place in suitable vise.



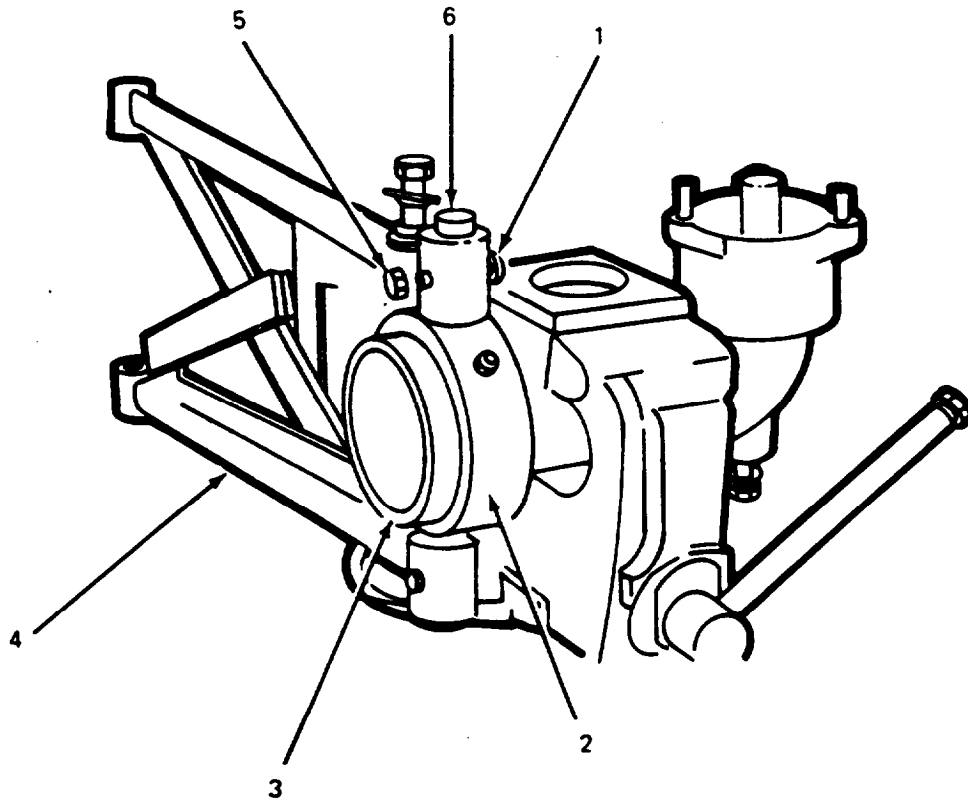
LEGEND:

- | | |
|----------------------|---------------------|
| 1. CHAIN (2) | 11. SPRING LINK |
| 2. CLEVIS PIN (2) | 12. CLEVIS PIN |
| 3. CHAIN | 13. NUT (3) |
| 4. ADJUSTING LINK | 14. HAND LIFT LEVER |
| 5. SPACER RING | 15. ARM |
| 6. PACKING | 16. SNAP RING |
| 7. CLEVIS PIN | 17. CAPSCREW (4) |
| 8. END TUBE ASSEMBLY | 18. FLANGE GASKET |
| 9. PIPE NUT | 19. COTTER PIN |
| 10. HINGE SECTION | |

TA 075865

Figure 2-57. Remove/Install End Tube Assembly.

- (2) Replace ball bearings in carry arm assembly (4, fig. 2-58) as follows:
- (a) Remove hex nut (5), screw (1), and pin (6).



LEGEND:

- | | |
|-----------------------|-----------------------|
| 1. SCREW | 4. CARRY ARM ASSEMBLY |
| 2. OUTER BEARING RACE | 5. HEX NUT |
| 3. INNER BEARING RACE | 6. PIN |

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Figure 2-58. *Remove/Install Bearing Balls.*

CAUTION

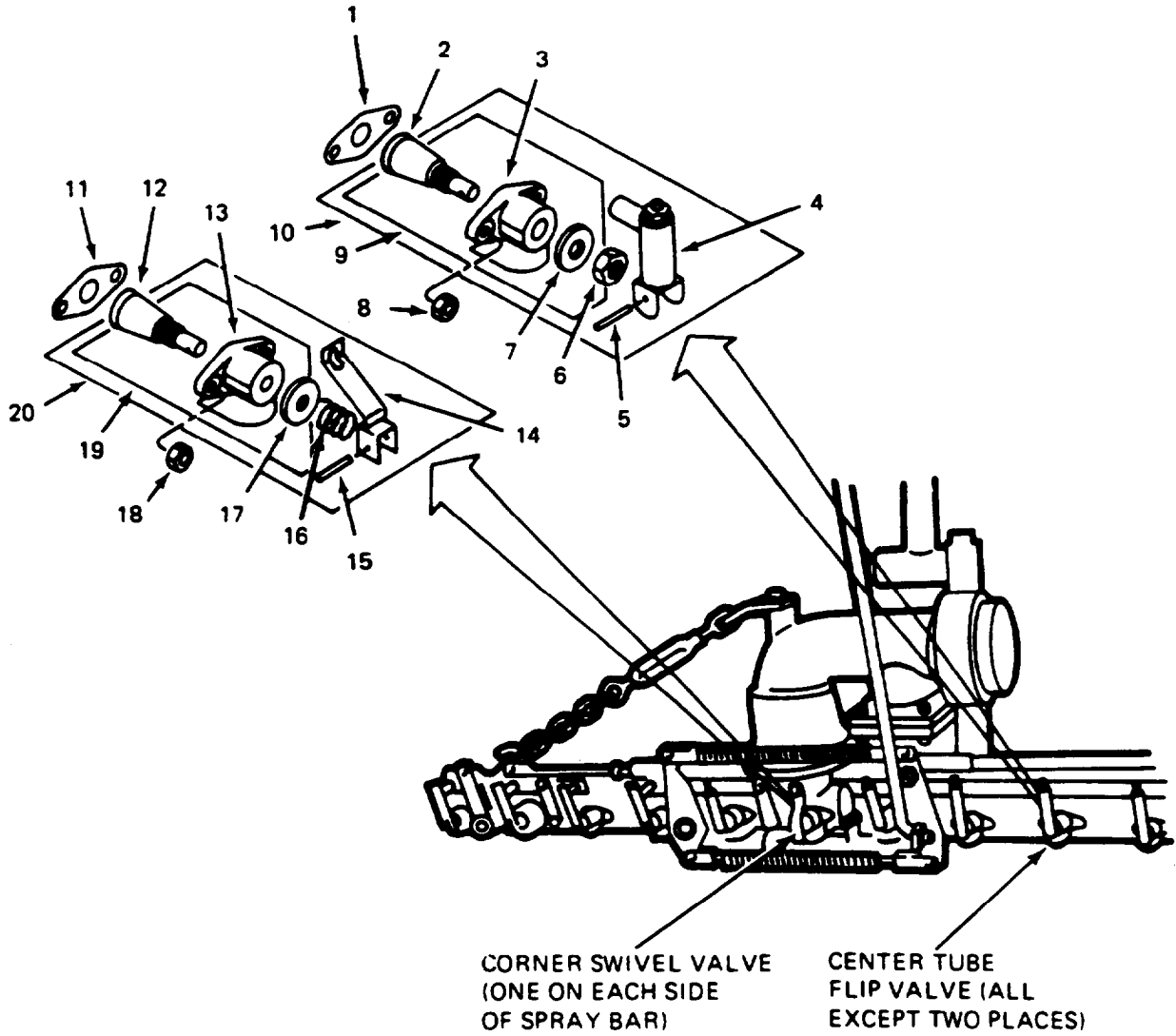
Be careful not to lose any bearing balls in the next step. There are 38 of them.

- (b) Turn carry arm assembly (4) upside down, turn inner bearing race (3); then shake the assembly. Bearing balls will fall out.
 - (c) Rotate inner bearing race (3) and allow 38 balls to drop out and remove bearing race.
 - (d) Inspect all bearing balls and inner bearing race (3) for pitted condition, gouges, or other defects. Replace if defective.
 - (e) Install inner bearing race (3).
 - (f) Drop one ball at a time through hole for pin (6). After ball is dropped in, use small screwdriver or similar tool to force the ball down so that the next one can be dropped in until 38 balls are installed.
 - (g) Install pin (6) and secure with screw (1) and hex nut (5).
- (3) Remove flip valves (fig. 2-59) as follows:

NOTE

The flip valve plug is lapped into the valve housing. Therefore, the flip valves are a non-serviceable item and must be replaced as an assembly.

- (a) Remove two nuts (8) and lockwashers; remove valve assembly (9).
- (b) Remove gasket (1).
- (c) Remove pin (5) and lever (4) from valve assembly (9). (On valves located adjacent to end section swivel points, remove pin (15), washer (17), spring (16) and lever (14).



LEGEND:

- | | |
|-------------------------|--------------------|
| 1. GASKET | 11. GASKET |
| 2. PLUG, VALVE | 12. PLUG, VALVE |
| 3. VALVE BODY | 13. VALVE BODY |
| 4. LEVER | 14. LEVER |
| 5. PIN | 15. PIN |
| 6. NUT | 16. SPRING |
| 7. WASHER | 17. WASHER |
| 8. NUT (2) | 18. NUT (2) |
| 9. VALVE ASSEMBLY | 19. VALVE ASSEMBLY |
| 10. FLIP VALVE ASSEMBLY | 20. VALVE ASSEMBLY |

Figure 2-59. Remove/Install Flip Valves.

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(4) Remove spray bar as follows:

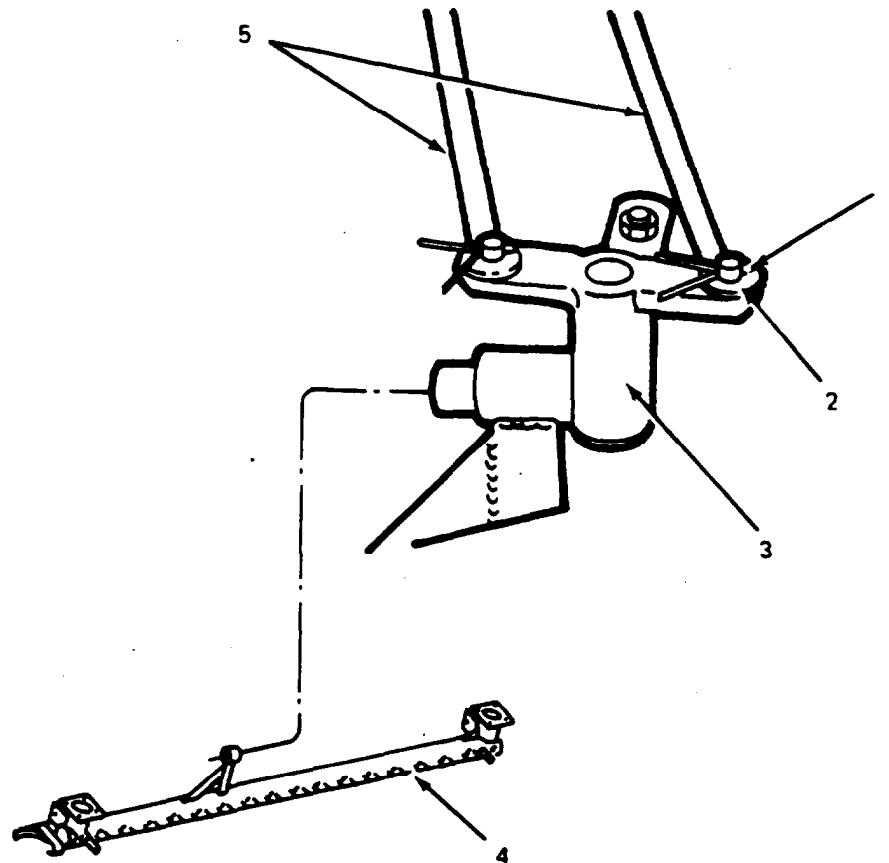
(a) Repeat steps (a) thru (g) for right side of spray bar. (Refer to para 2-38a (1).)

(b) Disconnect line (12, fig. 2-55) from ball joint (11) and remove gasket (18).

Remove two cotter pins (1, fig. 2-60) and two flat washers (2); then disconnect connecting rods% from swivel toggle assembly (3).

(d) Remove two cotter pins from swivel pin (9, fig. 2-56) then drive out pin (9) and remove thrust washer (7).

(e) Remove carry arm assembly (10).



LEGEND:

- 1. COTTER PIN (2)
- 2. WASHER (2)
- 3. SWIVEL TOGGLE ASSEMBLY
- 4. SPRAY BAR
- 5. CONNECTING ROD (2)

TA 075868

Figure 2-60. *Disconnect/Connect Swivel Toggle Rods.*

- (f) Remove spray bar (4, fig. 2-60) by lowering the floor jack.
- (5) Remove spray nozzles by using special wrench (fig. 2-61) from tool box.

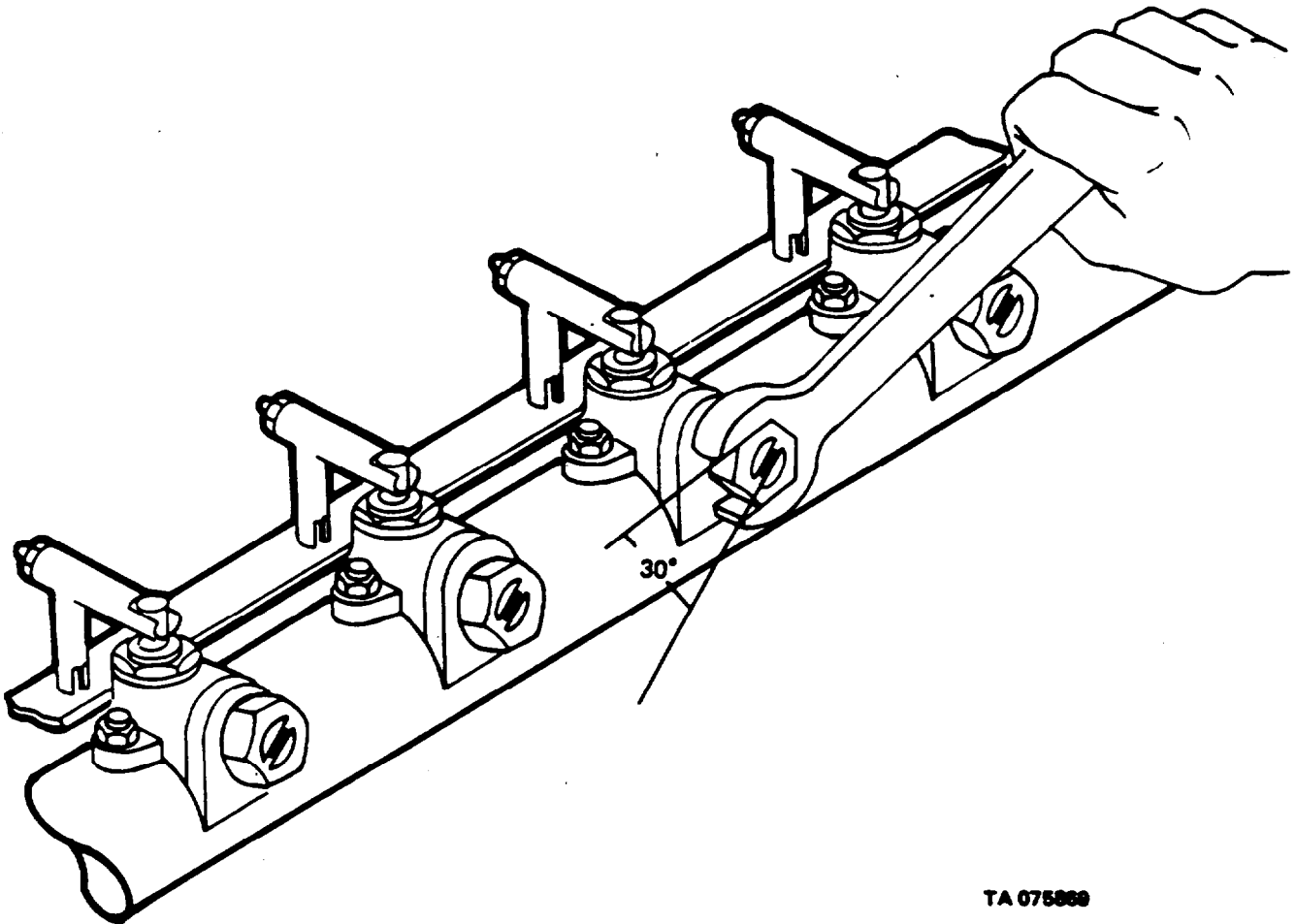


Figure 2-61. *Remove/Install Spay Nozzles*

- b. cleaning and inspection.
 - (1) Clean all parts in dry cleaning solution.
 - (2) inspect all parts for cracks or other damage. Replace defactive parts.

c. **Reassembly.**

- (1) Install spray nozzles using special wrench from tool box (fig. 2-61).

NOTE

Handle of tool should rest upon adjacent spray nozzle as shown to give the proper 30° spray overlap. (Refer to fig. 2-61.)

- (2) Install spray bar (4, fig. 2-60) as follows:

- (a) Support spray bar (4) on floor jack; then move spray bar into assembly position and connect rods (5) to swivel toggle assembly (3). Secure with two washers (2) and cotter pins (1).
- (b) Install gasket (32, fig. 2-55) and connect line (30) to transfer valve.
- (c) Install flange gasket (18, fig. 2-57) and install four capscrews (17) that fasten hinge section to spray bar.
- (d) Install end tube assembly (8) and secure to hinge section (10) with pipe nut (9).
- (e) Install spacer ring (5) and packing (6) into hinge section (10); then install three nuts (13) and lockwashers that fasten the two halves of hinge section together.
- (f) Connect spring link (11) and secure with clevis pin (12) and cotter pin.
- (g) Connect two chains (1) and secure each with clevis pin (2) and cotter pin.
- (h) Connect adjusting link (4) and secure with clevis pin (7) and cotter pin.
- (i) Connect chain (2, fig. 2-56) to left hinge section (1) with sleeve (3), washer (4), lockwasher (5) and capscrew (6).
- (j) Install gasket (18, fig. 2-55) and connect line (12) to ball joint (11).
- (k) Repeat steps (c) thru (i) above for right side of spray bar. Observe that some item numbers change, however, the procedure and parts remain the same.
- (3) Install flip valves (fig. 2-59) as follows:


CAUTION

The center section flip valves and end section flip valves are not the same. When installing, the valves must be installed in their proper places or damage to valves will occur.

- (a) On center tube flip valves, install lever (4) and secure with pin (5). For corner swivel valve, install lever (14), spring (16) and washer (17). Secure with pin (15).

CAUTION

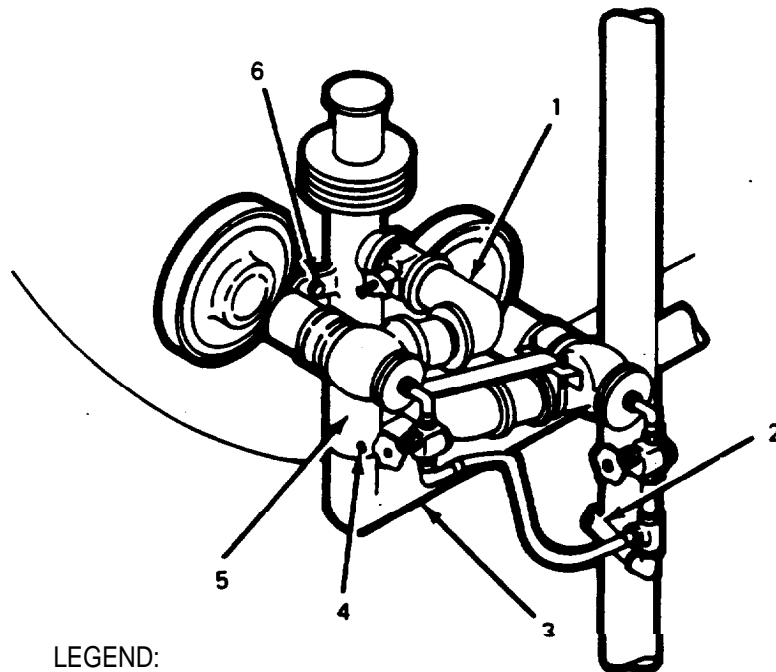
Valve plug (12) protrudes slightly through the valve body (3). When installing valves, care must be taken to make certain that the valve plug is seated in the hole in spray bar.

- (6) Install gasket (1) and mount valve on spray bar. Secure with two lockwashers and nuts (8).

Section XXXV. MAINTENANCE OF LOW PRESSURE BURNER ASSEMBLY

2-39. Low Pressure Burner.

- a. Removal. (Refer to fig. 2-62.)
 - (1) Remove screw (4) and fuel line (2).



LEGEND:

- | | |
|--------------------|----------------------------|
| 1. BURNER ASSEMBLY | 4. SCREW |
| 2. FUEL LINE | 5. TUBE |
| 3. TUBE | 6. CAPSCREW AND WASHER (2) |

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Figure 2-62. Remove/Install Low Pressure Burner Assembly.

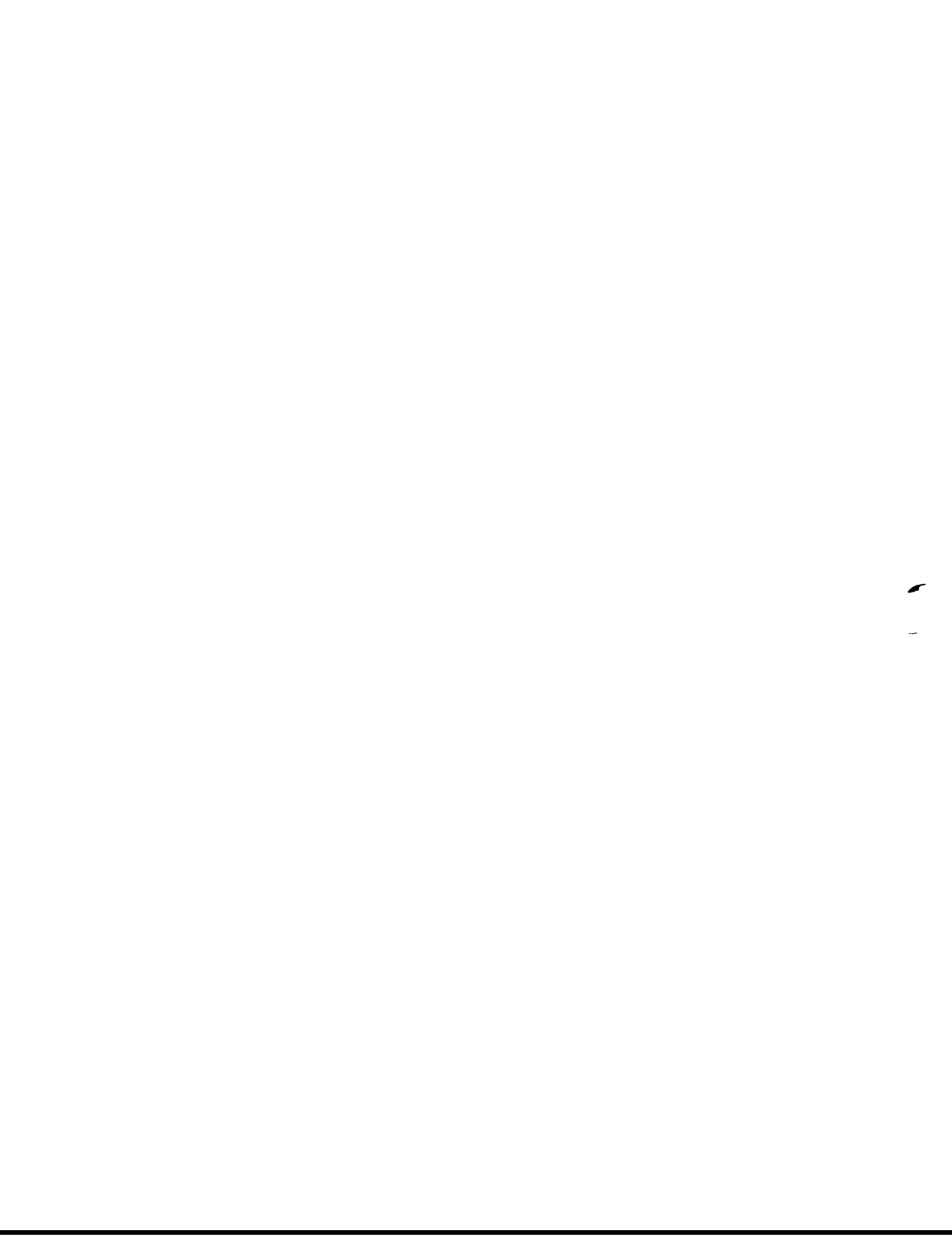
(2) Remove two capscrews and washers (6) that fasten the burner assembly to the tank; then pull out the burner assembly (1) and two tapered spacers located behind the burners.

b. Installation. (Refer to fig. 2-62.)

(1) Mount burner assembly (1) on tank with a tapered spacer between each mounting cap-screw hole and the tank.

(2) Secure mounting plate to tank with two capscrews and washers (6).

(3) Join tubes (3 and 5) together with screws (4) and reconnect fuel line (2).



CHAPTER 3

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

3-1. Special Tools and Equipment. There is no special test equipment required for maintenance of the Bituminous Distributor. Special tools, which are located in the tool box, are listed in Appendix B.

3-2. Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tools list covering Direct Support and General Support maintenance for the equipment (Appendix C).

Section II. TROUBLESHOOTING

3-3. General.

a. This section contains Direct Support and General Support troubleshooting information for locating and correcting most of the operating troubles which may develop in the M918 Bituminous Distributor. This information supplements the information in the Organizational level troubleshooting procedure, Table 2-2. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine corrective actions to take. You should perform the test/inspections and corrective actions in the order listed.

b. This manual 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 listed corrective actions, notify your supervisor.

Table 3-1. *Direct Support and General Support Troubleshooting.*

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
1. ASPHALT PUMP FAILS TO DELIVER RATED CAPACITY:
Step 1. Worn or damaged impeller.
Replace impeller (para 9-11).
Step 2. Damaged pump bearing.
Replace bearing (para 9-11).
2. NOISY PUMP OPERATION:
Step 1. Impeller loose on shaft.
Replace impeller or shaft (para 9-1).
Step 2. Worn pump shaft bearings.
Replace the bearings (para 9-1).
Step 3. Shaft seal plate or packings defective.
Replace the seal plate or packings (para 9-1).
3. PUMP WILL NOT TURN OR TURNS SLOWLY:
Step 1. Asphalt material below pumping temperature.
Reheat to pumping temperature. (Refer to TM 5-3895-371-10.)
Step 2. Air leak in suction line from hydraulic reservoir to filter to inlet of charge pump on back of hydraulic pump.
Tighten all connections.
Step 3. Defective hydraulic pump or motor. Check for excessive case drain.
Replace defective pump or motor (para 3-5 or 3-6).
step 4. Hydraulic system pressure low.
Increase motor bypass pressure to 4500 psi (para 3-5).

Table 3-1. Direct Support and General Support Troubleshooting (Continued).

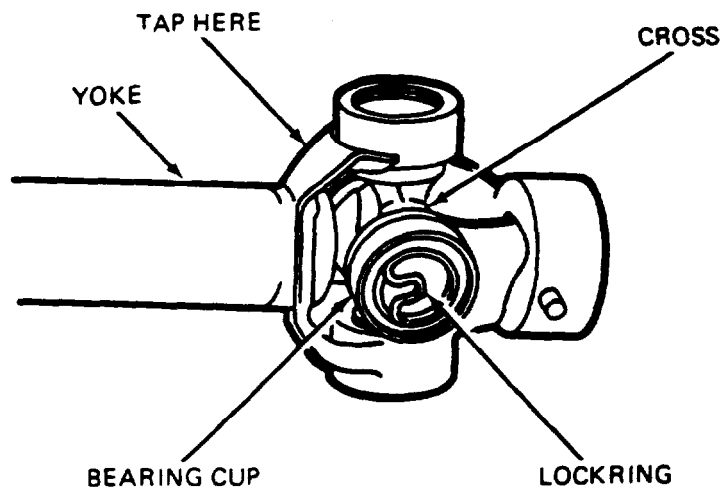
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
<p>3. PUMP WILL NOT TURN OR TURNS SLOWLY (Continued):</p> <p>Step 5. Low oil level in reservoir. Replenish oil. (Refer to LO 5-3895-371-12.)</p> <p>Step 6. Spray bar control valves set improperly. Reset controls.</p>

Section I I I. GENERAL MAINTENANCE

3-4. General Repair Practices.

a. When maintenance is authorized for a special component or part, and no special tools are given in this manual, you should understand that only standard shop practice techniques are required to perform the task. Included in this category is the replacement of a drive shaft universal joint as shown in figure 3-1 and the procedure explained in paragraph 2-14-c where only shop tools and techniques are used.

b. Refer to Appendix A for references to other manuals for general maintenance information. (Such as, welding, inspection and maintenance of bearings, etc.)



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Figure 3-1. Replace Drive Shaft Universal.

Section IV. REPAIR OF HYDRAULIC PUMP

3-5. Hydraulic Pump.

CAUTION

Throughout the entire operation, hands, parts, tools and immediate area must be kept clean. introduction of foreign material into the system may damage or hinder its operation.

Do not operate the hydraulic motor at maximum by-pass pressure for extended periods of time since this will cause overheating of hydraulic oil and result in system damage.

Recommended relief pressure 4000 to 4500 psi.

For accessibility, removal of bar box or center platform is recommended.

- a. Equipment Required for Hydraulic Motor Pressure check:
 - (1) 5000 psi pressure gage with a 2 ft. length of high pressure hose to fit gage fitting and adapter.
 - (2) Use suitable adapter to connect 5000 psi gage to motor.
- b. Initial **Pressure** Check.
 - (1) On bottom of hydraulic motor remove right hand, nine sixteenth inch plug.
 - (2) In this opening install a minimum capacity 5000 psi gage using appropriate adapter with high pressure hose.
 - (3) Lock hydraulic motor by the following means and take a pressure reading.
 - (4) On instrument stand in truck cab pull pump control knob to its uppermost position. Adjust fine control tube up until it is against bottom of hydraulic control knob.
 - (5) At the rear of distributor lock universal coupling between pump and hydraulic motor with a pipe wrench of sufficient length to lay against left distributor frame.
 - (6) Set tachometer to minimum of 1000 RPM.
 - (7) Engage PTO. (Refer to TM 5-3895-371-10.)
 - (8) Pull out rear override control until hydraulic motor pressure registers the highest reading. This is by-pass pressure.

c. Pressure Evaluation. With pressure gage installed and hydraulic motor locked as indicated above, determine if by-pass pressure is actually low. If pressure is not low consult Table 3-1, Malfunction 3, for other items which may cause hydraulic motor to turn slow or not at all.

d. Hydraulic Motor Relief Pressure Adjustment. (Refer to fig. 3-2.) Adjust hydraulic motor relief pressure as outlined below.

- (1) Loosen jam nut one half inch hex and turn five thirty second inch Allen head screw in so as to increase pressure. A pressure of 800 psi per turn may be expected.
- (2) Increase pressure to recommended level of 4000 to 4500 psi.
- (3) Retighten jam nut while holding screw.
- (4) Remove gage and replace nine sixteenth inch hex plug.

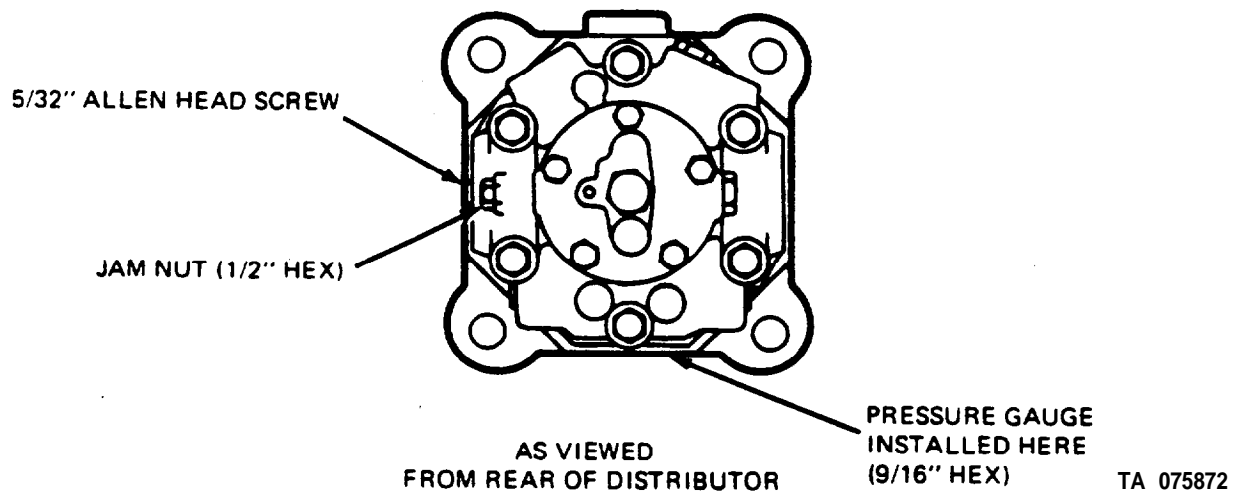


Figure 3-2. Hydraulic Motor Pressure Adjustment.

- e. Removal of Hydraulic Pump. (Refer to fig. 3-3.)

NOTE

In step (1), a 20-gallon (76 l) container, or larger, is required.

- (1) Drain oil from tank by removing drain plug at bottom of tank. (Refer to para 2-16.)
- (2) Disconnect four hoses from pump: hose (10), hose (6), and two hoses (5).

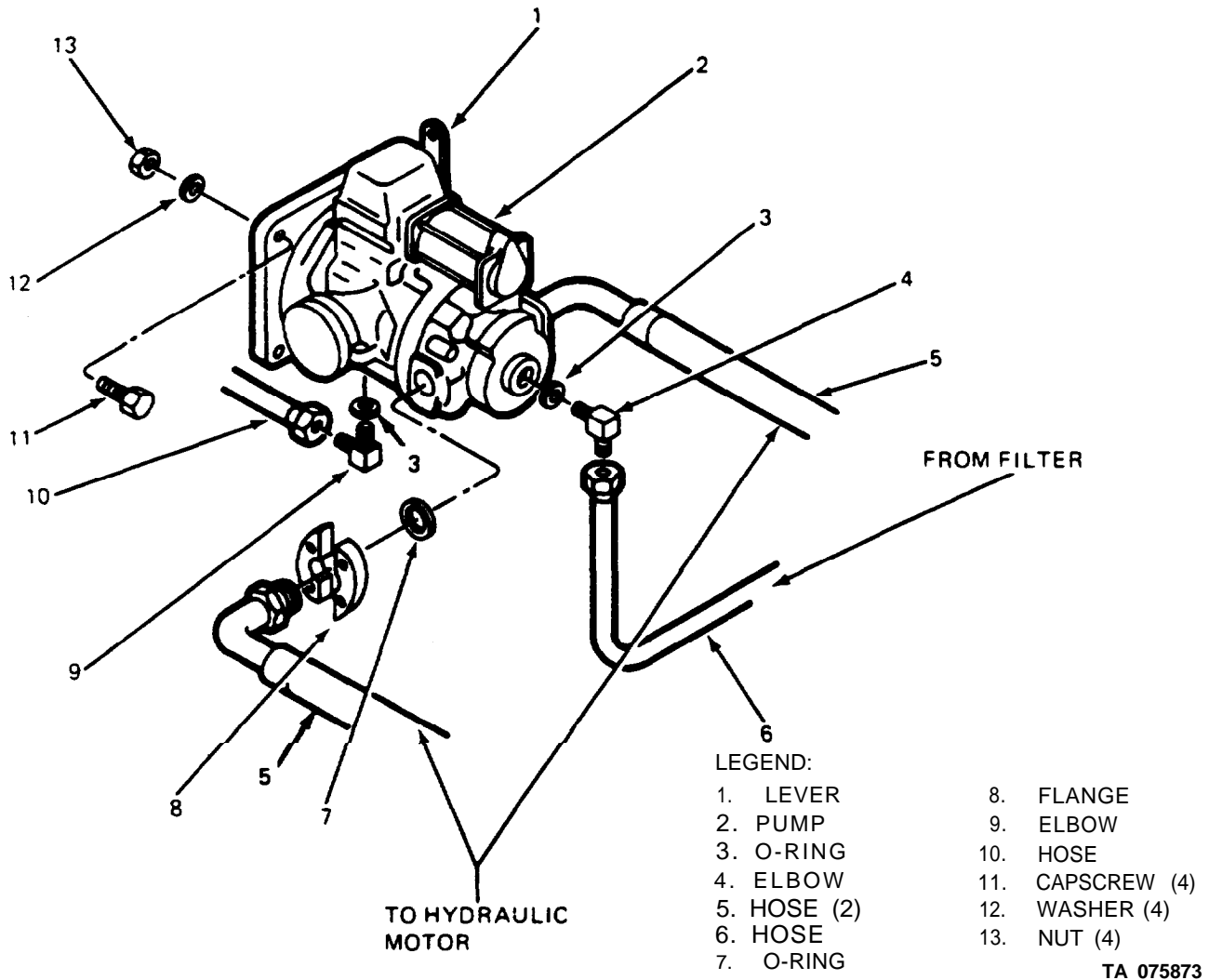


Figure 3-3. Remove/Install Hydraulic Pump.

- (3) Disconnect pump control from lever (1).
- (4) Remove pump propeller shaft (refer to para 2-14) and remove elbow (9).
- (5) Place a hydraulic jack under the pump and raise the jack so that it just touches the pump.
- (6) Remove four capscrews (11), washers (12), and nuts (13) that fasten the pump to its mounting bracket; then lower pump on the hydraulic jack and remove.

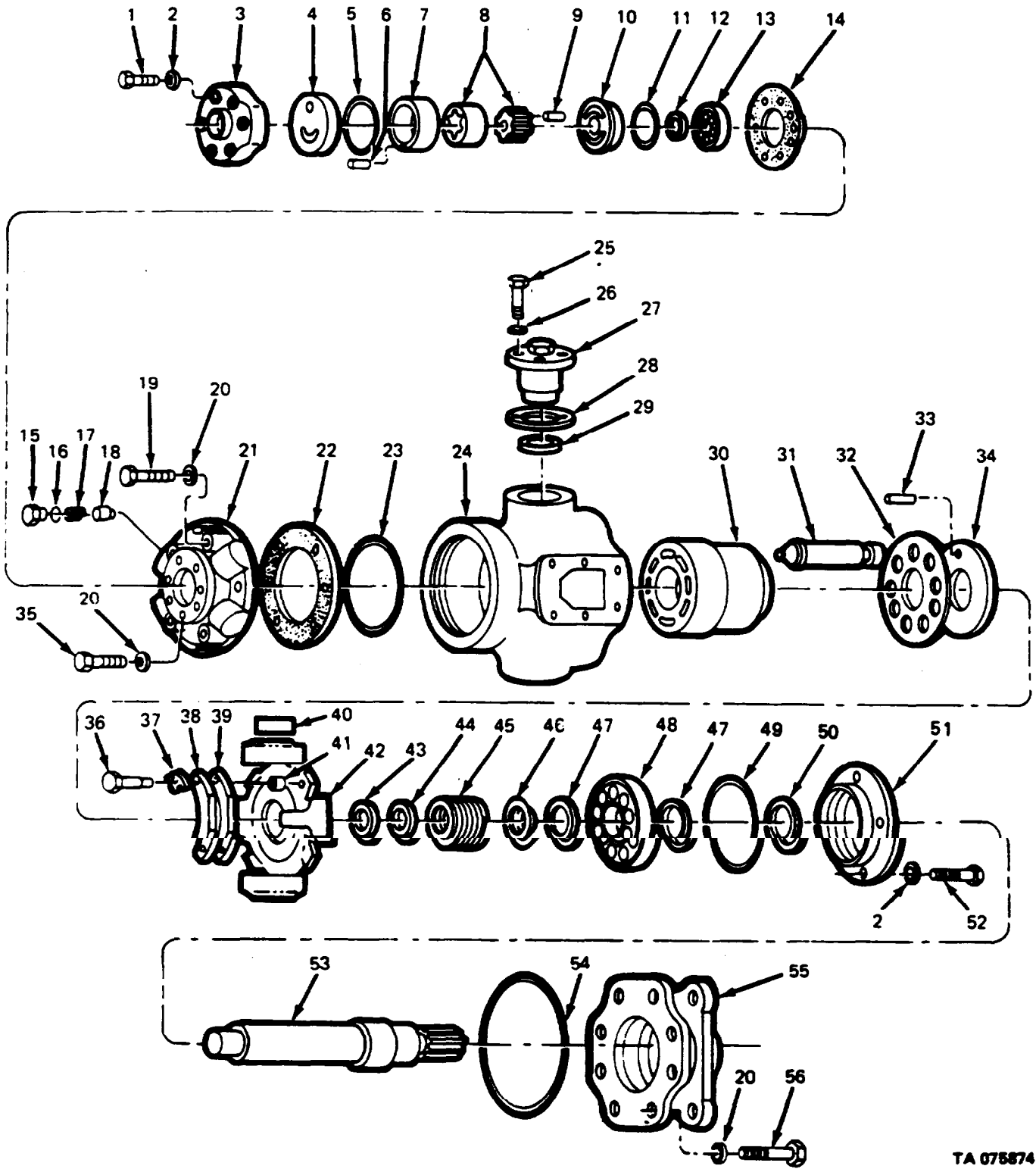
f. General Instructions (Before Disassembly of Hydraulic Pump).

(1) Parts and work area must be kept absolutely clean at all times. The hydraulic pump must be cleaned externally with a commercial solvent or steam and dried with compressed air before the unit is removed from the application.

(2) Most service operations are carried out with the pump in a shaft down position. A 7 in. sq. block of wood, 4 in. thick with a 2 in. round center hole, can be used as a platform upon which the pump can be positioned. The corrugated cardboard spacer packed at the end of a new pump can be Used.

(3) When performing minor service work, do not remove bearings, dowel pins or block assembly components unless they exhibit signs of gelling, scratches, or excessive wear. On major over-haul, replace all bearings, seals, gaskets, tablocks, wear plates and bronze crescent clips.

g. Disassemble Hydraulic Pump. (Refer to fig. 3-4.)



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Figure 3-4. Hydraulic Pump Sectional Drawing (Sheet 1 of 2)

- | | | | |
|-----|----------------------|-----|-----------------------|
| 1. | CAPSCREW (6) | 29. | BEARING (2) |
| 2. | LOCKWASHER (6) | 30. | BLOCK ASSEMBLY |
| 3. | PUMP COVER | 31. | PISTON ASSEMBLY (9) |
| 4. | PLATE | 32. | RETURN PLATE |
| 5. | O-RING | 33. | DOWEL PIN |
| 6. | DOWEL PIN | 34. | WEAR PLATE |
| 7. | SPACER ASSEMBLY | 35. | SHORT CAPSCREW (2) |
| 8. | CHARGE PUMP ASSEMBLY | 36. | CAPSCREW (4) |
| 9. | PIN | 37. | LOCK TAB (4) |
| 10. | VALVE PLATE | 38. | CLIP (2) |
| 11. | O-RING | 39. | BEARING PLATE (2) |
| 12. | RETAINING RING | 40. | TRUNNION BEARING (2) |
| 13. | BEARING | 41. | SPACER (4) |
| 14. | SHIM GASKET (AR) | 42. | CAM ASSEMBLY |
| 15. | PLUG (2) | 43. | RING |
| 16. | O-RING (2) | 44. | INNER SPRING RETAINER |
| 17. | VALVE SPRING (2) | 45. | SPRING |
| 18. | PLUNGER (2) | 46. | SPRING RETAINER |
| 19. | LONG CAPSCREW (4) | 47. | RETAINING RING (2) |
| 20. | LOCKWASHER (18) | 48. | BALL BEARING |
| 21. | PUMP COVER | 49. | O-RING |
| 22. | COVER GASKET | 50. | SHAFT SEAL |
| 23. | O-RING | 51. | SEAL ASSEMBLY |
| 24. | HOUSING | 52. | CAPSCREW (4) |
| 25. | CAPSCREW (8) | 53. | PUMP SHAFT |
| 26. | LOCKWASHER (8) | 54. | O-RING |
| 27. | TRUNNION (2) | 55. | MOUNTING FLANGE |
| 28. | GASKET (2) | 56. | CAPSCREW (12) |

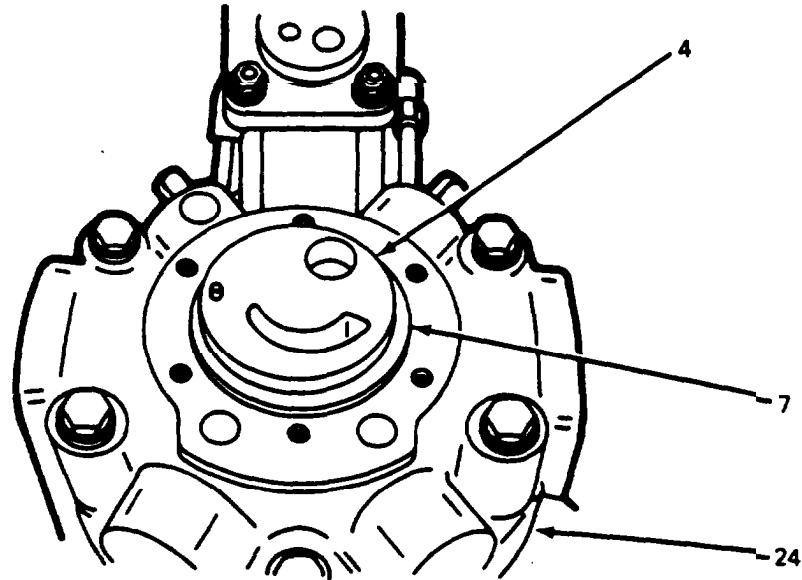
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Figure 3-4. Hydraulic Pump Sectional Drawing (Sheet 2 of 2)

(1) Place the pump in a shaft down position. Remove six capscrews (1) and lockwashers (2). Lift off pump cover (3).

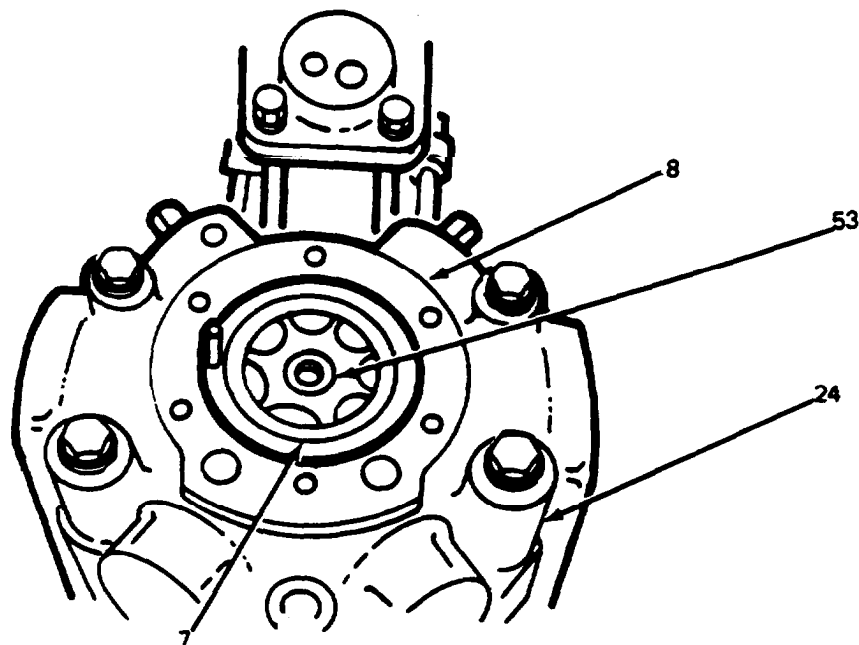
(2) Remove plate (4), shim gasket(s) (14) and O-ring (5).

(3) Remove spacer assembly (7, fig. 3-5) which includes the spacer and a dowel pin. Do not remove the dowel pin from the spacer assembly unless damaged. Note the relationship of the valve plate (10, fig. 3-7), plate (4, fig. 3-5), and spacer assembly (7, fig. 3-5) which is determined by the alignment of the dowel pin with the recessed hole in the inner face of the pump cover (3, fig.3-4). This relationship must be preserved upon reassembly to insure the proper function of the charge pump. Remove charge pump assembly (8, fig. 3-6) consisting of inner and outer rotor.



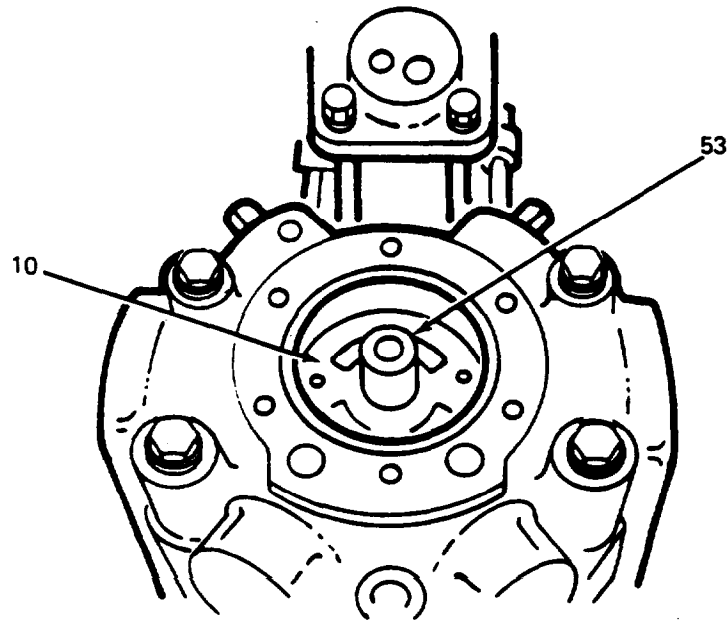
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Figure 3-5. Charge Pump Upper Valve Plate.



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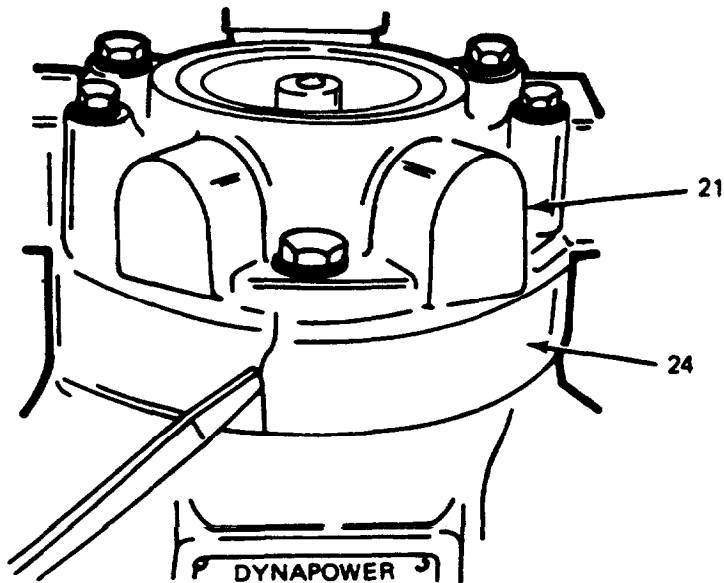
Figure 3-6. Charge Pump Eccentric, Inner and Outer Rotor.



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Figure 3-7. Charge Pump Lower Valve Plate.

- (4) Remove pin (9, fig. 3-4) from pump shaft (53). Lift out valve plate (10, fig. 3-7).
- (5) Remove check valve assemblies consisting of plug (15, fig. 3-4), O-ring (16), valve spring (17), and plunger (18)
- (6) Mark the housing (24, fig. 3-8) and pump cover (21) to insure proper orientation upon reassembly. A scratch in the paint across the cover/housing parting line may be used.



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Figure 3-8. Marking Across the Cover/Housing Parting Line.

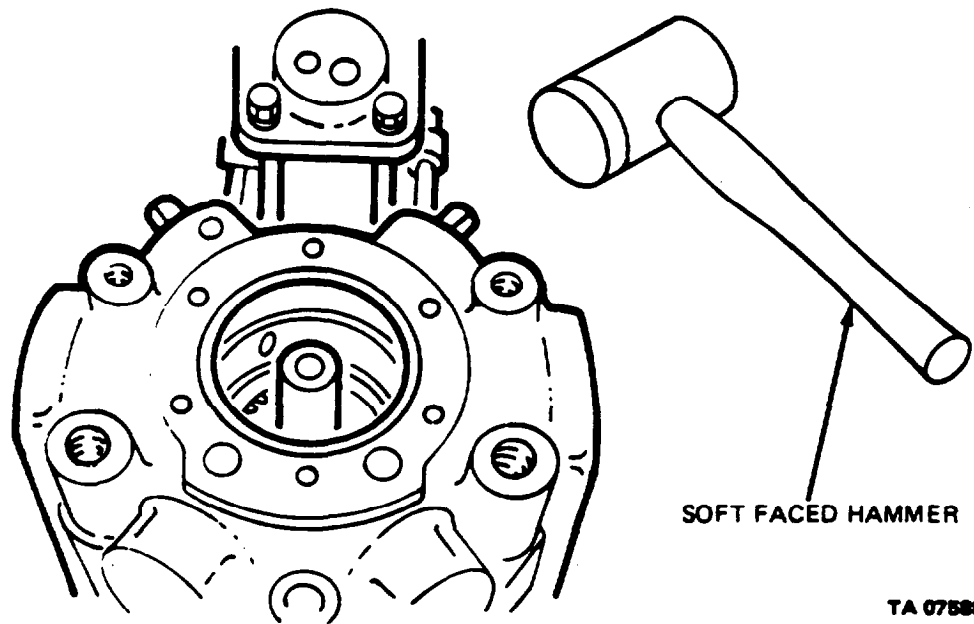
(7) Remove two short capscrews (35, fig. 3-4) and four long capscrews (19) and six lock-washers (20). Lift off the pump cover (21). If the cover should stick to the housing, jar loose with a soft faced hammer. Remove O-ring (23) and cover gasket (22) from pump cover. (See fig. 3-9.)

(8) Inspect the bearing (13, fig. 3-4) for galling of the rollers, roughness, or fracture of the cage. If any of these conditions exist, press the bearing (13) from the pump cover (21). If the bearing (13) is removed from the cover, then the bearing must also be replaced.

h. Disassemble Override Control. (Refer to fig. 3-10.)

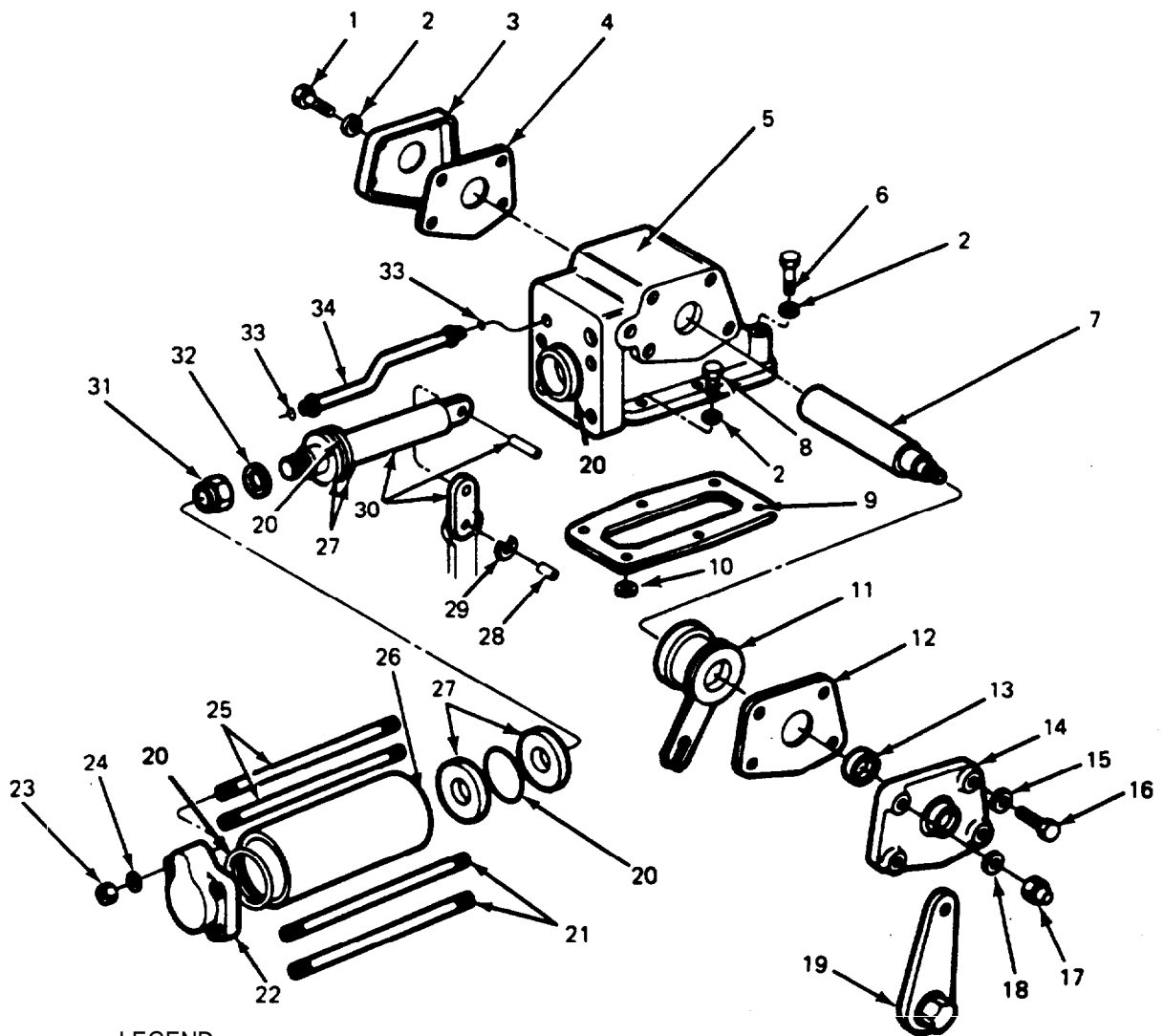
(1) Remove locknut (17), washer (18), and lever (19).

(2) Remove two long capscrews (6), four short capscrews (8), and six lockwashers (2).



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Figure 3-9. Removing the Pump Cover.



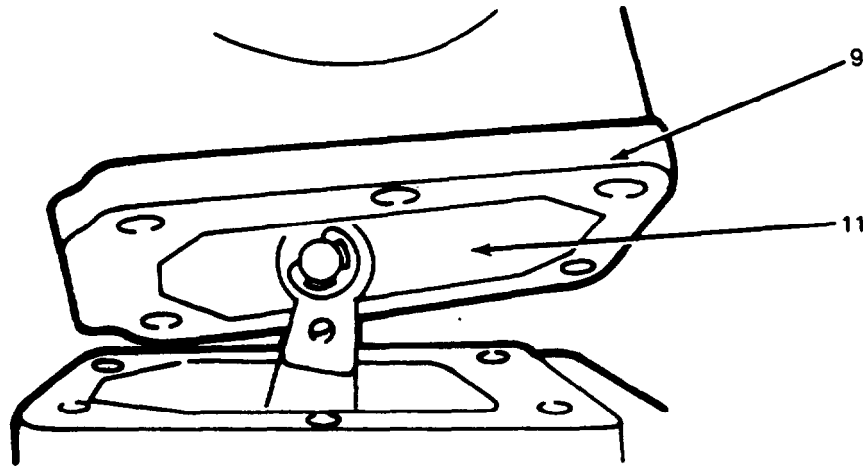
LEGEND:

- | | |
|---------------------------|------------------------|
| 1. CAPSCREW (4) | 18. WASHER |
| 2. LOCKWASHER (10) | 19. LEVER |
| 3. COVER | 20. O-RING (3) |
| 4. GASKET | 21. STUD (4) |
| 5. HOUSING | 22. CYLINDER COVER |
| 6. LONG CAPSCREW (2) | 23. HEX NUT (4) |
| 7. VALVE SPOOL | 24. LOCKWASHER (4) |
| 8. SHORT CAPSCREW (4) | 25. STUD |
| 9. GASKET | 26. TUBE |
| 10. O-RING | 27. PISTON ASSEMBLY |
| 11. VALVE SLEEVE ASSEMBLY | 28. CLEVIS PIN |
| 12. GASKET | 29. RETAINING RING (2) |
| 13. SEAL | 30. PLUNGER ASSEMBLY |
| 14. SEAL PLATE ASSEMBLY | 31. SELF-LOCKING NUT |
| 15. LOCKWASHER (4) | 32. WASHER |
| 16. CAPSCREW (4) | 33. O-RING (2) |
| 17. LOCKNUT | 34. TRANSFER TUBE |

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Figure 3-10. Override Control.

(3) Lift housing (5) from pump housing, breaking the seal with gasket (9). Care should be taken to avoid bending the valve sleeve assembly (11) by swinging it to one side, as illustrated in figure 3-11 before proceeding to step (4). Remove O-ring (10, fig. 3-10).



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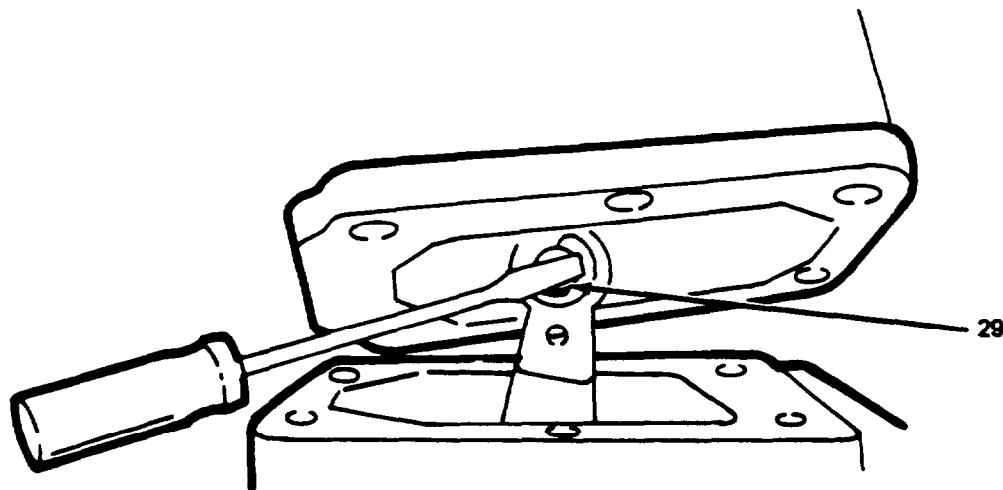
Figure 3-11. Cam Actuator Arm and Valve Sleeve.

CAUTION

A clean shop rag should be positioned around the cam arm to prevent the loss of the retaining ring into the control housing (5). (Refer to fig. 3-12.)

(4) With a small screwdriver, remove retaining ring (29) from the side of the cam arm opposite the counterbore.

(5) Remove clevis pin (28, fig. 3-10) with second retaining ring and slip the control link part of plunger assembly (30) from the cam lever. Remove gasket (9) from control housing.

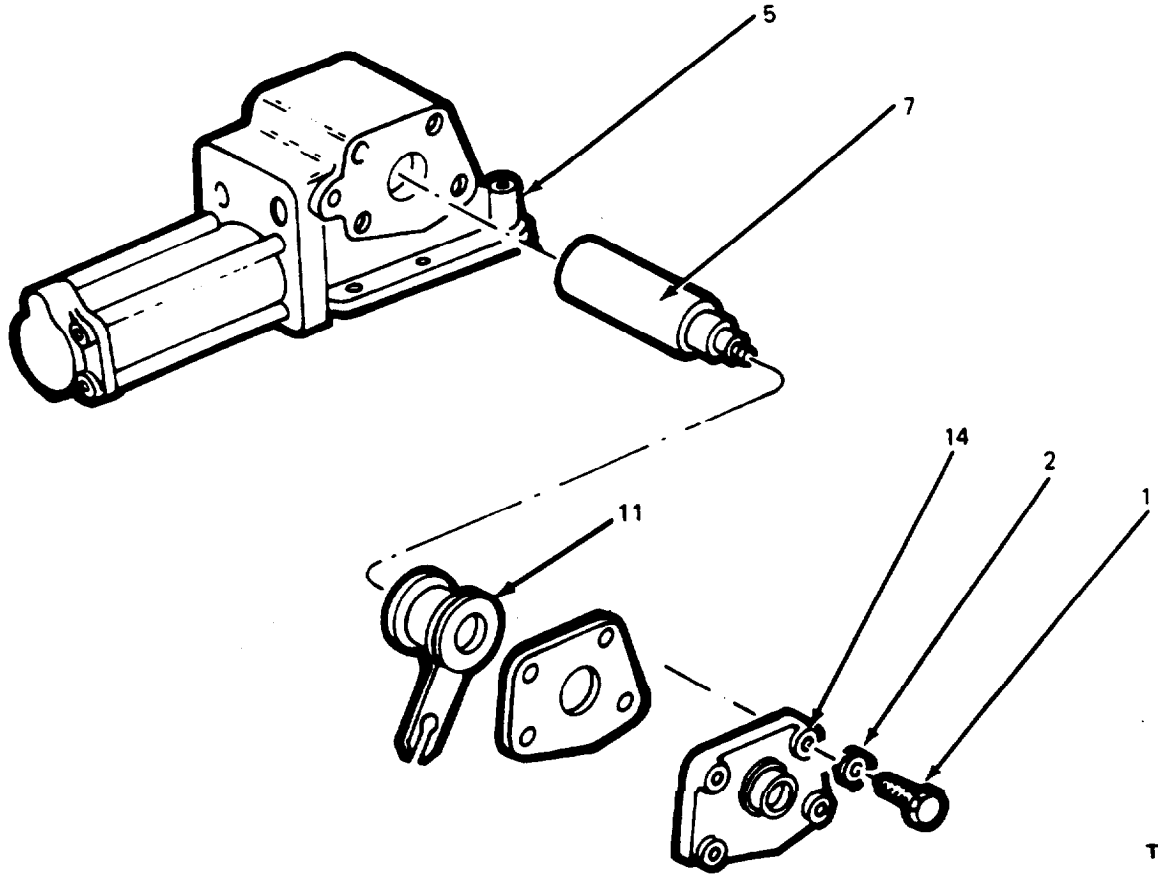


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Figure 3-12. Removing Retaining Ring.

(6) Remove four capscrews (16) and four lockwashers (15). Slip seal plate assembly (14) and gasket (12) off over valve spool (7). Replace seal (13) only if damaged.

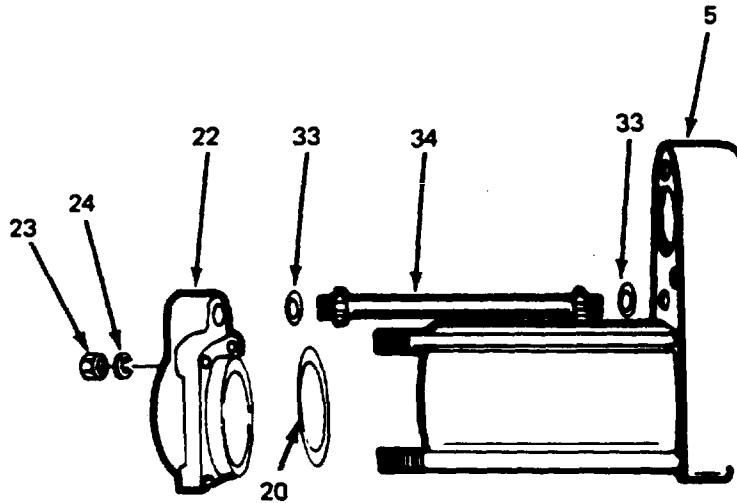
(7) Slide valve spool (7, fig. 3-13) from housing (5) and remove valve sleeve assembly (11) out through the bottom of the housing (5). (Refer to fig. 3-10.)



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Figure 3-13. Control Valve Spool with Valve Sleeve.

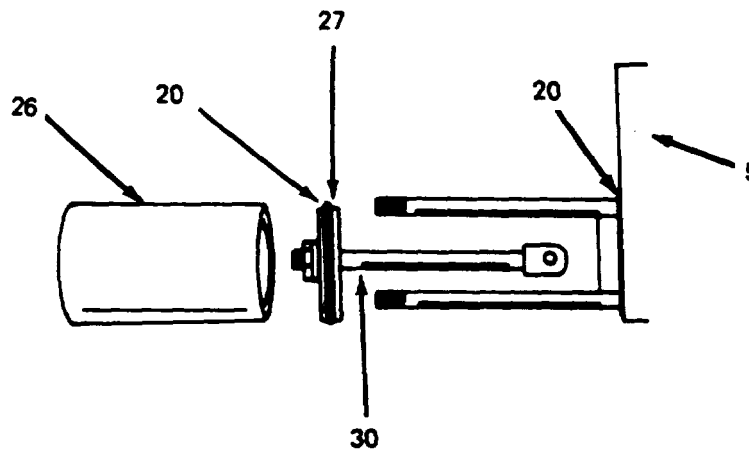
(8) Carefully, remove four hex nuts (23, fig. 3-14) and lockwashers (24). Lift off cylinder cover (22) including O-ring (20). Pull transfer tube (34) and two O-rings (33) from the seat in either the housing (5) or the cylinder cover (22). (Refer to fig. 3-10.)



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Figure 3-14. Cylinder Cover with Transfer Tube.

(9) Remove tube (26, fig. 3-15) with plunger assembly (30), from housing (5). Slide the plunger assembly (30) from tube (26) and remove two O-rings (20), one from the piston assembly (27) and one from the housing (5). (Refer to fig. 3-10.)



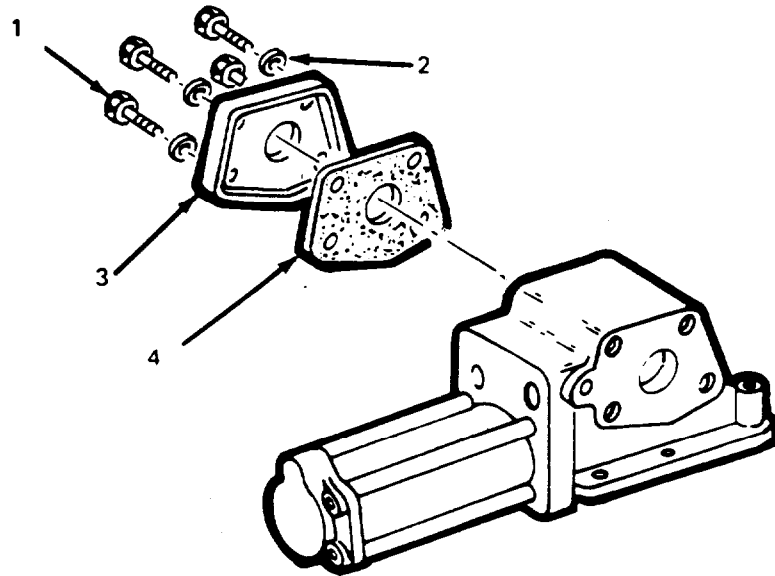
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Figure 3-15. Cylinder with Servo Plunger.

(10) Remove self-locking nut (31, fig. 3-10), washer (32), and piston assembly (27) from plunger assembly (30).

(11) Inspect four studs (21). Remove only if the threads have been damaged or if the studs are twisted or broken.

(12) Remove four capscrews (1, fig. 3-16), lockwashers (2), cover (3), and gasket (4). (Refer to fig. 3-10.)

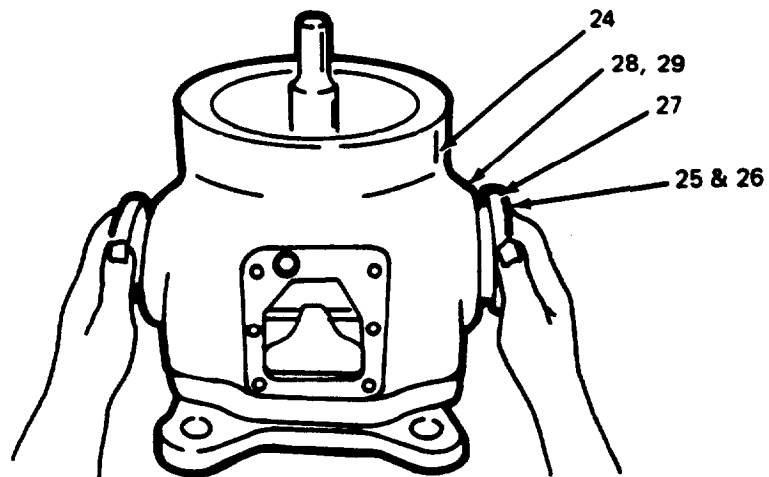


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Figure 3-16. Control Housing Cover.

i. Disassemble Hydraulic Pump (Continued).

(1) From both sides of the housing (24, fig. 3-17), remove eight capscrews (25) and eight lockwashers (26). Pull out trunnions (27), gaskets (28) and bearings (29). (Refer to fig. 3-4.)



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Figure 3-17. Removing Trunnions.

NOTE

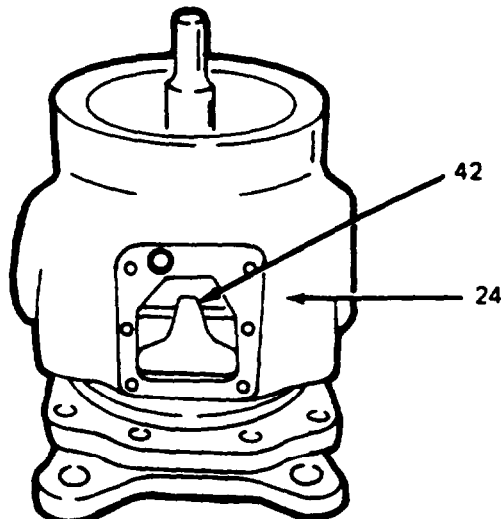
At the factory each block is marked to indicate cylinder bore number 1. Mark piston number 1 with felt pen or a similar device as a convenient method-of preserving the bore/piston relationship. (Refer to fig. 3-19.)

(2) Mark No. 1 piston assembly (31, fig. 3-19) and block assembly (30) maintaining bore/piston relationship. Slide block assembly out of housing.

(3) Remove eight capscrews (56, fig. 3-4) and lockwashers (20) from mounting flange (55).

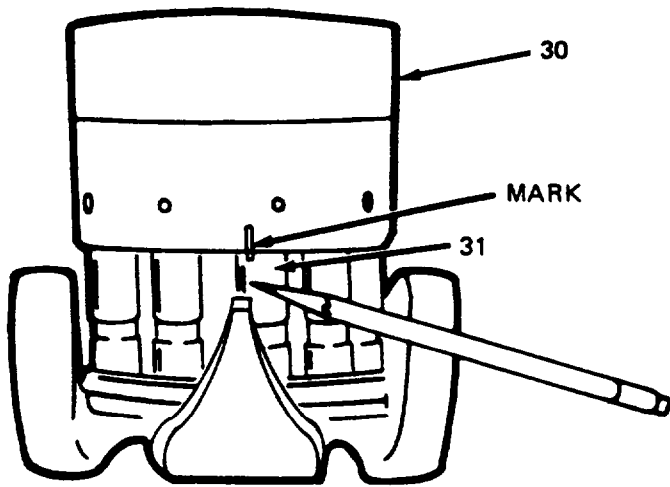
(4) Remove housing (24), as shown in figure 3-18, by lifting housing and working over cam assembly lever (42).

(5) Aline oil hole with trunnion and remove cylinder block so housing can clear control lever assembly.



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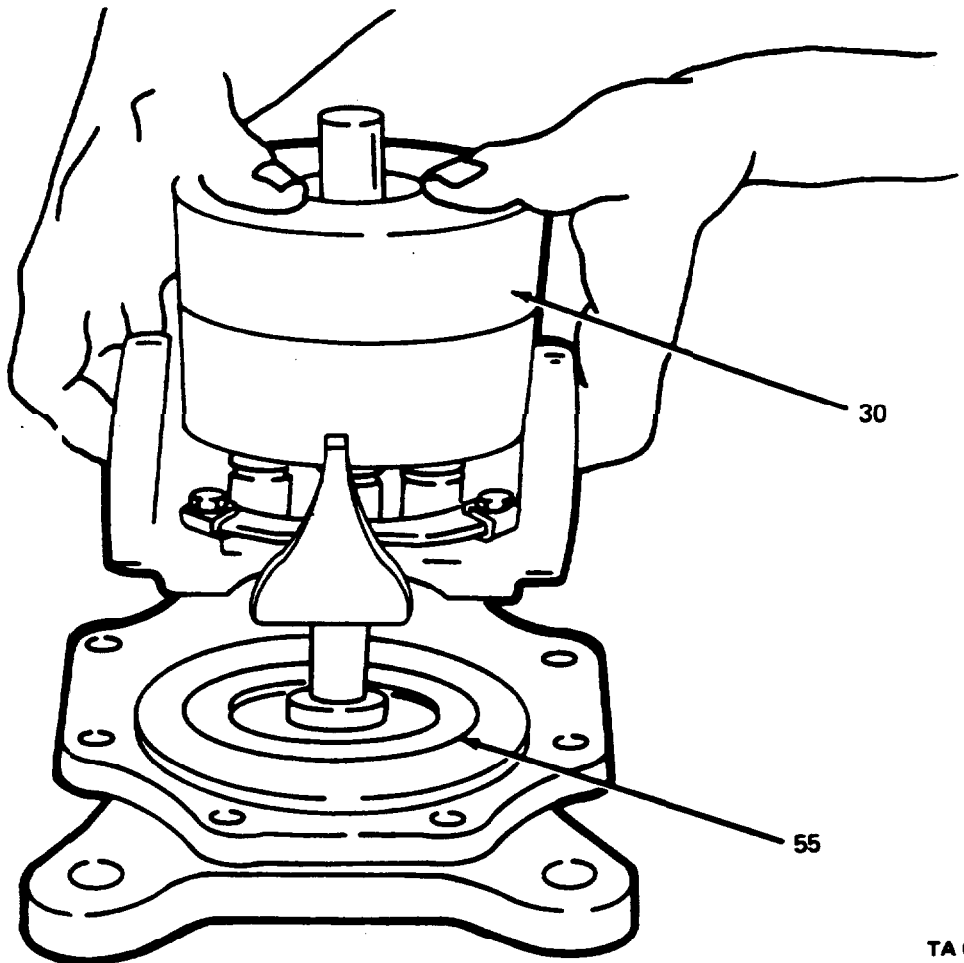
Figure 3-18. Removing Housing.



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Figure 3-19. Marking Number 1 Piston.

(6) Lift off rotating group from mounting flange (55, fig. 3-20).



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Figure 3-20. Removing Rotating Group.

WARNING

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

NOTE

Upon reassembly, all used pistons must be returned to their respective bores.

(7) Examine the block assembly (30, fig. 3-20) for excessive wear or damage. Observe the following:

(a) Cylinder bores that exhibit only slight burnishing of the bronze liners are acceptable for reuse.

(b) If the bores exhibit galling or any other irregularity in the running surface that can be felt with the fingernail, the cylinder block must be discarded. If there is evidence that the bronze liners have begun to pull out of the steel block, the block must also be discarded.

(c) Examine the upper running face of the block. Circular wear patterns that cannot be felt with the fingernail are normal.

(d) If the block is acceptable for reuse in all other respects several passes of the block over 500 grit emery paper on a flat lap surface is recommended to put the block face in a like-new condition. If circular wear patterns can be felt with the fingernail, grind or lap the running face as necessary to remove the wear pattern keeping the face parallel to the original face. Lap the reworked face on 500 grit emery as described above to remove the mat finish.

(e) Clean the block thoroughly in SD-2 and blow dry with clean compressed air. Check tolerance of refinished block outlined in figure 3-21.

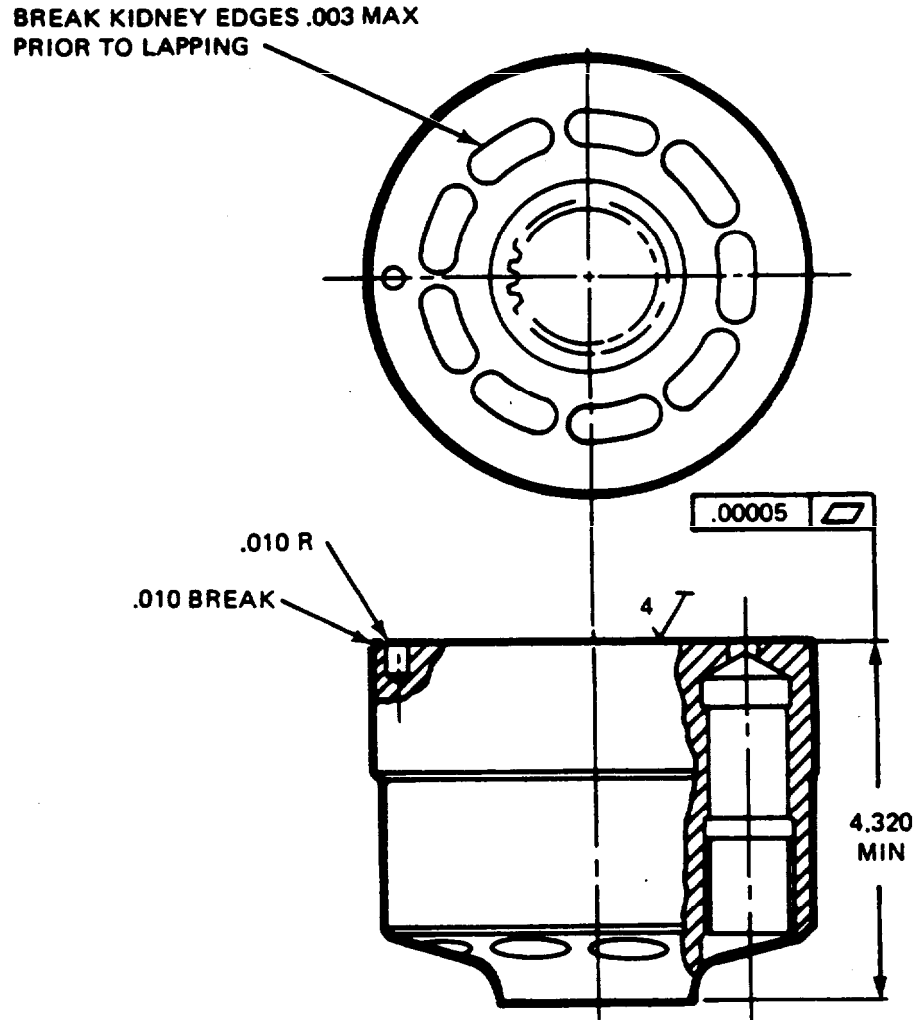


Figure 3-21. Block Rework Specifications.

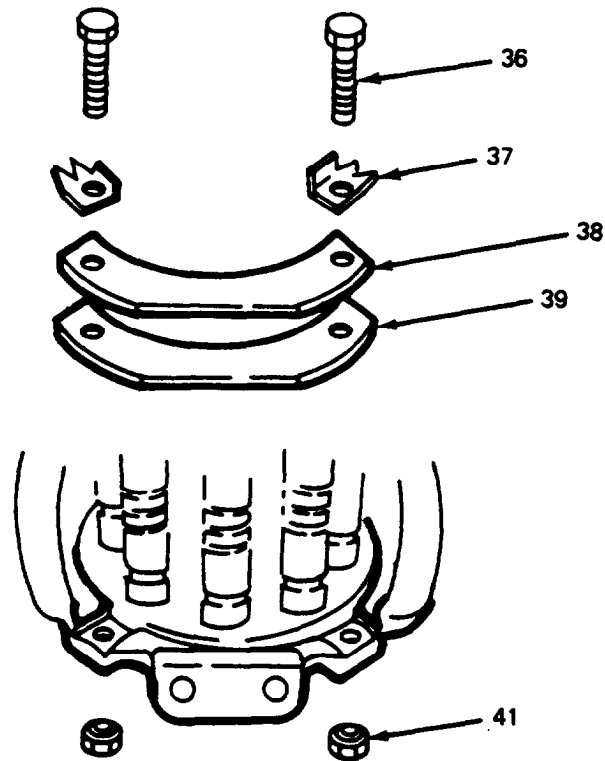
(f) If damage is evident to spring (45, fig. 3-4) or spring retainers (44 and 46), use an arbor press to remove retaining ring (47).

CAUTION

Extreme care must be exercised in removing spring (45) since it is under considerable compression.

Using a plug 1-3/4" in diameter, compress spring (45) until all tension is removed from retaining-ring (47). Using snap ring pliers, remove retaining ring (47) and gradually release arbor press until spring (45) is fully extended. Remove spring retainer (46), spring (45), and inner spring retainer (44) from block assembly (30).

(8) Remove two capscrews (36), two lock tabs (37), one clip (38), one bearing plate (39) and two spacers (41). (Refer to fig. 3-22.) Inspect bearing plate (39, fig. 3-4). If wear is evident or there are scratches in the bearing surface, discard bearing plate and replace. If bearing plate (39) must be discarded, disassemble other return plate and discard second bearing plate. If bearing plate (39) is reusable, do not disassemble second return plate assembly.



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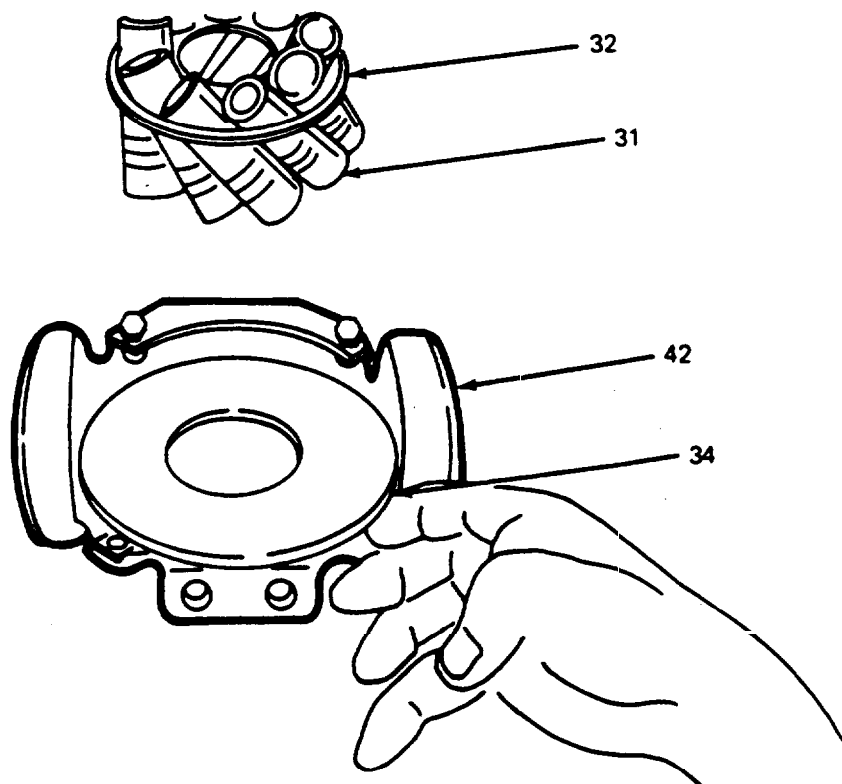
Figure 3-22. Return Plate Disassembly.

(9) Slip out return plate (32, fig. 3-23) and piston assemblies (31). Pick wear plate (34) from cam assembly (42).

NOTE

On a major overhaul, replace trunnion bearings (40, fig. 3-4), regardless of conditions.

(10) Inspect cam assembly (42) for damage. Remove any burrs or nicks from the face of the cam with a fine stone. Inspect trunnion bearings (40) for galling, roughness, or cracked cages. If damaged, press trunnion bearings from cam assembly (42) using an arbor press and a plug 1-1/2 in. in diameter.



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Figure 3-23. Removing Cam Reaction Plate.

(11) Remove O-ring (54, fig. 3-24) from mounting flange (55).

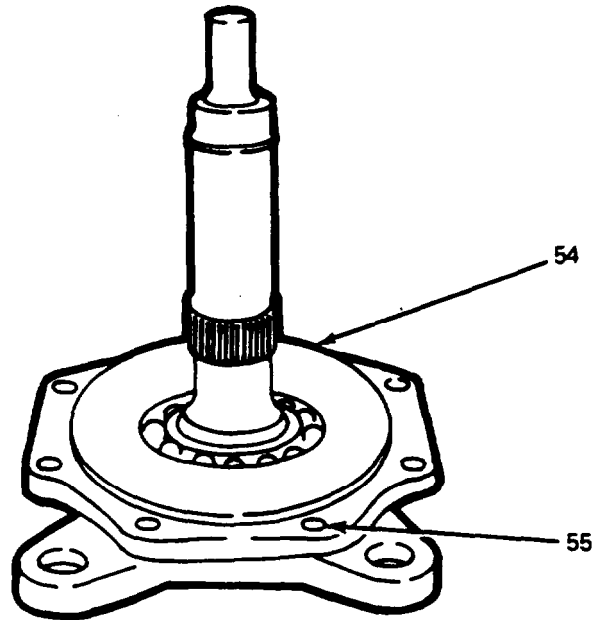


Figure 3-24. Removing Flange Square Ring.

(12) Reverse mounting flange (55, fig. 3-25) and remove four capscrews (56) and lockwashers (20).

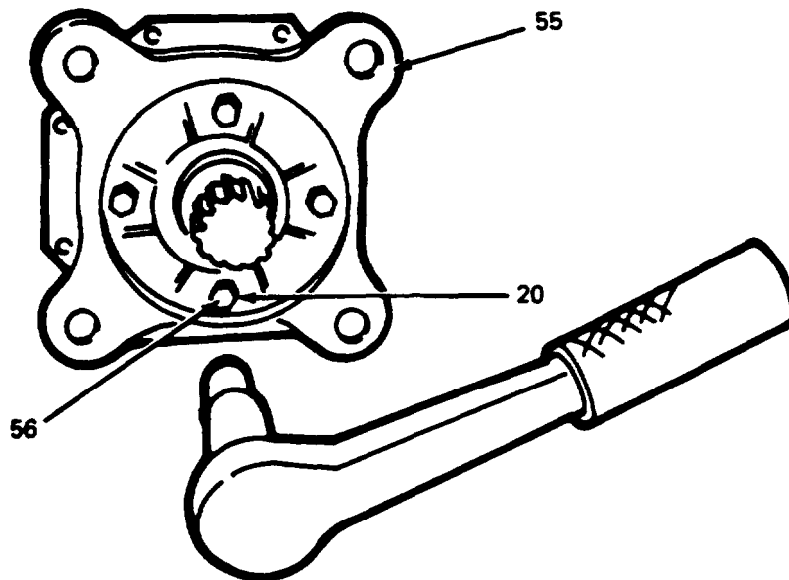
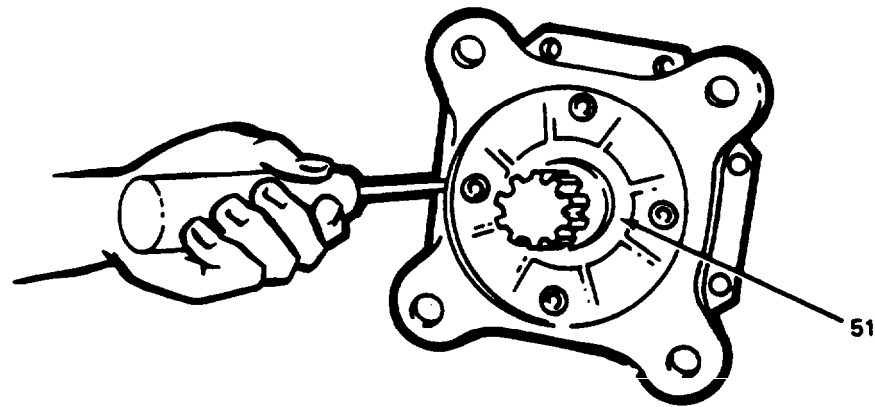


Figure 3-25. Removing Shah Seal Retainer Bolts.

(13) Tap the sides of the bolt hole counterbores lightly to break the gasket seal. Using a screwdriver, remove seal assembly (51, fig. 3-26).



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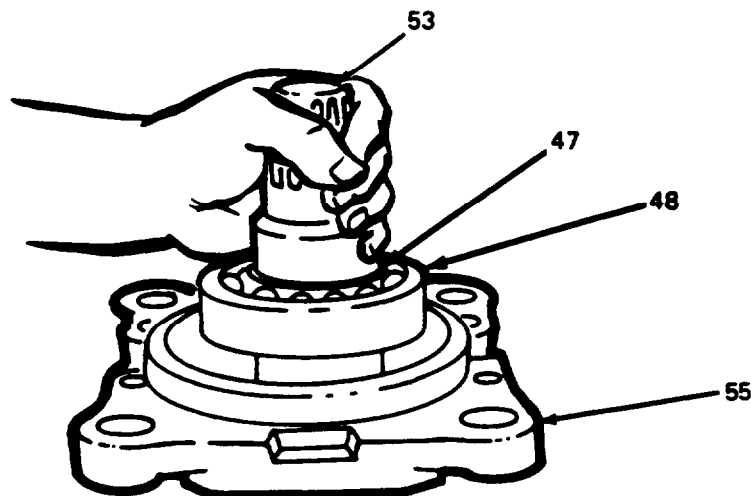
Figure 3-26. Removing Shaft Assembly.

(14) Remove shaft seal (50, fig. 3-4) from seal assembly (51) using an arbor press and a 2-1/2 in. plug.

(15) Remove O-ring (49) from flange.

(16) Remove pump shaft and assembled parts, pump shaft (53), ball bearing (48), retaining ring (47), retaining ring (12) and inner race of bearing (13) by pulling straight up from mounting flange (55), as shown in figure 3-27.

(17) Inspect ball bearing (48, fig. 3-27) for galling, roughness, or cage cracks. If damage is evident, remove retaining rings (47) using snapping pliers and press ball bearing (48) from shaft.



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Figure 3-27. Removing Shaft Seal Retainer.

(18) Inspect the inner race of ball bearing (13, fig. 3-4) for galling or roughness. If no damage is apparent and if no damage was observed when the outer race was inspected, then it is not necessary to remove the inner race from the shaft. If damage to either the inner or outer race is observed, both must be replaced. The inner and outer races are serviceable as a matched set only. Remove retainer ring (12). Slip inner face from pump shaft (53).

i. Assemble Hydraulic Pump.

(1) Inspect pump shaft (53, fig. 3-4) for excess wear or damage. If either spline shows damage or if bearing journal or seal surface shows galling, scoring or heat discoloration, replace shaft.

(2) If inner and outer races of ball bearing (13) are not damaged or worn, assemble inner race on shaft (53) with retaining ring (12) using snapping pliers. If either inner or outer race is damaged, replace bearing as a set only. Install new inner race as described above.

(3) If previously removed, install inner retainer ring (47). Inspect old ball bearing. If galled or damaged, press new ball bearing (48) on pump shaft. Ball bearing (48) should seat against inner retainer ring (47).

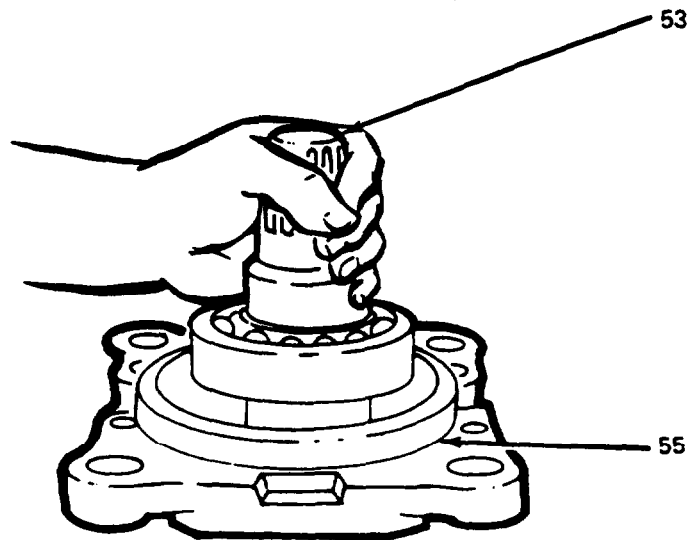


Be sure not to deform inner retainer ring by forcing ball bearing (48) against it. If deformed, back ball bearing (48) off and reset.

Care should be taken to support inner race of ball bearing (48) in arbor press while pressing in pump shaft (53). Heating the ball bearing in hot oil will aid in a smooth bearing installation. Install outer retaining ring (47).

(4) Install pump shaft (53, fig. 3-4), ball bearing (48), retaining ring (47), retaining ring (12) and inner race of bearing (13) through the front face of the mounting flange (55). (See fig. 3-28). The ball bearing (48, fig. 3-4) should fit snugly in the mounting flange (55). If ball bearing (48) doesn't seat easily, heat mounting flange (55) in hot oil and seat ball bearing in proper position. Do not drive the ball bearing (48) into place. Do not use the shaft seal assembly (51) to force bearing into seat. Check ball bearing (48) for free running by rotating pump shaft (53).

(5) Press a new shaft seal (50) into the seal assembly (51) using an arbor press with a 2-1/2 in. plug and loctite sealant. Fill cavity between oil lip and wiper lip approximately 3/4 full with multi-purpose grease. Install new O-ring (49) in mounting flange (55). To prevent possible cuts or abrasions, the O-ring (49) should be lightly coated with a multi-purpose grease. Wrap shim stock or other thin material around shaft spline and carefully slide seal assembly (51) over pump shaft (53).

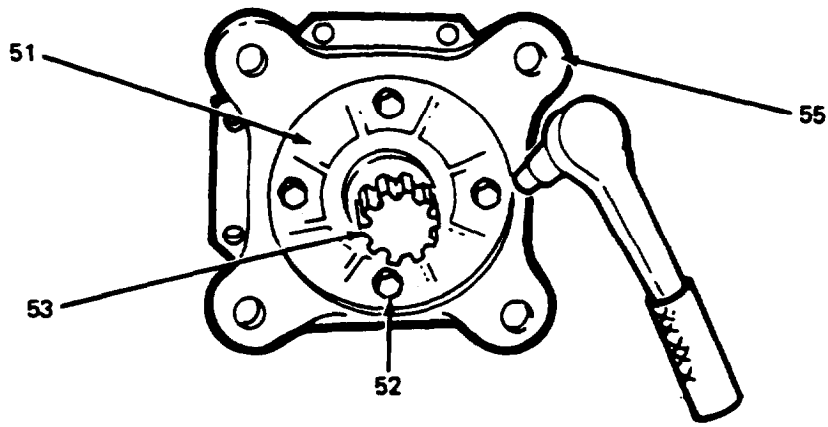


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Figure 3-28. *Installing Pump Shaft Assembly.*

(6) Replace O-ring (49) on mounting flange (55), line up bolt holes, and secure assembly (51) to mounting flange (55) with four capscrews (52) and lockwashers (2). Torque bolts to 11 lb-ft (14.9 N·m). (Refer to fig. 3-29.)

(7) If trunnion bearings (40, fig. 3-4) were removed from cam assembly (42) during disassembly, install new trunnion bearings (40) using an arbor press and a 1-1/2 in. plug, pressing against the lettered side of the trunnion bearing. It is extremely important that the bearing be started straight into the born. If the bearing cocks at any time during assembly, remove and discard the bearing Support the cam lug on the under side to avoid bending the lug. Outer face of trunnion bearing (40) should be pressed flush with outer face of cam assembly (42).

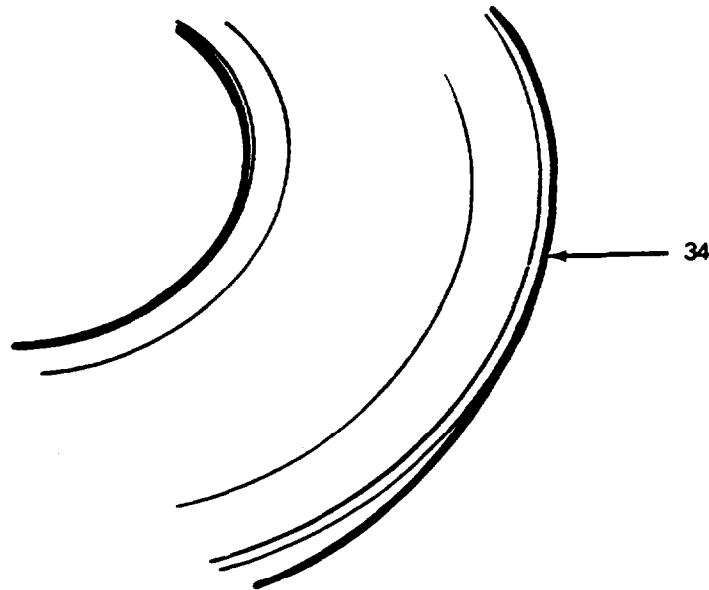


TA 075000

Figure 3-29. Installing Shaft Seal Retainer.

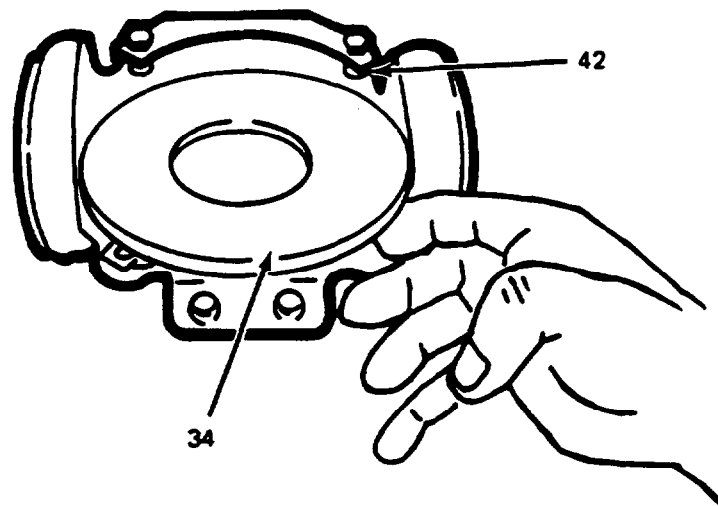
(8) Examine wear plate (34, fig. 34). Circular patterns burnished on the surface of the cam plate are normal. If circular patterns on the wear plate are extensive and can be felt with the fingernail, or if angular scratches are evident, the plate must be discarded. (Refer to fig. 3-30).

(9) Match up dowel pin (33, fig. 3-4) in cam assembly (42) with dowel pin hole in wear plate (34), and seat wear plate (34) in cam assembly (42). (Refer to fig. 3-31.) Check proper seating by pushing down on first one edge and then the opposite edge of the wear plate in a rocking motion. If any looseness is felt, remove cam plate and completely clean and compressed air dry both the cam assembly (42, fig. 3-4) and wear plate (34) to remove any foreign particles from beneath wear plate. Reposition wear plate in cam assembly (42) and repeat above procedure. If wear plate (34) refuses to seat properly, check plate for flatness and replace if necessary.



TA 075901

Figure 3-30. Cam 'Reaction to Wear' Plate.



TA 075902

Figure 3-31. Installing Cam Wear Plate.

(10) With a push-pull motion, check for free play between bronze shoe, part of piston assembly (31) and steel piston body. If any play can be felt, the piston must be discarded. Inspect bronze piston shoes (31). During normal service, a dulling of the running surface is to be expected. If large scratches that can be felt with a fingernail are present (fig. 3-32) make several short passes over 500 grit emery paper on a lap surface. On the last few passes, place five to six sheets of emery paper as a cushion under the top sheet to obtain the proper edge sharpness. Check the reworked piston assembly (31, fig. 34) with tolerance limits in figure 3-33. If piston shoe does not fall within tolerance limits, discard reworked piston and replace. Check as follows:

(a) Check piston shoe for iron or steel particles imbedded in the running surface. If present, discard the piston.

(b) Often, large scratches on the piston shoe running surface will "heal over" if placed back in service. It is recommended, however, that all piston shoes with badly scratched running surfaces be either reworked within tolerance limits or replaced.

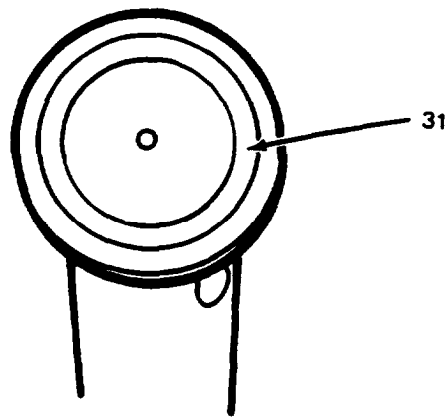


Figure 3-32. Inspecting Piston Shoe.

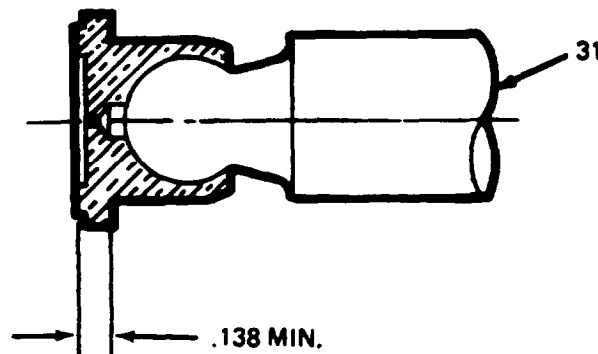


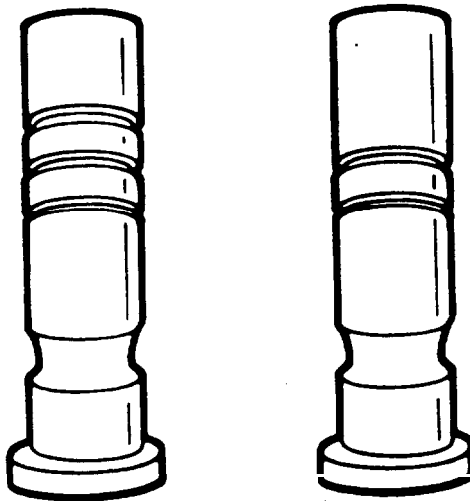
Figure 3-33. Piston Shoe Rework Tolerance.

NOTE

Hydraulic pumps may be encountered with either two groove or three groove pistons. (Refer to fig. 3-34.)

(c) Units supplied from the factory with two groove pistons may be refitted with three groove pistons as a nine piece set only.

(d) In a like manner, units supplied with three groove pistons may be refitted with two groove pistons again only as a nine piece set. Two groove and three groove pistons must not be mixed in the same unit.



TA 075905

Figure 3-34. Three Groove and Two Groove Pistons.

(11) Inspect steel piston body. If any galling is apparent or if any irregularities can be felt with the fingernail, the piston must be discarded. (Refer to fig. 3-35.) If damage is apparent, check the corresponding block assembly bore (30, fig. 3-4) for similar damage. Inspect piston return plate (32) for heat discoloration or cracks. Check for flatness. If discolored, cracked, or distorted, replace with a new return plate. (Refer to fig. 3-36.)



Figure 3-35. Inspecting Piston Body.

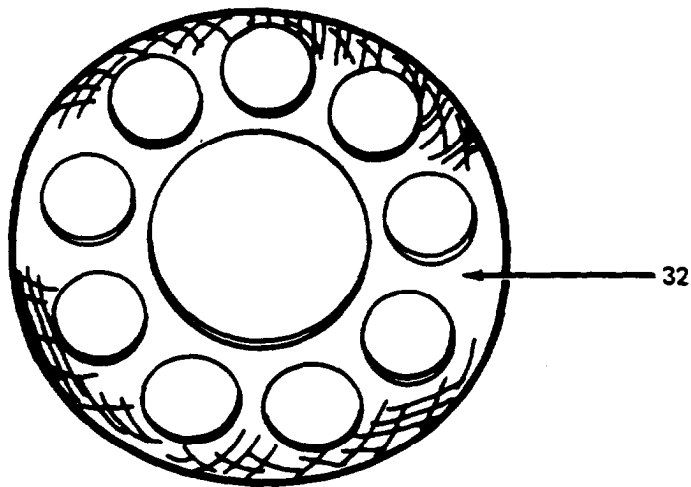


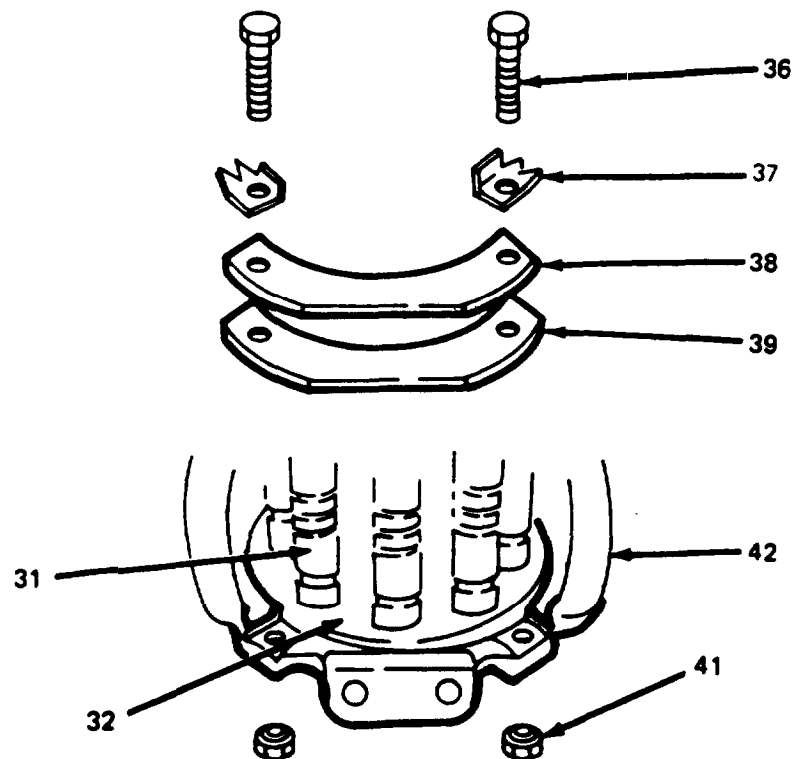
Figure 3-36. Return Plate Discolored by Heat.

(12) Install piston assemblies (31, fig. 3-4) in return plate (32). Used pistons must be so positioned in the return plate to allow placement of pistons in their respective block assembly bores as described.

(13) If return plate assembly, consisting of two spacers (41), bearing plate (39), clip (38), two new locktabs (37), and two capscrews (36), was disassembled; reassemble. Do not tighten capscrews (36).

(14) Spread a light film of oil over the surface of the wear plate (34) and slide piston (31) return plate (32) assembly into place.

(15) Assemble second of two return plate assemblies. Install two spacers (41), bearing plate (39), clip (38), two new lock tabs (37), and two capscrews (36). (Refer to fig. 3-37.) Torque four capscrews (36, fig. 3-4) to 13 lb-ft (17.6 N-m). Check clearance between each piston shoe and wear plate surface. Clearance should not be less than 0.003 or more than 0.007 in. Clearance of 0.0015 to 0.003 in acceptable only if the rotating group spins freely by hand with no binding or tight spots. Turn up locktabs (37).



TA 075908

Figure 3-37. Return Plate Assembly.

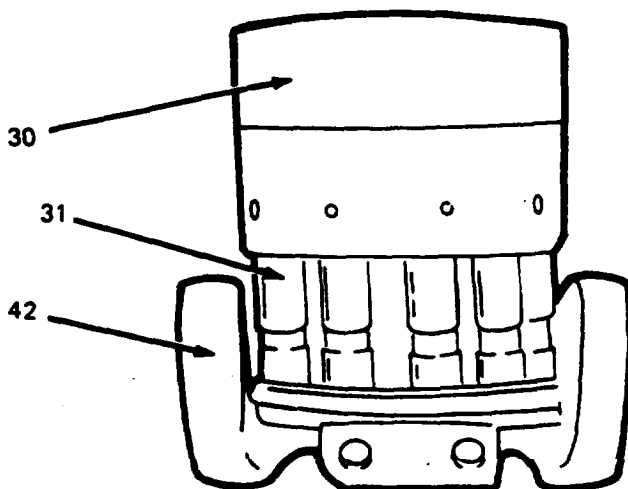
(16) If block assembly (30) was completely disassembled, proceed with block reassembly as follows:

- (a) Install the inner spring retainer (44), spring (45) and spring retainer (48) in block assembly (30).
- (b) Place block in an arbor press and compress spring (45).
- (c) Install spring retaining ring (47).
- (d) Gradually release spring (45) until it seats against retaining ring (47).

(17) Place cam assembly (42) on pump shaft (53) with the block assembly (30) still removed, insert cam assembly (42) into housing (24) and install block assembly (30) over piston assembly (31). (Refer to fig. 3-40.)

CAUTION

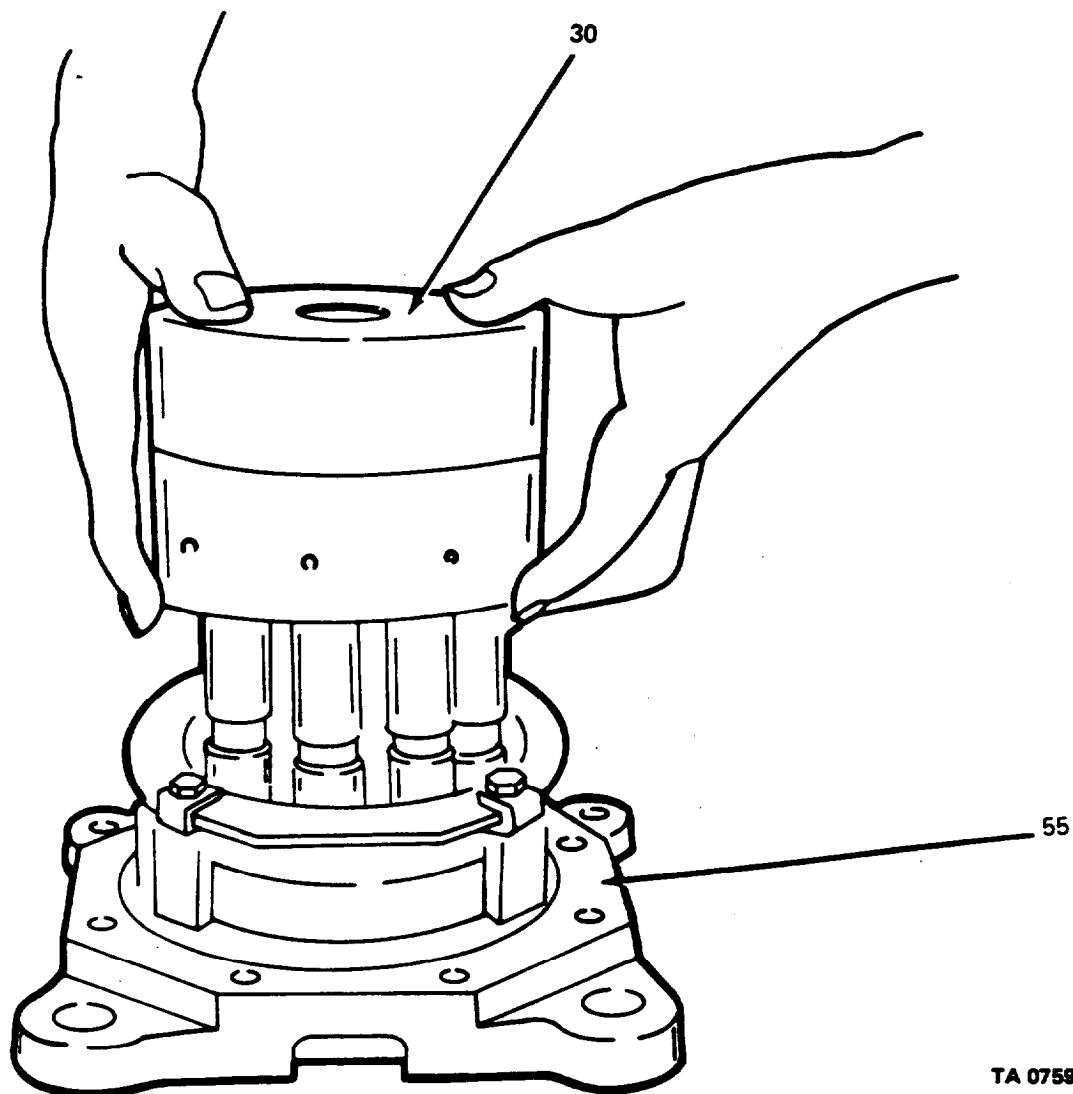
Be sure used pistons are returned to their original bores. A slight rotary motion of the block will often aid in positioning the block over the pistons. Do not force the block over the piston assemblies. (Refer to fig. 3-38.)



TA 075909

Figure 3-38. Rotating Group Assembly.

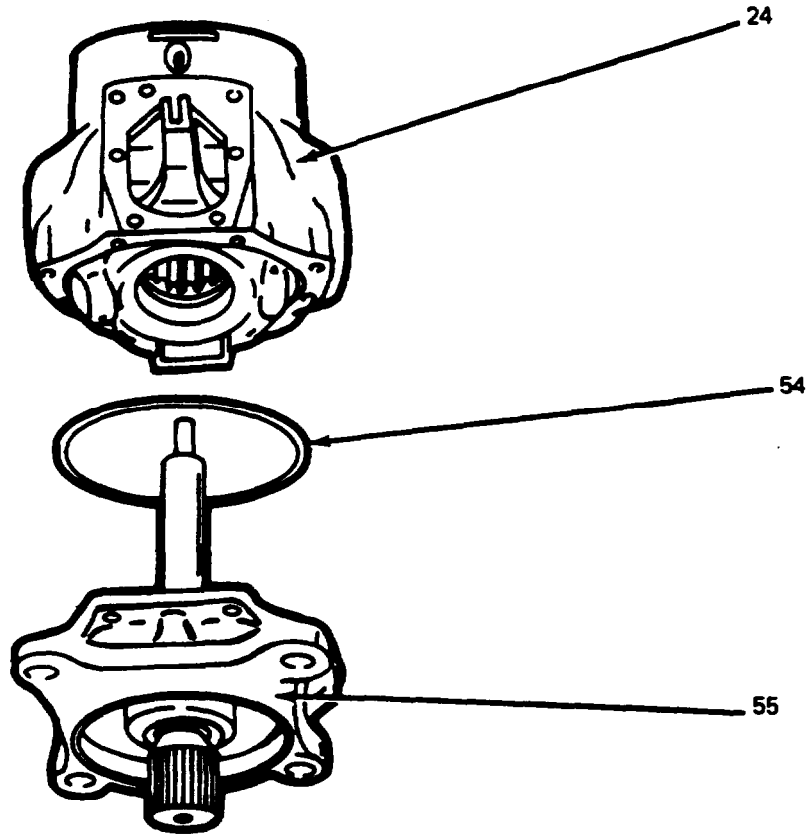
(18) Lower rotating group consisting of cam assembly (42, fig. 3-4), piston assembly (31) and block assembly (30) over pump shaft (53) and on to mounting flange (55). (Refer to fig. 3-39.) Rotate cam assembly (42, fig. 3-4) to accept trunnions (27) through holes in the housing (24).



TA 075910

Figure 3-39. Positioning Rotating Group.

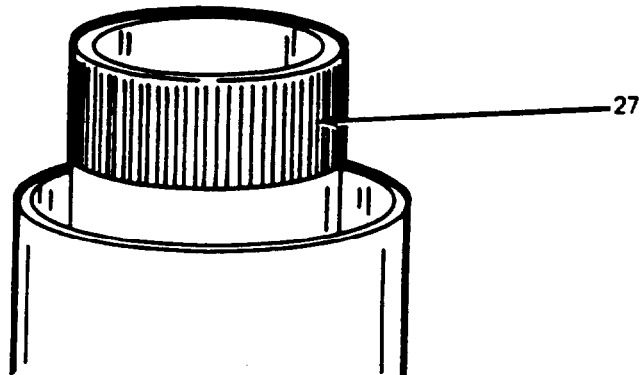
(19) Install new O-ring (54) on mounting flange (55). Lower housing (24) carefully over rotating group and on to mounting flange (55) being careful not to disturb the assembled, internal parts. (Refer to fig. 3-40.) Carefully place block assembly (30, fig. 3-4) onto pistons aligning oil cavity with trunnion (27). Install capscrews (56) and lockwashers (20) and tighten, but do not torque.



TA 075011

Figure 3-40. Positioning Pump Housing.

(20) Inspect the trunnions (27). Small nicks or burrs can be removed with 500 grit emery cloth. If galling or scoring can be felt with the fingernail, the trunnion should be discarded. (Refer to fig. 3-41.)



TA 075912

Figure 3-41. Inspecting Trunnions.

(21) Assemble new bearings (29, fig. 3-4) and gaskets (28) on trunnions (27). Insert a large screwdriver through the cam lever opening in the housing and between the cam assembly and the back face of the flange. A slight downward pressure on the screwdriver will lift the cam assembly into position. If the trunnions do not slide easily into place, rotate the trunnions slowly back and forth while repositioning the cam with the screwdriver until the trunnions seat properly. (Refer to fig. 3-42). Install eight capscrews (25, fig. 3-4) and lockwashers (26) in trunnions and torque to 11 lb-ft (14.9 N-m).

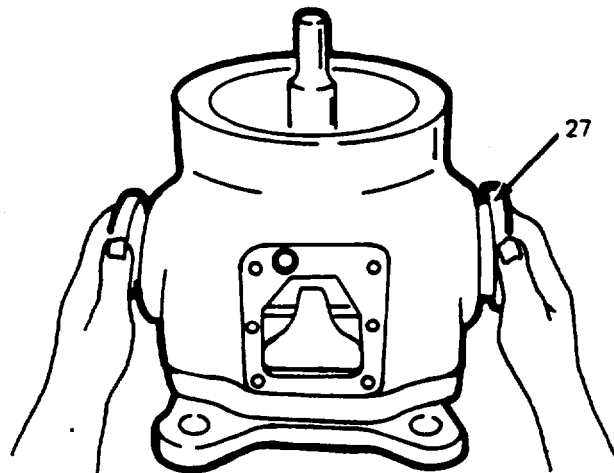
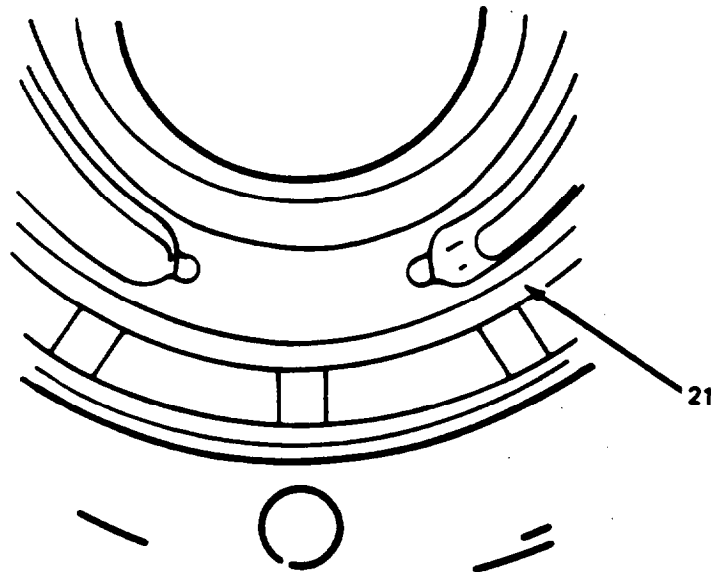


Figure 3-42. Installing Trunnions.

(22) Inspect pump cover (21) bronze face for signs of cavitation, excessive wear, contamination or other damage. (Refer to fig. 343.) Observe the following:

(a) If circular wear patterns cannot be felt with a fingernail and if there are no nicks scratches or other surface blemishes, one or two passes across 500 grit emery paper on a lap surface will put the bronze face in like-new condition. If scratches or the wear pattern can be felt with a fingernail use 500 grit emery as described above and continue to make passes until wear pattern or scratches can no longer be felt. Removal of scratches that may cross the lands on either side of the kidney port is extremely critical. Every effort must be made to remove them.



TA 075914

Figure 3-43. Inspecting Pump Cover.

WARNING

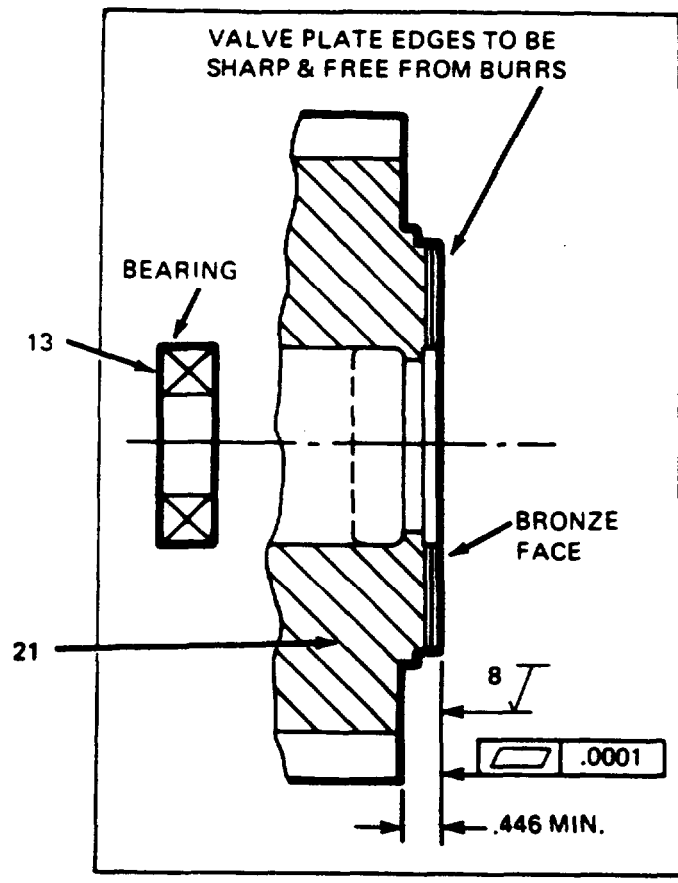
Compressed air used for cleaning purposes will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

(b) Wash reworked cover in SD-2 solvent and dry with compressed air. Check against tolerances in figure 3-44. If the reworked pump cover (21, fig. 3-4) does not fall within the tolerance limits, it must be discarded.

NOTE

It is important that if either the inner or outer race is to be replaced, the entire bearing be replaced.

(23) If outer race of bearing (13) was removed during disassembly or if the inner race was removed and replaced, install outer race in pump cover (21) using an arbor press and plug of proper size.

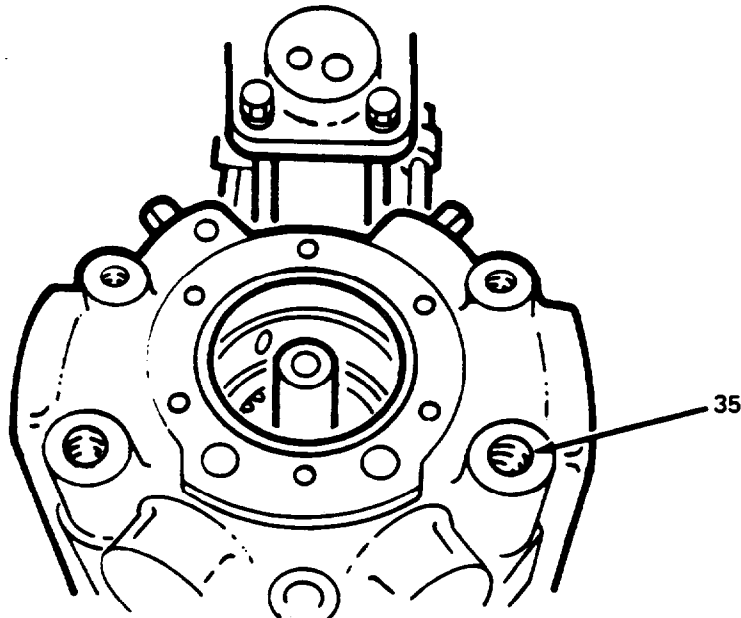


TA 075015

Figure 3-44. Pump Cow Rework specifications.

(24) Apply Vaseline to new O-ring (23) and position on the pump cover (21). Fill pistons with new transmission oil allowing a small excess oil to spill over the face of the block assembly (30).

(25) Place new cover gasket (22) on housing and position cover as shown in figure 3-45 utilizing reference marks in housing and cover. To operate properly, the cover must be assembled in its original position. Install two short capscrews (35, fig. 3-4), four long capscrews (19), and six lock-washers (20). Torque capscrews opposite one another to 40 lb-ft (54 N•m) until all six capscrews are tight.



TA 075916

Figure 3-45. Installing Pump Cover.

(26) Position bearing (13). Lubricate the entire charge pump cavity with clean transmission oil.

(27) Install valve plate (10, fig. 3-46) over bearing (13, fig. 34). Install on to shaft assembly pump shaft (53).

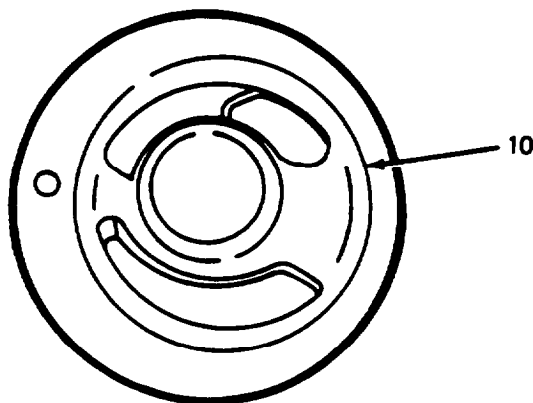
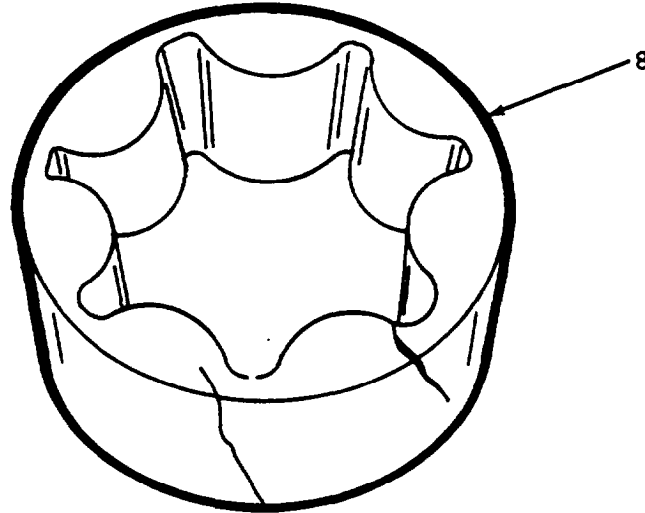


Figure 3-46. Charge Pump Lower Valve Plate.

(28) Inspect charge pump assembly (8, fig. 3-4) for damage or excess wear. If inner or outer rotor are scratched or galled, the gears must be replaced as a set. (Refer to fig. 3-47.) Rotate one gear within the other to check for free action. If action seems stiff in a particular area, use a hard Arkansas stone and lightly touch up the gear edges. Recheck for free rotation.

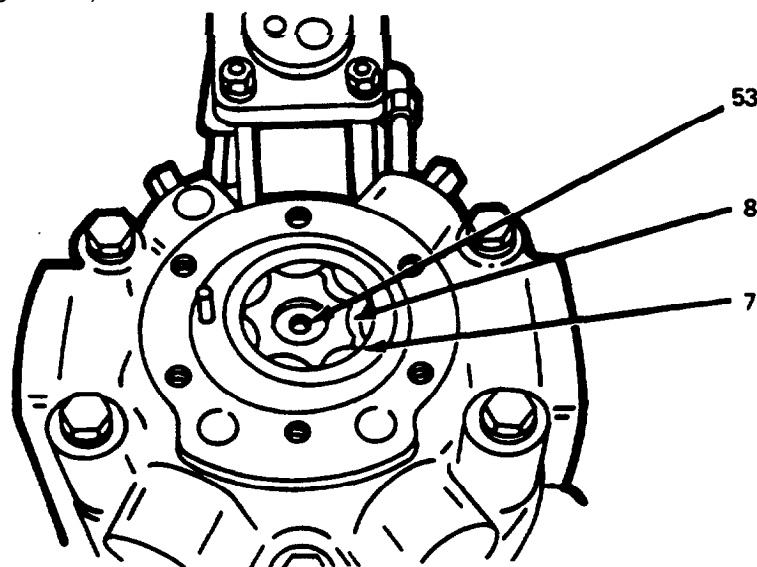


TA 075918

Figure 3-47. Inspecting Outer Rotor.

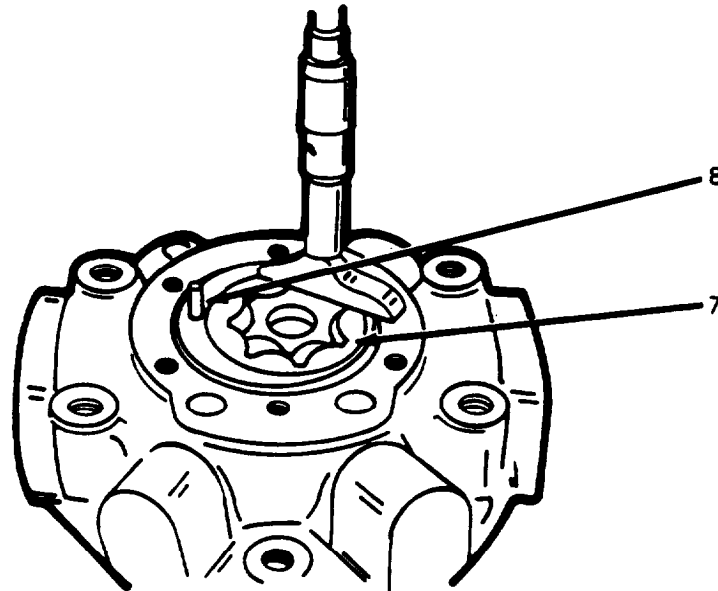
(29) Position pin (9, fig. 3-4) in shaft keyway. Install charge pump assembly (8) over keyway on pump shaft (53). Check for proper pin engagement by attempting to rotate inner gear on shaft. If gear turns on shaft, remove gear, reposition pin and repeat installation of charge pump assembly.

(30) Install the spacer assembly (7) over the charge pump assembly (8) positioning the short end of the roll pin in the lower valve plate (10). (Refer to fig. 3-48.) Use a depth gage to confirm 0.001-0.0035 clearance between the top of the spacer assembly (7, fig. 3-4) and the top of the charge pump assembly (8). (Refer to fig. 3-49.)



TA 075919

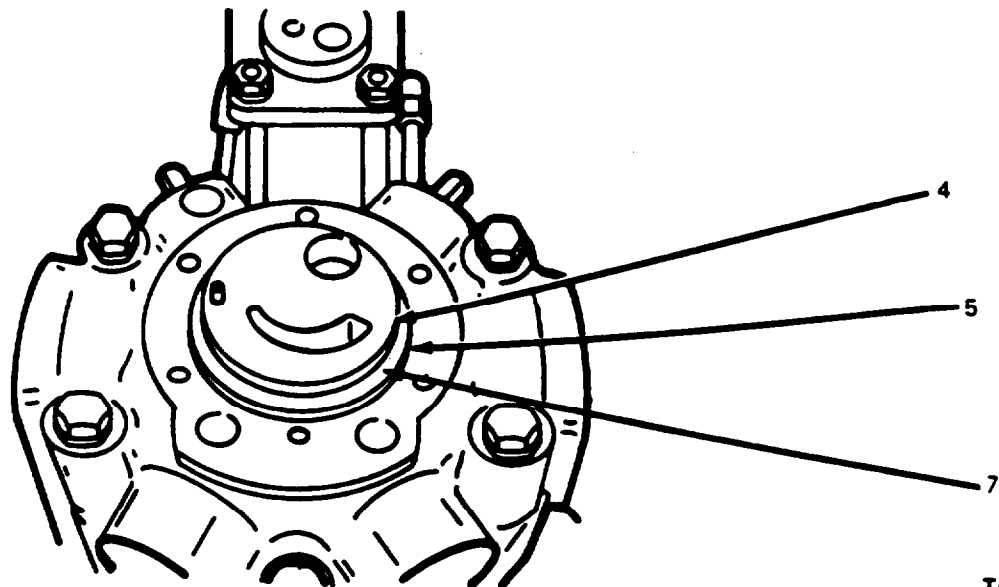
Figure 3-48. Charge Pump Eccentric Inner and Outer Rotor.



TA 075920

Figure 3-49. Checking Charge Pump Clearance.

(31) Install new O-ring (5, fig. 3-4) to outside of spacer assembly (7). The direction of pump rotation is indicated by an arrow cast on the charge pump cover. To operate properly, the plate (4) must be installed to correspond with the porting in the pump cover (3). Install plate over roll pin in spacer assembly (7). (Refer to fig. 3-50.)



TA 075921

Figure 3-50. Charge Pump Upper Valve Plate.

(32) From pump cover (3, fig. 3-4), remove all shims for testing.

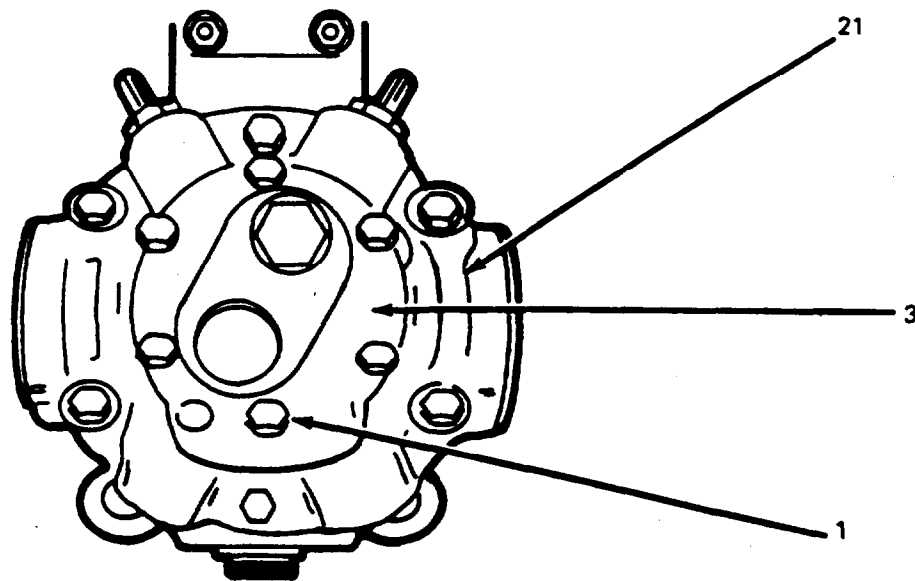
(33) Position pump cover (3) over plate (4) so that the spacer assembly dowel pin (6) aligns with roll pin hole in the pump cover (3). (Refer to fig. 3-51.) Measure gap between pump cover (3) and pump cover (21) with feeler gage in at least four places. Remove pump cover (3, fig. 3-4) and install shim gasket (14) equal to maximum measured gap plus 0.002 in. Replace pump cover (3), capscrews (1) and lockwashers (2) and torque alternately to 11 lbs-ft (15 Nm).

(34) Install valve assemblies consisting of plugs (15), O-rings (16), valve springs (17), and plungers (18).

(35) Rotate pump shaft (53) to check for binding in the charge pump. If shaft will not turn, remove pump cover (3) and plate (4), clean all parts, reassemble with light oil and recheck charge pump tolerances as described above.

NOTE

During reassembly, check all moving parts for smooth operation. It is essential that there be no binding or interference between any internal moving parts.



TA 075922

Figure 3-51. Charge Pump Cover.

k. *Assemble Override Control.* (Refer to fig. 3-10.)

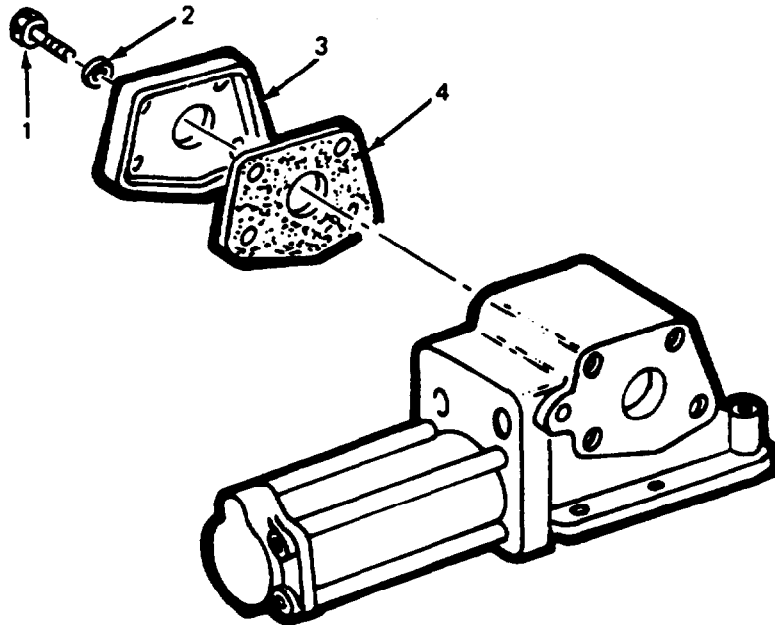
(1) Inspect servo plunger assembly (30).

(2) Install housing cover (3) with four capscrews (1), lockwashers (2), and a new gasket (4). (Refer to fig. 3-52.) Torque capscrews to 11 lb-ft (15 N·m).

(3) If removed during disassembly, inspect four studs (21, fig. 3-10) for damaged threads, bends, twists, or cracks, and replace if necessary. Use Loctite sealant, Grade 3, on coarse threaded end of studs and install in housing (5). Torque studs down tight.

(4) Inspect piston assembly (27) for nicks or scratches around the perimeter. If observed, replace piston assembly (27). Inspect link end of plunger assembly (30) for cracks. Replace plunger assembly (30) if cracks are found. Install piston assembly (27) on plunger assembly (30) with washer (32) and self-locking nut (31). Torque self-locking nut (31) to 35 lb-ft (47 N·m).

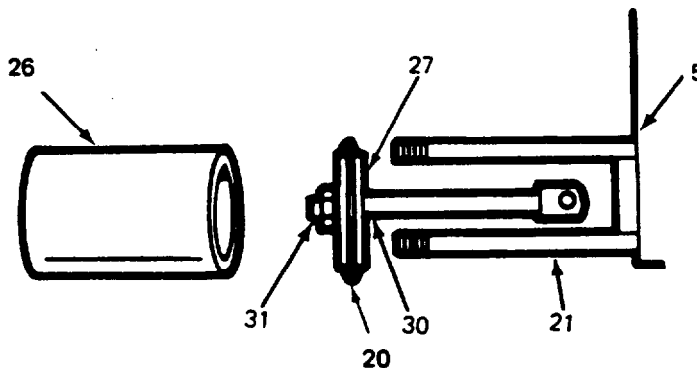
(5) Install three new O-rings (20) on housing (5), piston assembly (27), and cylinder cover (22). Install plunger assembly (30) in housing (5).



TA 075923

Figure 3-52. Housing Cover.

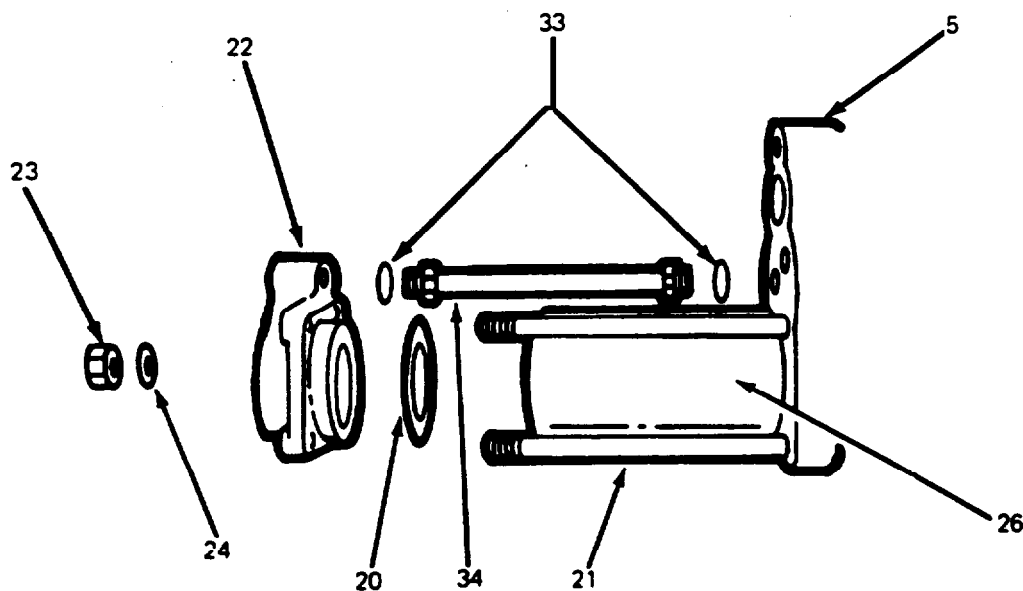
(6) Lubricate the entire inner surface of cylinder tube (26) with clean transmission oil. Install tube (26) over piston assembly (27) and seat tube (26) against housing (5). (Refer to fig. 3-53.)



TA 075824

Figure 3-53. Cylinder with Servo Plunger.

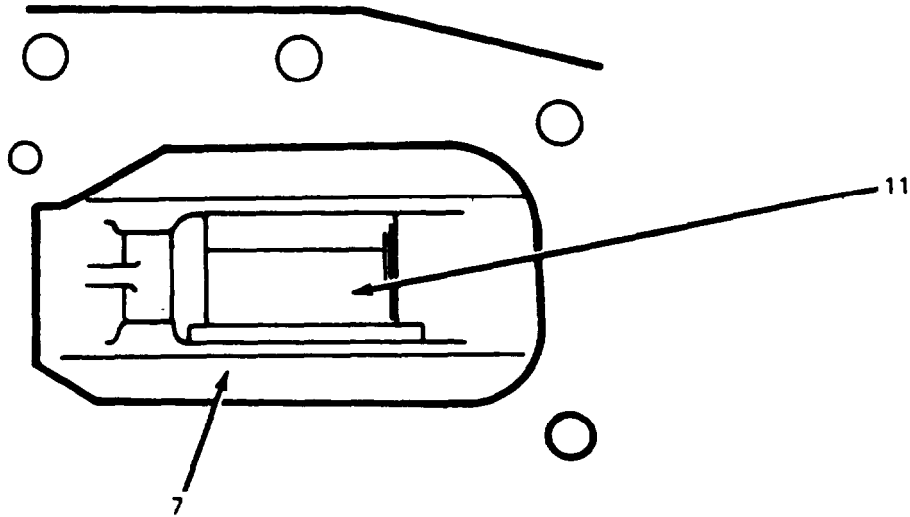
(7) Install two new O-rings (33, fig. 3-54) on each end of transfer tube (34). Lubricate the ends of transfer tube (34) and insert in cylinder cover (22). Install cylinder cover (22) with new O-ring (20) and transfer tube over studs (21) and seat into end of tube (26). Care must be taken not to damage transfer tube O-ring (33) as the transfer tube (34) is being positioned in housing (5). Install four lock-washers (24) and hex nuts (23) on studs (21) and torque to 6 lb-ft (8 N•m). Care should be taken to torque the hex nuts (23) gradually and in sequence to insure proper seating of the cylinder cover (22) and to minimize the possibility of twisting a stud to the breaking point.



TA 075825

Figure 3-54. Cylinder Cover with Transfer Tube.

(8) Insert valve sleeve assembly (11) up through the bottom of the housing (5). Lubricate servo valve spool (7) with clean transmission oil and insert into control housing through valve sleeve (11). Check for free movement. Any roughness may be removed with 500 grit emery cloth. (Refer to fig. 3-55.)



TA 075926

Figure 3-55. Valve Sleeve in Piston.

(9) Using seal plate assembly (14, fig. 3-56) and a new seal (13) fill the cavity between seal lips half full with multi-purpose grease. Position seal (13), plate (14), and gasket (12) on housing, being cautious not to damage the lip seal. Install upper two capscrews (16) and lockwashers (15). Torque to 11 lb-ft (15 N·m).

NOTE

To check plunger action, introduce compressed air to internal feed port. Actuate valve spool (7, fig. 3-10) forward and backward from detented position to confirm free travel to plunger assembly (30).

(10) Place a new gasket (9) on pump (or motor) housing using a thin coat of clean transmission oil to hold it in place.

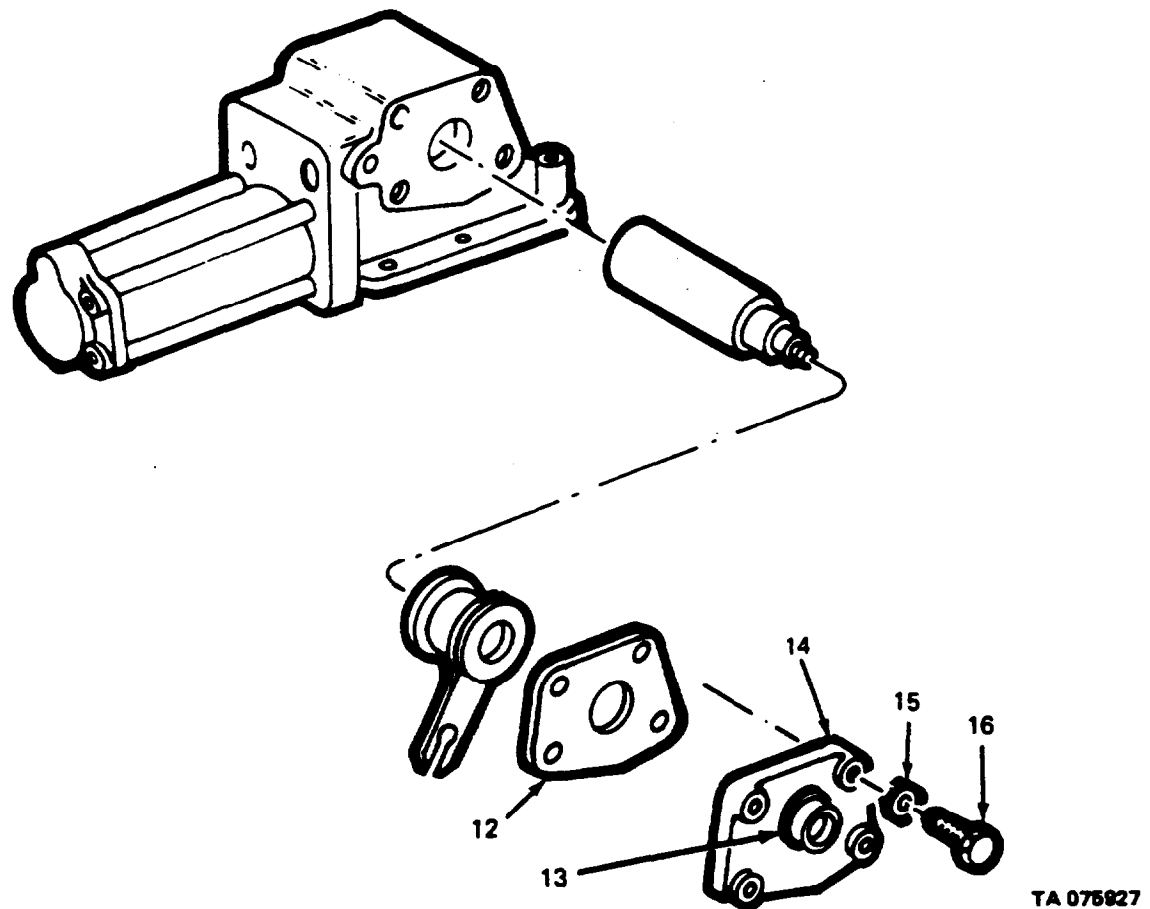


Figure 3-56. Control Valve Spool with Cam Follower.

(11) Position housing (5, fig. 3-57) so that rod link portion of plunger assembly (30) Slips into slot in pump cam arm. Place a clean shop rag around the cam arm and insert clevis pin (28) with one new retaining ring (29) attached in counterbored side of cam arm and through rod link. Install the second retaining ring (29) on clevis pin (28).

(12) Install new O-ring (10, fig. 3-10) in seat on pump housing using a thin coat of grease to hold it in place.

(13) Install control assembly to pump using four short and two long capscrews (6 and 8) and six lockwashers (2), making sure the slot in the valve sleeve assembly (11) is positioned over the pin on the cam lever assembly and that the O-ring (10) is properly seated. Torque six capscrews to 11 lb-ft (15 N-m). Replace lever and secure with locknut (17) and washer (18).

I. Installation of Hydraulic Pump. (Refer to fig. 3-3.)

(1) Support hydraulic pump on a hydraulic jack; then line up the mounting holes in the pump with mating holes in vehicle frame.

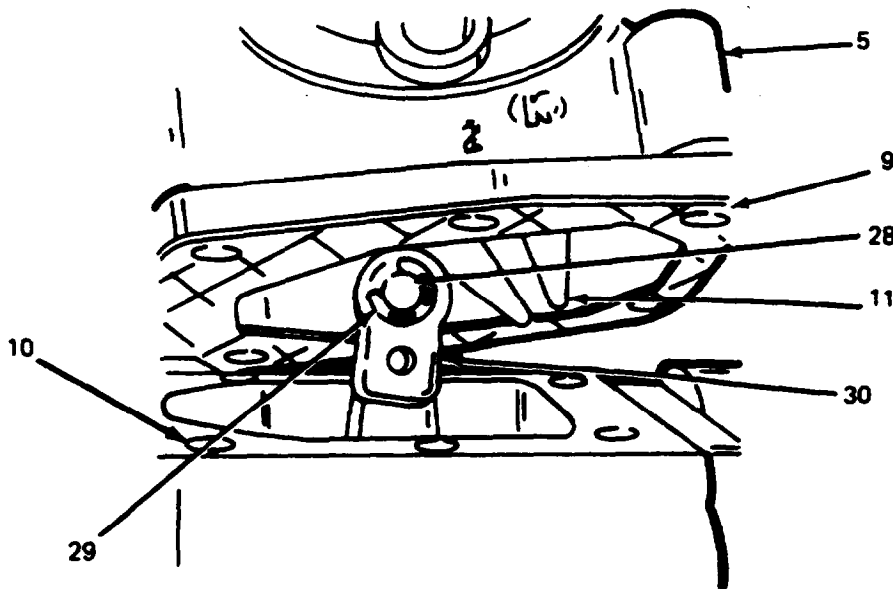
(2) Install four capscrews (11), washers (12), and nuts (13).

(3) Install pump propeller shaft. (Refer to para 2-14.)

(4) Connect pump control to lever (1, fig. 3-3).

(5) Connect four lines to pump; hose (10), hose (6), and two hoses (5).

(6) Replenish oil supply in hydraulic tank. (Refer to LO 5-3895-371-12.)



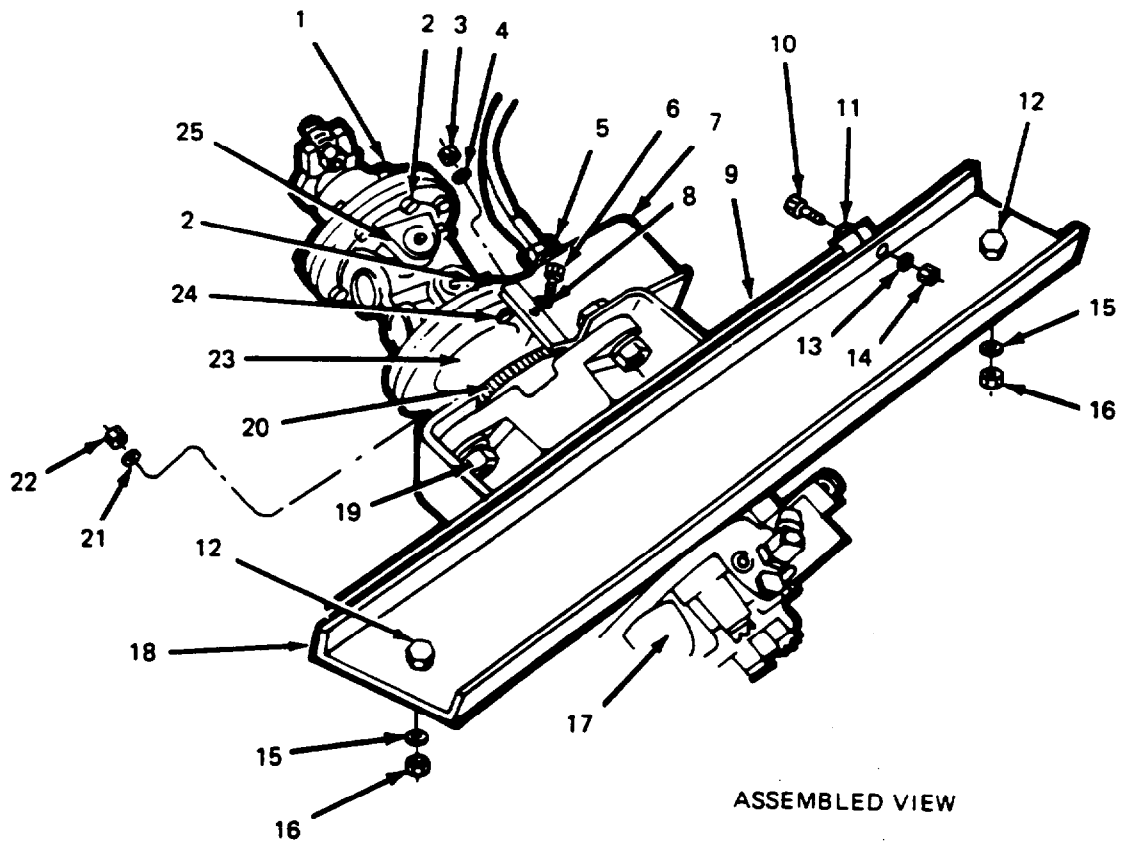
TA 075828

Figure 3-57. Cam Actuator Arm and Cam Follower.

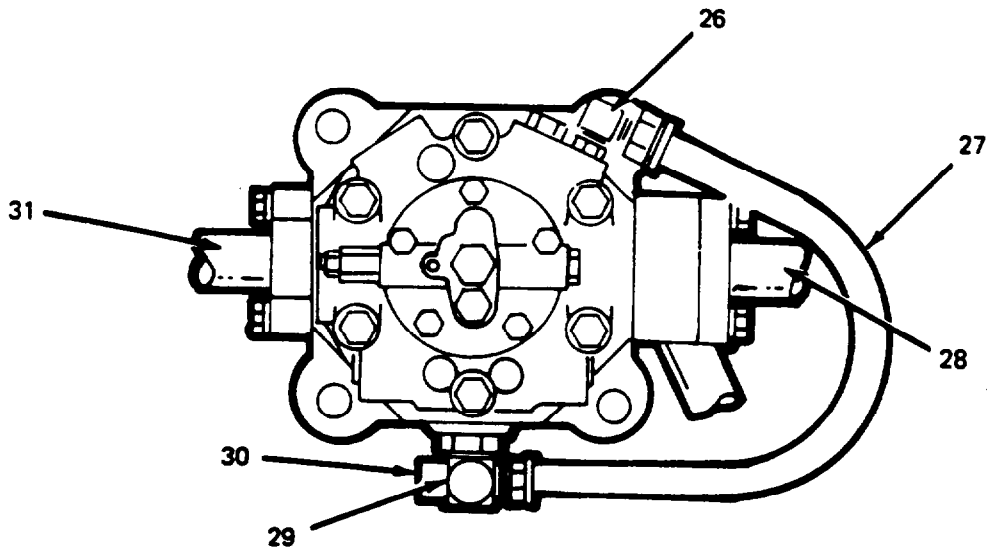
Section V. REPAIR OF HYDRAULIC MOTOR

3-6. Hydraulic Motor.

- a. *Removal of Hydraulic Motor. (Refer to fig. 3-58.)*
- (1) Remove stowage box. (Refer to para 2-11.)
 - (2) Disconnect tachometer cable (5, fig. 3-58).
 - (3) Disconnect three hydraulic lines (30, (31), (32) at hydraulic motor (17).
 - (4) Remove hydraulic hose (27) from elbow (26) and tee (29).
 - (5) Remove override cable clamp (11) by removing attaching capscrew (10), nut (14), and washer (13); then lift out override cable (9) and position it out of the way for pump removal.
 - (6) Disconnect universal drive by removing eight capscrews (1), nuts and washers (2).
 - (7) Remove capscrews (12) with nut (16) and lockwashers (15); then lift out rail (18) with attached hydraulic motor (17).
 - (8) Unscrew two capscrews (6) and washers (8); lift off sprocket cover (7).
 - (9) Remove three capscrews (19), lockwashers (21) and nuts (22) that fasten hydraulic motor (17) to its mounting bracket and separate the motor from the rail (18).
 - (10) Slip tachometer drive chain (20) from flange sprocket (23); separate from drive coupling (25).
 - (11) Remove drive coupling (25) by removing three each capscrews (24), nuts (3), and lockwashers (4).

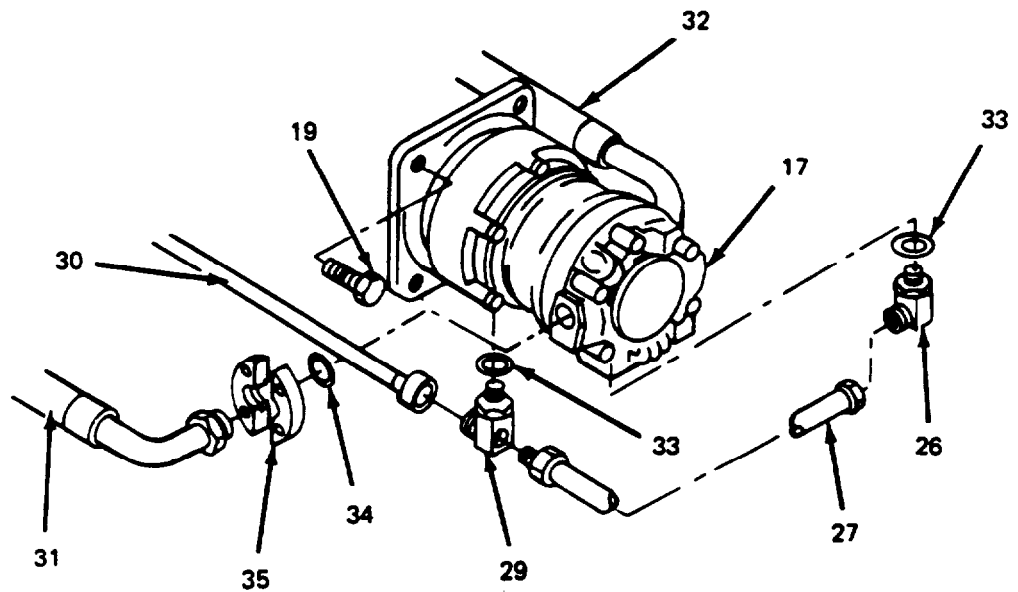


ASSEMBLED VIEW



TA 075829

Figure 3-58. Remove/Install Hydraulic Motor (Sheet 1 of 2).



EXPLODED VIEW

LEGEND:

- | | |
|--------------------------|----------------------------|
| 1. CAPSCREW (8) | 18. RAIL |
| 2. NUT AND WASHER (8) | 19. CAPSCREW |
| 3. NUT (3) | 20. TACHOMETER DRIVE CHAIN |
| 4. LOCKWASHER (3) | 21. LOCKWASHER |
| 5. TACHOMETER CABLE | 22. NUT |
| 8. CAPSCREW | 23. FLANGE SPROCKET |
| 7. SPROCKET COVER | 24. CAPSCREW (3) |
| 8. WASHER | 25. DRIVE COUPLING |
| 9. OVERRIDE CABLE | 26. ELBOW |
| 10. CAPSCREW | 27. HYDRAULIC HOSE |
| 11. OVERRIDE CABLE CLAMP | 28. LINE |
| 12. CAPSCREW (2) | 29. TEE |
| 13. WASHER | 30. LINE |
| 14. NUT (2) | 31. LINE |
| 15. LOCKWASHER (2) | 32. LINE |
| 16. NUT | 33. O-RING |
| 17. HYDRAULIC MOTOR | 34. O-RING |
| | 35. SPLIT FLANGE |

TA 075930

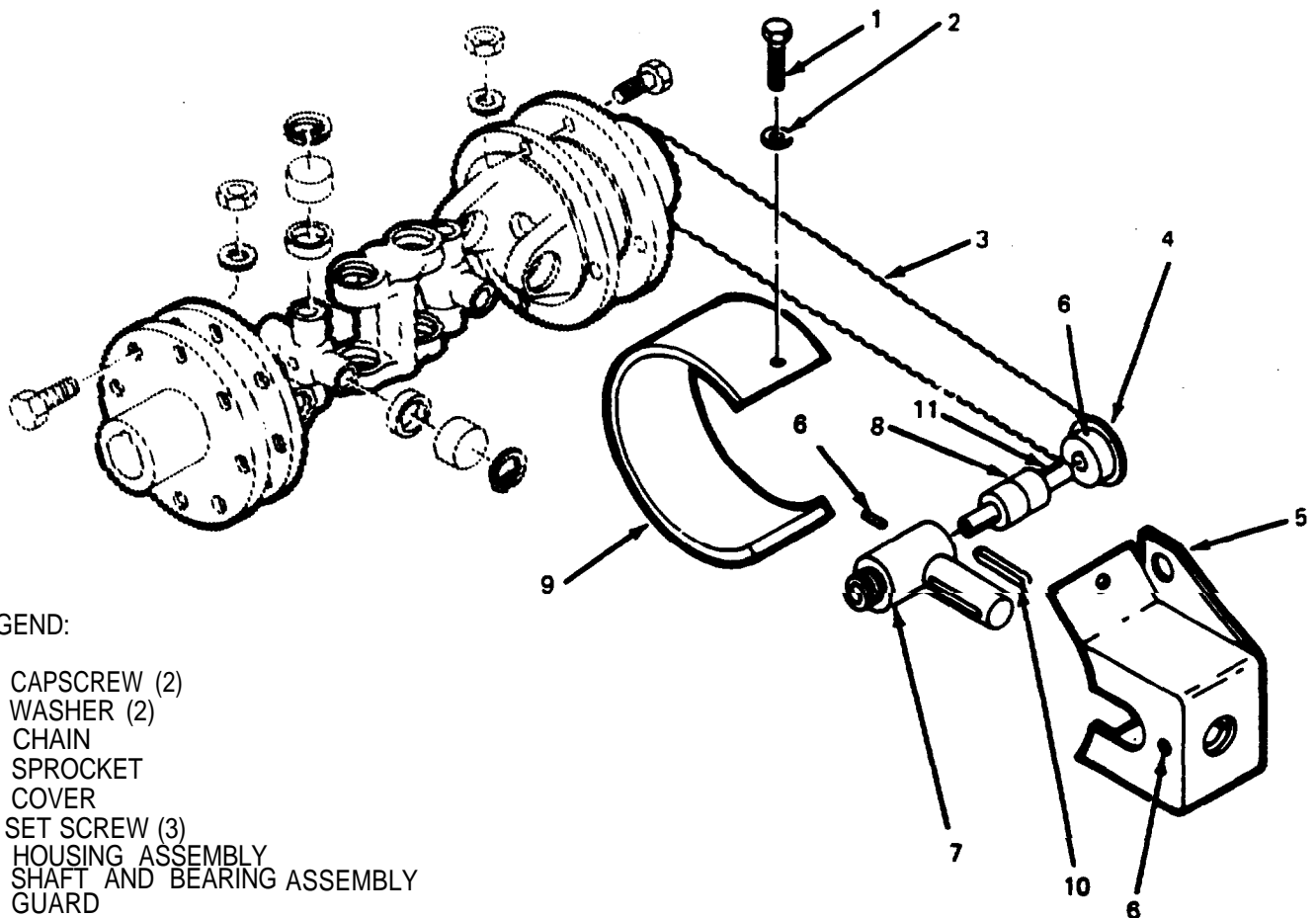
Figure 3-58. Remove/Install Hydraulic Motor (Sheet 2 of 2).

b. Disassemble Tachometer Drive Assembly. (Refer to fig. 3-59.)

- (1) Remove two capscrews (1) and washers (2); remove guard (9), if not previously removed.
- (2) Loosen set screw (6) from cover (5) and remove housing (7) and key (10) with chain (3) from cover (5).
- (3) Loosen set screw (6) in housing assembly (7) and remove shaft and bearing assembly (8).
- (4) Loosen set screw (6) in sprocket (4) and remove with key (11).

c. Assemble Tachometer Drive Assembly. (Refer to fig. 3-59.)

- (1) Install key (11) into shaft and bearing assembly (8).
- (2) Install sprocket (4) on shaft and bearing assembly (8) and tighten set screw (6).
- (3) Install shaft and bearing assembly (8) into housing assembly (7) and tighten set screw (6).
- (4) Install housing assembly (7) with key (10) and chain (3) into cover (5) and tighten set screw (6).
- (5) Install guard (9) with two capscrews (1) and washers (2).



LEGEND:

1. CAPSCREW (2)
2. WASHER (2)
3. CHAIN
4. SPROCKET
5. COVER
6. SET SCREW (3)
7. HOUSING ASSEMBLY
8. SHAFT AND BEARING ASSEMBLY
9. GUARD
10. KEY
11. KEY

TA 076831

Figure 3-59. Tachometer Drive - Hydraulic.

d. *General Instructions (Before Disassembly of Hydraulic Motor).*

(1) Parts and work area must be kept absolutely clean at all times. The Dynapower unit must be cleaned externally with a commercial degreaser or steam and dried before hoses are disconnected and before the unit is removed from the application.

(2) Most service operations are carried out with the motor in a shaft down position. A 7 in. sq. block of wood, 4 in. thick with a 2 in. round center hole may be used as a platform upon which the motor may be positioned. A similar size hole in a work bench surface may be utilized as can the corrugated cardboard spacer packed at the end of a new Dynapower motor.

(3) When performing minor service work, do not remove bearings, dowel pins, or cylinder block components unless they exhibit signs of galling, scratching, or excessive wear. On major overhauls, replace all bearings regardless of condition.

e. *Disassemble Hydraulic Motor. (Refer to fig. 3-58 and 3-60.)*

(1) Place hydraulic motor assembly (1) in a shaft down position. Remove plug (61) with O-ring (50).

(2) Remove by-pass hose (27, fig. 3-58) from cover (35, fig. 3-60) and housing (28).

(3) Remove tee (29, fig. 3-58) and O-ring (33) from housing (28, fig. 3-80).

(4) Remove elbow (26, fig. 3-58) and O-ring (33) from cover (35, fig. 3-60).

(5) Remove high pressure relief valve plug (59), O-ring (31), spring (58), and high pressure relief valve plunger (57).

(6) Remove capscrew (53, fig. 3-60), hex nut (55), and spring seat assembly (54) as a unit to prevent changing of the setting (if pressure valve needs adjusting see para 3-5). Then remove O-ring (52), inner spring seat (51), O-ring (50), spring (49), valve pilot (48), and seat (47).

(7) Remove low pressure relief valve plug (30), O-ring (31), spring (32), and plunger (33). (Refer to fig. 3-61.)

(8) Remove two shuttle valve plugs (40), and O-rings (31). Slide shuttle valve assembly (39) from cover (35). (Refer to fig. 3-62.)

(9) Unless leakage is experienced, do not remove plugs (38, fig. 3-60) or O-rings (37). If leaking, replace O-rings (37).

(10) If cover (35) is to be removed it is important that the cover-housing relationship be preserved. Mark both the housing (28) and cover (35) in such a way that upon reassembly, the relationship can be maintained. For example, a scratch in the paint across the cover-housing parting line can be used. (Refer to fig. 3-63.)

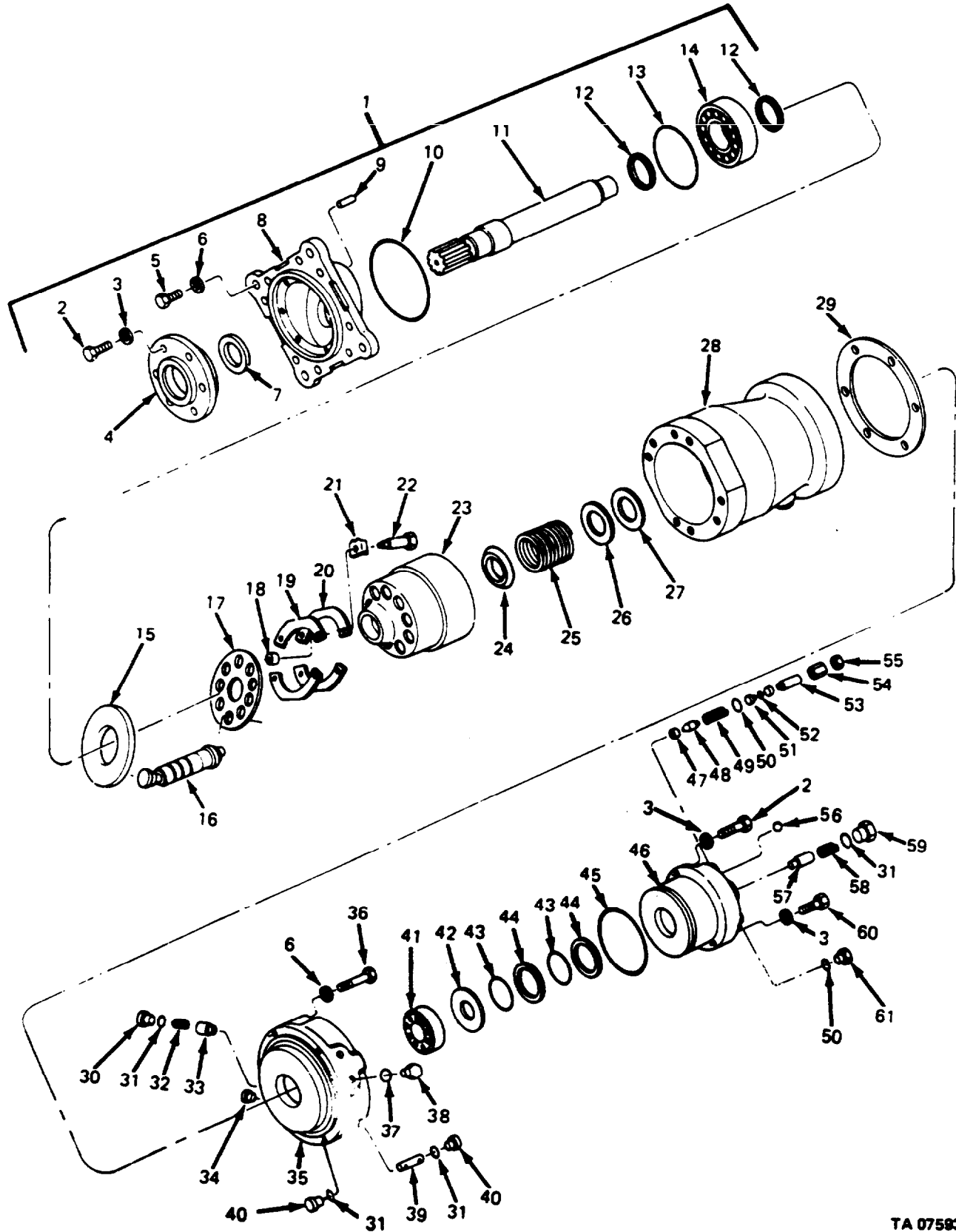


Figure 3-60. Motor - Hydraulic (Sheet 1 of 2).

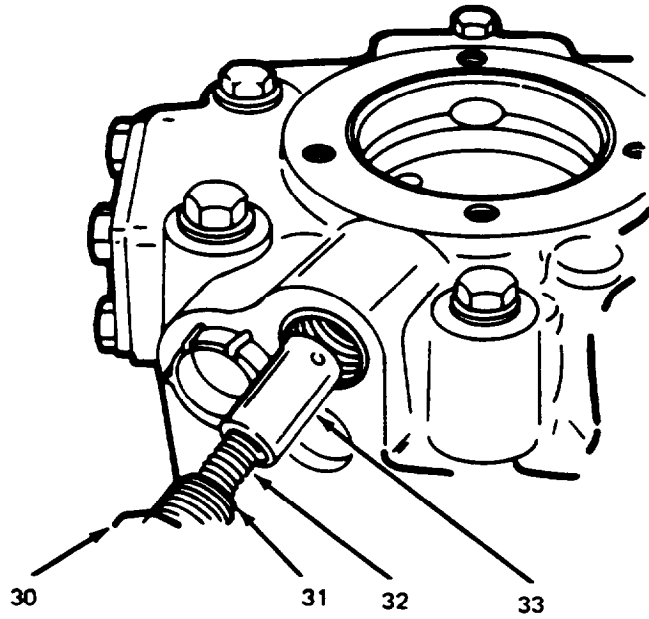
TA 075932

LEGEND:

1. HYDRAULIC MOTOR ASSEMBLY	32. SPRING
2. CAPSCREW (4)	33. PLUNGER
3. LOCKWASHER (9)	34. SHUTTLE VALVE PLUG
4. SHAFT SEAL ASSEMBLY	35. COVER
5. CAPSCREW (8)	36. CAPSCREW (6)
6. LOCKWASHER (14)	37. O-RING (2)
7. O-RING	38. PLUG (2)
8. MOUNTING FLANGE ASSEMBLY	39. SHUTTLE VALVE ASSEMBLY
9. DOWEL PIN	40. PLUG
10. O-RING	41. COVER ROLLER BEARING
11. MOTOR SHAFT	42. RETAINING RING
12. RETAINING RING (2)	43. PACKING
13. PACKING	44. RING
14. BALL BEARING	45. PACKING
15. WEAR PLATE	46. BODY
16. PISTON (9)	47. SEAT
17. SEAT PLATE	48. VALVE PILOT
18. SPACER (2)	49. SPRING
19. BEARING PLATE (2)	50. O-RING
20. CLIP	51. INNER SPRING SEAT
21. LOCKTABS (2)	52. O-RING
22. CAPSCREW (2)	53. CAPSCREW
23. CYLINDER BLOCK ASSEMBLY	54. SPRING SEAT ASSEMBLY
24. RETAINING RING	55. HEX NUT
25. BLOCK SPRING	56. BALL
26. OUTER SPRING BLOCK	57. HIGH PRESSURE RELIEF VALVE PLUNGER
27. INNER SPRING RETAINER	58. SPRING
28. HOUSING	59. HIGH PRESSURE RELIEF VALVE PLUG
29. GASKET	60. CAPSCREW (5)
30. LOW PRESSURE RELIEF VALVE PLUG	61. PLUG
31. O-RING	

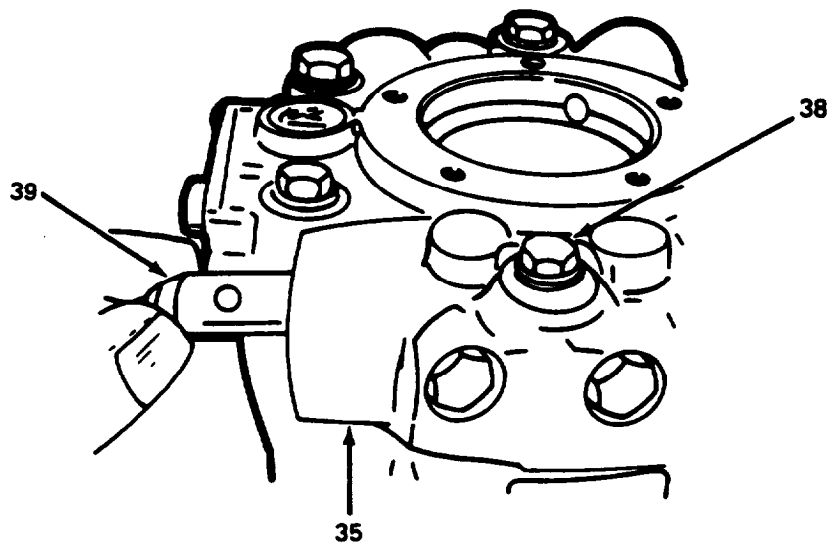
TA 075033

Figure 3-60. Motor - Hydraulic (Sheet 2 of 2).



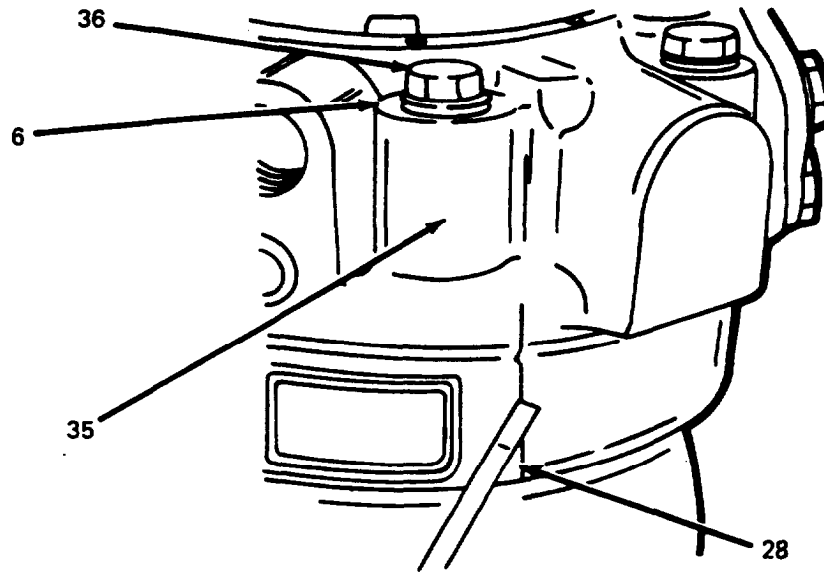
TA 075834

Figure 3-61. Removing Low Pressure Relief Valve.



TA 075835

Figure 3-62. Removing shuttle Valve.

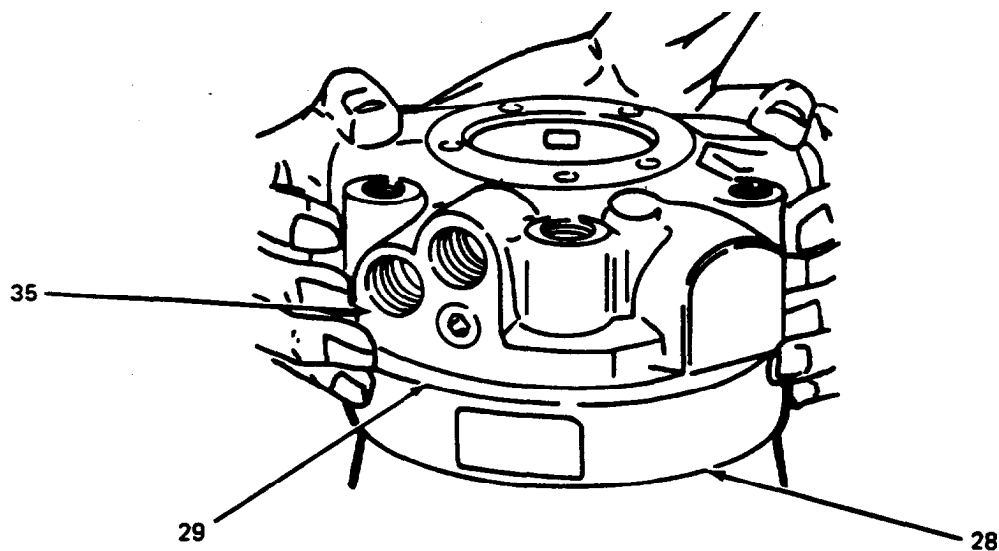


TA 075936

Figure 3-63. Marking Across Cover-Housing Parting Line.

Remove five cap screws (60), lockwashers (3), and remove body (46) with packing (45), (43), and ring (44). Remove six cap screws (36) and washers (6).

(11) If the motor cover (35) should stick to housing (28), jar it loose with a soft faced hammer. Remove gasket (29) from housing (28) or cover (35). (Refer to fig. 3-64.)



TA 075937

Figure 3-64. Removing Motor Cover.

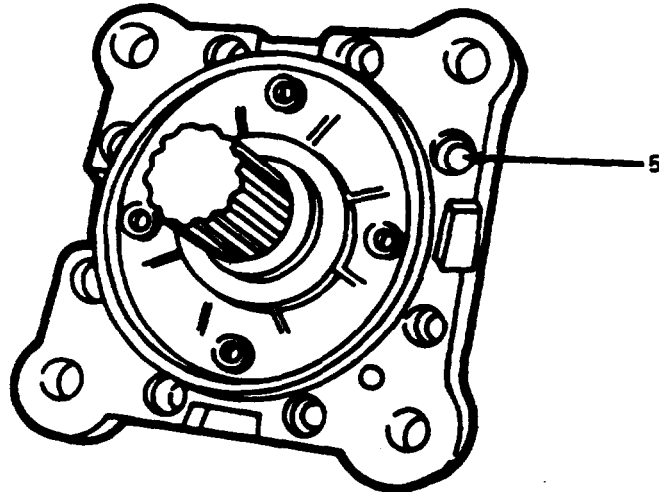
(12) It is important that every precaution be taken to protect the bronze face on the cover (35) from damage. Never lay the cover down on the bronze face. Do not allow parts or tools to come in contact with the bronze face. A nick or scratch resulting from a moment's carelessness can easily damage a cover (35) beyond repair.

(13) Inspect cover roller bearing (41, fig. 3-60) for excessive wear, galling or roughness. If damaged, remove bearing outer race from cover (35) with an arbor press and a 1-7/8 in. dia plug. If roller bearing is removed, then the inner race must also be removed as they are serviced as a matched set only. If no damage is evident, do not remove outer or inner race and proceed to the next step.

CAUTION

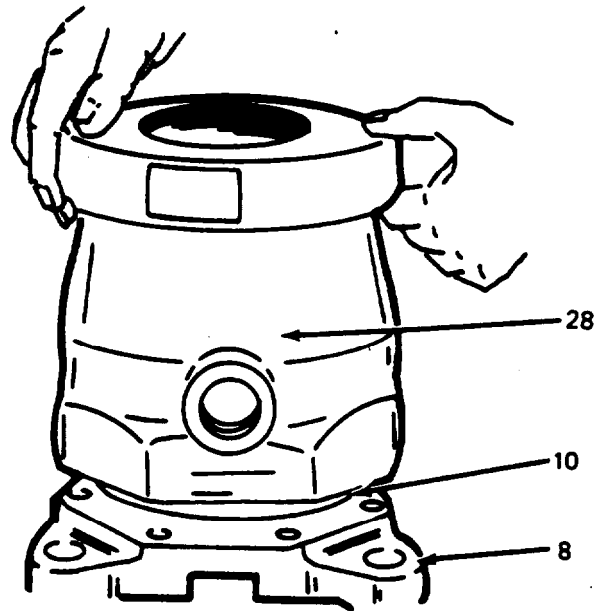
Remove capscrews (5) with motor resting on its side.

(14) Remove eight capscrews (5) and lockwashers (6). (Refer to fig. 365.) Lift off housing (28, fig. 3-66) from mounting flange assembly (8). Remove O-ring (10).



TA 075938

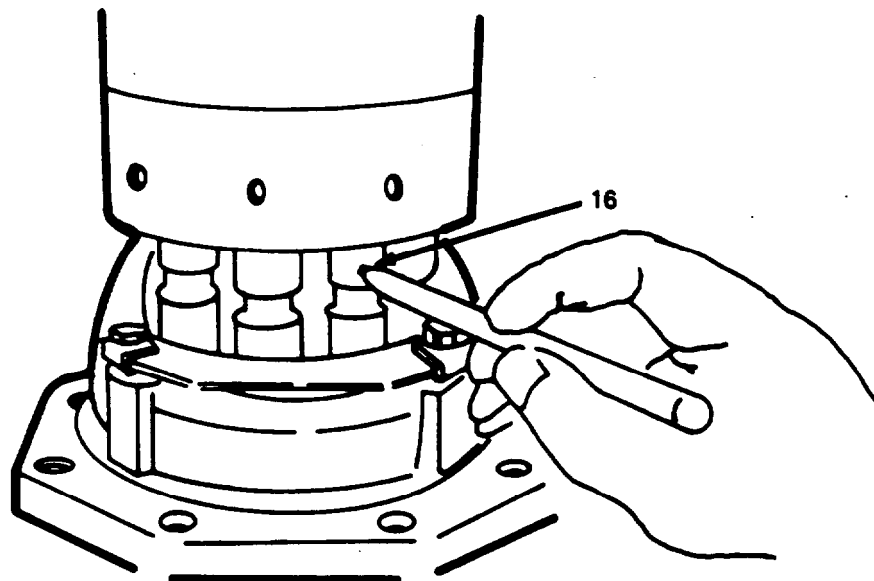
Figure 3-65. Removing Housing Capscrews.



TA 075939

Figure 3-66. Removing Housing.

(15) At the factory, each cylinder block is marked to indicate cylinder bore number one. Mark number one piston (16, fig. 3-67) as a method of preserving the bore/piston relationship. All used pistons (16) must be returned to their respective bores upon reassembly.



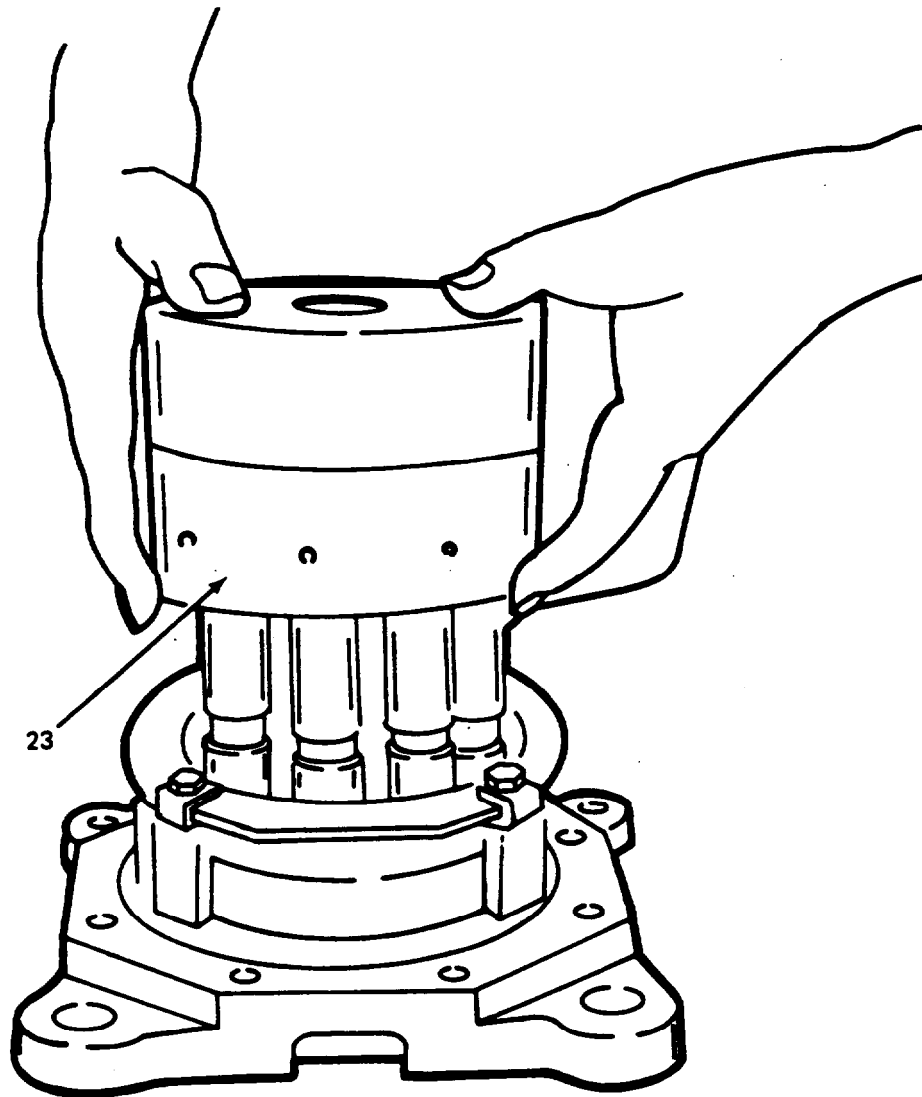
TA 075940

Figure 3-67. Marking Number 1 Piston.

(16) Remove the cylinder block assembly (23, fig. 3-68) by lifting it straight up off the piston assemblies. Observe the following:

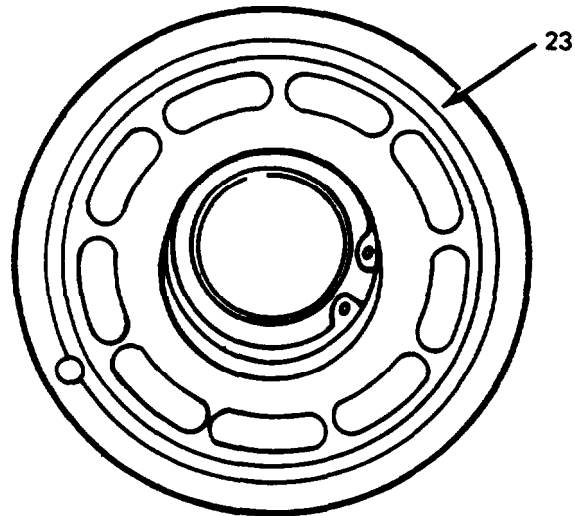
(a) Examine the cylinder block assembly (23, fig. 3-60) for excessive wear or damage. Cylinder bores that exhibit only slight burnishing of the bronze liners are acceptable for reuse. If the bores exhibit galling or any other irregularity in the running surface that can be felt, the cylinder block assembly must be discarded. If there is evidence that the bronze liners have begun to pull out of the steel block, the cylinder block assembly must also be discarded.

(b) Examine the upper running face of the cylinder block assembly (23). (Refer to fig. 3-69.) Circular wear patterns or phonographing that cannot be felt with the fingernail are normal.



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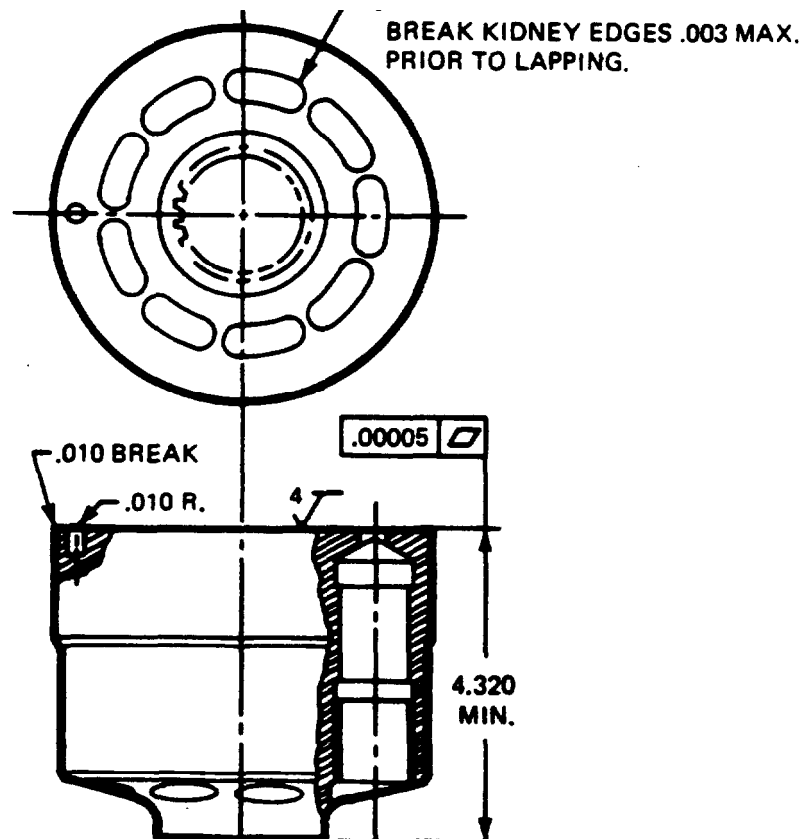
Figure 3-68. Removing Cylinder Block.



TA 075942

Figure 3-69. Inspecting Cylinder Block.

(c) If the cylinder block assembly is acceptable for reuse in all other respects, several passes of the block over 500 grit emery paper on a lap table, is recommended to put the block face in a like-new condition. If circular wear patterns can be felt with the fingernail, grind the running face as necessary to remove the wear pattern keeping the face parallel to the original face. Lap the reworked face on 500 grit emery as described above to remove the mat finish. Clean the block thoroughly in a commercial degreaser such as trichloroethylene and blow dry with compressed air. Check tolerance of refinished block as outlined in figure 3-70. If reworked block does not meet the tolerances, discard block.



TA 075943

Figure 3-70. Cylinder Block Rework Specifications.

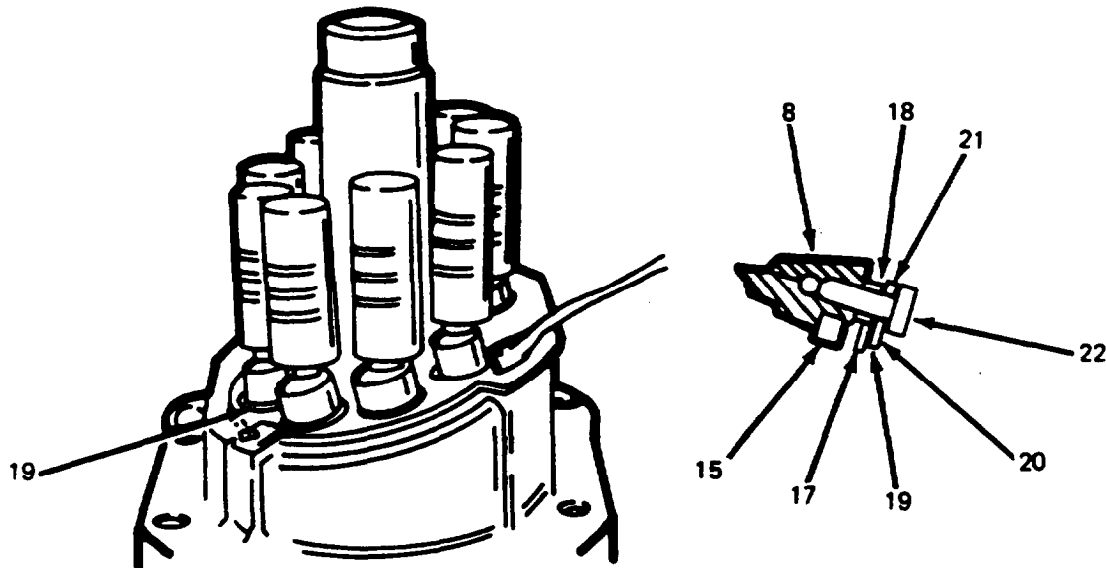
CAUTION

Be careful when removing block spring (25, fig. 3-60). It is under considerable tension.

(d) If damage is evident to block spring (25) or spring retainers, use an arbor press to remove retaining ring (24). Using a plug 1-3/4 in. dia, compress block spring (25) until all tension is removed from retaining ring (24). Using truarc pliers, remove retaining ring (24) and gradually release arbor press until block spring (25) is fully extended. Remove outer spring block (26), block spring (25), and inner spring retainer (27) from cylinder block assembly (23).

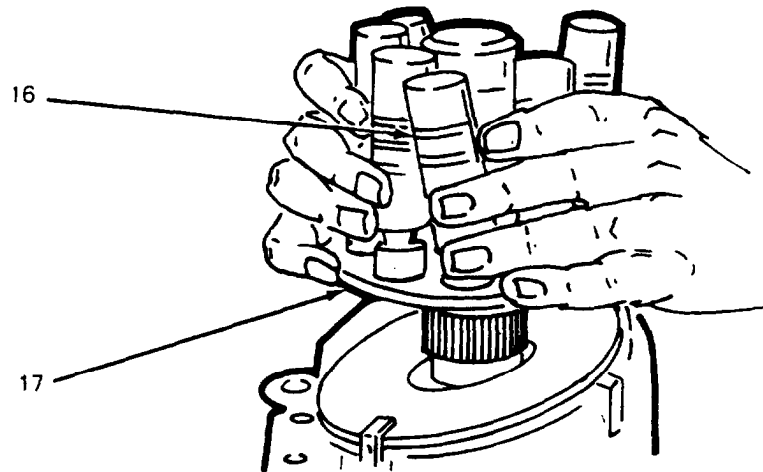
(17) From the high side of the cam, remove two capscrews (22, fig. 3-71), two lock tabs (21), clip (20), bearing plate (19), and two spacers (18). Inspect bearing plate (19). If wear patterns can be felt, disassemble the other spacer assembly and replace both bearing plates (19).

(18) Lift out return plate (17) and pistons (16). (Refer to fig. 3-72.) If damage is evident to either pistons (16), or return plate (17), remove pistons from return plate (17).



TA 075844

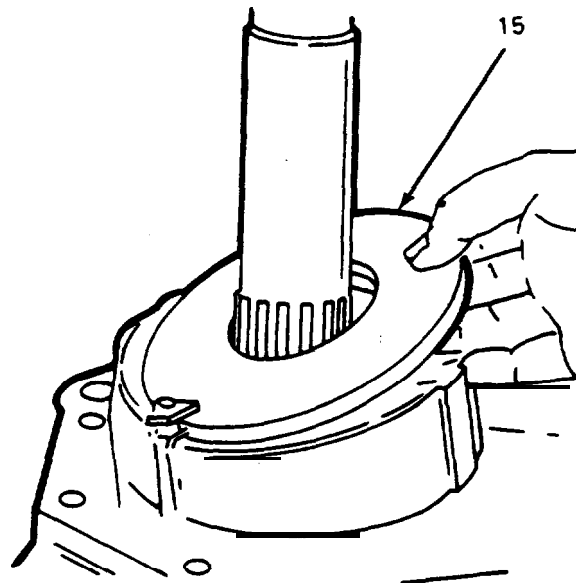
Figure 3-71. Removing Pistons and Return Plate.



TA 075945

Figure 3-72. Removing Pistons and Return Plate.

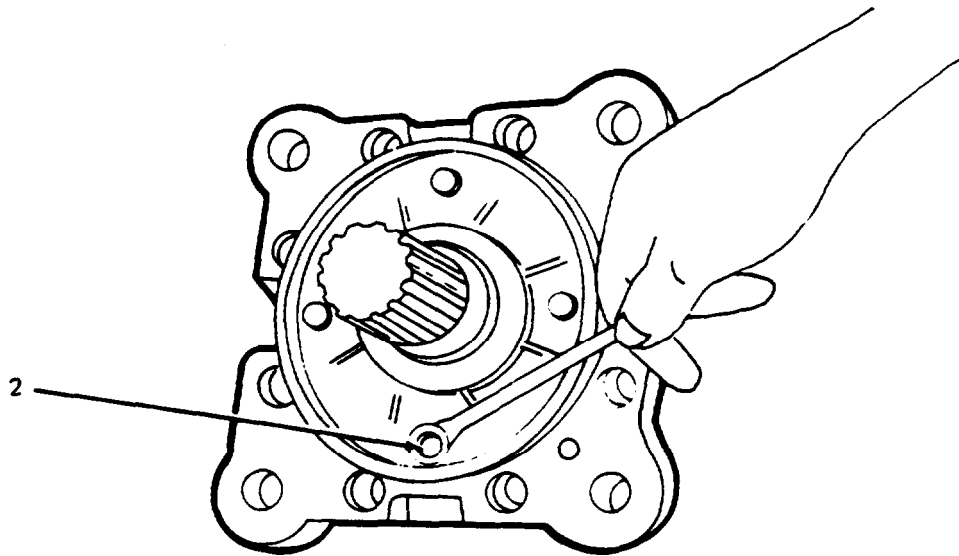
(19) Lift out wear plate (15). (Refer to fig. 3-73.) Remove dowel pin (9, fig. 3-50) only if damaged or needs replacement, by twisting and pulling with vice grip pliers.



TA 075946

Figure 3-73. Removing Wear Plate.

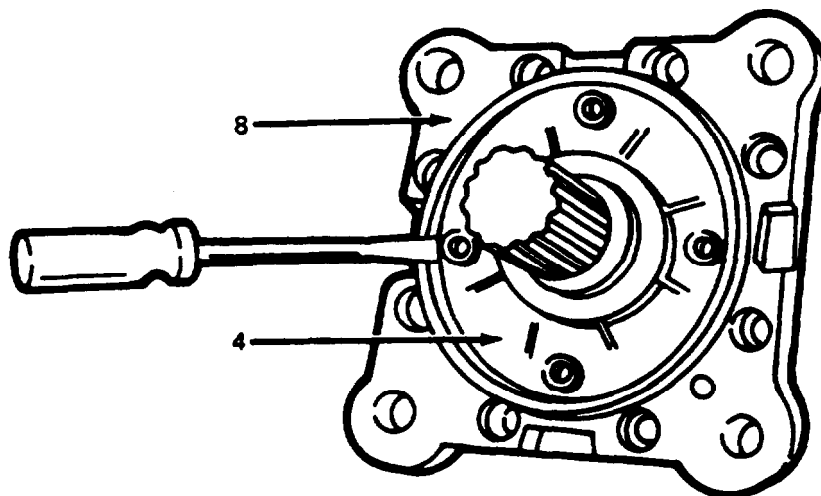
(20) Invert shaft/adaptor assembly. Remove four capscrew (2, fig. 3-60) and lockwashers (3). For extra identification of capscrew (2) location refer to figure 3-74.



TA 075947

Figure 3-74. Removing Shaft Seal Retainer Capscrews.

(21) Using a small screwdriver, remove shaft seal assembly (4, fig. 3-60) from mounting flange assembly (8). (Refer to fig. 3-75.) Remove O-ring (7, fig. 3-60). Press shaft seal assembly (4) from retainer using an arbor press and a 2-1/2 in. plug.



TA 075948

Figure 3-75. Removing Shaft Seal Retainer.

(22) Remove motor shaft (11) and assembled parts of ball bearing (14), and inner race of cover roller bearing (41), by pulling straight up from mounting flange assembly (8) as shown in figure 3-76.

(23) Inspect ball bearing (14, fig. 3-60) for galling, roughness, or cage cracks. Remove pecking (13). If damaged, remove retaining rings (12) using truarc pliers and press ball bearing (14) from motor shaft (11).

(24) Inspect inner race of cover roller bearing (41) for galling or roughness. If no damage is apparent and no damage was observed when the outer race was inspected, do not remove bearing from shaft. If damage was observed on either the inner or outer race, cover roller bearing (11) must be replaced. Remove retaining ring (42) and slide cover roller bearing (41) from motor shaft (11).

f. *Reassemble Hydraulic Motor.*

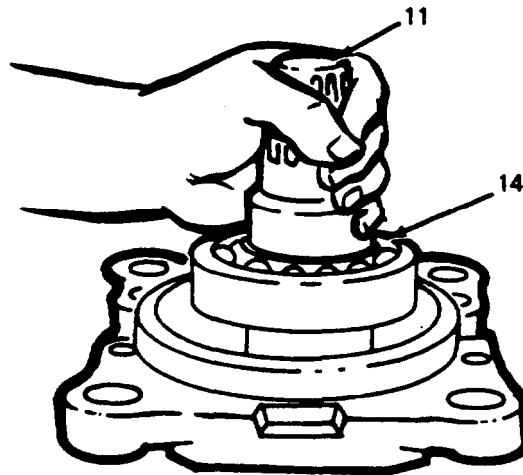
NOTE

Use new gaskets and seals, except as noted.

(1) If the cover roller bearing (41, fig. 3-60) is rough or galled, replace cover roller bearing (41). Place new cover roller bearing (41) on motor shaft (11) and install retaining ring (42).

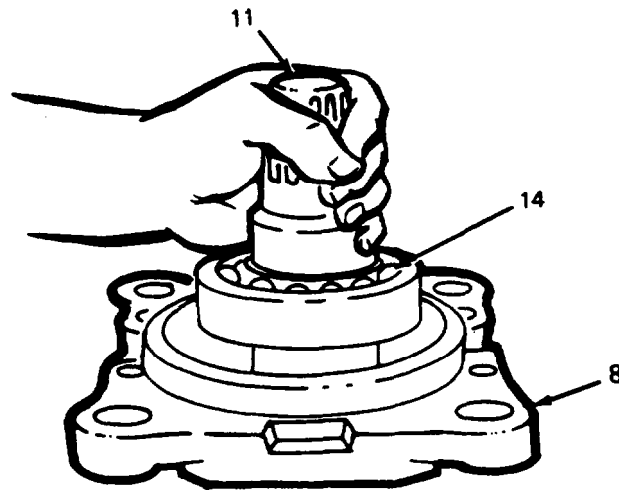
(2) If previously removed, install inner retaining ring (12). If damaged, install a new ball bearing (14) on motor shaft (11), using an arbor press. CAUTION should be exercised not to deform inner retaining ring (12) when ball bearing (14) is seated against it. If this occurs, back the ball bearing (14) off and reseal. Care should be taken to support the ball bearing (14) in the arbor press to prevent deformation of the ball bearing (14). Heating the bearing in hot oil will aid in a smooth bearing installation. install outer retaining ring (12).

(3) Install motor shaft (11), ball bearing (14) with packing (13), two retaining rings (12), retaining ring (42), and cover roller bearing (41) through the front face of the mounting flange assembly (8). (Refer to fig. 3-77.) The ball bearing (14, fig. 3-60) should fit snugly in the mounting flange assembly (8). If the ball bearing (14) doesn't seat easily, heat the mounting flange assembly (8) in hot oil and seat ball bearing (14) in proper position. Do not drive the ball bearing (14) into place. Do not use the shaft seal assembly (4) to force the ball bearing (14) into the seat. After ball bearing (14) is seated, check for free running by rotating motor shaft (11).



TA 075949

Figure 3-76. Removing Motor Shaft Assembly.



TA 075950

Figure 3-77. Installing Motor Shaft Assembly.

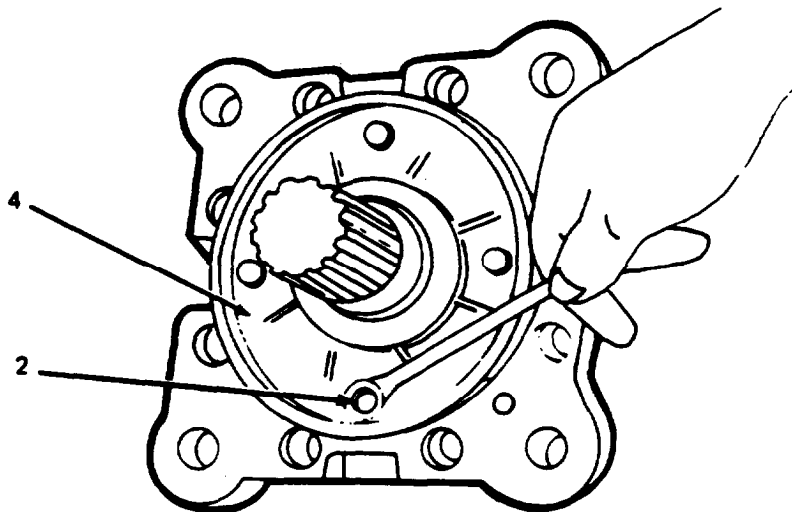
(4) Coat the OD of seal assembly (4) with Loctite pipe sealant and press new shaft seal into shaft seal assembly (4) using an arbor press and 2-1/2 in. plug. Fill cavity in shaft seal between oil lips approximately 3/4 full with multi-purpose grease.

(a) Coat O-ring (7) lightly with a multi-purpose grease.

(b) Install motor shaft (11) and ball bearing (14) assembly into mounting flange assembly (8) using new O-ring (7) in mounting flange assembly (8).

(5) Wrap shim stock or other thin material around shaft spline and carefully slide shaft seal assembly (4) into place over motor shaft (11).

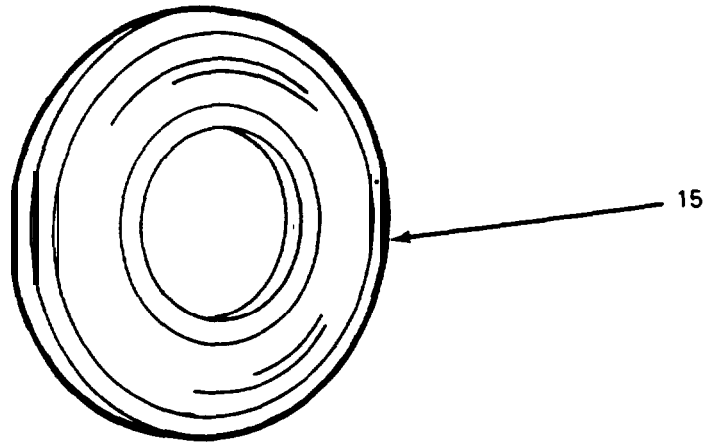
(6) Secure shaft seal assembly (4) with capscrews (2) and lockwashers (3). Torque to 11 lb ft. (15 N-m). (Refer to fig. 3-78.)



TA 075951

Figure 3-78. Installing Shaft Seal Retainer.

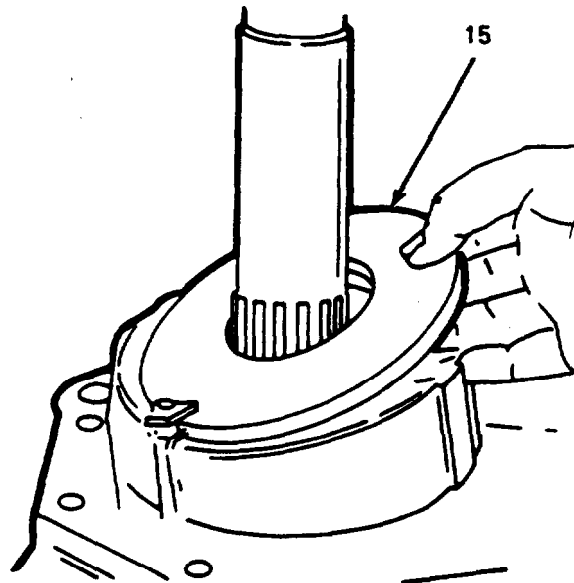
(7) Examine wear plate (15, fig. 3-60). Circular patterns burnished on the surface of the cam plate are normal. If the circular patterns on the wear plate are extensive and can be felt with the fingernail or if angular scratches are evident, the plate must be discarded. (Refer to fig. 3-79.) Install new dowel pin (9, fig. 3-60), if previously removed, by tapping in with a light weight hammer.



TA 075952

Figure 3-79. Inspecting Cam Wear Plate.

(8) Match up dowel pin (9) with hole in wear plate (15) and seat plate (17). (Refer to fig. 3-80.) Check for proper seating by pushing down on first one edge then the other in a rocking motion. If any looseness is felt, remove wear plate (15, fig. 3-60) and clean the cam assembly and wear plate to remove any foreign particles from beneath the wear plate (15). Reposition wear plate (15) and again check for proper seating. If wear plate (15) still does not seat properly, check wear plate (15) for flatness and replace if necessary.

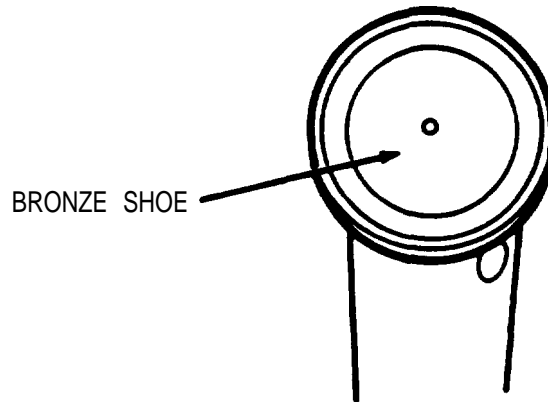


TA 075963

Figure 3-80. Installing Cam Wear Plate.

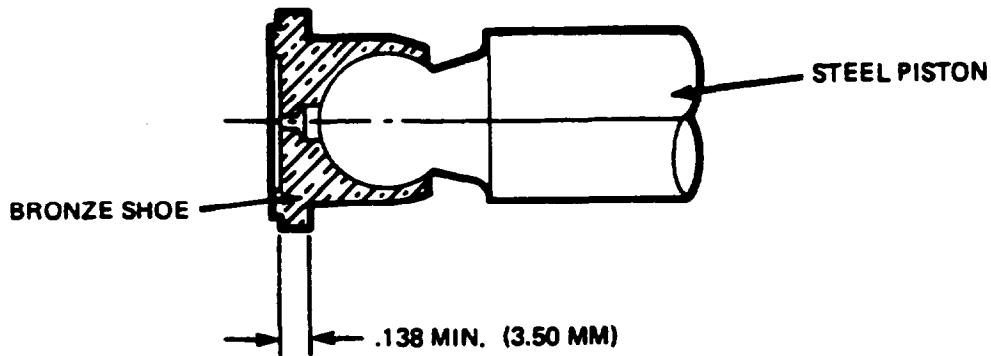
(9) Check clearance between bronze piston shoe and steel piston (16) body. With a push-pull motion check for free play between shoe and body. If any free play can be felt, the piston (16) must be replaced.

(10) Inspect the bronze piston shoe running surface. During normal service, a dulling of the running surface is to be expected. If large scratches are present, make several short passes over 500 grit emery paper on a lap table. (Refer to fig. 3-81.) On the last few passes, place five to six sheets of emery paper as a cushion under the top sheet to obtain the proper edge sharpness. Check the reworked piston (16) against the tolerance limits in figure 3-82. If the piston (16) does not fall within the tolerance limits, it must be discarded.



TA 075954

Figure 3-81. Inspecting Piston.



TA 075955

Figure 3-82. Piston Shoe Rework Tolerance

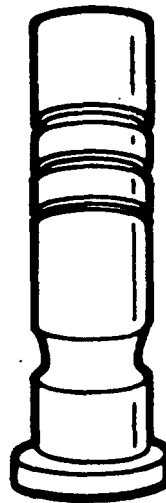
NOTE

Often, large scratches on the piston shoe running surface will "heal over" if placed back in service. It is recommended however, that all piston shoes with badly scratched running surfaces be either reworked within tolerance limits or replaced.

(11) Inspect steel piston body. If any galling is apparent or if any irregularities can be felt, the piston must be discarded. If damage is present, check corresponding cylinder block (23, fig. 3-60) bore for similar damage. (Refer to fig. 3-83.)

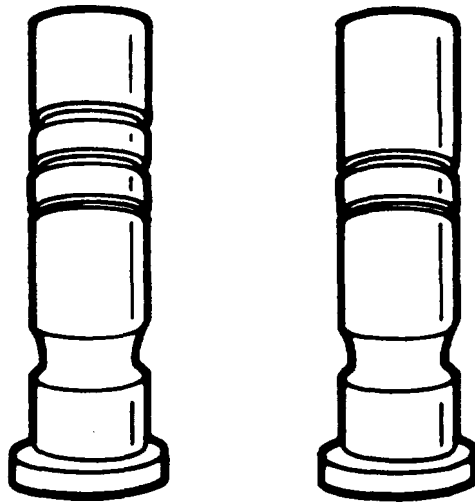
NOTE

Dynapower units may be encountered with either two groove or three groove piston. (Refer to fig. 3-84.) Units supplied from the factory with two groove pistons may be fitted with three groove pistons as a nine piece set only. In a like manner, units supplied with two groove pistons may be refitted with three groove pistons again only as a nine piece set. Two groove and three groove pistons must not be mixed in the same unit.



TA 075956

Figure 3-83. Inspecting Piston Body.

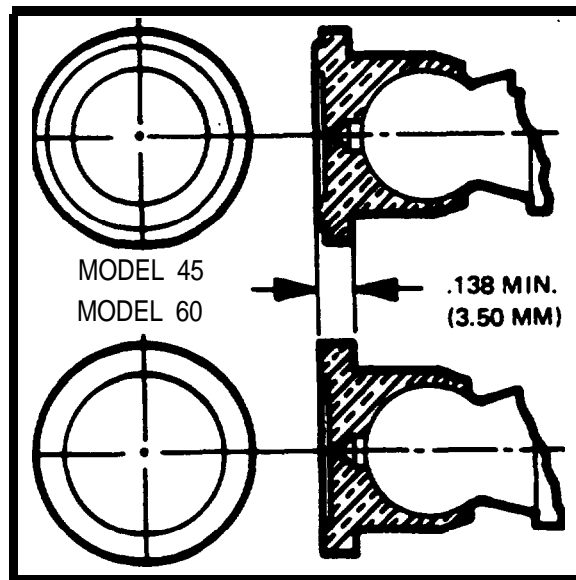


TA 075957

Figure 3-84. Three Groove and Two Groove Pistons.

NOTE

Model 45 pistons are easily identified by characteristic piston shoe running surface configurations. (Refer to fig. 3-85.)



TA 075958

Figure 3-85. Piston Shoe Configurations.

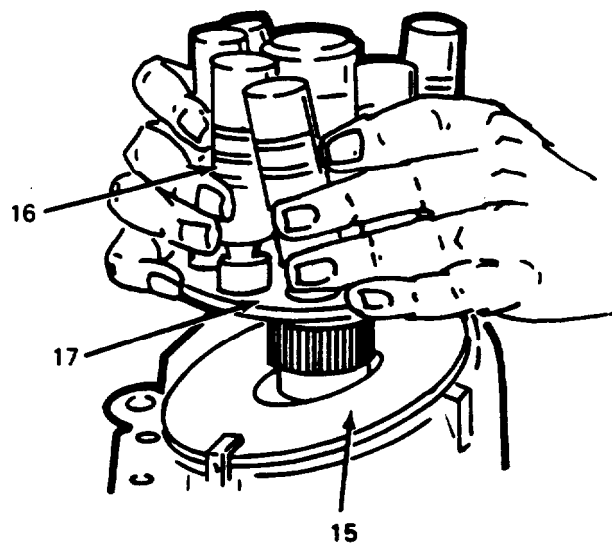
(12) Inspect seat plate (17, fig. 3-60) for heat discoloration or cracks. Check for flatness. If distorted, discolored or cracked, replace with a new seat plate.

(13) Install piston (16) in seat plate (17). Used pistons (16) must be so positioned in the seat plate (17) to allow placement of the pistons in their respective cylinder block bores.

(14) If both seat plate (17), two locktabs (21), spacers (18), bearing plates (19), clips (20), and capscrews (22) were disassembled, reassemble. Do not tighten capscrews (22).

(15) Spread a light film of oil on the surface of the wear plate (15) and slide piston (16) and return plate (17) assembly into place. (Refer to fig. 3-86).

(16) Install two spacers (18, fig. 3-60), bearing plate (19), clip (20), two new locktabs (21), and two capscrews (22). (Refer to fig. 3-87.) Torque four capscrews (22, fig. 3-60) to 13 lb-ft (18 N-m). Check clearance between each piston (16) and-wear plate (15) surface. Clearance should not be less than 0.003 in. (.07620 mm) nor more than 0.007 in. (0.17780 mm). Clearance of from 0.0015 (.0380 mm) to 0.003 (.07620 mm) is acceptable only if the rotating piston (16) assemblies spin freely by hand with no binding or tight spots. Turn up four locktabs (21).



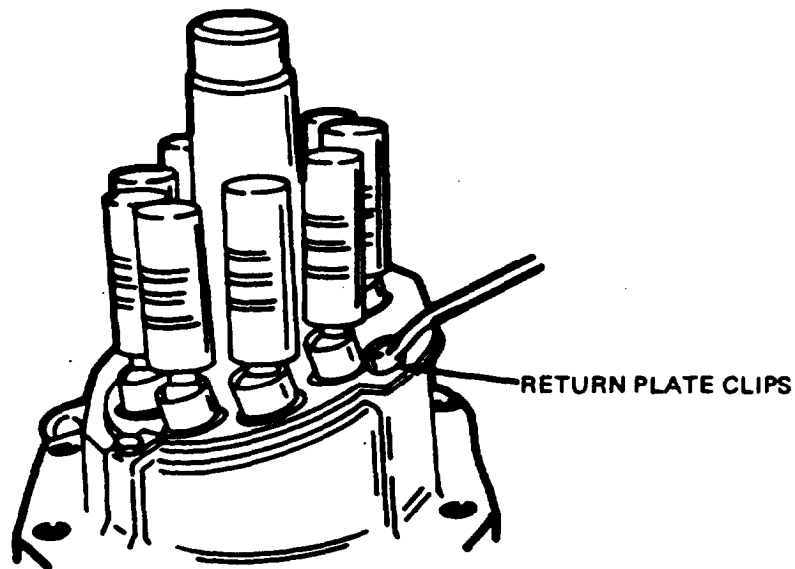
TA 075959

Figure 3-86. Installing Pistons and Return Plate.

(17) If cylinder block assembly (23) was completely disassembled, proceed with the block as follows:

- (a) Install the retaining ring (24), block spring (25), and outer spring block (26) in cylinder block (23).
- (b) Place cylinder block assembly (23) in an arbor press and compress block spring (25).
- (c) Install inner spring retainer (27).
- (d) Gradually release the block spring (25) until it seats against the inner spring retainer (27).

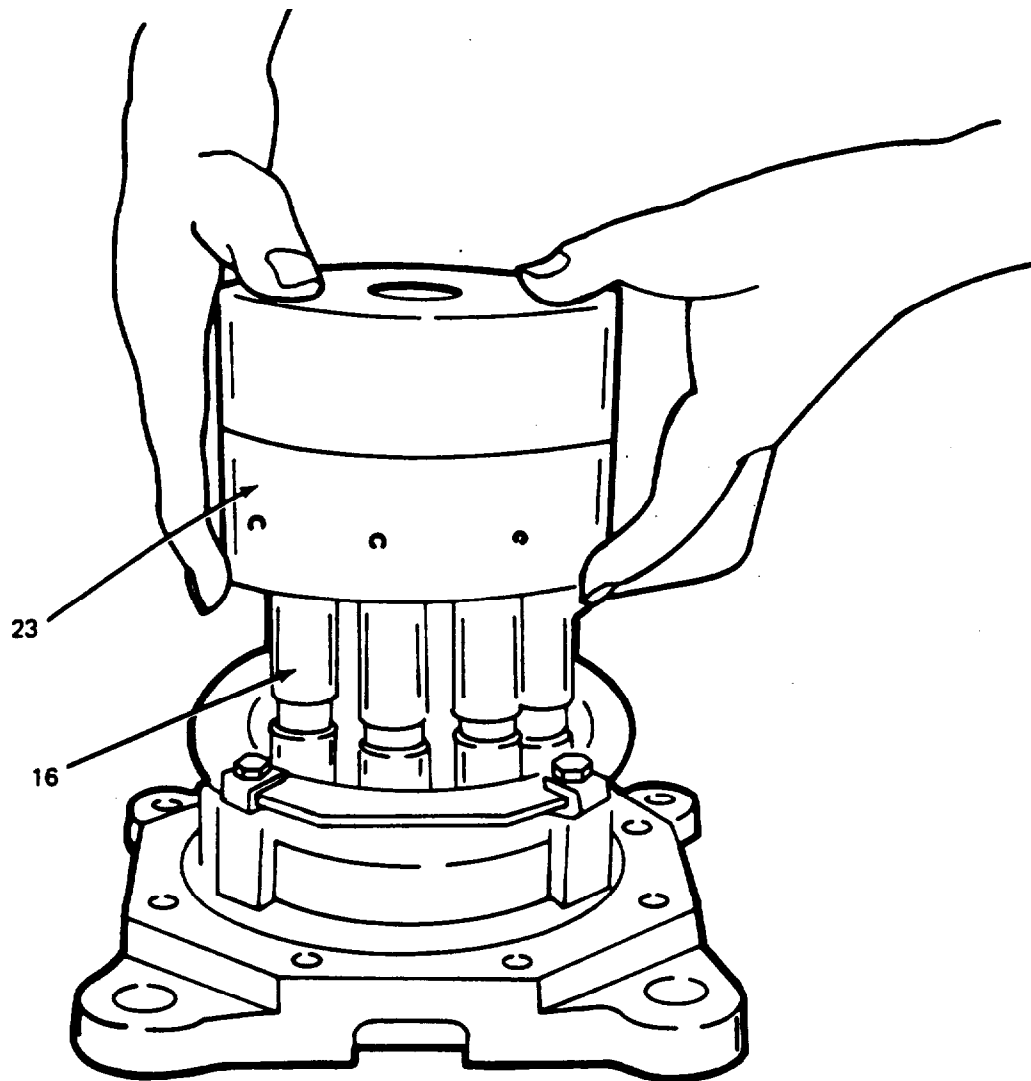
(18) Spread a thin film of oil over the inner surface of the nine piston bores. Stand the piston (16) in an erect position and carefully lower the cylinder block assembly (23) over them being sure to return the used pistons to their respective bores. Do not force the block over the pistons. A slight rotary motion of the cylinder block assembly (23) will aid in positioning the pistons in the cylinder bores. (Refer to fig. 3-88.)



TA 075960

Figure 3-87. Installing Return Plate Clips.

(19) Install O-ring (10, fig. 3-60) on mounting flange assembly (8). Lower housing (28) over rotating group onto mounting flange assembly (8) being careful not to disturb assembled parts. (Refer to fig. 3-89.) Secure housing (28) to mounting flange assembly (8) with capscrews (5, fig. 3-60) and lockwasher (6).



TA 075961

Figure 3-88. Installing Block Assembly.

WARNING

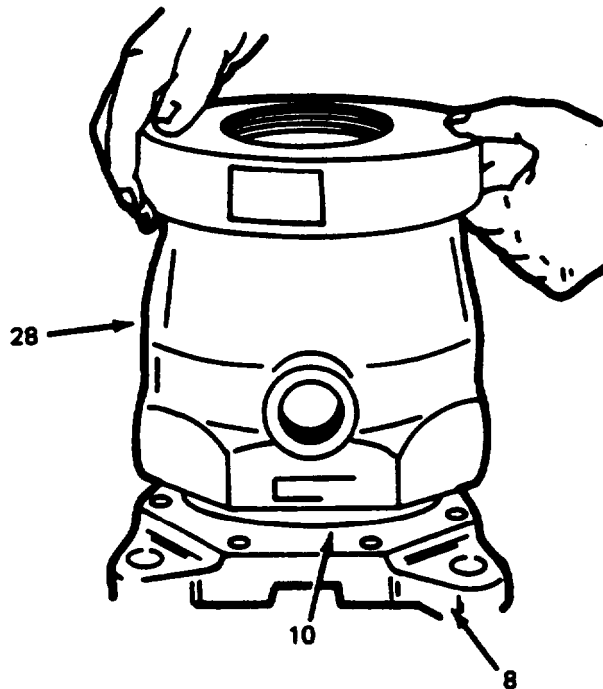
Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

(20) Inspect the cover (35) bronze face for signs of cavitation, excessive wear, contamination or other damage. (Refer to fig. 3-90.) If circular wear patterns cannot be felt with a fingernail and if there are no nicks, scratches, or other damage, one or two passes over 500 grit emery paper on a lap table, will put the bronze face in like-new condition. If scratches or the wear patterns can be felt, pass across 500 grit emery cloth as described above until scratches can no longer be felt. Every effort must be made to remove any scratches that cross the lands on either side of the kidneys. Degrease the cover in a commercial degreaser, such as trichloroethylene and blow dry with compressed air. Check the reworked cover (35) against tolerances in figure 3-91. If the cover (35) does not fall within tolerance limits, it must be discarded.

(21) If cover roller bearing (41, fig. 3-60) was removed from the cover (35) during disassembly, install cover roller bearing (41) in cover (35) using an arbor press and plug of proper size. It is important that the cover roller bearing (41) be replaced as a set only.

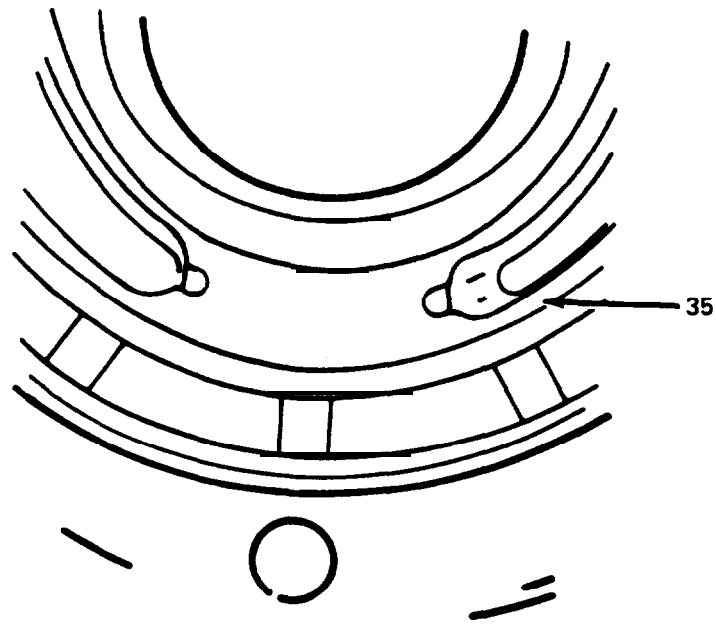
(22) Fill pistons (16) with new transmission oil allowing a small excess to spill over the face of the cylinder block assembly (23).

(23) Place a new gasket (28) on housing (28) and position cover (35), utilizing reference marks in housing (28) and cover (35). Install six capscrews (36) and lockwashers (6) and torque bolts in an opposite pattern to 38 lb-h (52 N•m). (Refer to fig. 3-92.)



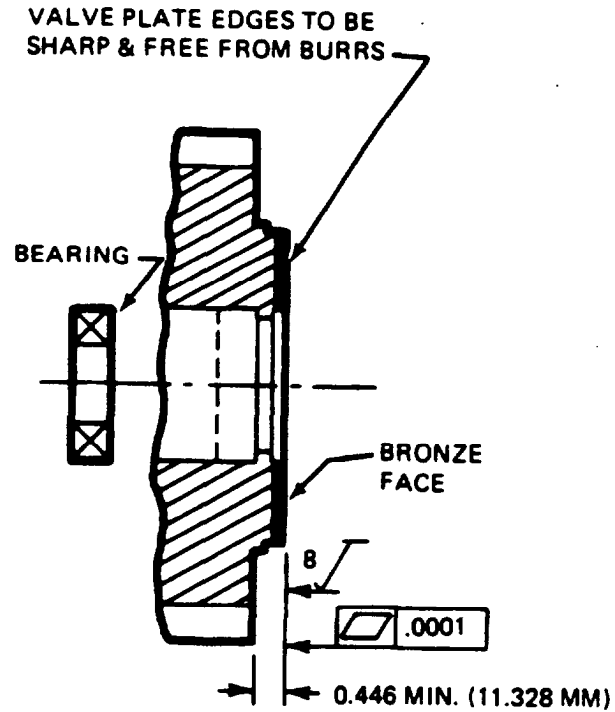
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Figure 3-89. Installing Housing.



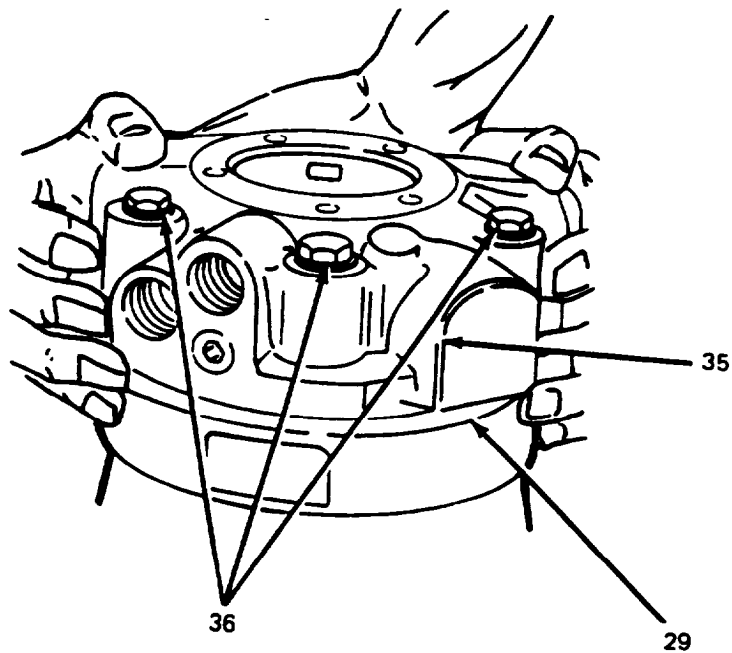
TA 075963

Figure 3-90. Inspecting Motor Cover.



TA 075964

Figure 3-91. Cover Rework Specifications.

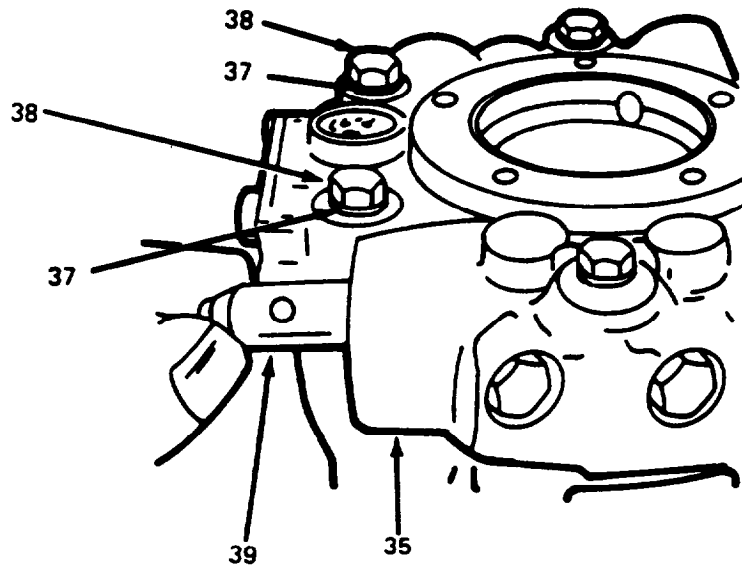


TA 075965

Figure 3-92. Installing Motor Cover.

(24) If previously removed, install two plugs (38, fig. 3-93) with new O-rings (37).

(25) Install shuttle valve assembly (39) in cover (35). Check for free movement from side to side. If any tightness is felt, remove any nicks or burn with 500 grit emery. It is essential to the proper operation of the relief valve stem that the shuttle valve operate freely. Install shuttle plugs (40, fig. 3-60) with new O-rings (31).



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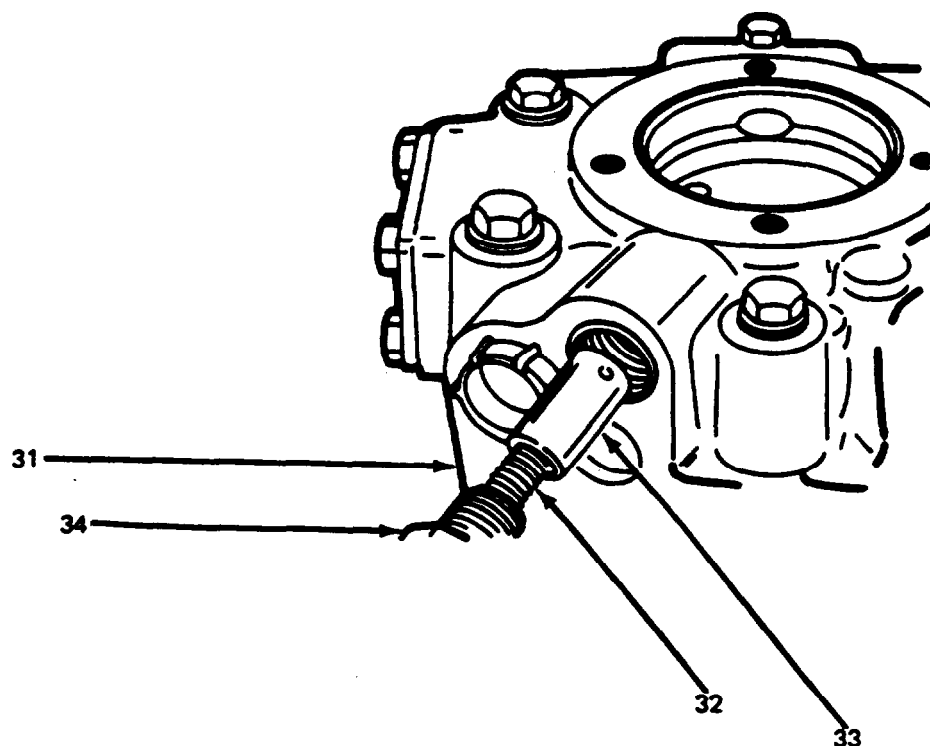
Figure 3-93. Installing Shuttle Valve.

(26) Inspect plunger (33) for scratches, nicks or burrs. Burnishing of the plunger at the point of contact with the seats is normal. If wear can be felt, replace the plunger (33). Install the plunger (33), spring (32), a new O-ring (311), shuttle valve plug (34) and low pressure relief valve plug (30). (Refer to fig. 3-94.)

NOTE

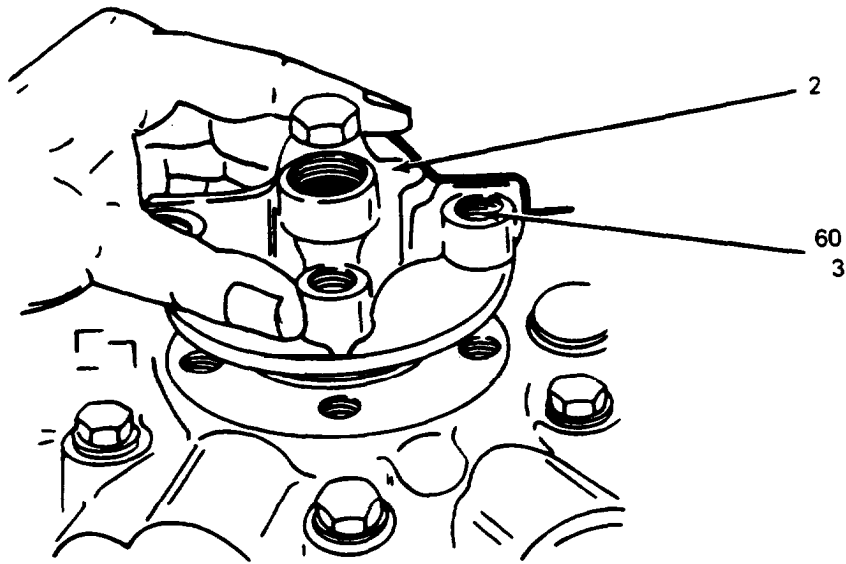
Where it becomes necessary to replace the shuttle or the plugs, be certain the faulty piece is replaced with one of a like kind.

(27) Insert body (46, fig. 3-60) in cover (35) with packings (46 and 43) and rings (44) and secure with capscrews (2 and 60) and lockwashers (3). Torque to 11 lb-ft (15 N•m). (Refer to fig. 3-95.)



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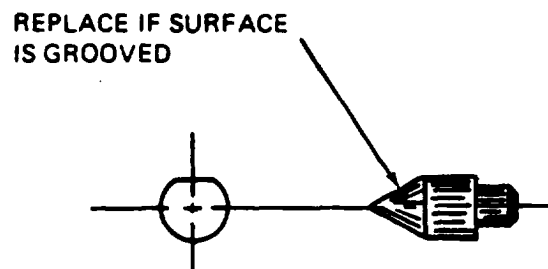
Figure 3-94. Installing Low Pressure Relief Valve.



TA 075968

Figure 3-95. Installing High Pressure Relief Valve Body.

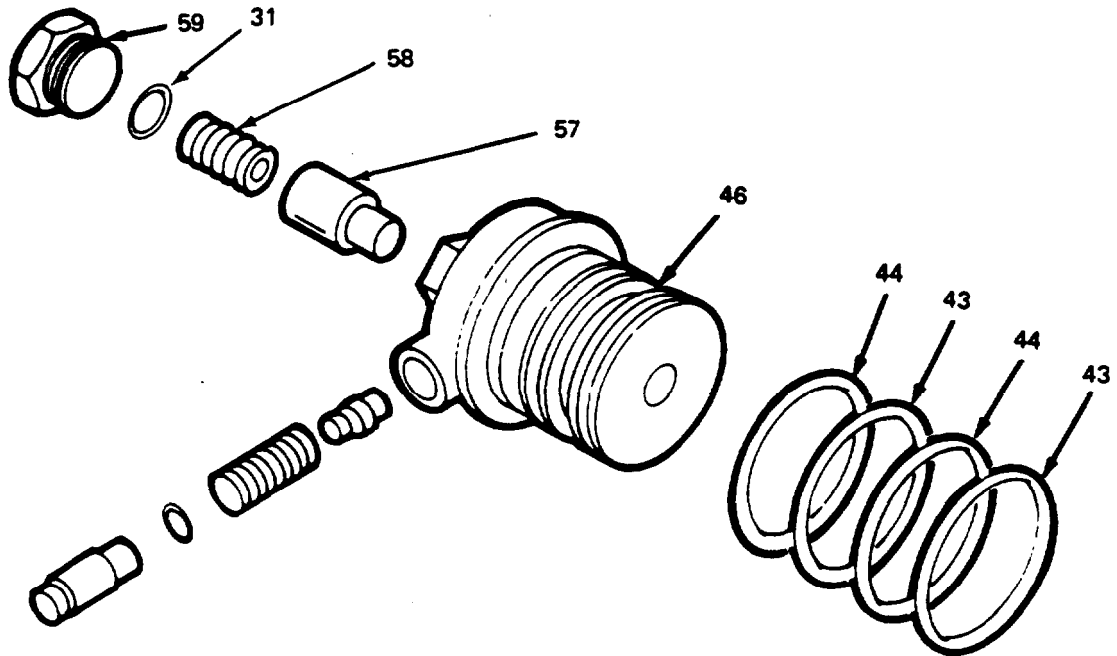
(28) Inspect valve pilot (48, fig. 3-60). Under normal usage, a seating pattern will burnish on face of valve pilot (48). If seating pattern can be felt or if the valve pilot (48) is damaged in any way, it must be replaced. (Refer to fig. 3-96.)



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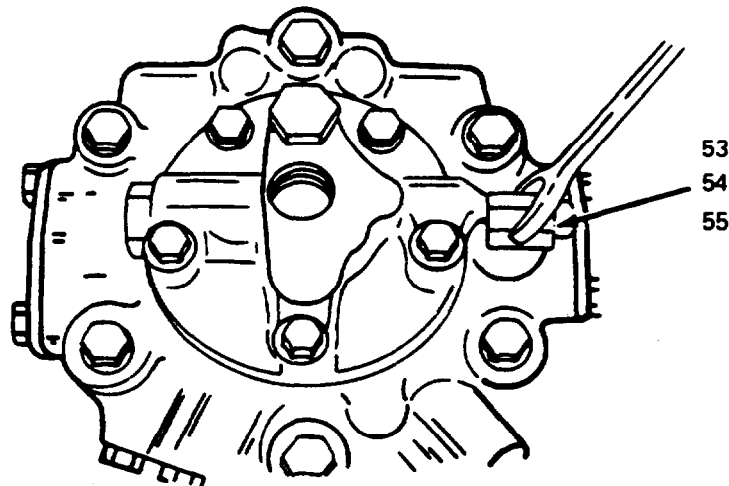
Figure 3-96. Inspecting Pilot Valve.

(29) Install valve pilot (48, fig. 3-60), spring (49), inner spring seat (51), and a new O-ring (52). Secure with spring seat assembly (54), hex nut (55), and capscrew (53) being careful not to disturb the seat, hex nut, screw relationship. (Refer to fig. 3-98.)



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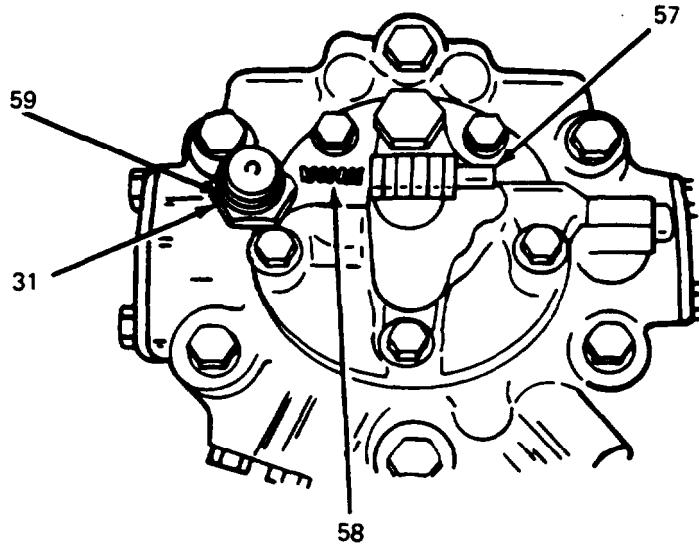
Figure 3-97. High Pressure Relief Valve and Pilot.



TA 075971

Figure 3-98. Installing High Pressure Pilot Valve.

(30) Inspect high pressure relief valve plunger (57, fig. 3-60). Check for free movement in relief valve body (46). If any tightness is felt, rework as necessary to remove nicks, scratches, or irregularities. Check body (46) against tolerance limits in figures 3-99 and 3-100. Install plunger (57, fig. 3-60), spring (58), a new O-ring (31) and secure with high pressure relief valve plug (59). Install O-ring (50) onto plug (61) and install into body (46).



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Figure 3-99. High Pressure Relief Valve.

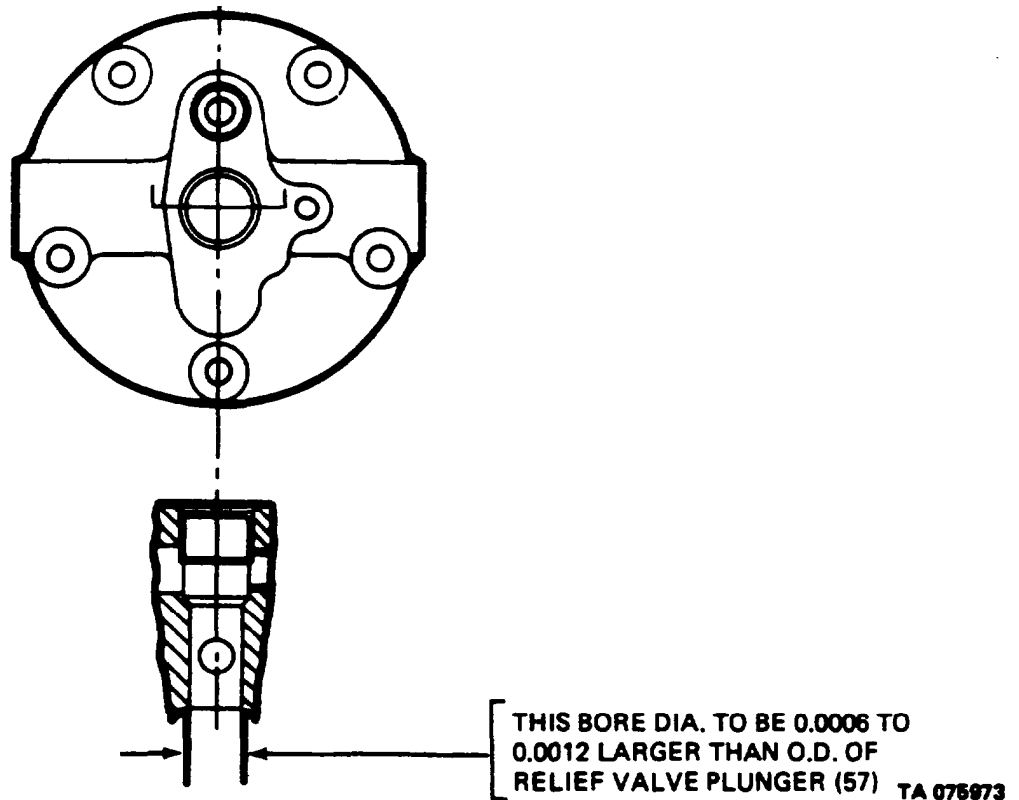


Figure 3-100. High Pressure Relief Valve Tolerance.

g. Install Motor. (Refer to fig. 3-58.)

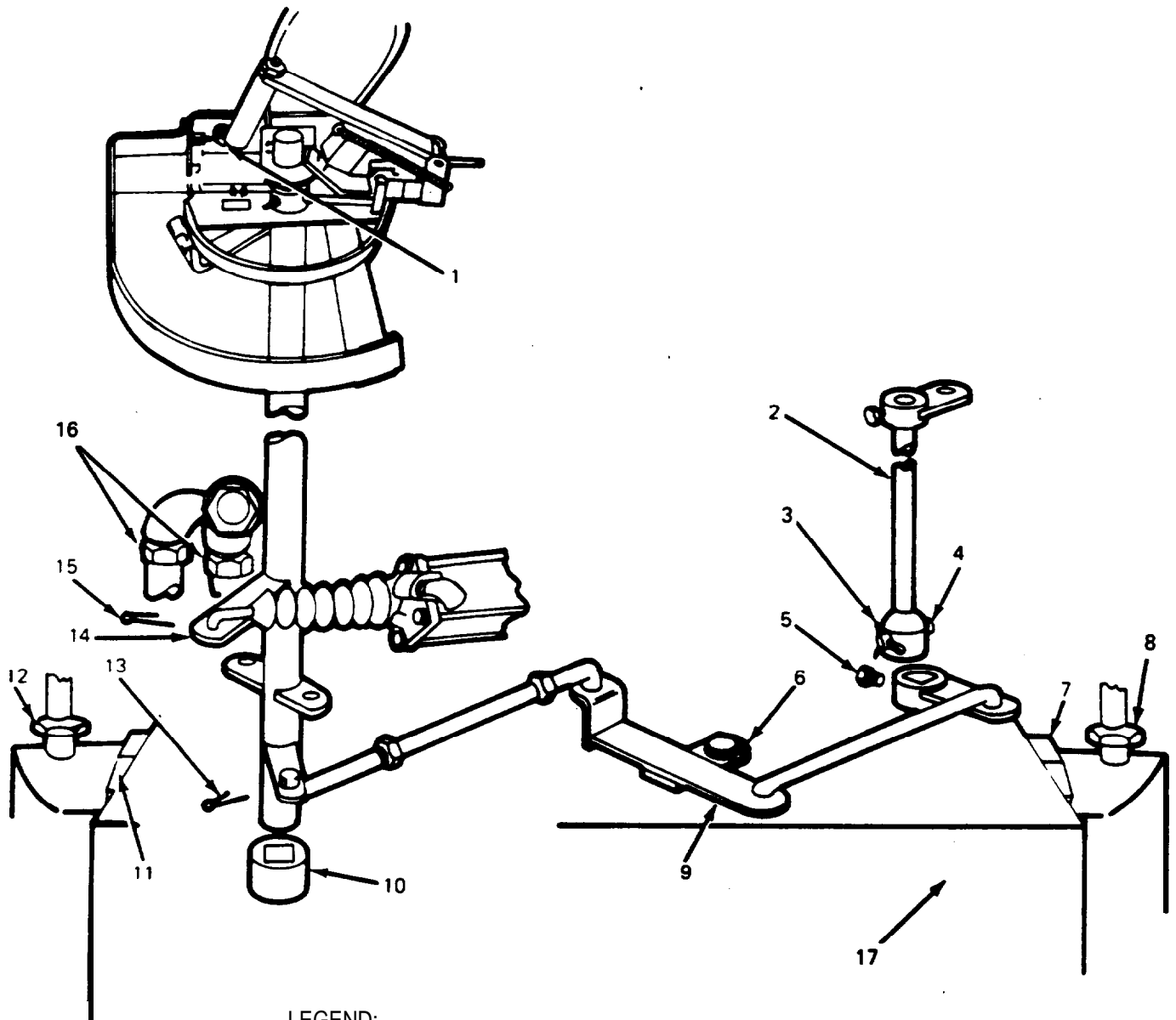
- (1) Mount rail (18) to hydraulic motor (17) with one capscrew (19), nut (22) and lock-washer (21). (Do not tighten.)
- (2) Install tachometer drive housing assembly to motor (17) and rail (18) with two cap-screws (19), lockwasher and nuts. (Do not tighten.)
- (3) Start drive coupling (25) onto shaft of hydraulic motor (17) and install tachometer drive chain (20) onto drive coupling (25) and finish pushing drive coupling (25) into place. Install capscrews (24) with nuts and washers (2).
- (4) Adjust tachometer drive chain (20) to a slight tension and finish tightening capscrews (19).
- (5) Install sprocket cover (7) with two capscrews (8) and washers (8).
- (6) Install hydraulic motor (17) into place and secure with capscrews (12), washers (15), and nuts (16).
- (7) Connect tachometer cable (5).
- (8) Connect override cable (9) to override cable clamp (11). Tighten capscrew (10), washer (13), and nut (14).
- (9) Install capscrews (1) and nuts and washers (2).
- (10) Connect hydraulic lines (30), (31), and (32).
- (11) Install hydraulic hose (27) to elbow (26) and tee (29).

Section VI. REPLACE ASPHALT PUMP

3-7. Asphalt Pump.

a. *Removal.*

- (1) Remove hydraulic motor. (Refer to para 3-6.)
- (2) Loosen lockscrew (5, fig. 3-101). Remove C-clip (6) and remove cotter pin (13); then lift off linkage assembly (9).
- (3) Remove cotter pin (15) and disconnect cylinder linkage (14) and move cylinder to the side.
- (4) Remove cotter pin (3) and tapered pin (4); then lift up linkage (2) to allow removal of cover (17) located below the linkage.
- (5) Remove two capscrews (1) and washers that fasten quadrant to tank; then lift up on the quadrant column and remove bushing (10).
- (6) Remove all covers shown in figure 3-102 by removing twenty-three screws (15).
- (7) Disconnect two pipe nuts (161, fig. 3-101).
- (8) Disconnect manifold pipe nuts (7 and 11).
- (9) Remove vacu-flo lines by removing pipe nuts (8 and 12).
- (10) Disconnect header assembly (6, fig. 3-103) from two valve assemblies (5) and asphalt pump assembly (1) by disconnecting in five places.
- (11) Remove studs (7) that fasten the manifold to the asphalt pump and remove the manifold.
- (12) Place a hydraulic jack under the asphalt pump. Raise the jack so that it just touches the pump. (Refer to fig. 3-113).
- (13) Remove studs, nuts, and washers that fasten the asphalt pump assembly (1) to the control valve.
- (14) Lower the pump on the jack as low as it will go; then remove the pump and gasket.

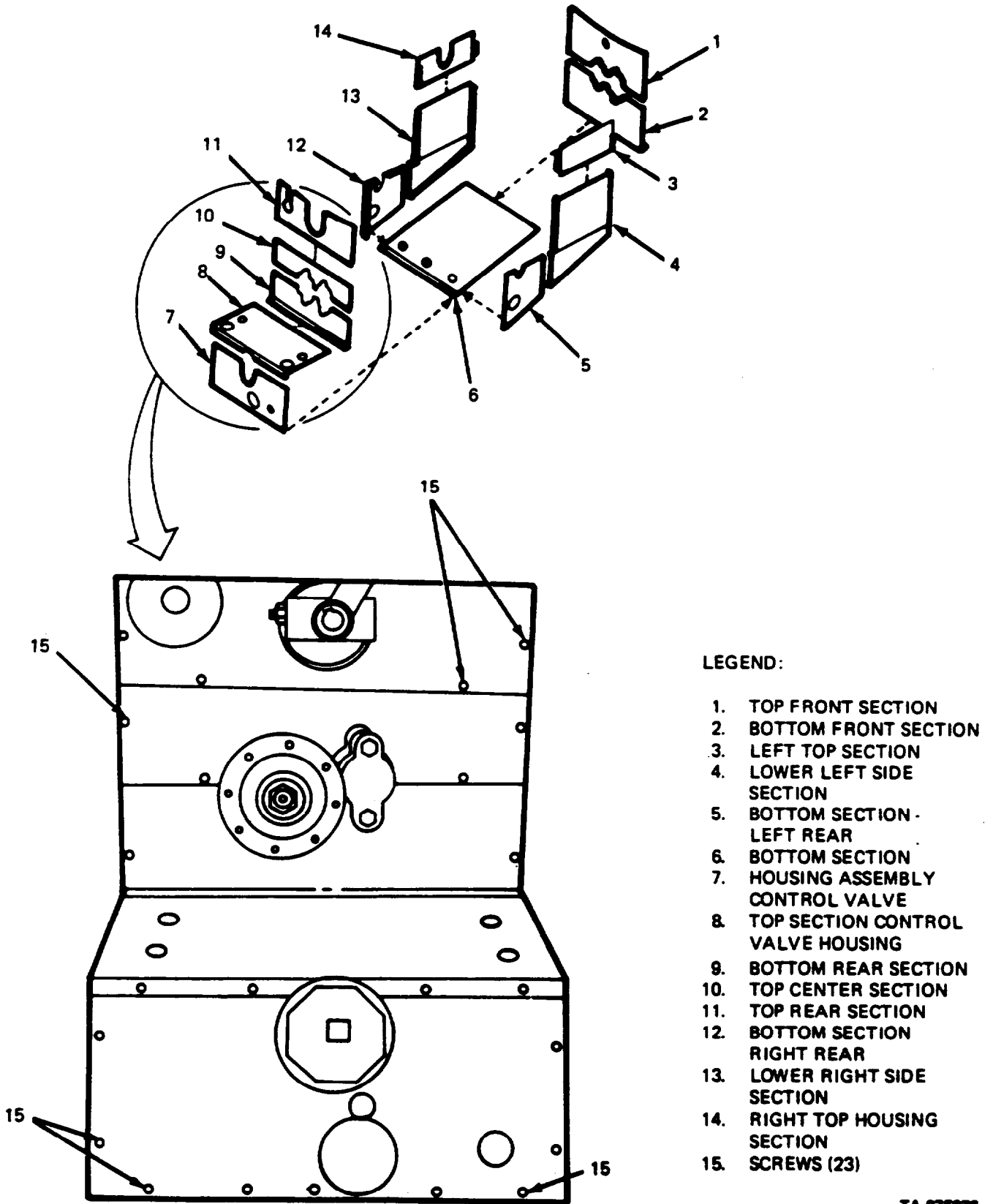


LEGEND:

- | | |
|----------------------|-----------------------|
| 1. CAPSCREW (2) | 9. LINKAGE ASSEMBLY |
| 2. LINKAGE | 10. BUSHING |
| 3. COTTER PIN | 11. MANIFOLD PIPE NUT |
| 4. TAPERED PIN | 12. PIPE NUT |
| 5. LOCKSCREW | 13. COTTER PIN |
| 6. C-CLIP | 14. CYLINDER LINKAGE |
| 7. MANIFOLD PIPE NUT | 15. COTTER PIN |
| 8. PIPE NUT | 16. PIPE NUT (2) |
| | 17. COVER |

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Figure 3-101. Disconnect/Connect Control Linkage and Manifold.

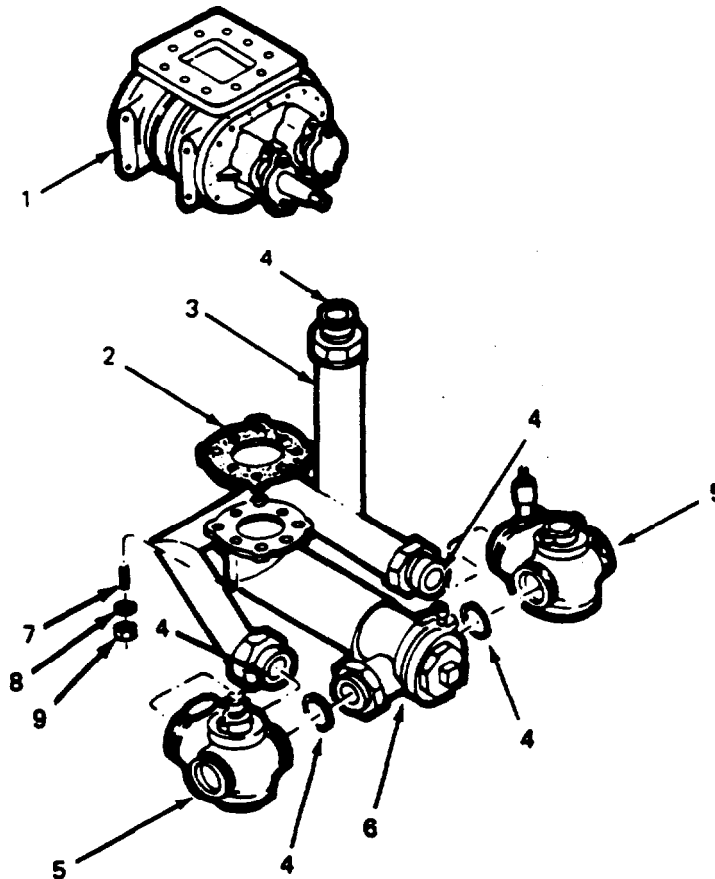


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Figure 3-102. Remove/Install Covers.

b. *Installation.*

- (1) Place the pump on a hydraulic jack and position the asphalt pump assembly (1, fig. 3-103) with a new gasket (2) under the control valve.
- (2) Install studs that fasten the asphalt pump assembly (1) to the control valve.
- (3) Connect header assembly (6) in five places to two valve assemblies (5) and the asphalt pump assembly (1). Use new gaskets (4).
- (4) Install stud (7), washer (8), and nut (9) that fasten header assembly to asphalt pump.



LEGEND:

- | | |
|--------------------------|-----------------------|
| 1. ASPHALT PUMP ASSEMBLY | 5. VALVE ASSEMBLY (2) |
| 2. GASKET | 6. HEADER ASSEMBLY |
| 3. RETURN LINE ASSEMBLY | 7. STUD (8) |
| 4. GASKET (6) | 8. WASHER (8) |
| | 9. NUT (8) |

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Figure 3-103. Remove/Install Asphalt Pump.

(5) Install vacu-flo lines (fig. 3-101) by loosely connecting pipe nuts (16), (8), and (12). Loosely connecting pipe nuts (7) and (11), tighten pipe nuts (8) and (12); then securely tighten pipe nuts (16), (7), and (11).

(6) Install all covers shown in figure 3-102.

(7) Install bushing (10, fig. 3-101) then place quadrant column on bushing and secure assembly to the tank with two capscrews (1) and washers-

(8) Install linkage (2) and secure with tapered pin (4) and cotter pin (3).

(9) Connect cylinder linkage (14) to quadrant column and secure with cotter pin (15).

(10) Install linkage assembly (9). Secure by tightening lockscrew (5) and installing C-clip (6) and cotter pin (13).

(11) Install hydraulic motor. (Refer to para 3-6.)

Section VII. REPAIR OF COMBUSTION CHAMBER

3-8. Combustion Chamber.

a. *Removal.*

(1) Remove low pressure burner assembly to gain access to combustion chamber components. (Refer to para 2-39.)

(2) Remove two capscrews (fig. 3-104), nuts and lockwashers that secure combustion chamber components to the tank.

(3) Remove the combustion block assembly, combustion tube and combustion tube holder.

b. *Inspection.* Inspect combustion tube for cracks, holes, or crumbling condition. Replace if defective.

c. *Installation.*

Assemble combustion block assembly, combustion tube, and combustion tube holder into tank.

(2) Secure components with two capscrews, nuts and lockwasher.

(3) Re-install low pressure burner assembly. (Refer to para 2-39.)

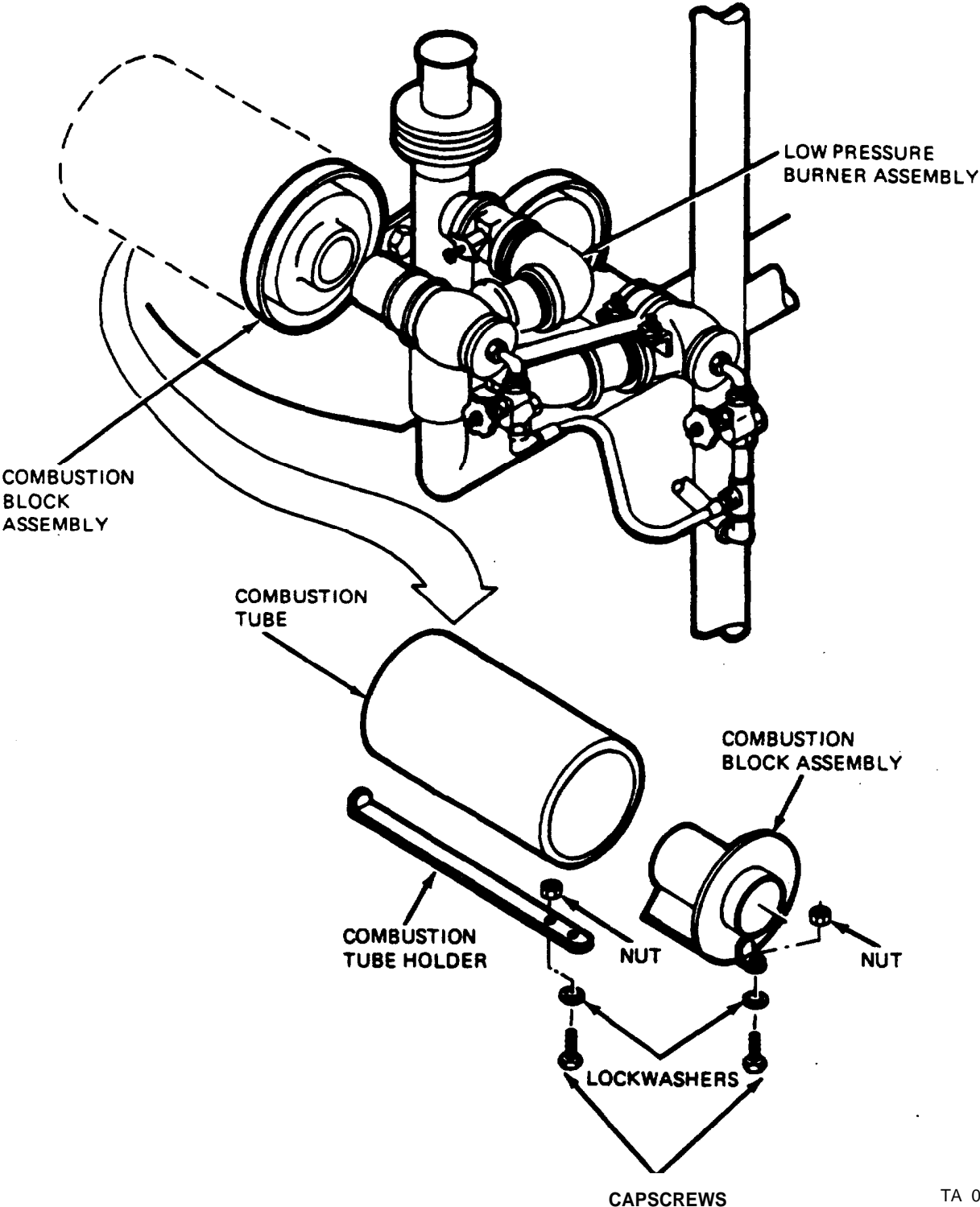


Figure 3-104. Remove/Install Combustion Chamber Components.

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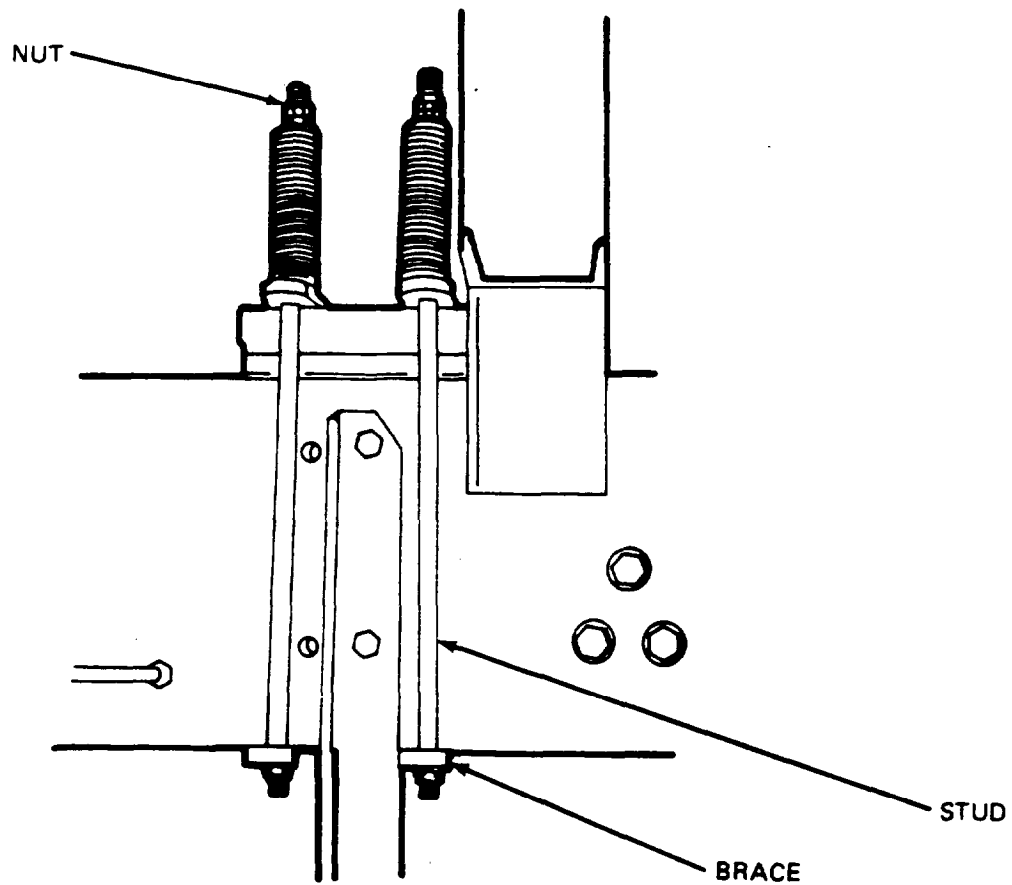
Section VIII. REPAIR OF ASPHALT TANK AND HOSES

3-9. Asphalt Tank.

a. *Removal.*

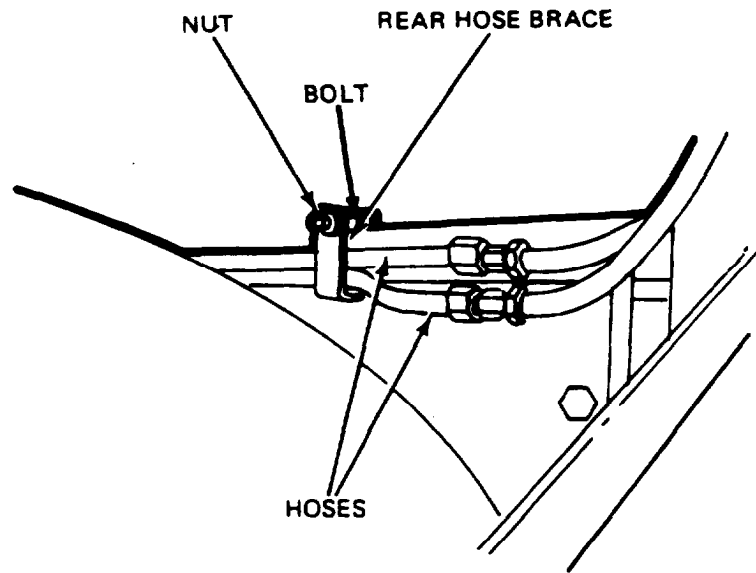
- (1) On the right side, remove fuel tank (para 2-27).
- (2) Remove eight nuts on top of spring mounting bolts securing tank to the frame (fig. 3-105).
- (3) Remove three bolts holding fuel lines to tank (fig. 3-106).
- (4) Remove three fender bolts at center of fender (fig. 3-107).
- (5) Remove one bolt at rear of right fender brace (fig. 3-109).
- (6) Remove four bolts from tank bracket to sub frame (fig. 4-11).
- (7) Lift off intake hoses and hand spray hose (fig. 4-9).
- (8) Remove eight bolts from walkway brackets and remove walkway (see para 4-3).
- (9) Remove two smoke stacks (para 2-28).
- (10) Remove quadrant (para 2-29).
- (11) Remove air inlet tube (4) from low pressure burners (para 2-39).
- (12) Remove low pressure burners (para 2-39).
- (13) Remove asphalt pump (para 3-7).
- (14) Remove intake valve lever (para 2-30).
- (15) Remove vacu-flo valve indicator (10, fig. 3-109) by removing four capscrews (11), two nuts (14), and two nuts (15).
- (16) On the left side, remove four bolts, tank to sub-frame (fig. 4-11).
- (17) Remove step from rear fender (fig. 5-3).
- (18) Remove air line (3) from control box (fig. 4.5).
- (19) Remove brace bolt from fender to tank brace (fig. 5-3).
- (20) Remove three bolts at center of fender (fig. 3-107).
- (21) Remove three clamp bolts and nuts holding air hoses to tank (fig. 3-106).
- (22) Remove two air lines from supply tank (fig. 3-114).
- (23) Remove two bolts from air supply tank and remove air tank (fig. 3-114).
- (24) Remove lamp wiring harness (para 2-10, fig. 2-3).
- (25) Remove bell assembly (para 2-12).

- 4-5).
- (26) Remove eight bolts from driver's side walkway brackets and remove walkway (see para 4-5).
 - (27) Remove eight nuts with springs securing tank to frame (Fig. 3-105).
 - (28) Remove electrical connector from lower corner of cab (Fig. 3-114).



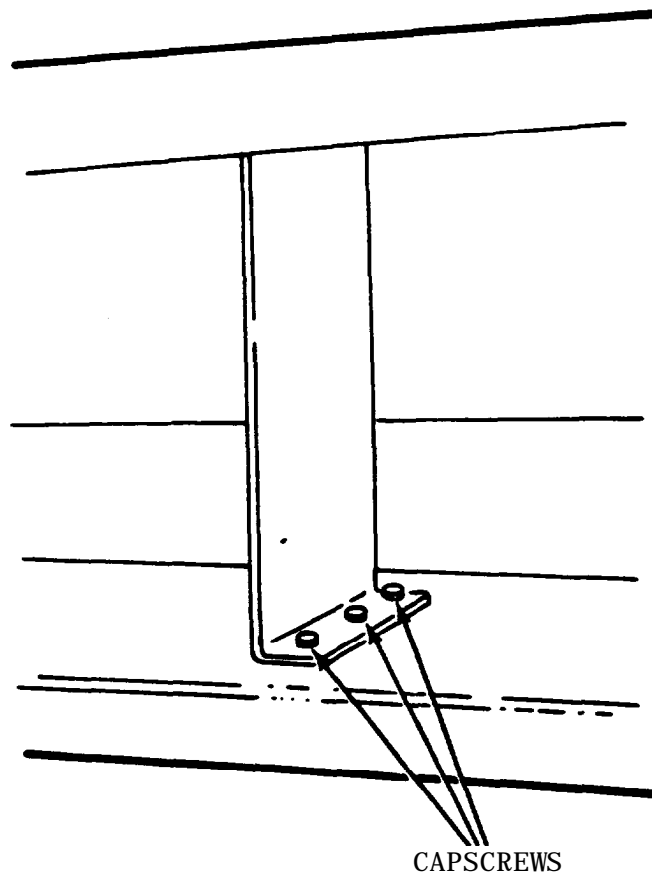
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Figure 3-105. Remove/Install Tank Forward Support Braces.



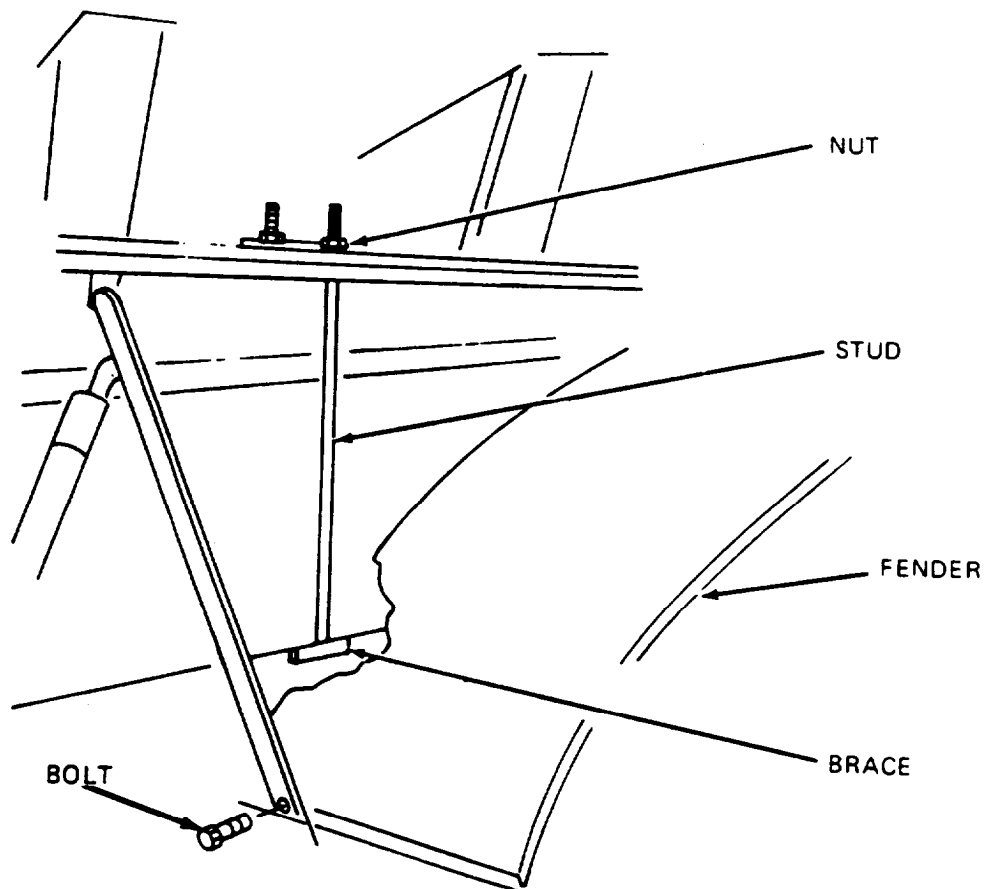
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Figure 3-106. Remove/Install Hose Brace.



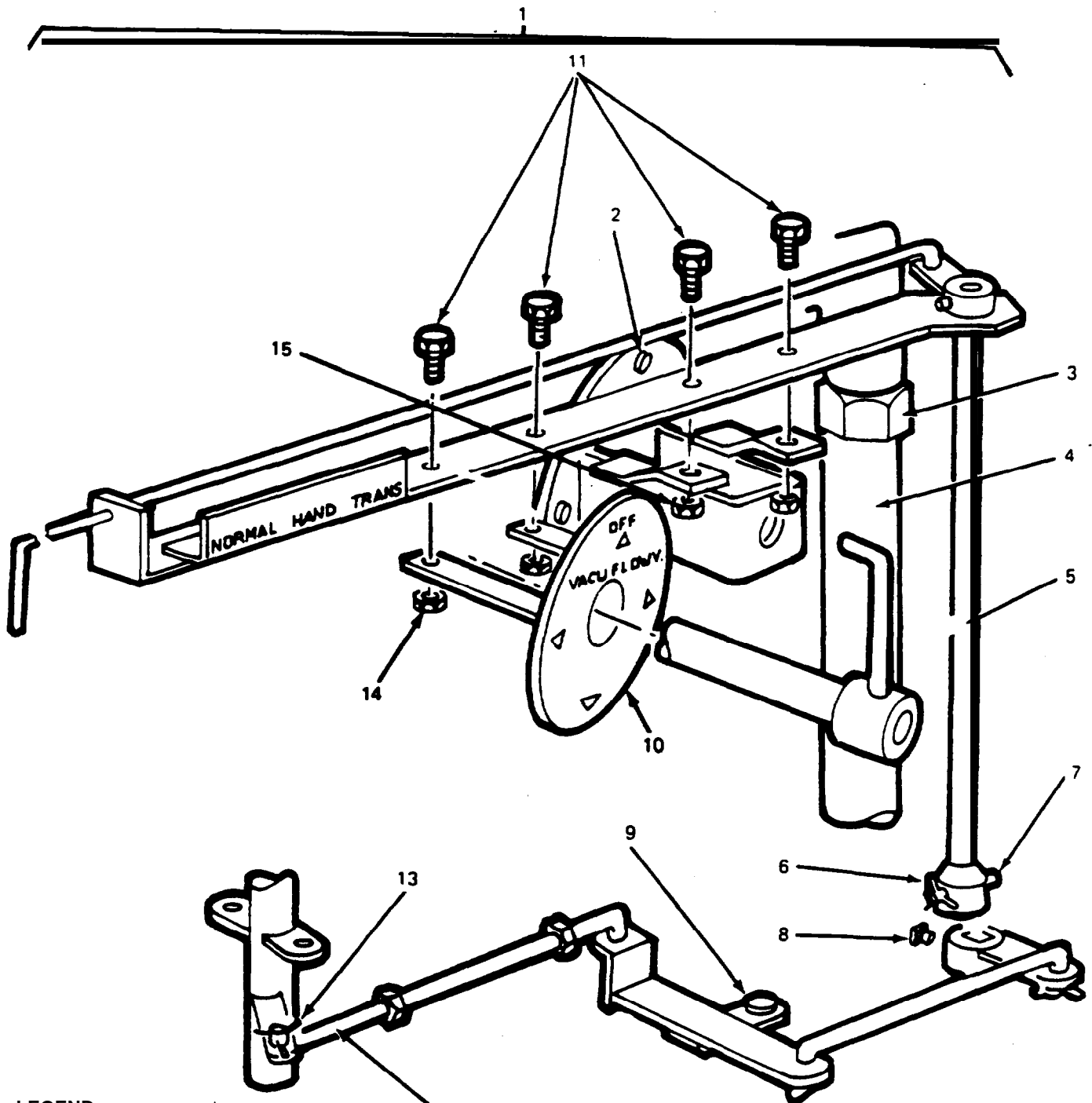
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Figure 3-107. Remove/Install Tank Support Plate.



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Figure 3-108. Remove/Install Tank Rear Support Braces.



LEGEND:

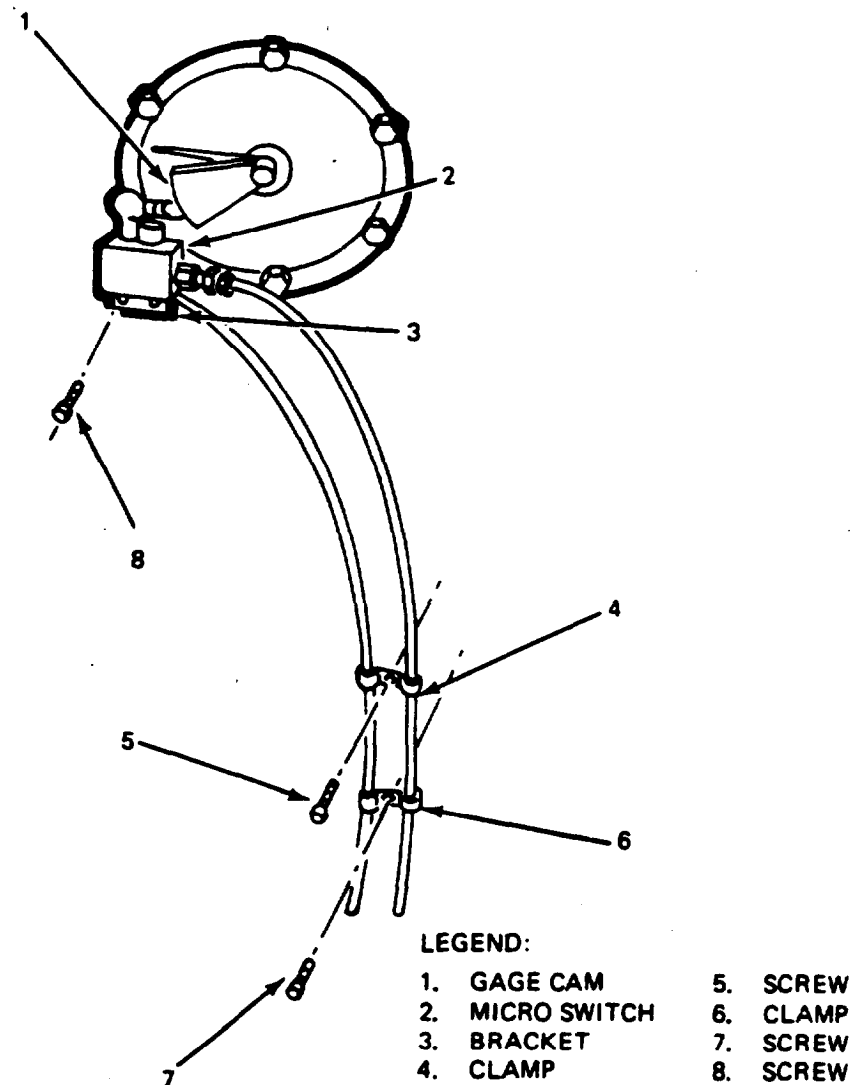
- 1. ROD ASSEMBLY
- 2. ROD
- 3. PIPE NUT
- 4. DOWN PIPE
- 5. CONTROL ROD
- 6. COMER PIN
- 7. TAPERED PIN

- 8. SET SCREW
- 9. SNAP RING
- 10. FLOW VALVE INDICATOR
- 11. CAPSCREW (4)
- 12. LINKAGE
- 13. COTTER PIN
- 14. NUT (2)
- 15. NUT (2)

Figure 3-109. Disconnect/connect Control Linkage and Manifold.

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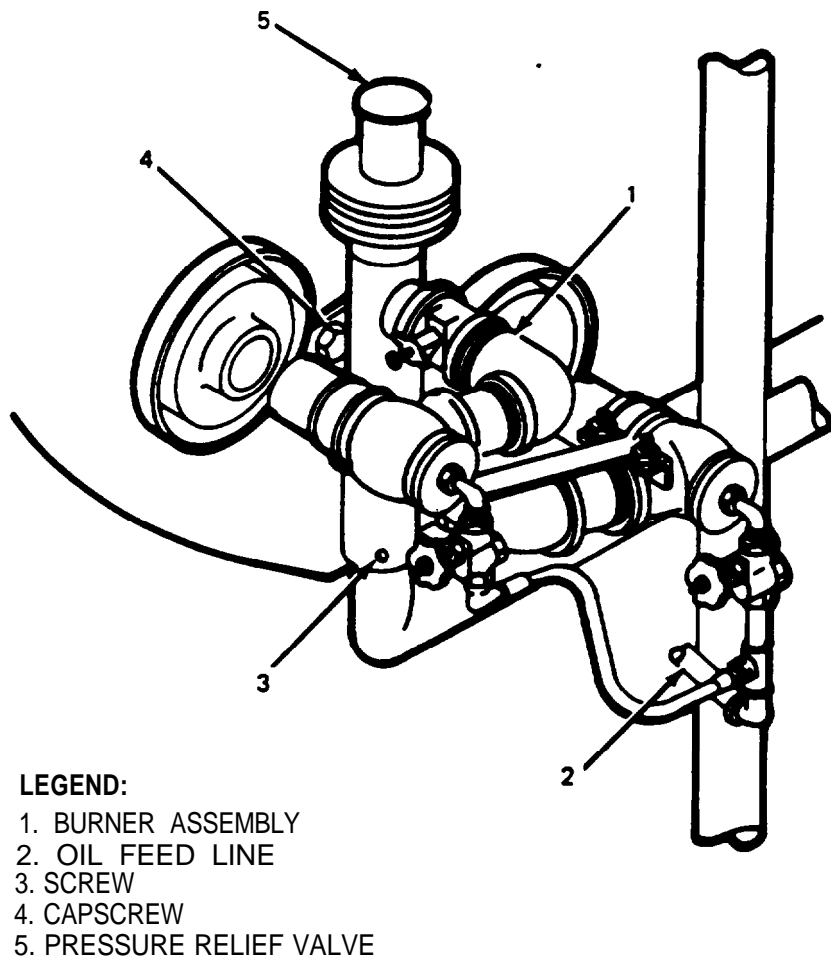
- (8). (29) Remove micro switch (2, fig. 3-110) with attached bracket (3) by removing two screws
- (30) Remove screws (5 and 7) and attached clamps (4 and 6). Lay the cable aside,
- (31) Remove burner assembly (1, fig. 3-111) by removing two capscrews (4) and washers that fasten the assembly to the tank; and screw (3) that joins the two tubes together. Disconnect oil feed line (2) and pull off the burner assembly (1) with the tapered spacers located behind the burners.



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Figure 3-110. Disconnect/Connect Micro Switch and Cables.

(32) Remove manifold (fig. 3-112) by removing attaching capscrews and disconnecting two pipe nuts. Remove gasket.

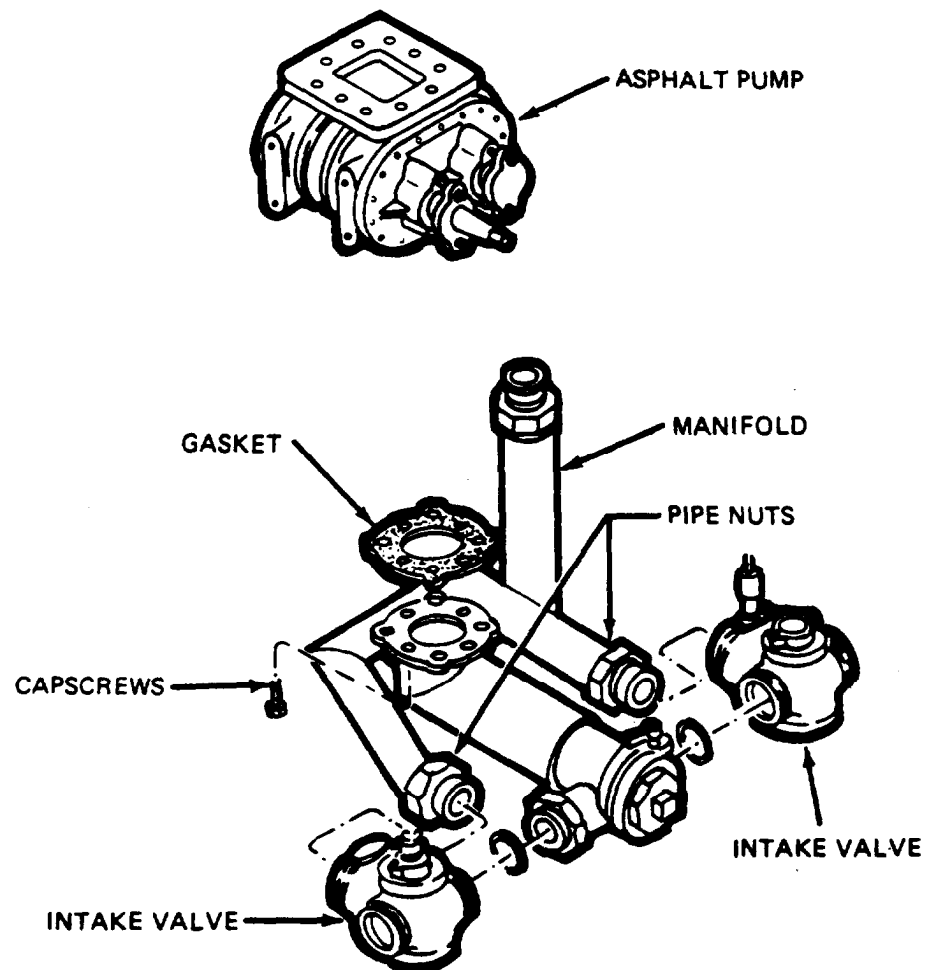


- LEGEND:**
- 1. BURNER ASSEMBLY
 - 2. OIL FEED LINE
 - 3. SCREW
 - 4. CAPSCREW
 - 5. PRESSURE RELIEF VALVE

TA 075985

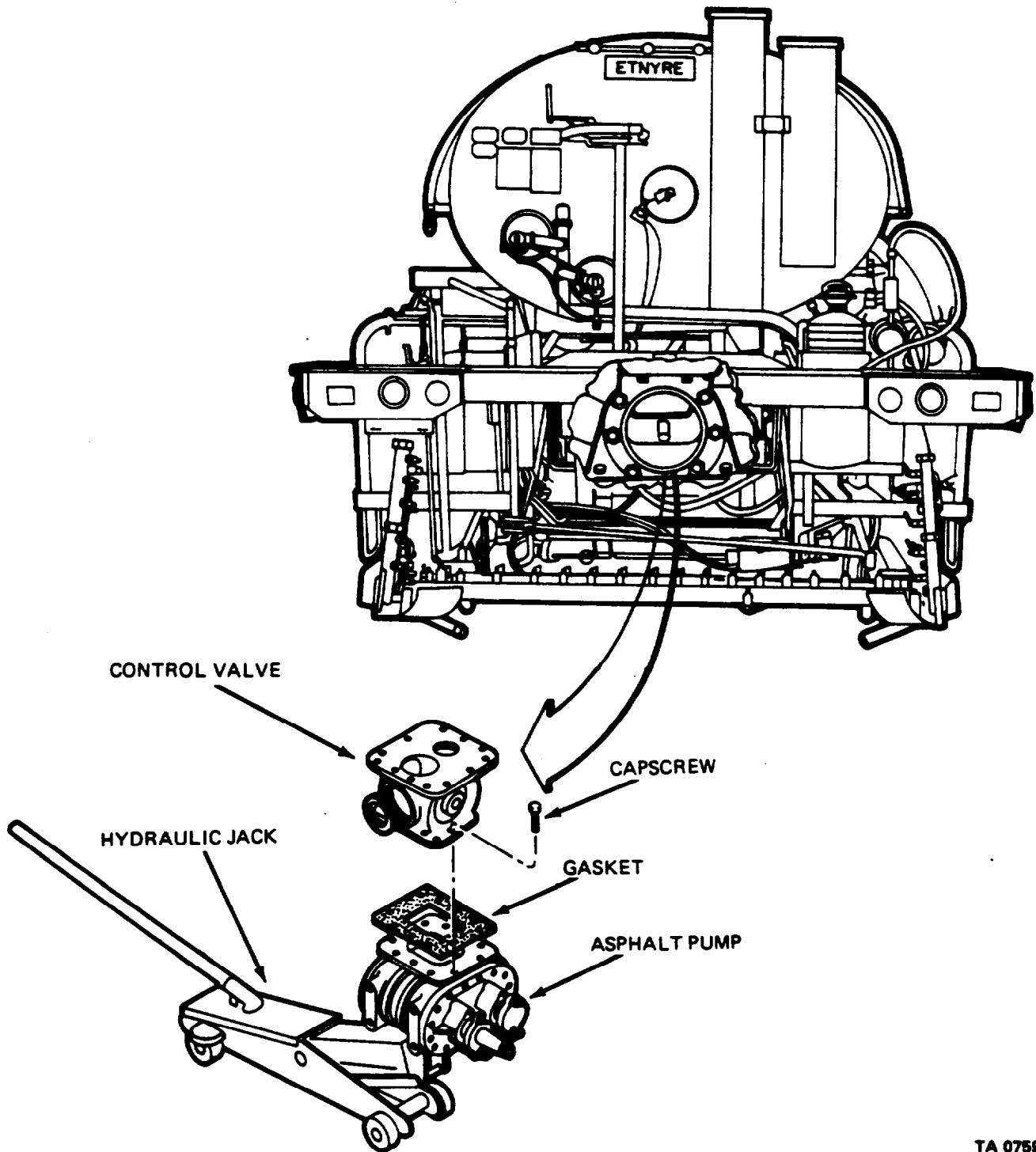
Figure 3-111. Remove/Install Low Pressure Burner Assembly,

- (33) Place a hydraulic jack under the asphalt pump. Raise the jack so that it just touches the pump.
- (34) Remove capscrews that fasten the asphalt pump (fig. 3-113) to the control valve.



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Figure 3-112. Remove/Install Manifold.



TA 075987

Figure 3-113. Remove/Install Asphalt Pump.

- (35) Remove control valve. (Refer to para 2-33.)
- (36) Attach sling and hoist to tank (fig. 3-115).
- (37) Slowly raise tank off of vehicle frame.

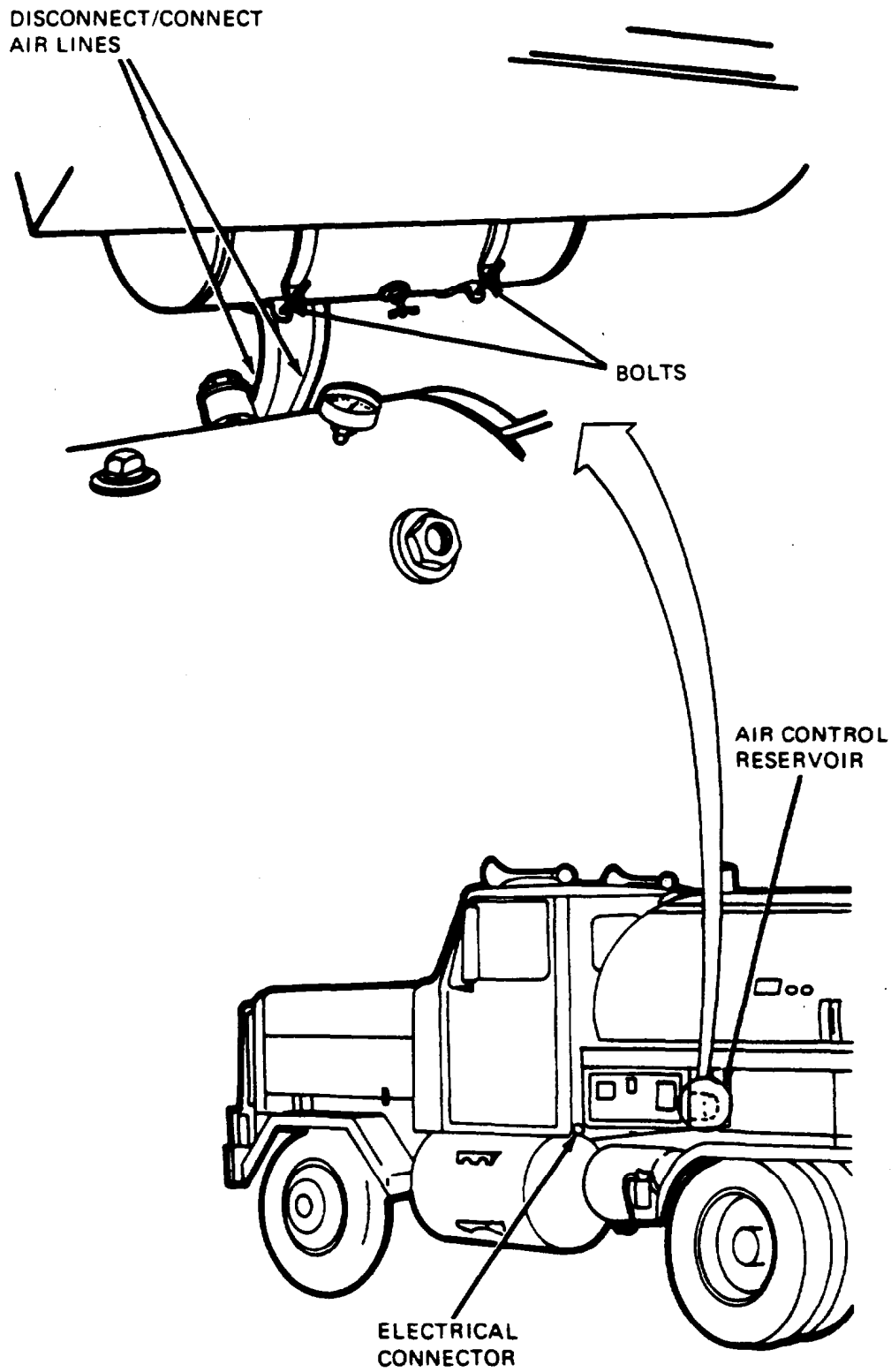
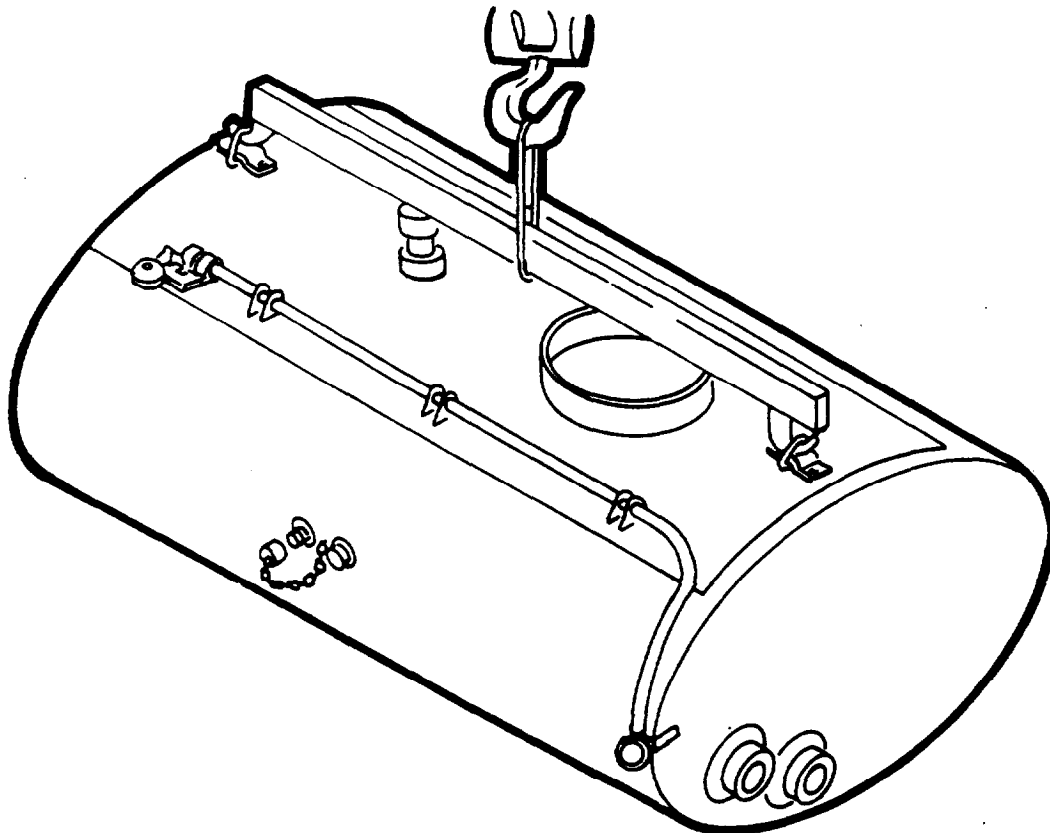


Figure 3-114. Disconnect/Connect Electrical Cable.

b. *Installation.* (Refer to fig. 3-115.)

- (1) On the left side, lift tank into position over chassis frame with suitable hoist; aline mounts and holes; set in place.
- (2) Install four tank to sub-frame bolts (1, fig. 4-11).
- (3) Install four bolts with springs securing tank to frame. Tighten nuts until it just touches spring top then pull down one inch (fig. 3-105).
- (4) Install eight bolts through walkway and brackets (para 4-6).
- (5) Install wire loom to tank (para 2-10).
- (6) Install wire loom to lower cab corner (fig. 3-114).
- (7) Install bell assembly (para 2-12).



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Figure 3-115. Support Tank with Sling and Hoist

- (8) Install air supply tank with two bolts in clamp brackets (fig. 3-114).
- (9) Install two air lines to air supply tank (fig. 3-114).
- (10) Install three clamp bolts holding air lines to tank (fig. 3-106).
- (11) Install three bolts at center of fender (fig. 3-107).
- (12) Install fender to tank brace bolt (fig. 5-3).
- (13) Install control box air line (3) (fig. 4-5).
- (14) Install step to rear fender (fig. 5-3).
- (15) Install asphalt pump (para 3-7).
- (16) Install low pressure burners (para 2-39).
- (17) Install low pressure burners air inlet tube (para 2-39).
- (18) Install intake valve lever (para 2-30).
- (19) Install vacuum flow lever and gage plate (fig. 3-109) with four capscrews (11), two nuts (14), and two nuts (15).
- (20) Install two smoke stacks (para 2-28).
- (27) Install eight bolts thru walkway and brackets (para 4-4).
- (22) Install fuel tank (see para 2-27 b).
- (23) Set intake hoses and hand spray hose in place (fig. 4-9).
- (24) Install four tank brackets to sub-frame bolts (fig. 4-11).
- (25) Install one bolt at rear of right fender brace (fig. 3-108).
- (26) Install three center fender bolts (fig. 3-107).
- (27) Install two fuel lines to tank and secure with three clamps and bolts (fig. 3-106).
- (28) Install eight nuts to top of tank to frame spring mounting bolts (fig. 3-105). Tighten nut until it just touches spring top then pull down one inch.
- (29) Install microswitch (2, fig. 3-110) with attached bracket (3) secure bracket to tank with two screws (8).
- (30) Install two clamps (4 and 6, fig. 3-110) to secure cables for microswitch (2). Fasten each pair of clamps to tank with screws (5 and 7).
- (37) Install hydraulic motor. (Refer to para 3-6.)

3-10. Asphalt Hose.

a. *Repair of Three Inch Asphalt Hose.* (Refer to fig. 3-116.)

- (1)** With two large pipe wrenches, remove coupler (5) from hose adapter (4).
- (2)** Remove adapter (4) from jam nut (2) and remove packing (3).
- (3)** Remove jam nut (2) from flex hose (1).
- (4)** With a sharp pointed tool remove gasket (6) from coupler (5).
- (5)** Repeat steps (1), (2), (3), and (4) for other end of same hose.
- (6)** Install jam nut (2) onto flex hose (1).
- (7)** Wrap packing (3) over jam nut (2) at flex hose (1).
- (8)** Install adapter (4) on to jam nut (2) and tighten with two pipe wrenches.
- (9)** Install coupler (5) on to adapter (4).
- (10)** Install new gasket (6) into coupler (5).
- (11)** Repeat steps (6), (7), (8), (9), and (10). on other end of hose.

b. *Repair of One Inch Asphalt Hose.*

- (1) With two large pipe wrenches remove coupler (11) from adapter (10).
- (2) Remove adapter (10) from jam nut (8) and remove packing (9).
- (3) Remove jam nut (8) from flex hose (7).
- (4) With a sharp pointed tool remove gasket (12) from coupler (11).
- (5) Repeat steps (1), (2), (3), and (4) for other end of hose.
- (6) Install jam nut (8) onto flex hose (7).
- (7) Wrap pecking (9) over jam nut (8).
- (8) Install adapter (10) to jam nut (8) and tighten with two pipe wrenches.
- (9) Install coupling (11) on to adapter (10).
- (10) Install new gasket (12) into coupler (11).
- (11) Repeat steps (6), (7), (8), (9), and (10) on other end of hose.

c. *Repair of Adapter and Fittings.*

- (1) Remove cap and chain assembly (16) from connector (15).
- (2) With a sharp pointed tool remove gasket (6) from cap and chain assembly (16).
- (3) Remove connector (15) from connector (14) and gasket (13).
- (4) Remove cap and chain assembly (17) from connector (18).
- (5) With a pointed tool, remove gasket (12) from cap and chain assembly (17).
- (6) Adapter (19) is used to connect two hoses together when needed.
- (7) Install new gasket (6) into cap and chain assembly (16).
- (8) Install cap and chain assembly (16) onto connector (15).
- (9) Install connector (15) into connector (14) with gasket (13).
- (10) Install gasket (12) into cap and chain assembly (17) and secure to connector (18).

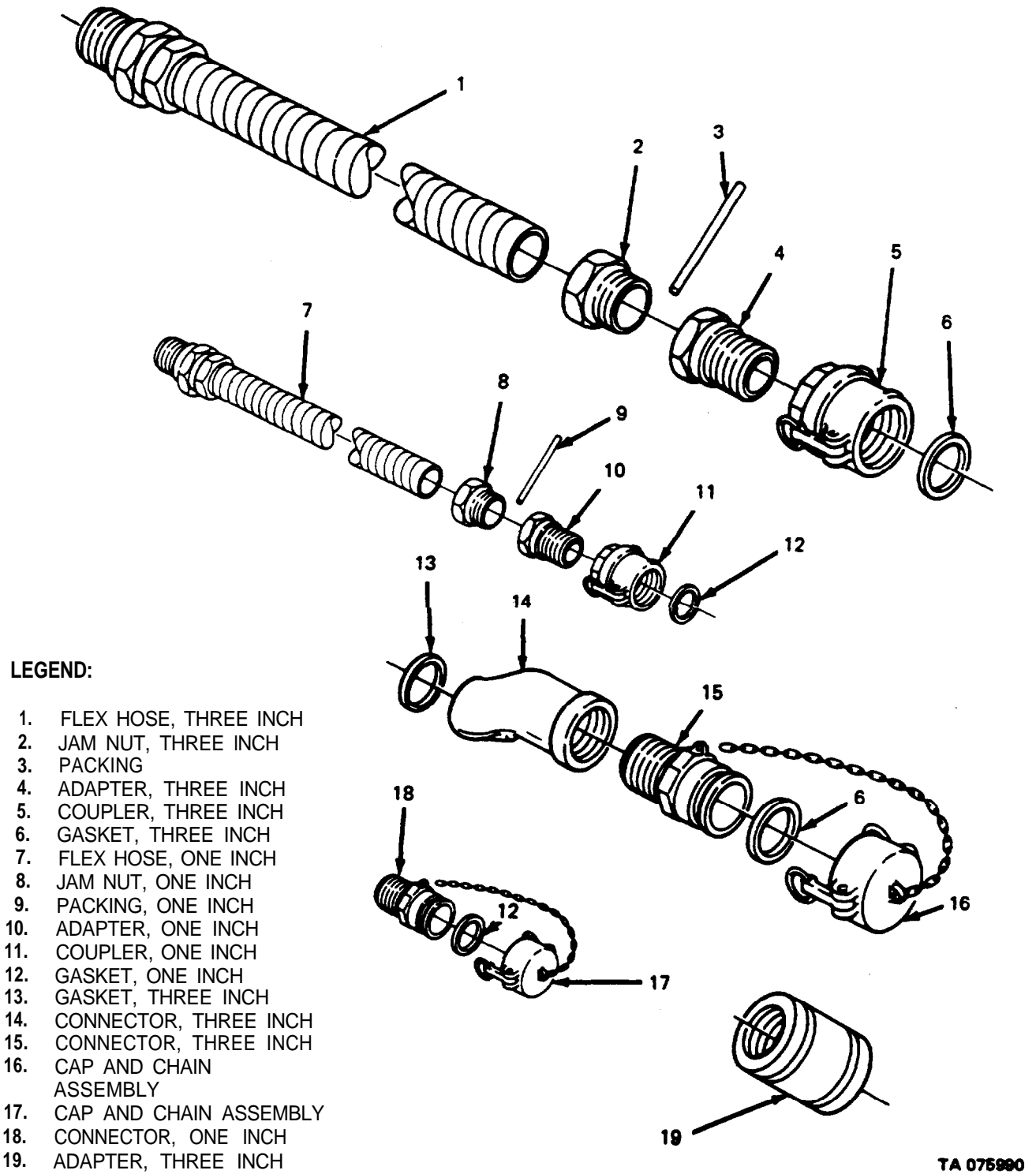


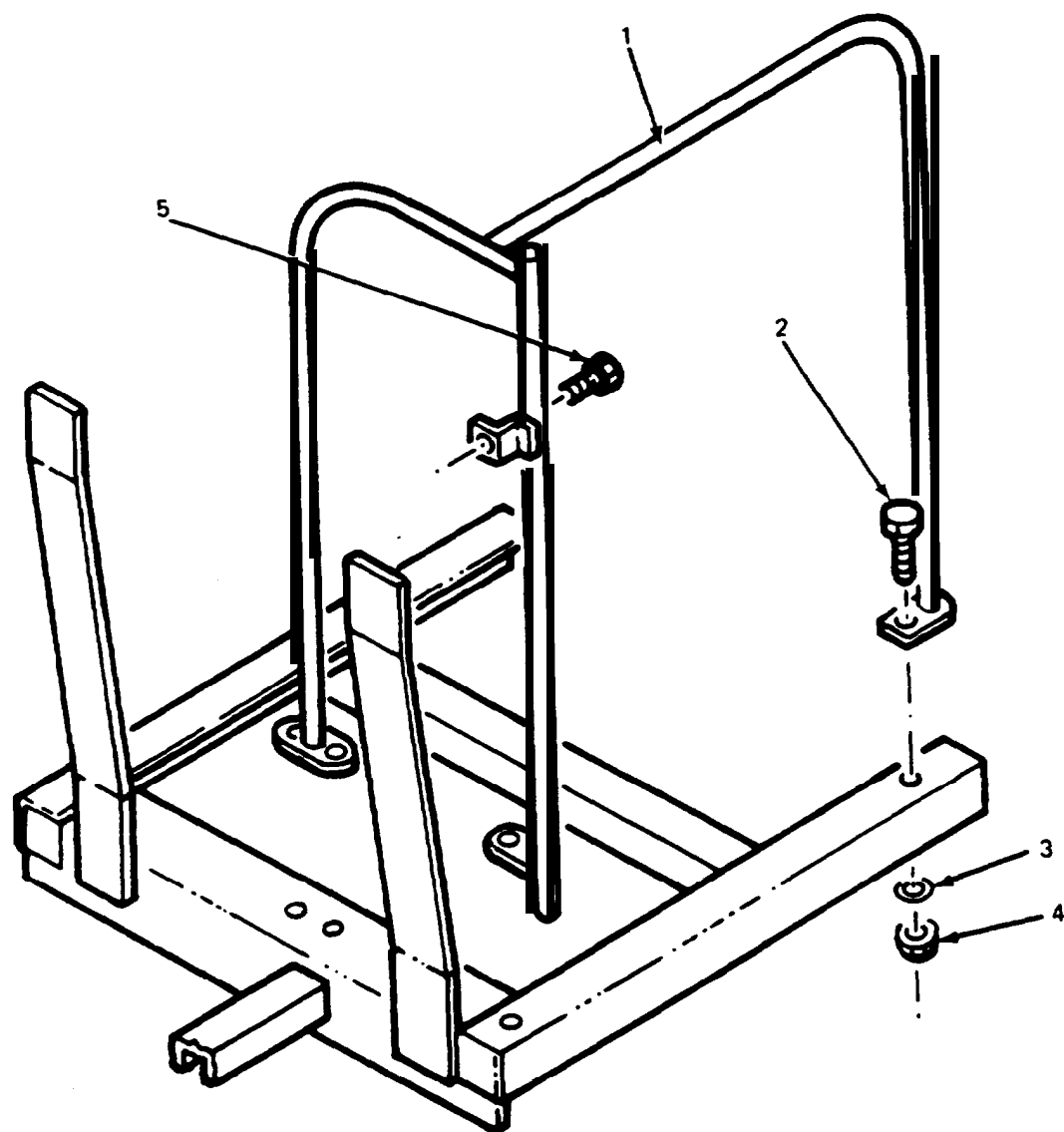
Figure 3-116. Asphalt Hoses (Metal) and Connectors.

CHAPTER 4
REPAIR OF PLATFORMS AND WALKWAYS

Section I. REPAIR OF REAR PLATFORM

4-1. Removal and Disassembly.

- a. Remove bumper. (Refer to para 2-9.)
- b. Remove stowage box. (Refer to para 2-11.)
- c. Remove blower assembly. (Refer to para 2-35.)
- d. Lift off rear end of two auxiliary tank hoses (fig. 4-9) so that they do not interfere with platform removal.
- e. Remove right side guard rail (1, fig. 4-1) by removing three capscrews (2), lockwashers (3), and nuts (4) from top and bottom. Remove capscrews (5), nut and washer that fasten guard rail to frame.



- LEGEND:**
- | | |
|--------------------------|-------------|
| 1. RIGHT SIDE GUARD RAIL | 4. NUT |
| 2. CAPSCREW | 5. CAPSCREW |
| 3. LOCKWASHER | |

TA 075993

Figure 4-1. Remove/Install Guard Rail

f. Remove right side platform (3, fig. 4-2) by removing nine capscrews (1), nuts, and washers from top and bottom of platform; and two capscrews (2), nuts and washer from the side step.

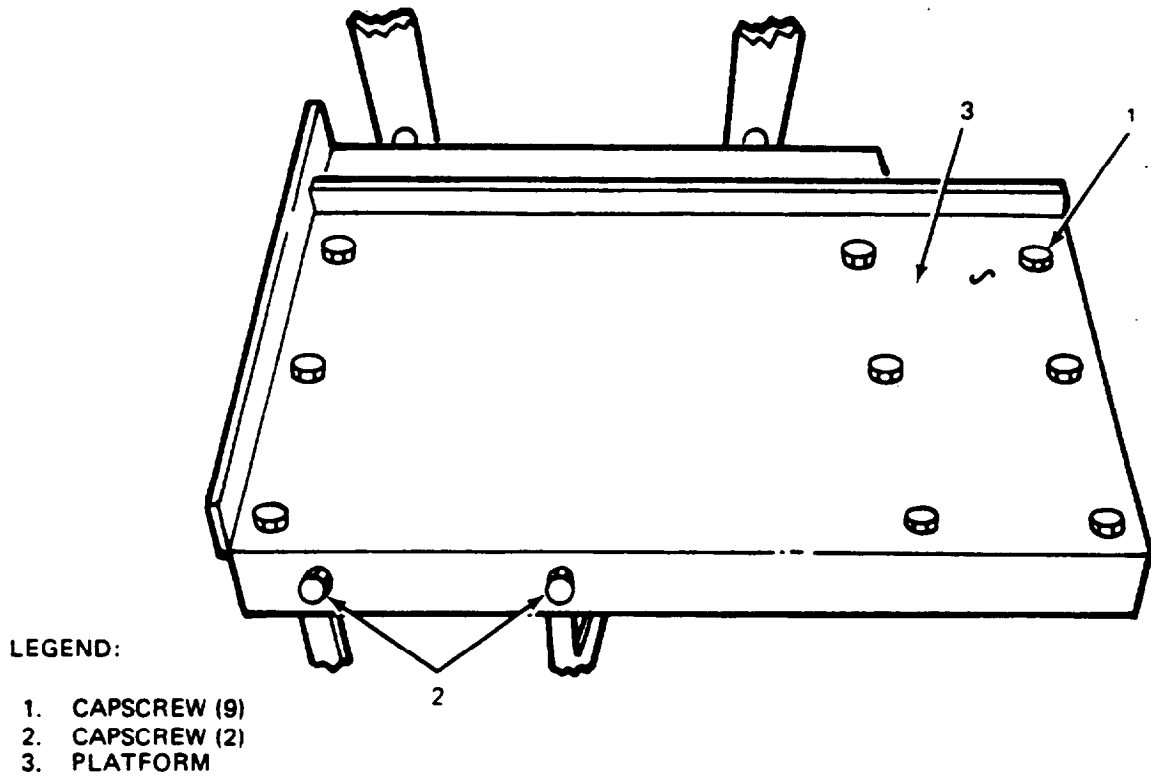


Figure 4-2. Remove/Install Platform.

TA 075994

- g. From below platform, disconnect two pipe nuts (1 and 2, fig. 4-3).

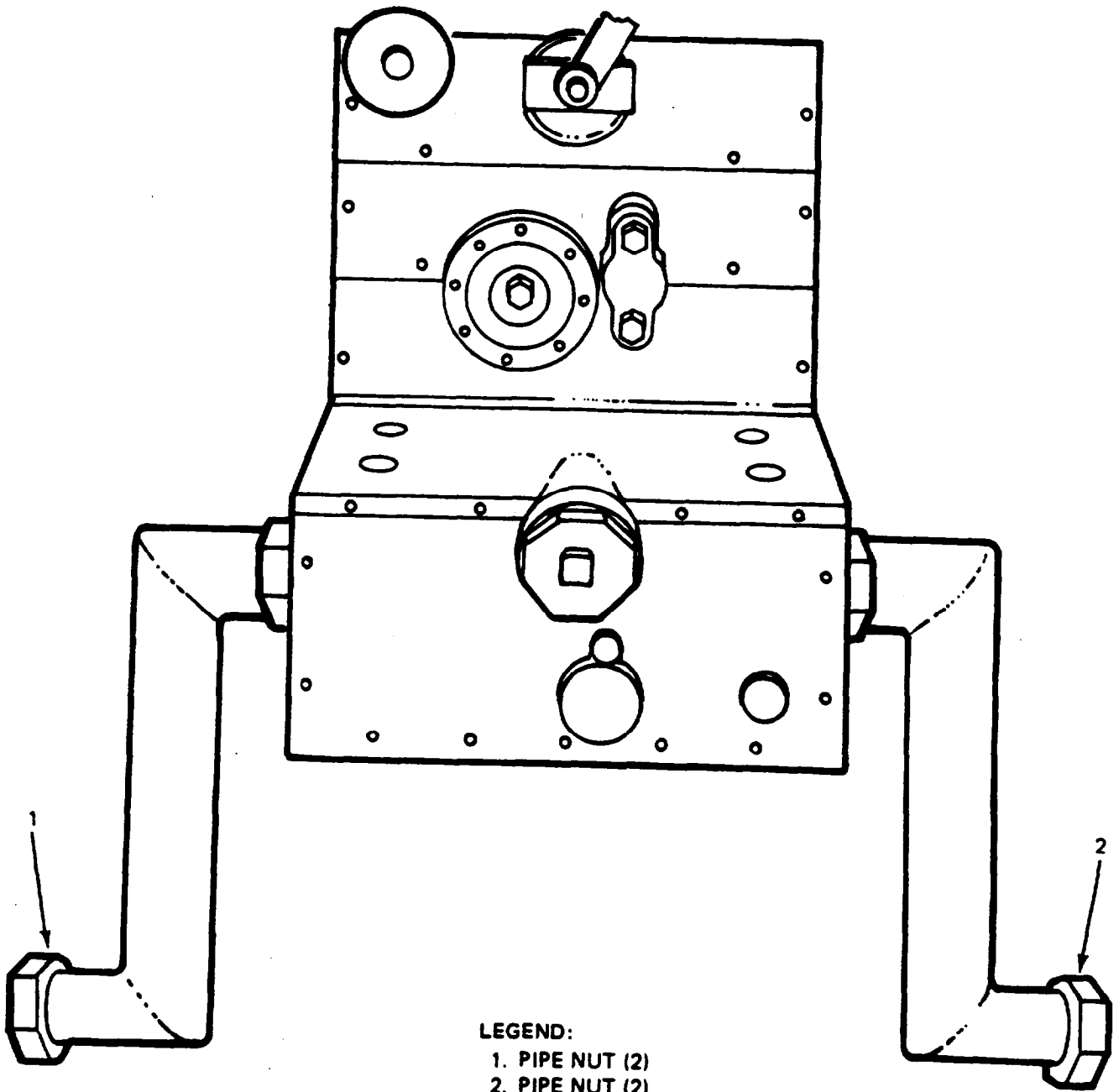


Figure 4-3. Disconnect/Connect Manifold.

TA 075886

- h. Disconnect linkage (3, fig. 4-4) from valve control arm (1) by removing cotter pin (2) and washer.

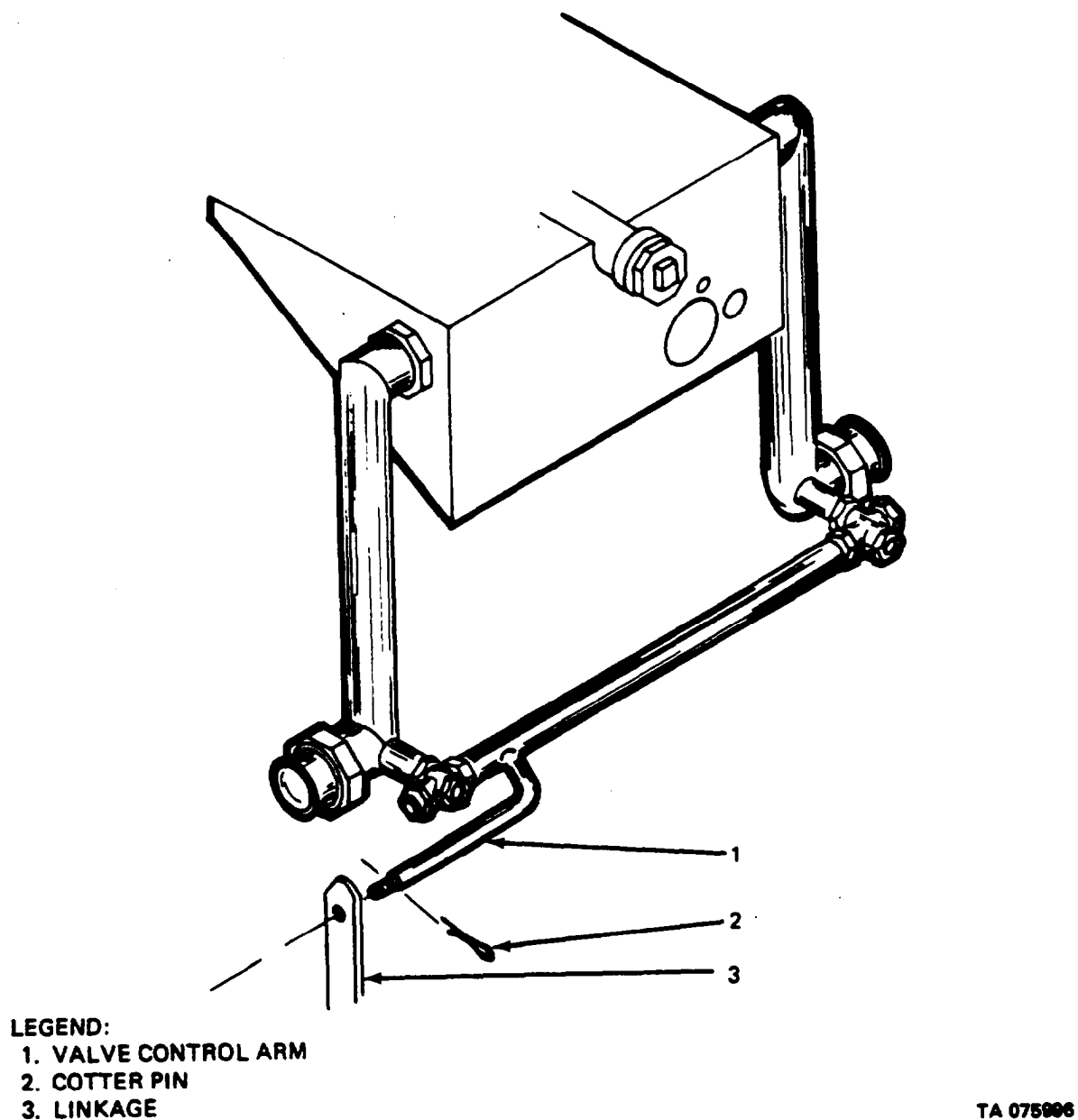
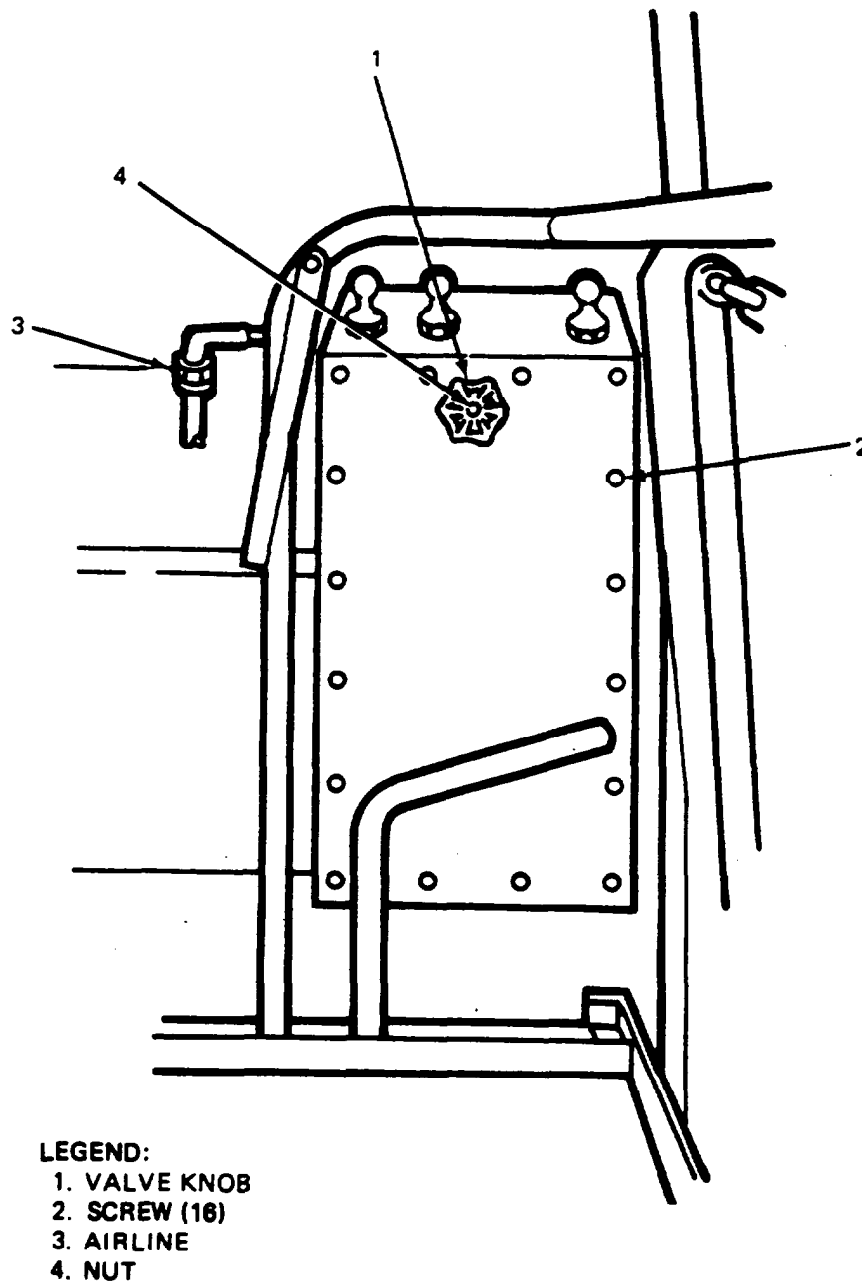


Figure 4-4. Disconnect/Connect Control Linkage.

- i. Disconnect two air lines from control cylinder.
- j. Disconnect air line (3, fig. 4-5).



TA 075997

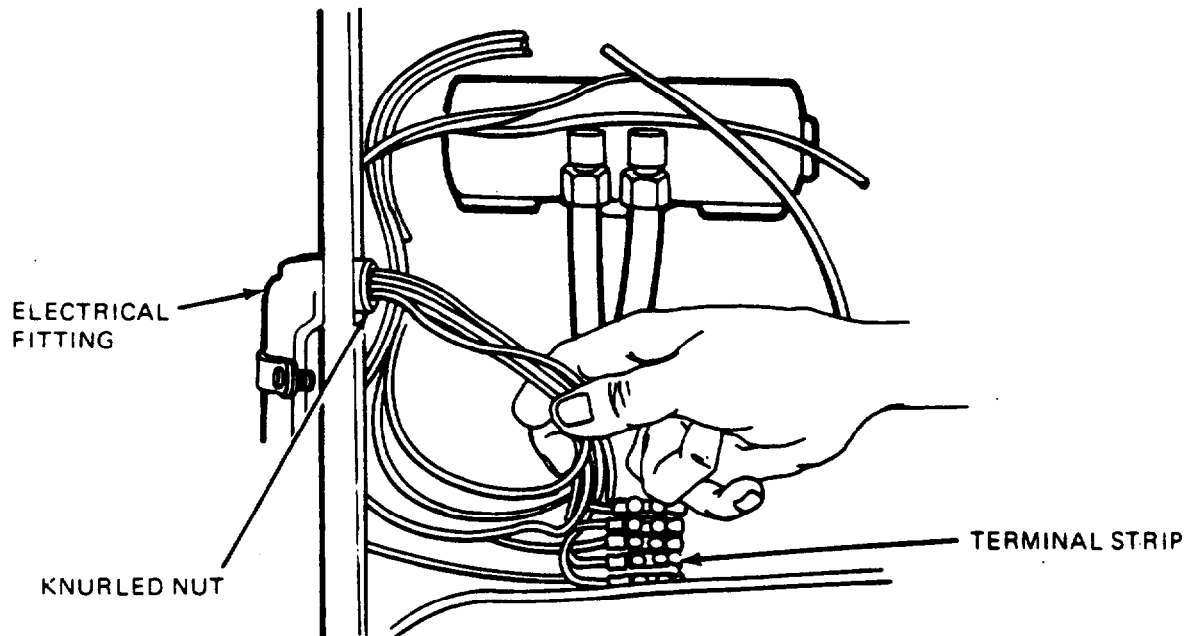
Figure 4-5. Remove/Install Air Control Box Components.

- k. Remove control box cover by removing nut (4), washer, valve knob (1), and sixteen screws (2).

NOTE

In step l, observe that the wires being disconnected are the same color as the wires remaining on each terminal. Therefore it is not necessary to tag the wires for identification.

- l. Disconnect eight wires (fig. 4-6) from terminal strip.
- m. Disconnect electrical fitting by removing knurled nut inside control box; then pull the eight wires out of box.



TA 075998

Figure 4-6. Disconnect/Connect Terminal Strip Wires.

n. Remove step (fig. 4-7) from left rear fender and platform by removing six capscrews, nuts, and washers.

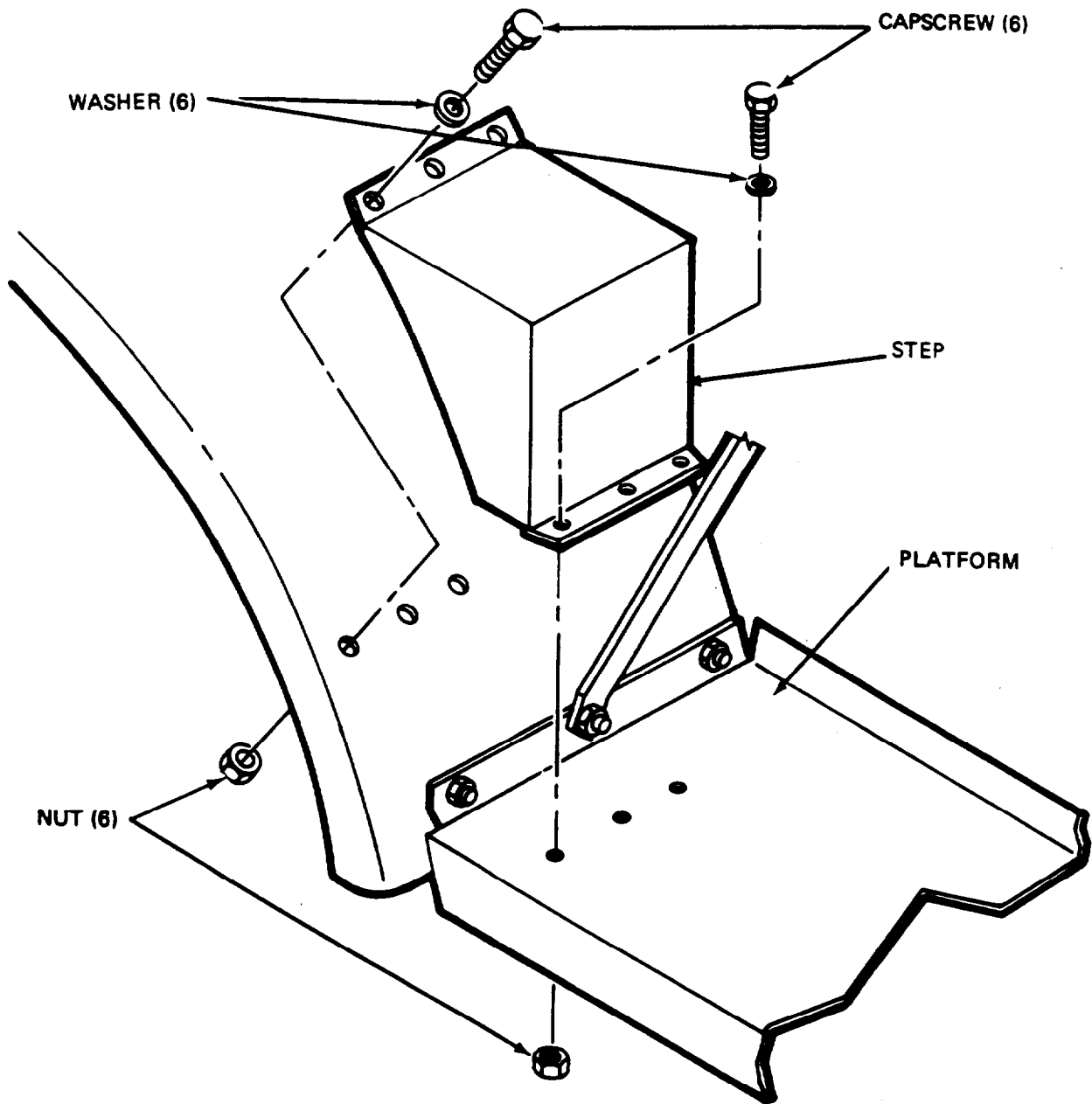
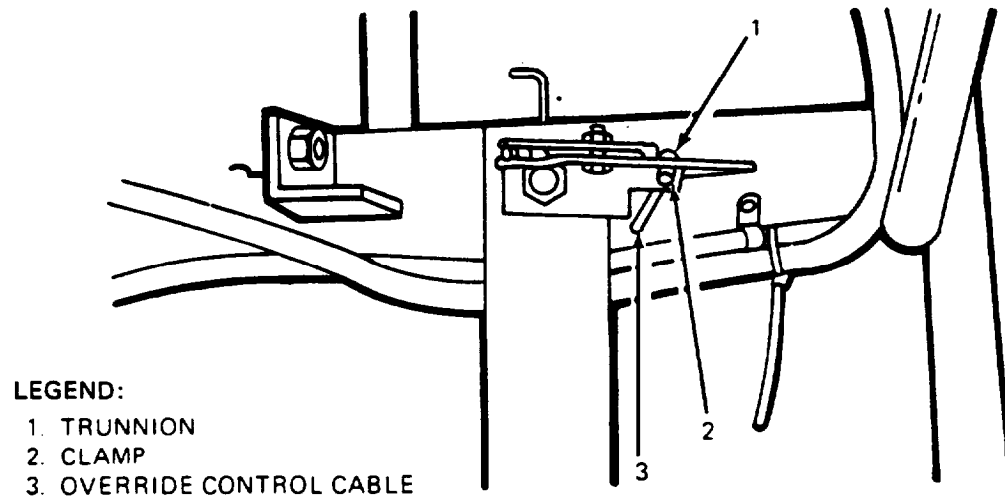


Figure 4-7. Disconnect/Connect Fender and Step.

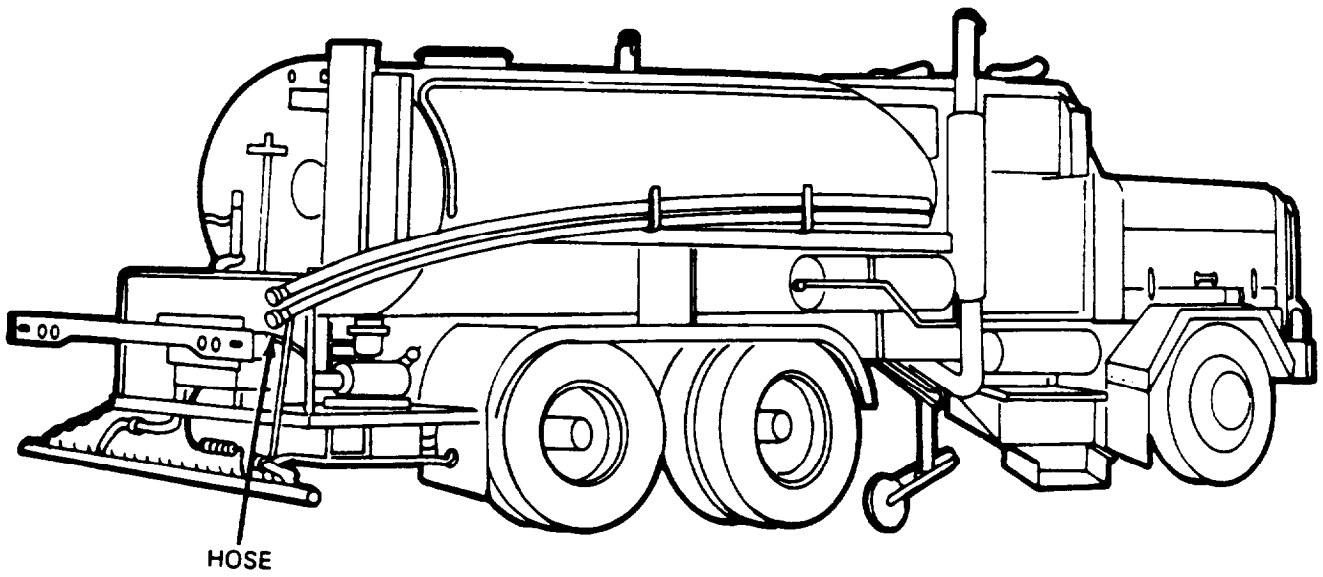
TA 075999

- o. Disconnect left rear fender from platform by removing three capscrews, nuts, and washers (fig. 4-7).
- p. Disconnect override control cable (3, fig. 4-8). Loosen screw on top of trunnion (1) and pull out cable wire. Loosen clamp (2) and pull cable (3) out through the clamp.



TA 076000

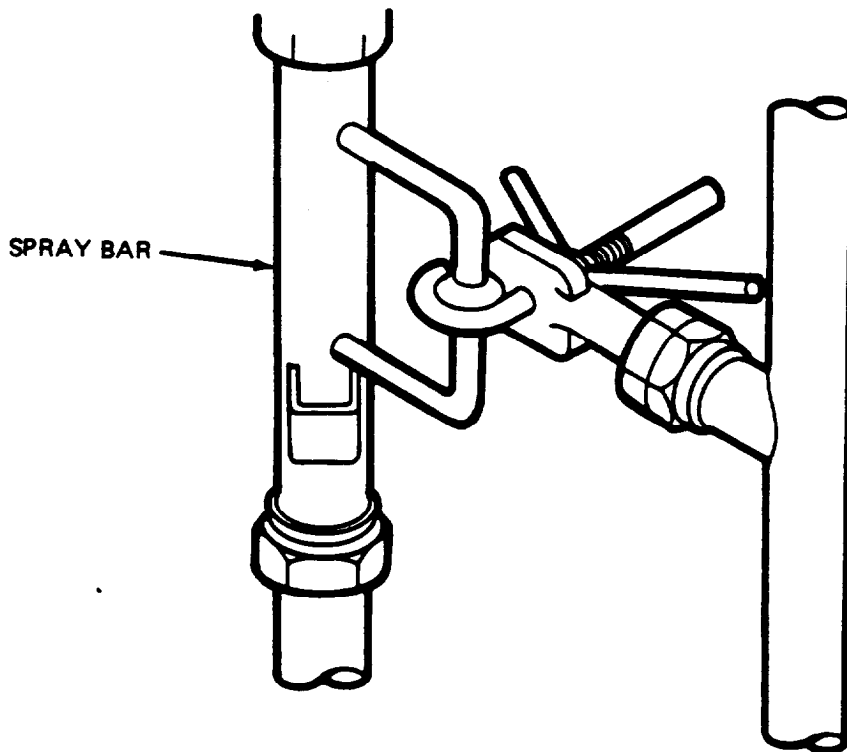
Figure 4-8. Disconnect/Connect Override Cable.



TA 076001

Figure 4-9. Displace/Mount Auxiliary Hoses.

- q. Raise spray bar and lock in up position (fig. 4-10).



TA 076002

Figure 4-10. Lock Spray Bar in Up Position.

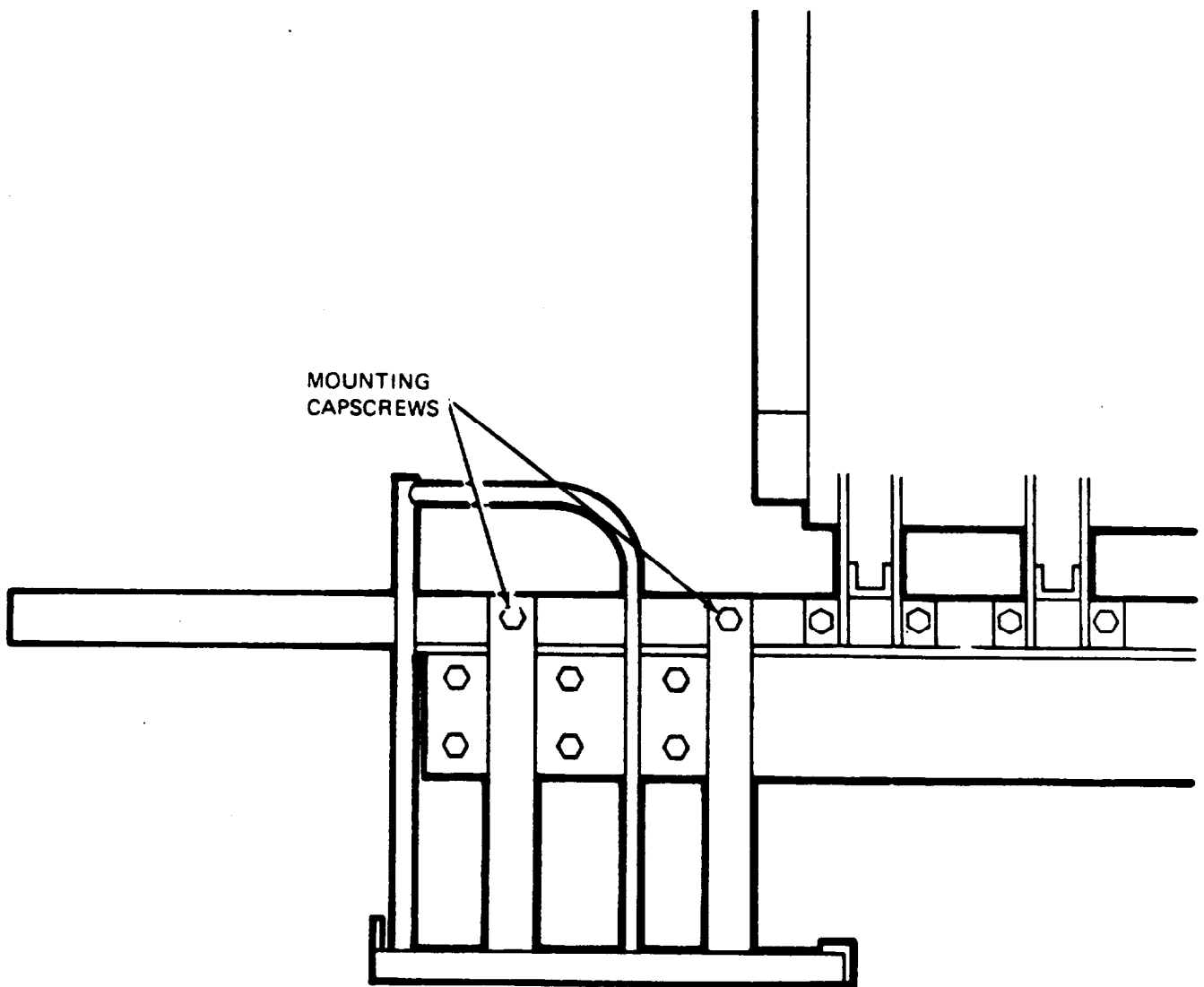
r. Position a hydraulic jack under the center of the platform. Set the jack so that it just touches the platform.

NOTE

In steps s and t, three men are required to remove the platform; one on each side and one operating the jack.

s. Remove two capscrews, nuts, and washers that fasten platform to left and right side frame rails (fig. 4-11).

t. Lower the platform on the jack; then remove the platform out from the rear of the vehicle.



TA 076003

Figure 4-11. Remove/Install Platform Attaching Parts.

4-2. Installation.

- a. Make sure that spray bar is set in locked-up position (fig. 4-10).

NOTE

In steps b and c, three men are required to install the platform; one on each side and one operating the jack.

- b. Position a hydraulic jack under the center of the platform.
- c. Position the platform (fig. 4-11) to line up its mounting holes with holes in vehicle frame; then install two capscrews, nuts, and washers that fasten the platform to each frame rail.
- d. Position auxiliary tank hoses in their proper position, as shown in figure 4-9.
- e. Connect override control cable (3, fig. 4-8). Pass wire through hole in trunnion (1); then tighten screws on top of the trunnion. Secure cable with clamp (2).
- f. Connect platform (fig. 4-7) to left rear fender and brace and secure with three capscrews, nuts, and washers.
- g. Install step and secure to left rear fender and platform with six capscrews, nuts, and washers.
- h. Connect right rear fender to platform with three capscrews, nuts, and washers.
- i. Connect electrical fitting (fig. 4-6) to control box and secure with knurled nut inside box.
- j. Connect eight wires to terminal strip. Color of each wire must match the color of the wire that is already connected to the terminal strip. That is, the red wire must go to the terminal that has another red wire on it; the white wire to the terminal that has another white wire on it, etc.
- k. Install control box cover (fig. 4-5) and secure with screws (2); then install knob (1) and secure with washer and nut (4). Connect air line (3) to control box.
- l. Connect two rods (5, fig. 2-60) to valve control arm and secure with cotter pins.
- m. Connect linkage (3, fig. 44) and secure with cotter pin (2).
- n. Connect two lines to cylinder (fig. 2-22).
- o. Connect pipe nuts (1 and 2, fig. 4-3).
- p. Install right side platform (fig. 4-2) and secure with nine capscrews (1) nuts and washers at top and bottom of plate; and two capscrews (2), nuts, and washers through the side step.
- q. Install right side guard rail (fig. 4-1) and secure with three capscrews (2), lockwashers (3), and nuts (4) at top and bottom. Install capscrews (5), nut, and washer that fasten guard rail to frame.
- r. Install blower assembly. (Refer to para 2-35.)

- s. Install stowage box. (Refer to para 2-11.)
- t. Install bumper. (Refer to para 2-9.)

Section II. REPAIR OF SIDE WALKWAYS

4-3. Remove Passenger Side Walkway. (Refer to fig. 4-12.)

NOTE

Lift off oil fill tubes from walkway.

- a. Remove four bolts, washers, and nuts (6) from two clearance lights (7). Snip wire at each light to remove from walkway.
- b. Remove three bolts, washers, and nuts (8) from walkway bracket to fender connection.
- c. Remove eight bolts and washers from four walkway to asphalt tank brackets (2) (3) (4) and (5). Do not remove the four lower bolts and washers from brackets (4) and (5); it is not necessary to remove the burner fuel tank.
- d. Remove walkway (1).

4-4. Install Passenger Side Walkway. (Refer to fig. 4-12.)

- a. Set walkway (1) in place and align mounting holes.
- b. Install eight bolts and washers thru walkway brackets (2), (3), (4), and (5).
- c. Install three bolts, washers, and nuts (8) thru walkway bracket to fender connection.
- d. Rejoin wires to clearance lights (7) with new wire crimp connectors.
- e. Install four bolts, washers and nuts (6) to clearance lights (7).
- f. Replace oil fill tubes to walkway.

4-5. Remove Driver's Side Walkway. (Refer to fig. 4-12.)

- a. Bleed air system; refer to TM 9-2320-273-10.
- b. Remove air lines (18) and (19) from "T" fitting (17) on back of air tank (16).
- c. Remove six bolts, washers, and nuts (11); three each on either end of storage box (15). Remove storage box (15) with air tank (16) attached, from walkway (12).
- d. Remove four bolts, washers, and nuts (6) from two clearance lights (7).
- e. Snip wires at two clearance lights (7) and remove from walkway.

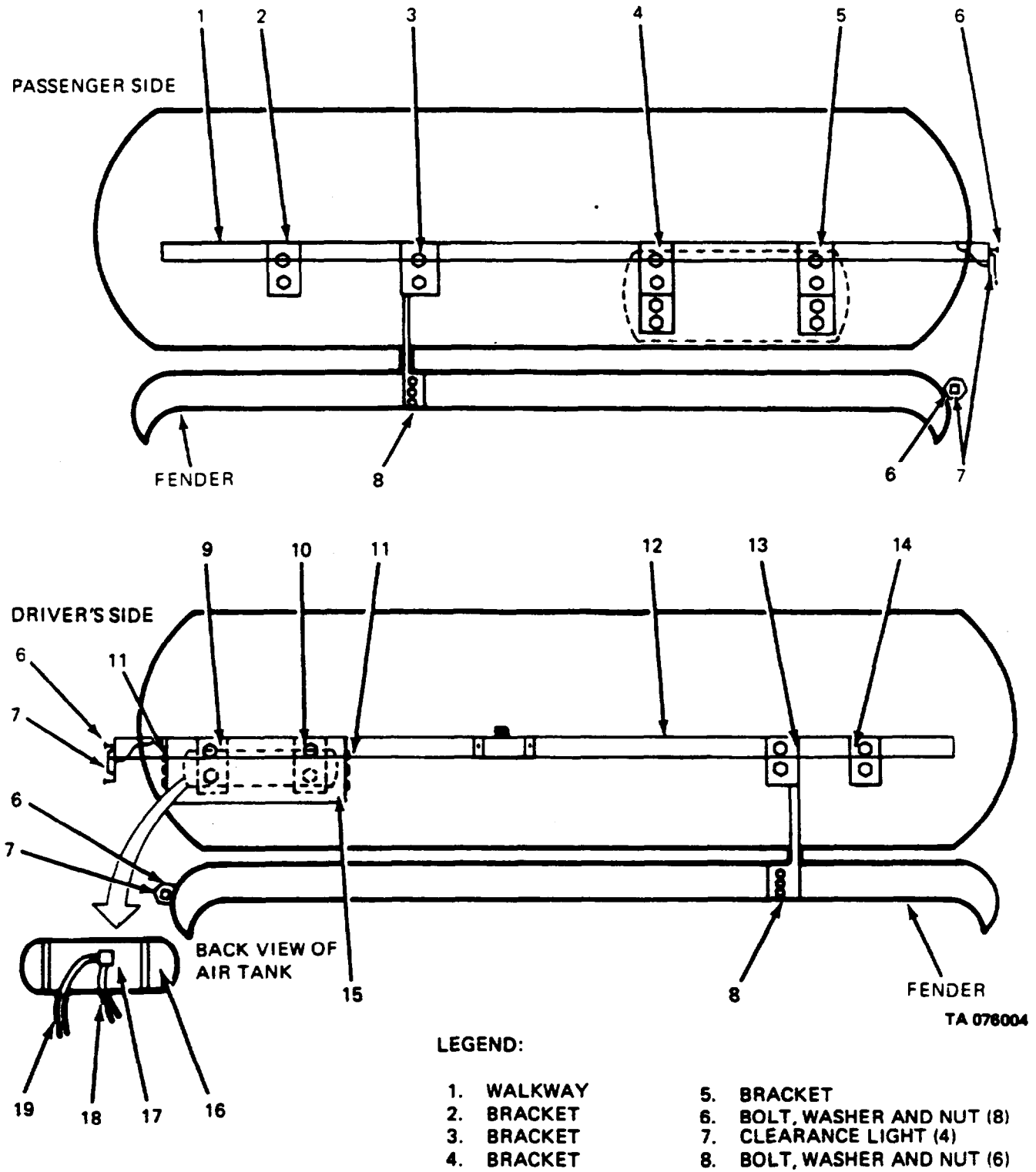
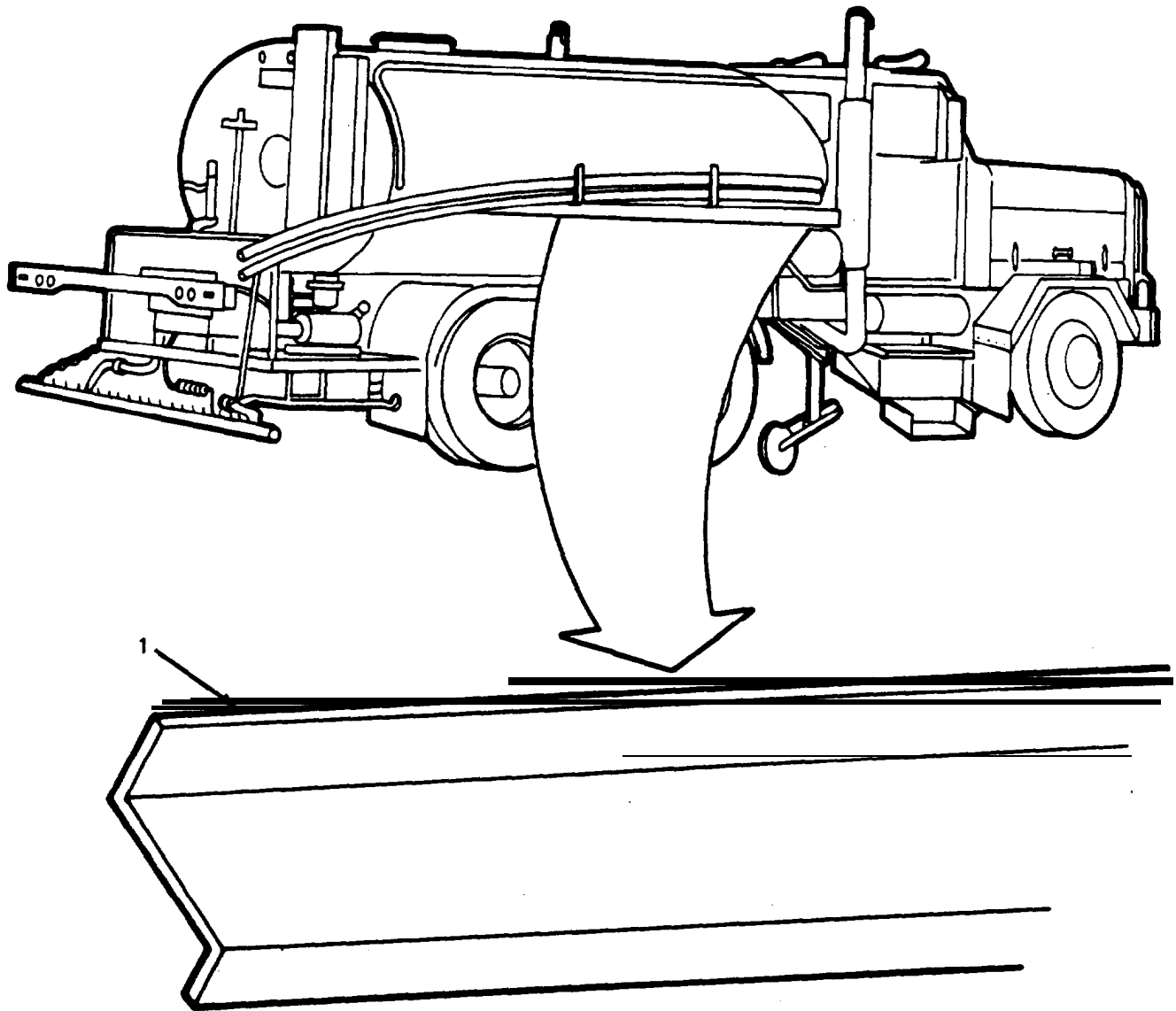


Figure 4-12. Passenger Side and Driver's Walkway (Sheet 1 of 2).



TA 076005

LEGEND:

- | | |
|---|--|
| <ul style="list-style-type: none"> 9. BRACKET 10. BRACKET 11. BOLT, WASHER AND NUT (6) 12. WALKWAY 13. BRACKET | <ul style="list-style-type: none"> 14. BRACKET 15. STORAGE BOX 16. AIR TANK 17. T' FITTING 18. AIR LINE 19. AIR LINE |
|---|--|

Figure 4-12. Passenger Side and Driver's Walkway (Sheet 2 of 2).

TM 5-3895-371-24 & P

- f.* Remove three bolts, washers, and nuts (8) from walkway bracket to fender connection.
- g.* Remove eight bolts and washers from four walkway brackets (9), (10), (13) and (14).
- h.* Remove walkway (12).

4-6. Install Driver's Side Walkway. (Refer to fig. 4-12.)

- a.* Set walkway (12) in place and aline mounting holes.
- b.* Install eight bolts and washers thru four walkway brackets (9), (10), (13), and (14).
- c.* Install three bolts, washers and nuts (8) thru walkway bracket to fender connection.
- d.* Rejoin wires to clearance lights (7) with new wire crimp connectors.
- e.* Install four bolts, washers, and nuts (6) and mount two clearance lights (7).
- f.* Install storage box (15) with air tank (16) attached to walkway (12) with six bolts, washers, and nuts (11); three each on either end of storage box (15).
- g.* Install air lines (18) and (19) to "T" fitting (17) on back of air tank (16).
- h.* Start engine, pressurize air system, check for air leaks and clearance light function; refer to TM 9-2329273-10.

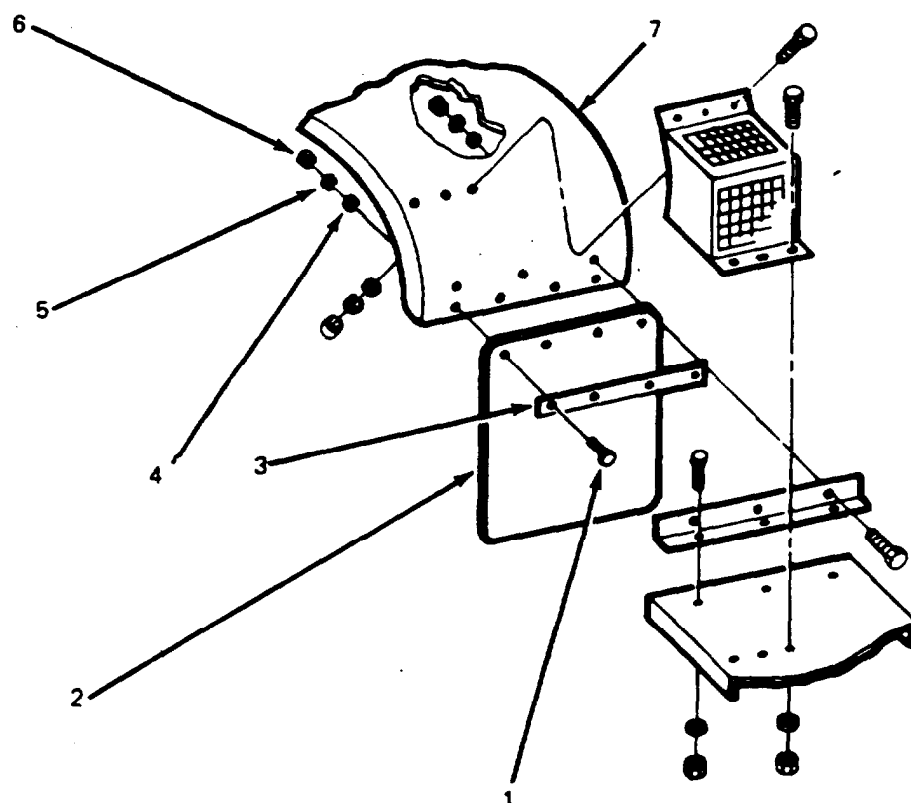
4-7. Remove Rear Wheel Splash Guard. (Refer to fig. 4-13.)

- a.* Remove four bolts (1) and flat washers (4) with lockwasher (5) and nuts (6).
- b.* Remove splash guard bar (3).
- c.* Remove splash guard (2) from fender (7).

4-8. Install Rear Wheel Splash Guard.

- a.* Install splash guard (2) to fender (7).

Install splash guard bar (3) and secure with four bolts (1) with flat washers (4), lockwashers (5), and nuts (6).



TA 076006

LEGEND:

- 1. BOLT (4)
- 2. SPLASH GUARD
- 3. SPLASH GUARD BAR
- 4. FLAT WASHER (4)
- 5. LOCKWASHER (4)
- 6. NUT (4)
- 7. FENDER

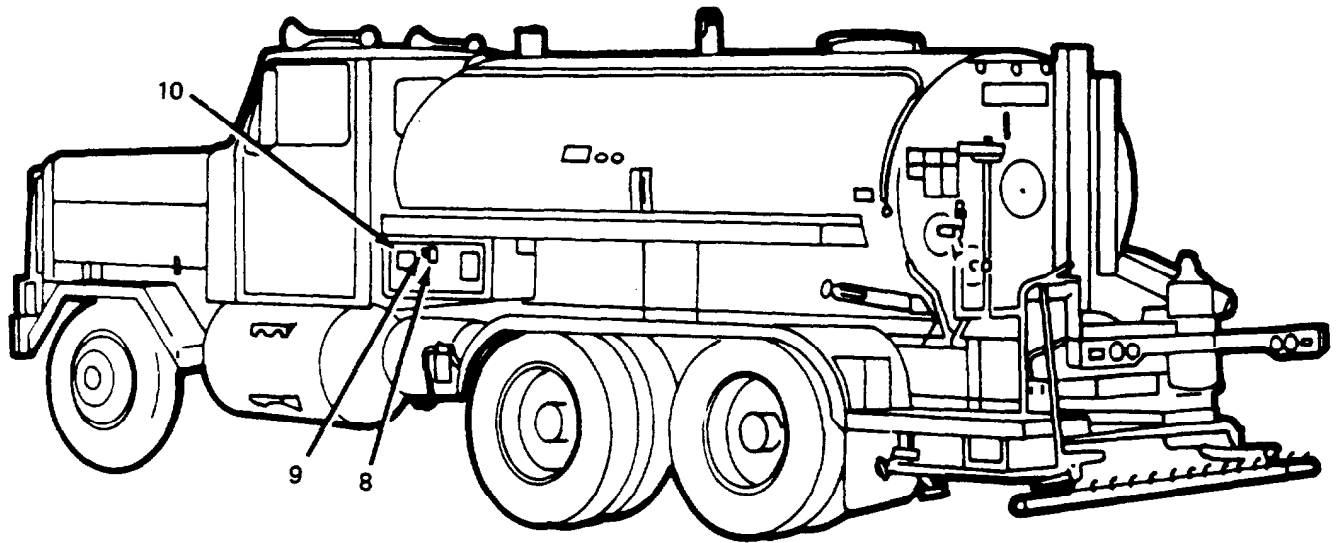
Figure 4-13. Rear Wheel Splash Guard.

4-9. Remove Tool Box. (Refer to fig. 4-14.)

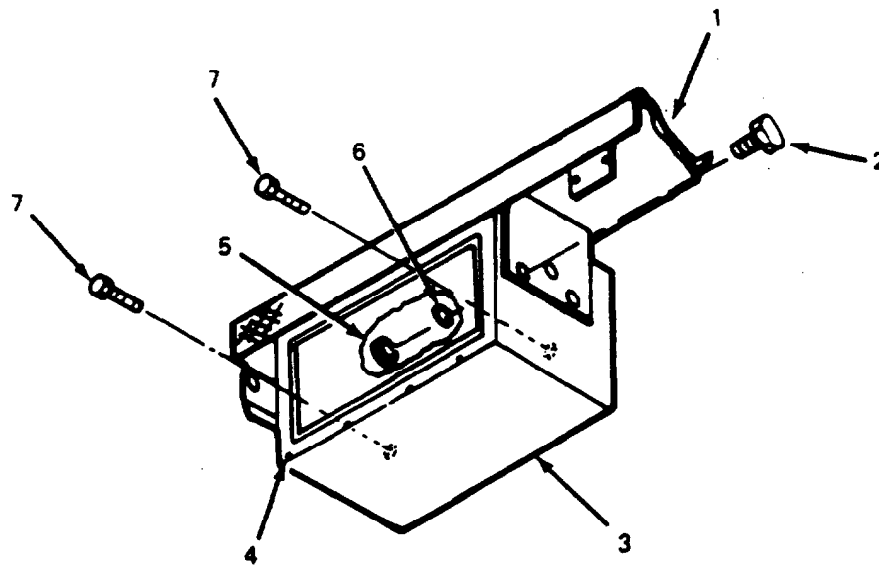
- a.* Remove four capscrews (7), nuts, and washers in rear of box holding air tank to tool box and pull air tank away.
- b.* Remove three bolts, nuts, and washers (2) on each end of box and remove box from walkway (1).
- c.* Drill out six pop rivets (8) holding latch arm (9) to lid (10).
- d.* Drill out eight pop rivets (4) holding hinge to lid (10).

4-10. Install Tool Box.

- a.* Install hinge to lid with eight new pop rivets (4).
- b.* Install latch arm to lid (10) with six new pop rivets (8).
- c.* Install tool box to walkway (1) with three bolts, nuts and washers (2) on each end.
- d.* Install four capscrews (7), nuts, and washers, and secure air tank assembly to back side of tool box.



TA 076007



LEGEND:

- | | |
|-----------------------------|------------------|
| 1. WALKWAY | 6. WASHER (6) |
| 2. BOLT, NUT AND WASHER (6) | 7. CAPSCREW (4) |
| 3. TOOL BOX | 8. POP RIVET (6) |
| 4. POP RIVET (8) | 9. LATCH ARM |
| 5. NUT (6) | 10. LID |

TA 076008

Figure 4-14. Tool Box.

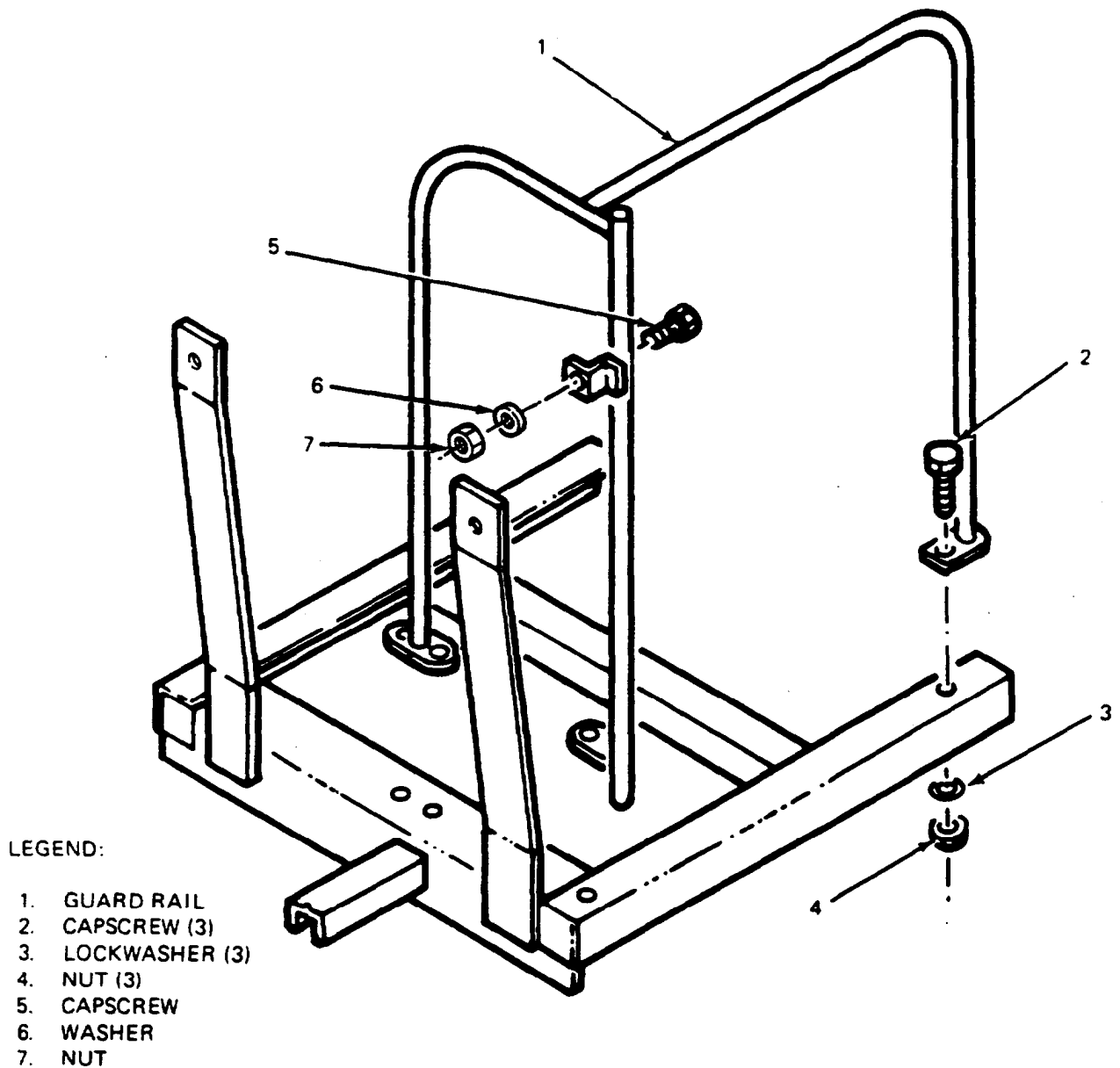
CHAPTER 5

REPAIR OF SPRAY BAR SUBFRAME

5-1. Disassembly.

a. Remove blower assembly. (Refer to para 2-35.)

b. Remove right side guard rail (1, fig. 5-1) by removing three capscrews (2), lockwashers (3), and nuts (4) from top and bottom. Remove capscrew (5), nut (7) and washer (6) that fasten guard rail to frame.

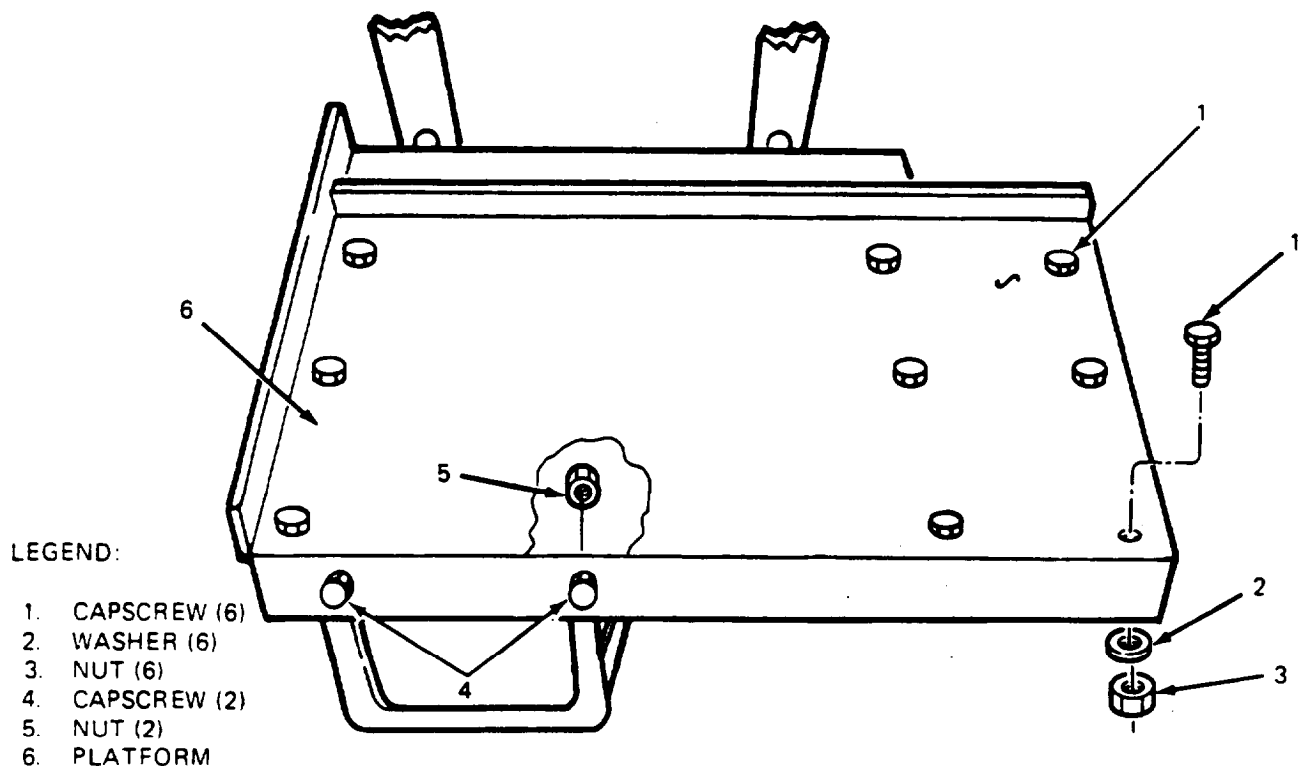


TA 076009

Figure 5-1. Remove/Install Guard Rail.

c. Remove left side guard rail as in step b.

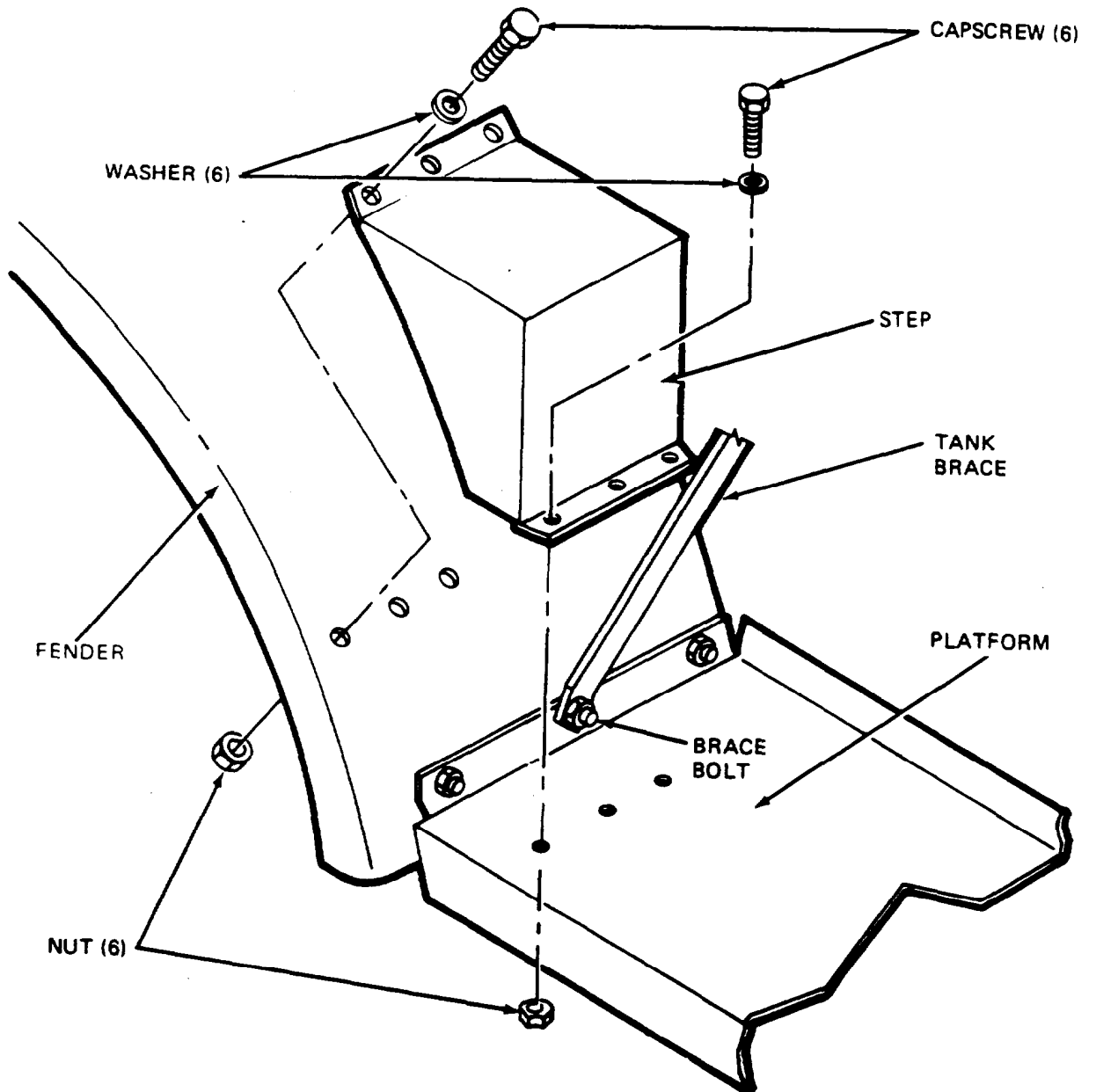
d. Remove right side platform (fig. 5-2) by removing six capscrews (1), nuts (3), and washers (2) from top and bottom of platform; and two capscrews (4) and nuts (5) from the side step.



TA 076010

Figure 5-2. Remove/Install Platform.

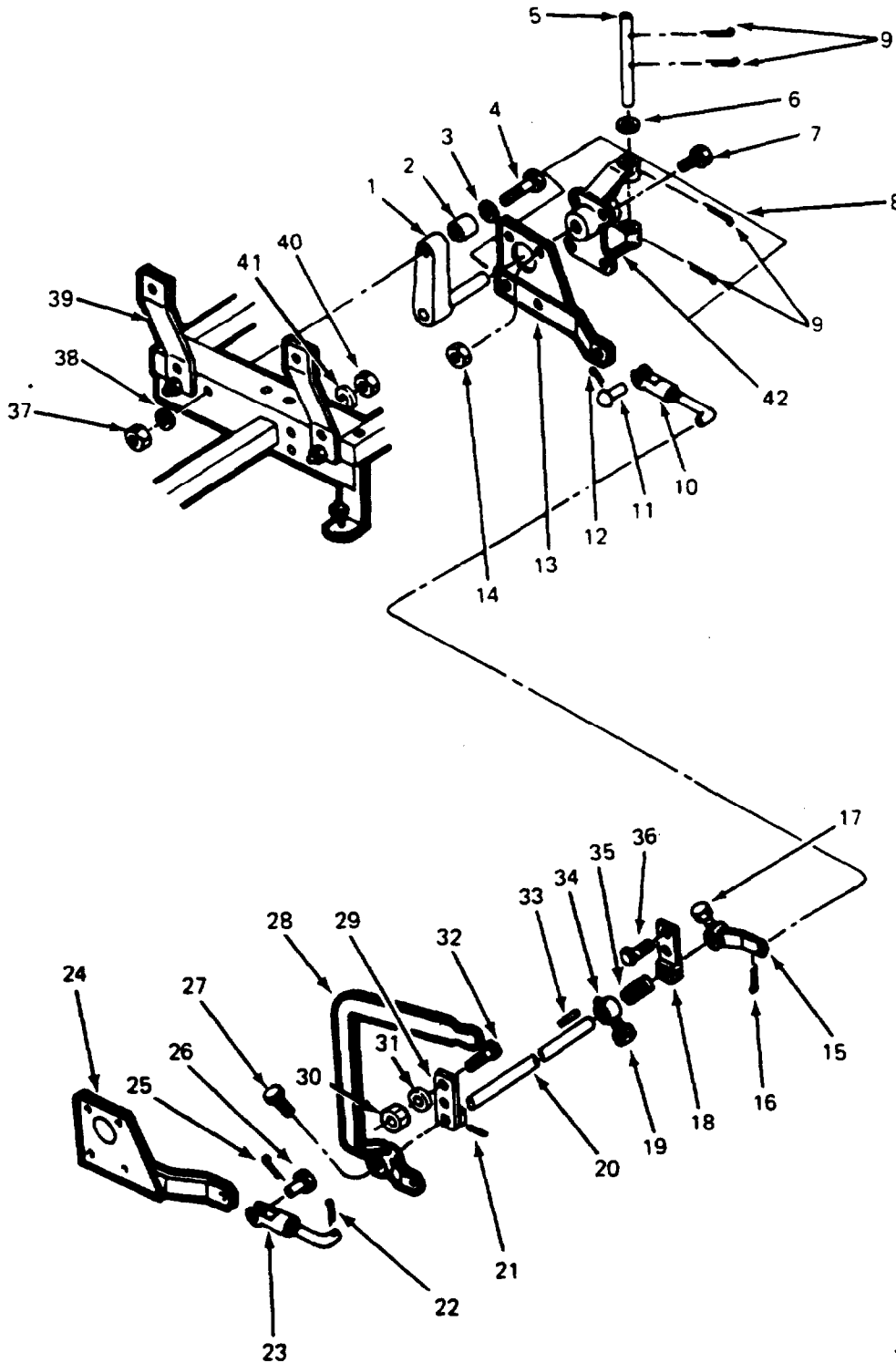
- e. Remove left side platform as in step d. (Refer to fig. 5-3).



TA 078011

Figure 5-3. Remove/Install Left Side Platform and Step.

- f. Remove step by removing six capscrews, washers, and nuts.
- g. Support spray bar with floor jack.
- h. Remove yoke assembly (8, fig. 5-4) right or left side as follows:



TA 076012

Figure 5-4. Disassemble/Assemble Sub frame (Sheet 1 of 2).

LEGEND:

1.	SHAFT ASSEMBLY	22.	COTTER PIN
2.	BUSHING	23.	CLEVIS
3.	WASHER	24.	BRACKET
4.	CAPSCREW	25.	COTTER PIN
5.	SWIVEL PIN	26.	PIN
6.	SPACER	27.	SET SCREW
7.	CAPSCREW	28.	ARM
8.	YOKE ASSEMBLY	29.	BEARING BLOCK
9.	COTTER PIN (2)	30.	NUT (2)
10.	CLEVIS	31.	WASHER (2)
11.	PIN	32.	CAPSCREW (2)
12.	COTTER PIN	33.	SQUARE KEY
13.	PIVOT ARM	34.	ARM
14.	NUT	35.	SPRING
15.	ARM	36.	CAPSCREW (2)
16.	COTTER PIN	37.	NUT
17.	SETSCREW	38.	WASHER
18.	BEARING BLOCK	39.	HANGER BRACKET
19.	SETSCREW	40.	NUT (2)
20.	SHAFT ASSEMBLY	41.	WASHER (2)
21.	PIN	42.	YOKE

TA076013

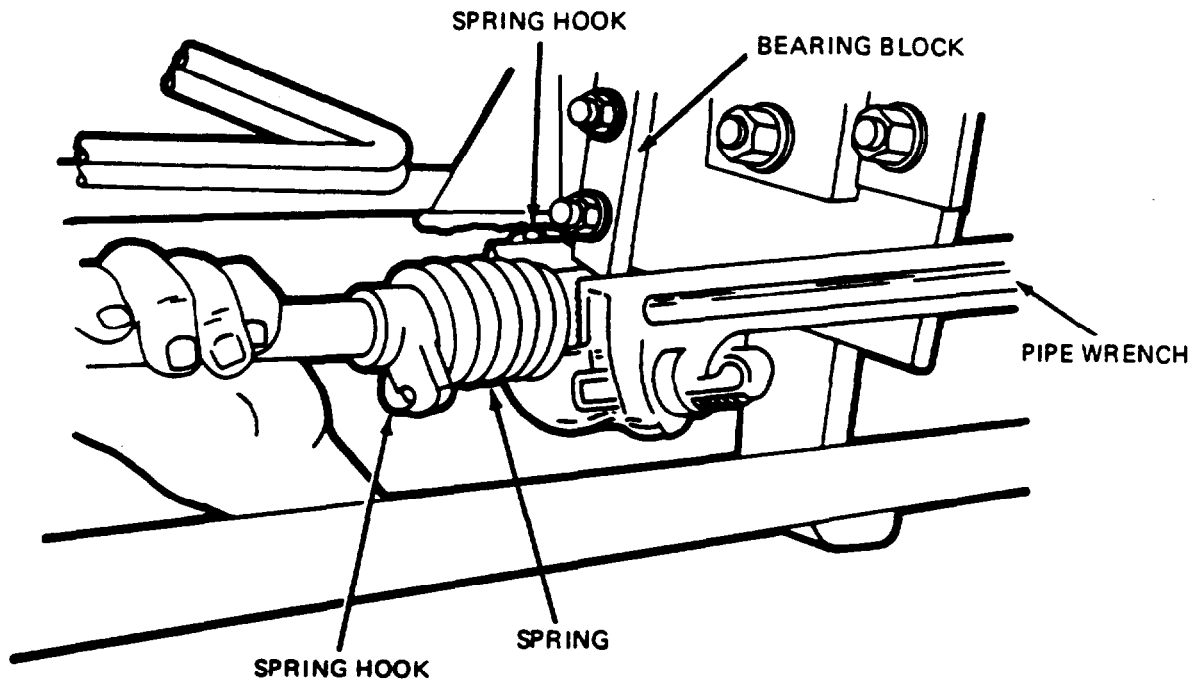
Figure 5-4. Disassemble/Assemble Subframe (Sheet 2 of 2).

- (1) Remove two cotter pins (9) and drive out swivel pin (5) up through yoke (42). Remove spacer (6).
- (2) Remove cotter pin (12) and pin (11) and disconnect clevis (10).
 - i. Remove cotter pin (25) and pin (26) and pull off clevis (23).
 - j. Remove shaft assembly (20) as follows:

WARNING

Shaft assembly (20) is under great spring tension. Exercise caution when removing.

- (1) Retain spring tension on bearing block (18) with pipe wrench, as shown in figure 5-5, while removing two capscrews (36, fig. 5-4), nuts (40), and washers (41); then lower pipe wrench to relieve spring tension.



NOTE: FOR LOCATION REFER TO FIGURE 5-4

TA 076014

Figure 5-5. Remove/Install Raising Bar Spring.

(2) Remove shaft assembly (20) by removing two capscrews (32), washers (31), and nuts (30), and move shaft assembly to the bench for disassembly.

k. Remove arm (15) by loosening setscrew (17) and removing cotter pin (16).

l. Remove square key (33) from shaft assembly (20); then remove bearing block (18), spring (35), and arm (34).

m. Loosen setscrew (27). Remove cotter pin (22) and pull off arm (28).

n. Remove pin (21) and pull off bearing block (29).

5-2. Reassembly.

a. Install shaft assembly (20, fig. 5-4) as follows:

(1) Install bearing block (29) on shaft (20).

(2) Install arm (28). Secure with cotter pin (22) and tighten setscrew (27).

(3) Install arm (34), spring (35) and bearing block (18) on shaft assembly (20).

(4) Install arm (15) with square key (33); then tighten setscrew (17).

(5) Place shaft assembly (20) with assembled spring (35) and bearing blocks (18) and (29) on frame. Spring should not be under tension at this time.

(6) Install two capscrews (32), washers (31), and nuts (30) to fasten bearing block (29) to frame.

(7) Using a pipe wrench, as shown in figure 5-5, wind spring (35, fig. 5-4) hooks to tensioned position.

(8) Install capscrews (36), nuts (40), and washers (41) to fasten bearing block (18) to frame. Remove pipe wrench.

(9) Connect clevis (23); then install pin (26) and cotter pin (25).

(10) Connect clevis (10); then install pin (11) and cotter pin (12).

(11) Install swivel pin (5) into yoke (42); then install two cotter pins (9).

b. Install right side platform (fig. 5-2) and secure with six capscrews (1), nuts (3), and washers (2) at top and bottom of platform; and two capscrews (4) and nuts (5) through the side step.

c. Install right side guard rail (1, fig. 5-1) and secure with three capscrews (2), lockwasher (3), and nuts (4) at top and bottom. Install capscrew (5), nut, and washers that fasten guard rail to frame.

d. install left side platform and left side guard rail as in steps b and c.

e. Install step (fig. 5-3) and secure with six capscrews and washers.

f. Install blower assembly. (Refer to para 2-35.)

CHAPTER 6

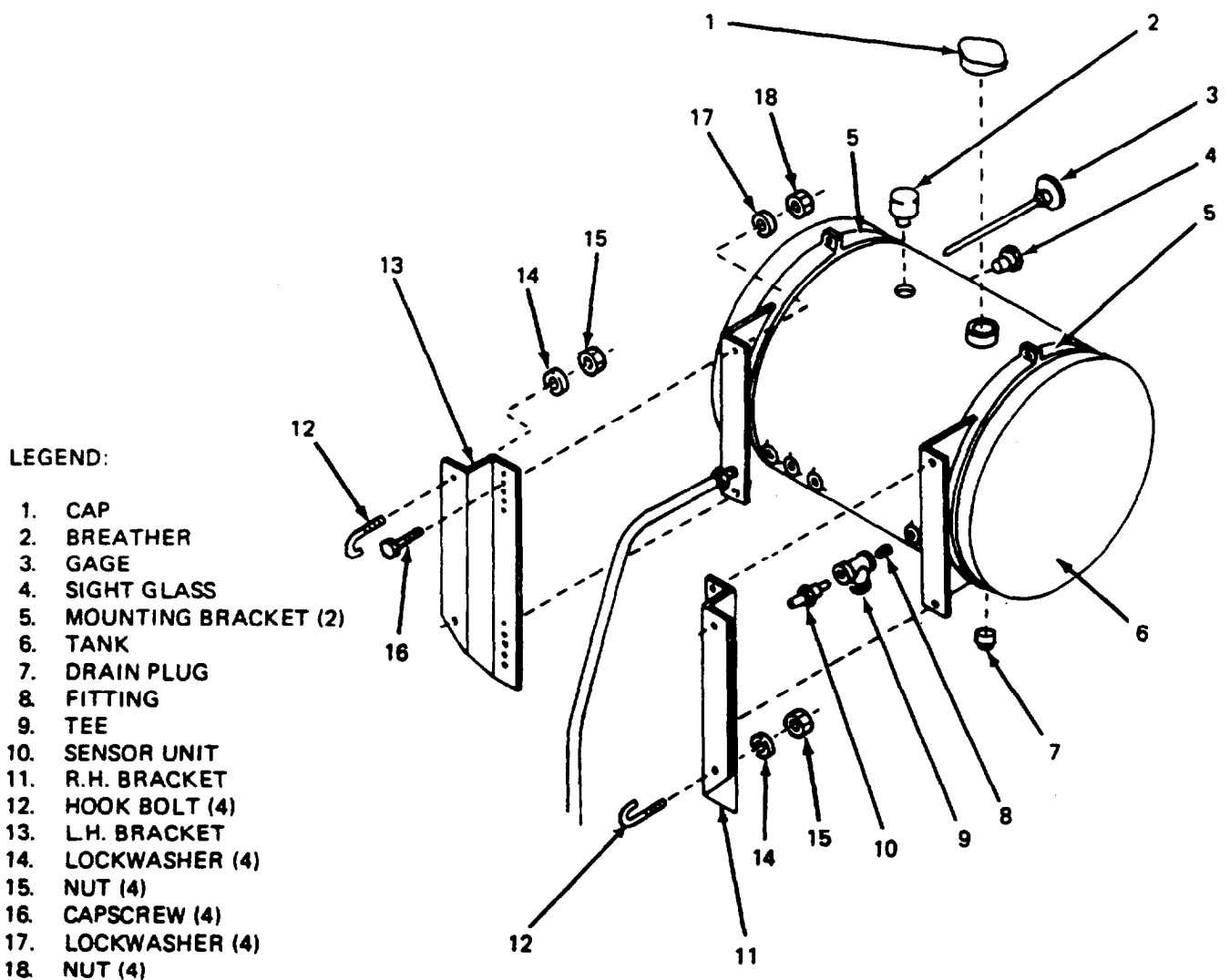
REPAIR OF HYDRAULIC TANK

6-1. Removal.

a. Remove drain plug (7) from tank (6) and drain fluid below sight glass level (4) Cap (1) breather (2), gage (3) and sight glass (4) may be removed and replaced. Fitting (8) tee (9) and sensor unit (10) may be disconnected and replaced. Tank (6) and mounting brackets (5) may be replaced or repaired with welds.

b. Remove four nuts (15), lockwashers (14), and hook bolts (12); remove brackets (13 and 11).

Remove mounting brackets (5) from brackets (13 and 11) by removing four capscrews (16), lockwashers (17), and nuts (18).



TA 076015

Figure 6-1. Disassemble/Reassemble Hydraulic tank.

TM 5-3895-371-24 & P

6-2. General Repair. With the exception of the mounting brackets, frame clips and clamps, all parts may be replaced with the tank installed. To replace parts on the lower half of the tank, first drain the tank.

6-3. Installation.

a . Install brackets (11 and 13) to mounting brackets (5) by installing four capscrews (16) with lockwashers (17) and nuts (18).

b. Install brackets (13 and 11) to chassis frame by installing four hook bolts (12), lockwashers (14), and nuts (15).

c . Reinstall cap (1), breather (2), gage (3), sight glass (4), drain plug (7), fitting (8), tee (9), and sensor unit (10).

d. Install hydraulic fluid and test for leaks.

CHAPTER 7

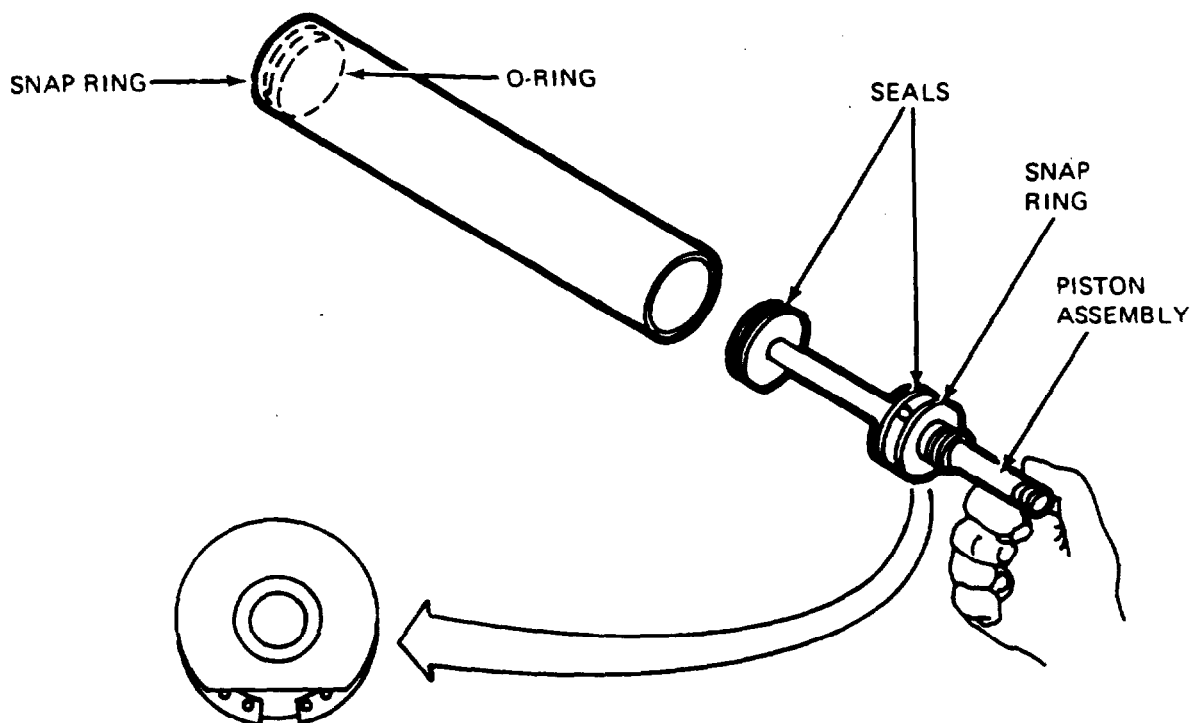
REPAIR OF SPRAY BAR AIR CYLINDERS

7-1. Disassembly of Bar Shifting Control Cylinder. (Refer to fig. 7-1.)

- a. Remove snap ring at piston end of cylinder; then pull out piston assembly.
- b. Remove two seals from piston assembly.
- c. Remove snap ring at opposite end of cylinder; then remove O-ring.

7-2. Reassembly of Bar Shifting Control Cylinder. (Refer to fig. 7-1.)

- a. Clean cylinder and piston in dry cleaning solvent.
- b. Install new seals and O-ring.
- c. Install piston assembly and secure with snap ring.
- d. Install O-ring at opposite end of cylinder and secure with snap ring.



TA 078016

Figure 1-1. Disassemble/Assemble Bar Shifting Control Cylinder.

NOTE

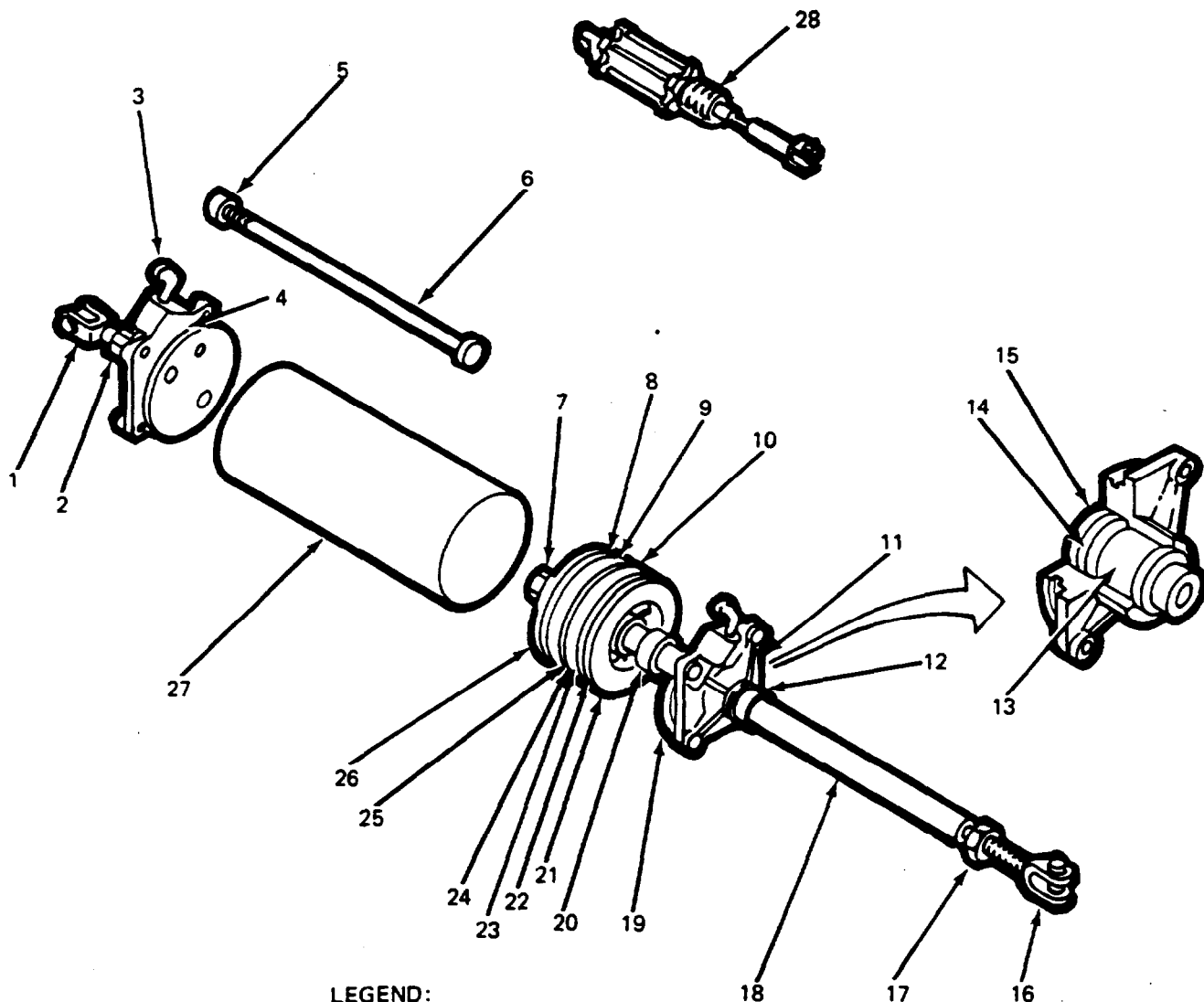
Procedures for disassembly and reassembly of the two turn up cylinders and the two on-off control cylinders are identical.

7-3. Disassembly of Turn Up and On-Off Control Cylinders. (Refer to fig. 7-2.)

- a. Move rubber boot back to gain access to nut (17); then loosen nut (17) and remove clevis (16).
- b. Pull off rubber boot (28).
- c. Remove four bolts (6), nuts (5), and washers that fasten caps (3 and 11) to cylinder (27); then pull off caps (3 and 11).
- d. Pull piston rod (18) out of cylinder (27).
- e. Remove sleeve (20).
- f. Remove nut (7) and washers from end of piston rod (18) and pull off the following:
 - (1) Head (26), leather seal (9), and spring (10).
 - (2) Spacer (25).
 - (3) Leather seal (24), spring (23), and head (21).
- g. Remove felt ring (8) from head (26).
- h. Remove felt ring (22) from head (21).
- i. Remove O-ring (4) from cap (3).
- j. Remove O-ring (19) from cap (11).
- k. Remove backup washer (15) and remove seal (14) and bushing (13) from cap (11).
- l. Remove felt seal (12) from cap (11).

7-4. Reassembly of Turn Up and On-Off Control Cylinders. (Refer to fig. 7-2.)

- a. Install new felt seal (12) into cap (11).
- b. Press in bushing (13) into cap (11).
- c. Press in new seal (14) and backup washer (15) into cap (11).
- d. Install new O-ring (19) on cap (11).
- e. Install new O-ring (4) on cap (3).
- f. Install new felt ring (22) on head (21).
- g. Install new felt ring (8) on head (26).



LEGEND:

- | | |
|-----------------|-------------------|
| 1. CLEVIS | 15. BACKUP WASHER |
| 2. NUT | 16. CLEVIS |
| 3. CAP | 17. NUT |
| 4. O-RING | 18. PISTON ROD |
| 5. NUTS (4) | 19. O-RING |
| 6. BOLTS (4) | 20. SLEEVE |
| 7. NUT | 21. HEAD |
| 8. FELT RING | 22. FELT RING |
| 9. LEATHER SEAL | 23. SPRING |
| 10. SPRING | 24. LEATHER SEAL |
| 11. CAP | 25. SPACER |
| 12. FELT SEAL | 26. HEAD |
| 13. BUSHING | 27. CYLINDER |
| 14. SEAL | 28. RUBBER BOOT |

TA 076017

Figure 7-2. Disassemble/Assemble Bar On-Off Cylinder.

TM 5-3895-371-24 & P

- h.* Install new leather seal (24) and spring (23) on head (21).
- i.* Install spacer (25).
- j.* Install new leather seal (9) and spring (10) to head (26).
- k.* Install heads (21) and (26) on piston rod (18) and secure with flat washer and nut (7).
- l.* Install sleeve (20) on piston rod (18).
- m.* Install piston rod assembly (18) into cylinder (27).
- n.* Install caps (3 and 11) alining end caps square with each other and hose fittings in line.
- o.* Install four bolts (6), nuts (5), and lockwashers.
- p.* Install rubber boot (28).
- q.* Install clevis (16) with nut (17) and secure.
- r.* Place rubber boot (28) in place over nut (17).

CHAPTER 8
REPAIR OF BITUMETER AIR CHAMBER

8-1. Disassembly. (Refer to para 2-23 for removal instructions.)

- a.* Remove clamp (fig. 8-1) that fastens chamber cap and chamber base together by removing two capscrews and nuts.
- b.* Pry clamp off of chamber.
- c.* Lift off chamber cap and remove diaphragm, spring and piston.

8-2. Reassembly.

- a.* Clean assembly, except diaphragm, in dry cleaning solution.
- b.* Inspect diaphragm for cracks or tears. Replace if defective,
- c.* Assemble piston, spring and diaphragm in chamber base.
- d.* Press down on top of piston to compress the spring; then clamp the piston rod in a vise to hold the spring in the compressed position.
- e.* Install chamber cap and clamp.
- f.* Fasten clamp securely with two capscrews and nuts.

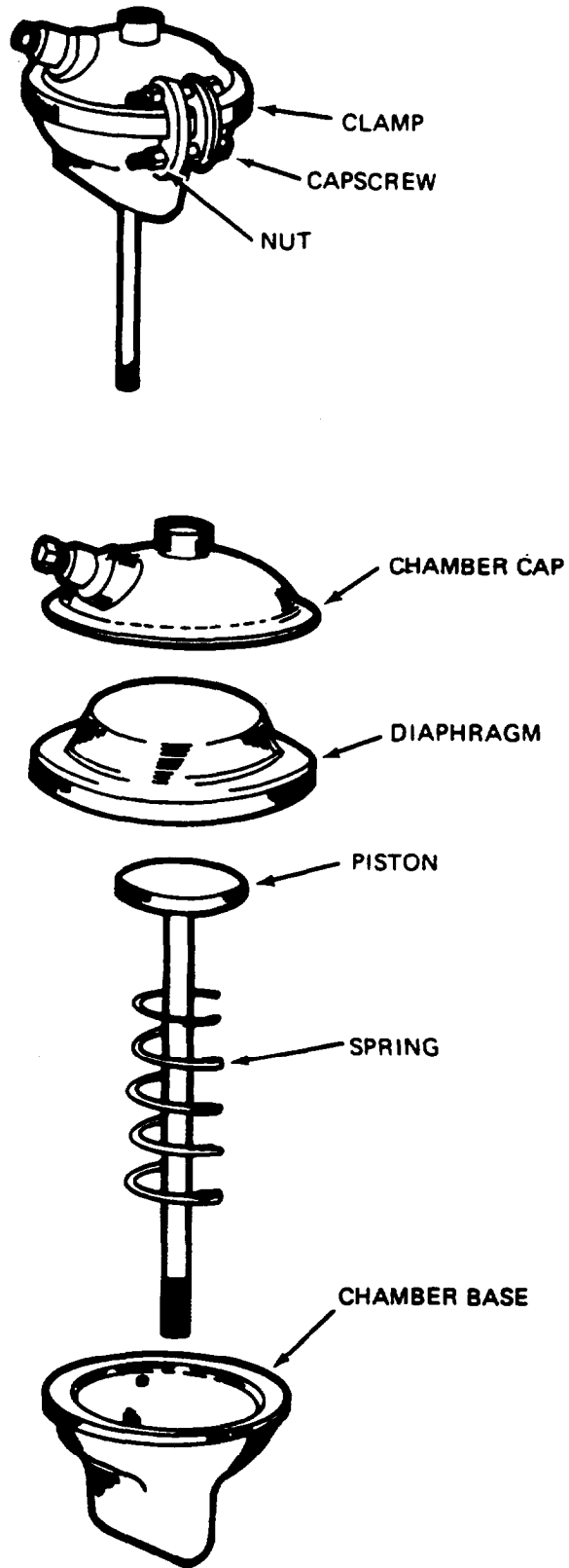


Figure 8-1. Disassemble/Reassemble Bitumeter Air Chamber.

TA 070018

CHAPTER 9
REPAIR OF ASPHALT PUMP

9-1. Disassembly. (Refer to fig. 9-1.)

a. Remove cotter pin (25), nut (26), flange (28), and key (27).

b. Scribe a mark on pump housing (8) and a corresponding mark on each face plate (4 and 19) to aid in reassembly.

c. Remove six capscrews (1) and pull out three blind bearings (2) and gaskets (3).

Remove two studs and nuts (21), two packing gland retainers (20), packing gland (22), packing (23), and lantern ring (24).

e. Remove capscrews (18) that fasten face plate (19) to housing.

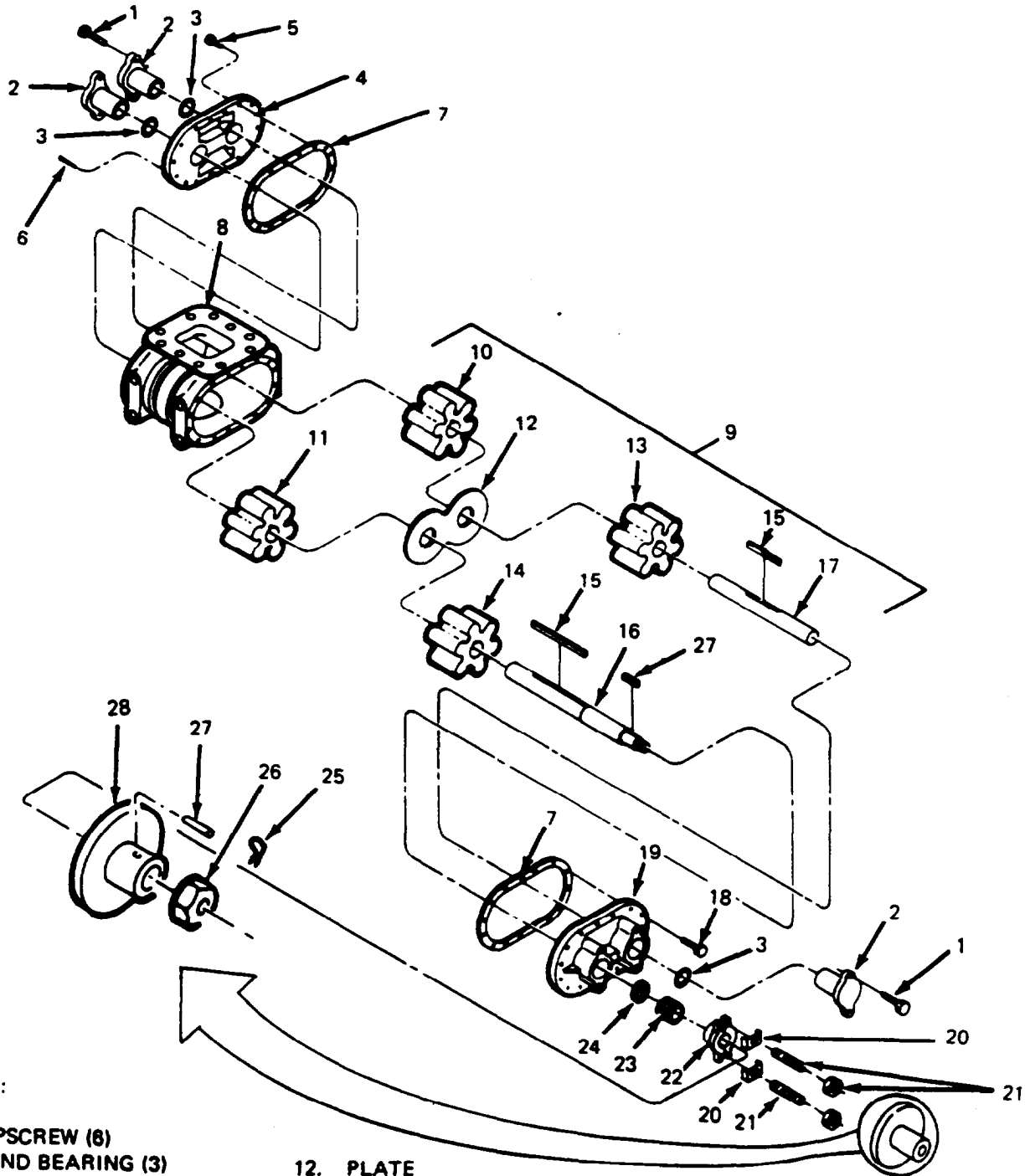
f. Pull off front face plate (19) with the four assembled impellers (10), (11), (13), and (14).

Pull off impellers (10 and (13) and key (15) from idler shaft (17) and remove idler shaft (17).

h. Remove gasket (7).

i. Tap shaft (16) out of assembly and separate plate (12) and impellers (11 and 14) and key (15).

Remove capscrews (5) that fasten rear face plate (4) to pump housing (8) and pull off the assembled rear face plate with gasket (7). Remove alignment pin (6).



LEGEND:

- | | | |
|----------------------|----------------------|----------------------|
| 1. CAPSCREW (8) | 12. PLATE | 21. STUD AND NUT (2) |
| 2. BLIND BEARING (3) | 13. IMPELLER | 22. PACKING GLAND |
| 3. GASKET (3) | 14. IMPELLER | 23. PACKING |
| 4. REAR FACE PLATE | 15. KEY (2) | 24. LATTERN RING |
| 5. CAPSCREW | 16. SHAFT | 25. COTTER PIN |
| 6. ALINEMENT PIN (4) | 17. IDLER SHAFT | 26. NUT |
| 7. GASKET (2) | 18. CAPSCREW | 27. KEY |
| 8. PUMP HOUSING | 19. FRONT FACE PLATE | 28. FLANGE |
| 9. IMPELLER SET | 20. PACKING GLAND | |
| 10. IMPELLER | RETAINER (2) | |
| 11. IMPELLER | | |

Figure 9-1. Disassemble/Reassemble Asphalt Pump.

TA 078019

9-2. Clean and Inspect. (Refer to fig. 9-1.)

- a. Clean all parts with SD-2 dry cleaning solvent.
- b. Inspect the following:
 - (1) Impellers (10), (11), (13), and (14) for nicks or other damage.
 - (2) The three blind bearings (2) for damage.
- c. Replace all defective parts.

9-3. Reassembly. (Refer to fig. 9-1.)

- a. Install rear face plate (4) and gasket (7). Secure to pump housing (8) with capscrews (5). Drive in alignment pin (6) before tightening capscrew (5).
- b. Install key (15) to shaft (16), install impeller (14) with lip of impeller towards plate (12). Tap impeller (14) down so that approximately half of key (15) is still exposed.
- c. Install plate (12) and impeller (14) and press on impeller (11).
- d. Install impeller (13) and key (15) on idler shaft (17) with lip of impeller mating to plate (12).
- e. Install impeller (10) on idler shaft (17).

NOTE

Prior to installation of the assembled four impellers, make sure that there is no gap between the impellers and the plate (12). Check also that the impellers turn freely.

- f. Install the assembled four impellers on their respective shafts into pump housing (8).
- g. Install blind bearings (2) (shown at forward end of illustration) with gaskets (3). It may be necessary to move idler shafts (17 and 16) so that they set into blind bearings (2).
- h. Secure blind bearings (2) with capscrews (1).
- i. Install gasket (7) and front face plate (19). Secure to pump housing (8) with capscrews (18).
- j. Install gasket (3) and blind bearing (2). Secure with two studs and nuts (21).
- k. Install lantern ring (24) and packing (23).
- l. Install pecking gland (22) and secure with two packing gland retainers (20) and two studs and nuts (21).
- m. Install key (27) onto shaft (16) and install flange (28).
- n. Install nut (26) and cotter pin (25).

CHAPTER 10

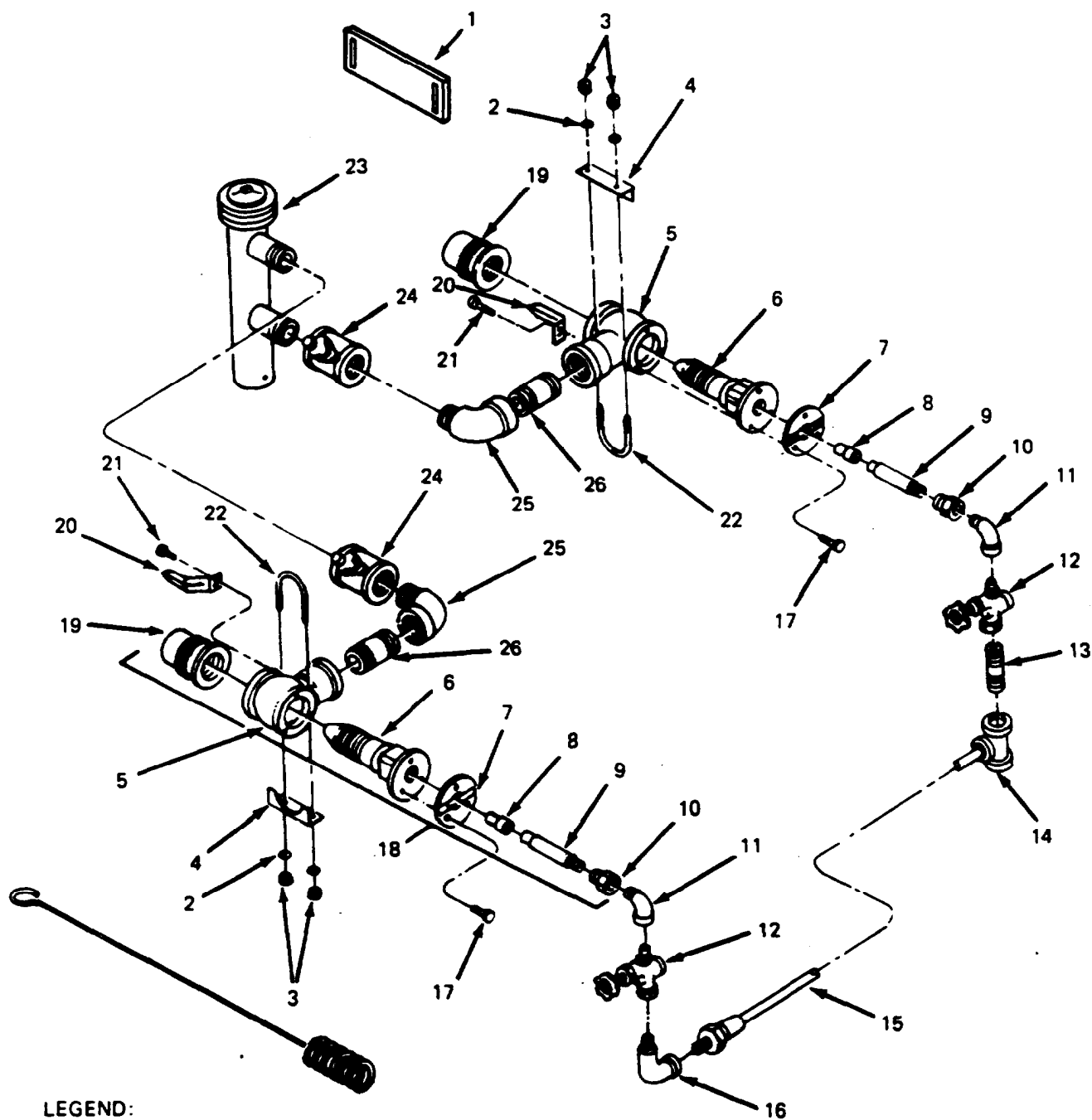
REPAIR OF LOW PRESSURE BURNER ASSEMBLY

10-1. Disassembly. (Refer to fig. 10-1.)

- a. Remove copper tube (15) by disconnecting at both ends.
- b. Remove U-bolt (22) and brace (4) by removing two lockwashers (2) and hex nuts (3) and U-bolt (22).
- c. Remove burner assembly (5) with nipple (26).
- d. Unscrew nipple (26) from burner (5).
- e. Unscrew butterfly valve (24) from burn tube (23).
- f. Unscrew elbow (25) from control valve (24).
- g. Remove burner stop (20) by removing two screws (21).
- h. Remove low pressure nozzle (19).
- i. Remove three capscrews (17) and remove plate (7) and nozzle (6) from burner (5).
- j. Remove bushing (10); then separate tip (8) and body (9) and remove from plate (7).
- k. Remove elbows (16) and (11) from valve (12) on left burner and nipple (13) and tee (14) from right burner.

10-2. Reassembly. (Refer to fig. 10-1.)

- a. Clean strainer in valve (12).
- b. Connect elbows (11) and (16) to valve (12) on left burner and nipple (13) and tee (14) on right burner.
- c. Assemble tip (8), body (9), and bushing (10) through plate (7).
- d. Install nozzle (6) in burner (5).
- e. Install name plate (7) and secure with three capscrews (17).
- f. Install low pressure nozzle (19).
- g. Install burner stop (20) and secure with two screws (21).
- h. Screw in control valve (24) onto burn tube (23).
- i. Screw elbow (25) into butterfly valve (24).
- j. Screw nipple (26) into burner (5) and elbow (25).
- k. Install U-bolt (22) and clamp (4). Secure loosely at this time with lockwashers (2) and hex nuts (3).
- l. Connect copper tube (15) to elbow (16) and to connector on valve for other burner assembly.
- m. Aline burners with holes in tank and finish tightening hex nuts (3) on brace to hold burners in place.



LEGEND:

- | | | |
|-------------------|---------------------|-----------------------------|
| 1. CLAMP | 10. BUSHING (2) | 19. LOW PRESSURE NOZZLE (2) |
| 2. LOCKWASHER (4) | 11. ELBOW (2) | 20. BURNER STOP (2) |
| 3. HEX NUT (4) | 12. VALVE (2) | 21. SCREW (4) |
| 4. BRACE (2) | 13. NIPPLE | 22. U-BOLT (2) |
| 5. BURNER (2) | 14. TEE | 23. MANIFOLD |
| 6. NOZZLE (2) | 15. COPPER TUBE | 24. BUTTERFLY VALVE (2) |
| 7. NAME PLATE (2) | 16. ELBOW | 25. ELBOW (2) |
| 8. TIP (2) | 17. CAPSCREW (6) | 26. NIPPLE (2) |
| 9. BODY (2) | 18. BURNER ASSEMBLY | |

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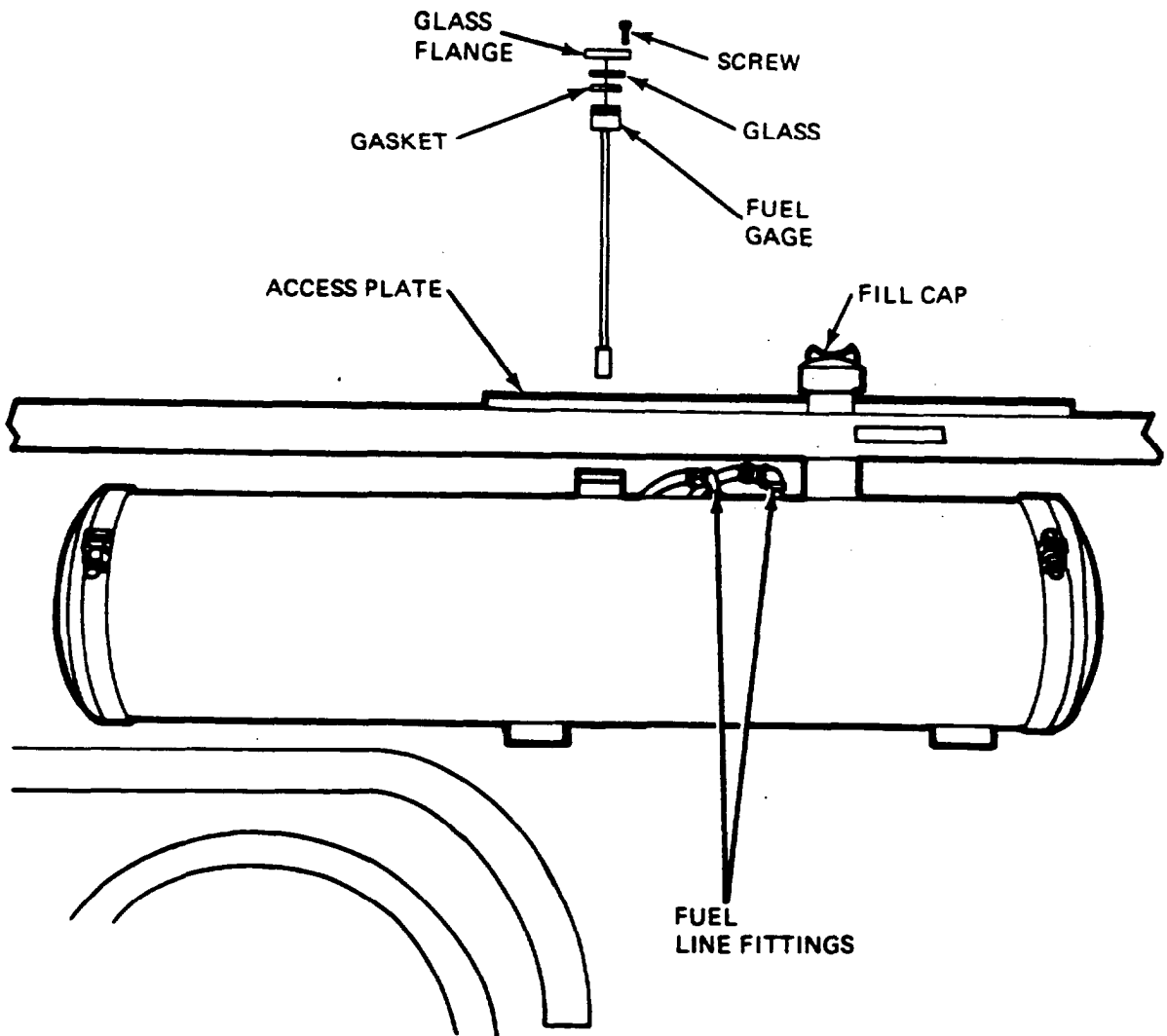
Figure 10-1. Disassemble/Reassemble Low Pressure Burner Assembly.

CHAPTER 11

REPAIR OF BURNER FUEL TANK

NOTE

Repair is limited to replacement of the fuel line fittings (fig. 11-1), draincocks, fill cap, and fuel gage. Following are procedures for replacement of the fuel gage. Follow standard shop practice techniques for replacement of other components.



TA 076021

Figure 11-1. Remove/Install Fuel Gage.

TM 5-3895371-24 & P

11-1. Removal of Fuel Gage. (Refer to fig. 11-1.)

- a. Remove two hexhead tap screws holding access plate and remove access plate.
- b. Remove five capscrews from top of gage.
- c. Remove gage flange, gage glass, and two gaskets.
- d. Remove indicator assembly from tank.

11-2. Fuel Tank Repair and Cleaning. Repairs are limited to sheet metal straightening and welding. For repairs of this type, refer to the following:

- a. Metal Body Repair and Related Operation - TM 9-450.
- b. Welding Theory and Application - TM 9-237.
- c. Wire brush all welded areas and remove any existing weld splatter.
- d. Vacuum interior.

11-3. Inspection of Fuel Gage.

- a. Inspect gage glass to see that it is clear for fuel indicator visibility. If necessary, clean fuel gage in hot water and soap. Wipe clean with a soft cloth.
- b. Inspect fuel indicator assembly for free movement and deformities.

11-4. Replacement of Fuel Gage.

- a. Install indicator assembly into tank.
- b. Replace flange, gaskets, gage glass, and secure with five screws.
- c. Line up access plate and secure with hexhead crews.

CHAPTER 12
REPAIR OF ASPHALT TANK GAGE

12-1. Removal of Gage. (Refer to fig. 12-1.)

- a. Loosen setscrew (31, view B) and remove switch actuator (34).

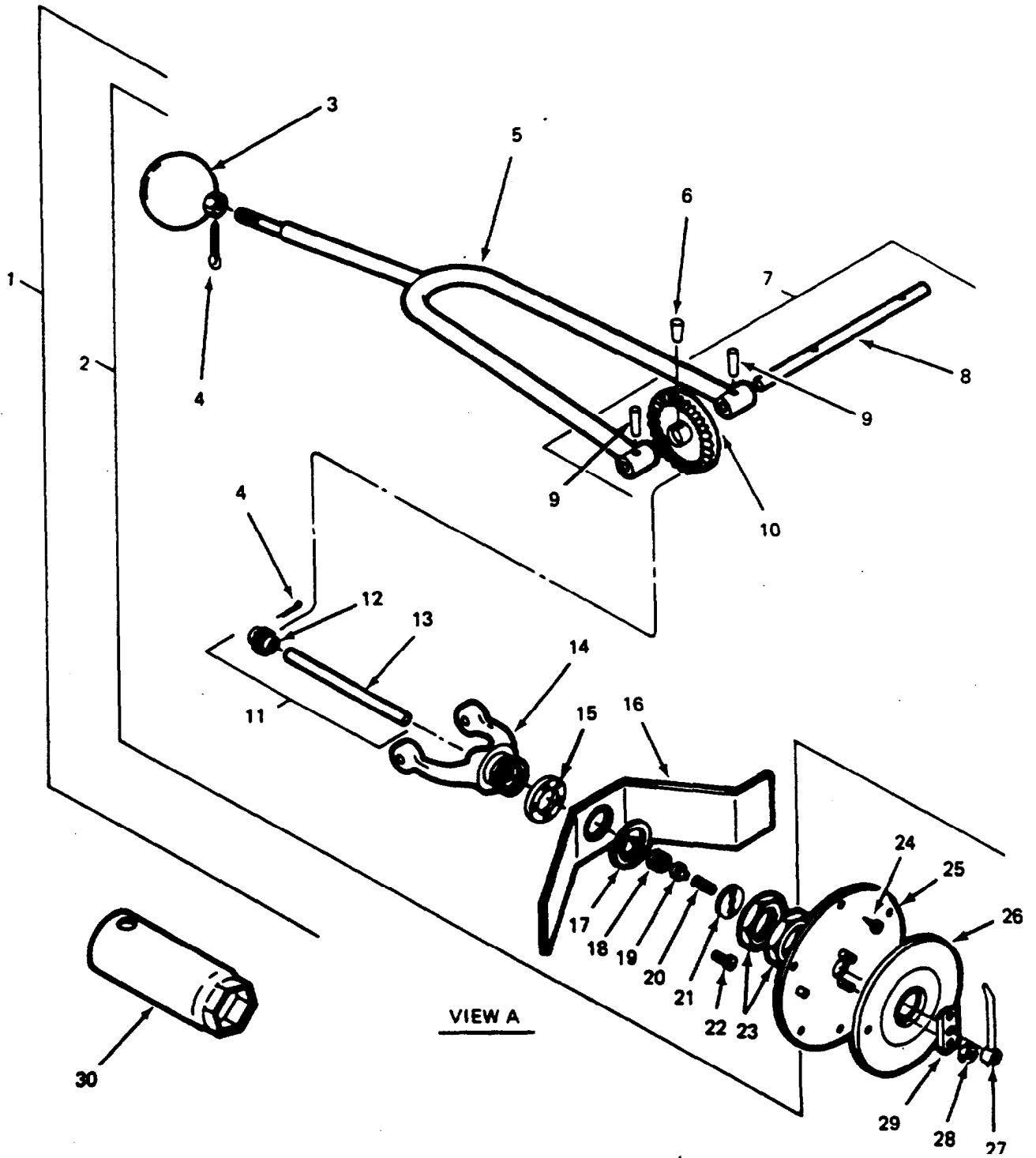
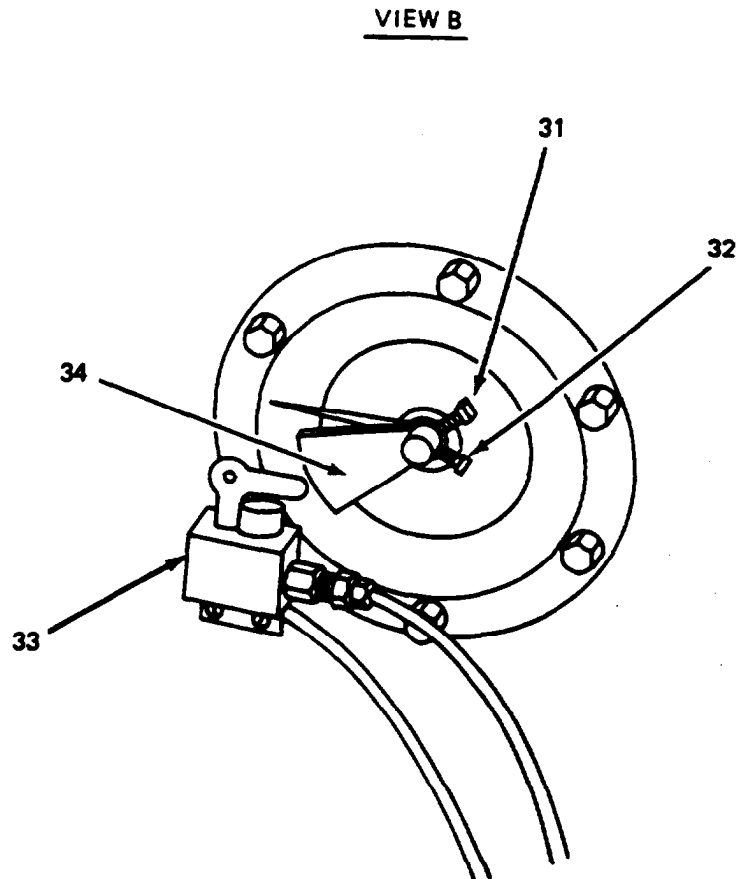


Figure 12-1. Disassemble/Assemble Asphalt Tank Gage (Sheet 1 of 2).

TA 070022



LEGEND:

TA 076023

- | | | |
|------------------------------|-----------------------|-------------------------|
| 1. TANK GAGE ASSEMBLY | 12. PINION GEAR | 24. CAPSCREW (5) |
| 2. FLOAT STEM ASSEMBLY | 13. INDICATOR SHAFT | 25. DIAL PLATE ASSEMBLY |
| 3. FLOAT BALL | 14. FLOAT BRACKET | 26. TANK GAGE DIAL |
| 4. COTTER PIN | 15. WASHER | 27. INDICATOR |
| 5. STEM ASSEMBLY | 16. SPACER | 28. HEX NUT (2) |
| 6. TAPERED PIN | 17. COPPER GASKET | 29. END BEARING PLATE |
| 7. SHAFT ASSEMBLY | 18. PACKING | 30. WRENCH |
| 8. SHAFT | 19. SLEEVE | 31. SET SCREW |
| 9. TAPERED PIN (2) | 20. SPRING | 32. SET SCREW |
| 10. BEVEL GEAR | 21. PACKING PLATE | 33. MICRO SWITCH |
| 11. INDICATOR SHAFT ASSEMBLY | 22. MACHINE SCREW (2) | 34. SWITCH ACTUATOR |
| | 23. TANK GAGE NUT (2) | |

Figure 12-1. Disassemble/Assemble Asphalt Tank Gage (Sheet 2 of 2).

- b. Loosen setscrew (32) and remove indicator (27, view A).
- c. Remove two hex nuts (28), end bearing plate (29) and tank gage dial (26).
- d. Remove five capscrews (24) and dial plate assembly (25).
- e. Remove two tank gage nuts (23) by using wrench (30) located in tool box.
- f. Remove tank gage assembly (1) from inside tank. (Enter tank through manhole).
- g. Remove copper gasket (17).

12-2. Disassembly. (Refer to fig. 12-1.)

- a. Tap out two tapered pins (9) with knock out punch and hammer.
- b. Tap out tapered pin (6).
- c. Remove shaft (8) from float bracket (14), stem assembly (5) and bevel gear (10).
- d. Remove two machine screws (22).
- e. Remove packing plate (21), spring (20), sleeve (19) and packing (18).
- f. Remove indicator shaft (13) from float bracket (14).
- g. Remove cotter pin (4) from float ball (3) and stem assembly (5).
- h. Unscrew float ball (3) from step (5).
- i. Remove pin (4) from pinion gear (12) and pull pinion gear (12) from indicator shaft (13).

12-3. Inspection.

- a. Inspect all parts for cracks, holes, deterioration, and deformity.
- b. Shake float ball (3). If it contains any liquid it must be replaced.

12-4. Reassembly. (Refer to fig. 12-1.)

- a. Insert indicator shaft (13) through float bracket (14).
- b. Install packing (18), sleeve (19), spring (20) and packing plate (21). Secure with two machine screws (22).
- c. Install pinion gear (12) and tapered pin (6).
- d. Place shaft (8) through step assembly (5), float bracket (14) and bevel gear (10). Install tapered pin (6).

NOTE

Check to see that, when float ball (3) is raised, indicator shaft (13) rotates in proper direction.

TM 5-3895-371-24 & P

- e. Install two tapered pins (9).
- f. Screw float ball (3) onto stem assembly (5) and install cotter pin (4).

12-5. Installation of Gage. (Refer to fig. 12-1.)

- a. Install copper gasket (17).
- b. Insert tank gage assembly (1) through tank.
- c. Install two tank gage nuts (23). Tighten nut closest to tank securely and lock with second nut.
- d. Line up dial plate assembly (25) and secure with five capscrews (24).
- e. Place tank gage dial (26) over dial plate assembly (25) so that dowel pin on dial plate assembly (25) is through hole in tank gage dial (26).
- f. Install end bearing plate (29) and secure with two hex nuts (28).
- g. Install indicator (27) with float ball (3) on bottom of tank, then tighten setscrew (32) with indicator at zero.
- h. install switch actuator (34) and adjust so that micro switch (33) is activated at 50 gallons then tighten setscrew (31). This will prevent the tank from going completely dry during operation.
- i. Check operation.

12-6. Discharge Header Strainer. (Refer to fig. 12-2.)

a. *Preparation.* Drain circulating system and spray bar. (Refer to TM 5-3895371-10.)

b. *Removal.*

(1) Remove the header end cap (3) and gasket (2).

(2) Remove the strainer (1).

c. *Cleaning, Inspection, and Repair.*

(1) Clean all parts in an approved cleaning solvent. Dry thoroughly with clean, dry, compressed air.

(2) Inspect the cap for cracks, breaks, damaged threads corrosion, distortion, or other damage. Inspect the strainer for bends, breaks, tears, cracks, corrosion, or other damage.

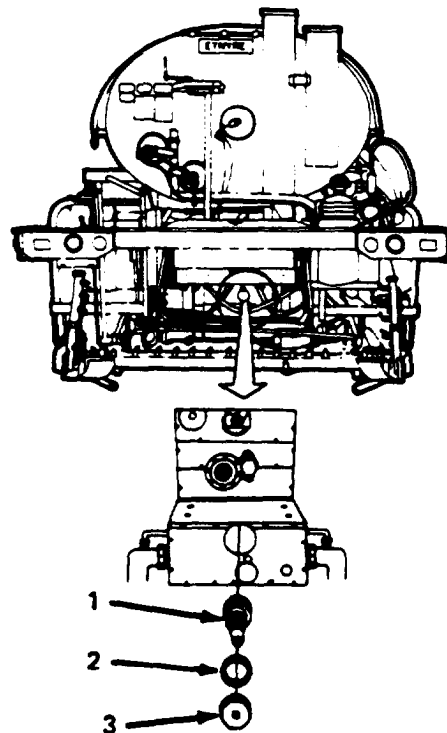
(3) Straighten bends or dents on the strainer. Replace the gasket. Replace strainer, if damaged.

d. *Installation.*

(1) Place strainer (1) in position inside the discharge header. Make sure the large end of strainer is properly seated.

(2) Install new gasket (2).

(3) Install and tighten header end cap (3).



LEGEND:

- 1. STRAINER
- 2. GASKET
- 3. HEADER END CAP

TA 076024

Figure 12-2. Disassemble/Assemble Header Strainer.

APPENDIX A

REFERENCES

A-1. Department of the Army Pamphlets.

Consolidated Index of Army Publications and Blank Forms DA Pam 25-30
 Index of Graphic Training Aids and Devices DA Pam 310-5
 The Army Maintenance Management System (TAMMS) DA Pam 738-750

A-2. Forms.

U.S. Government Motor Vehicle Operator's Identification Card SF 46
 Operator's Report of Motor Vehicle Accident SF 91
 Recommended Changes to Publications and Blank Forms DA Form 2028
 Recommended Changes to Equipment Technical Publications DA Form 2028-2

A-3 Other Publications.

The following publications contain information pertinent to the major item of material and associated equipment.

a. Vehicle.

Lubrication Order for M915, M916, M920 Truck
 Tractor and Chassis for M917, M918, and M919 LO 9-2320-273-12
 Lubrication Order for M918 Bituminous Distributor Truck Body LO 5-3895-371-12
 Operator's Manual for M915, M916, M920 Truck
 Tractor and Chassis for M917, M918, and M919 TM 9-2320-273-10
 Operator's Manual, Bituminous Distributor Truck Body TM 5-3895-371-10
 Organizational Maintenance for M915, M916, M920 Truck
 Tractor and Chassis for M917, M918, and M919 TM 9-2320-273-20
 Organizational Maintenance Repair Parts and Special Tools Lists
 for M915, M916, M920 Truck Tractor and Chassis for
 M917, M918, and M919 TM 9-2320-273-20P
 Organizational, Direct Support and General Support Maintenance
 Manual with Repair Parts and Special Tools Lists for
 M918 Bituminous Distributor Truck Body TM 5-3895-371-24 & P
 Direct and General Support Repair Parts and Special Tools Lists
 for M915, M916, M920 Truck Tractor and Chassis for
 M917, M918, and M919 TM 9-2320-273-34P

Direct and General Support Maintenance Manual
 (including Repair Parts and Special Tools Lists) for
 Engine, Diesel: 6 Cylinder, In-line, Turbocharger,
 Cummins Model NTC-400 TM 9-2815-222-34 & P

b. Camouflage.

Camouflage FM 5-20

c. Decontamination.

Nuclear, Biological and Chemical (NBC) Decontamination FM 3-5

d. General.

Operation and Maintenance of Ordnance Materiel in
 Extreme Cold Weather (0° to -65°F). FM 9-207

Principles of Automotive Vehicles TM 9-8000

How to Prepare and Conduct Military Training FM 21-6

Military Symbols FM 21-30

Manual for Wheeled Vehicle Driver FM 21-305

Basic Cold Weather Manual FM 31-70

Northern Operations FM 31-71

Army Motor Transport Units and Operations FM 55-30

Authorized Abbreviations and Brevity Codes AR 310-50

Accident Reporting and Records AR 385-40

Prevention of Motor Vehicle Accidents AR 385-55

Procedures for Destruction of Tank-Automotive
 Equipment to Prevent Enemy Use TM 750-244-6

Cooling Systems: Tactical Vehicle TM 750-254

e. Maintenance and Repair.

Organizational Care, Maintenance and Repair of
 Pneumatic Tires and Inner Tubes TM 9-2610-200-24

Description, Use, Bonding Techniques, and
 Properties of Adhesives TB ORD 1032

Inspection, Care, and Maintenance of Antifriction Bearings TM 9-214

Materials Used for Cleaning, Preserving, Abrading, and
 Cementing Ordnance Material and Related Materials
 Including Chemicals TM 9-247

Operator's, Organizational, Direct Support and General Support
 Maintenance Manual for Lead-Acid Storage Batteries TM 9-6140-200-14

Use of Antifreeze Solutions and Cleaning Compounds in
Engine Cooling System TB 750-651

Operator's Manual: Welding Theory and
Application TM 9-237

f. Administrative Storage.

Administrative Storage of Equipment TM 740-90-1

APPENDIX B
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General.

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

b. The Maintenance Allocation Chart (MAC) in section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function, as referenced from section II.

B-2. Maintenance Functions.

a. *Inspect.* To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards.

b. *Test.* To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.'

c. *Service.* Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), preserve, drain, paint, or replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

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

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

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

Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. *Replace.* The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart

i. *Repair.* The application of maintenance services or other maintenance actions to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

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

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

B-3. Explanation of Columns in the MAC, Section II.

a. *Column 1, Group Number.* Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

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

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

d. *Column 4, Maintenance Level.* Column 4 specifies, by the listing of a “work time” figure in the appropriate subcolumn (the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform the 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 number of man hours specified by the “work time” figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

- C Operator or crew
- O Organization 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 will, when applicable, contain a letter code, in alphabetic order, which will be keyed to the remarks contained in Section IV.

B-4 Explanation of Columns in Tool and Test Equipment Requirements, Section III.

- a. *Column 1, Reference Code.* The tool and TMDE 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.
- d. *Column 4, National Stock Number.* The National stock number of the tool or TMDE.
- e. *Column 5, Tool Part Number.* The manufacturer's part number.

B-5. Explanation of Columns in Remarks Section IV. See MIL-M-63037 (page 48 and 50).

MAINTENANCE ALLOCATION CHART FOR DISTRIBUTOR, BITUMINOUS MATERIAL, TRUCK MOUNTED (MD SOP 700-5)								
Section II -ASSIGNMENT OF MAINTENANCE FUNCTIONS.								
(1)	(2)	(3)	(4)					(5)
Group Number	Component/Assembly	Maintenance Function	Maintenance Category					Tools and Equipment
			C	O	F	H	D	
06	Electrical System							
0609	Lights	Inspect Replace	0.1	0.2				1-2-3-4-5
0613	Wiring Harness	Inspect Replace		0.2 1.0				1-2-3-4-5
15	Frame and Attachments							
1501	Loom Bumper Assembly	Replace Repair		1.5 1.5				1-2-3-4-5 1-2-3-4-5
	Subframe, Spray Bar	Replace Repair			2.0 2.0			6-7-8-9-10-11 6-7-8-9-10-11
	Stowage Box	Replace Repair		0.5 0.5				1-2-3-4-5 1-2-3-4-5
22	Accessory/Items							
2202	Bell Assembly	Replace Repair		0.5 0.5				1-2-3-4-5 1-2-3-4-5
	Hand Spray Gun	Inspect Service Replace Repair	0.1 0.2	0.5 0.5				1-2-3-4-5 1-2-3-4-5
	Asphalt Hose and Connector	Inspect Replace Repair	0.1	0.5 0.5				1-2-3-4-5 1-2-3-4-5
2210	Data Plates	Inspect Replace	0.1	0.5				

MAINTENANCE ALLOCATION CHART FOR DISTRIBUTOR, BITUMINOUS MATERIAL, TRUCK MOUNTED (MD SOP 700-5)								
Section II - ASSIGNMENT OF MAINTENANCE FUNCTIONS.								
(1)	(2)	(3)	(4)					(5)
Group Number	Component/Assembly	Maintenance Function	Maintenance Category					Tools and Equipment
			C	O	F	H	D	
24	Hydraulic System							
2401	Hydraulic Pump Propeller Shafts	Service		0.5				1-2-3-4-5
		Replace		1.0				1-2-3-4-5
		Repair		1.0				1-2-3-4-5
2401	Hydraulic Pump	Test			0.2			6-7-8-9-10-11
		Replace			1.5			6-7-8-9-10-11
		Repair			2.0			6-7-8-9-10-11
2401	Hydraulic Motor	Test			0.2			6-7-8-9-10-11
		Replace			1.5			6-7-8-9-10-11
		Repair			2.0			6-7-8-9-10-11
2403	Hydraulic Controls	Service		0.5				1-2-3-4-5
		Adjust		1.0				1-2-3-4-5
		Replace		1.0				1-2-3-4-5
		Repair		1.0				1-2-3-4-5
2406	Hydraulic Filter Assembly	Inspect	0.1					
		Replace		1.0				1-2-3-4-5
		Repair		1.0				1-2-34-5
2406	Hydraulic Filter Element	Replace	0.4					
2406	Hydraulic Lines/Fittings	Inspect	0.1					
		Replace			1.0			1-2-3-4-5
2408	Hydraulic Tank	Service	0.2					
		Replace			1.5			1-2-3-4-5
		Repair				1.5		6-7-8-9-10-11

MAINTENANCE ALLOCATION CHART FOR DISTRIBUTOR, BITUMINOUS MATERIAL, TRUCK MOUNTED (MD SOP 700-5)								
Section II -ASSIGNMENT OF MAINTENANCE FUNCTIONS.								
(1)	(2)	(3)	(4)					(5)
Group Number	Component/Assembly	Maintenance Function	Maintenance Category					Tools and Equipment
			C	O	F	H	D	
42	Electrical Equipment							
4202	Electrical Controls	Replace Repair		1.0 1.0				1-2-3-45 1-2-3-45
43	Air System							
4301	Air Lines/Fittings	Inspect Replace	0.1	1.5				1-2-3-45
4317	Air Control Box Assembly	Replace Repair		1.5 1.0				1-2-345 1-2-345
4318	Air Cylinders, Spray Bar	Inspect Replace Repair	0.1	1.5	1.0			1-2-3-4-5 6-7-8-9 10-11
4318	Air Chamber, Bitumeter	Inspect Replace Repair	0.1	1.5	1.0			1-2-3-4-5 6-7-8-9 10-11
4321	Bitumeter Air Control Reservoir	Inspect Service Replace	0.1 0.1	1.0				1-2-3-4-5
47	Gages and Measuring Devices							
4701	Tachometer, Asphalt Pump	Replace		0.5				1-2-3-4-5
4701	Tank Gage	Replace Repair		0.5 1.0				1-2-3-4-5 1-2-3-4-5
4701	Tachometer Drive Assembly	Service Replace	0.1	2.5				1-2-3-4-5

MAINTENANCE ALLOCATION CHART FOR DISTRIBUTOR, BITUMINOUS MATERIAL, TRUCK MOUNTED (MD SOP 700-5)								
Section II - ASSIGNMENT OF MAINTENANCE FUNCTIONS.								
(1)	(2)	(3)	(4)					(5)
Group Number	Component/Assembly	Maintenance Function	Maintenance Category					Tools and Equipment
			C	O	F	H	D	
4701	Ground Speed Indicator	Replace		0.5				1-2-3-4-5
4701	Ground Speed Indicator Drive	Replace		1.5				1-2-3-4-5
4701	Bitumeter, Fifth Wheel	Sew ice		0.2				1-2-3-4-5
		Replace		1.0				1-2-3-4-5
		Repair		1.0				1-2-3-4-5
4702	Hydraulic/Air System Gages (All)	Replace		1.0				1-2-3-4-5
55	Pumps							
5500	Pump, Asphalt	Replace			1.5			6-7-8-9 10-11
		Repair			3.0			6-7-8-9 10-11
5501	Impellers, Shafts, Bearing	Replace			3.0			6-7-8-9 10-11
5507	Pump, Universal Drive	Service		0.5				1-2-3-4-5
		Replace		1.5				1-2-3-4-5
		Repair		2.0				1-2-3-4-5
60	Burners							
6004	Burner Fuel Pump	Sew ice		0.5				1-2-3-4-5
		Replace		1.0				1-2-3-4-5
		Repair		2.0				1-2-3-4-5
6005	Burner Assembly	Service		0.5				1-2-3-4-5
		Replace		0.5				1-2-3-4-5
		Repair			1.0			6-7-8-9 10-11
6005	Valves, Air Nozzle and Injector	Service		0.5				1-2-3-4-5
		Replace		1.0				1-2-3-4-5

MAINTENANCE ALLOCATION CHART FOR DISTRIBUTOR, BITUMINOUS MATERIAL, TRUCK MOUNTED (MD SOP 700-5)								
Section II -ASSIGNMENT OF MAINTENANCE FUNCTIONS.								
(1)	(2)	(3)	(4)				(5)	
Group Number	Component/Assembly	Maintenance Function	Maintenance Category				D	Tools and Equipment
			C	O	F	H		
6005	Portable Burner	Inspect Service Repair	0.1 0.2	1.0				1-2-3-4-5
6007	Burner Fuel Tank	Inspect Service Replace Repair	0.1 0.2	1.0	1.0			1-2-3-4-5 6-7-8-9- 10-11
	Fuel Tank	Replace		0.5				1-2-3-4-5
6007	Fuel Tank Lines and Fittings	Inspect Replace Repair	0.1	1.0 1.0				1-2-3-4-5 1-2-3-4-5
6010	Smoke Stacks	Sew ice Replace Repair	0.5	1.0 1.5				1-2-3-4-5 1-2-3-4-5
6011	Combustion Chamber	Replace			2.0			6-7-8-9- 10-11
	Combustion Block	Replace		1.0				1-2-3-4-5
73	Asphalt Equipment							
7317	Spray Bar	Inspect Service Adjust Replace Repair	0.1 0.5	1.0 0.2 1.0				1-2-3-4-5 1-2-3-4-5 1-2-3-4-5
7317	Quadrant Assembly	Service Adjust Replace Repair		0.5 0.5 1.0 1.5				1-2-3-4-5 1-2-3-4-5 1-2-3-4-5 1-2-3-4-5
7318	Valves, Transfer/Filling	Replace		1.5				1-2-3-4-5

MAINTENANCE ALLOCATION CHART FOR DISTRIBUTOR, BITUMINOUS MATERIAL, TRUCK MOUNTED (MD SOP 700-5)								
Section II - ASSIGNMENT OF MAINTENANCE FUNCTIONS.								
(1)	(2)	(3)	(4)					(5)
Group Number	Component/Assembly	Maintenance Function	Maintenance Category					Tools and Equipment
			C	O	F	H	D	
7318	Valves, intake/Dual Control	Replace		1.5				1-2-3-4-5
		Repair		1.0				1-2-3-4-5
7318	Lines/Fittings and Strainers	Inspect	0.1					
		Service	0.5					
		Replace			1.0			1-2-3-4-5
		Repair			1.0			1-2-3-4-5
7318	Valve Control Spray Bar	Service	1.0					
		Replace			2.0			1-2-3-4-5
		Repair			2.0			1-2-3-4-5
7318	Manhole/Cover	Inspect	0.1					
		Service	0.2					
		Replace			1.0			1-2-3-4-5
		Repair			1.0			1-2-3-4-5
7318	Tank,, Asphalt	Inspect	0.1					
		Service	1.0					
		Replace				16.0		6-7-8-9 10-11
		Repair				4.0		6-7-8-9 10-11
7322	Blower Assembly	Service	0.2					
		Replace			1.5			1-2-3-4-5
7322	Blower Drive	Service	0.5					
		Replace			1.5			1-2-3-4-5
		Repair			2.0			1-2-3-4-5
7322	Blower Air Cleaner	Inspect	0.1					
		Service	0.5					
7322	Blower Motor Control	Replace		1.0				1-2-3-4-5

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS				
(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National/NATO Stock Number	(5) Tool Number
1	O-F-H	Tool Kit, General Mechanic-Automotive	5180-00-177-7033	LIN-W3304
2	O-F-H	Shop Equipment Auto Maintenance and Repair: Organizational Maintenance Common No. 1 Less Power	4910-00-754-0654	LIN-W32593
3	O-F-H	Shop Equipment Auto Maintenance and Repair: Organizational Maintenance Common No. 2 Less Power	4910-00-754-0650	LIN-W-32730
4	O-F-H	Shop Equipment, Organizational Repair, Light Truck Mounted	4940-00-294-9516	LIN-T13152
5	O-F-H	Shop Equipment Auto Maintenance and Repair Organizational Sup	4910-00-754-0653	LIN-W32867
6	F-H	Tool Kit, Auto Fuel and Electrical System Repair	4910-00-754-0655	LIN-W32456
7	F-H	Welding Shop Trailer Mounted		LIN-Y48323
8	F-H	Tool Kit Master Mechanic Equipment Maintenance and Repair	5810-00-699-5273	LIN-W45060
9	F-H	Shop Equipment Contract Maintenance Truck Mounted	4940-00-294-9518	LIN-T10138
10	F-H	Shop Equipment General Purpose Repair Semi Trailer Maintenance	4940-00-287-4894	LIN-T10549
11	F-H	Torque Wrench 3/4 Drive 100-500 Foot Capacity	5120-00-542-5577	LIN-Y84966

APPENDIX D
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. Scope.

This appendix lists expendable supplies and materials you will need to operate and maintain the Concrete Mobile Mixer. These items are authorized to you by CTA 5-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. Explanation of Columns.

- a. Column 1- Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, App. D").
- b. Column 2- Level. This column identifies the lowest level of maintenance that requires the listed item.
- c. Column 3- National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.
- d. Column 4- Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.
- e. Column 5- Unit of Measure (U/M). indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST				
(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)
1	F, H	9150-00-015-0029	Grease, Automotive Artillery, GAA (MIL-G-10924C) 2-1/4-oz tube	OZ
		9150-00-935-1017	1/4-oz cartridge	OZ
		9150-00-190-0904	1-lb can	LB
		9150-00-190-0905	5-lb can	LB
		9150-00-190-0907	35-lb can	LB
2	F, H	9150-00-234-5197	Oil, Lubricating, Exposed Gear, CW VV-L-751) 5-lb can	LB
		9150-00-261-7891	35-lb pail	LB
3	F, H	9150-00-265-9425	Oil, Lubricating, OC/HDO-10 (MIL-L-2104C) 1-qt can	QT
		9150-00-265-9428	5-gal drum	GAL
		9150-00-265-9429	55-gal drum, 16 ga.	GAL
		9150-00-265-9430	55-gal drum, 18 ga.	GAL
4	F, H	9150-00-265-9433	Oil, Lubricating, OE/HDO-30 (MIL-L-2104C) 1-qt can	QT
		9150-00-265-9435	5-gal drum	GAL
		9150-00-265-9436	55-gal drum, 16 ga.	GAL
		9150-00-265-9437	55-gal drum, 18 ga.	GAL
5	F, H	9150-00-265-9440	Oil, Lubricating, OE/HDO-50 MIL-L-2104C) 1-qt can	QT
		9150-00-265-9442	5-gal drum	GAL
		9150-00-265-9441	55-gal drum, 16 ga.	GAL
6	F, H	9150-00-657-4959	Fluid, Hydraulic Type A, Transmission	
7	F, H	9150-00-402-4478	Oil, Lubricating, Sub-Zero OEA (MIL-L-46167) 1-qt can	QT
		9150-00-402-2372	5-gal can	GAL
		9150-00-491-7197	55-gal drum	GAL
8	F, H		Lubricant, Gear, Universal (MIL-L-2105C)	
9	O,F,H		Loctite Pipe Sealant, Tube	

APPENDIX E
ILLUSTRATED LIST OF MANUFACTURED ITEMS

Section I. INTRODUCTION

E-1. General. This appendix contains all the information you need to assemble, manufacture or fabricate the items that appear in this manual's RPSTL (Appendix C) that are source coded MO or MF; that is, the items authorized to be manufactured by organizational or direct support maintenance personnel.

E-2. Contents.

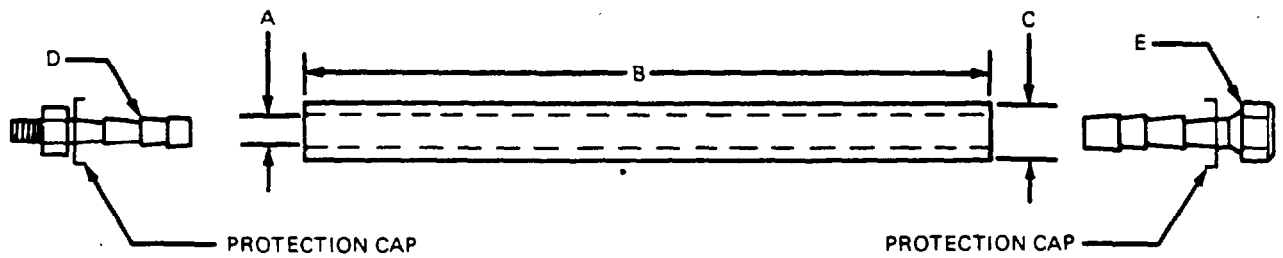
a. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at organizational or direct support maintenance.

b. A part number index in alphanumeric order is provided for cross referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

c. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

Section II. PART NUMBER INDEX			
Part Number	Fig. No.	Part Number	Fig. No.
MA207-22743	E-2	MA207-22971	E-2
MA207-22744	E-2	MA207-22972	E-2
MA207-22745	E-2	MA207-22973	E-2
MA207-22913	E-1	MA207-22974	E-1
MA207-22914	E-1	3360569	E-1
MA207-22915	E-1	3360570	E-1
MA207-22916	E-1	3360573	E-1
MA207-22917	E-1	3360574	E-1
MA207-22918	E-1	3360656	E-1
MA207-22970	E-2	7230153	E-1

Section III. ILLUSTRATED MANUFACTURING INSTRUCTIONS



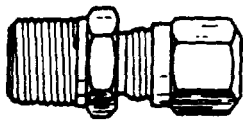
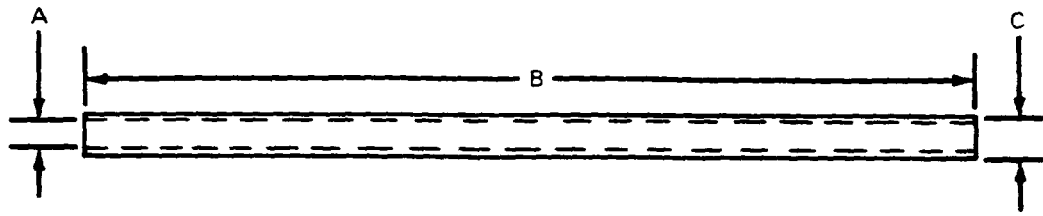
Hose Assembly Number	Manufacture From P/N (FSCM)	Dimension A Inches (mm)	Dimension B Inches (mm)	Dimension C Inches (mm)	Connector D P/N (FSCM)	Connector E P/N (FSCM)
MA207-22913	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	28.00 (711.2)	.61 (15.5)	6600305 (80195)	6600306 (80195)
MA207-22914	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	72.00 (1905.0)	.61 (15.5)	6600306 (80195)	6600306 (80195)
MA207-22915	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	24.00 (609.6)	.61 (15.5)	6600305 (80195)	6600306 (80195)
MA207-22916	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	13.00 (330.2)	.61 (15.5)	6600305 (80195)	6600306 (80195)
MA207-22917	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	31.00 (787.4)	.61 (15.5)	6600305 (80195)	6600306 (80195)
MA207-22918	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	40.00 (1016.0)	.61 (15.5)	6600305 (80195)	6600306 (80195)
MA207-22974	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	40.00 (1016.0)	.61 (15.5)	6600306 (80195)	6600306 (80195)
3360569	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	42.00 (1016.0)	.61 (15.5)	6600305 (80195)	6600306 (80195)
3360570	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	48.00 (1219.2)	.61 (15.5)	6600305 (80195)	6600306 (80195)
3360573	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	21.00 (533.4)	.61 (15.5)	6600305 (80195)	6600306 (80195)
3360574	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	12.00 (304.8)	.61 (15.5)	6600305 (80195)	6600306 (80195)
3360656	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	46.00 (1168.4)	.61 (15.5)	6600305 (80195)	6600306 (80195)
7230153	6 LOLA MESA ZG-11C (24161)	.375 (9.525)	120.00 (3048.0)	.61 (15.5)	6600306 (80195)	6600306 (80195)

NOTES:

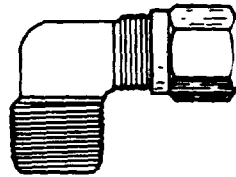
TA 075901

1. The connectors shown are for reference purposes only. In some instances, the same connector will be used on both ends of the hose.
2. Insert the connectors into the hose ends until the hose makes contact with the protection cap on the connector.

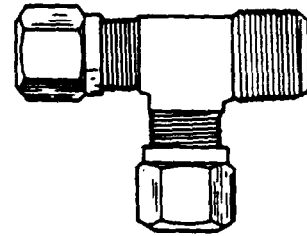
Figure E-1. Hose Assemblies



MALE CONNECTOR



MALE ELBOW



MALE RUN TEE

Nylon Tubing No.	Manufacture From NSN	Dimension A Inches (mm)	Dimension B Inches (mm)	Dimension C Inches (mm)	Male Connector P/N (FSCM)	Male Elbow P/N (FSCM)	Male Run Tee P/N (FSCM)
MA207-22743	4720-01-040-0591	.25 (6.35)	11.00 (279.4)	.375 (9.525)	6600831 (80195)	N/A	6600829 (80195)
MA207-22744	4720-01-040-0591	.25 (6.35)	13.00 (330.2)	.375 (9.525)	6000831 (80195)	6600832 (80195)	N/A
MA207-22745	4720-01-040-0591	.25 (6.35)	14.00 (355.6)	.375 (9.525)	6600831 (80195)	6600832 (80195)	N/A
MA207-22970	4720-01-040-0591	.25 (6.35)	3.00 (76.2)	.375 (9.525)	6600831 (80195)	N/A	N/A
MA207-22971	4720-01-040-0591	.25 (6.35)	12.00 (304.8)	.375 (9.525)	6600831 (80195)	N/A	6600829 (80195)
MA207-22972	4720-01-040-0591	.25 (6.35)	6.00 (152.4)	.375 (9.525)	6600831 (80195)	6600832 (80195)	N/A
MA207-22973	4720-01-040-0591	.25 (6.35)	8.00 (203.2)	.375 (9.525)	N/A	N/A	6600829 (80195)

*Quantity of two (2) required.

NOTES:

1. Select tubing and cut squarely to specified length.
2. Select the proper end fittings for the tubing.
3. Install fittings on tubing. Do not overtighten.

TA 075992

Figure E-2. Nylon Tubing and Fittings.

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PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER			DATE		TITLE			
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

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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

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

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

CUBIC MEASURE

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

LIQUID MEASURE

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

TEMPERATURE

$59^{\circ}\text{F} - 32 = 0^{\circ}\text{C}$
 212^o Fahrenheit is equivalent to 100^o Celsius
 90^o Fahrenheit is equivalent to 32.2^o Celsius
 32^o Fahrenheit is equivalent to 0^o Celsius
 $9\text{ }^{\circ}\text{C} + 32 = \text{ }^{\circ}\text{F}$

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

