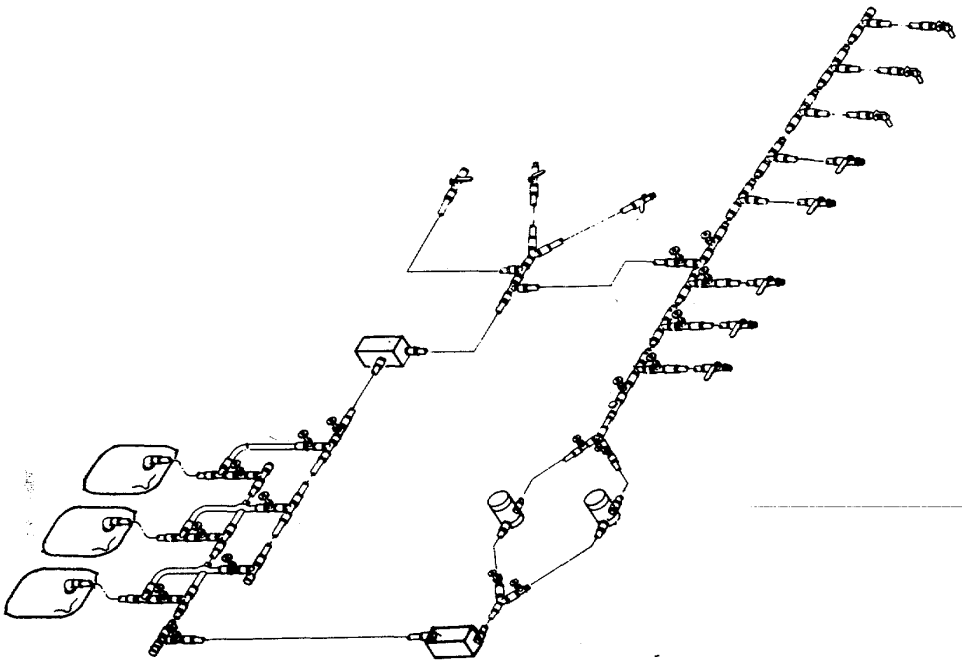
TECHNICAL MANUAL

OPERATOR'S AND UNIT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST

FUEL SYSTEM SUPPLY POINT

MODEL LAB 6891

NSN 4930-01-347-4793



HEADQUARTERS, DEPARTMENT OF THE ARMY

31 MARCH 1993

WARNING

DEATH or SEVERE INJURY can occur from fire and explosion of fuels. To avoid fire and explosion during operation of the fuel system supply point:

- **DO NOT** allow any flame producing material within 100 feet of the fuel system.
- **DO NOT** smoke or allow smoking during refueling operations.
- **DO NOT** allow fuel to drip onto hot surfaces.
- **DO NOT** refuel equipment while its engine is running.

WARNING

Death or serious injury can occur from exploding fuel ignited by static electric discharge. Before operating the FSSP, be sure that all components are properly grounded.

WARNING

Most fuels evaporate very quickly and can quickly lower the temperature of exposed skin until there is a great danger of frost bite. Prevent leakage of fuel onto bare skin of personnel. Remove any fuel form exposed skin as soon as possible.

WARNING

Serious injury could occur if heavy equipment is moved/lifted without sufficient personnel to do the job. Use proper physical lifting procedures or use a suitable lifting device or dolly. Wear safety shoes, gloves and other suitable protective clothing.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent P-D-680. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100° F to 138° F (38° C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

WARNING

Engine Exhaust Gas (Carbon Monoxide) is **DEADLY.**

Carbon monoxide is an odorless, colorless gas formed by incomplete combustion of hydrocarbon fuels. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal. Some of the symptoms or signs of carbon monoxide inhalation are: Dizziness; Intense Headache; Weakness and Sleepiness; Vomiting; Muscular Twitching; Throbbing in Temples. If you experience any of these symptoms, get out into fresh air immediately. The best protection against carbon monoxide inhalation is a regular inspection of the complete exhaust system. If you notice a change in the sound or appearance of the exhaust system, shut the unit down immediately and have it inspected and repaired at once by a competent mechanic.

NOTE

In the event that first aid is required for any injured operating or maintenance personnel, refer to FM21-11 for proper first aid procedures.

CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 19 December 1996

Operator's and Unit Maintenance Manual
Including Repair Parts and Special Tools List
for

FUEL SYSTEM SUPPLY POINT
MODEL LAB 6891
NSN 4930-01-347-4793
AND
MODEL LPI-95-6891
NSN 4930-01-325-2869

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

TM 10-4930-239-12&P, 31 March 1993 is changed as follows:

1. Title changed as noted above.

2. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
i through iv	i through iv
1-1 and 1-2	1-1 and 1-2
1-5 and 1-6	1-5 and 1-6
2-1 and 2-2	2-1 and 2-2
2-11 and 2-12	2-11 and 2-12
- - - -	2-12.1 through 2-12.6
A-1/(A-2 blank)	A-1/(A-2 blank)
C-7 through C-9/(C-10 blank)	C-7 through C-9/(C-10 blank)
D-1 through D-8	D-1 through D-8
F-5 and F-6	F-5 and F-6
F-8-1 and Figure 9	F-8-1 and Figure 9
F-12-1 and Figure 13	F-12-1 and Figure 13
F-13-1 and Figure 14	F-13-1 and Figure 14

Remove pages	Insert pages
F-29-1 and Figure 30	F-29-1/(F-29-2 blank) and Figure 30 (Sheet 1 of 2) and Figure 30 (Sheet 2 of 2)
F-30-1	F-30-1
1-3 through 1-14	I-3 through I-14
1-17/(1-18 blank)	I-17/(I-18 blank)
Index-1 and Index-2	Index-1 and Index-2

3. Retain this sheet in front of manual for reference purposes.

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03206

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TECHNICAL MANUAL

NO. 10-4930-239-12&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C. 31 MARCH 1993

Technical Manual

Operator's and Unit Maintenance Manual
(Including Repair Parts and Special Tools List)
FUEL SYSTEM SUPPLY POINT
MODEL LAB 6891
NSN 4930-01-347-4793
and
MODEL LPI-95-6891
NSN 4930-01-325-2869
Current as of 24 June 1996

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 these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATITN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. You may also submit your recommended changes by E-mail directly to <mpmt%avma28@st-louis-emh7.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited

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LIST OF ILLUSTRATIONS

LIST OF TABLES

HOW TO USE THIS MANUAL

GENERAL. This technical provides you with the information needed to operate and to maintain the Fuel System Supply Point (FSSP). By properly using this manual, you will be able to identify any problem you may have in operating the FSSP and then locate the proper procedure needed to correct any problem found.

MANUAL ORGANIZATION. This manual has been organized in a manner that groups together the information that an operator or a maintenance technician will need to perform their duties. The following list indicates how this information has been organized.

Chapter 1 This chapter contains a complete description of the FSSP and includes such information as general equipment data, location/descriptions of the major FSSP components, and the general theory of operations of the FSSP.

Chapter 2 The information needed to set up and to operate the FSSP are included in this chapter. It includes assembly information, operator PMCS, and special instructions for unusual or emergency conditions.

Chapter 3 All operator maintenance procedures have been placed within this chapter.

Chapter 4 In the event that unit level maintenance is required for the FSSP, the required maintenance instructions can be found in this chapter.

Appendix F If you find that a part or component of the FSSP is damaged and must be replaced, you can identify the part needed by referring to the illustrations and parts lists found in this Repair Parts and Special Tools List.

AIDS TO FINDING INFORMATION The following aids have been placed within this technical manual to help you quickly locate the information you may need.

Front Cover Index To provide you with a quick reference to the most used portions of this technical manual, an index of these areas has been placed on the front cover of this manual.

Bleeder Edges On Pages On the right edge of the front cover index of this manual you will see a black box area that goes to the edge of the front cover page. If you hold this manual with you left hand and bend back the outer right edges of the pages with your right hand, you will find that there are pages inside the technical manual that also have black boxes on the right edges of the page and that these boxes line up with the boxes on the front cover index. By turning to the page in the technical manual that lines up with the box on the front cover, you will be able to quickly turn to the topic shown in the front cover index.

Table Of Contents And Boxed Titles In the event that the front cover has been removed from this manual, the items that appear in the front cover index have also been placed in a box where they appear in the Table of Contents of this manual.

Alphabetical Index To assist you in locating any other information not found in the front cover index or the Table of Contents, an alphabetical index has been placed in the back of this manual to help you find any information you may need.

GENERAL MAINTENANCE METHOD. Although your local standard operating and maintenance procedure may vary, a simple method of using this technical manual to operate and maintain the FSSP is shown in the following steps.

WARNINGS And CAUTIONS.

Always Read, Understand, and Perform ALL WARNINGS and CAUTIONS Found In This Technical Manual BEFORE Performing The Step Immediately Following The WARNING or CAUTION.

Throughout this technical manual there are certain procedures and operations that are hazardous to you or to the FSSP. If you see a **WARNING**, pay special attention to the information stated in it because **all WARNINGS provide you with data that will prevent serious injury to you or others around you.** When you see a **CAUTION** read it carefully because the information given in it will keep you from damaging the FSSP and making the FSSP unable to fulfill its mission.

Equipment Set Up And Operation. Unpack and set up the FSSP in accordance with the procedures shown in Chapter 2.

Preventive Maintenance Checks And Services (PMCS). Perform the operator PMCS procedures shown in Chapter 2.

Troubleshooting Procedures. If the FSSP should not operate properly, refer to either the operating troubleshooting procedures in Chapter 3 or the unit troubleshooting procedures in Chapter 4. The most likely FSSP malfunctions have been placed within these troubleshooting procedures and a test and/or repair procedure paragraph has been indicated to correct the malfunction found. If a repair is required, refer to the maintenance shown in the troubleshooting procedure.

Maintenance Procedures. The complete repair procedures needed to correct a problem found with the FSSP have been included in Chapters 3 and 4.

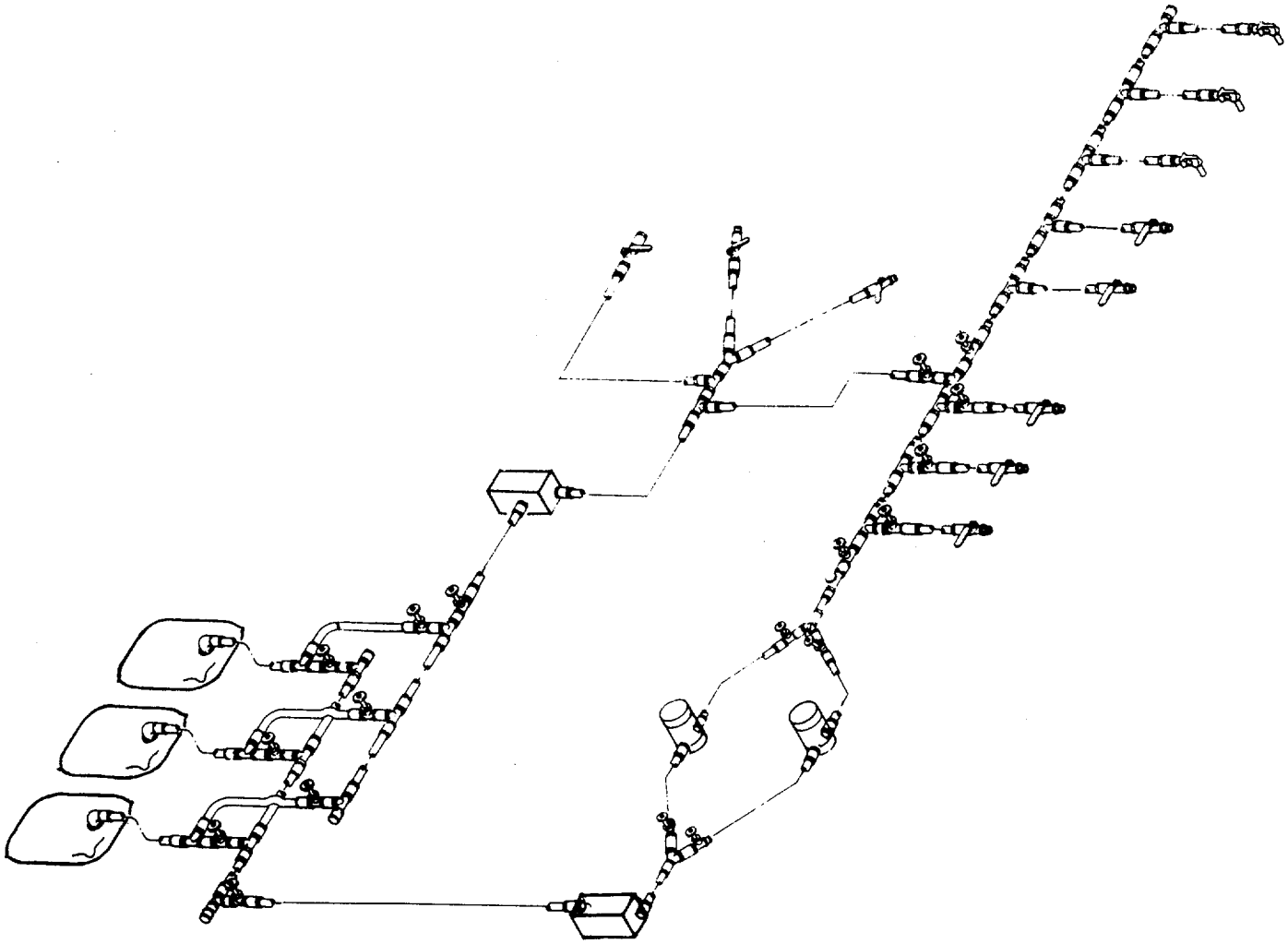


Figure 1-1. Fuel System Supply Point.

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

a. Type of Manual. Operator's and Unit Maintenance Manual (Including Repair Parts and Special Tools List).
b. Model Number and Equipment Name. LaBarge Military Products Model Numbers LAB 6891 and LPI-95-6891, Fuel System Supply Point (FSSP).
c. Purpose of Equipment. The FSSP covered by this manual is a specially assembled group of components designed to be used by forward area personnel to receive, dispense, and store automotive gasoline, aviation gasoline, jet fuel, and diesel fuel.

1-2. MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750. The Army Maintenance Management System (TAMMS) (Maintenance Management UPDATE).

1-3. CORROSION AND PREVENTION CONTROL. Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with the rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of the materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using Standard Form 368, Product Quality Deficiency Report. Use of key word such as "rust", "deterioration", "corrosion", or "cracking" will insure that the information is identified as a CPC problem. The form should be submitted to the address specified in the DA PAM 738-750.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. Refer to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.

1-5. PREPARATION FOR STORAGE OR SHIPMENT. Contact unit maintenance for preparation and storage or shipment. Refer to Section VI, Chapter 4.

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S). If your Fuel System Supply Point 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 a SF 368 (Product Quality Deficiency Report). Mail it to us at;

Commander
U.S. Army Aviation and Troop Command
Attention: AMSAT-I-MDO
4300 Goodfellow Blvd.
St. Louis, Missouri 63120-1798.

We will send you a reply.

1-7. LIST OF ABBREVIATIONS. All abbreviations use within this technical manual conform to the standard military abbreviations found in MIL-STD-12, Abbreviations for use on Drawings, and in Specifications, Standards, and Technical Documents.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-8. EQUIPMENT PURPOSE, CAPABILITIES, AND FEATURES.

a. Purpose. The FSSP is designed to store and dispense various types of fuels and is capable of the following.

(1) Receiving fuel from tank truck, rail, pipeline or hose line.

(2) Storing a maximum of 60,000 gallons of fuel.

(3) Dispensing fuel by pumping the fuel from the storage tanks to the nozzles at the dispensing points.

(4) Bypassing storage tanks and pumping fuel directly from receiving points to distribution points.

(5) Performing any combination of the following distribution tasks at the same time.

(a) Bottom loading up to three tank trucks or semi trailers.

(b) Filling up to three vehicle fuel tanks.

(c) Filling up to two 500 gallon collapsible drums.

1-8.A. DIFFERENCES BETWEEN MODELS. There are no differences between LaBarge Models LAB 6891 and LPI-95-6891 of the FSSP depicted in this technical manual.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. The FSSP consists of the following major components shown on Figure 1-2.

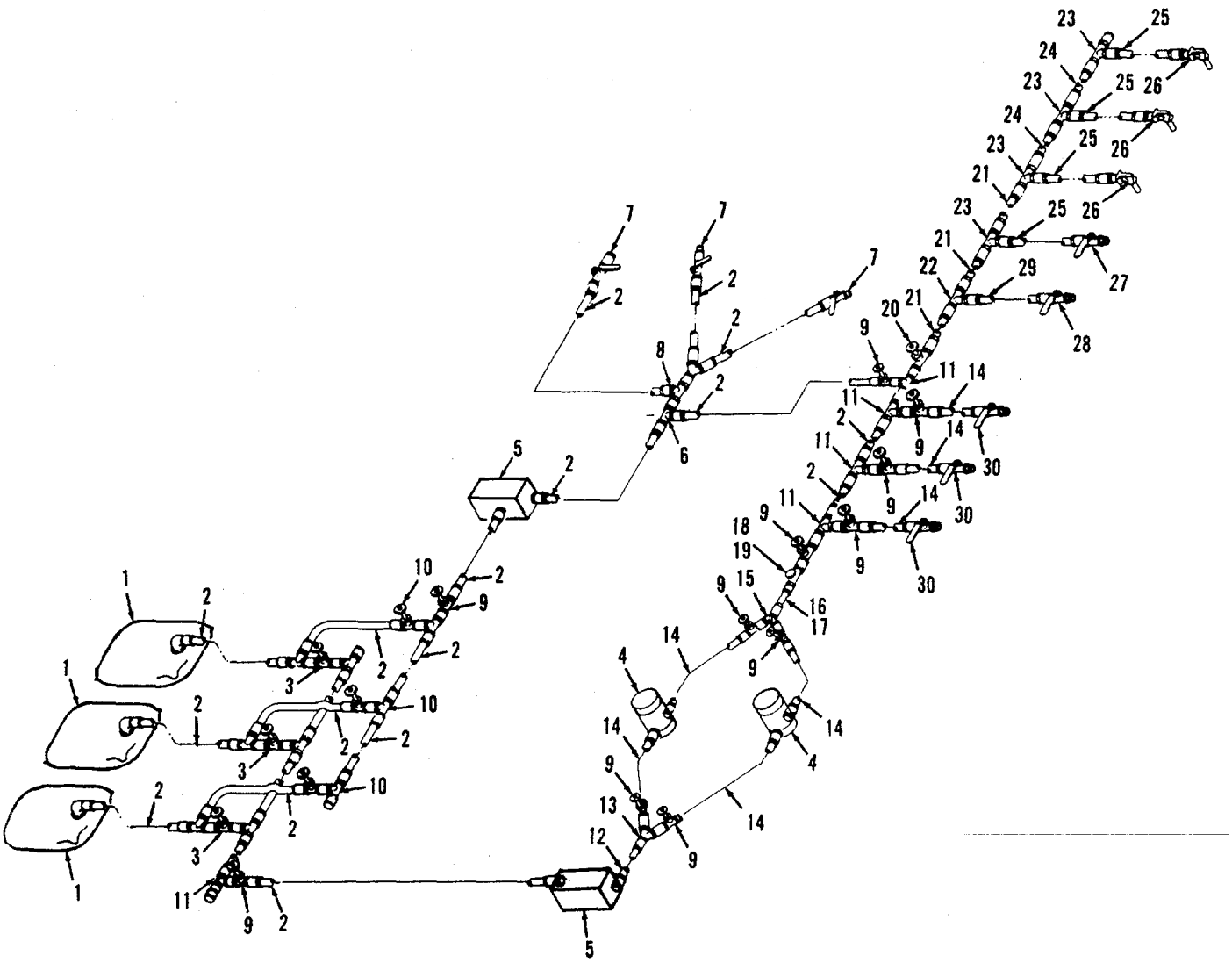


Figure 1-2. Location of Major Components. (Sheet 1 of 2).

LEGEND FOR FIGURE 1-2.

Item No.	Part No.	Qty/ System	Description
1	MIL-T-52983	3	Tanks (3k, 10k, 20k gallon or any combination)
2	M370B09B2A1200	65	Hose Assemblies, Suction, 4 In. x 10 Ft.
3	13200E0068	3	Manifold Assembly, Type I
4	13217E9320	2	Filter/Separator, Liquid Fuel, 350 GPM Capacity
5	MIL-P-52144	2	Pumping Assembly, 350 GPM
6	13229E6465	1	Tee Assembly, 4 In. M x 4 In. F x 4 In. F
7	13229E6466	3	Butterfly Valve Assembly, 4 In. x 4 In.
8	13229E6042	1	Wye and Tee Assembly, 4 In.
9	13226E8282	11	Valve Assembly, 4 In.
10	13200E0803	3	Manifold Assembly, Type II
11	13229E6039	5	Tee Assembly, 4 In. M x 4 In. F x 4 In. M
12	M11588-03-11	4	Hose Assembly, Discharge, 4 In. x 50 Ft.
13	13229E6037	1	Wye Assembly, 4 In. M x 4 In. M x 4 In. F
14	M11588-03-11	9	Hose Assembly, Discharge, 4 In. x 25 Ft.
15	13229E6038	1	Wye Assembly, 4 In. F x 4 In. F x 4 In. M
16	13220E9406-2	1	Adaptor for Water Detector Kit
17	MS49000-1	1	Reducer, Female x Male, 4 In. to 3 In.
18	MIL-M-82180	1	Meter Assembly, 3 In.
19	MS49000-9	2	Reducer, Male x Female, 4 In. to 3 In.
20	13229E6040	1	Valve Assembly, 3 In. x 4 In.
21	M11588-03-10	3	Hose Assembly, 3 In. x 50 Ft.
22	13229E6061	1	Tee Assembly, 3 In. x 3 In. x 2 In.
23	13222E9884	4	Tee Assembly, 3 In. x 3 In. x 3 In. with 3 In. x 1.5 In. Reducer
24	M11588-03-10	2	Hose Assembly, Discharge, 3 In. x 25 Ft.
25	M11588-03-07	4	Hose Assembly, Discharge, 1-1/2 In. x 25 Ft.
26	13229E9836-1	3	Nozzle Assembly, 1-1/2 In.
27	13222E9886	1	Valve Assembly, Quick Acting, 1.5 In.
28	13222E9887	1	Valve Assembly, Quick Acting, 2 In.
29	M11588-03-08	1	Hose Assembly, Discharge, 2 In. x 25 Ft.
30	13229E6060	3	Valve Assembly, Quick Acting, 4 In. Valve with 4 In. x 3 In. Reducer
31	MS39352-15	3	Adapter, Male x Male, 3 In.
32	MS39352-19	3	Adapter, Male x Male, 4 In.

Figure 1-2. Location of Major Components. (Sheet 2 of 2).

1-10. EQUIPMENT DATA. Refer to Table 1-1. for the performance data for the fuel system.

Table 1-1. Equipment Data.

CAPACITIES

Fuel system ..... 60,000 gallons (227,100 liters)
Fuel tanks (Three tanks of any combination of any of the following three different sizes.)
- 3k Tank ..... 3,000 gallons (11,356 liters)
- 10k Tank ..... 10,000 gallons (37,854 liters)
- 20k Tank ..... 20,000 gallons (75,708 liters)

PUMP ASSEMBLY .....(2 each) 350 gpm (1325 Lpm)

FILTER/SEPARATOR ..... (2 each) 350 gpm (1325 Lpm)

NOTE

The following shipping weights and dimensions do not include pumps, filter/separators, tanks, nozzles stands, and other miscellaneous fittings which are not shipped with the FSSP.

SHIPPING WEIGHT ..... 12,000 lbs (5,443.2 Kg)
SHIPPING DIMENSIONS

Model LAB 6891
- Quantity of crates 1
- Width ..... 92 in. (233.7 cm)
- Length ..... 170 in. (431.8 cm)
- Height ..... 77 in. (195.6 cm)

Model LPI-95-6891(Consists of five crates total.)
Crate type A.
- Quantity of crate type 2
- Width ..... 48 in. (121.9 cm)
- Length ..... 96 in. (243.8 cm)
- Height ..... 48 in. (121.9 cm)

Crate type B.
- Quantity of crate type.....3
- Width ..... 48 in. (121.9 cm)
- Length..... 144 in. (365.7 cm)
- Height ..... 18 in. (45.7 cm)

Section III. PRINCIPLES OF OPERATION

1-11. THEORY OF OPERATIONS. The FSSP comprises a number of separate major components to store and dispense fuel. The principles of operation of each of these major components and how they work within the system are defined in the following paragraphs. (Refer to Figure 1-3.)

a. Fuel System. The FSSP is used to store and dispense fuel to using units in the field. A typical layout of the FSSP is shown in Figure 1-3. Fuel enters FSSP through the wye and tee assembly (1), and it is moved into the three collapsible fabric fuel tanks (2) by the first of two 350 gpm centrifugal pumps (3) or it may be moved by the fuel transporter or pipeline pumps. A second 350 gpm pump (4) moves the fuel from the collapsible tanks (2) through the filter/separators (5) to the quick acting valves (6), gate valves (7), and the nozzles (8).

b. Pumps. The 350 gpm centrifugal pump (3) is used on the receiving side of the FSSP to move fuel into the collapsible tanks (2). An identical pump (4) is used on the delivery side of the FSSP to move the fuel from the tanks to the various types of dispensing units.

c. Filter/Separator. Two 350 gpm filter/separators (5) may be connected in parallel on the delivery side of the system to remove entrained water and solid contaminants from fuel before it is dispensed into vehicles or containers.

d. Tanks. Three collapsible fuel tanks (2) (any combination of 3,000, 10,000, or 20,000 gallon tanks may be used) are used to store fuel received from fuel transporters or pipelines to be supplied to the dispensing units.

e. Fittings. There are several different types of fitting assemblies in the FSSP to connect hoses, valves, and components together.

f. Hose Assemblies. There are two types of hose assemblies used in the system. The suction hose assemblies have reinforcing wires spiraled throughout their length to keep the hose from collapsing and to act as a bonding wire. The discharge hose assemblies are of a non-wire reinforced type but have bonding wires imbedded in the entire length of the assembly.

g. Dispensing Nozzles. Three nozzles provide a means of refueling vehicles or filling cans and drums. The nozzles are fuel and oil servicing, automatic shut-off for use with 1-1/2 inch or 1 inch hose. When 1 inch nozzles are required, fittings are supplied to remove the 1-1/2 inch nozzles and replace them with 1 inch nozzles.

h. Dispensing Valves. Five quick acting valves are also provided for dispensing fuel to systems with various other types of fuel connections. Three sizes of quick acting valves are provided; 1-1/2 inch, 2 inch, and 3 inch. When 4 inch dispensing valves are required, the 4 inch to 3 inch reducer fitting on the 3 inch valve can be removed.

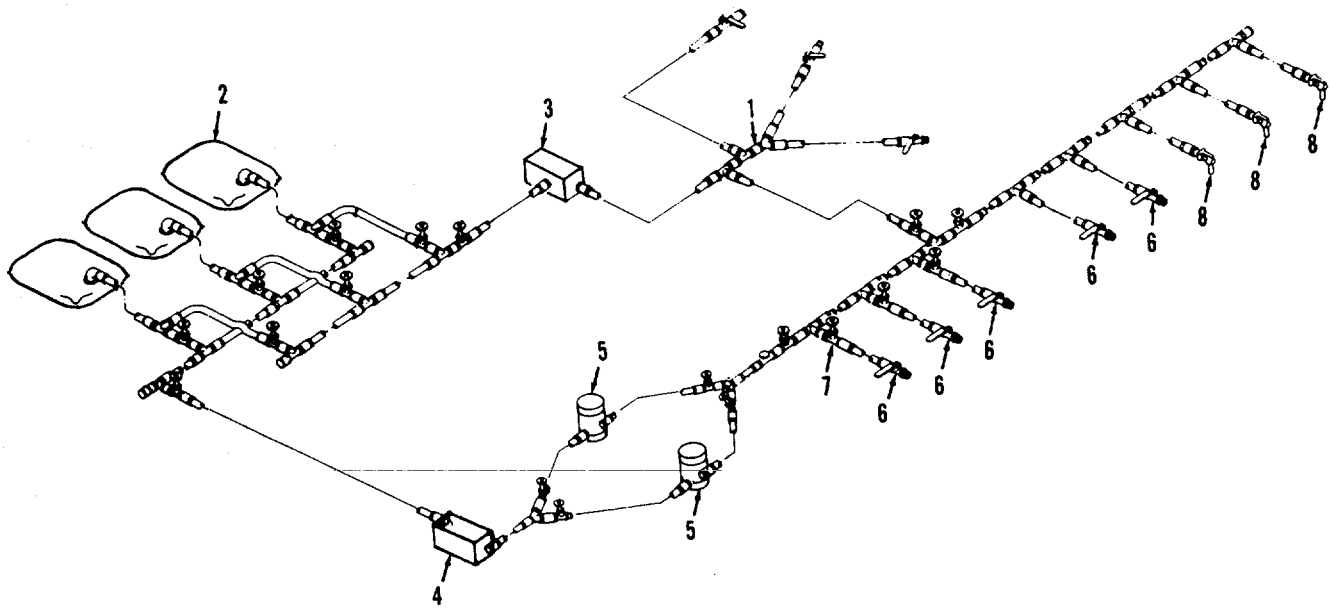


Figure 1-3. Operation of Fuel System Supply Point.

CHAPTER 2

OPERATING INSTRUCTIONS
CHAPTER 2 INDEX

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

2-1. INTRODUCTION. The FSSP is designed for a variety of installations and for operation under a wide range of climatic conditions. Operators must be aware of any peculiarities or operational limitations for their specific installation. Before setting and operating this system, be sure that you have determined the type of terrain and climate in which you will use the system and that you have assembled and service the system to match the existing needs.

2-2. OPERATOR'S CONTROLS AND INDICATORS. This manual covers a fuel system less tanks, pumps, and filter/separators. There are no operator controls and indicators for the portion of the system covered in this manual. For controls and indicators applicable to tanks, pumps and/or filter/separators, refer to manuals covering these components.

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

2-3. INTRODUCTION. The following information should be read and understood before preforming the procedures within the PMCS table.

a. General. Table 2-1 (PMCS Table) has been provided so you can keep your equipment in good operating condition and ready for its primary mission.

b. Warnings and Cautions. Always observe the WARNINGS and CAUTIONS appearing in your PMCS table. Warnings and cautions appear before the applicable procedures. You must observe these WARNINGS and CAUTIONS to prevent serious injury to yourself and others or prevent your equipment from being damaged.

c. Explanation of Table Entries

(1) Item Number Column. Numbers in this column are for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.

(2) Interval Column. This column tells you when you must do the procedure in the procedure column. BEFORE procedures must be done before you operate or use the equipment for its intended mission. DURING procedures must be done during the time you are operating or using the equipment for its intended mission. AFTER procedures must be done immediately after you have operated or used the equipment.

(3) Location, Check/Service Column. This column provides the location and the item to be checked or serviced. The item location is underlined.

(4) Procedure Column. This column gives the procedure you must do to check or service the item listed in the Check/Service column to know if the equipment is ready or available for its intended mission or for operation. You must do the procedure at the time stated in the interval column.

(5) Not Fully Mission Capable If: Column. Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

c. Other Table Entries. Be sure to observe all special information and notes that appear in your table.

2-4. SPECIAL INSTRUCTIONS. If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

2-5. PMCS TABLE Refer to Table 2-1 for the operator Preventive Maintenance Checks and Services for the FSSP.

Table 2-1. Operator Preventive Maintenance Checks and Services for Fuel System Supply Point.

Item No.	Interval	Location Item To Check/Service.	Procedure	Not Fully Mission Capable If:
1	Before	HOSE ASSEMBLIES	a. Check hoses for cuts, cracks, and deterioration.	Hoses are cut, cracked, or deteriorated.
			b. Check for damaged or missing coupling halves.	Coupling halves are damaged or missing.
2	Before	VALVE ASSEMBLIES	a. Inspect valve wheels and handles for damage.	Valve wheels or handles are damaged.
			b. Check all valves for smooth operation.	Valves do not operate smoothly.
			c. Inspect valve coupling halves for damage and for missing gaskets.	Valve coupling halves are damaged or gasket is missing.

Table 2-1. Operator Preventive Maintenance Checks and Services for Fuel System Supply Point. — (Continued.)

Item No.	Interval	Location Item To Check/Service.	Procedure	Not Fully Mission Capable If:
3	Before	MANIFOLD ASSEMBLIES	Inspect piping and coupling halves for damage and for missing gaskets.	Piping or coupling halves are damaged or gasket is missing.
4	Before	TEE ASSEMBLIES	Inspect piping and coupling halves for damage and for missing gaskets.	Piping or coupling halves are damaged or gasket are missing.
5	Before	WYE ASSEMBLIES	Inspect piping and coupling halves for damage and for missing gaskets.	Piping or coupling halves are damaged or gaskets are missing.
6	Before	ADAPTER ASSEMBLIES	Inspect piping and coupling halves for damage and for missing gaskets.	Piping or coupling halves are damaged or gaskets are missing.
7	Before	NOZZLES	a. Inspect nozzles for cracks, damage, or missing parts.	Nozzles are cracked, damaged, or has missing parts.
			b. Check control handle for proper operation.	Control handle does not operate properly.
			c. Inspect couplings for damage and for missing gaskets.	Couplings are damaged or gaskets are missing.
8	Before	MISC.	Inspect connectors for damage or missing gaskets.	Connectors are damaged or gaskets are missing.
9	During	HOSE ASSEMBLIES	Check hoses and fittings for leaks.	Hoses or fittings leak.

Table 2-1. Operator Preventive Maintenance Checks and Services for Fuel System Supply Point. — (Continued.)

Item No.	Interval	Location Item To Check/Service.	Procedure	Not Fully Mission Capable If:
10	During	VALVE ASSEMBLIES	Inspect valves and coupling halves for leaks.	Valve or coupling halves leak.
11	During	MANIFOLD ASSEMBLIES	Inspect piping and coupling halves for leaks.	Piping or coupling halves leak.
12	During	TEE ASSEMBLIES	Inspect piping and coupling halves for leaks.	Piping or coupling halves leak.
13	During	WYE ASSEMBLIES	Inspect piping and coupling halves for leaks.	Piping or coupling halves leak.
14	During	ADAPTER ASSEMBLIES	Inspect piping and coupling halves for leaks.	Piping or coupling halves leak.
15	During	NOZZLES	Inspect nozzles for leaks.	Nozzle leaks.
16	During	MISC.	Inspect connectors and coupling halves for leaks.	Connectors or coupling halves leak.

Section III. OPERATION UNDER USUAL CONDITIONS

2-6. ASSEMBLY AND PREPARATION FOR USE. Figure 2-1 shows a typical layout of the FSSP. It should be used only as a guide since terrain features of the site and the specific application will dictate the final configuration. Plan the most efficient layout for the selected site, making the best use of natural cover and level terrain. Plan for good access for vehicles loading and unloading fuel.

NOTE

- Make sure all dust caps and plugs remain in place on components, hoses, and fittings until they are connected into the system.
- For all components having cam lock type caps and plugs, attach protective plugs from one component into the protective caps of the other mating component to protect loose caps, plugs, and gaskets when components are in use.

a. Position major components of the FSSP first

(1) Place the selected combination of three 3,000, 10,000, and 20,000 gallon collapsible fuel tanks (1) in accordance with instructions contained in the fuel tank operator manual.

(2) Place the two 350 GPM pump assemblies (10) and (19) as shown in Figure 2-1 and in accordance with instructions contained in the applicable operator's manual for the pump assemblies.

(3) Place the 350 GPM filter/separator units (24) and (25) as shown in Figure 2-1 and in accordance with instructions contained in the applicable operator's manual for the filter/separator units.

b. Install two 4.00" x 10' hoses (2) onto fuel tank (1) and manifold assembly (3).

c. Install a maximum of six 4.00" x 10' hoses (4) (when using 20,000 gallon tanks) or a minimum of two 4.00" x 10' hoses (4) (when using 3,000 gallon tanks) to manifold assemblies (3).

d. Repeat steps a. and b. for other fuel tanks.

e. Install three 4.00" x 10' hoses (5) between manifold assemblies (3) and valve assembly (6). Repeat for other two tanks (1).

f. Install a maximum of six 4.00" x 10' hoses (7) (when using 20,000 gallon tanks) or a minimum of two 4.00" x 10' hoses (7) (when using 3,000 gallon tanks) between three valve assemblies (6).

g. Install valve assembly (8) and two 4.00" x 10' hose assemblies (9) to valve assembly (6) and to discharge port of pump assembly (10).

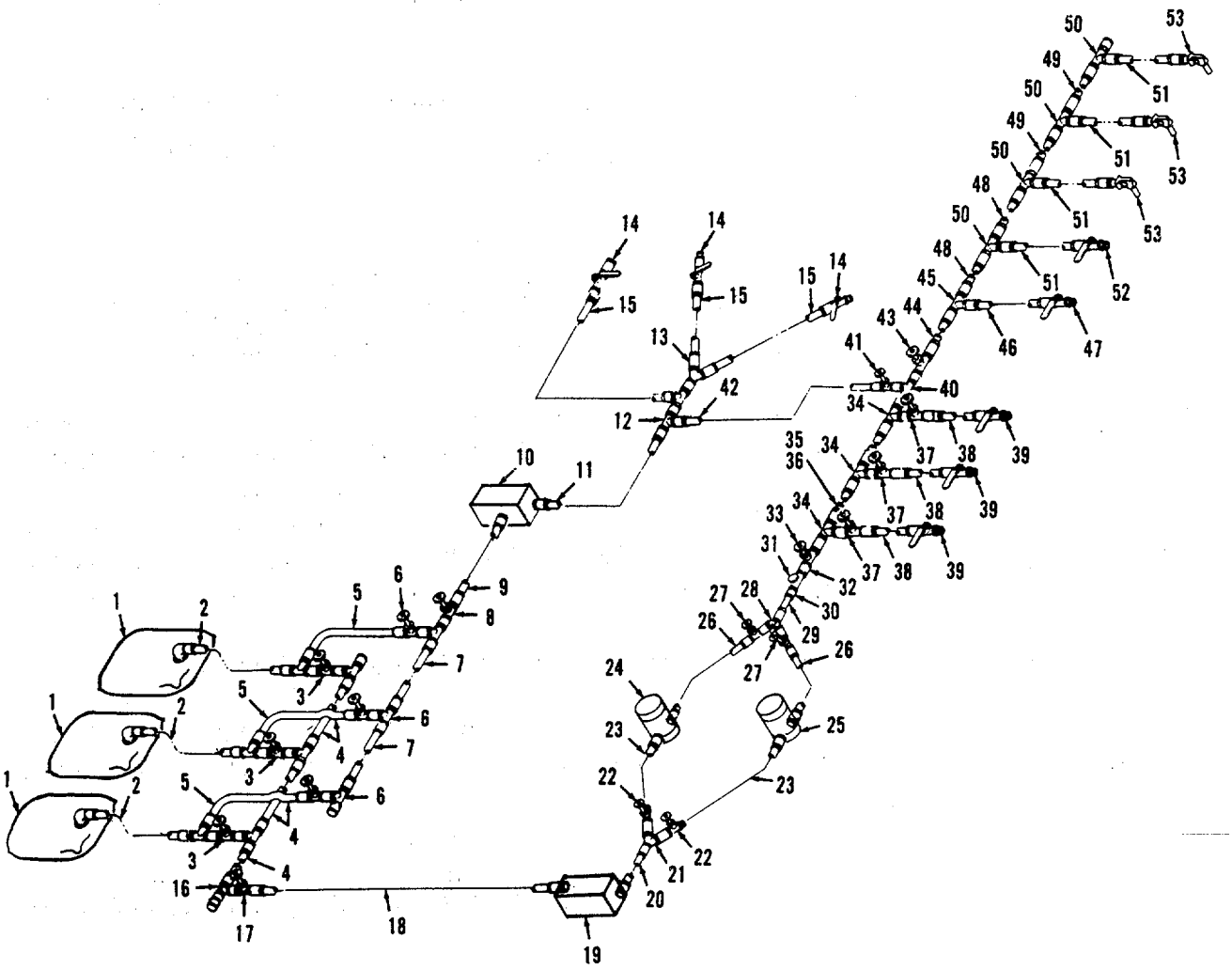


Figure 2-1. Typical Set Up of Fuel System Supply Point.

h. Install a maximum of three 4.00" x 10' hose assemblies (11) to the suction port of pump assembly (10) and to tee assembly (12).

i. Install wye and tee assembly (13) onto tee assembly (12).

j. Place each of three valve assemblies (14) into position which will allow enough space for fuel tanker trucks to maneuver and dispense fuel.

k. Install 4.00" x 10' hose assemblies (15) (quantity as needed) between wye and tee assembly (13) and three valve assemblies (14).

l. Install tee assembly (16) and valve assembly (17) to hose assembly (4).

m. Install a maximum of eight 4.00" x 1O' hose assemblies (18) to valve (17) and to suction port of pump assembly (19).

n. Connect two 4.00" x 50' hose assemblies (20) to discharge port of pump assembly (19).

o. Install wye assembly (21), two valve assemblies (22), and two 4.00" x 25' hose assemblies (23) to filter/separators (24) and (25).

p. Install two 4.00" x 25' hose assemblies (26) to filter/separators (24) and (25).

q. Install two valve assemblies (27) and wye assembly (28) to hose assemblies (26).

r. Install water detection adapter assembly (29), reducer (30), meter assembly (31), reducer (32), and valve assembly (33).

s. Install three tee assemblies (34), three 4.00" x 50' long discharge hoses (35), and three 4.00" x 25' long discharge hoses (36).

t. Install three valve assemblies (37), three 4.00" x 25' long discharge hose assemblies (38), and three quick acting valve assemblies (39).

u. Install tee assembly (40), valve assembly (41), and ten 4.00" x 10' long suction hoses (42).

v. Install valve assembly (43), 3.00" x 50' long discharge hose (44), tee assembly (45), 2.00" x 25' long discharge hose (46), and quick acting valve (47).

w. Install two 3.00" x 50' long discharge hoses (48), two 3.00" x 25' long discharge hoses (49), four tee assemblies (50), four 1.50" x 25' long discharge hoses (51), quick acting valve assembly (52), and three nozzles (53).

x. Install ground rods into position throughout the FSSP in accordance with FM 10-69.

2-7. INITIAL ADJUSTMENTS AND CHECKS.

a. Inspect all tanks, hoses, pumping assemblies, filter/separators, and all tee, valve, manifold, wye, and adapter assemblies for completeness, damage, and for proper operation as applicable. Report any deficiencies to unit maintenance.

b. Perform the preventative maintenance checks and services listed in Table 2-1.

2-8. OPERATING PROCEDURES.(Refer to Figure 2-1.) The following general operation procedures and explanations should be used and understood to be sure that the FSSP will operate in the best possible manner.

WARNING

Death or serious injury can occur from exploding fuel ignited by static electric discharge. Before operating the FSSP, be sure that all components are properly grounded.

WARNING

DEATH or SEVERE INJURY can occur from fire and explosion of fuels. To avoid fire and explosion during operation of the FSSP:

- **DO NOT** allow any flame producing material within 100 feet of the FSSP.
- **DO NOT** smoke or allow smoking during refueling operations.
- **DO NOT** allow fuel to drip onto hot surfaces.
- **DO NOT** refuel equipment while its engine is running.

WARNING

Spilled fuel can ignite or explode and cause serious injury or death to operating personnel. ALL valves are to remain in the closed position unless one of the following steps specifically instructs you to open a particular valve.

NOTE

Be sure that fire extinguishing equipment is available and operational.

a. Fuel Storage. Perform the following steps to store fuel in the collapsible tanks.

(1) Attach butterfly valves (14) to the outlet of the fuel transporter (or pipeline). If butterfly valves do not match the connectors on the fuel source, attach adapter (Appendix C, Item 5) or reducer (Appendix C, Item 23) and adapter (Appendix C, Item 4) to butterfly valve as required to match connector on fuel source.

(2) Open butterfly valves (14).

(3) Open valve (8) and valve (6) in the hose line between the fuel transporters (or pipeline) and the selected fuel storage tank (1) to permit flow of fuel to that tank.

CAUTION

Fuel tanks can be badly damaged by overfilling them. Fuel is normally pumped into one tank at a time while remaining valves (3) leading to the other tanks in the FSSP are closed to reduce possible damage to fuel tanks.

(4) Refer to applicable pump assembly technical manual and start operation of pump assembly (10).

(5) When all fuel is transferred from transporter, or tanks are full, shut down the pump assembly (10) and close butterfly valves (14), three valves (6), and valve (8).

b. Fuel Dispensing. Perform the following steps for dispensing fuel:

WARNING

Death or serious injury can occur from exploding fuel ignited by static electric discharge. Before operating the FSSP, be sure that all components are properly grounded.

WARNING

DEATH or SEVERE INJURY can occur from fire and explosion of fuels. To avoid fire and explosion during operation of the FSSP:

- **DO NOT** allow any flame producing material within 100 feet of the FSSP.
- **DO NOT** smoke or allow smoking during refueling operations.
- **DO NOT** allow fuel to drip onto hot surfaces.
- **DO NOT** refuel equipment while its engine is running.

WARNING

Spilled fuel can ignite or explode and cause serious injury or death to operating personnel. ALL valves are to remain in the closed position unless one of the following steps specifically instructs you to open a particular valve.

NOTE

Be sure that fire extinguishing equipment is available and operational.

NOTE

Fuel is normally drawn from one tank (1) at a time while valves (3) and (6) leading to other tanks (1) in the system are closed to minimize friction loss and reduction in pumping capacity. Fuel is normally dispensed through only one filter/separator for the same reason.

(1) Open valve (3) on one tank (1) from which fuel will be drawn.

(2) Be sure to close three quick-acting valves (39), quick acting valve (47), quick acting valve (52), and three nozzles (43).

(3) Refer to applicable technical manual for pump assembly (19) and start pump assembly to move fuel from the tank (1) into the fuel discharge lines.

(4) Select which filter/separator (24) or (25) will be used in this dispensing operation and open one valve (22) and one valve (27) to allow fuel to flow through only the filter/separator selected.

(5) For dispensing through 3-inch or 4-inch quick-acting valve, connect valve to tanker, open tanker valve, and then open valve (33) and valve (39). Operate handle on valve (39) to dispense fuel.

(6) For dispensing through 2-inch quick-acting valve, connect valve to 500 gallon collapsible drum, open valve on drum, and then open valve (33) and valve (43). Operate handle on valve (47) to dispense fuel.

(7) For dispensing through 1-1/2-inch quick-acting valve, connect valve to 500 gallon collapsible drum, open valve on drum, and then open valve (33) and valve (43). Operate handle on valve (52) to dispense fuel.

(8) For dispensing through service nozzle, place nozzle spout into fuel container or vehicle fuel tank, attach one nozzle grounding clamp to container or vehicle fuel tank, clamp remaining nozzle grounding clamp to an FSSP ground rod, and then open valve (33) and valve (43). Operate lever on service nozzle (53) to dispense fuel.

(9) When dispensing operation is completed, release lever on service nozzle (53) and/or close valves opened in steps (1) through (8).

(10) Remove nozzle spout from fuel container or vehicle tank.

(11) Remove one nozzle ground clamp from fuel container or vehicle fuel tank and then remove remaining nozzle ground clamp from FSSP ground rod.

(12) Refer to applicable technical manual for pump assembly and shut down pump assembly (19).

2-8.A. ENVIRONMENTAL PROTECTION AND ENHANCEMENT. Army Regulation (AR) 200-1 prescribes Department of the Army (DA) responsibilities, policies, and procedures to preserve, protect, and restore the quality of the environment. It incorporates all applicable statutory and regulatory requirements in the area of hazardous substances spill contingency planning, control, and emergency response; solid and hazardous waste management; and environmental restoration

for Fuel System Supply Point (FSSP) operations. Management of fuel spills, use of the spill control kit, disposal of contaminated kit material, and the restoration of the environment after a spill is the responsibility of the installation, activity, and unit commander in consultation with AR 200-1 and environmental authorities.

a. Fuel Spills. Fuel spill are classified by the area covered by the spill. The seriousness of a fuel spill is determined by the area of contact between the fuel, soil, and air. It is on or above the surface that a flammable, vapor-air mixture can form and fire can take place. The number of square feet covered by the spill is more important than the amount of fuel spilled. The types of fuel spills are described below.

(1) Small Priming Spill A small priming spill is one that covers less than 18 inches in diameter.

(2) Small Spill. A small spill is on that is less than 10 feet in diameter or that covers less than 50 square feet. It is not a continuous spill (tank leak).

(3) Large Spill. A spill that is larger than 10 feet in diameter, that covers an area larger than 50 square feet, or that is continuous (a tank leak) is classified as a large spill.

b. Fuel Spill Cleanup. Every spill, no matter how small, should be reported by FSSP operators and investigated in accordance with AR 200-1 so that the cause can be determined and future spills prevented. Every spill should be treated as a potential source of soil contamination and fire. Cleanup procedures are described below.

(**1) All Spills**. Detailed instructions must be given by the responsible environmental authority. Each spill must be treated as an individual case because of size, type of fuel involved, wind conditions, weather, equipment available, possible involvement of vehicles, and other similar variables. In general, the following are basic actions that should be considered and carried out to prevent spills if spills occur with the FSSP (Refer to Figure 2-1.1.):

WARNING

DEATH or SEVERE INJURY can occur from fire and explosion of fuels. Spilled fuel can ignite or explode and cause serious injury or death to operating personnel. To avoid fire and explosion during all fuel spill cleanup procedures:

- **DO NOT** allow any flame producing material within 100 feet of the FSSP.
- **DO NOT** smoke or allow smoking during refueling operations.
- **DO NOT** allow fuel to drip onto hot surfaces.
- **DO NOT** refuel equipment while its engine is running.
- **DO NOT** allow spilled fuel to come into contact with exposed skin. ALWAYS wear gloves when cleaning up a fuel spill.
- **DO NOT** allow spilled fuel to get into eyes. ALWAYS wear goggles when cleaning up any fuel spill.

(a) Place the drip pans (1) under all locations where there is the greatest chance of leaks or spills. Drip pans should be used when connecting or disconnecting hoseline or pipeline couplings. They should be placed under tank vehicle or tank car loading connections. Place the 10" x 10" x 2" thick sorbent pads (2) under locations less likely to have leaks.

(b) Stop the flow of fuel if possible. Examples of stopping a spill include shutting off the valves in a hoseline and closing secondary containment valves around storage tanks.

(c) Contain the spill. Examples of containing a spill include constructing berms and cut-off trenches, and using the spill kit's enclosed oil sorbants (2, 3, and 4). Do not contain gasoline or other volatile chemical spills. Instead, disperse the volatile fuel away from equipment and let it evaporate.

(d) Evacuate personnel from vehicle involved.

(e) Shut down operations in the area of large spills. or the whole FSSP if necessary.

(f) Notify fire fighting and environmental support activities if the spill is serious. Call for help immediately. Once started, fuel fires spread quickly. Reaction speed is the single most important element in fighting a fuel fire successfully.

(g) Check thoroughly for vapors trapped in equipment used in the Fuel System Supply Point such as pumps or filter separators and in the refueled vehicle's structure if fuel is spilled on or into a vehicle. Be sure vapors have dissipated before the equipment and vehicles are returned to service.

(h) Start immediate cleanup. A quick cleanup slows down the spread of contamination and saves on clean up costs. Absorb spilled fuel or allow it to evaporate before using the spill area for operation.

WARNING

DEATH or SEVERE INJURY can occur from fire and explosion of fuels. Spilled fuel can ignite or explode and cause serious injury or death to operating personnel. To avoid fire and explosion during all fuel spill cleanup procedures:

- **DO NOT** allow any flame producing material within 100 feet of the FSSP.
- **DO NOT** smoke or allow smoking during refueling operations.
- **DO NOT** allow fuel to drip onto hot surfaces.
- **DO NOT** refuel equipment while its engine is running.
- **DO NOT** allow spilled fuel to come into contact with exposed skin. ALWAYS wear gloves when cleaning up a fuel spill.
- **DO NOT** allow spilled fuel to get into eyes. ALWAYS wear goggles when cleaning up any fuel spill.

(2) Small Priming Spills. A small priming spill is not usually dangerous. Use the spill kit's bag of granular sorbent (5) to spread over the spill. Dig up the sorbent and contaminated soil using the 2-piece non-sparking shovel (8) and place the sorbent and soil into plastic disposal bags (9). Use tie strips (10) to seal the bags. Store and transport the bags in the 55 gallon drums (11) marked with the "Hazardous Material" caution plate (12). A fire guard should stand by the spill area with a fire extinguisher until the cleanup operation is completed.

WARNING

DEATH or SEVERE INJURY can occur from fire and explosion of fuels. Spilled fuel can ignite or explode and cause serious injury or death to operating personnel. To avoid fire and explosion during all fuel spill cleanup procedures:

- **DO NOT** allow any flame producing material within 100 feet of the FSSP.
- **DO NOT** smoke or allow smoking during refueling operations.
- **DO NOT** allow fuel to drip onto hot surfaces.
- **DO NOT** refuel equipment while its engine is running.
- **DO NOT** allow spilled fuel to come into contact with exposed skin. ALWAYS wear gloves when cleaning up a fuel spill.
- **DO NOT** allow spilled fuel to get into eyes. ALWAYS wear goggles when cleaning up any fuel spill.
- **DO NOT** use rags to clean up the spill if low flash point fuel such as AVGAS or JP-4.

(3) Small Spills. Stop operation at the spill site, and post a fire guard with a fire extinguisher by the spill. First use the spill kit's 10 foot long enclosed oil sorbants (4) which are filled with loose sorbent material to contain the spill by forming a dike around it.

Once contained, spread the granular sorbent (5) over the spill. The kit's 16-1/2" wide x 20" long sorbent pads (3) may also be used to absorb the spill. If low flash point fuel such as AVGAS or JP-4 has been spilled, dig up the sorbent and contaminated soil using the 2-piece non-sparking shovel (8) and place them either in the kit's five gallon pails (13) or plastic disposal bags (9) sealed with the tie strips (10). Store and transport the pails or bags in the 55 gallon drums (11).

WARNING

DEATH or SEVERE INJURY can occur from fire and explosion of fuels. Spilled fuel can ignite or explode and cause serious injury or death to operating personnel. To avoid fire and explosion during all fuel spill cleanup procedures:

- **DO NOT** allow any flame producing material within 100 feet of the FSSP.
- **DO NOT** smoke or allow smoking during refueling operations.
- **DO NOT** allow fuel to drip onto hot surfaces.
- **DO NOT** refuel equipment while its engine is running.
- **DO NOT** allow spilled fuel to come into contact with exposed skin. ALWAYS wear gloves when cleaning up a fuel spill.
- **DO NOT** allow spilled fuel to get into eyes. ALWAYS wear goggles when cleaning up any fuel spill.

(4) Large Spills. The first thing to do is stop the flow of fuel if possible. At a permanent installation or large temporary refueling point where there is a fire department or fire brigade, call the fire fighters immediately and stop operations in the area. As soon as the fire assistance has been called, the actions described below should be performed as necessary:

(a) Personnel. It may be necessary to have all personnel leave a vehicle if the spill is at or near it. No one other than authorized personnel should move through the spill area. If anyone gets fuel on his clothes, he should take them off and wash them with soap and water. Any person whose clothes are on fire should roll or be rolled on the ground to put out the fire or be wrapped in a blanket to smother the flames.

(b) Mobile Refueling Equipment. This equipment may be the largest single source of fuel near the spill. If the fuel spill has not caught fire, starting the engine of a refueler or other vehicle could supply the spark that would ignite the spill or vapors. The decision on what procedure is least hazardous -- driving the refueler away or not starting the engine -- must be made on the spot by the person in charge. If the vehicle engine is running, normal practice is to drive the vehicle away from the spill unless this would pose an unacceptable risk to the driver.

(c) Aircraft. If an aircraft in the spill area has its engine running at the time of the spill, usually it should lift off out of the spill area. The heat of the engines can cause the spill to ignite. The rotor or prop wash from an aircraft can spread the vapor hazard to an area there ignition sources may be present, thus increasing the danger. It can also cause problems by dissipating fire fighting agents.

(d) Equipment. If equipment engines are operating in the area of the spill and they are to be shut down, the engine speed should be cut back to idle before the engine is shut off. This is a precaution against backfiring.

(e) Cleanup. If the fuel is AVGAS, MOGAS, or JP-4, a large spill should be blanketed with fire extinguisher foam as soon as possible to reduce danger of fire or to put out the fire if one exists. After the immediate emergency is over, go to your appropriate response plan document prepared in accordance with AR 200-1 for instructions on whom to call. For example, the document may tell you to call a fuel spill removal organization to do this type of work at your site. Make sure that arrangements for experienced cleanup personnel are in place before an actual large spill occurs. Until cleanup help arrives, it may be best to rope off the area, post a guard, close down nearby refueling operations, and allow the spill to evaporate. Use the FSSP spill kit to contain and cleanup the spill to the extent you can. The spill area should not be used for operations again until it is free of fuel vapors.

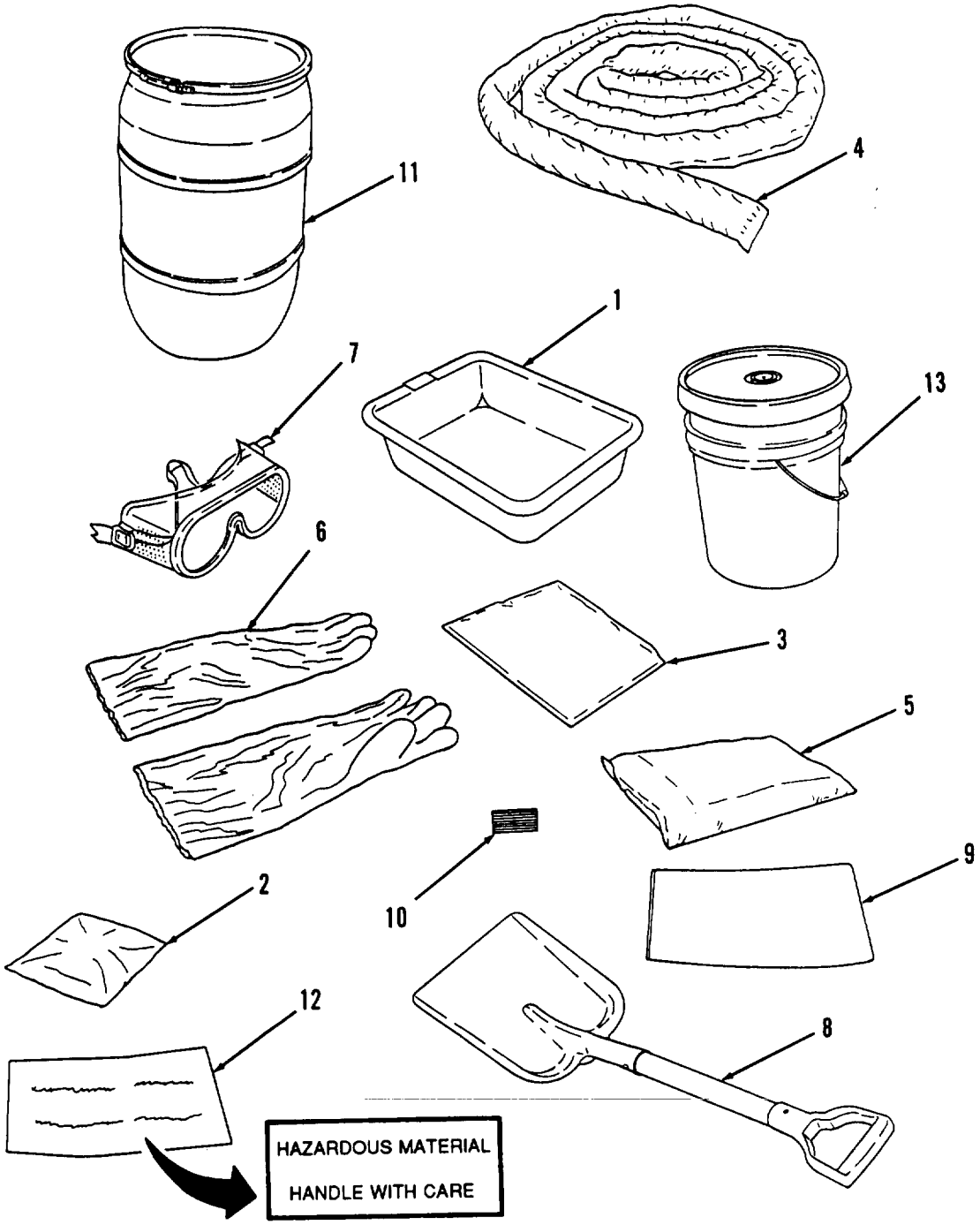


Figure 2-1.1. Spill Control Kit.

2-9. PREPARATION FOR MOVEMENT. When the FSSP is to be moved, the services of unit maintenance shall be employed for the necessary preparations. See Chapter 4, Section VI.

a. Review unit safety procedures for dealing with possible spills or accidents before beginning disassembly for movement.

b. Have sufficient portable fuel containers on hand to collect the fuel that will be drained from the components of the system during disassembly.

c. Connect the valve (39) that is closest to pump assembly (19) and transfer as much of the stored fuel as possible to fuel transporters for shipment to the new site (Refer to paragraph 2-8b). Leave the tanker connected to the FSSP to receive fuel as it is drained from the FSSP.

d. Start pump assembly (19) and open valve (17), one valve (22), and one valve (27).

e. Open valve (33).

f. Open valve (37) and (39) on valve which was connected to fuel tanker in step c.

g. Open three valves (3) and drain remaining fuel from each fuel tank (1) into hose assemblies.

h. Disconnect each tank (1) from system and place caps onto open ends of valve (3).

i. Start pump assembly (10) and open valve (8) and three valves (6).

CAUTION

Running the pump assembly without fuel in its suction lines will badly damage the pump. Turn off pump assembly as soon as fuel lines are empty.

j. Open each of three valves (14) individually and drain all fuel from receiving lines and tank manifold lines.

k. Lift hose assemblies over the shoulder to create a siphoning action and walk the hose line to the pump assembly. Dismantle valves, hoses, and fittings as you go and install caps and plugs into all dismantled components.

1. Refer to pump assembly technical manual and turn off pump assembly (10).

m. Dismantle manifold system as indicated in step k.

n. Turn off pump assembly (19).

o. Start pump unit on tanker in accordance with FM 10-71.

p. Dismantle remaining system as defined in step k.

q. Store hose assemblies and fittings in their original shipping boxes or other suitable containers for transportation.

2-10. OPERATION INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES. Because the FSSP is basically a set of separate items assembled for a special purpose, the system itself does not have any information plates. Certain components of the system, however, do have individual information plates. Refer to the applicable technical manual for the following system components that do have information plates.

a. Pumping Assembly.

b. Tank Assemblies.

c. Filter/Separator Assemblies.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-11. OPERATION UNDER UNUSUAL WEATHER. The FSSP is designed to operate normally within a wide range of climatic conditions. However, some extreme conditions require special operating and servicing procedures to prevent undue loading and excessive wear on the equipment. These unusual conditions and the special steps to be performed are listed in the following paragraphs.

a. Operation In Extreme Heat. When operating the FSSP in temperatures of 125°F (52°C) or higher, extra care should be taken to minimize the possibility of fuel fire and explosion. Some of the precautions that may be taken are:

(1) Be sure that all fittings and hose connections are tight and do not leak fuel. Fuel can ignite and cause serious injury to personnel and damage to equipment.

(2) When spills and drips do occur, they must be cleaned up immediately to prevent accumulation of explosive fumes from the evaporating fuel.

(3) Special hot weather procedures must be followed for operation of the pump assemblies and the filter/separators which are part of this FSSP. Refer to the applicable technical maintenance manual for the procedures to follow when operating these items in extremely hot temperatures.

b. Operation In Extreme Cold. When operating the FSSP in temperatures down to -50°F (-45°C), extra care should be taken to minimize possible injury to personnel and damage to equipment. Special cold weather procedures must be followed for operation of the pump assembly and the filter/separators which are part of this FSSP. Refer to the applicable technical maintenance manual for the procedures to follow when operating these items in extremely cold temperatures.

WARNING

Most fuels evaporate very quickly and can quickly lower the temperature of exposed skin until there is a great danger of frost bite. Prevent leakage of fuel onto bare skin of personnel. Remove any fuel form exposed skin as soon as possible.

c. Operation In Sandy or Dusty Conditions. Dusty and sandy conditions can seriously affect the operation of the FSSP. When operating the FSSP in these dusty and sandy conditions, perform the following steps.

(1) Accumulation of dust or sand in the filters of the pump assembly will cause the pumps to overheat and damage the equipment. Frequently clean filters and all other areas of dust and sand accumulation. In extreme conditions, daily cleaning of filters may be necessary. Refer to the technical maintenance manual for the pump assembly for detailed procedures which must be performed when the pump assembly is used in dusty and sandy conditions.

(2) Fuel which has been contaminated by dust and sand will severely affect the operation of any engine. Special care must be taken that the fuel being pumped does not have dust or sand in it when using the FSSP in dusty and sandy conditions. Be sure that all hose and piping connections are tight. Be sure that the insides of all FSSP components are clean before piping connections are made during FSSP set up and assembly.

(3) Check the filter/separator more frequently to insure that the filter is working properly to remove dust sand that may have entered the FSSP. Refer to the technical maintenance manual for the filter/separator for detailed procedures to be followed when using the filter/separator in dusty and sandy conditions.

d. Operation In Salt Air and Sea Spray Conditions. The nature of salt presents serious corrosion problems. Frequent cleaning is necessary during which all exposed surfaces should be thoroughly sprayed rinsed or sponged with fresh water to remove salt.

2-12. OPERATION UNDER EMERGENCY CONDITIONS Emergency shutdown of the FSSP is done by the immediate shutdown of the pumping assemblies used by the FSSP. Refer to the technical maintenance manual for the pump assemblies for the proper emergency shutdown procedures for the pumps.

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION

3-1. GENERAL. No lubrication is required for the FSSP itself, however, the pump units used with the FSSP do require lubrication. Refer to the maintenance manual for the pump units for proper lubrication procedures.

Section II. OPERATOR TROUBLESHOOTING PROCEDURES

3-2. INTRODUCTION.

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the FSSP. 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 tests/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.

c. Table 3-1 lists the common malfunctions which you may find during the operation or maintenance o f the FSSP or its components. You should perform the tests/inspections and corrective actions in the order listed.

3-3. OPERATOR TROUBLESHOOTING PROCEDURES Refer to Table 3-1 for the operator troubleshooting procedures authorized for the FSSP.

Table 3-1. Operator Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. PUMP ASSEMBLY WILL NOT START.
Step 1. Refer to operator sections of operator technical manual for p umping units and start pumps.
Step 2. Notify unit maintenance.
2. PUMP ASSEMBLY STARTS BUT WILL NOT PUMP RATED CAPACITY.
Step 1. Inspect pump assembly for proper operation.
Refer to operator technical manual for pump assembly.
Step 2. Check that filter/separators are operating properly.
Refer to operator troubleshooting section of filter/separator operator technical manual.
Step 3. Check for proper combination of open and closed valves.
Refer to operating procedures in paragraph 2-8.
3. PUMP ASSEMBLIES START, BUT FUEL CANNOT BE DISPENSED OR STORED.
Step 1. Pump assembly starts, but will not pump rated capacity.
Refer to malfunction 2.
Step 2. Fuel system valves are improperly set.
Refer to Operating Instructions in paragraph 2-8 to be sure that all FSSP valves have been adjusted for the operation desired.
Step 3. Nozzle assembly is defective.
Replace nozzle assembly with a properly functioning nozzle assembly.

Table 3-1. Operator Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
Step 4. A valve assembly is defective. Check that all valves in the related area of malfunction are operating properly. If any valve assembly is found to be defective, replace it with a properly functioning valve assembly.
4. HOSE ASSEMBLY LEAKS.
Step 1. Cam-lock couplings are improperly fastened. Disconnect couplings from hose and then reconnect couplings. Be sure that the coupling cam-locking mechanism is properly position to seal the hose joint.
Step 2. Dust or dirt is trapped inside the hose coupling connection. Disconnect couplings from hose and check for dust or dirt inside couplings. Remove any dust or dirt found and reconnect hose assembly.
Step 3. Gaskets are missing from hose connection joints. Remove affected hose from connection and check that gasket is properly placed within the coupling half. If gasket is missing, contact unit maintenance for a replacement gasket.
Step 4. Hose assembly is defective. Replace hose assembly with a new or repaired hose assembly that does not leak.
5. LEAKS OCCUR AT JOINTS OF COMPONENTS.
Step 1. Cam-lock couplings are improperly fastened. Disconnect couplings from component and then reconnect couplings. Be sure that the coupling cam-locking mechanism is properly position to seal the component joint.

Table 3-1. Operator Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
Step 2. Dust or dirt is trapped inside the component coupling connection. Disconnect couplings from component and check for dust or dirt inside couplings. Remove any dust or dirt found and reconnect component.
Step 3. Gaskets are missing from connection joints. Take affected joint connection apart and check that gasket is properly placed within the coupling half. If gasket is missing, contact unit maintenance for a replacement gasket.
Step 4. Check for loose mounting hardware at mounting flanges. Tighten mounting bolts and nuts with adjustable wrench.
Step 5. Component parts are defective. Replace defective component with a new or repaired component.
6. VALVE ASSEMBLIES OR OTHER COMPONENTS LEAK AT PLACES OTHER THAN JOINTS.
Component parts are defective. Replace defective component with a new or repaired component.

Section III. OPERATOR MAINTENANCE PROCEDURES.

3-4. GENERAL. This section contains the maintenance procedures which the Maintenance Allocation Chart authorizes the operator to perform. If the FSSP still does not operate properly after performing these maintenance procedures, contact unit maintenance for assistance.

3-5. GENERAL COMPONENT REPLACEMENT. The FSSP comprises a number of separate assembly and subassembly components. The operator is authorized to replace a number of these separate components if they should fail. The following components may be replaced (as an assembly) by the FSSP operator if they are found to be defective.

a. Hose Assemblies.
b. Valve Assemblies.
c. Manifold Assemblies.
d. Tee Assemblies.
e. Wye Assemblies.
f. Adapter Assemblies.
g. Nozzle Assemblies.
h. Miscellaneous Fittings.

In the event that any of the above components fail, the operator should replace the defective component with a properly functioning component exactly like the one which has failed. The operator should not attempt to make any repairs on any components found to be defective. All defective FSSP components must be sent to unit maintenance for repair.

NOTE

No other operator maintenance is authorized. If the FSSP still fails to operate properly, contact unit maintenance.

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS

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

4-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT. No special tools are required for maintenance of the equipment. Test, Measurement, and Diagnostic Equipment (TMDE) and Support Equipment include standard equipment found in any maintenance shop.

4-3. REPAIR PARTS. Repair parts needed by unit maintenance of the FSSP are listed and illustrated in the Repair Parts and Special Tools List (RPSTL) provided in Appendix F to this technical manual.

Section II. SERVICE UPON RECEIPT AND PREPARATION FOR MOVEMENT

4-4. SITING REQUIREMENTS. The FSSP should be assembled on a level area free of debris and large rocks. Special care should be taken to insure that no hose assemblies will be placed on or near rocks or other objects that may have sharp points or edges which may damage the hose assemblies when the FSSP is operated. Be sure that the site allows for enough room to assemble the fuel system. When configured as shown in this technical manual the FSSP will take up an area about 500 ft. x 400 ft.

4-5. SERVICE UPON RECEIPT. The following paragraphs contain the procedures for unloading, unpacking, and general checking of the unpacked FSSP.

a. Unloading. Most of the components of the FSSP are shipped in one wooden crate. The only items which are not shipped inside this crate are the two pump assemblies, the two filter/separators, and the fuel tanks. The crate may be lifted by fork-lift, crane, or sling. To unload the fuel system, perform the following steps.

(1) Check all shipping crates for damage. Damaged crates indicate probable damage to equipment.

(2) Remove all blocking and die downs that may have been used to secure the crate onto the carrier.

(3) Use a forklift truck or other suitable material handling equipment to remove the crate from the carrier.

b. Unpacking.

NOTE

The FSSP shipping container is designed so that it may be retained for re-use for mobility purposes when frequent relocation of the system is anticipated.

(1) Remove top of shipping crate.

(2) Remove the technical publications envelope that is attached to the inside of the crate and put them in a safe place.

(3) Carefully remove all FSSP components and packaging material from crate.

c. Checking Unpacked Equipment. To check the unpacked FSSP, perform the following steps.

(1) Inspect each of the FSSP components for damage that may have been incurred during shipment, especially if crate is damaged. If any component has been damaged, report damage on SF 364, Report of Discrepancy.

(2) Check the quantities and type of each component against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions as defined within DA PAM 738-750. See that all Components of End Item and Basic Issue Items (See Appendix C) are with the fuel system.

(3) Check to see whether the equipment has been modified.

4-6. INSTALLATION INSTRUCTIONS.

a. Tools, Test Equipment, and Materials Needed for Installation. The FSSP can be assembled by hand and no special tools, test equipment, or other materials are needed for assembly of the fuel system.

b. Assembly of Equipment. Refer to the operation instructions in Chapter 2 of this technical manual and place all components of the FSSP into position.

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

4-7. INTRODUCTION.

a. Systematic, periodic, Preventive Maintenance Checks and Services (PMCS) are essential to ensure that the FSSP is ready for operation at all times. The purpose of a preventive maintenance program is to discover and correct defects and deficiencies before they can cause serious damage or complete failure of the equipment. Any effective preventive maintenance program must begin with the indoctrination of operators to report all unusual conditions noted during daily checks or actual operation to unit maintenance. All defects and deficiencies discovered during maintenance inspections must be recorded, together with corrective action taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

b. A schedule for unit preventive maintenance inspection and service should be established immediately after installation of the fuel system. A quarterly interval, equal to three calendar months or 250 hours of operation (whichever occurs first) is recommended for usual operating conditions. When operating under unusual conditions, such as a very dusty or sandy environment, it may be necessary to reduce the interval to monthly or even less if conditions are extreme.

WARNING

Severe injury or death can occur from fire and explosion caused by fuel and fuel fumes. **NEVER** allow open flames or hot objects to get near the FSSP.

4-8. UNIT PMCS. The FSSP has no system unit PMCS. However, the pump assemblies, filter/separators, and fuel tanks do have unit PMCS. Refer to the applicable technical manual for these items for proper unit PMCS procedures and perform those procedures.

Section IV. UNIT TROUBLESHOOTING PROCEDURES.

4-9. INTRODUCTION.

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the FSSP. 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 tests/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.

c. Table 4-1 lists the common malfunctions which you may find during the operation or maintenance of the FSSP or its components. You should perform the tests/inspections and corrective actions in the order listed.

4-10. UNIT TROUBLESHOOTING PROCEDURES TABLE. Refer to Table 4-1 for the authorized unit troubleshooting procedures for the FSSP.

NOTE

Before you use this table, be sure you have performed all applicable operating checks.

NOTE

Unit troubleshooting procedures for the fuel tanks, filter/separators, and pump assemblies are contained in the technical manual for those components.

Table 4-1. Unit Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. HOSE ASSEMBLIES LEAK.
Inspect hose assemblies for leaks.
Repair hose assemblies per paragraph 4-12.
2. VALVE ASSEMBLIES DO NOT OPERATE PROPERLY.
Functionally test valve assemblies for proper operation.
Repair valve assemblies per paragraphs 4-13 through 4-19.

Table 4-1. Unit Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
3. OTHER FUEL SYSTEM COMPONENTS LEAK OR WILL NOT JOIN WITH OTHER COMPONENTS PROPERLY. Repair the defective component per the following applicable paragraph. For repair of valve assemblies, refer to paragraphs 4-13 through 4-19. For repair of manifold assemblies, refer to paragraphs 4-20 and 4-21. For repair of tee assemblies, refer to paragraph 4-22 through 4-25. For repair of wye and tee assembly, refer to paragraph 4-26. For repair of wye assemblies, refer to paragraph 4-27 and 4-28. For repair of adapter assemblies, refer to paragraph 4-29 and 4-30. For repair of nozzle assemblies, refer to paragraph 4-31 and 4-32.

Section V. UNIT MAINTENANCE PROCEDURES

4-11. GENERAL INFORMATION. This section contains the maintenance procedures authorized for the unit maintenance as defined in the Maintenance Allocation Chart located in Appendix B. Before performing any procedure in this section, use the unit troubleshooting procedures to identify and locate the parts on the FSSP requiring maintenance.

4-12. HOSE ASSEMBLIES.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Clamping Tool (Appendix C, Item 37)
Clamping Tool (Appendix C, Item 38)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Strapping (Appendix C, Item 42)
Strapping (Appendix C, Item 43)
Strapping (Appendix C, Item 45)
Strapping (Appendix C, Item 46)

Equipment Condition

Hose assembly removed from fuel system.

Repair. (Refer to Figure 4-1.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Cut hose clamps (1) and remove clamps from hose assembly.

(2) Remove female coupling half (2) and male coupling half (3) from hose assembly.

(3) Remove quick disconnect plug (4) from female coupling h alf (2).

(4) Remove quick disconnect cap (5) from male coupling half (3).

(5) Remove gaskets (6) and (7) from female coupling half (2) and from quick disconnect cap (5).

b. Cleaning.

(1) Remove ail build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. **DO NOT** use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all gaskets for cracks, tears, or nicks.

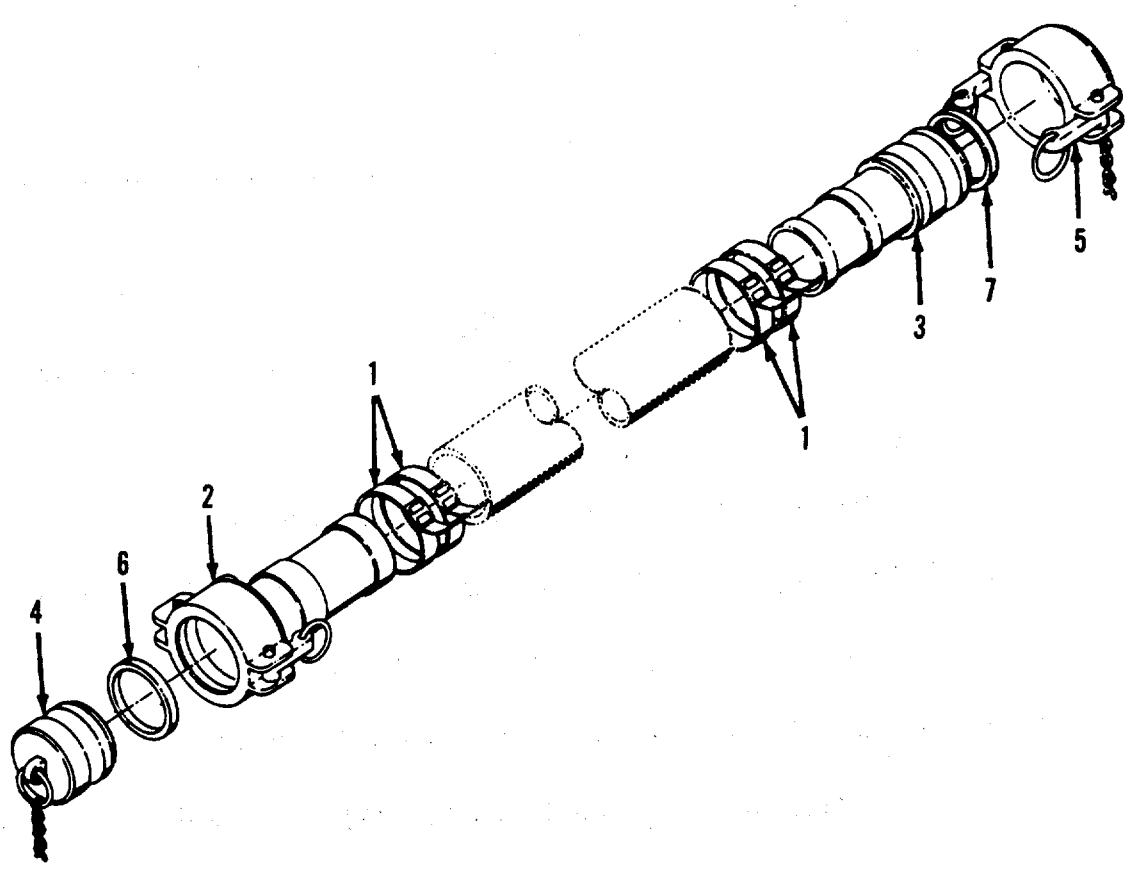


Figure 4-1. Hose Assembly.

d. Assembly.

NOTE

Two different hose clamp installation tools are furnished with the FSSP. One tool (Appendix C, Item 37) is for use in installing preformed hose clamps. The other tool (Appendix C, Item 38) is for use in installing hose clamps made from bulk hose strapping material. While only the bulk hose strapping material is normally available for the FSSP, the following steps include instructions for using either tool. Before installing hose clamps, determine whether you will be using preformed hose clamps or hose clamps you will make from bulk hose strapping material and then refer to the applicable steps in the following procedures.

(1) When using preformed hose clamps, use clamping tool (Appendix C, Item 37) and perform the following steps (a) through (h). (Refer to Figure 4-2.)

(a) Place two adjustable hose clamps and seals onto the end of the hose and insert the coupling half into the end of the hose (Step 1). Be sure the static wires make good contact with the coupling.

(b) Insert the end of the hose clamp into the clamping tool (Step 2).

(c) Insert the winder into the clamping tool (Step 3). Be certain the end of the hose clamp fits into the winder slot.

(d) Attach the ratchet wrench to the winder and tighten the hose clamp until the hose presses against the shank of the coupling half (Step 4).

(e) Maintain tension on the wrench and strike the punch a sharp blow with a mallet (Step 5).

(f) Maintain tension on the wrench and move the clamping tool back and forth until the end of the clamp breaks off (Step 6).

(g) Peen the sharp edges of the clamp flat with a mallet.

(h) Repeat steps (a) through (g) for each clamp until two clamps have been installed onto each end of the hose to hold the male and female coupling halves.

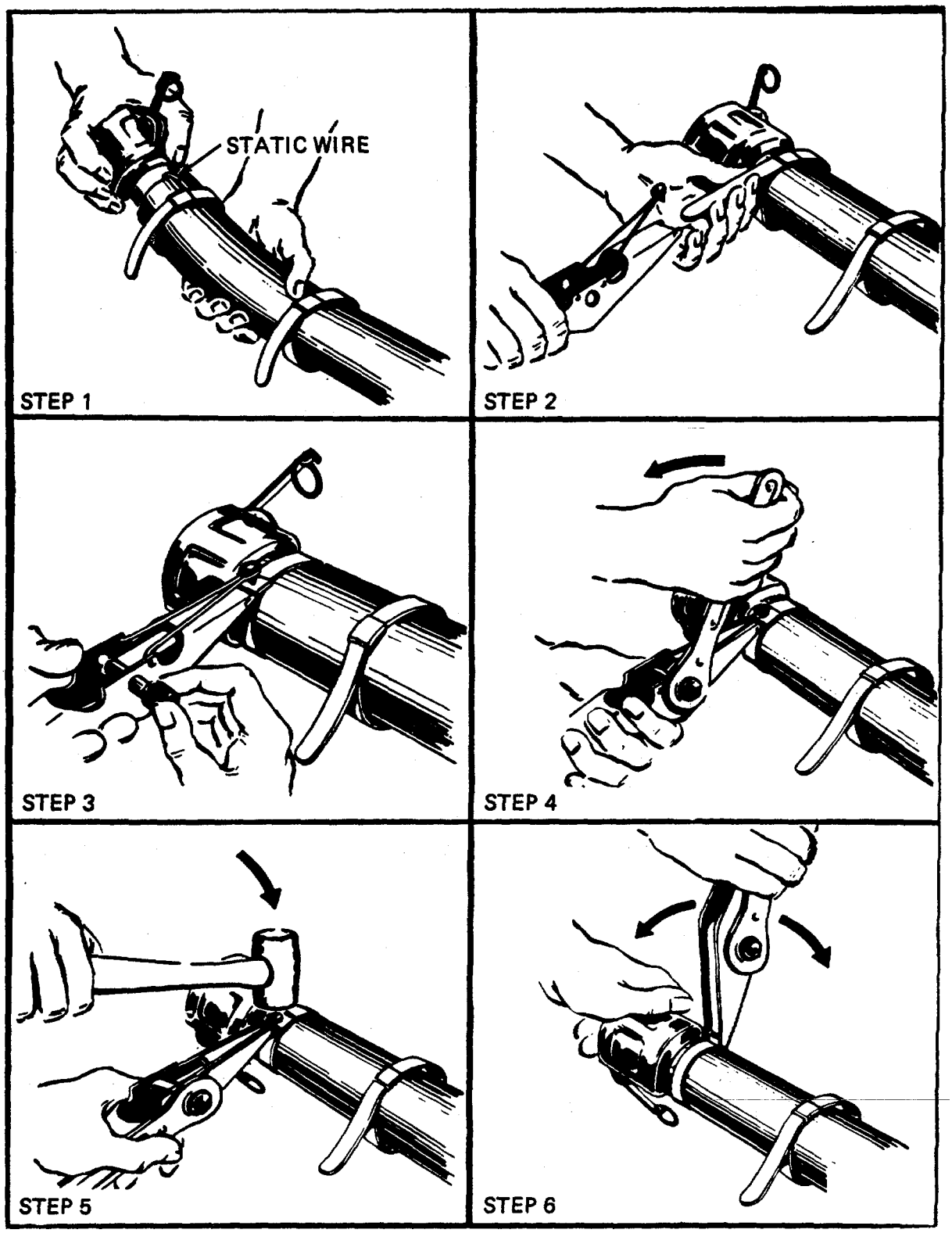


Figure 4-2. Clamp Installation Using Clamping Tool (Appendix C, Item 37).

(2) When using hose clamps made from bulk hose clamp strapping, use clamping tool (Appendix C, Item 38) and perform the following steps (a) through (h). (Refer to Figure 4-3.)

(a) Cut a length of strapping material from the 1/2 inch or 3/4 inch roll of bulk strapping material which will encircle the hose and still have 8 to 10 inches more strapping material left over.

(b) Place two adjustable hose clamps and seals onto the end of the hose and insert the coupling half into the end of the hose (Step 1). Insert the coupling shank into the hose. Be sure the static wire makes good contact with the coupling half.

(c) Hold the buckle with the prongs extended up and insert one end of the strapping through the toothed slot. Bend inserted end of strapping into a hook shape to fit over and under buckle.

(d) Pull on strapping until hook engages buckle (Step 1).

(e) Bring the other end of the strapping around the hose and through the toothed slot twice (Step 1).

(f) Insert part of the strapping drawn through the buckle into the tool slots. The nose of the tool should be flush against the buckle (Step 2).

(g) Apply tension on the tension handle, keeping tension on the strapping gripper lever, and adjust the position of the tool as required. The lever will lock itself with the correct amount of tension.

CAUTION

The hose strapping may break unless the operator releases tension correctly when bending the strapping back over the buckle. Be sure that you gradually release the tension on the strapping with the tension handle at the same time you are bending back the strapping.

(h) Release the tension about one turn on the strapping while bending the strapping over the buckle teeth (Step 3).

(i) Cut the strapping with the cutting handle (Step 4).

(j) Remove the tool and hold the stub of the strapping down with the thumb (Step 5).

(k) Clinch the strapping stub by hammering down the prongs of the buckle (Step 6).

(l) Repeat step (a) through (k) for each clamp.

(3) (Refer to Figure 4-1.) Install gaskets (7) and (6) into quick disconnect cap (5) and female coupling half (2).

(4) Install quick disconnect cap (5) onto male coupling half (3).

(5) Install quick disconnect plug (4) into female coupling half (2).

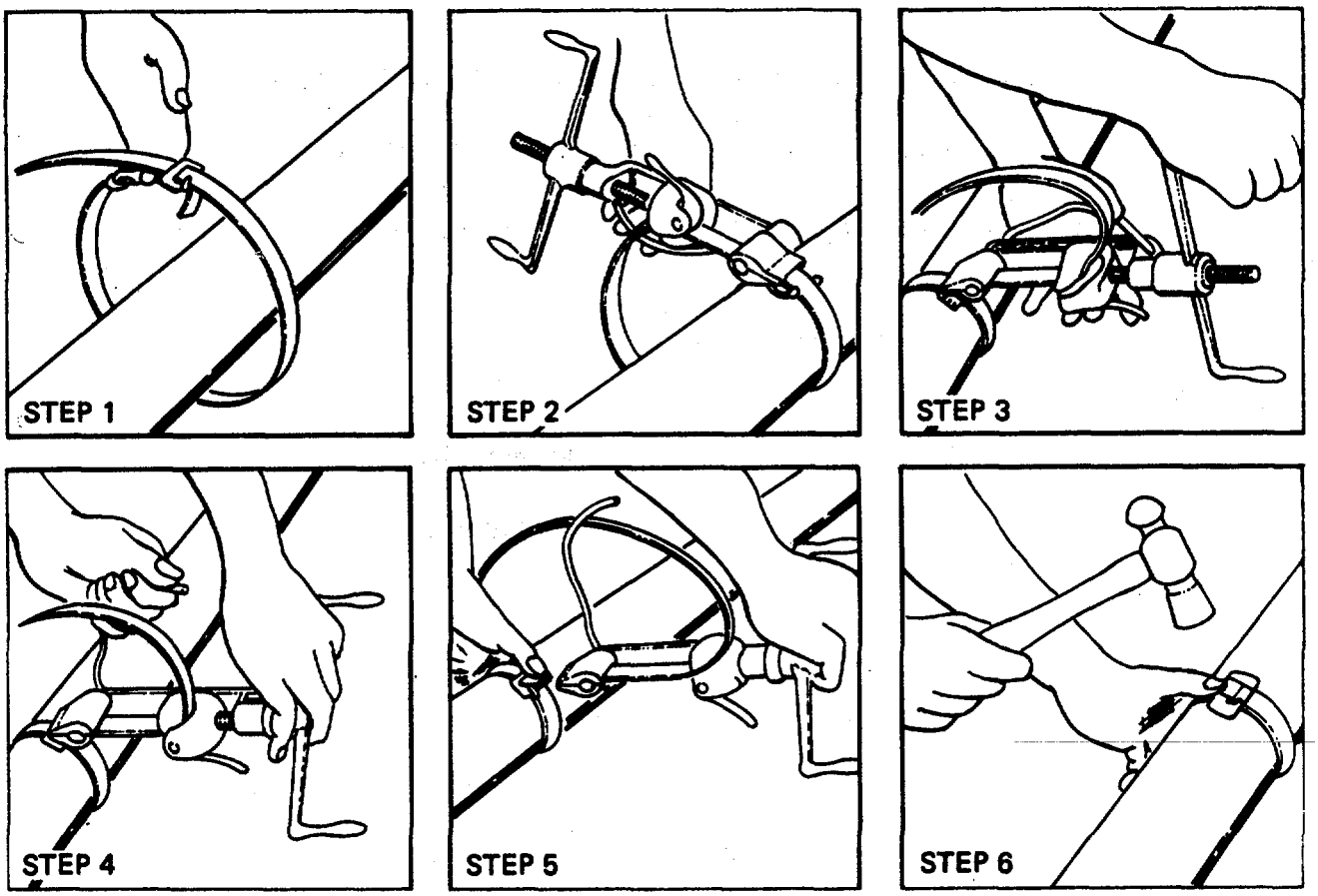


Figure 4-3. Clamp Installation Using Clamping Tool (Appendix C, Item 38).

4-13. VALVE ASSEMBLY, BUTTERFLY, 4.00 INCH.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Wrench, Chain (2 Each) (Appendix C, Item 40)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Sealing Compound (Appendix C, Item 44)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-4.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect cap (1) and gasket (2) from male coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from female coupling half (6).

(3) Remove male coupling half (3) and female coupling half (6) from butterfly valve (7).

(4) Remove split ring (8) from male coupling half (3).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

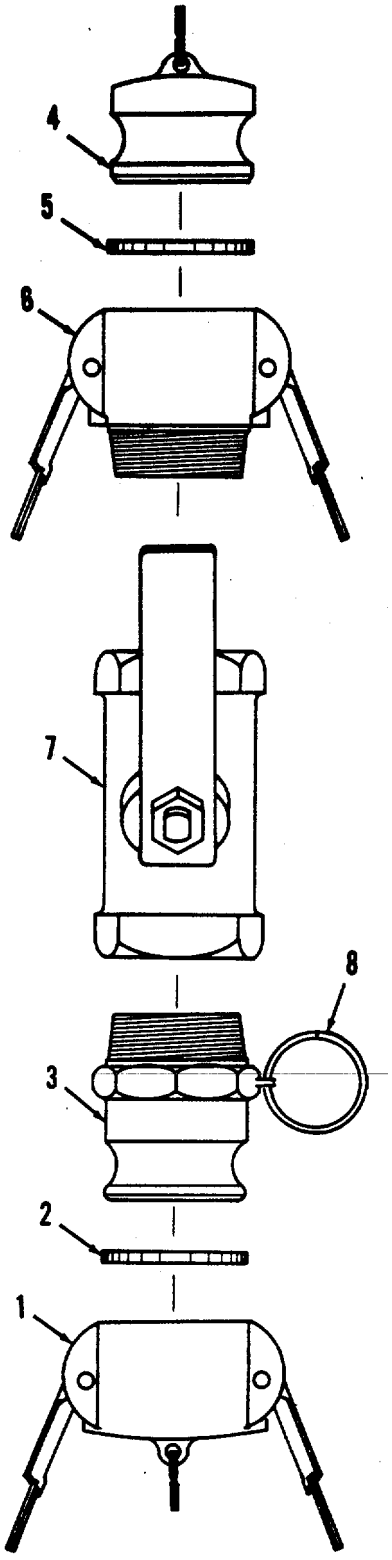


Figure 4-4. Butterfly Valve Assembly, 4.00 inch.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check for smooth operation of handle on butterfly valve.

d. Assembly.

(1) Install split ring (8) onto male coupling half (3).

(2) Apply sealing compound (Appendix C, Item 44) to all external threads and install female coupling half (6) and male coupling half (3) into butterfly valve (7).

(3) Install gasket (5) and quick disconnect plug (4) onto female coupling half (6).

(4) Install gasket (2) and quick disconnect cap (1) onto male coupling half (3).

4-14. VALVE ASSEMBLY, 4.00 INCH GATE.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-5.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect cap (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from coupling half (6).

(3) Remove sixteen screws (7), sixteen flat washers (8), sixteen lock washers (9), and sixteen nuts (10), coupling half (3), coupling half (6), and two gaskets (11) from gate valve (12). Discard gaskets (11) and lock washers (9).

(4) Remove split ring (13) from coupling half (3).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3). Allow parts to dry.

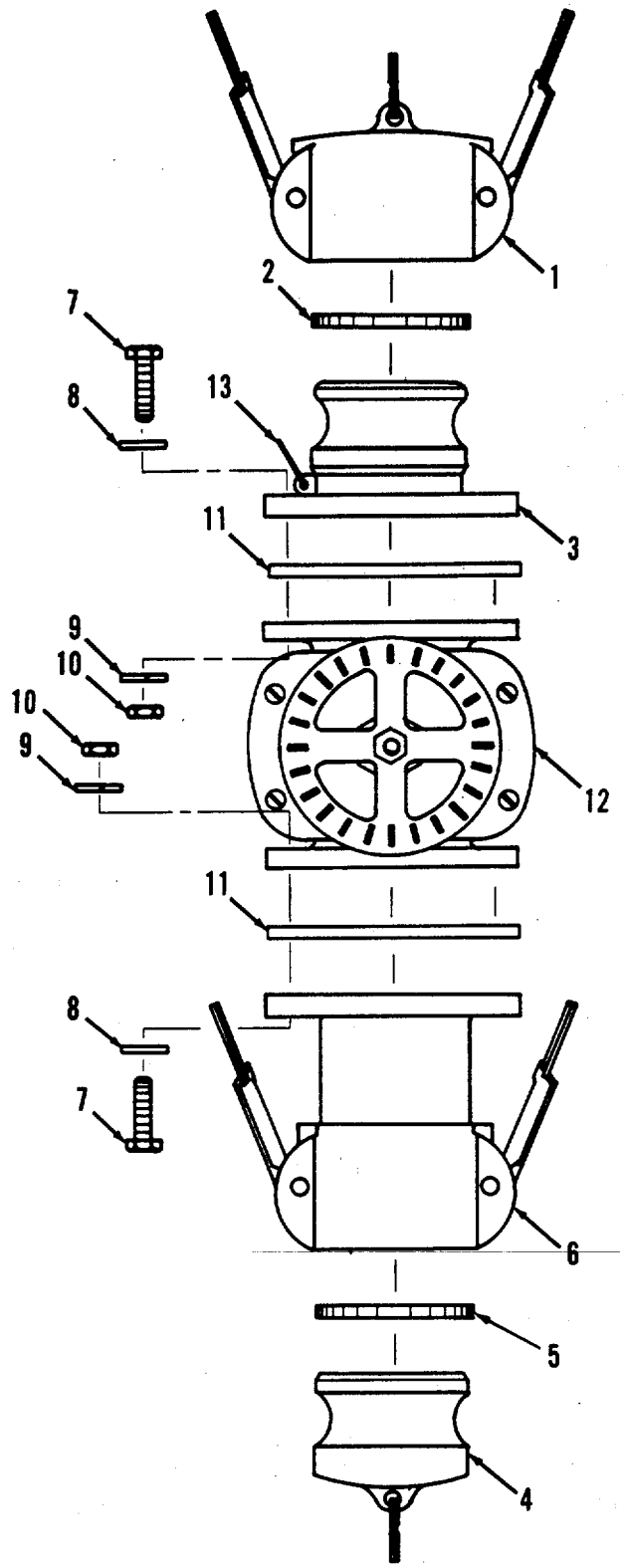


Figure 4-5. Valve Assembly, 4.00 Inch Gate.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check gate valve assembly for crack surfaces, bent handwheel and for smooth handwheel operation.

d. Assembly.

(1) Install split ring (13) onto coupling half (3).

(2) Install two new gaskets (11), coupling half (6), coupling half (3), sixteen nuts (10), sixteen new lock washers (9), sixteen flat washers (8), and sixteen screws (7) onto gate valve (12).

(3) Install gasket (5) and quick disconnect plug (4) onto coupling half (6).

(4) Install gasket (2) and quick disconnect cap (1) onto coupling half (3).

4-15. VALVE ASSEMBLY, 3.00 IN. X 4.00 IN. GATE.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-6.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect cap (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from coupling half (6).

(3) Remove sixteen screws (7), sixteen flat washers (8), sixteen lock washers (9), and sixteen nuts (10), coupling half (3), coupling half (6), and two new gaskets (11) from gate valve (12). Discard gaskets (11) and lock washers (9).

(4) Remove split ring (13) from coupling half (3).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3). Allow parts to dry.

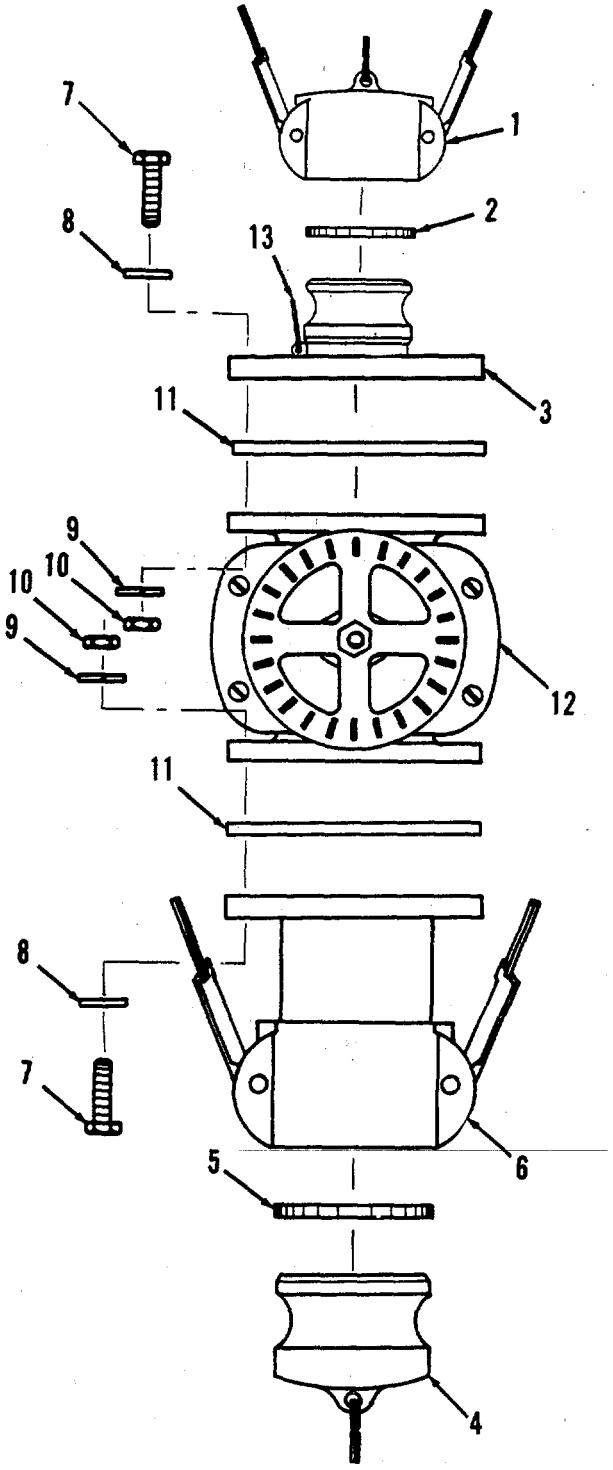


Figure 4-6. Valve Assembly, 3.00 Inch x 4.00 Inch Gate.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check gate valve assembly for crack surfaces, bent handwheel and for smooth handwheel operation.

d. Assembly.

(1) Install split ring (13) onto coupling half (3).

(2) Install two new gaskets (11), coupling half (6), coupling half (3), sixteen nuts (10), sixteen new lock washers (9), sixteen flat washers (8), and sixteen screws (7) onto gate valve (12).

(3) Install gasket (5) and quick disconnect plug (4) onto coupling half (6).

(4) Install gasket (2) and quick disconnect cap (1) onto coupling half (3).

'

4-16. VALVE ASSEMBLY, 1.50 IN., QUICK ACTING.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Wrench, Chain (2 Each) (Appendix C, Item 40)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Sealing Compound (Appendix C, Item 44)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-7.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect cap (1) and gasket (2) from male coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from female coupling half (6).

(3) Remove male coupling half (3) and female coupling half (6) from butterfly valve (7).

(4) Remove split ring (8) from male coupling half (3).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

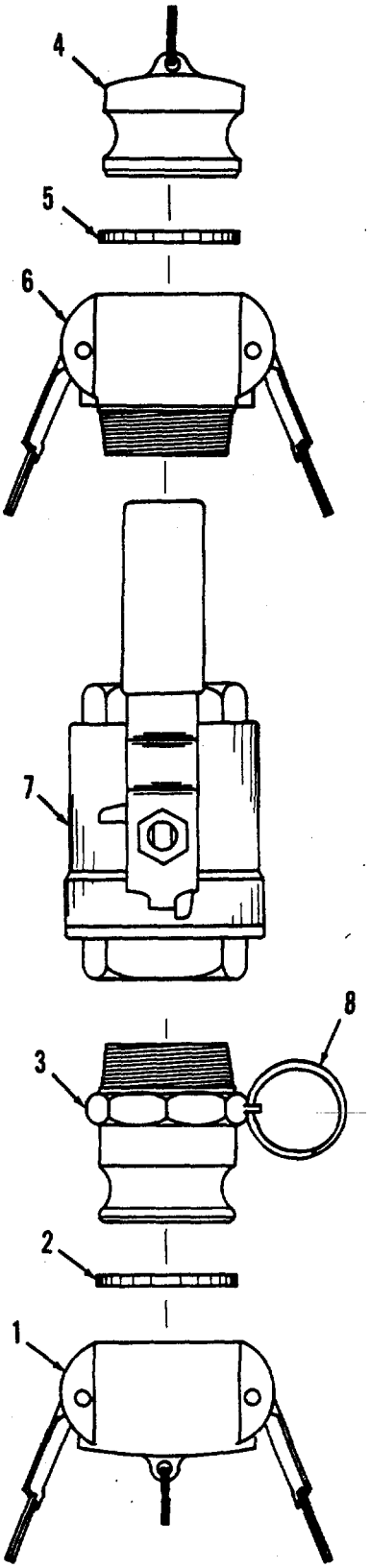


Figure 4-7. Valve Assembly, 1.50 Inch, Quick Acting.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check for smooth operation of handle on butterfly valve.

d. Assembly.

(1) Install split ring (8) onto male coupling half (3).

(2) Apply sealing compound (Appendix C, Item 44) to all external threads and install female coupling half (6) and male coupling half (3) into butterfly valve (7).

(3) Install gasket (5) and quick disconnect plug (4) onto female coupling half (6).

(4) Install gasket (2) and quick disconnect cap (1) onto male coupling half (3).

4-17. VALVE ASSEMBLY, 2.00 INCH, QUICK ACTING.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Wrench, Chain (2 Each) (Appendix C, Item 40)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Sealing Compound (Appendix C, Item 44)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-8.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.,

(1) Remove quick disconnect cap (1) and gasket (2) from male coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from female coupling half (6).

(3) Remove male coupling half (3) and female coupling half (6) from butterfly valve (7).

(4) Remove split ring (8) from male coupling half (3).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

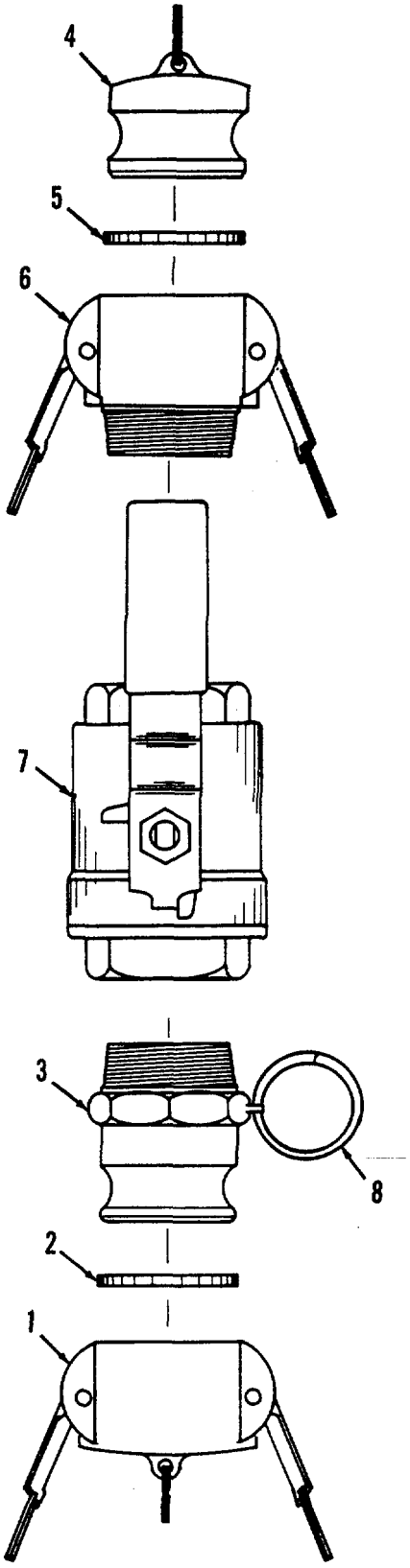


Figure 4-8. Valve Assembly, 2.00 Inch, Quick Acting.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check for smooth operation of handle on butterfly valve.

d. Assembly.

(1) Install split ring (8) onto male coupling half (3).

(2) Apply sealing compound (Appendix C, Item 44) to all external threads and install female coupling half (6) and male coupling half (3) into butterfly valve (7).

(3) Install gasket (5) and quick disconnect plug (4) onto female coupling half (6).

(4) Install gasket (2) and quick disconnect cap (1) onto male coupling half (3).

4-18. VALVE ASSEMBLY, 4.00 INCH, QUICK ACTING.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Wrench, Chain (2 Each) (Appendix C, Item 40)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Sealing Compound (Appendix C, Item 44)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-9.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect plug (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect plug (4), gasket (5), reducer (6), and gasket (7) from coupling half (8).

(3) Remove coupling half (3) and coupling half (8) from quick acting valve (9).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

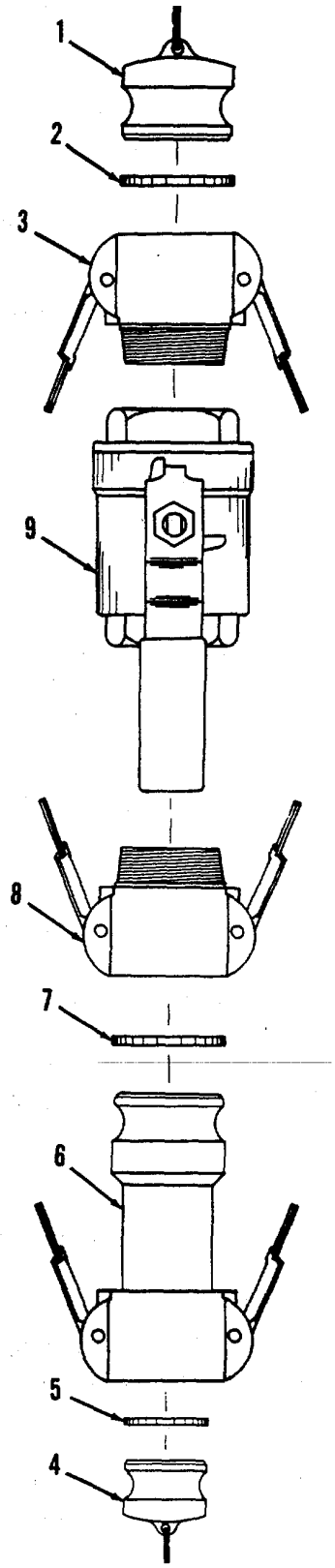


Figure 4-9. Valve Assembly, 4.00 Inch, Quick Acting.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check quick acting valve for smooth handle operation.

d. Assembly.

(1) Apply sealing compound (Appendix C, Item 44) to all external threads and install coupling half (8) and coupling half (3) into quick acting valve (9).

(2) Install gasket (7), reducer (6), gasket (5), and quick disconnect plug (4) onto coupling half (8).

(3) Install gasket (2) and quick disconnect plug (1) into coupling half (3).

4-19. VALVE, 4.00 INCH GATE.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Packing (Appendix C, Item 6)
Gasket, Bonnet (Appendix F, Figure 10, Item 15)
Washer, Lock (Appendix F, Figure 10, Item 8)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-10.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove wheel nut (1) and handwheel (2).

(2) Remove packing nut (3), packing spring (4), packing gland (5), and packing (6) from bonnet (7). Discard packing (6).

(3) Remove eight nuts (7), eight lock washers (8), and eight screws (9). Discard lock washers (8).

(4) Remove bonnet (10) and bonnet gasket (11) from gate valve as sembly (12). Discard bonnet gasket (11).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

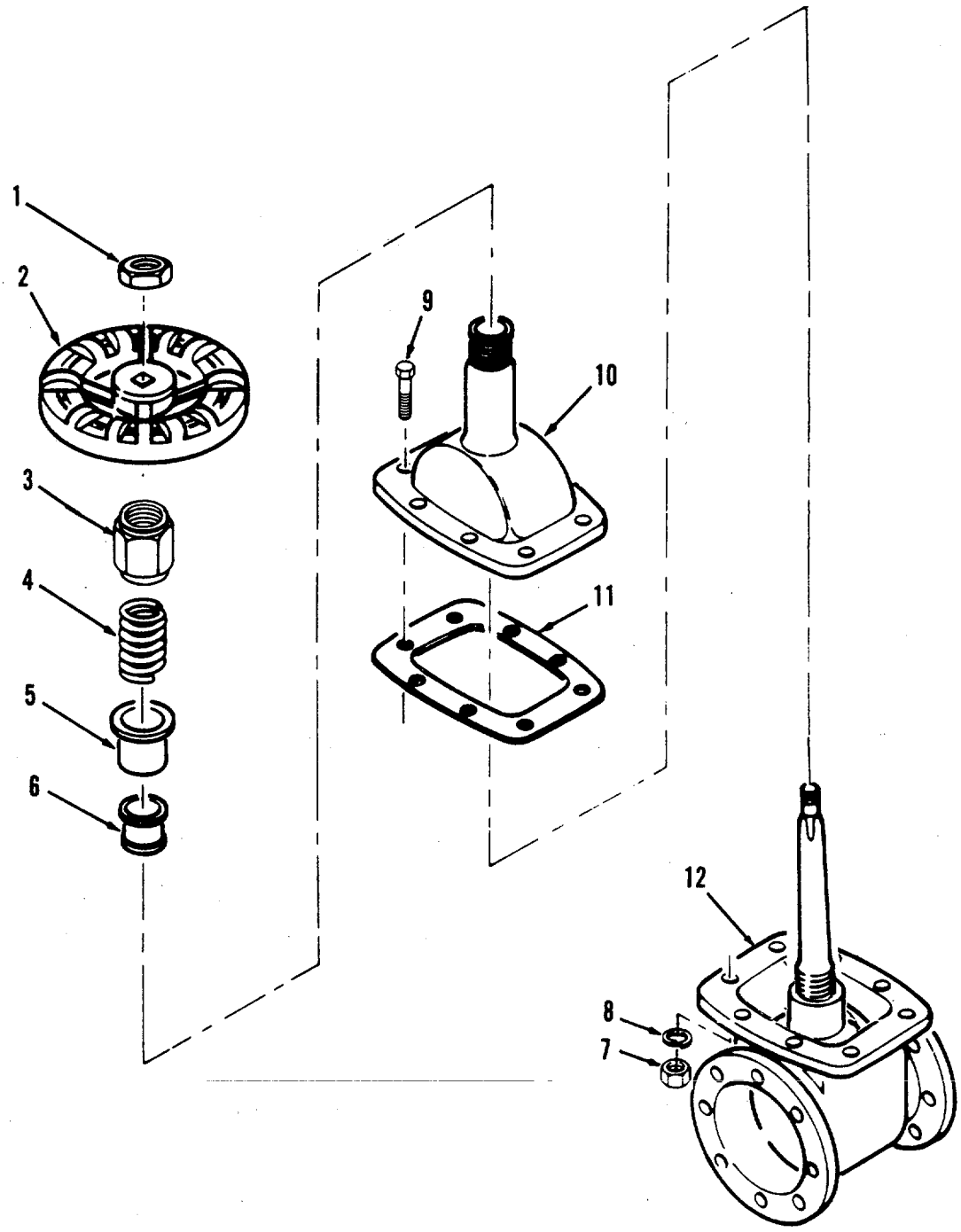


Figure 4-10. Valve, 4.00 Inch gate.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check for smooth operation of gate valve by turning handwheel.

D Assembly.

(1) Install new bonnet gasket (11) and bonnet (7) onto gate valve assembly (12).

(2) Install eight screws (9), eight new lock washers (8), and eight nuts (7).

(3) Install new packing (6), packing gland (5), packing spring (4), and packing nut (3) onto bonnet (7).

(4) Install handwheel (2) and wheel nut (1).

4-20. MANIFOLD ASSEMBLY, TYPE 1.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-11.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect plug (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from coupling half (6).

(3) Remove quick disconnect cap (7) and gasket (8) from coupling half (9).

(4) Remove quick disconnect cap (10) and gasket (11) from coupling half (12).

(5) Remove eight screws (13), eight flat washers (14), eight lock washers (15), eight nuts (16), gasket (17), and coupling half (3) from tee (18). Discard gasket (17) and lock washers (15).

(6) Remove eight screws (19), eight flat washers (20), eight lock washers (21), eight nuts (22), gasket (23), and coupling half (9) from tee (18). Discard gaskets (23) and lock washers (21).

(7) Remove eight screws (24), eight flat washers (25), eight lock washers (26), eight nuts (27), gasket (28), and coupling half (6) from tee (29). Discard gaskets (28) and lock washers (26).

(8) Remove eight screws (30), eight flat washers (31), eight lock washers (32), eight nuts (33), gasket (34), and coupling half (12) from tee (29). Discard gaskets (34) and lock washers (32).

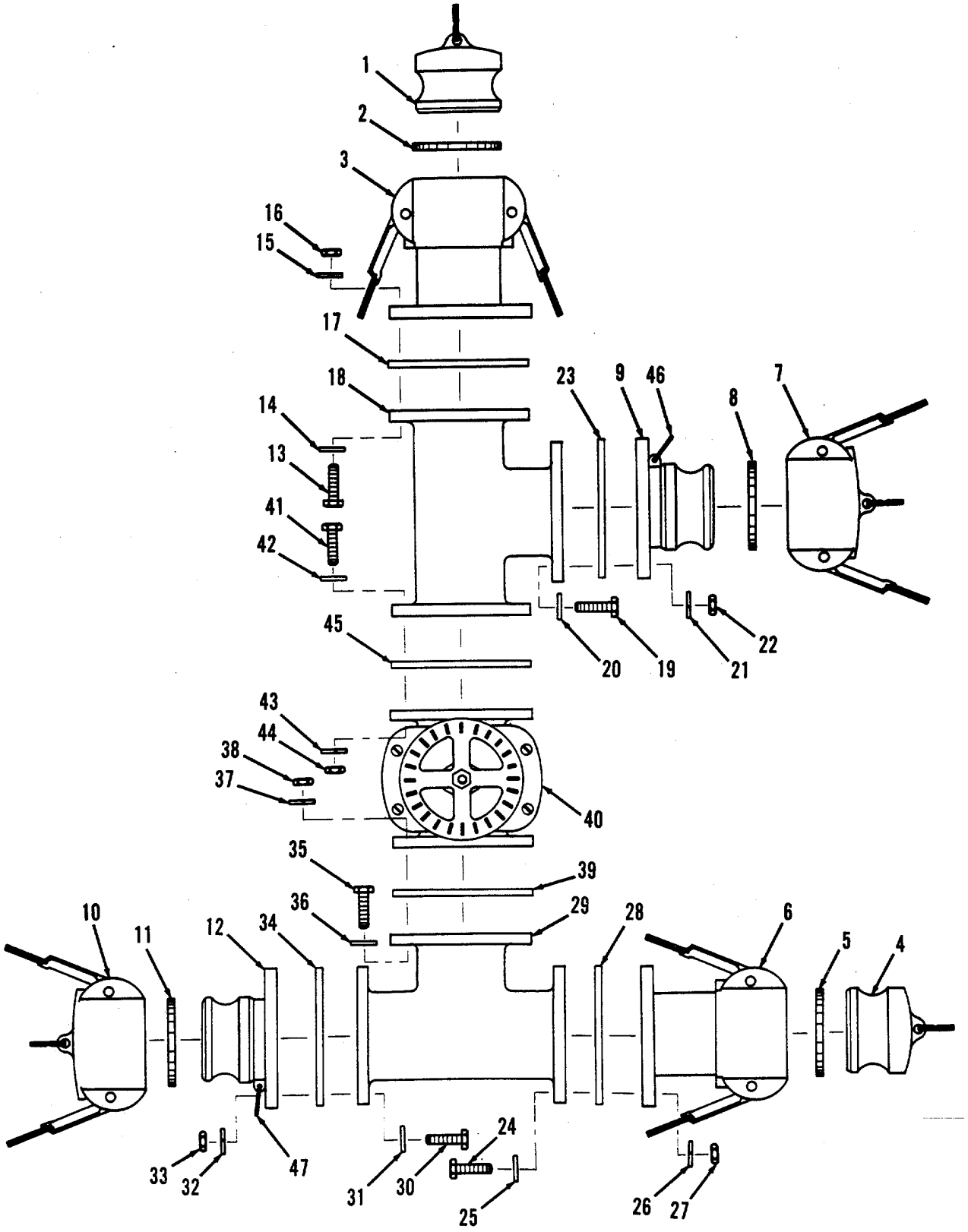


Figure 4-11. Manifold Assembly, Type I.

(9) Remove eight screws (35), eight flat washers (36), eight lock washers (37), eight nuts (38), gasket (39), and tee (29) from gate valve (40). Discard gaskets (39) and lock washers (37).

(10) Remove eight screws (41), eight flat washers (42), eight lock washers (43), eight nuts (44), gasket (45), and gate valve (40) from tee (18). Discard gaskets (45) and lock washers (43). Refer to paragraph 4-19 for repair of gate valve.

(11) Remove split ring (46) from coupling half (9).

(12) Remove split ring (47) from coupling half (12).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check gate valve assembly for crack surfaces, bent handwheel and for smooth handwheel operation.

d. Assembly.

(1) Install split ring (47) onto coupling half (12).

(2) Install split ring (46) onto coupling half (9).

(3) Install gate valve (40), new gasket (45), eight nuts (44), eight new lock washers (43), eight flat washers (42), and eight screws (41) onto tee (18).

(4) Install tee (29), new gasket (39), eight nuts (38), eight new lock washers (37), eight flat washers (36), and eight screws (35) onto gate valve (40).

(5) Install coupling half (12), new gasket (34), eight nuts (33), eight new lock washers (32), eight flat washers (31), and eight screws (30) onto tee (29).

(6) Install coupling half (6), new gasket (28), eight nuts (27), eight new lock washers (26), eight flat washers (25), and eight screws (24) onto tee (29).

(7) Install coupling half (9), new gasket (23), eight nuts (22), eight new lock washers (21), eight flat washers (20), and eight screws (19) onto tee (18).

(8) Install coupling half (3), new gasket (17), eight nuts (16), eight new lock washers (15), eight flat washers (14), and eight screws (13) onto tee (18).

(9) Install gasket (11) and quick disconnect cap (10) onto coupling half (12).

(10) Install gasket (8) and quick disconnect cap (7) onto coupling half (9).

(11) Install gasket (5) and quick disconnect plug (4) onto coupling half (6).

(12) Install gasket (2) and quick disconnect plug (1) onto coupling half (3).

4-21. MANIFOLD ASSEMBLY, TYPE II.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-12.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect cap (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from coupling half (6).

(3) Remove quick disconnect plug (7) and gasket (8) from coupling half (9).

(4) Remove eight screws (10), eight flat washers (11), eight lock washers (12), eight nuts (13), gasket (14), and coupling half (3) from tee (15). Discard gasket (14) and lock washers (12).

(5) Remove eight screws (16), eight flat washers (17), eight lock washers (18), eight nuts (19), gasket (20), and coupling half (9) from tee (15). Discard gasket (20) and lock washers (18).

(6) Remove eight screws (21), eight flat washers (22), eight lock washers (23), eight nuts (24), gasket (25), and coupling half (6) from gate valve (31). Discard gasket (25) and lock washers (23).

(7) Remove eight screws (26), eight flat washers (27), eight lock washers (28), eight nuts (29), gasket (30), and gate valve (31) from tee (15). Discard gasket (30) and lock washers (28). Refer to paragraph 4-19 for repair of gate valve.

(8) Remove split ring (32) from coupling half (3).

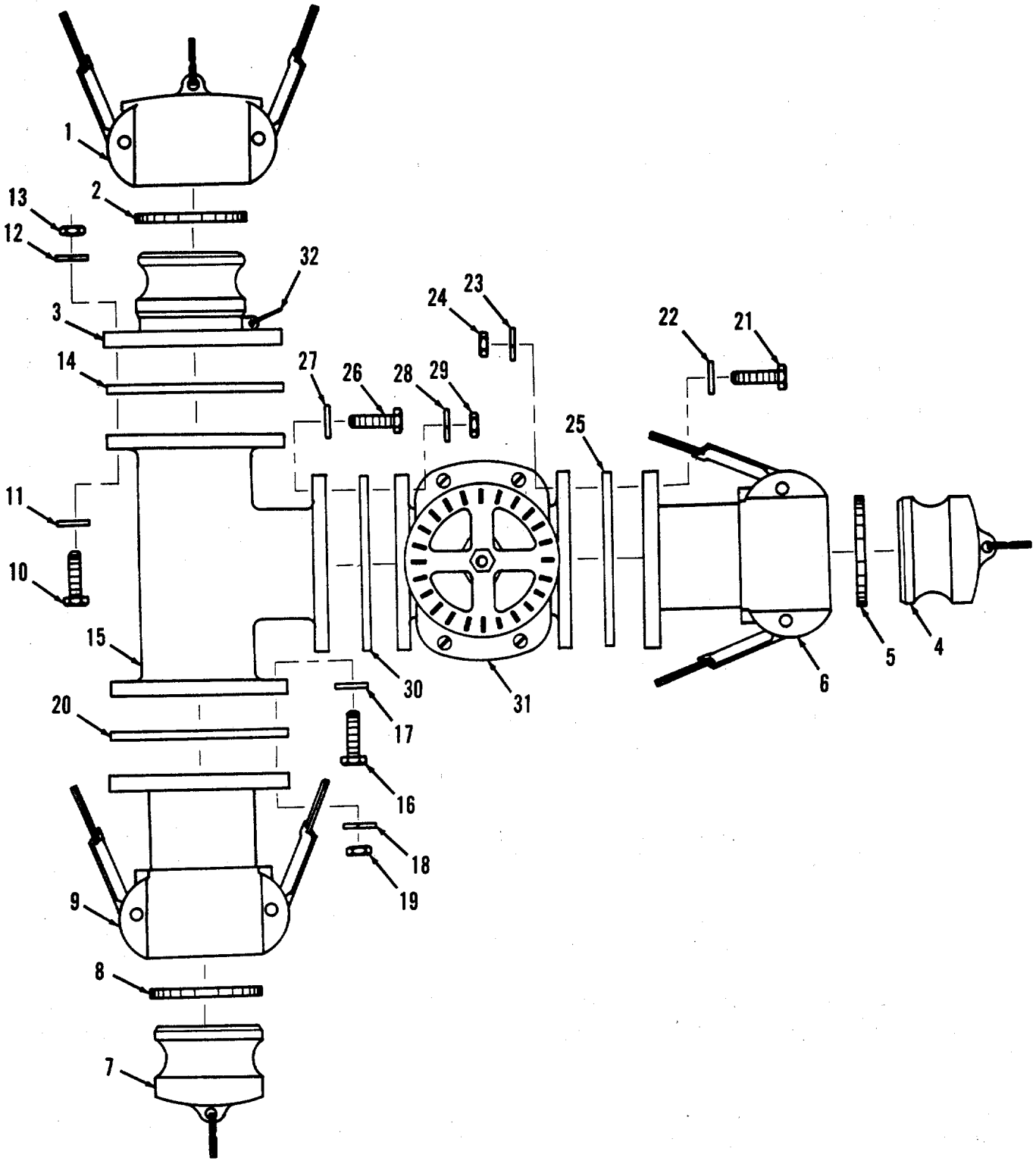


Figure 4-12. Manifold Assembly, Type II.

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check gate valve assembly for crack sur faces, bent handwheel and for smooth handwheel operation.

d. Assembly.

(1) Install split ring (32) onto coupling half (3).

(2) Install gate valve (31), new gasket (30), eight nuts (29), eight new lock washers (28), eight flat washers (27), and eight screws (26) onto tee (15).

(3) Install coupling half (6), new gasket (25), eight nuts (24), eight new lock washers (23), eight flat washers (22), and eight screws (21) onto gate valve (31).

(4) Install coupling half (9), new gasket (20), eight nu ts (19), eight new lock washers (18), eight flat washers (17), and eight screws (16) onto tee (15).

(5) Install coupling half (3), new gasket (14), eight nuts (13), eight new lock washers (12), eight flat washers (11), and eight screws (10) onto tee (15).

(6) Install gasket (8) and quick disconnect plug (7) onto coupling half (9).

(7) Install gasket (5) and quick disconnect plug (4) onto coupling half (6).

(8) Install gasket (2) and quick disconnect cap (1) onto coupling half (3).

4-22. TEE ASSEMBLY, 4.00 INCH MALE X 4.00 INCH FEMALE X 4.00 INCH FEMALE.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-13.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect cap (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from coupling half (6).

(3) Remove quick disconnect plug (7) and gasket (8) from coupling half (9).

(4) Remove eight screws (10), eight flat washers (11), eight lock washers (12), eight nuts (13), gasket (14), and coupling half (3) from tee (15). Discard gasket (14) and lock washers (12).

(5) Remove eight screws (16), eight flat washers (17), eight lock washers (18), eight nuts (19), gasket (20), and coupling half (6) from tee (15). Discard gasket (20) and lock washers (18).

(6) Remove eight screws (21), eight flat washers (22), eight lock washers (23), eight nuts (24), gasket (25), and coupling half (9) from tee (15). Discard gasket (25) and lock washers (23).

(7) Remove split ring (26) from coupling half (3).

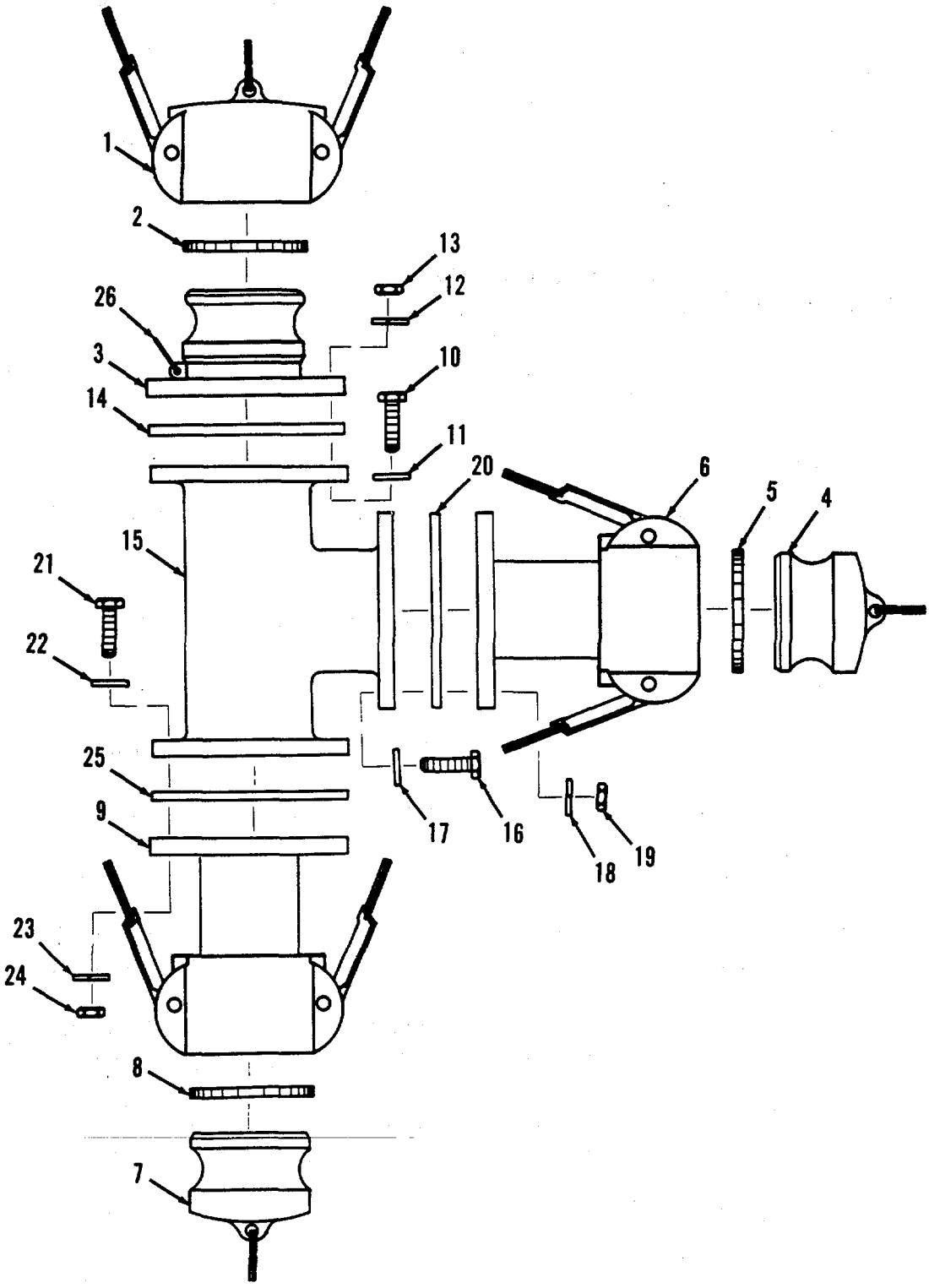


Figure 4-13. Tee Assembly, 4.00 Inch Male x 4.00 Inch Female x 4.00 Inch Female.

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check gate valve assembly for crack surfaces, bent handwheel and for smooth handwheel oper ation.

d. Assembly.

(1) Install split ring (26) onto coupling half (3).

(2) Install coupling half (9), new gasket (25), eight nuts (24), eight new lock washers (23), eight flat washers (22), and eight screws (21) onto tee (15).

(3) Install coupling half (6), new gasket (20), eight nuts (19), eight new lock washers (18), eight flat washers (17), and eight screws (16) onto tee (15).

(4) Install coupling half (3), new gasket (14), eight nuts (13), eight new lock washers (12), eight flat washers (11), and eight screws (10) onto tee (15).

(5) Install gasket (8) and quick disconnect plug (7) onto coupling half (9).

(6) Install gasket (5) and quick disconnect plug (4) onto coupling half (6).

(7) Install gasket (2) and quick disconnect cap (1) onto coupling half (3).

4-23. TEE ASSEMBLY, 4.00 INCH MALE X 4.00 INCH MALE X 4.00 INCH FEMALE.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-14.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a Disassembly.

(1) Remove quick disconnect plug (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect cap (4) and gasket (5) from coupling half (6).

(3) Remove quick disconnect cap (7) and gasket (8) from coupling half (9).

(4) Remove eight screws (10), eight flat washers (11), eight lock washers (12), eight nuts (13), gasket (14), and coupling half (3) from tee (15). Discard gasket (14) and lock washers (12).

(5) Remove eight screws (16), eight flat washers (17), eight lock washers (18), eight nuts (19), gasket (20), and coupling half (6) from tee (15). Discard gasket (20) and lock washers (18).

(6) Remove eight screws (21), eight flat washers (22), eight lock washers (23), eight nuts (24), gasket (25), and coupling half (9) from tee (15). Discard gasket (25) and lock washers (23).

(7) Remove split ring (26) from coupling half (3).

(8) Remove split ring (27) from coupling half (6).

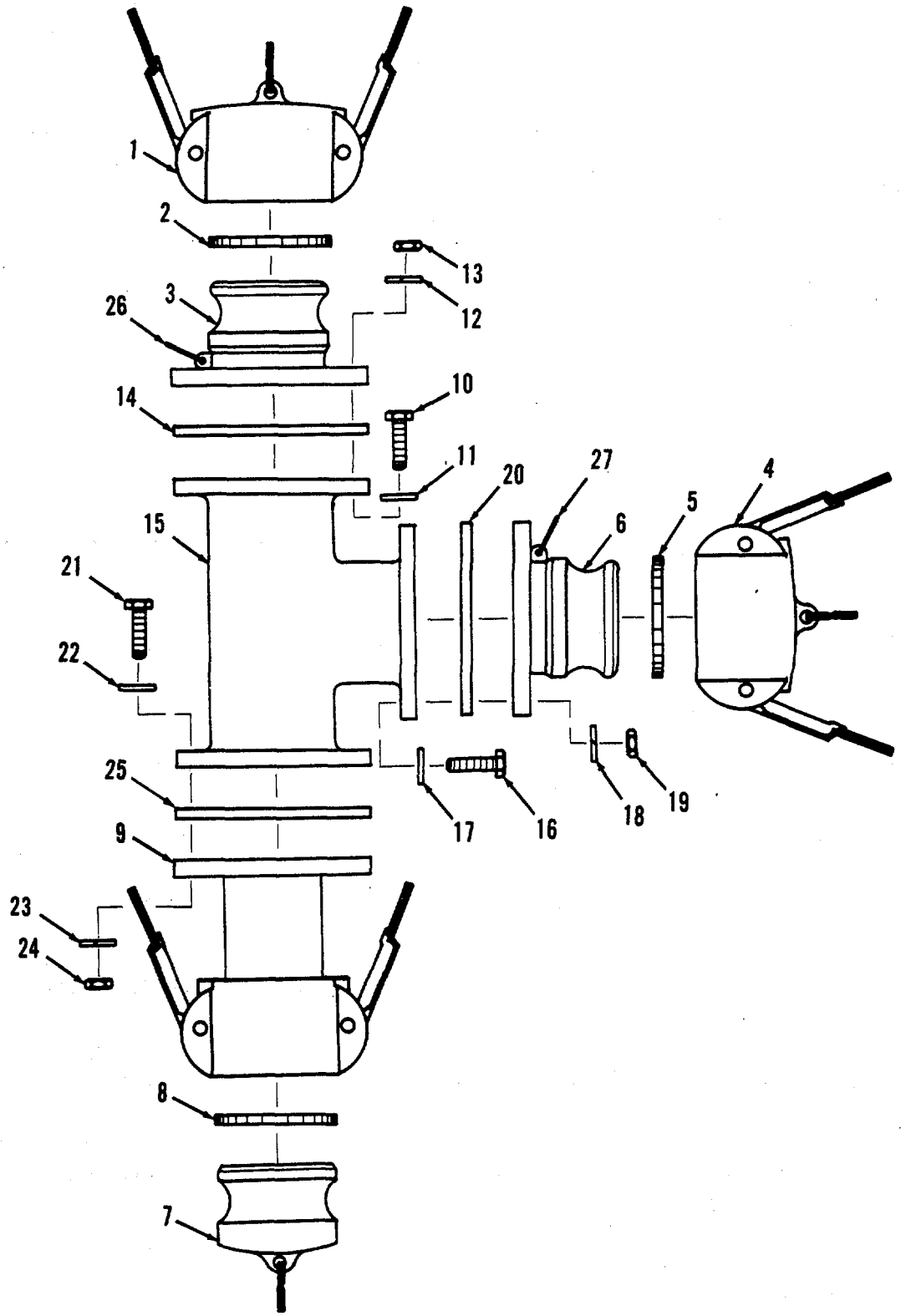


Figure 4-14. Tee Assembly, 4.00 Inch Male x 4.00 Inch Male x 4.00 Inch Female.

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check gate valve assembly for crack surfaces, bent handwheel and for smooth handwheel operation.

d. Assembly.

(1) Install split ring (27) onto coupling half (6).

(2) Install split ring (26) onto coupling half (3).

(3) Install coupling half (9), new gasket (25), eight nuts (24), eight new lock washers (23), eight flat washers (22), and eight screws (21) onto tee (15).

(4) Install coupling half (9), new gasket (20), eight nuts (19), eight new lock washers (18), eight flat washers (17), and eight screws (16) onto tee (15).

(5) Install coupling half (3), new gasket (14), eight nuts (13), eight new lock washers (12), eight flat washers (11), and eight screws (10) onto tee (15).

(6) Install gasket (8) and quick disconnect plug (7) onto coupling half (9).

(7) Install gasket (5) and quick disconnect cap (4) onto coupling half (6).

(8) Install gasket (2) and quick disconnect cap (1) onto coupling half (3).

4-24. TEE ASSEMBLY, 3.00 INCH MALE X 2.00 INCH MALE X 3.00 INCH FEMALE.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-15.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect cap (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect cap (4) and gasket (5) from coupling half (6).

(3) Remove quick disconnect plug (7) and gasket (8) from coupling half (9).

(4) Remove eight screws (10), eight flat washers (11), eight lock washers (12), eight nuts (13), gasket (14), and coupling half (3) from tee (15). Discard gasket (14) and lock washers (12).

(5) Remove eight screws (16), eight flat washers (17), eight lock washers (18), eight nuts (19), gasket (20), and coupling half (6) from tee (15). Discard gasket (20) and lock washers (18).

(6) Remove eight screws (21), eight flat washers (22), eight lock washers (23), eight nuts (24), gasket (25), and coupling half (9) from tee (15). Discard gasket (25) and lock washers (23).

(7) Remove split ring (26) from coupling half (3).

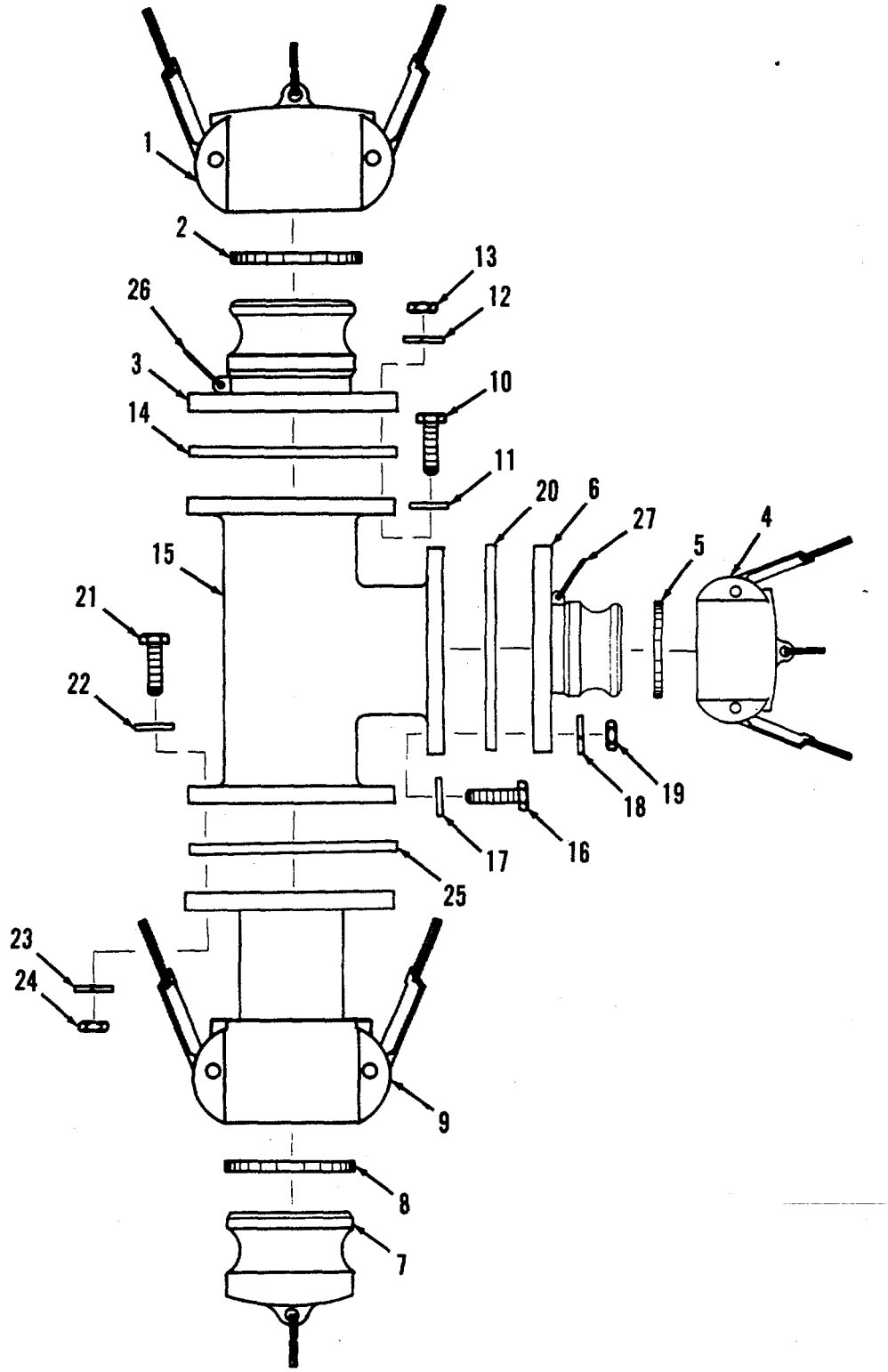


Figure 4-15. Tee Assembly, 3.00 Inch Male x 2.00 Inch Male x 3.00 Inch Female.

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfa ces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fitting s.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check gate valve assembly for crack surfaces, bent handwheel and for smooth handwheel operation.

d. Assembly.

(1) Install split ring (26) onto coupling half (3).

(2) Install coupling half (9), new gasket (25), eight nuts (24), eight new lock washers (23), eight flat washers (22), and eight screws (21) onto tee (15).

(3) Install coupling half (6), new gasket (20), eight nuts (19), eight new lock washers (18), eight f lat washers (17), and eight screws (16) onto tee (15).

(4) Install coupling half (3), new gasket (14), eight nuts (13), eight new lock washers (12), eight flat washers (11), and eight screws (10) onto tee (15).

(5) Install gasket (8) and quick disconnect plug (7) onto coupling half (9).

(6) Install gasket (5) and quick disconnect cap (4) onto coupling half (6).

(7) Install gasket (2) and quick disconnect cap (1) onto coupling half (3).

4-25. TEE ASSEMBLY, 3.00 INCH MALE X 1.50 INCH MALE X 3.00 INCH FEMALE.

This Task Covers:

Repair

I

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-16.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect cap (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect cap (4), gasket (5), coupler (6), and gasket (7) from coupling half (8).

(3) Remove quick disconnect plug (9) and gasket (10) from coupling half (11).

(4) Remove eight screws (12), eight flat washers (13), eight lock washers (14), eight nuts (15), gasket (16), and coupling half (3) from tee (17). Discard gasket (16) and lock washers (9).

(5) Remove eight screws (18), eight flat washers (19), eight lock washers (20), eight nuts (21), gasket (22), and coupling half (8) from tee (17). Discard gasket (22) and lock washers (9).

(6) Remove eight screws (23), eight flat washers (24), eight lock washers (25), eight nuts (26), gasket (27), and coupling half (11) from tee (17). Discard gasket (27) and lock washers (9).

(7) Remove split ring (28) from coupling half (3).

(8) Remove split ring (29) from coupling half (8).

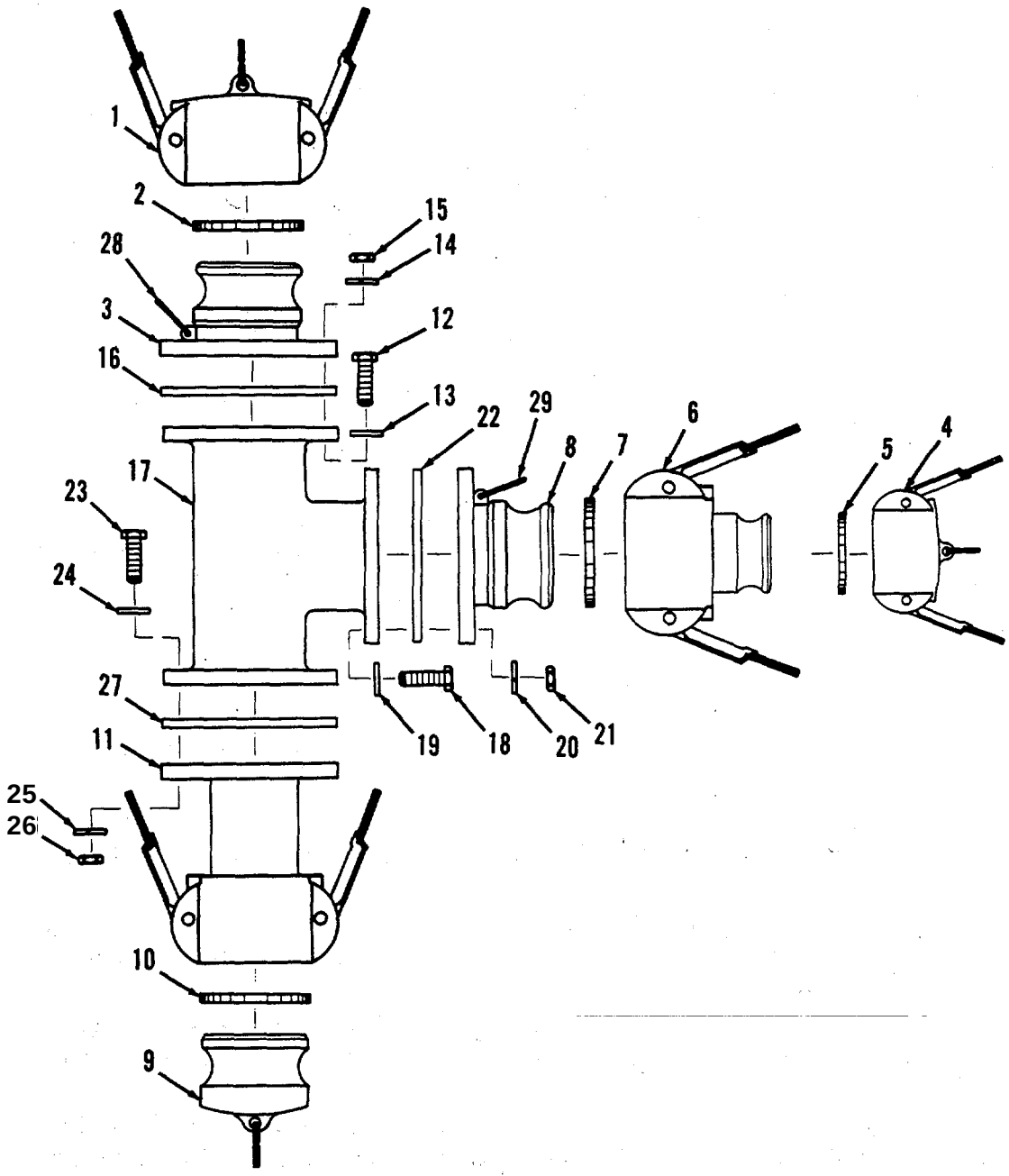


Figure 4-16. Tee Assembly, 3.00 Inch Male x 1.50 Inch Male x 3.00 Inch Female.

b. **Clean.**

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. **Inspection**

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

d. **Assembly.**

(1) Install split ring (29) onto coupling half (8).

(2) Install split ring (28) onto coupling half (3).

(3) Install coupling half (11), new gasket (27), eight nuts (26), eight new lock washers (25), eight flat washers (24), and eight screws (23) onto tee (17).

(4) Install coupling half (8), new gasket (22), eight nuts (21), eight new lock washers (20), eight flat washers (19), and eight screws (18) onto tee (17).

(5) Install coupling half (3), new gasket (16), eight nuts (15), eight new lock washers (14), eight flat washers (13), and eight screws (12) onto tee (17).

(6) Install gasket (10) and quick disconnect plug (9) onto coupling half (11).

(7) Install gasket (7), coupler (6), gasket (5), and quick disconnect cap (4) onto coupling half (8).

(8) Install gasket (2) and quick disconnect cap (1) onto coupling half (3).

4-26. WYE AND TEE ASSEMBLY, 4.00 INCH.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-17.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. **Disassembly.**

(1) Remove quick disconnect plug (1) and gasket (2) from cou pling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from coupling half (6).

(3) Remove quick disconnect plug (7) and gasket (8) from coupling half (9).

(4) Remove quick disconnect cap (10) and gasket (11) from coupling half (12).

(5) Remove eight screws (13), eight flat washers (14), eight lock washers (15), eight nuts (16), gasket (17), and coupling half (3) from wye (18). Discard gasket (17) and lock washers (15).

(6) Remove eight screws (19), eight flat washers (20), eight lock washers (21), eight nuts (22), gasket (23), and coupling half (6) from wye (18). Discard gasket (23) and lock washers (21).

(7) Remove eight screws (24), eight flat washers (25), eight lock washers (26), eight nuts (27), gasket (28), and coupling half (12) from tee (29). Discard gasket (28) and lock washers (26).

(8) Remove eight screws (30), eight flat washers (31), eight lock washers (32), eight nuts (33), gasket (34), and coupling half (9) from tee (29). Discard gaskets (34) and lock washers (32).

(9) Remove eight screws (35), eight flat washers (36), eight lock washers (37), eight nuts (38), gasket (39), and tee (29) from wye (18). Discard gaskets (39) and lock washers (37).

(10) Remove split ring (40) from coupling half (12).

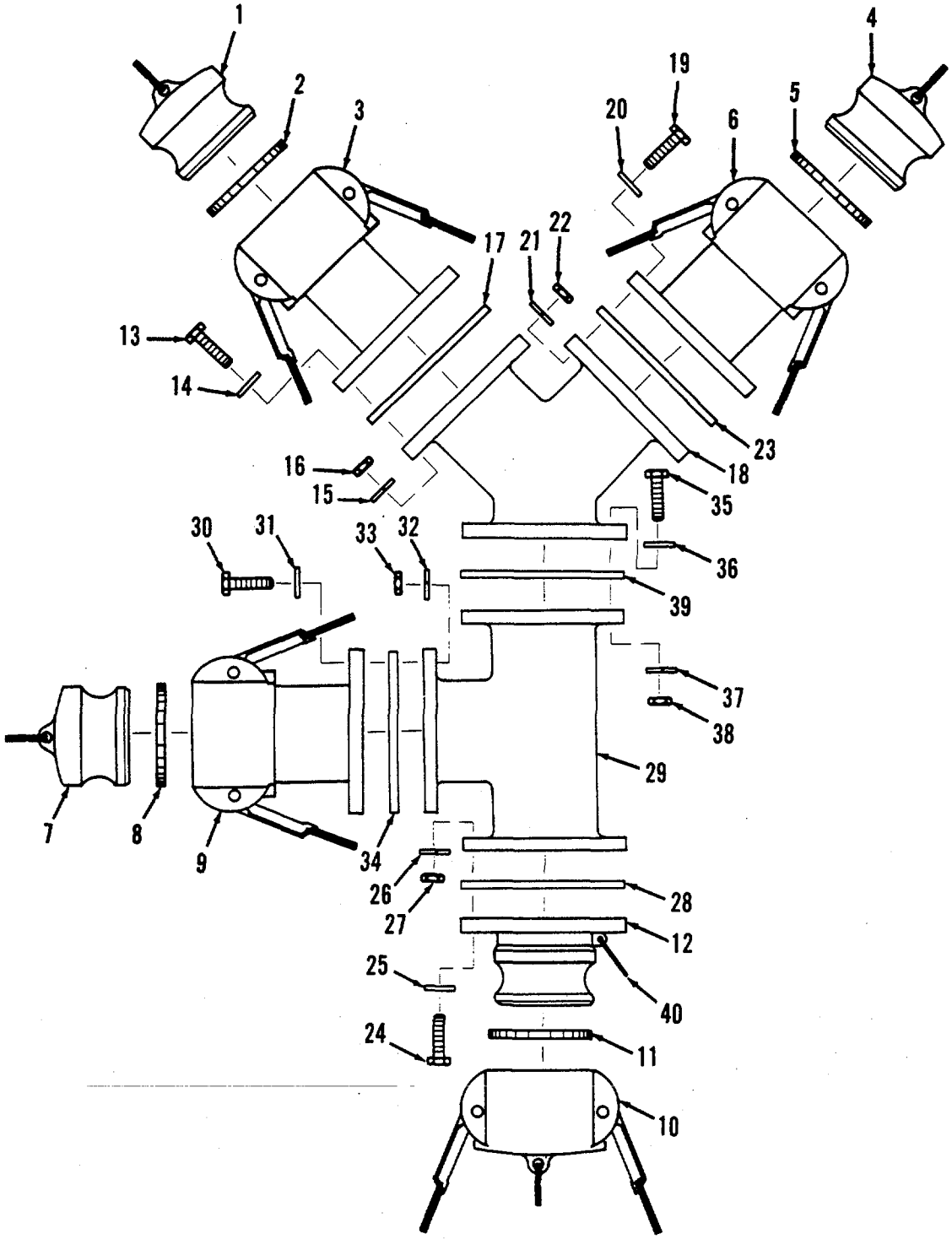


Figure 4-17. Wye and Tee Assembly, 4.00 Inch.

b. **Clean.**

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. **Inspection.**

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

d. **Assembly.**

(1) Install split ring (40) onto coupling half (12).

(2) Install wye (18), new gasket (39), eight nuts (38), eight new lock washers (37), eight flat washers (36), and eight screws (35) onto tee (29).

(3) Install coupling half (9), new gasket (34), eight nuts (33), eight new lock washers (32), eight flat washers (31), and eight screws (30) onto tee (29).

(4) Install coupling half (12), new gasket (28), eight nuts (27), eight new lock washers (26), eight flat washers (25), and eight screws (24) onto tee (29).

(5) Install coupling half (6), new gasket (23), eight nuts (22), eight new lock washers (21), eight flat washers (20), and eight screws (19) onto wye (18).

(6) Install coupling half (3), new gasket (17), eight nuts (16), eight new lock washers (15), eight flat washers (14), and eight screws (13) onto wye (18).

(7) Install gasket (11) and quick disconnect cap (10) onto coupling half (12).

(8) Install gasket (8) and quick disconnect plug (7) onto coupling half (9).

(9) Install gasket (5) and quick disconnect plug (4) onto coupling half (6).

(10) Install gasket (2) and quick disconnect plug (1) onto coupling half (3).

4-27. WYE ASSEMBLY, 4.00 INCH, FEMALE TO MALE.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item, 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-18.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. **Disassembly.**

(1) Remove quick disconnect cap (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect cap (4) and gasket (5) from coupling half (6).

(3) Remove quick disconnect plug (7) and gasket (8) from coupling half (9).

(4) Remove eight screws (10), eight flat washers (11), eight lock washers (12), eight nuts (13), gasket (14), and coupling half (3) from wye (15). Discard gasket (14) and lock washers (12).

(5) Remove eight screws (16), eight flat washers (17), eight lock washers (18), eight nuts (19), gasket (20), and coupling half (6) from wye (15). Discard gasket (20) and lock washers (18).

(6) Remove eight screws (21), eight flat washers (22), eight lock washers (23), eight nuts (24), gasket (25), and coupling half (9) from wye (15). Discard gasket (25) and lock washers (23).

(7) Remove split ring (26) from coupling half (3).

(8) Remove split ring (27) from coupling half (6).

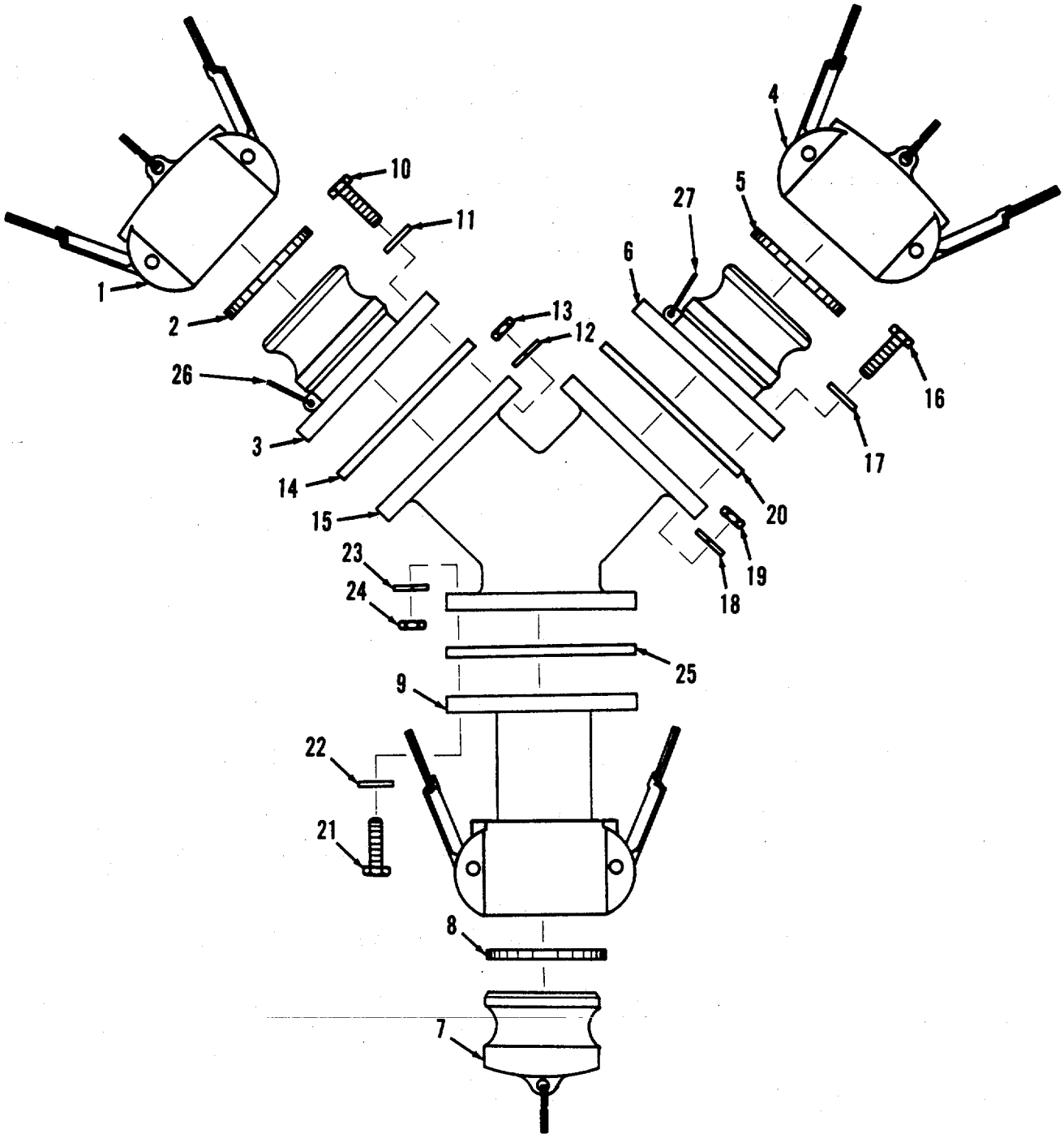


Figure 4-18. Wye Assembly, 4.00 Inch, Female to Male.

b. **Clean.**

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. **Inspection.**

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

d. **Assembly.**

(1) Install split ring (27) onto coupling half (6).

(2) Install split ring (26) onto coupling half (3).

(3) Install coupling half (9), new gasket (25), eight nuts (24), eight new lock washers (23), eight flat washers (22), and eight screws (21) onto wye (15).

(4) Install coupling half (6), new gasket (20), eight nuts (19), eight new lock washers (18), eight flat washers (17), and eight screws (16) onto wye (15).

(5) Install coupling half (3), new gasket (14), eight nuts (13), eight new lock washers (12), eight flat washers (11), and eight screws (10) onto wye (15).

(6) Install gasket (8) and quick disconnect plug (7) onto coupling half (9).

(7) Install gasket (5) and quick disconnect cap (4) onto coupling half (6).

(8) Install gasket (2) and quick disconnect cap (1) onto coupling half (3).

4-28. WYE ASSEMBLY, 4.00 INCH, MALE TO FEMALE.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Gasket, Cork (Appendix E, Item 5)
Washer, Lock, Split (Appendix E, Item 4)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-19.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. **Disassembly.**

(1) Remove quick disconnect plug (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect plug (4) and gasket (5) from coupling half (6).

(3) Remove quick disconnect cap (7) and gasket (8) from coupling half (9).

(4) Remove eight screws (10), eight flat washers (11), eight lock washers (12), eight nuts (13), gasket (14), and coupling half (3) from wye (15). Discard gasket (14) and lock washers (12).

(5) Remove eight screws (16), eight flat washers (17), eight lock washers (18), eight nuts (19), gasket (20), and coupling half (6) from wye (15). Discard gasket (20) and lock washers (18).

(6) Remove eight screws (21), eight flat washers (22), eight lock washers (23), eight nuts (24), gasket (25), and coupling half (9) from wye (15). Discard gasket (25) and lock washers (23).

(7) Remove split ring (26) from coupling half (9).

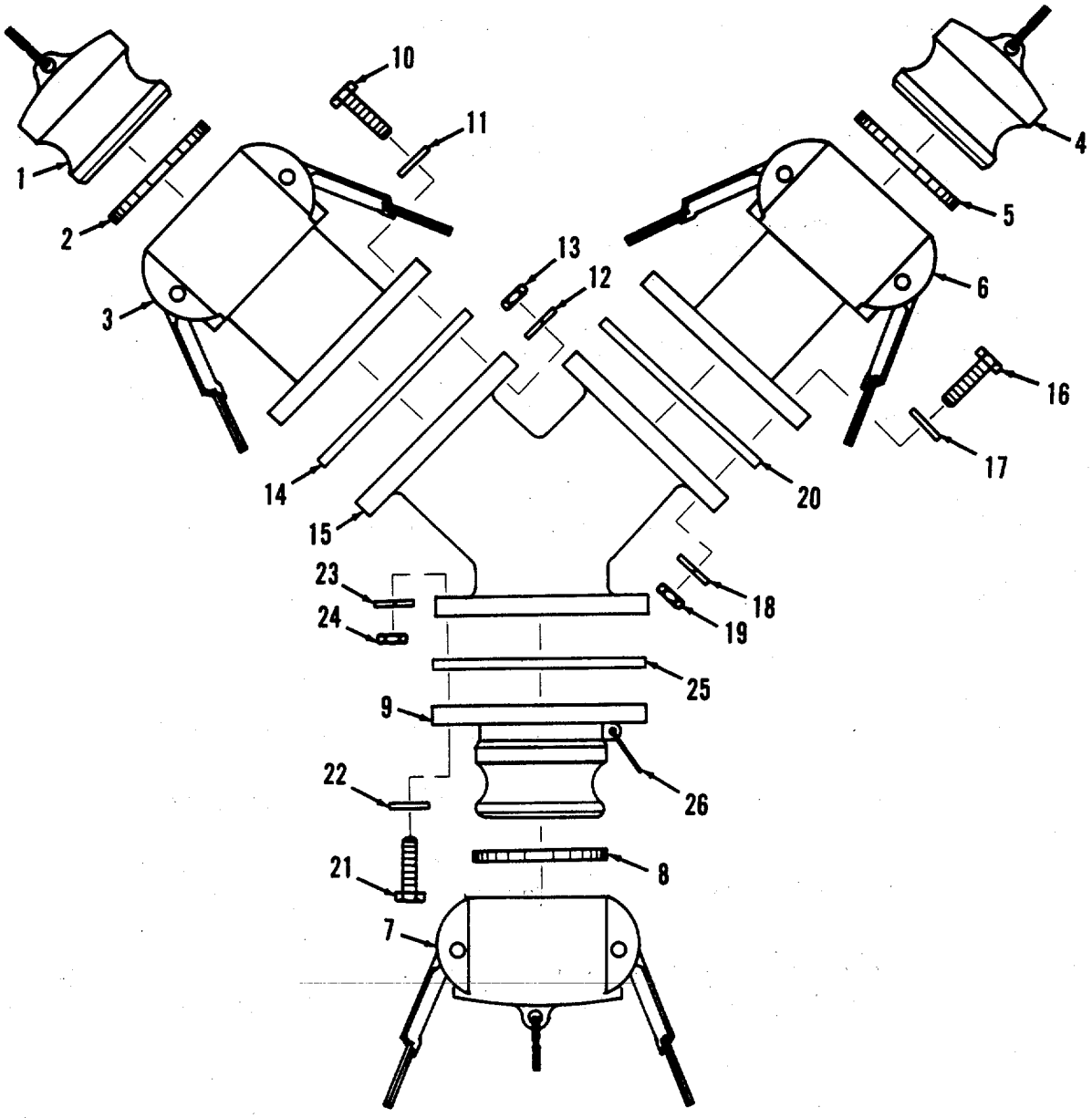


Figure 4-19. Wye Assembly, 4.00 Inch, Male to Female.

b. **Clean.**

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. **Inspection.**

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

d. **Assembly.**

(1) Install split ring (26) onto coupling half (9).

(2) Install coupling half (9), new gasket (25), eight nuts (24), eight new lock washers (23), eight flat washers (22), and eight screws (21) onto wye (15).

(3) Install coupling half (6), new gasket (20), eight nuts (19), eight new lock washers (18), eight flat washers (17), and eight screws (16) onto wye (15).

(4) Install coupling half (3), new gasket (14), eight nuts (13), eight new lock washers (12), eight flat washers (11), and eight screws (10) onto wye (15).

(5) Install gasket (8) and quick disconnect cap (7) onto coupling half (9).

(6) Install gasket (5) and quick disconnect plug (4) onto coupling half (6).

(7) Install gasket (2) and quick disconnect plug (1) onto coupling half (3).

4-29. ADAPTER, WATER DETECTOR AND PROBE ASSEMBLY.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Wrench, Chain (2 Each) (Appendix C, Item 40)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Sealing Compound (Appendix C, Item 44)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-20.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. **Disassembly.**

(1) Remove quick disconnect plug (1) and gasket (2) from coupling half (3).

(2) Remove quick disconnect cap (4) and gasket (5) from coupling half (6).

(3) Remove probe assembly (7) from pipe coupling (8).

(4) Remove split ring (9) from quick disconnect cap (4).

b. **Clean.**

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

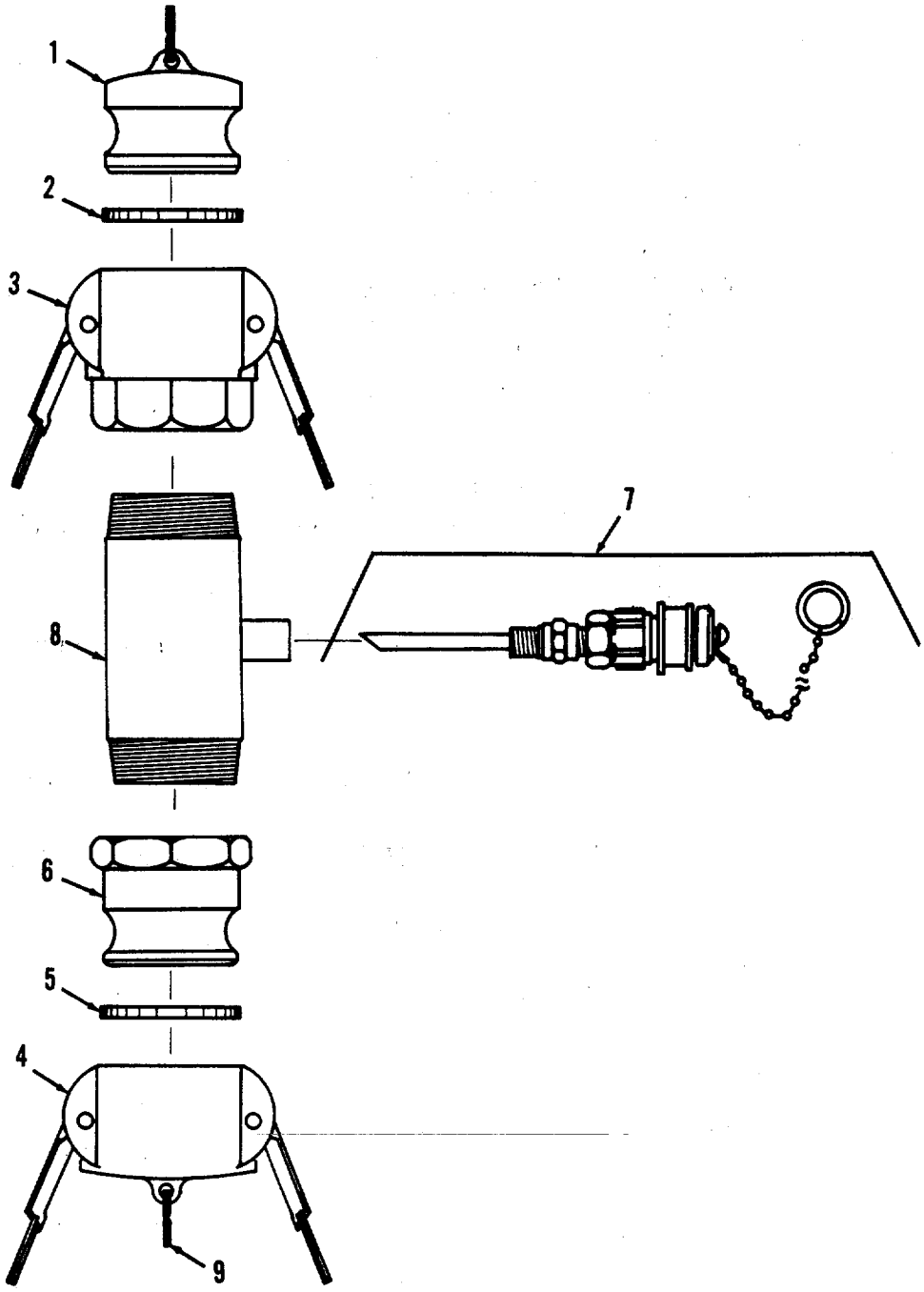


Figure 4-20. Adapter, Water Detector and Probe Assembly.

c. **Inspection.**

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

d. **Assembly.**

(1) Install split ring (9) onto quick disconnect cap (4).

(2) Apply sealing compound (Appendix C, Item 44) to all external threads and install probe assembly (7) into pipe coupling (8).

(3) Apply sealing compound (Appendix C, Item 44) to all external threads and install coupling half (3) and (6) into pipe coupling (8).

(4) Install gasket (5) and quick disconnect cap (4) onto coupling half (6).

(5) Install gasket (2) and quick disconnect plug (1) onto coupling half (3).

4-30. ADAPTER, DOUBLE, 1.50 INCH, 3.00 INCH, AND 4.00 INCH.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Wrench, Chain (2 Each) (Appendix C, Item 40)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Sealing Compound (Appendix C, Item 44)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-21.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. **Disassembly.**

(1) Remove two gaskets (1) from coupling half (2) and coupling half (3).

(2) Remove coupling half (2) from coupling half (3).

b. **Clean.**

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

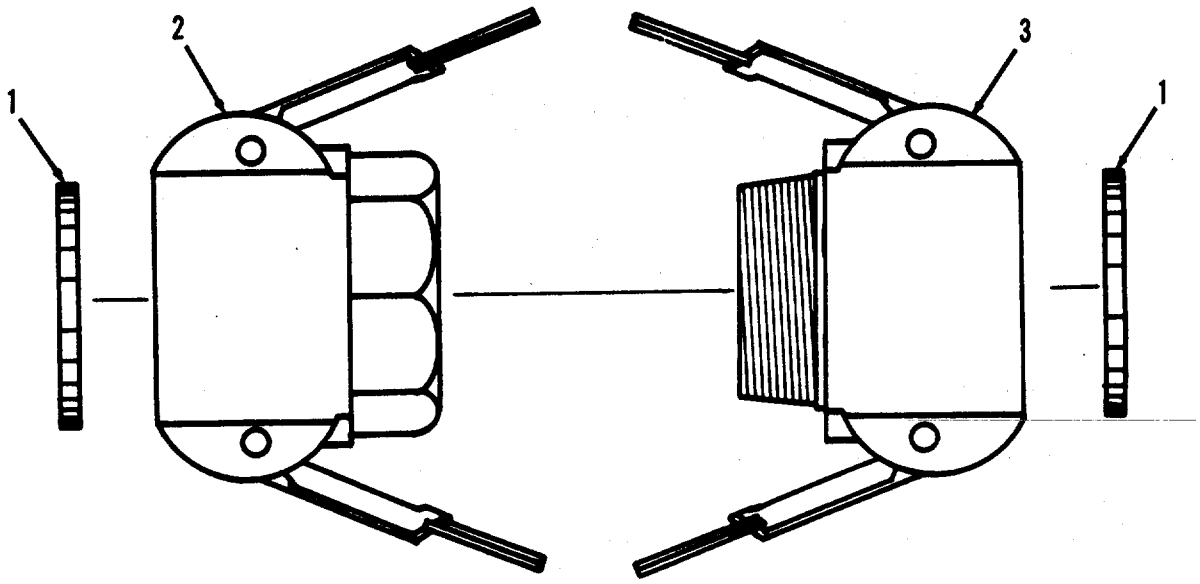


Figure 4-21. Adapter, Double, 1.50 Inch, 3.00 Inch, and 4.00 Inch.

d. Assembly.

(1) Apply sealing compound (Appendix C, Item 44) to all external threads and install coupling half (3) onto coupling half (2).

(2) Install two gaskets (1) into coupling half (3) and coupling half (2).

4-31. NOZZLE ASSEMBLY, 1.00 IN.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Wrench, Chain (2 Each) (Appendix C, Item 40)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Sealing Compound (Appendix C, Item 44)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-22.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect plug (1) and gasket (2) from coupling half (3).

(2) Remove coupling half (3) from nozzle (4).

(3) Remove ground wire assembly (5) from nozzle (4).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

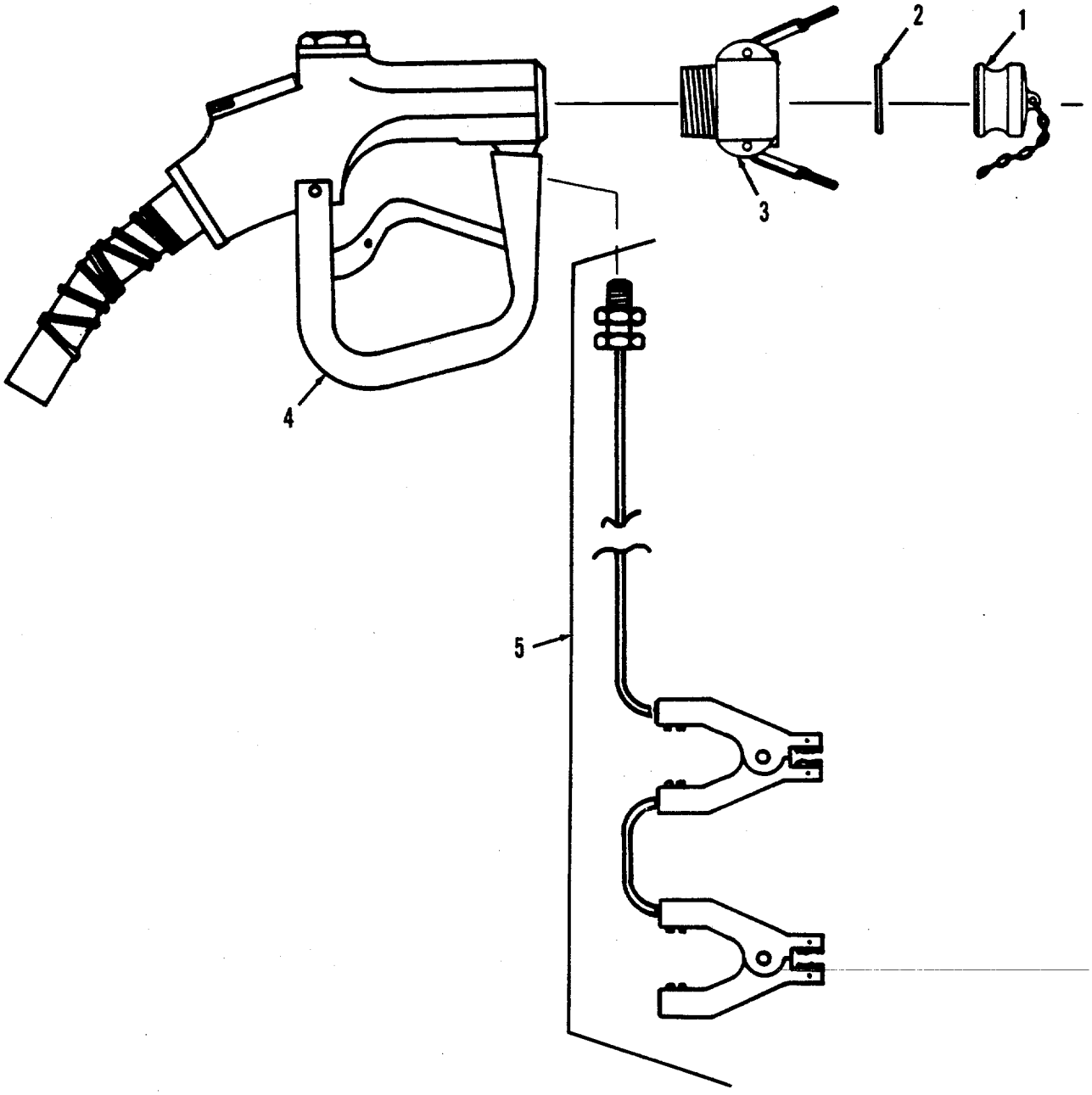


Figure 4-22. Nozzle Assembly, 1.00 Inch.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check that lever operates smoothly.

(4) Inspect ground wire clamp assembly for frayed ground wire and for bent or inoperative grounding clamps.

d. Assembly.

(1) Install ground wire assembly (5) into nozzle (4).

(2) Apply sealing compound (Appendix C, Item 44) to all external threads and install coupling half (3) into nozzle (4).

(3) Install gasket (2) and quick disconnect plug (1) into coupling half (3).

4-32. NOZZLE ASSEMBLY, 1.50 IN.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Wrench, Chain (2 Each) (Appendix C, Item 40)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)
Sealing Compound (Appendix C, Item 44)

Equipment Condition

Assembly removed from FSSP installation.

Repair. (Refer to Figure 4-23.)

NOTE

Repair is limited to replacement of parts found defective during inspection.

a. Disassembly.

(1) Remove quick disconnect plug (1) and gasket (2) from coupling half (3).

(2) Remove coupling half (3) from nozzle (4).

(3) Remove ground wire assembly (5) from nozzle (4).

b. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

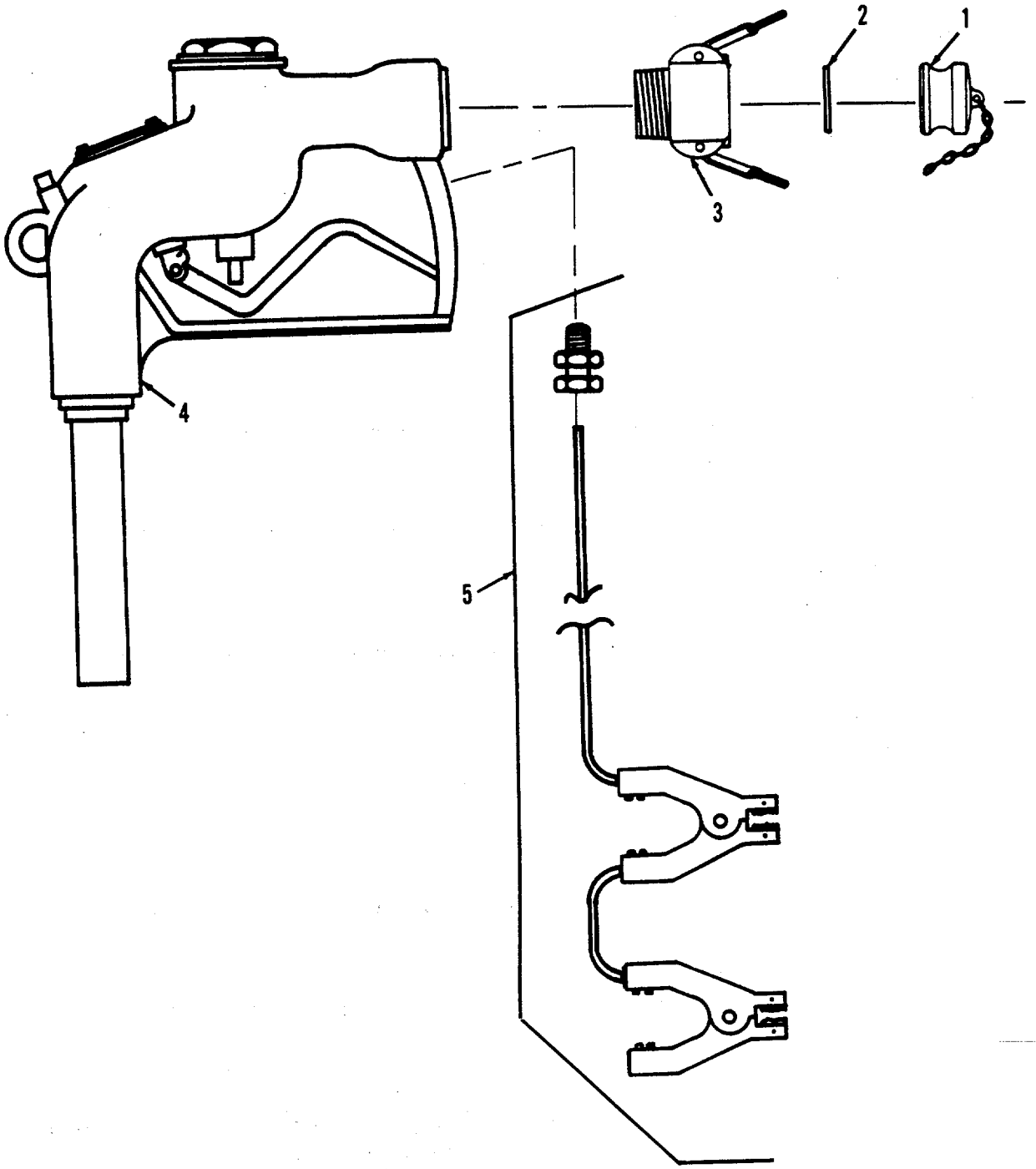


Figure 4-23. Nozzle Assembly, 1.50 Inch.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check that lever operates smoothly.

(4) Inspect ground wire clamp assembly for frayed ground wire and for bent or inoperative grounding clamps.

d. Assembly.

(1) Install ground wire assembly (5) into nozzle (4).

(2) Apply sealing compound (Appendix C, Item 44) to all external threads and install coupling half (3) into nozzle (4).

(3) Install gasket (2) and quick disconnect plug (1) into coupling half (3).

4-33. MISCELLANEOUS.

This Task Covers:

Repair

Initial Setup:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's Required

Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cloth, Lint-Free (Appendix E, Item 1)

Equipment Condition

Assembly removed from FSSP installation.

In addition to the other components listed in the previous chapters and paragraphs of this technical manual, there are a number of various miscellaneous fittings and components which are furnished with the FSSP. The following general maintenance procedures are to be used to verify that these additional miscellaneous components are in proper working order.

a. Clean.

(1) Remove all build up of dirt, oil, and debris from all mating surfaces and clamping areas.

WARNING

DO NOT breath dry cleaning solvent vapors for long periods of time or allow solvent to come into contact with skin for an extended time. DO NOT use solvent near open flames or excessive heat.

(2) Clean all metallic parts with a clean soft cloth (Appendix E, Item 1) or a medium bristle brush (Appendix E, Item 2), and cleaning solvent (Appendix E, Item 3).

(3) Allow parts to dry.

b. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Examine all coupling half gaskets for cracks, tears, or nicks.

(3) Check that all assemblies function as required.

c. Repair.

Repair is limited to replacement of parts found defective during inspection.

Section VI. PREPARATION FOR STORAGE OR SHIPMENT

4-34. PREPARATION FOR STORAGE.

a. Intermediate Storage (46 to 180 days).

(1) Drain all fuel from the FSSP and all of its components.

(2) Disassemble the entire FSSP by referring to paragraph 2-9 and performing the Preparation for Movement procedures.

(3) Refer to Preparation for Storage sections of the applicable technical manuals for the pump units, the filter/separators, and the fuel tanks and prepare those items for long term storage.

(4) Mark the FSSP for intermediate storage in accordance with the standard Army procedures contained in TM 740-90-1, Administrative Storage of Equipment.

b. Long Term or Flyable Storage (Indefinite time). Long term storage procedures are the same as for intermediate storage except the FSSP shall be marked for long term storage in accordance with TM 740-90-1, Administrative Storage of Equipment.

4-35. ADMINISTRATIVE STORAGE.

a. Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness within 24 hours or within the time factors determined by the directing authority. During the storage period appropriate maintenance records will be kept.

b. Before placing equipment in administrative storage, current maintenance services and Equipment Serviceable Criteria (ESC) evaluations should be completed, shortcomings and deficiencies should be corrected, and all Modification Work Orders (MWO) should be applied.

c. Storage site selection. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, conex containers and other containers may be used.

APPENDIX A
REFERENCES

A-1. SCOPE. This appendix lists all forms, field manuals, technical manuals, and miscellaneous publications referenced in this manual.

A-2. FORMS.

Report of Discrepancy ..... SF 364
Equipment Inspection and Maintenance Worksheet ..... DA Form 2404
Maintenance Request ..... DA Form 2407
Quality Deficiency Report ..... SF 368
Recommended Changes to Equipment Technical Publications ..... DA Form 2028-2
Recommended Changes to Publications and Blank Forms ..... DA Form 2028

A-3. FIELD MANUALS.

First Aid For Soldiers ..... FM 21-11

A-4. TECHNICAL MANUALS.

Administrative Storage of Equipment ..... TM 740-90-1
Procedure for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command) ..... TM 750-244-3

A-5. MISCELLANEOUS PUBLICATIONS.

The Army Maintenance Management System ..... DA PAM 738-750
Abbreviations for Use on Drawings, Standards, Specifications and Technical Documents MIL-STD-12
Army Medical Department Expendable/Durable Items ..... CTA 8-100
Consolidated Index of Army Publications and Blank Forms ..... DA PAM 25-30
Environmental Protection and Enhancement ..... (AR) 200-1
Expendable Items (Except Medical Class V, Repair Parts and Heraldic Items) ..... CTA 50-970
Supply Point Operations ..... FM 10-69
Tank Vehicle Operations ..... FM 10-71

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 categories.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove / Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3rd position code of the SMR code.

i. Repair. The application of maintenance services, including fault location/trouble-shooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column 1. Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00."

b. Column 2. Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3. Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column 4. Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart.

The symbol designations for the various maintenance categories are as follows:

C ..... Operator or crew
O ..... Unit Maintenance
F ..... Direct Support Maintenance
H ..... General Support Maintenance
D ..... Depot Maintenance

e. Column 5. Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6. Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. Column 1. Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2. Maintenance Category. The lowest category 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 test equipment.

e. Column 5. Tool Number. The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. Column 1. Reference Code. The code recorded in column 6, Section II.

b. Column 2. Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART FOR FUEL SYSTEM, SUPPLY POINT

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIP	(6) REMARKS
			C	O	F	H	D		
00	Fuel System Supply Point								
01	Hose Assemblies	Inspect	0.2						
		Replace	0.2						
		Repair		1.0				1	
02	Valve Assemblies	Inspect	0.2						
		Replace	0.2						
		Repair		1.0				1	A
03	Manifold Assemblies	Inspect	0.2						
		Replace	0.3						
		Repair		1.0				1	
04	Tee Assemblies	Inspect	0.2						
		Replace	0.3						
		Repair		1.0				1	
05	Wye Assemblies	Inspect	0.2						
		Replace	0.3						
		Repair		1.0				1	
06	Adapter Assemblies	Inspect	0.2						
		Replace	0.3						
		Repair		1.0				1	
07	Nozzle Assemblies	Inspect	0.2						
		Replace	0.2					1	
		Repair		1.0				1	
08	Miscellaneous	Inspect	0.2						
		Replace	0.2						
		Repair		1.0				1	

Section III. SPECIAL TOOLS AND TEST EQUIPMENT REQUIREMENTS

(1) REFERENCE TOOL CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/AUTO STOCK NUMBER	(5) TOOL NUMBER
		Standard tools and test equipment contained in the following kit are adequate to perform the maintenance functions listed in Section II.		
1	O	Tool Kit, General Mechanics	5180-00-177-7033	SC 5180-90-CL-N26 (19099)
		SPECIAL TOOLS		
		(NONE)		

Section IV. REMARKS.

REFERENCE CODE	REMARKS
A	Repair is limited to replacement of packing, gaskets, and through-bolts.

APPENDIX C
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the Fuel System Supply Point to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.

b. Section III. Basic Issue Items (BII). These essential items required to place the Fuel System Supply Point in operation, to operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the system during operation and whenever it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement, based on authorization of the end item by TOE/MTOE. Illustrations are furnished to help you find and identify the items.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column (1) - Illustration Number (Illus. Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. Indicates the National stock number of the item to be used for requisitioning purposes.

c. Column (3) - Description. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (Commercial and Government Entity Code) (in parentheses) and the part number.

d. Column (4) - Unit of Issue (U/I). Indicates how the item is issued for the National Stock Number shown in column two.

e. Column (5) - Quantity required (Qty rqr). Indicates the quantity required.

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number / Usable On Code	(4) U/M	(5) Qty. Rqr
1	4730-01-096-1042	ADAPTER, DOUBLE, QUICK DISCONNECT (97403)13227E9880	EA	3
2	4730-01-NIIN	ADAPTER, DOUBLE, QUICK DISCONNECT (97403) 13222E9891	EA	3
3	4730-01-096-1004	ADAPTER, DOUBLE, QUICK DISCONNECT (97403)13222E9892	EA	4
4	4730-01-078-8130	ADAPTER, MALE BY MALE, QUICK DISCONNECT: CAM-LOCKING TYPE XXI; MALE BOTH ENDS; 3 IN. BOTH ENDS (97403) MS39352-15	EA	3
5	4730-01-935-1613	ADAPTER, MALE BY MALE, QUICK DISCONNECT: CAM-LOCKING TYPE XXI; MALE BOTH ENDS; 4 IN. BOTH ENDS (97403) MS39352-19	EA	3
6	4930-01-013-7590	ADAPTER ASSEMBLY, WATER DETECTOR KIT: USED ON FILTER SEPARATOR, LIQUID FUEL; 350 GPM CAPACITY (97403) 13220E9406-2	EA	1
7	4730-01-640-6156	CAP, QUICK DISCONNECT:CAM-LOCKING TYPE IX; 4 IN. SIZE; W/RING, SPLIT (KEY RING) AND CHAIN, SASH, 19 LINKS LONG (96906) MS27028-17	EA	4
8	4720-01-540-6156	CAP, QUICK DISCONNECT:CAM-LOCKING TYPE IX; 4 IN. SIZE; W/RING, SPLIT (KEY RING) AND CHAIN, SASH 19 LINKS LONG (96906) MS27028-178	EA	4
9	4720-01-NIIN	HOSE ASSEMBLY, NONMETALLIC: RUBBER MATL; NONCOLLAPSABLE, BRAIDED WIRE OUTER MOLDED; BLACK COLOR; 4 IN. X 120 IN. LG EXCLUDING END FITTINGS. (81349) MIL-H-370, PIN M370B2A1200	EA	65

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number / Usable On Code	(4) U/M	(5) Qty. Rqr
10	4720-01-083-0046	HOSE ASSEMBLY, NONMETALLIC: RUBBER INNER TUBE CONVEYING MATL; BRAIDED COTTON CORD 1st AND 2nd LAYER; MOLDED RUBBER OUTER LAYER; BLACK COLOR; 4 IN. X 600 IN. LG, EXCLUDING END FITTINGS; (81349) MIL-H-11588, PIN M11588-03-11-32	EA	4
11	4720-01-083-0047	HOSE ASSEMBLY, NONMETALLIC: RUBBER INNER TUBE CONVEYING MATL; BRAIDED COTTON CORD 1st AND 2nd LAYER; MOLDED RUBBER OUTER LAYER; BLACK COLOR; 4 IN. X 300 IN. LG, EXCLUDING END FITTINGS; (81349) MIL-H-11588, PIN M11588-03-11-32	EA	9
12	4720-00-864-0300	HOSE ASSEMBLY, NONMETALLIC: RUBBER INNER TUBE CONVEYING MATL; BRAIDED COTTON CORD 1st AND 2nd LAYER; MOLDED RUBBER OUTER LAYER; BLACK COLOR; 3 IN. X 300 IN. LG, EXCLUDING END FITTINGS. (81349) MIL-H-11588, P/N M11588-03-10-32	EA	2
13	4720-00-083-0048	HOSE ASSEMBLY, NONMETALLIC: RUBBER INNER TUBE CONVEYING MATL; BRAIDED COTTON CORD 1st AND 2nd LAYER; MOLDED RUBBER OUTER LAYER; BLACK COLOR; 3 IN. X 600 IN. LG, EXCLUDING END FITTINGS; (81349) MIL-H-11588, PIN M11588-03-10-32	EA	3
14	4720-01-231-5333	HOSE ASSEMBLY, NONMETALLIC: RUBBER INNER TUBE CONVEYING MATL; BRAIDED COTTON CORD 1st AND 2nd LAYER; MOLDED RUBBER OUTER LAYER; BLACK COLOR; 2 IN. X 300 IN. LG, EXCLUDING END FITTINGS; (81349) MIL-H-1 1588, P/N M1 1588-03-08-32	EA	1

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number / Usable On Code	(4) U/M	(5) Qty. Rqr
15	4720-00-075-4771	HOSE ASSEMBLY, NONMETALLIC: RUBBER INNER TUBE CONVEYING MATL; BRAIDED COTTON CORD 1st AND 2nd LAYER; MOLDED RUBBER OUTER LAYER; BLACK COLOR; 1-1/2 IN. X 300 IN. LG, EXCLUDING END FITTINGS; (81349) MIL-H-11588, P/N M11588-03-07-32	EA	4
16	4730-00-842-0851	MANIFOLD ASSEMBLY: TYPE I; QUICK DISCONNECT, CAM-LOCKING TYPE; 4 IN. SIZE; (97403) 13200E0068 AND PL13200E0068	EA	3
17	4730-00-840-5346	TEE, FLANGE: FLANGE ALL ENDS; PLAIN FACE DESIGN; 4-1/4 LEG LG; 6-5/8 IN. FLANGE OD; 3/16 IN. THK; 8 BOLT HOLES, 7/16 IN. DIA; (97403) 13216E8243	EA	2
18	4730-00-842-0850	MANIFOLD ASSEMBLY: TYPE II; QUICK DISCONNECT; CAM-LOCKING TYPE; 4 IN. SIZE; (97403) 13200E0803 AND PL13200E0803	EA	3
19	4930-01-NIIN	NOZZLE ASSEMBLY: DIESEL FUELS AND OIL; 1 IN. COUPLING, QUICK DISCONNECT TYPE; AUTOMATIC SHUT-OFF (97403) 13229E9838-1	EA	3
20	4930-01-NIIN	NOZZLE ASSEMBLY: DIESEL FUELS AND OIL; 1-1/2 IN. COUPLING, QUICK DISCONNECT TYPE; AUTOMATIC SHUT-OFF (97403) 13229E9836-1	EA	3
21	4730-00-951-3293	REDUCER, QUICK DISCONNECT: CAM-LOCKING TYPE)a; 4 IN DIA TO 3 IN. DIA; FEMALE 1st END, MALE 2nd END; (96906) MS49000-1	EA	1

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number / Usable On Code	(4) U/M	(5) Qty. Rqr
22	4730-00-889-2382	REDUCER, QUICK DISCONNECT: CAM-LOCKING TYPE Xl; 1-1/2 IN DIA TO 1 IN. DIA; FEMALE 1st END, MALE 2nd END; (96906) MS49000-7	EA	3
23	4730-00-951-3296	REDUCER, QUICK DISCONNECT: CAM-LOCKING TYPE Xl; 4 IN DIA TO 3 IN. DIA; MALE 1st END, FEMALE 2nd END; (96906) MS49000-9	EA	2
24	4730-01-NIIN	TEE ASSEMBLY, QUICK DISCONNECT: 3 IN. MALE X 2 IN. MALE X 3 IN. FEMALE; (97403) 13229E6061	EA	1
25	4730-01-NIIN	TEE ASSEMBLY, QUICK DISCONNECT: 3 IN. MALE X 1-1/2 IN. MALE X 3 IN. FEMALE; (97403) 13222E9884	EA	4
26	4730-00-075-2405	TEE ASSEMBLY, QUICK DISCONNECT: 4 IN. MALE X 4 IN. FEMALE X 4 IN. FEMALE; (97403)13222E6309	EA	5
27	4730-01-NIIN	TEE ASSEMBLY, QUICK DISCONNECT: 4 IN. MALE X 4 IN. FEMALE X 4 IN. FEMALE; (97403) 13222E6465	EA	5
28	4820-01-NIIN	VALVE ASSEMBLY, QUICK ACTING BALL TYPE; 2 IN. SIZE; (97403) 13222E9887 (24869) SSBV-200:	EA	1
29	4820-01-NIIN	VALVE ASSEMBLY, QUICK ACTING: BUTTERFLY TYPE VALVE; 4 IN. SIZE X 3 IN. SIZE; (97403) 13229E6060	EA	3

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number / Usable On Code	(4) U/M	(5) Qty. Rqr
30	4820-01-210-5605	VALVE ASSEMBLY, QUICK DISCONNECT: 4 IN. SIZE; (97403) 13226E8282	EA	11
31	4820-01-NIIN	VALVE ASSEMBLY, QUICK DISCONNECT: 3 IN. X 4 IN. SIZE; (97403)13226E6040	EA	1
32	4820-01-NIIN	VALVE ASSEMBLY, BUTTERFLY: QUICK DISCONNECT, CAM-LOCKING TYPE. (97403) 13229E6466	EA	3
33	4820-01-102-8757	VALVE ASSEMBLY, QUICK ACTING: BALL TYPE; 1-1/2 IN. SIZE; (97403)13222E9886 (24869) SSBV-150	EA	1
34	4730-01-096-1041	WYE AND TEE ASSEMBLY, QUICK DISCONNECT: (97403)13229E6042	EA	1
35	4730-00-075-2407	WYE ASSEMBLY, QUICK DISCONNECT, FLANGED, 4 IN. SIZE: (97403) 13229E6037	EA	1
36	4730-00-075-2408	WYE ASSEMBLY, QUICK DISCONNECT: FLANGED, 4 IN. SIZE: (97403) 13229E6038	EA	1
37	5120-00-359-6587	CLAMPING TOOL, STRAP BAND, HOSE: SIZE OF STRAP FOR WHICH DESIGNED; 3/8 IN. TO 5/8 IN. RANGE, 1/64 IN. TO 1/32 IN. THK RANGE; FURNISHED WITH RATCHET TENSION WRENCH. (70847) P/N S38	EA	1
38	5120400-278-9925	CLAMPING TOOL, STRAP BAND, HOSE: SIZE OF STRAP FOR WHICH DESIGNED; 3/8 IN. TO 3/4 IN. W RANGE, 1/64 IN. TO 1/32 IN. THK RANGE; (81348) GGG-CN413	EA	1

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description Usable CAGEC and Part Number On Code	(4) U/M	(5) Qty. Rqr
39	5120-00-240-5328	WRENCH, ADJUSTABLE: STEEL O/A MATL; CHROMIUM O/A SURFACE TREAT; OPEN END SINGLE HEAD RACK AND WORM ADJ STYLE; 0 TO 15/16 IN. WRENCH SURFACE; 17/32 IN. HEAD THK; 8 IN. O/A LG; (58536) A-A-2344	EA	2
40	5120-01-192-9403	WRENCH CHAIN: ALUM BRONZE OR BERYLLIUM COPPER, ALLOY MATL; NON-SPARKING AND NON-MAGNETIC; 23 IN. CHAIN LG; 24 IN. HANDLE LG; 6 IN. MAX DIAMETER ACCOMMODATING CAP; (55719) P/N CW24	EA	2
41	5120-00-357-8431	WRENCH, COUPLING, TANK CAR: CAST IRON HEAD MATL; 1-3/8 IN. W; 3/4 IN. THK WITH INSIDE RADIUS 5-5/8 IN., 5-5/8 IN. CHORDAL LG; HANDLE 3/4 IN. ID STEEL PIPE, 1-1/16 IN. OD. (24869) P/N G-10	EA	1
42	5340-00-244-7327	SEAL, STRAPPING: CRES MATL; PASSIVATED SURFACE TREAT: OPEN TYPE, W/EARS; 3/4 IN. W/STRAP; U/W BAND-IT-TOOL P/N S-38; CLAMPING TOOL; (70847) P/N C256, BAND-IT-BUCKLES, 3/4 IN. 100 PER BOX.	EA	100
43	5340-00-244-7325	SEAL, STRAPPING: CRES MATL; PASSIVATED SURFACE TREAT: OPEN TYPE, W/EARS; 1/2 IN. W/STRAP; U/W BAND-IT-TOOL P/N S-38; CLAMPING TOOL, NSN 5120-00-278-9925; (70847) P/N C254, BAND-IT-BUCKLES, 1/2 IN. 100 PER BOX.	EA	100
44	8030-00-837-5885	SEALING COMPOUND: PASTE FORM; ONE QUART PER CAN; (81349) MIL-S-45180, TYPE II (77247) FORMAGASKET 2.	QT	2

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description Usable CAGEC and Part Number	On Code	(4) U/M	(5) Qty. Rqr
45	5340-00-245-9440	STRAPPING: CRES MATL; PASSIVATED SURFACE TREAT; 11.82 FR PER POUND; 24000 LBS BREAKING STRENGTH; 3/4 IN. W; 1/32 IN. THK; 100 FT PER ROLL; (70874) P/N C206		RL	1
46	5340-00-245-9438	STRAPPING: CRES MATL; PASSIVATED SURFACE TREAT; 18.82 FR PER POUND; 1500 LBS BREAKING STRENGTH; 1/2 IN. W; 1/32 IN. THK; 100 FT PER ROLL; (70874) P/N C204		RL	1
47		KIT, FUEL SPILL CONTROL (97403) 13228E3337-1		EA	1

Section III. BASIC ISSUE ITEMS

(1) Illus. Number	(2) National Stock Number	(3) Description Usable CAGEC and Part Number	On Code	(4) U/M	(5) Qty. Rqr
1	4210-00-257-5343	Extinguisher, Fire, Dry Chemical: Handportable; 20 lb Capacity, CRTG Discharge; Bracketed, Mtd; (58536) A-A-393, Type I, Class 2, Size 20		EA	16
2	TM10-4930-239 -12&P	Technical Manual: Fuel System Supply Point		EA	1

APPENDIX D
ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

D-1. SCOPE.

This appendix lists additional items you are authorized for the support of the Fuel System Supply Point.

D-2. GENERAL.

This list identifies items that do not have to accompany the fuel system supply point and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING.

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name. If the item you require differs between the serial numbers of the same model, effective serial numbers are shown in the last line of the description. If the item required differs for different models of this equipment, the model number is shown under the "Usable On" heading in the description column.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGEC and Part Number	Usable On Code	(3) U/M	(4) Qty. Rqr
	ADAPTER KIT; NATO; TANK TRUCK: (97403) 13222E8212	FAY, FNX	KT	2
	ADAPTER, HOSE COUPLING; NATO: BRASS (COPPER ALLOY) MATL; 2.95 IN. (75mm) ID; 3.74 IN. (95mm) OD 4 LUGS, 1.26 IN. (32rnm) ACROSS FLATS. (97403) 13222E8215-1	FAY, FNX	EA	1
	ADAPTER, NATO: BRASS OR COPPER ALLOY: 1st END METRIC THREAD IN ACCORDANCE WITH INTRNL. STD. ISO 228/1 G3A; (97403) 13222E8216-1	FAY, FNX	EA	1
	ADAPTER WITH STRAINER: FAY, FNX 2-1/2 IN. FLANGE D-1 NOZZLE TO 2 IN. ID UNISEX COUPLING; (00624) AE82101R		EA	1
4730-00-649-9100	CAP, QUICK DISCONNECT: CAM LOCKING TYPE IX; 2 IN. SIZE; W/RING, SPLIT (KEY RING) AND CHAIN, SASH, 19 LINKS LG, BRONZE MATL; ALUMINUM ALLOY MATL; (96906) MS27028-11	FAY, FNX	EA	1
4730-00-640-6156	CAP, QUICK DISCONNECT: CAM LOCKING TYPE IX; 4 IN. SIZE; W/RING, SPLIT (KEY RING) AND CHAIN, SASH, 19 LINKS LG, BRONZE MATL; ALUMINUM ALLOY MATL; (96906) MS27028-17	FAY, FNX	EA	1

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGEC and Part Number	Usable On Code	(3) U/M	(4) Qty. Rqr	
5999-00-134-5844	CLIP, ELECTRICAL; STEEL COMP OR ALUMINUM ALLOY MATL;, BATTERY CLIP STYLE; 4-1/8 IN. LG, 2-7/8 IN. H; 3/4 IN. JAW OPENING; 2 SCREW TERMINAL TYPE MTD; (81349) MIL-C-83413, P/N M83413/7-1	FAY, FNX	EA	4	■
	COUPLER, QUICK DISCONNECT, FEMALE, IPT, 3 IN. SIZE. (ONTT4) J1407-002	FAY, FNX	EA	1	■
4730-01-214-0993	COUPLING HALF, QUICK DISCONNECT: ADAPTER TYPE, 2 IN. UNISEX TO 2 IN. MALE CAM LOCKING; (00624) AE82093R	FAY, FNX	EA	1	■
	COUPLING HALF, QUICK DISCONNECT, NATO, CAM-LOCKING TYPE V, FEMALE 3 IN. SIZE; (97403) 13222E8213-1	FAY, FNX	EA	1	■
	COUPLING HALF, QUICK DISCONNECT, CAM-LOCKING, TYPE I, MALE, 3 IN. SIZE; (97403) 13222E8214-1	FAY, FNX	EA	1	■
	COUPLING HALF, QUICK DISCONNECT, MALE, EPT 3 IN. SIZE. (96906) MS27022-15	FAY, FNX	EA	1	■
	COUPLING, TANK TRUCK, NATO MATL AND DESIGN CONTROL BY GERMAN STD MS80, DIN 28450 (97403) 13222E8217-1	FAY, FNX	EA	1	■
	COUPLING, TANK TRUCK, NATO; MATL AND DESIGN CTRL. BY GERMAN STD. VK 80, DIN 28450 (97403) 13222E8218-1	FAY, FNX	EA	1	■

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGEC and Part Number	Usable On Code	(3) U/M	(4) Qty. Rqr
	COUPLING, NATO RAIL TANK CAR: ALUMINUM ALLOY MATL; CLAMPING DEVICE TYPE; SHALL ACCOMMODATE 2.50 TO 5.50 IN. OD PIPE SIZE. (97403) 12333E8219	FAY, FNX	EA	1
4210-00-257-5343	EXTINGUISHER, FIRE, DRY CHEMICAL: HAND-PORTABLE; 20 LB CAP., CRTG DISCHARGE; BRACKET, MTD; (58536) A-A-393, TYPE I, CLASS 2, SIZE 20	FAY, FNX	EA	1
4330-00-177-8485	FILTER-SEPARATOR, LIQUID FUEL: SKID MTD; FIBERGLASS AND PAPER FILTER MATL; VERTICAL DESIGN; I INLET AND 1 OUTLET CONN. CAM-LOCKING 4 IN. PIPE SIZE; 350 GPM CAPACITY. (97403) 13217E9320	FAY, FNX	EA	2
5330-00-612-2414	GASKET, COUPLING HALF, QUICK DISCONNECT: CAM-LOCKING TYPE; 2-5/8 IN. OD, 2 IN. APERTURE DIA; 1/4 IN. THK; RUBBER SYNTHETIC O/A MATL; CIRCULAR STYLE; (96906) MS27030-6	FAY, FNX	EA	2
5330-00-899-4509	GASKET, COUPLING HALF, QUICK DISCONNECT: CAM-LOCKING TYPE; 4-7/8 IN. OD, 4 IN. APERTURE DIA; 1/4 IN. THK; RUBBER SYNTHETIC O/A MATL; CIRCULAR STYLE; (96906) MS27030-9	FAY, FNX	EA	1

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGEC and Part Number	Usable On Code	(3) U/M	(4) Qty. Rqr	
5330-00-599-5831	GASKET: SWIVEL FITTING FLANGED: 6 BOLT HOLES .328 IN. DIA, 3.812 IN. BOLT CIRC DIA; 4.00 IN. O/A WIDTH; 2.375 IN. APERTURE DIA; .016 THK; (81352) AN763-40	FAY, FNX	EA	1	■
	HOSE ASSEMBLY, NONMETALLIC: SUCTION TYPE; 2 IN. NOM ID; -40 °F TO +160 °F TEMP RATING; 2-1/2 IN. NOM OD; RUBBER INNER TUBE MATL; 300 PSI BURST TEST, 100 PSI MAX OPER PRESSURE; 120 IN. O/A LG; UNISEX COUPLING BOTH ENDS; (00624) AE706581-12	FAY, FNX	EA	1	■
4720-01-214-0999	HOSE ASSEMBLY, NONMETALLIC: COLLAPSIBLE DISCHARGE TYPE; 2 IN. NOM ID; -40 °F TO +160 °F TEMP RATING; 2-19/64 IN. NOM OD; RUBBER INNER TUBE MATL; 300 PSI BURST TEST, 100 PSI MAX OPER PRESSURE; 120 IN. O/A LG; UNISEX COUPLING BOTH ENDS; (00624) AE706722-1	FAY, FNX	EA	1	■
	KIT, DEFUELING SYSTEM; WET WING: CONSISTS OF 20 ITEMS; (97403) 13229E9977	FAY, FNX	KT	1	■
4930-00-106-8672	METER ASSEMBLY, SKID MTD VORTEX TYPE METER, 200 PSI MAX READING; QUICK DISCONNECT FITTING, 3 IN. SIZE, MALE OUTLET; W/GROUND ROD LEAD AND CLIP. (97403) MIL-M-82180, 3 IN.	FAY, FNX	EA	1	■

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGEC and Part Number	Usable On Code	(3) U/M	(4) Qty. Rqr
4930-00-310-4858	NOZZLE, FUEL AND OIL SERVICING ALUMINUM BODY MATL; INTEGRAL STRAINER; I CAP, DUST; LEVER HANDLE, MANUAL CONTROL DESIGN; BRASS TUBE, RIGID SPOUT TYPE; 2-1/2 IN. ID INLET, FLANGED, 45 DEGREE ANGLE, SWIVEL CAPABILITY; LONG HANDLE GRIPS (81349) MIL-N-5877, TYPE D-l (86090) 61429AGH	FAY, FNX	EA	1
5130-00-927-3877	NUT, SELF-LOCKING, HEXAGON; CRES MATL PASSIVATE HEAT TREAT; 5/16-24UNF-2B, RH THREAD; (96906) MS51922-14	FAY, FNX	EA	6
4730-00-915-5127	PLUG, QUICK DISCONNECT: CAM-LOCKING TYPE X; 2 IN. SIZE; W/RING, SPLIT (KEY RING) AND CHAIN, SASH, 19 LINKS LG, BRONZE MATL; ALUMINUM ALLOY MATL; (96906) MS27029-11	FAY, FNX	EA	1
4320-01-067-0223	PUMPING ASSEMBLY, FLAMMABLE LIQUID, BULK TRANSFER: WHEEL MTG TYPE; DIESEL ENG PRIME MOVER; 350 GPM CAPACITY. (81349) MIL-P-52144	FAY, FNX	EA	2
4730-01-186-0819	REDUCER, EPT BY QUICK DISCONNECT MALE, 3 IN. X 4 IN. END SIZE. (96906) MS49001-13	FAY, FNX	EA	1
4730-01-186-0821	REDUCER, QUICK DISCONNECT: CAM-LOCKING TYPE; ALUMINUM ALLOY BODY MATL; 1ST END 4 IN. MALE, 2ND END 2 IN. FEMALE W/5310-00-612-2414 GASKET; RUBBER SYNTHETIC MATL; CIRCULAR 2-5/8 IN. OD, 2 IN. APERTURE DIA, 1/4 IN. THK; MS27030-6 (96906) MS49000-19, TYPE XI 4 X 2 IN.	FAY, FNX	EA	1

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGEC and Part Number	Usable On Code	(3) U/M	(4) Qty. Rqr
5975-01-050-5707	ROD, GROUND: DRIVE HEAD STYLE 68 IN. O/A 1 IN. DIA; (97403) 13219E0462 (90598) FARE 0462	FAY, FNX	EA	1
4010-00-575-6233	ROPE, WIRE: CRES MATL; 7 X 7 STYLE; 1/16 DIA; RIGHT REGULAR LAY; 480 LBS MIN BREAKING STRENGTH; INDEPENDENT WIRE ROPE CORE; NYLON PLASTIC POLYAMIDE COVERING; 3/32 IN. DIA AFTER COVERING; UNIT OF ISSUE FT, REQUIRES 200 FT EA, ISSUED IN ONE CONTINUOUS LENGTH; (81349) MIL-W-83420, P/N M83420/4-200, 200 FT	FAY, FNX	EA	2
5306-00-051-4077	SCREW, CAP, HEXAGON HEAD: STEEL MATL; ZINC SURFACE TREAT; 5/16-24UNF-2A X 1-1/8 LG, RH THREAD; (80204) ANSI B18.2.1 P/N B1821BH031F113	FAY, FNX	EA	6
4930-01-120-7426	STAND ASSEMBLY, FUEL AND WATER DISPENSING EQUIP. TRIPOD TYPE; 34-1/2 IN.±1/2 IN. MAX SPREAD OF LEGS; 36-3/4 IN. +3/64 IN. O/A LEG LG, PER DRWG 13225E9145; 3 HOOKS FOR NOZZLE, 1/2 IN. DIA MATL PER DRWG 13225E9145; PIVOT PER DRWG 13225E9144; PLUG PER DRWG 13225E9143; (97403) 13225E9140 AND PL13225E9140	FAY, FNX	EA	3
1560-01-216-9210	STRAP ASSEMBLY, FUEL SYSTEM DESIGNED FOR STORAGE AND/OR DEPLOYMENT OF COLLAPSIBLE DISCHARGE HOSES; (00624) P/N AE27389-001	FAY, FNX	EA	4

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGEC and Part Number	Usable On Code	(3) U/M	(4) Qty. Rqr
5430-00-268-8187	TANK ASSEMBLY, FABRIC, COLLAPSIBLE: 3000 GAL CAPACITY; PETROLEUM PRODUCTS; (81349) MIL-T-52983, P/N M52983-03	FAY, FNX	AR	
5430-00-126-7623	TANK ASSEMBLY, FABRIC, COLLAPSIBLE: 10000 GAL CAPACITY; PETROLEUM PRODUCTS; (81349) MIL-T-52983, P/N M52983-10	FAY, FNX	AR	
5430-00-126-7623	TANK ASSEMBLY, FABRIC, COLLAPSIBLE: 20000 GAL CAPACITY; PETROLEUM PRODUCTS; (81349) MIL-T-52983, P/N M52983-20	FAY, FNX	AR	
5310-01-199-1354	WASHER, FLAT: ALUMINUM MATL; ANODIZE SURFACE TREAT; ROUND SHAPE; ROUND CENTER HOLE, 21/64 IN. ID; 9/16 IN. OD; 1/16 THK; (81352) AN960KD516	FAY, FNX	EA	6

APPENDIX E
EXPENDABLE / DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain the Fuel System Supply Point. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable Items (except medical, class V, repair parts, and heraldic items) or CTA 8-100, Army Medical Department Expendable/Durable Items.

E-2. EXPLANATION OF COLUMNS.

a. Column (1) - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, Appendix E").

b. Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item.

C — Operator/Crew
O — Unit Maintenance
F — Direct Support Maintenance
H — General Support Maintenance

c. Column (3) - National Stock Number. This is the National stock number assigned to the item which you can use to requisition it.

d. Column (4) - Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number. This provides the other information you need to identify the item.

e. Column (5) - Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Section II. EXPENDABLE / DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC, PART NUMBER	(5) U/M
1	O	7920-00-205-1711	Cloth, Lint-Free	ea
2	O	8020-00-207-6658	Brush, Medium, Oval	ea
3	O	6850-00-274-5421	Dry Cleaning Solvent. (81348)	gl
4	O	5310-00-637-9541	Washer, Lock, Split (96906) MS35338-46	ea
5	O	5330-00-647-2072	Gasket, Cork (97403) 13216E8238	ea
6	O	TBD	Packing(1U339) GV026	ea

APPENDIX F. OPERATOR'S AND UNIT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

F-1. SCOPE This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of operator's and unit maintenance of the Fuel System Supply Point, Model LAB 6891. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

F-2. GENERAL. In addition to this section, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. This list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed in item name sequence. Items are shown in the associated illustration(s)/figure(s).

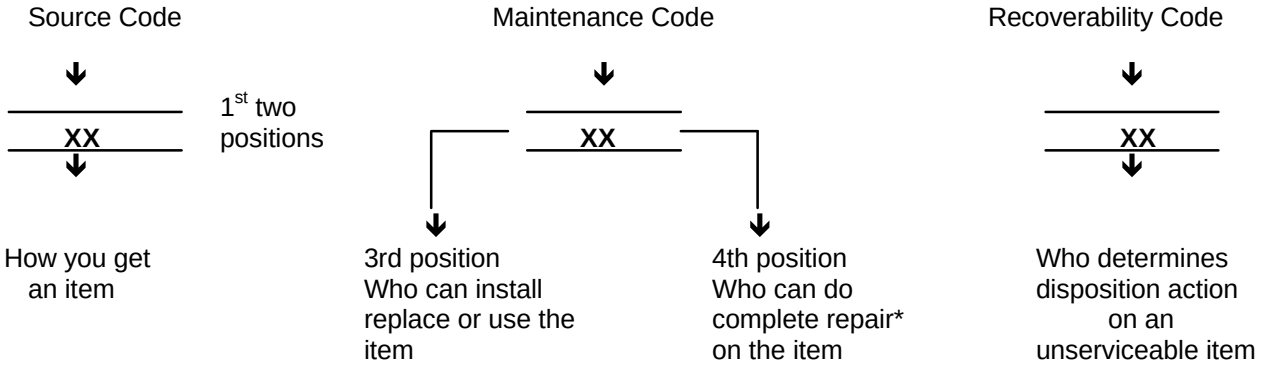
b. Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE column) for the performance of maintenance.

c. Section IV. Cross-References Indexes. A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross referenced to each illustration figure and item number appearance. The figure and item number index lists figure and item numbers in alphanumeric sequence and cross references NSN, CAGEC and part number.

F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. ITEM NO. (Column (1)) . Indicates the number used to identify items called out in the illustration.

b. SMR Code (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) SourceCode. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

Source Code	Explanation
PA PB PC** PD PE PF PG	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3rd position of the SMR code. **NOTE: Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO - (Made at Unit/AVUM Level) MF - (Made at DS/AVUM Level) MH - (Made at GS Level) ML - (Made at Specialized Repair Activity (SRA)) MD - (Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION and USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO - (Assembled by Unit/AVUM Level) AF - (Assembled by DS/AVIM Level) AH - (Assembled by GS Category) AL - (Assembled by SRA) AD - (Assembled by Depot)	Items with these codes are not to be requested/ requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position code of the SMR code authorizes you to replace the item, but the source code indicates the items are assembled at a higher level, order the item from the higher level of maintenance.

XA - Do not requisition "XA"-coded item. Order its next higher assembly. (Refer to the NOTE below.)
XB - If an "XB" item is not available from salvage, order it using the CAGEC and part number given.
XC - Installation drawing, diagram, instruction sheet, field service drawing, that is identified manufacturer's part number.
XD - Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGEC and part number given ,if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance.

Maintenance Code	Application/Explanation
C -	Crew or operator maintenance done within unit/AVUM maintenance.
O -	Unit level/AVUM maintenance can remove, replace, and use the item.
F -	Direct support/AVIM maintenance can remove, replace, and use the item.
H -	General support maintenance can remove, replace, and use the item.
L -	Specialized repair activity can remove, replace, and use the item.
D -	Depot can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions.)

NOTE

Some limited repair may be done on an item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart and SMR codes.

Maintenance Code	Application/Explanation
O -	Unit/AVUM is the lowest level that can do complete repair of the item.
F -	Direct support/AVIM is the lowest level that can do complete repair of the item.
H -	General Support is the lowest level that can do complete repair of the item.
L -	Specialized repair activity is the lowest level that can do complete repair of the item.
D -	Depot is the lowest level that can do complete repair of the item.
Z -	Nonreparable. No repair is authorized.
B -	No repair is authorized. No parts or special tools are authorized for the maintenance of a "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Recoverability Codes	Application/Explanation
Z -	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code.
O -	Reparable item. When not economically reparable, condemn and dispose of the item at unit or AVUM level.
F -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or AVIM level.
H -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D -	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L -	Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A -	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical materia l, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. CAGEC (Column (3)). The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

d. PART NUMBER (Column (4)). Indicates the primary number used by the manufacturer, (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the number listed.

e. DESCRIPTION AND USABLE ON CODE (UOC) (Column (5) . This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) Part numbers of bulk materials are referenc ed in this column in the line entry to be manufactured/fabricated.

(3) The statement "END OF FIGURE" appears just below the last item description in Column (5) for a given figure in both Section II and Section III.

f. QTY (Column (6)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and may vary from application to application.

F-4. EXPLANATION OF INDEX FORMAT AND COLUMNS (SECTION IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX .

(1) STOCK NUMBER Column. This column lists the NSN in national item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN, i.e.

NSN
5305-01-574-1467
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. Use the complete NSN (13 digits) when requisitioning items by stock number.

(2) FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section III.

(3) ITEM Column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9, and each following letter or digit in like order).

(1) CAGEC Column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

(2) PART NUMBER Column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

(3) STOCK NUMBER Column. This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left.

(4) FIG. Column. This column lists the number of the figure where the item is identified/located in Section II and Section III.

(5) ITEM Column. The item number is that number assigned to the item as it appears in the figure referenced in adjacent figure number column.

c. FIGURE AND ITEM NUMBER INDEX.

(1) FIG. Column. This column lists the number of the figure where the item is identified/located in Section II and Section III.

(2) ITEM Column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

(3) STOCK NUMBER Column. This column lists the NSN for the item.

(4) CAGEC Column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

(5) PART NUMBER Column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

F-5. .SPECIAL INFORMATION.

a. USABLE ON CODE. The usable on code appears in the lower left comer of the Description Column heading. Usable on codes are shown as 'UOC:.." in the Description Column (justified left) on the last line of the applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes used in this RPSTL are:

Code	Used On
FAY	LAB 6891
B	LPI-95-6891

b. FABRICATION INSTRUCTIONS. Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL Part numbers for bulk materials are also referenced in the description column of the line entry for the item to be manufactured/fabricated.

c. INDEX NUMBERS. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the Nation Stock Number/Part Number Index and the bulk material list in Section II.

d. ASSOCIATED PUBLICATIONS. There are no associated publications.

F-6. HOW TO LOCATE REPAIR PARTS.

a. When National Stock Numbers or Part Numbers are NOT Known .

(1) First. Using the table of contents, determine the assembly or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and use the Figure and Item Number Index to find the NSN.

b. When National Stock Number or Part Number is Known .

(1) First. Using the of National Stock Number and Part Number Indexes find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see paragraph 4.b.). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see paragraph 4.b.). Both indexes cross-reference you to the illustration/figure and item number of the item you are looking for.

(2) Second. Turn to the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure.

F-7. ABBREVIATIONS-. Abbreviations used in this manual are listed in MIL-STD-12.

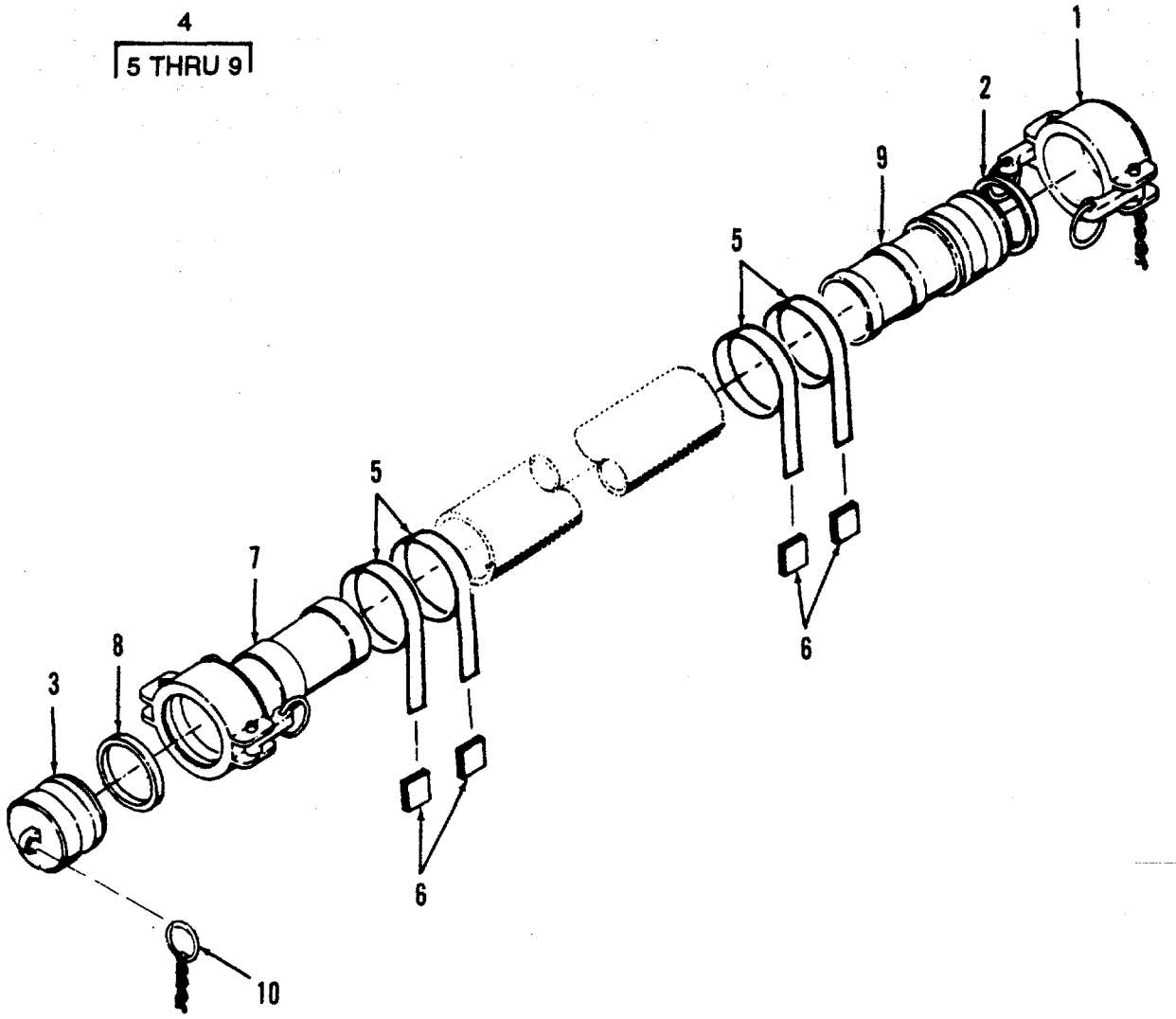


Figure 1. Hose Assembly, Discharge, 4.00 in. x 10 ft.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01 HOSE ASSEMBLIES	
				FIG. 1 HOSE ASSEMBLY, DISCHARGE 4.00 IN. X 10 FT.	
1	PAOOO	96906	MS27028-17	CAP,QUICK DISCONNEC	1
2	PCOZZ	96906	MS27030-9	.GASKET	1
3	PAOZO	96906	MS27029-17	PLUG,QUICK DISCONNE	1
4	PCOOO	81349	M370B09B2A1400	HOSE ASSEMBLY,NONME 4 IN X 10 FT	65
5	MOOOO	97403	13227E6891-42	.CLAMP, STRAPPING MAKE FROM P/N C- ..... 206 (77414), CUT TO LENGTH.	4
6	PAOZZ	77414	PB-256	.SEAL, STRAPPING CRES, TYPE 201, 3/..... 4 WIDTH, 100 EA PER BOX.	4
7	XBOOZ	96906	MS27025-17	.COUPLING HALF,QUICK	1
8	PCOZZ	96906	MS27030-9	..GASKET	1
9	XBOZZ	96906	MS27021-17	.COUPLING HAL F, QUICK	1
10	PAOZZ	97403	13227E6160-5	RING, KEY, SPLIT	1
				END OF FIGURE	

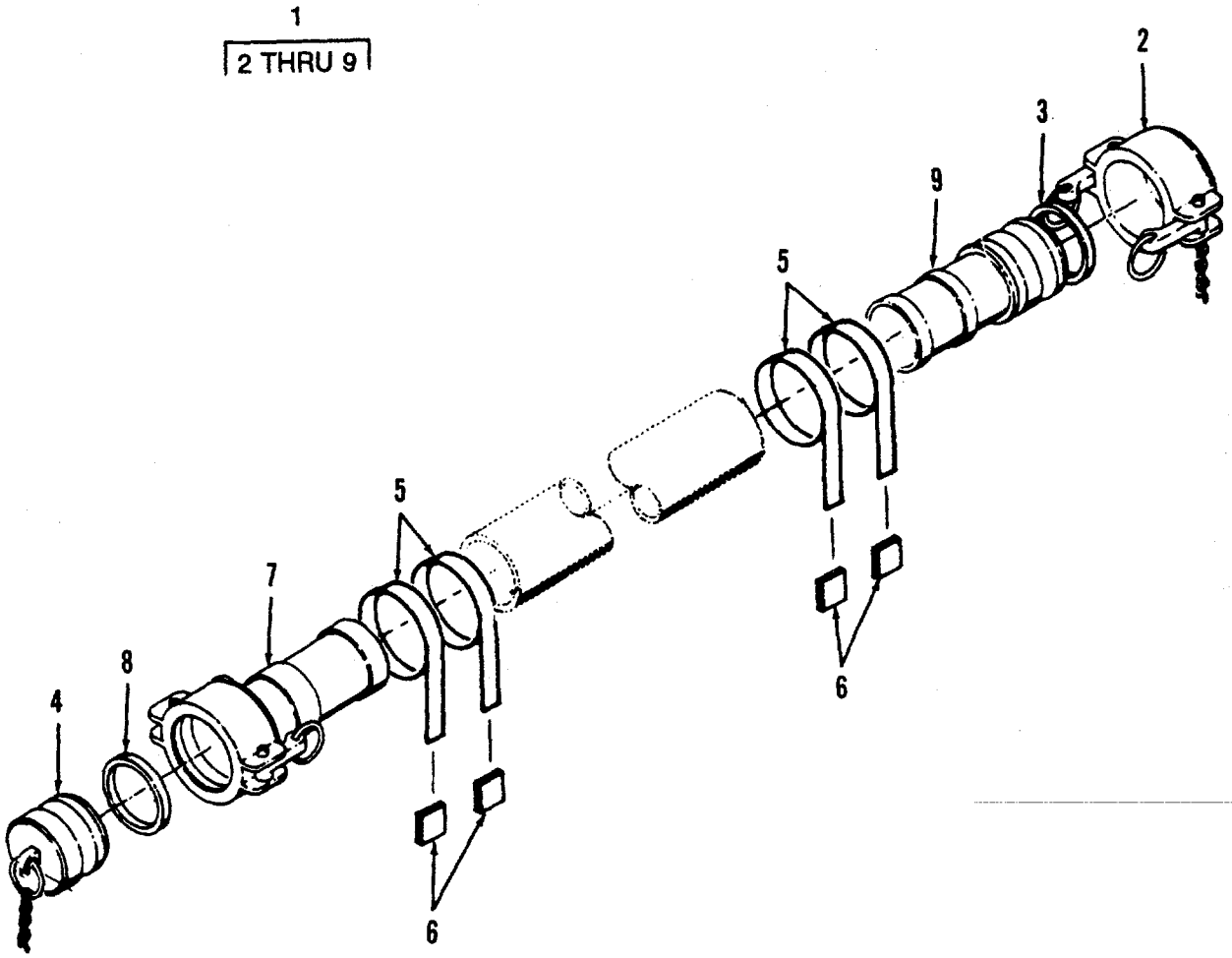


Figure 2. Hose Assembly, Discharge, 4.00 in. x 50 ft.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01 HOSE ASSEMBLIES	
				FIG. 2 HOSE ASSEMBLY, DISCHARGE, 4.00 IN. X 50 FT.	
1	PCOOO	81349	M11588-03-11-32	HOSE ASSEMBLY,NONME 4 IN X 50 FT	4
2	PCOOO	96906	MS27028-17	.CAP,QUICK DISCONNEC	1
3	PCOZZ	96906	MS27030-9	..GASKET	1
4	PAOZO	96906	MS27029-17	.PLUG,QUICK DISCONNE	1
	MOOOO	97403	13227E6891-42	.STRAPPING MAKE FROM P/N C-206 ..... (77414), CUT TO LENGTH.	4
6	PAOZZ	77414	C-256	.SEAL, STRAPPING CRES, TYPE 201, 3. ..... 4 WIDTH, 100 EA PER BOX.	4
7	XBOOZ	96906	MS27025-17	.COUPLING HALF ,QUICK	1
8	PCOZZ	96906	MS27030-9	..GASKET	1
9	XBOZZ	94906	MS27021-17	.COUPLING HALF,QUICK	1

END OF FIGURE

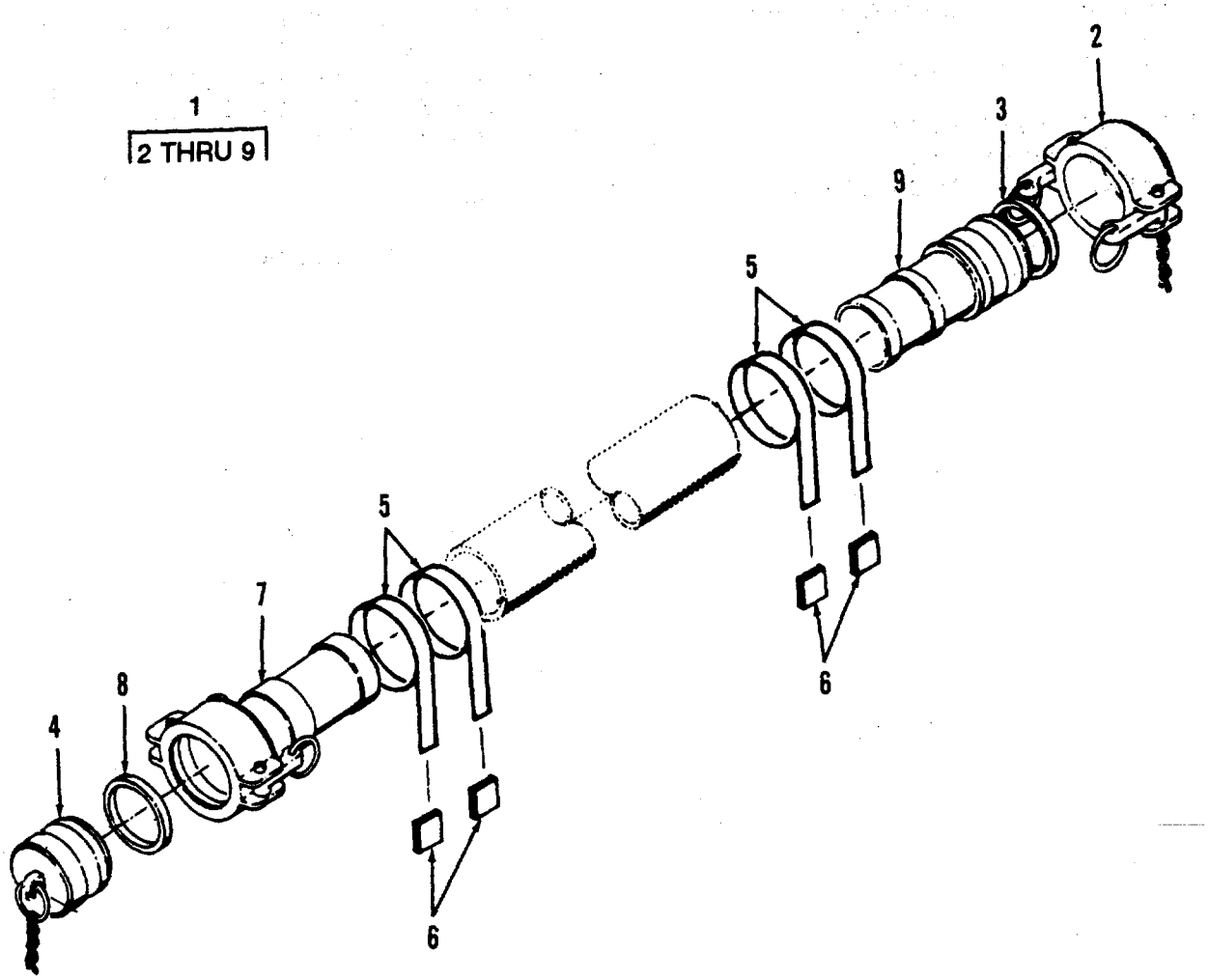


Figure 3. Hose Assembly, Discharge, 4.00 in. x 25 ft.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01 HOSE ASSEMBLIES	
				FIG. 3 HOSE ASSEMBLY, DISCHARGE, 4.00 IN. X 25 FT.	
1	PCOOO	81349	M11588-03-11-32	HOSE ASSEMBLY,NONME 4 IN X 25 FT	9
2	PCOOO	96906	MS27028-17	.CAP,QUICK DISCO NNEC	1
3	PCOZZ	96906	MS27030-9	..GASKET	1
4	PAOZO	96906	MS27029-17	.PLUG,QUICK DISCONNE	1
5	MOOOO	97403	13227E6891-42	.CLAMP, STRAPPING MAKE FROM P/N C- ..... 206 (77414), CUT TO LENGTH	4
6	PAOZZ	77414	C-256	.SEAL, STRAPPING CRES, TYPE 201, 3/ ..... 4 WIDTH, 100 EA PER BOX	4
7	XBOOZ	96906	MS27025-17	.COUPLING HALF,QUICK	1
8	PCOZZ	96906	MS27030-9	..GASKET	1
9	XBOZZ	96906	MS27021-17	.COUPLING HALF,QUICK	1

END OF FIGURE

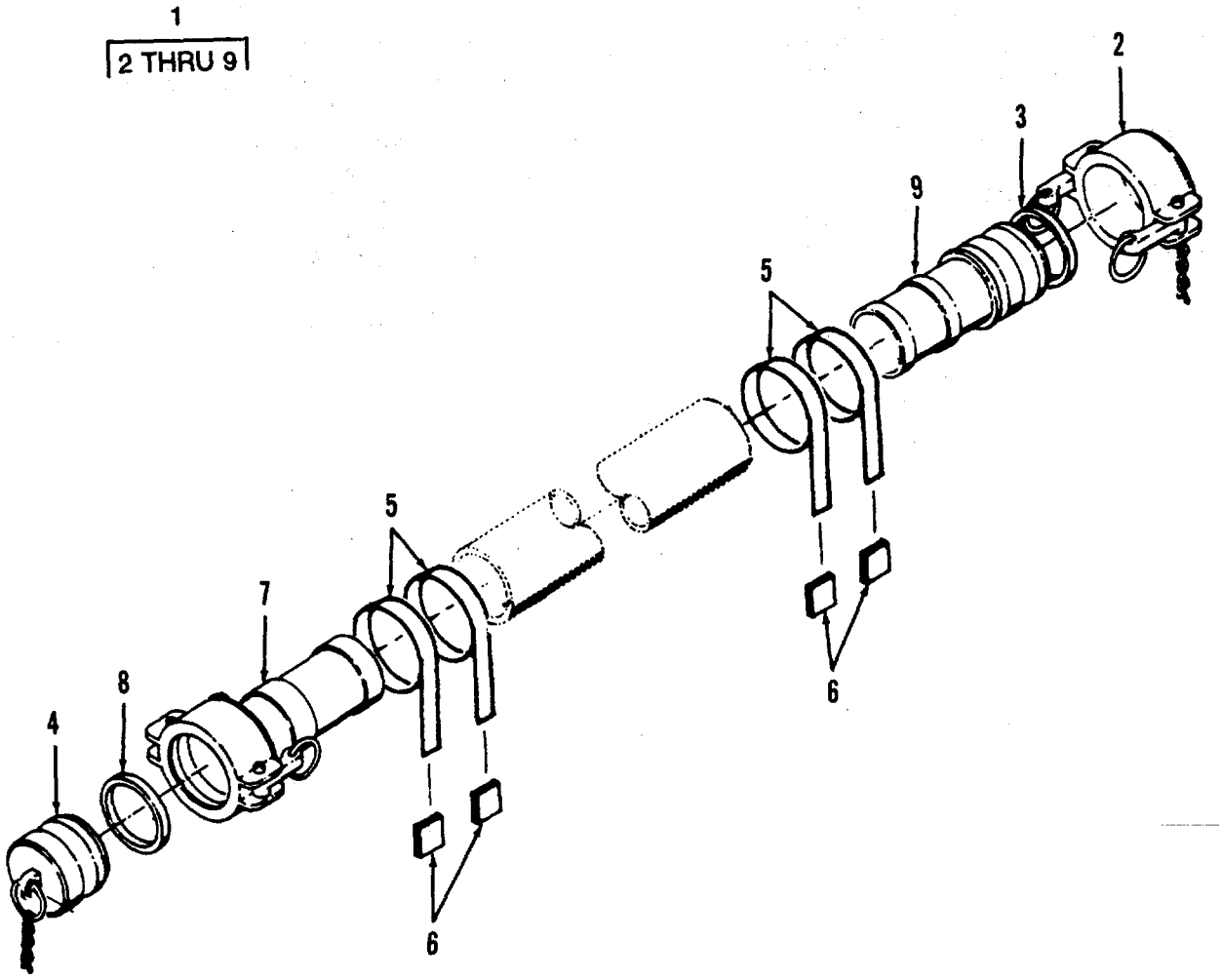


Figure 4. Hose Assembly, Discharge, 3.00 in. x 50 ft.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01 HOSE ASSEMBLIES	
				FIG. 4 HOSE ASSEMBLY, DISCHARGE, 3.00 IN. X 50 FT.	
1	PCOOO	81349	M11588-03-10-32	HOSE ASSEMBLY,NONME 3 IN X 50 FT	3
2	PCOOZ	96906	MS27028-15	.CAP,QUICK DISCONNEC	1
3	PCOZZ	96906	MS27030-8	..GASKET	1
4	PAOZZ	96906	MS27029-15	.PLUG,QUICK DISCONNE	1
5	MOOOO	97403	13227E6891-42	.CLAMP, STRAPPING MAKE FROM P/N C- ..... 206 (77414), CUT TO LENGTH.	4
6	PAOZZ	77414	C-256	.SEAL, STRAPPING CRES, TYPE 201, 3/ ..... 4 WIDTH, 100 EA PER BOX.	4
7	XBOOO	96906	MS27025-15	.COUPLING HAL F, QUICK	1
8	PCOZZ	96906	MS27030-8	..GASKET	1
_9	XBOZZ	96906	MS27021-15	.COUPLING HALF ,QUICK	1

END OF FIGURE

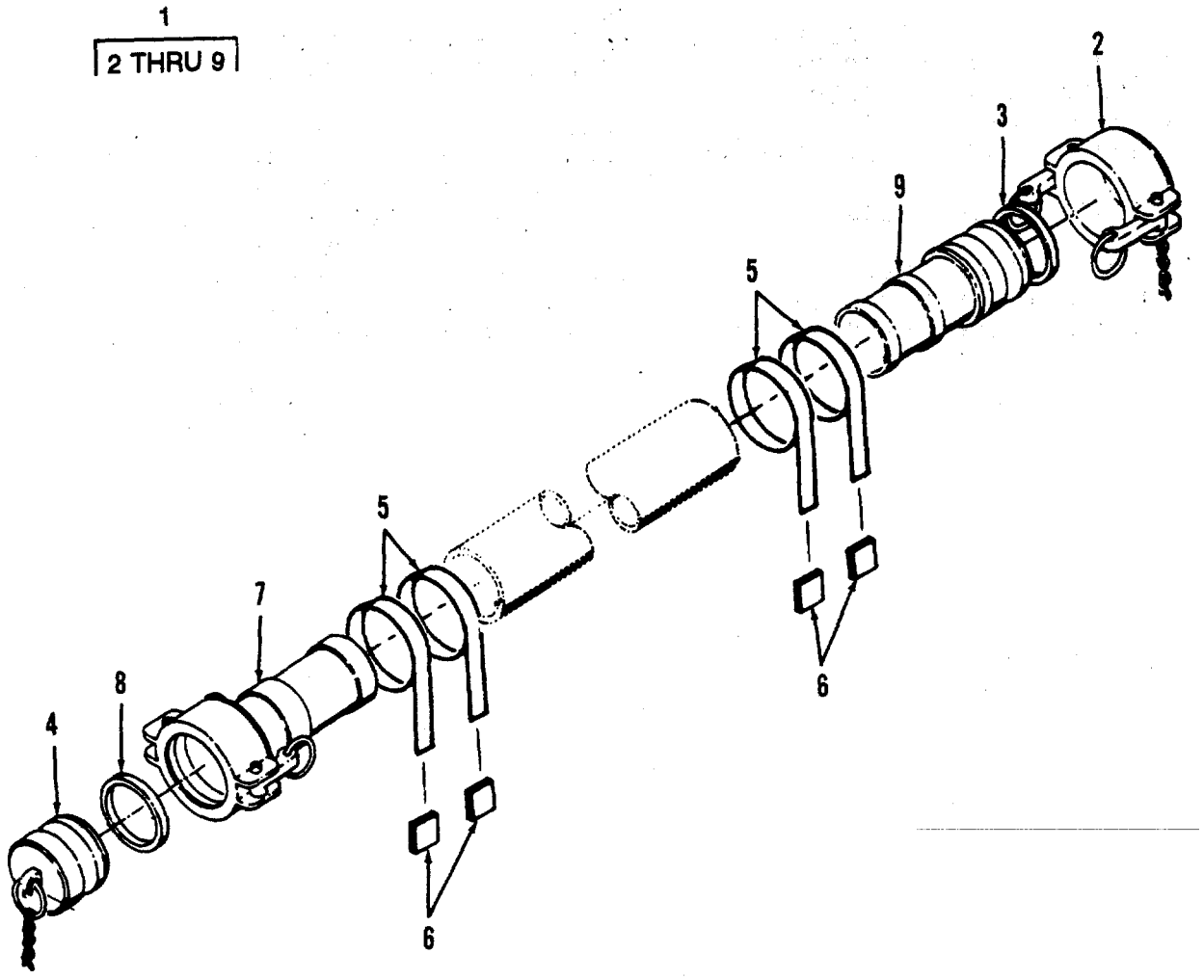


Figure 5. Hose Assembly, Discharge, 3.00 in. x 25 ft.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01 HOSE ASSEMBLIES	
				FIG. 5 HOSE ASSEMBLY, DISCHARGE, 3.00 IN. X 25 FT.	
1	PCOOO	81349	M11588-03-10-32	HOSE ASSEMBLY,NONME 3 IN X 25 FT...	2
2	PCOOZ	96906	MS27028-15 .	,CAP,QUICK DISCONNEC	1
3	PCOZZ	96906	MS27030-8	..GASKET	1
4	PAOZZ	96906	MS27029-15	.PLUG,QUICK DISCONNE	1
5	MOOOO	97403	13227E6891-42	.CLAMP, STRAPPING MAKE FROM P/N C- ..... 206 (77414), CUT TO LENGTH.	4
6	PAOZZ	77414	C-256	.SEAL, STRAPPING CRES, TYPE 201, 3..... 4 WIDTH, 100 EA PER BOX.	4
7	XBOOO	96906	MS27025-15	.COUPLING HALF ,QUICK.....	1
8	PCOZZ	96906	MS27030-8	..GASKET.....	1
9	XBOZZ	96906	MS27021-15	.COUPLING HALF,QUICK	1

END OF FIGURE

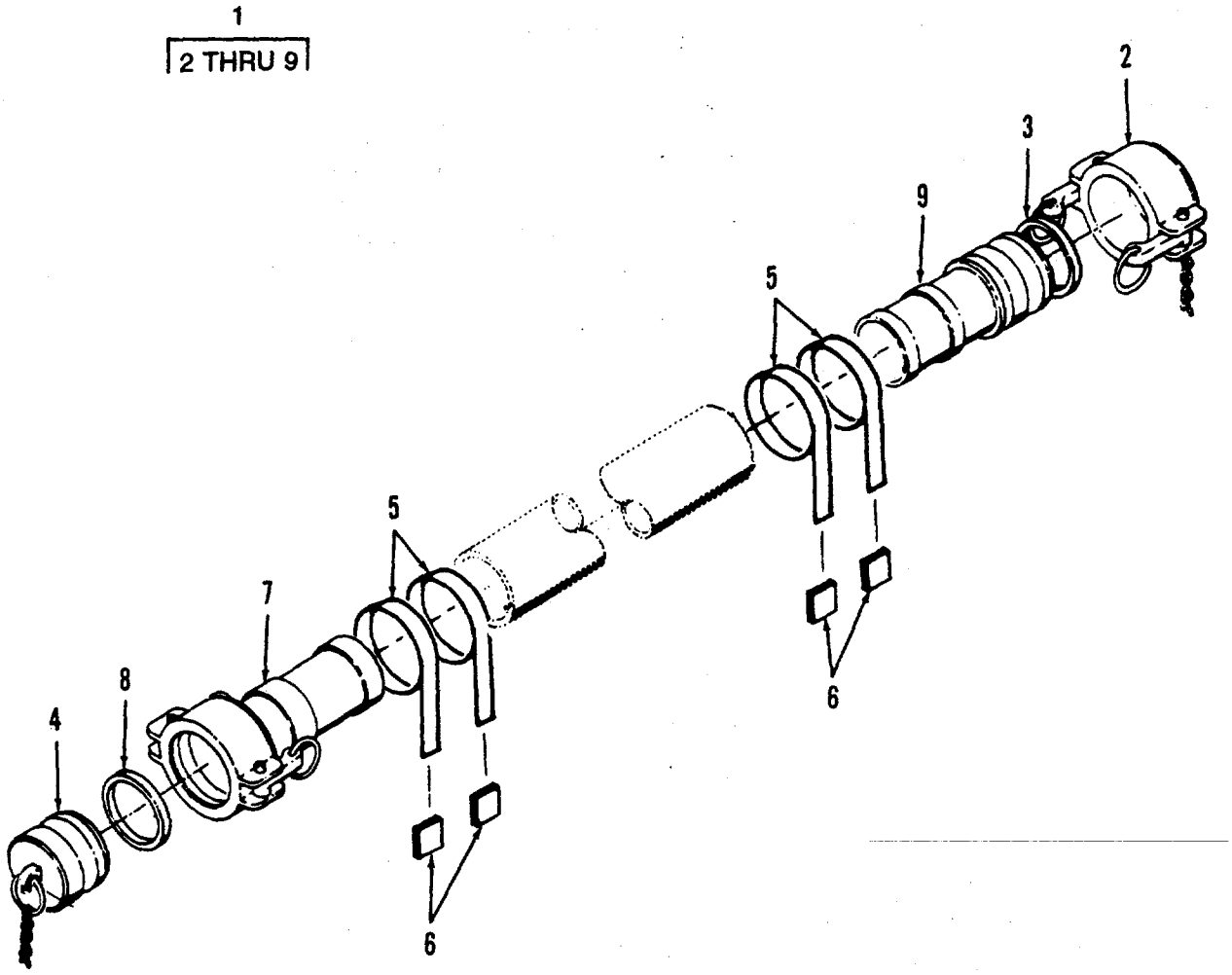


Figure 6. Hose Assembly, Discharge, 1.50 in. x 25 ft.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01 HOSE ASSEMBLIES	
				FIG. 6 HOSE ASSEMBLY, DISCHARGE, 1.50 IN. X 25 FT.	
1	PCOOZ	81349	M11588-03-07-32	HOSE ASSEMBLY,NONME 1 1/2 IN X 25 FT...	4
2	PCOOZ	96906	MS27028-9	.CAP,QUICK DISCONNEC	1
3	PCOZZ	96906	MS27030-5	..GASKET.....	1
4	PAOZZ	96906	MS27029-9	.PLUG,QUICK DISCONNE	1
5	MOOOO	97403	13227E6891-43	.CLAMP, STRAPPING MAKE FROM P/N C-204 (77414), CUT TO LENGTH....	4
6	PAOZZ	77414	C-254	.SEAL, STRAPPING CRES, TYPE 201, 1/2 WIDTH, 100 EA PER BOX.	1
7	XBOOO	96906	MS27025-9	.COUPLING HALF, QUICK	1
8	PCOZZ	96906	MS27030-5	..GASKET.....	1
9	XBOZZ	96906	MS27021-9	.COUPLING HALF,QUICK..	1

END OF FIGURE

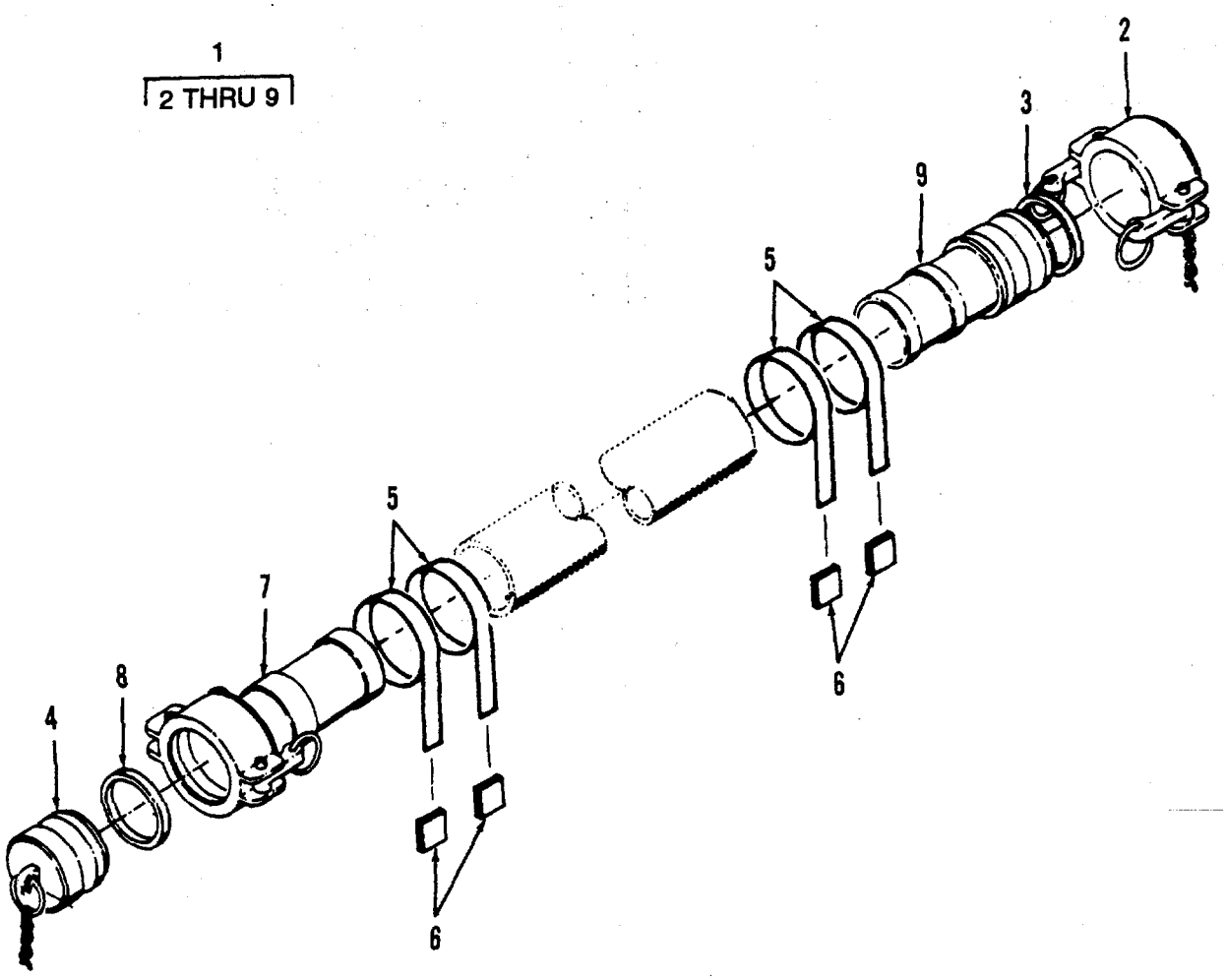


Figure 7. Hose Assembly, Discharge, 2.00 in. x 25 ft.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01 HOSE ASSEMBLIES	
				FIG. 7 HOSE ASSEMBLY, DISCHARGE, 2.00 IN. X 25 FT.	
1	PCOOO	81349	M11588-03-08-32	HOSE ASSEMBLY,NONME 2 IN X 25 FT...	1
2	PCOOZ	96906	MS27028-11	.CAP,QUICK DISCONNEC	1
3	PCOZZ	96906	MS27030-6	..GASKET	2
4	PAOZZ	96906	MS27029-11	.PLUG,QUICK DISCONNE	1
5	MOOOO	97403	13227E6891-43	.CLAMP, STRAPPING MAKE FROM P/N C-204 (77414), CUT TO LENGTH.	4
6	PAOZZ	77414	C-254	.SEAL, STRAPPING CRES, TYPE 201, 1/2 WIDTH, 100 EA PER BOX.	1
7	XBOOO	96906	MS27025-11	.COUPLING HALF,QUICK.....	1
8	PCOZZ	96906	MS27030-6	..GASKET	1
9	XBOZZ	96906	MS27021-11	.COUPLING HALF,QUICK	1

END OF FIGURE

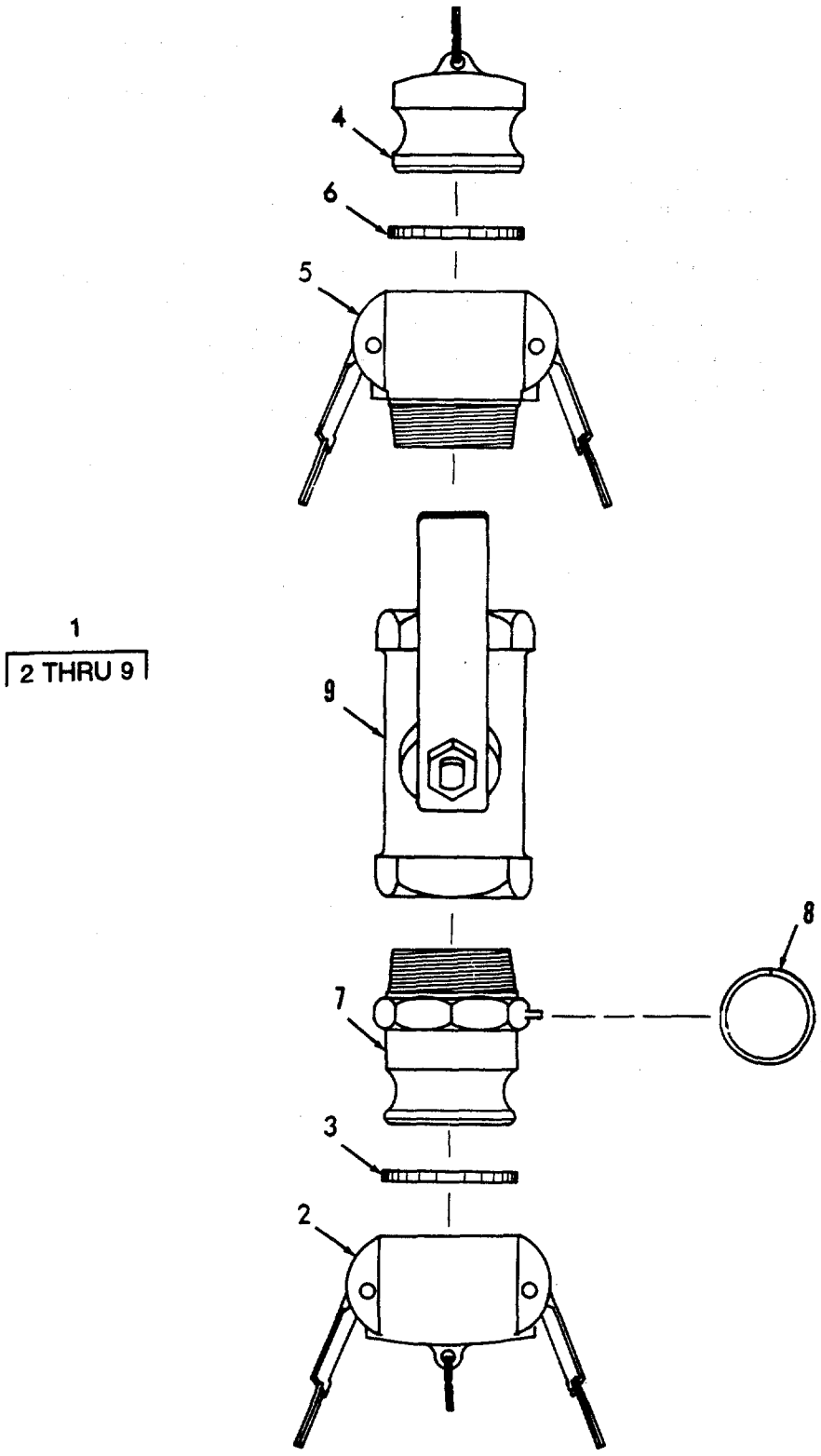


Figure 8. Butterfly Valve Assembly, 4.00 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02 VALVE ASSEMBLIES	
				FIG. 8. BUTTERFLY VALVE ASSEMBLY, 4.00 IN.	
1	PCOOO	97403	13229E6466	VALVE ASSEMBLY, BUT.....	3
2	PCOOO	96906	MS27028-17	.CAP, QUICK DISCONNECT	1
3	PCOZZ	96906	MS27030-9	..GASKET	1
4	PAOZO	96906	MS27029-17	.PLUG, QUICK DISCONNECT	1
5	PCOOZ	96906	MS27026-17	.COUPLING HALF,QUICK	1
6	PCOZZ	96906	MS27030-9	..GASKET	1
7	PAOZZ	96906	MS27022-17	.COUPLING HALF,QUICK	1
8	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT.....	1
9	XAOZZ	91363	B0140-534A-1Q	.VALVE, BUTTERFLY ..... FAY	1
9	XAOZZ	97403	13228E3457	.VALVE, BUTTERFLY ..... FNX	1

END OF FIGURE

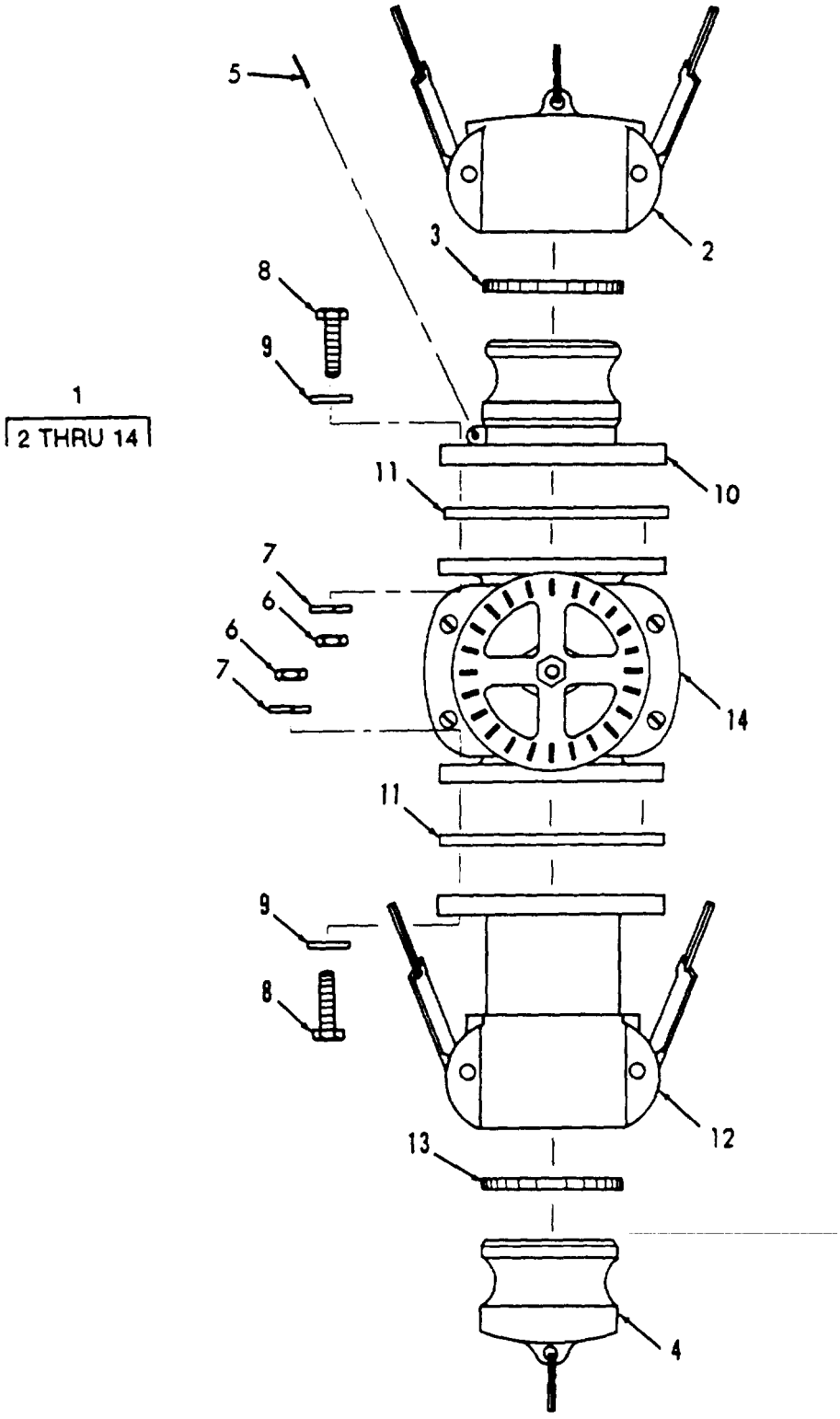


Figure 9. Valve Assembly, 4 in. Gate

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02 VALVE ASSEMBLIES	
				FIG. 9 VALVE ASSEMBLY, 4.00 IN GATE	
1	PAOOF	97403	13226E8282	VALVE ASSEMBLY,QUIC	11
2	PCOOO	96906	MS27028-17	.CAP,QUICK DISCONNEC	1
3	PCOZZ	96906	MS27030-9	..GASKET.....	1
4	PAOZZ	96906	MS27029-17	.PLUG,QUICK DISCONNE	1
5	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT	1
6	PAOZZ	96906	MS35649-2382	.NUT,PLAIN,HEXAGON .375-16 UNC-2B..	16
7	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN NOM ..... SIZE.....	16
8	PAOZZ	96906	MS90728-64	.SCREW,CAP,HEXAGON H .375-16 UNC- ..... 2A X 1.50 IN. LG.	16
9	PAOZZ	96906	MS27183-14	.WASHER,FLAT .406 IN.ID	16
10	PAOZZ	96906	MS27023-17	.COUPLING HALF,QUICK	1
11	PCOZZ	97403	13216E8238	.GASKET	2
12	PCOOO	96906	MS27027-17	.COUPLING HALF,QUICK	1
13	PCOZZ	96906	MS27030-9	..GASKET	1
14	XBOOO	1U339	4GV-AL	.VALVE, GATE	1
				END OF FIGURE	

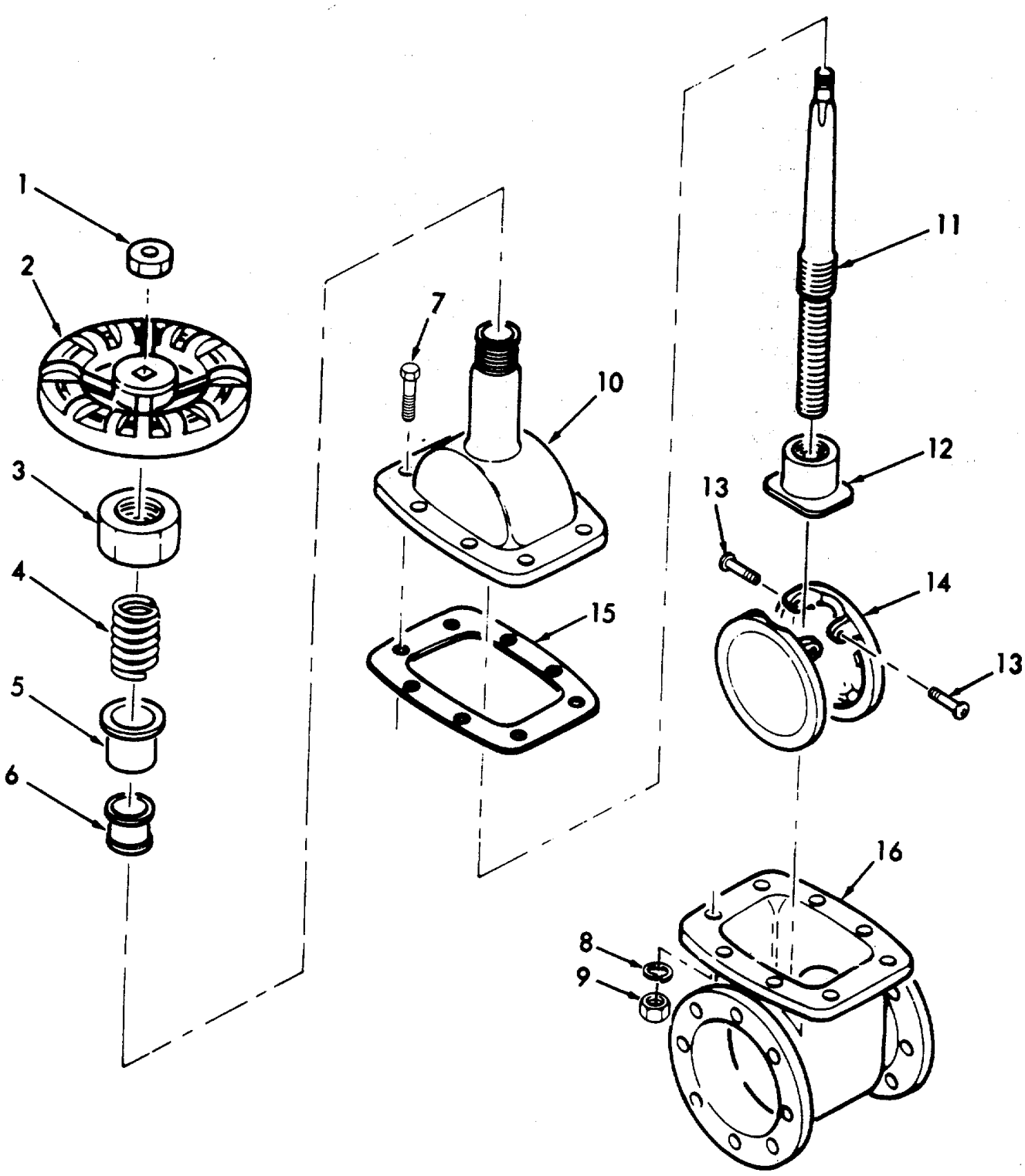


Figure 10. Gate Valve, 4.00 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02 VALVE ASSEMBLIES	
				FIG. 10 GATE VALVE, 4.00 IN	
1	PBOZZ	1U339	GV022	..NUT, WHEEL	1
2	PBOZZ	1U339	GV015	..HANDWHEEL	1
3	XBOZZ	1U339	GV006	..NUT, PACKING	1
4	XBOZZ	1U339	GV021	..SPRING, PACKING	1
5	XBOZZ	1U339	GV023	..GLAND, PACKING	1
6	PCOZZ	1U339	GV026	..PACKING	1
7	XBOZZ	1U339	GV027	..BONNET SCREW	8
8	XBOZZ	1U339	GV031	..WASHER, LOCK	8
9	XBOZZ	1U339	GV028	..BONNET NUT	8
10	XAOZZ	1U339	GV009	..BONNET	1
11	XAOZZ	1U339	GV001	..STEM M	1
12	XAOZZ	1U339	GV010	..DISC COLLAR	1
13	XBOZZ	1U339	GV025	..DISC SCREW	2
14	XAOZZ	1U339	GV024	..DISC ASSEMBLY:	1
15	XBOZZ	1U339	GV029	..BONNET GASKET	1
16	XAOZZ	1U339	GV030	..BODY	1
				END OF FIGURE	

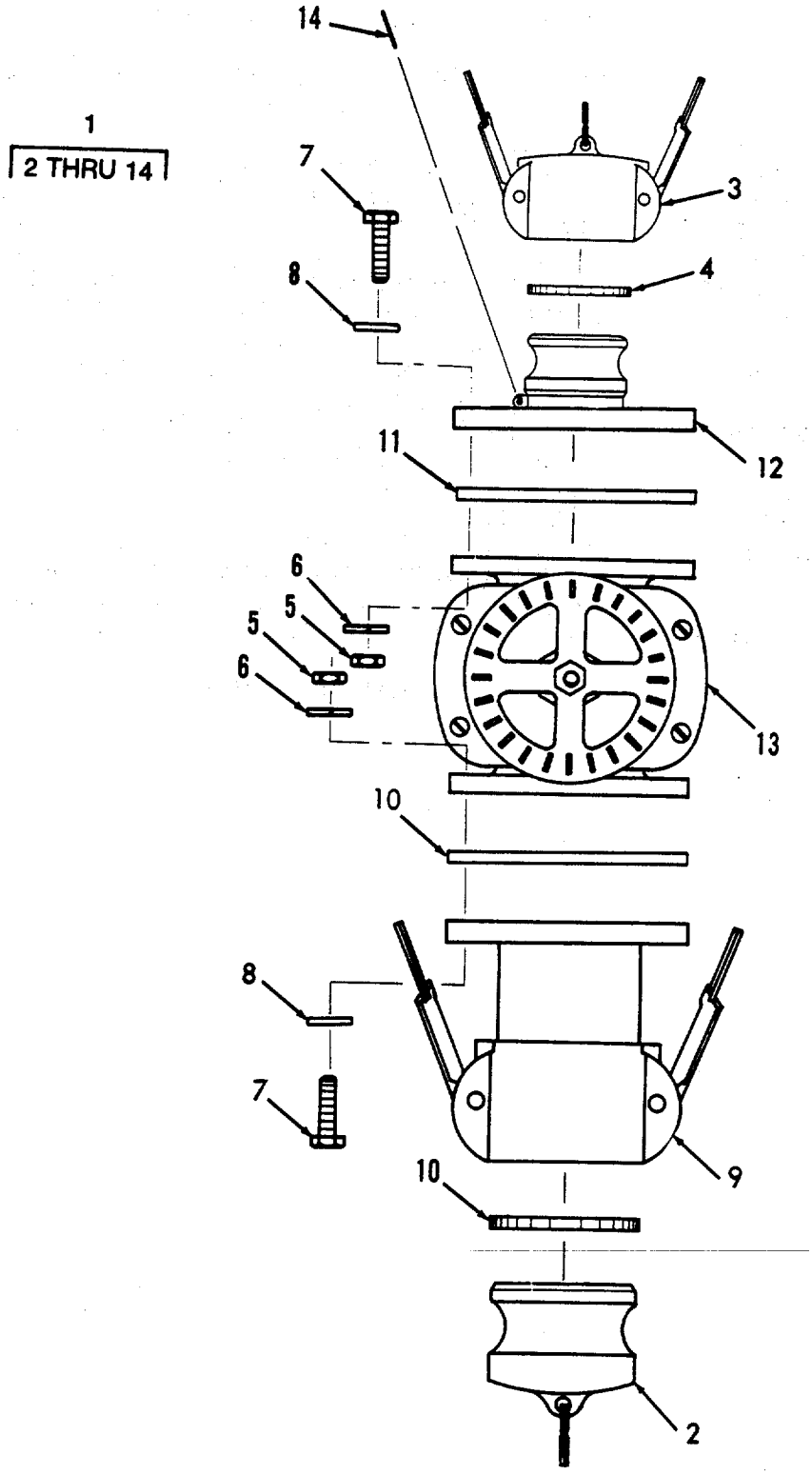


Figure 11. Valve Assembly, 3.00 in. x 4.00 in. Gate.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02 VALVE ASSEMBLIES	
				FIG. 11 VALVE ASSEMBLY, 3.00 IN. X 4.00 IN. GATE	
1	PCOOO	97403	13229E6040	VALVE, GATE 3 IN X 4 IN	1
2	PAOZO	96906	MS27029-17	.PLUG,QUICK DISCONNE	1
3	PCOOZ	96906	MS27028-15	.CAP,QUICK DISCONNEC	1
4	PCOZZ	96906	MS27030-8	..GASKET	1
5	PAOZZ	96906	MS35649-2382	.NUT,PLAIN,HEXAGON .375-16 UNC-2B..	16
6	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN. NOM SIZE	16
7	PAOZZ	96906	MS90728-046	.SCREW,CAP,HEXAGON H .375-16 UNC-2A X 1.50 IN. L	16
8	PAOZZ	96906	MS27183-14	.WASHER,FLAT .406 IN. ID	16
9	PCOOO	96906	MS27027-17	.COUPLING HALF,QUICK	1
10	PCOZZ	96906	MS27030-9	..GASKET	1
11	PCOZZ	97403	13216E8238	.GASKET	2
12	PAOZZ	96906	MS27023-27	.COUPLING HALF,QUICK	1
13	XBOOO	1U339	4GV-AL	.VALVE, GATE (SEE FIG. 10 FOR ASSY BRKDN.)	1
14	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT	1

END OF FIGURE

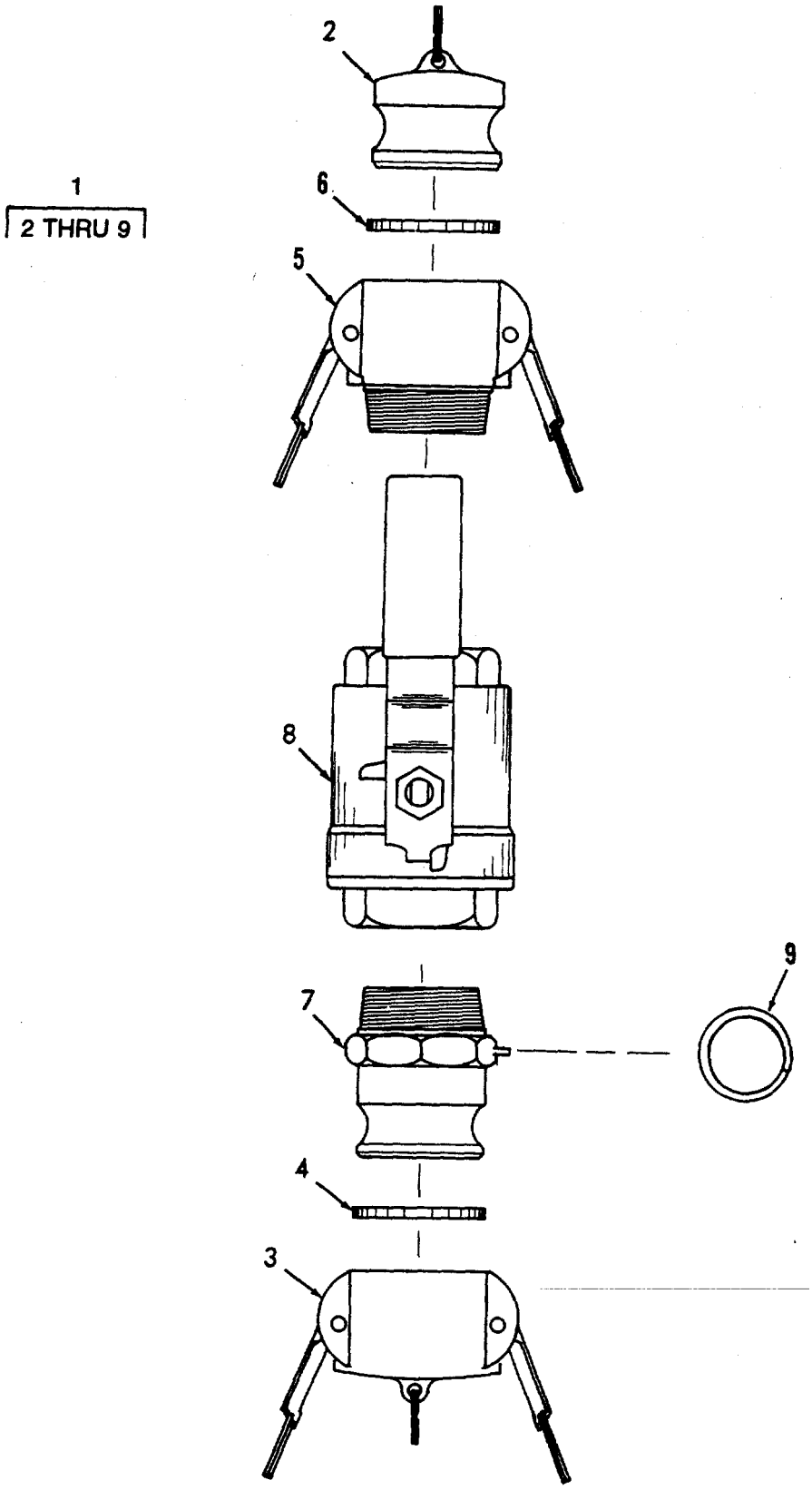


Figure 12. Valve Assembly, 1.50 in., Quick Acting.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02 VALVE ASSEMBLIES	
				FIG. F-12. VALVE ASSEMBLY, 1.50 IN., QUICK ACTING.	
1	PCOOO	97403	13222E9886	VALVE ASSEMBLY,QUICK..... 1.5 IN.	1
2	PAOZZ	96906	MS27029-9	. PLUG, QUICK DISCONNECT	1
3	PCOOZ	96906	MS27028-9	.CAP, QUICK DISCONNECT	1
4	PCOZZ	96906	MS27030-5	.. GASKET	1
5	PCOOZ	96906	MS27026-9	.COUPLING HALF,QUICK	1
6	PCOZZ	96906	MS27030-5	.. GASKET	1
7	PAOZZ	96906	MS27022-9	.COUPLING HALF,QUICK	1
8	XAOZZ	24869	SSBV-150	. VALVE, QUICK ACTING . ..... FAY	1
8	XAOZZ	97403	13228E3457	VALVE, BUTTERFLY ..... FNX	1
9	PAOZZ	97403	13227E6160-5	. RING, KEY, SPLIT.....	1

END OF FIGURE

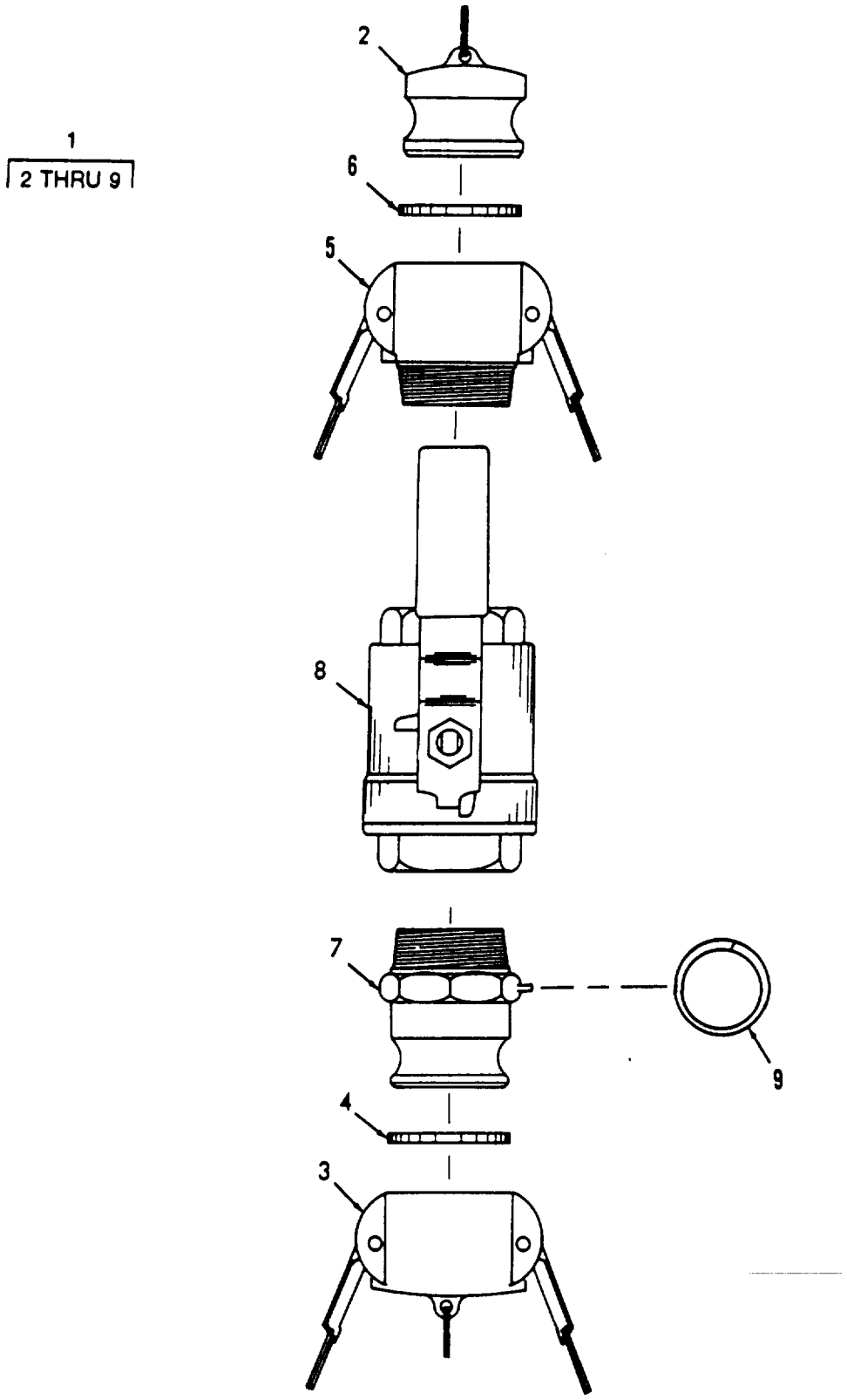


Figure 13. Valve Assembly, 2.00 in., Quick Acting.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02 VALVE ASSEMBLIES	
				FIG. F-13. VLAVE ASSEMBLY, 2.00 IN., QUICK ACTING.	
1	PCOOO	97403	13222E9887	VALVE ASSEMBLY,QUICK..... 2 IN.	1
2	PAOZZ	96906	MS27029-11	.PLUG, QUICK DISCONNECT	1
3	PCOOZ	96906	MS27028-11	.CAP, QUICK DISCONNECT	1
4	PCOZZ	96906	MS27030-6	..GASKET	1
5	PCOZO	96906	MS27026-11	.COUPLING HALF,QUICK	1
6	PCOZZ	96906	MS27030-6	..GASKET	1
7	PAOZZ	96906	MS27022-11	.COUPLING HALF,QUICK	1
8	XAOZZ	24869	SSBV-200	.VALVE, QUICK ACTING ..... FAY	1
8	XAOZZ	97403	13228E0468	.VALVE, BUTTERFLY ..... FNX	1
9	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT.....	1

END OF FIGURE

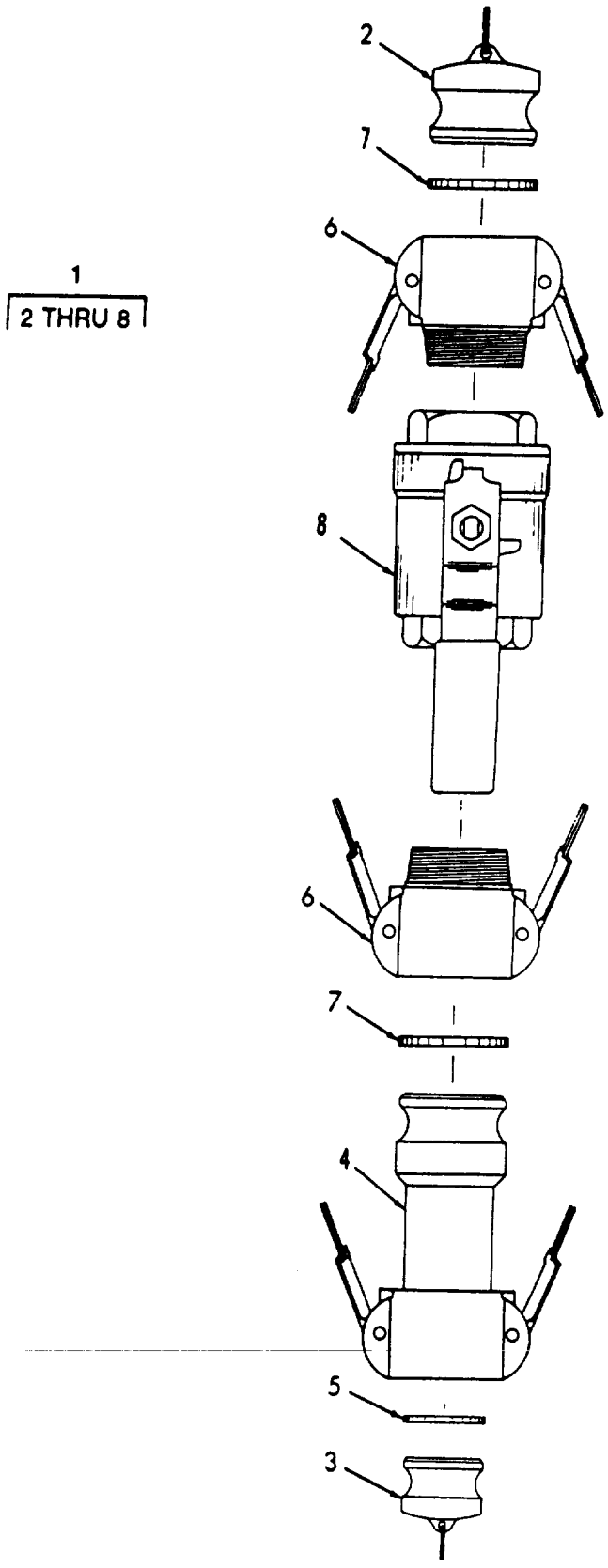


Figure 14. Valve Assembly, 4.00 in., Quick Acting.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02 VALVE ASSEMBLIES	
				FIG. 14 VALVE ASSEMBLY, 4.00 IN., QUICK ACTING	
1	PCOZZ	97403	13229E6060	VALVE ASSEMBLY,QUIC	3
2	PAOZO	96906	MS27029-17	.PLUG,QUICK DISCONNE	1
3	PAOZZ	96906	MS27029-15	.PLUG,QUICK DISCONNE	1
4	PCOOZ	96906	MS49000-9	.REDUCER,QUICK DISCO 4 IN. X 3 IN..	1
5	PCOZZ	96906	MS27030-8	..GASKET.....	1
6	PCOOZ	96906	MS27026-17	.COUPLING HALF,QUICK	2
7	PCOZZ	96906	MS27030-9	..GASKET.....	1
8	XAOZZ	91363	R0140-53AA-1Q	.VALVE, BUTTERFLY	1
				END OF FIGURE	

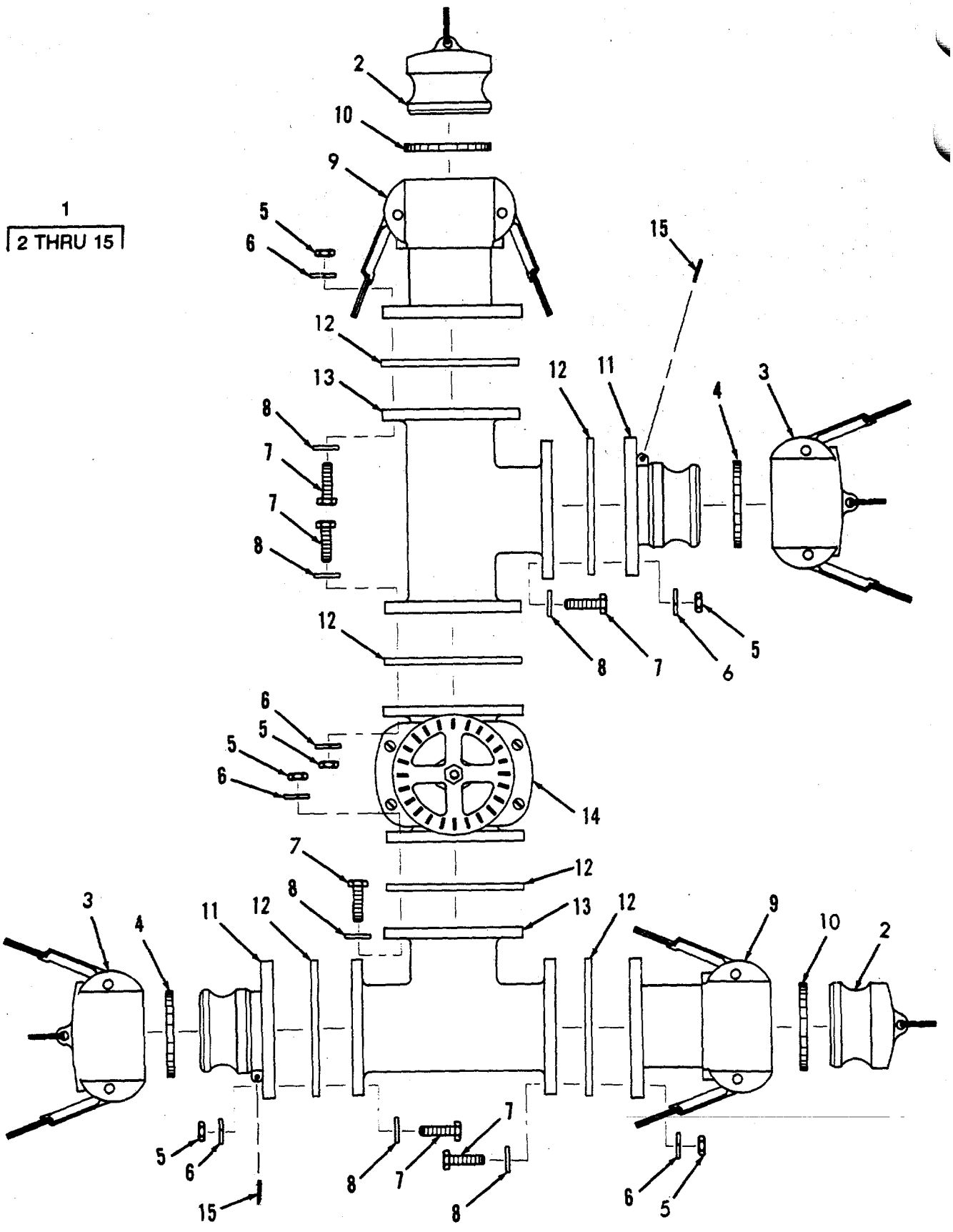


Figure 15. Manifold Assembly, Type I.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 03 MANIFOLD ASSEMBLIES	
				FIG. 15 MANIFOLD ASSEMBLY, TYPE I	
1	PCOOO	97403	13200E0068	MANIFOLD ASSEMBLY TYPE I	3
2	PAOZO	96906	MS27029-17	.PLUG,QUICK DISCONNE	2
3	PCOOO	96906	MS27028-17	.CAP,QUICK DISCONNEC	2
4	PCOZZ	96906	MS27030-9	..GASKET	1
5	PAOZA	96906	MS51967-8	.NUT,PLAIN,HEXAGON	48
6	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN. NOM SIZE	48
7	PAOZZ	96906	MS90728-64	.SCREW,CAP,HEXAGON H .375-16 UNC-2A X 1.50 IN. LG	48
8	PAOZZ	96906	MS27183-14	.WASHER,FLAT .406 IN. ID	48
9	PCOOO	96906	MS27027-17	.COUPLING HALF, QUICK	2
10	PCOZZ	96906	MS27030-9	..GASKET	1
11	PAOZZ	96906	MS27023-17	.COUPLING HALF,QUICK	2
12	PCOZZ	97403	13216E8238	.GASKET	6
13	XAOZZ	97403	13216E8243	.TEE,FLANGE	2
14	XBOOO	1U339	4GV-AL	.VALVE, GATE (SEE FIG. F-10 FOR ASSY BRKDN.).	1
15	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT	2

END OF FIGURE

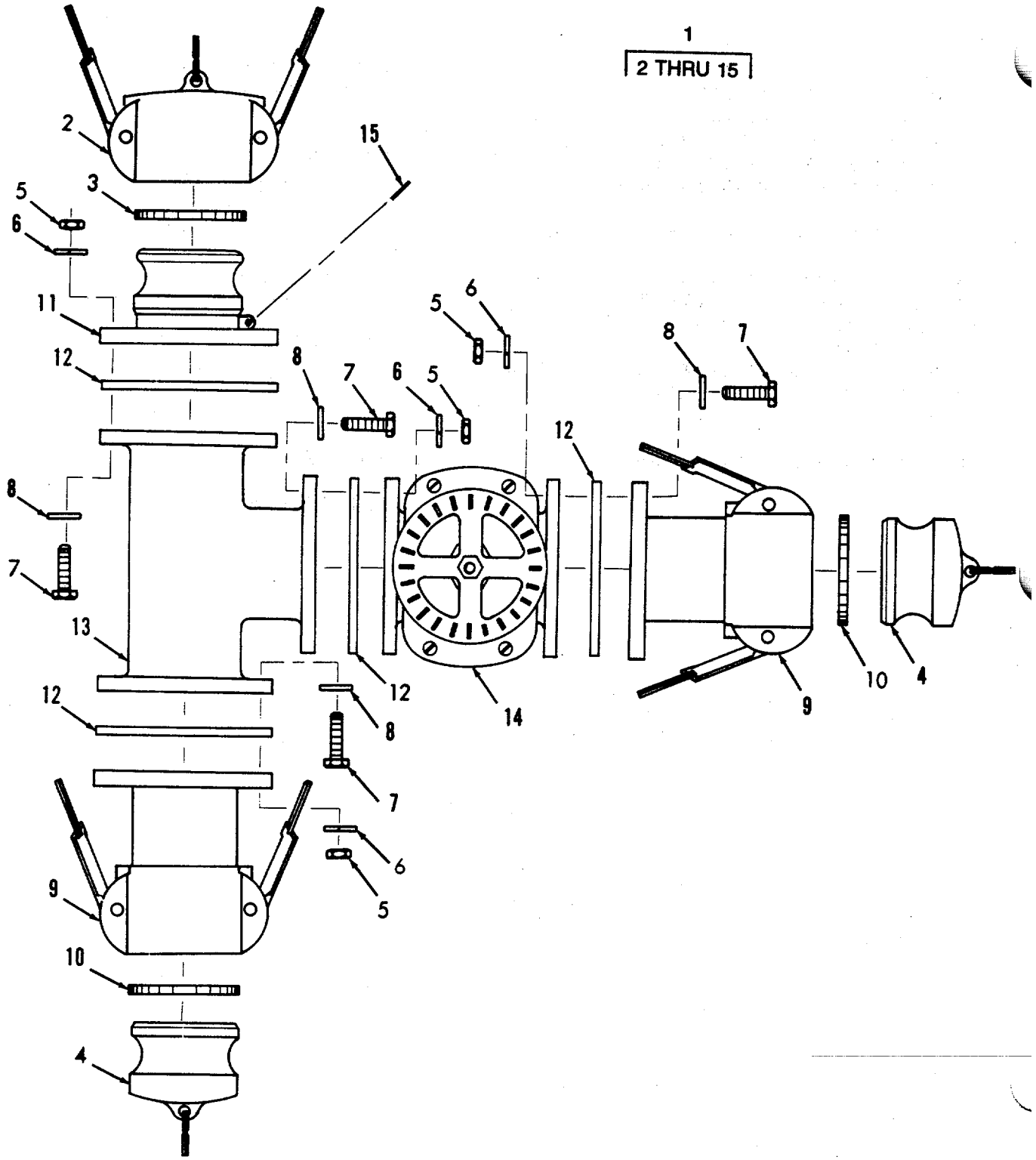


Figure 16. Manifold Assembly, Type II.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 03 MANIFOLD ASSEMBLIES	
				FIG. 16 MANIFOLD ASSEMBLY, TYPE II	
1	PCODO	97403	13200E0803	MANIFOLD ASSEMBLY TYPE II	3
2	PCOOO	96906	MS27028-17	.CAP,QUICK DISCONNEC	1
3	PCOZZ	96906	MS27030-9	..GASKET	1
4	PAOZZ	96906	MS27029-17	.PLUG,QUICK DISCONNE	2
5	PAOZZ	96906	MS51967-8	.NUT,PLAIN,HEXAGON	32
6	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN NOM SIZE	32
7	PAOZZ	96906	MS90728-64	.SCREW,CAP, HEXAGON H .375-16 UNC-2A X 1.50 IN. L	32
8	PAOZZ	96906	MS27183-14	.WASHER,FLAT .406 IN. I D	32
9	PCOOO	96906	MS27027-17	.COUPLING HALF,QUICK	2
10	PCOZZ	96906	MS27030-9	..GASKET.	1
11	PAOZZ	96906	MS27023-17	.COUPLING HALF,QUICK	1
12	PCOZZ	97403	13216E8238	.GASKET	4
13	XAOZZ	97403	13216E8243	.TEE,FLANGE	1
14	XBOOO	1U339	4GV-AL	.VALVE, GATE (SEE FIG. F-10 FOR ASSY BRKDN.)	1
15	PAOZZ	97403	13227E6160-S	.RING, KEY, SPLIT	1

END OF FIGURE

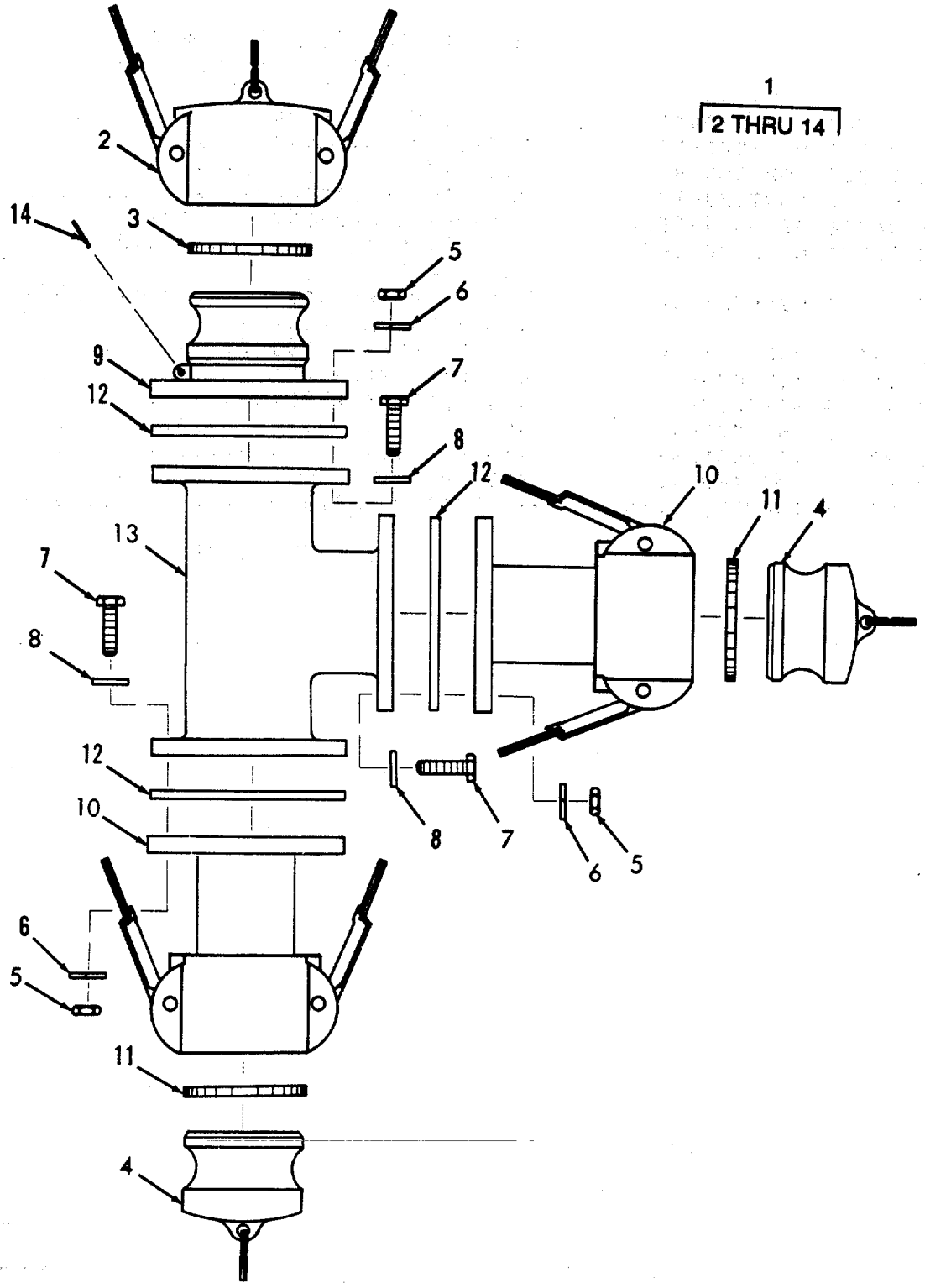


Figure 17. Tee Assembly, Quick Disconnect, 4.00 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 04 TEE ASSEMBLIES	
				FIG. 17 TEE ASSEMBLY, QUICK DISCONNECT, 4.00 IN.	
1	PCOOO	97403	13229E6465	TEE ASSEMBLY 4 IN	1
2	PCOOO	96906	MS27028-17	.CAP, QUICK DISCONNEC	1
3	PCOZZ	96906	MS27030-9	..GASKET	1
4	PAOZO	96906	MS27029-17	.PLUG, QUICK DISCONNE	2
5	PAOZZ	96906	MS35649-2382	.NUT, PLAIN, HEXAGON .375-16 UNC-2B	24
6	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN NOM SIZE	24
7	PAOZZ	96906	MS90728-64	.SCREW, CAP, HEXAGON H .375-16 UNC-2A X 1.50 IN. L.	24
8	PAOZZ	96906	MS27183-14	.WASHER, FLAT .406 IN. ID	24
9	PAOZZ	96906	MS27023-17	.COUPLING HALFPQUICK	1
10	PCOOO	96906	MS27027-17	.COUPLING HALFQUICK	2
11	PCOZZ	96906	MS27030-9	..GASKET	1
12	PCOZZ	97403	13216E8238	.GASKET	3
13	XAOZZ	97403	13216E8243	.TEE, FLANGE	1
14	PAOZZ	97403	13227E6160-5	.RING, KEYT SPLIT	1

END OF FIGURE

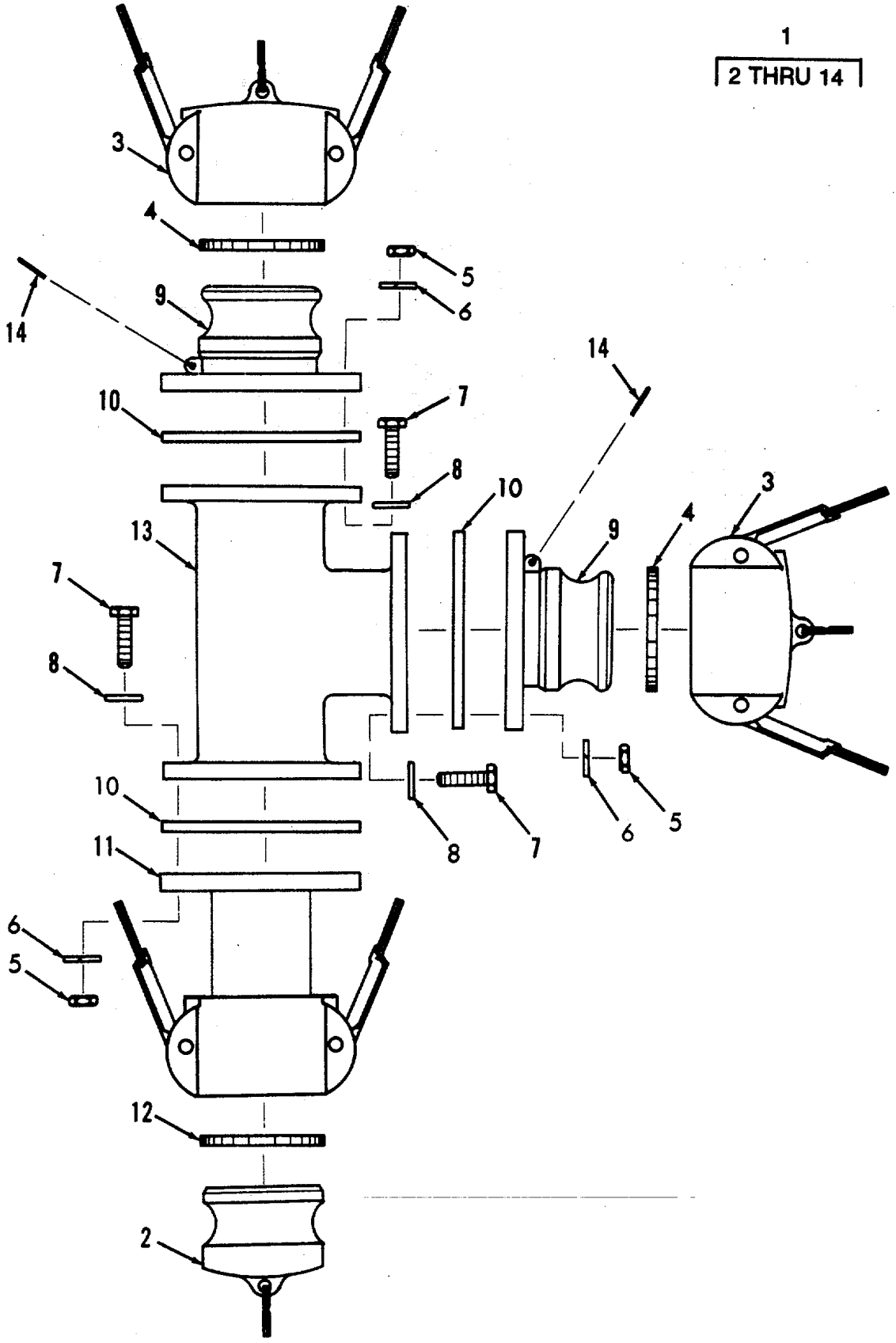


Figure 18. Tee Assembly, Quick Disconnect, 4.00 in- Male x 4.00 in. Female x 4.00 in. Male

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 04 TEE ASSEMBLIES	
				FIG. 18 TEE ASSEMBLY, QUICK DISCONNECT, 4 IN. MALE X 4 IN. FEMALE X 4 IN. MALE	
1	PCOOO	97403	13229E6039	TEE ASSEMBLY	5
2	PAOZO	96906	MS27029-17	.PLUG, QUICK DISCONNE.....	1
3	PCOOO	96906	MS27028-17	.CAP, QUICK DISCO NNEC	2
4	PCOZZ	96906	MS27030-9	..GASKET	3
5	PAOZZ	96906	MS35649-2382	.NUT, PLAIN, HEXAGON .375-16 UNC-2B	24
6	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN NOM SIZE	24
7	PAOZZ	96906	MS90728-64	.SCREW, CAP, HEXAGON H .375-16 UNC-2A X 1.50 IN. LG	24
8	PAOZZ	96906	MS27183-14	.WASHER, FLAT .406 IN. ID	24
9	PAOZZ	96906	MS27023-17	.COUPLING HALF, QUICK	.2
10	PCOZZ	97403	13216E8238	.GASKET	3
11	PCOOO	96906	MS27027-17	.COUPLING HALF, QUICK	1
12	PCOZZ	96906	MS27030-9	..GASKET	1
13	XAOZZ	97403	13216E8243	.TEEPFLANGE	1
14	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT.....	2

END OF FIGURE

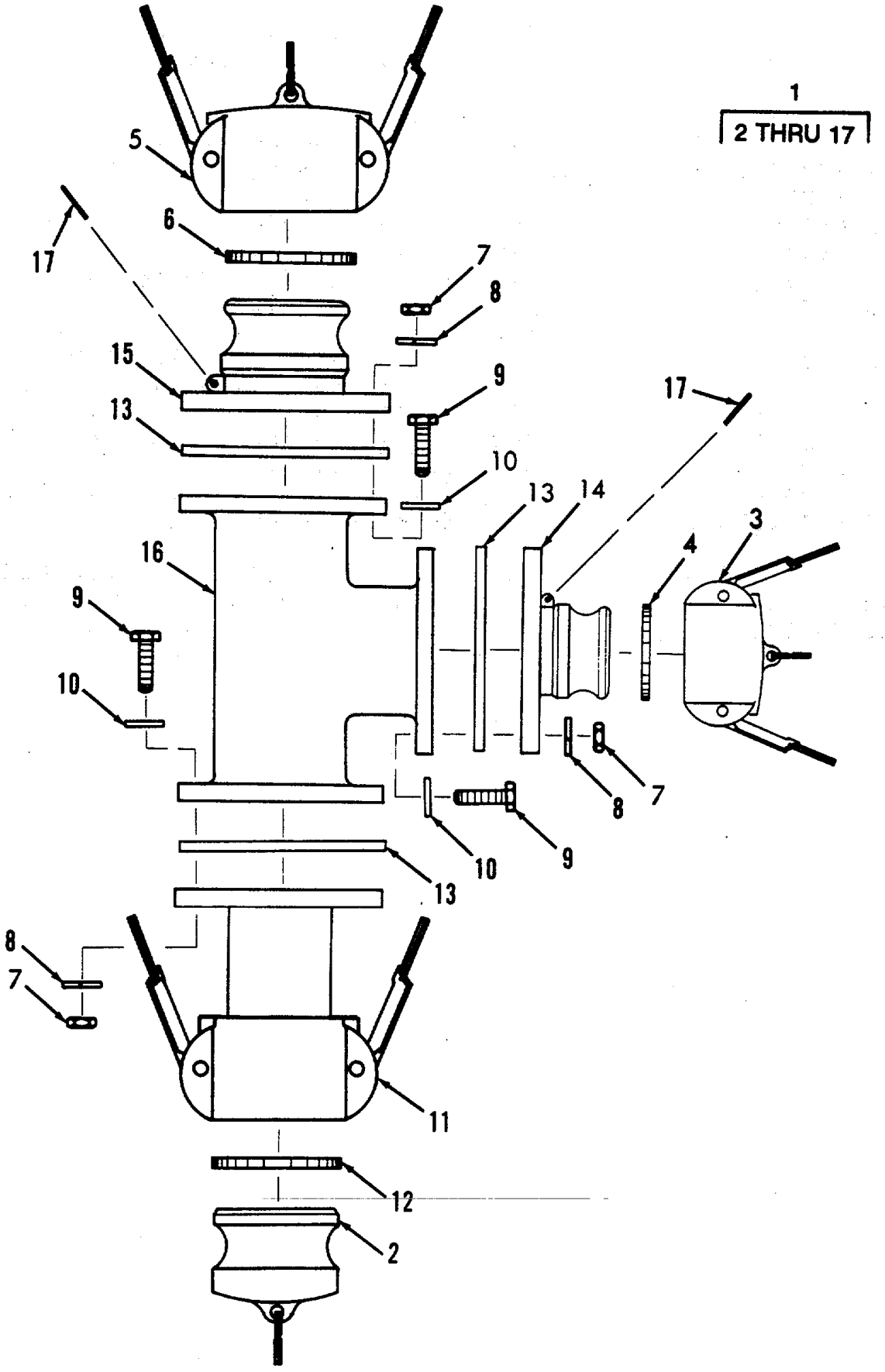


Figure 19. Tee Assembly, 3.00 in. x 3.00 in. x 2.00 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 04 TEE ASSEMBLIES	
				FIG. 19 TEE ASSEMBLY, 3.00 IN. X 3.00 IN. X 2.00 IN.	
1	PCOOO	97403	13229E6061	TEE ASSEMBLY	1
2	PAOZZ	96906	MS27029-15	.PLUGPQUICK DISCONNE	1
3	PCOOZ	96906	MS27028-11	.CAP, QUICK DISCONNEC 2 IN. NOM SIZE	1
4	PCOZZ	96906	MS27030-6	..GASKET	1
5	PCOOZ	96906	MS27028-15	.CAP, QUICK DISCONNEC 3 IN. NOM SIZE	1
6	PCOZZ	96906	MS27030-8	..GASKET	2
7	PAOZZ	96906	MS35649-2382	.NUT, PLAIN, HEXAGON .375-16 UNC-2B	24
8	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN NOM SIZE	24
9	PAOZZ	96906	MS90728-64	.SCREW, CAP, HEXAGON H .375-16 UNC-2A X 1.50 IN. LG	24
10	PAOZZ	96906	MS27183-14	.WASHER, FLAT .406 IN. ID	24
11	PCOOZ	96906	MS27027-15	.COUPLING HALF, QUICK 3 IN. NOM SIZE	1
12	PCOZZ	96906	MS27030-8	..GASKET	1
13	PCOZZ	81718	H3289M	.GASKET	3
14	PAOZZ	96906	MS27023-25	.COUPLING HALF, QUICK 2 IN. X 3 IN NOM SIZE	1
15	PAOZZ	96906	MS27023-15	.COUPLING HALF, QUICK 3 IN. NOM SIZE	1
16	XAOZZ	81718	320F3	.TEE, FLANGE 3.00 IN. NOM SIZE	1
17	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT	2

END OF FIGURE

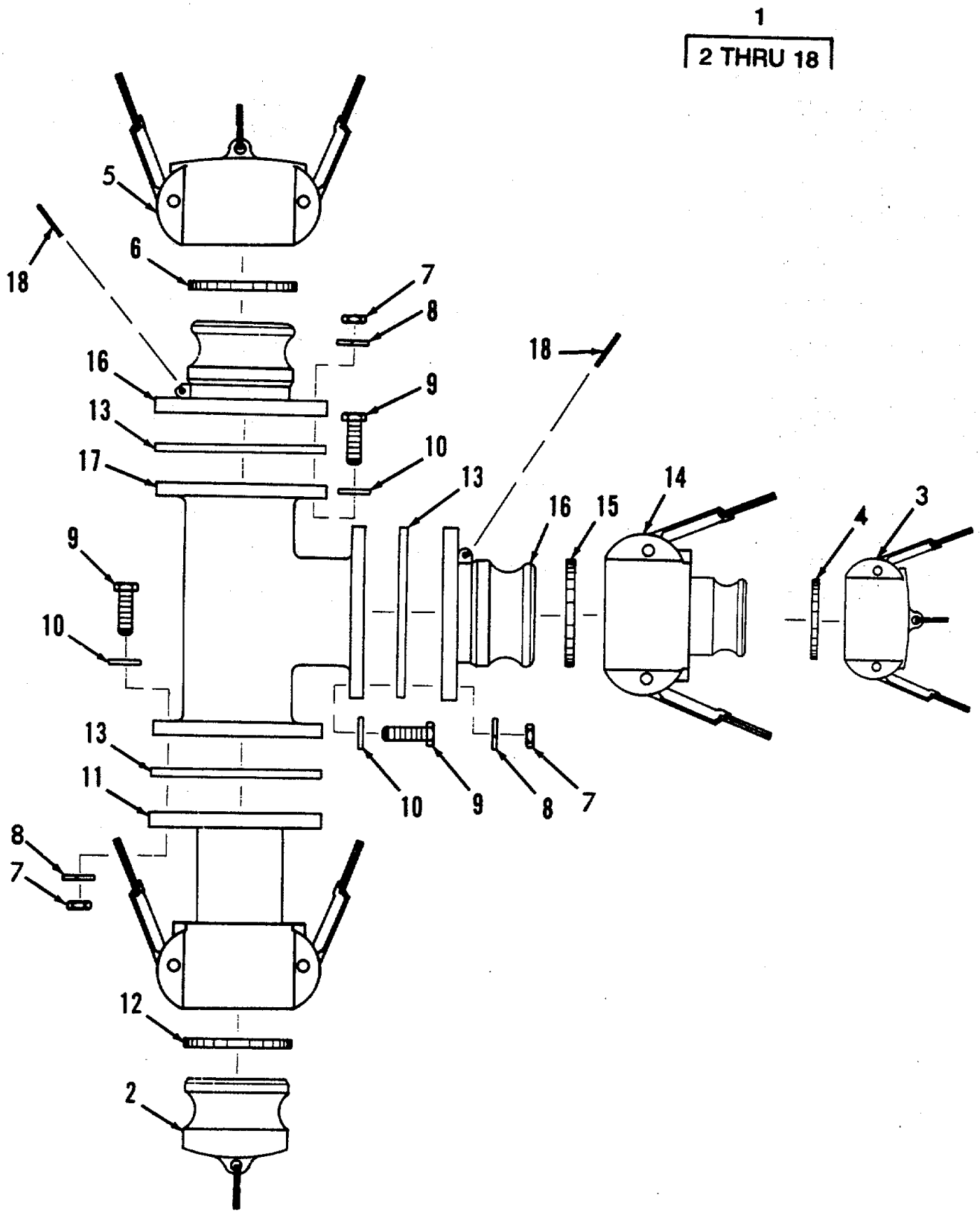


Figure 20. Tee Assembly, 3.00 in. x 3.00 in. x 1.50 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 04 TEE ASSEMBLIES	
				FIG. 20 TEE ASSEMBLY, 3.00 IN. X 3.00 IN. X 1.50 IN.	
1	PCOOO	97403	13222E9884	COUPLING HALF, QUICK	4
2	PAOZZ	96906	MS27029-15	.PLUG, QUICK DISCO NNE.....	1
3	PCOOZ	96906	MS27028-9	.CAP, QUICK DISCONNEC 1.50 IN. NOM SIZE	1
4	PCOZZ	96906	MS27030-5	..GASKET	1
5	PCOOZ	96906	MS27028-15	.CAP, QUICK DISCONNEC 3 IN. NOM SIZE	1
6	PCOZZ	96906	MS27030-8	..GASKET	1
7	PAOZZ	96906	MS35649-2382	.NUT, PLAIN, HEXAGON .375-16 UNC-2B	24
8	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN. NOM SIZE.	24
9	PAOZZ	96906	MS90728-64	.SCREW, CAP, HEXAGON H .375-16 UNC-2A X 1.50 IN. LG.	24
10	PAOZZ	96906	MS27183-14	.WASHER, FLAT .406 IN. ID	24
11	PCOOZ	96906	MS27027-15	.COUPLING HALF, QUICK 3 IN. NOM SIZE	1
12	PCOZZ	96906	MS27030-8	..GASKET	1
13	PCOZZ	81718	H3289M	.GASKET	3
14	PCOOO	97403	13222E9884-10	.ADAPTER 3.00 X 1.50 NOM SIZE	1
15	PCOZZ	96906	MS27030-8	..GASKET	1
16	PAOZZ	96906	MS27023-15	.COUPLING HALF, QUICK 3 IN. NOM SIZE	2
17	XAOZZ	81718	320F3	.TEE,FLANGE	1
18	PAOZZ	97403	13227E6160-5	.RING, KEY, SPL.....	2

END OF FIGURE

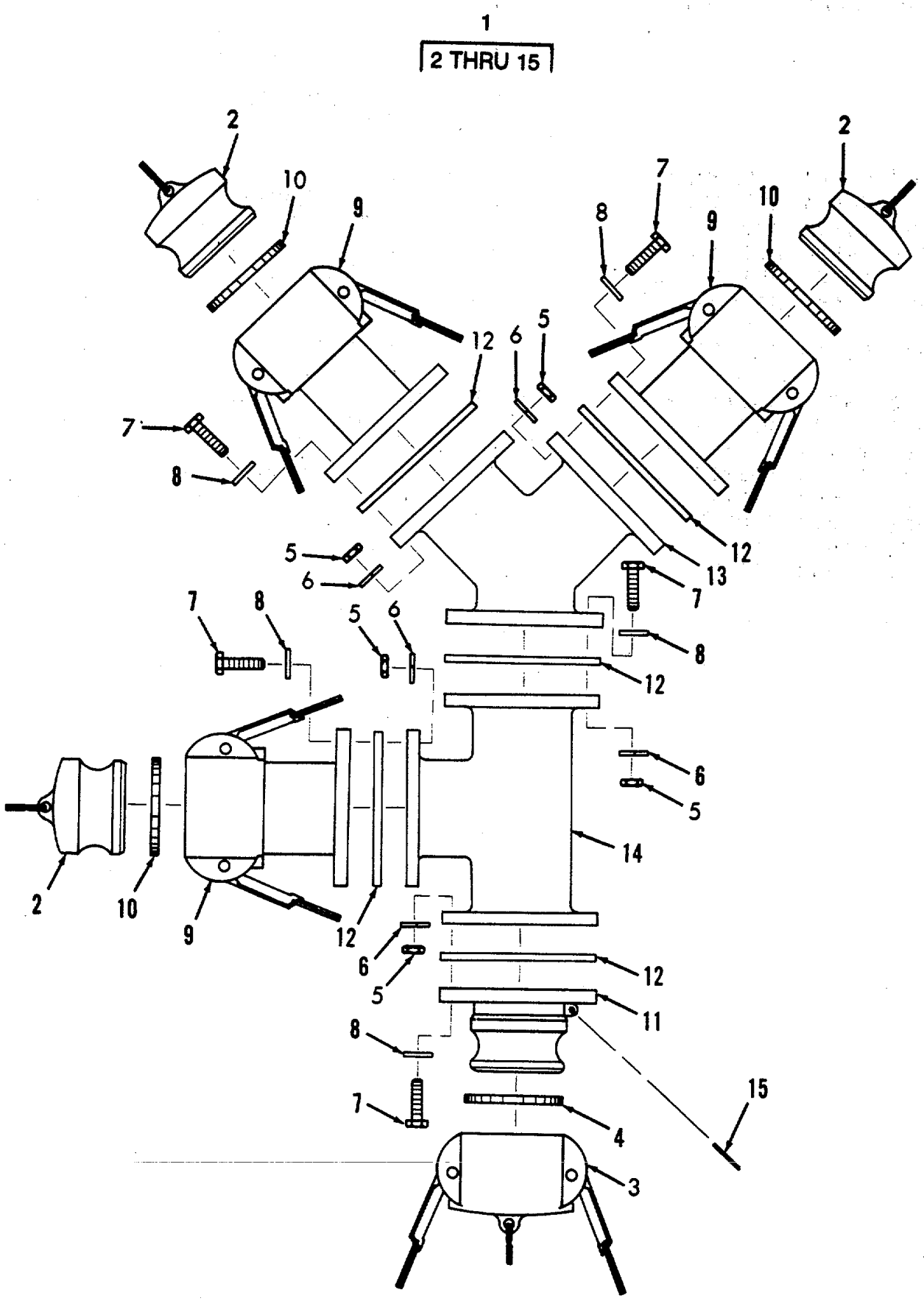


Figure 21. Wye and Tee Assembly, 4.00 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 05 WYE ASSEMBLIES	
				FIG. 21 WYE AND TEE ASSEMBLY, 4.00 IN.	
1	PCOOO	97403	13229E6042	WYE AND TEE ASSY	1
2	PAOZO	96906	MS27029-17	.PLUG, QUICK DISCONNE	3
3	PCOOO	96906	MS27028-17	.CAP, QUICK DISCONNEC	1
4	PCOZZ	96906	MS27030-9	..GASKET	1
5	PAOZZ	96906	MS35649-2382	.NUT, PLAIN, HEXAGON .375-16 UNC-2B	40
6	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN NOM SIZE	40
7	PAOZZ	96906	MS90728-64	.SCREW, CAP, HEXAGON H .375-16 UNC-2A X 1.50 IN. LG.	40
8	PAOZZ	96906	MS27183-14	.WASHER, FLAT .406 IN. ID	40
9	PCOOO	96906	MS27027-17	.COUPLING HALF, QUICK	3
10	PCOZZ	96906	MS27030-9	..GASKET	1
11	PAOZZ	96906	MS27023-17	.COUPLING HALF, QUICK	1
12	PCOZZ	97403	13216E8238	.GASKET	5
13	XAOZZ	96906	MS39336-1	.WYE, TRUE, PIPE	1
14	XAOZZ	97403	13216E8243	.TEE, FLANGE	1
15	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT	1

END OF FIGURE

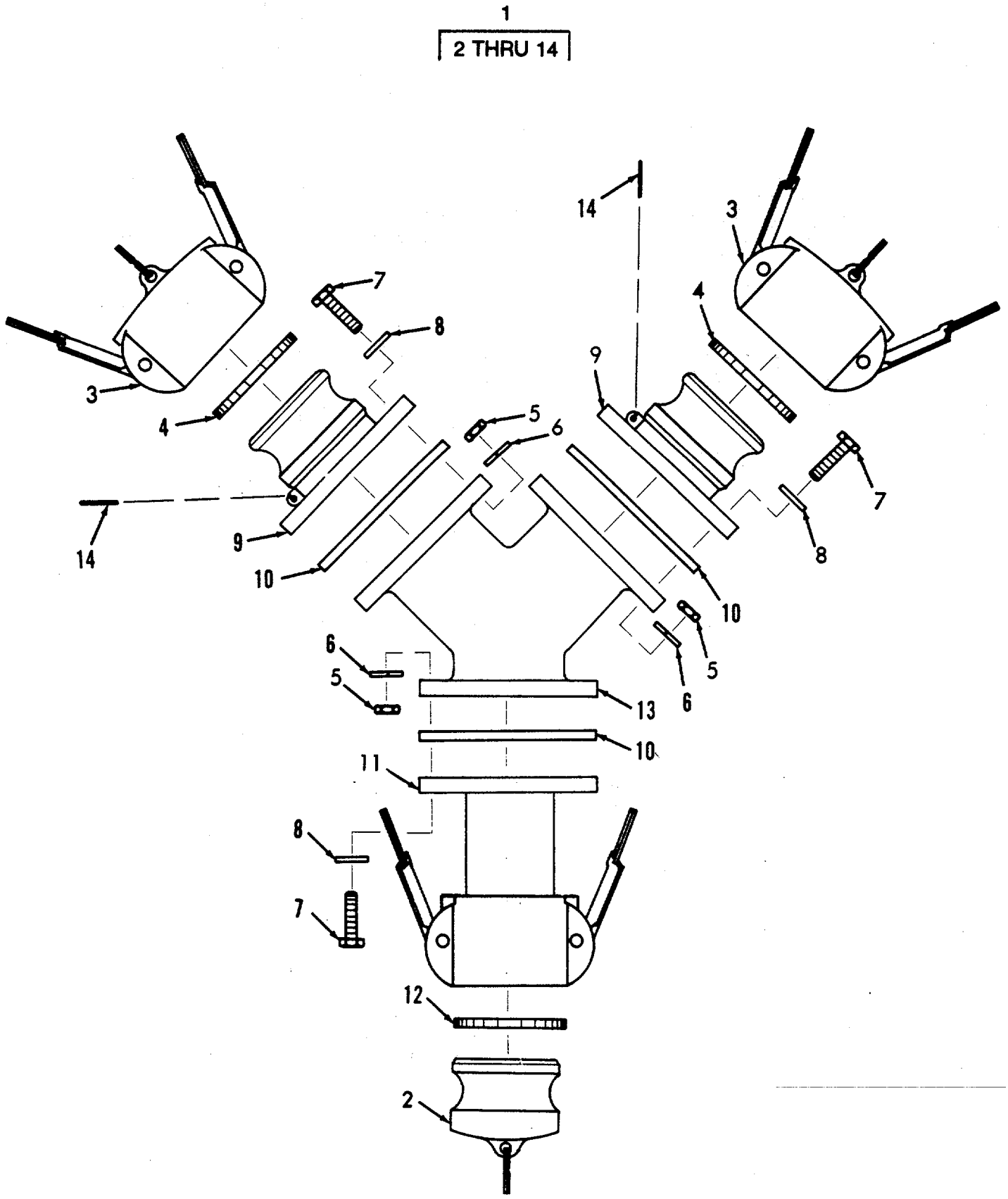


Figure 22. Wye Assembly, Quick Disconnect

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 05 WYE ASSEMBLIES	
				FIG. 22 WYE ASSEMBLY, QUICK DISCONNECT	
1	PCOOO	97403	13229E6037	WYE ASSEMBLY	1
2	PAOZO	96906	MS27029-17	.PLUG, QUICK DISCONNE.....	1
3	PCOOO	96906	MS27028-17	.CAP, QUICK DISCONNEC	2
4	PCOZZ	96906	MS27030-9	..GASKET	1
5	PAOZZ	96906	MS35649-2382	.NUT, PLAIN, HEXAGON .375-16 UNC-2B	24
6	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN NOM SIZE	24
7	PAOZZ	96906	MS90728-64	.SCREW, CAP, HEXAGON H .375-16 UNC-2A X 1.50 IN. LG	24
8	PAOZZ	96906	MS27183-14	.WASHER, FLAT .406 IN. ID	24
9	PAOZZ	96906	MS27023-17	.COUPLING HALF, QUICK	2
10	PCOZZ	97403	13216E8238	.GASKET	3
11	PAOZO	96906	MS27027-17	.COUPLING HALF, QUICK	1
12	PCOZZ	96906	MS27030-9	..GASKET	1
13	XAOZZ	96906	MS39336-1	.WYE, TRUE, PIPE	1
14	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT.....	1

END OF FIGURE

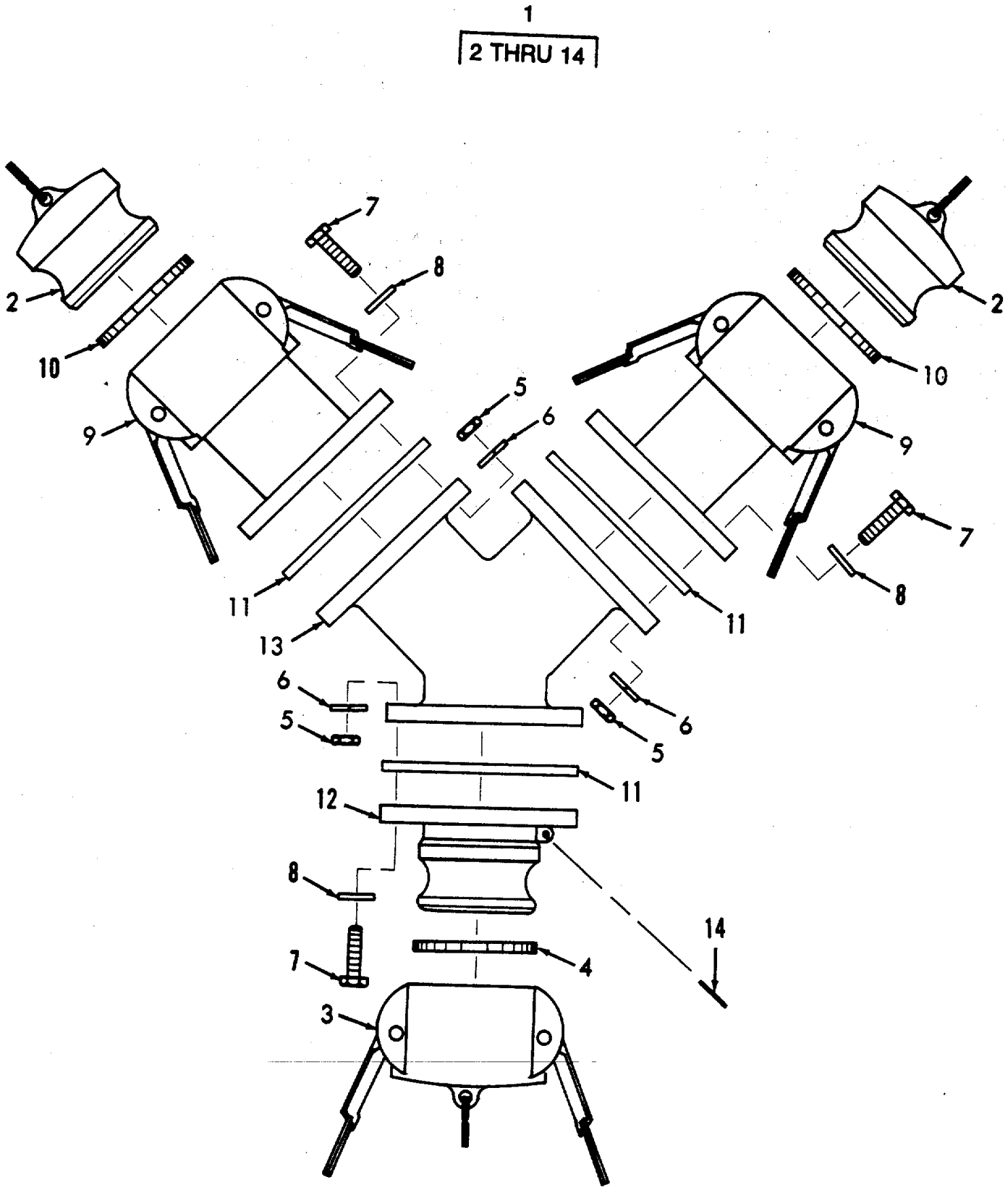


Figure 23. Wye Assembly, Quick Disconnect, 4.00 in. Male x 4.00 in. Female x 4.00 in. Male

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 05 WYE ASSEMBLIES	
				FIG. 23 WYE ASSEMBLY, QUICK DISCONNECT, 4 IN. MALE X 4 IN. FEMALE X 4 IN. MALE	
1	PCOOO	97403	13229E6038	WYE ASSEMBLY	1
2	PAOZO	96906	MS27029-17	.PLUG, QUICK DISCONNE	2
3	PCOOO	96906	MS27028-17	.CAP, QUICK DISCONNEC	1
4	PCOZZ	96906	MS27030-9	..GASKET	1
5	PAOZZ	96906	MS35649-2382	.NUT, PLAIN, HEXAGON .375-16 UNC-2B	24
6	PAOZZ	96906	MS35338-046	.WASHER, LOCK HELICAL, .375 IN NOM SIZE	24
7	PAOZZ	96906	MS90728-64	.SCREW, CAP, HEXAGON H .375-16 UNC-2A X 1.50 N LG	24
8	PAOZZ	96906	MS27183-14	.WASHER, FLAT 406 IN. ID	24
9	PCOOO	96906	MS27027-17	.COUPLING HALF, QUICK	2
10	PCOZZ	96906	MS27030-9	..GASKET	1
11	PCOZZ	97403	13216E8238	.GASKET	3
12	PAOZZ	96906	MS27023-17	.COUPLING HALF, QUICK	1
13	XAOZZ	96906	MS39336-1	.WYE, TRUE, PIPE	1
14	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT	1

END OF FIGURE

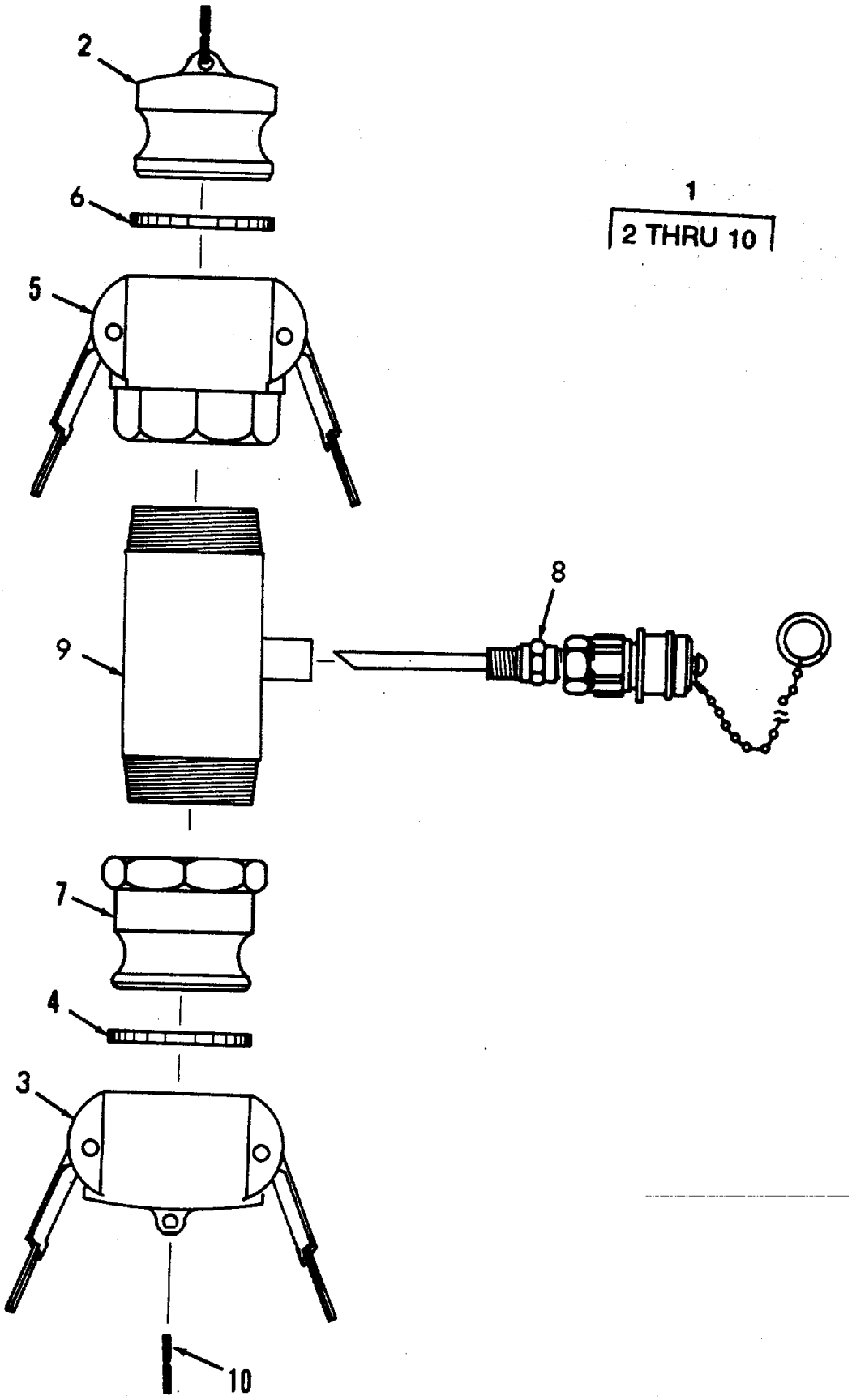


Figure 24. Adapter, Water Detector.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 06 ADAPTER ASSEMBLIES	
				FIG. 24 ADAPTER, WATER DETECTOR	
1	PCOOZ	97403	13220E9406-2	ADAPTER ASSEMBLY, WA	1
2	PAOZO	96906	MS27029-17	.PLUG, QUICK DISCONNE.....	1
3	PCOOO	96906	MS27028-17	.CAP, QUICK DISCONNEC	1
4	PCOZZ	96906	MS27030-9	..GASKET	1
5	PCOOZ	96906	MS27024-17	.COUPLING HALF, QUICK	1
6	PCOZZ	96906	MS27030-9	..GASKET	1
7	PAOZZ	96906	MS27020-17	.COUPLING HALF, QUICK	1
8	PAOZZ	97403	13220E9914-2	.PROBE ASSEMBLY, WATE	1
9	XAOZZ	97403	13220E9406-4-5	.PIPE COUPLING.....	1
10	PAOZZ	97403	13227E6160-5	.RING, KEY, SPLIT.....	2

END OF FIGURE

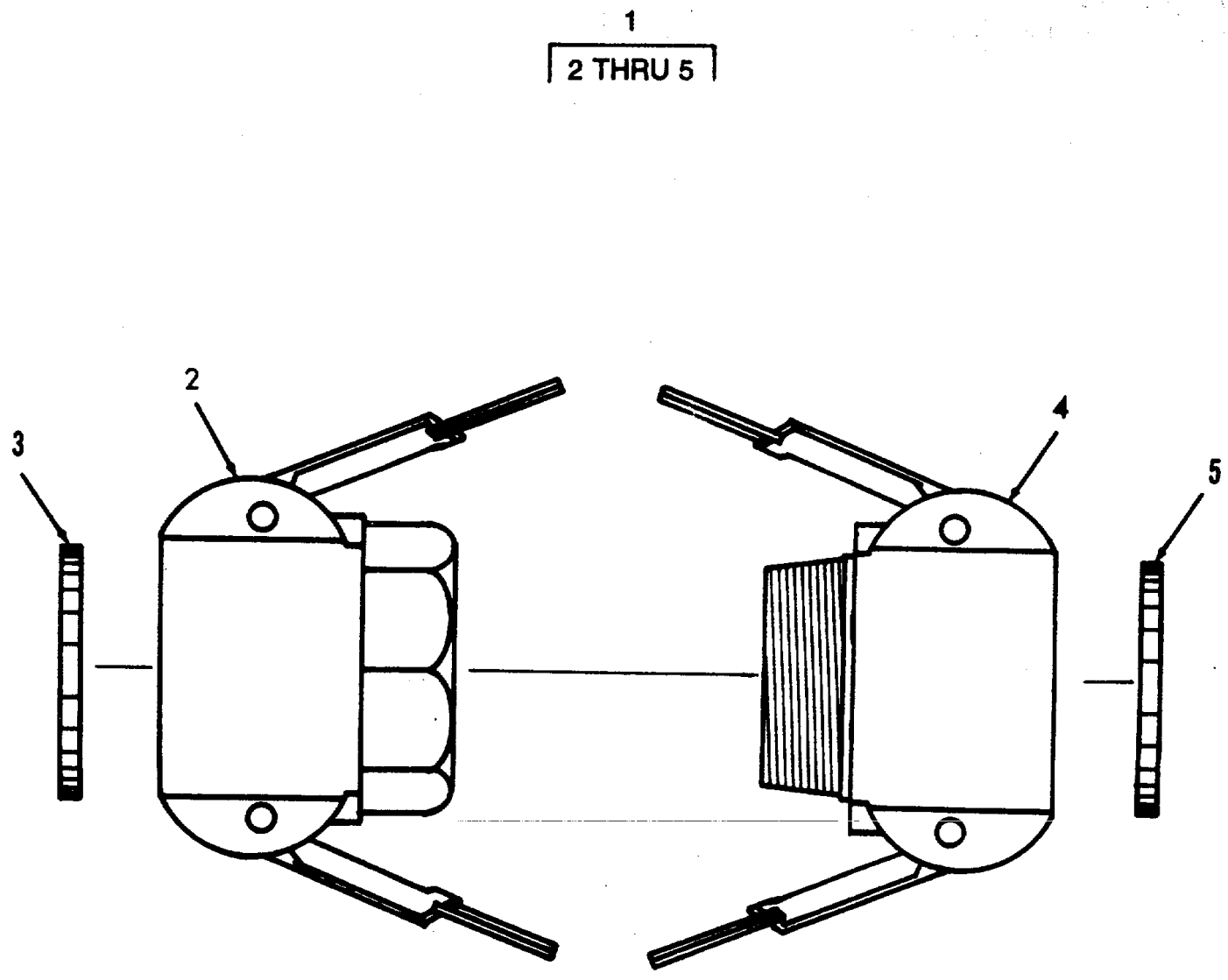


Figure 25. Adapter, Double, 3.00 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 06 ADAPTER ASSEMBLIES	
				FIG. 25 ADAPTER, DOUBLE, 3.00 IN.	
1	XBOOZ	97403	13222E9891	COUPLING ASSEMBLY, Q 3 IN	3
2	PCOOZ	96906	MS27024-15	.COUPLING HALF, QUICK	1
3	PCOZZ	96906	MS27030-8	..GASKET	1
4	PCOOZ	96906	MS27026-15	.COUPLING HALF, QUICK.	1
5	PCOZZ	96906	MS27030-8	..GASKET	1

END OF FIGURE

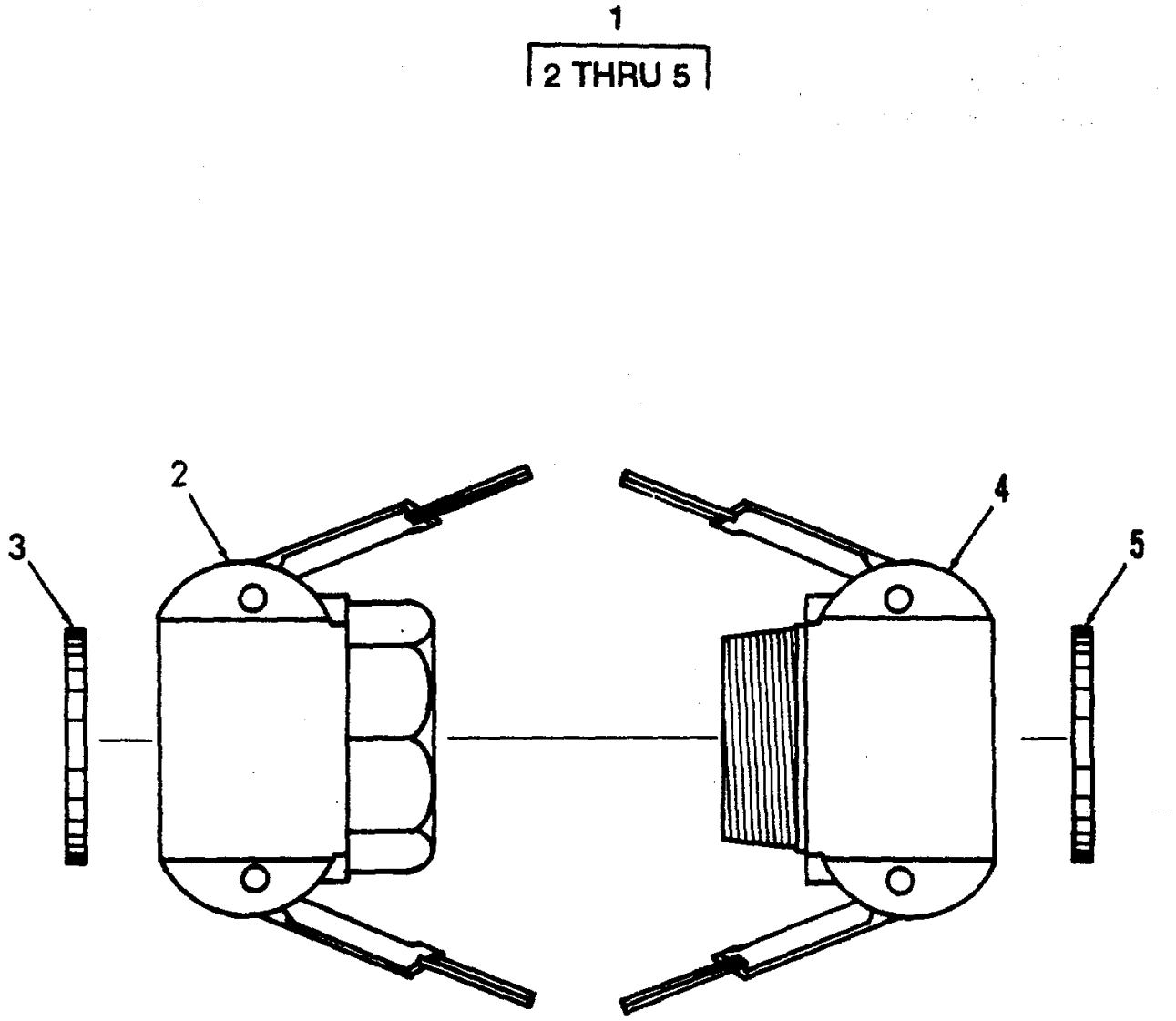


Figure 26. Adapter, Double, 1.50 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 06. ADAPTER ASSEMBLIES	
				FIG. 26 ADAPTER, DOUBLE, 1.50 IN	
1	XBOOZ	97403	13222E9890	COUPLING ASSEMBLY, Q 1.50 IN	1
2	PCOOZ	96906	MS27024-9	.COUPLING HALF, QUICK	1
3	PCOZZ	96906	MS27030-5	.. GASKET	1
4	PCOOZ	96906	MS27026-9	.COUPLING HALFPQUICK	1
5	PCOZZ	96906	MS27030-5	..GASKET	1

END OF FIGURE

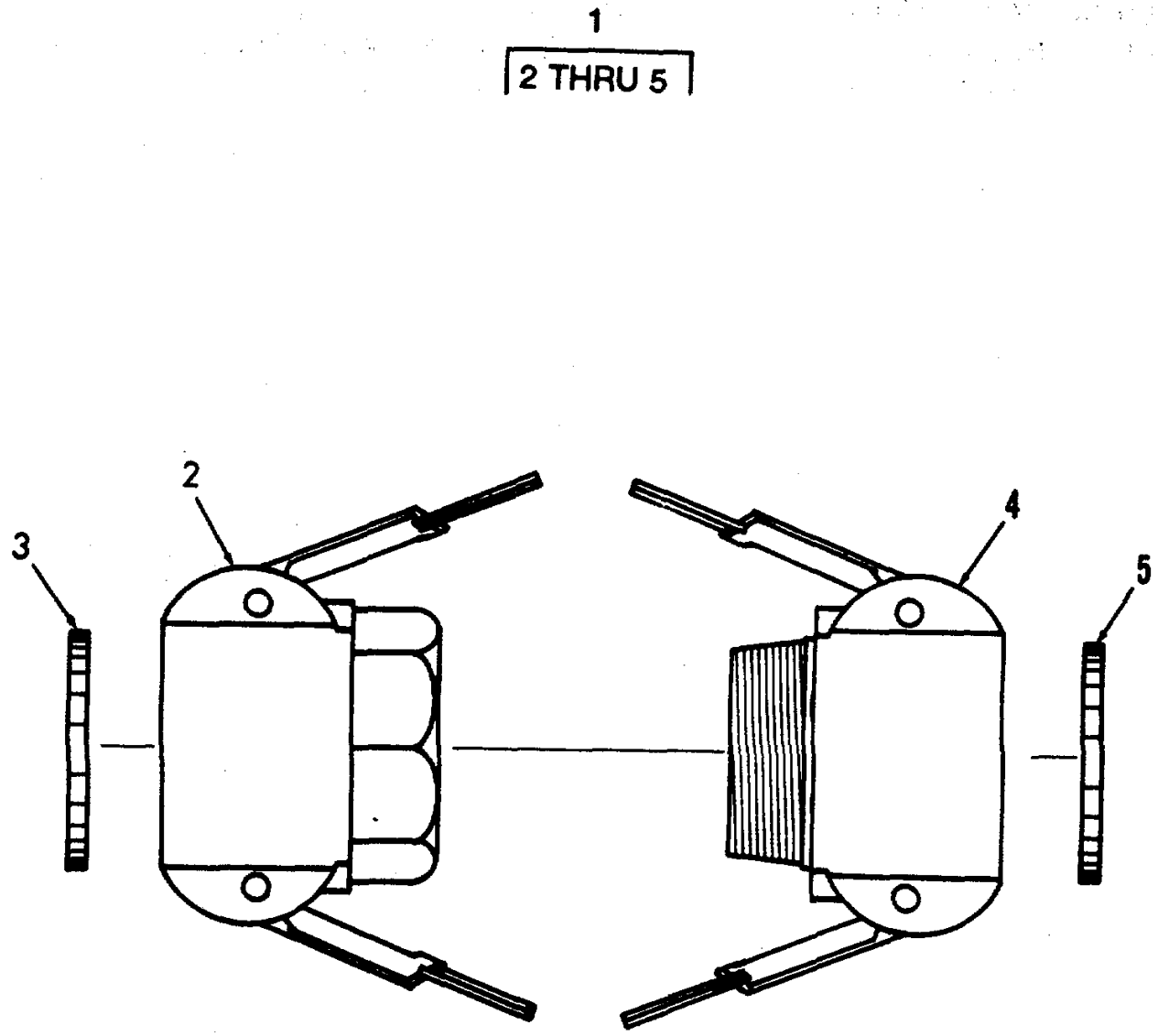


Figure 27. Adapter, Double, 4.00 in.

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 06 ADAPTER ASSEMBLIES	
				FIG. 27. ADAPTER, DOUBLE, 4.00 IN.	
1	XBOOZ	97403	13222E9892	COUPLING ASSEMBLY, Q 4 IN	4
2	PCOOZ	96906	MS27024-17	.COUPLING HALF, QUICK 4 IN. NOM SIZE	1
3	PCOZZ	96906	MS27030-9	..GASKET	2
4	PCOOZ	96906	MS27026-17	.COUPLING HALF QUICK	1
5	PCOZZ	96906	MS27030-9	..GASKET	1

END OF FIGURE

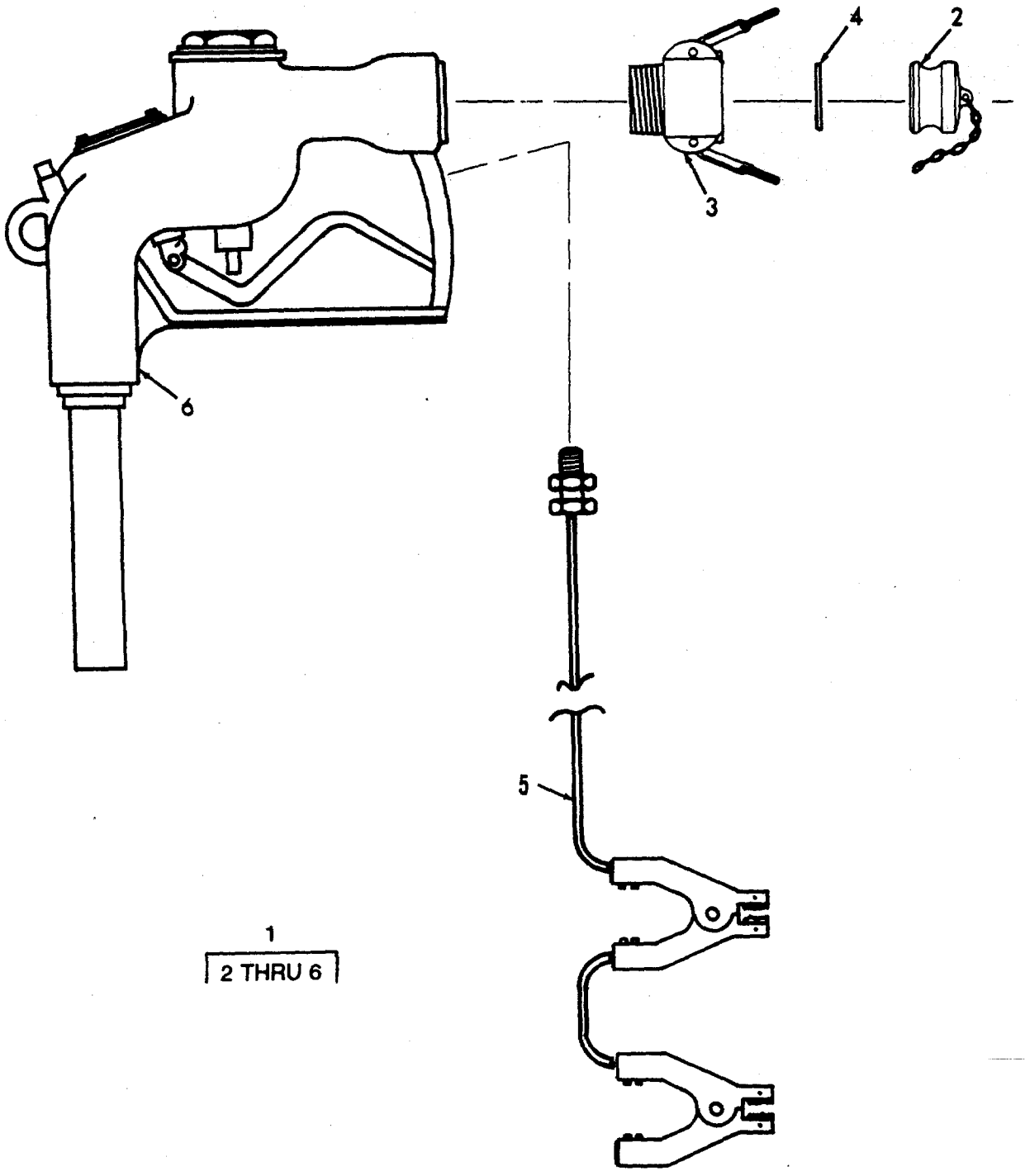


Figure 28. Nozzle Assembly, 1.50 in.

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 07 NOZZLE ASSEMBLIES	
				FIG. 28. NOZZLES ASSEMBLY, 1.50 IN.	
1	PCOOZ	97403	13229E9836-1	NOZZLE, FUEL AND OIL 1 1/2 IN	1
2	PAOZZ	96906	MS27029-9	.PLUG,QUICK DISCONNE	1
3	PCOOZ	96906	MS27026-9	.COUPLING HALF, QUICK	1
4	PCOZZ	96906	MS27030-5	..GASKET	1
5	PAOZZ	97403	13229E9840	.GROUND WIRE ASSY	1
6	XAOZZ	97403	13229E9837-1	.NOZZLE, FUEL AND OIL OIL, 1 1/2 IN, ... TYPE II, SIZE 2, CLASS A, STYLE 2, PER A-A-520 .	1
				END OF FIGURE	

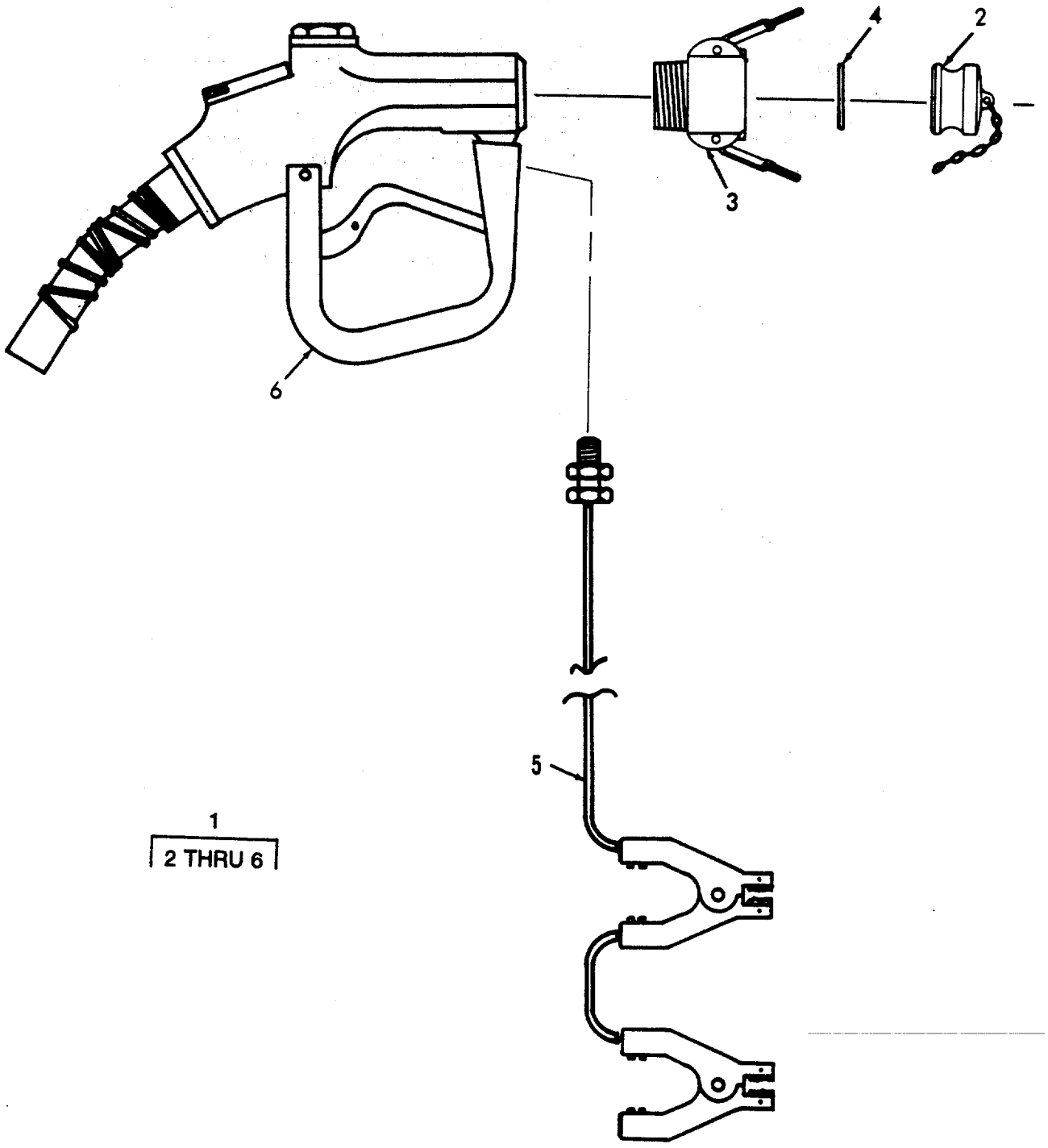


Figure 29. Nozzle Assembly, 1.00 in.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 07 NOZZLE ASSEMBLIES	
				FIG. F-29. NOZZEL ASSEMBLY, 1.00 IN.	
1	PCOOO	97403	13229E9838-1	NOZZLE,FUEL AND OIL	3
2	PAOZZ	96906	MS27029-5	.PLUG, QUICK DISCONNECT	1
3	PCOOZ	96906	MS27026-5	.COUPLING HALF,QUICK	1
4	PCOZZ	96906	MS27030-3	..GASKET	1
5	PAOZZ	97403	13229E9840	.GROUND WIRE ASSY	1
6	XAOZZ	97403	13229E9839-1	.NOZZLE,FUEL AND OIL . ..... OIL, 1 IN, TYPE II, SIZE 1, CLASS A, STYLE 1, PER A-A-52030	1
				END OF FIGURE	

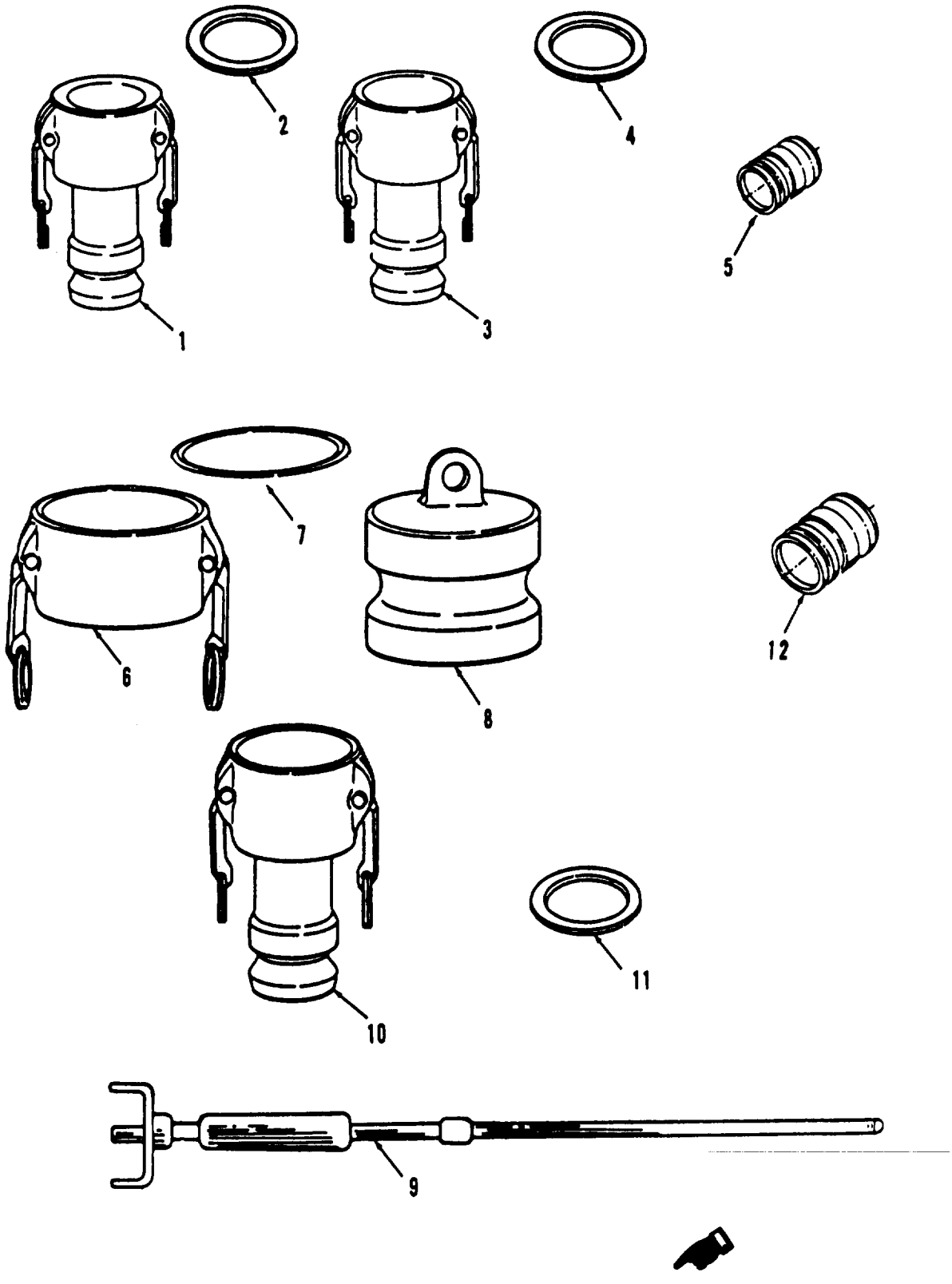


Figure 30. Miscellaneous. (Sheet 1 of 2).

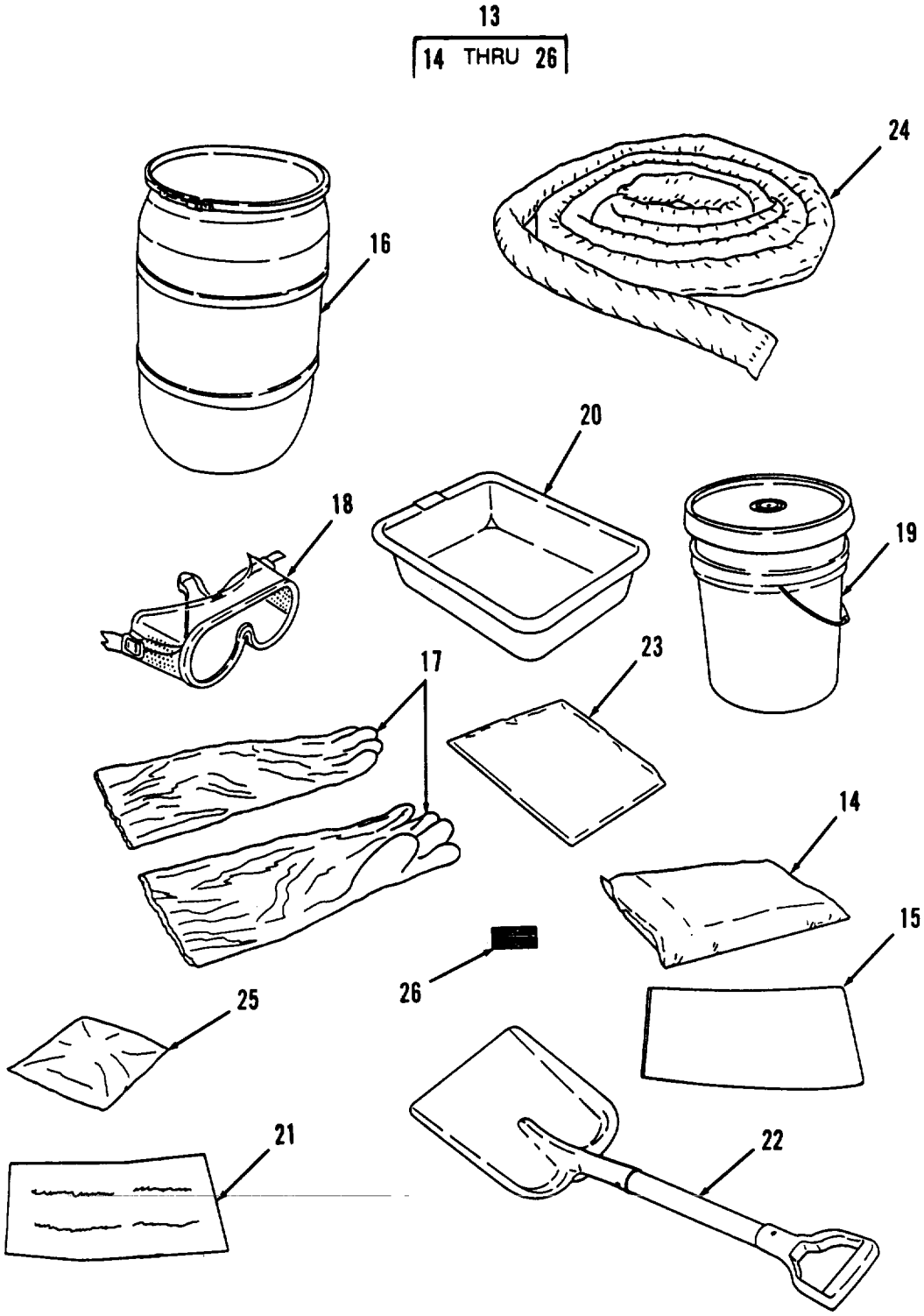


Figure 30. Miscellaneous. (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 08 MISCELLANEOUS	
				FIG. F-30. MISCELLANEOUS.	
1	PCOOZ	96906	MS49000-1	REDUCER,QUICK DISCONNECT 4 IN. X 3 IN.	1
2	PCOZZ	96906	MS27030-9	GASKET	1
3	PCOOZ	96906	MS49000-9	REDUCER,QUICK DISCONNECT 4 IN. X 3 IN.	2
4	PCOZZ	96906	MS27030-8	GASKET .	1
5	PAOZZ	96906	MS39352-15	NIPPLE, QUICK DISCONNECT 3 IN. NOM SIZE	3
6	PCOOO	96906	MS27028-17	CAP, QUICK DISCONNECT 4 IN. NOM SIZE	4
7	PCOZZ	96906	MS27030-9	GASKET	1
8	PCOZZ	96906	MS27029-17	PLUG, QUICK DISCONNECT 4 IN. NOM SIZE	4
9	PAOZO	97403	13219E0462	GROUND ROD	14
10	PCOOZ	96906	MS49000-7	REDUCER,QUICK DISCONNECT 1-1/2 IN. X 1 IN.	3
11	PCOOZ	96906	MS27030-5	GASKET	1
12	PCOZZ	96906	MS39352-19	NIPPLE, QUICK DISCONNECT 4 IN. NOM SIZE	3
13	PAOOO	97403	13228E3337-1	KIT, FUEL SPILL CONTROL	1
14	PAOZZ	58536	A1281	. SORBENT, OIL 22 LB BAG, PER A-A-1281	3
15	PAOZZ	97403	13230E6367	. BAG, DISPOSAL HAZARDOUS MATERIAL	24
16	PAOZZ	97403	13228E3885	. DRUM, PLASTIC 55 GALLON, WITH LID	2
17	PAOZZ	81348	ZZ-G-381	. GLOVES TYPE II, STYLE 2, SIZE 9-11	4
18	PAOZZ	58536	A-A-11 0	.GOGGLES INDIRECT VENTILATION	2
19	PAOZZ	58536	A-A-332	. PAIL, 5 GALLON	4
20	PAOZZ	97403	13228E3909-3	. PAN, DRIP	48
21	PAOZZ	97403	13230E6369	. PLATE, CAUTION	2
22	PAOZZ	97403	13230E6366	. SHOVEL, HAND 2 PIECE, 62 IN. OA LENGTH	2
23	PAOZZ	58536	A 1280-03-2	. SORBENT, OIL, PAD 16-1/2" X 20", DBL WT, TYPE III, CLASS 2 PER A-A-1280	60
24	PAOZZ	58536	A 1282-01-2	. SORBENT, OIL ENCLOSED, 3" DIA X 10' LONG, PER A-A-1282	12
25	PAOZZ	58536	A 1282-02-2	. SORBENT, OIL ENCLOSED, 10" X 10" X 2" THK, TYPE II, CLASS 2 PER A-A-1282	48
26	PAOZZ	58536	A-A-1734	. TIE, STRIP, BAG BLACK	48

END OF FIGURE

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 09 BULK MATERIALS	
				FIG. BULK.	
1	PAOZZ	77414	C-204	STRAPPING 1/2 WIDTH, 100 FT PER ROLL CIIC((E)	1
2	PAOZZ	77414	C-206	STRAPPING 3/4 WIDTH, 100 FT PER ROLL CIIC(E)	1
				END OF FIGURE	

SECTION III. Special Tools.

NONE

NATIONAL STOCK NUMBER

STOCK NUMBER	FIGURE	ITEM
5310-00-056-3395	9	6
	11	5
	17	5
	18	5
	19	7
	20	7
	21	5
	22	5
	23	5
5330-00-075-2419	19	13
	20	13
5310-00-080-6004	9	9
	11	8
	15	8
	16	8
	17	8
	18	8
	19	10
	20	10
	21	8
	22	8
	23	8
4720-00-083-0048	4	1
	5	1
5330-00-088-9166	4	3
	4	8
	5	3
	5	8
	11	4
	14	5
	19	6
	19	12
	20	6
	20	12
	20	15
	25	3
	25	5
	30	4
5330-00-088-9167	29	4
4730-00-088-9285	13	5
4730-00-088-9286	24	5
	27	2
4730-00-203-1010	12	5
	26	4
	28	3
4730-00-360-0589	12	7
5330-00-360-0595	6	3
	6	8
	12	4
	12	6
5330-00-360-0595	20	4
	26	3
	26	5
	28	4
	30	11
4730-00-360-0710	29	3
4730-00-360-0715	29	2
5330-00-612-2414	7	3
	7	8
	13	4
	13	6
	19	4
4730-00-640-6156	1	1
	2	2
	3	2
	8	2
	9	2
	15	3
	16	2
	17	2
	18	3
	21	3
	22	3
	23	3
	24	3
	30	6
4730-00-640-6188	1	3
	2	4
	3	4
	8	4
	9	4
	11	2
	14	2
	15	2
	16	4
	17	4
	18	2
	21	2
	22	2
	23	2
	24	2
	30	8
5330-00-647-2072	9	11
	11	11
	15	12
	16	12
	17	12
	18	10
	21	12
	22	10

NATIONAL STOCK NUMBER

STOCK NUMBER	FIGURE	ITEM
5330-00-647-2072	23	11
4730-00-649-9100	7	2
	13	3
	19	3
4730-00-649-9118	8	5
	14	6
	27	4
5305-00-725-2317	9	8
	15	7
	16	7
	17	7
	18	7
	19	9
	20	9
	21	7
	22	7
	23	7
4730-00-823-5316	6	4
	12	2
	28	2
4730-00-840-0796	24	7
4730-00-840-0797	8	7
4730-00-840-5347	9	10
	15	11
	16	11
	17	9
	18	9
	21	11
	22	9
	23	12
4730-00-840-5348	9	12
	11	9
	15	9
	16	9
	17	10
	18	11
	21	9
	22	11
	23	9
4730-00-869-5246	6	2
	12	3
	20	3
4730-00-873-4551	25	4
4730-00-889-2378	19	11
	20	11
4730-00-889-2380	19	15
	20	16
4730-00-889-2382	30	10
5330-00-899-4509	1	2
	1	8
5330-00-899-4509	2	3
	2	8
	3	3
	3	8
	8	3
	8	6
	9	3
	9	13
	11	10
	14	7
	15	4
	15	10
	16	3
	16	10
	17	3
	17	11
	18	4
	18	12
	21	4
	21	10
	22	4
	22	12
	23	4
	23	10
	24	4
	24	6
	27	3
	27	5
	30	2
	30	7
4730-00-915-5127	7	4
	13	2
4730-00-929-0787	4	2
	5	2
	11	3
	19	5
	20	5
4730-00-929-0790	4	4
	5	4
	14	3
	19	2
	20	2
4730-00-935-1613	30	12
4730-00-938-7997	13	7
4730-00-938-7998	25	2
4730-00-951-3293	30	1
4730-00-951-3296	14	4
	30	3
4730-00-980-9411	26	2
4930-01-013-7589	24	8

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STOCK NUMBER	FIGURE	ITEM	STOCK NUMBER	FIG.	ITEM
4930-01-013-7590	24	1			
5975-01-050-5707	30	9			
5310-01-052-1793	15	5			
	16	5			
4730-01-078-8130	30	5			
4730-01-096-1039	20	1			
4820-01-098-3952	13	1			
4820-01-102-8757	12	1			
4820-01-210-5605	9	1			
4720-01-337-0033	6	1			
4930-01-352-1660	28	1			

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CAGEC	PART NUMBER	STOCK NUMBER	FIGURE	ITEM
58536	A 1280-03-2		30	23
58536	A 1282-01-2		30	24
58536	A 1282-02-2		30	25
58536	A-A-1110		30	18
58536	A-A-1734		30	26
58536	A-A-332		30	19
58536	A1281		30	14
91363	B0140-534A-1Q		8	9
77414	C-204		BULK	1
77414	C-206		BULK	2
77414	C-254		6	6
			7	6
77414	C-256		2	6
			3	6
			4	6
			5	6
1U339	GVOO1		10	11
1 U339	GV006		10	3
1U339	GVOO9		10	10
1U339	GVO10		10	12
1U339	GV015		10	2
1U339	GV021		10	4
1U339	GV022		10	1
1U339	GV023		10	5
1U339	GV024		10	14
1U339	GV025		10	13
1U339	GV026		10	6
1U339	GV027		10	7
1 U339	GV028		10	9
1U339	GV029		10	15
1U339	GV030		10	15
1U339	GV031		10	3
81718	H3289M	5330-00-075-2419	19	13
			20	13
96906	MS27020-17	4730-00-840-0796	24	7
96906	MS27021-11		7	9
96906	MS27021-15		4	9
			5	9
96906	MS27021-17		1	9
			2	9
			3	9
96906	MS27021-9		6	9
96906	MS27022-11	4730-00-938-7997	13	7
96906	MS27022-17	4730-00-840-0797	8	7
96906	MS27022-9	4730-00-360-0589	12	7
96906	MS27023-15	4730-00-889-2380	19	15
			20	16
96906	MS27023-17	4730-00-840-5347	9	10
			15	11
			16	1
			17	18
			21	11
			22	9

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CAGEC	PART NUMBER	STOCK NUMBER	FIGURE	ITEM
			23	12
96906	MS27023-25		19	14
96906	MS27023-27		11	12
96906	MS27024-15	4730-00-938-7998	25	2
96906	MS27024-17	4730-00-088-9286	24	5
96906	MS27024-17	4730-00-088-9286	27	2
96906	MS27024-9	4730-00-980-9411	26	2
96906	MS27025-11		7	7
96906	MS27025-15		4	7
			5	7
96906	MS27025-17		1	7
			2	7
			3	7
96906	MS27025-9		6	7
96906	MS27026-11	4730-00-088-9285	13	5
96906	MS27026-15	4730-00-873-4551	25	4
96906	MS27026-17	4730-00-649-9118	8	5
			14	6
			27	4
96906	MS27026-5	4730-00-360-0710	29	3
96906	MS27026-9	4730-00-203-1010	12	5
			26	4
			28	3
96906	MS27027-15	4730-00-889-2378	19	11
			20	11
96906	MS27027-17	4730-00-840-5348	9	12
			11	9
			15	9
			16	9
			17	10
			18	11
			21	9
			22	11
			23	9
96906	MS27028-11	4730-00-649-9100	7	2
			13	3
			19	3
96906	MS27028-15	4730-00-929-0787	4	2
			5	2
			11	3
			19	5
			20	5
96906	MS27028-17	4730-00-640-6156	1	1
			2	2
			3	2
			8	2
			9	2
			15	3
			16	2
			17	2
			18	3
			21	3
			22	3

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CAGEC	PART NUMBER	STOCK NUMBER	FIGURE	ITEM
			23	3
			24	3
96906	MS27028-17	4730-00-640-6156	30	6
96906	MS27028-9	4730-00-869-5246	6	2
			12	3
			20	3
96906	MSZ7029-11	4730-00-915-5127	7	4
			13	2
96906	MS27029-15	4730-00-929-0790	4	4
			5	4
			14	3
			19	2
			20	2
96906	MS27029-17	4730-00-640-6188	1	3
			2	4
			3	4
			8	4
			9	4
			11	2
			14	2
			15	2
			16	4
			17	4
			18	2
			21	2
			22	2
			23	2
			24	2
			30	8
96906	MS27029-5	4730-00-360-0715	29	2
96906	MS27029-9	4730-00-23-5316	6	4
			12	2
			28	2
96906	MS27030-3	5330-00-088-9167	29	4
96906	MS27030-5	5330-00-360-0595	6	3
			6	8
			12	4
			12	6
			20	4
			26	3
			26	5
			28	4
			30	11
96906	MS27030-6	5330-00-612-2414	7	3
			7	8
			13	4
			13	6
			19	4
96906	MS270308	5330-00-088-9166	4	3
			4	8
			5	3
			5	8
			11	4

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CAGEC	PART NUMBER	STOCK NUMBER	FIGURE	ITEM
			14	5
96906	MS27030-8	5330-00-088-9166	19	6
			19	12
			20	6
			20	12
			20	15
			25	3
			25	5
			30	4
96906	MS27030-9	5330-00-899-4509	1	2
			1	8
			2	3
			2	8
			3	3
			3	8
			8	3
			8	6
			9	3
			9	13
			11	10
			14	7
			15	4
			15	10
			16	3
			16	10
			17	3
			17	11
			18	4
			18	12
			21	4
			21	10
			22	4
			22	12
			23	4
			23	10
			24	4
			24	6
			27	3
			27	5
			30	2
			30	7
96906	MS27183-14	5310-00-080-6004	9	9
			11	8
			15	8
			16	8
			17	8
			18	8
			19	10
			20	10
			21	8
			22	8
			23	8

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CAGEC	PART NUMBER	STOCK NUMBER	FIGURE	ITEM
96906	MS35338-046		9	7
			11	6
			15	6
			16	6
			17	6
			18	6
			19	8
			20	8
			21	6
			22	6
			23	6
96906	MS35649-2382	5310-00-056-3395	9	6
			11	5
			17	5
			18	5
			19	7
			20	7
			21	5
			22	5
			23	5
96906	MS39336-1		21	13
			22	13
			23	13
96906	MS39352-15	4730-01-078-8130	30	5
96906	MS39352-19	4730-00-935-1613	30	12
96906	MS49000-1	4730-00-951-3293	30	1
96906	MS49000-7	4730-00-889-2382	30	10
96906	MS49000-9	4730-00-951-3296	14	4
			30	3
96906	MS51967-8	5310-01-052-1793	15	5
			16	5
96906	MS90728-046		11	7
96906	MS90728-64	5305-00-725-2317	9	8
			15	7
			16	7
			17	7
			18	7
			19	9
			20	9
			21	7
			22	7
			23	7
81349	M 11588-03-07-32	4720-01-337-0033	6	1
81349	M 11588-03-08-32		7	1
81349	M11588-03-10-32	4720-00-083-0048	4	1
			5	1
81349	M11588-03-11-32		2	1
			3	1
81349	M370B09B2A1400		1	4
77414	PB-256		1	6
91363	R0140-53AA-IQ		14	8
24869	SSBV-150		12	8
24869	SSBV-200		13	8

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CAGEC	PART NUMBER	STOCK NUMBER	FIGURE	ITEM
81348	ZZ-G-381		30	17
97403	13200E0068		15	1
97403	13200E0803		16	1
97403	13216E8238	5330-00-647-2072	9	11
			11	11
			15	12
			16	12
			17	12
			18	10
			21	12
			22	10
			23	11
97403	13216E8243		15	13
			16	13
			17	13
			18	13
			21	14
97403	13219E0462	5975-01-050-5707	30	9
97403	13220E9406-2	4930-01-013-7590	24	1
97403	13220E9406-4-5		24	9
97403	13220E9914-2	4930-01-013-7589	24	8
97403	13222E9884	4730-01-096-1039	20	1
97403	13222E9884-10		20	14
97403	13222E9886	4820-01-102-8757	12	1
97403	13222E9887	4820-01-098-3952	13	1
97403	13222E9890		26	1
97403	13222E9891		25	1
97403	13222E9892		27	1
97403	13226E8282	4820-01-210-5605	9	1
97403	13227E6160-5		1	10
			8	8
			9	5
			11	14
			12	9
			13	9
			15	15
			16	15
			17	14
			18	14
			19	17
			20	18
			21	15
			22	14
			23	14
			24	10
97403	13227E6891-42		1	5
			2	5
			3	5
			4	5
97403	13227E6891-42		5	5
97403	13227E6891-43		6	5
			7	5
97403	13228E0468		13	8

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CAGEC	PART NUMBER	STOCK NUMBER	FIGURE	ITEM
97403	13228E3337-1		30	13
97403	13228E3457		8	9
			12	8
97403	13228E3885		30	16
97403	13228E3909-3		30	20
97403	13229E6037		22	1
97403	13229E6038		23	1
97403	13229E6039		18	1
97403	13229E6040		11	1
97403	13229E6042		21	1
97403	13229E6060		14	1
97403	13229E6061		19	1
97403	13229E6465		17	1
97403	13229E6466		8	1
97403	13229E9836-1	4930-01-352-1660	28	1
97403	13229E9837-1		28	6
97403	13229E9838-1		29	1
97403	13229E9839-1		29	6
97403	13229E9840		28	5
			29	5
97403	13230E6366		30	22
97403	13230E6367		30	15
97403	13230E6369		30	21
81718	320F3		19	16
			20	17
1U339	4GV-AL		9	14
			11	13
			15	14
			16	14

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
BULK	1		77414	C-204
BULK	2		77414	C-206
1	1	4730-00-640-6156	96906	MS27028-17
1	2	5330-00-899-4509	96906	MS27030-9
1	3	4730-00-640-6188	96906	MS27029-17
1	4		81349	M370B09B2A1400
1	5		97403	13227E6891-42
1	6	5340-00-244-7327	77414	PB-256
1	7		96906	MS27025-17
1	8	5330-00-899-4509	96906	MS27030-9
1	9		96906	MS27021-17
1	10		97403	13227E6160-5
2	1		81349	M11588-03-11-32
2	2	4730-00-640-6156	96906	MS27028-17
2	3	5330-00-899-4509	96906	MS27030-9
2	4	4730-00-640-6188	96906	MS27029-17
2	5		97403	13227E6891-42
2	6	5340-00-244-7327	77414	C-256
2	7		96906	MS27025-17
2	8	5330-00-899-4509	96906	MS27030-9
2	9		96906	MS27021-17
3	1		81349	M11588-03-11-32
3	2	4730-00-640-6156	96906	MS27028-17
3	3	5330-00-899-4509	96906	MS27030-9
3	4	4730-00-640-6188	96906	MS27029-17
3	5		97403	13227E6891-42
3	6	5340-00-244-7327	77414	C-256
3	7		96906	MS27025-17
3	8	5330-00-899-4509	96906	MS27030-9
3	9		96906	MS27021-17
4	1	4720-00-083-0048	81349	MI1588-03-10-32
4	2	4730-00-929-0787	96906	MS27028-15
4	3	5330-00-088-9166	96906	MS27030-8
4	4	4730-00-929-0790	96906	MS27029-15
4	5		97403	13227E6891-42
4	6	5340-00-244-7327	77414	C-256
4	7		96906	MS27025-15
4	8	5330-00-088-9166	96906	MS27030-8
4	9		96906	MS27021-15
5	1	4730-00-083-0048	81349	MI1588-03-10-32
5	2	4730-00-929-0787	96906	MS27028-15
5	3	5330-00-088-9166	96906	MS27030-8
5	4	4730-00-929-0790	96906	MS27029-15
5	5		97403	13227E6891-42
5	6	5340-00-244-7327	77414	C-256
5	7		96906	MS27025-15
5	8	5330-00-088-9166	96906	MS27030-8
5	9		96906	MS27021-15
6	1	4720-00-337-0033	81349	MI1588-03-07-32
6	2	4730-00-869-5246	96906	MS27028-9
6	3	5330-00-360-0595	96906	MS27030-5

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
6	4	4730-00-823-5316	96906	MS27029-9
6	5		97403	13227E6891-43
6	6	5340-00-244-7325	77414	C-254
6	7		96906	MS27025-9
6	8	5330-00-360-0595	96906	MS27030-5
6	9		96906	MS27021-9
7	1		81349	M11588-03-08-32
7	2	4730-00-649-9100	96906	MS27028-11
7	3	5330-00-612-2414	96906	MS27030-6
7	4	4730-00-915-5127	96906	MS27029-11
7	5		97403	13227E6891-43
7	6	5340-00-244-7325	77414	C-254
7	7		96906	MS27025-11
7	8	5330-00-612-2414	96906	MS27030-6
7	9		96906	MS27021-11
8	1	4820-01-210-5605	97403	13229E6466
8	2	4730-00-640-6156	96906	MS27028-17
8	3	5330-00-899-4509	96906	MS27030-9
8	4	4730-00-640-6188	96906	MS27029-17
8	5		96906	MS27026-17
8	6		96906	MS27030-9
8	7		96906	MS27022-17
8	8		97403	13227E6160-5
8	9		91363	B0140-534A-1Q
8	9		97403	13228E3457
9	1	4820-01-210-5605	97403	13226E8282
9	2	4730-00-640-6156	96906	MS27028-17
9	3	5330-00-899-4509	96906	MS27030-9
9	4	4730-00-640-6188	96906	MS27029-17
9	5		97403	13227E6160-5
9	6	5310-00-056-3395	96906	MS35649-2382
9	7	5310-00-637-9541	96906	MS35338-046
9	8	5305-00-725-2317	96906	MS90728-64
9	9	5310-00-080-6004	96906	MS27183-14
9	10	4730-00-840-5347	96906	MS27023-17
9	11	5330-00-647-2072	97403	13216E8238
9	12	4730-00-840-5348	96906	MS27027-17
9	13	5330-00-899-4509	96906	MS27030-9
9	14		1U339	4GV-AL
10	1		1U339	GV022
10	2		1U339	GV015
10	3		1U339	GV006
10	4		1U339	GV021
10	5		1U339	GV023
10	6		1U339	GV026
10	7		1U339	GV027
10	8		1U339	GV031
10	9		1U339	GV028
10	10		1U339	GV009
10	11		1U339	GV001
10	12		1U339	GV010
10	13		1U339	GV025

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
10	14		1U339	GV024
10	15		1U339	GV029
10	16		1U339	GV030
11	1	4820-00-084-7432	97403	13229E6040
11	2	4730-00-640-6188	96906	MS27029-17
11	3	4730-00-929-0787	96906	MS27028-15
11	4	5330-00-088-9166	96906	MS27030-8
11	5	5310-00-056-3395	96906	MS35649-2382
11	6	5310-00-637-9541	96906	MS35338-046
11	7	5305-00-725-2317	96906	MS90728-046
11	8	5310-00-080-6004	96906	MS27183-14
11	9	4730-00-840-5348	96906	MS27027-17
11	10	5330-00-899-4509	96906	MS27030-9
11	11	5330-00-647-2072	97403	13216E8238
11	12		96906	MS27023-27
11	13		1U339	4GV-AL
11	14		97403	13227E6160-5
12	1	4820-01-102-8757	97403	13222E9886
12	2	4730-00-823-5316	96906	MS27029-9
12	3	4730-00-869-5246	96906	MS27028-9
12	4	5330-00-360-0595	96906	MS27030-5
12	5	4730-00-203-1010	96906	MS27026-9
12	6	5330-00-360-0595	96906	MS27030-5
12	7	4730-00-360-0589	96906	MS27022-9
12	8		24869	SSBV-150
12	8		97403	13228E3457
12	9		97403	13227E6160-5
13	1		97403	13222E9887
13	2	4730-00-915-5127	96906	MS27029-11
13	3	4730-00-649-9100	96906	MS27028-11
13	4	5330-00-612-2414	96906	MS27030-6
13	5	4730-00-088-9285	96906	MS27026-11
13	6	5330-00-612-2414	96906	MS27030-6
13	7	4730-00-938-7997	96906	MS27022-11
13	8		24869	SSBV-200
13	8		97403	13228E0468
13	9		97403	13227E6160-5
14	1		97403	13229E6060
14	2	4730-00-640-6188	96906	MS27029-17
14	3	4730-00-929-0790	96906	MS27029-15
14	4	4730-00-951-3296	96906	MS49000-9
14	5	5330-00-088-9166	96906	MS27030-8
14	6	4730-00-649-9118	96906	MS27026-17
14	7	5330-00-899-4509	96906	MS27030-9
14	8		91363	B0140-534A-1Q
15	1		97403	13200E0068
15	2	4730-00-640-6188	96906	MS27029-17
15	3	4730-00-640-6156	96906	MS27028-17
15	4	5330-00-899-4509	96906	MS27030-9
15	5	5310-01-052-1793	96906	MS51967-8
15	6	5310-00-637-9541	96906	MS35338-046
15	7	5305-00-725-2317	96906	MS90728-64
15	8	5310-00-080-6004	96906	MS27183-14

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
15	9	4730-00-840-5348	96906	MS27027-17
15	10	5330-00-899-4509	96906	MS27030-9
15	11	4730-00-840-5347	96906	MS27023-17
15	12	5330-00-647-2072	97403	13216E8238
15	13		97403	13216E8243
15	14		1U339	4GV-AL
15	15		97403	13227E6160-5
16	1		97403	13200E0803
16	2	4730-00-640-6156	96906	MS27028-17
16	3	5330-00-899-4509	96906	MS27030-9
16	4	4730-00-640-6188	96906	MS27029-17
16	5	5310-01-052-1793	96906	MS51967-8
16	6	5310-00-637-9541	96906	MS35338-046
16	7	5305-00-725-2317	96906	MS90728-64
16	8	5310-00-080-6004	96906	MS27183-14
16	9	4730-00-840-5348	96906	MS27027-17
16	10		96906	MS27030-9
16	11	4730-00-840-5347	96906	MS27023-17
16	12	5330-00-647-2072	97403	13216E8238
16	13		97403	13216E8243
16	14		1U339	4GV-AL
16	15		97403	13227E6160-5
17	1		97403	13229E6465
17	2	4730-00-640-6156	96906	MS27028-17
17	3	5330-00-899-4509	96906	MS27030-9
17	4	4730-00-640-6188	96906	MS27029-17
17	5	5310-00-056-3395	96906	MS35649-2382
17	6	5310-00-637-9541	96906	MS35338-046
17	7	5305-00-725-2317	96906	MS90728-64
17	8	5310-00-080-6004	96906	MS27183-14
17	9	4730-00-840-5347	96906	MS27023-17
17	10	4730-00-840-5348	96906	MS27027-17
17	11	5330-00-899-4509	96906	MS27030-9
17	12	5330-00-647-2072	97403	13216E8238
17	13		97403	13216E8243
17	14		97403	13227E6160-5
18	1		97403	13229E6039
18	2	4730-00-640-6188	96906	MS27029-17
18	3	4730-00-640-6156	96906	MS27028-17
18	4	5330-00-899-4509	96906	MS27030-9
18	5	5310-00-056-3395	96906	MS35649-2382
18	6	5310-00-637-9541	96906	MS35338-046
18	7	5305-00-725-2317	96906	MS90728-64
18	8	5310-00-080-6004	96906	MS27183-14
18	9	4730-00-840-5347	96906	MS27023-17
18	10	5330-00-647-2072	97403	13216E8238
18	11	4730-00-840-5348	96906	MS27027-17
18	12	5330-00-899-4509	96906	MS27030-9
18	13		97403	13216E8243
18	14		97403	13227E6160-5
19	1		97403	13229E6061

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
19	2	4730-00-929-0790	96906	MS27029-15
19	3	4730-00-649-9100	96906	MS27028-11
19	4	5330-00-612-2414	96906	MS27030-6
19	5	4730-00-929-0787	96906	MS27028-15
19	6	5330-00-088-9166	96906	MS27030-8
19	7	5310-00-056-3395	96906	MS35649-2382
19	8		96906	MS35338-046
19	9	5305-00-725-2317	96906	MS90728-64
19	10	5310-00-080-6004	96906	MS27183-14
19	11	4730-00-889-2378	96906	MS27027-15
19	12	5330-00-088-9166	96906	MS27030-8
19	13	5330-00-075-2419	81718	H3289M
19	14		96906	MS27023-25
19	15	4730-00-889-2380	96906	MS27023-15
19	16		81718	320F3
19	17		97403	13227E6160-5
20	1	4730-01-096-1039	97403	13222E9884
20	2	4730-00-929-0790	96906	MS27029-15
20	3	4730-00-869-5246	96906	MS27028-9
20	4	5330-00-360-0595	96906	MS27030-5
20	5	4730-00-929-0787	96906	MS27028-15
20	6	5330-00-088-9166	96906	MS27030-8
20	7	5310-00-056-3395	96906	MS35649-2382
20	8		96906	MS35338-046
20	9	5305-00-725-2317	96906	MS90728-64
20	10	5310-00-080-6004	96906	MS27183-14
20	11	4730-00-889-2378	96906	MS27027-15
20	12	5330-00-088-9166	96906	MS27030-8
20	13	5330-00-075-2419	81718	H3289M
20	14		97403	13222E9884-10
20	15	5330-00-088-9166	96906	MS27030-8
20	16	4730-00-889-2380	96906	MS27023-15
20	17		81718	320F3
20	18		97403	13227E6160-5
21	1		97403	13229E6042
21	2	4730-00-640-6188	96906	MS27029-17
21	3	4730-00-640-6156	96906	MS27028-17
21	4	5330-00-899-4509	96906	MS27030-9
21	5	5310-00-056-3395	96906	MS35649-2382
21	6		96906	MS35338-046
21	7	5305-00-725-2317	96906	MS90728-64
21	8	5310-00-080-6004	96906	MS27183-14
21	9	4730-00-840-5348	96906	MS27027-17
21	10	5330-00-899-4509	96906	MS27030-9
21	11	4730-00-840-5347	96906	MS27023-17
21	12	5330-00-647-2072	97403	13216E8238
21	13		96906	MS39336-1
21	14		97403	13216E8243
21	15		97403	13227E6160-5
22	1		97403	13229E6037
22	2	4730-00-640-6188	96906	MS27029-17

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
22	3	4730-00-640-6156	96906	MS27028-17
22	4	5330-00-899-4509	96906	MS27030-9
22	5	5310-00-056-3395	96906	MS35649-2382
22	6		96906	MS35338-046
22	7	5305-00-725-2317	96906	MS90728-64
22	8	5310-00-080-6004	96906	MS27183-14
22	9	4730-00-840-5347	96906	MS27023-17
22	10	5330-00-647-2072	97403	13216E8238
22	11	4730-00-840-5348	96906	MS27027-17
22	12	5330-00-899-4509	96906	MS27030-9
22	13		96906	MS39336-1
22	14		97403	13227E6160-5
23	1		97403	13229E6038
23	2	4730-00-640-6188	96906	MS27029-17
23	3	4730-00-640-6156	96906	MS27028-17
23	4	5330-00-899-4509	96906	MS27030-9
23	5	5310-00-056-3395	96906	MS35649-2382
23	6		96906	MS35338-046
23	7	5305-00-725-2317	96906	MS90728-64
23	8	5310-00-080-6004	96906	MS27183-14
23	9	4730-00-840-5348	96906	MS27027-17
23	10	5330-00-899-4509	96906	MS27030-9
23	11	5330-00-647-2072	97403	13216E8238
23	12	4730-00-840-5347	96906	MS27023-17
23	13		96906	MS39336-1
23	14		97403	13227E6160-5
24	1	4930-01-013-7590	97403	13220E9406-2
24	2	4730-00-640-6188	96906	MS27029-17
24	3	4730-00-640-6156	96906	MS27028-17
24	4	5330-00-899-4509	96906	MS27030-9
24	5	4730-00-088-9286	96906	MS27024-17
24	6	5330-00-899-4509	96906	MS27030-9
24	7	4730-00-840-0796	96906	MS27020-17
24	8	4930-01-013-7589	97403	13220E9914-2
24	9		97403	13220E9406-4-5
24	10		97403	13227E6160-5
25	1		97403	13222E9891
25	2	4730-00-938-7998	96906	MS27024-15
25	3	5330-00-088-9166	96906	MS27030-8
25	4	4730-00-873-4551	96906	MS27026-15
25	5	5330-00-088-9166	96906	MS27030-8
26	1		97403	13222E9890
26	2	4730-00-980-9411	96906	MS27024-9
26	3	5330-00-360-0595	96906	MS27030-5
26	4	4730-00-203-1010	96906	MS27026-9
26	5	5330-00-360-0595	96906	MS27030-5
27	1		97403	13222E9892
27	2	4730-00-088-9286	96906	MS27024-17
27	3	5330-00-899-4509	96906	MS27030-9
27	4	4730-00-649-9118	96906	MS27026-17
27	5	5330-00-899-4509	96906	MS27030-9

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FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
28	1	4930-01-352-1660	97403	13229E9836-1
28	2	4730-00-823-5316	96906	MS27029-9
28	3	4730-00-203-1010	96906	MS27026-9
28	4	5330-00-360-0595	96906	MS27030-5
28	5		97403	13229E9840
28	6		97403	13229E9837-1
29	1		97403	13229E9838-1
29	2	4730-00-360-0715	96906	MS27029-5
29	3	4730-00-360-0710	96906	MS27026-5
29	4	5330-00-088-9167	96906	MS27030-3
29	5		97403	13229E9840
29	6		97403	13229E9839-1
30	1	4730-00-951-3293	96906	MS49000-1
30	2	5330-00-899-4509	96906	MS27030-9
30	3	4730-00-951-3296	96906	MS49000-9
30	4	5330-00-088-9166	96906	MS27030-8
30	5	4730-01-078-8130	96906	MS39352-15
30	6	4730-00-640-6156	96906	MS27028-17
30	7	5330-00-899-4509	96906	MS27030-9
30	8	4730-00-640-6188	96906	MS27029-17
30	9	5975-01-050-5707	97403	13219E0462
30	10	4730-00-889-2382	96906	MS49000-7
30	11	5330-00-360-0595	96906	MS27030-5
30	12	4730-00-935-1613	96906	MS39352-19
30	13		97403	13228E3337-1
30	14		58536	A1281
30	15		97403	13230E6367
30	16		97403	13228E3885
30	17		81348	ZZ-G-381
30	18		58536	A-A-1110
30	19		58536	A-A-332
30	20		97403	13228E3909-3
30	21		97403	13230E6369
30	22		97403	13230E6366
30	23		58536	A 1280-03-2
30	24		58536	A 1282-01-2
30	25		58536	A 1282-02-2
30	26		58536	A-A-1 734

APPENDIX G
TORQUE LIMITS

G-1. GENERAL This appendix provides general torque limits for fasteners. Special torque values are indicated in the maintenance procedures for applicable components. The general torque values given in this appendix shall be used when specific torque values are not indicated in the maintenance procedures.

G-2. TORQUE LIMITS. Torque limits are listed in Table G-1 for fasteners. Dry fasteners are defined as fasteners on which no lubricants are applied to the threads. Wet fasteners are defined as fasteners on which graphite or moly-disulphide greases or other extreme pressure lubricants are applied to the threads. Table G-2 lists the minimum breakaway torque values for locknuts.

Table G-1. General Torque Requirements for Dry Fasteners*

	Torque Requirement in lb ft (N.m)			
Bolt/Screw Size	**SAE Grade 1 or 2**	**SAE Grade 5**	**SAE Grade 6 or 7**	**SAE Grade 8**
1/4-20 UNC	5 (7)	8 (11)	10 (14)	12 (16)
1/4-28 UNF	6 (8)	10 (14)	12 (16)	14 (19)
5/16 18 UNC	11 (15)	17 (23)	19 (26)	24 (33)
5/16-24 UNF	13 (18)	19 (26)	23 (31)	27 (37)
3/8 16 UNC	18 (24)	31 (42)	34 (46)	44 (60)
3/8-24 UNF	20 (27)	35 (47)	42 (57)	49 (66)
7/16-14 UNC	28 (38)	49 (66)	55 (75)	70 (95)
7/16-20 UNF	30 (41)	55 (75)	67 (91)	78 (106)
1/2-13 UNC	39 (53)	75 (102)	85 (115)	105 (142)
1/2-20 UNF	41 (56)	85 (115)	102 (138)	120 (163)
9/16-12 UNC	51 (69)	110 (149)	120 (163)	155 (210)
9/16-18 UNF	55 (75)	120 (163)	145 (197)	170 (231)
5/8-11 UNC	63 (85)	150 (203)	167 (226)	210 (285)
5/8-18 UNF	95(129)	170 (231)	205 (278)	240 (325)
3/4-10 UNC	105 (142)	270 (366)	280 (380)	375 (509)
3/4-16 UNF	115 (156)	295 (400)	357 (484)	420 (570)
7/8-9 UNC	160 (217)	395 (536)	440 (597)	605 (820)
7/8-14 UNF	175 (237)	435 (590)	555 (753)	675 (915)

Table G-1. General Torque Requirements for Dry Fasteners* - Continued.

	Torque Requirement in lb ft (N.m)			
Bolt/Screw Size	**SAE Grade 1 or 2**	**SAE Grade 5**	**SAE Grade 6 or 7**	**SAE Grade 8**
1-8 UNC	235 (319)	590 (800)	660 (895)	910 (1234)
1-14 UNF	250 (339)	660 (895)	825 (1119)	990 (1342)
1-1/8-7 UNC	350 (475)	800 (1085)	1000 (1356)	1280 (1736)
1-1/8-12 UNF	400 (542)	880 (1193)	1050 (1424)	1440 (1953)
1-1/4-7 UNC,	500 (678)	1080 (1464)	1325 (1797)	1820 (2468)
1-1/4-12 UNF	550 (746)	1125 (1526)	1325 (1797)	1820 (2712)
1-3/8-6 UNC	660 (895)	1460 (1980)	1800 (2441)	2380 (3227)
1-3/8-12 UNF	740 (1003)	1680 (2278)	1960 (2658)	2720 (3688)
1-1/2-6 UNC	870 (1180)	1940 (2631)	2913 (3950)	3160 (4285) .
1-112-12 UNF	980 (1329)	2200 (2983)	3000 (4068)	3560 (4827)

** Torque given is for clean, dry threads. Reduce by 10% when engine oil is used as lubricant.*

Table G-2. Locknut Breakaway Torque Values.

NOTE

To determine breakaway torque, thread lock nut onto screw or bolt until at least two threads stick out. Locknut shall not make contact with a mating part. Stop the locknut. Torque necessary to begin turning locknut again is the breakaway torque. Do not reuse locknuts that do not meet minimum breakaway torque.

Thread Size	**Minimum Breakaway Torque**	
	lb-in.	**(N.m)**
10-32	2.0	(0.23)
¼-28	3.5	(0.40)
5/16-24	6.5	(0.73)
3/8-24	9.5	(1.07)
7/16-20	14.0	(1.58)
1/2-20	18.0	(2.03)
9/16-18	24.0	(2.71)
5/8-18	32.0	(3.62)
3/4-16	50.0	(5.65)
7/8-14	70.0	(7.91)
1-12	90.0	(10.17)
1-1/8-12	117.0	(13.22)

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ALPHABETICAL INDEX

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
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