

**TECHNICAL MANUAL**

**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**

**TANK, FABRIC, COLLAPSIBLE, FUEL STORAGE**

**3,000 GALLON, MODEL WTM3KF (EIC = ZVM)/  
MIL-T-52983B (EIC = ZC8)**

**(NSN 5430-01-433-8528)/(NSN 5430-00-268-8187)**

**10,000 GALLON, MODEL BA91-141 (EIC = ZF3)/BA91-141A (EIC = ZVL)  
FCE574-81-1-A (EIC = ) (EXTRA ACCESSORIES)/  
SC5430-97CLE01 (EIC = ZFN)**

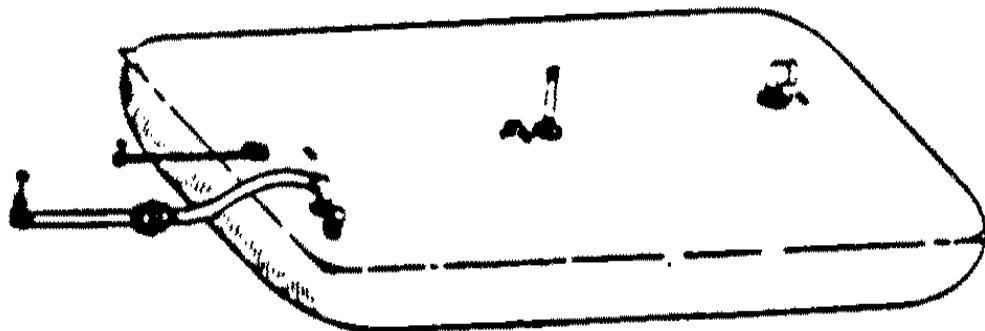
**(NSN 5430-01-358-6157)/(NSN 5430-01-414-9251)**

**(NSN 5430-00-052-3412)/(NSN 5430-00-641-8552)**

**20,000 GALLON, MODEL BA91-140 (EIC = ZF2)/  
BA91-140A (EIC = )/BA92-162 (EIC = ZFR)**

**(NSN 5430-01-359-4943)/(NSN 5430-01-414-9252)/  
(NSN 5430-01-215-7525)**

**50,000 GALLON, MODEL PD52983-50 (EIC = )/M52983-50 (EIC = ZFB)  
(NSN 5430-01-455-5676)/(NSN 5430-00-182-8181)**



This manual supersedes TM 5-5430-219-13, dated 31 August 1987, TM 5-5430-210-12, dated 30 November 1978, and TM 5-5430-219-23P, dated 31 August 1988, including all changes.

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**28 DECEMBER 2001**

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## **WARNING SUMMARY**

This warning summary contains general safety warnings and hazardous material warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel.

### **WARNINGS**

Do not allow smoking within 100 feet (30.50 meters) of the storage area. Death or serious injury may result if personnel fail to observe safety precautions.

Avoid spillage of fuel. When spillage occurs, cover the affected area with dry soil to reduce its rate of vaporization. Position fire extinguishers at readily accessible positions around the tank(s). Failure to observe this warning may result in death or serious injury.

Avoid getting fuel on the body or clothing. If clothing becomes saturated, remove it immediately and wash the body thoroughly with hot, soapy water. Failure to observe this warning may result in death or serious injury.

Safety berms must have capacities of less than one and one-half times that of tank capacities. Failure to construct a secure safety berm may result in death or serious injury.

Dry cleaning solvent, A-A-59601, used to clean parts, is potentially dangerous to personnel and property. It produces toxic and flammable fumes. Use only in well-ventilated areas. Avoid repeated and prolonged skin contact. Do not use near an open flame or excessive heat. The flash point of solvent is 100°F to 138°F (38°C to 59°C). Failure to observe these precautions may result in death or serious injury to personnel.

Sludge that accumulates in the bottom of the fuel tank gives off toxic and explosive vapors. Inhaling these vapors can cause lead poisoning. When cleaning tanks, provide ample ventilation to carry off harmful fumes. Failure to observe these precautions may result in death or serious injury to personnel.

Always wear protective goggles, breathing apparatus, and other protective gear when cleaning the tank interior. Fuel vapors are toxic and can damage eyes, skin, and lungs.

Fuel vapors are extremely flammable. Exercise care to prevent sparks when working near or in the tank. Death or severe personal injury can result if safety precautions are not strictly observed.

Make certain that the berm gate valve is closed and locked after installation and after draining the berm. In the event of tank rupture, an open berm valve would permit fuel to drain from the berm. Undetected fuel leakage could result in an explosion and cause death, severe personal injury, and damage to equipment.

Make sure that the gate valve hand wheel has been rotated fully to the right to the closed position before filling the tank. Undetected draining of the tank could result in an explosion that can cause death or severe personal injury.

Be careful when installing a sealing clamp in the tank. Fuel will pour out when a larger slit is made. Leaking fuel can cause personal injury and loss of Government property.

## **HEALTH HAZARD**

The solvent and adhesive furnished in the repair kit are highly flammable and toxic to the skin, eyes, and respiratory tract. Skin/eye protection is required. Avoid prolonged breathing of vapors, and minimize skin contact. Good general ventilation is normally adequate. Keep away from excessive heat, open flame, or other sources of ignition.

Clean parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure to cleaning solvent. Wash exposed skin thoroughly. Solvent used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat.

**FOR ARTIFICIAL RESPIRATION, REFER TO FM 21-11.**

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, D.C., 28 DECEMBER 2001

## TECHNICAL MANUAL

### OPERATOR AND UNIT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

#### TANK, FABRIC, COLLAPSIBLE, FUEL STORAGE

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#### REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <http://aeaps.ria.army.mil>. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or email your letter, or DA Form 2028 direct to: Technical Publication Information Office, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

This manual supersedes TM 5-5430-219-13, dated 31 August 1987, TM 5-5430-210-12, dated 30 November 1978, and TM 5-5430-219-23P, dated 31 August 1988, including all changes.

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## HOW TO USE THIS MANUAL

Section I. OVERVIEW -This manual is divided into six chapters consisting of 42 work packages that provide all the information necessary to operate and maintain the collapsible fabric fuel tank assemblies.

Section II. INDEXING -This manual contains several types of indexes to help the user locate information quickly and efficiently. The different indexes are as follows:

a. Table of Contents. Lists all chapters and work packages contained in the manual, along with the work package numbers where they begin.

b. Alphabetical Index. Located at the back of the manual, this index lists entries that personnel are most likely to look for. Most listings are provided several times in the index (i.e., "Maintenance Forms and Records" can also be found as "Forms and Records, Maintenance," and "Records, Maintenance Forms and"). This increases the likelihood of finding the information on first entry. Each entry also lists the work package where the information can be found.



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
GENERAL INFORMATION**

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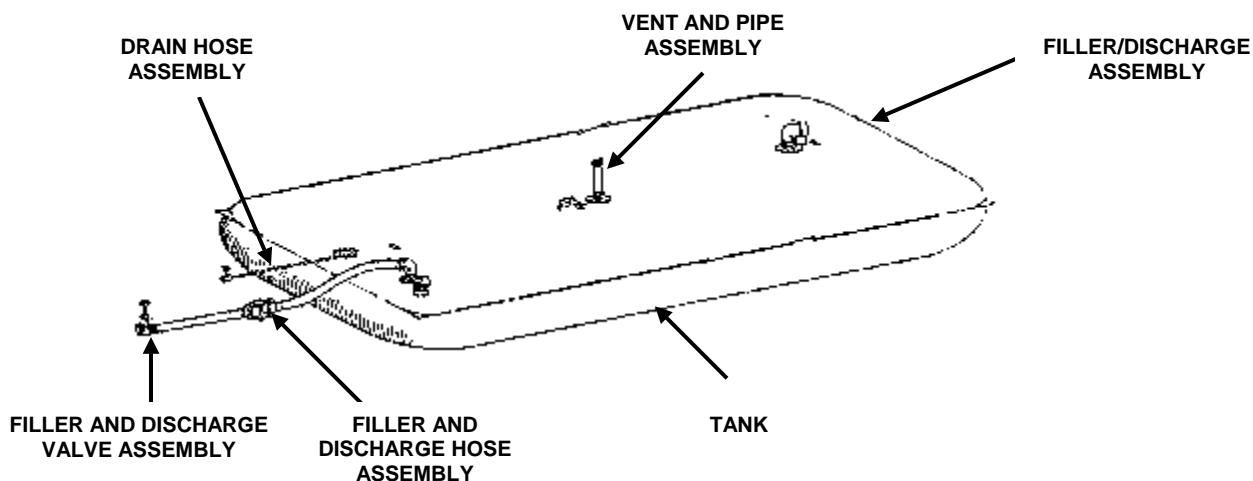
## SCOPE

This technical manual contains instructions for operations, checks, and corrective maintenance for 3,000 Gallon (11,360 liter), 10,000 Gallon (37,850 liter), 20,000 Gallon (75,710 liter), and 50,000 Gallon (189,300 liter) Fuel Storage Collapsible Fabric Tanks.

Type of Manual: Operator and Unit Maintenance.

Model Number and Equipment Names: WTM3KF, MIL-T-52983B, 3000 Gallon Fuel Storage Collapsible Fabric Tanks, BA91-141, BA91-141A, FCE574-81-1-A, SC5430-97CLE01, Extra Accessories, 10,000 Gallon Fuel Storage Collapsible Fabric Tank, BA91-140, BA91-140A, BA92-162, 20,000 Gallon Fuel Storage Collapsible Fabric Tank, PD52983-50, M52983-50, 50,000 Gallon Fuel Storage Collapsible Fabric Tank.

Purpose of Equipment: The tanks are containers designed to store a variety of petroleum liquids. The tanks will be used to store fuel as part of a bulk fuel terminal. Fuel will be available for use in a quick response deployment operation. The tanks are made of tough polymer-coated nylon fabric, and care must be taken not to puncture or tear the material.



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## **MAINTENANCE FORMS, RECORDS AND REPORTS**

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA Form 2404, Equipment Inspection and Maintenance Worksheet, DA Form 2407, Maintenance Request, DA Form 2407-1 Maintenance Request Continuation Sheet, DA PAM 738-750, The Army Maintenance Management System DA PAM 738-751, Functional Users Manual for The Army Maintenance Management System Aviation (TAMMS-A) or AR 700-138, Army Logistics Readiness and Sustainability.

## **CORROSION PREVENTION AND CONTROL (CPC)**

Corrosion prevention and control 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 rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Any 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 words such as "rust," "deterioration," "corrosion," or "cracking" will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA Pam 738-750.

## **DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE**

Command decisions, according to tactical situations, will determine when destruction of the collapsible fabric fuel tank assembly will be accomplished. A destruction plan will be prepared by the using organization, unless higher authority has prepared one. For general destruction procedures for this equipment, refer to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.

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

If the collapsible fabric fuel tank assemblies need improvement, notify publications by sending an EIR. The tank user is the only personnel that can report dissatisfaction with the equipment. Report discrepancies in the design or performance of the equipment. Fill out an SF 368 (Product Quality Deficiency Report), and mail it to: Commander, U.S. Army Tank-automotive and Armaments Command, AMSTA-LC-CIP-WT, Rock Island, IL 61299-7630.

## **PREPARATION FOR STORAGE OR SHIPMENT**

Army users refer to work package 0031 00.

## **QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)**

Workmanship shall be of the highest quality and shall permit no defects not repaired in accordance with the instructions in this manual. All metal parts shall be clean and free of sand, dirt, etc. The inside and outside of the tank shall be clean and free of foreign material.

## **END OF WORK PACKAGE**

## **CHAPTER 1**

### **DESCRIPTION AND THEORY OF OPERATION TANK, FUEL STORAGE, 3,000 GALLON, 10,000 GALLON 20,000 GALLON, AND 50,000 GALLON**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
EQUIPMENT DESCRIPTION**

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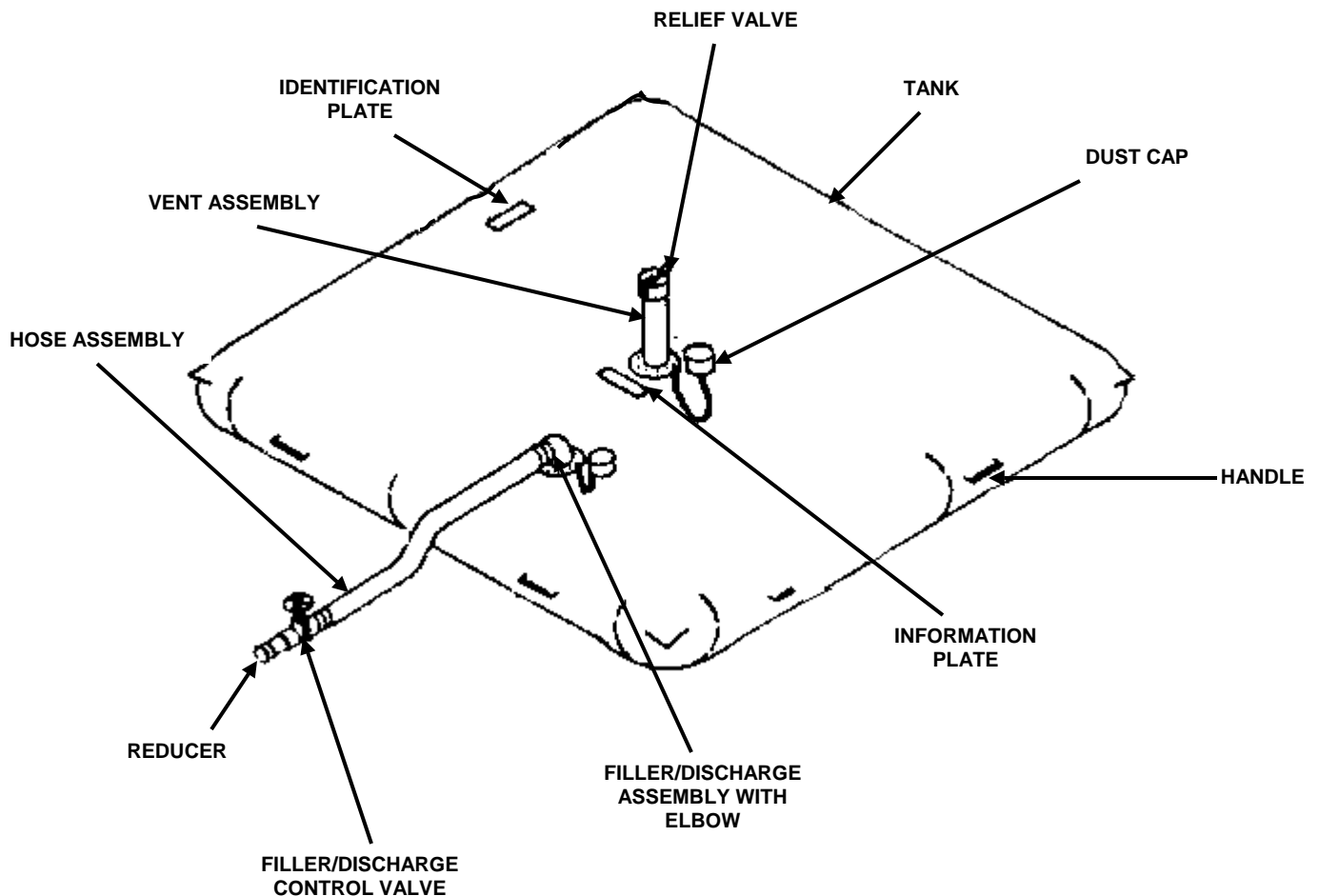
### **EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES**

Characteristics, capabilities, and features of the collapsible fabric fuel tank assemblies include:

- a. Constructed of tough polymer-coated nylon fabric with triple-wall thickness protection.
- b. Vulcanized handles for easy tank positioning.
- c. Various assemblies attach to hoses and related hardware with quick-disconnects.
- d. The filled tank expands vertically and internal pressure is vented.

#### **3,000-Gallon Collapsible Fabric Fuel Storage Tank**

The 3,000-Gallon (11,360-liter) fuel tank is used for the storage of petroleum-based fuels. The unit consists of a collapsible fabric fuel tank with one filler/discharge assembly, elbow fitting, a vent fitting assembly with relief valve, a 4.0-foot (1.219 meter) filler/discharge hose assembly with control valve, a 4.0-inch (10.16 centimeters) female to 3.0-inch (7.62 centimeters) male reducer, and emergency repair items.



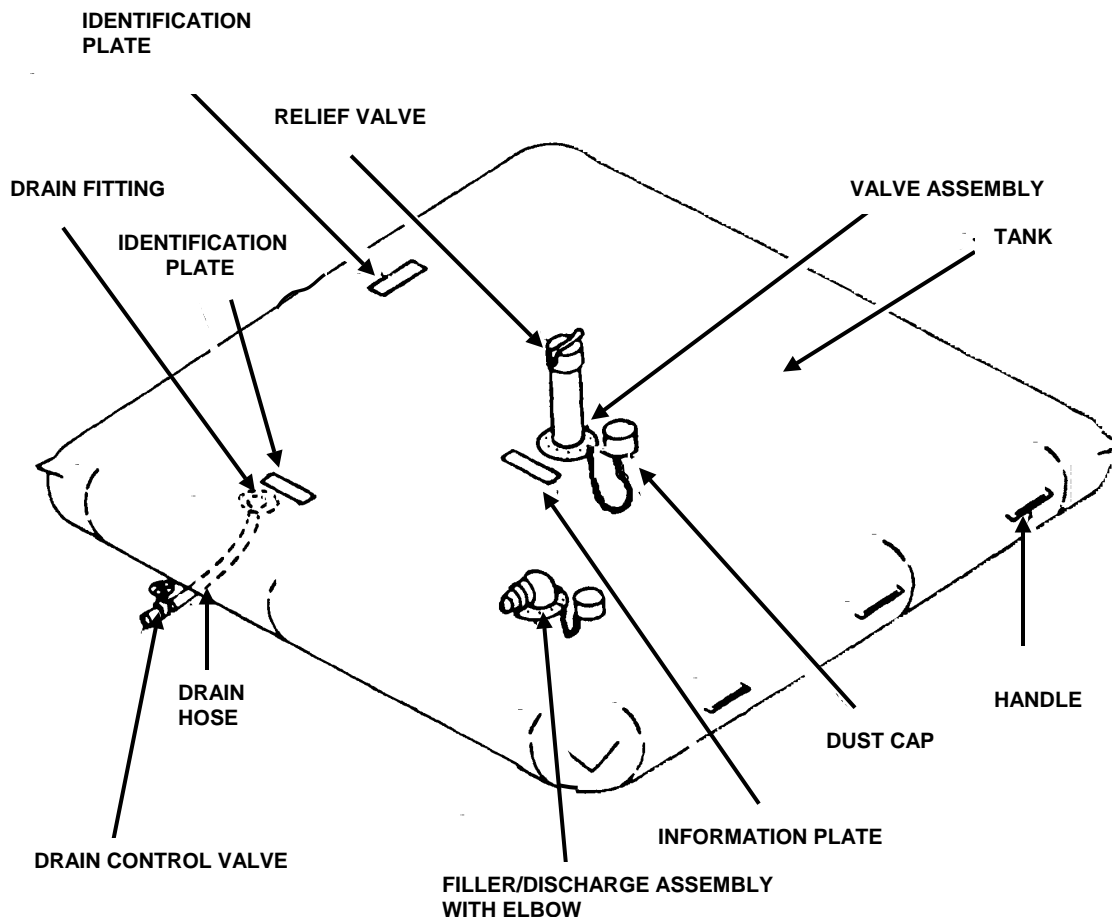
## 10,000-Gallon Collapsible Fabric Fuel Storage Tank

### NOTE

When the basic fuel tank, issued under SC5430-97CLE01, NSN 5430-00-641-8552, becomes unserviceable, replacement requisitions should be submitted for fuel tank NSN 5430-00-052-3412. The accessory items issued with NSN 5430-00-641-8552 should be retained and should not be turned in when only the collapsible fabric tank itself is unserviceable. These accessories should be retained for use with the replacement tank (NSN 5430-00-052-3412), as this tank is not issued with all the accessories that come with the tank assembly issued under SC5430-97CLE01. Replacement tanks will be issued in wooden crates only. The aluminum chest may be requisitioned at unit level for storage, as desired.

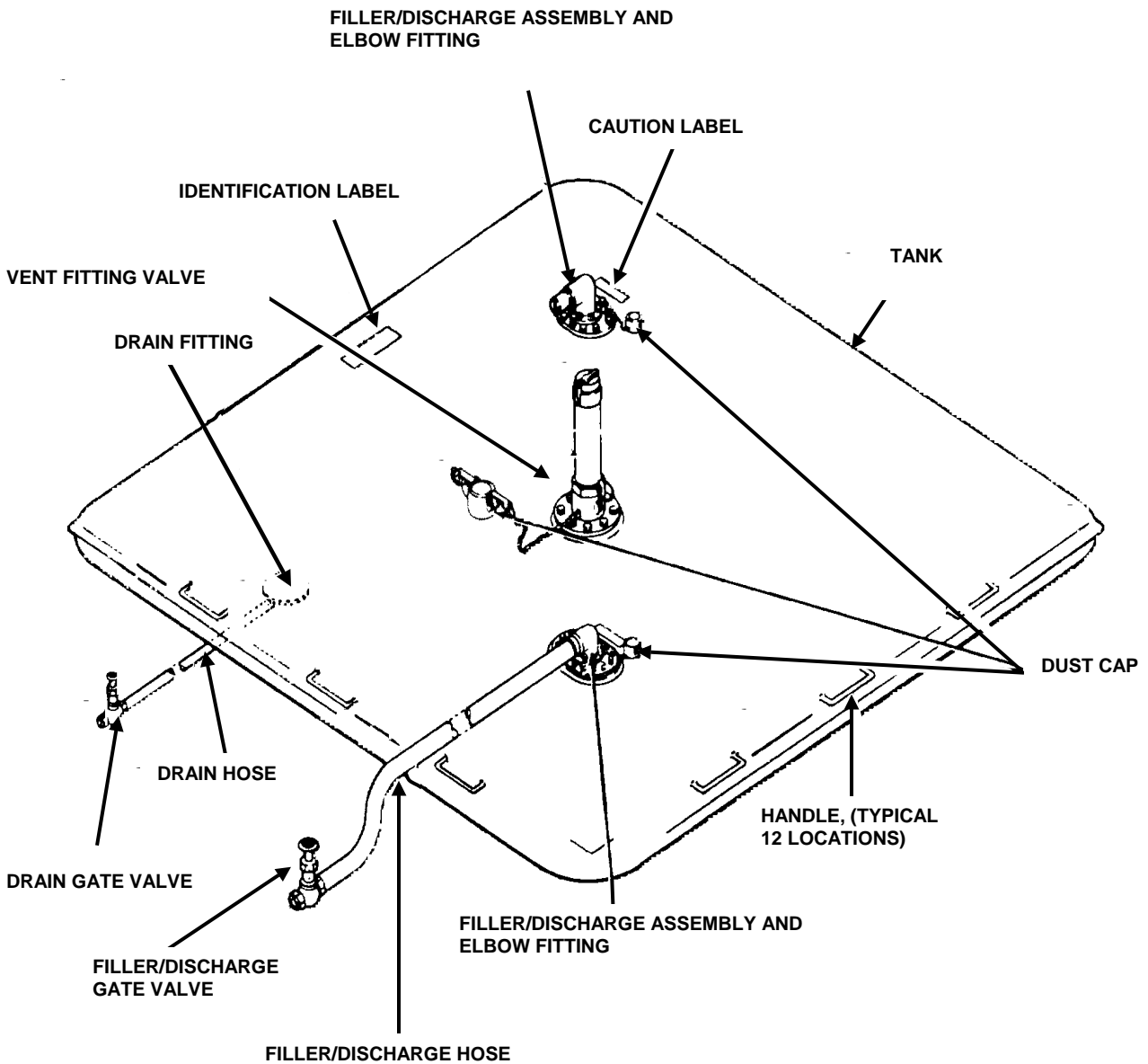
NSN 5430-00-641-8552, 10,000-Gallon (37,850-liter) tank is used for the storage of petroleum-based fuels. The unit consists of a collapsible tank with one filler/discharge assembly with elbow, a vent fitting assembly with relief valve, eight 10.0-foot (3.05 meter) filler/discharge hose assemblies, numerous adapters, coupling-halves, dust caps and plugs, reducers, manifolds, an aluminum storage chest or wooden box, and emergency repair items.

NSN 5430-00-052-3412, 10,000-Gallon (37,850-liter) tank is used for the storage of petroleum-based fuels. The unit consists of a collapsible fabric fuel tank with one filler/discharge assembly, elbow fitting, a vent fitting assembly with relief valve, a drain fitting assembly with a 6.0-foot (1.82 meter) drain hose with control valve, an aluminum storage chest (or crate), and emergency storage items.



## 20,000-Gallon Collapsible Fabric Fuel Storage Tank

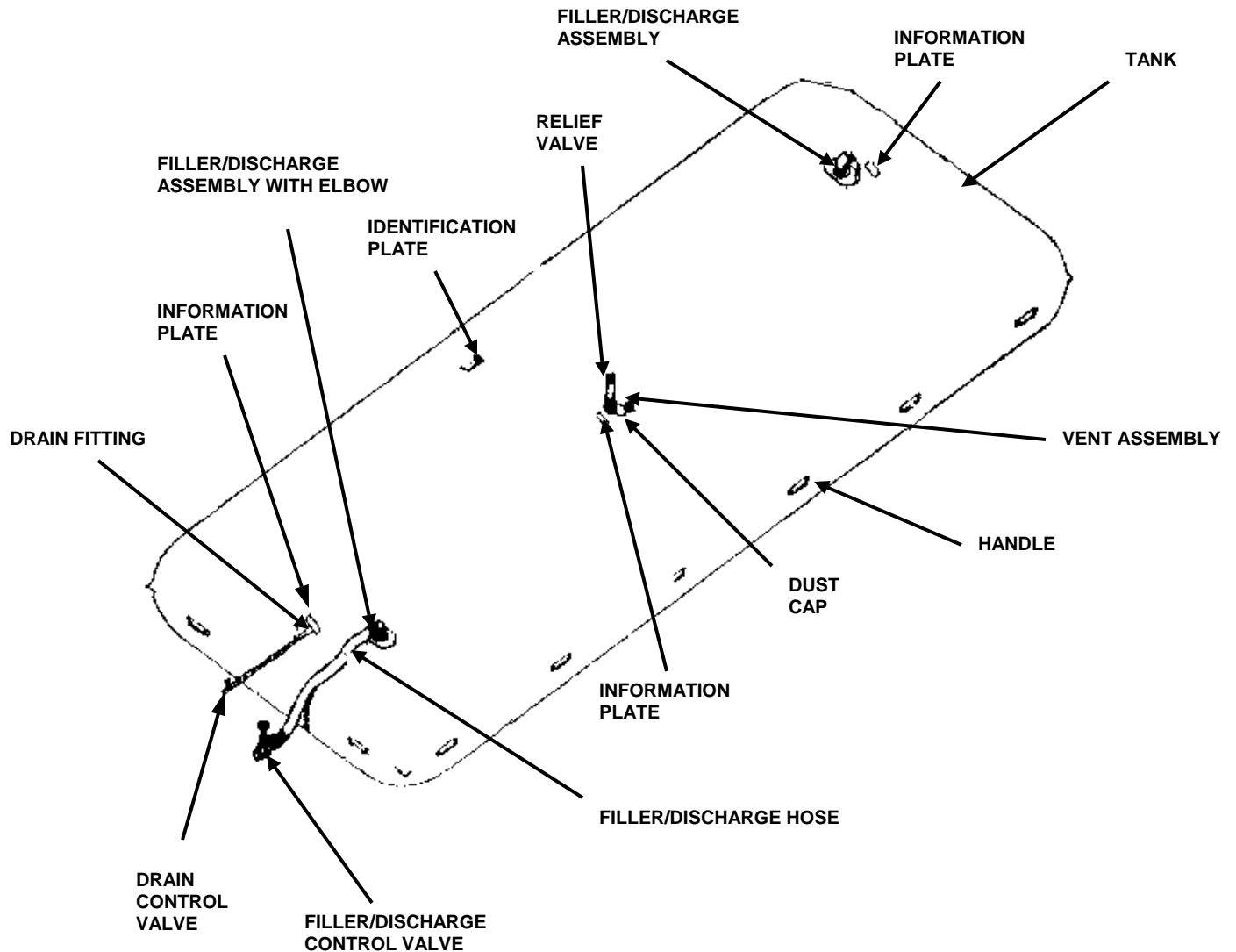
The 20,000-Gallon (75,710-liter) fuel tank is used for the storage of petroleum-based fuels. The unit consists of a collapsible fabric fuel tank with two filler/discharge assemblies with elbow fittings, a vent fitting assembly with relief valve, a drain fitting assembly with an 8.0-foot (2.44 meter) drain hose with gate valve, two 10.0-foot (3.05 meter) filler/discharge hose assemblies with a gate valve, and emergency repair items.





# 50,000-Gallon Collapsible Fabric Fuel Storage Tank

The 50,000-Gallon (189,300-liter) fuel tank is used for the storage of petroleum-based fuels. The unit consists of a collapsible fabric fuel tank with two filler/discharge assemblies with elbow fittings, a vent fitting assembly with relief valve, a drain fitting assembly with an 8.0-foot (2.44 meter) drain hose with control valve, an 8.0-foot (2.44 meter) filler/discharge hose assembly with control valve and emergency repair items.



## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

See WP 0004 00.

## DECAL MARKINGS

Identification Plate. The tanks are fitted with a bonded identification label, which lists the following:

Description:  
Federal or NSN:  
Serial number:  
Manufacturer's name and plant location:  
Date of manufacture, weight (empty), contract number:

Information Plate. The following information shall be located adjacent to each fitting assembly:

Maximum Torque ..... 30.0-inch pounds.

Caution Label. NSN 5430-01-215-7525. The following information shall be located adjacent to each fitting assembly:

### CAUTION

**Overfilling will result in permanent damage and failure of the tank.**

### DO NOT OVERFILL

Maximum Capacity When Full ..... 20,000-Gallon (75,710 liter)

Maximum Tank Height When Full ..... 5.577-ft (1.7 meters)

## EQUIPMENT DATA

### 3,000 - GALLON TANK

Temperature Range (Desired-5 Years Maximum)

Low ..... -25°F (-31.67°C)

High ..... +125°F (+51.67°C)

Dimensions, Outside (Packaged)

Height ..... 28.8 inches (73.15 cm)

Width ..... 28.0 inches (71.12 cm)

Length ..... 5.0 ft. 5.0 inches (1.651 m)

Crated Weight ..... 295 pounds (133.80 kg)

Dry Weight ..... 135 pounds (61.23 kg)

Dimensions (Filled)

Height (Depth) ..... 4.0 feet (1.219 m)

Width ..... 12.6 feet (3.840 m)

Length ..... 12.6 feet (3.840 m)

Dimensions (Dry)

Width ..... 13.0 feet (3.962 m)

Length ..... 13.0 feet 3.962 m)

Fuel Storage Capacity ..... 3,000 gallons (11.360 liters)

# 10,000 - GALLON TANK

## Temperature Range (Desired-5 Years Maximum)

Low ..... -25°F (-3.67°C)  
 High ..... +125°F (+51.67°C)

## Dimensions, Outside (Empty)

Width .....22.0 feet (6.70 m)  
 Length .....22.0 feet (6.70 m)

Dry Weight ..... 180 pounds (81.65 kg)

Crated Weight ..... 525 pounds (238.10 kg)

## Dimensions (Filled)

Height (Depth) .....4.0 feet (1.219 m)  
 Width .....12.6 feet (3.840 m)  
 Length .....12.6 feet (3.840 m)

## Dimensions (Dry)

Width .....22.0 feet (6.70 m)  
 Length .....22.0 feet (6.70 m)

## Crate Dimensions

Height (Depth) ..... 27.0 inches (68.58 cm)  
 Width ..... 30.0 inches (76.20 cm)  
 Length ..... 13.0 ft.7.0 inches (4.140 m)

Fuel Storage Capacity ..... 10,000-gallons (37,850 liters)

# 20,000 - GALLON TANK

## Temperature Range (Desired-5 Years Maximum)

Low ..... -25°F (-3.67°C)  
 High ..... +125°F (+51.67°C)

## Dimensions, Outside (Packaged)

Height (Depth) .....2.8 feet (0.85 m)  
 Width .....3.11 feet (.948 m)  
 Length .....3.4 feet (1.04 m)

## Dimensions (Filled)

Height (Depth) .....5.6 feet (1.71 m)  
 Width .....24.10 feet (7.35 m)  
 Length .....27.11 feet (8.26 m)

## Dimensions (Dry)

Width .....24.0 feet (7.31 m)  
 Length .....28.0 feet (8.53 m)

Dry Weight ..... 550 pounds (249.50 kg)

Crated Weight ..... 1200 pounds (544.30 kg)

Fuel Storage Capacity ..... 20,000 gallons (75,710 liters)

# 50,000 - GALLON TANK

## Temperature Range (Desired -5 Years Maximum)

Low ..... -25°F (-3.67°C)  
 High ..... +125°F (+51.67°C)

## Dimensions, Outside (Packaged)

Height (Depth) .....3.5 feet (1.07 m)  
 Width .....3.3 feet (1.01 m)  
 Length .....12.0 feet (3.66 m)

## Dimensions (Filled)

Height (Depth) .....5.8 feet (1.768 m)  
 Width .....24.0 feet (7.315 m)  
 Length .....64.0 feet (19.51 m)

## Dimensions (Dry)

|                             |                                 |
|-----------------------------|---------------------------------|
| Width .....                 | 26.0 feet (7.925 m)             |
| Length .....                | 66.0 feet (20.12 m)             |
| Dry Weight .....            | 744 pounds (337.50 kg)          |
| Crated Weight .....         | 1350 pounds (612.30 kg)         |
| Fuel Storage Capacity ..... | 50,000 gallons (189,300 liters) |

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
PRINCIPLES OF OPERATION**

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## **PRINCIPLES OF OPERATION**

Connecting a hose from a fuel truck or other fuel source to the filler/discharge hose assembly fills the collapsible fuel tank. This assembly is connected, in turn, to the gate, ball, or butterfly valve that has been connected to the filler/discharge assembly. Gate, ball, or butterfly valves are used to control the flow of the fuel.

Connecting the filler/discharge hose assembly, and gate, ball, or butterfly valve to the filler/discharge assembly discharges the collapsible fuel tank. Water, sludge, and residual fuel are drained through the drain hose assembly at the bottom of the tank. The fuels are extremely hazardous, and all safety procedures must be strictly followed.

The vent and pipe assembly contains a relief cap that opens automatically when the tank vapor reaches an internal pressure of 0.10 psi (0.0068 atmospheres).

## **END OF WORK PACKAGE**



## **CHAPTER 2**

### **OPERATING INSTRUCTIONS**

**TANK, FUEL STORAGE, 3,000 GALLON, 10,000 GALLON  
20,000 GALLON, AND 50,000 GALLON**



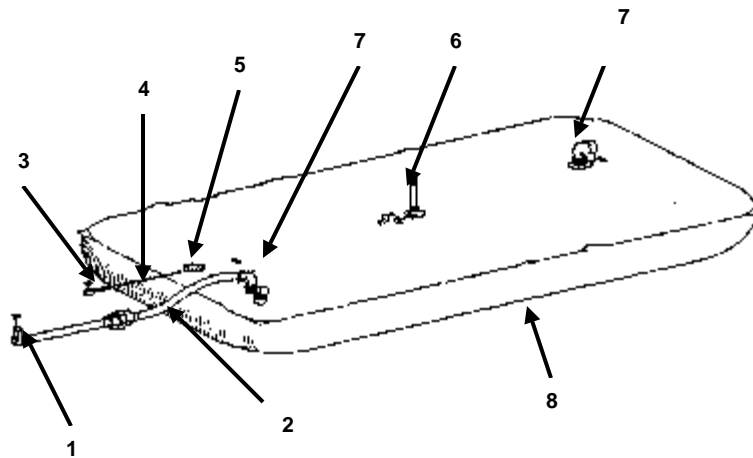
**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
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10,000, 20,000, AND 50,000 GALLON  
CONTROLS AND INDICATORS**

## GENERAL

This section lists major components, controls, and indicators, and describes the functions within the collapsible fabric, fuel storage tank assemblies.

## DESCRIPTION AND USE OF MAJOR COMPONENTS

Description and use of major components, including controls and indicators, are contained in Table 1.



**Table 1. Major Components, Controls and Indicators**

| Key | Component, Control, or Indicator  | Function   |
|-----|---|--|
| 1   | Filler/Discharge Gate Valve<br>(Models MIL-T-52983B, WTM3KF, FCE574-81-1-A, SC5430-97CLE01, BA92-162, PD52983-50, M52983-50)<br>Filler/Discharge Butterfly Valve<br>(Models BA91-141, BA91-140)<br>Filler/Discharge Ball Valve<br>(Models BA91-141A, BA91-140A) | Allows fuel to flow to and from the tank assembly. Valve is normally closed when the tank is not being filled or fuel is not being discharged from the tank. |
| 2   | Filler/Discharge Hose Assembly  | Feeds fuel from the source and valve to appropriate fitting on tank during fill. Allows fuel to flow from tank during discharge.                             |

| Key | Component, Control, or Indicator  | Function   |
|-----|---|--|
| 3   | Drain Ball Valve<br>(Models PD52983-50, BA91-141, BA91-140, BA91-141A, BA91-140A)<br>Drain Gate Valve<br>(Model WTM3KF, M52983-50, BA92-162, FCE574-81-1-A) | Allows fuel, water, and sludge to drain from the tank. The valve is normally closed when the tank is not being drained or replaced.  |
| 4   | Drain Hose Assembly (Except Model MIL-T-52983B)   | Allows fuel, water, and sludge to drain from the storage tank.   |
| 5   | Drain Fitting Assemblies<br>(Except Model MIL-T-52983B)   | Allows the drain hose to be connected to the fuel tank.  |
| 6   | Vent Pipe and Assembly  | Vent pipe opens automatically when the tank vapor reaches 0.10 psi (pounds per square inch) (0.0068 atmospheres), to relieve pressure from inside the tank.  |
| 7   | Filler/Discharge Assemblies   | Allows hose assembly to be connected to the tank. Directs fuel flow from the hose assembly into the tank when filling the tank. Directs fuel flow from the tank during discharge. Discharge fitting requires female/male elbow. Filler fitting requires female/female elbow. |
| 8   | Fuel Tank(s)  | Collapsible polymer-coated nylon fabric tank in 3,000, 10,000, 20,000, and 50,000 gallon capacities. Used for fuel storage. Emergency repair kit included.   |

**END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
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10,000, 20,000, AND 50,000 GALLON  
OPERATION UNDER USUAL CONDITIONS**

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## **ASSEMBLY AND PREPARATION FOR USE**

### **Construction of Berm**

#### **WARNING**

**Make certain that the berm gate valve is closed and locked after installing and draining the berm. In the event of tank rupture, an open berm gate valve would permit fuel to drain from the berm. Undetected fuel leakage can result in an explosion and cause death, severe personal injury, and damage to equipment.**

#### **CAUTION**

**Damage to tank may occur if chosen site is not free of sharp objects (rocks, sticks, glass, etc.), and center of leveled area should not exceed 9.0-inches (22.86-centimeters) below ground level. Retain a slight incline for draining surface water.**

#### **NOTE**

A minimum of 5.0-foot (1.52-meter) working clearance is necessary between the side of the tank and the berm on all four sides. When a single berm is used to contain more than one tank, maintain a 5.0-foot (1.52-meter) space between tanks. The installation site should have less than a 3.0 degree grade in order to prevent creeping of the tank.

#### **NOTE**

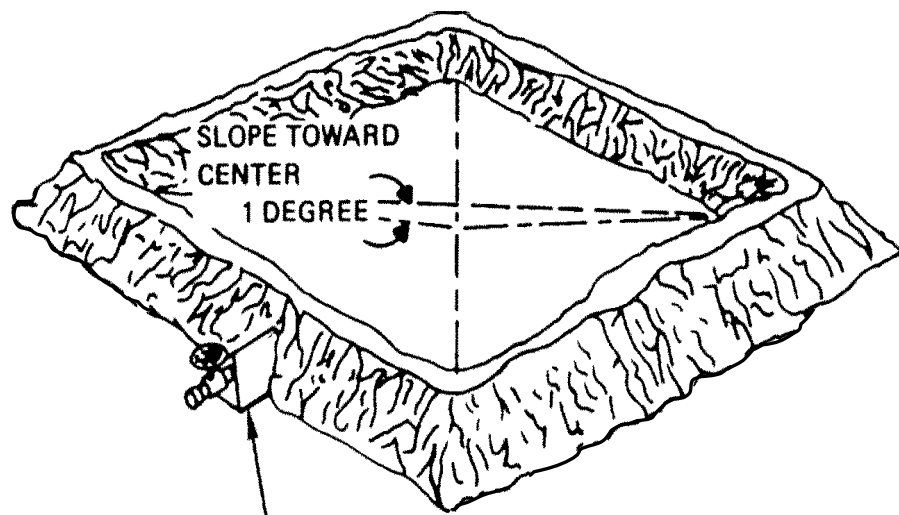
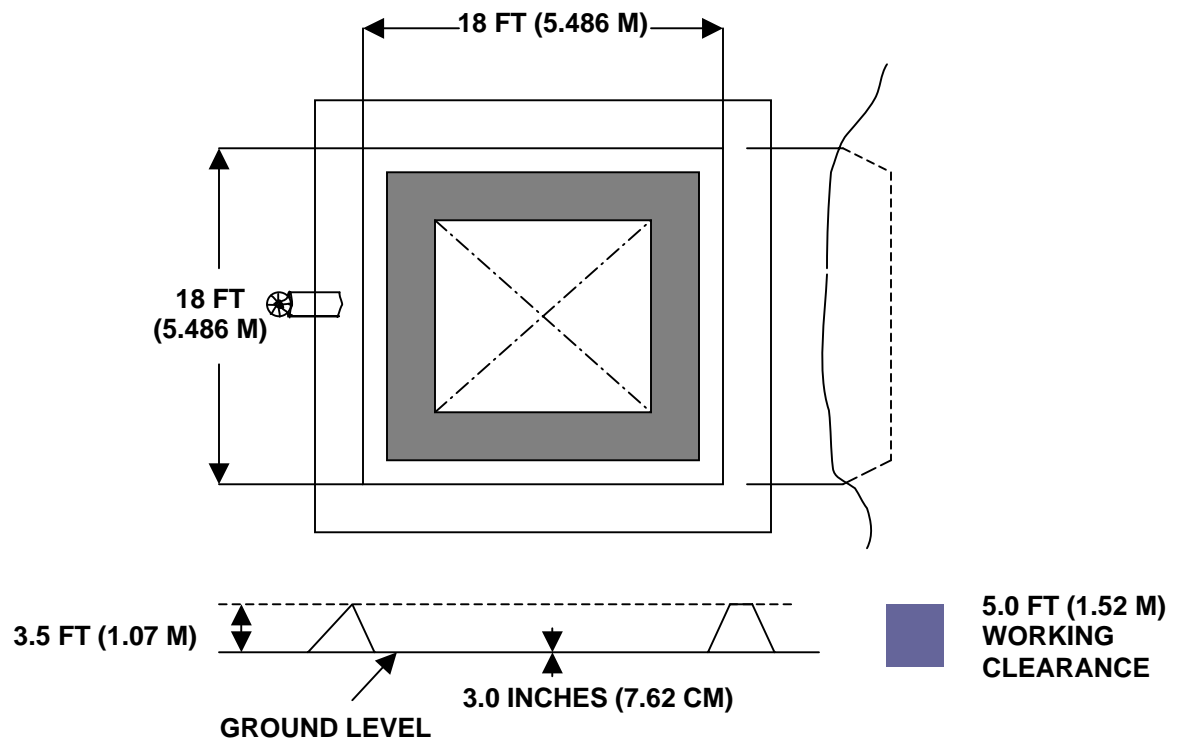
If possible, provide a 4.0-inch (10.16-centimeters) thick sand bottom for all collapsible fuel storage tanks. To provide a berm drain for all collapsible fuel storage tanks, place a 2.0-inch (5.08-centimeter) pipe with a gate valve through the bottom of the discharge end of the berm in order to provide a means of draining accumulated water. Position the drain assembly at the lowest point of the slope to aid in draining water or sludge. The gate valve should be normally closed, and opened only to drain water from the bermed area. Install a cloth, if provided, in the bermed area for all collapsible fuel storage tanks.

### **3,000-Gallon (11,360 liters) Tank**

#### **NOTE**

The following instructions are for a 13.0-foot by 13.0-foot (3.962-meter by 3.962-meter) tank in flat (empty) dimensions.

1. Clear and level an area 29.0-feet by 29.0-feet (8.84-meters by 8.84-meters).
2. Slope all four sides of leveled area in toward the center. The center should be no more than 3.0-inches (7.62-centimeters) below ground level, equal to an approximate slope of 1.0 degree.
3. Erect a 3.5-foot (1.07-meter) high berm around the outside of the sloped area.



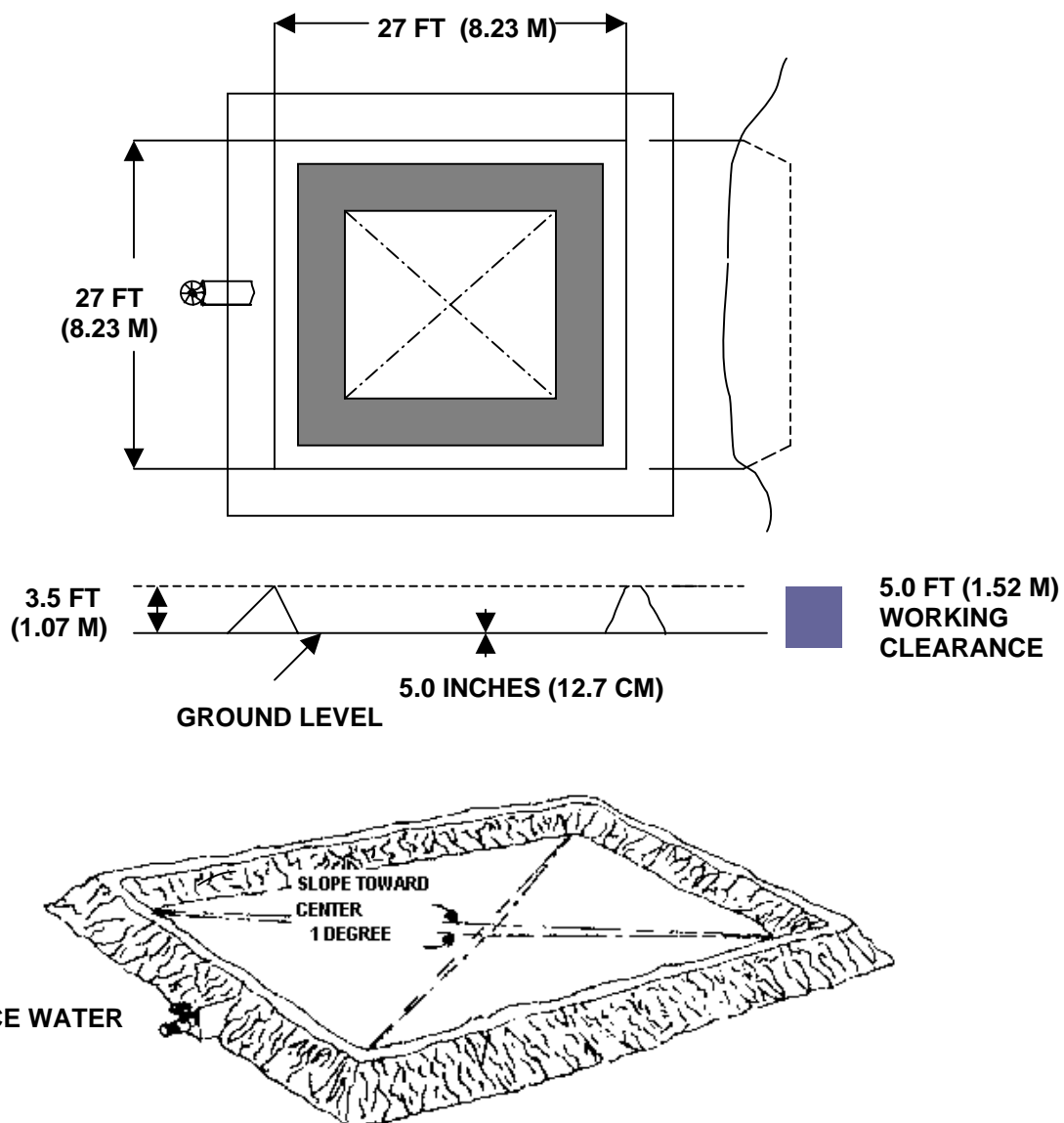
DRAIN FOR SURFACE WATER

Berm Construction, 3,000-Gallon (11,360 liter) tank

**10,000-Gallon (37,850 liters) Tank****NOTE**

The following instructions are for a 22.0-foot by 22.0-foot (6.706-meter by 6.706-meter) tank in flat (empty) dimensions.

1. Clear and level an area 35.0-feet by 35.0-feet (10.668-meters by 10.668-meters).
2. Slope all four sides of leveled area in toward the center. The center should be no more than 5.0-inches (12.7-centimeters) below ground level, equal to an approximate slope of 1.0 degree.
3. Erect a 3.5-foot (1.07-meter) high berm around the outside of the sloped area.



**Berm Construction, 10,000-Gallon (37,850 liter) tank**

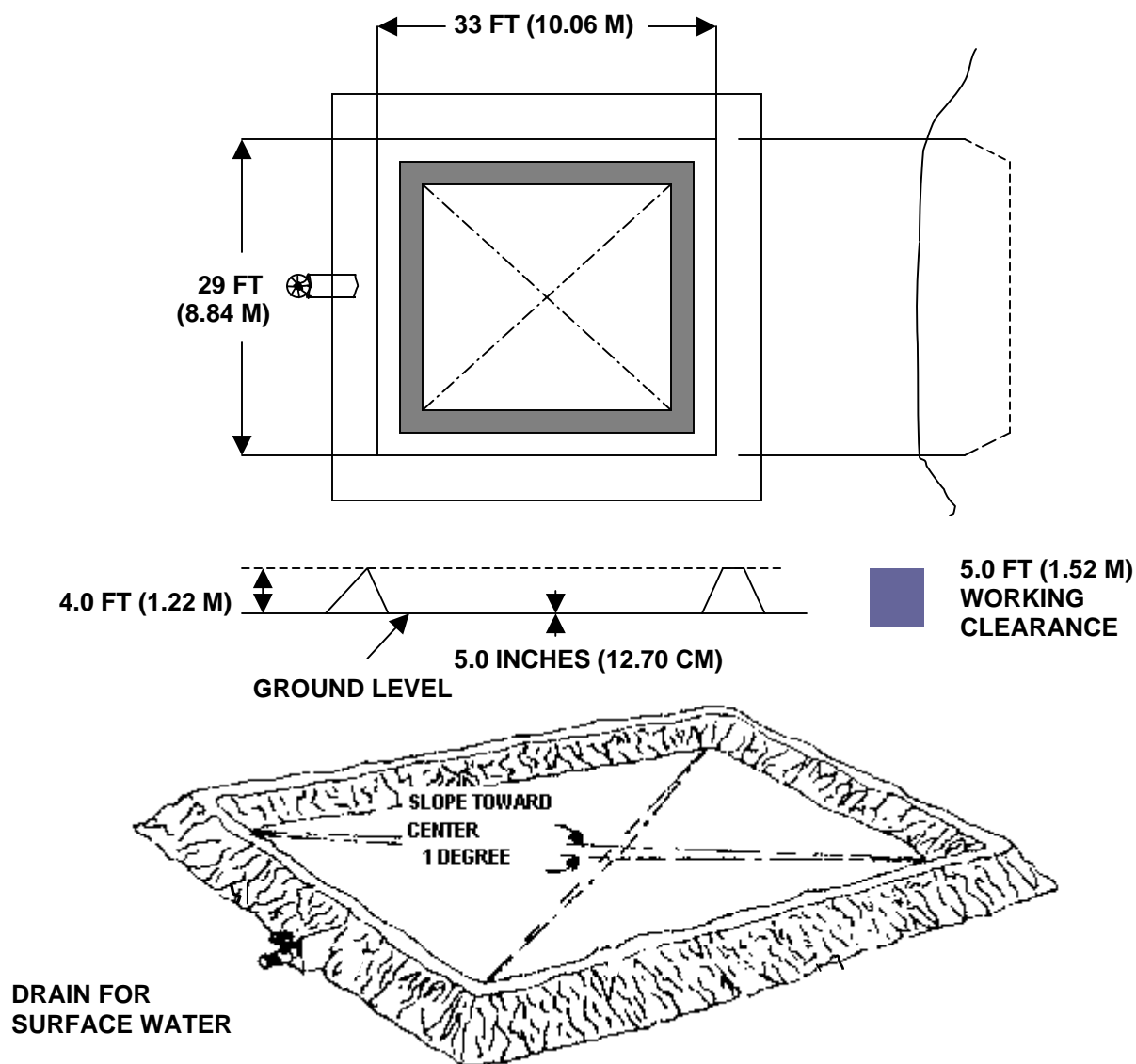
**NOTE**

Slope towards center, 1 degree.

**20,000-Gallon (75,710 liters) Tank****NOTE**

The following instructions are for a 24.6-foot by 28.6-foot (7.498 meter by 8.717 meter) tank in flat (empty) dimensions.

1. Clear and level an area 38.0-feet by 34.0-feet (11.58 meters by 10.36 meters).
2. Slope all four sides of leveled area in toward the center. The center should be no more than 5.0-inches (12.7-centimeters) below ground level, equal to an approximate slope of 1.0 degree.
3. Erect a 4.0-foot (1.22 meter) high berm around the outside of the sloped area.

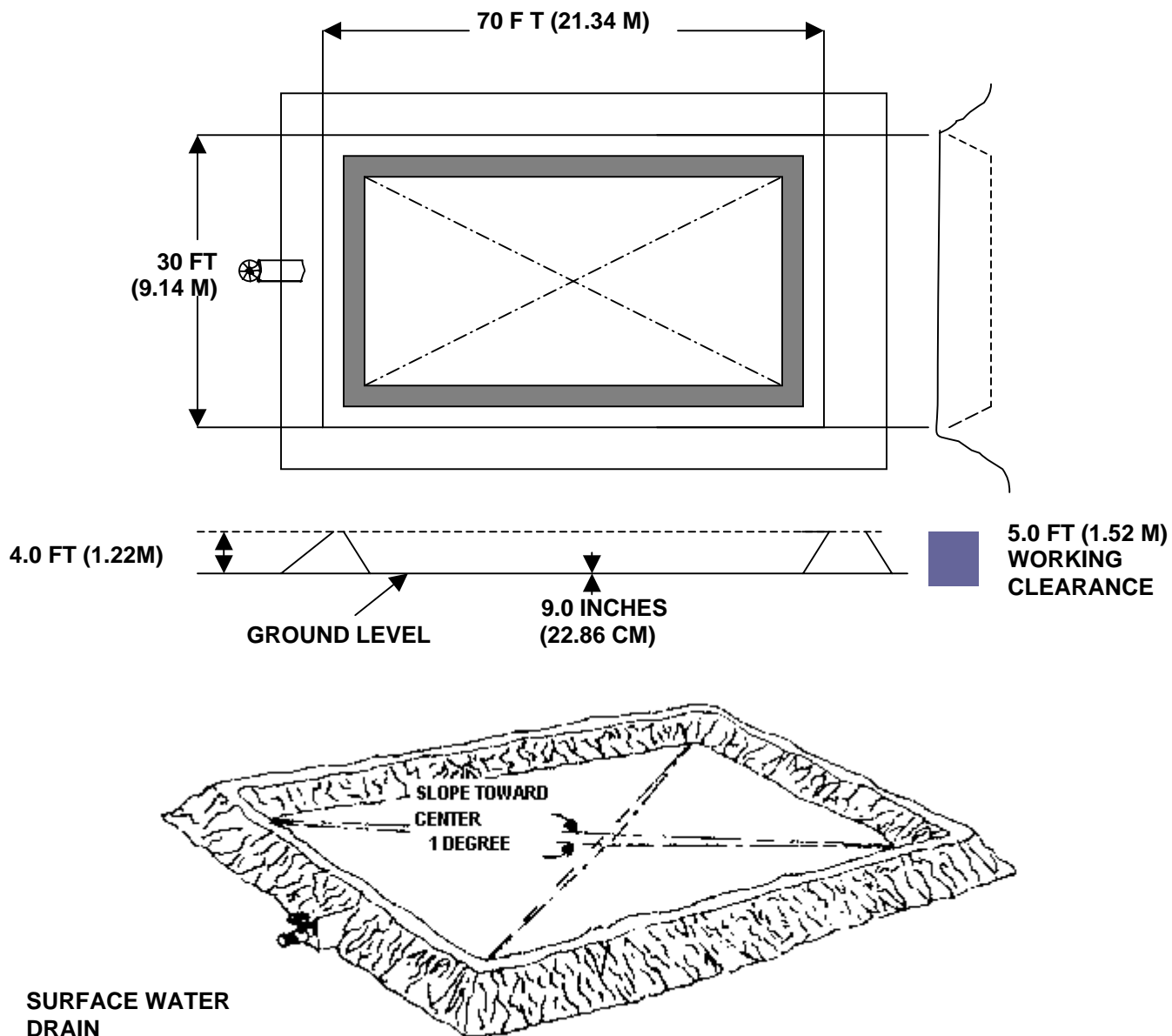


Berm Construction, 20,000-Gallon (75,710 liter) tank

**50,000-Gallon (189,300 liters) Tank****NOTE**

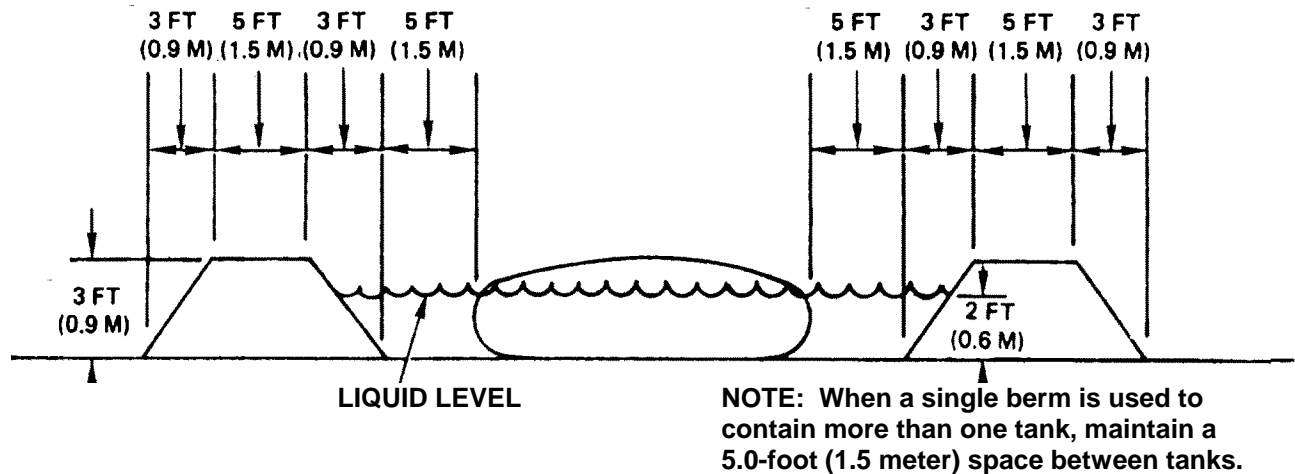
The following instructions are for a 26.0-foot by 66.0-foot (7.925 meters by 20.117 meters) tank in flat (empty) dimensions.

1. Clear and level an area 34.0-feet by 74.0-feet (10.36 meters by 22.56 meters).
2. Slope all four sides of leveled area in toward the center. The center should be no more than 9.0-inches (22.86-centimeters) below ground level, equal to an approximate slope of 1.0 degree.
3. Erect a 4.0-foot (1.22 meter) high berm around the outside of the sloped area.



**Berm Construction, 50,000-Gallon (189,300 liter) tank**

## BERM CROSS-SECTION



Typical Berm Cross-Section of Liquid Level in Relation to the Position of the Collapsible Fabric Fuel Tank.

## Unpacking the Equipment

1. Position the packaged tank (1) on an approved site near the point of installation.

### CAUTIONS

Unfold the collapsible fabric tanks with care. Coated surfaces may stick together, and use of excessive force may pull the coating from the tank fabric. A light application of petroleum jelly will prevent recurrence.

Remove all protruding nails and other objects before attempting to remove the tank from the container. This is necessary to avoid puncturing the tank.

2. Know the contents of the shipping container by reviewing the Bill of Materials.

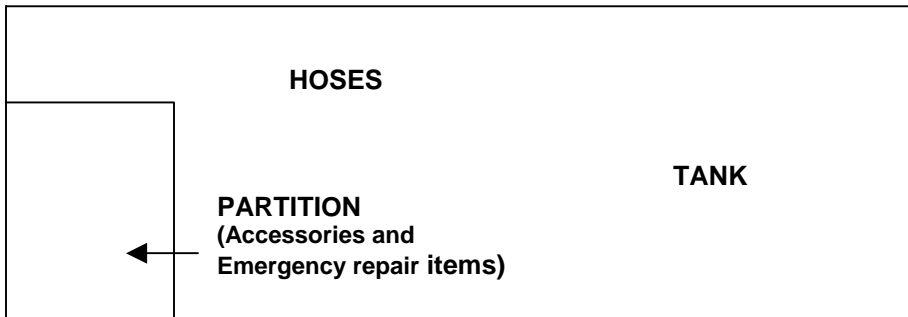
### NOTE

Items inside the wooden crate are listed sequentially from the top of the crate to the bottom of the crate.

| ITEM  | QUANTITY       |
|---|----------------|
| Hoses   | Three (3) each |
| Tank, with lifting straps                                   | One (1) each   |
| Partition containing accessories<br>Emergency repair items. | One (1) each   |

3. Carefully open the shipping container (2) and by removing nails and bolts from the container lid (3), retaining boards (4), container sides (5) and ends (6). Remove accessories (7), drain fitting hoses (8), and filler/discharge hose (9) from around tank (1).

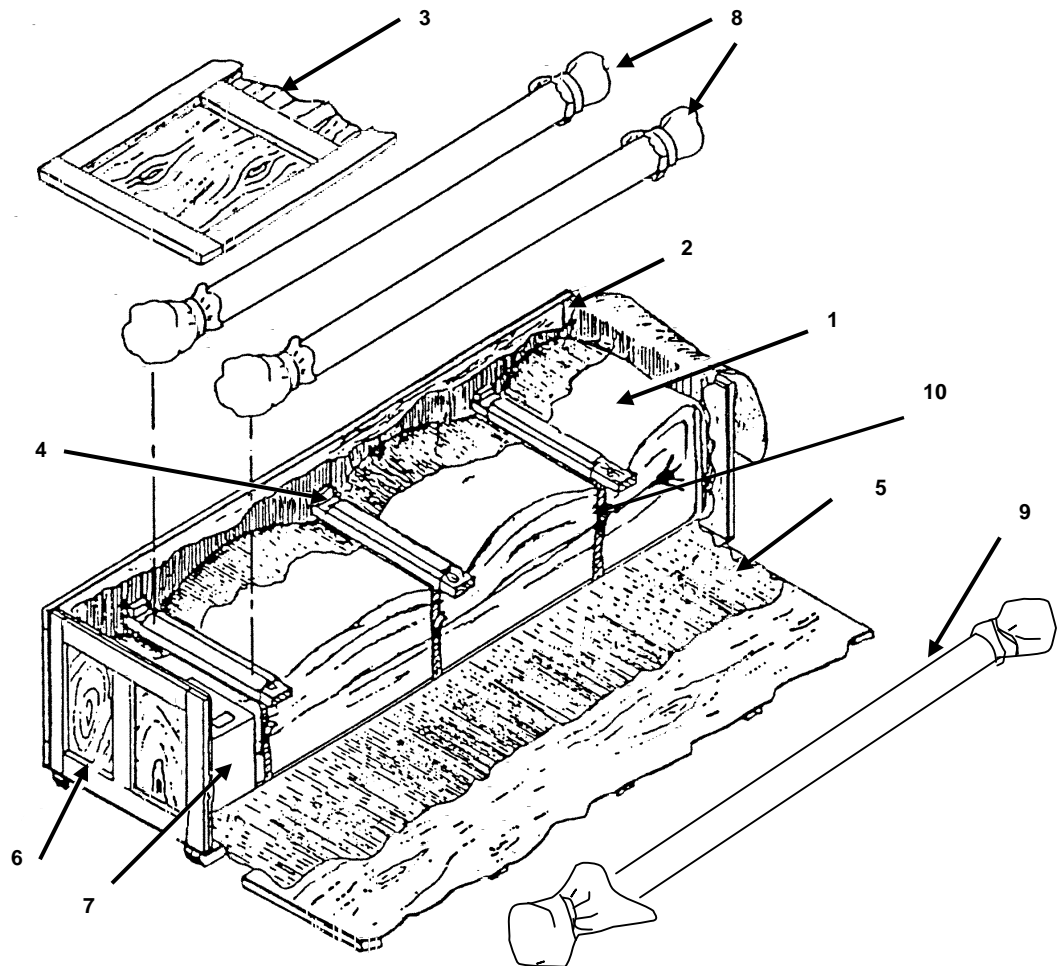


**NOTES**

If a tank is being replaced, package the unserviceable tank in the empty container in the same manner that the new tank was packaged.

The tank-lifting device must have a minimum lifting capacity of 2000 lb. (908 kg).

4. Locate the lifting straps (10) around tank (1). Carefully insert a lifting bar (2000 lb./908kg. capacity) through the loops of lifting straps (10).



**Unpacking Instructions for the 3,000 Gallon, 10,000 Gallon,  
20,000 Gallon, and 50,000 Gallon Collapsible Fabric Fuel Tanks.**

5. Transport tank (1) to the center of the desired installation site. Position long side of tank (1) parallel with long side of the installation site.
6. Remove lifting straps (10) from tank (1).
7. Unfold one-half of tank (1) along the length of the installation site, and unfold the other half of tank (1) in the opposite direction along the length of the installation site.

#### NOTE

Repair items (sealing clamps, plugs, gaskets, and pre-formed packing) are packaged in another box and should be placed in a secure storage area until needed.

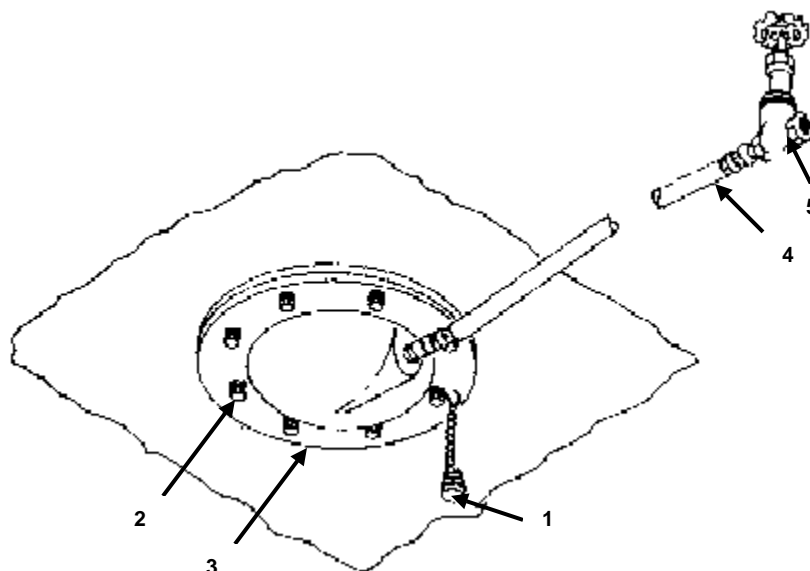
8. Grasp the handles located along the length of tank (1), and pull the folded sides of tank (1) towards the sides of the installation site.
9. Smooth out all creases and wrinkles in tank (1) fabric.

#### Removal of Drain Assembly Plug and Installation of Drain Hose Assembly

#### WARNING

**When filling the tank with fuel, verify that the drain gate hand-wheel or ball valve handle is rotated fully to the right (closed position), before fuel is introduced into the tank. Unobserved drainage of fuel can result in an explosion or fire. Failure to comply with this warning can cause death or severe personal injury.**

1. Fold the tank to expose drain plug (1).
2. Torque screws (2) on cover plate (3) to 30 in-lb (3.41 N•m).
3. Remove drain plug (1).



4. Apply sealing compound (Item 8, WP 0040 00) to the threads of drain hose (4).
5. Install drain hose (4).
6. Apply sealing compound or anti-seize tape (Item 7, WP 0040 00) to threads on other end of drain hose (4).

### WARNING

**Check that the drain gate or ball valve has been rotated clockwise to the closed position before proceeding. Failure to close the valve handle can cause loss of fuel and possible fire or explosion.**

7. Install ball valve or drain gate valve (5) onto the end of drain hose (4).

### NOTES

A narrow, shallow drainage trench, placed at the outer edge and away from the tank, should be used as an extension for the drain hose, drain gate, or ball valve.

Installation of drain plug and drain assembly are applicable to all tanks except for 3,000-Gallon (11,360 liter) tanks.

8. Return the tank end to the flat position, laying drain hose (4) and ball valve or drain gate valve (5) in narrow, shallow drainage trench.

### Installation of Vent Pipe Assembly

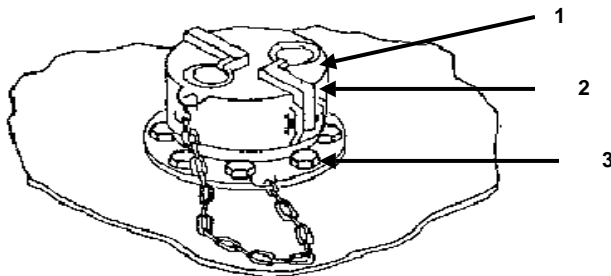
### CAUTION

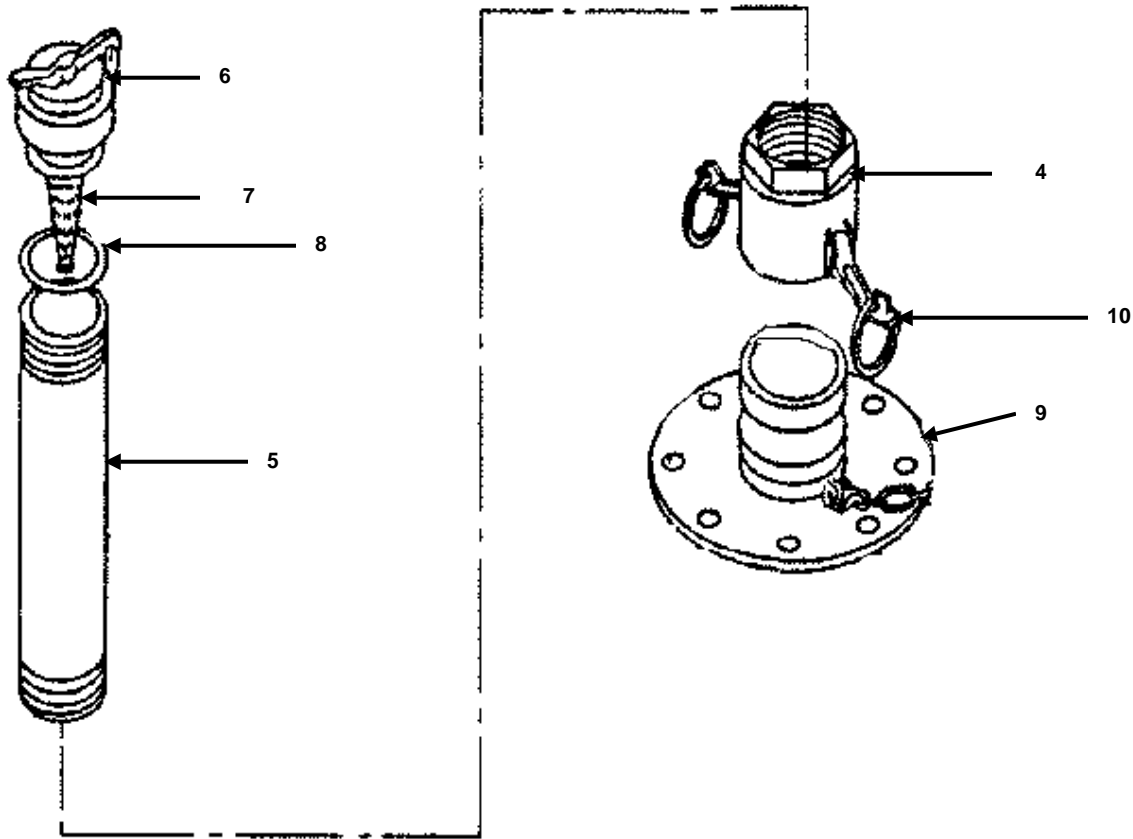
**Prior to installing the fuel tanks, check all coupling gaskets and sealing surfaces to ensure they are in place and serviceable.**

### NOTE

Dust cap is chain-attached to prevent loss.

1. Remove dust cap (1) by pulling cam-lever arms (2) outward, and lifting up on dust cap (1).
2. Torque dust cap screws (3) to 30 in-lb (3.41 N•m).

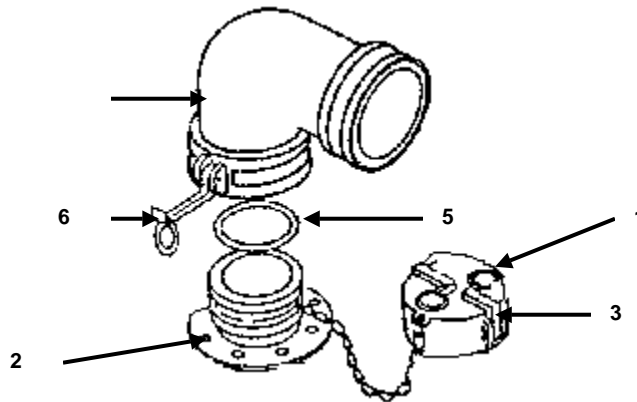


**NOTE**

Normally the vent pipe and female coupling half will be received pre-assembled.

3. Inspect female coupling half (4) and vent pipe (5) for cleanliness.
4. Check to see that relief cap (6) operates freely.
5. Check that flame arrestor (7) is installed.
6. Check that relief cap (6) is installed tightly on vent pipe (5).
7. Check that gasket (8) is in place and correctly seated.
8. Insert female coupling half (4) over flanged adapter (9), with cam-lever arms (10) in the outward position.
9. Press cam-lever arms (10) upward, and inward, to lock vent pipe (5) into operating position.

## Installation of Filler/Discharge Elbow Assembly



### NOTE

The dust cap is attached to the flanged adapter to prevent it from being lost. The filler/discharge elbow on the discharge end requires a female/male elbow; whereas, the filler/discharge elbow used on the intake end requires a female/female elbow.

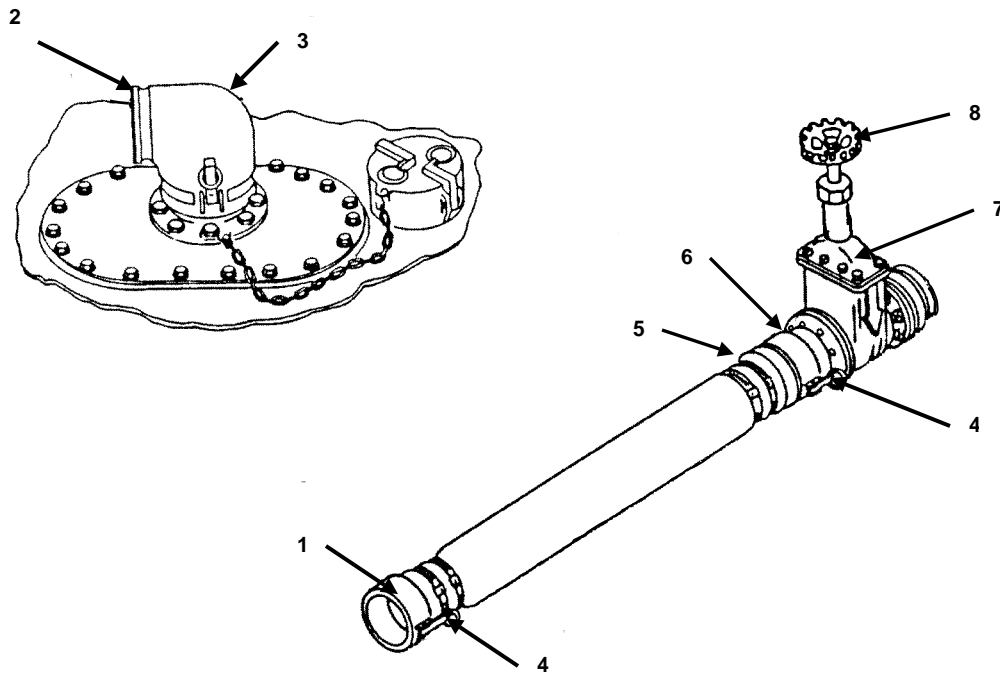
1. Remove dust cap (1) from flanged adapter (2) by pulling cam-lever arms (3) outward and lifting up on dust cap (1).
2. Inspect elbow (4) for cleanliness.
3. Check that gasket (5) is in place and is properly seated.
4. Position the female end of elbow (4) over flanged adapter (2) with cam-lever arms (6) in the outward position.
5. Rotate elbow (4) so that the open end points to nearest end of the tank.

### NOTE

Cam-lever arms must be pushed inward to lock and pulled outward to unlock the elbow.

6. Lift cam-lever arms (6), and lock elbow (4) in place.
7. Install dust cap (1) on the open end of elbow (4) and lock in place.

## Installation of Filler/Discharge Hose Assembly and Filler/Discharge Valve Assembly



### NOTE

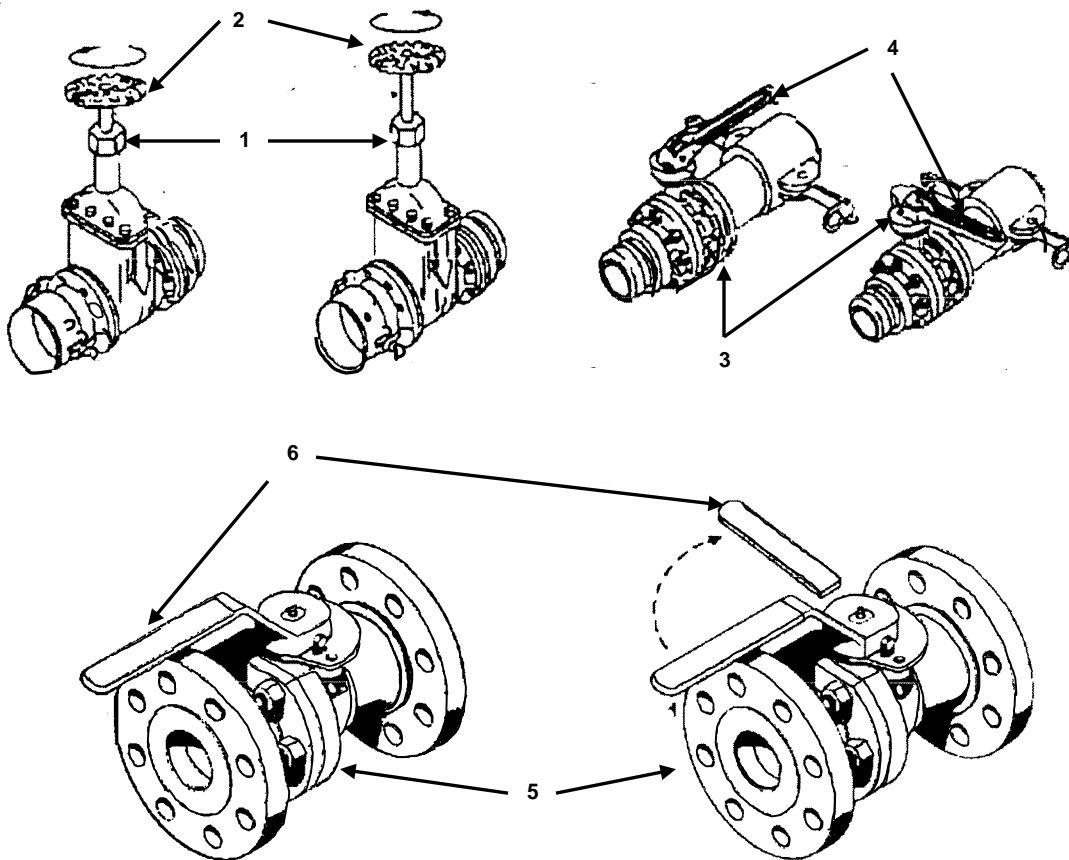
The filler and discharge hose assembly is fitted with a quick-disconnect female coupling on one end and a quick-disconnect male adapter on the other end.

1. Place female coupling (1) on male adapter (2) end of filler/discharge elbow (3).
2. Push coupling cam-lever arms (4) into position to lock the hose assembly in place.
3. Place male adapter (5) end of the hose into female coupling (6) of the gate or butterfly valve (7).
4. Push coupling cam-lever arms (4) into position to lock the hose assembly in place.
5. Ensure gate or butterfly valve (7) is closed, rotating handle (8) to the right until it stops.

### Valves

1. Gate valve (1) is fully opened by rotating hand-wheel (2) to the left, and backing off one-quarter turn.
2. Gate valve (1) is fully closed by rotating hand-wheel (2) to the right and backing off one-quarter turn. Note the difference in exposure of the handle stem between the closed and open positions.
3. Ensure butterfly valve (3) (Models BA91-141 and BA91-140) is closed. Press down on the end of the handle (4) to release the locking pin and turn until handle (4) is 90° to the valve body and stops. Release handle (4).
4. Butterfly valve (3) is fully opened by pressing down on the end of handle (4) and turning it counter clockwise to a parallel position in line with the valve body or hose assembly.

5. Ball valve (5) is fully opened by rotating handle (6) until handle (6) is parallel to the valve body or hose assembly.
6. Ball valve (5) is fully closed by rotating handle (6) until perpendicular to valve body or hose assembly.



## INITIAL ADJUSTMENTS AND ROUTINE CHECKS

### NOTE

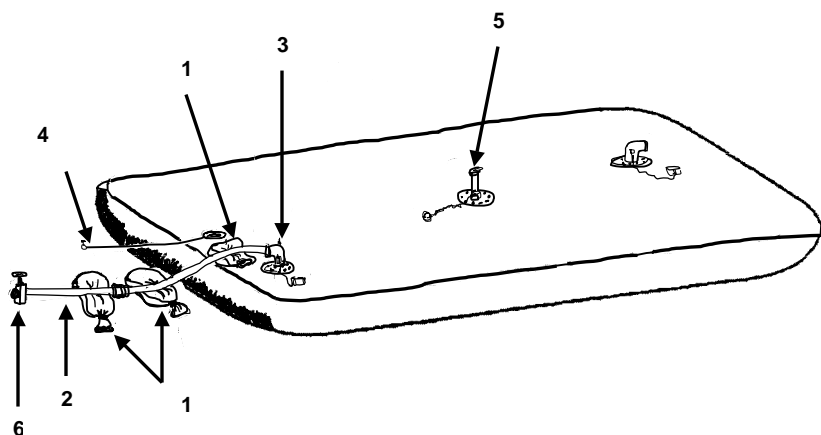
If the tank is cut or punctured during any phase of operation, refer to WP 0006 00 for emergency repair procedures.

1. Position filled sandbag (1) under hose (2) near filler/discharge elbow (3). This support will reduce stress on tank fitting, the gasket in the hose coupling, and the coupling of filler/discharge elbow (3).

### WARNING

**Check the placement of all sandbags to see potential leak points in order to avoid fire hazard. Not checking the positions of sandbags can cause serious injury or death by fire or explosion.**

2. Position other sandbags (1) or wood blocks on the ground near the hose connections so that a faulty or leaking connection is easier to see, and a fire hazard can be avoided.
3. Inspect the tank to verify the elevated connection setup for easy leak detection.
4. Check drain gate or ball valve (4) to verify that it is in the closed position.
5. Check the vent pipe assembly relief cap (5) to verify freedom of operation.
6. Check the filler/discharge gate, butterfly or ball valve (6) to verify closed position.



**Elevated Connections for Easy Leak Detection**



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**OPERATING PROCEDURES (Filling the Tank)****WARNING**

**Over-aged tanks can become weakened and rupture, thereby spilling flammable fuel on the ground. Care must be taken to ensure that over-aged tanks are not left in operation. Failure to heed this warning can cause injury or death to personnel.**

**CAUTION**

**Persons operating the fuel tank must periodically check the dates on the data plates to verify that the tank is safe for use. Each tank has a maximum of three-years service life beginning on the date when it is first filled. Service life may be less, depending on the climatic conditions in which the tank is used and the number of deployments it has been on. Shelf storage life is five years from the date of manufacture. Users must initiate action to replace over-aged tanks. Failure to heed this caution can cause tank rupture.**

1. After performing adjustments and routine checks, attach the fuel source to the filler/discharge gate or butterfly valve.
2. Activate the fuel source.
3. Open the gate or butterfly valve by rotating the hand-wheel (or handle) counter-clockwise.

**CAUTION**

**Do not exceed maximum fill capacity. The fuel tank will burst if it is overfilled causing damage to the equipment.**

4. Close the gate or butterfly valve when the tank is filled by rotating the hand-wheel (or handle) clockwise.
5. Deactivate the fuel source.
6. Disconnect the fuel source from the gate or butterfly valve.

**Draining the Tank**

1. Inspect the tank to verify that the tank is set up correctly.
2. Attach an emptying source to the gate or butterfly valve.
3. Open the gate or butterfly valve by rotating the hand-wheel (or handle) counter-clockwise.
4. Activate the emptying source.
5. Close the gate or butterfly valve when the tank is empty by rotating the hand-wheel (or handle) clockwise.
6. Deactivate the emptying source.
7. Disconnect the emptying source from the gate or butterfly valve.
8. Disconnect the filler/discharge hose from the elbow.

9. Squeeze excess fuel from the tank by rolling the ends of the tank towards the drain fitting.
10. Open the drain fitting gate or ball valve to allow the remaining fuel to drain from the tank.

### **WARNING**

**Sludge that accumulates in the bottom of the fuel tank gives off toxic and explosive vapors. Inhaling these vapors can cause lead poisoning. When cleaning tanks, provide ample ventilation to carry off harmful fumes.**

11. Clean the tank of residual sludge that accumulates at the bottom of the storage tank and dispose of the sludge in compliance with EPA and local regulations.

### **PREPARATION FOR MOVEMENT**

### **CAUTION**

**Always handle the tank carefully. Components stored with the tank should be padded to avoid chafing during movement. Rough handling of the tank or components will result in damage.**

1. Drain all fuel from the tank.
2. Dry out the tank by purging it with air pressure. Use a maximum line pressure of 50 pounds per square inch (3.40 atmospheres).
  - a. Insert the air hose through the filler/discharge adapter, placing rags (Item 6, WP 0040 00) around the air hose at the fitting to prevent air from escaping.
  - b. Apply compressed air into the tank until the tank expands to 3-feet (0.914 meters) in height.
  - c. Remove the dust cap from the vent fitting to allow air to vent from the tank for 30 minutes.
  - d. Deactivate the compressed air source and remove the air hose and rags.
3. Remove the drain hose assembly from the drain fitting and install the drain plug.
4. Remove the filler/discharge elbows from the filler/discharge adapters.
5. Install the dust caps, pushing in on the cam-lever arms to lock the dust caps in place.
6. Remove the vent pipe assembly from the flanged adapter and install the dust cap, pushing in on the cam-lever arms to lock the dust caps in place.
7. Brush off any stones or debris clinging to the tank.
8. Fold the tank from both sides towards the middle.
9. Roll the tank from the end opposite the drain fitting.
10. Plug the exposed hose assembly openings with suitable, clean materials to keep them dirt free.
11. Place the tank in a suitable shipping container or on a skid.
12. Pad or wrap the components before placing in separate shipping containers or storing with the tank. This prevents chafing of the tank during movement.

### **END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
OPERATION UNDER UNUSUAL CONDITIONS**

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### **OPERATION IN EXTREME HEAT**

1. Avoid unnecessary handling of the tank that might cause coating material separation. The coating material becomes increasingly delicate as the temperature rises.
2. If possible, set up protective shade over the tank being careful not to block air circulation.

### **OPERATION IN EXTREME COLD**

1. Avoid any unnecessary handling of the tank.
2. If possible, deploy the tank only when the temperature is above -25°F (-32°C).

### **CAUTION**

**In extreme cold, a new fabric tank must be prepared for initial operations. The fabric tank will crack if the seams formed in the material from depot vacuum packing are not stretched out prior to the fabric tank being filled with fuel.**

3. Remove the tank from the packing crate and unfold the tank to allow the seams created by the depot vacuum packing to stretch out.
4. If possible, inflate the fabric tank with compressed air to ensure all seams are stretched out.
5. Keep snow and ice from accumulating on the top of the tank, vent, and pipe assembly.
6. Keep snow and ice from accumulating on the couplings to ensure proper assembly and disassembly.
7. Avoid unnecessary folding, unfolding, or rolling of the tank that might cause flaking, cracking, or delaminating of the coating material.
8. Sweep snow from the exterior of tank with a soft-bristled broom or brush.
9. Cover fittings to keep ice from forming on the filler/discharge assemblies.
10. Refold and repack the fabric tank after the seams have been stretched out.

### **OPERATION IN SANDY OR DUSTY AREAS**

1. Cover all hoses and fittings not in use with dust caps to prevent sand or dust from contaminating the fuel.
2. Ensure that filler/discharge fittings are free of sand or dirt prior to filling or drawing fuel from the tank.
3. Keep the tank, vent and pipe assembly, and filler/discharge valve assemblies clear of sand, dust and grime.
4. Wipe all couplings clean before assembly.

### **OPERATION AT HIGH ALTITUDES**

No special procedures are required for operation at high altitudes.

**OPERATION IN MUD**

Ensure that filler/discharge valves and fittings are clean before filling or drawing fuel from the tank.

**OPERATION IN HIGH WINDS**

1. Ensure that the tank is secure and protected from flying debris.
2. Keep the tank as full of fuel as possible.

**OPERATION IN RAIN**

If possible, provide adequate drainage ditches to prevent water from accumulating around the tank.

**EMERGENCY REPAIR PROCEDURES****General**

Emergency repair is performed when cuts or punctures occur in the tank when in use.

The Emergency Repair Kit is stored in the partition on the inside wall of the tank shipping container.

**Emergency Repairs with Wood Plugs**

In emergencies, as an immediate temporary measure, wood plugs may be used for sealing small holes or punctures.

The size of hole or tear will determine the size of the wood plug to be used.

1. For holes (tears) up to approximately 0.5-inch (1.27 centimeters) in size, use the 3.0-inch (7.62 centimeters) long plug.
2. For holes (tears) up to approximately 1.5-inch (3.81 centimeters) in size, use the 5.0-inch (12.7 centimeters) long plug.

Select the size of the plug needed to fit (seal) the tank puncture. Wet the plug and insert in the tank puncture. Twist the plug clockwise until the leak is either stopped or slowed. As a follow-up, regular inspection should be made of the wood plugs, as possible tightening may be necessary if the leaks resume. Later, if a leak is not totally stopped, the use of a small sealing clamp may become necessary.



**Installation of Wood Plug**

## Emergency Repairs with Sealing Clamps

Small slits, tears, or cuts [not to exceed 6-inches (15.24 centimeters) in length] may be repaired with sealing clamps.

The size of the damaged area (opening) needing repair will govern the size of the clamp needed. Select clamp size as follows:

1. For holes (tears) less than 2-inches (5.08 centimeters) in length, use the 3.0-inch (7.6 centimeters) clamp.
2. For holes (tears) 2 to 4 inches (5.08 to 10.16 centimeters) in length, use the 5-inch (12.7 centimeters) clamp.
3. For holes (tears) 4 to 6-inches (10.16 to 15.24 centimeters) in length, use the 7.5-inch (19 centimeters) clamp.

### WARNING

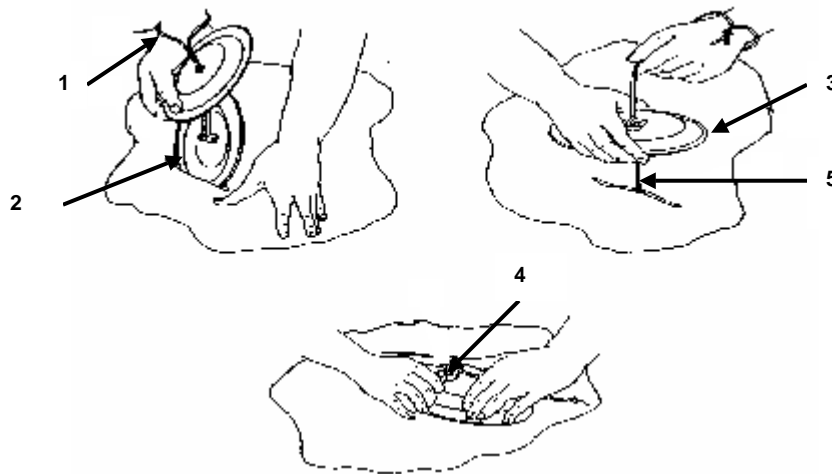
**It may be necessary to increase the size of the tear in order to insert the bottom plate of the clamp. Be careful when installing a sealing clamp in the tank. Fuel will pour out when a larger slit is made in the tank. Leaking fuel can cause personal injury, fire, explosion, or loss of government property.**

4. Loop cord around wrist (1) to prevent loss of the clamp into tank.
5. Insert the bottom plate (2) of the clamp through the hole or tear and rotate it until it is centered, and its length runs with the tear.
6. Pull the bottom plate up against the fabric, and slide the top plate (3) and wing nut (4) down the cord and onto the threaded stud (5) of the bottom plate.

### CAUTION

**Do not over tighten the wing nut, as stud threads may be stripped, or damage to the tank fabric may occur.**

7. With the plates aligned, tighten the wing nut (4), clamping the tank wall between the two plates. Tighten the wing nut enough to stop the leak.



## Installation of Sealing Clamps

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**INTERIM NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES****NOTE**

Detailed decontamination procedures can be found in: FM 3-3, FM 3-4, and FM 3-5.

**General**

The following emergency procedures can be performed until field NBC decontamination facilities are available.

**Emergency Procedures**

If an NBC attack is known or suspected, mask at once and continue the mission. Do not unmask until told to do so.

1. Nuclear decontamination: Brush fallout from skin, clothing, and equipment with available brushes, rags, and tree branches. Wash the skin and have radiation check made as soon as the tactical situation permits.
2. Biological decontamination: Remain masked and continue mission until told to unmask.
3. Chemical detection and decontamination:

**WARNING**

**Do not use decontamination spray on personnel. It could cause personal injury.**

- a. Use M8 paper from the M256 chemical agent detector kit or M9 paper to determine if liquid agent is present on the surface of the equipment.
- b. If exposure to liquid agent is known or suspected, clean the exposed skin, clothing, and personal gear, in that order, using M258A1 kit. Use the buddy system. Wash exposed skin and thoroughly decontaminate as soon as the tactical situation permits.
- c. If the M8 or M9 paper indicates that a liquid chemical agent is present, rinse the exposed portion of the collapsible tank with a liberal amount of water. When the tactical situation permits, wash the collapsible tank with soapy water and rinse.
- d. Decontamination procedures take time. Do as much as you can based on the tactical situation.

**END OF WORK PACKAGE**

## **CHAPTER 3**

### **OPERATOR AND UNIT TROUBLESHOOTING TANK, FUEL STORAGE, 3,000 GALLON, 10,000 GALLON 20,000 GALLON, AND 50,000 GALLON**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
OPERATOR TROUBLESHOOTING PROCEDURES**

---

## **INTRODUCTION TO OPERATOR TROUBLESHOOTING**

This Troubleshooting Malfunctions chapter lists common malfunctions which may be found during the operation or maintenance of the collapsible fabric fuel tank assembly or its components. Perform the tests/inspections and corrective actions in the order listed in the table.

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 supervision.

## **TROUBLESHOOTING PROCEDURE**

### **FUEL TANK**

#### **SYMPTOM**

The tank leaks.

#### **MALFUNCTION**

Inspect the tank for punctures or tears.

#### **CORRECTIVE ACTION**

Perform emergency repairs. See WP 0006 00.

The tank cannot be repaired.

#### **CORRECTIVE ACTION**

Notify Unit Maintenance.

## **TROUBLESHOOTING PROCEDURE**

### **HOSE ASSEMBLY, FILLER/DISCHARGE**

#### **SYMPTOM**

Hose or couplings leak.

#### **MALFUNCTION**

Check for tears and breaks in the hose.

#### **CORRECTIVE ACTION**

If hose is damaged, notify Unit Maintenance.

Check the quick-disconnect coupling gasket for damage or wear.

#### **CORRECTIVE ACTION**

Replace the quick-disconnect gasket. See WP 0011 00.



Check the quick-disconnect coupling for dirt, damage, or wear.

#### **CORRECTIVE ACTION**

Remove the dirt or debris from inside the quick-disconnect coupling. Replace the hose assembly if the corrective action fails to stop the leakage. Notify Unit Maintenance.

### **TROUBLESHOOTING PROCEDURE**

#### **DRAIN HOSE ASSEMBLY**

##### **SYMPTOM**

Drain hose assembly leaks.

##### **MALFUNCTION**

Check for leaks or breaks in the drain hose.

##### **CORRECTIVE ACTION**

If hose is damaged, notify Unit Maintenance.

### **TROUBLESHOOTING PROCEDURE**

FILLER/DISCHARGE GATE VALVE ASSEMBLY (Models WTM3KF, MIL-T-52983B, M52983-50, PD52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)

##### **SYMPTOM**

Female coupling or male flange adapter leaks.

##### **MALFUNCTION**

Check the female coupling for missing or loose hex-head cap screws, hex nuts, washers, and lockwashers. Check for damaged or missing coupling gasket.

##### **CORRECTIVE ACTION**

If hardware is loose or missing, notify Unit Maintenance.

If female coupling gasket is damaged or missing, replace gasket. See WP 0011 00.

Check the flange gasket for damage or leaks.

##### **CORRECTIVE ACTION**

If damaged or leaking, notify Unit Maintenance.

Check the male flange adapter for missing or loose hex-head cap screws, hex nuts, washers, and lockwashers.

##### **CORRECTIVE ACTION**

If damaged or loose hardware, notify Unit Maintenance.

---

Male flange gasket leaks between gasket and valve.

**CORRECTIVE ACTION**

If leaking, notify Unit Maintenance.

**TROUBLESHOOTING PROCEDURE**

FILLER/DISCHARGE BALL VALVE (Models BA91-141A, BA91-140A)

**SYMPTOM**

Ball valve leaks.

**MALFUNCTION**

Check for binding in the ball valve handle.

**CORRECTIVE ACTION**

If binding, notify Unit Maintenance.

Check that the ball valve is completely shut off.

**CORRECTIVE ACTION**

If ball valve does not completely shut off, notify Unit Maintenance.

Ball valve continues to leak.

**CORRECTIVE ACTION**

If leaking, notify Unit Maintenance.

Check for binding or leaks in the coupling and flange gaskets.

**CORRECTIVE ACTION**

If binding or leaking, notify Unit Maintenance.

**TROUBLESHOOTING PROCEDURE**

FILLER/DISCHARGE BUTTERFLY VALVE (Models BA91-141, BA91-140)

**SYMPTOM**

Butterfly valve assembly leaks.

**MALFUNCTION**

Butterfly valve assembly leaks through the dust cap, male quick disconnect coupling, gasket and butterfly valve, gasket and female quick-disconnect coupling.

**CORRECTIVE ACTION**

If leaking, notify Unit Maintenance.

**MALFUNCTION**

Check the male flange adapter for missing or loose hex-head cap screws, hex nuts, washers, and lockwashers.

**CORRECTIVE ACTION**

If hardware is missing or loose, notify Unit Maintenance.

Male flange gasket leaks between gasket and valve.

**CORRECTIVE ACTION**

If leaking, notify Unit Maintenance.

**TROUBLESHOOTING PROCEDURE**

DRAIN GATE VALVE (Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)

**SYMPTOM**

Drain gate valve leaks.

**MALFUNCTION**

Check that the drain gate valve is completely closed.

**CORRECTIVE ACTION**

Close the drain gate valve tightly.

If valve still leaks, check the drain gate valve for damage or wear.

**CORRECTIVE ACTION**

If damaged or worn, notify Unit Maintenance.

**TROUBLESHOOTING PROCEDURE**

DRAIN BALL VALVE (Models BA91-141, BA91-140, PD52983-50, BA91-141A, BA91-140A)

**SYMPTOM**

Drain ball valve leaks.

**MALFUNCTION**

Check that the drain ball valve is closed completely.

**CORRECTIVE ACTION**

Tightly close the drain ball valve.

Check the drain ball valve for damage or wear.

**CORRECTIVE ACTION**

If damaged or worn, notify Unit Maintenance.

Check the drain ball valve for proper alignment.

#### **CORRECTIVE ACTION**

Align valve. If still leaking, notify Unit Maintenance.

### **TROUBLESHOOTING PROCEDURE**

#### **DRAIN FITTING ASSEMBLY**

##### **SYMPTOM**

Drain fitting assembly leaks between the drain fitting and the tank fitting.

##### **MALFUNCTION**

Check for missing or loose washers and hex-head cap screws.

#### **CORRECTIVE ACTION**

If hardware is missing or loose, notify Unit Maintenance.

Check the preformed packing between the drain cover plate and the tank fitting for nicks, breaks, and compression.

#### **CORRECTIVE ACTION**

If damaged, notify Unit Maintenance.

Check the drain cover plate for damage or cracks.

#### **CORRECTIVE ACTION**

If damaged, notify Unit Maintenance.

### **TROUBLESHOOTING PROCEDURE**

#### **VENT AND PIPE ASSEMBLY**

##### **SYMPTOM**

Vent and pipe assembly leaks.

##### **MALFUNCTION**

Check gasket between quick-disconnect coupling and flange adapter.

#### **CORRECTIVE ACTION**

Replace coupling gasket.

Vent and pipe assembly continues to leak.

#### **CORRECTIVE ACTION**

If still leaking, notify Unit Maintenance.

**TROUBLESHOOTING PROCEDURE****RELIEF CAP AND FLAME RESISTOR ASSEMBLY****SYMPTOM**

Relief cap does not operate freely.

**MALFUNCTION**

Check the relief cap for leakage, cleanliness, and freedom of action.

**CORRECTIVE ACTION**

Notify Unit Maintenance if dirty or leaking.

**TROUBLESHOOTING PROCEDURE****FILLER/DISCHARGE ASSEMBLY****SYMPTOM**

Filler/discharge assembly leaks.

**MALFUNCTION**

Inspect the gasket between the quick disconnect coupling and the flanged adapter.

**CORRECTIVE ACTION**

Replace the gasket between the quick disconnect coupling and the flanged adapter.

Filler/discharge assembly continues to leak.

**CORRECTIVE ACTION**

If still leaking, notify Unit Maintenance.

**TROUBLESHOOTING PROCEDURE****EMERGENCY REPAIR ITEMS****SYMPTOM**

Inspect contents of Emergency Repair items.

**MALFUNCTION**

Emergency repair items are missing from the fuel tank crate.

**CORRECTIVE ACTION**

Replace Emergency repair item(s). See WP 0035 00.

**END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
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COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
UNIT TROUBLESHOOTING PROCEDURES**

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## **INTRODUCTION TO UNIT TROUBLESHOOTING**

This Troubleshooting Malfunctions chapter lists common malfunctions that may be found during the operation or maintenance of the collapsible fabric fuel tank assembly or its components. Perform the tests/inspections and corrective actions in the order listed in the table.

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 supervision.

## **TROUBLESHOOTING PROCEDURE**

### **HOSE ASSEMBLY, FILLER/DISCHARGE**

#### **SYMPTOM**

Hose couplings leak.

#### **MALFUNCTION**

Check for tears and leaks in the hose.

#### **CORRECTIVE ACTION**

If hose is damaged, see WP 0022 00.

## **TROUBLESHOOTING PROCEDURE**

### **DRAIN HOSE ASSEMBLY (Except Model MIL-T-52983B)**

#### **SYMPTOM**

Drain hose assembly does not drain properly.

#### **MALFUNCTION**

Check for dirt, grime, cracks or wear.

#### **CORRECTIVE ACTION**

Service the drain hose. See WP 0025 00.

## **TROUBLESHOOTING PROCEDURE**

### **FILLER/DISCHARGE GATE VALVE ASSEMBLY (Models MIL-T-52983B, WTM3KF, M52983-50, PD52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)**

#### **SYMPTOM**

Female coupling leaks.

**MALFUNCTION**

Check the female coupling for missing or loose cap screws, hex nuts, washers, and lockwashers.

**CORRECTIVE ACTION**

Replace missing screws, nuts, washers, and lock-washers. Torque the fastening hardware to 30 in-lb (3.41 N•m). See WP 0019 00.

Check coupling and flange gaskets for damage or breaks.

**CORRECTIVE ACTION**

Remove the female coupling and replace the damaged gaskets. Reinstall the female coupling. See WP 0019 00.

**SYMPTOM**

Male flanged adapter leaks.

**MALFUNCTION**

Check the male-flanged adapter for missing or loose hex-head cap screws, hex nuts, washers, and lockwashers.

**CORRECTIVE ACTION**

Replace missing screws, nuts, washers, and lockwashers. Torque the fastening hardware to 30 in-lb (3.41 N•m). See WP 0019 00.

Check the flanged gasket for damage or breaks.

**CORRECTIVE ACTION**

Remove the flanged adapter and replace the flanged gasket. Reinstall the flanged adapter. See WP 0019 00.

**SYMPTOM**

Gate valve leaks.

**MALFUNCTION**

Check for loose or missing hex head cap screws and lockwashers on the bonnet.

**CORRECTIVE ACTION**

Replace missing hex head screws and lockwashers. Torque the fastening hardware to 30 in-lb (3.41 N•m). See WP 0019 00.

Check for damaged or distorted bonnet gasket.

**CORRECTIVE ACTION**

Replace the bonnet gasket. See WP 0019 00.

Check for bent or distorted valve stem.

**CORRECTIVE ACTION**

Replace the valve stem. Torque hex head cap screws, new lockwashers, and hex nuts assembled to the valve body to 16.0 ft-lb (21.84 N•m). See WP 0019 00.

**TROUBLESHOOTING PROCEDURE**

FILLER/DISCHARGE BUTTERFLY VALVE (Models BA91-141, BA91-140)

**SYMPTOM**

Butterfly valve leaks.

**MALFUNCTION**

Check for bent or binding stem.

**CORRECTIVE ACTION**

Replace the stem. See WP 0020 00.

Check for damaged sleeve.

**CORRECTIVE ACTION**

Replace damaged sleeve. See WP 0020 00.

Male and female coupling gaskets leak.

**CORRECTIVE ACTION**

Replace the gaskets. See WP 0020 00.

Butterfly valve continues to leak.

**CORRECTIVE ACTION**

Repair or replace the butterfly valve. See WP 0020 00.

**TROUBLESHOOTING PROCEDURE**

FILLER/DISCHARGE BALL VALVE (Models BA91-141A, BA91-140A))

**SYMPTOM**

Ball valve leaks.

**MALFUNCTION**

Ball valve handle sticks and binds. Ball valve will not completely shut off.

**CORRECTIVE ACTION**

Replace the ball valve. See WP 0021 00.



**SYMPTOM**

Female coupling or male flange adapter leaks.

**MALFUNCTION**

Check the female coupling for missing or loose hex-head cap screws, hex nuts, washers, and lockwashers. Check for damaged or missing coupling gasket.

**CORRECTIVE ACTION**

If hardware is loose or missing, tighten hardware to 30 in-lb (3.41 N•m). See WP 0021 00.

If female coupling gasket is damaged or missing, replace gasket. See WP 0021 00.

Check the flange gasket for damage or leaks.

**CORRECTIVE ACTION**

Replace the flange gasket. See WP 0021 00.

Check the male flange adapter for missing or loose hex-head cap screws, hex nuts, washers, and lockwashers.

**CORRECTIVE ACTION**

Replace or tighten missing or loose hardware according to specification. See WP 0021 00.

Male flange gasket leaks between gasket and valve.

**CORRECTIVE ACTION**

Replace the male flange gasket. See WP 0021 00.

**TROUBLESHOOTING PROCEDURE**

DRAIN GATE VALVE (Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)

**SYMPTOM**

Drain gate valve leaks.

**MALFUNCTION**

Check the drain gate valve for damage or wear if closing the valve fails to stop the leakage.

**CORRECTIVE ACTION**

Replace the drain gate valve. See WP 0023 00.

---

**TROUBLESHOOTING PROCEDURE**

DRAIN BALL VALVE (Models BA91-141, BA91-140, PD52983-50, BA91-141A, BA91-140A)

**SYMPTOM**

Drain ball valve leaks.

**MALFUNCTION**

Check the drain ball valve for damage or wear.

**CORRECTIVE ACTION**

Service, replace, or repair the drain ball valve. When repairing, torque cap screws to 16.0 ft-lb (21.04 N•m). See WP 0024 00.

**TROUBLESHOOTING PROCEDURE**

RELIEF CAP AND FLAME ARRESTOR

**SYMPTOM**

Relief cap remains open.

**MALFUNCTION**

Check the relief cap for a broken or bent pivot pin.

**CORRECTIVE ACTION**

Replace the relief cap. See WP 0026 00.

Relief cap leaks.

**CORRECTIVE ACTION**

Replace the relief cap gasket. See WP 0026 00.

**SYMPTOM**

Flame arrestor does not work properly.

**MALFUNCTION**

Check the flame arrestor for cracks, breaks, or wear.

**CORRECTIVE ACTION**

Service, repair, or replace the flame arrestor. See WP 0026 00.

**TROUBLESHOOTING PROCEDURE**

VENT AND PIPE ASSEMBLY

**SYMPTOM**

Pipe assembly leaks.

---

**MALFUNCTION**

Check the pipe gasket for cracks, distortion or wear.

**CORRECTIVE ACTION**

Service, repair, or replace the pipe assembly gasket.  
See WP 0026 00.

Pipe is cracked, bent, or damaged.

**CORRECTIVE ACTION**

Replace the pipe. See WP 0026 00.

Check the gasket between the quick disconnect coupling the flanged adapter.

**CORRECTIVE ACTION**

Replace the gasket.

Check the vent pipe for cracks or damage.

**CORRECTIVE ACTION**

Replace the cracked or broken vent pipe. See WP 0026 00.

Check for cracked or broken flange adapter.

**CORRECTIVE ACTION**

Replace the cracked or damaged flange adapter.  
See WP 0026 00.

Check for loose or missing cap screws and washers.

**CORRECTIVE ACTION**

Replace the missing screws and washers. Torque the fastening hardware to 30 in-lb (3.41 N•m). See WP 0026 00.

**TROUBLESHOOTING PROCEDURE****FILLER/DISCHARGE ASSEMBLY****SYMPTOM**

Filler/discharge assembly leaks between the closure plate and the tank fitting.

**MALFUNCTION**

Check for missing or loose washers and hex-head cap screws.

**CORRECTIVE ACTION**

Replace missing washer and screws. Torque the screws to 30 in-lb (3.41 N•m). See WP 0027 00.

---

Check the preformed packing between the closure plate and the tank fitting for nicks, breaks, and compression.

**CORRECTIVE ACTION**

Replace the preformed packing. See WP 0027 00.

**SYMPTOM**

Filler/discharge assembly leaks between the closure plate and flanged adapter.

**MALFUNCTION**

Check for missing or loose nuts, lockwashers, thread seal washers, and hex head cap screws.

**CORRECTIVE ACTION**

Replace missing nuts, lockwashers, thread seal washers, and hex-head cap screws. Torque the fastening hardware to 30 in-lb (3.41 N•m). See WP 0027 00.

Check the flange gasket for damage or wear.

**CORRECTIVE ACTION**

Remove the flange adapter from the closure plate and replace the damaged flange gasket. See WP 0027 00.

**SYMPTOM**

Filler/discharge assembly leaks through hardware or will not assemble.

**MALFUNCTION**

Check all filler/discharge fastening hardware for cracks, damages, and wear.

**CORRECTIVE ACTION**

Replace the fastening hardware as required. Torque the fastening hardware to 30 in-lb (3.41 N•m). See WP 0027 00.

**SYMPTOM**

Filler/discharge assembly elbows leak.

**MALFUNCTION**

Check elbows for cracks, dents, or wear. Check for damaged or missing elbow gaskets.

**CORRECTIVE ACTION**

Replace damaged elbows and gaskets. See WP 0027 00.

---

**TROUBLESHOOTING PROCEDURE****DRAIN FITTING ASSEMBLY (Except Model MIL-T-52983B)****SYMPTOM**

Drain fitting assembly leaks between drain fitting and tank.

**MALFUNCTION**

Check for missing or loose washers and hex head cap screws.

**CORRECTIVE ACTION**

Replace missing screws or washers. Torque the fastening hardware to 30 in-lb (3.41 N•m). See WP 0028 00 or WP 0029 00.

Check the preformed packing between the drain cover plate and the tank fitting for nicks, breaks, and compression.

**CORRECTIVE ACTION**

Replace the preformed packing. See WP 0028 00 or WP 0029 00.

**SYMPTOM**

Drain fitting leaks through metal.

**MALFUNCTION**

Check the drain cover plate for damage or cracks.

**CORRECTIVE ACTION**

Replace the drain cover plate. See WP 0028 00 or WP 0029 00.

**END OF WORK PACKAGE**

**CHAPTER 4**

**OPERATOR MAINTENANCE INSTRUCTIONS**  
**FOR**  
**TANK, FUEL STORAGE, 3,000 GALLON, 10,000 GALLON**  
**20,000 GALLON, AND 50,000 GALLON**

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OPERATOR PMCS PROCEDURES**

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## **INTRODUCTION**

### **General**

Preventive Maintenance Checks and Services (PMCS) are performed to keep the collapsible fabric fuel tank assembly in operating condition. The checks are used to find, correct, or report problems. Be sure to perform PMCS each time the tank assembly is serviced. Using the PMCS table, always do PMCS in the same order, so it gets to be a habit. With practice, problems can be easily detected. Pay attention to WARNING and CAUTION statements. A WARNING means someone could be hurt. A CAUTION means equipment could be damaged.

Before using the tank assembly, do "Before" PMCS.

During use, do "During" PMCS.

After the tank assembly is used, do "After" PMCS.

Do "Semi-Annual" PMCS once every six months.

If something is found to be wrong when performing PMCS, fix it if possible, using troubleshooting procedures and/or maintenance procedures.

Use DA Form 2404 (Equipment Inspection and Maintenance Worksheet) to record any faults discovered before, during, or after operation, unless the faults can be fixed. It is not required to record faults that can be fixed. For further information on how to use this form, see DA PAM 738-750.

If tools required to perform PMCS are not listed in Table 2, WP 0033 00, the Maintenance Allocation Chart, notify Unit Maintenance.

## PMCS Leakage Definitions

It is necessary to know how fluid leakage affects the status of the collapsible fuel tank. The following are types/classes of leakage needed to be able to determine the status of the collapsible fabric petroleum tank. Learn these leakage definitions and remember – when in doubt, notify supervision.

### CAUTION

**Report Class III and IV leaks to the supervisor or unit maintenance.  
Failure to heed this caution can damage the equipment.**

### NOTES

Equipment operation is allowed with minor leakages (Class I or Class II). Consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify the supervisor.

When operating with Class I or Class II leaks, continue to check fluid levels as required in the PMCS.

|           |  |
|-----------|--|
| Class I   | Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.  |
| Class II  | Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.                           |
| Class III | Leakage of fluid great enough to form drops that fall from the item being checked/inspected.   |
| Class IV  | Leaks found under the tank. There is evidence of dampness on the ground around the tank. Volume of fuel in the tank is less than it should be. |

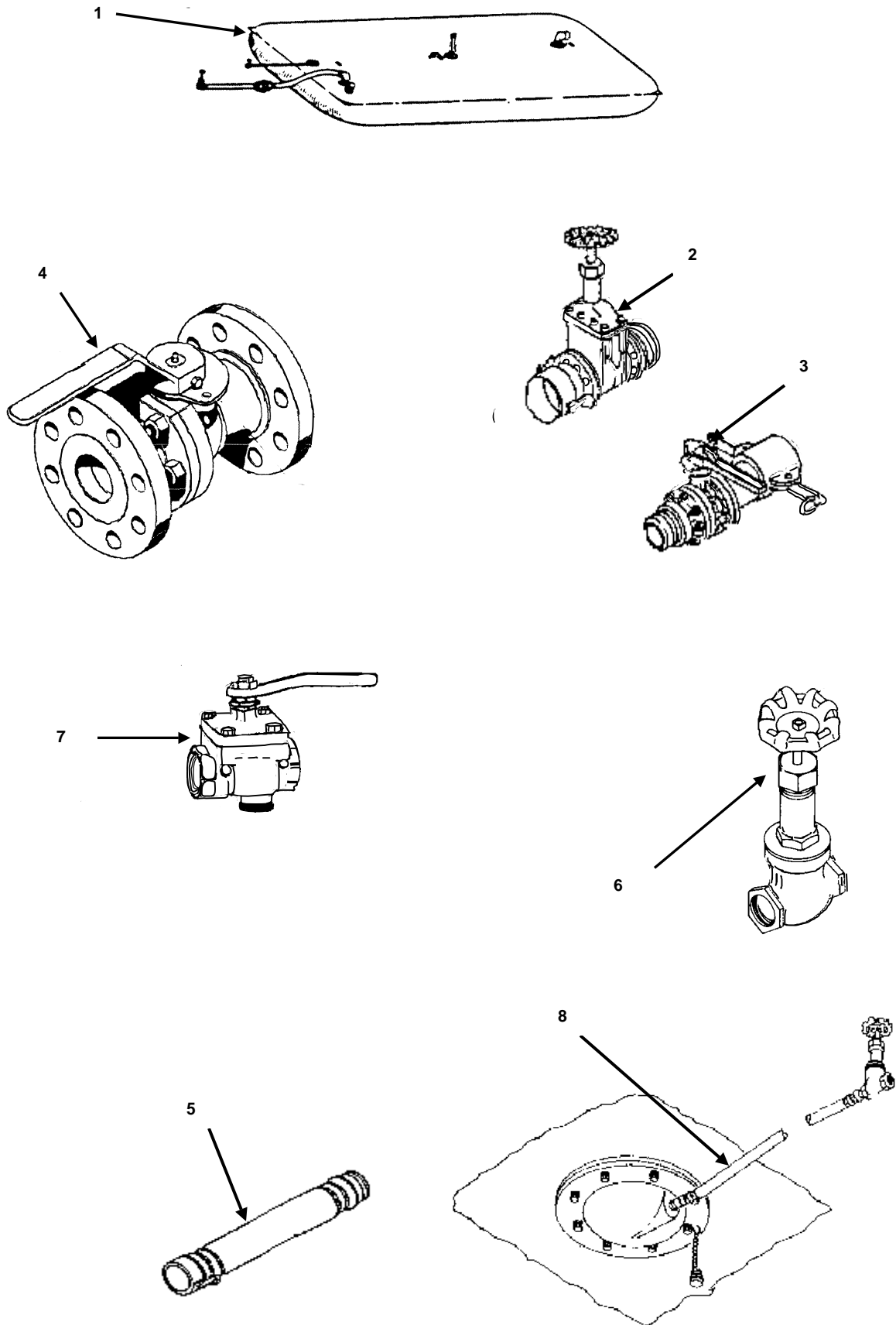
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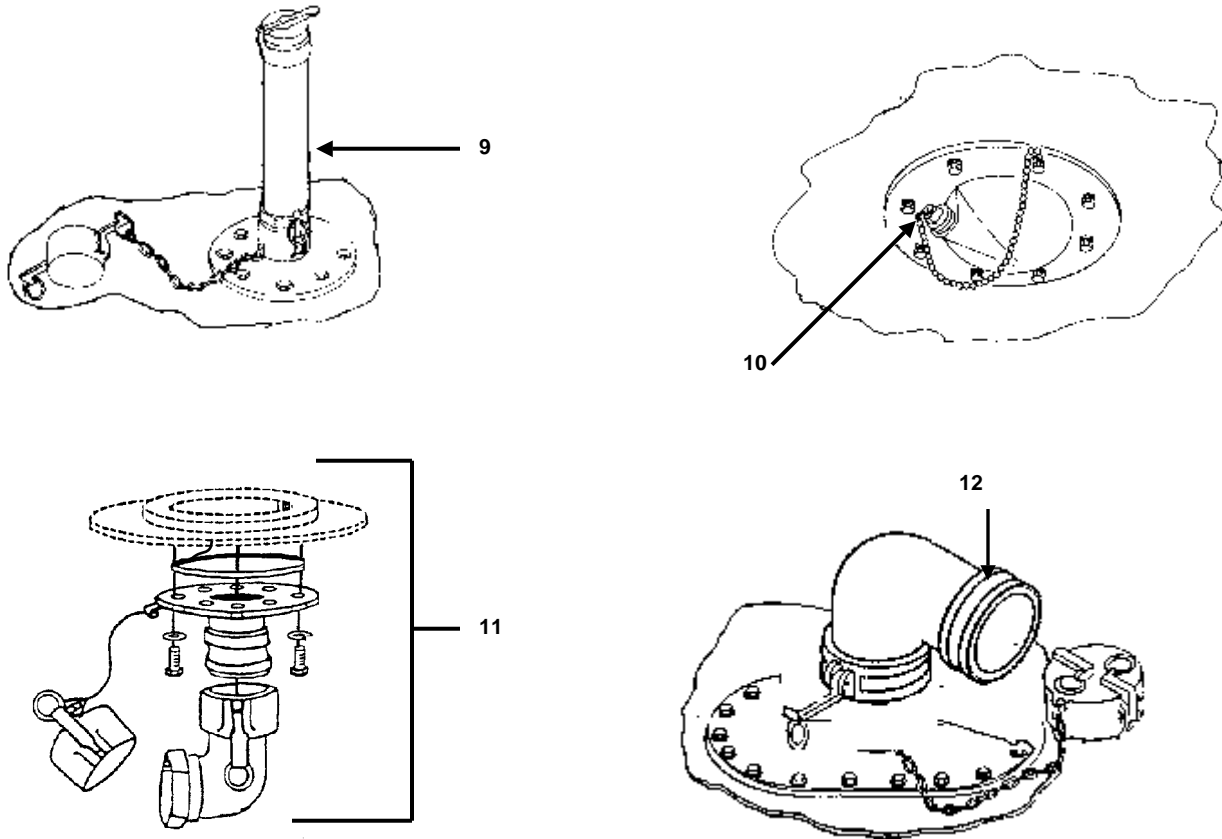
When a check and service procedure is required for both weekly and before intervals, it is not necessary to perform the weekly procedure during the same week in which the previous procedure was done.

The "Procedure" column of Table 1 explains how to do the required checks and services. Carefully follow these instructions. When the procedure instructs, notify supervision.

The "Equipment Not Ready/Available If" column explains when and why the equipment cannot be used.







**Table 1. Preventive Maintenance Checks and Services for Fuel Storage Tank**

**NOTE**

Within designated interval, these checks are to be performed in the order listed.

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED | PROCEDURE  | EQUIPMENT NOT READY/ AVAILABLE IF:                   |
|----------|----------|----------|--------------------------------|--|--|
| 1        | Before   |          | Installation Area              | Inspect the installation area for sticks and other sharp objects that might cause punctures and leaks. | Sharp objects are present.                           |
| 2        | Before   |          | Tank (1)                       | Inspect for tears or punctures. If torn or punctured, perform emergency repairs (WP 0006 00).          | Tank has tears or punctures that cannot be repaired. |

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED  | PROCEDURE  | EQUIPMENT NOT READY/ AVAILABLE IF:                                  |
|----------|----------|----------|---|--|---|
| 3        | Before   |          | Filler/Discharge Gate Valve (2) (Models MIL-T-52983B, WTM3KF, M52983-50, PD52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01) | Check for bent or binding stem and broken hardware. Check gasket and cam-lever arms for damage.  | Stem, hand-wheel, gasket, or cam-lever arms are damaged or missing. |
| 4        | Before   |          | Filler/Discharge Butterfly Valve Assembly (3) (Models BA91-141 & BA91-140)  | Check for bent or binding stem and broken handle. Check for missing/damaged couplings, and bolts. Check gasket, and cam-lever arms for damage. | Stem, handle, gasket, cam-lever arms are damaged.                   |
| 5        | Before   |          | Filler/Discharge Ball Valve Assembly (4) (Models BA91-141A & BA91-140A)   | Check for bent or binding stem and broken handle.  | Stem or handle is damaged.  |
| 6        | Before   |          | Filler/Discharge Hose Assembly (5)  | Check for cuts and tears. Check fittings for distortion and damage, or missing gaskets.  | Hose assembly is damaged. Gaskets are damaged or missing.           |
| 7        | Before   |          | Drain Gate Valve (6) (Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)                                      | Check for bent or binding stem and broken handle.  | Stem or handle is damaged or missing.                               |
| 8        | Before   |          | Drain Ball Valve (7) (BA91-141 & BA91-140, PD52983-50, BA91-141A & BA91-140A)   | Check for bent or binding stem and broken handle.  | Stem or handle is damaged or missing.                               |

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED                             | PROCEDURE  | EQUIPMENT NOT READY/ AVAILABLE IF:  |
|----------|----------|----------|--|--|---|
| 9        | Before   |          | Drain Hose Assembly (8) (Except Model MIL-T-52983B)        | Check hose for cuts and tears. Check fittings for distortion or damage.  | Hose assembly is damaged.   |
| 10       | Before   |          | Vent and Pipe Assembly (9)                                 | Check relief cap, flame arrestor, cap gasket, gasket, and cam-lever arms for evidence of leakage, damage, or missing parts. Check relief cap for cleanliness and freedom of operation. Check for damaged or missing gaskets. | Relief cap or flame arrestor is damaged or missing. Relief cap, gasket, flat rubber gasket, or cam-lever arms are damaged or missing. |
| 11       | Before   |          | Drain Fitting Assemblies (10) (Except Model MIL-T-52983B)  | Check drain plug, drain hose, drain gate, or ball valve for damaged or missing parts.  | Drain plug, drain hose, and drain gate or ball valve are missing, not properly connected, or damaged.                                 |
|          |          |          | Drain Fitting Assembly (11) (Models BA91-141 and BA91-140) |  |   |
| 12       | Before   |          | Filler/Discharge Assembly (12)                             | Check cam-lever arms and elbow for damage.   | Cam-lever arms damaged or missing. Elbow body is cracked or worn.   |
| 13       | During   |          | Installation Area  | Inspect the installation area for sticks and other sharp objects.  | Sharp objects are present.  |
| 14       | During   |          | Tank (1)   | Inspect for tears, punctures, or leaks. If torn or punctured, perform emergency repairs (WP 0006 00).  | Tank has tears, punctures, or leaks that cannot be repaired.  |

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED  | PROCEDURE   | EQUIPMENT NOT READY/ AVAILABLE IF:  |
|----------|----------|----------|---|---|---|
| 15       | During   |          | Filler/Discharge Gate Valve (2) (Models MIL-T-52983B, WTM3KF, M52983-50, PD52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01) | Check for bent or binding stem, broken hardware, and leakage. Check gasket and cam-lever arms for damage.   | Stem, hand-wheel, gasket, or cam-lever arms are damaged, missing, or leaking. |
| 16       | During   |          | Filler/Discharge Butterfly Valve Assembly (3) (Models BA91-141 & BA91-140)  | Check for bent or binding stem, broken handle, and leakage. Check for missing/damaged couplings and bolts. Check gasket, and cam-lever arms for damage. | Stem, handle, gasket, cam-lever arms are damaged or leaking.                  |
| 17       | During   |          | Filler/Discharge Ball Valve Assembly (4) (Models BA91-141A & BA91-140A)   | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle is damaged or leaking.   |
| 18       | During   |          | Filler/Discharge Hose Assembly (5)  | Check for leaks, cuts, and tears. Check fittings for distortion and damage, or missing gaskets.   | Hose assembly leaks or is damaged. Gaskets are damaged or missing.            |
| 19       | During   |          | Drain Gate Valve (6) (Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)                                      | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle is damaged or missing, or leaking.                             |
| 20       | During   |          | Drain Ball Valve (7) (BA91-141 & BA91-140, PD52983-50, BA91-141A & BA91-140A)   | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle is damaged or missing, or leaking.                             |

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED                                | PROCEDURE  | EQUIPMENT NOT READY/ AVAILABLE IF:  |
|----------|----------|----------|---|--|---|
| 21       | During   |          | Drain Hose Assembly (8)<br>(Except Model MIL-T-52983B)        | Check hose for leaks, cuts, and tears. Check fittings for distortion and damage.   | Hose assembly leaks or is damaged.  |
| 22       | During   |          | Vent and Pipe Assembly (9)                                    | Check relief cap, flame arrestor, cap gasket, gasket, and cam-lever arms for evidence of leakage, damage, or missing parts. Check relief cap for cleanliness and freedom of operation. Check for damaged or missing gaskets. | Relief cap or flame arrestor is damaged or missing. Relief cap, gasket, flat rubber gasket, or cam-lever arms are damaged or missing. |
| 23       | During   |          | Drain Fitting Assemblies (10)<br>(Except Model MIL-T-52983B)  | Check immediate area for evidence of leakage. Check drain plug, drain hose, drain gate, or ball valve, for damaged or missing parts.   | Drain plug, drain hose, drain gate, or ball valve is missing, not properly connected, or damaged.                                     |
|          |          |          | Drain Fitting Assembly (11)<br>(Models BA91-141 and BA91-140) |  |   |
| 24       | During   |          | Filler/Discharge Assembly (12)                                | Check cam-lever arm and elbow body for damage or leakage.  | Cam-lever arms are damaged or missing. Elbow body is cracked. Elbow sealing surface is badly dented.                                  |
| 25       | After    |          | Tank (1)  | Inspect for tears and punctures. If torn or punctured, perform emergency repairs (WP 0006 00).   | Tank has tears or punctures that cannot be repaired.  |

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED   | PROCEDURE  | EQUIPMENT NOT READY/ AVAILABLE IF:                                  |
|----------|----------|----------|--|--|---|
| 26       | After    |          | Filler/Discharge Gate Valve (2)<br>(Models MIL-T-52983B, WTM3KF, M52983-50, PD52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01) | Check for bent or binding stem or broken hardware. Check gaskets and cam-lever arms for damage.  | Stem, hand-wheel, gasket, or cam-lever arms are damaged or missing. |
| 27       | After    |          | Filler/Discharge Butterfly Valve Assembly (3)<br>(Models BA91-141 & BA91-140)  | Check for bent or binding stem and broken handle. Check for missing/damaged couplings, and bolts. Check gasket, and cam-lever arms for damage. | Stem, handle, gasket or cam-lever arms are damaged.                 |
| 28       | After    |          | Filler/Discharge Ball Valve Assembly (4)<br>(Models BA91-141A & BA91-140A)   | Check for bent or binding stem and broken handle.  | Stem or handle is damaged.  |
| 29       | After    |          | Filler/Discharge Hose Assembly (5)   | Check for cuts and tears. Check fittings for distortion and damage, or missing gaskets.  | Hose assembly is damaged. Gaskets are damaged or missing.           |
| 30       | After    |          | Drain Gate Valve (6)<br>(Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)                                      | Check for bent or binding stem and broken handle.  | Stem or handle is damaged or missing.                               |
| 31       | After    |          | Drain Ball Valve (7) (BA91-141 & BA91-140, PD52983-50, BA91-141A & BA91-140A)  | Check for bent or binding stem, or broken handle.  | Stem or handle is damaged or missing.                               |

| ITEM NO. | INTERVAL      | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED                             | PROCEDURE  | EQUIPMENT NOT READY/ AVAILABLE IF:  |
|----------|---------------|----------|--|--|---|
| 32       | After         |          | Drain Hose Assembly (8) (Except Model MIL-T-52983B)        | Check hose for cuts and tears. Check fittings for distortion and damage.   | Hose assembly is damaged.   |
| 33       | After         |          | Vent and Pipe Assembly (9)                                 | Check relief cap, flame arrestor, cap gasket, gasket, and cam-lever arms for damage or missing parts. Check relief cap for cleanliness and freedom of operation. Check for damaged or missing gaskets. | Relief cap or flame arrestor is damaged or missing. Relief cap, gasket, flat rubber gasket, or cam-lever arms are damaged or missing. |
| 34       | After         |          | Drain Fitting Assemblies (10) (Except Model MIL-T-52983B)  | Check drain plug, drain hose, drain gate, or ball valve, for damaged or missing parts.   | Drain plug, drain hose, and drain gate or ball valve are missing, not properly connected, or damaged.                                 |
|          |               |          | Drain Fitting Assembly (11) (Models BA91-141 and BA91-140) |  |   |
| 35       | After         |          | Filler/ Discharge Assembly (12)                            | Check cam-lever arm and elbow body for damage.   | Cam-lever arms damaged or missing. Elbow body cracked or worn.  |
| 36       | Semi-Annually |          | Tank (1) Interior  | Check coating for cracking.  | Coating is cracked allowing leakage.  |

END OF WORK PACKAGE



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
OPERATOR MAINTENANCE PROCEDURES**

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**GENERAL INSTRUCTIONS**

Maintenance instructions in this section will list resources required, personnel required, and equipment condition for start of procedure, except as noted below:

**NOTE**

Personnel required are listed only if the task requires more than one.

**EQUIPMENT**

**MAINTENANCE PROCEDURE**

|  |            |
|--|------------|
| Filler/Discharge Valve and Hose Assembly ..... | WP 0011 00 |
| Coupling and Dust Cap Gasket                   |            |

|   |            |
|---|------------|
| Vent and Pipe Assembly Coupling and ..... | WP 0012 00 |
| Dust Cap Gasket                           |            |

|  |            |
|--|------------|
| Filler/Discharge Assembly Elbow and..... | WP 0013 00 |
| Dust Cap Gasket                          |            |

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
FILLER/DISCHARGE VALVE AND HOSE ASSEMBLY COUPLING AND DUST CAP GASKET  
REPLACEMENT**

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## INITIAL SETUP

### Mandatory Replacement Parts

Gasket

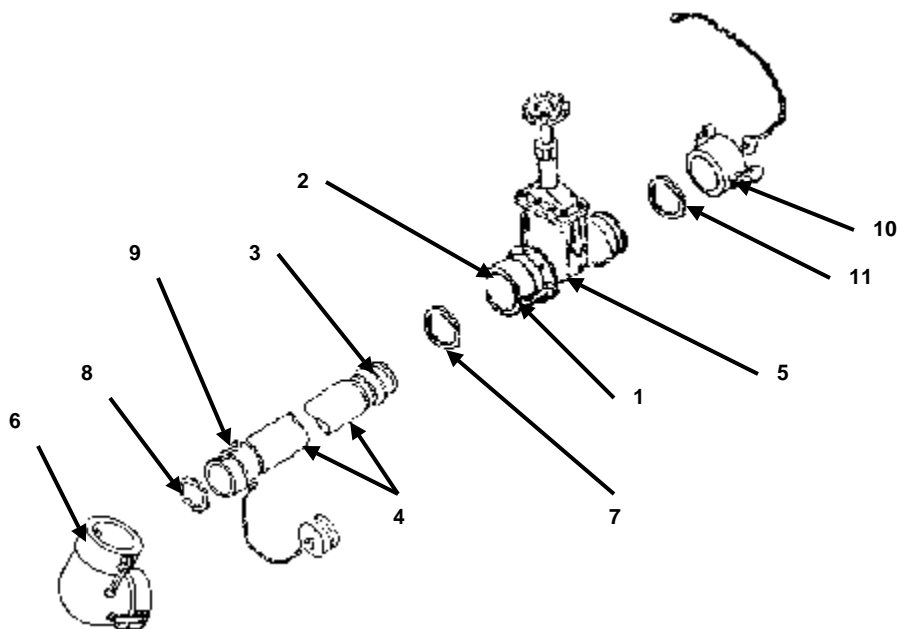
(Item 1, WP 0042 00)

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## REMOVAL

The filler/discharge hose is fitted with a female quick-disconnect coupling on one end and a male quick-disconnect adapter on the other end.

1. Pull two cam-lever arms (1) outward on female quick-disconnect coupling (2), and hose assembly coupling (3). Disconnect hose assembly (4) from filler/discharge valve assembly (5) and elbow (6).
2. Remove coupling gasket (7) from inside female quick-disconnect coupling (2). Discard gasket (7).
3. Remove hose assembly gasket (8) from inside hose coupling (9). Discard gasket (8).
4. Remove dust cap (10). Remove gasket (11) from dust cap (10). Discard gasket (11).



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**INSTALLATION**

1. Install new gasket (11) in dust cap (10). Install dust cap (10).
2. Install new hose assembly gasket (8) inside hose coupling (9).
3. Install new coupling gasket (7) inside quick-disconnect coupling (2).
4. Connect hose assembly (4) to filler/discharge valve assembly (5) and elbow (6).
5. Push in on cam-lever arms (1) to lock hose assembly (4) in place.

**END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
VENT AND PIPE ASSEMBLY COUPLING AND DUST CAP GASKET  
REPLACEMENT**

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**INITIAL SETUP****Mandatory Replacement Parts**

Gasket

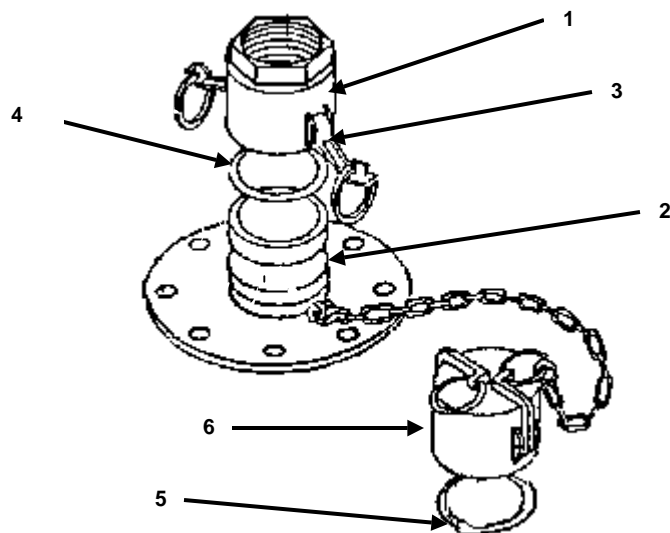
(Item 2, WP 0042 00)

**REMOVAL**

1. Disconnect female quick-disconnect coupling (1) from male-flanged adapter (2) by pulling outward on cam-lever arms (3). Lift female quick-disconnect coupling (1) from male-flanged adapter (2).
2. Remove female quick-disconnect coupling gasket (4). Discard gasket (4).
3. Remove gasket (5) from inside dust cap (6). Discard gasket (5).

**NOTE**

Vent pipe, relief cap, and flame arrestor removed for clarity.



---

**INSTALLATION**

1. Seat new coupling gasket (4) into female quick-disconnect coupling (1).
2. With cam-lever arms (3) in the outward position, install female quick-disconnect coupling (1) to male-flanged adapter (2).
3. Push cam-lever arms (3) inward until they lock in place.
4. Seat new gasket (5) into dust cap (6).

**END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
FILLER/DISCHARGE ASSEMBLY ELBOW AND DUST CAP GASKET  
REPLACEMENT**

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**INITIAL SETUP****Mandatory Replacement Parts**

Gasket

(Item 1, WP 0042 00)

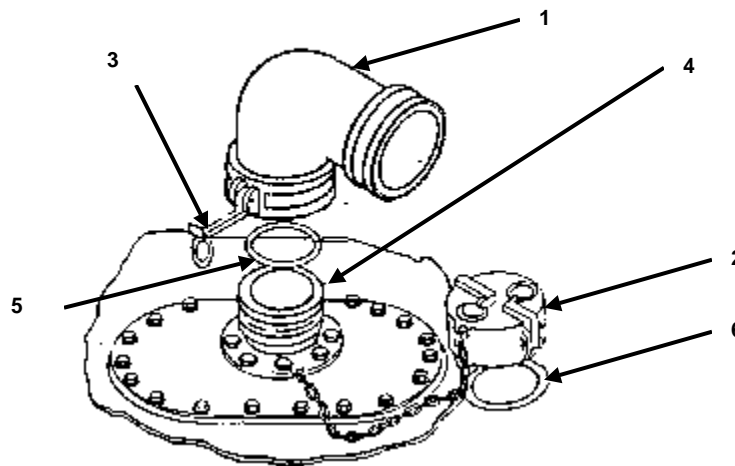
**REMOVAL**

1. Remove elbow (1) or dust cap (2) by pulling outward on cam-lever arms (3), and lifting elbow (1) or dust cap (2) from flanged adapter (4).

**NOTE**

Fill end female/female elbow has two gaskets.

2. Remove gasket (5) from elbow (1) and gasket (6) from dust cap (2). Discard gaskets (5) and (6).

**INSTALLATION****NOTE**

Fill end female/female elbow will require two new gaskets.

1. Place new gasket (5) into elbow (1) and new gasket (6) in dust cap (2).
2. Install elbow (1) onto flanged adapter (4), by pushing inward on cam-lever arms (3) to lock elbow (1) into position.
3. Install the dust cap (2) onto the elbow (1) by pushing inward on the cam-lever arms (3) on dust cap (2) to lock into position.

**END OF WORK PACKAGE**





**CHAPTER 5**

**UNIT MAINTENANCE INSTRUCTIONS**  
**FOR**  
**TANK, FUEL STORAGE, 3,000 GALLON, 10,000 GALLON**  
**20,000 GALLON, AND 50,000 GALLON**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK, FUEL STORAGE,  
3,000, 10,000, 20,000, AND 50,000 GALLONS  
LUBRICATION INSTRUCTIONS**

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**LUBRICATION INSTRUCTIONS**

Lubricate all cam-lever arms and lobes systematically with two drops of lubricating oil (Item 1, WP 0040 00). These instructions are mandatory.

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
UNIT REPAIR; TOOLS, SPECIAL TOOLS; TEST MEASUREMENT AND  
DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT**

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**COMMON TOOLS AND EQUIPMENT**

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), applicable to the unit.

**SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT**

For special tools required for use with the Collapsible Fabric Tanks, refer to WP 0033 00, Maintenance Allocation Chart. No TMDE or support equipment is required for the Collapsible Fabric Tanks.

**REPAIR PARTS**

Repair parts are listed and illustrated in WP 0035 00 of this manual.

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
UNIT SERVICE UPON RECEIPT**

---

## **SITE AND SHELTER REQUIREMENTS**

Choose a site that is free from sharp objects (rocks, sticks, glass, etc.), which could cut or puncture the tank.

## **WARNING**

**If the tank is placed over drop-offs greater than 4.0 inches (0.1 meter), serious injury to personnel or damage to the tank may occur.**

The collapsible fabric fuel tank may be installed on a slope of up to 10 percent [1.0 foot (0.3 meter) rise in 10.0 foot (3.0 meters) run], but the tank base should not rest over abrupt drop-offs greater than 4.0 inches (0.1 meter).

## **SERVICE UPON RECEIPT OF MATERIEL**

Inspect the equipment for damage incurred (punctures or tears) during shipment. If the equipment has been damaged, report the damage in accordance with the instructions of DA PAM 738-750.

Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.

Inspect emergency repair items (sealing clamps, plugs, gaskets, and preformed packing) that are packaged separately. Place the items in a secure storage area until required.

Check to see whether the equipment has been modified.

## **INSTALLATION INSTRUCTIONS**

Refer to WP 0005 00.

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

No preliminary servicing or adjustment is required.

## **END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
UNIT PMCS PROCEDURES**

---

## **INTRODUCTION**

### **General**

Preventive Maintenance Checks and Services (PMCS) are performed to keep the collapsible fabric fuel tank assembly in operating condition. The checks are used to find, correct, or report problems. Perform PMCS each time the tank assembly is serviced. Using the PMCS table, always do PMCS in the same order, so it gets to be a habit. With practice, maintenance personnel will quickly spot anything wrong. Pay attention to WARNING and CAUTION statements. A WARNING means someone could be hurt. A CAUTION means equipment could be damaged.

Before using the tank assembly, do "Before" PMCS.

During use, do "During" PMCS.

After the tank assembly is used, do "After" PMCS.

Do "Semi-Annually" PMCS once every six months.

If something is found to be wrong when performing PMCS, fix it if possible, using troubleshooting procedures and/or maintenance procedures.

Use DA Form 2404 (Equipment Inspection and Maintenance Worksheet) to record any faults discovered before, during, or after operation, unless they can be fixed. It is not necessary to record faults that can be fixed. For further information on how to use this form, refer to DA PAM 738-750.

### **PMCS Leakage Definitions**

It is necessary to know how fluid leakage affects the status of the collapsible fabric petroleum tank. The following are types/classes of leakage that are used to determine the status of the collapsible fabric fuel tank. Learn these leakage definitions and remember – when in doubt, notify supervision.

## **CAUTIONS**

**Report Class III and IV leaks to supervision or unit maintenance. Failure to heed this caution can damage the equipment.**

### **NOTE**

Equipment operation is allowed with minor leakages (Class I or Class II). Consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify supervision.

When operating with Class I or Class II leaks, continue to check fluid levels as required in PMCS.

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



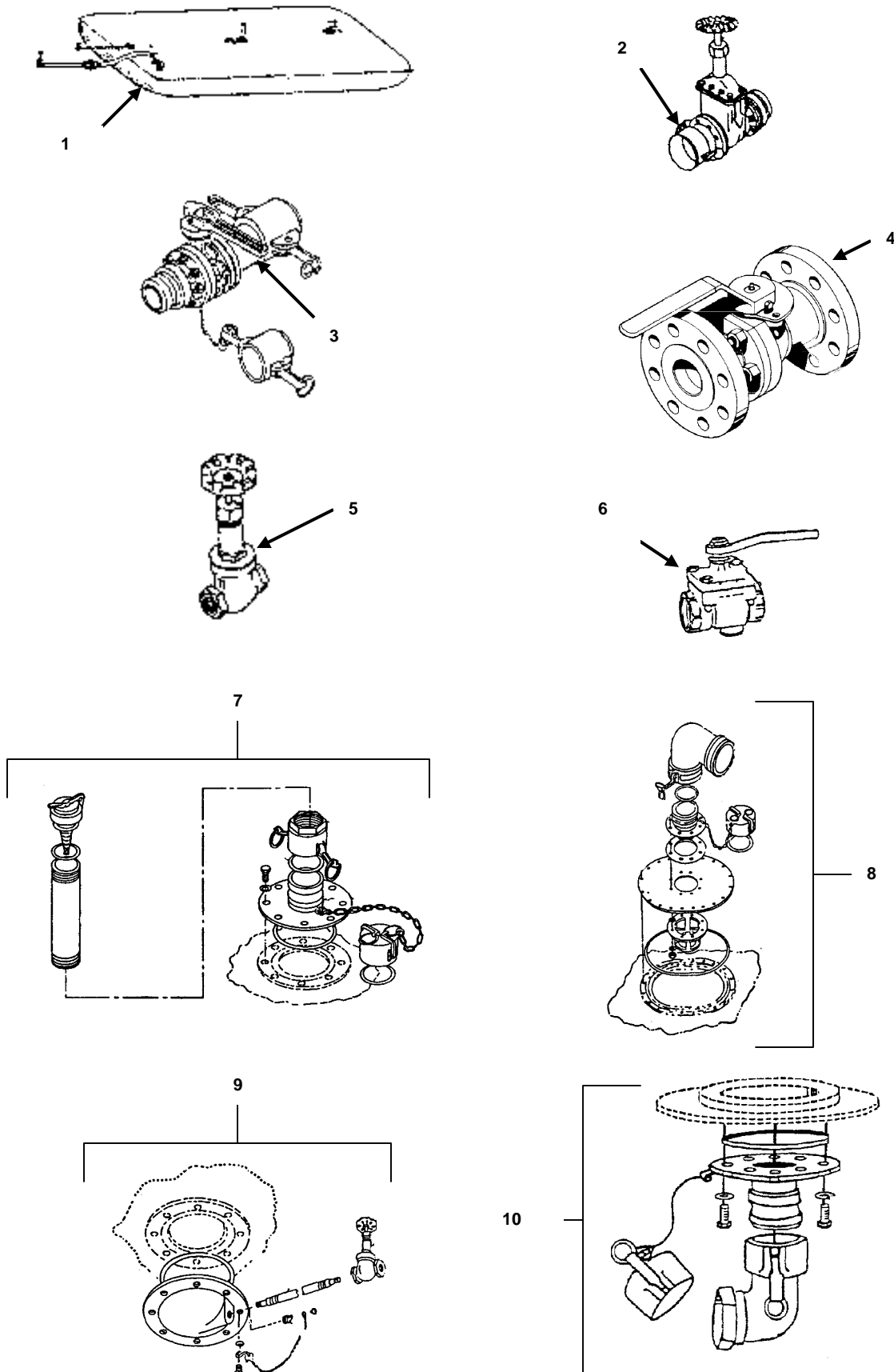
Class IV    Leaks found under the tank. There is evidence of dampness on the ground around the tank. Volume of fuel in the tank is less than it should be.

#### **NOTES**

Equipment operation is allowable with minor leakages (Class I or II). Consider the fluid capacity in the item/system being checked/inspected. When in doubt, notify supervision.

When a check and service procedure is required for both weekly and before intervals, it is not necessary to perform the weekly procedure during the same week in which the before procedure was done.

The Procedure column of Table 1 illustrates how to do the required checks and services. Carefully follow these instructions. When the procedure instructs, notify supervision.



Unit Preventive Maintenance Checks and Services Components

**Table 1. Unit Preventive Maintenance Checks and Services for Fuel Storage Tank****NOTE**

Within designated intervals, these checks are to be performed in the order listed.

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED  | PROCEDURE   | EQUIPMENT NOT READY/ AVAILABLE IF:                                  |
|----------|----------|----------|---|---|---|
| 1        | Before   |          | Tank (1)  | Inspect for tears, punctures, or leaks (Exclude weeping/wicking where the tank seams are not involved and droplets do not form or run down the side of the tank). | Torn, punctured, or leaking.  |
| 2        | Before   |          | Filler/Discharge Gate Valve (2) (Models WTM3KF, MIL-T-52983B, M52983-50, PD52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01) | Check for bent or binding stem, broken hand-wheel, and leakage.   | Stem, hand-wheel, gasket, or cam-lever arms are damaged or leaking. |
| 3        | Before   |          | Filler/Discharge Butterfly Valve Assembly (3) (Models BA91-141 & BA91-140)  | Check for bent or binding stem, broken handle, and leakage.   | Stem, handle, gasket, cam-lever arms are damaged or leaks.          |
| 4        | Before   |          | Filler/Discharge Ball Valve (4) (Models BA91-141A & BA91-140A)  | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle is damaged or leaks.                                 |
| 5        | Before   |          | Drain Gate Valve (5) (Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)                                      | Check for bent or binding stem, broken hand-wheel, and leakage.   | Stem or hand-wheel is damaged or leaks.                             |

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED  | PROCEDURE   | EQUIPMENT NOT READY/ AVAILABLE IF:   |
|----------|----------|----------|---|---|--|
| 6        | Before   |          | Drain Ball Valve (6)<br>(Models BA91-141 & BA91-140, PD52983-50, BA91-141A & BA91-140A)   | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle is damaged or leaks.  |
| 7        | Before   |          | Vent and Pipe Assembly (7)  | Check for evidence of leakage, damage or missing parts. Check the relief cap for cleanliness and freedom of operation. Check if the flame arrestor, relief cap gasket, flat rubber gasket or cam-lever arms are damaged or missing. | Leaks are evident. Relief cap or flame arrestor is damaged or missing. Relief cap gasket, flat rubber gasket or cam-lever arms are damaged or missing. |
| 8        | Before   |          | Filler/Discharge Assembly (8)   | Check for evidence of damage or leakage. Check if cam-lever arms are damaged or missing. Check if the elbow body is cracked or sealing surface is badly dented. Check for loose, damaged or missing screws and gaskets.             | Cam-lever arms are damaged or missing. Elbow body is cracked. Elbow sealing surface is badly dented. Hardware is damaged or missing.                   |
| 9        | Before   |          | Drain Fitting Assembly (9)<br>(Except Models MIL-T-52983B, BA91-141, BA91-140)<br><br>Drain Fitting Assembly (10)<br>(Models BA91-141 and BA91-140) | Check immediate area for evidence of leakage. Check drain plug, drain hose, or drain valve, for damaged or missing parts.   | Drain plug, drain hose, drain gate, or ball valve is missing, not properly connected, damaged or leaks.  |
| 10       | During   |          | Tank (1)  | Inspect for tears, punctures, or leaks (Exclude weeping/wicking where the tank seams are not involved and droplets do not form or run down the side of the tank).   | Tank has tears or punctures that cannot be repaired.   |

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED   | PROCEDURE   | EQUIPMENT NOT READY/ AVAILABLE IF:   |
|----------|----------|----------|--|---|--|
| 11       | During   |          | Filler/Discharge Gate Valve (2)<br>(Models WTM3KF, MIL-T-52983B, M52983-50, PD52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01) | Check for bent or binding stem, broken hand-wheel, and leakage.   | Stem, hand-wheel, gasket, or cam-lever arms are damaged, missing, or leaks.  |
| 12       | During   |          | Filler/Discharge Butterfly Valve Assembly (3)<br>(Models BA91-141 & BA91-140)  | Check for bent or binding stem, broken handle, and leakage.   | Stem, handle, gasket, cam-lever arms are damaged or leaks.   |
| 13       | During   |          | Filler/Discharge Ball Valve (4)<br>(Models BA91-141A & BA91-140A)  | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle is damaged or leaks.  |
| 14       | During   |          | Drain Gate Valve (5)<br>(Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)                                      | Check for bent or binding stem, broken hand-wheel, and leakage.   | Stem or hand-wheel is damaged, missing, or leaks.  |
| 15       | During   |          | Drain Ball Valve (6)<br>(Models BA91-141 & BA91-140, PD52983-50, BA91-141A & BA91-140A)  | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle damaged, missing, or leaks.   |
| 16       | During   |          | Vent and Pipe Assembly (7)   | Check for evidence of leakage, damage, or missing parts. Check the relief cap for cleanliness and freedom of operation. Check if the flame arrestor, relief cap gasket, flat rubber gasket, or cam-lever arms are damaged or missing. | Relief cap or flame arrestor is damaged or missing. Relief cap gasket, flat rubber gasket, or cam-lever arms are damaged or missing. |

| ITEM NO. | INTERVAL | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED  | PROCEDURE   | EQUIPMENT NOT READY/ AVAILABLE IF:   |
|----------|----------|----------|---|---|--|
| 17       | During   |          | Filler/Discharge Assembly (8)   | Check for evidence of damage or leakage. Check if cam-lever arms are damaged or missing. Check if the elbow body is cracked or sealing surface is badly dented. Check for loose, damaged or missing screws and gaskets. | Cam-lever arms are damaged or missing. Elbow body is cracked. Elbow sealing surface is badly dented. |
| 18       | During   |          | Drain Fitting Assembly (9) (Except Models MIL-T-52983B, BA91-141, BA91-140)   | Check immediate area for any evidence of leakage. Check the drain plug, drain hose, or drain valve, for damaged or missing parts.   | Drain plug, drain hose, drain valve is missing, not properly connected, or damaged.                  |
|          |          |          | Drain Fitting Assembly (10) (Models BA91-141 and BA91-140)  |   |  |
| 19       | After    |          | Tank (1)  | Inspect for tears, punctures, or leaks (Exclude weeping/wicking where the tank seams are not involved and droplets do not form or run down the side of the tank).   | Tank has tears or punctures that cannot be repaired.   |
| 20       | After    |          | Filler/Discharge Gate Valve (2) (Models WTM3KF, MIL-T-52983B, M52983-50, PD52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01) | Check for bent or binding stem, broken hand-wheel, and leakage.   | Stem, hand-wheel, gasket, or cam-lever arms are damaged or missing.                                  |
| 21       | After    |          | Filler/Discharge Butterfly Valve Assembly (3) (Models BA91-141 & BA91-140)  | Check for bent or binding stem, broken handle, and leakage.   | Stem, handle, gasket or cam-lever arms are damaged.  |
| 22       | After    |          | Filler/Discharge Ball Valve (4) (Models BA91-141A & BA91-140A)  | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle is damaged.   |

| ITEM NO. | INTERVAL      | MAN-HOUR | ITEM TO BE CHECKED OR SERVICED  | PROCEDURE   | EQUIPMENT NOT READY/ AVAILABLE IF:   |
|----------|---------------|----------|---|---|--|
| 23       | After         |          | Drain Gate Valve (5)<br>(Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)   | Check for bent or binding stem, broken hand-wheel, and leakage.   | Stem or hand-wheel is damaged or missing.  |
| 24       | After         |          | Drain Ball Valve (6)<br>(Models BA91-141 & BA91-140, PD52983-50, BA91-141A & BA91-140A)   | Check for bent or binding stem, broken handle, and leakage.   | Stem or handle is damaged or missing.  |
| 25       | After         |          | Vent and Pipe Assembly (7)  | Check for evidence of leakage, damage, or missing parts. Check the relief cap for cleanliness and freedom of operation. Check if the flame arrestor, relief cap gasket, flat rubber gasket, or cam-lever arms are damaged or missing. | Relief cap or flame arrestor is damaged or missing. Relief cap gasket, flat rubber gasket, or cam-lever arms are damaged or missing. |
| 26       | After         |          | Filler/Discharge Assembly (8)   | Check for evidence of damage or leakage. Check if cam-lever arms are damaged or missing. Check if the elbow body is cracked or sealing surface is badly dented. Check for loose, damaged or missing screws and gaskets.               | Cam-lever arms damaged or missing. Elbow body cracked or worn.   |
| 27       | Semi-annually |          | Drain Fitting Assembly (9)<br>(Except Models MIL-T-52983B, BA91-141, BA91-140)<br><br>Drain Fitting Assembly (10)<br>(Models BA91-141 and BA91-140) | Check immediate area for evidence of leakage. Check the drain plug, drain hose, or drain valve, for damaged or missing parts.   | Drain plug, drain hose, and drain valve are missing, not properly connected, or damaged.   |

END OF WORK PACKAGE

**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
UNIT MAINTENANCE PROCEDURES**

## **GENERAL INSTRUCTIONS**

Maintenance instructions in this section will list resources required, personnel required and equipment conditions for start of procedure, except as noted below:

### **NOTE**

Personnel required are listed only if the task requires more than one.

## **EQUIPMENT**

## **MAINTENANCE PROCEDURE**

|  |            |
|--|------------|
| Filler/Discharge Gate Valve Assembly (Models WTM3KF, MIL-T-52983B, PD52983-50, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01) Service, Replacement, and Repair..... | WP 0019 00 |
| Filler/Discharge Butterfly Valve Assembly (Models BA91-141, BA91-140) Service, Replacement, and Repair .....   | WP 0020 00 |
| Filler/Discharge Ball Valve Assembly (Models BA91-141A, BA91-140A) Replacement .....   | WP 0021 00 |
| Filler/Discharge Hose Assembly Service and Replacement.....  | WP 0022 00 |
| Drain Gate Valve (Models WTM3KF, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01) Service, Replacement, Repair .....  | WP 0023 00 |
| Drain Ball Valve (Models BA91-141, BA91-140, PD52983-50, BA91-141A, BA91-140A) Service, Replacement, Repair .....  | WP 0024 00 |
| Drain Hose Assembly (Except Model MIL-T-52983B) Service .....  | WP 0025 00 |
| Vent and Pipe Assembly Service and Repair .....  | WP 0026 00 |
| Filler/Discharge Assembly Service, Replacement, Repair .....   | WP 0027 00 |
| Drain Fitting Assembly (Except Models MIL-T-52983B, BA91-141, BA91-140) Service and Repair .....   | WP 0028 00 |
| Drain Fitting Assembly (Models BA91-141, BA91-140) Service and Repair .....  | WP 0029 00 |
| Tank Assembly Service.....   | WP 0030 00 |

## **END OF WORK PACKAGE**





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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
FILLER/DISCHARGE GATE VALVE ASSEMBLY (MODELS WTM3KF,  
MIL-T-52983B, PD52983-50, M52983-50, BA92-162, FCE574-81-1-A, SC5430-97CLE01)  
SERVICE, REPLACEMENT, REPAIR**

---

**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)  
Torque Wrench (in-lb)  
(Item 2, WP 0033 00)  
Torque Wrench (ft-lb)  
(Item 3, WP 0033 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)

**Materials/Parts**

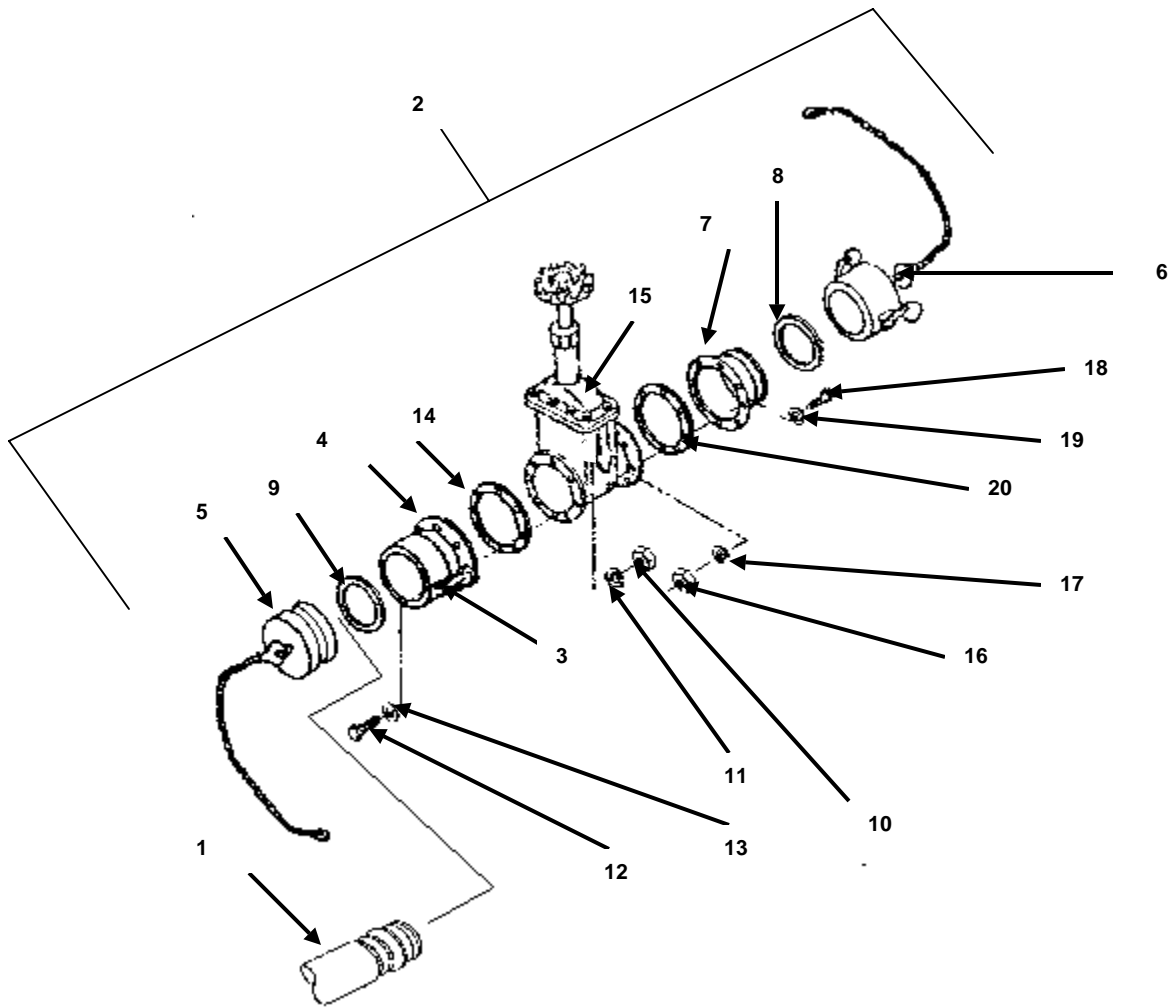
Crocus Cloth  
(Item 2, WP 0040 00)  
Detergent  
(Item 3, WP 0040 00)  
Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Grease  
(Item 5, WP 0040 00)  
Rags, wiping  
(Item 6, WP 0040 00)

**Mandatory Replacement Parts**

Gasket  
(Item 1, WP 0042 00)  
Gaskets  
(Item 3, WP 0042 00)  
Gasket, Valve Bonnet  
(Item 5, WP 0042 00)  
Lockwashers  
(Item 4, WP 0042 00)  
Lockwashers  
(Item 6, WP 0042 00)

**REMOVAL****Hose Assembly, Coupling, and Adapter**

1. Remove hose assembly (1) from gate valve assembly (2) by pulling two cam-lever arms (3) outward on female quick-disconnect coupling (4).
2. Remove hose assembly (1).
3. Remove the chain and dust cap (5) from female quick-disconnect coupling (4), and the chain and dust plug (6) from male-flanged adapter (7). Remove gasket (8) from male-flanged adapter (7).
4. Remove coupling gasket (9) from inside female quick-disconnect coupling (4).
5. Remove eight hex nuts (10), lockwashers (11), hex-head cap screws (12), and washers (13).
6. Remove female quick-disconnect coupling (4) and flange gasket (14) from face of gate valve (15).
7. Remove eight hex nuts (16), lockwashers (17), hex-head cap screws (18), and washers (19) from the opposite end of gate valve (15).
8. Remove male-flanged adapter (7) and flange gasket (20).



**DISASSEMBLY****Gate Valve**

1. Remove jam nut (1) from the top of hand-wheel (2).
2. Remove hand-wheel (2) from the top of valve stem (3).
3. Remove packing nut (4) from bonnet (5).
4. Remove packing gland (6) and gland spring (7) from valve stem (3).

**NOTE**

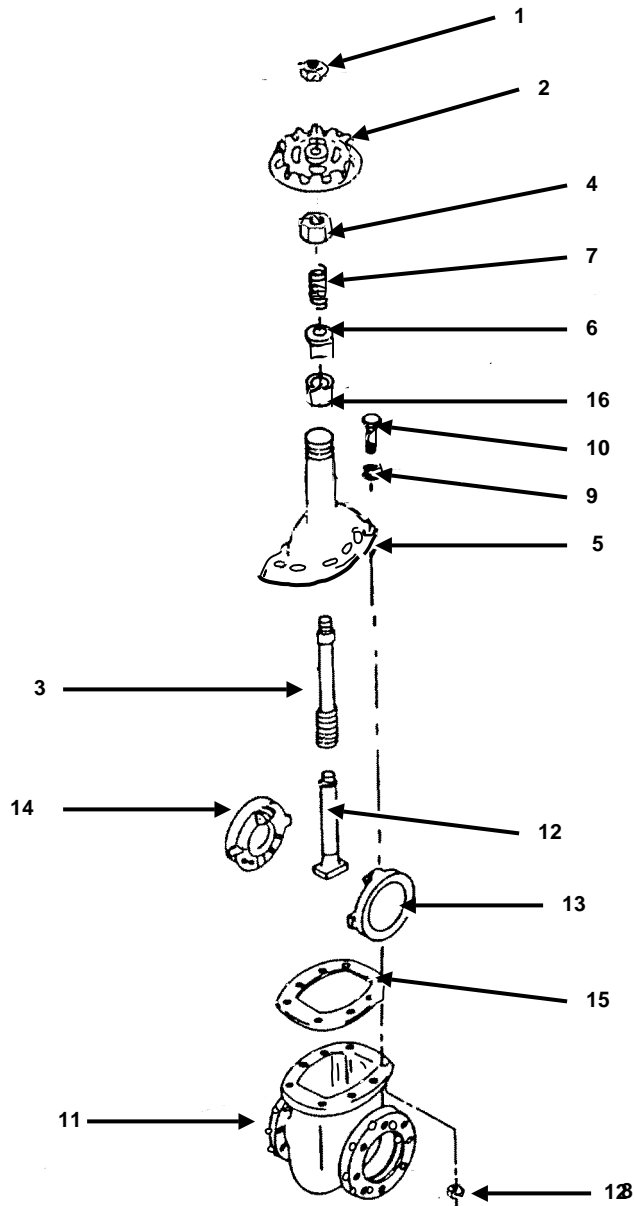
The packing ring will remain in the bonnet until the valve stem, the disk riser, and the disk halves have been removed from the bonnet.

5. Remove eight hex nuts (8), lockwashers (9), and hex-head cap screws (10) holding bonnet (5) to valve body (11).

**CAUTION**

**Keep the disk halves together when removing from the valve body. Disk halves must be grasped firmly when disassembled from the valve body. Dropping the disk halves off the disk riser can damage the sealing surfaces. As the discs clear the slots in the valve body, hold them together with the right hand in order to avoid dropping off the disk stem and damaging the sealing surface.**

6. Lift bonnet (5) with valve stem (3), disk riser (12), and disk halves (13) and (14) from valve body (11).



7. Remove bonnet gasket (15) from valve body (11).
8. Rotate disk riser (12) counterclockwise, and disassemble disk riser (12) from valve stem (3).
9. Rotate valve stem (3) clockwise, and disassemble valve stem (3) from the bottom side of bonnet (5).

**NOTE**

The packing ring should be removed only when it is to be replaced.

10. Drive packing ring (16) through the bottom of bonnet (5).

**SERVICE****WARNING**

**Dry cleaning solvent, A-A-59601, used to clean parts, is potentially dangerous to personnel and property. It produces toxic and flammable fumes. Use only in well ventilated areas. Avoid repeated and prolonged skin contact. Do not use solvent near an open flame or near excessive heat. The flash point of the solvent is 100°F to 130°F (38° C to 59° C).**

1. Clean all parts with dry cleaning solvent and dry thoroughly with rags.
2. Clean all gasket-sealing surfaces thoroughly with detergent and hot water.
3. Inspect all mechanical parts for cracks, dents, breaks, and wear. Replace components if unserviceable.
4. Polish valve stem (3) with crocus cloth. Coat valve stem (3) with grease.

**ASSEMBLY****Gate Valve**

1. Thread disk riser (12) into valve stem (3).
2. Check that disk riser (12) is completely secured to bonnet (5).
3. Lay valve body (11) on its side on a clean surface. Position new gasket (15) over disk riser (12).
4. Install disk halves (13) and (14) onto disk riser (12).
5. Insert disk halves (13) and (14) into valve body (11) slot.
6. Place valve body (11) and bonnet (5) in an upright position.
7. Align valve body (11) to gasket (15). Install bonnet (5) assembly to valve body (11) with eight hex-head cap screws (10), new lockwashers (9), and hex nuts (8).
8. Insert packing ring (16) onto valve stem (3).
9. Insert packing nut (4) onto valve stem (3) by pushing packing nut (4) down on the neck of bonnet (5) until packing ring (16) is seated in bonnet (5).
10. Remove packing nut (4) from valve stem (3), and assemble gland spring (7) and packing gland (6) to valve stem (3).
11. Insert packing nut (4), hand-wheel (2), and jam nut (1) onto the valve stem (3).
12. Torque hex-head cap screws (10), lockwashers (9), and hex nuts (8) assembled to the valve body (11) to 16 ft-lb (21.84 Nm).

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**INSTALLATION****Hose Assembly, Coupling, and Adapter**

1. Position new flange gasket (20) on the face of gate valve (15), and align the holes.
2. Position male-flanged adapter (7) against flange gasket (20), and align the holes.
3. Install washers (19) and hex-head cap screws (18) onto male-flanged adapter (7), flange gasket (20), and gate valve (15).
4. Install new lockwashers (17), and hex nuts (16) onto gate valve (15). Torque nuts (16) to 30 in-lb (3.41N•m).
5. At the opposite end of gate valve (15), position new flange gasket (14) against gate valve (15).
6. Position female quick-disconnect coupling (4) against flange gasket (14) and align the holes.
7. Install washers (13) and hex-head cap screws (12) onto female quick-disconnect coupling (4), flange gasket (14), and the face of gate valve (15).
8. Install new lockwashers (11) and hex nuts (10) onto hex-head cap screws (12). Torque nuts (10) to 30 in-lb (3.41N•m).
9. Lubricate new coupling gasket (9), and install coupling gasket (9) on the inside of female quick-disconnect coupling (4).
10. Install new gasket (8) on male-flanged adapter (7). Install chains and dust cap (5) and dust plug (6) on coupling (4) and adapter (7).
11. Install hose assembly (1) to gate valve assembly (2) and position hose assembly (1) in place by pushing in on cam-lever arms (3).

**END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
FILLER/DISCHARGE BUTTERFLY VALVE ASSEMBLY  
(MODELS BA91-141, BA91-140)  
SERVICE, REPLACEMENT, AND REPAIR**

---

**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)  
Torque Wrench (in-lb)  
(Item 2, WP 0033 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)

**Materials/Parts**

Detergent  
(Item 3, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)

**Mandatory Replacement Parts**

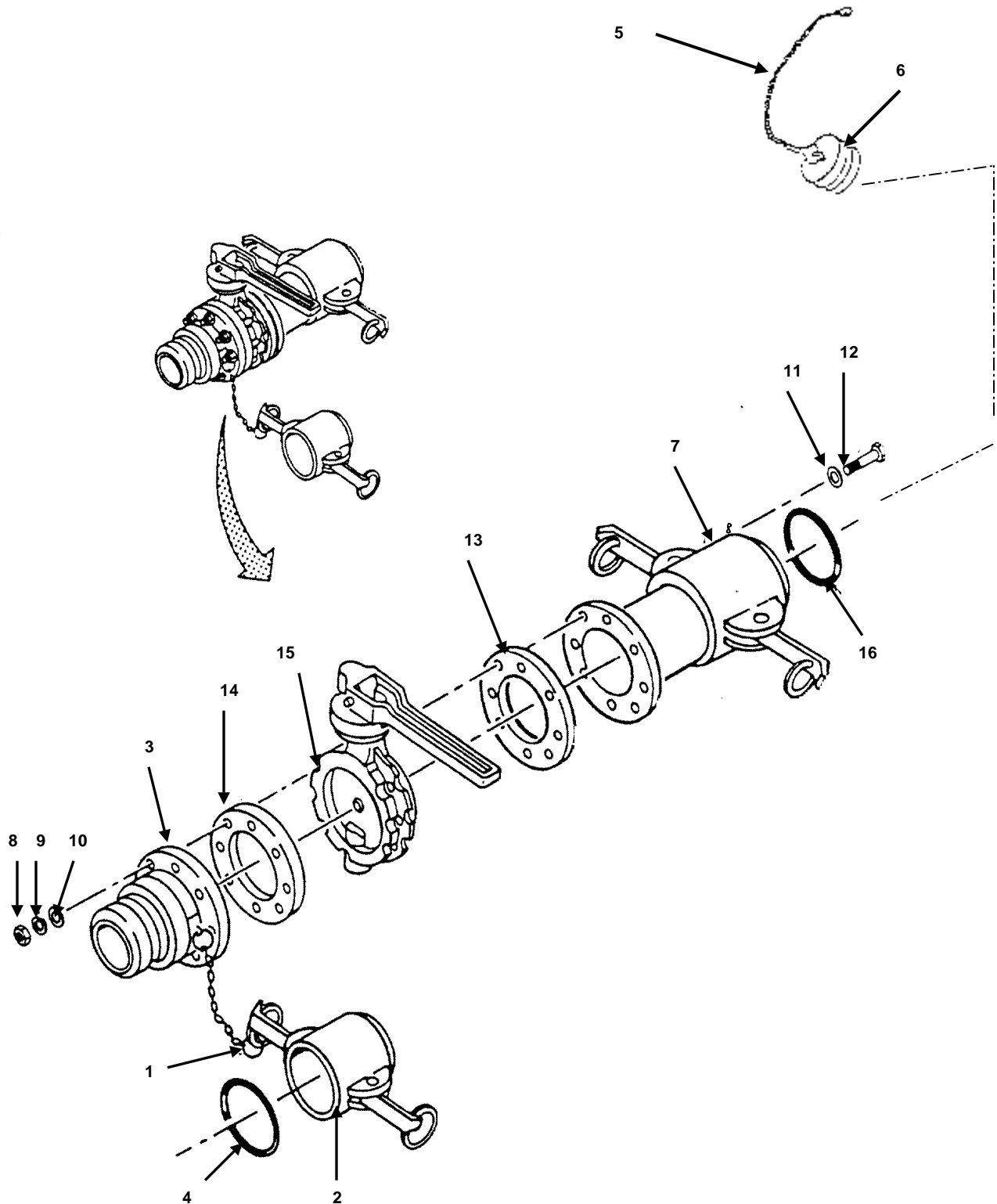
Gasket  
(Item 1, WP 0042 00)  
Gasket  
(Item 3, WP 0042 00)  
Lockwashers  
(Item 4, WP 0042 00)  
Parts Kit, Butterfly  
(Item 8, WP 0042 00)  
Parts Kit, Valve  
(Item 7, WP 0042 00)

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**REMOVAL**

1. Disconnect ring (1) and remove dust cap (2) from male coupling (3).
2. Remove gasket (4) from dust cap (2).
3. Remove chain (5) and dust plug (6) from female coupling (7).
4. Remove nuts (8), lockwashers (9), washers (10) and (11) and screws (12).
5. Remove female coupling (7) and gasket (13), and male coupling (3) and gasket (14) from butterfly valve (15).
6. Remove gasket (16) from female coupling (7).
7. Inspect dust cap (2), male coupling (3), and female coupling (7) for cracks and corrosion. Replace damaged parts.



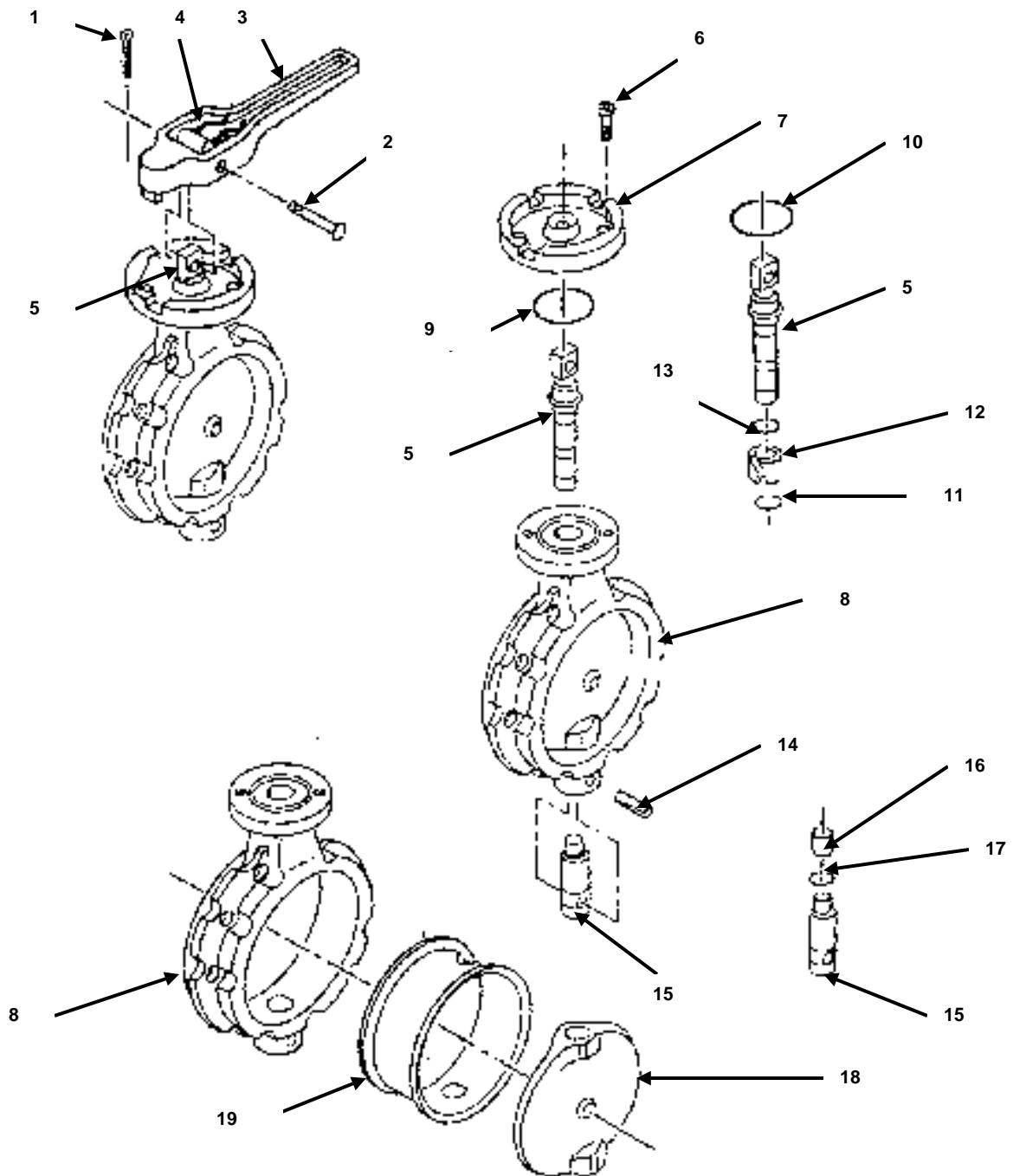


**DISASSEMBLY**

1. Remove cotter pin (1) and pin (2) from handle (3).
2. Lift handle (3) and attached spring (4) from valve stem (5).
3. Remove two socket head screws (6) and stop plate (7) from valve body (8).
4. Remove top seal (9) from the bottom of stop plate (7).
5. Remove top valve stem (5) assembly from valve body (8).
6. Remove seal (10), O-ring (11), top bearing (12), and O-ring (13) from top valve stem (5).
7. Drive spring pin (14) from valve body (8) and bottom valve stem (15).
8. Remove bottom valve stem (15) assembly from valve body (8).
9. Remove bottom bearing (16) and O-ring (17) from bottom valve stem (15).
10. Remove disk (18) from valve body (8).
11. Remove sleeve (19) from valve body (8).

**SERVICE**

1. Wash all components with clean hot water and detergent.
2. Rinse components in clean water and dry with rags.
3. Inspect the valve body, handle, disc, and stop plate for cracks and corrosion.
4. Inspect the top valve stem and bottom valve stem for cracks, deep scratches, and corrosion.
5. Replace damaged parts.



**ASSEMBLY**

1. Install sleeve (19) into valve body (8) and align the fastening holes of sleeve (19) with those of valve body (8).

**NOTE**

The bottom hole in the disk is round and smooth. The top hole is slotted to fit on the end of the top stem.

2. Install disk (18) into valve body (8) and align the fastening holes of disk (18) with the holes in sleeve (19) and valve body (8).
3. Install new O-ring (17) and bottom valve bearing (16) onto bottom valve stem (15).
4. Install bottom valve stem (15) through the bottom of valve body (8) and into the bottom hole of disk (18), aligning spring pin (14) hole in valve stem (15) with spring pin (14) hole in valve body (8).
5. Install spring pin (14) into valve body (8) and through bottom valve stem (15).
6. Install new O-ring (13), top bearing (12), and new O-ring (11) onto the bottom of top valve stem (5).
7. Install new seal (10) on top valve stem (5).
8. Align the end of top valve stem (5) with the hole in disk (18).
9. Install valve stem (5) assembly through valve body (8) and into the slot located in disk (18), ensuring valve stem (5) is fully seated in disk (18).
10. Install new top seal (9) at the bottom of stop plate (7).
11. Position stop plate (7) on valve body (8), and install two socket head screws (6).
12. Rotate disk (18) to the open position.
13. Position handle (3) and attach spring (4) on top of valve stem (5), so that handle (3) is in line with disk (18).

**NOTE**

Press handle down against the spring to align the holes with top valve stem.

14. Install pin (2) through handle (3) and top valve stem (5), securing pin (2) to handle (3) with a new cotter pin (1).

**INSTALLATION****NOTE**

Check that gasket is fully seated in the coupling groove.

1. Install new gasket (16) into female coupling (7).
2. Position new gasket (13) and female coupling (7) on butterfly valve (15).
3. Position new gasket (14) and male coupling (3) on butterfly valve (15).

4. Install eight washers (11), screws (12), washers (10), new lockwashers (9), and nuts (8) on butterfly valve assembly. Torque the fastening hardware to 30 in-lbs (3.41N•m).
5. Install new gasket (4) into dust cap (2).
6. Connect ring (1) and install dust cap (2) onto male coupling (3).

**END OF WORK PACKAGE**

**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
FILLER/DISCHARGE BALL VALVE ASSEMBLY  
(MODELS BA91-141A, BA91-140A)  
REPLACEMENT**

**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)  
Torque Wrench (in-lb)  
(Item 2, WP 0033 00)

**Equipment Condition**

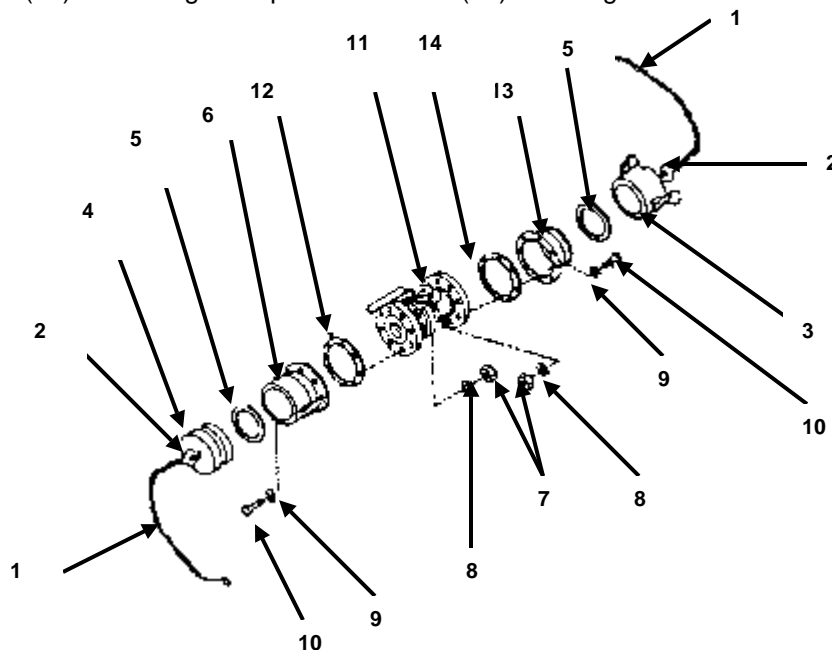
Fuel tank drained  
(WP 0005 00)

**Mandatory Replacement Parts**

Gaskets  
(Item 3, WP 0042 00)  
Lockwashers  
(Item 4, WP 0042 00)

**REMOVAL**

1. Disconnect chains (1) from key rings (2) and remove dust cap (3), and dust plug (4). Remove gaskets (5) from dust cap (3) and female coupling (6).
2. Remove eight nuts (7), lockwashers (8), washers (9), and screws (10) from female coupling (6) and ball valve (11).
3. Remove female coupling (6) and flange gasket (12) from ball valve (11).
4. Remove other eight nuts (7), lockwashers (8), washers (9), and screws (10) from male coupling (13) and ball valve (11).
5. Remove male coupling (13) and flange gasket (14) from ball valve (11).
6. Inspect ball valve (11) for damage. Replace ball valve (11) if damaged.



**INSTALLATION**

1. Align male coupling (13) and new flange gasket (14) on ball valve (11).
2. Install eight nuts (7), new lockwashers (8), washers (9), and screws (10) to male coupling (13) and ball valve (11). Torque the fastening hardware to 30 in-lbs (3.41N•m).
3. Align female coupling (6) and new flange gasket (12) on ball valve (11).
4. Install eight nuts (7), new lockwashers (8), washers (9), and screws (10) to female coupling (6) and ball valve (11). Torque the fastening hardware to 30 in-lbs (3.41 N•m).
5. Install new gaskets (5) in female coupling (6) and dust cap (3).
6. Connect chains (1) to key rings (2) and install dust cap (3) and dust plug (4) to female coupling (6) and male coupling (13).

**END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
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COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
FILLER/DISCHARGE HOSE ASSEMBLY  
SERVICE AND REPLACEMENT**

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## INITIAL SETUP

### Materials/Parts

Detergent  
(Item 3, WP 0040 00)

### Equipment Condition

Fuel tank drained  
(WP 0005 00)

### Mandatory Replacement Parts

Gasket  
(Item 1, WP 0042 00)

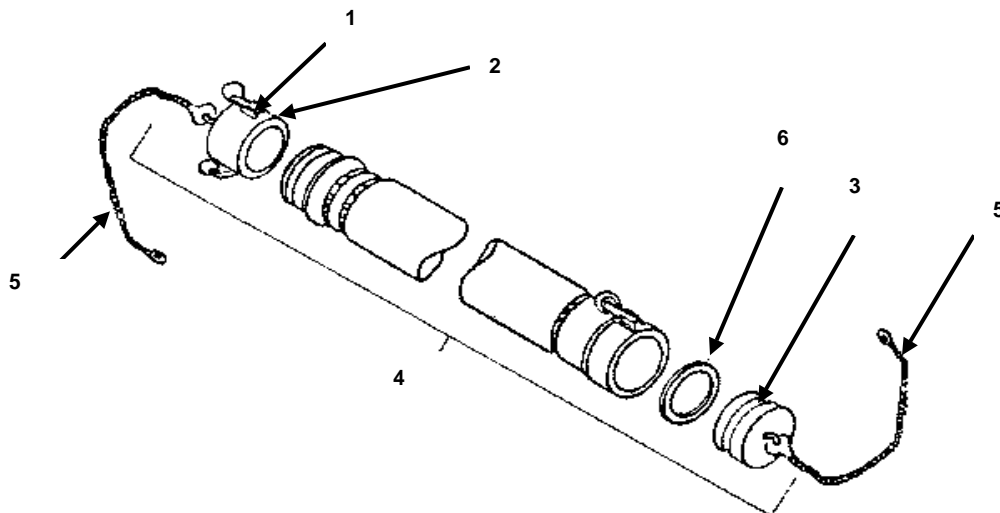
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## REMOVAL

1. Pull outward on two cam-lever arms (1). Remove dust cap (2) and dust plug (3) from hose assembly (4).
2. Remove two chain assemblies (5) and remove dust cap (2) and dust plug (3) from hose assembly (4).
3. Remove gasket (6) from dust cap (2).

## SERVICE

1. Flush out the hose assembly with hot, soapy water.
2. Rinse out the filler/discharge hose assembly thoroughly and air-dry.
3. Inspect the hose for cracks, tears, or wear, and ensure that the hose bands are secure to the couplings.
4. Inspect all mechanical parts for cracks, dents, breaks and wear. Replace any unserviceable components.





**INSTALLATION**

1. Install two chain assemblies (5), dust cap (2), and dust plug (3) to hose assembly (4).  
Install new gasket (6) in dust cap (2).
2. Connect dust cap (2) and dust plug (3) to hose assembly (4) by pushing  
in on cam-lever arms (1).

**END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
DRAIN GATE VALVE (MODELS WTM3KF, M52983-50,  
BA92-162, FCE574-81-1-A, SC5430-97CLE01)  
SERVICE, REPLACEMENT, REPAIR**

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## INITIAL SETUP

### Tools

Tool Kit General Mechanics  
(Item 1, WP 0033 00)

### Materials/Parts

Anti-seize Tape  
(Item 7, WP 0040 00)  
Crocus Cloth  
(Item 2, WP 0040 00)  
Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Grease  
(Item 5, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)  
Thread Sealing Compound  
(Item 8, WP 0040 00)

### Equipment Condition

Fuel tank drained  
(WP 0005 00)

### Mandatory Replacement Parts

Packing Material  
(Item 10, WP 0042 00)

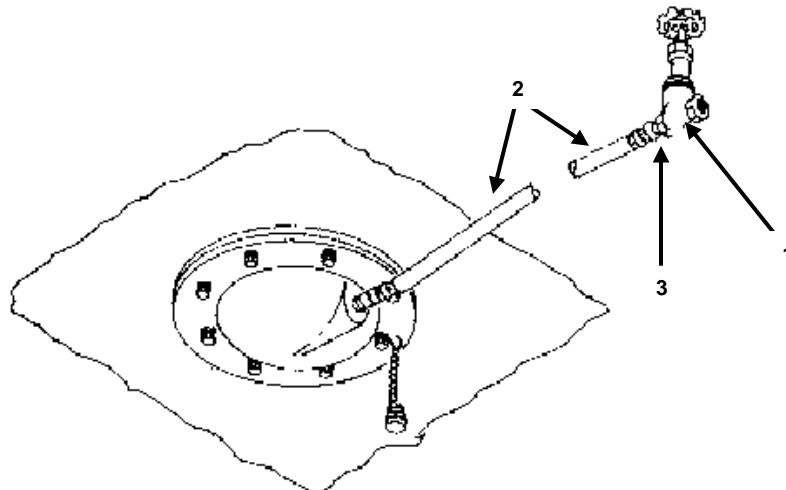
## REMOVAL

1. Remove drain gate valve (1) from drain hose assembly (2).

## WARNING

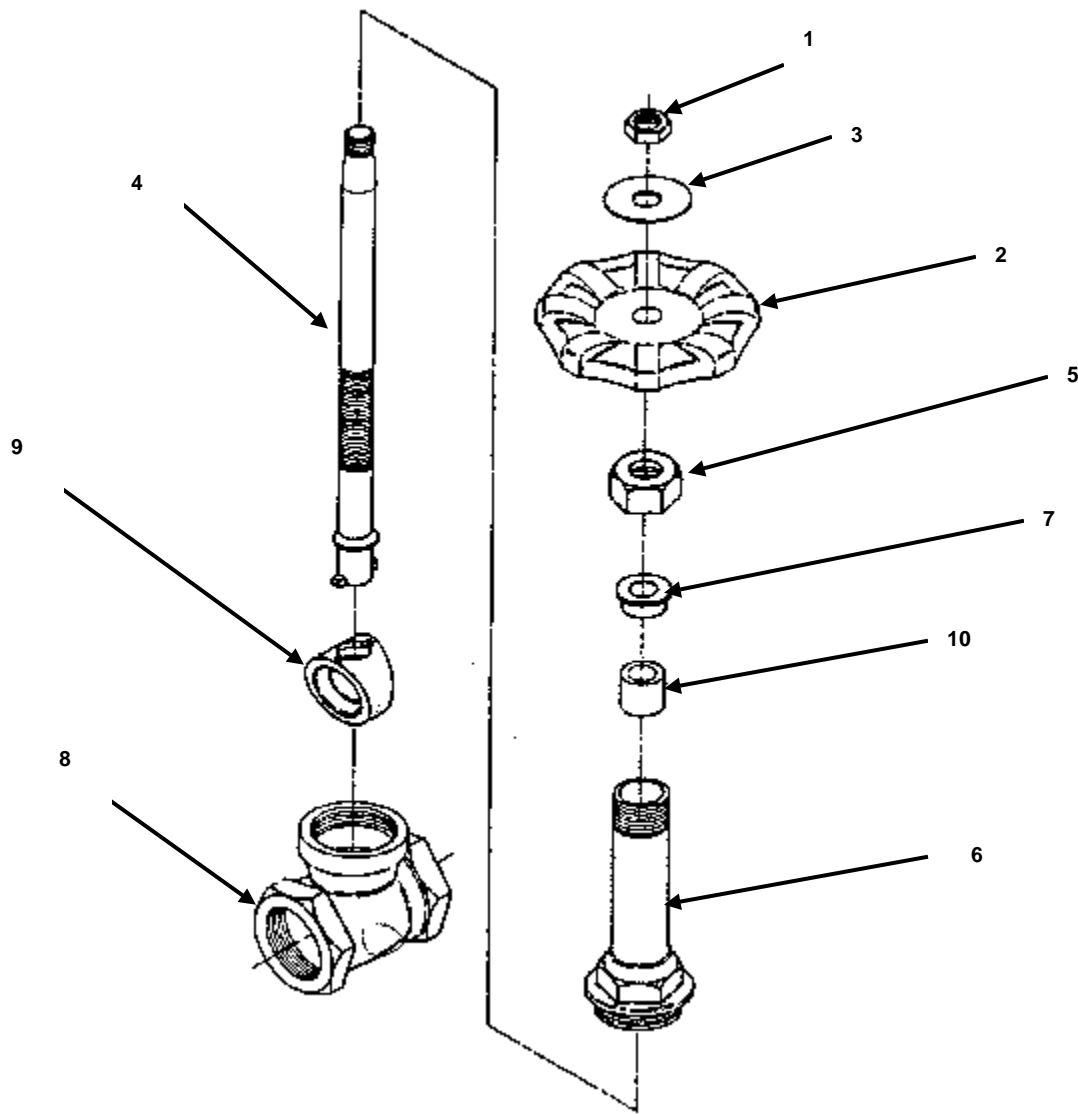
Dry cleaning solvent, A-A-59601, used to clean parts, is potentially dangerous to personnel and property. It produces toxic and flammable fumes. Use only in well ventilated areas. Avoid repeated and prolonged skin contact. Do not use solvent near an open flame or near excessive heat. The flash point of the solvent is 100°F to 130°F (38° C to 59° C).

2. Clean threads (3) of drain hose assembly (2) with dry cleaning solvent and dry with rags.



**DISASSEMBLY**

1. Remove hand-wheel nut (1) from hand-wheel (2).
2. Remove hand-wheel (2) and identification plate (3) from top of valve stem (4).
3. Remove packing nut (5) from bonnet (6).
4. Remove packing retainer (7) from bonnet (6).
5. Remove bonnet (6) from valve body (8).
6. Remove wedge disks (9) from valve stem (4).
7. Remove valve stem (4) from bonnet (6).
8. Remove packing material (10) from bonnet (6).



**SERVICE****WARNING**

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1. Clean all parts with dry cleaning solvent and dry thoroughly with rags.
2. Inspect all mechanical parts for cracks, dents, breaks, and wear. Replace the component if unserviceable.
3. Polish the valve stem with a crocus cloth, then coat the valve stem with grease.

**ASSEMBLY**

1. Position valve body (8) on its side on a clean surface.
2. Insert wedge disks (9) into valve body (8) slot.
3. Install new packing material (10) into bonnet (6).
4. Insert valve stem (4) into bonnet (6).
5. Install bonnet (6) into valve body (8).
6. Install packing retainer (7) into bonnet (6).
7. Install packing nut (5) onto bonnet (6).
8. Install hand-wheel (2), hand-wheel nut (1), and identification plate (3) on valve stem (4).

**INSTALLATION**

1. Coat threads (3) of drain hose assembly (2) with thread sealing compound or anti-seize tape.
2. Install drain gate valve (1) on drain hose assembly (2).

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
DRAIN BALL VALVE (MODELS BA91-141, BA91-140,  
PD52983-50, BA91-141A, BA91-140A)  
SERVICE, REPLACEMENT, REPAIR**

---

**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)  
Torque Wrench (ft-lb)  
(Item 3, WP 0033 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)

**Materials/Parts**

Anti-seize Tape  
(Item 7, WP 0040 00)  
Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Grease  
(Item 5, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)  
Thread Sealing Compound  
(Item 8, WP 0040 00)

**Mandatory Replacement Parts**

Bonnet gasket  
(Item 11, WP 0042 00)  
Stem Seal  
(Item 12, WP 0042 00)  
Stem Seal  
(Item 13, WP 0042 00)

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**REMOVAL**

Remove the drain ball valve from the drain hose assembly.

**DISASSEMBLY**

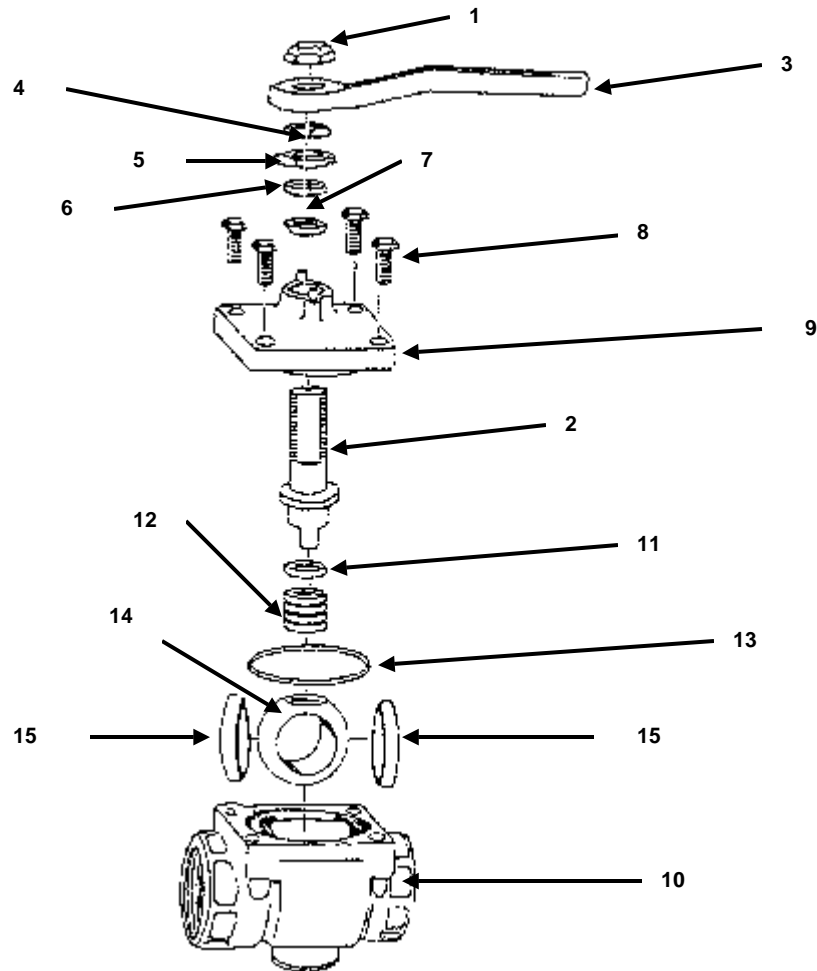
1. Remove handle-nut (1) from valve stem (2).
2. Remove handle (3) from valve stem (2).
3. Remove valve stem nut (4) from valve stem (2).
4. Remove travel stop (5), gland ring (6), and valve stem seal (7) from valve stem (2). Discard seal (7).
5. Remove cap screws (8) from bonnet (9). Remove bonnet (9) from valve body (10).
6. Remove valve stem (2), valve stem seal (11), spring (12), bonnet gasket (13), ball (14), and two ball seats (15) from valve body (10). Discard seal (11) and bonnet gasket (13).

**SERVICE****WARNING**

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1. Clean all parts with dry cleaning solvent and dry thoroughly with rags.

2. Inspect all mechanical parts for cracks, dents, breaks, and wear. Replace the component if unserviceable.
3. Polish the valve stem with a crocus cloth, then coat the valve stem with grease.



## ASSEMBLY

1. Install two ball seats (15) into valve body (10).
2. Install new bonnet gasket (13) into valve body (10).
3. Install ball (14) into valve body (10).
4. Install new valve stem seal (11) and spring (12) at the bottom of valve stem (2). Insert valve stem (2) into valve body (10).

- 
5. Position bonnet (9) over valve stem (2) and install four cap screws (8). Torque cap screws (8) to 16 ft-lbs (21.04 N•m).
  6. Install new valve stem seal (7), gland ring (6), travel stop (5), and valve stem nut (4) onto valve stem (2).
  7. Position handle (3) on valve stem (2). Install and tighten handle-nut (1) on valve stem (2).

**INSTALLATION**

Coat the threads of the drain hose assembly with thread sealing compound or anti-seize tape, and install the drain ball valve on the drain hose assembly.

**END OF WORK PACKAGE**





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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
DRAIN HOSE ASSEMBLY (EXCEPT MODEL MIL-T-52983B)  
SERVICE**

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**INITIAL SETUP****Materials/Parts**

Anti-seize Tape  
(Item 7, WP 0040 00)  
Detergent  
(Item 3, WP 0040 00)  
Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)  
Sealing Compound  
(Item 8, WP 0040 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)  
Drain Gate/Ball Valve removed  
(WP 0023 00 or WP 0024 00)

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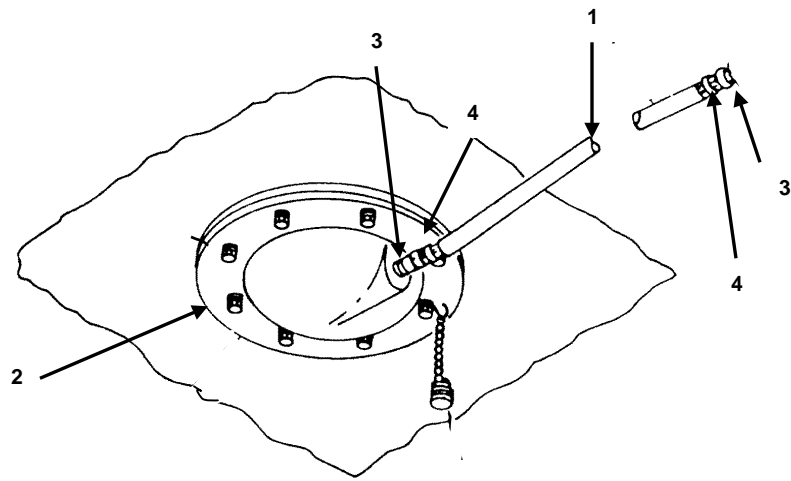
**SERVICE**

1. Rotate hose assembly (1) counterclockwise and remove from drain fitting (2).
2. Flush hose assembly (1) with hot, soapy water.
3. Rinse out hose assembly (1) thoroughly and air dry.

**WARNING**

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4. Clean the threads on couplings (3) with dry cleaning solvent and dry thoroughly with rags.
5. Inspect hose assembly (1) for cracks, tears, or wear.
6. Check and ensure hose bands (4) are secured to threaded couplings (3).
7. Apply sealing compound or anti-seize tape on threads of coupling (3). Engage threads of couplings (3) with threads on drain fitting (2) and turn hose assembly (1) clockwise until tight.
8. Install the drain gate or ball valve. See WP 0023 00 and WP 0024 00.



END OF WORK PACKAGE

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
VENT AND PIPE ASSEMBLY  
SERVICE, REPLACEMENT, REPAIR**

---

**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)  
Torque Wrench (in-lb)  
(Item 2, WP 0033 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)

**Materials/Parts**

Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)  
Silicone Compound  
(Item 9, WP 0040 00)

**Mandatory Replacement Parts**

Gasket  
(Item 2, WP 0042 00)  
Gasket Cap  
(Item 14, WP 0042 00)  
O-Ring  
(Item 15, WP 0042 00)  
Relief Cap Gasket  
(Item 16, WP 0042 00)

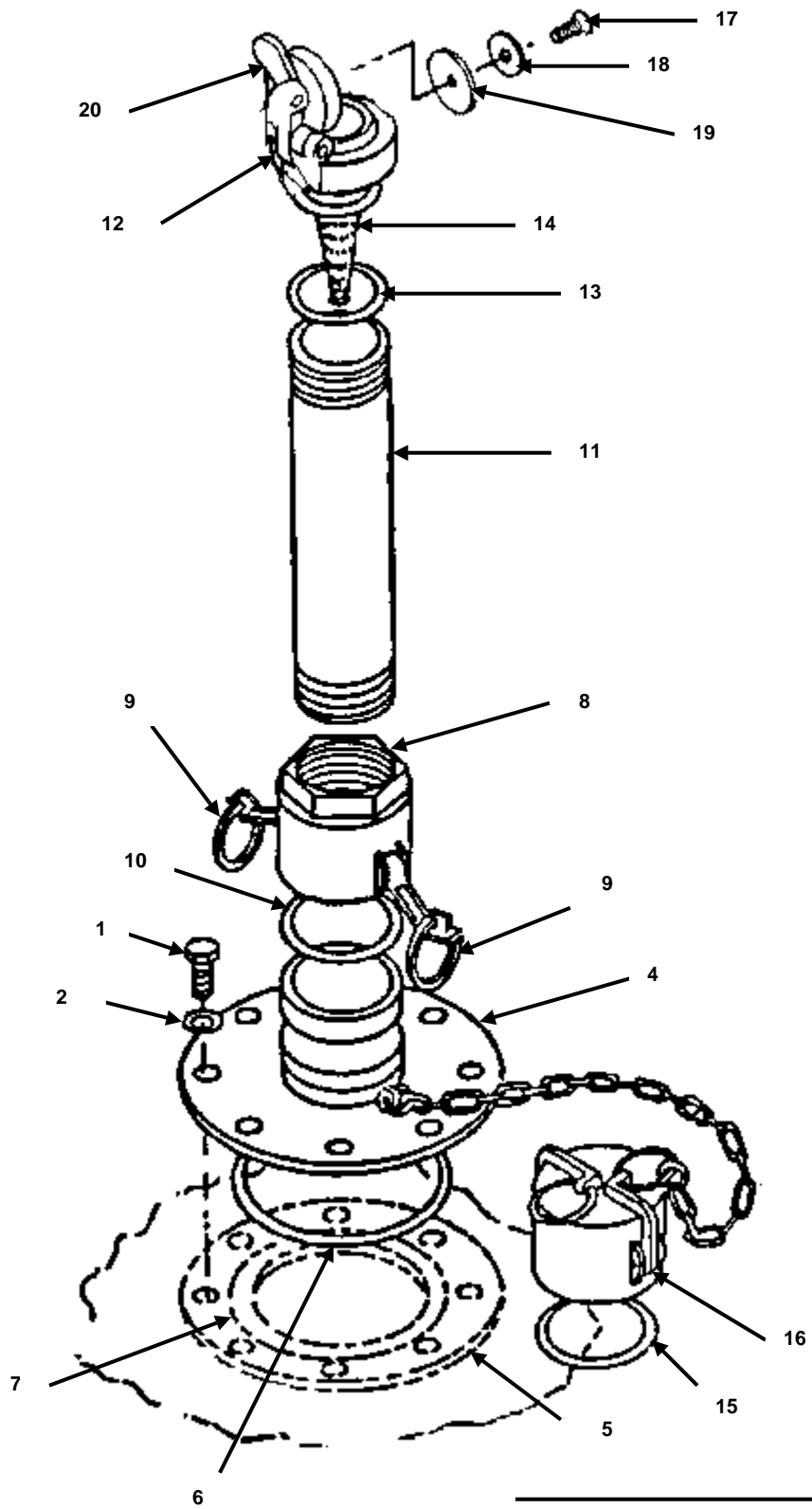
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**REMOVAL**

1. Remove screws (1) and washers (2) from vent and pipe assembly (3).
2. Lift male-flanged adapter (4) from tank fitting (5).
3. Remove and discard O-ring (6) from packing groove (7) located in tank fitting (5).

**DISASSEMBLY**

1. Remove female quick-disconnect coupling (8) from male-flanged adapter (4) by pulling outward on cam-lever arms (9), and lifting female quick-disconnect coupling (8) from male-flanged adapter (4).
2. Remove and discard gasket (10) from female quick-disconnect coupling (8).
3. Rotate vent pipe (11) counterclockwise until the vent pipe threads disengage from female quick-disconnect coupling (8), and remove female quick-disconnect coupling (8) from vent pipe (11).
4. Rotate relief cap (12) counterclockwise until the relief cap threads disengage from vent pipe (11). Remove the relief cap (12) from the vent pipe (11).
5. Remove and discard relief cap gasket (13) from inside relief cap (12).
6. Rotate flame arrestor (14) counterclockwise until the flame arrestor threads disengage from relief cap (12). Remove flame arrestor (14) from relief cap (12).
7. Remove and discard gasket (15) from inside dust cap (16).
8. Remove vent relief cap screw (17), washer (18), and gasket (19) from lever head assembly (20). Discard gasket (19).



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**SERVICE****WARNING**

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1. Clean all parts with dry cleaning solvent, and dry thoroughly with rags.
2. Clean the preformed packing grooves with cleaning solvent, and dry thoroughly with rags.
3. Inspect all mechanical parts for cracks, dents, breaks, and wear. Replace the component if unserviceable.
4. Check that the vent hole in the flame arrestor is clear of all debris.

**ASSEMBLY**

1. Install screw (17), washer (18), and new gasket (19) in lever head assembly (20).
2. Position new relief cap gasket (13) over flame arrestor (14). Seat relief cap gasket (13) into relief cap (12).
3. Install flame arrestor (14) into relief cap (12). Rotate flame arrestor (14) clockwise until threads are firmly seated in relief cap (12).
4. Install flame arrestor (14) into vent pipe (11) until vent pipe (11) contacts relief cap (12).
5. Rotate relief cap (12) clockwise until vent pipe (11) and relief cap (12) are firmly seated together.
6. Install vent pipe (11) into female quick-disconnect coupling (8). Rotate vent pipe (11) clockwise until it firmly seats in female quick-disconnect coupling (8).
7. Install new gasket (10) into female quick-disconnect coupling (8).
8. Install female quick-disconnect coupling (8) on male-flanged adapter (4) pushing in cam-lever arms (9) until locked in place.
9. Install new gasket (15) inside dust cap (16).

**INSTALLATION**

1. Lubricate new O-ring (6) with silicone compound.
2. Install O-ring (6) into packing groove (7) located in tank fitting (5).
3. Position male-flanged adapter (4) over tank fitting (5).
4. Install eight washers (2) and screws (1) through vent and pipe assembly (3) and tank fitting (5) holes.
5. Torque screws (1) to 30 in-lb (3.41 N•m).

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
FILLER/DISCHARGE ASSEMBLY  
SERVICE AND REPAIR**

---

**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)  
Torque Wrench (in-lb)  
(Item 2, WP 0033 00)

**Materials/Parts**

Detergent  
(Item 3, WP 0040 00)  
Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)  
Silicone Compound  
(Item 9, WP 0040 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)  
Filler/Discharge hose removed  
(WP 0022 00)

**Mandatory Replacement Parts**

Gasket  
(Item 1, WP 0042 00)  
Gasket  
(Item 3, WP 0042 00)  
Gasket  
(Item 18, WP 0042 00)  
Lockwasher  
(Item 4, WP 0042 00)  
O-Ring  
(Item 17, WP 0042 00)

---

**DISASSEMBLY****CAUTION**

**Be sure to take off the closure plate before removing the flanged adapter. The flanged adapter is bolted to the closure plate and suction stub. If the flanged adapter is removed first, the hex head nuts bolted to the suction stub will fall into the tank.**

**NOTE**

The filler/discharge fitting on the discharge end requires a female/male elbow. The filler/discharge fitting on the fill end requires a female/female elbow.

1. Remove 4-inch elbow (1) by pulling outward on cam-lever arms (2), and lifting elbow (1) from flanged adapter (3).
2. Remove and discard elbow gasket (4) from inside elbow (1).
3. Remove twenty screws (5) and washers (6) from closure plate (7). Lift closure plate (7) from tank fitting (8).
4. Remove and discard o-ring (9) from the packing groove located in tank fitting (8).
5. Remove eight nuts (10), lockwashers (11), screws (12), and gaskets (13) from suction stub (14), flanged adapter (3), and gasket (15). Discard lockwashers (11), gaskets (13), and gasket (15).
6. Remove and discard gasket (16) from inside dust cap (17).

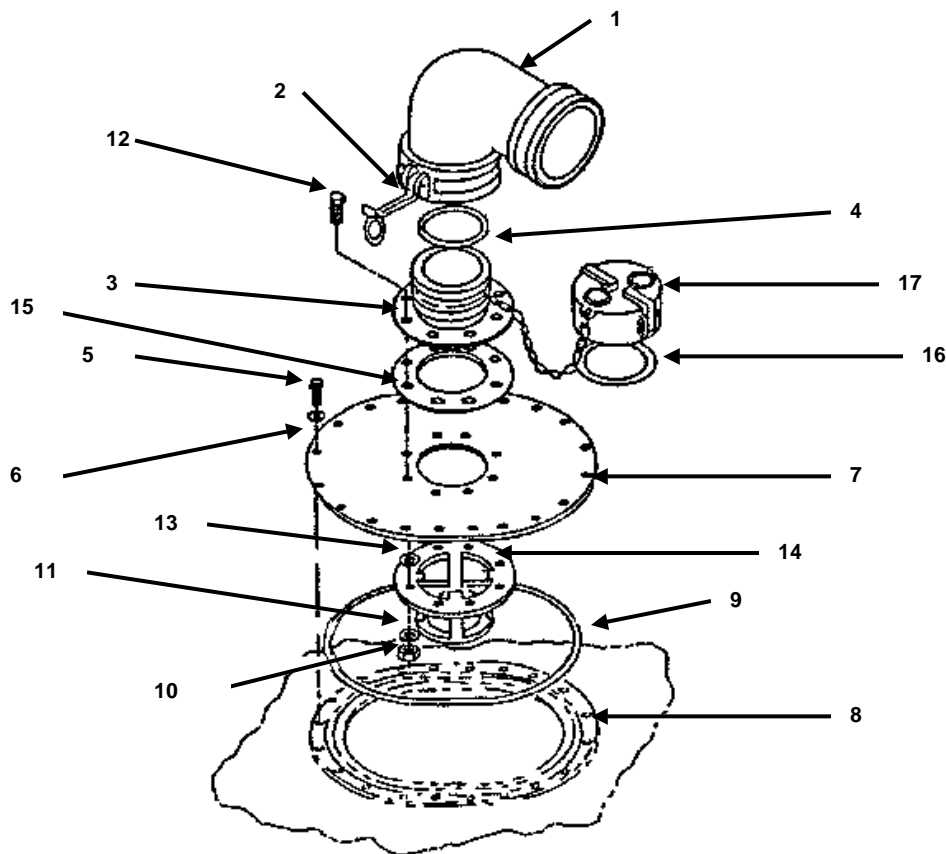


## SERVICE

## WARNING

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1. Clean all parts with dry cleaning solvent and dry thoroughly with rags.
2. Clean packing grooves thoroughly with detergent and hot water.
3. Clean all gasket-sealing surfaces thoroughly with detergent and hot water.
4. Inspect all mechanical parts for cracks, dents, breaks, and wear. Replace the component if unserviceable.



**ASSEMBLY**

1. Install new gasket (16) into dust cap (17).
2. Install new elbow gasket (4) into elbow (1).
3. Place suction stub (14) on a hard, flat surface with the eight bolt holes positioned up.
4. Position new gaskets (13) over each bolt hole in suction stub (14).
5. Position closure plate (7) on top of gaskets (13), and align the holes.
6. Position new flanged adapter gasket (15) on closure plate (7), and align the holes.
7. Position flanged adapter (3) on gasket (15), and align the holes.
8. Install screws (12) through the holes in flanged adapter (3), and thread screws (12) through until the ends protrude through suction stub (14).
9. Assemble new lockwashers (11) and nuts (10) to screws (12). Torque the fastening hardware to 30 in-lbs (3.41N•m).
10. Lubricate new o-ring (9) with silicone compound. Position o-ring (9) into the packing groove.
11. Position closure plate (7) and attached components on the tank. Install suction stub (14) through the opening in the tank, until closure plate (7) contacts tank fitting (8).

**NOTE**

If the tank is lying completely flat, lift the tank to the closure plate to begin threading the screws through the tank fitting.

12. Assemble twenty washers (6) onto screws (5). Install screws (5) through closure plate (7) and tank fitting (8).
13. Torque fastening screws (5) to 30 in-lbs (3.41 N•m).
14. Position elbow (1) on flanged adapter (3), and push cam-lever arms (2) inward, locking elbow (1) to flanged adapter (3).

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
DRAIN FITTING ASSEMBLY (EXCEPT MODELS MIL-T-52983B  
BA91-141, BA91-140)  
SERVICE AND REPAIR**

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**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)  
Torque Wrench (in-lb)  
(Item 2, WP 0033 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)

**Materials/Parts**

Antiseize Tape  
(Item 7, WP 0040 00)  
Detergent  
(Item 3, WP 0040 00)  
Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)  
Sealing Compound  
(Item 8, WP 0040 00)  
Silicone Compound  
(Item 9, WP 0040 00)

**Mandatory Replacement Parts**

O-ring  
(Item 15, WP 0042 00)

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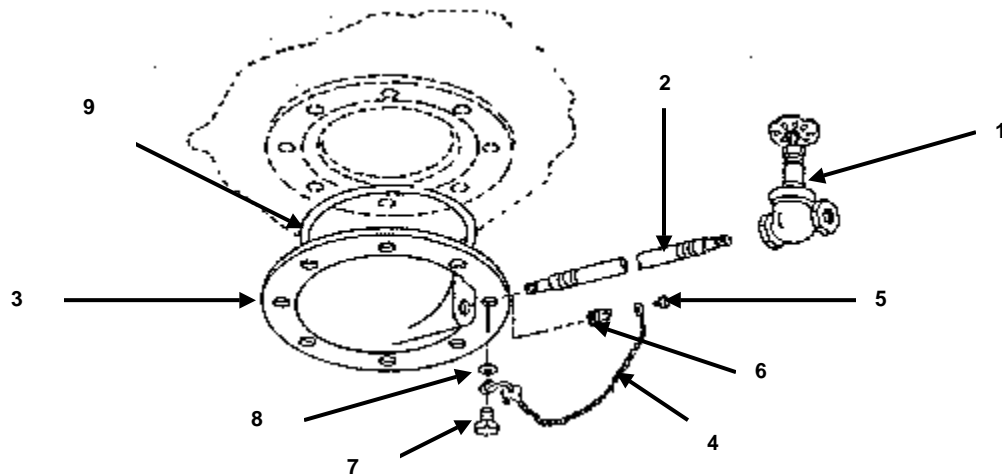
**DISASSEMBLY**

1. Rotate gate valve (1) counterclockwise until the threads disengage from drain hose (2). Remove from drain hose (2).
2. Rotate drain hose (2) counterclockwise until the threads disengage from drain cover plate (3). Remove from drain cover plate (3).
3. Disconnect chain assembly (4). Remove drain plug screw (5) and drain plug (6) from cover plate (3).
4. Remove eight screws (7) and washers (8) from drain cover plate (3) and tank fitting.
5. Remove drain cover plate (3).
6. Remove o-ring (9) from the packing groove located in the tank fitting. Discard o-ring (9).

**SERVICE****WARNING**

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1. Clean all parts with dry cleaning solvent and dry thoroughly with rags.
2. Clean packing grooves thoroughly with detergent and hot water.
3. Inspect all mechanical parts for cracks, dents, breaks, and wear. Replace the component if unserviceable.

**ASSEMBLY**

1. Lubricate new o-ring (9) with silicone compound. Position o-ring (9) into the packing groove located on the tank fitting.
2. Position drain cover plate (3) on the tank fitting, and align the fastening holes.
3. Install drain cover plate (3) to the tank fitting with screws (7) and washers (8), hand tightening screws (7) and washers (8).
4. Attach the S-hook of chain assembly (4) under one screw (7) head. Torque all screws (7) to 30 in-lbs (3.41 N•m).
5. Apply sealing compound or anti-seize tape to drain plug screw (5) threads.
6. Attach chain assembly (4) to drain plug (6), drain plug screw (5), and drain cover plate (3).
7. Screw drain hose (2) clockwise until firmly engaged in drain cover plate (3).
8. Screw gate valve (1) clockwise until firmly engaged with drain hose (2).

**END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE,  
10,000 AND 20,000 GALLON  
DRAIN FITTING ASSEMBLY (MODELS BA91-141 and BA91-140)  
SERVICE AND REPAIR**

---

**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)  
Torque Wrench (in-lb)  
(Item 2, WP 0033 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)

**Materials/Parts**

Antiseize Tape  
(Item 7, WP 0040 00)  
Detergent  
(Item 3, WP 0040 00)  
Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)  
Sealing Compound  
(Item 8, WP 0040 00)  
Silicone Compound  
(Item 9, WP 0040 00)

**Mandatory Replacement Parts**

O-Ring  
(Item 15, WP 0042 00)

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**DISASSEMBLY**

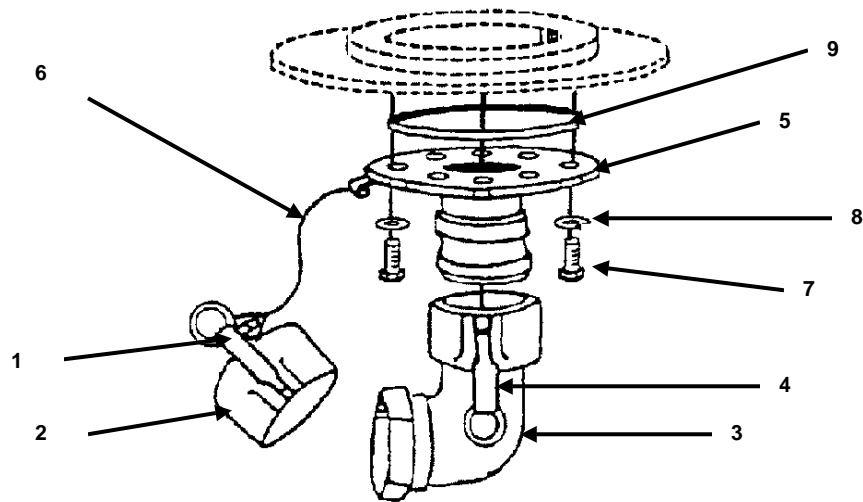
1. Pull outward on cam-lever arms (1) of dust cap (2).
2. Remove dust cap (2) from female quick-disconnect coupling (3).
3. Pull outward on cam-lever arms (4) of female quick-disconnect coupling (3).
4. Remove female quick-disconnect coupling (3) from flanged adapter (5).
5. Remove chain assembly (6) from flanged adapter (5).
6. Remove eight screws (7) and washers (8) from flanged adapter (5) and tank fitting.
7. Remove flanged adapter (5) and O-ring (9). Discard O-ring (9).

**SERVICE****WARNING**

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1. Clean all parts with dry cleaning solvent and dry thoroughly with rags.

2. Clean packing groove thoroughly with detergent and hot water.
3. Inspect all mechanical parts for cracks, dents, breaks, and wear. Replace the component if unserviceable.



#### ASSEMBLY

1. Attach chain assembly (6) to flanged adapter (5).
2. Apply sealing compound or anti-seize tape to screws (7) threads.
3. Lubricate new O-ring (9) with silicone compound. Position O-ring (9) into groove on the tank fitting.
4. Position flanged adapter (5) on the tank fitting, and align the fastening holes.
5. Install flanged adapter (5) to the tank fitting with screws (7) and washers (8).
6. Torque screws (7) to 30 in-lbs (3.41 N•m).
7. Connect female quick-disconnect coupling (3) to flanged adapter (5), pushing cam-lever arms (4) in on female quick-disconnect coupling (3).
8. Install dust cap (2) on female quick-disconnect (3) and push in on cam-lever arms (1).

#### END OF WORK PACKAGE

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
TANK ASSEMBLY  
SERVICE**

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**INITIAL SETUP****Tools**

Tool Kit General Mechanics  
(Item 1, WP 0033 00)

**Materials/Parts**

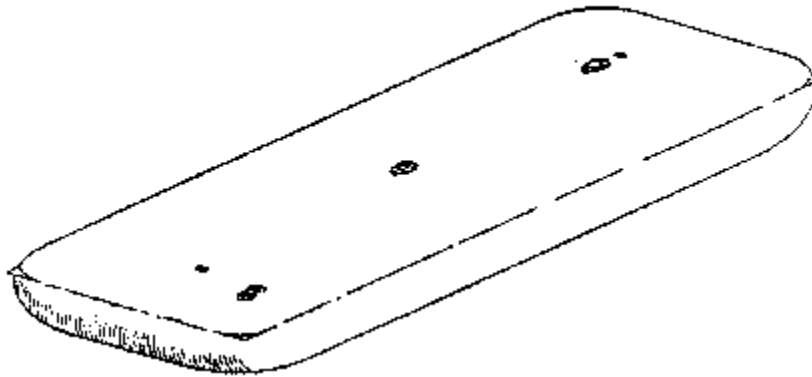
Detergent  
(Item 3, WP 0040 00)  
Dry Cleaning Solvent  
(Item 4, WP 0040 00)  
Rags, Wiping  
(Item 6, WP 0040 00)

**Equipment Condition**

Fuel tank drained  
(WP 0005 00)  
Filler/Discharge hose assembly  
disconnected  
(WP 0022 00)

**REMOVAL**

1. Remove the vent and pipe assembly from the vent fitting (WP 0026 00).
2. Remove the filler/discharge assemblies (WP 0027 00).
3. Remove the drain fitting assembly (WP 0028 00 or WP 0029 00).

**SERVICE****WARNING**

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1. Clean all mechanical parts with dry cleaning solvent and dry thoroughly with rags.



2. Clean the tank exterior with detergent and hot water.
3. Inspect all mechanical parts for cracks, dents, breaks, and wear. Replace the component if unserviceable.

## **INSTALLATION**

### **NOTE**

Prior to the installation of fuel tank assemblies, the drain end of the tank will unroll first.

1. Unroll the tank and unfold the sides, using tank handles to position the tank.
2. Install the drain fitting assemblies (WP 0028 00 or WP 0029 00).
3. Install the vent and pipe assembly (WP 0026 00).
4. Install the filler/discharge assemblies (WP 0027 00).

## **END OF WORK PACKAGE**

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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANKS, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
PREPARATION FOR STORAGE OR SHIPMENT**

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## **PREPARATION FOR STORAGE OR SHIPMENT**

### **WARNING**

Sludge that accumulates at the bottom of the tank gives off toxic and explosive vapors. Inhaling these vapors can cause lead poisoning. When cleaning the fuel tanks, provide ample ventilation to dissipate harmful fumes.

Always wear protective goggles, a breathing apparatus, and other protective gear when cleaning the tank interior. Fuel vapors are toxic and can damage eyes, skin, and lungs.

Fuel vapors are extremely flammable. Exercise care to prevent sparks when working near or in the tank. Death or severe personal injury can result if safety precautions are not strictly observed.

### **CAUTION**

Always handle the tank carefully. Pad the components stored with the tank to avoid chafing during storage or transportation. Rough handling or careless storage can damage the tank.

### **NOTE**

Prior to storage the tank should be disassembled, purged of all residual fuel and fumes, cleaned, and preserved with all its components for future use.

1. Drain fuel from the tank (WP 0005 00).
2. Remove the drain hose assembly from the drain fitting and install the drain plug (WP 0028 00 or WP 0029 00).
3. Remove the filler/discharge elbows from the filler/discharge adapters (WP 0027 00).
4. Remove the vent and pipe assembly from the flanged adapter, and install the dust cap (WP 0026 00).
5. Inflate the tank with air and air-dry the tank for 24 hours.
6. Remove the filler/discharge assembly from the tank (WP 0027 00).
7. Flush the tank with detergent solution.
8. Remove the detergent solution from the tank with a shop vacuum.
9. Flush the tank with clear water.
10. Air-dry the tank with a blower until the tank is dry.
11. Apply technical talc (Item 10, WP 0040 00) to the tank interior.
12. Install the filler/discharge assembly on the tank (WP 0027 00).

13. Install the dust caps on the flanged adapters of the filler/discharge assemblies.
14. Brush off all debris clinging to the fabric material of the tank.
15. Apply technical talc (Item 10, WP 0040 00) to the tank exterior.
16. Fold the tank from the sides towards the middle.
17. Roll the tank from the end opposite the drain fitting.
18. Plug the exposed hose assembly openings with suitable, clean materials.

### **CRATING INSTRUCTIONS**

1. Make sure the tank has been properly folded (WP 0005 00).

### **CAUTION**

**Use care when packing the tank. The tank will be easily damaged by tools, packing box nails, or other sharp objects.**

2. The tank will be packed in a close-fitting box or container. When the tank is disassembled and refolded, it is to be replaced in the original box or container.
3. Each tank is provided with suitable packing around the tank to prevent the tank fabric from being damaged by contact with the inside of the box or container. When the tank is replaced in the original box or container, the packing material is replaced around the tank in the same manner as received.

### **ADMINISTRATIVE STORAGE**

1. 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 as determined by the directing authority. During the storage period, appropriate maintenance records will be kept.
2. Before placing the equipment in administrative storage, current preventive maintenance checks and services should be completed, shortcomings and deficiencies should be corrected, and all Modification Work Orders (MWO) should be applied.
3. 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. Refer to WP 0002 00 for ambient storage temperature range.

### **END OF WORK PACKAGE**

**CHAPTER 6**

**SUPPORTING INFORMATION**

**FOR**

**TANK, FUEL STORAGE, 3,000 GALLON,**

**10,000 GALLON, 20,000 GALLON, AND 50,000 GALLON**

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**OPERATOR AND UNIT MAINTENANCE  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK, FUEL STORAGE, 3,000,  
10,000, 20,000, AND 50,000 GALLON  
REFERENCES**

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**REFERENCES**

This work package lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual.

**TECHNICAL MANUALS**

|                |  |
|----------------|--|
| AR 700-138     | Army Logistics Readiness and Sustainability                        |
| AR 750-1       | Army Materiel Maintenance Policy and Retail Maintenance Operations |
| DA PAM 738-750 | The Army Maintenance Management Systems (TAMMS)                    |
| DA PAM 738-751 | Functional Users Manual for TAMMS-A                                |
| TM 750-244-3   | Procedures for Destruction of Equipment to Prevent Enemy Use       |

**FORMS**

|                |   |
|----------------|---|
| DA Form 2404   | Equipment Inspection and Maintenance Worksheet      |
| DA Form 2407   | Maintenance Request                                 |
| DA Form 2407-1 | Maintenance Request Continuation Sheet              |
| DA Form 2028   | Recommended Changes to Publications and Blank Forms |
| SF Form 368    | Product Quality Deficiency Report                   |

**FIELD MANUALS**

|                        |                                     |
|------------------------|-------------------------------------|
| FM 3-3, FM 3-4, FM 3-5 | Detailed Decontamination Procedures |
| FM 21-11               | First Aid                           |

**MISCELLANEOUS**

|            |   |
|------------|---|
| CTA 8-100  | Army Medical Dept. Expendable/Durable Items   |
| CTA 50-970 | Expendable/Durable Items (except medical, Class V repair parts, and heraldic items) |

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK, FUEL STORAGE, 3,000, 10,000,  
20,000, AND 50,000 GALLON TANKS  
MAINTENANCE ALLOCATION CHART**

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## **MAINTENANCE ALLOCATION CHART (MAC)**

### **The Army Maintenance System MAC**

This introduction provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army/Marine Corps Maintenance System concept.

The MAC (immediately following the introduction) 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 shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit – includes two sub-columns, C (operator/crew) and O (unit) maintenance.

Direct Support – includes an F sub-column.

General Support – includes an H sub-column.

Depot – includes a D sub-column.

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

### **Maintenance Functions**

Maintenance functions will be limited to and defined as follows:

1. 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.
2. Test - To verify serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with prescribed standards.
3. Service - Operations required periodically to keep an item in proper operating condition: e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or gases.
4. Adjust - To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
5. Align - To adjust specified variable elements of an item to bring out optimum or desired performance.
6. Calibrate - To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

7. 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 such a manner to allow the proper functioning of equipment or system.
8. Replace - To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the 3rd position code of the SMR code.
9. Repair - The application of maintenance services, including fault location/troubleshooting, removal/-installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.
10. 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 material maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
11. 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.

#### **Columns In The MAC Table 1.**

1. Column 1, Group Number, 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."
2. Column 2, Component/Assembly, contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.
3. Column 3, Maintenance Functions, lists the functions to be performed on the item listed in Column 2.
4. Column 4, Maintenance Level, specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as man-hours in whole hours or decimals) in the appropriate sub-column. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work-time figures will be shown for each level. The 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 time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC.
5. Column 5, Tools and Test Equipment, specifies, by code, required tool and test equipment requirements.
6. Column 6, Remarks, when applicable, contains a letter code, in alphabetical order.

#### **Explanation of Columns In Table 2. Tool and Test Equipment Requirements**

1. Column 1, Reference Code correlates with a code used in the MAC, Column 5.
2. Column 2, Maintenance Level is the lowest level of maintenance authorized to use the tool or test equipment.



3. Column 3, Nomenclature, names or identifies the tool or test equipment.
4. Column 4, National Stock Number of the tool or test equipment.
5. Column 5, Tool Number is the manufacturer's part number, model number, or type number.

**Explanation of Columns in Table 3. Remarks**

1. Column 1, Remarks Code is recorded in Column 6 of the MAC.
2. Column 2, Remarks, lists information pertinent to the maintenance function being performed as indicated in the MAC.



**Table 1. MAC for 3,000 Gallon, 10,000 Gallon, 20,000 Gallon, 50,000 Gallon  
Collapsible Fabric Tank, Fuel**

| (1)<br>Group<br>Number | (2)<br>Component/<br>Assembly                  | (3)<br>Maint.<br>Function               | (4)<br>Maintenance Level |                          |    |    |       | (5)<br>Tools and<br>Equipment | (6)<br>Remarks |
|------------------------|--|---|--------------------------|--------------------------|----|----|-------|-------------------------------|----------------|
|                        |  |   | Unit                     |                          | DS | GS | Depot |                               |                |
|                        |  |   | C                        | O                        | F  | H  | D     |                               |                |
| 00                     | TANK,<br>FABRIC,<br>COLLAP-<br>SIBLE, FUEL     |   |                          |                          |    |    |       |                               |                |
| 01                     | VALVE<br>ASSY 4 IN.<br>FILLER AND<br>DISCHARGE | Inspect<br>Service<br>Replace<br>Repair | 0.1<br>0.4               | 0.1<br>0.8<br>0.2<br>0.8 |    |    |       | 1, 2, 3<br>1, 2, 3            | A<br><br>B     |
| 0101                   | VALVE,<br>GATE, 4 IN.                          | Inspect<br>Service<br>Replace<br>Repair | 0.1                      | 0.1<br>0.5<br>0.3<br>0.5 |    |    |       | 1, 2, 3<br>1, 2, 3            |                |
| 0101                   | VALVE,<br>BUTTERFLY                            | Inspect<br>Service<br>Replace<br>Repair | 0.1                      | 1.0<br>0.5<br>0.3<br>0.5 |    |    |       |                               |                |
| 0101                   | VALVE,<br>BALL                                 | Inspect<br>Replace                      | 0.1                      | 0.1                      |    |    |       | 1, 2, 3                       |                |
| 02                     | HOSE<br>ASSY,<br>FILLER AND<br>DISCHARGE       | Inspect<br>Service<br>Replace<br>Repair | 0.1<br>0.2<br>0.1        | 0.1<br>0.2<br>0.2        |    |    |       |                               |                |
| 03                     | VALVE,<br>GATE 1/2 IN.<br>DRAIN                | Inspect<br>Service<br>Replace<br>Repair | 0.1<br>0.1               | 0.1<br>0.4<br>0.2<br>0.4 |    |    |       |                               | A<br><br>B     |
| 03                     | VALVE,<br>BALL<br>2 IN. DRAIN                  | Inspect<br>Service<br>Replace<br>Repair | 0.1                      | 0.1<br>0.4<br>0.2<br>0.4 |    |    |       |                               |                |
| 04                     | HOSE<br>ASSY,<br>DRAIN                         | Inspect<br>Service<br>Replace           | 0.1                      | 0.2<br>0.2               |    |    |       | 1                             |                |

**Table 1. MAC for 3,000 Gallon, 10,000 Gallon, 20,000 Gallon, 50,000 Gallon Collapsible Fabric Tank, Fuel (cont.)**

| (1)<br>Group<br>Number | (2)<br>Component/<br>Assembly                   | (3)<br>Maint.<br>Function               | (4)<br>Maintenance Level |                          |    |    |       | (5)<br>Tools and<br>Equipment | (6)<br>Remarks |
|------------------------|---|---|--------------------------|--------------------------|----|----|-------|-------------------------------|----------------|
|                        |   |   | Unit                     |                          | DS | GS | Depot |                               |                |
|                        |   |   | C                        | O                        | F  | H  | D     |                               |                |
| 05                     | VENT AND<br>PIPE ASSY                           | Inspect<br>Service<br>Replace<br>Repair | 0.1<br>0.4               | 0.1<br>0.8<br>0.2<br>0.8 |    |    |       | 1                             | A<br>B         |
| 0501                   | CAP AND<br>FLAME<br>ARRESTOR<br>ASSY,<br>RELIEF | Inspect<br>Service<br>Replace<br>Repair | 0.1                      | 0.1<br>0.2<br>0.2<br>0.2 |    |    |       | 2                             | A              |
| 0502                   | PIPE ASSY,<br>VENT                              | Inspect<br>Service<br>Replace<br>Repair | 0.1<br>0.2               | 0.1<br>0.2<br>0.2<br>0.2 |    |    |       | 1                             | A<br>B         |
| 06                     | ASSY,<br>FILLER AND<br>DISCHARGE                | Inspect<br>Service<br>Repair            | 0.1<br>0.4               | 0.1<br>0.8<br>0.8        |    |    |       | 1, 2, 3                       | A<br>B         |
| 07                     | FITTING<br>ASSY,<br>DRAIN                       | Inspect<br>Service<br>Repair            | 0.1                      | 1.0<br>0.5<br>0.5        |    |    |       | 1, 2, 3                       | A              |
| 08                     | TANK  | Inspect<br>Service<br>Replace<br>Repair | 0.5<br>0.5               | 1.0                      |    |    |       | 1                             | C              |
| 09                     | REPAIR<br>ITEMS,<br>EMER-<br>GENCY              | Inspect<br>Replace                      | 0.1<br>0.1               |                          |    |    |       |                               |                |

**Table 2. Tools and Test Equipment for 3,000, 10,000 Gallon, 20,000 Gallon, 50,000 Gallon Collapsible Fabric Tank, Fuel**

| <b>Tool or Test Equipment Ref Code</b> | <b>Maintenance Level</b> | <b>Nomenclature</b>                     | <b>National Stock Number</b> | <b>Tool Number</b>         |
|--|--------------------------|---|------------------------------|----------------------------|
| 1                                      | O                        | Tool Kit, General Mechanics: Automotive | 5180-00-177-7033             | (50980) SC5180-90-CL-N26   |
| 2                                      | O                        | Torque Wrench (inch-pounds)             | 5120-01-075-2597             | (80204) B107.14M TY1CLBST3 |
| 3                                      | O                        | Torque Wrench (foot-pounds)             | 5120-00-242-3264             | (80204) B107.14M TY1CLBST3 |

| <b>Remarks Code</b> | <b>Remarks</b>   |
|---------------------|--|
| A                   | Operator inspection occurs with assembly in tact. Unit level inspection occurs after the assembly has been disassembled and cleaned. |
| B                   | Operator repair is limited to replacement of gaskets on quick-disconnect couplings.  |
| C                   | Operator repair is limited to use of the clamps and plugs included with the emergency repair items.                                  |

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK, FUEL STORAGE, 3,000, 10,000,  
20,000, AND 50,000 GALLON  
REPAIR PARTS AND SPECIAL TOOLS LIST**

---

**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 unit, maintenance of the Tank. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

**GENERAL**

In addition to the Introduction work package, this RPSTL is divided into the following work packages:

1. **Repair Parts List Work Packages.** Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include 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 in FIG. BULK at the end of the work packages. Repair parts kits are listed separately in their own functional group and work package. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.
2. **Special Tools List Work Packages.** Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII shall not be listed.
3. **Cross-Reference Indexes Work Packages.** There are two cross-reference indexed work packages in this RPSTL: the National Stock Number (NSN) Index work package and the Part Number (P/N) Index work package. The National Stock Number Index work package refers to the figure and item number. The Part Number Index work package refers you to the figure and item number.

**EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES**

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR Code (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:

| <u>Source<br/>Code</u>                                      | <u>Maintenance<br/>Code</u>   | <u>Recoverability<br/>Code</u>  |
|---|---|---|
| <u>xx</u>   | <u>xx</u>   | <u>xx</u>   |
| 1 <sup>st</sup> two<br>positions:<br>How to get an<br>item. | 3 <sup>rd</sup> position:<br>Who can<br>install, replace<br>or use the item.<br>the item. | 4 <sup>th</sup> position:<br>Who can do<br>complete<br>repair* on<br>items.                     |
|   |   | 5 <sup>th</sup> position:<br>Who determines<br>disposition action<br>on unserviceable<br>items. |

\*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.

Source Code. The source code tells how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow.

| Source Code   | Application/Explanation   |
|---|---|
| PA<br>PB<br>PC<br>PD<br>PE<br>PF<br>PG  | Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the level indicated by the code entered in the 3rd position of the SMR code.   |
|   | <b>NOTE</b><br>Items coded PC are subject to deterioration.   |
| KD<br>KF<br>KB  | Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.   |
| MO-Made at unit/<br>AVUM level<br>MF-Made at DS/<br>AVIM level<br>MH-Made at GS<br>level<br>ML-Made at SRA<br>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 P/N in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized by the 3 <sup>rd</sup> position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance. |
| AO-Assembled by<br>unit/AVUM level<br>AF-Assembled by<br>DS/AVIM level<br>AH-Assembled by<br>GS level<br>AL-Assembled by<br>SRA<br>AD-Assembled by<br>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 of the SMR code, authorizes replacement of the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.                             |
| XA  | Do not requisition an "XA" coded item. Order the next higher assembly. (Refer to the NOTE on page 3.)   |
| XB  | If an item is not available from salvage, order it using the CAGEC and P/N.   |
| XC  | Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's P/N.  |
| XD  | Item is not stocked. Order an XD-coded item through normal supply channels using the CAGEC and P/N 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 items source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

**Maintenance Code.** Maintenance codes tell 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:

**Third Position.** The maintenance code entered in the third position tells 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.

| <b><u>Maintenance Code</u></b> | <b><u>Application/Explanation</u></b>                                  |
|--------------------------------|--|
| 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.                           |

**Fourth Position.** 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 (perform all authorized repair functions).

**NOTE**

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

| <b><u>Maintenance Code</u></b> | <b><u>Application/Explanation</u></b>   |
|--------------------------------|---|
| 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 maintenance of a "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level. |

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:

| <u>Recoverability Codes</u> | <u>Application/Explanation</u>  |
|-----------------------------|---|
| Z --                        | Non-reparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR Code.  |
| O --                        | Reparable item. When uneconomically reparable, condemn and dispose of the item at the unit level.   |
| F --                        | Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support 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 are 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 (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions. |

NSN (Column (3)). The NSN for the item is listed in this column.

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a five-digit code, which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

PART NUMBER (Column (5)). 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 using an NSN to requisition an item, the item received may have a different P/N from the number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name and, when required, a minimum description to identify the item.
2. P/Ns of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.
3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.
4. The statement END OF FIGURE appears just below the last item description in Column (6) for a given figure in both the repair parts list and special tools list work packages.

QTY (Column (7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakdown 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 quantity may change from application to application.

## EXPLANATION OF CROSS-REFERENCE INDEXES, WORK PACKAGES FORMAT AND COLUMNS

### 1. National Stock Number (NSN) Index Work Package.

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.

NSN  
 (e.g., 5385-01-574-1476)  
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list work packages.

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.

2. Part Number (P/N) Index Work Package. P/Ns in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations 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).

PART NUMBER Column. Indicates the P/N assigned to the item.

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages.

ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

## SPECIAL INFORMATION

UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as "UOC:..." in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models. Identification of the UOC's used in the RPSTL are:

| <u>Code</u> | <u>Used On</u>                      |
|-------------|-------------------------------------|
| ECY         | 3,000 Gallon, Model MIL-T-52983B    |
| FNR         | 3,000 Gallon, Model WTM3KF          |
| EQB         | 10,000 Gallon, Model FCE574-81-1-A  |
| EQC         | 10,000 Gallon, Model SC5430-97CLE01 |
| FCN         | 10,000 Gallon, Model BA91-141       |
| FMD         | 10,000 Gallon, Model BA91-141A      |
| ELS         | 20,000 Gallon, Model BA92-162       |
| FCM         | 20,000 Gallon, Model BA91-140       |
| FMC         | 20,000 Gallon, Model BA91-140A      |
| EDD         | 50,000 Gallon, Model PD52983-50     |
| EDC         | 50,000 Gallon, Model M52983-50      |

Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in this manual.

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 NSN / P/N index work packages and the bulk material list in the repair parts list work package.

Illustrations List. The illustrations in this RPSTL contain unit authorized items.

## **HOW TO LOCATE REPAIR PARTS.**

### **1. When NSNs or P/Ns Are Not Known.**

First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.

Second. Find the figure covering the functional group or the subfunctional group to which the item belongs.

Third. Identify the item on the figure and note the number(s).

Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

### **2. When the NSN Is Known.**

First. If the NSN is available, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

Second. Turn to the figure and locate the item number. Verify that the item is the one being looked for.

### **3. When the P/N Is Known.**

First. If the P/N is available and not the NSN, look in the PART NUMBER column of the P/N index work package. Identify the figure and item number.

Second. Look up the item on the figure in the applicable repair parts list work package.

## **END OF WORK PACKAGE**



UNIT MAINTENANCE

COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

FILLER/DISCHARGE VALVE ASSEMBLY (GATE VALVE)

REPAIR PARTS LIST

1  
2 - 17

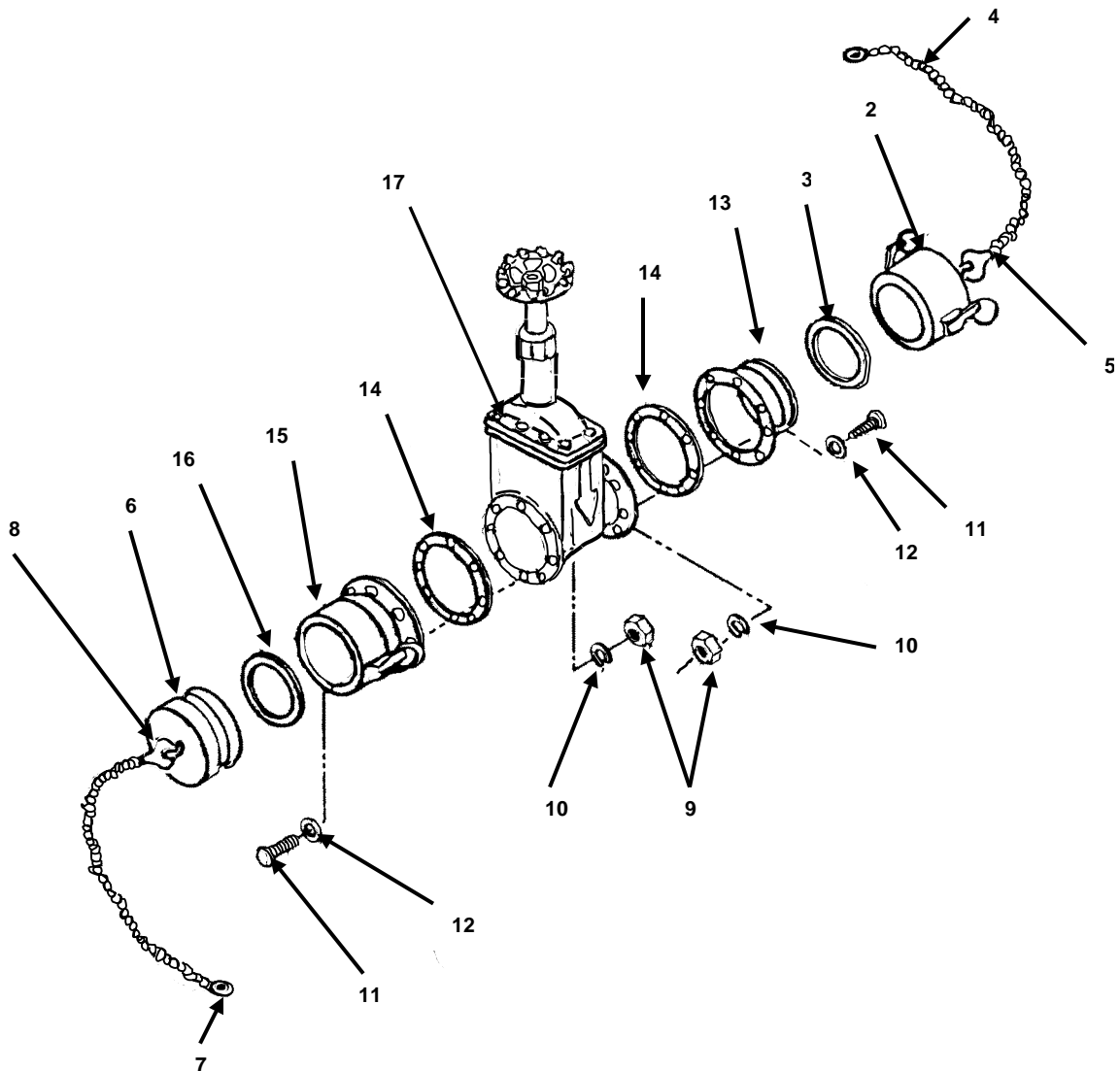


Figure 1. Filler/Discharge Gate Valve Assembly

| (1)      | (2)      | (3)              | (4)   | (5)         | (6)   | (7) |
|----------|----------|------------------|-------|-------------|---|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER | DESCRIPTION/USABLE ON CODE (UOC)  | QTY |
|          |          |                  |       |             | GROUP 00 TANK, FABRIC COLLAPSIBLE   |     |
|          |          |                  |       |             | GROUP 01 FILLER/DISCHARGE VALVE ASSEMBLY  |     |
|          |          |                  |       |             | FIG. 1 FILLER/DISCHARGE VALVE ASSEMBLY (GATE VALVE)   |     |
| 1        | PBOOO    | 4820-01-262-5079 | 00333 | 50610130    | GATE VALVE, ASSEMBLY<br>FILLER AND DISCHARGE ..... 1<br>UOC: ECY, FNR, EDC, EDD,<br>ELS, EQB, EQC     |     |
| 2        | PBOOZ    | 4720-00-640-6156 | 96906 | MS27028-17  | .CAP, QUICK-DISCONNECT 4 IN. .... 1<br>UOC: EDC, ELS, EDD, EQB, EQC                                   |     |
| 2        | PBOOZ    | 4730-00-929-0787 | 96906 | MS27028-15  | .CAP, QUICK-DISCONNECT 3K<br>TANK ..... 1<br>UOC: ECY, FNR  |     |
| 3        | PBOZZ    | 5330-00-899-4509 | 96906 | MS27030-9   | ..GASKET HALF, 4 IN, VALVE<br>ASSEMBLY ..... 1<br>UOC: EDC, ELS, EDD, EQB, EQC                        |     |
| 3        | PBOZZ    | 5330-00-088-9166 | 96906 | MS27030-8   | ..GASKET ..... 1<br>UOC: ECY, FNR   |     |
| 4        | PAOZZ    | 4010-00-360-0596 | 81718 | H06683M     | ..CHAIN ASSEMBLY, SING ..... 1<br>12 IN, DUST CAP<br>UOC: ECY, FNR, EDC, ELS,<br>EDD, EQB, EQC        |     |
| 5        | XDOZZ    |                  | 01976 | 1SK         | ..RING, KEY DUST CAP ..... 2<br>UOC: ECY, FNR, EDC, ELS,<br>EDD, EQB, EQC                             |     |
| 6        | PBOOZ    | 4730-00-640-6188 | 96906 | MS27029-17  | .PLUG, QUICK DISCONNECT ..... 1<br>VALVE ASSY<br>UOC: EDC, ELS, EDD, EQB, EQC                         |     |
| 6        | PBOOZ    | 4730-00-929-0790 | 96906 | MS27029-15  | .PLUG, QUICK DISCONNECT ..... 1<br>3K TANK<br>UOC: ECY, FNR   |     |
| 7        | PBOZZ    | 4010-00-360-0596 | 81718 | H06683M     | ..CHAIN ASSEMBLY, SING ..... 1<br>12 IN. DUST PLUG<br>UOC: ECY, FNR, EDC, ELS,<br>EDD, EQB, EQC       |     |
| 8        | XDOZZ    |                  | 01976 | 1SK         | ..RING, KEY DUST PLUG ..... 2<br>UOC: ECY, FNR, EDC, ELS,<br>EDD, EQB, EQC                            |     |
| 9        | PBOZZ    | 5310-00-732-0558 | 96906 | MS51967-8   | ..NUT, PLAIN, HEXAGON ..... 16<br>3/8-16, VALVE ASSEMBLY<br>UOC: ECY, FNR, EDC, ELS,<br>EDD, EQB, EQC |     |

| (1)      | (2)      | (3)              | (4)   | (5)                    | (6)   | (7) |
|----------|----------|------------------|-------|------------------------|---|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER            | DESCRIPTION/USABLE ON CODE (UOC)  | QTY |
| 10       | PBOZZ    | 5310-00-637-9541 | 96906 | MS35338-46             | .WASHER, LOCK SPLIT, 3/8 IN, .....<br>ID, VALVE ASSEMBLY<br>UOC: ECY, FNR, EDC, ELS,<br>EDD, EQB, EQC | 16  |
| 11       | PBOZZ    | 5305-00-725-2317 | 80204 | B1821BH038<br>C150N    | .SCREW, CAP, HEXAGON .....<br>H 3/8-16 VALVE ASSY<br>UOC: ECY, FNR, EDC, ELS,<br>EDD, EQB, EQC        | 16  |
| 12       | PBOZZ    | 5310-00-087-7493 | 96906 | MS27183-13             | .WASHER, FLAT 3/8 IN, .....<br>VALVE ASSY<br>UOC: ECY, FNR, EDC, ELS,<br>EDD, EQB, EQC                | 16  |
| 13       | PBOZZ    | 4730-00-840-5347 | 96906 | MS27023-17             | .COUPLING HALF, QUICK .....<br>ADAPTER, FLANGED, MALE<br>UOC: EDC, ELS, EDD, EQB, EQC                 | 1   |
| 13       | PBOZZ    | 4730-00-889-2380 | 96906 | MS27023-15             | .COUPLING HALF, QUICK 3K .....<br>TANK ILC DOVER<br>UOC: ECY, FNR                                     | 1   |
| 14       | PBOZZ    | 5330-01-262-5120 | 05476 | FCC-62398/<br>50609735 | .GASKET, VALVE ASSEMBLY .....<br>UOC: EDC, ELS, EDD, EQB, EQC   | 2   |
| 14       | PBOZZ    | 5330-01-280-9388 | 74897 | 66108-L                | .GASKET .....<br>UOC: ECY, FNR  | 2   |
| 15       | PBOZZ    | 4730-00-840-5348 | 96906 | MS27027-17             | .COUPLING HALF, QUICK .....<br>DISCONNECT, FEMALE<br>UOC: EDC, ELS, EDD,<br>EQB, EQC                  | 1   |
| 15       | PBOZZ    | 4730-00-889-2378 | 96906 | MS27027-15             | .COUPLING HALF, QUICK .....<br>3K TANK<br>UOC: ECY, FNR   | 1   |
| 16       | PBOZZ    | 5330-00-899-4509 | 96906 | MS27030-9              | ..GASKET HALF, 4 IN .....<br>VALVE ASSEMBLY<br>UOC: EDC, ELS, EDD, EQB, EQC                           | 1   |
| 16       | PBOZZ    | 5330-00-088-9166 | 96906 | MS27030-8              | ..GASKET .....<br>UOC: ECY, FNR   | 1   |
| 17       | XDOOF    | 4820-01-159-0439 | 76364 | 5551-001 4IN           | .VALVE GATE .....<br>UOC: ECY, FNR  | 1   |
| 17       | XDOOF    | 4820-01-189-2809 | 76364 | 235RF-0200AV           | .VALVE, GATE VALVE ASSY .....<br>UOC: EDC, ELS, EDD, EQB, EQC   | 1   |

END OF FIGURE





UNIT MAINTENANCE

COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

FILLER/DISCHARGE VALVE ASSEMBLY (BUTTERFLY VALVE)

REPAIR PARTS LIST

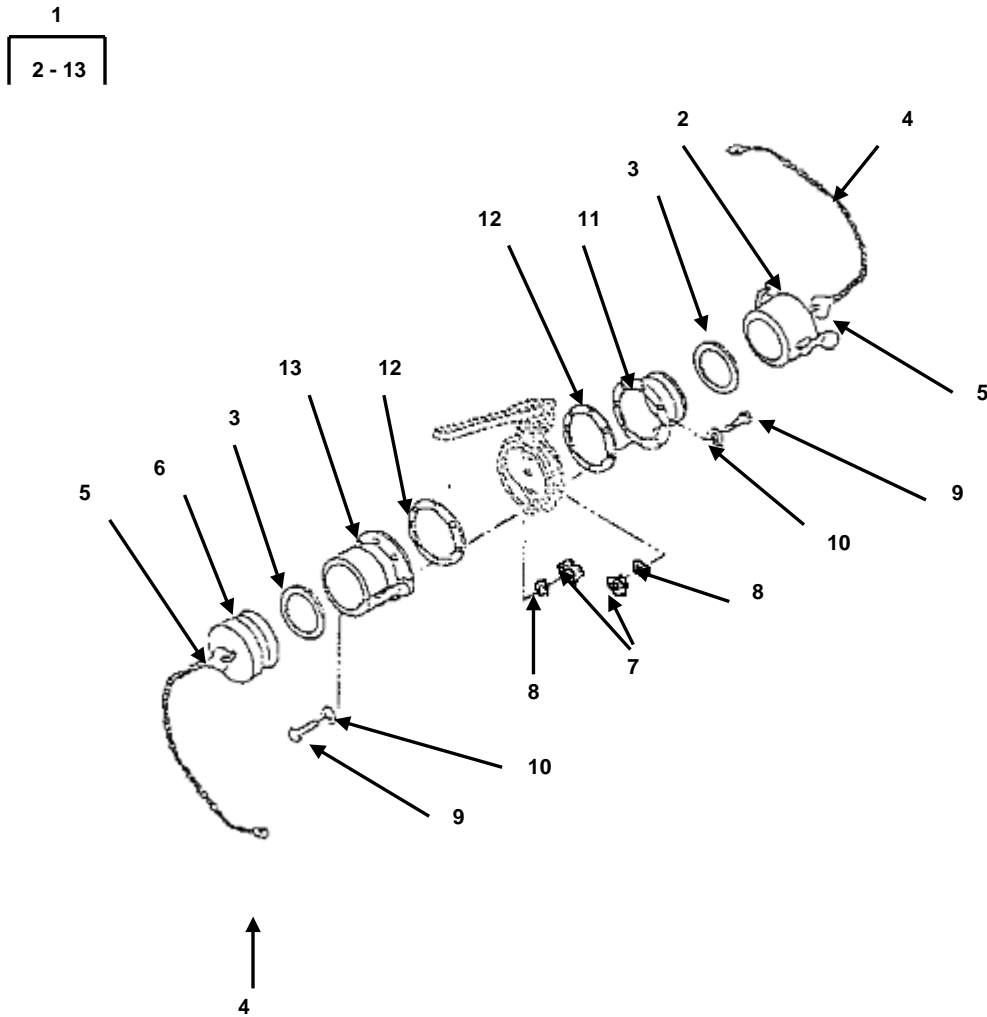


Figure 2. Filler/Discharge Valve Assembly (Butterfly Valve)

| (1)      | (2)      | (3)              | (4)   | (5)                    | (6)  | (7) |
|----------|----------|------------------|-------|------------------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER            | DESCRIPTION/USABLE ON CODE (UOC)   | QTY |
|          |          |                  |       |                        | GROUP 01 VALVE ASSEMBLY,<br>FILLER/DISCHARGE                               |     |
|          |          |                  |       |                        | FIG. 2 FILLER/DISCHARGE VALVE<br>ASSEMBLY (BUTTERFLY VALVE)                |     |
| 1        | A0000    |                  | 66618 | C0317-4NA              | BUTTERFLY VALVE ASSEMBLY, ..... 1<br>FILLER AND DISCHARGE<br>UOC: FCM, FCN |     |
| 2        | PBOOZ    | 4730-00-640-6156 | 96906 | MS27028-17             | .CAP, QUICK DISCONNECT 4 IN. .... 1<br>UOC: FCM, FCN                       |     |
| 3        | PCOZZ    | 5330-00-899-4509 | 96906 | MS27030-9              | ..GASKET ..... 2<br>UOC: FCM, FCN  |     |
| 4        | PAOZZ    | 4010-00-360-0596 | 81718 | H06683M                | ..CHAIN ASSEMBLY, SING, ..... 2<br>12 IN, DUST CAP<br>UOC: FCM, FCN        |     |
| 5        | XDOZZ    |                  | 01976 | 1SK                    | ..RING, KEY ..... 4<br>UOC: FCM, FCN                                       |     |
| 6        | PBOOZ    | 4730-00-640-6188 | 96906 | MS27029-17             | .PLUG, QUICK ..... 1<br>DISCONNECT 4 IN.<br>UOC: FCM, FCN                  |     |
| 7        | PBOZZ    | 5310-00-732-0558 | 96906 | MS51967-8              | .NUT, PLAIN HEXAGON 3/8-16 ..... 16<br>UOC: FCM, FCN                       |     |
| 8        | PAOZZ    | 5310-00-637-9541 | 96906 | MS35338-46             | .WASHER, LOCK SPLIT, ..... 16<br>3/8 INCH, ID<br>UOC: FCM, FCN             |     |
| 9        | PBOZZ    | 5305-01-325-8387 | 96906 | MS90725-64             | .SCREW, CAP, HEXAGON ..... 16<br>H 3/8-16 x 1 1/2<br>UOC: FCM, FCN         |     |
| 10       | PBOZZ    | 5310-00-087-7493 | 96906 | MS27183-13             | .WASHER, FLAT 3/8 IN. .... 16<br>UOC: FCM, FCN                             |     |
| 11       | PBOZZ    | 4730-00-840-5347 | 96906 | MS27023-17             | .COUPLING HALF, QUICK ..... 1<br>ADAPTER, FLANGED, MALE<br>UOC: FCM, FCN   |     |
| 12       | PBOZZ    | 5330-01-262-5120 | 05476 | FCC-62398/<br>50609735 | .GASKET ..... 2<br>UOC: FCM, FCN   |     |
| 13       | PBOZZ    | 4730-00-840-5348 | 96906 | MS27027-17             | .COUPLING HALF, QUICK FEMALE ..... 1<br>UOC: FCM, FCN                      |     |

END OF FIGURE

## UNIT MAINTENANCE

COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

FILLER/DISCHARGE VALVE ASSEMBLY (BALL VALVE)

## REPAIR PARTS LIST

1  
2 - 14

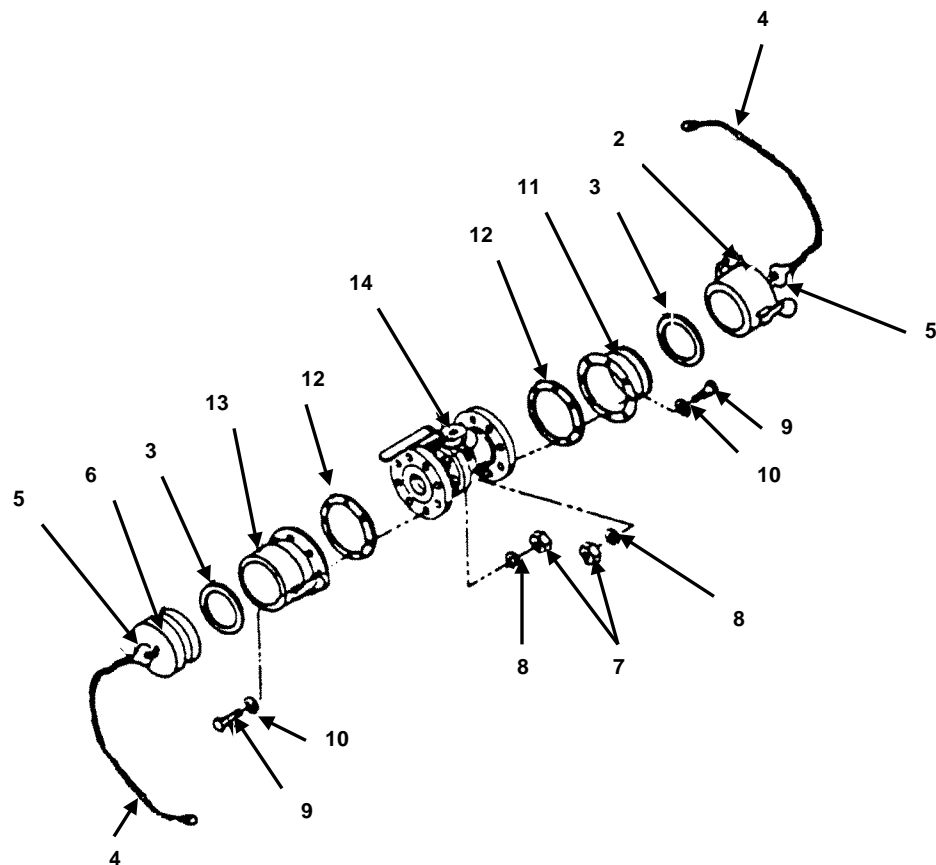


Figure 3. Filler/Discharge Valve Assembly (Ball Valve)

| (1)      | (2)      | (3)              | (4)   | (5)                    | (6)   | (7) |
|----------|----------|------------------|-------|------------------------|---|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER            | DESCRIPTION/USABLE ON CODE (UOC)  | QTY |
|          |          |                  |       |                        | GROUP 01 VALVE ASSEMBLY, FILLER/DISCHARGE                                   |     |
|          |          |                  |       |                        | FIG 3. FILLER/DISCHARGE VALVE ASSEMBLY (BALL VALVE)                         |     |
| 1        | A0000    |                  | 81349 | MIL-T-529<br>83F-BVA   | VALVE ASSEMBLY, BALL ..... 1<br>INCH, FILLER AND DISCHARGE<br>UOC: FMC, FMD |     |
| 2        | PBOOZ    | 4730-00-640-6156 | 96906 | MS27028-17             | .CAP, QUICK DISCONNECT 4 IN ..... 1<br>UOC: FMC, FMD                        |     |
| 3        | PCOZZ    | 5330-00-899-4509 | 96906 | MS27030-9              | ..GASKET ..... 2<br>UOC: FMC, FMD   |     |
| 4        | PAOZZ    | 4010-00-360-0596 | 81718 | H06683M                | ..CHAIN ASSEMBLY, SING 12 IN, ..... 2<br>DUST CAP<br>UOC: FMC, FMD          |     |
| 5        | XDOZZ    |                  | 01976 | 1SK                    | ..RING, KEY ..... 4<br>UOC: FMC, FMD  |     |
| 6        | PBOOZ    | 4730-00-640-6188 | 96906 | MS27029-17             | .PLUG, QUICK DISCONNED 4 IN..... 1<br>UOC: FMC, FMD                         |     |
| 7        | PAOZZ    | 5310-00-732-0558 | 96906 | MS51967-8              | .NUT, PLAIN, HEXAGON 3/8-16 ..... 16<br>UOC: FMC, FMD                       |     |
| 8        | PAOZZ    | 5310-00-637-9541 | 96906 | MS35338-46             | .WASHER, LOCK SPLIT, 3/8 IN, ID ..... 16<br>UOC: FMC, FMD                   |     |
| 9        | PAOZZ    | 5305-01-325-8387 | 96906 | MS90725-64             | .SCREW, CAP, HEXAGON ..... 16<br>H 3/8-16X1-1/2<br>UOC: FMC, FMD            |     |
| 10       | PAOZZ    | 5310-00-087-7493 | 96906 | MS27183-13             | .WASHER, FLAT 3/8 IN ..... 16<br>UOC: FMC, FMD                              |     |
| 11       | PBOZZ    | 4730-00-840-5347 | 96906 | MS27023-17             | .COUPLING HALF, QUICK ..... 1<br>ADAPTER, FLANGED, MALE<br>UOC: FMC, FMD    |     |
| 12       | PBOZZ    | 5330-01-262-5120 | 05476 | FCC-62398/<br>50609735 | .GASKET ..... 2<br>UOC: FMC, FMD  |     |
| 13       | PBOOZ    | 4730-00-840-5348 | 96906 | MS27027-17             | .COUPLING HALF, QUICK FEMALE ..... 1<br>UOC: FMC, FMD                       |     |
| 14       | XDOZZ    |                  | OA6K1 | 4IN-CS15-F             | .VALVE, BALL, 4 IN ..... 1<br>UOC: FMC, FMD                                 |     |

END OF FIGURE

UNIT MAINTENANCE

COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

GATE VALVE

REPAIR PARTS LIST

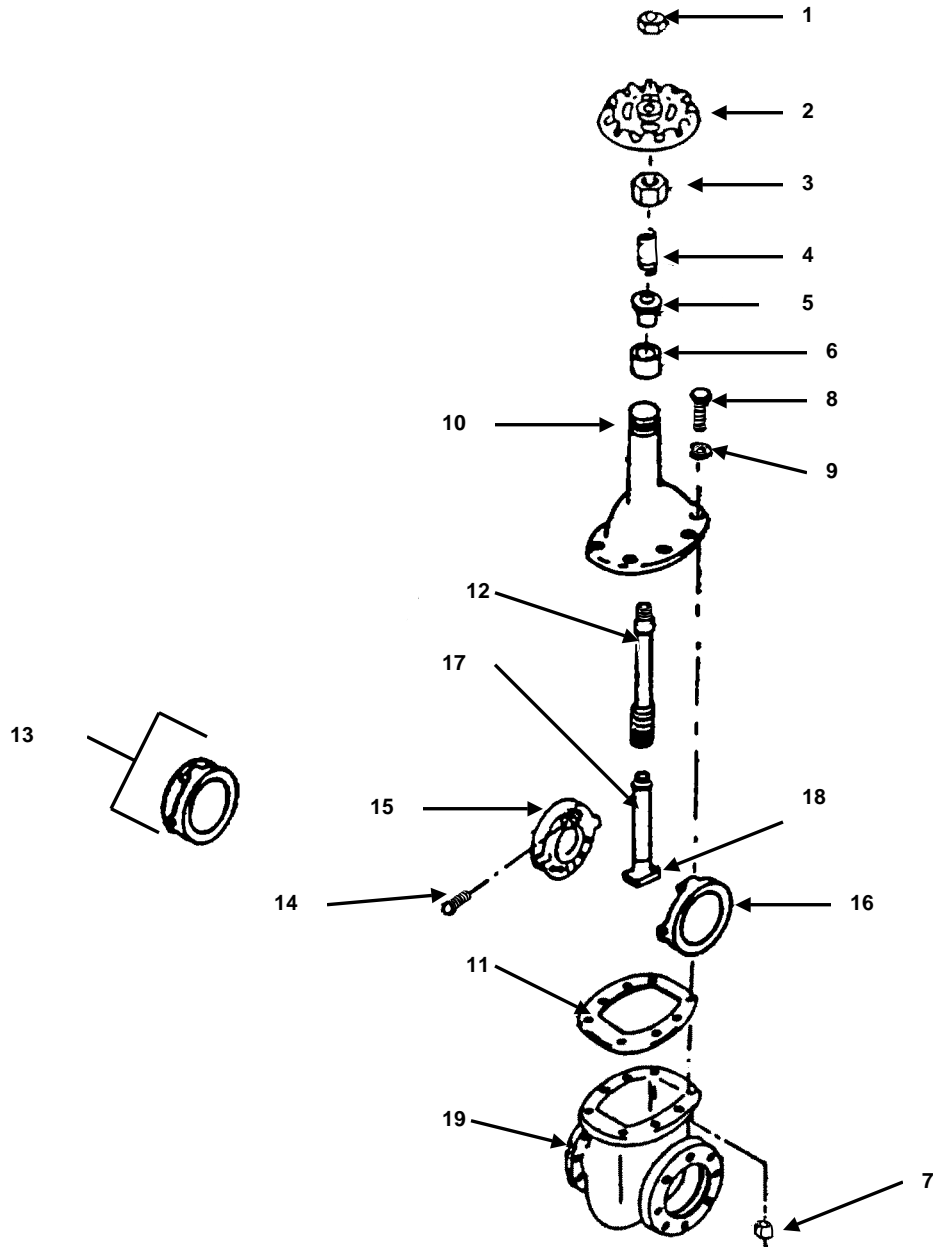


Figure 4. Gate Valve

| (1)      | (2)      | (3)              | (4)   | (5)          | (6)  | (7) |
|----------|----------|------------------|-------|--------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER  | DESCRIPTION/USABLE ON CODE (UOC)   | QTY |
|          |          |                  |       |              | GROUP 01 VALVE ASSEMBLY,<br>FILLER/DISCHARGE                               |     |
|          |          |                  |       |              | FIG. 4 GATE VALVE  |     |
|          | XDOOF    | 4820-01-189-2809 | 41592 | 235RF-0200AV | ..VALVE,GATE VALVE ASSEMBLY ..... 1<br>UOC: EDC, ELS, EDD                  |     |
|          | XDOOF    | 4820-01-159-0439 | 76364 | 5551-001 4IN | ..VALVE,GATE ..... 1<br>UOC: EDC   |     |
| 1        | PBOZZ    | 5310-01-262-1359 | 41592 | 235RF-02052N | ..NUT, PLAIN, HEXAGON GATE ..... 1<br>VALVE, 4 IN<br>UOC: EDC, ELS, EDD    |     |
| 1        | XDOZZ    | 5310-00-654-4537 | 76364 | 3116M        | ..NUT, PLAIN, HEXAGON 3 IN ..... 1<br>GATE VALVE<br>UOC: EDC               |     |
| 2        | XDOZZ    | 5340-01-381-1690 | 41592 | 235RF-02043A | ..HANDWHEEL, GATE VALVE, 4 IN ..... 1<br>UOC: EDC, ELS, EDD                |     |
| 2        | XDOZZ    | 5340-01-077-4942 | 76364 | 7699-K-C56   | ..HANDWHEEL, 3 IN GATE VALVE ..... 1<br>UOC: EDC                           |     |
| 3        | PAOZZ    | 5310-01-262-1337 | 41592 | 235RF-020721 | ..NUT, PACKING GATE VALVE, 4 IN..... 1<br>UOC: EDC, ELS, EDD               |     |
| 3        | XDOZZ    |                  | 76364 | 2864-L       | ..STUFF NUT 3 IN GATE VALVE ..... 1<br>UOC: EDC                            |     |
| 4        | PAOZZ    | 5360-01-262-1338 | 41592 | 235RF-02162S | ..SPRING, GLAND GATE VALVE, 4 IN ..... 1<br>UOC: EDC, ELS, EDD             |     |
| 4        | XDOZZ    |                  | 76364 | 70171-L      | ..GLAND, SPRING 3 IN GATE VALVE ..... 1<br>UOC: EDC                        |     |
| 5        | PAOZZ    | 5330-01-262-1363 | 41592 | 235RF-020621 | ..RETAINER, PACKING GATE ..... 1<br>VALVE, 4 IN.<br>UOC: EDC, ELS, EDD     |     |
| 5        | XDOZZ    | 4930-00-653-0407 | 76364 | 363-G        | ..GLAND FOLLOWER 3 IN GATE VALVE... 1<br>UOC: EDC                          |     |
| 6        | PAOZZ    | 5365-01-262-1339 | 41592 | 235RF-02082P | ..RING, PACKING GATE VALVE, 4 IN ..... 1<br>UOC: EDC, ELS, EDD             |     |
| 6        | XDOZZ    | 5330-00-889-5483 | 76364 | 6593-L       | ..PACKING, PREFORMED 3 IN VALVE ..... 1<br>UOC: EDC                        |     |
| 7        | PAOZZ    | 5310-01-262-1360 | 41592 | 235RF-02202N | ..NUT, PLAIN, HEXAGON GATE ..... 8<br>VALVE, 4 IN.<br>UOC: EDC, ELS, EDD   |     |
| 7        | XDOZZ    |                  | 76364 | 3198-B       | ..BONNET HEX NUT ..... 8<br>UOC: EDC                                       |     |
| 8        | PAOZZ    | 5305-01-262-1365 | 41592 | 235RF-02192S | ..SCREW, CAP, HEXAGON H ..... 8<br>GATE VALVE, 4 IN.<br>UOC: EDC, ELS, EDD |     |

| (1)      | (2)      | (3)              | (4)   | (5)          | (6)  | (7) |
|----------|----------|------------------|-------|--------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER  | DESCRIPTION/USABLE ON CODE (UOC)                             | QTY |
| 8        | PAOZZ    | 5305-01-271-7588 | 76364 | 4247-E       | ..SCREW, BONNET 3 K TANK .....8<br>ILC DOVER<br>UOC: EGY     |     |
| 9        | PAOZZ    | 5310-01-265-5044 | 41592 | 235RF-02212W | ..WASHER, LOCK GATE VALVE, 4 IN.....8<br>UOC: EDC, ELS       |     |
| 9        | XDOZZ    |                  | 76364 | 38084-3      | ..BONNET, LOCK WASHER .....8<br>3 IN GATE VALVE<br>UOC: EGY  |     |
| 10       | XDOZZ    |                  | 41592 | 235RF-0202MB | ..BONNET, VALVE .....1<br>UOC: EDC, ELS, EDD                 |     |
| 10       | XDOZZ    |                  | 76364 | 23194-L      | ..BONNET 3 IN GATE VALVE .....1<br>UOC: EGY                  |     |
| 11       | PAOZZ    | 5330-01-262-1340 | 41592 | 235RF-02092G | ..GASKET, VALVE BONNET .....1<br>UOC: EDC, ELS, EDD          |     |
| 11       | XDOZZ    |                  | 76364 | 66173-L      | ..GASKET 3IN 3 IN GATE VALVE.....1<br>UOC: EGY               |     |
| 12       | PBOZZ    | 4820-01-262-1341 | 41592 | 235RF-0203MS | ..STEM, VALVE .....1<br>UOC: EDC, ELS, EDD                   |     |
| 12       | XDOZZ    |                  | 76364 | 26264-L      | ..STEM VALVE GATE 3 IN .....1<br>UOC: EGY                    |     |
| 13       | PDOOZ    | 4820-01-262-1342 | 41592 | 235RF-0215MR | ..RING, SEAT GATE VALVE, 4 IN.....1<br>UOC: EDC, ELS, EDD    |     |
| 13       | XDOZZ    |                  | 76364 | 84168-L      | ..DISC ASSY .....1<br>UOC: EGY                               |     |
| 14       | PBOZZ    | 5305-01-262-1343 | 41592 | 235RF-02182S | ...SCREW, DISK GATE VALVE, 4 IN.....1<br>UOC: EDC, EDD, ELS  |     |
| 15       | PBOZZ    | 4820-01-262-1366 | 41592 | 235RF-0210MD | ...DISK, VALVE GATE VALVE, 4 IN .....1<br>UOC: EDC, ELS, EDD |     |
| 16       | PAOZZ    | 4820-01-262-5121 | 41592 | 235RF-0212MD | ...VALVE,GATE GATE VALVE, 4 IN .....1<br>UOC: EDC, ELS, EDD  |     |
| 17       | PBOZZ    | 4820-01-262-1344 | 41592 | 235RF-0217MR | ..DISK, VALVE GATE VALVE, 4 IN .....1<br>UOC: EDC, ELS, EDD  |     |
| 18       | XDOZZ    |                  | 76364 | 3042-L       | ..PULL, NUT .....1<br>UOC: EGY                               |     |
| 19       | XDOZZ    |                  | 41592 | 235RF-0201MB | ..BODY, VALVE 4 IN .....1<br>UOC: EDC, ELS, EDD              |     |
| 19       | XDOZZ    |                  | 76364 | 2093-7       | ..BODY, VALVE 3 IN .....1<br>UOC: EGY                        |     |

END OF FIGURE





UNIT MAINTENANCE

COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

BUTTERFLY VALVE

REPAIR PARTS LIST

1

2 - 19

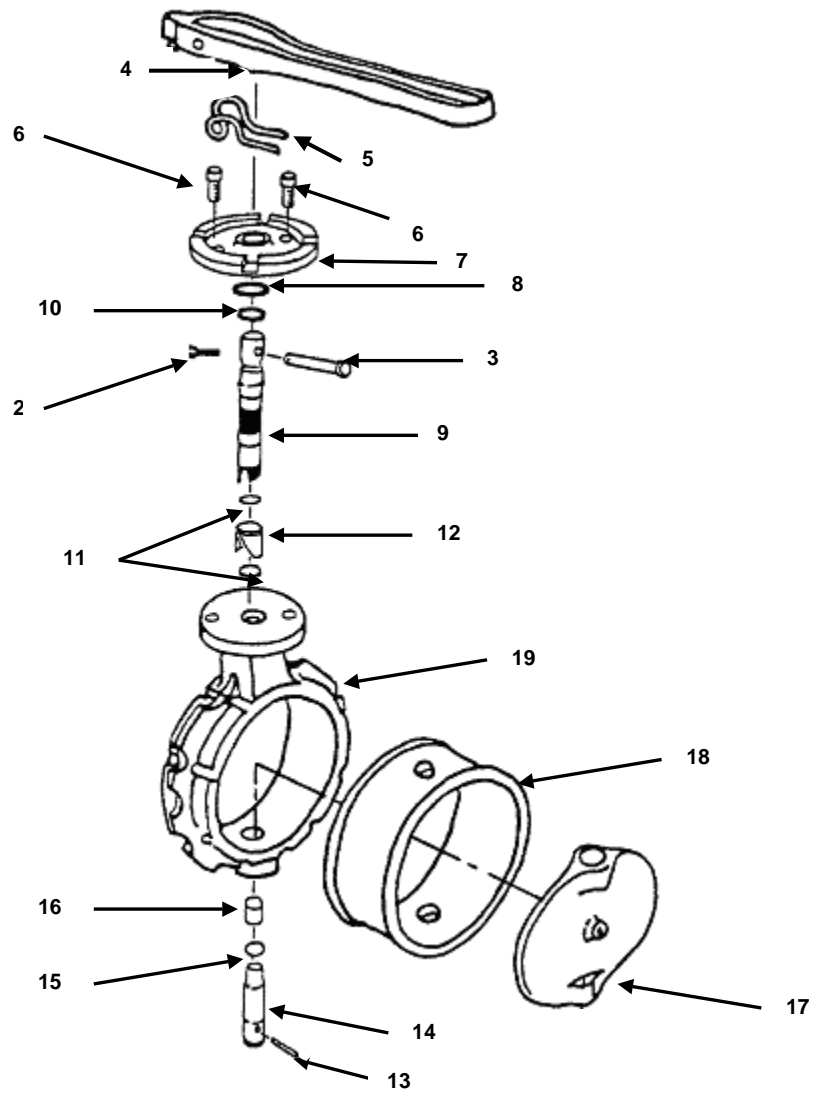


Figure 5. Butterfly Valve

| (1)      | (2)      | (3)              | (4)   | (5)         | (6)  | (7) |
|----------|----------|------------------|-------|-------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER | DESCRIPTION/USABLE ON CODE (UOC)   | QTY |
|          |          |                  |       |             | GROUP 01 VALVE ASSEMBLY,<br>FILLER/DISCHARGE                               |     |
|          |          |                  |       |             | FIG. 5 BUTTERFLY VALVE   |     |
| 1        | XBOOF    | 4820-01-090-0923 | 76364 | P-2860H-400 | VALVE, BUTTERFLY 4 INCH ..... 1<br>UOC: FCM, FCN                           |     |
| 2        | KFOZZ    |                  | 76364 | 7959-D      | .COTTER PIN, PART OF KIT ..... 1<br>P/N 8621-N-940<br>UOC: FCM, FCN        |     |
| 3        | KFOZZ    | 5315-01-073-8970 | 76364 | 5988-N      | .PIN, PART OF KIT P/N 8621-N-940 ..... 1<br>UOC: FCM, FCN                  |     |
| 4        | XBOZZ    | 5340-01-381-1621 | 76364 | P-8449      | .HANDLE, MANUAL CONTR ..... 1<br>BUTTERFLY VALVE<br>UOC: FCM, FCN          |     |
| 5        | PAOZZ    | 5342-01-077-3664 | 76364 | 70170-N     | .CLIP ..... 1<br>UOC: FCM, FCN   |     |
| 6        | XBOZZ    | 5305-01-382-5962 | 76364 | 42136-N     | .SCREW, CAP, SOCKET HEAD ..... 2<br>UOC: FCM, FCN                          |     |
| 7        | XBOZZ    | 4310-01-382-6532 | 76364 | 45199-N-660 | .PLATE, VALVE STOP ..... 1<br>UOC: FCM, FCN                                |     |
| 8        | PAOZZ    | 5330-01-381-2809 | 76364 | 6595-N      | .SEAL, PLAIN ENCASED ..... 1<br>UOC: FCM, FCN                              |     |
| 9        | KFOZZ    |                  | 76364 | 26462-N     | .TOP STEM, PART OF KIT ..... 1<br>P/N 8621-N-940<br>UOC: FCM, FCN          |     |
| 10       | KFOZZ    | 5330-01-073-5007 | 76364 | 66150-N     | .SEAL, VALVE, PART OF KIT ..... 1<br>P/N 8621-N-940<br>UOC: FCM, FCN       |     |
| 11       | KFOZZ    | 5331-01-076-9342 | 76364 | 6596-B      | .O-RING, PART OF KIT ..... 1<br>P/N 8621-N-940<br>UOC: FCM, FCN            |     |
| 12       | KFOZZ    |                  | 76364 | 7410-N      | .TOP BEARING SPLIT, PART OF ..... 1<br>KIT P/N 8621-N-940<br>UOC: FCM, FCN |     |
| 13       | KFOZZ    |                  | 76364 | 5996-R      | .SPRING PIN, BOTTOM PART ..... 1<br>OF KIT P/N 869-N-940<br>UOC: FCM, FCN  |     |
| 14       | KFOZZ    |                  | 76364 | 26399-N     | .BOTTOM STEM, PART OF KIT ..... 1<br>P/N 869-N-940<br>UOC: FCM, FCN        |     |
| 15       | KFOZZ    | 5331-01-076-9342 | 76364 | 6596-B      | .O-RING, PART OF KIT ..... 1<br>P/N 869-N-940<br>UOC: FCM, FCN             |     |

| (1)      | (2)      | (3)              | (4)   | (5)         | (6)  | (7) |
|----------|----------|------------------|-------|-------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER | DESCRIPTION/USABLE ON CODE (UOC)   | QTY |
| 16       | KFOZZ    |                  | 76364 | 7411-N      | .BOTTOM BEARING, PART OF .....<br>KIT P/N 869-N-940<br>UOC: FCM, FCN   | 1   |
| 17       | XBOZZ    |                  | 76364 | 38194-N     | .DISC .....<br>UOC: FCM, FCN   | 1   |
| 18       | XDOZZ    |                  | 76364 | X-7993-N    | .SLEEVE .....<br>UOC: FCM, FCN   | 1   |
| 19       | XBOZZ    |                  | 76364 | 1726-N      | .BODY .....<br>UOC: FCM, FCN   | 1   |
|          | PBOZZ    | 4820-01-090-0877 | 76364 | 8621-N-940  | PARTS KIT, BUTTERFLY .....<br>UOC: FCM, FCN<br>COTTER PIN (1) 5-2<br>PIN (1) 5-3<br>TOP STEM (1) 5-9<br>SEAL VALVE (1) 5-10<br>O-RING (1) 5-11<br>TOP BEARING SPLIT (1) 5-12 | 1   |
|          | PBOZZ    | 4820-01-076-8018 | 76364 | 869-N-940   | PARTS KIT, VALVE .....<br>UOC: FCM, FCN<br>SPRING PIN-BOTTOM (1) 5-13<br>BOTTOM STEM (1) 5-14<br>O-RING (1) 5-15<br>BOTTOM BEARING (1) 5-16                                  | 1   |

END OF FIGURE



## UNIT MAINTENANCE

COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## FILLER AND DISCHARGE HOSE ASSEMBLY

## REPAIR PARTS LIST

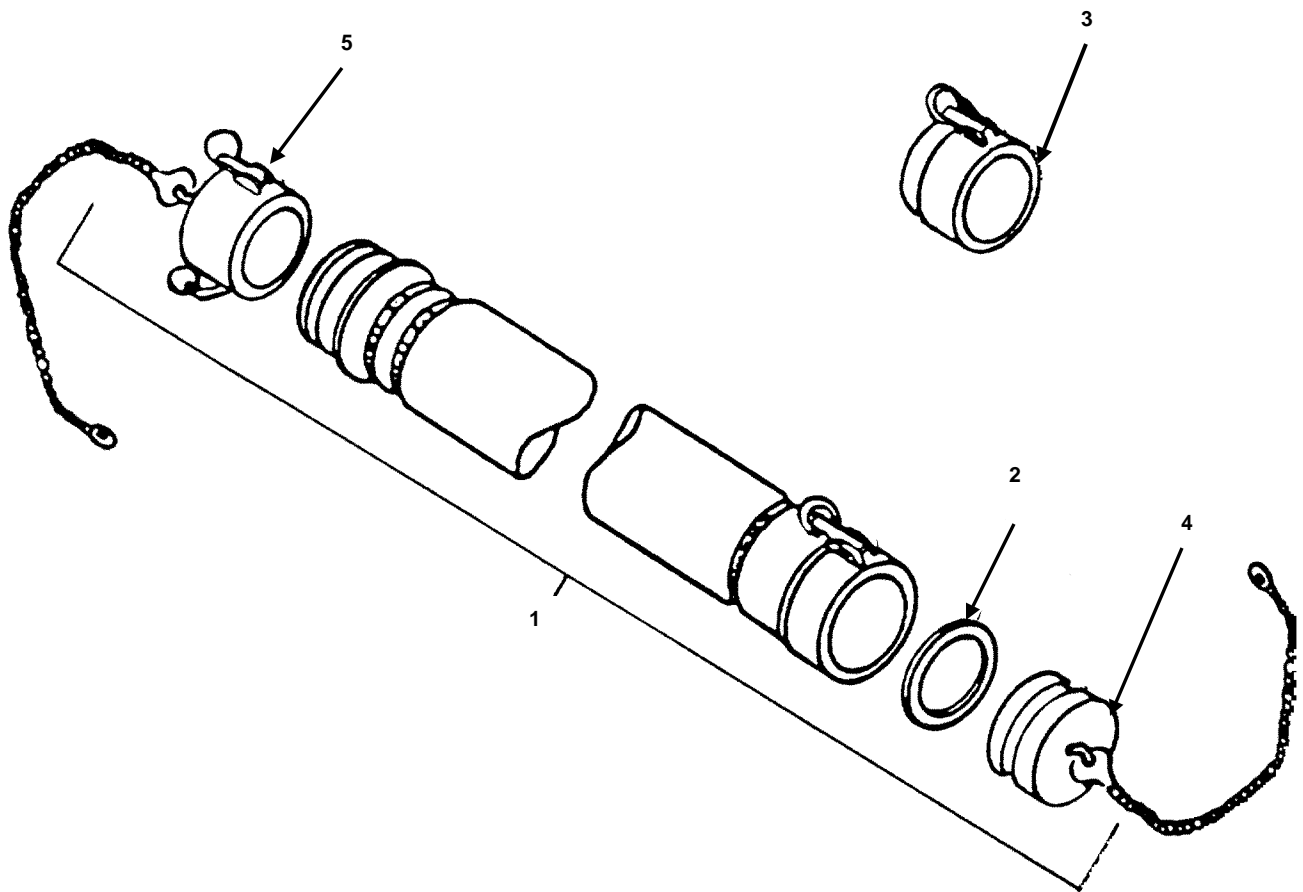


Figure 6. Filler and Discharge Hose Assembly

| (1)      | (2)      | (3)              | (4)   | (5)            | (6)   | (7) |
|----------|----------|------------------|-------|----------------|---|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER    | DESCRIPTION/USABLE ON CODE (UOC)  | QTY |
|          |          |                  |       |                | GROUP 02 HOSE ASSEMBLY,<br>FILLER/DISCHARGE   |     |
|          |          |                  |       |                | FIG. 6 FILLER/DISCHARGE<br>HOSE ASSEMBLY  |     |
| 1        | PBOZZ    | 4720-01-262-5146 | 00333 | 50609892       | HOSE ASSEMBLY, NONMETALLIC, ..... 1<br>4 IN X 10 FT, WITH QUICK<br>DISCONNECT FITTINGS<br>UOC: EDC, ELS, FCM, FCN, FMC, FMD |     |
| 1        | XDOZZ    |                  | 74897 | 239-20023-01   | HOSE, ASSEMBLY ..... 1<br>UOC: ECY  |     |
| 1        | XDOZZ    |                  | OCBB4 | M370B09B2A0960 | HOSE ASSEMBLY, NONMETALLIC ..... 1<br>4 IN X 8 FT, TYPE B, SIZE 9,<br>(4-INCH) STYLE A<br>UOC: EDD                          |     |
| 1        | XAOZZ    |                  | OA6K1 | D102408        | HOSE, ASSEMBLY, 3 IN ..... 1<br>UOC: ECY, FNR   |     |
| 1        | XDOZZ    |                  | 81348 | M370-B08B2A480 | HOSE, ASSEMBLY, NONMETALLIC ..... 1<br>UOC: ECY, FNR  |     |
| 2        | PBOZZ    | 5330-00-899-4509 | 96906 | MS27030-9      | .GASKET HALF, 4 IN ..... 1<br>UOC: EDC, ELS, EDD, FCM, FCN,<br>FMC, FMD   |     |
| 2        | PBOZZ    | 5330-00-088-9166 | 96906 | MS27030-8      | .GASKET 3 INCH ..... 1<br>UOC: ECY, FNR   |     |
| 3        | PBOZZ    | 4730-00-951-3293 | 96906 | MS49000-1      | .REDUCER, QUICK DISCO 3K TANK ..... 1<br>UOC: ECY, FNR  |     |
| 4        | PBOZZ    | 4730-00-640-6188 | 58536 | AA59326X19     | .PLUG, QUICK DISCONNE 4 INCH ..... 1<br>UOC: EDC, ELS, EDD, FCM, FCN,<br>FMC, FMD   |     |
| 4        | PBOZZ    | 4730-00-929-0790 | 96906 | MS27029-15     | .PLUG, QUICK DISCONNECT ..... 1<br>UOC: ECY, FNR  |     |
| 5        | PBOZZ    | 4730-00-640-6156 | 96906 | MS27028-17     | .CAP, QUICK DISCONNECT 4 INCH ..... 1<br>UOC: EDC, ELS, EDD, FCM, FCN,<br>FMC, FMD  |     |
| 5        | PBOZZ    | 4730-00-929-0787 | 96906 | MS27028-15     | .CAP, QUICK DISCONNECT ..... 1<br>DUST CAP<br>UOC: ECY, FNR   |     |

END OF FIGURE

## UNIT MAINTENANCE

## COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## DRAIN GATE VALVE

## REPAIR PARTS LIST

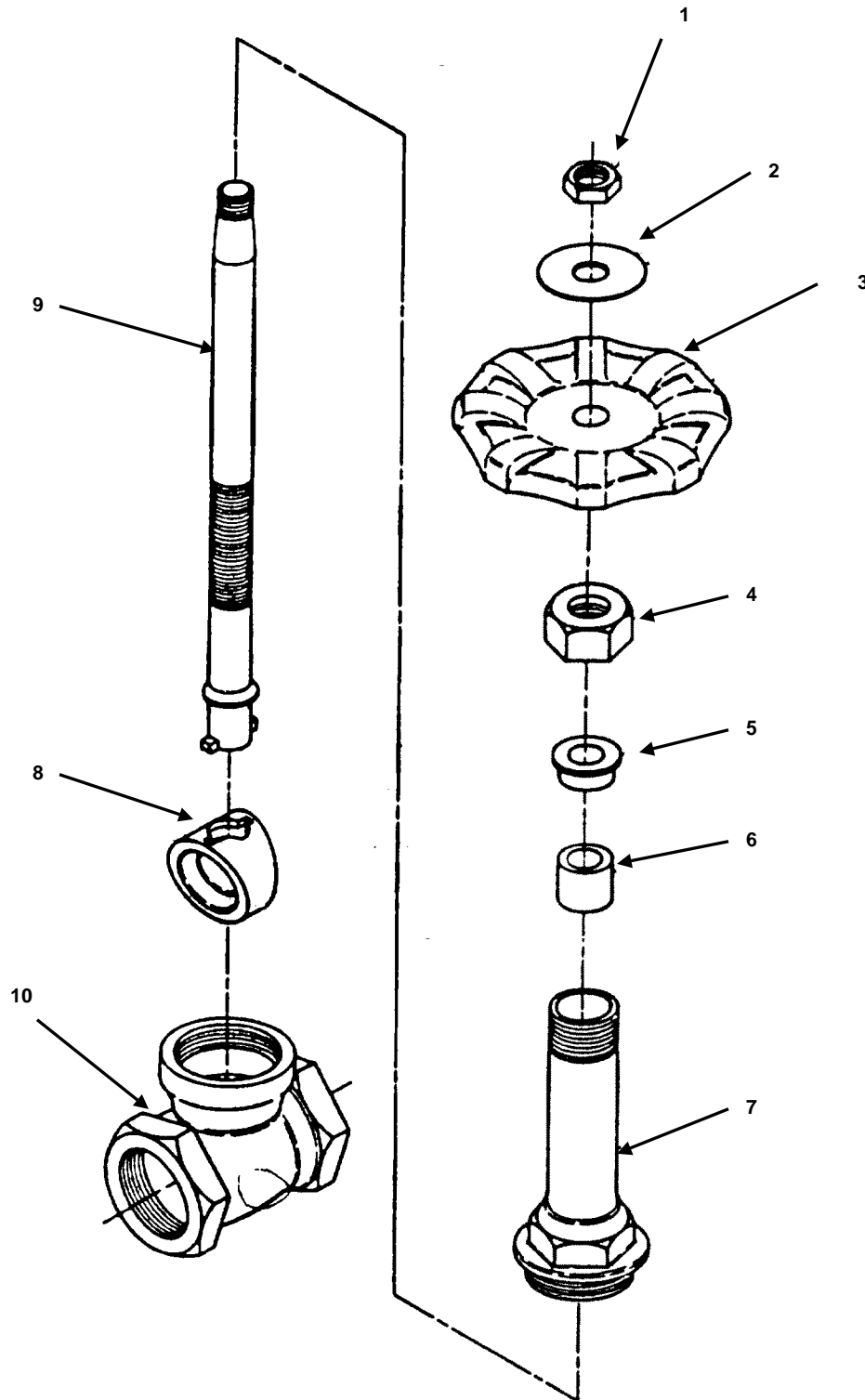


Figure 7. Drain Gate Valve



| (1)      | (2)      | (3)              | (4)   | (5)         | (6)  | (7) |
|----------|----------|------------------|-------|-------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER | DESCRIPTION/USABLE ON CODE (UOC)   | QTY |
|          |          |                  |       |             | GROUP 03 VALVE, GATE, DRAIN  |     |
|          |          |                  |       |             | FIG. 7 DRAIN GATE VALVE  |     |
|          | PBOOZ    | 4820-00-595-1841 | 67060 | 009240-3    | VALVE, GATE SP-80,TYPE II,125 LB ..... 1<br>UOC: FNR, EDC, ELS, EQB, EQC |     |
| 1        | PAOZZ    | 5310-01-262-1345 | 76364 | 1148-10     | .NUT, HAND WHEEL GATE ..... 1<br>VALVE,1/2 IN                            |     |
| 2        | XDOZZ    |                  | 76364 | 1148-9      | .PLATE, IDENT GATE VALVE, 1/2 IN ..... 1                                 |     |
| 3        | XDOZZ    |                  | 76364 | 1148-8      | .WHEEL, HAND GATE VALVE, 1/2 IN ..... 1                                  |     |
| 4        | PAOZZ    | 5310-01-262-1346 | 76364 | 1148-7      | .NUT, PACKING GATE VALVE, 1/2 IN ..... 1                                 |     |
| 5        | PAOZZ    | 5330-01-262-1364 | 76364 | 1148-6      | .RETAINER, PACKING GATE ..... 1<br>VALVE, 1/2 IN                         |     |
| 6        | PAOZZ    | 5330-01-262-1362 | 76364 | 1148-5      | .PACKING MATERIAL GATE ..... 1<br>VALVE, 1/2 IN                          |     |
| 7        | XDOZZ    |                  | 76364 | 1148-2      | .BONNET, VALVE GATE ..... 1<br>VALVE, 1/2 IN                             |     |
| 8        | PAOZZ    | 4820-01-262-1347 | 76364 | 1148-3      | .DISK, WEDGE GATE VALVE, 1/2 IN ..... 1                                  |     |
| 9        | PBOZZ    | 4820-01-262-1348 | 76364 | 1148-4      | .STEM, VALVE GATE VALVE, 1/2 IN ..... 1                                  |     |
| 10       | XDOZZ    |                  | 76364 | 1148-1      | .BODY, VALVE GATE VALVE, 1/2 IN ..... 1                                  |     |

END OF FIGURE

## UNIT MAINTENANCE

## COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## DRAIN BALL VALVE

## REPAIR PARTS LIST

|        |
|--------|
| 1      |
| 2 - 18 |

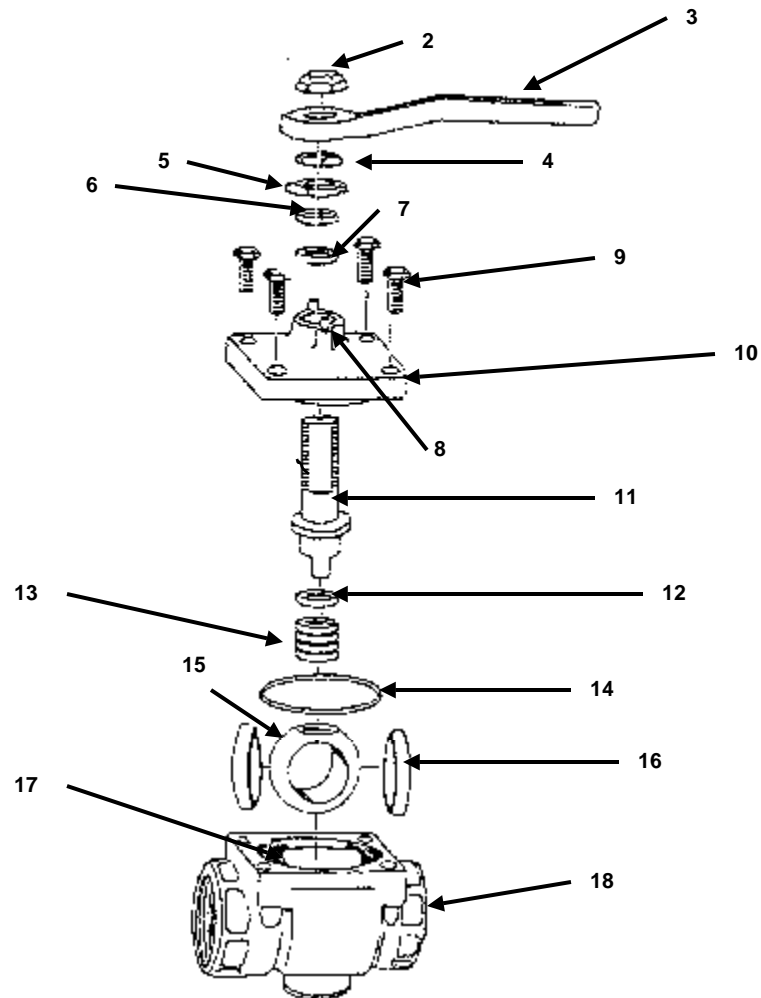


Figure 8. Drain Ball Valve

| (1)      | (2)      | (3) | (4)   | (5)         | (6)   | (7) |
|----------|----------|-----|-------|-------------|---|-----|
| ITEM NO. | SMR CODE | NSN | CAGEC | PART NUMBER | DESCRIPTION/USABLE ON CODE (UOC)                        | QTY |
|          |          |     |       |             | GROUP 03 VALVE, BALL, DRAIN                             |     |
|          |          |     |       |             | FIG. 8 DRAIN BALL VALVE                                 |     |
| 1        | XDOOO    |     | OA6K1 | 2222191     | BALL VALVE 2 INCH .....<br>UOC: FCM, FCN, EDD, FMC, FMD | 1   |
| 2        | XBOZZ    |     | OA6K1 | 29014       | .HANDLE RETAINER NUT .....                              | 1   |
| 3        | XBOZZ    |     | OA6K1 | 29015       | .HANDLE .....   | 1   |
| 4        | XBOZZ    |     | OA6K1 | 29016       | .STEM NUT .....   | 1   |
| 5        | XBOZZ    |     | OA6K1 | 29012       | .TRAVEL STOP, SINC.....                                 | 1   |
| 6        | XBOZZ    |     | OA6K1 | 29011       | .GLAND RING .....                                       | 1   |
| 7        | XBOZZ    |     | OA6K1 | 29010A      | .STEM SEAL .....  | 1   |
| 8        | XBOZZ    |     | OA6K1 | 29013       | .PIN GROOVE .....                                       | 1   |
| 9        | XBOZZ    |     | OA6K1 | 29007       | .CAPSCREW HEX HEAD.....<br>5 IN-13 UNC X 1.75 INCH      | 4   |
| 10       | XBOZZ    |     | OA6K1 | 29002       | .BONNET .....   | 1   |
| 11       | XBOZZ    |     | OA6K1 | 29009       | .STEM .....   | 1   |
| 12       | XBOZZ    |     | OA6K1 | 29010B      | .STEM SEAL .....  | 1   |
| 13       | XBOZZ    |     | OA6K1 | 29006       | .SPRING .....   | 1   |
| 14       | XBOZZ    |     | OA6K1 | 29008       | .BONNET GASKET .....                                    | 1   |
| 15       | XBOZZ    |     | OA6K1 | 29003       | .BALL .....   | 1   |
| 16       | XBOZZ    |     | OA6K1 | 29004       | .SEAT .....   | 2   |
| 17       | XBOZZ    |     | OA6K1 | 29005       | .SEAT RING .....  | 2   |
| 18       | XBOZZ    |     | OA6K1 | 29001       | .BODY .....   | 1   |

END OF FIGURE

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UNIT MAINTENANCE

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COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## DRAIN HOSE ASSEMBLY

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REPAIR PARTS LIST

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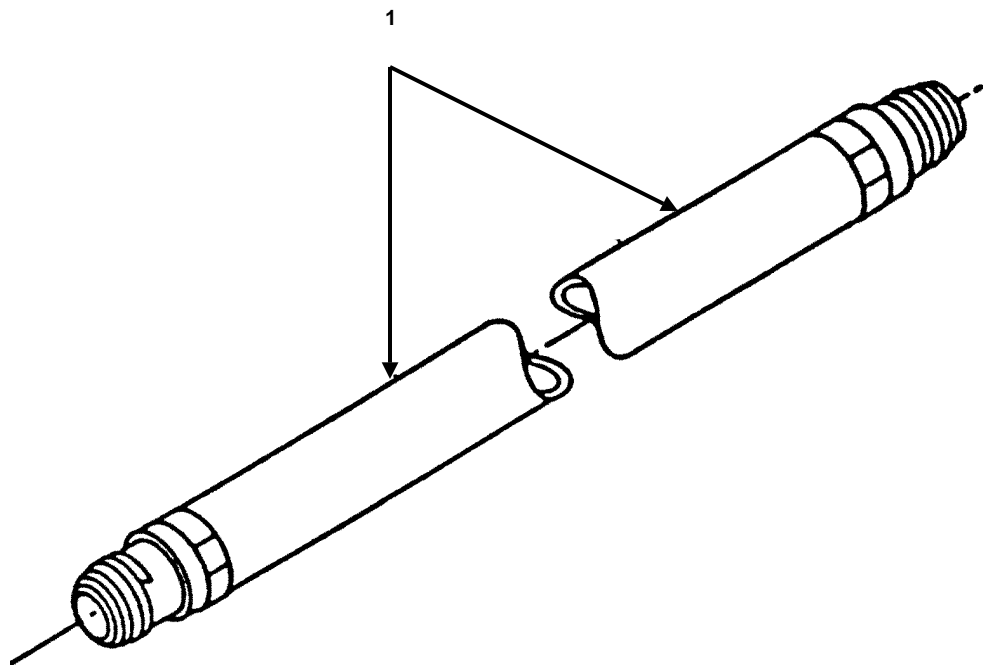


Figure 9. Drain Hose Assembly

| (1)      | (2)      | (3) | (4)   | (5)            | (6)  | (7) |
|----------|----------|-----|-------|----------------|--|-----|
| ITEM NO. | SMR CODE | NSN | CAGEC | PART NUMBER    | DESCRIPTION/USABLE ON CODE (UOC)   | QTY |
|          |          |     |       |                | GROUP 04 HOSE ASSEMBLY,<br>DRAIN   |     |
|          |          |     |       |                | FIG. 9 DRAIN HOSE ASSEMBLY   |     |
| 1        | XDOZZ    |     | 00333 | 50608694       | HOSE ASSY, DRAIN, TYPE I,.....<br>SIZE 2, CLASS 2, STYLE A X 8 FT<br>UOC: FNR, EQB, EQC, EDC, ELS,<br>FCM, FCN, FMC, FMD | 1   |
| 1        | XDOZZ    |     | OCBB4 | M370B06C2A0960 | HOSE ASSY, 2-INCH X 8 FEET,.....<br>TYPE B, SIZE 06 (2-INCH),<br>CLASS C WITH NPT FITTINGS<br>UOC: EDD                   | 1   |

END OF FIGURE

## UNIT MAINTENANCE

## COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## VENT AND PIPE ASSEMBLY

## REPAIR PARTS LIST

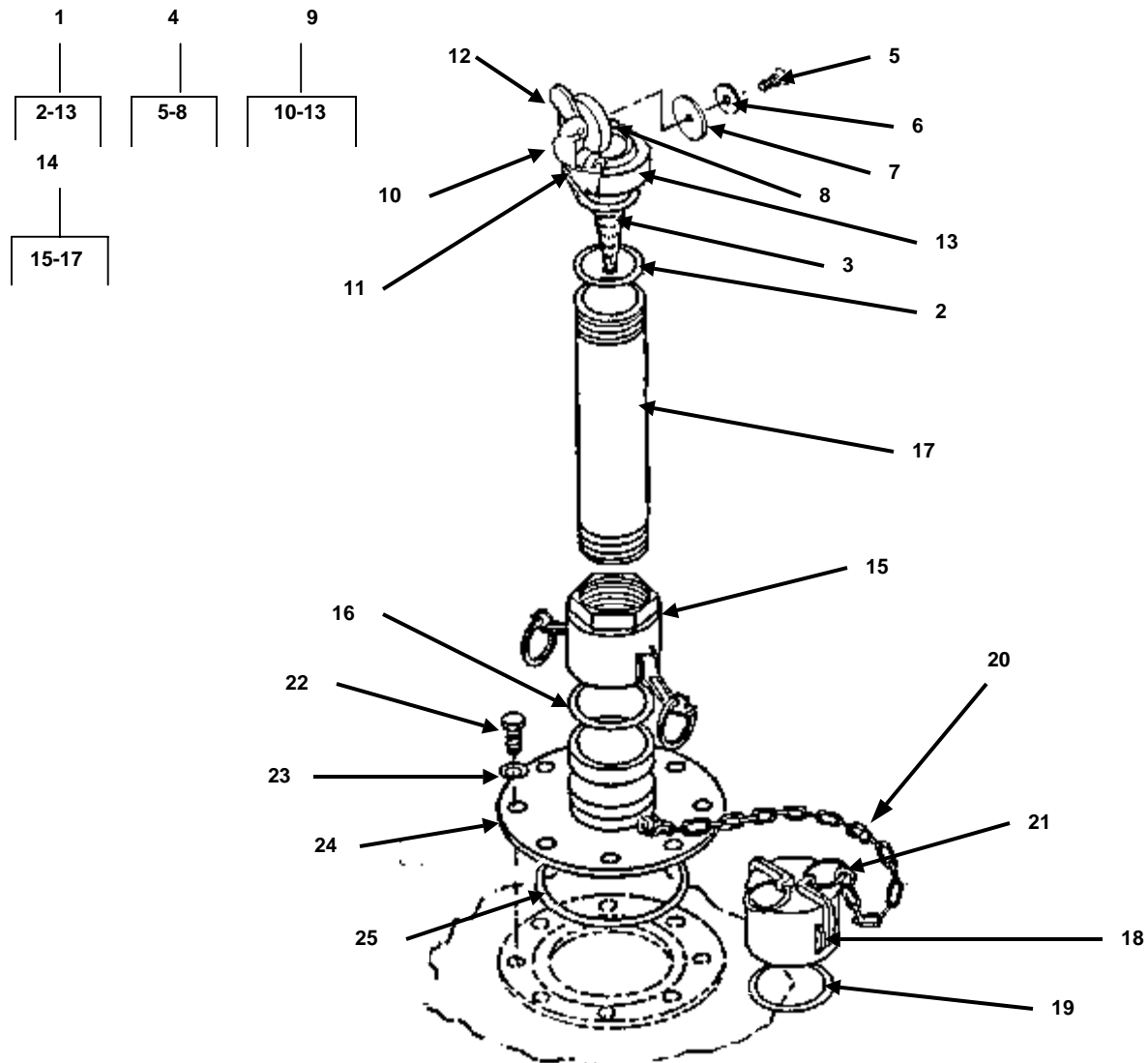


Figure 10. Vent and Pipe Assembly

| (1)      | (2)      | (3)              | (4)   | (5)           | (6)                                    | (7) |
|----------|----------|------------------|-------|---------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER   | DESCRIPTION/USABLE ON CODE (UOC)       | QTY |
|          |          |                  |       |               | GROUP 05 VENT AND PIPE ASSEMBLY        |     |
|          |          |                  |       |               | FIG. 10 VENT AND PIPE ASSEMBLY         |     |
| 1        | PBOOO    | 4930-00-734-0180 | 49234 | EX1333B       | STRAINER ELEMENT, SE<br>ARRESTOR, VENT |     |
| 2        | PAOZZ    | 5330-01-262-1361 | 49234 | EX1333B-18-95 | .GASKET CAP .....                      | 1   |
| 3        | XDOZZ    |                  | 49234 | EX1333B-36-13 | .SCREEN, FLAME ARRESTOR .....          | 1   |
| 4        | PAOOO    | 5430-01-262-1350 | 49234 | EX1333B-38    | .CAP ASSEMBLY, RELIEF .....            | 1   |
| 5        | PAOZZ    | 5305-01-262-5080 | 49234 | 4447101620    | ..SCREW, VENT RELIEF CAP .....         | 1   |
| 6        | PAOZZ    | 5310-01-262-1351 | 49234 | EX1333B-17    | ..WASHER RELIEF CAP .....              | 1   |
| 7        | PBOZZ    | 5330-01-262-1349 | 49234 | 205-18-98     | ..GASKET, RELIEF CAP ASSY .....        | 1   |
| 8        | XDOZZ    |                  | 49234 | EX1333B-40-68 | ..CAP, RELIEF .....                    | 1   |
| 9        | XDOOO    | 4930-00-786-9566 | 49234 | EX1333B-39    | .HEAD ASSEMBLY CAP ASSY.....           | 1   |
| 10       | PAOZZ    | 5320-01-262-1352 | 49234 | 4201232400    | RIVET HEAD ASSY .....                  | 1   |
|          |          |                  |       |               | 96906 MS20450C10AD24                   |     |
| 11       | PAOZZ    | 5320-01-262-1353 | 49234 | 4201035000    | ..RIVET 96906 MS20450C12AD50 .....     | 1   |
| 12       | XDOZZ    |                  | 49234 | EX1333B-3-607 | .LEVER HEAD ASSY .....                 | 1   |
| 13       | XDOZZ    |                  | 49234 | EX1333B-1-607 | .BODY, HEAD ASSEMBLY .....             | 1   |
| 14       | PAOOO    | 5430-01-262-9475 | 00333 | 50609780      | VENT ASSEMBLY, .....                   | 1   |
|          |          |                  |       |               | PIPE ASSEMBLY                          |     |
| 15       | XDOZZ    | 4730-00-649-9103 | 58536 | AA59326V16    | .COUPLING HALF,QUICK 2 IN .....        | 1   |
| 16       | PAOZZ    | 5330-00-612-2414 | 96906 | MS27030-6     | .GASKET 2 IN .....                     | 1   |
| 17       | XDOZZ    |                  | 00333 | 50609928      | .PIPE, 2 IN .....                      | 1   |
| 18       | PAOOO    | 4730-00-649-9100 | 58536 | AA59326IX16   | .CAP, QUICK DISCONNECT .....           | 1   |

| (1)      | (2)      | (3)              | (4)   | (5)                 | (6)   | (7) |
|----------|----------|------------------|-------|---------------------|---|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER         | DESCRIPTION/USABLE ON CODE (UOC)                | QTY |
| 19       | PAOZZ    | 5330-00-612-2414 | 96906 | MS27030-6           | ..GASKET 2 IN .....                             | 1   |
| 20       | XDOZZ    | 4010-00-360-0596 | 81718 | H06683M             | ..CHAIN ASSEMBLY, SING<br>12 IN, CAP ASSY ..... | 1   |
| 21       | XDOZZ    |                  | 63711 | 1SK                 | ..RING, KEY CAP ASSY .....                      | 1   |
| 22       | PBOZZ    | 5305-00-068-0509 | 80204 | B1821BH025<br>C125N | SCREW, CAP, HEXAGON H .....                     | 8   |
| 23       | PBOZZ    | 5310-00-809-4058 | 96906 | MS27183-10          | WASHER, FLAT 1/4 IN .....                       | 8   |
| 24       | XDOZZ    | 4730-01-416-1533 | 96906 | MS27023-21          | COUPLING HALF, QUICK 2IN .....                  | 1   |
| 25       | PAOZZ    | 5331-00-291-3085 | 96906 | MS29513-250         | O-RING .....                                    | 1   |

END OF FIGURE





## UNIT MAINTENANCE

## COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## FILLER/DISCHARGE ASSEMBLY

## REPAIR PARTS LIST

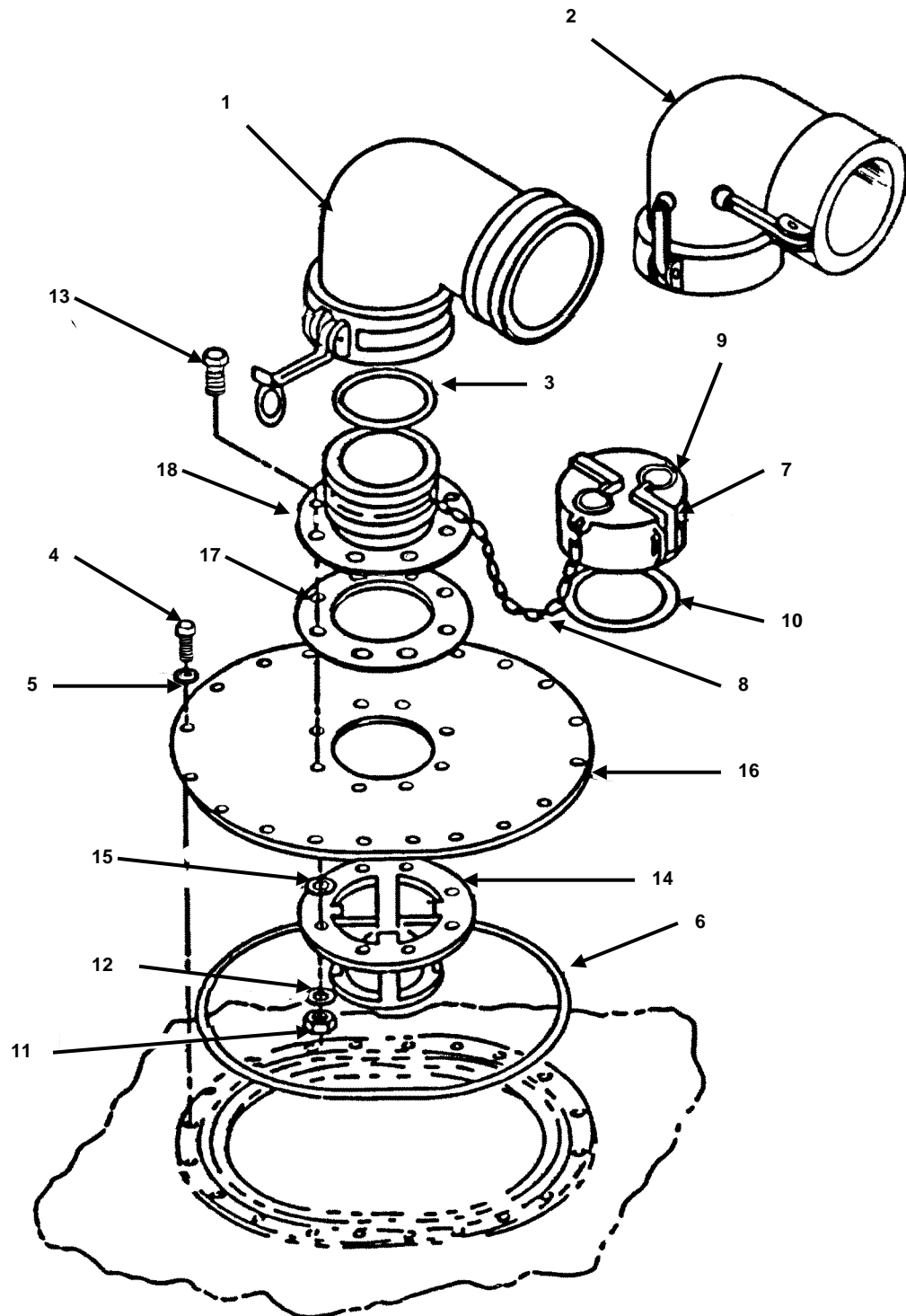


Figure 11. Filler/Discharge Assembly

| (1)      | (2)      | (3)              | (4)   | (5)                    | (6)  | (7) |
|----------|----------|------------------|-------|------------------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER            | DESCRIPTION/USABLE ON CODE (UOC)                     | QTY |
|          |          |                  |       |                        | GROUP 06 ASSEMBLY<br>FILLER/DISCHARGE                |     |
|          |          |                  |       |                        | FIG. 11 FILLER/DISCHARGE ASSEMBLY                    |     |
| 1        | XDOZZ    |                  | 00333 | 50609362               | ELBOW, FEMALE TO MALE, ..... 1<br>4 IN, 90 DEG       |     |
| 2        | XDOZZ    |                  | 00333 | 50609789               | ELBOW, QD, FEMALE TO FEMALE, ..... 1<br>4 IN, 90 DEG |     |
| 3        | PBOZZ    | 5330-00-899-4509 | 96906 | MS27030-9              | GASKET 4 IN..... 1                                   |     |
| 4        | PAOZZ    | 5305-00-225-3843 | 80204 | B1821BH025<br>C100N    | SCREW, CAP, HEXAGON H..... 20<br>1/4-20 X 1 IN       |     |
| 5        | PAOZZ    | 5310-00-809-4058 | 96906 | MS27183-10             | WASHER, FLAT 1/4 IN..... 20<br>UOC: EDC, ELS, EDD    |     |
| 6        | PBOZZ    | 5331-00-364-9862 | 81343 | AS3578-383             | O-RING, 4 IN ..... 1                                 |     |
| 7        | PAOOZ    | 4730-00-640-6156 | 96906 | MS27028-17             | CAP, QUICK DISCONNEC 4 IN ..... 1                    |     |
| 8        | PBOZZ    | 4010-00-360-0596 | 81718 | H06683M                | .CHAIN ASSEMBLY, SING 12 IN ..... 1                  |     |
| 9        | PBOZZ    |                  | 01976 | 1SK                    | .RING, KEY ..... 2                                   |     |
| 10       | PAOZZ    | 5330-00-899-4509 | 96906 | MS27030-9              | .GASKET 4 IN ..... 1                                 |     |
| 11       | PBOZZ    | 5310-00-732-0558 | 96906 | MS51967-8              | NUT, PLAIN, HEXAGON 3/8-16 ..... 8                   |     |
| 12       | PBOZZ    | 5310-00-637-9541 | 96906 | MS35338-46             | WASHER, LOCK 3/8 IN ..... 8                          |     |
| 13       | PBOZZ    | 5305-00-725-2317 | 80204 | B1821BH038<br>C150N    | SCREW, CAP, HEXAGON H..... 8<br>3/8-16 X 1 1/2 IN    |     |
| 14       | XDOZZ    |                  | 00333 | 50609818               | STUB, SUCTION ..... 1                                |     |
| 15       | PAOZZ    | 5330-00-874-3744 | 83259 | 7500-3-8               | GASKET 3/8 IN ..... 8<br>UOC: EDC, ELS, EDD          |     |
| 16       | XDOZZ    |                  | 00333 | 50862063               | PLATE, CLOSURE ..... 1                               |     |
| 17       | PAOZZ    | 5330-01-262-5120 | 05476 | FCC-62398/<br>50609735 | GASKET ..... 1                                       |     |
| 18       | XDOZZ    | 4730-00-840-5347 | 96906 | MS27023-17             | COUPLING HALF, QUICK..... 1                          |     |

END OF FIGURE

## UNIT MAINTENANCE

COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## TANK DRAIN FITTING ASSEMBLY

## REPAIR PARTS LIST

1  
2-8

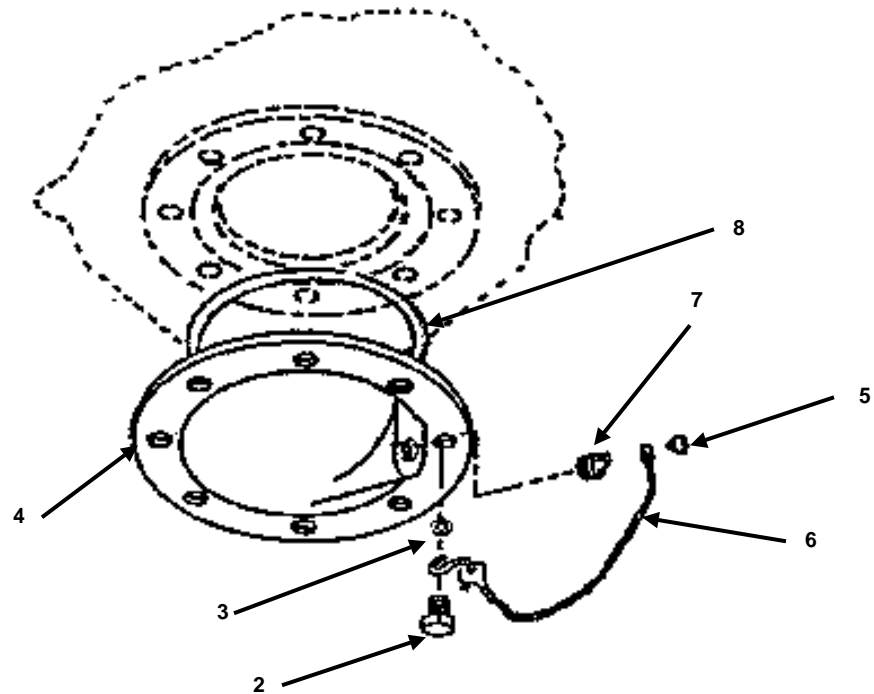


Figure 12. Tank Drain Fitting Assembly

| (1)                                  | (2)      | (3)              | (4)   | (5)                 | (6)  | (7) |
|--------------------------------------|----------|------------------|-------|---------------------|--|-----|
| ITEM NO.                             | SMR CODE | NSN              | CAGEC | PART NUMBER         | DESCRIPTION/USABLE ON CODE (UOC)   | QTY |
| GROUP 07 FITTING ASSEMBLY, DRAIN     |          |                  |       |                     |  |     |
| FIG. 12 DRAIN FITTING ASSEMBLY, TANK |          |                  |       |                     |  |     |
| 1                                    | PBOZZ    | 5430-01-275-9478 | 74897 | 0061-28406          | DRAIN FITTING ASSEMBLY .....2<br>UOC: FNR, EDC, EDD                            |     |
| 2                                    | PBOZZ    | 5305-00-225-3843 | 80204 | B1821BH025<br>C100N | .SCREW, CAP, HEXAGON H.....8<br>1/4-20 X 1 INCH<br>UOC: EDC, EDD, FMC,FMD, FNR |     |
| 3                                    | PBOZZ    | 5310-00-809-4058 | 96906 | MS27183-10          | WASHER, FLAT 1/4 INCH.....8<br>UOC: EDC, EDD, FMC, EMD, FNR                    |     |
| 4                                    | XDOZZ    |                  | 00333 | 50609926            | .PLATE, COVER, DRAIN .....1<br>FITTING ASSY<br>UOC: EDC, EDD                   |     |
| 4                                    | XBOZZ    |                  | 10068 | 90031-4             | DRAIN FITTING, 2 INCH .....1<br>UOC: FMC, FMD, FNR                             |     |
| 5                                    | XDOZZ    |                  | 00333 | 50609923            | .SCREW, DRAIN PLUG .....1<br>UOC: EDC, EDD, FMC, FMD, FNR                      |     |
| 6                                    | PBOZZ    | 4010-01-262-1354 | 00333 | 50609921            | .CHAIN ASSEMBLY DRAIN PLUG.....1<br>UOC: EDC, EDD, FMC, FMD, FNR               |     |
| 7                                    | XDOZZ    |                  | 00333 | 50609922            | .PLUG, DRAIN COVER PLATE.....1<br>UOC: EDC, EDD                                |     |
| 7                                    | XDOZZ    |                  | OA6K1 | M52618/7P09XC       | PLUG, 2 INCH DRAIN .....1<br>UOC: FMC, FMD, FNR                                |     |
| 8                                    | PAOZZ    | 5331-00-291-3085 | 96906 | MS29513-250         | .O-RING .....1<br>UOC: EDC, EDD, FMC, FMD, FNR                                 |     |

END OF FIGURE

## UNIT MAINTENANCE

COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## BERM LINER DRAIN FITTING ASSEMBLY

## REPAIR PARTS LIST

|       |
|-------|
| 1     |
| 2 - 8 |

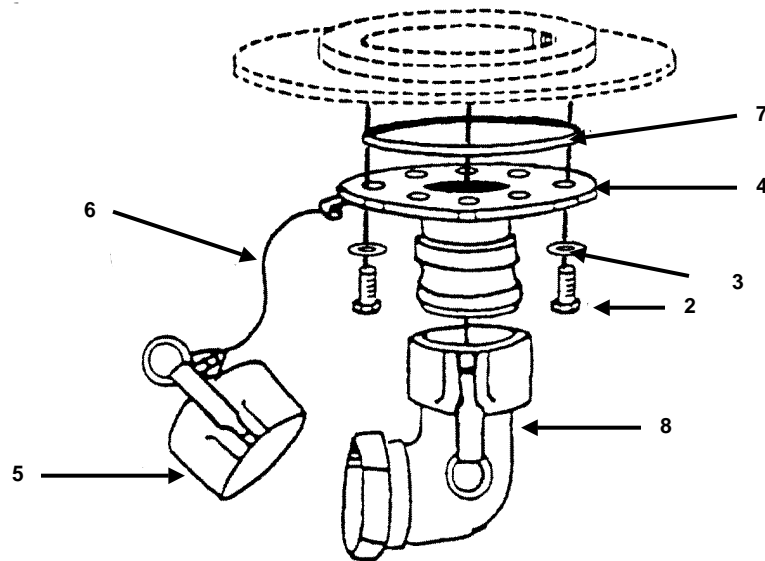


Figure 13. Berm Liner Drain Fitting Assembly

| (1)      | (2)      | (3) | (4)   | (5)         | (6)                              | (7) |
|----------|----------|-----|-------|-------------|----------------------------------|-----|
| ITEM NO. | SMR CODE | NSN | CAGEC | PART NUMBER | DESCRIPTION/USABLE ON CODE (UOC) | QTY |

GROUP 07 FITTING ASSEMBLY, DRAIN

FIG. 13 DRAIN FITTING ASSEMBLY, BERM LINER

|   |       |                  |       |                     |  |  |
|---|-------|------------------|-------|---------------------|--|--|
| 1 | XDOZZ |                  | 66618 | X-4775              | DRAIN FITTING ASSY ..... 1<br>UOC: FCM, FCN                              |  |
| 2 | PBOZZ | 5305-00-225-3843 | 80204 | B1821BH025<br>C100N | .SCREW, CAP, HEXAGON H..... 8<br>1/4-20 X 1 IN<br>UOC: FCM, FCN          |  |
| 3 | PBOZZ | 5310-00-809-4058 | 96906 | MS27183-10          | .WASHER, FLAT 1/4 IN ..... 8<br>UOC: FCM, FCN                            |  |
| 4 | XBOZZ | 4730-01-416-1533 | 96906 | MS27023-21          | .ADAPTER, FLANGED 2 IN ..... 1<br>UOC: FCM, FCN                          |  |
| 5 | PBOOZ | 4730-00-929-0787 | 96906 | MS27028-15          | .CAP, QUICK DISCONNECT ..... 1<br>DUST CAP<br>UOC: FCM, FCN              |  |
| 6 | PBOZZ | 4010-01-262-1354 | 00333 | 50609921            | ..CHAIN ASSEMBLY DUST CAP ..... 1<br>SECURITY CHAIN<br>UOC: FCM, FCN     |  |
| 7 | PCOZZ | 5331-00-291-3085 | 96906 | MS29513-250         | .O-RING ..... 1<br>UOC: FCM, FCN   |  |
| 8 | XBOZZ |                  | 10068 | 13228E9842-4        | .COUPLING HALF QUICK FEMALE ..... 1<br>INTERNAL THREADS<br>UOC: FCM, FCN |  |

END OF FIGURE

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UNIT MAINTENANCE

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COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

TANK

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REPAIR PARTS LIST

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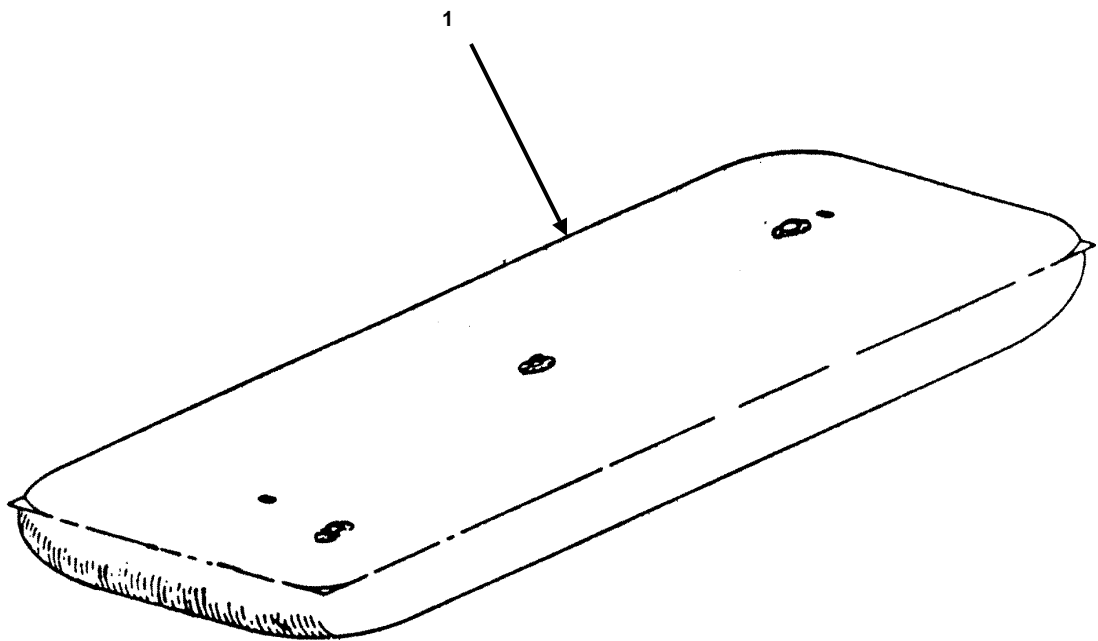


Figure 14. Tank



| (1)      | (2)      | (3)              | (4)   | (5)                | (6)  | (7) |
|----------|----------|------------------|-------|--------------------|--|-----|
| ITEM NO. | SMR CODE | NSN              | CAGEC | PART NUMBER        | DESCRIPTION/USABLE ON CODE (UOC)                                 | QTY |
|          |          |                  |       |                    | GROUP 08 TANK  |     |
|          |          |                  |       |                    | FIG. 14 TANK   |     |
| 1        | PAOOO    | 5430-01-455-5676 | OCBB4 | PD52983-50         | TANK, 50K .....<br>UOC: EDD                                      | 1   |
| 1        | PAOOO    | 5430-01-479-5099 | IDFDO | M52983-50          | TANK, 50K .....<br>UOC: EDC                                      | 1   |
| 1        | PAOOO    | 5430-01-215-7525 | 66618 | BA92-162           | TANK, 20K .....<br>UOC: ELS                                      | 1   |
| 1        | PAOOO    | 5430-01-359-4943 | 66618 | BA91-140           | TANK, FABRIC, COLLAPS 20K .....<br>GALLON, PETROLEUM<br>UOC: FCM | 1   |
| 1        | PAOOO    | 5430-01-414-9252 | 66618 | BA91-140A          | TANK, FABRIC, COLLAPS 20K .....<br>GALLON, PETROLEUM<br>UOC: FMC | 1   |
| 1        | PAOOO    | 5430-01-358-6157 | 66618 | BA91-141           | TANK, FABRIC, COLLAPS 10K .....<br>GALLON, PETROLEUM<br>UOC: FCN | 1   |
| 1        | PAOOO    | 5430-01-414-9251 | 66618 | BA91-141A          | TANK, FABRIC, COLLAPS 10K .....<br>GALLON, PETROLEUM<br>UOC: FMD | 1   |
| 1        | PAOOO    | 5430-01-052-3412 | 00333 | FCE574-81-1-A      | TANK, FABRIC, COLLAPS 10K .....<br>GALLON, PETROLEUM<br>UOC: EQB | 1   |
| 1        | PAOOO    | 5430-00-641-8552 | 81996 | SC5430-97<br>CLE01 | TANK, FABRIC, COLLAPS 10K .....<br>GALLON, PETROLEUM<br>UOC: EQC | 1   |
| 1        | PAOOO    | 5430-01-433-8528 | OXOJ8 | WTM3KF             | TANK, 3K .....<br>UOC: FNR                                       | 1   |
| 1        | PAOOO    | 5430-00-268-8187 | 81349 | M52983B            | TANK, 3K .....<br>UOC: ECY                                       | 1   |

END OF FIGURE

## UNIT MAINTENANCE

## COLLAPSIBLE FABRIC TANK, 3,000,10,000, 20,000, 50,000 GALLON

## EMERGENCY REPAIR ITEMS

## REPAIR PARTS LIST

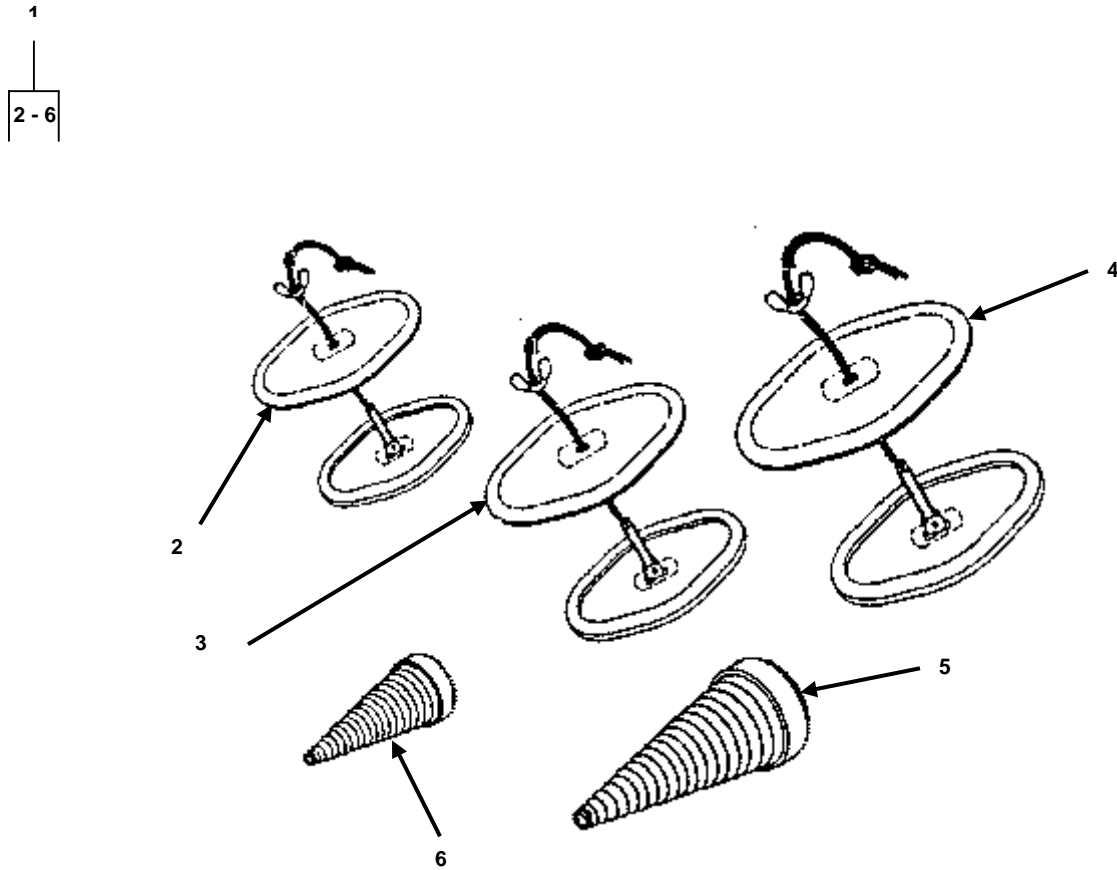


Figure 15. Emergency Repair Items

| (1)                              | (2)      | (3)              | (4)   | (5)          | (6)   | (7) |
|----------------------------------|----------|------------------|-------|--------------|---|-----|
| ITEM NO.                         | SMR CODE | NSN              | CAGEC | PART NUMBER  | DESCRIPTION/USABLE ON CODE (UOC)  | QTY |
| GROUP 09 REPAIR ITEMS, EMERGENCY |          |                  |       |              |   |     |
| FIG. 15 EMERGENCY REPAIR ITEMS   |          |                  |       |              |   |     |
| 1                                | PAOZZ    |                  | 81349 | MILR52255    | REPAIR KIT, COLLAPSIBLE .....<br>EMERGENCY<br>UOC: ECY, FNR, EDC, EDD, ELS, EQB,<br>EQC, FCM, FCN, FMC, FMD | 1   |
| 2                                | KFOZZ    | 5342-00-720-8864 | 81336 | 13202E2870-1 | .PATCH, MECHANICAL, FL .....<br>UOC:  | 4   |
| 3                                | KFOZZ    | 5342-00-720-8863 | 81336 | 13202E2870-2 | .PATCH, MECHANICAL, FL .....<br>PART OF KIT P/N MILR22368<br>UOC:   | 2   |
| 4                                | KFOZZ    | 5342-00-720-8858 | 81336 | 13202E2870-3 | .PATCH, MECHANICAL, FL .....<br>UOC:  | 2   |
| 5                                | KFOZZ    | 5510-00-255-9492 | 81336 | 13211E3084   | .PLUG, WOOD, 5 IN .....<br>UOC:   | 2   |
| 6                                | KFOZZ    | 5510-00-255-9493 | 81336 | 13211E3085   | .PLUG, WOOD, 3 IN .....<br>UOC:   | 2   |

END OF FIGURE

END OF WORK PACKAGE



**OPERATOR AND UNIT MAINTENANCE MANUAL  
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COLLAPSIBLE FABRIC TANK,  
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NATIONAL STOCK NUMBER INDEX**

| STOCK NUMBER     | FIG. | ITEM  | STOCK NUMBER     | FIG. | ITEM  |
|------------------|------|-------|------------------|------|-------|
| 5305-00-068-0509 | 10   | 22    | 5310-00-732-0558 | 1    | 9     |
| 5310-00-087-7493 | 1    | 12    |                  | 2    | 7     |
|                  | 2    | 10    |                  | 3    | 7     |
|                  | 3    | 10    |                  | 11   | 11    |
| 5330-00-088-9166 | 1    | 3     | 4930-00-734-0180 | 10   | 1     |
|                  | 1    | 16    | 4930-00-786-9566 | 10   | 9     |
|                  | 6    | 2     | 5310-00-809-4058 | 10   | 23    |
| 5305-00-225-3843 | 11   | 4     |                  | 11   | 5     |
|                  | 12   | 2     |                  | 12   | 3     |
|                  | 13   | 2     |                  | 13   | 3     |
| 5510-00-255-9492 | 15   | 5     | 4730-00-840-5347 | 1    | 13    |
| 5510-00-255-9493 | 15   | 6     |                  | 2    | 11    |
| 5331-00-291-3085 | 10   | 25    |                  | 3    | 11    |
|                  | 12   | 8     |                  | 11   | 18    |
|                  | 13   | 7     | 4730-00-840-5348 | 1    | 15    |
| 4010-00-360-0596 | 1    | 4     |                  | 2    | 13    |
|                  | 1    | 7     |                  | 3    | 13    |
|                  | 2    | 4     | 5330-00-874-3744 | 11   | 15    |
|                  | 3    | 4     | 4730-00-889-2378 | 1    | 15    |
|                  | 10   | 20    | 4730-00-889-2380 | 1    | 13    |
|                  | 11   | 8     | 4730-00-889-5483 | 4    | 6     |
| 4820-00-595-1841 | 7    | blank | 5330-00-899-4509 | 1    | 3     |
| 5330-00-612-2414 | 10   | 16    |                  | 1    | 16    |
|                  | 10   | 19    |                  | 2    | 3     |
| 5310-00-637-9541 | 1    | 10    |                  | 3    | 3     |
|                  | 2    | 8     |                  | 6    | 2     |
|                  | 3    | 8     |                  | 11   | 3     |
|                  | 11   | 12    |                  | 11   | 10    |
| 4730-00-640-6156 | 1    | 2     | 4730-00-929-0787 | 1    | 2     |
|                  | 2    | 2     |                  | 6    | 5     |
|                  | 3    | 2     |                  | 13   | 5     |
|                  | 6    | 5     | 4730-00-929-0790 | 1    | 6     |
|                  | 11   | 7     |                  | 6    | 4     |
| 4730-00-640-6188 | 1    | 6     | 4730-00-951-3293 | 6    | 3     |
|                  | 2    | 6     | 5331-00-364-9862 | 11   | 6     |
|                  | 3    | 6     | 5330-01-073-5007 | 5    | 10    |
|                  | 6    | 4     | 5315-01-073-8970 | 5    | 3     |
| 4730-00-649-9100 | 10   | 18    | 4820-01-076-8018 | 5    | blank |
| 4730-00-649-9103 | 10   | 15    | 5331-01-076-9342 | 5    | 11    |
| 4930-00-653-0407 | 4    | 5     |                  | 5    | 15    |
| 5310-00-654-4537 | 4    | 1     | 5342-01-077-3664 | 5    | 5     |
| 5342-00-720-8858 | 15   | 4     | 5340-01-077-4942 | 4    | 2     |
| 5342-00-720-8863 | 15   | 3     | 4820-01-090-0877 | 5    | blank |
| 5342-00-720-8864 | 15   | 2     | 4820-01-090-0923 | 5    | 1     |
| 5305-00-725-2317 | 1    | 11    | 4820-01-159-0439 | 1    | 17    |
| 4820-01-189-2809 | 1    | 17    |                  | 4    | blank |
|                  | 4    | blank | 5310-01-262-1337 | 4    | 3     |
| 5360-01-262-1338 | 4    | 4     | 5365-01-262-1339 | 4    | 6     |

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NATIONAL STOCK NUMBER INDEX**

| STOCK NUMBER     | FIG. | ITEM | STOCK NUMBER     | FIG. | ITEM |
|------------------|------|------|------------------|------|------|
| 5330-01-262-1340 | 4    | 11   | 4820-01-262-1341 | 4    | 12   |
| 4820-01-262-1342 | 4    | 13   | 5305-01-262-1343 | 4    | 14   |
| 4820-01-262-1344 | 4    | 17   | 5310-01-262-1345 | 7    | 1    |
| 5310-01-262-1346 | 7    | 4    | 4820-01-262-1347 | 7    | 8    |
| 4820-01-262-1348 | 7    | 9    | 5310-01-262-1349 | 10   | 7    |
| 5430-01-262-1350 | 10   | 4    | 5310-01-262-1351 | 10   | 6    |
| 5320-01-262-1352 | 10   | 10   | 5320-01-262-1353 | 10   | 11   |
| 4010-01-262-1354 | 12   | 6    | 5430-01-455-5676 | 14   | 1    |
|                  | 13   | 6    | 5310-01-262-1359 | 4    | 1    |
| 5310-01-262-1360 | 4    | 7    | 5330-01-262-1361 | 10   | 2    |
| 5330-01-262-1362 | 7    | 6    | 5330-01-262-1363 | 4    | 5    |
| 5330-01-262-1364 | 7    | 5    | 5330-01-262-1365 | 4    | 8    |
| 4820-01-262-1366 | 4    | 15   | 4820-01-262-5079 | 1    | 1    |
| 5305-01-262-5080 | 10   | 5    | 5330-01-262-5120 | 1    | 14   |
| 4820-01-262-5121 | 4    | 16   |                  | 2    | 12   |
| 4720-01-262-5146 | 6    | 1    |                  | 3    | 12   |
| 5430-01-262-9475 | 10   | 14   |                  | 11   | 17   |
| 5310-01-265-5044 | 4    | 9    | 5305-01-271-7588 | 4    | 8    |
| 5430-01-275-9478 | 12   | 1    | 5330-01-280-9388 | 1    | 14   |
| 5305-01-325-8387 | 2    | 9    | 5340-01-381-1621 | 5    | 4    |
|                  | 3    | 9    | 5340-01-381-1690 | 4    | 2    |
| 5330-01-381-2809 | 5    | 8    | 5305-01-382-5962 | 5    | 6    |
| 4310-01-382-6532 | 5    | 7    | 4730-01-416-1533 | 10   | 24   |
| 5430-01-479-5099 | 14   | 1    | 5430-01-414-9251 | 14   | 1    |
| 5430-01-215-7525 | 14   | 1    | 5430-01-052-3412 | 14   | 1    |
| 5430-01-359-4943 | 14   | 1    | 5430-01-641-8552 | 14   | 1    |
| 5430-01-414-9252 | 14   | 1    | 5430-01-433-8528 | 14   | 1    |
| 5430-01-358-6157 | 14   | 1    | 5430-01-268-8187 | 14   | 1    |

**END OF WORK PACKAGE**

**OPERATOR AND UNIT MAINTENANCE MANUAL  
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3,000, 10,000, 20,000, 50,000 GALLON  
PART NUMBER INDEX**

| PART NUMBER      | FIG. | ITEM | PART NUMBER | FIG. | ITEM |
|------------------|------|------|-------------|------|------|
| AA59326IX16      | 10   | 18   | MS27027-15  | 1    | 15   |
| AA59326V16       | 10   | 15   | MS27027-17  | 1    | 15   |
| AA59326X19       | 4    | 6    |             | 2    | 13   |
| AS3578-383       | 11   | 6    |             | 3    | 13   |
| B1821BH025C100N  | 11   | 4    | MS27028-15  | 1    | 2    |
|                  | 12   | 2    |             | 6    | 5    |
|                  | 13   | 2    |             | 13   | 5    |
| B1821BH025C125N  | 10   | 22   | MS27028-17  | 1    | 2    |
| B1821BH025C125N  | 1    | 11   |             | 2    | 2    |
|                  | 11   | 13   |             | 3    | 2    |
| C0317-4NA        | 2    | 1    |             | 6    | 5    |
| D102408          | 6    | 1    |             | 11   | 7    |
| EX1333B          | 10   | 1    | MS27029-15  | 1    | 6    |
| EX1333B-1-607    | 10   | 13   |             | 6    | 4    |
| EX1333B-3-607    | 10   | 12   | MS27029-17  | 1    | 6    |
| EX1333B-17       | 10   | 6    |             | 2    | 6    |
| EX1333B-18-95    | 10   | 2    |             | 3    | 6    |
| EX1333B-36-13    | 10   | 3    | MS27030-6   | 10   | 16   |
| EX1333B-38       | 10   | 4    |             | 10   | 19   |
| EX1333B-39       | 10   | 9    | MS27030-8   | 1    | 3    |
| EX1333B-40-68    | 10   | 8    |             | 1    | 16   |
| FCC-             |      |      |             |      |      |
| 62398/50609735   | 1    | 14   |             | 6    | 2    |
|                  | 2    | 12   | MS27030-9   | 1    | 3    |
|                  | 3    | 12   |             | 1    | 16   |
|                  | 11   | 17   |             | 2    | 3    |
| FCE574-81-1-A    | 14   | 1    |             | 3    | 3    |
| H06683M          | 1    | 4    |             | 6    | 2    |
|                  | 1    | 7    |             | 11   | 3    |
|                  | 2    | 4    |             | 11   | 10   |
|                  | 3    | 4    | MS27030-10  | 10   | 23   |
|                  | 10   | 20   |             | 11   | 5    |
|                  | 11   | 8    |             | 12   | 3    |
| M370-B08B2A480   | 6    | 1    |             | 13   | 3    |
| M370-B06C2A960   | 9    | 1    | MS27183-13  | 1    | 12   |
| M370-B09B2A960   | 6    | 1    |             | 2    | 10   |
| M52983-50        | 14   | 1    |             | 3    | 10   |
| MILR52255        | 15   | 1    | MS29513-250 | 10   | 25   |
| MIL-T-52983F-BVA | 3    | 1    |             | 12   | 8    |
| BA91-141         | 14   | 1    |             | 13   | 7    |
| MS27023-15       | 1    | 13   | MS35338-46  | 1    | 10   |
| MS27023-17       | 1    | 13   |             | 2    | 8    |
|                  | 2    | 11   |             | 3    | 8    |
|                  | 3    | 11   |             | 11   | 12   |
|                  | 11   | 18   | MS49000-1   | 6    | 3    |
| MS27023-21       | 10   | 24   | MS51967-8   | 1    | 9    |
|                  | 13   | 4    |             | 2    | 7    |
|                  |      |      |             | 3    | 7    |
|                  |      |      |             | 11   | 11   |

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PART NUMBER INDEX**

| PART NUMBER    | FIG. | ITEM  | PART NUMBER  | FIG. | ITEM |
|----------------|------|-------|--------------|------|------|
| MS90725-64     | 2    | 9     | 235RF-0252N  | 4    | 1    |
|                | 3    | 9     | 235RF-020621 | 4    | 5    |
| M52618/7P09XC  | 12   | 7     | 235RF-020721 | 4    | 3    |
| BA91-141A      | 14   | 1     | 235RF-02082P | 4    | 6    |
| BA91-140       | 14   | 1     | 235RF-02092G | 4    | 11   |
| M52983B        | 14   | 1     | 235RF-0210MD | 4    | 15   |
| SC5430-97CLE01 | 14   | 1     | 235RF-0210MD | 4    | 15   |
| P-2860H-400    | 5    | 1     | 235RF-0212MD | 4    | 16   |
| P-8449         | 5    | 4     | 235RF-0215MR | 4    | 13   |
| BA92-162       | 14   | 1     | 235RF-02162S | 4    | 4    |
| WTM3KF         | 14   | 1     | 235RF-0217MR | 4    | 17   |
| X-4775         | 13   | 1     | 235RF-02182S | 4    | 14   |
| X-7993-N       | 5    | 18    | 235RF-02192S | 4    | 8    |
| 0061-28406     | 12   | 1     | 235RF-02202N | 4    | 7    |
| 009240-3       | 7    | blank | 235RF-02212W | 4    | 9    |
| 1SK            | 1    | 5     | 239-20023-01 | 6    | 1    |
|                | 1    | 8     | 26264-L      | 4    | 12   |
|                | 2    | 5     | 26399-N      | 5    | 14   |
|                | 3    | 5     | 26462-N      | 5    | 9    |
|                | 10   | 21    | 2864-L       | 4    | 3    |
|                | 11   | 9     | 29001        | 8    | 18   |
| 1148-1         | 7    | 10    | 29002        | 8    | 10   |
| 1148-2         | 7    | 7     | 29003        | 8    | 15   |
| 1148-3         | 7    | 8     | 29004        | 8    | 16   |
| 1148-4         | 7    | 9     | 29005        | 8    | 17   |
| 1148-5         | 7    | 6     | 29006        | 8    | 13   |
| 1148-6         | 7    | 5     | 29007        | 8    | 9    |
| 1148-7         | 7    | 4     | 29008        | 8    | 14   |
| 1148-8         | 7    | 3     | 29009        | 8    | 11   |
| 1148-9         | 7    | 2     | 29010A       | 8    | 7    |
| 1148-10        | 7    | 1     | 29010B       | 8    | 12   |
| 13202E2870-1   | 15   | 2     | 29011        | 8    | 6    |
| 13202E2870-2   | 15   | 3     | 29012        | 8    | 5    |
| 13202E2870-3   | 15   | 4     | 29013        | 8    | 8    |
| 13211E3084     | 15   | 5     | 29014        | 8    | 2    |
| 13211E3085     | 15   | 6     | 29015        | 8    | 3    |
| 13228E9842-4   | 13   | 8     | 29016        | 8    | 4    |
| 1726-N         | 5    | 19    | 3042-L       | 4    | 18   |
| 205-18-98      | 10   | 7     | 3116M        | 4    | 1    |
| 2093-7         | 4    | 19    | 3198-B       | 4    | 7    |
| 2222191        | 8    | 1     | 363-G        | 4    | 5    |
| 23194-L        | 4    | 10    | 38084-3      | 4    | 9    |
| 235RF-0200AV   | 1    | 17    | 38194-N      | 5    | 17   |
|                | 4    | blank | 4IN-CS15-F   | 3    | 14   |
| 235RF-0201MB   | 4    | 19    | 4201035000   | 10   | 11   |
| 235RF-0202MB   | 4    | 10    | 4201232400   | 10   | 10   |
| 235RF-0203MB   | 4    | 12    | 42136-N      | 5    | 6    |
| 235RF-02043A   | 4    | 2     | 4247-E       | 4    | 8    |



**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK,  
3,000, 10,000, 20,000, 50,000 GALLON  
PART NUMBER INDEX**

| <b>PART NUMBER</b> | <b>FIG.</b> | <b>ITEM</b> | <b>PART NUMBER</b> | <b>FIG.</b> | <b>ITEM</b> |
|--------------------|-------------|-------------|--------------------|-------------|-------------|
| 4447101620         | 10          | 5           |                    |             |             |
| 45199-N-660        | 5           | 7           |                    |             |             |
| 50608694           | 9           | 1           |                    |             |             |
| 50609362           | 11          | 1           |                    |             |             |
| 50609780           | 10          | 14          |                    |             |             |
| 50609789           | 11          | 2           |                    |             |             |
| 50609818           | 11          | 14          |                    |             |             |
| 50609892           | 6           | 1           |                    |             |             |
| 50609921           | 12          | 6           |                    |             |             |
|                    | 13          | 6           |                    |             |             |
| 50609922           | 12          | 7           |                    |             |             |
| 50609923           | 12          | 5           |                    |             |             |
| 50609926           | 12          | 4           |                    |             |             |
| 50609928           | 10          | 17          |                    |             |             |
| 50610130           | 1           | 1           |                    |             |             |
| 50862063           | 11          | 16          |                    |             |             |
| 5551-001 4IN       | 1           | 17          |                    |             |             |
|                    | 4           | blank       |                    |             |             |
| 5988-N             | 5           | 3           |                    |             |             |
| 5996-R             | 5           | 13          |                    |             |             |
| 6593-L             | 4           | 6           |                    |             |             |
| 6595-N             | 5           | 8           |                    |             |             |
| 6596-B             | 5           | 11          |                    |             |             |
|                    | 5           | 15          |                    |             |             |
| 66108-L            | 1           | 14          |                    |             |             |
| 66150-N            | 5           | 10          |                    |             |             |
| 66173-L            | 4           | 11          |                    |             |             |
| 70170-N            | 5           | 5           |                    |             |             |
| 70171-L            | 4           | 4           |                    |             |             |
| 7410-N             | 5           | 12          |                    |             |             |
| 7411-N             | 5           | 16          |                    |             |             |
| 7500-3-8           | 11          | 15          |                    |             |             |
| 7699-K-C56         | 4           | 2           |                    |             |             |
| 7959-D             | 5           | 2           |                    |             |             |
| 84168-L            | 4           | 13          |                    |             |             |
| 8621-N-940         | 5           | blank       |                    |             |             |
| 869-N-940          | 5           | blank       |                    |             |             |
| 90031-4            | 12          | 4           |                    |             |             |

**END OF WORK PACKAGE**



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**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK,  
3,000, 10,000, 20,000, 50,000 GALLON  
COMPONENTS OF END ITEMS (COEI) AND BASIC ISSUE ITEMS (BII) LISTS**

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**INTRODUCTION**

This work package lists COEI and BII for the 3,000 Gallon, 10,000 Gallon, 20,000 Gallon or 50,000 Gallon collapsible fabric tank to help inventory items for safe and efficient operation of the equipment.

**General**

The COEI and BII information is divided into the following lists:

**Components of End Item (COEI).** This list is for informational purposes only, and is not authority to requisition replacements. These items are part of the collapsible fabric fuel tank. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist in identifying the items.

**Basic Issue Items (BII).** These essential items are required to place a 3,000 Gallon, 10,000 Gallon, 20,000 Gallon or 50,000 Gallon collapsible fabric fuel tank in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the collapsible fabric fuel tank during operation and whenever it is transferred between property accounts. Listing these items is authority to request/requisition items for replacement based on authorization of the end item by TOE/MTOE. Illustrations are furnished to help find and identify the items.

**Explanation of Columns in the COEI List and BII List**

Column (1), Illus Number, gives the number of the item illustrated.

Column (2), National Stock Number, identifies the stock number of the item to be used for requisitioning purposes.

Column (3), Description, CAGEC, and Part Number, identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the CAGEC (Commercial and Government entity code) (in parentheses) and the part number.

Column (4), Usable on Code, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

| <u>Code</u> | <u>Used On</u>                     |
|-------------|------------------------------------|
| ECY         | 3,000 Gallon, Model MIL-T-52983B   |
| FNR         | 3,000 Gallon, Model WTM3KF         |
| EQB         | 10,000 Gallon, Model FCE574-81-1-A |
| EQC         | 10,000 Gallon, SC5430-97CLE01      |
| FCN         | 10,000 Gallon, Model BA91-141      |
| FMD         | 10,000 Gallon, Model BA91-141A     |
| ELS         | 20,000 Gallon, Model BA92-162      |
| FCM         | 20,000 Gallon, Model BA91-140      |
| FMC         | 20,000 Gallon, Model BA91-140A     |
| EDD         | 50,000 Gallon, Model PD52983-50    |
| EDC         | 50,000 Gallon, Model M52983-50     |

Column (5), U/M (unit of measure), indicates how the item is issued for the National Stock Number shown in column (2).

Column (6) Qty Rqr, indicates the quantity required.

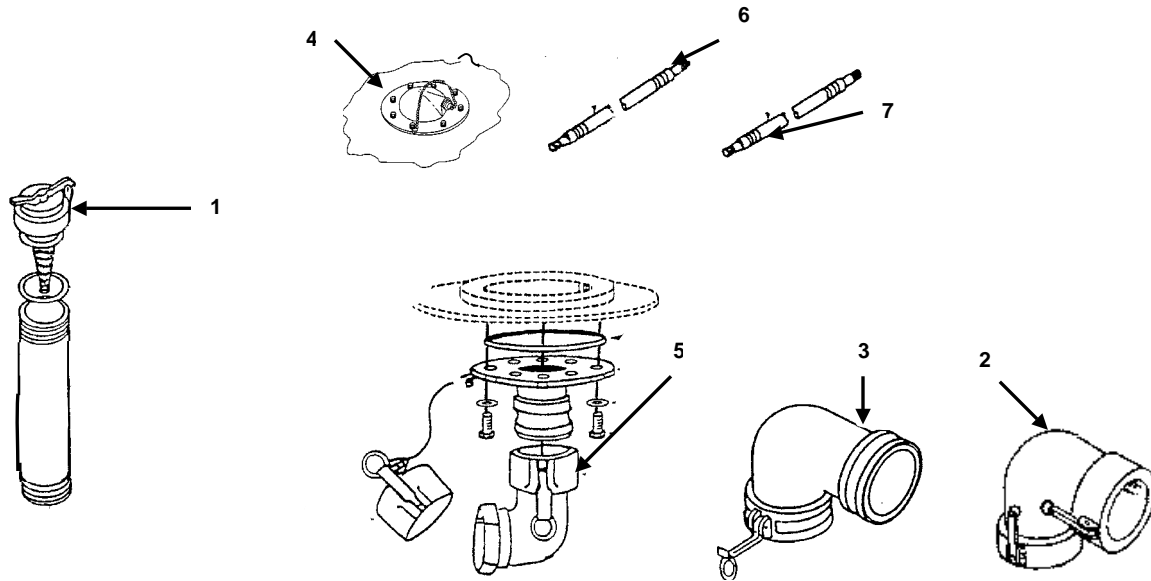


Table 1. Components of End Item List

| (1)<br>ILLUS<br>NUMBER | (2)<br>NATIONAL STOCK<br>NUMBER | (3)<br>DESCRIPTION,<br>CAGEC AND<br>PART NUMBER                 | (4)<br>USABLE ON<br>CODE      | (5)<br>U/M | (6)<br>QTY<br>RQR |
|------------------------|---------------------------------|---|-------------------------------|------------|-------------------|
| 1                      | 4930-00-734-0180                | STRAINER ELEMENT<br>(49234) EX1333B                             | EDC, FCN,<br>FCM, ELS,<br>EDD | EA         | 1                 |
| 2                      |                                 | ELBOW, QUICK<br>DISCONNECT<br>FEMALE/FEMALE<br>(00333) 50609789 | EDC, FCN,<br>FCM, ELS,<br>EDD | EA         | 1                 |
| 3                      |                                 | ELBOW, QUICK<br>DISCONNECT<br>FEMALE/MALE<br>(00333) 50609362   | EDC, FCN,<br>FCM, ELS,<br>EDD | EA         | 1                 |
| 4                      | 5430-01-275-9478                | FITTING ASSEMBLY,<br>DRAIN<br>½" (74897) 0061-28406             | EDC, ELS,<br>EDD              | EA         | 1                 |
| 5                      |                                 | FITTING ASSEMBLY,<br>DRAIN 2.0"<br>(66618) X-4775               | FCN, FCM,<br>FNR              | EA         | 1                 |

Table 1. Components of End Item List

| (1)<br>ILLUS<br>NUMBER | (2)<br>NATIONAL STOCK<br>NUMBER | (3)<br>DESCRIPTION,<br>CAGEC AND<br>PART NUMBER                                       | (4)<br>USABLE ON<br>CODE           | (5)<br>U/M | (6)<br>QTY<br>RQR |
|------------------------|---------------------------------|---|------------------------------------|------------|-------------------|
| 6                      |                                 | HOSE ASSEMBLY, DRAIN<br>1/2" (00333) 5068694  | EDC, ELS                           | EA         | 1                 |
| 7                      |                                 | HOSE ASSEMBLY, DRAIN<br>2.0" (OA6KI) 28148  | FCN, FCM,<br>FNR                   | EA         | 1                 |
|                        |                                 | HOSE ASSY, DRAIN 2.0"<br>(OCBB4) M370B06C2A0960                                       | EDD                                | EA         | 2                 |
| 8                      |                                 | HOSE ASSEMBLY, 4.0"<br>FILLER/DISCHARGE<br>(OD333) 50609892                           | EDC, ELS,<br>FCM, FMD,<br>FCN, FMC | EA         | 2                 |
|                        |                                 | (OCBB4) M370B09824A0960   | EDD                                | EA         | 1                 |
|                        |                                 | HOSE ASSEMBLY, 3.0"<br>FILLER/DISCHARGE<br>(OA6KI) D102408 or<br>(74897) 239-20023-01 | ECY, FNR                           |            |                   |
| 9                      | 5430-01-262-9475                | PIPE AND COUPLER<br>ASSEMBLY, VENT<br>(00333) 50609780 or<br>(80691) 20VPALTM         | EDC, FCN,<br>FCM, ELS,<br>FNR, EDD | EA         | 1                 |
| 10                     | 5430-01-455-5676                | TANK, FABRIC, COLLAP-<br>SIBLE 50,000-GALLON<br>(OCBB4) PD52983-50                    | EDD                                | EA         | 1                 |
|                        | 5430-01-479-5099                | TANK, FABRIC, COLLAP-<br>SIBLE 50,000-GALLON<br>(IDFDO) M52983-50                     | EDC                                | EA         | 1                 |
|                        | 5430-01-215-7525                | TANK, FABRIC, COLLAP-<br>SIBLE 20,000-GALLON<br>(66618) BA92-162                      | ELS                                | EA         | 1                 |
|                        | 5430-01-359-4943                | TANK, FABRIC, COLLAP-<br>SIBLE 20,000-GALLON<br>(66618) BA91-140                      | FCM                                | EA         | 1                 |
|                        | 5430-01-414-9252                | TANK, FABRIC, COLLAP-<br>SIBLE 20,000-GALLON<br>(66618) BA91-140A                     | FMC                                | EA         | 1                 |
|                        | 5430-01-358-6157                | TANK, FABRIC, COLLAP-<br>SIBLE 10,000-GALLON<br>(66618) BA91-141                      | FCN                                | EA         | 1                 |
|                        | 5430-01-414-9251                | TANK, FABRIC, COLLAP-<br>SIBLE 10,000 GALLON<br>(66618) BA91-141A                     | FMD                                | EA         | 1                 |

Table 1. Components of End Item List

| (1)<br>ILLUS<br>NUMBER | (2)<br>NATIONAL STOCK<br>NUMBER | (3)<br>DESCRIPTION,<br>CAGEC AND<br>PART NUMBER   | (4)<br>USABLE ON<br>CODE | (5)<br>U/M | (6)<br>QTY<br>RQR |
|------------------------|---------------------------------|---|--------------------------|------------|-------------------|
|                        | 5430-01-052-3412                | TANK, FABRIC, COLLAP-<br>SIBLE 10,000 GALLON<br>(00333) FCE574-81-1-A                         | EQB                      | EA         | 1                 |
|                        | 5430-01-641-8552                | TANK, FABRIC, COLLAP-<br>SIBLE 10,000 GALLON<br>(81996) SC5430-97CLE01                        | EQC                      | EA         | 1                 |
|                        | 5430-01-433-8528                | TANK, FABRIC, COLLAP-<br>SIBLE 3,000-Gallon<br>(0X0J8) WTM3KF                                 | FNR                      | EA         | 1                 |
|                        | 5430-01-268-8187                | TANK, FABRIC, COLLAP-<br>SIBLE 3,000 GALLON<br>(81349) M52983B                                | ECY                      | EA         | 1                 |
| 11                     |                                 | GATE VALVE ASSEMBLY,<br>4.0" FILLER/DISCHARGE<br>(00333) 50610130 or<br>(76364) 235RF-0200 AV | EDC, ELS,<br>FNR, EDD    | EA         | 1                 |
|                        | 4820-01-189-2809                |   |                          |            |                   |
|                        | 4820-01-159-0439                | (76364) 5551-001 4 IN.  | ECY                      | EA         | 1                 |
| 12                     | 4820-00-595-1841                | VALVE, ½" DRAIN GATE<br>(67060) 009240-3  | FNR, EDC,<br>ELS, EQB    | EA         | 1                 |

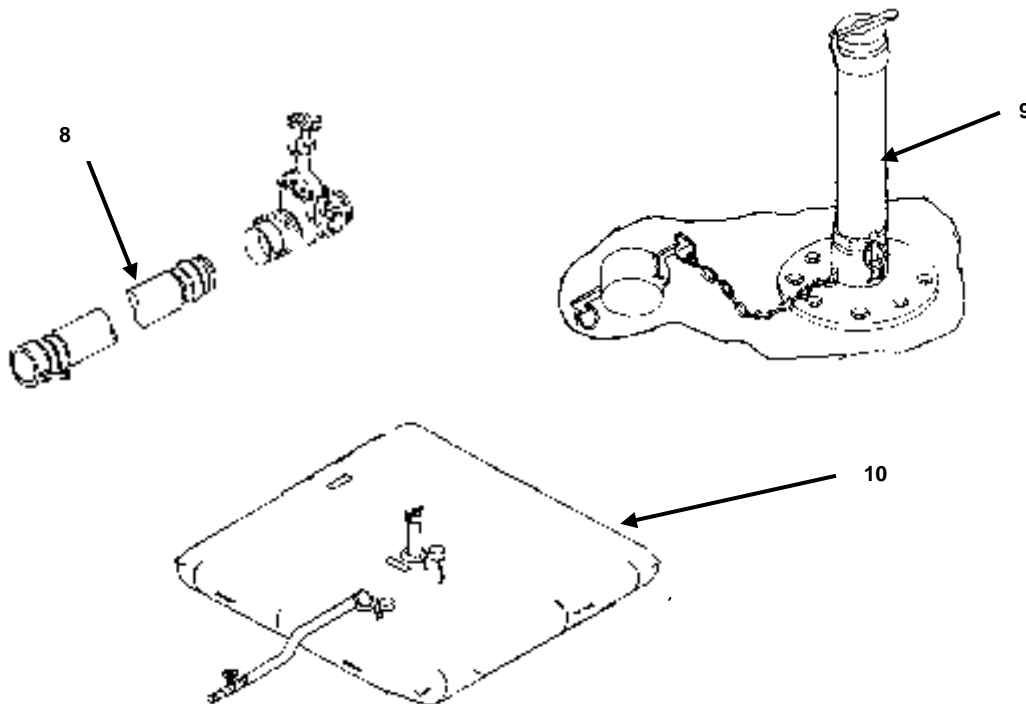


Table 1. Components of End Item List

| (1)<br>ILLUS<br>NUMBER | (2)<br>NATIONAL STOCK<br>NUMBER | (3)<br>DESCRIPTION,<br>CAGEC AND<br>PART NUMBER          | (4)<br>USABLE ON<br>CODE           | (5)<br>U/M | (6)<br>QTY<br>RQR |
|------------------------|---------------------------------|--|------------------------------------|------------|-------------------|
| 13                     | 4820-01-090-0923                | BUTTERFLY VALVE<br>ASSEMBLY<br>(76364) P-2680H-400       | FCN, FCM                           | EA         | 1                 |
| 14                     |                                 | DRAIN BALL VALVE<br>(OA6K1) 2222191                      | FCN, FCM,<br>FMD, FMC,<br>FNR, EDD | EA         | 1                 |
| 15                     |                                 | BALL VALVE,<br>FILLER/DISCHARGE<br>4IN-C515-F<br>(OA6K1) | FCN, FCM,<br>FMD, FMC              | EA         | 1                 |

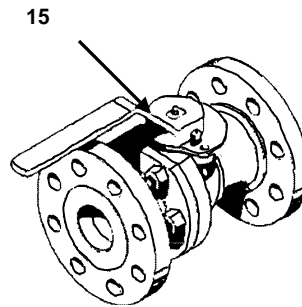
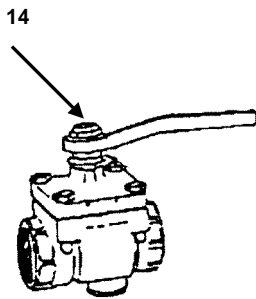
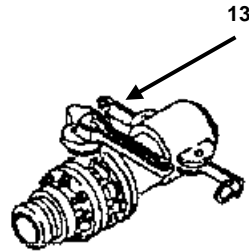
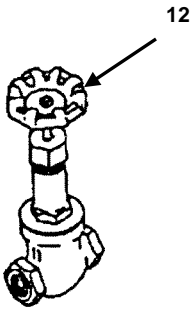
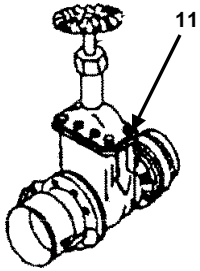
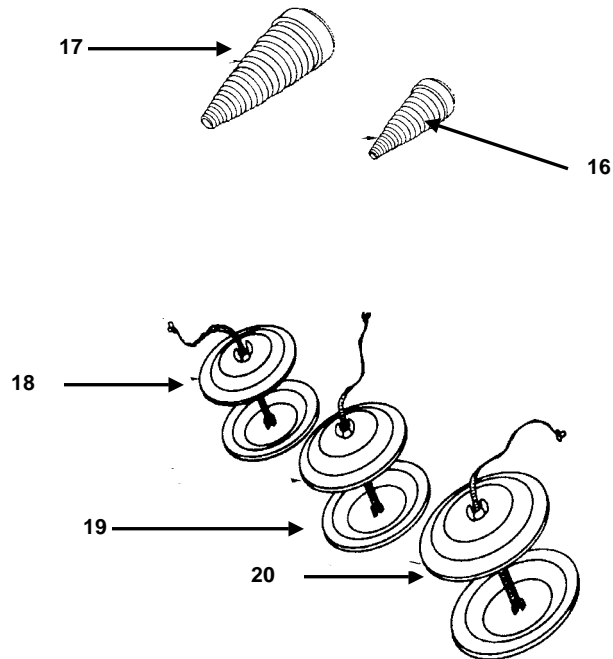


Table 1. Components of End Item List

| (1)<br>ILLUS<br>NUMBER | (2)<br>NATIONAL STOCK<br>NUMBER | (3)<br>DESCRIPTION,<br>CAGEC AND<br>PART NUMBER            | (4)<br>USABLE ON<br>CODE | (5)<br>U/M | (6)<br>QTY<br>RQR |
|------------------------|---------------------------------|--|--------------------------|------------|-------------------|
| 16                     | 5510-00-255-9493                | PLUG, WOOD, 3 INCH<br>(97403), 13211E3085                  |                          | EA         | 2                 |
| 17                     | 5510-00-255-9492                | PLUG, WOOD, 5 INCH<br>(97403), 13211E3084                  |                          | EA         | 2                 |
| 18                     | 5340-00-720-8864                | PATCH, MECHANICAL, FI,-3 INCH<br>(81336), 13202E2870-1     |                          | EA         | 4                 |
| 19                     | 5340-00-720-8863                | PATCH, Mechanical, FI,-5 inch<br>(81336), 13202E2870-2     |                          | EA         | 2                 |
| 20                     | 5340-00-720-8858                | PATCH, MECHANICAL, FI, 7-1/2 INCH<br>(81336), 13202E2870-3 |                          | EA         | 2                 |

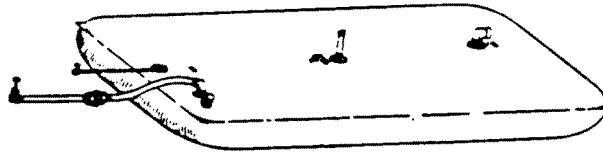




TM 10-5430-238-12&amp;P

**TECHNICAL MANUAL****OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)****TANK, FABRIC, COLLAPSIBLE, FUEL STORAGE**

3,000 GALLON, MODEL WTM3KF (EIC=ZVM)/  
MIL-T-52983B (EIC=ZC8)  
(NSN 5430-01-433-8528)/(NSN 5430-00-268-8187)  
10,000 GALLON, MODEL BA91-141 (EIC=ZF3)/BA91-141A (EIC=ZVL)  
FCE574-81-1-A (EIC=) (EXTRA ACCESSORIES)/  
SC5430-97CLE01 (EIC=ZFN)  
(NSN 5430-01-358-6157)/(NSN 5430-01-414-9251)  
(NSN 5430-00-052-3412)/(NSN 5430-00-641-8552)  
20,000 GALLON, MODEL BA91-140 (EIC-ZF2)/  
BA91-140A (EIC=)/BA92-162 (EIC=ZFR)  
(NSN 5430-01-359-4943)/(NSN 5430-01-414-9252)/  
(NSN 5430-01-215-7525)  
50,000 GALLON, MODEL PD52983-50 (EIC= )/M52983-50 (EIC=ZFB)  
(NSN 5430-01-455-5676)/(NSN 5430-00-182-8181)



This manual supersedes TM 5-5430-219-13, dated 31 August 1987, TM 5-5430-210-12, dated 30 November 1978 and TM 5-5430-219-23P, dated 31 August 1988 including all changes.

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

HEADQUARTERS, DEPARTMENT OF THE ARMY

28 DECEMBER 2001

**Table 2. Basic Issue Items List.**

| (1)<br>ILLUS.<br>NUMBER | (2)<br>NATIONAL<br>STOCK<br>NUMBER | (3)<br>DESCRIPTION, CAGEC<br>AND PART NUMBER   | (4)<br>USABLE<br>ON CODE | (5)<br>U/M | (6)<br>QTY<br>RQR. |
|-------------------------|------------------------------------|--|--------------------------|------------|--------------------|
| 1                       |                                    | TECHNICAL MANUAL, OPERATOR<br>AND UNIT MAINTENANCE<br>(INCL. RPSTL)<br>TM 10-5430-238-12&P |                          | EA         | 1                  |

END OF WORK PACKAGE



**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK,  
3,000, 10,000, 20,000, 50,000 GALLON  
ADDITIONAL AUTHORIZATION LIST (AAL)**

## **ADDITIONAL AUTHORIZATION LIST (AAL)**

### **INTRODUCTION**

#### **Scope**

This work package lists additional items authorized for the support of the collapsible fabric fuel storage tanks.

#### **General**

This list identifies items that do not have to accompany the collapsible fabric fuel storage tank, and do not have to be turned in with it. These items are all authorized by CTA, MTOE, TDA, or JTA.

#### **Explanation of Columns in the AAL**

Column (1) – National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) – Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). 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 (in parentheses) and the part number.

Column (3) – Usable On Code. When applicable, gives a code if the item needed is not the same for different models of equipment.

Column (4) – Unit of Measure (U/M). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) – Qty Recm. Indicates the quantity recommended.

### **ADDITIONAL AUTHORIZED LIST ITEMS**

**Table 1. Additional Authorization List.**

| <b>(1)<br/>NATIONAL<br/>STOCK NUMBER</b> | <b>(2)<br/>DESCRIPTION, CAGEC<br/>AND PART NUMBER</b> | <b>(3)<br/>USABLE<br/>ON CODE</b> | <b>(4)<br/>U/M</b> | <b>(5)<br/>QTY<br/>RECM.</b> |
|--|---|-----------------------------------|--------------------|------------------------------|
| 5430-01-237-3659                         | LINER, BERM, FABRIC TANK<br>(81349) M53081-2          | FCN                               | EA                 | 1                            |
| 5430-01-237-3660                         | LINER, BERM, FABRIC TANK<br>(81349) M53081-3          | ELS, FCM                          | EA                 | 1                            |
| 5430-01-237-3661                         | LINER, BERM, FABRIC TANK<br>(81349) M53081-4          | EDC                               | EA                 | 1                            |
| 5430-01-237-3658                         | LINER, BERM, FABRIC TANK<br>(81349) M53081-1          | FNR                               | EA                 | 1                            |

Table 1. Additional Authorization List

| (1)<br>NATIONAL<br>STOCK NUMBER | (2)<br>DESCRIPTION, CAGEC<br>AND PART NUMBER   | (3)<br>USABLE<br>ON CODE | (4)<br>U/M | (5)<br>QTY<br>RECM. |
|---------------------------------|--|--------------------------|------------|---------------------|
| 5430-01-359-1078                | REPAIR KIT, COLLAPSIBLE FABRIC FUEL<br>STORAGE TANK<br>(ROCTAD)<br>(0F6E1) BOV-USA-1 |                          | EA         | 1                   |

END OF WORK PACKAGE

**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK,  
3,000, 10,000, 20,000, 50,000 GALLON  
EXPENDABLE AND DURABLE ITEMS LIST**

## INTRODUCTION

This work package lists expendable and durable items needed to operate and maintain the collapsible fabric fuel tank. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except for Medical, Class V Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

### Explanations of Columns in the Expendable/Durable Items List

Column (1) - Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., "Use lubricating oil (Item 10, WP 0039 00).").

Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item (C=Operator/Crew).

Column (3) - National Stock Number. This is the NSN assigned to the item used to requisition it.

Column (4) - Item Name, Description, Commercial and Government Entity Code (CAGE), and Part Number (P/N). This column provides the other information needed to identify the item.

Column (5) - Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

## EXPENDABLE AND DURABLE ITEMS LIST

**Table 1. Expendable and Durable Items List.**

| (1)<br>ITEM<br>NUMBER | (2)<br>LEVEL | (3)<br>NATIONAL<br>STOCK NUMBER | (4)<br>ITEM NAME, DESCRIPTION,<br>CAGE, PART NUMBER               | (5)<br>U/M |
|-----------------------|--------------|---------------------------------|---|------------|
| 1                     | C            | 9150-00-231-6689                | LUBRICATING OIL, GENERAL PURPOSE<br>(81349) MIL-PRF-32033         | QT         |
| 2                     | O            | 5350-00-221-0872                | CROCUS CLOTH<br>(80204) ANSI B74.18                               | SH         |
| 3                     | O            | 5350-00-221-0872                | DETERGENT<br>(81349) MIL-D-16791                                  | GL         |
| 4                     | O            | 6850-00-281-1985                | DRY CLEANING SOLVENT<br>(58536) A-A-59601                         | GL         |
| 5                     | O            | 9150-00-261-8291                | GREASE, PLUG VALVE<br>(81343) SAE AMS-G-6032                      | EA         |
| 6                     | O            | 7920-00-205-1711                | RAG, WIPING<br>(80244)  | LB         |
| 7                     | O            | 8030-00-889-3534                | ANTI-SEIZE TAPE,<br>POLYTERAFLUORSETHYLENE<br>(81349) MIL-T-27730 | EA         |

Table 1. Expendable and Durable Items List

| (1)<br>ITEM<br>NUMBER | (2)<br>LEVEL | (3)<br>NATIONAL<br>STOCK NUMBER | (4)<br>ITEM NAME, DESCRIPTION,<br>CAGE, PART NUMBER                               | (5)<br>U/M |
|-----------------------|--------------|---------------------------------|---|------------|
| 8                     | O            | 8030-00-543-4384                | SEALING COMPOUND, THREAD AND<br>GASKET, FUEL, OIL AND WATER<br>(81343) AMS-S-7916 | LB         |
| 9                     | O            | 6850-00-880-7613                | SILICONE COMPOUND<br>(81343) SAE-A58660   | OZ         |
| 10                    | O            | 6810-01-080-9589                | TECHNICAL TALC, T1 AND T3<br>(81349) MIL-T-50036                                  | LB         |

END OF WORK PACKAGE

**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK,  
3,000, 10,000, 20,000, 50,000 GALLON  
TORQUE LIMITS**

## INTRODUCTION

This work package 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 work package shall be used when specific torque values are not indicated in the maintenance procedures.

### Torque Limits

Torque limits are listed in Table 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 2 lists the minimum breakaway torque values for locknuts.

**Table 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                        | 7 (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)   |
| 1-8 UNC                           | 235 (319)        | 590 (800)   | 660 (895)        | 910 (1234)  |
| 1-14 UNF                          | 250 (339)        | 660 (865)   | 825 (1119)       | 999 (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) |
| 1-1/2-12 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 2. Locknut Breakaway Torque Values****NOTE**

To determine breakaway torque, thread locknut onto screw or bolt until at least two threads stick out. The 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 requirements.

| Thread<br>Size | Minimum Breakaway Torque |         |
|----------------|--------------------------|---------|
|                | lb-in.                   | (N·m)   |
| 10-32          | 2.0                      | (0.23)  |
| 1/4-28         | 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) |

**END OF WORK PACKAGE**



**OPERATOR AND UNIT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
COLLAPSIBLE FABRIC TANK,  
3,000, 10,000, 20,000, 50,000 GALLON  
MANDATORY REPLACEMENT PARTS LIST**

**INTRODUCTION**

This work package includes a list of all mandatory replacement parts referenced in the task initial setups and procedures. These are items that must be replaced during maintenance whether they have failed or not. This includes items based on usage intervals such as miles, time, rounds fired, etc.

**MANDATORY REPLACEMENT PARTS LIST****Table 1. Mandatory Replacement Parts List**

| <b>ITEM<br/>#</b> | <b>PART<br/>NUMBER</b> | <b>CAGE</b> | <b>NSN</b>       | <b>NOMENCLATURE</b>     | <b>QTY</b> |
|-------------------|------------------------|-------------|------------------|-------------------------|------------|
| 1                 | MS27030-9              | 96906       | 5330-00-899-4509 | GASKET 4 IN.            | 6          |
| 2                 | MS27030-6              | 96906       | 5330-00-612-2414 | GASKET 2 IN.            | 3          |
| 3                 | FCC-<br>62398/50609735 | 05476       | 5330-01-262-5120 | GASKET                  | 7          |
| 4                 | MS35338-46             | 96906       | 5310-00-637-9541 | LOCKWASHER              | 32         |
| 5                 | 235RF-02092G           | 41592       | 5330-01-262-1340 | GASKET, VALVE<br>BONNET | 1          |
| 6                 | 235RF-02212W           | 41592       | 5310-01-265-5044 | LOCKWASHER              | 8          |
| 7                 | 869-N-940              | 76364       | 4820-01-076-8018 | PARTS KIT, VALVE        | 1          |
| 8                 | 8621-N-940             | 76364       | 4820-01-090-0877 | PARTS KIT, BUTTERFLY    | 1          |
| 9                 | 6595-N                 | 76364       | 5330-01-381-2809 | SEAL, PLAIN ENCASED     | 1          |
| 10                | 1148-5                 | 76364       | 5330-01-262-1362 | PACKING MATERIAL        | 1          |
| 11                | 29008                  | OA6K1       |                  | BONNET GASKET           | 1          |
| 12                | 29010A                 | OA6K1       |                  | STEM SEAL               | 1          |
| 13                | 29010B                 | OA6K1       |                  | STEM SEAL               | 1          |
| 14                | EX1333B-18-95          | 49234       | 5330-01-262-1361 | GASKET CAP              | 1          |
| 15                | MS29513-250            | 96906       | 5330-01-262-1361 | O-RING                  | 1          |
| 16                | 205-18-98              | 49234       | 5330-01-262-1349 | RELIEF CAP GASKET       | 1          |
| 17                | AS29513-383            | 81343       | 5330-01-067-3449 | O-RING                  | 1          |
| 18                | 7500-3-8               | 83259       | 5330-00-874-3744 | GASKET                  | 8          |

**END OF WORK PACKAGE**



## GLOSSARY

### ABBREVIATIONS

|             |  |
|-------------|--|
| AAL .....   | Additional Authorization List                |
| Assy .....  | Assembly                                     |
| Bil.....    | Basic Issue Items                            |
| bu .....    | Bundle                                       |
| °C .....    | Degree Celsius                               |
| CAGEC ..... | Commercial and Government Entity Code        |
| COEI .....  | Components of End Item                       |
| EIR .....   | Equipment Improvement Recommendations        |
| ESC .....   | Equipment Serviceable Criteria               |
| °F .....    | Degree Fahrenheit                            |
| Fed .....   | Federal                                      |
| gl .....    | Gallon                                       |
| illus ..... | Illustration                                 |
| MTOE .....  | Modified Table of Organization and Equipment |
| MWO .....   | Modification Work Order                      |
| NSN .....   | National Stock Number                        |
| PMCS .....  | Preventive Maintenance Checks and Services   |
| QA/QC ..... | Quality Assurance/Quality Control            |
| Qty .....   | Quantity                                     |
| Rqr .....   | Required                                     |
| Spec .....  | Specification                                |
| TAMMS ..... | The Army Maintenance Management System       |
| TMDE .....  | Test, Measurement, and Diagnostic Equipment  |
| U/M .....   | Unit of Measure                              |

### DEFINITION OF TERMS

#### A

APPENDIX - A collection of supplementary material at the end of a book.

APPROVED - Permitted to be used for a specific purpose by the person or group who is authorized to grant approval.

ASSEMBLY - A combination of parts that may be taken apart without destruction, which has no application or use of its own but is needed for the completeness of a more complex item with which it is combined, or to which it is attached.

#### C

COMPONENT - A part or a combination of parts, which together accomplish a function.

#### E

EXPENDABLE - An item that is not repairable and is discarded if damaged.

EXPOSURE - Being in the presence of something, or in contact with something. Skin is exposed to cleaning solvent when the solvent contacts the skin during cleaning operations.

#### L

LEGIBLE - Capable of being read. A legible nameplate can be read; an illegible plate cannot.

**M**

MALFUNCTION - Occurs when a unit fails to operate normally.

MANUFACTURER – The company which makes an item or piece of equipment for sale.

MATERIEL - Equipment, apparatus, and supplies of an organization such as an army.

**R**

RECOMMENDATIONS - Suggestions for change; advice given usually to make an improvement.

REQUIRE - To demand or need.

**S**

SCOPE - The extent of an activity or concept; the amount of information covered as in a book.

SOLVENT - A liquid that can dissolve another substance.

**T**

TORQUE - Force around an axis. It produces a rotary or twisting motion, and is measured in foot-pounds (ft-lb) or newton-meters (N•m).

**V**

VENTILATE - To provide with a source of fresh or uncontaminated air.

VISUAL - Visible; detected by the unaided eye.

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By Order of the Secretary of the Army:

Official:

  
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*General, United States Army  
Chief of Staff*

To be distributed in accordance with the initial distribution number (IDN) 256702 requirements for TM 10-5430-238-12&P.



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The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17 and 27.

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To: tacom-tech-pubs@tacom.army.mil

### Subject DA Form 2028

1. **From:** Joe Smith
2. **Unit:** home
3. **Address:** 4300 Park
4. **City:** Hometown
5. **St:** MO
6. **Zip:** 77777
7. **Date Sent:** 19-OCT-93
8. **Pub no:** 55-1915-200-10
9. **Pub Title:** TM
10. **Publication Date:** 11-APR-88
11. **Change Number:** 12
12. **Submitter Rank:** MSG
13. **Submitter Fname:** Joe
14. **Submitter Mname:** T
15. **Submitter Lname:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem:** 1
18. **Page:** 1
19. **Paragraph:** 3
20. **Line:** 4
21. **NSN:** 5
22. **Reference:** 6
23. **Figure:** 7
24. **Table:** 8
25. **Item:** 9
26. **Total:** 123
27. **Text:**

This is the text for the problem below line 27.



|   |      |            |      |            |  |   |  |  |  |
|---|------|------------|------|------------|--|---|--|--|--|
| <b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b><br><br>For use of this form, see AR 25-30; the proponent agency is OAASA |      |            |      |            |  | Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM). |  | DATE   |  |
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| PUBLICATION/FORM NUMBER<br><br>TM 10-5430-238-12&P  |      |            |      |            |  | DATE<br><br>28 December 2001  |  | TITLE<br><br>Tank, Fabric, Collapsible, Fuel Storage |  |
| ITEM  | PAGE | PARA-GRAPH | LINE | FIGURE NO. | TABLE                                      | RECOMMENDED CHANGES AND REASON  |  |  |  |
|   |      |            |      |            |  |   |  |  |  |
| * Reference to line numbers within the paragraph or subparagraph.   |      |            |      |            |  |   |  |  |  |
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| <b>PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS</b>   |          |          |                       |  |            |          |                                    |                    |
| PUBLICATION NUMBER  |          |          |                       | DATE   |            | TITLE    |                                    |                    |
| PAGE NO.  | COLM NO. | LINE NO. | NATIONAL STOCK NUMBER | REFERENCE NO.  | FIGURE NO. | ITEM NO. | TOTAL NO. OF MAJOR ITEMS SUPPORTED | RECOMMENDED ACTION |
|   |          |          |                       |  |            |          |                                    |                    |
| <b>PART III - REMARKS</b> <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i> |          |          |                       |  |            |          |                                    |                    |
|   |          |          |                       |  |            |          |                                    |                    |
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## The Metric System and Equivalents

### *Linear Measure*

1 centimeter = 10 millimeters = .39 inch  
 1 decimeter = 10 centimeters = 3.94 inches  
 1 meter = 10 decimeters = 39.37 inches  
 1 dekameter = 10 meters = 32.8 feet  
 1 hectometer = 10 decameters = 328.08 feet  
 1 kilometer = 10 hectometers = 3,280.8 feet

### *Weights*

1 centigram = 10 milligrams = .15 grain  
 1 decigram = 10 centigrams = 1.54 grains  
 1 gram = 10 decigrams = .035 ounce  
  
 1 dekagram = 10 grams = .35 ounce  
 1 hectogram = 10 dekagrams = 3.52 ounces  
  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

### *Liquid Measure*

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

### *Square Measure*

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

### *Cubic Measure*

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 feet

## Approximate Conversion Factors

| <i>To change</i> | <i>To</i>          | <i>Multiply by</i> | <i>To change</i>   | <i>To</i>     | <i>Multiply by</i> |
|------------------|--------------------|--------------------|--------------------|---------------|--------------------|
| inches           | centimeters        | 2.540              | ounce-inches       | newton-meters | .007062            |
| feet             | meters             | .305               | centimeters        | inches        | .394               |
| yards            | meters             | .914               | meters             | feet          | 3.280              |
| miles            | kilometers         | 1.609              | meters             | yards         | 1.094              |
| square inches    | square centimeters | 6.451              | kilometers         | miles         | .621               |
| square feet      | square meters      | .093               | square centimeters | square inches | .155               |
| square yards     | square meters      | .836               | square meters      | square feet   | 10.764             |
| square miles     | square kilometers  | 2.590              | square meters      | square yards  | 1.196              |
| acres            | square hectometers | .405               | square kilometers  | square miles  | .386               |
| cubic feet       | cubic meters       | .028               | square hectometers | acres         | 2.471              |
| cubic yards      | cubic meters       | .765               | cubic meters       | cubic feet    | 35.315             |
| fluid ounces     | milliliters        | 29.573             | cubic meters       | cubic yards   | 1.308              |
| pints            | liters             | .473               | milliliters        | fluid ounces  | .034               |
| quarts           | liters             | .946               | liters             | pints         | 2.113              |
| gallons          | liters             | 3.785              | liters             | quarts        | 1.057              |
| ounces           | grams              | 28.349             | liters             | gallons       | .264               |
| pounds           | kilograms          | .454               | grams              | ounces        | .035               |
| short tons       | metric tons        | .907               | kilograms          | pounds        | 2.205              |
| pound-feet       | newton-meters      | 1.356              | metric tons        | short tons    | 1.102              |
| pound-inches     | newton-meters      | .11296             |                    |               |                    |

## Temperature (Exact)

|    |                        |                            |                     |    |
|----|------------------------|----------------------------|---------------------|----|
| °F | Fahrenheit temperature | 5/9 (after subtracting 32) | Celsius temperature | °C |
|----|------------------------|----------------------------|---------------------|----|

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