TECHNICAL MANUAL

OPERATOR, UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

FOR

TANK, UNIT, 600 GALLON, LIQUID DISPENSING FOR TRAILER MOUNTING (ADVANCE MODEL TRL 1000 AND TRL 1616) (HIGHLAND MODEL TRL 1020, TRL 2000 AND TRL 2500) (UNITED MODEL TRL 4123) NSN 4930-00-752-9983 (EIC: ZDC)

*** This manual supersedes TM 5-4930-220-13&P, 23 May 1990, including all changes.**

HEADQUARTERS, DEPARTMENT OF THE ARMY

30 JUNE 1993

FIRE AND EXPLOSION HAZARD is present during operation of this equipment.

DEATH or serious injury may result if personnel fail to observe the safety precautions listed below.

Only ONE tank shall be mounted on the Trailer, General Purpose, 5 Ton, Dual Axle, M1061A1.

Do NOT SMOKE or USE OPEN FLAME within 50 feet (15.24 m) of this unit.

Be sure that fire extinguishers and other firefighting equipment are available and OPERABLE before transferring fuel.

Unit must be grounded prior to fuel transfer operations.

If fuel is spilled, wash the area of spillage thoroughly with water.

DEATH or serious injury may result if personnel fail to heed the safety precautions for welding. Prior to repairs and/or welding, personnel shall read the welding instructions contained in paragraph 5-3 of this manual.

Only competent personnel thoroughly instructed in the proper handling and reading of the explosive meter will conduct vapor tests. Conduct a combustible vapor test reading immediately after purging. Under no circumstances will repair of the tank begin until declared safe by competent personnel. Discontinue all operations if an electrical storm is threatening or in progress. Eliminate conditions that could cause explosions.

Clean parts in a well ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F. (38°C. to 50°C.) Wear eye protection when blowing solvent from parts.

Compressed air used for cleaning purposes should not exceed 30 PSI (2.1 kg/cm).

Do not touch metal parts with bare skin during cold weather. The skin may stick to the metal.

The following safety precautions must be observed before welding tanks used for flammable liquids.

- Tank must have a static ground during all operations.
- Use caution with all tools and metal objects to insure that no sparks will be created.
- Combustive vapor tests must be performed before and immediately following purging the tank. Do not begin repair of the tank until declared safe by safety personnel.
- Allow only thoroughly trained personnel to conduct vapor tests.
- Discontinue all operations if an electrical storm is threatening or in progress.
- Eliminate all conditions which could cause explosions.
- Do not wear wool, nylon, silk, rayon or other static electricity generating clothing. Wear clean cotton clothing with no metal buttons or fittings Remove all contents from pockets.
- Rubber boots must be worn.
- Use cotton rags for cleaning. Do not use cleaning material that will generate static electricity.

Death or serious injury may result from exposure to toxic vapors or Insufficient oxygen inside petroleum tanks. Do not enter a tank to perform maintenance unless the tank has been thoroughly purged, and the air inside has been tested and certified safe by technically qualified safety or health personnel.

TM 10 4 -220-13&P
C3

CHANGE

NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 3 October 1996

Operator, Unit and Direct Support Maintenance Manual
(Including Repair Parts and Special Tools List)
for

TANK, UNIT, 600 GALLON, LIQUID DISPENSING FOR TRAILER MOUNTING (ADVANCE MODEL TRL1000 AND TRL1616) (HIGHLAND MODEL TRL1020, TRL2000 AND TRL2500) (UNITED MODEL TRL4123) NSN 4930-00-752-9983 (EIC: ZDC)

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Chief of Staff

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TM 10-4930-220-13&P
C 2

CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 22 JUNE 1994

Operator, Unit and Direct Support Maintenance Manual
(Including Repair Parts and Special Tools List)
for

TANK, UNIT, 600 GALLON, LIQUID
DISPENSING FOR TRAILER MOUNTING
(ADVANCE MODEL TRL 1000 AND
TRL 1616) (HIGHLAND MODEL TRL 1020,
TRL 2000 AND TRL 2500) (UNITED MODEL
TRL 4123) NSN 4930-00-752-9983 (EIC: ZDC)

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Operator, Unit and Direct Support Maintenance Manual
(Including Repair Parts and Special Tools List)
for

TANK, UNIT, 600 GALLON, LIQUID DISPENSING FOR TRAILER MOUNTING (ADVANCE MODEL TRL 1000 AND TRL 1616) (HIGHLAND MODEL TRL 1020, TRL 2000 AND TRL 2500) (UNITED MODEL TRL 4123) NSN 4930-00-752-9963 (EIC: ZDC)

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4-11 through 4-14	4-11 through 4-14
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6-1 and *6-2*	6-1 and 6-2
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TECHNICAL MANUAL

NO. 10-4930-220-13&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 30 June 1993

OPERATOR, UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

TANK, UNIT, 600 GALLON, LIQUID DISPENSING FOR
TRAILER MOUNTING (ADVANCE MODEL TRL 1000 AND TRL 1616)
(HIGHLAND MODEL TRL 1020, TRL 2000 AND TRL 2500)
(UNITED MODEL TRL 4123) NSN-4930-00-752-9983 (EIC:ZDC)

Current as of 18 May 1993

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

TABLE OF CONTENTS

***** This manual supersedes TM 5-4930-220-13&P, 23 MAY 1990, including all changes.

TABLE OF CONTENTS (Cent)

LIST OF ILLUSTRATIONS

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. Scope. This is an operator, unit and direct support maintenance level manual, including Repair Parts and Special Tools List. This manual supports the Advance Model TRK1616 and TRL1 000, the United Model TRL4123 and the Highland Model TRL1020, TRL2000, and TRL2500 600 gallon liquid dispensing tank unit, which is a portable storage tank used for transporting and storing liquid petroleum products.

1-2. **Maintenance Forms and Records** Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. **Reporting Equipment Improvement Recommendations (ElRs).** If your tank needs improvement, let us know. Send us an E. I. R. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MDO, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be mailed to you.

1-4. **Destruction of Army Material to Prevent Enemy** Use. Refer to TM 750-244-3, Procedure for Destruction of Equipment to Prevent Enemy Use.

1-5. **Administrative Storage of Equipment.**

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

b. Before placing equipment in administrative storage, current preventive maintenance checks and services should be completed, shortcomings and deficiencies should be corrected, and all modification work orders (MWCYs) should be applied.

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

d. Refer to Chapter 4, Section VI, paragraph 4-18 for procedures to move equipment to a new worksite.

Section II. EQUIPMENT DESCRIPTION

1-6. Equipment Characteristics, Capabilities and Features.

a. Portable storage used for transporting and storing liquid petroleum products.

b. Used with M1061 A1 series trailers.

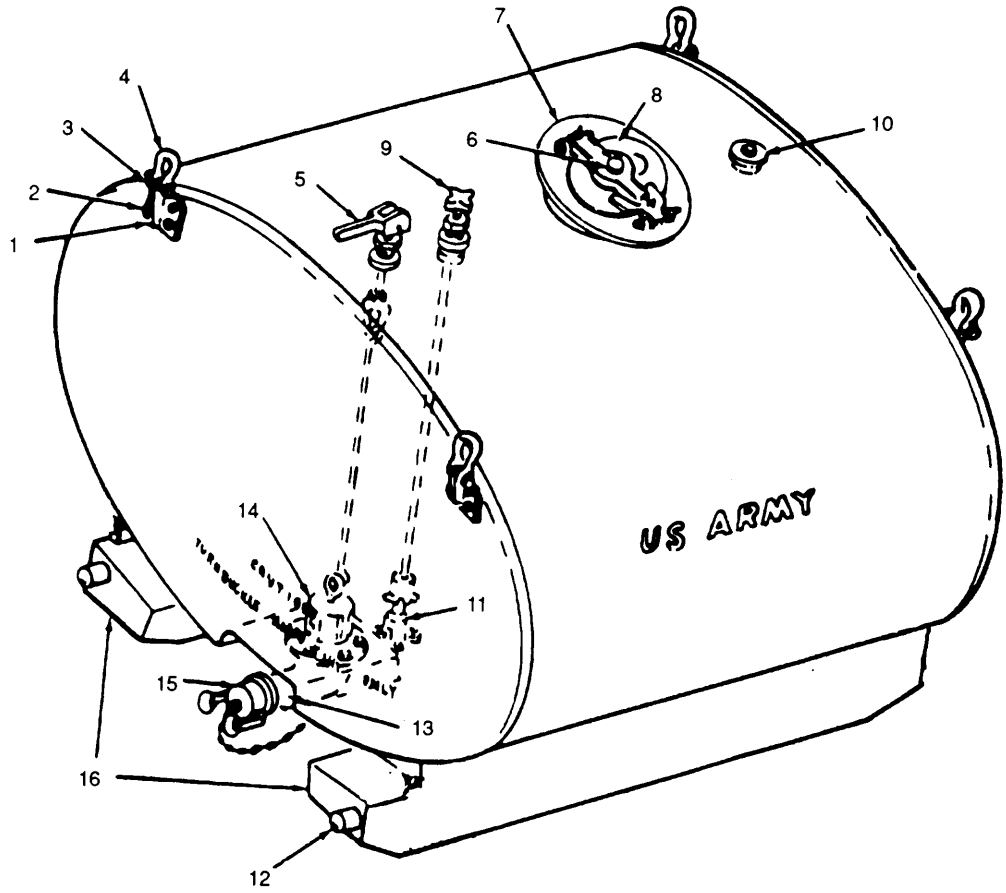
c. Lifting eyes on top of tank facilitates loading onto the trailer.

d. Equipped with skids and holddown assemblies with adjustable turnbuckles for securing to trailer head.

e. Tank assembly welded and fabricated from aluminum.

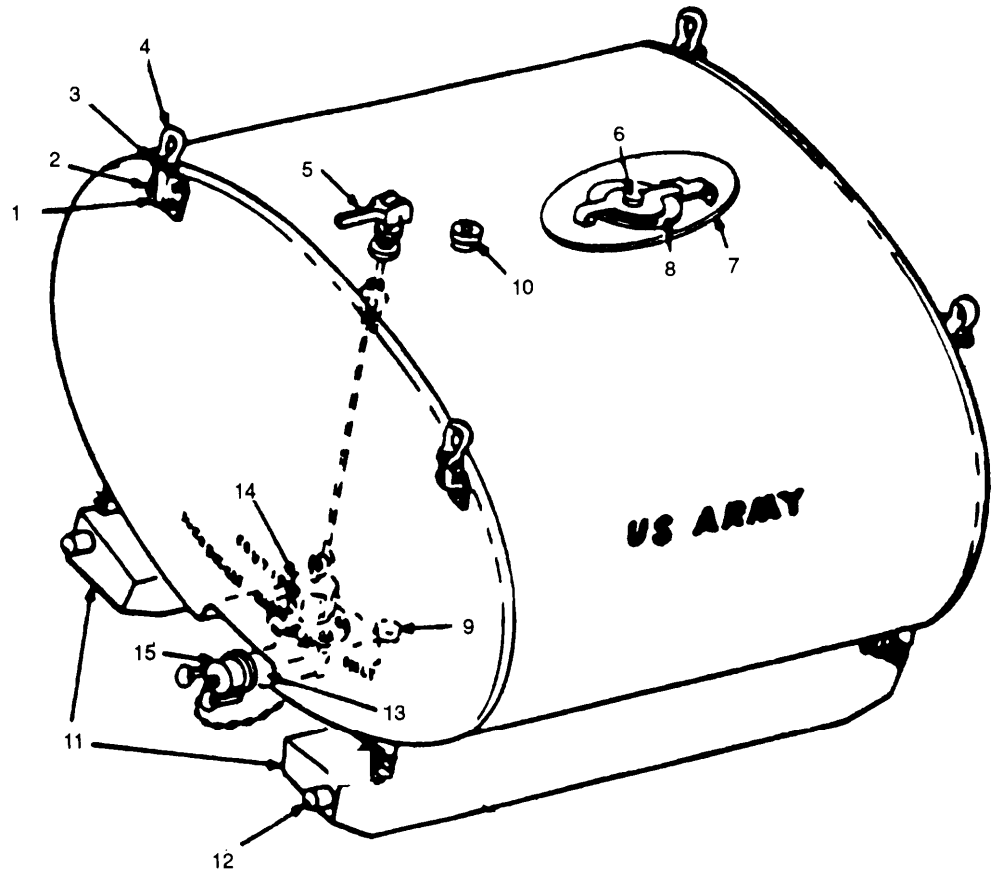
f. Tank is filled and serviced through the manhole on top of the tank

1-7. Location and Description of Major Components.



1. Bracket
2. Bolt
3. Nut
4. Lifting eye
5. Control lever
6. Vent assembly
7. Manhole cover
8. Filler plug
9. Drain valve handle
10. Pump port
11. Drain valve
12. Interlock
13. Emergency dump valve
14. Inlet strainer valve
15. Dust cap
16. Skids

Figure 1-1. Tank unit assembly (Except Advance Model TRL 1000).



1. Bracket
2. Bolt
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6. Vent assembly
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8. Filler plug
9. Drain plug
10. Pump port
11. Skids
12. Interlock
13. Emergency dump valve
14. Inlet strainer valve
15. Dust cap

Figure 1–2. Tank unit assembly (Advanced Model TRL 1000).

a. Skids. Used to stabilize the Tank Unit Assembly and provide a place for it to be mounted (16 Figure 1-1 and 11, Figure 1–2)

b. Emergency Dump Valve. Used for dispensing liquid. Located on the bottom front of the Tank Unit between the skids (13, Figure 1–1 and Figure 1 –2)

c. Tank. Used for storage and transporting of liquid petroleum products (Figure 1–1 and Figure 1 –2)

d. Interlock. The male interlocks are secured by clamping adapters, with the female end by socket adapters.

e. Control Lever. Operates the emergency dump valve (13, Figure 1–1 and Figure 1–2) to allow dispensing of liquid petroleum products or draining of the tank unit.

f. Vent Assembly. Allows the release of pressure buildup within the tank unit assembly.

g. Pump Port. Provides coupling of a hand pump to retrieve liquid from the tank unit assembly.

1-8. Differences Between Models. Table 1-1 shows the differences between models.

Table 1-1. DIFFERENCES BETWEEN MODELS

TANK FUNCTION	TRL1010	TRL2000	TRL2500	TRL1616	TRL1000	TRL4123
Buckeye Model 5 Nozzle Assembly			x			
OPW Model 190GA Nozzle Assembly	x	x		x	x	x
Drain Plug					X	
Drain Valve and Handle	X	X	X	X		X
Without Drain Hose					X	
Pump Port located at rear of tank					X	
Pump Port located at front of tank	X	x	x	x		x

1-9. Equipment Data.

a. Manufacturers

Manufacturer	Advance Industries Inc.
Models	TRL 1616 and TRL 1000
Manufacturer	Highland Industries Inc.
Models	TRL 1020,TRL2000, TRL2500
Manufacturer	United Manufacturing and Engineering Corp.
Model	TRL4123

b. Nozzle Assembly.

(1) Model Highland TRL2500.

Manufacturer	Buckeye Division Emco-Wheaton lnc.
Model	5

(2) Other models.

Manufacturer	OPW Division, Dover Corp.
Model	109GA

c. Capacities

Tank Capacity	600 gallons
Cubage	131 cu.ft.

d. Weight and Dlmensions.

Length	56 inches
Width	72 inches
Height	56 inches
Tank weight	390 lbs.

Section III. TECHNICAL PRINCIPLES OF OPERATION

1-10. Storage of Fuel.

a. The 600 gallon, liquid dispensing tank can be filled with fuel after storage or servicing through the manhole on the top of the tank.

b. Fuel can be dispensed from the tank using gravity flow principles by connecting a hose and nozzle to the emergency dump valve on the bottom end of the tank.

1-11. Dispensing of Fuel.

a. Fuel can be dispensed from the tank using gravity flow principles by connecting a hose and nozzle to the emergency dump valve on the bottom end of the tank.

b. Fuel can also be dispensed by using a hand pump coupled to the hand pump port on the top of the tank.

c. The tank can be drained by opening the drain plug or valve on the bottom of the tank when it is necessary to drain the contents of the tank.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF CONTROLS AND INDICATORS

2-1. General. The tank can be used for transporting, storing, and dispensing all types of petroleum products. However, only one type of petroleum product can be carried in and dispensed from the unit at a time.

2-2. Operator's Controls and Indicators. Operator's controls and indicators are shown in Figure 2-1 and Figure 2-2 and are listed in Table 2-1.

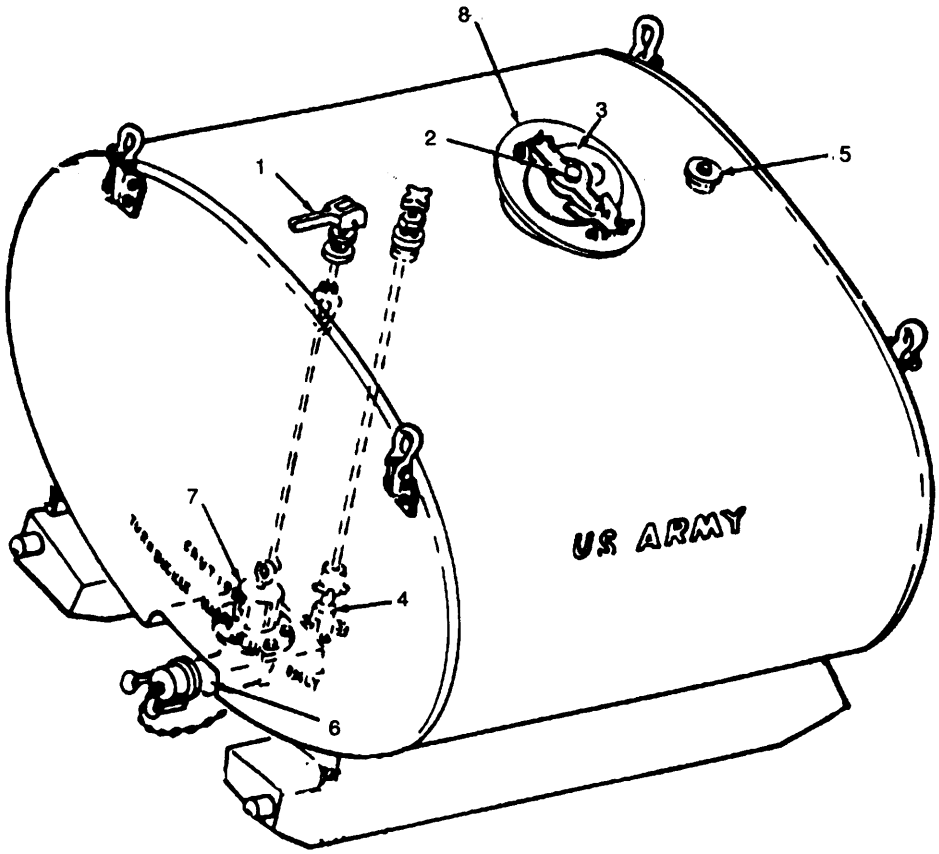


Figure 2-1. Tank unit assembly (except Advance Model TRL 1000).

1. Emergency valve control lever
2. Vent assembly
3. Filler plug
4. Drain valve
5. pump port
6. Emergency dump valve
7. Inlet strainer valve
8. Manhole cover

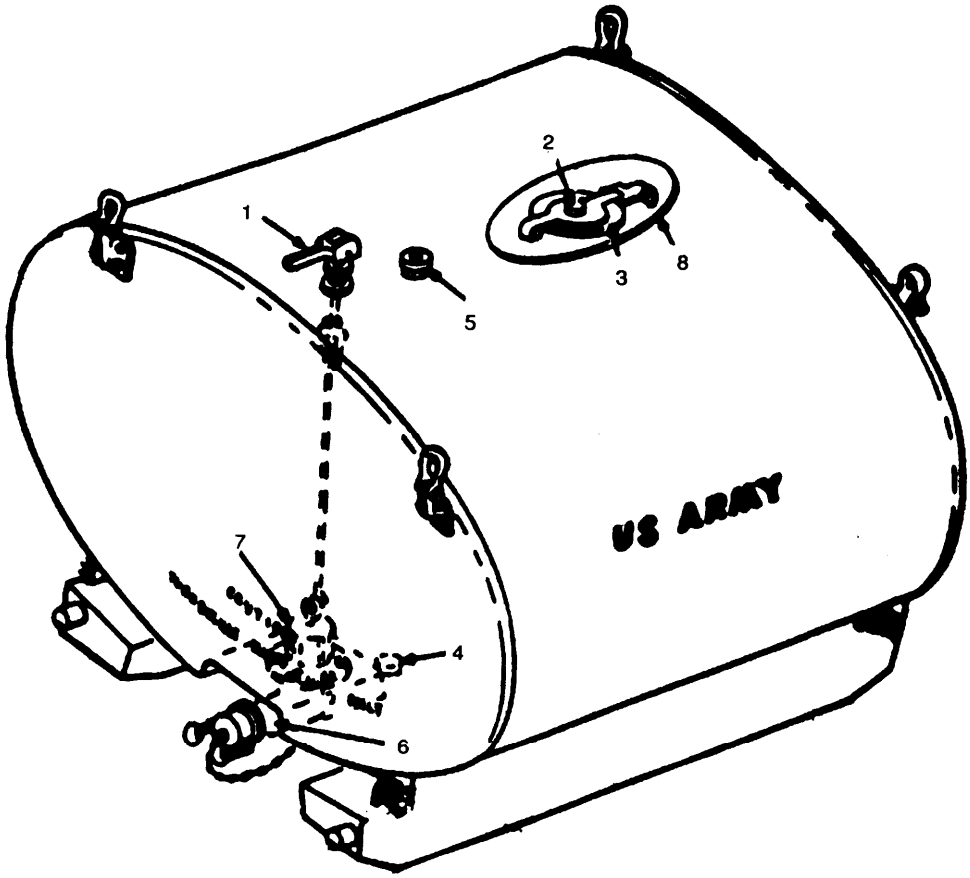


Figure 2-2. Tank unit assembly (Advane Model TRL 1000).

1. Emergency valve control lever
2. Vent assembly
3. Filler plug
4. Drain plug
5. Pump port
6. Emergency dump valve
7. Inlet strainer valve
8. Manhole cover

Table 2-1. OPERATOR CONTROLS AND INDICATORS

KEY	CONTROL OR INDICATOR	FUNCTION
1	Emergency Valve Control Lever	Located on top of the tank. It is normally in the "open" position for dispensing liquid from the tank.
2	Vent Assembly	Located on the filler plug on top of the tank. It is used to relieve pressure from the tank.
3	Filler Plug	Located on the manhole cover on top of the tank. It is opened to refill the tank with liquid.
4	Drain Valve	Located on the inside bottom of the tank. It is used to remove water accumulation and drain the tank. It is normally closed.
4	Drain Plug (Advance Model TRL 1000) (Figure 2-2)	Located on the inside bottom of the tank. It is used to remove water accumulation and drain the tank. It is normally closed.
5	Pump Port	Located on top of the tank for use with hand pump for dispensing of fluid.
6	Emergency Dump Valve	Located on the bottom end of the tank. It is used with the hose and nozzle assemblies for the dispensing of liquid.
7	Inlet Strainer Valve	Located on the inside bottom of the tank. It is used to remove contamination and large particles from the fluid before dispensing.

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-3. General.

a. Before you operate always keep in mind the WARNINGS and CAUTIONS. Perform your before (B) PMCS.

b. While you operate always keep in mind the WARNINGS and CAUTIONS. Perform your during (D) PMCS.

c. After you operate perform your after (A) PMCS.

d. If your equipment fails to operate. Troubleshoot with proper equipment. Report any deficiencies using the proper form. See DA PAM 738-750, The Army Maintenance Management System (TAMMS).

2-4. Preventive Maintenance Checks and Services

a. Table 2-2, Preventive Maintenance Checks and Services Table lists the inspections and care of equipment required to keep it in good operating condition.

b. Leak definitions for operator/crew PMCS shall be classified as follows:

Class I — Seepage of liquid (as indicated by wetness or discoloration) not great enough to form drops.

Class II — Leaks of liquid great enough to form drops but not enough to cause drops to drip or run from the faulty area.

Class III — Leak of liquid great enough to form drops that fall or run or collect in puddles near the faulty area.

Class IV — Leak from under the tank Shown by:
i) Dampness of the ground around the tank.
ii) Volume of liquid in the tank less than it should be.

CAUTION

- Equipment operation Is allowable with minor leak (class I or II).
- When operating with class I or II leaks continue to check them visually at regular intervals.
- Class Ill and class IV leaks should be reported to your supervisor.

Table 2-2. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Fully Mission Capable
1	Before	Hoses	Check for leaks, breaks, cracks, cuts and worn areas. Refer leaking, worn or damaged hose to unit maintenance.	Hoses are leaking, worn or damaged.
2	Before	Nozzles	Check nozzles for distortion, corrosion and leaks. Clean corroded nozzle. Clean strainer daily. Replace gasket at hose connection. Refer distorted, leaking or badly corroded nozzles to unit maintenance.	Nozzles are distorted, leaking or badly corroded.
3	Before	Ground Cable	Check for worn, frayed or corroded condition. Refer worn, frayed or corroded cable to unit maintenance.	Cable is worn, frayed or corroded.
4	Before	Emergency Dump Valve and Control Lever	Check control lever for binding or damage. Check valve for leaks, close control lever tightly. Replace gasket in coupler. Refer worn or damaged valve or control lever to unit maintenance.	Valve or control lever is worn or damaged.

Table 2-2. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Fully Mission Capable
5	Before	Drain Valve and Control Handle or Drain	Check control handle for damage. Check for leaks. Tighten leaking valve. Refer worn or damaged valve or control handle to unit maintenance.	Valve or control handle is worn or damaged.
6	Before	Tank	Check tank for leaks, dents, cracks or breaks. Check interior for dirt, water accumulation or other foreign matter. Drain water accumulation. Refer leaks, dents, cracks, breaks or dirty interior to unit maintenance.	Tank has leaks, cracks, breaks, or dirty interior.
7	During	Hoses	Check for leaks, breaks, cracks, cuts and worn areas. Refer leaking, worn or damaged hose to unit maintenance.	Hoses are leaking, worn or damaged.
8	During	Nozzles	Check nozzles for distortion, corrosion and leaks. Clean corroded nozzle. Clean strainer daily. Replace gasket at hose connection. Refer distorted, leaking or badly corroded nozzles to unit maintenance.	Nozzles are distorted, leaking or badly corroded.
9	During	Ground Cable	Check for worn, frayed or corroded condition. Refer worn, frayed or corroded cable to unit maintenance.	Cable is worn, frayed or corroded.
10	During	Emergency Dump Valve and Control Lever	Check control lever for binding or damage. Check valve for leaks, close control lever tightly. Replace gasket in coupler. Refer worn or damaged valve or control lever to unit maintenance.	Valve or control lever is worn or damaged.
11	After	Hoses	Check for leaks, breaks, cracks, cuts and worn areas. Refer leaking, worn or damaged hose to unit maintenance.	Hoses are leaking, worn or damaged.
12	After	Nozzles	Check nozzles for distortion, corrosion and leaks. Clean corroded nozzle. Clean strainer daily. Replace gasket at hose connection. Refer distorted, leaking or badly corroded nozzles to unit maintenance.	Nozzles are distorted, leaking or badly corroded.
13	After	Ground Cable	Check for worn, frayed or corroded condition. Refer worn, frayed or corroded cable to unit maintenance.	Cable is worn, frayed or corroded.

Table 2-2. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Fully Mission Capable
14	After	Emergency Dump Valve and Control Lever	Check control lever for binding or damage. Check valve for leaks, close control lever tightly. Replace gasket in coupler. Refer worn or damaged valve or control lever to unit maintenance.	Valve or control lever is worn or damaged.
15	After	Drain Valve and Control Handle or Drain	Check control handle for damage. Check for leaks. Tighten leaking valve. Refer worn or damaged valve or control handle to unit maintenance.	Valve or control handle is worn or damaged.
16	After	Tank	Check tank for leaks, dents, cracks or breaks. Check interior for dirt, water accumulation or other foreign matter. Drain water accumulation. Refer leaks, dents, cracks, breaks or dirty interior to unit maintenance.	Tank has leaks, cracks, breaks, or dirty interior.

Section III. OPERATION UNDER USUAL CONDITIONS

2-5. Operation.

a. Filling the Tank.

(1) Check the control lever (5, Figure 1-1 and Figure 1-2) and be certain it is in the “close” position.

(2) Check the drain valve handle (9, Figure 1-1) and be certain it is shut off. For Advance Model TRL 1000, check to be certain drain plug (9, Figure 1 -2) is installed.

(3) Remove the manhole cover (7, Figure 1-1 and Figure 1-2) and check the inside of the tank to be certain it is clean and free of condensation or other foreign matter.

(4) Fill the tank through the manhole opening. Avoid spilling liquid and do not overfill the tank.

(5) Refill an empty or semi-filled tank at the end of a day’s operation to reduce condensation during overnight storage.

CAUTION

+When dispensing liquid, attend the nozzle constantly: do not wedge open or block the control lever.

b. Dispensing Liquid.

(1) Liquids may be dispensed from tank either through the emergency dump valve (13, Figure 1-1 and 13, Figure 1 -2) by gravity flow or by use of a hand pump coupled to hand pump port (10, Figure 1-1 and Figure 1-2). Stow hand pump port cap in a safe place.

(2) Connect hose and nozzle to emergency dump valve coupling.

(3) Place control lever (5 Figure 1-1 and Figure 1-2) in 'open" position and dispense liquid through nozzle.

(4) The flow may be stopped at any time by dosing nozzle. When dispensing is complete, place emergency dump valve lever in "close" position.

(5) Drain hose and nozzle assembly and disconnect it from emergency dump valve coupling.

(6) Stow the hose and nozzle assembly and cap the emergency dump valve with dust cap (15, Figure 1-1 and 15, Figure 1-2).

Do not drain flammable liquid on transporting vehicles.

***c. Draining the Tank* (All Models except Advance Model TRL 1000).**

(1) Connect drain hose to drain valve (11, Figure 1-1); this will direct drainage away from unit. Turn drain valve handle (9, Figure 1-1) to "open" position.

(2) When tank is completely drained, turn drain valve handle (9, Figure 1-1) to dosed position.

***d. Draining the Tank* (Advance Model TRL 1000).**

(1) To drain tank, use same procedure as described in b above.

(2) After draining tank with hose and nozzle, remove drain plug (9, Figure 1-2) to remove any remaining l-quid or water accumulation. Reinstall drain plug.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-6. Operation in Extreme Heat.

a. Locate tank unit in shade, where possible, and wet down with water to reduce heat.

b. Follow instructions for operation under normal conditions.

2-7. Operation in Dusty or Sandy Areas.

a. Take advantage of natural barriers to blowing sand and dust, or, if necessary, erect artificial barriers.

b. Clean tank unit with an approved cleaning solvent, giving special attention to cavities, corners, and partially exposed interior spaces. Dry thoroughly. Keep tank and areas around emergency valve and controls free from sand and dust.

2-8. Operation in Salt Water Areas. Saltwater corrodes metal. If unpainted equipment parts are exposed to salt water, dean them off immediately with an approved cleaning solvent and dry thoroughly. All surfaces should be cleaned daily.

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

3-1. General.

a. The only lubrication required on the tank unit is described in paragraph 3–2.

b. There is no lubrication order for the tank, therefore, the instructions in paragraph 3–2 are mandatory.

3-2. Lubrication. Lubricate the emergency dump valve control lever (all models) and the drain valve handIe (all models except the Advance Model TRL 1000) monthly (5) and (9). Refer to F5G9100, Identification List for Fuels, Lubricants, Oils and Waxes.

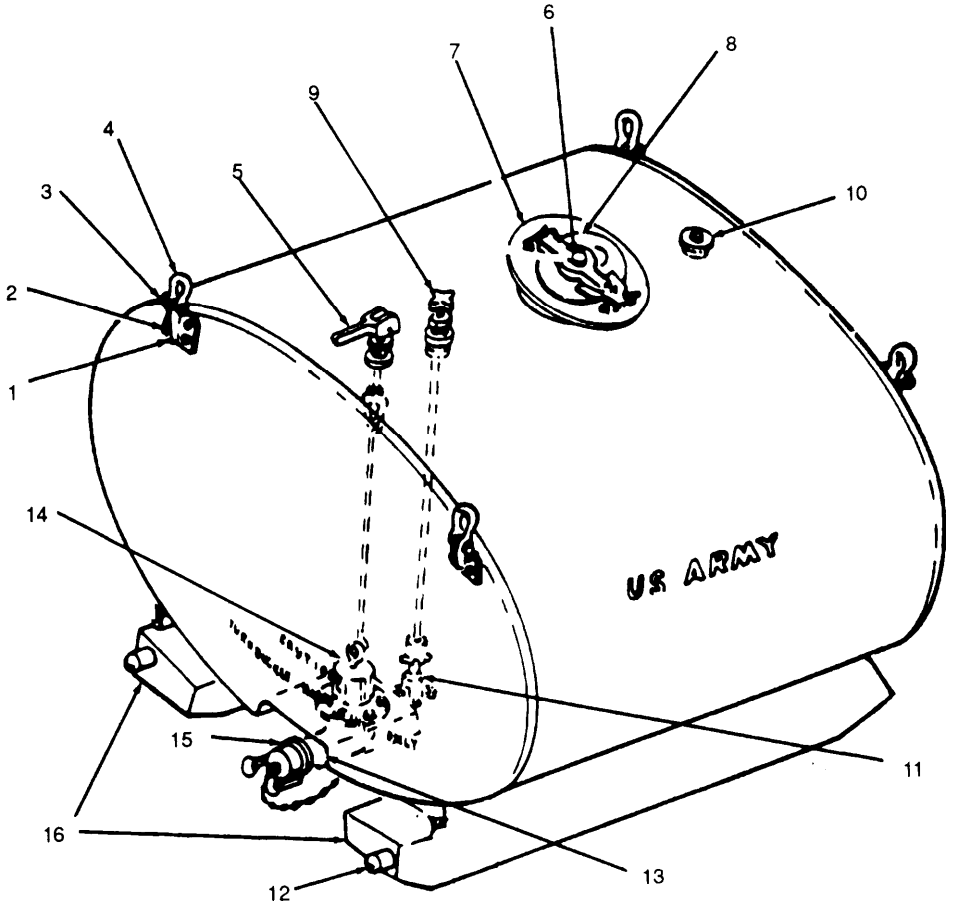


Figure 3–1. Emergency Dump Valve.

Section II. OPERATOR TROUBLESHOOTING

3-3. General.

a. The section contains troubleshooting information for locating and correcting most of the operating problems which may develop in the tank unit, Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine probable causes and corrective actions to take. You should perform the tests, inspections and corrective actions in the order listed.

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

3-4. Troubleshooting Tables.

Table 3-1. OPERATOR TROUBLESHOOTING

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
1. PRODUCT DISCHARGE IS NOT CLEAN.	
step 1. Check strainer in nozzle for contamination.	Clean nozzle strainer.
Step 2. Check liquid in tank for contamination.	Drain a portion of the liquid to remove contaminant in bottom of tank.
2. FLOW OF PRODUCT SLOWS DOWN DURING OPERATION.	
Check for leak in hose or connections.	Tighten connection or replace hose.
3. PRODUCT LEVEL IN TANK DROPS BEFORE OPERATION.	
Step 1. Check drain valve or drain plug for leak,	Tighten the drain valve control handle or drain plug.
Step 2. Check emergency dump valve for leak.	Turn control lever to completely closed position.

Section III. OPERATOR MAINTENANCE INSTRUCTIONS

3-5. General.

This section contains the maintenance instructions for the tank unit that are applicable to the operator.

3-6. Tank Unit Assembly Service.

This task covers: Service

a. Lubricate tank assembly in accordance with the lubrication instructions in paragraph 3–2

b. Replace gasket in emergency dump valve dust cap (15, Figure 1-1 and Figure 1–2).

3-7. Hose Assembly Service.

This task covers: Service

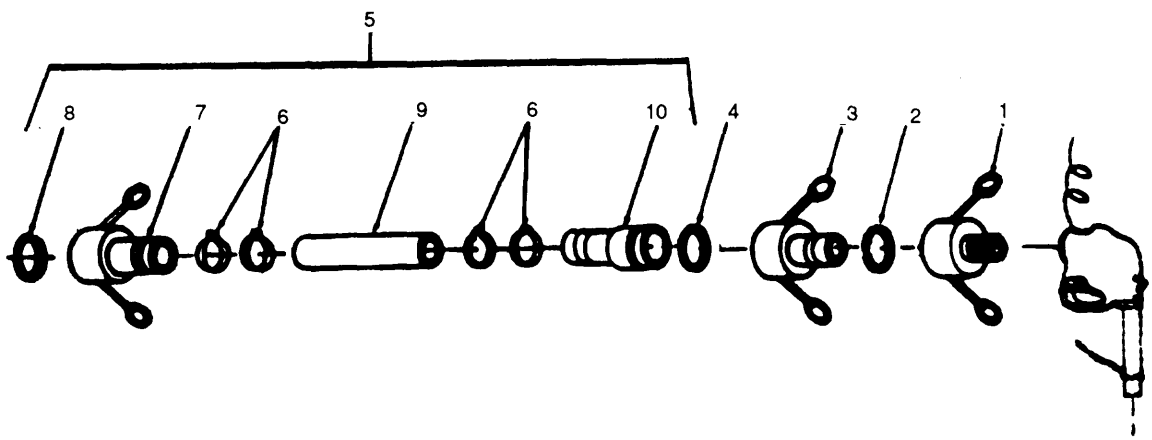


Figure 3–2. Hose Assembly.

Replace gaskets (2, 4 and 8 Figure 3–2) in hose assembly.

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

4-1. Tools and Equipment. There are no tools or special equipment authorized for the tank unit.

4-2. Special Tools and Equipment. Special tools and equipment that are required by unit maintenance personnel for maintenance of the tank unit can be found in Appendix B, Section III

4-3. Repair Parts List. Unit Maintenance Repair Parts and Equipment covering unit maintenance for the tank unit are listed in Appendix C.

Section II. SERVICE UPON RECEIPT

4-4. Inspect Equipment.

a. Inspect identification plates for positive identification of equipment.

b. Inspect equipment for damage incurred during shipping.

c. Check equipment against packing list to make sure all items are accounted for. Report all discrepancies in accordance with DA PAM 738-750.

d. Inspect components for loose or missing mounting hardware and for loose connections.

4-5. Preliminary Servicing and Installation of Equipment.

a. Servicing.

(1) Lubricate the tank in accordance with the instructions in paragraph 3–2.

(2) Perform preventive checks and services as described in Table 4-1 and correct any deficiencies.

b. Installation. The tank unit can be used mounted on skids on level ground or floor, or on a modified Model M1061A1, 5-ton Trailer.

(1) Tank unit without M1061A1, 5-ton Trailer. Select a level site free from stones and debris. Place tank unit level, with skids resting on ground or floor. Insert male interlocks of one unit into the female interlocks of the connecting unit (12, Figure 1–1).

(2) Tank Unit Mounted on M1061A1, 5-ton Trailer. Detailed installation procedures for the tie-down kit and for mounting the tank unit on the M1061A, 5-ton Trailer are found in paragraph 4-16

Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-6. General.

a. To insure the tank unit is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure.

b. The necessary preventive maintenance checks and services to be performed by unit maintenance personnel are listed in Table 4-1 and described in Chapter 4, Section V.

c. Defects discovered during operation of the unit will be noted on DA Form 2404 for future corrections to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted which would damage the equipment if operation were continued.

d. Record all deficiencies, shortcomings and the corrective action taken, on DA form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

4-7. Unit Preventive Maintenance Check and Services.

a. Table 4–1 contains a tabulated list of preventive checks and services which must be performed by unit maintenance personnel.

b. The interval column designates the required service interval. A quarterly interval is equal to three calendar months or two hundred and fifty hours of operation, whichever occurs first.

c. Refer to Table 4-1 for unit maintenance checks and services.

Table 4-1. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Item No.	Interval	Item to be Inspected	Procedures	Not Fully Mission Capable If:
1	Quarterly	Tank Assembly	Check the tank for leaks, dents, cracks, or breaks. Check for ruptures in the welded seams. Check the interior of the tank for dirt or contamination. Repair leaks, dents or other damage. Replace a badly damaged tank. Purge and clean.	Tank has leaks, cracks or breaks. Welded seams are ruptured.
2	Quarterly	Manhole Cover Assembly	Check all bolts and nuts for tightness. Check for dents, cracks or breaks. Check gaskets for wear and darnage. Replace defective cover gasket. Repair or replace defective manhole cover and filler cover.	Bolts and nuts are loose or missing. Cracks or breaks exist. Cover gasket, manhole cover or filler cover are defective.
3	Quarterly	Drain Valve and Control or Drain Plug	Check drain valve or drain plug for leaks or damage. Check control handle for binding or damage. Replace damaged control handle. lighten or replace a leaking or damaged drain valve or drain plug.	Control handle is damaged. Drain valve or drain plug leaks or is damaged.
4	Quarterly	Emergency Dump Valve and Control Lever	Check the emergency dump valve for leaks or damage. Check the valve strainer screen for residue. Check the valve mounting gaskets for wear or damage. Check the control lever for binding or damage. Replace or repair damaged valve or control lever. Clear the valve strainer and replace damaged gasket.	Emergency dump valve leaks, valve mounting gaskets or control lever are damaged. Valve strainer has residue, gasket is damaged.
5	Quarterly	Hose Assembly	Inspect hoses for leaks, breaks, cuts or worn areas and defective gaskets. Replace damaged hoses, fitting or defective gasket.	Hoses, fitting or gaskets are damaged or defective.
6	Quarterly	Ground Cable	Inspect cable for frayed, worn or corroded condition. Replace defective cable.	Cable is missing or defective.
7	Quarterly	Nozzle Assembly	Inspect the nozzle for leaks, distortion and corrosion. Replace or repair a leaking or distorted nozzle. Clean corroded nozzle.	Nozzle leaks or is corroded or distorted.

Section IV. UNIT MAINTENANCE TROUBLESHOOTING

4-8. General.

a. This section contains troubleshooting information for locating and correcting problems which develop in the tank unit that are within the scope of unit maintenance. Each malfunction for an individual component, unit or system is followed by a list of tests or inspections to help to determine corrective actionsfor specific malfunctions. Perform the tests/inspections and corrective actions in the order listed.

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

c. For unit maintenance troubleshooting refer to Table 4-2.

Table 4-2. UNIT MAINTENANCE TROUBLESHOOTING

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
1. PRODUCT DISCHARGE IS NOT CLEAN.	
Step 1. Check product in tank for contamination.	Clean and purge tank interior after product is drained.
Step 2. Check emergency dump valve strainer screen for contamination,	Remove, clean and reinstall strainer screen.
2. FLOW OF PRODUCT SLOWS DOWN OR STOPS DURING OPERATION.	
Step 1. Check emergency dump valve strainer for contamination.	Remove, clean and reinstall strainer screen.
Step 2. Check nozzle for distortion, damage, or leaks.	Repair or replace a defective nozzle.
Step 3. Check hose assembly for leaks or damage.	Replace or repair hose assembly.
3. PRODUCT LEVEL IN TANK DROPS BEFORE OPERATION.	
Step 1. Check tank for leaks.	Weld, repair or replace the tank.

Table 4-2. UNIT MAINTENANCE TROUBLESHOOTING (Cont)

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
Step 2. Check drain valve or drain plug for leak	Replace defective drain valve gasket. Replace or repair drain valve or drain plug.
Step 3. Check the emergency dump valve for a leak	Replace defective dump valve gasket. Replace or repair a defective emergency dump valve.
Step 4. Check the drain valve control handle, rod and rod support assembly. (Not applicable to Advance Model TRL 1000)	Repair or replace the drain valve control handle, rod and rod support assembly.
Step 5. Check the emergency dump valve control lever and rod assembly for wear or damage.	Repair or replace the dump valve control lever and rod assembly.

Section V. UNIT MAINTENANCE PROCEDURES

4-9. General.

a. This section contains unit maintenance procedures as authorized by the Maintenance Allocation Chart (MAC), Appendix B of this manual.

b. The tank assembly includes the manhole cover assembly, the drain valve and control handle, the emergency dump valve and control lever, and the pump port and tiedown assemblies.

c. The tank and its components must be cleaned before any repair is started. Each time a component is removed for repair, inspection or other service, it must be cleaned thoroughly.

d. No repair will be initiated until the tank has been thoroughly vented and cleaned. The atmosphere inside the tank must be tested and certified safe by technically qualified personnel prior to welding on the tank or entry into the tank to perform maintenance.

e. Before attempting any welding repair on the tank, drill four 1/2 inch diameter drain holes in each skid (eight holes required) and four 1 1/2 inch holes in each skid (eight holes required). (Figure 4-1)

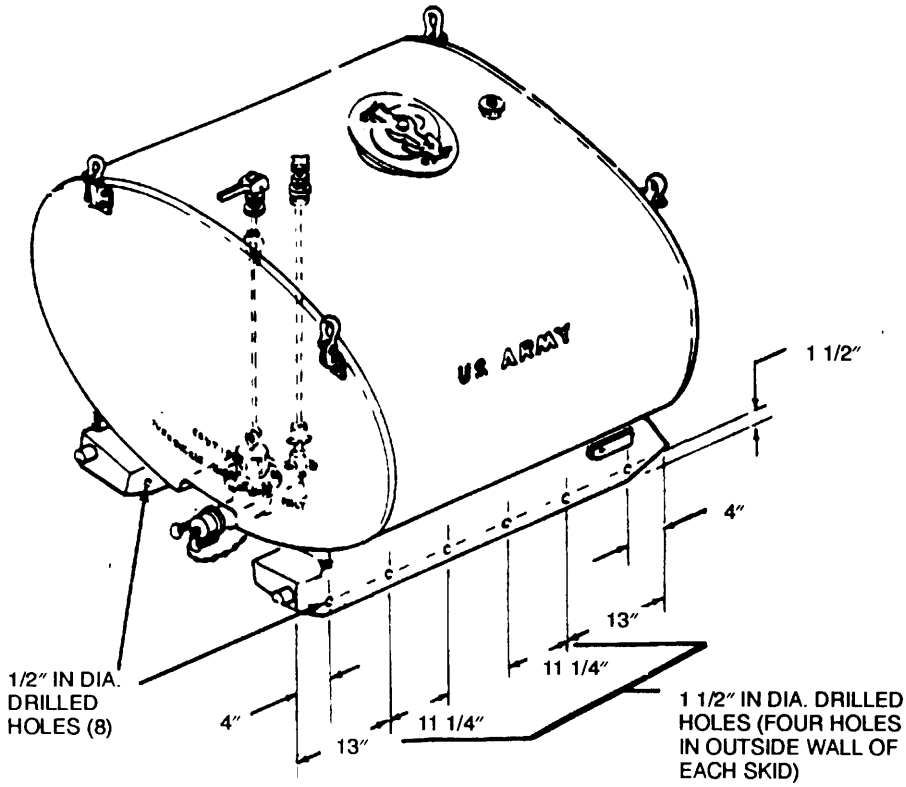


Figure 4–1. Tank Assembly

f. Read all warnings, cautions, notes and instructions carefully before operating or working on this unit. Read and understand all warnings listed in the front of this manual.

4-10. Inspect and Clean Tank Assembly.

This task covers: a. Cleaning b. Inspection

INITIAL SETUP

Tools

MSA Vapor Tester (Appendix B, Section Ill, item 5)
Drill Motor
1/2 inc. dia. drill bit
1 1/2 in. dia. drill bit

Materials

Rags, Wiping (Appendix E, Section II, item 3)
Adequate water supply with a large diameter hose long enough to reach the vehicle or tank.
Compressed air supply and air hose of sufficient length to reach depth of the tank.
A sufficient quantity of gas tank purger solution or a suitable detergent solution.
(Trisodium-phosphate, (Appendix E, Section II, item 6) FS-O-T-642D)
(Appendix E, Section II, item 1) FS-P-F-790).

- To avoid contamination, check your local installation procedures to properly dispose of waste and to ensure compliance with Environmental Protection Agency guidelines.
- Clean parts in a well ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F. (38°C. to 50°C.). Wear eye protection when blowing solvent from parts.
- Compressed air used for cleaning purposes should not exceed 30 PSI (2.1 kg/cm).

a. Cleaning Exterior.

(1) Wash all exterior metal surfaces with a solution of trisodium-phosphate, FS-O-T-642D, and water.

(2) Rinse thoroughly and dry.

(3) Parts removed on disassembly maybe cleaned by immersing or wiping with cleaning solvent, (Appendix E, Section II, item 1).

b. Cleaning Interior.

The following safety precautions must be observed before welding tanks used for flammable liquids.

- Tank must have a static ground during all operations.
- Use caution with all tools and metal objects to insure that no sparks will be created.
- Combustible vapor tests must be performed before and immediately following purging the tank Do not begin repair of the tank until declared safe by safety personnel.
- Allow only thoroughly trained personnel to conduct vapor tests.
- Discontinue all operations if an electrical storm is threatening or in progress.
- Eliminate all conditions which could cause explosions.
- Do not wear wool, nylon, silk, rayon or other static electricity generating clothing. Wear clean cotton clothing with no metal buttons or fittings. Remove all contents from pockets.

- Rubber boots must be worn.
- Use cotton rags for cleaning. Do not use cleaning material that will generate static electricity.
- Entry into the tank is prohibited unless the tank has been thorougly purged, and the atmosphere has been tested for air contaminants and oxygen deficiency by technicality qualified personnel.

(1) Conduct combustible vapor test using an acceptable explosive meter.

(2) Completely drain all liquid fuel from tank in accordance with TB 1047.

(3) Remove waste liquid fuel and liquid soaked waste material from work area.

(4) Thoroughly clean all flammable liquid from work area floor.

(5) Remove all accessories which might entrap liquid.

(6) Close or seal all drains.

(7) Fill tank with cold water and overflow for five minutes.

(8) Drain tank completely.

(9) Close or seal all drains.

NOTE

Insufficient amount of chemical will result in an Incomplete purging. Accurate computations of the amount of chemical to be used must be made prior to the purging. Once the purging has begun, do not stop until the process is complete.

(10) For each 100 gallon capacity, add 40-fluid ounces of purging chemical or 240-fluid ounces for a 600 gallon tank and fill the tank with water. Do not overflow.

(11) Insert an airline into the tank opening and agitate the solution with 3 to 5 psi of air for five minutes. Frequently move the air hose around in the tank covering as much area as possible espcially near the bottom. Remove air hose and drain the tank.

(12) Fill the tank and overflow for five minutes with cold water or until the water is dear. Drain the tank completely.

(13) Conduct a combustible vapor test reading to determine if the tank is safe to repair, dean, paint, store, or change materials. If combustible vapor test reading indicates tank is not safe, repeat procedure as cited in subparagraphs (1) through (12) above.

NOTE

Testing to determine if tanks are safe for entry will be performed only by technically qualified safety or health personnel.

(14) If repair procedures must be performed inside the tank, perform pre-entry testing for air contaminants and oxygen deficiency to determine if the tank is safe for entry.

c. Inspection.

(1) Condition of paint. Check the tank for condition of paint and indicate whether repainting is required.

(2) Dents, break, holes, or cracks. Check tank for dents that require repairs. Check dents on welds for break in weld seam. Check for any damage or wear that has caused a rupture or leak.

(3) Contamination and rust. Check interior of tank for general cleanliness and presence of contaminants. Check exterior and interior of cans for presence of rust.

(4) Refer all welding repairs to Direct Support.

4-11. Manhole Cover Assembly.

This task covers: a. Removal b. Disassembly c. Inspection d. Repair e. Installation

INITIAL SETUP

Tools

Tool Kit, General Mechanic's, (Appendix B, Section III, item 2)

Materials/Parts

Rags, Wiping (Appendix E, Section II, item 3)
Cleaning Solvent (Appendix E, Section II, item 1)
Gasket Oval (Appendix F, F-2, item 7)
Gasket Plug (Appendix F, F-2, item 17)

Manhole Cover

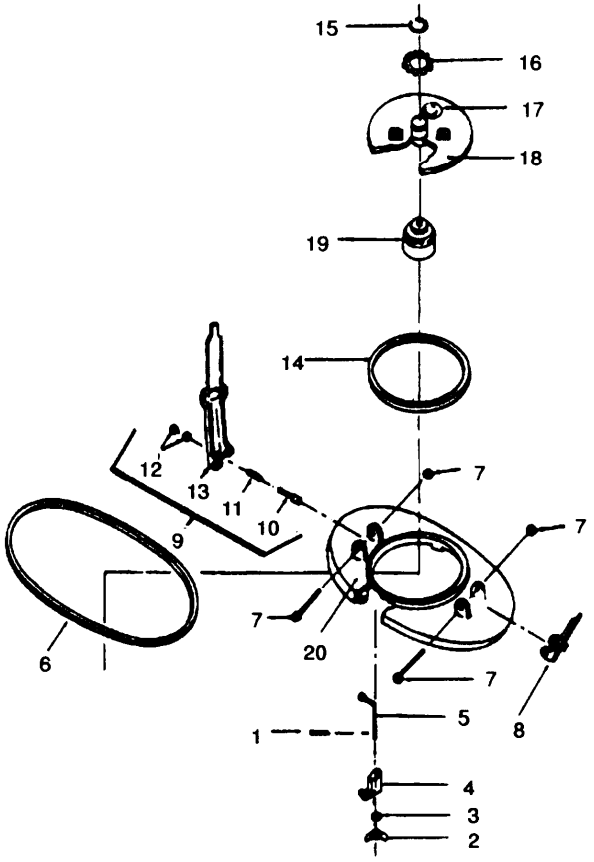


Figure 4-2. Manhole Cover Assembly.

Clean parts In a well ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent used to dean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F. (38°C. to 50°C.). Wear eye protection when blowing solvent from parts.

Compressed air used for cleaning purposes should not exceed 30 PSI (2.1 kg/cm).

a. Removal.

(1) Release cam (8) and raise hinge (13).

(2) Open manhole cover (17) and loosen six nuts (2) so that hooks (5) will drop free of tank rim.

(3) Lift manhole cover from the tank.

b. Cleaning, Inspection, and Repair.

(1) Clean all parts with an approved cleaning solvent and dry thoroughly.

(2) Inspect all parts for breaks, cracks, damaged threads and other damage. Replace defective or missing gasket. Repair or replace defective parts.

c. Installation.

(1) Replace manhole cover on tank.

(2) Position six hooks (5) on tank rim and tighten nuts (2).

(3) Close cover (17), drop hinge (13) into position and lock cam (8).

4-12. Pump Port.

This task covers: a. Replace b. Cleaning c. Inspection

INITIAL SETUP

Tools

Tool kit, General Mechanic's, (Appendix B, Section III, item 2)

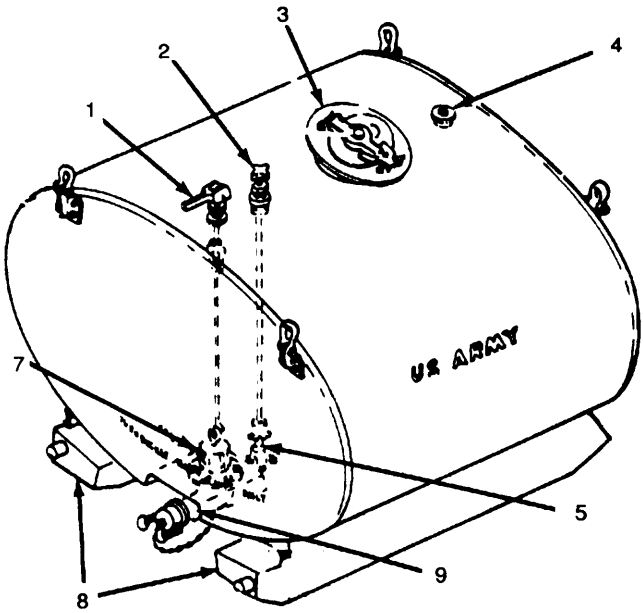
a. General. A pump port cover assembly is provided so that a hand pump maybe used.

***b. Cleaning,* Inspection.**

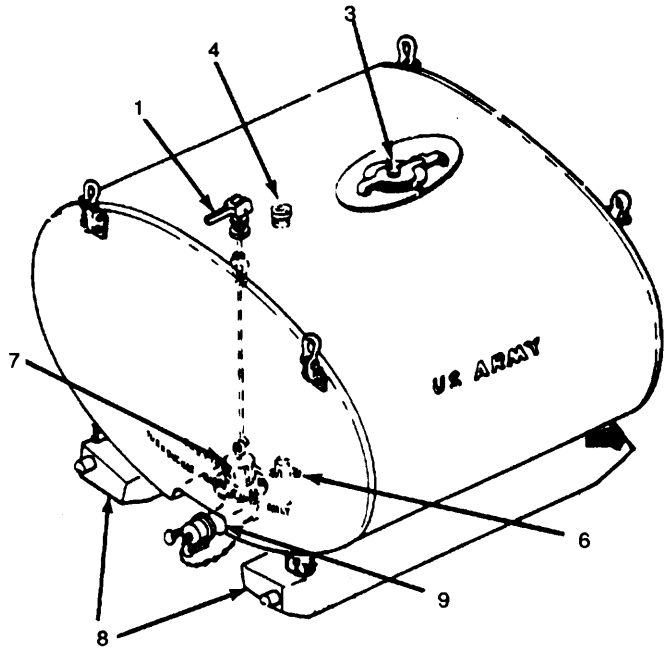
(1) Remove port pump cover and check for damage, rust or dirt. Check pump port gasket (4).

(2) Clean rust or contamination from cover. Replace a defective or damaged cover. Replace a defective or missing gasket (4).

TANK ASSEMBLY



EXCEPT ADVANCE MODEL TRL 1000



ADVANCE MODEL TRL 1000

Figure 4-3. Tank Assembly

4-13. Drain Valve Assembly.

This task covers: a. Inspection b. Cleaning c. Replace

INITIAL SETUP

Tools

Tool Kit, General Mechanic's (Appendix B, Section III, item 2).

Materials

Rags, Wiping (Appendix E, Section II, item 3)
Cleaning Solvent (Appendix E, Section II, item 1 **)**

WARNING

Clean parts in a well ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F. *(38°C.* to 50°C.). Wear eye protection when blowing solvent from parts.

WARNING

Compressed air used for cleaning purposes should not exceed 30 PSI (2.1 kg/cm).

WARNING

Entry into the tank is prohibited unless the tank has been thoroughly purged, and the atmosphere has been tested for air contaminants and oxygen deficiency by technically qualified personnel.

a. General. The drain valve assembly is used for draining the tank or for removing water accumulation.

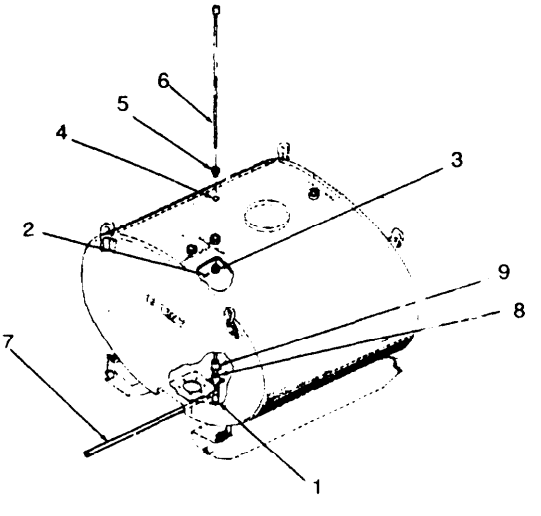


Figure 4-4. Drain Valve Assembly.

b. Inspection, Cleaning, and Replace.

(1) Remove manhole cover (para 4-11)

(2) Drain tank completely.

NOTE

Testing to determine If tanks are safe for entry will be performed only by technically qualified safety or health personnel.

(3) Perform pre-entry testing for air contaminants and oxygen deficiency by technically qualified personnel.

(4) Enter tank through manhole opening and loosen setscrew (2).

(5) Unscrew collar (3) from support (9).

(6) Remove rod and handle (6).

(7) Transfer parts to a well ventilated area outside the tank. Clean all parts with an approved cleaning solvent and dry thoroughly.

(8) Inspect all parts for breaks, cracks, and damaged threads.

(9) Replace damaged parts or valve assembly.

(10) Place rod and handle (6) into position through collar (3) and support (9).

(11) Tighten setscrew (2).

(12) Install manhole cover (para 4-11).

4-14. Emergency Dump Valve Assembly.

This task covers: a. Inspection b. Cleaning c. Replace

INITIAL SET UP

Tools

Tool **Kit, General Mechanic's (Appendix B, Section III, item 2)**

Materials

Cleaning Solvent (Appendix E, Section II, item 1)
Rags, Wiping (Appendix E, Section II, item 3)

a. General. The emergency dump valve is used for dispensing liquid from the Tank Unit.

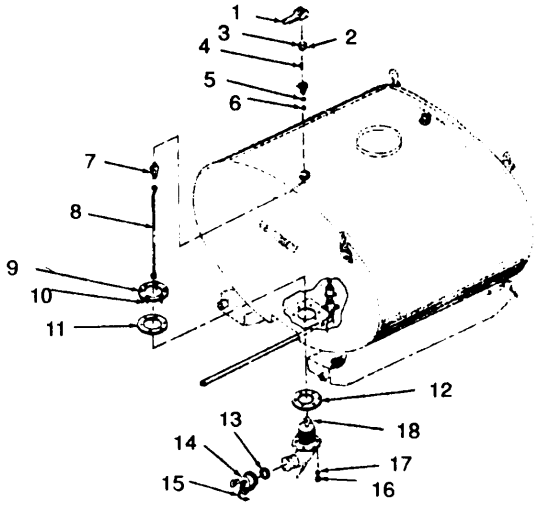


Figure 4-5. Emergency Dump Valve Assembly.

WARNING

Clean parts in a well ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent used to dean parts is potentiality dangerous to personnel and property. Do not use near open frame or excessive heat. Flash point of solvent is 100°F. (38°C. to 50°C.). Wear eye protection when blowing solvent from parts.

Compressed air used for cleaning purposes should not exceed 30 PSI (2.1 kg/cm).

Entry into the tank is prohibited unless the tank has been thoroughly purged, and the atmosphere has been tested for air contaminants and oxygen deficiency by technically qualified personnel.

b. Inspection, Cleaning and Replace.

(1) Remove manhole cover (para 4-11)

(2) Pull control lever (1) to "close" position and remove dust cap (14).

NOTE

Testing to determine if tanks are safe for entry will be performed only by technically qualified safety or health personnel.

(3) Perform pre-entry testing for air contaminants and oxygen deficiency by technically qualified personnel.

(4) Enter tank through manhole opening.

(5) Loosen eye nut (7), disengage lift rod (8) from eye nut and remove lift rod.

(6) Outside the tank, remove six nuts (16) and six washers (17) holding valve to sump ring (11) and remove valve assembly.

(7) Transfer parts to a well ventilated area outside the tank. Clean all parts with an approved cleaning solvent and dry thoroughly.

(8) Inspect all parts for breaks, cracks and other damage. Replace damaged valve assembly.

(9) Position valve body on sump ring (11) and install six washers (17) and six nuts (16).

(1 0) Inside the tank place lift rod (8) in eye nut (18) and tighten eye nut.

(11) Reinstall manhole cover (para 4-11).

4-15. Hose Assembly.

This task covers: a. Inspection b. Cleaning c. Replace

INITIAL SETUP

Tools

Tool Kit, General Mechanic's (Appendix B, Section III, item 2)

Materials

Cleaning Solvent (Appendix E, Section II, item 1)
Rags, Wiping (Appendix E, Section II, item 3)

a. General. The hose assembly is used to connect the tank unit to the dispensing nozzle.

WARNING

Clean parts In a well ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent used to dean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent Is 100°F. (38°C. to 50°C.). Wear eye protection when blowing solvent from parts.

WARNING

Compressed air used for cleaning purposes should not exceed 30 PSI (2.1 Kg/cm).

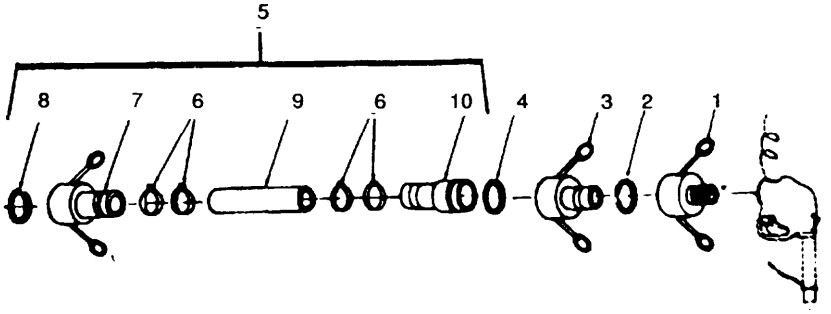


Figure 4-6. Hose Assembly.

b. Inspection, Cleaning and Replace.

(1) Disassembly hose assembly.

(2) Detach coupling (7) from emergency dump valve and coupling (1) from nozzle.

(3) Clean metal parts with an approved solvent and dry thoroughly.

(4) Clean hose surface with a dean dry cloth.

(5) Inspect hose for cuts, leaks, deterioration, damage and wear. Replace defective hose, couplers or adapters.

(6) Assemble hose assembly.

(7) Attach coupling (1) to nozzle and coupling (7) to emergency dump valve.

4-16. Installation Of Tie Down Kit For 5-ton Trailer (M1061A1).

This task covers: Installation

INITIAL SETUP

Tools

Tool Kit, General Mechanic's (Appendix B, Section III, item 2).

Materials

Tiedown Kit for 5-Ton Trailer M1061A1 (Appendix F, Figure F-4)
Stowage Box Assembly (Appendix F, Figure F-5)

a. General. These installation instructions outline the procedures and provide descriptive illustrations to install a single 600 gallon, Liquid Dispensing Tank Unit, 97403/13217E7080 onto a modified M1061A1, 5-Ton Trailer.

b. Sequence. It is not necessary to follow the installation procedures in the sequence presented; however, it will be advantageous to become familiar with these procedures prior to starting installation so that they can be rearranged, if necessary, in an efficient sequence, suitable to existing facilities.

WARNING

Handling equipment safety precautions and those for the facility, warnings and cautions specified in technical manuals supplied with the equipment will be reviewed and strictly observed. Failure to do so could result in personnel injury or fatality and/or damage to the equipment.

(1) Tightening of Hardware. Hardware will be tightened in accordance with requirements specified in Appendix B, Section V

(2) Dimensions. Dimensions specified in this procedure are in decimal inches. A table of fractional equivalents is supplied at the end of this procedure.

c. Installation Procedure.

NOTE

Prior to start of installation, verify that all items listed in Appendix F, Figure F-4 and Figure F–5 are actually present.

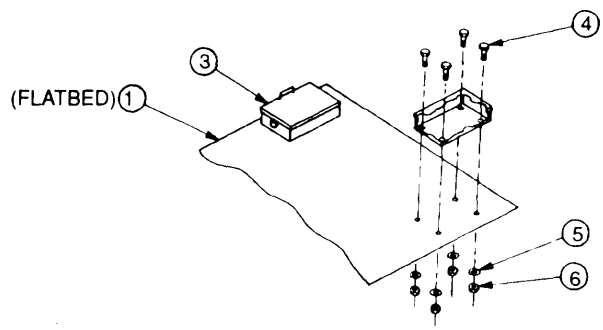


Figure 4–7. Accessories Stowage Box Installation.

(1) Place stowage boxes (3) on the two existing 4-hole patterns in the flatbed trailer (1) (forward curb-side and roadside areas). See Figure 4-7.

(2) Attach boxes to flatbed using four bolts (4), four washers (5), and four nuts (6).

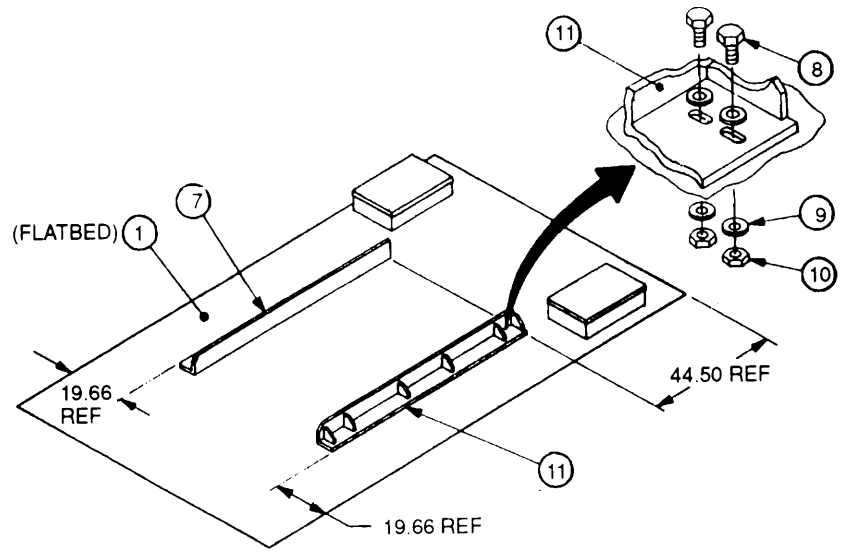


Figure 4–8. Tank Mounting Angle Installation.

(3) Orient and position tank mounting angles, (7) and (11), on flatbed at approximately 44.50 inches from front edge and 19.66 inches from side edge. See Figure 4-8.

(4) Loosely attach angles to flatbed using eight bolts, (8), sixteen washers, (9), and eight nuts (10). Move angles outboard (on flatbed) as far as slots (in angles) will permit.

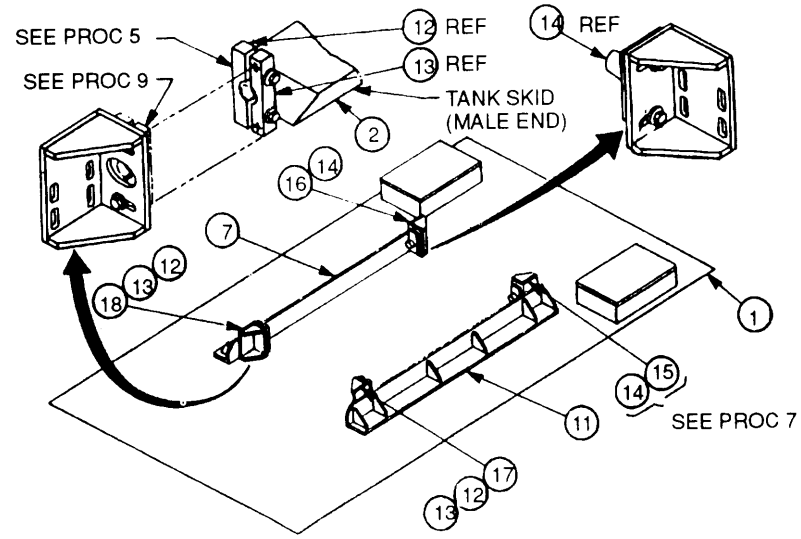


Figure 4–9. Preparation for Installation.

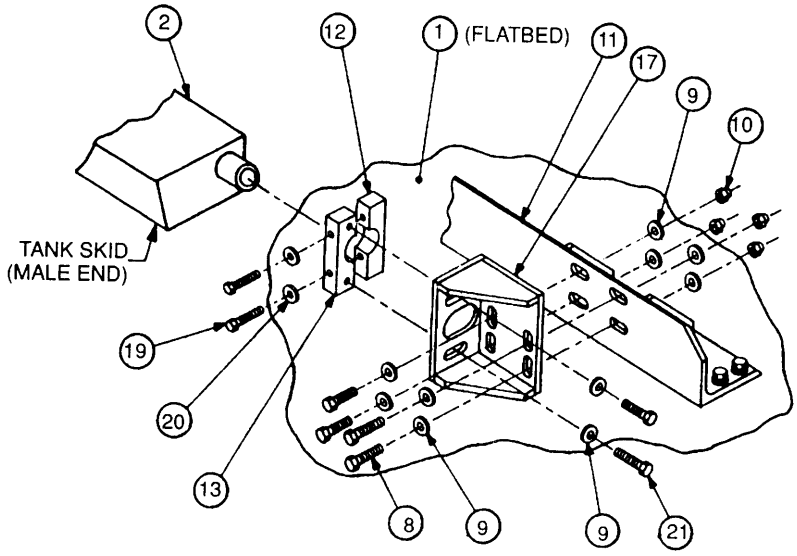


Figure 4–10. Angle/Bracket/Clamping Adapter Assembly

(5) Orient and position inboard and outboard clamping adapters, (12) and (13), and attach to post protruding from one skid on tank (2), using two screws (19), and two washers (20). Install hardware only fingertight, enough to retain adapters during positioning of tank. Repeat procedure at post on the other skid. Note that positions will be reversed (inverted) to maintain the inboard position of adapter (13). See Figure 4–9 and Figure 4–10.

(6) Orient and position tank (2) on flatbed and move mounting angles inboard so the angles are flush against the sides of the tank skids. Keeping mounting angle parallel to trailer edge, as much as possible, retighten its hardware. Align tank snugly against the secured angle, moving the other mounting angle with it. See Figure 4–11.

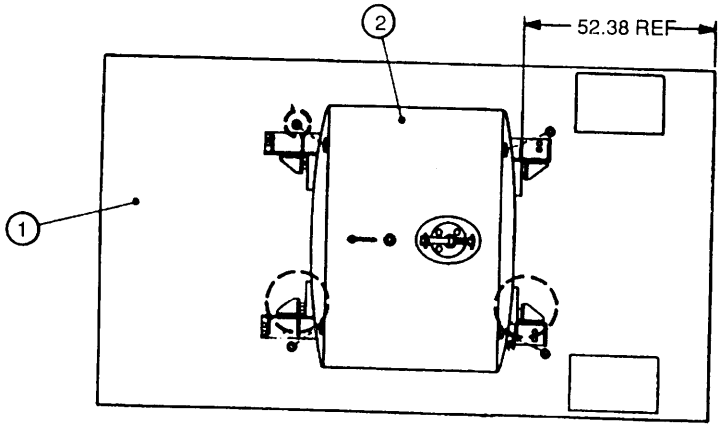


Figure 4–11. Tank Placement and Tiedown Locations.

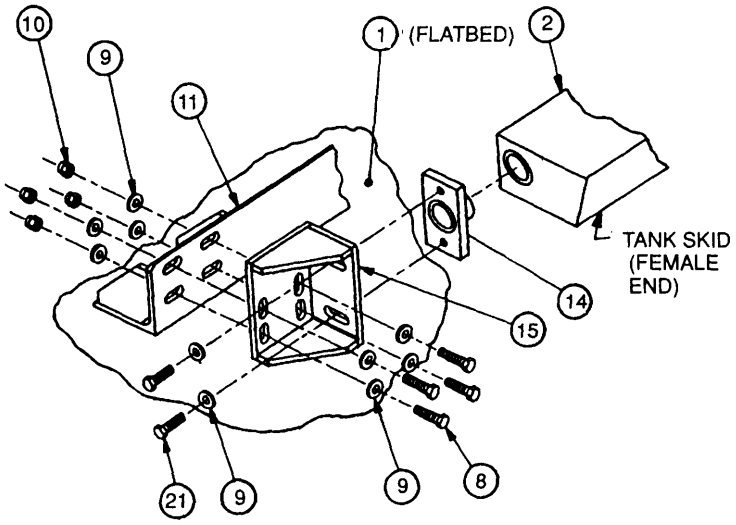


Figure 4-12. Angle/Bracket/Socket Adapter Assembly.

(7) Loosely attach one socket adapter (14), with the curbside end angle bracket (15), using two screws (21), and two washers (9). Repeat procedure using the roadside equivalent, (16, Figure 4-9). See Figure 4-12

(8) Starting at the secured mounting angle, fit the adapter, with the appropriate angle bracket assembled, into socket on that skid of the tank and loosely attach the angle bracket to the mounting angle using four screws (8), eight washers, (9), and four nuts (10). Repeat procedure at mounting angle farside. See Figure 4-12

(9) At the other end of tank, again starting at the secured mounting angle, attach the appropriate clamping end bracket (17 or 18 Figure 4-9) to the assembled clamping adapters on post of tank skid (step 5, above) by installing two screws (21) and two washers (9) through bracket into tapped holes in the inboard adapter (13), fingertight only. See Figure 4-10 and Figure 4-12

(10) Loosely attach clamping end bracket to mounting angle using four screws (8), eight washers (9), and four nuts (10). Repeat procedure in steps (9) and (10), for farside. See Figure 4-12

NOTE

It is preferred that the tank be shifted as far forward on flatbed as slots will allow, without compromising the fit of the clamping adapters.

(11) Starting at secured mounting angle, fit all parts up snug and tighten all hardware. Refer to paragraph 4-16, b, (1).

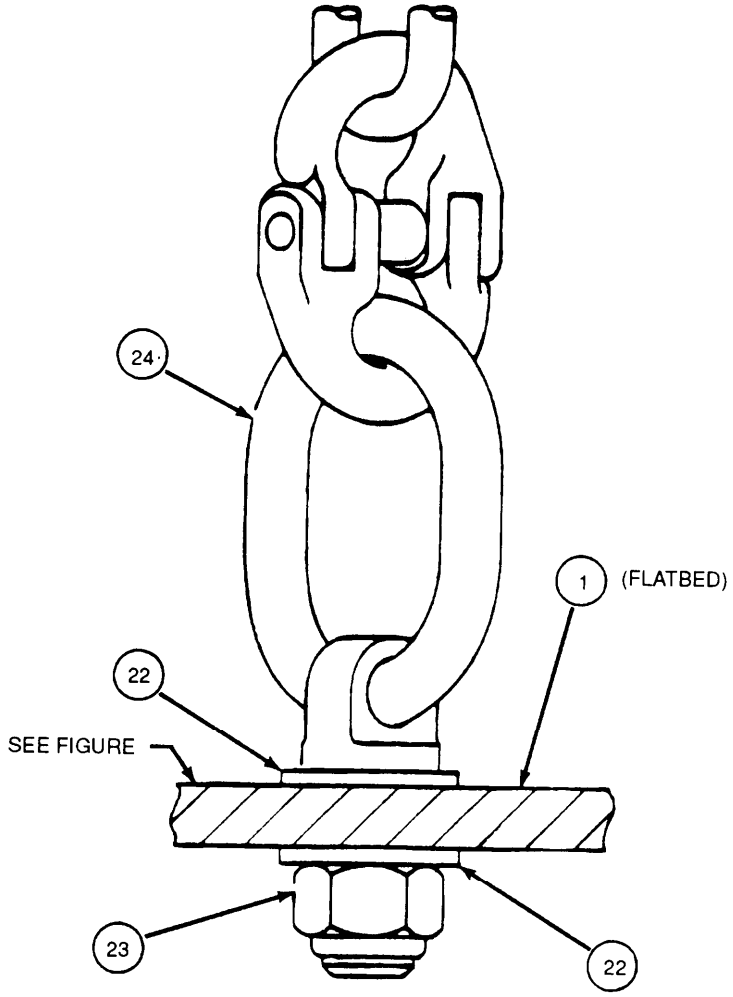


Figure 4-13. Tiedown Assembly Attachment.

(12) With tank mounted, install tiedown assemblies (24), at locations shown in Figure 4-11, using two washers (22) and one nut (23). Apply 325-327 ft. -lbs of torque to nuts to secure tiedowns.

(13) Extend turnbuckles on tiedowns, enough to attach hooks to shackles provided on tank. Attach, secure safety clips on hooks and draw turnbuckles, handtight only, to remove slack from tiedowns assemblies. Tighten jam nuts on turnbuckles to secure.

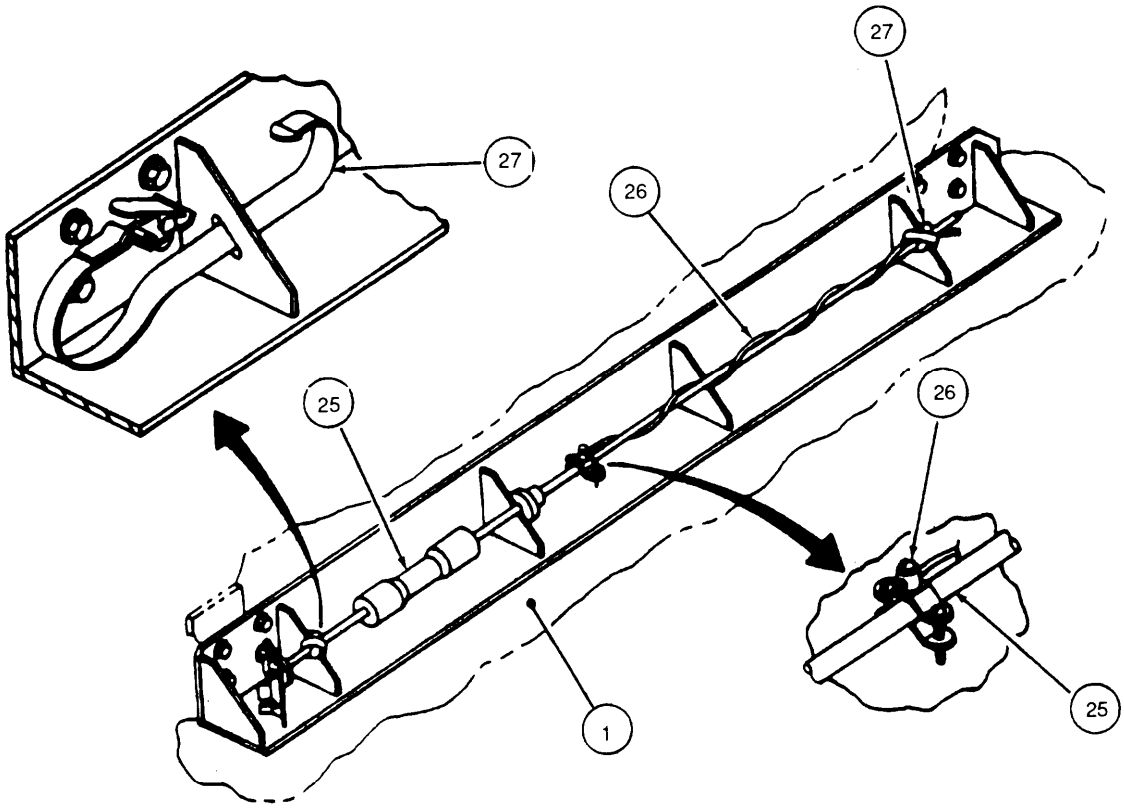


Figure 4-14. Ground Rod Stowage.

(14) Run strap assemblies (27, Figure 4-14) through slots in tank mounting angle (7, Figure 4-6).

(15) Attach ground cable assembly (26) to ground rod (25). Wrap cable around rod. See Figure 4-14.

(16) Position ground rod (25) on angle and secure in place with straps.

4-17. Nozzle Assembly Service.

This task covers: Service

a. Buckeye Model 5. Remove tube assembly (22, Figure 4-15) from valve body (30) and remove strainer (23) and clean.

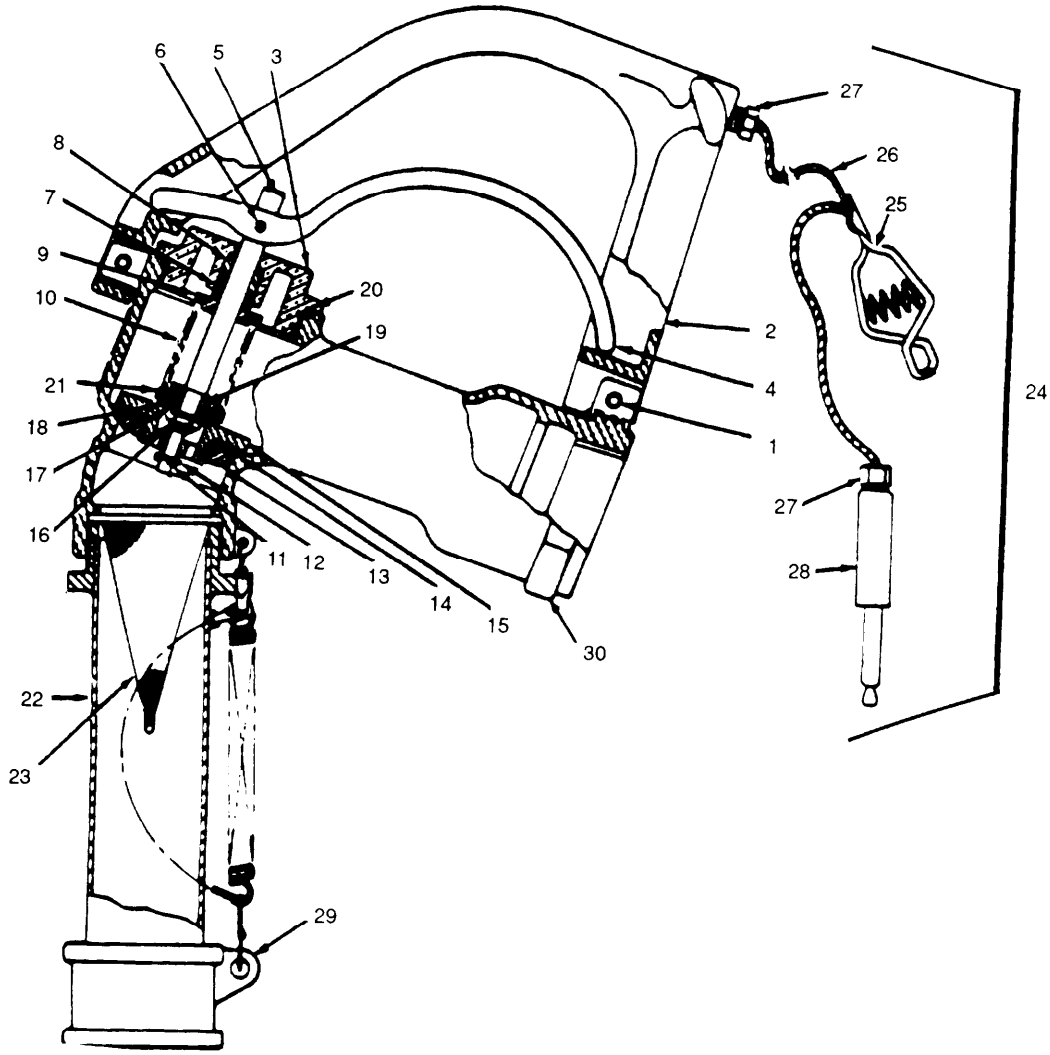


Figure 4-15. Nozzle Assembly, Buckeye Model 5.

b. All Other Models. Remove the spout assembly (13, Figure 4–16) from the body (29) and remove strainer (15) and clean.

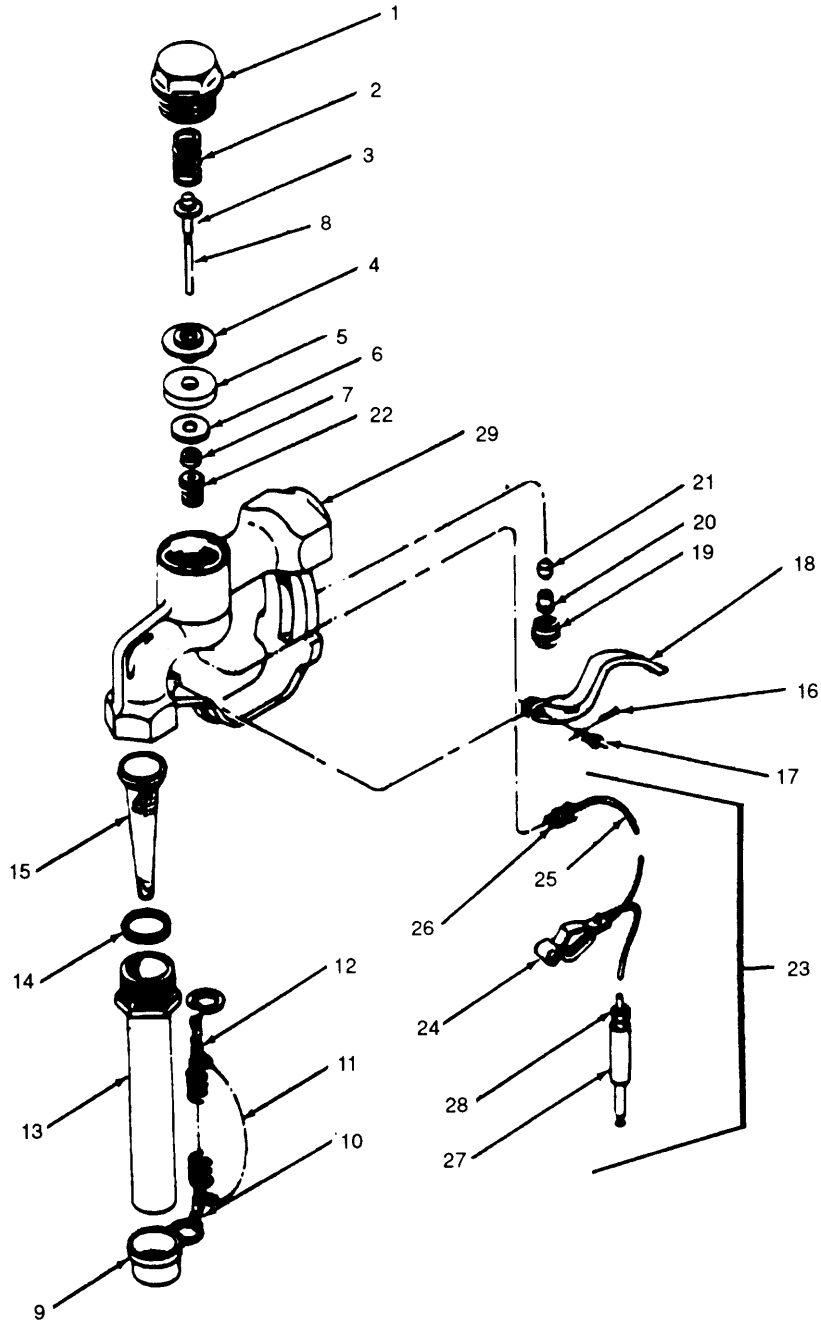


Figure 4-16. Nozzle Assembly. All Other Models.

Section VI. MOVEMENT TO A NEW WORKSITE

4-18. Dismantling for Movement.

a. Short D/stance Movement.

(1) Trailer mounted unit. Attach a towing vehicle to the trailer and tow trailer to new worksite.

(2) Unit without trailer. Move the tank unit to the new worksite with a forklift or vehicle. Provide suitable blocking and tiedowns to prevent the equipment from shifting.

b. Long Distance Movement.

(1) Provide suitable container for the tank unit. Refer to TM 38-230-1 for instructions for container fabrication.

(2) Provide suitable blocking and tiedowns to prevent the unit from shifting during transport.

4-19. Reinstallation After Movement. Reinstall the tank and pump unit after movement to a new work site as instructed in paragraph 4-5.

CHAPTER 5
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. DIRECT SUPPORT TROUBLESHOOTING

5-1. There are no troubleshooting procedures at Direct Support Maintenance Level for the Tank, Unit, 600 Gallon, Liquid Dispensing.

Section II. DIRECT SUPPORT MAINTENANCE PROCEDURES

5-2. General.

a. This section contains the direct support maintenance procedures as authorized by the Maintenance Allocation Chart (MAC), Appendix B of this manual.

b. The tank assembly includes the manhole cover assembly, the drain valve and control handle, the emergency dump valve and control lever, and the pump port and holddown assemblies.

c. The tank and its components must be cleaned before any repair is initiated. Each time a component is removed for repair, inspection or other service, it must be cleaned thoroughly.

d. No repair will be initiated until the tank has been thoroughly vented and cleaned. The atmosphere inside the tank must be tested and certified safe by technically qualified personnel prior to welding on the tank.

e. Before attempting welding repairs on the tank, drill four 1/2 inch diameter drain holes in each skid (eight holes required) and four 1-1)2 inch holes in each skid (eight holes required). (See Figure 4-1)

f. Read all warnings, cautions, notes and instructions carefully before operating or working on the tank assembly.

5-3. Repair Tank Assembly.

This task covers: a. Repair

INITIAL SETUP

Tools

MSA Vapor Tester (Appendix B, Section III, item 5)
Welder (Appendix B, Section III, item 4)
Tool Kit, Master Mechanic's (Appendix B, Section III, item 4)

Materials

Rags, Wiping (Appendix E, Section II, item 3)
Compressed air supply and air hose of sufficient length to reach depth of the tank.
A sufficient quantity of gas tank purger solution or a suitable detergent solution
(Trisodium-phosphate, (Appendix E, Section II, item 6) FS-O-T-642D)
(Appendix E, Section II, item 1) FS-P-D-790).

The following safety precautions must be observed before welding tanks used for flammable liquids.

- Tank must have a static ground during all operations.
- Use caution with all tools and metal objects to Insure that no sparks will be created.
- Combustible vapor tests must be performed before and immediately following purging the tank. Do not begin repair of the tank until declared safe by safety personnel.
- Allow only thoroughly trained personnel to conduct vapor tests.
- Discontinue all operations If an electrical storm Is threatening or in progress.
- Eliminate all conditions which could cause explosions.
- Do not wear wool, nylon, silk, rayon or other static electricity generating clothing. Wear clean cotton clothing with no metal buttons or fittings. Remove all contents from pockets.
- Rubber boots must be worn.
- Use cotton rags for cleaning. Do not use material that will generate static electricity.

a. Repair Tank Assembly.

(1) Conduct combustible vapor test using an acceptable explosive meter (Tester, Combustion Vapor, NSN 6665-00-664-4650).

(2) If combustible vapor test shows combustible atmosphere in tank, clean tank thoroughly in accordance with TB 750-1047 (refer to paragraph 4-10 for complete cleaning procedures).

(3) Repair all dents, cracks, breaks and holes in tank. Weld ruptured seams and other damaged areas in accordance with TM 9-237. Replace badly damaged parts.

(4) After tank has been repaired, cleaned, dried and made dust-free, paint exterior with one coat of rust-inhibiting enamel. Paint in accordance with TM 43-0139.

CHAPTER 6

MATERIAL USED IN CONJUNCTION WITH THE TANK UNIT

Section I. GENERAL.

This chapter covers equipment used in conjunction with the tank unit, but not necessary for the basic operation of the tank unit.

Section II. AUXILIARY EQUIPMENT.

6-1. Trailer.

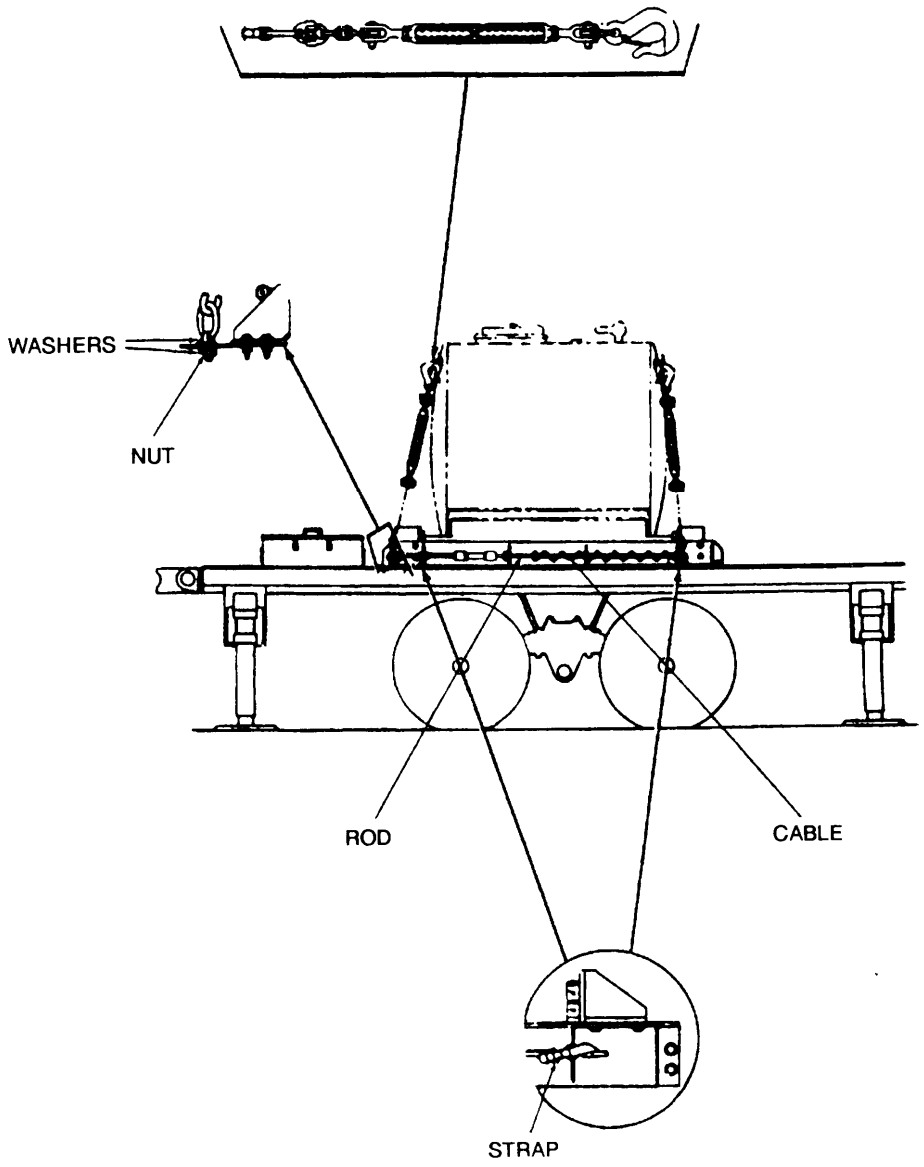


Figure 6–1. Five Ton M1061A1, Trailer Chassis

a. The trailer (Figure 6-1) on which the tank unit is mounted is a five-ton, four wheel, modified M1061A1 trailer chassis.

b. For operating procedures and maintenance procedures for the five-ton trailer, refer to TM 9-2330-376-14&P.

6-2. Hand Driven Dispensing Pump. The tank unit is provided with a pump port (10, Figure 1-1 and Figure 1-2) to receive various types of hand-driven dispensing pumps. There are several designs of hand pumps of various sizes and pumping capacities that are adaptable to the tank unit.

APPENDIX A

REFERENCES

A-1. Lubrication FSG9100	Identification List for Fuels, Lubricants, Oils and Waxes
A-2. Painting TM 43-0139	Painting Instructions for Field Use.
A-3. Maintenance DA PAM 738-750	The Army Maintenance Management System (TAMMS).
DA Form 2404	Equipment Inspection and Maintenance Worksheet
TB 750-1047	Elimination of Combustibles in Fuel Tanks.
TM 9-2330-376-14&P	Operator, Unit, Direct Support and General Support Maintenance Manual (including repair parts and special tools list) for trailer, flatbed, 5-ton, 4 wheel, M1061A1.
A-4. Testing DA Form 2028	Recommended Changes to Publications
TM 750-244-3	Destruction of Army Materiel to Prevent Enemy Use.
A-5. Shipment and Storage TB 740-99-1	Storage Serviceability Standard
TB 740-97-2	Preservation of USAMEC Mechanical Equipment for Shipment and Storage
TM 38-230-1	Preservation, packaging, and packing of military supplies and equipment.

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APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall responsibility for performance of maintenance functions on the identified end item or component. Implementation of maintenance functions upon end item or component will be consistent with assigned maintenance functions.

c. Section III lists special tools and test equipment required for each maintenance function as referenced in Section II.

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

B-2. Maintenance Functions.

a. ***Inspect.*** To determine serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination.

b. ***Test.*** To verify serviceability and detect incipient failure by measuring mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. ***Service.*** Periodic operations required to keep an item in proper operating condition, i.e. to clean (decontaminate), to preserve, to drain, to paint, and to lubricate.

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

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

f. ***Calibrate.*** To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic 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.

g. ***Install.*** The act of emplacing, seating, or fixing an item into position.

h. ***Replace.*** The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. ***Repair.*** The application of maintenance services (inspect, test, service, adjust, align, calibrate, or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), and item or system.

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

k. ***Rebuild.*** Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of 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 equipments/components.

B-3. Column Entries.

Columns used in the Maintenance Allocation Chart will be limited to those shown. Entries for those columns are explained below.

a. ***Column 1, Group Number.*** Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

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

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

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

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

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

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

B-4. Explanation of Columns In Tool and Test Equipment Requirements Section III.

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

b. Column 2, Maintenance Category. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock /Vumber. The National Stock Number of the tool or test equipment.

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

B-5. **Explanation of Columns in Remarks, Section IV.**

a. ***Column 7, Reference Code.*** The code recorded in column 6, Section II.

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

Section II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		D/S	G/S	Depot		
			C	O	F	H	D		
01	TANK ASSEMBLY								
	TANK	INSPECT	0.5						
		PURGE		4.0				5, 4, 3	A
		REPLACE		2.0					
		REPAIR			6.0				B
	MANHOLE COVER	INSPECT	0.2						
		REPLACE		0.4				4	
		REPAIR		0.5					
	GASKET, MANHOLE	INSPECT	0.2						C
		REPLACE		0.4				4	
	GASKET, FILLER COVER	INSPECT	0.2						
		REPLACE		0.3				4	
	VALVE, DRAIN	INSPECT	0.2						
		REPLACE		5.0				4	
	VALVE, PUMP	INSPECT	0.2						
		REPLACE		5.0				4	
02	TIEDOWN ASSEMBLY	INSPECT	0.3						
		REPLACE		0.3				4, 1	
03	ACCESSORY STOWAGE BOX	INSPECT	0.1						
		REPLACE		0.5				4	
04	HOSE ASSEMBLY	INSPECT	0.3						
		REPLACE		0.1				4, 1	
05	NOZZLE ASSEMBLY	INSPECT	0.1						
		SERVICE		0.1				4, 1	
		REPLACE		0.2					
06	GROUND ROD ASSEMBLY	INSPECT	0.1						
		REPLACE		0.2				4	
		REPAIR		0.3					D

Tank for Trailer Mounting

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS for MAINTENANCE ALLOCATION CHART

(1) Tool/Test Equip. Ref. Code	(2) Maintenance Category	(3) Nomenclature	(4) NSN	(5) Tool Number
1	0	Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance Common No. 1 Less Power	4910-00-754-0654	SC 4910-95CL-A74
2	O	Tool Kit, General Mechanic's, Automotive	5180-00-177-7033	SC 5180-90-CL-N26
3	F	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Basic Less Power (19204)	4910-00-754-0705	SC 4910-95-CL-A31
4	F	Tool Kit, Master Mechanic's	5180-00-699-5273	SC 5180-90-CL-NO5
5	0	Tester, Combustion Vapor	6665-00-664-4650	

Tank for Trailer Mounting

Section IV. REMARKS FOR MAINTENANCE ALLOCATION CHART

Reference Code	Remarks
A	Clean and purge.
B	Clean, purge and weld.
C	Inspect for external leaks and/or visual damage, deterioration, defects, etc.
D	Repair by replacing defective component.

Section V. TORQUE REQUIREMENTS

Unless otherwise specified in this manual or technical manuals supplied with the unit, all hardware affected by this retrofit is to be tightened to standard torque requirements listed below for carbon steel bolts, studs and nuts.

COARSE THREADS	SAE GRADE 5 		SAE GRADE 8 	
	Dry	Lubricated or Plated	Dry	Lubricated or Plated
	(IN LB)	(IN LB)	(IN LB)	(IN LB)
10-24	43-47	32-35	60-66	45-49
1/4-20	96-106	75-83	144-158	108-119
	(FT LB)	(FT LB)	(FT LB)	(FT LB)
5/16-18	17-19	13-14	25-28	18-20
3/8-16	31 -34	23-25	44-48	33-36
7/16-14	49-54	37-41	70-77	52-57
1/2-13	75-83	57-63	106-117	80-88
9/16-12	109-120	82-90	153-168	115-127
5/8-11	150-165	113-124	212-233	159-175
3/4-10	266-293	200-220	376-414	282-310
7/8-9	394-433	296-326	606-667	455-501
1-8	591-649	443-489	909-1000	682-750
1 1/8-7	794-873	596-656	1288-1417	966-1063
1 1/4-7	1120-1232	840-924	1817-1999	1360-1496
FINE THREADS				
	(IN LB)	(IN LB)	(IN LB)	(IN LB)
10-32	49-54	36-40	68-75	51-56
1/4-28	120-132	86-95	168-185	120-132
	(FT LB)	(FT LB)	(FT LB)	(FT LB)
5/16-24	19-21	14-15	25-28	20-22
3/8-24	35-39	26-29	49-54	37-41
7/16-20	55-61	41-45	78-86	58-64
1/2-20	85-94	64-70	120-132	90-99
9/16-18	121-133	91-100	171-188	128-141
5/8-18	170-187	128-141	240-264	180-198
3/4-16	297-327	223-245	420-462	315-347
7/8-14	434-477	326-359	668-735	501-550
1-12	646-711	485-534	995-1096	746-821
1 1/8-12	891-980	668-735	1445-1590	1083-1191
1 1/4-12	1240-1364	931-1024	2012-2213	1509-1660

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

C-1. Scope. This appendix lists components of end item and basic issue items for the Tank for Trailer Mounting to help you inventory items required for safe and efficient operation.

C-2. General.

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III Basic Issue Items. These are the minimum essential items required to place the Tank for Trailer Mounting in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the Tank for Trailer Mounting during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorizations of the end item.

C-3. Explanation of Columns.

The following provides an explanation of columns found in the tabular listings.

a. Column (1) — Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) — National Stock Number. Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. Column (3) — Description. Indicates the Federal item name, and if required, a minimum description to identify and locate the item. The last line for each item indicates the Commercial and Government Entity Code (CAGEC) followed by the part number.

d. Column (4) Unit of Measure (u/m). Indicates the measure used in performing the actual operation/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr, etc).

e. Column (5) Quantity Required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

Tank for Trailer Mounting

(1) Illus/ Item No.	(2) National Stock Number	(3) Description, CAGEC and Part Number		(4) U/M	(5) QTY RQR
	5430-00-585-2529	Tank, Liquid Dispensing, 600 Gal 97403 13217E7080	EA	1	
		Angle, Tank Mounting, Curbside 97403 13228E4264	EA	1	
		Angle Tank Mounting, Roadside 97403 13228E4264	EA	1	
		Adapter, Clamping Outboard 97403 13228E4268	EA	2	
		Adapter Clamping Inboard 97403 13228E4269	EA	2	
		Adapter Socket 97403 13228E4272	EA	2	
		Bracket, Angle, Socket End, Curbside 97403 13228E4271	EA	1	
		Bracket, Angle, Socket End, Roadside 97403 13228E4273	EA	1	
		Bracket, Angle, Clamping End, Curbside 97403 13228E4555	EA	1	
		Bracket, Angle, Clamping End, Roadside 97403 13228E4526	EA	1	
		Tiedown, Fuel Tank 97403 13228E4528	EA	1	
		Box Stowage, Accessory 97403 13228E4263	EA	2	
	5975-01-050-5707	Ground Rod 97403 13219E0462	EA	1	
		Strap Assy (Grd Rod Holddown) 97403 13220E5288-1	EA	2	
	4720-00-937-2822	Hose Discharge 81349 370B06B2A1440	EA	1	
	4930-00-902-4642	Nozzle, Fuel Dispensing 97403 13217E2974	EA	1	

SECTION III. BASIC ISSUE ITEMS LIST
TANK FOR TRAILER MOUNTING

(1) ILLUS/ ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER	(4) U/M	(5) QTY RQR
1	N/A	TECHNICAL MANUAL TM 10-4930-220-13&P	EA	1

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

Tank for Trailer Mounting

Section I. INTRODUCTION

D-1. Scope. This appendix lists additional items authorized for the support of the Tank for Trailer Mounting.

D–2. General. This list identifies items that do not have to accompany the Tank for Trailer Mounting and that do not have to be turned in with it. These items are all authorized by CTA, MTOE, TDA, or JTA.

D-3. Explanation of Listing. National stock numbers, descriptions, and quantities are provided to identify and request the additional items required to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorized the item(s).

APPENDIX D

Section II. ADDITIONAL AUTHORIZATION LIST

Tank for Trailer Mounting

(1) Illus/ Item No.	(2) National Stock Number	(3) Description, CAGEC and Part Number	Usable On Code	(4) U/M	(5) QTY RQR
1	5340-01-004-5180	Padlock, Key Operation	BXG	EA	1
2	5210-01-083-2926	Gage Stick, Petroleum 97403 13217E7144	BXG	EA	1
3	6665-00-664-4650	Vapor Tester	BXG	EA	1

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APPENDIX E

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Tank for Trailer Mounting

Section I. INTRODUCTION

E-1. Scope. This appendix lists expendable/durable supplies and materials needed to operate and maintain the Tank for Trailer Mounting. These items are authorized by CTA 50-070, Expendable/Durable Items (Except Medical, Class V repair parts, and Heraldic Items).

E-2. Explanation of Columns.

a. ***Column (1) - Item Number.*** This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, App E").

b. ***Columm (2) - Level.*** This column identifies the lowest level of maintenance that requires the listed item.

C . . . . . Operator/Crew
O . . . . Unit Maintenance
F . . . . . Direct Support Maintenance
H . . . . . General Support Maintenance

c. ***Column (3) — National Stock Number.*** This is the National Stock Number assigned to the item; use it to request or requisition the item.

d. ***Column (4) — Descrlptlon.*** Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity Code (CAGEC), in parenthesis followed by the part number.

e. ***Column (5) — Unit of Measure (U/M).*** Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two character alphabetical abbreviation (e.g., ea, in, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy requirements.

SECTION II. EXPENDABLE/DURABLE SUPPLIES AND MATERIAL LIST

TANK FOR TRAILER MOUNTING

(1) ILLUS/	(2) MAINT.	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	O	6850-00-664-5685	DRY CLEANING SOLVENT, AA 711, TYPE II (58536)	QT
2	C	7930-00-526-2919	DETERGENT, GENERAL PURPOSE LIQUID 5 GAL PAIL	GAL
3	C	7920-00-148-9666	RAGS, WIPING	BALE
4	C	9150-00-190-0905	GREASE, AUTOMOTIVE AND ARTILLERY GAA, MIL-G-10924	LB
5	O	8030-00-889-3535	TAPE ANTISEIZE 1/2" X 260" (18876) 11072502	RL
6	O	6810-00-240-2116	TRISODIUM-PHOSPHATE (81348) 0-T-642D	DRUM

APPENDIX F

UNIT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

F-1. SCOPE. This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of the Tank Unit. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

F-2. GENERAL. In addition to this section, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed in item name sequence. Repair parts kits are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in this section. Items listed are shown on the associated illustration(s)/figure(s).

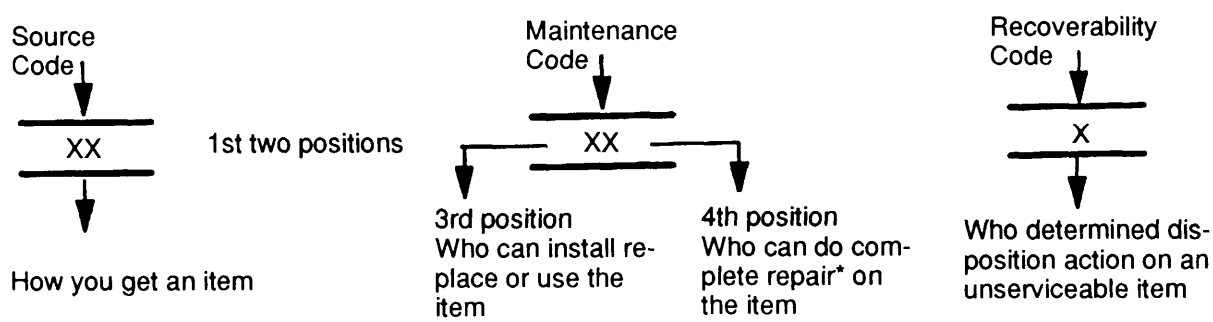
b. Section III Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE column) for the performance of maintenance.

c. Section IV Cross–references indexes. A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross referenced to each illustration figure and item number appearance. The figure and item number index lists figure and item number in alphanumeric sequence and cross references NSN, CAGEC and part number.

F-3. EXPLANATION OF COLUMNS (Section II and Section III)

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

b. SMR Code (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



NOTE

*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the “Repair” function in a use/user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

Code	Explanation
PA PB PC** PD PE PF PG	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.
MO–(Made at unit AVUM Level MF–(Made at DS/ AVUM Level MH–(Made at GS Level) ML–Made at Specialized Repair Activity (SRA)) MD–(Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION and USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. if the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.

**NOTE: Items coded PC are subject to deterioration.

Code	Explanation
AO— —	(Assembled by unit/AVUM Level)
AF— —	(Assembled by DS/AVIM Level
A H — —	(Assembled by GS Category)
A L — —	(Assembled by SRA)
A D — —	(Assembled by Depot)

Items with these codes are not to be requested requisi–tioned 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 3d position code of the SMR code authorizes you to replace the item, but the source code indicates the items are assembled at a higher level, order the item from the higher level of maintenance.

Code	Explanation

XA – – Do not requisition "XA" -coded item. Order its next higher assembly. (Also, refer to the NOTE be-low.)

XB – – If an “XB” item is not available from salvage, order it using the CAGEC and part number given.

X C – – Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufac-turer’s part number.

XD– - Item is not stocked. Order an “XD” -coded item through normal supply channels using the CA-GEC and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded “XA” or those aircraft support items re-stricted by requirements of AR 750–1.

(2) Maintenance Code. Maintenance codes tells you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level au-thorized to remove, replace, and use an item. The maintenance code entered in the third posi-tion will indicate authorization to one of the following levels of maintenance.

Code	Application/Explanation
C -	Crew or operator maintenance done within unit or aviation unit maintenance.
O -	Unit or aviation unit category can remove, replace, and use the item.

F— Direct support or aviation intermediate level can remove, replace, and use the item.

H— General support level can remove, replace, and use the item.

L— Specialized repair activity can remove, replace, and use the item.

D— Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions.) NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes. This position will contain one of the following maintenance codes.

Code	Application/Explanation
0—	Unit or (aviation unit) is the lowest level that can do complete repair of the item.
F—	Direct support or aviation intermediate 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 –	Nonrepairable. No repair is authorized.
B –	No repair is authorized. (No parts or special tools are authorized for the maintenance of a “B” coded item). However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Recoverability Codes	Application/Explanation
Z –	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code.

Recoverability Codes	Application/Explanation
O—	Reparable item. When uneconomically reparable, condemn and dispose of the item at unit or aviation unit level
F—	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or aviation intermediate level
H—	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D—	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L–	Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A—	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious-metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. CAGEC (Column (3)). The Commercial and Government Entity Code (CAGEC) is a digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. PART NUMBER (Column (4)). Indicates the primary number used by the manufacturer, (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

e. DESCRIPTION AND USABLE ON CODE (UOC) (Column (5)). This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The physical security classification of the item is indicated by the parenthetical entry, e.g., Phy Sec C (C) — Confidential, Phy Sec Cl (S) — Secret, Phy Sec Cl (T) — Top Secret.

(3) Items that are included in kits and sets are listed below the name of the kit or set.

(4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(5) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

(6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).

(7) The usable on code, when applicable (see F-5, Special Information).

(8) In the Special Tools List section, the basis of issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

(9) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Section II and Section III

(10) The indenture, shown as dots appearing before the repair part, indicates that the item is a repair part of the next higher assembly.

f. QTY (Column (6)). The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and may vary from application to application.

F-4. EXPLANATION OF COLUMNS (Section IV)

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER column. This column lists the NSN by National item identification number

(NIIN) sequence. The NIIN consists of the last nine digits of the
NSN
NSN, i.e. (5305-01-574-1467).
NIIN

When using this column to locate an item, ignore the first 4 digits of the NSN.
However, the complete NSN should be used when ordering items by stock number.

(2) FIG. column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section Ill.

(3) ITEM column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) CAGEC column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) PART NUMBER column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

(3) STOCK NUMBER column. This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left.

(4) FIG. column. This column lists the number of the figure where the item is identified/located in Sections II and III.

(5) ITEM column. The item number is that number assigned to the item as it appears in the figure referenced in adjacent figure number column.

c. FIGURE AND ITEM NUMBER INDEX.

(1) FIG. column. This column lists the number of the figure where the item is identified/located in Section II and III.

(2) ITEM column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

(3) STOCK NUMBER column. This column lists the NSN for the item.

(4) CAGEC column. The Commercial and Governmental Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(5) PART NUMBER column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

F-5. SPECIAL INFORMATION.

USABLE ON CODE. The usable on code 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 last line applicable item description/nomenclature. Uncoded items are applicable to all models.

F-6. HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number Is NOT known.

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

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

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

(4) Fourth. Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) Fifth. Refer to the Part Number Index to find the NSN, if assigned.

b. When National Stock Number or Part Number Is Known:

(1) First. Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see c--4a (1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see c-4.b). Both indexes cross–reference you to the illustration figure and item number of the item you are looking for.

(2) Second. After finding the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure.

F-7. ABBREVIATIONS Abbreviations used in this manual are listed in MIL–STD–12.

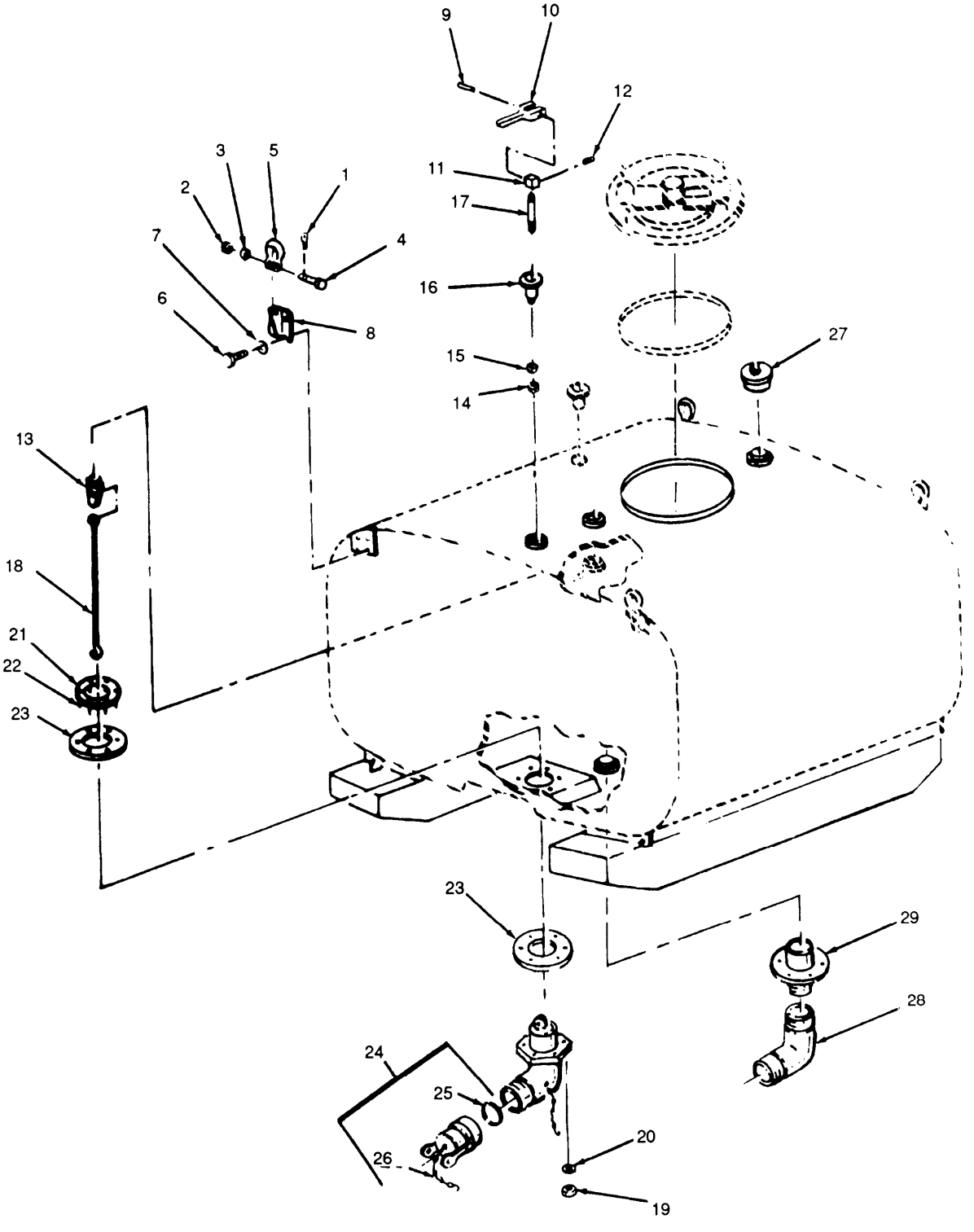


Figure F–1. Tank

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 01 TANK ASSEMBLY	
				FIG. F1 TANK	
1	PAOZZ	96906	MS24665-357	.PIN, COTTER	6
2	PAOZZ	96906	MS35692-58	.NUT, PLAIN, SLOTTED, H	4
3	PAOZZ	96906	MS27183-23	.WASHER FLAT	4
4	PAOZZ	96906	MS51105-464	.SCREW, CAP, HEXAGON H	4
5	XDOOZ	97403	13217E7085	.SHACKLE	4
6	PAOZZ	96906	MS90725-111	.SCREW, CAP, HEX	16
7	PAOZF	96906	MS27183-18	.WASHER, FLAT	16
8	XDOOZ	97403	13217E7092	.BRACKET SHACKLE	4
9	PBOZZ	96906	MS16562-256	.PIN SPRING	1
10	PBOZZ	97403	13217E7091	.LEVER, CAM	1
11	PAOZZ	97403	13217E7090	.ADAPTER, ROD, CAM LEV	1
12	PAOZZ	96906	MS51029-51	.SETSCREW	1
13	PBOZZ	97403	13217E7088	.YOKE, ADJUSTING, VALVE	1
14	PBOZZ	96906	MS35691-36	.NUT, PLAIN HEX	1
15	PCOZZ	96906	MS29513-112	.PACKING, PREFORMED	1
16	PBOZZ	97403	13217E7086	.BASE, CAM LEVER	1
17	PBOZZ	97403	13217E7087	.ROD END, THREADED	1
18	PBOZZ	97403	13217E7089	.ROD, CONNECTING, VALVE	1
19	PAOZZ	96906	MS51967-14	.NUT, PLAIN HEX	6
20	PAOZZ	96906	MS35338-48	.WASHER, LOCK	6
21	XDOOZ	97403	13217E7082	.RETAINER,PACKING	1
22	PBOZZ	96906	MS90728-115	.SCREW, CAP, HEXAGON H	6
23	PAOZZ	97403	13217E7084	.GASKET	2
24	PAOZZ	96906	MS27028-11	..CAP, DUST	1
25	PCOZZ	96906	MS27030-6	...GASKET	1
26	XAOOZ	96906	MS87006-22	...HOOK, CHAIN S	1
27	XDOZZ	97403	13217E7080-22	.PLUG FLANGE	1
28	XDOZZ	97403	13218E0122-17	.PLUG, PIPE OUTSIDE HEAD	1
29	XBOZZ	97403	5-14-365-54-1	BODY, VALVE	1
				END OF FIGURE	

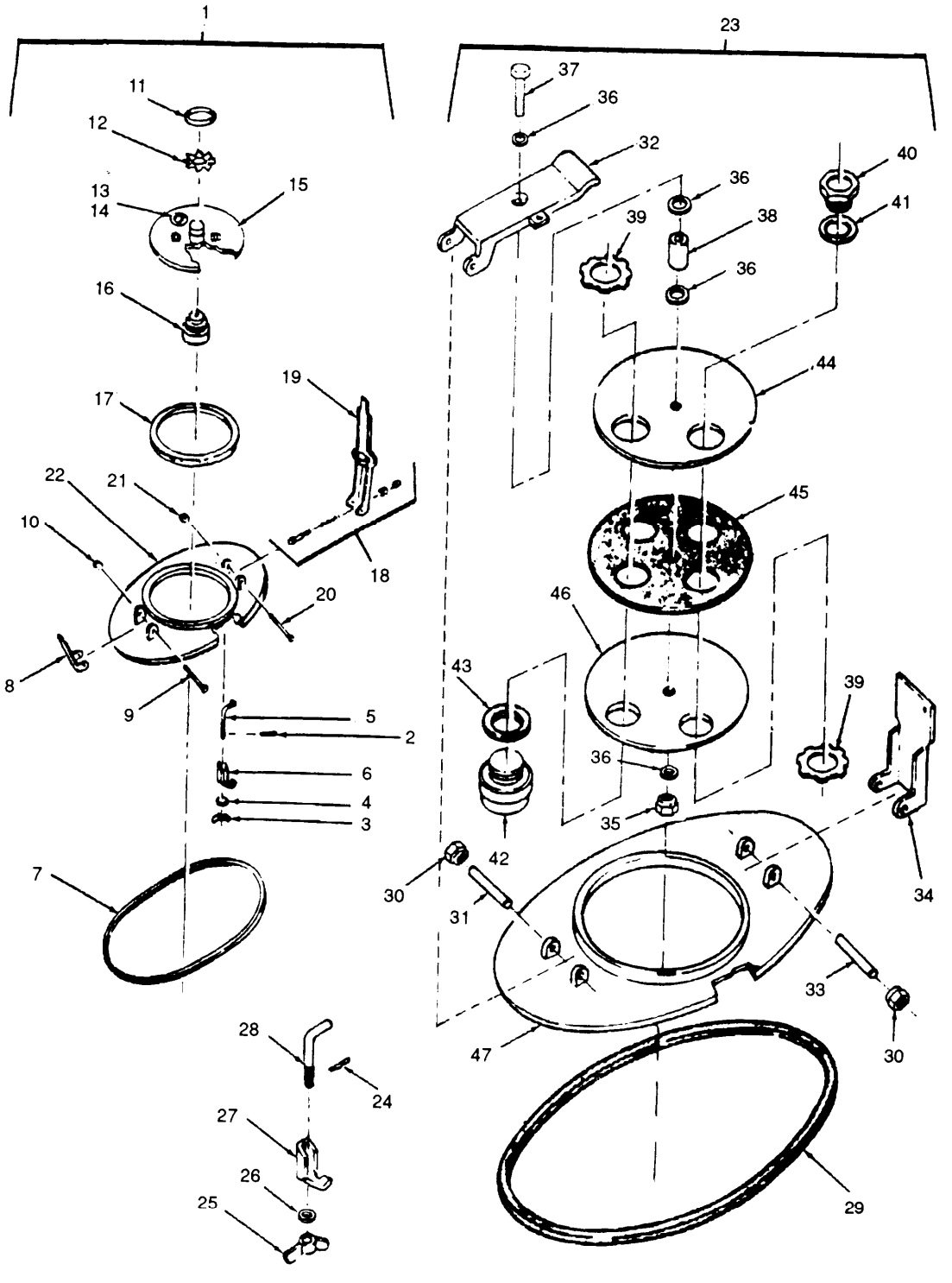


Figure F–2. Manhole Cover (Models 1 and 2)

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 01 TANK ASSEMBLY	
				FIG. F2 MANHOLE COVER ASSEMBLY	
1	XDOZZ	12718	FX1097SA	.COVER, ACCESS	1
2	PAOZZ	96906	MS24665-357	.PIN, COTTER	6
3	PAOZZ	12718	887-128	..NUT, PLAIN, WING	6
4	PAOZZ	96906	MS35338-45	.WASHER, LOCK	6
5	PAOZZ	12718	887-123	..ELL BOLT	1
6	PAOZZ	12718	887-125	..CLAMP HOOK	6
7	PCOZZ	12718	887-22	..GASKET OVAL	1
8	XDOZ	12718	1097-4	..CAM, CLOSING	1
9	XDOZZ	12718	1097-8	..SCREW, CAP, HEXAGON H	1
10	XDOZZ	12718	887-23C	..NUT, PLAIN, WING	1
11	XDOZZ	12718	997R6	..RING, RETAINING	1
12	XDOFZ	12718	887-7	..WASHER, SPRING TENSI	1
13	XDOZZ	12718	FX887-11	..PLUG, FUSE	1
14	XDOZZ	12718	FX887-11G	..GSKT FUSE PLUG	1
15	XAOZZ	12718	FX997-2	..PLUG 8"	1
16	XDOZZ	12718	937	..VENT TRIPLEX	1
17	XDOZZ	12718	FX997-12	..GASKET PLUG	1
18	XDOZZ	12718	1097-5	..HINGE ADJ ASSY	1
19	XDOZZ	12718	1097-3	..HINGE	1
20	PAOZZ	96906	MS18154-113	..SCREW, CAP, HEXAGON H	1
21	PAOZZ	96906	MS51967-14	..NUT, PLAIN HEX	1
22	XAOZZ	12718	1097S1	..COVER, OVAL	1
23	PAOZZ	12718	887-L-541	.COVER, ACCESS ASSY	1
24	PAOZZ	96906	MS24665-357	.PIN, COTTER	1
25	PAOZZ	12718	887-128	..NUT, PLAIN WING	1
26	PAOZZ	96906	MS35338-45	..WASHER, LOCK	6
27	PAOZZ	12718	887-125	..CLAMP, HOOK	6
28	PAOZZ	12718	887-123	..ELL BOLT	6
29	PCOZZ	12718	887-122	..GASKET	1
30	PBOZZ	12718	1820-001	.WASHER, NUT	4
31	PBOZZ	12718	887-801	.PIN, HINGE	1
32	XDOZZ	12718	2097-301	.HINGE	1
33	XDOZZ	12718	887-802	.PIN, HINGE	1
34	XDOZZ	12718	2097-401	.CAM, LOCKING	1
35	XDOZZ	12718	1607-180	.NUT, RETAINER	1
36	XDOZZ	12718	2097-700	.WASHER, RETAINING	4
37	XDOZZ	12718	2097-916	.BOLT, RETAINER	1
38	XDOZZ	12718	2097-501	.SPACER	1
39	XDOZZ	12718	2097-910	.NUT, CONDUIT	1
40	XDOZZ	12718	FX887-11	..PLUG, FUSIBLE	1
41	XDOZZ	12718	FX887-11G	..GASKET, FUSE PLUG	1
42	XDOZZ	12718	937	.VENT	1
43	XDOZZ	12718	21-100	.GASKET	1
44	XDOZZ	12718	2097-249	..PLUG, 10 INCH	1
45	PCOZZ	12718	2097-251	..GASKET	1
46	XDOZZ	12718	2097-250	..GASKET, RETAINER	1
47	XDOZZ	12718	887-140	.COVER, OVAL	1
				END OF FIGURE	

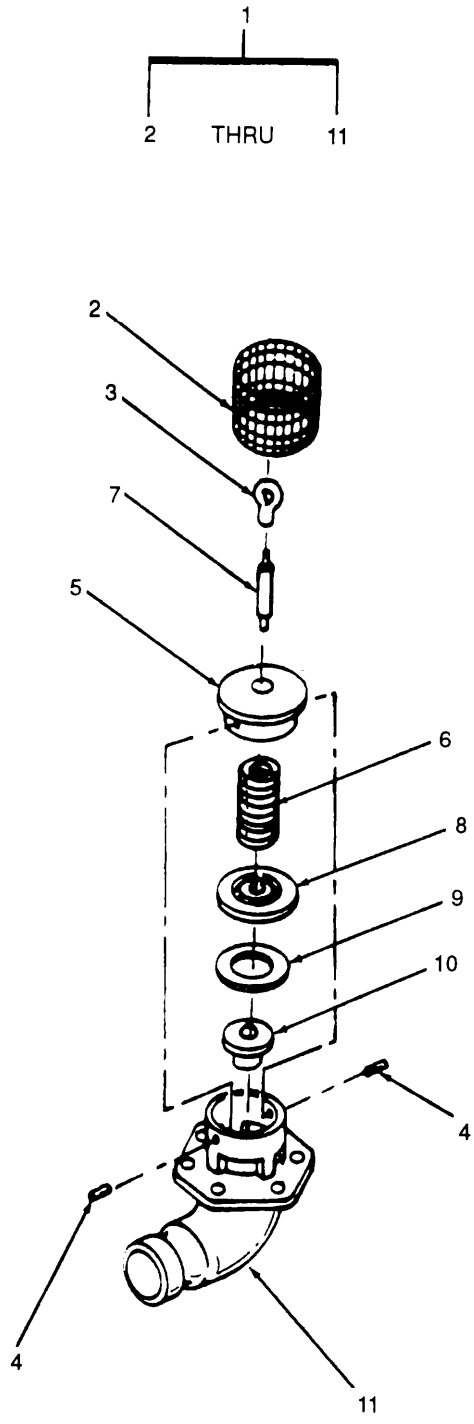


Figure F-3. Dump Valve

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 01 TANK ASSEMBLY	
				FIG. F3 EMERGENCY DUMP VALVE	
1	PBOZZ	79515	380AMQ2IN	.VALVE DISP	1
2	XAOZZ	79515	P420	..SCREEN MONEL	1
3	XAOZZ	97403	A609	..BALE, PLUNGER	1
4	PAOZZ	96906	MS51029-52	..SETSCREW	2
5	XAOZZ	79515	AP402A	..BONNET	1
6	XAOZZ	79515	P414	..SPRING PLUNGER	1
7	XAOZZ	79515	AP425A	..STEM, PLUNGER	1
8	XAOZZ	79515	AP404	..HOLDER, DISC	1
9	XAOZZ	79515	P431	..DISK, VALVE	1
10	XAOZZ	79515	AP403	..NUT,PLUNGER DISC	1
11	XAOZZ	76515	P401-2E	..BODY, VALVE	1
				END OF FIGURE	

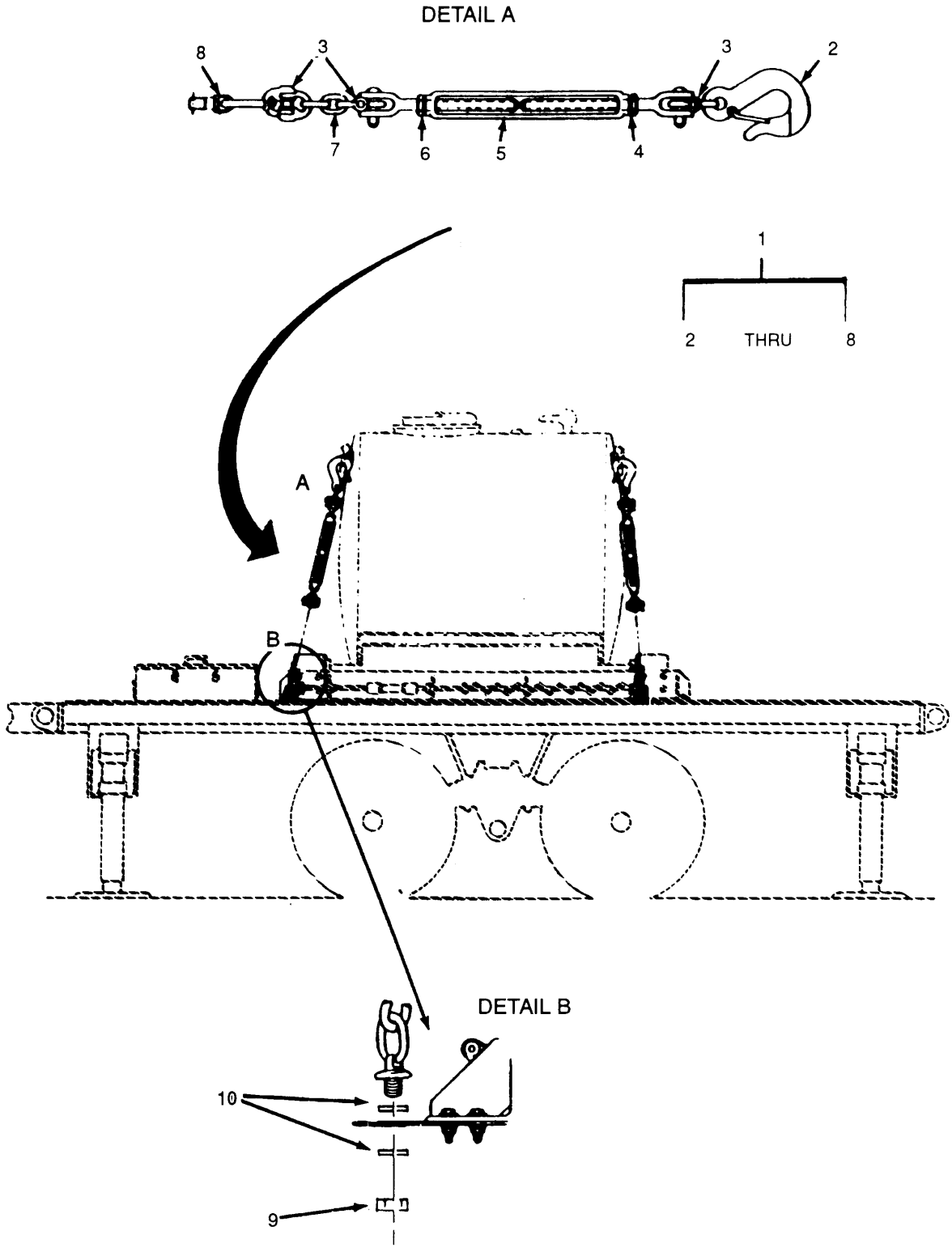


Figure F-4. Hold Down Assembly (Sheet 1 of 2)

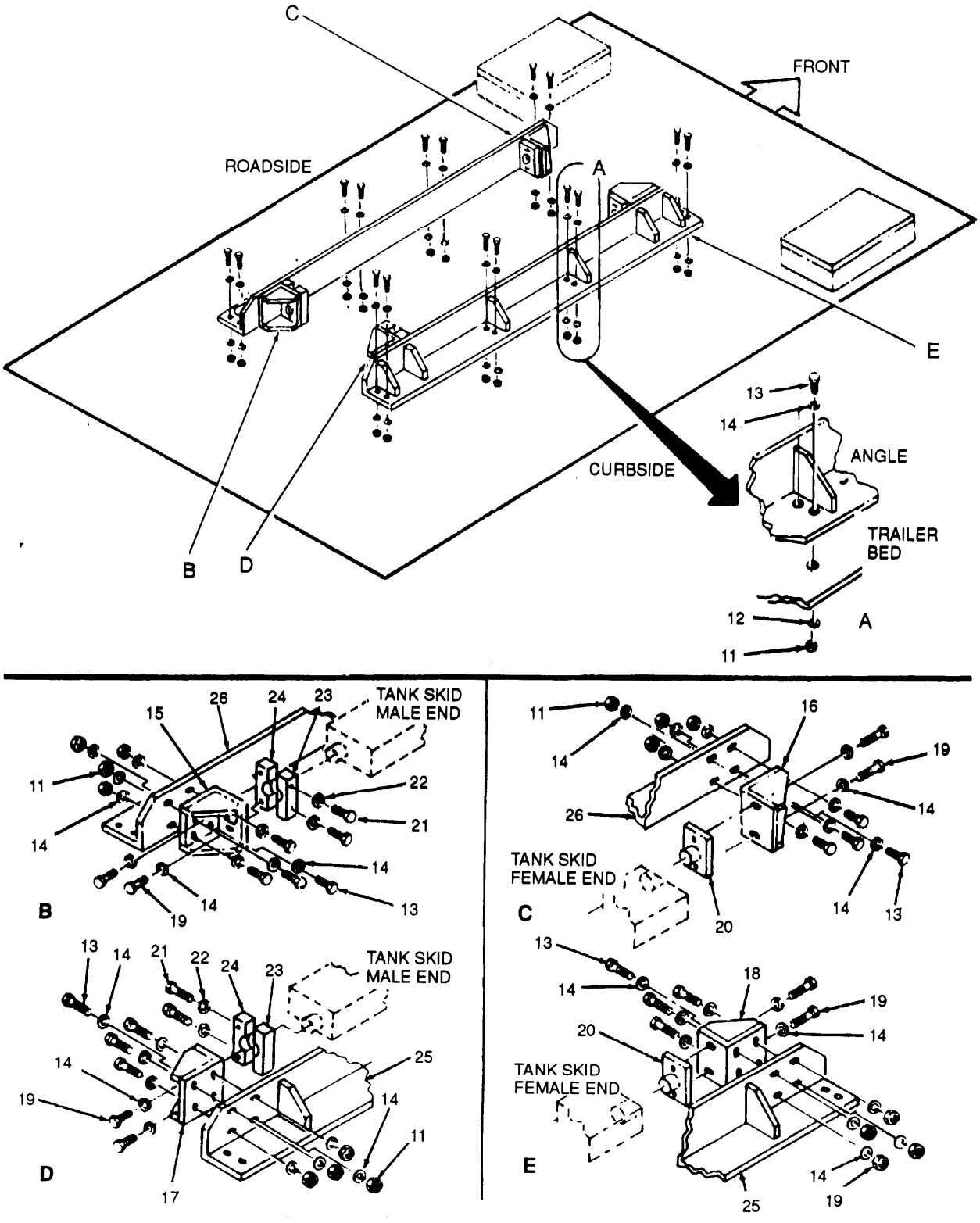


Figure F-4. Hold Down Assembly (Sheet 2 of 2)

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 02 HOLDDOWN ASSEMBLY	
				FIG. F4 HOLDDOWN ASSEMBLY	
	PDOZZ	97403	13228E9880	.TIE DOWN ASSEMBLY	1
1	PDOZZ	97403	13228E4528	..TIEDOWN, FUEL TANK	4
2	XDOZZ	97403	13228E4529-2	..HOOK, SAFETY, EYE SLI	1
3	XDOZZ	97403	13228E4527-4	..LINK, CHAIN, DETACHAB	3
4	XDOZZ	96906	MS27952-1	..NUT, PLAIN, HEX, JAM	1
5	XDOZZ	97403	13228E8309-13	..TURNBUCKLE, JAW & JA	1
6	XDOZZ	96906	MS35691-57	..NUT, PLAIN, HEXAGON	1
7	MOOZZ	19099	MAB-1	..TIEDOWN, CHAIN CUT 2 LINKS FROM (81348) ..P/N RR-C-271, TYPE 1, GRADE C	1
8	XDOZZ	97403	13226E7730-6	..BOLT, RING	1
9	PBOZZ	96906	MS51922-61	.NUT, SELF-LOCKING, HE	4
10	PBOZZ	96906	MS51412-13	.WASHER, FLAT	8
11	PBOZZ	96906	MS51922-33	.NUT, SELF-LOCKING, HE	32
12	PBOZZ	96906	MS51412-9	.WASHER, FLAT	16
13	PBOZZ	96906	MS90728	.SCREW, HEX HEAD CAP	32
14	PBOZZ	97403	13228E4559-1	.WASHER, FLAT	56
15	XDOZZ	97403	13228E4526	.BRACKET, ANGLE	1
16	XAOZZ	97403	13228E4273	.BRACKET, ANGLE	1
17	XDOZZ	97403	13228E4555	.BRACKET, ADAPTER	1
18	XDOZZ	97403	13228E4271	.BRACKET, ADAPTER	1
19	PBOZZ	96906	MS90728-112	.SCREW, CAP, HEXAGON	8
20	XDOZZ	97403	MS13228E4272	.ADAPTER SOCKET	1
21	PBOZZ	96906	MS90728-42	.BOLT, MACHINE	4
22	XDOZZ	96906	MS51412-6	.WASHER, FLAT	4
23	PBOZZ	97403	13228E4268	.ADAPTER, CLAMP OUTBO	1
24	PBOZZ	97403	13228E4269	.ADAPTER CLAMP INBOA	1
25	XDOZZ	97403	13228E4264	.ANGLE TK MTG CRBSD	1
26	XAOZZ	97403	13228E4265	.ANGLE TK MTG RDSD	1
				END OF FIGURE	

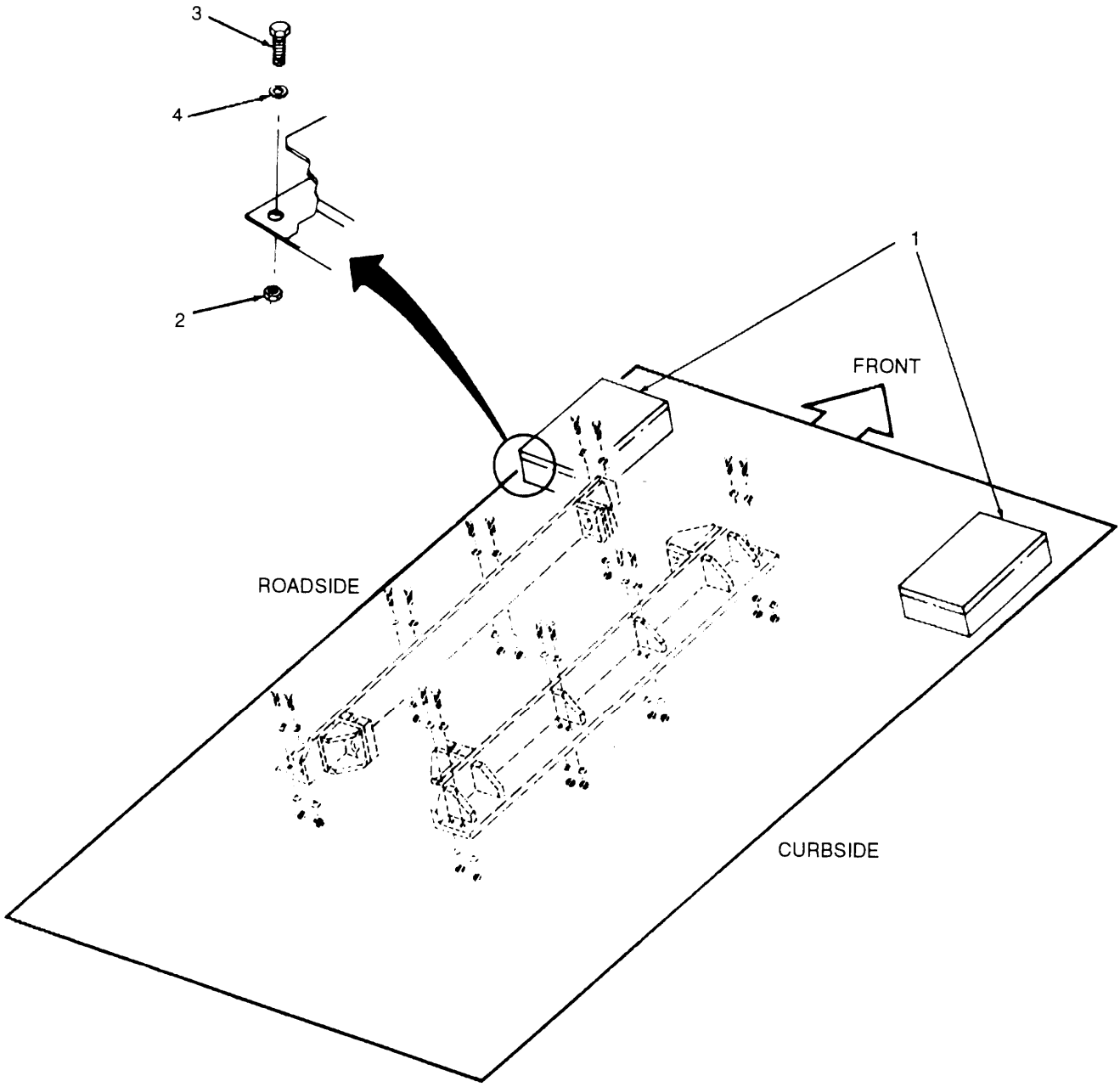


Figure F–5. Accessory Stowage Box

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 03 STOWAGE BOX ASSEMBLY FIG. F5 STOWAGE BOX ASSEMBLY	
1	XDOZZ	97403	13228E4263	.BOX STOWAGE, ACCESS	2
2	PBOZZ	96906	MS51922-1	.NUT, SELF-LOCKING, HE	8
3	PBOZZ	96906	MS90728-8	.SCREW, CAP, HEXAGON H	8
4	PBOZF	96906	MS27183-10	.WASHER, FLAT	8
				END OF FIGURE	

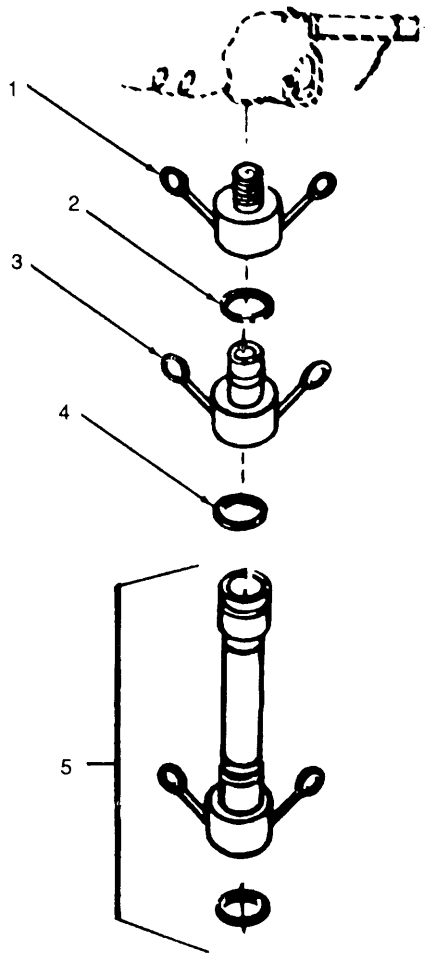


Figure F–6. Hose Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 04 HOSE ASSEMBLY	
				FIG. F6 HOSE ASSEMBLY	
1	PBOZZ	96906	MS27026-9	.COUPLING HALF, QUICK	1
2	PCOZZ	96906	MS27030-5	.GASKET	1
3	PBOZZ	96906	MS49000-5	.REDUCER, QUICK DISCO	1
4	XBOOZ	56789	MS27030-6	.GASKET	1
5	PBOZZ	81349	M370B06B2A1440	.HOSE, NONMETALLIC	1
				END OF FIGURE	

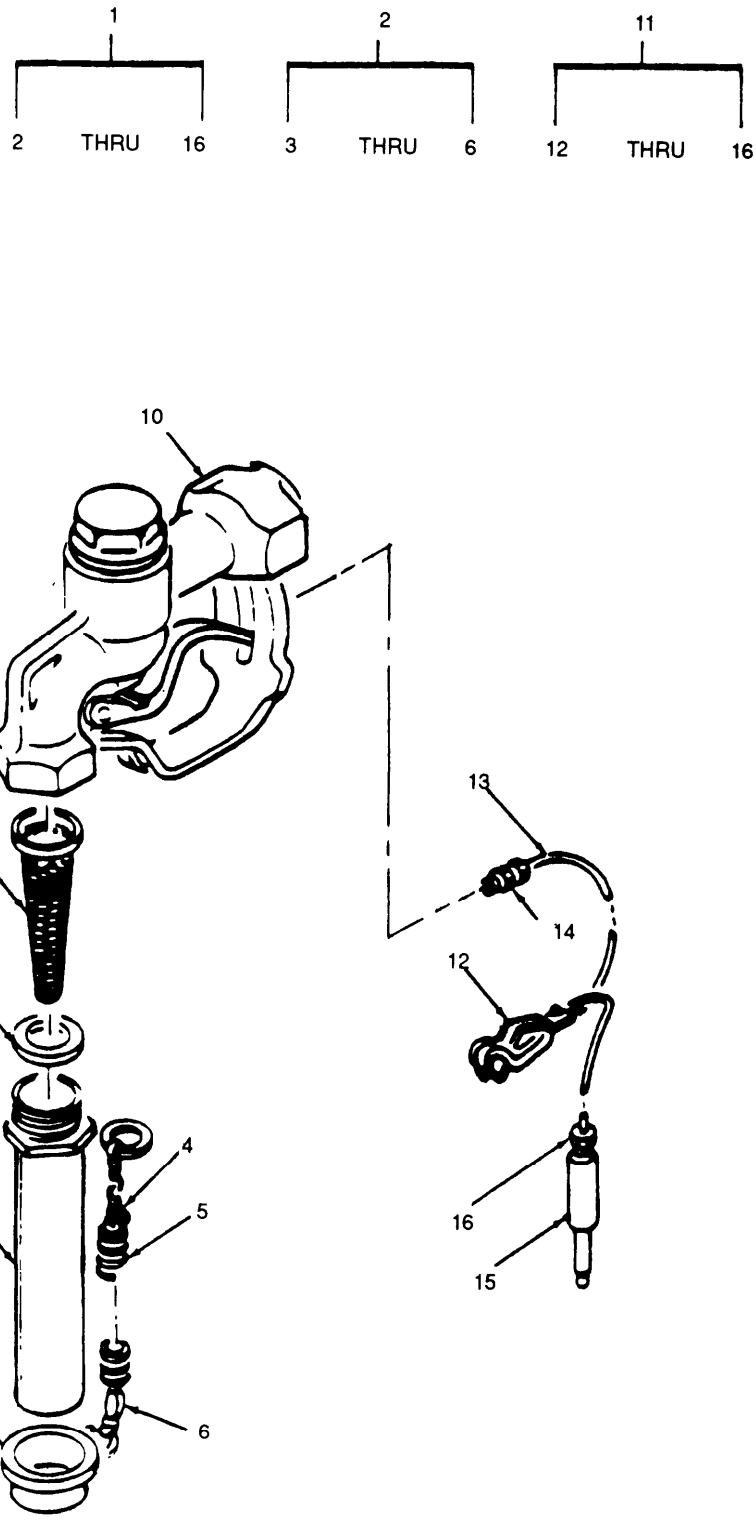


Figure F–7. Nozzle Assembly, Fuel Dispensing

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 04 HOSE ASSEMBLY FIG. F7 NOZZLE ASSEMBLY	
1	PAOZZ	97403	13217E2974	NOZZLE, FUEL AND OIL	1
2	PAOZZ	81718	296CA1 5-8	..CAP ASSEMBLY, DUST	1
3	XDOZZ	81718	H-3804-AG	...CAP, DUST	1
4	XAOZZ	81718	H3673M	..HOOK, CHAIN, S	1
5	XAOZZ	81718	H-9209-M	...SPRING, COMPRESSION	2
6	XAOOZ	81718	H284M-12	..CHAIN, NOOZLE	1
7	PBOZZ	81718	190GT-1 1/2	..SPOUT ASSEMBLY	1
8	PCOZZ	81718	H7670M	..PACKING, PREFORMED	1
9	PBOZZ	81718	153-11/2X15/8	..STRAINER ELEMENT, SE	1
10	XAOOZ	81718	D546A	..BODY NOOZLE	1
11	PAOZZ	81718	616W	.CABLE ASSEMBLY	1
12	XDOZZ	81718	H5482M	..CLIP, ELECTRICAL	1
13	XAOZZ	81718	H5132RS	..CABLE	1
14	XAOZZ	96906	MS25384-3	..STUD	1
15	XAOZZ	96906	MS3493-1	..PLUG, TIP	1
16	XAOZZ	96906	MS3493-2	..COMPRESSION NUT, ELE	2
				END OF FIGURE	

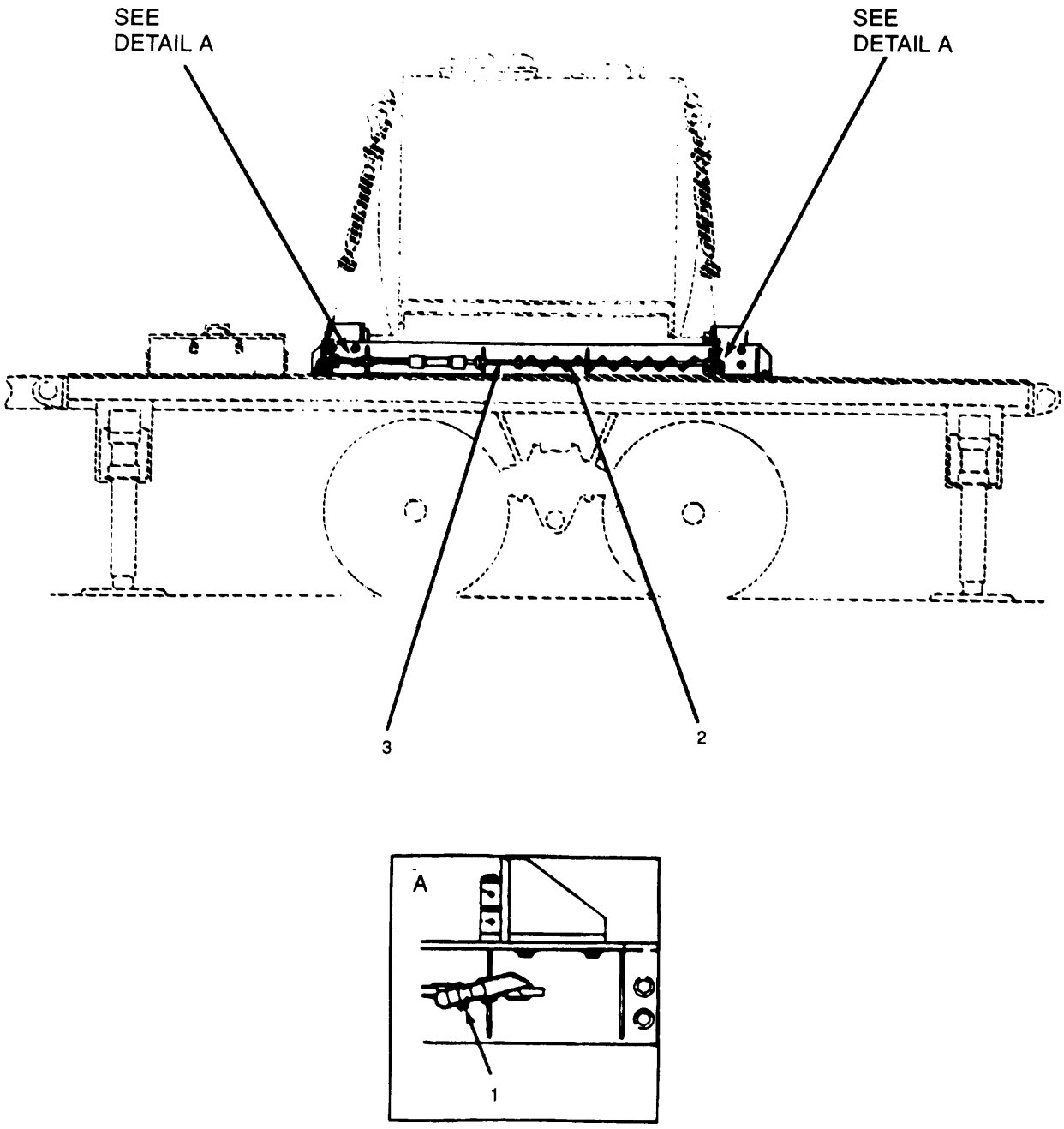


Figure F–8. Ground Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 05 GROUND ASSEMBLY FIG. F8 GROUND ASSEMBLY	
1	PAOZZ	97403	13220E5288-1	.STRAP ASSY	2
2	XDOZO	97403	13219E3930	.CABLE ASSEMBLY, POWER	1
3	XDOZZ	97403	13219E0462	.ROD, GROUND	1
				END OF FIGURE	

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE(UOC)	(6) QTY
				GROUP 06 BULK FIG. BULK	
PBOZZ	81348	RR-C-271TY1CL2		CHAIN	1
				END OF FIGURE	

Section III. SPECIAL TOOLS LIST

(NOT APPLICABLE)

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5305-00-057-2600	F-3	4			
5305-00-071-2068	F-4	19			
5305-00-071-2071	F-1	22			
5310-00-088-1251	F-5	2			
4930-00-119-0452	F-7	2			
5305-00-161-0698	F-1	4			
5310-00-171-2435	F-1	2			
4730-00-203-1010	F-6	1			
5305-00-225-3843	F-5	3			
5310-00-225-6993	F-4	11			
5306-00-226-4835	F-4	21			
5315-00-298-1481	F-1	1			
	F-2	2			
	F-2	24			
5330-00-360-0595	F-6	2			
4930-00-405-7544	F-7	7			
5310-00-407-9566	F-2	4			
	F-2	26			
5305-00-543-2671	F-1	12			
5330-00-612-2414	F-1	25			
4730-00-649-9100	F-1	24			
5330-00-732-6270	F-2	7			
5330-00-733-2208	F-1	15			
5315-00-753-3895	F-1	9			
5310-00-768-0318	F-1	19			
	F-2	21			
5430-00-794-6956	F-1	16			
5310-00-809-4058	F-5	4			
5310-00-809-5998	F-1	7			
5310-00-809-8533	F-1	3			
5310-00-832-9719	F-4	9			
5920-00-897-4857	F-7	11			
5310-00-897-6082	F-1	14			
4930-00-902-4642	F-7	1			
5305-00-915-8087	F-2	20			
4730-00-951-3295	F-6	3			
2940-00-989-3260	F-7	9			
4930-01-013-7592	F-1	18			
5330-01-015-4753	F-1	23			
4930-01-017-3637	F-1	13			
5340-01-037-8739	F-1	17			
4930-01-041-6870	F-1	10			
5330-01-103-0958	F-7	8			
4930-01-167-2890	F-1	11			
5330-01-200-2704	F-2	45			
5330-01-200-2705	F-2	29			
5310-01-266-4641	F-4	12			
5310-01-275-1065	F-4	10			
4930-01-281-1748	F-4				
5340-01-281-6032	F-2	23			

NATIONAL STOCK NUMBER INDEX

CAGE	PART NUMBER	STOCK NUMBER	FIG.	ITEM
79515	AP402A		F-3	5
79515	AP403		F-3	10
79515	AP404		F-3	8
79515	AP425A		F-3	7
97403	A609		F-3	3
81718	D546A		F-7	10
12718	FX1097SA		F-2	1
12718	FX887-11		F-2	13
			F-2	40
12718	FX887-11G		F-2	14
			F-2	41
12718	FX997-12		F-2	17
12718	FX997-2		F-2	15
81718	H-3804-AG		F-7	3
81718	H-9209-M		F-7	5
81718	H284M-12		F-7	6
81718	H3673M		F-7	4
81718	H5132RS		F-7	13
81718	H5482M		F-7	12
81718	H7670M	5330-01-103-0958	F-7	8
19099	MAB-1		F-4	7
96906	MS16562-256	5315-00-753-3895	F-1	9
96906	MS18154-113	5305-00-915-8087	F-2	20
96906	MS24665-357	5315-00-298-1481	F-1	1
			F-2	2
			F-2	24
96906	MS25384-3		F-7	14
96906	MS27026-9	4730-00-203-1010	F-6	1
96906	MS27028-11	4730-00-649-9100	F-1	24
96906	MS27030-5	5330-00-360-0595	F-6	2
96906	MS27030-6	5330-00-612-2414	F-1	25
			F-6	4
96906	MS27183-10	5310-00-809-4058	F-5	4
96906	MS27183-18	5310-00-809-5998	F-1	7
96906	MS27183-23	5310-00-809-8533	F-1	3
96906	MS27952-1		F-4	4
96906	MS29513-112	5330-00-733-2208	F-1	15
96906	MS3493-1		F-7	15
96906	MS3493-2		F-7	16
96906	MS35338-45	5310-00-407-9566	F-2	4
			F-2	26
96906	MS35338-48		F-1	20
96906	MS35691-36	5310-00-897-6082	F-1	14
96906	MS35691-57		F-4	6
96906	MS35692-58	5310-00-171-2435	F-1	2
96906	MS49000-5	4730-00-951-3295	F-6	3
96906	MS51029-51	5305-00-543-2671	F-1	12
96906	MS51029-52	5305-00-057-2600	F-3	4
96906	MS51105-464	5305-00-161-0698	F-1	4
96906	MS51412-13	5310-01-275-1065	F-4	10
96906	MS51412-6		F-4	22

SECTION IV

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

CAGE	PART NUMBER	STOCK NUMBER	FIG.	ITEM
96906	MS51412-9	5310-01-266-4641	F-4	12
96906	MS51922-1	5310-00-088-1251	F-5	2
96906	MS51922-33	5310-00-225-6993	F-4	11
96906	MS51922-61	5310-00-832-9719	F-4	9
96906	MS51967-14	5310-00-768-0318	F-1	19
			F-2	21
96906	MS87006-22		F-1	26
96906	MS90725-111		F-1	6
96906	MS90728		F-4	13
96906	MS90728-112	5305-00-071-2068	F-4	19
96906	MS90728-115	5305-00-071-2071	F-1	22
96906	MS90728-42	5306-00-226-4835	F-4	21
96906	MS90728-8	5305-00-225-3843	F-5	3
81349	M370B06B2A1440		F-6	5
79515	P401-2E		F-3	11
79515	P414		F-3	6
79515	P420		F-3	2
79515	P431		F-3	9
81348	RR-C-271TY1CL2		BULK	
12718	1097-3		F-2	19
12718	1097-4		F-2	8
12718	1097-5		F-2	18
12718	1097-8		F-2	9
12718	1097S1		F-2	22
97403	13217E2974	4930-00-902-4642	F-7	1
97403	13217E7080-22		F-1	27
97403	13217E7082		F-1	21
97403	13217E7084	5330-01-015-4753	F-1	23
97403	13217E7085		F-1	5
97403	13217E7086	5430-00-794-6956	F-1	16
97403	13217E7087	5340-01-037-8739	F-1	17
97403	13217E7088	4930-01-017-3637	F-1	13
97403	13217E7089	4930-01-013-7592	F-1	18
97403	13217E7090	4930-01-167-2890	F-1	11
97403	13217E7091	4930-01-041-6870	F-1	10
97403	13217E7092		F-1	8
97403	13218E0122-17		F-1	28
97403	13219E0462		F-8	3
97403	13219E3930		F-8	2
97403	13220E5288-1		F-8	1
97403	13226E7730-6		F-4	8
97403	13228E4263		F-5	1
97403	13228E4264		F-4	25
97403	13228E4265		F-4	26
97403	13228E4268		F-4	23
97403	13228E4269		F-4	24
97403	13228E4271		F-4	18
97403	13228E4272		F-4	20
97403	13228E4273		F-4	16
97403	13228E4526		F-4	15
97403	13228E4527-4		F-4	3

CAGE	PART NUMBER	STOCK NUMBER	FIG.	ITEM
97403	13228E4528		F-4	1
97403	13228E4529-2		F-4	2
97403	13228E4555		F-4	17
97403	13228E4559-1		F-4	14
97403	13228E8309-13		F-4	5
97403	13228E9880	4930-01-281-1748	F-4	
81718	153-11/2X15/8	2940-00-989-3260	F-7	9
12718	1607-180		F-2	35
12718	1820-001		F-2	30
81718	190GT-1 1/2	4930-00-405-7544	F-7	7
12718	2097-249		F-2	44
12718	2097-250		F-2	46
12718	2097-251	5330-01-200-2704	F-2	45
12718	2097-301		F-2	32
12718	2097-401		F-2	34
12718	2097-501		F-2	38
12718	2097-700		F-2	36
12718	2097-910		F-2	39
12718	2097-916		F-2	37
12718	21-100		F-2	43
81718	296CA1 5-8	4930-00-119-0452	F-7	2
79515	380AMQ2 IN		F-3	1
97403	5-14-365-54-1		F-1	29
81718	616W	5920-00-897-4857	F-7	11
12718	887-L-541	5340-01-281-6032	F-2	23
12718	887-122	5330-01-200-2705	F-2	29
12718	887-123		F-2	5
			F-2	28
12718	887-125		F-2	6
			F-2	27
12718	887-128		F-2	3
			F-2	25
12718	887-140		F-2	47
12718	887-22	5330-00-732-6270	F-2	7
12718	887-23C		F-2	10
12718	887-7		F-2	12
12718	887-801		F-2	31
12718	887-802		F-2	33
12718	937		F-2	16
			F-2	42
12718	997R6		F-2	11

SECTION IV

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGE	PART NUMBER
F-1	1	5315-00-298-1481	96906	MS24665-357
F-1	2	5310-00-171-2435	96906	MS35692-58
F-1	3	5310-00-809-8533	96906	MS27183-23
F-1	4	5305-00-161-0698	96906	MS51105-464
F-1	5		97403	13217E7085
F-1	6		96906	MS90725-111
F-1	7	5310-00-809-5998	96906	MS27183-18
F-1	8		97403	13217E7092
F-1	9	5315-00-753-3895	96906	MS16562-256
F-1	10	4930-01-041-6870	97403	13217E7091
F-1	11	4930-01-167-2890	97403	13217E7090
F-1	12	5305-00-543-2671	96906	MS51029-51
F-1	13	4930-01-017-3637	97403	13217E7088
F-1	14	5310-00-897-6082	96906	MS35691-36
F-1	15	5330-00-733-2208	96906	MS29513-112
F-1	16	5430-00-794-6956	97403	13217E7086
F-1	17	5340-01-037-8739	97403	13217E7087
F-1	18	4930-01-013-7592	97403	13217E7089
F-1	19	5310-00-768-0318	96906	MS51967-14
F-1	20		96906	MS35338-48
F-1	21		97403	13217E7082
F-1	22	5305-00-071-2071	96906	MS90728-115
F-1	23	5330-01-015-4753	97403	13217E7084
F-1	24	4730-00-649-9100	96906	MS27028-11
F-1	25	5330-00-612-2414	96906	MS27030-6
F-1	26		96906	MS87006-22
F-1	27		97403	13217E7080-22
F-1	28		97403	13218E0122-17
F-1	29		97403	5-14-365-54-1
F-2	1		12718	FX10975A
F-2	2	5315-00-298-1481	96906	MS24665-357
F-2	3		12718	887-128
F-2	4	5310-00-407-9566	96906	MS35338-45
F-2	5		12718	887-123
F-2	6		12718	887-125
F-2	7	5330-00-732-6270	12718	887-22
F-2	8		12718	1097-4
F-2	9		12718	1097-8
F-2	10		12718	887-23C
F-2	11		12718	997R6
F-2	12		12718	887-7
F-2	13		12718	FX887-11
F-2	14		12718	FX887-11G
F-2	15		12718	FX997-2
F-2	16		12718	937
F-2	17		12718	FX997-12
F-2	18		12718	1097-5
F-2	19		12718	1097-3
F-2	20	5305-00-915-8087	96906	MS18154-113
F-2	21	5310-00-768-0318	96906	MS51967-14
F-2	22		12718	1097S1

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGE	PART NUMBER
F-2	23	5340-01-281-6032	12718	887-L-541
F-2	24	5315-00-298-1481	96906	MS24665-357
F-2	25		12718	887-128
F-2	26	5310-00-407-9566	96906	MS35338-45
F-2	27		12718	887-125
F-2	28		12718	887-123
F-2	29	5330-01-200-2705	12718	887-122
F-2	30		12718	1820-001
F-2	31		12718	887-801
F-2	32		12718	2097-301
F-2	33		12718	887-802
F-2	34		12718	2097-401
F-2	35		12718	1607-180
F-2	36		12718	2097-700
F-2	37		12718	2097-916
F-2	38		12718	2097-501
F-2	39		12718	2097-910
F-2	40		12718	FX887-11
F-2	41		12718	FX887-11G
F-2	42		12718	937
F-2	43		12718	21-100
F-2	44		12718	2097-249
F-2	45	5330-01-200-2704	12718	2097-251
F-2	46		12718	2097-250
F-2	47		12718	887-140
F-3	1		79515	380AMQ2 IN
F-3	2		79515	P420
F-3	3		97403	A609
F-3	4	5305-00-057-2600	96906	MS51029-52
F-3	5		79515	AP402A
F-3	6		79515	P414
F-3	7		79515	AP425A
F-3	8		79515	AP404
F-3	9		79515	P431
F-3	10		79515	AP403
F-3	11		79515	P401-2E
F-4		4930-01-281-1748	97403	13228E9880
F-4	1		97403	13228E4528
F-4	2		97403	13228E4529-2
F-4	3		97403	13228E4527-4
F-4	4		96906	MS27952-1
F-4	5		97403	13228E8309-13
F-4	6		96906	MS35691-57
F-4	7		19099	MAB-1
F-4	8		97403	13226E7730-6
F-4	9	5310-00-832-9719	96906	MS51922-61
F-4	10	5310-01-275-1065	96906	MS51412-13
F-4	11	5310-00-225-6993	96906	MS51922-33
F-4	12	5310-01-266-4641	96906	MS51412-9
F-4	13		96906	MS90728
F-4	14		97403	13228E4559-1

SECTION IV

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGE	PART NUMBER
F-4	15		97403	13228E4526
F-4	16		97403	13228E4273
F-4	17		97403	13228E4555
F-4	18		97403	13228E4271
F-4	19	5305-00-071-2068	96906	MS90728-112
F-4	20		97403	13228E4272
F-4	21	5306-00-226-4835	96906	MS90728-42
F-4	22		96906	MS51412-6
F-4	23		97403	13228E4268
F-4	24		97403	13228E4269
F-4	25		97403	13228E4264
F-4	26		97403	13228E4265
F-5	1		97403	13228E4263
F-5	2	5310-00-088-1251	96906	MS51922-1
F-5	3	5305-00-225-3843	96906	MS90728-8
F-5	4	5310-00-809-4058	96906	MS27183-10
F-6	1	4730-00-203-1010	96906	MS27026-9
F-6	2	5330-00-360-0595	96906	MS27030-5
F-6	3	4730-00-951-3295	96906	MS49000-5
F-6	4		56789	MS27030-6
F-6	5		81349	M370B06B2A1440
F-7	1	4930-00-902-4642	97403	13217E2974
F-7	2	4930-00-119-0452	81718	296CA1 5-8
F-7	3		81718	H-3804-AG
F-7	4		81718	H3673M
F-7	5		81718	H-9209-M
F-7	6		81718	H284M-12
F-7	7	4930-00-405-7544	81718	190GT-1 1/2
F-7	8	5330-01-103-0958	81718	H7670M
F-7	9	2940-00-989-3260	81718	153-11/2X15/8
F-7	10		81718	D546A
F-7	11	5920-00-897-4857	81718	616W
F-7	12		81718	H5482M
F-7	13		81718	H5132RS
F-7	14		96906	MS25384-3
F-7	15		96906	MS3493-1
F-7	16		96906	MS3493-2
F-8	1		97403	13220E5288-1
F-8	2		97403	13219E3930
F-8	3		97403	13219E0462
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By Order of the Secretary of the Army:

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

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
04676

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEONARDWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 10-4930-220-13&P	30 Jun 93	TANK, UNIT, 600 GALLON, LIQUID

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO
6	2-1 a		
81		4-3	
125	line 20		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 Cylenders. The engine on my set only has 4 Cylenders. Change the manual to show 4 Cylenders.

Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.

I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is Wrong. Please give me a good NSN

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317-7111

SIGN HERE John Doe
JOHN DOE

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THEN . . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

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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 dekameters = 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 decigram = .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 milliters = .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 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
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