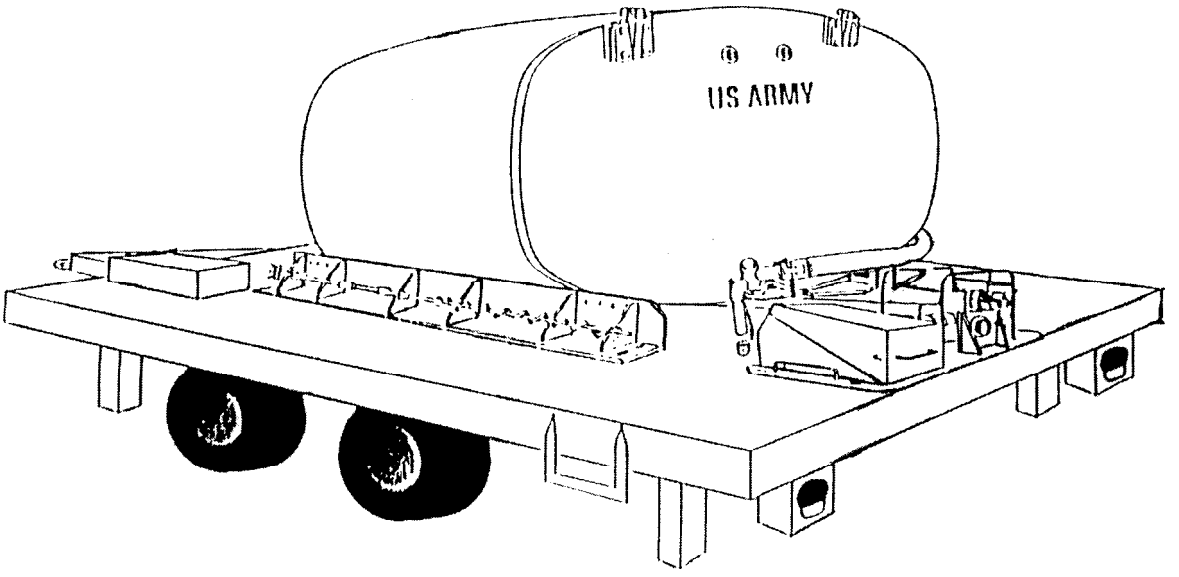
Technical Manual

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

FOR

TANK, UNIT, 500 GALLON (P/N 13226E2146), LIQUID DISPENSING FOR TRAILER (M1061A1) MOUNTING

(NSN 4930-01-370-6079)



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HEADQUARTERS, DEPARTMENT OF THE ARMY

21 JUNE 1999

WARNINGS

Give particular attention to specific WARNINGS and CAUTIONS throughout this manual Death or serious injury may result it' personnel fail to observe safety precautions,

FIRE AND EXPLOSIVE **HAZARDS** arc present during operation nt'this equipment

To prevent serious injury to personnel or equipment damage, use a lifting device with a lifting capacity of at least three tons to handle tanks. Do not allow tank units to swing back and forth while hanging in the air.

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

Make sure tire extinguisher and or fire fighting equipment are available in the immediate area before transferring fuel. He extremely careful when using a fire extinguisher in an enclosed area. Provide adequate ventilation.

Unit must be grounded prior to fuel transfer operations. Use protective equipment to prevent skin and eye contact with fuel.

Do not drain fuel from the unit on the ground. Drain fuel into a container that can be closed. Otherwise. a FIRE HAZARD or Environmental Contamination could result. If fuel is spilled. wash the area of spillage thoroughly with water.

Use rubber fuel resistant gloves when replacing filter elements due to toxic effects ot'some fuel additives. Dispose of filter elements in accordance with local policy.

Skin may stick to metal in cold conditions. Do not touch metal parts with bare skin during cold weather.

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).

TECHNICAL MANUAL

NO. 10-4930-251-12&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 21 June 1999

OPERATOR'S AND UNIT MAINTENANCE MANUAL (AND REPAIR PARTS AND SPECIAL TOOLS LIST) FOR TANK, UNIT, 500 GALLON(P/N 13226E2146), FOR LIQUID DISPENSING FOR TRAILER (M1061A1) MOUNTING (NSN 4930-01-370-6079)

21 June 1999

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028-2 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is http://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028-2 is located in the ONLINE FORMS PROCESSING section of AEPS. Fill out the form and click SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or e-mail your letter, DA Form 2028, or DA Form 2028-2 direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, Il 61299-7630. The e-mail address is: amsta-ac-nml@ria.army.mil. The fax number is COMM:(309) 782-0726/DSN: 793-0726.

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TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

LIST OF ILLUSTRATIONS

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. Scope. This is an operator and unit maintenance level manual, including Repair Parts and Special Tools List. This manual supports the trailer mounted Low Profile 500-gallon liquid dispensing tank unit, which is a portable storage tank used for transporting and dispensing 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 (EIRS). If your unit needs improvement, let us know. Send us an EIR. 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 a SF 368 (Quality Deficiency Report). Mail it to Commander, U.S. Army Tank-Automotive and Armaments Command, ATTN: AMSTA-TR-E/MPA, Warren, Mi. 48397-5000. A reply will be mailed to you.

1-4. Destruction of Army Materiel to Prevent Enemy Use. Refer to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.

1-5. 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 time factors as determined 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 existing modification work orders should be applied.

c. Storage site selection. Inside storage is preferred for items selected for administrative storage. If an inside storage facility is not available, any type or style container is suitable providing it gives complete shelter from the elements.

d. Refer to Chapter 4, Section VI, paragraph 4-16 For procedures to move equipment to a new worksite.

Section II. EQUIPMENT DESCRIPTION

1-6. Equipment Characteristics, Capabilities and Features.

a. Portable storage 500-gallon tank, equipped with skids, used for transporting and storing liquid petroleum products. Tank assembly is welded and fabricated from aluminum.

b. Modified M1061A1 series trailer used to transport various equipment.

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

d. Holddown Assembly consists of two tank mounting angles, four end angle brackets, two adapter clamp assemblies, two adapter sockets, and adjustable turnbuckles for securing tank to the trailer.

e. Tank is filled and dispenses through the Bottom Loading Valve at bottom of tank and fuel manifold at rear of trailer. Automatic fuel shut-off during bottom loading refilling.

f. Control Box Assembly is equipped with ON/OFF tank valve operating levers and a fuel manifold used to control refilling tank or dispensing liquid product operations.

1-7. Location and Description of Major Components.

a. Trailer. The 5-ton Trailer M1061A1 (1, Figure 1-1) is use for transporting various equipment. In this application the trailer provides support for the 500-gallon fuel tank.

b. Tank. Low Profile 500-gallon tank (2, Figure 1-1) is used for transporting petroleum products and dispensing those products.

c. Skids. The Skids (9, Figure 1-2) are used to stabilize and mount the Tank Unit Assembly.

d. Manhole Cover. Cover (10, Figure 1-2) can be opened if the tank is to be filled through the manhole.

e. Control Box Assembly. The Control Box Assembly (4, Figure 1-1) is used to control gravity force fuel flow during refilling tank and liquid dispensing operations. Only one lever will be connected/used in this application.

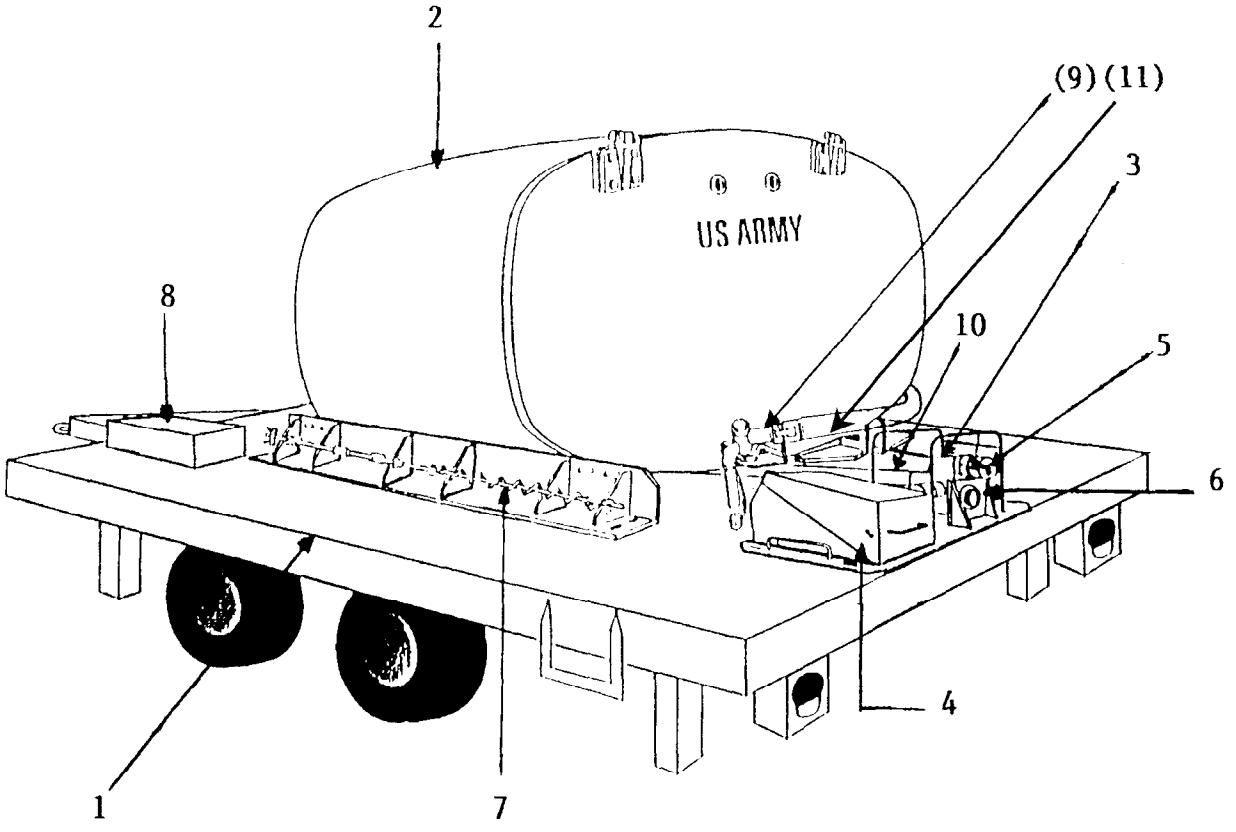
f. Manual Cable. The Manual Cable (5, Figure 1-2) transfers the motion of the operating lever to operate the tank bottom loading valve (3, Figure 1-2) on the tank (1, Figure 1-2).

g. Bottom Loading Valves. The fuel tank is equipped with a bottom loading valve (3, Figure 1-2). The unit is equipped with a fuel manifold (3, Figure 1-1) on the rear of the trailer. Refilled through either the bottom loading valve (5, Figure 1-1), or bottom loading port (6, Figure 1-1) at the Fuel Manifold (3, Figure 1-1) and the tank bottom loading valve (3, Figure 1-2). As the tank is being refilled all three will open automatically when fuel pressure is applied. The tank bottom loading valve (3, Figure 1-2) closes automatically by the jet level sensor when the tank is full. The others are closed when refilling fuel pressure is released.

h. Grounding Rod. The grounding rod (7, Figure 1-1) is pre-attached to the tank by a strap.

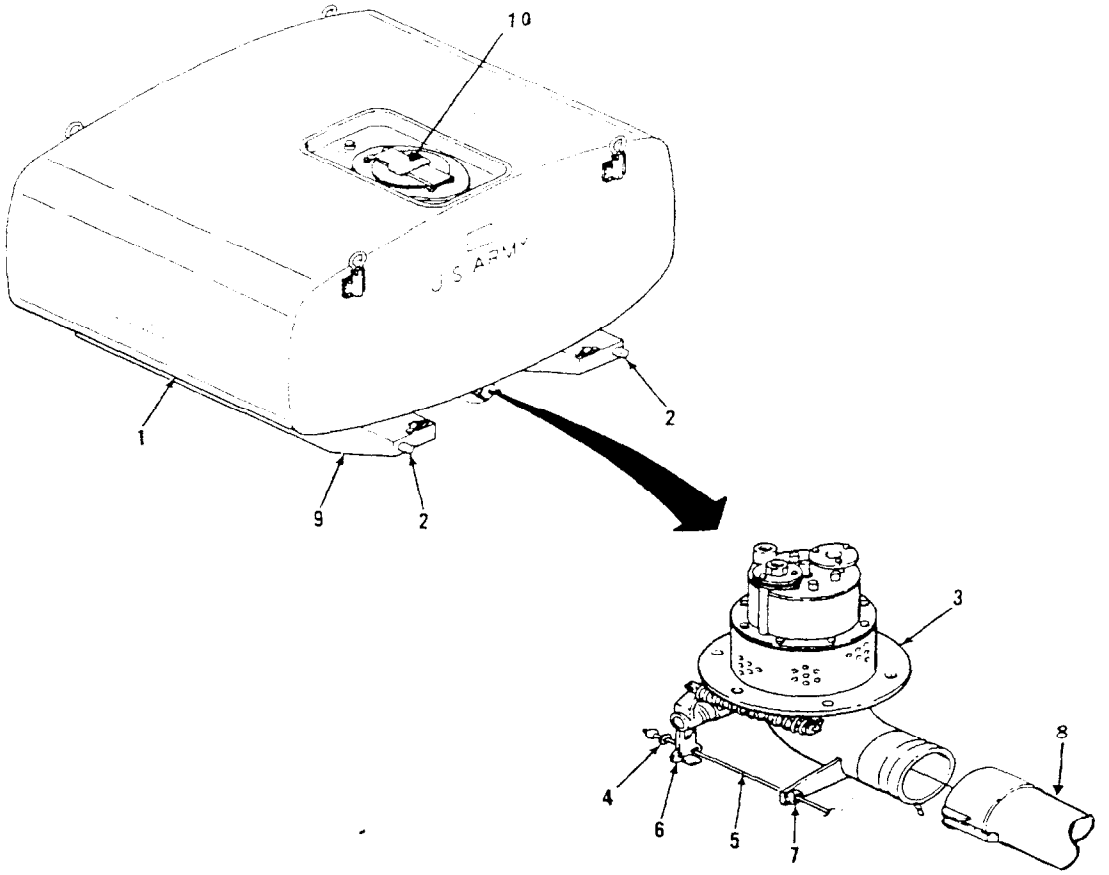
i. Hose and Dispensing Nozzle. Transfer Hose (10, Figure 1-1) (8, Figure 1-2) connects at one end to the tank bottom loading valve (3, Figure 1-2), the other end to the dispensing units fuel manifold. Dispensing Hose (11, Figure 1-1) and nozzle (9) are stowed, as shown, when not conducting dispensing operations.

j. Tool Boxes. The Tool Boxes (8, Figure 1-1) provide storage area for accessories and/or tools.



I. Trailer
3. Tank
3. Unit Fuel Manifold Assembly
4. Control Box Assembly
5. Unit Bottom Loading Valve
6. Bottom Loading Port
7. Grounding Rod w/strap
8. Storage Box
9. Nozzle
IO. Hose. Transfer
I]. Hose. Dispensing

Figure 1-1 " Frailer Mounted Liquid Dispensing Tank Unit Assembly "



1. Tank
2. Interlocks
3. Tank Bottom Loading Valve
4. Cable Washer
5. Cable Assembly
6. Tank Bottom Loading Valve Lever
7. Bushing. Cable Guide
8. Hose, Transfer
9. Skids
10. Manhole Assembly

Figure I-2 " Tank Assembly Dispensing "

k. Interlocks. The male interlocks are secured by clamping adapters (23 and 24, Figure 1-3) and socket adapters (20. Figure 1-3) at the female end.

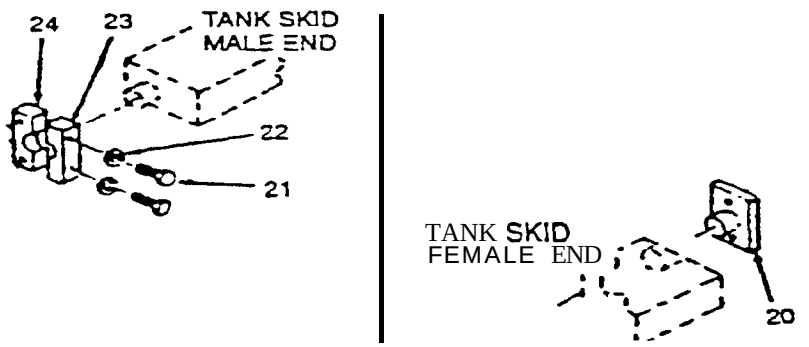


Figure I-i " Angle and Bracket Assemblies "

l-9. Equipment Data.

Manufacturers

1 Tank "Beta Systems"

Model/Part Number	13226E2146
Capacity	500 gal.
Length	56 in.
Width	71 in.
Height	39 in
Weight	500 lbs. Empty

2. Trailer "D & S Manufacturing Co."

Model/Part Number	M1061A1
Cubic Volume	458 Cu. Ft.
Length	232.62 in.
Width	69 in.
Height	37 in.
Weight	5,510 lbs. Empty
	15.850 lbs. Gross

3. Holddown Assembly

Model/Part Number 13226E2146

l-10. Safety, Care and Handling. Observe all WARNINGS. CAUTIONS, and NOTES in this manual. This equipment can be hazardous if these instructions are not followed.

Section III. TECHNICAL PRINCIPLES OF OPERATION

l-l 1. Storage of Fuel.

a. The 500-gallon liquid dispensing tank can be filled with fuel after storage or servicing. It is recommended that the tank not be used to store fuel for more than ten (10) calendar days beyond the accomplished mission.

1-12. Dispensing of Fuel.

NOTE

The hand pump is a "not issued" item with this equipment.

a. Using a hand pump coupled to the hand pump port on the top of the tank can also dispense fuel.

b. Fuel is dispensed from the tank unit using gravity flow procedures by connecting a dry disconnect coupling and hose and nozzle assembly to the bottom loading port at the fuel manifold. When the nozzle handle is activated. gravity takes over, allowing fuel then to flow through hose and nozzle to be dispensed into vehicles needing refueling.

c. When it is necessary to drain the contents of the tank, open the valve on the bottom of the tank

CHAPTER 2

OPERATING INSTRUCTIONS

Section 1. DESCRIPTION AND USE OF CONTROLS

2-l. General. Reference TM 10-4930-236- 13&P for cleaning instructions/procedures on tank assembly. The tank can be used for transporting, storing. and dispensing all types of petroleum products. I lowever. only one ty pe of petroleum product can be carried in and dispensed from the unit at a time.

2-2. Operator's Controls. Operator's controls are shown in Figure 2- l The control lev er assembly allows for the starting and stopping of fuel flow from the tank. When the control lever (l. Figure 2-I) is pulled up (ON or OPEN position), the Tank bottom loading valve (3, Figure 2-1) opens and allow s fuel to flow through the hose (8. Figure 2-I) that connects to the Unit Fuel Manifold bottom loading valve.

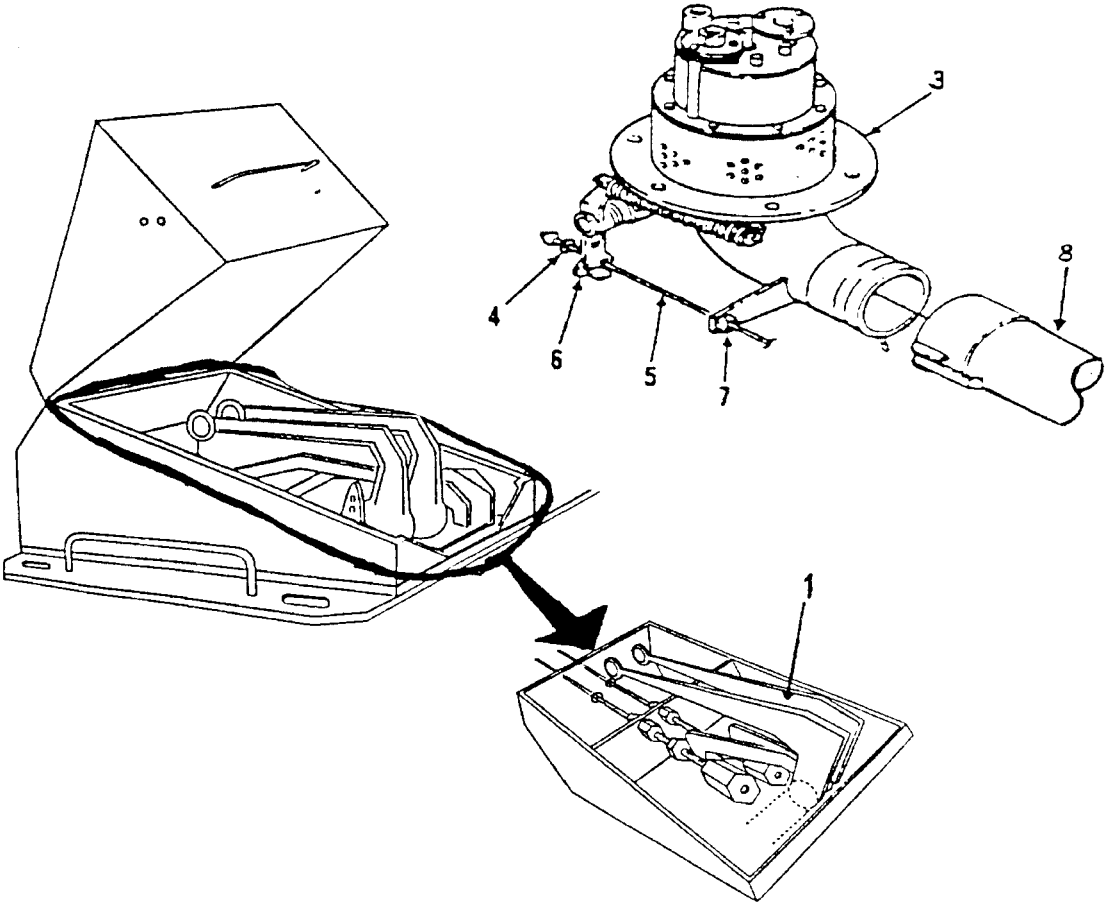


Figure 2-1 " Dispensing Unit Operating Controls "

2-3. Operator's Components. Hose (5, Figure 2-2) is connected to the front of the Unit bottom loading valve (12, Figure 2-2) and nozzle (6, Figure 2-2) is connected to hose for dispensing fuel. When the lever is pushed down (OFF or CLOSED position), the bottom loading valve at the tank closes, stopping fuel flow. The lever is shown in the OFF or CLOSED position in Figure 2-1.

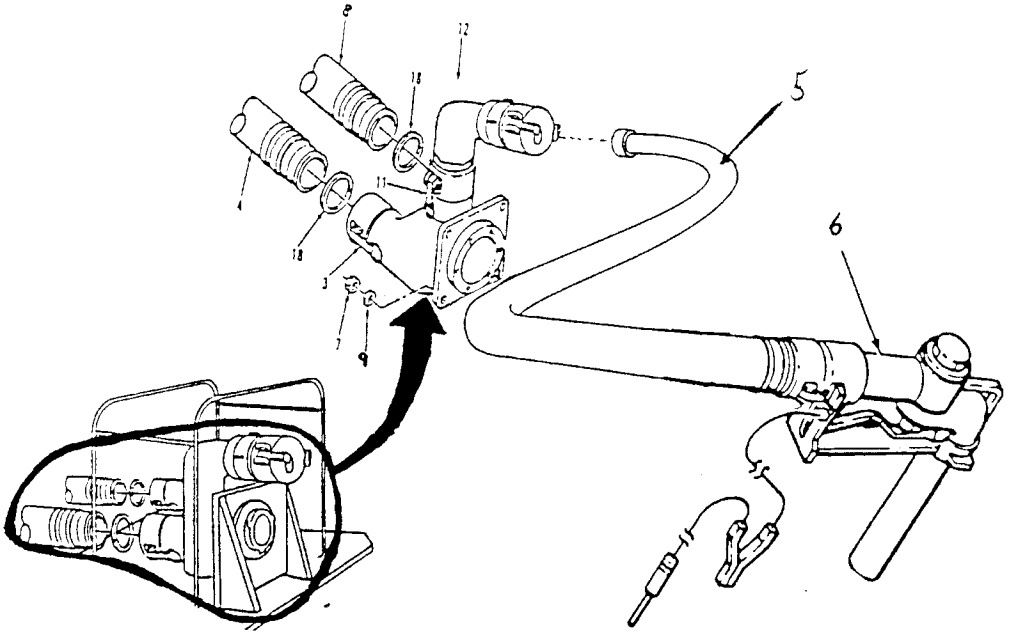


Figure 2-2 " Dispensing Unit Operating Components "

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-4. General. Operator PMCS are performed to ensure that the tank and gravity fed dispensing unit is ready for operation. Perform the checks and services at specified intervals.

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 properly, refer to Unit Maintenance. Report any deficiencies using the proper form. See DA PAM 738-750, The Army Maintenance Management System (TAMMS).

2-5. Purpose of PMCS Table. This table provides a systematic method of inspecting and servicing the equipment. In this way, small defects can be detected early before they become a major problem, causing the equipment to fail in its mission. The PMCS table is arranged with the individual PMCS procedure listed in sequence under assigned intervals. The most logical time (before, during, or after operation) to perform each procedure determines the interval to which it is assigned. Make a habit of doing the checks in the same order each time and anything wrong will be seen quickly.

2-6. Explanation of Columns. The following is a list of the PMCS table columns headings with a description of information found in each column.

a. Item No. This column shows the sequence in which the checks and services are to be performed, and is used to identify the equipment area on the Equipment Inspection and Maintenance Worksheet, DA Form 2404

b. Interval. This column shows the interval when each check is to be done.

c. Item to Check/Service. These columns identify the general area or specific part on which the check or service is to be done, and explains how to perform them.

2-7. Equipment Is Not Fully Mission Capable. This column lists conditions which make the equipment unavailable for use because it is unable to perform its mission, or because it would represent a safety hazard. Do not accept or operate equipment when a condition in the Equipment Is Not Ready/Available column exists.

2-8. Reporting Deficiencies. If any problem with the equipment is discovered during PMCS (or while it is being operated) that cannot be corrected at the operator/crew maintenance level, it must be reported. Refer to DA Pam 738-750 and report the deficiency using the proper forms.

2-9. Special Instructions. Preventive Maintenance is not limited to performing the checks and services listed in the PMCS table.

WARNING

Dry-cleaning solvent PD-680 used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Solvent flash point is 100-138°F (38-60°C).

a. Keep it Clean. Dirt, grease, oil and debris get in the way and may cover up a serious problem. Use dry-cleaning solvent on all metal surfaces. Use soap and water to clean rubber or plastic material.

b. Bolts, Nuts and Screws. Check them all for obvious looseness, missing, bent or broken condition. You can't try them all with a tool, but look for chipped paint, bare metal, or rust around boltheads. If you find one you think is loose, tighten it, or report it to unit maintenance if you can't tighten it.

c. Fluid Lines. Look for wear, damage and leaks. Make sure clamps and fittings are tight. Wet spots and stains around a fitting or connector can mean a leak. If a leak comes from a loose connector, tighten it. If something is broken or worn out, report it to unit maintenance.

d. Leakage Definitions. It is necessary for you to know how fluid leakage affects the status of your equipment. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of your equipment. Learn and be familiar with them. When in doubt, NOTIFY YOUR SUPERVISOR!

Leak definitions for operator/crew PMCS shall be classi tied as follow s:

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 Leaks of liquid great enough to form drops that fall or run or collect iii puddles near fault area.

Class IV Leaks from under the tank. Shown by either dampness of the area around the tank. or the v olume of liquid in the tank less than it should be.

CAUTION

- **Equipment operation is allowable with minor leakage (Class I or Class II).**
- **When operating with Class 1 or II leaks continue to check them visually at regular intervals.**
- **Class III and Class IV leak should be reported to your supervisor or unit maintenance.**

e. Painting. Touch-up Gravity Fed Fuel Dispensing Unit as needed. Refer to TM 43-O 139 for specific painting procedures.

NOTE

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

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

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

Item NO.	Interval	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	Nozzle	Check nozzle for distortion, corrosion and leaks. Refer distorted, leaking or corroded nozzles to unit maintenance	Nozzles are distorted, leaking or 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.

Table 2-1.
OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)
(Cont)

tem No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable
4	Before	Drain Valve and Control Handle or Drain	C'hech control handle/lever for binding or damage. Check valves for leaks, close control handle/lever. Refer worn or damaged valve or control handle/lever to unit maintenance.	Valve or Control Lever I landle is worn or damaged.
5	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.
6	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.
7	During	Nozzle	Check nozzle for distortion. corrosion and leaks. Refer distorted, leaking or corroded nozzles to unit maintenance.	Nozzles are distorted leaking or corroded.
8	During	Ground Cable	Check for worn, frayed or corroded condition. Refer worn. frayed or corroded cable to unit maintenance.	Cable is worn, frayec or corroded.
9	During	Drain Valve and Control Lever	Check control handle/lever for binding or damage. Check valve for leaks, close control lever tightly. Refer worn or damaged valve or control lever to unit maintenance.	Valve or control leve is worn or damaged.
10	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.
11	After	Nozzle	Check nozzle for distortion, corrosion and leaks. Clean strainer daily. Refer distorted, leaking or corroded nozzle to unit maintenance.	Nozzle is distorted. leaking or corroded.
12	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.
13	After	Drain Valve and Control Lever	Check control handle/lever for binding or damage. Check valve for leaks, close control lever tightly. Refer worn or damaged valve or control lever to unit maintenance.	Valve or control lever is worn or damaged.
14	After	Tank	Check tank for leaks. dents. cracks, or breaks. Check interior for dirt. water accumulation or other foreign matter. Drain water accumulation (see para. IO. C.). 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

2-10. Grounding Procedures.

WARNING

Failure to properly ground unit prior to operation could allow a static discharge (spark) which could ignite fuel or cause an explosion of fuel vapor.

a. Remove grounding rod (3. Figure 2-3) from tank unit mounting angle. Using slide hammer, drive grounding rod three feet into ground then attach clamp to dispensing unit to establish ground, Figure 2-4.

b. Once fueling operations are completed. disconnect grounding clamp from dispensing unit. Using slide hammer. withdraw grounding rod from ground then place it in storage position on mounting angle and secure with attaching straps. Detail A Figure 2-3.

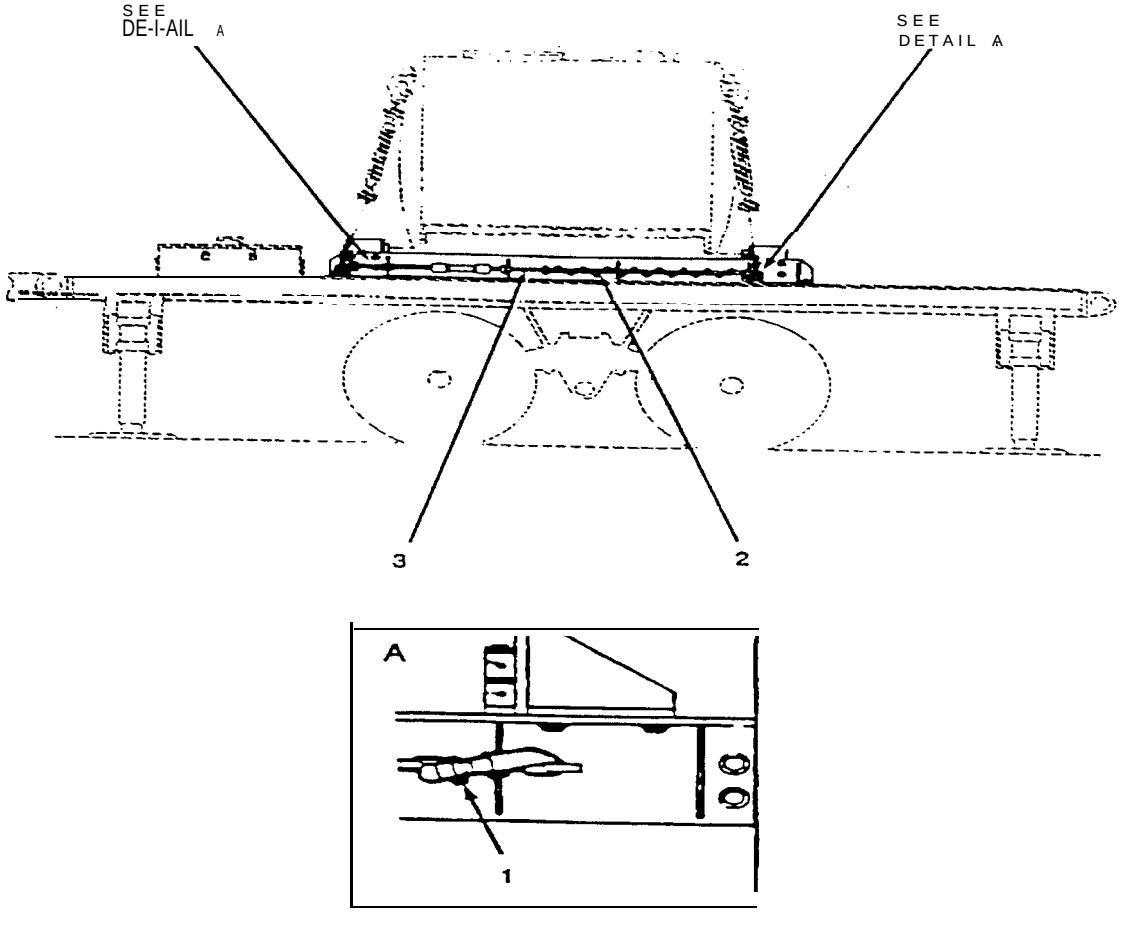


Figure 2-3 " Grounding **Rod** (Stowed) "

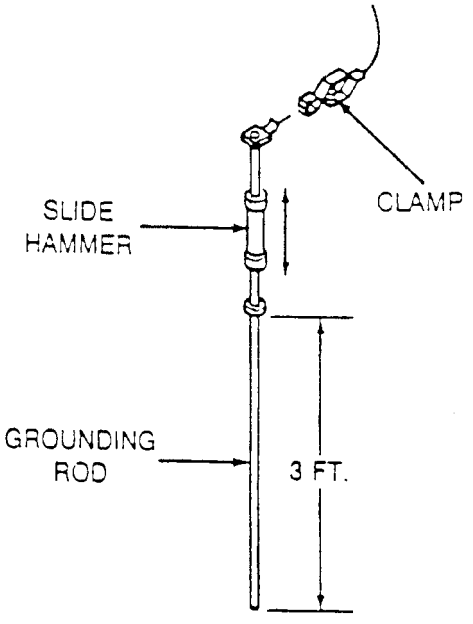


Figure 2-4 " Grounding Rod Installation "

2-l 1. Operating Procedures

a. Filling the Tank Through Bottom Loading Valve Port.

(1) Perform grounding procedures. Refer to paragraph 2-9.

WARNING

Fire hazards exist when handling fuel. Do not smoke or use open flame within 50 feet of the tank dispensing unit.

(2) Check the control lever (5, Figure 2-5) and be certain it is in the "OPEN" position.

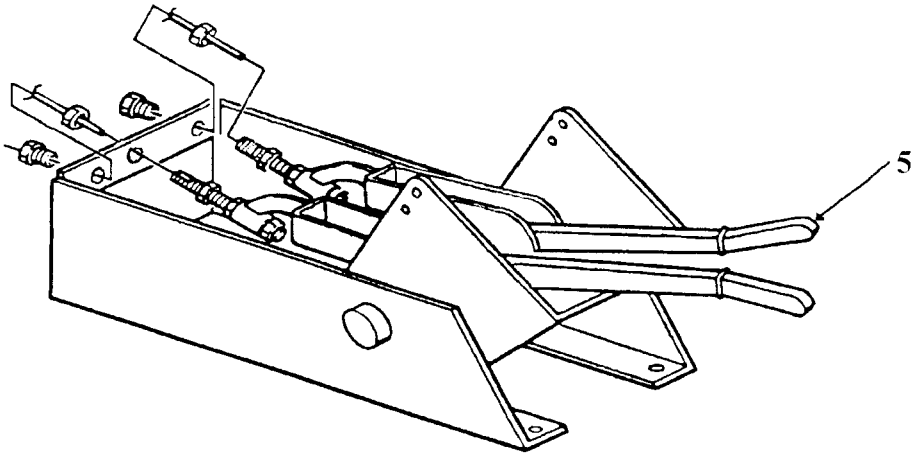


Figure 2-5 " Operating Control Lever "

(3) Open the manhole cover (7, figure 2-6) and check the inside of the tank to be certain it is clean and free of condensation or foreign matter. If clean close cover. If not clean, refer to para 2-1.

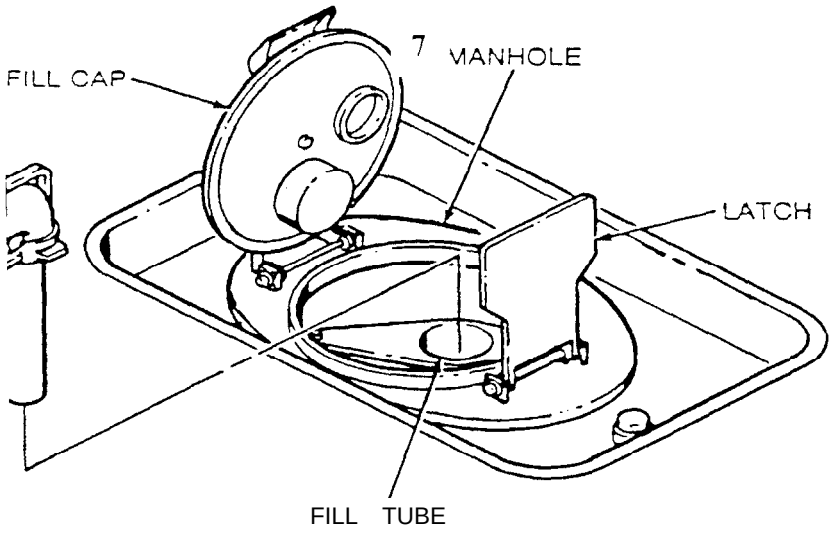


Figure 2-6 " Tank Manhole Access "

(4) Attach dry disconnect coupling (3, Figure 2-7) to the fuel manifold (2. Figure 2-7).

(5) Attach hose (9. Figure 2-7) or D- l nozzle (3. Figure 2-7), whichever is applicable. to the dry disconnect coupling (3. Figure 2-7).

(6) Open valve on dry disconnect coupling (3. Figure 2-7), fill tank. Avoid spilling liquid and do not overfill the tank.

(7) When tank is filled, stop flow of fuel, close dry disconnect valve (3, Figure 2-7). Disconnect D- l nozzle. or Disconnect hose (9. Figure 2-7). drain and stow. Disconnect dry disconnect coupling (3, Figure 2-7) and stow. Cap Bottom Loading Valve (2. Figure 2-7).

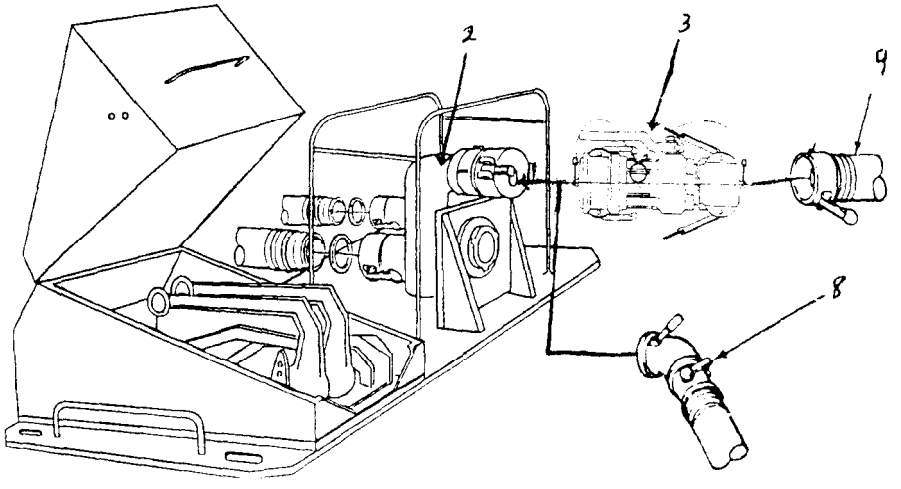


Figure 2-7 " Refilling Tank Components "

(8) Place control lever (5, Figure 2-5) in closed position.

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

(10) Disconnect and stow grounding equipment as referenced in paragraph 2-9

b. **Dispensing Liquid.**

CAUTION

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

(I) Locate dispensing unit adjacent to the equipment to be fueled.

(2) Refer to paragraph 2-9 and perform grounding procedures. Locate safety equipment.

(3) Liquids will be dispensed from tank through the bottom loading valve (2. Figure 3-7) by gravity flow

(4) Connect hose (5. Figure 3-8) and nozzle (6. Figure 3-8) to the Fuel Manifold bottom loading valve coupling (12, Figure 2-8).

(5) Connect nozzle ground clamp (IO, Figure 2-8) or nozzle ground plug (13, Figure 2-8) to equipment being serviced, whichever is compatible.

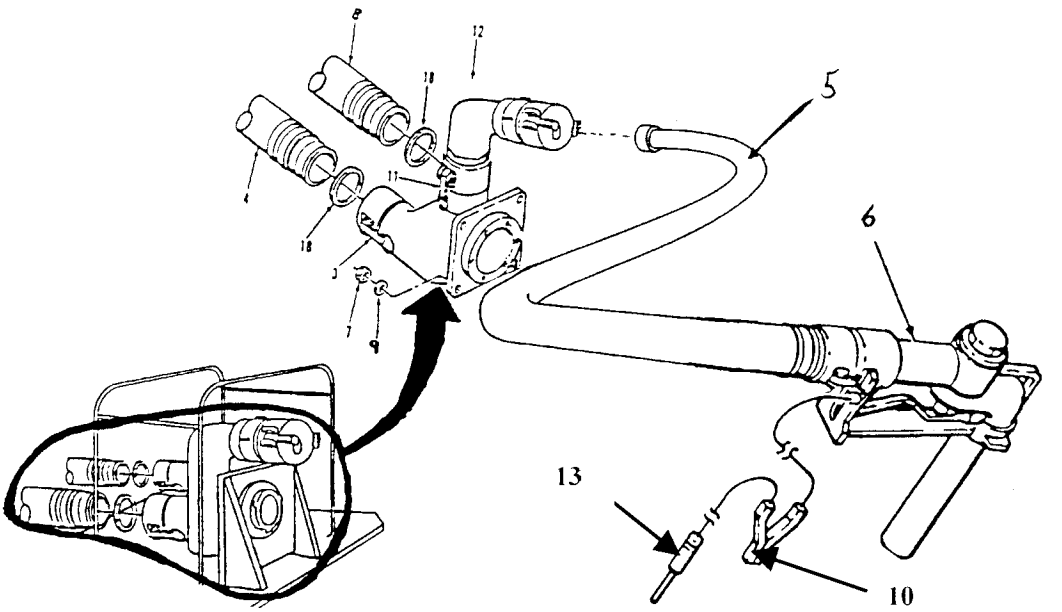


Figure 2-8 " Dispensing Fuel Set-up "

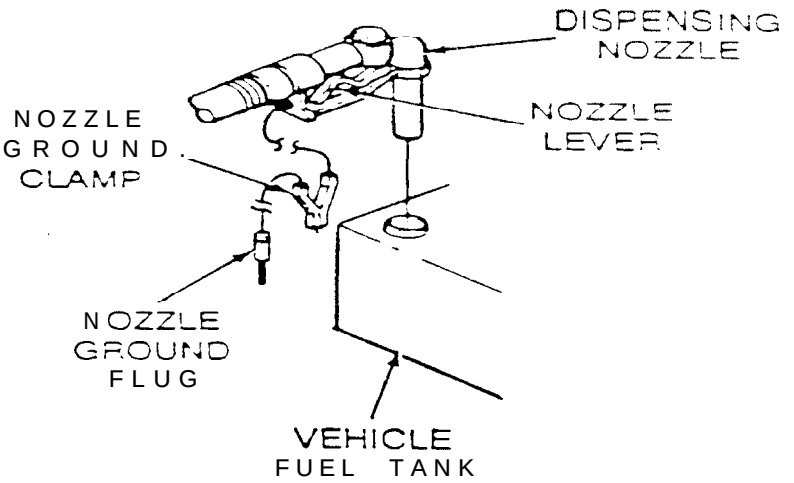


Figure 2-9 " Dispensing Fuel "

(6) Place control lever (5. Figure 2-5) in "open" position. Insert dispensing nozzle into tank being fueled (Figure 3-9) and squeeze the nozzle lever. Dispense liquid.

(7) The flow may be stopped at any time by releasing nozzle lever. thus closing nozzle When tank is full. dispensing is complete.

(8) Remove dispensing nozzle from tank. disconnect nozzle ground clamp or plug.

(9) Place control lever in "Closed" position.

(10) Stow the hose (5, Figure 2-8) and nozzle assembly (6. Figure 2-8) and cap the bottom loading valve port (2. Figure 2-7) with dust cap as depicted.

(11) Load safety equipment. Disconnect static ground rod as per paragraph 2-8

c. Draining the Tank.

WARNING

Do not drain petroleum products or flammable liquids on transporting equipment or the ground!

(1) Connect hose (8, Figure 2-1) to bottom loading valve (3. Figure 2-1).

(2) Position hose over the side of the trailer into suitable drainage container.

(3) Open Lever (1, Figure 2-l) and drain tank.

(4) Connect hose (5. Figure 2-2), without nozzle (6, Figure 2-2) to bottom loading valve (12, Figure 2-2): this will allow you to drain frorn tank Open Lever (1, Figure 2-l) and drain tank.

(5) Direct draining product into suitable container for storage or disposal.

(6) When tank is completely drained. close Lever (1. Figure 2-l).

(7) Disconnect Hose (5. Figure 2-2) or Hose (8. Figure 2-l). Reconnect Hose (8. Figure 2-1) to Fuel Manifold or stow Hose (5. Figure 2-2).

d. Shutdown.

(1) Check to see fuel dispensing hose and nozzle are secured.

(2) Check to see that grounding rod is secured.

(3) Check to see that tanh manhole cover is closed securely.

(4) Remove dipstick from frame.

(5) Open tank's manhole check quantity of fuel remaining in fuel tank

NOTE

If there is insufficient fuel in the fuel tank for continued operation. or the unit is to be idle for an extended period of time. fill the fuel tank to prevent condensation from forming and contaminating the **fuel.**

(6) Ensure that the dispensing unit control lever is in the "closed " position (Figure 2-I).

e. Preparation for Movement.

1. Refer to paragraph 2-10.d. and perform shutdown procedures

2. Check that all tie down straps are securely attached to tie down brackets and shackles and that all turnbuckles are tight.

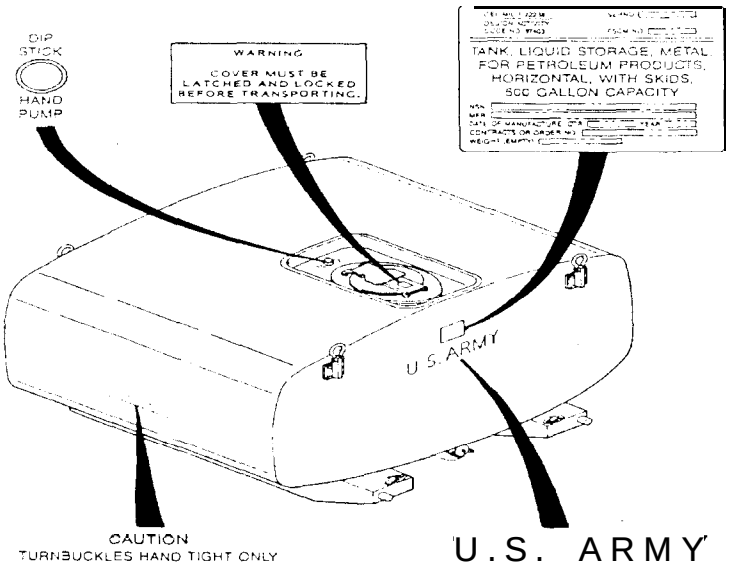
WARNING

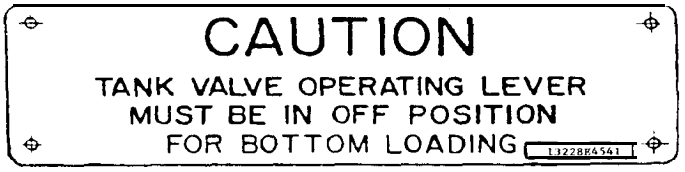
To prevent possible fuel spillage and potential fire hazard. manhole must be closed and locked before transporting.

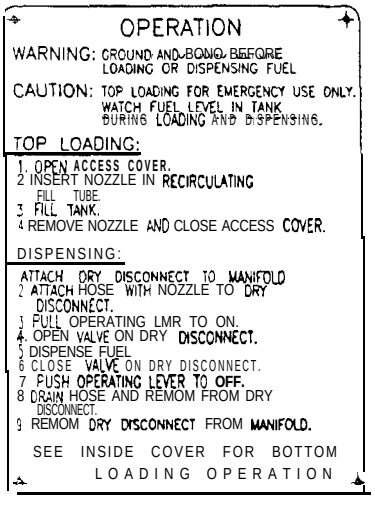
3. Make certain manhole cover on tank is closed, latched and locked

4. Low Profile Tank Dispensing Unit, Trailer Mounted is ready for movement.

2-12. Operating Instructions on Decals and Instruction Plates. The location of warning, caution, instruction, and identification plates, decals, and stencils are shown in the following illustrations. Illustrations of the plates, decals, and stencils are included.







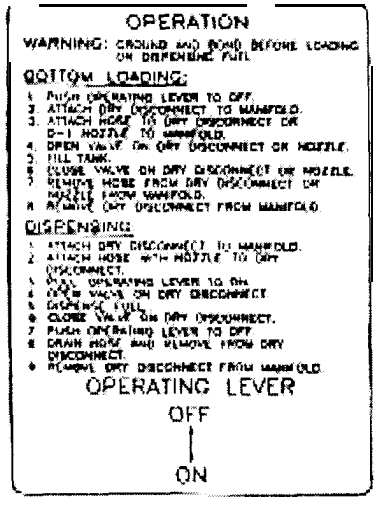


Figure 2-10 " Decal Operating Instructions "

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2- 13. Operation in Extreme Cold. The procedures for operating the Low Profile Tank Dispensing Unit are the same as under usual conditions except for the following special precautions.

WARNING

Shin may stick to metal in cold conditions.
Do not touch metal parts with bare skin during cold weather

a. Check all coupling joints and drain water more frequently than usual and at each shut down to avoid freezing.

b. Provide shelter to prevent snow or ice from entering unit when opened during servicing

c. If possible provide a heated shelter.

2-14. Operation in Extreme Heat. The procedures for operating the Low Profile Tank Dispensing Unit are the same as under usual conditions except for the following special precautions.

a. Locate dispensing unit in shaded area, where possible, and wet down the tank with water to reduce heat.

2-15. Operation in Dusty or Sandy Areas. The procedures for operating the Low Profile Tank Dispensing Unit are the same as under usual conditions except for the following special precautions.

a. Take advantage of natural barriers when possible, or, if necessary. erect artificial barriers to protect unit from blowing dust and sand.

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

c. Ensure inlet plugs and outlet caps are installed when hoses, couplings. and nozzle are removed or disconnected.

2-16. Operation in Rainy or Humid Conditions. The procedures for operating the Low Profile Tank Dispensing Unit are the same as under usual conditions except for the following special precautions.

a. Water must be drained from the tank more often than normal conditions.

b. Erect a shelter to prevent the entrance of rain into the interior of the tank when it is opened for servicing.

2-17. Operation in Salt Water Areas. The procedures for operating the Low Profile Tank Dispensing Unit are the same as under usual conditions except for the following special precautions.

a. Water must be drained from the tank more often than normal conditions

NOTE

Salt mater corrodes metal. If unpainted equipment parts are exposed to salt water, clean them off immediately w ith an approved solvent and dry thoroughly. All surfaces should be cleaned daily.

b. Wipe clown the dispensing unit with a lightly oiled rag to prevent corrosion

2-18. Operation at High Altitudes. The procedures for operating the Low Profile Tank Dispensing Unit are the same as under usual conditions except for the following special precautions.

2-19. Emergency Procedures. In a situation where clean filtered fuel is needed but the correct hose coupling to connect to the bottom loading valve port is not available. it will be necessary to fill the tank through the manhole. Perform the following procedures to refuel tank through manhole fill opening.

a. Refer to paragraph 2-9 and perform grounding procedures.

b. Attach nozzle grounding clamp (10. Figure 2-I I) to fuel tank being serviced.

c. Open manhole latch (9, Figure 2-I 1) and till cap (8. Figure 2-1 1)

d. Insert fuel supply nozzle (6, Figure 2-I 1) into till tube (7, Figure 2- 1 1) of tank and fill tank.

e. When tank is full. withdraw fuel nozzle. close fill cap and latch then disconnect nozzle grounding clamp.

f. Disconnect static grounding rod, and return it to its stowed position.

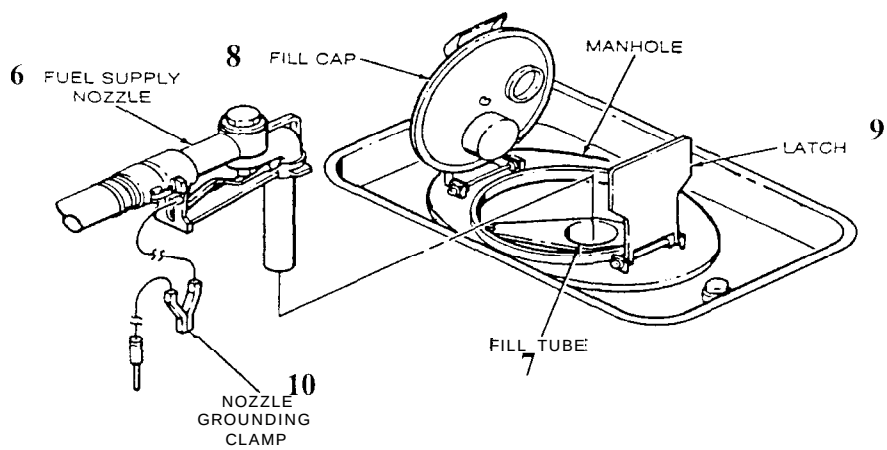


Figure 2-I | " Emergency Refilling of Tank "

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

Section I. OPERATOR LUBRICATION INSTRUCTIONS

3-1. General.

a. There are no lubrication requirements prescribed for the tank unit.

b. Refer to TM 9-2330-376-14&P for lubrication requirements of the modified M 106 I A I five-ton, four wheel. trailer chassis.

Section II. OPERATOR TROUBLESHOOTING

3-2. Introduction.

a. This section contains troubleshooting information for locating and correcting most of the operating problems, which may develop with the tank dispensing unit. Table 3-l lists the common malfunctions, which you may find during operation of the tank or its components. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections that will help you 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 or unit maintenance.

Table 3-l. OPERATOR TROUBLESHOOTING

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. UNABLE TO BOTTOM LOAD TANK.
Step l. Check for adequate supply pressure.
Notify supervisor.
Step 2. Bottom loading port/valve obstructed.
Disconnect nozzle and check port/valve for foreign material.
Step 3. If problem still exists:
Refer to Unit Maintenance.

Table 3-1. OPERATOR TROUBLESHOOTING (Cont.)

2. FUEL FLOW WILL NOT STOP WHEN TANK IS FULL.

Step 1. Check for operator control lever in "ON" position.

Move lever to "CLOSED" position.

Step 3. If malfunction still exists:

Shut off flow, refer to Unit Maintenance.

3. FLOW OF PRODUCT SLOWS DOWN DURING OPERATION.

Step 1. Check for leak in hose or connections.

Tighten connection or replace hose.

Step 2. If malfunction still exists:

Shut off flow. refer to Unit Maintenance.

4. PRODUCT LEVEL, IN TANK DROPS BEFORE OPERATION.

Step 1. Check -for operator control lever in "OPEN" position.

Move lever to "CLOSED" position.

Step 2. Check bottom loading valve at bottom of tank for leaks.

Tighten valve.

Step 3. If problem still exists:

Refer to Unit Maintenance.

5. 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 contamination in bottom of tank

Step 3. If problem still exists:

Refer to Unit Maintenance.

Section III. OPERATOR MAINTENANCE INSTRUCTIONS

3-3. General. Operator maintenance on Low Profile Tank Dispensing Unit consists of only those tasks and procedures stated in the Operator Preventive Maintenance Checks and Services (PMCS) Chart. Refer to the Operator's PMCS Chart and perform all tasks outlined at the intervals stated in the chart.

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

4-1. Tools and Equipment. Tools or equipment required for maintenance of the unit can be found in Appendix B, Section III, Test, Measurement and Diagnostic Equipment (TMDE) or support equipment to include standard test equipment are found in any unit maintenance shop.

4-2. Special Tools and Equipment. There are no Special tools and equipment that are required by the unit maintenance personnel for maintenance of the unit.

4-3. Repair Parts List. Unit Maintenance Repair Parts and Equipment are listed in Appendix F.

Section II. SERVICE UPON RECEIPT

4-4. Inspect Equipment.

a. Inspect identification plates for positive identification of equipment.

b. Inspect the equipment for damage incurred during shipment. If the Equipment has been damaged, report the damage on SF 364, Report of Discrepancy (ROD).

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 Trailer in accordance with the instructions in TM 9-2330-376-14&P.

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

b. Installation. The tank unit will be used mounted on skids and secured on a modified Model M1061A1, 5-ton Trailer.

(1) Low Profile Tank Unit mounted on M1061A1, 5-ton Trailer. Detailed installation procedures for the tie down kit and for mounting the tank unit on the M1061A1, 5-ton Trailer are found in paragraph 4-10.

Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-6. General.

a. To ensure the Low Profile Tank Dispensing Unit, Trailer Mounted 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, (Equipment Inspection and Maintenance Worksheet), 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 or harm personnel if operation were continued.

d. Record all deficiencies, shortcomings and the corrective action taken on the DA Form 2404 at the earliest possible opportunity.

4-7. Unit Preventive Maintenance Checks 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) MONTHLY SCHEDULE

Item No.	Item to Check/ Service	Procedure	Not Fully Mission Capable
1	Hose and Fittings	Visually inspect hoses for leaks, cracks, breaks or cuts. Inspect fittings and couplings for secure connections, damage, and signs of leakage. Extend hose for inspection. Replace damaged hoses, fitting or defective gasket.	Hoses, fittings or couplings are damaged or defective.
2	Nozzle	Check nozzle for proper operation and leakage, distortion, and corrosion. Check screen for foreign matter. Replace a leaking or distorted nozzle. Clean dirty screen replace corroded screen or nozzle.	Nozzle leaks or is corroded or distorted.
3	Tank Valve	Check valve for proper operation, leaks or damage. Check control cable for secure connection, worn, binding, frayed or corroded condition. Replace damaged control or cable. Replace leaking or damaged valve.	Control or Cable is worn, frayed or corroded or damaged. Valve leaks or is damaged.
4	Adapter Half, Quick Disconnect	Inspect for secure connections, damage and signs of leakage. Refer to para. 4-10 for repair.	Adapter Half leaks, corroded or distorted.
5	Fuel Manifold Assembly	Inspect for secure connections, leaks or damage. Replace damaged manifold.	Manifold leaks, is worn or damaged.
6	Frame and Storage Box	Inspect frame for cracks, loose and missing hardware or components. Tighten loose hardware.	Frame has Extensive damage beyond unit level of repair.
7	Tie Down Assembly	Inspect Tie Down assemblies for looseness, cracked welds and thread damage. Check for frayed, missing, or loose straps and turnbuckles. Tighten loose turnbuckles hand tight. Replace defective assemblies.	Tie Downs or Turnbuckles have cracked welds or missing.
8	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. Check for damaged or missing shackles and tie down links. Inspect skids for damage. Inspect the bottom loading valve for leaks. If the tank is damaged or leaking replace the tank. Refer other damage to depot maintenance for repair.	Tank has leaks, cracks or breaks. Welded seams are ruptured.

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

9	Manhole Cover Assembly	**CAUTION** In freezing weather, especially during freezing precipitation, ensure the vent valve in the manhole is protected by being located under the Fill Plug Hinge. Check the manhole gasket for damage and replace, if necessary. Check for dents, cracks or breaks. Repair or replace defective manhole cover and filler cover. Ensure that the manhole mounting hardware is tight. Check to see that the manhole cover hinge and cam close tightly.	Bolts and nuts are loose or missing. Cracks or breaks exist. Cover gasket, manhole cover or filler cover are defective.
10	Coupling Half	Check for signs of leakage around the valve handle shaft. Check coupling gaskets for cracks. Inspect coupling for secure connection. Test coupling half by observing the internal valve mechanism as the handle is moved to ensure handle operates valve. Replace damaged valve or handle lever.	Valve leaks, Valve or Control Lever Handle is worn or damaged.
11	Ground Cable	Inspect cable for frayed, worn or corroded condition. Replace defective cable.	Cable is missing or defective.

Section IV. UNIT MAINTENANCE TROUBLESHOOTING

4-8. General.

a. This section contains troubleshooting information for locating and correcting problems which develop in the tank dispensing 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 determine corrective actions for specific malfunctions. Perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, or all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

Table 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 tank bottom loading valve strainer screen for contamination.

Remove, clean and reinstall strainer screen.

2. FLOW OF PRODUCT SLOWS DOWN OR STOPS DURING OPERATION.

Step 1. Check tank bottom loading 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.

NOTE

For these and other Troubleshooting Measures
for the tank refer to TM 10-4930-236-13&P

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.

Replace the tank.

Step 2. Check bottom loading valve on tank for leaks.

Replace defective valve gasket, screen, or valve.

Step 3. Check bottom loading valve control handle and lever, rod and rod support assembly.

Repair or Replace the control handle, control lever, or rod assembly.

Table 4-2. UNIT MAINTENANCE TROUBLESHOOTING (Cont.)

4. FUEL WILL NOT BEGIN TO FLOW.

Fusible link of valve operator control cable apart or control cable pulled loose.

Reconnect control cable to valve operator mechanism.

5. FUEL FLOW WILL NOT STOP WHEN TANK IS FULL.

Bottom loading valve malfunction.

Drain tank and refer to next level of maintenance.

6. TANK WILL NOT BOTTOM LOAD.

Step 1. Inspect jet level sensor to see if fuel is present in drain tube. If fuel is present:

Refer to TM 10-4930-236-13&P for maintenance repair.

Step 2. Inspect jet level sensor to see if fuel is present in drain tube. If fuel is not present:

a. Repair or replace jet level sensor.

b. Remove and check manifold to tank hose.

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 Trailer Model M1061A1 and its components are not addressed within this manual. Refer to TM 9-2330-376-14&P for PMCS, Troubleshooting, and Maintenance Procedures in order for you to maintain this piece of equipment.

c. The Tank assembly includes the pump port, manhole cover assembly, the bottom loading valve, control handle/lever, and tie-down assemblies.

d. Before any repair is started, the Low Profile Tank Fuel Dispensing Unit, Trailer Mounted, and its components must be thoroughly vented and cleaned. Each time a component is removed for repair, inspection, or other maintenance action, it must be cleaned thoroughly.

e. The Tank assembly Unit Maintenance is limited to those procedures outlined within this manual. Refer to TM 10-4930-236-13&P for further unit maintenance not covered in this manual.

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. Dispensing Unit Assembly.

This task covers: Installation

INITIAL SET-UP

Tools

General Mechanics Tool Kit, (Appendix B, Section III, Item 2)

Materials

Tie-down Kit for 5 Ton Trailer M1061A1 (Appendix F, Figure 8). Quantities are for single tank installation.

Stowage Box Assembly (Appendix F, Figure 9)

Trailer Assembly Refer to TM 9-2330-376-14&P

General Safety Instructions

WARNING

Warnings, Cautions, Handling Equipment Safety Precautions specified in technical manuals and those for the facility pertaining to specific 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. General. These installation instructions outline procedures and provide descriptive illustrations to install a single 500-gallon, Liquid Dispensing Tank Unit, mounted onto a modified M1061A1, 5-Ton Trailer.

2. Sequence. It is not necessary to follow the installation procedures in the sequence presented; however, it will be advantages 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.

a. Installation Procedures.

NOTE

Prior to start of installation, verify that all items listed in Appendix F, Figure F-8 and Figure F-9 are actually present.

(3) Stowage Box Installation.

(a) Place stowage boxes (3, Figure 4-1) on the two existing 4-hole patterns on the flatbed trailer (1, Figure 4-1) (forward, curbside and roadside areas of trailer).

(b) Attach boxes to flatbed using four bolts (4) four washers (5), and four nuts (6) Figure 4-1.

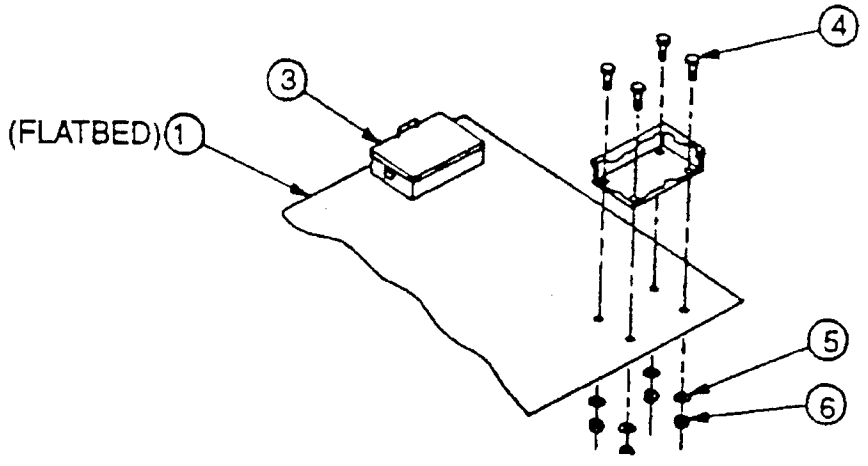


Figure 4-1 Accessories Stowage Box Installation.

(4) Tank Mounting and Angle Installation.

(a) Orient and position tank mounting angles, (7) and (11), on flatbed at approximately 44 inches from front edge and 19 inches from side edge in pre-existing mounting holes. See Figure 4-2.

(b) Loosely attach angles to flatbed using eight bolts, (8), sixteen washers, (9), and eight nuts, (10) Figure 4-2. Move angles outboard (on flatbed) as far as slots (in angles) will permit.

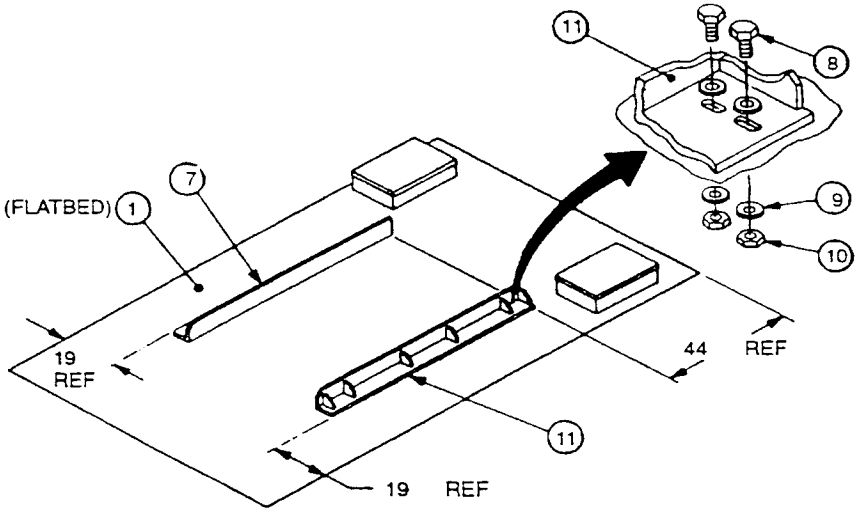


Figure 4-2 Tank Mounting Angle Installation.

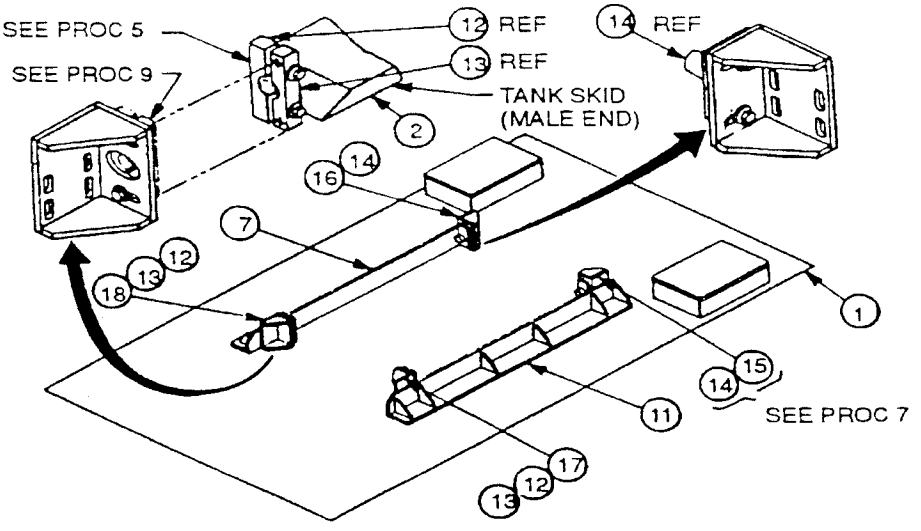


Figure 4-3 Preparation for Tank Installation.

(c) 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 finger tight, enough to retain adapters during positioning of tank. Repeat procedure at post on the other side. Note that positions will be reversed (inverted) to maintain the inboard position of adapter (13). See Figure 4-3 and Figure 4-4.

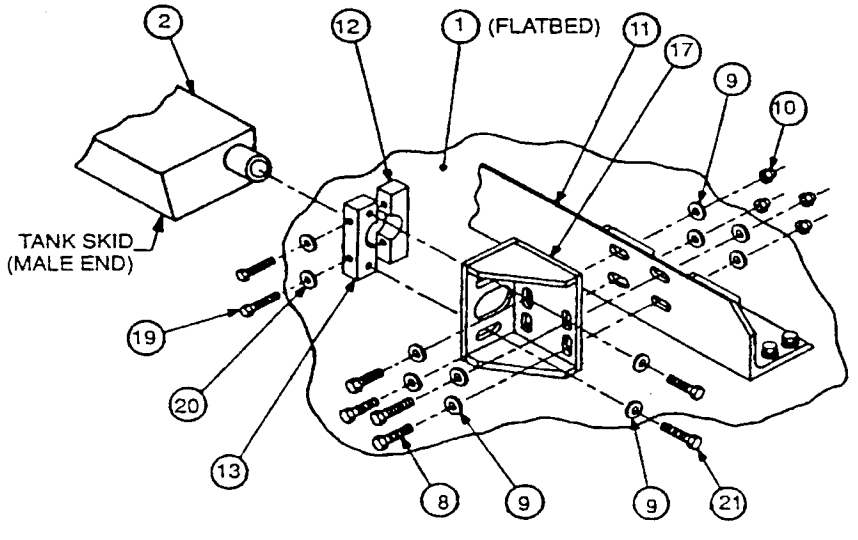


Figure 4-4 Angle/Bracket/Clamping Adapter Assembly.

WARNING

Serious injury can occur when lifting. When an item cannot be lifted with ease, use two or more people or a lifting device with a lifting capacity of a least 3-tons to handle tank. Do not allow unit to swing back and forth while hanging in the air.

CAUTION

Load tank on trailer before filling. Extreme caution should be taken in filling tanks to avoid exceeding cross-country payload limits of transporting vehicle.

(d) While tank is suspended in the air, route cable assembly (5, Figure 4-5) through guide (7) and connect cable assembly (5) to the tank's bottom loading valve control lever (6) and temporarily secure for safety. Other end will be connected at a later time.

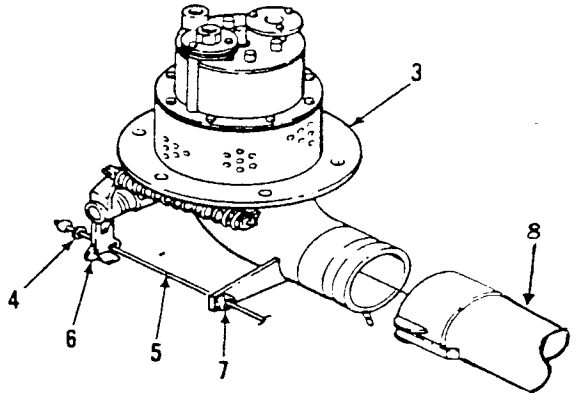


Figure 4-5 Tank, Bottom Loading Valve Cable Connection.

NOTE

The tank must be oriented with the Tank bottom loading valve facing toward the rear (Aft) of the trailer.

(e) 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 4-6.

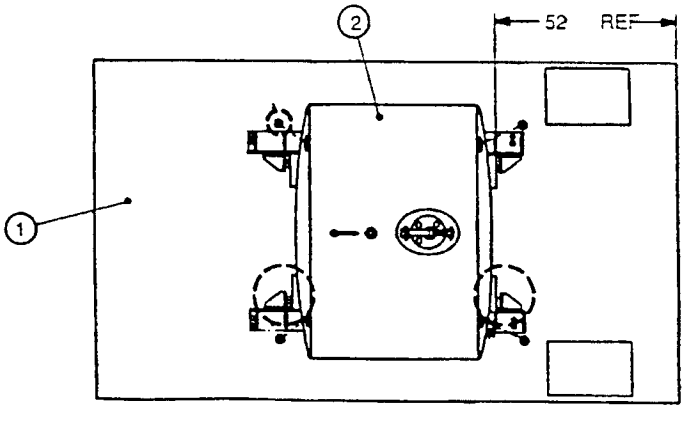


Figure 4-6 Tank Placement and Tie-down Locations.

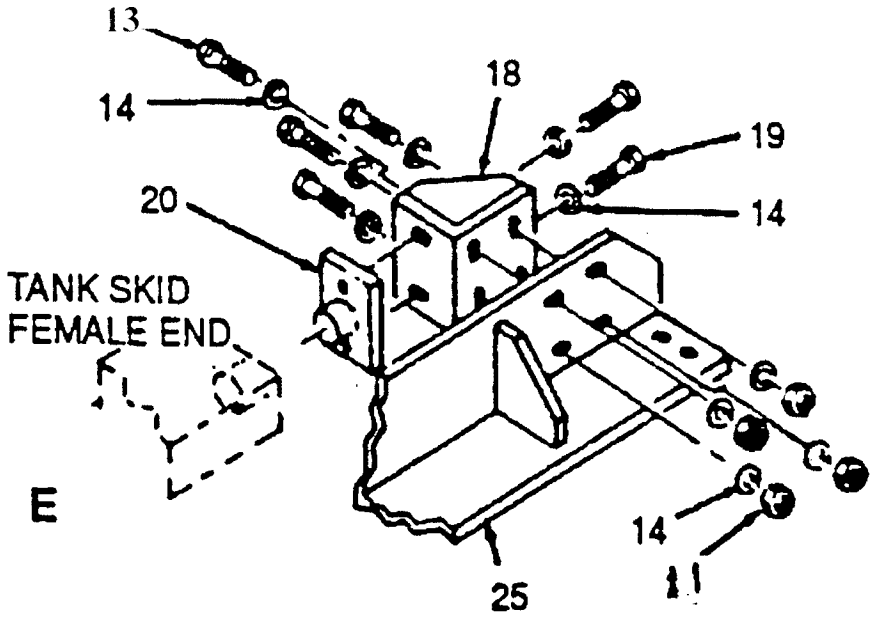


Figure 4-7 Angle/Bracket/Socket Adapter Assembly.

(f) Loosely attach one socket adapter (20), with the curbside end angle bracket (18), using two screw (19), and two washer (14). Repeat procedure at the other skid. See Figure 4-7.

(g) Starting at the secured mounting angle (25), 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 (13), eight washers, (14), and four nuts (11). Repeat procedure on the other side. See Figure 4-7.

(h) At the other end of tank, again starting at the secured mounting angle. Attach the appropriate clamping end bracket (17 or 18 Figure 4-3) to the assembled clamping adapters, on post of tank skid (step (c), above). Install two screw (19, Figure 4-7) and two washer (14, Figure 4-7) through bracket into tapped holes in the inboard adapter (13, Figure 4-4), finger-tight only.

(i) Loosely attach clamping end bracket to mounting angle using four screw (19), eight washer (14), and four nuts (11). Repeat procedure in steps (g) and (h) for far-side. See Figure 4-7.

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.

(j) Starting at secured mounting angle, fit all parts snugly and tighten all hardware. Refer to Appendix B, Section V, Torque Requirements.

(5) Tie-Down Assembly Attachment Installation.

(a) With tank mounted, install tie-down assemblies (24, Figure 4-8) at locations shown in Figure 4-6, using two washers (22) and one nut (23). Apply 325-327 ft. lbs. of torque to nuts to secure tie-downs.

(b) Extend turnbuckles on tie-downs, enough to attach hooks to shackles provided in tank. Attach, secure safety clips on hooks and draw turnbuckles, hand-tight only, to remove slack from tie-downs assemblies. Tighten jam nuts on turnbuckles to secure.

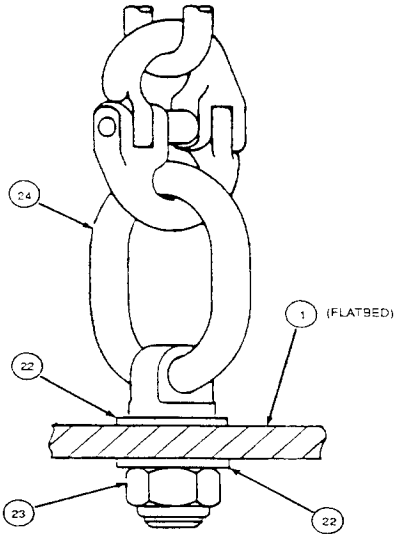


Figure 4-8 Tiedown Assembly Attachment.

(6) Ground Rod Stowage Installation.

(a) Run straps assemblies (27, Figure 4-9) through slots in tank mounting angle.

(b) Attach ground cable assembly (26) to ground rod (25). Wrap cable around rod. See Figure 4-9.

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

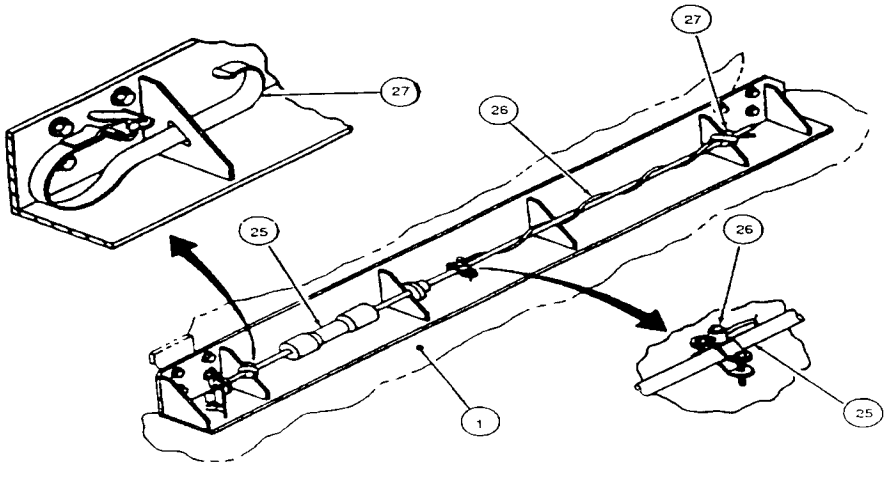


Figure 4-9 Ground Rod Stowage.

4-11. Hose Replacement.

This task covers: a. Removal b. Inspection c. Cleaning d. Installation

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)

General Safety Instructions

WARNING

Do not smoke or use open flame within 50 feet of tank fuel dispensing unit.

a. Removal.

(1) Move fuel flow control lever (1, Figure 2-1) to OFF.

(2) Position a suitable container or drip pan under point where hose is to be disconnected.

(3) Hose assembly (4, Figure 4-10) is used to connect the tank to the Dispensing Unit Fuel Manifold.

(a) Detach coupling, on hose (4), from tank bottom loading valve (3, Figure 4-5) and coupling (3, Figure 4-10) from dispensing unit fuel manifold (12 Figure 4-10), remove hose.

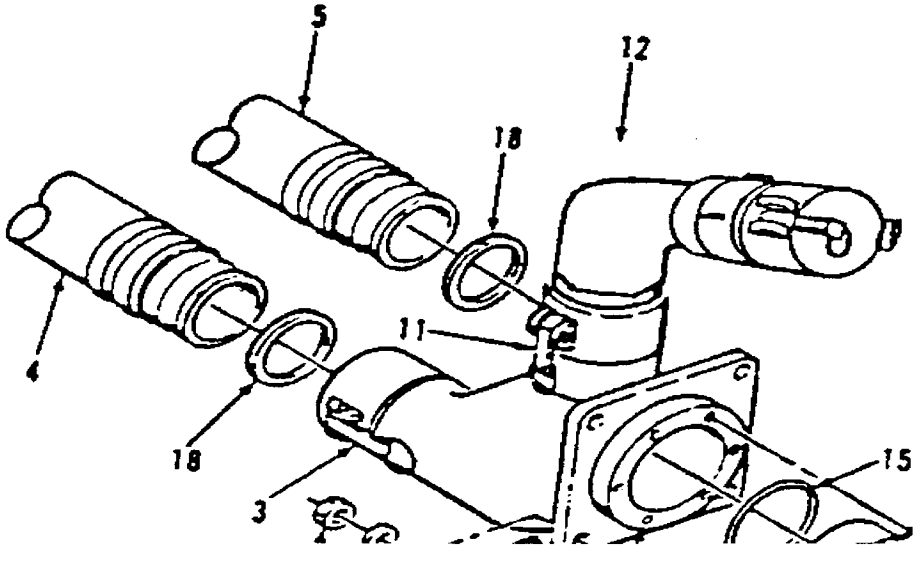


Figure 4-10 Interconnecting Hose Assembly.

(4) Hose assembly (5) is used to connect the Fuel Dispensing Unit to the nozzle.

(a) Detach coupling (6) from Fuel Dispensing Nozzle and disconnect hose from fuel manifold at other end, if connected; Remove hose.

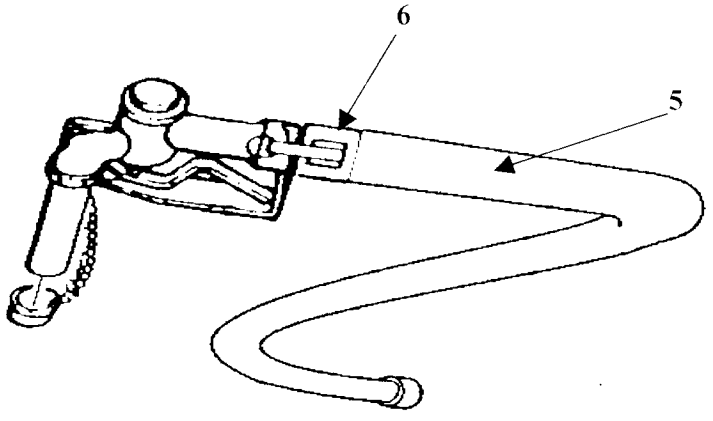


Figure 4-11 Fuel Dispensing Hose.

b. Inspection. Inspect hoses for cuts, leaks, deterioration, damage and wear. Replace defective hoses, couplings, or adapters.

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 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 purpose should not exceed 30 PSI.

c. Cleaning.

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

(2) Clean hose surface with a clean dry cloth.

d. Disassembly. When any of the components which make up a hose assembly become unserviceable, disassemble hose as shown in Figure 4-12 to replace unserviceable item.

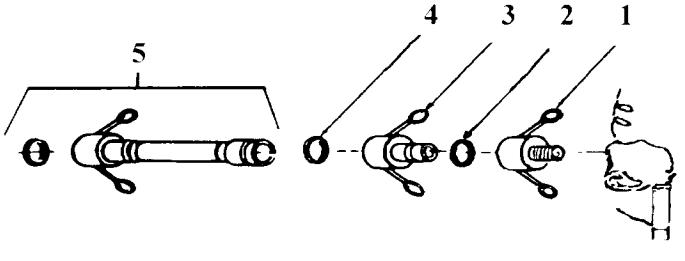


Figure 4-12 Hose Assembly.

e. Installation.

(1) Install hose assembly (4, Figure 4-10) by attaching coupling to dispensing unit fuel manifold at one end and the tank bottom loading valve port at the other end.

(2) Install hose assembly (5, Figure 4-11) at dispensing unit fuel manifold bottom loading valve port for fuel dispensing or stow for use later.

4-12. Dispensing Nozzle Maintenance.

This task consists of: a. Removal b. Disassembly c. Repair
d. Assembly e. Installation

INITIAL SET-UP

Tools Required

General Mechanics Tool Kit (Appendix B, Section III, Item 2)
Pipe Wrench (Appendix B, Section III, Item 4)

Materials/Parts Required

Dry Cleaning Solvent (Appendix E, Section II, Item 1)
Silicone Compound (Appendix E, Section II, Item 6)
Sealing Compound (Appendix E, Section II, Item 7)
Rags, Wiping (Appendix E, Section II, Item 3)
Suitable container
O-Ring Packing (1each) (Appendix F, Figure F-11, Item 2)
Gasket (1each) (Appendix F, Fgiure F-11, Item 3)

Equipment Condition

None

General Safety Instructions

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 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 purpose should not exceed 30 PSI.

WARNING

Silicone compound is toxic to the skin, eyes and respiratory tract.

a. Removal.

(1) Position a suitable container beneath nozzle, remove cap (18) and operate nozzle lever (20) to drain any remaining fuel from nozzle. See Figure 4-13

(2) Pull out on cam lock arms (8) of coupling half (6) and disconnect nozzle from dispensing hose (not shown).

b. Disassembly.

(1) Unscrew spout (1) and remove O-ring packing (2), gasket (3), and strainer element (4) from body (5).

NOTE

Further disassembly should only be performed to the extent required for parts replacement.

(2) Unscrew and remove coupling half (6). If gasket (7) is damaged, remove gasket from coupling half and replace.

(1) Unscrew contact (9) from body (5) and remove static discharger. Hold nut (10) and unscrew plug (11) from nut. Pull nut (10) from cable (12) only if it requires replacement.

(4) To remove chain (15) and/or spring (16), spread open s-hooks (17) and disconnect chain (15) and spring (16).

(5) Spread open the other end of s-hooks (17) to remove them from body (5) and cap (18).

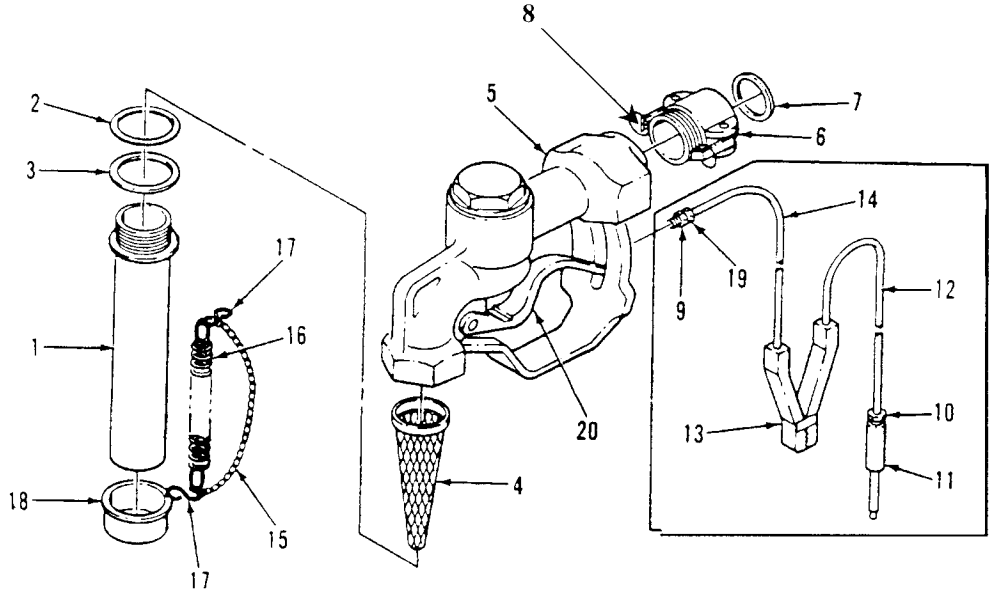


Figure 4-13 Nozzle Assembly.

c. Repair.

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 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.

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

(2) Inspect nozzle body (5) and spout (1) for damage. Check free operation of lever (20). See Figure 4-13.

(3) Inspect coupling half (6) for any damage. Check the gasket (7) and replace if damaged.

(4) Check grounding wires (12 and 14) for breaks, fraying and broken or missing covering. Make sure clip (13) jaws close firmly and inspect plug (11) and nut (10) for any damage. If clip (13) or wire (12) are defective, replace complete static discharger assembly.

NOTE

Do not shorten grounding wire to less than 18 inches between contact and clip.

(5) If grounding wire (14) is broken or frayed at the contact (9), it may be repaired. Hold nut (19) and unscrew contact (9). Pull nut from wire (14) and cut off the frayed portion of the wire. Trim plastic cover from the end of the wire and slide nut (19) over the end (14), allowing approximately 1/4 inch of wire to extend through nut. Use a punch, or similar tool, to spread the end of wire1/4 inch of wire to extend through nut. Use a punch, or similar tool, to spread the end of wire (14) slightly, then screw contact (9) onto nut (19).

(6) If nut (10) was removed, use the same procedure as above to install it on wire (12).

WARNING

Compressed air used for cleaning can create airborne particles that may enter the eyes. Pressure will not exceed 30 PSI. Eye protection required.

(7) Use low pressure compressed air to dry strainer element (4) and remove any trapped particles. Replace the strainer element if there is damage to the screen.

(8) Replace any other parts that are damaged. Use a new O-ring packing (2) and gasket (3) at assembly.

d. Assembly.

WARNING

Silicone compound, MIL-S-8660, is toxic to skin, eyes and respiratory tract.
Skin and eye protection required. Avoid repeated or prolonged contact.
Good ventilation is normally adequate.

(1) Apply silicone compound to O-ring packing (2) and install it on strainer element (4). See Figure 4-13.

(2) Install strainer element (4) and gasket (3) on spout (1) and screw spout into nozzle body (5), hand tight.

(3) Screw plug (11) onto nut (10) and install the static discharger assembly by screwing contact (9) into nozzle body (5).

(4) Connect chain (15) and spring (16) to s-hooks (17) and squeeze the s-hook closed. Connect the s-hooks to the body (5) and cap (18) and squeeze closed. Install the cap (18) on spout (1).

(5) Apply sealing compound to threads of coupling half (6) and screw coupling half into body (5). Install gasket (7).

e. Installation.

(1) Install nozzle assembly on dispensing hose by connecting hose to coupling half (6).

(2) Close cam lock arms (8) on coupling half (6).

4-13. Control Box Assembly.

This task consists of: a. Removal b. Disassembly c. Repair
d. Assembly e. Installation

INITIAL SET-UP

Tools Required
General Mechanics Tool Kit (Appendix B, Section III, Item 2)

Materials/Parts Required
Grease (Appendix E, Section II, Item 4)
Dry Cleaning Solvent (Appendix E, Section II, Item 1)
Rags, Wiping (Appendix E, Section II, Item 3)
Lock-washers (4each) (Appendix F, Figure F-7, Item 6)
Spring Pin (1each) (Appendix F Figure F-7, Item 10)

Equipment Condition
None

General Safety Instructions

WARNING

Do not smoke or have open flame within 50 feet of dispensing unit.

Dry cleaning solvent is potentially dangerous to personnel and property.

NOTE

Discard all mandatory replacement parts.

NOTE

In the following maintenance procedures two cables installed are depicted. You need only concern yourself with single cable installation. That cable is installed in No. 1 (inboard) position.

a. Control Box Assembly Levers Maintenance.

(1) Removal.

(a) Loosen nuts (1) to disconnect cables (2) from the adjusting bolt (3). See Figure 4-14.

(b) Remove the nuts (1) and withdraw cables (2) through bushing (4).

(c) Remove screw (5) and lock washers (6) to remove lever assembly (7) from Control Box Assembly.

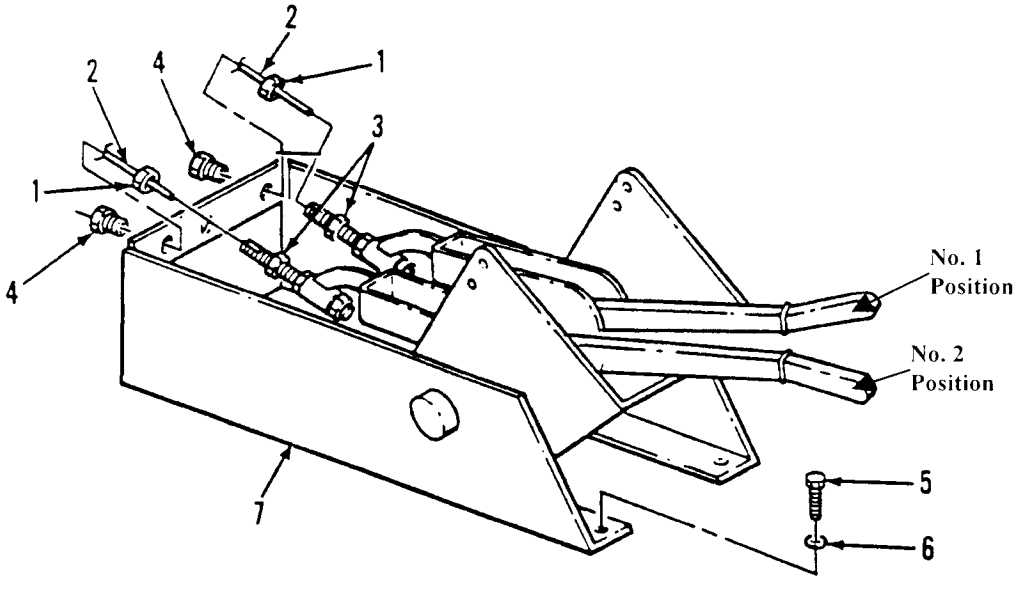


Figure 4-14 Control Box Assembly " Control Levers ".

(2) Disassembly.

(a) Remove spring pin (10) and shaft (11, Figure 4-15).

(b) Remove roll pins (8) and yokes (9).

(c) Remove spacer (12), control levers (13 and 14) and trip lever (15) from container (18).

(d) Remove fuse nuts (16), adjusting bolt (3) and nuts (17) from yokes (9).

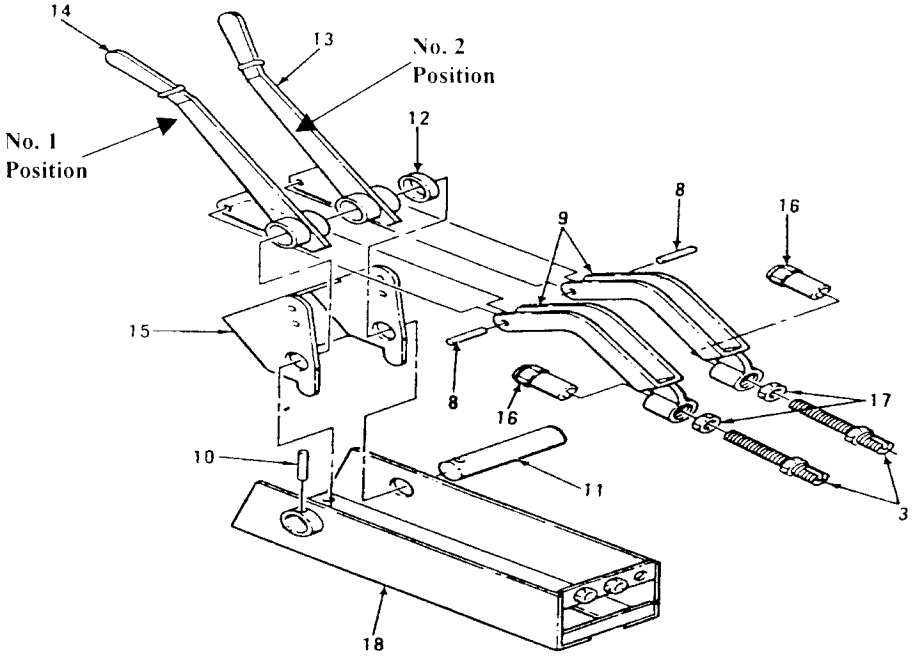


Figure 4-15 Control Levers Assembly.

(3) Repair.

WARNING

Dry cleaning solvent is used to clean parts and is potentially hazardous to personnel and property. Clean parts in a well ventilated area. Avoid inhalation of solvent fumes and prolonged exposure to skin. Wash exposed skin thoroughly. Do not use 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.

(a) Clean all parts with dry cleaning solvent and dry thoroughly.

(b) Inspect all parts for wear and damage. Check levers and yokes for cracks or breaks.

(c) Replace all worn or damaged parts.

(4) Assembly.

(a) Thread nuts (17) on adjusting bolts (3). Install fuse nuts (16) and adjusting bolts (3) in yokes (9). Attach yokes to control levers (13 and 14) with roll pins (8). See Figure 4-16.

(b) Install trip lever (15) in container (18) and insert shaft (11). Install spacer (12) and control levers (13 and 14) as shaft (11) is pushed into place. Make sure hole in shaft is aligned with hole in container boss.

(c) Install spring pin (10).

(5) Installation.

(a) Position lever assembly (7) on A-Frame, reference Figure 1-1, align holes and install screws (5) and lock washers (6). See Figure 4-16.

(b) Move levers (13 and 14) forward to OFF position.

(c) Insert cable (2) from tank valve through bushing (4) on right side and install nut (1) on cable. Pull cable taut and install in groove of adjusting bolt (3). Screw nut (1) onto adjusting bolt (3) tight enough that cable (2) does not slip. See figre 4-16.

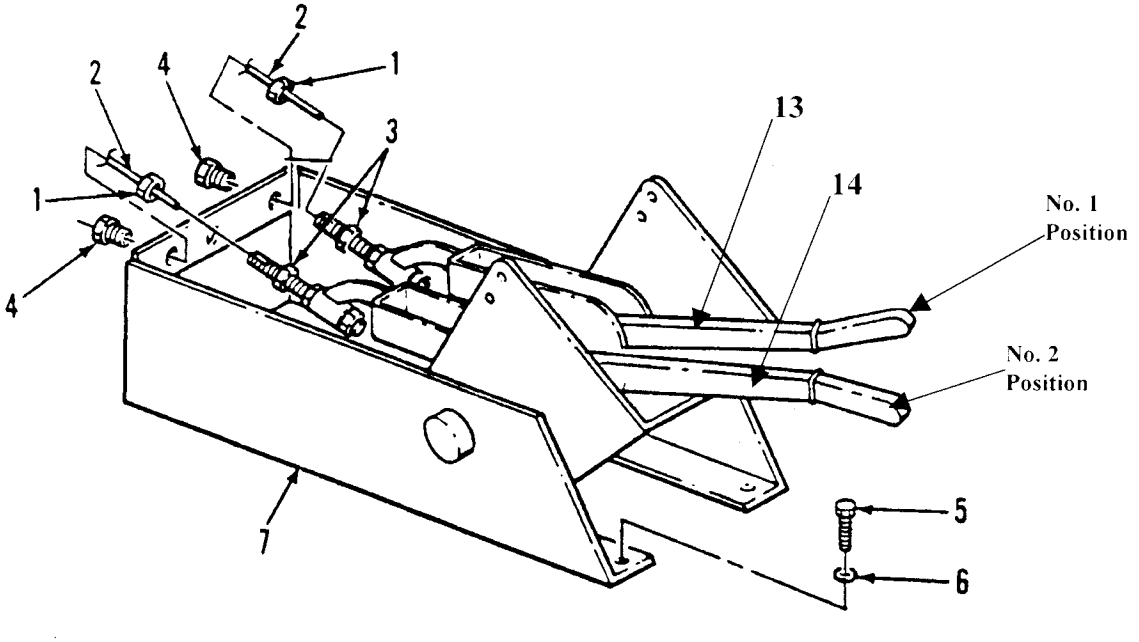


Figure 4-16 Control Box Assembly " Control Levers ".

b. Fuel Manifold Maintenance.

(1) Removal.

(a) Pull out on cam lock handles (3) on manifold (12). See Figure 4-17.

(b) Disconnect hoses (4 and 5).

(c) Remove nuts (7), lock washers (8), screw (9) and flat washer (10).

(d) Remove Fuel Manifold Assembly (12) from mount (6).

(2) Disassembly.

(a) Remove screw (13), service adapter (14) and O-ring packing (15).

(b) Remove cap (16) and lanyard (17).

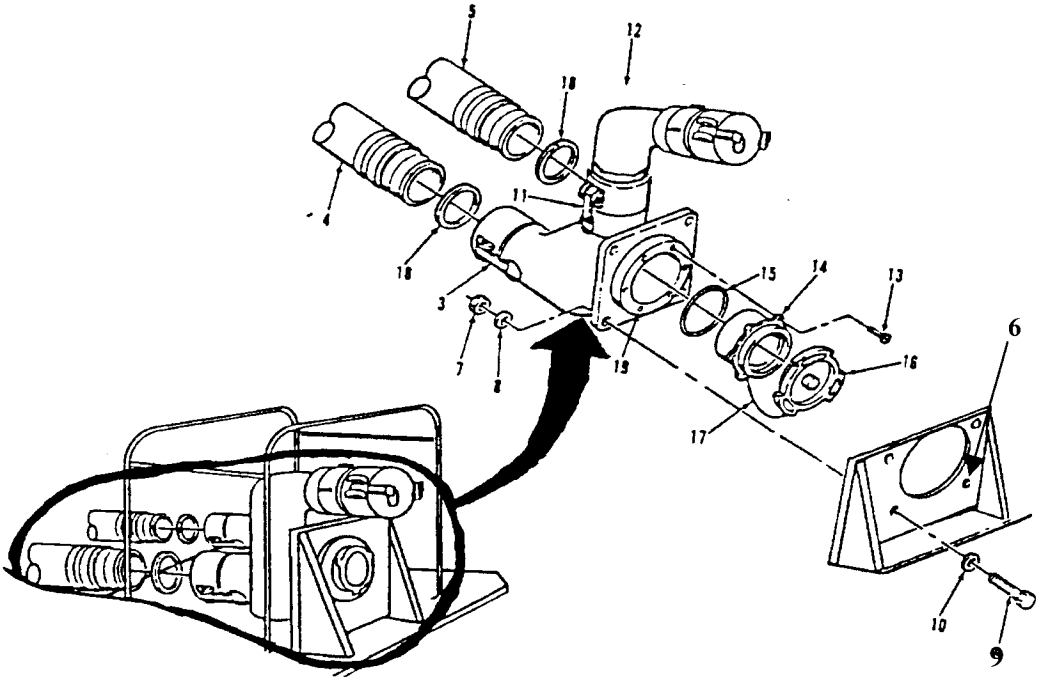


Figure 4-17 Fuel Manifold Assembly.

(3) Repair.

(a) Clean manifold and service adapter with dry cleaning solvent and dry thoroughly.

(b) Examine manifold for cracks or other damage. Check gasket (18) in coupling halves for damage. Replace as required.

(c) Inspect thread inserts (19). If they are damaged, extract them and install new inserts.

(d) Inspect service adapters for damage. Inspect fit of cap and check O-ring for damage. Replace as required.

(4) Assembly.

(a) Install O-ring packing (15) on service adapter (14) and insert into fuel manifold (6). Install screws (13). See Figure 4-17.

(b) Attach lanyard (17) with screw at lower left corner position, and install cap (16) on service adapter (14).

(5) Installation.

(a) Position fuel manifold (12) within control box assembly frame mount (6) and install flat washer (10), screw (9), lock washer (8) and nuts (7). Torque to 50-55 ft. lbs.

(b) Make sure gaskets (18) are in place. Guide tank hoses (4 and 5) into place onto fuel manifold. Close cam lock handles (3). See Figure 4-17.

c. Control Box Assembly Maintenance.

(1) Removal.

(a) Loosen nuts (1) to disconnect cables (2) from the adjustable bolt (3). See Figure 4-14.

(b) Remove the nuts (1) and withdraw cables (2) through bushing (4). See Figure 4-14.

(c) Pull out on cam lock handles (3) at Fuel manifold (12). See Figure 4-17.

(d) Disconnect hoses (4) and (5). See Figure 4-17.

(e) Ensure that the fuel dispensing hose and nozzle are not connected to the fuel manifold bottom loading port.

(f) Loosen nuts (10) in four places and remove washer (9) and Bolts (8). See Figure 4-18.

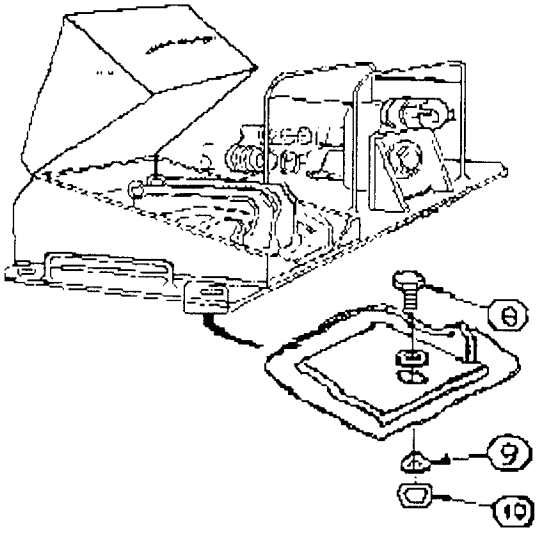


Figure 4-18 Control Box Assembly.

4-14. Dry Disconnect Coupling.

This task consists of : a. Disassembly b. Repair c. Assembly

INITIAL SET-UP

Tools Required

General Mechanics Tool Kit (Appendix B, Section III, Item 2)

Material/Parts Required

Dry Cleaning Solvent (Appendix E, Section II, Item 1)
Rags, Wiping (Appendix E, Section II, Item 3)
O-Ring Packing (1each) (Appendix F, Figure F-12, Item 4)

General Safety Instructions

WARNING

Parts under spring tension can cause injury.

Dry Cleaning solvent is potentially dangerous to personnel and property.

NOTE

The coupling is normally stowed in the accessory storage box.

a. Disassembly.

(1) Remove drive pin (1) and lever (2). See Figure 4-19.

(2) Remove stuffing box (3), packing (4), packing (5), and stem (6).

b. Repair.

WARNING

Dry cleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do Not use near open flame or excessive heat. Flash point of solvent Is 100 degrees F - 138 degrees F (38 degrees C - 59 degrees C).

(1) Clean all metal surfaces with dry cleaning solvent and dry thoroughly.

(2) Inspect all parts for damage or wear, and replace parts as required. Discard all mandatory replacement parts.

c. Assembly.

(1) Install stem (6). Place packings (4 and 5) on stuffing box (3) and install box on stem. Tighten stuffing box.

(2) Position handle end of lever (2) toward dust plug end of body and install lever on stem (6).

(3) Install drive pin (1).

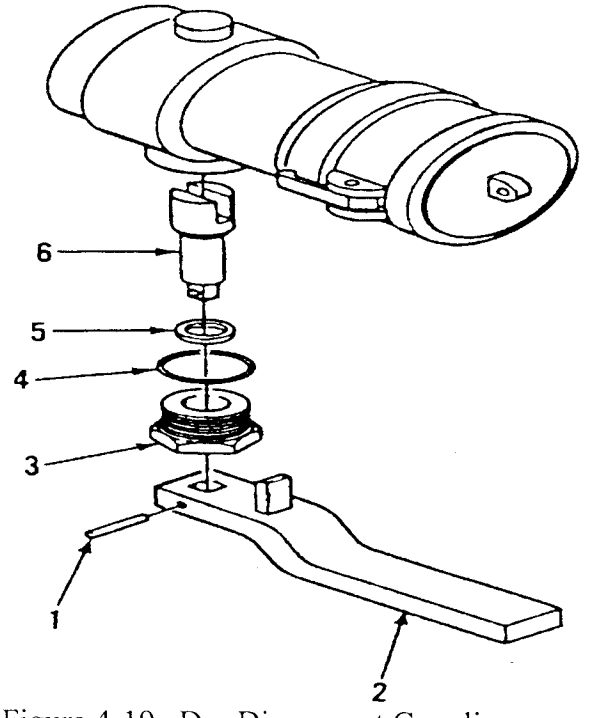


Figure 4-19 Dry Disconnect Coupling

4-15. Storage Box Maintenance.

This task consists of: a. Inspection b. Repair

INITIAL SET-UP

Tools Required

General Mechanics Tool Kit (Appendix B, Section III, Item 2)

Materials/Parts Required

Dry Cleaning Solvent (Appendix E, Section II, Item 1)
Adhesive (Appendix E, Section II, Item 8)
Rags, Wiping (Appendix E, Section II, Item 3)
Gasket Material (Appendix G)

WARNING

Adhesive, General Purpose, MMM-A-23053/5 is toxic to skin, eyes and respiratory tract. Skin and eye protection required. Good ventilation is normally adequate.

a. Inspection.

(1) Inspect the exterior of storage box (1, Figure 4-20) for dents or scratches.

(2) Open storage box door and check for torn or missing gaskets.

b. Repair.

(1) Knock out any minor dents.

(2) Cut gaskets from bulk material. Clean surface of box with dry cleaning solvent. Apply adhesive to rubber gasket and attach to box.

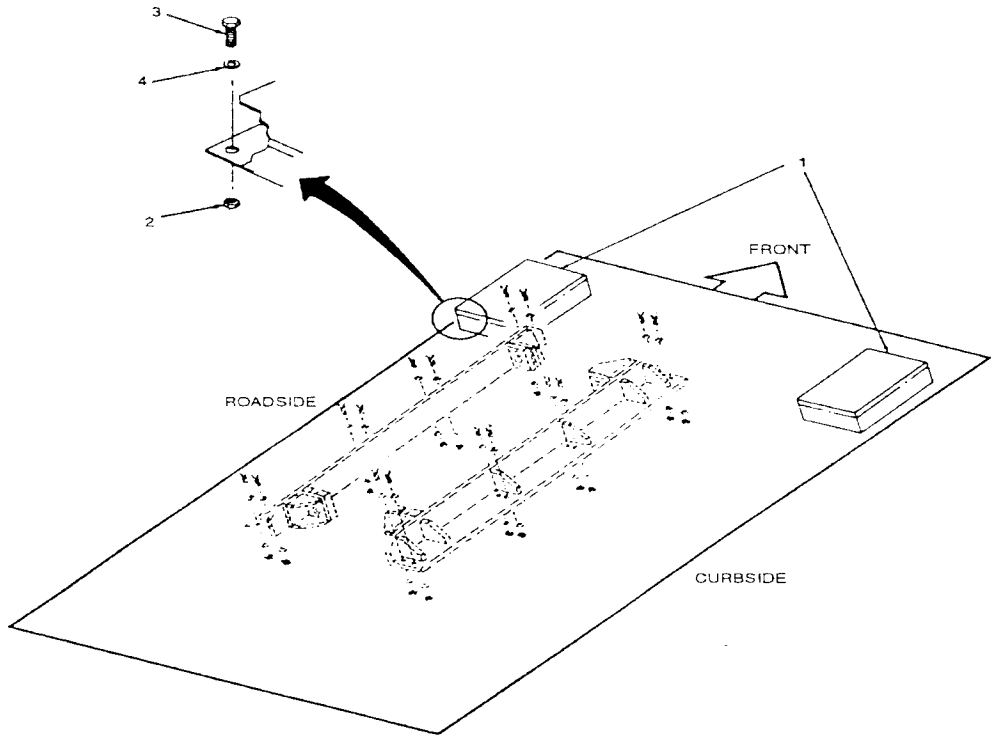
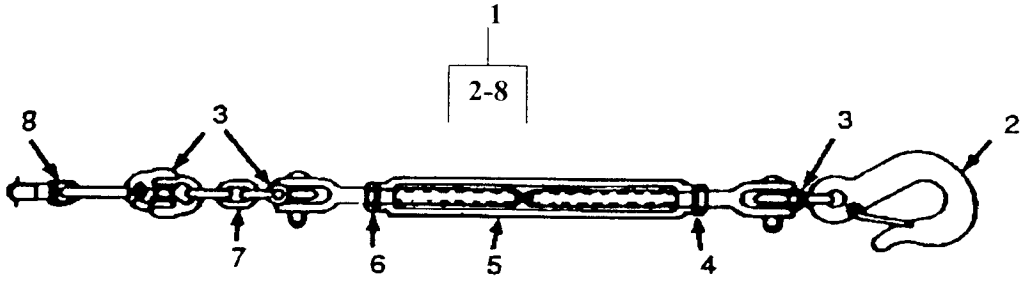


Figure 4-20 Storage Box Assembly.

4-16 Tie Down Assembly Maintenance.

This task consists of: a. Repair

a. Repair. This task authorizes repair by replacement of parts found worn or damaged.



Legend Figure 4-21

1. Tiedown Assembly
2. Hook, Safety
3. Link, Chain
4. Nut, Plain
5. Turnbuckle
6. Nut, Plain
7. Tiedown, Chain
8. Bolt, Ring

Figure 4-21 Tiedown Assembly.

Section VI. PREPARATION FOR MOVEMENT OR STORAGE

4-17 Dismantling for Movement.

a. Short Distance Movement.

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

(2) Unit without trailer. Move the tank unit to the new worksite with a forklift or vehicle. Provide suitable blocking and tie-downs 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 tie-downs to prevent the unit from shifting during transport.

4-18 Reinstallation After Movement. Reinstall the tank after movement to a new work site as instructed in paragraph 4-10.

4-19 Short Term Storage.

a. Drain fuel from tank, lines and manifold.

b. Store loose components and equipment in storage boxes.

c. Secure grounding rod and dipstick with straps provided.

4-20 Intermediate Storage. Refer to the following documents for information relative to storing the tank and other equipment.

a. TM 38-230-1 Preservation and Packing of Military Equipment.

b. AR 750-1 Army Material Maintenance Policy and Retail Maintenance Operations.

4-21 Administrative Storage. Administrative storage is discussed in paragraph 1-6.

4-22 Other Maintenance Procedures. Other maintenance procedures not covered in this technical manual for related equipment can be found in TM 10-4930-236-13&P.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals, and miscellaneous publications referenced in this manual either by Title, Number, or Subject.

A-2. FORMS

Recommended Changes to Publications and Blank Forms ..... DA Form 2028

Equipment Inspection and Maintenance Worksheet ..... DA Form 2404

Quality Deficiency Report ..... SF 368

Report of Discrepancy (ROD) ..... SF 364

A-3. FIRST AID

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

A-4. PAINTING

Treatment and Painting of Material MIL-STD-704R

Painting Instructions for Army Material ..... TM 43-0139

A-5. MAINTENANCE

The Army Maintenance Management System (TAMMS-G) ..... DA PAM 738-750

Elimination of Combustibles From Interiors of Metal or Plastic ..... TB 750-1047
Gasoline and Diesel Fuel Tanks

Operator, Unit, Direct Support and General Support Maintenance ..... TM 9-2330-376-14&P
Manual (including RPSTL) for Trailer, flatbed, 5-ton, 4 wheel, M1061A1.

Operator's, Unit, and Direct Support Maintenance Manual and Repair Parts .... TM 10-4930-236-13&P
and Special Tools (RPSTL) List for Tank and Pump Unit, Liquid Dispensing; For Truck Mounting
MIL Design Tank and Pump Unit, Electric Motor Driven Model (500 Gallon) Tank.

A-6. SHIPMENT and STORAGE

Preservation, Packaging, and Packing of Military Supplies and Equipment .... TM 38-230-1

Administrative Storage of Equipment ..... TM 740-90-1

Army Materiel Maintenance Policy and Retail Maintenance Operations ..... AR 750-1

A-7. DEMOLITION

Procedures for Destruction of Equipment to Prevent Enemy Use ..... TM 750-244-3

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) Section II designates overall authority and responsibility for the 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.

e. Section V contains standard torque requirements to be used when performing assigned maintenance functions unless otherwise specified.

B-2. MAINTENANCE FUNCTIONS Maintenance functions will be limited to and defined as follows:

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

b. Test. To verify serviceability by measuring the 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 (includes decontaminate), to preserve, to drain, to paint, to replenish fuel, lubricants, chemical fluids, and to lubricate.

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

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

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instrument 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. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install is the act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

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

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, re-machining, 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/action necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards in appropriate technical publications i.e., Depot Maintenance Work Requirements (DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

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

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

a. Column 1, Group Number. Column 1 lists functional group code 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 function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated maintenance category level. If the complexity of the maintenance tasks within the listed function varies at different maintenance categories, appropriate work time figures are 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, but is not limited to, preparation time (including any necessary disassembly/assembly time), troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

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

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

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

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

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

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

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

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

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

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

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

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

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINT. FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS & EQUIP.	(6) REMARKS
01	Trailer, 5 Ton M1061A1								E
02	Tank, 500 Gallon	Inspect	0.5						
		Replace		1.0				3	
		Repair							F
03	Hose Assemblies, Consists of Tank to Fuel Manifold and Dispensing	Inspect	0.1						
		Replace		0.3				3	B
0301	Lever, Controls	Inspect	0.1						
		Replace		0.5				3	A, C
		Repair		0.5				3	A, C, D
0302	Fuel Manifold	Inspect	0.1						
		Replace		0.5				3	A, C
		Repair		0.5				3	A, C, D
04	Nozzle Assembly	Inspect	0.1						
		Replace		0.2				3	A, C, D
		Repair		0.5				3	A, C, D
05	Control Box Assembly	Inspect	0.1						
06	Dry Disconnect Coupling Assembly	Inspect	0.1						
		Repair		1.0				3	D
07	Accessory Storage Box	Inspect	0.1						
		Replace		0.5				3	
		Repair		0.5				3	D

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

(1) Tool/Test Equip. Ref. Code	(2) Maintenance Category	(3) Nomenclature	(4) National/NATO Stock Number	(5) Tool Number
1	O	Shop Equipment, Automotive Maintenance and Repair: Common No. 1 Less Power	4910-00-754-0654	SC 4910-95-CL-A 74
3	0	Tool Kit, General Mechanics, Automotive	5lSO-OO-177-7033	SC 5180-90-CL-N 26
3	O	Wrench Torque: Deflecting Frame End DR Style Mech 1/2" Male Sq. Drive	5 120-00-247-2536	SC 49 IO-95-CL-A 74
4	O	Wrench Spanner: Adjustable Hook Type, Fixed Pivot Point 3/4" and 2" max circumference	5 120-00-288-6488	SC 49 10-95-CL-A 7-i

Section IV. REMARKS FOR MAINTENANCE ALLOCATION CHART

Reference Code	REMARKS
A	Replace Gaskets.
B	Replace Defective Hose Assembly.
C	Replace Seal Assembly.
D	Repair by Replacing Defective Components.
E	Refer to TM 9-2330-376-14&P for Complete Repair and Replacement.
F	Refer to TM I 0-4930-236-13&P for Complete Repair and Replace Components.

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	Dry	Lubricated or Plated	SAE GRADE 8 → Dry	Lubricated or Plated
	(IN LB)	(IN LB)	(IN LB)	(IN LB)
10-24	43-47	32-35	60-66	45-J')
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- I6	31-34	23-25	44-48	33-36
7.' I6-14	49-54	37-41	70-77	52-57
1 '2-13	75-83	57-63	106-I 17	80-88
9 16-12	109-120	82-90	153-168	115-127
5/8-1 I	150-165	113-124	212-233	159-175
3/4-10	266-293	200-220	376-J 14	282-3IO
7'8-9	394-433	296-326	606-667	455-501
1-8	59 I-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	X40-924	1817-1999	1360-1496
FINE THREADS				
	(IN LB)	(IN LB)	(IN LB)	(IN LB)
1 o-32	49-54	36-40	68-75	5 I-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	55-6 I	4 I-45	78-86	58-64
I '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	X3-245	420-462	315-347
7/8-14	434-477	326-359	668-735	50 I-550
1-12	646-7 I 1	485-534	995-1096	746-82 I
I 1/8-12	89 I-980	668-735	1445-1590	1083-I191
I I J-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 appcndis lists components of end item and basic issue items for the 500 Gallon Low Profile Tank Dispensing Unit. for Trailer Mounting to help you inventor? items required for safe and efficient operations.

C-2. General. The Components of End Item and Basic issue Items List arc divided into the following sections:

a. Section II Components of End Item. This listing is for intbrmational purposes only, and is not authority to requisition replacements. These items arc 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 identifing the items.

b. Section III Basic Issue Items. These are the minimum essential items required to place the Low Profile Tank Dispensin g Unit for Trailer Mounting in operation, to operate it. and to perform emergency repairs. Although shipped separately packaged. BII must be with the Dispensing Unit 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 (NSN). Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. Column (3) - Part Number (P/N). Indicates the Part number assigned to the item and will be used for requisitioning purposes.

cl. Column (4) - Commercial and Government Entity Code **(CAGE CODE).** Indicates the Commercial and Government Entity Code (CAGE CODE) assigned to the item.

e. Column (5) - Description. Indicates the Federal Item Name and. if required. a minimum description to identify and locate the item.

f. Column (6) - 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).

g. Column (7) - Quantity Required (Qty Rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

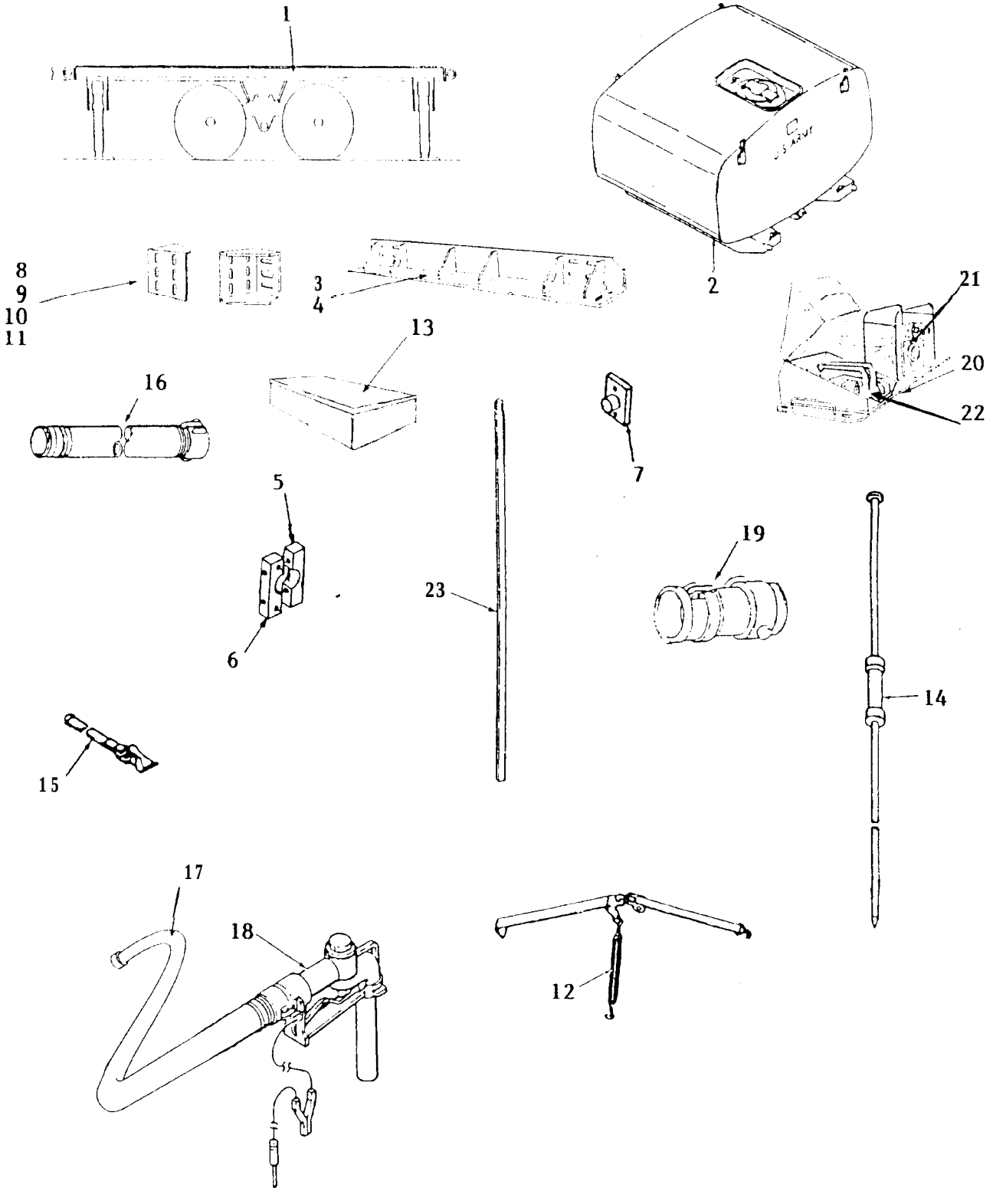


Figure C-l Components of' End Item.

Section II. COMPONENTS OF END ITEM

1 Illus/ Item No.	(2) NSN	(3) P/N	(4) Cage Code	(5) Description	(6) U/M	(7) Qty Rqr
1	2330-01-207-3533	M1061A1	97403	Trailer, 5 ton	EA	1
2	4930-01-256-0650	13226E2146	97403	Tank, Liquid Dispensing, 500 Gal	EA	1
3		13228E4264	97403	Angle, Tank Mounting, Curbside	EA	1
4		13228E4265	97403	Angle, Tank Mounting, Roadside	EA	1
5		13228E4268	97403	Adapter, Clamping, Outboard	EA	2
6		13228E4269	97403	Adapter, Clamping, Inboard	EA	2
7		13228E4272	97403	Adapter, Socket	EA	2
8		13228E4271	97403	Bracket, Angle, Socket End Crb.	EA	1
9		13228E4273	97403	Bracket, Angle, Socket End, Rd.	EA	1
10		13228E4555	97403	Bracket, Angle, Clamp End, Crb.	EA	1
11		13288E4526	97403	Bracket, Angle, Clamp End, Rd.	EA	1
12	4930-01-281-1748	13228E9880	97403	Hold Down Assembly, Tank	EA	1
13		13228E4528	97403	Box, Stowage, Accessory	EA	2
14	5975-01-050-5707	13219E0462	97403	Rod, Grounding	EA	1
15	5340-01-395-8001	13220E5288-1	97403	Strap, Ground Rod Hold Down	EA	2
16		M370B06B2A890	81349	Hose Assembly, Tank to Manifold	EA	1
17	4720-00-937-2822	M370B06B2A1440	81349	Hose, Discharge	EA	1
18	4930-01-352-1661	1290GE-0050	81718	Nozzle, Fuel Dispensing	EA	1
19	4730-01-192-1624	OPW-1711-D2	81718	Coupling Half, Quick Disconnect	EA	1
20		13228E4259	97403	Control Box Assembly	EA	1
21		13228E4261	97403	Manifold, Fuel	EA	1
22		13228E4262	97403	Cover, Levers	EA	1
23	5210-01-083-2926	13217E7144	97403	Gage Stick, Petroleum	EA	1

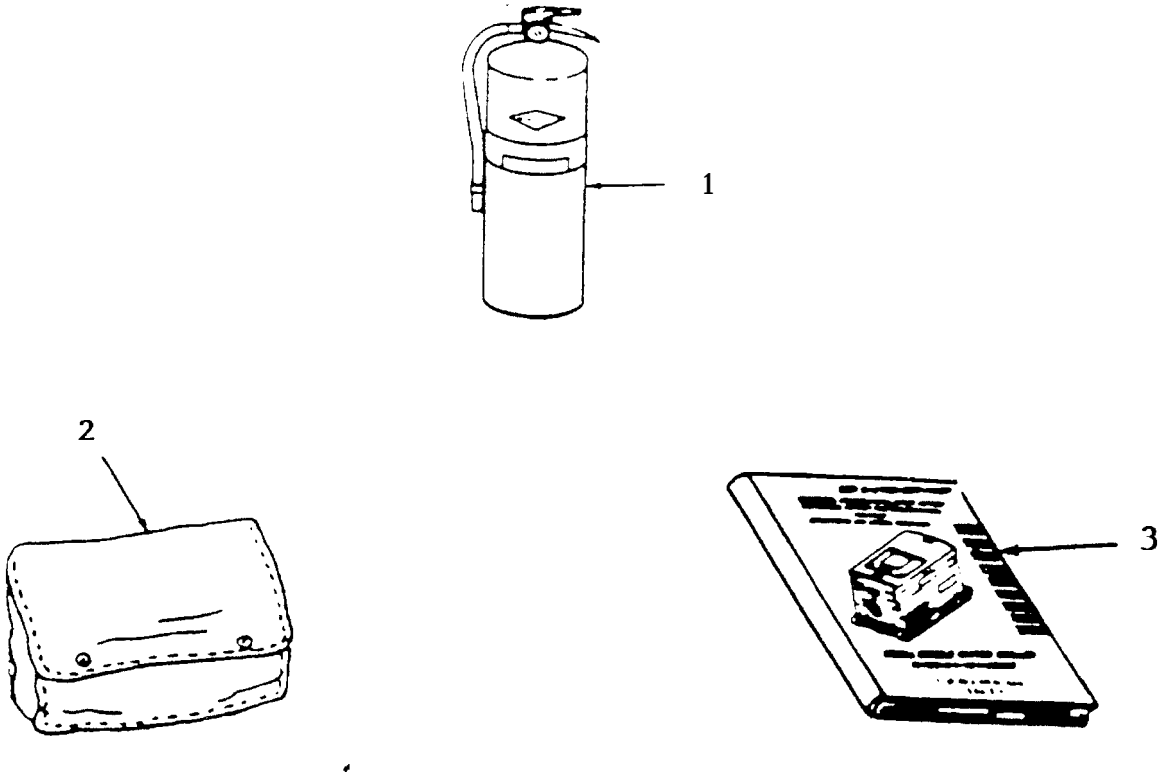


Figure C-2 Basic Issue Items.

Section III. BASIC ISSUE ITEMS LIST

(1) Illus/ Item No.	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) QTY RQR
1	4210-00-775-0127	Fire Extinguisher, Type 2. Class 2 W/Bracket (81348) O-E-9115	EA	1
2	X40-00-670-2459	Bag, pamphlet (56161) 10510977	EA	1
3	N/A	Technical Manual TM 9-2330-376-14&P	EA	1
3	N/A	Technical Manual TM 10-4930-220-13&P	EA	1
3	N/A	Technical Manual TM 10-4930-251-12&P	EA	

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-l. Scope. This appendix lists additional items authorized for the support of the Trailer Mount 500 gallon Tank Fuel Dispensing Unit.

C-2. **General.** This list identities items that do not have to accompany the Tank or Trailer and that do not have to be turned in with Tank or Trailer. These items are all authorized by CTA, MTOE, TDA, or JTA.

C-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).

Section II. ADDITIONAL AUTHORIZATION LIST

(1) Illus/ Item No.	(2) National Stock Number	(3) Description CAGE and Part Number	(4) Usable On Code	(5) U/M	(6) QTY RQR
1	5330-01-004-5180	Padlock, Key Operation	BXG	EA	1

APPENDIX E

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-l. Scope. This appendix lists expendable/durable supplies and materials needed to operate and maintain the Trailer Mounted Fuel Tank Dispensing Unit. 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. Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item.

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

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

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

e. Column (5) - Unit of Measure U/M. Indicates the measure used to performing the actual maintenance function. This measure is expressed by a two character alphabetical abbreviation (e.g.. EA. QT, LB, GAL). If the unit of measure differs from the unit of issue. requisition the lowest unit of issue that wilt satisfy requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIAL LIST

(1) Illus/ Item No.	(2) Maint. Level	(3) National Stock Number	(4) Description CAGE and Part Number	(5) U/M
1	O	6850-00-664-5685	Dry Cleaning solvent, ASTM D 235 Type I (81346)	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	9150-00-530-6814	Grease, Wire Rope, and Exposed Gear, (81349) MIL-G-18458	Can
5	O	8030-00-889-3535	Tape, Antiseizing 1/2" X 260 (18876) 11072502	RL
6	O	6850-00-880-7616	Silicone Compound (81349) MIL-S-8660	Tube
7	O	8030-00-543-4384	Sealing Compound (81349) MIL-S-7916	Can, Brush Top
8	O	8040-00-262-9011	Adhesive, Rubber Base, General Purpose (81348) MMM-A-1617, Type III	Can
9	O	6810-00-240-2116	Trisodium-Phosphate (81348) O-S-642	Drum

APPENDIX F

UNIT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

F-I. SCOPE.

This Repair Parts and Special Tools List (RPSTL) lists and authorizes spares and repair parts. and other special support equipment. if applicable, required for performance of the dispensing 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 the Introduction. this RPSTL is divided into the following sections:

a. ***Section II. Repair Parts List.*** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. This list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number scquencc. Sending units, brackets. filters, and bolts shall be listed with the component they mount on. Bulk materials are listed by item name sequence in FIG. BULK. Repair parts kits arc listed separately in their own functional group. Items listed are shown on the associated illustrations.

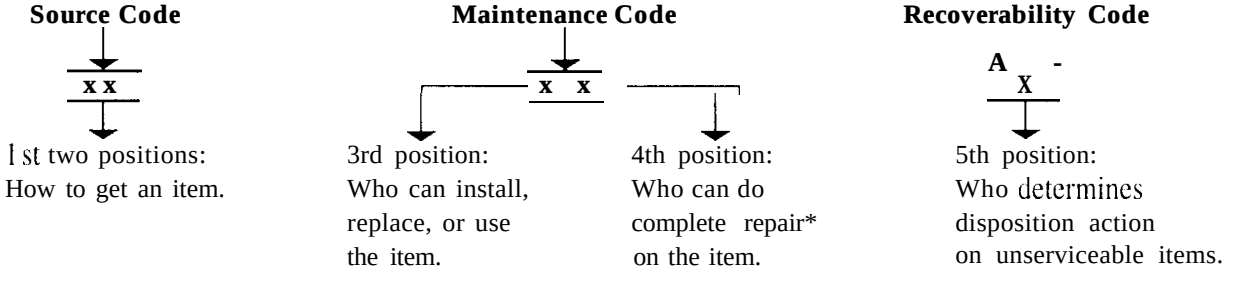
h. ***Section III. Special Tools List.*** A list of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) int'ormation in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.

c. ***Section IV Cross Reference Indexes.*** There are two cross-reference indexes in this RPSTL: The National Stock Number (NSN) Index and the Part Number (P/N) Index. The NSN Index refers you to the figure and item number. The P/N Index refers you to the figure and item number.

F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. ***Item*** No. (Column (I)]. Indicates the number used to identify items called out in the illustration.

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



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

3. EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST (Continued).

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

Source Code	Application/Explanation
PA PB PC PD PE PF PG	Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the cods entered in the 3rd position of the SMR code. NOTE Items coded PC arc subject to deterioration.
KD KF KB	Items with these codes are not to he requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO-Made at unit level MF-Made at DS level MH-Made at GS level ML-Made at SRA MD-Made at depot	Items with these codes are not to he requisitioned/requested individually. They must he made from hulk material which is identified by the P/N in the DESCRIPTION AND UOC column and listed in Bulk material group of the RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, hut the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO-Assembled by unit/AVUM level AF-Assembled hy DS/AVIM level AH-Assembled by GS level AL-Assembled by SRA AD-Assembled by depot	Items with these codes are not to he requested/requisitioned individually. The parts that make up the assembled item must he requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position of the SMR code authorizes you to replace the item, hut the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an "XA" coded item. Order the next higher assembly (refer to NOTE below).
XB	If an item is not available from salvage, order it using the CAGE Code and P/N.
x c	Installation drawings, diagrams, instruction sheets, field services drawings; identified by manufacturer's P/N.
XD	Item is not stocked, Order an XD-coded item through normal supply channels using the CAGE Code and P/N given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes except for those items source coded "XA".

3. EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST (Continued).

d. Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(1) THIRD POSITION. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance:

Maintenance Code	Application/Explanation
C	Crew or operator maintenance done within unit maintenance.
O	Unit level maintenance can remove, replace, and use the item
F	Direct support maintenance can remove, replace, and use the item.
H	General support maintenance can remove, replace. and use the item.
L	Specialized repair activity can remove, replace, and use the item.

(2) FOURTH POSITION. The maintenance code entered in the fourth position tells you whether or not the item is to he repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

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

Maintenance Code	Application/Explanation
0	Unit is the lowest level that can do complete repair of the item.
F	Direct support 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.
Z	Nonreparable. No repair is authorized.
B	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may he reconditioned by adjusting, lubricating, etc.. at the user level.

3. EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST (Continued).

e. ***Recoverability*** Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
0	Reparable item. When uneconomically reparable. condemn and dispose of the item at the unit level.
F	Reparable item When uneconomically reparable, condemn and dispose of the item at the direct support level.
H	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
L	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

f. ***NSN [Column (3)].*** The NSN for the item is listed in this column.

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

h. ***Part Number [Column (5)].*** Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or ***range of*** items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different P/N from the number listed.

i. ***Description and Usable on Code (UOC) [Column (6)].*** This column includes the following information:

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

(2) P/Ns of hulk materials are referenced in this column in the line entry to he manufactured or fabricated.

(3) Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.

(4) The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list.

j. ***QTY [Column (7)].*** The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

4. EXPLANATION OF CROSS-REFERENCE INDEXES FORMAT AND COLUMNS.

a. National Stock Number (NSN) Index.

(1) STOCK NUMBER COLUMN. This column lists the NSN in National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN.

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

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

(2) FIG. COLUMN. This column lists the number of the figure where the item is identified/ located. The figures are in numerical order in the repair parts list and special tools list.

(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 (P/N) Index. P/Ns in this index arc listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter or digit of each group in order A through Z, followed hy 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, distrihuter or Government agency/activity that supplies the item.

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

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

(4) FIG. COLUMN. This column lists the number of the figure where the item is identified/ located in the repair parts list and special tools list.

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

5. SPECIAL INFORMATION.

a. *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 or none listed items arc applicable to all models.

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

c. *Index Numbers.* Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN I P/N index and the bulk material list in the repair parts list.

6. HOW TO LOCATE REPAIR PARTS.

a. When NSNs or P/Ns Arc NOT Known:

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

(2) Find the figure coveting the functional group or the subfunctional group to which the item belongs.

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

(4) Look in the repair parts list for the figure and itcm numbers. The NSNs and part numbers are on the same line as the associated item numbers.

b. When NSN Is ***Known:***

(1) If you have the NSN, look in the STOCK NUMBER column of the NSN index. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

(2) Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

c. When PIN Is Known:

(1) If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index. Identify the figure and item number.

(2) Look up the item on the figure in the applicable repair parts list. Verify that the item is the one you are looking for.

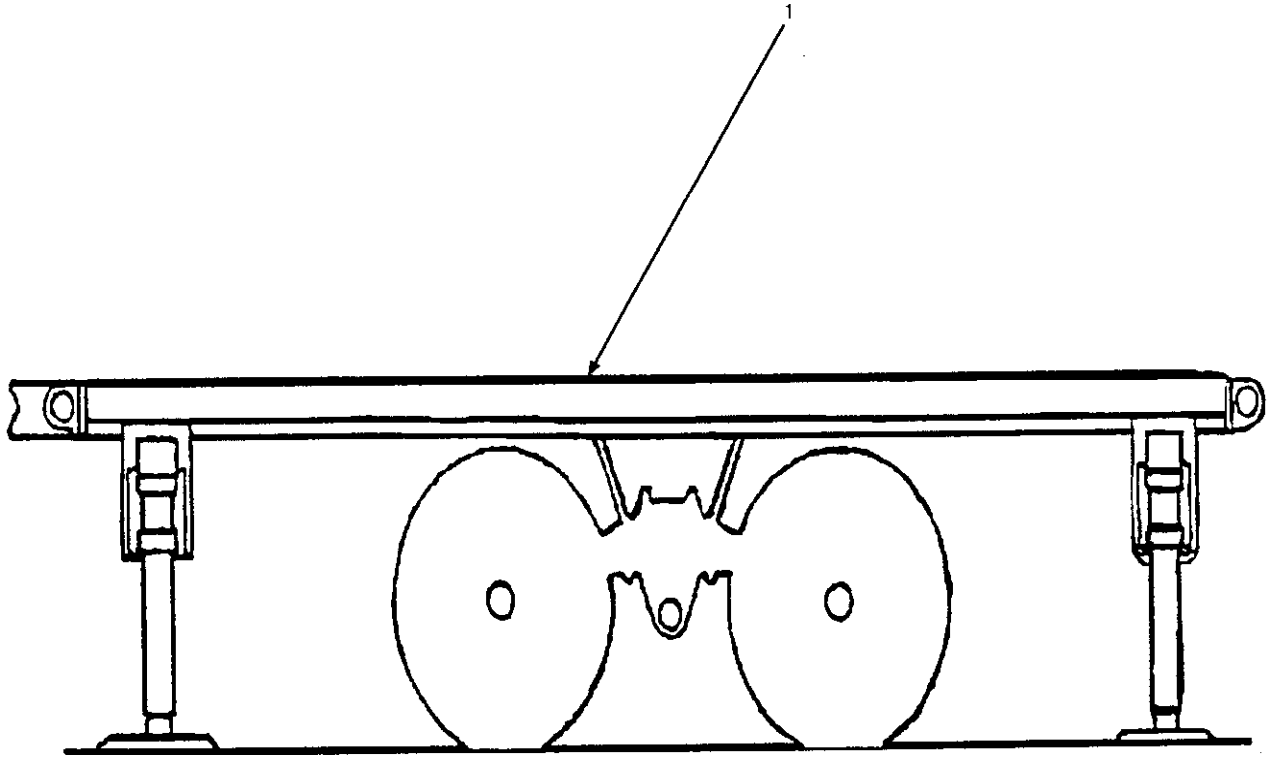


Figure 1. Trailer Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 01 TRAILER ASSEMBLY	
					FIG. 1 TRAILER ASSEMBLY	
1	PAFHH	2330012073533	19207	8750137	TRAILER,FLAT BED SEE TM 9-2330-376-14&P.....	1
					END OF FIGURE	

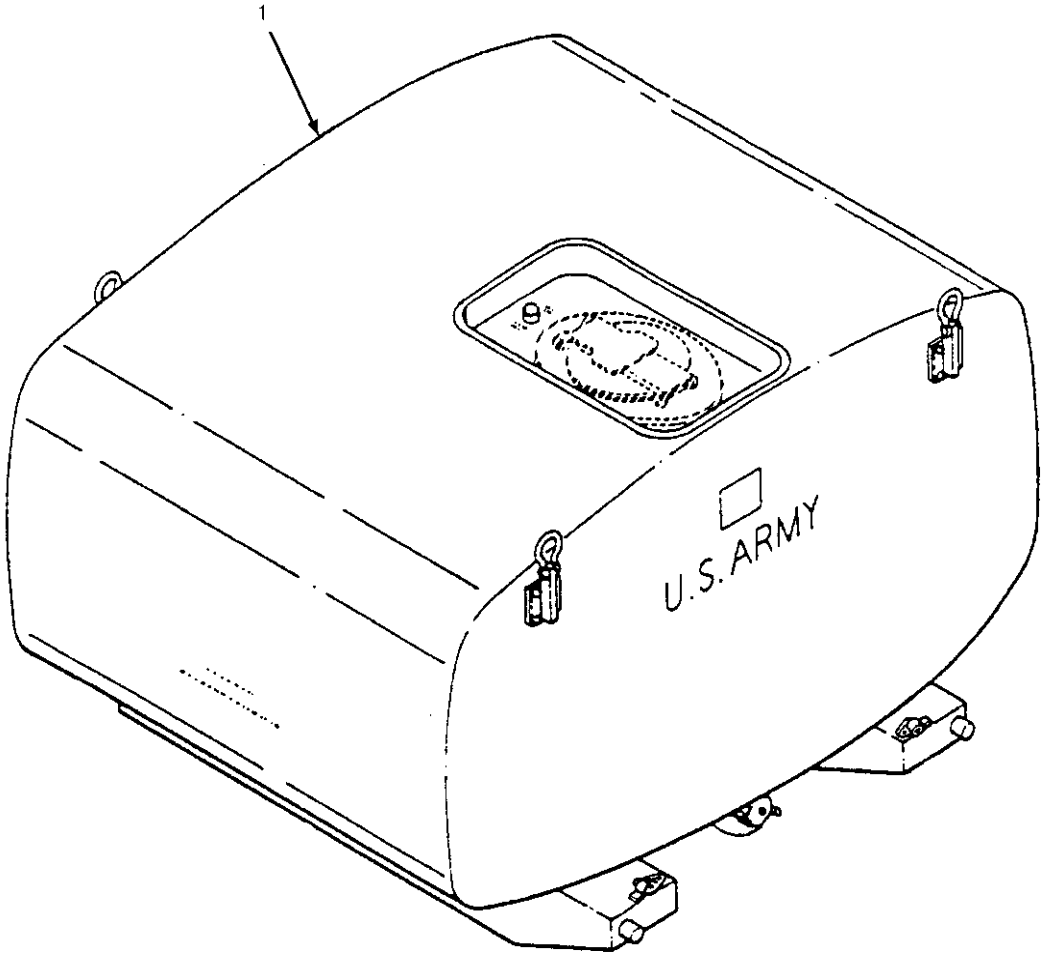


Figure 2. Tank Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 02 TANK ASSEMBLY	
					FIG. 2 **TANK ASSEMBLY**	
1	**PDOFH**	**5430012560650**	**97403**	**1322632146**	TANK,LIQUID **STORAGE SEE TM** 10-4930-236-13&P.....	1
					END OF FIGURE	

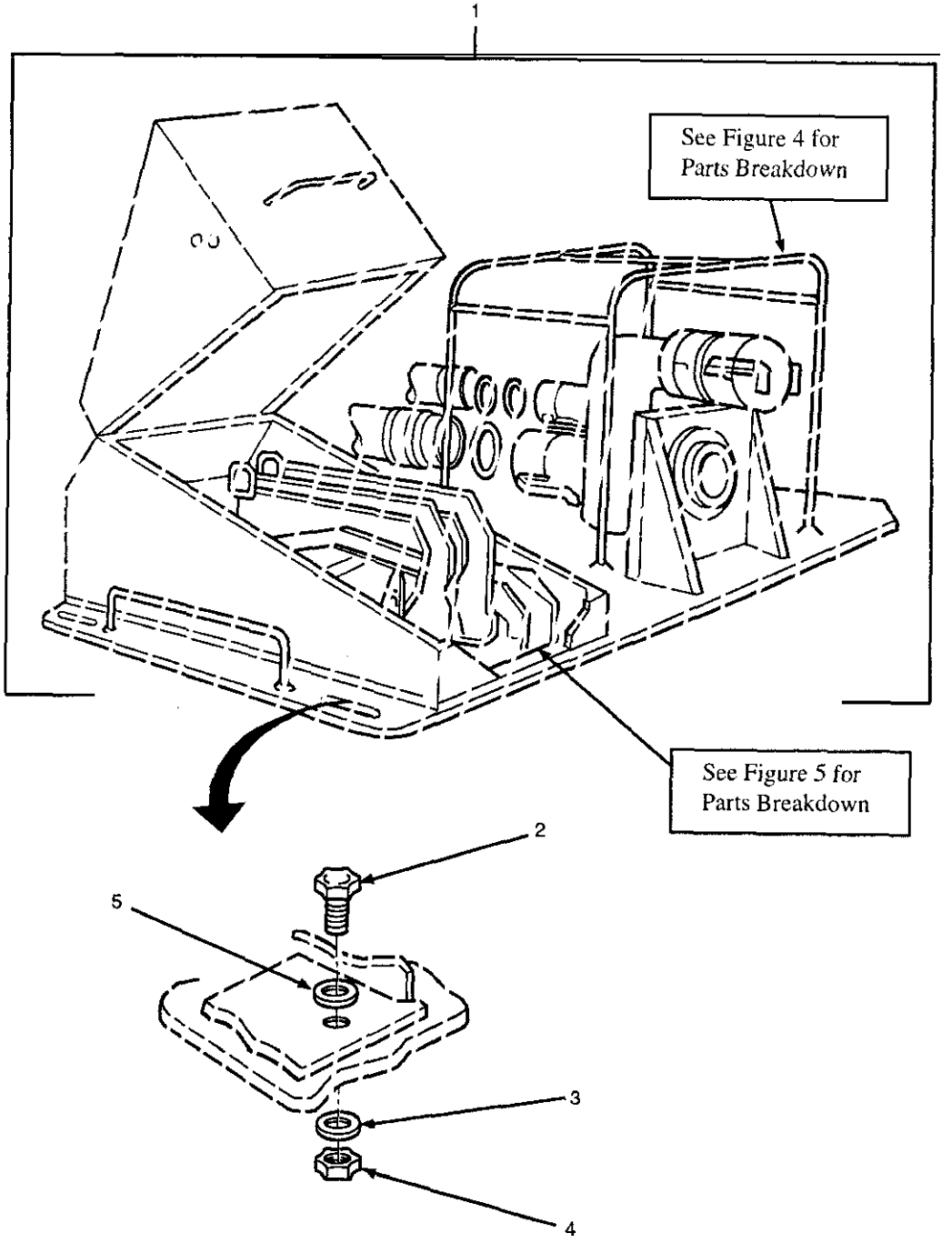


Figure 3. Control Box Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 03 CONTROL BOX ASSEMBLY	
					FIG. 3 CONTROL BOX ASSEMBLY	
1	ADO00		19207	12463701-l	CONTROL AND MANIFOL	1
2	PAOZZ	5305007195238	80204	B1821BH050F200N	SCREW,CAP,HEXAGON H.....	4
3	PAOZZ		97403	1322834559-l	WASHER,FLAT	4
4	PAOZZ	5310012317459	96906	MS51943-9	NUT,SELF-LOCKING,HE	4
5	PAOZZ	5310012664641	96906	MS51412-9	WASHER.FLAT	4
					END OF FIGURE	

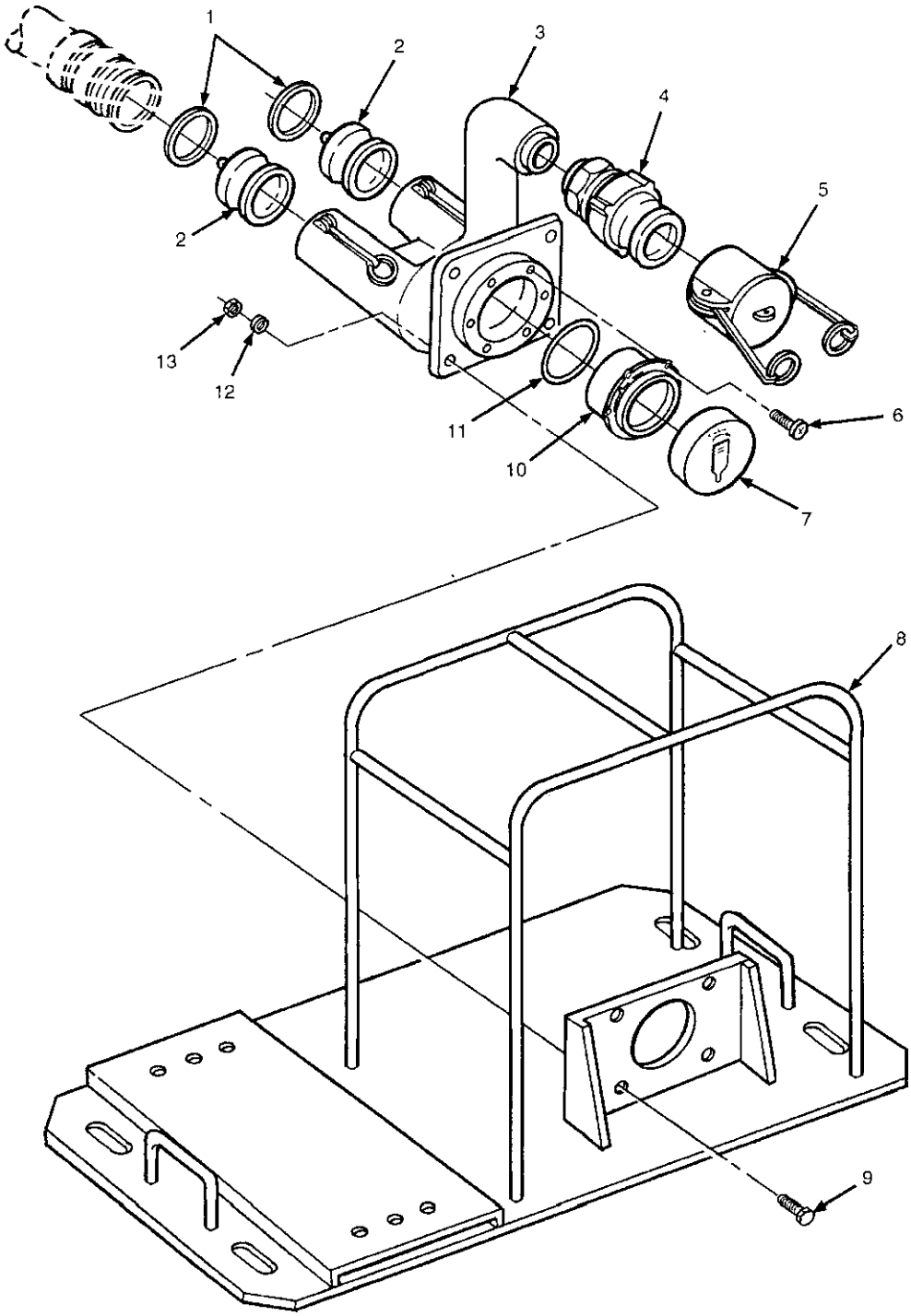


Figure 4. Fuel Manifold Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 03 CONTROL BOX ASSEMBLY	
					FIG. 4 FUEL MANIFOLD ASSEMBLY	
1	PAOZZ	5330006122414	96906	MS27030-6	.GASKET	2
2	PFOZZ	4730009155127	96906	MS27029-11	.PLUG,QUICK DISCONNE	2
3	XDOZZ		97403	1322834261	.MANIFOLD,BOTTOM	1
4	XDOZZ		97403	1322632178	.ADAPTER HALF,QUICK	1
5	PFOZZ	4730010197432	96906	MS27028-13	.CAP,QUICK DISCONNEC	1
6	PAOZZ	5305009594158	96906	MS24693-C273	.SCREW,MACHINE	6
7	PBOZZ	1560003072780	96906	MS29526-2	.CAP,FILLER OPENING.	1
8	XDOZZ		97403	1322834259	.PLATE,MOUNTING	1
9	PAOZZ	5305007276804	96906	MS35307-414	.SCREW,CAP,HEXAGON H	4
10	PFOZZ	1560009492087	96906	MS24484-5	.ADAPTER,PRESSURE FU	1
11	PAOZZ	5331008758288	96906	MS29513-153	.O-RING.	1
12	PAOZZ	5310005845272	96906	MS35338-48	.WASHER,LOCK	4
13	PAOZZ	5310007680321	96906	MS51971-5	.NUT,PLAIN,HEXAGON	4
					END OF FIGURE	

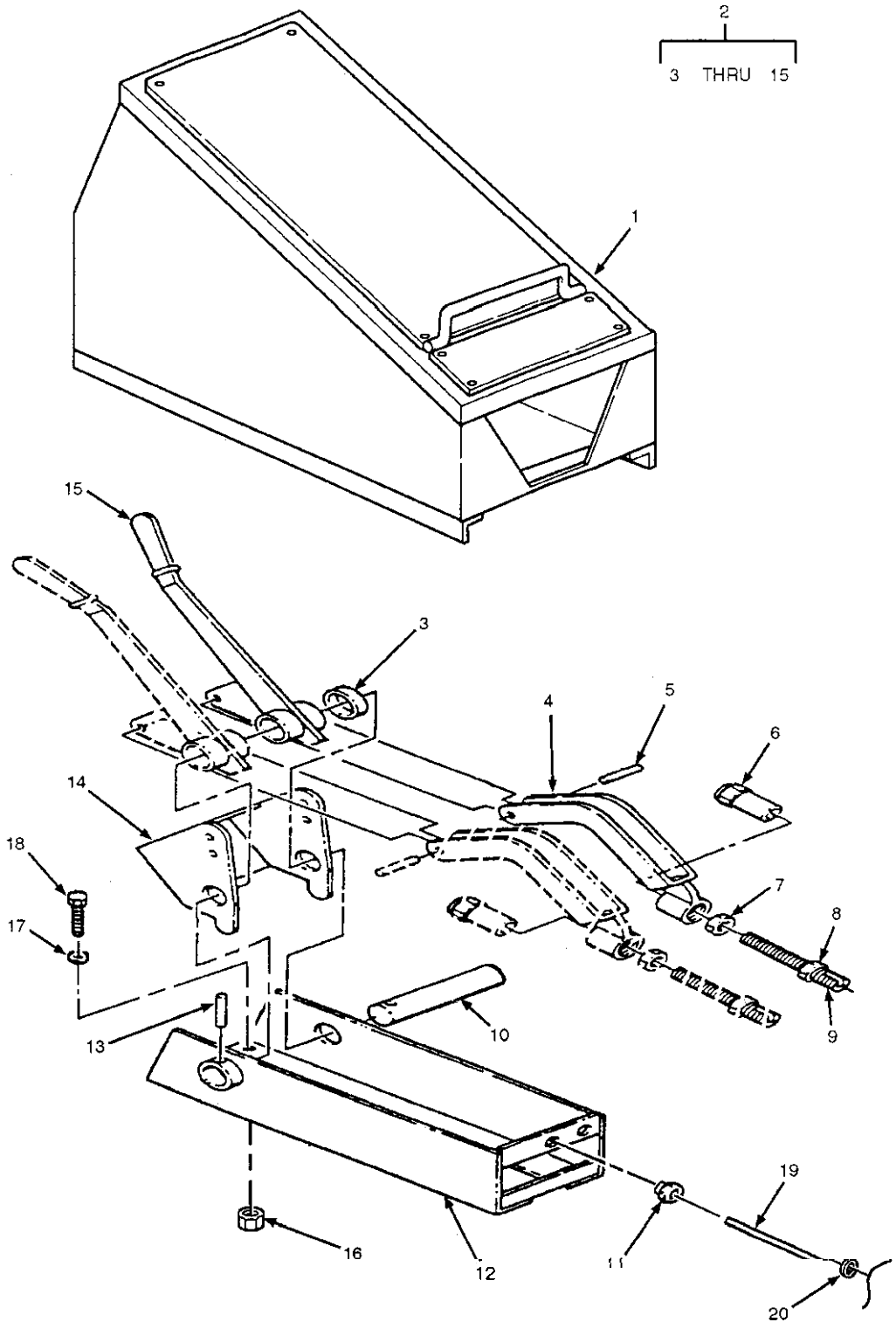


Figure 5. Control Lever Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 03 CONTROL BOX ASSEMBLY	
					FIG. 5 CONTROL LEVER ASSEMBLY	
1	XBOZZ		97403	1322834262	.COVER,PROTECTIVE	1
2	PBOOO		97403	1322739681-l	.LEVER	1
3	XBOZZ		09310	452712	.. SPACER	1
4	XBOZZ		09310	442898	.. YOKE,HANDLE	1
5	XBOZZ		09310	443802	.. PIN,ROLL	1
6	PFOZZ		09310	444707	..NUT,PLAIN,HEXAGON	1
7	XBOZZ		09310	443791	..NUT,ADJUSTING,HEXAG	1
8	XBOZZ		09310	443790	..NUT,PLAIN,HEXAGON	1
9	PFOZZ		09310	443789	BOLT,CABLE ADJUSTIN	1
10	PFOZZ		09310	444951	.. SHAFT,STRAIGHT	1
11	XBOZZ		09310	443824	.. BUSHING	1
12	XBOZZ		09310	444945	.. CONTAINER ASSEMBLY	1
13	PFOZZ		09310	407843	.. PIN	1
14	XBOZZ		09310	452690	.. LEVER,TRIP	1
15	XBOZZ		09310	442896	.. HANDLE	1
16	PAOZZ	5310009291807	96906	MS51922-2	.N"T,SELF-LOCKING,HE	4
17	PAOZZ	5310013529593	80205	NAS1149C0463R	.WASHER,FLAT	4
18	PAOZZ	5305007195007	96906	MS51959-83	.SCREW,MACHINE	4
19	PBOZZ		97403	1322834531-3	CABLE,BALL END	1
20	PAOZZ	5310008094058	96906	MS27183-10	WASHER,FLAT	1
					END OF FIGURE	

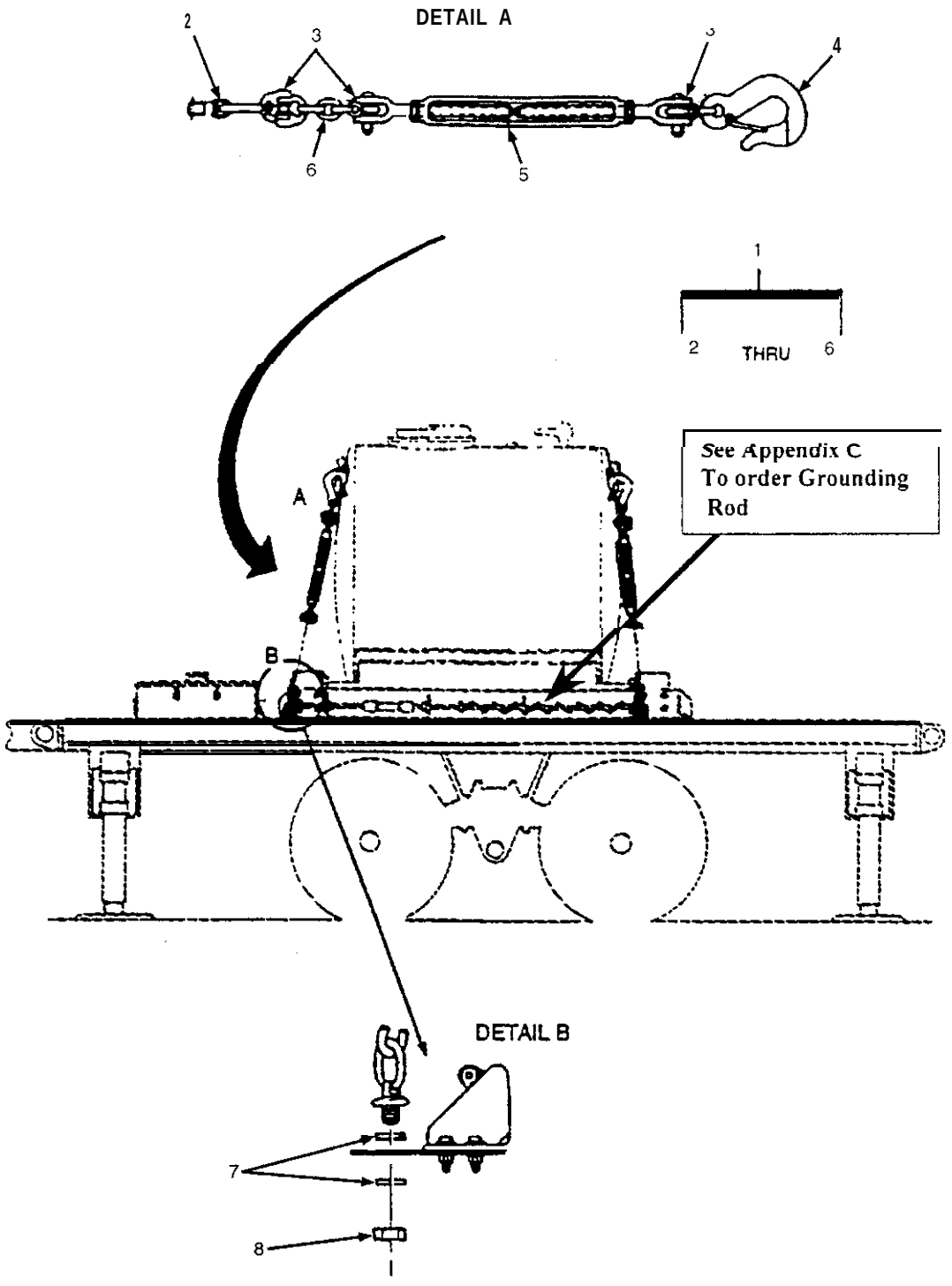


Figure 6. Hold Down Assembly (Sheet 1 of 2)

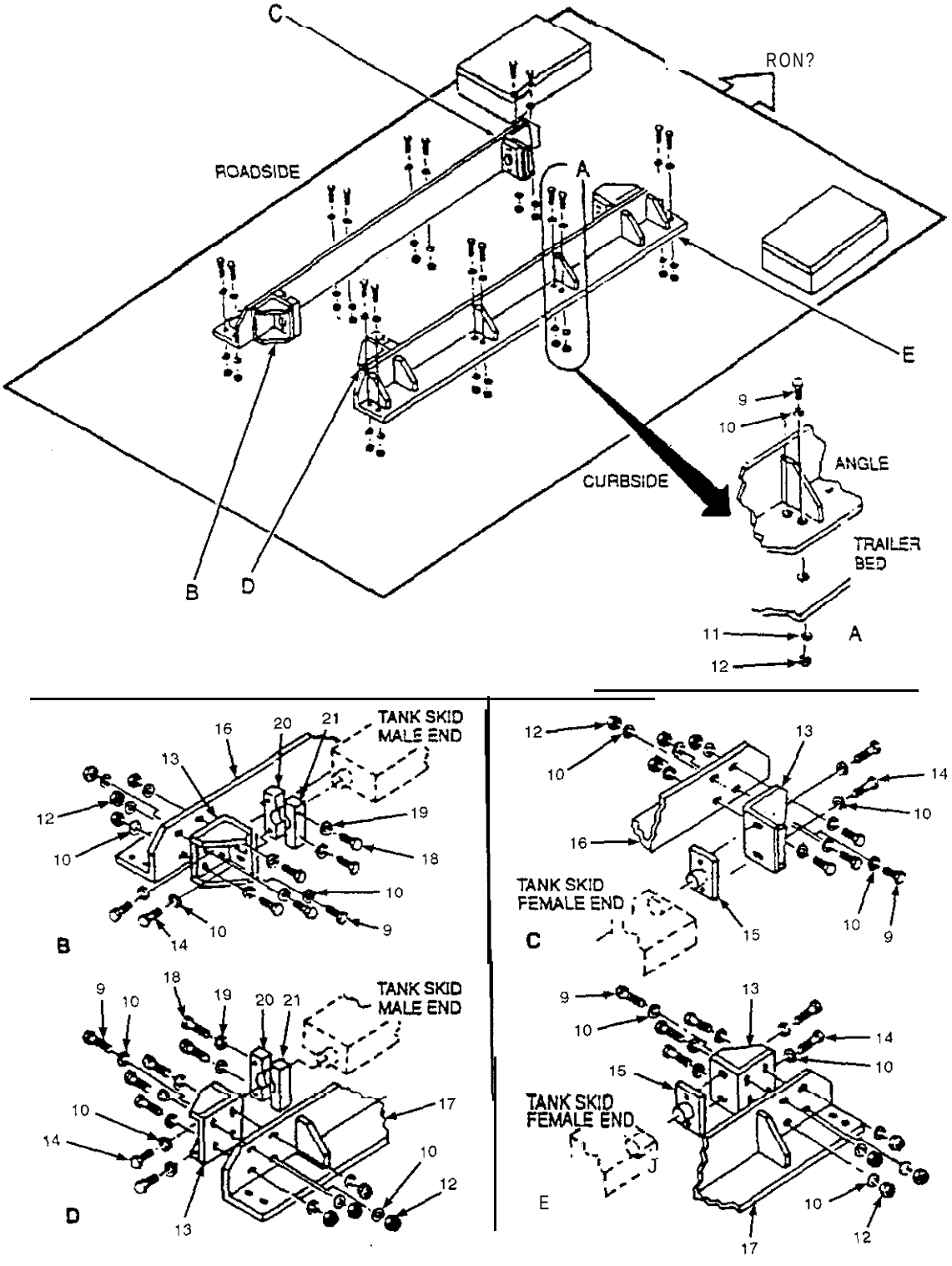


Figure 6. Hold Down Assembly (Sheet 2 of 2)

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 04 HOLD DOWN ASSEMBLY	
					FIG, 6 HOLD DOWN ASSEMBLY	
1	PDOOO		97403	1322834528	TIEDOWN,FUEL TANK	4
2	XDOZZ		97403	1322637730-6	.RING,LIFTING	1
3	PFOZZ	4010014467986	75535	lo-14592	.LINK,CHAIN,DETACHAB	3
4	XDOZZ		97403	13228E4529-2	.HOOK,SAFETY,EYE	1
5	XDOZZ		97403	13228E8308-13	.TURNBUCKLE,JAW AND	1
6	MOOZZ	4010002865645	81348	RRC271	.CHAIN,WELDED MAKE FROM CHAIN,P/N RRC271,2 LINKS LONG,.	1
7	PAOZZ	5310012751065	96906	MS51412-13	WASHER,FLAT	8
8	PAOZZ		96906	MS51943-16	NUT,SELF-LOCKING,HE	4
9	PAOZZ	5305000712071	80204	B1821BH050C200N	SCREW,CAP,HEXAGON H	32
10	PAOZZ		97403	1322834559-l	WASHER,FLAT	56
11	PAOZZ	5310012664641	96906	MS51412-9	WASHER,FLAT	56
12	PAOZZ	5310012317459	96906	MS51943-9	NUT,SELF-LOCKING,HE	32
13	XDOZZ		97403	1322936648	BRACKET,ANGLE	4
14	PAOZZ	5305000712068	80204	B1821BH050C138N	SCREW,CAP,HEXAGON H	8
15	WOZZ		97403	1322834272	ADAPTER,SOCKET,TANK	2
16	XDOZZ		97403	1322834265	ANGLE,TANK MOUNTING	1
17	XDOZZ		97403	1322834264	ANGLE,TANK MOUNTING	1
18	PAOZZ	5306002264835	80204	B1821BH031C250N	BOLT,MACHINE	4
19	PAOZZ	5310012590296	96906	MS51412-6	WASHER,FLAT	4
20	PDOZZ		97403	1322834269	ADAPTER,CLAMPING,IN	2
21	PDOZZ		97403	1322834268	ADAPTER,CLAMPING,OU	2
					END OF FIGURE	

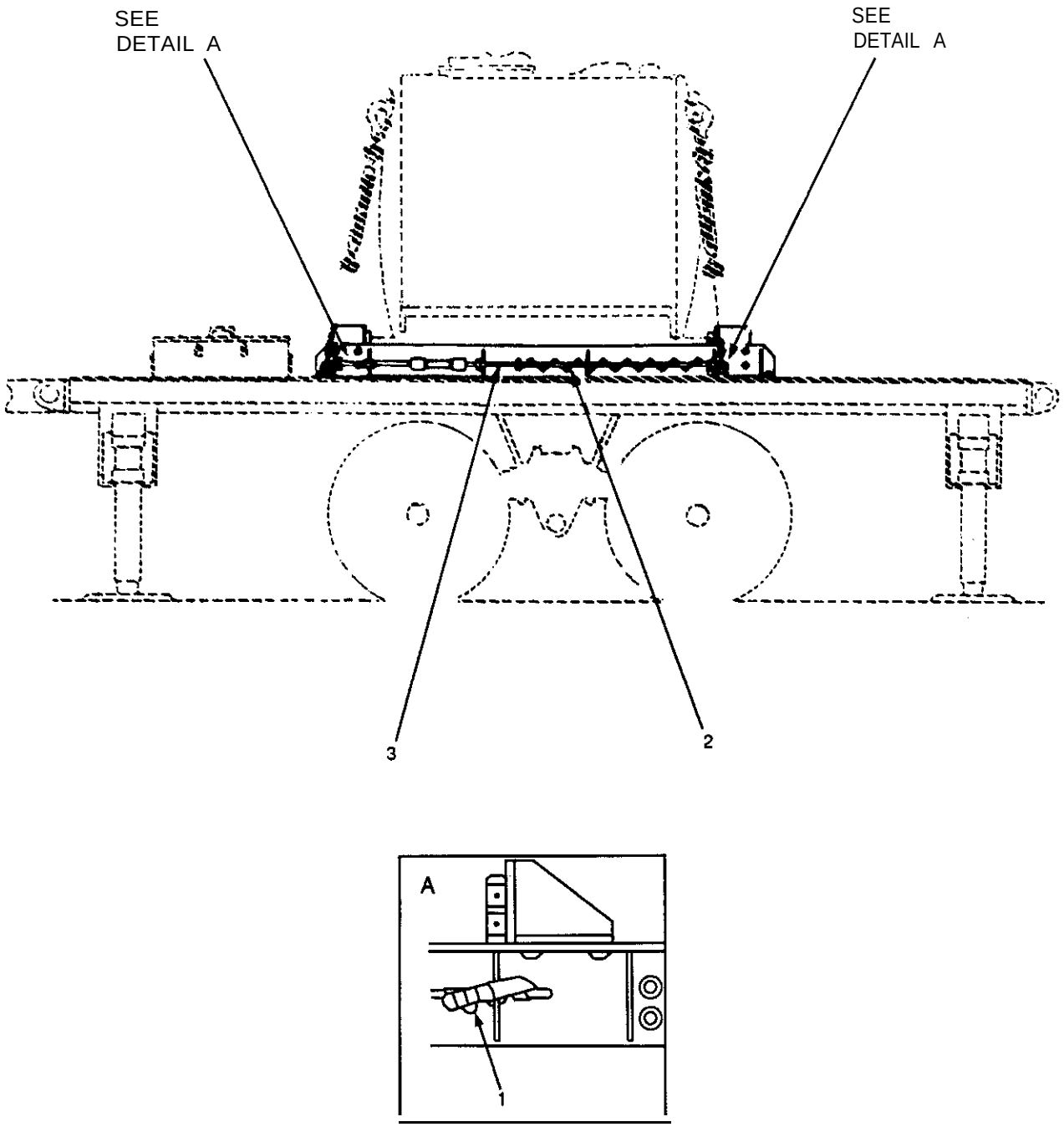


Figure 7. Ground Rod Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 04 HOLD DOWN ASSEMBLY	
					FIG. 7 GROUND ROD ASSEMBLY	
1	PAOZZ	5340013958001	97403	13220E5288-1	STRAP,WEBBING	2
2	PFOZZ	6150004833918	97403	13219E3930	C A B L E ASSEMBLY,POWE ..	1
3	PFOZZ	5975010505707	97403	1321930462	ROD,GROUND	1
					END OF FIGURE	

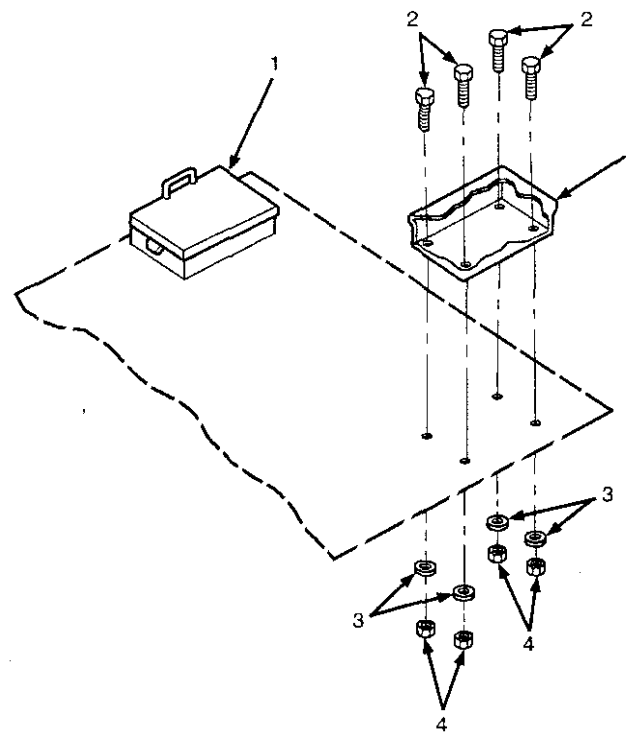


Figure 8 Accessory Stowage Box Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 05 ACCESSORY STOWAGE BOX ASSEMBLY	
					FIG, 8 ACCESSORY STOWAGE BOX ASSEMBLY	
1	XDOZZ		97403	1322834263	**BOX,STOWAGE,ACCESSO**	2
2	**PAOZZ**	**5305002253843**	**130204**	B1821BH025C100N	SCREW,CAP,HEXAGON **H**	8
3	**PAOZZ**	**5310008094058**	**96906**	MS27183-10	**WASHER,FLAT**	8
4	**PAOZZ**	**5310009291807**	**96906**	MS51922-2	NUT,SELF-LOCKING,HE	8
					END OF FIGURE:	

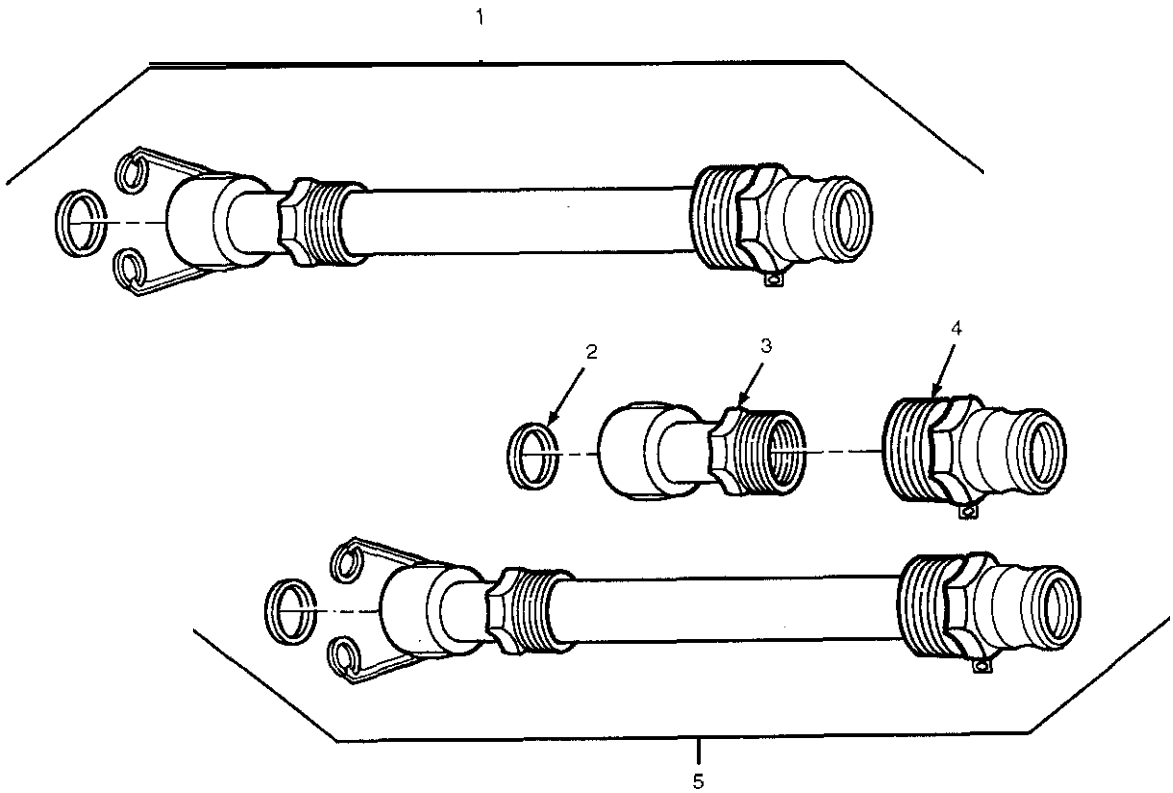


Figure 9. Hose Assemblies

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 06 HOSE ASSEMBLY FIG. 9 HOSE ASSEMBLIES	
1	PBOZZ	4720009372822	81349	M370B06B2A1440	HOSE ASSEMBLY,NONME	1
2	PAOZZ	5330006122414	96906	MS27030-6	GASKET	1
3	PAOZZ	4730011921624	96906	MS49002-9	COUPLING HALF,QUICK	1
4	PAOZZ		96906	MS49001-9	COUPLING HALF,QUICK	1
5	PBOZZ		81349	M370B06B2A0540	HOSE ASSEMBLY,NONME	1
					END OF FIGURE	

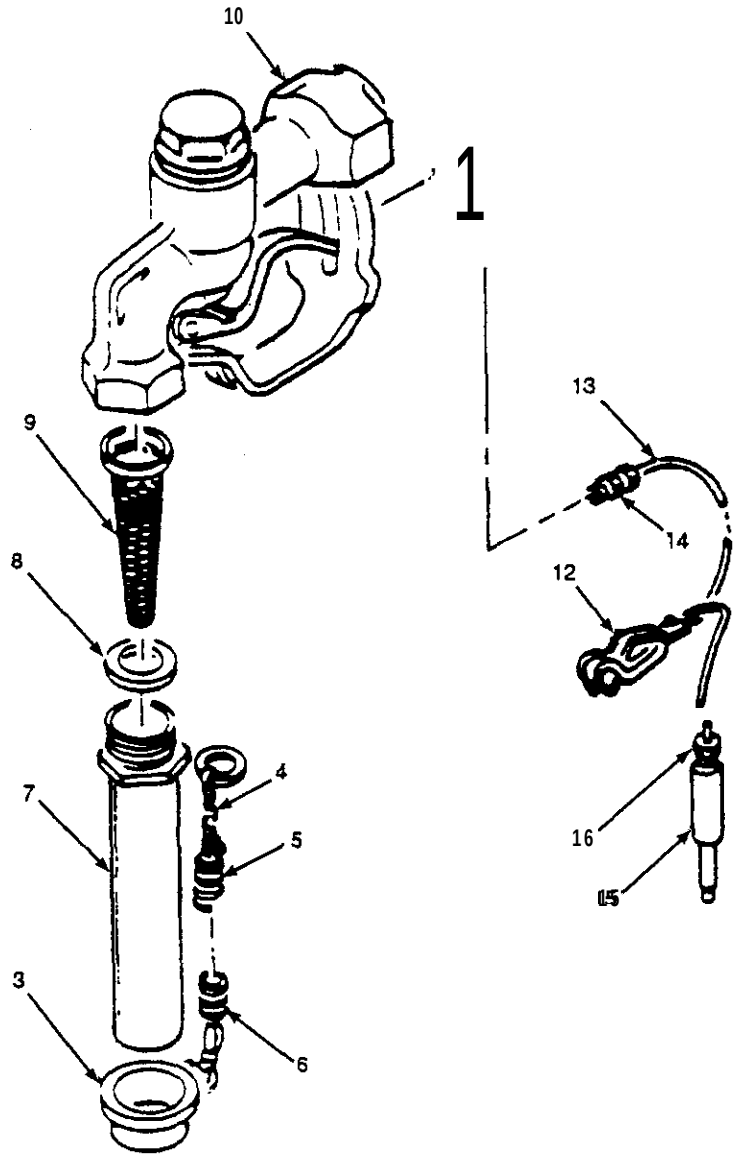


Figure 10. Fuel Dispensing Nozzle Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 06 HOSE ASSEMBLY	
					FIG. 10 FUEL DISPENSING NOZZLE ASSEMBLY	
1	PA000		58536	A-A-52030TYPE1,SIZE2	NOZZLE,FUEL AND OIL.....	1
2	PAOZZ	4930001190452	81718	296CA-4000	.CAP ASSEMBLY,DUST	1
3	XDOZZ		81718	H-3804-AG	.CAP,DUST PART OF 296CA-4000 . .	1
4	PFOZZ	4030008030272	81718	H3673M	.HOOK,CHAIN,S PART OF 296CA-4000	1
5	XAOZZ		81718	H-9209-M	.SPRING,COMPRESSION PART OF 296CA-4000	2
6	PFOZZ	4930001209602	81718	HD-9597-RB	.CHAIN,NOZZLE PART OF 296CA-4000	1
7	PBOZZ	4930004057544	81718	190GT-1 1/2	.SPOUT ASSEMBLY.....	1
8	PBOZZ	5331011030958	81718	H7670M	.O-RING.....	1
9	PBOZZ	4730009893260	81718	153-11/2X15/8	.STRAINER ELEMENT,SE	1
10	XAOZZ		81718	D546A	.BODY NOZZLE.....	1
11	PAOZZ		96906	MS25384-1	.DISCHARGER,ELECTROS	1
12	PFOZZ		81718	H5482M	.CLIP,ELECTRICAL PART OF MS25384-1	1
13	XAOZZ		81718	H5132RS	.CABLE PART OF MS25384-1	1
14	PAOZZ	5999012078412	96906	MS25384-3	.CONTACT,ELECTRICAL PART OF MS25384-1	1
15	PFOZZ	5935000079202	96906	MS3493-1	.PLUG,TIP PART OF MS25384-1	1
16	PFOZZ		96906	MS3493-2	.COMPRESSION NUT,ELE PART OF MS25384-1	2
					END OF FIGURE	

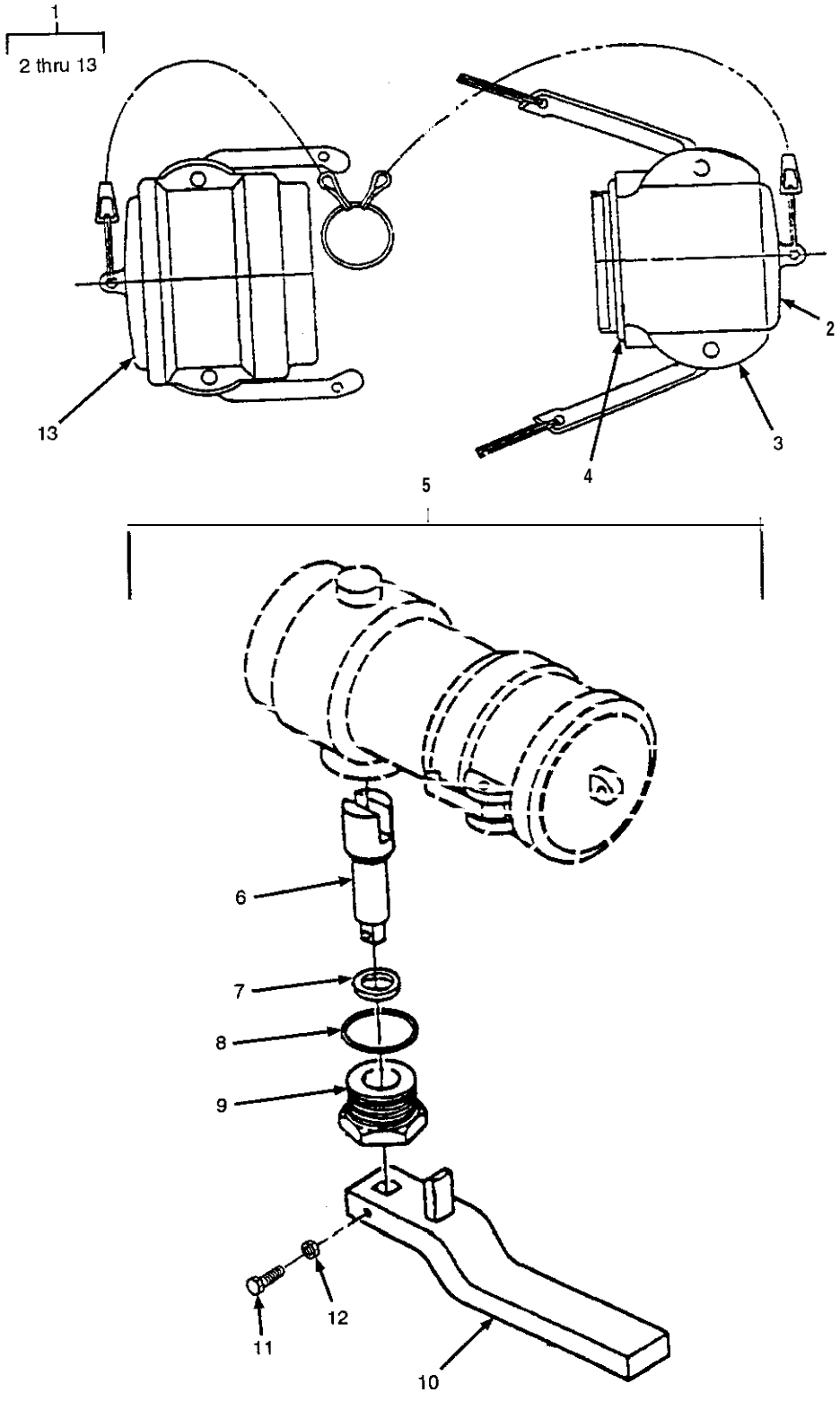


Figure 11. Dry Disconnect Coupling Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 07 DRY DISCONNECT COUPLING ASSEMBLY	
					FIG. 11 DRY DISCONNECT COUPLING ASSEMBLY	
1	XAOOO		97403	1322834534	**COUPLING ASSEMBLY**	1
2	PFOZZ	4730009155127	96906	MS27029-11	.PLUG,QUICK **DISCONNE**	1
3	PFOZZ	4730000889285	96906	MS27026-11	.COUPLING HALF,QUICK	1
4	PAOZZ	5330006122414	96906	MS27030-6	.GASKET	1
5	XDOZZ		97403	1322632177	.CO"PLING HALF,QUICK	1
6	XDOZZ		81718	C-3140-RE	.STEM **PART OF 1322632177**	1
7	PBOZZ	5331013596707	81718	H-6281-M	.O-RING **PART OF 1322632177**	1
8	PBOZZ	5331013598778	81718	H-7725-M	.O-RING **PART OF 1322632177**	1
9	XDOZZ		81718	H-7724-M	.STUFFING **BOX PART OF 1322632177**	1
10	XDOZZ		81718	C-1123-D1	.LEVER **PART OF 1322632177**	1
11	XDOZZ		81718	H-4466-M	.BOLT **PART OF 1322632177**	1
12	XDOZZ		81718	H-4464-M	.NUT **PART OF 1322632177**	1
13	PFOZZ	4730012540217	96906	MS27029-13	.PLUG,QUICK DISCONNE	1
					END OF FIGURE	

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 08 GENERAL USE STANDARDIZED PARTS	
					FIG. BULK	
1	PAOZZ	**4010002865654**	**81348**	RRC271	CHAIN,WELDED	**V**
					END OF FIGURE	

CROSS REFERENCE INDEXES
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
5935-00-007-9202	10	15
5305-00-071-2068	6	14
5305-00-071-2071	6	9
4730-00-088-9285	11	3
4930-00-119-0452	10	2
4930-00-120-9602	10	6
5305-00-225-3843	8	2
5306-00-226-4835	6	18
4010-00-286-5645	BULK	1
1560-00-307-2780	4	7
4930-00-405-7544	10	7
4730-00-432-7448	9	4
6150-00-483-3918	7	2
5935-00-503-8979	10	16
5310-00-584-5272	4	12
5330-00-612-2414	4	1
	9	2
	11	4
5305-00-719-5007	5	18
5305-00-719-5238	3	2
5305-00-727-6804	4	9
5310-00-768-0321	4	13
4030-00-803-0272	10	4
5310-00-809-4058	5	20
	8	3
5331-00-875-8288	4	11
4730-00-915-5127	4	2
	11	2
5310-00-929-1807	5	16
	8	4
4720-00-937-2822	9	1
1560-00-949-2087	4	10
5305-00-959-4158	4	6
4730-00-989-3260	10	9
4730-01-019-7432	4	5
5975-01-050-5707	7	3
5331-01-103-0958	10	8
4730-01-192-1624	9	3
5999-01-207-8412	10	14
5310-01-231-7459	3	4
	6	12
4730-01-254-0217	11	13
5430-01-256-0650	2	1
5310-01-259-0296	6	19
5310-01-266-4641	3	5
	6	11
5310-01-275-1065	6	7
5310-01-352-9593	5	17
5331-01-359-6707	11	7
5331-01-359-8778	11	8
5340-01-395-8001	7	1
4010-01-446-7986	6	3

CROSS REFERENCE INDEXES
PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
58536	A-A-52030TYPE1,SIZE2		10	1
80204	B1821BH025C100N	5305-00-225-3843	8	2
80204	B1821BH031C250N	5306-00-226-4835	6	18
80204	B1821BH050C138N	5305-00-071-2068	6	14
80204	B1821BH050C200N	5305-00-071-2071	6	9
80204	B1821BH050F200N	5305-00-719-5238	3	2
81718	C-1123-D1		11	10
81718	C-3140-RE		11	6
81718	D546A		10	10
81718	H-3804-AG		10	3
81718	H-4464-M		11	12
81718	H-4466-M		11	11
81718	H-6281-M	5331-01-359-6707	11	7
81718	H-7724-M		11	9
81718	H-7725-M	5331-01-359-8778	11	8
81718	H-9209-M		10	5
81718	HD-9597-RB	4930-00-120-9602	10	6
81718	H3673M	4030-00-803-0272	10	4
81718	H5132RS		10	13
81718	H5482M		10	12
81718	H7670M	5331-01-103-0958	10	8
96906	MS24484-5	1560-00-949-2087	4	10
96906	MS24693-C273	5305-00-959-4158	4	6
96906	MS25384-1		10	11
96906	MS25384-3	5999-01-207-8412	10	14
96906	MS27026-11	4730-00-088-9285	11	3
96906	MS27028-13	4730-01-019-7432	4	5
96906	MS27029-11	4730-00-915-5127	4	2
			11	2
96906	MS27029-13	4730-01-254-0217	11	13
96906	MS27030-6	5330-00-612-2414	4	1
			9	2
			11	4
96906	MS27183-10	5310-00-809-4058	5	20
			8	3
96906	MS29513-153	5331-00-875-8288	4	11
96906	MS29526-2	1560-00-307-2780	4	7
96906	MS3493-1	5935-00-007-9202	10	15
96906	MS3493-2	5935-00-503-8979	10	16
96906	MS35307-414	5305-00-727-6804	4	9
96906	MS35338-48	5310-00-584-5272	4	12
96906	MS49001-9	4730-00-432-7448	9	4
96906	MS49002-9	4730-01-192-1624	9	3
96906	MS51412-13	5310-01-275-1065	6	7
96906	MS51412-6	5310-01-259-0296	6	19
96906	MS51412-9	5310-01-266-4641	3	5
			6	11
96906	MS51922-2	5310-00-929-1807	5	16
			8	4
96906	MS51943-16		6	8

CROSS REFERENCE INDEXES
PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
96906	MS51943-9	5310-01-231-7459	3	4
			6	12
96906	MS51959-83	5305-00-719-5007	5	18
96906	MS51971-5	5310-00-768-0321	4	13
81349	M370B06B2A0540		9	5
81349	M370B06B2A1440	4720-00-937-2822	9	1
80205	NAS1149C0463R	5310-01-352-9593	5	17
81348	RRC271		6	6
		4010-00-286-5645	BULK	1
75535	10-14592	4010-01-446-7986	6	3
19207	12463701-l		3	1
97403	1321930462	5975-01-050-5707	7	3
97403	1321933930	6150-00-483-3918	7	2
97403	1322035288-l	5340-01-395-8001	7	1
97403	13226E2146	5430-01-256-0650	2	1
97403	1322632177		11	5
97403	1322632178		4	4
97403	1322637730-6		6	2
97403	1322739681-l		5	2
97403	1322834259		4	8
97403	1322834261		4	3
97403	1322834262		5	1
97403	1322834263		8	1
97403	1322834264		6	17
97403	1322834265		6	16
97403	1322834268		6	21
97403	13228E4269		6	20
97403	1322834272		6	15
97403	1322834528		6	1
97403	1322834529-2		6	4
97403	1322834531-3		5	19
97403	13228E4534		11	1
97403	1322834559-l		3	3
			6	10
97403	13228E8309-13		6	5
97403	1322936648		6	13
81718	153-11/2X15/8	4730-00-989-3260	10	9
81718	190GT-1 1/2	4930-00-405-7544	10	7
81718	296CA-4000	4930-00-119-0452	10	2
09310	407843		5	13
09310	442896		5	15
09310	442898		5	4
09310	443789		5	9
09310	443790		5	8
09310	443791		5	7
09310	443802		5	5
09310	443024		5	11
09310	444707		5	6
09310	444945		5	12
09310	444951		5	10
09310	452690		5	14

CROSS REFERENCE INDEXES
PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
09310	452712		5	3

APPENDIX G

ILLUSTRATED LIST OF MANUFACTURED ITEMS

Section 1. INTRODUCTION

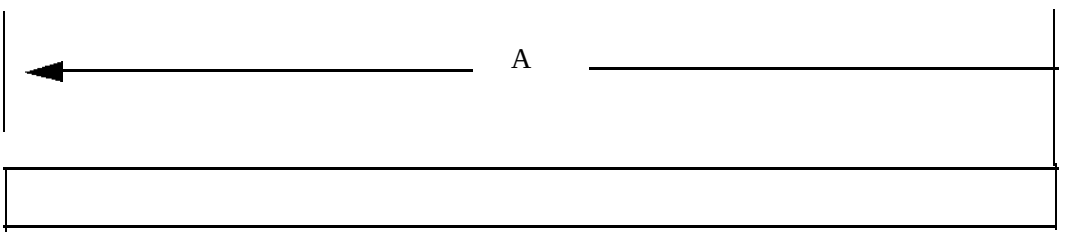
G-I. This appendix includes complete instructions for authorized manufactured or fabricated item(s) at Unit Maintenance.

G-2. All bulk materials needed for manufacture/fabrication are listed by part number or specification number in a tabular list on the illustration.

G-3. A part number index in alphanumeric order is provided for cross-referencing the pan number of the item to be manufactured to the figure which covers fabrication criteria.

PART NUMBER INDEX

PART NO.	FIGURE NO.
13226E2149-11	G-I
13226E2149-13	G-I



PART NO.	DIMENSION "A"
13226E2149-11	12.75
13226E2149-13	7.5

NOTES:

1. FABRICATE FROM SYNTHETIC RUBBER. PART NO. MIL-R-6855. CLASS 1, GRADE 40
2. DIMENSIONS ARE IN INCHES.

INDEX

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By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

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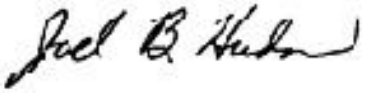

JOEL B. HUDSON
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05869

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E EXACT.. .PIN-POINT WHERE IT IS

'AGE NO.	PARA-GRAPH	IGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
-193		2		Step No. 1 says to connect LH 4 SPNSN Unit-8 hose from where to what? It is also not identified.
-227				Procedure is continued from another page, but cap is not removed - add step to procedure.

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PAGE NO.	PARA-GRAPH	IGURE NO.	TABLE NO.	

PRINTE AME, ADE O TLE, AND TELEPHONE NUMBERS | SIGN HERE:

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE
1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches
1 Kilometer = 1,000 Meters = 0.621 Miles

WEIGHTS
1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces
1 Kilogram = 1,000 Grams = 2.2 Lb
1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE
1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Lilter = 1,000 Millimeters = 33.82 Fluid Ounces

SQUARE MEASURE
1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

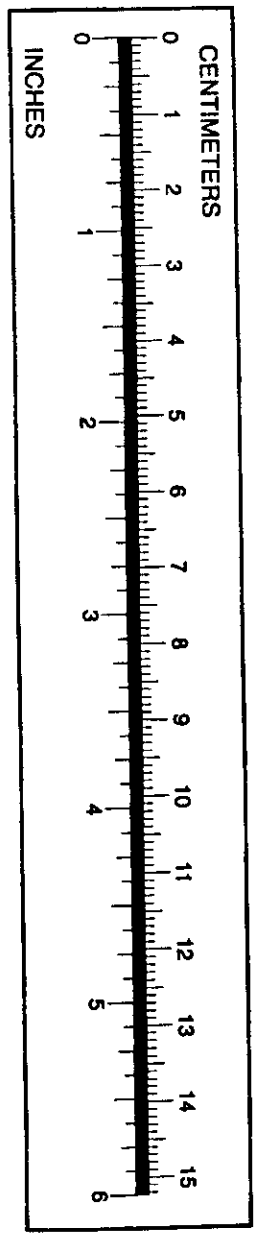
CUBIC MEASURE
1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE
5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 °C + 32 = °F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton•Meters	1.356
Pounds Per Square Inch	Kilopascals	6.895
Miles Per Gallon	Kilometers Per Liter	0.425
Miles Per Hour	Kilometers Per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton•Meters	Pound-Feet	0.738
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621



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