TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

DRUMS, FABRIC COLLAPSIBLE NON-VENTED;

500 GALLON, LIQUID FUEL,
PART NO. 13216E9172,
NSN 8110-753-4892,

500 GALLON, LIQUID FUEL,
PART NO. 13216E9170
NSN 8110-824-1444,

250 GALLON, POTABLE WATER
PART NO. 5-13-1681-1
NSN 8110-00-900-8328

55 GALLON, POTABLE WATER
PART NO. 5-13-206-1
NSN 8110-00-089-4505

This copy is a reprint which includes current pages from Changes 1 through 11.

HEADQUARTERS, DEPARTMENT OF THE ARMY

10 FEBRUARY 1983

CHANGE

No. 11

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 November 1994

Operator, Organizational, Direct Support
and General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

DRUMS, FABRIC, COLLAPSIBLE, NON-VENTED
500 GALLON, LIQUID FUEL
PART NO. 13216E9172, NSN 8110-00-753-4892
500 GALLON, LIQUID FUEL
PART NO. 13216E9170, NSN 8110-00-824-1444
KIT, TIEDOWN (NSN 8110-00-856-6245)
REPAIR KIT, EMERGENCY, TYPE I (NSN 8110-00-856-6244)
REPAIR KIT, EMERGENCY, TYPE II (NSN 8110-00-856-6246)
TOWING AND LIFTING YOKE (NSN 8110-00-856-6243)

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i and ii	i and ii
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MILTON H. HAMILTON
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NO. 10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 18 January 1994

Operator, Organizational, Direct Support
and General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

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500 GALLON, LIQUID FUEL
PART NO. 13216E9170, NSN 8110–00–824–1444
KIT, TIEDOWN (NSN 8110–00–856–6245)
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REPAIR KIT, EMERGENCY, TYPE II (NSN 5430–01–114–6668)
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i through iv	i through iv
1–1 through 1–4	1–1 through 1–4
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5–21 through 5–24	5–21 through 5–24
A–1/(A–2 blank)	A–1/(A–2 blank)
C–3 and C–4	C–3 and C–4
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F–1/(F–2 blank)	F–1/(F–2 blank)
– – – – –	G–1/(G–2 blank)
Index–3 through Index–6	Index–3 through Index–6

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NO. 9

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 SEPTEMBER 1992

Operator, Organizational, Direct Support and
General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

DRUMS, FABRIC, COLLAPSIBLE, NON-VENTED
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4-13 and 4-14	4-13 and 4-14
- - - - -	4-14.1/(4-14.2 blank)
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NO. 8

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Operator, Organizational, Direct Support
and General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

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TM 10–8110–201–14&P
C 8

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NO. 7

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Operator's, Organizational, Direct Support and
General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

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C-27 and C-28	C-27 and C-28
C-43 and C-44	C-43 and C-44

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CHANGE NO. 6

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 January 1989

Operator's, Organizational, Direct Support and
General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

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500 GALLON, LIQUID FUEL, PART NO. 13216E9170, NSN 8110-00-824-1444
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5-1 and 5-2	5-1 and 5-2

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CHANGE
No. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 August 1988

Operator's, Organizational, Direct Support and
General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

DRUMS, FABRIC COLLAPSIBLE NON-VENTED;
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CHANGE NO. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *21 March 1988*

Operator's, Organizational, Direct Support and
General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

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1-1 and 1-2	1-1 and 1-2
5-1 and 5-2	5-1 and 5-2
C-11 and C-12	C-11 and C-12
C-43 and C-44	C-43 and C-44

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Change No. 2 will be forthcoming. TM changes must be inserted in numerical sequence.

TM 10-8110-201-14&P
C 3

CHANGE NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 21 April 1987

Operator's, Organizational, Direct Support and
General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

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5-13 through 5-16	5-13 through 5-16

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CHANGE
No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 10 May 1987

Operator's, Organizational, Direct Support and General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

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i and ii	i and ii
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C-31 and C-32	C-31 and C-32
C-41 through C-44	C-41 through C-44

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CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 17 November 1986

Operator's, Organizational, Direct Support and
General Support Maintenance Manual
(Including Repair Parts and Special Tools List)

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C-21 and C-22	C-21 and C-22
C-41 through C-44	C-41 through C-44

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DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Operator, Organizational, Direct Support and General Support Maintenance requirements for Drums, Collapsible, Fabric, Non-Vented, Liquid Fuel, 500 GAL.

WARNING

FLAMMABLE FUEL

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

FUEL DRUMS that are to be transported internally, in pressurized aircraft, must be filled with the pressure control, NSN 4930-00-855-8739, and must conform to the requirements of TM 38-250.

WATER DRUMS should be filled to the point where the horizontal surface of the drum casing is no longer concave and then filling should be stopped. Drycleaning solvent, P-D-680 used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F - (38°C - 59°C).

BEFORE OPERATION be certain drum is secure to avoid slipping or rolling during filling operation. (Drum may be stabilized by piling loose earth against the sides). Do not allow any smoking within 100 feet (30.5 meters) of the fuel drum filling areas. Post NO SMOKING signs around the areas. Be certain a suitable fire extinguisher is present.

DURING OPERATION avoid spillage of gasoline as much as possible. If spillage of gasoline occurs, cover the areas with dry soil to reduce its rate of vaporization. Avoid getting gasoline on the body or clothing. If clothing becomes saturated with gasoline, remove the clothing immediately and wash the body with hot soapy water. Do not allow any smoking within 100 feet (30.5 meters) of the dispensing area. Post NO SMOKING signs around the areas. Be certain the nozzle of the fuel dispensing hose is properly bonded to the vehicle being filled. The vehicle being filled and the dispensing pump must be grounded. Be certain a suitable fire extinguisher is present and that has been properly filled. Never dispense gasoline to a vehicle while its engine is operating.

AFTER OPERATION do not attempt to move, tow lift, or transport filled or partially filled drums to which the emergency repair kits have been applied. The emergency kits are only intended to enable the operator to stop the leakage long enough to empty the drum. As soon as practical, after the drum has been emptied, it should be evacuated to the appropriate maintenance repair facility for permanent repair by valcanization. Use the sparkproof sledge to remove the swivel plate.

Cleaning solvent, TT-M-261D (methyl-ethyl-ketone), used in surface coatings and in protective coatings is extremely flammable and is potentially dangerous to personnel and property. Keep away from heat and open flame. Keep container closed. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Flash point of solvent is 24°F (4.4°C).

TECHNICAL MANUAL

NO. 10-8110-201-14&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 10 February 1983

Operator, Organizational, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List)

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REPAIR KIT, EMERGENCY, TYPE II (NSN 8110-00-856-6246)
TOWING AND LIFTING YOKE (NSN 8110-00-856-6243)

Current as of 10 SEPTEMBER 1982

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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

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

TABLE OF CONTENTS

*This manual supersedes TM 10-8110-201-14, 30 June 1976, including all changes.

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LIST OF ILLUSTRATIONS

LIST OF TABLES

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope.

a. This manual is for your use in operating and maintaining the drums described in Section II.

b. Throughout this maual, the use of the terms, right, left, front and rear indicate directions from the viewpoint of the operator facing the end of the drum where the coupler valve assembly or faucet valve is attached.

1-2. Maintenance Forms and Records.

Maintenance forms and records that you are rerequired to use are DA Form 2402 (Exchange Tag), DA Form 2407 (Maintenance Request), and Standard Form 368 (Quality Deficiency Report). Their use, and procedures for using them are explained in DA PAM 738-750 (The Army Maintenance Management System).

1-3. Hand Receipt.

a. Hand receipt for the End Item/Component of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) Items are published in a Hand Receipt Manual.

b. The Hand Receipt Manual numerical designation is the same as the related Techbical Manual with the letters HR added to the number. These manuals are published to aid in property accountability and are available through: Commander, U.S. Army Adjutant General Publication Center, 2800 Eastern Blvd., Baltimore, MD.

1-4. Administrative Storage.

a. Fill fuel drums and water drums to the maximum allowable level.

NOTE

If local fire regulations prohibit storing equipment with fuel in the system, completely drain the fuel drums.

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

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

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

Do not fill the drum with air. Vapors inside drum can cause an explosion.

Never stack drums on top of each other or place equipment on top of the drums. Drums are heavy and can cause serious injury to personnel if they fall.

CAUTION

To avoid accelerated deterioration, store drums out of direct sunlight, extreme cold and away from heat of any kind.

2) Keep the drums out of direct sunlight when storing them outdoors. Place them in a tent or under a tarp to block the sun and keep the snow and ice off during cold weather.

3) Store drums away from any kind of heat. If no shelter is available cover the drums with wet burlap or other cloth, to keep the drums out of direct sunlight.

1-5. Destruction of Army Materiel to Prevent Enemy Use.

a. General. This type of equipment may be destroyed by mechanical method or by using the fuel which the drums contain to set it on fire.

NOTE

The burning of drums that contain fuel can be used as a means of destroying other pieces of equipment in the same area.

b. Mechanical Demolition. Use an axe, pick, mattock, sledge, or any other heavy implement to smash the coupler/faucet valves, the pressure control unit, and to slash holes in the collapsible drum.

c. Demolition by Fire. Use some of the fuel contained in the drum to saturate the equipment and ignite.

d. Additional Information. For additionid information on procedure for destruction of material, refer to TM 750-244-3.

1-6. Reporting Equipment Improvement Recommendations (EIR).

ElR's will be prepared on SF 368 (Quality Deficiency Report). Instruction for preparing EIR's should be mailed directly to Headquarters, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MDO, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished directly to you.

Section II. DESCRIPTION AND DATE

1-7. Description.

a. Longie Fuel Drum. The longie fuel drum, P/N 13216E9172 (fig. 1-1) is a durable, nonvented collapsible container that is designed for a working pressure of 4 to 5 psi (pounds/square inch) (0.3 to 0.4 kg/cm) and a maximum pressure of 45 psi (3.17 kg/sq cm). When filled to its 500 gallon (1893 liter) capacity, the drum is cylindrical in shape with rounded ends. It can be towed, at speeds not to exceed 10 mph (miles/hour) (16 km/hr), for short distances over smooth terrain, using the towing and lifting yoke. The drum fabric is impregnated with fuel resistance synthetic rubber. The front and rear closure plates are connected by a network of wire ropes (3 ea) that form an interior support for the drum. The front closure plate has a threaded coupler valve assembly. When the drum is collapsed, it can be folded to permit transportation by cargo truck.

b. Shortie Fuel Drum. The shortie drum, P/N 13216E9170 (fig. 1-1) also has a capacity of 500 gallons (1893 liters). the drum being larger in diameter than the longie drum, P/N 13216E9172. The interior constructions of the short drum is identical to that of the longer drum, except that the three wire ropes used to form the interior support are shorter. The shortie drum may be towed, handled, and when empty, folded in the same manner as the longie drum.

c. DELETED

d. Accessory Items.

(1) *Towing and Lifting Yoke.* A towing and lifting yoke (fig. 1-3) can be attached to the ends of the 500 gallon (1893 liter) fuel drums and the 250 gallon (946 liter) water drum for use in towing and lifting the drums.

(2) *Tiedown Kit.* A tiedown kit (fig. 1-4) is used to secure drums when they are being transported by cargo truck.

(3) *Repair Kits.* The repair kits (figs. 1-5 and 1-6) are furnished for emergency use only to prevent leakage until the operator can empty the drums. When these kits are used to make such emergency repairs. the repaired drum should not be moved, towed, lifted or transported until it is completely empty.

(4) *Pressure Control.* When filling the 500 gallon (1893 liter) fuel drums, a pressure control (fig. 1-7) is attached between the pump assembly and the drum during filling operation. The purpose of the pressure control is to automatically shut off the flow of fuel to the drum when the internal pressure of the drum is 4 to 5 psi (0.3 to 0.4 kg/sq cm). The automatic action will prevent over filling the drum and insure its acceptability for high altitude air transport.

be moved, towed, lifted or transported until it is completely empty.

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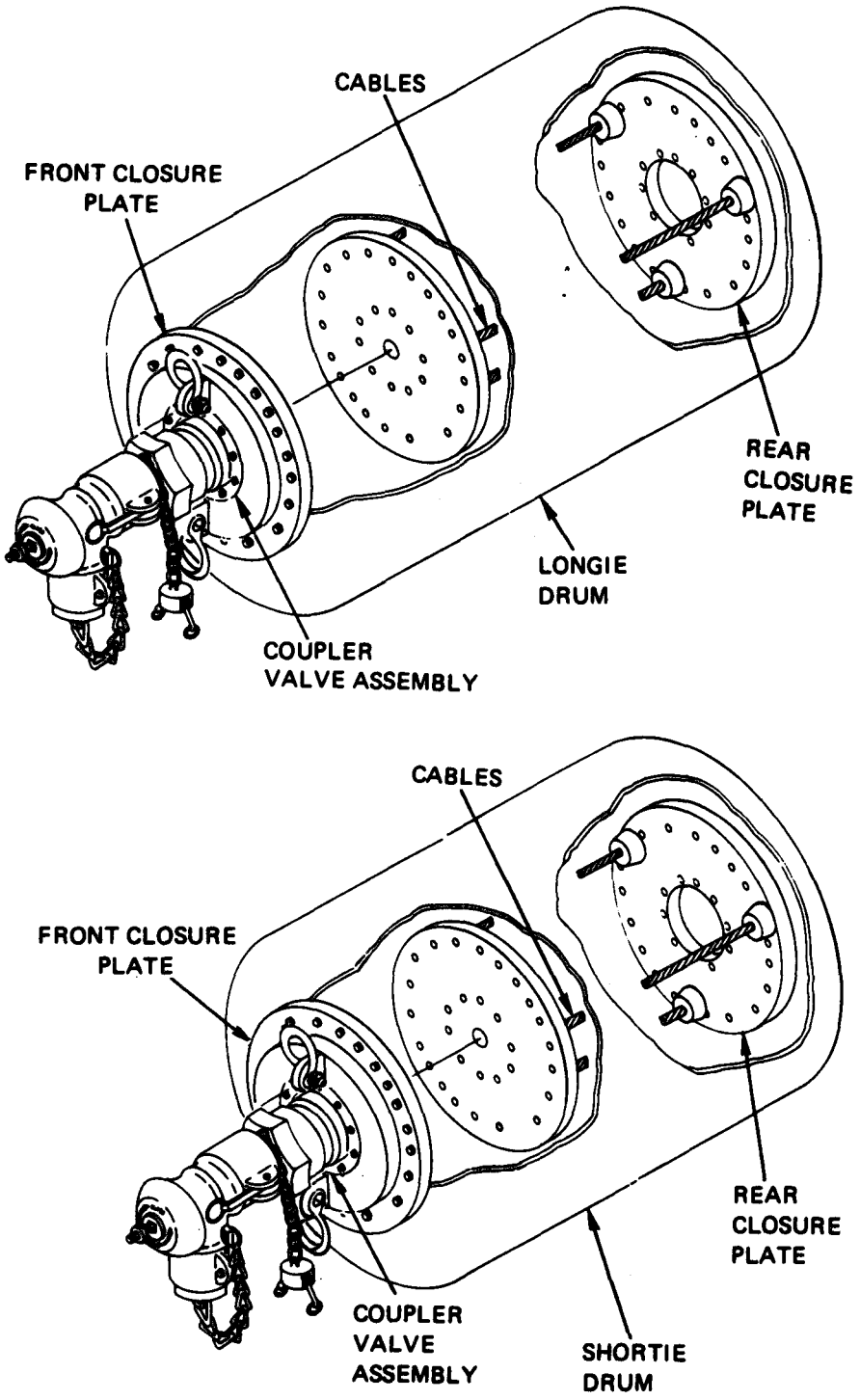

Figure 1-1. Fuel Drums, 500 Gallon (1893) Liter) Capacity

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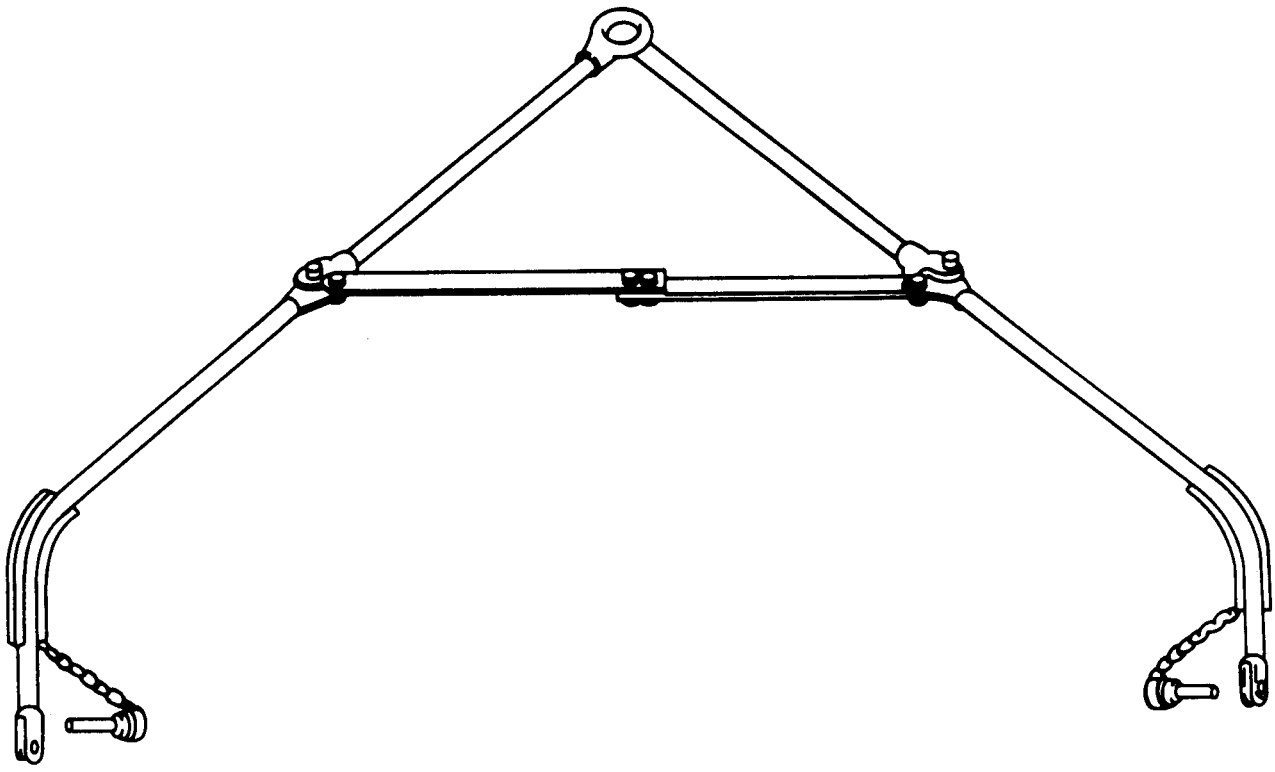

Figure 1-3. Towing and Lifting Yoke

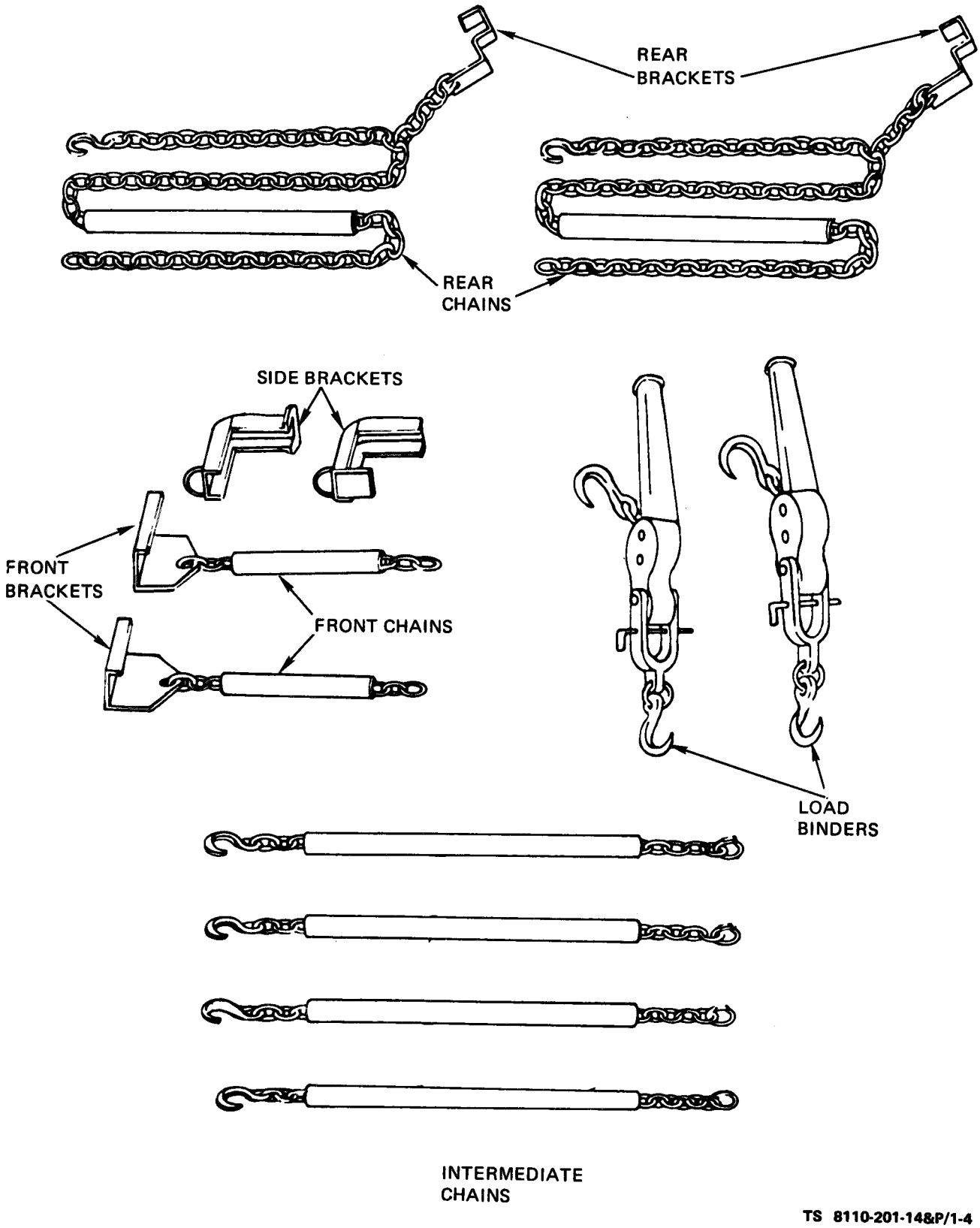

Figure 1-4. Tiedowm Kit

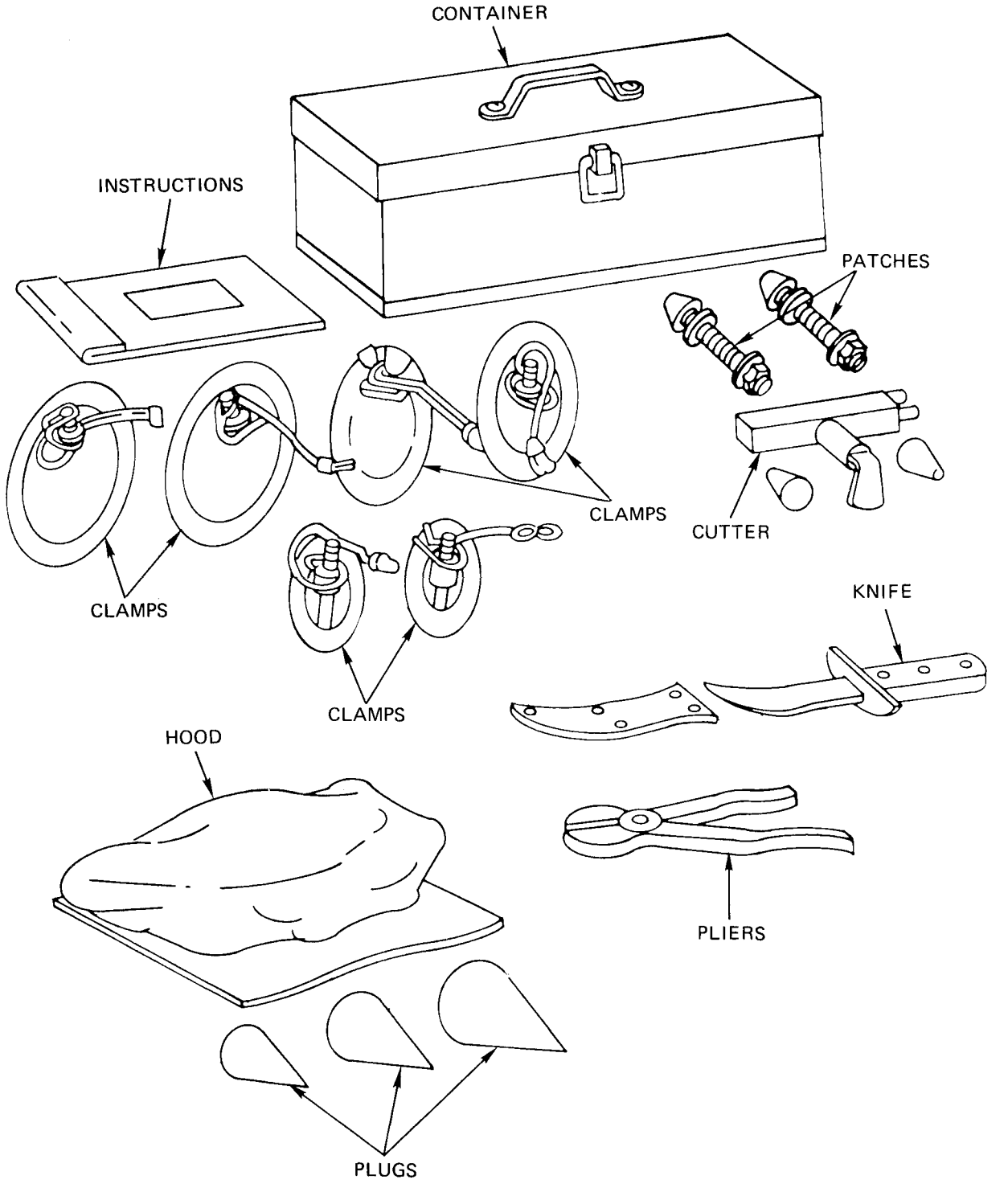

Figure 1-5. Repair Kit, Type I

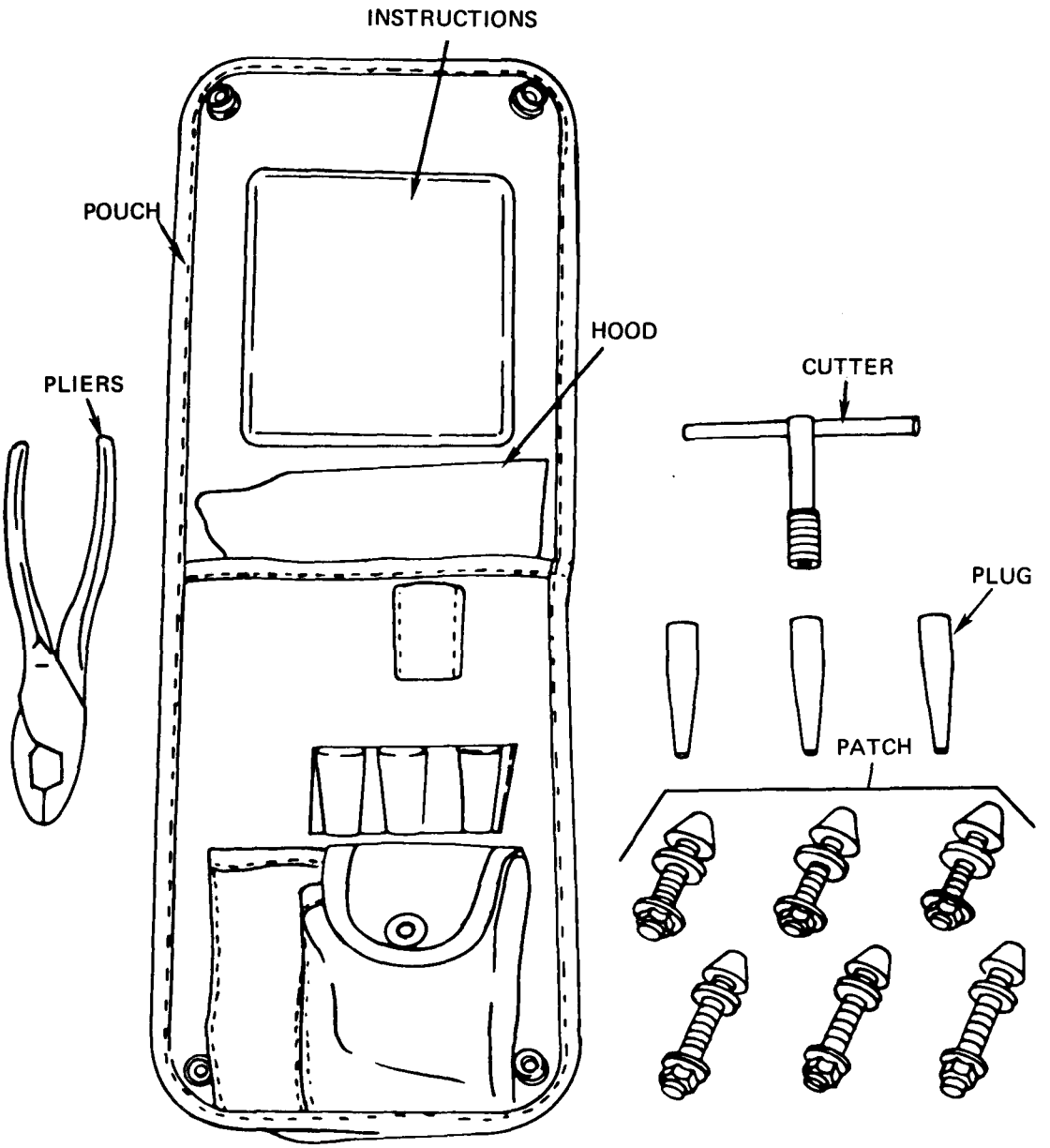

Figure 1-6. Repair Kit, Type II

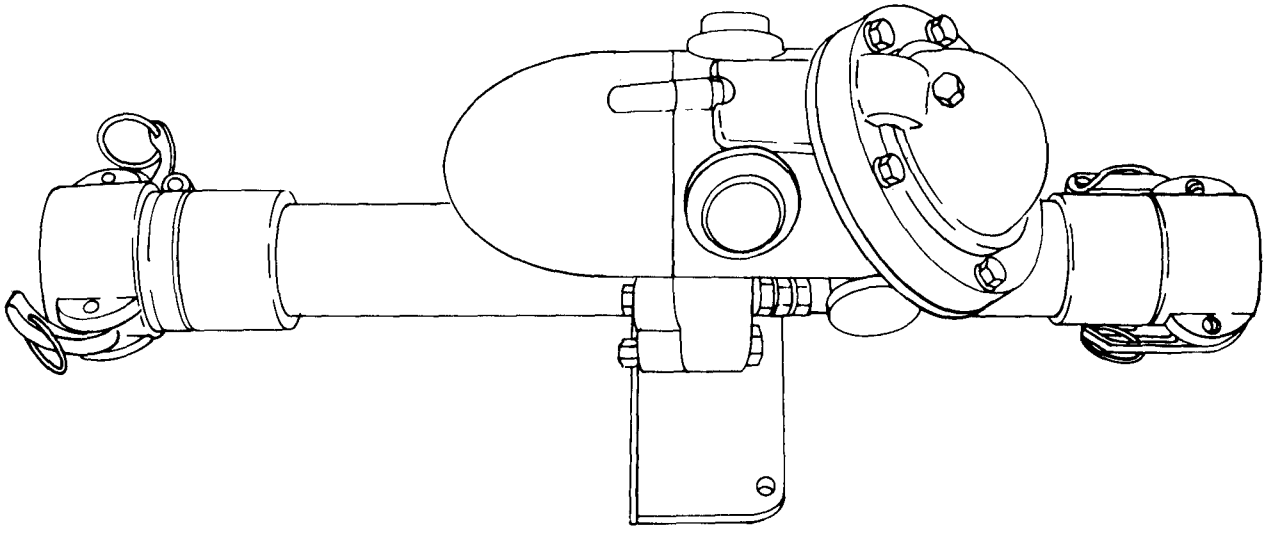

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Figure 1-7. Pressure Control

1-8. Tabulated Data.

a. Drums, 500 Gallon (1893 Liter), Fuel.

(1) General Information.

Part Number	13216E9172
National Stock Number	8110-00-753-4892
Part Number	13216E9170
National Stock Number	8110-00-824-1444

(2) Coupler Valve Assembly.

Manufacturer	OPW Division, Dover Corp.
Type	77BN
Size	2 x 1½ in. (5.08 x 3.81 cm)
National Stock Number	4820-00-973-2589

(3) Check Valve Assembly Adapter.

Manufacturer	OPW Division, Dover Corp.
Type	77A
Size	2 in. (5 cm)
National Stock Number	4820-00-973-2588

(4) Dimensions and Weight (Filled).

(a) Part No. 13216E9172.

Length	6 ft. 8 in. (200 cm)
Diameter	3 ft. 10 in. (117 cm)
Weight (W/Gasoline)	3767 lb. (1695 kg)
Cubage	70 cu. ft. (120960 cu in.)

(b) Part No. 13216E9170.

Length	5 ft. 2 in. (157 cm)
Diameter	4 ft. 5-1/8 in. (135 cm)
Weight (W/Gasoline)	3767 lb. (1695 kg)
Cubage	70 cu ft. (120960 cu. in.)

(c) DELETED

(d) DELETED

(5) Dimensions and Weights (Empty).

a. Drums, 500 Gallon (1893 Liter), Fuel.

Weight:	
Crated	330 lb. (149 kg)
Uncrated	250 lb. (123 kg)
Dimensions (crated):	
Length	70 in. (178 cm)
Weight	42 in. (107 cm)
Height	15 in. (38 cm)
Cubage	28.4 cu. ft. (49,075.2 cu. in.)

b. DELETED

c. DELETED

d. Repair Kit, Type I

Length	10 in. (25 cm)
Width	7 in. (18 cm)
Weight	1½ lb. (0.68 kg)

e. Repair Kit, Type II

Length	16 in. (41 cm)
Width	7 in. (18 cm)
Height	9½ in. (24 cm)
Weight	14 lb. (6 kg)

f. Pressure Control.

(1) General Information.

Manufacturer	Highland Industries, Inc.
Model	110
National Stock Number	4930-00-855-8739
Operating Temperatures	+125°F(Fahrenheit) to -40°F +52°C(Centigrade) to -40°C

(2) Dimensions and Weights.

Crated:	
Length	25 in. (64 cm)
Width	25 in. (64 cm)
Height	9 in. (23 cm)
Weight	40 lb. (18 kg)

Uncrated:

Length	24 in. (61 cm)
Width	6 in. (15 cm)
Height	7½ in. (19 cm)
Weight	16 lb. (7 kg)

(a)

(b)

1-9. Differences Between Models.

The basic differences between the various drum models are outlined in tabulated data (para 1-8).

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES

2-1. General.

NOTE

If equipment fails to operate refer to troubleshooting procedures in Chapter 3. This section furnishes the operator with the necessary information for dispensing the fuel or water, stopping operation and preparing the empty drum for transit.

2-2. Operating Controls.

a. Coupler Valve Assembly Handwheel. The handwheel (fig. 2-1) is a manual control which is used to open and close the coupler valve assembly. Turn the handwheel clockwise to close the coupler valve assembly and stop the flow of product. Turn the handwheel counterclockwise to open the coupler valve assembly and start the flow of product.

NOTE

The check valve located in the check valve assembly adapter opens and closes automatically with the coupler valve assembly.

b. Pressure Control Fill and Stop Buttons.

(1) Fill Button. The FILL button (fig. 2-2) is a push-type manual control which is used to change the flow of fuel in the pressure control to open the cycling valve. Push the FILL button to start the flow of fuel through the pressure control.

(2) Stop Button. The STOP button (fig. 2-2) is a push-type manual control which is used to change the flow of fuel in the pressure control to close the cycling valve. Push the STOP button to stop the flow of fuel through the pressure control.

2-3. Dispensing Fuel.

WARNING

Do not dispense gasoline to a vehicle on which the engine is operating. Be certain the nozzle of the dispensing hose is properly bonded to the vehicle being filled prior to beginning the transfer operation. Do not allow smoking within 100 feet (30.5 meters) of the dispensing area. Post NO SMOKING signs around the area. Avoid getting gasoline on the body or clothing, if clothing becomes saturated with gasoline, remove the clothing immediately and wash the body with hot soapy water and soak clothing in soapy water. Avoid spillage of gasoline. If spillage of gasoline occurs, cover the area with dry soil to reduce the rate of vaporization. Be certain a suitable fire extinguisher is present and that it is properly charged and positioned so as to be readily available in case of fire.

NOTE

Assure hose assembly and pressure control have been properly connected and pump assembly properly setup for operation prior to dispensation of fuel(fig. 2-3).

a. Open the coupler valve assembly by turning the handwheel (fig. 2-1) counterclockwise.

b. Start the pump assembly.

c. Dispense product directly from hose assembly nozzles.

NOTE

Push down on the end of the drum to remove maximum amount of product from the drum being emptied.

2-4. *Preparing* the Empty Fuel Drum for Transit.

a. Stop the pump assembly.

b. Turn handwheel (fig. 2-1) clockwise to close the valve.

c. Disconnect the coupler valve assembly from the check valve assembly adapter.

d. Place the dust cap on the adapter.

NOTE

The empty drum is now ready to be placed on a suitable carrier.

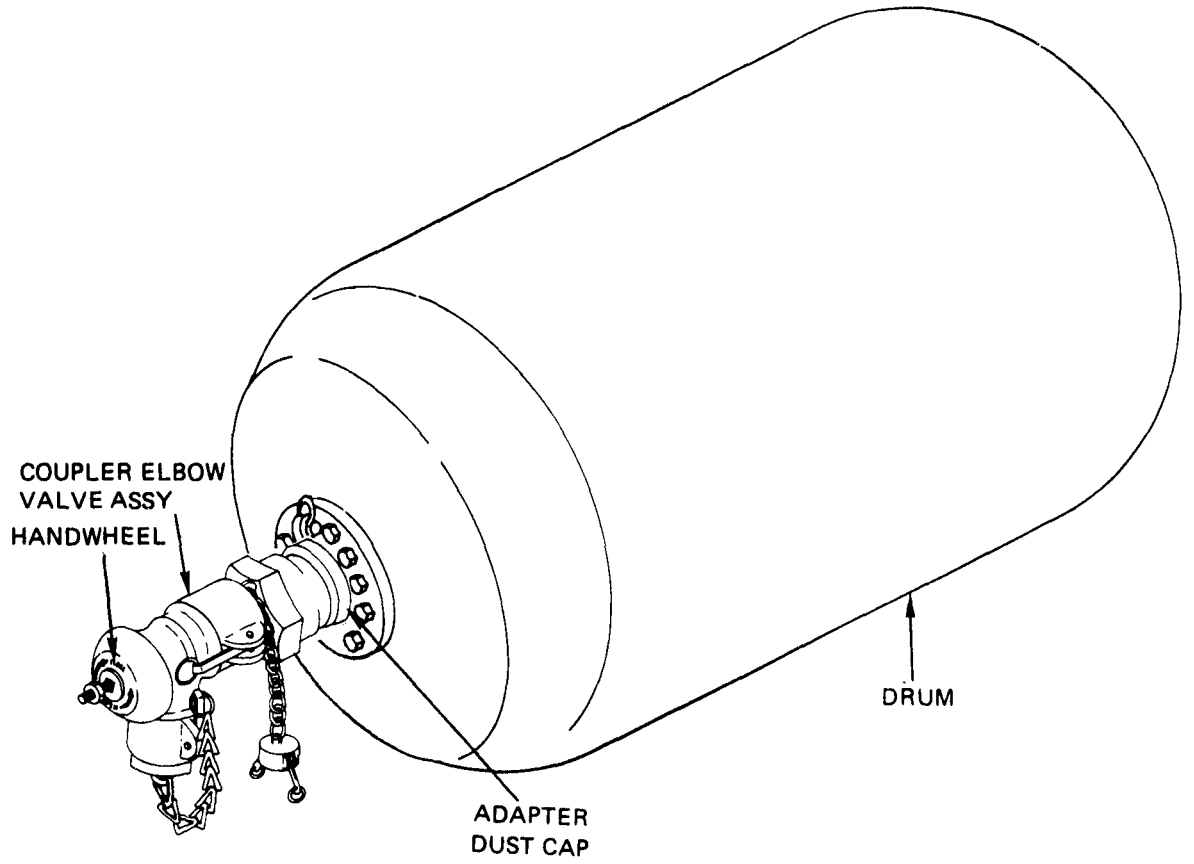

Figure 2-1. Coupler Valve Assembly Handwheel

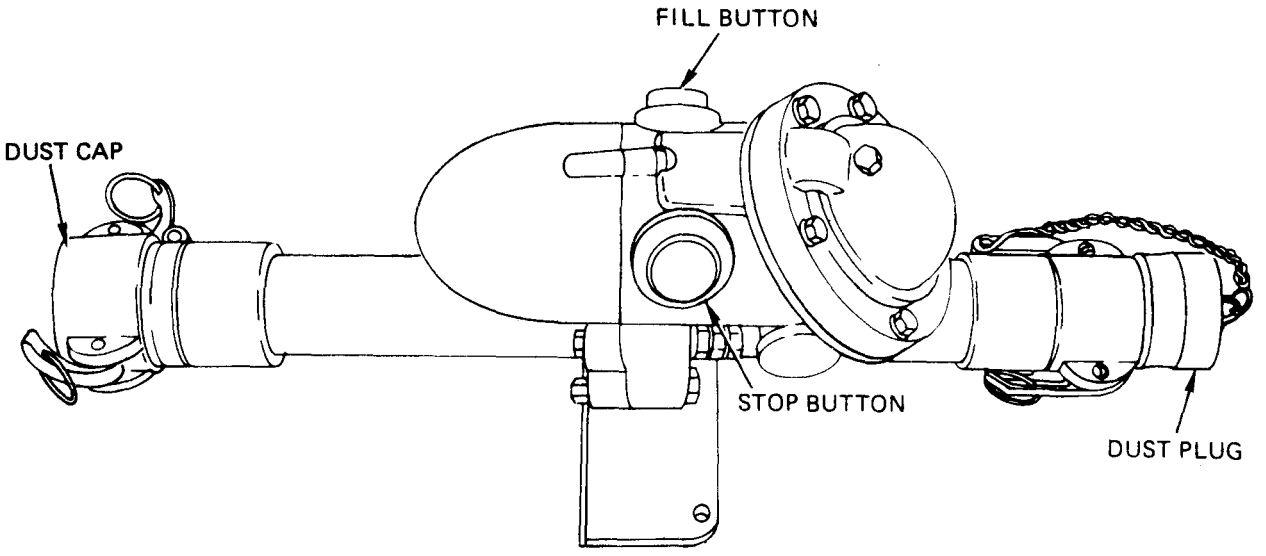

Figure 2-2. Pressure Control Fill and Stop Buttons

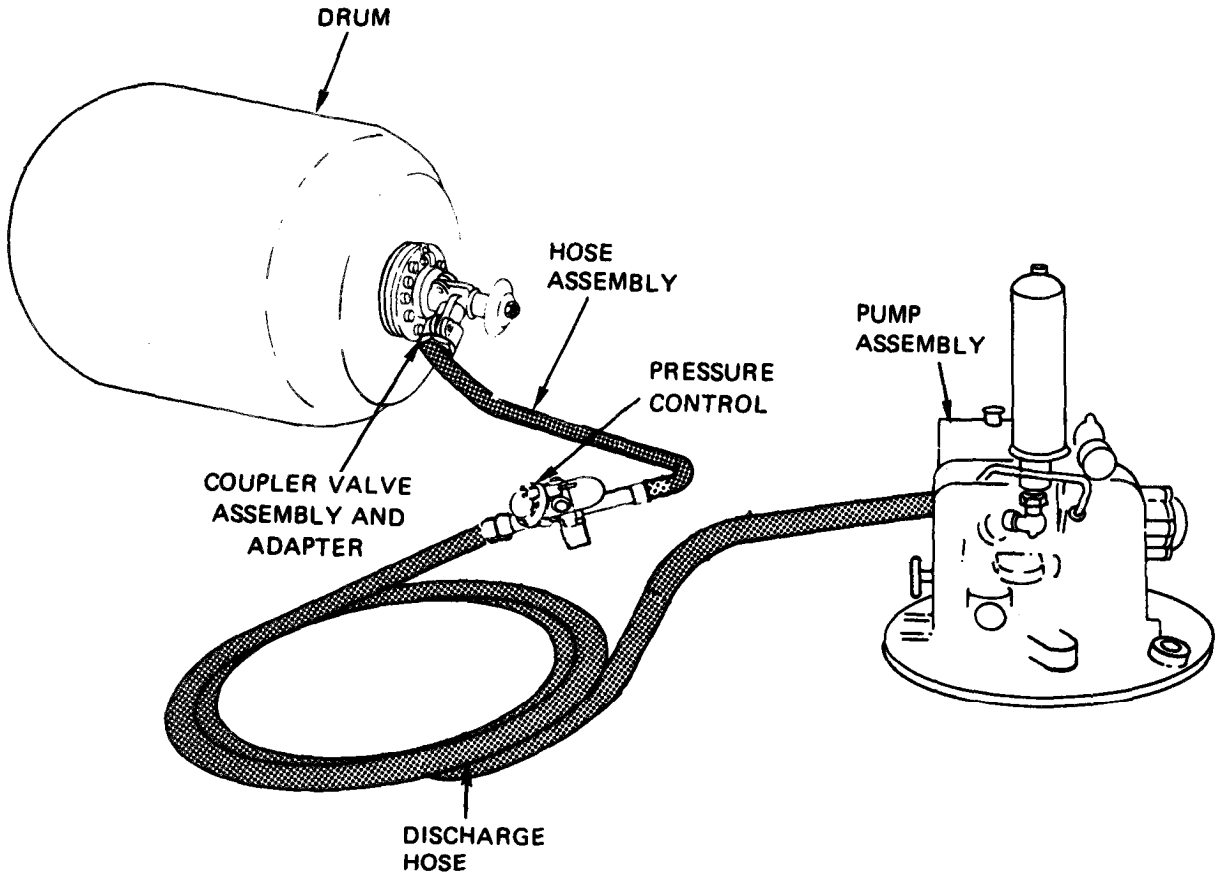

Figure 2-3. Fuel Drum Setup for Filling Fuel

Section II. OPERATION UNDER UNUSUAL CONDITIONS

2-5. Operating the Fuel drums in Artic Conditions.

a. Be careful when handling the hose assembly and drum to avoid cracking them. Always wear Arctic mittens when handling nozzles and other equipment.

b. Remove snow, sleet, or ice from the drum before installing the coupler valve assembly.

c. Water drums must be stored in a heated atmosphere in order to avoid freezing.

d. Refer to Section I, Operating Procedures.

2-6. Operating the Fuel Drum in Extreme Heat (Above 135°F (57.5°C).

a. To keep the drum as cool as possible, proceed with one or more of the following steps, as applicable to the location:

(1) Erect a tent or tarpaulin over the drum but do not block the circulation of air around the drum.

(2) Place the drum under shade of trees or cover it with leafy branches.

(3) Cover the drum with wet burlap or other fabric, and keep the drum wet.

(4) In extreme temperature it may be necessary to reduce the amount of product in the drum to allow for expansion.

b. Refer to Section I, Operating Procedures.

2-7. Operating the Drums in Strong Winds and Sandy or Dusty Conditions.

a. Strong Winds

(1) Anchor the drum by banking soil around the sides.

(2) Anchor the drum to the ground with rope and stakes.

b. Sandy and Dusty Conditions

(1) Remove any sand or dust from the adapter before installing the coupler elbow valve assembly on the drum.

(2) Keep all dust caps and dust plugs installed when the equipment is not in use.

c. Operating Procedures. Refer to Section I, Operating Procedures.

CHAPTER 3

OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

Lubrication instructions are not required.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3-1. General.

To insure that the drums are ready for use at all times they must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure of equipment. The necessary preventive maintenance checks to be performed are listed and described in table 3-1. Defects discovered during operation of the unit shall be noted for future correction, to be made as soon as the operation has ceased. Stop operation immediately if a deficiency is noted during operation which would damage the equipment if operation were continued. All deficiencies and shortcomings will be recorded, together with the corrective action taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

a. Before You Operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your before (B) PMCS.

b. While You Operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your during (D) PMCS.

c. After You Operate. Be sure to perform your after (A) PMCS.

d. If Your Equipment Fails to Operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms, refer to paragraph 1-2.

3-2. Daily Preventive Maintenance Checks and Services.

Table 3-1 contains a tabulated listing of preventive maintenance checks and services which must be performed by the operator daily. Figure 3-1 illustrates the items to be inspected in sequence.

Section III. TROUBLESHOOTING

3-3. General.

a. This section contains troubleshooting information for locating and correcting most of the operating trouble which may develop in the drums and their components. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine probable causes and corrective actions to take.

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

c. Table 3-2 lists the common malfunctions which you may find during the operation or maintenance of the drums and their components. You should perform the tests/inspections and corrective actions in the order listed.

3-4. Operator/Crew Troubleshooting.

Refer to table 3-2 for troubleshooting procedures applicable to the drums and other components. Any trouble, the correction of which is beyond the scope of the operator, should be referred to organizational maintenance.

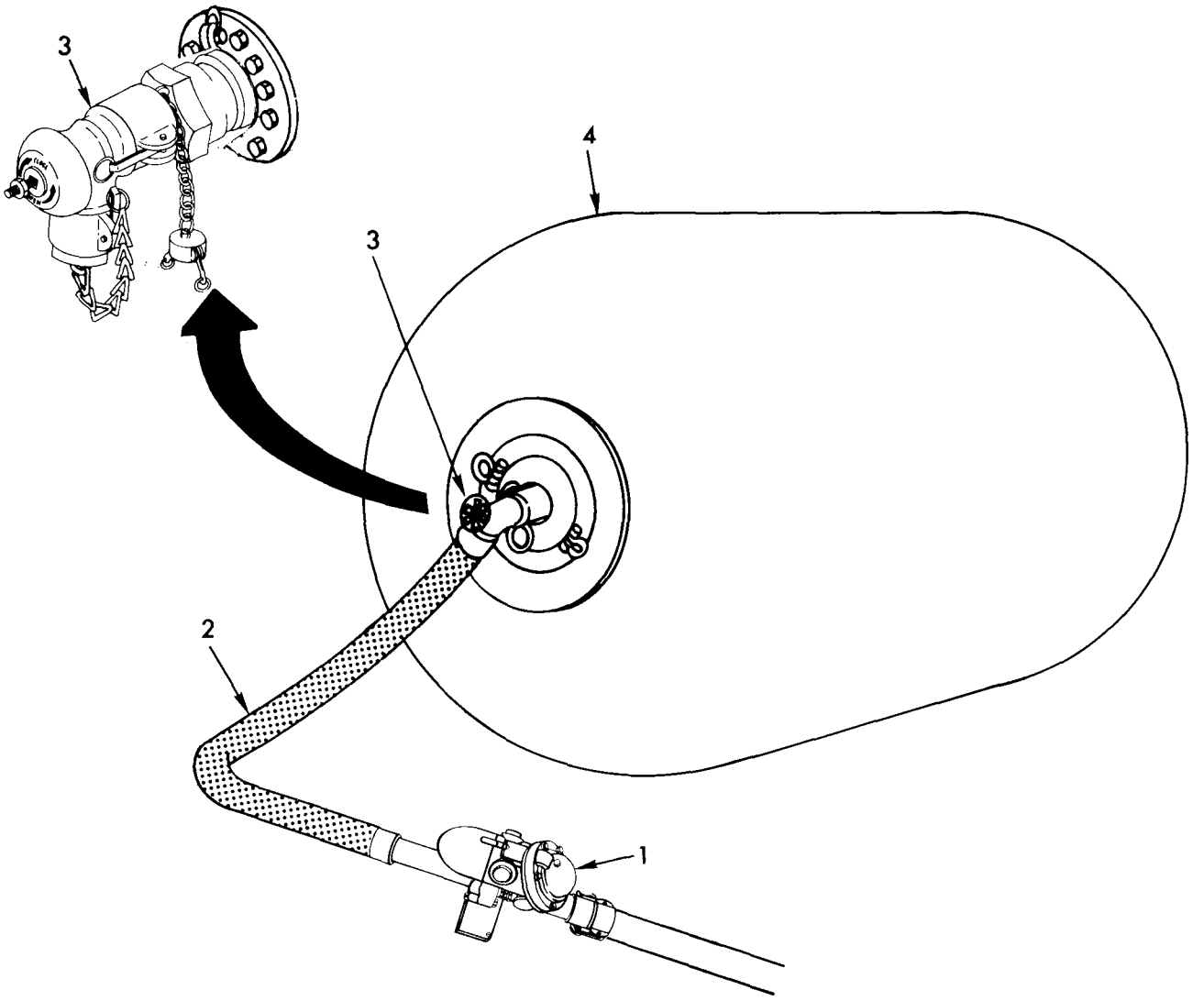

Figure 3-1. Operator/Crew Preventive Maintenance Sequence of Checks and Services

Table 3-1. Operater/Crew Preventive Maintenance Checks and Services

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

B—Before **A—After** **M—Monthly**
D—During **W—Weekly** **C—Combat Operability Check**

Item No.	Interval					C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	For Readiness Reporting, Equipment is Not Ready/ Available If:
	B	D	A	W	M				
1	•	•	•				Pressure Control	Check the exterior parts for cracks and leaks. Check the female coupling half for a missing or damaged gasket. Check for missing or damaged dust plug. Check the dust cap for a missing or damaged gasket. Check the pressure control for proper operation. NOTE Pressure controls should shut off as the wrinkles are removed from the drum.	
2	•		•				Hose Assembly	Check the hose for cuts, leaks, and deterioration. Check the female coupling half for cracks, leaks, and damaged or missing gasket. Check the male coupling half for missing or damaged parts.	
3	•	•	•				Coupler Valve Assembly and Adapter	Check the valve assembly handwheel for proper operation and leaks. Check the coupler valve assembly, for cracks, leaks, and missing gaskets. Check the adapter for cracks, leaks, and damaged threads.	
4	•		•				Drum Assembly	Check the fabric for cuts, holes, deterioration and leaks. Check the metal parts for cracks, leaks, and loose capscrews. No fabric cords should be showing through the rubber ream of the drum body.	Drum has punctures and/or excessive wear.

Table 3-2. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
DRUM ASSEMBLY (FUEL AND WATER)
1. Check Valve Assembly Adapter/Faucet Valve Leaks. Check for looseness. Tighten as required.
COUPLER VALVE ASSEMBLY
2. Coupler Valve Assembly Body Leaks. Check for cracked coupler valve assembly body. Install a serviceable coupler valve assembly (para 3-6c).
3. Coupler Valve Assembly Coupling Halves Leak. Step 1. Check for damaged or missing gasket. Install a serviceable gasket. Step 2. Check for loose coupler valve assembly coupling half connections. Tighten coupling halves.
PRESSURE CONTROL
Pressure Control Coupling Halves Leak. Step 1. Inspect for damaged or missing gasket. Install a serviceable gasket. Step 1. Check for loose coupling connections. Tighten coupling connections.
HOSE ASSEMBLY
5. Hose Assembly Coupling Halves Leak. Check for damaged or missing coupling half gaskets. Install serviceable coupling half gaskets (para 3-6c).
6. Hose Leaks. Check hose for cuts or cracks. Replace defective hose assembly.

Section IV. MAINTENANCE OF DRUM ASSEMBLY (FUEL OR WATER)

3-5. General.

This section contains instructions for replacement of the drum assembly, coupler valve assembly, check valve assembly, adapter/faucet valve assembly and emergency repair of the drum casing.

3-6. Drum Assembly.

a. Removal. Stop the pump assembly and proceed as follows:

(1) Turn handwheel (fig. 3-2) clockwise to close the valve.

(2) Disconnect the coupler valve assembly from the check valve assembly adapter.

(3) Place dust cap on adapter.

(4) Remove the drum assembly.

b. Inspection and Cleaning.

(1) Inspect the coupler valve assembly (fig. 3-3) for loose or missing gaskets, corroded or stuck valve and cracked or missing parts.

(2) Using a mild soap and water solution with a stiff bristle brush, remove any foreign matter from the exterior of the coupler valve assembly. Allow it to dry.

c. Coupler Valve Assembly and Check Valve Assembly Adapter Replacement.

(1) Disconnect the hose assembly (fig. 3-4) from the coupler valve assembly.

(2) Disconnect the coupler valve assembly from the check valve assembly adapter.

NOTE

Install the dust cap on the check valve assembly adapter.

(3) Using a pointed instrument, remove damaged gaskets (fig. 3-3) from the coupler valve assembly.

(4) Using a blunt instrument, install serviceable gaskets in the coupler valve assembly.

(5) Connect serviceable coupler valve assembly to the check valve assembly adapter.

(6) Connect the hose assembly (fig. 3-4) to the coupler valve assembly.

d. Installation.

(1) Remove the dust plug from the female coupling half on the pressure control (fig. 2-2) and connect and discharge hose to the pressure control.

(2) Remove the dust cap from the main coupling half of the pressure control and connect the hose assembly to the pressure control.

(3) Remove the dust plugs from the openings in the coupler valve assembly and close the valve by turning the handwheel (fig. 3-2) clockwise.

(4) Install the 2 inch (5.08 cm) female coupler of the coupler valve assembly on the check valve assembly adapter.

(5) Install the main coupler of the hose assembly in the 1-1/2 inch (3.81 cm) female coupler valve assembly.

e. Faucet Valve Assembly Replacement.

(1) Empty drum.

(2) Remove defective faucet valve.

(3) Clean threads in drum valve boss.

(4) Install serviceable faucet valve.

3-7. Drum Casing Emergency Repairs (Using Type I Repair Kit).

a. Repair (Exterior). Holes in the drum casing not greater than 3/8 inch (0.9525 cm) will be repaired as follows:

(1) When necessary, insert a wood plug (6, fig. 3-5) in the hole to temporarily stop the leak.

(2) Roll drum over to position the plugged hole at the highest point on the drum.

(3) Put on the face protective hood (4). (Fuel drums only).

(4) Using the rotary cutter (5) cut a clean edge around the hole.

(5) Push the conical end of a mechanical patch assembly (7) through the prepared hole, and pull the patch tight against the interior of the drum wall.

(6) Using the pliers (1) tighten the nut on the patch assembly against the exterior drum wall.

(7) Using the pliers, cut off the excess patch assembly shank.

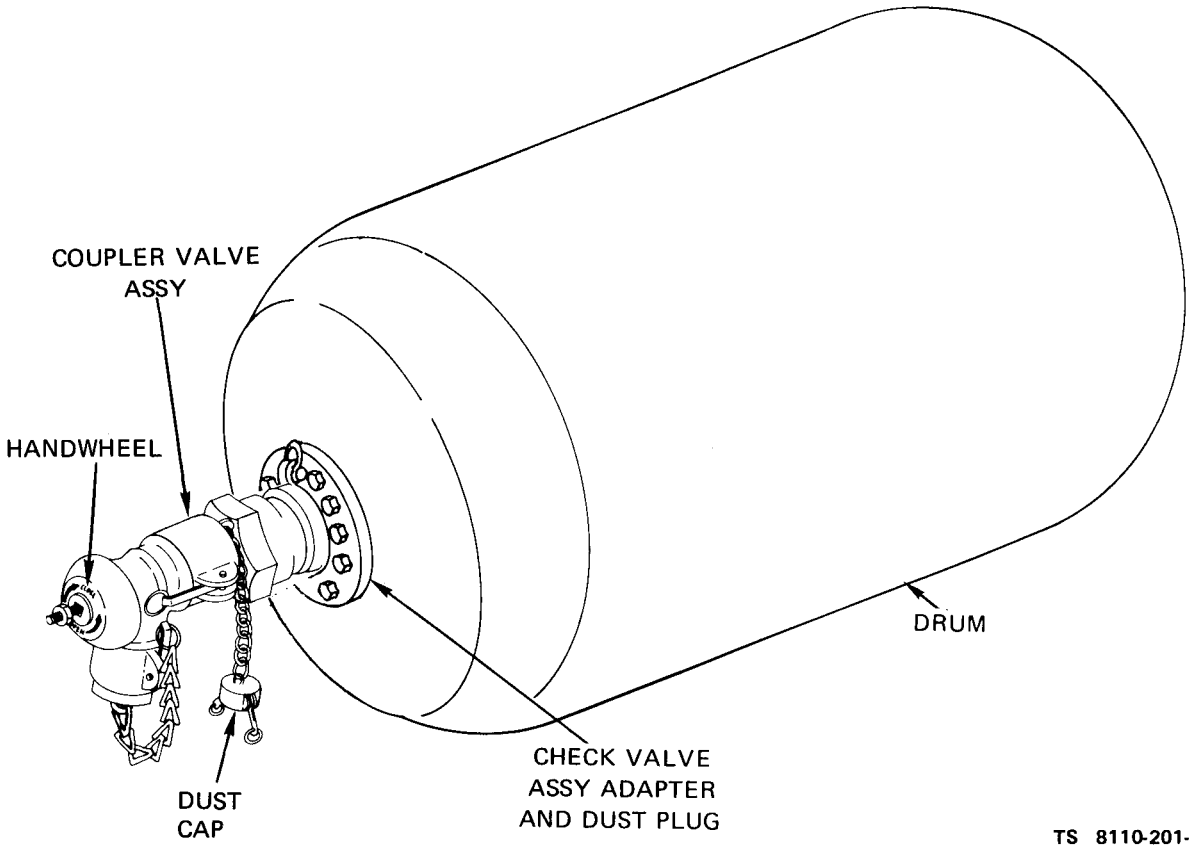

Figure 3-2. Drum Assembly

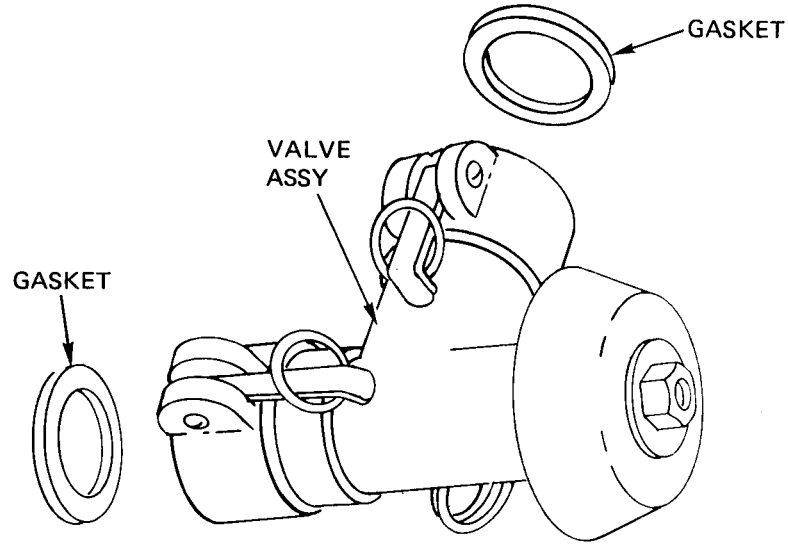

Figure 3-3. Coupler Valve Assembly

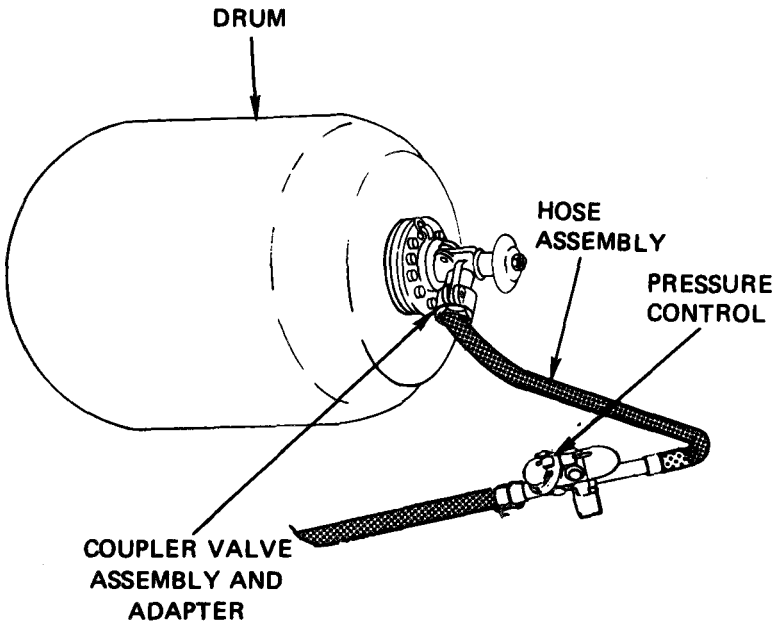

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Figure 3-4. Coupler Valve and Check Valve Assembly Adapter, Replacement

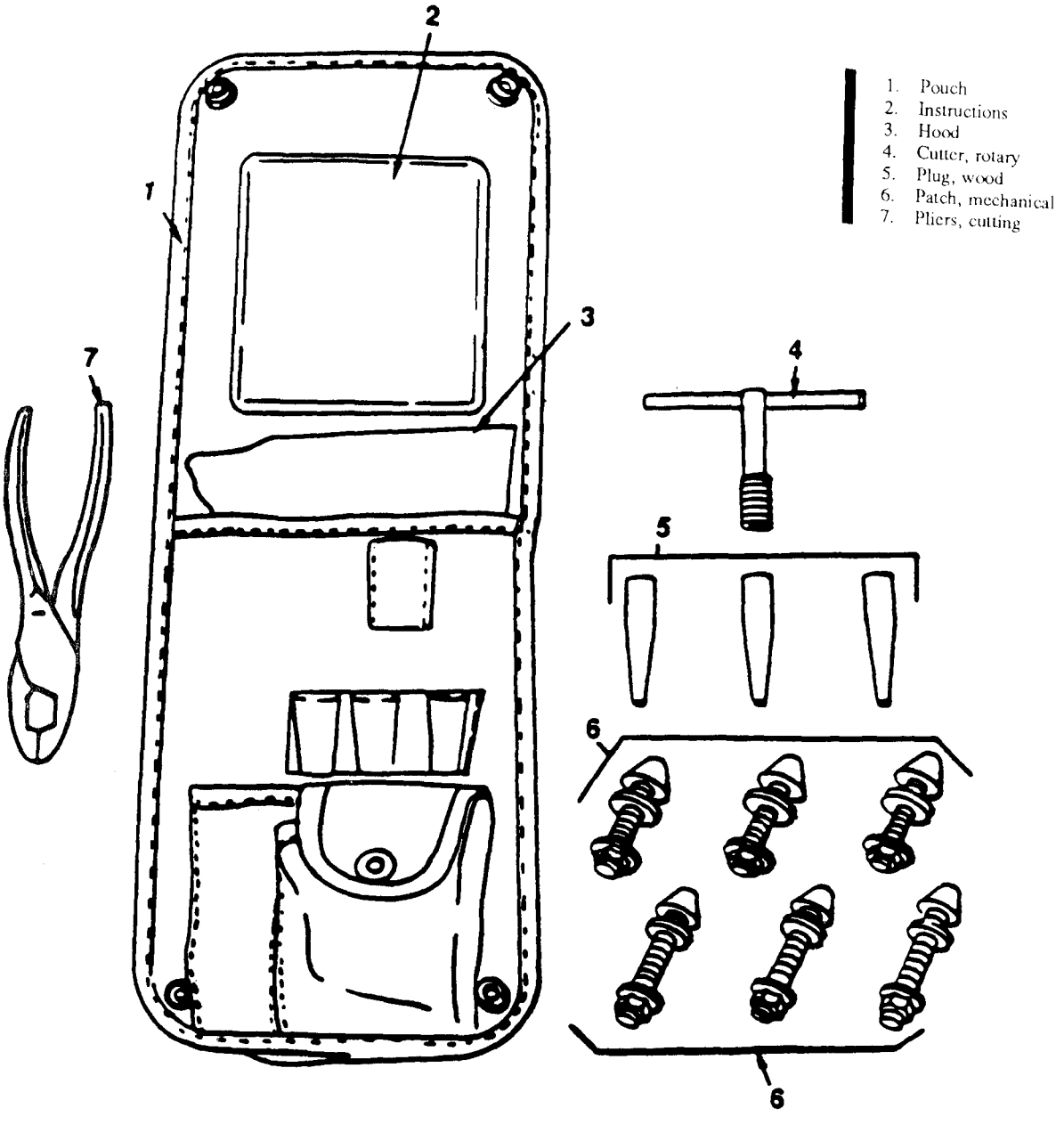


Figure 3-5. Repair Kit Type I

b. Cleaning and Inspection (Exterior).

(1) Use a mild soap and water solution and a stiff bristle brush to remove any foreign matter from the exposed part of the bearing plates (fig. 3-6) and the drum assembly.

(2) Inspect the interior front plate for cracks and evidence of leaks around the valve assembly adapter threads.

(3) Inspect the interior rear plate for cracks.

(4) Inspect the drum causing for cuts, deterioration, and evidence of leaks.

CAUTION

Do not attempt to tow, lift or transport partially filed drums, to which emergency repairs have been applied.

(5) If drum casing requires more extensive repair, notify direct and general support maintenance.

3-8. Drum Casing Emergency Repairs (Using Type II Repair Kit).

a. Repair exterior holes in the drum casing greating than 3/8 inch (0.9525 cm) in length as follows:

NOTE

Use the 2 inch (5.08 cm) mechanical patch (10, fig. 3-7) for tears up to 1-1/2 inches (3.81 cm).

(1) Roll drum over to position the torn area at the highest point of the drum.

(2) Put on the face protective hood (2, fig. 3-7) (fuel drum only).

(3) Turn back the nut on the threaded shank of the 2 inch (5.08 cm) mechanical patch.

(4) Grasp the flange with the fingers and insert the rubber portion into the torn area. Pull forward until the rubber portion is completely inside the drum.

(5) Use the pliers (9, fig. 3-7) to tighten the nut on the threaded shank until the flange seals against the drum wall.

b. Use the 3, 5, or 7 inch (7.62, 12.70, or 17.78 cm) sealing clamps (4, 5 and 6, fig 3-7) for tears up to 6 inches (15.24 cm).

(1) Position the tear at the highest point of the drum.

(2) Put on the face protective hod (2, fig. 3-7) (fuel drum only).

(3) Slip the corn loop, at the end of the threaded shank, over the left wrist to prevent its loss on the inside of the drum.

(4) Release the wingnut on the threaded shank to permit entry of the bottom half of the sealing clamp through the tear.

NOTE

Use knife (3, fig. 3-7) if necessary to lengthen tear to accommodate clamp.

(5) Push the bottom half of clamp completely through the tear and pull forward to tighten it against the inner wall of the drum.

(6) Insert upper half of clamp in threaded shank and turn entire clamp until length of clamp coincides with length of tear.

(7) Place wingnut on threaded shank and tighten down to seal.

CAUTION

Do not attempt to tow, lift or transport partially filled drums to which emergency repairs have been applied.

(8) If drum casing requires more extensive repair, notify direct and general support maintenance.

3-9. Swivel Plates and Shackles or D-Rings, Bearing Plates and Closure Rings.

a. Use a mild soap and water solution and stiff bristle brush to remove any foreign matter from the exterior of the shackles or D-Rings, swivel plates, and bearing plates.

b. Inspect the shackles (fig. 3-6) for cracks and damaged or missing screws.

c. Inspect D-rings for distortion or damage.

d. Inspect swivel plate for cracks and mechanical binding.

e. Inspect closure ring and bearing plate for cracks and loose or missing capscrews.

f. If replacement or repair of parts is necessary, notify direct and general support maintenance.

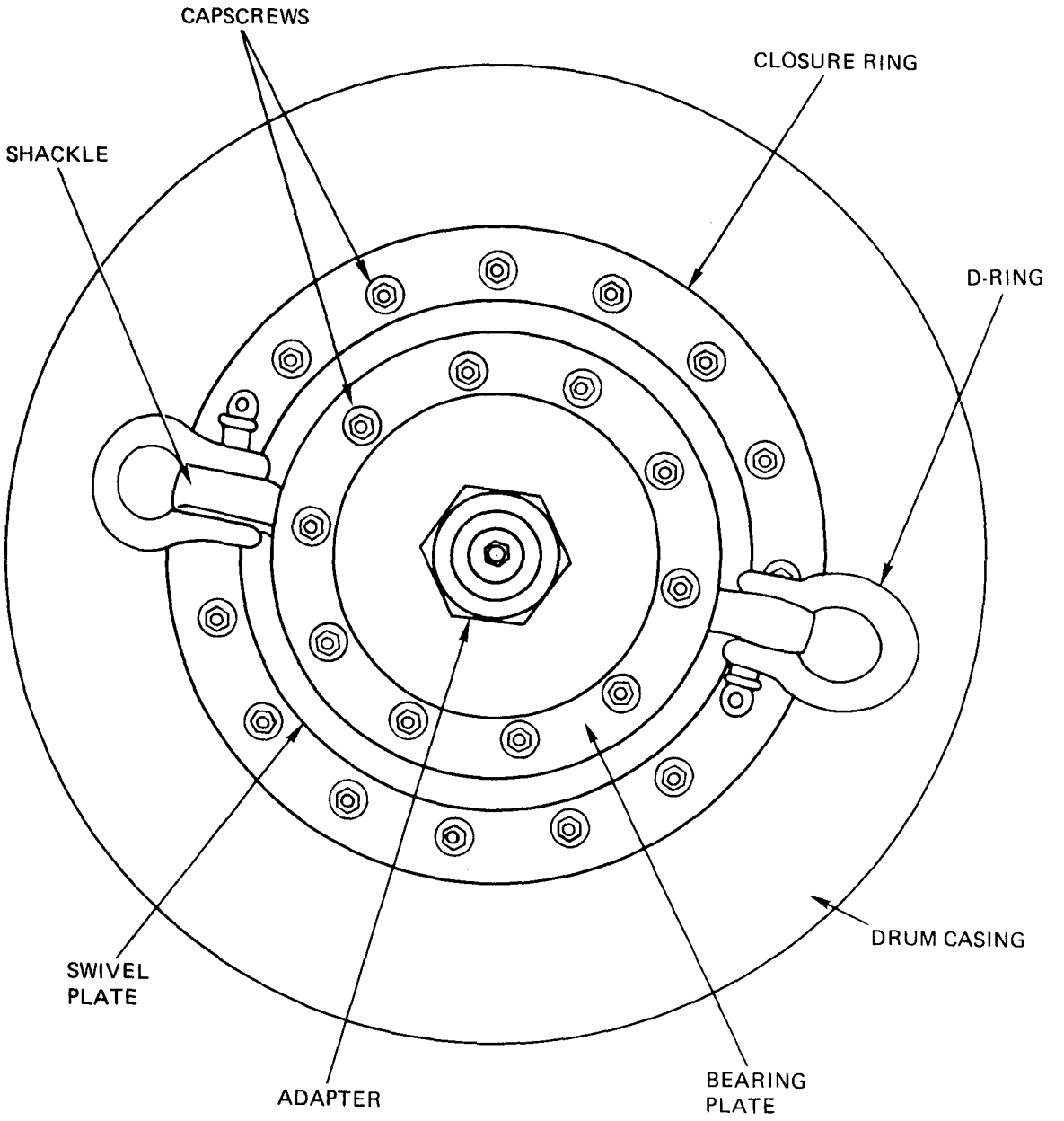
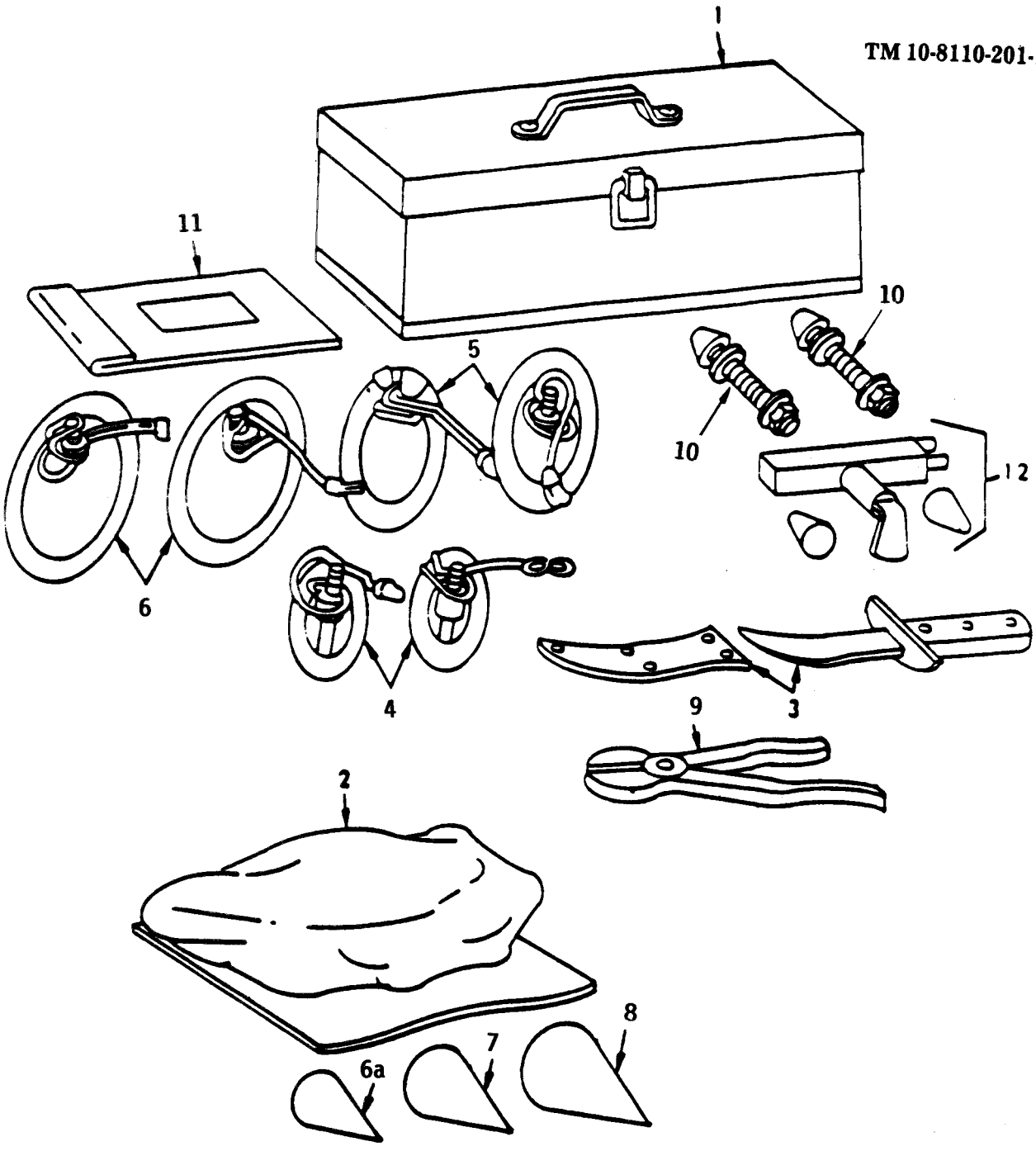


Figure 3-6. Drum Assembly, Front View



1. Container
2. Hood
3. Knife
4. Clamp, sealing (3 inch)
5. Clamp, sealing (5 inch)
6. Clamp, sealing (7 inch)
6a. Plug, wood (5/8 inch)
7. Plug, wood (1-1/2 inch)
8. Plug, wood (2 inch)
9. Pliers, cutting
10. Patch, mechanical
11. Instructions
12. Cutter, rotary

Figure 3-7. Repair Kit, Type II

3-10. Check Valve Assembly Adapter.

a. Cleaning and Inspection.

(1) Using a mild soap and water solution with a stiff bristle brush, remove any foreign matter from the exterior of the check valve assembly adapter.

(2) Inspect check valve assembly adapter (fig. 3-8) for a broken chain, cracked or missing dust cap, worn check valve assembly body, damaged or missing gasket and ring(s) and evidence of leaking around threads and around check valve assembly.

b. Replacement.

(1) Turn handwheel (fig. 3-2) clockwise to close the valve.

(2) Disconnect coupler valve assembly from check valve assembly adapter.

(3) Remove chain and dust cap from check valve assembly adapter.

(4) Remove check valve assembly adapter from drum.

(5) Apply a coating of anti-seize compound (item 2, App. E), to threads of serviceable check valve assembly adapter, and install it in the drum (fuel drum only).

(6) Attach chain and dust cap to check valve assembly adapter.

(7) Connect coupler valve assembly to check valve assembly adapter.

(8) Refill drum as necessary.

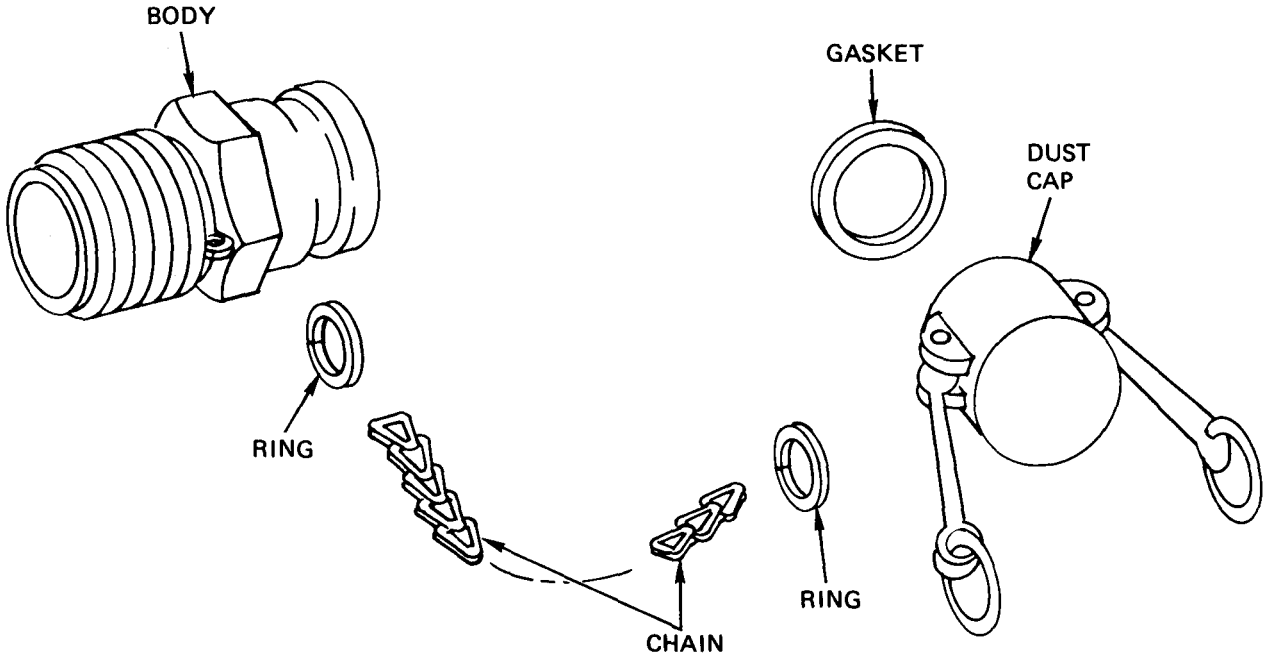


Figure 3-8. Check Valve Assembly Adapter

Section V. MAINTENANCE OF TOWING AND LIFTING YOKE, TIEDOWN KIT AND REPAIR KITS

3-11. Towing and Lifting Yoke

a. Cleaning and Inspection.

WARNING

Drycleaning solvent P-D-680, used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Clean the towing and lifting yoke (fig. 3-9) with drycleaning solvent, (item 1, App. D), to remove any foreign matter.

(2) Inspect the connecting legs and upper legs for breaks, cracks or bends.

(3) Inspect the chains, pins and key rings for broken or missing parts.

(4) Inspect the female and male braces for bends, cracks and breaks.

b. Replacement. Replace the entire towing and lifting yoke assembly, as necessary.

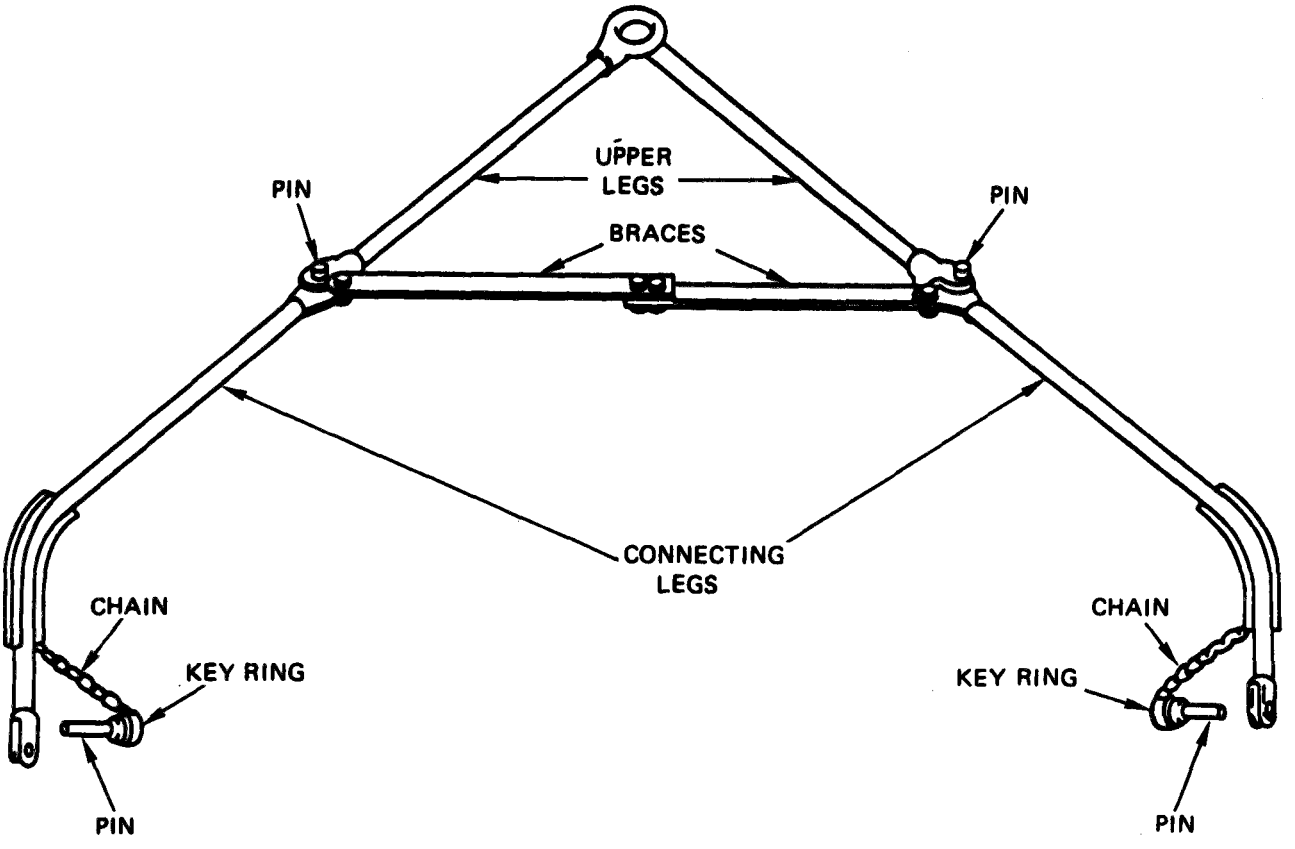


Figure 3-9. Towing and Lifting Yoke

3-12. Drum Tiedown Kit

a. Side Brackets.

WARNING

Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Wash the brackets (fig. 3-10) in drycleaning solvent (item 1, App. D), to remove all foreign matter.

(2) Inspect side brackets for cracks and bent or missing parts.

(3) Replace unserviceable side brackets with serviceable ones.

b. Chain Assemblies.

WARNING

Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property, Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Wash the front chain assemblies and brackets (fig. 3-10), intermediate chain assemblies (4) and rear chain assemblies and brackets in drycleaning solvent (item 1, App. D) to remove any foreign matter.

(2) Inspect the chain assemblies for cracked or broken links and hooks and damaged or missing sleeve.

(3) Inspect front and rear brackets for cracks and bends.

(4) Replace any unserviceable chain assembly or chain assembly and bracket with a serviceable one.

c. Load Binders.

WARNING

Drycleaning solvent, P-D-680 used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Wash the load binders (fig. 3-10) in drycleaning solvent (item 1, App. D) to remove any foreign matter.

(2) Inspect the load binders for cracked, broken, bent or missing parts.

(3) Replace unserviceable load binders.

3-13. Repair Kit, Type I.

a. Cleaning and Inspection.

WARNING

Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Wash the pliers (1, fig. 3-5) and the rotary cutter in drycleaning solvent (item 1, App. D), and dry them with a clean cloth.

(2) Using a stiff bristle brush, remove foreign matter from the pouch (2).

(3) Wash the face protective hood (4) with clear water, and dry it with a clean cloth.

(4) Using a mild soap and water solution with a stiff bristle brush, remove foreign matter from wood plugs (6) and mechanical patches (7).

(5) Inspect the pouch for rips and broken or missing snap fasteners.

(6) Inspect the pliers and rotary cutter for cracks and excessive wear.

(7) Inspect the wood plugs for broken points and cracks.

(8) Inspect the mechanical patches for deteriorated rubber parts, stripped threads and missing parts.

NOTE

Be certain all repair kit items are present.

b. Replacement. Replace unserviceable items.

3-14. Repair Kit, Type II.

a. Inspection.

(1) Inspect kit (fig. 3-7) for damaged or missing components.

(2) Inspect sealing clamps (5, 6, and 7) for stripped threads and missing parts.

b. Replacement. Replace unserviceable or missing items.

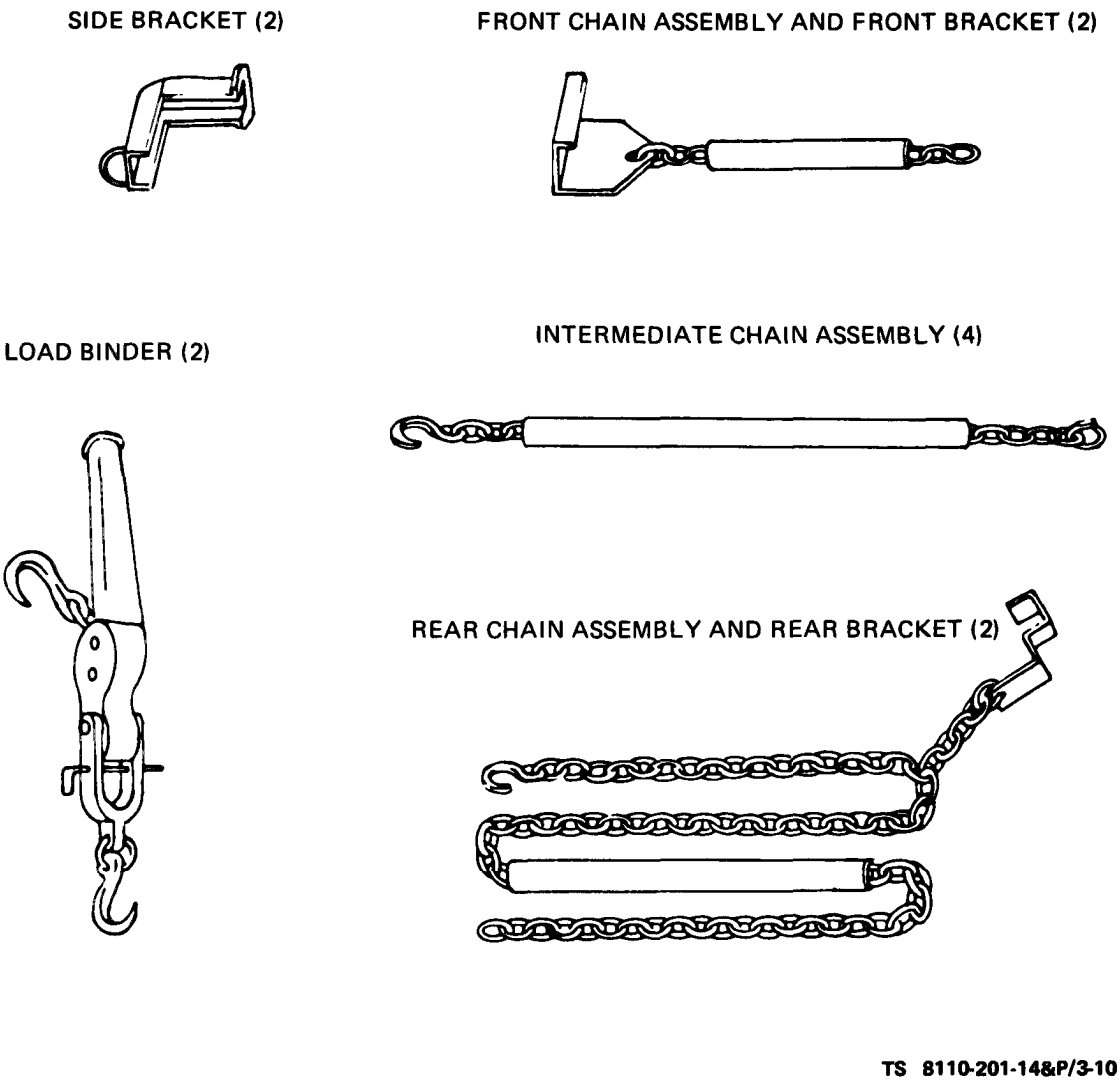


Figure 3-10. Tiedown Kit Components

Section VI. MAINTENANCE OF PRESSURE CONTROL

3-15. Pressure Control.

a. Cleaning and Inspection.

(1) Using a mild soap and water solution with a stiff bristle brush, remove any foreign matter from the pressure control (fig. 3-3).

(2) Inspect the pressure control for cracked, loose or missing parts.

b. Replacement.

(1) Disconnect and remove the pressure control from the hose assemblies.

(2) Replace unserviceable pressure control.

3-16. Hose Assembly.

a. Cleaning. Wash the hose assembly (fig. 3-11) in a mild soap and water solution and dry it with a clean cloth.

b. Inspection. Inspect the hose assembly for the following:

(1) Cut, cracked or deteriorated hose (1, fig. 3-11).

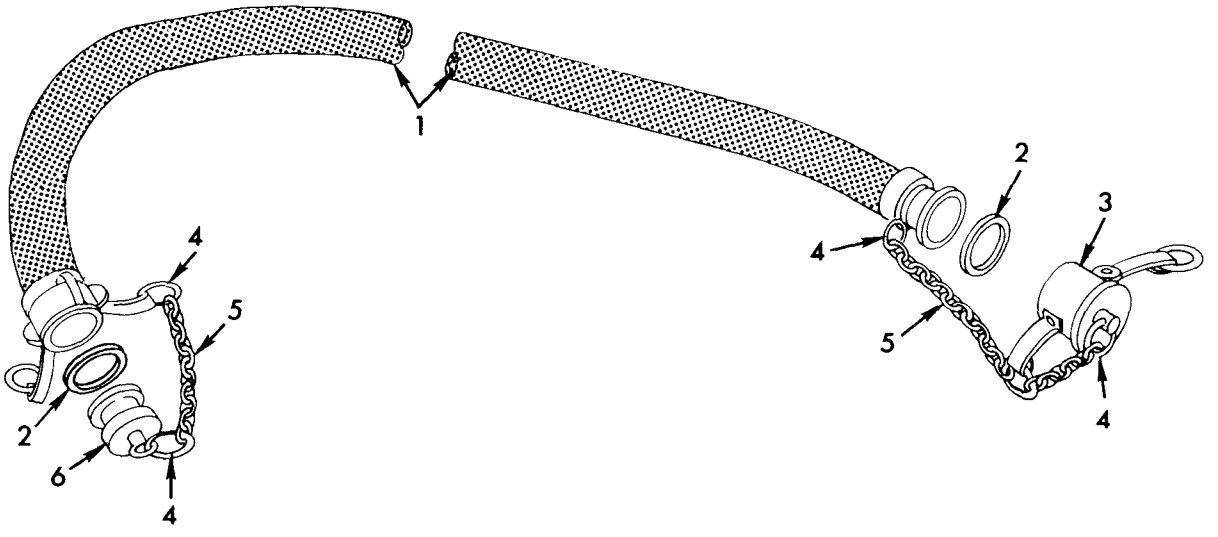
(2) Cracked, broken or missing dust cap (3) and dust plug (6).

(3) Missing or worn gaskets (2).

(4) Broken or missing chains (5).

(5) Broken or missing key rings (4).

c. Replacement. Replace unserviceable hose assembly.



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1. Hose Assembly
2. Gasket
3. Cap, dust
4. Ring, split
5. Chain
6. Plug, dust

Figure 3-11. Hose Assembly

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF MATERIEL

4-1. Unloading and Unpacking Equipment.

a. Unloading. Use a suitable lifting device to remove crate equipment from carrier.

b. Unpacking Drum.

(1) Remove nails from crate top, and remove crate top from crate (1, fig. 4-1).

(2) Remove coupler valve assembly box (2) from crate. Remove coupler valve assembly; check valve assembly, adapter, and the anti-seize compound from the box

(3) Remove protective paper and tape from coupler valve assembly (fuel drums and 250 gallon (946 liter) water drum only).

(4) Remove drum (3) from crate, and place it on a clean surface.

c. Unpacking Accessory Items.

(1) Towing andLifting Yoke.

(a) Remove towing and lifting yoke (fig. 1-3) from crate.

(b) Remove protective tape or paper from towing and lifting yoke.

(2) Tiedown Kit.

(a) Remove nails from crate top, and remove tiedown kit (fig. 1-4) from crate.

(b) Remove protective material from metal parts of tiedown kit.

(3) Repair Kit.

(a) Remove repair kit (fig, 1-5) from shipping container.

CAUTION

Assure that all loose components are removed prior to discarding crate.

WARNING

Drycleaning solvent P-D-680, used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(b) Use drycleaning solvent (item 1, App. D), to remove the preservative which has been sprayed on metal tools.

(4) Check Valve Assembly Adapter.

(a) Unscrew and remove pipe plug from front interior plate. Flatten drum down as much as possible to remove maximum amount of air from it.

(b) Apply a thin coat of anti-seize compound (item 2, App. D), to threads on check valve assembly adapter, and install it in the front plate (fuel drums only).

(5) Pressure Control.

(a) Remove nails from crate top, and remove crate top from the crate (4, fig. 4-1).

(b) Remove hose assembly (6) from crate, and remove protective paper and tape from hose assembly.

(c) Remove the metal securing straps from pressure control (5), and remove pressure control from crate.

4-2. Inspecting and Servicing Equipment.

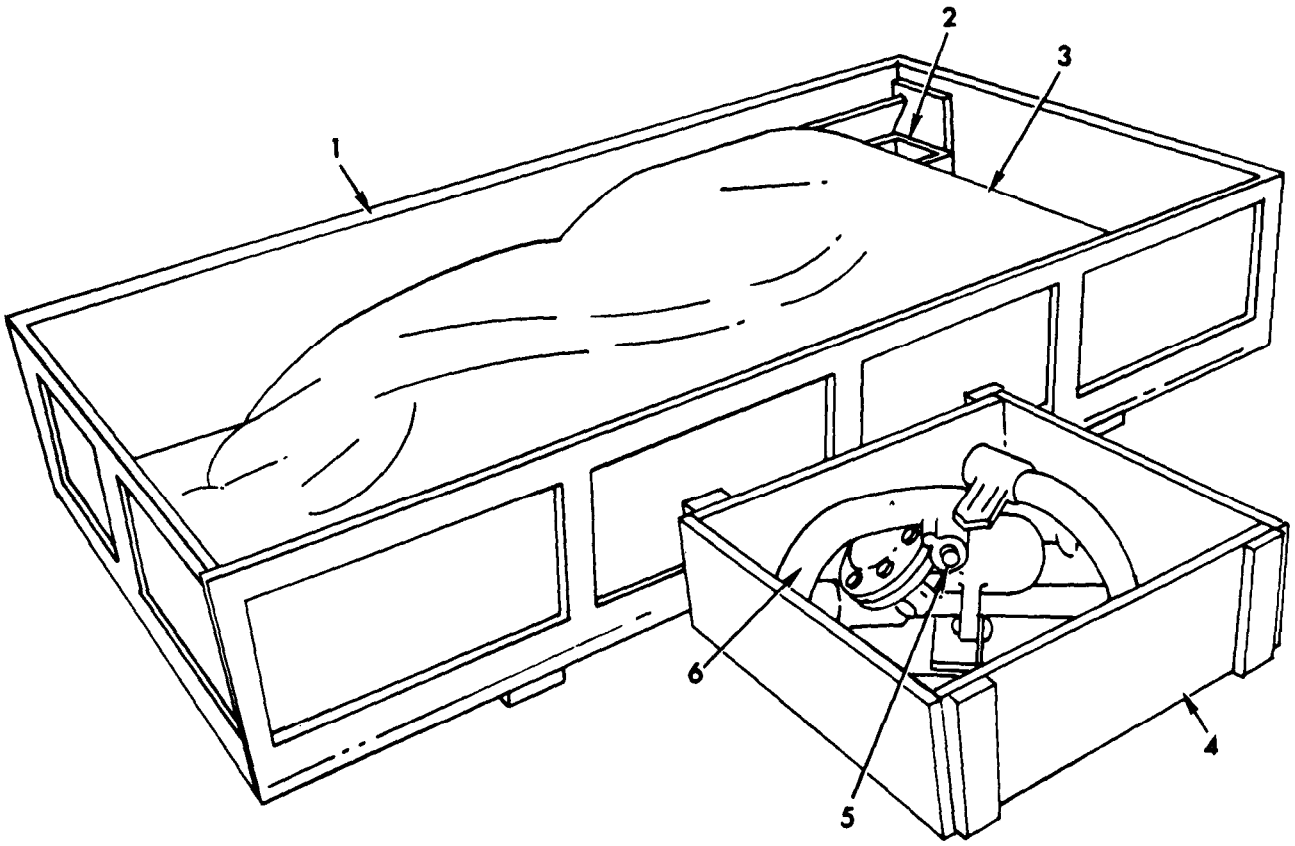
a. Drum.

(1) Inspect fabric for cuts, deterioration, and evidence of leaks.

NOTE

Complete wear of the rubber coating from the fabric does not, in itself render the drum unserviceable.

(2) Inspect front and rear bearing plates to determine if they are cracked or have loose or missing capscrews.



1. Crate, drum
2. Box, coupler valve assembly and check valve assembly adapter
3. Drum
4. Crate, pressure control
5. Control, pressure
6. Hose assembly

Figure 4-1. Drum and Pressure Control Crate

(3) Inspect front and rear swivel plates for broken or missing shackles or D-rings and evidence of binding.

(4) Inspect front and rear closure rings to determine if they are cracked or have any loose or missing capscrews.

(5) Inspect front closure plate for missing pipe plug or stripped threads.

(6) Inspect check valve assembly adapter for stripped threads, broken chain, loose or missing dust cap gasket, and corroded parts.

(7) Inspect coupler valve assembly (4, fig. 4-5) for loose or missing gaskets, corroded or stuck valve, and cracked or missing parts.

b. Towing and Lifting Yoke. Inspect towing and lifting yoke (fig, 3-9) for bent, cracked, and missing parts.

c. Tiedown Kit.

(1) Inspect front, intermediate and rear chain assemblies (fig. 3-10) for bent or broken links and hooks, and for missing covers.

(2) Inspect bracket for bent, cracked, and missing parts.

(3) Inspect load binders for broken or missing parts.

d. Repair Kits.

(1) Inspect pouch (2, fig, 3-5) for rips, dirt, and broken or missing snap fasteners.

(2) Inspect pliers (1) and rotary cutter (6) for cracked, worn, and corroded parts.

(3) Inspect wood plugs (6) to determine if they are cracked or have broken points.

(4) Inspect mechanical patch assemblies (7) for deteriorated rubber parts, stripped threads, and missing parts.

(5) Inspect kit for missing components.

(6) Inspect sealing clamps (5, 6, and 7, fig. 3-7) for stripped threads and missing parts.

e. Pressure Control

(1) Inspect pressure control for broken or missing dust plug and dust cap.

(2) Inspect pressure control for cracked body and loose or missing capscrews and nuts.

(3) Report all deficiencies that cannot be corrected to the proper authority on Standard Form SF 368 (Quality Deficiency Report).

4-3. Preparing and Filling the Drum.

Select a site near the source of supply which is level and firm as possible. Clear the site enough to permit the drums to be conveniently lined up for filling and to be rolled away after filling.

a Drum Setup.

NOTE

Perform the daily preventive maintenance checks and services listed in table 3-1.

(1) Remove the dust plug from the female coupling half on pressure control (fig. 4-2) and connect discharge hose to the pressure control.

(2) Remove the dust cap from the main coupling half on the pressure control and connect hose assembly to the pressure control.

(3) Remove dust plugs from the openings in the coupler valve assembly and close the valve by turning the handwheel clockwise.

(4) Install the 2 inch (5.08 cm) female coupler of the coupler valve assembly on the check valve assembly adapter.

(5) Install the main coupler of the hose assembly in the 1-1/2 inch (3.81 cm) female coupler valve assembly.

b. Fill Drum.

WARNING

Be certain the drum is secure to avoid slipping or rolling during filling operation. Avoid spillage of product. If spillage occurs cover the area with dry soil to reduce its rate of vaporization. Avoid getting product on body or clothing. If clothing becomes saturated with product remove the clothing immediately and wash body with hot soapy water. Do not allow smoking within 100 feet (30.5 meters) of the filling area. Be certain a suitable fire extinguisher is present.

(1) Disconnect coupler valve assembly from the check valve assembly adapter.

(2) Turn handwheel counterclockwise two turns to partially open the valve.

(3) Open the valve assembly at the source of product supply,

(4) Start the pump assembly.

(5) Hold coupler valve assembly over a suitable container for catching product.

(6) Depress and hold the FILL button (fig. 2-2), until the product is dispensed from the coupler valve assembly, indicating all air is purged from system.

(7) Turn handwheel clockwise until flow of product from coupler valve assembly is stopped.

NOTE

The pressure control will close when the flow of product is stopped at the coupler valve assembly.

(8) Install 2 inch (5.08 cm) female coupler of the coupler valve assembly on check valve assembly adapter.

(9) Turn handwheel counterclockwise to open the valve.

(10) Push the FILL button on the pressure control and allow the drum to fill.

NOTE

A slight flexing in the nose assembly means the pressure control is closed.

(11) Close coupler valve assembly by turning handwheel clockwise.

(12) Disconnect coupler valve assembly from check valve assembly adapter. Install dust cap over check valve assembly.

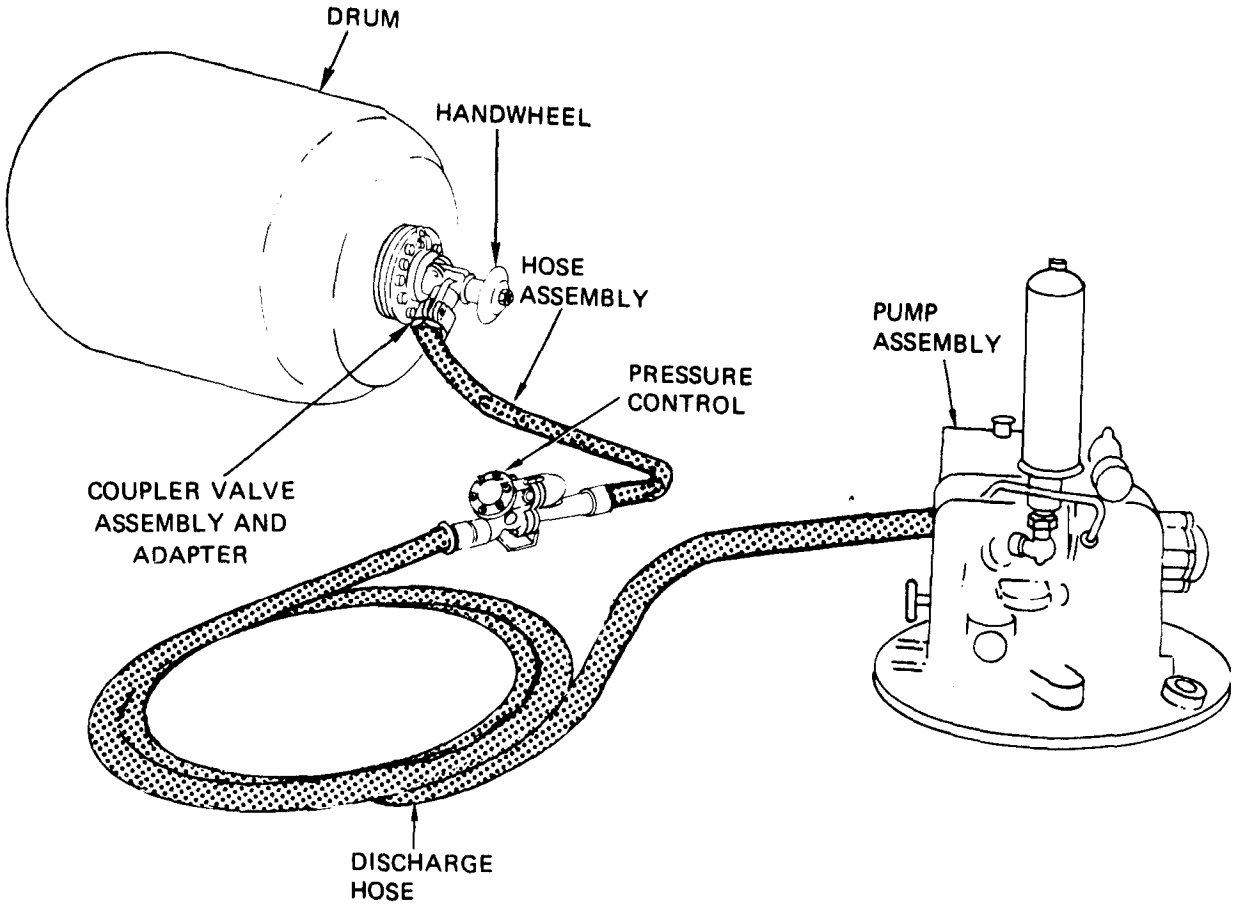


Figure 4-2. Fuel Drum Setup for Filling

Section II. MOVEMENT TO A NEW WORKSITE

4-4. Transporting the Filled Drum by Cargo Truck

CAUTION

Do not tow drums over sharp objects or rough terrain. Towing speed should not exceed 10 mph (16 km/hr).

a. Towing Drum. A filled drum may be moved short distances, at a speed not to exceed 10 mph (16 km/hr), by towing with the towing and lifting yoke as shown in figure 4-3.

(1) Unfold the towing and lifting yoke and connect the two braces.

(2) Install the screws in the braces.

(3) Place the shackles in the slots in the end of each connecting leg and install each quick release pin in each connecting leg.

(4) Connect the towing and lifting yoke to the cargo truck pintle hook.

(5) When the drum has been towed to the new location, remove the towing and lifting yoke as follows:

(a) Disconnect towing and lifting yoke from the cargo truck pintle hook.

(b) Remove the quick release pin from each connecting leg and pull the shackles from the slots.

(c) Remove the screws from the braces.

(d) Separate the two braces and fold the towing and lifting yoke.

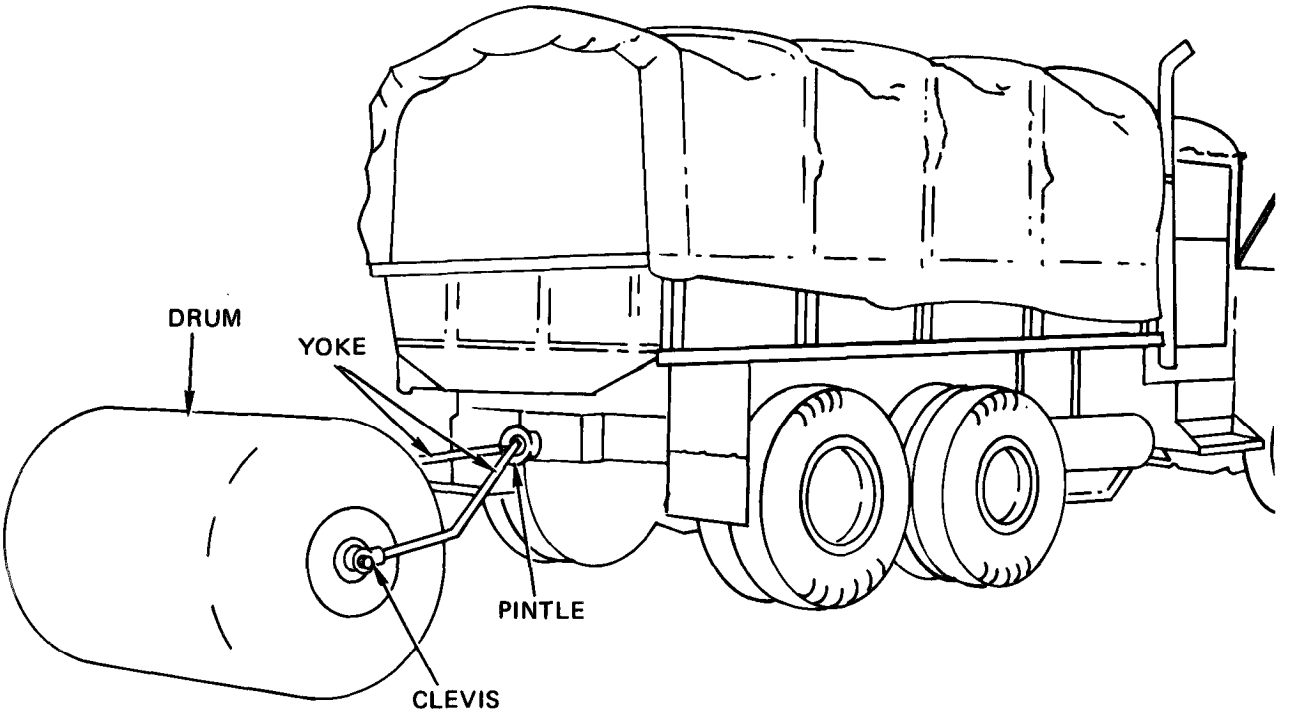


Figure 4-3. Drum Attached to Cargo Truck for Towing

b. Carrying Fuel Drums. The 2-1/2 and 5 ton (2.3 and 4.5 metric ton) cargo trucks can be used to carry filled drums from the filling site to the dispensing site. The **2-1/2** ton **(2.3** metric ton) cargo truck can carry one filled drum per load. The 5 ton (4.5 metric ton) cargo truck can carry 1, 2 or 3 filled drums per load.

(1) Loading Filled Drums Onto 5 Ton (4.5 Metric Ton) Cargo Truck.

(a) Remove all foreign objects from the cargo compartment of the cargo truck.

(b) Attach towing and lifting yoke to one drum by following the procedures in ***a(1)*** thru ***(4)*** above.

(c) Use a suitable lifting device (minimum 4,000 lb (1816 kg) capacity) to place the drum on the cargo truck. Remove the towing and lifting device from the filled drum.

(d) Repeat the procedures in ***(b)*** and ***(c)*** above to place the remaining two drums on the cargo truck.

(e) Connect the lap link of the front chain assembly (as shown in fig. 4-4) to a shackle on the front drum, and hook the opposite end of the front chain assembly over the front of the cargo compartment.

(f) Secure the opposite end of the drum to the cargo truck by following the procedure in ***(e)*** above.

(g) Connect the lap link, located on the end of an intermediate chain assembly, to the free shackle on the front drum.

(h) Connect the lap link, located six links from the hook on an intermediate chain assembly, to the shackle of the second drum.

(i) Secure the opposite end of the second drum to the first drum by following the procedures in ***(g)*** and ***(h)*** above.

(j) Connect the lap link, located on the end of an intermediate chain assembly, to the free shackle on the second drum.

(k) Connect the lap link, located six links from the hook on an intermediate chain assembly, to the shackle on the third drum.

(l) Secure the opposite end of the third drum to the second drum by following the procedures in ***(j)*** and ***(k)*** above.

(m) Hook two rear brackets over the tailgate of the cargo truck.

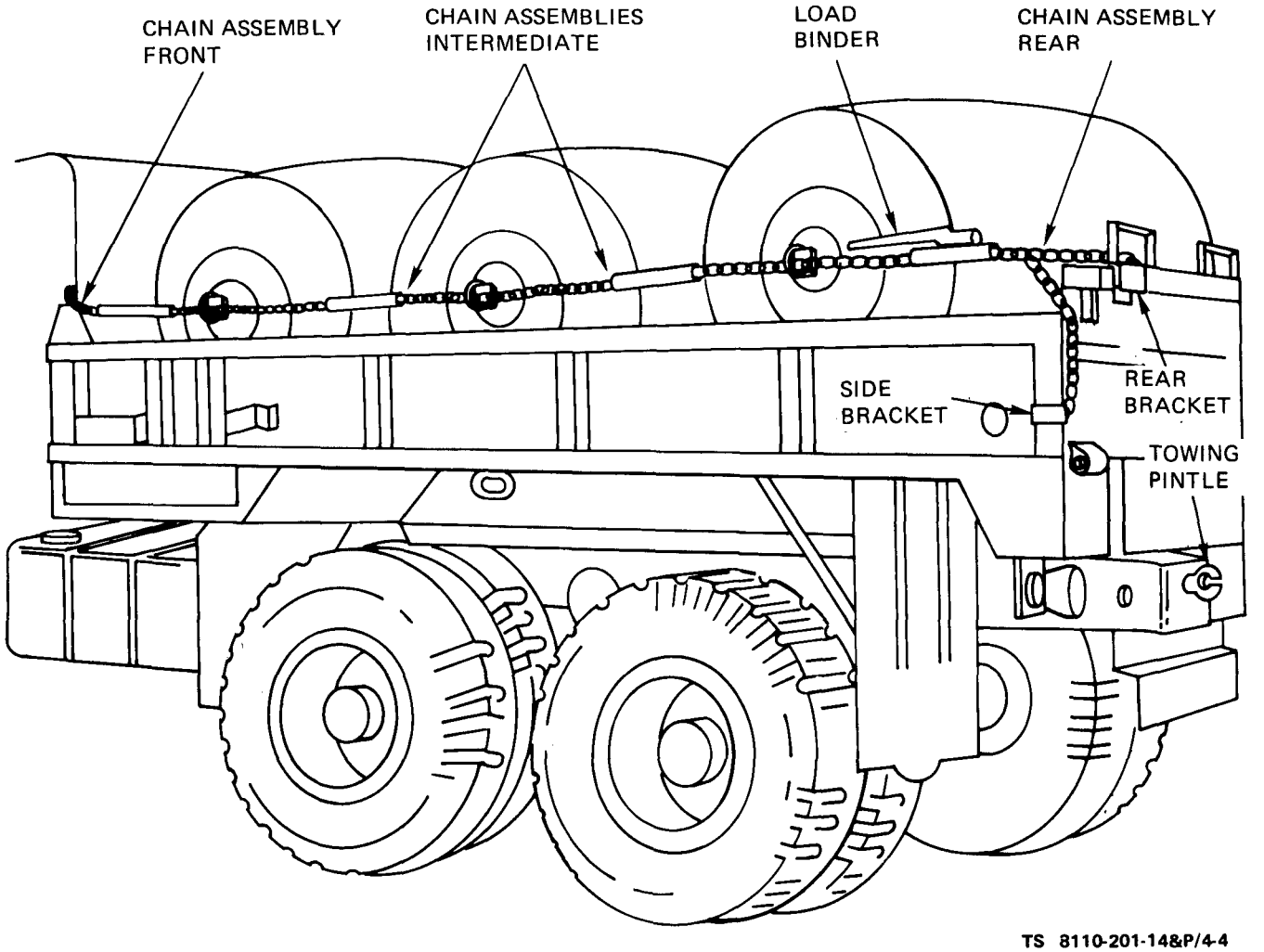


Figure 4-4. Loaded Fuel Filled Drums On 5-Ton (4.5 Metric Ton) Truck

NOTE

Be certain the brackets are located under the tailgate step.

(n) Hook a side bracket on each side of the cargo compartment, and secure them to the truck with the bracket screws.

(o) Pass the rear chain assembly hook through the towing pintle, and secure the hook to the chain of the rear chain assembly.

(p) Pass the free end of the rear chain assembly through the two loops on the rear bracket.

(q) Connect the lap link, located on the free end of the rear chain assembly, to the free shackle on the third drum.

(r) Install a load binder on the rear chain assembly between the third drum and the rear bracket to remove the slack in the rear chain assembly.

(s) Secure the opposite end of the third drum to the cargo truck by following the procedures in ***(o)*** thru ***(r)*** above.

(2) *Loading Filled Drums Onto the 2-1/2 Ton (2.3 Metric Ton) Truck.*

NOTE

Only two intermediate chain assemblies are used when loading the drums on this truck.

(a) Clean all foreign objects from the cargo compartment of the cargo truck.

(b) Attach the towing and lifting yoke to one drum by following the procedures in ***a(1)*** thru ***(4)*** above.

(c) Use a suitable lifting device (minimum 4,000 lb (1816 kg) capacity) to place the drum on the cargo truck. Remove the towing and lifting yoke from the drum.

(d) Repeat the procedures in ***(b)*** and ***(c)*** above to place the remaining drum on the cargo truck.

(e) Connect the lap link of the front chain assembly (same as shown on figure 4-4) to a shackle on the front drum, and hook the front chain assembly over the front of the cargo compartment.

(f) Secure the opposite end of the drum to the cargo truck by following the procedure in ***(e)*** above.

(g) Connect the lap link, located on the end of an intermediate chain assembly, to the free shackle on the first drum.

(h) Connect the lap link, located six links from the hook on the intermediate chain assembly, to the shackle of the second drum.

(i) Secure the opposite end of the second drum to the first drum by following the procedures in ***(g)*** and ***(h)*** above.

(j) Hook two rear brackets over the tailgate of the cargo truck.

NOTE

Be certain rear brackets are located under tailgate step.

(k) Hook side bracket on each side of the cargo compartment of the truck, and secure them to the truck with the bracket screws.

(l) Pass the rear chain assembly through the towing pintle, and secure the hook on the chain.

(m) Pass the free end of the rear chain assembly through the two loops on the rear bracket.

(n) Connect the free end of the rear chain assembly to the shackle of the second drum.

(o) Install a load binder on the rear chain assembly between the second drum and the rear bracket.

(p) Secure the opposite end of the second drum to the cargo truck by following the procedures ***(1)*** thru ***(o)*** above.

(3) Unloading Filled Fuel Drums From the 5 Ton (4.5 Metric Ton) Cargo Truck.

NOTE

When a suitable lifting device is to be used to lift the drums for the cargo truck it will not be necessary to lower the tailgate of the cargo truck.

(a) Remove the load binders from the rear chain assemblies.

(b) Disconnect the rear chain assemblies from the shackles on the third drum.

(c) Disconnect the intermediate chain assemblies from the shackles on the third drum.

(d) Loosen the screws on the side brackets, and remove the side brackets from the sides of the cargo truck, and remove the third drum from the truck.

NOTE

If only the drum is to be unloaded at this location, close the cargo truck tailgate. Reinstall the side brackets on the sides of the cargo compartment. Connect the hook on the intermediate chain assemblies to the rear chain assemblies. Install the load binders on the rear chain assemblies between the intermediate chain assemblies and the rear brackets.

(e) Disconnect the intermediate chain assemblies from the shackles on the second drum. Remove the second drum from the cargo truck.

NOTE

If only two drums are to be unloaded at this location, close the cargo truck tailgate. Reinstall the side brackets on the sides of the cargo compartment. Connect an intermediate chain assembly already connected to first drum shackles. Connect the hooks of the intermediate chain assemblies to the rear chain assemblies. Install the load binders on the rear chain assemblies between the intermediate chain assemblies and the rear brackets.

(f) Disconnect the intermediate chain assemblies from the shackles on the first drum.

(g) Disconnect the front chain assemblies from the shackles on the first drum and the cargo compartment.

(h) Remove the first drum from the cargo truck.

(i) Disconnect the rear chain assemblies from the towing pintles.

(4) Unloading Filled Fuel Drums From the 2-1/2 Ton (2.8 Metric Ton) Cargo Truck.

NOTE

When a suitable lifting device is to be used to remove the drums from the cargo truck, it will not be necessary to lower the tailgate of the cargo truck.

(a) Remove the load binders from the rear chain assemblies.

(b) Disconnect the rear chain assemblies from the shackles on the second drum.

(c) Disconnect the intermediate chain assemblies from the shackles on the second drum.

(d) Loosen the screws on the side brackets and remove them from the sides of the cargo compartment.

(e) Open the tailgate of the cargo truck, and remove the second drum from the truck.

NOTE

If only one drum is to be unloaded, reinstall tiedown gear as instructed in paragraph 4-4b.

f) Disconnect intermediate chain assemblies from the shackles on the first drun.

(g) Disconnect the front chain assemblies from the shackles of the first drum and from the cargo compartment.

(h) Remove first drum from truck.

(i) Disconnect the rear chain assemblies from the towing pintles.

4-5. Transporting the Filled Fuel Drum by Aircraft.

The drum must not be subjected to free-fall air drops. The rigging, loading and dropping procedures to be followed are in FM 10-564.

4-6. Installing Drum at Dispensing Site.

The location of the dispensing site will depend upon the intended use for the contents of the drum. However, the site should be made as level and firm as possible.

NOTE

Perform the quarterly organizational preventive maintenance checks and services listed in table 4-1.

a. Position a suitable pump assembly between the drum and the point of dispensing product.

b. Remove dust plugs from female couplers on coupler valve assembly and install the pump assembly suction hose in the 1-1/2 inch (3.8 cm) female coupler on the coupler valve assembly (fig, 4-2).

c. Install coupler valve assembly 2- inch (5.08 cm) female coupler on the check valve assembly adapter.

d. Connect the desired nozzle hose assembly arrangement to the discharge side of the pump assembly.

Section III. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

4-7. Special Tools and Equipment.

No special tools and equipment are issued to organizational maintenance personnel for maintenance of the fabric drum.

4-8. Repair Parts.

Repair parts are listed and illustrated in Appendix C of this manual.

4-9. Fabricated Tools and Equipment.

No fabricated tools or equipment are required.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-10. General.

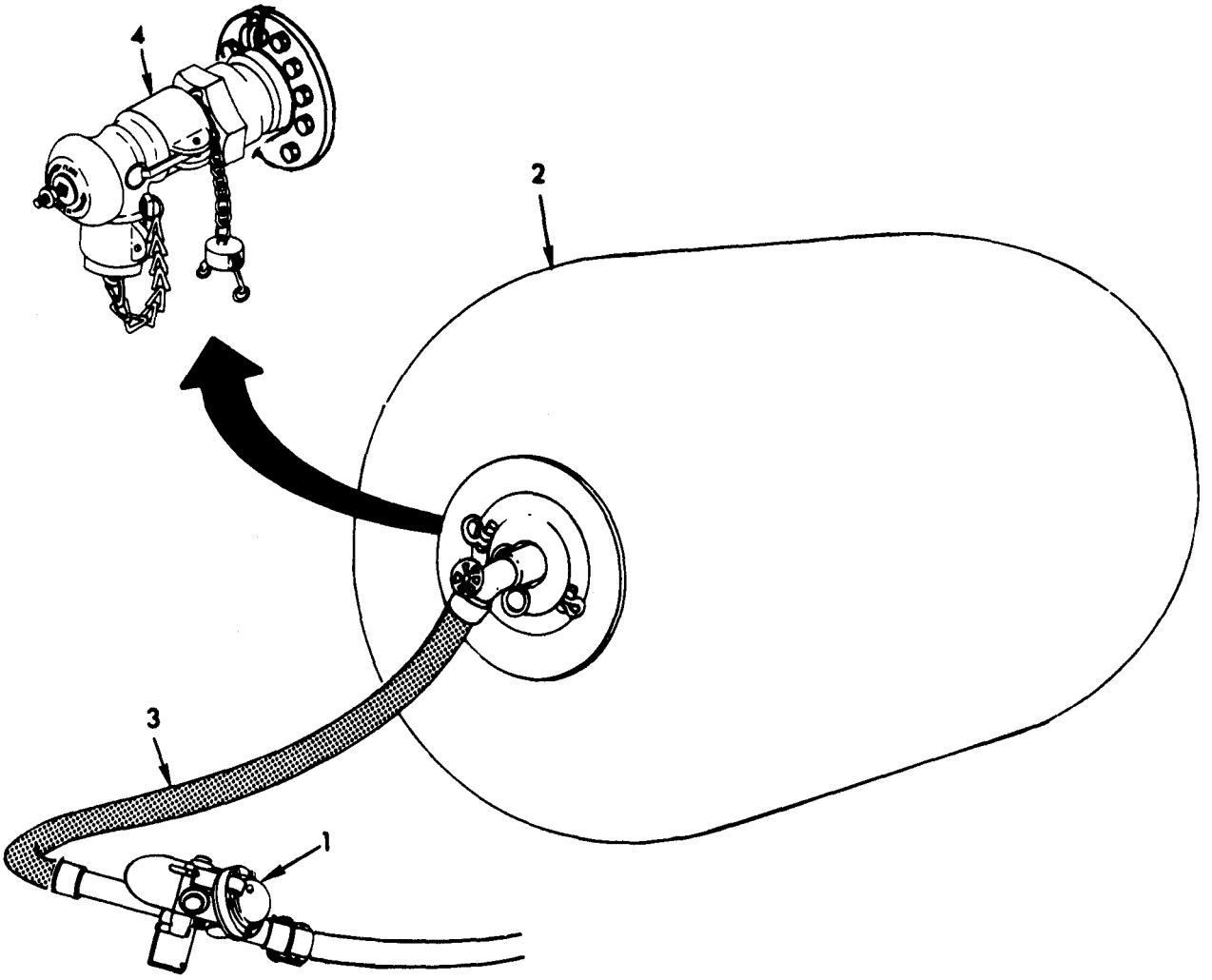
To insure that the fabric drum is ready for use at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure of equipment. The necessary preventive maintenance services to be performed are listed and described in paragraph 4-11. Defects discovered during operation of the unit should be corrected as soon as possible. All deficiencies and shortcomings will be recorded, together with the corrective actions taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

4-11. Quarterly Preventive Maintenance Checks and Services.

Table 4-1 lists the checks and services which must be performed quarterly. Figure 4-5 illustrates the items to be inspected in sequence.

Table 4-1. Organizational Preventive Maintenance Checks and Services Quarterly Schedule

Item No.	Item To Be Inspected	Procedures Check for and have Repaired Replaced, Adjusted as necessary	For Readiness Reporting, Equipment is Not Ready/ Available If:
1	Pressure Control	Check exterior parts for cracks and leaks. Check for missing or damaged gaskets, dust plug and dust cap. Check the pressure control for proper operation. Test the pilot valve; the correct shutoff pressure is from 4 to 5 psi (0.3 to 0.4 kg/sq cm) (para 4-22).	
2	Drum (All)	Check closure plates for cracks; check exterior of drums for cuts, wear, exposed fabrics or evdence of leaks.	
3	Hose Assembly	Check hose for cuts, leaks, and deterioration. Check coupling halves for cracks, leaks and damaged or missing gasket. Check dust cap and dust plug for cracks, breaks, and damaged or missing chain and key rings.	
4	Coupler Valve Assembly and Adapter	Check handwheel for leaks or damage. Check coupler valve assembly for cracks, leaks, and damaged or missing gaskets. Check adapter for cracks and damaged threads.	



1. Pressure Control
2. Drum
3. Hose Assembly
4. Coupler Valve Assembly and Adapter

Figure 4-5. Organizational Preventive Maintenance Sequence of Checks and Services

Section V. TROUBLESHOOTING

4-12. General.

a. This section contains troubleshooting information for locating and correcting most of the operation troubles which may develop in the drums and their components. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine corrective actions to take.

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

c. Table 4-2 lists the common malfunctions which you may find during the operation or maintenance of the drums and their components. You should perform the tests/inspections and corrective actions in the order listed.

4-13. Organizational Maintenance Troubleshooting.

Refer to table 4-2 for troubleshooting procedures applicable to the drums. Any trouble, the correction of which is beyond the scope of organizational maintenance should be referred to direct support maintenance.

Table 4-2. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
COUPLER VALVE ASSEMBLY
1. Coupler Valve Assembly Stem Leaks.
Inspect for damaged coupler valve assembly preformed packing.
Install serviceable preformed packing on valve stem (para 4-14).
PRESSURE CONTROL
2. Pressure Control Coupling Halves Leak.
Inspect for damaged or missing gasket.
Install a serviceable gasket.
3. Fuel Appears on Pressure Control Body Between the Two Main Castings.
Step 1. Inspect for broken pilot valve bellows assembly.
Install a serviceable valve (para 4-22).
Step 2. Inspect for damaged preformed packing in pilot valve.
Install serviceable preformed packing (para 4-22).
Step 3. Inspect for damaged venturi preformed packing.
Install a serviceable venturi preformed packing (para 4-23).
Step 4. Inspect venturi throat for damage.
Install serviceable venturi (para 4-23).
4. Diaphragm Valve Fails.
Step 1. Inspect for ruptured diaphragm.
Install a serviceable diaphragm (para 4-20).
Step 2. Inspect compression ring for damage.
Install serviceable compression ring (para 4-20).

Table 4-2. Troubleshooting (Cont)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
5. Pressure Control Shuts Off Prematurely or Too Late Check pilot valve adjustment. Adjust pilot valve (para 4-22).
6. Cycling Valve: No Response to Fill or Stop Buttons. Step 1. Inspect for damaged cycling valve preformed packings. Install serviceable cycling valve preformed packings (para 4-21). Step 2. Inspect for damaged cycling valve compression ring. Install serviceable cycling valve compression ring (para 4-21). Step 3. Inspect for dirty cycling valve. Clean dirty cycling valve (para 4-21 *b).*
7. Hose Assembly Coupling Halves Leak. Step 1. Inspect for damaged or missing coupling half gaskets. Install serviceable coupling half gaskets (para 4-24 and 4-25). Step 2. Inspect for cracked coupling half. Install a serviceable coupling half (para 4-24 and 4-25).
8. Hose Leaks. Inspect for cut or cracked hose. Replace or repair hose assembly.

Section VI. MAINTENANCE OF DRUM ASSEMBLY

4-14. Coupler Valve Assembly.

a. Removal. Stop the pump assembly and proceed as follows:

(1) Turn handwheel (fig. 4-2) clockwise to close the valve.

(2) Disconnect hose assembly from coupler valve assembly.

(3) Disconnect coupler valve assembly from check valve assembly adapter.

NOTE

Install the dust cap on the check valve assembly adapter.

b. Disassembly.

(1) Unscrew and remove nut (1, fig. 4-6) and handwheel (2) from stem (4).

(2) Unscrew and remove handwheel retainer (3) from the coupler valve body (14).

(3) Remove valve stem (4) from the coupler valve assembly. Pry damaged preformed packing (5) from valve stem.

(4) Remove retaining ring (6), spacer (7), and valve stem rotor (8).

(5) Remove valve stem (9) and seat ring (10). If damaged, remove pin (12) from valve stem.

c. Repair.

(1) Using a pointed instrument, remove a damaged gasket (11 and 13, fig. 4-6) from the coupler valve assembly. Using a blunt instrument, install serviceable gaskets in the coupler valve assembly.

(2) Install a serviceable preformed packing (5) on the valve stem.

(3) Replace any damaged or defective part.

d. Reassembly.

(1) If removed, insert pin (12, fig 4-6) in valve stem (9). Install seat ring (10) and valve stem (9) in the coupler valve body (14).

(2) Install valve stem rotor (8), spacer (7), and retaining ring (6).

(3) Install valve stem (4) and preformed packing (5).

(4) Apply anti-seize compound (item 2, App. D) to the retainer (3) and install it in the coupler valve assembly.

(5) Install handwheel (2) and secure with nut (1).

e. Installation.

NOTE

Remove dust cap from check valve assembly adapter.

(1) Connect coupler valve assembly to check valve assembly adapter.

(2) Connect hose assembly (fig., 4-2) to coupler valve assembly.

(3) Turn handwheel (fig. 4-2) counterclockwise to open coupler valve assembly.

4-15. Check Valve Assembly Adapter.

a. Removal. Start the pump assembly and proceed as follows:

(1) Dispense the contents from the drum (para 2-3).

(2) Disconnect coupler valve assembly from check valve assembly adapter.

(3) Remove the chain and dust cap from the check valve assembly adapter.

(4) Remove the check valve assembly adapter on the drum.

b. Disassembly.

(1) Unscrew and remove spring retainer (4, fig. 4-7), spring (5) and spring housing (6) using spring retainer wrench (fig. 4-7.1) Turn counterclockwise to remove spring retainer.

(2) Remove pin guide (1), washer (2), and gasket (3) from spring housing (6).

(3) If necessary, pull dust cap (7) free from the adapter body (8).

c. Repair.

(1) Inspect parts for signs of damage or defects.

(2) Replace any unserviceable parts.

(3) Replace all gaskets.

d. Reassembly.

(1) If removed, install dust cap (7, fig. 4-7) on adapter body (8).

(2) Install guide pin (1), and washer (2) and gasket (3) on spring housing (6).

(3) Insert spring (5) in spring housing (6) and install spring retainer (4) using spring retainer wrench (fig. 4-7.1). Turn clockwise to install spring retainer.

(4) Insert assembled spring housing into the adapter body (8) and install spring retainer.

e. Installation.

(1) Apply a coating of anti-seize compound (item 2, App. D) to threads of a serviceable check valve assembly adapter, and install it in the drum (fuel drum only).

(2) Install the check valve assembly adapter in the drum.

(3) Install the chain and dust cap on the check valve assembly adapter.

(4) Connect the coupler valve assembly to the check valve assembly adapter.

4-16. Repair Kits, Type I and Type II.

These repair kits are provided for emergency repair of the fabric drum casing by the operating personnel.

a. Refer to paragraphs 3-7 and 3-8 for emergency repair instructions of the drum casing.

b. Refer to paragraphs 3-13 and 3-14 for inspection and replacement of the repair kits.

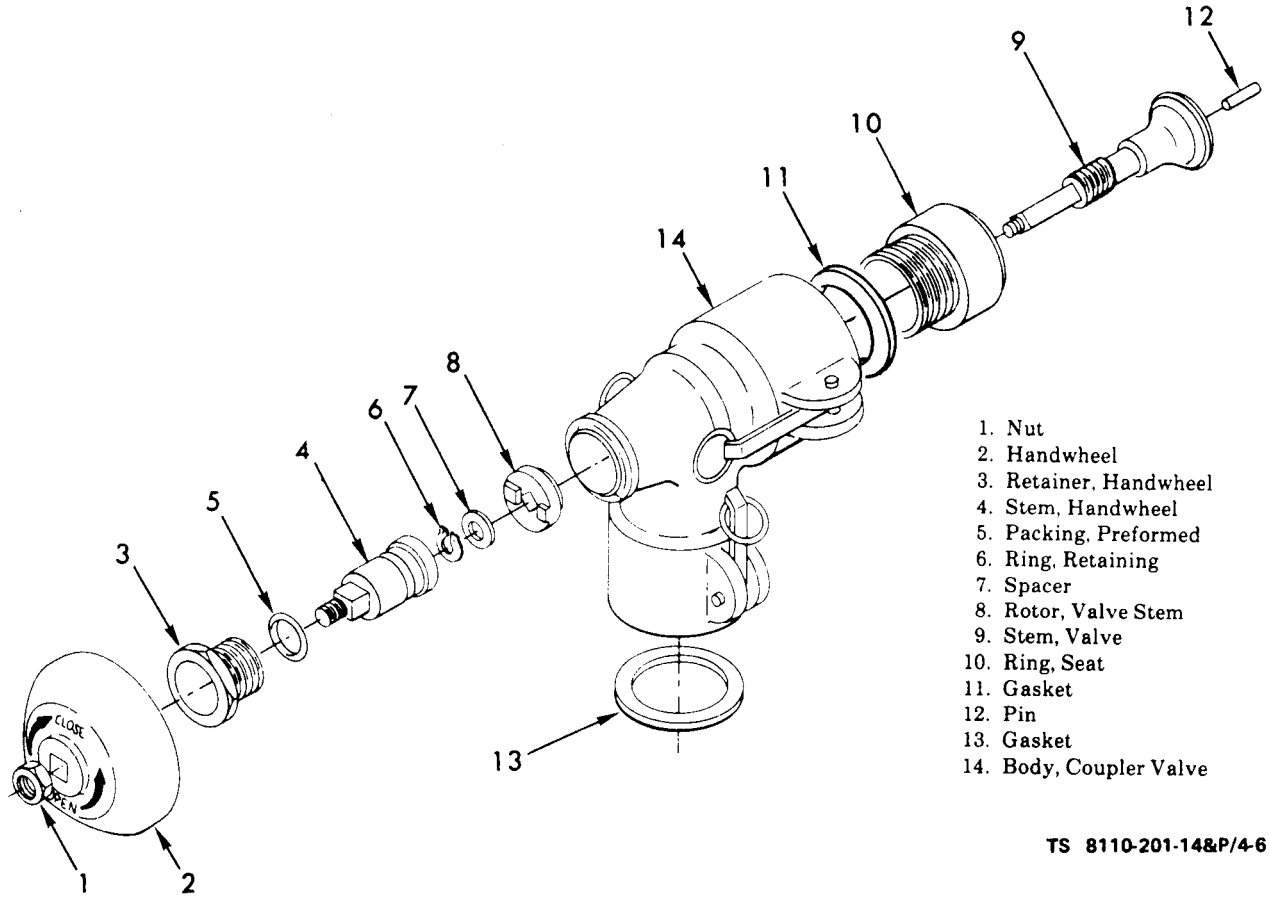


Figure 4-6. Coupler Valve Assembly, Disassembly and Reassembly

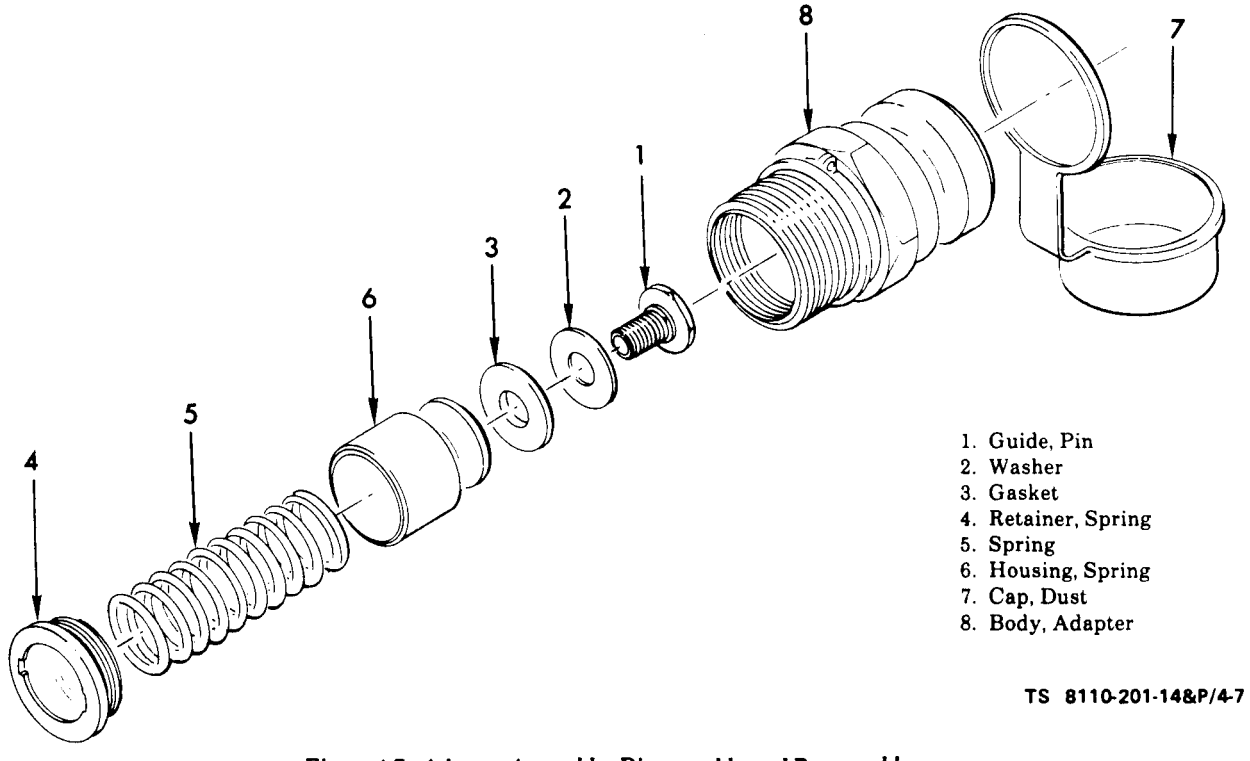


Figure 4-7. Adapter Assembly, Disassembly and Reassembly

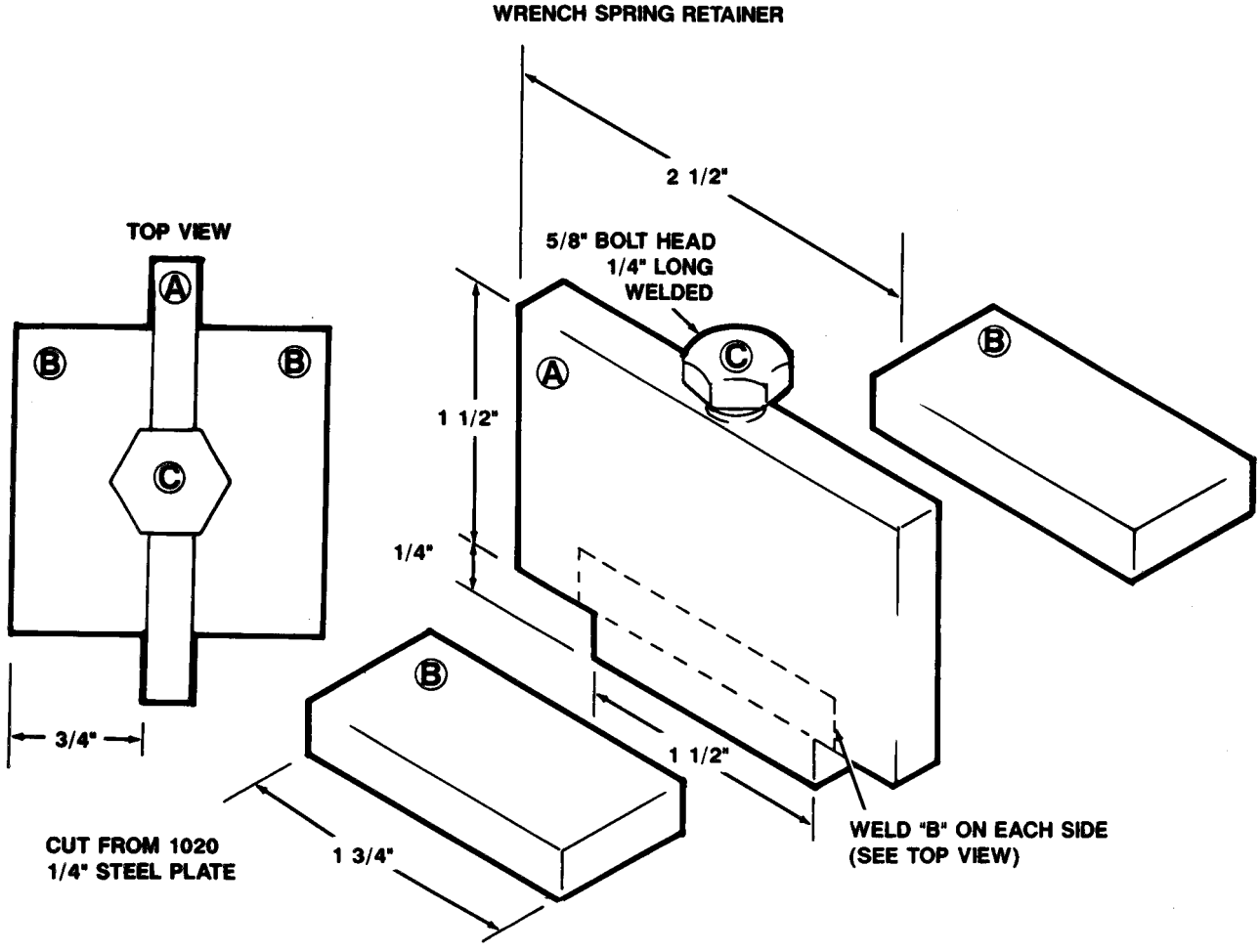


Figure 4-7.1. Wrench Spring Retainer.

Section VII. MAINTENANCE OF TOWING AND LIFTING YOKE AND TIEDOWN KIT

4-17. Towing and Lifting Yoke.

a. C1eaning and Inspection.

WARNING

Drycleaning solvent P-D-680, used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Wash the towing and lifting yoke (fig. 4-8) with drycleaning solvent (item 1, App. D), to remove foreign matter.

(2) Inspect connecting legs (1, fig. 4-8) and upper legs (2) for breaks, cracks or bends.

(3) Inspect chains (10), pins (3, 12, and 13) and hooks and key ring (11) for damage or missing parts.

(4) Inspect the two braces (5) for breaks, bends, or cracks.

b. Dissassembly.

(1) Remove setscrews (4, fig. 4-8) and pins (3) and separate connecting legs (1) from upper legs (2).

(2) Remove screws (6) and nuts (7) and separate the two braces (5) from the connecting legs.

(3) If necessary, seperate the two braces by removing the capscrews (8) and nuts (9).

(4) Pull cotter pins (13) and remove clevis pins (12), hooks and key rings (11), and chains (10) from connecting legs.

c. Repair.

(1) Using the proper tools, straighten any bent legs or braces. Weld any minor cracks or breaks that were detected during inspection. Replace any leg or brace that is damaged beyond repair.

(2) If either chain is damaged, cut a new one approximately 6 inches (15 cm) or 10 links in length from bulk chain (NSN 4010-00-567-2325).

(3) Replace any remaining parts that are damaged or defective.

d. Reassembly.

(1) Attach chains (10, fig. 4-8), hooks and key rings (11), and clevis pins (12) to connecting legs (1) and secure with cotter pin (13).

(2) Connect the two braces (5) and install screws (8) and washers (9).

(3) Connect the two braces to the connecting legs and secure with screws (6) and nuts (7).

(4) Attach the upper legs (1) to the connecting legs with pins (3) and setscrews (4).

4-18. Drum Tiedown Kit

a. Brackets.

WARNING

Drycleaning solvent P-D-680 used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Wash side brackets (8, fig. 4-9), rear brackets (9), and front brackets (10) in drycleaning solvent (item 1, App. D) to remove foreign matter and inspect for cracks and bent or missing parts.

(2) Using proper tools, straighten bent parts of brackets.

(3) Using proper procedures, weld any cracks, or breaks in brackets.

(4) Replace unserviceable brackets that cannot be repaired with serviceable ones.

b. Chain Assemblies.

WARNING

Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Wash the front chain assemblies (6, fig. 4-9), intermediate chain assemblies (4), and rear chain assemblies (1) in drycleaning solvent (item 1, App. D), to remove foreign matter.

(2) Inspect all chain assemblies for cracked or broken links and hooks and damaged or missing sleeve.

(3) Using proper tools, straighten bent links in chain assemblies.

(4) Using proper welding procedures, weld cracked or broken links and hooks in chain assemblies.

(5) Replace an unserviceable chain assembly that cannot be repaired with a serviceable one.

(6) Fabricate chain assembly covers as follows:

(a) Using the unserviceable cover (2, 5, or 7) as a pattern, cut a new cover from the bulk cotton duck cloth (NSN 8305-00-170-5871).

(b) Machnine screw the long edges together to form the cover.

Legends for Figure 4-8.

1. Leg, Connecting
2. Leg, Upper
3. Pin
4. Setscrew
5. Brace
6. Capscrew
7. Nut
8. Capscrew
9. Nut
10. Chain
11. Hook and Key Ring
12. Pin, Clevis
13. Pin, Cotter

Legends for Figure 4-9.

1. Chain Assembly, Rear
2. Cover
3. Binder
4. Chain Assembly, Intermediate
5. Cover
6. Chain Assembly, Front
7. Cover
8. Bracket
9. Bracket, Rear
10. Bracket, Front
11. Setscrew

c. Load Binder.

WARNING

Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Use in a well-ventilated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F - 138°F (38°C - 59°C).

(1) Wash the load binders (3, fig. 4-9) in drycleaning solvent (item 1, App. D), to remove foreign matter, and inspect for cracked, broken, bent, or missing parts.

(2) Using proper tools, straighten bent load binder parts.

(3) Using proper welding procedures, weld cracks or breaks in load binder parts.

(4) Replace unserviceable load binders that cannot be repaired with serviceable ones.

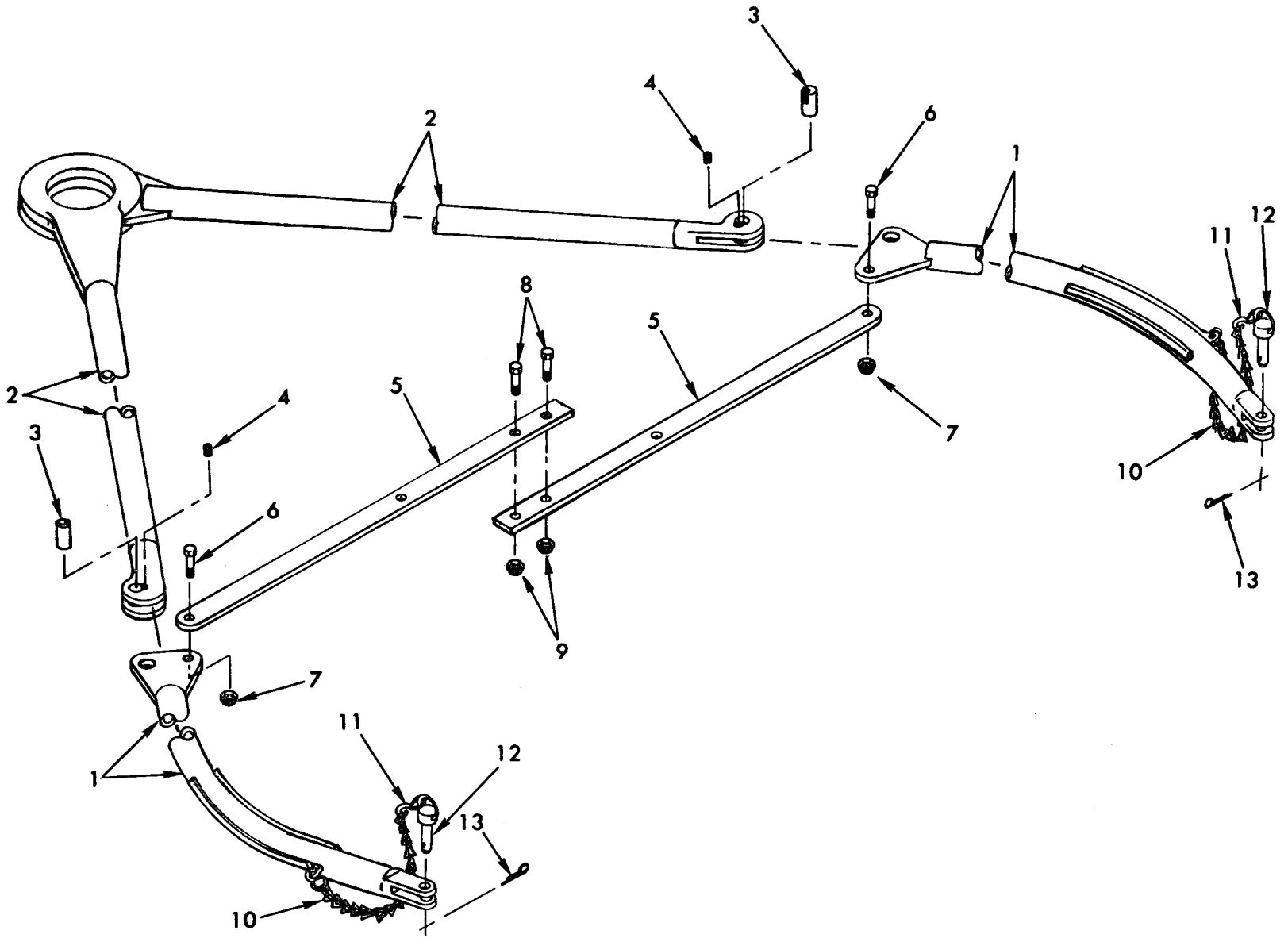


Figure 4-8. Towing and Lifting Yoke, Disassembly and Reassembly

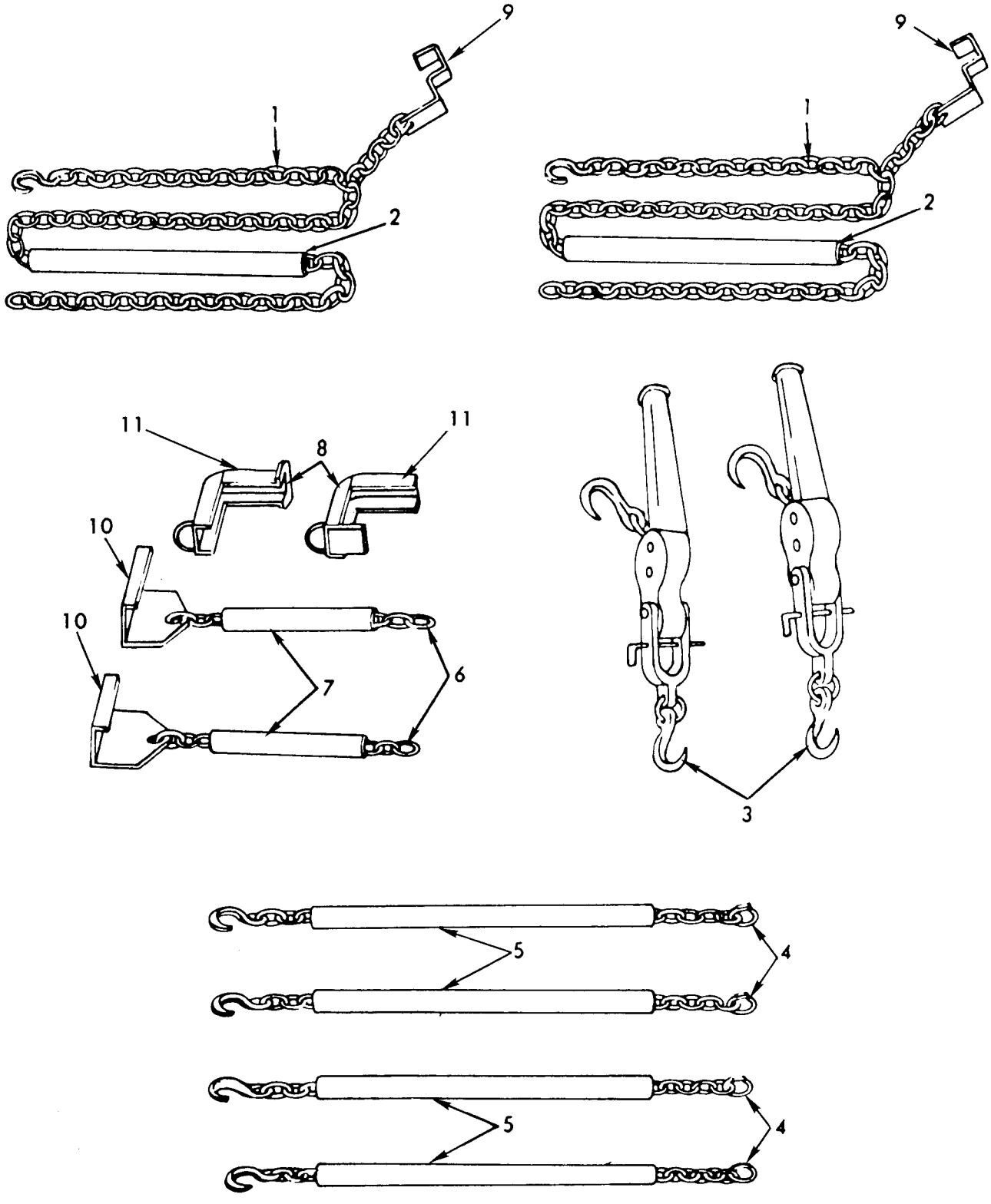


Figure 4-9. Tiedown Kit

Section VIII. MAINTENANCE OF PRESSURE CONTROL

4-19. Pressure Control (Fuel Drums Only).

a. Cleaning and Inspection (Exterior), Testing and Adjustment.

(1) Using a mild soap and water solution with a stiff bristle brush, remove foreign matter from the pressure control.

(2) Inspect pressure control for cracked, loose, or missing parts.

(3) Test and adjust pilot valve (para 4-22).

b. Repair. When it becomes necessary to repair and adjust the pressure control, the procedures in paragraphs 4-20 thru 4-25 will be followed as required.

4-20. Diaphragm Valve.

a. Removal and Disassembly.

(1) Remove the plug (1, fig. 4-10) from the cover (3) as necessary.

(2) Hold down the cover (3) firmly to prevent spring action and remove the nuts (2) from studs (14). Gradually release the pressure on the cover and remove the cover from the studs.

(3) Unscrew and remove guide shaft (4) from cover (3).

(4) Remove spring (5) from the pressure control. Lift the diaphragm valve from the pressure control.

(5) Remove the nut (6) from machine screw (13).

(6) Remove the large washer (7), diaphragm (8), poppet (9), disk (10), spacer (11) and small washer (12) from the machine screw (13).

b. Cleaning, Inspection and Repair.

(1) Wash all metal parts in a hot, mild soap and water solution and dry the parts with a clean cloth.

(2) Inspect the machine screw and guide shaft to determine if they are bent, cracked, broken, burred or have stripped threads.

(3) Inspect the nut for stripped threads and a burred surface.

(4) Inspect the diaphragm and disk to determine if they are cut or deteriorated.

(5) Inspect the spring to determine if it is broken or collapsed.

(6) Inspect the poppet, spacer and washers to determine if they are cracked or burred.

(7) Replace all unserviceable parts.

c. Reassembly and Installation.

(1) Place the small washer (12, fig. 4-10), spacer (11), disk (10) and poppet (9) on the machine screw (13).

(2) Place the diaphragm (8) on the machine screw (13).

(3) Place the large washer (7) on the machine screw with the raised side against the diaphragm. Install the nut (6) on the machine screw and tighten it securely.

(4) Align the holes in the diaphragm valve in the pressure control.

(5) Screw the guide shaft (4) into the cover (3).

(6) Place the spring (5) over the diaphragm valve.

(7) Align the holes in the cover with the studs, and place the cover on the pressure control.

NOTE

Assure the guide shaft is in the hole in the machine screw.

(8) Install nuts (2) on the studs and tighten the nuts to 20 foot-pounds (2.77 m-kg) torque.

(9) Insert plug (1) in cover.

4-21. Cycling Valve Assembly.

a. Removal and Disassembly.

(1) Hold the ring (2, fig. 4-1 1) in place and remove the capscrews (1).

(2) Remove the ring (2) and cover (3) from the pressure control.

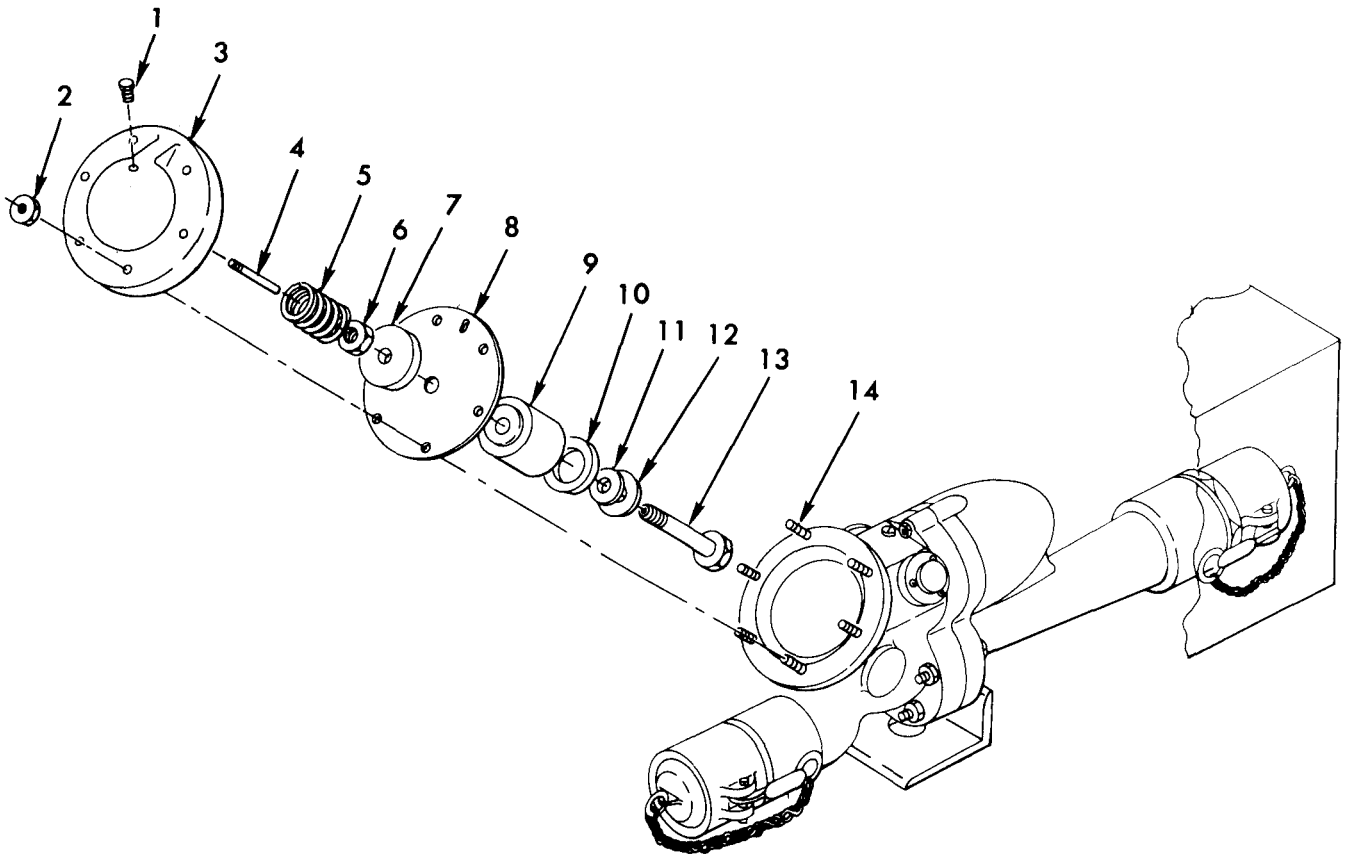
(3) Grasp the button (4) and twist and pull it until the cycling valve is removed from the pressure control.

(4) Remove the preformed packings (11) from the valve body (12).

(5) Apply pressure on the spring (8) with the washer (9) and remove the retaining ring (10) from the valve body.

(6) Remove the retaining ring (13) from the cycling valve stem (6) and remove the valve body from the cycling valve stem.

(7) Remove the washer and spring from the cycling valve stem.



1. Plug
2. Nut
3. Cover
4. Shaft
5. Spring
6. Nut
7. Washer
8. Diaphragm
9. Poppet
10. Disk
11. Spacer
12. Washer
13. Screw
14. Stud

Figure 4-10. Pressure Control Diaphragm Valve, Exploded View

(8) Remove the preformed packings (7) from the cycling valve stem.

(9) Remove the setscrew (5) from the button, and remove the button from the cycling valve stem.

(10) Repeat the procedures in ***(1)*** thru ***(9)*** above to remove and disassemble the remaining cycling valve assembly.

b. Cleaning, Inspection and Repair.

(1) Wash all metal parts in a hot, mild soap and water solution and dry them with a clean cloth.

(2) Inspect the ring, valve body, washer, cycling valve stem, and button to determine if they are chipped or burred. Be certain the threads on the setscrew, and in the button and cycling valve stem are not stripped.

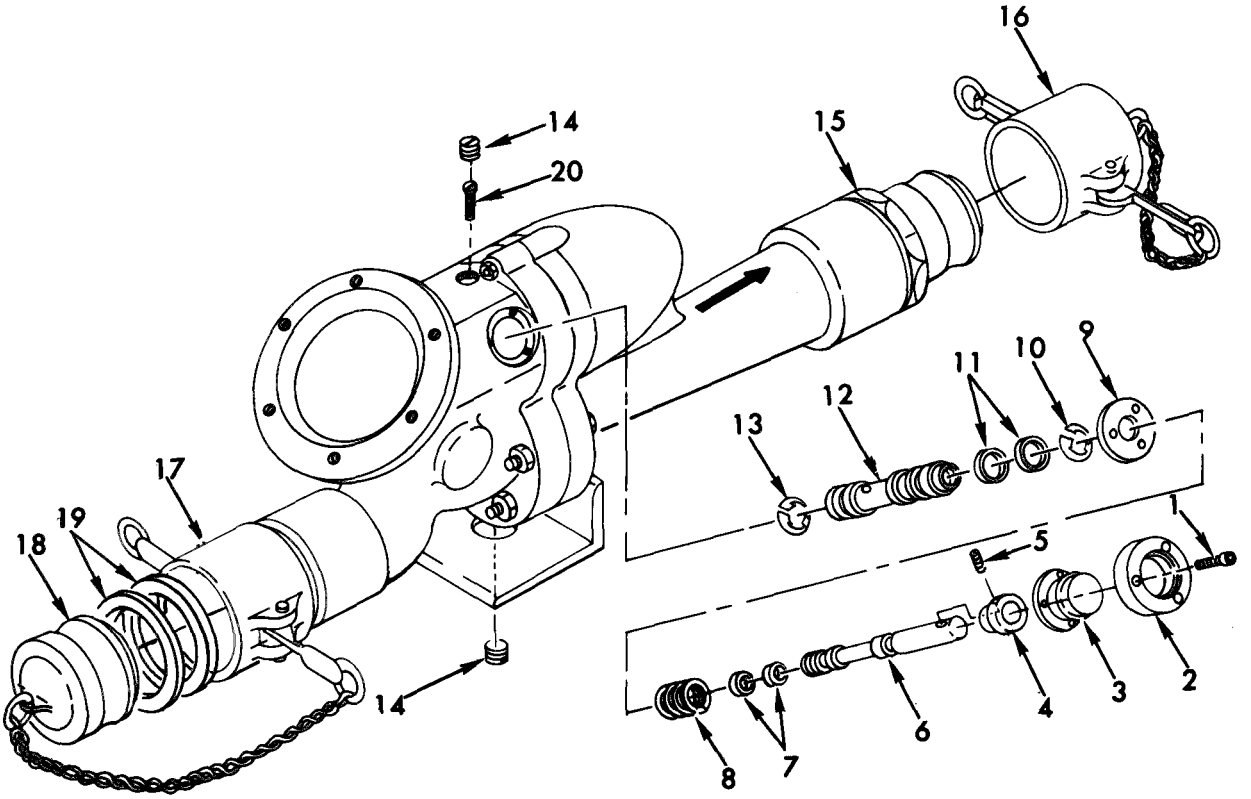
(3) Inspect the spring to determine if it is broken or collapsed.

(4) Inspect the cover to determine if it is cut or deteriorated.

(5) Replace all preformed packings and retaining rings.

(6) Replace all other unserviceable parts with serviceable parts as authorized.

(7) To clean, inspect and repair the remaining cycling valve assembly, follow the procedures in ***(1)*** thru ***(6)*** above.



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1. Capscrew
2. Ring
3. Cover
4. Button
5. Setscrew
6. Stem
7. Packing
8. Spring
9. Washer
10. Ring, Retaining
11. Packing
12. Body
13. Ring, Retaining
14. Plug
15. Coupling, Male
16. Cap, Dust
17. Coupling, Female
18. Plug, Dust
19. Gasket
20. Screw

Figure 4-11. Pressure Control Cycling Valve, Exploded View

c. Reassembly and Installation.

NOTE

Apply a light coat of petroleum jelly to all preformed packings and other contacting surfaces.

(1) Install preformed packings (7, fig. 4-11) on the cycling valve stem (6) and preformed packings (11) on body (12).

(2) Install retaining ring (10) on the valve body with the convex side towards the washer (9).

(3) Place the button (4) on the cycling valve stem (6) and align the hole in the button with the hole in the cycling valve stem.

(4) Install the setscrew (5) in the button and cycling valve stem.

(5) Place the spring (8), washer (9) and valve body (12) on the cycling valve stem.

(6) Hold the valve body, and apply pressure on the spring with the washer until the valve body is on the cycling valve stem.

(7) Install retaining ring (13) on the cycling valve stem to hold the valve body in place.

CAUTION

Do not apply any excess pressure on the cycling valve while installing it as this action could damage the exposed preformed packings.

(8) Place the cycling valve in the pressure control, and align the holes in the washer.

(9) Place the ring (2) on the pressure control and align holes.

(10) Install the cap screws (1) in the ring and tighten them securely.

(11) Assemble and install the remaining cycling valve assembly by following the procedures in (1) thru (10) above.

4-22. Pilot Valve.

a. Testing.

(1) Prepare the drum for filling (para 4-3 *a).*

(2) Block the pressure control off the ground as shown in figure 4-12.

(3) Remove the bottom plug (14, fig. 4-11) from the pressure control.

(4) Connect a pressure gage that reads from 0 to 6 psi (0 to 0.42 kg/sq cm) to the pressure control (fig. 4-12).

(5) Start filling the drum (para 4-3 *b)* and observe the pressure gage during the filling operation. If the pressure gage reaches 5 psi (0.4 kg/sq cm) and the pressure control does not shut off, press the STOP button. Adjust the pilot valve assembly, paragraph ***b*** below.

NOTE

The pressure should reach a maximum of 5 psi (0.4 kg/sq cm) just as the wrinkles come out of the drum and it assumes a firm cylindrical shape.

(6) If the pressure control shuts off before the pressure gage reaches 4.5 psi (0.32 kg/sq cm), adjust the pilot vale assembly *(b* below).

b. Adjustment.

(1) Remove the cap screws (1, fig. 4-13) from the pressure control.

(2) Remove the nuts (15) from the four screws (12) and remove the screws from the pressure control.

(3) Separate the housing bodies (11 and 16).

(4) Loosen the nut as shown in A, figure 4-14 to allow turning of the valve stem as shown in B, figure 4-14.

(5) Turn the valve stem clockwise to increase pressure; counterclockwise to decrease pressure.

NOTE

Turning the valve stem out 1/4 of a turn will change the pressure approximately 1 psi (0.07 kg/sq cm).

(6) Tighten the nut to lock the valve stem.

(7) Place the housing bodies together, and install the capscrew, screw, and nuts by reversing the procedures in ***(1)*** and ***(2)*** above. Tighten the nuts to 20 foot-pounds (2.77 m-kg) torque.

(8) Retest the pilot valve *(a* above).

(9) Readjust and retest until pressure is 4.5 pounds per square inch (0.32 kg/sq cm) ±0.5 pounds-per square inch (0.04 kg/sq cm).

(10) Perform the procedures in ***(1)*** thru ***(4)*** above and replace the preformed packings (14, fig. 4-13).

(11) Perform the procedures in (7) above.

c. Removal and Disassembly.

(1) Remove the capscrew (1, fig. 4-13), from the pressure control.

(2) Remove the nuts (15) from the four screws (12 and 18) and remove the screws from the pressure control.

(3) Separate the housing bodies (11 and 16) and stand (17).

(4) Remove the three screws (10) from the bellows assembly (4) and remove the bellows assembly from the housing body.

(5) Remove nut (8) from valve stem (7).

(6) Remove the preformed packings (2 and 3) and seal (5).

(7) Grasp the threaded end of the valve stem (7), turn it clockwise and remove the valve stem from the bellows assembly.

(8) Remove the retaining ring (6) and valve guide (9) from the valve stem.

d. Cleaning, Inspection, and Repair.

(1) Wash the bellows assembly parts in hot, mild soap and water solution to remove any foreign matter. Allow the parts to dry.

(2) Inspect the bellows assembly for cracks or breaks.

(3) Inspect burred valve stem or damaged valve stem threads.

(4) Replace all unserviceable parts as authorized.

e. Reassembly and Installation.

(1) Install the valve guide (9, fig. 4-13) and retaining ring (6) on valve stem (7).

(2) Grasp the unthreaded end of the valve stem, place the threaded end in the bellows

assembly (4), and turn valve stem clockwise to install it through the bellows assembly.

(3) Install seal (5) and preformed packings (2 and 3).

(4) Screw the nut (8) on the valve stem until approximately one half of the valve stem threads are through the nut.

(5) Place bellows assembly against housing body (16), and align the holes.

(6) Install three screws (10) in the bellows assembly and housing body. Tighten screws securely.

(7) Place the two housing bodies (11 and 16) together, and align the holes.

(8) Place four screws (12 and 18) through the housing bodies, and install nuts (15) on the screws.

(9) Install capscrew (1) in the housing bodies.

(10) Tighten nuts and capscrew to 20 foot-pounds (2.77 m-kg) torque.

(11) Test and adjust the pilot valve ***a*** and ***b*** above.

4-23. Venturi.

a. Removal and Disassembly.

(1) Remove capscrew (1, fig. 4-13) from housing bodies (11 and 16).

(2) Remove nuts (15) from screws (12 and **18)** and remove the screws from the housing bodies.

(3) Separate the housing bodies and pull venturi (14) from housing body.

(4) Remove preformed packings (13) from the venturi.

b. Inspection and Repair.

(1) Inspect the venturi to determine if it is cracked, burred or worn.

(2) Replace a damaged venturi with serviceable one.

(3) Replace the three preformed packings with serviceable ones.

c. Reassembly and Installation.

(1) Install three serviceable packings (13, fig. 4-13) on the serviceable venturi (14) and install the venturi in the housing body.

(2) Place the housing bodies (11 and 16) together, align the holes and install the screws (12 and 18) and nuts (15). Tighten nuts to 20 foot-pounds (2.77 m-kg) torque.

(3) Install capscrew (1).

4-24. Female Coupling Half.

a. Cleaning and Inspection.

(1) Wash female coupling half (17, fig, 4-11) with a hot water and soap solution and dry it with a clean cloth.

(2) Inspect the female coupling to determine if cracked, burred or leaking.

(3) Inspect coupling for damaged or missing dust plug (18), gasket (19), chain, or key rings.

b. Repair.

(1) Replace Gasket. Using a pointed instrument, remove a damaged gasket from the female coupling half. Install a serviceable gasket in the female coupling half.

(2) Replace Dust Plug. Remove a damaged dust plug from the key ring. Pry open the key ring, and install a serviceable dust plug on the key ring.

(3) Replace Chains and Key Rings. Follow the procedures in ***c*** below.

c. Replacement.

(1) Remove the dust plug (18, fig. 4-11) with chain and key rings from the damaged female coupling half (17).

(2) Remove the damaged female coupling half from the pressure control.

(3) Apply a coating of anti-seize compound (item 2, App. D) to the threads of a serviceable female coupling half, and install it in the pressure control.

(4) Pry open a serviceable key ring, install it on the female coupling half, and install a serviceable chain on the key ring.

(5) Pry open another serviceable key ring, and install it on the dust plug end of the chain. Install a serviceable dust plug on the key ring.

4-25. Male Coupling Half.

a. Cleaning and Inspection.

(1) Wash the male coupling half (15, fig. 4-11) with a hot soap and water solution. Dry it with a clean cloth.

(2) Inspect the male coupling half to determine if it is cracked, burred, or leaking.

(3) Inspect the male coupling half for damaged or missing dust cap (16), gasket (19), chain or key rings.

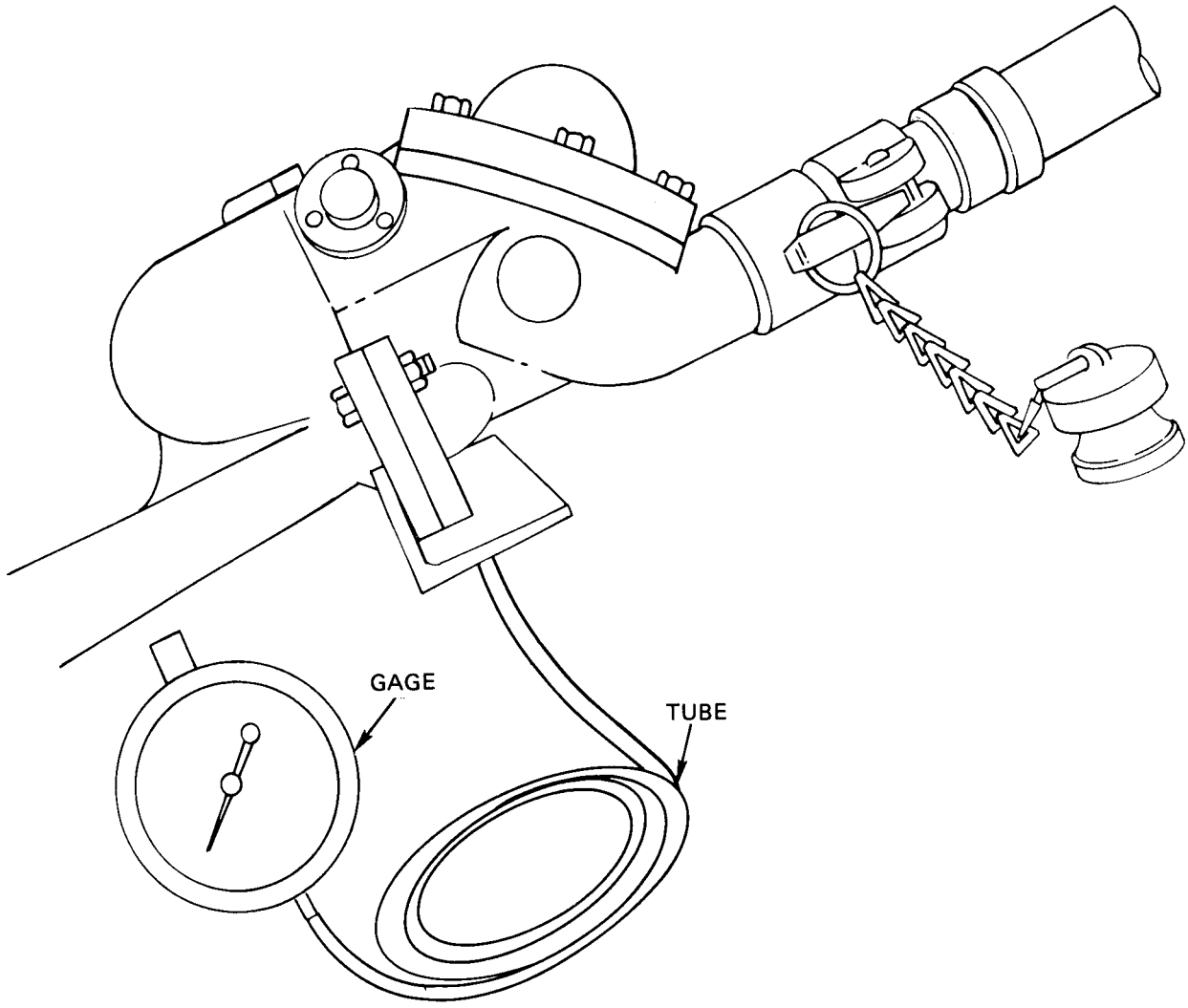
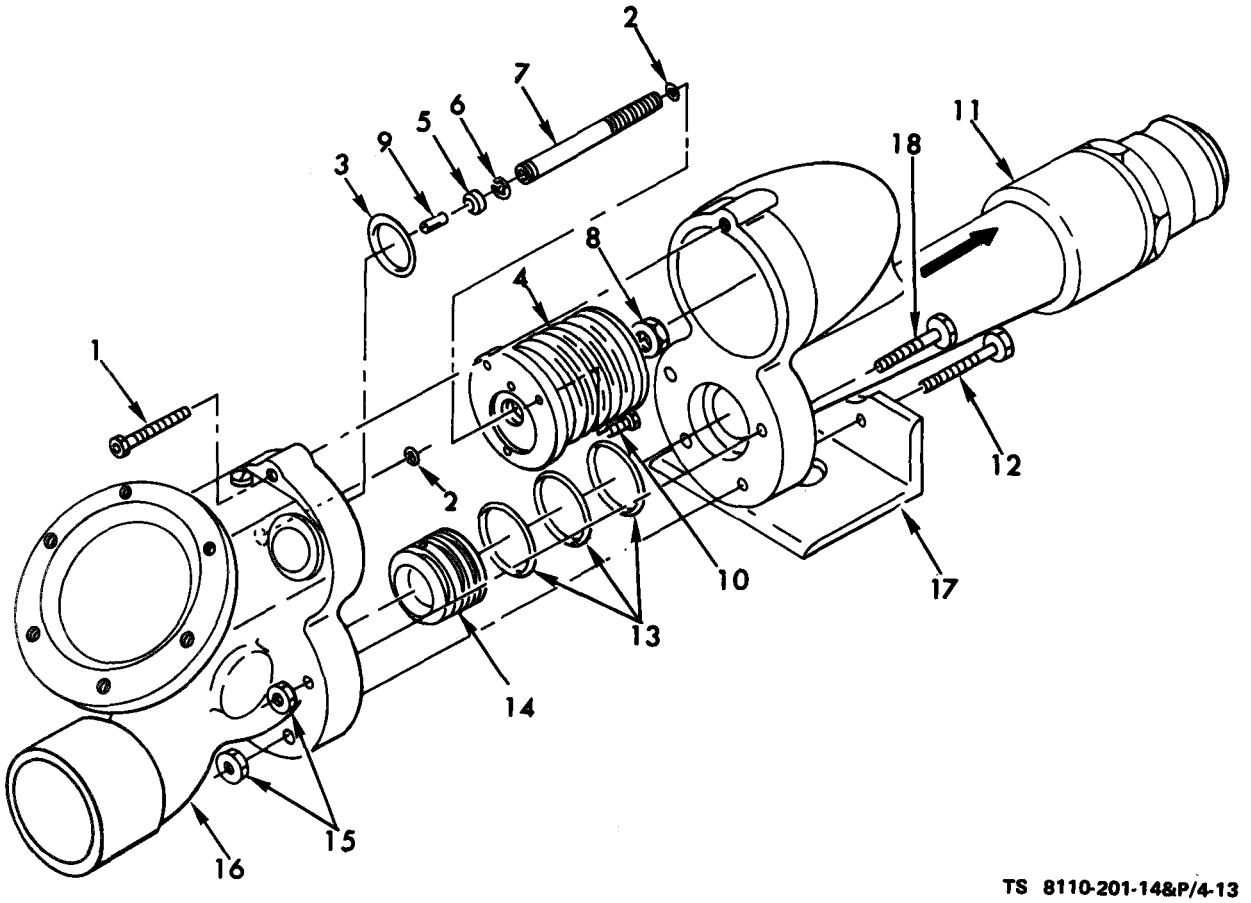


Figure 4-12. Testing Pressure of Pressure Control



1. Capscrew
2. Packing
3. Packing
4. Bellows Assembly
5. Seal
6. Ring, Retaining
7. Stem
8. Nut
9. Guide
10. Screw
11. Outlet, Valve Body
12. Screw
13. Packing
14. Venturi
15. Nut
16. Inlet, Valve Body
17. Stand
18. Screw

Figure 4-13. Pressure Control Pilot Valve, Exploded View

b. Repair.

(1) Replace Dust Cap. Remove a damaged dust cap from the key ring. Pry open the key ring, and attach a serviceable dust cap to it.

(2) Replace gasket, chains, and ring. Follow the procedures in paragraph ***c*** below.

c. Replacement.

(1) Remove the dust cap (16, fig. 4-11) with chain and key rings from the damaged male coupling half (15).

(2) Remove the damaged male coupling half from the pressure control.

(3) Apply a coating of anti-seize compound (item 2, App. D), to the threads of a serviceable male coupling half, and install it in the pressure control.

(4) Pry open a serviceable key ring, install it on the male coupling half, and install a serviceable chain on the key ring.

(5) Pry open another serviceable key ring and install it on the loose end of the key chain. Install a serviceable dust cap on the key ring.

4-26. Hose Assembly.

a. Cleaning. Wash the hose assembly (fig. 4-15) in a mild soap and water solution and dry it with a clean cloth.

b. Inspection.

(1) Inspect hose for cuts, cracks, or signs of deterioration (1, fig. 4-15).

(2) Inspect for a cracked, broken, or missing dust cap (3), gasket (2), and dust plug (4).

(3) Inspect for cracked coupling halves (5 and 7).

(4) Inspect for a broken or missing chain (8) and key ring (9).

c. Repair.

(1) Replace dust cap gasket (2).

(a) Using a pointed instrument, remove a damaged dust cap gasket from dust cap (3, fig. 4-15).

(b) Install a serviceable dust cap gasket.

(2) Replace Dust Cap and Dust Plug.

(a) Remove a damaged dust cap (3, fig. 4-15) or dust plug (6) from key ring (4).

(b) Pry the key ring open, and install a serviceable dust cap or dust plug on the key ring.

NOTE

When replacing a dust cap, be certain the serviceable cap contains a serviceable gasket..

(3) Replace Chains and Key Rings.

(a) Remove dust cap (3, fig. 4-15) or dust plug ***(4)*** from a damaged key ring (9).

(b) Remove a damaged key ring from the chain.

(c) Remove a damaged chain (8) from the remaining key ring. If the key ring is damaged, remove it from the coupling half.

(d) Pry open the serviceable key ring, and install it on the coupling half. Install the serviceable chain on the key ring.

(e) Pry open another serviceable key ring, and install the chain on it.

(f) Install the dust cap or dust plug on the key ring.

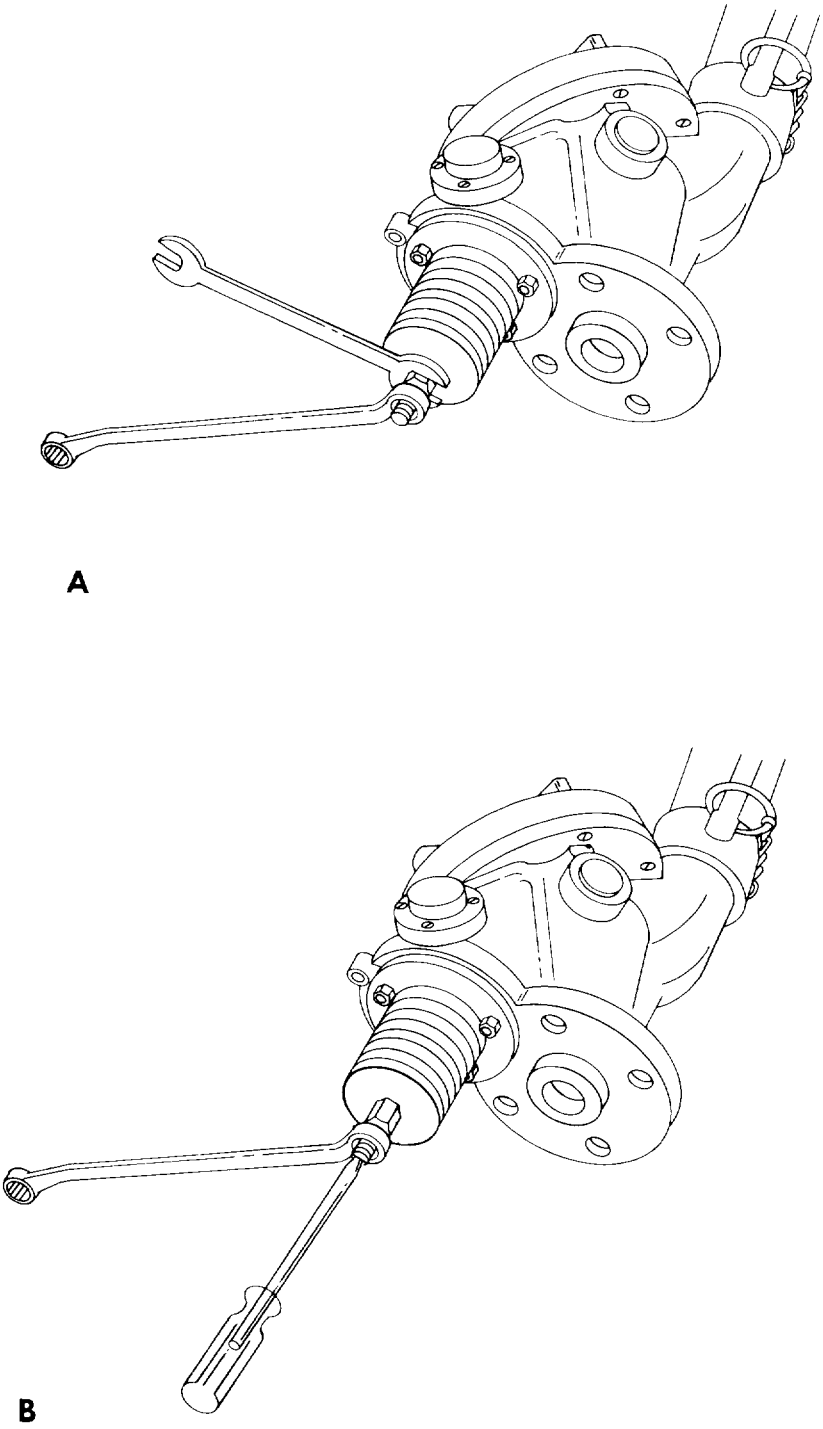
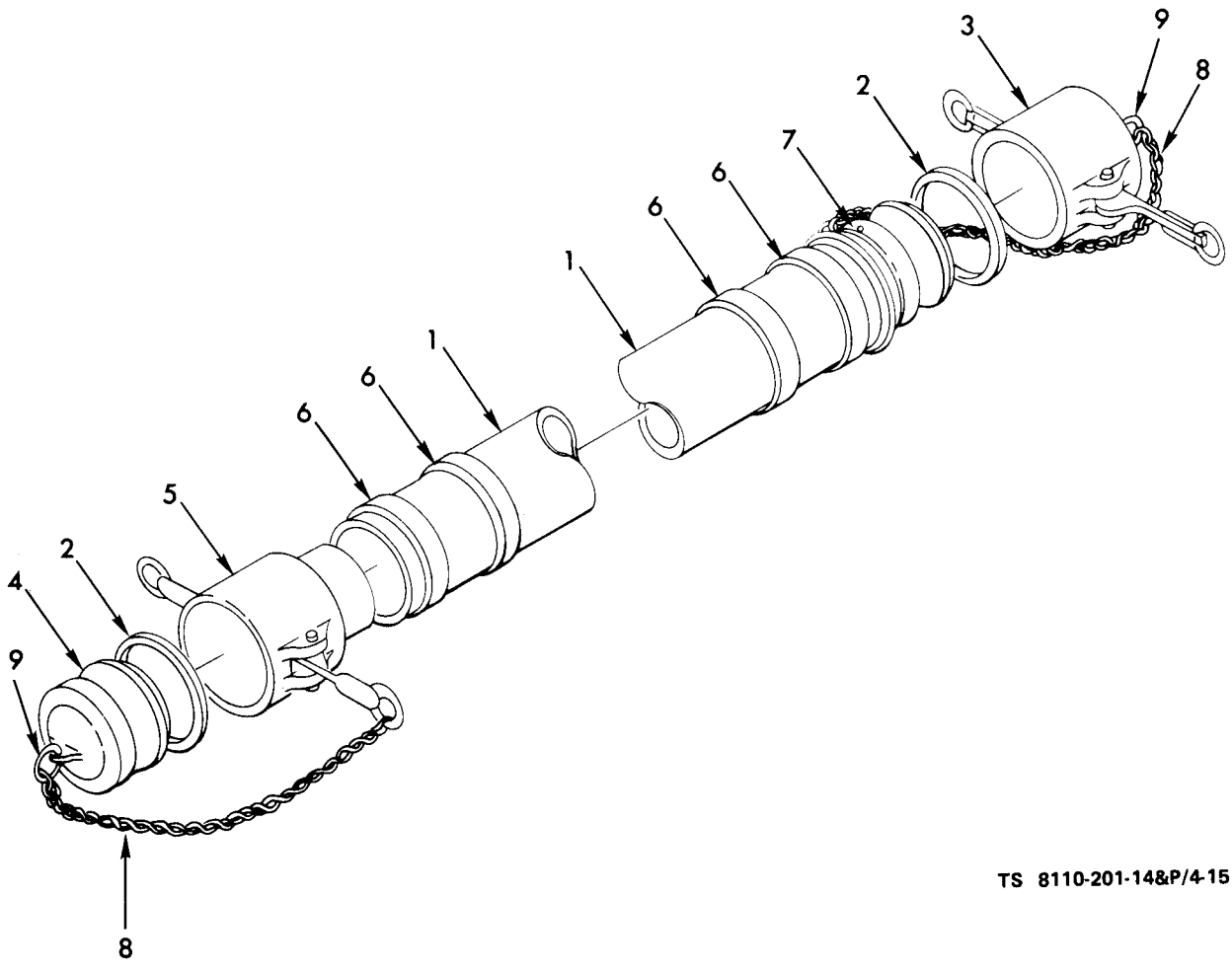


Figure 4-14. Adjusting Pressure of Pressure Control



1. Hose
2. Gasket
3. Cap, Dust
4. Plug, Dust
5. Coupling Half, Female
6. Clamp, Hose
7. Coupling Half, Male
8. Chain
9. Key Ring

Figure 4-15. Hose Assembly, Exploded View

CHAPTER 5

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

5-1. Tools, Equipment, and Materials.

The tools, equipment, and material required to perform direct and general support maintenance on the collapsible drums are listed in table 5-1.

5-2. Special Tools and Equipment.

No special tools and equipment are required.

5-3. Repair Parts.

Repair parts and equipment are listed and illustrated in the repair special tools list, Appendix C of this manual.

5-4. Fabricated Tools and Equipment.

No fabricated tools or equipment are required.

Table 5-1. Tools, Equipment, and Materials

Item	NSN Stock No. MFG Code	Unit of Issue	Qty Inc in Unit	SMR Code	Ref
Explosimeter, Hand Held, Portable	73251 (40912)	EA	1	PAFFF	
Steam Cleaner	4940-00-186-0027	EA	1	PAFFH	
Air Compressor	4310-01-043-7604	EA	1	PAFFH	
Kit, Tool	5810-00-177-7033	EA	1	PAOOF	
Hoist, Chain 1/2 Ton	3950-00-804-4315	EA	1	PAFFH	
Hoist Chain, Hand Operated	5120-00-294-9505	EA	1	PAFFF	
Wrench, Impact	5130-00-595-9259	EA	1	PAFFF	
Gun, Spray	4940-00-261-8413	EA	1	PAFFF	
Hammer, Sledge, Sparkproof	5120-00-288-9707	EA	1	PAFFF	
Hose Assembly, Air	4720-00-356-8557	EA	1	PAFFF	
Tool, Clamping	5120-00-359-6587 P38 (77414)	EA	1	PAFFF	
Knife, Shoe, 6 1/2 in. Blade	5110-00-595-8402	EA	1	PAFFF	
Knife, Shoe Round Point	5110-00-268-3883	EA	1	PAFFF	
Knife, Shoe Taper Point	5110-00-268-3882	EA	1	PAFFF	
Roller	5120-00-449-7498	EA	1	PAFFF	
Screwdriver	5120-00-227-7356	EA	1	PAFFF	
Shears, Pointed Blade	5110-00-244-6511	EA	1	PAFFF	
Stitcher	5120-00-293-0392	EA	1	PAFFF	
Drain, Wash Tank With Rack	D3754 (00333)	EA	2	PBFZZ	
Bar, Lifting	C7700 (00333)	EA	1	PBFZZ	
Bar, Lifting, Spark Proof	NPN (00333)	EA	1	PBFZZ	
Tank, Wash and Drain	NPN (00333)	EA	1	PBFZZ	
Stand, Pipi	NPN (00333)	EA	1	PBFZZ	
Rack Support	NPN (00333)	EA	1	PBFZZ	
Platform, Work	D3752 (00333)	EA	1	PBFZZ	
Fitting, Air	4730-00-142-1958 ANG027-1 (88044)	EA	1	PBFZZ	

Table 5-1. Tools, Equipment, and Materials (Con't)

Item	NSN Stock No. MFG Code	Unit of Issue	QTY Inc in Unit	SMR Code	Ref
Roller	D3755 (00333)	EA	1	PBFZZ	
Cloth, Holland, 19 in. Wide, 2 Sq. Ft. Required	210-2000-1040 (82282)	RL	5 FT.	PAFZZ	
Fabric, Nylon Coated Paracril (Exterior), 2 Sq. Ft. Required	42171 (00333)	FT	1	PAFZZ	
Cement, Neoprene (Exterior), 1 Qt. Required	3918 (00333)	QT	1	PCFZZ	
Fabric, Neoprene Coated Nylon (Exterior), 2 Sq. Ft. Required	42153 (00333)	FT	2	PAFZZ	
Cement (Interior), 1 Qt. Required	3985 (00333)	QT	1	PCFZZ	
Stock, Gum (Interior), 2 Sq. Ft. Required	42114 (00333)	FT	2	PAFZZ	
Solution, Freshener (Interior), 1 Qt.	C-3339 (00333)	QT	1	PCFZZ	
Methyl-Ethyl-Ketone (MEK), 1 Qt. Required	6810-00-281-2785	QT	1	PCFZZ	
Compound, Anti-Seize, 8 oz. Required	8030-00-292-1102	TB	1	PAFZZ	
Detergent, 1 Gal. Required	7930-00-515-2477	GAL	1	PAFZZ	
Stock, Gum (Exterior), 2 Sq. Ft. Required	42113 (00333)	FT	2	PAFZZ	
Solvent, Dry Cleaning, 1 Gal. Required	6850-01-377-1809	GAL	1	PCFZZ	
NOTE					
Short shelf items (cements, methyl-ethyl-ketone, freshener, drycleaning solvent elastomer) should be stored in a controlled humid environment.					
Cement (Interior), 1 Qt. Required	3980 (00333)	QT	1	PCFZZ	
Stock, Gum (Interior), 2 Sq. Ft. Required	42118 (00333)	FT	2	PAFZZ	
Stock, Gum (Interior), 2 Sq. Ft. Required	42156 (00333)	FT	2	PAFZZ	
Seal, Strapping, 1/2 in.	5340-00-244-7325 C254 (70847)	BX	1	PAOZZ	
Strapping, 1/2 in. Wide	5340-00-245-9348 C204 (70847)	RL	1	PAOZZ	
Elastomer 885, Ethanol, Denatured	6810-00-201-0905 (67020)	GAL	1	PAOZZ	
Elastomer	8040-01-248-6104	EA	1	PBOZZ	

Section II. TROUBLESHOOTING

5-5. General.

a. This section provides information useful in diagnosing, and correcting unsatisfactory operation or failure of the storage drum or any of its components. Each trouble symptom stated is followed by a list of probable causes. The possible remedy recommended is described opposite the probable cause.

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

5-6. Direct Support and General Support Maintenance Troubleshooting.

Refer to table 5-2 for troubleshooting pertaining to direct support and general support maintenance.

Table 5-2. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
DRUM ASSEMBLY (FUEL AND WATER)
1. Front and Rear Plates Leak.
Step 1. Inspect for loose, damaged or missing capscrews.
Replace damaged or missing capscrews. Tighten capscrews. Tighten capscrews to 30 foot-pounds (4.15 m-kg) torque.
Step 2. Inspect for damaged front and rear plate or missing components.
If plates are unserviceable, replace the drum (para 3-6).
PRESS ASSEMBLIES, VULCANIZING
2. Fabric of Drum Leak.
Inspect drums for cuts, punctures or abrasions through all plies.
Vulcanize a damaged drum as instructed in paragraph 5-15.
APPLICATION OF ELASTOMER
3. Scuffs and Abrasions.
Inspect exterior of drums for scuffs or abrasions where the fabric is exposed but not damaged.
Apply Elastomer to damaged drums as instructed in paragraph 5-14.

Section III. GENERAL MAINTENANCE

5-7. General Information for Vulcnizing Drums.

a. The efficiency of adequate vulcanization depends upon proper cleaning and buffing, correct application and drying of cements, and strict adherence to the established curing cycle.

b. The material used for patching shall be identical to the material being patched.

NOTE

The collapsible drums are supplied by three vendors: The United States Rubber Company; B.F. Goodrich Rubber Company; and Uniroyal Inc. Patching materials are not interchangeable between the drums manufactured by the vendors.

c. Do not attempt any repair within one inch of the outside diameter of the end plate or on hardware sealing surfaces.

d. All patches will be vulcanized.

NOTE

Cuts, punctures, or abrasions through all plies, in excess of 8 inches (20 cm) in length, will not be repaired.

e. An outside patch is mandatory for gouges, cuts or scrapes, if the cord is damaged (para. 5-15). Cuts, punctures and abrasions through all plies up to 8 inches (20 cm) require inside and outside patches.

f. Refer to figure 5-1 for a typical shop layout plan for a drum vulcanizing repair facility.

NOTE

Paragraphs 5-8 and 5-9 are included to provide maintenance instructions for replacement of drum hardware when vulcanizing procedures are not required; however, all drums must be drained and cleaned, as necessary, in accordance with paragraphs 5-10 thru 5-13 prior to any repair procedures.

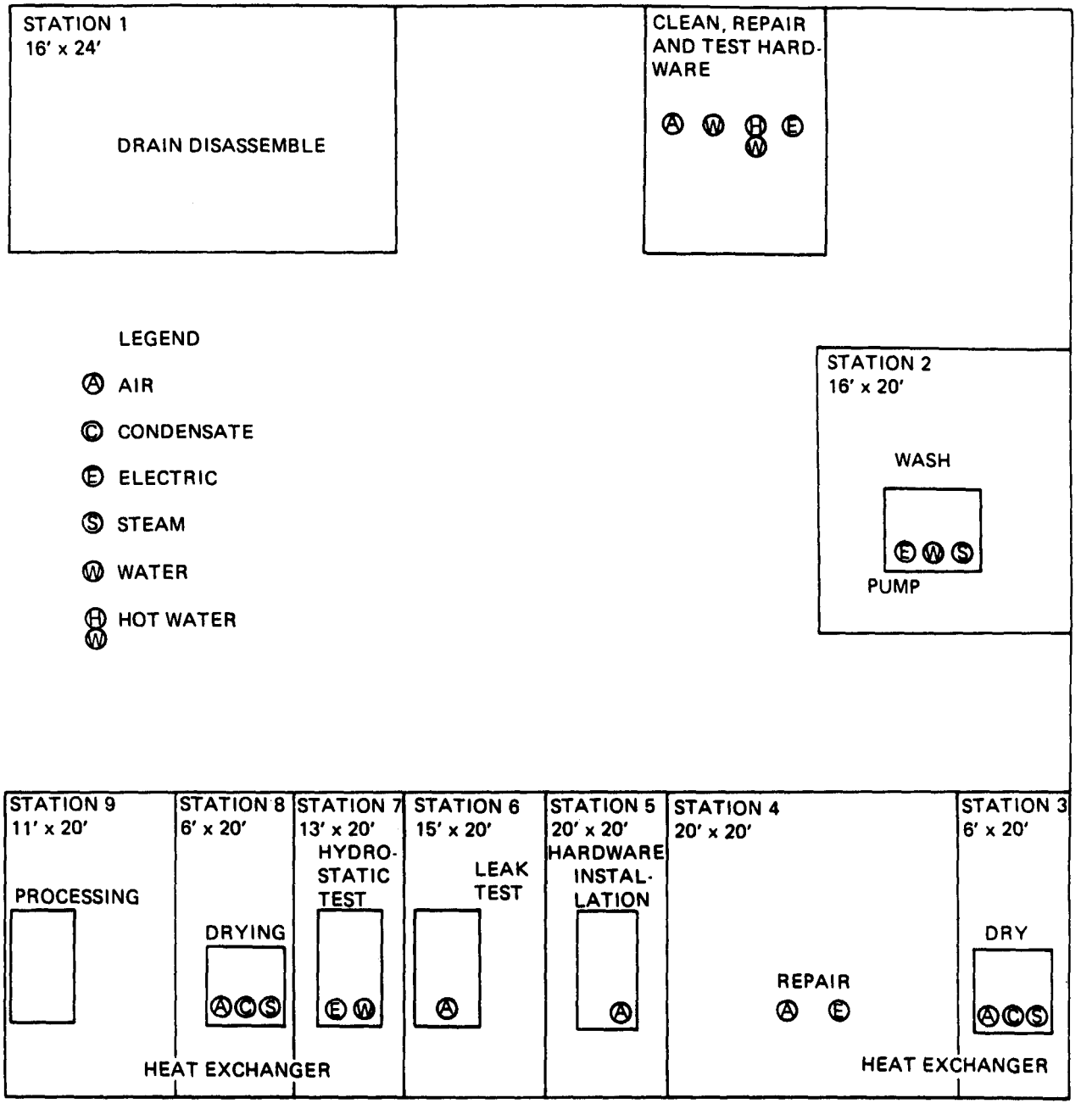


Figure 5-1. Typical Vulcanizing Shop Layout Plan

5-8.Drum Hardware, Removal and Installation.

a. Removal.

(1) Remove cotter Pin (1, fig. 5-2), screw-pin (2) and shackle (3). Remove all shackles using the same procedure.

(2) Remove 10 capscrews (4) from front bearing plate (6) end remove bearing plate (6) from front end of tank. Remove 10 capscrews (4) and remove rear bearing plate.

(3) Remove 21 capscrews (4) from front closure ring (5) and remove closure ring. Remove 21 capscrews (4) from rear closure ring (5) and remove closure ring.

(4) Refer to figure 5-5, attach a suitable lifting device to swivel plate, raise the drum and remove swivel plate by pounding drum from swivel plate with spark-proof sledge.

(5) Repeat step (4) to remove swivel plate from other end of drum.

(6) Remove plug (8) and preformed packing (9) from rear of drum.

(7) Remove cable assembly (12) from inside of drum body (13).

b. Cleaninf and Inspection.

(1) Remove all dirt and debris from drum hard. ware.

(2) Inspect parts for signs of damage or defects.

(3) Replace preformed packing.

(4) Replace any unserviceable parts.

c. Installation.

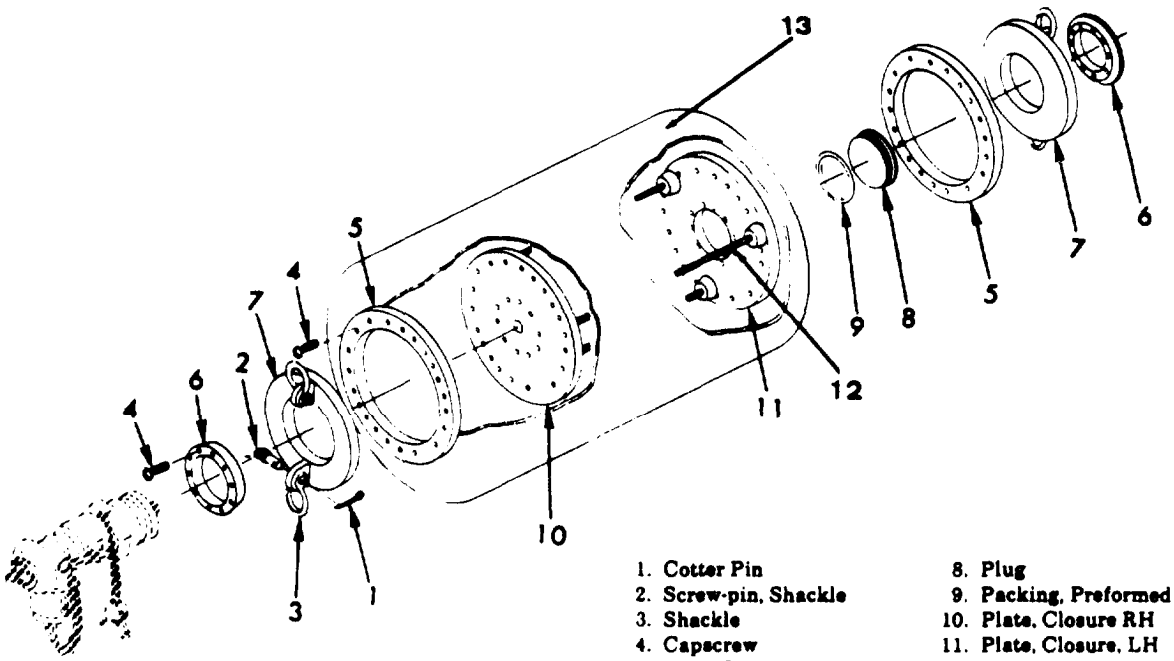
(1) Position cable assembly (12, fig. 5-2) inside of drum body (13). Lineup plats bosses with screw holes in collar.

(2) Install packing (9) and plug (8) in rear of drum.

(3) Install closure plates (11 and 10), closure ring (5), swivel plates (7), and bearing plate (6) and secure with capscrews (4).

(4) Torque capscrews to 30 foot-pounds (4.15 m-kg).

(5) Install four shackles (3) and secure with screw-pins (2) and cotter pins (1).



1. Cotter Pin
2. Screw-pin, Shackle
3. Shackle
4. Capscrew
5. Ring, Closure
6. Plate, Bearing
7. Plate, Swivel
8. Plug
9. Packing, Preformed
10. Plate, Closure RH
11. Plate, Closure, LH
12. Cable Assy
13. Body, Drum

Figure 5-2. Drum Harware, removal and installation

Figure 5-3. **DELETED**

5-9. DELETED

DELETED

5-10. Draining Drum

WARNING

When draining fuel drums, do mot permit smoking within 100 feet (30.5 meters) of draining area. The drums contain the residue of highly flammable liquids.

a. Disconnect drum, remove drum from carrier and place on drain rack and drain (fig. 5-4).

b. Refer to figure 5-2 and remove the bearing plate, swivel plate and closure ring from each end of drum as follows:

CAUTION

Use chalk and match mark the drum, bearing plate, swivel plate and closure ring to facilitate and assure same alignment when assembled. This action will prevent twisting the wire ropes.

(1) Remove 10 capscrews (4) from each bearing plate (6).

(2) Remove bearing plates (6) from swivel plates (7).

(3) Remove 21 capscrews (4) from each closure ring (5).

(4) Remove closure rings.

(5) Unscrew and remove the check valve assembly adapter from front swivel plate.

WARNING

Use a sparkproof sledge to remove the swivel plate.

(6) Attach a suitable lifting device (fig. 5-5) to the swivel plate, raise the drum and remove the drum from the plate by pounding drum from swivel plate.

c. Repeat steps outlined in ***b*** above to remove second swivel plate.

d. Refer to figure 5-6 and insert lifting bar into one end of drum. Use a suitable lifting device and raise drum over drain tank (fig. 5-4) and allow drum to complete training.

e. Aerate drum by "tenting" over a 24-hour period.

5-11. DELETED

5-12. Washing Drum

a. Insert lifting bar (fig. 5-7) in end plate mounting holes and lift drum body.

CAUTION

Water temperature must not exceed 150° F (66° C). Use small pump and flush out interior with hose and nozzle assembly. Solution in tank can be pumped into drum.

b. Suspend drum over wash tank and thoroughly wash interior of drum with a solution of detergent and hot water for 5 minutes (fig. 5-8). Use 5 quarts (4.7 liters) of detergent to 200 gallons (757 liters) of water. (Reduce quantity to 1 quart (0.946 liters) of detergent to 40 gallons (151 liters) of water for the 55 gallon (208 liters) water drum.)

c. Use a long-handled, stiff-bristled brush to scrub exterior of drum.

d. Inspect exterior of drum thoroughly; drum must be free of all contaminants.

5-13. Drying Drum After Washing.

CAUTION

Hot air temperature must not exceed 150° F (65° C).

a. Refer to figure 5-9 and, using a suitable lifting device, suspend the drum over the hot air stand pipe for approximately 5 minutes. If hot air blowing equipment is not available, hang to dry in a room at normal atmospheric conditions.

NOTE

Water in depressions can be located by feeling the exterior of the drum. Where water has settled the drum exterior will be slightly cooler to the touch.

b. Insert 1/2 inch (1.3 cm) L-shaped copper tubing in depressions to siphon out water. The internal air pressure will cause the water to flow through the tube.

c. Inspect interior of drum. Make certain that all contaminants have been cleaned out. Check for inner lining separation.

d. Inspect exterior of drum and mark areas requiring repair.

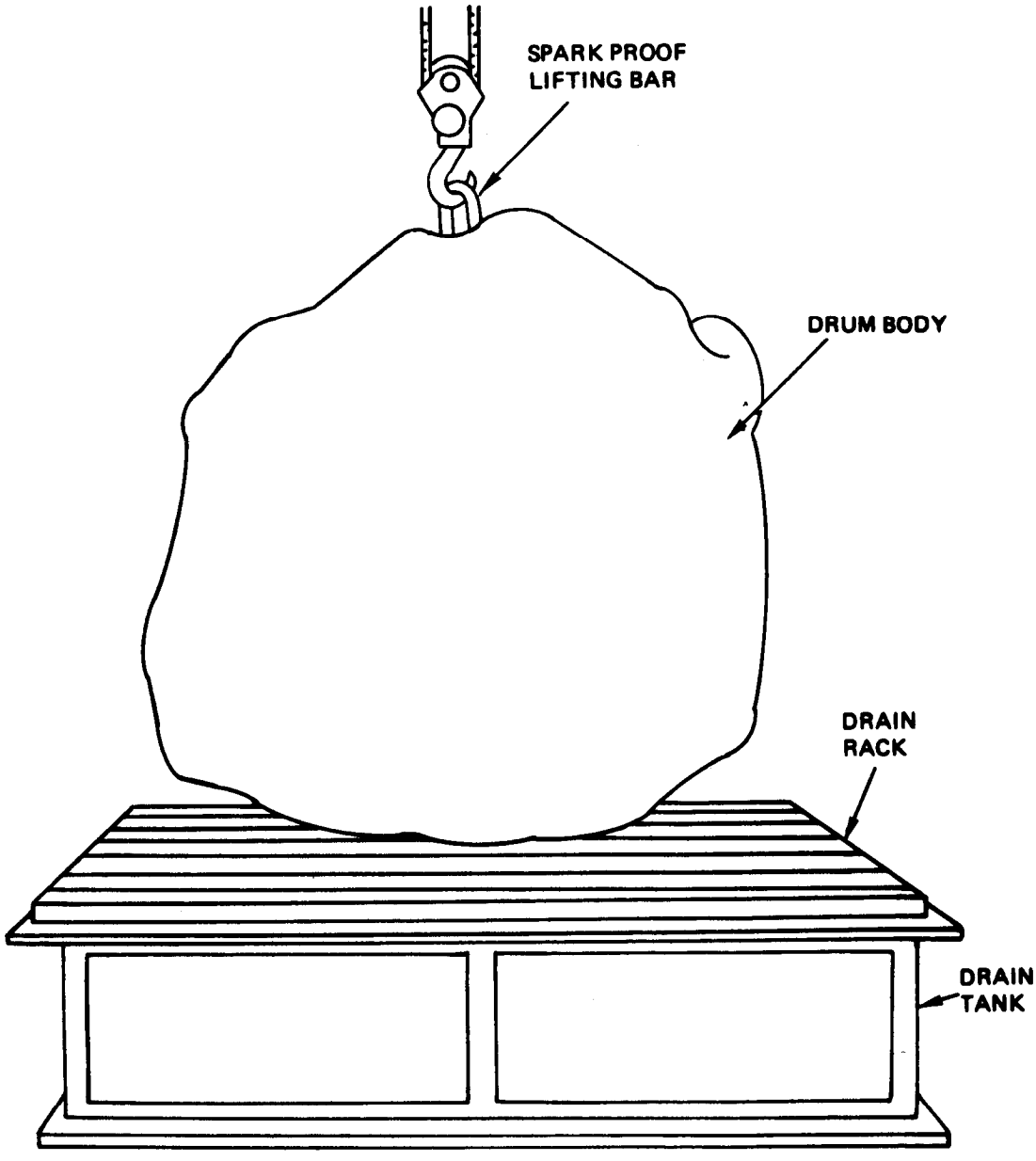


Figure 5-4. Draining Drum

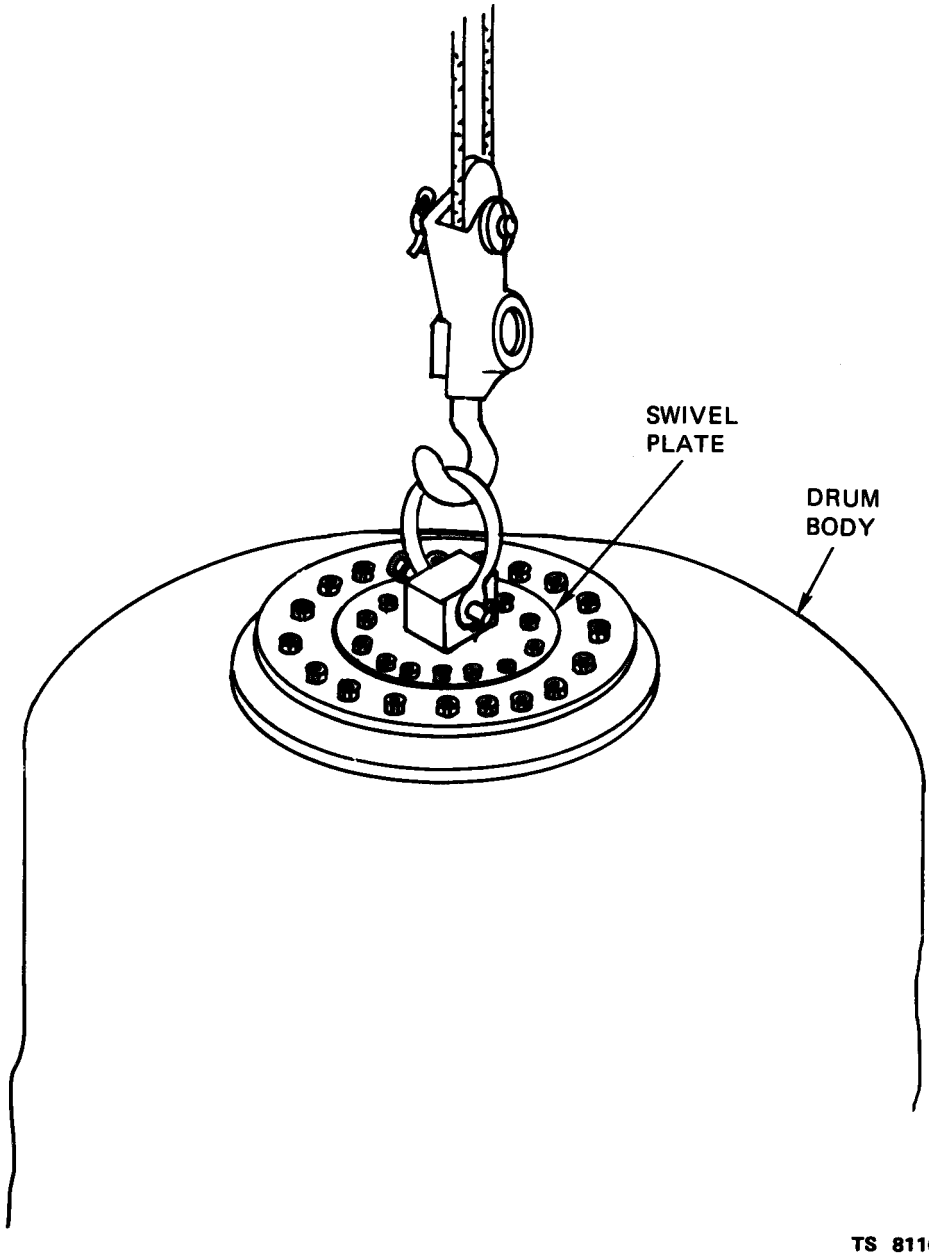


Figure 5-5. Removal of Swivel Plate

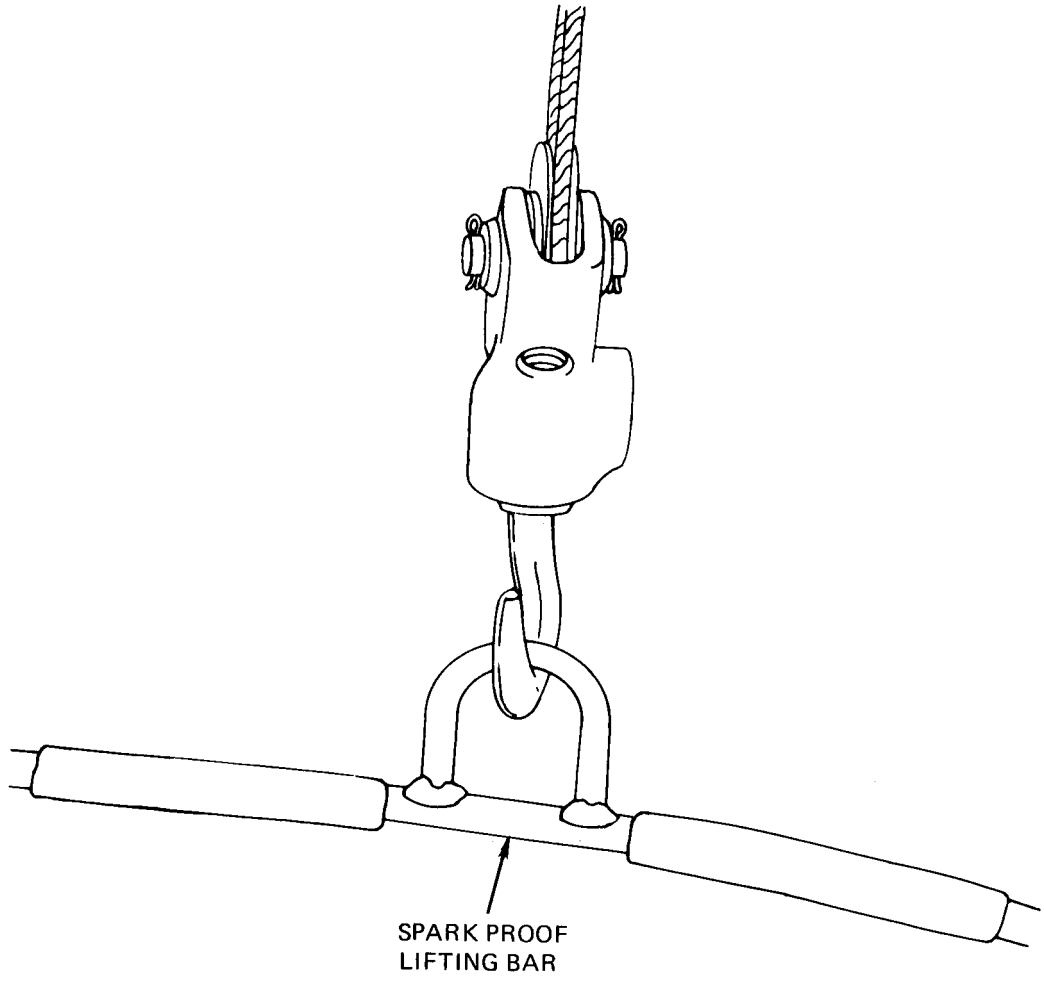


Figure 5-6. Sparkproof Lifting Bar

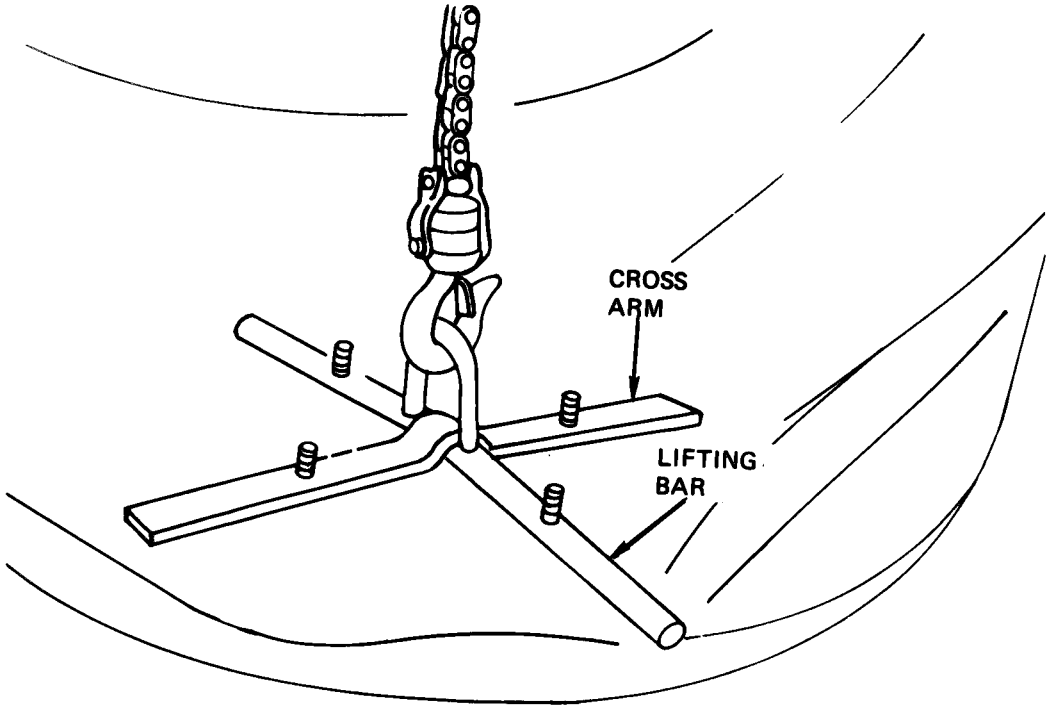


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Figure 5-7. Lifting Bar

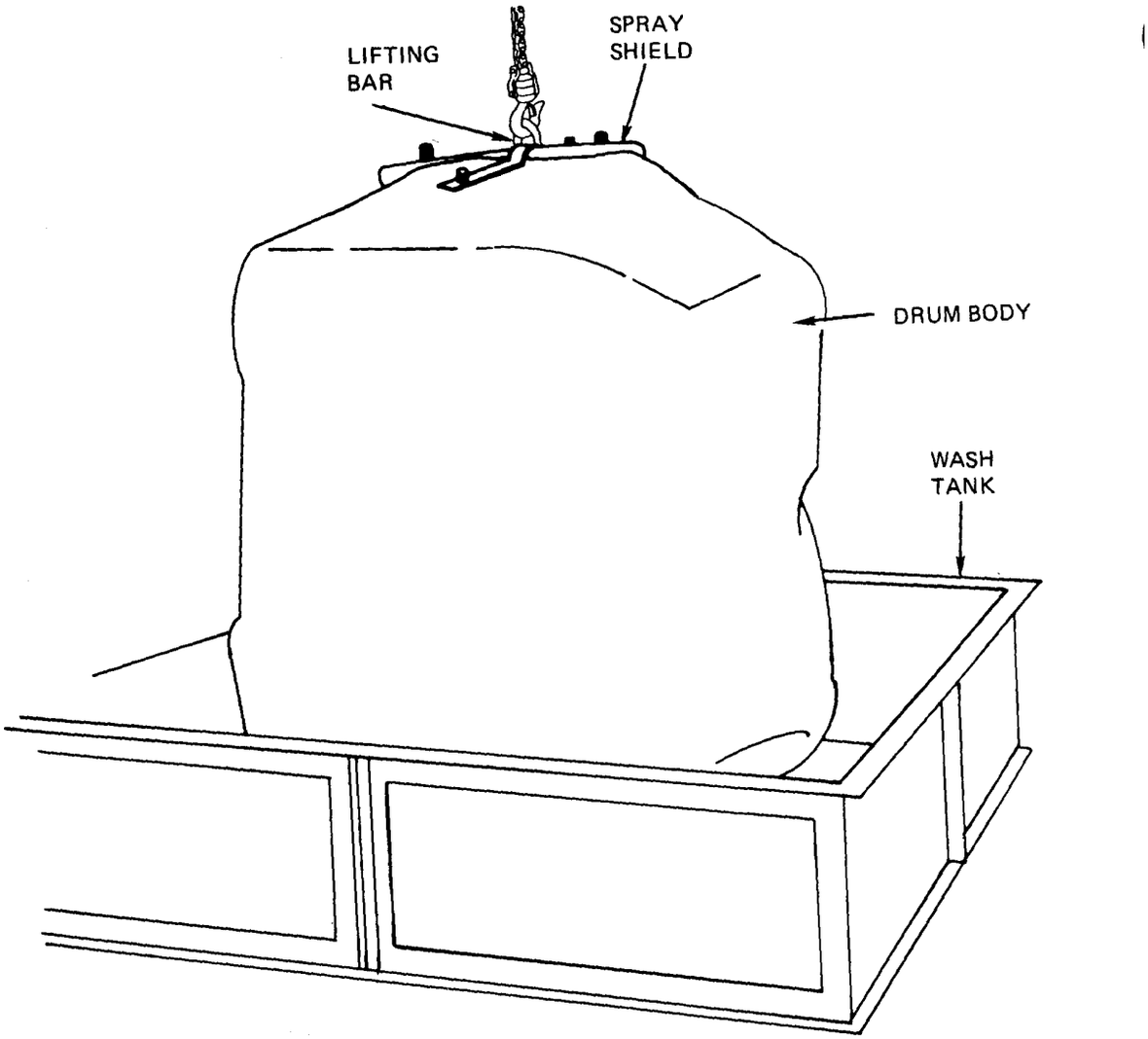

Figure 5-8. Washing Drum

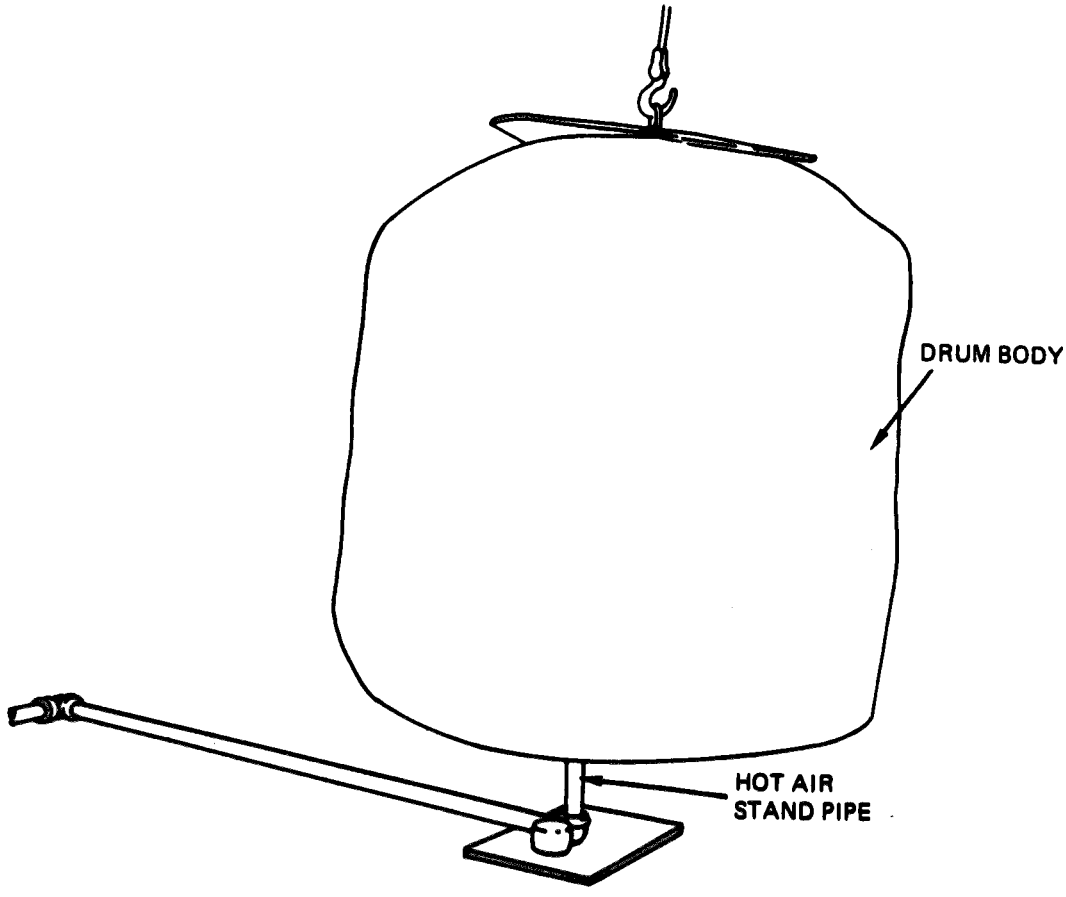

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Figure 5-9. Drying Drum After Washing

Section IV. REPAIR OF DRUM

5-14. Applying Elastomer

a. Preparing Surface

(1) Lightly scuff the surface with a rotary wire brush or suitable roughing tool.

NOTE

Be *careful not to damage cord layer.*

b. Degrease Surface

(1) Apply a small amount of denatured ethanol to degrease the surface.

(2) Apply a coat of surface conditioner onto the prepared surface with a brush. Apply as thin as possible. Let dry for 2 hours.

WARNING

Skin contact should be avoided by the use of suitable protective equipment as harmful or irritant effect may result.

c. Combining the Reactive Components

(1) Mix the Elastomer with the following mixing ratio:

3 parts Base to 1 part Solidifier by volume.
or
2.3 parts Base to 1 part Solidfier by weight.

NOTE

Complete mixing is the most important step in the use of Elastomer

(2) After using part of the Base component, the lid should be REPLACED IMMEDIATELY to minimize the risk of skinning and consequential loss of material.

(3) Apply the Elastomer directly onto the prepared surface with a plastic applicator or spatula. Press down firmly to remove entrapped air and to ensure maximum contact with the surface.

NOTE

From the commencement of mixing, MP Elastomer must be used within 20 minutes at 5°C (41°F), within 15 minutes at 15°C (59°F), and within 10 minutes at 25°C (77°F).

NOTE

All mixing and application tools should be cleaned immediately after use.

(4) Allow three days to cure properly.

NOTE

Once opened, the Elastomer will have a limited shelf life of six months under normal conditions of storage in correctly sealed containers. A surface skin may result during this period, but after its removal, the remaining material can be used in the normal way. Containers must be stored in a dry environment at a temperature of not more than 30°C (86°F).

5-15. Vulcanizing Part No. 13216E9170.

a. Exterior Patch (Fuel Drums).

(1) Clean damaged area of all contaminants and foreign matter. Wash drum exterior with an approved detergent solution.

(2) Refer to figure 5-10 and buff damaged area; buff the drum wall 5 inches (13cm) in each direction from tear. Remove dust and rewash with detergent solution.

(3) Refer to figure 5-11 for typical patch pattern and prepare patch assembly as follows:

(a) Cut first patch from 42153 stock. Cut patch large enough to extend 3 inches (7.62cm) in all directions beyond break.

(b) Cut second patch from 42153 stock. Cut patch 1/2 inch (1.3cm) larger than first patch.

(c) Cut a third patch from 42113 stock. Cut patch 1/2 inch (1.3 cm) larger than second patch.

NOTE

Under normal atmospheric conditions the cement will dry in 2 to 3 minutes. Excessive humidity will require longer drying time. Limit use of applicator brush to 3918 cement. Do not use an applicator brush in more than one type of cement.

(4) Apply one coat of 3918 cement to third (largest) patch. Apply cement to corded side of patch. Apply one coat of cement to the second patch. Allow cement to dry and place smooth patch on the third patch; center the smaller patch on the large patch. Roll and stitch the cemented patches thoroughly.

(5) Refer to figure 5-12 and complete patch assembly as follows: Apply one coat of 3918 cement to the remaining side of the second patch and one coat to the first (small) patch. Allow cement to dry and center first patch on second patch. Roll and stitch the small patch thoroughly.

(6) Apply two coats of 3918 cement to the cleaned area around break on drum (fig. 5-13). Allow cement to dry between coats.

(7) Apply one coat of 3918 to the patch assembly; apply the cement to the underside (containing the small patch) and allow to dry.

(8) Refer to figure 5-14 and position patch assembly over break areas. Roll and stitch thoroughly.

(9) Apply one coat of 3918 cement to the outside edge of the patch and allow to dry.

b. Interior Patch (Fuel Drums).

WARNING

Cleaning solvent, TT-M-261D (Methyl-Ethyl-Ketone) used in surface coatings and in protective coatings is extremely flammable and is potentially dangerous to personnel and

(1) Clean damaged area of all contaminants and foreign matter and wash with detergent solution.

CAUTION

Do not buff through nylon barrier

(2) Buff drum wall 5 inches (12.7 cm) in all directions around break; remove dust and rewash with MEK (Methyl-Ethyl-Ketone) solution.

(3) Prepare patch assembly as follows:

(a) Cut a patch from 42171 stock large enough to extend 3 inches (8 cm) beyond break in all directions.

(b) Cut a second patch from 42171 stock 1/2 inch (1.3 cm) larger, in all directions, than the first patch.

(c) Cut a third patch from 42114 stock 1/2 inch (1.3 cm) larger than the second patch.

(4) Apply one coat of 3985 cement to the large patch and one coat of cement to the second patch; allow to dry.

(5) Reactivate both cemented surfaces with freshner No. C-3339. Position two cement surfaces, centering the small patch on the larger patch. Roll and stitch thoroughly.

NOTE

Use separate brushes for the 3985 cement and the C-3339 freshner. Do not use the same brush in more than one cement.

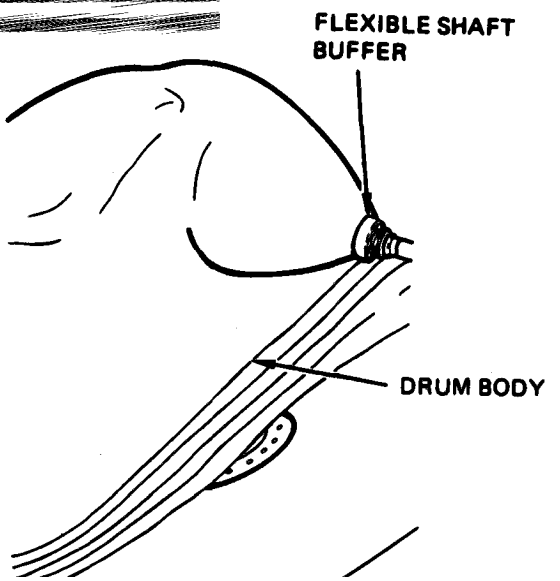


Figure 5-10.

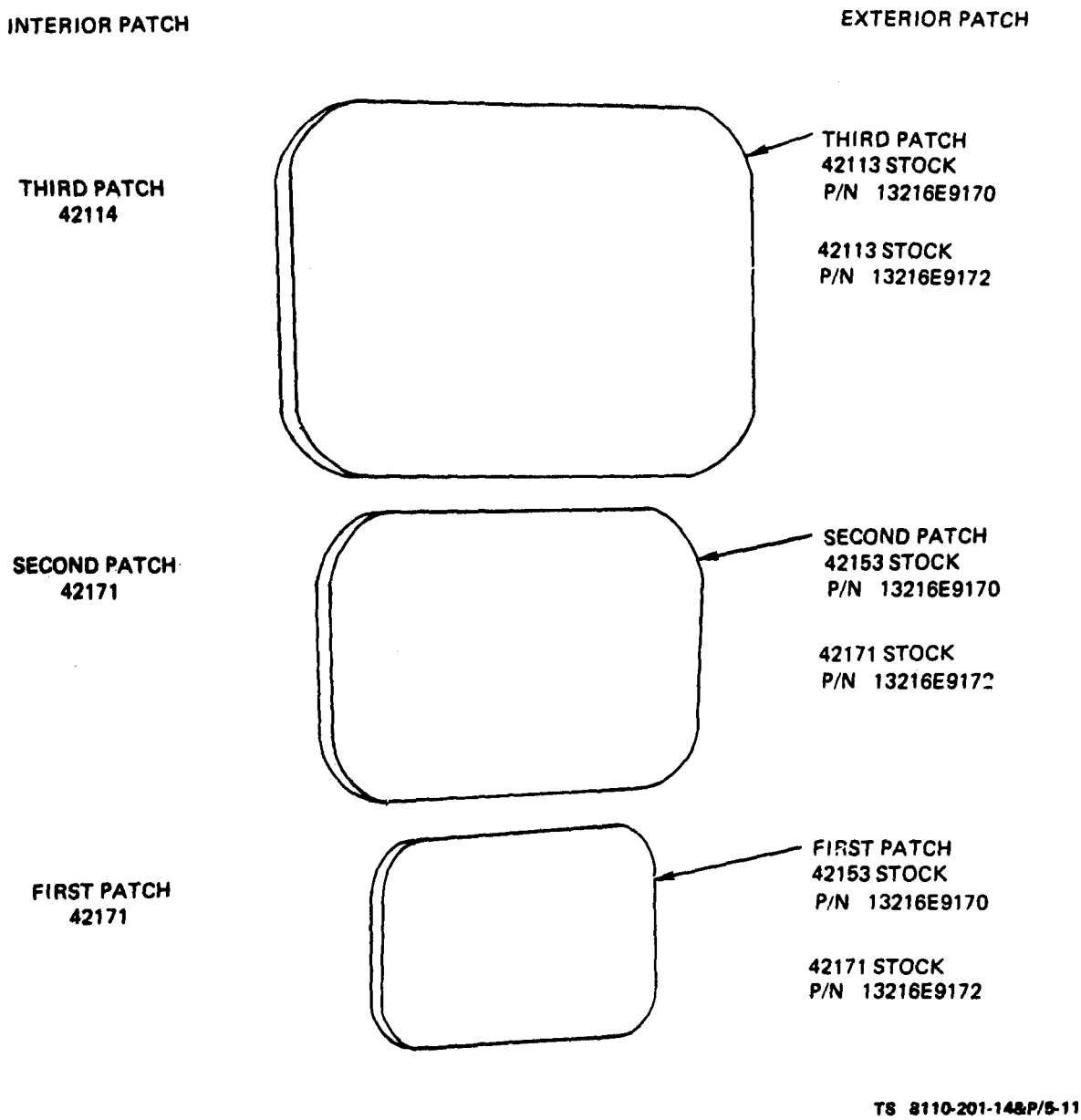


Figure 5-11. Drum Patches

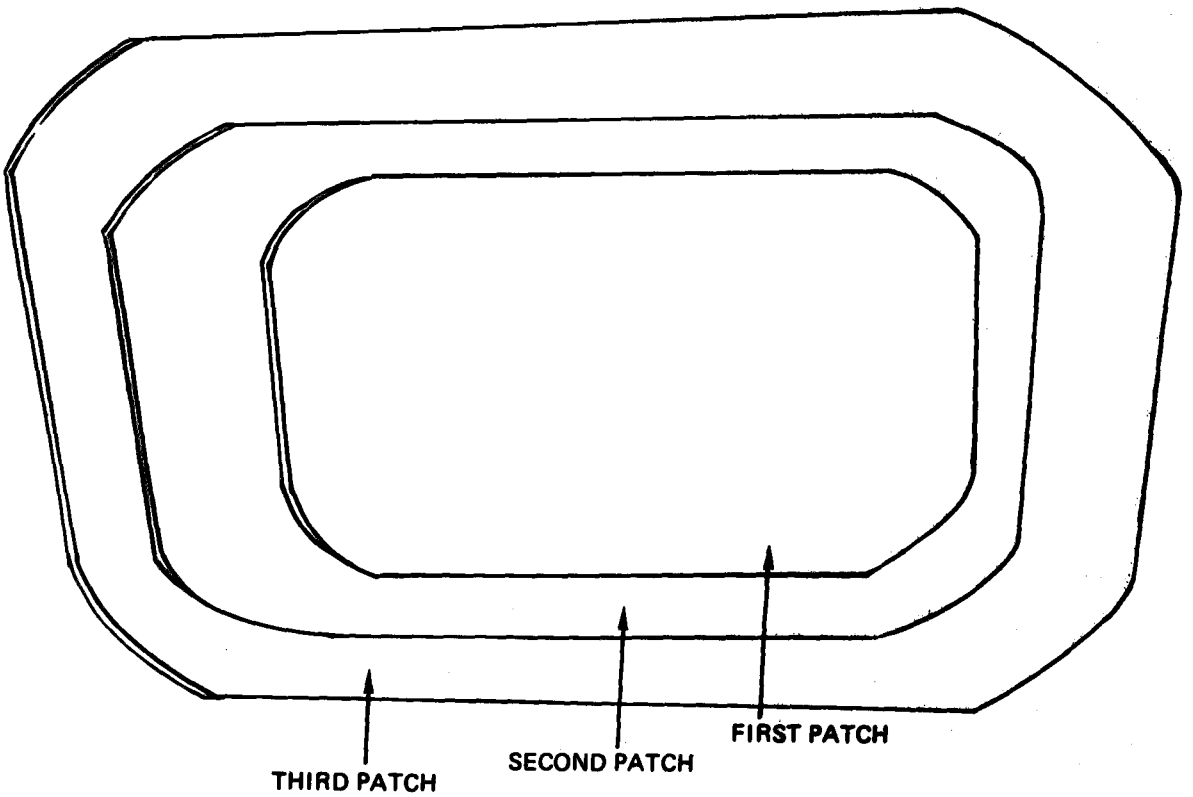


Figure 5-12. Assembled Patches

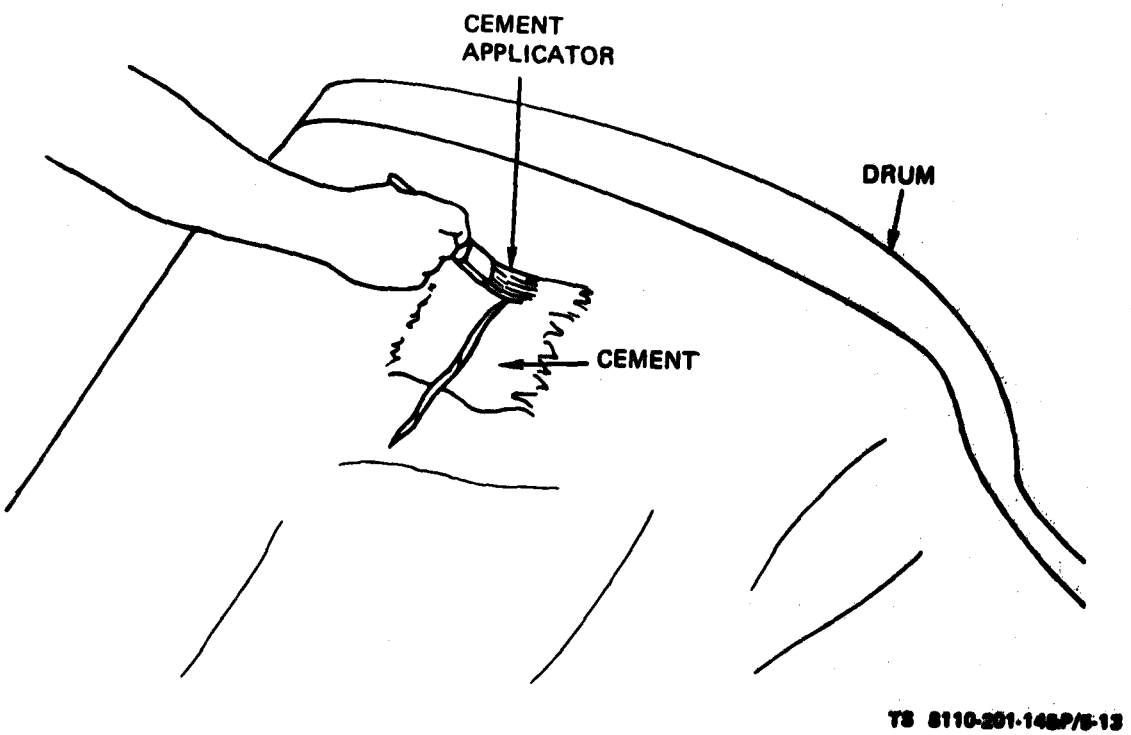


Figure 5-13. Cementing Break Area

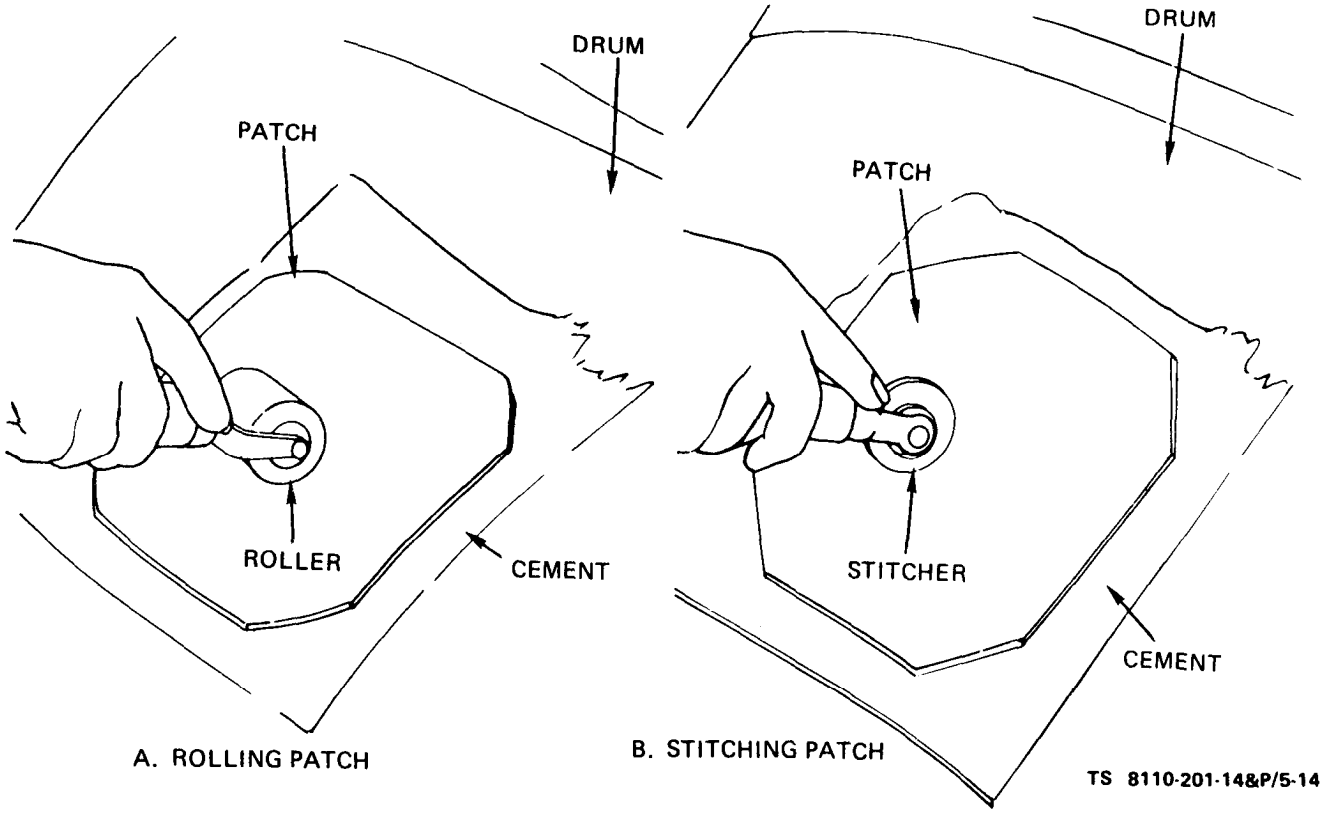


Figure 5-14. Rolling and Stitching Patch

(6) Apply one coat of 3985 cement to the remaining side of the second patch and one coat of cement to the first (small) patch. Allow cement to dry.

(7) Reactivate both cemented surfaces with freshner No. C-3339 or MEK. Position the two cemented surfaces together, centering the smaller patch on the large patch. Roll and stitch thoroughly.

(8) Apply two coats of 3985 cement to area cleaned around break. Allow the cement to dry between coats.

(9) Apply one coat of 3895 cement to the patch assembly. Apply to the underside of patch (with small patch affixed). Allow cement to dry.

(10) Reactivate both cemented surfaces with freshner No. C-3339 or MEK. Position patch on break and press in place. Roll and stitch thoroughly.

(11) Apply one coat of 3985 cement around outside edge of patch assembly. Allow cement to dry.

c. Vulcanizing (Fuel Drums).

WARNING

Prior to vulcanizing, aerate the interior of the drum with compressed air and check with an explosive meter (01575), Model (05HCS) or equivalent.

(1) Position repair area in jaw of cure unit so that repair area is facing the heating element.

(2) Slip a sheet of RM58B cloth inside drum immediately under liner patch. Place a second sheet immediately over exterior patch. Place a pad under the repair and close jaws of unit. Inflate unit bladder.

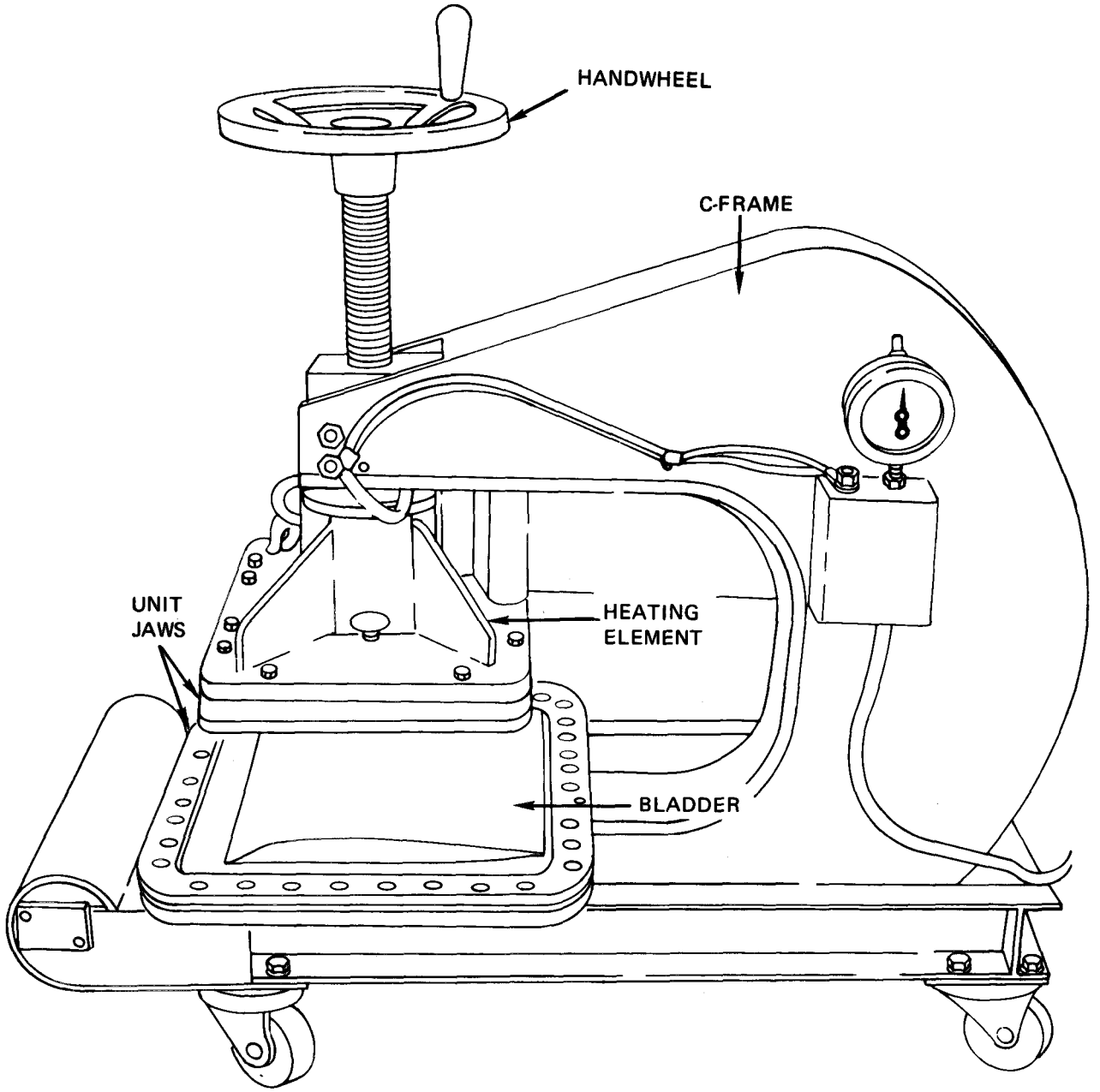
(3) Cure for one hour and 15 minutes at 300° F (149° C) and cool under pressure for 45 minutes.

(4) Deflate unit bladder and remove drum from unit.

(5) Suspend drum by one end and inspect interior and exterior of repaired area.

(6) Remove all foreign matter, dust, flakes, etc., from drum interior with compressed air or wash thoroughly and dry.

All data on pages 5-19 and 5-20, including Figure 5-15, deleted.



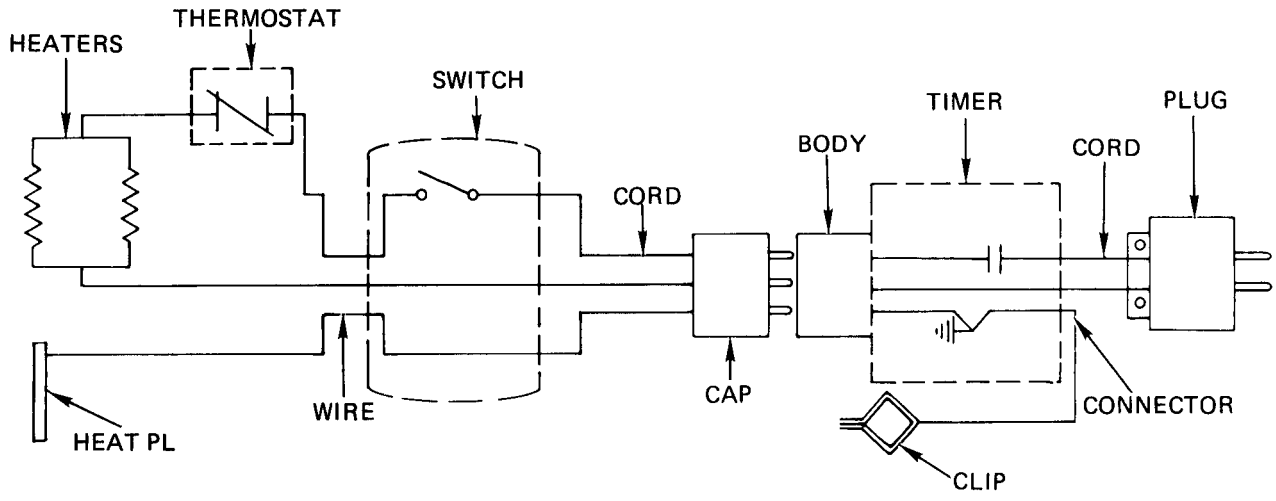
NOTE: PLACE REPAIR AREA OF DRUM IN JAWS OF PRESS ASSEMBLY WITH PATCHED AREA FACING HEATING ELEMENT.

(1) PRESS ASSEMBLY

TS 8110-201-14&P/5-15 (1)

Figure 5-15. Vulcanizing Press (Sheet 1 of 3)

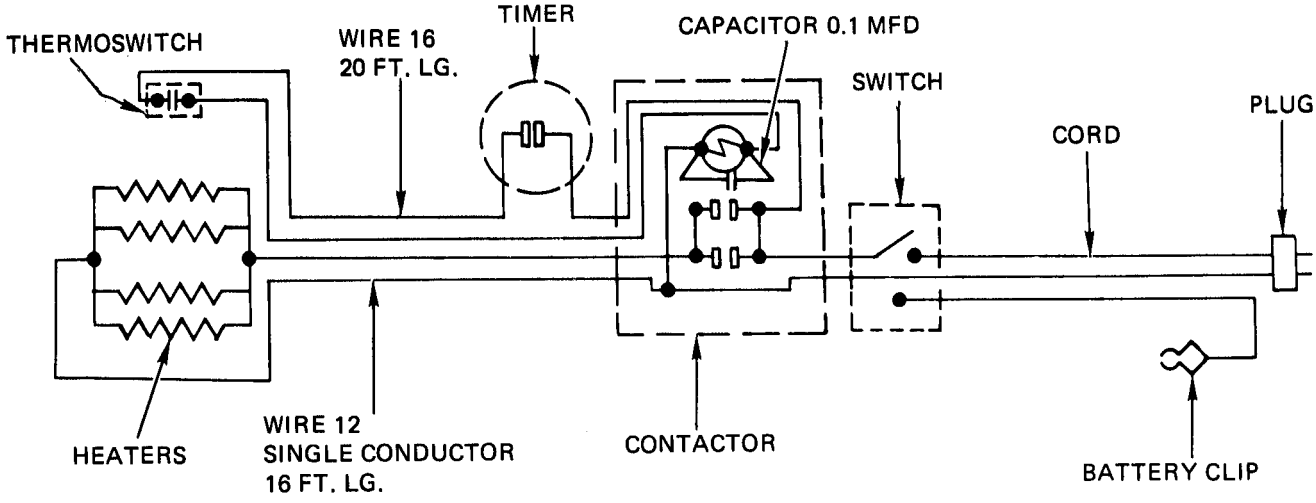
NOTE: THERMOSTAT SET FOR 300°F (149°C).



(2) 110 VOLT WIRING DIAGRAM, PV510

TS 8110-201-14&P/5-15 (2)

Figure 5-15. Vulcanizing Press (Sheet 2 of 3)



(3) 110 VOLT WIRING DIAGRAM, PV 1418

TS 8100-201-14&P/5-15 (3)

Figure 5-15. Vulcanizing Press (Sheet 3 of 3)

5-15. Vulcanizing Part No. 13216E9172.

a. Exterior Patch

WARNING

Cleaning solvent, TT-M-261D (Methyl-Ethyl-Ketone), used in surface coatings and in protective coatings is extremely flammable and is potentially dangerous to personnel and property. Keep container closed. Use in a well-ventillated area as the fumes are dangerous if inhaled. Avoid repeated and prolonged skin contact. Flash point of solvent is 24° F (4.4° c).

(1) Clean damaged area of all contaminants and foreign matter. Wash with an approved detergent solution.

(2) Buff area to be repaired; buff the drum wall 5 inches 13 cm) in each direction from tear. Remove dust and rewash with MEK (Methyl-Ethyl-Ketone) solution.

(3) Prepare patch assembly as follows:

(a) Cut a patch from 42171 stock. Cut patch large enough to extend 3 inches (8 cm) from break in all directions.

(b) Cut second patch from 42171 stock. Cut patch 1/2 inch (1.3 cm) larger than second patch.

(c) Cut third patch from 42113 stock. Cut patch 1/2 inch (1.3 cm) larger than second patch.

(4) Apply one coat of 3895 cement to the corded side of the third (large) patch and one coat to the second patch. Allow cement to dry.

NOTE

Under normal atmospheric conditions the cement will dry in 2 to 3 minutes. Excessive humidity will require longer drying time. Use the applicator brush in one type of cement only.

(5) Position the two cemented surfaces together, centering the smaller patch on the large patch. Roll and stitch thoroughly.

(6) Apply one coat of 3985 cement to the remaining side of second patch and one coat of cement to the first (small) patch. Allow cement to dry and position the two cemented surfaces together, centering the smaller patch on the larger patch (fig. 5-12). Roll and stitch thoroughly.

(7) Apply two coats of 3985 cement to the area around break (previously cleaned and buffed). Allow cement to dry between coats (fig. 5-13).

(8) Apply one coat of 3895 cement to the patch assembly. Apply to side with small patch. Allow to dry and position the two cemented surfaces together at break area. Roll and stitch thoroughly (fig. 5-14).

b. Interior Patch. Preparation for repair and patch application is identical to the method outlined in paragraph 5-14b.

c. Vulcanizing. Vulcanizing procedure is identical to methods outlined in paragraph 5-14c.

5-16. DELETED

DELETED

DELETED

DELETED

5-17. Drum Hardware Installation Prior to Testing

a. Install interior plates as follows:

(1) Insert interior plate through drum collar, line up plate bosses with bolt holes in collar.

(2) Mount closure ring and install capscrews hand tight.

b. Install remaining hardware except valves.

c. Torque end plate bolts to 30 foot-pounds (4.15 m-kg).

d. Install air inflation equipment as shown in figure 5-16.

CAUTION

Do not exceed 6 psig.

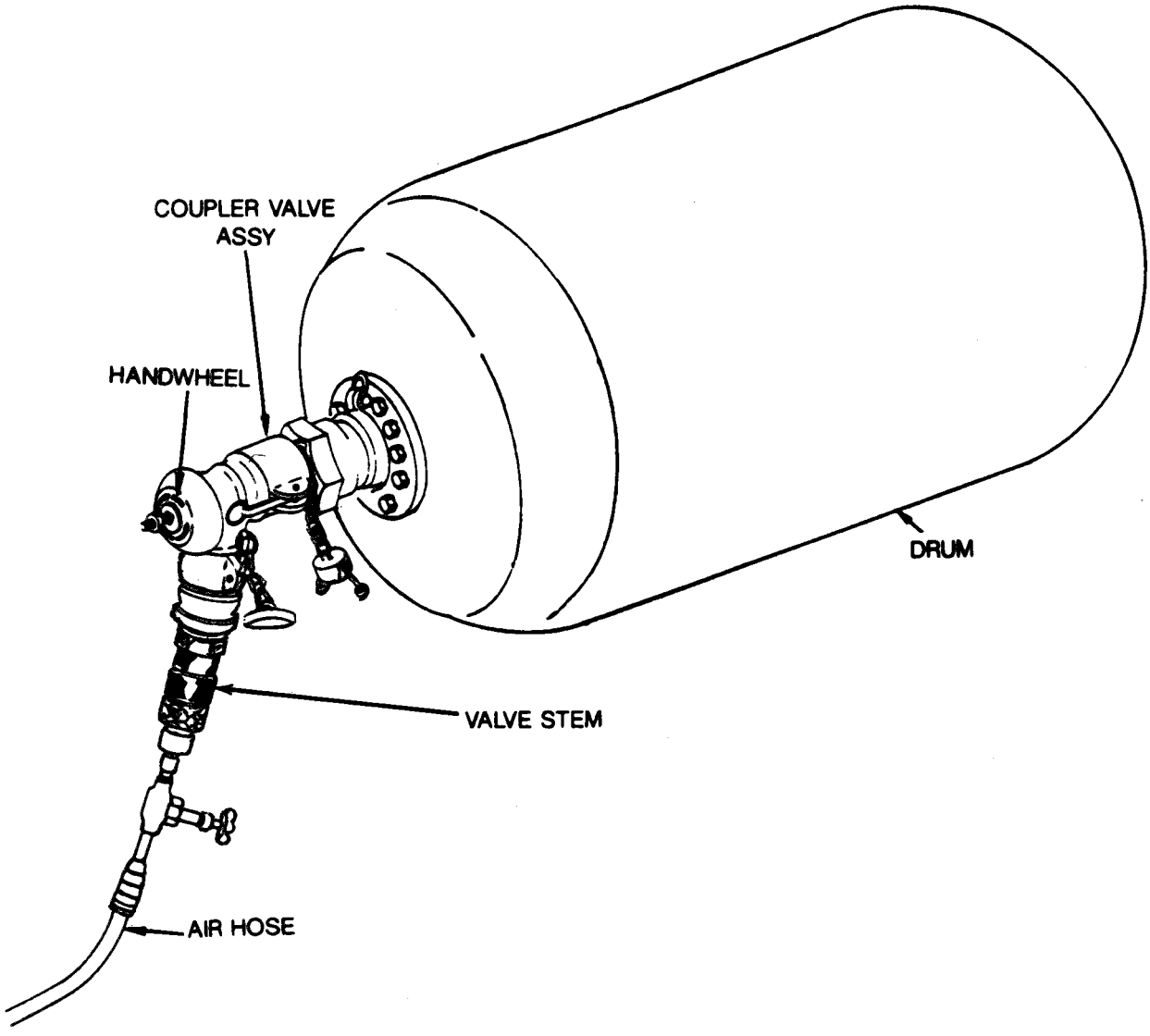


Figure 5-16. Air Testing Drum.

e. Install coupler valve.

f. Install modified dust plug (fig. 5-16).

g. Open coupler valve by turning handle to the left.

h. Insert air nozzle on valve stem and inflate to 6 psig.

i. Use standard air gage to determine air pressure.

j. Install lifting yoke (fig. 5-17) and move drum to leak test station.

5-18. DELETED

5-19. Testing (All Drums).

a. General. Testing is divided into two separate categories: Pressure Testing and Hydrostatic Testing. These tests will be conducted as outlined in b below.

b. Test Procedures.

(1) Pressure Test.

(a) Check all adapters and faucet valves to insure that they are tight and properly seated.

(b) Check all end plate capscrews to insure that they have been torqued to 30 foot pounds (4.54 m-kg).

(c) Install the air inflation and gaging equipment (fig. 5-16) and inflate the drum to 6 psi (0.42 kg/sq cm).

(d) Spray the inflated drum thoroughly with a detergent and water solution. After allowing a time lapse of approximately 5 minutes for normal expansion, add air, as required, to bring the internal pressure back to 6 psi (0.42 kg/sq cm).

(e) Inspect the drum surface and end playes for evidence of air leakage (frizzing or bubbling (fig. 5-18)). check the air pressure after a one hour time lapse and again after a two hour time lapse. Any loss of pressure from the original 6 psi (0.42 kg/sq cm) during the second hour will verify the presence of a leak and a requirement for repair. Serviceable drums will be drained and thoroughly dried (para 5-20).

(2) Hydrostatic Test.

(a) Remove air inflation and gaging equipment and deflate the drum.

(b) Position the drum with the opening at the top and fill the drum with water (fig. 5-19).

(c) Continue falling until the internal pressure of 30 psig is attained.

(d) After allowing a time lapse of 5 minutes after filling to permit normal expansion, add air as required (fig. 5-16) to bring the internal pressure back to the specified limit.

(e) Allow the pressurized drums to stand for 30 minutes.

(f) At the end of the specified stand period check the external surface of the drum for obvious evidence of leakage and check the internal pressure for pressure drop (fig. 5-20).

(g) Clearly mark any leak points and return the unserviceable drum for repair. Serviceable drums will be drained and thoroughly dried (para 5-20).

5-20. Drying Drum After Testing.

CAUTION

Hot air must not exceed 150° F (66°C).

a. Suspend drum by one end and dry interior with hot air for approximately 5 minutes, until interior of drum is completely dry (fig. 5-21).

NOTE

Water in depressions can be located by feeling the exterior of the drum. Where water has settled the temperature of the drum exterior will be cooler than the surrounding area.

b. Insert 1/2 inch (1.3 cm) L-shaped copper tubing in depressions to siphon out water. The internal air pressure will cause the water to flow through the tubing.

5-21. Fogging and Crating Drum (500 Gallon (1893 Liter) Fuel Drums Only).

a. Inflate drum to approximately 1/2 of full size.

b. Attach fogging equipment (fig. 5-22) and spray PE10 light oil into the drum for approximately 15 seconds.

c. Allow drum to remain semi-inflated for 3 to 5 minutes so that the oil fog covers surface of the inner liner.

d. Release air and fold drum into an S shape. The swivel plate should be opposite the valve end

of the interior of the bundle, and the valve end should be on top and exterior to the bundle.

e. Install the check valve using anti- seize compound (item 2, App. D) applied to internal threads.

f. Install dust cap on check valve.

g. Wrap coupler valve in wax-free paper and attach securely to a shackle on valve end of drum.

h. Place total bundle in crate or container approximately 70 inches (158 cm) long, 42 inches (107 cm) wide and 15 inches (38.10 cm) deep for ship ment or limited storage.

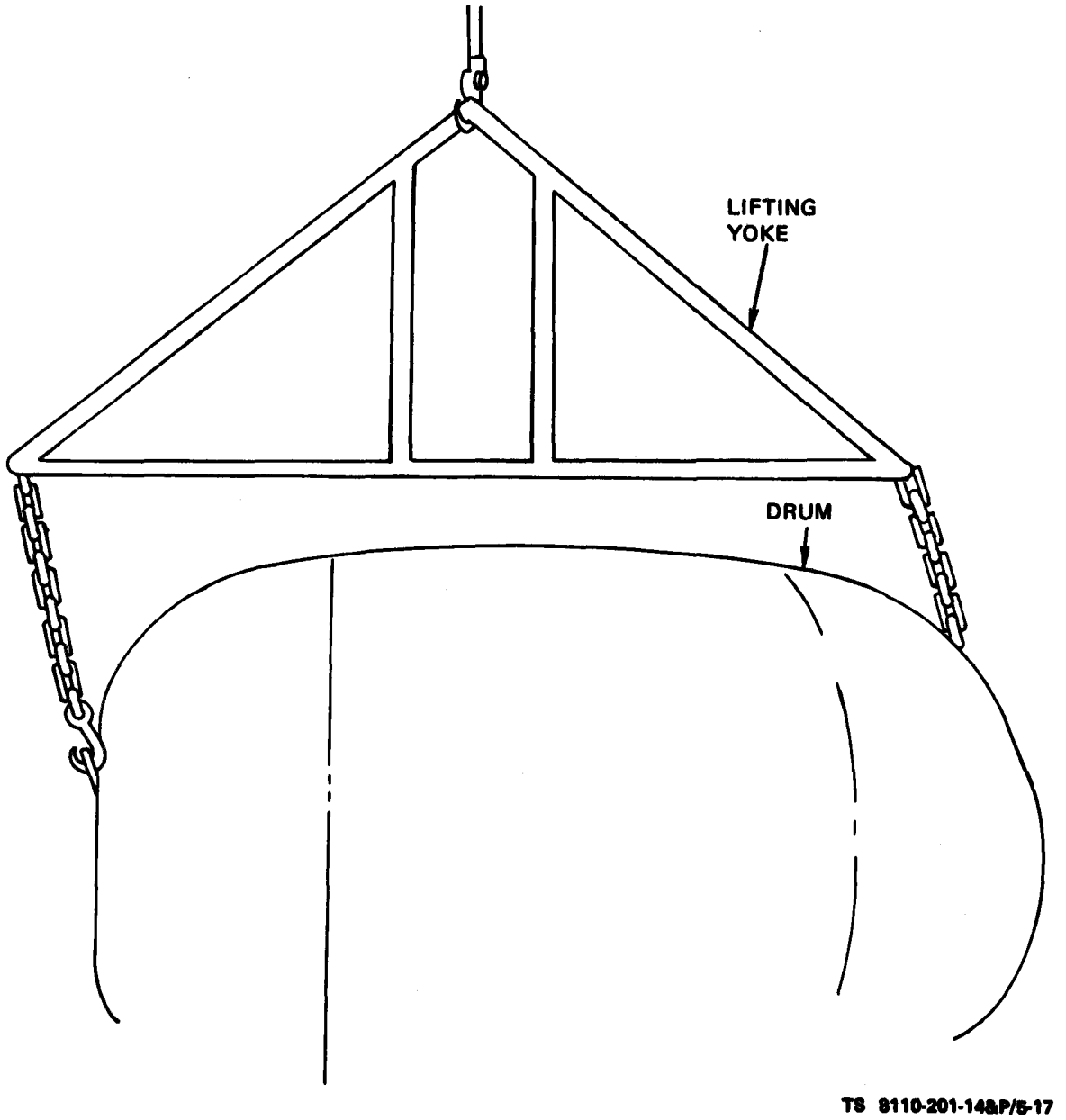
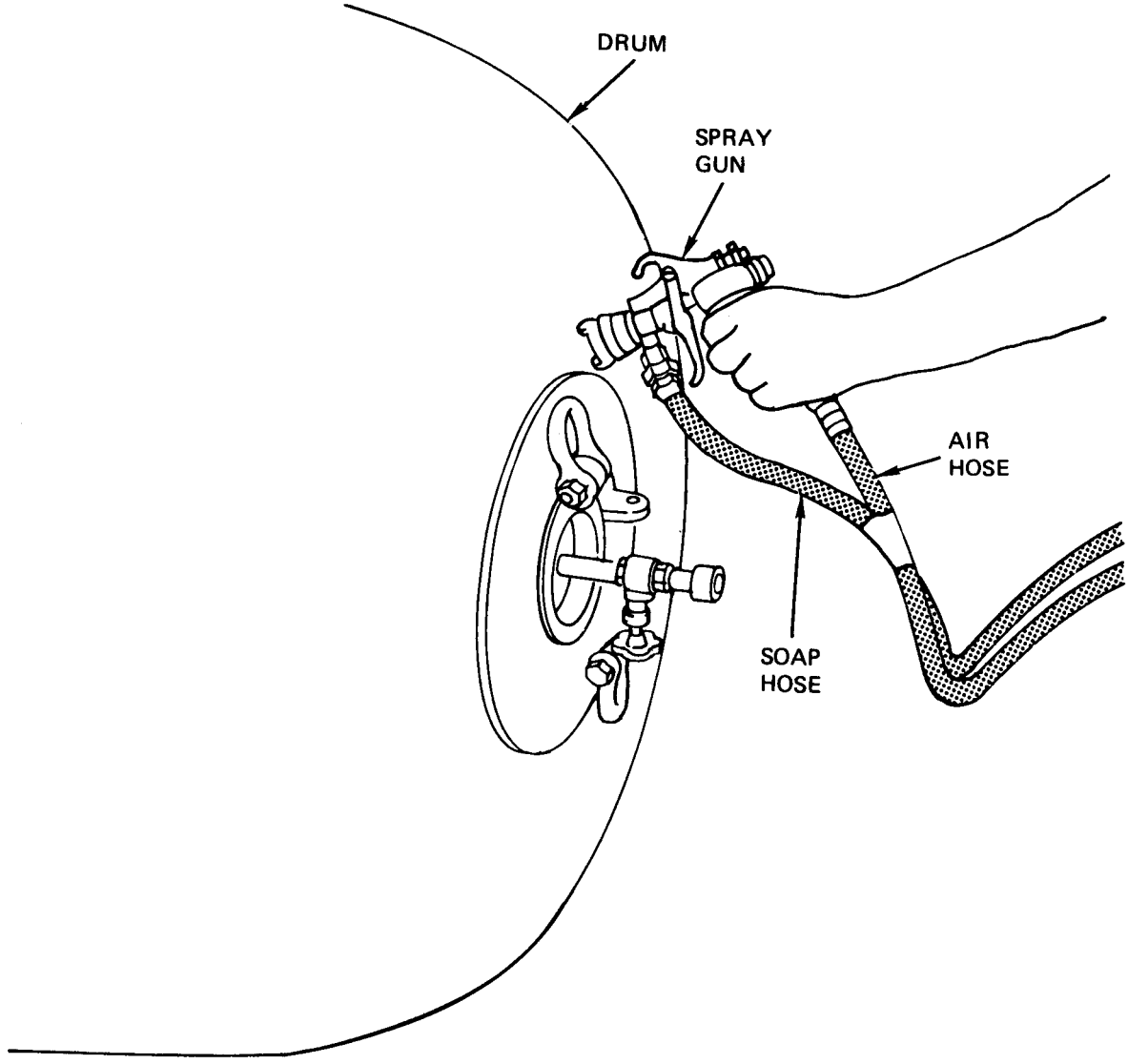
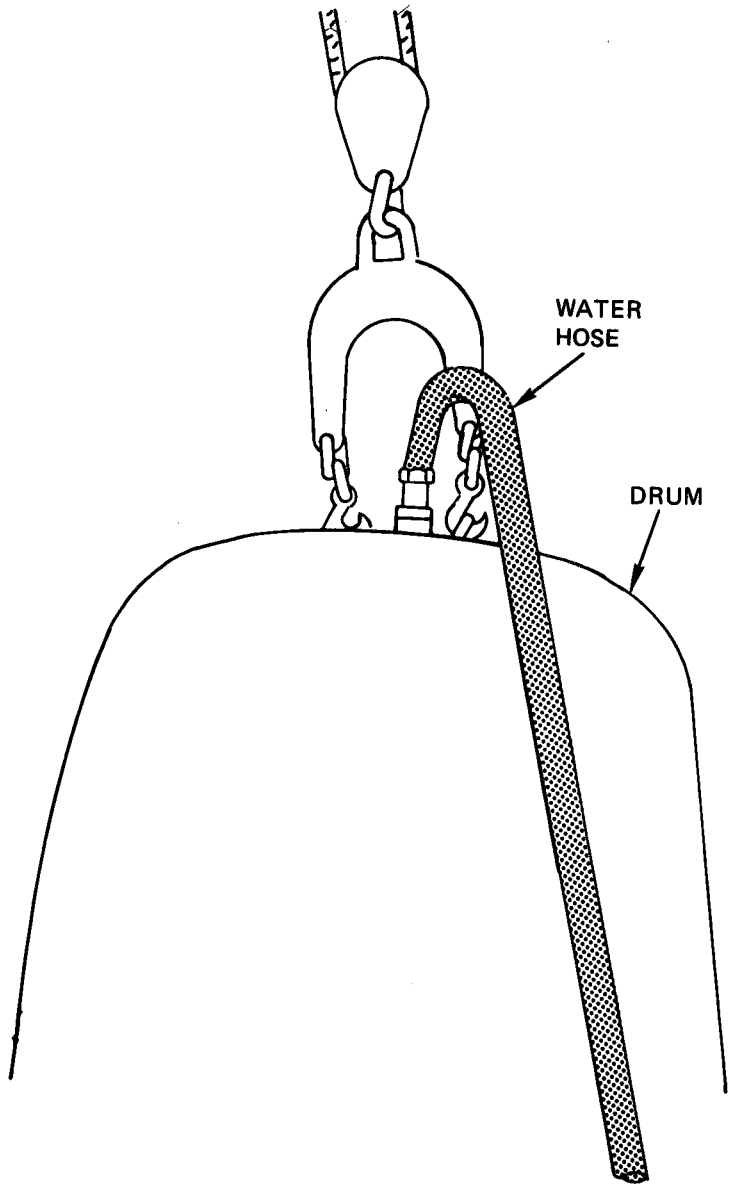


Figure 5-17. Lifting Drum with Lifting Yoke



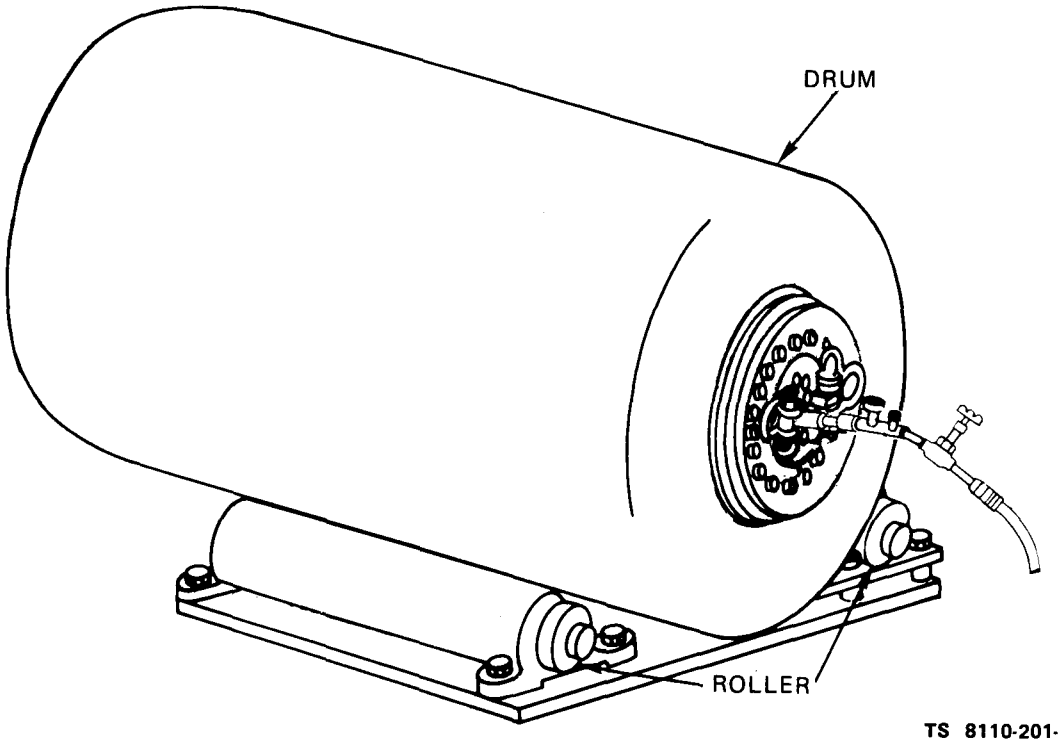
TS 8110-201-14&P/5-18

Figure 5-18. Leak Testing Drum



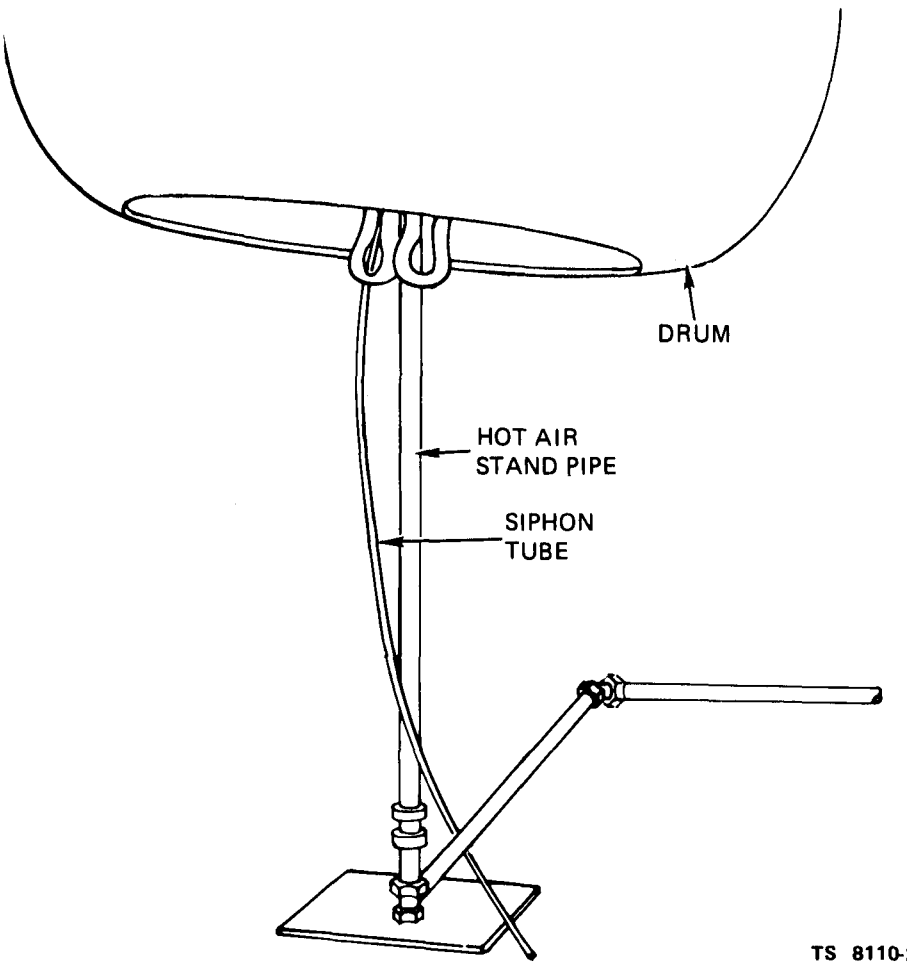
TS 8110-201-14&P/5-19

Figure 5-19. Hydrostatic Test



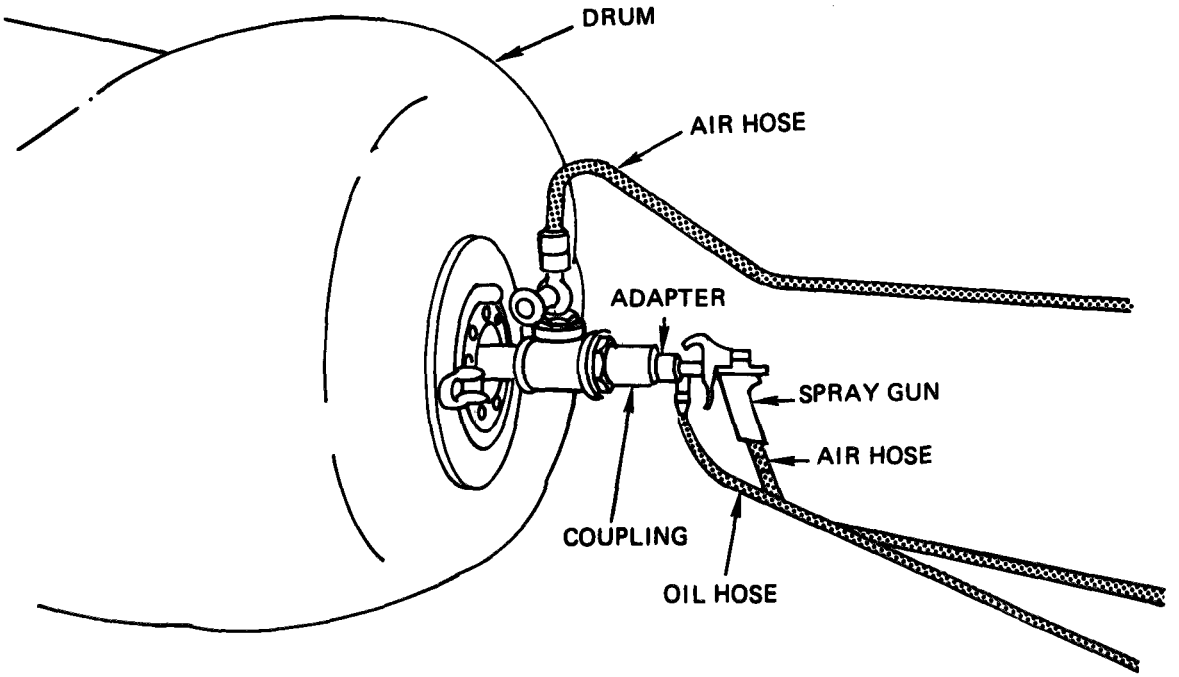
TS 8110-201-14&P/5-20

Figure 5-20. Air Pressure Check of Drum



TS 8110-201-14&P/5-21

Figure 5-21. Drying Drum



TS 8110-201-14&P/5-22

Figure 5-22. Fogging Drum

Section V. REPAIR OF PRESSURE CONTROL

5-22. General.

This section covers the complete overhaul of the pressure control. Upon completion of the overhaul the pressure control should be properly tested and adjusted to assure it is operating efficiently.

5-23. Pressure Control.

a. ***Disassembly.*** Refer to paragraphs 4-20 thru 4-25 for disassembly of the pressure control.

b. Overhaul. Replace all parts as necessary to restore the pressure control to serviceability and reassemble in accordance with paragraphs 4-20 thru 4-25.

c. ***Test and Adjustment.*** Refer to paragraph 4-**22a** and ***b*** for testing and adjustment of the pressure control.

All data on pages 5-30 through 5-38, including figures 5-23 and 5-24, deleted.

APPENDIX A
REFERENCES

A-1. Demolition.

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

A-2 Maintenance.

TM 10-1101	Petroleum Handling Equipment and Operation.
FM 10-564	Air Drop of Supplies and Equipment; Rigging Remote Area Refueling System.
TM 38-750	The Army Maintenance Management System.

A-3. Painting.

AR 38-250	Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft.
TM 740-90-1	Administrative Storage of Equipment.

APPENDIX B
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION.

B-1. General.

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

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

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from section II (Not Applicable).

d. Section IV contains supplemental instructions on explanatory notes for a particular maintenance function (Not Applicable).

B-2. Maintenance Functions.

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

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

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

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 instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

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

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

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

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

B-3. Column Entries Used in the MAC.

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify

components, assemblies, subassemblies, and modules with trhe next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the name of components, assemblies, subassemblies and module for which maintenance authorized.

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

d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform the maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time will be shown for each level. The number of manhours specified by the work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating condition. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

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

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

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

B-4. Column Entries Used in Tool and Test Equipment Requirements.

a. Column 1, Tool or Test Equipment Reference Code. The tool and test equipment reference code correlates with a maintenance function on the identified end item or component.

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

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

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

e. Column 6, Tool Number. The manufacturer's part number.

B-5. Explanation of Columns in Section IV.

a. Reference Code. The code scheme recorded in column 1, Section III.

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

Section II. MAINTENANCE ALLOCATION CHART FOR COLLAPSIBLE FABRIC DRUMS

(1)	(2)	(3)	(4)					(5)	(6)
Group Number	Component/Assembly	Maintenance Function	*Maintenance Level C	O	F	H	D	Tools and Equipment	Remarks
01	DRUM ASSEMBLY	Inspect	0.2						
		Replace	0.2						
		Repair	0.5						
		Overhaul			8.0				
	Casing	Inspect	0.2						
		Replace			4.0				
		Repair	0.5						
		Overhaul			4.0				
	Plate, bearing and plate w/cables	Inspect	2.5						
		Replace			4.0				
		Repair			4.0				
	Adapter, check valve assy	Inspect	0.2						
		Replace	0.5						
		Repair		1.0					
	Valve assy, coupler	Inspect	0.2						
		Replace	0.5					1	
		Repair		1.0					
	Valve, faucet	Inspect	0.2						
		Replace	0.2						
02	YOKE, TOWING AND LIFTING	inspect	0.2						
		Replace	0.5						
		Repair		1.0					
03	KIT, TIEDOWN	Inspect	0.2						
		Replace	0.5						
		Repair		1.5					
04	KITS, REPAIR, EMERGENCY	Inspect 0.2							
		Replace	0.5						
05	CONTROL, PRESSURE	Inspect	1.0						
		Adjust		2.0					
		Replace	0.5						
		Repair		3.0					
		Overhaul			6.0				
	Hose Assembly	Inspect	0.2						
		Replace	0.2						
		Repair		1.0					
06	PRESS ASSEMBLIES, VULCANIZING	Inspect	0.5						
		Replace			0.5				
		Repair			1.5				
		Overhaul			8.0				

*Subcolumns are as follows:

C - Operator/Crew O - Organizational F - Direct Support H - General Support D - Depot

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

(1) TOOL/TEST EQUIP. REF CODE	(2) MAINTENANCE CATEGORY	(3) NOMENCLATURE	(4) NSN	(5) TOOL NUMBER
1	F	Wrench, Spring Retainer		MEPN 91-0501

APPENDIX C

REPAIR PARTS AND SPECIAL TOOLS LISTS

Section I. INTRODUCTION

C-1. Scope.

a. This Appendix lists repair parts, special tools, test and support equipment required for the performance of maintenance of the drums.

b. Repair parts listed represents those authorized for use at the organizational, direct support and general support maintenance levels and will be requisitioned on an "as required" basis until stockage is justified by demand in accordance with AR 710-2.

C-2. General.

This Repair Parts and Special Tools List is divided into the following sections:

a. Repair Parts List - Section II. A list of spares and repair parts authorized for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of assembly groups in ascending numerical sequence, with the parts in each group listed in figure and item number sequence.

b. Special Tools List - Section III. (Not Applicable).

c. National Stock Number and Part Number Index - Section IV. A list, in ascending numerical sequence, of all National Stock Numbers appearing in the listings, followed by a list, in alphanumeric sequence, of all part numbers appearing in the listings. National Stock Number and part numbers are cross-referenced to each illustration figure and item number appearance.

C-3. Explanation of Columns.

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

a. Illustration. This column is divided as foIlows:

(1) Figure Number. Indicates the figure number of the illustration in which the item is shown.

(2) Item Number. The number used to identify each item called out in the illustration.

b. Source, Maintenanc, and Recoverability Codes (SMR).

(1) Source Code. Source codes are assigned to support items to indicate the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are entered in the first and second positions of the Uniform SMR code format as follows:

Code	*Definition*
PA	Item procured and stocked for anticipated or known usage.
PB	Item procured and stocked for insurance purpose because essentiality dictates that a minimum quantity be available in the supply systems.
PC	Item procured and stocked and which otherwise would be coded PA except that it is deteriorative in nature.
PD	Support item, excluding support equipment, procured for initial issue or outfitting and stocked only for subsequent or additional issues or outfittings. Not subject to automatic replenishment.
PE	Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
PF	Support equipment which will not be stocked but which will be centrally procured on demand.
PG	Item procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which, because of probable discontinuance or shutdown of production facilities, would prove uneconomical to reproduce at a later time.

Code	*Definition*
KD	An item of a depot overhaul/repair kit and not purchased separately. Depot kit defined as a kit that provides items required at the time of overhaul or repair.
KF	An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be replaced at organizational or intermediate levels of maintenance.
KB	Item included in both a depot overhaul/repair kit and a maintenance kit.
MO	Item to be manufactured or fabricated at organizational level.
MF	Item to be manufactured or fabricated at the direct support maintenance level.
MH	Item to be manufactured or fabricated at the general support maintenance level.
MD	Item to be manufactured or fabricated at the depot maintenance level.
AO	Item to be assembled at organizational level.
AF	Item to be assembled at direct support maintenance level.
AH	Item to be assembled at general support maintenance level.
AD	Item to be assembled at depot maintenance level.
XA	Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB	Item is not procured or stocked. If not available through salvage, requisition.
XD	A support item that is not stocked. When required, item will be procured through normal supply channels.

NOTE

Cannibalization or salvage maybe used as a source of supply for any items source coded above except those coded XA or XD.

(2) Maintenance Code. Maintenance codes are assigned to indicate the levels of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code format as follows:

(a) The maintenance code entered in the third position will indicate the lowest level authorized to move, replace, and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance:

Code	*Application/Explanation*
C	Crew or operator maintenance performed within organizational maintenance.
O	Support item is removed, replaced, used at the organizational level.
I	Support item is removed, replaced, used by the direct support element of integrated direct support maintenance.
F	Support item is removed, replaced, used at the direct support level.
H	Support item is removed, replaced, used at the general support level.
D	Support items that are removed, replaced, used at depot, mobile depot, specialized repair activity only.

NOTE

Codes "I" and "F" will be considered the same by direct support units.

(b) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). This position will contain one of the following maintenance codes:

Code	*Application/Explanation*
O	The lowest maintenance level capable of complete repair of the support item is the organizational level.
F	The lowest maintenance level capable of complete repair of the support item is the direct support level.
H	The lowest maintenance level capable of complete repair of the support item is the general support level.
D	The lowest maintenance level capable of complete repair of the support item is the depot level.

Code	*Application/Explanation*
L	Repair restricted to designated specialized repair activity.
Z	Nonreparable. No repair is authorized.
B	No repair is authorized. The item may be reconditioned by adjusting, lubricating, etc., at the user level. No parts or special tools are procured for the maintenance of this item.

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

Recoverability Code	*Definition*
Z	Nonreparable item. When serviceable, condemn and dispose at the level indicated in position 3.
O	Reparable item. When uneconomically reparable, condemn and dispose at organizational level.
F	Reparable item. When uneconomically reparable, condemn and dispose at the direct support level.
H	Reparable item. When uneconomically reparable, condemn and dispose at the general support level.
D	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level.
L	Reparable item. Repair, condemnation, and disposal not authorized below depot/specialized repair activity level.
A	Item requires special handling or condemnation procedures because of specific reasons (i.e., precious metal content, high dollar value, critical material or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

d. Part Number. Indicates the primary number used by the manufacturer 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 a stock numbered item is requisitioned, the repair part received may have a different part number than the part being replaced.

e. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code listed in SB 708-42 which is used to identify the manufacturer, distributor, or Government agency, etc.

f. Description. Indicates the Federal item name and, if required, a minimum description to identify the item. Items that are included in kits and sets are listed below the name of the kit or set with the quantity of each item in the kit or set indicated in the quantity incorporated in unit column. When the part to be used differs between serial numbers of the same model, the effective serial numbers are shown as the last line of the description. In the Special Tools List, the initial basic of issue (BOI) appears as the last line in the entry for each special tool, TMDE, and support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased accordingly.

g. Unit of Measure (U/M). Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two character alphabetical abbreviation (e.g., ea, in, pr, etc.). When the unit of measure differs from the unit of issue, the lower unit of issue that will satisfy the required units of measure will be requisitioned.

h. Quantity Incorporated in Unit. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that no specific quantity is applicable (e.g., shims, spacers, etc.).

i. Usable on Codes. Usable on codes are included in Column 6. Uncoded items are applicable to

all models and/or serial number range. Identification of the usable on codes used in this publication are:

Code	*Used On*
CWD	Part No. 5-13-1681-1-1 (NSN 8110-00-900-8328)
CXA	Part No. 13216E9170 (NSN 8110-00-824-1444)
CXB	Part No. 13216E9172 (NSN 8110-00-753-4892)
CXC	Part No. 13216E7991 (NSN 8110-00-856-6243)
CXD	Part No. 5-14-1673 (NSN 8110-00-856-6245)
CXE	Part No. X-3068 (NSN 8110-00-856-6246)
CXF	Part No. X-3064 (NSN 8110-00-856-6244)
CXG	Part No. 13215E8372 (NSN 4930-00-855-8739)
CXH	Part No. PV 1418 (NSN 4940-00-070-0885)
CXJ	Part No. PV 510 (NSN 4940-01-032-3754)

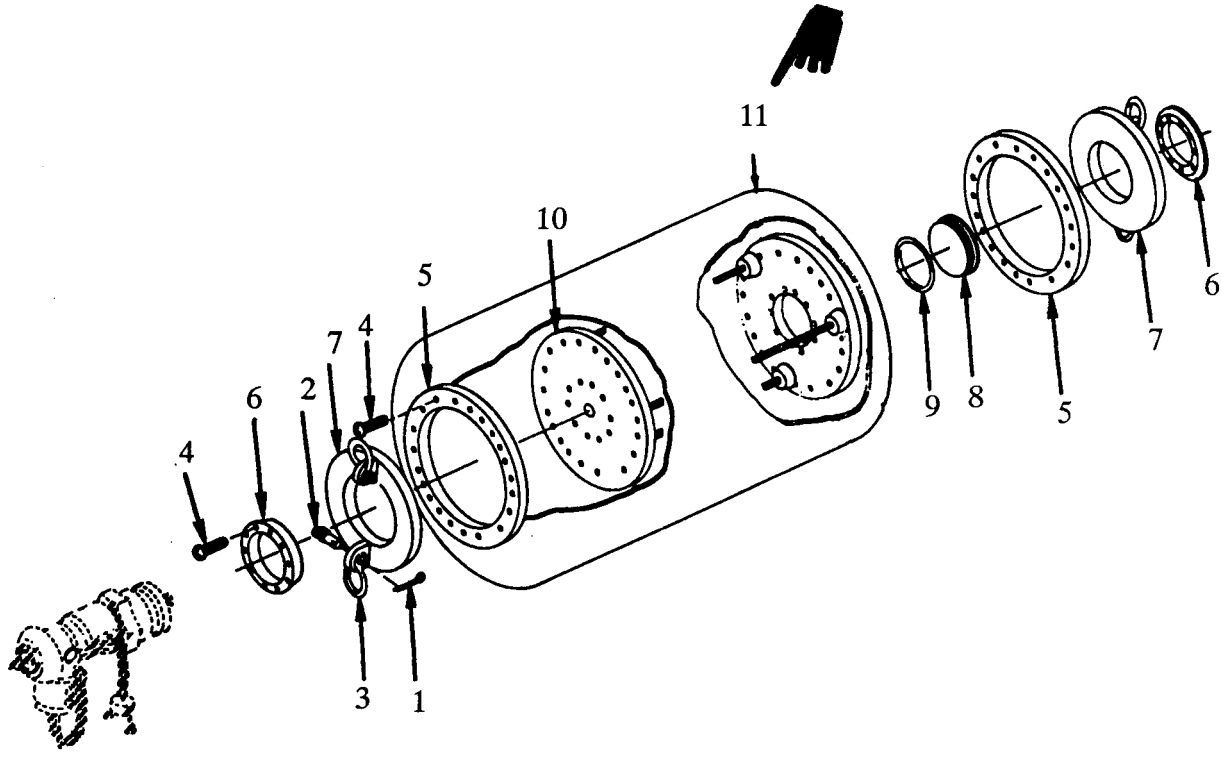


Figure C-1. Drum, Fabric, Long

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
						GROUP 01 DRUM ASSEMBLY			
C1		PAFFF	8110-00-900-8328	81337	5-13-1681-1-:	DRUM,FABRIC,LONG	CWD	EA	1
C1	1	PBOZZ	5315-00-839-5822	96906	MS24665-353	PIN,COTTER	CXA,CXB	EA	4
C1	2	PBOZZ	5306-01-118-1915	97403	13216E9193	BOLT,EYE	CWD,CXA,CXB	EA	4
C1	3	PBOZZ	5030-00-149-5574	97403	5-14-592-3-8	SHACKLE	CWD,CXA,CXB	EA	4
C1	4	PBFZZ	5305-00-978-9396	96906	MS16997-101	SCREW,CAP,SOCKET	CWD,CXA,CXB	EA	62
C1	5	PBOZZ	5365-01-108-7945	97403	13216E9183	SPACER,PLATE	CWD,CXB	EA	2
C1	6	PBOZZ	8110-01-110-4817	97403	13216E9168	PLATE,BEARING	CWD,CXA,CXB	EA	2
C1	7	PBOZH	8110-01-104-5181	97403	13216E9163	PLATE SWIVEL	CWD,CXA,CXB	EA	2
C1	8	XAFZZ		97403	13216E9165	PLATE,CLOSURE,LH	CWD,CXA,CXB	EA	1
C1	9	XAFZZ		97403	13216E9166	PLATE,CLOSURE,RH	CWD,CXA,CXB	EA	1
C1	10	XAFZZ		97403	13216E9167-1	CABLE ASSEMBLY	CWD,CXA	EA	3
C1	11	PAFFF	8110-01-114-6178	97403	13216E9171	BODY,DRUM,LONG	CXB	EA	1

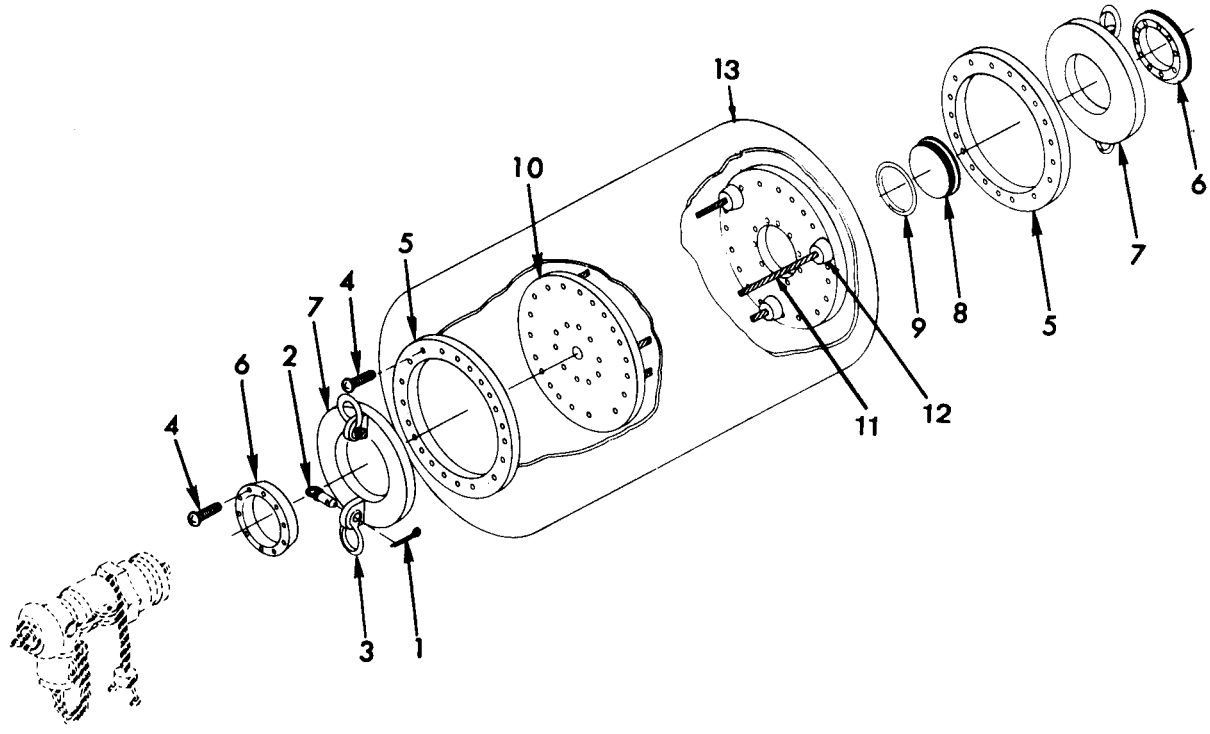


Figure C-2. Drum, Fabric, Short

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
C2	1	PBOZZ	5315-00-839-5822	96906	MS24665-353	PIN,COTTER	CXA,CXB	EA	4
C2	2	PBOZZ	5306-01-118-1915	97403	13216E9193	BOLT,EYE	CWD,CXA,CXB	EA	4
C2	3	PBOZZ	4030-00-149-5574	97403	5-14-592-3-8	SHACKLE	CWD,CXA,CXB	EA	4
C2	4	PBFZZ	5305-00-978-9396	96906	MS16997-101	SCREW,CAP,SOCKET	CWD,CXA,CXB	EA	62
C2	5	PBOZZ	5365-01-108-7945	97403	13216E9183	SPACER,PLATE	CWD,CXB	EA	2
C2	6	PBOZZ	8110-01-110-4817	97403	13216E9168	PLATE,BEARING	CWD,CXA,CXB	EA	2
C2	7	PBOZH	8110-01-104-5181	97403	13216E9163	PLATE SWIVEL	CWD,CXA,CXB	EA	2
C2	8	XAFZZ		97403	13216E9165	PLATE,CLOSURE,LH	CWD,CXA,CXB	EA	1
C2	9	XAFZZ		97403	13216E9166	PLATE,CLOSURE,RH	CWD,CXA,CXB	EA	1
C2	10	XAFZZ		97403	13216E9167-2	CABLE ASSEMBLY	CWD,CXA	EA	3
C2	11	XAFZZ		97403	13216E9167-2-2	WIRE ROPE,7X19,3-80	CWD,CXA	EA	3
C2	12	XAFZZ		97403	13216E9167-2-1	SLEEVE	CWD,CXA,CXB	EA	6
C2	13	XBFFO	8110-00-837-2191	97403	13216E9169	DRUM BODY,SHORT	CXA	EA	1

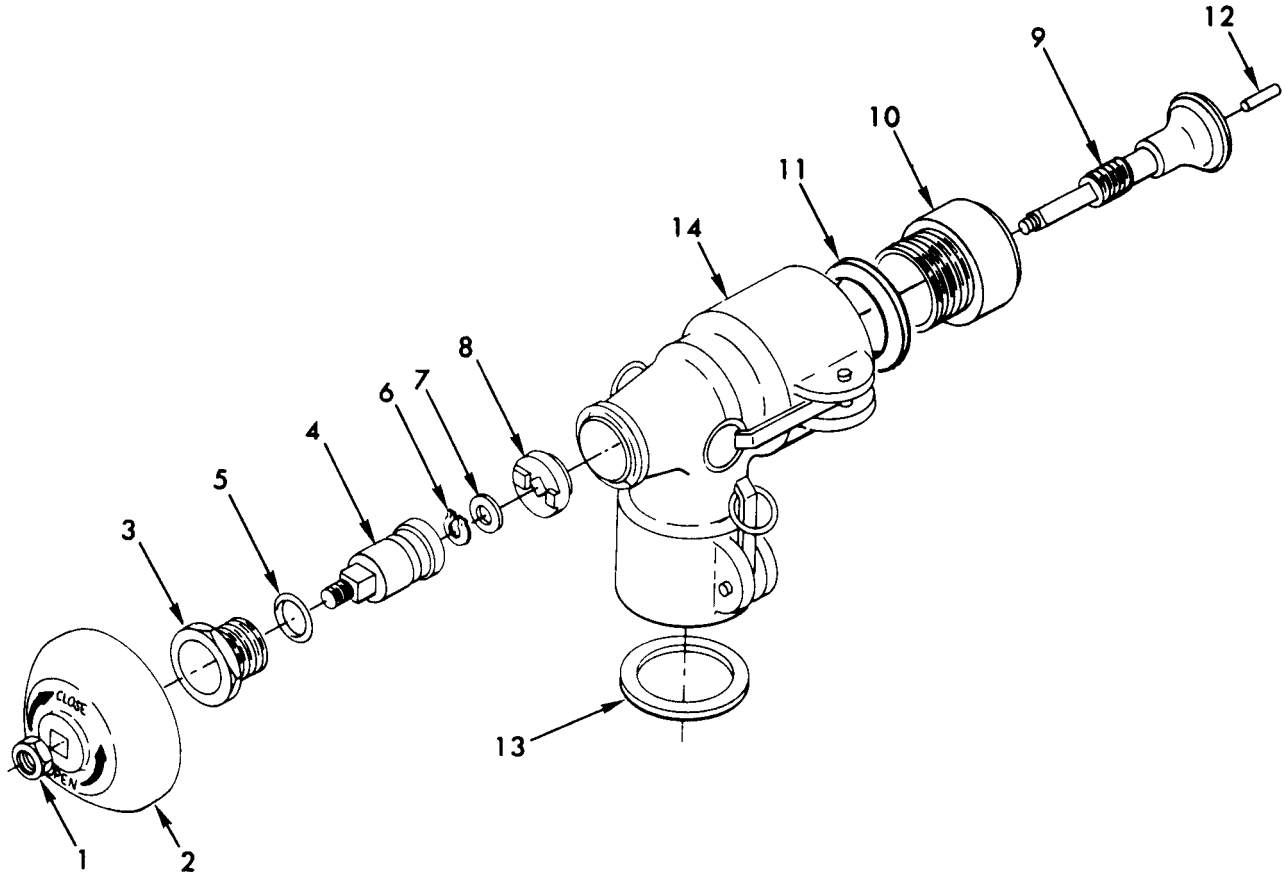


Figure C-4. Coupler Valve Assembly

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC UNIT
C4		PAOOO	4930-00-973-2589	97403	13216E9190	COUPLER VALVE ASSEMBLY			
C4	1	PBOZZ	5310-00-056-3395	96906	MS35649-2382	NUT,PLAIN,HEXAGON	CWD,CXA,CXB	EA	1
C4	2	PBOZZ	8110-01-110-7689	97403	13216E9175	WHEEL,HAND	CWD,CXA,CXB	EA	1
C4	3	PBOZZ	8110-01-119-7383	97403	13216E9181	RETAINER,HAND WHEEL	CWD,CXA,CXB	EA	1
C4	4	PBOZZ	8110-01-104-5182	97403	13216E9177	STEM,HAND WHEEL	CWD,CXA,CXB	EA	1
C4	5	PAOZZ	5330-00-248-3850	96906	MS29513-116	PACKING,PREFORMED	CWD,CXA,CXB	EA	1
C4	6	PBOZZ	5365-00-803-7312	96906	MS16624-1035	RING,TETAINING	CWD,CXA,CXB	EA	1
C4	7	PBOZZ	5310-01-112-7942	97403	13216E9186	SPACER	CWD,CXA,CXB	EA	1
C4	8	PBOZZ	8110-01-110-3830	97403	13216E9189	ROTOR,VALVE SYSTEM	CWD,CXA,CXB	EA	1
C4	9	PBOZZ	8110-01-104-5183	97403	13216E9174	STEM,VALVE	CWD,CXA,CXB	EA	1
C4	10	PBOZZ	8110-01-104-5184	97403	13216E9178	RING,SEAT	CWD,CXA,CXB	EA	1
C4	11	PAOZZ	5310-00-612-2414	96906	MS27030-6	WASHER,FLAT	CWD,CXA,CXB	EA	1
C4	12	PBOZZ	5315-01-106-8299	96906	MS9389-88	PIN,STRAIGHT,HEADLESS	CWD,CXA,CXB	EA	1
C4	13	PAOZZ	5330-00-360-0595	96906	MS27030-5	GASKET	CWD,CXA,CXB	EA	1
C4	14	XAOZZ		97403	13216E9188	BODY,VALVE,COUPLER	CWD,CXA,CXB	EA	1

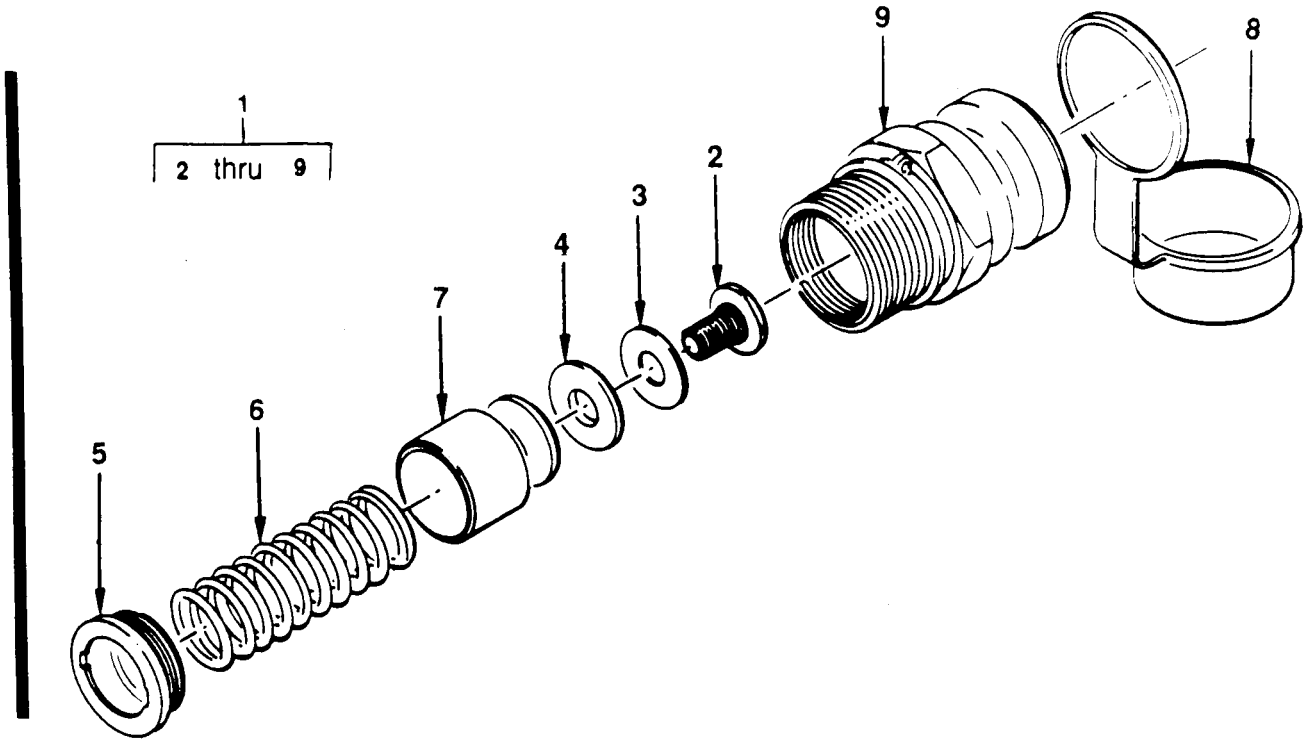


Figure C-5. Adapter Assembly

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) INC IN UNIT
C5	1	PAOZZ	8110-01-114-6177	97403	13216E9191	ADAPTER ASSEMBLY	CWD,CXA,CXB	EA	1
C5	2	XAOZZ		97403	13216E9184	GUIDE,PIN	CWD,CXA,CXB	EA	1
C5	3	XAOZZ		97403	13216E9185	WASHER	CWD,CXA,CXB	EA	1
C5	4	PAOZZ	5330-01-109-1369	97403	13216E9176	GASKET,ADAPTER	CWD,CXA,CXB	EA	1
C5	5	XAOZZ		97403	13216E9182	RETAINER,SPRING	CWD,CXA,CXB	EA	1
C5	6	XAOZZ		97403	1321639187	SPRING,HELICAL	CWD,CXA,CXB	EA	1
C5	7	XAOZZ		97403	13216E9179	HOUSING,SPRING	CWD,CXA,CXB	EA	1
C5	8	PAOZZ	5340-01-119-7584	97403	13216E9192	CAP,DUST	CWD,CXA,CXB	EA	1
C5	9	XAOZZ		97403	13216E9173	BODY,ADAPTER	CWD,CXA,CXB	EA	1

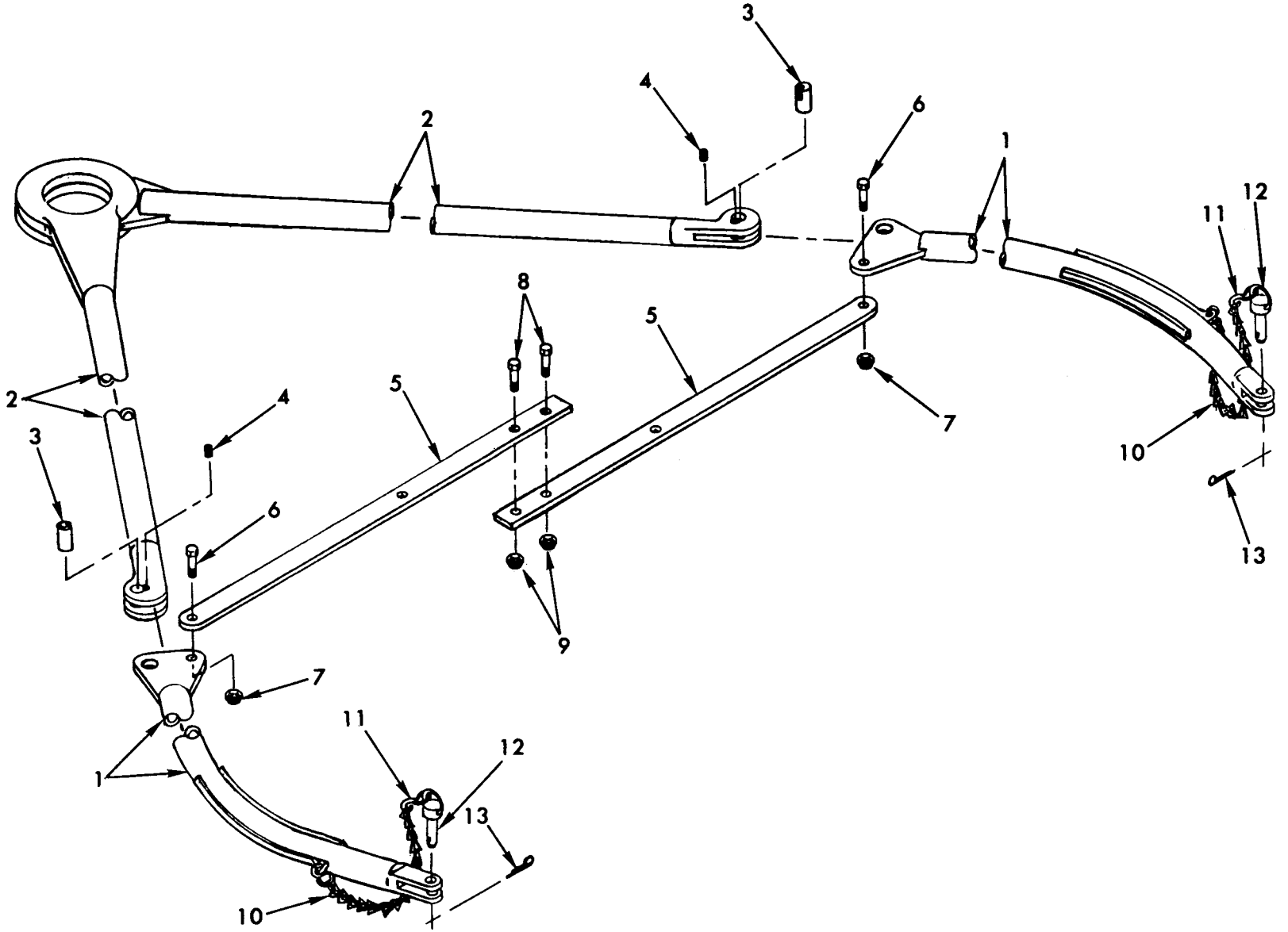


Figure C-6. Towing and Lifting Yoke Assembly

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
						GROUP 02 YOKE,TOWING AND LIFTING			
C6	1	XAOZZ		97403	13216E7992	LEG,CONNECTING	CXC	EA	2
C6	2	XAOZZ		97403	13216E7993	LEG,UPPER	CXC	EA	2
C6	3	PBOZZ	5315-01-105-7350	97403	13216E7995	PIN,STRAIGHT	CXC	EA	2
C6	4	PBOZZ	5305-00-723-9387	96906	MS51963-63	SETSCREW	CXC	EA	2
C6	5	XAOZZ		97403	13216E7994	BRACE	CXC	EA	2
C6	6	PBOZZ	5305-00-941-3579	96906	MS35307-463	SCREW,CAP,HEXAGON	CXC	EA	2
C6	7	PBOZZ	5310-00-245-8826	96906	MS16228-10C	NUT,SELF-LOCKING	CXC	EA	2
C6	8	PBOZZ	5305-00-727-6804	96906	MS35307-414	SCREW,CAP,HEXAGON	CXC	EA	2
C6	9	PBOZZ	5310-00-241-6667	96906	MS16228-8C	NUT,SELF-LOCKING	CXC	EA	2
C6	10	PBOZZ	4010-01-119-7382	81349	RR-C-271-NO8X10 LINKS LG	CHAIN	CXC	EA	2
C6	11	PBOZZ	4030-00-948-7315	96906	MS87006-33	HOOK,CHAIN	CXC	EA	4
C6	12	PBOZZ	5315-01-105-9474	97403	13216E8074	PIN,CLEVIS	CXC	EA	2
C6	13	PBOZZ	5315-00-839-5821	96906	MS24665-351	PIN,COTTER	CXC	EA	2

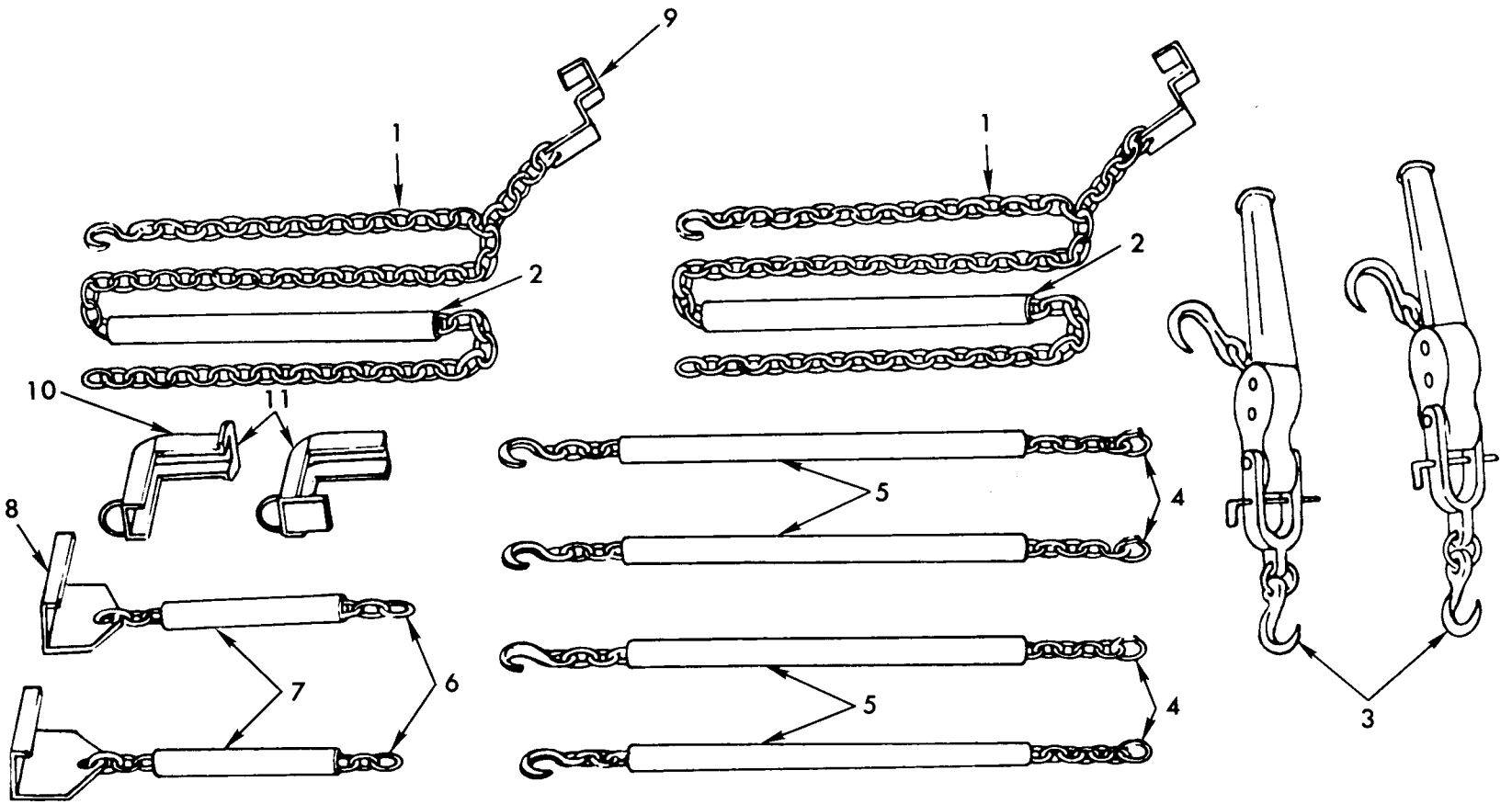


Figure C-7. Tiedown Assembly

SECTION II

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
						GROUP 03 KIT,TIEDOWN			
C7		PAOFA	8110-00-856-6245	97403	5-14-673	TIEDOWN ASSEMBLY	CXD	EA	1
C7	1	XBOOF		97403	5-14-674-4	CHAIN ASSEMBLY,REAR	CXD	EA	2
C7	2	XBOZZ		97403	5-14-674-4-8	COVER,CANVAS	CXD	EA	2
C7	3	XBOOF		97403	5-14-673-5	BINDER,LOAD,CHAIN	CXD	EA	2
C7	4	XBOOF		97403	5-14-674-3	CHAIN ASSEMBLY	CXD	EA	4
C7	5	XBOZZ		97403	5-14-674-3-5	COVER,CANVAS	CXD	EA	4
C7	6	XBOOF		97403	5-14-674-2	CHAIN ASSEMBLY	CXD	EA	2
C7	7	XBOZZ		97403	5-14-674-2-4	COVER,CANVAS	CXD	EA	2
C7	8	XBOOF		97403	5-14-674-2-1	BRACKET,FRONT	CXD	EA	2
C7	9	XBOOF		97403	5-14-674-4-3	BRACKET,SIDE	CXD	EA	2
C7	10	XBOZZ	5305-00-018-7069	97403	5-14-674-4-4	SETSCREW	CXD	EA	2
C7	11	XBOOF		97403	5-14-674-4-2	BRACKET,REAR	CXD	EA	2

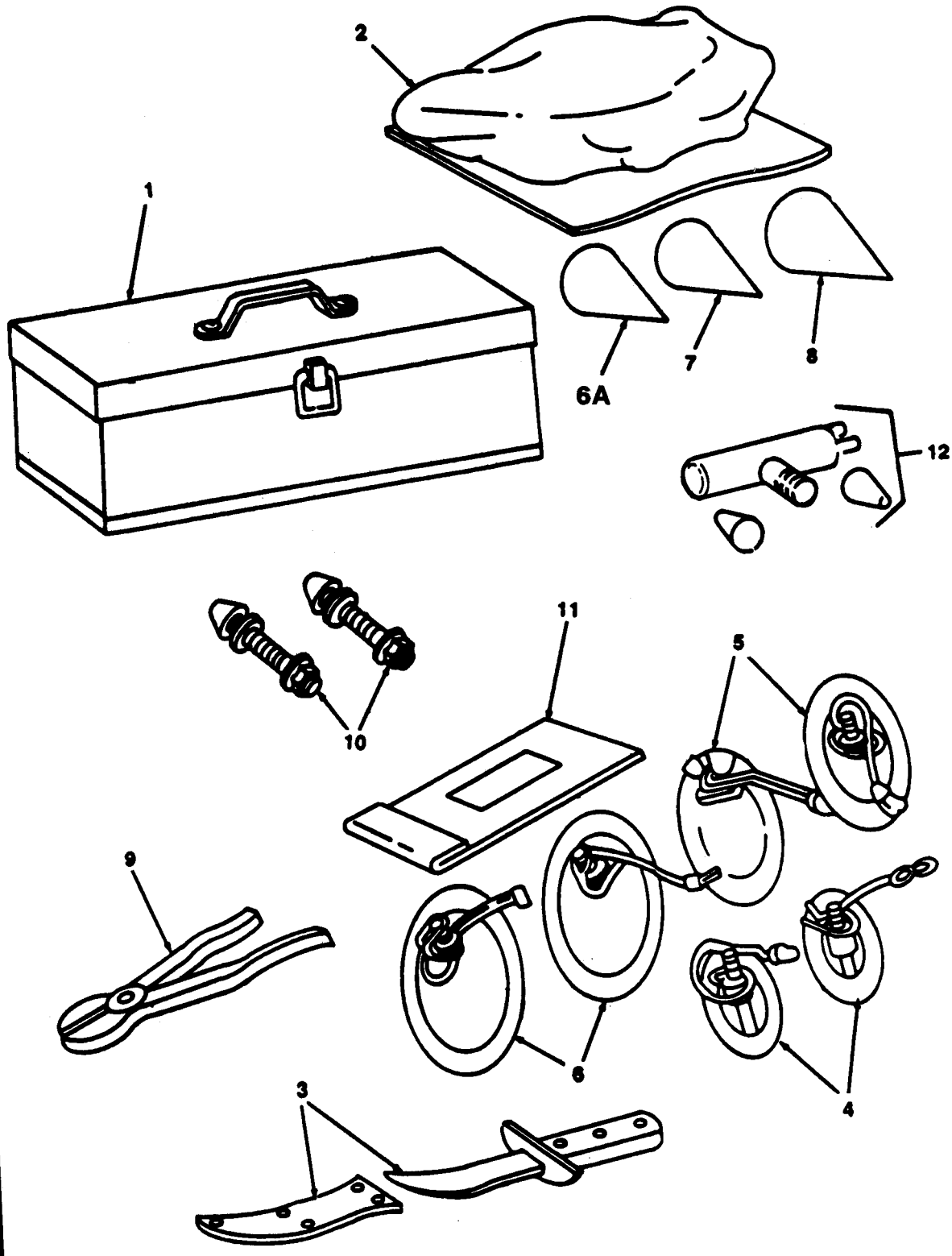


Figure C-8. Repair Kit Emergency Type II.

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
						GROUP 04 KITS, REPAIR, EMERGENCY			
C8	1	PBOZZ	5430-01-114-6668	81349	M52255FIG10	CONTAINER,REPAIR KIT	CXE	EA	1
C8	2	PAOZZ	8110-01-120-7824	81349	M52255FIG11I11	HOOD,FLEXIBLE	CXE	EA	1
C8	3	PBOZZ	5430-01-123-3082	81349	M52255FIG8	KNIFE AND SHEATH ASSY	CXE	EA	1
C8	4	PAOZZ	5430-01-123-0317	97403	13202E2870-1	CLAMP,SEALING,3 IN	CXE	EA	2
C8	5	PAOZZ	5430-00-787-8734	97403	13202E2870-2	CLAMP,REPAIR SEALING	CXE	EA	2
C8	6	PAOZZ	5430-01-119-7526	97403	13202E2870-3	CLAMP,REPAIR SEALING	CXE	EA	2
C8	6A	XDOZZ		81349	MIL-R-522-55	PLUGWOOD,5/8 INCH		EA	2
C8	7	XBOOF		81349	M52255FIG3-1-1/2	PLUG,WOOD 1 1/2IN	CXE	EA	2
C8	8	PAOZZ	5510-01-119-5995	81349	M52255FIG3-2	PLUG,WOOD,2IN	CXE	EA	2
C8	9	XDOZZ	5110-01-122-3804	81349	X-3064	PLIERS,CUTTING		EA	1
C8	10	PAOZZ		81349	M52255FIG5	PATCH ASSY,MECH,2IN	CXE	EA	2
C8	11	PAOZZ	7610-01-128-1852	81349	M52255FIG9	INSTRUCTIONS	CXE	EA	1
C8	12	XDOZZ	5430-01-114-4597	81349	M52255FIG2	CUTTER,ROTARY		EA	1

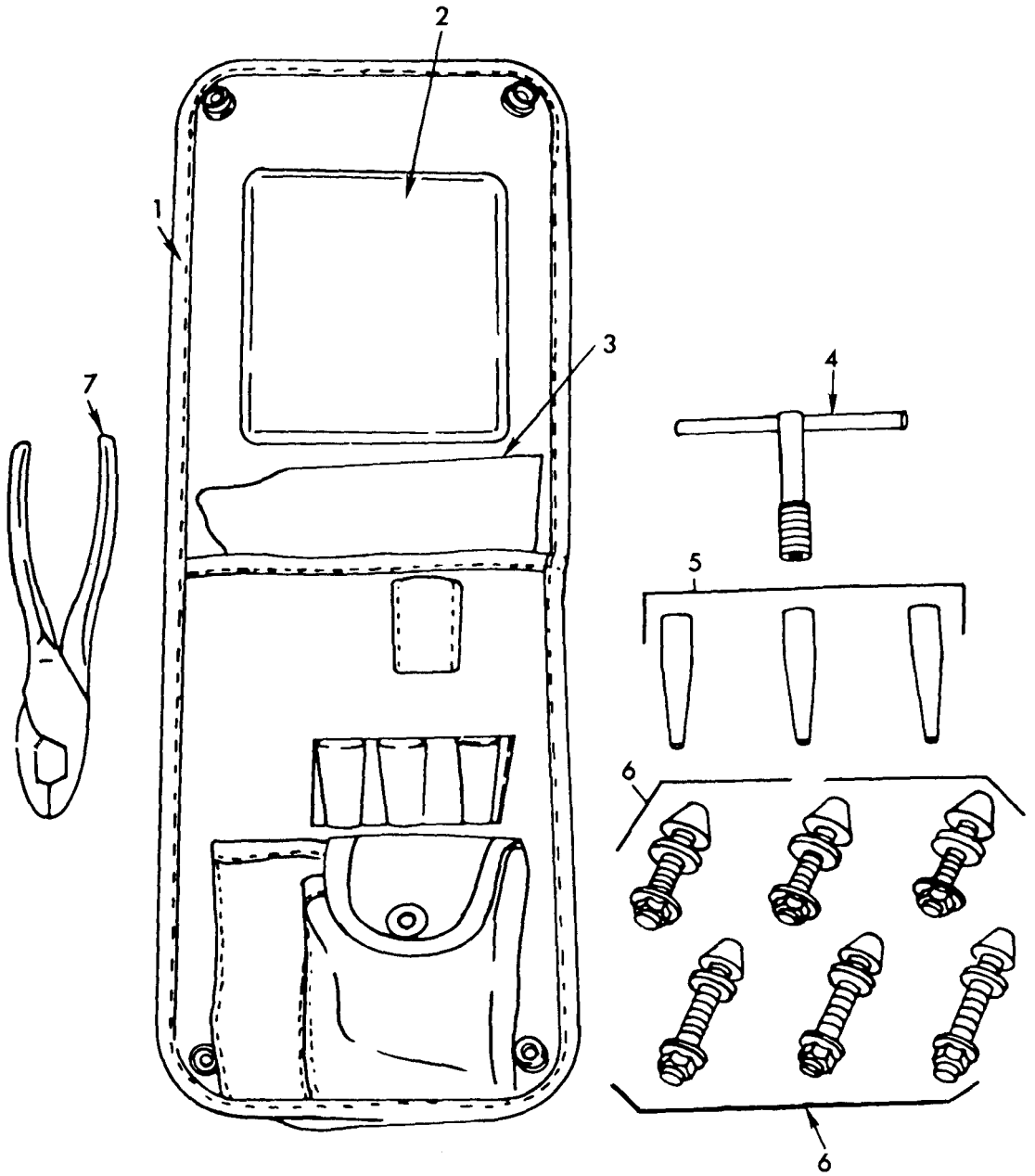


Figure C-9. Repair Kit, Emergency, Type I

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
C9	1	PAOZZ	5340-01-114-5392	81349	M52255FIG1	POUCH,REPAIR KIT	CXF	EA	1
C9	2	PAOZZ	7610-01-122-3771	81349	M52255FIG6	INSTRUCTIONS	CXF	EA	1
C9	3	PAOZZ	8110-01-120-7824	81349	M52255FIG11I11	HOOD,FLEXIBLE	CXF	EA	1
C9	4	PAOZZ	5430-01-114-4597	81349	M52255FIG2	ROTARY CUTTER,WRENCH	CXF	EA	1
C9	5	PAOFZ	5510-01-115-0893	81349	M52255FIG3-5/8	PLUG,WOOD	CXF	EA	3
C9	6	PAOZZ	5430-01-114-4598	81349	M52255FIG4	PATCH ASSEMBLY,MECH,3/4IN	CXF	EA	6
C9	7	PAOZZ	5110-01-122-3804	81349	M52255FIG714	PLIERS,DIAGONAL CUT	CXF	EA	1

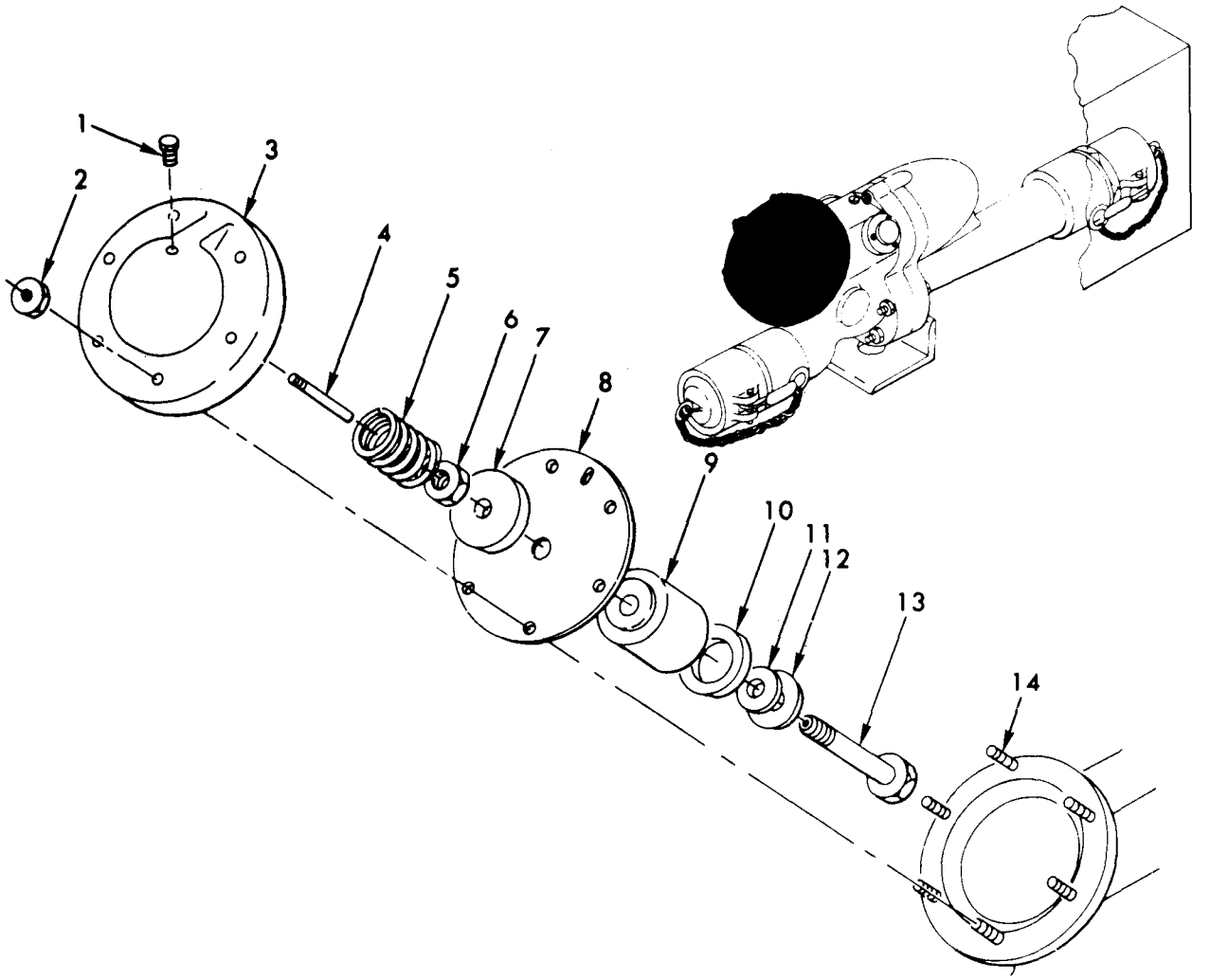


Figure C-10. Pressure Control Assembly (Sheet 1 of 3)

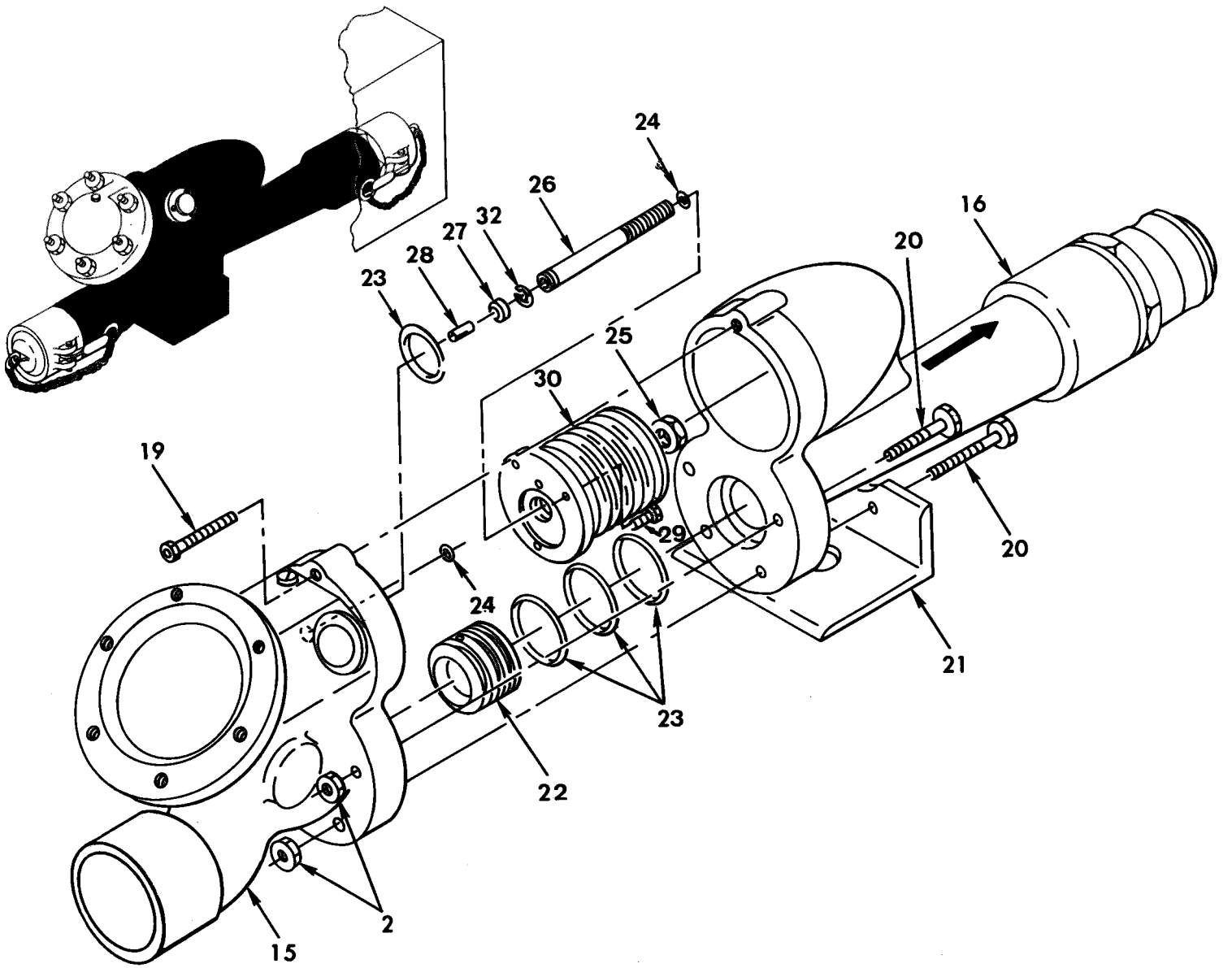


Figure C-10. Pressure Control Assembly (Sheet 2 of 3)

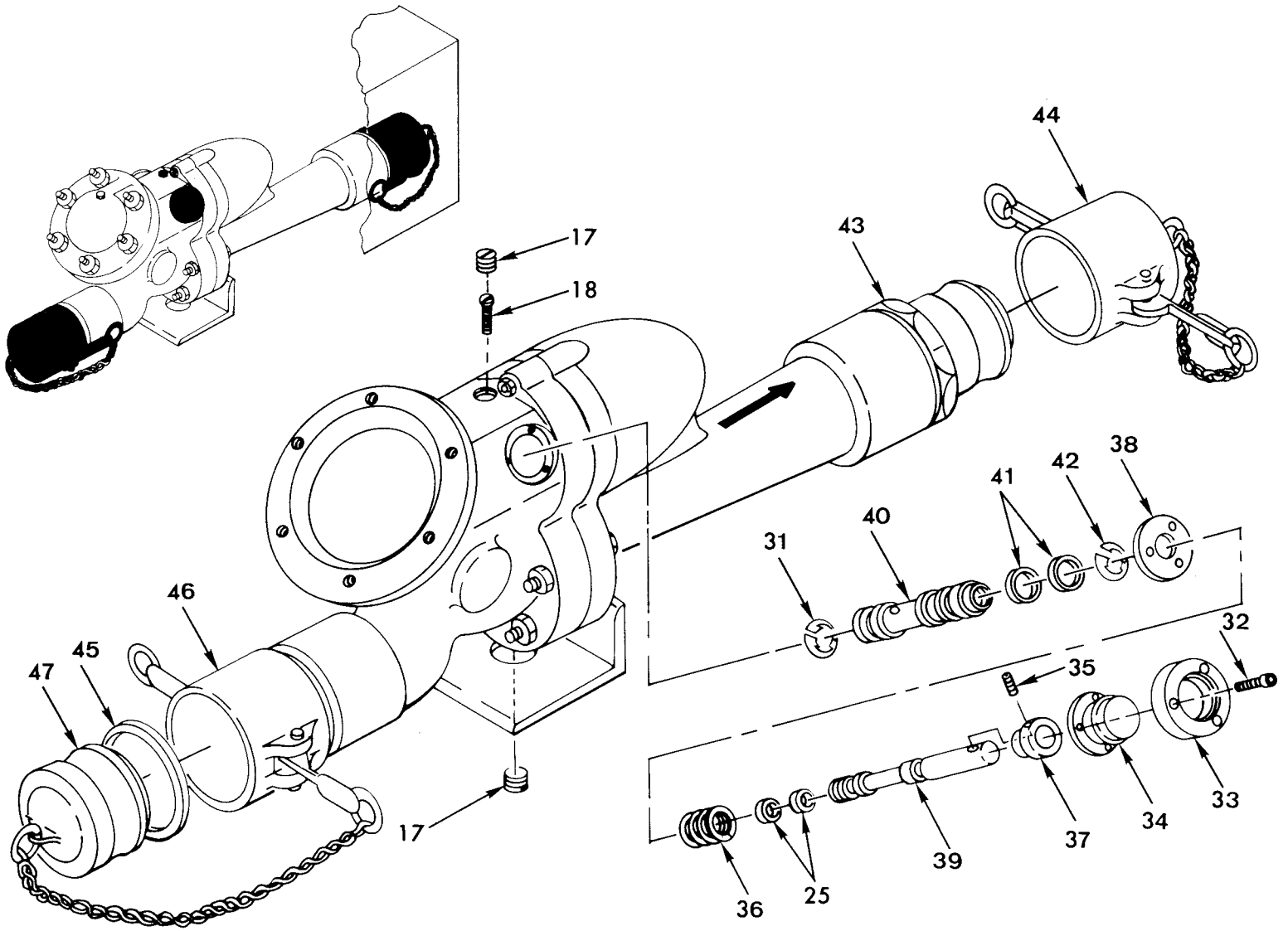


Figure C-10. Pressure Control Assembly (Sheet 3 of 3)

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
						GROUP 05 CONTROL PRESSURE			
C10		XBOFZ		97403	13215E8372	PRESSURE CONTROL ASSEMBLY	CXG	EA	1
C10	1	XAOZZ		81352	AN93381	PLUG,PIPE,HEX HD	CXG	EA	1
C10	2	PBOZZ	5310-00-732-0558	97403	13215E8372-18	NUT,PLAIN,HEXAGON	CXG	EA	10
C10	3	XAOZZ		97403	13215E4200	COVER,VALVE	CXG	EA	1
C10	4	PBOZZ	5315-01-105-9477	97403	13215E4195	PIN,STRAIGHT,THREAD	CXG	EA	1
C10	5	PBOZZ	5360-00-014-8492	97403	13215E4196	SPRING,HELICAL,COMP	CXG	EA	1
C10	6	PBOZZ	5310-00-763-8920	97403	13215E8272-13	NUT,PLAIN,HEXAGON	CXG	EA	1
C10	7	PBOZZ	5310-01-108-7555	97403	13215E4198	WASHER,LARGE	CXG	EA	1
C10	8	PAOZZ	4820-00-803-5412	97403	13215E8342	DIAPHRAGM	CXG	EA	1
C10	9	PBOZZ	4820-01-113-0888	97403	13215E4193	DISK,VALVE	CXG	EA	1
C10	10	PAOZZ	4930-00-803-5413	97403	13215E8343	DISK,VALVE	CXG	EA	1
C10	11	PBOZZ	5310-01-105-7238	97403	13215E4202	WASHER,FLAT	CXG	EA	1
C10	12	PBOZZ	5310-01-107-1237	97403	13215E4199	WASHER,FLAT	CXG	EA	1
C10	13	PBOZZ	5306-01-106-0256	97403	13215E4197	BOLT,INTERNAL	CXG	EA	1
C10	14	PBOZZ	5307-01-105-7330	97403	13215E4201	STUD,PLAIN	CXG	EA	6
C10	15	XAOZZ		97403	13215E4191	INLET,VALVE BODY	CXG	EA	1
C10	16	XAOZZ		97403	13215E4192	CUTLET,VALVE BODY	CXG	EA	1
C10	17	PBFZZ	5365-01-119-7403	97403	13215E8372-10	PLUG,BRASS,SLOTTED	CXG	EA	1
C10	18	PBOZZ	5305-01-105-6873	97403	13215E8372-11	SCREW	CXG	EA	1
C10	19	PBOZZ	5305-00-988-7616	96906	MS16995-52	SCREW,CAP,SOCKET	CXG	EA	1
C10	20	PBOZZ	5305-01-119-3490	97403	13215E8372-32	SCREW,MACHINE,HEX	CXG	EA	4
C10	21	XBOZZ		97403	13215E4218	STAND	CXG	EA	1
C10	22	PBOZZ	4930-00-014-4608	97403	13215E4194	VENTURI THROAT	CXG	EA	1
C10	23	PAOZZ	5330-00-514-6060	96906	MS29513-28	PACKING,PRIFORMED	CXG	EA	7
C10	24	PAOZZ	5330-00-248-3833	96906	MS29513-8	PACKING,PREFORMED	CXG	EA	7
C10	25	PBOZZ	5310-00-989-5953	96906	MS35691-11	NUT,PLAIN,HEXAGON	CXG	EA	1
C10	26	PBOZZ	4820-01-104-0829	97403	13215E4204	STEM,FLUID VALVE	CXG	EA	1
C10	27	PAOZZ	5330-00-360-0595	97403	13215E4219	GASKET	CXG	EA	1
C10	28	PBOZZ	4820-01-104-7554	97403	13215E4205	GLIDE,PILOT VALVE	CXG	EA	1
C10	29	PBOZZ	5305-00-988-7614	96906	MS16995-50	SCREW,CAP,SOCKET	CXG	EA	3
C10	30	PBOZZ	4520-01-112-3238	97403	13215E4216	BELLOWS ASSEMBLY	CXG	EA	1
C10	31	PAOZZ	5365-00-682-1762	96906	MS16633-1031	RING,RETAINING	CXG	EA	3
C10	32	PBOZZ	5305-00-988-7602	96906	MS16995-26	SCREW,CAP,SOCKET	CXG	EA	6
C10	33	PBOZZ	5330-00-014-4606	97403	13215E4214	RETAINER,PACKING	CXG	EA	2
C10	34	PAOOZ	4930-00-014-4603	97403	13215E8341	CASE,CONTROL	CXG	EA	2
C10	35	PBOZZ	5305-01-105-7203	96906	NS18066-35	SETSCREW	CXG	EA	2
C10	36	PBOZZ	5360-01-106-5547	97403	13215E4215	SPRING,HELICAL,COMP	CXG	EA	2
C10	37	PBOZZ	4930-00-014-4600	97403	13215E4212	BUTTON, PUSH	CXG	EA	2
C10	38	PBOZZ		97403	13215E4213	WASHER	CXG	EA	2
C10	39	PBOZZ	4820-00-014-4599	97403	13215E4211	STEM,FLUID VALVE	CXG	EA	2

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	(6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
C10	40	PBOZZ	4930-01-119-3397	97403	13215E4210	BODY,CYCLING VALVE	CXG	EA	2
C10	41	PAOZZ	5330-00-248-3840	96906	MS29513-014	PACKING,PRIFORMED	CXG	EA	4
C10	42	PAOZZ	5365-00-543-3029	96906	MS16634-1062	RING,RETAINING	CXG	EA	2
C10	43	PBOZZ	4730-00-360-0589	96906	MS27022-9	COUPLING,HALF,QUICK	CXG	EA	2
C10	44	PBOZZ	4730-00-869-5246	96906	MS27028-9	CAP,QUICK DISCONNECT	CXG	EA	2
C10	45	PAOZZ	5330-00-360-0595	96906	MS27030-5	GASKET	CXG	EA	4
C10	46	PBOZZ	4730-00-203-1010	96906	MS27026-9	COUPLING HALF,QUICK	CXG	EA	2
C10	47	PBOZZ	5340-00-823-5316	96906	MS27029-9	PLUG,PROTECTIVE,DUST	CXG	EA	2

TEXT DELETED

SECTION III. NOT APPLICABLE

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

STOCK NUMBER	FIGURE NO.	ITEM NO.	STOCK NUMBER	FIGURE NO.	ITEM NO.
4820-00-014-4599	C10	40	5310-01-107-1237	C10	12
4930-00-014-4600	C10	38	5310-01-108-7555	C10	7
4930-00-014-4603	C10	35	5365-01-108-7945	C1	5
5330-00-014-4606	C10	34	4940-01-108-8923	C12	46
4930-00-014-4608	C10	23	4940-01-108-8924	C12	3
4720-00-014-8286	11		4940-01-108-8925	C12	56
5360-00-014-8492	C10	5	4940-01-108-8926	C12	6
5305-00-018-7069	C7	10	5330-01-109-1369	C5	4
5310-00-056-3395	C4	1	8110-01-110-3830	C4	8
3110-00-100-8545	C12	52	8110-01-110-4817	C1	6
4030-00-149-5574	C1	3	8110-01-110-7689	C4	2
5975-00-152-1144	12	30			
4730-00-203-1010	C10	47	6645-01-111-9860	C12	32
4720-00-223-7663	C11	5	4520-01-112-3238	C10	31
5310-00-241-6667	C6	9	5310-01-112-7942	C4	7
5310-00-245-8826	C6	7	4820-01-113-0888	C10	9
5330-00-248-3830	C10	25	4730-01-113-0930	C11	
5330-00-248-3833	C10	24	4730-01-113-0930	C11	4
5330-00-248-3840	C10	42	4940-01-113-8136	C12	25
5330-00-248-3850	C4	5	4940-01-113-8137	C12	40
5975-00-281-0090	C12	34	4940-01-113-8138	C12	8
4730-00-360-0589	C10	44	4940-01-113-8139	C12	35
4730-00-360-0592	C11	3	4940-01-114-0838	C11	42
5330-00-360-0595	C11	1	5430-01-114-4597	C9	4
5330-00-360-0595	C4	13	5430-01-114-4597	C8	12
5330-00-360-0595	C10	28	5430-01-114-4598	C9	6
5330-00-360-0595	C10	46	5430-01-114-5392	C9	1
5975-00-501-4924	C12	34A			
5330-00-514-6060	C10	24	8110-01-114-6177	C5	1
5365-00-543-3029	C10	43	8110-01-114-6178	C1	11
5310-00-612-2414	C4	11	5430-01-114-6668	C8	1
5999-00-636-5344	C12	23	5510-01-115-0893	C9	5
5999-00-636-5344	C13	33	5340-01-115-2812	C12	11
5930-00-669-7474	C12	57	5430-01-115-3515	C12	37
5365-00-682-1762	C10	32	4540-01-115-9428	C12	43
5305-00-723-9387	C6	4	4540-01-115-9429	C12	62
5305-00-727-6804	C6	8	5975-01-115-9430	C12	4
5310-00-732-0558	C10	2	4540-01-115-9437	C12	64
5310-00-763-8920	C10	6	4540-01-115-9438	C12	45
5430-00-787-8734	C8	5	5365-01-115-9439	C12	60
4820-00-803-5412	C10	8	5975-01-115-9440	C12	55
4930-00-803-5413	C10	10	4540-01-115-9441	C12	48
5365-00-803-7312	C4	6	5305-01-115-9442	C12	39
5340-00-823-5316	C11	6	5910-01-115-9449	C12	34B
5340-00-823-5316	C10	48	9905-01-115-9465	C12	22
8110-00-837-2191	C3	8	5999-01-115-9483	C12	36
5315-00-839-5821	C6	13	5320-01-115-9486	C12	7
5315-00-839-5822	C11	1	5310-01-115-9487	C12	59
4730-00-869-5246	C11	2	5315-01-115-9490	C12	38
4730-00-869-5246	C10	45	4730-01-115-9492	C12	15
4730-00-886-8146	C12	19	4730-01-115-9493	C12	29
5930-00-900-6251	C12	33	4730-01-115-9494	C12	16
8110-00-900-8328	C1	13	5340-01-115-9507	C12	14
5305-00-941-3579	C6	6	4730-01-115-9513	C12	17
4730-00-948-1722	C11	7	5305-01-115-9517	C12	31
4030-00-948-7315	C6	11	5305-01-115-9518	C12	63
4930-00-973-2589	C4		5305-01-115-9519	C12	27
5305-00-978-9396	C1	4	5975-01-115-9520	C12	12
5305-00-988-7602	C10	33	5365-01-115-9521	C12	47
5305-00-988-7614	C10	30	5305-01-115-9536	C12	21
5305-00-988-7616	C10	19	5305-01-115-9537	C12	20
5935-01-005-9266	C12	24	5305-01-115-9537	C12	54
5935-01-005-9266	C13	32	5305-01-115-9538	C12	51
4540-01-103-6374	C12	44	5305-01-115-9539	C12	5
4820-01-104-0829	C10	27	5305-01-115-9539	C12	61
5945-01-104-3930	C12	26	5305-01-115-9540	C12	2
8110-01-104-5181	C1	7	5305-01-115-9541	C12	41
8110-01-104-5182	C4	4	5305-01-115-9549	C12	58
8110-01-104-5183	C4	9	5305-01-115-9550	C12	10
8110-01-104-5184	C4	10	5975-01-115-9600	C12	28
4820-01-104-7554	C10	29	4710-01-115-9612	C12	13
5305-01-105-6873	C10	18	5310-01-117-7301	C12	9
5305-01-105-7203	C10	36	5306-01-118-1915	C10	2
5310-01-105-7238	C10	11	4930-01-119-3397	C10	41
5307-01-105-7330	C10	14	5305-01-119-3490	C10	20
5315-01-105-7350	C6	3	5510-01-119-5995	C8	8
5310-01-105-9267	C12	18	4010-01-119-7382	C6	10
5315-01-105-9474	C6	12	8110-01-119-7383	C4	3
5315-01-105-9477	C10	4	5365-01-119-7403	C10	17
5306-01-106-0256	C10	13	5430-01-119-7526	C8	6
5360-01-106-5547	C10	37	5430-01-119-7584	C5	8
5315-01-106-8299	C4	12	8110-01-120-7824	C9	3

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

STOCK NUMBER	FIGURE NO.	ITEM NO.	STOCK NUMBER	FIGURE NO.	ITEM NO.
4940-01-121-5117	C12	49	5430-01-123-0317	C8	4
7610-01-122-3771	C9	2	5430-01-123-3082	C8	3
5110-01-122-3804	C8	9	7610-01-128-1852	C8	12

FSCM	PART NUMBER	FIGURE NO.	ITEM NO.	FSCM	PART NUMBER	FIGURE NO.	ITEM NO.
81352	AN933B1	C10	1	97403	13215E4210	C10	41
03489	B25	C12	52	97403	13215E4211	C10	40
81348	GGG-P-471-8IN TYPE IX,			97403	13215E4212	C10	38
	CLASS I, STYLE A	C9	7	97403	13215E4213	C10	39
00658	G26	C12	53	97403	13215E4214	C10	34
81349	MIL-R-52255	C8	6A	97403	13215E4215	C10	37
96906	MS16228-10C	C6	7	97403	13215E4216	C10	31
96906	MS16228-8C	C6	7	97403	13215E4217	C11	
96906	MS16624-1035	C4	6	97403	13215E4217-4	C11	4
96906	MS16633-1031	C10	32	97403	13215E4217-5	C11	5
96906	MS16634-1062	C10	43	97403	1321534218	C10	21
96906	MS16995-26	C10	33	97403	13215E4219	C10	28
96906	MS16995-50	C10	30	97403	13215E8341	C10	35
96906	MS16995-52	C10	19	97403	13215E8342	C10	8
96906	MS16997-101	C1	4	97403	13215E8343	C10	10
96906	MS18066-35	C10	36	97403	13215E8372	C10	
96906	MS24665-351	C6	13	97403	13215E8372-10	C10	17
96906	MS24665-353	C1	1	97403	13215E8372-11	C10	18
96906	MS27021-9	C11	3	97403	13215E8372-13	C10	6
96906	MS27022-9	C10	44	97403	13215E8372-18	C10	2
96906	MS27025-9	C11	7	97403	13215E8372-32	C10	20
96906	MS27026-9	C10	47	97403	13216E7992	C6	1
96906	MS27028-9	C11	2	97403	13216E7993	C6	2
96906	MS27028-9	C10	45	97403	13216E7994	C6	5
96906	MS27029-9	C11	6	97403	13216E7995	C6	3
96906	MS27029-9	C10	48	97403	13216E8074	C6	12
96906	MS27030-5	C11	1	97403	13216E9163	C1	7
96906	MS27030-5	C4	13	97403	13216E9165	C1	8
96906	MS27030-5	C10	46	97403	13216E9166	C1	9
96906	MS27030-6	C4	11	97403	13216E9167-1	C1	10
96906	MS29513-014	C10	42	97403	13216E9168	C1	6
96906	MS29513-116	C4	5				
96906	MS29513-28	C10	24	97403	13216E9171	C1	11
96906	MS29513-8	C10	25	97403	13216E9173	C5	9
96906	MS35307-414	C6	8	97403	13216E9174	C4	9
96906	MS35307-463	C6	6	97403	13216E9175	C4	2
96906	MS35649-2382	C4	1	97403	13216E9176	C5	4
96906	MS35691-11	C10	26	97403	13216E9177	C4	4
96906	MS51963-63	C6	4	97403	13216E9178	C4	10
96906	MS87006-33	C6	11	97403	13216E9179	C5	7
96906	MS9389-88	C4	12	97403	13216E9181	C4	3
81349	M52255FIG1	C9	1	97403	13216E9182	C5	5
81349	M52255FIG2	C9	4	97403	13216E9183	C4	5
81349	M52255FIG2	C8	12	97403	13216E9184	C5	2
81349	M52255FIG3-5/8	C9	5	97403	13216E9185	C5	3
81349	M52255FIG3-1-1/2	C8	7	97403	13216E9186	C4	7
81349	M52255FIG3-2	C8	8	97403	13216E9187	C5	6
81349	M52255FIG4	C9	6	97403	13216E9188	C4	14
81349	M52255FIG5	C8	10	97403	13216E9189	C4	8
81349	M52255FIG6	C9	2	97403	13216E9190	C4	
81349	M52255FIG714	C9	7	97403	13216E9191	C5	1
81349	M52255FIG8	C8	3	97403	13216E9192	C5	8
81349	M52255FIG9	C8	12	97403	13216E9193	C1	2
81349	M52255FIG10	C8	1	97403	1461-11	C12	19
81349	M52255FIG11I11	C8	2	97403	1461-12	C12	18
81349	M52255FIG11I11	C9	3	97403	22104	C12	37
81349	RR-C-271-N08X10 LINKS LG	C6	10	97403	24A	C12	23
13426	S1405-115V	C12	44	97403	24A	C13	33
81349	X-3064-6	C8	9	97403	2880	C13	1
97403	13202E2870-1	C8	4	97403	30002	C12	57
97403	13202E2870-2	C8	5	97403	3302	C12	30
97403	13202E2870-3	C8	6	97403	4096D1-1	C13	4
97403	13215E4191	C10	15	97403	4096D1-10	C13	12
97403	13215E4192	C10	16	97403	4096D1-11	C13	13
97403	13215E4193	C10	9	97403	4096D1-12	C13	14
97403	13215E4194	C10	23	97403	4096D1-13	C13	22
97403	13215E4195	C10	4	97403	4096D1-15	C13	31
97403	13215E4196	C10	5	97403	4096D1-16	C13	20
97403	13215E4197	C10	13	97403	4096D1-17	C13	2
97403	13215E4198	C10	7	97403	4096D1-18	C13	30
97403	13215E4199	C10	12	97403	4096D1-19	C13	17
97403	13215E4200	C10	3	97403	4096D1-2	C13	3
97403	13215E4201	C10	14	97403	4096D1-20	C13	28
97403	13215E4202	C10	11	97403	4096D1-21	C13	26
97403	13215E4204	C10	27	97403	4096D1-22	C13	27
97403	13215E4205	C10	29	97403	4096D1-23	C13	25

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

FSCM	PART NUMBER	FIGURE NO.	ITEM NO.	FSCM	PART NUMBER	FIGURE NO.	ITEM NO.
20858	4096D1-24	C13	24	20858	4097D1-45	C12	8
20858	4096D1-25	C13	23	20858	4097D1-46	C12	4
20858	4096D1-26	C13	21	20858	4097D1-47	C12	5
20858	4096D1-28	C13	16	20858	4097D1-47	C12	61
20858	4096D1-3	C13	5	20858	4097D1-48	C12	14
20858	4096D1-31	C13	29	20858	4097D1-5	C12	15
20858	4096D1-32	C13	34	20858	4097D1-50	C12	63
20858	4096D1-33	C13	38	20858	4097D1-51	12	6
20858	4096D1-34	C13	37	20858	4097D1-52	C12	7
20858	4096D1-35	C13	15	20858	4097D1-54	C12	35
20858	4096D1-36	C13	36	20858	4097D1-56	C12	29
20858	4096D1-37	C13	35	20858	4097D1-57	C12	28
20858	4096D1-38	C13	18	20858	4097D1-58	C12	22
20858	4096D1-39	C13	19	20858	4097D1-59	C12	27
20858	4096D1-4	C13	6	20858	4097D1-6	C12	13
20858	4096D1-5	C13	7	20858	4097D1-60	C12	31
20858	4096D1-6	C13	8	20858	4097D1-63	C12	36
20858	4096D1-7	C13	9	20858	4097D1-64	C12	21
20858	4096D1-8	C13	10	20858	4097D1-65	C12	34B
20858	4096D1-8	C13	11	20858	4097D1-7	C12	12
20858	4097D1-1	C12	1	20858	4097D1-9	C12	10
20858	4097D1-10	C12	9	06004	4779	C12	11
20858	4097D1-11	C12	59	81337	5-13-1681-1-1	C1	13
20858	4097D1-12	C12	58				
20858	4097D1-14	C12	38		DELETED		
20858	4097D1-15	C12	39				
20858	4097D1-16	C12	40				
20858	4097D1-17	C12	41				
20858	4097D1-18	C12	42				
20858	4097D1-21	C12	51	97403	5-14-592-3-8	C1	3
20858	4097D1-22	C12	50	97403	5-14-673-5	C7	3
20858	4097D1-23	C12	49	97403	5-14-674-2	C7	6
20858	4097D1-24	C12	47	97403	5-14-674-2-1	C7	8
20858	4097D1-25	C12	46	97403	5-14-674-2-4	C7	7
20858	4097D1-27	C12	60	97403	5-14-674-3	C7	4
20858	4097D1-28	C12	20	97403	5-14-674-3-5	C7	5
20858	4097D1-28	C12	54	97403	5-14-674-4	C7	1
20858	4097D1-29	C12	55	97403	5-14-674-4-2	C7	11
20858	4097D1-3	C12	17	97403	5-14-674-4-3	C7	9
20858	4097D1-30	C12	56	97403	5-14-674-4-4	C7	10
20858	4097D1-31	C12	62	97403	5-14-674-4-8	C7	2
20858	4097D1-32	C12	48	78229	58030	C12	34A
20858	4097D1-33	C12	43	78229	58361-1-2	C12	34
20858	4097D1-34	C12	64				
20858	4097D1-37	C12	45	01121	702BAD92	C12	26
20858	4097D1-39	C12	2	37266	80120A	C12	32
20858	4097D1-4	C12	16	71183	9754	C12	24
20858	4097D1-40	C12	3	71183	9754	C13	32
20858	4097D1-44	C12	25	83315	9805	C12	33

APPENDIX D

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

D-1. Scope.

This appendix lists components of end item and basic issue items for the drum to help you inventory items required for safe and efficient operation.

D-2. General.

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

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

b. Section III. Basic Issue Items. These are the minimum essential items required to place the drum in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the drum 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 authorization of the end item.

D-3. Explanation of Columns.

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

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

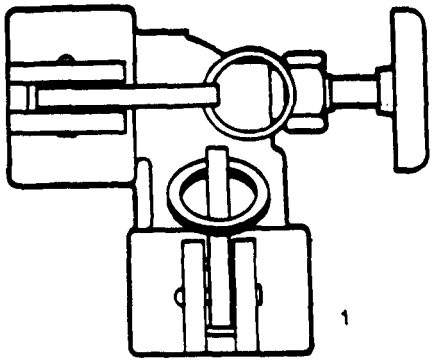
b. Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

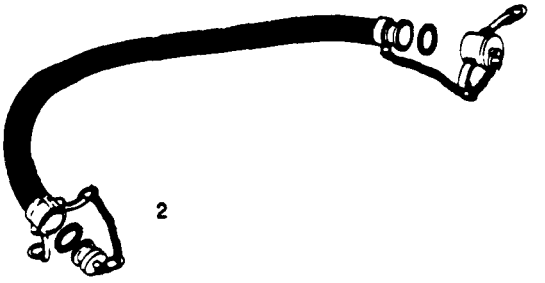
c. Column (3) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGEC (in parentheses) followed by the part number.

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

e. Column (5) - Quantity required (Qty Rqr). Indicates the quantity of the item authorized to be used with/on the equiptment.

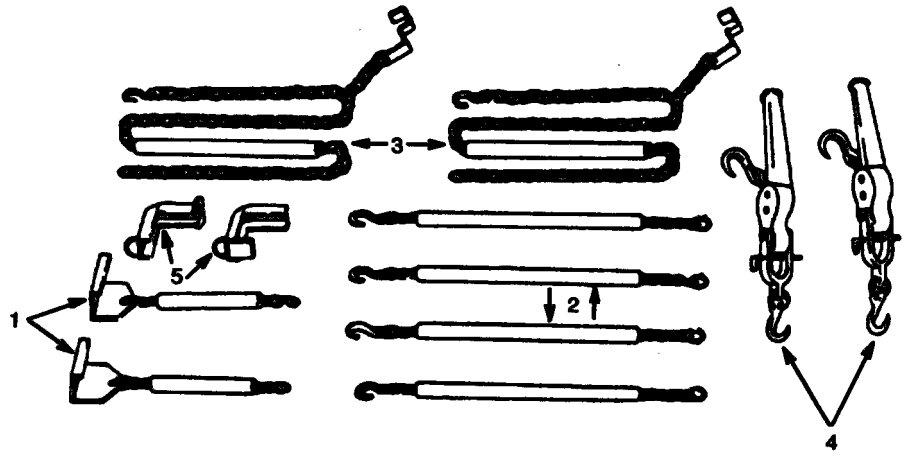
Section II. COMPONENTS OF END lTEM
for
DRUMS, FABRIC, COLLAPSIBLE, NON-VENTED
500 GALLON, LIQUID FUEL
PART NO. 13216E9172, NSN 8110-00-753-4892
500 GALLON, LIQUID FUEL
PART NO. 13216E9170, NSN 8110-00-824-1444





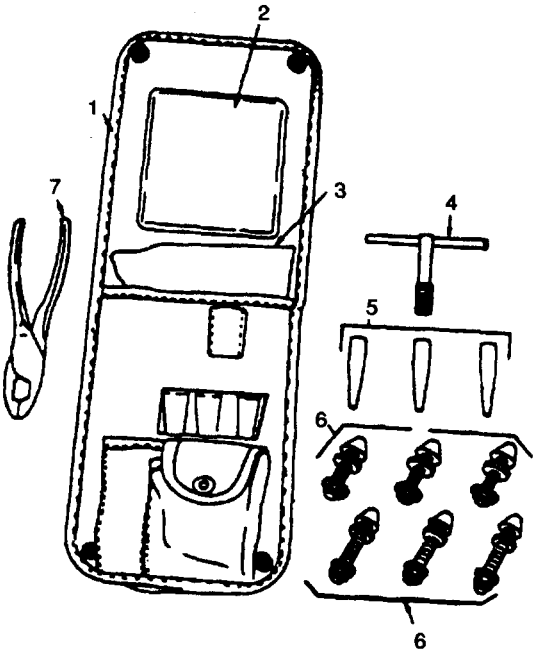
(1) Illus Number	(2) National Stock Number	(3) Description CAGEC And Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
1	4930-00-973-2589	COUPLER VALVE ASSEMBLY (81718) 13217E2991		EA	1
2	4720-00-214-8286	HOSE ASSEMBLY		EA	1

Section II. COMPONENTS OF END lTEM (continued)
for
KIT, TIEDOWN
(NSN 8110-00-856-6245)



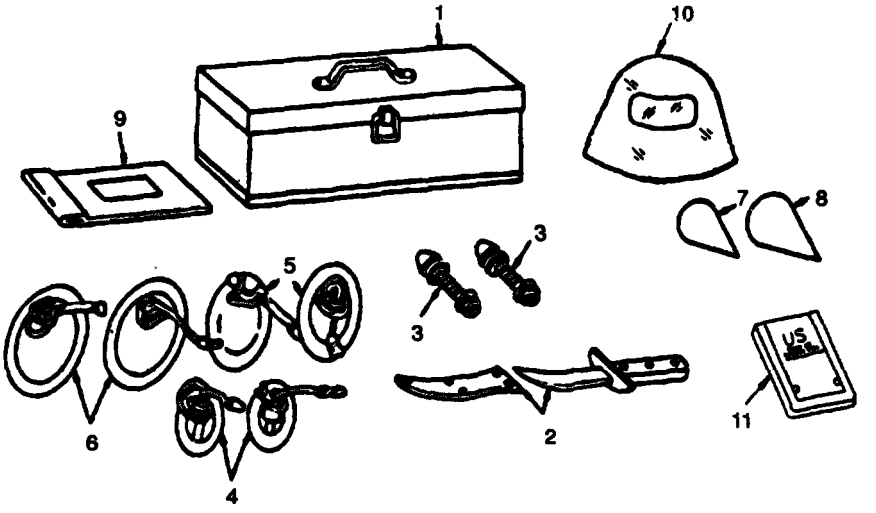
(1) Illus Number	(2) National Stock Number	(3) Description CAGEC And Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
1	8110-01-197-5945	CHAIN ASSEMBLY FRONT (97403) 13226E2256		EA	2
2	8110-00-937-3882	CHAIN ASSEMBLY, INTERMEDIATE (97403) 13226E2257		EA	4
3	4010-01-174-4056	CHAIN ASSEMBLY, REAR (97403) 13226E2258		EA	2
4	8110-01-180-7587	BINDER LOAD (97403) 13226E2255-4		EA	2
5		BRACKET, REAR (97403) 13226E2253		EA	2

Section II. COMPONENTS OF END ITEM (continued)
for
REPAIR KIT, EMERGENCY, TYPE I
(NSN 8110-00-856-6244)



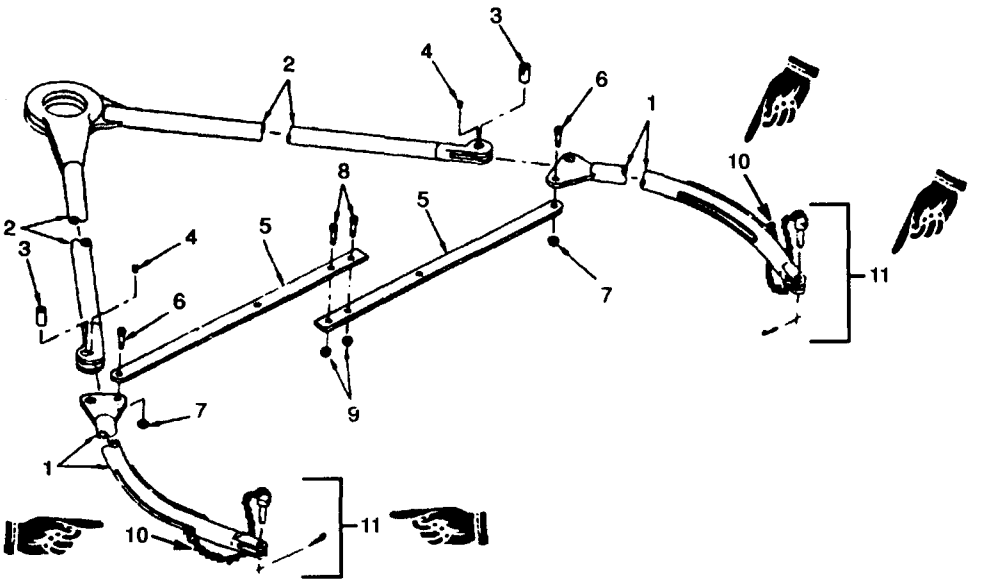
(1) Illus Number	(2) National Stock Number	(3) Description CAGEC And Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
1	5430-01-114-5392	POUCH, REPAIR KIT		EA	1
2	7610-01-122-3771	SHEEY, TECHNICAL		EA	1
3	8110-01-120-7824	HOOD, FLEXIBLE		EA	1
4	5430-01-114-4597	ROTARY CUTTER, WRENCH		EA	1
5	5510-01-115-0893	PLUG, WOOD, 0.625 IN		EA	3
6	5430-01-114-4598	PATCH ASSEMBLY, MECH, 3/4 IN		EA	6
7	5120-01-119-4173	PLIERS, DIAGONAL CUT (19207) 11655790		EA	1

Section II. COMPONENTS OF END ITEM (continued)
for
REPAIR KIT, EMERGENCY, TYPE II
(NSN 8110-00-856-6246)



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC And Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
1	5430-01-248-1662	CONTAINER REPAIR KIT		EA	1
2	5430-01-123-3082	KNIFE AND SHEATH ASSEMBLY		EA	1
3	5430-01-245-5983	PATCH ASSY, MECH, 2 IN		EA	2
4	5340-00-720-8864	PATCH, MECHANICAL, FLEXIBLE, 3 IN		EA	1
5	5340-00-720-8863	PATCH, MECHANICAL, FLEXIBLE, 5 IN		EA	2
6	5340-00-720-8858	PATCH, MECHANICAL, FLEXIBLE, 7.50 IN		EA	2
7	(81349) X-3059	PLUG, WOOD 1 1/2 IN		EA	2
8	5510-01-119-5995	PLUG, WOOD 2 IN		EA	2
9	7610-01-128-1852	SHEET, TECHNICAL		EA	1
10	8110-01-120-7824	HOOD, FLEXIBLE		EA	1
11	8110-00-856-6244	REPAIR KIT, EMERGENCY, TYPE I		EA	1

Section II. COMPONENTS OF END ITEM (continued)
for
TOWING AND LIFTING YOKE
(NSN 8110-00-856-6243)



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC And Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
1	(97403) 13216E7992	LEG, CONNECTING		EA	2
2	(97403) 13216E7993	LEG, UPPER		EA	2
3	5315-01-105-7350	PIN, STRAIGHT		EA	2
4	5305-00-723-9387	SETSCREW		EA	2
5	(97403) 13216E7994	BRACE		EA	2
6	5305-00-941-3579	SCREW, CAP, HEXAGON		EA	2
7	5310-00-245-8826	NUT, SELF-LOCKING		EA	2
8	5305-00-727-6804	SCREW, CAP, HEXAGON		EA	2
9	5310-00-241-6667	NUT, SELF-LOCKING		EA	2
10	4030-00-948-7315	HOOK, CHAIN, 5		EA	2
11	5315-01-258-6496	CLEVIS PIN ASSEMBLY		EA	2

SECTION III. BASIC ISSUE ITEMS

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
NA	NA	TM 10-8110-201-14&P		EA	1

APPENDIX E

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

E-1. Scope.

This appendix lists additional items you are authorized for support of the drum.

E-2. General

This list identifies items that do not have to accompany the drum and that do not have to be turned in with it. These items are all authorized to you by (CTA, MTOE, TDA, or JTA.

E-3. Explanation of Listing.

National sock numbers, description, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type of document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

Section II. ADDITIONAL AUTHORIZATION LIST for DRUMS, FABRIC, COLLAPSIBLE NON-VENTED 500 GALLON, LIQUID FUEL PART NO. 13216E9172, NSN 8110-00-753-4892 500 GALLON, LIQUID FUEL PART NO. 13216E9170, NSN 8110-00-824-1444

(1) National Stock Number	(2) Description CAGEC And Part Number	(3) U/M	(4) Qty Rqr
8110-00-856-6244	81349 ML-R-52255; REPAIR KIT, EMERGENCY, TYPE I	EA	1
8110-00-856-6246	81349 ML-R-52255; REPAIR KIT, EMERGENCY, TYPE II	EA	1
8110-00-856-6245	97403 P/N 5-14-673; KIT, TIEDOWN ASSEMBLY	EA	1
8110-00-856-6243	97403 P/N 13216E7991; YOKE, TOWING AND LIFTING (EXCEPT FOR 55 GALLON WATER, NSN 8110-00-089-4505)	EA	1

APPENDIX F
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

F-1. Scope.

This appendix lists expendable supplies and materials you will need to operate and maintain the drums. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except Medical, Class V, Repair Parts, and Heraldic Items).

F-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 1, appendix D").

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

(enter as applicable)

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 parentheses followed by the part number.

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

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	C	6850-01-377-1809	SOLVENT, DRYCLEANING P-D-680, TYPE III	GAL
2	C	8030-00-515-2477	COMPOUND, ANTI-SEIZE	PT

APPENDIX G

ILLUSTRATED LIST OF MANUFACTURED ITEMS

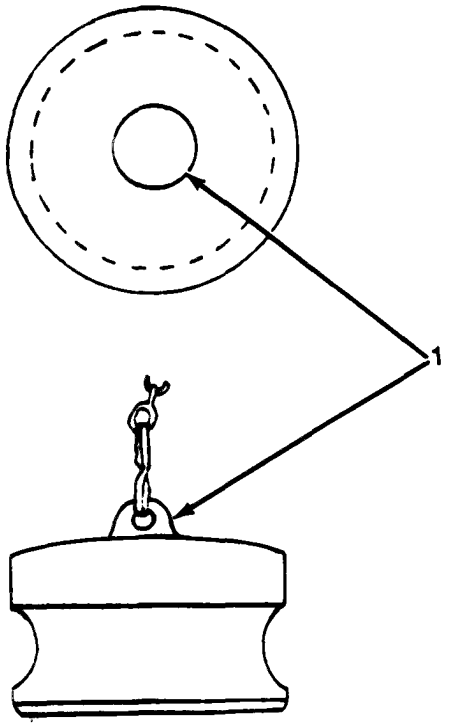
Alphabetical Index

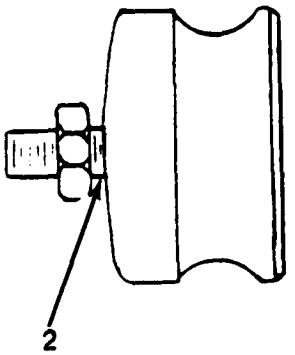
G-1. INTRODUCTION.

This appendix includes complete instructions for making items authorized to be manufactured or fabricated at unit maintenance. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

G-2. MANUFACTURED ITEMS PART NUMBER INDEX.

Part Name: Adapter, Pressure Test





NOTES

1. Modify plug, MS 27029-9, NSN 4730-00-823-5316 as follows:
   a. Remove and discard ring and chain
   b. Grind or machine away ring/chain retaining lug
   c. Drill and tap a 0.5-20 UNF hole in center of plug
2. Assemble adapter using modified plug and air valve MS 28889-2, NSN 4820-00-535-6483
3. Adapter may be used for testing hoses, tanks or drums for POL or water.

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INDEX (Continued)

D

INDEX (Continued)

INDEX (Continued)

INDEX (Continued)

R

S

INDEX (Continued)

INDEX (Continued)

INDEX (Continued)

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
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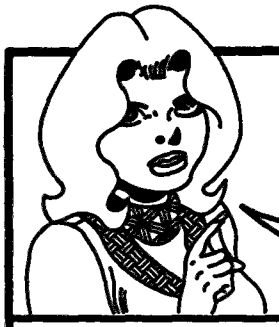

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CO A 3rd Engineer Bn
Ft. Leonardwood, MO 63108

DATE SENT: 22 August 1992

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 1-1520-250-10	15 June 1992	Operator's Manual MH60K Helicopter

BE EXACT...PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
6	2-1 a		
B1		4-3	

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

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

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

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

SIGN HERE: JOHN DOE John Doe

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The Metric System and Equivalents

Linear Measure

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

Weights

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

Liquid Measure

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

Square Measure

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

Cubic Measure

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

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

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

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TM 10-8110-201-14&P				
LOCATION	QUANTITY	UNIT OF ISSUE	ACTION	RQN DATE
I5205	**1**	**EA**	**DR**	**5257**
PKG SIZE	ITEM NO.	BULK/RCPT DATE	SLAPDC CONTROL NO.	
	403090	**BLK**	**5278 03311**	

BATCH 42 **ZONE 4**

M0497#003042

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