

TECHNICAL MANUAL

OPERATOR'S AND

ORGANIZATIONAL MAINTENANCE

MANUAL (INCLUDING REPAIR PARTS

AND SPECIAL TOOLS LIST)

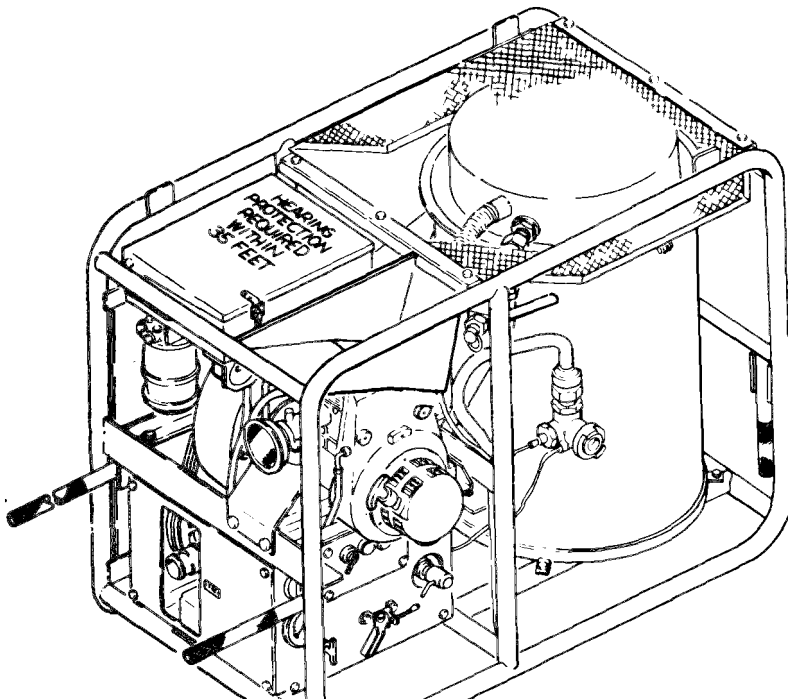
FOR

DECONTAMINATING APPARATUS:

POWER DRIVEN, PORTABLE,

TYPE A/E32U-8

NSN: 4230-01-153-8660



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

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CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 21 February 1990

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
FOR
DECONTAMINATING APPARATUS, POWER-DRIVEN, PORTABLE,
TYPE A/E32U-8

(NSN 4230-01-153-8660)

TM 3-4230-218-12&P, March 1987, is changed as follows:

1. Remove old pages, and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in margin of page.
3. Revised illustrations have a vertical bar beside the illustrations and pointing hands to show the exact areas changed.

Remove Pages

a and b
iii (iv blank)
1-3 and 1-4
2-9 and 2-10
2-39 through 2-42
4-17 and 4-18
A-1 (A-2 blank)
D-1 through D-4
Index 5 and Index 6

Insert Pages

a through c (d blank)
iii (iv blank)
1-3 and 1-4
2-9 and 2-10
2-39 through 2-42.5 (2-42.6 blank)
4-17 and 4-18
A-1 (A-2 blank)
D-1 through D-4
Index 5 and Index 6

4. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

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Chief of Staff

Official:

WILLIAM J. MEEHAN
Brigadier General United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-28R, requirements for TM 3-4240-218-12&P.

WARNINGS

The decontaminating apparatus weighs over 360 lb. To avoid back injury, use a minimum of four people to move it. In loading on a transport vehicle, use a minimum of six people or a loading ramp.

The equipment uses a variety of fuels. To prevent fire or explosion, follow these rules:

DO NOT allow any flame-producing material within 50 feet.

DO NOT smoke while mixing fuels.

DO NOT fill fuel can past top weld line; it could leak.

DO NOT prime a hot engine.

Remove fuel can from equipment, and place on ground before filling.

Mix fuel in a well-ventilated location, preferably outside.

Always wear protective gloves when operating the jets (cleaning wands) with hot water/steam. The cleaning wands and extension get extremely hot in about two minutes.

NEVER use a torch or open flame to thaw the equipment as it could ignite.

Solvents and adhesives used for water tank repair are flammable and toxic. Perform water tank repair in a well-ventilated area that is free from open sparks and flame.

All fuels damage MOPP clothing. To prevent possible agent contamination, DO NOT let any fuels touch MOPP clothing.

DO NOT press and hold START BURNER button for more than two seconds.

The equipment can produce scalding water. To avoid injury DO NOT set THERMOSTAT SELECTOR to 120° position for decontamination of personnel or to shower personnel.

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

Cold water entering a hot heat exchanger can cause the heat exchanger to rupture. To avoid injury, DO NOT start the burner until water flow has started.

The equipment exhaust opening emits carbon monoxide. To avoid illness or injury, DO NOT stand behind exhaust opening for more than a few minutes. Stay upwind of equipment.

WARNINGS (Continued)

To avoid hearing damage, wear approved hearing protection as the equipment operates at a very high noise level.

The equipment can get very hot during operation. To avoid burns, DO NOT touch hot surfaces.

Pressure hoses can whip around dangerously when equipment is started. To avoid injury, secure the ends of hoses before starting engine.

Be sure pressure hoses are properly connected. A connection that detaches can cause injury to personnel when operating at elevated temperatures.

to avoid injury to personnel, be sure that panels and guards are in place when operating the equipment.

The chemicals used for descaling will burn or irritate skin and eyes and are harmful if inhaled. Be sure to wear protective clothing (MOPP GEAR) with rubber gloves, apron and mask when descaling. Perform descaling outdoors away from an operational setup.

Sulfamic acid is a poison and a corrosive chemical. It can cause death or serious injury. Read the instructions on the sulfamic acid container before use. In case of accident when using the descaling solutions use the following Emergency Procedures:

In case of eye contact, immediately flush the eyes with plenty of water for at least 15 minutes. Seek medical help IMMEDIATELY.

For skin contact, flush with plenty of water; seek medical help IMMEDIATELY.

For ingestion of sulfamic acid, immediately drink large amounts of water. "DO NOT INDUCE VOMITING." Seek medical help IMMEDIATELY.

If ambient temperature falls below 32°F, the following precautions should be taken to prevent getting your clothes wet and suffering cold weather injuries:

Avoid contact with water as much as possible.

Stand upwind (if possible) of water spray.

Use caution when connecting/disconnecting fittings.

Use caution when adjusting control panel.

If clothing (including hand gear) becomes wet in cold environments, the operator should immediately change from wet clothing to dry protective clothing. If this is not done, cold injury will occur.

WARNINGS (Continued)

When operating equipment in cold environments, appropriate clothing shall be worn. (See Appendix D, Additional Authorization List.)

In cold weather, three operators are needed per system to prevent system freeze-ups and operator injury. The third operator will assist the other two operators to ensure the necessary operating steps are conducted in a timely manner.

The equipment should be placed on a level surface with provisions made for water runoff. The operating area for the pump unit must remain as dry as possible.

To prevent injury to personnel, make sure pressure hoses are properly connected. A separated connection can also cause fluid to spread over a large area, and slipping hazards may occur.

Extreme caution should be used when wearing loose clothing to prevent contact with moving parts (belts, pulleys, etc).

When changing the burner fuel, allow the fuel line to drain before removing the lid assembly from the can to prevent the fuel from spilling.

For general First Aid information, refer to FM 21-11 (TEST).

TECHNICAL MANUAL
NO. 3-4230-218-12&P

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DEPARTMENT OF THE ARMY
Washington, D.C. 1 MARCH 1987

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
for
DECONTAMINATING APPARATUS:
POWER-DRIVEN, PORTABLE, TYPE A/E32U-8
(NSN 4230-01-153-8660)
Current as of MARCH 1987 for Appendix F

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help to 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 back of this manual direct to: Commander, US Army Armament Munitions and Chemical Command, ATTN: AMSMC-MAR-TT(A), Aberdeen Proving Ground, MD 21010-5423. A reply will be furnished to you.

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HOW TO USE THIS MANUAL

General.

This manual contains operation instructions and crew and organizational maintenance procedures for the Decontaminating Apparatus: Power-Driven, Portable, Type A/E32U-8 and its auxiliary equipment. At the beginning of each chapter, you will find an index of the topics covered in the chapter.

Instructions for operator and organizational maintenance procedures are in Chapter 3 and 4. In using these procedures, you must familiarize yourself with an entire maintenance procedure before beginning a specific maintenance task.

Read all the Warnings before you begin operating your equipment. Read each procedure completely before beginning a task. References in the manual are to pages, paragraphs and appendixes or other publications.

This manual is organized for you to quickly find needed information. Several useful indexes are provided.

a. Front Cover Index - Tabbed index of major functions and appendixes are keyed to tabbed pages in the manual. These major items are also enclosed in boxed areas in the Table of Contents.

b. Table of Contents - List of chapters, sections and appendixes.

c. Alphabetical Index - Extensive index for each subject, located at the end of the manual.

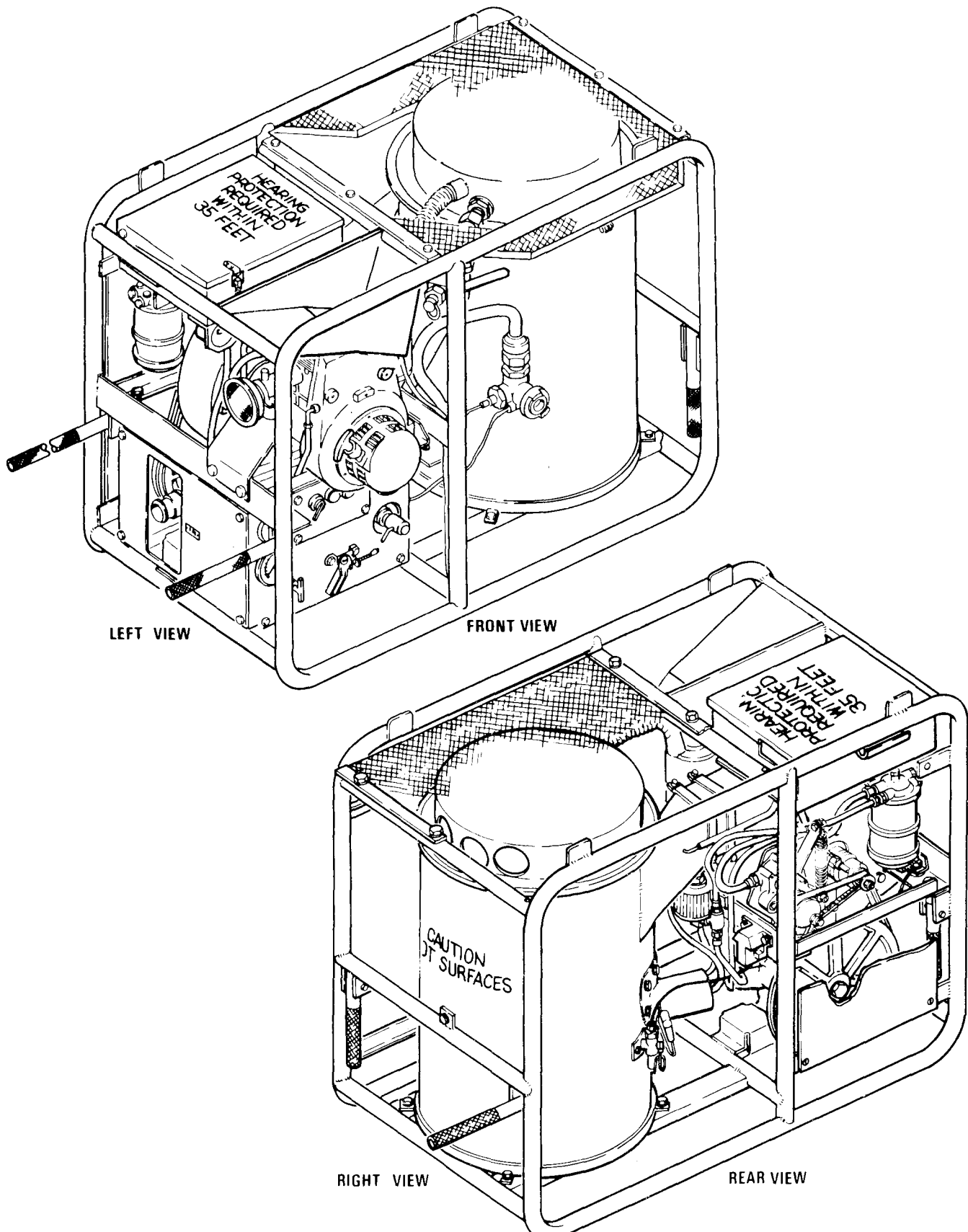
NOTE

In using this manual you should know:

There are two different strainers being manufactured for this equipment. However, only one type strainer is furnished with each unit. Before making repairs to the strainer assembly, you must determine which strainer you have.

One version of the strainer incorporates a yoke assembly that retains the cap, and the other type of strainer has a cap that screws directly into the body of the strainer.

It is important to determine what strainer you have as the strainer parts are NOT interchangeable.



Decontaminating Apparatus: Power-Driven, Portable, Type A/E32U-8.

CHAPTER 1

INTRODUCTION

| | |
|--------------|-------------------------|
| Section I. | General Information |
| Section II. | Equipment Description |
| Section III. | Principles of Operation |

Section I. GENERAL INFORMATION

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|---------------------------|-------|-------------------------|-------|
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| Maintenance Forms and Re- | | erence List | .1-4 |
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1-1. SCOPE.

- a. Type of Manual. This manual is an operator's and organizational maintenance manual including a Repair Parts and Special Tools List (RPSTL).
- b. Model Number and Equipment Name. The official equipment nomenclature is the Decontaminating Apparatus: Power-Driven, Portable, Type A/E32U-8.
- c. Purpose of Equipment. The equipment is used to decontaminate equipment, personnel and other material exposed to nuclear, biological, or chemical contaminants. It is used with water and also water mixed with decontaminating agents. When using decontaminating agents, the injector must be used.

1-2. MAINTENANCE FORMS AND RECORDS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, Maintenance Management Update.

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR's).

If your decontaminating apparatus needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander. US Army Armament Munitions and Chemical Command, ATTN: AMSMC-QAD (R), Rock Island, IL 61299-6000. We'll send you a reply.

1-4. NOMENCLATURE CROSS REFERENCE LIST.

| <u>Common Name</u> | <u>Official Nomenclature</u> |
|---------------------------|--|
| Decontaminating Apparatus | Decontaminating Apparatus: Power-Driven, Portable, Type A/E32U-8 |
| Accessory Kit | Accessory Box and Accessories |
| Cleaning Wands | Jets |
| Antifreeze | Propylene Glycol, Technical |

1-5. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

For procedures and materials to destroy the decontaminating apparatus, refer to TM 43-0002-31, Destruction of Chemical Weapons and Defense Equipment to Prevent Enemy Use.

1-6. PREPARATION FOR STORAGE OR SHIPMENT.

For administrative storage requirements, refer to TM 740-90-1. For other storage requirements, refer to Chapter 4, Section VI.

Section II. EQUIPMENT DESCRIPTION

| | | | |
|---|--------------|--|-----------------------|
| Equipment Characteristics, Capabilities, and Fea- tures | Para. 1-7 | Location and Description of Major Components. . . Equipment Data | Para. .1-8 .1-9 |
|---|--------------|--|-----------------------|

1-7. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

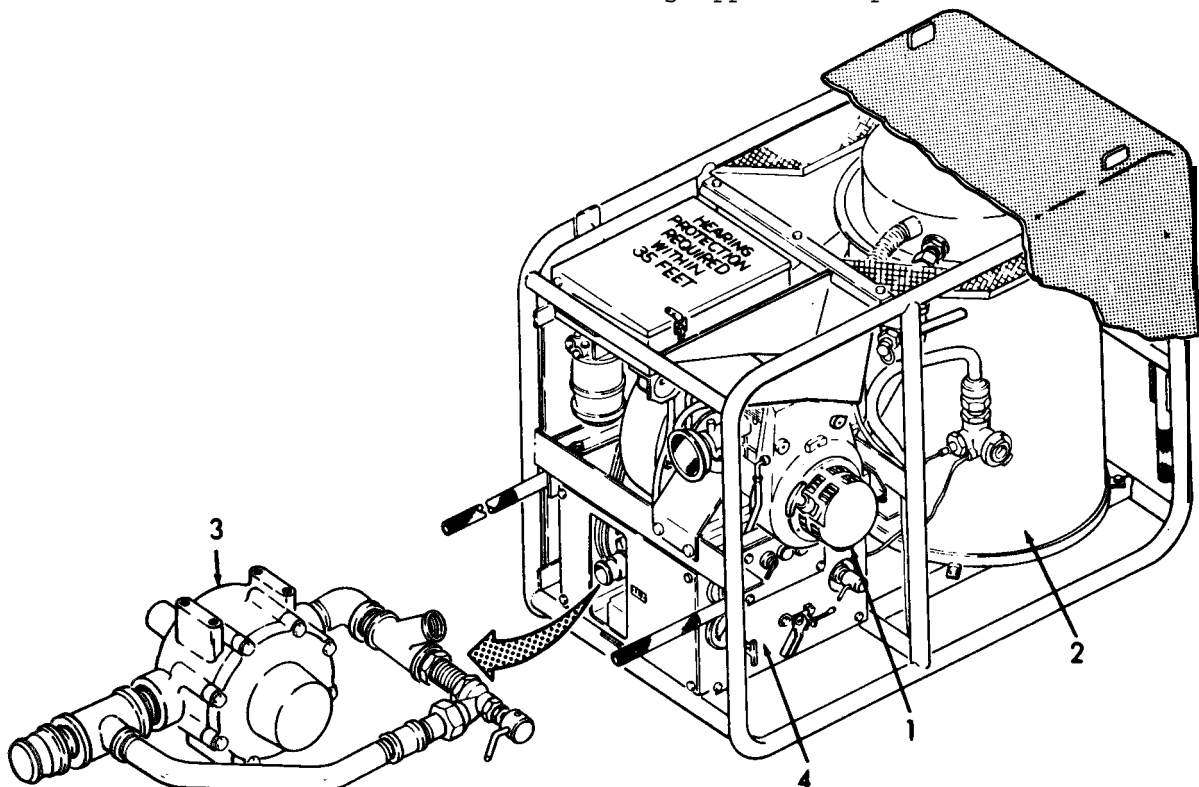
- a. Characteristics.
 - (1) Portable.
 - (2) Requires no external power source.
 - (3) Can be used to decontaminate both equipment and personnel.
- b. Capabilities and Features.
 - (1) Both water temperature and water pressure are adjustable.
 - (2) Uses an air-cooled, 2-cycle, gasoline engine to pump the water and operate the heater fan.

- (3) Has a built-in water heating system.
- (4) Has cleaning wands for decontamination of equipment and shower bars for decontamination of personnel.
- (5) Water tank is collapsible and holds 1580 gallons (6000 liters) of water.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

a. Decontaminating Apparatus.

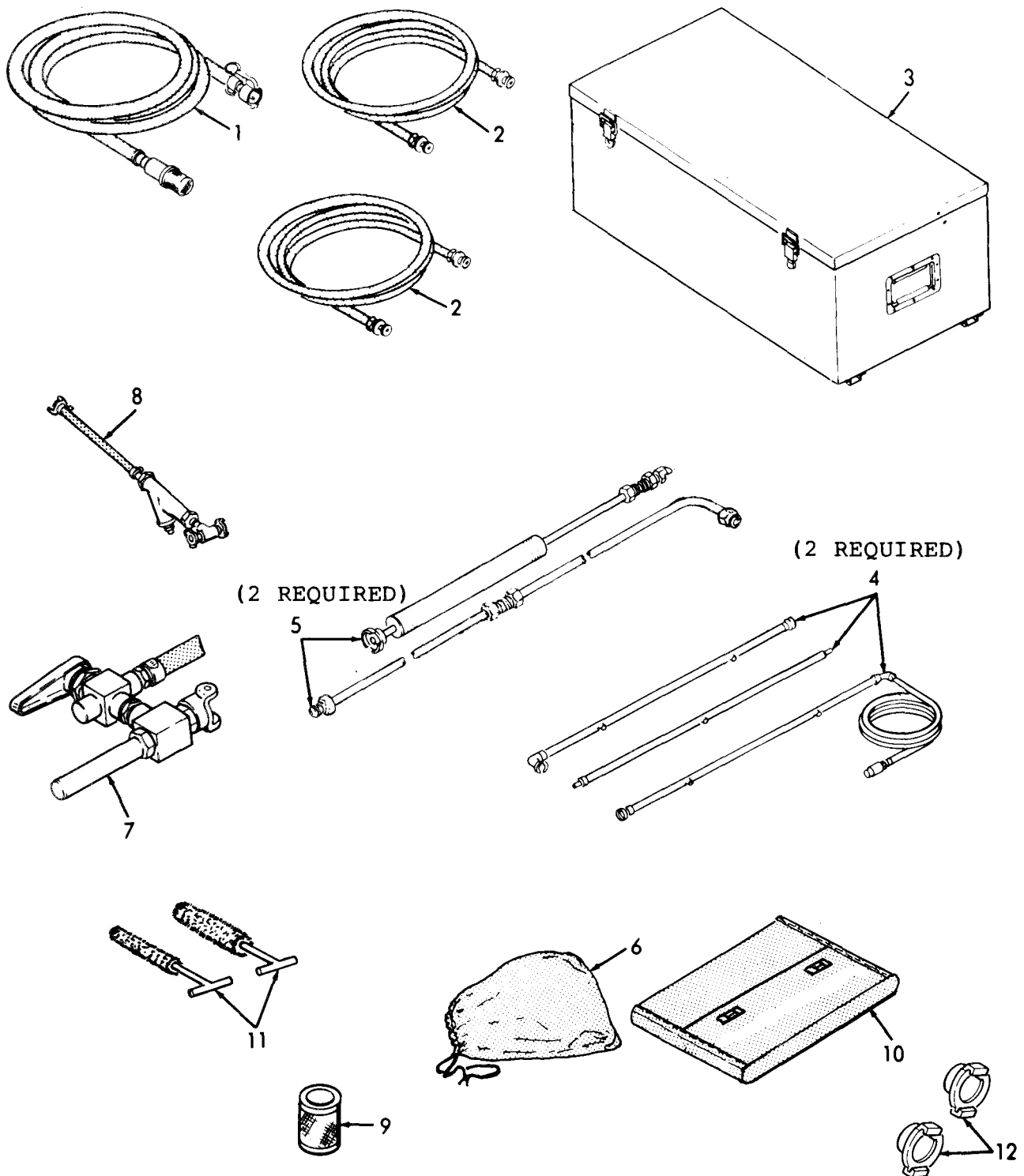
- (1) Engine. The engine (1) provides the power to operate the water pump, the fan, and the heater fuel pump. It also provides power to the control system.
- (2) Heat Exchanger. The heat exchanger (2) burns fuel to heat the water.
- (3) Water Pump. The water pump (3) provides the flow of water required to operate the decontaminating apparatus.
- (4) Control Panel. The control panel (4) controls the water temperature and the water pressure. Gages and controls are provided to control the decontaminating apparatus operation.



1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued.

b. Storage Accessory Case and Accessories.

- (1) Suction Hose. The suction hose (1) transfers the water from the water source to the water pump.
- (2) Pressure Hoses. The pressure hoses (2) transfer heated water (under pressure) from heat exchanger to cleaning wands, shower bars, or injector.
- (3) Storage Accessory case. The storage accessory case (3) provides for storage of the accessories.
- (4) Shower Bars. The shower bars (4) are used to decontaminate personnel.
- (5) Cleaning Wands. The cleaning wands (5) are used to decontaminate equipment.
- (6) Water Tank Repair Kit. The water tank kit (6) is used to repair holes in the water tank. Each kit contains special clamp patches used to stop water tank leaks when the tank is in use.
- (7) Injector. The injector (7) is used to mix a decontaminating agent with water from the water tank.
- (8) Branch Hose. The branch hose (8) with strainer is used to connect two pressure hoses to the water outlet on the decontaminating apparatus.
- (9) Strainer Screen. The strainer screen (9) filters pressurized water to the cleaning wands to prevent buildup of contaminants in the cleaning wands. A spare strainer is provided to permit continued use of the system while dirty filter is being cleaned.
- (10) Pouch. The pouch (10) retains and protects the engine restraints when not in use.
- (11) Brushes. Two brushes (11) are provided to clean scale and contaminants from hose ends, fittings, and strainer screen. The 2-inch diameter brush is intended for use on the strainer screen.
- (12) Test Orifices. Test orifices (12) are used during operational checkout of the decontaminating apparatus.

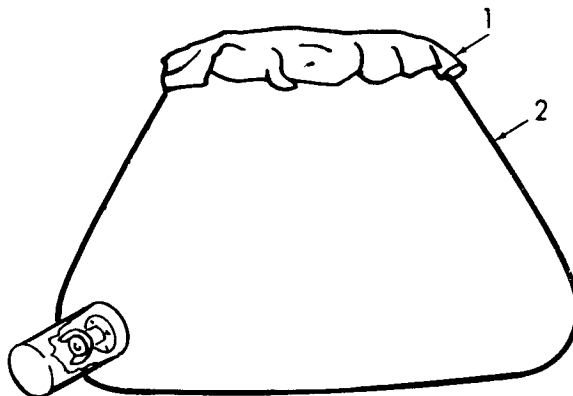


Storage Accessory Case and Accessories.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued.

c. Water Tank.

- (1) Water Tank. The water tank (2) holds the water used for decontamination.
- (2) Top Cover. The top cover (1) is used to store the water tank when not in use.



Water Tank.

1-9. EQUIPMENT DATA.

(Refer to Table 1-1).

Table 1-1. Equipment Data

DECONTAMINATING APPARATUS

| | |
|------------------|-------------------|
| Weight | 360 lbs (163 kg) |
| Length | 40.2 in. (102 cm) |
| Width | 23.2 in. (59 cm) |
| Height | 33.9 in. (86 cm) |

Heater

| | |
|------------------------|---|
| Type | Convection, high pressure fuel fired, spark plug ignition |
| Heat output | 700,000 Btu (180,000 Kilocalories) per hour |
| Primary fuel | Leaded or unleaded regular gasoline |

| | |
|----------------------------|---|
| Alternate fuel | Diesel (DF2), Jet Fuel (JP4), or kerosene |
| Fuel consumption | Less than 9 gal (34 liter) per hour |
| Spark plug | Champion RL87Y/RL87YC |
| Spark plug gap | 0.070 inches (1.778mm) |
| Fuel pump | Belt driven, gear type |

Engine

| | |
|--------------------------------|--|
| Type | Single cylinder, two-cycle |
| Displacement | .77.6 in ³ (197 cc) |
| Compression ratio | 7.5 to 1 |
| Output power | 7.3 hp at 4250 rpm |
| Cooling | Air-cooled |
| Fuel required | Leaded or unleaded regular gasoline (5 gal of fuel mixed with 1 qt of two-cycle motor oil) |
| Normal engine rpm | 4250±50 rpm |
| Fuel consumption | 0.7 gal (2.7 liter) per hour |
| Starter type | Manual recoil |
| Ignition system | Resistive-discharge with breaker points |
| Spark plug | Champion RL87Y/RL87YC |
| Spark plug gap | 0.030 inches (.762mm) |
| Electrical generator | Flywheel mounted, providing 6 V-ac |
| Power transfer | Centrifugal clutch with engagement at 2700 rpm |

Water Pump (Water Inlet)

| | |
|----------------|--|
| Type | Belt driven, self priming, high pressure, over-capacity roller |
|----------------|--|

Centrifugal Fan Assembly

| | |
|----------------|----------------------|
| Type | Shrouded, axial vane |
|----------------|----------------------|

ACCESSORY DATA

Storage Accessory Case

| | |
|---------------------------|-------------------|
| Weight (Loaded) | 165 lbs (65 kg) |
| Length | 41.8 in. (106 cm) |
| Width | 20.5 in. (52 cm) |
| Height | 15.4 in. (39 cm) |

1-9. EQUIPMENT DATA - Continued.

Table 1-1. Equipment Data - Continued

Suction Hose (1)

Length 33 ft (10 m)

Branch Hose (1)

Length 3 ft (1 m)

Pressure Hoses (2)

Length 49 ft each (15 m)

Shower Bars (2)

Coupling type 3-section with 6 jets
each

Length 8.0 ft each (2.44 m)

Cleaning Wands (2)

Type 3 section with one sec-
tion bent 90°

Coupling type Quick disconnect

Length 12.5 ft each (3.81 m)

Injector Includes nozzle, valve,
couplings and tubing

Water Tank

Type Self-erecting, rubber-
ized nylon

Weight (empty) 70 lbs (32 kg)

Height (full) 5.8 ft (1.7 m)

Capacity 1580 gal (6000 liters)

Section III. PRINCIPLES OF OPERATION

| | Para. | | Para. |
|-------------------------------|-------|---------------------------|-------|
| General | 1-10 | Electronic Control Module | |
| Engine Principles of Oper- | | Principles of Opera- | |
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| Air System Principles of | | Engine Fuel System Prin- | |
| Operation | 1-12 | ciples of Operation. . . | 1-16 |
| Water System Principles of | | Heater Fuel System Prin- | |
| Operation | 1-13 | ciples of Operation. . . | 1-17 |
| Heat Exchanger System Prin- | | | |
| ciples of operation | 1-14 | | |

1-10. GENERAL.

a. The decontaminating apparatus has five major systems: the engine, the air system, the water system, the heater system, and the electronic control system. These systems provide a supply of pressurized, temperature-controlled water. After the system is operating, the operator is required to periodically monitor the output water temperature and fuel supplies.

b. No external power is required to operate the system. Only a source of water and fuel is needed. Decontamination may be conducted in the following three ways:

- (1) Decontamination of material and equipment using the cleaning wands.
- (2) Decontamination of personnel using the showers.
- (3) Decontamination using the injector and decontaminating agents.

1-11. ENGINE PRINCIPLES OF OPERATION.

a. The engine is a one-cylinder, 2-cycle, air-cooled, power source that develops 7.3 horsepower at 4250 rpm. A centrifugal clutch drives the combustion air fan, the water pump, and the heater fuel pump. The clutch begins to drive the fan, water pump, and fuel pump when the engine speed exceeds 2700 rpm. A diaphragm fuel pump operates on pulsating crankcase pressure to supply fuel to the engine carburetor.

b. The engine has a built-in generator. The generator supplies 6 V-ac at 17 watts to power the electronic control system. A manual recoil starter is used to start the engine.

1-12. AIR SYSTEM PRINCIPLES OF OPERATION.

The air system consists of the axial vane fan enclosed in a shroud. When the centrifugal clutch engages, the fan assists in drawing air from around the engine cooling fins to cool the engine and provide preheated air to the heat exchanger. In the heat exchanger, the air is used for combustion which in turn heats the water in the heating coil.

1-13. WATER SYSTEM PRINCIPLES OF OPERATION.

The water system consists of an over-capacity, roller-type pump that is belt driven by the engine through the centrifugal clutch. The pump can provide varying flow rates at the water outlet and is controlled by a pressure regulator valve on the control panel. The water pressure regulator valve will allow any over supply of water to be returned to the inlet side of the pump.

1-14. HEAT EXCHANGER SYSTEM PRINCIPLES OF OPERATION.

The heat exchanger system is a double-walled, convection type. The functional components consist of a burner and a heating coil. The burner is fired by an electronic ignition system through a spark plug. Pressurized fuel is received and atomized by the burner jet. Air is received from the fan in the burner, mixed with the atomized fuel and ignited. The heated air is then forced around the water coils to heat the water and then out through the exhaust side of the heat exchanger.

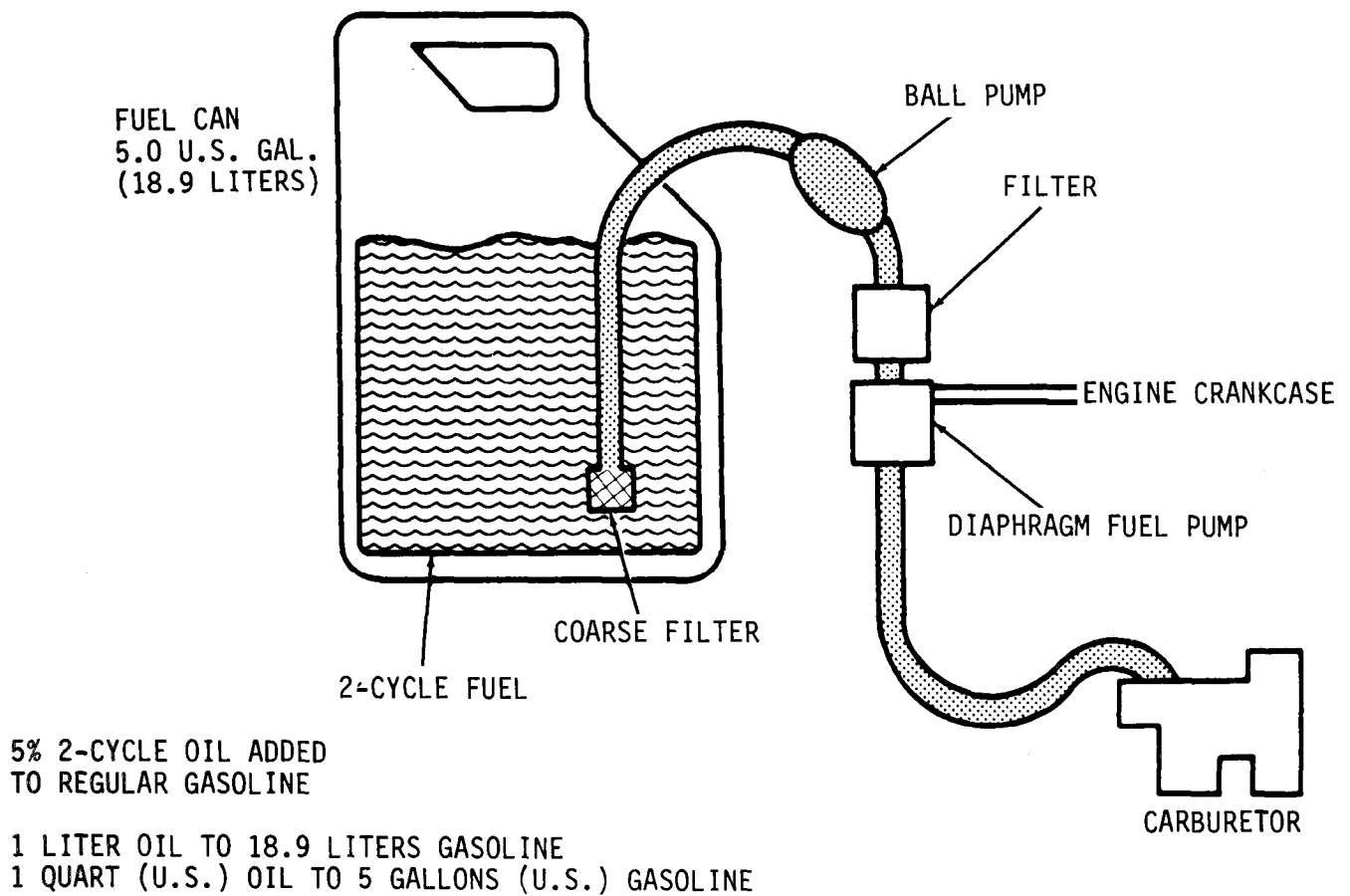
1-15. ELECTRONIC CONTROL MODULE PRINCIPLES OF OPERATION.

Through the use of valves, switches, and thermostats, the electronic control module does the following things:

- a. Monitors water pressure.
- b. Monitors water temperature.
- c. Monitors and controls burner ignition.

1-16. ENGINE FUEL SYSTEM PRINCIPLES OF OPERATION.

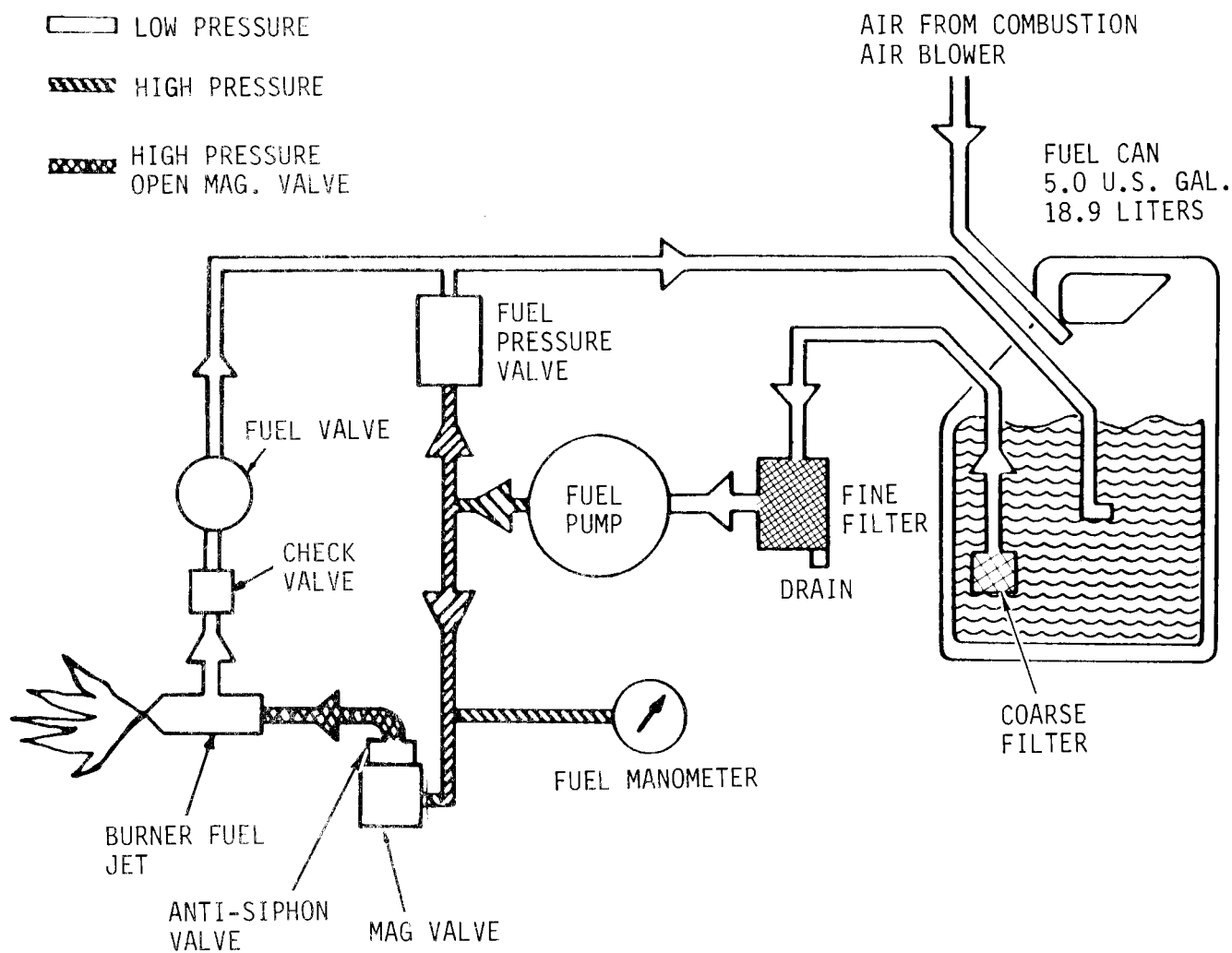
Fuel is supplied to the engine from a five gallon (18.9 liter) fuel can. The ball pump is initially used to prime the fuel system. Fuel is drawn through the coarse fuel can filter and through the fuel inline filter prior to entering the fuel pump and then the carburetor.



Engine Fuel System.

1-17. HEATER FUEL SYSTEM PRINCIPLES OF OPERATION.

Fuel is supplied to the burner from a five gallon (18.9 liter) fuel can. Air from the combustion air fan provides a positive pressure in the fuel can. A coarse filter is located on the inlet hose assembly to remove the larger particles from the fuel. The fuel then passes to the fine filter to remove the smaller particles. From the engine driven fuel pump, fuel is forced through a magnetic valve and check valve to the burner fuel jet. Unused fuel is by-passed back to the fuel can.



Heater Fuel System.

CHAPTER 2

OPERATING INSTRUCTIONS

| | |
|--------------|---|
| Section I. | Description and Use of Operator's Controls and Indicators |
| Section II. | Operator's Preventive Maintenance Checks and Services |
| Section III. | Operation Under Usual Conditions |
| Section IV. | Operation Under Unusual Conditions |

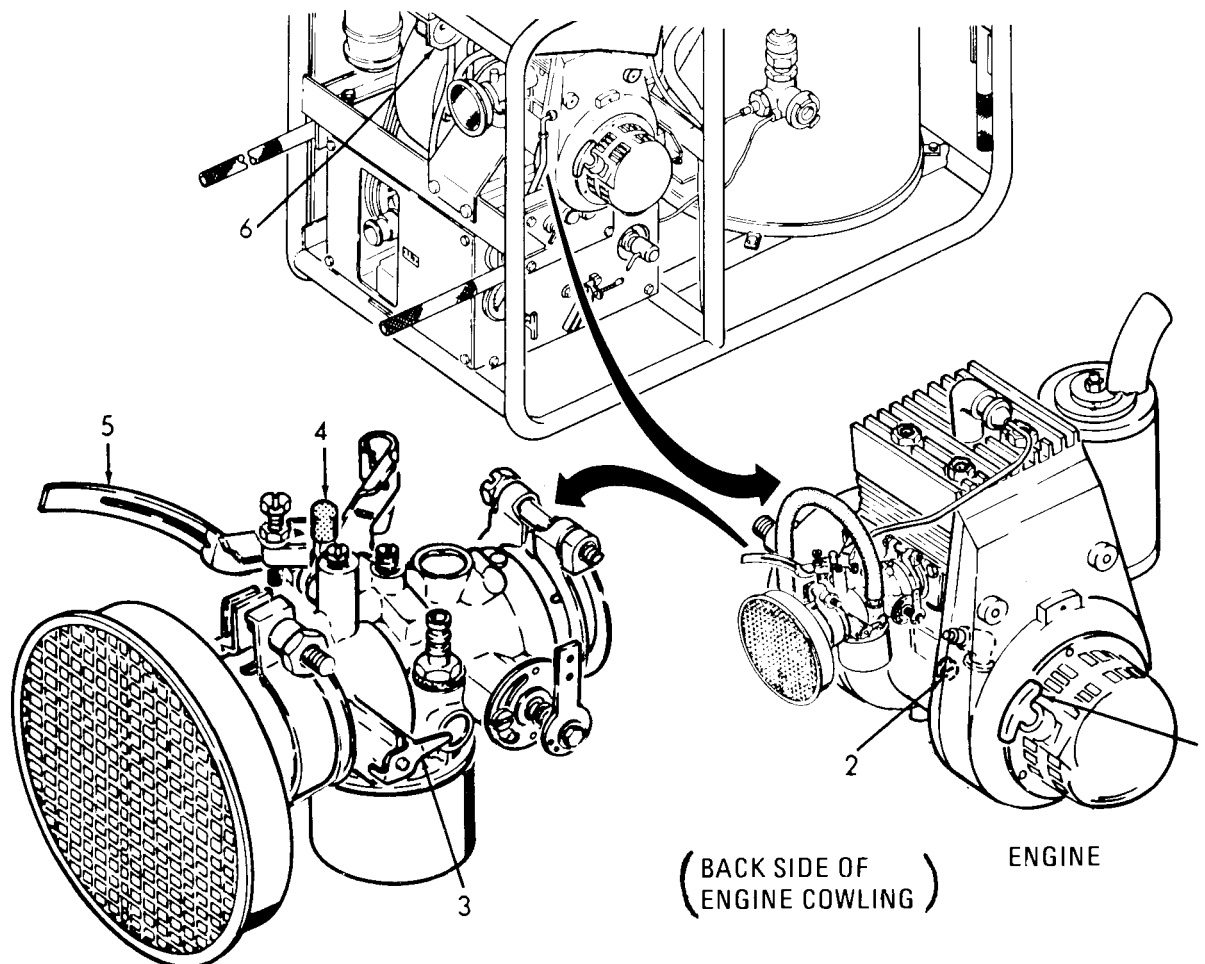
Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

| | | | |
|--|-------|---|-------|
| | Para. | | Para. |
| Introduction | 2-1 | Control Panel Controls and Indicators | 2-3 |
| Engine Controls and Indicators | 2-2 | Fuel System Controls and Indicators | 2-4 |

2-1. INTRODUCTION.

This section describes the controls and indicators you, as the operator, will be using most often. Most of your controls and indicators are on the control panel located on the front side of the decontaminating apparatus. You will also be using the throttle located on the engine. The following paragraphs will give you a brief description of each control and indicator.

2-2. ENGINE CONTROLS AND INDICATORS.

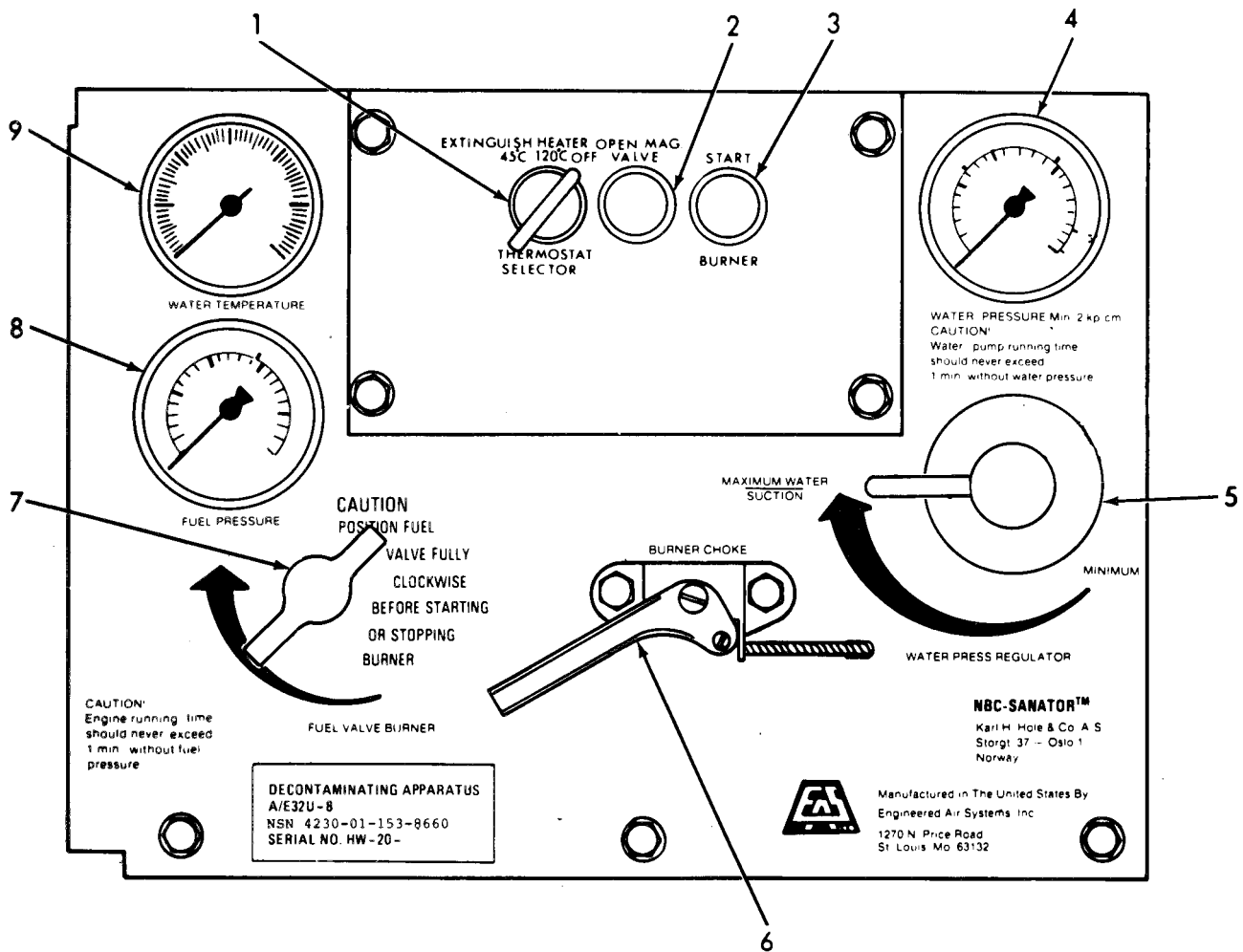


| KEY | CONTROL OR INDICATOR | FUNCTION |
|-----|----------------------|--|
| 1 | Starter Handle | Used to start engine. |
| 2 | Stop Switch | Shorts out the engine ignition system. |
| 3 | Choke | Aids engine starting in cold temperature. |
| 4 | Tickler | Holds float down and allows fuel to enter the fuel bowl when priming the carburetor. |
| 5 | Throttle | Controls engine speed. |
| 6 | Hour Meter | Indicates the number of hours the unit has been operating. |

Engine Controls and Indicators.

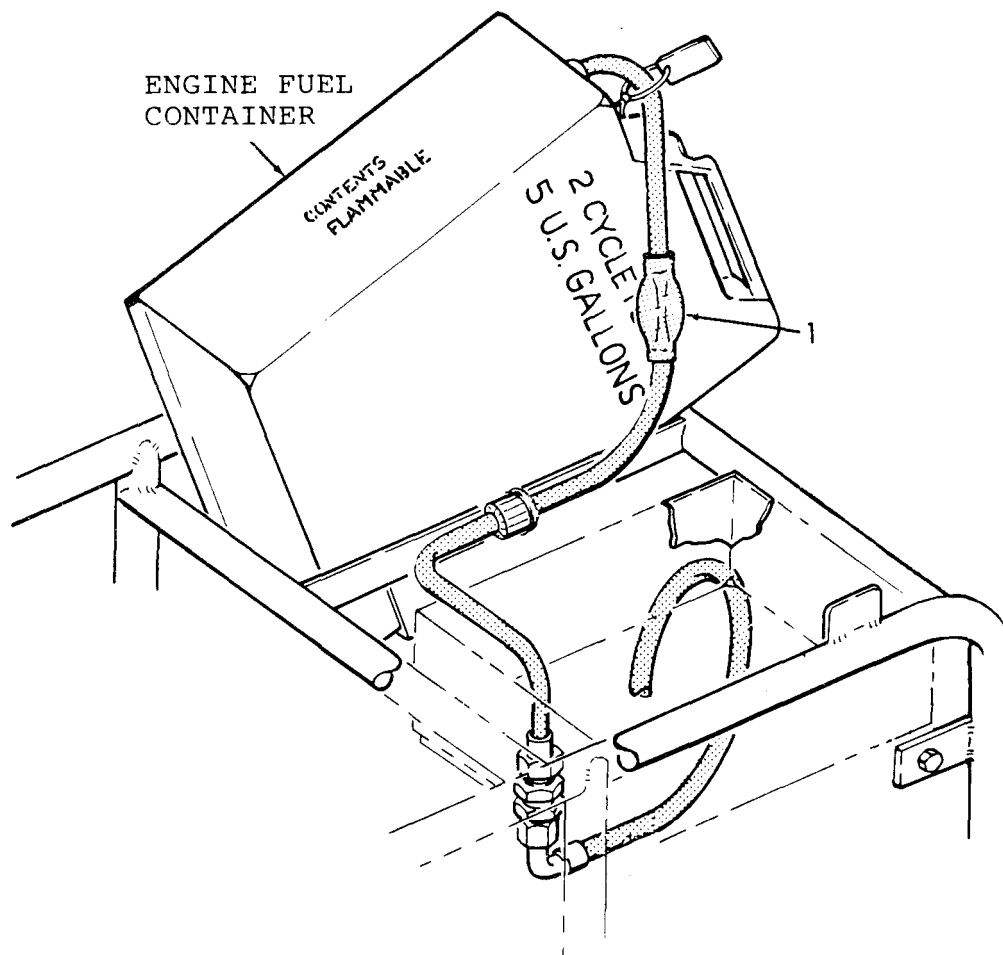
| |
|---|
| 2-3. CONTROL PANEL CONTROLS AND INDICATORS. |
|---|

| KEY CONTROL OR INDICATOR | | FUNCTION |
|--------------------------|--------------------------|--|
| 1 | THERMOSTAT SELECTOR | This three position switch selects the maximum temperature of the outgoing water. |
| 2 | OPEN MAG VALVE | Indicates whether or not the burner is operating. |
| 3 | START BURNER | This momentary contact switch is used to ignite the burner. |
| 4 | WATER PRESSURE GAGE | Indicates the outgoing water pressure. |
| 5 | WATER PRESSURE REGULATOR | A valve that regulates the output pressure and volume of the unit. |
| 6 | BURNER CHOKE | A damper device used to limit the air-flow past the heater spark plug during ignition. |
| 7 | BURNER FUEL VALVE | A valve that controls fuel to the burner. |
| 8 | FUEL PRESSURE GAGE | A pressure gage that indicates the output pressure of the heater fuel pump. |
| 9 | WATER TEMPERATURE | This gage indicates the temperature of the outgoing water. |



Control Panel Controls and Indicators.

2-4. FUEL SYSTEM CONTROLS AND INDICATORS.



| KEY CONTROL OR INDICATOR | FUNCTION |
|--------------------------|--|
| 1 Ball Pump | Used to pump fuel (prime) into the carburetor. |

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

| | | | |
|------------------------|-------|--|-------|
| | Para. | | Para. |
| Introduction | 2-5 | Operator Preventive Main- tenance Checks and Ser- vices. | 2-6 |

2-5. INTRODUCTION.

a. General.

- (1) Before You Operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your (B) PMCS.
- (2) While You Operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your (D) PMCS.
- (3) After You Operate. Be sure to perform your (A) PMCS.
- (4) If Your Equipment Fails to Operate. If your equipment does not perform as required, refer to Chapter 3 under troubleshooting for possible problems. Report any malfunctions or failures on DA Form 2404, or refer to DA PAM 738-750.

b. PMCS Procedures.

- (1) Purpose of PMCS. Your Preventive Maintenance Checks and Services list the inspections and care of your equipment required to keep it in good operating condition.
- (2) Item Number Column. Checks and services are numbered in chronological order regardless of interval. This column is used as a source of item number for the "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.
- (3) Interval Columns. The interval columns tell you when to do a certain check or service: before, during, or after operation. Sometimes a dot may be placed in more than one interval column which would mean you should do the check or service at each of those intervals.
- (4) Item To Be Inspected Column. This column lists the common name of the item to be inspected such as "Drive Belts".
- (5) Procedures Column. This column tells you how to do the required checks or services. Carefully follow these instructions.
- (6) Equipment Is Not Ready/Available If Column. This column tells you when and why your equipment cannot be used.

2-5. INTRODUCTION - Continued.

b. PMCS Procedures - Continued.

NOTE

The terms ready/available and mission capable refer to the same status: equipment is on hand and is able to perform its combat missions. (See DA PAM 738-750.)

2-6. OPERATOR PREVENTIVE MAINTENANCE - CHECKS - AND SERVICES..

NOTE

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

Table 2-1. Operator Preventive Maintenance Checks and Services

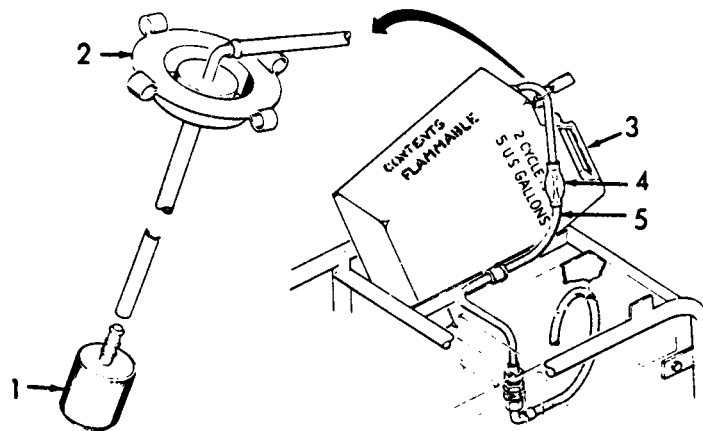
B - Before

D - During

A - After

| Item No. | Interval | | | Item to Be Inspected | Procedure Check for and have repaired or adjusted as necessary | Equipment Is Not Ready/Available If: |
|----------|----------|---|---|---------------------------|--|---|
| | B | D | A | | | |
| 1 | • | • | | Water Tank | Check for leaks Temporarily repair all leaks with clamp patches in tank repair kit (see page 3-18). | Water tank leaks. |
| 2 | • | • | | Decontaminating Apparatus | Inspect entire Unit for physical damage. Examine unit for proper engine operation, gage operation, temperature control, and adequate water pressure. | Unit is incapable of providing constant pressurized water supply at a controlled temperature. |
| | • | | | | Check for loose or missing belts. | Belts loose or missing. |

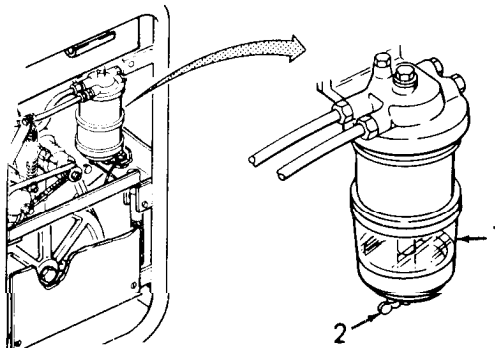
| Item No. | Interval | | | Item to be inspected | Procedure - Check for and have repaired or adjusted as necessary. | Equipment is not ready/available if: |
|----------|----------|---|---|----------------------|--|--|
| | B | D | A | | | |
| 3 | o | | | | Inspect all component housings for cracks. Examine all wiring for cuts, burns or cracks. | Housing or any components are cracked; wiring is cut, burned or cracked. |
| | o | o | | | Examine all hoses, fittings and connections for looseness, cracks cuts or leaks. Verify that pressure hoses are stamped "250 PSI". | Hose fittings or connections are loose, cracked or cut. Pressure hoses incorrectly marked for high pressure (250 PSI). |
| | o | o | | Engine Fuel System | Inspect hoses (5) and ball pump (4) for leaks, cracks and secure connections. Remove lid assembly (2) from engine fuel can (3). Check strainer (1) for clogging. Clean clogged strainer, if required. (See page 3-20.) Reinstall lid assembly (2). | Hoses or ball pump is cracked or has leaks. Strainer is clogged. |

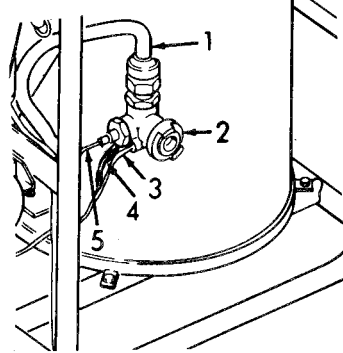


2-6. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Continued.

Table 2-1. Operator Preventive Maintenance Checks and Services - Continued.

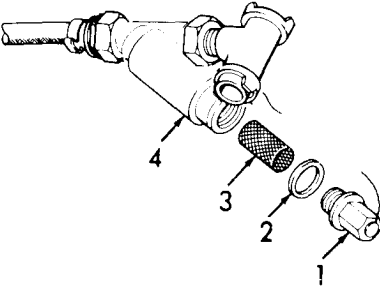
| Item No. | Interval | | | Item to Be Inspected | Procedure Check for and have repaired or adjusted as necessary | Equipment Is Not Ready/Available If: |
|----------|----------|---|---|----------------------|---|--|
| | B | D | A | | | |
| 4 | • | • | • | Burner Fuel System | Inspect hoses for leaks and proper connections. Check fuel can strainer for clogging. Check fuel pump belt for cracks. | Hoses are cracked or leaking. Strainer is clogged. |
| | | • | | | Check fuel pump for leaks. | Fuel pump is leaking. |
| 5 | • | | • | Burner Fuel Filter | Check glass bowl for cracks or leaks. Inspect for water and dirt accumulations in glass bowl (1). If required, drain water and dirt from glass bowl by loosening drain plug (2). Allow fuel to drain into any available container until glass bowl is clear of contaminants, then tighten drain plug. | Filter contains dirt or water. Glass bowl is cracked or leaking. |



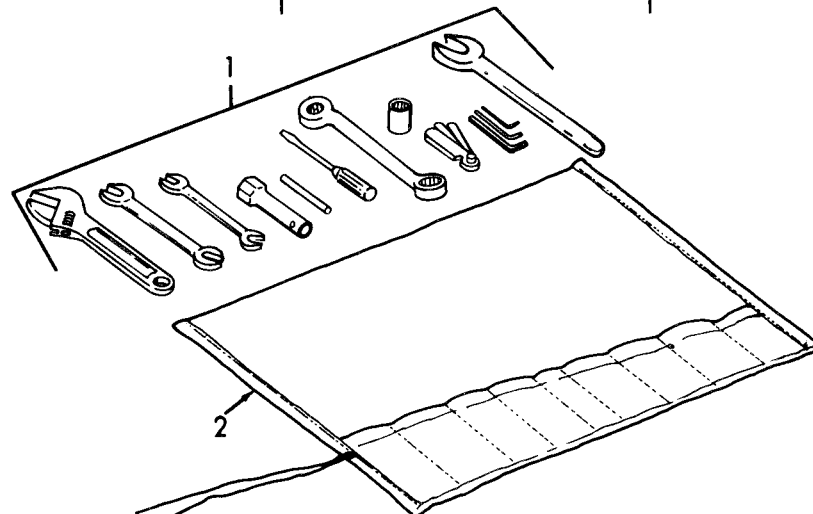
| Item No. | Interval | | | Item to Be Inspected | Procedure Check for and have repaired or adjusted as necessary | Equipment Is Not Ready/Available If: |
|----------|----------|---|---|--------------------------------|---|--|
| | B | D | A | | | |
| 6 | ● | | ● | Water Outlet | Examine fitting (2) for cracks, leaks, or looseness. | Fitting cracked, leaks, or loose. |
| | | ● | | | Check thermostat leads (3 and 4) for cuts, cracks, and secure connection. Inspect manometer lead (1) and thermometer lead (5) for cuts, cracks and secure connection. | Wire leads cut or damaged. |
| | | | | |  | |
| 7 | ● | ● | | Suction Hose | Inspect hose for cracks, cuts, and leaks. Inspect fittings and gaskets for cracks or damage. | Hose leaks or fittings and gaskets are damaged. |
| 8 | ● | | ● | Suction Hose Strainer (filter) | Inspect screen for clogging. Clean clogged screens (see page 3-22). Inspect for missing or loose hardware. | Strainer is clogged. |
| 9 | ● | ● | ● | Branch Hose | Examine hose for cracks, cuts, and leaks. Inspect fittings and gaskets for cracks or damage. | Hose is cracked, cut, or leaks. Fittings are cracked or damaged. |

| |
|--|
| 2-6. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Continued |
|--|

Table 2-1. Operator Preventive Maintenance Checks and Services - Continued.

| Item No. | Interval | | | Item to Be Inspected | Procedure Check for and have repaired or adjusted as necessary | Equipment Is Not Ready/Available If: |
|--|----------|---|---|----------------------|--|--|
| | B | D | A | | | |
| 10 | • | | • | Branch Hose Strainer | <p>Inspect for clogging.</p> <p>a. Remove cap (1) and attached gasket (2) from strainer body (4).</p> <p>b. Remove and inspect strainer element (3). If element is clogged with dirt, clean dirt from element. If element is clogged with scale, refer unit to organizational maintenance.</p> | Strainer is clogged or unserviceable. |
|  | | | | | | |
| 11 | • | • | • | Pressure Hoses | Examine hose for cracks, cuts, and leaks. Inspect fittings and gaskets for cracks or damage. | Hose is cracked, cut, or leaks. Fittings are cracked or damaged. Gaskets cracked or missing. |

| Item No. | Interval | | | Item to Be Inspected | Procedure Check for and have repaired or adjusted as necessary | Equipment Is Not Ready/Available If: |
|----------|----------|---|---|----------------------|--|---|
| | B | D | A | | | |
| 12 | • | | • | Shower Assemblies | Inspect tubes for cracks or leaks. Check for missing or clogged jets (nozzles). Check hose for cuts or cracks. | Tubes are cracked. Jets (nozzles) are clogged. Hose is cracked or leaks. |
| 13 | • | • | • | Cleaning Wands | Inspect all fittings for cracks or leaks. Check for clogged nozzle. Check for gaskets. | Tubes are cracked. Nozzle is clogged. Gaskets are missing or cracked. |
| 14 | • | • | • | Injector | Examine fittings and gaskets for cracks or leaks. Check valve handle for ease of rotation. Inspect for cracked or cut injector tubing. | Fittings and gaskets are missing or cracked. Valve does not open and close. |
| 15 | • | | • | Tool Kit | Examine for cracked or missing tools (1). Check pouch (2) for cuts or tears. | Tools are damaged or missing. |



Section III. OPERATION UNDER USUAL CONDITIONS

| | Para. | | Para. |
|---|-------|--|-------|
| Assembly and Preparation for Use | 2-7 | Preparation for Move- merit | 2-9 |
| Operating Procedures | 2-8 | Decals and Instruction Plates | 2-10 |

2-7. ASSEMBLY AND PREPARATION FOR USE.

NOTE

- For unpacking instructions refer to page 4-2.
- Assemble shower injector, cleaning wands, or water tank only as required to support your particular operating mode.

These procedures consist of the following:

- Suction Hose Connection (page 2-14).
- Branch Hose Connection (page 2-15).
- Pressure Hose Connection (page 2-16).
- Shower Assembly (page 2-17).
- Injector Connection (page 2-18).
- Cleaning Wand Connection (page 2-19).
- Engine Fueling (page 2-20).
- Heater Fueling (page 2-22).
- Water Tank Set-Up (page 2-23).

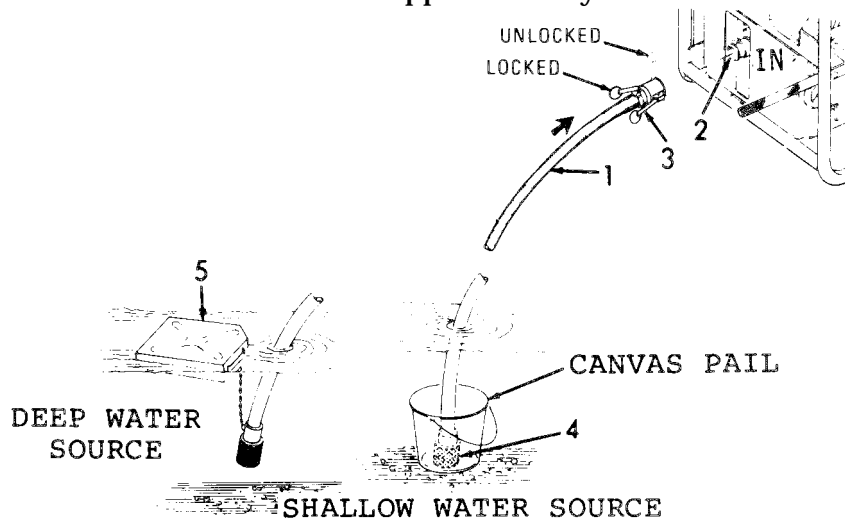
a. Suction Hose Connection.

- (1) Connect suction hose (1) to inlet connection (2) by alining locking levers (3) straight up and down.
- (2) Pull levers straight back to lock hose into position.

CAUTION

Do not let suction hose strainer rest on bottom of water source. Ingestion of foreign matter can cause damage to the system.

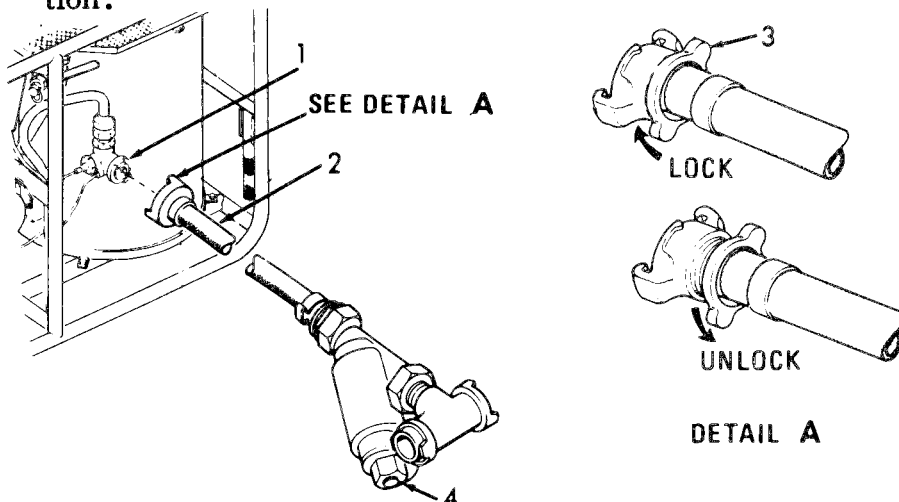
- (3) Place strainer (4) in the water source. Strainer should be positioned to prevent entry of foreign matter. Do not allow strainer to rest on bottom of water source if silt, mud or small gravel is present. If water source is shallow, place strainer in a canvas pail (Appendix D).
- (4) If the natural water source is deep, attach an empty fuel can (5) to the suction strainer with the chain provided so the strainer is immersed approximately 12 inches below water.



Suction Hose Connection.

b. Branch Hose Connection.

- (1) Connect branch hose (2) to water outlet (1) by connecting couplings. Be sure gaskets are properly seated.
- (2) Position branch hose so that strainer cap (4) is resting on ground.
- (3) Secure by turning brass ring (3) clockwise to lock into position.



Branch Hose Connection.

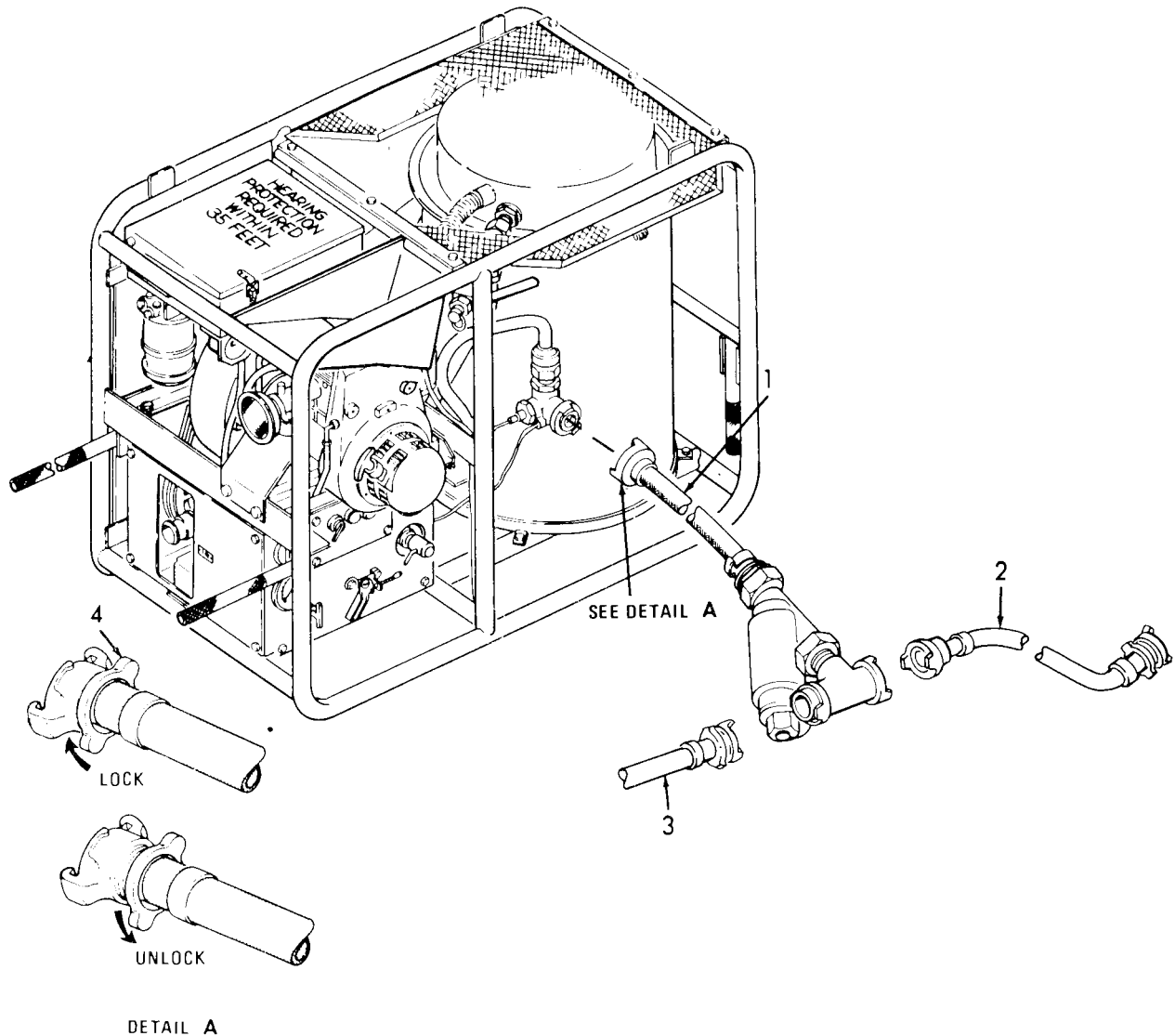
2-7. ASSEMBLY AND PREPARATION FOR USE - Continued.

c. Pressure Hose Connection.

WARNING

Be sure pressure hoses are properly connected. A connection that detaches can cause injury to personnel when operating at elevated temperatures.

- (1) Connect two pressure hoses (2 and 3) to branch hose (1) by connecting couplings. Be sure gaskets are properly seated.
- (2) Secure couplings by turning brass ring (4) clockwise to lock into position.



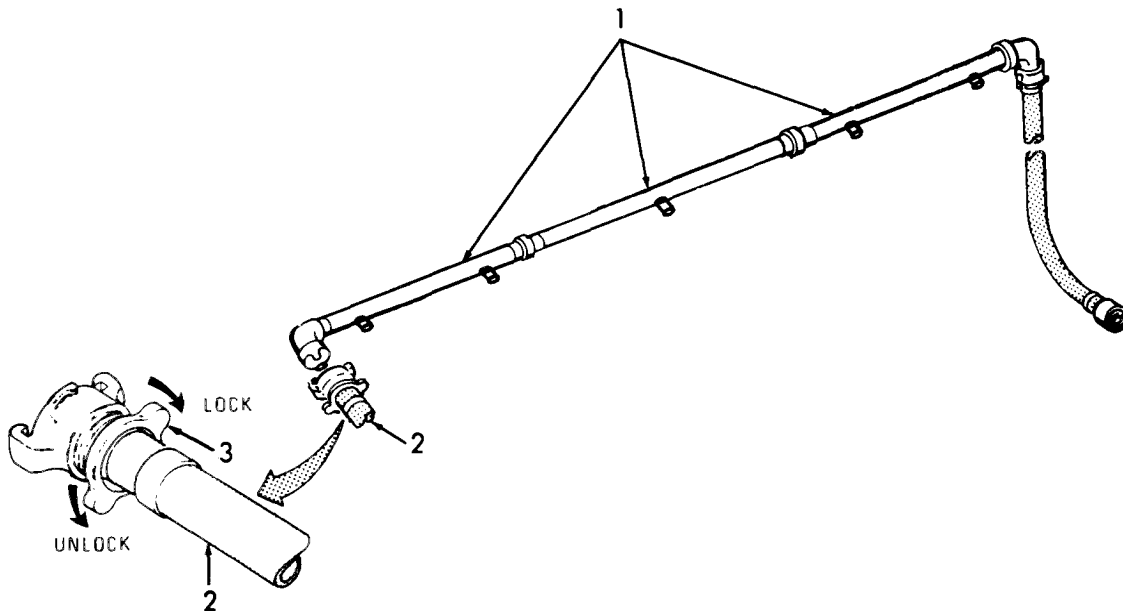
Pressure Hose Connection.

NOTE

Assemble only those parts of your equipment which will be used to support your operating mode. Shower assembly, injector, and cleaning wand connections are described on the following pages.

d. Shower Assembly.

- (1) Connect three shower bar sections (1) together. The nozzles do not have to be lined up. Offsetting of shower nozzles will allow for more convenient spray angle. Slide nut over shoulder of each shower bar section and tighten.
- (2') Mount shower bars on a supporting device to hold shower bars at least seven feet above ground on any support available (i. e., a tree or post) or as directed by local SOP.
- (3) Connect end of pressure nose (2) to shower assembly. Secure in place by turning brass ring (3) fully clockwise.
- (4) Repeat above three steps for other shower.



Shower, Assembly.

2-7. ASSEMBLY AND PREPARATION FOR USE - Continued.

e. Injector Connection.

NOTE

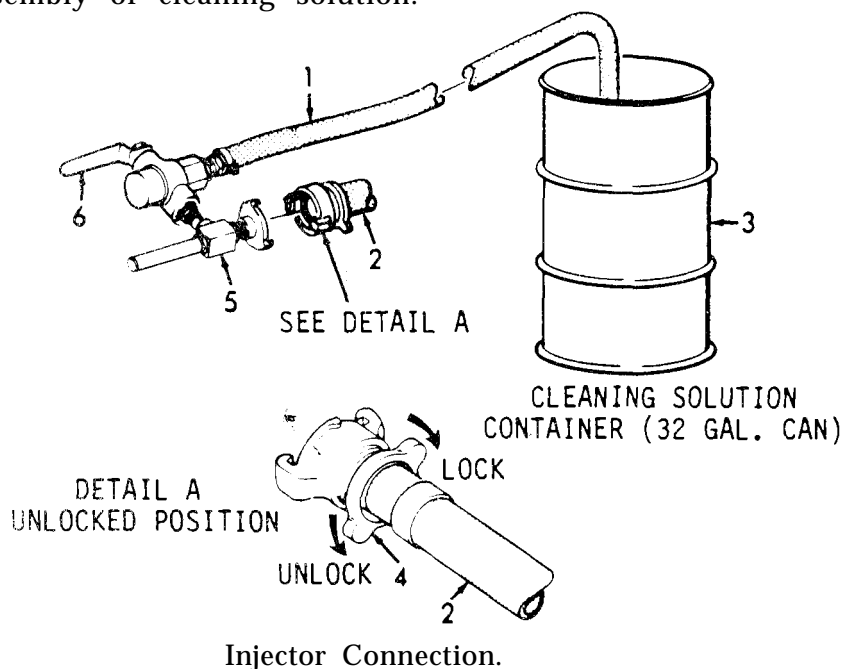
During operation of injector, the pressure hose must be connected from the injector directly to the water outlet.

- (1) Connect end of pressure hose (2) to coupling on injector (5).
Be sure gasket is properly seated. Be sure the opposite end of the pressure hose is hooked directly to the water outlet coupling.
- (2) Secure in place by turning the brass ring (4) clockwise.
- (3) Insert other end of injector hose (1) into 32 gallon can (3) filled with cleaning solution to be used.

NOTE

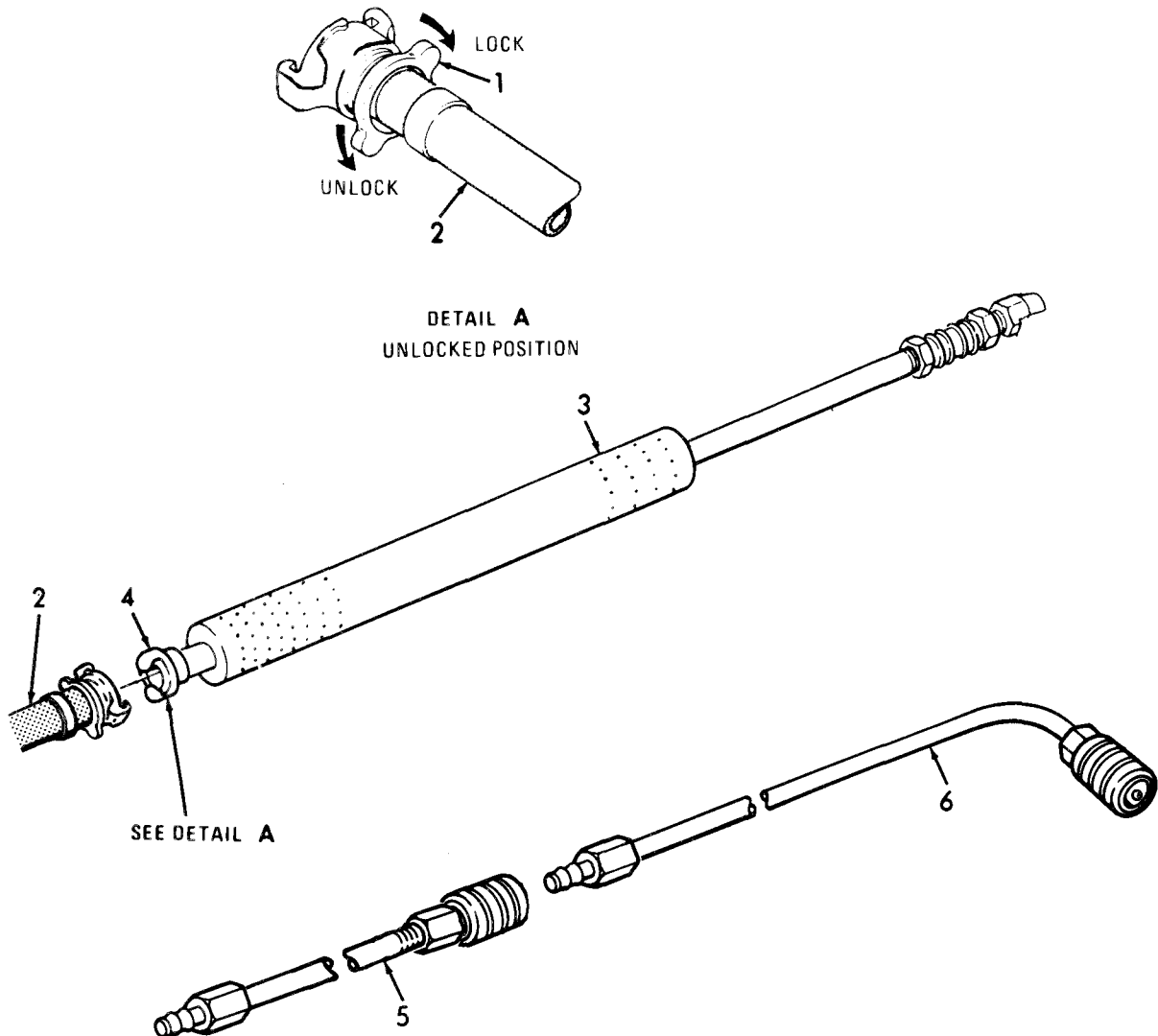
During operation, the clear hose may partially collapse. Try to support the clear hose as much as possible to prevent collapsing.

- (4) Turn control valve handle (6) parallel to clear hose to draw cleaning solution from container.
- (5) Upon completion of decontamination procedure, remove end of clear tubing (2) from cleaning solution container (3) and place in pail of water (Appendix D).
- (6) Turn control valve handle (6) to initiate flow of water to purge assembly of cleaning solution.



f. Cleaning Wand Connection.

- (1) Connect pressure hose (2) to coupling (4) on cleaning wand handle (3).
- (2) Secure coupling connection by turning brass ring (1) clockwise.
- (3) Repeat above two steps for other cleaning wand.
- (4) If additional length is needed for cleaning wand, wand extension tubes (5 and 6) may be added to wand handle (3).



Cleaning Wand Connection.

| |
|--|
| 2-7. ASSEMBLY AND PREPARATION FOR USE - Continued. |
|--|

g. Engine Fueling.

WARNING

The engine uses a variety of fuels. To prevent fire or explosion, follow these rules:

- DO NOT allow any flame-producing material within 50 feet during fueling or mixing.
- DO NOT smoke when mixing fuel.
- DO NOT fill fuel can past top weld line. It could leak.
- DO NOT prime a hot engine.
- Remove fuel can from decontaminating apparatus and place on ground during refueling.
- All fuels damage MOPP clothing. To prevent possible agent contamination, DO NOT let fuel touch MOPP clothing.
- Mix fuel in well-ventilated location, preferably outside.

CAUTION

The engine on the unit is lubricated by oil mixed with gasoline. Using less than the recommended amount of oil will result in serious engine damage due to insufficient lubrication. Using more than the recommended amount of oil will cause spark plug fouling, erratic engine operation (poor carburation), and excessive carbon accumulation or excessive smoke.

NOTE

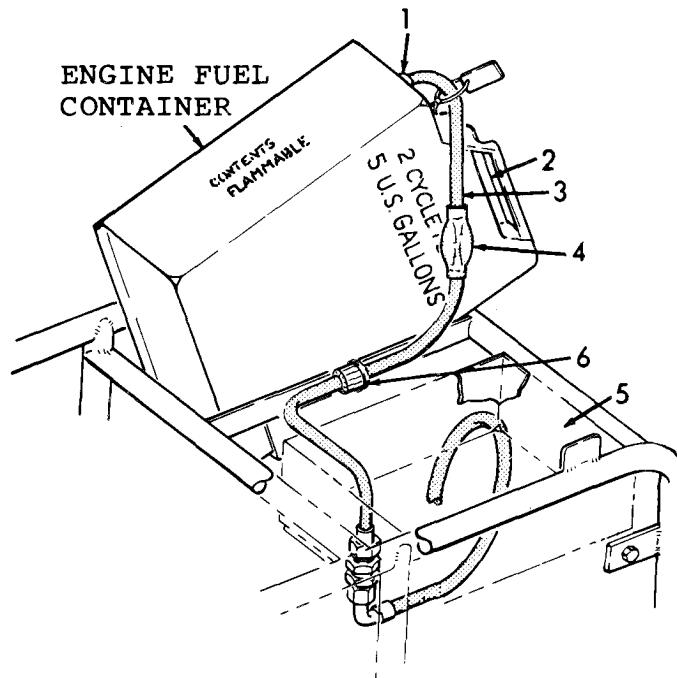
Be sure to observe cleanliness procedures in mixing fuel. Even a very small particle of dirt can cause carburetor trouble. Don't use multi-grade oils or other automotive oils that contain large amounts, of detergents.

Your unit is powered by a 2-cycle engine and requires a fuel mixture of gasoline and 2-cycle engine oil. The proper fuel mixture is, a quart of oil with 5 gallons of unleaded or "regular" leaded gasoline. After adding oil to the gasoline, shake the fuel container vigorously to mix the fuel well.

In the event 2-cycle oil is not available, use a good grade of SAE 30 non-detergent oil (SE).

The 2-cycle oil is tinted and will produce an aqua-tint to the gasoline when mixed. A slight tint to fuel however, does not mean that oil has been added. as some gasoline is tinted. If in doubt of the fuel mix, pour the engine fuel mix into the burner fuel can and re-mix fuel for the engine.

- (1) Install fuel can (2) into position as shown.
- (2) Remove fuel can lid from fuel can (2).
- (3) Remove engine fuel hose (3) with lid assembly (1) from tool box (5).
- (4) Install engine lid assembly (1) on fuel can (2).
- (5) Hold tickler on engine down and squeeze fuel line ball pump (4) until inline engine filter (6) is full.



Engine Fueling.

2-7. ASSEMBLY AND PREPARATION FOR USE - Continued.

h. Heater Fueling.

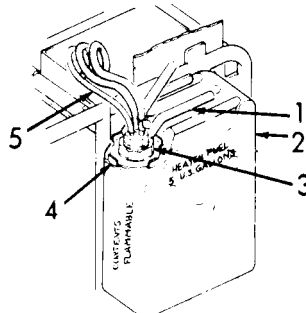
WARNING

The equipment uses a variety of fuels. To prevent fire or explosion, follow these rules:

- DO NOT allow any flame-producing material within 50 feet during fueling.
- DO NOT smoke when mixing fuel.
- DO NOT fill fuel can past top weld line, it could leak.
- Remove fuel can from decontaminating apparatus and place on ground during refueling.

NOTE

- Panel must be in place before replacing heater fuel can.
 - The burner uses as primary fuel, leaded or unleaded gasoline. Alternate fuels include: kerosene, jet fuel, diesel fuel, or any mixture of these. Because of the lower volatility of the alternate fuels, ignition of the burner unit at temperatures below 70°F may be difficult and result in wet-fouling of the spark plug. When the ambient temperature is below 70°F, the primary fuel, gasoline, will be used until operating temperature has been achieved (approximately 5 minutes). Thereafter, one of the alternate fuels may be used.
- (1) Install full heater fuel can (2) into position as shown.
 - (2) Remove lid from fuel can (2). Store lid under fuel can handle.
 - (3) Place heater fuel can lid assembly (3) into position on heater fuel can (2).
 - (4) Lock heater fuel can lid assembly (3) onto heater fuel can (2) by holding upper lock (1) while turning bottom lock (4) clockwise until tight. Bring both handles of upper lock together to tighten lock.
 - (5) Be sure fuel lines (5) are not kinked.



Heater Fueling.

i. Water Tank Set-Up.

NOTE

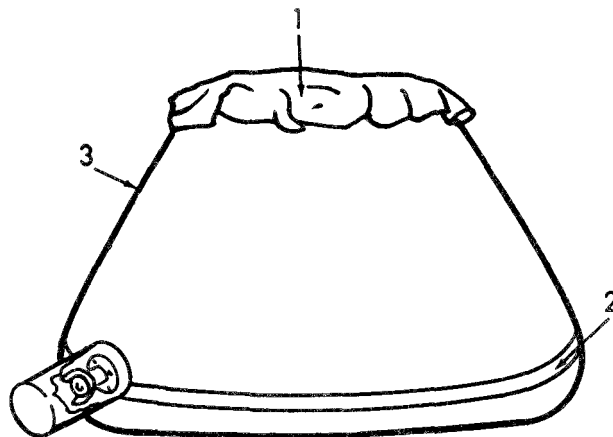
The water tank is used when a natural source of water is not readily available. After set-up of the water tank, it may be filled with water from any source of water available.

- (1) Remove the water tank (3) from shipping carton.

CAUTION

Water tank is fragile and must be handled with care. Do not pull it, drag it, or walk on it. Ensure that all debris is removed from the area before setting it up.

- (2) Place water tank (3) on a flat, debris-free surface. Position water tank so that entire tank bottom is in contact with ground. Tank is correctly positioned when solid white line (2) is visible along full circumference of tank as shown below.
- (3) Fill water tank (3) with water through opening (1) at top of tank. Check periodically for proper filling and adjust tank as required.
- (4) Install strainer end of suction hose into tank opening (1).



Water Tank Set-Up.

2-8. OPERATING PROCEDURES.

These procedures consist of the following:

- Engine Starting (page 2-24).
- Water Pressure Adjustment (page 2-26).
- Water Temperature Selection (page 2-26).
- Burner Ignition (page 2-26).
- Shutdown (page 2-29).

a. Engine Starting.

WARNING

The engine uses a variety of fuels. To prevent fire or explosion, follow these rules:

- DO NOT prime a hot engine.

The equipment exhaust opening emits carbon monoxide. To avoid illness or injury, DO NOT stand behind exhaust opening for long periods. Stay upwind of equipment.

Operate your system on a level surface.

The equipment can get very hot during operation. To avoid severe burns, DO NOT touch hot surfaces. Always wear protective gloves when operating the cleaning wand/injector with hot water/steam.

Pressure hose can whip around dangerously when decontaminating apparatus is first started. To avoid injury, secure the end of hose before starting engine.

To avoid hearing damage wear approved hearing protection as the equipment operates at a very high noise level.

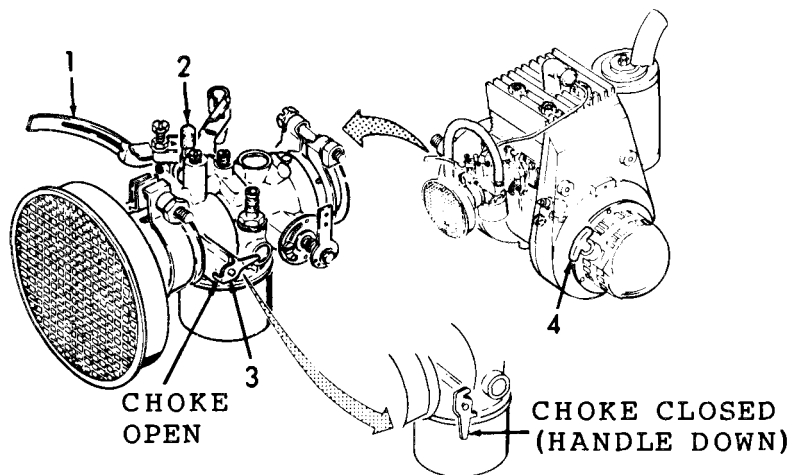
CAUTION

- Do not let the water pump or the burner fuel pump operate more than one minute without liquid flow. If this happens, shut off system. This could result in damage to the equipment.
- Do not pull starter rope all the way against the end stop as this may damage the starter.

NOTE

If the outside temperature is below 60°F (16°C), it may be necessary to close the engine choke. If choking is required, press the choke lever (3) down. Open the choke when the engine begins to run and then close it in short bursts until the engine runs smoothly.

- (1) On control panel, (see illustration next page) turn BURNER FUEL VALVE and WATER PRESS REGULATOR controls fully clockwise. Set THERMOSTAT SELECTOR switch to OFF position.
- (2) Open engine throttle (1) to one-third open.
- (3) If this is the first start of the day or if equipment has not been operated for over an hour, prime carburetor by depressing tickler (2) on the carburetor left side until fuel drips from carburetor.
- (4) Check that engine choke (3) is fully open.
- (5) Pull starter handle (4) slowly until starter engages engine. Then pull handle firmly and sharply approximately 1-1/2 feet.
- (6) Keep hold of handle, relaxing enough to let the starter spring pull the handle back down.
- (7) Repeat until engine starts.
- (8) When engine starts, increase speed by pushing down throttle lever (1) to full open position.



Engine Starting.

2-8. OPERATING PROCEDURES - Continued.

b. Water Pressure Adjustment.

NOTE

If the water pressure is too high, water will flow out of the overflow tube.

On the control panel turn the WATER PRESS REGULATOR (8) counterclockwise until WATER PRESSURE gage (7) indicates correct pressure as follows:

- (1) SHOWERS - Water pressure for showers is 44 to 58 psi (3 to 4 kp/cm²) as indicated by WATER PRESSURE gage.
- (2) CLEANING WANDS - Water pressure for cleaning wands is 73 to 100 psi (5 to 7 kp/cm²) as indicated by WATER PRESSURE gage.
- (3) INJECTOR - Water pressure for the injector is 73 to 100 psi (5 to 7 kp/cm²) as indicated by the WATER PRESSURE gage.

c. Water Temperature Selection.

WARNING

- The equipment can produce scalding water. To avoid injury, DO NOT set THERMOSTAT SELECTOR (13) to 120° position to decontaminate or shower personnel.
- Wear gloves when operating the injector and cleaning wands, as they get very hot.

NOTE

Turn thermostat selector switch (13) as indicated below.

- (1) Select 45°C if showers are used.
- (2) Select 120°C if cleaning wands or the injectors tire used.

d. Burner Ignition.

WARNING

- Cold water entering a hot heat exchanger can cause the exchanger to rupture. To avoid injury, DO NOT start the burner until water flow has started.
- To avoid fire and explosion, DO NOT press and hold START BURNER button for more than two seconds.

- (1) Verify that fuel pressure is 95 to 105 psi (7.0 to 7.2 kp/cm²) as indicated by the FUEL PRESSURE gage (11).

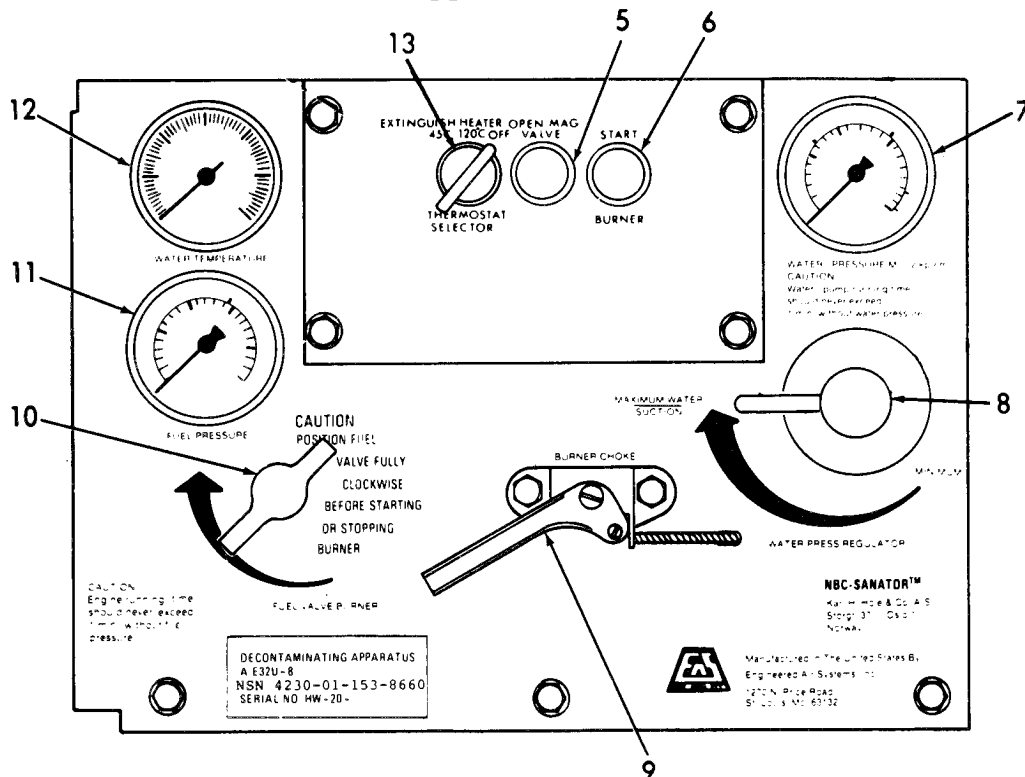
NOTE

- When a water temperature of 45°C is selected, burner will not ignite if water temperature is 32°C (90°F) or more.
 - When a water temperature of 120°C is selected, the burner will not ignite if water temperature is 100°C (212°F) or more.
- (2) Verify that burner fuel valve (10) is fully closed (turned clockwise) prior to starting burner.
 - (3) Lift BURNER CHOKE handle (9) up and hold. At the same time, press START BURNER button (6) for about one second, then release. Repeat procedure until burner ignites.
 - (4) Release BURNER CHOKE handle (9). The OPEN MAG VALVE indicator lamp (5) will light to indicate that burner is ignited,
 - (5) If showers are connected, adjust BURNER FUEL VALVE (10) as follows :

NOTE

The lag time of the WATER TEMPERATURE gage (12) is approximately one minute.

- (a) Allow unit to operate until WATER TEMPERATURE gage (12) indicates approximately 40°C (109°F).



Burner Ignition.

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|--|
| 2-8. OPERATING PROCEDURES - Continued. |
|--|

d. Burner Ignition - Continued.

- (b) Turn BURNER FUEL VALVE (10) counterclockwise until WATER TEMPERATURE gage (12) indicates between 38°C and 48°C (100°F and 118°F), or as set for required mission temperature.

NOTE

The burner will automatically shut off between a temperature of 38°C to 48°C (100°F to 118°F) when the thermostat selector switch is set to the 45°C position. The burner cannot be restarted until the water temperature drops to at least approximately 32°C (90°F). To restart burner, refer to page 2-26.

- (6) If cleaning wands are to be used, adjust the BURNER FUEL VALVE (10) as follows:

NOTE

The lag time of WATER TEMPERATURE gage (12) is approximately one minute.

- (a) Allow unit to operate until WATER TEMPERATURE gage (12) indicates approximately 120°C (248°F).
- (b) Turn BURNER FUEL VALVE (10) counterclockwise until WATER TEMPERATURE gage (12) indicates 100°C (212°F), or as set for required mission temperature.

NOTE

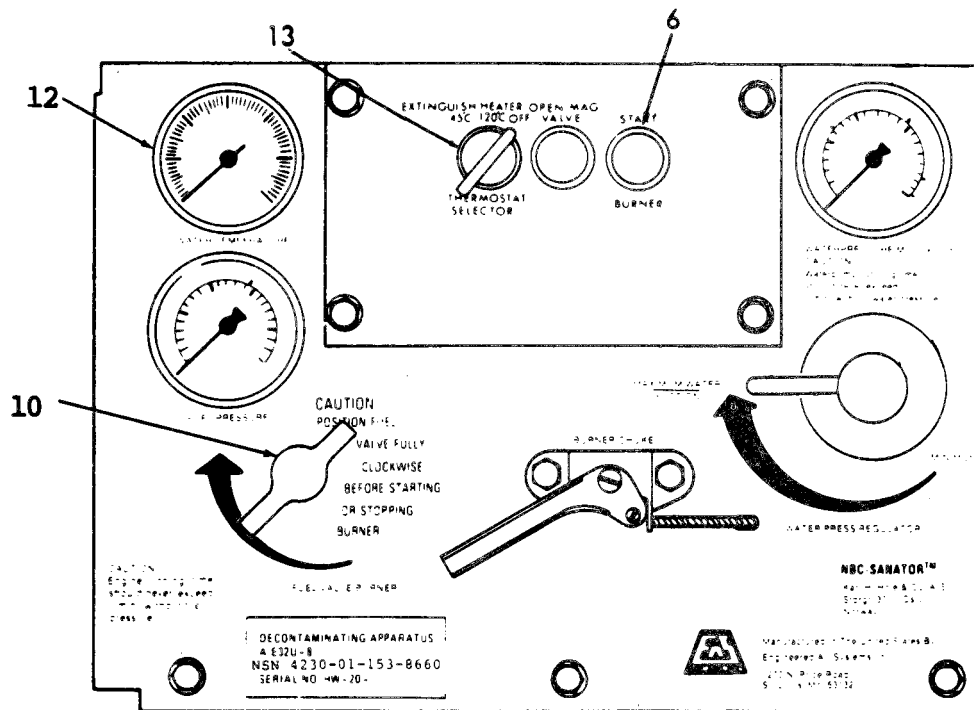
The burner will automatically shut off between a temperature of 111° C to 123°C (231°F to 253°F) when the thermostat selector switch is set to the 120°C position. The burner cannot be restarted until the water temperature drops to at least 100°C (212°F). To restart burner, refer to page 2-26.

e. Shutdown.

- (1) Turn THERMOSTAT SELECTOR (13) to OFF.
- (2) Close BURNER FUEL VALVE (10) by turning fully clockwise.

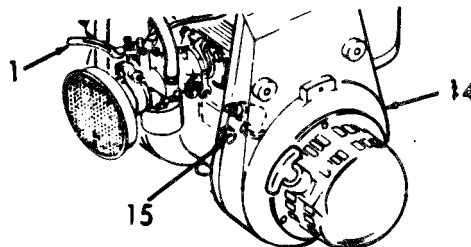
NOTE

When using cleaning wands or injector, allow engine to run and pump water through the unit until WATER TEMPERATURE gage (12) indicates less than 40°C (109°F) .



Burner Ignition/ Shutdown.

- (3) Hold throttle lever (1) in UP position, until engine (14) stops.
- (4) If engine does not stop, press engine stop switch (15) on side of engine, until engine stops.



Engine Shutdown.

2-9. PREPARATION FOR MOVEMENT.

This paragraph contains procedures for the following:

- Injector Removal (page 2-30).
- Shower Assembly Removal (page 2-31).
- Cleaning Wands Removal (page 2-31).
- Suction Hose Removal (page 2-32).
- Pressure Hose Removal (page 2-33).
- Engine Fuel Can Removal (page 2-34).
- Heater Fuel Can Removal (page 2-35).
- Water Tank Disassembly (page 2-36).

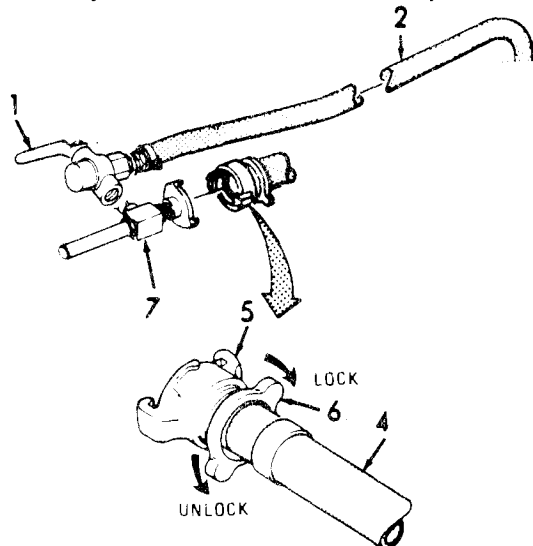
a. Injector Removal.

(1) Remove pressure hose (4) from injector (7) by turning brass ring (6) counterclockwise. Disconnect coupling (5).

(2) Clean injector (7) and clear tube (2) with clean water.

(3) Allow injector (7) to dry.

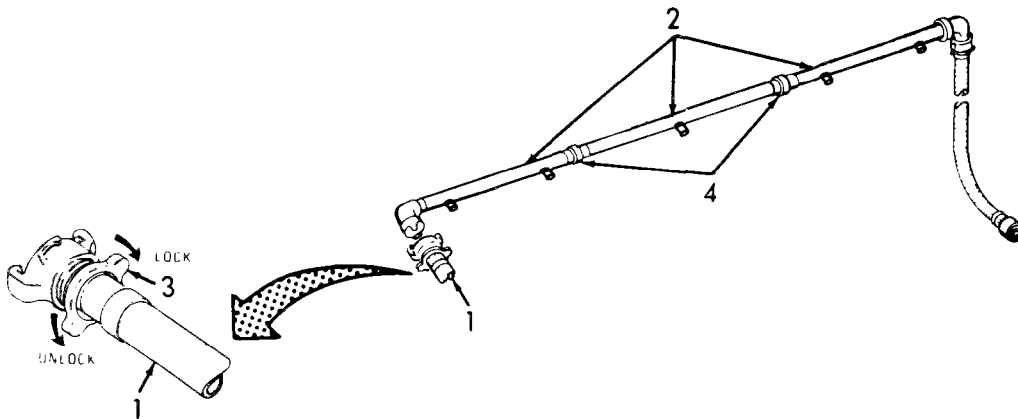
(4) Stow injector (7) in accessory case.



Injector, Removal.

b. Shower Assembly Removal and Disassembly.

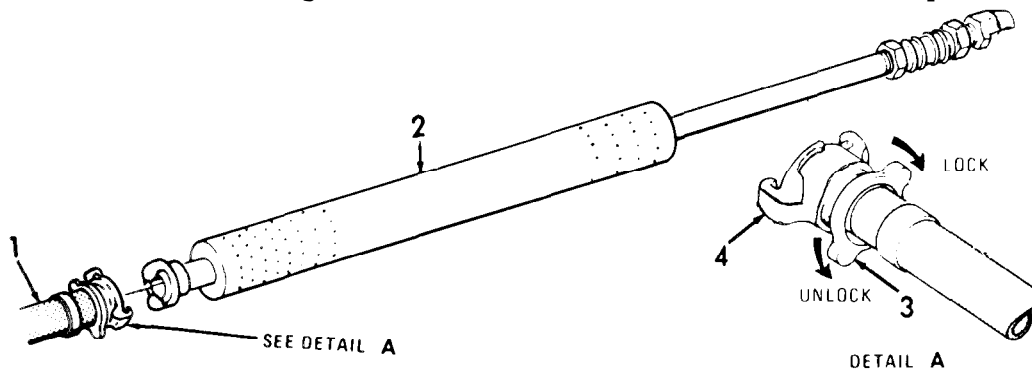
- (1) Disconnect pressure hose (1) from shower (2) by turning brass ring (3) counterclockwise and disconnecting coupling (4).
- (2) Remove shower (2) from the supporting devices.
- (3) Disconnect shower (2) segments from each other by unscrewing coupling nuts (4).
- (4) Allow shower (2) to dry completely and then stow in accessory case.
- (5) Repeat steps for other shower assembly.



Shower Assembly, Disassembly.

c. Cleaning Wands Removal.

- (1) Disconnect cleaning wands (2) and extensions (if used) from pressure hose (1) by turning brass ring (3) counterclockwise, and disconnecting coupling (4).
- (2) Clean cleaning wands (2) and extensions with clean water. Allow to dry.
- (3) Stow cleaning wands (2) and extensions in accessory case.

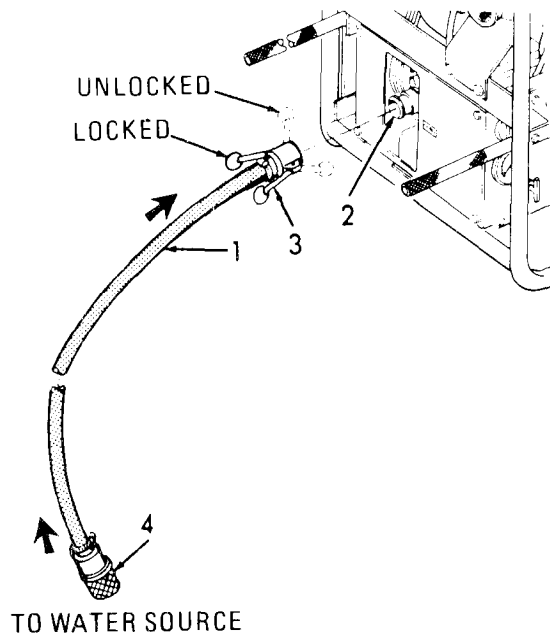


Cleaning Wands, Removal.

2-9. PREPARATION FOR MOVEMENT - Continued.

d. Suction Hose Removal.

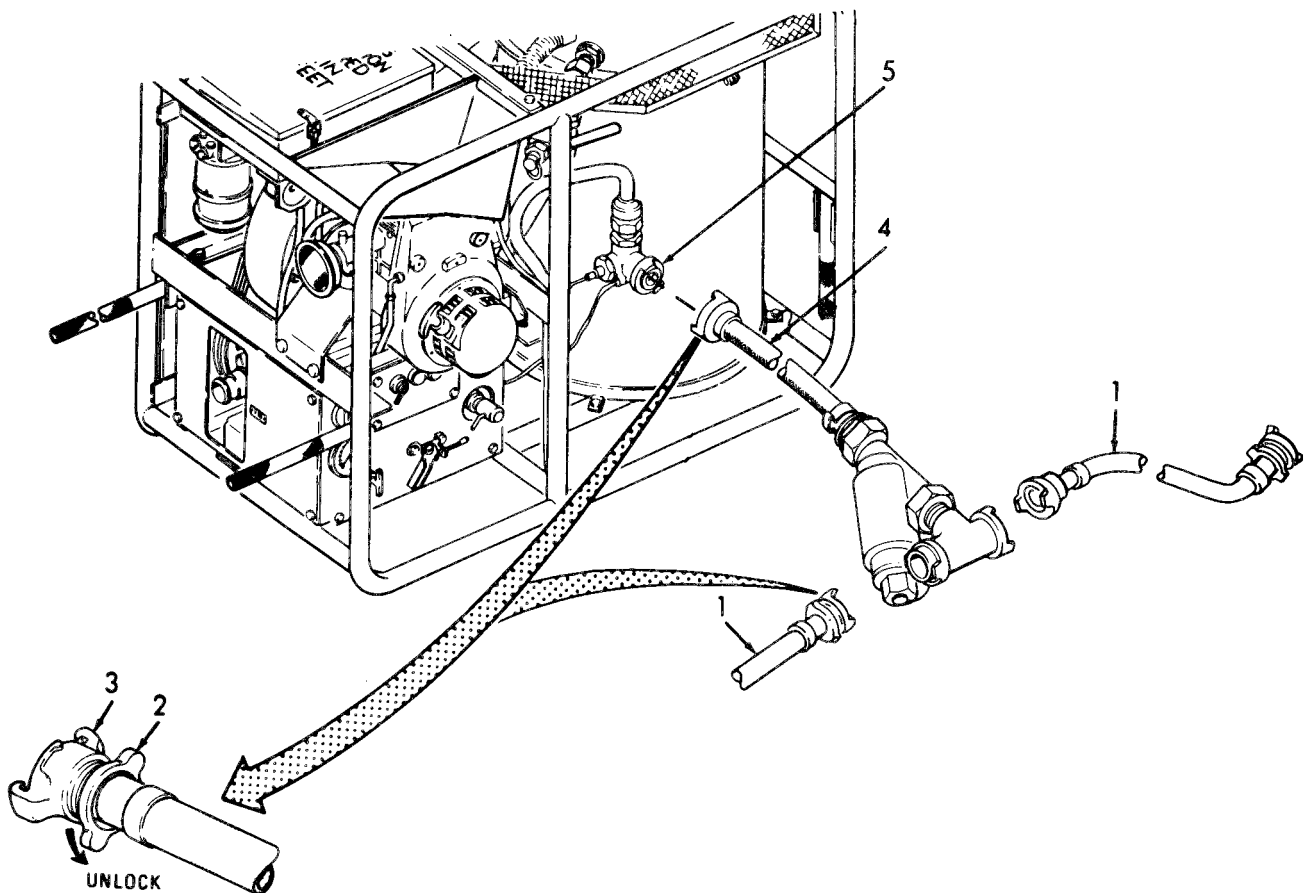
- (1) Remove suction hose (1) from water inlet (2) by pushing locking levers (3) forward.
- (2) Remove strainer end (4) from water source. Disassemble and clean strainer end (page 3-22). Reassemble and install on suction hose.
- (3) Drain and clean hose with clean water. Allow to dry.
- (4) Stow hose in accessory case.



Suction Hose, Removal.

e. Pressure Hose Removal.

- (1) Remove two pressure hoses (1) from branch hose (4) by turning brass ring (2) counterclockwise, and disconnecting coupling (3).
- (2) Drain pressure hoses (1) and clean with clean water.
- (3) Allow pressure hoses (1) to dry.
- (4) Stow pressure hoses (1) in the accessory case.
- (5) Remove branch hose (4) from water outlet (5) by turning brass ring (2) counterclockwise, and disconnecting coupling (3).
- (6) Drain branch hose (4) and clean with clean water.
- (7) Allow branch hose (4) to dry and store in accessory case.

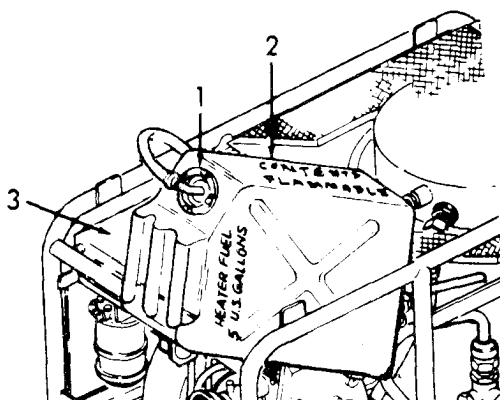


Pressure Hose, Removal.

2-9. PREPARATION FOR MOVEMENT - Continued.

f. Engine Fuel Can Removal.

- (1) Disconnect engine fuel can lid assembly (1) from engine fuel can (2).
- (2) Remove engine fuel can (2) from system and place on ground, letting end of hose drain into can. Pump ball pump to drain fuel from hose. Install cap on fuel can and place lid assembly in tray.
- (3) Restart engine and set throttle to idle. Engine will stop when carburetor and fuel lines are drained of fuel.
- (4) Store fuel can lid assembly (1) in tool box (3).



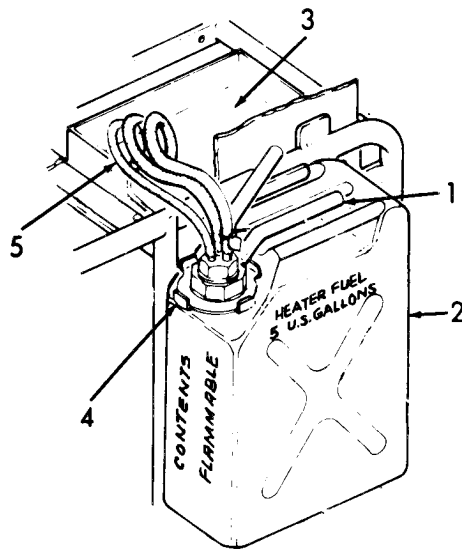
Engine Fuel Can, Removal.

g. Heater Fuel Can Removal.

- (1) Pull handles apart on upper lock (1) to unlock upper lock.
- (2) Rotate bottom lock (4) counterclockwise to unlock fuel can lid assembly from fuel can (2).
- (3) Disconnect heater fuel can lid assembly keeping lines in the can and set fuel can on the ground. Keep strainer above fuel level to allow fuel to drain.
- (4) Store fuel lines with lid assembly in tool box (3).
- (5) When engine is cooled, install the protective cover over the decontaminating unit.

NOTE

All fuel must be drained and filter removed and thrown away prior to storage or preparation for movement.



Heater Fuel Can, Removal.

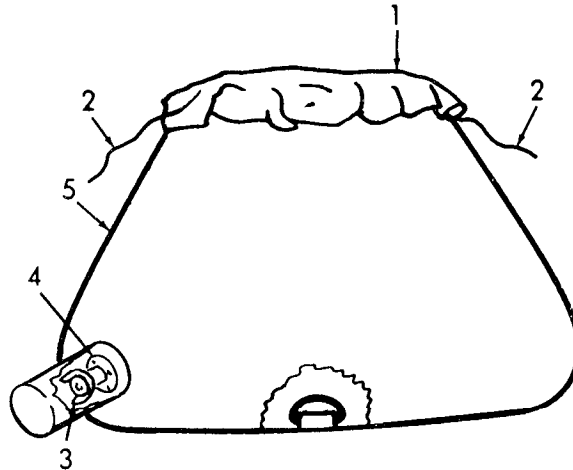
2-9. PREPARATION FOR MOVEMENT - Continued.

h. Water Tank Disassembly.

CAUTION

The water tank is fragile and must be handled with care. Do not pull, drag, or walk on it. Be sure that all debris is removed from the area before disassembling the tank.

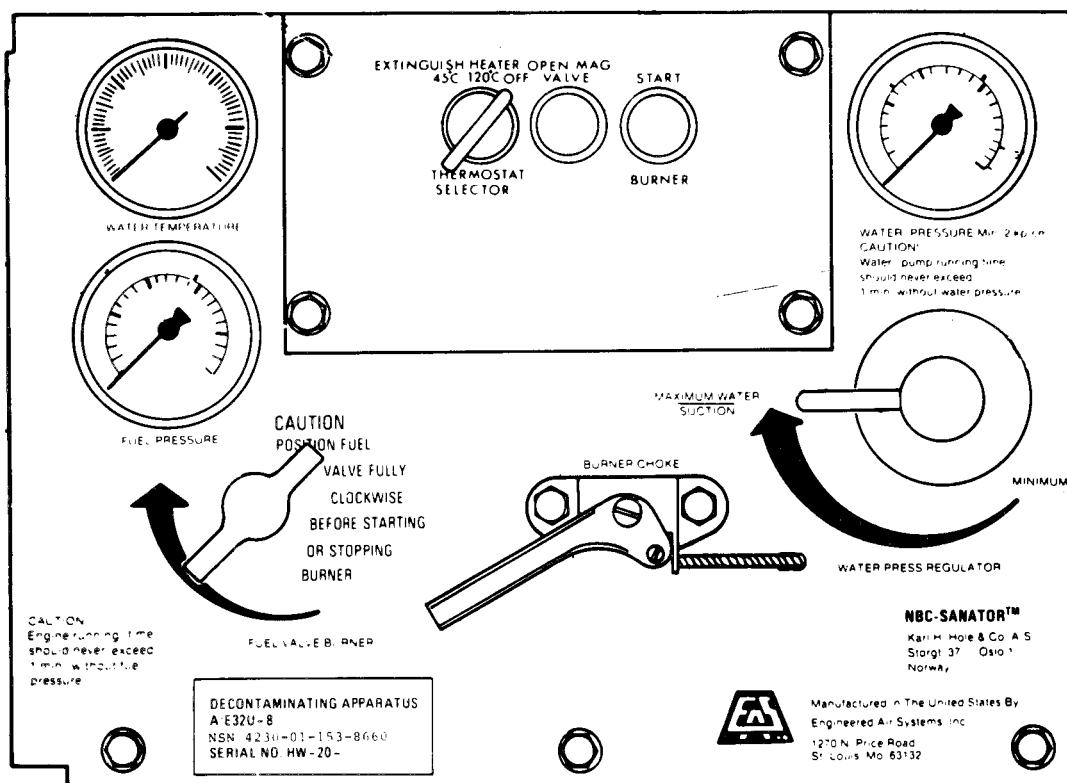
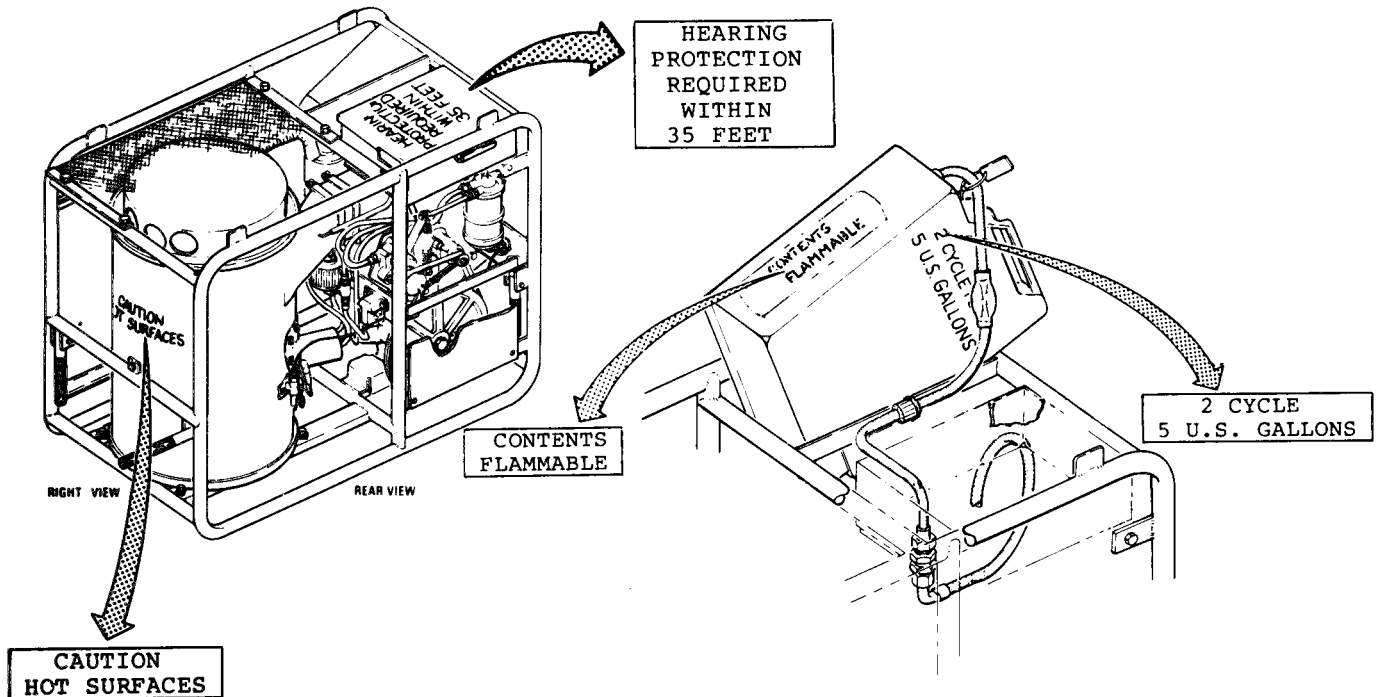
- (1) Remove cap (3) from fitting (4).
- (2) Open flapper valves on fitting (4) by pulling drain cords (2) and allow the water to drain out of tank (5).
- (3) Turn tank (5) inside out and hang from the D-ring on inside of tank to dry. Allow tank to dry completely.
- (4) Completely dust the interior with a light coat of talcum powder (item 12, Appendix E).
- (5) Turn tank (5) right side out and stow in top cover (1).



Water Tank, Disassembly.

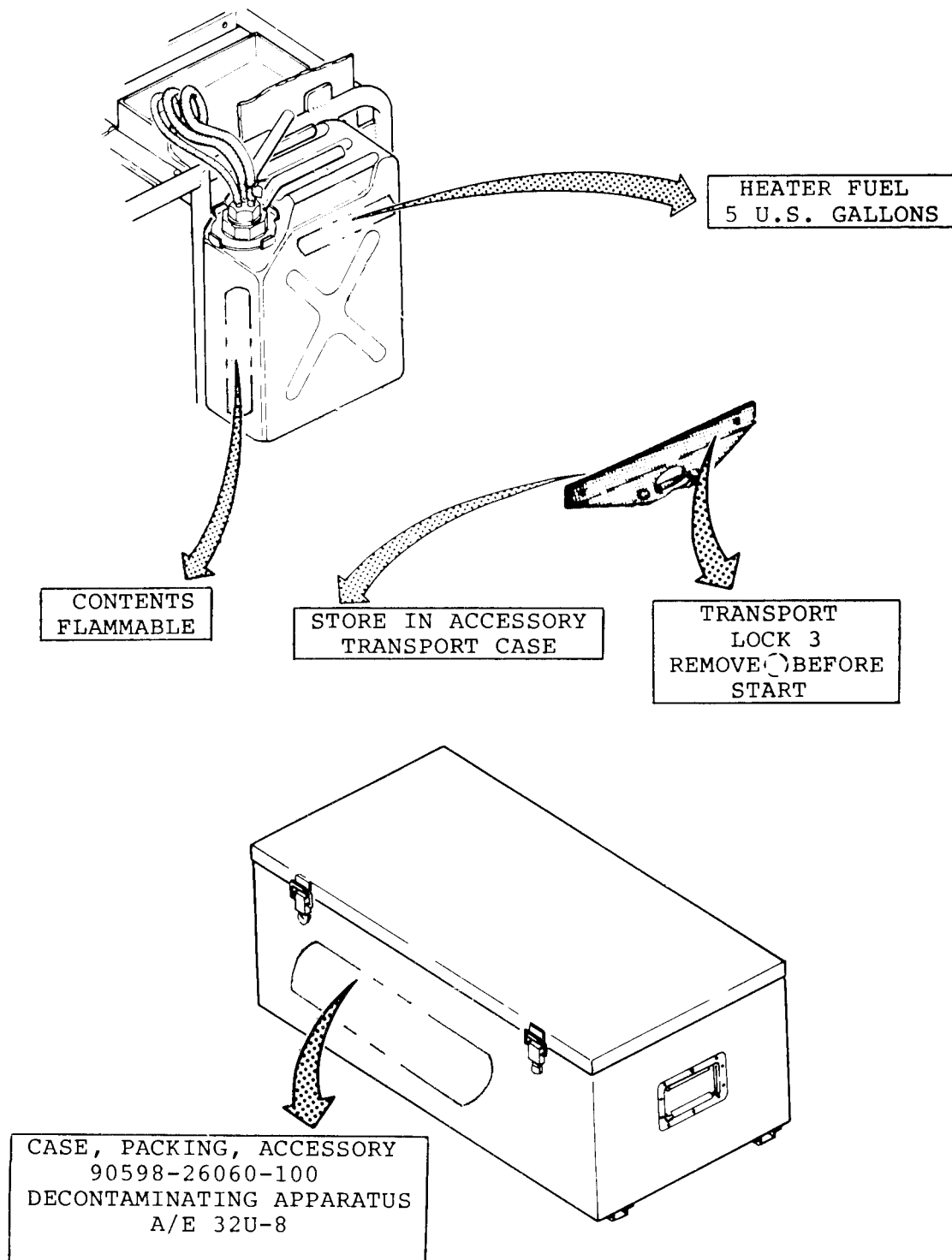
2-10. DECALS AND INSTRUCTION PLATES.

Data plates and stencils are used on the decontaminating apparatus. The text of these items and their location are indicated in this paragraph.



Stencils.

2-10. DECALS AND INSTRUCTION PLATES - Continued.



Stencils.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

| | Para | Para |
|---|------|------------------------------------|
| Operation in unusual Weather Conditions. | 2-11 | Emergency Procedures2-12 |

2-11. OPERATION IN UNUSUAL WEATHER CONDITIONS.

This paragraph contains procedures for the following:

Operation in Extreme Heat and Different Altitudes (page 2-39)

Operation in Freezing Weather (page 2-40)

Shutdown in Freezing Weather (page 2-42)

Storage in Freezing Weather (page 2-42.2)

Thawing Procedures (page 2-42.4)

Thawing Hoses and Accessories (page 2-42.5)

Operation in High Scale Deposit Environments (page 2-42.5)

Operation in Salt and High Humidity Areas (page 2-42.5).

- a. Operation in Extreme Heat and Different Altitudes.

NOTES

Keep equipment shielded from hot rays of sun by moving into a shaded area when operating. Never position one unit so that the exhaust is directed toward another unit.

When operating at elevated temperatures, the condition "vapor lock" may occur causing either the engine or burner unit to stop functioning. Vapor lock is the forming of vapor or bubbles in the suction fuel lines, thereby preventing fuel from flowing.

If vapor lock is suspected with the burner and the burner is being operated on gasoline, switch to one of the alternate fuels specified.

If vapor lock is suspected with the engine, try to cool the fuel container by covering with a wet towel, and start fuel flow by **pumping ball pump.**

Inspect the rubber hoses, tank, and other rubber components once a week for signs of wear and damage. Rubber deteriorates rapidly in extreme temperatures.

b. Operation in Freezing weather.

WARNINGS

If clothing (including hand gear) becomes wet in cold environments, the operator should immediately change from wet clothing to dry protective clothing. If this is not done, cold injury will occur.

When operating equipment in cold environments, appropriate clothing shall be worn. Appropriate clothing includes the following:

- (1) Wet weather parka (LIN N70110)
- (2) Wet weather trousers (LIN N33752)
- (3) Chemical Protective Suit (Overgarment - LIN U57960)
- (4) Petroleum, Oil & Lubrication (POL) Handler's Gloves (NSN 8415-01-150-6198 through 6201)
- (5) M3 Winterization Kit (NSN 4240-00-066-0181) with the M24/25 Protective Masks or the M4 Winterization Kit (NSN 4240-00-065-0319) with the M17 Series Protective Masks.

Avoid contact with water as much as possible; stand upwind (if possible) of water spray; use caution when connecting/disconnecting fittings; use caution when adjusting control panel.

Equipment should be placed on a level surface with provision for water runoff. The operating area for the pump unit must remain as dry as possible.

To prevent injury to personnel, make sure pressure hoses are properly connected. A separated connection can also cause fluid to spread over a large area, and slipping hazards may occur.

In cold weather, three operators are needed per system to prevent system freeze-up and operator injury. The third operator will assist the other two operators to ensure necessary operating steps are conducted in a timely manner.

Extreme caution shall be used when wearing loose clothing to prevent contact with moving parts (belts, pulleys, etc).

CAUTION

If uncertain about depth of natural water source, insert suction filter in water until it is just below surface. Restrain in this position using the chain and float provided. Ingestion of foreign matter can cause damage to the pump/heater assembly.

- (1) Make sure the pump/heater assembly is not clogged with ice. Remove drive side panel, and manually rotate water pump pulley. Reinstall drive side panel and manually rotate water pump pulley. If pulley will not rotate freely, perform thawing procedures (page 2-42.4).

- (2) Connect suction hose to water inlet, and place suction hose strainer in water source (page 2-14).
- (3) Connect branch hose to water outlet (page 2-15).
- (4) Connect pressure hoses to branch hose (page 2-16).
- (5) Install engine fuel can (page 2-21).
- (6) Install heater fuel can (page 2-22).
- (7) Verify that heater fuel filter is free of water. If needed, drain filter (page 4-42).
- (8) Set FUNCTION SELECTOR switch to OFF.
- (9) Turn BURNER FUEL VALVE fully clockwise.

CAUTION

If the equipment was flushed with antifreeze, the antifreeze must be purged from the system before operation.

- (10) Place ends of pressure hoses in 32-gal. container (Appendix D).
- (11) Prime carburetor and start engine (page 2-25) .
- (12) If engine is difficult to start or runs rough after initial start, close the choke momentarily, then open again. Repeat the open-close process until the engine runs unaided. Choke must remain open during normal operation. Do not over choke carburetor flooding may occur.
- (13) Set throttle to about 2/3 MAX speed.
- (14) Allow water to force out any antifreeze solution that is in the pump/heater assembly into container. Watch the color of the liquid going into the container. when the liquid becomes clear, quickly remove the pressure hoses from the container.
- (15) By lifting throttle, decrease engine speed until water pump pulley stops rotating.
- (16) Attach showers (page 2-17), spray wands (page 2-19) or injector system (page 2-18) as required for your mission.
- (17) set throttle to MAX.
- (18) Check all pressure hoses and connections for leaks.
- (19) Ignite burner. Refer to page 2-28 for WANDS mode, page 2-28 for INJECTOR mode or page 2-27 for SHOWER mode.

b. Operation in Freezing Weather. (Continued)

(20) If using the SHOWER mode, adjust the BURNER FUEL VALVE to maintain a temperature of 38 to 42°C (100 to 107°F) so that the burner will not automatically shut off.

(21) Check all hoses and connections for leaks.

c. Shutdown in Freezing Weather.

WARNINGS

If ambient temperature falls below 32°F while performing a mission and you cannot terminate operations, take the following precautions:

Don cold wet weather clothing IAW page 2-40.

If clothing (including hand gear) gets wet in cold environments, the operator should immediately change from wet clothing to dry protective clothing. If this is not done, cold injury will occur.

Avoid contact with water as much as possible; stand upwind, if possible, of water spray; use caution when connecting/disconnecting fittings; use caution when adjusting control panel.

The equipment should be placed on a level surface with provision for water runoff. The operating area for the pump unit must remain as dry as possible.

In cold weather, three operators are needed per system to prevent system freezeups and operator injury. The third operator will assist the other two operators to ensure the necessary operating steps are conducted in a timely manner.

Extreme caution should be used when wearing loose clothing to prevent contact with moving parts (belts, pulleys, etc).

NOTES

Shutdown under freezing conditions will require the operator and assistants to perform rapidly to prevent equipment freeze-up.

Before performing any of the following procedures, prepare at least 25 gal. of antifreeze solution by mixing 15 gal. of antifreeze with 10 gal. of water.

(1) Turn THERMOSTAT SELECTOR switch to OFF position.

(2) Turn BURNER FUEL VALVE fully clockwise.

(3) Allow outlet water temperature to cool to 40°F.

- (4) Throttle down engine to slow speed until water pump stops.
- (5) Operator places wands or showers near antifreeze solution container and removes steam jets or showers, as required . Disassembled showers or steam jets are placed in antifreeze solution.
- (6) Assistant removes suction hose and filter assembly from water source and places it in antifreeze container.
- (7) Operator holds pressure hoses near antifreeze solution container.
- (8) Assistant throttles up engine speed to MAX RPM, allowing antifreeze to push water from the system.
- (9) Operator watches for water to change to the color of antifreeze. Make sure all antifreeze goes into container.
- (10) Assistant adjusts WATER PRESS REGULATOR valve from minimum to maximum two or three times so that antifreeze can circulate in total system for about one minute.
- (11) Assistant turns WATER PRESS REGULATOR valve counterclockwise to minimum position.
- (12) Assistant manually releases pressure relief valve by pulling firmly on ring and uses a small can to catch antifreeze.
- (13) Assistant removes suction hose from antifreeze solution.
- (14) Operator holds pressure hoses up so he can see that no more antifreeze is coming from wands/showers.
- (15) Assistant throttles down engine to minimum speed. Shut off engine.
- (16) Disconnect pressure hoses, and drain as much water from them as possible. Store in storage accessory case.
- (17) Carefully disconnect branch hose, and drain into antifreeze solution container by elevating strainer end. Do not allow any foreign objects to pass into container.
- (18) Disassemble and clean branch hose strainer assembly. Carefully remove loose particles/scale from strainer body and interior of strainer element. Reassemble branch hose strainer. Rinse strainer element in water then in antifreeze, and place in storage accessory case.
- (19) Store branch hose in storage accessory case.
- (20) Remove both fuel cans from unit; drain fuel lines, and store in tool box.
- (21) Install lids on fuel cans.

c. Shutdown in Freezing Weather. (Continued)

- (22) Dismantle remainder of decontaminating apparatus; store in accessory case, and prepare for transport.

d. Storage in Freezing Weather.

WARNINGS

Don cold wet weather clothing IAW page 2-40.

If clothing (including hand gear) becomes wet in cold environments, the operator should immediately change from wet clothing to dry protective clothing. If this is not done, cold injury will occur.

Avoid contact with water as much as possible; stand upwind, if possible, of water spray; use caution when connecting/disconnecting fittings; use caution when adjusting control panel.

The equipment should be placed on a level surface with provision for water runoff. The operating area for the pump unit must remain as dry as possible.

In cold weather, three operators are needed per system to prevent system freeze-ups and operator injury. The third operator will assist the other two operators to ensure the necessary operating steps are conducted in a timely manner.

Extreme caution should be used when wearing loose clothing to prevent contact with moving parts (belts, pulleys, etc).

- (1) Mix about 15 gal. of antifreeze (Item 7, Appendix E) to 10 gal. of water in 32-gal. container (Appendix D) to obtain 60/40 antifreeze mixture.
- (2) Make sure the pump/heater assembly is not clogged with ice. Remove drive side panel, and manually rotate water pump pulley. Verify that fuel in the heater fuel filter is free of water. If needed, drain filter (page 4-42). Re-install drive side panel. If pulley will not rotate freely, perform thawing procedures (page 2-42.4).

WARNING

To prevent injury to personnel, make sure pressure hoses are properly connected. A connection that separates can also cause fluid to spread over a large area. Slipping hazards may occur.

- (3) Place suction hose strainer at bottom of antifreeze container.
- (4) Connect suction hose to water inlet (page 2-14).

- (5) Connect branch hose to water outlet coupling (page 2-15). Position hose that strainer body is resting on ground.
- (6) Connect two pressure hoses to branch hose (page 2-16).
- (7) Place ends of pressure hoses in antifreeze solution.
- (8) Place accessories required for your mission into antifreeze container. Verify that suction hose strainer is submerged in the solution.
- (9) Install heater fuel can (page 2-22).
- (10) Install engine fuel can (page 2-21).
- (11) set FUNCTION SELECTOR switch to OFF.
- (12) Turn the BURNER FUEL VALVE fully clockwise.
- (13) Prime the carburetor, and start engine (page 2-24).
- (14) If engine is difficult to start or runs rough after initial start, close the choke momentarily, then open again. Repeat the open-close process until the engine runs unaided. Choke must remain open during normal operation. Do not over choke, carburetor flooding may result.
- (15) After engine has started and is running smoothly, set throttle to MAX speed.
- (16) set FUNCTION SELECTOR switch to SHOWERS.

NOTE

Lag time of WATER TEMPERATURE gage is about one minute.

- (17) Wait until WATER TEMPERATURE gage shows about 10°C (50°F); don't exceed 20°C (68°F).
- (18) Verify that BURNER FUEL VALVE is fully clockwise.
- (19) Set FUNCTION SELECTOR switch to OFF.
- (20) Allow engine to run for 2 minutes before proceeding to next step.
- (21) Remove engine fuel can from unit, and place on ground. Drain fuel from fuel line into fuel can by squeezing ball pump.
- (22) Position fuel hose in fuel can opening so that strainer remains in fuel can, but above fuel.

d. Storage in Freezing Weather. (Continued)

- (23) Restart engine (page 2-24). Lift up on throttle lever just until water pump pulley stops rotating (idle speed).
- (24) Allow engine to run at idle speed until all fuel in fuel system is used up and engine stops.
- (25) Stow engine fuel line in storage area above engine.
- (26) Install fuel can lid on engine fuel can.
- (27) Loosen heater lid assembly from heater fuel can, and drain fuel into heater fuel can.
- (28) Remove heater fuel can from unit, and place on ground.
- (29) Stow heater fuel lid assembly in tool box.
- (30) Install lid on heater fuel can.
- (31) Remove injector, shower assembly, cleaning wads, and suction and pressure hoses from unit (pages 2-30 to 2-33).

e. Thawing procedures. If decontaminating apparatus has been exposed to freezing temperatures without having been operated, the unit could be frozen. Manually try to rotate water pump drive wheel. If drive wheel does not rotate freely, unit is frozen. Proceed to thaw as follows:

- (1) Place unit inside shelter where temperature is above freezing. Position unit on end so that heat exchanger is down, and pump inlet is pointing up.
- (2) Pour several cups of hot, undiluted antifreeze into pump inlet while trying to rotate drive wheel.
- (3) When pump rotates freely, gently try to rotate water pressure regulator valve handle. If handle does not rotate, continue to pour hot antifreeze into pump inlet until water pressure regulator handle is free to turn.
- (4) When unit has thawed and is operating, check water pump and plumbing for leaks caused by freezing. If decontaminating apparatus is damaged, make appropriate repairs prior to continuing operation.

WARNING

Never use a torch or open flame to thaw unit as it can ignite and cause injury to personnel and damage to equipment.

NOTES

If unable to heat antifreeze, allow unit to thaw naturally in a sheltered area where the temperature is above freezing.

After thawing unit, observe water pressure gage for high readings indicating contamination of branch hose strainer element by residual ice crystals.

- f. Thawing Hoses and Accessories. Hoses and accessories should be flushed with warm antifreeze until clean. Be sure branch hose strainer element is thoroughly rinsed and clear of ice particles.
- g. Operation in High Scale Deposit Environments. If at any time you detect any particles in, or a slight coating of scales on branch hose strainer element, you are in a high scale deposit environment. If operations are to be continually conducted at this site, you must descale or remove/replace according to procedures on page 4-38.
 - (1) In certain environments, you will notice an increase in high scale deposit build-up on the heater coil. More frequent inspection of the heat exchanger must be done to keep equipment in good operating condition. The heat exchanger must be inspected at a minimum of 100-operating-hour intervals for scale build-up.
 - (2) The descaling procedures should be completed first, next (B) PMCS, followed by a test to be sure equipment is operating properly after descaling.
- h. Operation in Salt and High Humidity Areas.
 - (1) Much aluminum is used in the equipment. Aluminum is subject to corrosion in areas of high salt air. To minimize damage to aluminum, wash and dry units well after exposure to salt air.
 - (2) Keep the unit clean by moving it inside a protective shed or building when salt or salt air is present. A coat of lubricant can be used to preserve exposed surfaces on the unit.

- (3) In high humidity areas, a slight decrease of the ambient temperature will cause air moisture to form condensation. Keep fuel lines well covered and engine in a warm dry area. Reduce corrosion in high humidity areas by using warm, dry storage areas. Keep the engine covered and dry as possible.

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|-----------------------------|
| 2-12. EMERGENCY PROCEDURES. |
|-----------------------------|

- a. Emergency Shutdown.

- (1) Burner Shutdown. Burner control system in this unit is normally closed and is "fail-safe". There is, however, one failure which requires a different style of burner shutdown. If burner will not extinguish when THERMOSTAT SELECTOR switch is set to OFF (OPEN MAG VALVE light remains OFF or ON). Perform the following:
 - (a) Set BURNER FUEL VALVE fully clockwise.
 - (b) Carefully loosen heater fuel can lid and lift hoses until suction, filter, and return lines are both above fuel level.
 - (c) Listen for burner to cease operation (about 2 to 5 minutes).
 - (d) Observe that no flow is coming from return line.
 - (e) Carefully position hoses so they do not drip fuel on any hot surfaces. DO NOT REPLACE INTO FUEL CAN.
 - (f) Adjust WATER PRESS REGULATOR valve to maximum clockwise position.
 - (g) Run unit until indicated temperature is 40°C or less.
 - (h) If freezing temperature exist, shutdown unit in accordance with page 2-40.
 - (i) Shut off engine.
 - (j) Notify Organizational Maintenance of malfunction.
- (2) If Engine Failure Occurs. If engine failure occurs, perform the following:
 - (a) Turn THERMOSTAT SELECTOR switch to OFF.
 - (b) Attempt to re-establish fuel flow to engine by squeezing engine fuel line ball pump until fuel appears in in-line filter. Prime carburetor and attempt to re-start.
 - (c) Check for lack of/or contaminated fuel. Replace fuel if necessary. Attempt to re-start.

| |
|---|
| 2-12. EMERGENCY PROCEDURES - Continued. |
|---|

a. Emergency Shutdown - Continued.

(2) If Engine Failure Occurs - Continued.

(d) Clean spark plug and attempt to re-start.

(3) If Burner Failure Occurs. If burner failure occurs, proceed as follows :

(a) Verify that HEATER FUEL VALVE is fully clockwise.

(b) Check for lack of fuel or contaminated fuel. Replace if required. Adjust HEATER FUEL VALVE. Drain contaminate from fuel filter. Attempt to re-start burner.

(c) Check spark plug. Change/clean and re-gap plug to 0.070. Attempt to re-start burner.

(d) Check mica window. Clean if necessary. Attempt to re-start burner.

(e) If above steps do not re-start the burner, and freezing is possible, refer to page 2-40.

(4) Any Other Emergency. To shutdown decontaminating apparatus for any other emergency, proceed as follows:

(a) Extinguish burner by turning THERMOSTAT SELECTOR switch to OFF.

(b) Wait as long as possible before stopping engine.

(c) If time permits, flush unit per page 2-40.

(d) If freezing occurs, proceed with thawing procedures per page 2-41.

b. Emergency Repair of the Water Tank.

NOTE

The use of clamp patches is for emergency use until organizational maintenance can make permanent repairs.

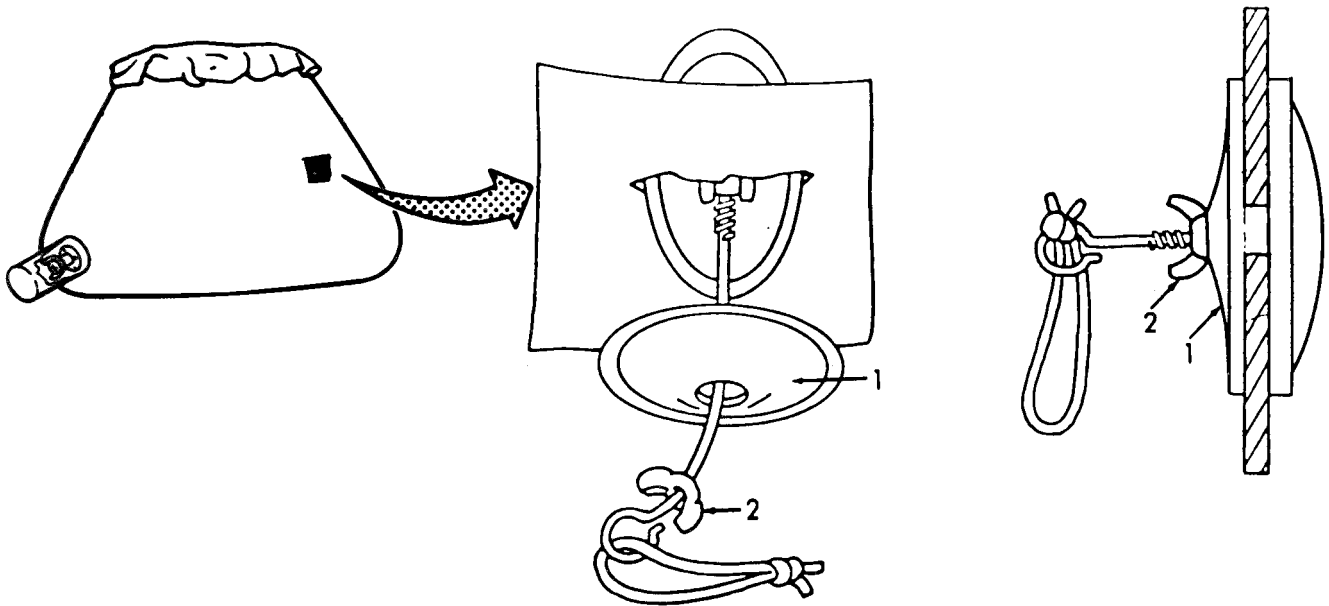
(1) Repairs can be made to tank when filled with water.

(2) Open accessory kit for water tank and select proper size clamp patch.

CAUTION

If enlargement of tank hole is required to install clamp patch, cut hole horizontally only. Enlarging the hole vertically may cause ripping and collapse of water tank.

- (3) Select smallest clamp patch that will fit through the hole. If hole is smaller than patch, enlarge the hole horizontally with knife so sealing end of clamp patch fits through the hole.
- (4) Rotate the clamp patch 1/4 turn until it covers hole.
- (5) Slide bearing plate (1) and wing nut (2) onto threaded portion and tighten wing nut until tank material is securely clamped and leak has stopped.



Clamp Patches.

- c. Refer to Appendix A for manuals on decontaminating Procedures.

CHAPTER 3
OPERATOR MAINTENANCE

Section I. Lubrication Instructions
Section II. Operator Troubleshooting Procedures
Section III. Operator Maintenance Procedures

Section I. LUBRICATION INSTRUCTIONS

3-1. GENERAL.

Lubrication for the 2-cycle engine is provided through the oil-fuel mixture. Failure to add oil to the gasoline will result in engine damage. (Refer to page 2-20.)

Section II. OPERATOR TROUBLESHOOTING PROCEDURES

| | | | |
|-------------------------------|-------|---------------------------------|-------|
| | Para. | | Para. |
| Introductory Information. . . | 3-2 | Troubleshooting Table | 3-4 |
| Symptom Index | 3-3 | | |

3-2. INTRODUCTORY INFORMATION.

- a. The table lists the common malfunctions which you may find during the operation or maintenance of the decontaminating apparatus or its components. You should perform the tests/inspections and corrective actions in the order listed.
- b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by the listed corrective actions, notify your supervisor.

3-3. SYMPTOM INDEX.

| | |
|--|----------|
| | Page No. |
| Burner choke does not return to open position | 3-12 |
| Burner lights and extinguishes when START BURNER switch is released | 3-13 |
| Burner will not extinguish when THERMOSTAT SELECTOR switch is set to OFF (OPEN MAG VALVE light is off) | 3-14 |
| Burner will not extinguish when THERMOSTAT SELECTOR switch is set to OFF (OPEN MAG VALVE light is on) | 3-14 |
| Burner will not light | 3-12 |
| Engine backfires | 3-6 |

3-3. SYMPTOM INDEX - Continued.

Page No.

| | |
|---|------|
| Engine overheats/runs irregularly | 3-6 |
| Engine runs roughly or stops | 3-3 |
| Engine will not start. | 3-2 |
| Exhaust is very dark | 3-14 |
| Fluctuating heater fuel pressure | 3-11 |
| Low engine power or speed. | 3-5 |
| Low water pressure. | 3-8 |
| No heater fuel pressure | 3-10 |
| No water pressure | 3-7 |
| No water temperature indication | 3-10 |
| Water comes out pressure relief valve | 3-9 |

3-4. TROUBLESHOOTING TABLE.

Table 3-1. Operator Troubleshooting

WARNING

Be sure to read all WARNINGS in front of the manual before troubleshooting.

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****1. ENGINE WILL NOT START.**

Step 1. Check for empty fuel can.

If fuel can is empty, fill can with proper fuel mixture. See page 2-20.

If fuel can is full, proceed to step 2.

Step 2. Check for loose spark plug lead.

If spark plug lead is loose, reattach lead to spark plug.

If spark plug lead is tight, proceed to step 3.

Step 3. Check that throttle is one-third open.

If throttle is not set to one-third open, set throttle to one-third open.

If throttle is set to one-third open, proceed to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 4. Check if carburetor is primed when engine is cold.

If carburetor is not primed, squeeze ball pump and press tickler until fuel flows from the carburetor.

If carburetor is primed, proceed to step 5.

Step 5. Check that engine choke is closed in cold weather and open in hot weather or when engine is warm.

If choke is not set properly, set choke.

If choke is set properly, proceed to step 6.

Step 6. Check for flooded engine/fouled spark plug.

Remove spark plug and examine electrodes. If they appear wet, the engine may be flooded.

Dry spark plug and pull recoil starter several time to purge excess fuel from cylinder.

If the plug has excessive accumulation of deposits around electrodes, clean deposits from spark plug electrodes with wiping rag, abrasive paper or wire brush. Rinse spark plug electrodes in solvent, dry plug, regap to .030 (.75mm) inches and reinstall plug finger tight plus 1/8 turn.

Attempt to restart engine. Be sure choke is open.

If engine will not start, proceed to step 7.

Step 7. Check for contaminated or clogged fuel filter.

Water can be seen as a separate layer below fuel level within filter. If filter is contaminated, drain filter by back-draining fuel system:

Remove lid from fuel container. Let fuel hose hang. Do not let strainer end of hose come in contact with ground. Keep fuel filter in vertical position and allow fuel and water contamination to drain when ball is squeezed. After draining, reinsert assembly in fresh fuel container. Reprime system and attempt to start.

If engine does not start, notify organizational maintenance.

2. ENGINE RUNS ROUGHLY OR STOPS.

Step 1. Check fuel can is not empty.

If fuel can is empty, fill it.

If fuel can is not empty, proceed to step 2.

Table 3-1. Operator Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

2. ENGINE RUNS ROUGHLY OR STOPS - Continued.

Step 2. Check for loose spark plug lead.

If spark plug lead is loose, reattach lead to spark plug.

If spark plug lead is tight, proceed to step 3.

Step 3. Check that choke is open.

If choke is closed, open choke.

If choke is open, proceed to step 4.

Step 4. Check that fuel is flowing from fuel can into carburetor and inspect for leaking hose.

If fuel is not flowing into carburetor, squeeze ball pump to break vapor lock.

If hose leaks, notify organizational maintenance to replace defective hose.

If fuel is flowing into carburetor and hose does not leak, proceed to step 5.

Step 5. Check for loose fuel line fittings.

Check that all fittings, including ball pump, are tight to prevent air from entering engine fuel lines.

If fuel lines are cut or damaged notify organizational maintenance for replacement.

If fuel lines are acceptable, proceed to step 6.

Step 6. Check for clogged air filter.

If air filter is clogged, notify organizational maintenance.

If air filter is not clogged, proceed to step 7.

Step 7. Check for contaminated fuel and fuel filter. Water contamination will make the filter appear cloudy.

If fuel is contaminated, remove existing fuel can and install new fuel can with uncontaminated fuel.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

If filter is contaminated, remove lid and fuel hose from container, hang in any available container to drain contaminated fuel. Retain fuel filter after draining.

If fuel is not contaminated, proceed to step 8.

Step 8. Check for fouled spark plug.

If spark plug is fouled, clean and re-gap to 0.030 inch (.75mm).

If plug is not fouled, proceed to step 9.

Step 9. Check for clogged fuel tank air vent.

Air must enter the tank between the tank lid and fuel line holder.

Clean any accumulation of foreign matter, ice, or snow, from around fuel line holder and tank lid. Be sure fuel lineholder spins freely within the lid.

If fuel tank air vent is not clogged, proceed to step 10.

Step 10. Check for blockage of engine cylinder fins and head fins.

If engine cylinder fins and head fins are clogged with leaves, grasses, etc., the engine will overheat. Clean all foreign matter from around engine cooling fins.

If engine is clean and still runs roughly or stops, notify organizational maintenance.

3. LOW ENGINE POWER OR SPEED.

Step 1. Check for correct throttle position.

If throttle is closed, open throttle.

If throttle is open, proceed to step 2.

Step 2. Check for closed choke.

If choke is closed, open choke.

If choke is open, proceed to step 3.

Step 3. Check for contaminated fuel.

Refer to MALFUNCTION 2, Step 7.

If fuel is not contaminated, notify organizational maintenance.

Table 3-1. Operator Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

3. LOW ENGINE POWER OR SPEED - Continued.

Step 4. Check for presence of 2-cycle oil in fuel.

The 2-cycle oil is tinted and will produce an aqua-tint to the gasoline when mixed. A slight tint to fuel, however, does not mean that oil has been added, as some gasoline is tinted. If in doubt of the fuel mix, pour the engine fuel mix into the burner fuel can and re-mix fuel for the engine. Refer to page 2-20.

If fuel is properly mixed, notify organizational maintenance.

4. ENGINE BACKFIRES.

Step 1. Check for contaminated or wrong grade of fuel.

If fuel is contaminated or wrong grade, replace fuel with fresh, uncontaminated fuel of correct grade. (See MALFUNCTION 2, Step 7).

If fuel is not contaminated and is of correct grade, proceed to Step 2.

Step 2. Check engine spark plug for fouling.

If plug is fouled, clean or replace plug.

If plug is not fouled, notify organizational maintenance.

5. ENGINE OVERHEATS/RUNS IRREGULARLY.

Step 1. Check for correct fuel mixture.

If fuel mixture is incorrect, use correct oil and gasoline mixture (see MALFUNCTION 3, Step 4).

If fuel mixture is correct, proceed to step 2.

Step 2. Check to see if engine cooling fins are blocked.

Engine is air cooled; cylinder fins and head fins must be free of debris.

If blockage exists use small screwdriver to clean debris from around cooling fins. Excessive blockage may require removing engine fan cover for adequate cleaning.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

If engine cooling fins are not blocked, proceed to step 3.

Step 3. Check to see if fuel tank air vent is clogged.

Air enters tank between fuel tank lid and fuel line holders. Holder should spin freely in lid and be free of debris, ice or snow.

If debris is present, clean around fuel line holder and fuel tank lid.

If engine still overheats or runs irregularly, contact organizational maintenance.

6. NO WATER PRESSURE.

Step 1. Check suction hose for proper positioning or clogged strainer.

If suction hose is not properly positioned, reposition water hose.

If suction hose strainer is clogged, clean strainer (refer to page 3-22).

Step 2. Check control panel WATER PRESS REGULATOR setting.

If control panel WATER PRESS REGULATOR is not set fully clockwise, turn fully clockwise.

If control panel WATER PRESS REGULATOR is set fully clockwise, proceed to step 3.

Step 3. Check that engine speed is not too low.

If engine speed is low, increase engine speed by adjusting throttle.

If engine speed is normal, proceed to step 4.

Step 4. Check for loose suction hose and connections.

If hose is loose, tighten hose connections.

If hoses are tight, proceed to step 5.

Step 5. Check for loose or broken water pump drive belts.

If drive belts are loose, adjust belt tension.

If drive belts are broken, notify organizational maintenance.

If drive belts are not loose or broken, proceed to step 6.

Table 3-1. Operator Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

6. NO WATER PRESSURE - Continued.

Step 6. Check for clutch engagement.

Clutch engagement occurs at approximately 1/2 throttle position or 2700 rpm. The pump pulley will start to turn when pump engagement occurs.

If no pulley movement is observed, notify organizational maintenance.

If pulley movement is observed, proceed to step 7.

Step 7. If temperature is below freezing, ice may have formed in water pump.

If ice is in water pump, thaw the unit (see page 2-41).

If there is no ice in water pump, or if temperature is above freezing, contact organizational maintenance.

7. LOW WATER PRESSURE.

Step 1. Check control panel WATER PRESSURE REGULATOR setting.

If valve is improperly set, adjust valve for desired reading on control panel WATER PRESSURE gage.

If valve is properly set or adjusting valve does not change pressure indication, proceed to step 2.

Step 2. Check that engine speed is not too low.

If engine speed is low, increase engine speed by adjusting throttle.

If engine speed is normal, proceed to step 3.

Step 3. Check for loose or worn water pump drive belts.

If drive belts are loose, adjust belt tension (refer to page 3-16).

If drive belts are worn, notify organizational maintenance.

If drive belts are not loose or worn, proceed to step 4.

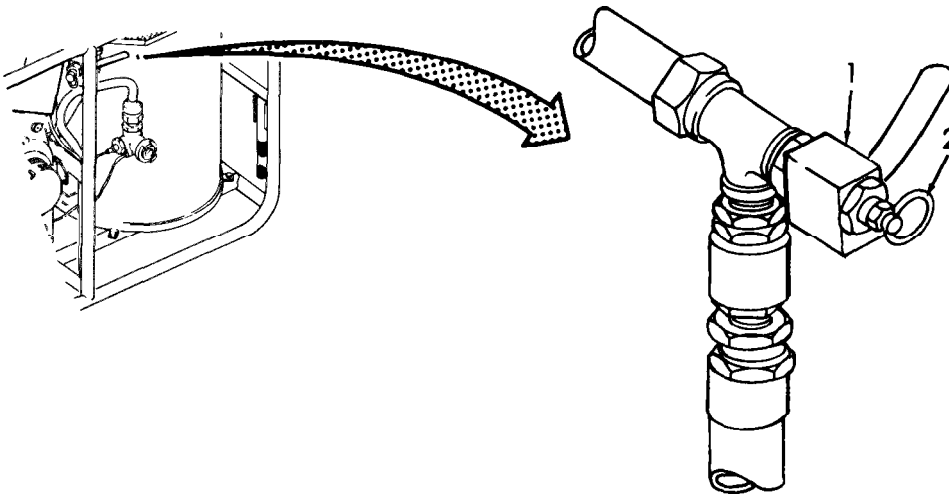
| MALFUNCTION | TEST OR INSPECTION | CORRECTIVE ACTION |
|-------------|--------------------|-------------------|
|-------------|--------------------|-------------------|

Step 4. Check for clogged suction hose strainer.

If suction hose strainer is clogged, clean strainer (refer to page 3-22) .

8. WATER COMES OUT PRESSURE RELIEF VALVE.

Step 1. Check that manual pressure relief valve (1) plunger is seated by pulling out plunger ring (2) and letting it snap back.



If plunger is seated, proceed to step 2.

Step 2. Check WATER PRESS REGULATOR valve setting.

If pressure exceeds 100 psi, readjust water pressure regulator valve.

If water pressure is correct, proceed to step 3.

Step 3. Check for kinked branch or pressure hoses.

If hoses are kinked, straighten hoses.

If hoses are not kinked, proceed to step 4.

Table 3-1. Operator Troubleshooting - Continued

| MALFUNCTION | TEST OR INSPECTION | CORRECTIVE ACTION |
|-------------|--------------------|-------------------|
|-------------|--------------------|-------------------|

8. WATER COMES OUT PRESSURE RELIEF VALVE - Continued.

Step 4. Check for blocked output nozzles in cleaning wands and shower bars.

If the output nozzles are blocked, clean wands.

If the output nozzles are clean, proceed to step 5.

Step 5. Check for blocked branch hose strainer.

If blocked, clean strainer (refer to page 3-23).

If strainer is clean, proceed to step 6.

Step 6. If temperature is below freezing, check for ice in pressure hose, cleaning wands, branch hose strainer, or shower bars.

If ice is present, thaw out frozen components (see page 2-41).

If above steps do not correct malfunction, notify organizational maintenance.

9. NO WATER TEMPERATURE INDICATION.

Step 1. Check for lit burner.

If burner is not lit, light the burner and check that control panel OPEN MAG VALVE indicator is lit.

If the burner is lit and hot water is being produced, notify organizational maintenance.

10. NO HEATER FUEL PRESSURE.

Step 1. Check for empty fuel can.

If fuel can is empty, fill can with fuel.

If the fuel can is not empty, proceed to step 2.

Step 2. Check for loose fuel pump drive belt.

If fuel pump drive belt is loose, tensioner spring is broken; notify organizational maintenance.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

If fuel pump drive belt is not loose, proceed to step 3.

Step 3. Check for loose fuel pump assembly and fittings.

If either assembly or fittings are loose, tighten.

If assembly is tight, proceed to step 4.

Step 4. Check for clogged or contaminated fluid filter.

If fluid filter is clogged, drain contaminants from filter fuel bowl (refer to page 3-21).

Inspect fluid filter for clogging. If filter is clogged, notify organizational maintenance.

If fluid filter is clean, proceed to step 5.

step 5. Check fuel lines for loose connections.

If connections are loose, tighten connections.

If fuel line connections are tight, notify organizational maintenance.

Step 6. Check for vapor lock.

If vapor lock condition is suspected, cool burner fuel can by covering with a wet towel.

If outside air temperature is above 100°F, use diesel as alternate burner fuel.

11. FLUCTUATING HEATER FUEL PRESSURE.

Step 1. Check for a low fuel supply.

If fuel supply is low, add more fuel.

If fuel supply is not low, proceed to step 2.

Step 2. Observe temperature of heater fuel container.

If container feels warm to the touch, (approximately 80°F (28°C) or hotter), switch to alternate fuel specified (diesel, jet fuel, or kerosene).

If temperature of heater fuel container is correct, proceed to step 3.

Table 3-1. Operator Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

11. FLUCTUATING HEATER FUEL PRESSURE - Continued.

Step 3. Check for water contamination in fluid filter bowl.

If fuel is contaminated in filter bowl, drain fluid filter bowl (refer to page 3-21).

If filters are clogged, notify organizational maintenance.

Step 4. Check for loose fuel line fittings.

If fuel line fittings are loose, tighten with tools provided in tool pouch .

If fittings are tight, notify organizational maintenance.

12. BURNER CHOKE DOES NOT RETURN TO OPEN POSITION.

If above condition exists, notify organizational maintenance.

13. BURNER WILL NOT LIGHT.

Step 1. Check fuel valve setting.

If fuel valve is not fully clockwise, turn clockwise.

If fuel valve is fully clockwise, proceed to step 2.

Step 2. Check that control panel THERMOSTAT SELECTOR switch is not in OFF position.

If control panel THERMOSTAT SELECTOR switch is in OFF position, set switch to proper setting.

If control panel THERMOSTAT SELECTOR switch is set to proper setting proceed to step 3.

Step 3. Check for low fuel supply.

If fuel tank is empty, add more fuel.

If fuel supply is full, proceed to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 4. Check FUEL PRESSURE gage for correct fuel pressure indication (100-106 psi).

If fuel pressure is not correct, refer to MALFUNCTION 10 (NO HEATER FUEL PRESSURE).

If fuel pressure is correct, proceed to step 5.

Step 5. Check for high water temperature.

If water temperature has exceeded the temperature specified on the THERMOSTAT SELECTOR switch, burner will extinguish and cannot be relit until water temperature is decreased to below 40°C.

Continue operating pump until water temperature is decreased and attempt to reignite burner.

If water temperature is not above thermostat setting, proceed to step 6.

Step 6. Check for contaminated fuel.

If fuel is contaminated, replace fuel with fresh, uncontaminated fuel. Drain contaminated fuel from fluid filter bowl (refer to page 3-21).

If fuel is not contaminated, proceed to step 7.

Step 7. Check for proper fuel.

If diesel fuel is in the heater fuel container, observe temperature of heater fuel container. If container is cool to touch (approximately 60°F (15°C) or colder), replace fuel with MOGAS.

If fuel is correct, notify organizational maintenance.

Step 8. Check for fouled burner spark plug.

Check gap. Regap to .070. Clean spark plug.

If spark plug is not fouled, notify organizational maintenance.

14. BURNER LIGHTS AND EXTINGUISHES WHEN START BURNER SWITCH IS RELEASED.

Step 1. Check for correct water temperature and pressure.

If outlet water temperature is too high for thermostat selector setting (see MALFUNCTION 13, step 5), continue to pump water until system has cooled.

Table 3-1. Operator Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

14. BURNER LIGHTS AND EXTINGUISHES WHEN START BURNER SWITCH IS RELEASED - Continued.

Step 1. Check for correct water pressure - Continued.

If water pressure is incorrect, adjust WATER PRESS REGULATOR valve until correct pressure is obtained.

If water pressure is correct, notify organizational maintenance.

15. BURNER WILL NOT EXTINGUISH WHEN THERMOSTAT SELECTOR SWITCH IS SET TO OFF. (OPEN MAG VALVE LIGHT IS OFF).

Step 1. Check that BURNER FUEL VALVE is fully clockwise.

If BURNER FUEL VALVE is not fully clockwise, turn fully clockwise.

If BURNER FUEL VALVE is fully clockwise, proceed to step 2.

NOTE

When diesel fuel is used at low heat input level the burner may continue to burn for approximately two (2) minutes. Keep engine running until heat exchanger exhaust is relatively cool and no light is visible in burner sight glass.

Step 2. If fuel is suspected of flowing with THERMOSTAT SELECTOR switch set to OFF, refer to emergency shutdown (page 2-43) and notify organizational maintenance.

16. BURNER WILL NOT EXTINGUISH WHEN THERMOSTAT SELECTOR SWITCH IS SET TO OFF (OPEN MAG VALVE LIGHT IS ON).

Refer to emergency shutdown procedures (page 2-43) and notify organizational maintenance if above condition exists.

17. EXHAUST IS VERY DARK.

NOTE

When the decontaminating apparatus is used at altitudes above 1000 ft., less fuel combustion will be required. Continued operation at maximum fuel will lead to carbon formation in/on the coil assembly.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 1. Reduce burner fuel flow by turning the control panel BURNER FUEL VALVE counterclockwise.

If exhaust remains very dark, proceed to step 2.

Step 2. Check that engine speed is not too low.

If engine speed is too low, open throttle and increase engine speed.

If above steps do not correct the malfunction, notify organizational maintenance.

Section III. OPERATOR MAINTENANCE PROCEDURES

TASK INDEX

| <u>Task Ref.</u> <u>(para.)</u> | <u>Task</u> | <u>Task Ref.</u> <u>(page)</u> |
|------------------------------------|---|-----------------------------------|
| 3-5 | General | 3-15 |
| 3-6 | Decontaminating Apparatus | 3-15 |
| 3-7 | Water Tank | 3-18 |
| 3-8 | Engine Fuel System (Filters and Strainer) . . . | 3-19 |
| 3-9 | Burner Fuel System (Fluid Filter) | 3-21 |
| 3-10 | Suction Hose Strainer Cleaning | 3-22 |
| 3-11 | Branch Hose Strainer Cleaning | 3-23 |

3-5. GENERAL.

This section contains the procedures for performing the operator maintenance functions.

3-6. DECONTAMINATING APPARATUS.

a. Drive Belts.

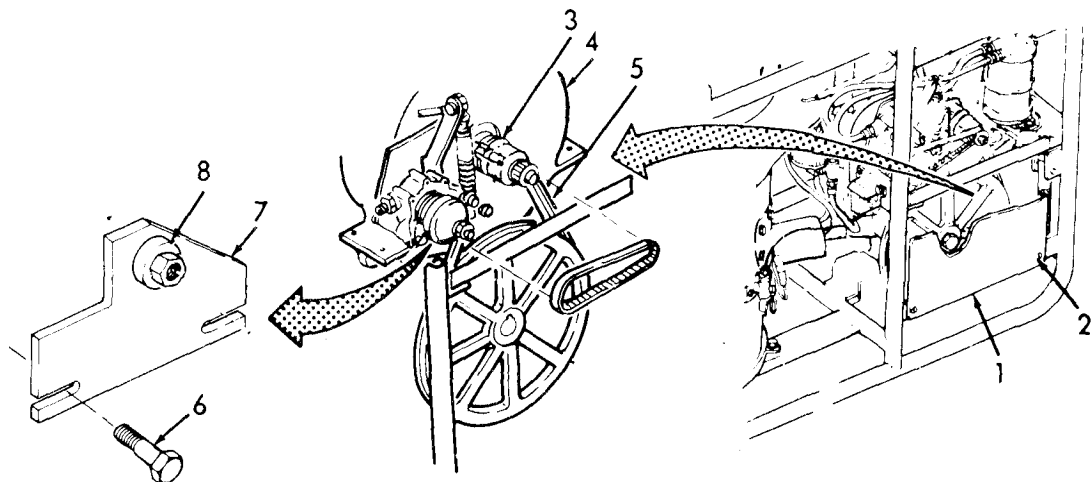
(1) Introduction.

This paragraph contains the procedures for adjustment of the decontaminating apparatus drive belts.

3-6. DECONTAMINATING APPARATUS - Continued.

(2) Adjustment.

- (a) Release four fasteners (2) and remove panel (1).
- (b) Loosen water pump belt tensioner attaching bolts (6). Move tensioner (7) as far to left as possible.
- (c) Move water pump belt tensioner (7) to the right until roller (8) just touches belts (5).
- (d) Move tensioner (7) an additional 1/4 inch to the right and securely tighten bolts (6). Replace panel.
- (e) Start engine and run unit for approximately 30 minutes.
- (f) Shut unit down and carefully reach in and touch fan hub (3). (This hub is the drive pulley for the water pump.) If hub surface is warm to touch, belts (5) need to be tightened.
- (g) Tighten belts as follows:
 - (1) Using any sharp pointed instrument available, scribe position of left end of tensioner (7) on fan housing (4).
 - (2) Slightly loosen two attaching bolts (6), but do not remove.
 - (3) Push tensioner (7) 3/16 to 1/4 inch further to the right and while holding in place, securely tighten attaching bolts (6).
 - (4) Repeat steps (e) and (f) to verify adjustment.
- (h) Reinstall panel (1) and lock four fasteners (2).



Drive Belts, Adjustment.

b. Cleaning Spark Plugs.

NOTE

Same procedure for cleaning spark plugs will be followed on engine and burner.

- (1) Allow engine to cool down prior to performing this procedure.

CAUTION

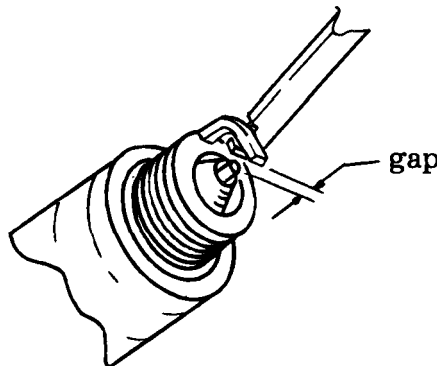
DO NOT PULL ON SPARK PLUG CABLE AS THIS COULD BREAK THE CONDUCTOR INSIDE.

- (2) Disconnect spark plug cable by pulling spark plug cap off spark plug.

CAUTION

BE SURE THAT NO DIRT FALLS INTO THE SPARK PLUG HOLE.

- (3) Use spark plug wrench to unscrew spark plug from engine cylinder head or burner weldment. Make sure metal sealing washer is attached to plug.
- (4) Use wire brush to clean carbon deposits from electrode area of the plug. Dip threaded portion of plug into solvent to wash away carbon residue. Allow plug to air dry.
- (5) Inspect plug for cracked insulator. Use feeler gage to check gap between the electrodes. This gap should be .030 in. for engine plug and .070 in. for burner plug. Obtaining a gap of .070 in. will require combining several blades (i. e. .030 in. + .025 in. + .015 in.) of gap gage. Use gap gage to change plug gap if required.



- (6) Be sure metal gasket is in place on plug prior to installation. Screw plug in as far as possible by hand. Tighten firmly with spark plug wrench (approximately 1/8 turn beyond handtight). Push spark plug cap squarely over plug end.

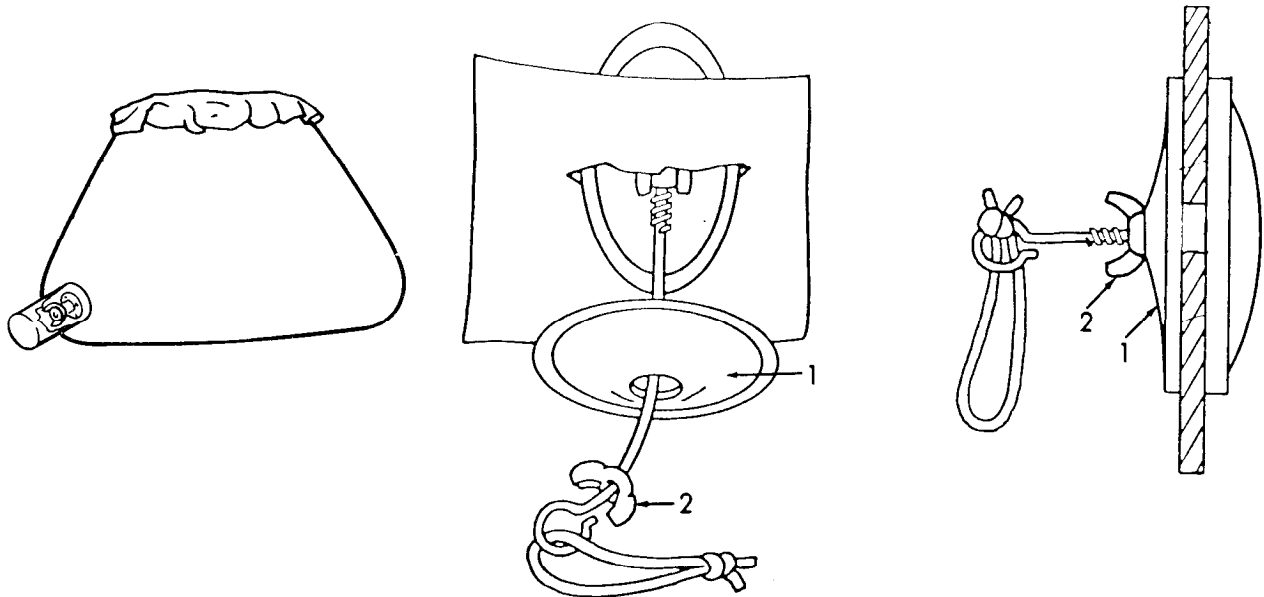
3-7. WATER TANK.

- a. Repair water tank in accordance with instructions on water tank repair kit located in storage accessory box.

NOTE

The use of clamp patches in the accessory kit are for emergency use until organizational maintenance can make permanent repairs. The following procedures define repair with the clamp patches.

- (1) Repairs can be made to tank when filled with water.
- (2) Open repair kit and select proper size clamp patch.
- (3) Select smallest clamp patch that will fit through hole. If hole is smaller than smallest patch, enlarge the hole horizontally as shown with knife so sealing end of clamp patch fits through the hole.
- (4) Rotate the clamp patch 1/4 turn until it covers hole.
- (5) Slide bearing plate (1) and wing nut (2) onto threaded portion and tighten wing nut until tank material is securely clamped and leak has stopped.



Clamp Patches.

3-8. ENGINE FUEL SYSTEM (FILTERS AND STRAINER).

a. Introduction.

This paragraph contains procedures for removal, cleaning, inspection, and installation of the engine fuel system filter and strainers.

b. Removal.

- (1) Remove lid assembly (1) from fuel can and allow strainer to remain in can.
- (2) Remove fuel can from bracket and place on ground so that fuel strainer is above fuel level in can.
- (3) Pump ball pump to drain fuel from hose, filter, and ball pump.
- (4) Pull strainer (3) from hose (2).

c. Cleaning.

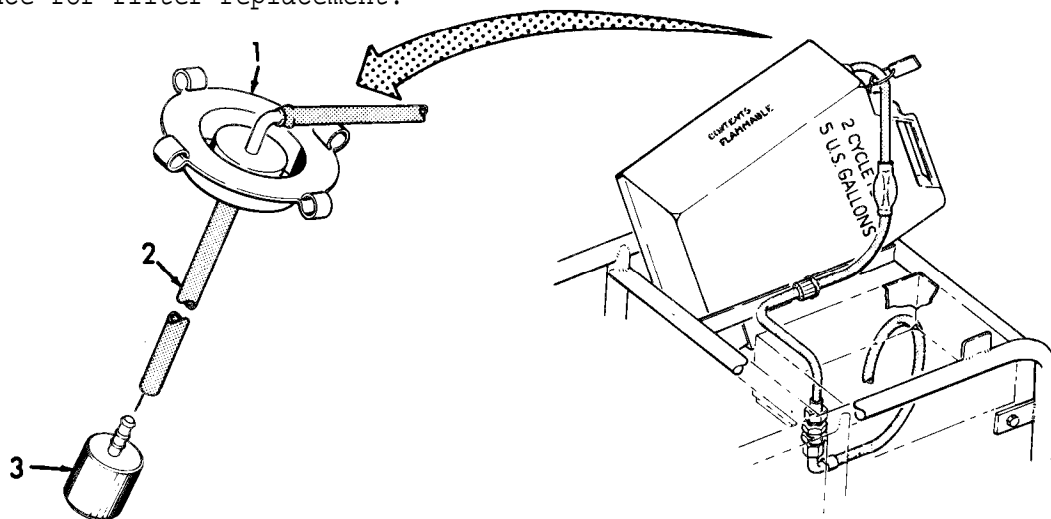
WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

Wash strainer in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E).

NOTE

Cleaning of the filter is limited to back draining (accomplished in b-3 above). If back draining does not correct fuel system problems, refer to organizational maintenance for filter replacement.



Engine Fuel Strainer, Removal.

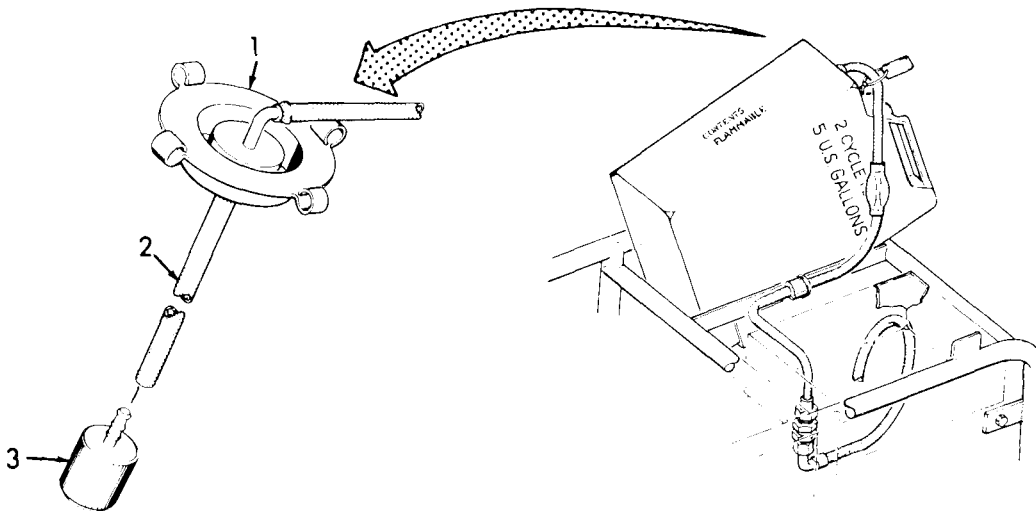
3-8. ENGINE FUEL SYSTEM (FILTERS AND STRAINER) - Continued.

d. Inspection.

- (1) Inspect hose ends for cracks.
- (2) Inspect strainer for damaged screen.
- (3) Inspect lid assembly for missing gasket on broken fuel outlet.
- (4) Inspect filter for contamination.

e. Installation.

- (1) Install strainer (3) on hose (2).
- (2) Install lid assembly (1) on fuel can.



Engine Fuel Strainer, Installation.

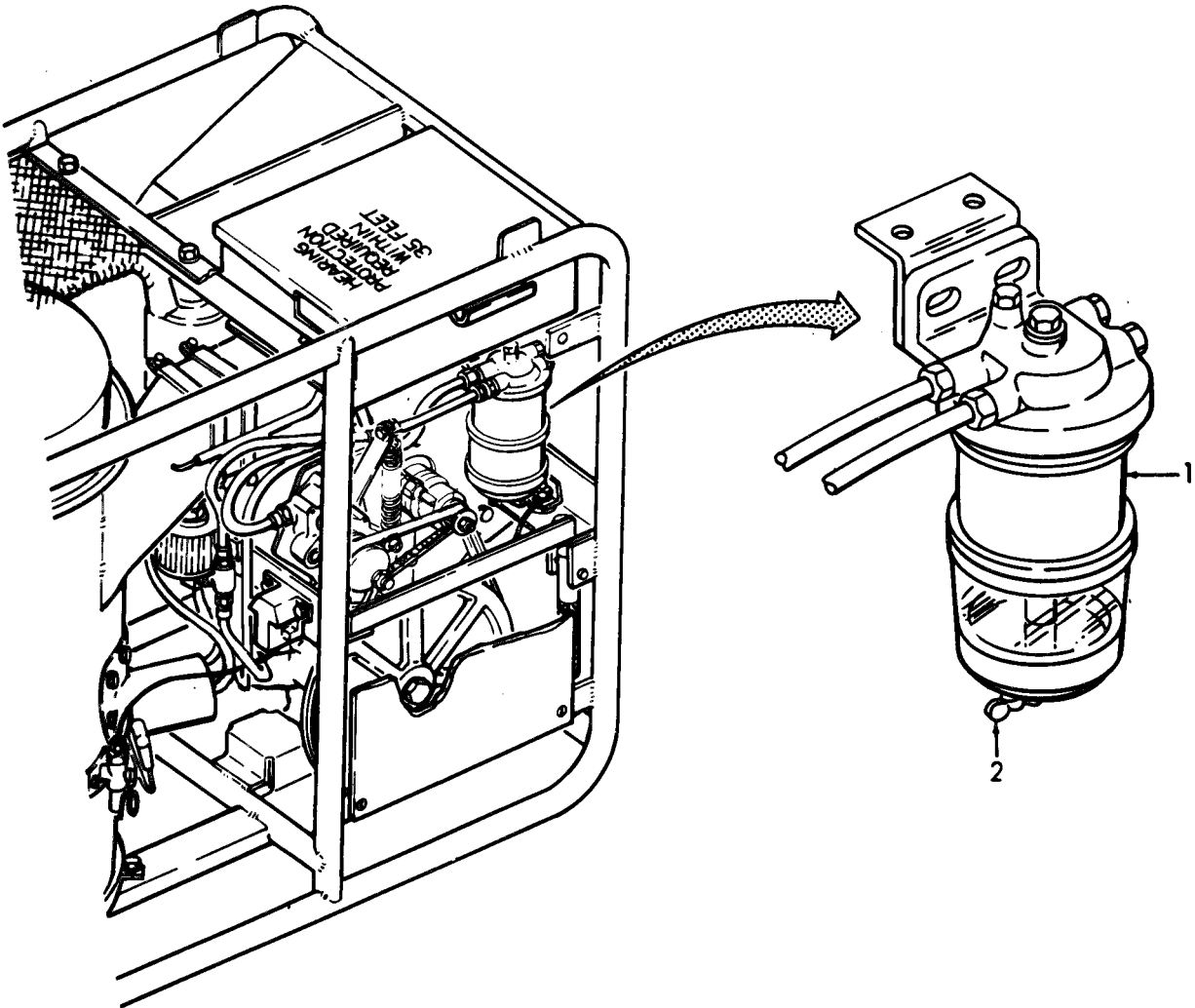
3-9. BURNER FUEL SYSTEM (FLUID FILTER).

a. Introduction.

This paragraph contains the procedures for cleaning the burner fuel system fluid filter.

b. Cleaning.

- (1) Place any available container under filter (1).
- (2) Loosen drain (2) and allow fuel and contaminants to drain into container.
- (3) Tighten drain (2).
- (4) Dispose of contaminated fuel in accordance with local SOP.



Burner Fuel Filter, Draining.

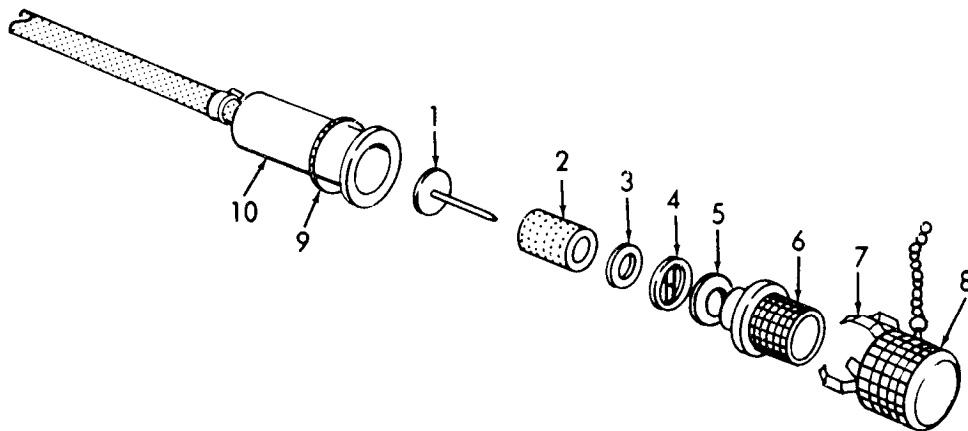
3-10. SUCTION HOSE STRAINER CLEANING.

a. Introduction.

This paragraph contains instructions for cleaning the suction hose strainer.

b. Cleaning.

- (1) Remove spring (9) from clips (7) on strainer basket (8).
Remove basket from shroud (10).
- (2) Unscrew screen (6) and remove attached parts from shroud (10).
- (3) Unscrew retainer (1) and separate filter element (2), gasket (3), mount (4), and gasket (5) from screen (6).
- (4) Flush all parts out with fresh water. If any parts are coated or clogged with scale, clean using brushes from accessory kit. If screen cannot be cleaned using brushes, notify organizational maintenance.
- (5) Install gasket (5) on screen (6).
- (6) Install filter element (2), gasket (3), and mount (4) on retainer (1) and screw retainer (1) into screen (6) and install filter assembly onto shroud (10).
- (7) Secure strainer basket (8) to shroud (10) using clips (7) and spring (9).



Suction Hose Strainer, Cleaning.

3-11. BRANCH HOSE STRAINER CLEANING.**a. Introduction.**

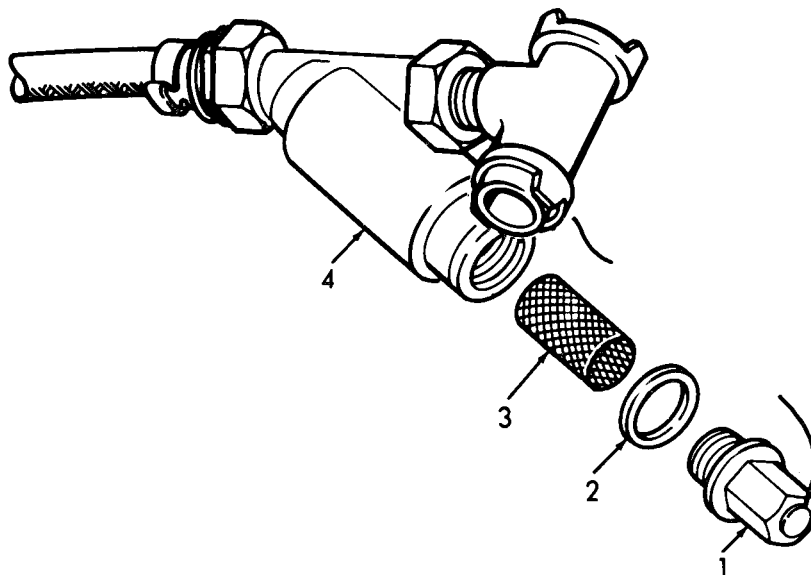
This paragraph contains instructions for cleaning the branch hose strainer.

NOTE

If at any time you detect any particles in, or a slight coating of scale on strainer, you may be in a high scale deposit environment.

b. Cleaning.

- (1) Loosen and remove cap (1) from housing (4). Remove strainer element (3). Inspect gasket (2) for damage, but do not remove unless defective.
- (2) If strainer element is coated or clogged replace with element provided in accessory kit. Clean dirty element with brushes from accessory kit. If strainer element cannot be cleaned, refer to organizational maintenance.
- (3) Install strainer element (3) in housing (4).
- (4) If removed, install new gasket (2) on cap (1).
- (5) Install cap (1).



Branch Hose Strainer, Cleaning.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

| | |
|--------------|--|
| Section I. | Repair Parts, Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment |
| Section II. | Service Upon Receipt |
| Section III. | Organizational Preventive Maintenance Checks and Services (PMCS) |
| Section IV. | Organizational Troubleshooting Procedures |
| Section V. | Organizational Maintenance Procedures |
| Section VI. | Preparation for Storage or Shipment |

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

| | Para. | | Para. |
|--|-------|------------------------|-------|
| Common Tools and Equipment. | .4-1 | Repair Parts | 4-3 |
| Special Tools, TMDE, and Support Equipment | 4-2 | | |

4-1. COMMON TOOLS AND EQUIPMENT.

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

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

Special tools required for organizational maintenance are listed and illustrated in Appendix F of this manual. TMDE and support equipment are listed in the Maintenance Allocation Chart in Appendix B.

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in Appendix F of this manual covering organizational maintenance for this equipment.

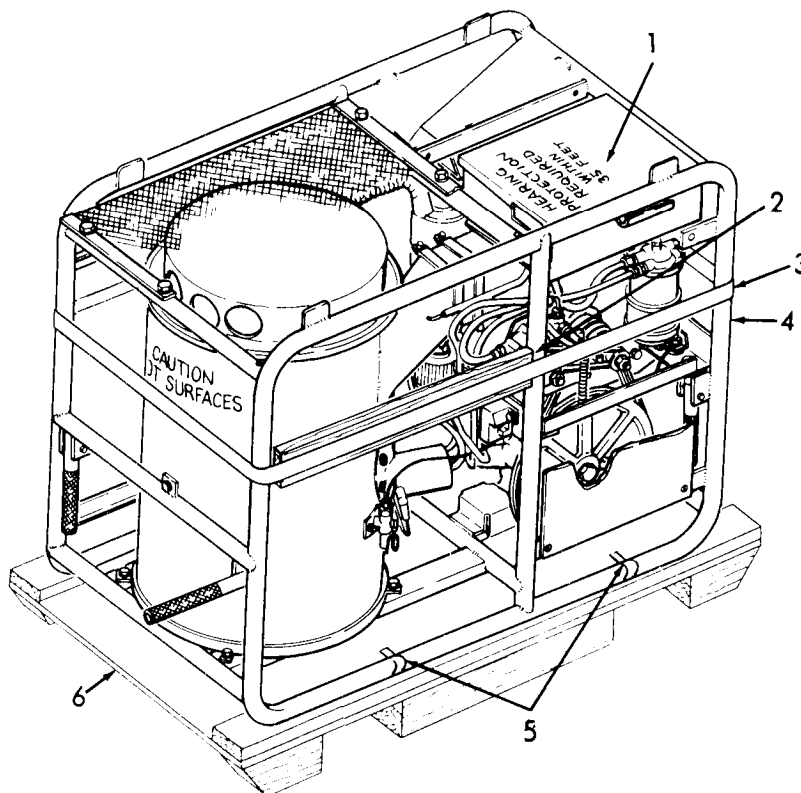
Section II. SERVICE UPON RECEIPT

WARNING

The decontaminating apparatus weighs over 360 lbs. To avoid back injury, use a minimum of four people to move it. If loading onto a transport vehicle use a minimum of six people or a loading ramp.

4-4. SERVICE UPON RECEIPT OF MATERIAL.

- a. General. The following steps will be taken to unpack and inspect the equipment prior to issue to the user.
- b. Unpack. Remove transportation brackets and protective packing.
 - (1) Remove tool pouch from tool box (1).
 - (2) Remove four clamps (5) securing decontaminating apparatus (4) to skid (6). Using four persons, remove unit from skid.
 - (3) Remove banding (3) and 2 x 4 piece of wood (2).



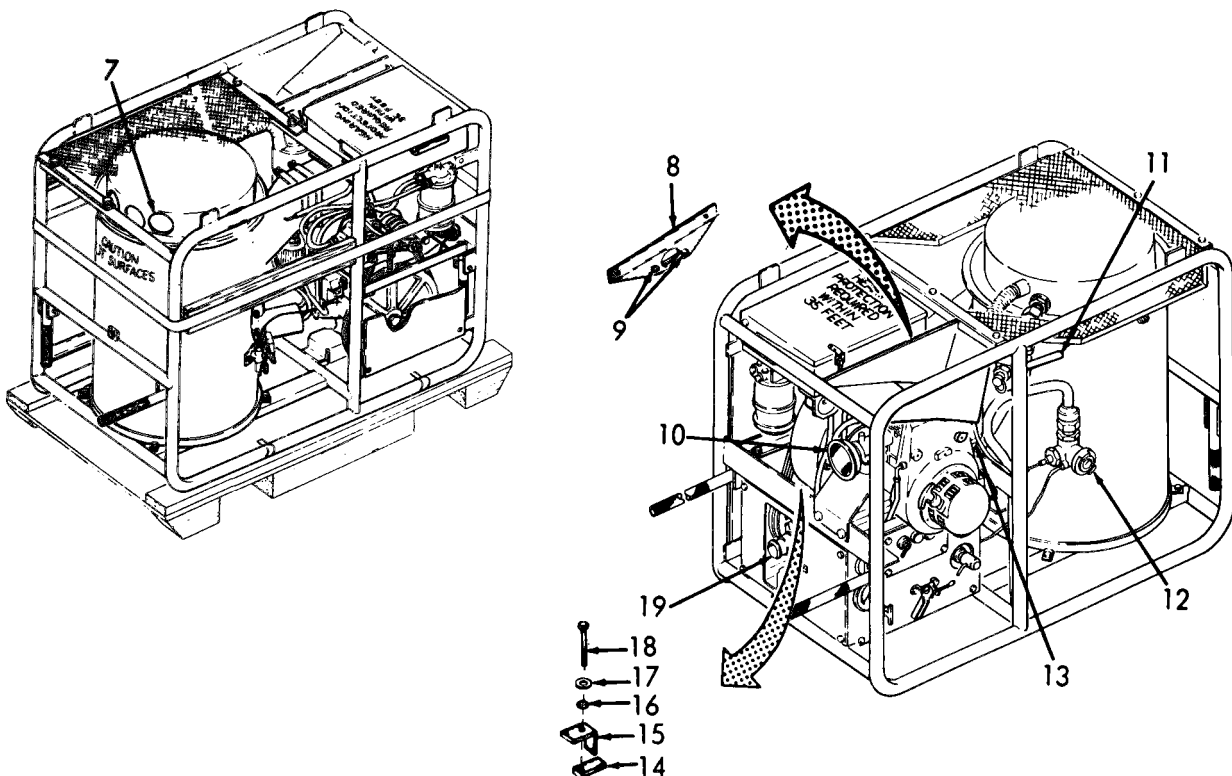
Unpacking Decontaminating Apparatus.

- (4) Loosen two bolts (9) and remove upper engine shipping retainer (8). (Retainer is red in color.)
- (5) Remove two bolts (18), two washers (17), and two washers (16). Pry up on engine mounting bracket and remove lower engine restraints (14 and 15).
- (6) Remove tape from heat exchanger outlet (7), water inlet (19), carburetor filter (10), water outlet (12), air vent (13), and water pressure relief valve (11).

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (7) Using cleaning solvent (item 3, Appendix E), remove tape residue from all surfaces.
- (8) Install water pump belts and fuel pump belt. (Refer to page 4-18).

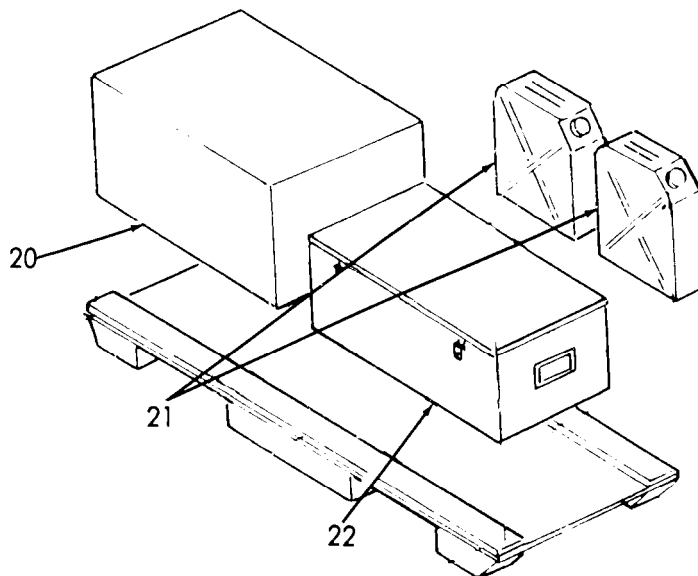


Restraint, Removal.

4-4. SERVICE UPON RECEIPT OF MATERIAL - Continued.

b. Unpacking Equipment - Continued.

- (9) Remove the banding from skid no. 2. Discard banding.
- (10) Remove banding securing water tank container (20), accessory box (22), and two fuel containers (21). Remove all items from skid.
- (11) Remove pouch from accessory box and place engine shipping restraints and attaching hardware in tool pouch.
- (12) If water tank is to be used, remove water tank from shipping container. If water tank is not to be used, store in a cool, dry location.
- (13) Retain all skids, attaching hardware, and shipping containers for repackaging.



Unpacking Shipping Skid No. 2.

c. Checking the Unpacked Equipment.

- (1) Inspect equipment for damage incurred during shipment. If equipment has been damaged, report the damage on SF 364, Package Improvement Report.
- (2) Check equipment against packing slip to see if shipment is complete. Report all discrepancies in accordance with instructions of DA PAM 738-750. See that special tools components of end item and basic issue items are with the equipment. Technical manuals must be present.
- (3) Check to see whether equipment has been modified. Refer to DA PAM 310-1.
- (4) Reject if: Parts are missing, parts are deformed, rust/corrosion is visible.
- (5) Inspect to make sure stencil markings are present and readable.

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

| | Para. | Para. |
|------------------------|-------|---------------------------------|
| Introduction | 4-5 | Organizational PMCS.4-6 |

4-5. INTRODUCTION.

a. Purpose of PMCS Table. The purpose of this table is to list all the scheduled maintenance required to keep the decontaminating apparatus in good working order. Doing the scheduled maintenance will reduce the chances of equipment breakdown.

b. Item Number Column. This column numbers the PMCS procedures in the order they should be done. These numbers will be used as a source of item numbers for the "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording the results of PMCS.

c. Item to be Inspected Column. This column lists the specific item to be worked on such as "water pump".

d. Procedure Column. This column tells you how to perform the required checks and services.

4-6. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

Refer to Table 4-1.

Table 4-1. Organizational Preventive Maintenance Checks and Services
HOURLY SCHEDULE

| Item No. | Interval Hours | Item to be Inspected | Procedure |
|----------|----------------|--|--|
| 1 | 200 | Decontaminating Apparatus: Power-Driven, Portable, Type A/E32U-8 | Examine unit for completeness. Inspect accessories for damage or corrosion. Replace damaged or missing accessories. |
| 2 | 20 | Water Tank | Repair all rips, tears, and punctures in tank fabric using tank repair kit permanent patches. Replace non-repairable tank. |
| 3 | 200 | Decontaminating Apparatus | Inspect unit for cracked, damaged or deteriorated drive belts. Replace all defective drive belts. Adjust engine RPM. Inspect inlet assembly and pump assembly. Clean all foreign matter from pump tubing. Test unit to isolate any defective system components . |
| 4 | 20/200 | Engine Assembly | Inspect cylinder head nuts initially at 20 hrs. and every 200 hrs. thereafter to verify 32 lb-ft torque. Inspect fuel pump for leaks. |
| 5 | 20/200 | Carburetor | <u>20 hours</u> - Inspect carburetor for damage or improper adjustment. Remove and clean air filter (see page 4-22). <u>200 hours</u> - Remove and clean settling bowl. Examine and adjust RPM setting (see page 4-24). Replace worn components. |
| 6 | 100 | Engine Fuel System | Replace gas line filter (see page 4-28). |
| 7 | 200 | Burner | Clean burner. Remove and clean spark plug (see page 3-17). |

| Item No. | Interval Hours | Item to be Inspected | Procedure |
|----------|----------------|-----------------------|--|
| 8 | 20 | Photocell | Inspect photocell for damaged surfaces. Clean all surfaces. Replace or repair photocell (see page 4-36). |
| 9 | 100 | Heat Exchanger | Inspect heat exchanger coil for scale buildup. Descale heat exchanger (see page 4-38). |
| 10 | 100 | Burner Fuel Filter | Install new filter element (refer to page 4-42). |
| 11 | 100 | Water Outlet | Replace outlet coupling gaskets (see page 4-46). |
| 12 | 200 | Frame | Inspect handles. Replace if damaged or missing (see page 4-57). |
| 13 | 100 | Suction Hose | Flush hose to remove buildup of scale. Replace all defective parts (see page 4-60). |
| 14 | 200 | Suction Hose Strainer | Clean strainer and replace all defective parts (see page 4-60). |

Section IV. ORGANIZATIONAL TROUBLESHOOTING PROCEDURES

| | Para. | Para. |
|-----------------------------------|-------|------------------------------|
| Introductory Information. | 4-7 | Troubleshooting. 4-9 |
| Symptom Index. | 4-8 | |

4-7. INTRODUCTORY INFORMATION..

a. The table lists the common malfunctions which you may find during the operation or maintenance of the decontaminating apparatus or its components. You should perform the tests/inspections and corrective actions in the order listed.

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

4-8. SYMPTOM INDEX.

| <u>Malfunction</u> <u>No.</u> | <u>Malfunction</u> | <u>Page</u> |
|----------------------------------|--|-------------|
| 11 | Burner choke does not return | 4-12 |
| 15 | Burner ignites when thermostat selector switch is moved from OFF position (START BURNER button is not pressed) | 4-14 |
| 13 | Burner lights and extinguishes when START BURNER button is released | 4-13 |
| 12 | Burner will not light | 4-12 |
| 4 | Engine knocks or backfires | 4-11 |
| 5 | Engine overheats | 4-11 |
| 2 | Engine runs roughly or stops | 4-10 |
| 1 | Engine will not start | 4-9 |
| 3 | Low engine power or speed | 4-10 |
| 7 | Low water pressure | 4-11 |
| 10 | No heater fuel pressure or fluctuating fuel pressure | 4-12 |
| 6 | No water pressure | 4-11 |
| 9 | No water temperature indication | 4-12 |
| 14 | OPEN MAG VALVE indicator fluctuates | 4-13 |
| 8 | Water comes out pressure relief valve | 4-1 |

| |
|-----------------------|
| 4-9. TROUBLESHOOTING. |
|-----------------------|

Table 4-2. Organizational Troubleshooting

| MALFUNCTION |
|---|
| TEST OR INSPECTION |
| CORRECTIVE ACTION |
| 1. ENGINE WILL NOT START. |
| Step 1. Check for defective manual recoil starter. |
| If starter is defective, replace starter. |
| If starter is not defective, proceed to step 2. |
| Step 2. Check for fouled spark plug. |
| If spark plug is fouled, replace spark plug. |
| Be sure plug has gap of 0.030 inch (.75mm). Before installing, check for adequacy of spark by attaching spark plug lead and laying plug on cylinder head. Pull recoil starter and observe spark at electrodes. If no spark or weak spark is observed, refer to direct support maintenance. If spark is seen, proceed to step 3. |
| Step 3. Check for clogged needle jet. |
| Remove jet nut at base of carburetor bowl and inspect for deposits of gum and varnish. Soak jet in solvent. A varnish brush (item 1, Appendix E) may be helpful in removing deposits. Clean jet and clear orifice. |
| Step 4. Check for stuck carburetor float and/ or needle. |
| Remove carburetor bowl. Inspect float and needle for excessive wear or fuel deposits. If float is worn at hinge pin, notify direct support maintenance (refer to page 4-22). |
| Step 5. Check for water or ice in carburetor bowl. |
| If water is present, clean bowl, check jet is not clogged. |
| If water is not present, refer to direct support maintenance. |
| Step 6. Check for defective/clogged fuel pump. |
| a. Prime carburetor and disconnect fuel line at carburetor. Direct fuel line into a container. Start engine and observe fuel flow. If fuel flow is not steady, use the following procedures to isolate fuel system problem. |

TROUBLESHOOTING - Continued.

Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. ENGINE WILL NOT START - Continued.

NOTE

The fuel pump will not function properly if a leak exists anywhere on the suction side of the pump.

(1) Check to see that fuel pump vacuum/pressure line is free of cuts and firmly attached to pump and to engine crankcase.

(2) Check fuel line from fuel tank for cuts and for proper attachment.

b. If all hoses are good, and properly connected, and engine still does not start, replace fuel pump.

2. ENGINE RUNS ROUGHLY OR STOPS.

Step 1. Check for fouled spark plug.

Refer to MALFUNCTION 1, step 2.

If spark plug is not fouled, proceed to step 2.

Step 2. Check for defective/ clogged fuel pump filter.

Refer to MALFUNCTION 1, step 6.

If fuel pump is not defective/clogged, proceed to step 3.

Step 3. Check for water or ice in carburetor bowl.

Refer to MALFUNCTION 1, step 5.

If water or ice is not present, notify direct support maintenance.

3. LOW ENGINE POWER OR SPEED.

Step 1. Check for improper governor speed adjustment.

Adjust governor speed (page 4-25).

If governor speed is correct, notify direct support maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

4. ENGINE KNOCKS OR BACKFIRES.

Notify direct support maintenance if this condition exists.

5. ENGINE OVERHEATS.

Notify direct support maintenance if this condition exists.

6. NO WATER PRESSURE.

Step 1. Check for clogged water pump.

If water pump is clogged, clean out pump (page 4-50).

If pump is not clogged, proceed to step 2.

Step 2. Check for scale or other foreign objects blocking manometer sensing port. (See callout 2 on page 4-47).

Disconnect manometer sensing connector from water outlet tee fitting. Remove foreign objects and reconnect manometer sensing connector. If foreign objects cannot be removed, notify direct support maintenance.

7. LOW WATER PRESSURE.

Step 1. Check for clogged water pump. Refer to MALFUNCTION 6, step 1.

Inspect water pump for clogging (refer to MALFUNCTION 6, step 1).

Check control panel WATER PRESSURE REGULATOR setting. Refer to page 3-8.

If water pump is not clogged and valve is set properly, proceed to step 2.

Step 2. Check for no water pressure indication while water is flowing from installed accessories.

If water is flowing but there is no water pressure indication, notify direct support maintenance.

8. WATER COMES OUT OF PRESSURE RELIEF VALVE.

Notify direct support maintenance if this condition exists.

4-9, TROUBLESHOOTING - Continued.

Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

9. NO WATER TEMPERATURE INDICATION.

Notify direct support maintenance if this condition exists.

10. NO HEATER FUEL PRESSURE OR FLUCTUATING FUEL PRESSURE.

Notify direct support maintenance if this condition exists.

11. BURNER CHOKE DOES NOT RETURN.

Step 1. Check for defective return spring on burner.

If spring is defective, replace spring.

If spring is not defective, proceed to step 2.

Step 2. Check for dirt or corrosion in and around choke cable assembly.

If cable casing is defective, replace casing (refer to page 4-54).

If casing is not defective, notify direct support maintenance.

12. BURNER WILL NOT LIGHT.

Step 1. Check for fouled burner spark plug.

If spark plug is fouled, replace spark plug.

If spark plug is not fouled, proceed to step 2.

Step 2. Check for defective igniter.

Test igniter by connecting igniter wire to uninstalled spark plug. Position spark plug to allow uninsulated side of plug to touch an electrically grounded surface. Start engine. If a spark does not jump between electrodes of spark plug, igniter is defective.

If igniter is defective, replace igniter (see page 4-32).

If igniter is not defective, proceed to step 3.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 3. Check for broken or separated burner lead assembly.

If burner lead choke cable assembly is broken or separated, replace cable (refer to page 4-54).

If burner lead assembly is not defective, notify direct support maintenance.

13. BURNER LIGHTS AND EXTINGUISHES WHEN START BURNER BUTTON IS RELEASED.

Step 1. Check for dirty mica window.

If window is dirty, clean window (refer to page 4-37).

If window is not dirty, proceed to step 2.

Step 2. Check for broken or cracked cell.

If cell is cracked or broken, replace cell (refer to page 4-37).

If cell is not defective, notify direct support maintenance.

14. OPEN MAG VALVE INDICATOR LIGHT FLUCTUATES.

Step 1. Check for corroded, cracked, or broken lamp socket or broken or burned out lamp.

If socket is defective, notify direct support maintenance.

If lamp is defective, replace lamp (refer to page 4-52).

If lamp and socket are not defective, proceed to step 2.

Step 2. Check for loose wires in cell, magnetic valve, and lamp circuit.

Tighten all electrical connections including ground wires.

If no loose wires are found, proceed to step 3.

Step 3. Check for cracked or broken cell.

If cell is cracked or broken, replace cell (refer to page 4-37).

If cell is not defective, notify direct support maintenance.

4-9. TROUBLESHOOTING - Continued.

Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

-
15. BURNER IGNITES WHEN THERMOSTAT SELECTOR SWITCH IS MOVED FROM OFF POSITION (START BURNER BUTTON IS NOT PRESSED).

Check that the cell is not out of its mounting bracket.

If cell is out of mounting bracket, reinstall (refer to page 4-37).

If cell is not out of mounting bracket, notify direct support maintenance.

Section V. ORGANIZATIONAL MAINTENANCE PROCEDURES

4-10. GENERAL.

This section contains the maintenance procedures authorized for the organizational support group. The information is organized into the following paragraphs:

| Para. | Page No. |
|--|----------|
| 4-11. Water Tank | 4-15 |
| 4-12. Decontaminating Apparatus (Drive Belts) | 4-16 |
| 4-13. Gasoline Engine Assembly Fuel Pump (Diaphragm) | 4-20 |
| 4-14. Carburetor | 4-22 |
| 4-15. Starter | 4-26 |
| 4-16. Engine Fuel System | 4-28 |
| 4-17. Burner | 4-29 |
| 4-18. Photocell | 4-36 |
| 4-19. Heat Exchanger (Descaling Procedure) | 4-38 |
| 4-20. Burner Fuel System | 4-40 |
| 4-21. Fluid Filter | 4-42 |
| 4-22. Fuel Pump Belt Tensioner | 4-44 |
| 4-23. Water Outlet | 4-46 |
| 4-24. Water Pump | 4-50 |
| 4-25. Control Panel | 4-52 |
| 4-26. Tool Box | 4-56 |
| 4-27. Frame | 4-58 |
| 4-28. Suction Hose/Strainer Assembly | 4-60 |
| 4-29. Branch Hose/Strainer Assembly | 4-62 |
| 4-30. Pressure Hose | 4-65 |

| Para. | Page No. |
|------------------------------|----------|
| 4-31. Shower | 4-66 |
| 4-32. Jet | 4-68 |
| 4-33. Injector | 4-69 |
| 4-34. Tool Kit | 4-70 |
| 4-35. Storage Accessory Case | 4-72 |

4-11. WATER TANK.

This task consists of:

- a. Repair
-

INITIAL SETUP:

Materials Required:

Water tank repair kit (P/N 26680-100).

Equipment Conditions:

Water tank drained and dry and turned inside out.

- a. Repair.

WARNING

Solvents and adhesive used for tank repair are flammable and toxic. Perform tank repair in a well-ventilated area free from spark or open flame.

NOTE

Do not exceed 100°C (212°F) temperature during drying. Ensure that the surface to be repaired is completely dry.

- (1) Repair water tank from the inside.
- (2) Rub damaged area with emery cloth provided in kit.
- (3) If a standard patch does not fit damaged area, cut a patch to fit.

NOTE

Adhesive used with the repair kit has a shelf life of 9 months. Before using adhesive verify that shelf date has not passed.

4-11. WATER TANK - Continued.

a. Repair - Continued.

(4) Apply patch in accordance with instructions supplied with repair kit.

(5) After repairing water tank, allow adhesive to dry thoroughly. This will take 24 hours at 75°F (24°C), or 2 hours at 140°F (60°C). Always use dry heat.

4-12. DECONTAMINATING APPARATUS (DRIVE BELTS).

This task consists of:

a. Replace

b. Adjust

INITIAL SETUP :

Tools Required:

Tool Kit, General Mechanics
Tool Kit from Accessory Box

Wrench Set, Combination
Socket Set, Metric

Equipment Conditions:

Engine shutdown and cool.

a. Removal.

NOTE

Replace water pump belts in pairs only.

(1) Release four fasteners (3) and then remove panel (4).

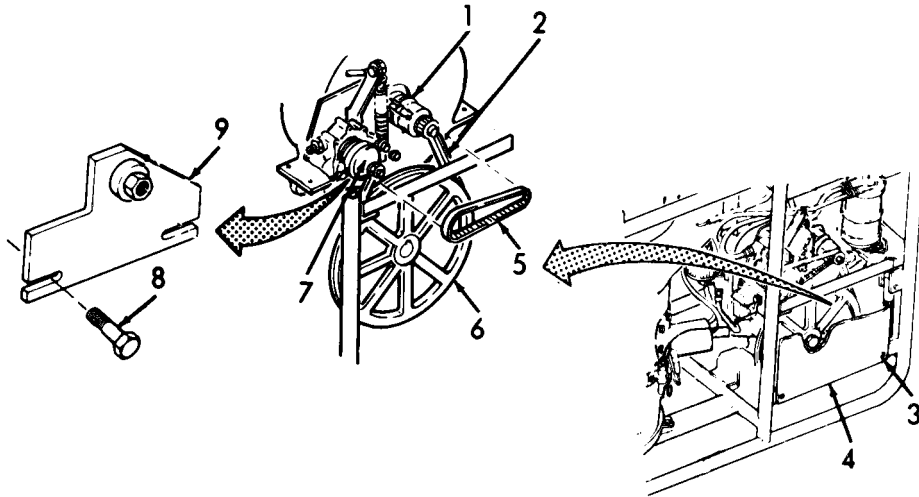
(2) Depress fuel pump (7) to release tension on fuel pump belt (5).

(3) Remove fuel pump belt (5) from fuel pump (7) and drive pulley (1).

(4) Loosen two water pump belt tensioner bolts (8) and move tensioner (9) to the left.

(5) Grasp outside belt (2) and while turning water pump pulley (6), pull the belt toward the outside and remove belt.

- (6) Grasp inside belt (2) and while turning water pump pulley (6), pull the belt inside and remove belt.

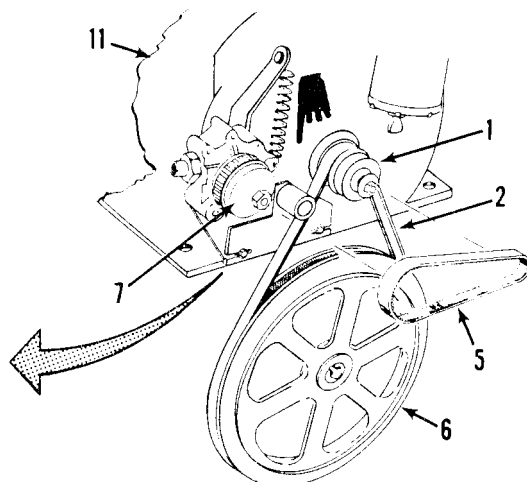


Drive Belts, Removal.

4-12. DECONTAMINATING APPARATUS (DRIVE BELTS). Continued

b. Installation.

- (1) Install inside belt (2) on drive pulley (1) and, while turning water pump pulley (6), slip belt below tensioner and into inside groove at rear of pulley. Repeat for outside belt in outer groove.
- (2) Install fuel pump drive belt (5) on drive pulley (1).
- (3) Depress fuel pump (7) and slide other end of drive belt (5) onto fuel pump pulley.
- (4) Adjust drive belts in accordance with paragraph "c" below.
- (5) Position panel (4) on unit and lock fasteners (3).



Drive Belts, Installation/Adjustment

c. Adjustment.

- (1) Loosen water pump belt tensioner attaching bolts (8). Move tensioner (9) as far to the left as possible.
- (2) Move water pump belt tensioner (9) to the right until roller (10) just touches belts (2).
- (3) Move tensioner (9) an additional 1/4 inch to the right and tighten bolts (8) securely.
- (4) Start engine and operate unit for approximately 30 minutes.
- (5) Shut unit down and carefully reach in and touch drive pulley (fan hub (1)). (This hub is the drive pulley (1) for the water pump.) If hub surface is hot to touch, belts (2) need to be tightened.

(6) Tighten belts as follows:

- (a) Using any sharp pointed instrument available, mark position of left end of tensioner (9) on fan housing (11).
- (b) Slightly loosen two attaching bolts (8), but do not remove.
- (c) Push tensioner (9) 3/16 to 1/4 inch further to the right of scribe mark on fan housing (11) and, while holding in place, securely tighten attaching bolts (8).
- (d) Repeat steps (4) and (5) to verify adjustment.

| |
|--|
| 4-13. GASOLINE ENGINE ASSEMBLY ENGINE FUEL PUMP (DIAPHRAGM). |
|--|

This task consists of:

- a. Repair

INITIAL SETUP:

Tools Required:

Tool Kit from Accessory Box

Materials Required:

Pump, Engine, Fuel (P/N 002-46-903-000)

Equipment Conditions:

Engine shutdown and cool.

- a. Removal.

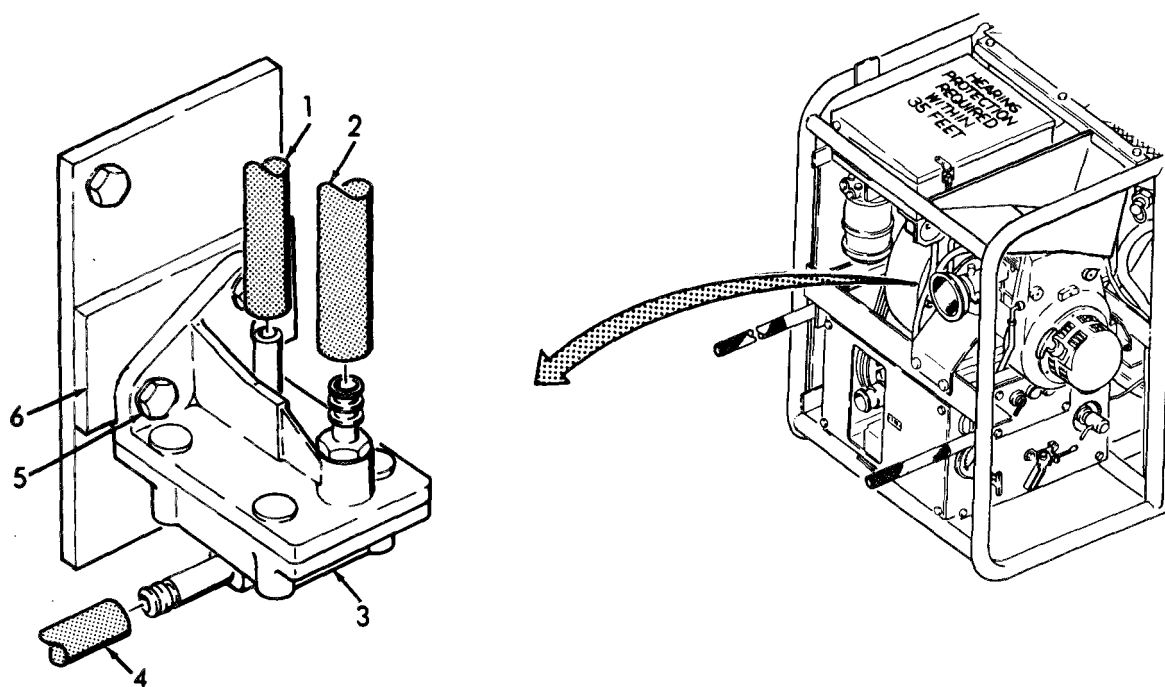
- (1) Disconnect vacuum line (1), fuel line (2), and fuel line (4).
- (2) Remove two bolts (5), fuel pump (3), and spacer (6).

- b. Inspection.

- (1) Inspect all hardware for damage.
- (2) Inspect the fuel pump for dents, cracks, leaks, rust and/or corrosion. Discard entire fuel pump if damaged, refinish if rusted or corroded.

- c. Installation.

- (1) If a replacement pump is being installed, go to step (2).
- (2) Position spacer (6) and fuel pump (3) on frame and secure with two bolts (5).
- (3) Connect fuel line (4), fuel line (2), and vacuum line (1).



Engine Fuel Pump, Removal/ Installation.

| |
|-------------------|
| 4-14. CARBURETOR. |
|-------------------|

This task consists of:

- | | | |
|------------|-----------|-----------|
| a. Service | b. Adjust | c. Repair |
|------------|-----------|-----------|
-

INITIAL SETUP:

Tools Required:

Tool Kit from Accessory Box
General Mechanics Tool Kit
RPM indicator (P/N 000-15-300-100)
11 mm wrench

Materials Required:

Brush, Varnish (item 1, Appendix E).
Cleaning Solvent (item 3, Appendix E).
Carburetor Bowl Gasket (P/N 602-45-087-900).
Lubricating Oil (item 4, Appendix E).
Cheesecloth (item 2, Appendix E).

Equipment Conditions:

Engine shutdown and cool.

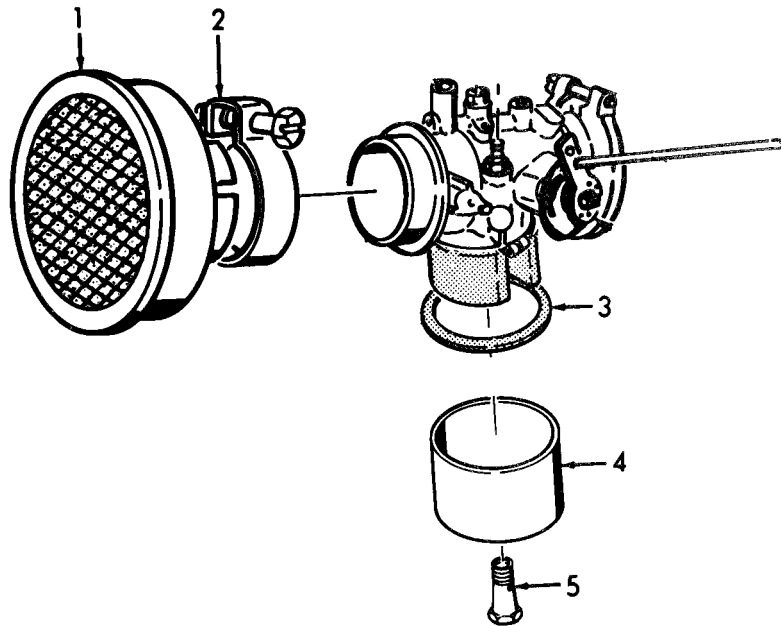
a. Cleaning.

- (1) Loosen clamp (2) and remove air cleaner (filter) (1).
- (2) Remove jet (5) and bowl (4).

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (3) Wash carburetor bowl in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E). Soak and back-flush air cleaner (filter) in cleaning solvent.
- (4) Allow to dry.
- (5) Coat air cleaner (filter) with a light coat of oil (item 4, Appendix E).



Carburetor Cleaning, Parts Removal.

b. Inspection.

- (1) Inspect clamp and screw for cracks or stripped threads.
- (2) Inspect carburetor bowl for cracks. Inspect jet (nut) for stripped threads or blockage of orifice.
- (3) Inspect for dents, cracks or perforations through the air screen.
- (4) Inspect exterior of carburetor for visible damage or missing components.

c. Assembly.

- (1) Install bowl (4) and jet (5). Replace gasket (3) if leak appears on bowl (4).
- (2) Install air cleaner (filter) (1) and then tighten clamp (2).

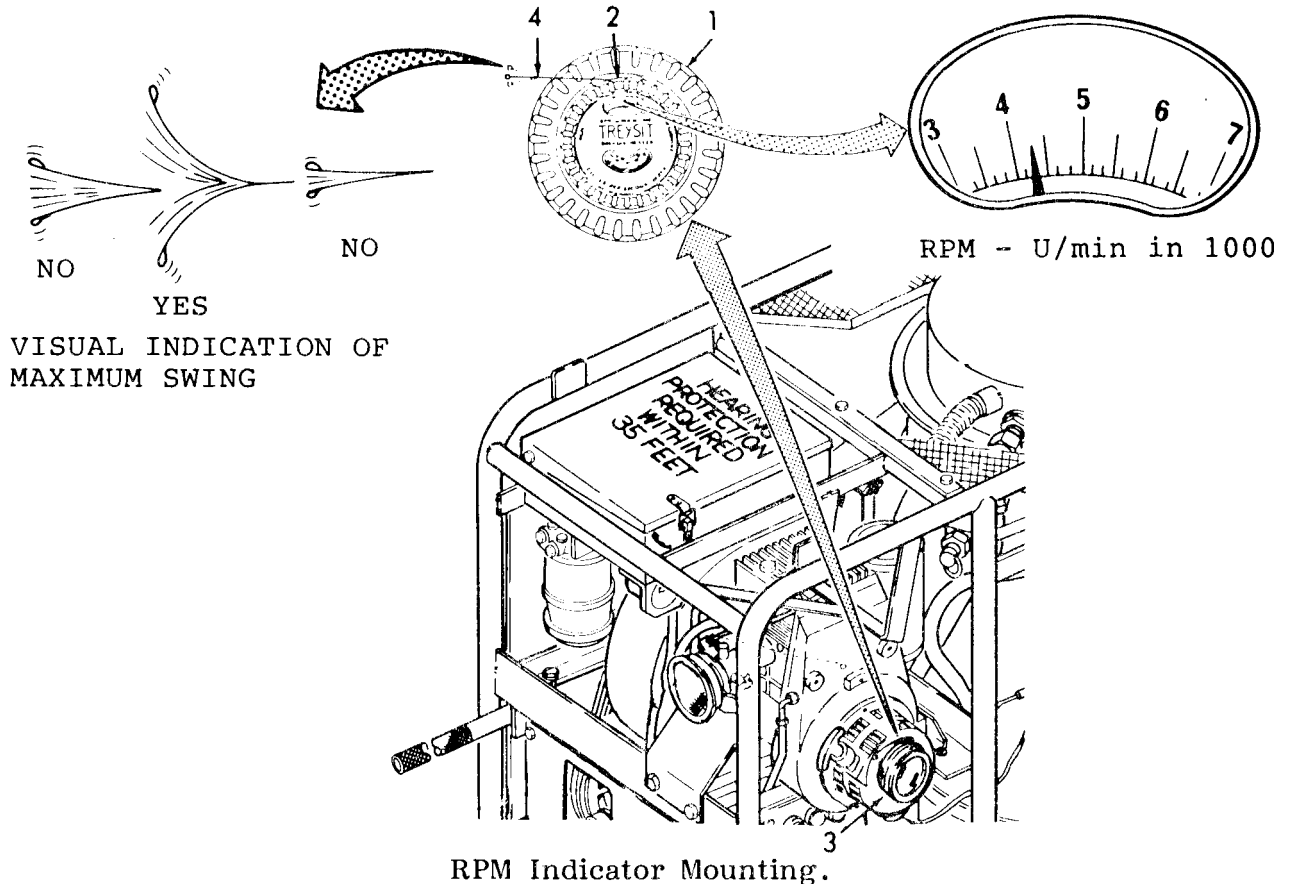
4-14. CARBURETOR-Continued.

d. Adjustment.

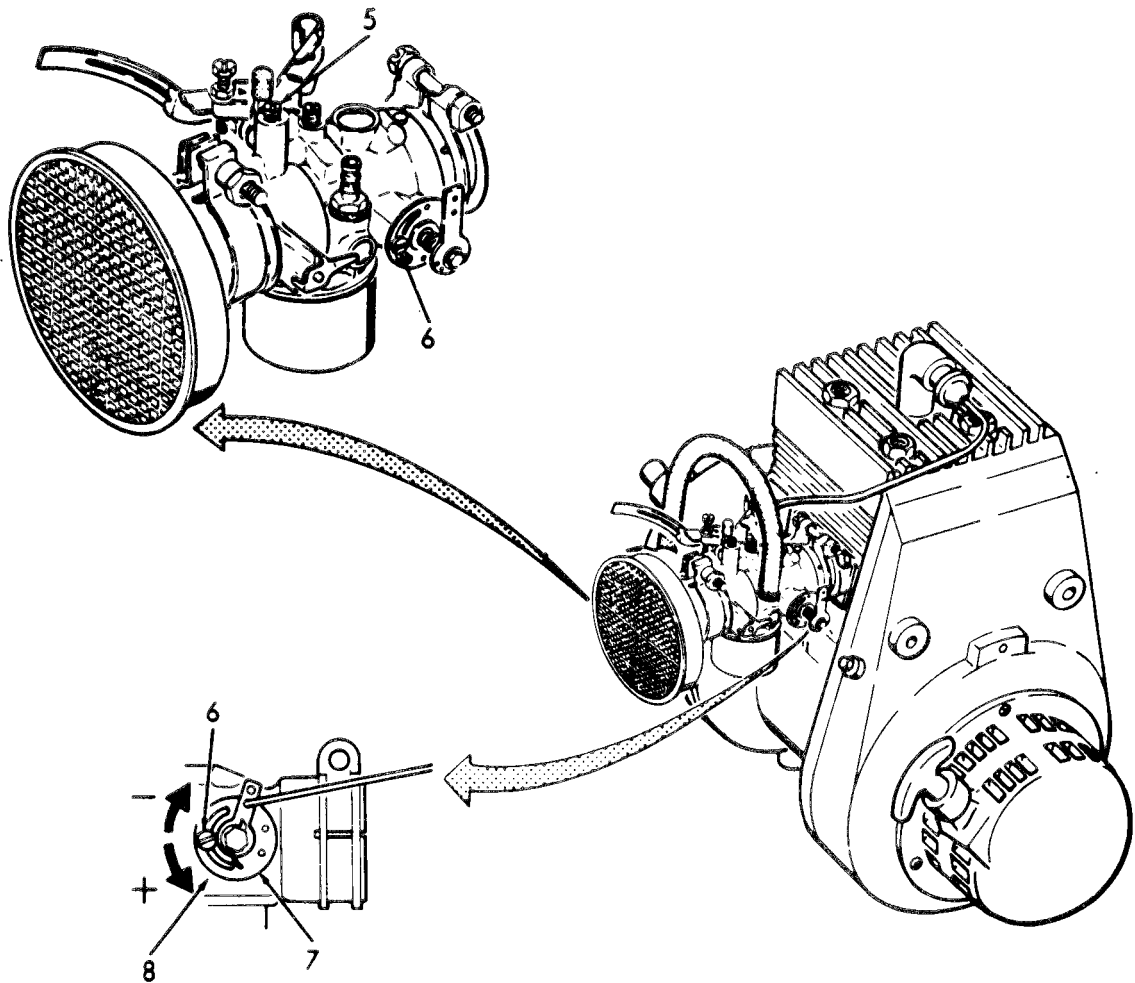
NOTE

Dial indications must be multiplied by 1000 (x1000). The number 4 represents 4000 RPM.

- (1) Adjust dial (2) on RPM indicator (1) so dial is between 4200 and 4400. Wire (4) should now be extended approximately three inches.
- (2) Start engine.
- (3) When engine reaches maximum speed, hold RPM indicator (1) firmly against engine starter (3) as shown.
- (4) While holding RPM indicator in place, rotate dial (2) to the left, then right. Watch wire (4) as dial is moved. When wire vibrates at maximum swing, stop rotating dial. Read dial indication.
- (5) If RPM indication is less than 4200 or greater than 4400 go to step (6). If RPM indication is between 4200 and 4400, no carburetor adjustment is required.



- (6) On Carburetor (8), turn adjustment screw (5) fully clockwise and then quickly back-off 1-1/2 turns. If RPM indicator wire vibrates at maximum swing, engine rpm is now between 4200 and 4400. If not, proceed to step (7).
- (7) Loosen screw (6) on adjusting plate (7).
- (8) Slowly turn adjusting plate (7) until rpm indicator wire vibrates at maximum swing. Turning the adjusting plate clockwise decreases engine speed, counterclockwise increases engine speed.
- (9) Tighten screw (6).
- (10) Shutdown engine.



Engine RPM Adjustment.

4-15. STARTER.

This task consists of:

- a. Replace
-

INITIAL SETUP:

Tools Required:

Tool Kit from Accessory Box

Materials Required:

Starter (P/N 197-41-834-000).

Equipment Conditions:

Engine shutdown and cool.

- a. Removal,

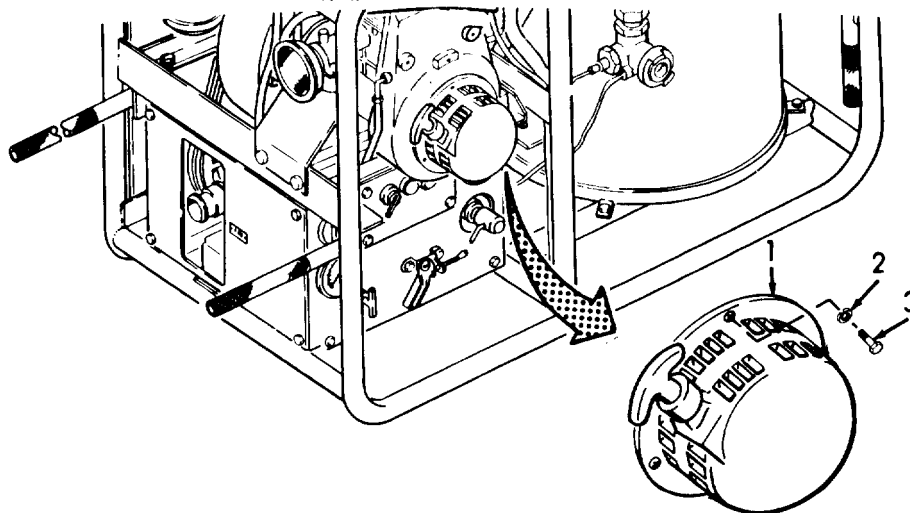
(1) Remove three screws (3) and three lockwashers (2).

(2) Remove starter (1).

- b. Installation.

(1) Position starter (1) on engine.

(2) While holding starter (1) in place, install three lockwashers (2) and three screws (3).



Starter, Removal/Installation.

| |
|---------------------------|
| 4-16. ENGINE FUEL SYSTEM. |
|---------------------------|

This task consists of:

- a. Repair
-

INITIAL SETUP:

Tools Required:

Tool Kit from Accessory Box

Materials Required:

None

Equipment Conditions:

Engine shutdown and cool.

- a. Disassembly.

- (1) Remove strainer (1) from hose (2).
- (2) Remove hose (2) and gasket (3) from lid (4).
- (3) Remove ball pump assembly (7) from lid (4) and filter (8).
Remove tag (5) and strap (6).
- (4) Remove filter (8) from hose assembly (9).
- (5) Remove nipple (10), hose assembly (11), reducer (15), and
hose (14).
- (6) Remove hoses (12 and 13).

- b. Repair. Replace defective components.

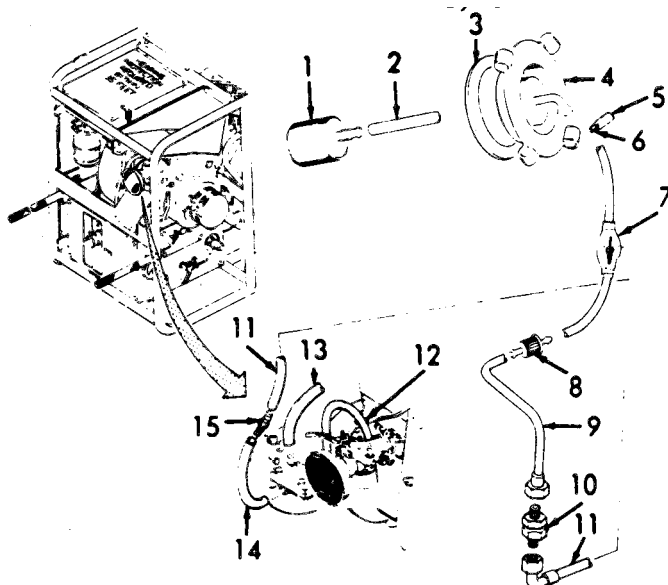
- c. Assembly.

- (1) Install hoses (12 and 13).
- (2) Install hose (14), reducer (15) hose assembly (11) and nipple
(10).
- (3) Install filter (8) on hose assembly (9) so that arrow on filter
points away from fuel source.

(4) Slide strap (6) and tag (5) on pump assembly (7). Connect ball pump assembly to filter (8) and lid (4). Make sure arrow on ball pump points in direction of fuel flow.

(5) Install gasket (3) and hose (2) on lid (4).

(6) Connect strainer (1) to hose (2).



Engine Fuel System, Disassembly/Assembly.

4-17. BURNER.

This task consists of:

- a. Repair

INITIAL SETUP:

Tools Required:

Tool Kit, General Mechanics
Tool Kit from Accessory Box

Socket Set, Metric
Wrench Set, Combination

Materials Required:

Brush, Varnish (item 1, Appendix E).
Cleaning Solvent (item 3, Appendix E).
Cheesecloth (item 2, Appendix E).
Paper, Abrasive (item 6, Appendix E).

Equipment Conditions:

Engine and heat exchanger shutdown and cool.

4-17. BURNER - Continued.

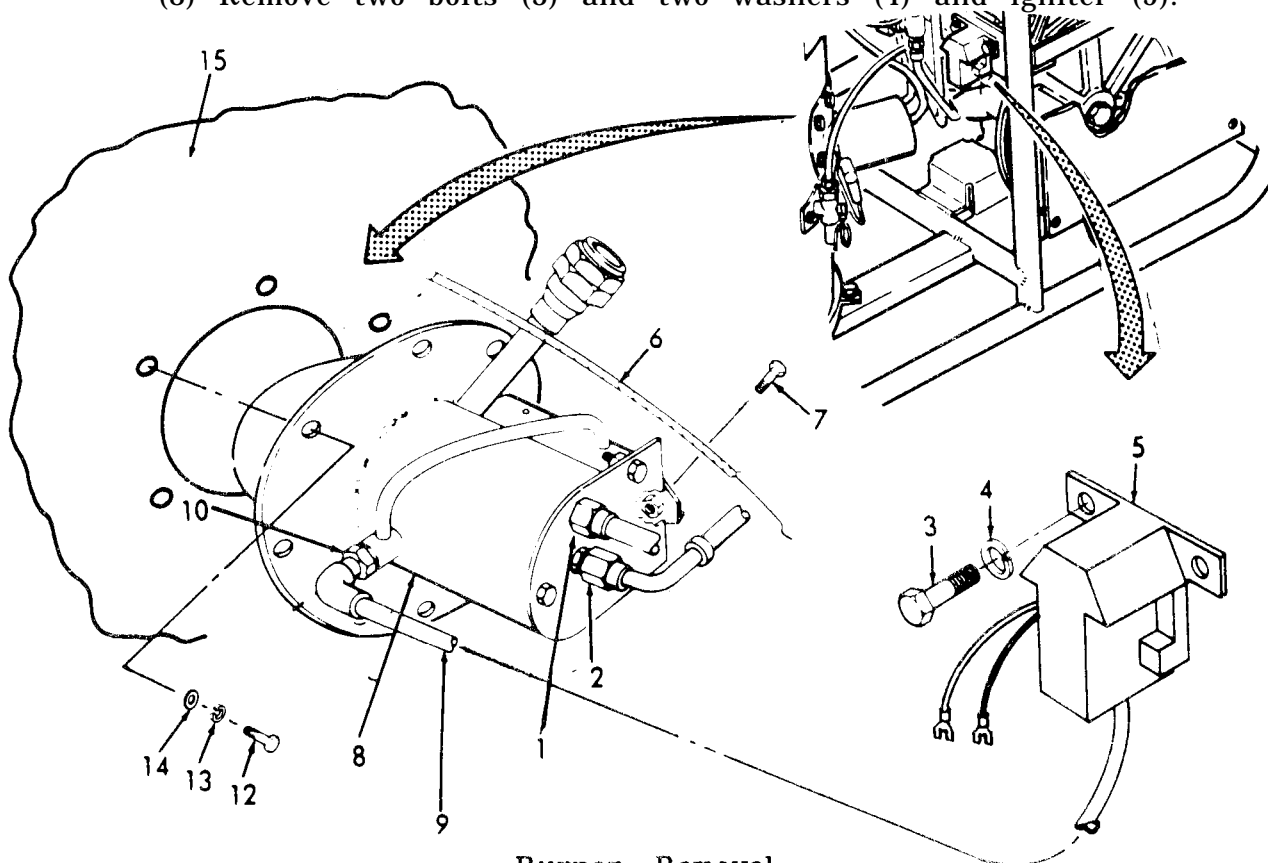
a. Removal.

- (1) Remove spark plug.
- (2) Tag and disconnect fuel lines (1 and 2) from burner (8).
- (3) Disconnect ignition wire (9) from spark plug (10).
- (4) Disconnect burner choke cable (6) from burner (8).
- (5) Remove eight bolts (12), eight lockwashers (13), and eight washers (14).

NOTE

Igniter does not have to be removed unless it is defective. (Refer to page 4-32.)

- (6) Remove burner (8) from heat exchanger (15).
- (7) To remove igniter wires from control panel refer to page 4-35. The igniter can be disconnected from control panel by disconnecting white wire from No. 7 terminal and green/yellow wire from No. 12 terminal on terminal strip.
- (8) Remove two bolts (3) and two washers (4) and igniter (5).

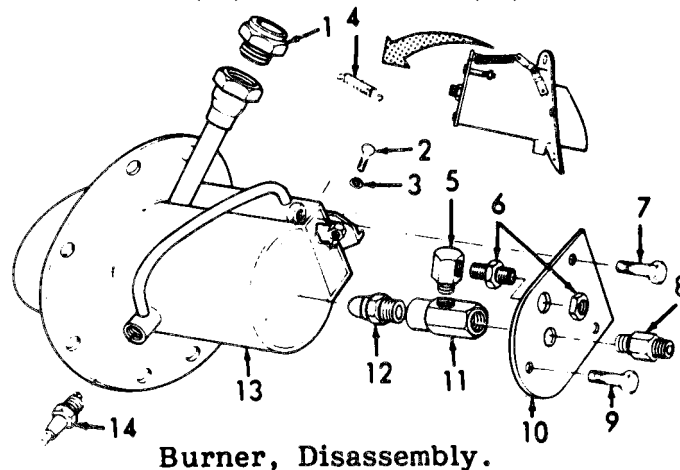


Burner, Removal.

b. Disassembly.CAUTION

Care must be taken during disassembly of the nozzle as components are delicate and easily damaged.

- (1) Unscrew window (1) from burner weldment (13) sight tube.
- (2) Remove bolt (2) and washer (3).
- (3) Disconnect spring (4) from burner weldment (13) and lid (10).
- (4) Remove two long bolts (7), short bolt (9), and lid (10) from burner weldment (13).
- (5) Unscrew nozzle (12) from holder (11). Disassemble nozzle.



Burner, Disassembly.

c. Cleaning.

- (1) Use a wire brush to remove all carbon deposits from spark plug electrodes and insulator.
- (2) Use abrasive cloth to square up and smooth spark plug electrodes.
- (3) Use gage to set spark plug gap at 0.070 inch (1.778mm).

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in "a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (4) Clean and wash heat exchanger exterior, burner nozzle and burner blast tube in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E) to remove all traces of carbon and soot.

4-17. BURNER - Continued.

c. Cleaning - Continued.

CAUTION

DO NOT use anything metallic to clean fuel nozzle orifice as the orifice may be damaged.

- (5) Clean fuel nozzle components in cleaning solvent (item 3, Appendix E). Be sure that nozzle fuel orifice is clean and unobstructed.

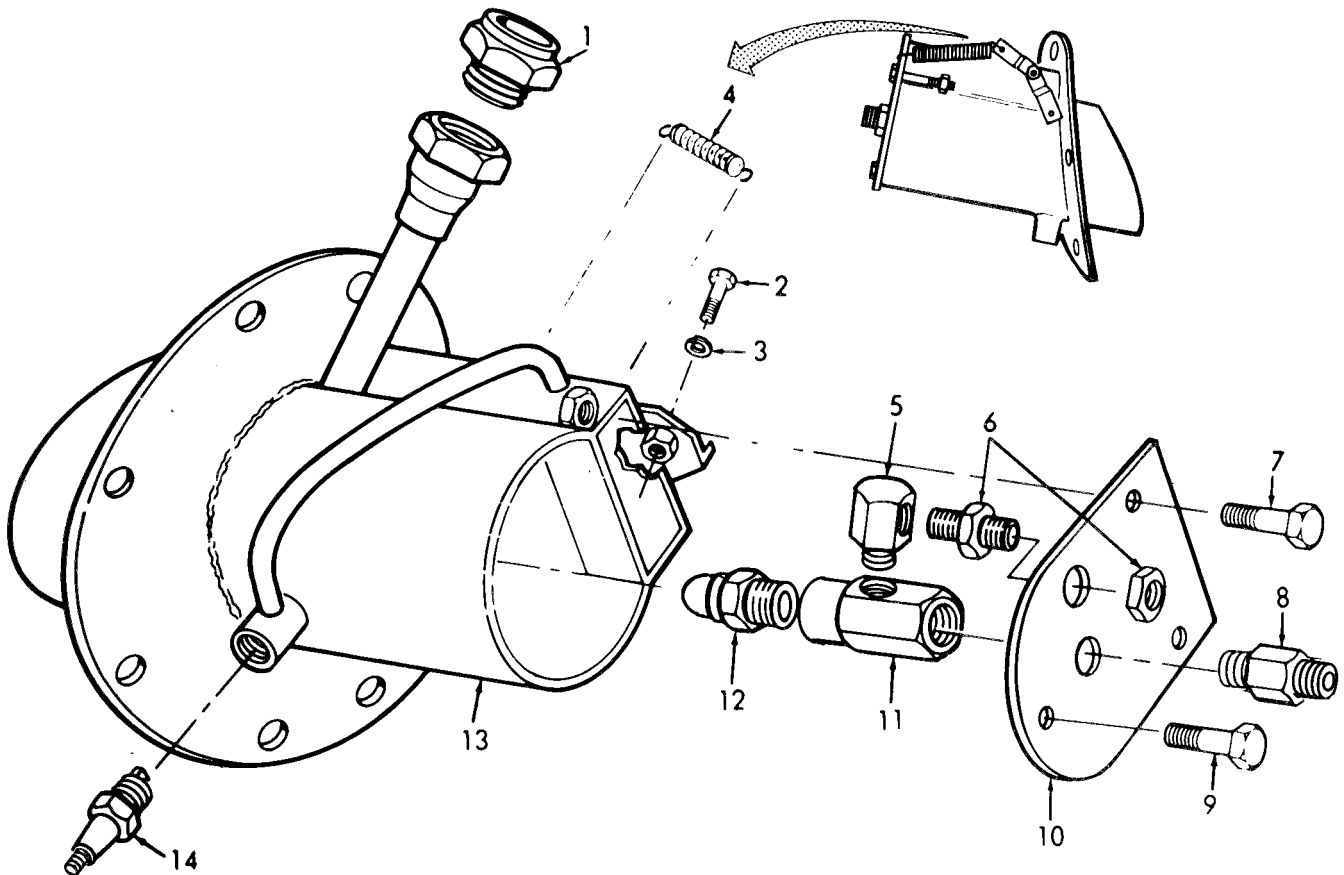
d. Inspection.

- (1) Inspect burner housing for cracks and broken welds.
- (2) Inspect window for damage, dirt, or soot.
- (3) Inspect spark plug lead for corroded or broken connector and for cracked or deteriorated insulation.
- (4) Inspect spark plug for cracked insulator, broken electrode, soot covered electrodes, and corroded electrodes and/or connector.
- (5) Inspect igniter for cracks, broken or cracked wires, broken terminals, or burned areas.
- (6) Inspect for missing hardware.
- (7) Inspect igniter function by following procedures below.
 - (a.) Connect igniter plug wire to uninstalled spark plug.
 - (b) Connect igniter wires to control panel.
 - (c) Position spark plug to allow uninsulated side of plug to touch an electrically grounded surface.
 - (d) Start engine.
 - (e) If a spark. does not jump between electrodes of spark plug, igniter is defective and must be replaced.
 - (f) After replacement of defective igniter, retest to insure new igniter is operative.
- (8) Inspect burner nozzle tip for clogs, cracks and deformation.

e. Reassembly.

- (1) Reassemble nozzle and carefully install nozzle (12) in holder (11).

- (2) Position lid (10) on burner weldment (13). Install short bolt (9) and long bolts (7) in holes.
- (3) Connect spring (4) to burner weldment (13) and lid (10).
- (4) Install bolt (2) and washer (3).
- (5) Install window (1) on burner weldment (13) sight tube.

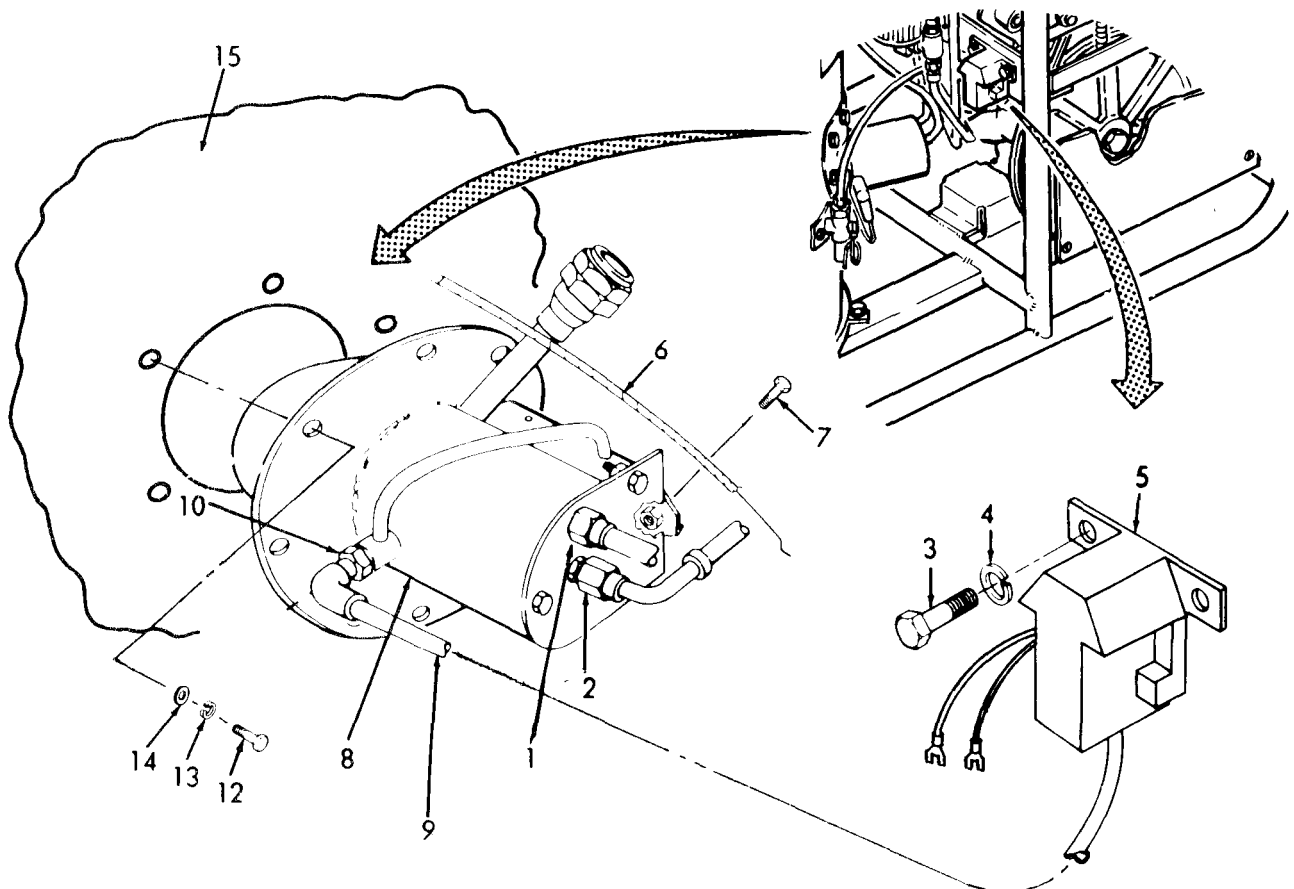


Burner, Reassembly.

4-17. BURNER - Continued.

f. Installation.

- (1) Install igniter (5), two washers (4), and two screws (3). To connect igniter wires to control panel refer to page 4-35.
- (2) Connect white wire to No. 7 terminal and the green/yellow wire to No. 12 terminal of terminal strip.
- (3) Position burner (8) on heat exchanger (15).
- (4) Install eight washers (14), eight lockwashers (13), and eight screws (12).
- (5) Connect burner choke cable (6) to burner (8).
- (6) Secure burner choke cable (6) to burner (8) with bolt (7).
- (7) Connect ignition wire (9) to spark plug (10).
- (8) Connect fuel lines (1 and 2).



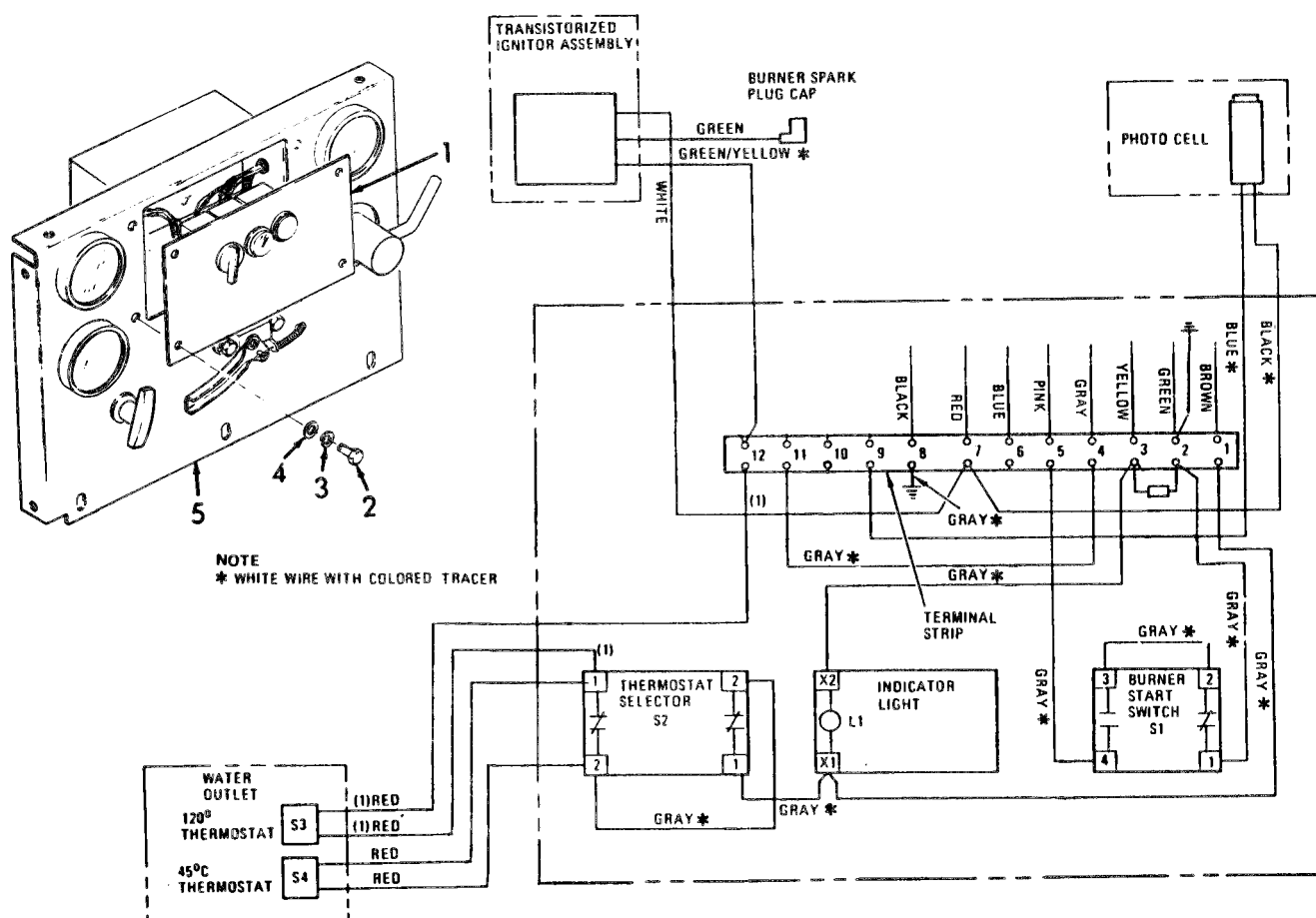
Burner, Installation.

g. Front Panel Removal/Installation.

NOTE

To remove igniter, photocell or high and low temperature thermostats, it will be necessary to first gain access to back of panel (1). This is done as follows :

- (1) Remove four bolts (2), washers (3), and washers (4) from panel (1).
- (2) Carefully ease panel (1) away from control panel (5) thereby exposing the terminal strip.
- (3) Disconnect only those wires necessary to remove component.
- (4) Upon installation of new component, and attachment to terminal strips, install spot ties as required.
- (5) Reposition panel (1) and secure with bolts (2), washers (3), and washers (4).



Partial Panel Schematic.

4-18. PHOTOCELL.

This task consists of:

a. Replace

b. Repair

INITIAL SETUP:

Tools Required:

Tool Kit, General Mechanics
Tool Kit from Accessory Kit
Socket Set, Metric

Materials Required:

Brush, Varnish (item 1, Appendix E) .
Cleaning Solvent, (item 3, Appendix E).
Sealing Compound (item 8, Appendix E).

Equipment Conditions:

Engine shutdown and cool.

a. Removal.

- (1) Disconnect air cooling hose (1) from nipple (2).
- (2) Remove two bolts (6), two washers (4), two lockwashers (5), tee (3), mica window (11), and plate (12).
- (3) Loosen mounting screw (10) and remove cell (9) from tee (3).
- (4) To remove photocell wires from control panel refer to page 4-35. The photocell can be disconnected from control panel by disconnecting white wire with black tracer from No. 7 terminal and white wire with blue tracer from No. 9 terminal on terminal strip .
- (5) Remove nipple (2), air vent line (8), and elbow (7).

b. Cleaning.

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (1) Wash cell components in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E).

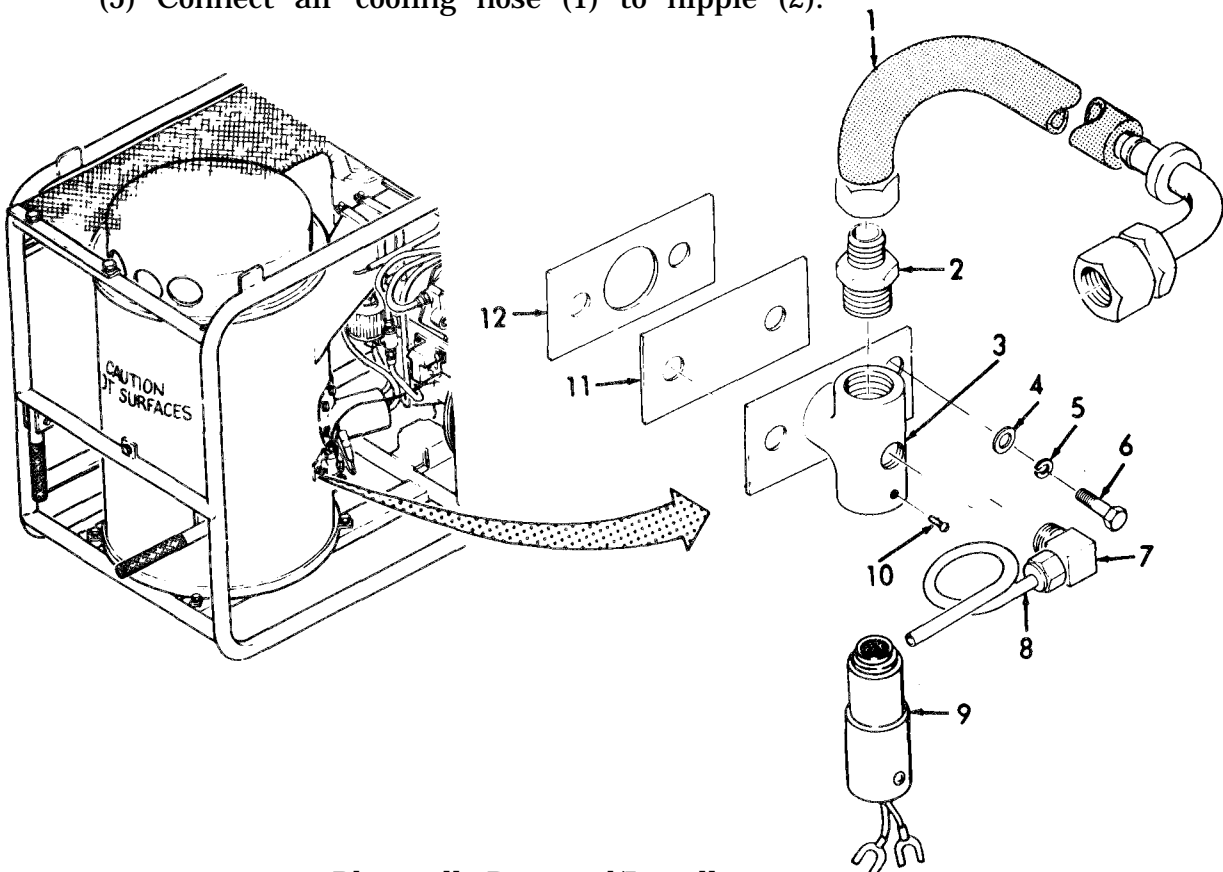
(2) Allow to dry.

c. Inspection.

- (1) Inspect for missing hardware.
- (2) Inspect mica window (11) for cracks or carbon buildup.
- (3) Inspect cell (9) for buildup of carbon or cracks.
- (4) Inspect mounts and brackets for cracks.

d. Installation.

- (1) Using sealing compound (item 8, Appendix E) install elbow (7), air vent line (8), and nipple (2).
- (2) To connect cell (9) wires to control panel terminal strip, refer to page 4-35. Connect white wire with black tracer to No. 7 terminal and white wire with blue tracer to No. 9 terminal.
- (3) Install cell (9) in tee (3) and tighten mounting screw (10).
- (4) Install plate (12), mica window (11), tee (3), two washers (4), two lockwashers (5), and two bolts (6).
- (5) Connect air cooling hose (1) to nipple (2).



Photocell, Removed/Installation.

4-19. HEAT EXCHANGER (DESCALING PROCEDURE).

This task consists of:

- | | | |
|------------|------------|-----------|
| a. Inspect | b. Service | c. Repair |
|------------|------------|-----------|

INITIAL SETUP:

Tools Required:

None

Materials Required:

2-Can, Ash and Garbage, 32 gallon (Appendix D).

| <u>Nomenclature</u> | <u>Recommended Strength</u> |
|---|-----------------------------|
| Sulfamic Acid (descaler) (item 11, Appendix E) | 1/2 pound/gallon water |
| Sodium Carbonate (neutralizer) (item 9, Appendix E) | 2 1/2 pounds/gallon water |

Equipment Conditions:

Decontaminating apparatus operational.

- a. Descaling Procedure.

WARNING

The chemicals used for descaling can cause burns or irritation to skin and eyes. May be harmful if inhaled. Be sure to wear protective clothing (MOPP GEAR) including rubber gloves, apron and mask when descaling.

- (1) Move the decontaminating apparatus to be descaled to a designated area.
- (2) Position the descaling drum approximately 20 to 30 feet from intake end of decontaminating apparatus.
- (3) Connect suction hose and place strainer end in solution near top of container. Secure in position.
- (4) connect strainer/branch hose to unit. Do not remove strainer.
- (5) Connect two pressure hoses to branch hose.

- (6) Place discharge ends of each pressure hose in can of descaling solution. Install cleaning wands without jets if they are to be descaled.
- (7) Connect engine and heater fuel supplies and fill 32 gallon can with 25 gallons of water.
- (8) Start decontaminating apparatus and establish a water flow. Adjust water pressure for minimum indicated pressure (5-10 psi).
- (9) Position return hoses (pressure) so that they do not interfere with inlet to suction strainer.
- (10) Manually start burner for 5-10 seconds. Repeat several times until indicated temperature is approximately 35-40° C (85-100°F).
- (11) Mix selected descaler chemicals into warm water according to Recommended Strength column of INITIAL SET-UP. (Refer to page 4-38).
- (12) Maintain pressure and temperature setting during recirculation. Recirculate solution for a period not longer than two hours.

NOTE

- Observe water pressure gage during procedure. Excessive pressure could indicate suction hose strainer blockage requiring cleaning of strainer.
- The descaler agent on the INITIAL SET-UP Materials List contains a depletion indicator which changes color (from reddish to yellow) when the active acid is used up. If at any time during the first 15 to 30 minutes the solution changes color to yellow, add one pound of chemical to the solution. Extend recirculating time by 30 minutes - circulation is complete when the acid remains a reddish color.

- (13) Before end of recirculation period, prepare a 5% (by weight) solution of sodium carbonate to neutralize the unit, side by side of the other can. Prepare 25 gallons solution of sodium carbonate to neutralize the solution.
- (14) When recirculation period is over, throttle engine back until water pump stops, then transfer suction hose into soda ash solution and pump remaining descaling solution (in system) into descaling solution container.
- (15) When all descaler is pumped out, transfer pressure hoses into sodium carbonate solution container and circulate for several minutes.
- (16) Perform steps (14) and (15) except use fresh water instead of ash solution.

4-19. HEAT EXCHANGER (DESCALING PROCEDURE) - Continued.

a. Descaling Procedure - Continued.

- (17) Shut down unit and inspect for scale in outlet and branch hose/strainer.
- (18) If descaling is not adequate, repeat steps (12) through (17).
- (19) When entire descaling procedure is completed, slowly add sodium carbonate solution to descaling solution. Descaling solution will froth and foam as sodium carbonate solution is added. When solution does not foam or froth, and has turned yellow, it is completely neutralized and may be disposed of in accordance with local SOP.

4-20. BURNER FUEL SYSTEM.

This task consists of:

Repair

INITIAL SETUP :

Tools Required:

Tool Kit from Accessory Kit

Materials Required:

Brush, Varnish (item 1, Appendix E)
Cleaning Solvent (item 3, Appendix E)
Strap, Tiedown (item 10, Appendix E)

Equipment Conditions:

Engine and heat exchanger shutdown and cool.

NOTE

Fuel hoses are easily damaged during removal. All hoses must be carefully inspected during reassembly. Replace all damaged hoses.

a. Repair.

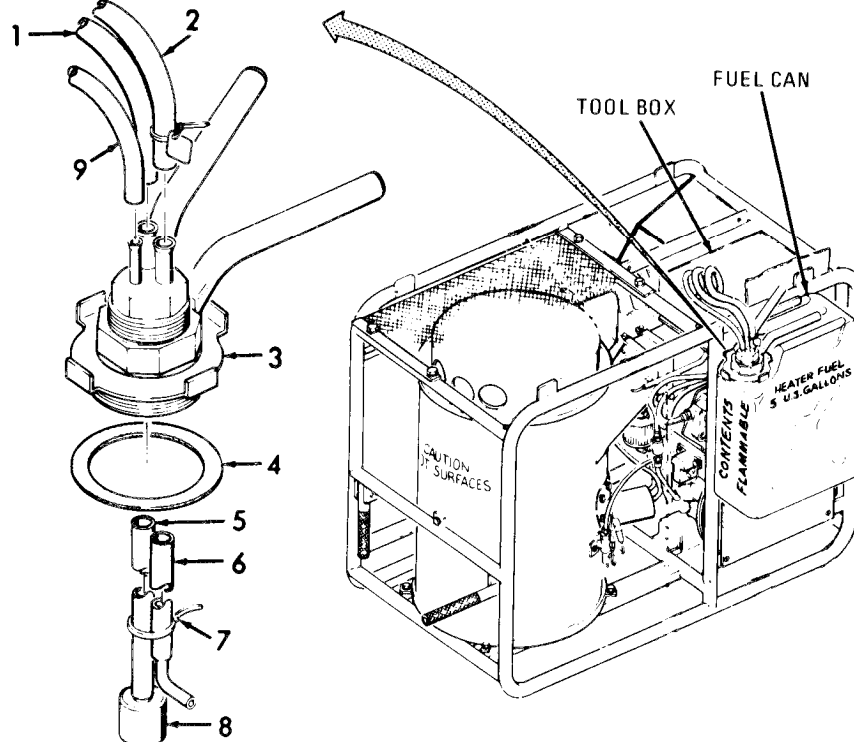
- (1) Remove burner fuel can lid assembly (3) from fuel can or tool box, as required.
- (2) Clean all metal parts of lid assembly (3) with dry cleaning solvent (item 3, Appendix E).

- (3) Inspect burner fuel system for the following:
- (a) Clogged or damaged strainer (8).
 - (b) Hoses (1, 2, 5, 6, and 9) are punctured, cracked, or not securely attached to fittings. Loose hose fittings cause leaks and prevent the system from operating properly.
 - (c) Gasket (4) is worn, frayed, cut or torn.
 - (d) Lid assembly (3) is damaged, threads are stripped or fuel hose connections are bent.
- (4) Replace defective components as follows:

NOTE

Replace damaged fuel hoses one at a time to prevent hooking to a wrong connection.

- (a) Disconnect defective hose (1, 2, 5, 6, or 9) from lid assembly (3).
- (b) Trace defective hose to its termination point. Remove tiedown straps (7) as required.
- (c) Install new hose from lid assembly (3) to termination point.
- (d) Secure hose by installing tiedown straps (7) (item 10, Appendix E).



Fuel Hose Repair.

4-21. FLUID FILTER.

This task consists of:

Repair of Filter Element

INITIAL SETUP:

Tools Required:

Tool Kit, On-Board

Materials Required:

Brush, Varnish (item 1, Appendix E)
Cleaning Solvent (item 3, Appendix E)
Filter Element (P/N-7111-296)

Equipment Conditions:

Engine shutdown and cool.

a. Removal.

- (1) Remove panel.
- (2) Remove drain (10) and gasket (11). Drain fuel into suitable container.
- (3) Remove bolt (1) and washer (2). Separate bottom (9), gasket (8), bowl (7), and filter element (5) from filter body (13). Remove and discard gaskets (4 and 6) and O-rings (3 and 12).

b. Cleaning.

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (1) Wash fluid filter components in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E).
- (2) Allow to dry.

c. Installation.

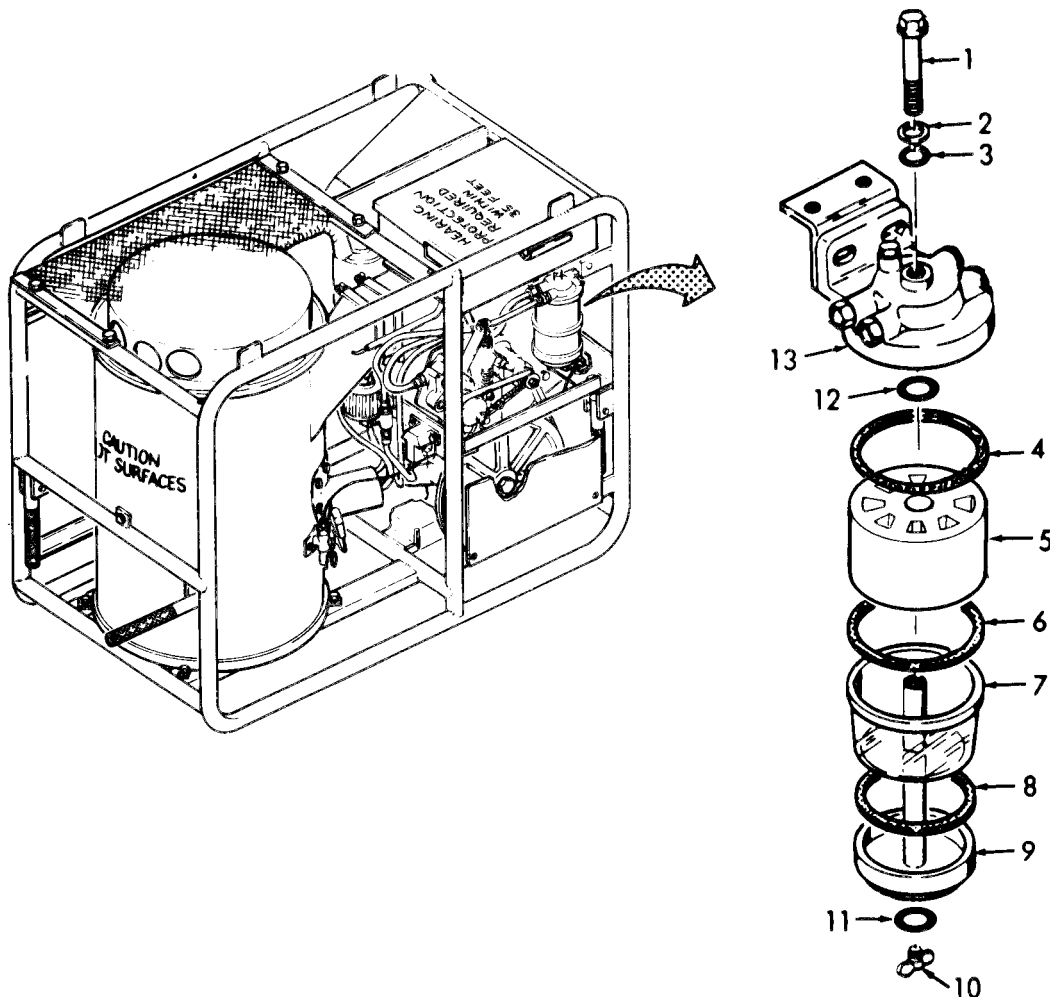
- (1) Place bowl (7), on bottom (9) and install new gasket (6) on bowl making sure gasket (8) is in place.

- (2) Install new gasket (6) and bowl (7).
- (3) Position new filter element (5) and new gasket (4) on bowl (7).

NOTE

Be sure bowl (7) is properly seated against the gasket (6) prior to tightening bolt (1).

- (4) Install new O-rings (3 and 12) on filter body (13).
- (5) Position assembled components (4 through 9) on filter body (13). Secure components in place with washer (2) and bolt (1). Install drain (10) and gaskets (11).
- (6) Perform operational checkout and inspect for leaks.



Fluid Filter Element, Removal/Installation.

4-22. FUEL PUMP BELT TENSIONER.

This task consists of:

Repair

INITIAL SETUP:

Tools Required:

Tool Kit, General Mechanics
Socket Set, Metric

Materials Required:

Brush, Varnish (item 1, Appendix E)
Cleaning Solvent (item 3, Appendix E)

Equipment Conditions:

Engine shutdown and cool.
Fuel pump belt removed.

a. Removal.

- (1) Remove two bolts (5), two lockwashers (6), and two washers (7).
- (2) Remove bracket (8) from fan housing (1).
- (3) Remove nut (2), bolt (9), washer (3), and disconnect spring (4).

b. Cleaning.

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (1) Wash all parts of belt tensioner in cleaning solvent (item 3, Appendix E) using a varnish brush (item-1, Appendix E).
- (2) Allow to dry.

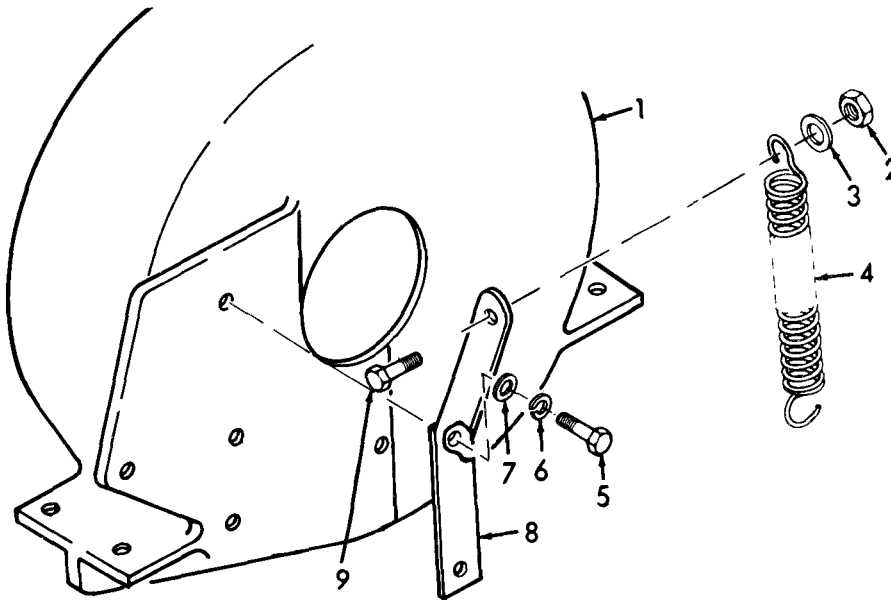
c. Repair.

- (1) Repair of the fuel pump tensioner shall consist of replacement of missing or damaged components. Damage is defined as the following:

- (a) Bracket (8) is cracked or bent.
- (b) Spring (4) is broken or coils are stretched.
- (c) Bolts and nuts with stripped or deformed threads.

d. Installation.

- (1) Install spring (4), washer (3), bolt (9), and (2) on bracket (8).
- (2) Install bracket (8) on fan housing (1) and secure with two washers (7), two lockwashers (6), and two bolts (5).
- (3) Install and adjust fuel pump drive belts.



Fuel Pump Belt Tensioner, Removal/Installation.

4-23. WATER OUTLET.

This task consists of:

- | | |
|------------|-----------|
| a. Replace | b. Repair |
|------------|-----------|
-

INITIAL SETUP:

Tools Required:

On-Board Tool Kit

Materials Required:

Brush, Varnish (item 1, Appendix E)
Cleaning Solvent (item 3, Appendix E)
Sealing Compound (item 8, Appendix E)
Gasket (P/N 9000-0268)

Equipment Conditions:

Engine shutdown and cool.

- a. Removal.

NOTE

Disassemble only to the extent necessary to replace defective parts.

- (1) Disconnect manometer sensing port (2) by unscrewing large hex nut from tee (5).
- (2) Disconnect thermometer sensing bulb (9) by unscrewing threaded sleeve from tee (5).
- (3) To disconnect thermostat switches (8 and 10) from control panel terminal strip, refer to page 4-35. The high temperature thermostat wires are removed by disconnecting one red wire with white band from No. 12 contact on terminal strip and the other red wire with white band from No. 1 position on thermostat selector switch. The low temperature thermostat wires are removed by disconnecting one red wire from No. 1 position on thermostat selector switch and the other red wire from No. 2 position on the thermostat selector switch.
- (4) Remove, thermostat switches (8 and 10).
- (5) Loosen nut (3) and remove tee (5) from heat exchanger (4).
- (6) Remove coupling (6) and gasket (7) from tee (5). Discard gasket.

- (7) Remove cone (compression fitting) (1) and nut (3) from tee (5).

b. Cleaning.

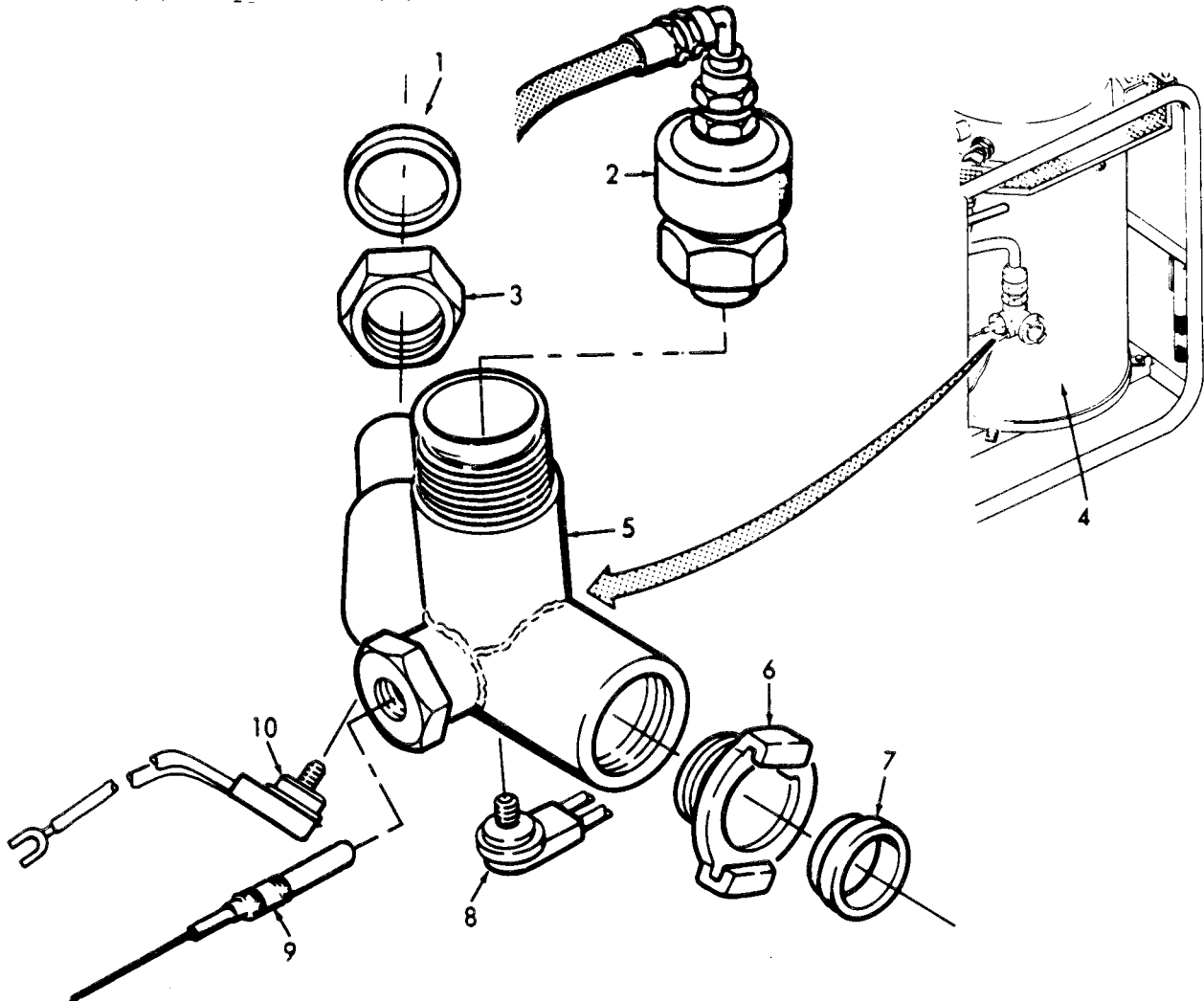
WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (1) Wash water outlet assembly parts in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E).

c. Inspection.

- (1) Inspect for broken, frayed wires on thermostats.
(2) Inspect tee (5) for cracks.



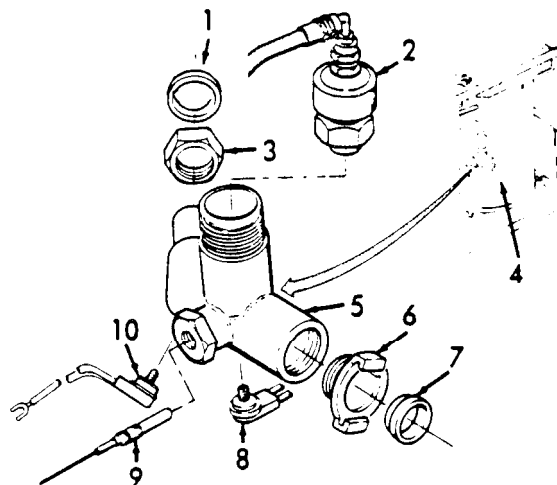
Water Outlet, Removal.

4-23. WATER OUTLET - Continued.

d. Installation.

NOTE

- Use sealing compound (item 8, Appendix E) on all threads.
 - If nut and compression fitting were not salvageable, install a new nut and compression fitting.
- (1) Install coupling (6) and new gasket (7) on tee (5).
 - (2) Install nut (3) and new cone (compression fitting) (1) on tee (5).
 - (3) Position assembled components (1, 3, 5, 6, and 7) on heat exchanger (4). Tighten nut (3).
 - (4) Install thermostat switches (8 and 10) on tee (5).
 - (5) To connect thermostat switch leads to the control panel, refer to page 4-35. The high temperature thermostat is attached to control panel by connecting one red wire with white band to No. 12 terminal of terminal strip. Connect other red wire with white band to No. 1 position on thermostat selector switch. The low temperature thermostat is attached to the control panel by connecting one red wire to No. 1 position on thermostat selector switch and the other red wire to No. 2 position on thermostat selector switch.
 - (6) Connect manometer sensing port (2) to tee (5).
 - (7) Install thermometer bulb (9) on tee (5). Screw threaded sleeve in fingertight.
 - (8) Perform operational checkout and inspect for leaks.



Water Outlet, Installation.

4-24. WATER PUMP.

This task consists of:

Repair

INITIAL SETUP:

Tools Required:

Socket Set, Metric
Tool Kit, General Mechanics

Socket Adapter

Materials Required:

None

Equipment Conditions:

Engine shutdown and cool.

a. Cleaning.

NOTE

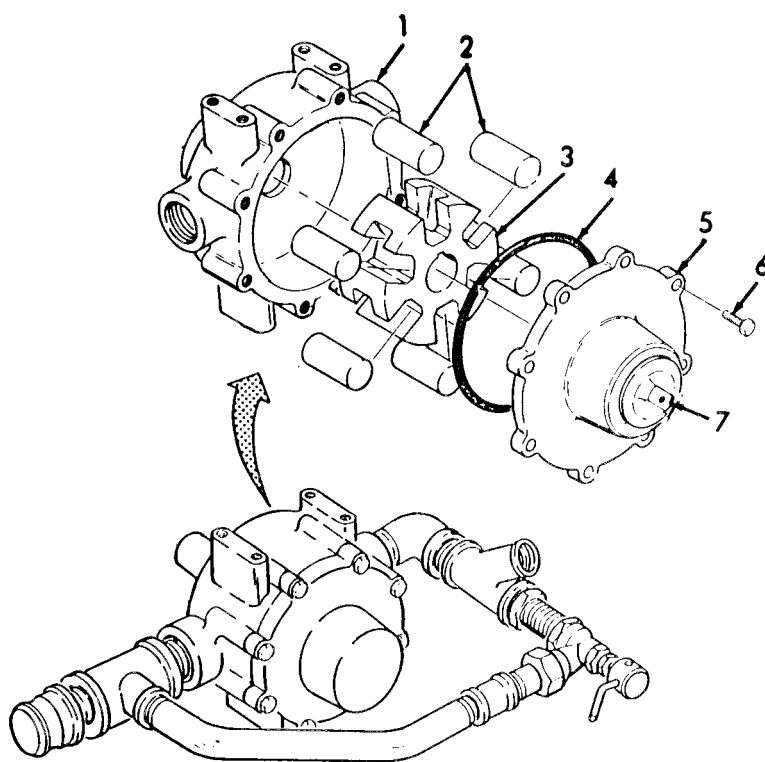
When removing bolts (6) from pump lid (5), record location and length of bolts to aid installation.

- (1) Position unit on end with heat exchanger down and remove bolts (6).
- (2) Thread one long bolt into retainer (7) and tighten until pump lid (5) breaks free of pump housing (1).
- (3) Remove pump lid (5) and (1-ring seal (4) from pump housing (1). Remove long bolt (6) from retainer (7).

NOTE

Prior to removing rotors, note the position of rotor vane cups.

- (4) Remove rollers (2) from housing (1). If necessary, remove rotor (3) from housing (1) and clean mud, silt, and contaminants from pump lid (5), housing (1), rotor (3), and rollers (2) with fresh, clean water. Reinstall rotor (3) and rollers, if removed.
- (5) Position O-ring seal (4) on pump lid (5). Install pump lid on pump housing (1) with bolts (6). Cross tighten bolts (6) so that pump lid is drawn down evenly.
- (6) Operate unit and check for leaks.



Water Pump, Cleaning.

4-25. CONTROL PANEL.

This task consists of:

Repair - Indicator light and lead

INITIAL SETUP:

Tools Required:

On-Board Tool Kit

Equipment Conditions:

Engine shutdown.

a. Indicator Lamp.

(1) Removal.

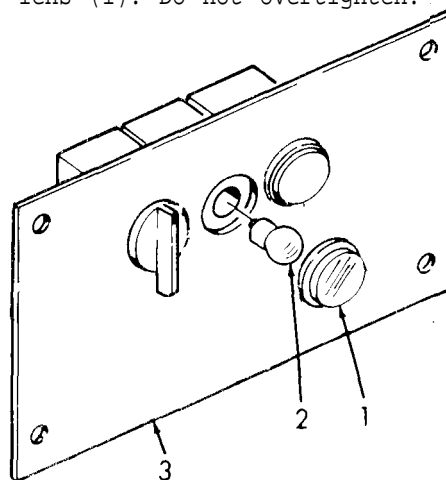
- (a) Unscrew and remove lens (1).
- (b) Push bulb (2) in toward panel (3), twist 1/4 turn counter-clockwise, and remove lamp.

(2) Inspection.

- (a) Inspect lamp socket for damage or corrosion.

(3) Reassembly.

- (a) Press new lamp (2) in toward panel (3). Twist lamp 1/4 turn clockwise to lock lamp in place.
- (b) Install lens (1). Do not overtighten.



Lamp, Removal and Reassembly.

b. Burner Choke Control.

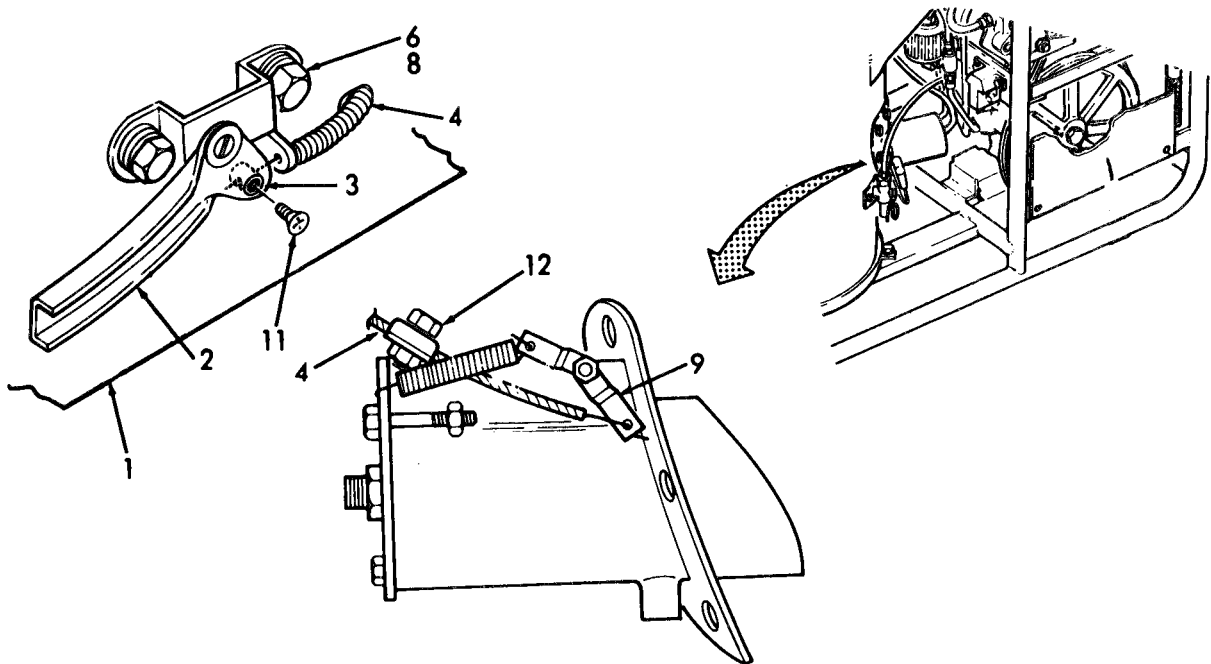
(1) Removal.

- (a) Remove two bolts (8), two washers (6), and lever (2) from control panel.

NOTE

It may be required to cut bend in lead to free cable from cable clamp.

- (b) Loosen bolt (11) on cable clamp (3) and unscrew choke cable (4) outer casing from lever (2).
- (c) Loosen bolt (11) and disconnect lead (4) from burner choke arm (9). Pull lead from unit.



Burner Choke Control, Removal.

(2) Cleaning.

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (a) Wash burner lever (2) and cable parts in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E).
- (b) Allow to dry.

| |
|----------------------------------|
| 4-25. CONTROL PANEL - Continued. |
|----------------------------------|

b. Burner Choke Control - Continued.

(3) Inspection.

- (a) Inspect burner choke lever (2) for cracks and rust/corrosion. Replace if damaged.
- (b) Inspect lead (4) for kinks and fraying.

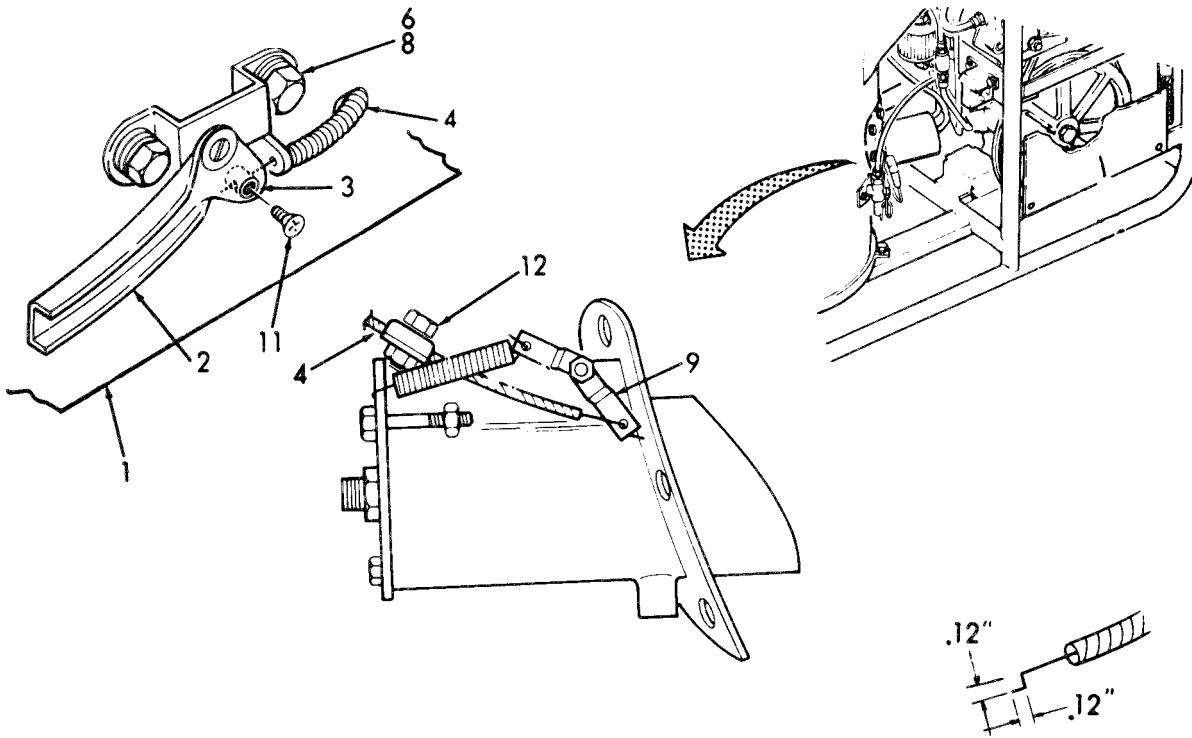
(4) Installation.

- (a) Lubricate new lead (choke cable) (4) and lever (1) with oil (item 4, Appendix E) .
- (b) Bend one end of lead (4) inner wire into Z shape as shown. Connect cable end to burner choke arm (10).
- (c) Position lead in clamp on burner (9). Make sure lead is under washer (12) and bolt (11). Handtighten bolt (11).
- (d) Position lead (4) through control panel (1).
- (e) Screw lead (4) outer casing into lever (2) while guiding inner wire through cable clamp (3).

NOTE

To prevent misadjustment of lead, lever must be against cable stop (choke in open position) before tightening cable clamp screw.

- (f) With lead lever (2) rotated so that lever is against cable stop, tighten screw (5) against choke cable (4) inner wire.
- (g) Bend lead (4) inner wire around cable clamp (3) to prevent cable slippage through clamp during use.
- (h) Position lever (2) on control panel (1) and install two washers (6), two lockwashers (7), and two bolts (8).
- (i) Tighten bolt (11) on burner (9).
- (j) Raise lever (2) and ensure burner choke goes to fully closed position. Release lever and ensure burner choke returns to full open position.



Burner Choke Control, Installation.

| |
|-----------------|
| 4-26. TOOL BOX. |
|-----------------|

This task consists of:

Repair

INITIAL SETUP:

Tools Required:

Tool Kit, General Mechanics
Socket Set, Metric
Riveter, Blind, Hand

Materials Required:

Brush, Varnish (item 1, Appendix E)
Cleaning Solvent (item 3, Appendix E)

Equipment Conditions:

All items removed from tool box.
Engine shutdown and cool.

a. Cleaning.

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

(1) Wash tool box and all metal parts in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E).

(2) Allow to dry.

b. Inspection.

(1) Inspect tool box.

(2) Inspect hoses and connections.

(3) Inspect for missing hardware.

c. Repair.

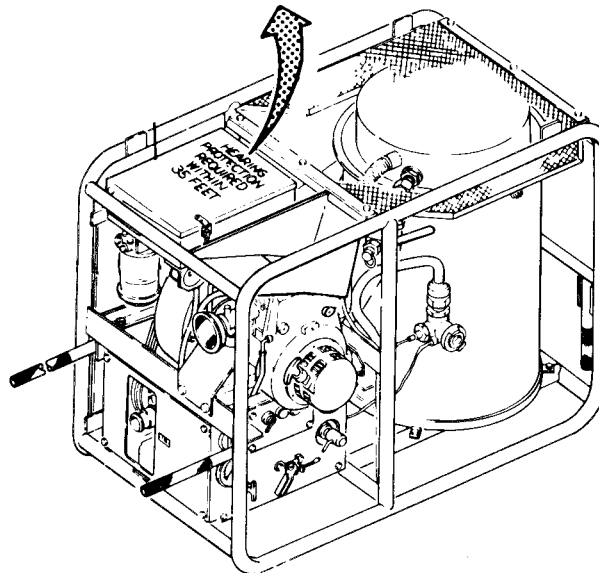
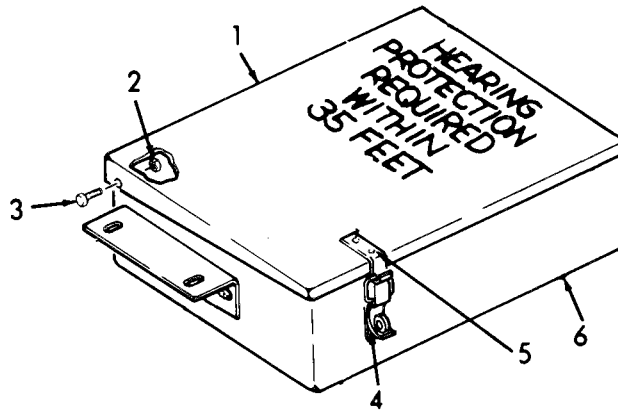
(1) Open cover (lid) (1) and remove two nuts (2).

(2) Remove cover (1).

NOTE

Do not remove rivets unless latches (catch/strike) must be replaced.

- (3) Remove four rivets (5), and latch assembly (catch/strike) (4) from cover (1) and bottom (6).
- (4) Replace parts as required.
- (5) Place latch assembly (catch/strike) (4) into position and secure with four rivets (5).
- (6) Install cover (1).
- (7) Install two bolts (3) and two nuts (2).



Tool Box, Repair.

| |
|--------------|
| 4-27. FRAME. |
|--------------|

This task consists of:

Repair - Handle

INITIAL SETUP:

Tools Required:

Tool Kit, General Mechanics
Tool Kit from Accessory Box

Materials Required:

None

Equipment Conditions:

Engine shutdown and cool.

a. Disassembly.

NOTE

Disassemble only to the extent required to repair.

- (1) Remove nut (1), washer (2), bolt (5), washer (4), and handle (3).
- (2) Repeat step (1) for other three handles.
- (3) Remove drain hose (6) from engine fuel can holder (7) and from drain tube on frame.

b. Inspection.

- (1) Inspect all hardware for stripped threads. Replace if damaged.
- (2) Inspect all parts of frame for cracks, holes, elongated mounting holes, broken tube, and rust/corrosion. Replace frame if broken.

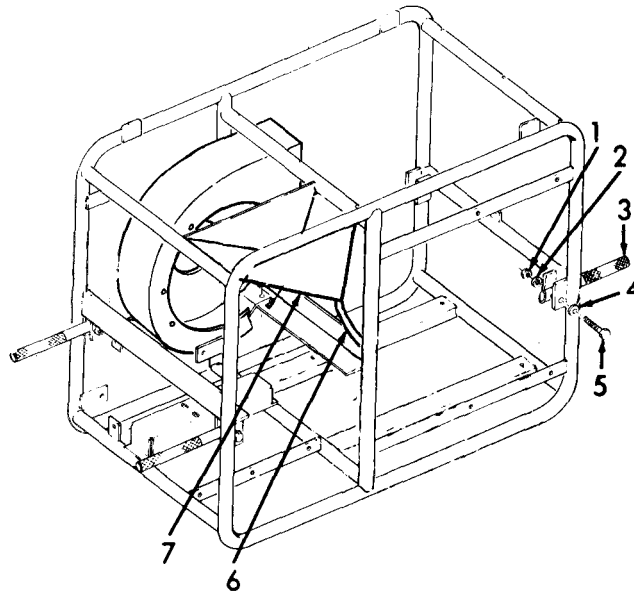
c. Repair.

Repair of the frame is limited to the following:

- (1) Replacement of hardware.
- (2) Replacement of handles, support brackets, and panels.

d. Assembly.

- (1) Install handle (3), washer (4), bolt (5), washer (2), and nut (1).
- (2) Repeat step (1) for other three handles.
- (3) Install drain hose (6) onto fuel can holder (7) and drain tube on frame.



Frame, Disassembly and Assembly.

| |
|---------------------------------------|
| 4-28. SUCTION HOSE/STRAINER ASSEMBLY. |
|---------------------------------------|

This task consists of:

a. Repair

b. Replace

INITIAL SETUP:

Tools Required:

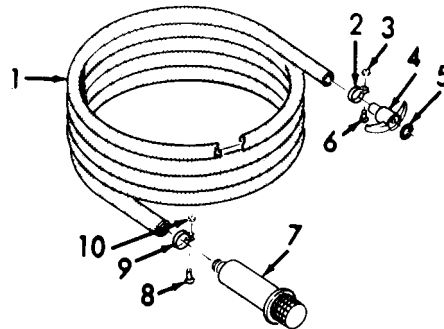
Tool Kit, General Mechanics

Equipment Conditions:

Hoses removed.

a. Suction Hose Repair.

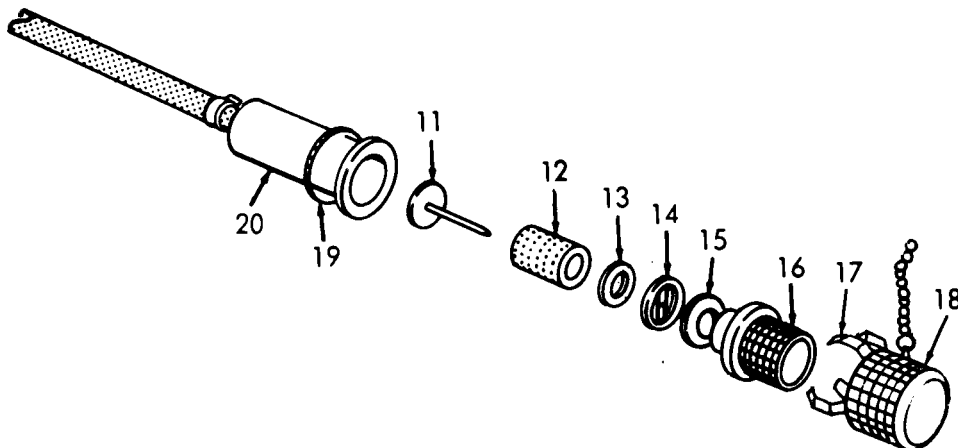
- (1) Remove gasket (5) from coupling (4).
- (2) Loosen nut (3) and bolt (6) and then remove coupling (4) from hose (1).
- (3) Remove clamp (2).
- (4) Loosen nut (10) and bolt (8) and remove strainer (7).
- (5) Remove clamp (9).
- (6) Replace defective or damaged parts as required.
- (7) Install clamp (9) over hose (1).
- (8) Install strainer (7) and tighten nut (10) and bolt (8) on clamp (9).
- (9) Install clamp (2) on hose (1).
- (10) Install coupling (4) and tighten nut (3) and bolt (6) on clamp (2).
- (11) Install gasket (5) in coupling (4).



Suction Hose, Disassembly.

b. Strainer Repair.

- (1) Slide spring (19) from clips (17) and remove basket (18) and filter components from shroud (20).
- (2) Unscrew retainer (11) and disassemble screen (16), gasket (15), mount (14), gasket (13), and element (12).
- (3) Replace defective parts.
- (4) Assemble element (12), gasket (13), mount (14), gasket (15), and screen (16).
- (5) Slide retainer (11) through assembled parts and thread into mount (14). Position components in shroud (20).
- (6) Position basket (18) on shroud (20) and slide spring (19) over clips (17).



Strainer, Repair.

4-29. BRANCH HOSE/STRAINER ASSEMBLY.

This task consists of:

- | | |
|-----------|------------|
| a. Repair | b. Replace |
|-----------|------------|
-

INITIAL SETUP:

Tools Required:

Tool Kit, General Mechanics

Equipment Conditions:

Branch hose removed.

NOTE

There are two different strainers being manufactured for this equipment. However, only one type of strainer is furnished with each unit. Before making repairs to the strainer assembly, you must determine which strainer you have. The "A" version strainer incorporates a yoke assembly that retains the cap, see Fig. A. The "B" version has a cap that screws directly into the body of the strainer, see Fig. B.

It is important to determine what strainer you have as the strainer parts are not interchangeable. If strainer replacement is required, the "A" version shall be replaced by the "B" version.

a. Disassembly.

- (1) Remove gaskets (3 and 13) from couplings (4 and 12) and couplings (4) from tee (5) .
- (2) Remove tee (5) and nipple (2) from body (1).
- (3) If you have the "A" version, loosen locked nut and bolt (6) and remove yoke and cap (7).
- (4) If you have the "B" version, unscrew cap (8) , remove strainer (10) and gasket (9).
- (5) Remove strainer body (1) from hose (11).

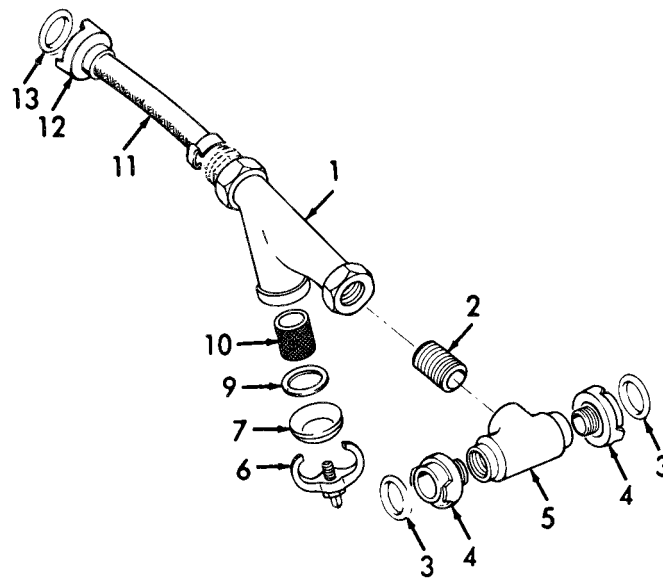
b. Repair.

Replace defective parts.

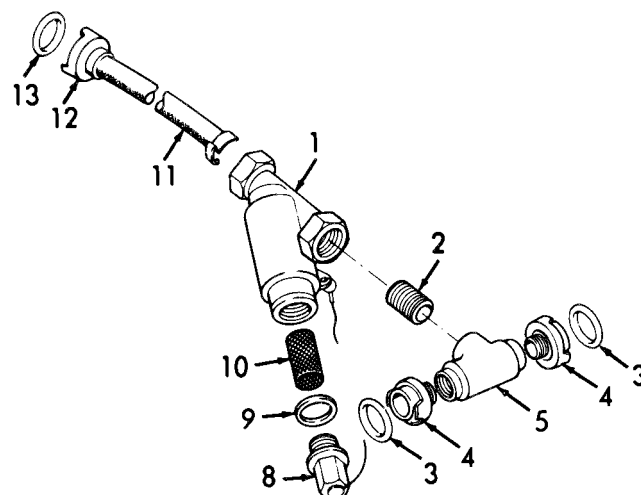
c. Assembly.

- (1) Install nipple (2) and tee (5) on body (1).

- (2) Install body (1) on hose (11).
- (3) Install new gaskets (3 and 13) on couplings (4 and 12) and install coupling (4) on tee (5).
- (4) With the "A" version, install strainer (10) and replace gasket (9), and cap (7), and yoke (6).
- (5) With "B" version, install strainer and replace gasket (9) and cap (8).



Branch Hose Strainer, Assembly (Version "A").



Branch Hose Strainer, Assembly (Version "B").

| |
|-----------------------|
| 4-30. PRESSURE HOSES. |
|-----------------------|

This task consists of:

a. Replace

b. Repair

INITIAL SETUP:

Tools Required:

Tool Kit, General Mechanics

Materials Required:

Gasket (P/N 9000-0268)

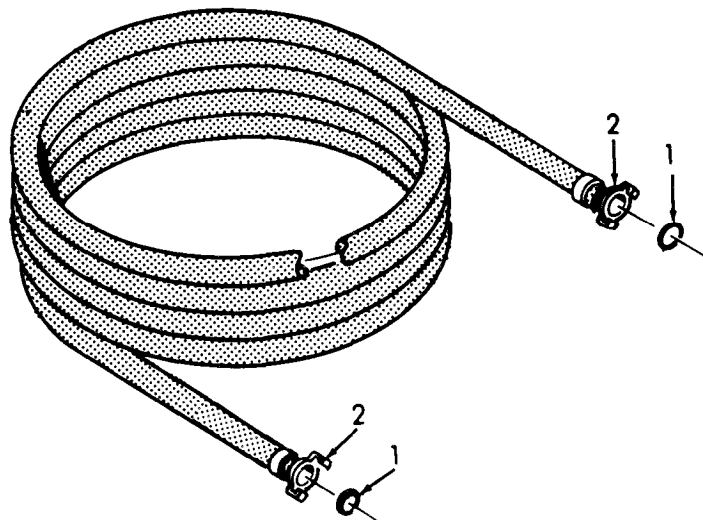
Equipment Conditions:

Pressure hoses removed.

a. Repair

(1) Remove two gaskets (1) from hose connectors (2).

(2) install two new gaskets (1) in hose connectors (2).



Pressure Hose, Repair.

| |
|---------------|
| 4-31. SHOWER. |
|---------------|

This task consists of:

a. Replace

b. Repair

INITIAL SETUP:

Tools Required:

Tool Kit On-Board

Materials Required:

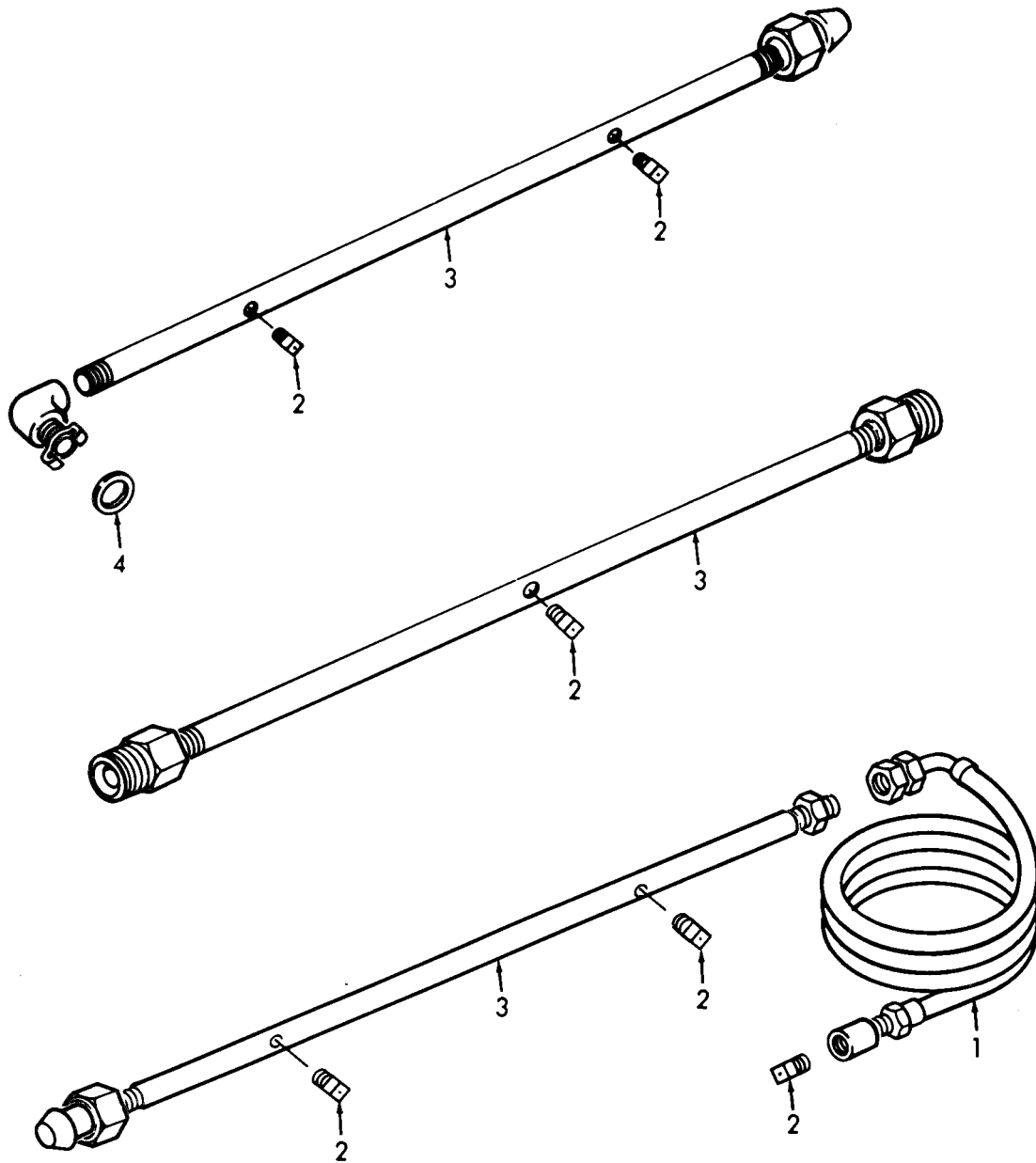
Sealing Compound (item 8, Appendix E).

Equipment Conditions:

Shower removed.

a. Repair.

- (1) Disconnect hose (1) from shower tube (3).
- (2) Remove nozzles (2) from shower tubes (3).
- (3) Remove gasket (4).
- (4) Replace gasket if cracked, broken or split.
- (5) Install new gasket (4).
- (6) Install nozzles (2) on shower tubes (3) using sealing compound (item 8, Appendix E).
- (7) Connect hose (1) to shower tube (3).



Shower, Repair.

4-32. JET (CLEANING WANDS).

This task consists of:

- a. Repair
-

INITIAL SETUP:

Tools Required:

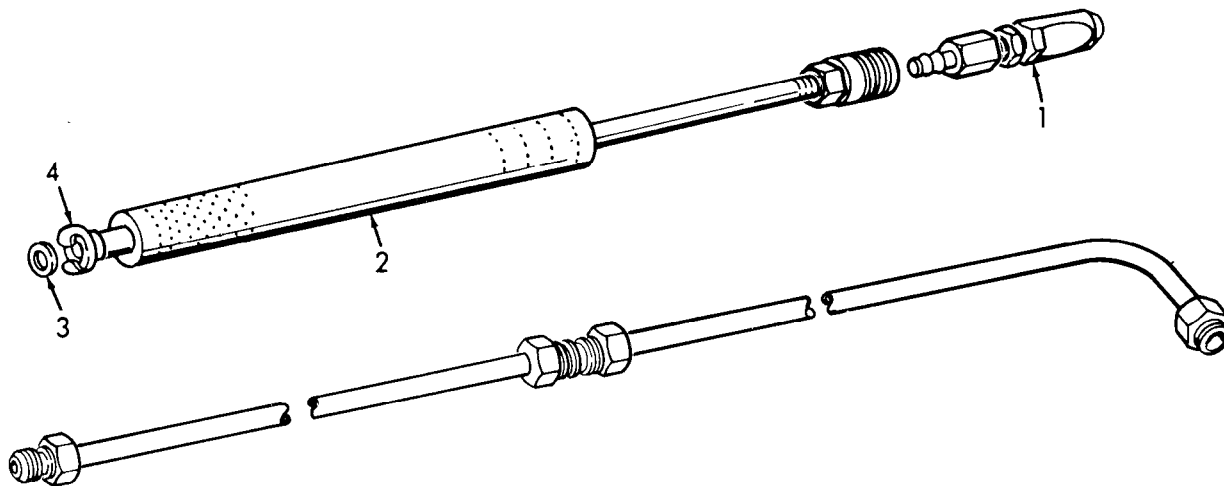
Tool Kit, General Mechanics

Equipment Conditions:

Cleaning wands removed.

- a. Repair.

- (1) Remove nozzle (1) from handle (2).
- (2) Remove gasket (3) from coupling (4).
- (3) Clean nozzle (1) and inspect.
- (4) Replace defective parts.
- (5) Install new gasket (3) in coupling (4).
- (6) Install nozzle (1) on handle (2).



Jet, Repair.

| |
|-----------------|
| 4-33. INJECTOR. |
|-----------------|

This task consists of:

- | | |
|------------|-----------|
| a. Replace | b. Repair |
|------------|-----------|
-

INITIAL SETUP:

Tools Required:

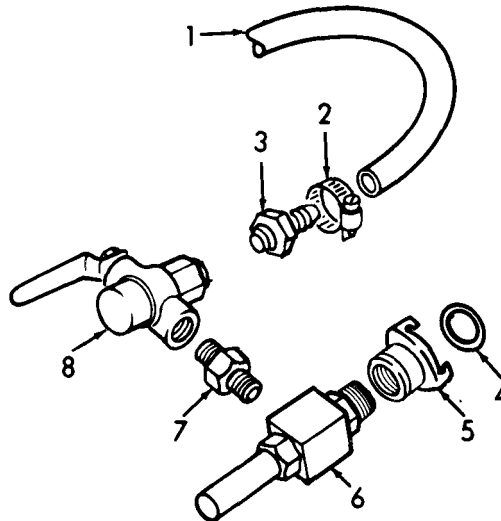
Tool Kit, General Mechanics

Equipment Conditions:

Injector removed.

a. Repair.

- (1) Loosen clamp (2) and remove hose (1).
- (2) Remove gasket (4), coupling (5) and injector (6) from reducer (7). Remove adapter (3) and reducer (7) from valve (8).
- (3) Replace damaged parts.
- (4) Install reducer (7) and adapter (3) on valve (8).
- (5) Install gasket (4) in coupling (5). Install coupling on injector (6).
- (6) Install nozzle (6) on reducer (7).
- (7) Install hose (1) and clamp (2) on adapter (3). Tighten clamp.



Injector, Repair.

| |
|-----------------|
| 4-34. TOOL KIT. |
|-----------------|

This task consists of:

- a. Repair
-

INITIAL SETUP:

Tools Required:

Tool Kit from Accessory Box

Materials Required:

Brush, Varnish (item 1, Appendix E).
Cleaning Solvent (item 3, Appendix E).

Equipment Conditions:

Engine shutdown and cool.

- a. Cleaning.

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (1) Wash all tools in cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E).
- (2) Wash pouch in mild soap and water.
- (3) Allow to dry.

- b. Repair.

Repair is limited to replacement of defective or missing parts.

4-35. STORAGE ACCESSORY CASE.

This task consists of:

- | | |
|------------|-----------|
| a. Replace | b. Repair |
|------------|-----------|
-

INITIAL SETUP:

Tools Required:

Tool Kit, General. Mechanics
Tool Kit from Accessory Box
Riveter, Blind, Hand

Materials Required:

Brush, Varnish (item 1, Appendix E).
Cleaning Solvent (item 3, Appendix E).
Paint (item 5, Appendix E).

Equipment Conditions:

Storage accessory case emptied of all accessories.

a. Disassembly.

NOTE

Disassemble accessory case only to extent required to make repairs.

- (1) Remove two hooks (2) and chain (3).
- (2) Remove eighteen rivets (4) from hinge (5) and separate cover (1).
- (3) Remove twenty-eight rivets (7) and two handles (6) from case (8).
- (4) Remove eight rivets (10) and two latches (both halves) (9) from cover (1) and case (8).

b. Cleaning.

WARNING

The cleaning solvent used emits strong vapors and is flammable. To avoid illness or fire, use in a well-ventilated area and away from open flames. DO NOT breathe vapors for a prolonged time.

- (1) Wash all the exterior and interior of storage accessory case with cleaning solvent (item 3, Appendix E) using a varnish brush (item 1, Appendix E).

(2) Allow to dry.

(3) Remove rust and touch up paint as required.

c. Inspection.

(1) Inspect cover (1) and case (8) for damage.

(2) Inspect for missing hardware.

(3) Replace missing or defective parts.

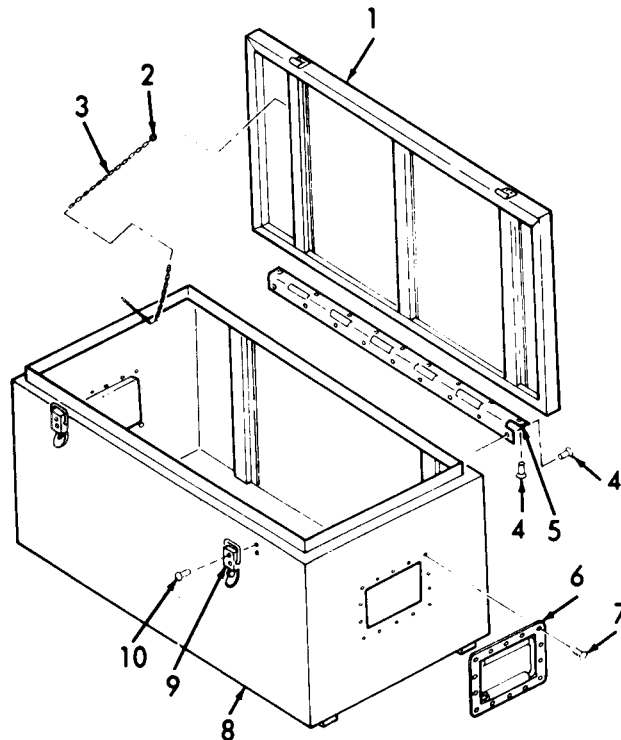
d. Assembly.

(1) If removed, install eight rivets (10) and two latches (both halves) (9) to cover (1) and case (8).

(2) If removed, install twenty-eight rivets (7) and two handles (6) on case (8).

(3) If removed, install eighteen rivets (4) and hinge (5) on cover (1) and case (8).

(4) Install two hooks (2) and chain (3).



Storage Accessory Case, Disassembly and Assembly

Section VI. PREPARATION FOR STORAGE OR SHIPMENT

4-36. PREPARATION FOR LONG TERM STORAGE OR SHIPMENT.

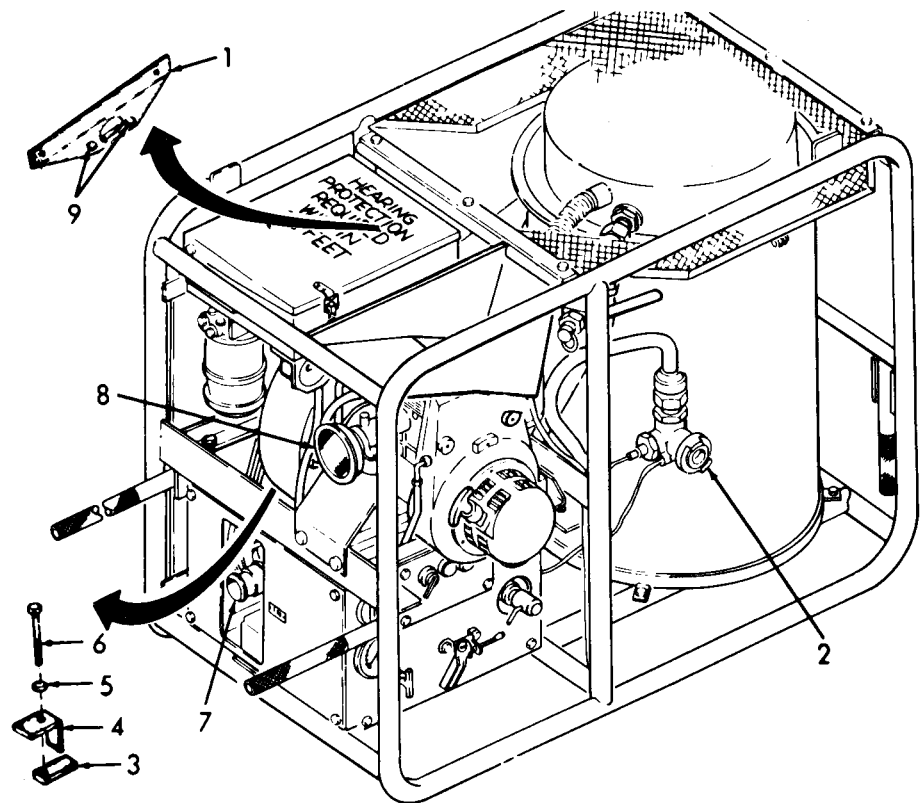
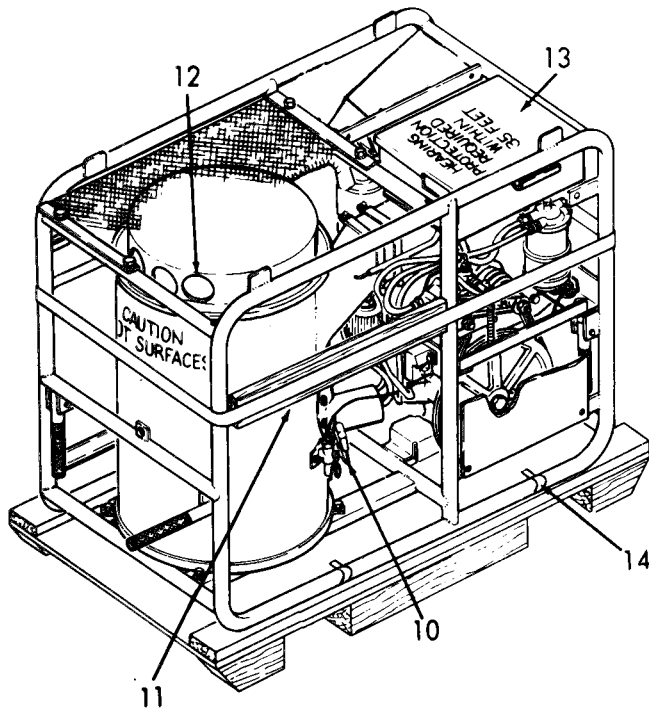
General Information.

- Security of the unit will be maintained in accordance with AR 190-13.
- Administrative Storage will be in accordance with TM 740-90-1.
- Under tropic conditions the unit must be stored indoors. Exposure to salt spray can cause corrosion.
 - a. Drain water from all components and allow to dry.
 - b. Remove fuel pump belt and water pump drive belts. Place all belts in tool box (13).
 - c. Drain all fuel lines and fuel containers.

NOTE

Be sure to powder (item 12, Appendix E) the tank before placing in container.

- d. Place water tank into shipping container.
- e. Remove shipping restraints and attaching hardware from pouch. Place pouch in-accessory kit.
- f. Place water tank container, accessory case, and two fuel containers on skid and band securely.
- g. Using tape (item 13, Appendix E), cover heat exchanger exhaust (12), water inlet (7), carburetor filter (8), water outlet (2), and air vent (10).
- h. Place decontamination unit on skid.
- i. Install lower engine restraints (4 and 3) into position and secure with two washers (5) and two bolts (6).
- j. Install upper engine restraints (1) and secure with two bolts (9).
- k. Install four clamps (14) to secure decontamination unit to skid.
- l. Place tool kit in tool box.
- m. If unit is to be shipped or stored overseas, install shipping crates over both skids.



Preparation for Storage or Shipment.

APPENDIX A

REFERENCES

A-1. SCOPE.

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

A-2. FORMS.

Equipment Inspection and Maintenance Worksheet DA Form 2404
 Recommended Changes to DA Publications. DA Form 2028-2
 Recommended Changes to Publications and Blank. DA Form 2028

A-3. FIELD MANUALS.

NBC Contamination FM 3-5
 First Aid for Soldiers. FM 21-11

A-4. TECHNICAL MANUALS.

Destruction of Chemical Weapons and Defense Equipment
 to Prevent Enemy Use. TM 43-0002-31
 Administrative Storage of Equipment. TM 740-90-1
 Painting Instructions for Field Use. TM 43-0139

A-5. MISCELLANEOUS.

The Army Physical Security Program. AR 190-13
 Maintenance Management Update. DA PAM 738-750
 Consolidated Index of Army Publications and Blank Forms. DA PAM 310-1
 Army Medical Department Expendable/Durable Items DTA 8-100
 Expendable Items (Except Medical Class V, Repair Parts and
 Heraldic Items CTA 50-970

APPENDIX B
MAINTENANCE ALLOCATION CHART (MAC)

Section I. INTRODUCTION

B-1. GENERAL.

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

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

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

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

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows:

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

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

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

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

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

B-2. MAINTENANCE FUNCTIONS - Continued.

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

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

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

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

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

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

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

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

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

C.....Operator or Crew
 O.....Organizational Maintenance
 F.....Direct Support Maintenance
 H.....General Support Maintenance
 L.....Specialized Repair Activity (SRA)
 D.....Depot Maintenance

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

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

| |
|--|
| <p>B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.</p> |
|--|

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

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

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

d. Column 4, National Stock Number. The national stock number of the tool or test equipment.

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

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

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

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

Section II. MAINTENANCE ALLOCATION CHART
for
DECONTAMINATING APPARATUS: POWER-DRIVEN , PORTABLE, TYPE A/E32U-8

| (1) GROUP NUMBER | (2) COMPONENTS/ ASSEMBLIES | (3) MAINTENANCE FUNCTIONS | (4) MAINTENANCE LEVELS | | | | | (5) TOOLS & EQUIP. | (6) RE - MARKS |
|------------------------|--|---|------------------------------|------------------------------|------------------------|---|---|--|----------------------|
| | | | C | O | F | H | D | | |
| 00 | Decontaminat- ing Appara- tus: Power- Driven, Por- table | Inspect Repair | | 0.5 0.2 | | | | | |
| 01 | Water Tank | Inspect Replace Repair | 0.1 0.1 | 0.1 0.2 | | | | | A, C |
| 02 | Decontamina- ting Appara- tus | Inspect Service Adjust Repair | 0.2 0.5 | 0.2 0.5 0.2 0.5 | | | | 1 1,2,4 1-7 | |
| 0201 | Gasoline En- gine and Fan | Adjust Repair | | | 0.8 1.0 | | | 1,3,4,5, 6,8,11 1,4,5,6, 7,10 | |
| 020101 | Centrifugal Fan | Replace Repair | | | 0.7 0.5 | | | 1,4,5,6, 7,10 1,4,6,7 | |
| 020102 | Gasoline Engine As- sembly | Inspect Replace Repair | | 0.3 0.2 | 1.5 3.0 | | | 4, 9, 14 | |
| 020102 01 | Carburetor | Inspect Service Adjust Replace Repair | | 0.2 0.2 0.1 0.2 | 0.3 0.7 | | | 1 1,4 4 | |
| 020102 02 | Starter | Replace Repair | | 0.2 | 1.0 | | | 1 4 | D |
| 0202 | Engine Fuel System | Inspect Service Repair | 0.1 0.2 | 0.3 | | | | 1,4 | |

| (1) GROUP NUMBER | (2) COMPONENTS/ ASSEMBLIES | (3) MAINTENANCE FUNCTIONS | MAINTENANCE LEVELS | | | | | (5) TOOLS & EQUIP. | (6) RE- MARKS |
|------------------------|----------------------------------|---|-----------------------|--------------------------|------------|---|---|--------------------------|---------------------|
| | | | C | O | F | H | D | | |
| 0203 | Burner | Service Repair | 0.1 | 0.3 0.5 | | | | 1 1,4 | |
| 0204 | Photocell | Inspect Service Replace Repair | | 0.2 0.2 0.2 0.2 | | | | 1 1 1,4 | |
| 0205 | Heat Ex- changer | Inspect Service Replace Repair | | 0.5 1.0 | 1.0 2.0 | | | 1 1,4 1,4 | |
| 0206 | Burner Fuel System | Inspect Repair | 0.1 | 0.3 | 1.0 | | | 1,4,6 | E |
| 020601 | Fluid Fil- ter | Service Replace Repair | 0.1 | 0.2 | 0.5 | | | 1,4 1,4 | |
| 0207 | Belt Pump Tensioner (Fuel) | Repair | | 0.2 | | | | 1 | |
| 0208 | Water Out- let | Inspect Replace Repair | 0.1 | 0.5 0.3 | | | | 1,4 1,4 | |
| 0209 | Control Panel | Inspect Repair | 0.1 | 0.2 | 0.5 | | | 1,3,4 | |
| 0210 | Tool Box | Inspect Repair | 0.1 | 0.2 | | | | 1,4,12 | |
| 0211 | Frame | Inspect Repair | 0.2 | 0.2 | 0.4 | | | 1,4,6 | B |
| 0212 | Water Pump Assembly | Replace Repair | | 0.5 | 1.0 | | | 5, 13 | F |
| 03 | Suction Hose | Inspect Repair | 0.1 | 0.3 | | | | 1 | |
| 0301 | Strainer | Inspect Service Replace Repair | 0.1 0.1 | 0.1 0.3 | | | | 1 1,4 | |

Section II. MAINTENANCE ALLOCATION CHART - Continued

| (1) GROUP NUMBER | (2) COMPONENTS/ ASSEMBLIES | (3) MAINTENANCE FUNCTIONS | MAINTENANCE LEVELS | | | | | (5) TOOLS & EQUIP. | (6) RE- MARKS |
|------------------------|----------------------------------|---------------------------------|-----------------------|---|---|---|---|--------------------------|---------------------|
| | | | C | O | F | H | D | | |
| 04 | Branch Hose | Inspect Repair | 0.1 | | | | | 1,4 | |
| 0401 | Strainer | Service Repair Replace | 0.1 | | | | | 1 1,4 | |
| 05 | Pressure Hose | Inspect Replace Repair | 0.1 | | | | | 1 | |
| 06 | Shower (End) | Inspect Replace Repair | 0.1 | | | | | 1 | |
| 07 | Shower (Middle) | Inspect Replace Repair | 0.1 | | | | | 1 | |
| 08 | Shower (with Hose) | Inspect Replace Repair | 0.1 | | | | | 1,4 | |
| 09 | Jet | Inspect Replace Repair | 0.1 | | | | | 1,4 | |
| 10 | Injector | Inspect Replace Repair | 0.1 | | | | | 1,4 | |
| 11 | Tool Kit | Inspect Repair | 0.1 | | | | | | |
| 12 | Storage Accessory Case | Inspect Replace Repair | 0.1 | | | | | 1,4,12 | |

SECTION III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

| (1) REFERENCE CODE | MAINTENANCE CATEGORY | (2) NOMENCLATURE | (4) NATIONAL STOCK NUMBER (NSN) | (5) TOOL NUMBER |
|--------------------------|-------------------------|--|---------------------------------------|----------------------------------|
| 1 | C | TOOL KIT (ON BOARD) | | 26070-100 |
| 2 | O | RPM INDICATOR | | 000-15-300-100 |
| 3 | O | MULTIMETER, AN/PSM 45 | 6625-01-139-2512 | AN/PSM 45 |
| 4 | O | GENERAL MECHANICS TOOL KIT | 5180-00-177-7033 | |
| 5 | O | SOCKET SET, METRIC, 8-19 MM | 5120-01-067-5012 | |
| 6 | O | WRENCH SET, COMBI-NATION 8-19 MM | 5120-01-063-2916 | |
| 7 | F | TIMING GAGE | 5210-01-063-3357 | |
| 8 | O | TORQUE WRENCH 0-50 LB-FT | 5120-00-541-3001 | |
| 9 | F | FLYWHEEL PULLER AND EXTENDER NUTS (3 REQUIRED) | 5120-01-159-7787 5120-01-159-7788 | 444-31-843-700 057-07-003-000 |
| 10 | F | CLUTCH PULLER | 5120-01-159-7789 | 444-31-822-110 |
| 11 | F | FAN EXTRACTOR | 5120-01-159-7790 | 19199-100 |
| 12 | O | RIVETER, BLIND, HAND | 5120-00-017-2247 | 444-31-807-000 |
| 13 | O | SOCKET ADAPTER | 5120-00-240-8702 | |
| 14 | O | CROWFOOT, WRENCH | 5120-00-962-0148 | |

Section III. TOOLS AND TEST EQUIPMENT REQUIREMENTS - Continued

| (1) REFERENCE CODE | (2) MAINTENANCE CATEGORY | (3) NOMENCLATURE | (4) NATIONAL STOCK NUMBER (NSN) | (5) TOOL NUMBER |
|--------------------------|--------------------------------|-------------------------------|---------------------------------------|-----------------------|
| 15 | F | Engine Compression Gage | 4910-01-092- 8437 | |
| 16 | F | Mallet, Rubber | 5120-00-293- 3399 | |
| 17 | F | Gage Set, Tele- scoping | 5210-00-473- 9350 | |
| 18 | F | Micrometer, Outside 2-3 in | 5210-00-221- 1945 | |

Section IV. REMARKS

| REFERENCE CODE | REMARKS |
|-------------------|--|
| A | No replacement of parts. Permanent repair to tank using patch kits. |
| B | Direct support maintenance shall be straightening and welding frame members. |
| c | Crew is authorized to install clamp patches. |
| D | Repair of starter limited to replacement of handle. Bushing mounted on starter housing shall be replaced only when handle is replaced if required. |
| E | Organizational maintenance authorized to replace filter element. |
| F | No replacement of parts. |

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION**C-1. SCOPE.**

This appendix lists components of end item and basic issue items for the decontaminating apparatus to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

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

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

b. Section III. Basic Issue Items. These are the minimum essential items required to place the decontaminating apparatus in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the decontaminating apparatus 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.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listing:

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 and name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

C-3. EXPLANATION OF COLUMNS - Continued.

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 equipment.

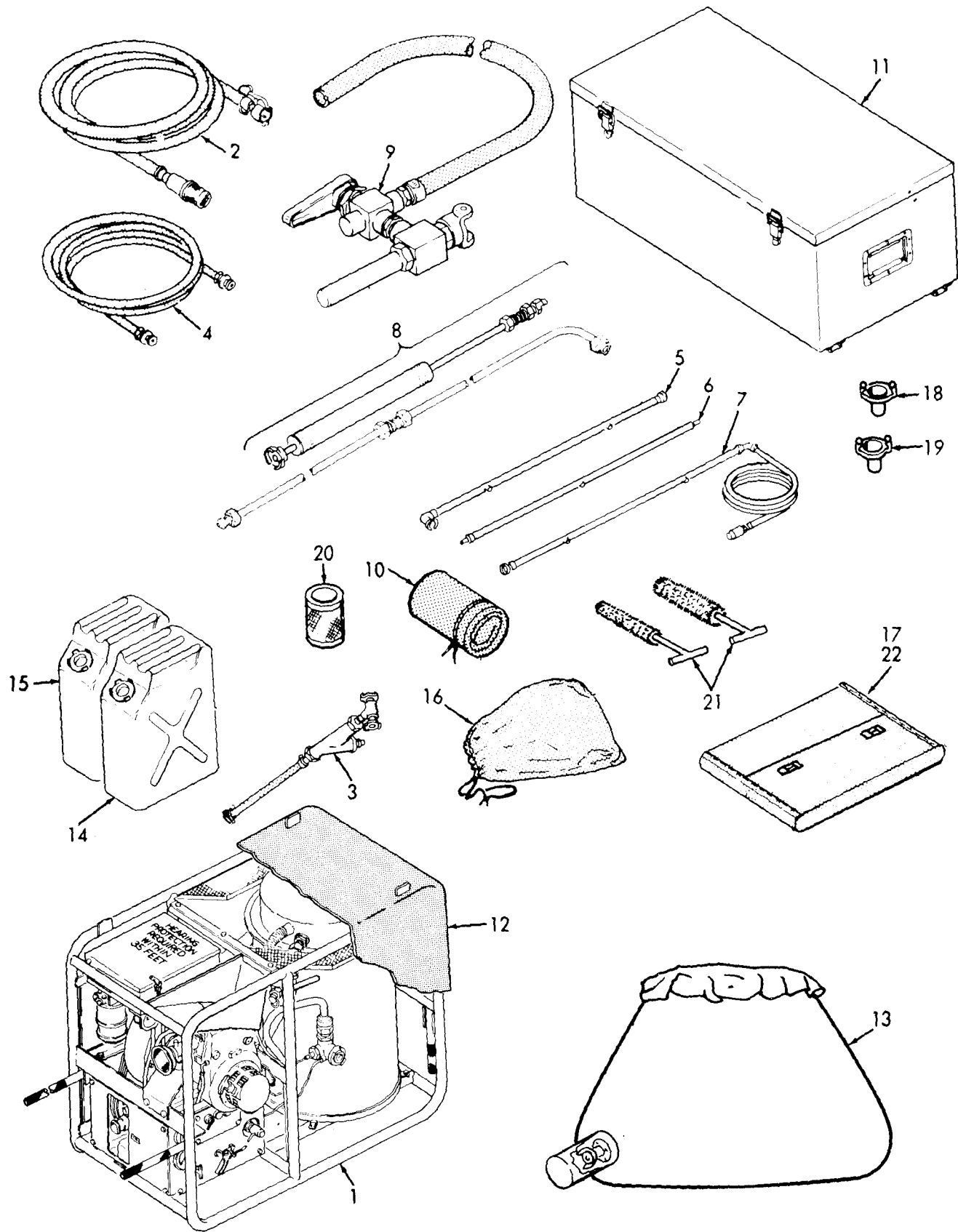
Section II. COMPONENTS OF END ITEM

| (1) Illus Number | (2) National Stock Number | (3) Description FSCM and Part Number | Usable on Code | (4) U/M | (5) Qty rqr |
|------------------------|---------------------------------|---|-------------------|------------|-------------------|
| 1 | 4230-01-153-8660 | DECONTAMINATING APPARATUS (90598) 26100-102 | | EA | 1 |
| 2 | 4720-01-175-4861 | HOSE ASSEMBLY, SUCTION (90598) 26650-100 | | EA | 1 |
| 3 | | HOSE ASSEMBLY, BRANCH (90598) 26660-102 | | EA | 1 |
| 4 | 4720-01-175-4863 | HOSE ASSEMBLY, PRESSURE (90598) 26670-100 | | EA | 2 |
| 5 | 4230-01-171-2531 | SHOWER (90598) 26041-100 | | EA | 2 |
| 6 | 4230-01-171-2553 | SHOWER (90598) 26042-100 | | EA | 2 |
| 7 | 4230-01-171-0900 | SHOWER (90598) 26043-100 | | EA | 2 |
| 8 | 4730-01-174-8897 | JET (90598) 26020-100 | | EA | 2 |
| 9 | 4230-01-171-7253 | INJECTOR ASSEMBLY, AGENT (90598) 26010-100 | | EA | 1 |
| 10 | N/A | POUCH, TOOL KIT (90598) 26070-100 | | EA | 1 |
| 11 | 4230-NC-C50-1294 | CASE, PACKING, ACCESSORY (90598) 26060-100 | | EA | 1 |
| 12 | 4230-01-171-2417 | COVER, DECONTAMINATING APPARATUS (90598) 26080-100 | | EA | 1 |

| (1) ILLUS NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION FSCM AND PART NUMBER | USABLE ON CODE | (4) U/M | (5) QTY RQR |
|------------------------|---------------------------------|--|-------------------|------------|-------------------|
| 13 | | TANK, WATER (90598) 26090-101 | | EA | 1 |
| 14 | 7240-00-222-3088 | CAN, FUEL, 2 CYCLE (90598) 26006-100 | | EA | 1B |
| 15 | | CAN, FUEL, HEATER (90598) 26005-100 | | EA | 1 |
| 16 | | KIT, REPAIR, TANK AND COVER (90598) 26090-100 | | EA | 1 |
| 17 | | POUCH, ACCESSORY (90598) 26004-1 | | EA | 1 |
| 18 | | TEST ORIFICE, 5 MM (90598) 26000-23 | | EA | 1 |
| 19 | | TEST ORIFICE, 10 MM (90598) 26000-24 | | EA | 1 |
| 20 | | ELEMENT STRAINER (90598) 26664-1 | | EA | 1 |
| 21 | | BRUSH SET (90598) 26070-15 | | EA | 1 |
| 22 | | TOOL KIT (90598) 26070-100 | | EA | 1 |

SECTION III. BASIC ISSUE ITEMS

| (1) ILLUS NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION FSCM AND PART NUMBER | USABLE ON CODE | (4) U/M | (5) QTY RQR |
|------------------------|---------------------------------|--|-------------------|------------|-------------------|
| | NSN: 4230-01-153-8660 | TM 3-4230-218-12&P TECHNICAL MANUAL, OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MAN- UAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR DECON- TAMINATING APPARATUS: POWER-DRI- VEN, PORTABLE, TYPE A/E32U-8 | | EA | 1 |



Components of End Item.

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

D-1. SCOPE. This appendix lists additional items you are authorized for the support of the decontaminating apparatus.

D-2. GENERAL. This list identifies items that do not have to accompany the decontaminating apparatus and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA or JTA.

D-3. EXPLANATION OF LISTING. National stock numbers, descriptions and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA or JTA) which authorizes the item(s) to you.

Section II. ADDITIONAL AUTHORIZATION LIST

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION FSCM & PART NUMBER USABLE ON CODE | (3) U/M | (4) QTY AUTH |
|------------------------------------|--|----------------|------------------------|
| | CTA AUTHORIZED ITEMS | | |
| 7240-00-160-0440 | Can, Ash and Garbage (58536) A-A-1069 | EA | 2 |
| 7240-00-161-1143 | cover, can, Ash and Garbage (58536) A-A-1069 | EA | 2 |
| 4210-00-270-4512 | Extinguisher, Fire (02788) F5COV | EA | 1 |
| 4270-00-289-6123 | Hose Assembly, Nonmetallic 1 in. OD, 39 in. long (81348) ZZ-H-451 | EA | 4 |
| 4270-00-202-6731 | Hose Assembly, Nonmetallic 1-1/2 in. ID, 120 in. long (81348) ZZ-H-561 | EA | 3 |
| 8415-01-150-6198 | Mitten set, Extreme Cold Weather (81349) MIL-M-87033 | PR | 1 |
| 8415-01-150-6199 | Mitten set, Extreme Cold weather (81349) MIL-M-87033 | PR | 1 |

SECTION II. ADDITIONAL AUTHORIZATION LIST - CONT

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION FSCM & PART NUMBER | (3) USABLE ON CODE U/M | (4) QTY AUTH |
|------------------------------------|--|---------------------------|--------------------|
| 8415-01-150-6200 | MITTEN SET, EXTREME COLD WEATHER (81349) MIL-M-87033 | PR | 1 |
| 8415-01-150-6201 | MITTEN SET, EXTREME COLD WEATHER (81349) MIL-M-87033 | PR | 1 |
| 8465-00-224-9505 | PAIL, COLLAPSIBLE, CANVAS (81349) MIL-P-10018 | EA | 1 |
| 8405-01-053-9202 | PARKA, WET WEATHER, (XXS) (81349) MIL-P-43907 | EA | 1 |
| 8405-00-001-1547 | PARKA, WET WEATHER, (XS) (81349) MIL-P-43907 | EA | 1 |
| 8405-00-001-1548 | PARKA, WET WEATHER, (S) (81349) MIL-P-43907 | EA | 1 |
| 8405-00-001-1549 | PARKA, WET WEATHER, (M) (81349) MIL-P-43907 | EA | 1 |
| 8405-00-001-1550 | PARKA, WET WEATHER, (L) (81349) MIL-P-43907 | EA | 1 |
| 8405-00-001-1551 | PARKA, WET WEATHER, (XL) (81349) MIL-P-43907 | EA | 1 |
| 4320-00-752-9466 | PUMP UNIT, CENTRIFUGAL (81349) MIL-P-14514 | EA | 1 |
| 8415-01-137-1700 | SUIT, CHEMICAL PROTECTIVE, (XXXS) CAMOUFLAGE PATTERN (81349) MIL-S-43926 | EA | 1 |
| 8415-01-137-1701 | SUIT, CHEMICAL PROTECTIVE, (XXS) CAMOUFLAGE PATTERN (81349) MIL-S-43926 | EA | 1 |
| 8415-01-137-1702 | SUIT, CHEMICAL PROTECTIVE, (XS) CAMOUFLAGE PATTERN (81349) MIL-S-43926 | EA | 1 |

SECTION II. ADDITIONAL AUTHORIZATION LIST - CONT

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION FSCM & PART NUMBER | (3) USABLE ON CODE U/M | (4) QTY AUTH |
|------------------------------------|---|---------------------------|--------------------|
| 8415-01-137-1703 | SUIT, CHEMICAL PROTECTIVE, (S) CAMOUFLAGE PATTERN (81349) MIL-S-43926 | EA | 1 |
| 8415-01-137-1704 | SUIT, CHEMICAL PROTECTIVE, (M) CAMOUFLAGE PATTERN (81349) MIL-S-43926 | EA | 1 |
| 8415-01-137-1705 | SUIT, CHEMICAL PROTECTIVE, (L) CAMOUFLAGE PATTERN (81349) MIL-S-43926 | EA | 1 |
| 8415-01-137-1706 | SUIT, CHEMICAL PROTECTIVE, (XL) CAMOUFLAGE PATTERN (81349) MIL-S-43926 | EA | 1 |
| 8415-01-137-1707 | SUIT, CHEMICAL PROTECTIVE, (XXL) CAMOUFLAGE PATTERN (81349) MIL-S-43926 | EA | 1 |
| 8415-01-070-1880 | SUIT, CHEMICAL PROTECTIVE, (XXXS) GREEN (81349) MIL-S-43926B | EA | 1 |
| 8415-01-070-1879 | SUIT, CHEMICAL PROTECTIVE, (XXS) GREEN (81349) MIL-S-43926B | EA | 1 |
| 8415-00-407-1060 | SUIT, CHEMICAL PROTECTIVE, (XS) GREEN (81349) MIL-S-43926B | EA | 1 |
| 8415-00-177-5007 | SUIT, CHEMICAL PROTECTIVE, (S) GREEN (81349) MIL-S-43926B | EA | 1 |
| 8415-00-177-5008 | SUIT, CHEMICAL PROTECTIVE, (M) GREEN (81349) MIL-S-43926B | EA | 1 |

SECTION II. ADDITIONAL AUTHORIZATION LIST - CONT

| (1) NATIONAL STOCK NUMBER | (2) DESCRIPTION FSCM & PART NUMBER | (3) USUABLE ON CODE U/M | (4) QTY AUTH |
|------------------------------------|---|-------------------------------|--------------------|
| 8415-00-407-1062 | SUIT, CHEMICAL PROTECTIVE, (L) GREEN (81349) MIL-S-43926B | EA | 1 |
| 8415-00-407-1063 | SUIT, CHEMICAL PROTECTIVE, (XL) GREEN (81349) MIL-S-43926B | EA | 1 |
| 8415-00-407-1064 | SUIT, CHEMICAL PROTECTIVE, (XXL) GREEN (81349) MIL-S-43926B | EA | 1 |
| 8405-01-053-9400 | TROUSERS, WET WEATHER, (XXS) GREEN (81349) MIL-P-43907 | PR | 1 |
| 8405-00-001-8025 | TROUSERS, WET WEATHER, (XS) GREEN (81349) MIL-P-43907 | PR | 1 |
| 8405-00-001-8026 | TROUSERS, WET WEATHER, (S) GREEN (81349) MIL-P-43907 | PR | 1 |
| 8405-00-001-8027 | TROUSERS, WET WEATHER, (M) GREEN (81349) MIL-P-43907 | PR | 1 |
| 8405-00-001-8028 | TROUSERS, WET WEATHER, (L) GREEN (81349) MIL-P-43907 | PR | 1 |
| 8405-00-001-8029 | TROUSERS, WET WEATHER, (XL) GREEN (81349) MIL-P-43907 | PR | 1 |
| 4240-00-066-0181 | WINTERIZATION KIT, CHEMICAL-BIOLOGICAL (81361) DL5-77-934 | EA | 1 |

APPENDIX E

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION**E-1. SCOPE.**

This appendix lists expendable supplies and materials you will need to operate and maintain the decontaminating apparatus. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except Medical, Class V, Repair Parts and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

E-2. EXPLANATION OF COLUMNS.

a. Column 1 - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use sealing compound, Item 6, Appendix E").

b. Column 2 - Category. This column identified the lowest category of maintenance that required the listed item:

C - Operator/Crew

O - organizational Maintenance

c. Column 3 - National Stock Number. This is the national stock number assigned to the item; use it to request or requisition the items.

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 part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

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 rest of the 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 | (2) STOCK NUMBER | (4) DESCRIPTION | (5) U/M |
|-----------------------|--------------|---------------------|--|------------|
| 1 | O | 8020-00-889-7920 | BRUSH, VARNISH H-B-695 (81348) | EA |
| 2 | O | 8305-00-141-2503 | CLOTH, CHEESECLOTH DDDC301 | LB |
| 3 | O | 6850-00-281-1985 | DRY CLEANING SOLVENT P-D-680 (81348) | GL |
| 4 | C | 9150-00-082-7535 | LUBRICATING OIL TC-W-LUBRICANT (54926) | QT |
| 5 | O | 8010-00-616-4009 | PAINT MIL-P-14105 (81349) | GL |
| 6 | O | 5350-00-619-9166 | PAPER, ABRASIVE P-P-101 (81348) | EA |
| 7 | C | 6810-00-394-3555 | PROPYLENE GLYCOL, TECH- NICAL MIL-P-83800 (81349) | GL |
| 8 | O | 8030-01-063-7510 | SEALING COMPOUND MIL-S-46163, TY I, GR L (81349) | OZ |
| 9 | O | 6810-00-233-1715 | SODIUM CARBONATE, TECH- NICAL A-A-41 (58536) | LB |
| 10 | O | 5975-00-111-3208 | STRAP, TIEDOWN MS3367-5-7 (96906) | EA |
| 11 | O | 6810-00-146-1586 | SULFAMIC ACID, TECHNICAL SULFAMIC ACID (98091) | LB |
| 12 | C | 8510-00-817-0295 | TALCUM POWDER A-A-42A (58536) | OZ |
| 13 | O | 5640-00-103-2254 | TAPE, DUCT, 2" WIDE | FT |
| 14 | O | 5350-00-192-5051 | CLOTH ABRASIVE | PKG |
| 15 | O | 7920-00-291-5815 | BRUSH, WIRE HB178 (81348) | EA |

APPENDIX F

ORGANIZATIONAL MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION1. Scope.

This RPSTL lists and authorizes spare and repair parts: special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of organizational, direct support, and general support maintenance of the Decontaminating Apparatus: Power-Driven, Portable, Type A/E32U-8. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

2. General.

In addition Section I, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

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

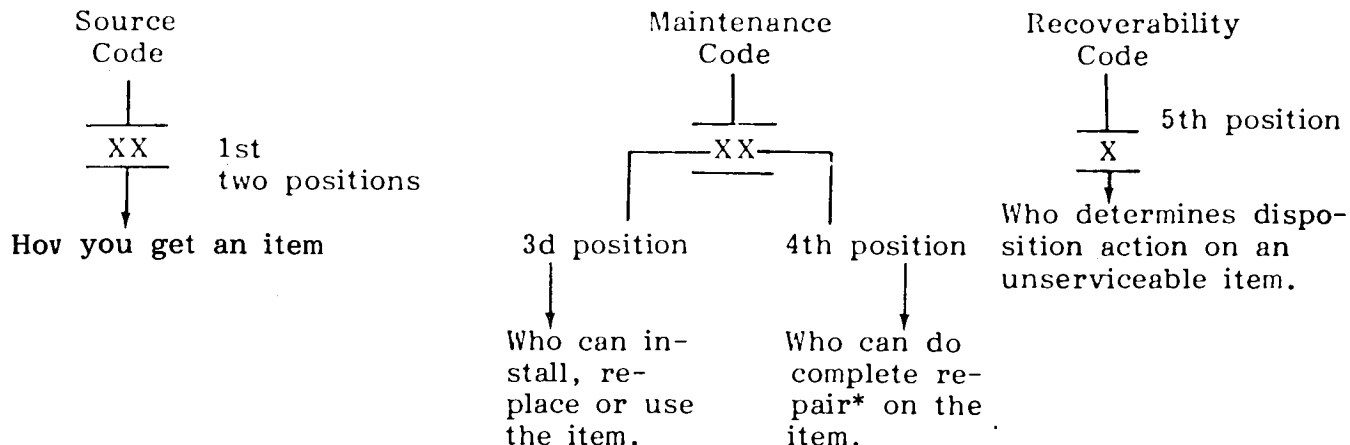
b. Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE column) for the performance of maintenance.

c. Section IV. National Stock Number and Part Number Index. A list, in National Item Identification Number (N I I N) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

3. Explanation of Columns (Sections II and III).

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

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



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

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

| Code | Explanation |
|--|---|
| PA PB PC** PD PE PF PG | Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code. **NOTE: Items coded PC are subject to deterioration. |
| KD KF KB | Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied. |

| | Explanation |
|--|--|
| MO-(Made at org/AVUM Level) | Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION and USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in the RPSTL. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance. |
| MF-(Made at DS/AVUM Level) | |
| MH-(Made at GS Level) | |
| ML-(Made at Specialized Repair Activity (SRA)) | |
| MD-(Made at Depot) | |

| Code | Explanation |
|--------------------------------------|---|
| AO-(Assembled by org/ AVUM Level) | Items with these codes are not to be requested/ requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3d position code of the SMR code authorizes you to replace the item, but the source code indicates the items are assembled at a higher level, order the item from the higher level of maintenance. |
| AF-(Assembled by DS/AVIM Level) | |
| AH- (Assembled by GS Level) | |
| AL-(Assembled by SRA) | |
| AD-(Assembled by Depot) | |

| Code | Explanation |
|--|-------------|
| XA-DO not requisition an "XA" coded item. Order its next higher assembly. (Also, refer to the NOTE below.) | |
| XB-If an "XB" item is not available from salvage, order it using the FSCM and part number given. | |
| XC-Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number. | |
| XD-Item is not stocked. Order an "XD" coded item through normal supply channels using the FSCM and part number given, if not NSN is available. | |

NOTE

Cannibalization or controlled exchange, when authorized may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 700-42.

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

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

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

| Code | Application/Explanation |
|------|---|
| F | -Direct support or aviation intermediate level can remove, replace, and use the item. |
| H | -General support level can remove, replace, and use the item. |
| L | -Specialized repair activity can remove, replace, and use the item. |
| D | -Depot level can remove, replace, and use the item. |

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

| Code | Application/ Explanation |
|------|--|
| O | -Organizational or (aviation unit) is the lowest level that can do complete repair of the item. |
| F | -Direct support or aviation intermediate is the lowest level that can do complete repair of the item. |
| H | -General support is the lowest level that can do complete repair of the item. |
| L | -Specialized repair activity (designate the specialized repair activity) is the lowest level that can do complete repair of the item. |
| D | -Depot is the lowest level that can do complete repair of the item. |
| Z | -Nonreparable. No repair is authorized. |
| B | -No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item). However, the item may be reconditioned by adjusting, lubricating, etc., at the user level. |

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

| Recoverability Codes | Application/Explanation |
|-------------------------|---|
| Z | -Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code. |
| O | -Reparable item. When uneconomically repairable, condemn and dispose of the item at organizational or aviation unit level. |
| F | -Reparable item. When uneconomically repairable, condemn and dispose of the item at the direct support or aviation intermediate level. |
| H | -Reparable item. When uneconomically repairable, condemn and dispose of the item at the general support level. |
| D | -Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level. |
| L | -Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA). |
| A | -Item requires special handling or condemnation procedures because of specific reasons (e.g. , precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions. |

c. FSCM (Column (3)). The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

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

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

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

(2) Not applicable.

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

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

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

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

(7) The usable on code, when applicable (see paragraph 5, Special information).

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

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

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

4. Explanation of Columns (Sect. IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER column. This column lists the NSN by National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (i.e., 5305-01-674-1467). When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

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

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

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

(1) FSCM column. The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

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

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

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

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

5. Special Information.

a. FABRICATION INSTRUCTIONS. Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. Part numbers for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated.

b. ASSEMBLY INSTRUCTION. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in this manual. Items that make up the assembly are listed immediately following the assembly item entry or referenced is made to an applicable figure.

c. KITS. Line item entries for repair parts kits appear in a group in Section II (see table of contents).

d. INDEX NUMBERS. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in Section II.

e. ILLUSTRATIONS - LISTING. The illustrations in this RPSTL are identical to those published in TM 3-4230-218-30&P manual. Only those parts codes "C" or "O" in the third position of the SMR Code are listed in the tabular listing; therefore, there may be a break in the item number sequence. Only illustrations containing organizational or aviation unit authorized items appear in this RPSTL.

6. How to Locate Repair Parts.

a. When National Stock Number or Part Number is Not Known.

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

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

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

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

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

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

(1) First. Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see 4.1(1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see 4.b). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

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

7. Abbreviations. Not applicable.

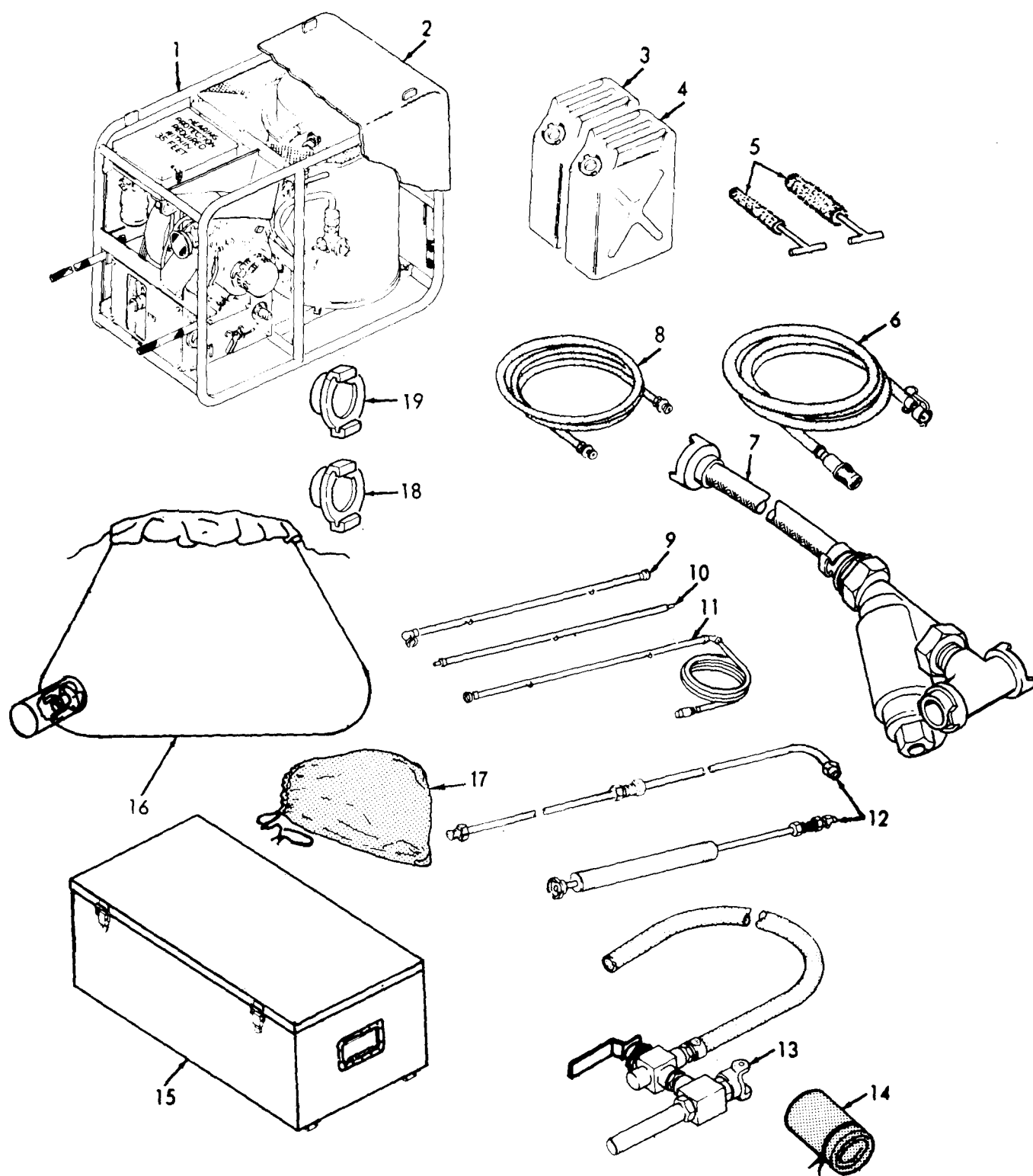


Figure F-1. Decontaminating Apparatus and Water Tank

| SECTION II (1) | SMR (2) | FSCM (3) | TM3-4230-218-12&P (4) | (5) | (6) |
|--|------------|-------------|--------------------------|--|-----|
| ITEM NO | CODE | | PART NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 00: PORTABLE POWER DRIVEN DECONTAMINATING APPARATUS GROUP 01: WATER TANK | | | | | |
| FIG. F-1 DECONTAMINATING APPARATUS | | | | | |
| AND WATER TANK | | | | | |
| 2 | PAOZZ | 90598 | 26080-100 | COVER,ACCESS | 1 |
| 3 | XDOZZ | 90598 | 26006-100 | CAN,FUEL | 1 |
| 4 | XDOZZ | 90598 | 26005-100 | CAN, FUEL, HEATER | 1 |
| 5 | XDOZZ | 90598 | 26071-100 | 1BRUSH SET | 1 |
| 6 | AOOOO | 90598 | 26650-100 | HOSE ASSY,SUCTION SEE FIG F-14 ASSY BKDN | 1 |
| 7 | AOOOO | 90598 | 26660-102 | HOSE ASSY,BRANCH SEE FIG F-15 ASSY BKDN | 1 |
| 8 | XDOZZ | 90598 | 26670-102 | HOSE,PRESSURE,MAIN | 2 |
| 9 | PAOOO | 90598 | 26041-100 | SHOWER ASSEMBLY,END | 2 |
| 10 | PAOOO | 90598 | 26042-100 | SHOWER ASSEMBLY | 2 |
| 11 | PAOOO | 90598 | 26043-100 | SHOWER ASSEMBLY | 2 |
| 12 | PAOOO | 90598 | 26020-100 | JET ASSEMBLY | 1 |
| 13 | PAOOO | 90598 | 26010-100 | INJECTOR ASSEMBLY | 1 |
| 14 | AOOOO | 90598 | 26070-100 | TOOL KIT SEE FIG F-22 ASSY BKDN | 1 |
| 15 | PAOOO | 90598 | 26060-100 | CASE,ACCESSORY STOR | 1 |
| 16 | XDOZZ | 90598 | 26090-101 | TANK,WATER | 1 |
| 17 | XDOZZ | 90598 | 26090-7 | KIT,REPAIR,TANK,CON SISTS OF: 3CLAMPS,PATCH(4"X72"),22 PATCHES- 10(3"),6(4"),6(5") | 1 |
| 18 | XDOZZ | 90598 | 26000-23 | ORIFICE,TEST 5MM | 1 |
| 19 | XDOZZ | 90598 | 26000-24 | ORIFICE,TEST 10MM | 1 |
| END OF FIGURE | | | | | |

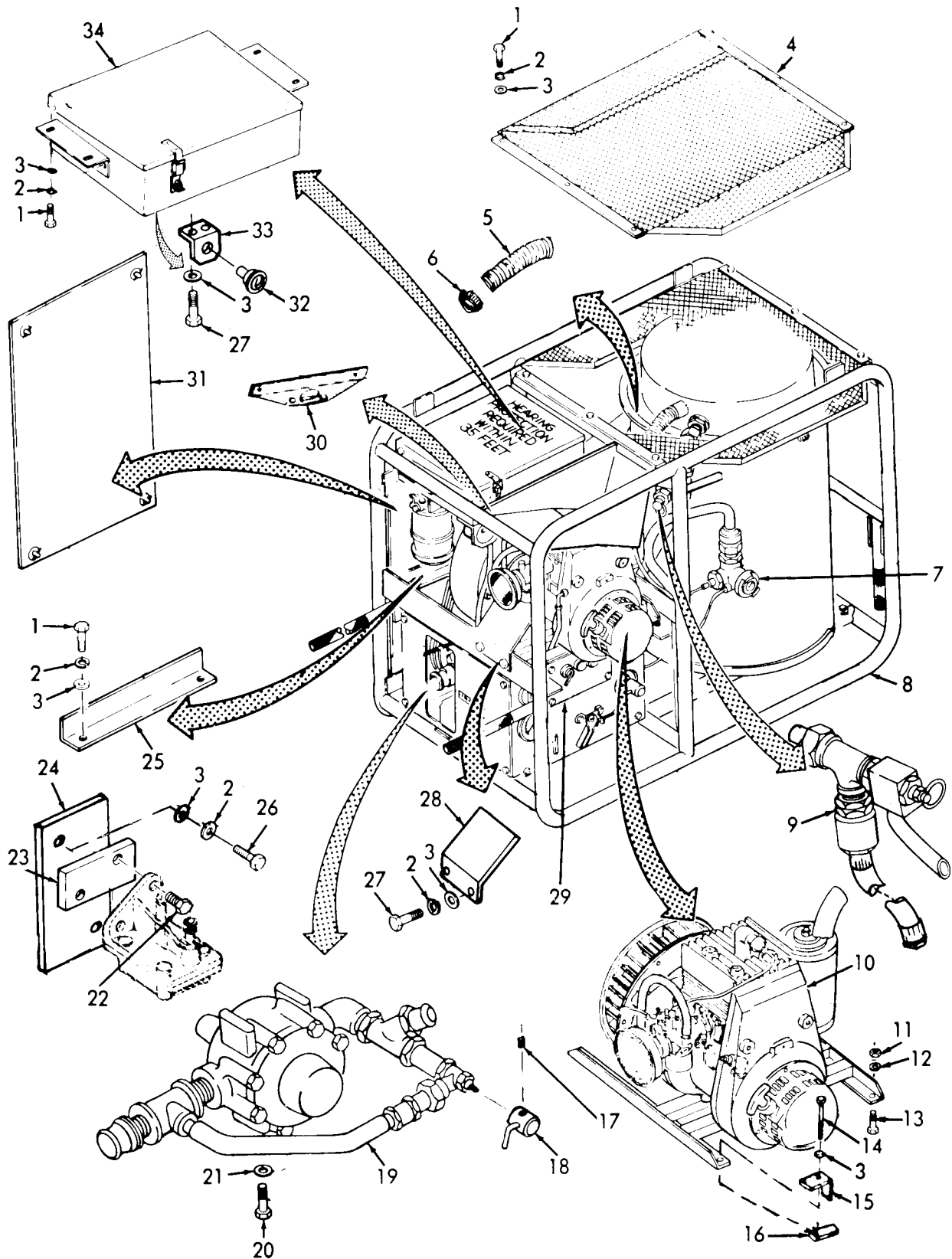


Figure F-2. Decontaminating Apparatus (Sheet 1 of 3).

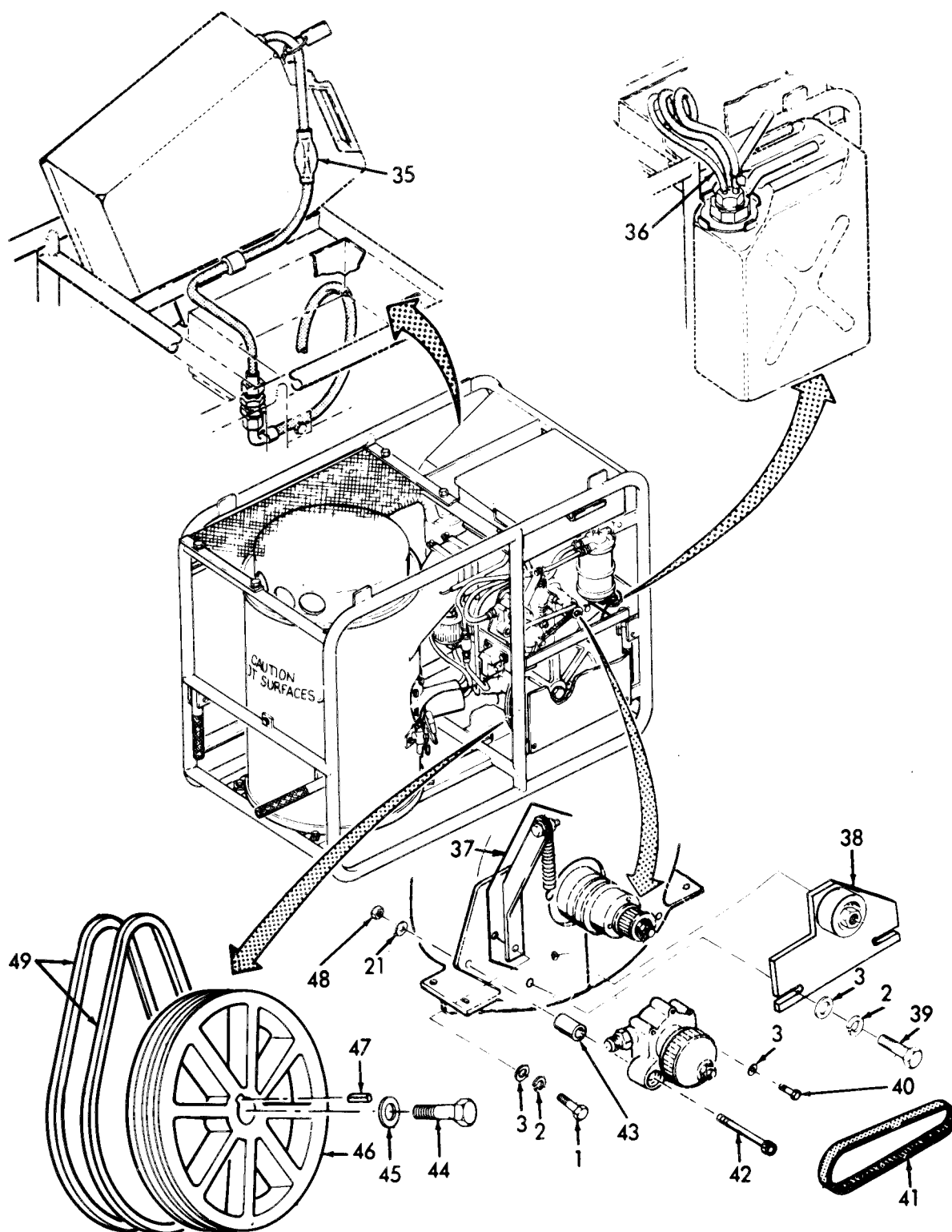


Figure F-2. Decontaminating Apparatus (Sheet 2 of 3).

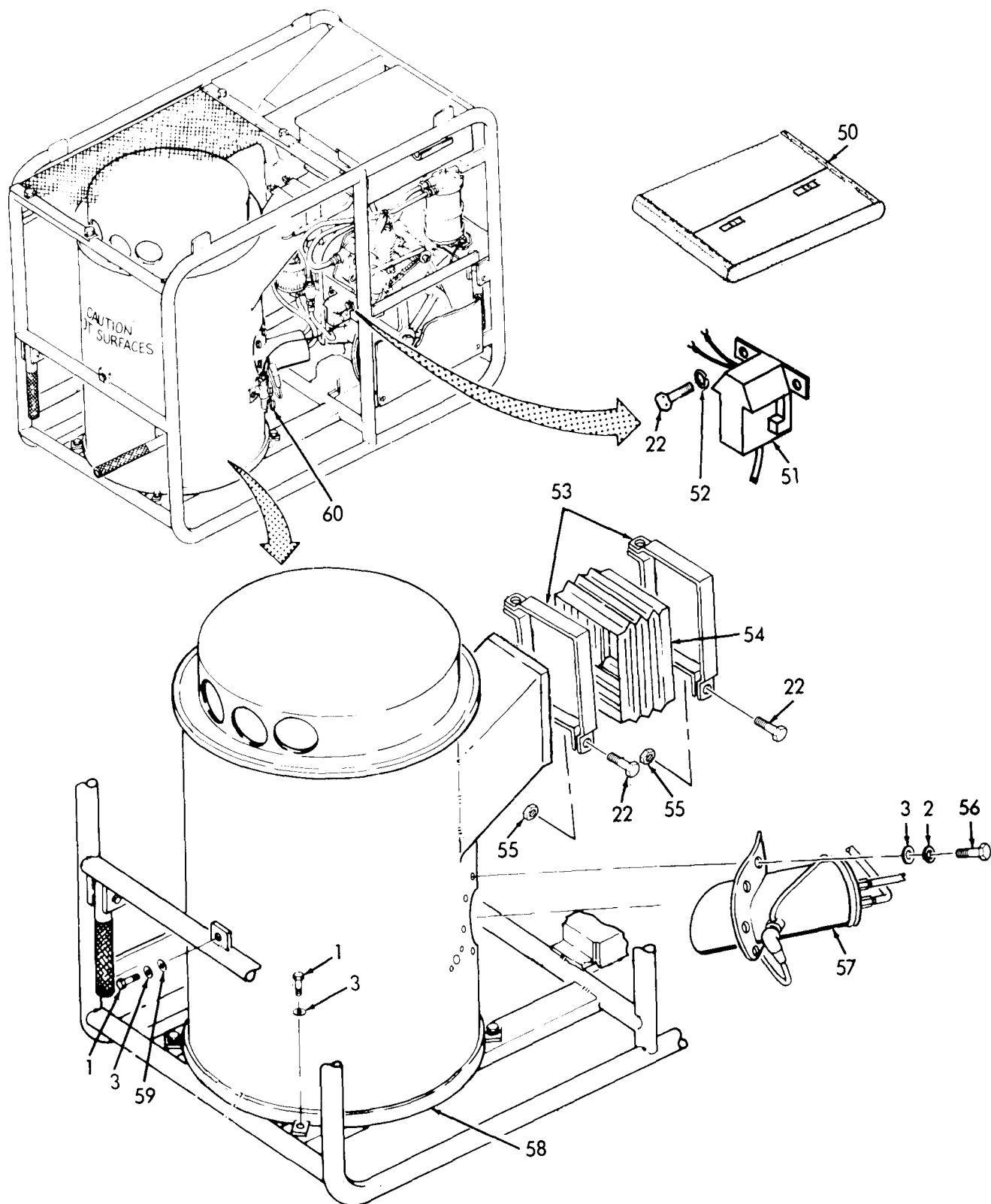


Figure F-2. Decontaminating Apparatus (Sheet 3 of 3).

| SECTION II (1) ITEM NO | (2) SMR CODE | (3) FSCM | TM3-4230-218-12&P (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODE (UOC) | (6) QTY |
|-------------------------------------|--------------------|-------------|--|---|------------|
| GROUP 02: DECONTAMINATING APPARATUS | | | | | |
| FIG. F-2 DECONTAMINATING APPARATUS | | | | | |
| 1 | PAOZZ | 90598 | 26703-507 | BOLT | 19 |
| 2 | PAOZZ | 96906 | MS35333-135 | WASHER, LOCK | 28 |
| 3 | PAOZZ | 96906 | MS27183-9 | WASHER, FLAT | 34 |
| 4 | PAOZZ | 90598 | 26510-100 | GUARD ASSEMBLY | 1 |
| 5 | XDOZZ | 39248 | 5241K57 | HOSE, METALLIC, FLEX | 1 |
| 6 | XDOZZ | 96906 | MS35842-126 | CLAMP, HOSE | 1 |
| 7 | XDOZZ | 90598 | 26270-101 | OUTLET ASSY | 1 |
| 14 | XDOZZ | 90598 | 26703-572 | BOLT, HEX HD | 4 |
| 15 | XDOZZ | 90598 | 26002-1 | BRACKET | 2 |
| 16 | XDOZZ | 90598 | 26001-1 | SPACER | 2 |
| 17 | XAOZZ | 96906 | MS51964-136 | SET-SCREW, HEX SOCKET | 1 |
| 18 | XAOZZ | 90598 | 26254-1 | HANDLE, VALVE | 1 |
| 22 | PAOZZ | 90598 | 26703-407 | BOLT | 6 |
| 23 | PAOZZ | 90598 | 26291-1 | SHIM | 1 |
| 24 | PAOZZ | 90598 | 26292-1 | BRACKET, PUMP | 1 |
| 26 | PAOZZ | 90598 | 26703-508 | BOLT | 2 |
| 27 | PAOZZ | 90598 | 26703-505 | BOLT, MACHINE | 4 |
| 28 | XDOZZ | 90598 | 26530-1 | PLATE, DRAIN | 1 |
| 30 | PAOZZ | 90598 | 26003-1 | BRACKET, SHIPPING | 1 |
| 31 | XAOZZ | 90598 | 26600-101 | PANEL ASSY, SIDE | 1 |
| 32 | PAOZZ | 62887 | RZ52H | METER, TIME TOTALIZI | 1 |
| 33 | XDOZZ | 90598 | 26540-1 | BRACKET | 1 |
| 35 | AOOOO | 90598 | 26300-100 | FUEL SYSTEM. ENGINE SEE FIG F-15 ASSY BKDN | 1 |
| 37 | AOOOO | 90598 | 26462-100 | TENSIONER, FUEL BELT SEE FIG F-9 ASSY BKDN | 1 |
| 38 | PAOZZ | 90598 | 26230-100 | TENSIONER, BELT, PUMP | 1 |
| 39 | PAOZZ | 90598 | 26703-509 | BOLT | 2 |
| 40 | PAOZZ | 90598 | 26706-87 | SCREW | 1 |
| 41 | PAOZZ | 81300 | 160XL037 | BELT, POSITIVE DRIVE | 1 |
| 42 | PAOZZ | 90598 | 26707-719 | SCREW | 1 |
| 43 | XDOZZ | 90598 | 26467-1 | SPACER, SLEEVE | 1 |
| 44 | PAOZZ | 90598 | 26703-809 | BOLT | 1 |
| 45 | PAOZZ | 90598 | 26701-2 | WASHER | 1 |
| 46 | PAOZZ | 90598 | 26240-1 | PULLEY, GROOVE | 1 |
| 47 | PAOZZ | 15526 | 6885-7-8-25 | KEY, MACHINE | 1 |
| 48 | PAOZZ | 90598 | 26705-700 | NUT, SELF-LOCKING, HF | 1 |
| 49 | PAOZZ | 96906 | MS39277-045 | BELT, V | 2 |
| 50 | XDOZZ | 90598 | 26004-1 | POUCH (FOR ENGINE RESTRANT) | 1 |
| 51 | PAOZZ | 90598 | 26430-100 | IGNITER ASSEMBLY | 1 |
| 52 | PAOZZ | 96906 | MS27183-8 | WASHER, FLAT | 2 |
| 53 | PAOZZ | 90598 | 26560-1 | CLAMP | 4 |
| 54 | PAOZZ | 90598 | 26545-1 | HOSE, AIR DUCT | 1 |
| 55 | PAOZZ | 90598 | 26705-400 | NUT | 4 |
| 56 | PAOZZ | 90598 | 26708-505 | BOLT | 8 |
| 57 | AOOOO | 90598 | 26450-100 | BURNER ASSEMBLY, DEC SEE FIG F-6 ASSY BKDN | 1 |
| 59 | PAOZZ | 90598 | 26701-1 | WASHER, FLAT | 1 |
| 60 | PAOOO | 90598 | 26470-100 | PHOTOCELL ASSEMBLY | 1 |

END OF FIGURE

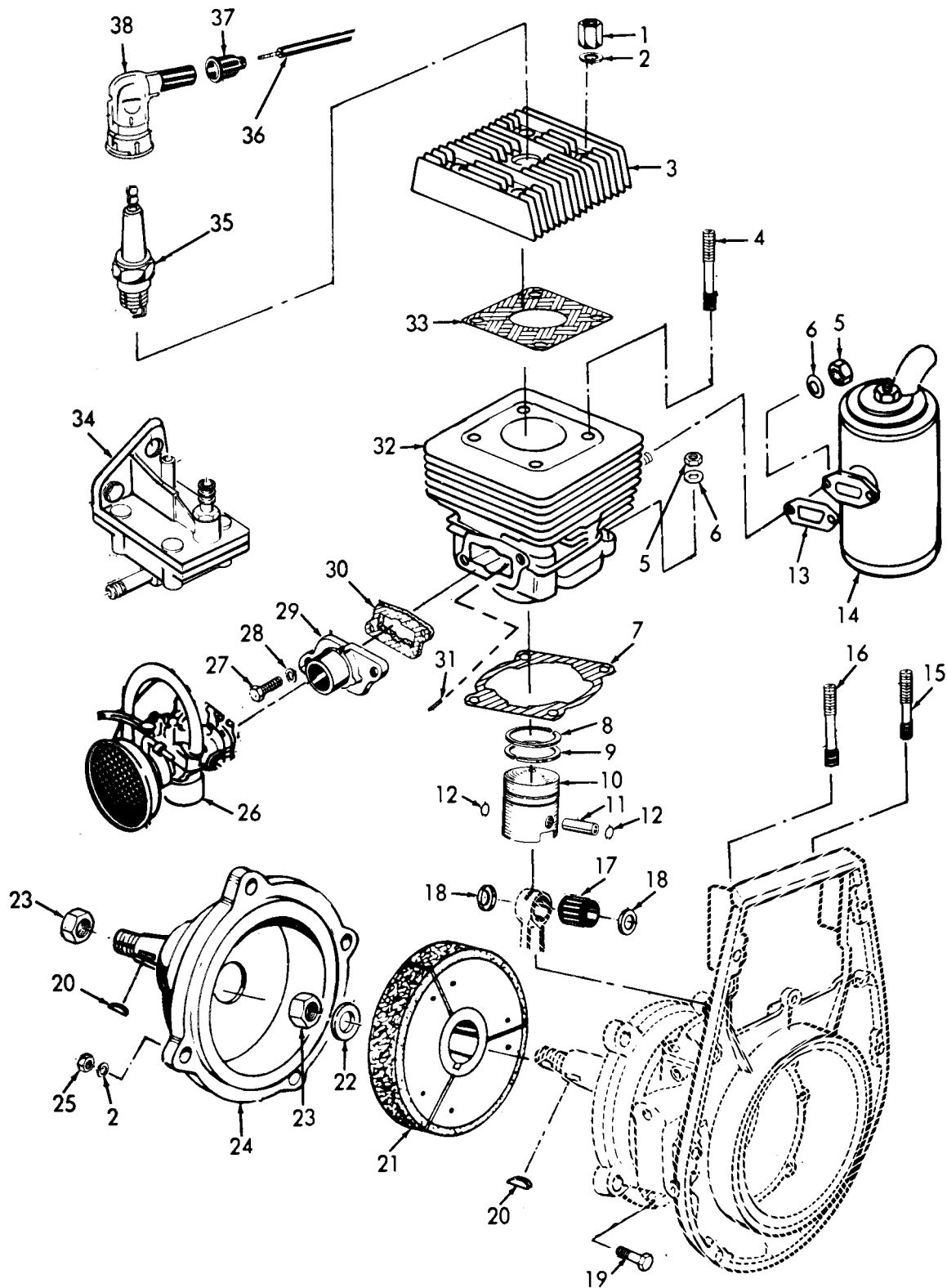


Figure F-3. Gasoline Engine Assembly (Sheet 1 of 2).

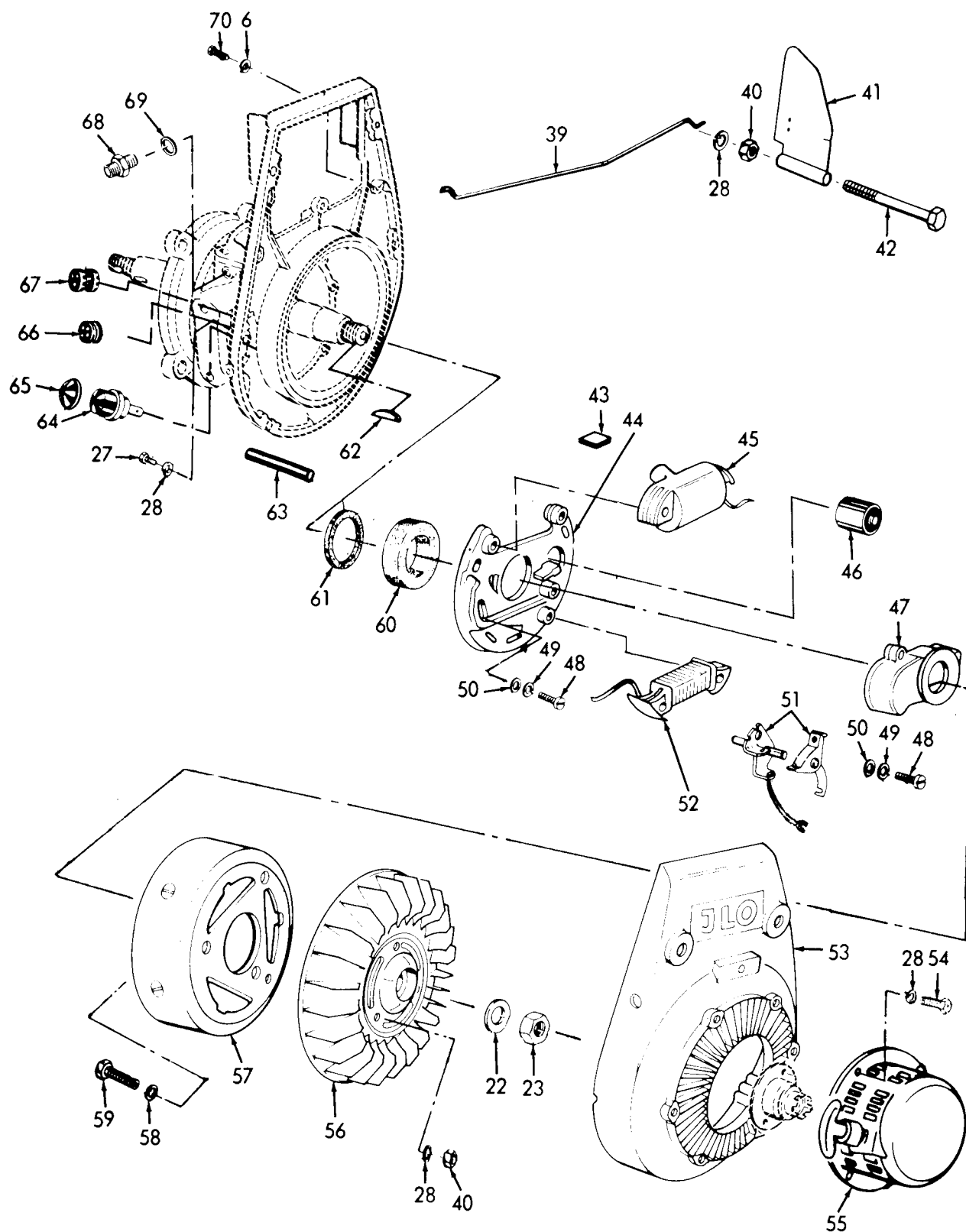


Figure F-3. Gasoline Engine Assembly (Sheet 2 of 2).

| SECTION II | | | | | |
|--|-------|-------|----------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 020102: GASOLINE ENGINE ASSEMBLY | | | | | |
| FIG. F-3 GASOLINE ENGINE ASSEMBLY | | | | | |
| 28 | XDOZZ | D0345 | 000-40-645-060 | WASHER LOCK | 7 |
| 34 | PAOZZ | D0345 | 002-46-903-000 | PUMP,FUEL,CAM ACTUA | 1 |
| 35 | XDOZZ | 11583 | RL87YC | PLUG,SPARK | 1 |
| 36 | XAOZZ | D0345 | 002-44-151-000 | WIRE,HIGH TENSION | 1 |
| 37 | XAOZZ | D0345 | 002-44-465-900 | SLEEVE, INSULATION | 1 |
| 38 | XDOZZ | D0345 | 002-44-306-400 | CAP,SPARKPLUG | 1 |
| 54 | XDOZZ | D0345 | 000-41-010-680 | SCREW,HEX-HEAD 6M | 4 |
| 55 | PAOFF | D0345 | 197-41-834-000 | STARTER,ENGINE,HAND | 1 |
| END OF FIGURE | | | | | |

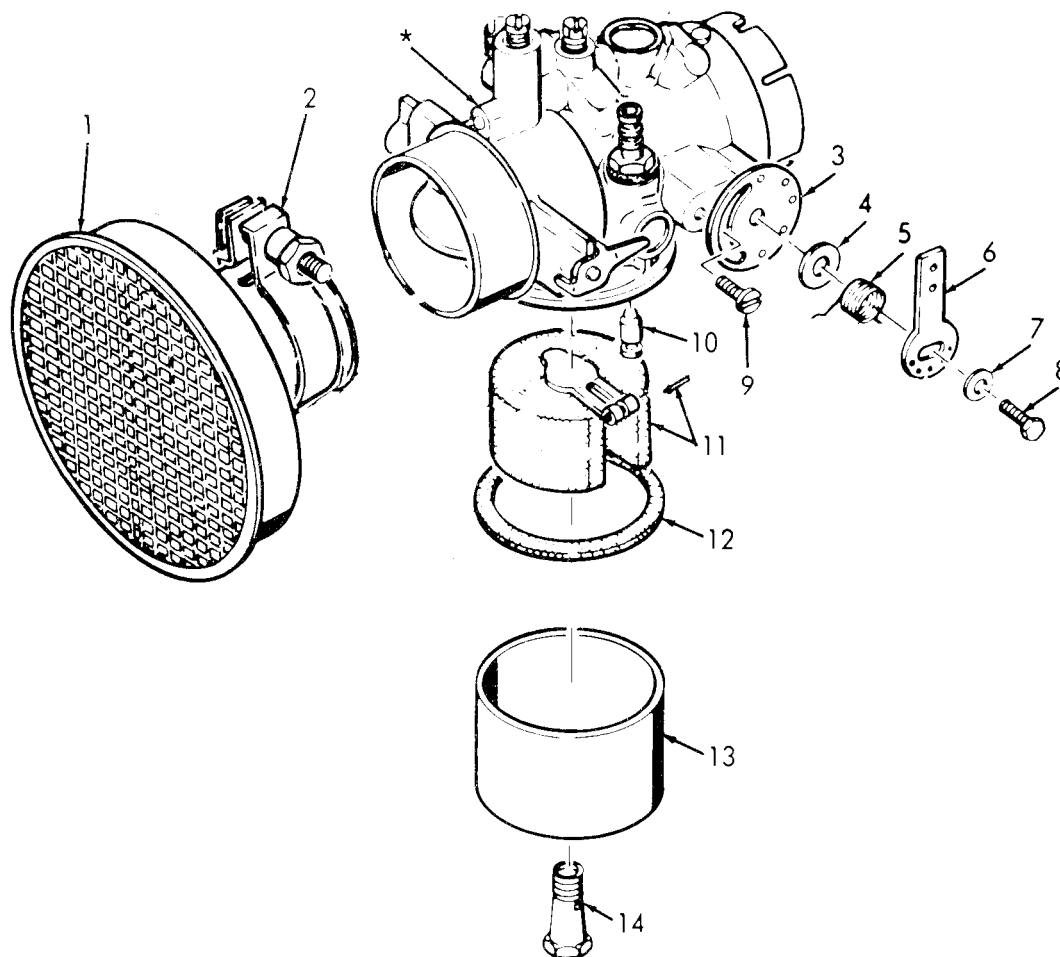


Figure F-4. Carburetor.

| SECTION II | | TM3-4230-218-12&P | | | |
|----------------------------|-------|-------------------|----------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 02010201: CARBURETOR | | | | | |
| FIG. F-4 CARBURETOR | | | | | |
| 1 | PAOZZ | D0345 | 002-46-809-000 | AIR CLEANER, INTAKE | 1 |
| 2 | XDOZZ | D0345 | 102-20-069-000 | CLAMP | 1 |
| 12 | PAOZZ | D0345 | 002-45-087-900 | GASKET | 1 |
| 13 | XDOZZ | D0345 | 002-45-123-000 | BOWL, CARBURETOR | 1 |
| 14 | PAOZZ | D0345 | 002-45-070-000 | JET GAS | 1 |
| END OF FIGURE | | | | | |

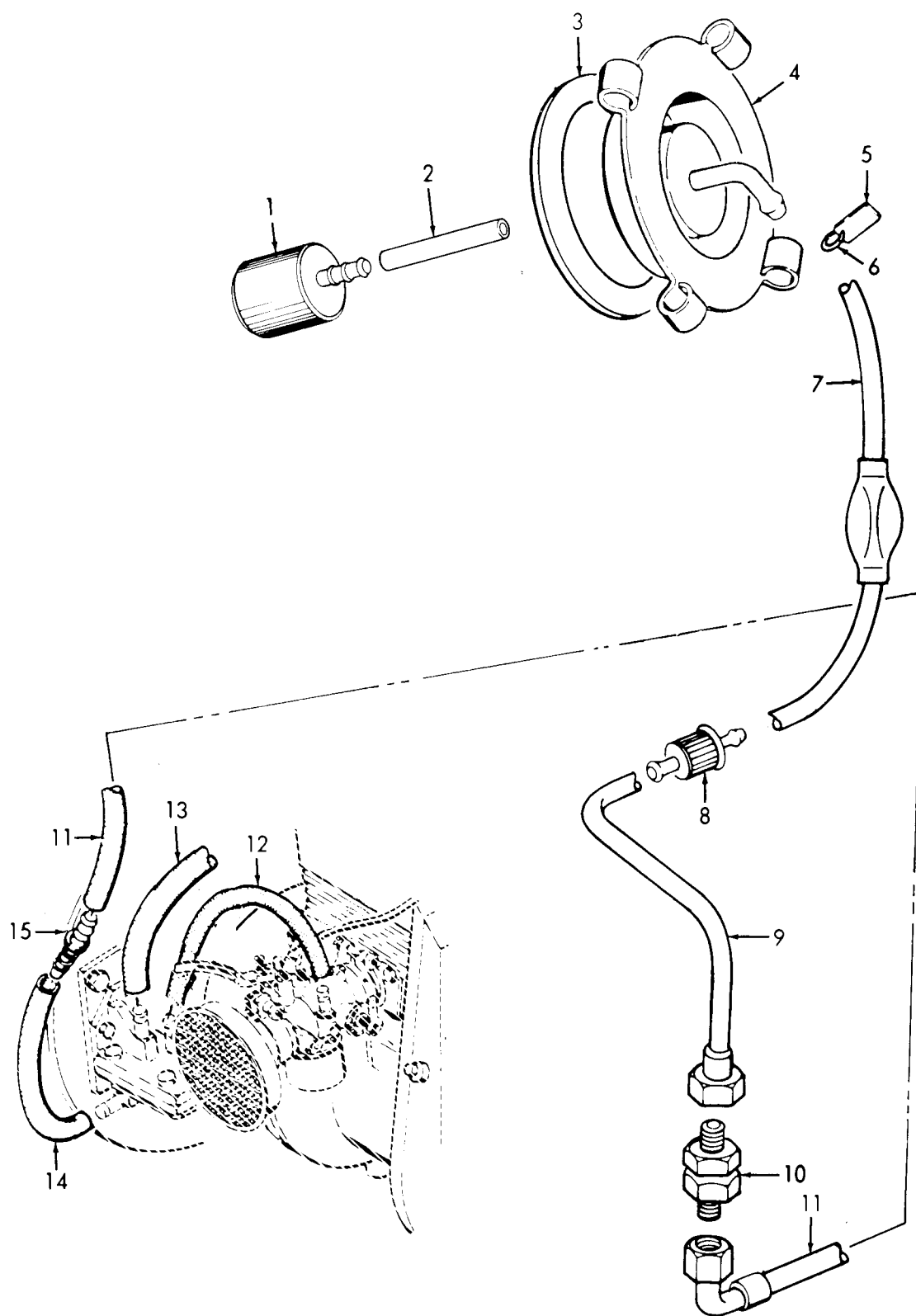


Figure F-5. Engine Fuel System.

| SECTION II (1) ITEM NO | (2) SMR CODE | (3) FSCM | TM3-4230-218-12&P (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODE (UOC) | (6) QTY |
|---------------------------------|--------------------|-------------|--|---|------------|
| GROUP 0202: ENGINE FUEL SYSTEM | | | | | |
| FIG. F-5 ENGINE FUEL SYSTEM | | | | | |
| 1 | PAOZZ | 90598 | 26305-1 | STRAINER, SEDIMENT | 1 |
| 2 | PAOZZ | 90598 | 26306-1 | HOSE, NONMETALLIC | 1 |
| 3 | PAOZZ | 56926 | 11910 | GASKET | 1 |
| 4 | PAOZZ | 90598 | 26302-100 | LID ASSEMBLY, FUEL C | 1 |
| 5 | XDOZZ | 90598 | 26314-1 | TAG, FUEL INFORM. MFG FROM STEEL, PLATED NSN | 1 |
| 6 | PAOZZ | 59730 | ET5M | STRAP, RETAINING | 1 |
| 7 | PAOZZ | 90598 | 26307-100 | PUMP, BALL ASSEMBLY | 1 |
| 8 | PAOZZ | N0844 | 05-02-05 | FILTER, FLUID | 1 |
| 9 | PAOZZ | 90598 | 26310-1 | HOSE ASSEMBLY, NONME | 1 |
| 10 | PAOZZ | N1384 | 286B1/4 | NIPPLE, PIPE | 1 |
| 11 | PAOZZ | 90598 | 26313-1 | HOSE ASSEMBLY, NONME | 1 |
| 12 | PAOZZ | 90598 | 26311-1 | HOSE, NONMETALLIC | 1 |
| 13 | PAOZZ | 90598 | 26312-1 | HOSE, NONMETALLIC | 1 |
| 14 | PAOZZ | 90598 | 26316-1 | HOSE, NONMETALLIC | 1 |
| 15 | PAOZZ | 90598 | 26315-1 | MENDER, HOSE | 1 |
| END OF FIGURE | | | | | |

SECTION II - Cont

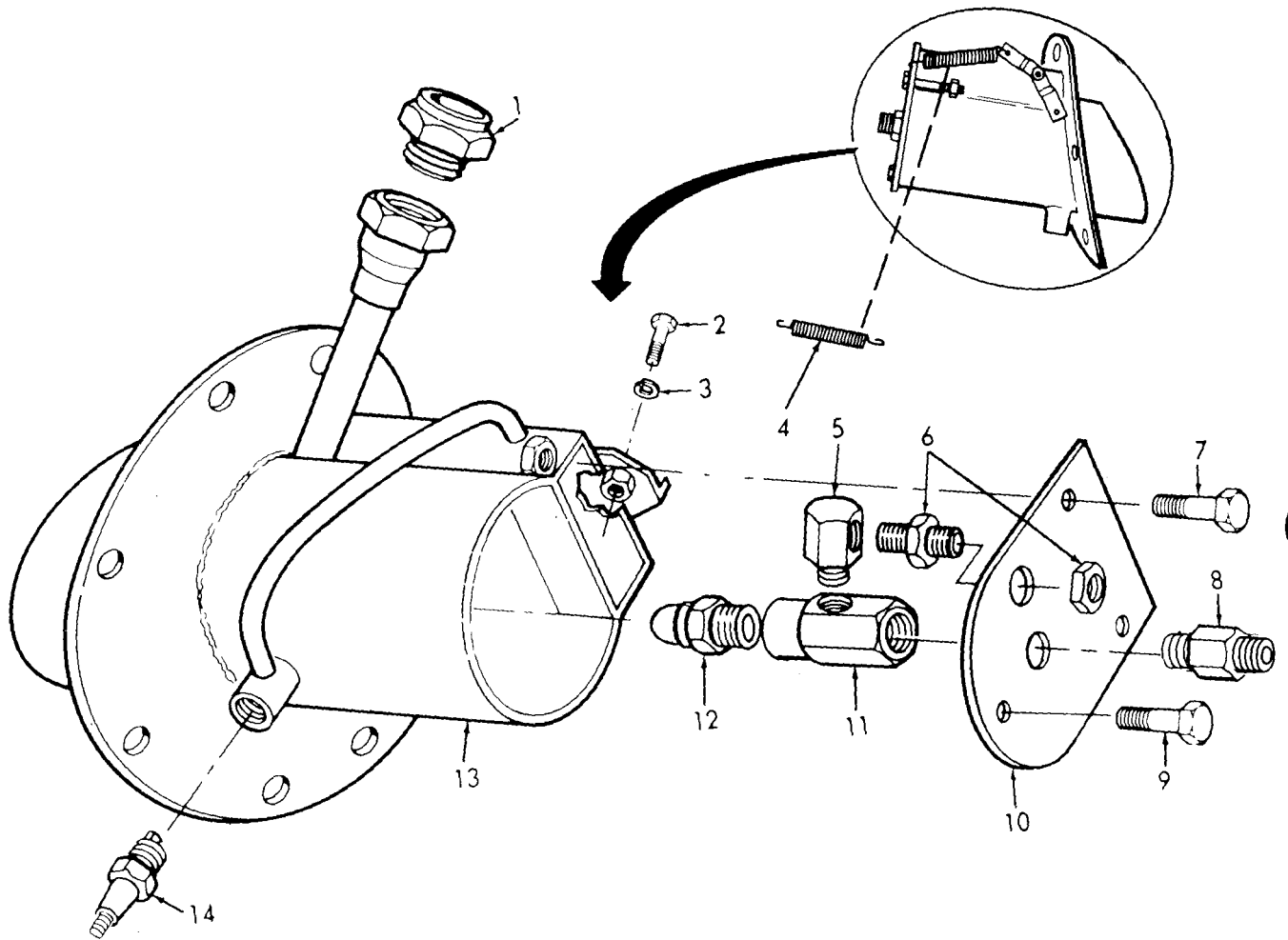


Figure F-6. Burner.

| SECTION II (1) | SMR (2) | FSCM (3) | TM3-4230-218-12&P (4) | (5) | (6) |
|--------------------|------------|-------------|--------------------------|--------------------------------------|-----|
| ITEM NO | CODE | | PART NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 0203: BURNER | | | | | |
| FIG. F-6 BURNER | | | | | |
| 1 | PAOZZ | 70673 | P75 | WINDOW, OBSERVATION | 1 |
| 2 | PAOZZ | 90598 | 26703-507 | BOLT | 1 |
| 3 | PAOZZ | 96906 | MS27183-9 | WASHER, FLAT | 1 |
| 4 | PAOZZ | 84830 | LE-049D-6SS | SPRING, HELICAL, EXTE | 1 |
| 5 | XDOZZ | N1384 | 394X1/4X1/8 | ELBOW, PIPE | 1 |
| 6 | XDOZZ | N1384 | 286BX1/4 | NIPPLE, PIPE | 1 |
| 7 | PAOZZ | 80958 | 26708-514 | BOLT | 2 |
| 8 | PAOZZ | N1384 | EV282BX1/4X1/4 | NIPPLE, PIPE | 1 |
| 9 | PAOZZ | 90598 | 26708-509 | BOLT | 1 |
| 10 | PAOZZ | 90598 | 26452-1 | LID, BURNER ASSEMBLY | 1 |
| 11 | XDOZZ | 76444 | H730C | HOLDER, FUEL JET | 1 |
| 12 | PAOZZ | 76444 | F80BPS-12GPH-60DEG | NOZZLE, OIL BURNER, P | 1 |
| 13 | PAOZZ | 90598 | 26451-100 | BURNER, WELDMENT | 1 |
| 14 | XDOZZ | 11583 | RL87YC | PLUG, SPARK | 1 |
| END OF FIGURE | | | | | |

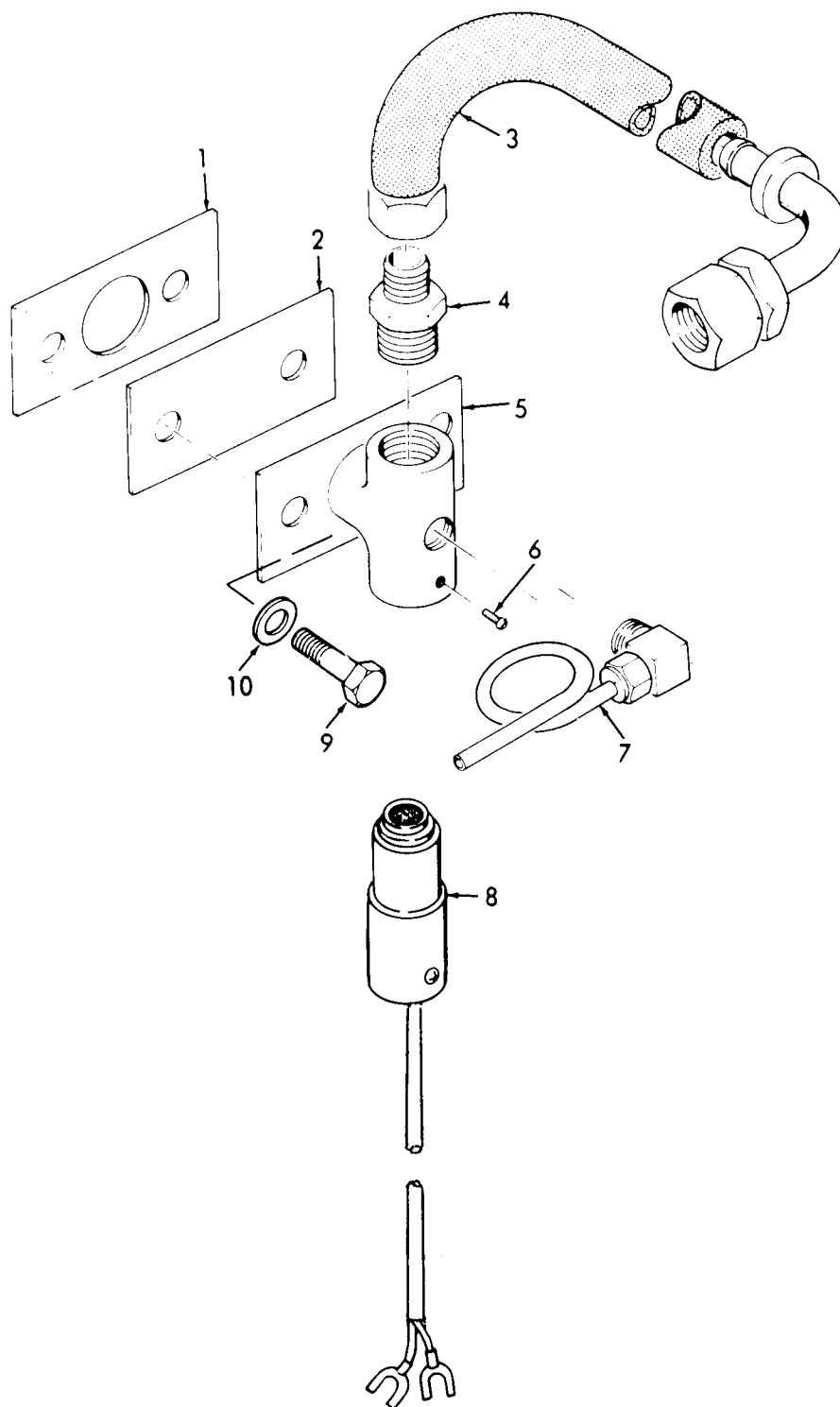
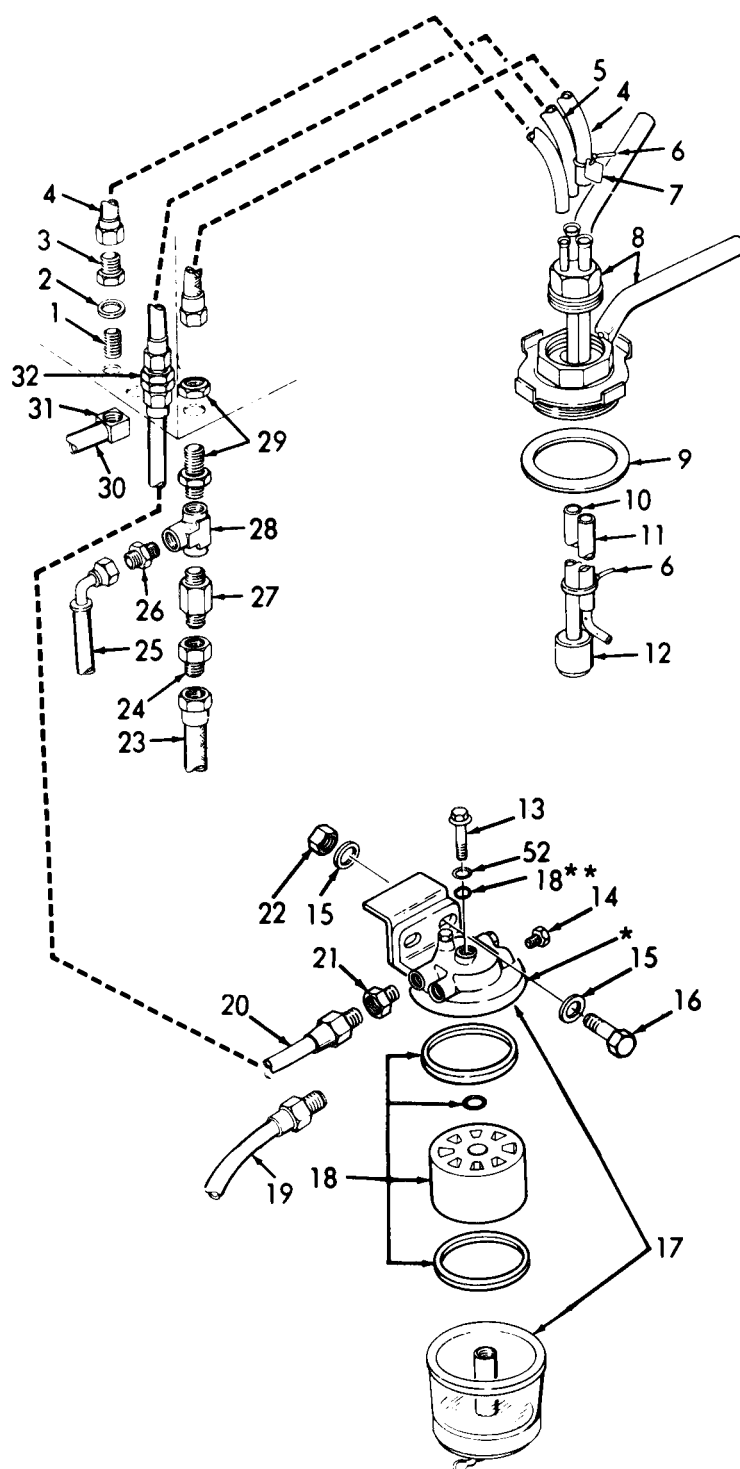


Figure F-7. Photocell.

| SECTION II | | | | | |
|-----------------------|-------|-------|---------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 0204: PHOTOCELL | | | | | |
| FIG. F-7 PHOTOCELL | | | | | |
| 1 | XDOZZ | 90598 | 26478-1 | PLATE, BACKUP CELL | 1 |
| 2 | PAOZZ | 90598 | 26473-1 | PHOTOELECTRIC CELL MICA WINDOW | 1 |
| 3 | PAOZZ | 90598 | 26474-1 | HOSE ASSEMBLY, NONME | 1 |
| 4 | XAOZZ | N1384 | EV283X1/4X3/8 | NIPPLE, 3X1-4 BSP | 1 |
| 5 | XAOZZ | 90598 | 26477-100 | HOUSING, TEE | 1 |
| 6 | PAOZZ | 90598 | 26702-1 | SCREW, SELF-LOCKING | 1 |
| 7 | PAOZZ | 90598 | 26475-100 | AIR VENT ASSEMBLY | 1 |
| 8 | PAOZZ | N0844 | MPY12H49 | PHOTOELECTRIC CELL | 1 |
| 9 | PAOZZ | 90598 | 26703-505 | BOLT, MACHINE | 2 |
| 10 | PAOZZ | 96906 | MS27183-9 | WASHER, FLAT | 2 |
| END OF FIGURE | | | | | |



* No further disassembly authorized.

** Furnished with element

Figure F-8. Burner Fuel System (Sheet 1 of 2).

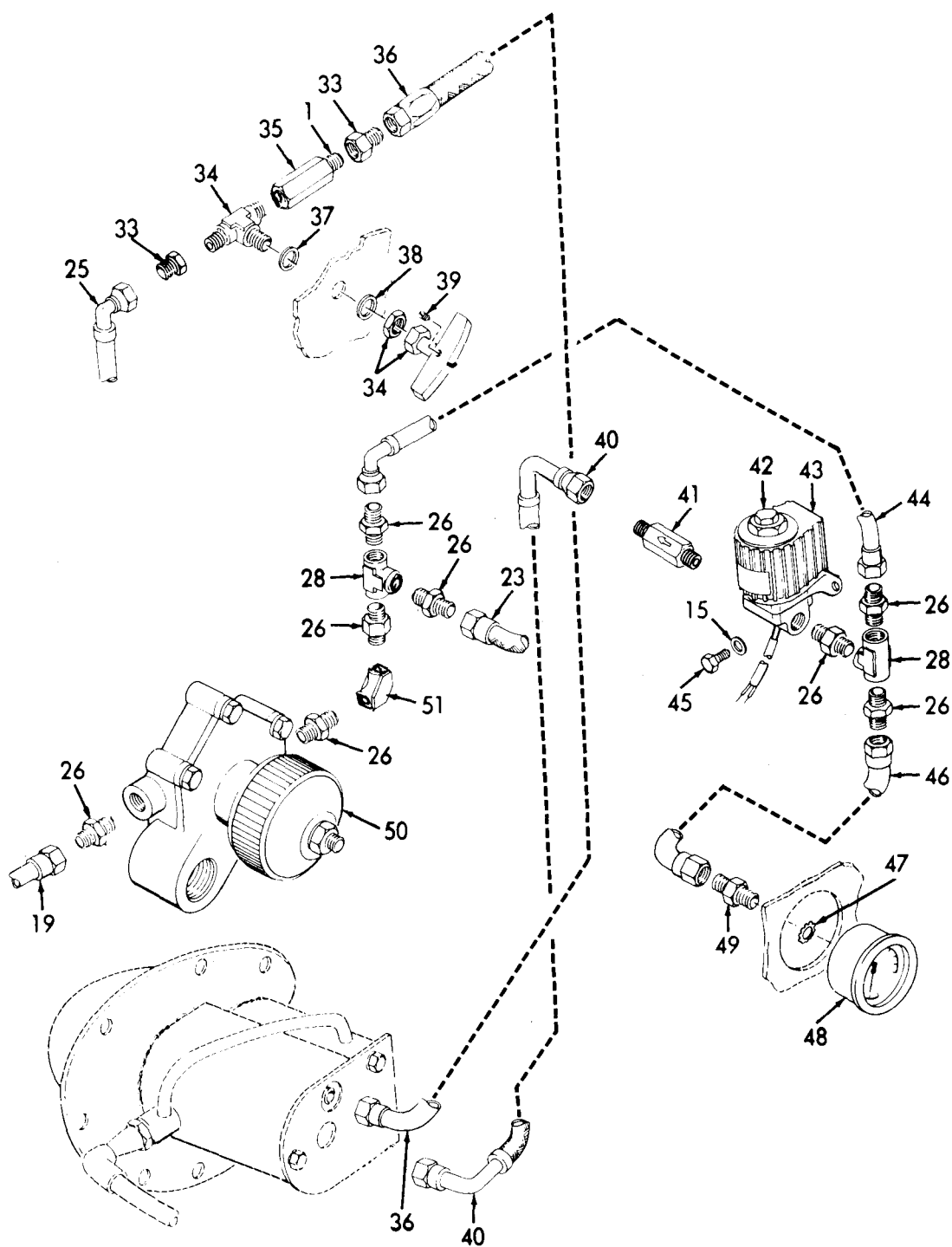


Figure F-8. Burner Fuel System (Sheet 2 of 2).

| SECTION II | | TM3-4230-218-12&P | | | |
|--------------------------------|-------|-------------------|------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 0206: BURNER FUEL SYSTEM | | | | | |
| GROUP 020601: FLUID FILTER | | | | | |
| FIG. F-8 BURNER FUEL SYSTEM | | | | | |
| 8 | PAOZZ | 90598 | 26424-100 | LID ASSEMBLY,HEAT-F | 1 |
| 9 | PAOZZ | 56926 | 11910 | GASKET | 1 |
| 10 | XDOZZ | 90598 | 26408-1 | HOSE ASSY SUCTION | 1 |
| 11 | PAOZZ | 90598 | 26419-1 | HOSE ASSEMBLY,NONME | 1 |
| 12 | PAOZZ | 90598 | 26421-1 | STRAINER,SEDIMENT | 1 |
| 13 | PAOZZ | 90598 | 26703-807 | BOLT | 1 |
| 14 | PAOZZ | 81384 | 39FX5 | PLUG | 2 |
| 18 | PAOZZ | U3697 | 7111-296 | ELEMENT,FILTER,FUEL | 1 |
| 39 | PAOZZ | 96906 | MS51964-64 | SETSCREW | 1 |
| 52 | XDOZZ | 96906 | MS27183-9 | WASHER, FLAT | 1 |
| END OF FIGURE | | | | | |

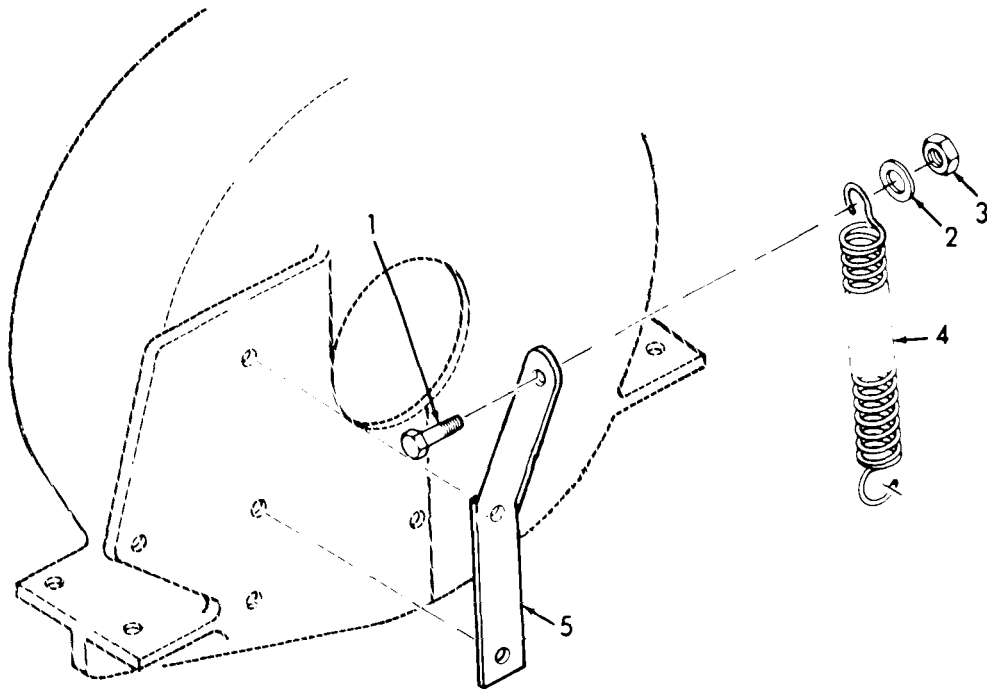


Figure F-9. Belt Tensioner.

| SECTION II | | | | | |
|---------------------------------|-------|-------|-------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 0207: BELT PUMP TENSIONER | | | | | |
| FIG. F-9 BELT PUMP TENSIONER | | | | | |
| 1 | XDOZZ | 90598 | 26708-506 | SCREW,HEX HD | 1 |
| 2 | PAOZZ | 90598 | 26701-1 | WASHER,FLAT | 2 |
| 3 | PAOZZ | 90598 | 26705-500 | NUT,SELF-LOCKING,HE | 1 |
| 4 | PAOZZ | 84830 | LE-055E-8SS | SPRING,HELICAL,EXTE | 1 |
| 5 | XDOZZ | 90598 | 26468-1 | BRACKET,TENSIONER | 1 |
| END OF FIGURE | | | | | |

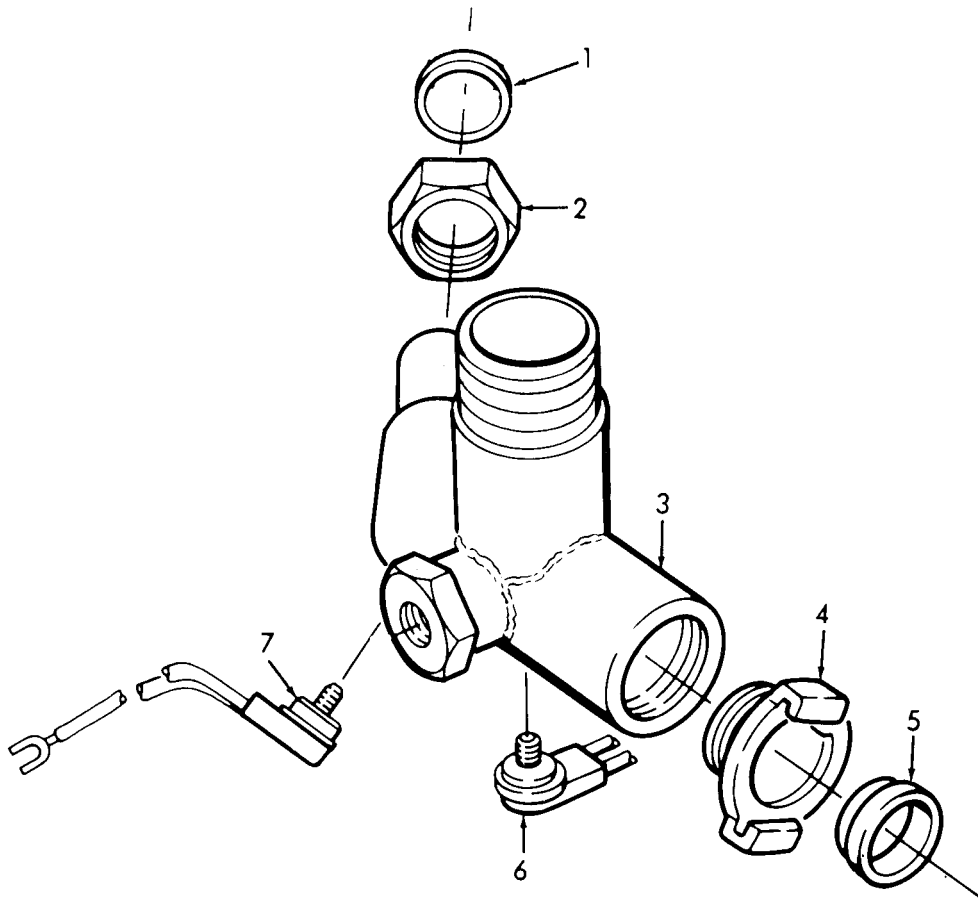


Figure F-10. Water outlet.

| SECTION II | | | | | |
|--------------------------|-------|-------|------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 0208: WATER OUTLET | | | | | |
| FIG. F-10 WATER OUTLET | | | | | |
| 1 | PAOZZ | N1384 | 60FX16 | CONE,RING CLAMPING | 1 |
| 2 | XDOZZ | N1384 | 191B1X1 | NUT,HEX IINBSP | 1 |
| 3 | XDOZZ | 90598 | 26271-101 | TEE,OUTLET | 1 |
| 4 | PAOZZ | 59379 | 9000-0303 | COUPLING HALF,QUICK | 1 |
| 5 | PAOZZ | 59379 | 9000-0268 | GASKET | 1 |
| 6 | XDOZZ | 82647 | 4344-324-1 | SWITCH,THERMOSTAT | 1 |
| 7 | XDOZZ | 82647 | 4344-324-2 | SWITCH,THERMOSTAT | 1 |
| END OF FIGURE | | | | | |

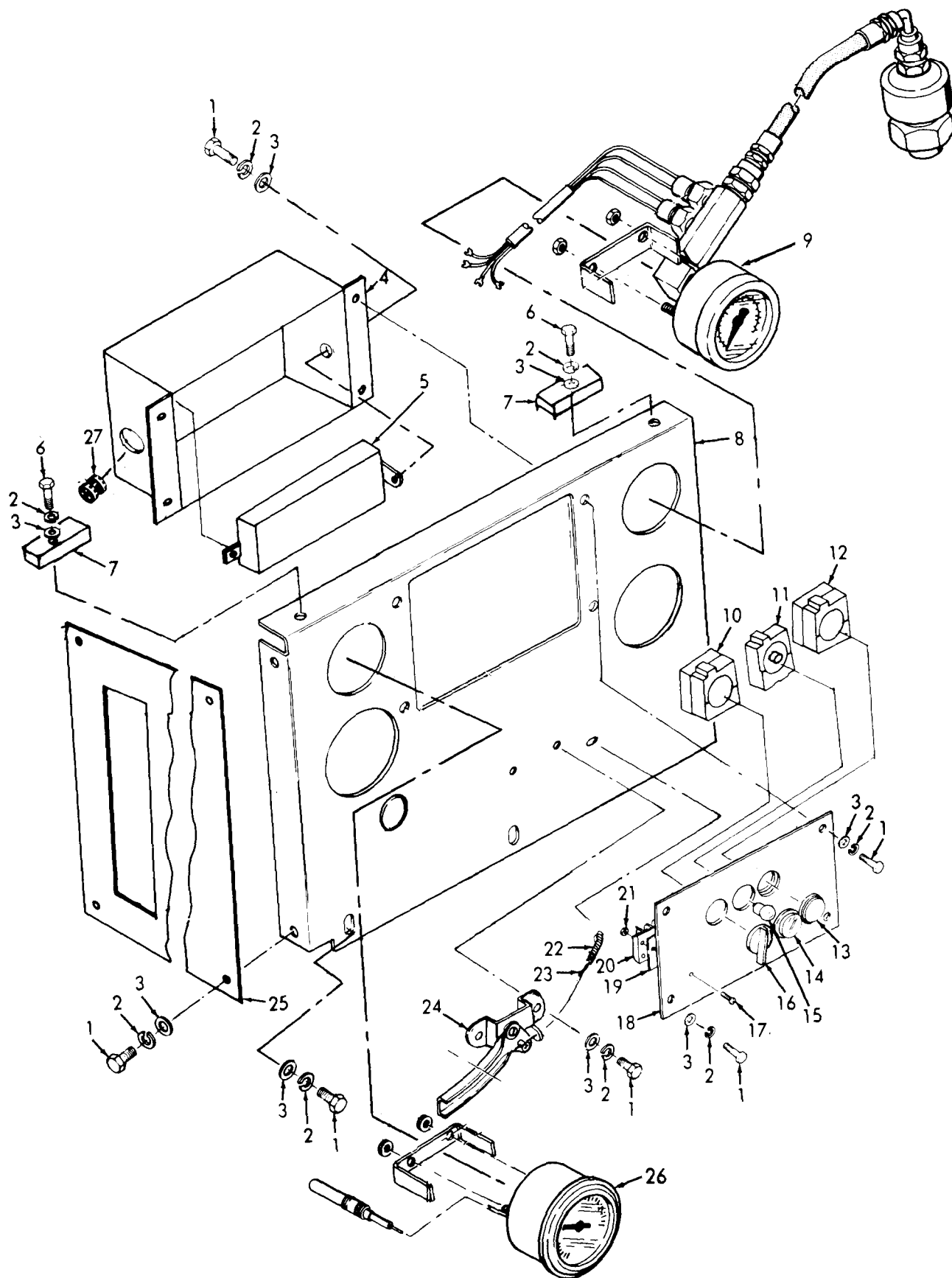


Figure F-11. Control Panel.

| SECTION II | | TM3-4230-218-12&P | | | |
|---------------------------|-------|-------------------|-------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 0209: CONTROL PANEL | | | | | |
| FIG. F-11 CONTROL PANEL | | | | | |
| 1 | PAOZZ | 90598 | 26703-505 | BOLT,MACHINE | 15 |
| 2 | PAOZZ | 96906 | MS35333-135 | WASHER, LOCK | 17 |
| 3 | PAOZZ | 96906 | MS27183-9 | WASHER, FLAT | 17 |
| 14 | PAOZZ | 37833 | ZB2BV05 | LENS, LIGHT | 1 |
| 15 | PAOZZ | 21877 | 146381 | LAMP, INCANDESCENT | 1 |
| 16 | PAOZZ | 37833 | ZB2BJ3 | KNOB | 1 |
| 22 | XDOZZ | 08645 | 66986 | CASING | 1 |
| 23 | XDOZZ | 08645 | 26099 | LEAD | 1 |
| 24 | PAOZZ | 08645 | 290568 | LEVER, THROTTLE CONT | 1 |
| END OF FIGURE | | | | | |

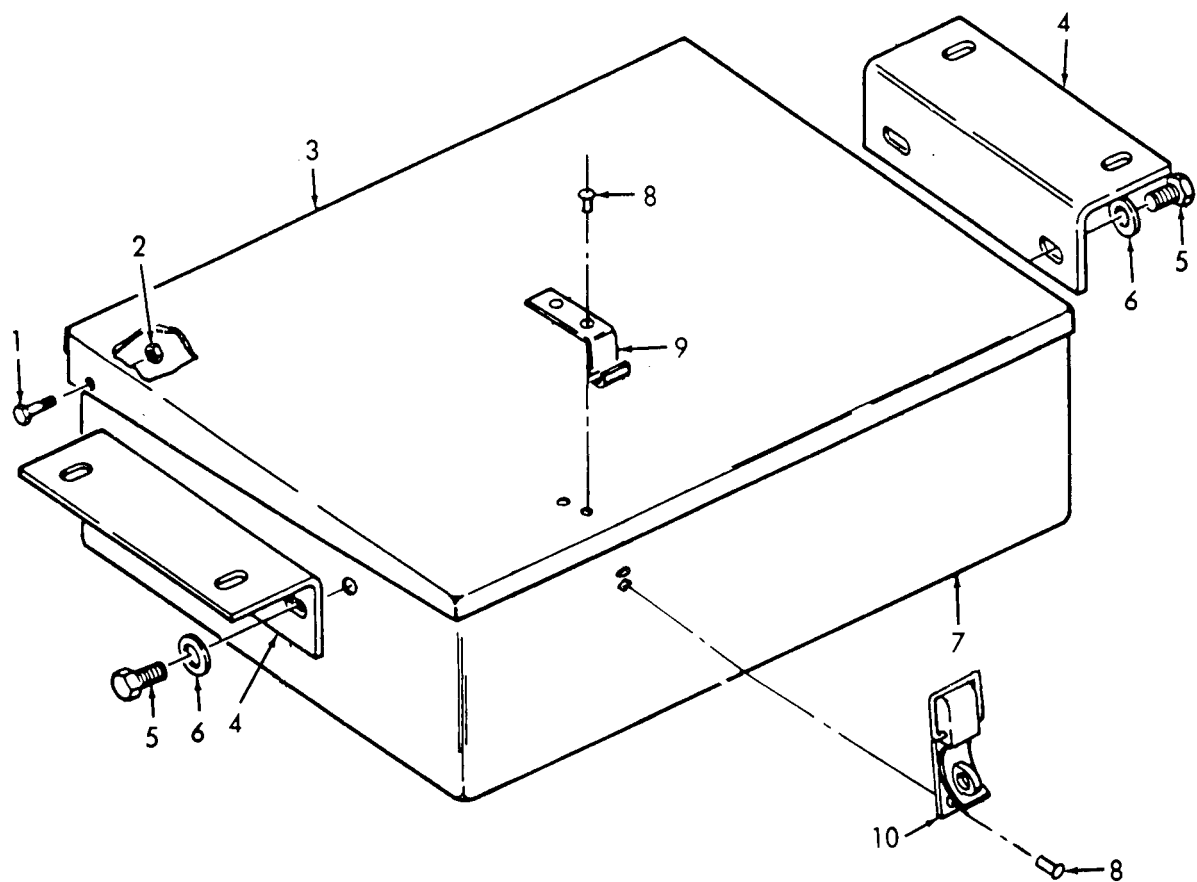


Figure F-12. Tool Box.

| SECTION II | | TM3-4230-218-12&P | | | |
|----------------------|-------|-------------------|----------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 0210: TOOL BOX | | | | | |
| FIG. F-12 TOOL BOX | | | | | |
| 1 | PAOZZ | 90598 | 26703-407 | BOLT | 2 |
| 2 | PAOZZ | 90598 | 26705-400 | NUT, SELF-LOCKING | 2 |
| 3 | XDOZZ | 90598 | 26571-1 | COVER, TOOL BOX | 1 |
| 4 | XDOZZ | 90598 | 26573-1 | ANGLE, TOOL BOX | 2 |
| 5 | PAOZZ | 90598 | 26703-505 | BOLT, MACHINE | 4 |
| 6 | PAOZZ | 96906 | MS27183-9 | WASHER, FLAT | 4 |
| 7 | XAOZZ | 90598 | 26572-1 | BOX, TOOL | 1 |
| 8 | XDOZZ | 07707 | SCD45BS | RIVET | 4 |
| 9 | PAOZZ | 98003 | SC-D20650-14CE | STRIKE, CATCH | 1 |
| 10 | PAOZZ | 98003 | HC227ZE | CATCH, CLAMPING | 1 |
| END OF FIGURE | | | | | |

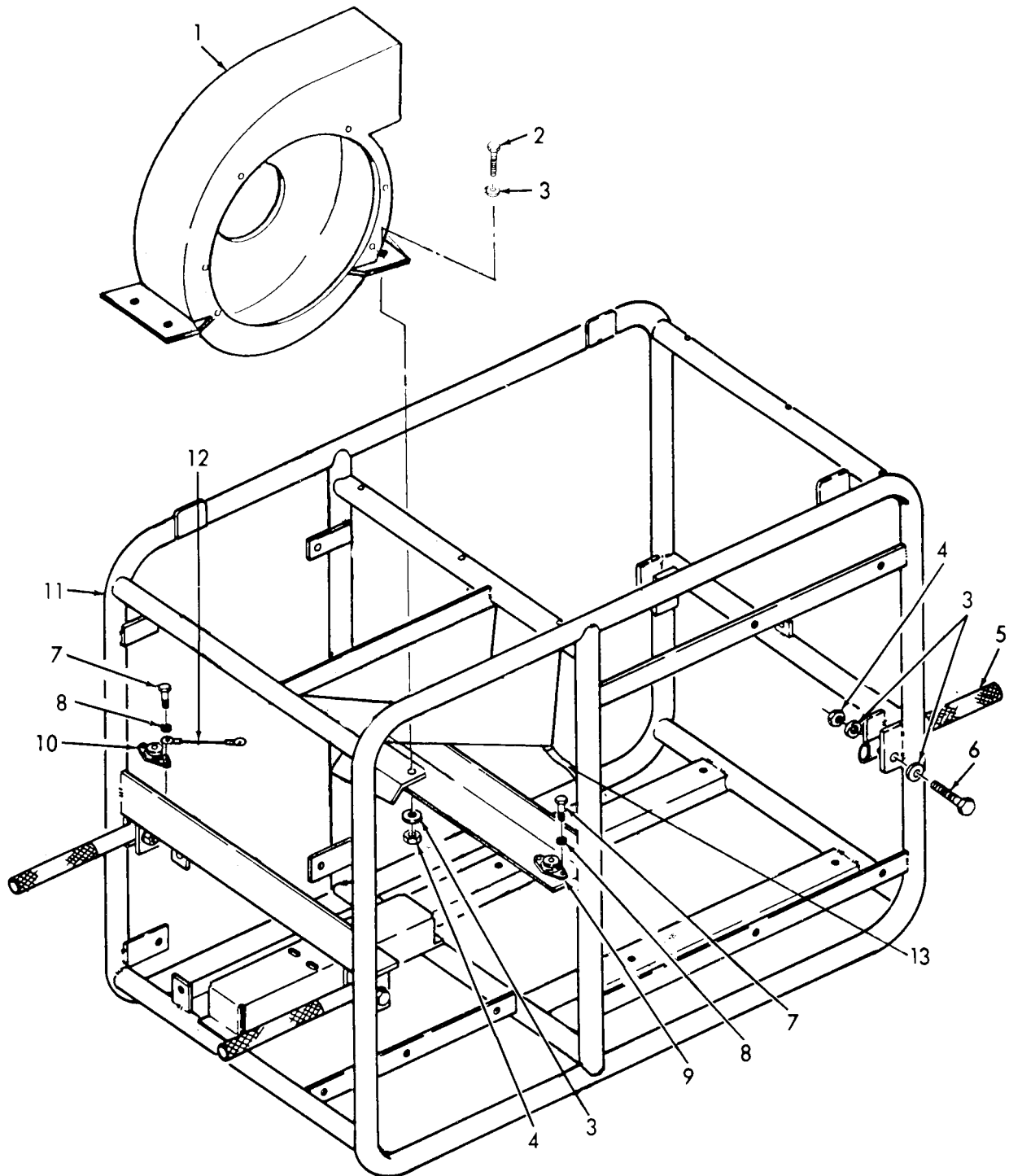


Figure F-13. Frame.

| SECTION II (1) | ITEM (2) | SMR (3) | TM3-4230-218-12&P (4) | (5) | (6) |
|-------------------|-------------|------------|--------------------------|--------------------------------------|-----|
| NO | CODE | FSCM | PART NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 0211: FRAME | | | | | |
| FIG. F-13 FRAME | | | | | |
| 3 | PAOZZ | 96906 | MS27183-12 | WASHER, FLAT | 16 |
| 4 | PAOZZ | 90598 | 26705-700 | NUT, SELF-LOCKING, HE | 8 |
| 5 | PAOZZ | 90598 | 26502-1 | HANDLE, DECONTAMINAT | 4 |
| 6 | PAOZZ | 90598 | 26703-719 | BOLT HEX HD | 4 |
| 12 | PAOZZ | 90598 | 26619-100 | LEAD, ELECTRICAL | 1 |
| 13 | XDOZZ | 90598 | 26500-14 | TYGON TUBING | 1 |
| END OF FIGURE | | | | | |

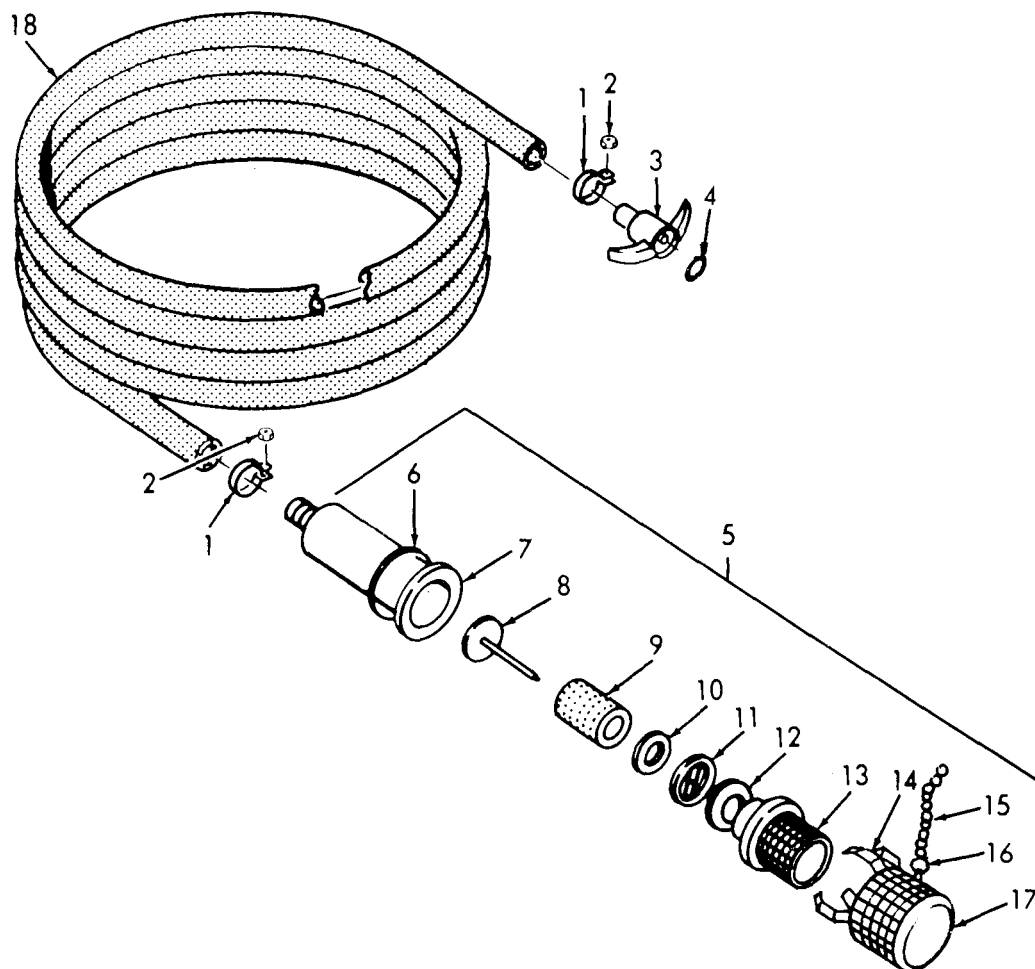


Figure F-14. Suction Hose.

| SECTION II (1) | ITEM (2) | SMR (3) | TM3-4230-218-12&P (4) | PART (5) | DESCRIPTION AND USABLE ON CODE (UOC) | QTY (6) |
|------------------------|-------------|------------|--------------------------|-------------|--------------------------------------|------------|
| NO | CODE | FSCM | NUMBER | | | |
| GROUP 03: SUCTION HOSE | | | | | | |
| GROUP 0301: STRAINER | | | | | | |
| FIG. F-14 SUCTION HOSE | | | | | | |
| 1 | PAOZZ | 72661 | 11 | | CLAMP, HOSE | 2 |
| 2 | PAOZZ | 96906 | MS51943-31 | | NUT, SELF-LOCKING, HE | 2 |
| 3 | PAOZZ | 96906 | MS27025-7 | | COUPLING HALF, QUICK | 1 |
| 4 | XDOZZ | 96906 | MS27030-4 | | GASKET, COUPLING | 1 |
| 5 | PAOOO | 90598 | 26051-100 | | STRAINER, WATER HOSE | 1 |
| 6 | XAOZZ | 39428 | 9651K61 | | SPRING, HELICAL | 1 |
| 7 | XAOZZ | 90598 | 26052-1 | | SHROUD, STRAINER | 1 |
| 8 | XAOZZ | 90598 | 26053-1 | | RETAINER, FILTER | 1 |
| 9 | PAOZZ | 55524 | Y45-238 | | FILTER ELEMENT, FLUI | 1 |
| 10 | PAOZZ | 90598 | 26054-2 | | GASKET | 1 |
| 11 | XAOZZ | 90598 | 26055-1 | | MOUNT, FILTER | 1 |
| 12 | PAOZZ | 90598 | 26054-1 | | GASKET | 1 |
| 13 | PAOZZ | 55524 | F20-30 | | STRAINER, SUCTION | 1 |
| 14 | PAOZZ | 90598 | 26056-1 | | CLIP | 3 |
| 15 | MOOZZ | 90598 | 26051-11 | | CHAIN, SAFETY MAKE FROM P/N 8962T12 | 1 |
| 16 | PAOZZ | 39428 | 943K13 | | HOOK | 1 |
| 17 | XDOZZ | 90598 | 26057-1 | | BASKET, STRAINER | 1 |
| 18 | PAOZZ | 90598 | 26650-1 | | HOSE ASSEMBLY, NONMETAL | 1 |
| END OF FIGURE | | | | | | |

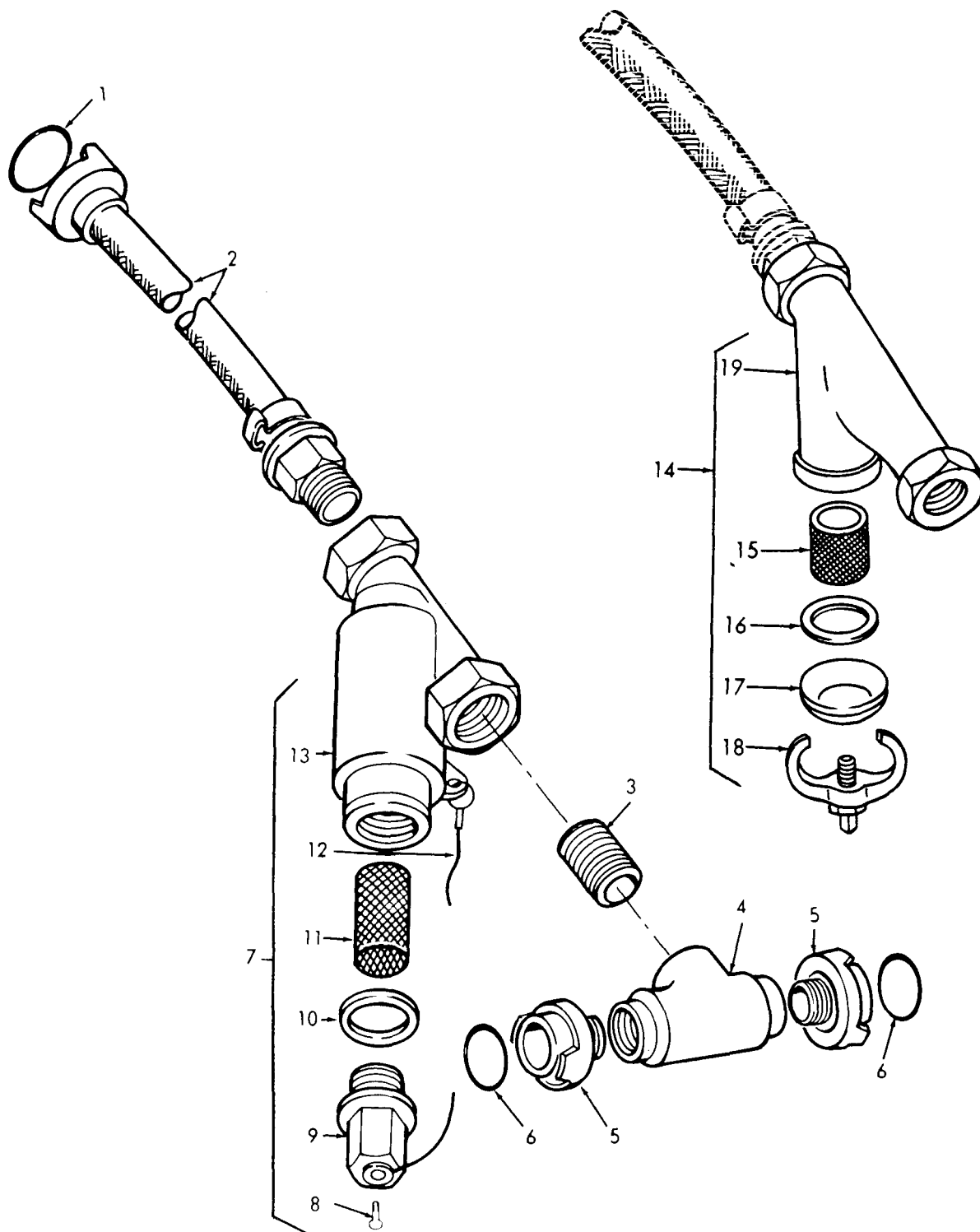
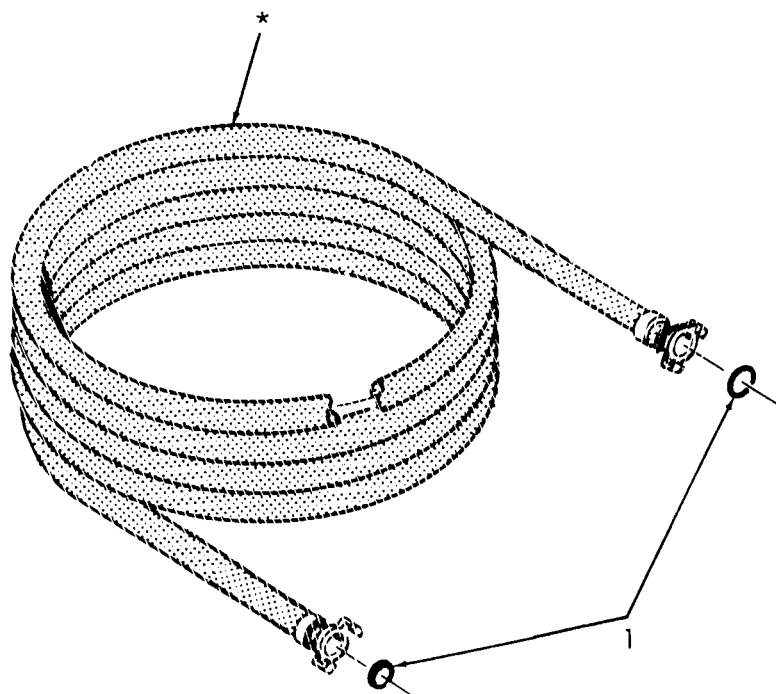


Figure F-15. Branch Hose/Strainer Assembly.

| SECTION II (1) ITEM NO | (2) SMR CODE | (3) FSCM | TM3-4230-218-12&P (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODE (UOC) | (6) QTY |
|-------------------------------------|--------------------|-------------|--|---|------------|
| GROUP 04: BRANCH HOSE | | | | | |
| GROUP 0401: STRAINER | | | | | |
| FIG. F-15 BRANCH HOSE/STRAINER ASSY | | | | | |
| 1 | PAOZZ | 59379 | 9000-0268 | GASKET | 1 |
| 2 | XDOZZ | 90598 | 26007-101 | HOSE,BRANCH | 1 |
| 3 | XDOZZ | 90598 | 26660-12 | NIPPLE,BRANCH HOSE | 1 |
| 4 | PAOZZ | N0844 | 12-01-08 | TEE,PIPE | 1 |
| 5 | PAOZZ | 59379 | 9000-0303 | COUPLING HALF,QUICK | 2 |
| 6 | PAOZZ | 59379 | 9000-000 | GASKET | 2 |
| 7 | XDOZ | 90598 | 26663-101 | STRAINER, ASSEMBLY (VERSION B- CONSISTS OF ITEMS 8,9,10,11, 12, & 13) | 1 |
| 8 | XAOZZ | 90598 | 26663-13 | SCREW,LANYARD | 1 |
| 9 | XAOZZ | 90598 | 26663-10 | CAP,STRAINER | 1 |
| 10 | XDOZZ | 90598 | 26663-11 | GASKET,STRAINER | 1 |
| 11 | XDOZZ | 90598 | 26664-2 | ELEMENT,STRAINER | 1 |
| 12 | XDOZZ | 90598 | 26663-12 | LANYARD,STRAINER | 1 |
| 13 | XAOZZ | 90598 | 26663-9 | BODY,STRAINER | 1 |
| 14 | XDOZZ | 90598 | 26663-100 | STRAINER ASSEMBLY (VERSION A- CONSISTS OF ITEMS 15, 16, 17, 18, & 19) | 1 |
| 15 | PAOZZ | 90598 | 26663-6 | ELEMENT,STRAINER | 1 |
| 16 | PAOZZ | 90598 | 26663-5 | GASKET,STRAINER | 1 |
| 17 | XDOZZ | 90598 | 26663-2 | COVER,STRAINER | 1 |
| 18 | XDOZZ | 90598 | 26663-3 | YOKE | 1 |
| 19 | XAOZZ | 90598 | 26663-1 | BODY, STRAINER | 1 |

END OF FIGURE



* No further disassembly authorized.

Figure F-16. Pressure Hose.

| SECTION II | | | | | |
|------------|-------|-------|-----------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| | | | | GROUP 05: PRESSURE HOSE | |
| | | | | FIG. F-16 PRESSURE HOSE | |
| 1 | PAOZZ | 59379 | 9000-0268 | GASKET | 2 |
| | | | | END OF FIGURE | |

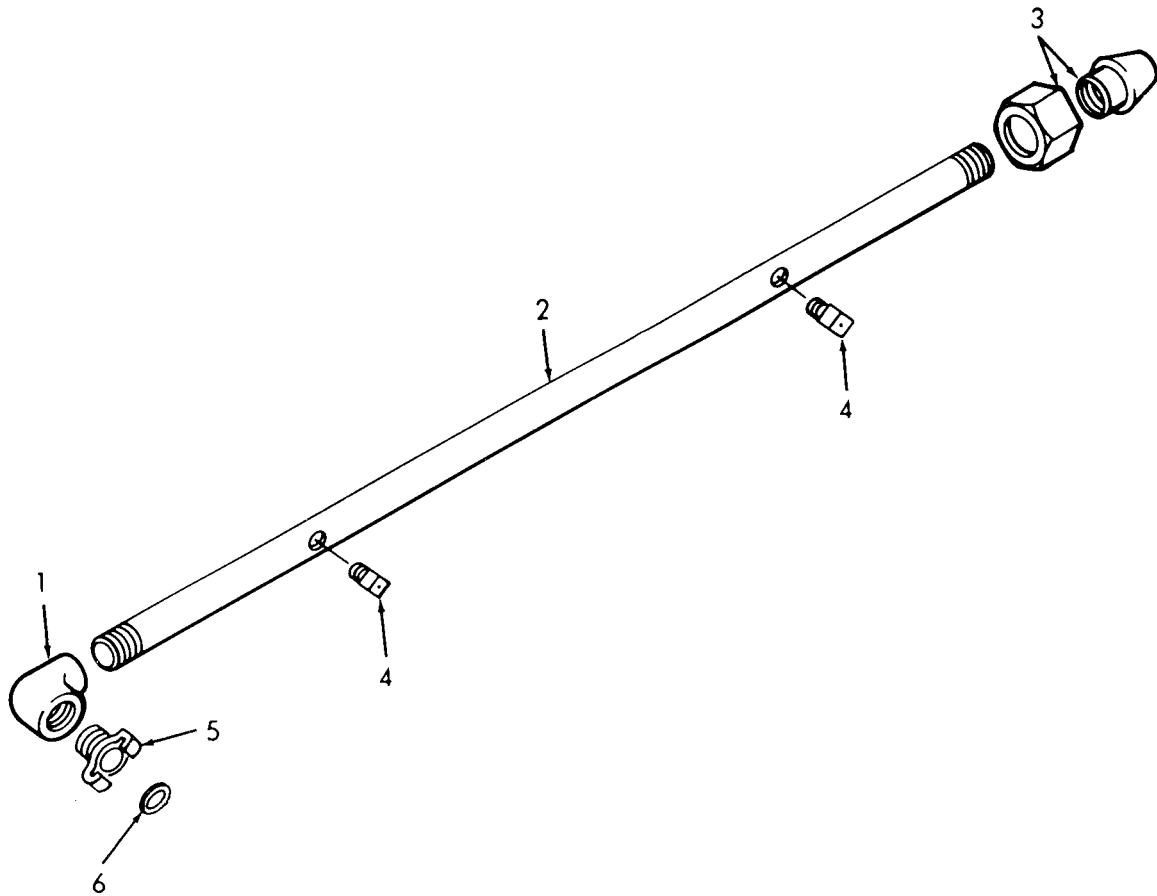


Figure F-17. Shower (End).

| SECTION II | | | | | |
|------------|-------|-------|----------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| | | | | GROUP 06: SHOWER (END) | |
| | | | | FIG. F-17 SHOWER (END) | |
| 1 | PAOZZ | N0844 | 10-02-03 | ELBOW, PIPE | 1 |
| 2 | XAOZZ | 90598 | 26044-1 | TUBE, METALLIC | 1 |
| 3 | XDOZZ | N1054 | 311X8F M/HYLSE | COUPLING, FEMALE | 1 |
| 4 | XDOZZ | 82247 | 1-4HH6-5 | NOZZLE, SPRAY, FLUID- | 2 |
| 5 | XDOZZ | 59379 | 9000-0301 | COUPLIG, PIPE | 1 |
| 6 | PAOZZ | 59398 | 9000-0000 | GASKET | 1 |
| | | | | END OF FIGURE | |

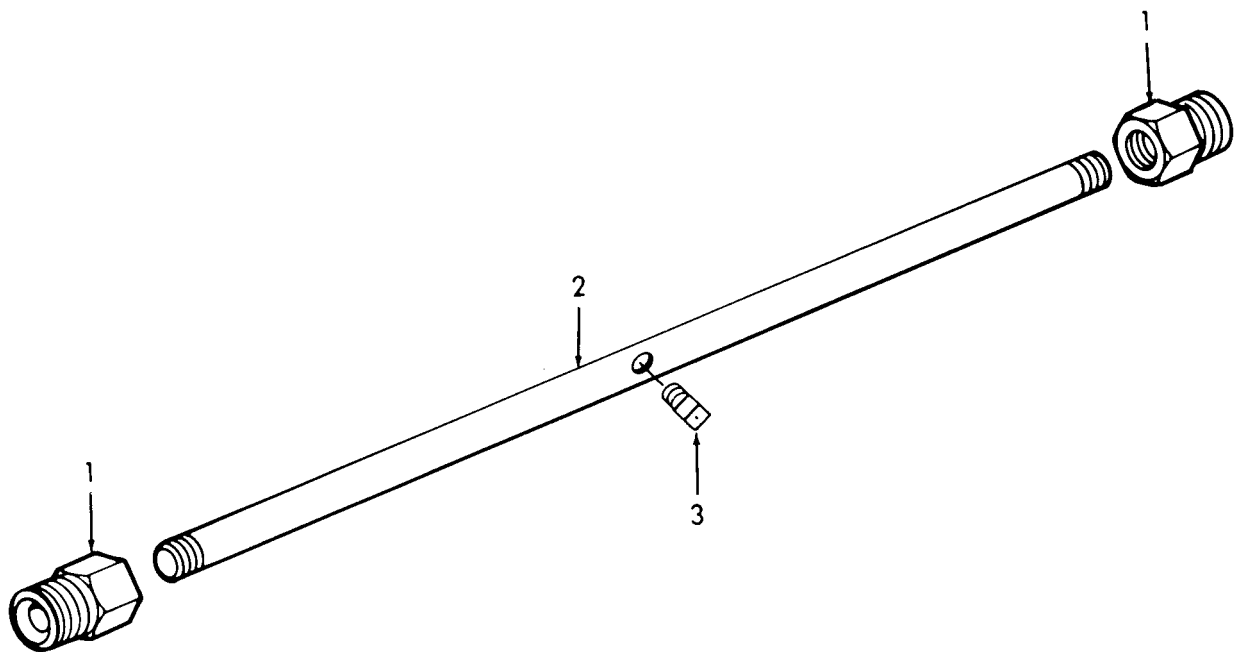


Figure F-18. Shower Assembly (Middle).

| SECTION II | | | | | |
|------------|-------|-------|----------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| | | | | GROUP 07: SHOWER (MIDDLE) | |
| | | | | FIG. F-18 SHOWER (MIDDLE) | |
| 1 | PAOZZ | N1054 | 311X8M | COUPLING,MALE | 2 |
| 2 | XAOZZ | 90598 | 26045-1 | TUBE,METALLIC | 1 |
| 3 | XDOZZ | 82247 | 1-4HH6-5 | NOZZLE,SPRAY | 1 |
| | | | | END OF FIGURE | |

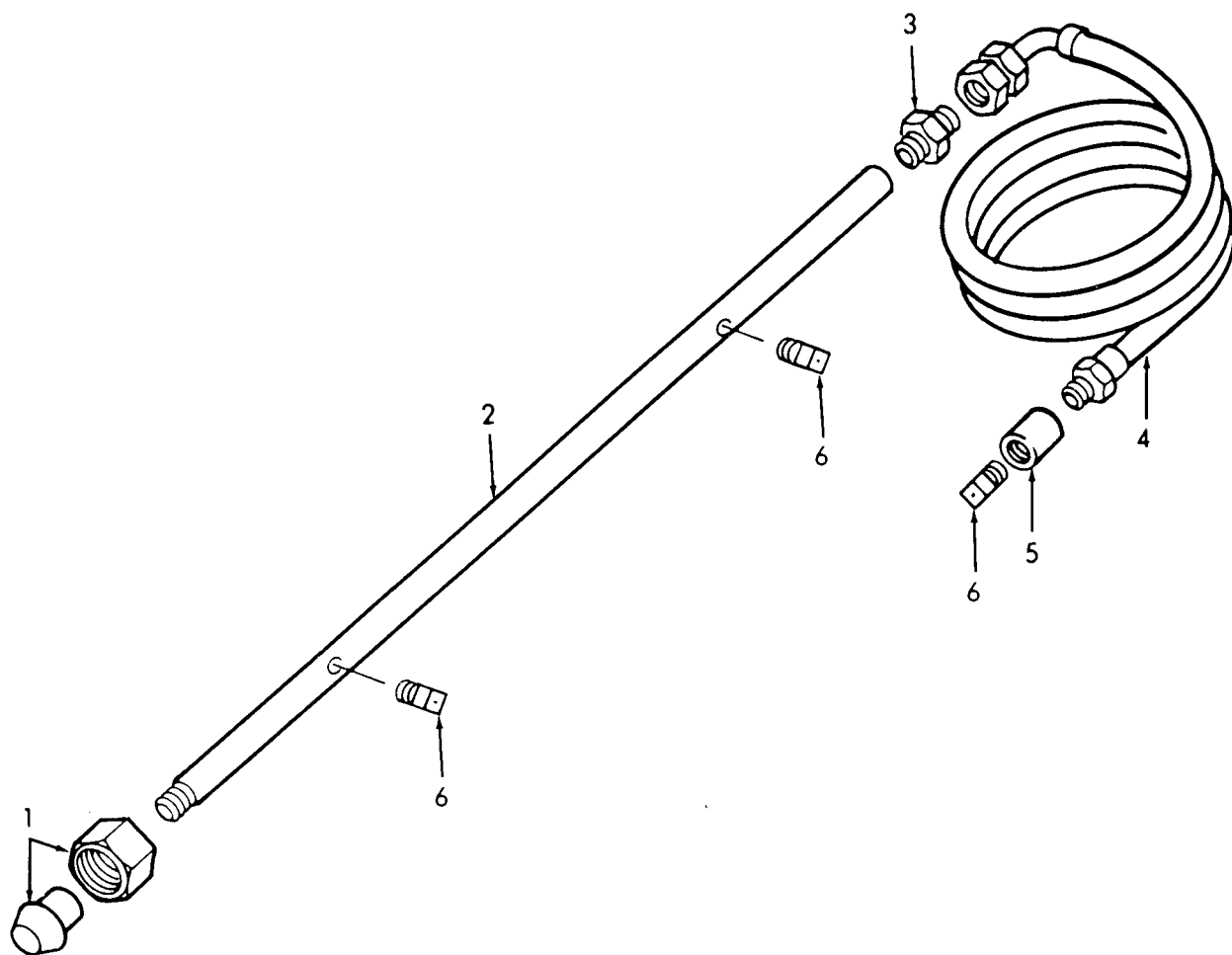


Figure F-19. Shower (with Hose).

| SECTION II | | | | | |
|------------------------------|-------|-------|----------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 08: SHOWER (WITH HOSE) | | | | | |
| FIG. F-19 SHOWER (WITH HOSE) | | | | | |
| 1 | XDOZZ | N1054 | 311X8F | COUPLING,FEMALE | 1 |
| 2 | XAOZZ | 90598 | 26046-1 | TUBE,SPRAYER | 1 |
| 3 | PAOZZ | N1384 | 267X4X6 | NIPPLE,PIPE | 1 |
| 4 | PAOZZ | 90598 | 26047-1 | HOSE ASSEMBLY,NONME | 1 |
| 5 | PAOZZ | N1054 | 375X4 | COUPLING,PIPE | 1 |
| 6 | XDOZZ | 82247 | 1-4HH6-5 | NOZZLE,SPRAY | 3 |
| END OF FIGURE | | | | | |

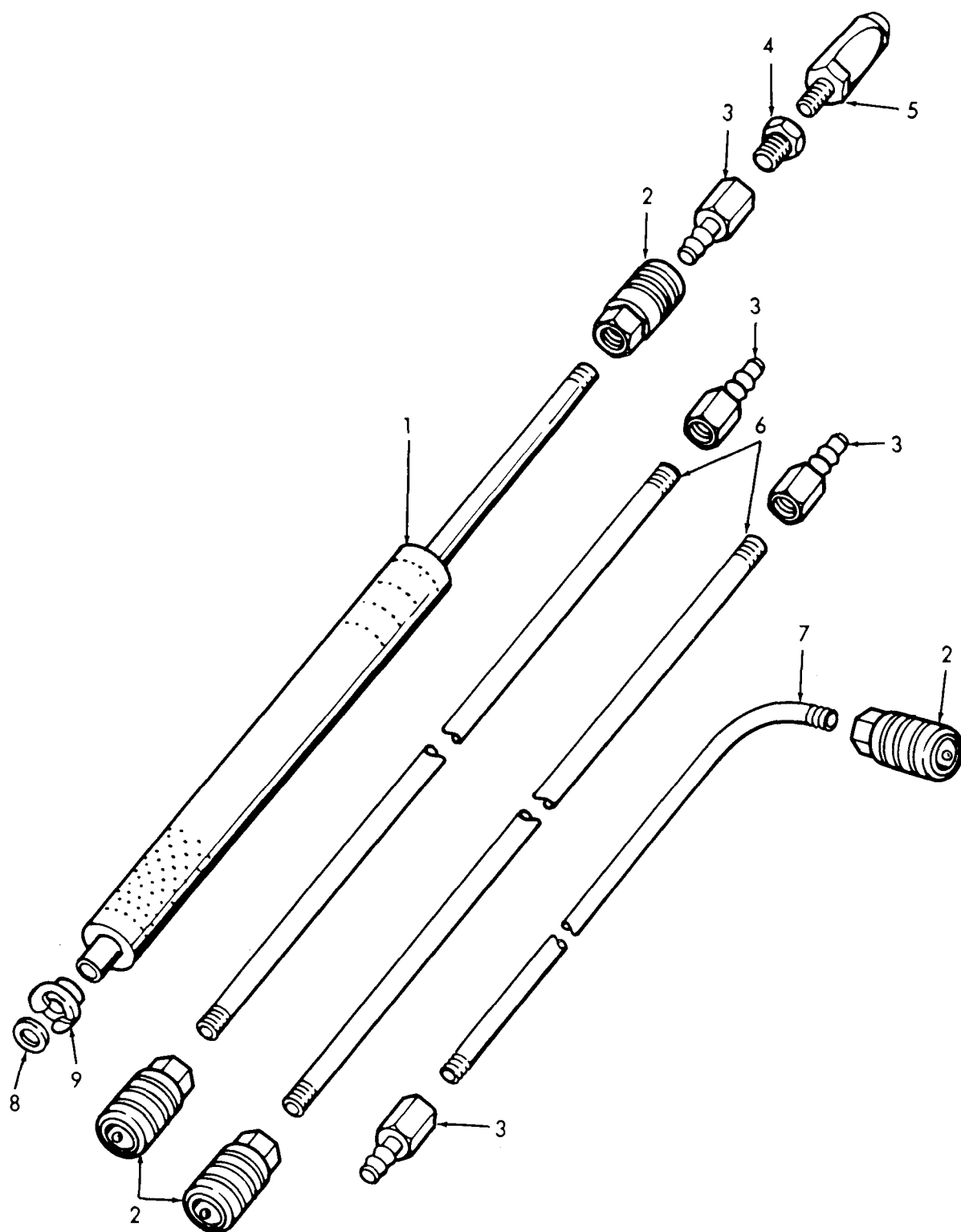


Figure F-20. Jet.

| SECTION II | | TM3-4230-218-12&P | | | |
|---------------|-------|-------------------|-----------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 09: JET | | | | | |
| FIG. F-20 JET | | | | | |
| 1 | XAOZZ | 90598 | 26021-100 | HANDLE | 1 |
| 2 | PAOZZ | 73061 | 4S26 | COUPLING HALF, QUICK | 4 |
| 3 | PAOZZ | 73061 | B4T26 | COUPLING HALF, QUICK | 4 |
| 4 | PAOZZ | 79470 | 3220X8X6 | BUSHING, PIPE | 1 |
| 5 | PAOZZ | 82247 | 3-8P1530 | NOZZL, SPRAY, FLUID | 1 |
| 6 | XDOZZ | 90598 | 26022-2 | TUBE, THREADED | 2 |
| 7 | PAOZZ | 90598 | 26022-4 | TUBE, BENT, METALLIC | 1 |
| 8 | PAOZZ | 59379 | 9000-0000 | GASKET | 1 |
| 9 | PAOZZ | 59379 | 9000-0305 | COUPLING HALF, QUICK | 1 |
| END OF FIGURE | | | | | |

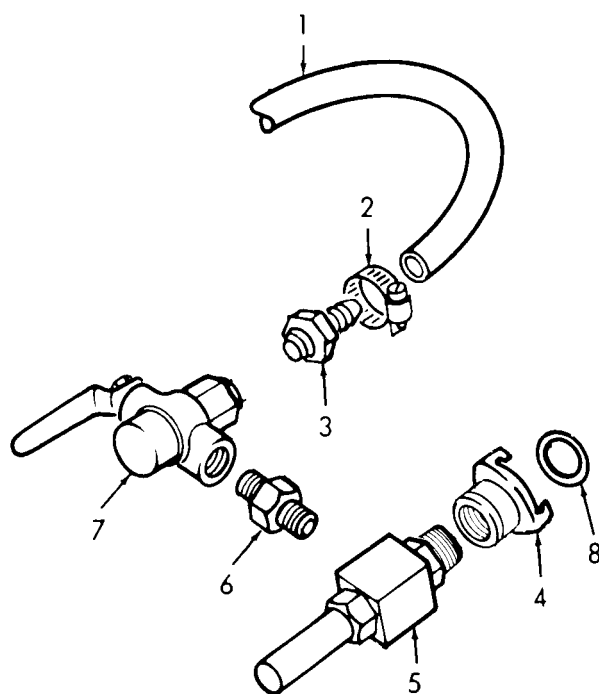


Figure F-21. Injector.

| SECTION II (1) | ITEM (2) | SMR (3) | TM3-4230-218-12&P (4) | (5) | (6) |
|--------------------|-------------|------------|--------------------------|--------------------------------------|-----|
| NO | CODE | FSCM | PART NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 10: INJECTOR | | | | | |
| FIG. F-21 INJECTOR | | | | | |
| 1 | PAOZZ | 61501 | TYGON5-81DX7-80D | TUBING, NONMETALLIC | 1 |
| 2 | XDOZZ | 38428 | 5916K32 | CLAMP, HOSE | 1 |
| 3 | PAOZZ | 41947 | W1431 | ADAPTER, STRAIGHT, PI | 1 |
| 4 | PAOZZ | 59379 | 9000-0306 | COUPLING HALF, QUICK | 1 |
| 5 | PAOZZ | 82247 | 1-7N16 | NOZZLE, SPRAY, FLUID- | 1 |
| 6 | PAOZZ | 32402 | 122R-ED | REDUCER, PIPE | 1 |
| 7 | PAOZZ | 12623 | B45XF8 | VALVE | 1 |
| 8 | PAOZZ | 59379 | 9000-0000 | GASKET | 1 |
| END OF FIGURE | | | | | |

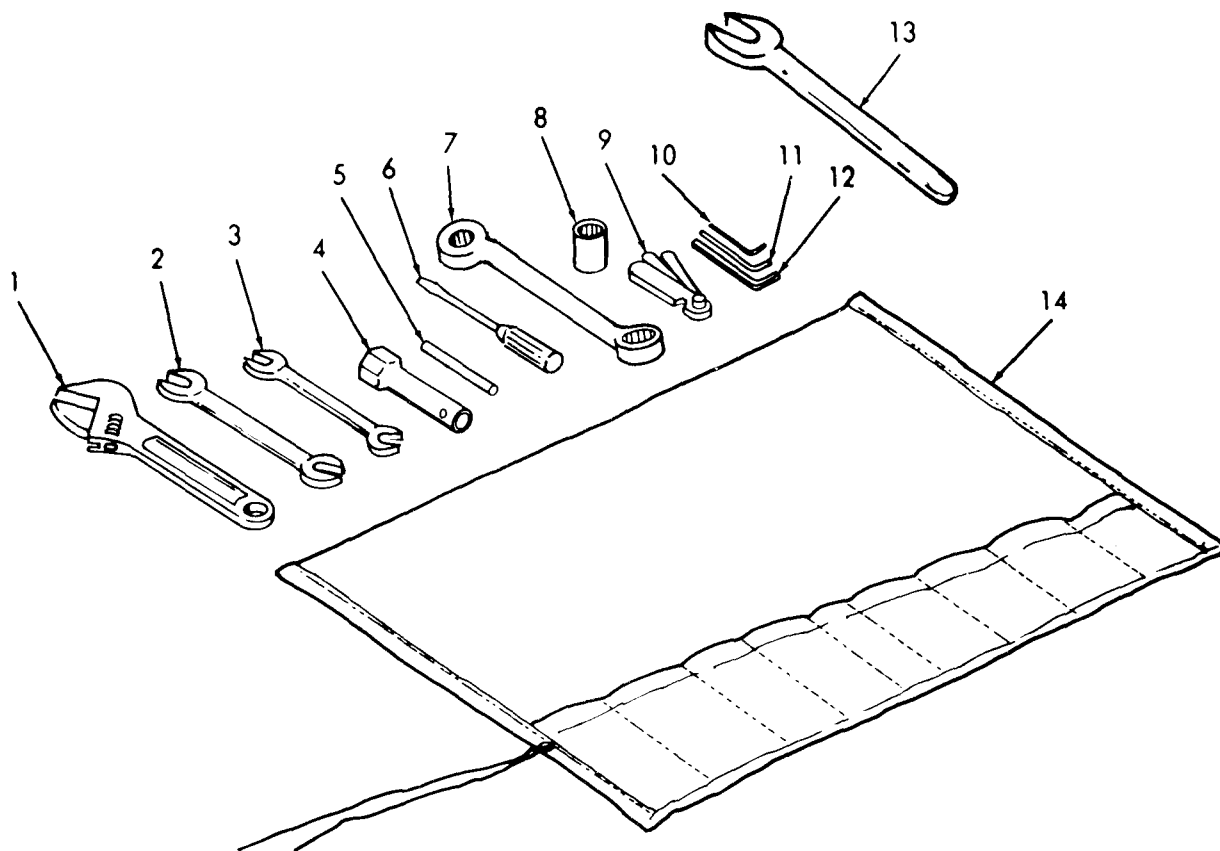


Figure F-22. Tool Kit.

| SECTION II (1) | ITEM (2) | SMR (3) | FSCM (4) | TM3-4230-218-12&P PART NUMBER | (5) | (6) |
|--------------------|-------------|------------|-------------|-------------------------------------|--------------------------------------|-----|
| NO | CODE | | | | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 11: TOOL KIT | | | | | | |
| FIG. F-22 TOOL KIT | | | | | | |
| 1 | PAOZZ | 90598 | 26070-1 | | WRENCH,SPECIAL PURP | 1 |
| 2 | XDOZZ | 90598 | 26070-2 | | WRENCH,OPEN END | 1 |
| 3 | PAOZZ | 90598 | 26070-3 | | WRENCH,OPEN END | 1 |
| 4 | PAOZZ | 90598 | 26070-4 | | WRENCH,SPARK PLUG | 1 |
| 5 | XDOZZ | 26848 | 40950 | | BAR,SOCKET WRENCH H | 1 |
| 6 | PAOZZ | 65814 | DS-6B | | SCREWDRIVER,FLAT TI | 1 |
| 7 | PAOZZ | 90598 | 26070-7 | | WRENCH,BOX | 1 |
| 8 | PAOZZ | 55719 | FSM-241 | | SOCKET,SOCKET WRENC | 1 |
| 9 | PAOZZ | 90598 | 26070-9 | | GAGE,FEELE | 1 |
| 10 | XDOZZ | 90598 | 26070-10 | | KEY,SOCKET HD SCR | 1 |
| 11 | XDOZZ | 90598 | 26070-11 | | KEY,SOCKET HD SCR | 1 |
| 12 | XDOZZ | 90598 | 26070-12 | | KEY,SOCKET HD SCR | 1 |
| 13 | XDOZZ | 90598 | 26070-14 | | WRENCH,OPEN END | 1 |
| 14 | PAOZZ | 90598 | 26070-13 | | POUCH,TOOL KIT | 1 |
| END OF FIGURE | | | | | | |

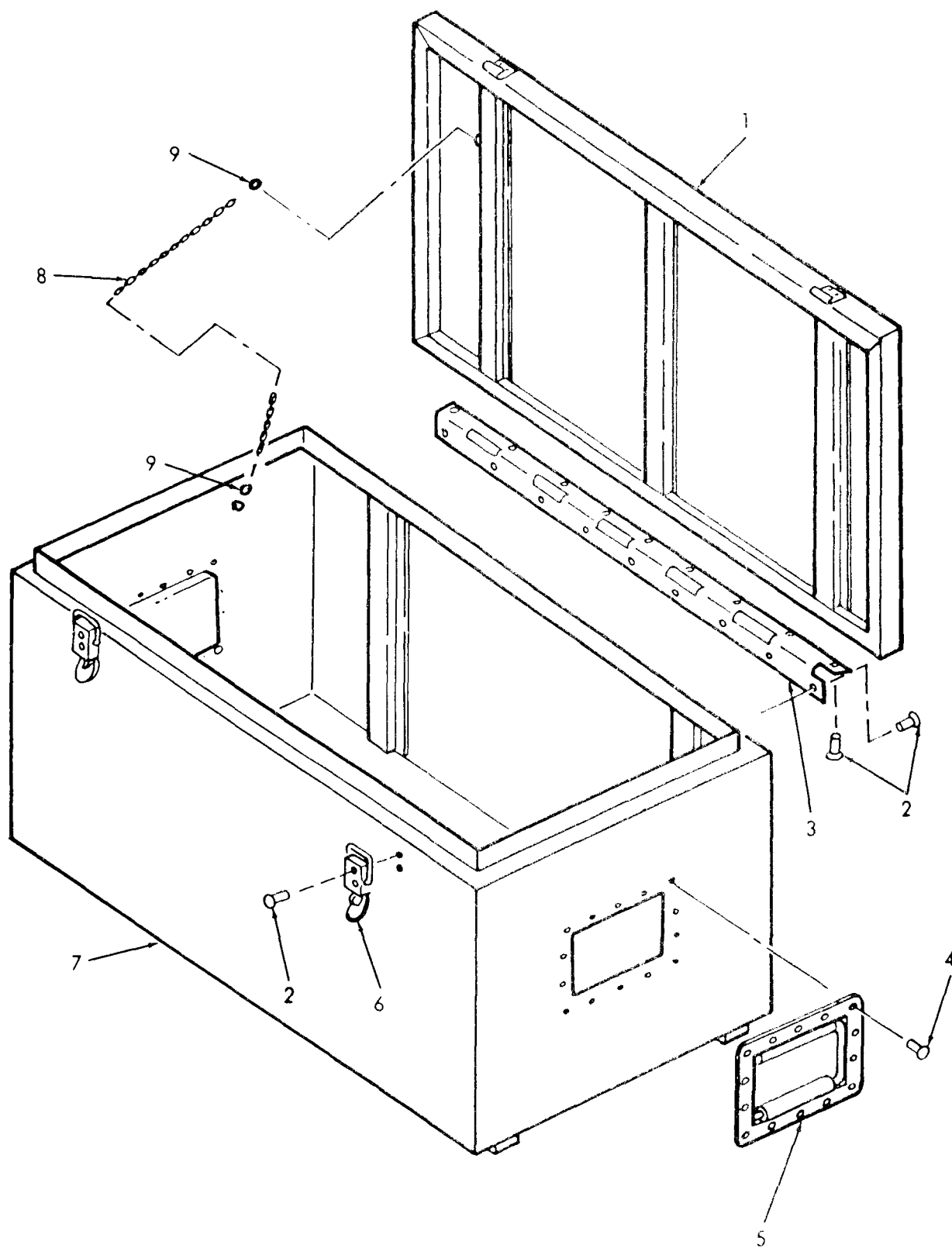


Figure F-23. Storage Accessory Kit.

| SECTION II (1) | ITEM (2) | SMR (3) | TM3-4230-218-12&P (4) | (5) | (6) |
|----------------------------------|-------------|------------|--------------------------|--------------------------------------|-----|
| NO | CODE | FSCM | PART NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| GROUP 12: STORAGE ACCESSORY CASE | | | | | |
| FIG. F-23 ACCESSORY CASE | | | | | |
| 1 | XAOZZ | 90598 | 26067-100 | COVER ASSY | 1 |
| 2 | PAOZZ | 07707 | SSD64BS | RIVET | 22 |
| 3 | PAOZZ | 90598 | 26068-1 | HINGE | 1 |
| 4 | PAOZZ | 07707 | SSD43BS | RIVET | 28 |
| 5 | PAOZZ | 98003 | H561LS2RG | HANDLE,BAIL | 2 |
| 6 | PAOZZ | 98003 | HC207CE | CATCH,CLAMPING | 2 |
| 7 | XAOZZ | 90598 | 26061-100 | CASE,BOTTOM ASSY | 1 |
| 8 | PAOZZ | 39428 | 3607T18 | CHAIN | 1 |
| 9 | XDOZZ | 39428 | 90177A216 | RING,SPLIT STEEL | 2 |
| END OF FIGURE | | | | | |

| SECTION II (1) | ITEM (2) | SMR (3) | FSCM (4) | TM3-4230-218-12&P PART NUMBER | (5) | (6) |
|-------------------|-------------|------------|-------------|-------------------------------------|--------------------------------------|-----|
| NO | CODE | | | | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| | | | | | GROUP 99: BULK MATERIALS | |
| | | | | | FIG. BULK | |
| 1 | PAOZZ | 39428 | 8962T12 | | CHAIN SAFETY | V |
| | | | | | END OF FIGURE | |

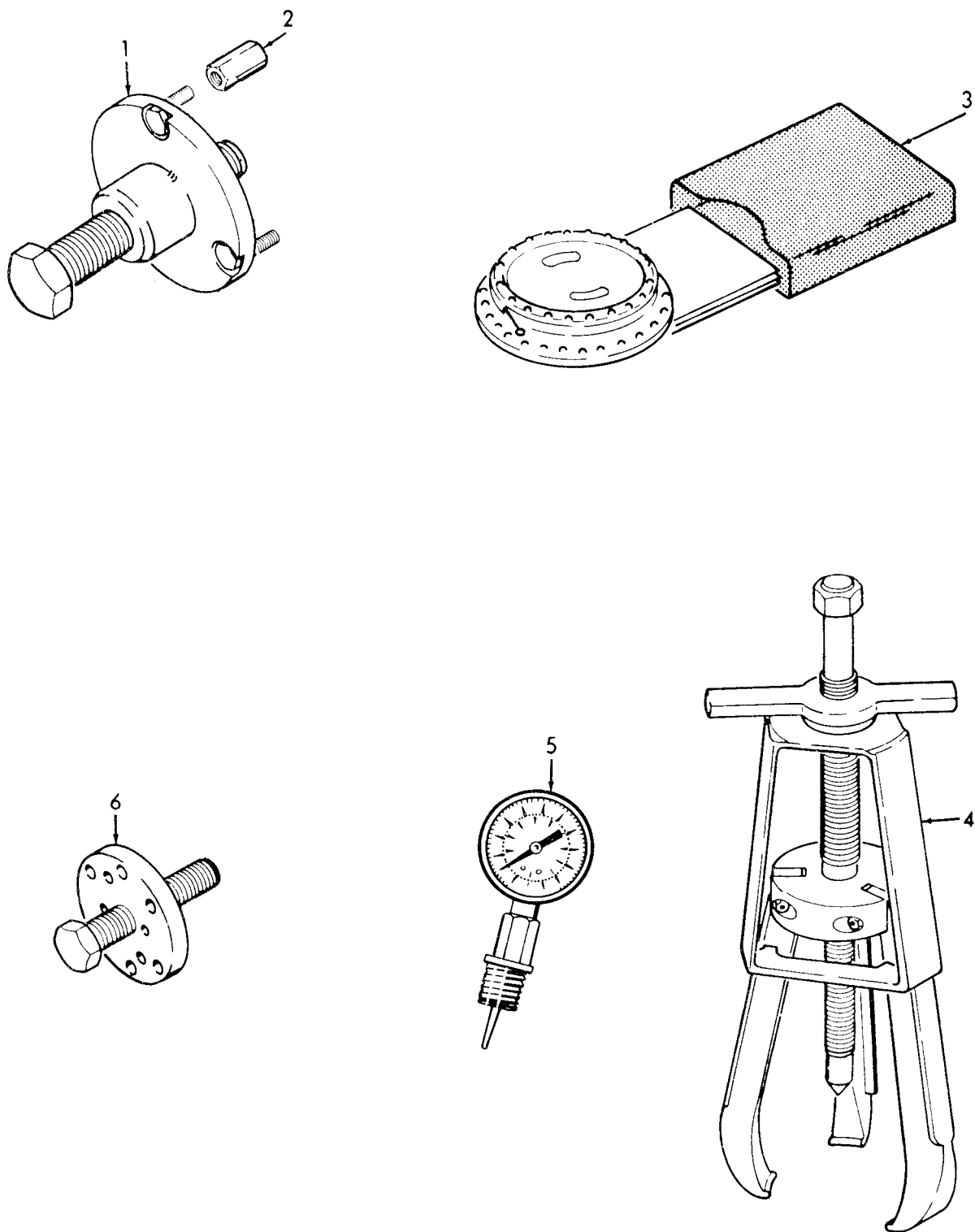


Figure F-24. Special Tools.

| SECTION III | | | | | |
|-------------|-------|-------|----------------|--------------------------------------|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |
| ITEM | SMR | | PART | | |
| NO | CODE | FSCM | NUMBER | DESCRIPTION AND USABLE ON CODE (UOC) | QTY |
| | | | | GROUP 98: SPECIAL TOOLS | |
| | | | | FIG. F-24 SPECIAL TOOLS | |
| 3 | PAOZZ | D0345 | 000-15-300-100 | INDICATOR,ELECTRICA | |
| | | | | END OF FIGURE | |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

| NATIONAL STOCK NUMBER INDEX | | | | | |
|-----------------------------|------|------|------------------|------|------|
| STOCK NUMBER | FIG. | ITEM | STOCK NUMBER | FIG. | ITEM |
| 2910-00-057-1421 | F-8 | 18 | 5306-01-173-6503 | F-2 | 44 |
| 5310-00-061-4650 | F-14 | 2 | 5355-01-173-6555 | F-11 | 16 |
| 5310-00-081-4219 | F-13 | 3 | 5330-01-173-6670 | F-10 | 5 |
| 9340-00-230-0441 | F-6 | 1 | | F-16 | 1 |
| 5120-00-240-5292 | F-22 | 12 | 5330-01-173-6671 | F-5 | 3 |
| 5120-00-293-0315 | F-22 | 6 | | F-8 | 9 |
| 4730-00-317-4217 | F-20 | 2 | 5330-01-173-6672 | F-14 | 12 |
| 2910-00-360-4208 | F-11 | 24 | 5330-01-173-6673 | F-14 | 10 |
| 5305-00-724-5811 | F-8 | 39 | 5330-01-173-6674 | F-15 | 6 |
| 5120-00-737-7964 | F-22 | 3 | | F-17 | 6 |
| 3030-00-789-0637 | F-2 | 49 | | F-20 | 8 |
| 5310-00-809-8546 | F-2 | 52 | | F-21 | 8 |
| 4730-00-817-6578 | F-20 | 4 | 5340-01-173-6677 | F-5 | 6 |
| 4730-00-821-8981 | F-21 | 3 | 5365-01-173-6756 | F-2 | 23 |
| 5310-00-823-8804 | F-2 | 3 | 4720-01-173-9491 | F-19 | 4 |
| | F-6 | 3 | 4730-01-173-9511 | F-5 | 15 |
| | F-7 | 10 | 4710-01-173-9525 | F-20 | 7 |
| | F-11 | 3 | 6645-01-174-0858 | F-2 | 32 |
| | F-12 | 6 | 5340-01-174-2537 | F-2 | 53 |
| 4730-00-851-3255 | F-20 | 3 | 5310-01-174-2539 | F-2 | 45 |
| 5340-00-934-0532 | F-23 | 5 | 5340-01-174-2541 | F-14 | 14 |
| 4730-00-948-1721 | F-14 | 3 | 4030-01-174-2542 | F-14 | 16 |
| 3030-00-983-6781 | F-2 | 41 | 4010-01-174-2544 | F-23 | 8 |
| 4820-01-012-3405 | F-21 | 7 | 5320-01-174-2545 | F-23 | 2 |
| 6240-01-032-3696 | F-11 | 15 | 5310-01-174-2559 | F-2 | 48 |
| 5310-01-078-2992 | F-2 | 2 | | F-13 | 4 |
| | F-11 | 2 | 5980-01-174-2608 | F-7 | 2 |
| 5340-01-090-0252 | F-12 | 10 | 4730-01-174-4101 | F-10 | 4 |
| 5120-01-102-4471 | F-22 | 8 | | F-15 | 5 |
| | F-22 | 9 | 5315-01-174-6169 | F-2 | 47 |
| 5360-01-133-6152 | F-6 | 4 | 4720-01-174-8889 | F-5 | 2 |
| 5120-01-171-2268 | F-22 | 1 | 4720-01-174-8890 | F-5 | 9 |
| 4230-01-171-2417 | F-1 | 2 | 4730-01-174-8891 | F-14 | 5 |
| 4230-01-171-2531 | F-1 | 9 | 4730-01-174-8929 | F-8 | 12 |
| 4230-01-171-2540 | F-13 | 5 | 5306-01-175-0346 | F-2 | 39 |
| 4230-01-171-2548 | F-2 | 24 | 5306-01-175-0347 | F-2 | 26 |
| 4230-01-171-2550 | F-2 | 38 | 5306-01-175-0348 | F-2 | 22 |
| 4230-01-171-2552 | F-6 | 10 | 5306-01-175-0350 | F-8 | 13 |
| 4230-01-171-2553 | F-1 | 10 | 5306-01-175-0352 | F-6 | 9 |
| 4230-01-171-2554 | F-1 | 15 | 5306-01-175-0353 | F-6 | 7 |
| 4230-01-171-2564 | F-2 | 30 | 5305-01-175-0354 | F-2 | 40 |
| 4230-01-171-2569 | F-2 | 34 | 6685-01-175-0864 | F-8 | 48 |
| 4230-01-171-2571 | F-8 | 8 | 5980-01-175-2501 | F-7 | 8 |
| 4230-01-171-2575 | F-2 | 60 | 4720-01-175-4459 | F-8 | 5 |
| 4230-01-171-7253 | F-1 | 13 | 4720-01-175-4469 | F-8 | 11 |
| 4230-01-172-0208 | F-7 | 7 | 4720-01-175-4470 | F-7 | 3 |
| 6210-01-172-5978 | F-11 | 14 | 2910-01-175-4813 | F-5 | 1 |
| 5310-01-173-6498 | F-9 | 3 | 4720-01-175-4832 | F-2 | 54 |
| 5306-01-173-6501 | F-2 | 56 | 4720-01-175-4858 | F-5 | 12 |
| 5305-01-173-6502 | F-2 | 42 | 4720-01-175-4859 | F-5 | 13 |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

| STOCK NUMBER | NATIONAL STOCK NUMBER INDEX FIG. | ITEM | STOCK NUMBER | FIG. | ITEM |
|------------------|-------------------------------------|------|--------------|------|------|
| 4720-01-175-6344 | F-5 | 14 | | | |
| 4730-01-175-6367 | F-21 | 6 | | | |
| 5340-01-175-6585 | F-23 | 3 | | | |
| 5306-01-175-6637 | F-13 | 6 | | | |
| 5306-01-175-6639 | F-2 | 1 | | | |
| | F-6 | 2 | | | |
| 5305-01-175-6804 | F-7 | 6 | | | |
| 5310-01-175-6849 | F-2 | 59 | | | |
| | F-9 | 2 | | | |
| 4730-01-176-0577 | F-14 | 13 | | | |
| 4730-01-176-1091 | F-21 | 4 | | | |
| 4730-01-176-1092 | F-20 | 9 | | | |
| 2910-01-176-1175 | F-5 | 7 | | | |
| 5120-01-176-1803 | F-22 | 7 | | | |
| 5120-01-176-1828 | F-22 | 4 | | | |
| 3020-01-176-2769 | F-2 | 46 | | | |
| 4330-01-176-2949 | F-14 | 9 | | | |
| 4720-01-176-5844 | F-5 | 11 | | | |
| 4730-01-177-1018 | F-21 | 5 | | | |
| 5306-01-177-9696 | F-2 | 27 | | | |
| | F-7 | 9 | | | |
| | F-11 | 1 | | | |
| | F-12 | 5 | | | |
| 4730-01-179-2578 | F-19 | 6 | | | |
| 4730-01-179-3028 | F-20 | 5 | | | |
| 5360-01-180-5363 | F-9 | 4 | | | |
| 5340-01-182-7616 | F-23 | 6 | | | |
| 7240-01-193-8554 | F-5 | 4 | | | |
| 4730-01-199-7789 | F-14 | 1 | | | |
| 4230-01-200-8002 | F-2 | 51 | | | |
| 2910-01-200-9027 | F-5 | 8 | | | |
| 6680-01-201-0638 | F-24 | 3 | | | |
| 5330-01-205-2659 | F-4 | 12 | | | |
| 2910-01-217-4575 | F-3 | 34 | | | |
| 2910-01-217-9582 | F-4 | 10 | | | |
| 2940-01-217-9696 | F-4 | 1 | | | |
| 2990-12-304-3556 | F-3 | 55 | | | |
| 3010-12-304-4859 | F-1 | 12 | | | |
| 2910-12-304-5448 | F-4 | 14 | | | |
| 2910-12-304-5451 | F-4 | 11 | | | |
| 4730-25-120-8317 | F-15 | 4 | | | |
| 4730-25-120-8318 | F-17 | 1 | | | |
| 4730-25-120-8341 | F-10 | 1 | | | |
| 4730-25-120-8346 | F-8 | 14 | | | |
| 4730-25-120-8352 | F-19 | 3 | | | |
| 4730-25-120-8354 | F-18 | 1 | | | |
| 4730-25-120-8355 | F-19 | 5 | | | |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

| FSCM | PART NUMBER | PART NUMBER INDEX STOCK NUMBER | FIG. | ITEM |
|-------|----------------|-----------------------------------|------|------|
| 73061 | B4T26 | 4730-00-851-3255 | F-20 | 3 |
| 12623 | B45XF8 | 4820-01-012-3405 | F-21 | 7 |
| 65814 | DS-6B | 5120-00-293-0315 | F-22 | 6 |
| 59730 | ET5M | 5340-01-173-6677 | F-5 | 6 |
| 55719 | FSM-241 | 5120-01-102-4471 | F-22 | 8 |
| 55524 | F20-30 | 4730-01-176-0577 | F-14 | 13 |
| 98003 | HC207CE | 5340-01-182-7616 | F-23 | 6 |
| 98003 | HC227ZE | 5340-01-090-0252 | F-12 | 10 |
| 98003 | H561LS2RG | 5340-00-934-0532 | F-23 | 5 |
| 84830 | LE-049D-6SS | 5360-01-133-6152 | F-6 | 4 |
| 84830 | LE-055E-8SS | 5360-01-180-5363 | F-9 | 4 |
| N0844 | MPY12H49 | 5980-01-175-2501 | F-7 | 8 |
| 96906 | MS27025-7 | 4730-00-948-1721 | F-14 | 3 |
| 96906 | MS27183-12 | 5310-00-081-4219 | F-13 | 3 |
| 96906 | MS27183-8 | 5310-00-809-8546 | F-2 | 52 |
| 96906 | MS27183-9 | 5310-00-823-8804 | F-2 | 3 |
| | | | F-6 | 3 |
| | | | F-7 | 10 |
| | | | F-11 | 3 |
| | | | F-12 | 6 |
| 96906 | MS35333-135 | 5310-01-078-2992 | F-2 | 2 |
| | | | F-11 | 2 |
| 96906 | MS39277-045 | 3030-00-789-0637 | F-2 | 49 |
| 96906 | MS51943-31 | 5310-00-061-4650 | F-14 | 2 |
| 96906 | MS51964-64 | 5305-00-724-5811 | F-8 | 39 |
| 70673 | P75 | 9340-00-230-0441 | F-6 | 1 |
| 62887 | RZ52H | 6645-01-174-0858 | F-2 | 32 |
| 07707 | SSD64BS | 5320-01-174-2545 | F-23 | 2 |
| 41947 | W1431 | 4730-00-821-8981 | F-21 | 3 |
| 55524 | Y45-238 | 4330-01-176-2949 | F-14 | 9 |
| 37833 | ZB2BJ3 | 5355-01-173-6555 | F-11 | 16 |
| 37833 | ZB2BV05 | 6210-01-172-5978 | F-11 | 14 |
| D0345 | 000-15-300-100 | 6680-01-201-0638 | F-24 | 3 |
| D0345 | 002-45-070-000 | 2910-12-304-5448 | F-4 | 14 |
| D0345 | 002-45-087-900 | 5330-01-205-2659 | F-4 | 12 |
| D0345 | 002-45-352-180 | 2910-12-304-5451 | F-4 | 11 |
| D0345 | 002-45-470-320 | 2910-01-217-9582 | F-4 | 10 |
| D0345 | 002-46-809-000 | 2940-01-217-9696 | F-4 | 1 |
| D0345 | 002-46-903-000 | 2910-01-217-4575 | F-3 | 34 |
| N0844 | 05-02-05 | 2910-01-200-9027 | F-5 | 8 |
| 82247 | 1-7N16 | 4730-01-177-1018 | F-21 | 5 |
| N0844 | 10-02-03 | 4730-25-120-8318 | F-17 | 1 |
| 72661 | 11 | 4730-01-199-7789 | F-14 | 1 |
| 56926 | 11910 | 5330-01-173-6671 | F-5 | 3 |
| | | | F-8 | 9 |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

| FSCM | PART NUMBER | PART NUMBER INDEX STOCK NUMBER | FIG. | ITEM |
|-------|----------------|-----------------------------------|------|------|
| N0844 | 12-01-08 | 4730-25-120-8317 | F-15 | 4 |
| 32402 | 122R-ED | 4730-01-175-6367 | F-21 | 6 |
| 21877 | 146381 | 6240-01-032-3696 | F-11 | 15 |
| 81300 | 160XL037 | 3030-00-983-6781 | F-2 | 41 |
| D0345 | 197-41-834-000 | 2990-12-304-3556 | F-3 | 55 |
| 90598 | 26003-1 | 4230-01-171-2564 | F-2 | 30 |
| 90598 | 26010-100 | 4230-01-171-7253 | F-1 | 13 |
| 90598 | 26022-4 | 4710-01-173-9525 | F-20 | 7 |
| 90598 | 26041-100 | 4230-01-171-2531 | F-1 | 9 |
| 90598 | 26042-100 | 4230-01-171-2553 | F-1 | 10 |
| 90598 | 26051-100 | 4730-01-174-8891 | F-14 | 5 |
| 90598 | 26054-1 | 5330-01-173-6672 | F-14 | 12 |
| 90598 | 26054-2 | 5330-01-173-6673 | F-14 | 10 |
| 90598 | 26056-1 | 5340-01-174-2541 | F-14 | 14 |
| 90598 | 26060-100 | 4230-01-171-2554 | F-1 | 15 |
| 90598 | 26068-1 | 5340-01-175-6585 | F-23 | 3 |
| 90598 | 26070-1 | 5120-01-171-2268 | F-22 | 1 |
| 90598 | 26070-12 | 5120-00-240-5292 | F-22 | 12 |
| | | | F-22 | 12 |
| 90598 | 26070-3 | 5120-00-737-7964 | F-22 | 3 |
| 90598 | 26070-4 | 5120-01-176-1828 | F-22 | 4 |
| 90598 | 29070-7 | 5120-01-176-1803 | F-22 | 7 |
| 90598 | 26070-9 | 5120-01-102-4471 | F-22 | 9 |
| 90598 | 26080-100 | 4230-01-171-2417 | F-1 | 2 |
| 90598 | 26230-100 | 4230-01-171-2550 | F-2 | 38 |
| 90598 | 26240-1 | 3020-01-176-2769 | F-2 | 46 |
| 90598 | 26291-1 | 5365-01-173-6756 | F-2 | 23 |
| 90598 | 26292-1 | 4230-01-171-2548 | F-2 | 24 |
| 90598 | 26302-100 | 7240-01-193-8554 | F-5 | 4 |
| 90598 | 26305-1 | 2910-01-175-4813 | F-5 | 1 |
| 90598 | 26306-1 | 4720-01-174-8889 | F-5 | 2 |
| 90598 | 26307-100 | 2910-01-176-1175 | F-5 | 7 |
| 90598 | 26310-1 | 4720-01-174-8890 | F-5 | 9 |
| 90598 | 26311-1 | 4720-01-175-4858 | F-5 | 12 |
| 90598 | 26312-1 | 4720-01-175-4859 | F-5 | 13 |
| 90598 | 26313-1 | 4720-01-176-5844 | F-5 | 11 |
| 90598 | 26315-1 | 4730-01-173-9511 | F-5 | 15 |
| 90598 | 26316-1 | 4720-01-175-6344 | F-5 | 14 |
| 90598 | 26407-1 | 6685-01-175-0864 | F-8 | 48 |
| 90598 | 26409-1 | 4720-01-175-4459 | F-8 | 5 |
| 90598 | 26419-1 | 4720-01-175-4469 | F-8 | 11 |
| 90598 | 26421-1 | 4730-01-174-8929 | F-8 | 12 |
| 90598 | 26424-100 | 4230-01-171-2571 | F-8 | 8 |
| 90598 | 26430-100 | 4230-01-200-8002 | F-2 | 51 |
| 90598 | 26452-1 | 4230-01-171-2552 | F-6 | 10 |
| 90598 | 26470-100 | 4230-01-171-2575 | F-2 | 60 |
| 90598 | 26473-1 | 5980-01-174-2608 | F-7 | 2 |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

| FSCM | PART NUMBER | PART NUMBER INDEX STOCK NUMBER | FIG. | ITEM |
|-------|----------------|-----------------------------------|------|------|
| 90598 | 26474-1 | 4720-01-175-4470 | F-7 | 3 |
| 90598 | 26475-100 | 4230-01-172-0208 | F-7 | 7 |
| 90598 | 26502-1 | 4230-01-171-2540 | F-13 | 5 |
| 90598 | 26545-1 | 4720-01-175-4832 | F-2 | 54 |
| 90598 | 26560-1 | 5340-01-174-2537 | F-2 | 53 |
| 90598 | 26570-100 | 4230-01-171-2569 | F-2 | 34 |
| N1384 | 267X4X6 | 4730-25-120-8352 | F-19 | 3 |
| 90598 | 26701-1 | 5310-01-175-6849 | F-2 | 59 |
| | | | F-9 | 2 |
| 90598 | 26701-2 | 5310-01-174-2539 | F-2 | 45 |
| 90598 | 26702-1 | 5305-01-175-6804 | F-7 | 6 |
| 90598 | 26703-407 | 5306-01-175-0348 | F-2 | 22 |
| 90598 | 26703-505 | 5306-01-177-9696 | F-2 | 27 |
| | | | F-7 | 9 |
| | | | F-11 | 1 |
| | | | F-12 | 5 |
| 90598 | 26703-507 | 5306-01-175-6639 | F-2 | 1 |
| | | | F-6 | 2 |
| 90598 | 26703-508 | 5306-01-175-0347 | F-2 | 26 |
| 90598 | 26703-509 | 5306-01-175-0346 | F-2 | 39 |
| 90598 | 26703-719 | 5306-01-175-6637 | F-13 | 6 |
| 90598 | 26703-807 | 5306-01-175-0350 | F-8 | 13 |
| 90598 | 26703-809 | 5306-01-173-6503 | F-2 | 44 |
| 90598 | 26705-500 | 5310-01-173-6498 | F-9 | 3 |
| 90598 | 26705-700 | 5310-01-174-2559 | F-2 | 48 |
| 90598 | 26705-700 | 5310-01-174-2559 | F-13 | 4 |
| 90598 | 26706-87 | 5305-01-175-0354 | F-2 | 40 |
| 90598 | 26707-719 | 5305-01-173-6502 | F-2 | 42 |
| 90598 | 26708-505 | 5306-01-173-6501 | F-2 | 56 |
| 90598 | 26708-509 | 5306-01-175-0352 | F-6 | 9 |
| 90598 | 26708-514 | 5306-01-175-0353 | F-6 | 7 |
| 08645 | 290568 | 2910-00-360-4208 | F-11 | 24 |
| 82247 | 3-8P1530 | 4730-01-179-3028 | F-20 | 5 |
| N1054 | 311X8M | 4730-25-120-8354 | F-18 | 1 |
| 79470 | 3220X8X6 | 4730-00-817-6578 | F-20 | 4 |
| 39428 | 3607T18 | 4010-01-174-2544 | F-23 | 8 |
| N1054 | 375X4 | 4730-25-120-8355 | F-19 | 5 |
| N1384 | 39FX5 | 4730-25-120-8346 | F-8 | 14 |
| 73061 | 4S26 | 4730-00-317-4217 | F-20 | 2 |
| D0345 | 409-49-420-000 | 3010-12-304-4859 | F-1 | 12 |
| N1384 | 60FX16 | 4730-25-120-8341 | F-10 | 1 |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

| FSCM | PART NUMBER | PART NUMBER INDEX STOCK NUMBER | FIG. | ITEM |
|-------|-------------|-----------------------------------|------|------|
| 15526 | 6885-7-8-25 | 5315-01-174-6169 | F-2 | 47 |
| U3697 | 7111-296 | 2910-00-057-1421 | F-8 | 18 |
| 59379 | 9000-0000 | 5330-01-173-6674 | F-15 | 6 |
| | | | F-17 | 6 |
| | | | F-20 | 8 |
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