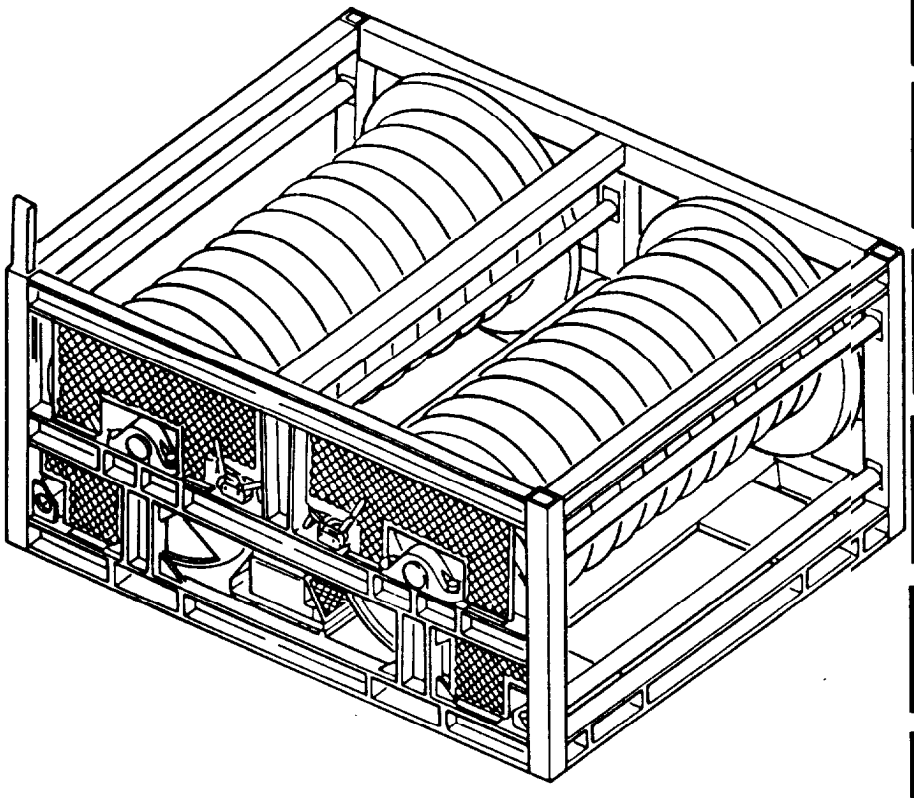
TECHNICAL MANUAL

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR HOSE REEL SYSTEM NSN 3835-01-324-6354



HEADQUARTERS, DEPARTMENT OF THE ARMY

31 August 1993

WARNINGS

ELECTRICAL HAZARD

Never work on electrical equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Remove rings, bracelets, wrist watch and neck chains before starting work. Jewelry may short across an electrical circuit and cause severe burns or electrical shock.

Whenever possible, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body in the event of electrical shock.

Do not disconnect power cables when power is on or unit is operating.

HIGH PRESSURE

This equipment produces hydraulic pressure in excess of 1500 psi. Make sure all hydraulic hose couplings are properly connected before operation. Do not disconnect hydraulic hose couplings when system is under pressure.

SOLVENT HAZARD

Drycleaning solvent, P-D-680, Type II, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact **by** wearing rubber or nonporous gloves when handling the solvent or material wet with drycleaning solvent. Wash hands immediately after exposure with soap and water and use a lanolin based skin cream to prevent skin drying. Do not use near open flame or excessive heat. Flash point of solvent is 140°F (60°C). Do not work with solvent in a closed room. Be sure there is good ventilation or the solvent vapors will build up in the air and become a poisonous mixture which can cause physical injury or even death.

HEAVY EQUIPMENT HAZARD

Lifting or moving heavy equipment incorrectly can cause serious injury. Do not try to lift or move more than 50 pounds by yourself. Get an assistant. Rend legs while lifting. Don't support heavy weight with your back.

The hose reel system weighs 4,820 pounds and is design to be moved by forklift or hoist only. The removable power pack weighs 172 pounds and requires four personnel to transport.

Always use assistants during lifting operations. Use guide ropes to move hanging assemblies.

A lack of attention or being in an improper position during lifting operations can result in serious injury or death. Pay close attention to movements of assemblies being lifted. Do not stand under lifted assembly or in a position where you could be pinned against another object. Watch your footing.

OPERATING HAZARDS

To prevent injury to personnel, monitor reeling operations at all times. Use extreme caution when deploying or retrieving fuel hose. Personnel may be caught between fuel hose and hose reel if system is operated too quickly. Keep clear of all moving parts. Be completely familiar with the operating procedures before using the equipment.

Remove rings, bracelets, wrist watch ,neck chains and secure loose clothing. Jewelry and loose clothing can catch on moving equipment and drag you into the equipment.

Guard panel are installed on the hose reel to protect you. Do not operate the unit with guard panels removed.

FIRE HAZARD

All liquid fuel and fuel vapors must be removed from hoses before storage or shipment of the hose reel system. Fuel vapors are extremelv explosive!

For Artificial Respiration, refer to FM 21-11.

HOW TO USE THIS MANUAL

Be sure to read all Warnings before using your equipment.

This manual contains operating instructions and Operator, Unit and Direct Support Maintenance instructions for the Hose Reel System.

- Chapter 1 - Introduces you to the equipment and gives you information such as weight, height length, generally used abbreviations, cross reference information and principles of operation. The chapter is preceded by a full page illustration of the equipment.

- Chapter 2 - Provides information necessary to identify and use the equipment's operating controls. Operating procedures tell you how to use the equipment in both usual and unusual weather conditions. In addition, preventive maintenance instructions provide information needed to inspect and service the hose reel system.

- Chapter 3 - Provides operator maintenance instructions for lubricating the equipment, troubleshooting equipment malfunctions , removing access panels and replacing the power pack.

- Chapter 4 - Provides unit maintenance instructions including service upon receipt, preventive maintenance and troubleshooting information; detailed maintenance and repair procedures for the Unit Maintenance repairer and storage and shipment instructions.

- Chapter 5 - Provides detailed component repair instructions for the Direct support maintenance group.

- Appendix A gives you a list of frequently used forms and publications.

- Appendix B is the Maintenance Allocation Chart (MAC).

- Appendix C lists components that are not mounted on the equipment, but are required to make the system functional. All components in the Components of End Item and Basic Issue Items Lists are illustrated for easy identification.

- Appendix D lists additional equipment authorized for your unit for use with the hose reel system, but are not supplied as part of system. This equipment list may include fire extinguishers, buckets, protective clothing etc.

- Appendix E provides you with information about expendable supplies such as sealant, paint, lubricants, etc.

- Appendix F is the Repair Parts and Special Tools List (RPSTL). You will find this information helpful in finding repair parts and special tools information.

- The Alphabetical Index is the last item in the TM. You will find it useful in locating page numbers about specific information or procedures. Becoming familiar with this manual will enable you to operate and maintain the equipment in good working order.

TECHNICAL MANUAL

NO- 10-3835-223-13&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C., 31 August 1993

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

HOSE REEL SYSTEM

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to:

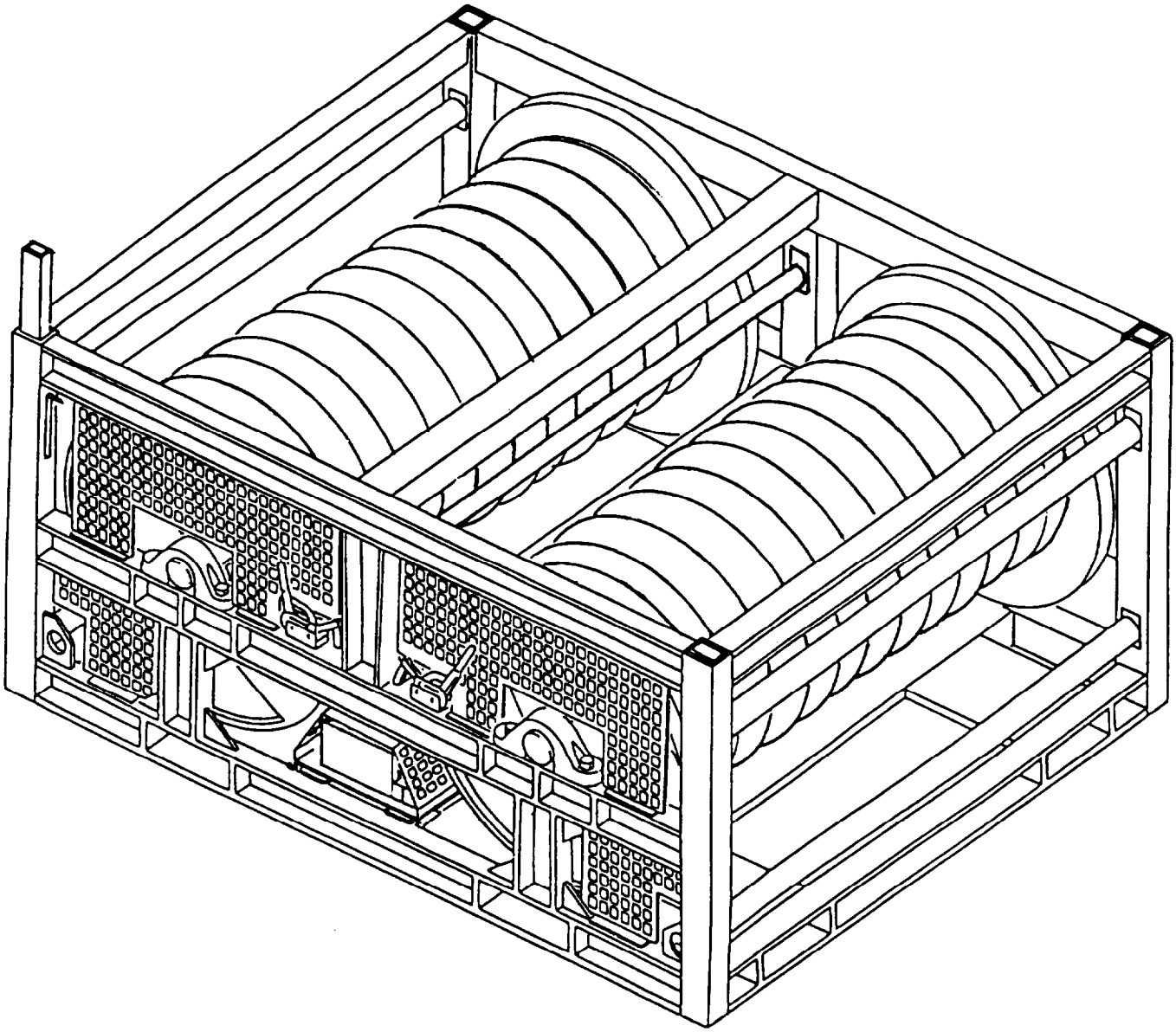
Cammander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be funished to you.

Current as of 15 July 1993

TABLE OF CONTENTS

TABLE OF CONTENTS Continued

PAGE



CHAPTER 1

INTRODUCTION

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

Section I. GENERAL INFORMATION

1-1.SCOPE

a. Type of Manual. This is an Operator's, Unit, and Direct Support Maintenance Including Repair Parts and Special Tools List manual for use with the Hose Reel System.

b. Model Number and Equipment Name. The official equipment nomenclature is Hose Reel System, Part Number 13228E3472.

c. Purpose of Equipment. The purpose of the hose reel system is to provide rapid deployment and retrieval of two 600 foot lengths of 6-inch collapsible fuel hose.

1-2. MAINTENCE FORMS AND RECORDS

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

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

If your Hose Reel System 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. U.S. Army Aviation and Troop command, ATTN: AMSAT-I-MDO, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798.

1-4. NOMENCLATURE CROSS REFERENCE LIST

Common Name	Official Nomenclature
Cylinder	Hydraulic Cylinder

Section II. EQUIPMENT DESCRIPTION

1-5. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

a. Characteristics.

(1) Portable.
(2) Utilizes 24Vdc inter-vehicular electrical power.
(3) Rapid deployment and retrieval of collapsible fuel hose.
(4) Removable power pack. One power pack is supplied for use with six reels.
(5) Stackable. Two units may be stacked to reduce floor storage space.
(6) Hand operated control cable assembly.

b. Capabilities and Features.

(1) Hydraulically powered drive system.
(2) Direction of rotation and speed of hose reels is controlled by operator.
(3) One power pack operates both hose reels.
(4) Electrically powered hydraulic system drives hose reel during deployment and retrieval..

1-6. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The hose reel system is comprised of two major assemblies, the power pack and frame unit.

a. **Frame Unit.** The following paragraphs describe major operating components of the frame unit.

(1) Hose Reels. Store up to 1200 feet of 6-inch collapsible hose (600 feet on each reel).

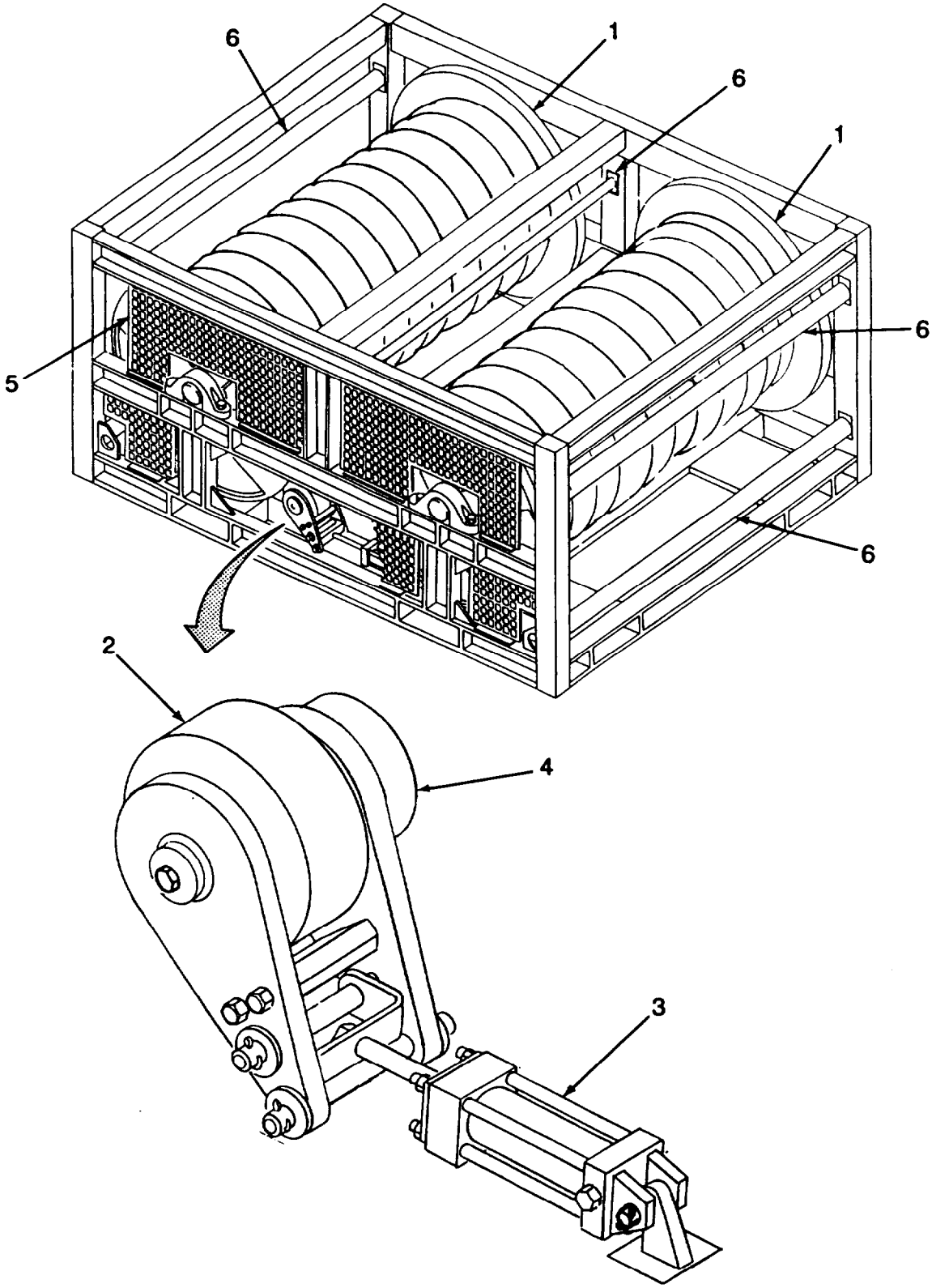
(2) Drive Wheel. Applies rotational force required to turn hose reels. Drive wheel operates directly off hydraulic motor.

(3) Hydraulic Cylinder. Changes position of drive wheel between hose reels. Presses drive wheel against hose reel.

(4) Hydraulic Motor. Converts hydraulic pressure (flow) to mechanical force needed to turn the drive wheel.

(5) Guards. Metal screening protects personnel from rotating components.

(6) Rollers. Guide fuel hose from reels during deployment and onto reels during retrieval.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1-6. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS-CONT.

(7) Frame. Supports and contains hose reel components.

(8) Hand Brakes (two). Apply braking force to hose reels. Prevent rotation of reels when system is not in use. Used during hose deployment to prevent free-wheeling.

(9) Stacking Posts (four). Extendible posts permit stacking of hose reel systems.

(10) Hoist Points (four). Four frame mounted hoist points allow lifting of hose reel system by crane and sling.

(11) Fork Lift Pockets (four). Allow lifting or transporting of hose reel system by fork lift.

(12) Transport Arms (four). Fold out to stabilize unit during flatbed transport. Prevents side-to-side movement of reel during hard turns.

b. **Power Pack.** The following paragraphs describe major operating components of the power pack.

(13) Guard (nine). Protects power pack from damage.

(14) Control Cable Assembly. Contains control switches used to operate hose reel.

(15) Quick Disconnect Couplings. Permit rapid connection of frame unit hydraulic hoses to the power pack.

(16) Sequence Valve. Controls and maintains system operating pressure.

(17) Valve Station, Three directional valves control the direction and speed of the hydraulic motor (drive wheel), and actuation of the hydraulic cylinder. A pressure regulator, pressure relief and flow regulating valves (sandwich valves) are mounted below the sequence valves.

(18) Power Unit. Comprised of electrical drive motor (a), hydraulic pump (b), and reservoir (c). Provides hydraulic pressure and flow to operate hose reel system. Reservoir stores system hydraulic fluid.

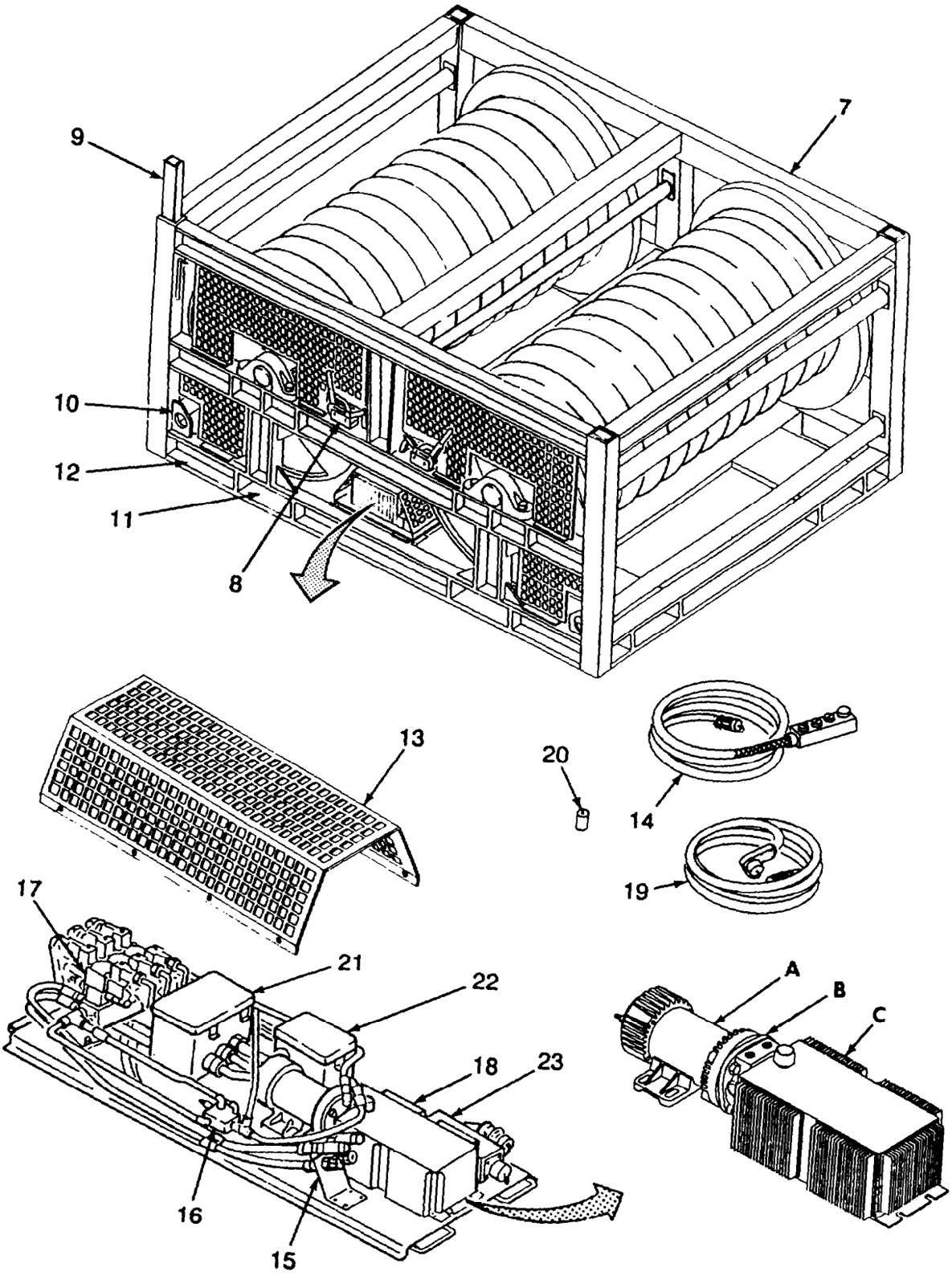
(19) Power Cable. Connects power pack to vehicle power source.

(20) Cable Adapter. Adapts power cable to fit alternate vehicle receptacles.

(21) Enclosure Assembly (Main Junction Box). Contains system circuit breaker and electrical terminal connections.

(22) Enclosure Assembly (Solenoid). Contains power unit starter solenoid.

(23) Enclosure Assembly (Slave Cable). Contains slave cable electrical connections.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1-7. EQUIPMENT DATA (Refer to Table 1-1)

Table 1-1. Equipment Data

HOSE REEL SYSTEM

Frame Unit

Weight	4820 lbs (2188 kg)
Length	77 in (196 cm)
Width	69 in (175 cm)
Height	41.5 in (105 cm)
Hose Capacity	1200 feet (366 m) of 6 in dia. collapsible hose (600 ft per reel) (183 m)
Hydraulic Cylinder	
Bore	2.00 in (5.08 cm)
Stroke	3.50 in (8.89 cm)
RodDiameter	.50 in (1.27cm)
Hydraulic Motor	
Type	Roller, High torque, low speed
Displacement	5.4 cu in (90 cu cm)

Power Pack

Weight	172 lbs (78 kg)
Voltage Requirement	24 Vdc, battery or vehicle power
Power Cable Length	30 ft (9.15 ml
Reservoir	
Capacity	2.5 gal (9.46 ltr)
FluidType	Automatic Transmission Fluid
Operating Pressure	1500 psi
Electric Motor	
Horsepower	2
Voltage	24 Vdc,
Amps	74
RPM	3700 rpm
Duty	Intermittent
Hydraulic Pump	
Displacement	470 cu. in/min (7.8 cu ltr/min)
Operating Speed	3700 rpm.

Section III. TECHNICAL PRINCIPLES OF OPERATION

1-8. GENERAL

a. The hose reel system consists of two functional assemblies: a frame unit and power pack. The frame unit contains the hose reels, hose, hydraulic cylinder, and hydraulic drive motor. The power pack contains an electrically driven hydraulic pump, reservoir, and the necessary sequencing and regulating valves needed to control the frame unit drive components.

b. The hose reel requires an external power source. The hose reel power cord must be connected to a rough terrain forklift, 6X6 truck, or similar type vehicle having a 24 Vdc slave receptacle.

c. Operation of the hose reel system is conducted in two modes:

(1) Deployment. Unreeling of fuel hose during installation of the fuel hose.

(2) Retrieval. Reeling the fuel hose back onto the hose reel system following fuel facility disassembly or preparation for movement.

1-9. HOSE REEL SYSTEM PRINCIPLES OF OPERATION

a. Power Pack. The power pack contains the control cable , sequence valve , valve station and power unit required to operate the hose reel system and is connected to the frame unit by quick disconnect couplings. No electrical connections between the power pack and the frame unit are required. The power pack can be moved from one frame unit to another by disconnecting the hydraulic couplings and sliding the power pack from the frame. One power pack is supplied for every six frame units.

(1) Control Cable. Electrical power from the slave vehicle is received at the main enclosure assembly (junction box) and distributed to the control cable. The control cable activates the hydraulic power unit and controls operation of the frame hydraulic motor and cylinder by activating the valve station control valves.

(2) Sequence Valve. An internal spring loaded spool unseats when hydraulic pressure from the pump reaches 1500 psi, allowing fluid to flow to the valve station. When system pressure is less than 1500 psi, the spool reseats and diverts fluid back to the reservoir. This valve ensures sufficient pressure is available to operate the system..

(3) Valve Station. The valve station controls the flow of fluid in the hydraulic system. By reversing the fluid path to the hydraulic cylinder, the drive wheel and motor are repositioned to the opposite hose reel. By reversing the fluid path to the hydraulic motor, the rotation of the hose reel is reversed. Pressure relief, pressure regulating, and pressure reducing valves built into the valve station maintain system pressure within safe operating limits.

1-9. HOSE REEL SYSTEM OF OPERATION - cont.

(4) Power Unit. The power unit is comprised of an electric drive motor, hydraulic pump, and reservoir. When energized, the electric motor rotates the hydraulic pump. The pump draws fluid from reservoir and supplies it, under pressure, to the hydraulic motor and cylinder through the valve station. Pressure relief valves within the valve station return excess fluid flow to the reservoir.

b. Frame Unit. The frame unit contains the hose reels, brakes and hose reel drive components. The reels are rotated by the drive wheel. When reel selection is changed from left to right, or right to left, the hydraulic cylinder moves the drive wheel and motor assembly to the selected reel.

(1) Drive Wheel and Motor. Hydraulic pressure supplied by the power pack is converted to a rotational force by the reversible hydraulic motor. The motor is directly coupled to the drive wheel. The drive wheel transfers the rotational force of the motor to the hose reel. Drive wheel rotation is reversed at the control cable.

(2) Cylinder. The hydraulic cylinder changes selection of the hose reels by pivoting the drive wheel and motor from one reel to the other. The cylinder is extended or retracted by pressure from the power pack. Force from the cylinder holds the drive wheel against the hose reel.

(3) Brake Levers. The brake levers and linkage force the brake pad in contact with the hose reels. Friction between the hose reel and pad surface prevents rotation of the reel.

CHAPTER 2

OPERATING INSTRUCTIONS

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

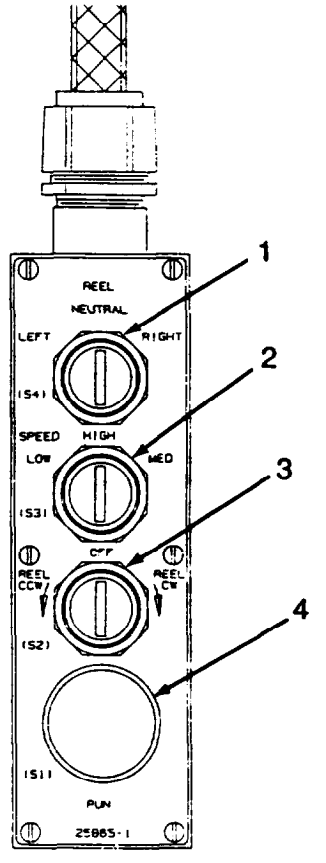
2-1. INTRODUCTION

This section provides information needed by the operator to locate, identify, and use the controls and indicators required to operate the hose reel system.

WARNING

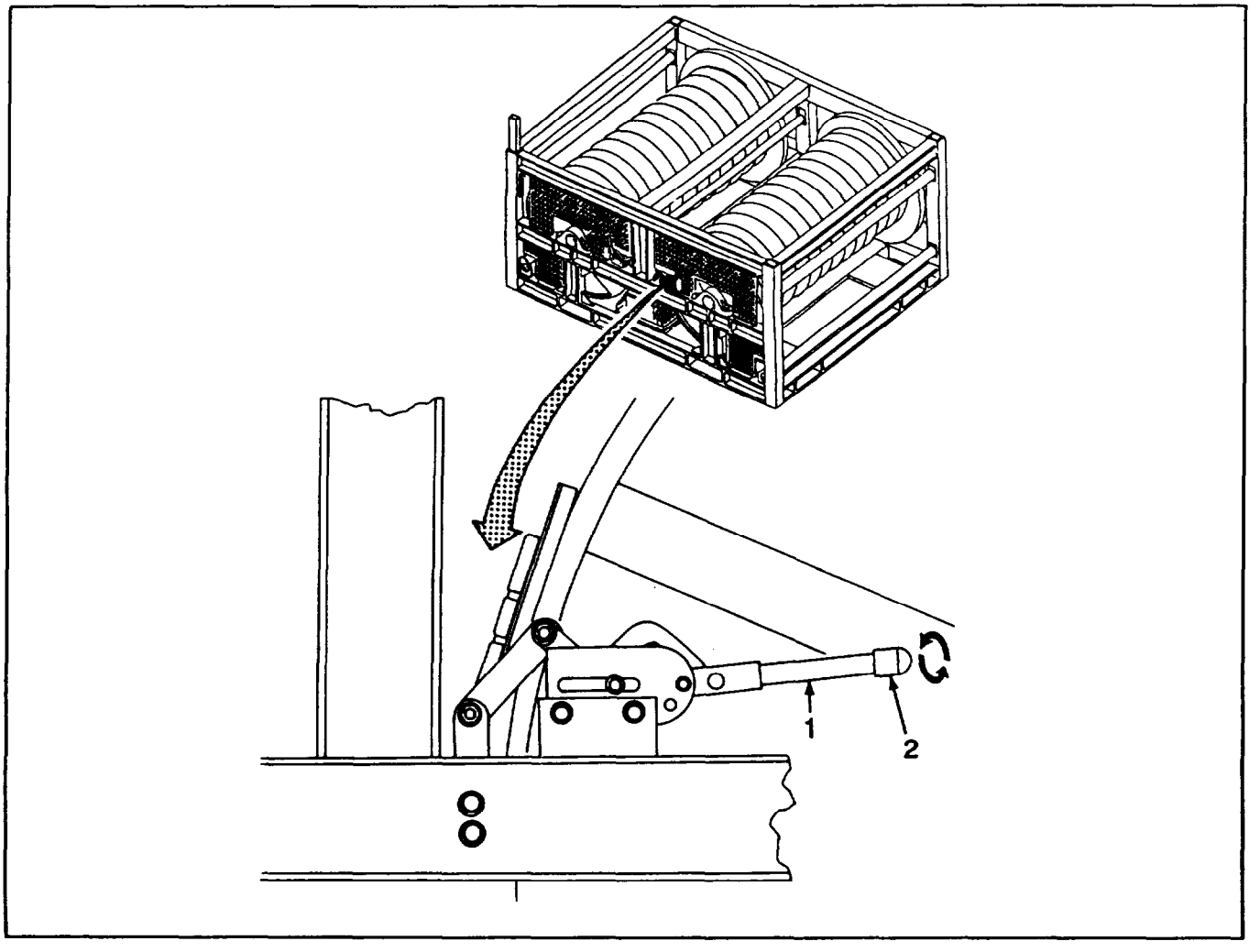
To prevent injury to personnel, remove rings, bracelets, wrist watch, and neck chains before starting work. Jewelry can catch on equipment and cause injury or may short across electrical circuits and cause severe burns or electrical shock. Secure loose clothing.

2-2. CONTROL CABLE CONTROLS



KEY	CONTROL OR INDICATOR	FUNCTION
1	REEL selection switch	Three position switch selects operation of LEFT or RIGHT hose reel. NEUTRAL position centers drive wheel between hose reel
2	SPEED switch	Three position switch controls hose reel rotation speeds, HIGH LOW, and MED
3	REEL direction switch	Two position switch controls hose reel direction, counterclockwise (CCW) or clockwise (CW)
4	RUN switch	Push button switch activates hose reel system. Must be depressed for operation

2-3. BRAKE CONTROLS



KEY	CONTROL OR INDICATOR	FUNCTION
1	Brake Lever	Separate brake levers are provided for each reel. Two position lever applies or releases hose reel brake. In vertical (up) position, brake is released. In horizontal (down) position, brake is applied.
2	Brake Tension Adjustment Knob	Rotating knob at end of brake lever causes brake pad pressure against hose reel to increase **or** decrease.

Section II.

OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-4. INTRODUCTION

a. **General.**

Your Preventive Maintenance Checks and Services table lists the inspections and care of your equipment required to keep it in good operating condition. The interval column of your PMCS table tells you-when to do a certain check or service. The procedures column of the table tells you how to do the required task. Carefully follow these instructions. If your equipment does not perform as required, refer to Chapter 3 Troubleshooting Procedures.

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

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

(3) **After You Operate.** Be sure to perform your after (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 servicing requirements necessary to keep the equipment 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.

(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.

2-4. INTRODUCTION-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).

2-5. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

NOTE

Within designated interval, these checks are to be performed in the order listed. Remove/Install power pack as required to perform your PMCS.

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	•			**Hose Reel System**	Inspect entire unit for physical damage. Check that all major components are present.	Major components are missing.
				Power Pack		
2	•		•	Guard	Inspect panel guard for cracks, dents, or tears. Check for missing fasteners.	Crack, dents, tears, or missing fasteners prevent secure mounting of panel guard.
3	•		•	Control Cable	a. Inspect for cracked, broken or missing switches.	Switch knobs cracked, broken or missing.
	•		•		b. Inspect electrical cable for cuts, frayed insulation, and exposed wiring. Check for signs of overheating.	Insulation is cut to bare wire. Wires are exposed.
	•				c. Inspect cable connector shell for cracks, bent pins, and missing cap.	Cable connector shell is damaged. Connector pins, bent or broken.
4	•			Hydraulic Hoses	a. Inspect hoses and fittings for cuts, tears and bulges.	Hoses cut, torn or bulged.
		•			b. Inspect hoses and fittings for and leaks.	Hose or fittings leak.

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

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			
4	●			Hydraulic Hoses (cont)	c. Inspect quick disconnect couplings for cracks or damaged mating surfaces.	Couplings damaged.
		•			d. Inspect for leaks.	Coupled connections leak.
			•		e. Verify that caps have been installed over all disconnected couplings.	
5		•		Sequence Valve	Inspect for leaks.	Sequence valve leaks.
6	●			Valve Station Components	a. Inspect for broken, frayed, burned and loose wiring.	Wires burned or broken.
	•				b. Inspect valve bodies for cracks and physical damage.	Valves cracked or broken.
	•				c. Check for loose or missing mounting belts.	Mounting bolts missing.
		•			d. Inspect for leaks.	Valve **(s)** leak.
7	●			Power Unit	a. Inspect reservoir for missing cooling fins, cracks, leaks and missing filler cap.	Reservoir leaks or filler cap is missing.
	•				b. Check reservoir fluid level. 1. Remove breather cap from hydraulic reservoir. 2. Check fluid level inside reservoir. Fluid should be within 1/2" of bottom of filler screen 3. Install breather cap.	Reservoir leaks.
	●	●			c. Inspect hydraulic pump for cracks and leaks.	Pump leaks.
	•				d. Inspect motor for cracks, loose electrical connections and evidence of overheating.	Motor shows signs of overheating.

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

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			
8	●			Enclosure (Electrical)	Inspect for dents, damaged or missing hardware/data plates, missing cover.	Missing cover.
9	●			Frame	Inspect for damaged or missing hardware and plastic guide slips.	
10	●		●	Fuel Hoses	a. Inspect hose for cuts, deep abrasions, tears and cracks.	Hose leaks, is cut, torn, or cracked and cannot be repaired.
		●			b. Inspect for leaks.	
11	●		●	Guards	inspect for loose or missing guard panels.	Guard panels missing.
12	●			Top Frame	a. Inspect for cracks and bends.	Cracks or bends prevent operation of system.
	●		●		b. Inspect for loose or missing nuts, bolts, and washers.	Nuts and bolts are missing or cannot be tightened.
13	●		●	Rollers	Inspect for bent rollers. Verify that rollers turn freely.	Rollers are bent or will not turn.
14	●		●	Hose Reels	a. Inspect hose reel bearing supports for cracks.	Bearing support is cracked.
	●		●		b. Inspect for loose or missing nuts and bolts at bearing supports.	Nuts and bolts missing or cannot be tightened.
15	●	●	●	Brakes	a. Check operation of brake components. Adjust brake handle to securely lock reel in position.	Brakes will not operate. Brakes will not lock reels.
	●				b. Inspect brake pad lining.	Brake pads worn down to rivet heads.

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

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			
16	●			Hydraulic Hoses	a. Inspect hoses and fittings for cuts, tears and bulges.	Hoses cut, torn or bulged.
		•			b. Inspect hoses and fittings for leaks.	Hose or fittings leak.
	•				c. Inspect quick disconnect couplings for cracks or damaged mating surfaces.	Couplings damaged.
		●			d. Inspect couplings for leaks.	Coupled connections leak.
			•		e. Verify that caps have been installed over all disconnected couplings.	
17	●			Hydraulic Motor and Drive Wheel	a. Inspect motor for cracks and loose or missing mounting bolts.	Missing bolts or cracked motor.
		•			b. Inspect for leaks.	
	•				c. Inspect drive wheel lining for wear.	Lining is worn off metal drive wheel.
18	●			Hydraulic Cylinder	a. Inspect for loose or missing mounting pin.	Mounting pin missing.
		•			b. Inspect cylinder for leaks.	Cylinder leaks.
19	●		●	Frame	Inspect for cracks, bends, and breaks in frame structure. Check for loose or missing bolts, nuts and attaching parts.	Frame is cracked, bent or broken. Bolts are missing.

Section III. OPERATION UNDER USUAL CONDITIONS

2-6. ASSEMBLY AND PREPARATION FOR USE

a. Powerpack Installation.

WARNINGS

- This equipment produces hydraulic pressure in excess of 1500 psi. Verify that all pressure hoses are properly connected before operation. A connection that detaches can cause injury.
- Do not disconnect hydraulic hose couplings when system is under pressure. Failure to comply may result in injury to personnel and damage to equipment.
- Remove rings, bracelets, wrist watch and neck chains before starting work. Jewelry can catch on equipment and cause injury or may short across an electrical circuit and cause severe burns or electrical shock. Secure all loose clothing.
- To prevent injury to personnel, the operator must monitor reeling operations at all times. Use extreme caution when retrieving fuel hose, Personnel may be caught between fuel hose and hose reel if system is operated too quickly. Keep clear of all moving parts.
- The power-pack is heavy. Four personnel are required to lift, carry and position the powerpack in the frame unit.

CAUTION

Do not untie or unwrap crimp from end of fuel hoses. Removing crimp will allow air to enter hose and make deployment difficult. Remove crimp only after hoses are fully deployed.

NOTE

Verify that hose reel brakes are applied before moving equipment. Hose reels may turn, causing hose to spill from reels.

(1) Working from the brake lever side of the frame unit, position powerpack so that hydraulic disconnects are pointing away from frame.

(2) Slide powerpack into guides approximately half way into frame unit.

(3) Carefully pull control cable from powerpack. Position control cable switches away from hydraulic hoses.

2-6. ASSEMBLY AND PREPARATION FOR USE - cont.

CAUTION

To prevent system contamination and early failure of equipment, wipe all dirt from quick disconnect fittings.

(4) Remove protective caps from frame unit quick disconnect fittings. Inspect fittings for dirt. Wipe clean using a clean, soft cloth.

(5) Remove protective caps from powerpack quick disconnect fittings. Inspect fittings for dirt. Wipe clean using a clean, soft cloth.

CAUTION

Two frame unit hoses and two powerpack hoses are marked with a white plastic sleeeve. Frame unit hoses with a white sleeve must be connected to powerpack hoses with a white sleeve. Black hoses (without white sleeve) must be connected to black hoses. Reversing hose connections will effect operation of hose reel system.

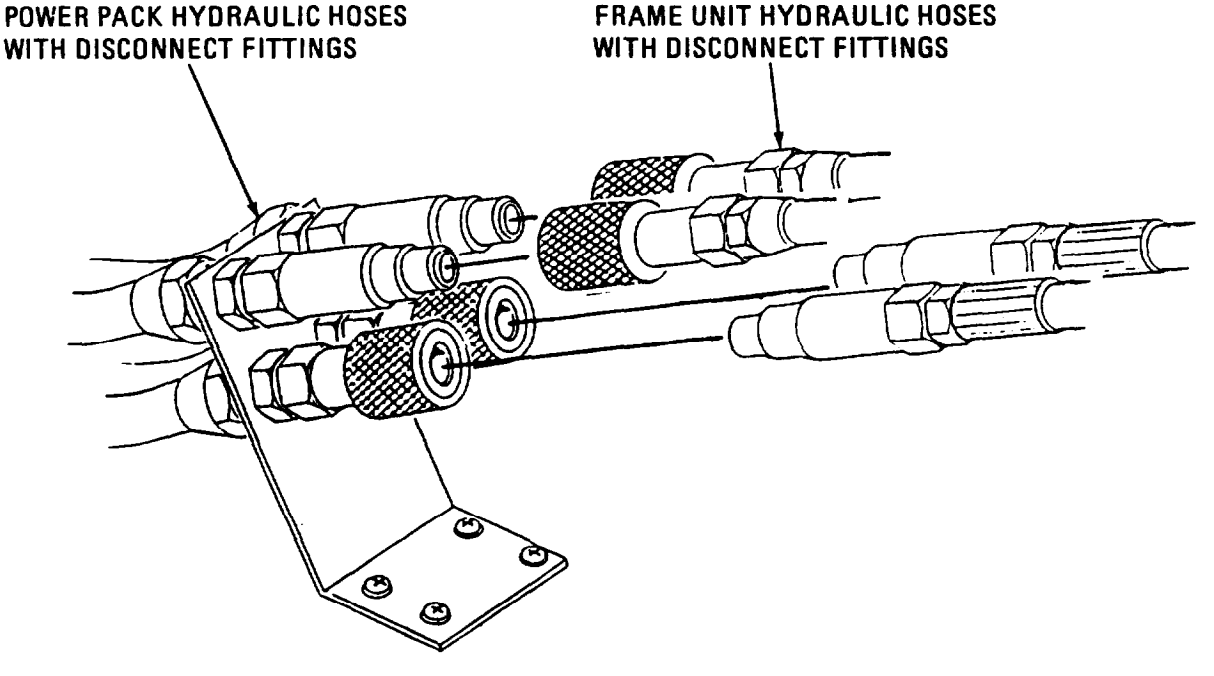
NOTE

When connecting hydraulic hose, you should hear a metallic click when hoses are securely connected.

(6) Locate two frame unit hydraulic hoses with white sleeve. Connect hydraulic hoses to mating hoses with white sleeve on powerpack.

(7) Locate two black (without white sleeve) frame unit hydraulic hoses. Connect hydraulic hoses to black mating hoses on powerpack.

(8) Tug on hose couplings to ensure connections are securely fastened. Slide power pack into guides until it contacts frame on opposite side.



2-6. ASSEMBLY AND PREPARATION FOR USE - cont.

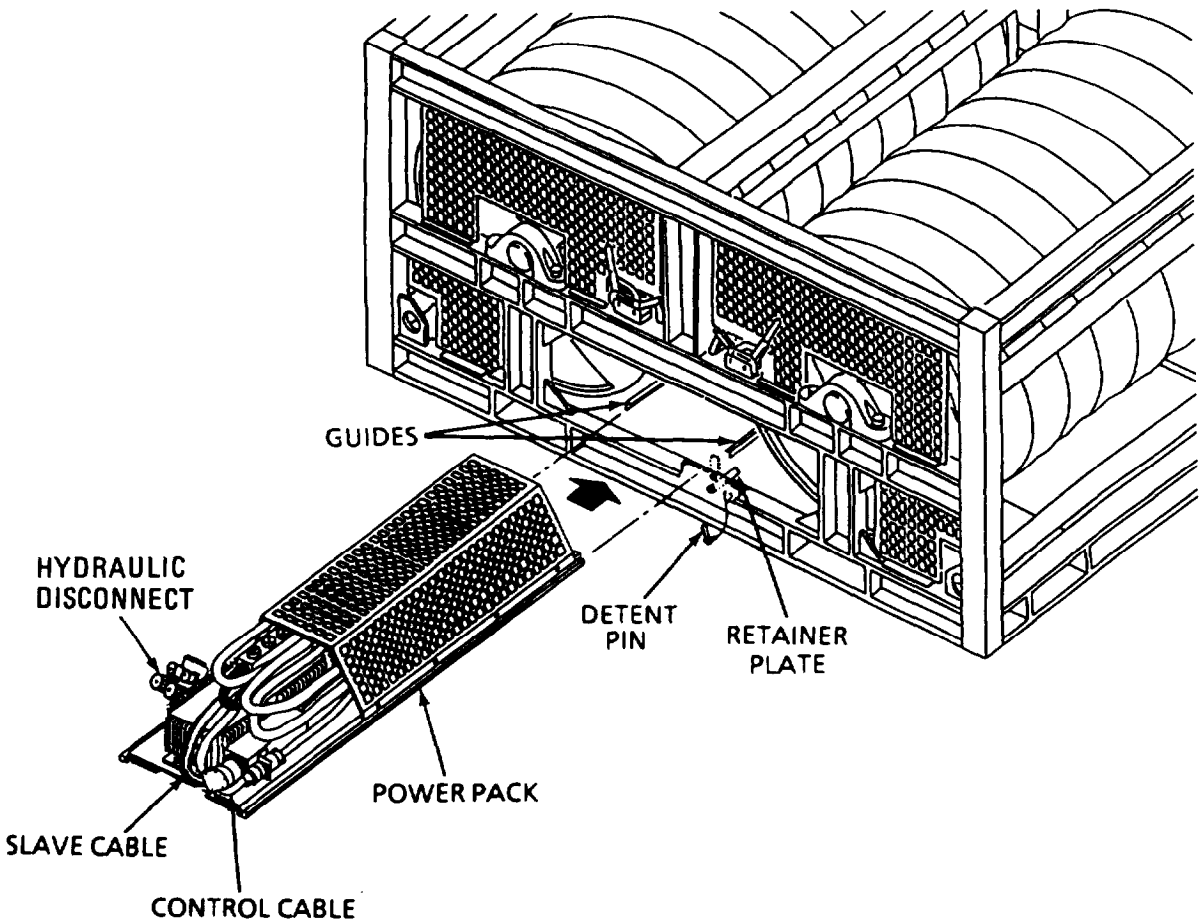
(9) Remove detent pin from tray retainer plate

(10) Rotate tray retainer plate so that it points straight up

(11) Install detent pin through hole in frame.

NOTE

Powerpack is not fully installed in frame if detent pin cannot be inserted

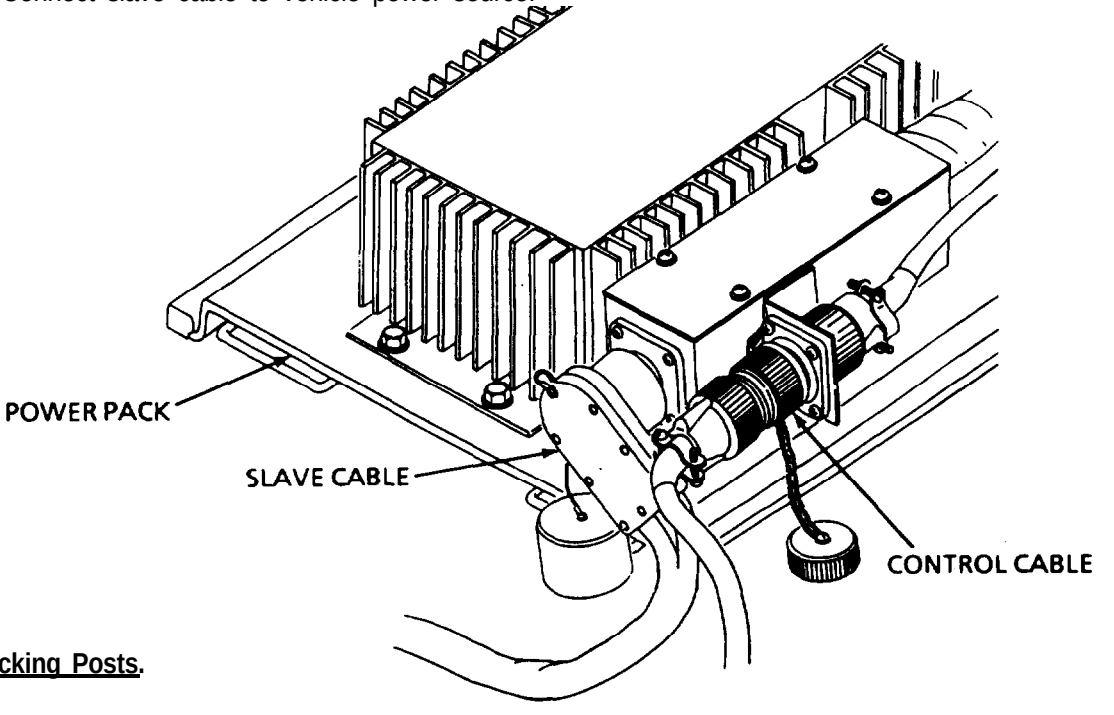


2-6. ASSEMBLY AND PREPARATION FOR USE - cont.

(12) Connect control cable to power pack.

(13) Connect slave cable to power pack.

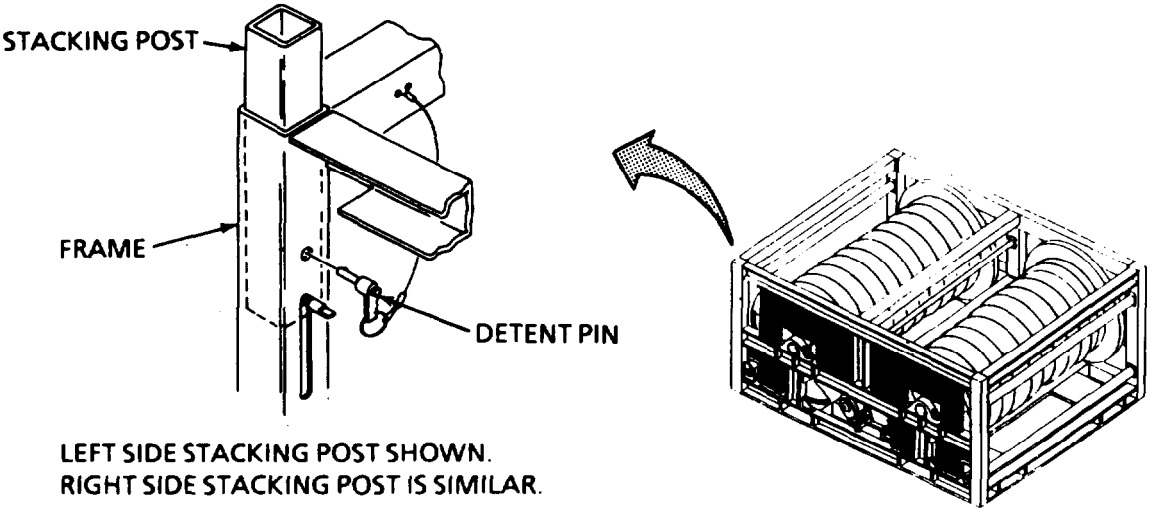
(14) Connect slave cable to vehicle power source.



b. Lower Stacking Posts.

(1) Remove two left side detent pins and lower stacking posts. Reinstall detent pins through hole in frame.

(2) Remove two right side detent pins and lower stacking posts. Reinstall detent pins through hole frame.



LEFT SIDE STACKING POST SHOWN.
RIGHT SIDE STACKING POST IS SIMILAR.

2-7. OPERATING PROCEDURES

These procedures consist of the following instructions:

a. Hose Deployment (page 2-15)

b. Hose Retrieval (page 2-18)

WARNING

Be completely familiar with the operating procedures before using the equipment.

a. **Hose Deployment.**

(1) Verify that brakes on both reels are applied.

WARNINGS

- To prevent injury to personnel or damage to the equipment , observe the following :
- Remove rings, bracelets, wrist watch and neck chains before starting work. Jewelry can catch on equipment and cause injury or may short across an electrical circuit and cause severe burns or electrical shock. Secure all loose clothing.
- Do not operate the unit with guard panels removed.
- Operator must monitor hose reel speed at all times. Do not let hose come off reel to fast.

NOTES

- Hose deployment works best if system is operated from rough terrain forklift or similar vehicle. Hose is unwound as vehicle hauls hose reel system through installation site.
- One power pack is supplied for use with six hose reel frame units. Power pack must be installed to make reels operational. Operating instructions are the same for all six frame units.

(2) Position hose reel system on flatbed truck, rough terrain forklift, or other suitable vehicle. Secure frame unit to vehicle. Transport to first connection point.

NOTE

Electrical power is not required to unreel hoses; however, power should be available in case hose must be retrieved or adjusted.

(3) Connect slave cable (power cable) to 24Vdc vehicle power source. Use the supplied cable adapter, ifrequired.

NOTE

DO NOT remove fold from hose end.

(4) Position loose end of hose between upper and lower frame rollers.

2-7. OPERATING PROCEDURES - cont.

(5) Release brake lever and pull about 100 feet of hose from reel. Adjust brake lever tension as follows:

(a) Loosen brake lever adjusting knob about three turns. Apply brake.

NOTE

Brake should apply enough drag to prevent reel from turning freely.

(b) Rotate hose reel by hand.

(c) If reel turns freely, tighten brake lever adjusting knob. If reel cannot be turned by hand, loosen brake lever adjusting knob.

CAUTION

Depending on vehicle speed and terrain, brake tension will require adjustment during deployment. Increase or decrease as needed to prevent hose reel from freewheeling (uncontrolled turning). Freewheeling may cause hose to tangle in hose reel frame.

(6) Position two personnel at ground level to guide and lay hose. Operator must remain with hose reel to monitor and control hose reel speed.

CAUTION

- To prevent damage to hose, do not let vehicle drive over deployed hose. Vehicle must be driven so that hose pulls from reel without passing under vehicle.
- Do not connect hose to directly to component.

(7) With loose end of hose secured near first connection point, notify vehicle operator to slowly drive vehicle toward final connection point. Adjust vehicle speed and hose reel brake tension to match ground terrain.

CAUTION

Hose end is secured to a slot in the hose reel spool. To prevent damage to hose reel and hose end, work hose end loose from spool by hand.

(8) Stop vehicle and pull last layer of hose from reel.

(9) When approaching last layer of hose, stop forklift vehicle. Slowly pull remaining hose from reel. Release hose end from slot in hose reel spool.

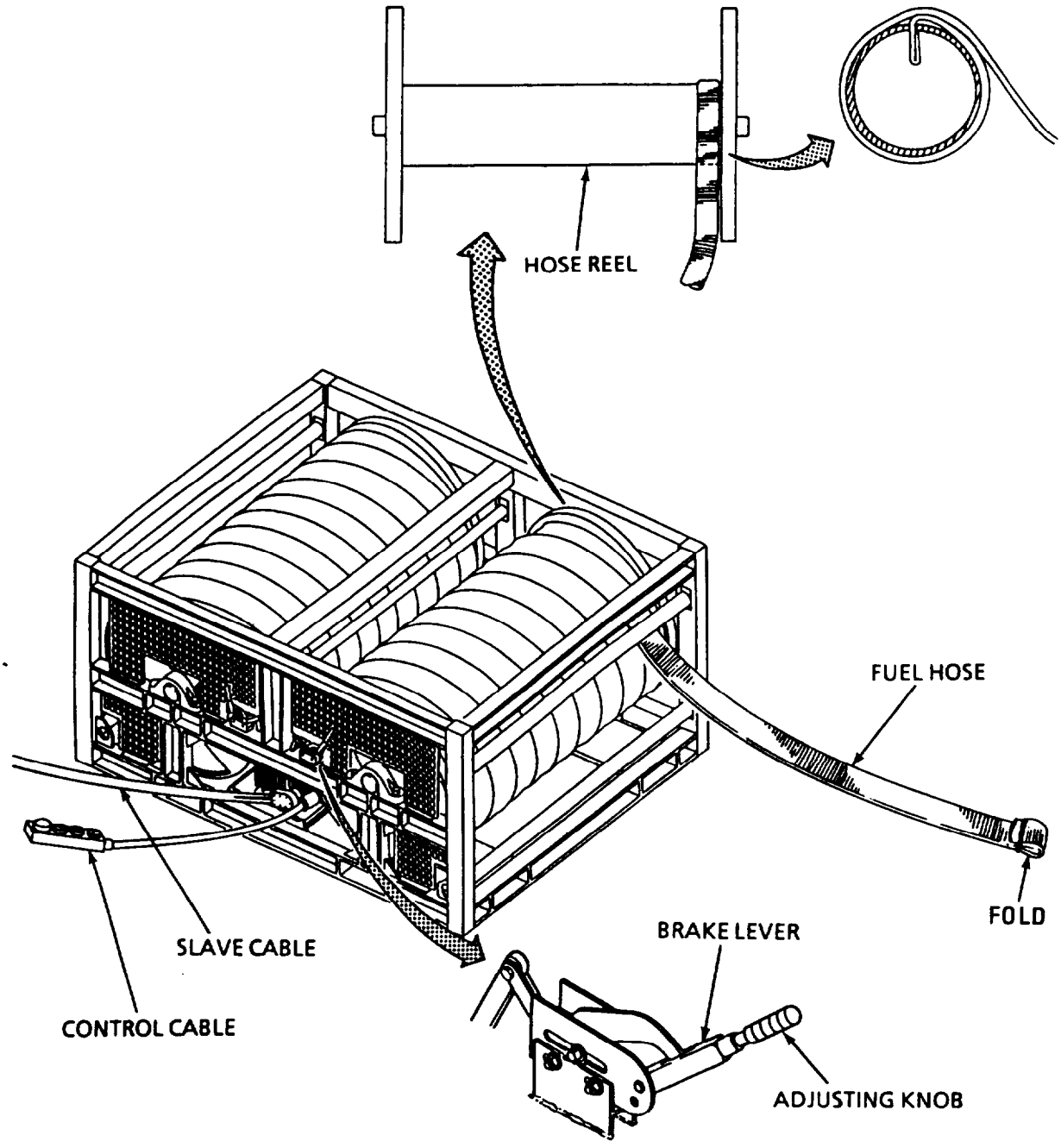
(10) Load frame unit on forklift from opposite direction. Position other hose for deployment.

(11) Repeat steps (4) through (9).

(12) Install couplings and coupling clamps on hose ends (Refer to TPT system manual).

(13) Connect hoses to TPT system components.

2-7. OPERATING PROCEDURES - cont.



2-7. OPERATING PROCEDURES - cont.

b. **Hose Retrieval.**

WARNINGS

- To prevent injury to personnel or damage to the equipment, observe the following :
- Remove rings, bracelets, wrist watch and neck chains before starting work. Jewelry can catch on equipment and cause injury or may short across an electrical circuit and cause severe burns or electrical shock. Secure all loose clothing.
- Do not operate the unit with guard panels removed.
- Operator must monitor hose reel speed and ground crew activity at all times. Do not let hose come off reel to fast.

NOTES

- Hose retreival works best if system is operated from rough terrain forklift or similar vehicle. Hose is recovered as vehicle transports hose reel system through installation site.
- One power pack is supplied for use with six hose reel frame units. Power pack must be installed to make reels operational. Operating instructions are the same for all six frame units.
- The capacity of each hose reel is 600 feet. To ensure that a full length of hose can be wound onto reel, hose must be drained and evacuated.

(1) Disconnect fuel hoses from TPT components.

(2) Lay hose out and drain all fuel.

(3) Evacuate hose as follows:

NOTE

Refer to TPT system manual for setup and operation of the evacuation pump.

(a) Install evacuation adapter cap at one end of hose. Connect evacuation pump to adapter cap.

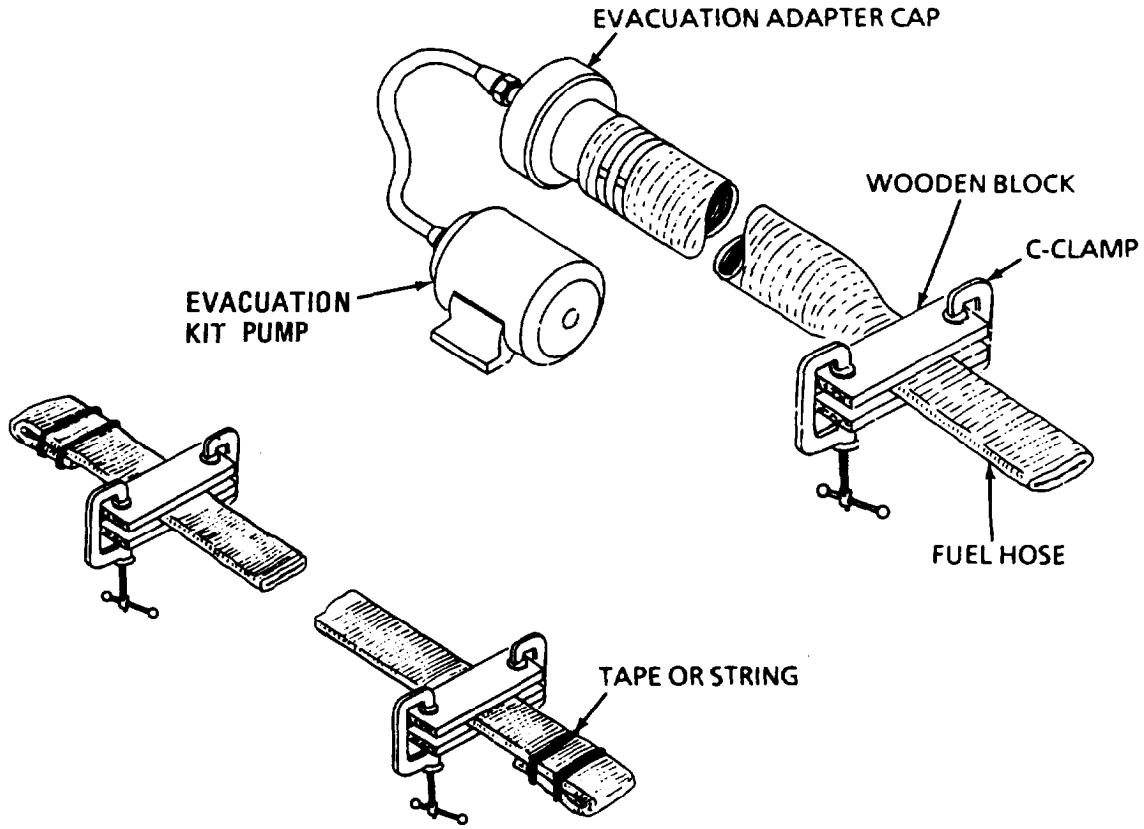
(b) At other end of hose, use two blocks of wood (2" x 4" X 12") and two 6-inch C clamps to clamp off hose end. Install clamp about two feet from hose end. Clamp must be tight to prevent air from entering hose. Remove coupling from hose end, fold end of hose. tightly as shown, and tape or tie fold in place.

(c) Operate evacuation pump until hose is completely pumped down (refer to TPT system manual). Hose will collapse and lay flat.

(d) Install second hose clamp two feet from adapter cap. Remove adapter cap and coupling from hose, fold end of hose tightly as shown, and tape or tie fold in place.

(e) Remove hose clamps from hose ends.

2-7. OPERATING PROCEDURES - cont.



(4) Connect slave cable (power cable) from power pack to 24Vdc vehicle power source. Use the supplied cable adapter, if required.

NOTE

All references to LEFT, RIGHT, CW (clockwise) or CCW (counterclockwise) are from the power pack side, facing the unit.

(5) Determine which hose reel you want to wind.

(6) Release brake lever.

(7) Rotate hose reel so that cutout in spool is facing out.

(8) Set control cable switches as follows:

(a) Set REEL switch to LEFT or RIGHT, as required.

(b) Set SPEED switch to SLOW.

NOTE

Hose must be wound so that hose wraps over top of hose reel spool.

(c) If left hose reel will be wound, set REEL CCW/CW switch to CW. If right hose reel will be wound, set REEL CCW/CW switch to CCW.

2-7. OPERATING PRODUCES - cont.

(9) Position hose between upper and lower frame unit rollers.

(10) Push folded hose end into hose reel spool.

NOTE

Four personnel are required to wind the hose onto the hose reel. The operator must control and monitor system operation at all times. Two ground crew personnel are required to guide hose onto reel. Vehicle operator must transport hose reel system along hose retrieval path.

(11) Position three personnel at ground level to guide hose onto reel.

WARNING

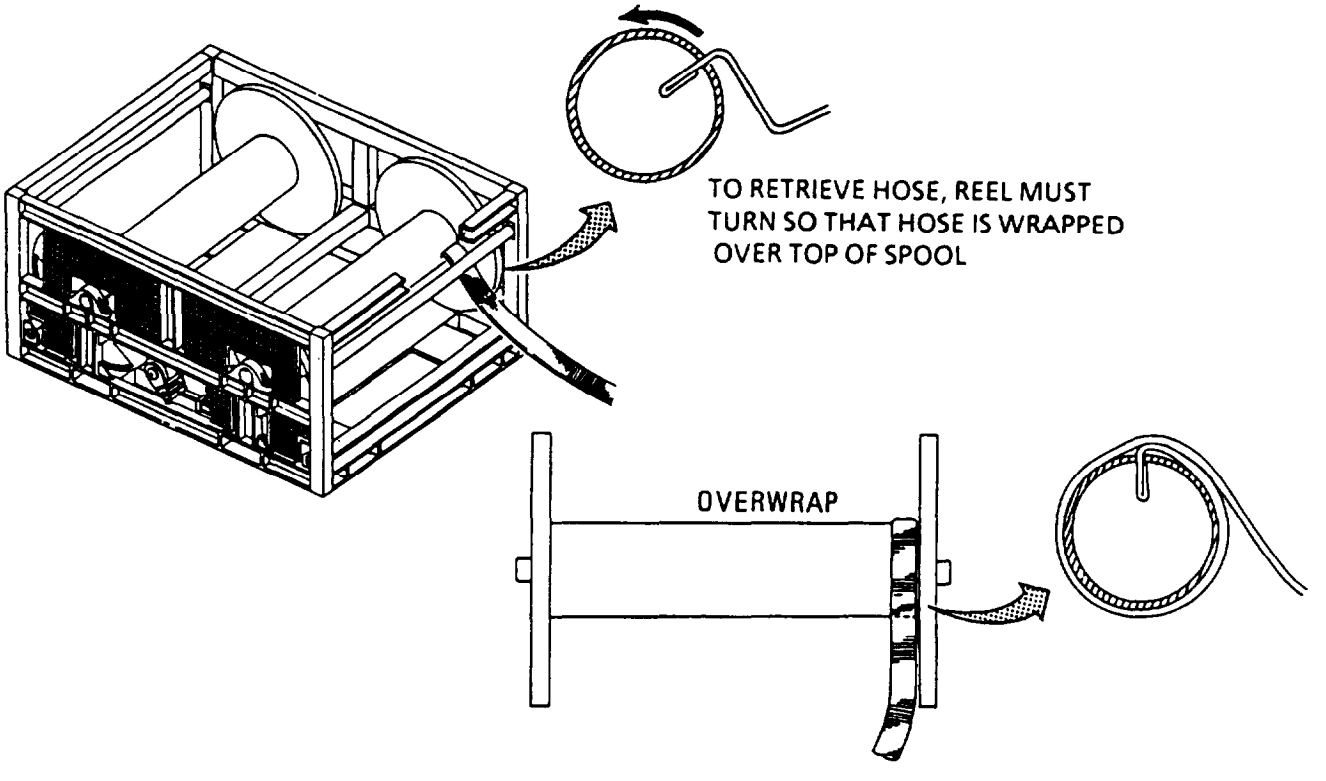
Do not allow reel speed to exceed working pace of ground personnel. Keep alert. Monitor tasks performed by ground crew. Be prepared to stop or reverse reel to assist ground crew.

(12) (Operator) Depress RUN switch to start rotation of reel. As required, release switch to stop reel. If reel must be reversed, release RUN switch and set REEL CW/CCW switch to CCW; depress RUN switch.

NOTE

First hose wrap must be overwrapped to prevent hose from pulling out of reel spool.

(13) (Ground Crew) On first wrap, overwrap hose onto reel.



2-7. OPERATING PROCEDURES - cont.

NOTE
Wrap hose tightly. Hose edges must touch, but not overlap.

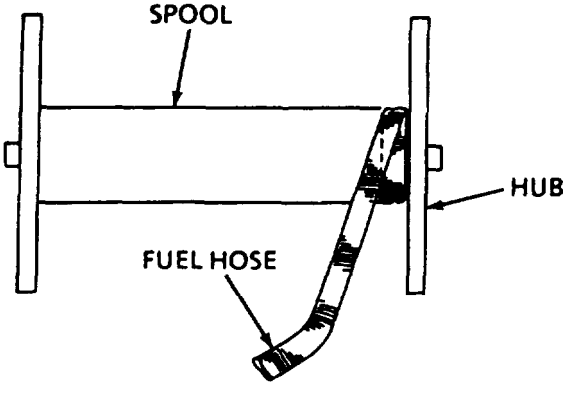
(14) (Ground Crew) On second wrap, angle hose toward opposite reel hub (see illustration) so that hose begins to spiral onto reel spool.

WARNING
Do not allow vehicle speed to exceed working pace of hose reel operator or ground crew. Do not drive vehicle over hose.

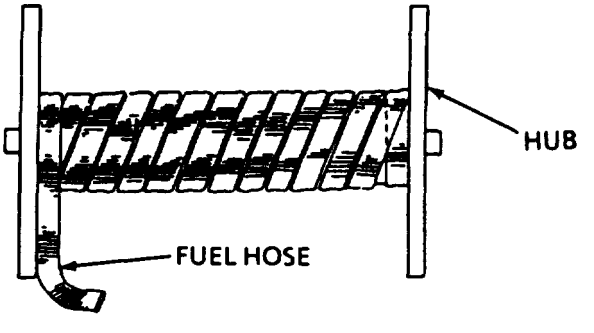
(15) (Vehicle Operator) Slowly drive transport vehicle along hose retrieval path.

(16) (Ground Crew) Continue to wrap hose onto reel until hose contacts opposite reel hub.

(17) (Ground Crew) When hose reaches opposite reel hub, straighten hose and complete one full level wrap.



ANGLE HOSE TOWARDS OPPOSITE SIDE OF SPOOL. WIND HOSE TO OPPOSITE HUB.



WHEN HOSE REACHES OPPOSITE HUB, COMPLETE ONE FULL LEVEL WRAP.

2-7. OPERATING PROCEDURES - cont.

(18) (Ground Crew) Position hose at angle to reel spool so that hose will wind in a spiral toward opposite reel hub. Continue to wrap hose toward opposite hub.

(19) Repeat steps (15) through (18) until reel is full or hose end is within ten feet of reel.

(20) (Ground Crew) Slowly wind remaining hose onto reel.

(21) (Operator) Stop reel when hose end is positioned under roller by releasing RUN switch.

(22) (Ground Crew) If hose is loose, tie hose end to hose reel with string. Make sure fold in hose end is secure.

(23) (Operator) Apply brake lever. Tighten brake adjusting knob as required to prevent reel from turning.

(24) (Operator/Ground Crew/Vehicle Operator) Repeat steps (5) through (23) for other hose reel. Set REEL CCW/CW switch to OFF when complete.

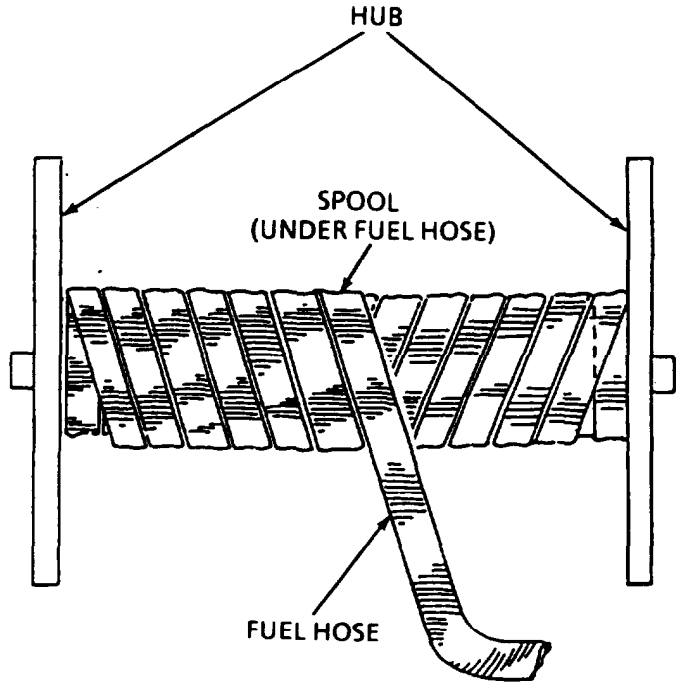
NOTE

One power pack is supplied for use with six hose reel frame units. Power pack must be installed to make reels operational. Operating instructions are the same for all six frame units.

(25) Remove power pack from frame unit and install in empty frame unit (para. 2-6a).

(26) Repeat procedures for all deployed hose.

2-7. OPERATING PROCEDURES - cont.



ANGLE HOSE TOWARD OPPOSITE HUB,
SPIRAL WRAP HOSE ACROSS SPOOL.

2-8. PREPARATION FOR MOVEMENT

This paragraph contains procedures for the following:

a. Power Pack Removal (page 2-24).

b. Stacking (page 2-27).

WARNINGS

- This equipment produces hydraulic pressure in excess of 1500 psi. Verify that all pressure hoses are properly connected before operation A connection that detaches can cause injury.
- Do not disconnect pressure hose couplings when system is under pressure. Failure to comply may result in injury to personnel and damage to equipment.
- Remove rings, bracelets, wrist watch and neck chains before starting work. Jewelry can catch on equipment and cause injury or may short across an electrical circuit and cause severe burns or electrical shock. Secure all loose clothing.

CAUTION

Do not untie or unwrap fold from end of fuel hoses. Removing fold will allow air to enter hose and make deployment difficult.

NOTE

Verify that hose reel brakes are applied before moving equipment. Hose reels may turn, causing hose to spill from reels.

a. **Power Pack Removal.**

(1) Disconnect slave cable from vehicle power source. If used, store cable adaptor.

(2) Disconnect slave cable from power pack.

(3) Disconnect control cable assembly from power pack.

(4) Disconnect four frame unit hydraulic hoses from power pack.

CAUTION

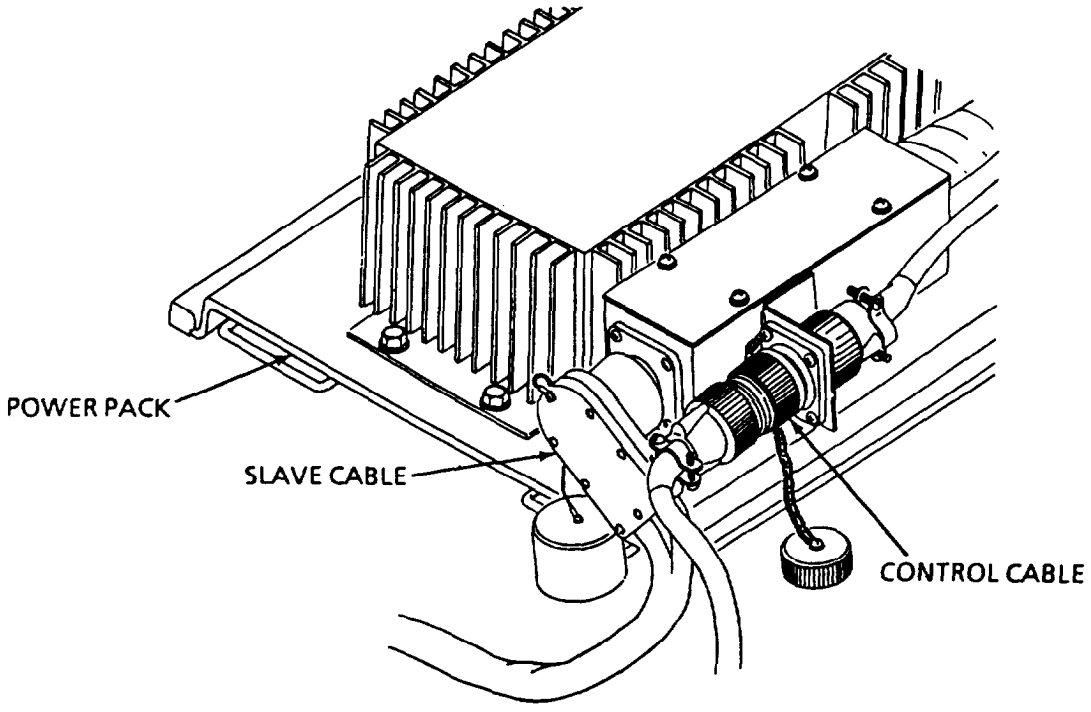
To prevent system contamination and early failure of equipment, wipe all dirt from quick disconnect fittings.

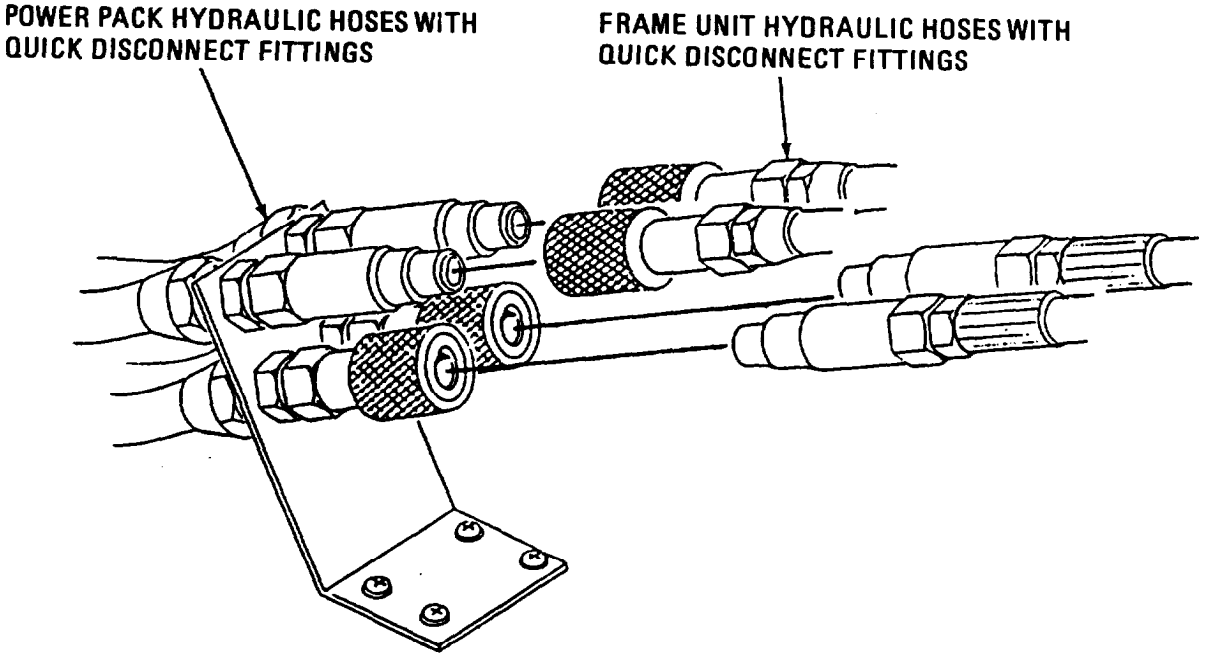
(5) Wipe dirt from quick disconnect fittings using a clean, soft cloth. Wipe spilled hydraulic fluid from power pack.

(6) Install protective caps on all quick disconnect coupling ends.

(7) Stow control cable assembly in power pack.

2-8. PREPARATION FOR MOVEMENT





2-8. PREPARATION FOR MOVEMENT - cont.

(8) Remove detent pin from hole in frame

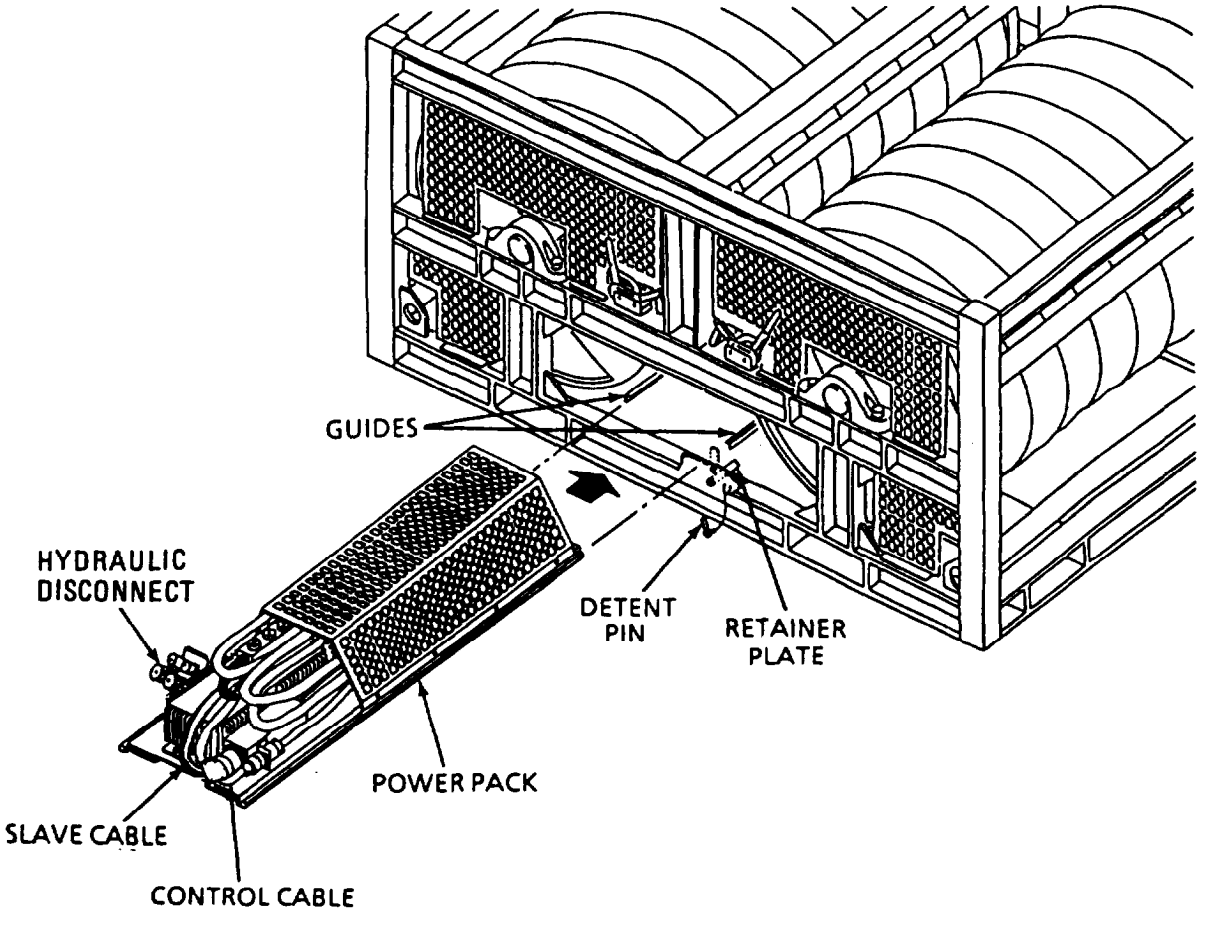
(9) Rotate tray retainer plate so that it is parallel with frame.

WARNING

The power pack is heavy. Four personnel are required to pull and carry the power pack from the frame unit.

(10) Pull power pack from frame unit.

(11) Install detent pin through hole in frame.



2-8. PREPARATION FOR MOVEMENT - cont.

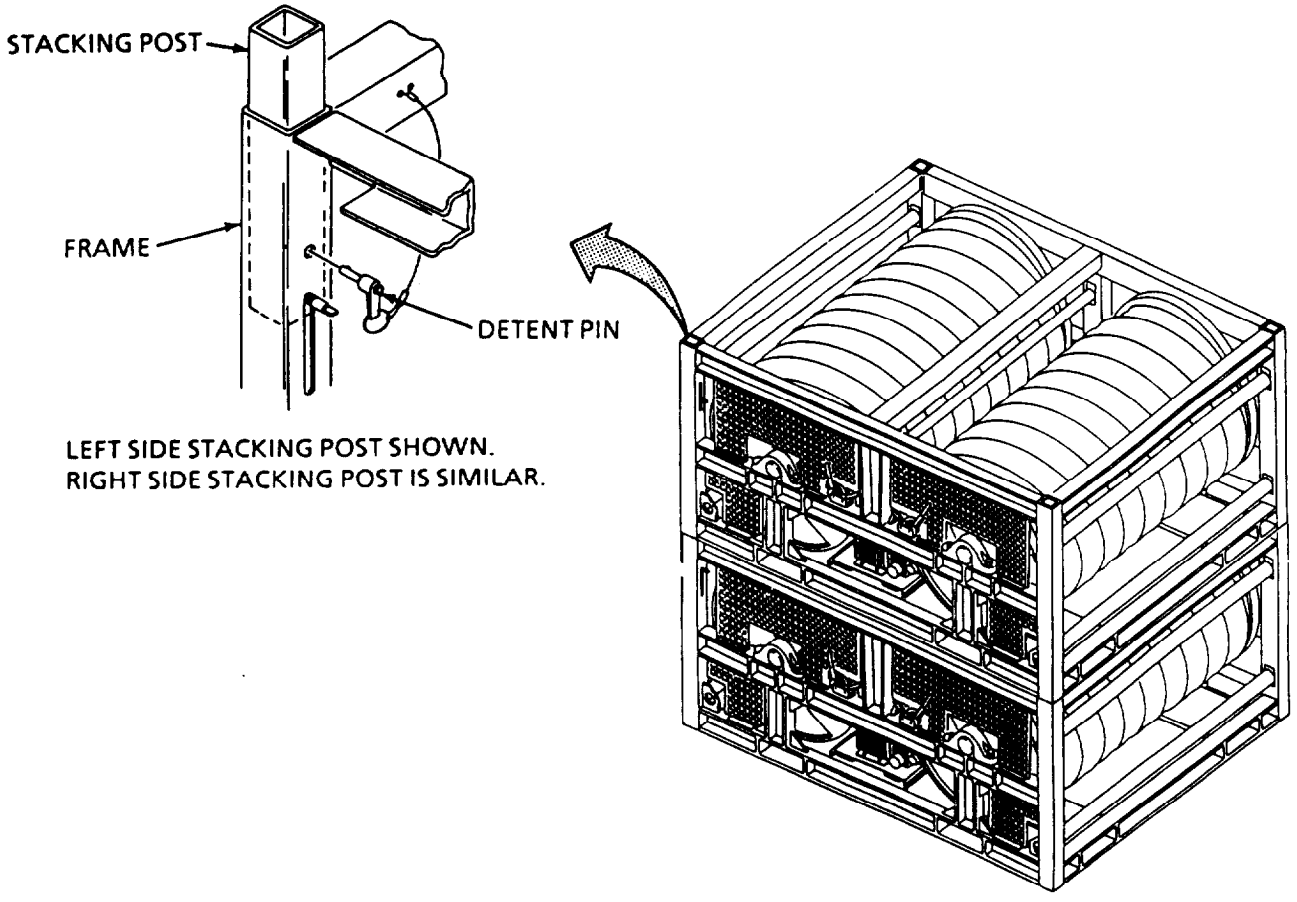
b. **Stacking.**

(1) Remove two right side detent pins and raise stacking posts. Reinstall detent pins through frame.

(2) Remove two left side detent pins and raise stacking posts. Reinstall detent pins through frame.

(3) Using forklift, raise frame unit and center over lower unit.

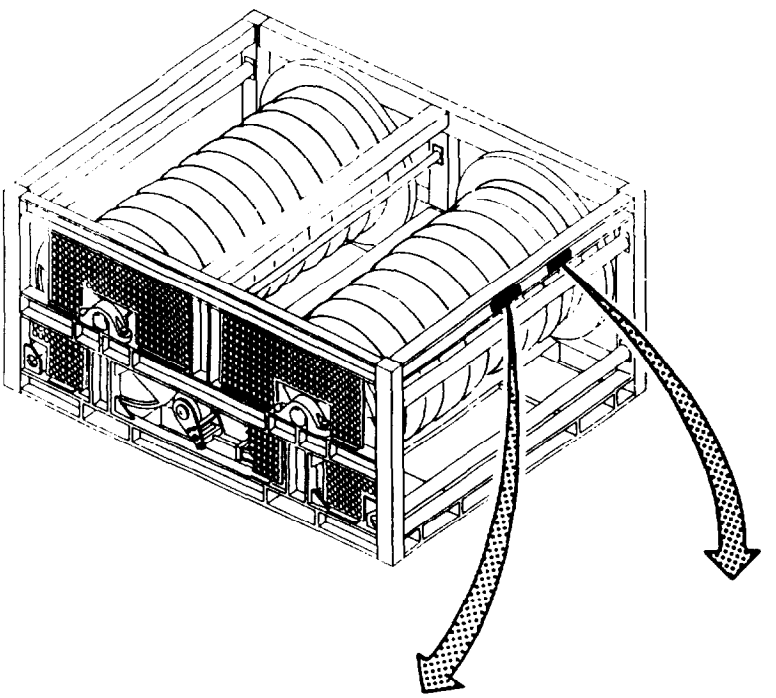
(4) Lower frame unit onto stacking posts of bottom unit.



LEFT SIDE STACKING POST SHOWN.
RIGHT SIDE STACKING POST IS SIMILAR.

2-9. DECALS AND INSTRUCTION PLATES.

Instruction plates are used on the Hose Reel System to advise the operator of proper operating procedures. Stencils provide additional operating information and cautions to be observed during use of the equipment. The following illustration shows the instruction plates and stencils and identifies their location on the unit.

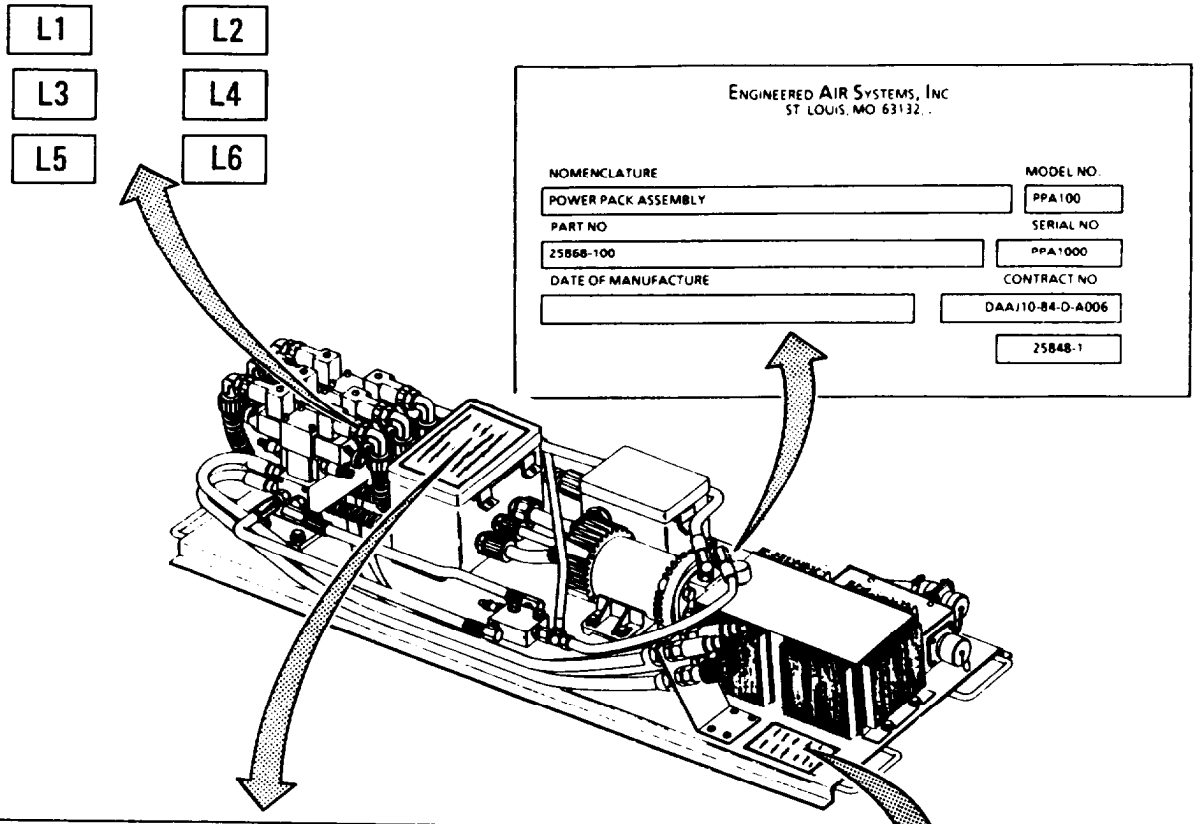


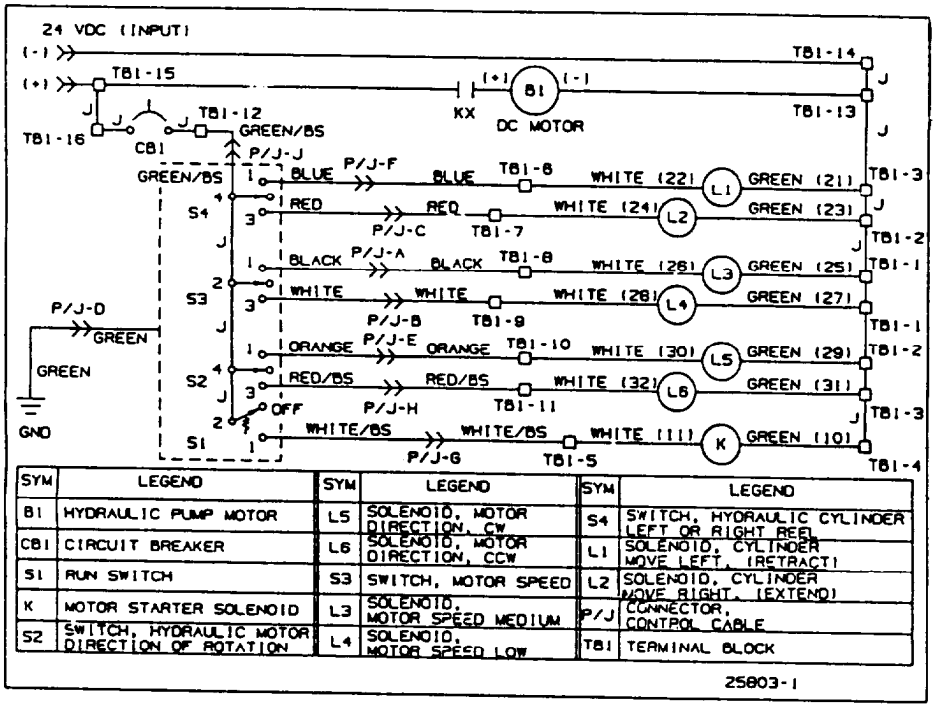
WARNING
MOVING MACHINERY, BE AWARE OF OPERATOR INTENTIONS AT ALL TIMES

ENGINEERED AIR SYSTEMS, INC
ST. LOUIS, MO 63132.

NOMENCLATURE	MODEL NO.
REELING SYSTEM, SWAPDOP ASSY	RS100
PART NO	SERIAL NO
25700-100	RS1000
DATE OF MANUFACTURE	CONTRACT NO
	DAA/10-84-D-A006
	25848-1

2-9. DECALS AND INSTRUCTION PLATES - cont.





SYM	LEGEND	SYM	LEGEND	SYM	LEGEND
B1	HYDRAULIC PUMP MOTOR	L5	SOLENOID, MOTOR DIRECTION, CW	S4	SWITCH, HYDRAULIC CYLINDER LEFT OR RIGHT REEL
CB1	CIRCUIT BREAKER	L6	SOLENOID, MOTOR DIRECTION, CCW	L1	SOLENOID, CYLINDER MOVE LEFT, (RETRACT)
S1	RUN SWITCH	S3	SWITCH, MOTOR SPEED	L2	SOLENOID, CYLINDER MOVE RIGHT, (EXTEND)
K	MOTOR STARTER SOLENOID	L3	SOLENOID, MOTOR SPEED MEDIUM	P/J	CONNECTOR, CONTROL CABLE
S2	SWITCH, HYDRAULIC MOTOR DIRECTION OF ROTATION	L4	SOLENOID, MOTOR SPEED LOW	TB1	TERMINAL BLOCK

25803-1

WIPE CONNECTORS CLEAN.
CONNECT WHITE HOSES TO WHITE HOSES.
CONNECT BLACK HOSES TO BLACK HOSES.
CAUTION:
FAILURE TO PROPERLY CONNECT COLOR CODED HOSES WILL REVERSE CONTROL SWITCH FUNCTIONS.

25802-1

Section IV. OPERATION UNDER UNUSUALCONDITIONS

2-10. OPERATION IN UNUSUAL WEATHER CONDITIONS - cont.

This paragraph contains procedures for the following:

a. Operation in Extreme Moist Heat
b. Operation in Extremely Dry and Dusty Heat
c. Operation in Salt Air and Sea Spray
d. Operation in Freezing Weather

Operation of the Hose Reel System in unusual weather conditions does not require special operating procedures. However, the equipment must be protected from weather related hazards. The following paragraphs describe these hazards and preventive tasks to perform when operating in unusual weather.

a. **Operation in Extreme Moist Heat.** Moisture in contact with bare metal surfaces will cause corrosion. Prolonged exposure to moist heat may cause the growth of fungus on painted surfaces, wiring, and electrical connections. Before and after use in humid conditions, perform the following tasks.

WARNING

Avoid skin contact with metal surfaces. Skin in contact with hot metal surfaces may cause burns.

(1) Dry hydraulic cylinder rod surface using a clean, dry cloth.

(2) Moisten cloth with hydraulic oil. Apply a light coat of oil to hydraulic cylinder rod.

(3) Inspect frame unit and power pack wiring for fungus growth. Inspect interior of metal enclosures (junction boxes) With electrical power disconnected, remove fungus using a clean cloth dampened with denatured alcohol.

CAUTION

To prevent slippage of hose reel brake controls, do not apply oil to braking surface of hose reel or brake pad.

(4) Spray a light coat of lubricating oil onto bare metal surfaces. **Do not** apply oil to braking surface of hose reels or brake shoes.

b. Operation in Extremely Dry and Dusty Heat. Blowing sand, dust, and dirt can contaminate the hydraulic system. Sand particle in bearings and between mating surfaces causes premature wear and component failure. Before and after use in extremely dry conditions, perform the following tasks:

WARNING

Avoid skin contact with metal surfaces. Skin in contact with hot metal surfaces may **cause** burns.

2-10. OPERATION IN UNUSUAL WEATHER CONDITIONS

CAUTION

Do not spray power pack with water. Remove power pack before cleaning frame unit.

(1) If clean, fresh water is available, rinse off dust and dirt from frame unit. Pay particular attention to frame unit rollers, drive wheel, and hose reel bearing hubs. Wipe water from hydraulic cylinder rod and allow frame unit to dry. Apply hydraulic oil to cylinder rod.

(2) If clean fresh water is not available, wipe dust and dirt from hydraulic cylinder rod. Lubricate rod with a light coat of hydraulic oil. Wipe dust and dirt from drive wheel and power pack quick disconnect couplings.

c. **Operation in Salt Air or Sea Spray.** Salt spray and salt air greatly accelerate corrosion of metal surfaces. Salt must be removed from the equipment as quickly as possible.

CAUTION

Do not spray power pack with water. Remove power pack before cleaning frame unit.

(1) After hose deployment, clean frame unit with clean fresh water. Store empty frame units in a protected area away from salt spray. Wipe salt spray from power pack with a cloth dampened in clean, fresh water.

(2) During retrieval, rinse salt, sand, and dirt from hose with clean fresh water. Winding wet, salty hose onto hose reel can result in severe corrosion.

(3) After operation, rinse off salt spray, dust and dirt from frame unit and hoses with clean fresh water. Pay particular attention to frame unit rollers, drive wheel, hose reel bearing hubs and hydraulic cylinder rod. Wipe off excess water and allow frame unit to dry.

(3) Apply a light coat of weapons oil, or similar lubricant, to all bare metal surfaces.

(4) Shelter equipment from salt spray with canvas cover or similar material

d. **Operation in Freezing Weather.** When operating in freezing weather, observe the following precautions:

WARNING

To avoid frostbite in extremely cold weather, wear mitten/protective gloves during operation. Change mittens/protective gloves immediately if they get wet.

(1) When not in use, shelter equipment from freezing rain and snow with canvas cover or similar material.

(2) During operation, remove build up of ice from drive wheel, hose reel hubs, and brakes. Protect control cable switches from freezing rain and snow.

CHAPTER 3

OPERATOR MAINTENANCE

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

Section I. LUBRICATION INSTRUCTIONS

There are no operator level lubrication instructions.

Section II. OPERATOR TROUBLESHOOTING PROCEDURES

3-1. GENERAL

3-2. INTRODUCTORY INFORMATION

a. The table lists the common malfunctions which you may find during the operation or maintenance of the Hose Reel system. 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. SYMPTON INDEX

3-4. TROUBLESHOOTING TABLE

Refer to Table 3-1.

Table 3-1. Operator Troubleshooting

WARNING

Be sure to read ALL Warnings in front of manual before troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. REEL WILL NOT OPERATE WHEN RUN SWITCH IS DEPRESSED.

Step 1. Check control cable switch settings.

Set switches as required for hose deployment or retrieval.

Step 2. Check control cable connection to power pack.

Tighten connection.

Step 3. Check slave cable connection at vehicle power source.

Push connector into power receptacle.

Step 4. Check slave cable connection at power pack.

Push connector into power pack receptacle.

Step 5. Reset power pack circuit breaker.

a. Remove power pack from frame unit (para. 2-8a).

b. Remove guard from power-pack (para. 3-6).

c. Using flat tip screwdriver, open lid on metal enclosure and reset circuit breaker.

d. Secure lid on metal enclosure.

e. Install guard on power pack (para. 3-6).

f. Install power pack in frame unit (para. 2-6a).

NOTE

If malfunction cannot be corrected, notify unit maintenance.

Table 3-1. Operator Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

2. DRIVE WHEEL(CYLINDER) MOVES TO LEFT REEL WHEN RIGHT REEL IS SELECTED.

NOTE

References to left, right, clockwise, and counterclockwise are based on operator standing on the brake lever side of frame while facing the unit.

Step 1. Check position of REEL switch.

On control cable, set REEL switch to LEFT or RIGHT, as required.

Step 2. Check for reversed hose connections at quick disconnect couplings.

a. Connect frame unit hoses with white sleeves to power pack hoses with white sleeves (para. 2-6a).

b. Connect frame unit hoses without sleeves to power pack hoses without sleeves (para. 2-6a).

NOTE

If malfunction cannot be corrected, notify unit maintenance.

3. DRIVE WHEEL (CYLINDER) MOVES TO RIGHT WHEN LEFT REEL IS SELECTED.

See MALFUNCTION 2.

4. DRIVE WHEEL (CYLINDER) DOES NOT MOVE WHEN RIGHT OR LEFT REEL IS SELECTED.

Step 1. Check position of control cable REEL switch.

NOTE

Cylinder will not move when REEL switch is set to NEUTRAL.

Set REEL switch to LEFT or RIGHT, as required.

Step 2. Check for loose or disconnected hydraulic hose couplings.

Connect loose or disconnected hydraulic hose couplings (para. 2-6a).

NOTE

If malfunction cannot be corrected, notify unit maintenance.

Table 3-1. Operator Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

5. DRIVE WHEEL (CYLINDER) MOVED IN ONE DIRECTION, BUT WILL NOT RETURN.

Step 1. Check position of control cable REEL switch.

NOTE
Cylinder will not move when REEL switch is set to NEUTRAL.

Set REEL switch to LEFT or RIGHT, as required.

Step 2. Check for loose or disconnected hydraulic hose couplings

Connect loose or disconnected hydraulic hose couplings (para. 2-6a).

NOTE
If malfunction cannot be corrected, notify unit maintenance.

6. DRIVE WHEEL (CYLINDER) MOVES VERY SLOWLY.

Step 1. Check for 24Vdc electrical power from slave vehicle.

Connect slave cable to vehicle with adequate electrical power.

Step 2. Check fluid level in hydraulic reservoir.

If fluid in reservoir is low, notify unit maintenance.

NOTE
If malfunction cannot be corrected, notify unit maintenance.

7. REEL TURNS CLOCKWISE WHEN CCW IS SELECTED.

NOTE
References to left, right, clockwise, and counterclockwise are based on operator standing on the brake lever side of frame while facing the unit.

Step 1. Check position of REEL CW/CCW switch.

Set switch to CCW or CW, as required.

Step 2. Check for reversed hose connections at quick disconnect couplings.

Refer to MALFUNCTION 2, Step 2.

NOTE
If malfunction cannot be corrected, notify unit maintenance.

Table 3-1. Operator Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

8. REEL TURNS COUNTERCLOCKWISE WHEN CW IS SELECTED.

Step 1. Check position of REEL CW/CCW switch.

Set switch to CCW or CW, as required.

Step 2. Check for reversed hose connections at quick disconnect couplings.

Refer to MALFUNCTION 2, Step 2.

NOTE
If malfunction cannot be corrected, notify unit maintenance.

9. REEL TURNS VERY SLOWLY.

Step 1. Verify that brake is released.

Raise brake lever to up position.

Step 2. Check for tangled hose. Hose may be dragging on frame unit.

Untangle hose from frame.

Step 3. Check fluid level in hydraulic reservoir.

If fluid in reservoir is low, notify unit maintenance.

Step 4. Check for 24Vdc electrical power from slave vehicle.

Connect slave cable to vehicle with adequate electrical output.

NOTE
If malfunction cannot be corrected, notify unit maintenance.

Table 3-1. Operator Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

10. REEL WILL NOT TURN (PUMP OPERATES).

Step 1. Check position of REEL CW/CCW switch.

Set switch to CCW or CW, as required.

Step 2. Check position of REEL LEFT/NEUTRAL/RIGHT switch.

Set switch to LEFT or RIGHT, as required. Do not select NEUTRAL.

Step 3. Check that brake is released.

Raise brake lever to up position.

Step 4. Check for tangled or jammed hose.

Untangle hose from frame.

Step 5. Check for loose or disconnected hose couplings.

Connect loose or disconnected hose couplings (para. 2-6a).

Step 6. Check fluid level in reservoir.

If fluid in reservoir is low, notify unit maintenance.

NOTE

If malfunction cannot be corrected, notify unit maintenance.

11. REEL TURNS ONE DIRECTION ONLY.

Step 1. Check for tangled or jammed hose.

Untangle hose from frame.

Step 2. Check for loose or disconnected hydraulic hose couplings.

Connect loose-or disconnected hose couplings (para. 2-6a).

NOTE

If malfunction cannot be corrected, notify unit maintenance.

12. DRIVE WHEEL SLIPS ON HOSE REEL HUB.

Step 1. Check position of REEL LEFT/NEUTRAL/RIGHT switch.

Set switch to LEFT or RIGHT, as required. Do not select NEUTRAL.

Table 3-1. Operator Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
12. DRIVE WHEEL SLIPS ON HOSE REEL HUB -cont.
Step 2. Check drive wheel and hose reel hub for dirt, fuel, and oil on drive surfaces.
a. Using clean cloth, wipe contaminants from drive wheel
b. Using clean cloth, wipe contaminants from drive surface of hose reel hub
NOTE If malfunction cannot be corrected, notify unit maintenance.

Section III. OPERATOR MAINTENANCE PROCEDURES

3-5. GENERAL

This section contains procedures for performing operator maintenance on the hose reel system.

3-6. POWER PACK GUARD REMOVAL/INSTALLATION

This task consists of: **a. Removal** b. Installation

INITIAL SET-UP:

Tools required:

Phillips Screwdriver (Appendix C, Section III, Item **2)**

Equipment Condition:

Power Pack Removed (paragraph 2-8a).

a. Removal.

(1) Remove eight screws (1) and eight flat washers (2).

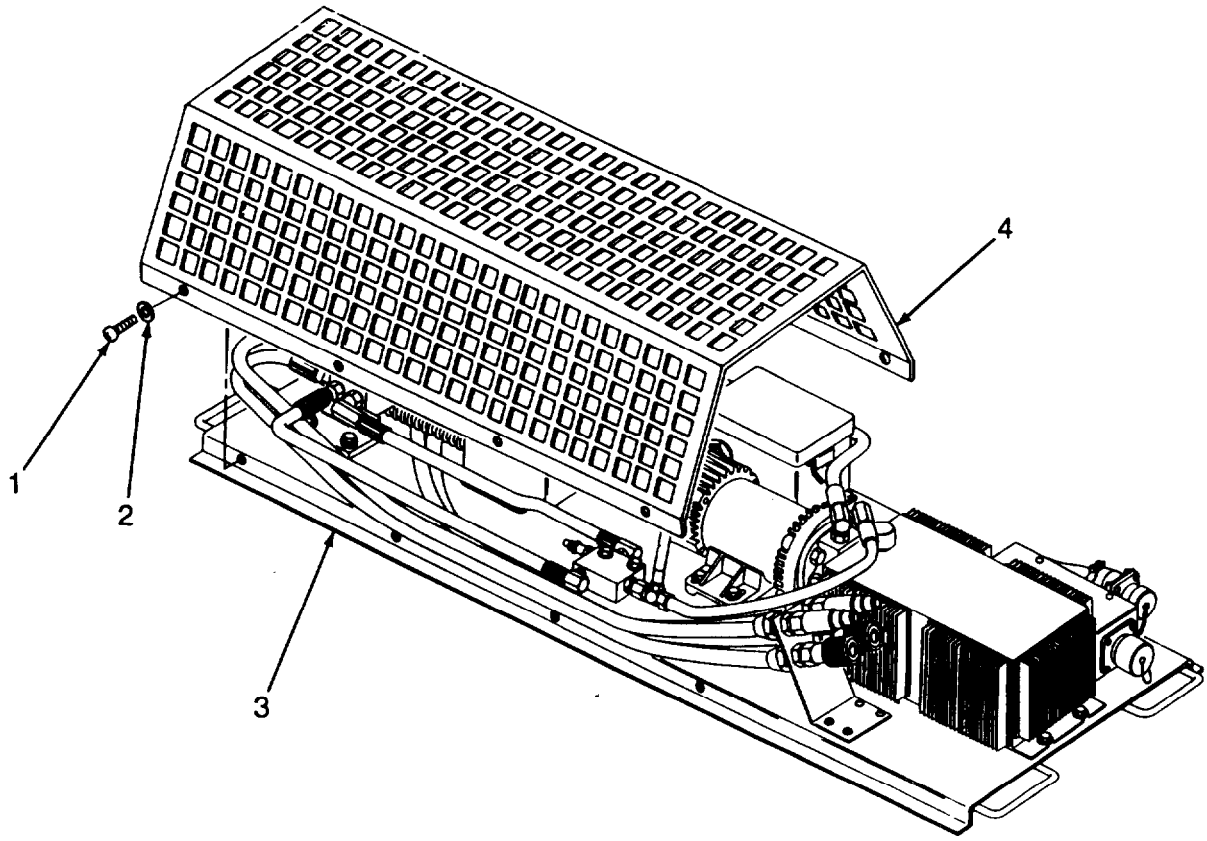
(2) Lift power pack guard (4) from frame (3).

3-6. POWER PACK GUARD REMOVAL/INSTALLATION - cont.

b. **Installation.**

(1) Position power pack guard (4) on frame (3). Align screw holes.

(2) Install eight flat washers (2) and eight screws (1).

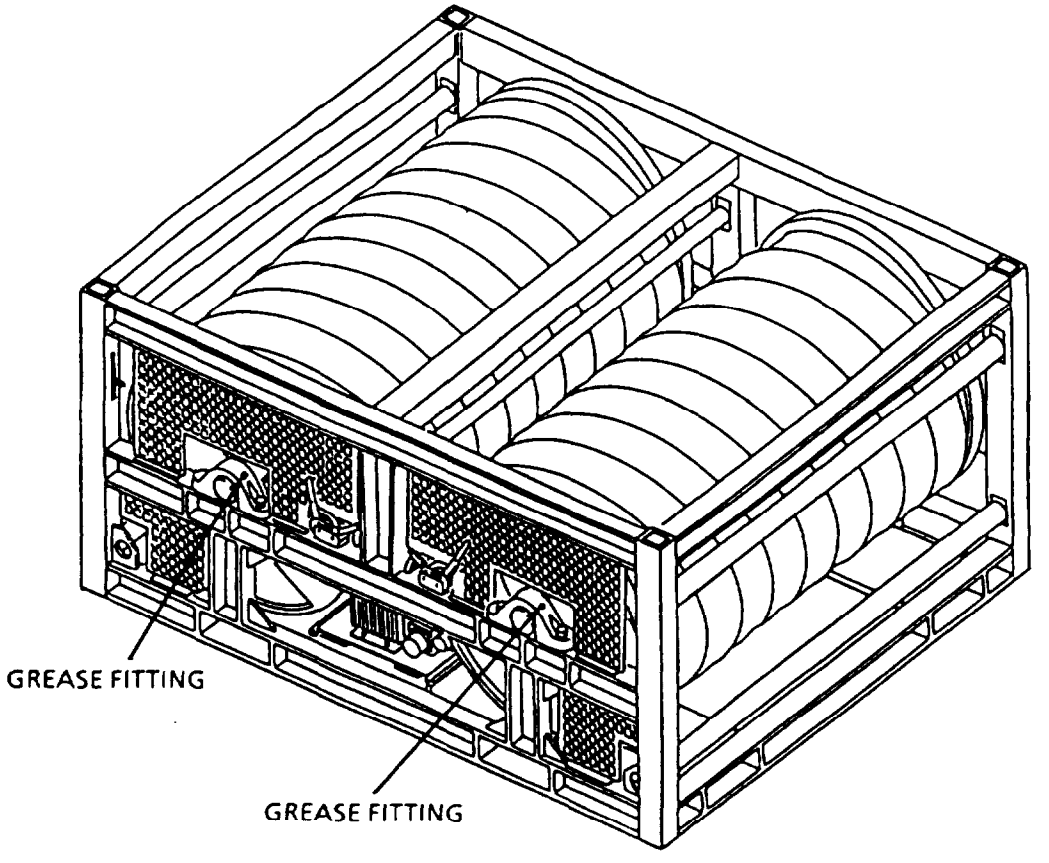


CHAPTER 4

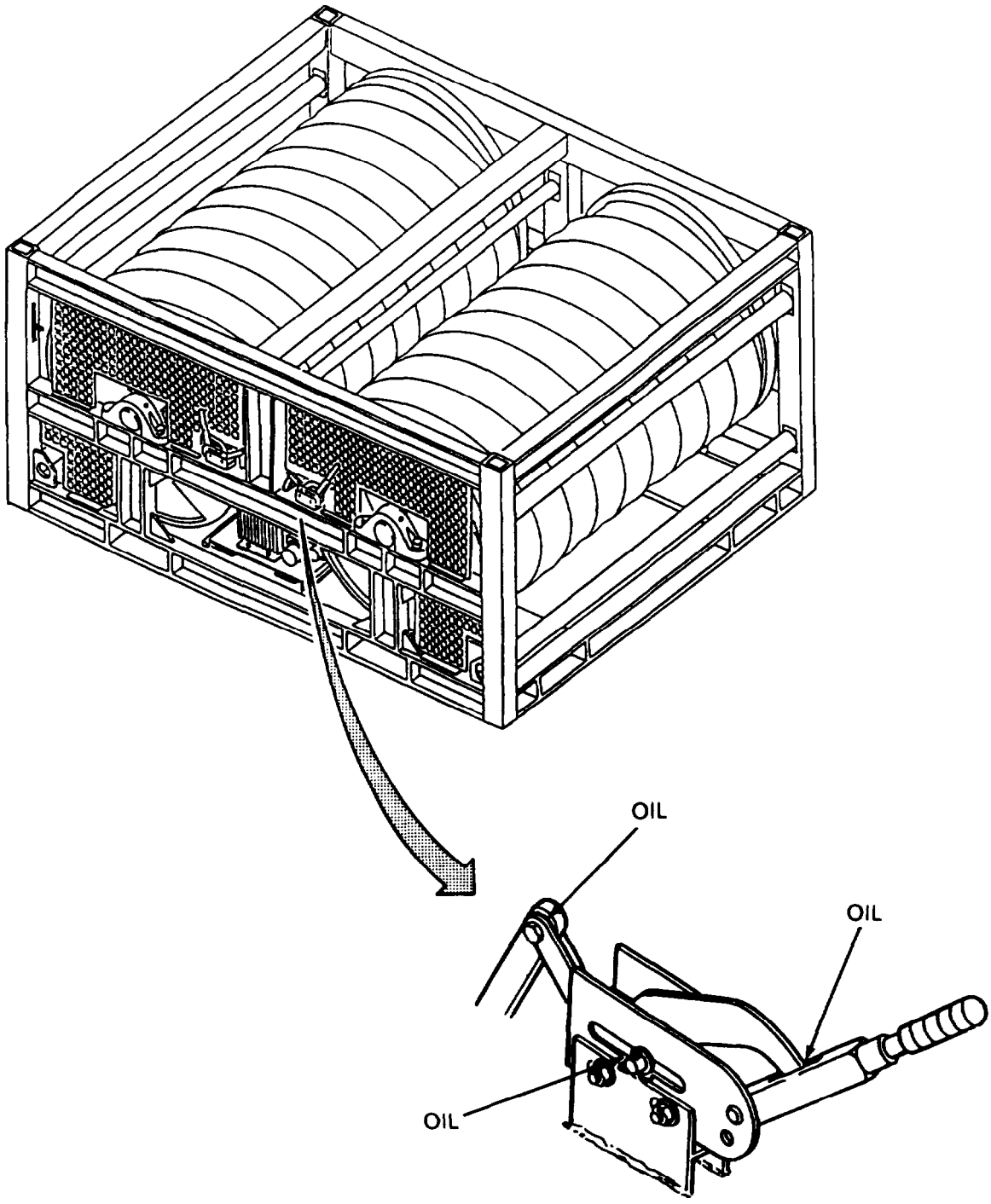
UNIT MAINTENANCE

Section I. LUBRICATION INSTRUCTIONS

NOTE
THESE LUBRICATION INSTRUCTIONS ARE MANDATORY. KEEP EQUIPMENT CLEAN AND LUBRICATED, EVEN IF IT WILL NOT BE USED FOR A LONG PERIOD OF TIME.



1. **LUBRICATE FOUR HOSE REEL BEARINGS. BEARINGS ARE LOCATED ON EACH END OF BOTH HOSE REELS.**



RIGHT BRAKE LEVER SHOWN.
LEFT BRAKE LEVER IS SIMILAR.

2. LUBRICATE BREAK LEVER LINKAGE. APPLY OIL TO ALL MOVING PIVOT POINTS.

SECTION II. REPAIR PARTS, SPECIALTOOLS;TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT.

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

4-2 SPECIALTOOLS, TMDE, AND SUPPORT EQUIPMENT.

No special tools or equipment are required to maintain the hose reel system.

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in the repair parts and special tools list (Appendix F) covering unit maintenance for this equipment.

Section III. SERVICE UPON RECEIPT

4-4. UNPACKING EQUIPMENT.

WARNING

The hose reel system weighs 4,820 pounds and is design to be moved by forklift or hoist only. The removable power pack weighs 172 pounds and requires four personnel to transport.

NOTE

Each hose reel system consists of six frame units and one power pack. The power pack is interchangeable with all six frame units. When unpacking, locate the frame unit containing the power pack.

a. Open ISO container.

b. Loosen turnbuckles securing hose reel.

c. Remove hose reel from container using rough terrain forklift or similar type equipment.

d. Remove hose couplings from container.

e. Remove protective wrapping from all frame units.

f. Remove tape, cardboard, protective paper, and plugs from frame unit and power pack.

4-5. CHECKING UNPACKED EQUIPMENT.

a. Inspect equipment for damage incurred during shipment. If equipment has been damaged, report on SF 364, Report of Discrepancy (ROD). Reject equipment if parts are missing, deformed, or show obvious physical damage, rust or corrosion.

b. Check equipment against packing slip to verify 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 equipment.

c. Check to see ifequipment has been modified. Refer to DA PAM 25-30.

d. Inspect nameplates and labels. Markings must readable.

Section IV. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).

4-6. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).

a. **General.** This section contains the procedures and instructions necessary to perform organizational PMCS. These services are to be performed by organizational maintenance personnel with the assistance, where applicable, of the operator/crew. Your Preventive Maintenance Checks and Services are performed to find and to fix problems before they cause major damage to the equipment. To save time and make sure that all items are checked, do the PMCS in the order given in the table.

b. **PMCS Procedures.**

(1) 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:

Semi-annual -every 180 days or 25 hours of operation, whichever is first.

Annual - once every year or every 50 hours of operation.

(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. If you do not have the tools, or if the procedures tell you to, have unit maintenance do the work.

c. **Prior to Storage or Shipment.** A complete PMCS must be performed prior to storage or shipment.

d. **Under Unusual Conditions.** Servicing of your unit is required more often when operating in extreme conditions and operating in dust, must or sand. Local SOP will authorize the intervals when the unit is operated under unusual conditions.

e. **Ecology and Conservation.** Spilling of fuel damages our ecology. Always use a suitable container to catch fuel when opening fuel/fluid lines. Immediately wipe up spilled fuels with rags. Dispose of drained fuels in accordance with local SOP.

Table 4-1. Unit Preventive Maintenance Checks and Services
S - Semi-annual A - Annual

Item No.	Interval		Item to Be Inspected	Procedure
	S	A		
			Frame Unit	
1	●		Hydraulic Hoses	Inspect hoses for deterioration. Replace if badly worn, cracked or weather rotted.
2	●		Drive wheel	Inspect drive wheel for excessive wear, bald patches, and cracks. Replace drive wheel if defective.
3	●		Hydraulic Motor	Inspect for corrosion, loose or missing mounting hardware and leaks. Replace if leaking.
4	●		Hydraulic Cylinder	Inspect rod end of cylinder for leaks. Replace cylinder if leaks have developed at rod seal.
5	●		Brake Levers	a. Lubricate brake levers. Refer to lubrication order. b. Inspect for bent, broken or cracked brake linkage. c. Check for worn brake lining. Replace lining if worn.
6	●	●	Hose Reel Block Bearings	a. Check bearings for corrosion and excessive play. b. Lubricate four hose rod bearings with GAA. Refer to lubrication order.
7		●	Rollers	Inspect roller side plates for excessive wear, galling, and corrosion.
8		●	Hose Reels	Inspect hose reel spool for cracks, separated welds, and corrosion. Replace reels if severely cracked.
9		●	Frame Weldment	Inspect for cracks, broken welds and corrosion. Inspect for missing bolts and nuts. Replace missing hardware.
			Power Pack	
10	●		Power Unit	a. Inspect electric motor for signs of overheating (melted insulation, bubbled paint, discoloration). Replace power unit if motor has over heated. b. Inspect pump and fittings for leaks. Check for loose mounting screws. Replace power unit if leaking. c. Inspect reservoir for leaks, cracks, and damaged cooling fins. Replace power unit if reservoir is cracked.

Section V. UNIT TROUBLESHOOTING PROCEDURES

4-7 GENERAL

4-8. INTRODUCTORY INFORMATION

a. The Symptom Index list the common malfunctions which you may find during operation or maintenance of the hose reel system or its components. Look through the Malfunction Index until you find the malfunction you are having. Go to the page listed and perform the troubleshooting test or inspections listed. The correctiveactions step will direct you to the proper paragraph for performing the corrective action.

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.

4-9. SYMPTOM INDEX

4-10. TROUBLESHOOTING TABLE

Refer to Table 4-2.

Table 4-2. Unit Troubleshooting.

WARNING

Be sure to read ALL Warnings in front of manual before troubleshooting.

NOTE

- Remove power pack from frame unit as required to aid troubleshooting.
- Remove guard from power pack as required to access power pack components.

MALFUNCTION
TEST OR INSPECTION.
CORRECTIVE ACTION

1. REEL (POWER PACK) WILL NOT OPERATE WHEN RUN SWITCH IS DEPRESSED.

Step 1. Inspect slave power cable for cuts, broken wires and damaged connectors.

Replace slave power cable.

Step 2. Test for damaged control cable.

a. Disconnect control cable assembly from power pack (para 4-15).

b. Depress and hold RUN switch (S1). Using a multimeter, check for continuity between pins G and J on control cable plug.

c. If continuity does not exist, replace control cable (para. 4-13).

Step 3. Test for bad starter solenoid.

a. Remove power pack guard (paragraph 3-6),

b. Using a multimeter, check for continuity between points D and G on power pack jack.

c. If continuity does not exist, starter solenoid must be replaced. Notify direct support maintenance.

Step 4. Test for defective power unit motor coil windings.

a. Using multimeter, check for continuity between positive (+) and negative (-) terminals of power unit motor.

Table 4-2. Unit Troubleshooting - cont.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. REEL (POWER PACK) WILL NOT OPERATE WHEN RUN SWITCH IS DEPRESSED - cont.

b. If continuity does not exist, replace power unit (para. 4-18).

2. DRIVE WHEEL (CYLINDER) MOVES TO LEFT REEL WHEN RIGHT REEL IS SELECTED.

Step 1. Check for reversed hydraulic hose connections at power pack.

Connect hoses to correct couplings.

Step 2. Check for reversed hose connections at hydraulic cylinder.

Reconnect hoses to hydraulic cylinder.

Step 3. Check for crossed hydraulic hoses at valve station manifold.

Reconnect hydraulic hoses to valve station manifold.

Step 4. Check for defective control cable.

a. Remove control cable from power pack (para. 413).

b. Depress and hold RUN switch (S1).

c. Set switch S4 to LEFT. Using multimeter, check for continuity between pins F and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

d. Set switch S4 to RIGHT. Using multimeter, check for continuity between pins C and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

Step 5. Check for cross connection of valve station electrical connectors L1 and L2.

Reconnect electrical connectors L1 and L2.

If malfunction cannot be corrected replace valve station (para. 4-17).

3. DRIVE WHEEL (CYLINDER) MOVES TO RIGHT WHEN LEFT REEL IS SELECTED.

See MALFUNCTION 2.

Table 4-2 Unit Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

4. DRIVE WHEEL (CYLINDER) DOES NOT MOVE WHEN RIGHT OR LEFT REEL IS SELECTED.

Step 1. Verify that hydraulic hoses from frame unit are secure and properly connected to power pack.

Connect hoses.

Step 2. Inspect hydraulic cylinder for cracked or missing pivot pin.

Replace pivot pin (para. 4-28).

Step 3. Inspect hydraulic cylinder for missing cylinder shaft nut.

Replace nut (para. 4-28).

Step 4. Inspect hydraulic motor and drive wheel components for damage.

Replace defective hydraulic motor and drive wheel components (para 4-27).

Step 5. Inspect power pack control cable jack for bent, broken or missing pins.

If pin(s) are bent, broken or missing, notify Direct Support Maintenance.

Step 6. Check for defective control cable.

a. Remove control cable from power pack (para. 4-13).

b. Depress and hold RUN switch (S1).

c. Set switch S4 to LEFT. Using multimeter, check for continuity between pins F and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

d. Set switch S4 to RIGHT. Using multimeter, check for continuity between pins C and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

If malfunction cannot be corrected, replace valve station (para. 4-17).

5. DRIVE WHEEL (CYLINDER) MOVED IN ONE DIRECTION, BUT WILL NOT RETURN.

Step 1. Verify that hydraulic hoses from frame unit are secure and properly connected to power pack.

Connect hoses.

Table 4-2. Unit Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

5. DRIVE WHEEL (CYLINDER) MOVED IN ONE DIRECTION, BUT WILL NOT RETURN - cont.

Step 2. Inspect power pack control cable jack for bent, broken or missing pins

If pin (s) are bent, broken or missing, notify Direct Support Maintenance.

Step 3. Check for defective control cable.

a. Remove control cable from power pack (para. 4-13).

b. Depress and hold RUN switch (S1).

c. Set switch S4 to LEFT. Using multimeter, check for continuity between pins F and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

d. Set switch S4 to RIGHT. Using multimeter, check for continuity between pins C and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

Ifmalfunction cannot be corrected, replace valve station (para. 4-17).

6. DRIVE WHEEL (CYLINDER) MOVES VERY SLOWLY.

Step 1. Check for loose or defective quick disconnect couplings.

a. Reconnect couplings.

b. If required, replace damaged or defective couplings (para. 4-17).

Step 2. Check hydraulic cylinder for internal leakage.

a. Operate hose reel and position drive wheel to right reel.

b. Disconnect hydraulic hose from retract side of hydraulic cylinder (shaft end).

c. Set switch S4 set to RIGHT and operate hose reel. Check for fluid leakage from open retract port (shaft end) of hydraulic cylinder.

d. If cylinder leaks from retract port after power is applied, replace cylinder (para. 4-28).

If malfunction cannot be corrected replace valve station (para. 4-17).

Table 4-2. Unit Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

7. REEL TURNS CLOCKWISE WHEN CCW IS SELECTED.

Step 1. Check for reversed hose connections on hydraulic motor.

Reconnect hydraulic hoses.

Step 2. Check for reversed hydraulic motor hose connections on valve station.

Reconnect hydraulic hoses.

Step 3. Check for reversed valve station electrical connectors L5 and L6.

Reconnect electrical connectors.

Step 4. Check for defective control cable.

a. Remove control cable from power pack (para. 4-13).

b. Depress and hold RUN switch (S1).

c. Set switch S2 to CW. Using multimeter, check for continuity between pins e and J ofcontrol cable plug. If continuity does not exist, replace control cable (para. 4-13).

d. Set switch S2 to CCW. Using multimeter, check for continuity between pins H and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

8. REEL TURNS COUNTERCLOCKWISE WHEN CW IS SELECTED.

See MALFUNCTION 7.

9. REEL TURNS VERY SLOWLY.

Step 1. Observe drive wheel during operation. If drive wheel slips on hose reel, inspect for grease, dirt, or fuel on drive wheel.

Clean drive wheel.

Step 2. Inspect for worn or damaged drive wheel.

Replace drive wheel (para. 4-27).

Step 3. With power off and hydraulic pressure relieved, manually rotate hose reels. Reels should turn smoothly without rubbing on frame or binding.

Table 4-2. Unit Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

9. REEL TURNS VERY SLOWLY - cont.

a. If defective, replace hose reel (para. 4-24).

b. If defective, replace hose reel bearing blocks (para. 4-24).

Step 4. Check operation of of hydraulic cylinder. Cylinder must press drive wheel tightly against hose reel.

See MALFUNCTION 6, Step 2.

Step 5. Operate hose reel and check speed of hydraulic cylinder actuation and drive wheel rotation. If both operate slowly, sequence valve is defective.

Replace sequence valve (para. 4-16).

Step 6. Check operation of hydraulic motor. Motor should turn drive wheel smoothly in both directions and at the same speed.

If defective, replace hydraulic motor (para. 4-27).

If malfunction cannot be corrected replace power unit (para. 4-18).

10. REEL WILL NOT TURN (PUMP OPERATES).

Step 1. If drive wheel turns at correct speed but hose reel does not turn, check for slipping or worn drive wheel.

a. Clean drive wheel.

b. If worn or damaged, replace drive wheel (para. 4-27).

Step 2. If drive wheel does not turn, check for loose or disconnected electrical connectors L5 and L6 on valve station.

Tighten electrical connectors.

Step 3. With power off and hydraulic pressure relieved, manually rotate hose reels. Reels should turn smoothly without rubbing on frame or binding.

a. If defective, replace hose reel (para. 4-24).

b. If defective, replace hose reel bearing blocks (para. 4-24).

Table 4-2. Unit Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

10. REEL WILL NOT TURN (PUMP OPERATES) - cont.

Step 4. Check operation of hydraulic cylinder. Cylinder must press drive wheel tightly against hose reel hub.

See MALFUNCTION 6 , Step 2.

Step 5. Check for defective control cable.

a. Remove control cable from power pack (para. 4-13).

b. Set switch S3 to MED. Using multimeter, check for continuity between pins G and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

c. Set switch S3 to LOW. Using multimeter, check for continuity between pins B and J of control cable plug. Ifcontinuity does not exist, replace control cable (para. 4-13).

Step 6. Tag and disconnect hydraulic hoses from hydraulic motor. Manually rotate drive wheel and check for jammed hydraulic motor and/or drive wheel.

Replace defective hydraulic motor/drive wheel components (para. 4-27).

If malfunction cannot be corrected replace valve station (para. 4-17).

11. REEL TURNS ONE DIRECTION ONLY.

Step 1. Check for loose electrical connectors L5 and L6 on valve station.

Tighten electrical connectors.

Step 2 Check for defective control cable.

a. Remove control cable from power pack (para. 4-13).

b. Depress and hold RUN switch (S1).

c. Set switch S2 to CW. Using multimeter, check for continuity between pins e and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

d. Set switch S2 to CCW. Using multimeter, check for continuity between pins H and J of control cable plug. If continuity does not exist, replace control cable (para. 4-13).

Table 4-2. Unit Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

11. REEL TURNS ONE DIRECTION ONLY - cont.

If malfunction cannot be corrected replace valve station (para. 4-17).

12. DRIVE WHEEL SLIPS ON HOSE REEL HUB.

Step 1. Inspect for grease, dirt, or fuel on drive wheel or hose reel hub.

Clean drive wheel and hose reel hub.

Step 2. Inspect for worn or damaged drive wheel.

Replace drive wheel (para. 4-27).

Step 3. With power off and hydraulic pressure relieved, manually rotate hose reels. Reels should turn easily without binding.

a. If reel is bent, warped, or twisted, replace hose reel (para. 4-24).

b. If reel is stuck, jammed, or frozen, replace hose reel bearing blocks (para. 4-24).

Step 4. Check for proper operation of hydraulic cylinder. Cylinder must press drive wheel tightly against hose reel.

See MALFUNCTION 6, Step 2.

Section VI UNIT MAINTENANCE PROCEDURES

4-11. GENERAL

This section contains the maintenance procedures authorized for the Unit Maintenance group. Procedures are to be performed by a Unit Maintenance technician or by the user under Unit Maintenance supervision.

4-12. POWER PACK GUARD REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Equipment Condition:

Power pack removed from frame unit (para. 2-8a).

a. Removal

(1) Remove eight screws (1) and washers (2).

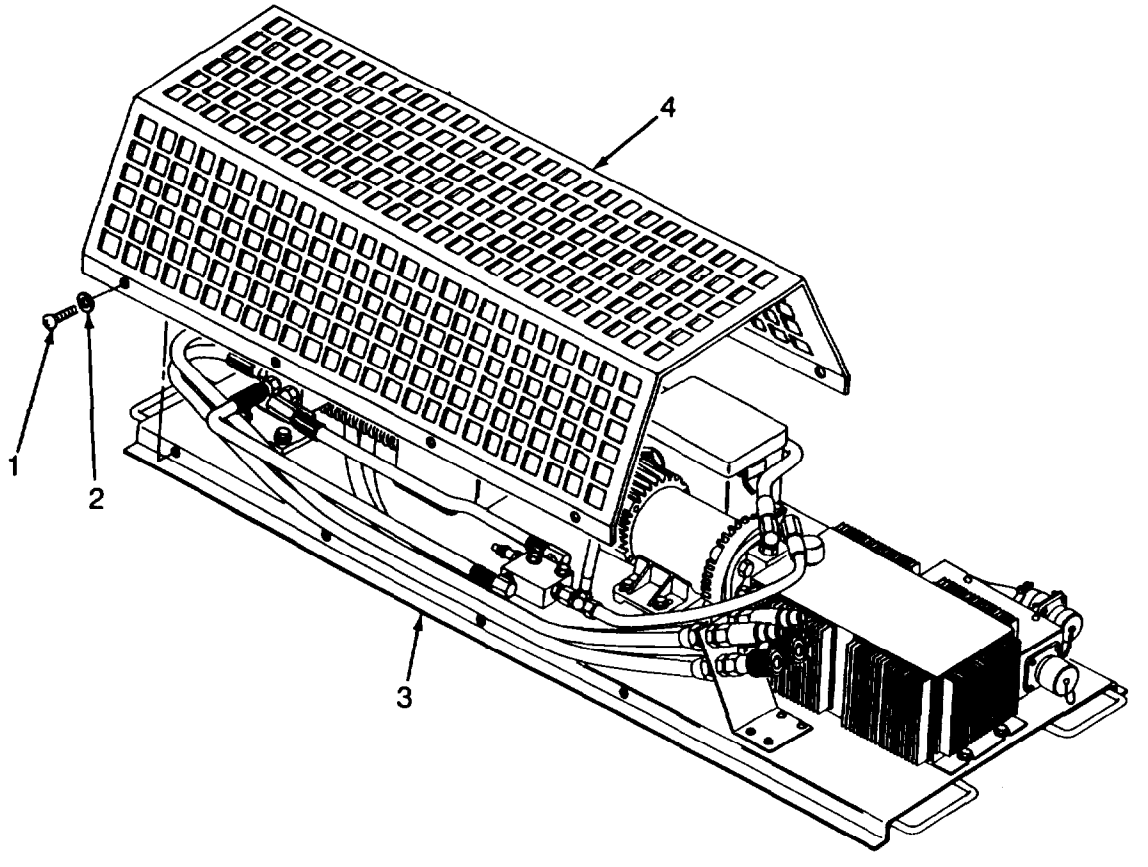
(2) Lift guard (4) from power pack frame (3).

b. Installation.

(1) Position replacement guard (4) over power pack frame (3) and aline screw holes.

(2) Install eight washers (2) and screws (1).

4-12. POWER PACK GUARD REPLACEMENT - cont.



4-13. CONTROL CABLE ASSEMBLY REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:
Equipment Condition:
Slave cable disconnected from power source (para. 2-8a.).

a. **Removal.**

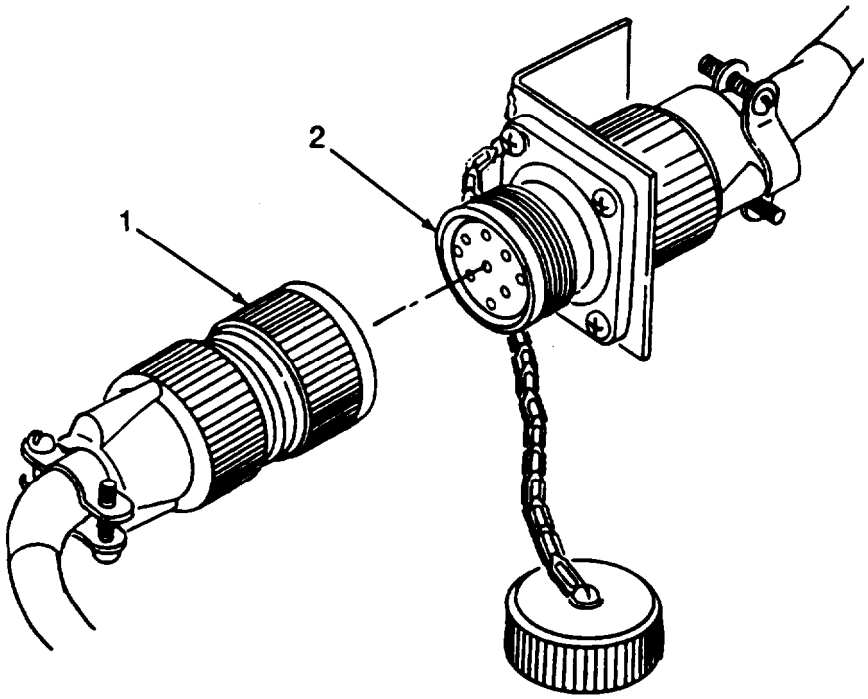
(1) Unscrew knurled ring of connector plug (1) from power pack receptacle (2).

(2) Pull connector plug (1) from receptacle (2). Install protective cap on receptacle (2).

b. **Installation.**

(1) Remove protective cap from power pack receptacle. Aline replacement cable assembly connector plug (1) with receptacle (2). Make sure connector pins line up correctly with receptacle.

(b) Screw knurled ring of connector plug (1) onto receptacle (2).



4-14. SLAVE POWER CABLE REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:
Equipment Condition:
Slave cable disconnected from power source (para. 2-8a.)

a. **Removal.**

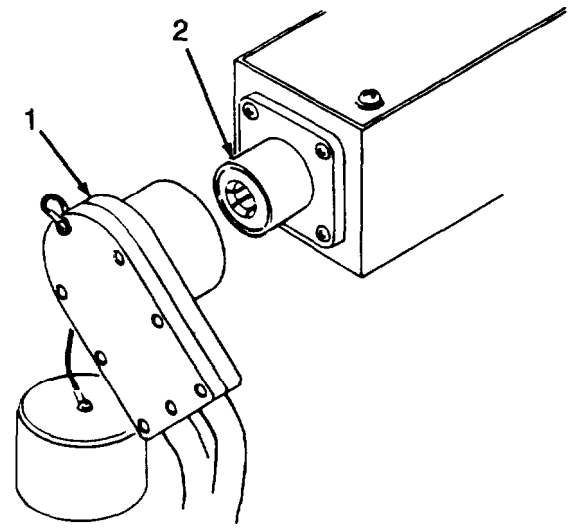
(1) Disconnect slave cable (1) from slave plug (2).

(2) Install protective cover on slave plug (2).

b. **Installation.**

(1) Remove protective cover from slave plug (2).

(2) Connect replacement slave cable (1) to slave plug (2).



4-15. HOSE/QUICK DISCONNECT ASSEMBLY (HYDRAULIC) REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Equipment Condition:

Power pack removed from frame unit (para. 2-8a.)
Power pack guard removed (para. 4-12)

Materials:

Tag, Marker, (Appendix E, Section II, Item 6)

a. **Removal.**

CAUTION

To prevent contamination of hydraulic system, do not allow dirt, dust or debris to enter open hoses or fittings. Contamination will cause premature failure of hydraulic components. Wipe up all spilled hydraulic fluid. Place absorbent paper or cloth beneath hose fittings when removing hoses.

Replace hoses one at a time to prevent crossed connections. Make sure hoses are not cross connected to quick disconnect couplings.

NOTE

Hose assemblies are supplied with three types of hose connectors, straight swivels, 90 ° swivels, and/or tee swivels. Replacement procedures for all hose assemblies is the same. To prevent difficult installation, do not reverse position of straight, tee, or 90 ° swivels. Remove only the hose required to effect repair of the power pack.

(1) Identify and tag hose assemblies (11). Make sure both ends are identified with their respective connection points. To prevent cross connection of hoses, replace hoses one at a time.

(2) Loosen hose fittings (10) and disconnect hose assembly (11) from power pack components.

(3) If required, remove quick disconnects as follows:

(a) Disconnect hose fittings (1 and 9) from bulkhead adapters (4 and 7).

(b) Unscrew couplers (6) and nipples (5) from bulkhead adapters (4 and 7)

(c) Remove nuts (2 and 8) and bulkhead adapters (4 and 7) from bracket (3).

4-15. HOSE/QUICK DISCONNECT ASSEMBLY (HYDRAULIC) REPLACEMENT- cont.

b. **Installation.**

(1) If removed, install quick disconnects as follows:

(a) Install replacement bulkhead adapters (4 and 7) and nuts (2 and 8) on bracket (3).

(b) Screw replacement couplers (6) and nipples (5) onto bulkhead adapters (4).

(c) Connect hose fitting (1 and 9) to bulkhead adapters (4 and 7).

(2) Position replacement hose assembly (11) on power pack.

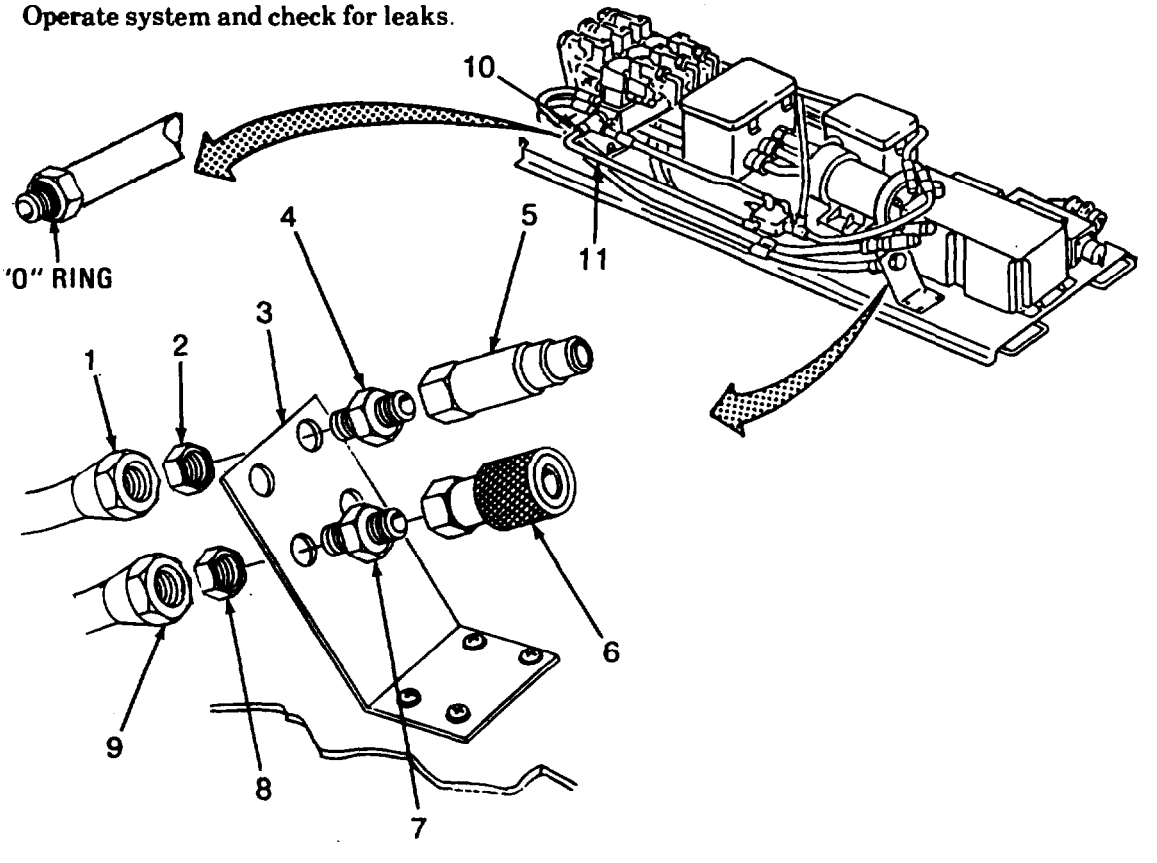
CAUTION

Do not cross connect hydraulic hoses. Erratic or reversed operation will result Make sure o-rings (12) are installed on hose swivel fittings before making connections.

(3) Connect swivel fittings (10) to power pack components as marked. Tighten fittings.

(4) Remove tags.

(5) **Operate system and check for leaks.**



4-16. SEQUENCE VALVE REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:
Tools required:
Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Equipment Condition:
Power pack removed from frame unit (para. 2-8a.)
Power pack guard removed (para. 4-12)

a. **Removal**

(1) Disconnect two hose assemblies (3 and 10) from sequence valve (4).

(2) Disconnect two hose assemblies (5 and 6) from tee (7).

(3) Disconnect tee (7) from adapter (8).

(4) Remove two bolts (1) and washers (2).

(5) Remove sequence valve (4) from power pack frame (9).

(6) Remove adapter (8) from sequence valve (4).

b. **Installation.**

NOTE
Ensure O-rings are installed on adapter (8) and hose assemblies (3 and 10).

(1) Install adapter (8) in replacement sequence valve (4).

(2) Position replacement sequence valve (4) on power pack frame (9).

(3) Install two washers (2) and bolts (1).

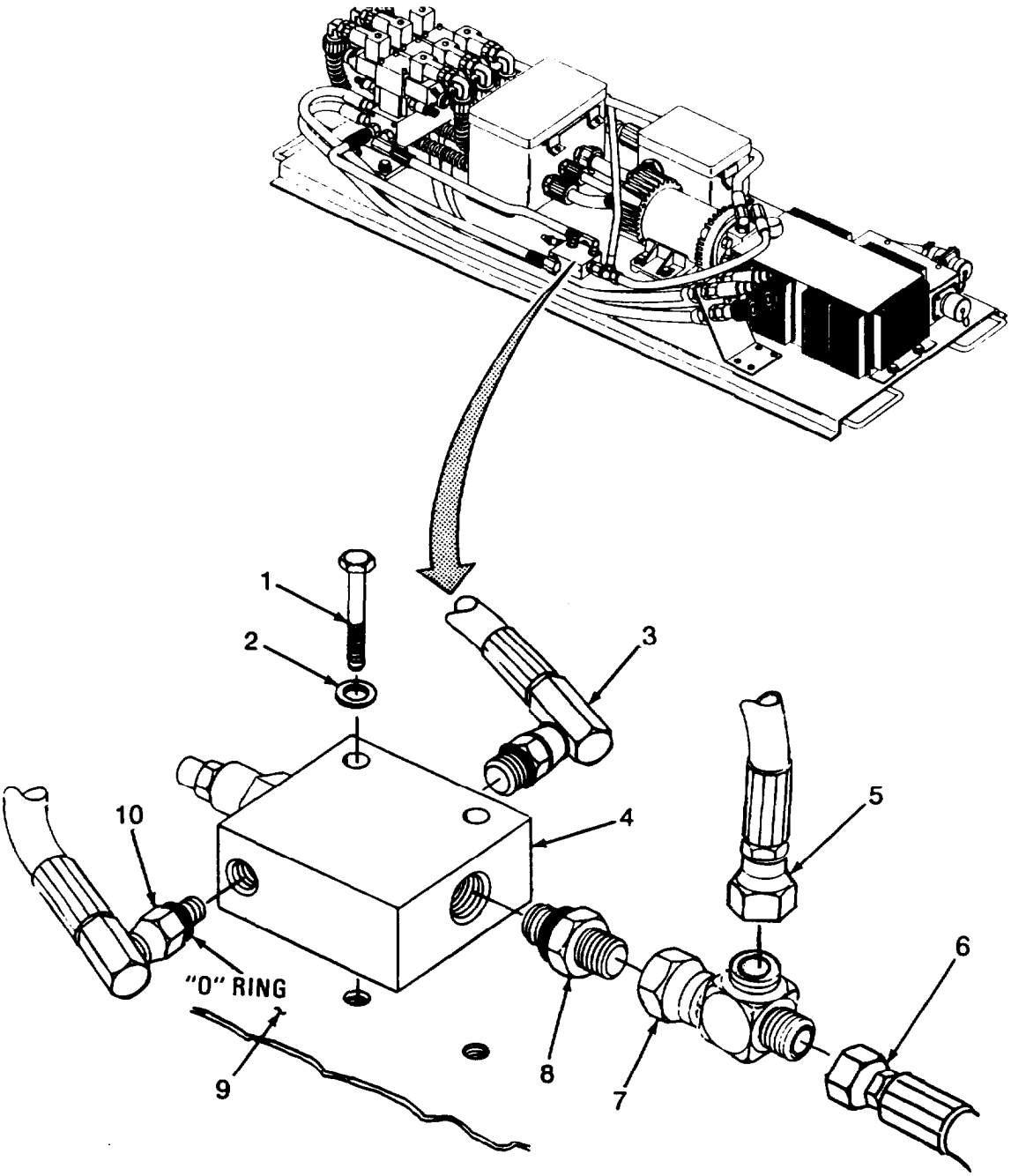
(4) Connect tee (7) to adapter (8).

(5) Connect two hose assemblies (6 and 5) to tee (7).

(6) Connect two hose assemblies (10 and 3) to sequence valve.

(7) Service hydraulic reservoir and check for leaks.

4-16. SEQUENCE VALVE REPLACEMENT - cont.



4-17. VALVE STATION REPLACEMENT.

This task consists of **a. Removal** **b. Installation**

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Equipment Condition:

Power pack removed from frame unit (para. 2-8a.)
Power pack guard removed (para. 4-12)

Materials:

Rag, Wiping (Appendix E, Section II, Item 4)
Tag, Marker (Appendix E, Section II, Item 6)
Suitable plugs and caps

a. **Removal.**

NOTE
Fluid will spill from open hydraulic lines.

(1) Identify and tag control valve electrical connectors (5). Loosen screws (4) and disconnect electrical connectors from control valves (2, 3, and 6)

(2) Tag anddisconnect six hose assemblies (1, 7, 8, and 16 through 18) from valve station manifold (12).

(3) Remove four screws (9), lock washers (10), and washers (11) securing valve station (19) to to power pack frame (13).

NOTE
Record position of valve station (which way it faces) before removal.

(4) Disconnect two hose assemblies (14 and 15) from valve station manifold (12).

(5) Lift valve station (19) from power pack frame (13).

CAUTION
Cap hose-ends and plug manifold ports to prevent contamination.

(6) Clean up spilled fluid using rags.

b. **Installation.**

(1) Remove caps from hose ends and pump from manifold ports.

4-17. VALVE STATION REPLACEMENT - cont.

(2) Connect two hose assemblies (14 and 15) to valve station manifold (12).

(3) Position replacement valve station (19) on power pack frame (13). Make sure valve station faces the correct direction.

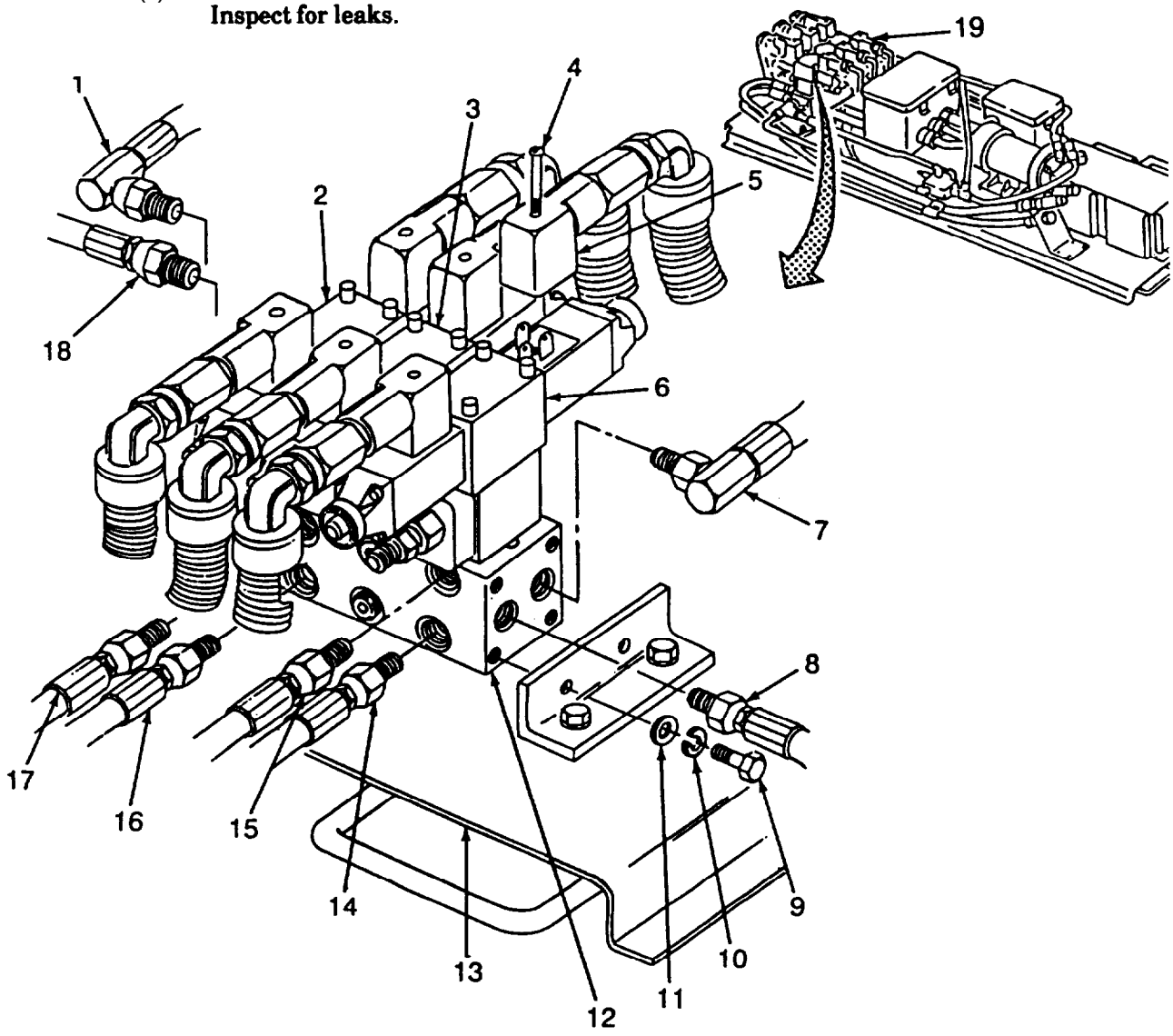
(4) Install four washers (11), lock washers (10), and screws (9).

(5) Connect six hose assemblies (1, 7,8, and 16 through 18) to manifold (12).

(6) Connect electrical connectors (5) to control valves (2, 3, and 6) as marked, then tighten screws (4).

(7) Remove tags.

(8) Service reservoir with hydraulic fluid. Start power pack and check for correct operation. **Inspect for leaks.**



4-18. POWER UNIT REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Materials:

Tag, Marker (Appendix E, Section II, Item 6)
Suitable plugs/caps

Equipment Condition:

Power pack removed from frame unit (para. 2-8a.)
Power pack guard removed (para. 4-12)

a. **Removal.**

(1) Tag and disconnect two hose assemblies (3 and 4) from power unit (5). Cap hose ends and plug power unit ports.

(2) Remove two nuts (1 and 12). Tag and disconnect electrical leads (2 and 11) from power unit.

(3) Remove four screws (10) and washers (9).

(4) Remove two screws (6) and washers (7).

(5) Lift power unit (5) from power pack frame (8).

b. **Installation.**

(1) Position replacement power unit (5) on power pack frame (8) and aline mounting holes.

(2) Install two screws (6) and washers (7).

(3) Install four screws (10) and washers (9).

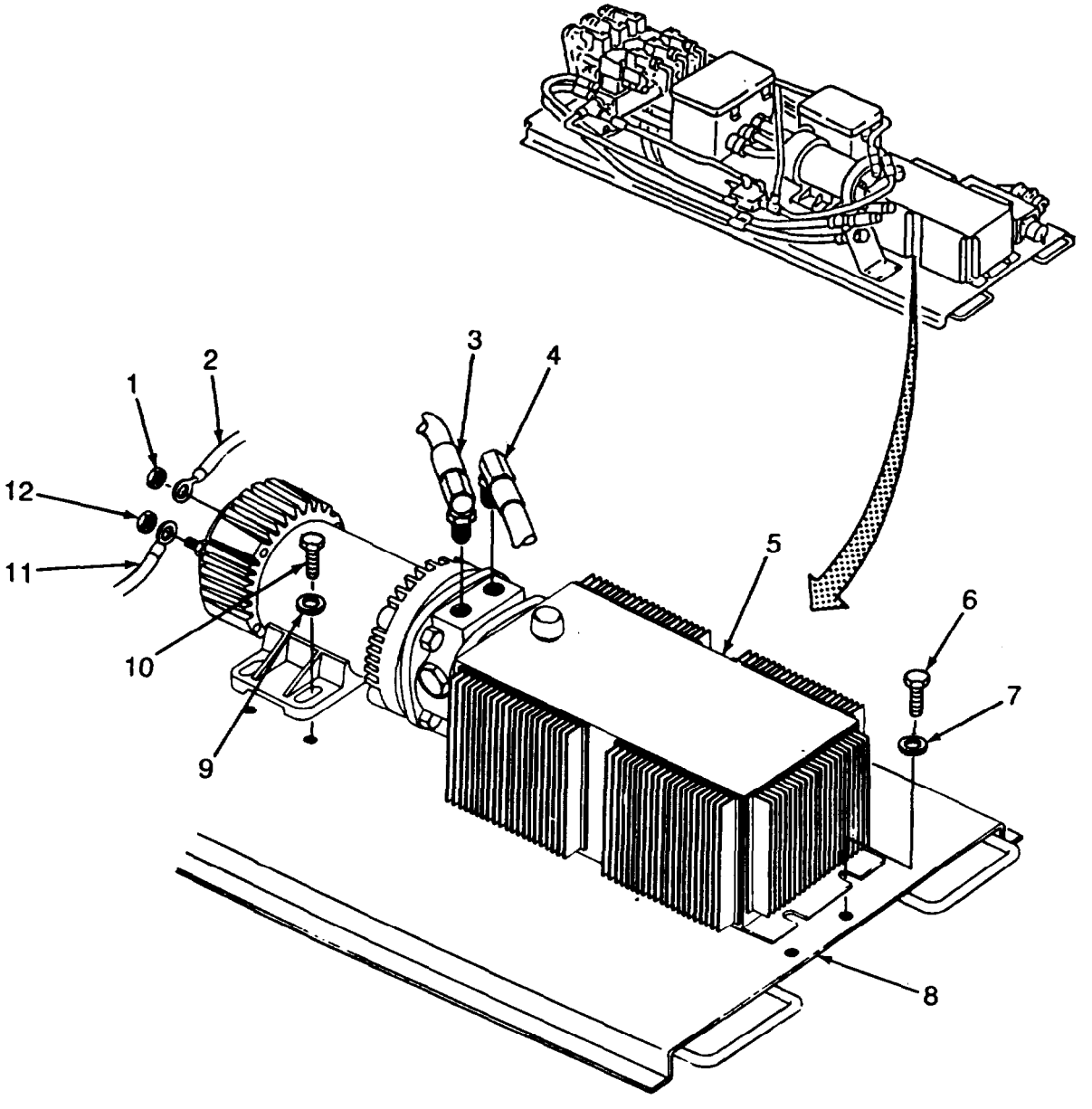
(4) Connect electrical leads (2 and 11) to power unit as marked. Install two nuts (1 and 12).

(5) Remove caps from hose ends and plug from power unit ports. Connect two hose assemblies (3 and 4) to power unit.

(6) Remove tags.

(7) Service power unit reservoir with hydraulic fluid.

4-18. POWER UNIT REPLACEMENT -cont.



4-19. POWER PACK FRAME REPAIR.

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

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)
Rivet Gun (Appendix B, Section III, Item 3)

Equipment Condition:

Valve station removed (para. 4-17)
Hose assemblies removed (para. 4-15)

Materials Required:

Rivets

a. **Disassembly.**

(1) Remove four screws(l), four washers (2) and bracket (3).

(2) Remove four screws (8), washers (7), and two brackets (6).

(3) Drill out eighteen rivets (4) and remove two plastic strips (5).

b. **Repair.** Replace damaged or defective components.

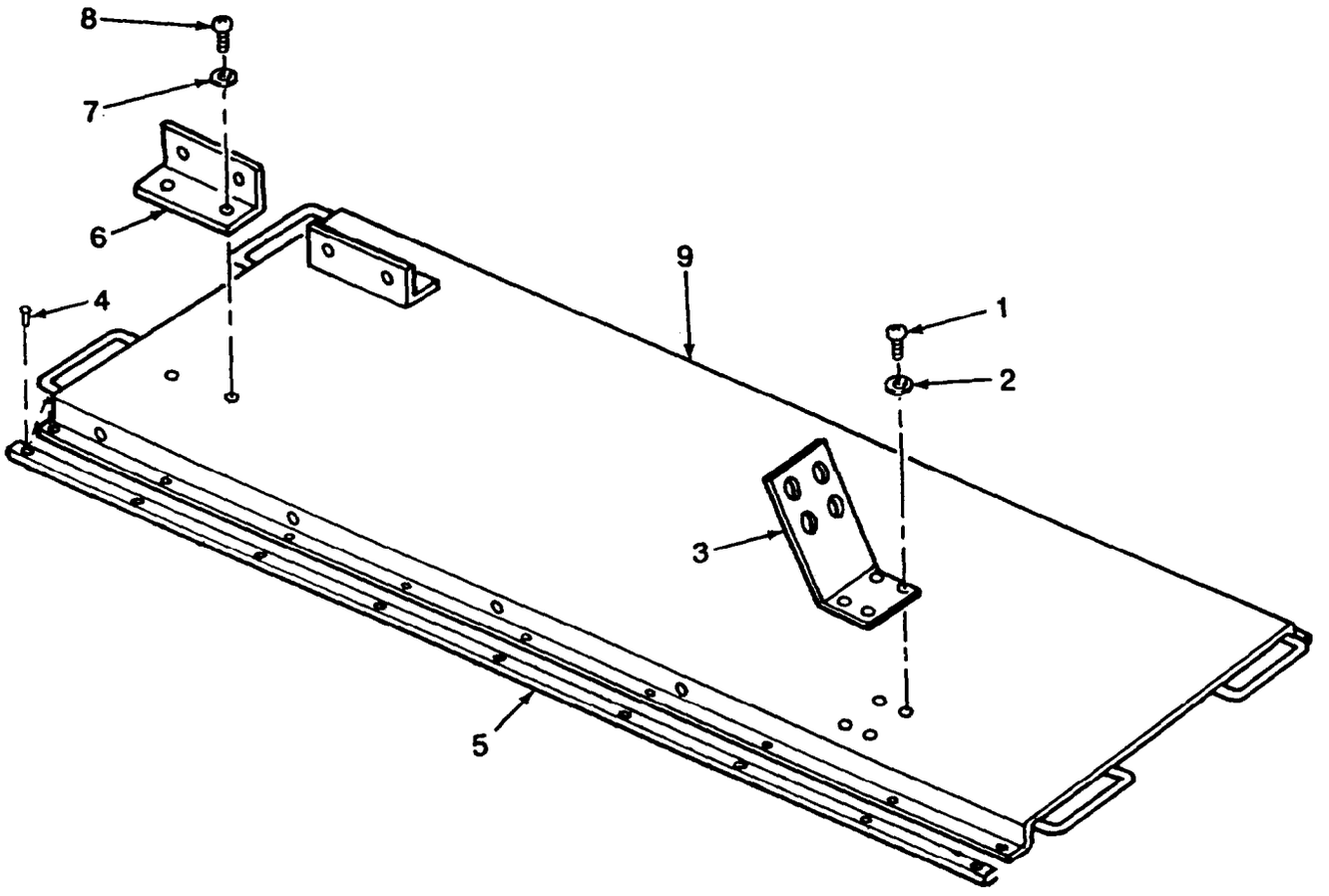
c. **Assembly.**

(1) Position plastic strips on frame (9) and install eighteen rivets (4).

(2) Position two brackets (6) on frame (9). Install four washers (7) and screws (8).

(3) Position bracket (3) on frame (3) and install four washers (2) and screws (1).

4-19. POWER PACK FRAME REPAIR- cont



4-20. FUEL HOSE MAINTENANCE.

Replacement.

Replacement of the fuel hose consists of requisition of replacement hose.

4-21. GUARD REPLACEMENT.

This task consists of **a. Removal** **b. Installation**

INITIAL SET-UP:
Tools required:
Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Equipment Condition:
Power Pack removed from frame unit (para. 2-8a.)

---

a. **Removal.**

(1) Remove four nuts (5), screws (1), lock washers (4), and washers (2 and 3) from cylinder side guards (6 through (10). Remove guards from frame unit.

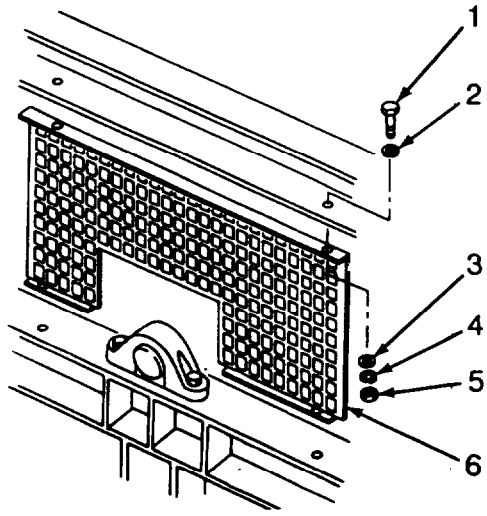
(2) Remove four nuts (15), screws (11), lockwashers (14), and washers (12 and 13) from brake side guards (16 through (19). Remove guards from frame unit.

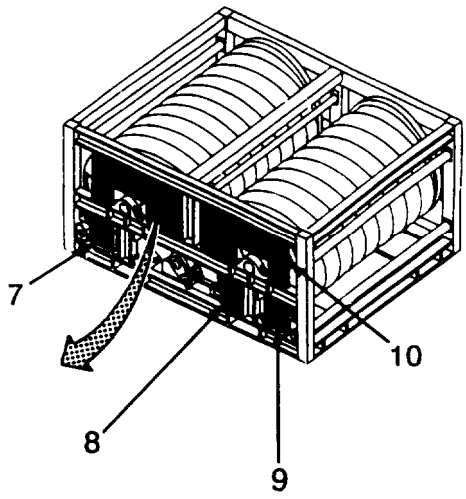
b. **Installation.**

(1) Position replacement brake side guards (6 through (10) on frame unit. Aline screw holes and install four washers (2 and 3), screws (1). lockwashers (4) and nuts (5).

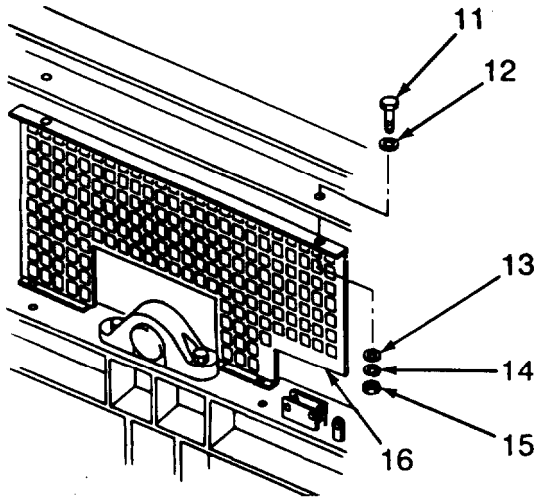
(2) Position replacement cylinder side guards (16 through (19) on frame unit. Aline screw holes and install four washers (12 and 13), four screws (11), lockwashers (14), and nuts (15).

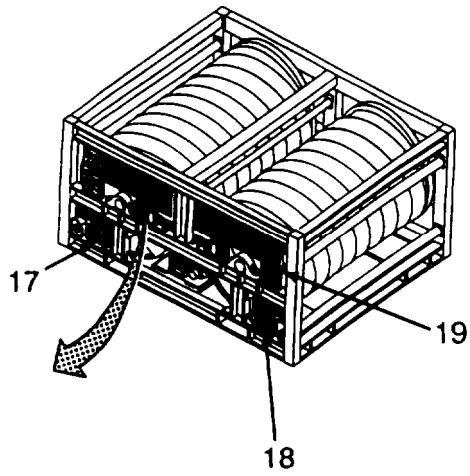
4-21. GUARD REPLACEMENT - cont.





ONE BRAKE SIDE GUARD SHOWN. ALL OTHER BRAKE SIDE GUARDS ARE SIMILAR.





ONE CYLINDER SIDE GUARD SHOWN. ALL OTHER CYLINDER SIDE GUARDS ARE SIMILAR.

4-22. TOP FRAME REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:
Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)
Hoist or crane

Equipment Condition:
Top side guards removed (para. 2-8a.)

a. **Removal.**

WARNING

Heavy parts can crush you. Keep out from under and clear of heavy parts at all times.

(1) Connect hoist to center brace on top frame (1). Remove slack from hoist.

(2) Remove four nuts (7), lockwashers (8, screws (10) and eight washers (9) securing top frame (1) to center post of frame weldment (2).

(3) Remove sixteen nuts (6), lockwashers (5), screws (3) and thirty two washers (4) securing top frame (1) to frame weldment (2) outer posts.

(4) Hoist top frame (1) from frame weldment (2).

b. **Installation.**

WARNING

Heavy parts can crush you. Keep out from under and clear of heavy parts at all times.

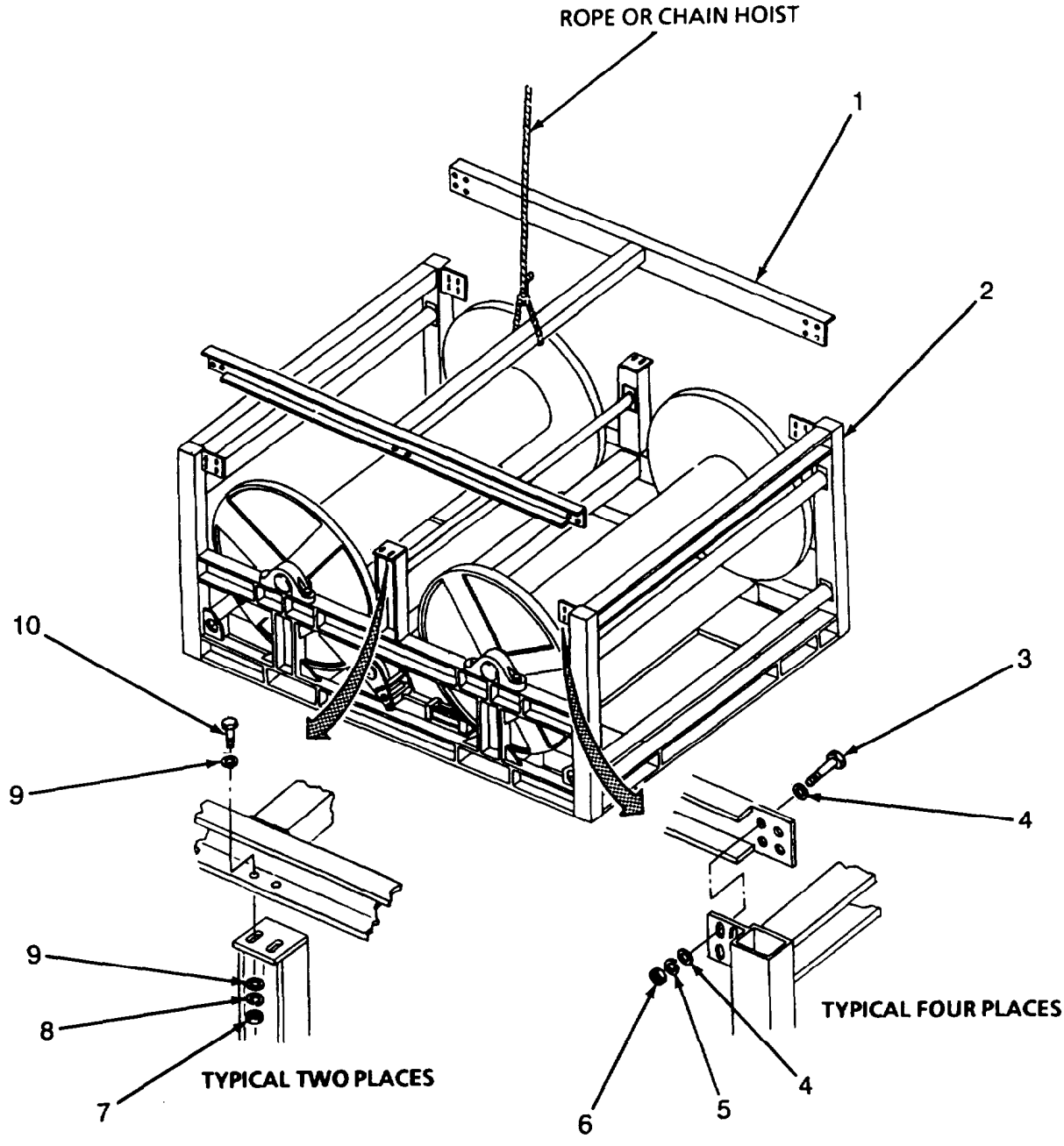
(1) Connect hoist to replacement top frame (1).

(2) Lower top frame (1) onto frame weldment (2). Aline screw holes.

(3) Secure top frame (1) to frame weldment (2) outer posts with thirty two washers (4), sixteen screws (3), lockwashers (5), and nuts (6).

(4) Secure top frame (1) to frame weldment (2) center post with eight washers (9), four nuts (7), lockwashers (8), and screws (10).

4-22. TOP FRAME PLACEMENT- cont



4-23. ROLLER MAINTENANCE.

This task consists of: **a. Removal** **b. Repair** **c. Installation**

INITIAL SET-UP:
Tools required:
Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

a. **Removal.**

(1) Remove side rollers as follows:

NOTE
Removal of one side roller is shown. Removal of three remaining side rollers is similar.

(a) Remove four screws (5) and washers (4) from two roller blocks (7).

(b) Remove roller (10) and two roller blocks (7) from frame weldment (6).

(2) Remove top center roller as follows:

(a) Remove four nuts (19), four lock washers (18), eight washers (12). and four screws (13) from two roller blocks (11).

(b) Remove top center roller (14) and two roller blocks (11) from frame weldment (6).

b. **Repair.**

NOTE
Repair of one side roller is shown. Repair of three remaining side rollers is similar. Repair is limited to replacement of defective components.

(1) Repair side roller as follows:

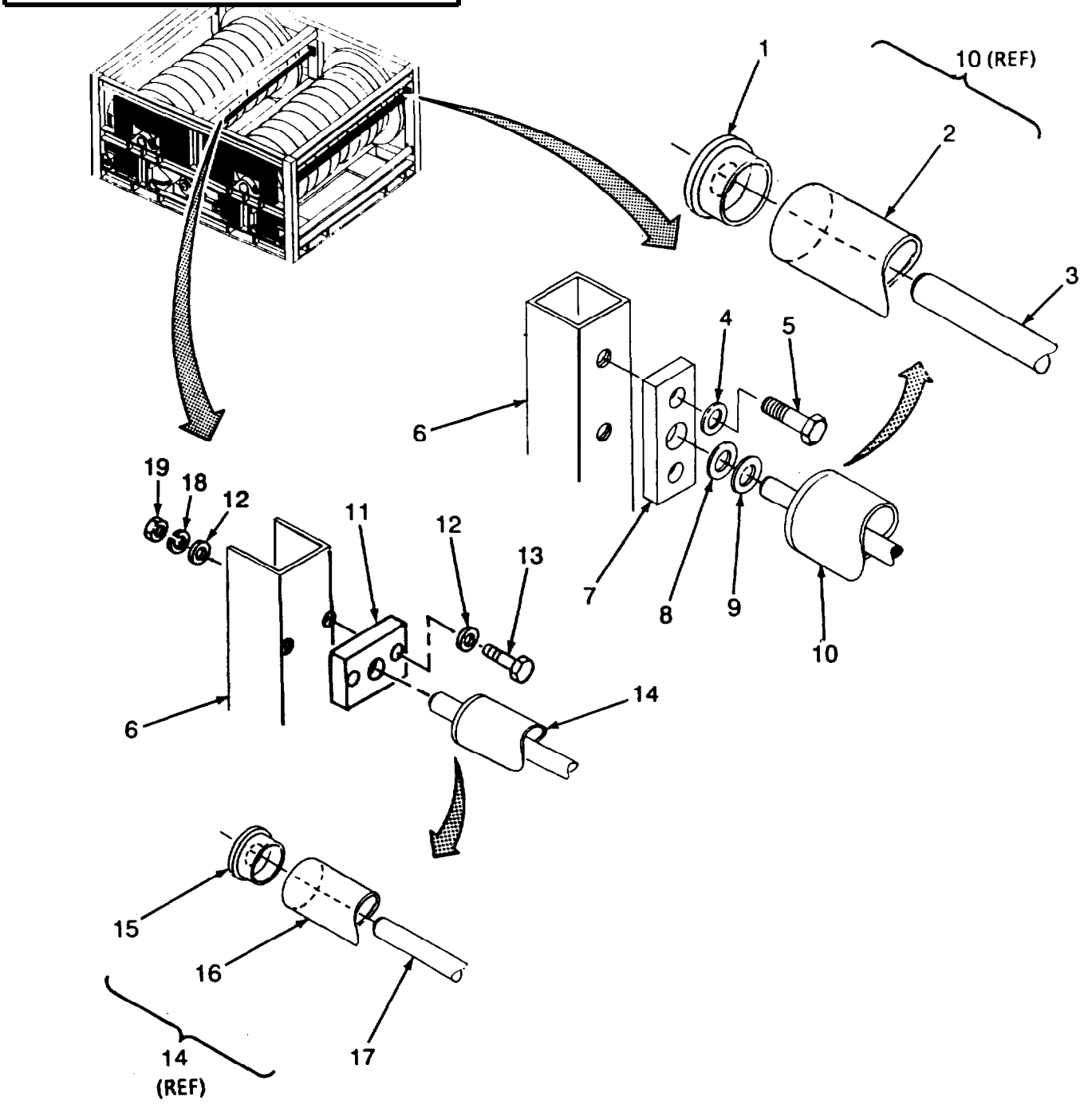
(a) Remove roller block (7) and two washers (8 and 9) from each end of roller shaft (3).

(b) Remove bushing (1) from both ends of roller shaft (3).

(c) Remove roller tube (2) from roller shaft (3).

(d) Replace defective roller components.

4-23. ROLLER MAINTENANCE -cont.



4-23. ROLLER MAINTENANCE - cont.

(e) Slide roller tube (2) over roller shaft (3).

(f) Push bushings (1) over roller shaft (3) and into roller tube (2).

(g) Install washers (8 and 9) and roller block (7) on both ends of roller shaft (3).

(2) Repair top center roller as follows:

(a) Remove roller blocks (11) from each end of roller shaft (17).

(b) Remove bushings (15) from ends of roller tube (16).

(c) Remove roller tube (16) from roller shaft (17).

(d) Replace all defective roller components.

(e) Slider roller tube (16) over roller shaft (17).

(f) Push bushings (15) over roller shaft (17) and into roller tube (16).

(g) Install roller block (11) on both ends of roller shaft (17).

c. **Installation.**

(1) Install top center roller as follows:

(a) Position top center roller (14) and two roller blocks (11) on frame weldment (6).

(b) Secure two roller blocks (11) to frame weldment (6) with eight washers (12), four lockwashers (18), four screws (13), and four nuts (19).

(2) Install side rollers as follows:

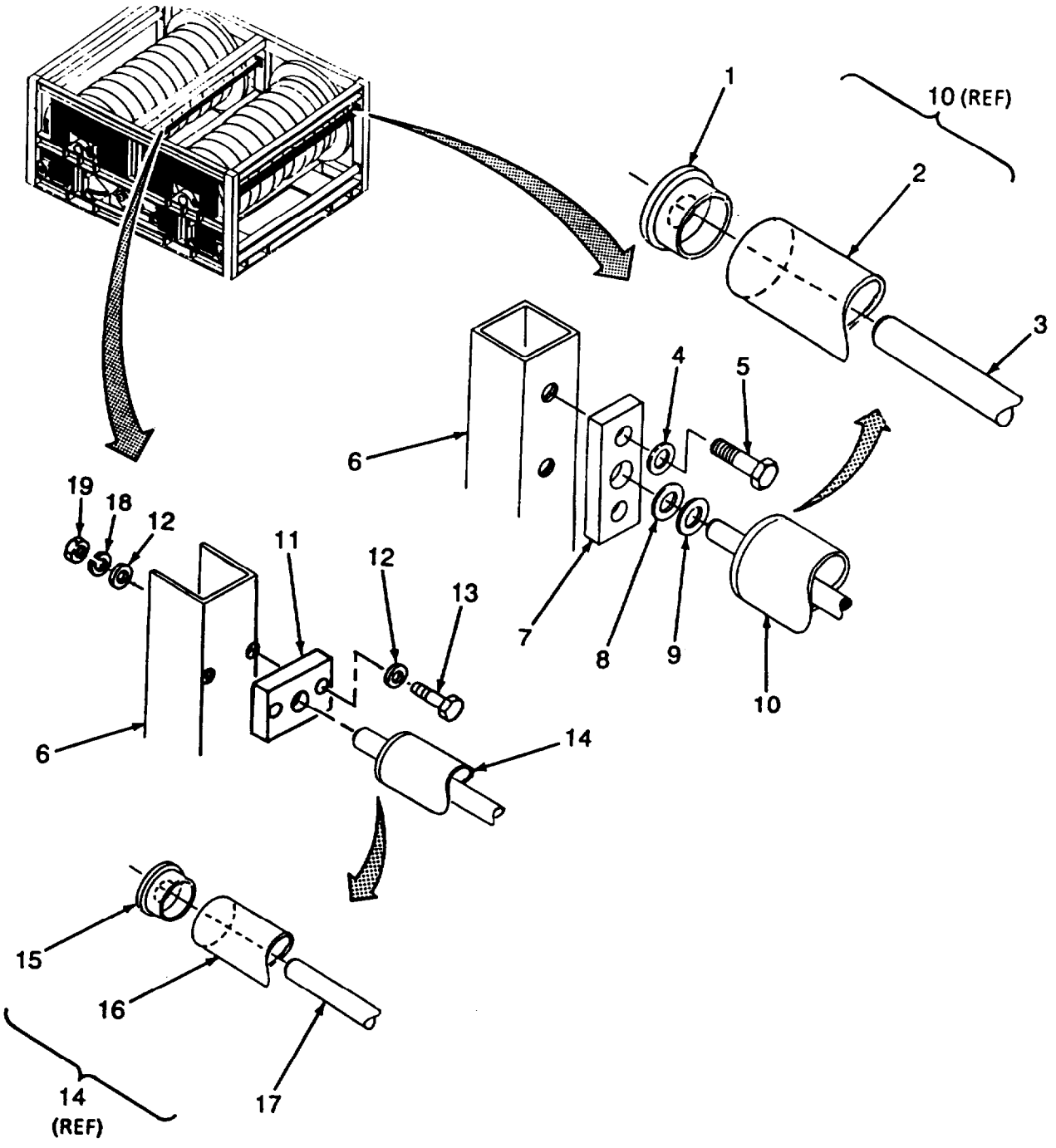
NOTE

Installation of one side roller is shown. Installation of three remaining side rollers is similar.

(a) Position roller (10) and two roller blocks (7) on frame weldment (6).

(b) Secure two roller blocks (7) to frame weldment (6) with four washers (4) and screws (5).

4-23. ROLLER MAINTENANCE - cont.



4-24. HOSE REEL REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)
Hoist or Crane.

Equipment Condition:

Power pack removed from frame unit (para. 2-8a)
Fuel hose removed from hose reels (para. 2-7a.)
Top frame removed (para. 4-22)
Rollers removed (para. 4-23)

a. **Removal.**

WARNING

To prevent injury to personnel and damage to equipment, use lifting device rated for at least 1,000 pounds.

NOTE

Removal of left hose reel is shown. Removal of right hose reel is similar.

(1) Connect hoist or crane to center of hose reel (1) spool.

(2) Remove slack from hoist or crane cable.

(3) Remove four nuts (5), lockwashers (6), washers (7 and 9), and bolts (10) from two bearing blocks (8).

(4) Hoist hose reel (1) from frame weldment (4).

(5) Loosen setscrews (3) and pull bearing blocks (8) from hose reel shafts (2).

b. **Installation.**

WARNING

To prevent injury to personnel and damage to equipment, lifting device must be rated for at least 1,000 pounds.

NOTE

Installation of left hose reel is shown. Installation of right hose reel is similar.

(1) Slide bearing blocks (8) on both hose reel shafts (2).

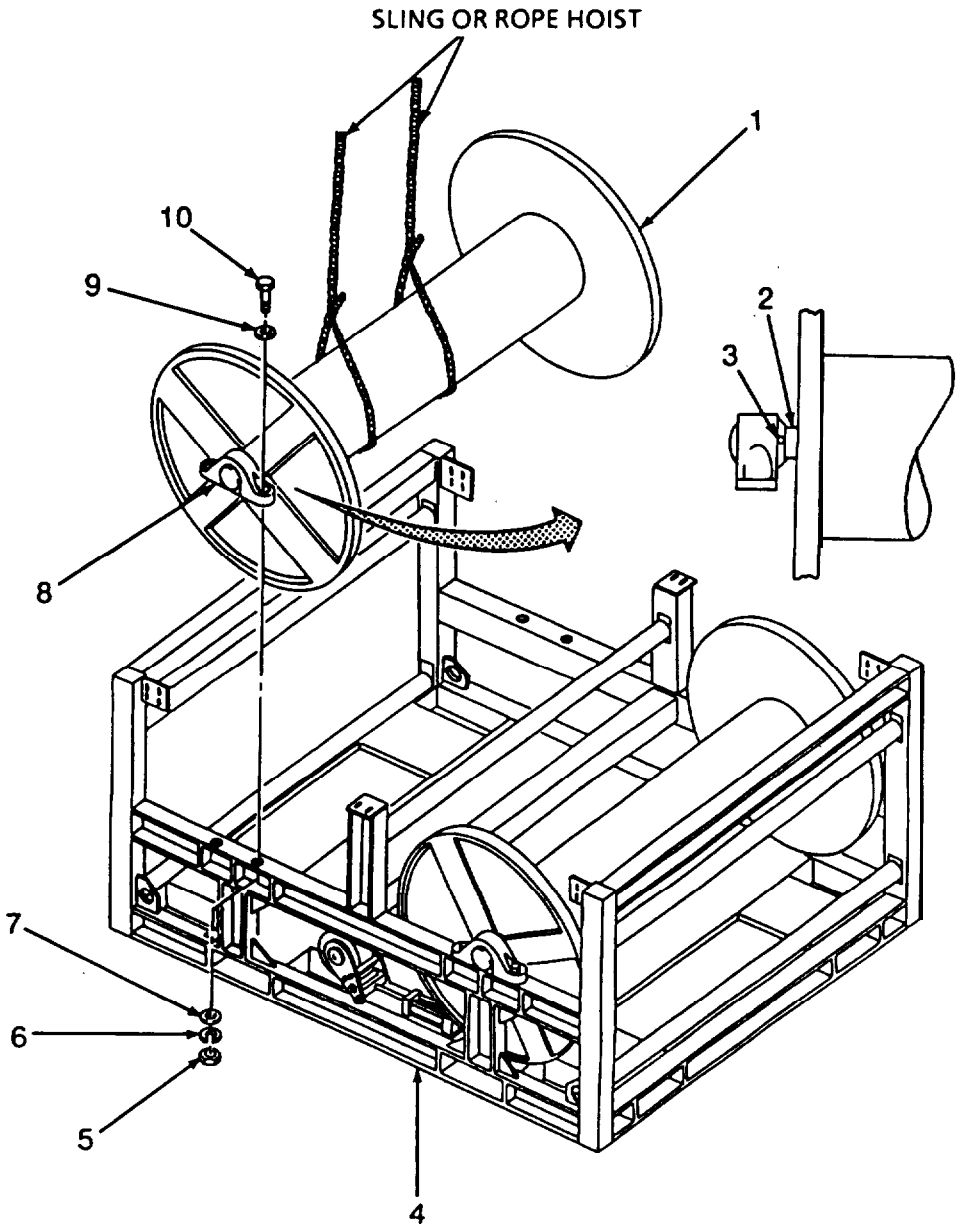
(2) Lower replacement hose reel (1) onto frame weldment (4). Aline bearing block mounting holes with holes in frame weldment.

4-24. HOSE REEL REPLACEMENT - cont.

(3) Install four bolts (10), washers (7 and 9), lockwashers (6) and nuts (5) in two bearing blocks (8).

(4) Remove hoist or crane cable. Center hose reel (1) between bearing blocks (8).

(5) When hose reel is centered, tighten setscrews (3) on bearing blocks (8).



4-25. BRAKE REPLACEMENT.

This task consists of: **a. Removal** **b. Installation**

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Equipment Condition:

Brake side guards removed (para. 4-21)

a. **Removal**

NOTE

Removal of left brake is shown. Removal of right brake is similar.

(1) Remove locknut (23), washer (22), and screw (21) from brake shaft weldment (18).

(2) Remove two locknuts (9), screws (3), washers (4 and 6) and spacers (2), from brake lever (1). Remove brake lever from frame weldment (5).

(3) Remove two nuts (14). lockwashers (13), washers (12 and 8), and screws (7) from shaft support (11).

(4) Remove two cotter pins (16 and 10). Separate washers (15 and 17) and shaft support (11) from brake shaft weldment (18).

(5) Remove two screws (19) and brake shoe (20) from brake shaft weldment (18).

b. **Installation.**

NOTE

Installation of left brake is shown. Installation of right brake is similar.

(1) Position brake shoe (20) on shaft weldment (18) and install two screws (19).

(2) Install cotter pin (10) and flat washer (17) on shaft weldment (18). Position shaft support (11) on shaft weldment (18) and install flat washer (15) and cotter pin (16).

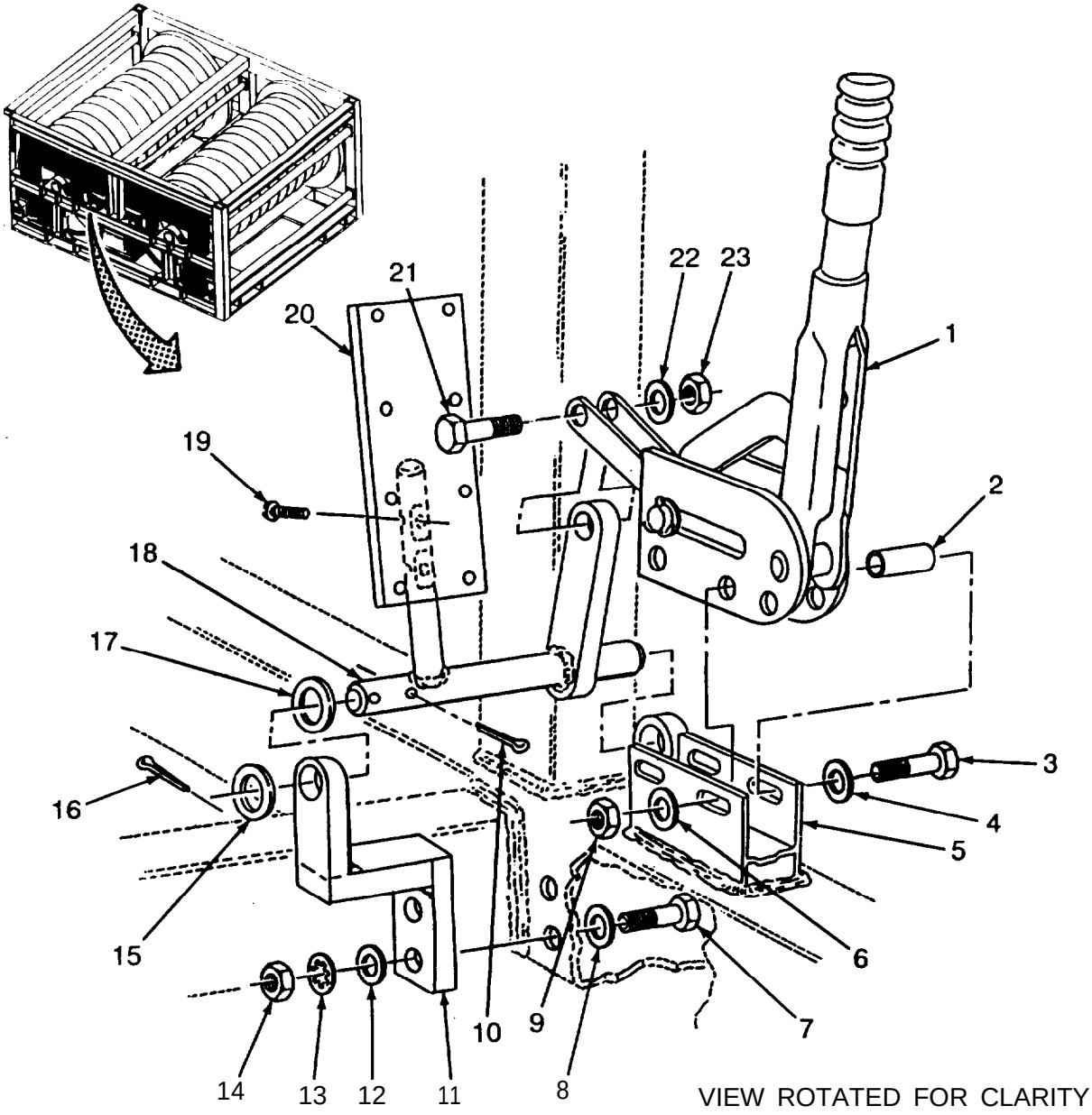
(3) Aline shaft support (11) mounting holes with holes in frame weldment (5). Install two washers (12 and 8), screws (7) , lock washers (13) and nuts (14).

4-25. BRAKE REPLACEMENT - cont.

(4) Position brake lever (1) in frame weldment (5). Install two spacers (2), washers (6 and 4), screws (3), and locknuts (9).

(5) Connect brake lever (1) to brake shaft weldment (18) with washer (22), screw (21) and locknut (23).

(6) Install brake sideguards (para. 4-21).



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4-26. HYDRAULIC HOSE MAINTENANCE.

This task consists of: **a. Removal** **c. Installation** **b. Repair**

INITIAL SET-UP:

Tools required:
Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Material Required:
Tag, Marker (Appendix E, Section II, Item 6)
Suitable plugs
Tiewraps

Equipment Condition:
Power pack removed (para. 2-8a.)
Fuel hoses removed (para. 2-7a.)

a. **Removal.**

CAUTION
Tag and identify hoses before removal. Make sure only same type hose is used to replace defective hose. To prevent cross connections, replace hoses one at a time.

(1) Cut tie-wraps (2) from frame weldment (1).

(2) Tag and disconnect two hydraulic hoses (3 and 4) from hydraulic motor (8). Install protective plugs in motor ports.

(3) Tag and disconnect two hydraulic hoses (5 and 6) from hydraulic cylinder (7). Install protective plugs in both cylinder ports.

b. **Repair.** Repair of hydraulic hoses is limited to replacement of defective quick disconnect couplers, nipples and o-rings.

(1) Disassembly.

CAUTION
Tag and identify hose and coupling type before disassembly. Make sure same type coupling is replaced on hose assembly. To prevent cross connections, replace hoses and disconnects one at a time.

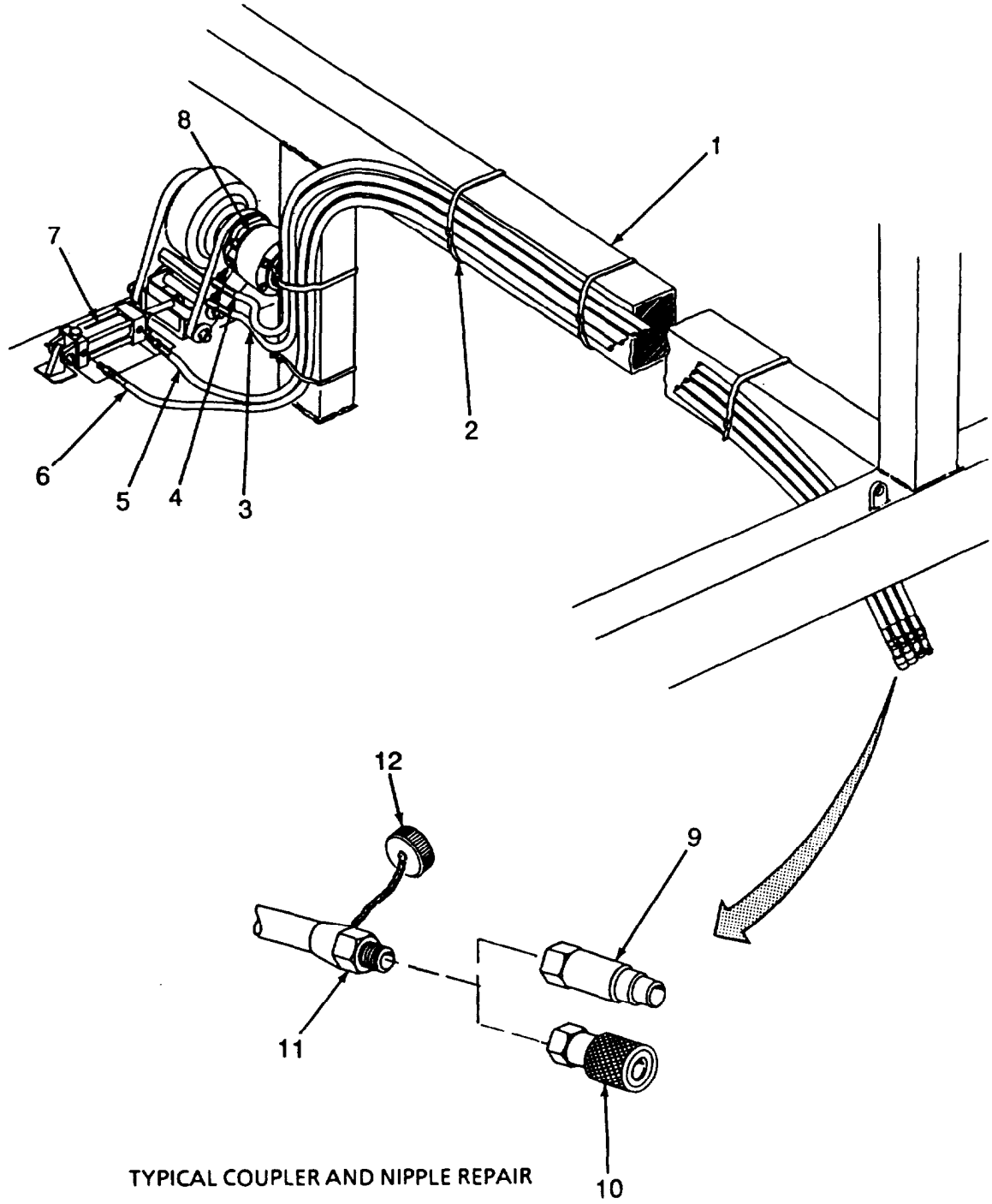
NOTE
Disassembly of one coupler and one nipple is shown. Disassembly of other nipple and coupler is similar.

(a) Tag and identify hose and coupling type.

4-26. HYDRAULIC HOSE MAINTENANCE - cont.

(b) Remove dust covers (12).

(c) Remove quick disconnect coupler (10) or nipple (9) from hose fitting (11).



TYPICAL COUPLER AND NIPPLE REPAIR

4-26. HYDRAULIC HOSE MAINTENANCE - cont.

(2) Assembly.

NOTE

Assembly of one coupler and one nipple is shown. Assembly of other nipple and coupler is similar.

(a) Install quick disconnect coupling (10) or nipple (9) on hose fitting (11).

(b) Install dust covers (12).

(c) Remove tags.

g. **Installation.**

(1) Remove protective plugs from hydraulic motor (8) ports. Connect replacement hydraulic hoses (3 and 4) to hydraulic motor (8) as marked.

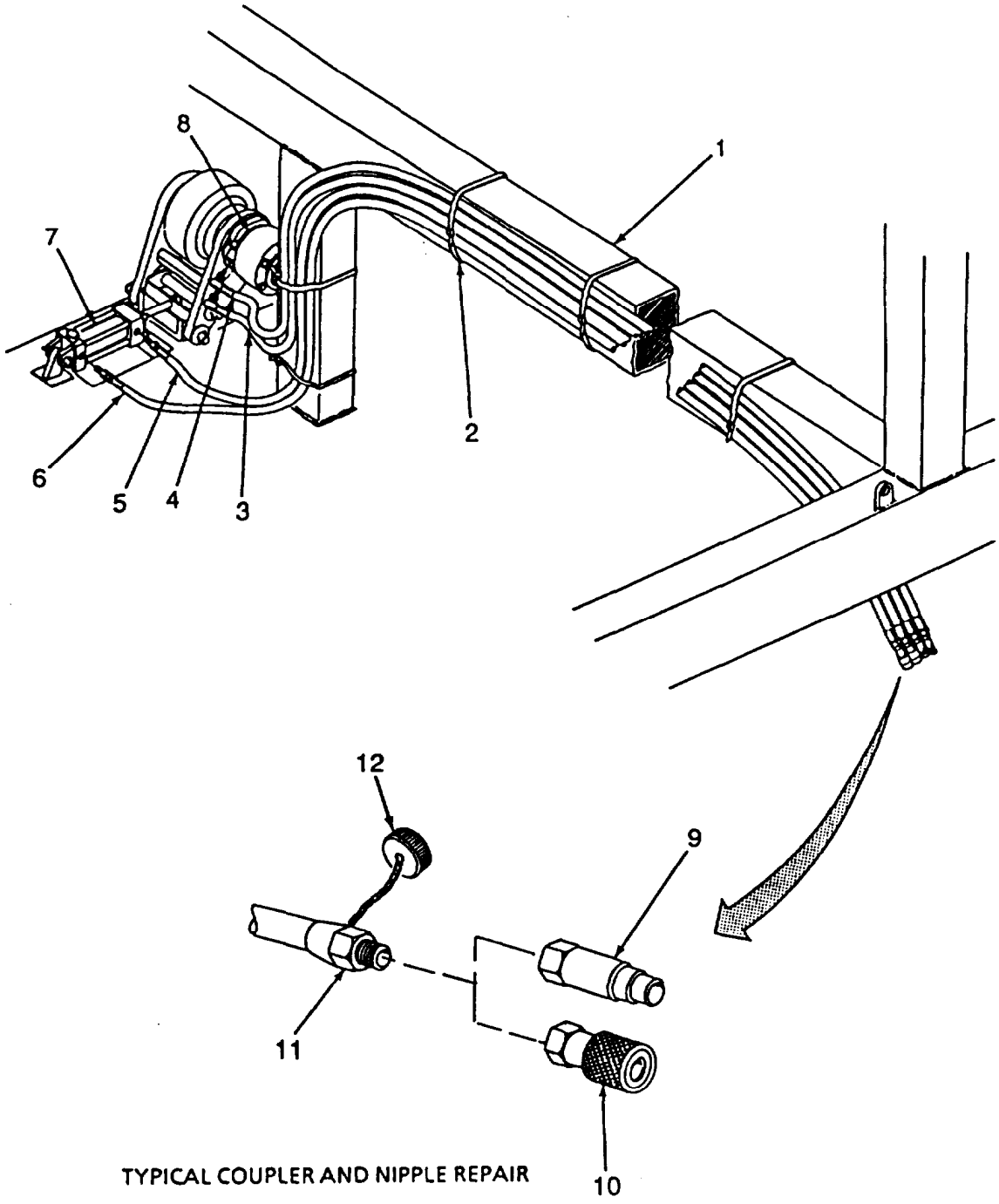
(2) Remove protective plugs from hydraulic cylinder (7) ports. Connect replacement hydraulic hoses (5 and 6) to cylinder (7) as marked.

(4) Secure hydraulic hoses (3 through 6) to frame weldment (1) with tie-wraps (2). Install enough tie wraps to keep slack out of hydraulic hoses and prevent chafing against hose reels.

(5) Remove tags.

(6) Service hydraulic reservoir, operate system, and check for leaks.

4-26. HYDRAULIC HOSE MAINTENANCE - cont.



TYPICAL COUPLER AND NIPPLE REPAIR

4-27. HYDRAULIC MOTOR AND DRIVE WHEEL MAINTENANCE.

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

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Material Rewired:

Tag, Marker (Appendix E, Section II, Item 6)
Suitable caps and plugs

Equipment Condition:

Power pack removed from frame unit (para. 2-8a)
Lower cylinder side guards removed (para. 4-21)

NOTE

Fluid will drain from hydraulic motor when hydraulic hoses are disconnected.

a. **Removal.**

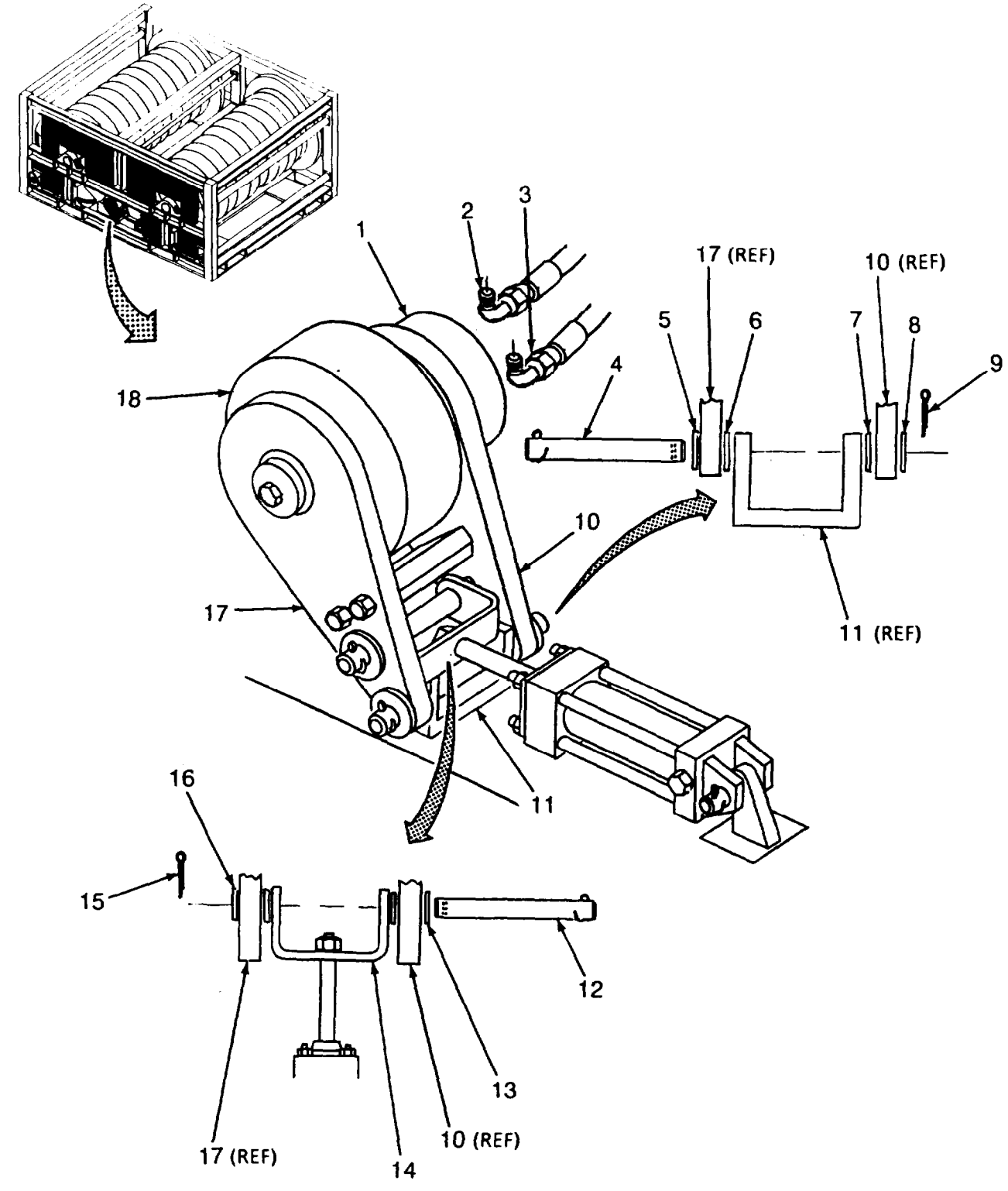
(1) Tag and disconnect hydraulic hoses (2 and 3) from hydraulic motor (1). Cap hydraulic lines and plug motor ports.

(2) Remove cotter pin (15). Push pivot rod (12) out through drive arms (10 and 17) and cylinder clevis (14). Remove two washers (13 and 16).

(3) Remove cotter pin (9). Push pivot rod (4) out through drive arms (10 and 17) and frame weldment (11). Remove four washers (5,6,7, and 8).

(4) Remove hydraulic motor (1), drive wheel (18), and attaching parts from frame weldment (11).

4-27. HYDRAULIC MOTOR AND DRIVE WHEEL MAINTENANCE -cont



4-27. HYDRAULIC MOTOR AND DRIVE WHEEL MAINTENANCE -cont.

b. **Disassembly.**

(1) Remove bolt (19), lockwasher (20), flat washer (21), and drive wheel end (22).

(2) Remove two nuts (27), lock washers (28), and washers (29).

(3) Remove flange (32), two washers (31), screws (30), and hydraulic motor (1) from drive arm (10).

(4) Remove two nuts (33), lockwashers (34), bolts (37) and stiffener (26) from drive arms (10 and 17).

(5) Separate drive arms (10 and 17) and spacer rings (23 and 25) from drive shaft (24).

(6) Loosen two setscrews (36) and remove drive wheel (18) from drive shaft (24).

(7) Remove key (25) from drive shaft (24).

c. **Repair.** and replace components if damaged.

d. **Assembly.**

(1) Position key (25) on drive shaft (24).

(2) Position drive wheel (18) on drive shaft (24). Center wheel on shaft and tighten two setscrews (36).

NOTE

Narrow spacer ring (35) goes on motor side of drive shaft.

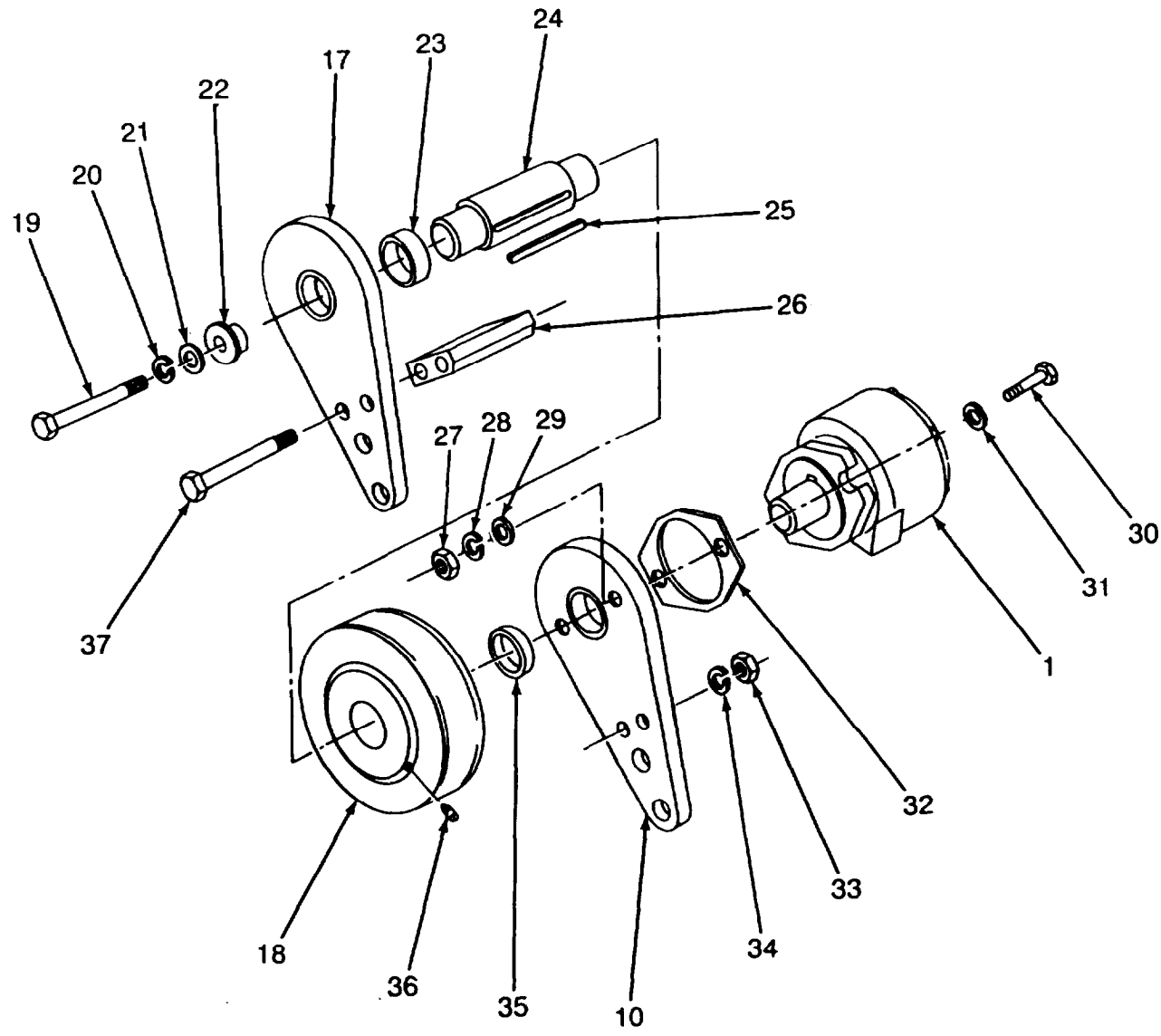
(3) Assemble spacer rings (35 and 23) and drive arms (17 and 10) on drive shaft (24).

(4) Position stiffener (26) between drive arms (17 and 10) and install two bolts (37), lockwashers (34), and nuts (33).

(5) Position flange (37), two washers (31), and screw (30) on hydraulic motor (1). Install two washers (29), lock washers (28), and nuts (27).

(6) Install drive wheel end (22), flat washer (21), lockwasher (20). and bolt (19).

4-27. HYDRAULIC MOTOR AND DRIVE WHEEL MAINTENANCE - cont.



4-27. HYDRAULIC MOTOR AND DRIVE WHEEL MAINTENANCE -cont.

e. **Installation.**

(1) Position drive wheel (18), hydraulic motor (1) and attaching parts in frame weldment (11).

(2) While positioning four washers (5,6,7, and 8), push pivot rod (4) through drive arms (10 and 19) and frame weldment (11). Install cotter pin (9).

(3) While positioning two washers (16 and 13), install pivot rod (12) through side arms (10 and 17) and cylinder clevis (14). Install cotter pin (15).

NOTE

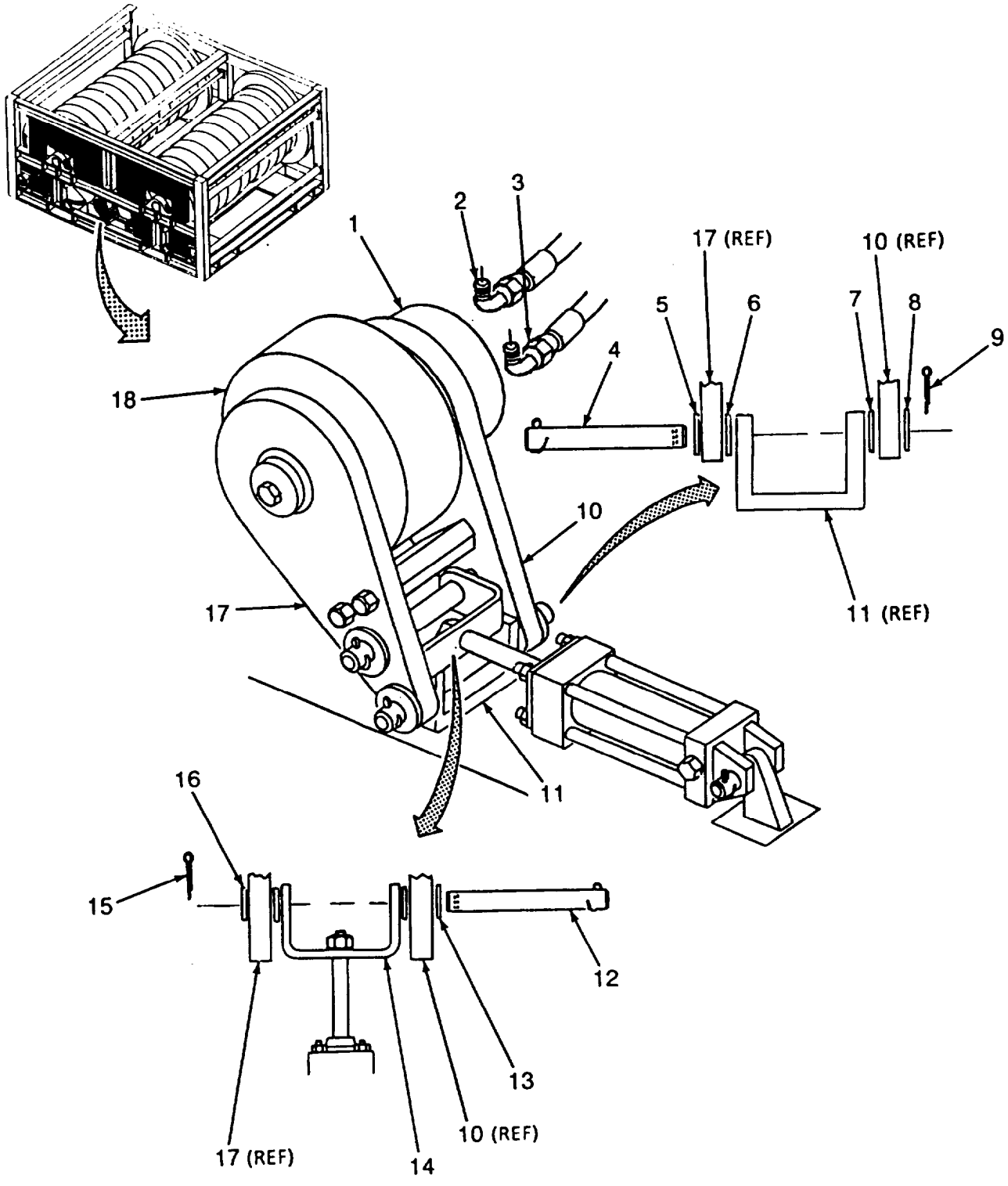
Hydraulic hose (3) is black (no white sleeve) and has a male quick disconnect fitting at one end.

(4) Remove caps from hydraulic hoses and plugs from motor. Connect hydraulic hoses (2 and 3) to hydraulic motor (1) as marked.

(5) Remove tags.

(6) Install lower cylinder side guards (reference para. 2-20).

4-27. HYDRAULIC MOTOR AND DRIVE WHEEL MAINTENANCE -cont.



4-28. HYDRAULIC CYLINDER REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools required:

Too! Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Material Required:

Tag, Marker (Appendix E, Section II, Item 6)
Suitable caps and plugs

Equipment Condition:

Hydraulic motor and drive wheel removed (para. 4-27)

NOTE
Fluid will drain from hydraulic cylinder when hoses are disconnected.

a. **Removal.**

(1) Remove cotter pin (6). Push pivot pin (7) from frame weldment (5) and cylinder end cap (3).

(2) Tag and disconnect two hydraulic hoses (2 and 4) from cylinder (1). Cap hoses and plug cylinder ports.

(3) Remove nut (9) from cylinder shaft (8).

(4) Unscrew clevis (10) from cylinder shaft.

(5) Remove cylinder (1) from frame weldment (5).

b. **Installation.**

(1) Connect hydraulic hoses (4 and 2) to cylinder (1) as marked.

(2) Screw cylinder shaft (8) into clevis (10) and install nut (9).

(3) Aline cylinder end cap (3) with frame weldment (5) and install pivot pin (7).

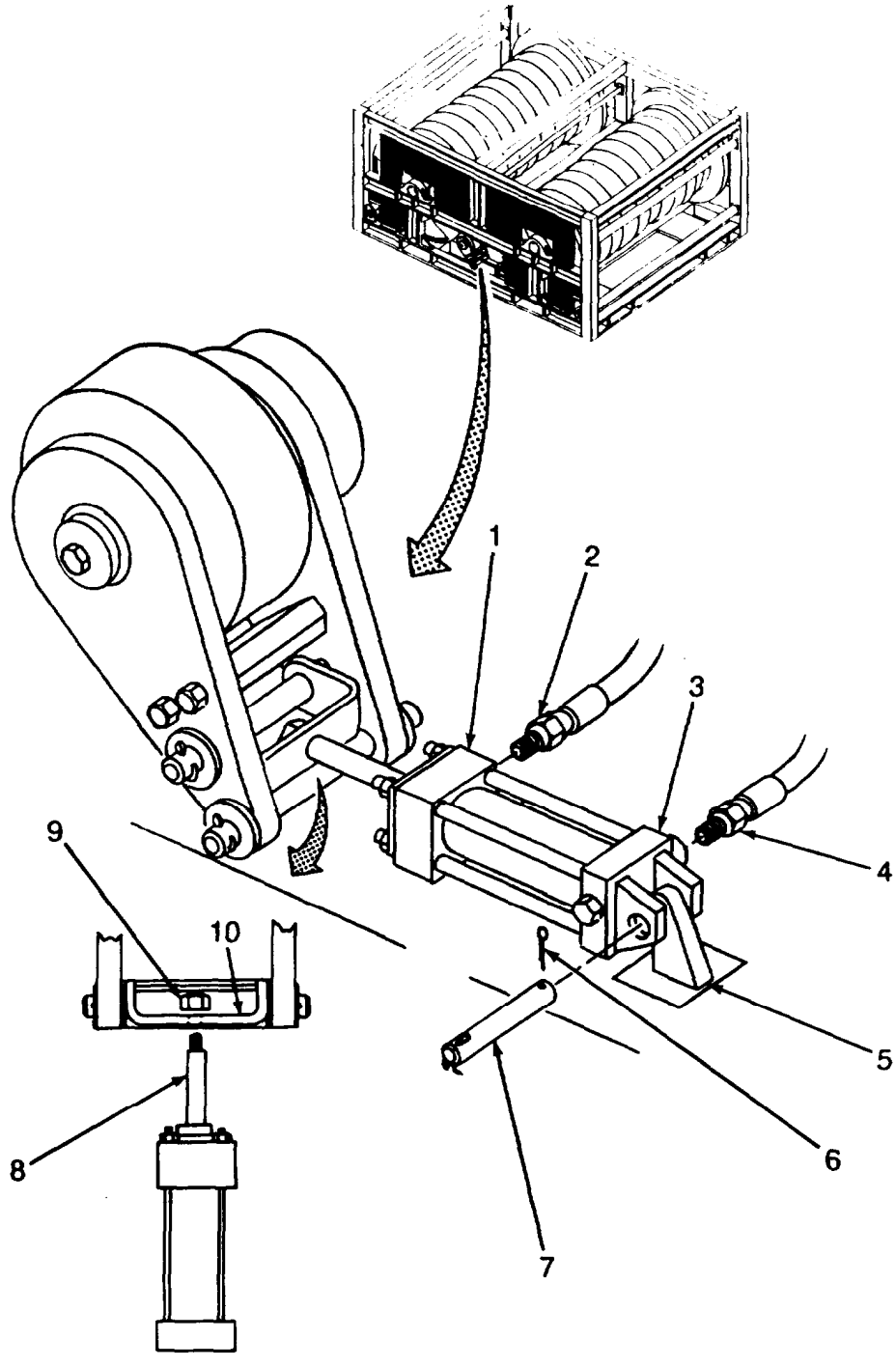
(4) Install cotter pin (6).

(5) Remove tags.

(6) Install hydraulic motor and drive wheel (para. 4-27).

(7) Operate system and check for leaks.

4-28. HYDRAULIC CYLINDER REPLACEMENT. - cont.



4-29. FRAME WELDMENT REPAIR.

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

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Equipment Condition:

Power pack removed from frame unit (para. 2-8a.)
Upper cylinder side guards removed (para. 4-21).

a. **Disassembly.**

(1) Remove nut (8), starwasher (7), washer (5), retainer plate (6), and screw (4) from frame weldment (2).

(2) Remove four nuts (9), lockwashers (10), washers (11 and 12), and screws (13). Remove storage bracket (14) from frame weldment (2).

(3) Remove lifting pins (3) from stacking posts (1).

(4) Slide stacking posts (1) from frame weldment (2).

b. **Repair.** Replace damaged components.

c. **Assembly.**

(1) Position stacking posts (1) in frame weldment (2). Position stacking posts so that lift pin mounting holes aline with cutouts in weldment (2).

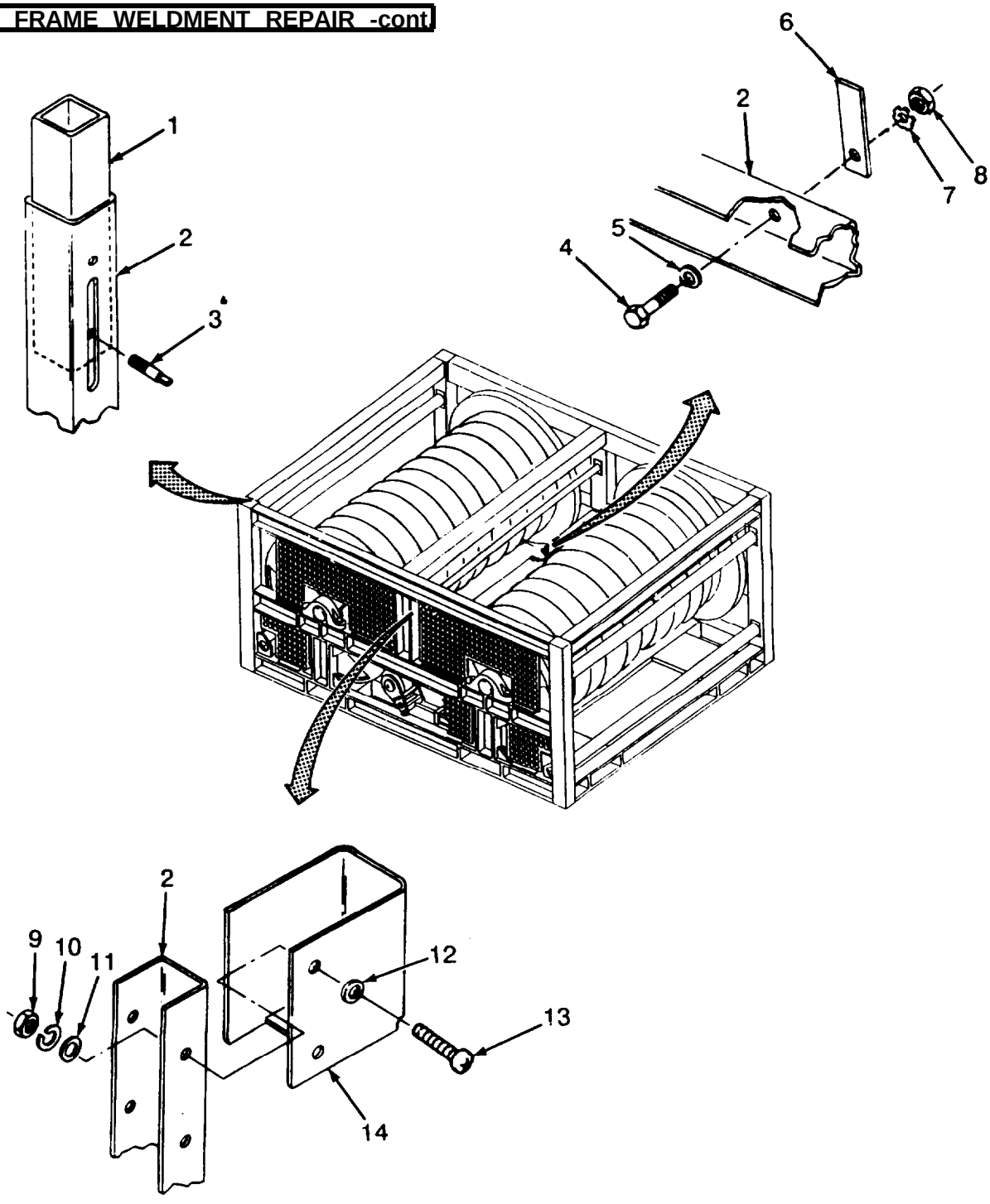
(2) Screw lifting pins (3) into stacking posts (1).

(3) Position storage bracket (14) in frame weldment (2). Install four washers (11 and 12), four screws (13), four lockwashers (10) and four nuts (9).

(4) Install screw (4), washer (5), retainer plate (6), starwasher (7) and nut (8) on frame weldment (2).

(5) Install upper cylinder side guards (para. 4-21).

4-29. FRAME WELDMENT REPAIR -cont



Section VII. PREPARATION FOR STORAGE OR SHIPMENT

4-30. PREPARATION FOR LONG TERM STORAGE OR SHIPMENT.

a. Perform all outstanding PMCS procedures.

WARNING

To prevent injury to personnel and damage to equipment, all liquid fuel and fuel vapors must be removed before storage or shipment of the hose reel system. Fuel vapors are extremely explosive!

b. Deploy fuel hose from both hose reels.

c. Remove power pack.

d. Flush inside and outside of both hoses with clean fresh water.

e Evacuate water from fuel hoses and allow to dry (refer to Tactical Petroleum Terminal technical manual for evacuation equipment and procedures).

f. Rinse frame unit with clean, fresh water and allow to dry.

g- Remove corrosion from metal surfaces. Paint all bare metal surfaces.

h. Install power pack in frame unit.

i. Retrieve fuel hoses onto hose reels. Wipe hose during retrieval to remove dirt, gravel, sand and water.

j. Disconnect hydraulic hoses from power pack. Install protective caps on frame unit and power pack hydraulic lines.

k. Wipe dirt and fuel from control cable switches. Secure control cable and slave power cable to power pack frame.

l. Set brake levers to prevent rotation of hose reels.

m. Install power pack in frame unit.

n. Place hose reel system in protective storage containers.

4-31. ADMINISTRATIVE STORAGE.

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

b. Before placing equipment in administrative storage, current maintenance services, PMCS and all modification work orders (MWO's) should be applied.

4-31. ADMINISTRATIVE STORAGE - cont.

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

CHAPTER 5

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. DIRECT SUPPORT MAINTENANCE PROCEDURES

5-1. GENERAL

This section contains the procedures for maintaining components that are the responsibility of Direct Support Maintenance.

5-2. CONTROL CABLE REPAIR.

This task consists of:
a Disassembly
b. Cleaning
c. Inspection
d. Repair
e. Assembly

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Material Required:

Rag, Wiping (Appendix E, Section II, Item 4)
Solvent, Dry Cleaning (Appendix E, Section II, Item 5)
Tag, Marker (Appendix E, Section II, Item 6)

Equipment Condition:

Control cable removed from power pack (para. 4-13)

a. Disassembly.

(1) Remove six screws (16), cover plate (5) and attached switches from switch box (8).

(2) Tag and disconnect wiring from selector switch (S-4) (14).

5-2. CONTROL CABLE REPAIR - cont.

(3) Unscrew bezel (19). Remove key washer (18) and protective washer (17) from selector switch (14).

(4) Remove selector switch (14) and sealing washer (15) from cover plate (5).

(5) Repeat steps (2) through (4) for selector switch S-3 (20) and selector switch S-2 (21).

(6) Tag and disconnect electrical cable wiring from push button switch S-1 (7).

(7) Unscrew bezel (2) and push button (1) from switch S-1 (7). Remove key washer (3) and protective washer (4).

(8) Remove switch S-1 (7) and sealing washer (6) from cover plate (5).

(9) Remove screw (13) and disconnect ground wire from switch box (8).

(10) Loosen knurled ring (12) and disconnect electrical cable (11) from switch box (8).

(11) Loosen setscrew (9) and remove union (10) from switch box (8).

b. **Cleaning.**

WARNING

Cleaning solvent is toxic and flammable. Use only in a well ventilated area. Avoid prolonged breathing of fumes. Keep solvent away from flames. Do not use in excessive amounts and avoid skin contact.

(1) Wipe fuel, oil, and contaminants from switch box using a clean rag dampened with cleaning solvent.

(2) Remove fuel, oil, and contaminants from face of cover plate (5).

(3) Clean mating surfaces of switch box (8) and cover plate (5). Remove particles of sand, gravel and accumulations of dirt from switch box seal.

(4) Remove corrosion, dirt, and oil from electrical cable connector.

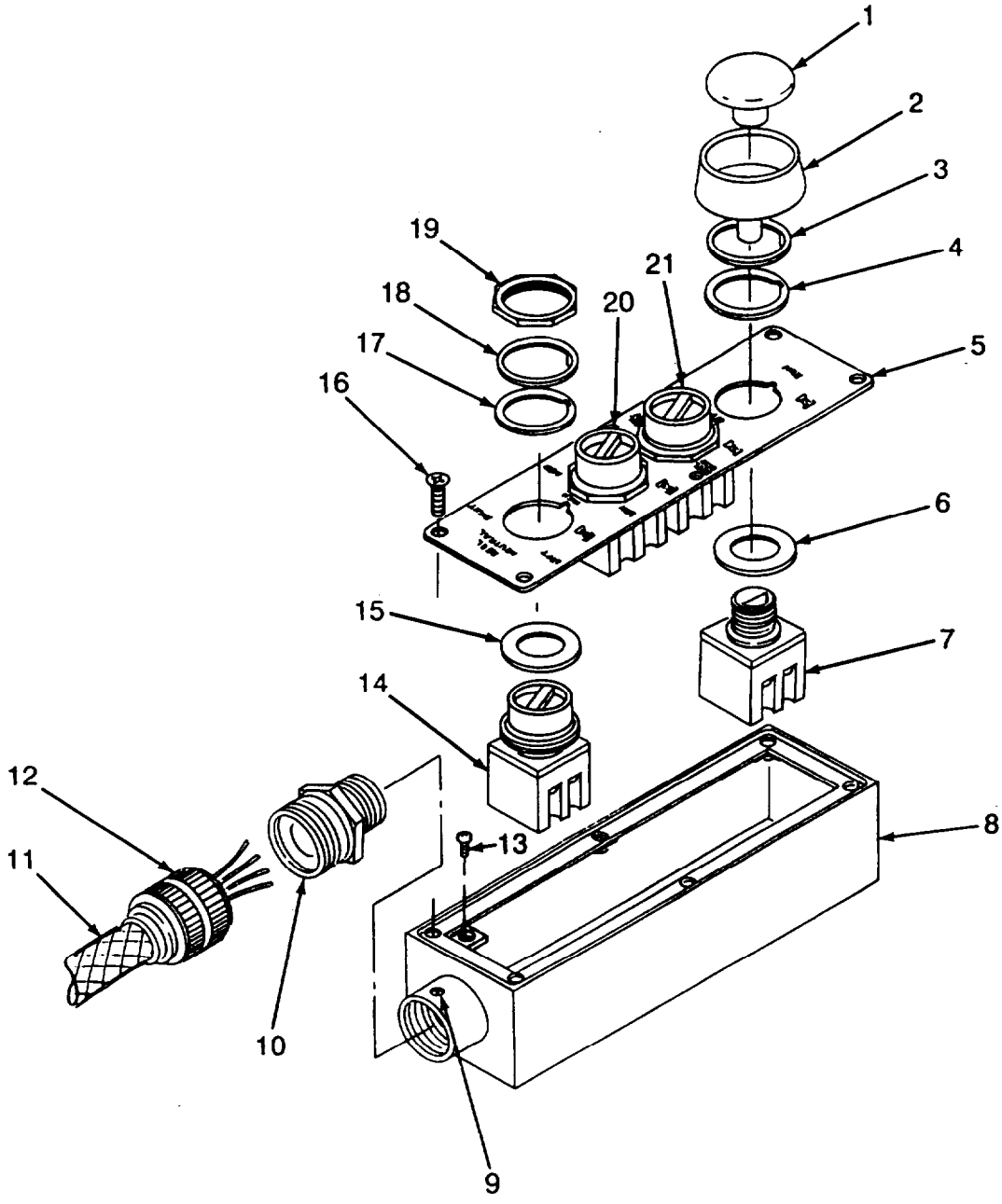
(5) Wipe fuel, oil, and contaminants from electrical cable insulation.

c. **Inspection.**

(1) Inspect electrical cable wiring for chafing, and burned, cut or missing insulation.

(2) Inspect switches (14,20,21, and 7) for cracks, missing hardware or decals, signs of overheating, and corrosion.

5-2. CONTROL CABLE REPAIR - cont.



5-2. CONTROL CABLE REPAIR - cont.

(3) Inspect cover plate (5) and switch box (8) for cracks, bends, and corrosion.

(4) Inspect electrical cable (11) for chafing, burns, and cut or missing insulation. Inspect cable connector for broken pins and stripped threads.

d. **Repair.**

(1) If defective, replace selector switches and push button switch.

(2) If defective, replace electrical cable.

(3) If defective, replace cover plate and switch box.

e. **Assembly.**

(1) Screw union (10) into switch box (8) and tighten setscrew (9).

(2) Thread electrical cable (11) wiring into switch box (8). Connect electrical cable to switch box (8) and tighten knurled ring(12). Connect ground wire to switch box with screw (13).

(3) Position push button switch S-1 (7) and sealing washer (6) on cover plate (5). Install protective washer (4). key washer (3), bezel (2), and push button (1) on push button switch.

(4) Connect electrical cable wiring to push button switch S-1 (7), as marked during disassembly.

(5) Position sealing washer (15), and selector switch S-4 (14) on cover plate (5).

(6) Install protective washer (17), key washer (18), and bezel (19) on selector switch (S-4) (14).

(7) Connect electrical cable wiring to selector switch S-4 (14), as marked during disassembly.

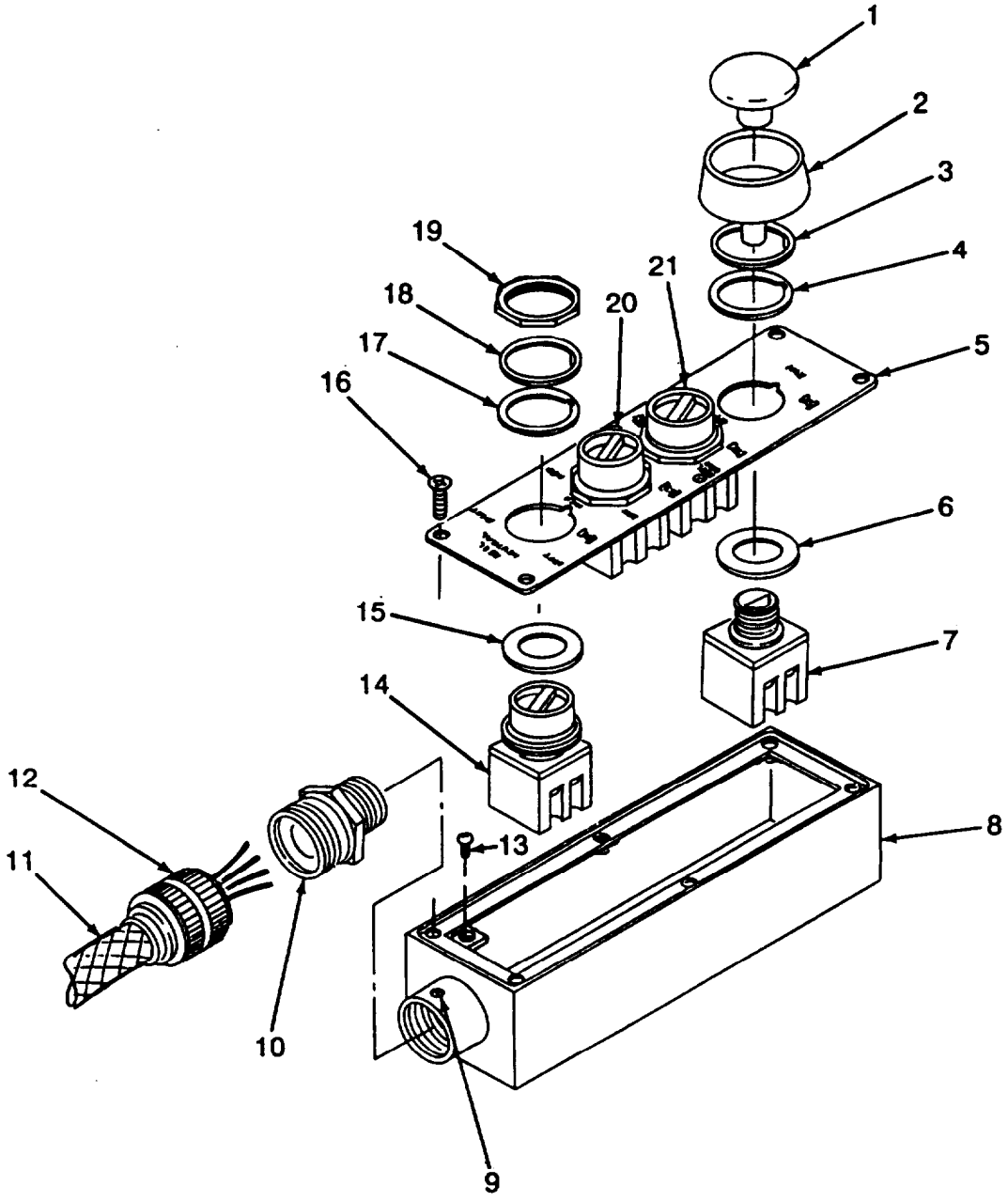
(8) Repeat steps (5). (6) and (7) for selector switch S-2 (20) and selector switch (S-3) (21).

(9) Remove tags.

(10) Position cover plate (5) and attached switches on switch box (8).

(11) Install six screws (14).

5-2. CONTROL CABLE REPAIR - cont.



SEQUENCE VALVE REPAIR.

This task consists of:

a. Disassembly
b. Cleaning
c. Inspection
d. Repair
e. Assembly
f. Adjustment

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)
Wrench, Torque (Appendix B, Section III, Item 3)

Material Required:

Solvent, Dry Cleaning (Appendix E, Section II, Item 5)

Equipment Condition:

Sequence valve removed from power pack (para. 4-16)

NOTE

Repair of the sequence valve is limited to replacement and adjustment of the cartridge valve.

a. **Disassembly.**

(1) Record number of exposed threads on cartridge valve adjustment stem (4).

(2) Remove cartridge valve (2) from valve body (1). Make sure all o-rings are removed with valve.

b. **Cleaning.**

(1) Clean cartridge valve (2) with cleaning solvent and a soft bristle brush.

(2) Clean valve body (1) and internal ports with cleaning solvent and a soft bristle brush.

c. **Inspection.**

(1) Inspect cartridge valve (2) for missing,, cracked, or deformed o-rings. Check for deformed or damaged back up rings (white teflon). Inspect for clogged valve passages.

(2) Inspect valve body (1) for cracks, stripped port threads and clogged passages.

5-3. SEQUENCE VALVE REPAIR - cont.

d. **Repair.**

(1) If cartridge valve (2) o-rings or back up rings are damaged or defective, replace cartridge valve.

(2) If valve body (1) is cracked, stripped or clogged, replace sequence valve.

e. **Assembly.**

(1) Screw replacement cartridge valve (2) into valve body (1).

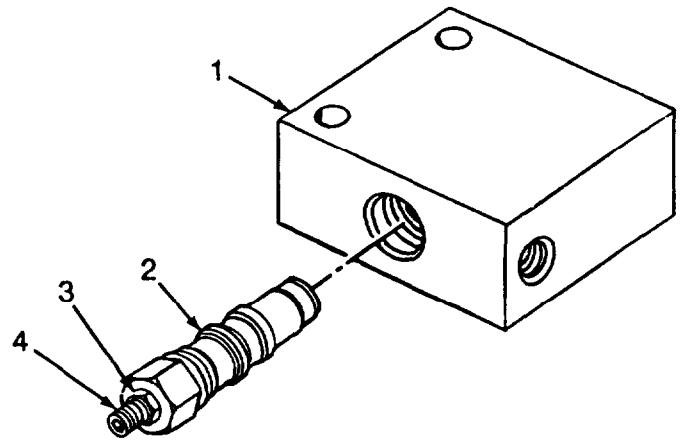
(2) Using torque wrench, torque cartridge valve (2) 30 to 40 ft/lbs (45 to 50 Nm).

f. **Adjustment.**

(1) Loosen lock nut (3).

(2) Using socket key, turn adjustment stem (4) until correct number of threads are exposed (as recorded in paragraph a).

(3) While using socket key wrench to keep adjusting stem (4) from turning, tighten lock nut (3).



5-4. VALVE STATION REPAIR.

This **task consists of:**

a Disassembly
b. Cleaning
c. Inspection
d. Repair
e. Assembly

INITIAL SET-UP:

Tools rewired:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Material Required:

Solvent, Dry Cleaning (Appendix E, Section II, Item 5)
Rag, Wiping (Appendix E, Section II, Item 4)

Equipment Condition:

Valve station removed from power pack (para. 4-17)

CAUTION

Mark and record location of all valves before removal. The three sandwich valves look similar, but are set to different relief pressures. During installation, do not exchange (mix up) the mounting position of these valves.

NOTE

Repair of the valve station is limited to replacement of control valves, sandwich valves and manifold.

a. **Disassembly.**

(1) Remove four socket head nuts (19).

(2) Lift control valve (17) and sandwich valve (14) from manifold (8). Remove retainer plate (11) and four o-rings (10).

(3) Remove four studs (18) from manifold (8).

(4) Remove four socket head nuts (1).

(5) Lift control valve (16) and sandwich valve (13) from manifold (8). Remove retainer plate (5) and four o-rings (9).

(6) Remove four studs (2) from manifold (8).

(7) Remove four socket head nuts (3).

(8) Lift control valve (15) and sandwich valve (12) from manifold (8). Remove retainer plate (6) and four o-rings (7).

5-4. VALVE STATION REPAIR - cont.

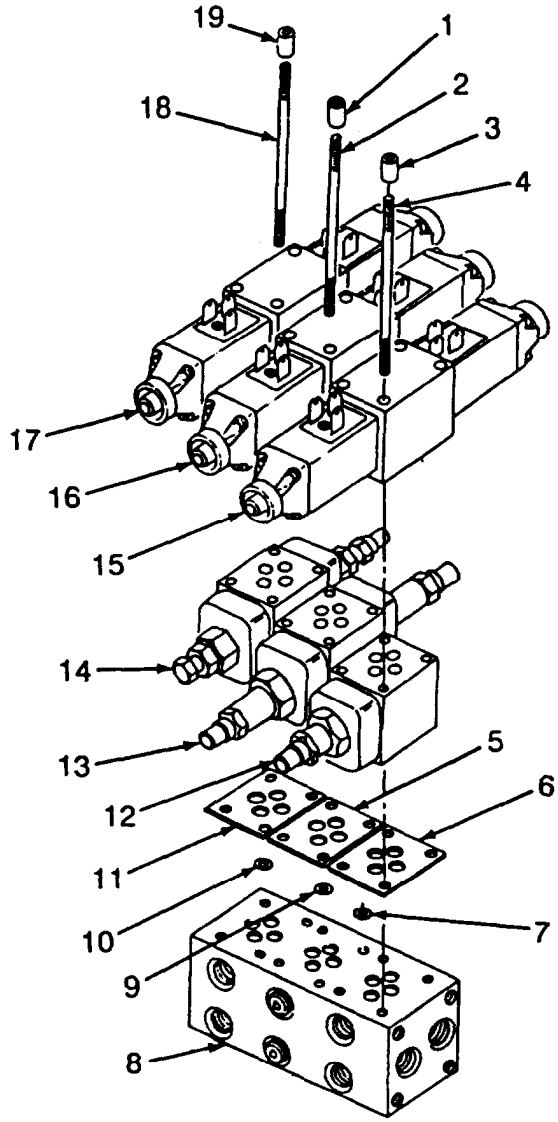
(9) Remove four studs (4) from manifold (8).

b. **Cleaning.**

WARNING

Cleaning solvent is toxic and flammable. Use only in a well ventilated area. Avoid prolonged breathing of fumes. Keep solvent away from flames. Do not use in excessive amounts and avoid skin contact.

(1) Rinse control valves and sandwich valves in cleaning solvent. Make sure o-rings do not fall from valve bodies. Using soft bristle brush, clean dirt and particles from open ports.



5-4. VALVE STATION REPAIR - cont.

(2) Rinse manifold in cleaning solvent. Make sure all contaminants are removed from ports.

c. **Inspection.**

(1) Inspect control valves (15,16, and 17) for clogged ports, missing or damaged o-rings, and clogged ports. Check for loose, missing or bent electrical terminals.

(2) Inspect sandwich valves (12,13, and 14) for clogged ports and missing or damaged o-rings.

(3) Inspect manifold (8) for clogged ports, scratched or deformed mating surfaces, and stripped threads. Check for scratched or damaged o-ring seats.

(4) Inspect retainer plates (5,6, and 11) for scratches, damaged o-ring seats and corrosion,

d. **Repair.**

NOTE

Repair of the valve station is limited to replacement of defective components.

(1) Replace damaged or worn control valves (15,16, and 17).

(2) Replace damaged or worn sandwich valves (12,13, and 14).

(3) Replace damaged or worn manifold (8).

(4) Replace damaged or worn retainer plates (5,6, and 11) and o-rings (7,9, and 10).

e. **Assembly.**

CAUTION

Make sure control valves and sandwich valves are installed in correct position on manifold. Do not change position or reverse mounting of valves.

(1) Install four studs (4) on manifold (8).

CAUTION

Ensure notches in retainer plate (5,6 and 11) are alined with word "NOTCH" on sandwich valves (12,13, and 14).

(2) Position retainer plate (6) and four o-rings (7) on manifold (8).

(3) Position sandwich valve (12) and control valve (15) over studs (4). Make sure valves are installed in correct position on manifold.

(4) Install four socket head nuts (3) on studs (4) Tighten nuts in a cross pattern.

(5) Install four studs (2) on manifold (8).

5-4. VALVE STATION REPAIR - cont.

(6) Position retainer plate (5) and four o-rings (9) on manifold (8).

(7) Position sandwich valve (13) and control valve (16) over studs (2). Make sure valves are installed in correct position on manifold.

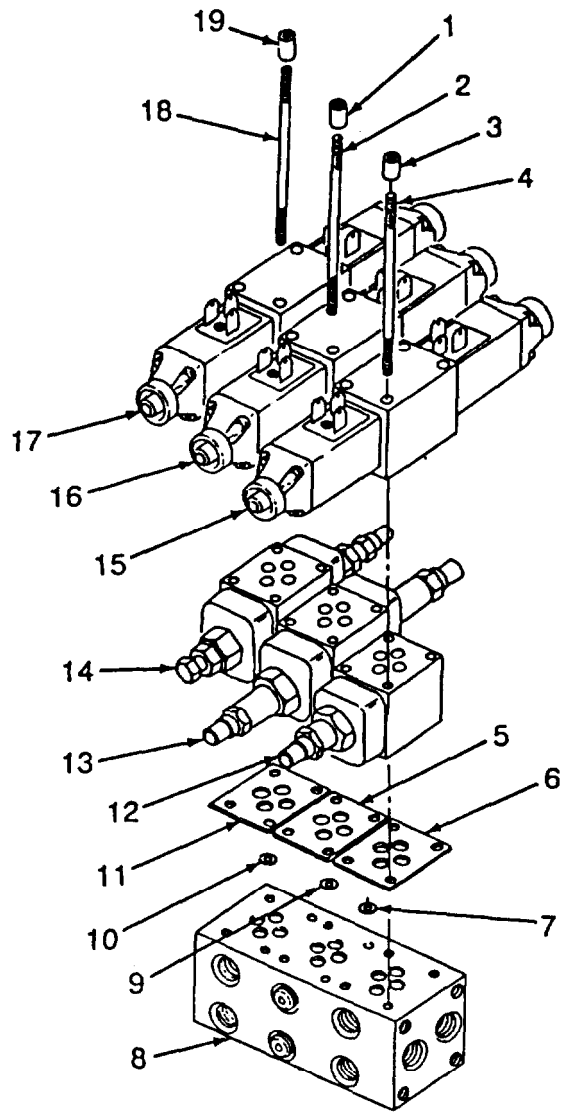
(8) Install four socket head nuts (1) on studs (2). Tighten nuts in a cross pattern.

(9) Install four studs (18) on manifold (8).

(10) Position retainer plate (11) and four o-rings (10) on manifold (8).

(11) Position sandwich valve (14) and control valve (17) over studs (8). Make sure valves are installed in correct position on manifold.

(12) Install four socket head nuts (19) on studs (18). Tighten nuts in a cross pattern.



5-5. POWER UNIT FILTER REPAIR.

This task consists of: **a. Disassembly** **c. Inspection** **d. Cleaning**
b. Cleaning **d. Repair**

INITIAL SET-UP:
Tools required:
Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Material/Parts Rewired:
Solvent, Dry Cleaning (Appendix E, Section II, Item 5)
Rag, Wiping (Appendix E, Section II, Item 4)
O-ring

Equipment Condition:
Power unit removed from power pack (para. 4-18)

a. **Disassembly.**

(1) Remove vent cap (4) and drain fluid from hydraulic reservoir (6).

(2) Remove four screws (5) that secure hydraulic reservoir (6) to pump/motor assembly (1).

(3) Remove hydraulic reservoir (6) and o-ring (3) from pump/motor assembly (I).

(4) Remove filter (7) from suction pipe (2).

b. **Cleaning.**

WARNING

Cleaning solvent is toxic and flammable. Use only in a well ventilated area. Avoid prolonged breathing of fumes. Keep solvent away from flames. Do not use in excessive amounts and avoid skin contact.

(1) Wipe and rinse inside of reservoir with cleaning solvent and wiping rag. Use a soft bristle brush to break loose sludge and solid particles from inside reservoir.

(2) Rinse vent cap in cleaning solvent. Clear clogged passages with a soft bristle brush.

(3) Clean suction pipe with cleaning solvent. Remove all contaminants and solid particles from pipe.

5-5. POWER UNIT FILTER REPAIR -cont.

c. **Inspection.**

(1) Inspect hydraulic reservoir (6) for cracks, missing cooling fins, broken welds, and corrosion.

(2) Inspect o-ring (3) for cuts, tears, and deterioration.

(3) Inspect suction pipe (2) for clogs.

d. **Repair.** Replace o-ring and filter.

e. **Assembly.**

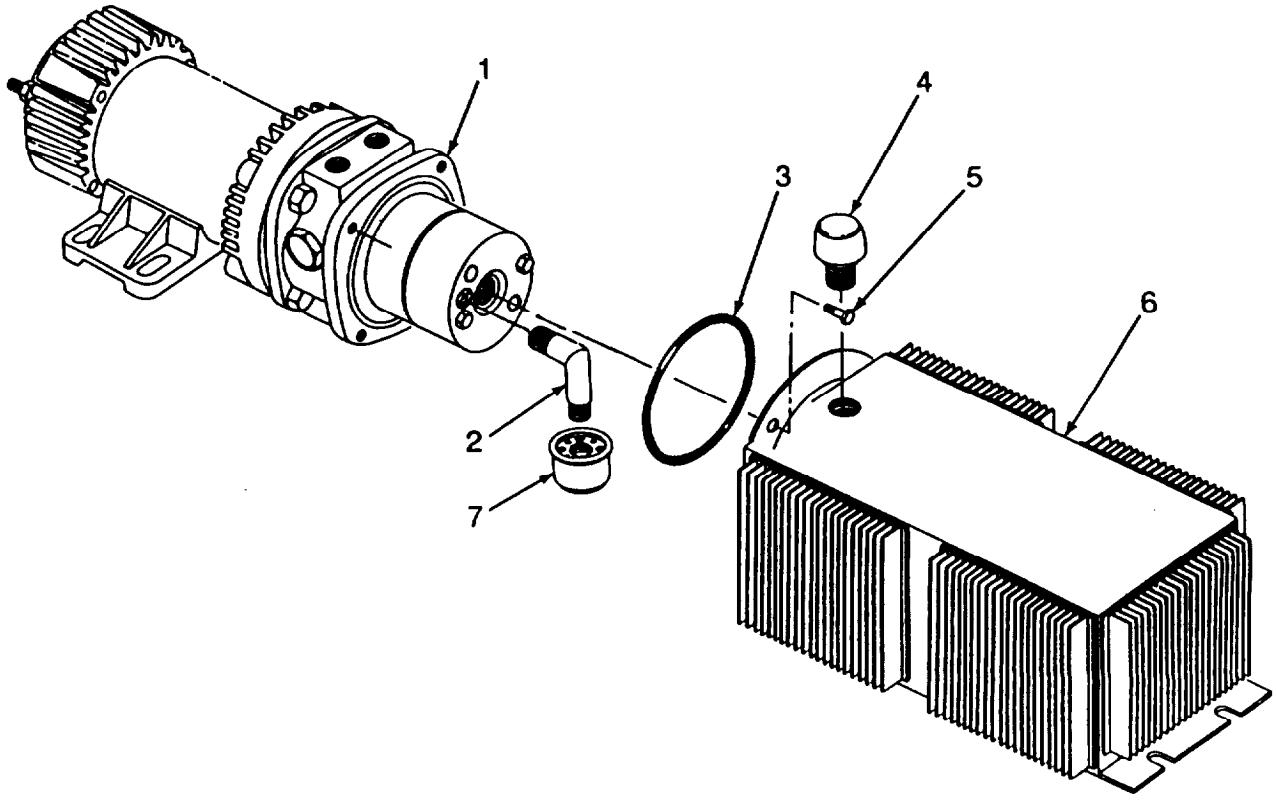
(1) Install replacement filter (7) on suction pipe (2).

(2) Position o-ring (3) and hydraulic reservoir (6) on pump/motor assembly (1).

(3) Install four screws (5).

(3) Service reservoir (6) with hydraulic fluid.

(4) Install vent cap (4) on hydraulic reservoir (6).



5-6. HYDRAULIC CYLINDER REPAIR.

This task consists of: **a. Disassembly** **b. Cleaning** **c. Inspection** **d. Repair** **e. Assembly**

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)

Material Rewired:

Solvent, Dry Cleaning (Appendix E, Section II, Item 5)
Suitable Plugs

Equipment Condition:

Hydraulic cylinder removed from frame unit (4-28)

NOTE

Repair of the hydraulic cylinder is limited to replacement of the rod seal and rod wiper.

a. Disassembly.

(1) Push piston rod (3) into cylinder tube (1).

(2) Remove four cap screws (8) from retainer plate (7). Separate retainer plate from cylinder head (2).

(3) Remove gland (5) from retainer plate (7).

CAUTION

Do not use screwdriver or hard metal tools to remove rod seal. Steel tools can damage sealing surfaces, causing premature failure of cylinder.

(4) Using a pointed brass or aluminum rod (brazing rod), puncture back of rod seal (4) and pull seal loose from cylinder head (2).

(5) Remove rod wiper (6) from gland (5) using brass or aluminum rod

5-6. HYDRAULIC CYLINDER REPAIR -cont.

b. **Cleaning.**

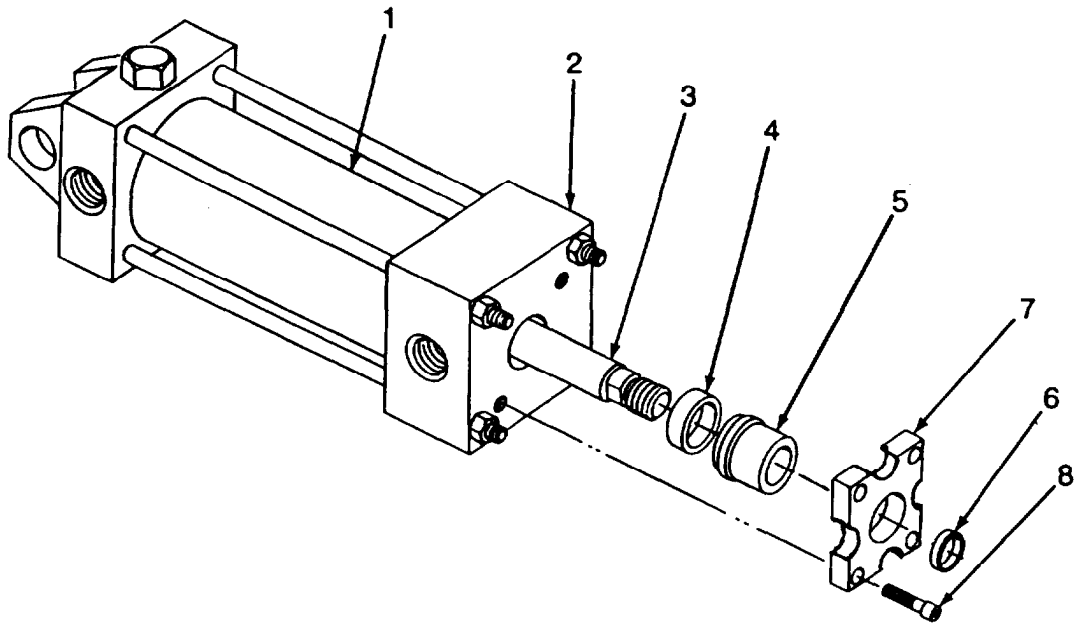
WARNING

Cleaning solvent is toxic and flammable. Use only in a well ventilated area. Avoid prolonged breathing of fumes. Keep solvent away from flames. Do not use in excessive amounts and avoid skin contact.

(1) Rinse retainer plate and gland in cleaning solvent. Remove all particles of dirt using a soft bristle brush.

(2) Wash exterior surfaces of cylinder tube with cleaning solvent. Pay close attention to hydraulic hose connection ports.

(3) Remove all dirt and particles from cylinder head (2) rod seal seat.



5-6. HYDRAULIC CYLINDER REPAIR - cont.

c. **Inspection.**

(1) Inspect piston rod (3) for scratches, dents and corrosion.

(2) Inspect gland (5) for scratches and dents. Inspect for damaged rod wiper seat.

(3) Inspect cylinder head (2) rod seal seat for scratches, nicks and corrosion.

d. **Repair.** Replace damaged components.

e. **Assembly.**

CAUTION

Do not use screwdriver or hard metal tools to remove rod seal. Steel tools can damage sealing surfaces, causing premature failure of cylinder.

(1) Install rod wiper (6) in gland (5). Be careful not to damage seal during installation.

(2) Install rod seal (4) in cylinder head (2). Open end of seal must face in toward cylinder tube.

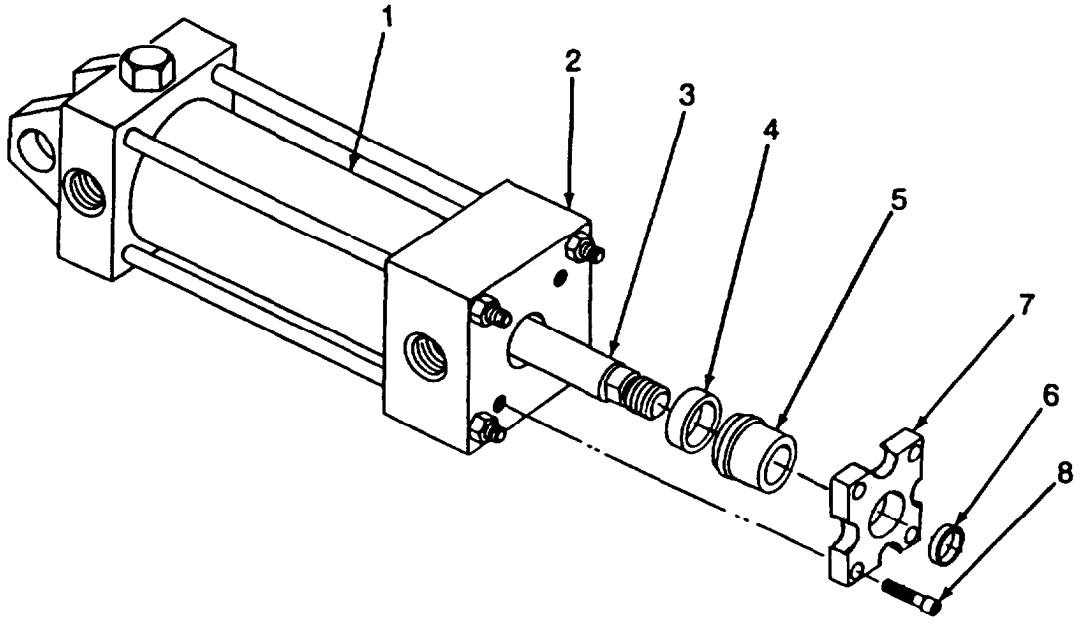
(3) Install gland (5) in retainer plate (7).

(4) Position retainer plate (7) and attached gland on cylinder head (2).

(5) Install four cap screws (8).

(6) Flush out hydraulic cylinder with clean, fresh hydraulic fluid. Install protective plugs.

5-6. HYDRAULIC CYLINDER REPAIR - cont.



5-7. ELECTRICAL ENCLOSURES REPAIR.

This task consists of:

a. Enclosure Assembly (Main Junction Box) Repair
b. Enclosure Assembly (Solenoid Junction Box) Repair
c. Cable Box (Slave Cable Junction Box) Repair

INITIAL SET-UP:

Tools required:

Tool Kit, General Mechanics, Automotive (Appendix B, Section III, Item 1)
Took Kit, Automotive Electrical (Appendix B, Section III, Item 3)

Material Required:

Solvent, Dry Cleaning (Appendix E, Section II, Item 5)
Tag, Marker (Appendix E, Section II, Item 6)

Equipment Condition:

Control cable removed from power pack (para. 4-13)

a. **Enclosure Assembly (Main Junction Box) Repair.**

NOTE

Repair of the electrical enclosure is limited to replacement. Make sure electrical cables are installed in the same enclosure mounting holes from which they were removed. Electrical wiring may be to short if cables are not mounted correctly.

(1) **Removal.** Remove enclosure (junction box) as follows;

(a) Loosen two screws (19), reposition brackets (20), and lift enclosure lid (21).

NOTE

To aid installation, tag location of electrical cables where they enter enclosure.

(b) Tag and disconnect electrical wiring from terminal board TB-1(24).

(c) Remove ferrule (23) from connector (1). Pull cable assembly (2) from enclosure (5)

(d) Repeat step (c) for corrugated (ribbed) cable assemblies (3,4,6,7,8, and 9).

(e) Remove lock nut (18) from connector (17). Pull cable assembly (16) and connector from enclosure (5).

(f) Remove screw (13) and disconnect ground wire.

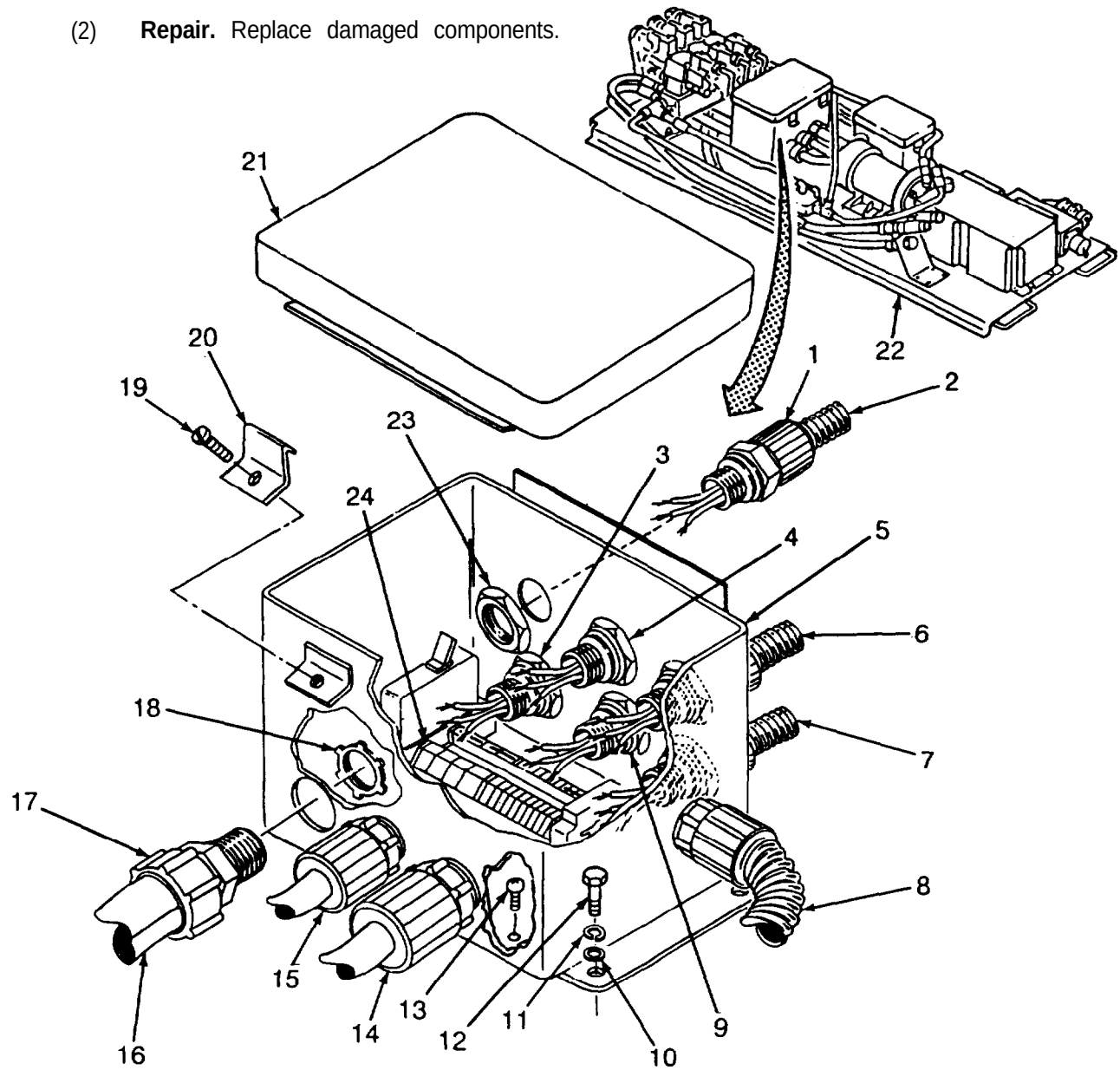
5-7. ELECTRICAL ENCLOSURES REPAIR -cont.

(g) Repeat step (e) for cable assemblies (14 and 15).

(h) Remove four screws (12), washers (10) and lock washers (11).

(j) Remove enclosure (5) from power pack weldment (22).

(2) **Repair.** Replace damaged components.



ENCLOSURE LID REMOVED FOR CLARITY

5-7. ELECTRICAL ENCLOSURES REPAIR - cont.

(3) **Installation.** Install the enclosure (junction box) as follows:

(a) Position enclosure (5) on power pack weldment (22).

(b) Install four lock washers (11), washers (10) and screws (12).

(c) Position cable assembly (16) in enclosure (5). Install lock nut (18) on connector (17).

(d) Repeat step (c) for cable assemblies (15 and 14).

(e) Connect ground wire with screw (13).

(f) Position connector (1) and cable assembly (2) in enclosure (5). Install ferrule (231 on connector.

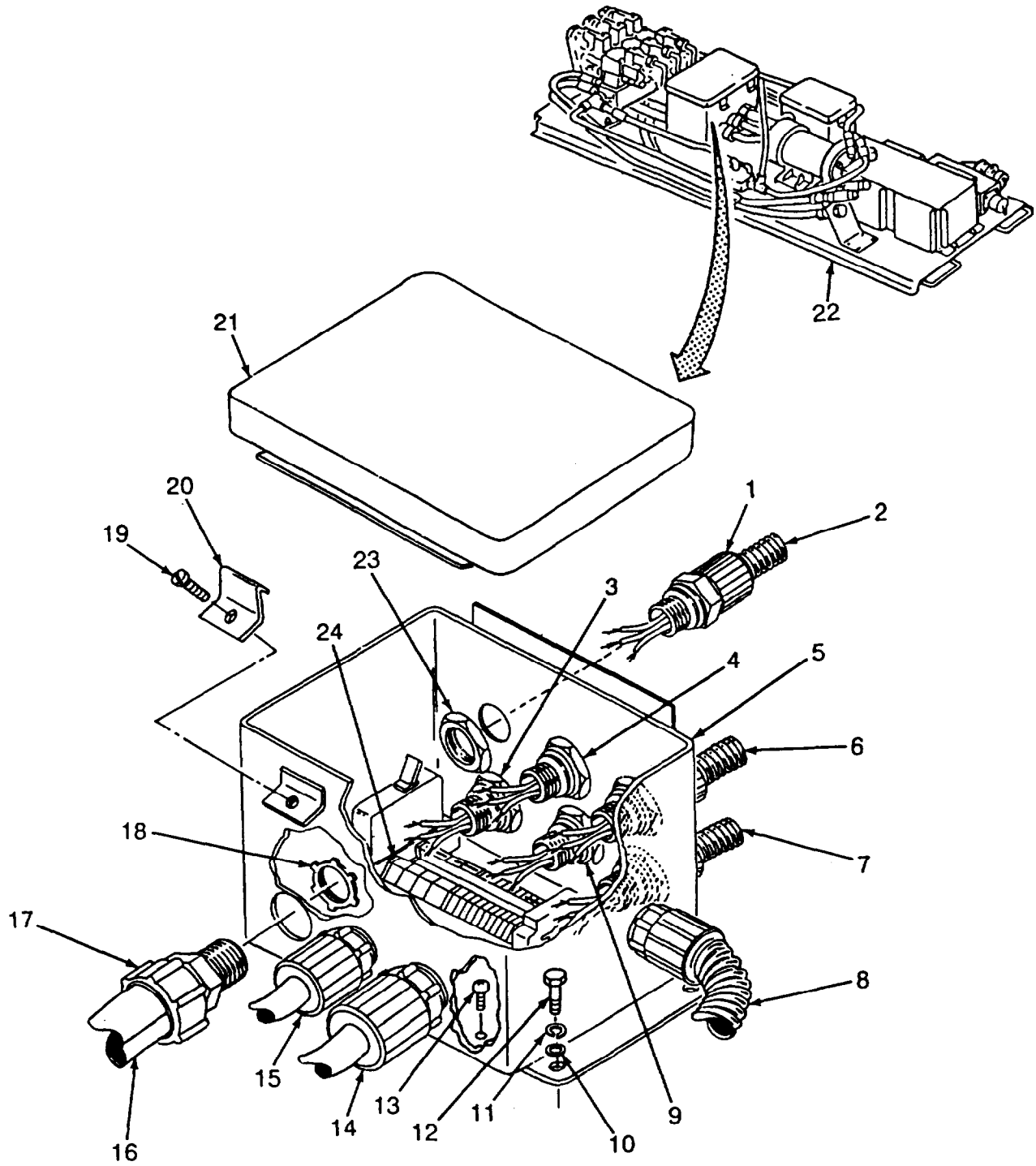
(g) Repeat step (e) for six remaining corrugated (ribbed) cable assemblies (9,8,7,6,4, and 3).

(h) Connect electrical wiring to terminal board TB-1(24) as marked. (Refer to electrical schematic on enclosure lid.)

(i) Remove tags.

(j) Lower enclosure lid (21), position two brackets (20) over lid edge, and tighten two screws (19).

5-7. ELECTRICAL ENCLOSURES REPAIR -cont.



ENCLOSURE LID REMOVED FOR CLARITY

5-7. ELECTRICAL ENCLOSURES REPAIR - cont.

b. **Enclosure Assembly (Solenoid Junction Box) Repair.**

(1) **Removal.** Remove the starter solenoid enclosure as follows:

(a) Loosen screw (25) and raise enclosure lid (24).

(b) Tag and disconnect cable assemblies (36 and 39) from solenoid (41).

(c) Remove ferrule (40) from connector (38). Remove cable assembly (39) from enclosure (32).

(d) Remove lock nut (43) from connector (37). Remove cable assembly (36) from enclosure (32).

(e) Remove four screws (33), lock washers (35), and washers (34).

Lift solenoid enclosure (32) from power pack weldment (21).

(2) **Repair.** Repair the starter solenoid enclosure as follows:

NOTE

Repair of the starter solenoid enclosure assembly is limited to replacement of defective solenoid and/or enclosure.

(a) Remove four screws (29) and separate solenoid (41) and panel (42) from enclosure (32).

(b) Remove two lock nuts (31), washers (30 and 28), and two screws (27). Separate solenoid (41) from panel (42).

(c) Position replacement solenoid (41) on panel (42). Install two washers (28 and 30), screws (27) and lock nuts (31).

(d) Position panel (42) and attached solenoid (41) in enclosure (32) and install four screws (29).

(3) **Installation.**

(a) Position solenoid enclosure (32) on power pack weldment (21).

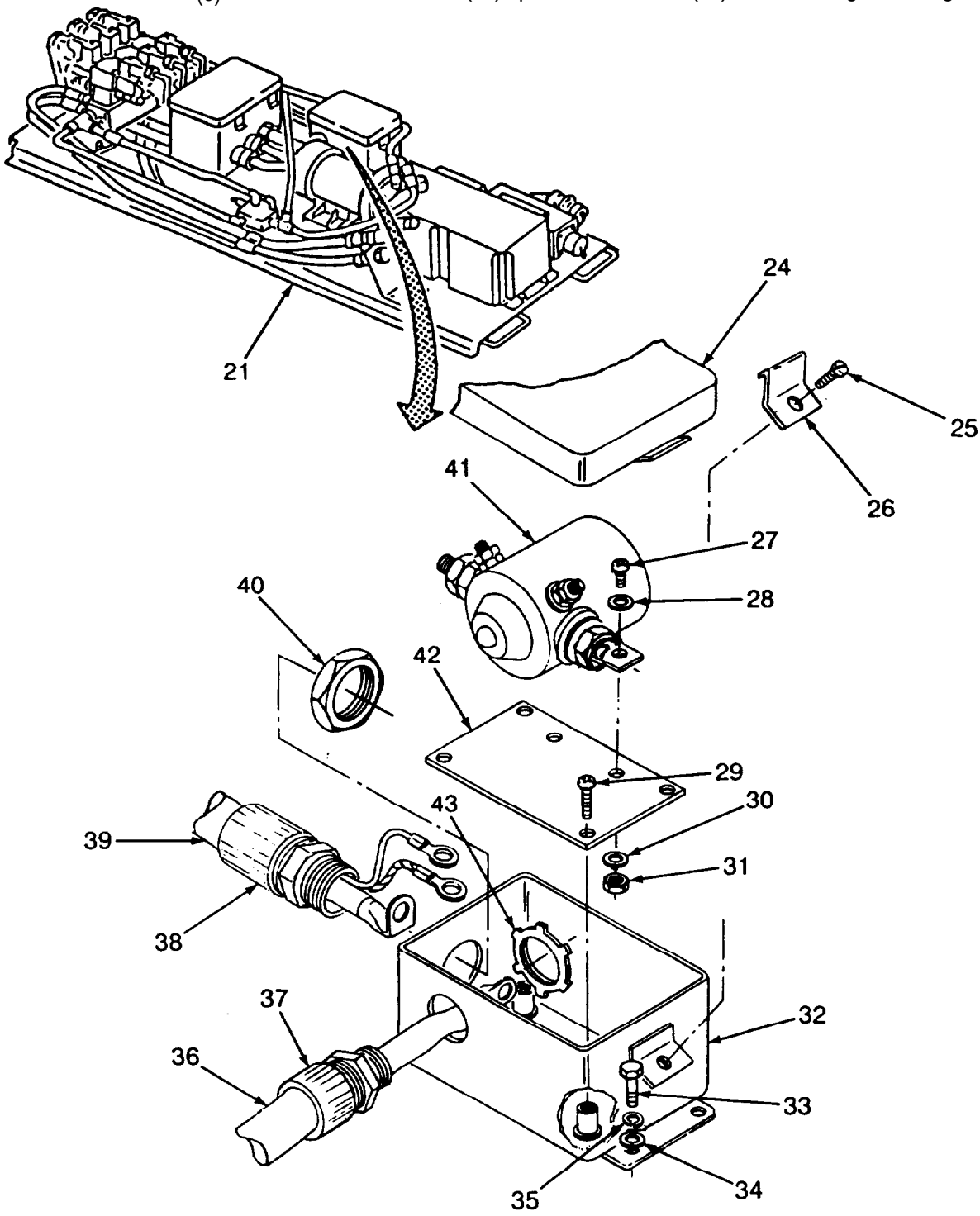
(b) Install four washers (34), lockwashers (35) and screws (33).

(c) Position cable assembly (36) end in enclosure (32) mounting hole. Install lock nut (43) on connector (37).

(d) Position cable assembly (39) in enclosure (32) mounting hole. Install ferrule (40) on connector (38).

5-7. ELECTRICAL ENCLOSURES REPAIR -cont.

(e) Lower enclosure lid (24), position brackets (26) over lid edge, and tighten screw (25).



5-7. ELECTRICAL ENCLOSURES REPAIR -cont.

c . **Cable Box (Slave Cable Junction Box) Repair.**

(1) **Removal.** Remove the cable box enclosure as follows:

NOTE
Repair of the cable box is limited to replacement.

(a) Disconnect cable assembly (55) from electrical enclosure (main junction box) (para.5-7a(1)).

(b) Remove four nuts (50), washers (51 and 58), lock washers (59), screws (60) and connector cover (57) from enclosure bracket (52).

(c) Loosen screws on cable assembly backshell (56) and unscrew backshell from cable assembly connector.

(d) Disconnect cable assembly (55) from enclosure bracket (52).

(e) Remove four screws (67), washers (66), and cover (44) from enclosure (49).

(f) Remove four screws (45), lock washers (46), flat washers (47), and enclosure (49) from power pack weldment (21).

(g) Remove four nuts (53), lock washers (541, washers (70), screws (62) and washers (63).

(h) Identify and tag electrical cable (65) leads at connector (64). Remove two screws (69) and washers (68), then remove connector plug (64), cover (61) and electrical cable (65) from enclosure (49).

(i) Remove grommet (48) from enclosure (49).

(2) **Installation.** Install cable box enclosure as follows:

(a) Install grommet (48) in enclosure (49).

NOTE
Make sure leads are connected as marked during removal. (Refer to schematic on main enclosure lid.)

(b) Push electrical cable (65) through grommet (48) and into enclosure (49). Connect electrical cable (65) leads to connector (64) using two screws (69) and washers (68).

(c) Position connector plug (64) and cover (61) on enclosure (49). Install four washers (63), screws (62), washers (70), lock washers (54) and nuts (53).

5-7. ELECTRICAL ENCLOSURES REPAIR-- cont.

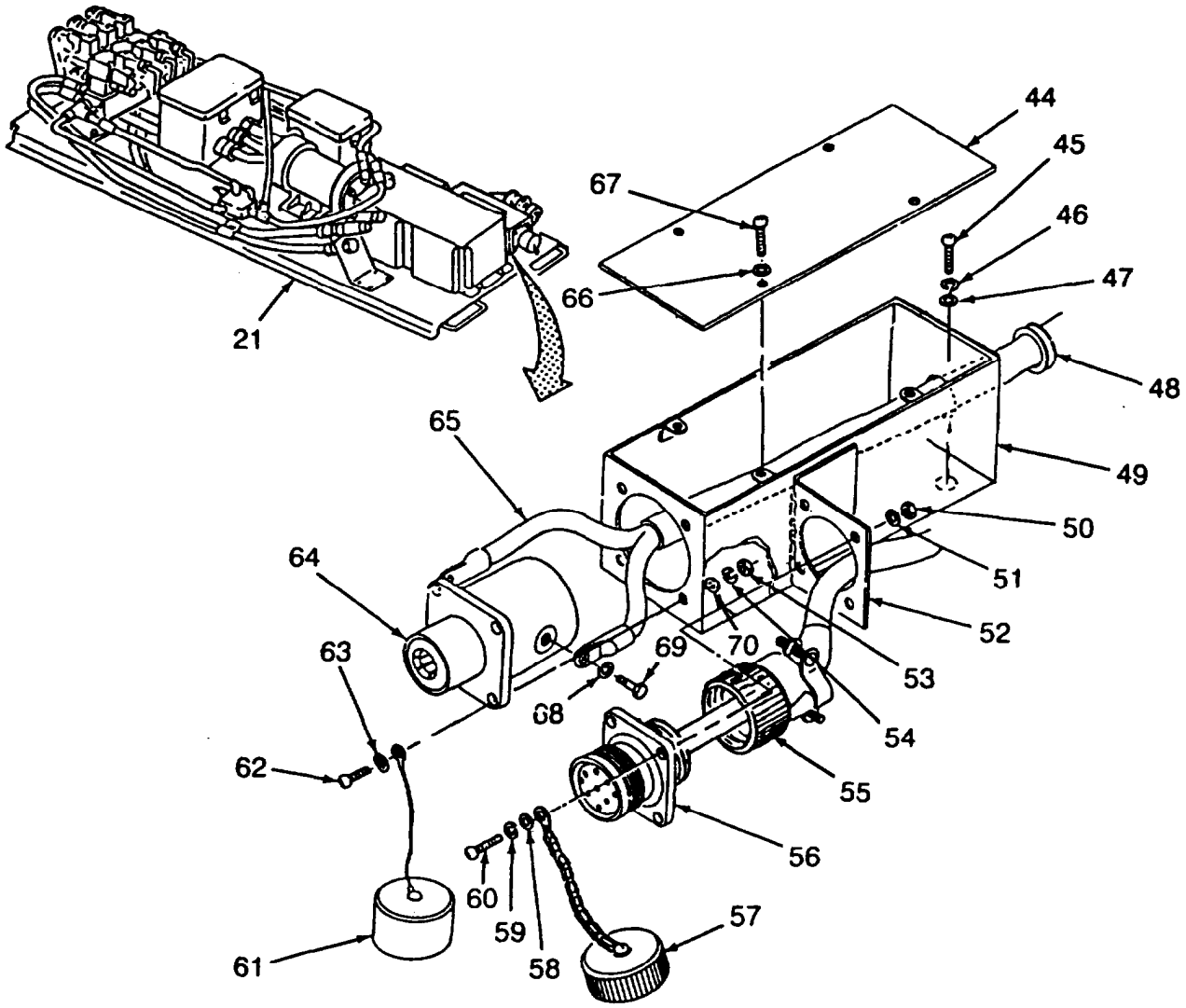
(d) Position enclosure (49) on power pack weldment (21). Install four washers (47), lock washers (46), and screws (45).

(e) Remove tags.

(f) Install cover (44), four flat washers (66) and screws (67) on enclosure (49).

(g) Position cable assembly (55) connector in enclosure bracket (52). Screw backshell(56) onto cable assembly connector and tighten screws. Install connector cover (56), four screws (60), lock washers (59), washers (58 and 51), and nuts (50).

(h) Connect cable assembly to electrical enclosure (main junction box. (Paragraph 5-7a(1)).



5-8. FRAME WELDMENT REPAIR.

This task consists of: **Repair**

INITIAL SET-UP:

Tools required:

Welding Shop (Appendix B, Section III, Item 4)

References:

TM9-237
TM43-0139

Repair.

a. Inspect for cracks, broken handles, and bent or damaged frame components.

b. Weld frame weldment as required in accordance with TM 9-237.

c. Paint frame weldment in accordance with TM 43-0139.

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 Control Record	DA Form 2408-9
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Quality Deficiency Report	SF 368
Recommended Changes to DA Publications	DA Form 2028-2
Recommended Changes to Publications and Blank Forms	DA Form 2028
Report of Discrepancy	SF 364

A-3. FIELD MANUALS

First Aid for Soldiers	FM 21-11

A-4. MISCELLANEOUS

Consolidated Index of Army Publications and Blank Forms	DA PAM 25-30
Destruction of Army Materiel to Prevent Enemy Use	TM 750-224-3
Painting Instructions for Army Materiel	TM 43-0139
The Army Maintenance Management System (TAMMS)	DA PAM 738-750
Welding Theory and Application	TM 9-237

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL

a. This section provides a general explanation of all maintenance and repair function authorized at various maintenance catagories.

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

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 are 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. ***Aline.*** To adjust specified variable elements of an item to bring about a optimum performance.

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

B-2. MAINTENANCE FUNCTIONS - cont

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 an equipment or system.

h. ***Replace.*** To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 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.

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

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

B-3. EXPLANATION OF 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 are "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 Level.*** Column 4 specifies, by the listing of a work time figure (expressed as man-hours shown as whole hours or decimals) in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in Column (3). This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or the complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation item 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 system designations for the various maintenance levels are shown on the following page.

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

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

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

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

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

b. ***Column 2, Maintenance Level.*** 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 HOSE REEL SYSTEM

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS& EQUIP.	(6) RE-MARKS
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	Hose Reel System	Repair							
01	Power Pack								
0101	Guard, Power Pack	Inspect	0.1						
		Remove/Install	0.2					1	
		Replace		0.2					
0102	Cables (Slave and Control)	Inspect	0.1						
		Remove/Install	0.1						
		Replace		0.1					
		Repair			1.2			1,2	
0103	Hose Assemblies, Hydraulic	Inspect	0.1						
		Replace		1.0				1	
0104	Sequence Valve	Inspect	0.1						
		Replace		0.3				1,3	
		Repair			0.3			1,3	
		Adjust			0.2			1	
0105	Valve Station	Inspect	0.1						
		Replace		0.8				1	
		Repair			1.5			1	
0106	Power Unit	Inspect	0.1						
		Service	0.3					1	
		Replace		0.5				1	
		Repair			1.0				
0107	Enclosures	Inspect	0.1						
		Replace			0.2			1	
		Repair			0.2			1	
0108	Frame	Inspect	0.1						
		Repair		0.8				1	

Section II. MAINTENANCE ALLOCATION CHART FOR HOSE REEL SYSTEM

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS& EQUIP.	(6) RE-MARKS
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
02	Frame Unit								
0201	Fuel Hoses	Inspect	0.1						
		Replace		1.2				1	
0202	Guards	Inspect	0.1						
		Replace		0.6				1	
0203	Top Frame	Inspect	0.1						
		Replace		0.5				1	
0204	Rollers	Inspect	0.1						
		Replace		0.8				1	
		Repair		1.0				1	
0205	Hose Reels	Inspect	0.1						
		Replace		1.0				1	
0206	Brakes	Inspect	0.1						
		Replace		0.6				1	
0207	Hydrualic Hoses	Inspect	0.1						
		Replace		0.8				1	
		Repair		0.4				1	
0208	Hydraulic Motor and Drive Wheel	Inspect	0.1						
		Replace		0.5				1	
		Repair		1.0				1	
0209	Hydraulic Cylinder	Inspect	0.1						
		Replace		0.5				1	
		Repair			0.8			1	
0210	Frame Weldment	Inspect	0.1						
		Repair		0.5	1.0			1	

Section III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

(1) REFERENCE CODE	(2) MAINTENANCE CATEGORY	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER (NSN)	(5) TOOL NUMBER
1	O	Tool Kit, General Mechanics	5180-00-177-7033	SC 5180-90-CL-N26
2	O	Multimeter, AN/PSM 45	6625-01-139-2512	AN/PSM45
3	F	Shop Equipment, Automotive Vehicle	4910-00-754-0654	SC 4910-95-A73
4	F	Welding Shop, Trailer Mounted	3431-01-090-1231	SC 3431-95-CL-A04

Section IV. REMARKS

REFERENCE CODE	
	NONE

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

C-1. SCOPE

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

C-2. GENERAL

The Components of End Item and Basic Issue Items List 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 hose reel system in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the hose reel system 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.

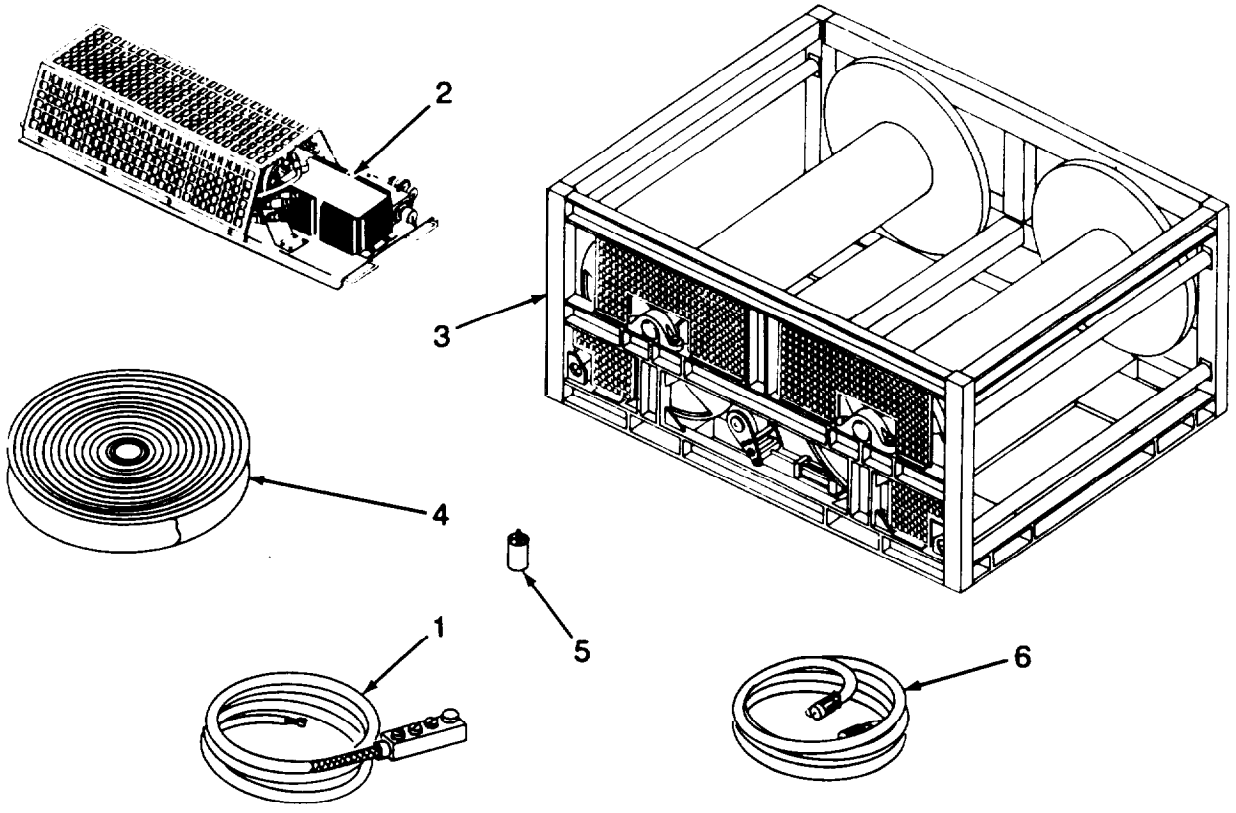
c. Column (3)- Description. Indicates the Federal item and name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

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 rqd). Indicates the quantity of the item authorized to be used with/on the equipment.

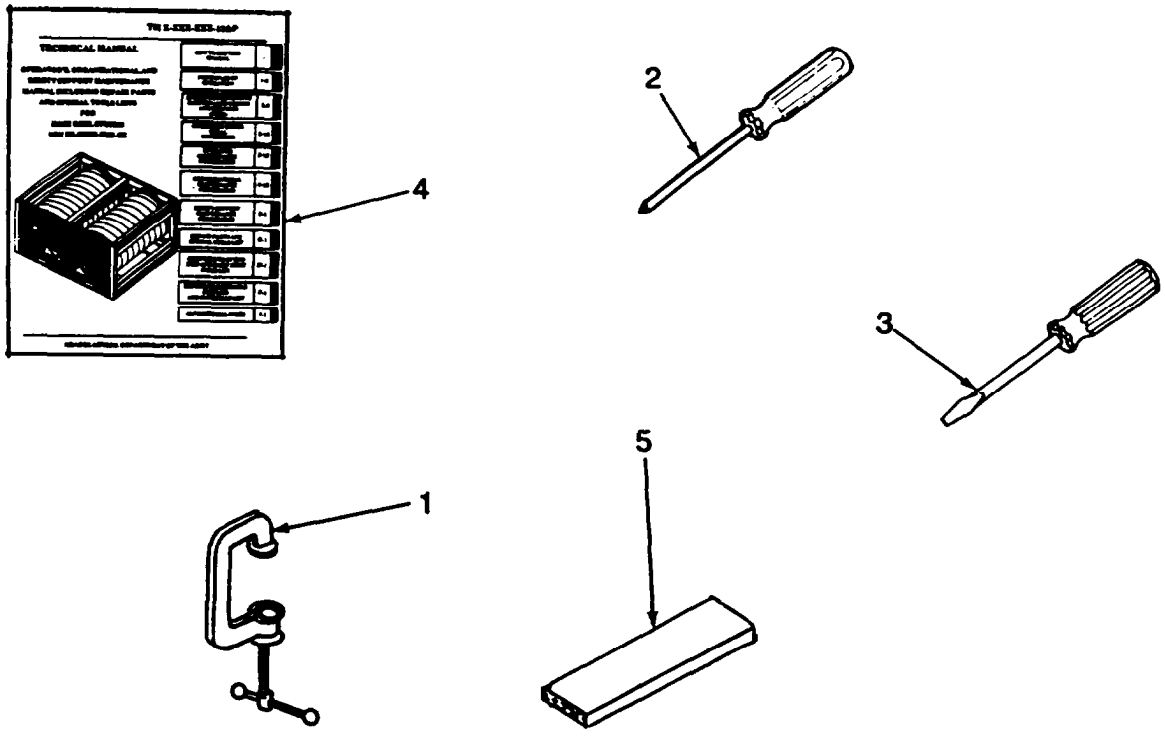
Section II. COMPONENTS OF END ITEM

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM and Part Number Usable on Code	(4) U/M	(5) QTY. RQD
1		Control Cable Assembly (90598) 25853-100	EA	1
2		Power Pack Assembly (90598) 25868-100	EA	1
3		Reeling System (90598) 25700	EA	6
4		Rubber Fuel Hose, 600 Ft. (90598) 25657-I	RO	12
5		Slave Cable to Slave Receptacle Adapter (90598) 25893-I	EA	1
6		Slave Power Cable (90598) 25892-I	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. RQD
1	5120-00-203-6431	Clamp, C, 6-Inch Jaw Opening	EA	4
2	5120-00-234-8913	Screwdriver, Cross Tip: Size 2. Phillips Type	EA	1
3	5120-00-222-8852	Screwdriver, Flat tip: l/4 In w. Tip	EA	1
4		Technical Manual (TM 5-3835-223-13&P): Operator's, Unit, and Direct Support Maintenance Manual Including Repair Parts and Special Tools List for Hose Reel System.	EA	1
5		Wood Block, 2 in. X 4 in. X 12 in.	EA	4



APPENDIX D

ADDITIONAL AUTHORIZATION LIST (AAL)

(NOT APPLICABLE)

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 Hose Reel System. 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 wiping rag, Item 12, Appendix D").

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

C - Operator/Crew
O - Unit 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, ifapplicable.

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

Item Number	Category	National Stock Number	Description	U/M
1	O	5350-00-025-7935	Cloth, Abrasive (19206) 11578467-3	PG
2	O	7930-00-965-6911	Detergent, General Purpose (81349) MIL-D-16791	GL
3	O	9150-00-190-0904	Crease, Automotive and Artillery GAA (81349) MILG-10924	EA
4	C	7920-00-205-1711	Rag, Wiping (58536) A-A-531	BL
5	O	6850-01-369-2474	Solvent, Dry Cleaning (58536) AA 711, Type 1	QT
6	O	9905-00-537-8954	Tag, Marker (81349) MIL-T-12755	EA
7	O	9150-00-657-4959	Hydraulic Fluid, Automatic Transmission (24617) DEXTRON II	GL

APPENDIX F

UNIT AND DIRECT SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

1. SCOPE. This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of unit and direct support maintenance of the Rose Reel System. 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 to this section, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

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

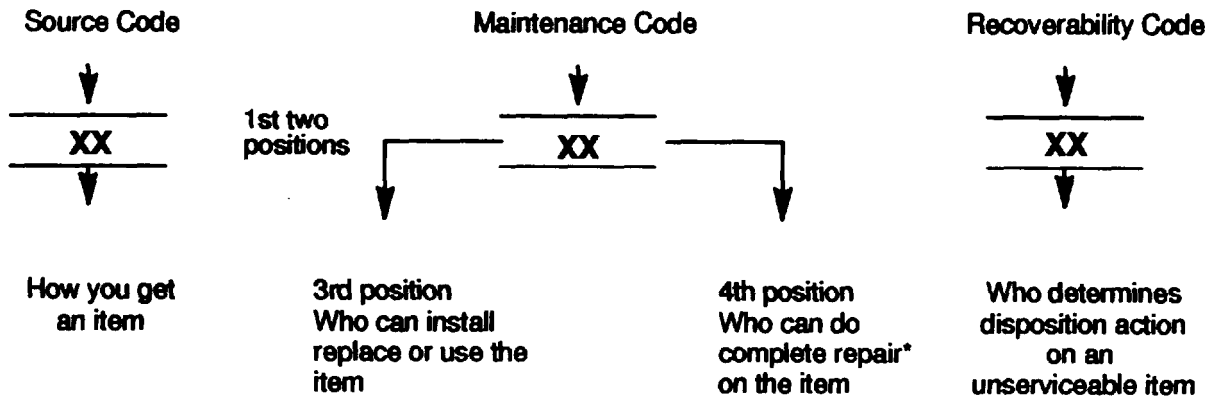
b. Section III Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE column) for the performance of maintenance.

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

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, capabilty, 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 main,. overhaul of an end item/equipment. Explanations of source codes follows:

Source 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 3rd 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 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO - (Made at Unit/AVUM Level) MF - (Made at DS/AVUM Level) MH - (Made at GS Level) ML - (Made at Specialized Repair Activity (SRA)) MD - (Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION and USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3rd 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.
AO - (Assembled by Unit/AVUM Level) AF - (Assembled by DS/AVIM Level) AH- (Assembled by GS Category) AL - (Assembled by SRA) AD - (Assembled by Depot)	Items with these codes are not to be requested/ requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position 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.

XA- Do not requisition "XA"-coded item. Order its next higher assembly. (Refer to the NOTE below.)

XB- lf an "XB". item is not available from salvage, order it using the CAGEC and part number given.

XC- installation drawing, diagram, instruction sheet, field service drawing, that is identified manufacturer"s part number.

XD- Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGEC and part number given,if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a some 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 750-1.

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

(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 the following levels of maintenance.

Maintenance Code	Application/Explanation
C -	Crew or operator maintenance done within unit/AVUM maintenance.
O -	Unit level/VAVUM maintenance can remove, replace, and use the item.
F -	Direct support/AVIM maintenance can remove, replace, and use the item.
H -	General support maintenance can remove, replace, and use the item.
L -	Special&d repair activity can remove, replace, and use the item.
D -	Depot 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 an item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart and SMR codes.

Maintenance Code	APPLICATION/EXPLANATION
O -	Unit/AVUM is the lowest level that can do complete repair of the item.
F -	Direct support/AVIM is the lowest level that can do complete repair of the item.
H -	General Support is the lowest level that can do complete repair of the item.
L -	Specialized repair activity is the lowest level that can do complete repair of the item.
D -	Depot is the lowest level that can do complete repair of the item.
Z -	Nonreparable. No repair is authorized.
B -	No repair is authorized. No park or special toots 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 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 not economically reparable, condemn and dispose of the item at unit or AVUM level.
F-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or AVIM level.
H-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D-	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L-	Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A-	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. CAGEC (Column (3)). The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

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

NOTE

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

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) Part numbers of bulk materials are referenced in this column in the line entry to be manufactured/fabricated.

(3) 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 lll.

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

4. EXPLANATION OF INDEX FORMAT AND COLUMNS (SECTION IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER Column. This column lists the NSN in national item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN, i.e.

NSN
5305-01-574-1467
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. Use the complete NSN (13 digits) when requisitioning items by stock number.

(2) FIG Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section 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) CAGEC Column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

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

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

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

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

c. FIGURE AND ITEM NUMBER INDEX.

(1) FIG, Column This column lists the number of the fiqure where the item is identified/located in section II Section III.

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

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

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

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

5. SPECIAL INFORMATION .

a. USABLE ON CODE. The usable on code appears in the lower left corner of the Description Column heading. Usable on codes are shown as "'UOC:.." in the Description Column (justified left) on the last line of the applicable item description/nomenclature. Uncoded items are applicable to all models.

b. 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 entry for the item to be manufactured/fabricated.

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

6. HOW TO LOCATE REPAIR PARTS.

a. When National Stock Numbers or Part Numbers are NOT Known.

(1) First. Using the table of contents, determine the assembly 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 use the Figure and Item Number Index to find the NSN.

b. When National Stock Number or Part Number is Known.

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

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

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

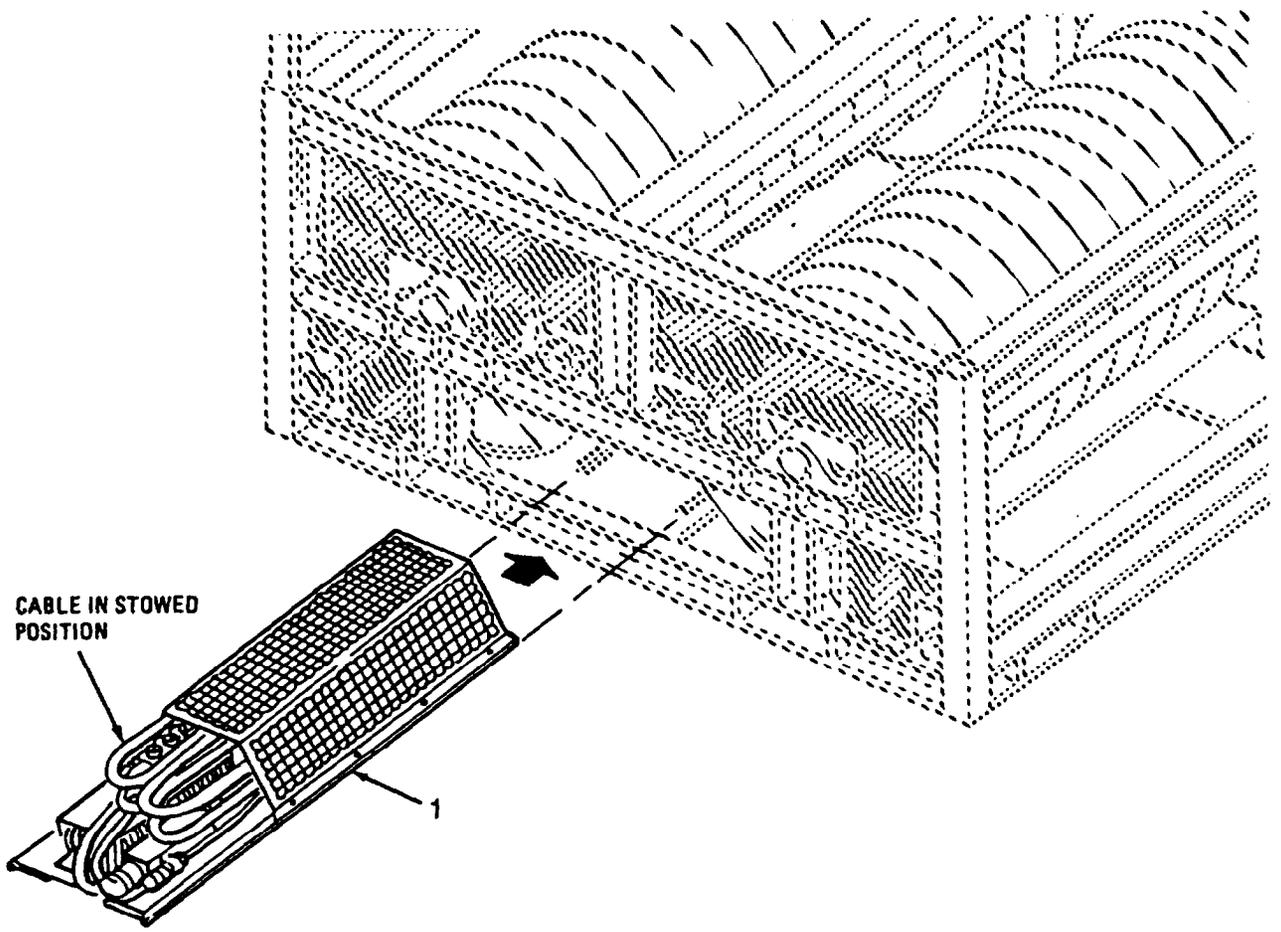


Figure 1. Power Pack

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG, 1. POWER PACK	
1	PDOFF	90598	25868-100	POWER PACK-ASSEMBLY	1
				END OF FIGURE	

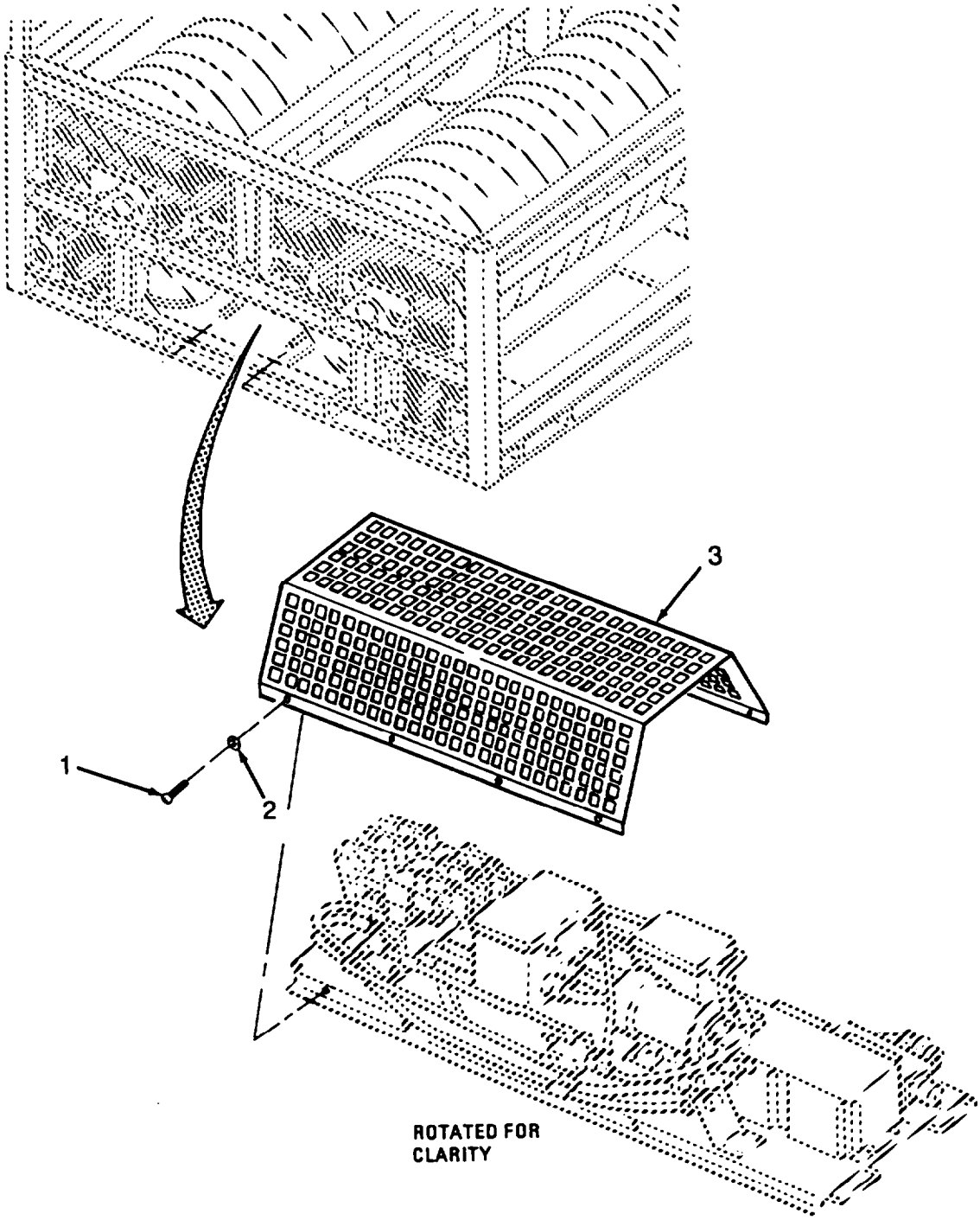


Figure 2. Power Pack Guard

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 2. POWER PACK GUARD	
1	PAOZZ	96906	MS35206-280	.SCREW,ACHINE	16
2	PAOZZ	96906	HS27183-10	.WASHER,FLAT	28
3	XDOZZ	90598	25745-1	.GUARD,POWER PACK	1

END OF FIGURE

1
1 THRU 22

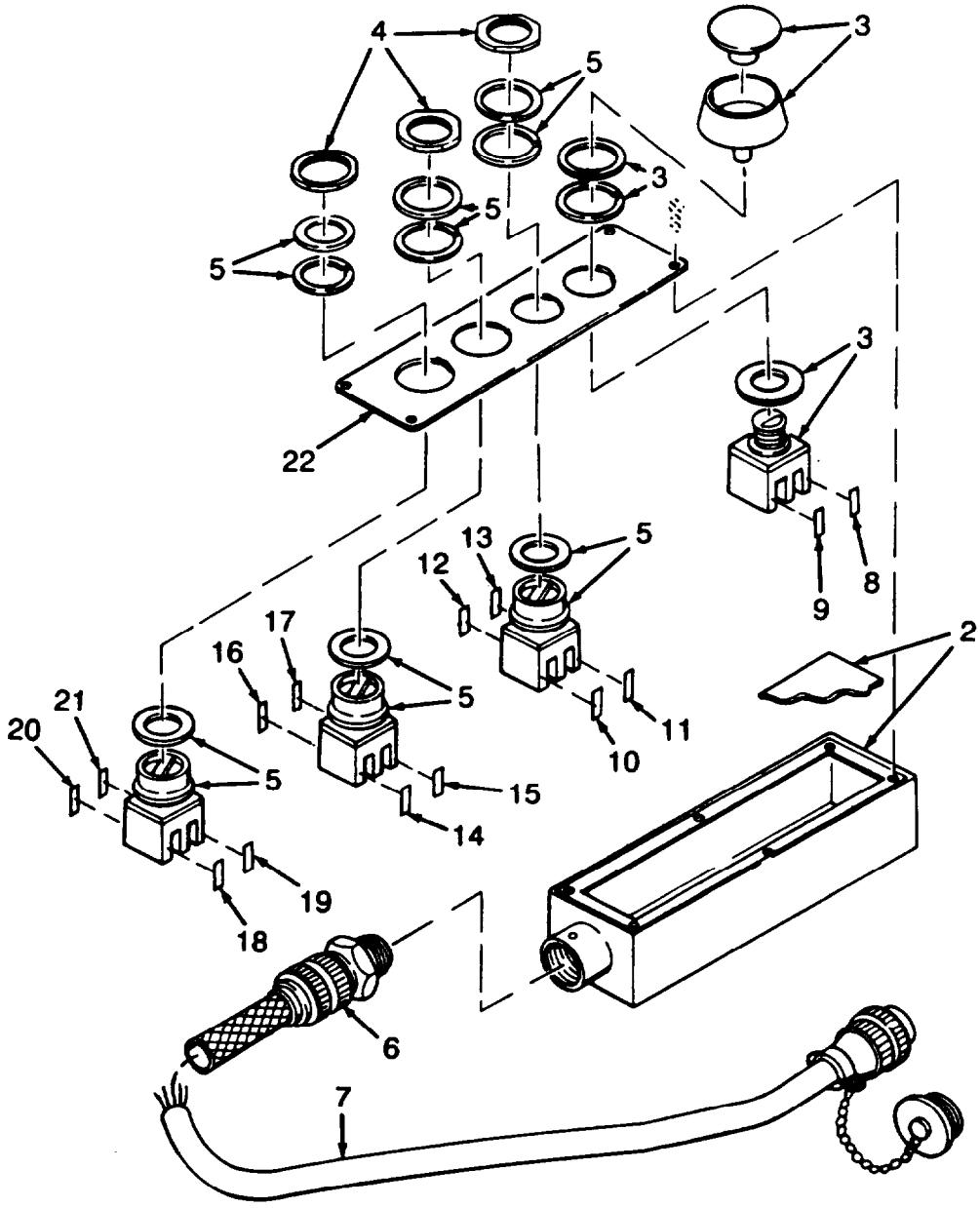


Figure 3. Control Cable

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES/(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 3. CONTROL CABLE	
1	PADFF	90598	25853	. CABLE, ASSEMBLY, CON	1
2	XDOZZ	90598	25815-1	..ENCLOSURE,SWITCHBOX	1
3	PAOZZ	2275X	ABGD310N-R	..PUSHBUTTON,MUSHROOM	1
4	XDOZZ	2275X	0G-82	. . BEZEL,(LOCK RING)	3
5	PAFZZ	2275X	ASD320N	..SWITCH,SELECTOR	3
6	XDFZZ	81992	074-01-021	..GRIP,CABLE	1
7	PAFZZ	90598	25898-100	..CABLE ASSEMBLY, SPE	1
8	XDOZZ	90598	25804-2	..DECAL,S1-1	1
9	XDOZZ	90598	25804-3	..DECAL,SI-2	1
10	XDOZZ	90598	25804-4	. . DECAL,S2-1	1
11	XDOZZ	90598	25804-5	. . DECAL,S2-2	1
12	XDOZZ	90598	25804-6	..DECAL,S2-3	1
13	XDOZZ	90598	25804-7	..DECAL,S2-4	1
14	XDOZZ	90598	25804-8	. . DECAL, S3-1	1
15	XDOZZ	90598	25804-9	..DECAL,S3-2	1
16	XDOZZ	90598	25804-10	. . DECAL,S3-3	1
17	XDOZZ	90598	25804-11	..DECAL,S3-4	1
18	XDOZZ	90598	25804-12	..DECAL,S4-1	1
19	XDOZZ	90598	25804-13	..DECAL,S4-2	1
20	XDOZZ	90598	25804-14	..DECAL,S4-3	1
21	XDOZZ	90598	25804-15	..DECAL,S4-4	1
22	XDOZZ	90598	25865-1	..NAMEPLATE,PENDENT	1

END OF FIGURE

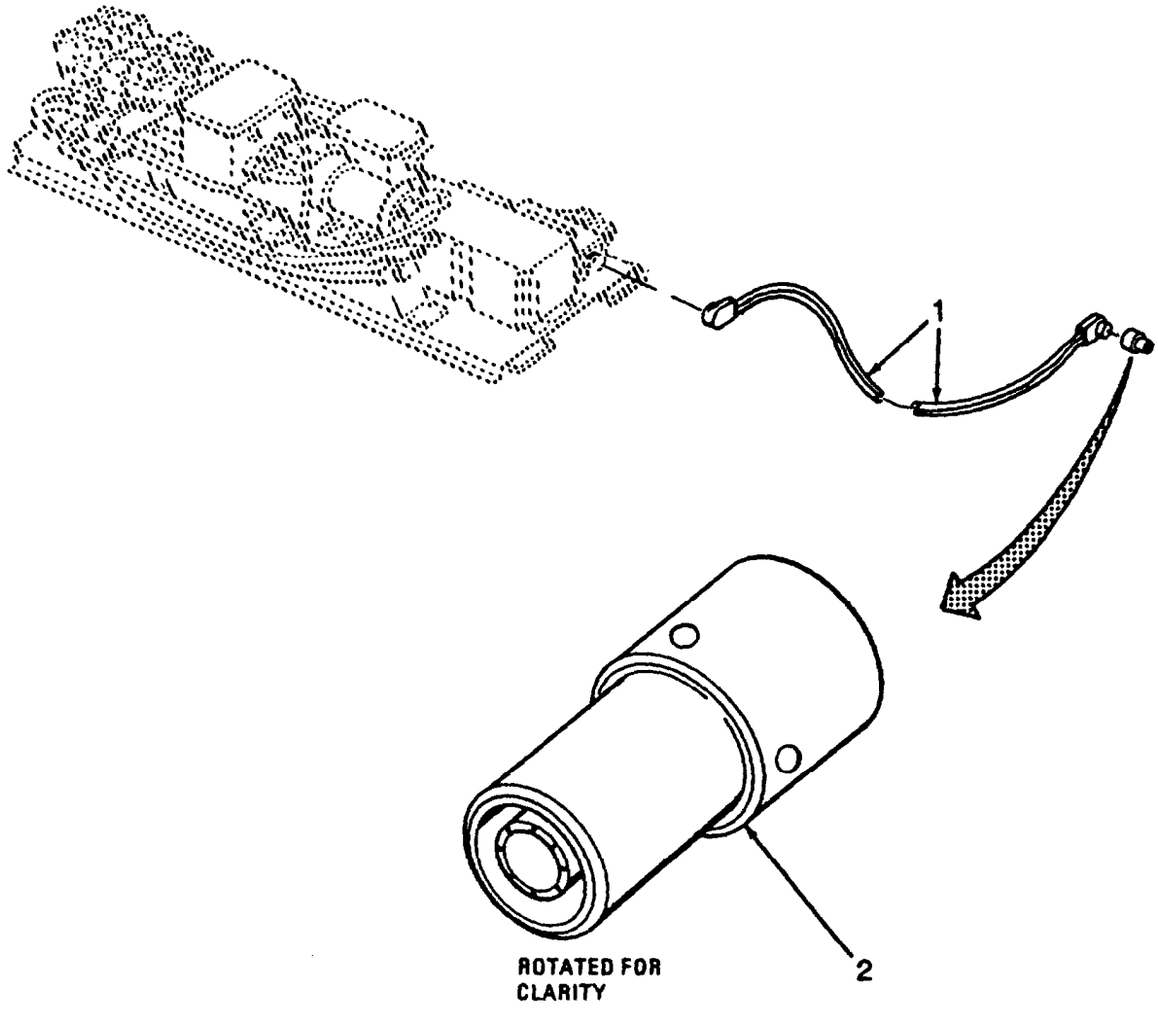


Figure 4. Slave Cable

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 4. SLAVE CABLE	
1	PAOFZ	19207	11682336	.CABLE ASSEMBLY.POWE	1
2	PAOZZ	19207	11677570	.ADAPTER.CONNECTOR	1

END OF FIGURE

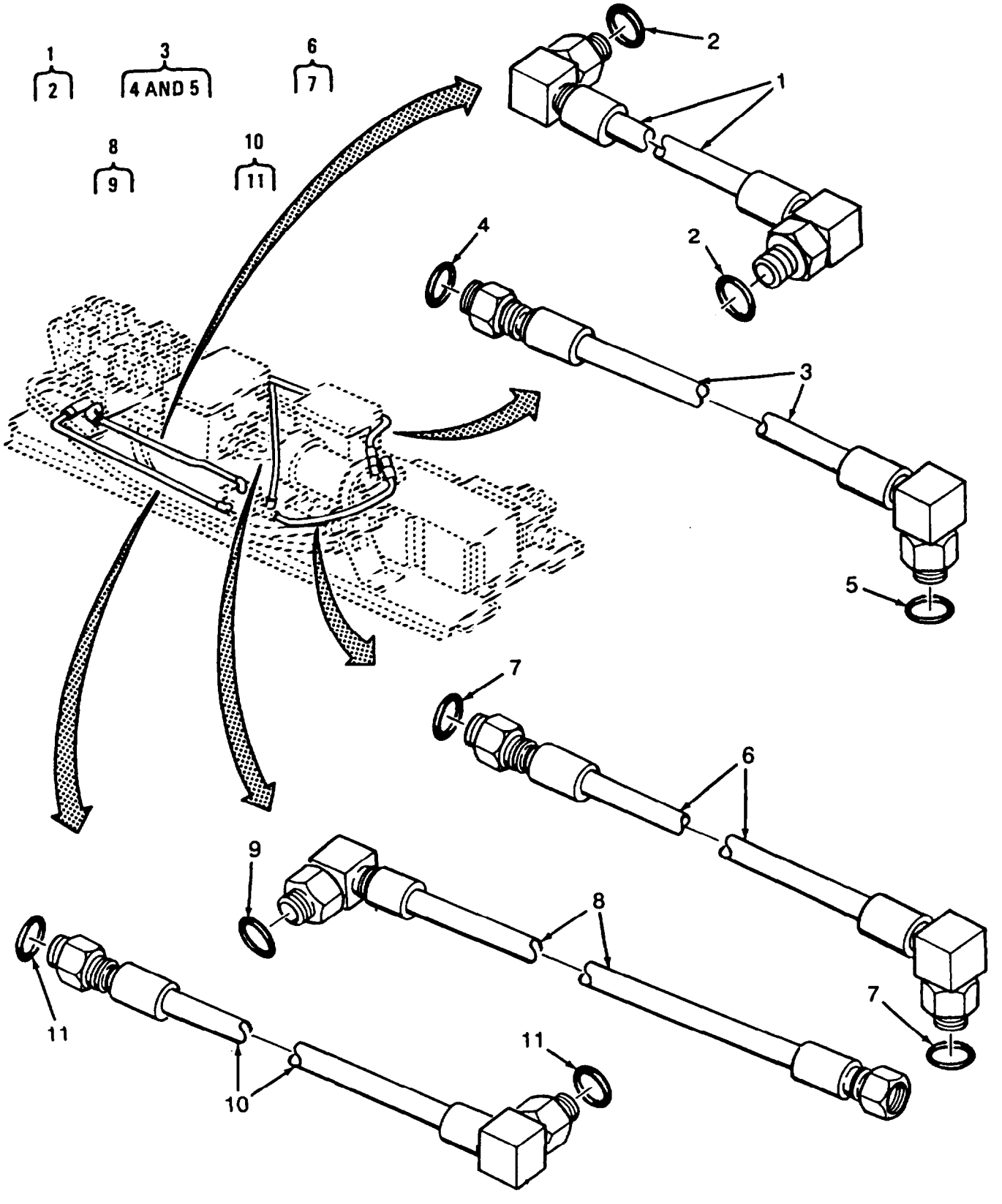


Figure 5. Hoses and Fittings (Sheet 1 of 2)

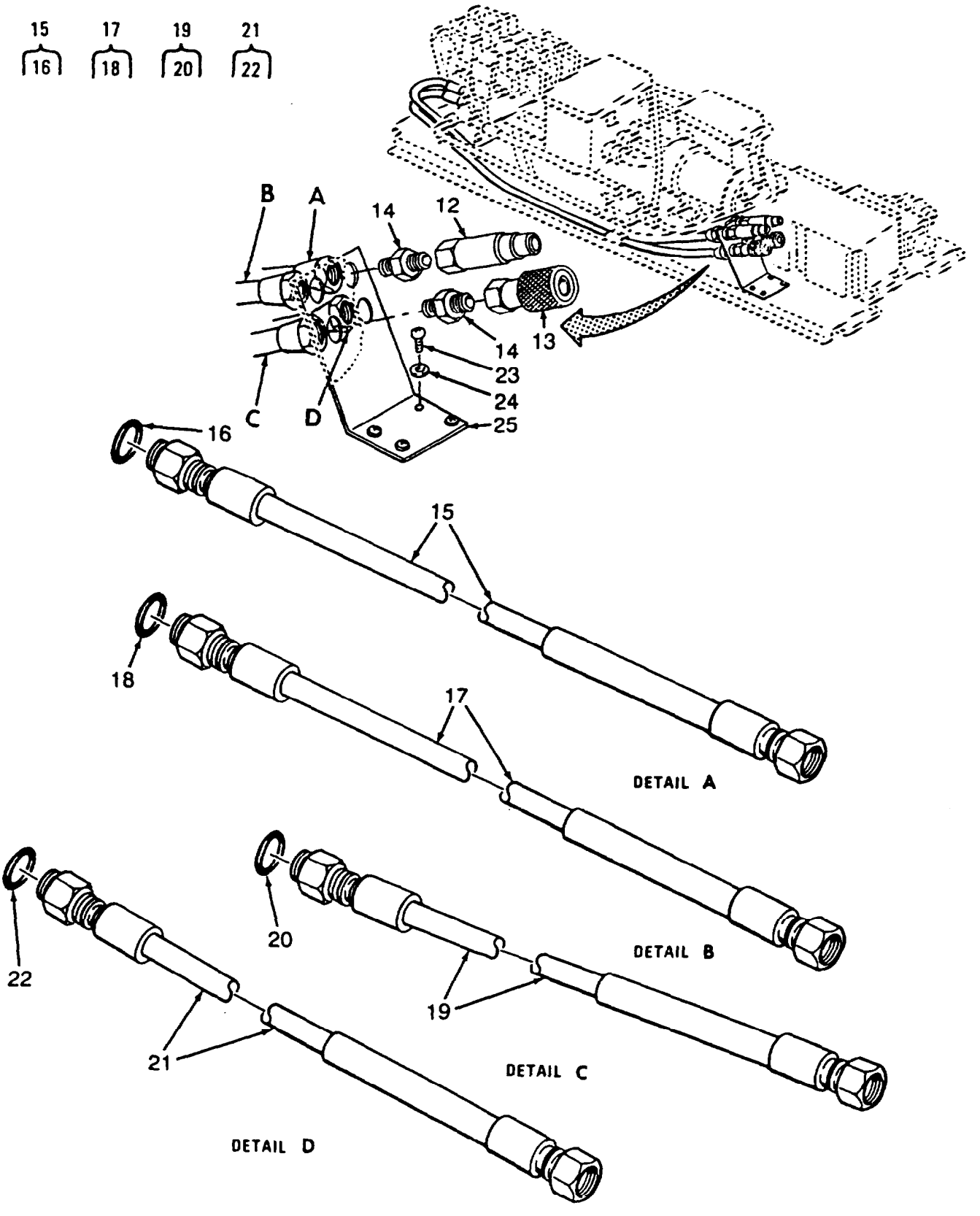


Figure 5. Hoses and Fittings (Sheet 2 of 2)

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 5. HOSES AND FITTINGS	
1	PAOZZ	24161	6C1T-6-8MBX90/6-8MBX90-19	.HOSE ASSEMBLY, META	1
2	PAOZZ	24161	7254-008-5	..PACKING, PREFORMED	2
3	PAOZZ	24161	6C1T-6-8MBX/6-6MBX90-21	.HOSE ASSEMBLY, META	1
4	PAOZZ	24161	7254-008-5	..PACKING, PREFORMED	1
5	PAOZZ	24161	7254-0006-5	..PACKING, PREFORMED	1
6	PAOZZ	24161	6C1T-6-8FJX/6-6MBX90-25	.HOSE ASSEMBLY,METAL	1
7	PAOZZ	24161	7254-0006-5	..PACKING, PREFORMED	2
8	PAOZZ	24161	6C1T-6-8MBX90/6-8FJX-32	.HOSE ASSEMBLY, META	1
9	PAOZZ	24161	7254-008-5	..PACKING, PREFORMED	1
10	PAOZZ	24161	6C1T-6-8MBX/6-8MBX90-19	.HOSE ASSEMBLY, META	1
11	PAOZZ	24161	7254-008-5	..PACKING, PREFORMED	2
12	PAOZZ	73992	6-FFP-38F	.NIPPLEE, QUICK-DISC	2
13	PAOZZ	73992	6-FFS-38F	.COUPLING HALF,QUICK	2
14	PAOZZ	01276	2240-6-8S	.ADAPTER,STRAIGHT,P1	4
15	PAOZZ	24161	6C1T-6-8MBX/6-8FJX-60	.HOSE ASSEMBLY, META	1
16	PAOZZ	24161	7254-008-5	..PACKING, PREFORMED	1
17	PAOZZ	24161	6C1T-6-8MBX/6-8FJX-60	.HOSE ASSEMBLY,META	1
18	PAOZZ	24161	7254-008-5	. . PACKING, PREFORMED	1
19	PAOZZ	24161	6C1T-6-8MBX/6-8FJX-52	.HOSE ASSEMBLY, META	1
20	PAOZZ	24161	7254-008-5	..PACKING, PREFORMED	1
21	PAOZZ	24161	6C1T-6-8MBX/6-8FJX-52	.HOSE ASSEMBLY, META	1
22	PAOZZ	24161	7254-008-5	..PACKING, PREFORMED	1
23	PAOZZ	96906	MS35206-280	.SCREW,MACHINE	4
24	PAOZZ	96906	MS27183-10	.WASHER,FLAT	4
25	PAOZZ	90598	25773-1	.BRACKET,MOUNTING	1

END OF FIGURE

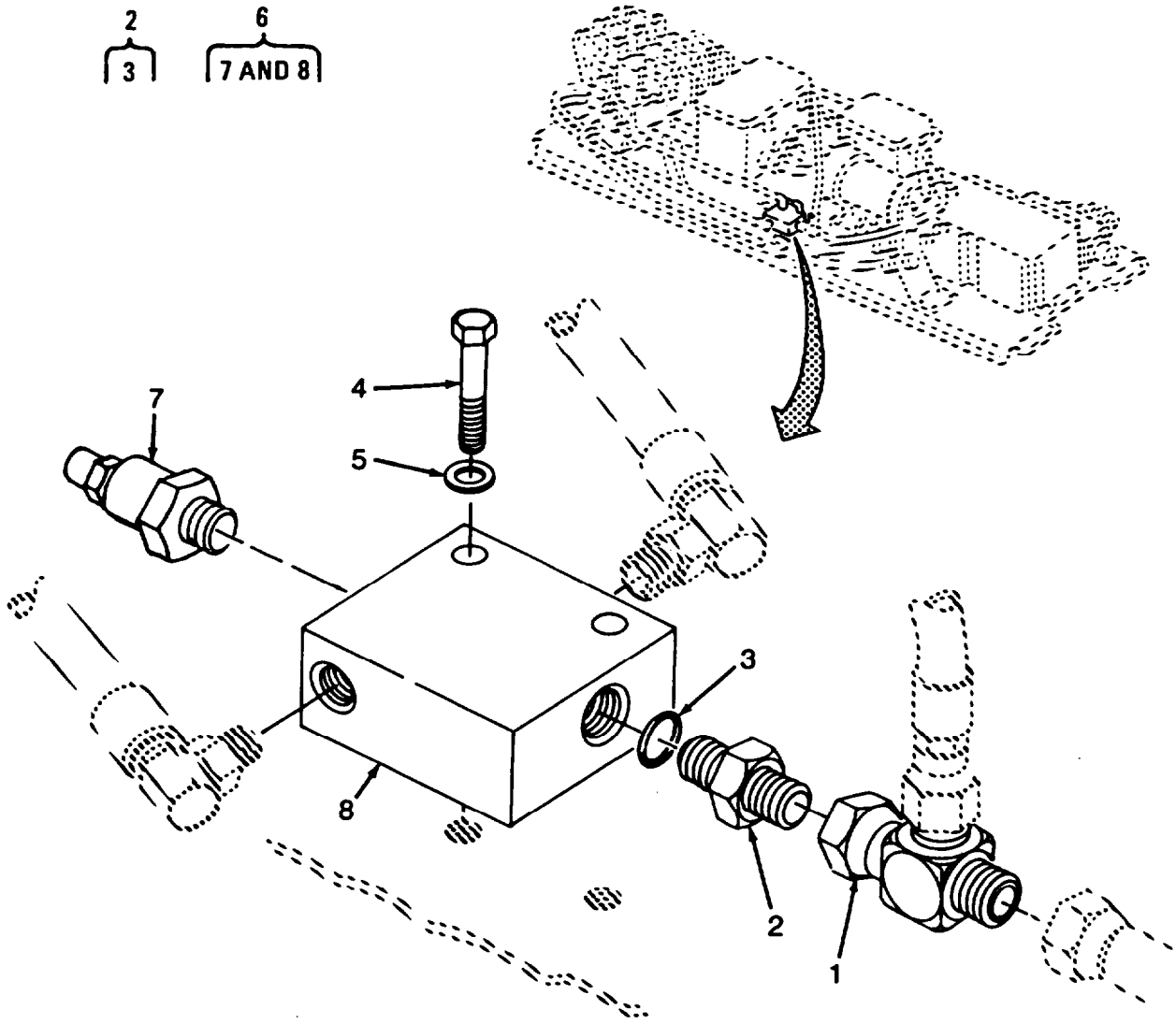


Figure 6. Sequence Valve

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 6. SEQUENCE VALVE	
1	PAOZZ	24161	8MJ-8FJX-8MJ	.TEE, PIPE TO TUBE T	1
2	PAOZZ	24161	8MB-8MJ	. ADAPTER, STRAIGHT,T	1
3	PAOZZ	24161	7254-008-5	..PACKING, PREFORMED	1
4	PAOZZ	96906	MS90725-39	. BOLT,MACHINE	2
5	PAOZZ	96906	MS27183-12	.WASHER.FLAT	2
6	PAOFZ	54035	RSDC LBN ECJ	.ADAPTER,STRAIGHT,T	1
7	PAFZA	54035	RSDC LBN	. . VALVE, REGULATING,F	1
8	PAFZZ	54035	ECJ	..BODY, VALVE	1
				END OF FIGURE	

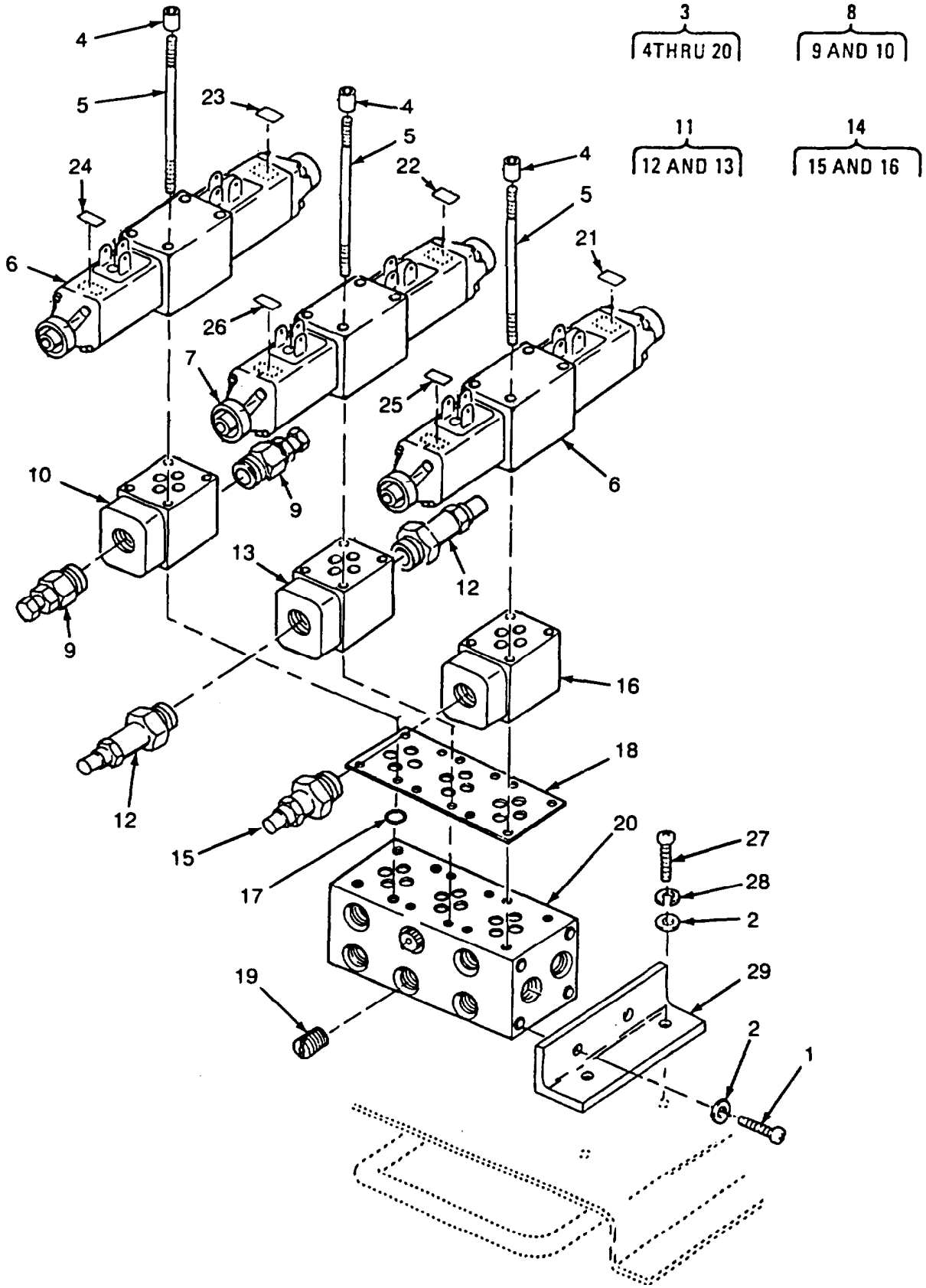


Figure 7. Valve Station

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) CITY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 7. VALVE STATION	
1	PAFZZ	96906	MS90725-31	. BOLT,MACHINE	1
2	PAFZZ	96906	MS27183-12	.WASHER,FLAT	2
3	PAFFF	90598	25819-100	. HEAD, VALVE	1
4	PAFZZ	90598	992550-1	..NUT,PLAIN,CAP	12
5	XDOZZ	90598	992650X4.25	. .STUD	12
6	PAFZZ	27005	4WE6G51/AG24NZ4/5V	..VALVE, LINEAR, DIRE	2
7	PAFZZ	27005	4WE6E51/AG24NZ4/5V	. . VALVE,LINEAR,DIRECT	1
8	PAFZZ	54035	RPEC LBN FBY	..VALVE, SAFETY RELIE	1
9	PAFZZ	54035	RPEC LBN	. . . VALVE, SAFETY RELIE	2
10	PAFZZ	54035	FBY	. . . MANIFOLD,HYDRAULIC	1
11	PAFZZ	54035	FDBA LAN GBX	..VALVE, SAFETY RELIE	1
12	PAFZZ	54035	FDBA LAN	. ..CARTRIDGE,VALVE	2
13	PAFZZ	54035	GBX	. . . BODY, VALVE	1
14	PAFZZ	54035	PPDB LNN EBP	..VALVE, SAFETY RELIE	1
15	PAFZZ	54035	PPDB LNN	. . . VALVE, SAFETY RELLE	1
16	PAFZZ	54035	EBP	. . . BODY,VALVE	1
17	PAFZZ	90598	2-012	. . PACKING, PREFORMED	12
18	PAFZZ	90598	990106003	..SEAL PLATE	1
19	PAFZZ	16309	7562-01	..PLUG,TUBE FITTING,T	1
20	PAFZZ	16309	1-1122-031	..MANIFOLD,HYDRAULIC	1
21	XDOZZ	90598	25804-21	.DECAL,L6	1
22	XDDZZ	90598	25804-17	. DECAL,L2	1
23	XDOZZ	90598	25804-19	. DECAL,L4	1
24	XDOZZ	90598	25804-16	. DECAL,L1	1
25	XDOZZ	90598	25804-20	.DECAL,L5	1
26	XDOZZ	90598	25804-18	. DECAL,L3	1
27	PAOZZ	80204	B1821BH031C075N	,BOLT,MACHINE	4
28	PAOZZ	96906	MS35338-45	.WASHER,LOCK	4
29	XDOZZ	90598	25784-1	. SUPPORT,MANIFOLD	2

END OF FIGURE

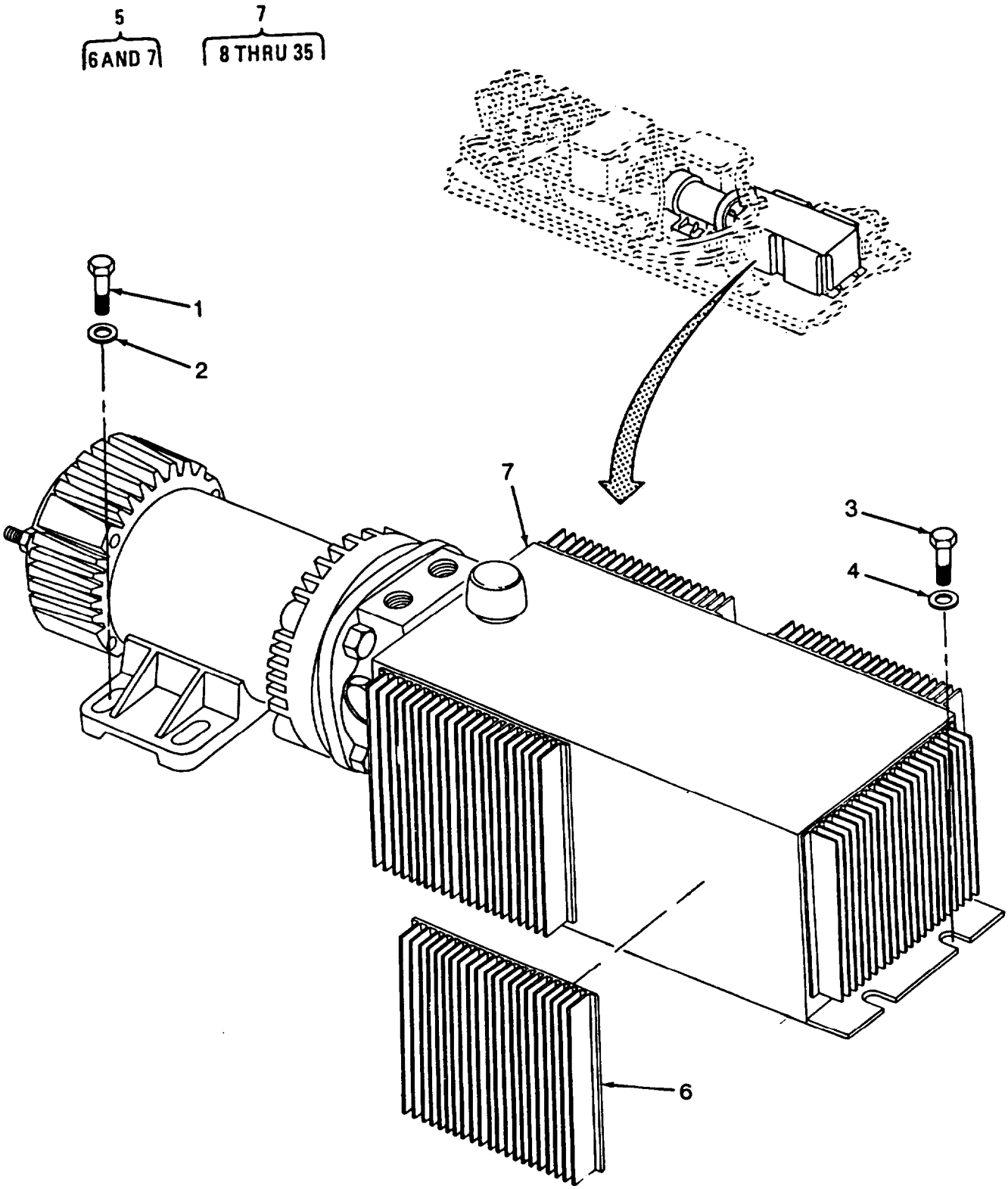


Figure 8. Power Unit (Sheet 1 of 2)

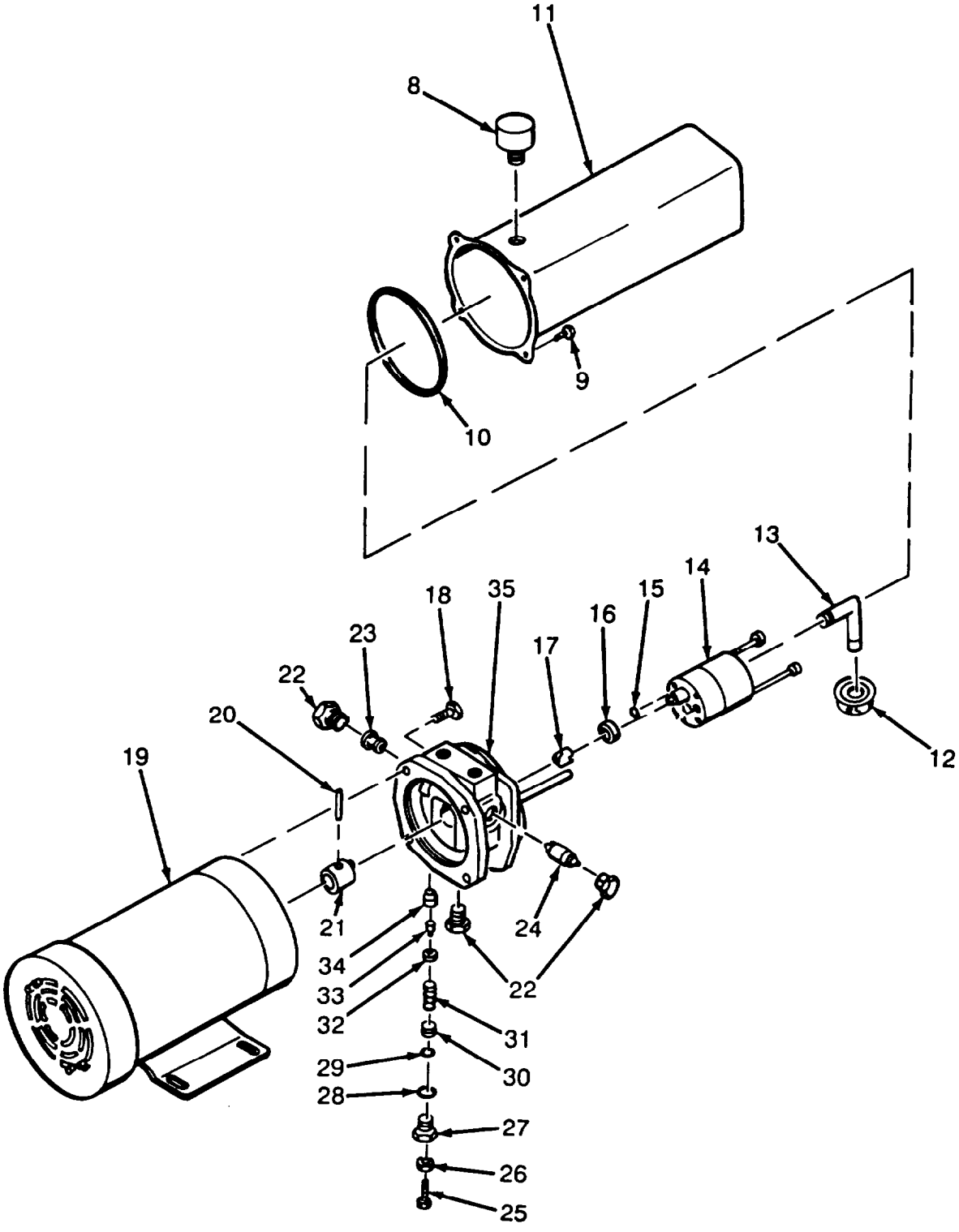


Figure 8. Power Unit (Sheet 2 of 2)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 8. POWER UNIT	
1	PAOZZ	96906	MS90725-5	. SCREW,CAP,HEXAGON H	4
2	PAOZZ	96906	MS27183-10	.WASHER,FLAT	4
3	PAOZZ	96906	MS90725-58	. SCREW,CAP,HEXAGON H	2
4	PAOZZ	96906	MS27183-14	.WASHER,FLAT	2
5	XDOFF	90598	25894-100	.POWER UNIT,HYD ASSY	1
6	XDFZZ	90598	25822-1	..FIN,HEAT	5
7	XDFFF	90598	25820-1	..POWER UNIT,HYD	1
8	XDFZZ	05448	410586	. ..VENT CAP	1
9	PAFZZ	05448	410559	. . . SCREW, CAP HEX	4
10	PAFZZ	05448	410526	. . . PACKING,PREFORMED	1
11	PAFZZ	05448	773748	. ..RESERVOIR,HYDRAULIC	1
12	PAFZZ	05448	410779	. ..FILTER,ACOUSTICAL	1
13	XDFZZ	05448	362244	. . . PIPE,SUCTION	1
14	PAFZZ	05448	631503	. ..PUMP,ROTARY	1
15	PAFZZ	05448	409005	. . . PACKING,PREFORMED	2
16	PAFZZ	05448	410694	. . . SEAL, PLAIN ENCASED	1
17	PAFZZ	05448	359673	. . . ADAPTER.STRAIGHT,PI	1
18	PAFZZ	05448	409221	. ..SCREW,CAP,HEX HD	4
19	PAFZZ	05448	363092	. . . MOTOR,HYDRAULIC	1
20	PAFZZ	05448	410485	. ..PIN,SPRING	1
21	PAFZZ	05448	362436	. . . ADAPTER,SHAFT	1
22	PAFZZ	05448	773764	. ..PLUG,MACHINE THREAD	3
23	PAFZZ	05448	774159	. ..BODY,VALVE	1
24	PAFZZ	05448	361181	. . . VALVE,LINEAR,DIRECT	1
25	PAFZZ	05448	400696	. ..SCREW,CAP,HEX HD	1
26	PAFZZ	05448	409843	. ..NUT,PLAIN,HEXAGON	1
27	PAFZZ	05448	361981	. ..VALVE,SAFETY RELIEF	1
28	PAFZZ	05448	410728	. ..PACKING,PREFORMEO	1
29	PAFZZ	05448	401272	. ..PACKING,PREFORMED	1
30	PAFZZ	05448	361983	. ..HOLDER,SPRING	1
31	PAFZZ	05448	411320	. ..HOLDER,SPRING	1
32	PAFZZ	05448	363162	. ..WASHER,FLAT	1
33	PAFZZ	05448	362501	. ..PISTON,VALVE	1
34	PAFZZ	05448	363163	. ..VALVE,SAFETY RELIEF	1
35	PAFZZ	05448	205707	. ..COUPLER,POWER	1
				END OF FIGURE	

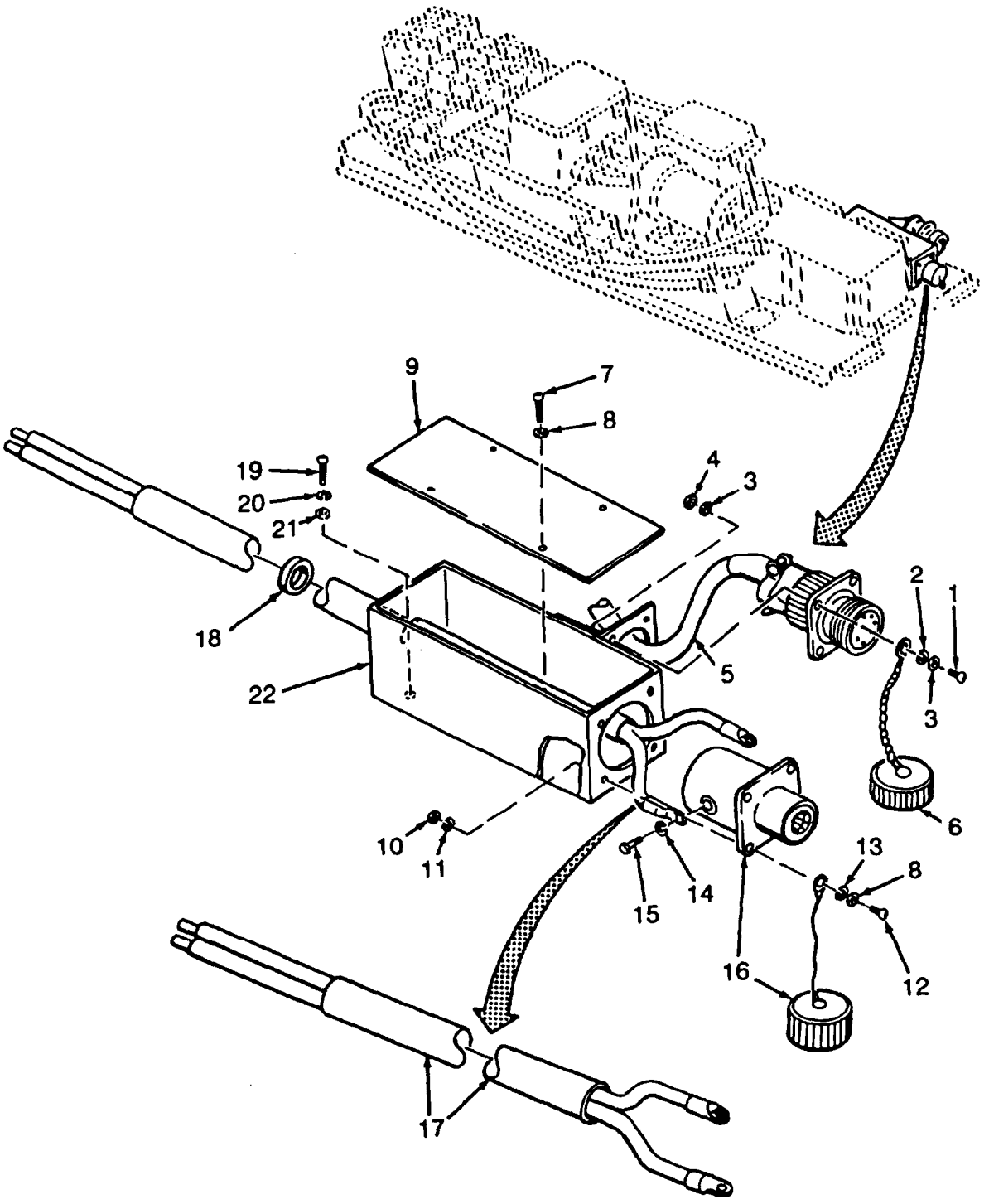


Figure 9. Cabling (Sheet 1 of 2)

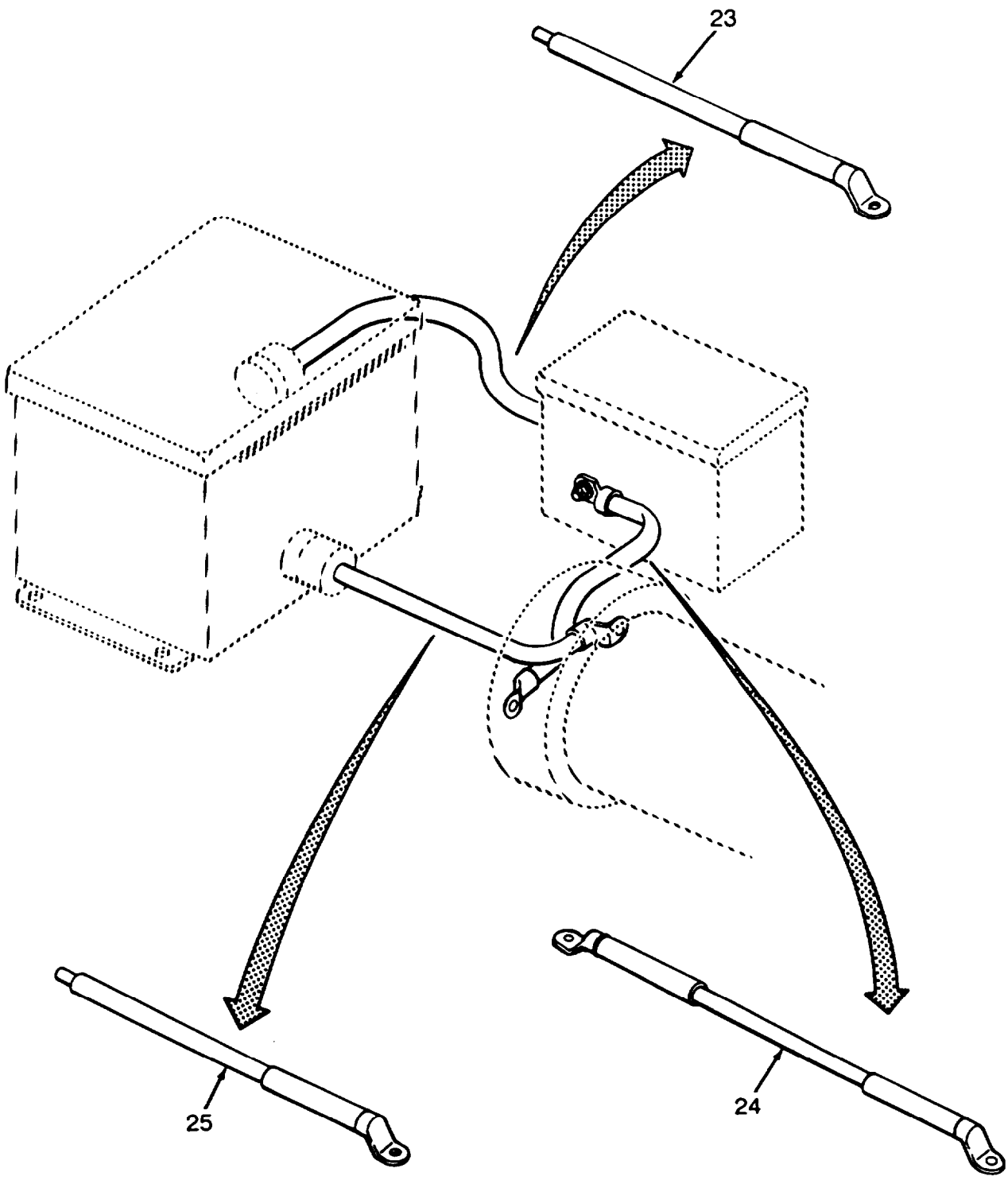


Figure 9. Cabling (Sheet 2 of 2)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 9. CABLING	
1	PAOZZ	96906	MS35206-217	.SCREW,MACHINE	4
2	PAOZZ	96906	MS35338-40	.WASHER,LOCK	4
3	PAOZZ	96906	MS27183-4	.WASHER,FLAT	8
4	PAOZZ	96906	MS35649-242	.NUT,PLAIN,HEXAGON	4
5	PAFZZ	90598	25818-100	.CABLE ASSEMBLY,SPEC	1
6	PAFZZ	96906	MS25043-22DA	. COVER,ELECTRICAL CO	1
7	PAFZZ	96906	MS35207-261	. SCREW,MACHINE	4
8	PAFZZ	96906	MS27183-42	.WASHER,FLAT	8
9	XDFZZ	90598	25885-1	.COVER,BOX,CABLE	1
10	PAFZZ	96906	MS35650-302	.NUT,PLAIN,HEXAGDN	4
11	PAFZZ	96906	MS35335-32	.WASHER,LOCK	4
12	PAFZZ	9606M	S35207-264	. SCREW,MACHINE	4
13	PAFZZ	96906	MS35338-43	.WASHER,LOCK	4
14	PAFZZ	96906	MS35338-46	.WASHER,LOCK	2
15	PAFZZ	96906	MS90727-57	. SCREW,CAP,HEXAGON H	2
16	PAFZZ	96906	MS52131-1	. CONNECTOR,RECEPTACL	1
17	PAFZZ	90598	25897-100	.CABLE ASSY, SPECIAL	1
18	PAFZZ	96906	MS35489-22	.GROMMET,NONMETALLIC	1
19	PAFZZ	96906	MS35206-280	. SCREW,MACHINE	4
20	PAFZZ	96906	MS35335-33	.WASHER,LOCK	4
21	PAFZZ	96906	MS27183-10	.WASHER,FLAT	4
22	XDFZZ	90598	25886-100	. BOX,CABLE,WELDMENT	1
23	PAFZZ	90598	25842-101	.CABLE ASSEMBLY, SPEC	1
24	PAFZZ	90598	25896-100	.CABLE ASSEMBLY, SPEC	1
25	PAFZZ	90598	25842-100	. CABLE ASSEHBLY, SPEC	1

END OF FIGURE

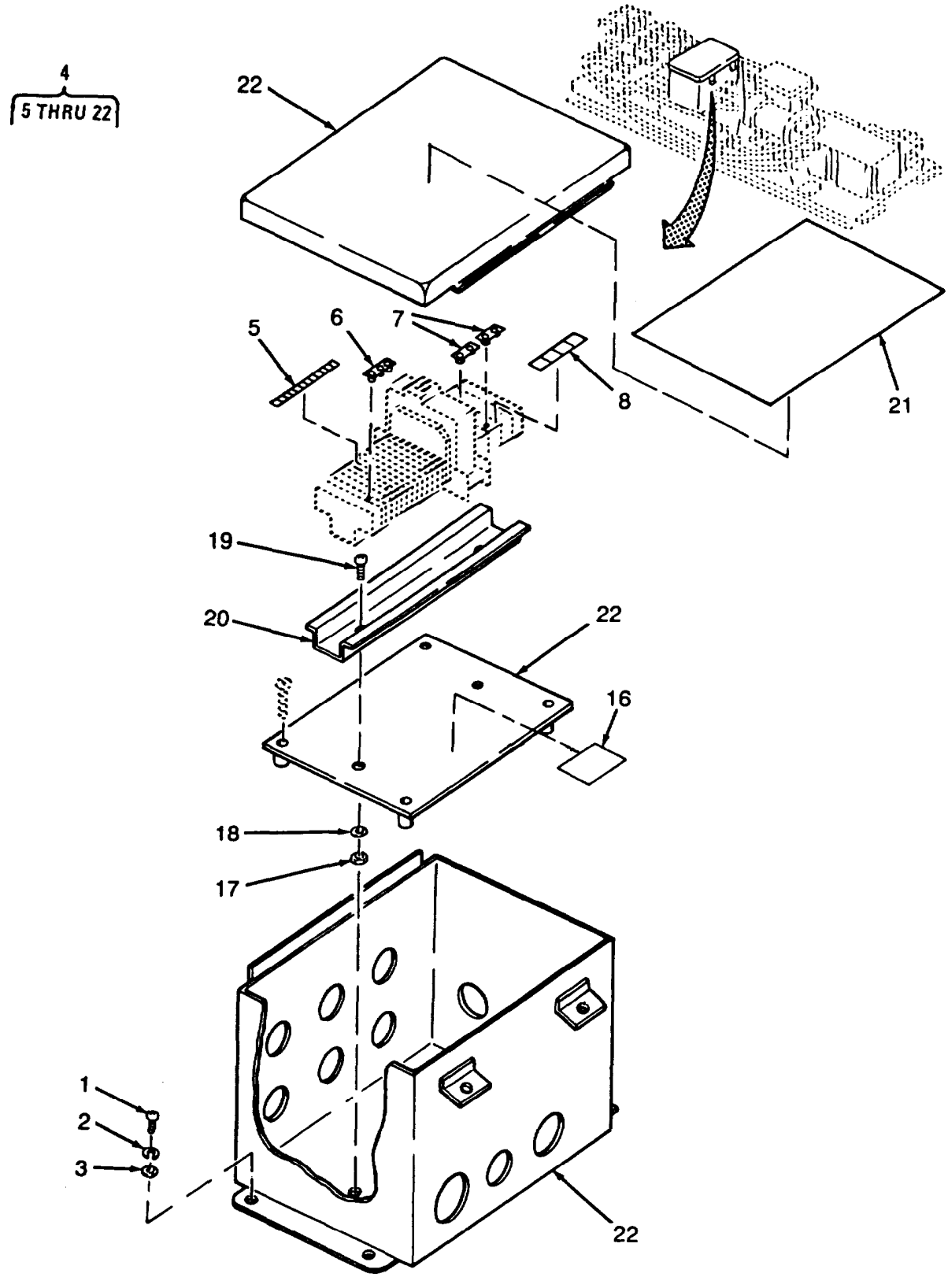


Figure 10. Junction Box (Sheet 1 of 2)

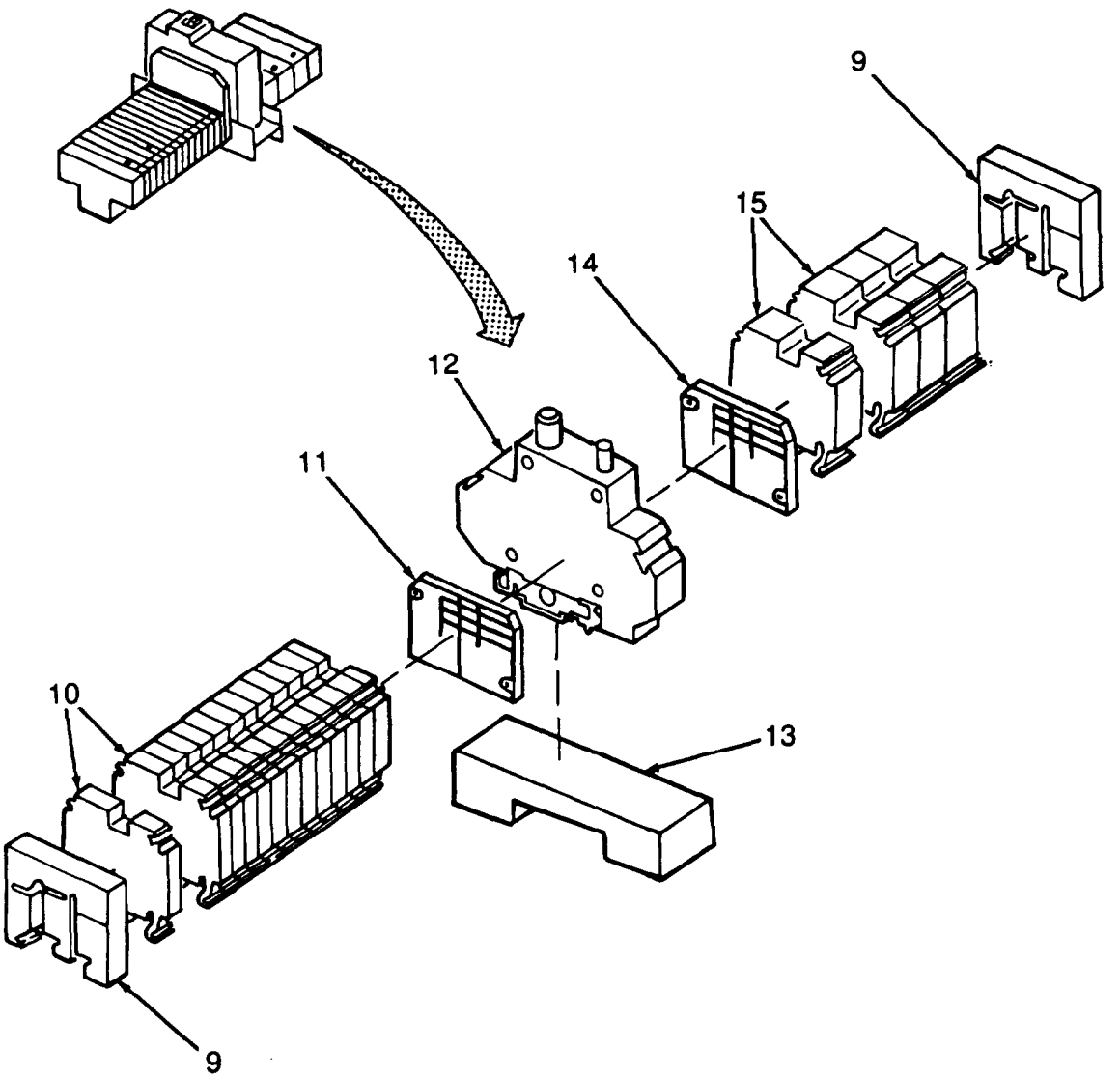


Figure 10. Junction Box (Sheet 2 of 2)

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 10. JUNCTION BOX	
1	PAFZZ	96906	MS90725-6	. SCREW,CAP,HEXAGON H	4
2	PAFZZ	96906	MS35335-33	.WASHER,LOCK	4
3	PAFZZ	96906	MS27183-10	.WASHER,FLAT	4
4	XDFFF	90598	25812-100	.ENCLOSURE ASSEMBLY	1
5	XDFZZ	F2821	103 085.11(1 TO 10)(RC610)	..MARKER,TERMINAL	2
6	XDFZZ	F2821	168 518.07	..BAR,JUMPER	1
7	XDFZZ	F2821	173 616.26	..BAR,JUMPER	2
8	XDFZZ	F2821	103 085.11 (11 T 0 20) (RC610)	. . MARKER,TERMINAL	2
9	XDFZZ	F2821	103 002.26	. . STOP,END	2
10	XDFZZ	F2821	115 116.07	. . BLOCK,TERMINAL	12
11	XDFZZ	F2821	118 618.01	..SECTION,END	1
12	PAOZZ	2275X	NRAS1100-10A	..BREAKER,CIRCUIT	1
13	XDFZZ	2275X	NR21	..BASE, CIRCUIT BREAKE	1
14	XDFZZ	F2821	118 368.16	..SECTION,END	1
15	XDFZZ	F2821	115 129.14	..BLOCK,TERMINAL	4
16	XDFZZ	90598	25804-1	. . D E C A L , T B 1	1
17	PAFZZ	96906	MS21044N3	..NUT,SELF-LOCKING,HE	2
18	PAFZZ	96906	HS27183-42	..WASHER,FLAT	4
19	PAFZZ	96906	MS35207-262	. . SCREW,MACHINE	2
20	XDFZZ	90958	25831-1	..RAIL,TERMINAL BLOCK	1
21	XDDZZ	90598	25803-1	..NAMEPLATE,WRG SCHEM	1
22	XDFZZ	90598	25811-1	. . ENCLOSURE,MODIFIED	1

END OF FIGURE

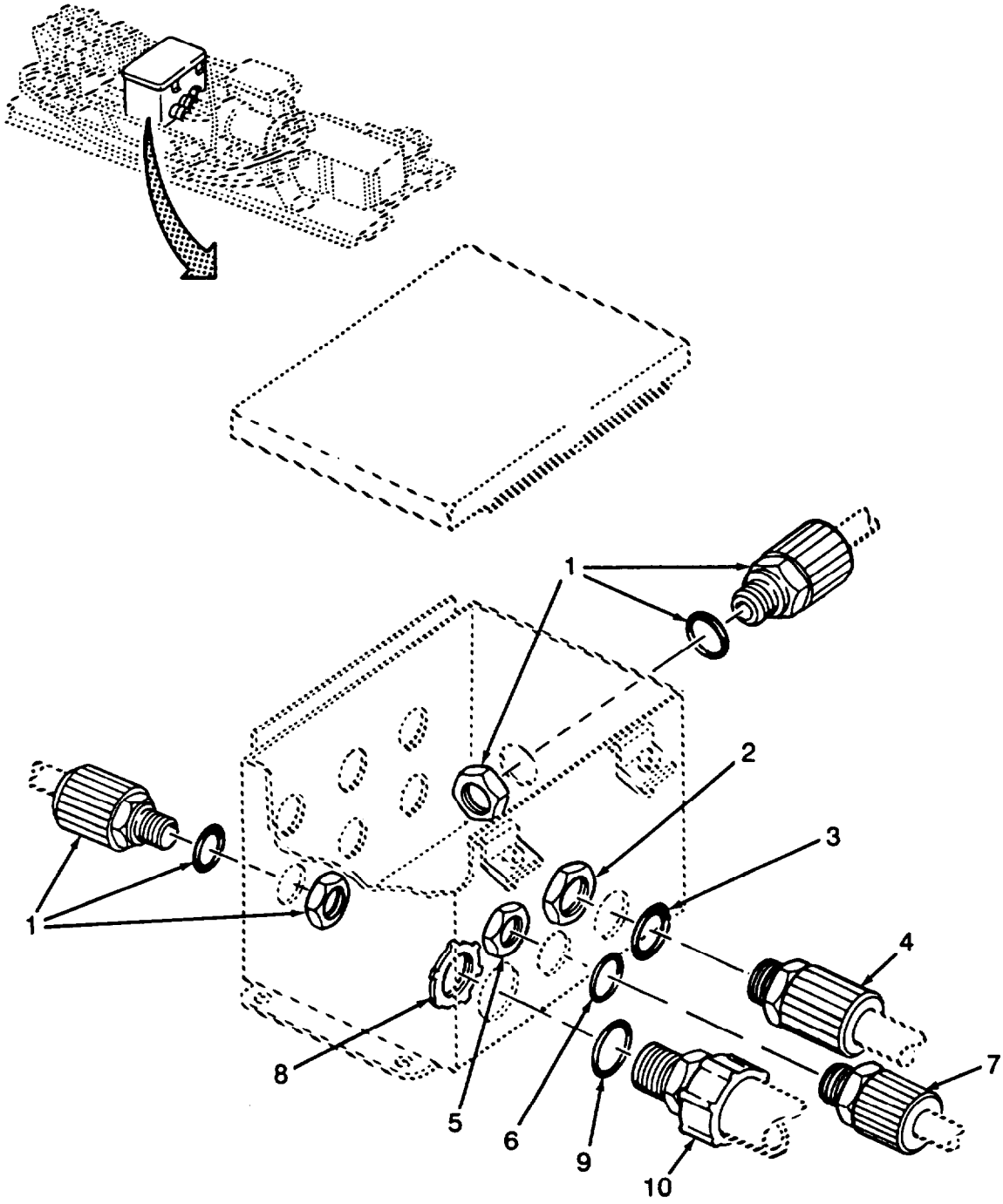


Figure 11. Junction Box Connectors

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01. HOSE REEL SYSTEM	
				FIG. 11. JUNCTION BOX CONNECTORS	
1	PAFZZ	81992	P050N-BK	. CONNECTOR, STR NYLON	2
2	PAFZZ	81992	003-22-002	. NUT	1
3	PAFZZ	81992	205-09-002	.SEAL,PLAIN	1
4	PAFZZ	74545	SHC-1037-CR	. BOX CONNECTOR, ELECT	1
5	PAFZZ	81992	003-22-001	.NUT,PLAIN,ROUND	1
6	PAFZZ	81992	205-09-001	.SEAL	1
7	PAFZZ	74545	SHC-1023-CR	.BOX CONNECTOR, ELECT	1
8	PAFZZ	81992	003-22-003	. LOCKNUT	1
9	PAFZZ	81992	205-09-003	. SEALING GASKET	1
10	PAFZZ	56501	2439	. CONNECTOR,CABLE	1

END OF FIGURE

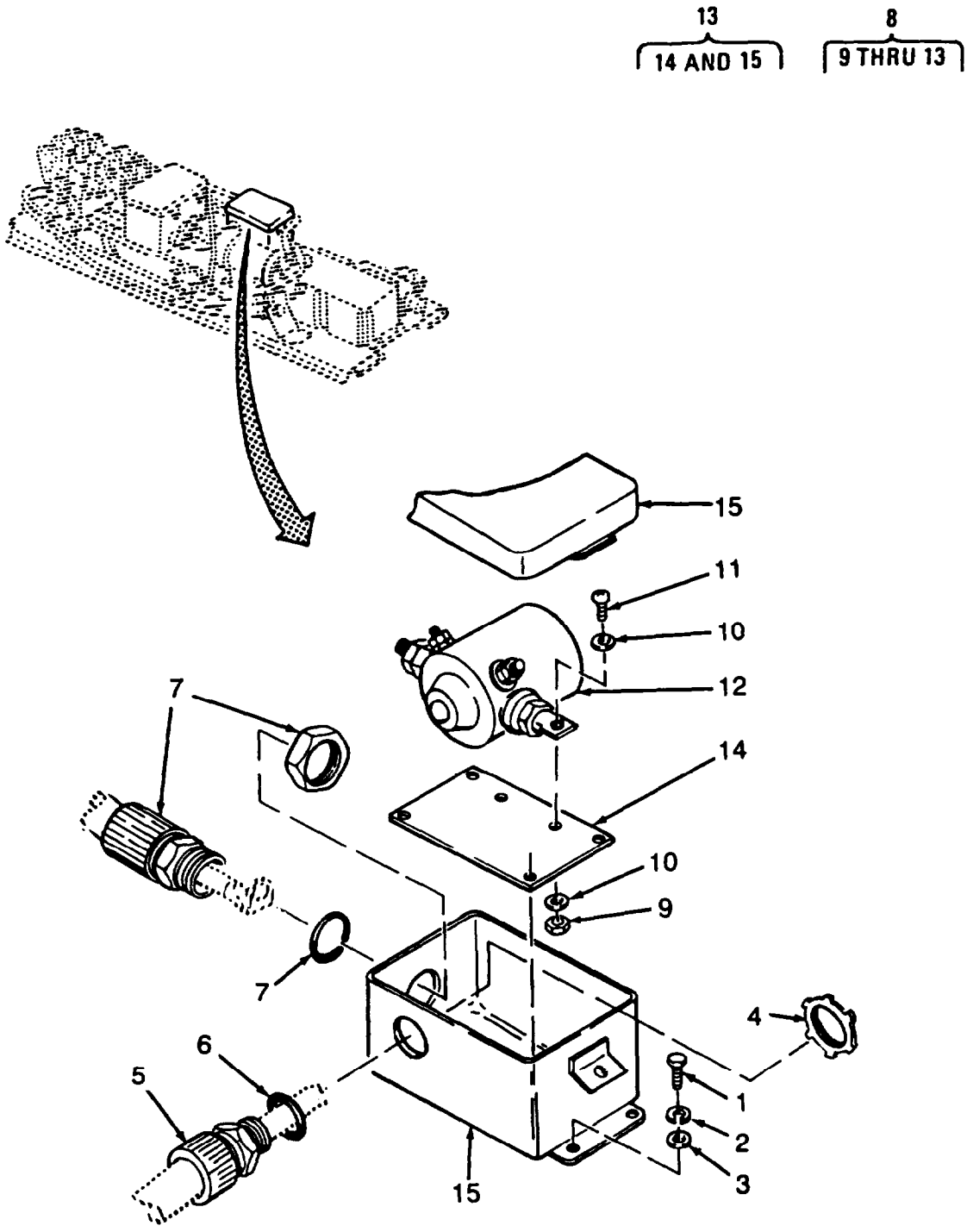


Figure 12. Relay Box

SECTION II

(1) ITEM NO	(2) SMR CODE	CAGEC	(3)	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
					GROUP 01. HOSE REEL SYSTEM	
					FIG. 12. RELAY BOX	
1	PAFZZ	96906	MS90725-5		. SCREW,CAP,HEXAGON H	4
2	PAFZZ	96906	MS35335-33		.WASHER,LOCK	4
3	PAFZZ	96906	MS27183-10		.WASHER,FLAT	4
4	PAFZZ	81992	003-22-001		.NUT,PLAIN,ROUND	1
5	PAFZZ	74545	SHC-1023-CR		. BOX CONNECTOR, ELECT	1
6	PAFZZ	81992	205-09-001		. SEAL	1
7	PAFZZ	81992	P050N-BK		.CONNECTOR,STR NYLON	1
8	PAFZZ	90598	25814-100		.HOUSING, ENGINE DRIV	1
9	PAFZZ	96906	MS21044N3		. . NUT,SELF-LOCKING,HE	2
10	PAFZZ	96906	MS27183-42		..WASHER,FLAT	4
11	PAFZZ	96906	MS35207-262		..SCREW,MACHINE	2
12	PAFZZ	16764	1115615		..LEVER, MANUAL CONTRO	1
13	PAFZZ	90598	25813-1		..ENCLOSURE,MODIFIED	1
14	XDFZZ	00843	A-6P4		. ..PANEL,BLANK	1
15	XDFZZ	00843	A-604LP		. ..BOX	1

END OF FIGURE

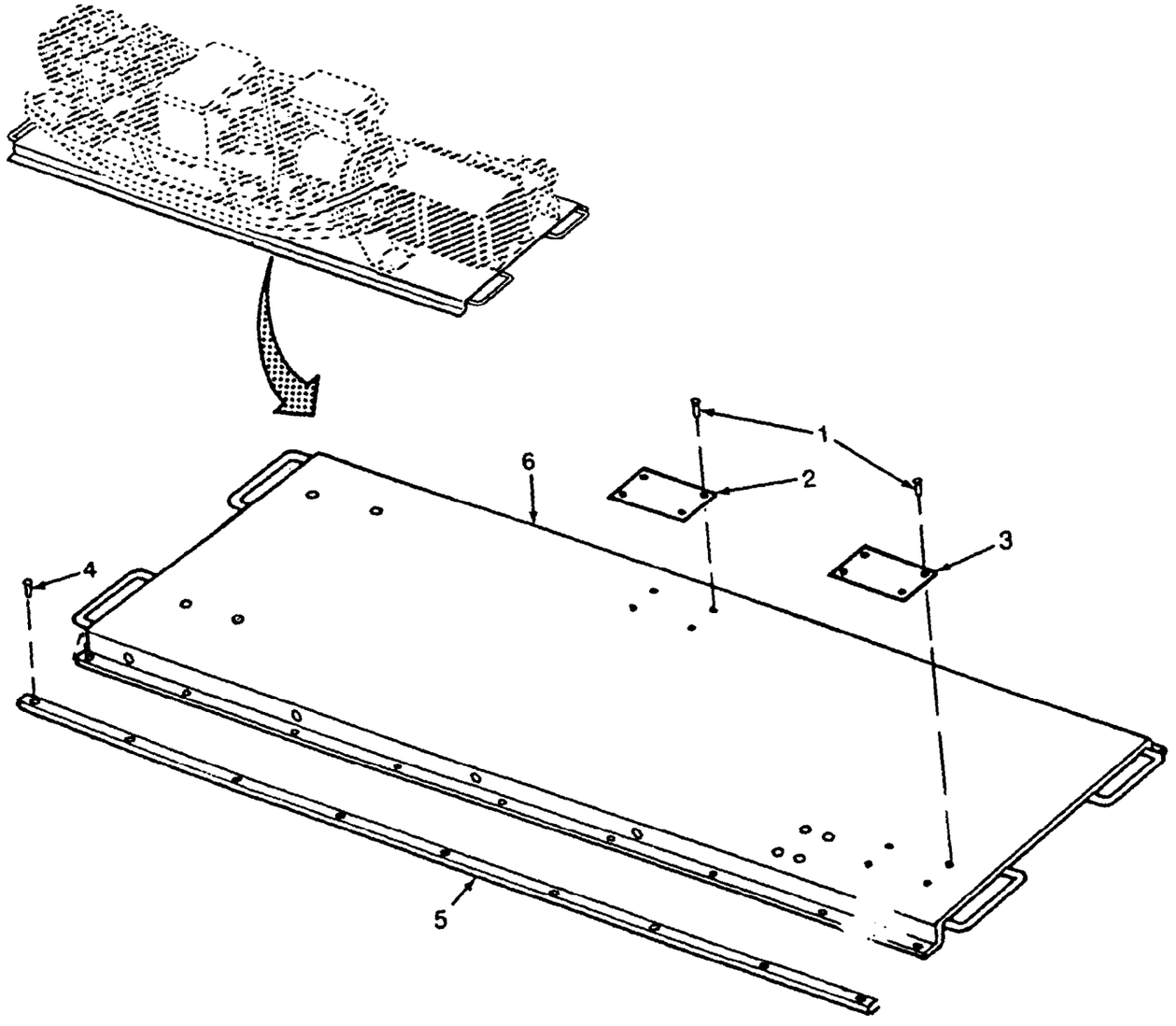


Figure 13. Frame

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 13. FRAME	
1	PAOZZ	81349	MIL-R-24243/1B	.RIVET,BLIND	8
2	XDOZZ	90598	25847-1	.PLATE,IDENT-PWR PK	1
3	XDOZZ	90598	25802-1	.PLATE,IDENT-HOSE CU	1
4	PAOZZ	81349	MIL-R-24243/7B	.RIVET,BLIND	18
5	XDOZZ	90598	25750-1	.EDGING,NYLON	2
6	XDFZZ	90598	25753-100	.TRAY,SLIDE-WLDMT	1
				END OF FIGURE	

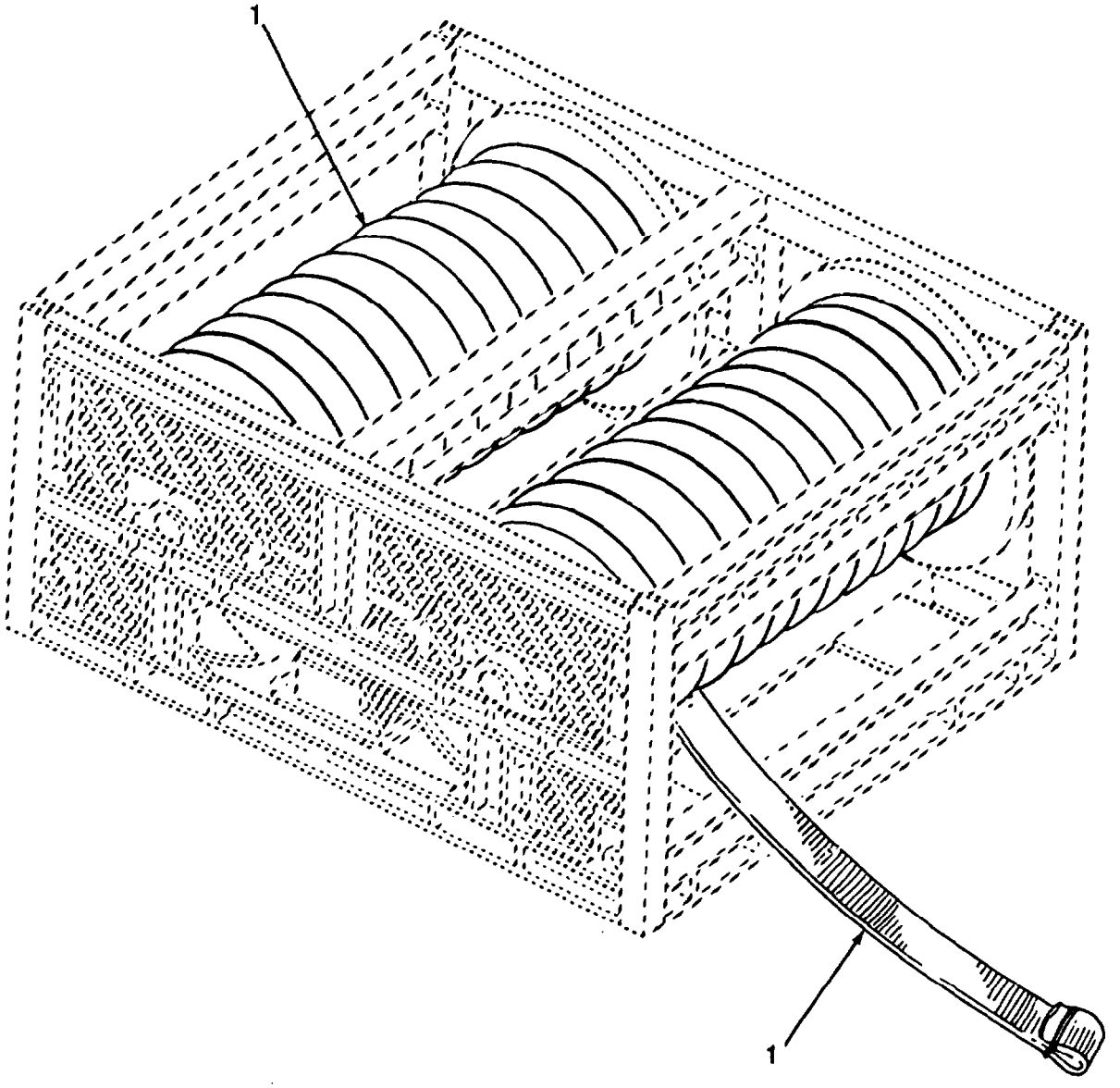


Figure 14. Fuel Hoses.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 14. FUEL HOSES	
1	XDOOO	62913	7220AA7200	HOSE,RUBBER,COLPS	2
				END OF FIGURE	

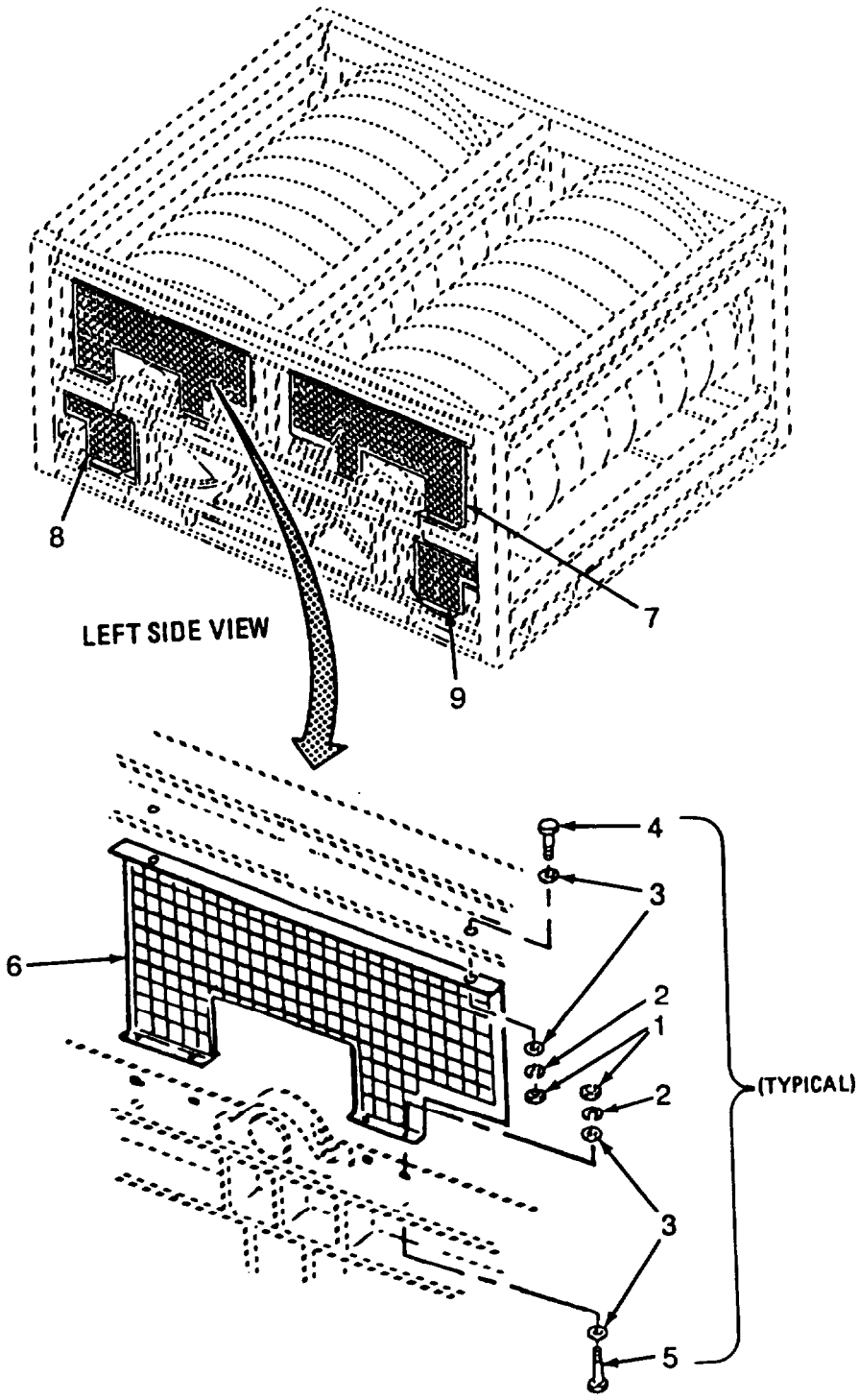


Figure 15. Guards (Sheet 1 of 2)

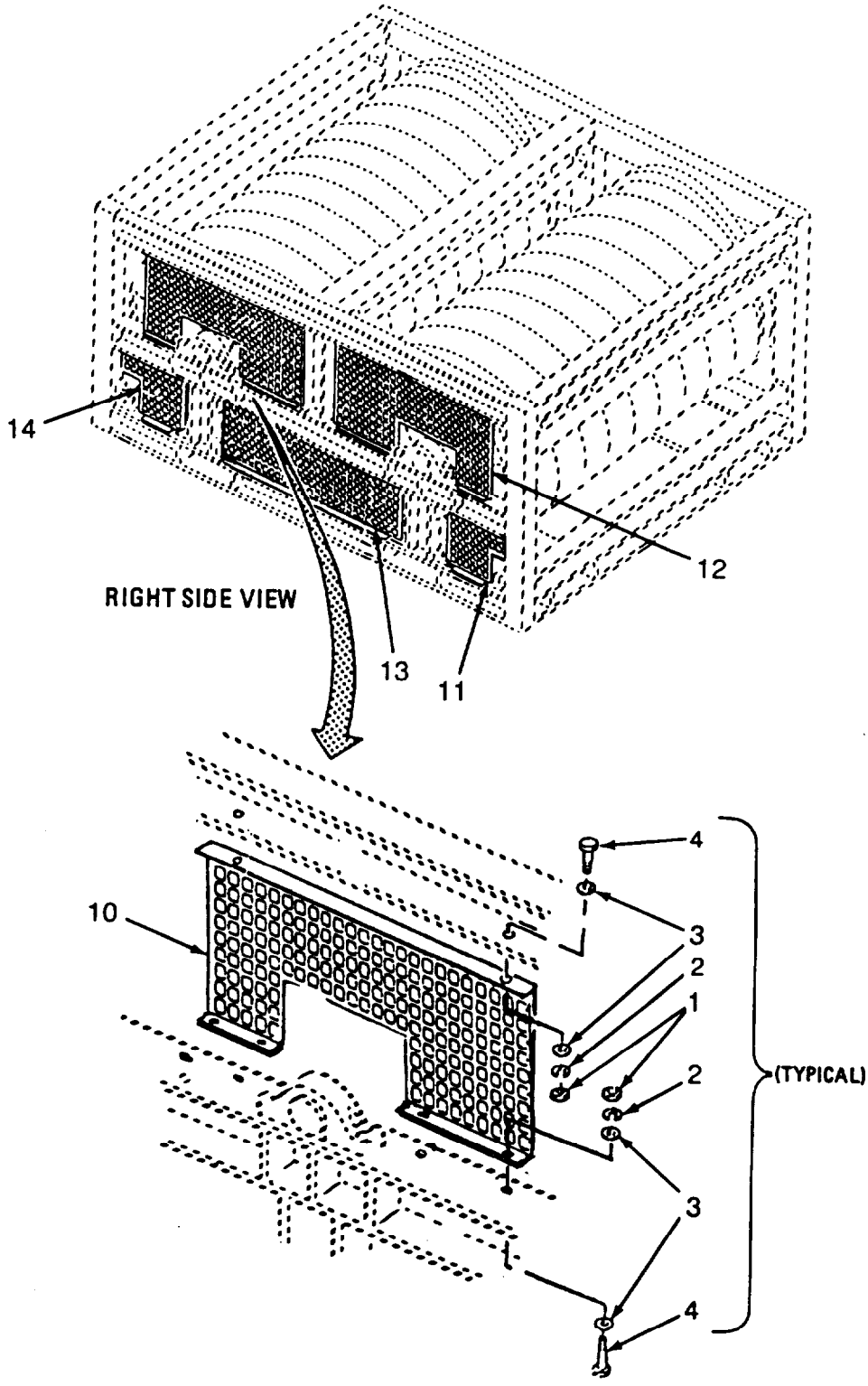


Figure 15. Guards (Sheet 2 of 2)

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 15. GUARDS	
1	PAOZZ	96906	MS51967-2	NUT,PLAIN,HEXAGON	4
2	PAOZZ	96906	MS35333-40	WASHER,LOCK	20
3	PAOZZ	96906	MS27183-10	WASHER,FLAT	4
4	PAOZZ	80204	B1821BH025C088N	SCREW,CAP,HEXAGON H	4
5	PAOZZ	96906	MS90725-5	SCREW,CAP,HEXAGON H	4
6	XDOZZ	90598	25787-100	GUARD,TOP,LEFT	1
7	XDOZZ	90598	25783-100	GUARD,TOP,RIGHT	1
8	XDOZZ	90598	25778-1	GUARD,BOTTOM,LEFT	1
9	XDOZZ	90598	25749-1	GUARD,BOTTOM,RIGHT	1
10	XDOZZ	90598	25789-1	GUARD,TOP,LEFT	1
11	XDOZZ	90598	25764-1	GUARD,BOTTOM,RIGHT	1
12	XDOZZ	90598	25889-1	GUARD,TOP,RIGHT	1
13	XDOZZ	90598	25786-1	GUARD,BOTTOM,CENTER	1
14	XDOZZ	90598	25788-1	GUARD,BOTTOM,LEFT	1

END OF FIGURE

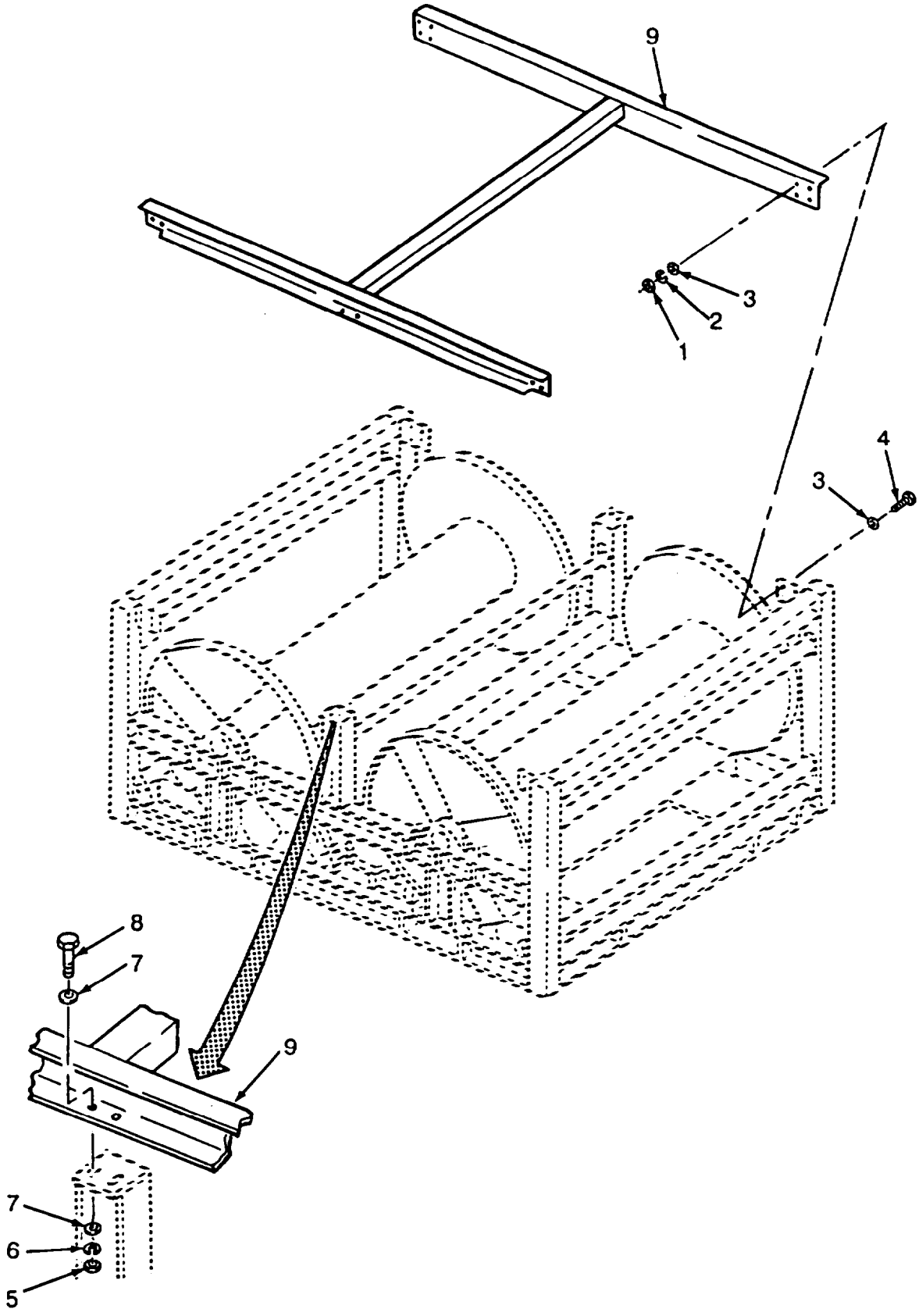


Figure 16. Top Frame

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 16. TOP FRAME	
1	PAOZZ	96906	MS51967-5	NUT,PLAIN,HEXAGON	20
2	PAOZZ	96906	MS35333-41	WASHER,LOCK	20
3	PAOZZ	96906	MS27183-12	WASHER,FLAT	40
4	PAOZZ	96906	MS90725-34	BOLT,MACHINE	20
5	PAOZZ	96906	MS51967-8	NUT,PLAIN,HEXAGON	4
6	PAOZZ	96906	MS35333-42	WASHER,LOCK	4
7	PAOZZ	96906	MS27183-14	WASHER,FLAT	8
8	PAOZZ	96906	MS90725-64	SCREW,CAP,HEXAGON H	4
9	XDOZZ	90598	25702-100	FRAME,TOP,REMOVABLE	1
				END OF FIGURE	

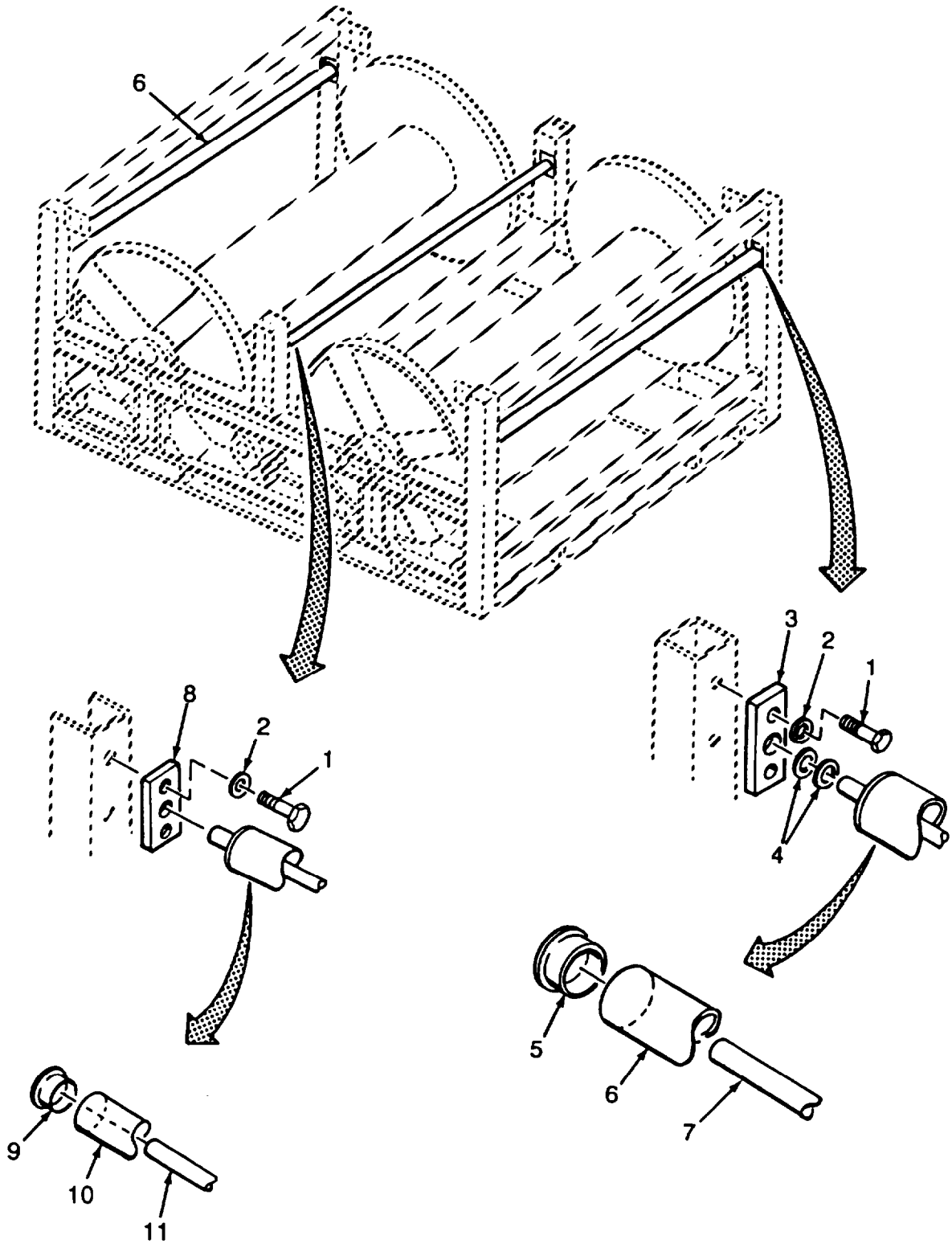


Figure 17. Rollers

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 17. ROLLERS	
1	PAOZZ	96906	MS90726-58	SCREW, CAP	16
2	PAOZZ	96906	MS27183-14	WASHER,FLAT	12
3	PAOZZ	90598	25774-1	BEARING,ROLLER,ROD	8
4	PAOZZ	96906	MS27183-19	WASHER,FLAT	8
5	PAOZZ	90598	25775-2	BUSHING,ROLLER,NEED	8
6	PAOZZ	90598	25777-2	REDUCER,TUBE	4
7	PAOZZ	90598	25776-2	BUSHING-SHAFT,PANEL	4
8	PAOZZ	90598	25782-1	ROLLER,LINEAR-ROTAR	2
9	PAOZZ	90598	25775-1	BUSHING,ROLLER,NEED	3
10	PAOZZ	90598	25777-1	REDUCER,TUBE	1
11	PAOZZ	90598	25776-1	ROLLER,CANVEYOR	1

END OF FIGURE

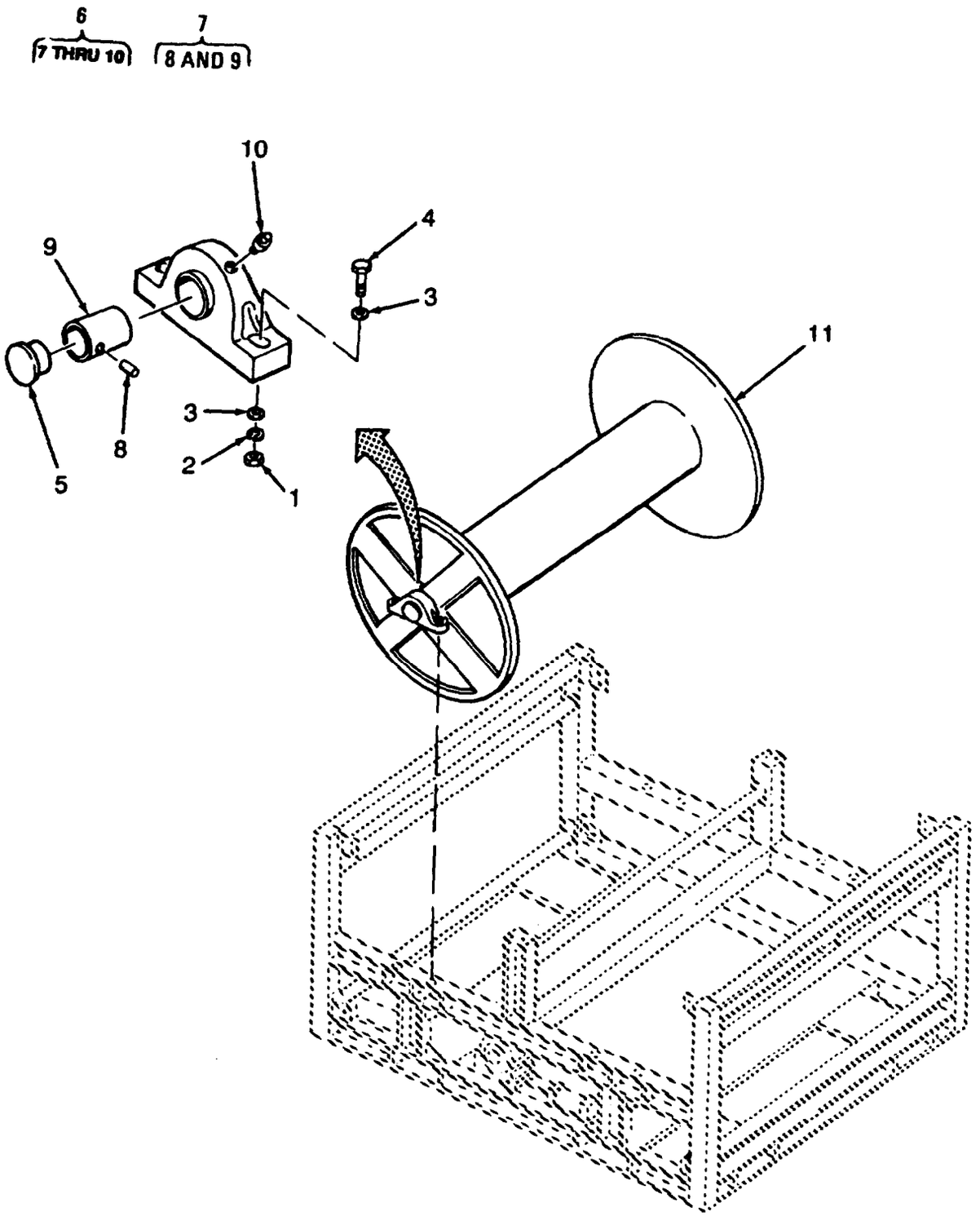


Figure 18. Hose Reels

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 18. HOSE REELS	
1	PAOZZ	96906	MS51967-20	NUT,PLAIN,HEXAGON	8
2	PAOZZ	96906	MS35333-46	WASHER,LOCK	8
3	PAOZZ	96906	MS27183-22	WASHER,FLAT	16
4	PAOZZ	80204	B1821BH063C225N	SCREW,CAP,HEXAGON H	8
5	PAOZZ	9G100	123873	CAP,PILLOW BLOCK	4
6	PAOZZ	9G100	124164	BEARING,ROLLER,ROD	4
7	PAOZZ	9G100	123347	. BALL,BEARING CH	4
8	PAOZZ	9G100	400670	..SETSCREW	4
9	PAOZZ	9G100	123891	..HOUSING,BEARING UN	4
10	PAOZZ	9G100	405015	.FITTING,LUBRICATION	4
11	XDOZZ	90598	25779-100	REEL,HOSE-WELDMENT	2
				END OF FIGURE	

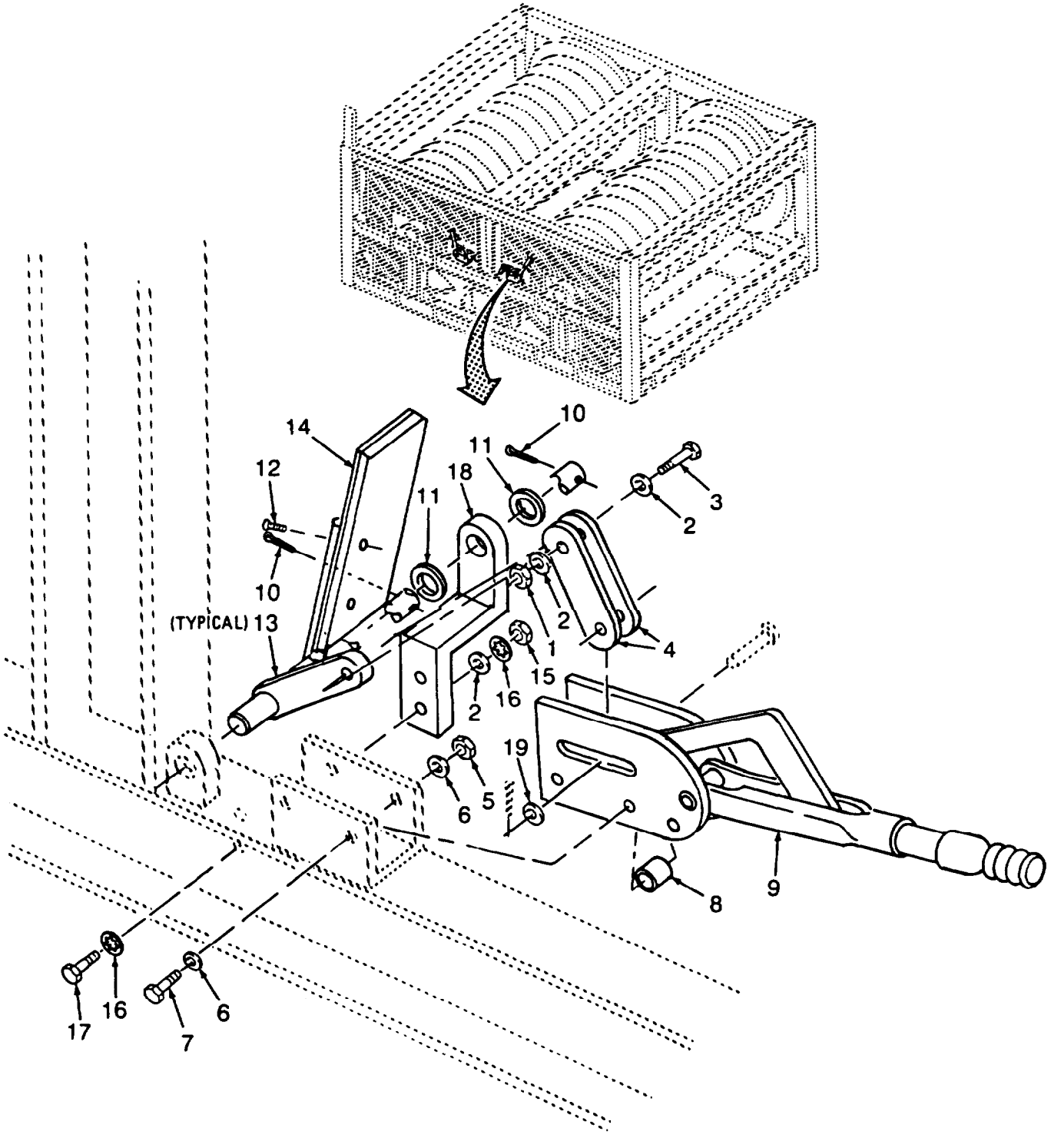


Figure 19. Brakes

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 19. BRAKES	
1	PAOZZ	96906	MS51922-17	NUT,SELF-LOCKING,HE	2
2	PAOZZ	96906	MS27183-14	WASHER,FLAT	8
3	PAOZZ	80204	B1821BH038C125N	SCREW,CAP,HEXAGON H	2
4	PAOZZ	90598	25772-1	LINK,BRAKE SHOE,ADJ	4
5	PAOZZ	96906	MS51922-9	NUT,SELF-LOCKING,HE	4
6	PAOZZ	96906	MS27183-12	WASHER,FLAT	8
7	PAOZZ	96906	MS90725-39	BOLT,MACHINE	4
8	PAOZZ	90598	25765-1	LEVER,MANUAL CON	4
9	PAOZZ	90598	25790-1	LEVER,MANUAL CONTRO	2
10	PAOZZ	96906	MS24665-287	PIN,COTTER	4
11	PAOZZ	96906	MS27183-22	WASHER,FLAT	16
12	PAOZZ	96906	MS35191-272	SCREW,MACHINE	4
13	XDOZZ	90598	25755-100	BRAKE SHAFT,LEFT S	1
13	XDOZZ	90598	25884-100	BRAKE SHAFT,RIGHT S	1
14	PAOZZ	90598	25759-100	BRAKE VALVE ASSEMBL	2
15	PAOZZ	96906	MS51967-8	NUT,PLAIN,HEXAGON	4
16	PAOZZ	96906	MS35333-42	WASHER,LOCK	4
17	PAOZZ	96906	MS90725-64	SCREW,CAP,HEXAGON H	4
18	XDOZZ	90598	25757-100	SUPPORT,SHAFT,BRAKE	2
19	PAOZZ	96906	MS27183-13	WASHER,FLAT	8

END OF FIGURE

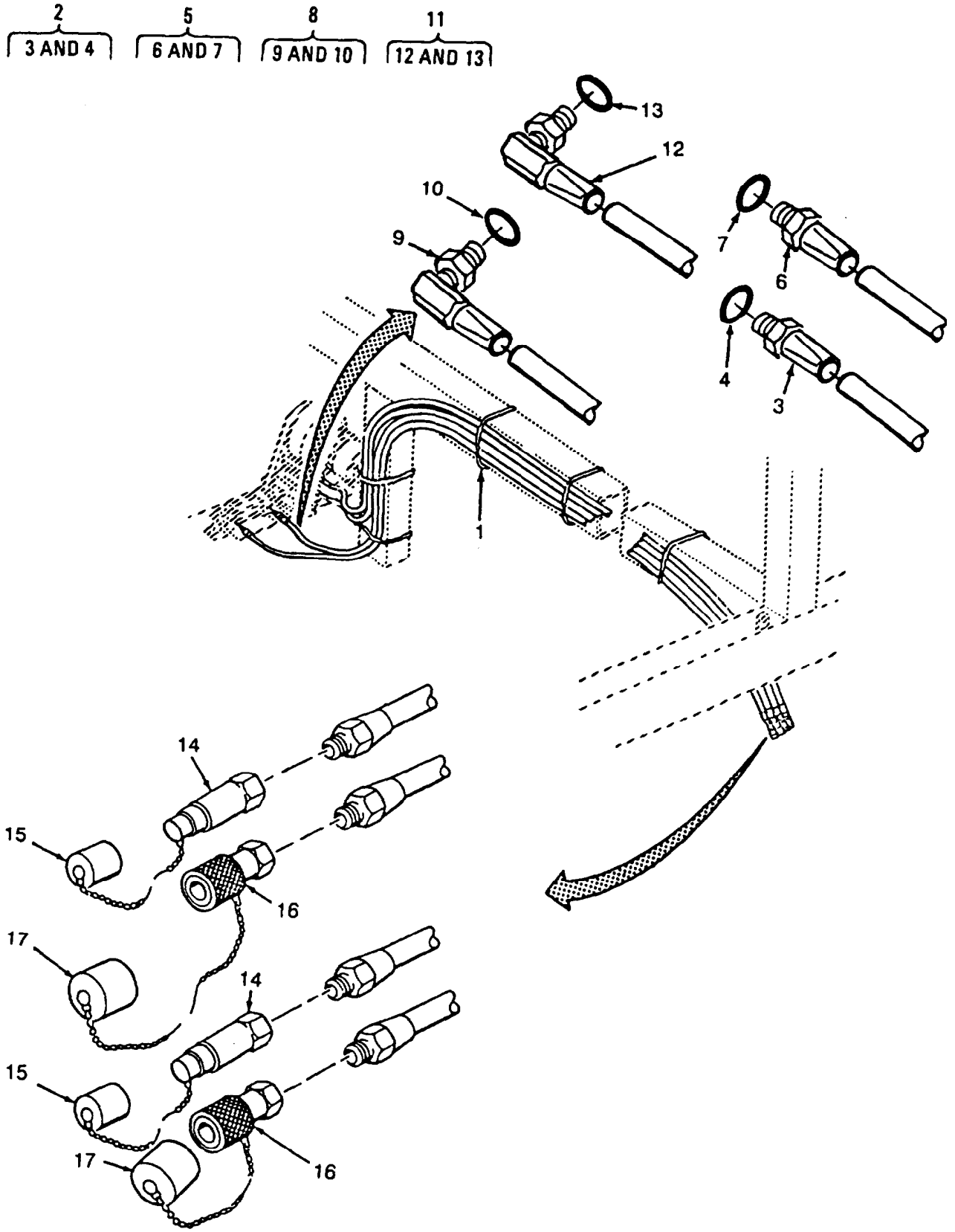


Figure 20. Hoses and Connectors

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 20. HOSES AND CONNECTORS	
1	PAOZZ	96906	MS3367-6-9	STRAP,TIEDOWN,ELECT	7
2	PAOOO	24161	6C1T-6-6MP/6-6MB X-87	HOSE ASSY SET,NONME	1
3	PAOZZ	24161	7306-2944-5	. CONNECTOR,STRAIGHT	1
4	PAOZZ	24161	7254-0006-5	..PACKING, PREFORMED	1
5	PAOOO	24161	6C1T-6-6MP/6-6MB X-87	HOSE ASSY SET,NONME	1
6	PAOZZ	24161	7306-2944-5	. CONNECTOR,STRAIGHT	1
7	PAOZZ	24161	7254-0006-5	..PACKING, PREFORMED	1
8	PAOOO	24161	6C1T-6-6MP/6-10M BX90-87	HOSE ASSEMMBLY,META	1
9	PAOZZ	24161	7307-2248-5	.CONNECTOR,90DEG	1
10	PAOZZ	24161	7254-0010-5	..PACKING,PREFORMED	1
11	PAOOO	24161	6C1T-6-6MP/6-10M BX90-87	HOSE ASSEMMBLY,META	1
12	PAOZZ	24161	7307-2248-5	.CONNECTOR,90DEG	1
13	PAOZZ	24161	7254-0010-5	..PACKING,PREFORMED	1
14	PAOZZ	73992	6-FFS-38F	COUPLING HALF,QUICK	2
15	PAOZZ	73992	P-SDC-6FF	.CAP,PROTECTIVE,DUST	2
16	PAOZZ	73992	6-FFP-38F	NIPPLEE, QUICK-DISC	2
17	PAOZZ	73992	P-PDC-6FF	.CAP,PROTECTIVE,DUST	2

END OF FIGURE

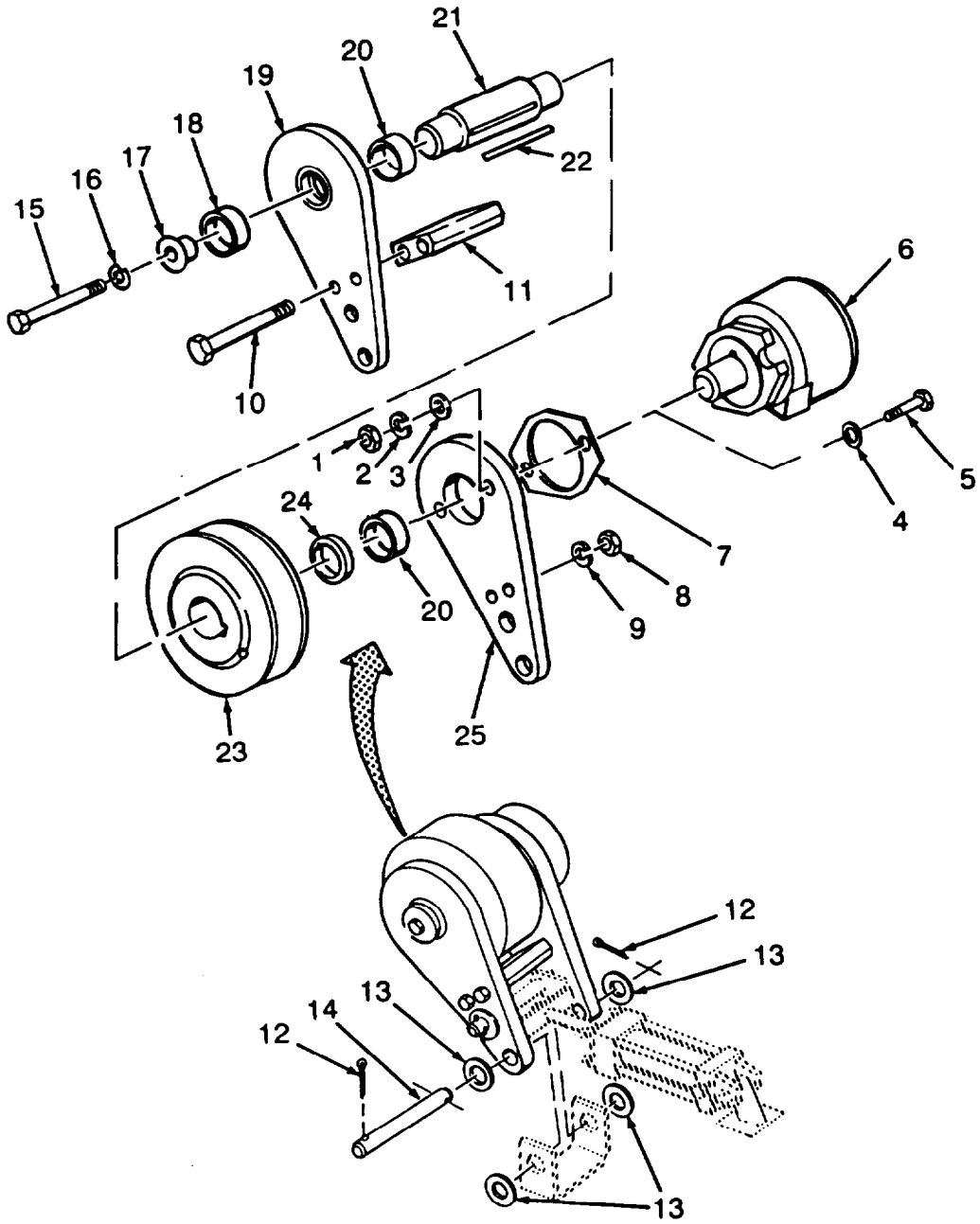


Figure 21. Drive Wheel and Motor

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 21. DRIVE WHEEL AND MOTOR	
1	PAOZZ	96906	MS35650-3392	NUT,PLAIN,HEXAGON	2
2	PAOZZ	96906	MS35338-48	WASHER,LOCK	2
3	PAOZZ	90598	25797-1	WASHER,FLAT	2
4	PAOZZ	96906	MS27183-18	WASHER,FLAT	2
5	PAOZZ	96906	MS90726-115	SCREW,CAP,HEXAGON H	2
6	PAOZZ	55746	110-2AS-0	MOTOR,HYDRAULIC	1
7	PAOZZ	90598	25899-1	RETAINER,ELECTRICAL	1
8	PAOZZ	96906	MS35691-49	NUT,PLAIN,HEXAGON	2
9	PAOZZ	96906	MS35338-50	WASHER,LOCK	2
10	PAOZZ	90598	25794-1	SCREW,ASSEMBLED WAS	2
11	XDOZZ	90598	25748-1	STIFFENER,ARM,DRIVE	1
12	PAOZZ	96906	MS24665-423	PIN,COTTER	4
13	PAOZZ	96906	MS27183-23	WASHER,FLAT	6
14	PAOZZ	90598	25747-1	BELL,CRANK	2
15	PAOZZ	39428	92136A566	SCREW,ASSEMBLED WAS	1
16	PAOZZ	96906	MS35338-44	WASHER,LOCK	1
17	XDOZZ	90598	25862-100	END-WELDMENT-DR WHL	1
18	PAOZZ	52676	619102RS1C3	BALL,VALVE,PORTED	2
19	XDOZZ	90598	25736-1	ARM,DRIVE	1
20	PAOZZ	90598	25844-2	SPACER,RING	1
21	PAOZZ	90598	25807-1	SHAFT,DRIVE,WHEEL	1
22	PAOZZ	90598	25798-1	KEY,DRIVE WHEEL	1
23	PAOZZ	90598	25806-1	WHEEL,DRIVE	1
24	PAOZZ	90598	25844-1	RING,SPACER,DR WHL	1
25	PAOZZ	90598	25737-1	ACTUATOR,ELECTRO-ME	1

END OF FIGURE

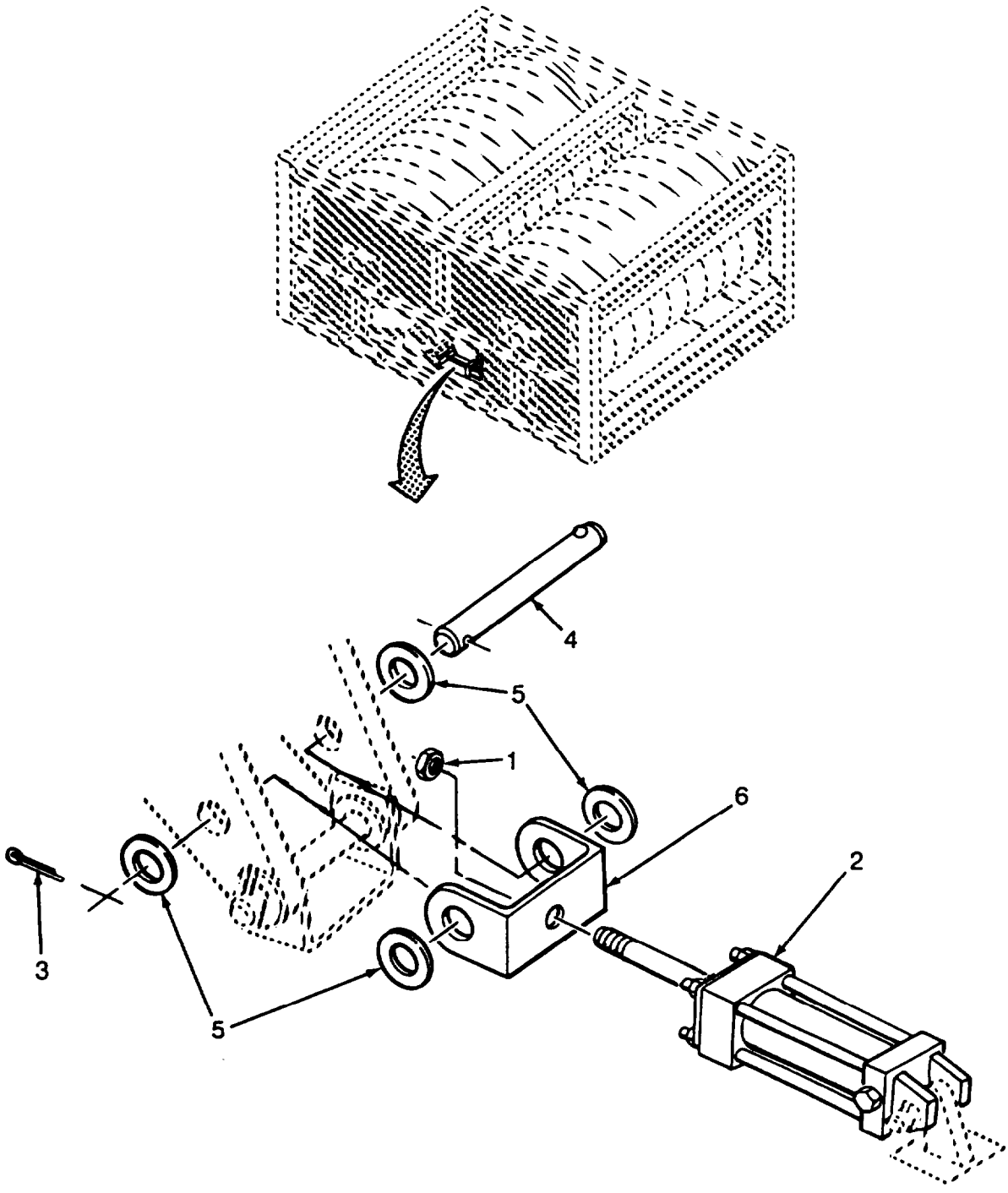


Figure 22. Hydraulic Actuator

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 22. HYDRAULIC ACTUATOR	
1	PAOZZ	96906	MS35691-29	NUT,PLAIN,HEXAGON	1
2	PAOZZ	27125	MP1-3L-NC-2.00-3 .50-DSM-1G	CYLINDER,ACTUATING	1
3	PAOZZ	96906	MS24665-423	PIN,COTTER	4
4	PAOZZ	90598	25747-1	BELL,CRANK	1
5	PAOZZ	96906	MS27183-23	WASHER,FLAT	4
6	PAOZZ	90598	25746-100	CLEVIS,ROD END	1

END OF FIGURE

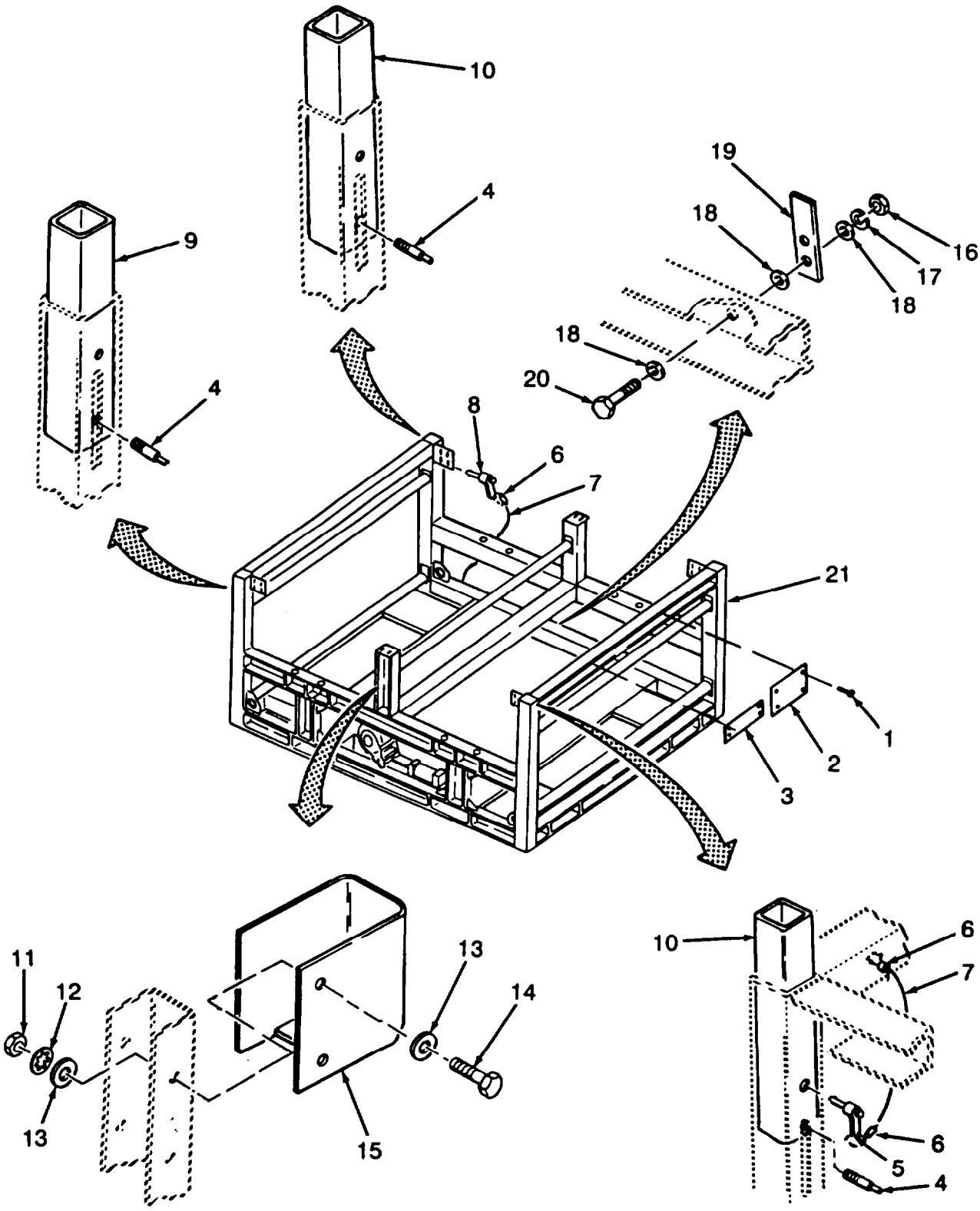


Figure 23. Frame Assembly

SECTION II

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02. FRAME UNIT	
				FIG. 23. FRAME ASSEMBLY	
1	PAOZZ	81349	M24243/1-B604	RIVET,BLIND	12
2	XDOZZ	90598	25848-1	PLATE,IDENT	1
3	XDOZZ	90598	25801-1	PLATE,WARNING	1
4	PAOZZ	90598	25707-1	PIN,LIFTING,STKING	4
5	XDOZZ	99862	CL-8-BLP-L-0.50	PIN,DETENT	5
6	XDOZZ	99862	CL-3-F	FERRULE,WIRE ROPE	14
7	XDOZZ	90598	25866-1	CABLE,NYLON COVERED	7
8	XDOZZ	09332	D-8-10-R-12LYD	PIN,DETENT	2
9	XDOZZ	90598	25706-100	POST,STACKING,LEFT	2
10	XDOZZ	90598	25870-100	POST,STACKING,RIGHT	2
11	PAOZZ	96906	MS35650-302	NUT,PLAIN,HEXAGON	4
12	PAOZZ	96906	MS35333-39	WASHER,LOCK	4
13	PAOZZ	96906	MS27183-42	WASHER,FLAT	8
14	PAOZZ	96906	MS35207-264	SCREW,MACHINE	4
15	XDOZZ	90598	25873-1	BRACKET,STORAGE	1
16	PAOZZ	96906	MS51967-2	NUT,PLAIN,HEXAGON	2
17	PAOZZ	96906	MS35333-40	WASHER,LOCK	1
18	PAOZZ	96906	MS27183-10	WASHER,FLAT	3
19	XDOZZ	90598	25785-1	PLATE,RTNR,TRAY	1
20	PAOZZ	0AT62	35A2C5	SCREW,CAP,HEXAGON H	1
21	XDOZZ	90598	25701-100	FRAME-WELDMENT	1

END OF FIGURE

Section III. Special Tools
(Not Applicable)

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
5310-00-003-4094	21	2
5315-00-011-9120	19	10
5315-00-013-7228	21	12
	22	3
5310-00-014-5850	9	8
	10	18
	12	10
	23	13
5310-00-045-3296	9	13
5305-00-068-0501	8	1
	12	1
	15	5
5305-00-068-0502	10	1
5305-00-068-0511	19	3
5305-00-071-2505	15	4
5310-00-080-6004	8	4
	16	7
	17	2
	19	2
5310-00-081-4219	6	5
	7	2
	16	3
	19	6
5310-00-087-4652	19	1
5310-00-087-7493	19	19
5310-00-113-3757	21	1
5975-00-133-8696	20	1
5310-00-167-0721	16	2
5310-00-209-0786	9	20
	10	2
	12	2
5305-00-225-3843	23	20
5306-00-225-8496	7	1
5306-00-225-8499	16	4
5306-00-225-8503	6	4
	19	7
5306-00-226-4825	7	27
5305-00-226-7768	21	5
5305-00-269-3233	9	15
5325-00-270-8890	9	18
5935-00-322-8959	4	2
5310-00-407-9566	7	28
5320-00-493-4101	23	1
5310-00-543-2410	9	2
5310-00-543-4385	18	2
5310-00-550-1130	15	2
	23	17
5310-00-576-5752	23	12
5310-00-582-5965	21	16
5310-00-595-7237	16	6
5310-00-595-7237	19	16
5310-00-596-7691	9	11
5310-00-637-9541	9	14
5305-00-724-7223	18	4
5310-00-732-0558	16	5
	19	15
5310-00-761-6882	15	1
	23	16
5310-00-763-8920	18	1
5310-00-809-3079	17	4
5310-00-809-4058	2	2
	5	24
	8	2
	9	21
	10	3
	12	3
	15	3
	23	18
5310-00-809-5998	21	4
5310-00-809-8533	21	13
	22	5
5310-00-820-6653	21	9
5310-00-835-2036	22	1
5310-00-851-2677	21	8
5310-00-877-5797	10	17
	12	9
5310-00-880-7744	16	1
5305-00-889-2999	9	1
5310-00-934-9739	9	4
5310-00-934-9751	9	10
	23	11
5310-00-950-1310	9	3
5310-00-951-7209	18	3
	19	11
5310-00-984-3806	19	5
5305-00-984-7363	19	12
5305-00-988-1724	2	1
	5	23
	9	19
5305-00-989-6265	10	19
	12	11
5305-00-989-7435	23	14
5305-00-990-6444	9	7
5935-01-044-8382	9	16
5310-01-113-9097	11	5
	12	4
5310-01-141-8704	11	8
5330-01-141-8705	11	9
5935-01-176-1708	9	6
5305-01-325-8387	16	8

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5305-01-325-8387	19	17			

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
00843	A-6P4		12	14
00843	A-604LP		12	15
2275X	ABGD310N-R		3	3
2275X	ASD320N		3	5
80204	B1821BH025C088N	5305-00-071-2505	15	4
80204	B1821BH031C075N	5306-00-226-4825	7	27
80204	B1821BH038C125N	5305-00-068-0511	19	3
80204	B1821BH063C225N	5305-00-724-7223	18	4
99862	CL-3-F		23	6
99862	CL-8-BLP-L-0.50		23	5
09332	D-8-10-R-12LYD		23	8
54035	EBP		7	16
54035	ECJ		6	8
54035	FBY		7	10
54035	FDBA LAN		7	12
54035	FDBA LAN GBX		7	11
54035	GBX		7	13
81349	MIL-R-24243/1B		13	1
81349	MIL-R-24243/7B		13	4
27125	MP1-3L-NC-2.00-3 .50-DSM-1G		22	2
96906	MS21044N3	5310-00-877-5797	10	17
			12	9
96906	MS24665-287	5315-00-011-9120	19	10
96906	MS24665-423	5315-00-013-7228	21	12
			22	3
96906	MS25043-22DA	5935-01-176-1708	9	6
96906	MS27183-10	5310-00-809-4058	2	2
			5	24
			8	2
			9	21
			10	3
			12	3
			15	3
			23	18
96906	MS27183-12	5310-00-081-4219	6	5
			7	2
			16	3
			19	6
96906	MS27183-13	5310-00-087-7493	19	19
96906	MS27183-14	5310-00-080-6004	8	4
			16	7
			17	2
			19	2
96906	MS27183-18	5310-00-809-5998	21	4
96906	MS27183-19	5310-00-809-3079	17	4
96906	MS27183-22	5310-00-951-7209	18	3
			19	11
96906	MS27183-23	5310-00-809-8533	21	13
			22	5
96906	MS27183-4	5310-00-950-1310	9	3

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
96906	MS27183-42	5310-00-014-5850	9	8
			10	18
			12	10
			23	13
96906	MS3367-6-9	5975-00-133-8696	20	1
96906	MS35191-272	5305-00-984-7363	19	12
96906	MS35206-217	5305-00-889-2999	9	1
96906	MS35206-280	5305-00-988-1724	2	1
			5	23
			9	19
96906	MS35207-261	5305-00-990-6444	9	7
96906	MS35207-262	5305-00-989-6265	10	19
			12	11
96906	MS35207-264	5305-00-989-7435	23	14
96906	MS35333-39	5310-00-576-5752	23	12
96906	MS35333-40	5310-00-550-1130	15	2
			23	17
96906	MS35333-41	5310-00-167-0721	16	2
96906	MS35333-42	5310-00-595-7237	16	6
			19	16
96906	MS35333-46	5310-00-543-4385	18	2
96906	MS35335-32	5310-00-596-7691	9	11
96906	MS35335-33	5310-00-209-0786	9	20
			10	2
			12	2
96906	MS35338-40	5310-00-543-2410	9	2
96906	MS35338-43	5310-00-045-3296	9	13
96906	MS35338-44	5310-00-582-5965	21	16
96906	MS35338-45	5310-00-407-9566	7	28
96906	MS35338-46	5310-00-637-9541	9	14
96906	MS35338-48	5310-00-003-4094	21	2
96906	MS35338-50	5310-00-820-6653	21	9
96906	MS35489-22	5325-00-270-8890	9	18
96906	MS35649-242	5310-00-934-9739	9	4
96906	MS35650-302	5310-00-934-9751	9	10
			23	11
96906	MS35650-3392	5310-00-113-3757	21	1
96906	MS35691-29	5310-00-835-2036	22	1
96906	MS35691-49	5310-00-851-2677	21	8
96906	MS51922-17	5310-00-087-4652	19	1
96906	MS51922-9	5310-00-984-3806	19	5
96906	MS51967-2	5310-00-761-6882	15	1
			23	16
96906	MS51967-20	5310-00-763-8920	18	1
96906	MS51967-5	5310-00-880-7744	16	1
96906	MS51967-8	5310-00-732-0558	16	5
			19	15
96906	MS52131-1	5935-01-044-8382	9	16
96906	MS90725-31	5306-00-225-8496	7	1
96906	MS90725-34	5306-00-225-8499	16	4
96906	MS90725-39	5306-00-225-8503	6	4

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
96906	MS90725-39	5306-00-225-8505	19	7
96906	MS90725-5	5305-00-068-0501	8	1
			12	1
			15	5
96906	MS90725-58		8	3
96906	MS90725-6	5305-00-068-0502	10	1
96906	MS90725-64	5305-01-325-8387	16	8
			19	17
96906	MS90726-115	5305-00-226-7768	21	5
96906	MS90726-58		17	1
96906	MS90727-57	5305-00-269-3233	9	15
81349	M24243/1-B604	5320-00-493-4101	23	1
2275X	NRAS1100-10A		10	12
2275X	NR21		10	13
73992	P-PDC-6FF		20	17
73992	P-SDC-6FF		20	15
54035	PPDB LNN		7	15
54035	PPDB LNN EBP		7	14
81992	P050N-BK		11	1
			12	7
54035	RPEC LBN		7	9
54035	RPEC LBN FBY		7	8
54035	RSDC LBN		6	7
54035	RSDC LBN ECJ		6	6
74545	SHC-1023-CR		11	7
			12	5
74545	SHC-1037-CR		11	4
9606M	S35207-264		9	12
2275X	0G-82		3	4
81992	003-22-001	5310-01-113-9097	11	5
			12	4
81992	003-22-092		11	2
81992	003-22-003	5310-01-141-8704	11	8
81992	074-01-021		3	6
16309	1-1122-031		7	20
F2821	103 002.26		10	9
F2821	103 085.11 (11 T 0 20) (RC610)		10	8
F2821	103 085.11(1 TO 10)(RC610)		10	5
55746	110-2AS-0		21	6
16764	1115615		12	12
F2821	115 116.07		10	10
F2821	115 129.14		10	15
19207	11677570	5935-00-322-8959	4	2
19207	11682336		4	1
F2821	118 368.16		10	14
F2821	118 618.01		10	11
9G100	123347		18	7
9G100	123873		18	5
9G100	123891		18	9

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
9G100	124164		18	6
F2821	168 518.07		10	6
F2821	173 616.26		10	7
90598	2-012		7	17
81992	205-09-001		11	6
			12	6
81992	205-09-002		11	3
81992	205-09-003	5330-01-141-8705	11	9
05448	205707		8	35
01276	2240-6-8S		5	14
56501	2439		11	10
90598	25701-100		23	21
90598	25702-100		16	9
90598	25706-100		23	9
90598	25707-1		23	4
90598	25736-1		21	19
90598	25737-1		21	25
90598	25745-1		2	3
90598	25746-100		22	6
90598	25747-1		21	14
			22	4
90598	25748-1		21	11
90598	25749-1		15	9
90598	25750-1		13	5
90598	25753-100		13	6
90598	25755-100		19	13
90598	25757-100		19	18
90598	25759-100		19	14
90598	25764-1		15	11
90598	25765-1		19	8
90598	25772-1		19	4
90598	25773-1		5	25
90598	25774-1		17	3
90598	25775-1		17	9
90598	25775-2		17	5
90598	25776-1		17	11
90598	25776-2		17	7
90598	25777-1		17	10
90598	25777-2		17	6
90598	25778-1		15	8
90598	25779-100		18	11
90598	25782-1		17	8
90598	25783-100		15	7
90598	25784-1		7	29
90598	25785-1		23	19
90598	25786-1		15	13
90598	25787-100		15	6
90598	25788-1		15	14
90598	25789-1		15	10
90598	25790-1		19	9
90598	25794-1		21	10

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
90598	25797-1		21	3
90598	25798-1		21	22
90598	25801-1		23	3
90598	25802-1		13	3
90598	25803-1		10	21
90598	25804-1		10	16
90598	25804-10		3	16
90598	25804-11		3	17
90598	25804-12		3	18
90598	25804-13		3	19
90598	25804-14		3	20
90598	25804-15		3	21
90598	25804-16		7	24
90598	25804-17		7	22
90598	25804-18		7	26
90598	25804-19		7	23
90598	25804-2		3	8
90598	25804-20		7	25
90598	25804-21		7	21
90598	25804-3		3	9
90598	25804-4		3	10
90598	25804-5		3	11
90598	25804-6		3	12
90598	25804-7		3	13
90598	25804-8		3	14
90598	25804-9		3	15
90598	25806-1		21	23
90598	25807-1		21	21
90598	25811-1		10	22
90598	25812-100		10	4
90598	25813-1		12	13
90598	25814-100		12	8
90598	25815-1		3	2
90598	25818-100		9	5
90598	25819-100		7	3
90598	25820-1		8	7
90598	25822-1		8	6
90958	25831-1		10	20
90598	25842-100		9	25
90598	25842-101		9	23
90598	25844-1		21	24
90598	25844-2		21	20
90598	25847-1		13	2
90598	25848-1		23	2
90598	25853		3	1
90598	25862-100		21	17
90598	25865-1		3	22
90598	25866-1		23	7
90598	25868-100		1	1
90598	25870-100		23	10
90598	25873-1		23	15

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
90598	25884-100		19	13
90598	25885-1		9	9
90598	25886-100		9	22
90598	25889-1		15	12
90598	25894-100		8	5
90598	25896-100		9	24
90598	25897-100		9	17
90598	25898-100		3	7
90598	25899-1		21	7
0AT62	35A2C5	5305-00-225-3843	23	20
05448	359673		8	17
05448	361181		8	24
05448	361981		8	27
05448	361983		8	30
05448	362244		8	13
05448	362436		8	21
05448	362501		8	33
05448	363092		8	19
05448	363162		8	32
05448	363163		8	34
27005	4WE6E51/AG24NZ4/5V		7	7
27005	4WE6651/AG24NZ4/5V		7	6
9G100	400670		18	8
05448	400696		8	25
05448	401272		8	29
9G100	405015		18	10
05448	409005		8	15
05448	409221		8	18
05448	409843		8	26
05448	410485		8	20
05448	410526		8	10
05448	410559		8	9
05448	410586		8	8
05448	410694		8	16
05448	410728		8	28
05448	410779		8	12
05448	411320		8	31
73992	6-FFP-38F		5	12
			20	16
73992	6-FFS-38F		5	13
			20	14
24161	6C1T-6-6MP/6-10MBX90-87		20	8
			20	11
24161	6C1T-6-6MP/6-6MBX-87		20	2
			20	5
24161	6C1T-6-8FJX/6-6MBX90-25		5	6

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
24161	6C1T-6-8MBX/6-6MBX90-21		5	3
24161	6C1T-6-8MBX/6-8FJX-52		5	19
			5	21
24161	6C1T-6-8MBX/6-8FJX-60		5	15
			5	17
24161	6C1T-6-8MBX/6-8MBX90-19		5	10
24161	6C1T-6-8MBX90/6-8FJX-32		5	8
24161	6C1T-6-8MBX90/6-8MBX90-19		5	1
52676	619102RS1C3		21	18
05448	631503		8	14
62913	7220AA7200		14	1
24161	7254-0006-5		5	5
			5	7
			20	4
			20	7
24161	7254-0010-5		20	10
			20	13
24161	7254-008-5		5	2
			5	4
			5	9
			5	11
			5	16
			5	18
			5	20
			5	22
			6	3
24161	7306-2944-5		20	3
			20	6
24161	7307-2248-5		20	9
			20	12
16309	7562-01		7	19
05448	773748		8	11
05448	773764		8	22
05448	774159		8	23
24161	8MB-8MJ		6	2
24161	8MJ-8FJX-8MJ		6	1
39428	92136A566		21	15
90598	990106003		7	18
90598	992550-1		7	4
90598	992650X4.25		7	5

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
1	1		90598	25868-100
2	1	5305-00-988-1724	96906	MS35206-280
2	2	5310-00-809-4058	96906	MS27183-10
2	3		90598	25745-1
3	1		90598	25853
3	2		90598	25815-1
3	3		2275X	ABGD310N-R
3	4		2275X	0G-82
3	5		2275X	ASD320N
3	6		81992	074-01-021
3	7		90598	25898-100
3	8		90598	25804-2
3	9		90598	25804-3
3	10		90598	25804-4
3	11		90598	25804-5
3	12		90598	25804-6
3	13		90598	25804-7
3	14		90598	25804-8
3	15		90598	25804-9
3	16		90598	25804-10
3	17		90598	25804-11
3	18		90598	25804-12
3	19		90598	25804-13
3	20		90598	25804-14
3	21		90598	25804-15
3	22		90598	25865-1
4	1		19207	11682336
4	2	5935-00-322-8959	19207	11677570
5	1		24161	6C1T-6-8MBX90/6-8MBX90-19
5	2		24161	7254-008-5
5	3		24161	6C1T-6-8MBX/6-6MBX90-21
5	4		24161	7254-008-5
5	5		24161	7254-0006-5
5	6		24161	6C1T-6-8FJX/6-6MBX90-25
5	7		24161	7254-0006-5
5	8		24161	6C1T-6-8MBX90/6-8FJX-32
5	9		24161	7254-008-5
5	10		24161	6C1T-6-8MBX/6-8MBX90-19
5	11		24161	7254-008-5
5	12		73992	6-FFP-38F
5	13		73992	6-FFS-38F
5	14		01276	7240-6-8S
5	15		24161	6C1T-6-8MBX/6-8FJX-60
5	16		24161	7254-008-5
5	17		24161	6C1T-6-8MBX/6-8FJX-60

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
5	18		24161	7254-008-5
5	19		24161	6C1T-6-8MBX/6-8F JX-52
5	20		24161	7254-008-5
5	21		24161	6C1T-6-8MBX/6-8F JX-52
5	22		24161	7254-008-5
5	23	5305-00-988-1724	96906	MS35206-280
5	24	5310-00-809-4058	96906	MS27183-10
5	25		90598	25773-1
6	1		24161	8MJ-8FJX-8MJ
6	2		24161	8MB-8MJ
6	3		24161	7254-008-5
6	4	5306-00-225-8503	96906	MS90725-39
6	5	5310-00-081-4219	96906	MS27183-12
6	6		54035	RSDC LBN ECJ
6	7		54035	RSDC LBN
6	8		54035	ECJ
7	1	5306-00-225-8496	96906	MS90725-31
7	2	5310-00-081-4219	96906	MS27183-12
7	3		90598	25819-100
7	4		90598	992550-1
7	5		90598	992650X4.25
7	6		27005	4WE6G51/AG24NZ4/ 5V
7	7		27005	4WE6E51/AG24NZ4/ 5V
7	8		54035	RPEC LBN FBY
7	9		54035	RPEC LBN
7	10		54035	FBY
7	11		54035	FDBA LAN GBX
7	12		54035	FDBA LAN
7	13		54035	GBX
7	14		54035	PPDB LNN EBP
7	15		54035	PPDB LNN
7	16		54035	EBP
7	17		90598	2-012
7	18		90598	990106003
7	19		16309	7562-01
7	20		16309	1-1122-031
7	21		90598	25804-21
7	22		90598	25804-17
7	23		90598	25804-19
7	24		90598	25804-16
7	25		90598	25804-20
7	26		90598	25804-18
7	27	5306-00-226-4825	80204	B1821BH031C075N
7	28	5310-00-407-9566	96906	MS35338-45
7	29		90598	25784-1
8	1	5305-00-068-0501	96906	MS90725-5
8	2	5310-00-809-4058	96906	MS27183-10

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
8	3		96906	MS90725-58
8	4	5310-00-080-6004	96906	MS27183-14
8	5		90598	25894-100
8	6		90598	25822-1
8	7		90598	25820-1
8	8		05448	410586
8	9		05448	410559
8	10		05448	410526
8	11		05448	773748
8	12		05448	410779
8	13		05448	362244
8	14		05448	631503
8	15		05448	409005
8	16		05448	410694
8	17		05448	359673
8	18		05448	409221
8	19		05448	363092
8	20		05448	410485
8	21		05448	362436
8	22		05448	773764
8	23		05448	774159
8	24		05448	361181
8	25		05448	400696
8	26		05448	409843
8	27		05448	361981
8	28		05448	410728
8	29		05448	401272
8	30		05448	361983
8	31		05448	411320
8	32		05448	363162
8	33		05448	362501
8	34		05448	363163
8	35		05448	205707
9	1	5305-00-889-2999	96906	MS35206-217
9	2	5310-00-543-2410	96906	MS35338-40
9	3	5310-00-950-1310	96906	MS27183-4
9	4	5310-00-934-9739	96906	MS35649-242
9	5		90598	25818-100
9	6	5935-01-176-1708	96906	MS25043-22DA
9	7	5305-00-990-6444	96906	MS35207-261
9	8	5310-00-014-5850	96906	MS27183-42
9	9		90598	25885-1
9	10	5310-00-934-9751	96906	MS35650-302
9	11	5310-00-596-7691	96906	MS35335-32
9	12		9606M	S35207-264
9	13	5310-00-045-3296	96906	MS35338-43
9	14	5310-00-637-9541	96906	MS35338-46
9	15	5305-00-269-3233	96906	MS90727-57
9	16	5935-01-044-8382	96906	MS52131-1
9	17		90598	25897-100
9	18	5325-00-270-8890	96906	MS35489-22

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
9	19	5305-00-988-1724	96906	MS35206-280
9	20	5310-00-209-0786	96906	MS35335-33
9	21	5310-00-809-4058	96906	MS27183-10
9	22		90598	25886-100
9	23		90598	25842-101
9	24		90598	25896-100
9	25		90598	25842-100
10	1	5305-00-068-0502	96906	MS90725-6
10	2	5310-00-209-0786	96906	MS35335-33
10	3	5310-00-809-4058	96906	MS27183-10
10	4		90598	25812-100
10	5		F2821	103 085.11(1 TO 10)(RC610)
10	6		F2821	168 518.07
10	7		F2821	173 616.26
10	8		F2821	103 085.11 (11 T 0 20) (RC610)
10	9		F2821	103 002.26
10	10		F2821	115 116.07
10	11		F2821	118 618.01
10	12		2275X	NRAS1100-10A
10	13		2275X	NR21
10	14		F2821	118 368.16
10	15		F2821	115 129.14
10	16		90598	25804-1
10	17	5310-00-877-5797	96906	MS21044N3
10	18	5310-00-014-5850	96906	MS27183-42
10	19	5305-00-989-6265	96906	MS35207 262
10	20		90958	25831-1
10	21		90598	25803-1
10	22		90598	25811-1
11	1		81992	P050N-BK
11	2		81992	003-22-002
11	3		81992	205-09-002
11	4		74545	SHC-1037-CR
11	5	5310-01-113-9097	81992	003-22-001
11	6		81992	205-09-001
11	7		74545	SHC-1023-CR
11	8	5310-01-141-8704	81992	003-22-003
11	9	5330-01-141-8705	81992	205-09-003
11	10		56501	2439
12	1	5305-00-068-0501	96906	MS90725-5
12	2	5310-00-209-0786	96906	MS35335-33
12	3	5310-00-809-4058	96906	MS27183-10
12	4	5310-01-113-9097	81992	003-22-001
12	5		74545	SHC-1023-CR
12	6		81992	205-09-001
12	7		81992	P050N-BK
12	8		90598	25814-100
12	9	5310-00-877-5797	96906	MS21044N3
12	10	5310-00-014-5850	96906	MS27183-42

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
12	11	5305-00-989-6265	96906	MS35207-262
12	12		16764	1115615
12	13		90598	25813-1
12	14		00843	A-6P4
12	15		00843	A-604LP
13	1		81349	MIL-R-24243/1B
13	2		90598	25847-1
13	3		90598	25802-1
13	4		81349	MIL-R-24243/7B
13	5		90598	25750-1
13	6		90598	25753-100
14	1		62913	7220AA7200
15	1	5310-00-761-6882	96906	MS51967-2
15	2	5310-00-550-1130	96906	MS35333-40
15	3	5310-00-809-4058	96906	MS27183-10
15	4	5305-00-071-2505	80204	B1821BH025C088N
15	5	5305-00-068-0501	96906	MS90725-5
15	6		90598	25787-100
15	7		90598	25783-100
15	8		90598	25778-1
15	9		90598	25749-1
15	10		90598	25789-1
15	11		90598	25764-1
15	12		90598	25889-1
15	13		90598	25786-1
15	14		90598	25788-1
16	1	5310-00-880-7744	96906	MS51967-5
16	2	5310-00-167-0721	96906	MS35333-41
16	3	5310-00-081-4219	96906	MS27183-12
16	4	5306-00-225-8499	96906	MS90725-34
16	5	5310-00-732-0558	96906	MS51967-8
16	6	5310-00-595-7237	96906	MS35333-42
16	7	5310-00-080-6004	96906	MS27183-14
16	8	5305-01-325-8387	96906	MS90725-64
16	9		90598	25702-100
17	1		96906	MS90726-58
17	2	5310-00-080-6004	96906	MS27183-14
17	3		90598	25774-1
17	4	5310-00-809-3079	96906	MS27183-19
17	5		90598	25775-2
17	6		90598	25777-2
17	7		90598	25776-2
17	8		90598	25782-1
17	9		90598	25775-1
17	10		90598	25777-1
17	11		90598	25776-1
18	1	5310-00-763-8920	96906	MS51967-20
18	2	5310-00-543-4385	96906	MS35333-46
18	3	5310-00-951-7209	96906	MS27183-22
18	4	5305-00-724-7223	80204	B1821BH063C225N
18	5		9G100	123873

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
18	6		9G100	124164
18	7		9G100	123347
18	8		9G100	400670
18	9		9G100	123891
18	10		9G100	405015
18	11		90598	25779-100
19	1	5310-00-087-4652	96906	MS51922-17
19	2	5310-00-080-6004	96906	MS27183-14
19	3	5305-00-068-0511	80204	B1821BH038C125N
19	4		90598	25772-1
19	5	5310-00-984-3806	96906	MS51922-9
19	6	5310-00-081-4219	96906	MS27183-12
19	7	5306-00-225-8503	96906	MS90725-39
19	8		90598	25765-1
19	9		90598	25790-1
19	10	5315-00-011-9120	96906	MS24665-287
19	11	5310-00-951-7209	96906	MS27183-22
19	12	5305-00-984-7363	96906	MS35191-272
19	13		90598	25755-100
19	13		90598	25384-100
19	14		90598	25759-100
19	15	5310-00-732-0558	96906	MS51967-8
19	16	5310-00-595-7237	96906	MS35333-42
19	17	5305-01-325-8387	96906	MS90725-64
19	18		90598	25757-100
19	19	5310-00-087-7493	96906	MS27183-13
20	1	5975-00-133-8696	96906	MS3367-6-9
20	2		24161	6C1T-6-6MP/6-6MB X-87
20	3		24161	7306-2944-5
20	4		24161	7254-0006-5
20	5		24161	6C1T-6-6MP/6-6MB X-87
20	6		24161	7306-2944-5
20	7		24161	7254-0006-5
20	8		24161	6C1T-6-6MP/6-10M BX90-87
20	9		24161	7307-2248-5
20	10		24161	7254-0010-5
20	11		24161	6C1T-6-6MP/6-10M BX90-87
20	12		24161	7307-2248-5
20	13		24161	7254-0010-5
20	14		73992	6-FFS-38F
20	15		73992	P-SDC-6FF
20	16		73992	6-FFP-38F
20	17		73992	P-PDC-6FF
21	1	5310-00-113-3757	96906	MS35650-3392
21	2	5310-00-003-4094	96906	MS35338-48
21	3		90598	25797-1
21	4	5310-00-809-5998	96906	MS27183-18

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
21	5	5305-00-226-7768	96906	MS90726-115
21	6		55746	110-2AS-0
21	7		90598	25899-1
21	8	5310-00-851-2677	96906	MS35691-49
21	9	5310-00-820-6653	96906	MS35338-50
21	10		90598	25794-1
21	11		90598	25748-1
21	12	5315-00-013-7228	96906	MS24665-423
21	13	5310-00-809-8533	96906	MS27183-23
21	14		90598	25747-1
21	15		39428	92136A566
21	16	5310-00-582-5965	96906	MS35338-44
21	17		90598	25862-100
21	18		52676	619102RS1C3
21	19		90598	25736-1
21	20		90598	25844-2
21	21		90598	25807-1
21	22		90598	25798-1
21	23		90598	25806-1
21	24		90598	25844-1
21	25		90598	25737-1
22	1	5310-00-835-2036	96906	MS35691-29
22	2		27125	MP1-3L-NC-2.00-3 .50-DSM-1G
22	3	5315-00-013-7228	96906	MS24665-423
22	4		90598	25747-1
22	5	5310-00-809-8533	96906	MS27183-23
22	6		90598	25746-100
23	1	5320-00-493-4101	81349	M24243/1-B604
23	2		90598	25848-1
23	3		90598	25801-1
23	4		90598	25707-1
23	5		99862	CL-8-BLP-L-0.50
23	6		99862	CL-3-F
23	7		90598	25866-1
23	8		09332	D-8-10-R-12LYD
23	9		90598	25706-100
23	10		90598	25870-100
23	11	5310-00-934-9751	96906	MS35650-302
23	12	5310-00-576-5752	96906	MS35333-39
23	13	5310-00-014-5850	96906	MS27183-42
23	14	5305-00-989-7435	96906	MS35207-264
23	15		90598	25873-1
23	16	5310-00-761-6882	96906	MS51967-2
23	17	5310-00-550-1130	96906	MS35333-40
23	18	5310-00-809-4058	96906	MS27183-10
23	19		90598	25785-1
23	20	5305-00-225-3843	0AT62	35A2C5
23	21		90598	25701-100

ALPHABETICAL INDEX

ALPHABETICAL INDEX

ALPHABETICAL INDEX

By Order of the Secretary of the Army:

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

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
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PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEONARDWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 10-3835-223-13&P	31 Aug 1993	HOSE REEL SYSTEM

BE EXACT PIN-POINT WHERE IT IS

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

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

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

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

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

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

SIGN HERE John Doe
JOHN DOE

DA FORM 1 JUL 79 2028-2

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TM 10-3835-223-13&P	31 Aug 1993	HOSE REEL SYSTEM

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PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

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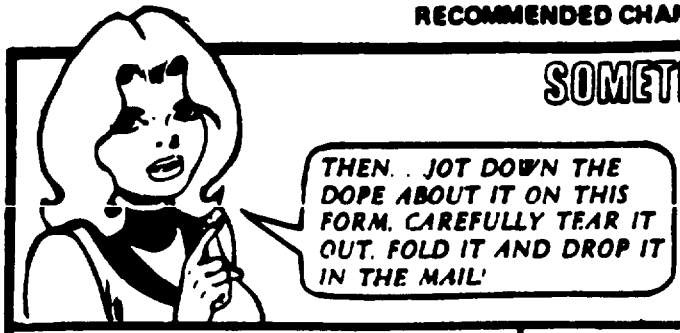

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The Metric System and Equivalents

Linear Measure

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

Weights

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

Liquid Measure

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

Square Measure

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

Cubic Measure

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

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

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

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