

# TM 10-4510-208-13&P

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## TECHNICAL MANUAL

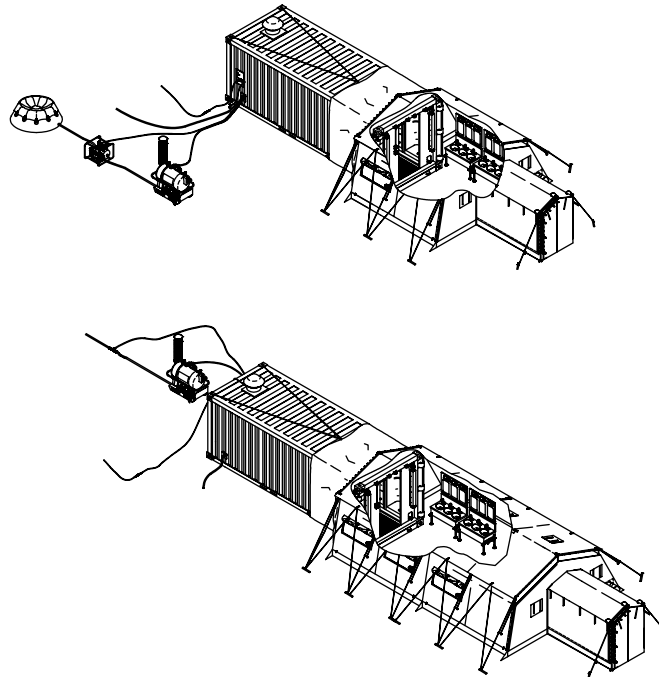
OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL  
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS (RPSTL)  
FOR

## CONTAINERIZED SHOWER

NSN 4510-01-477-7763

SHOWER, ENCLOSED UNIT, SYSTEM

NSN 4510-01-470-1398



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

HEADQUARTERS, DEPARTMENT OF THE ARMY

30 APRIL 2005



## WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within this technical manual.

### EXPLANATION OF SAFETY WARNING ICONS



**BIOLOGICAL** – abstract symbol bug shows that a material may contain bacteria or viruses that present a danger to life or health.



**CHEMICAL** – drops of liquid on hand shows that the material will cause burns or irritation to human skin or tissue.



**ELECTRICAL** – electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.



**FIRE** – flame shows that a material may ignite and cause burns.



**FLYING PARTICLES** – arrows bouncing off face with face shield shows that particles flying through the air will harm face.



**HEAVY OBJECT** – human figure stooping over heavy object shows physical injury potential from improper lifting technique.



**HEAVY PARTS** – hand with heavy object on top shows that heavy parts can crush and harm.



**HEAVY PARTS** – heavy object on human figure shows that heavy parts present a danger to life or limb.



**HELMET PROTECTION** – arrow bouncing off head with helmet shows that falling parts present a danger.



HOT AREA – hand over object radiating heat shows that part is hot and can burn.



MOVING PARTS – hand with fingers caught between rollers shows that the moving parts of the equipment present a danger to life or limb.



ROTATING BLADES – fan blade severing fingers shows that rotating parts present a hazard to limb



SLICK FLOOR – wavy line on floor with legs prone shows that slick floor presents a danger for falling.



VAPOR – human figure in a cloud shows that material vapors present a danger to life or health.



## GENERAL SAFETY WARNINGS DESCRIPTION



### **WARNING**

Electrical high voltage cannot be seen but it can kill you. Electricity is unlike most other dangerous things you can come in contact with because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you. To ensure your safety and that of other maintenance personnel, always observe the following precautions:

DO NOT operate any electrical equipment unless it is properly grounded.

DO NOT perform any maintenance on electrical equipment unless all power is removed.

BE CERTAIN that there is someone assisting you who can immediately remove power.

ALWAYS place POWER OFF warning tags on power supply switches so that no one will apply power while you are performing maintenance.

FOR ARTIFICIAL RESPIRATION, REFER TO FM 21 –11.



### **WARNING**

Read the lifting requirements printed on transport covers and bags for weight and personnel requirements. Ensure sufficient personnel are available when performing all lifting or carrying operations. Lifting should be done on command to ensure personnel work in unison. Lifting should be done using the legs. Use caution when carrying or moving assemblies. Be aware of other personnel that may be nearby and in range of swinging components.



### **WARNING**

Hinged container doors are capable of pinching or crushing hands or fingers. Use extreme caution when opening and closing these doors.



### **WARNING**

Use appropriate number of personnel when moving large, bulky, heavy items. Serious injury to personnel could result from improper lifting.

**WARNING**

Use only US Army Medical Activity approved potable water for the Containerized Shower. Failure to do so may cause serious illness or death to personnel.

**WARNING**

Sanitize the Containerized Shower water distribution system IAW U.S. Army Medical Activity sanitizing requirements, TB MED 577, Sanitation Control and Surveillance of Field Water Supplies. Failure to do so may cause serious illness or death to personnel.

**LIST OF EFFECTIVE PAGES / WORK PACKAGES**

Dates of issue for original and changed pages / work packages are:

Original .. 0 .. 30 April 05

**TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 36 AND TOTAL NUMBER OF WORK PACKAGES IS 75 CONSISTING OF THE FOLLOWING:**

<b>Page / WP* No.</b>	<b>Change No.</b>	<b>Page / WP No.</b>	<b>*Change No.</b>	<b>Page / WP No.</b>	<b>*Change No.</b>
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i-iv.....	0				
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WP 0001 00 – 0075 00 .....	0				
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\*Zero in this column indicates an original page or work package.



HEADQUARTERS,  
DEPARTMENT OF THE ARMY  
WASHINGTON, D.C., 30 APRIL 2005

**TECHNICAL MANUAL**  
**OPERATOR'S, UNIT, AND DIRECT SUPPORT**  
**MAINTENANCE MANUAL,**  
**INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST**

**CONTAINERIZED SHOWER**  
**NSN 4510-01-477-7763**

**SHOWER, ENCLOSED UNIT, SYSTEM**  
**NSN 4510-01-470-1398**

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter together with DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual, directly to: Commander, U.S. Army Tank-automotive & Armament Command, ATTN: AMSTA-LC-CECT, 15 Kansas Street, Natick, MA 01760-5052. You may also send in your recommended changes by E-mail directly to amssbriml@natick.army.mil. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

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

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## HOW TO USE THIS MANUAL

This Manual contains General Information, Operating Instructions, Operator Preventive Maintenance Checks and Services (PMCS) for both the Containerized Shower and the Shower, Enclosed Unit, System.

### Chapter Organization

#### Chapter 1 - Introduction

Chapter 1 contains introductory information on both models and their associated equipment as well as a Theory of Operation.

#### Chapter 2 – Operating Instructions

Chapter 2 includes operating instructions under usual and unusual conditions.

#### Chapter 3 – Operator Troubleshooting Procedures

Chapter 3 contains operator troubleshooting procedures.

#### Chapter 4 – Operator Maintenance Instructions

Chapter 4 contains PMCS and operator maintenance procedures and instructions.

#### Chapter 5 – Unit Maintenance Instructions

Chapter 5 contains unit maintenance instructions.

#### Chapter 6 – Direct Support Maintenance Instructions

Chapter 6 contains direct support maintenance instructions.

#### Chapter 7 – Supporting Information

Chapter 7 contains references and other supporting information.

### Manual Organization and Page Numbering System

The Manual is divided into seven major chapters that detail the topics mentioned above. Within each chapter are work packages covering a wide range of topics. Each work package is numbered sequentially starting at page 1. The work package has its own page numbering scheme and is independent of the page numbering used by other work packages. Each page of a work package has a page number of the form XXXX YY-ZZ where XXXX is the work package number (e.g. 0010 is work package 10) and YY is the revision number for that work package and ZZ represents the number of the page within that work package. A page number such as 0010 00-1/(2 blank) means that page 1 contains information but page 2 of that work package has been intentionally left blank.

### Finding Information

The Table of Contents permits the reader to find information in the manual quickly. The reader should start here first when looking for a specific topic. The Table of Contents lists the topics contained within each chapter and the Work Package Sequence Number where it can be found.

Example: If the reader were looking for instructions on “Preventive Maintenance Checks and Services”, which is an Operator Maintenance topic, the Table of Contents indicates that Operator Maintenance information can be found in Chapter 4. Scanning down the listings for Chapter 4, “Preventive Maintenance Checks and Services” information can be found in WP 0020 00 (i.e. Work Package 20).

An Alphabetical Index can be found at the back of the Manual. It lists specific topics with the corresponding work package.





**MAINTENANCE FORMS, RECORDS AND REPORTS**

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

**REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs)**

If your equipment 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 (Product Quality Deficiency Report). Mail it to: Commander, U.S. Army Tank-automotive Armament Command, ATTN: AMSTA-LC-R, 15 Kansas St., Natick, MA 01760-5052. We will send you a reply.

**CORROSION PREVENTION AND CONTROL (CPC)**

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber or plastic. Unusual cracking, softening, swelling or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion", "rust", "deterioration", or "cracking" will ensure that the information is identified as a CPC problem. This form should be submitted to the address specified in DA PAM 738-750.

**DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE**

For procedures to destroy this equipment to prevent its use by the enemy refer to TM 750-244-2, Procedures for Destruction of Materiel to Prevent Enemy Use.

**PREPARATION FOR STORAGE AND SHIPMENT**

Refer to work package 0007 00 for procedures to prepare the Containerized Shower for storage and shipment. Refer to work package 0008 00 for procedures to prepare the Shower, Enclosed Unit, System for storage and shipment.

**NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) CONTAMINATION**

The Containerized Latrine and Shower, Enclosed Unit, System have not been designed to withstand the effects of NBC events. The shower will require thorough decontamination IAW FM 3-5 if exposed to NBC contaminants because it is not Chemical Agent Resistant Coating (CARC) painted.

**WARRANTY DATA**

N/A

**NOMENCLATURE CROSS-REFERENCE LIST**

<b>Common Name</b>	<b>Official Nomenclature</b>
Container	General Cargo Container
Fabric Tank	Tank, Fabric, Collapsible, Air Column Supported, Open Top, Water Storage, 3,000 Gallon.
ISO	International Organization for Standardization
Luminaire(s), TEMPER light(s), Bruce Lights	Light Set, General Illumination
QD Fitting, QDC	Quick Disconnect Coupling
Space Heater	Marley FZ Series Model C, Fan Forced Wall Heater
Sump Pump	Zoeller Model M53-D, .3HP, 115V, 8 Amp, 60 Hz Sump Pump
TEMPER	Tent, Extendable, Modular, Personnel
TRICON	Triple Containers
Water Heater	Heater, Water, Liquid Fuel, M-80
Water Pump	30 gpm Water Pump

**LIST OF ABBREVIATIONS/ACRONYMS**

A	Ampere
AAL	Additional Authorization List
AC	Alternating Current
AR	Army Regulation
BII	Basic Issue Item
BOI	Basis of Issue
BTU	British Thermal Unit
CAGEC	Commercial and Government Entity Code
CFR	Code of Federal Regulation
COEI	Component of End Item
CPC	Corrosion Prevention Control
CTA	Common Table of Allowances
CWA	Clean Water Act
DA	Department of the Army
DMWR	Depot Maintenance Work Requirement
DS2	Decontamination Solution Number Two
EIR	Equipment Improvement Recommendation
EPA	Environmental Protection Agency
F	Female

**LIST OF ABBREVIATIONS/ACRONYMS- continued**

FGC	Functional Group Code
FM	Field Manual
GFCI	Ground Fault Circuit Interrupter
gpm	Gallons per Minute
HCI	Hardness Critical Item
Hz	Hertz
IAW	In Accordance With
in	Inch(es)
ISO	International Organization for Standardization
Kg	Kilogram(s)
kPa	Kilopascal(s)
kW	Kilowatt(s)
L	Liter
lbs	Pounds
M	Male
MAC	Maintenance Allocation Chart
MOS	Military Occupational Specialty
MTOE	Modified Table of Organization and Equipment
NBC	Nuclear, Biological and Chemical
NPDES	National Pollutant Discharge Elimination System
NPT	National Pipe Thread
NSN	National Stock Number
P/N	Part Number
PAM	Pamphlet
PMCS	Preventive Maintenance Checks and Services
POL	Petroleum, Oil and Lubricant
psi	Pounds Per Square Inch
QDC	Quick Disconnect
RPSTL	Repair Parts and Special Tools List
SEP	Sewage Ejection Pump
SF	Standard Form
SMR	Source, Maintenance and Recoverability
SOP	Standard Operating Procedures
TAMMS	The Army Maintenance Management System
TEMPER	Tent, Extendable, Modular, Personnel
TM	Technical Manual
TMDE	Test, Measurement and Diagnostic

**LIST OF ABBREVIATIONS/ACRONYMS - continued**

TOE	Table of Organization and Equipment
TRICON	Triple Container
U/M	Unit of Measure
UOC	Usable On Code
UUT	Unit Under Test
V	Volts

**SAFETY, CARE AND HANDLING**

Always pay attention to **WARNINGS, CAUTIONS** and **NOTES** appearing throughout the manual. They will appear prior to applicable procedures. Ensure you read and understand their content to prevent serious injury to yourself and others, or damage to equipment.





**CHAPTER 1**

**DESCRIPTION AND THEORY OF OPERATION  
FOR  
CONTAINERIZED SHOWER  
AND  
SHOWER, ENCLOSED UNIT, SYSTEM**



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
EQUIPMENT DESCRIPTION AND DATA**

**EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES**

<b>CHARACTERISTICS</b>	<b>CAPABILITIES AND FEATURES</b>
<ul style="list-style-type: none"> <li>• Modified ISO Container retaining standard external shipping and handling dimensions.</li> <li>• Can be set up and operational by MOS non-specific personnel within 30 minutes (at least 6 soldiers required, and without TEMPER installation).</li> <li>• No special tool requirements to set up or maintain.</li> <li>• Modular assembly construction allows for simplified exchange of components.</li> <li>• Uses standard M-80 Water Heater to supply hot water.</li> <li>• Uses 30 gpm Water Pump to supply cold water (Containerized Shower only).</li> <li>• Employs sections of standard TEMPER tent with a modified end wall (ISO bootwall).</li> <li>• Provides individual shave stand partitions with sink, mirror, interior light, and hot/cold running water.</li> </ul>	<ul style="list-style-type: none"> <li>• Provides shower capability for 96 soldiers/hour.</li> <li>• Employed as part of Force Provider system, or separately.</li> <li>• Can be used continuously, provided utility services can be sustained.</li> <li>• Hot and cold water shower facilities.</li> <li>• Internal space heating (Containerized Shower only).</li> <li>• Internal fluorescent lighting.</li> <li>• Overhead exhaust fan.</li> <li>• Fully furnished shave stands.</li> </ul>

## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (INTERNAL)

**Shower Stalls.** Six modular, commercial shower stalls (1) are installed on each side of the container. Each stall is serviced by an overhead shower valve (2) and a showerhead (3). A drain, a shower curtain, and a soap bar holder are an integral part of the shower stall shell. Two aluminum end walls and lengths of 2-inch angle stock along the container floor hold the showers stalls in place.

**Space Heater (Containerized Shower only).** A commercial heater/fan (4) is mounted inside the Containerized Shower at the service end of the container. It is operated with circuit breaker switch No. 3/5 and the output is controlled with a thermostat.

**Exhaust Fan.** A standard roof-mounted exhaust fan (5) is installed at the rear of the container. It is operated from an ON/OFF switch (6) located at the personnel entrance (7). Power is supplied through the integral power cord which is connected to a 20A external socket on the power service panel.

**Internal Lighting.** Three twin 40-watt fluorescent light fixtures (8) are mounted on the ceiling of the container along the center aisle to provide internal illumination. These lights are operated from an ON/OFF switch (9) located at the personnel entrance door. In addition, the TEMPER internal lights and shave stand individual lights provide illumination inside the TEMPER.

**Sump Pump.** A commercial sump pump (10) is mounted into the graywater holding tank (11) located at the rear of the container. The sump pump evacuates accumulated graywater from the holding tank. It is activated by a float switch when the accumulated graywater reaches a preset height within the tank and deactivates when the water level falls to a preset level. It can also be manually activated to pump the tank prior to packing either shower model.

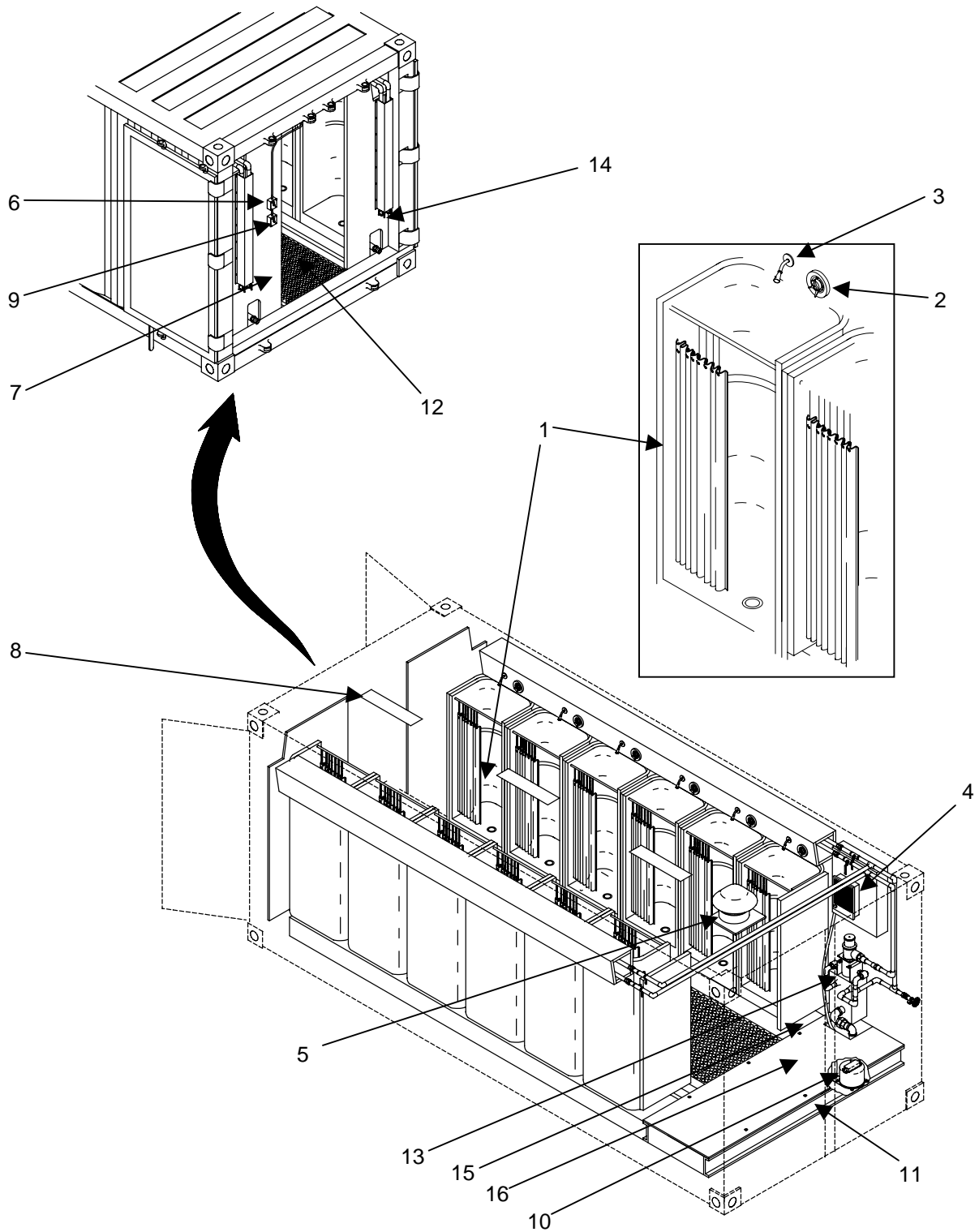
**Personnel Entrance Door.** The personnel entrance door (7) is part of the shower stall retaining wall. It permits entry into either shower model from the TEMPER tent.

**Floor Mat.** The rubber floor mat (12) covers the center aisle of the both models. It provides a non-slip surface for shower users to enter and exit the shower safely.

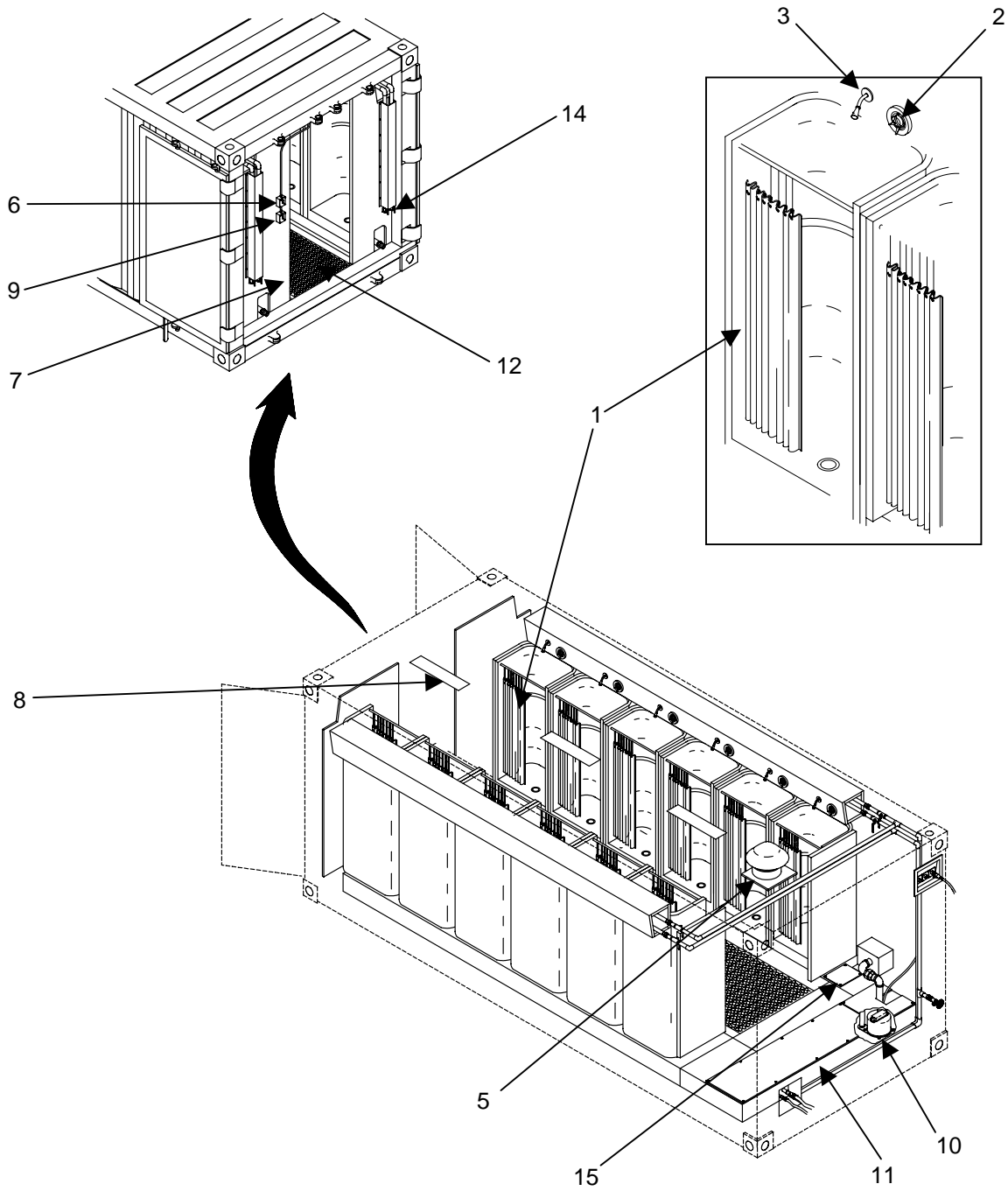
**Water Distribution System.** In the Containerized Shower, internal water distribution system consists of ½-inch copper hot and cold water lines leading from the water mixer valve (13) to the overhead shower valves of the individual shower stalls (1). Later production Containerized Showers use flexible hose in place of the copper water lines. For the Shower, Enclosed Unit, System, the water is distributed directly into the ½-inch copper hot and cold water lines and controlled at the shower valves (2) and shave stand sinks. At the personnel entrance end of the container, both hot and cold water lines end in quick disconnect fittings (14) onto which the hot and cold water supply hoses for the shave stand sinks are connected.

**Graywater Holding Tank.** Used water from the shower stalls (1) and shave stands flows through a drain duct (15) into the graywater holding tank (11) located at the service end of the container. The tank has a capacity of 100 gallons and is drained automatically during normal operation by the sump pump.

**Equipment Mounting Platform (Containerized Shower only).** The equipment mounting platform (16) is bolted to mounting rails on the sides of the graywater holding tank (11). This serves as a platform for mounting the M-80 water heater and the 30 gpm water pump in the Containerized Shower shipping configuration.



Containerized Shower Internal Components (Stand-alone Configuration)



**Shower, Enclosed Unit, System Internal Components (Force Provider Configuration)**

**LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (EXTERNAL)**

The major external components of the Containerized Shower and the Shower, Enclosed Unit, System are described in the following paragraphs.

**Container**

Both models are housed in standard ISO type 20-feet x 8-feet x 8-feet containers (refer to TM 55-8115-204-23&P). The shower modifications do not affect the container’s external dimensions or transportation characteristics. In a shipping configuration the total weight is less than 10,000 lbs.

**Water Service Panel**

The water service panel (1) on the Containerized Shower is located on the side of the container and consists of 1-inch QDC hot water, ¾-inch QDC cold water, and 2-inch QDC drain hose fittings. The water service panel (1) on the Shower, Enclosed Unit, System is located at the rear of the container, in the lower left corner, and consists of 1-inch QDC hot water and ¾-inch QDC cold water fittings. The graywater discharge fitting (2) is located on the side of the container opposite the folding steps fitted to access the exhaust fan mount.

**Double Entry Service Door (Containerized Shower only)**

The double entry service doors (3) allow access to the rear of the Containerized Shower, specifically for removal of the M-80 water heater and the 30 gpm water pump.

**Circuit Breaker Panel (Containerized Shower only)**

The circuit breaker panel (4) fitted to the Containerized Shower is located above the power service panel (5). The standard commercial panel contains breakers for the internal and external circuits of the Containerized Shower as follows:

**Table 1. Circuit Breakers.**

<b>Circuit Breaker Panel Controls and Indicators (Containerized Shower only)</b>		
<b>CIRCUIT BREAKER NO.</b>	<b>ITEM</b>	<b>FUNCTION</b>
1	Circuit Breaker 20A, 1 Pole	110V AC, Interior Lights
2/4/6	Circuit Breaker 20A, 3 Poles	208V AC 3 phase, M-80 Water Heater and 30 gpm Water Pump
3/5	Circuit Breaker 20A, 2 Poles	208V AC, Space Heater
7/9/11	Circuit Breaker 60A, 3 Poles	208V AC 3 phase, Main Breaker
8	Circuit Breaker 20A, 1 Pole	110V AC, Sump Pump
10	Circuit Breaker 20A, 1 Pole	110V AC, Exhaust Fan
12	Circuit Breaker 20A, 1 Pole	110V AC, GFCI Convenience Outlet

**M-80 Water Heater**

In the Containerized Shower shipping configuration, the M-80 water heater (6) is mounted on the equipment mounting platform located above the graywater holding tank, and is secured with straps. In the Shower, Enclosed Unit, System shipping configuration, the M-80 water heater is packed as a component of Force Provider packing plans 4A and 4E. Refer to TM 10-4520-259-13&P.

**30 gpm Water Pump (Containerized Shower only)**

The 30 gpm water pump (7) is mounted on the equipment mounting platform located above the graywater holding tank and secured with straps.

**TEMPER**

The TEMPER (8) houses the shave stands (9). Refer to TM 10-8340-224-13 for a description of the TEMPER tent system. In the deployed configuration, the TEMPER tent section is attached to the personnel entry end of the shower using a modified end section (bootwall) (10). The Containerized Shower employs a 16-foot TEMPER assembly stored within the container when not in use. The Shower, Enclosed Unit, System employs a 32-foot TEMPER assembly packed as a part of Force Provider packing plan 4B.

**Shave Stand**

Two shave stands (9) are provided with the Containerized Shower. Four shave stands are provided with the Shower, Enclosed Unit, System (not all are shown on the illustration). In the deployed configuration they are set up in the TEMPER tent (8). Each shave stand provides three users with individual sinks, hot and cold water faucets, a mirror, and an individual overhead light. The shave stand water supply and graywater drainage are provided by QDC fittings located at the personnel entrance end of the container. In the Containerized Shower configuration, the disassembled shave stands are stored in the aisle between the shower stalls inside the container. In the Shower, Enclosed Unit, System configuration, the shave stands are packed as a component of Force Provider packing plans 4A and 4E.

**Power Service Panel**

The power service panel (5) for the Containerized Shower is located beneath the circuit breaker panel (4) and contains a 60A, 208V AC, 3-Phase main power input socket. One 20A socket provides power to the exhaust fan, and is electrically connected to the fan control switch located at the personnel entrance. A second 20A socket provides power to the M-80 water heater and 30 gpm water pump. An external type, double 110V AC GFCI convenience outlet provides power to the shave stands and the TEMPER internal lighting. The power service panel (5) on the Shower, Enclosed Unit, System is located at the rear of the container at the upper right corner. It consists of three 20A sockets. The power supply for the fan and sump pump is plugged into the center socket. The fan is plugged in the right socket, and the power supply for the lights is plugged into the left socket.

**Grounding Terminal (Containerized Shower only)**

A container grounding terminal (11) is located on the power service panel. When the Containerized Shower is supplied with grounded generator power no separate grounding of the container is required. However, if commercial or another ungrounded power source is used, the container must be grounded using a grounding rod (12) that is connected to the terminal. The Shower, Enclosed Unit, System is grounded as a Force Provider component.

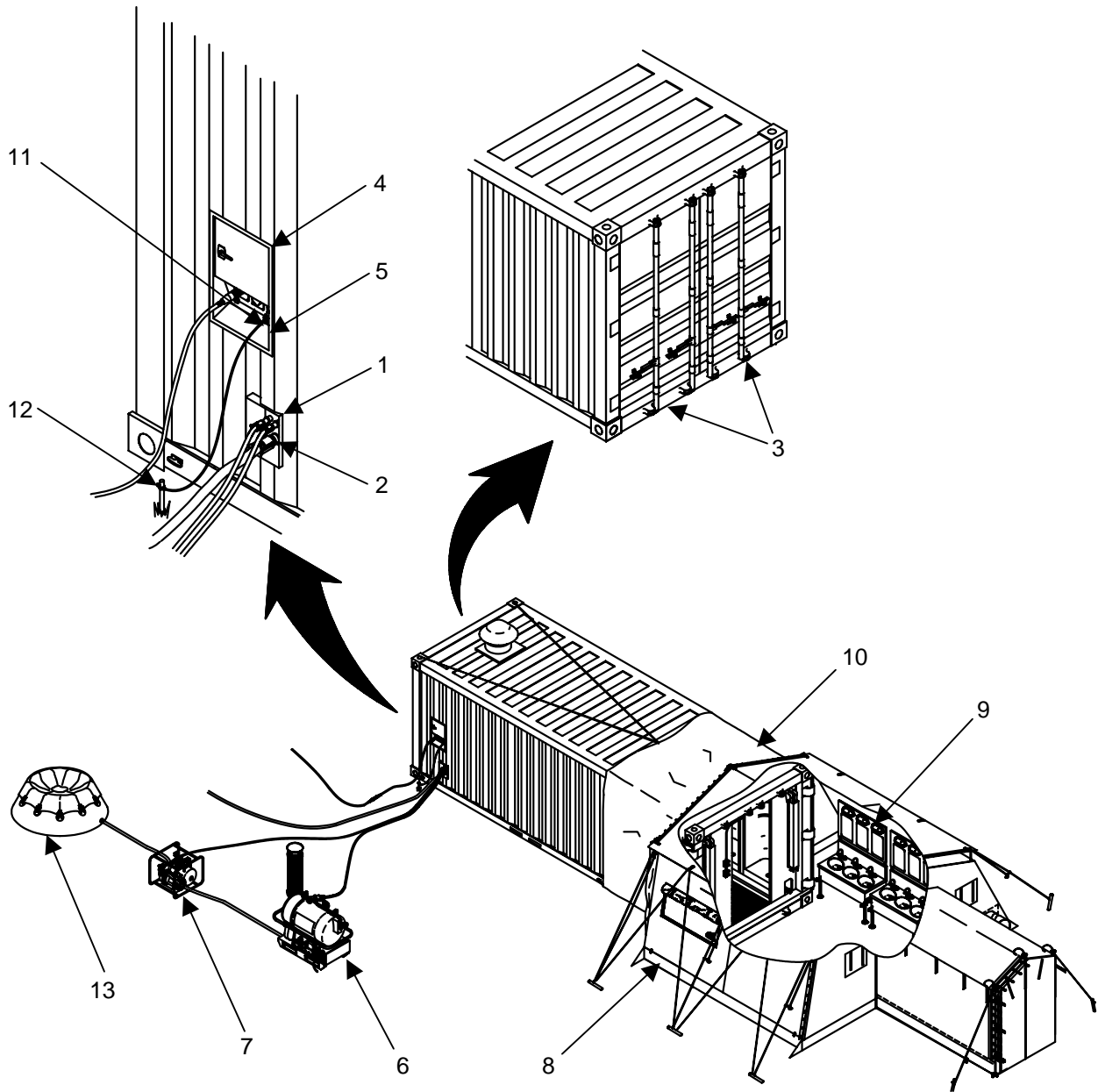
**3000 Gallon Freshwater Storage Tank (Containerized Shower only)**

The storage tank (13) serves as system freshwater supply tank for the Containerized Shower. This storage tank is not required when the Containerized Shower is deployed as part of the Force Provider System, or is connected to an authorized alternate source of fresh water.

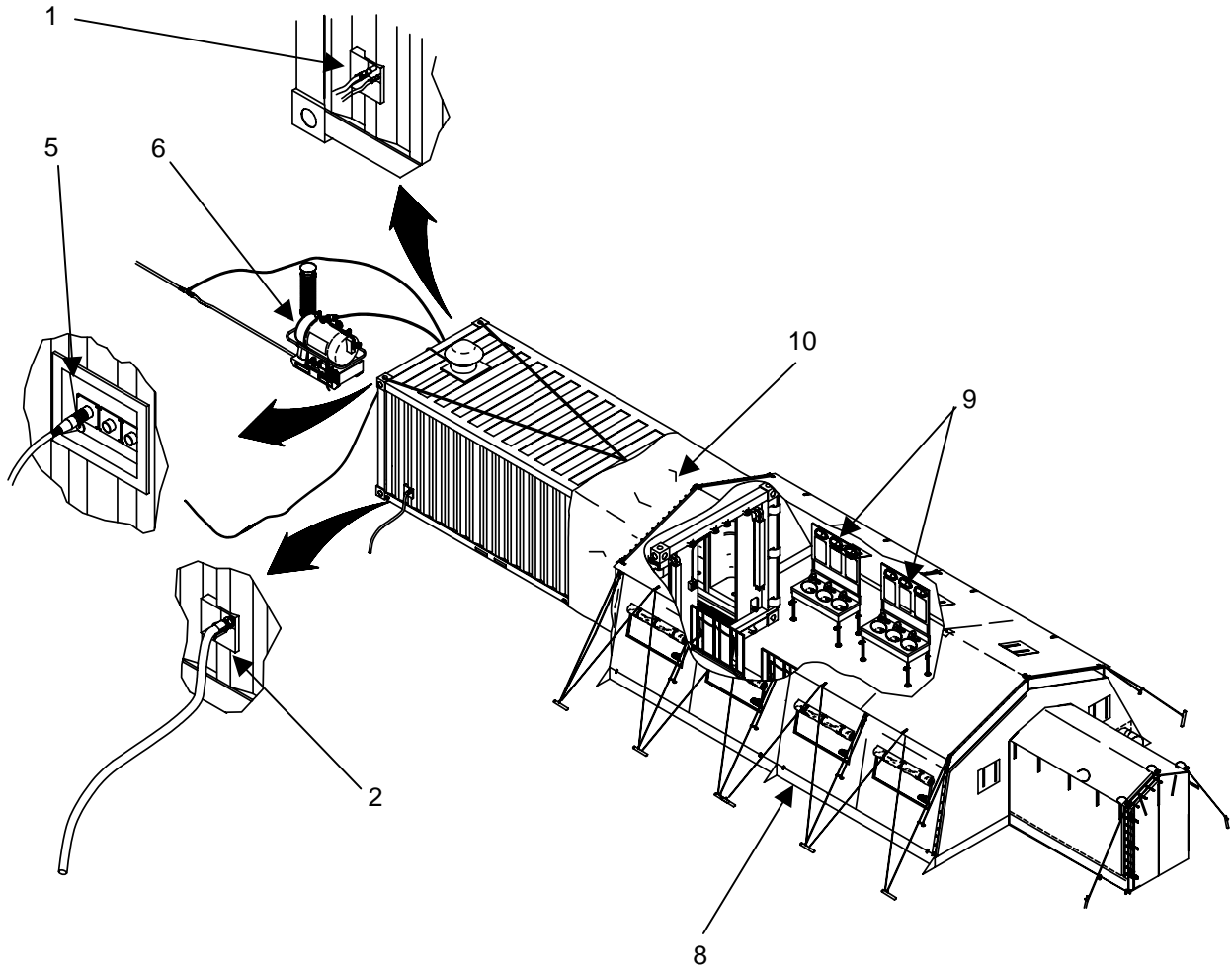
**TEMPER Bootwall**

The bootwall (10) is a modified end section that is used to attach the TEMPER tent section (8) to the personnel end of the container.





Containerized Shower External Components (Stand-alone Configuration)



**Shower, Enclosed Unit, System External Components (Force Provider Configuration)**

**Water Hoses, Electrical Cables, and Miscellaneous Fittings**

The following complement of hoses and cables, with fittings and purposes indicated, are shipped with each Containerized Shower (FRU) and Shower, Enclosed Unit, System (FSK):

**Table 2. Hoses.**

Length	Diameter	Qty, FRU	Qty, FSK	Coupling	Purpose
20ft	1½in	1		F/F QDC	Connects water source (3000 gallon tank or Force Provider water distribution system) to water pump
	2in x 1 ½in	1		F/M QDC	Adapts 2in supply from 3000 gallon tank to 1 1/2 inch
	1½in x 1½in x ¾in		1	M/F/M QDC	Cold water supply TEE
10ft	1½in		1	F/F QDC	Connects cold water supply TEE to M-80 Water Heater input manifold
15ft	¾in	1	1	F/F QDC	Connects water pump (FRU) or TEE (FSK) output to water service panel (cold)
5ftft	1½in	1		F/F QDC	Connects water pump output manifold to M-80 Water Heater input manifold
10ft	1in	1	1	F/F QDC	Connects M-80 Water Heater output to water service panel (hot)
20ft	2in	1	1	F/F QDC	Connects water service panel drain fitting to Sewage Ejection Pump (SEP), or other graywater disposal point.
6ft 3in	¾in	2	4	F/M QDC	Connects container water supply line to shave stand
2ft 3in	¾in	2	4	F/M QDC	Connects shave stand water supply lines
6ft	1½in	1	2	F/F QDC	Connects shave stand drain lines to container drain
2ft	1½in	1	2	F/F QDC	Connects shave stand drain lines

**Table 3. Electrical Cables.**

<b>Length</b>	<b>Capacity</b>	<b>Qty, FRU</b>	<b>Qty, FSK</b>	<b>Coupling</b>	<b>Purpose</b>
100ft	60A	1		MS90558C32412P	Connects 60A pigtail to main power in connector on power service panel
4ft	60A	1		MS90558C32412P	Connects power source to 100ft 60A cable
50ft	15A	1	1	Grounded Plug/Socket	Connects shave stand to power service panel 110V AC GFCI convenience outlet.
50ft	15A	1		Grounded Plug/Socket	Connects TEMPER interior lights to power service panel 110V AC GFCI convenience outlet
25ft	20A	1	1	MS90558C32412P	Power TEE with 60A to connect power supply to sockets on power service panel

**DIFFERENCES BETWEEN MODELS**

Two versions of the shower have been developed. The Containerized Shower model may be deployed on a stand-alone basis or as a component of Force Provider, and is furnished with its own M-80 water heater, 3000 Gallon Water Tank, 30 gpm water pump, and two shave stands. It is equipped with a circuit breaker panel and a power service panel that handles the electrical requirements of the shower. The Shower, Enclosed Unit, System model uses the Force Provider water distribution and graywater collection system, and includes four shave stands, rather than two as in the Containerized Shower model. The Shower, Enclosed Unit, System receives its electricity from Force Provider Power Grid, requires connection to the TEMPER GFCI protected convenience outlets and does not have an integral circuit breaker panel. This manual covers both configurations.

**EQUIPMENT DATA**

The following data provides dimensional and weight information, as well as electrical power requirements of the Containerized Shower.

**Table 4. Equipment Data.**

<b>External dimension:</b>	
Length .....	19 feet, 10-½ inches ..... (6.06 meters)
Width .....	8 feet ..... (2.44 meters)
Height .....	8 feet ..... (2.44 meters)
<b>Internal dimension:</b>	
Length .....	19 feet, 4 inches ..... (5.80 meters)
Width .....	7 feet, 6 inches ..... (2.25 meters)
Height .....	7 feet, 3-⅜ inches ..... (2.18 meters)
<b>Door dimensions:</b>	
Main entrance door	
Height .....	6 feet, 11-⅝ inches ..... (2.12 meters)
Width .....	7 feet, 7 inches ..... (2.31 meters)
Service doors (Containerized Shower only)	
Height .....	6 feet, 11-⅝ inches ..... (2.12 meters)
Width .....	7 feet, 7 inches ..... (2.31 meters)
<b>Weight:</b>	
Containerized Shower .....	<10,000 pounds
<b>Required electrical input:</b>	
Containerized Shower .....	60 Amp, 208 Volt, three phase AC
M-80 Water Heater .....	20 Amp, 208 Volt, three phase AC
30 gpm Water Pump .....	20 Amp, 208 Volt, three phase AC
Fan, exhaust.....	20 Amp, 110 Volt, single phase AC
Lighting.....	15 Amp, 110 Volt, single phase AC
Shower, Enclosed Unit, System .....	20 Amp, 110 Volt, single phase AC
<b>Required fresh water flow rate:</b> ..... 30 gpm	
<b>Environmental:</b>	
Operating temperature range .....	32° to 120° Fahrenheit ..... 0° to 49° Celsius

**EQUIPMENT CONFIGURATION**

The shower is deployed in two configurations. The Containerized Shower functions as a stand-alone system. The Shower, Enclosed Unit, System has been designed as a component of Force Provider, and cannot be operated independent of the Force Provider system. Similarities and differences are noted throughout this manual.

**COMMON TOOLS AND EQUIPMENT**

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), 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, as applicable to your unit. Repair parts will be listed and illustrated in work packages 0050 00 through 0069 00 of this manual.

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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
THEORY OF OPERATION**

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**GENERAL**

Each model of shower is a self-contained, portable facility accommodating twelve individually controlled, modular shower units (1), internal fluorescent lighting (2), an exhaust fan (3), and a sump pump (4). Cold water inlet (5), hot water inlet (6), and graywater discharge (7) connections are fitted to the container (8). An internal water distribution system (9) uses ½-inch copper piping or flexible hose to distribute freshwater to the showers.

On the Containerized Shower (stand alone configuration), a power service panel (10) contains a 60A input connector (11), two 20A connectors (12), and a double 110V AC GFCI convenience outlet (13). A circuit breaker panel (14) and internal power lines distribute power to the interior lights (2), the space heater (15), and the sump pump (4). Power for the M-80 water heater (16), 30 gpm water pump (17), and shave stand lighting (18) is supplied through external connectors on the power service panel (10).

The Shower, Enclosed Unit, System (Force Provider configuration) receives power, freshwater, and graywater service as a component of Force Provider. Hot water for the Shower, Enclosed Unit, System is provided by an M-80 water heater (16). The M-80 water heater and additional components for the Shower, Enclosed Unit, System are packed in TRICON containers 4A and 4E in the Force Provider packing plan (refer to TM 10-5419-206-13).

**Modified General Cargo Container**

The container (8) is a modified 20-foot x 8-foot x 8-foot ISO shipping container. Its external dimensions and transportation characteristics are not affected by the shower modifications. User access to the container is gained through a personnel door (19) at one end. Operator access for the Containerized Shower is gained through double service doors (20) at the other end of the container. The Shower, Enclosed Unit, System is not fitted with service doors. Both models are electrically grounded through the power source. The Containerized Shower may also be grounded using a grounding rod (21) connected to a grounding terminal (22) located on the power service panel (10).

A space heater (15) located above the mixer valve (23) provides heat for the Containerized Shower. A roof-mounted exhaust fan (3) provides ventilation for both models. The exhaust fan is operated by a switch accessible by the personnel entry door.

**TEMPER Tent Section With Bootwall**

A TEMPER tent (24) section with modified endwall (bootwall) is connected to the personnel door (19) end of the container. For the Containerized Shower, two shave stands (18) accommodating three persons each are located in the 16-foot TEMPER. For the Shower, Enclosed Unit, System (Force Provider) configuration, four shave stands are available to accommodate twelve persons in a 32-foot TEMPER. Freshwater supply and graywater outflow for the shave stands are conducted through flexible hoses connected to the container. Power for the TEMPER interior and shave stand lights is provided through the convenience outlets on the container power service panel (10) on the Containerized Shower, and through Force Provider power supply on the Shower, Enclosed Unit, System.

**Fresh Water System**

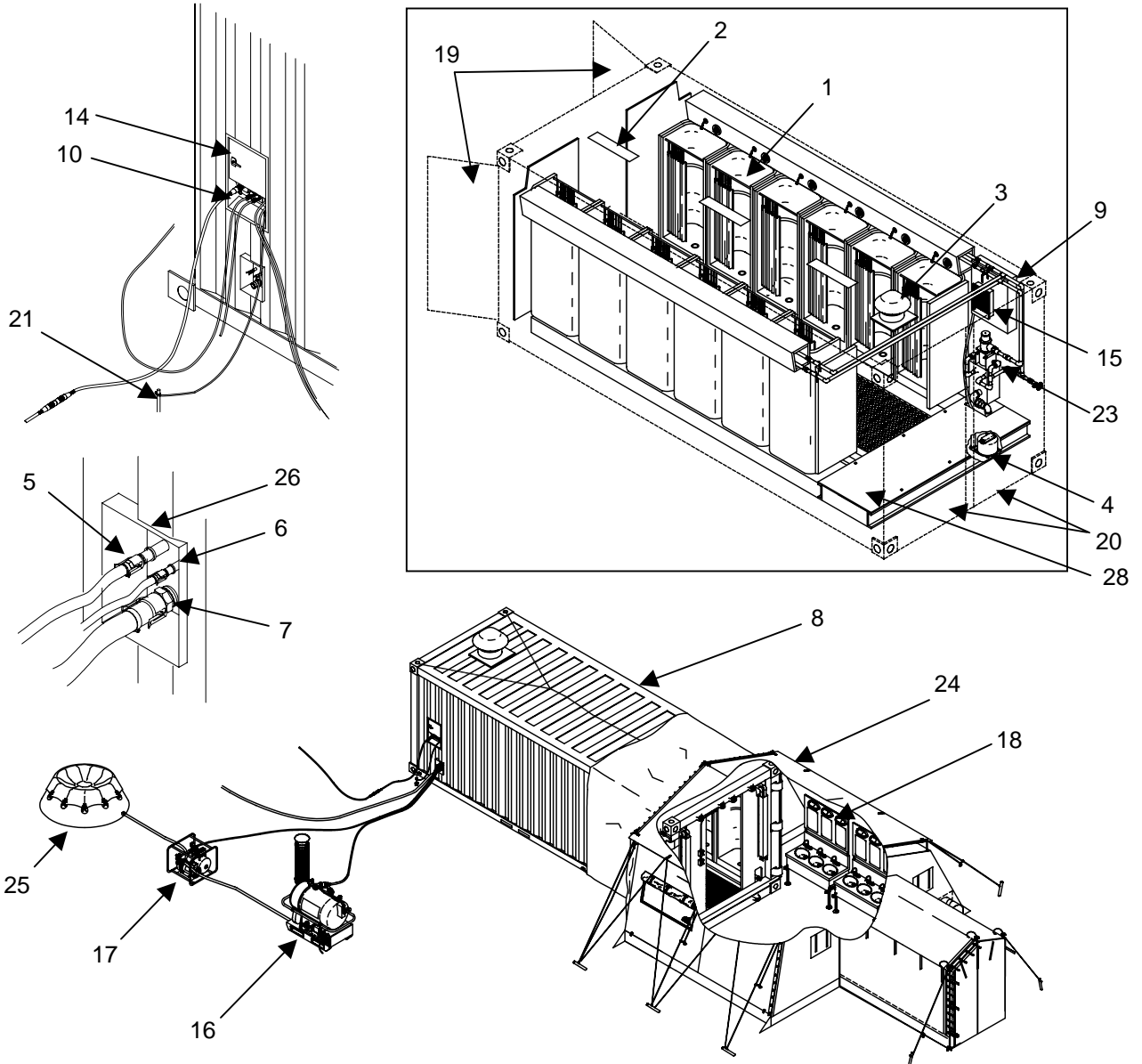
When the Containerized Shower is deployed separately, municipal water system, a 3000 gallon freshwater tank **(25)**, or other approved source of potable water serves as a freshwater supply. A 30 gpm water pump **(17)** feeds water to the Containerized Shower cold water inlet **(5)** on the water service panel **(26)**. A second supply hose feeds cold water from the pump to the M-80 water heater **(16)**. Hot water is supplied through a hose connection from the M-80 water heater to the hot water inlet **(6)** on the water service panel. On the Containerized Shower, hot and cold freshwater is taken through the water service panel to a mixer valve **(23)**, which tempers the hot water to safe temperature. The Shower, Enclosed Unit, System does not employ a mixer valve, but utilizes pressure compensating shower valves to prevent scalding.

Freshwater is provided through the Force Provider freshwater distribution system for the Shower, Enclosed Unit, System. This is fitted to a cold water supply TEE **(27)**, from which water goes to the M-80 water heater **(16)** and to the cold water inlet **(5)**.

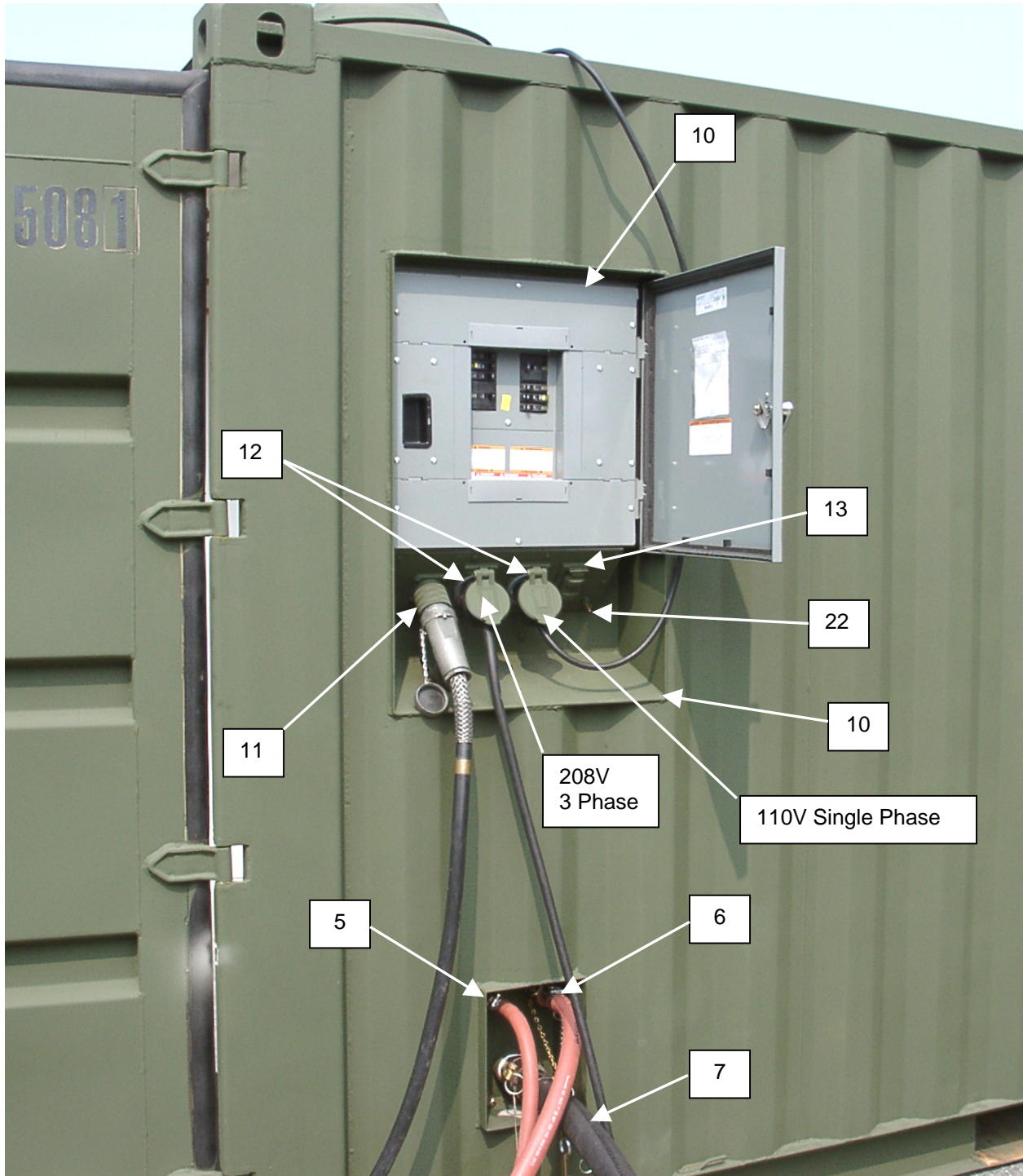
**Graywater System**

Graywater is collected in a holding tank **(28)** located at the service end of the container. It is evacuated by means of a sump pump **(4)** into municipal sewer facilities, contracted sewage disposal, Sewage Ejection Pump (SEP), or other authorized graywater disposal. The Shower, Enclosed Unit, System sump pump **(4)** discharges graywater into a Sewage Ejection Pump (SEP), which in turn pumps the graywater to the Force Provider graywater collection system.

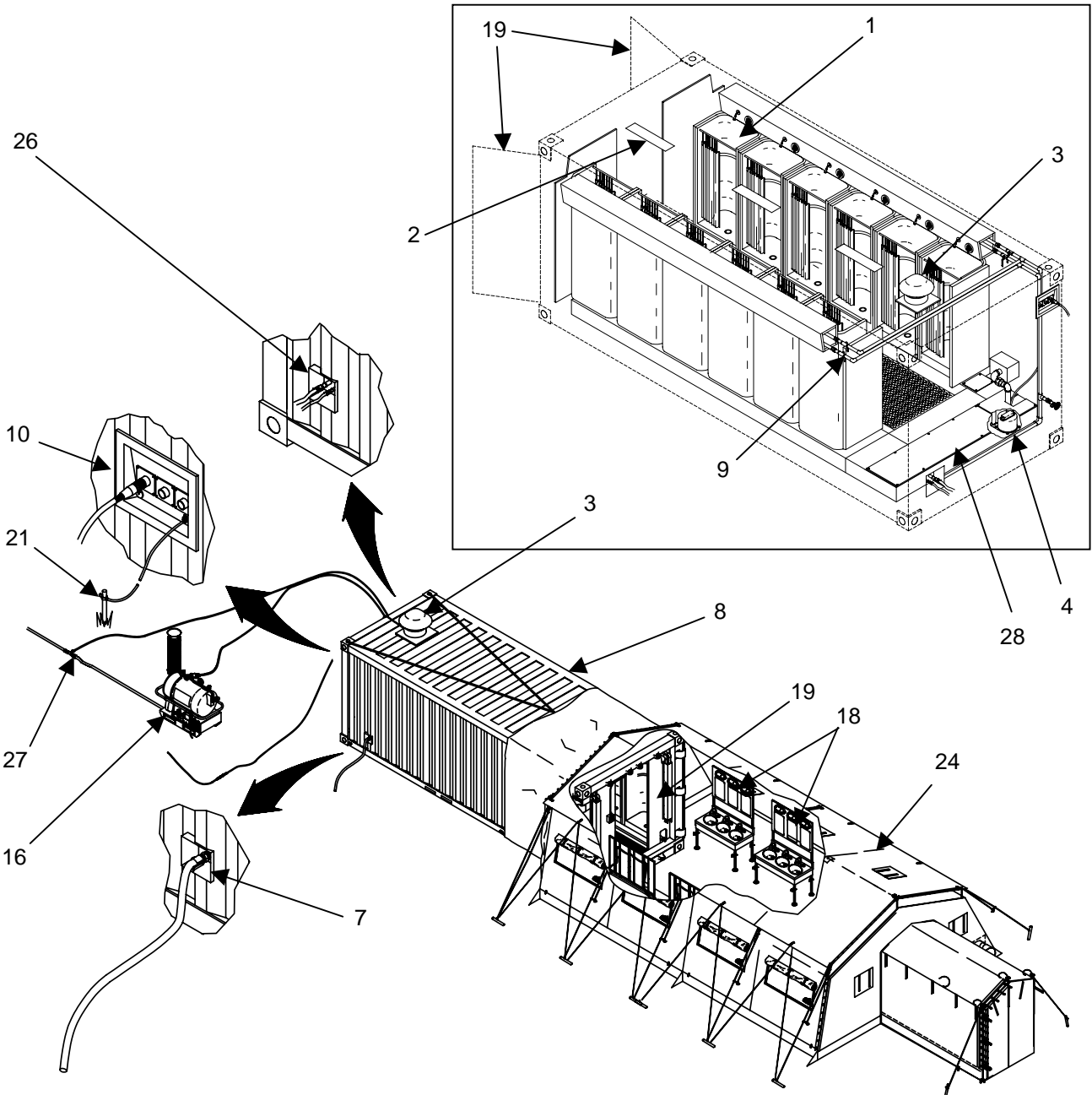




**Containerized Shower (Stand-Alone Configuration)**



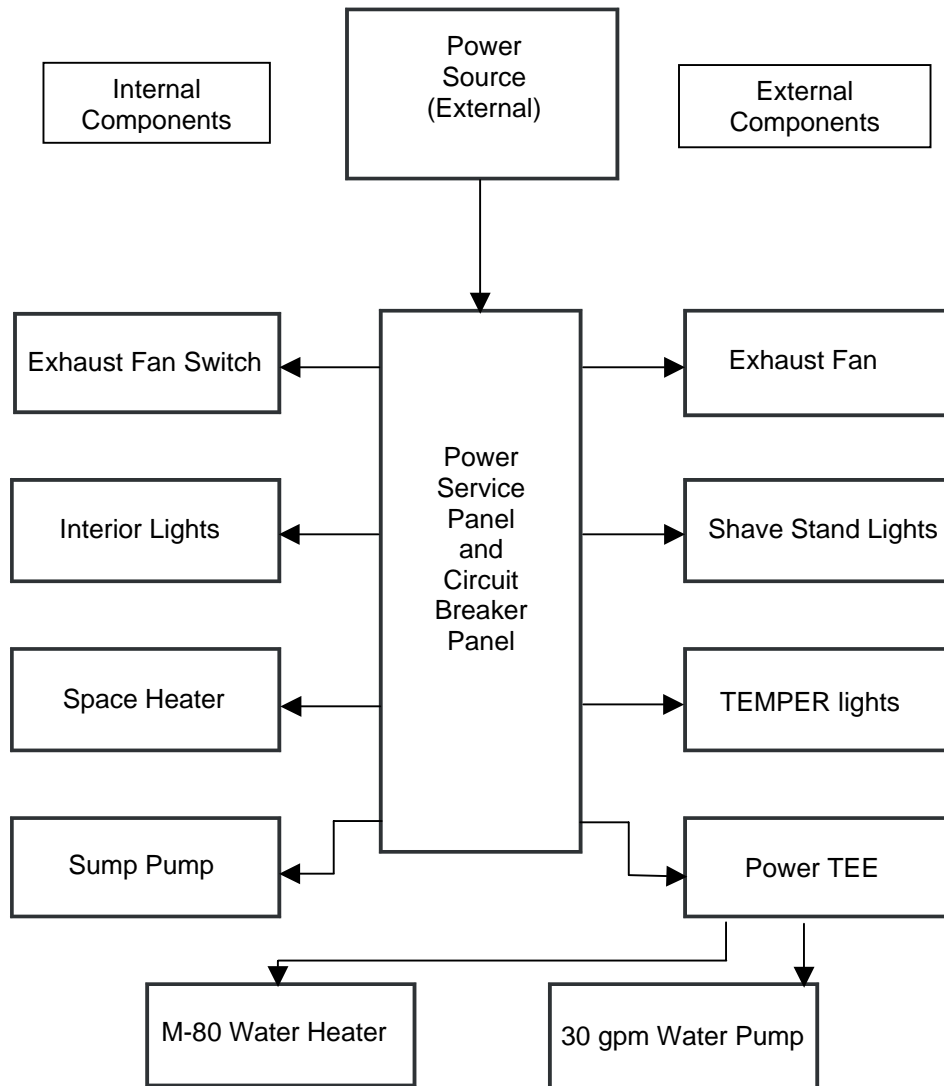
**Containerized Shower (Stand-Alone Configuration)**



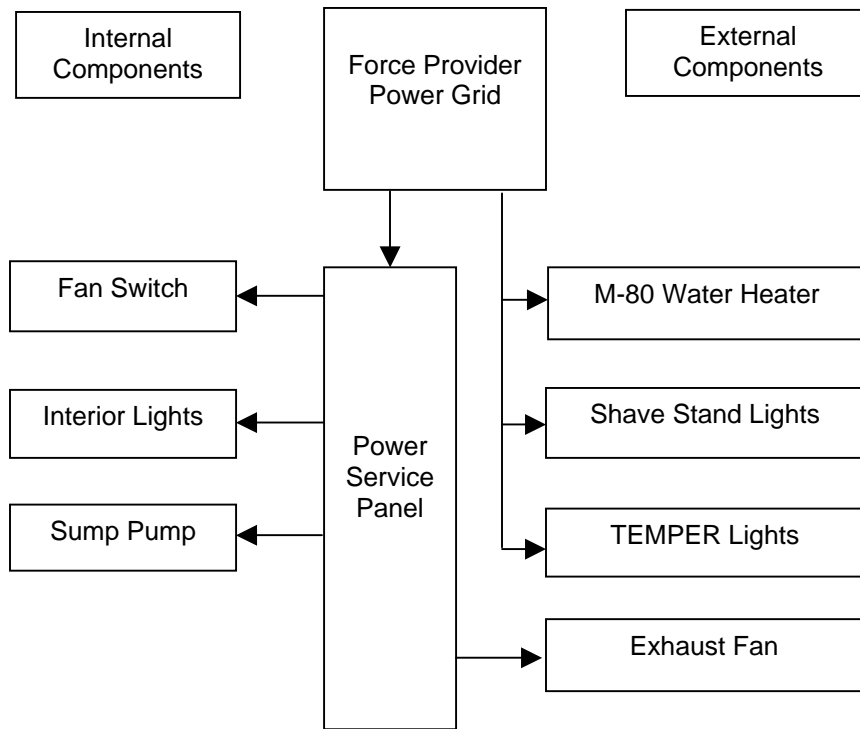
Shower, Enclosed Unit, System (Force Provider Configuration)



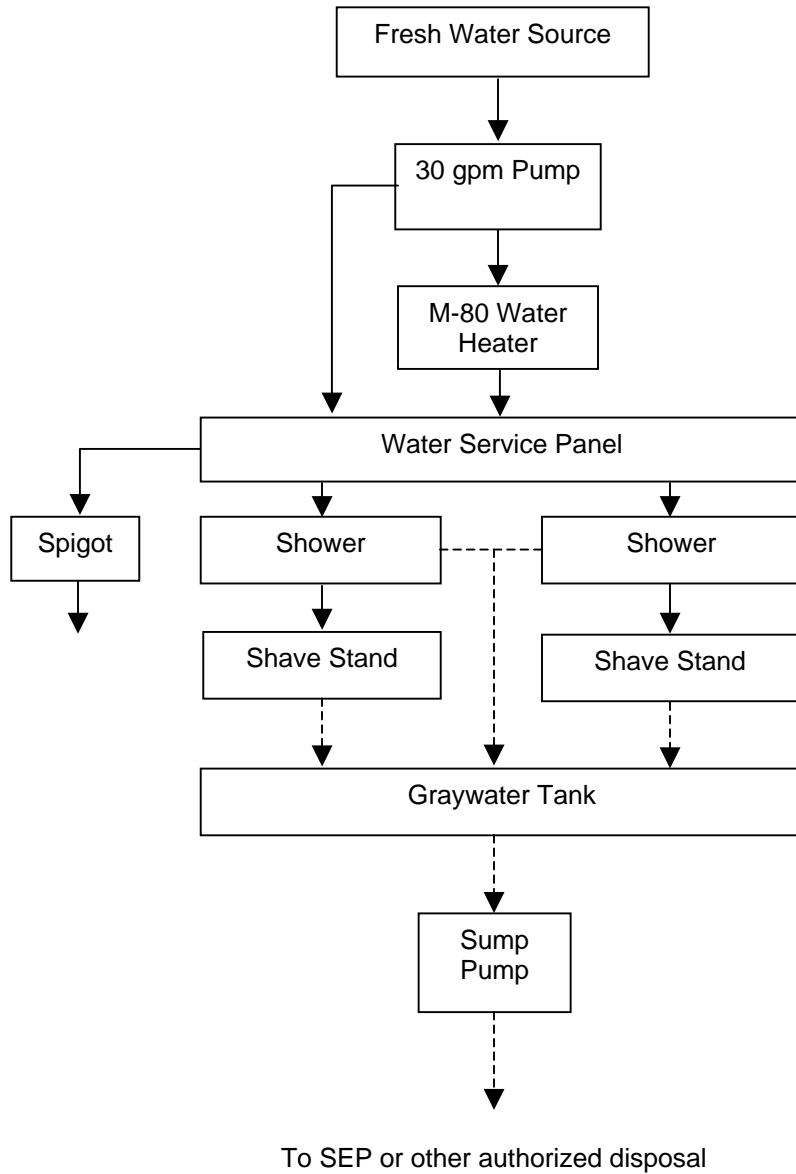
**Shower, Enclosed Unit, System (Force Provider Configuration)**



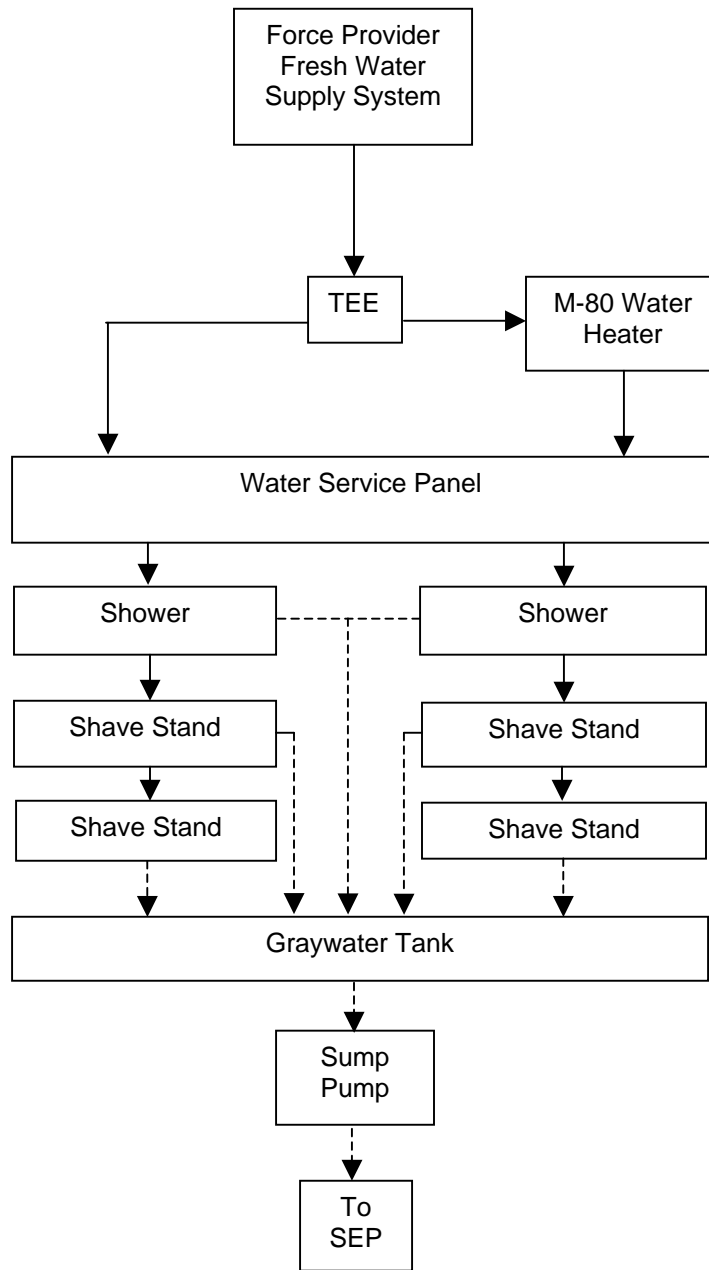
**Containerized Shower Power Distribution Schematic**



**Shower, Enclosed Unit, System Power Distribution Schematic**



**Containerized Shower Water Schematic**



**Shower, Enclosed Unit, System Water Schematic**



**CHAPTER 2**

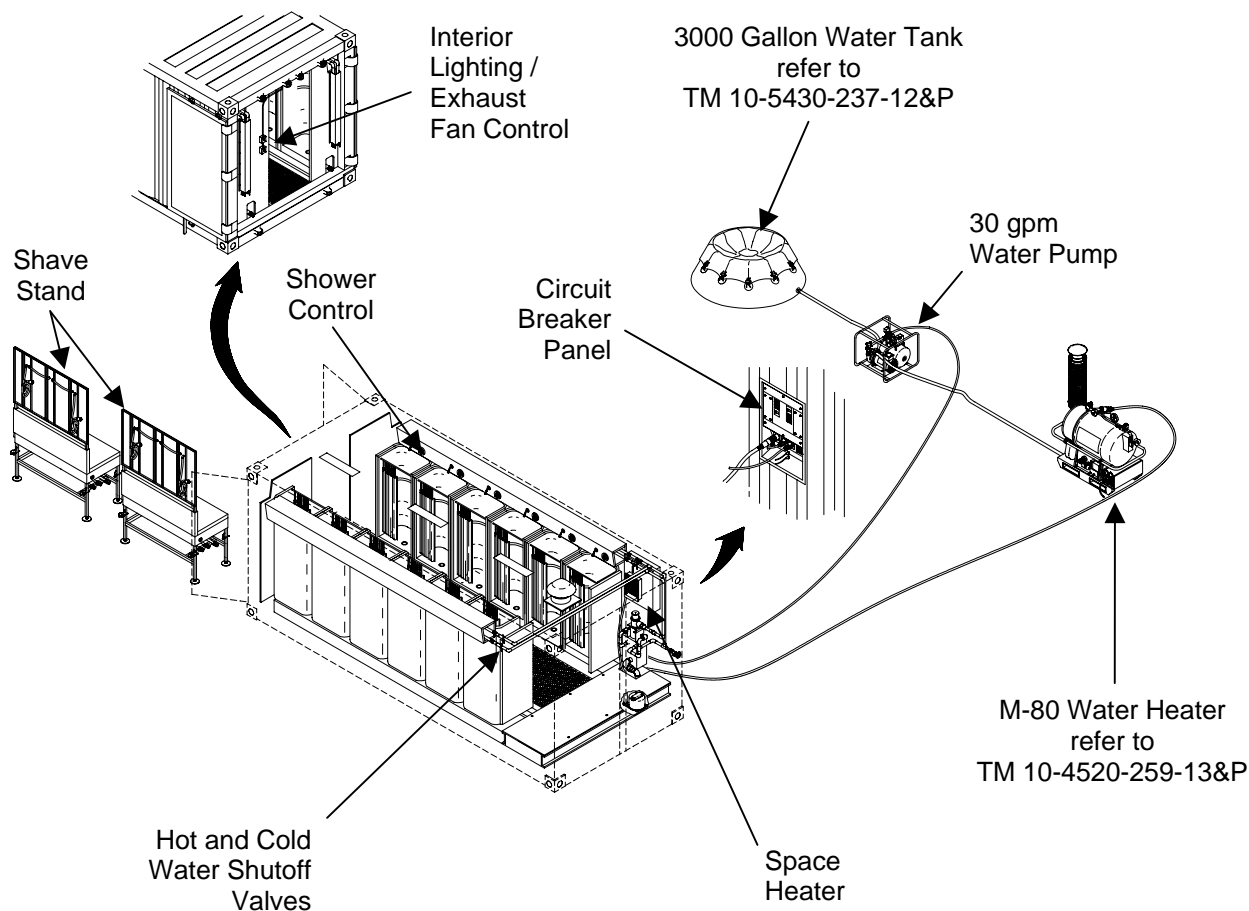
**OPERATOR INSTRUCTIONS  
FOR  
CONTAINERIZED SHOWER  
AND  
SHOWER, ENCLOSED UNIT, SYSTEM**



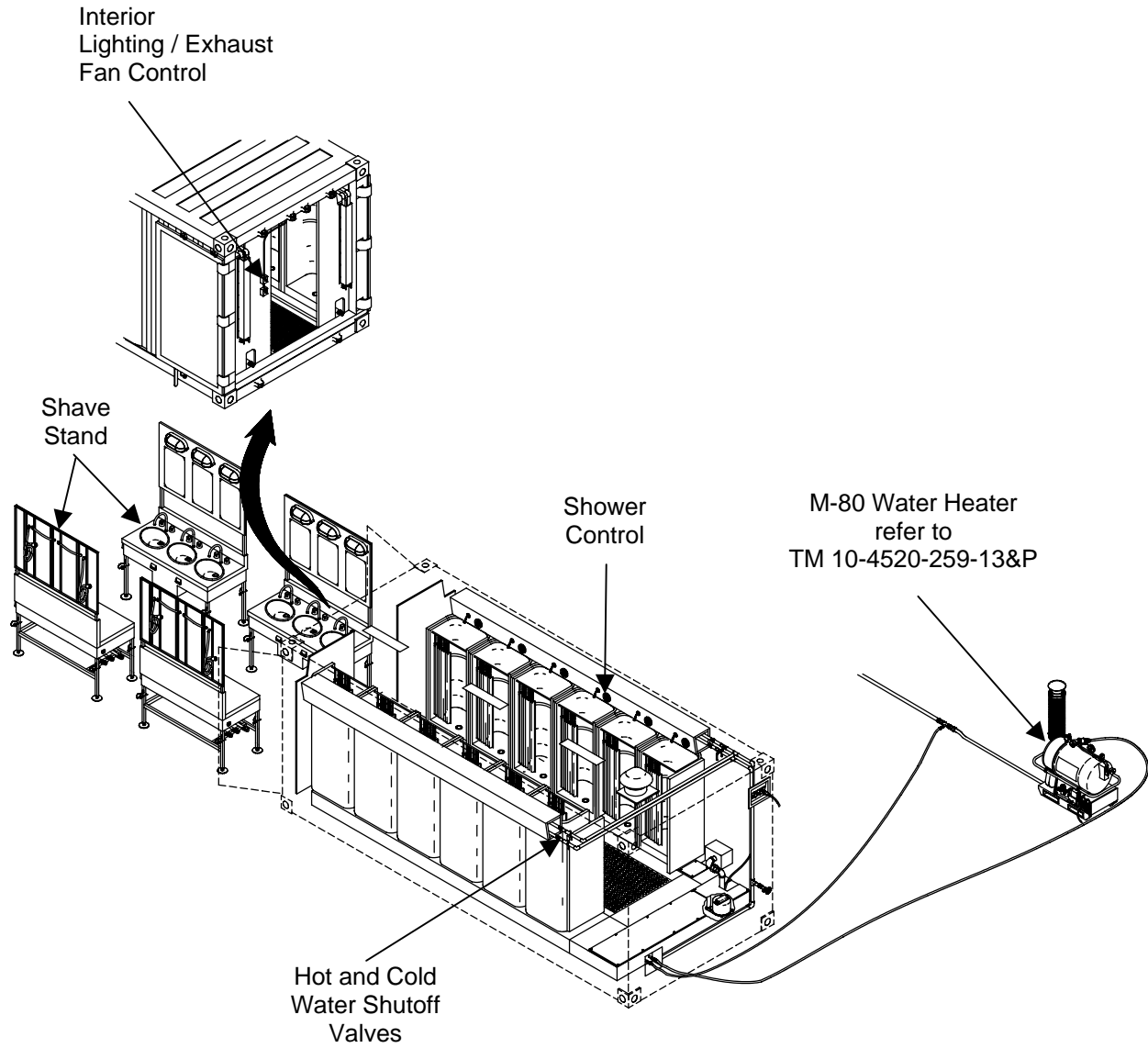
**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS**

**GENERAL**

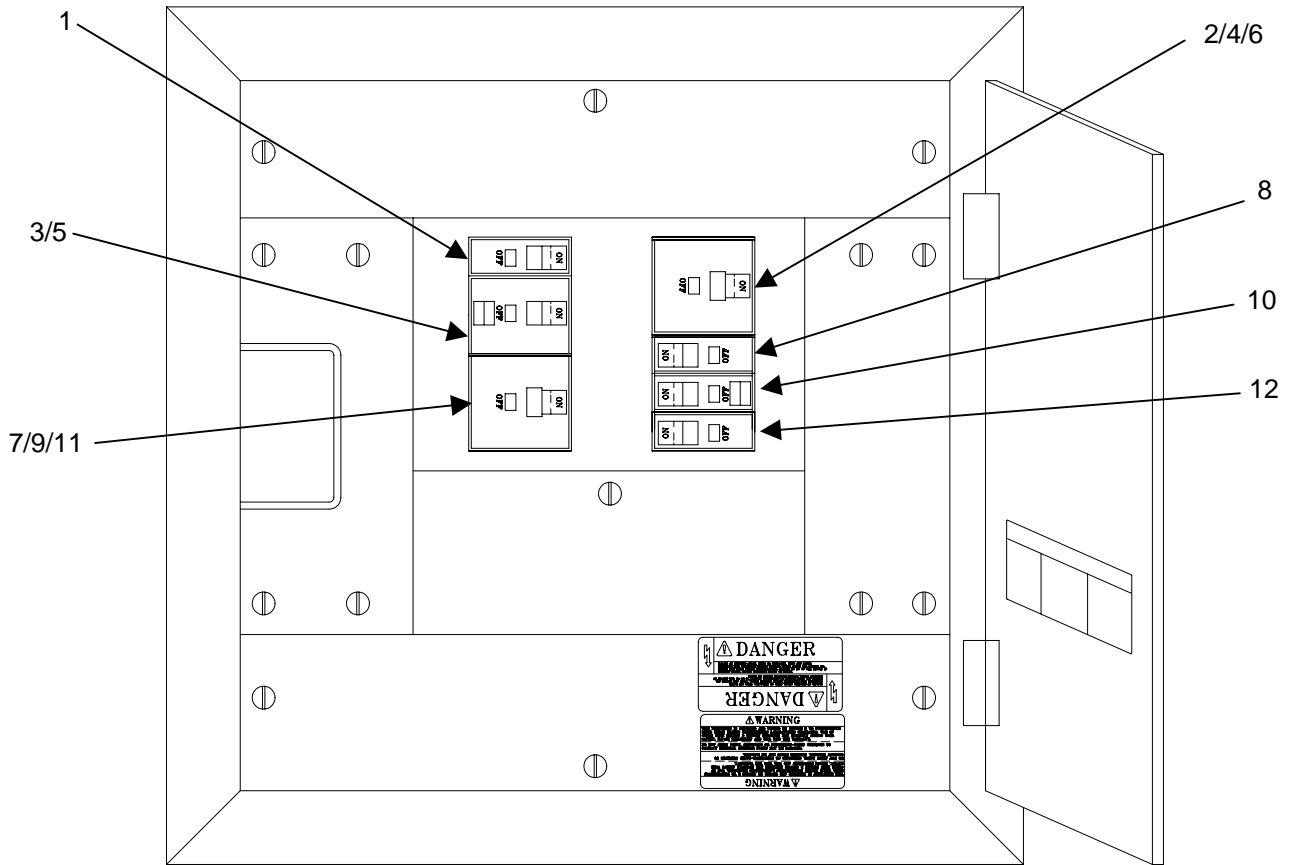
This work package contains information on the controls and indicators of the Containerized Shower and the Shower, Enclosed Unit, System. The next two illustrations show the location and function of each control and indicator and its associated equipment. Subsequent illustrations and tables explain the specific function of each control and indicator. Refer to TM 10-4520-259-13&P for the location and function of controls and indicators on the M-80 water heater. Refer to TM 10-5430-237-12&P for the location and function of controls and indicators on the 3000 gallon water tank. Refer to TM 10-8340-224-13 for the location and function of controls and indicators on the TEMPER tent system.



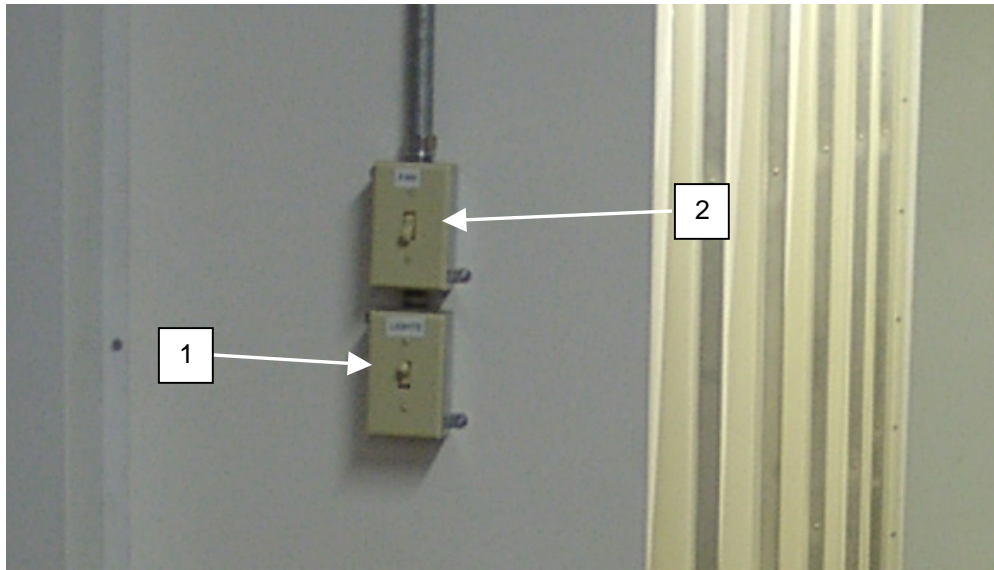
**Containerized Shower (Stand-Alone Configuration)**



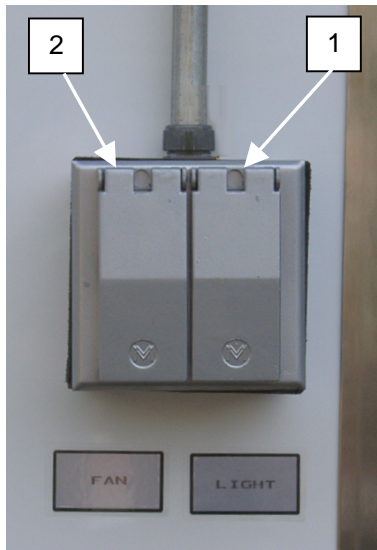
**Shower, Enclosed Unit, System (Force Provider Configuration)**



Circuit Breaker Panel Controls and Indicators (Containerized Shower only)		
CIRCUIT BREAKER NO.	ITEM	FUNCTION
1	Circuit Breaker 20A, 1 Pole	110V AC, Interior Lights
2/4/6	Circuit Breaker 20A, 3 Poles	208V AC 3 phase, M-80 Water Heater and 30 gpm Water Pump
3/5	Circuit Breaker 20A, 2 Poles	208V AC, Space Heater
7/9/11	Circuit Breaker 60A, 3 Poles	208V AC 3 phase, Main Breaker
8	Circuit Breaker 20A, 1 Pole	110V AC, Sump Pump
10	Circuit Breaker 20A, 1 Pole	110V AC, Exhaust Fan
12	Circuit Breaker 20A, 1 Pole	110V AC, GFCI Convenience Outlet

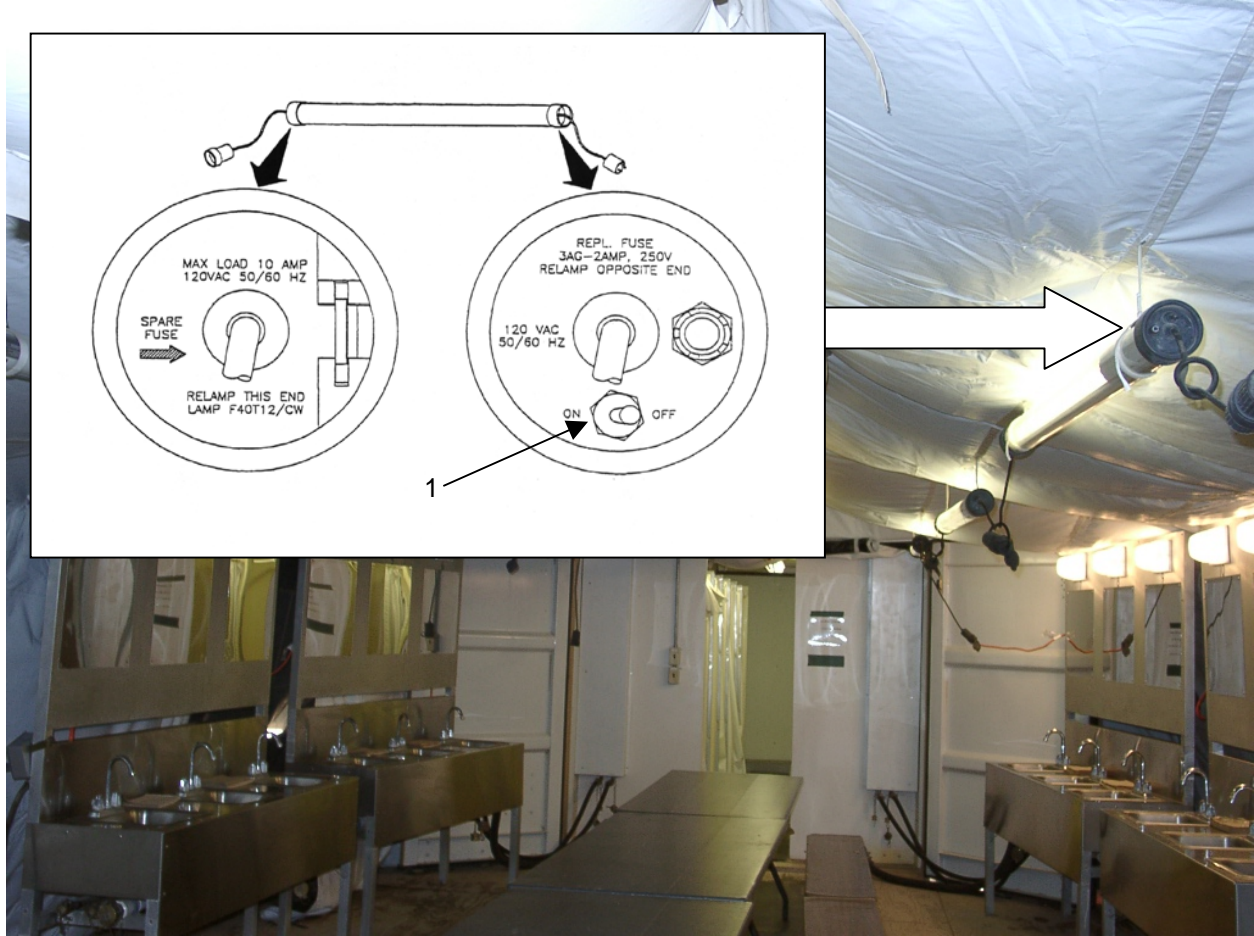


**Containerized Shower and Shower, Enclosed Unit, System**

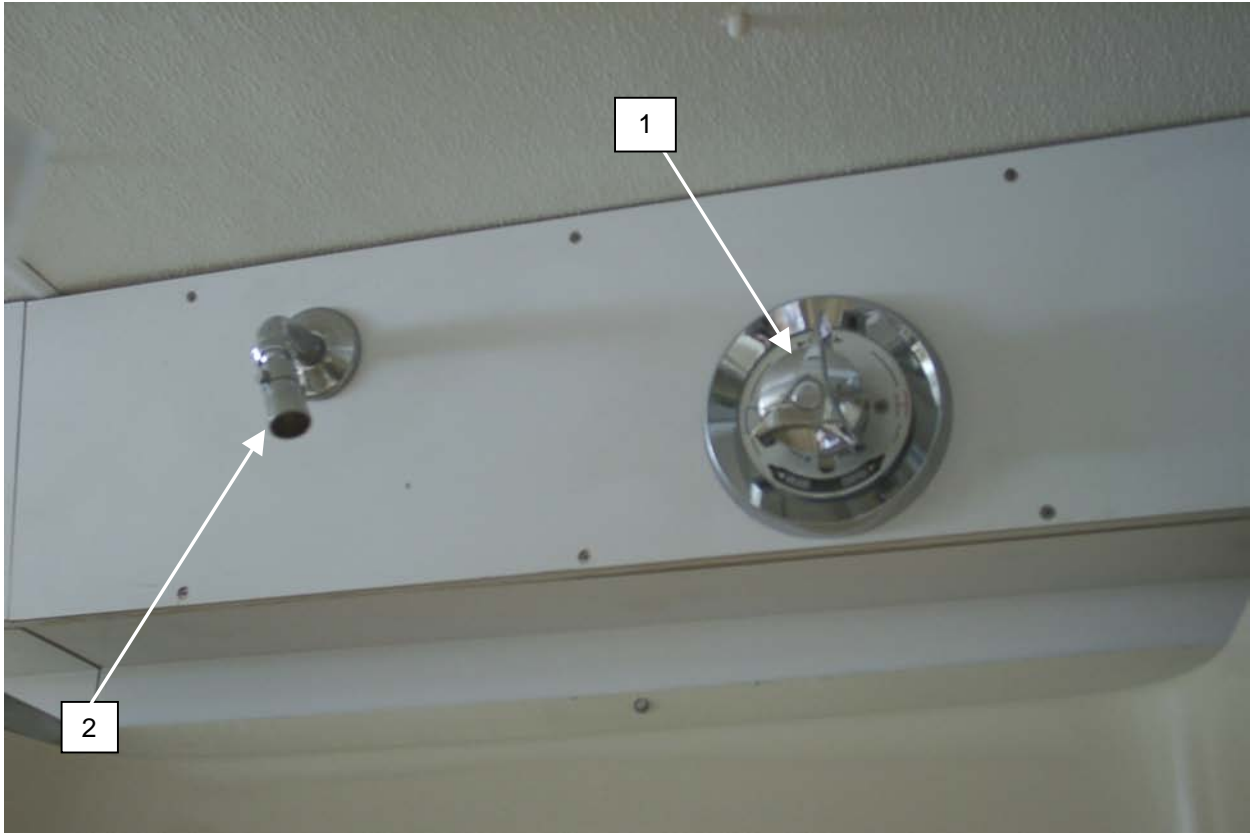


**Shower, Enclosed Unit, System only**

Interior Lighting Controls and Indicators		
KEY	ITEM	FUNCTION
1	ON/OFF Switch	Turns interior lights ON and OFF.
2	ON/OFF Switch	Turns exhaust fan ON and OFF.

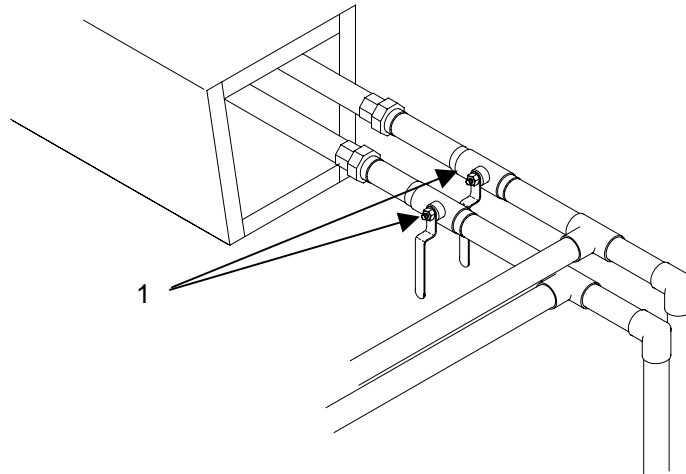


TEMPER Lighting Controls and Indicators		
KEY	ITEM	FUNCTION
1	ON/OFF Switch	Turns TEMPER light ON and OFF.

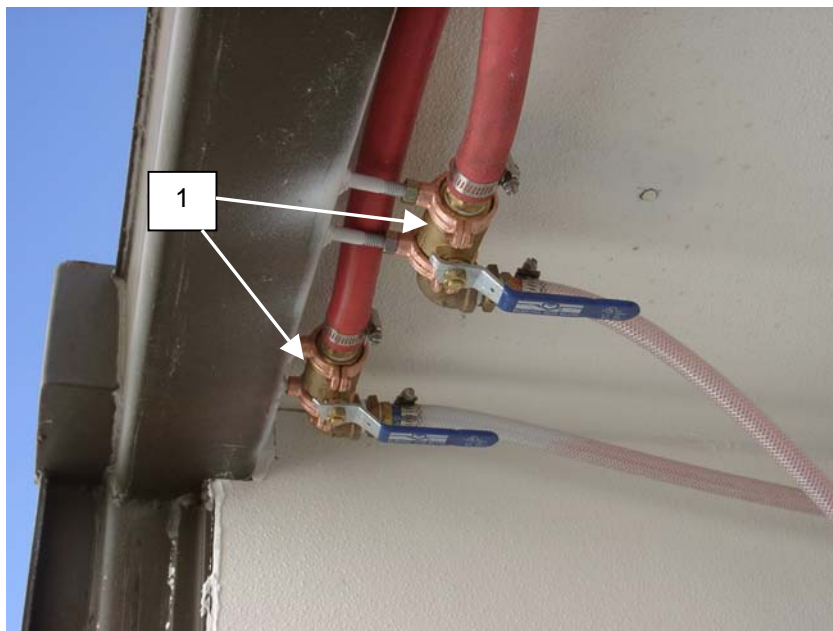


Individual Shower Controls and Indicators		
KEY	ITEM	FUNCTION
1	Shower Valve	Mixes water to desired temperature.
2	Shower Head	Delivers water into shower stall.



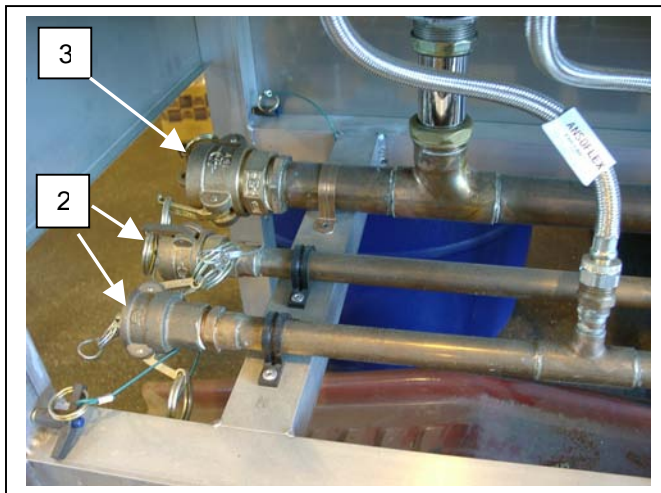
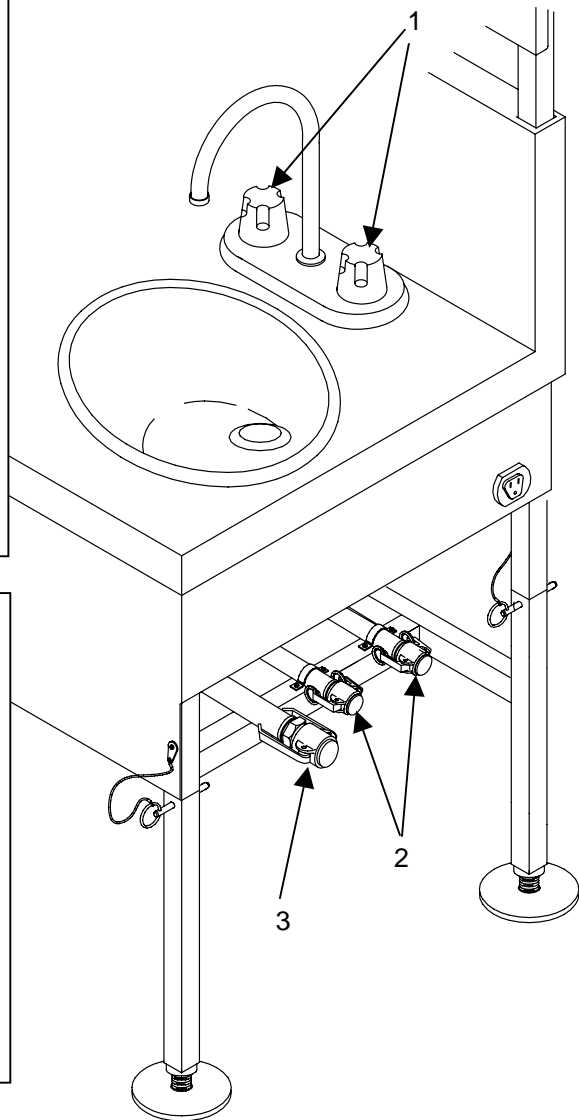


**Containerized Shower and Shower, Enclosed Unit, System with Copper Plumbing**



**Containerized Shower with Flexible Hose**

Hot and Cold Water Lines Controls and Indicators		
KEY	ITEM	FUNCTION
1	Water Shutoff Valves	Controls flow of cold water to shower stalls and shave stands. Can be used to isolate one bank of showers in the event of damage or during repair.

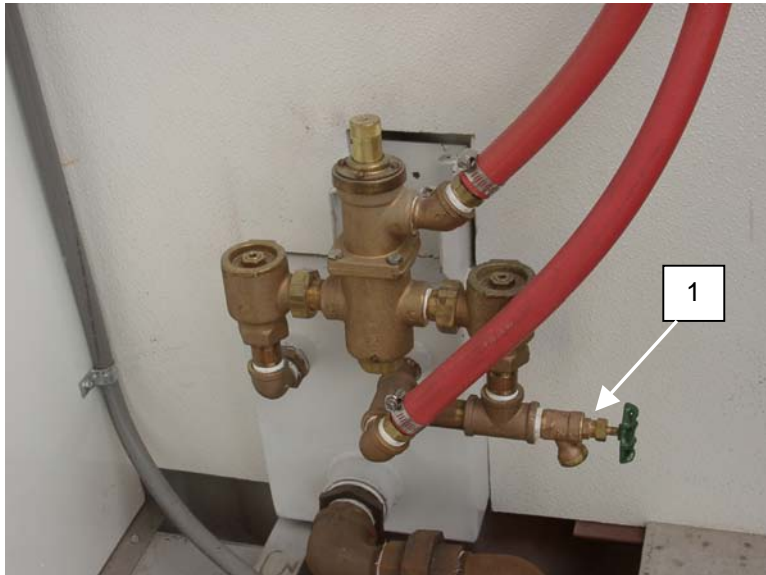


**Shave Stand and Utility Hose Valve Controls**

KEY	ITEM	FUNCTION
1	Faucets	Control flow of hot and cold water.
2	Hose QDC	Potable water hose connection.
3	Hose QDC	Graywater hose connection.

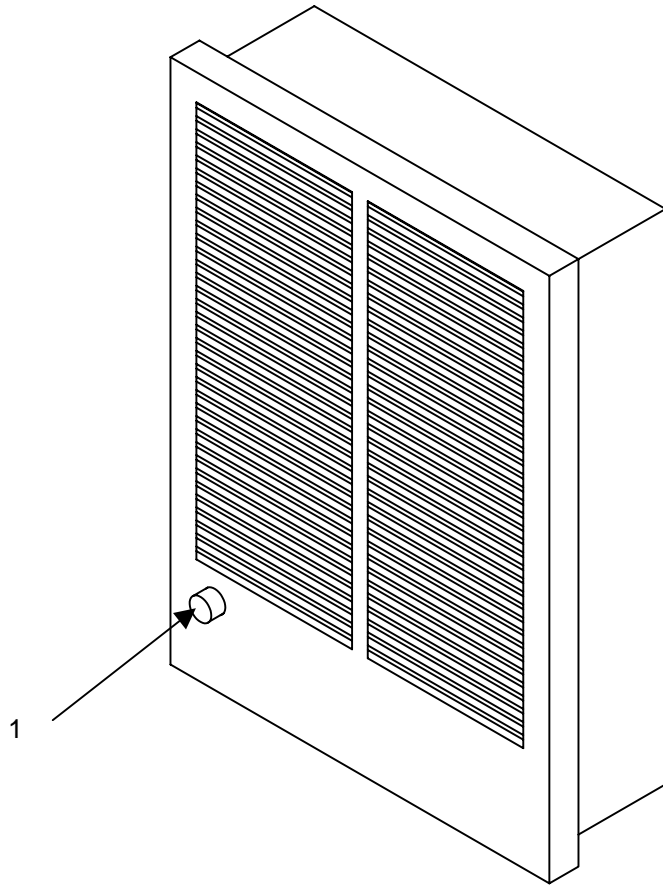


**Containerized Shower with Copper Plumbing**

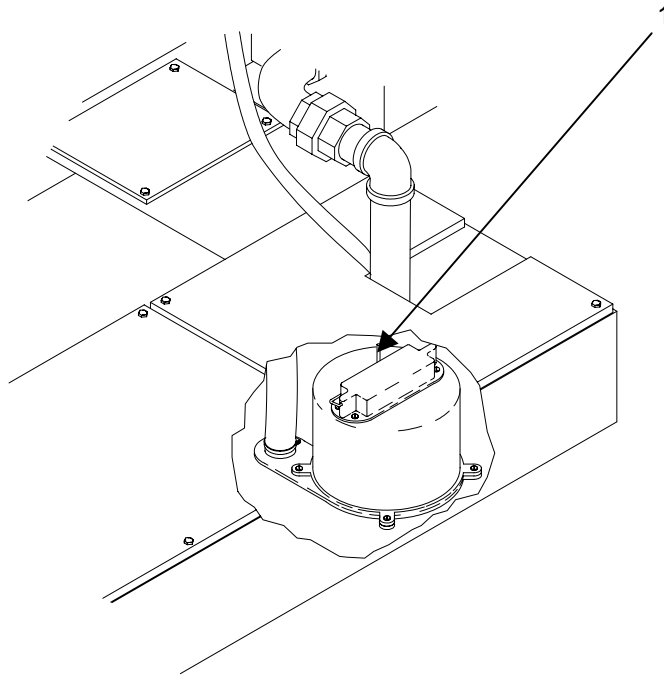


**Containerized Shower with Flexible Hose**

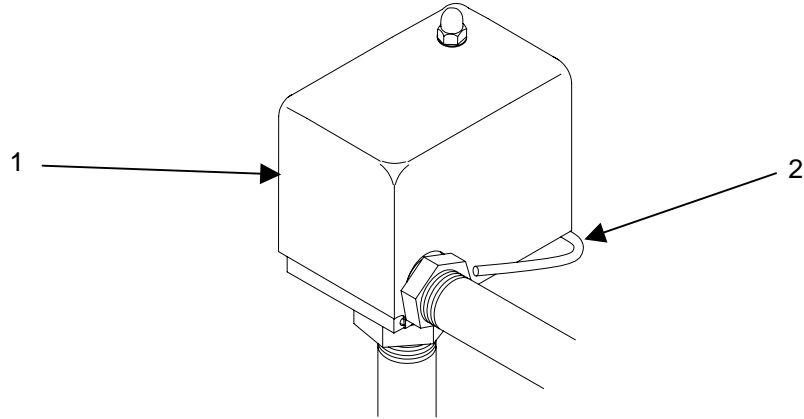
<b>Cold Water Washdown Spigot (Containerized Shower only)</b>		
<b>KEY</b>	<b>ITEM</b>	<b>FUNCTION</b>
1	Washdown Spigot	Provides 3/4-inch NPT connection for washdown hose.



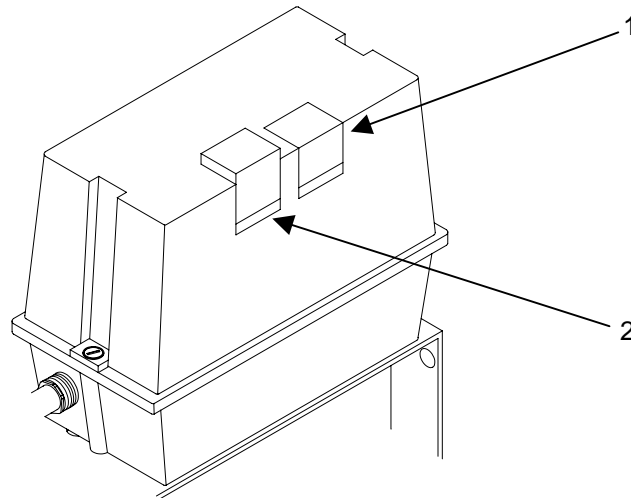
Space Heater (Containerized Shower only)		
KEY	ITEM	FUNCTION
1	Thermostat	Provides ON/OFF control, and controls heat output of unit.



Sump Pump Controls		
KEY	ITEM	FUNCTION
1	Sump Pump Override	Permits manual operation of sump pump.



Pressure Switch Controls (Containerized Shower only)		
KEY	ITEM	FUNCTION
1	Pressure Switch	Control water system pressure, high and low limit.
2	Pressure Switch Override	Overrides low water pressure cutoff.



Motor Starter and Overload Relay Controls (Containerized Shower only)		
KEY	ITEM	FUNCTION
1	ON Button	Turns power ON to 30 gpm water pump.
2	OFF Button	Turns power OFF to 30 gpm water pump.

**DECALS AND INSTRUCTION PLATES**

The following labels, decals, and instruction plates are found on the shower components indicated.

**M-80 Water Heater**

Refer to TM 10-4520-259-13&P.

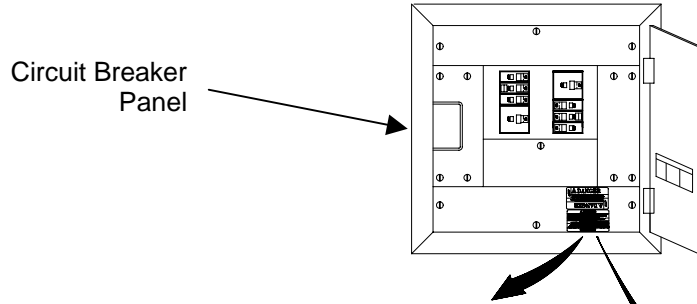
**Operation of 3000 gallon Water Tank**

Refer to TM 10-5430-237-12&P.

**TEMPER**

Refer to TM 10-8340-224-13.

The following identification labels are attached to the Circuit Breaker Panel (Containerized Shower only):



⚠ WARNING	⚠ AVERTISSEMENT	⚠ ADVERTENCIA
<p>POTENTIAL OF REDUCED SAFETY OR EQUIPMENT DAMAGE</p> <p>*THIS EQUIPMENT HAS BEEN DESIGNED AND TESTED BY SQUARE D TO PERFORMANCE LEVELS WHICH EXCEED UNDERWRITERS LABORATORIES STANDARDS</p> <p>USE OF OTHER THAN SQUARE D CIRCUIT BREAKERS MAY HAVE ADVERSELY AFFECT USER SAFETY, IMPAIR RELIABILITY, AND WILL VOID THE WARRANTY.</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>*DO NOT ALLOW PETROLEUM BASED PAINTS, SOLVENTS OR SPRAYS ON THE NON-METALLIC PARTS OF THIS PRODUCT. USE OF THESE PRODUCTS MAY ADVERSELY AFFECT USER SAFETY AND IMPAIR RELIABILITY.</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

<p>⚠ WARNING</p>
<p>THIS EQUIPMENT IS DESIGNED AND TESTED BY SQUARE D TO PERFORMANCE LEVEL WHICH EXCEED UNDERWRITERS LABORATORIES STANDARDS. USE OF OTHER THAN SQUARE D CIRCUIT BREAKERS MAY ADVERSELY AFFECT USER SAFETY, IMPAIR RELIABILITY AND WILL VOID THE WARRANTY.</p>
<p>DO NOT ALLOW PAINT, CHEMICALS OR PETROLEUM-BASED SOLVENTS TO CONTACT INTERIOR. INTERIOR PARTS MAY BE DAMAGED.</p>
<p>DO NOT ALLOW PAINT, CHEMICALS OR PETROLEUM-BASED SOLVENTS TO CONTACT INTERIOR. INTERIOR PARTS MAY BE DAMAGED.</p>
<p>SAFETY, IMPAIR RELIABILITY AND WILL VOID THE WARRANTY.</p>
<p>OTHER THAN SQUARE D CIRCUIT BREAKERS MAY ADVERSELY AFFECT USER SAFETY, IMPAIR RELIABILITY AND WILL VOID THE WARRANTY.</p>
<p>LEVEL WHICH EXCEED UNDERWRITERS LABORATORIES STANDARDS. USE OF OTHER THAN SQUARE D CIRCUIT BREAKERS MAY ADVERSELY AFFECT USER SAFETY, IMPAIR RELIABILITY AND WILL VOID THE WARRANTY.</p>
<p>⚠ WARNING</p>

<p>⚡ ⚠ DANGER</p>
<p>HAZARD OF ELECTRIC SHOCK, BURN OR EXPLOSION. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE. CLOSE AND SECURE ALL COVERS AND TRIMS BEFORE RE-ENERGIZING. FAILURE TO DO SO WILL RESULT IN ELECTRIC SHOCK, SEVERE PERSONAL INJURY OR DEATH.</p>
<p>HAZARD OF ELECTRIC SHOCK, BURN OR EXPLOSION. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE. CLOSE AND SECURE ALL COVERS AND TRIMS BEFORE RE-ENERGIZING. FAILURE TO DO SO WILL RESULT IN ELECTRIC SHOCK, SEVERE PERSONAL INJURY OR DEATH.</p>
<p>⚠ DANGER ⚡</p>





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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
OPERATION UNDER USUAL CONDITIONS - SETUP**

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## SCOPE

**This Work Package covers the setup of the Containerized Shower (stand-alone) only. Refer to Work Package 0006 00 to setup the Shower, Enclosed Unit, System (Force Provider).**

## SITING REQUIREMENTS

When deployed as part of Force Provider, the shower site will be staked as part of the Force Provider site preparation. However, when deployed independently, site selection for the Containerized Shower should include the following considerations:

- An area of about 50 feet x 75 feet is required.
- A hardstand or other improved area is preferable; however, any area that is level, free of large holes, depressions, rocks and other debris and otherwise within the guidelines of the unit Standard Operating Procedure (SOP) is acceptable.
- Site must allow for proper placement of the supporting equipment such as the 30 gpm water pump, M-80 water heater, 3000 gallon water tank (if used), FM 21-10 field expedient wastewater disposal or graywater storage tank (if used), and 16-foot TEMPER (if used).
- A freshwater source must be available. This can be a municipal water system or a 3000 gallon freshwater tank. If the latter is used, there must be sufficient room for frequent freshwater deliveries by tanker.
- Adequate room for the fuel source must be provided. The M-80 water heater will normally be supplied by 55 gallon drums of fuel. If the fuel drums are to be refilled, sufficient room for safe delivery of fuel is required.
- A graywater disposal method must also be available. This can be a municipal sewer system, a storage tank with a servicing plan, or some other field water disposal solution based on area of operations. If deployed with Force Provider, the shower will use the Force Provider graywater collection system.
- Flush and sanitize CS freshwater distribution system IAW U.S. Army Medical Activity sanitizing requirements, TB MED 577, Sanitation Control and Surveillance of Field Water Supplies.

**UNPACKING**

As a separate system, the Containerized Shower is shipped with the M-80 water heater, 30 gpm water pump, exhaust fan, all necessary water hoses and power cables, two disassembled shave stands, and the 16-foot TEMPER with modified end wall stored inside the ISO container. At least four soldiers are required to unpack the Containerized Shower in preparation for use.

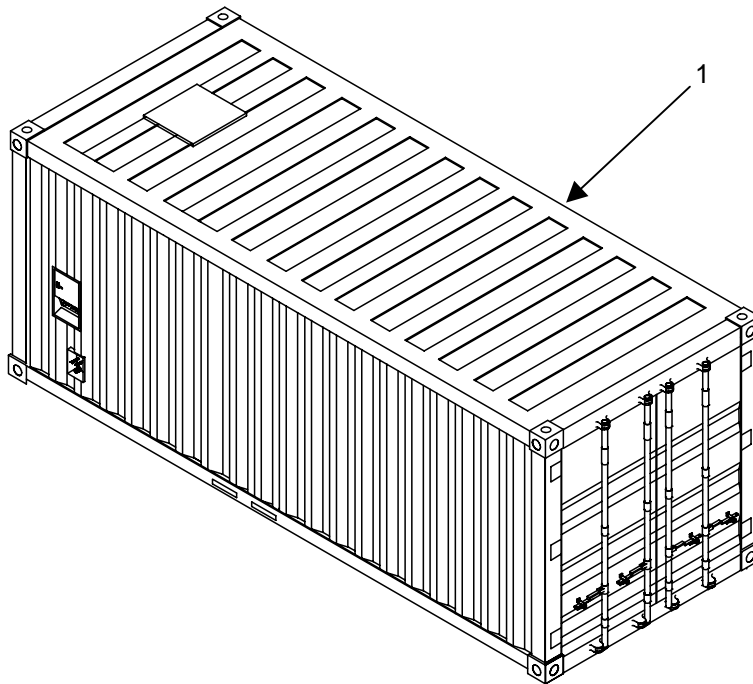
**Lift and Move the Shower Container****WARNING**

Ensure that all personnel are clear of the work area when moving the container. The shower container weighs approximately 10,000 pounds. If the container falls, it may cause serious injury or death to personnel or damage to the equipment.

With a 10,000-pound rated forklift, position the shower container **(1)** at its intended location. If the 16-foot TEMPER section is to be used, position the container so that there is sufficient space to erect and connect it to the personnel door end of the container.

**CAUTION**

The shower container must be level for proper operation and to prevent damage to the equipment. The shower container is sufficiently level when water poured in the center aisle trickles towards the service end of the container. Leveling may be done with available scrap materials, such as large stones, bricks, or wood, placed at the corners.



## Unpack Containerized Shower and Position Components

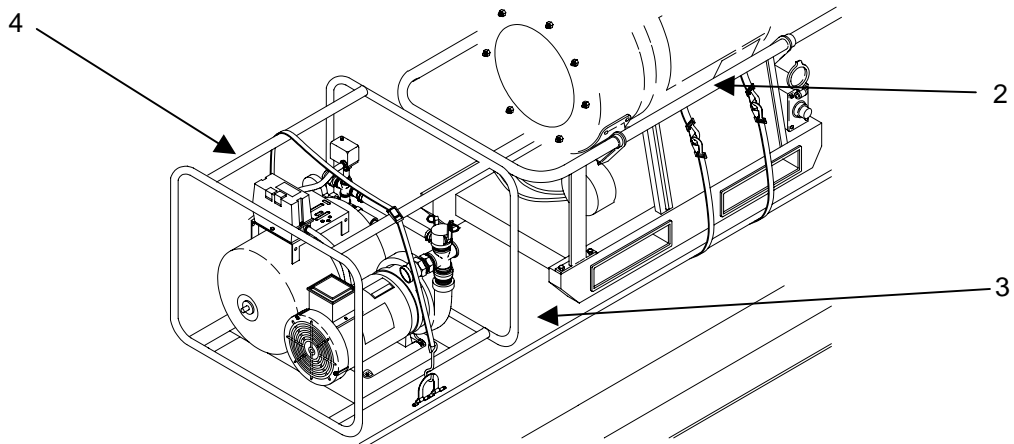
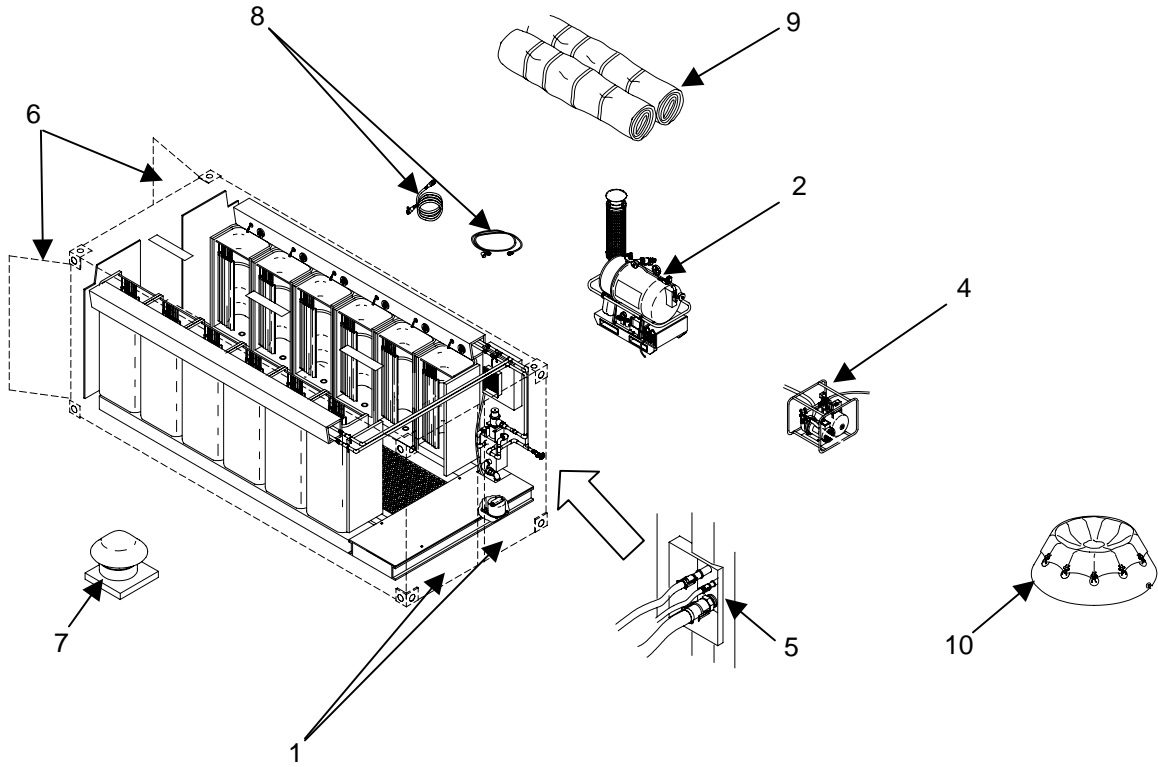
1. Open the double service doors **(1)** of the container.
2. Remove the straps securing the M-80 water heater **(2)** to the mounting platform **(3)**. Remove the straps securing the 30 gpm water pump **(4)** to the equipment mounting platform.



### WARNING

The equipment to be removed from the Containerized Shower is heavy (480 lbs), awkward, and difficult to maneuver. To prevent injury, seven or eight persons are required to remove and carry it.

3. Lift the 30 gpm water pump **(4)** off the platform **(3)**. Carry 30 gpm water pump to a position about 10 feet from the water service panel **(5)** of the container.
4. Lift the M-80 water heater **(2)** off of the platform **(3)**. Carry the M-80 water heater downward from prevailing winds to a position of about 6 to 10-feet from the water service panel **(5)** of the container.
5. Open personnel entry door **(6)**.
6. Remove exhaust fan **(7)** from the shower container and place it approximately 5-feet from the container steps.
7. Remove all hoses and power cables **(8)** from the container and place outside.
8. Remove TEMPER components **(9)**. Place components about 20-feet from the personnel door entrance **(6)**.
9. Remove 3000 gallon water tank **(10)** and position approximately 15-feet from the 30 gpm Water Pump **(4)**.
10. Inventory equipment and ensure the following items are available, clean and ready to be placed into service. Refer to Table 1. Containerized Shower Inventory.



**Table 1. Containerized Shower Inventory.**

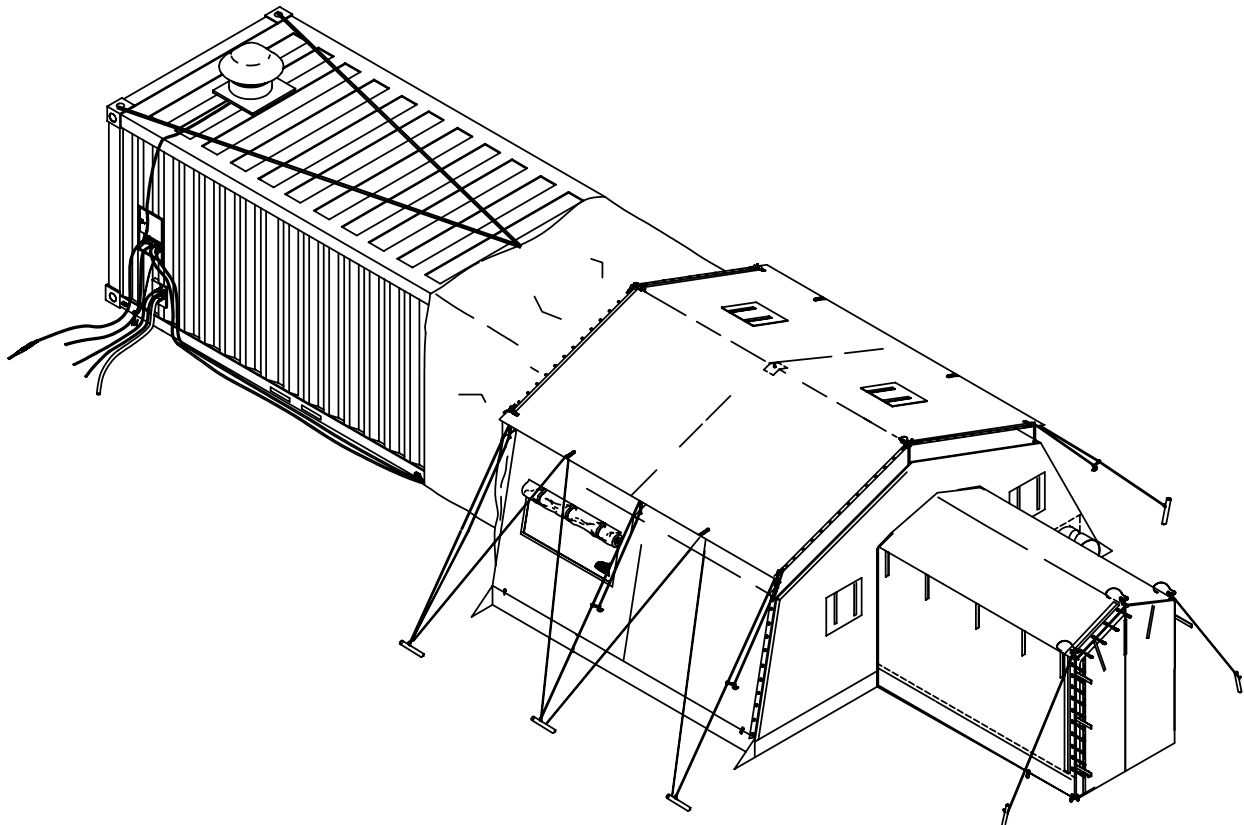
ITEM	QUANTITY
30 gpm Water Pump	1 each
3000 Gallon Water Tank	1 each
Apron, Toxicological Agents Protective	1 each
Exhaust Fan	1 each
Extension Cord 110V AC, 20ft long	2 each
Freshwater Hose ¾in, 15ft long	1 each
Freshwater Hose ¾in, 2ft 3in long	2 each
Freshwater Hose ¾in, 6ft 3in long	2 each
Freshwater Hose 1½in, 20ft long	1 each
Freshwater Hose 1½in, 5ft long	1 each
Freshwater Hose 1in, 10ft long	1 each
Fuel Drum Adapter	1 each
Glove Set, Chemical Protective	1 each
Goggles, Safety	1 each
Graywater Hose 1½in, 2ft 3in long	1 each
Graywater Hose 1½in, 6ft 3in long	1 each
Graywater Hose 2in, 20ft long	1 each
Grounding Rod	1 each
M-80 Water Heater and stack assembly	1 each
Pigtail 4ft Long, 60A	1 each
Power cable with TEE, 20A	1 each
Power service cable 60A, 100ft (Alternately, 2 each 60A, 50 ft cables may be provided)	1 each
Reducer, 2in QDC x 1½in QDC	1 each
Shave stand assembly w/ legs and backs	2 each
TEMPER 16ft w/modified end wall and lights (Refer to Table 2. TEMPER Components Inventory for a breakdown of the TEMPER components)	1 each
TM 10-4510-208-13&P	1 each

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**Prepare TEMPER With Modified End Section For Use****NOTE**

If the TEMPER with ISO bootwall is to be used, it must be installed before removing the shave stands from the container.

The Containerized Shower employs a 16-foot TEMPER assembly (two 8-foot sections) with a modified endwall (bootwall) attached to the shower container and a single vestibule attached to the standard endwall. For repair procedures or more detailed information on the TEMPER, refer to TM 10-8340-224-13. The frame assemblies are erected in three stages: kneeling, partially-erect, and erect. These stages permit the attachment of components without the aid of ladders. Erect tent from top to bottom, end section towards opposite end section.



**16-Foot TEMPER Assembly for Containerized Shower**

1. Close the personnel double doors on the container.
2. Inventory the TEMPER components. Use WP 0065 00 to identify individual pieces of the TEMPER section. Pay particular attention to the difference between the modified TEMPER end section and the regular TEMPER end section.

**Table 2. TEMPER Components Inventory.**

<b>ITEM</b>	<b>QUANTITY</b>
Arch Assembly	3 each
Eave Extender	6 each
Floor, Insulated	2 each
Header Assembly	3 each
Light Set, General Illumination	1 each
Line, Tent	10 each
Purlin Assembly	10 each
Ridge Extender	3 each
Slip, Tent Line	10 each
Strap, Light Support Assembly, Type I	2 each
TEMPER, End Section	1 each
TEMPER, End Section, Modified	1 each
TEMPER, Vestibule	1 each
TEMPER, Window Section	2 each
Tent Pin, Steel, 12-inch	26 each
Tent Pin, Wood, 24-inch	10 each



### WARNING

Frame assembly hinges can pinch or crush hands and fingers. Keep hands and fingers away from frame assembly ridges and eaves.

### CAUTION

Do not twist or turn frame components when handling. Damage to equipment may result.

### NOTE

The frame assemblies are erected in three stages: kneeling, partially-erect, and erect. These stages permit the attachment of components without the aid of ladders. Both rigid and sectionalized arch assemblies are in use in the field. After initial assembly, the sectionalized arch assembly does not vary in function from the rigid arch assembly. Erect tent from top to bottom, end section towards opposite end section.

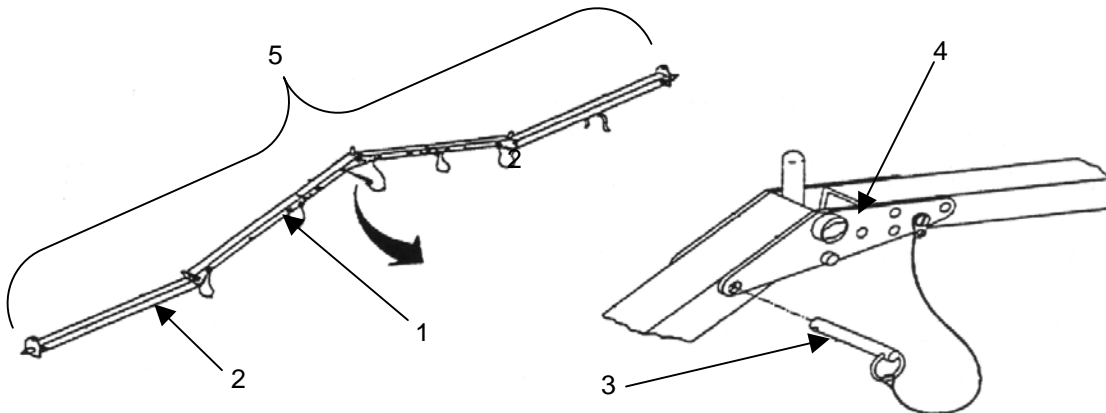
#### Arch Assembly

1. Remove roof arch assembly **(1)** and side arch assemblies **(2)** from frame sections cover assembly bundle. Ensure all quick release pins **(3)** are disengaged.

### CAUTION

Insert quick release pins towards inside of tent end assemblies. Tent fabric may tear if inserted towards outside.

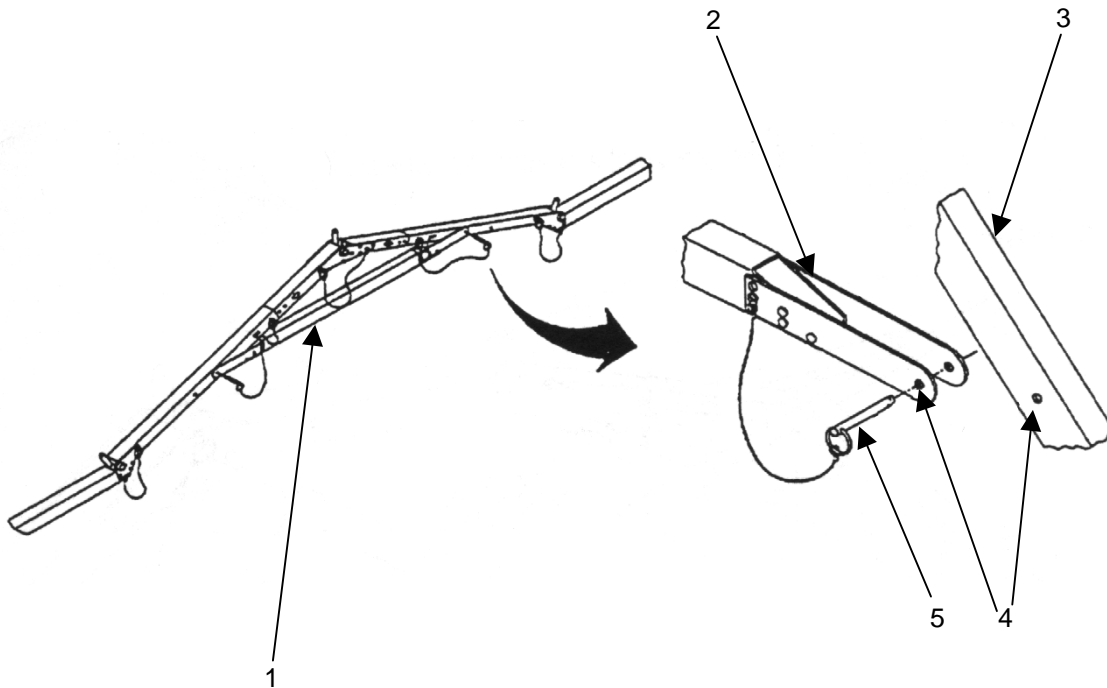
2. Align holes in roof arch assembly **(1)** with holes in ridge gusset plate **(4)**. Insert quick release pin **(3)**.
3. Unfold side arch assembly **(2)** away from roof arch assembly **(1)**.
4. Connect roof arch assembly **(1)** and side arch assemblies **(2)** to form arch assembly **(5)**. Insert quick release pins. Lay arch assembly flat on the ground, and repeat steps 1 through 5 for remaining arch assemblies.





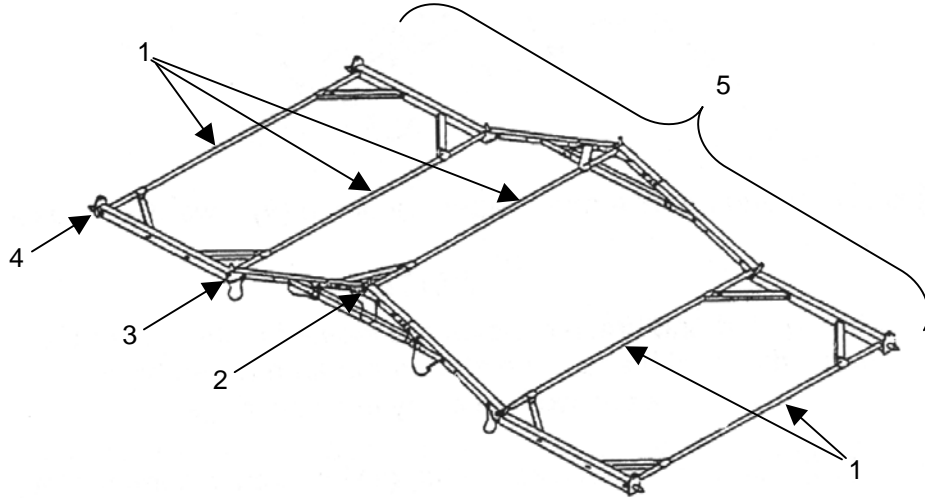
**Header Assembly**

1. Identify the header assembly **(1)**. Slide the header assembly end plates **(2)** over arch assembly **(3)**.
2. Align arch assembly **(3)** and header assembly end plate holes **(4)** and insert quick release pin **(5)**. Lay assembly on the ground, and repeat steps 1 and 2 for each arch assembly. The Containerized Shower will require three arch and header assemblies to complete the 16-foot TEMPER assembly.

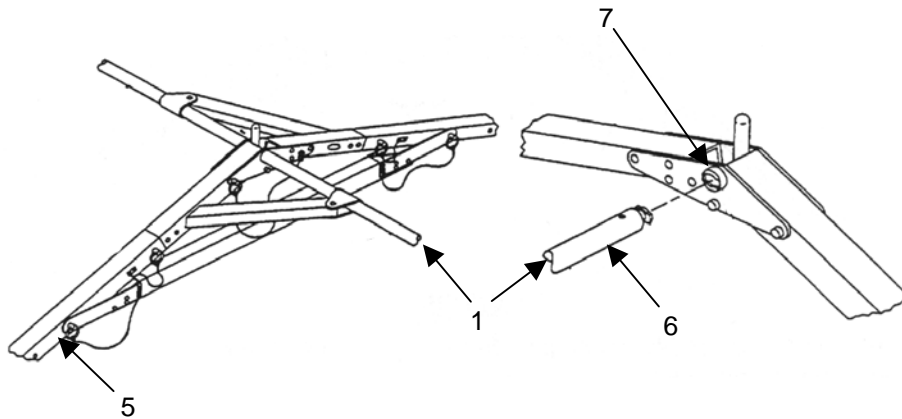


**Purlin Assembly**

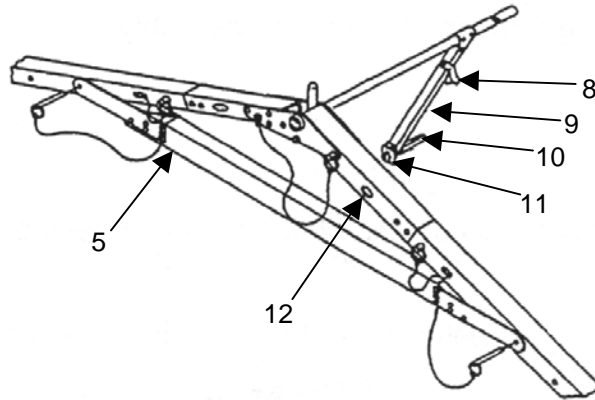
1. Identify five purlins (1) for installation at ridge (2), eaves (3), and bases (4). Starting at the end arch, hold two arch assemblies (5) upright and parallel, eight feet apart, in kneeling position.



2. Start at the ridge (2). Identify end fitting (6) on each end of purlin (1). Fit end fitting (6) in each arch assembly boss (7) simultaneously. Rotate purlin 90° so that end fittings lock into boss at each arch assembly.



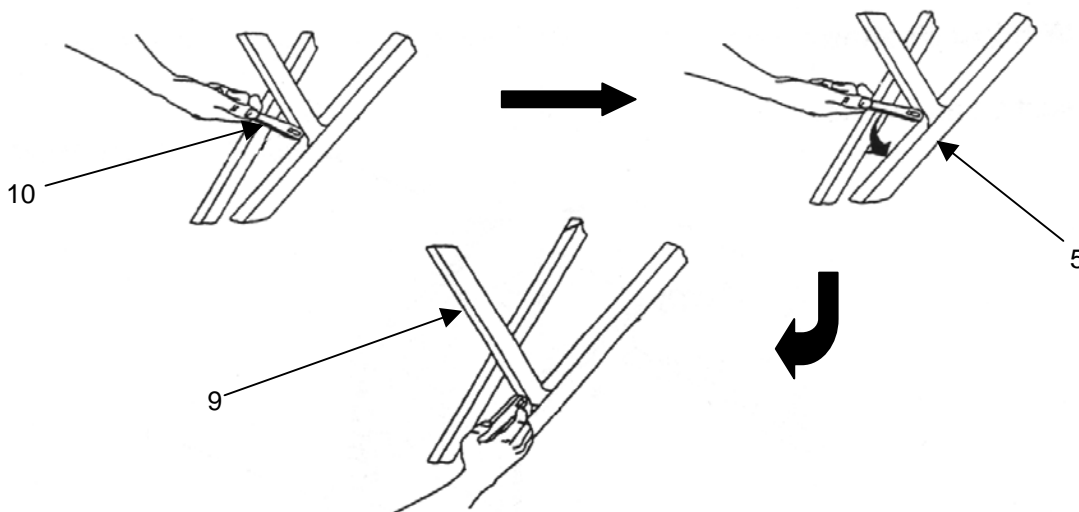
3. Unfasten retaining strap (8) and rotate a purlin diagonal brace (9) toward arch assembly (5).
4. Holding brace shackle (10), align and place brace stud (11) in arch assembly slot (12) located two feet from ridge. Rotate brace shackle (10) 90° to lock brace stud (11) in place.



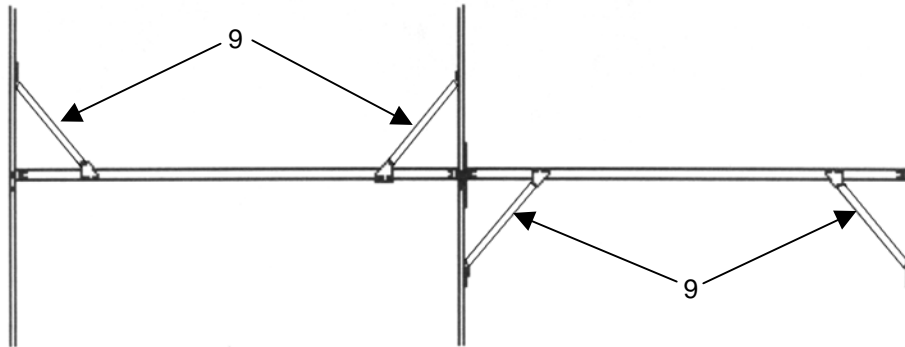
**WARNING**

Do not lock brace shackle toward purlin diagonal brace. Arch assembly may collapse causing injury to personnel or damage to equipment if improperly locked.

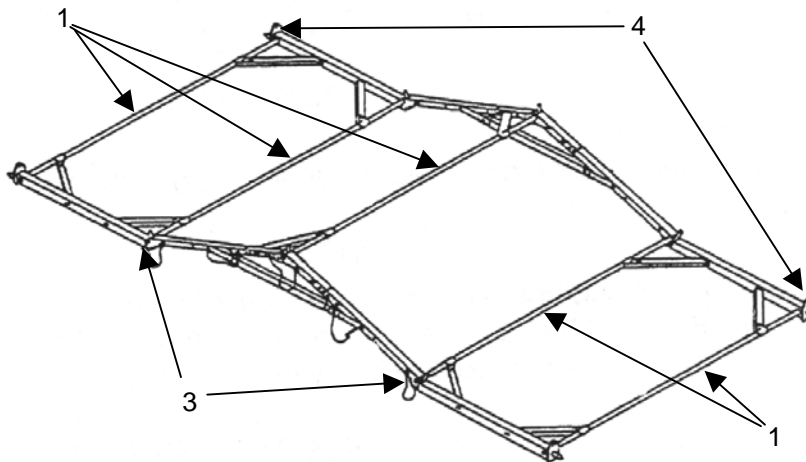
5. Lock purlin diagonal brace (9) by pressing brace shackle (10) down towards arch assembly (5) until it is secure.



6. Install remaining purlin diagonal braces (**9**) repeating steps 3 through 5 above. Stagger the placement of the diagonal braces as shown below.

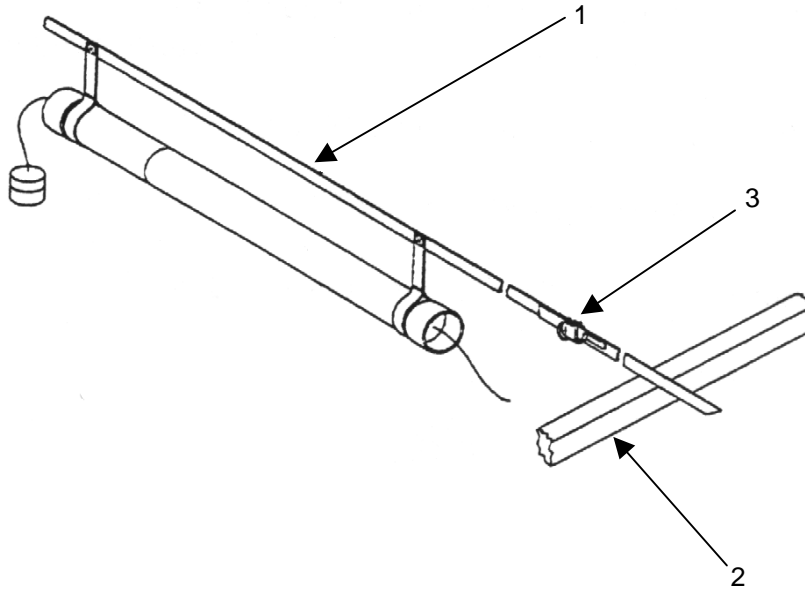


7. Install purlin (**1**) at each eave (**3**) repeating steps above. Begin at step "2. Start at the ridge..." Then, install purlin (**1**) at each base (**4**) repeating steps above. Begin at step "2. Start at the ridge..."
8. Add 8-foot TEMPER frame sections as required by installing additional purlin assemblies, repeating steps 1 through 7. When completed, the frame section is now in a kneeling position.



### Install the Light Supports

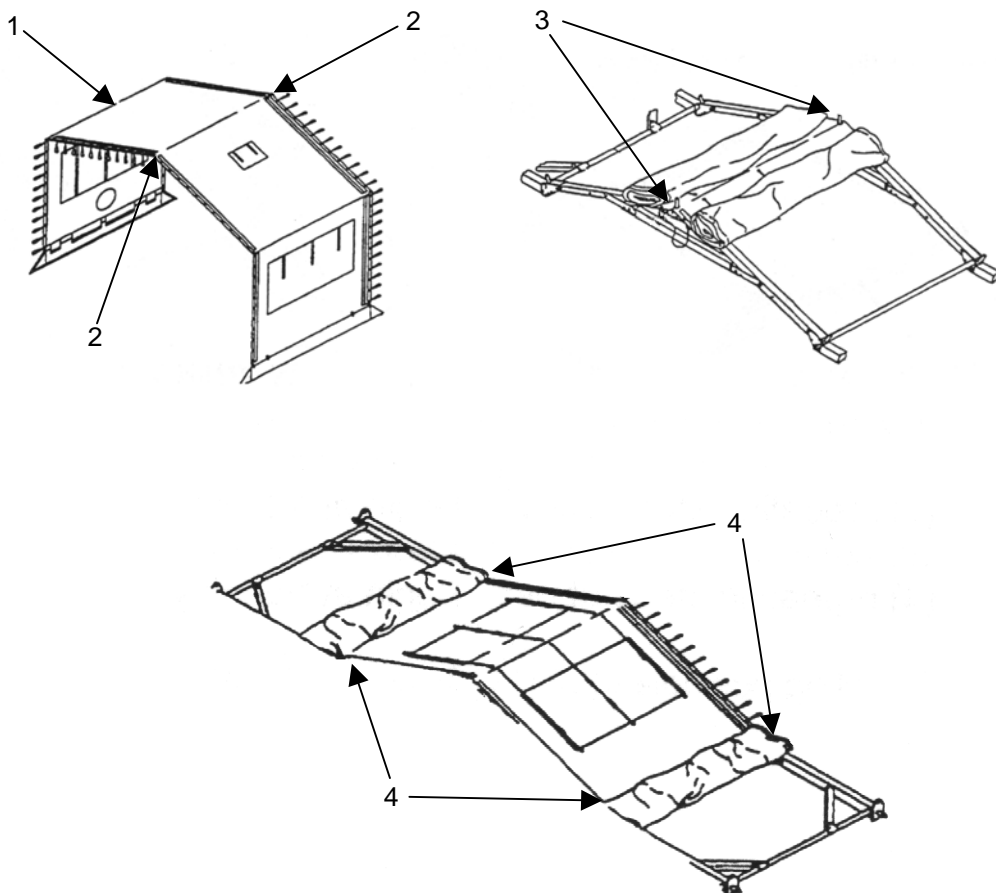
1. Identify light support strap assembly (1) in light set case. Wrap each running end of light support strap assembly once around header (2) at header/arch joint so the double D-ring (3) faces the tent roof.
2. Secure end of light support strap assembly (1) through double D-ring (3) assembly on standing end of strap. Tighten webbing until taut.



**Placement of Window / Door Section****NOTE**

Window and door sections are both used for the shower TEMPERs. With the exception of exterior fittings (windows vs. doors) they are identical. The door section will be placed furthest from the container. Four soldiers are required to carry the window or door section to the frame section ridge.

1. Identify the window and door sections **(1)**. Place window / door section **(1)** next to extendable frame.
2. Identify large, spindle grommets **(2)** at the center of each side of the window / door section **(1)**.
3. Roll window / door section from both sides up to the ridge.
4. Place the large spindle grommets over ridge spindles **(3)**.
5. Unroll tent fabric until fabric reaches eave spindles **(4)**. Place grommets over each of the four eave spindles. Repeat procedure for remaining window / door sections.



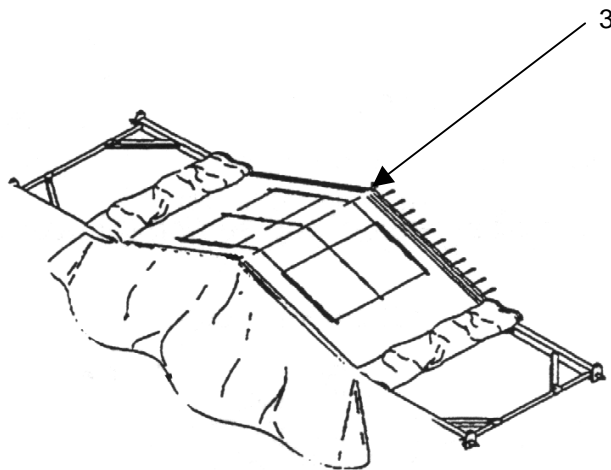
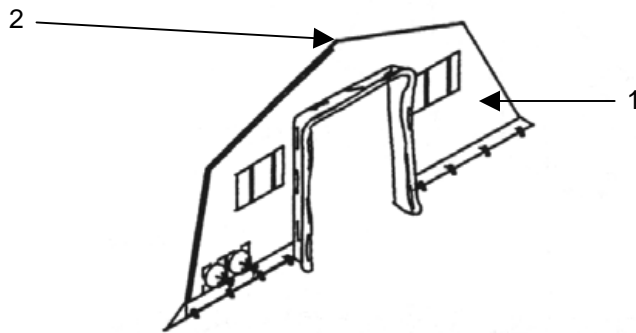
**Placement of Modified End Section (ISO Bootwall)**

1. Identify modified end section (bootwall) **(1)**. Modified end section should be stenciled "ISO Bootwall".

**NOTE**

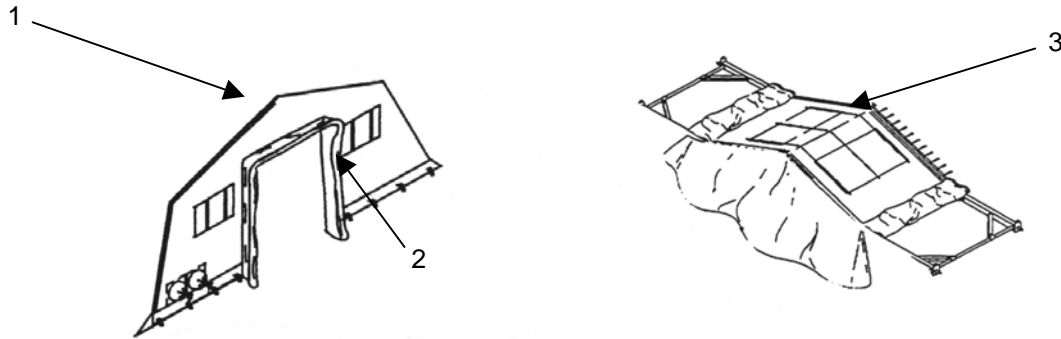
Place the modified end section on the side of the frame assembly facing the container; it connects to the container at a later stage.

2. Identify large spindle grommet **(2)** at peak of modified end section (bootwall). Place large spindle grommet located at peak of modified end section over ridge spindle **(3)** facing the container.



### Placement of End Section

1. Identify end section **(1)**. Regular end section has zip doors **(2)** rather than the bootwall attachment on the modified end section.
2. Place large spindle grommet located at peak of end section over ridge spindle **(3)** opposite container.

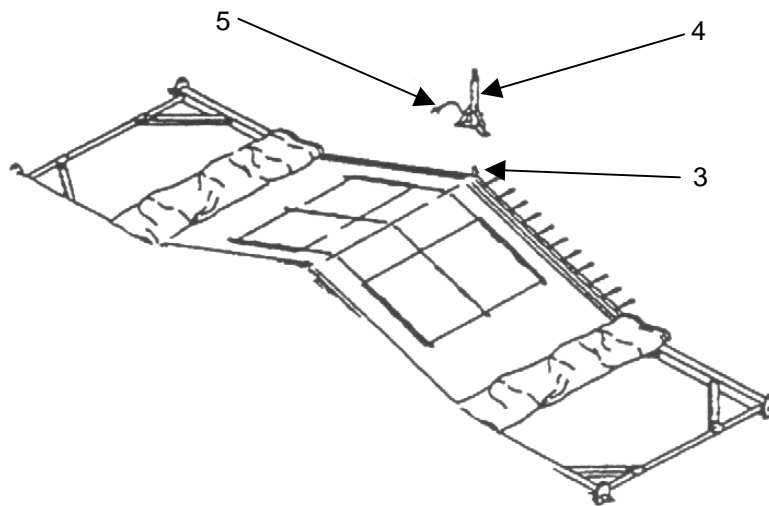


3. Identify the ridge extender **(4)**. Place the ridge extender over the ridge spindle **(3)** opposite the container.
4. Align holes in ridge spindle **(3)** and ridge extender **(4)**.

### NOTE

Ensure that the weather flap fabric is slid under the ridge extender before inserting the hitch pin.

5. Install the attached hitch pin **(5)** through holes in ridge extender **(4)** and spindle **(3)**, ensuring it secures both components.





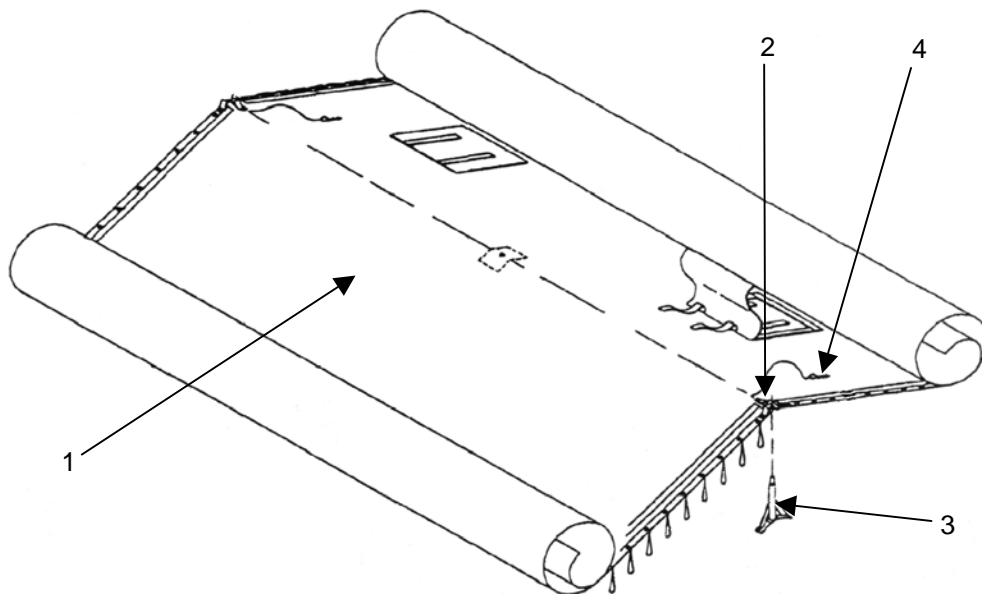
## Placement of Tent Fly

1. Identify tent fly **(1)** and lay out beside window / door sections. One 16-foot fly is used on the Containerized Shower TEMPER.

### NOTE

Be sure that the becket laces on one tent fly line up with the becket grommets of the adjoining tent fly.

2. Identify the large, ridge extender spindle grommet **(2)**.
3. Roll up both sides of fly **(1)** to large, ridge extender spindle grommet.
4. With a minimum of one individual placed at each large ridge extender spindle grommet **(2)**, lift and move fly **(1)** to frame section ridge purlin.
5. Place the large, ridge extender spindle grommets **(2)** on the ridge extender spindles **(3)**.
6. Place the fly hitch clip pins **(4)** through the holes in the ridge extender spindles **(3)** which protrude through the large ridge extender spindle grommets **(2)**.



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**Becket Lacing Window and End Sections**

At this point, lacing together of window/door sections, end sections, and tent fly may be accomplished simultaneously. Begin all lacing from the ridge line and work towards the eave. Becket lacing procedure is the same throughout the erection process and is accomplished as follows:

**CAUTION**

Do not step on tent components. Material may be torn and dirt ground into tent fabric.

**NOTE**

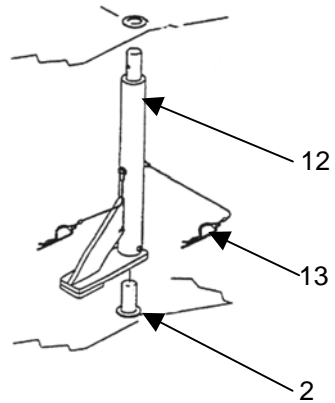
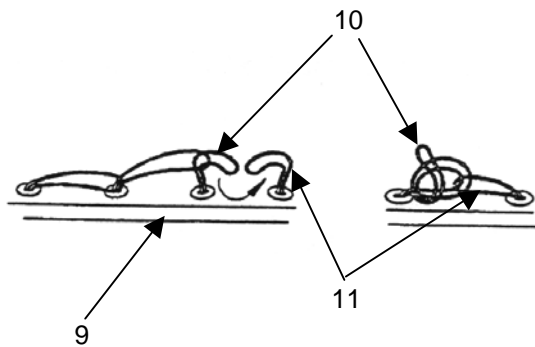
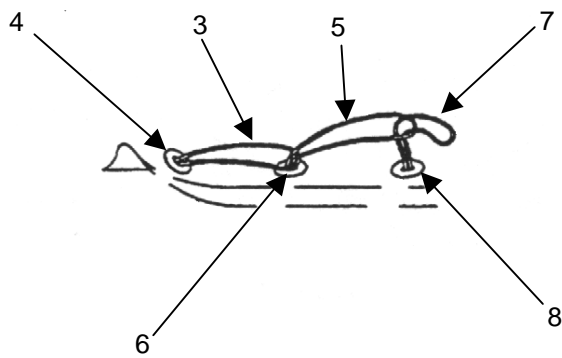
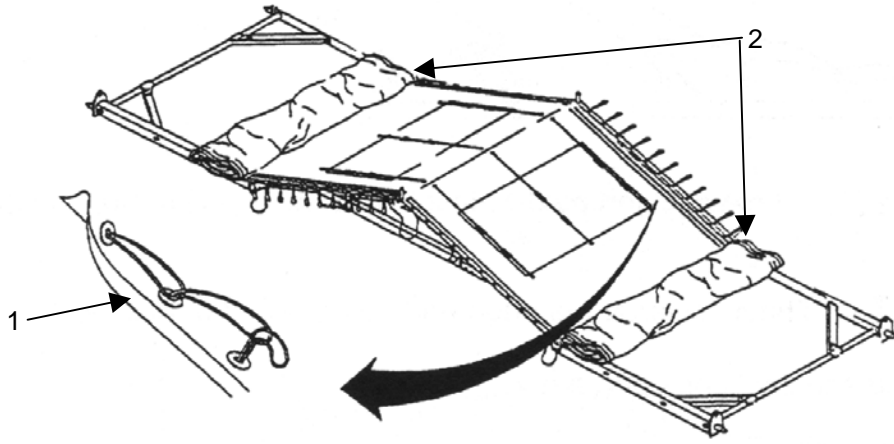
For easier lacing, place eave grommets with becket laces over eave spindles first, to provide fabric tension, then overlap adjoining window section and end section eave grommet without laces.

1. Place becket side **(1)** eave grommet over eave spindles **(2)**.
2. Identify first becket lace **(3)** and becket grommet **(4)** near the ridge.
3. Insert the first becket lace **(3)** through first becket grommet **(4)** and second becket lace **(5)** through second becket grommet **(6)**.
4. Insert second becket lace **(5)** through the loop of first becket lace **(3)**.
5. Pull second becket lace **(5)** tight away from ridge.
6. Insert third becket lace **(7)** through grommet **(8)** and through loop of second becket lace **(5)**.
7. Pull third becket lace **(7)** tight away from the ridge.
8. Continue lacing and close hook and pile weather flap **(9)** until reaching the last becket lace **(10)**.

**NOTE**

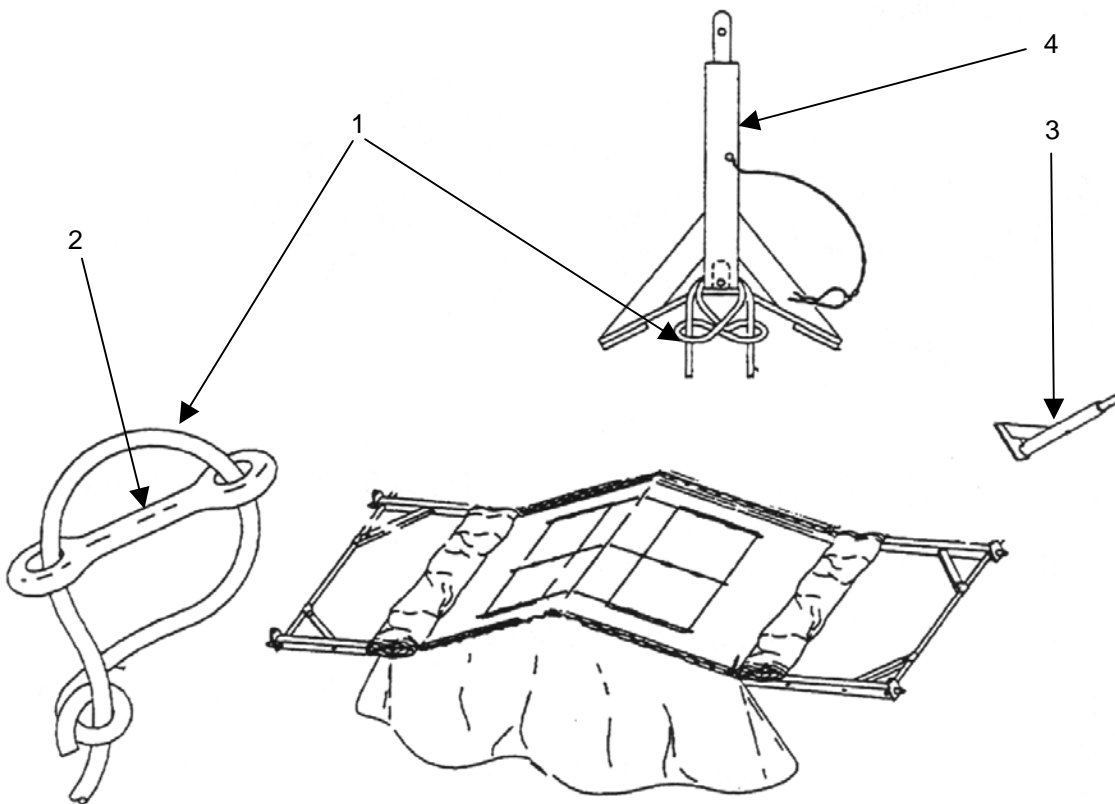
Ensure weather flap fabric is slid under the ridge extender brace.

9. Place remaining window and end section grommets over eave spindles.
10. Upon reaching last becket lace **(10)** at eave, insert next-to-last becket face **(11)** through loop of last becket lace.
11. Pull the next-to-last becket lace **(11)** back towards the ridge and tie off with half-hitch knot.
12. Complete lacing all window and end sections up to eave.
13. Identify the eave extenders **(12)**. Place eave extenders on eave spindle **(2)** with brace towards ridge.
14. Align holes on spindle **(2)** and eave extender **(12)** and insert the hitch clip pin **(13)** ensuring it secures both components. Do not leave any becket below the eave at this time.



**Install Guy Line**

1. Identify one 19-foot guy line (1) and one tent slip (2) for placement at each of the four eave extender (3) bases. Identify two 19-foot guy lines (1) and tent slips (2) for placement at the end ridge extender (4) base.
2. Thread the guy line (1) through one side of the tent slip (2) and then through the brace and around the pole of the eave (3) extender. Thread two guy lines through the ridge extender (4).
3. Bring guy line (1) through other side of tent slip (2) and tie an overhand knot at end of guy line. Repeat steps 1 through 4 above for all extenders.



## Raising the Frame to Partially-Erect Position

### CAUTION

Avoid folding wall fabric into joints. Material may rip or tear if caught in joint.

1. Fold wall fabric **(1)** towards ridge **(2)** to expose eave gussets **(3)**. Place folded fabric on ridge fabric **(4)**.
2. Identify quick release pin **(5)** and ensure it is hanging free. Identify the locking hole in the side arch assembly **(6)** and ensure it is free of debris.



### WARNING

Two soldiers should be placed at each arch leg to raise frame. Lift tent from correct squatting position, using your legs to avoid back injury.

### CAUTION

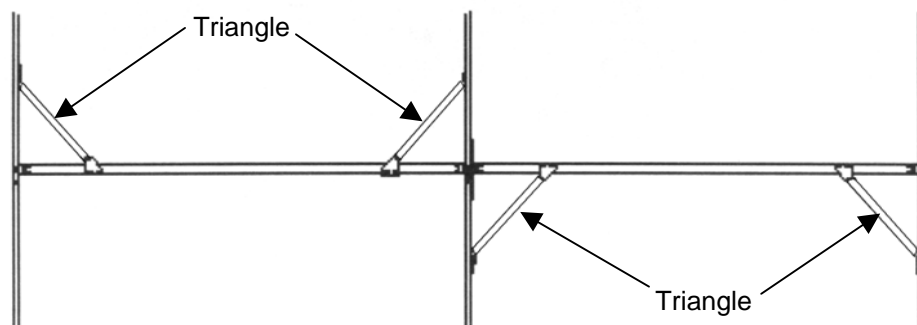
Tent frame must be raised uniformly to avoid twisting or turning. Damage to frame can result.

3. Step in next to the eave gusset **(3)**.

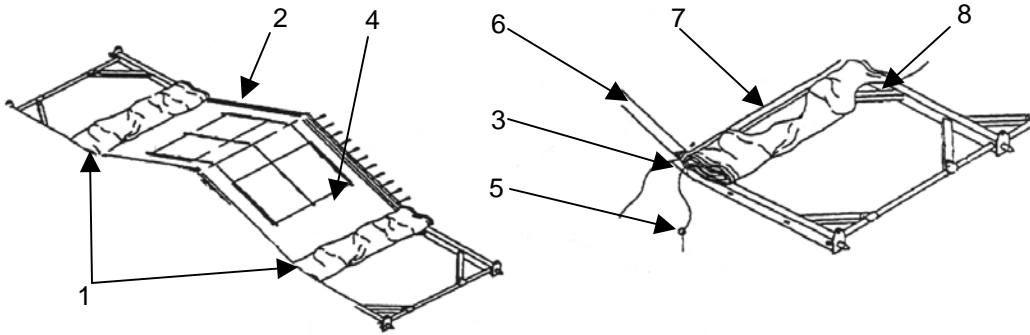


### WARNING

Frame assembly hinges can pinch, crush, or amputate hands and fingers. Keep hands and fingers away from frame assembly ridges and eaves. An expedient way to keep clear of potential danger areas is to keep your hands "outside the triangle" at all times.



- Place one hand on the side arch assembly (6) and one hand on the eave purlin (7) outside the diagonal brace (8).

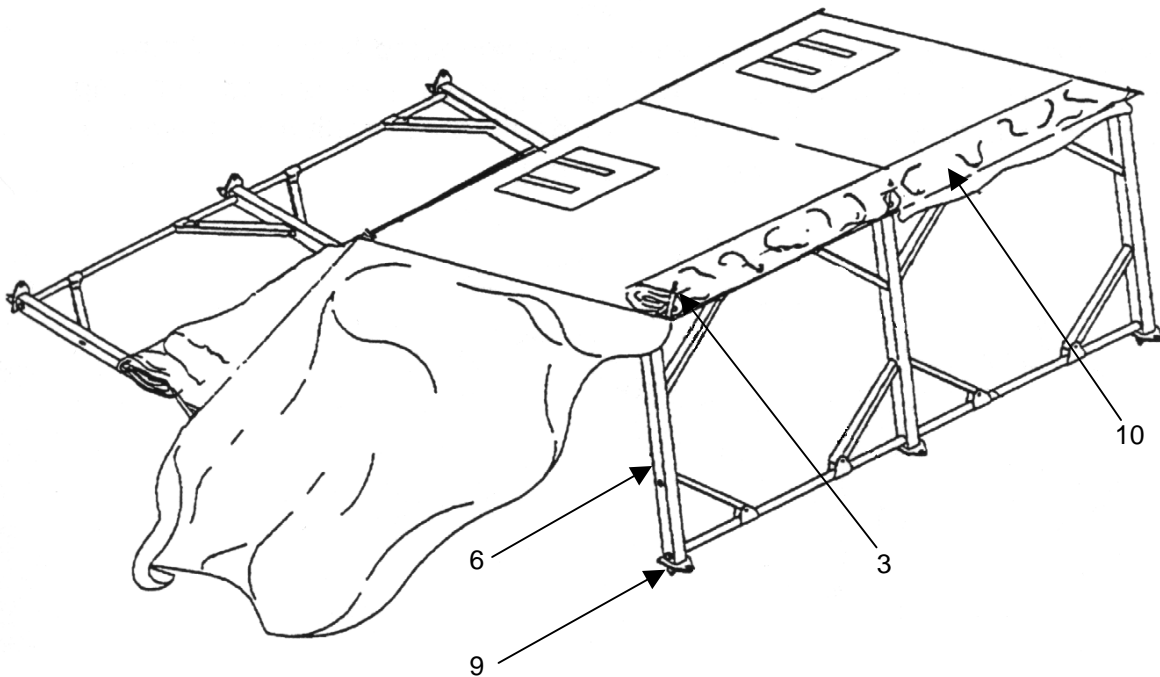


- Get in a stable squatting position. Lift frame straight up to shoulder height; drag side arch assembly (6) inward. Place weight of the frame on side arch assembly foot (9).

**CAUTION**

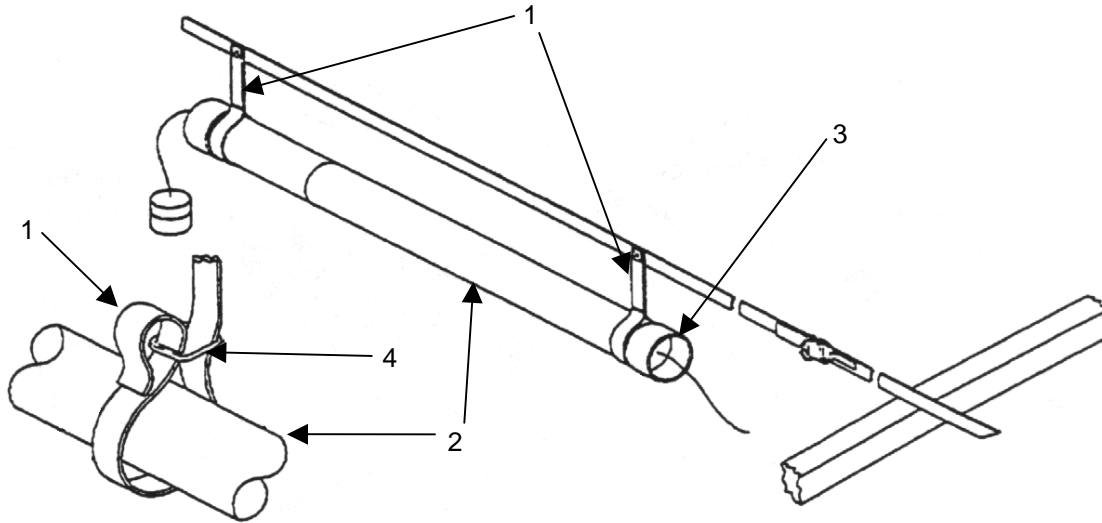
Insert quick release pins towards inside of tent on end assemblies. Tent fabric may tear if inserted towards outside.

- Align holes of eave gusset (3) and side arch assembly (6) and install quick release pin.
- Identify purlin flap (10) on interior of window/roof section. Secure purlin flap (10) to frame at eave purlin using hook and pile fasteners.



**Install Lights**

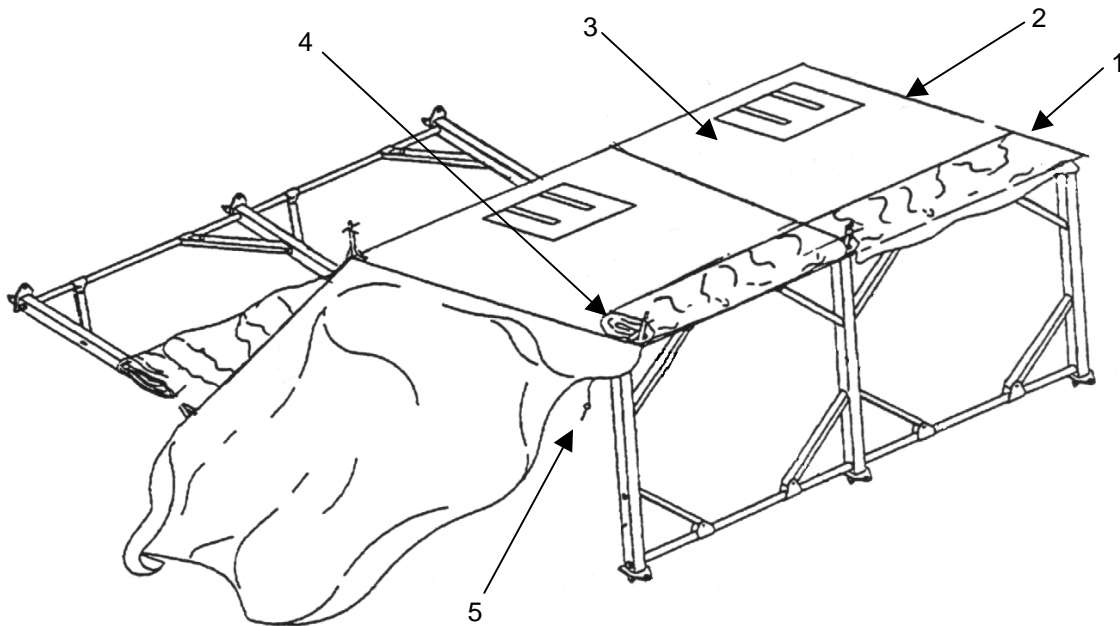
1. Wrap light hanger strap (1) around each end of luminaire (2) on inside of rubber end caps (3).
2. Pull strap (1) up through the D-ring (4) and press down to engage hook and pile fastener.
3. Mate plug properly to next luminaire (2), ensuring reflecting surface faces up and lamp faces down.
4. Repeat for second luminaire on other side of TEMPER section. Plug the luminaires together on the end opposite the container.



**Fully Erecting the Frame****CAUTION**

Avoid folding wall fabric into joints. Material may rip or tear.

1. Fold wall fabric **(1)** towards ridge fabric **(2)** and lay on roof **(3)** to expose eave gussets **(4)**.
2. Identify quick release pin **(5)** and ensure it is hanging free.
3. Identify the locking hole in the side arch assembly **(6)** and ensure it is free of debris.







### WARNING

Two soldiers should be placed at each arch to raise frame. Lift tent from correct squatting position, using your legs to avoid back injury.

### CAUTION

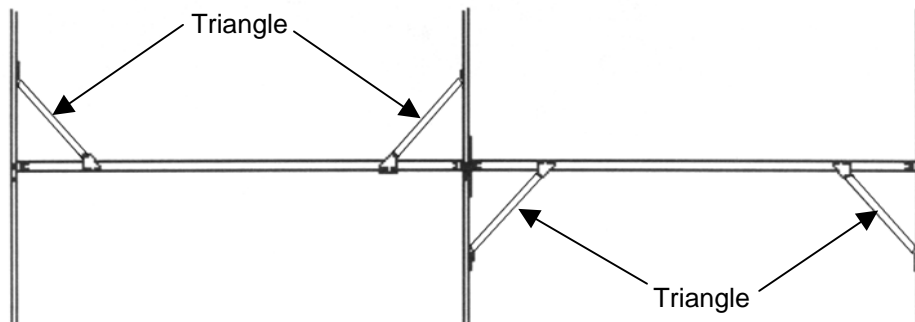
Tent frame must be raised uniformly to avoid twisting or turning. Damage to frame can result if lifted unevenly.

4. Step in next to the eave gusset (4).



### WARNING

Frame assembly hinges can pinch, crush, or amputate hands and fingers. Keep hands and fingers away from frame assembly ridges and eaves. An expedient way to keep clear of potential danger areas is to keep your hands "outside the triangle" at all times.



5. Place one hand on the side arch assembly (6) and one hand on the eave purlin (7) outside the diagonal brace (8).
6. Get in a stable squatting position and lift frame straight up to shoulder height, dragging side arch assembly (6) inward.
7. Place weight of the frame on side arch assembly foot (9).

### CAUTION

Insert quick release pins towards inside of tent on end assemblies. Tent fabric may tear if inserted towards outside.

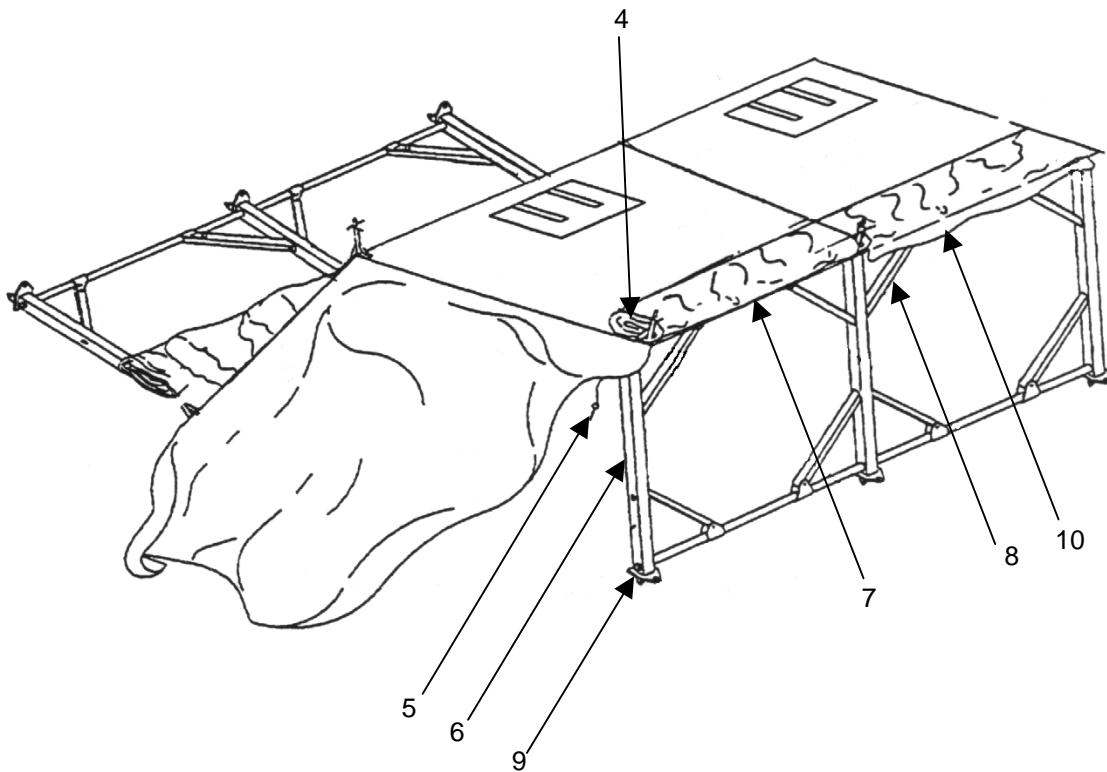
8. Align holes of eave gusset (4) and side arch assembly (6) and install quick release pin (5). Identify purlin flap (10) on interior of window/roof section.

- Secure purlin flap (10) to frame at eave purlin (7) using hook and pile fasteners.

### CAUTION

Frame bases set more than 20-feet 4-inches apart may cause end section fasteners to tear apart.

- Set frame bases 20-feet 4-inches apart.



## Move the TEMPER Section Into Position



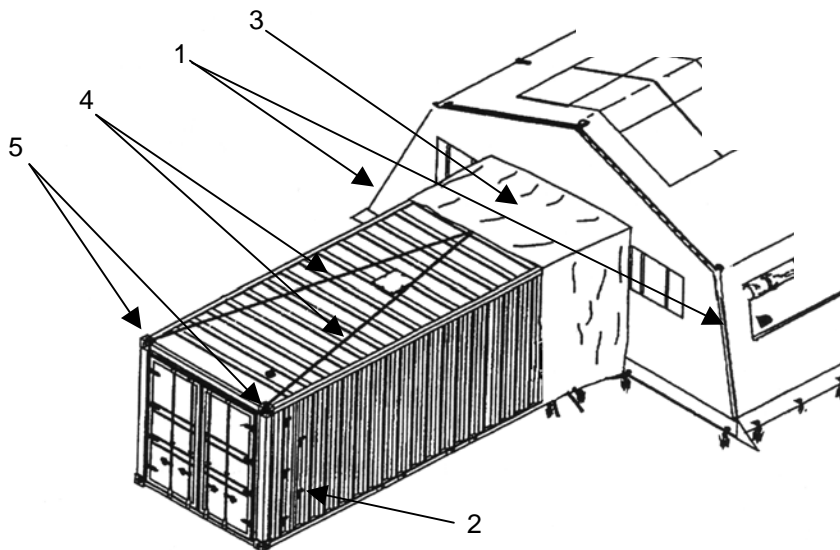
### WARNING

The assembled TEMPER is heavy. At least ten persons are required to move the 16-foot TEMPER into position. Personnel should be placed at each arch leg and at each base purlin. Additional personnel, if available, should be stationed at base purlins.

### CAUTION

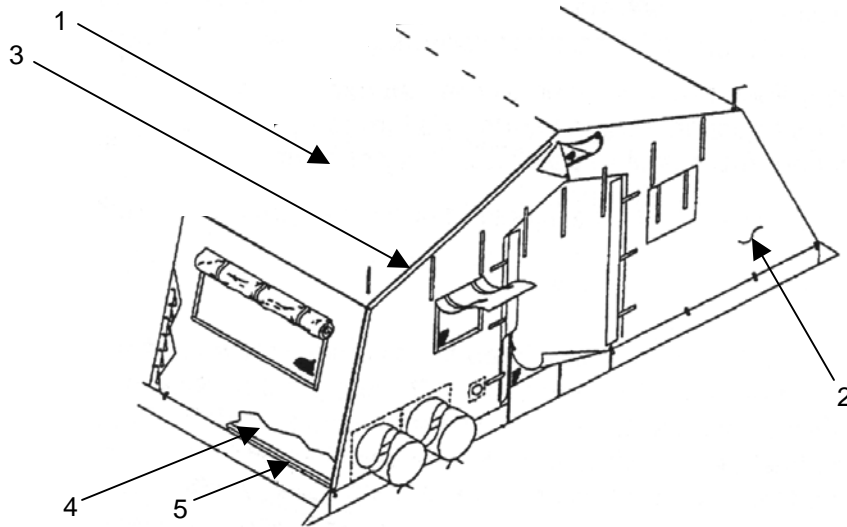
The TEMPER must be lifted evenly in order to prevent twisting the frame. Failure to do so may result in frame and fabric damage to the entire TEMPER assembly.

1. Using two soldiers at each arch assembly **(1)** and one at each base purlin, pick up and move the TEMPER section against the container, centering the ridge on the TEMPER section with the center of the closed personnel doors.
2. Have two soldiers access the top of the container using the hinged steps **(2)**. Pull the boot **(3)** over the container end and lay loosely on the container roof. Locate two bootwall lines **(4)** attached to the bootwall fabric and pull them towards the opposite corners of the container as shown. Fasten the lines to the ISO fittings **(5)**.

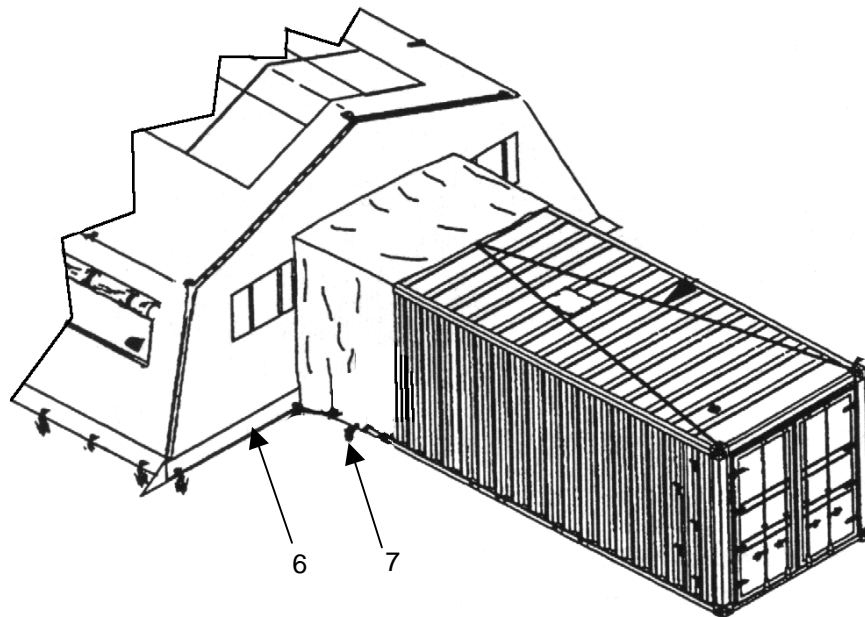


### Complete Becket Lacing and Bootwall Attachment

1. Have two soldiers on the ground complete lacing the window section (1) and the end sections (2) together. Secure weather seal flap (3).
2. Pull sod cloth (4) under base purlins (5) and end wall section (2).



3. Secure the lower end (6) of the bootwall with to the ground with 12-inch steel pins (7).



## Stakes and Guy Lines



### WARNING

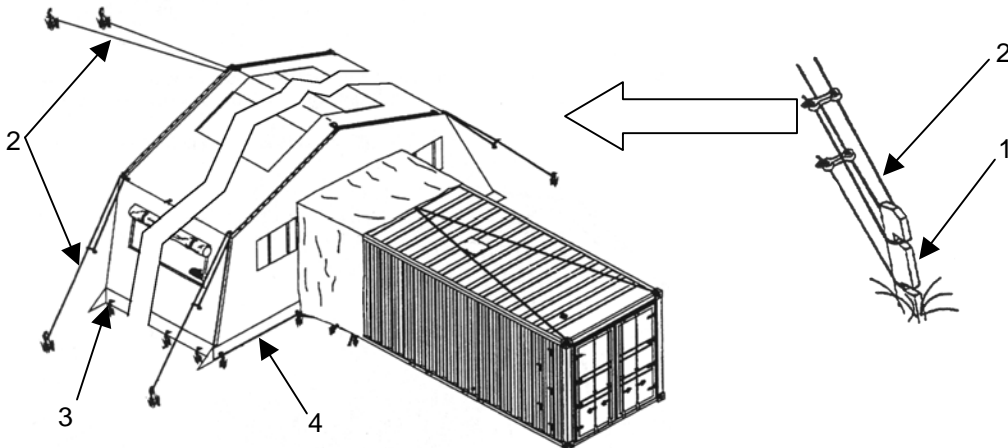
Stakes and guy lines must be used to prevent excessive movement of the tent section in high winds. Failure to stake and tie down tent section may result in personal injury or damage to equipment.

1. Place a 24-inch wooden stake **(1)** approximately 10-feet from the sides at the corners of the tent section at each eave extender and slant stake(s) towards tent.
2. Place two stakes **(1)** approximately 10-feet from the rear of the tent section at the ridge extender with stakes slanted towards tent.
3. Connect loop of eave extender guy line **(2)** and ridge extender guy lines **(2)** to bottom notch of wooden stake **(1)**.
4. Stake tent frame foot to ground using 12-inch steel pins **(3)**.
5. Stake foot loops **(4)** to ground and tighten guy lines **(2)**.

### CAUTION

Ensure that personnel door does not hit or damage luminaires.

6. Open the container personnel door.

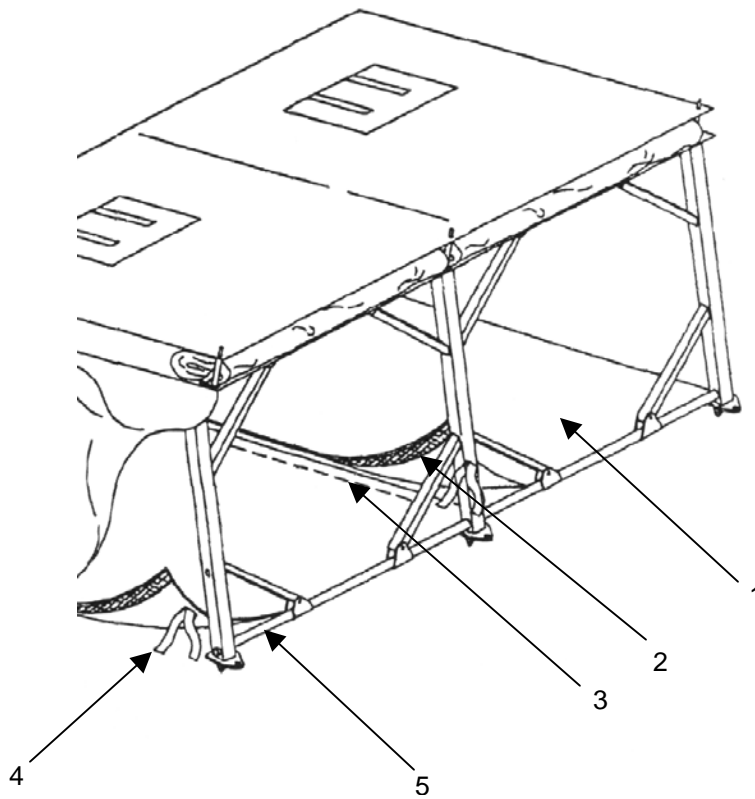


## Install Single Ply Floor

### CAUTION

Clear and level ground before installing floor. Sharp objects or depressions can damage tent floor.

1. Identify single ply floor sections **(1)**. The Containerized Shower utilizes two 8-foot floor sections.
2. Unroll floor sections and install black side down. Place all floor sections alternating hook and pile fasteners **(2,3)**.
3. Secure tie tapes **(4)** on narrow edge of floor to base purlins **(5)** on raised side of tent.



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**Install the Vestibule**

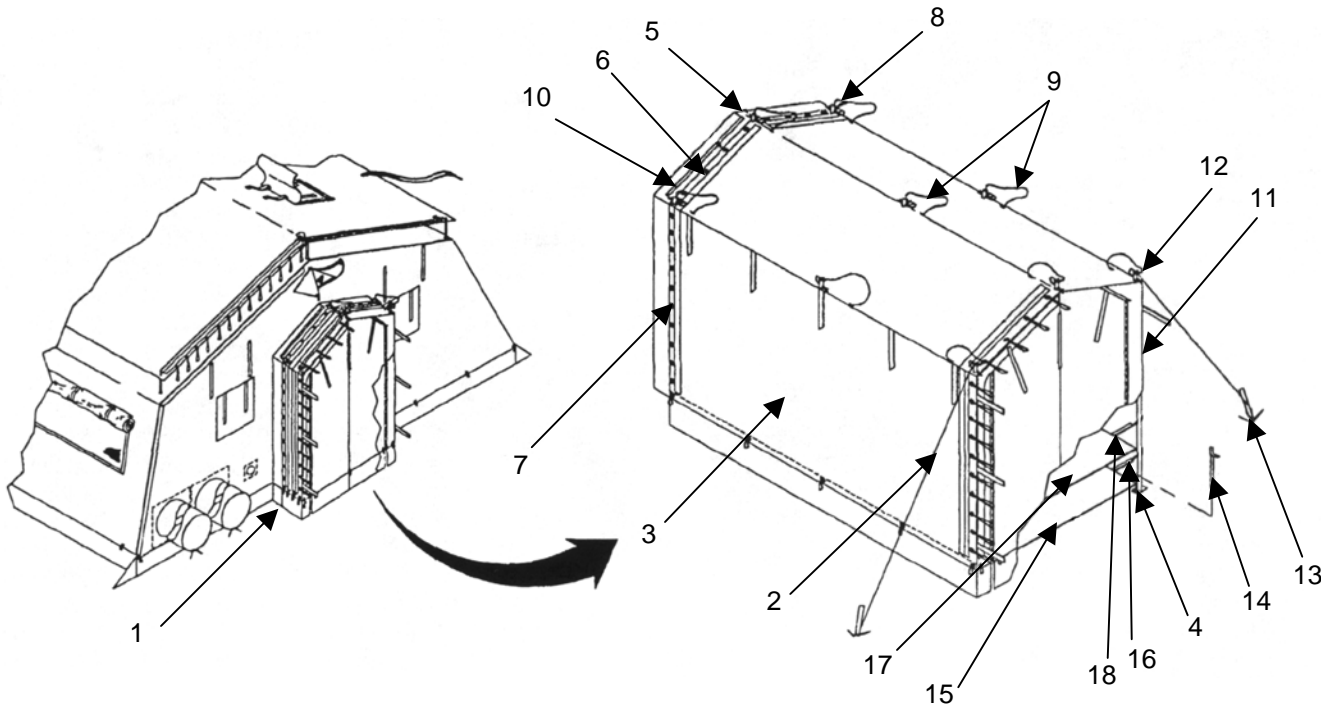
1. Unroll vestibule adapter **(1)** tent door.
2. Identify and lay out guy lines **(2)**.
3. Identify and lay out vestibule fabric **(3)**.
4. Identify, lay out and assemble vestibule frame sections **(4)** inside of TEMPER tent.
5. Identify ridge spindle grommets **(5)** at one end of vestibule **(3)** and vestibule adapter **(1)**.
6. Align vestibule spindle grommets **(6)** with vestibule adapter spindle grommet **(7)**.
7. Insert vestibule frame spindles **(8)** in vestibule adapter and vestibule spindle grommets **(6,7)**.
8. Secure ridge grommets **(5)** with hitch clip pins **(9)**.
9. Becket lace the vestibule fabric **(3)** to the adapter **(1)** starting at the ridge and working towards each eave.
10. Tie off at eave with half hitch knot.
11. Cover with weather seal flaps **(10)**.
12. Install remaining hitch clip pins **(9)**.
13. Complete becket lacing.
14. Carefully bring one completed vestibule frame **(4)** underneath vestibule **(1)**.
15. Place completed vestibule frame spindles **(8)** through three grommets **(6)** at center of vestibule.
16. Place hitch clip pins **(9)** through spindles.

**CAUTION**

Orient the hitch clip pins towards inside of vestibule at vestibule door frame so that the rounded end of the pin is against the fabric of the vestibule. Vestibule door fabric may tear if the hitch clip pins are oriented towards the outside.

17. Carefully bring one completed vestibule frame **(4)** underneath vestibule **(1)**.
18. Place completed vestibule frame spindles **(8)** through three grommets **(6)** at end of vestibule.
19. Install vestibule door **(11)** and secure ridge hitch clip pins **(9)**.
20. Becket lace from ridge to eave, seal weather flap **(10)** install remaining hitch clips pins **(9)** and complete becket lacing.
21. Extend frames **(4)** and fabric **(3)**.
22. Install two guy lines **(2)** under hitch clip pins **(9)** on eave spindles **(12)** of last vestibule frame.
23. Place 24-inch wooden stakes **(13)** about 6-feet out, facing towards vestibule door.

24. Tie guy lines (2) to stakes (13) and tighten.
25. Secure vestibule fabric (3) to vestibule frame (4) with tie tapes.
26. Install a 12-inch steel pin (14) in base plates of end vestibule frame (4).
27. Identify and install single ply floor (15) and secure with tie tapes (16) to vestibule frame (3).
28. Install insulated floor (17) on top of single ply floor (15).
29. Secure with tie tapes (18).





## ASSEMBLY AND PREPARATION FOR USE

### Prepare 30 gpm Water Pump for Use

Prepare the water pump for use, making all connections as described in this WP.

### Prepare M-80 Water Heater for Use

Prepare the water heater for use in accordance with TM 10-4520-259-13&P.

### Install Exhaust Fan

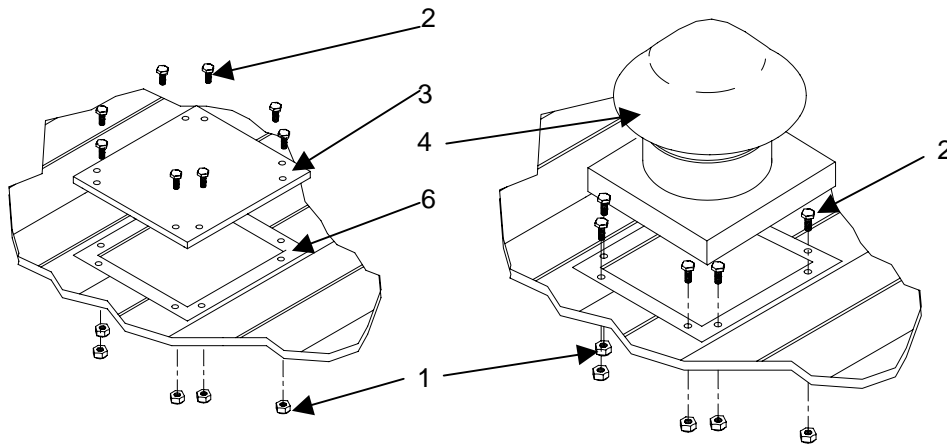
1. Open double service doors on Containerized Shower to better facilitate access for installation of the fan.
2. Inside the container, remove eight nuts **(1)** and bolts **(2)** securing the exhaust fan panel **(3)** to the roof.
3. Access to the top of the container via hinged steps on the container wall, and remove the panel **(3)**.



### WARNING

The equipment to be handled is heavy, awkward, and difficult to maneuver. To prevent injury, four persons are required for the following procedure – two on the ground, and two on top of the container.

4. Lift exhaust fan **(4)** onto roof of container and drop power cord over the side of the container near the power service panel.
5. Place exhaust fan **(4)** onto mount **(6)**.
6. Inside shower, install nuts **(1)** onto exhaust fan bolts **(2)**. Tighten nuts **(1)** securely. (Personnel whose standing height is within the 5<sup>th</sup> percentile may require a step aid)
7. Plug power cord into the twistlock 20A single-phase outlet on the power service panel.



## Prepare Shave Stands for Use



### **WARNING**

The equipment to be handled is heavy, awkward, and difficult to maneuver. To prevent injury, four persons are required for the following procedure – two on the ground, and two on top of the container.

1. Remove the shave stands as an assembly **(1)** from the center aisle of the shower container.
2. Remove the mirrors **(2)** and legs **(3)** and place them inside the container until they are needed.
3. Unstrap the two basin assemblies **(4)**. Retrieve the two dunnage pieces **(5)** and save for packing.
4. Install four legs **(3)** on the upper basin assembly. Secure the legs with the attached pins **(6)**.

### **NOTE**

The shave stands may be placed on either side of the personnel entrance.

5. Lift the upper basin assembly **(4)**, turn it upright, and place it in position.
6. Tip remaining basin assembly **(4)** on its back.
7. Install four legs **(3)** on the basin assembly, and secure the legs with the attached pins **(6)**.
8. Place the shave stand into position.

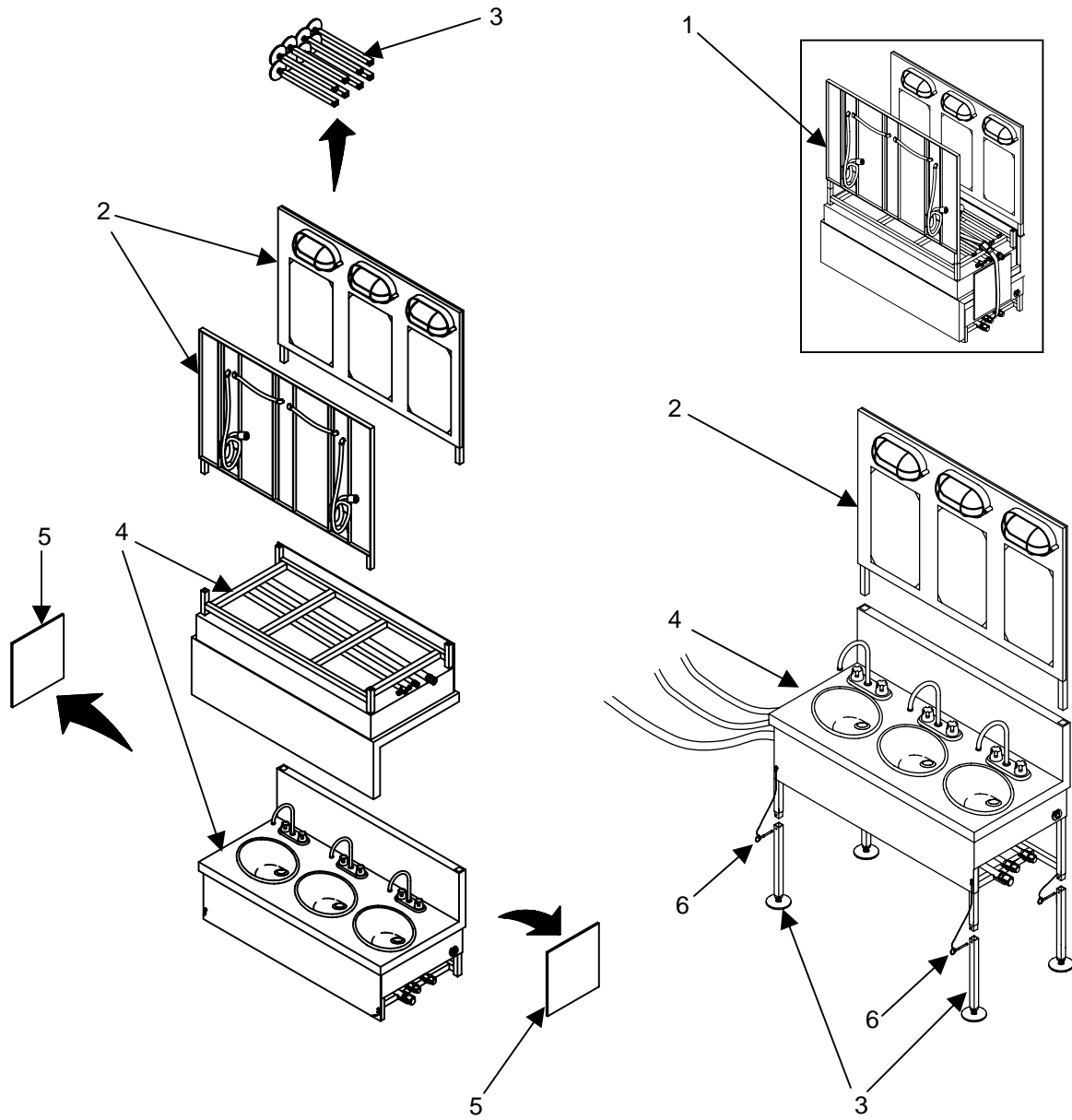


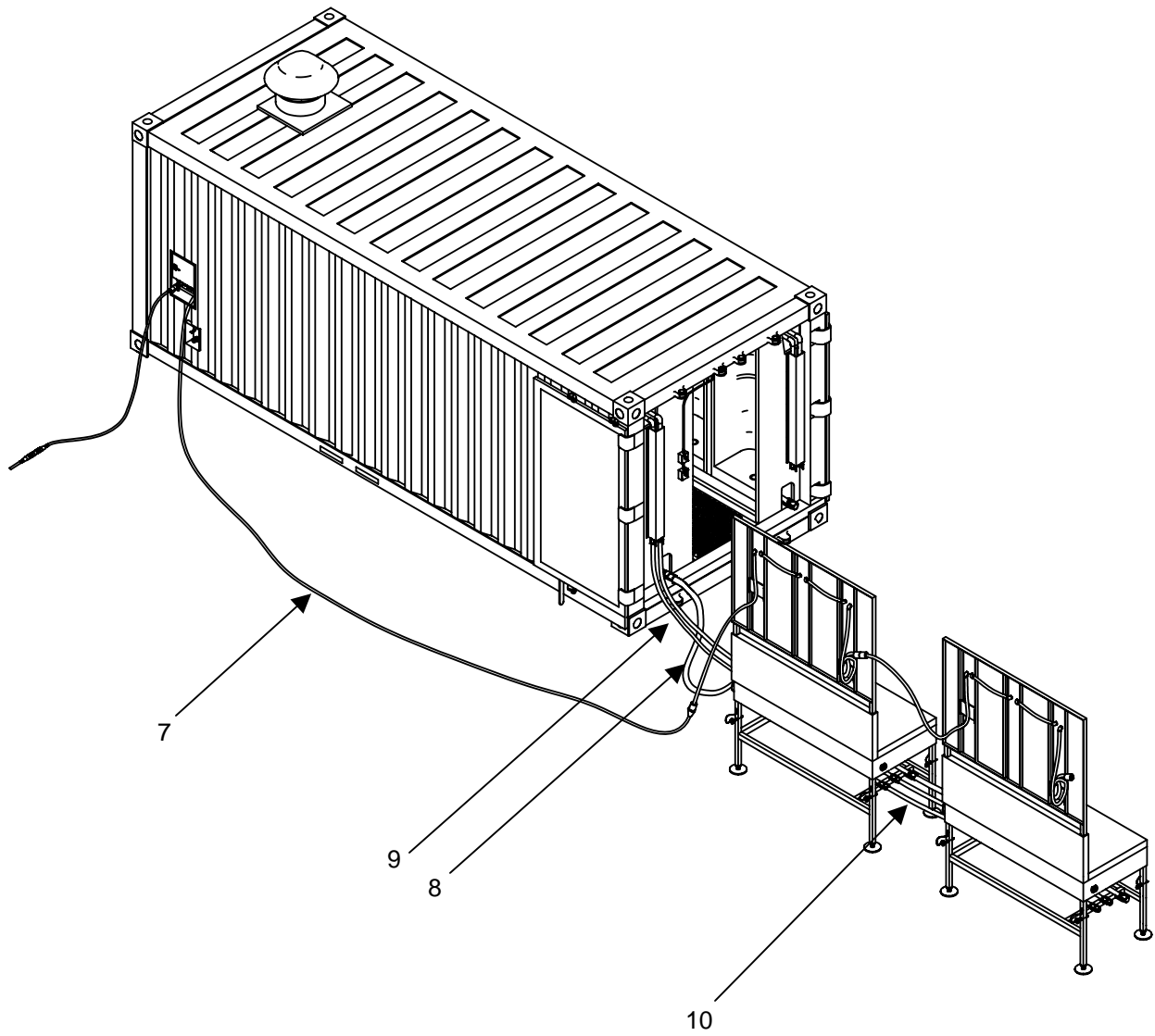
### **WARNING**

Use caution when installing the mirrors on the shave stands. Heavy, sliding metal parts can pinch or cut fingers, or may snag loose clothing.

9. Install the mirrors **(2)** on the shave stands.
10. Connect a 50-foot 110V AC extension cord **(7)** between a shave stand and the convenience outlet on the power service panel of the Containerized Shower. Ensure that the cord is placed out of the way, and does not present a tripping hazard.
11. Connect the 6-foot by 1½-inch graywater hose **(8)** to the shower and the shave stand closest to the container. (Refer to this WP under Lay Out Hoses, for more information on laying out the hoses.)
12. Connect the 6-foot by ¾-inch cold and hot water supply hoses **(9)** to the shower and the shave stand closest to the container. (Refer to this WP under Lay Out Hoses, for more information on laying out the hoses.)
13. Connect the remaining shave stand to the first using the installed electrical receptacles and hose connections. The second shave stand will use the 2-foot lengths **(10)** of ¾-inch and 1 ½-inch hose. (Refer to this WP under Lay Out Hoses, for more information on laying out the hoses.)

14. Connect the 3/4-inch dust caps together. Drape all the dust caps over the frame of the shave stand basin assembly to keep them out of the way.





**PREPARE POWER DISTRIBUTION SYSTEM FOR USE**

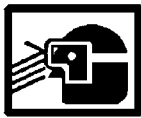
To prepare the power distribution system for use, proceed as follows:

**Ground Containerized Shower**

The container must be grounded. To ground the Containerized Shower proceed as follows:

**WARNING**

The Containerized Shower must be electrically grounded. Failure to ground the shower may result in serious injury or death to personnel from electrocution or damage to equipment.

**WARNING**

Leather gloves and eye protection must be worn when installing the grounding rod. Failure to do so could result in serious injury to eyes or hands. Do not place hands between the driving stud and the coupling. Be sure all connections are tight so as to avoid spark between the units and ground rod.

**CAUTION**

Ensure all circuit breakers on circuit breaker panel are set to the OFF position to prevent shorting of equipment when power is initially established.

**NOTE**

Drive grounding rod next to the power panel approximately 8 to 9-feet deep.

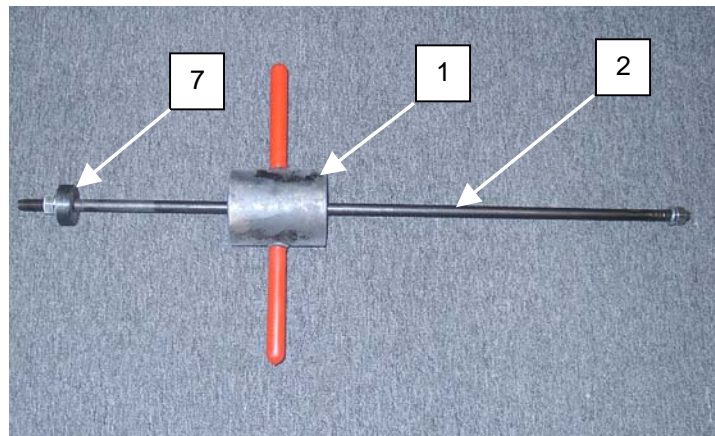
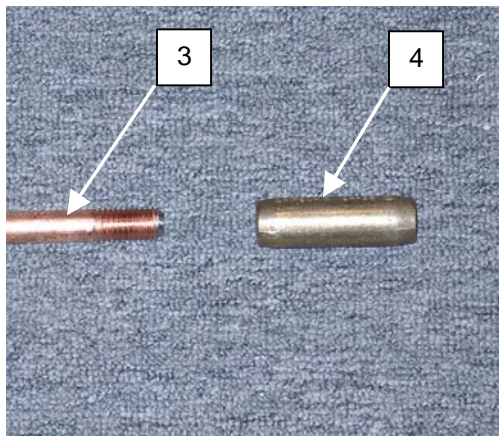
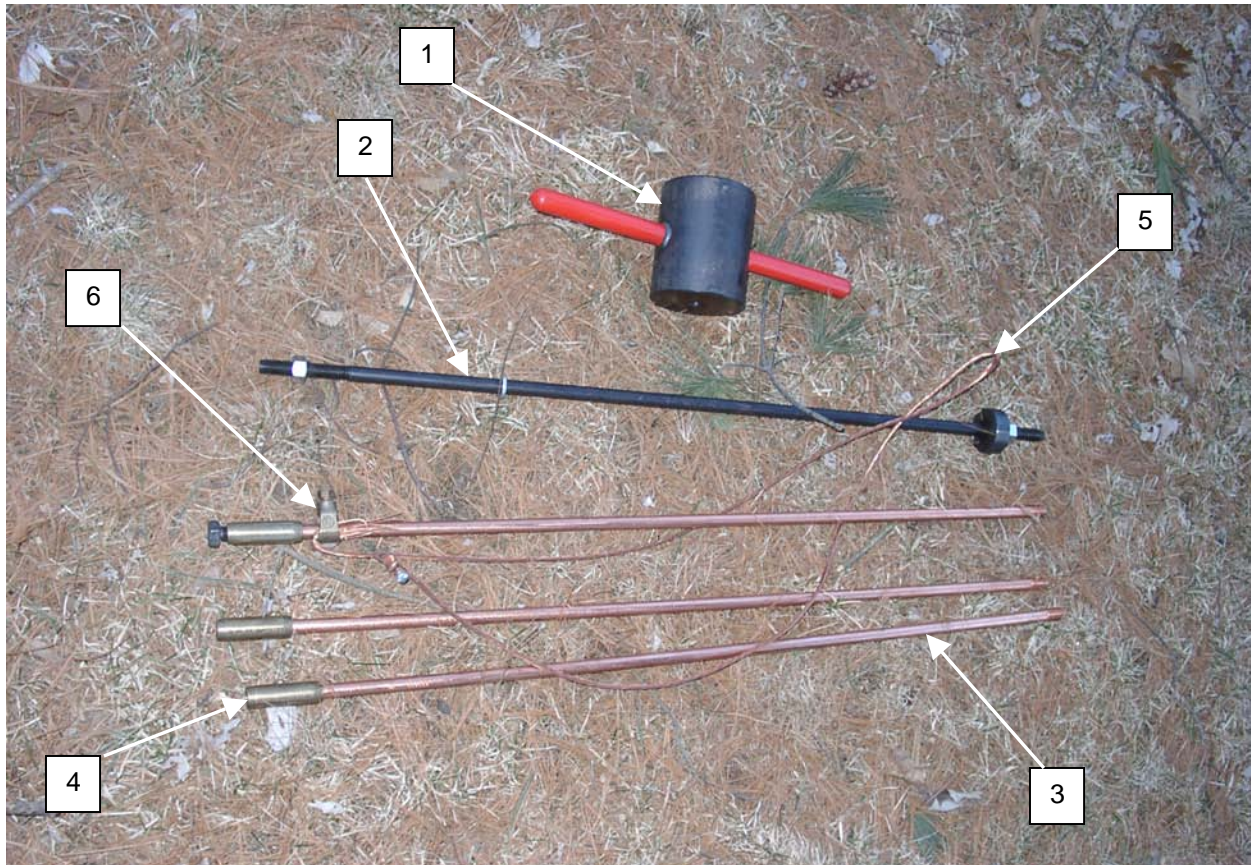
1. Identify the following components: slide hammer **(1)**, driving rod **(2)**, three ground rod sections **(3)**, three couplings **(4)**, and ground cable **(5)** with clamp **(6)** and connector.
2. Screw coupling **(4)** onto the flat end of rod section **(3)**.
3. Install slide hammer **(1)** onto driving rod **(2)**.
4. Install driving rod **(2)** onto coupling **(4)**. Turn the nut and anvil **(7)** down towards the coupling until both are tight.
5. Drive the section **(3)** into the ground with a slide hammer **(1)** until only six inches of the ground rod section remains above ground. Remove the driving rod **(2)** from the coupling.
6. Screw the pointed end of a second ground rod section **(3)** into the first ground rod coupling **(4)**; screw the second ground rod coupling onto the second ground rod section.
7. Install driving rod **(2)** onto coupling **(4)**.

8. Resume hammering until only six inches of the second grounding rod section **(3)** remains above the ground. Remove the driving rod **(3)** from the coupling **(4)**.
9. Screw the pointed end of the third ground rod section **(3)** into the second ground rod coupling **(4)**; screw the third ground rod coupling onto the third ground rod section.
10. Install driving rod **(2)** onto coupling **(4)**.
11. Resume driving the rod into the ground with the slide hammer **(1)** until only one foot of the ground rod assembly remains above ground. Remove the driving rod **(2)** and slide hammer from the coupling **(4)**.

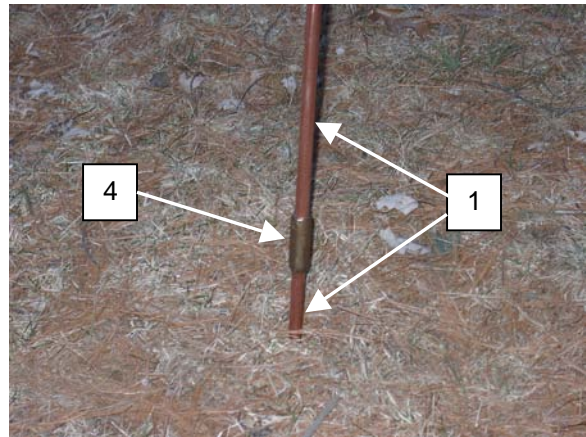
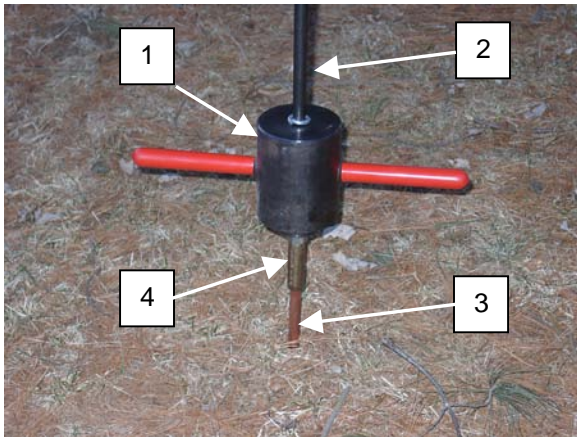
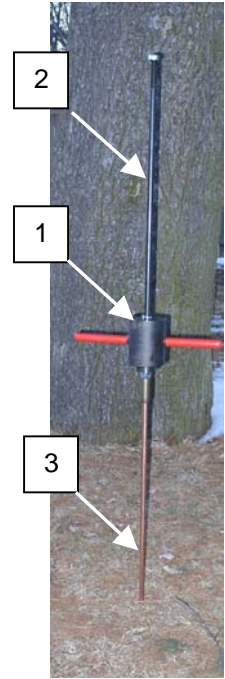
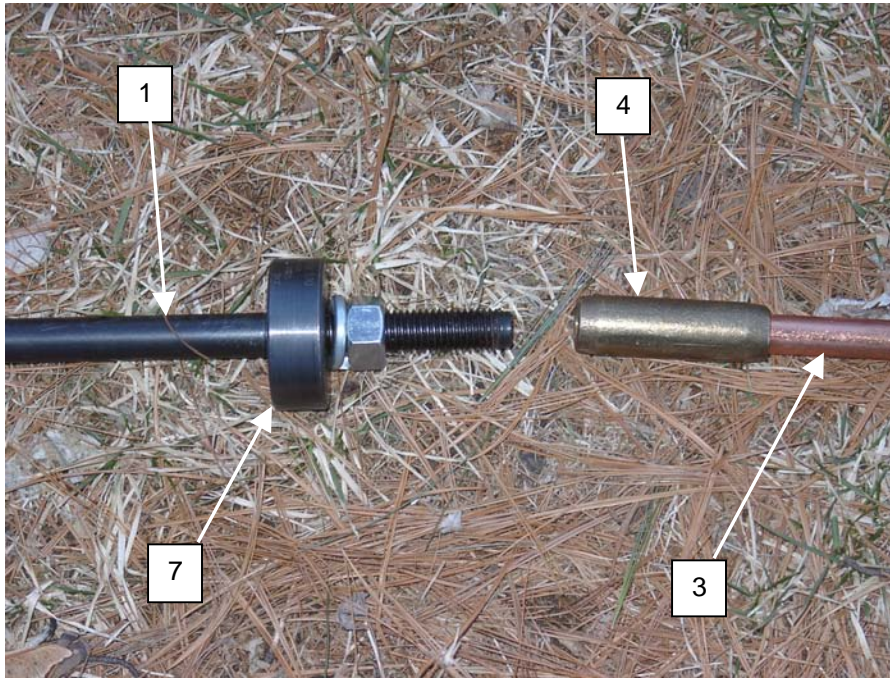
### NOTE

An electrical connector is fitted to the free end of the grounding cable. The connector is not used in this installation. Do not remove the connector – the connector is necessary for use in other installations.

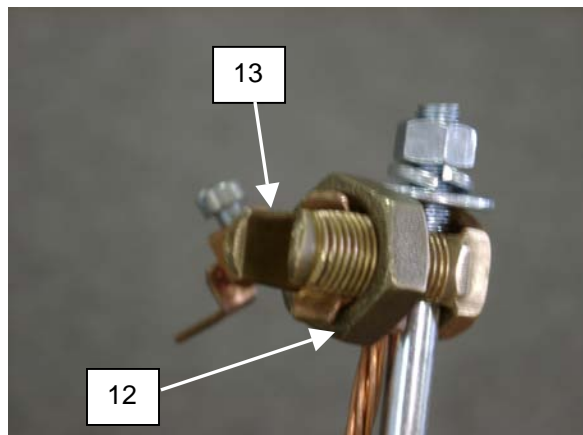
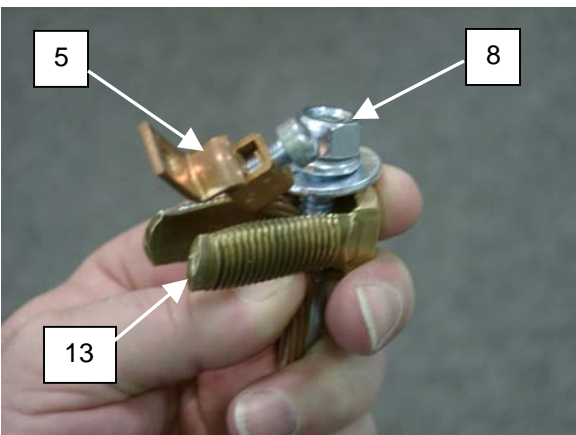
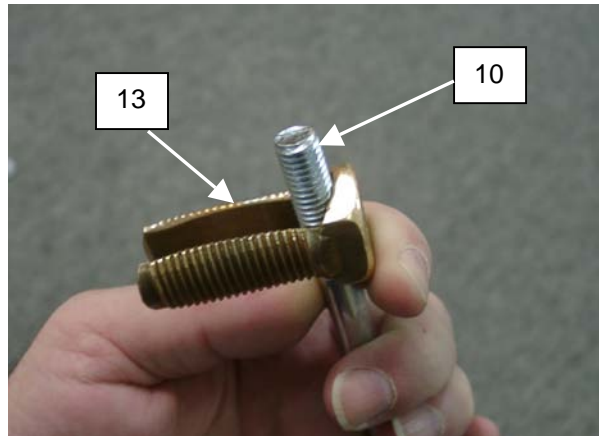
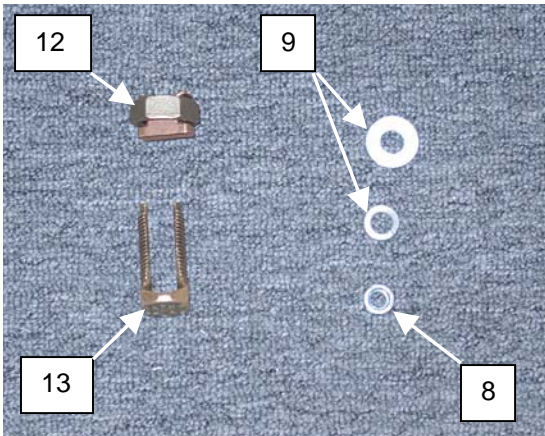
12. Attach grounding cable **(5)** to the electrical clamp **(6)**. Tighten the electrical clamp.
13. Remove nut **(8)**, washers **(9)** from stud **(10)** on panel **(11)**.
14. Remove splice connector nut **(12)** from splice connector **(13)**.
15. Place splice connector **(13)** over grounding stud **(10)**.
16. Install nut **(8)**, washers **(9)** onto stud **(10)**. Do not tighten at this time.
17. Slip grounding cable **(5)** through the splice connector **(13)**.
18. Install and tighten splice connector nut **(12)** until grounding cable **(5)** is securely fastened to grounding stud **(10)** using adjustable wrench provided.
19. Tighten washers **(9)** and nut **(8)** securely.











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**Connect Power and Distribution System Cables to Containerized Shower****WARNING**

The following procedure may only be performed by MOS 52D qualified personnel. Performance of this procedure by unqualified personnel may result in serious injury or death by electrocution.

**NOTE**

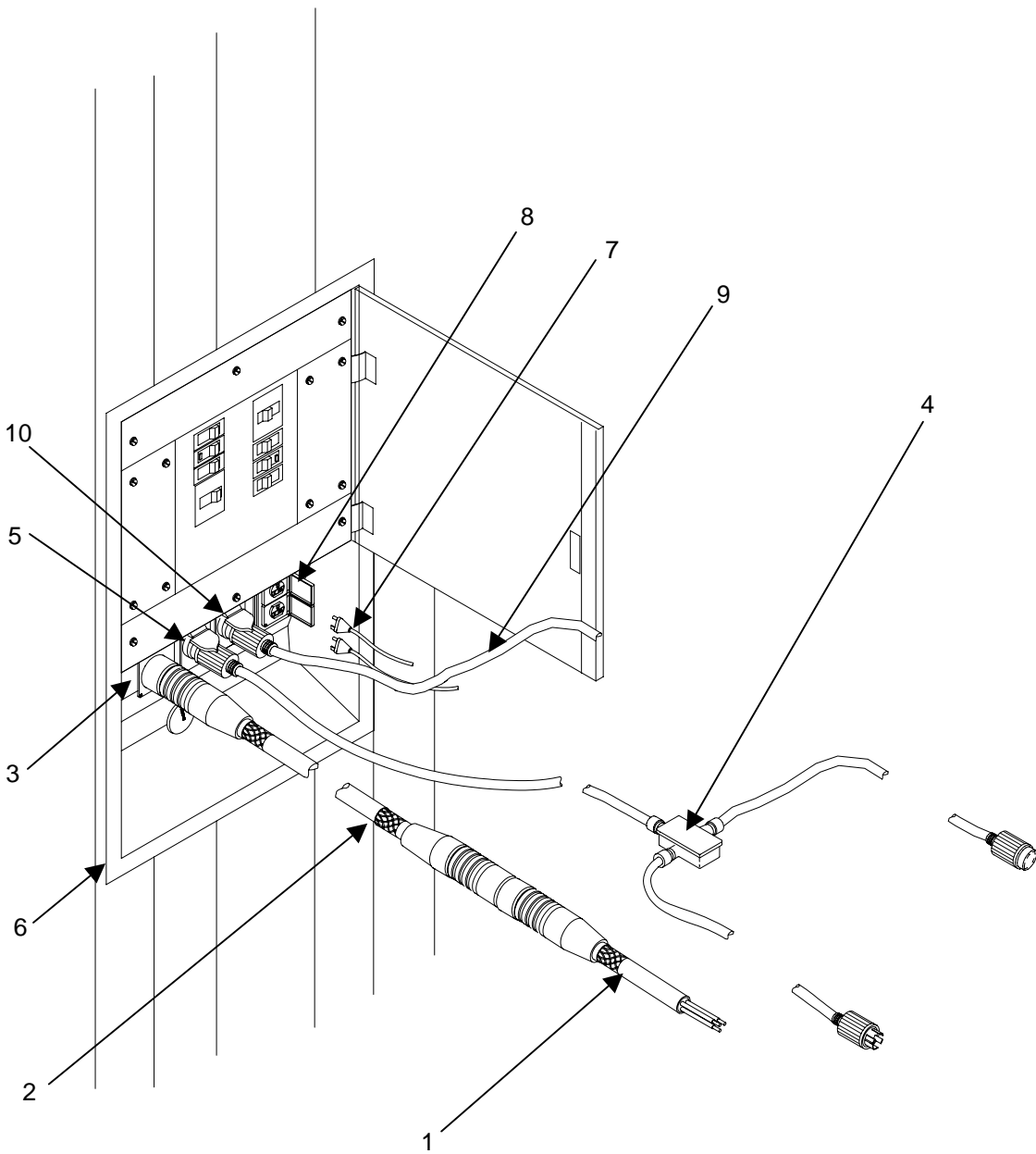
Refer to the diagram labeled Cable Layout, Containerized Shower, detailed on the following pages, as necessary to lay out power cables.

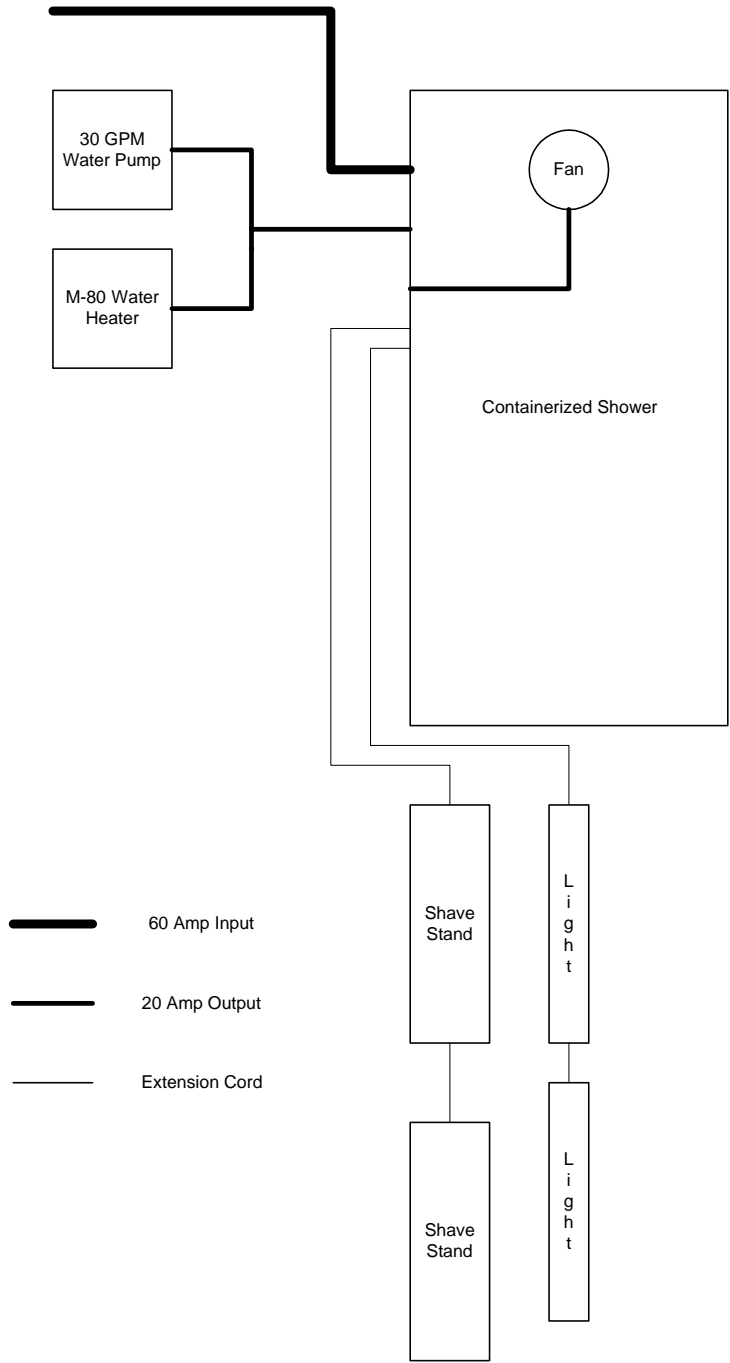
1. Locate all necessary power cables. This will consist of a 100-foot, 60A power service cable, a 4-foot 60A Pigtail, a 20A power cable with Tee connector, and two 50-foot 110V AC extension cords. (Some installations may have two 50-foot 60A cables in place of a single 100-foot 60A cable.)
2. Set all circuit breakers in the circuit breaker box to OFF.

**WARNING**

Power source must be shut down before connecting any cables. Failure to do so may result in serious injury or death to personnel by electrocution.

3. Identify the 4-foot 60A pigtail **(1)** and connect it to the designated power source.
4. Identify the 100-foot 60A power service cable **(2)**, connect it to the power service panel input socket **(3)**, and twist the collar to lock. (Some installations may have two 50-foot 60A cables.)
5. Identify the 20A Tee cable **(4)** and connect it to the matching 20A outlet **(5)** on power service panel **(6)**, the M-80 water heater and 30 gpm water pump.
6. Ensure the 110V AC shave stand extension cord **(7)** has been plugged into the convenience outlet **(8)** on the power service panel **(6)**.
7. Ensure the exhaust fan power cord **(9)** has been plugged into the matching 20A outlet **(10)** on the power service panel **(6)**.
8. With power source turned off, connect the 100-foot 60A power service cable **(2)** to the pigtail **(1)**. (Some installations may have two 50-foot 60A cables.)

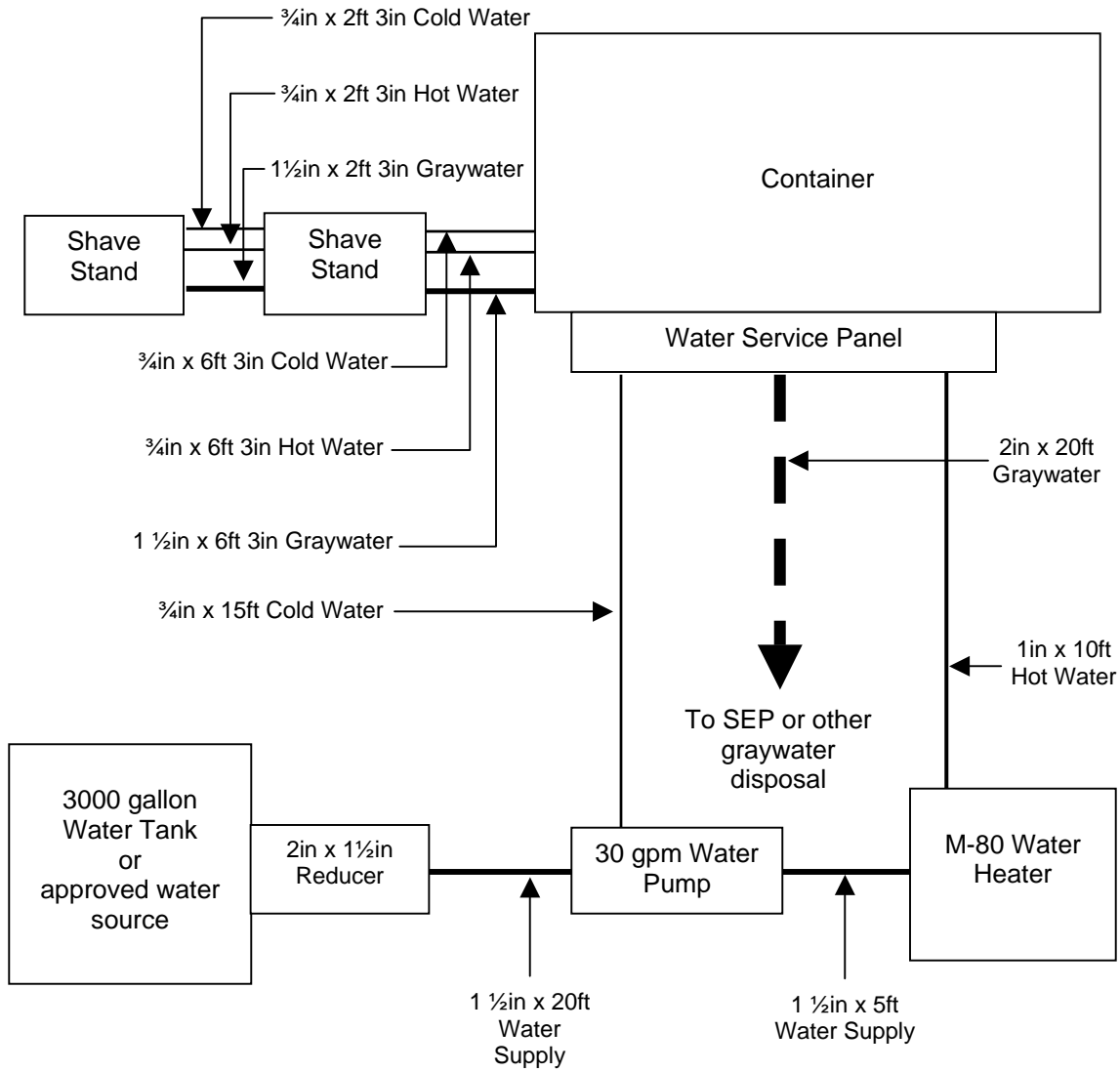




Cable Layout, Containerized Shower

**Lay Out Hoses, Containerized Shower (Stand-alone Configuration)**

Lay out the water supply and graywater drain hoses as shown in the suggested layout configuration below, or in a modified version to fit local conditions.



**Hose Layout, Containerized Shower (Stand-Alone Configuration)**

### Water Supply and Graywater Drain System

All freshwater and graywater hoses used with the shower are fitted with quick disconnect couplings (QDC) to permit rapid assembly and disassembly of the system.

The proper disposal of liquid waste is necessary to minimize rodent and insect problems and potential contamination of water supply or surface waters. The safest way to dispose of liquid waste from the CS is to discharge to or transport it to a wastewater treatment facility.

The CS wastewater will most likely be stored in bladders or tanks on-site before disposal. Care should be taken to ensure that spills and leaks do not occur and the wastewater is disposed of properly. Ensure the piping and fixtures don't leak and site selection will facilitate rapid drainage and minimize water pooling. Contact the local field preventive medicine unit or field sanitation team to assist in site selection. If these precautions are ignored, serious environmental and sanitation problems could occur particularly during extended operations and deployment.

The CS wastewater is not a hazardous waste and contains only soaps and substances washed from the users bodies. It is considered gray water. Currently, there are no specific regulations governing gray water generated from the CS. However, if the wastewater from the CS is disposed of in a surface water anywhere in the United States, a discharge permit is required from the State or Environmental Protection Agency (EPA). In a foreign country the local standards or EPA standards should be used.

When the use of an existing disposal facility is not an option, use a unit constructed field expedient wastewater disposal method delineated in FM 21-10 and FM 21-10-1. All disposal methods must comply with federal, state, and local regulations.

When disposing of liquid waste and wastewater from the CS, the following regulatory information is essential.

In the United States, rules and regulations for wastewater discharge are established by the U.S. Environmental Protection Agency (or a State with an EPA approved program) under the National Pollutant Discharge Elimination System (NPDES), established under the Clean Water Act (CWA). Dischargers must apply for and obtain a site-specific NPDES (or State equivalent) permit or a general NPDES permit.

Foreign governments will have their respective country's waste disposal guidance for training exercises or deployments. Coordinate with the installation point of contact or the environmental coordinator in the foreign country and the country's permitting agency to obtain information on applying for a permit to discharge. In some instances, it may be applicable to compare EPA discharge standards to those of the foreign country and apply the more stringent requirements.

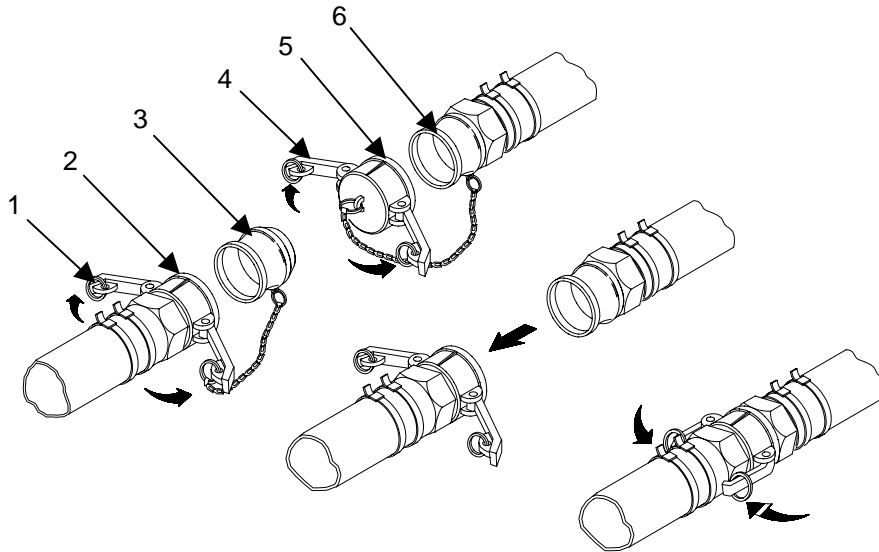
To make a QDC connection when caps and plugs are in place, proceed as follows:

### CAUTION

To prevent damage to the equipment, use care when connecting couplings to avoid getting dirt on the coupling mating surfaces or into the hoses. To prevent leaks and ensure tight connections, ensure gaskets are installed in all female couplings.

1. Lift the locking arms **(1)** of the female coupling **(2)** up and out.
2. Remove the plug **(3)** from the female coupling **(2)**.
3. Lift the locking arms **(4)** of the cap **(5)** up and out.

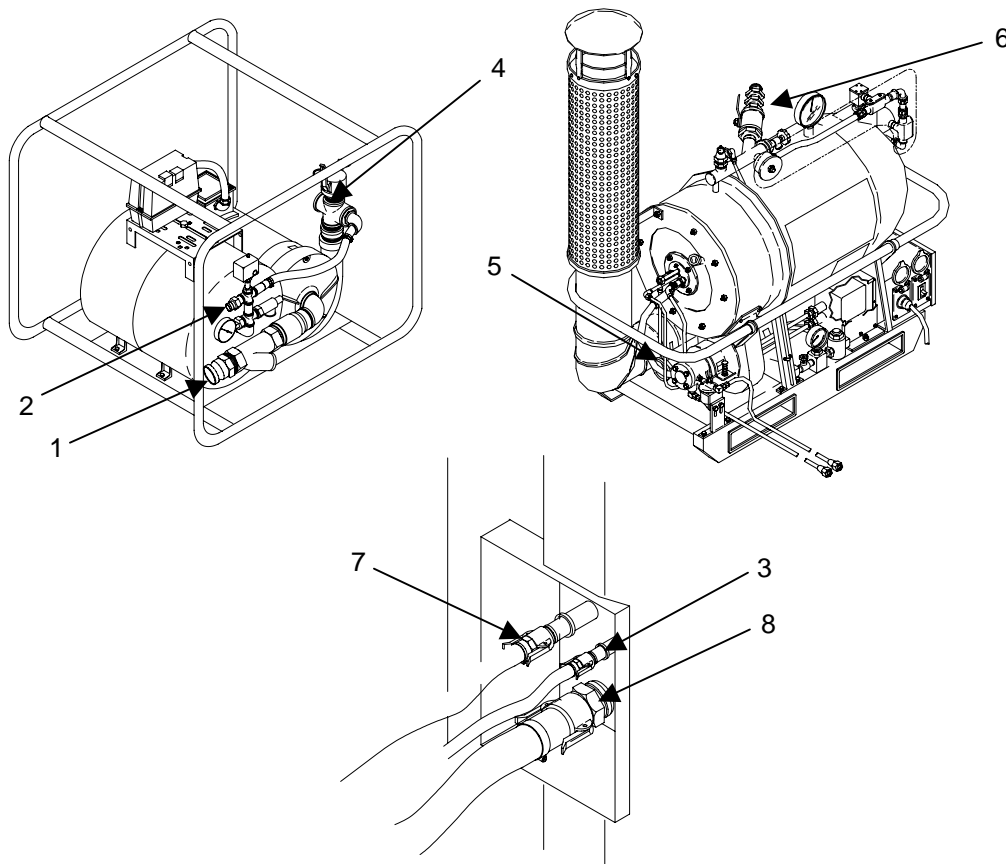
4. Remove the cap (5) from the male coupling (6).
5. Position the male coupling (6) in the female coupling (2) and hold in place.
6. Pull both locking arms (1) back at the same time against the body of the female coupling (2).
7. Reverse the procedure to disconnect a QDC.



**Connection of Water System, Containerized Shower (Stand-alone Configuration)**

Make the following connections as described and shown on the previous pages under Lay Out Hoses:

1. Connect a 20-foot long 1½-inch freshwater supply hose between the 3000 gallon water tank (or other approved freshwater source) and the 30 gpm water pump water inlet **(1)**, making sure the supply valve is OFF. A 2-inch by 1½-inch reducer is included to adapt the 2-inch supply from the 3000 gallon water tank.
2. Connect a 15-foot long ¾-inch freshwater hose between the 30 gpm water pump ¾-inch discharge fitting **(2)** and the water service panel cold water input coupling **(3)**.
3. Connect a 5-foot long 1½-inch freshwater supply hose between the 30 gpm water pump 1½-inch discharge fitting **(4)** and the M-80 water heater input manifold **(5)**.
4. Connect a 10-foot long 1-inch freshwater hose between the M-80 water heater output manifold **(6)** and the water service panel hot water input coupling **(7)**.
5. Connect the 20-foot long 2-inch graywater drain hose to the water service panel drain coupling **(8)**, and the intended discharge receptacle. This may be an FM 21-10 field expedient wastewater disposal or graywater storage tank, a designated wastewater fabric tank, or an approved municipal sewage hookup.





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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
SHOWER, ENCLOSED UNIT, SYSTEM  
OPERATION UNDER USUAL CONDITIONS – SETUP**

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**SCOPE**

**This work package covers the setup of the Shower, Enclosed Unit, System (Force Provider) only. Refer to work package 0005 00 to setup the Containerized Shower (stand-alone).**

As part of the Force Provider system, the Shower, Enclosed Unit, System is shipped with all necessary water hoses and power cables, four disassembled shave stands, and the 32-foot TEMPER with modified end wall packed in TRICON containers 4B and 4E. Components for the M-80 water heater are included in the Force Provider system and packed in TRICON container 4E. If used, the Shower, Enclosed Unit, System air conditioners are packed in TRICON container 4C.

**Unpack Shower, Enclosed Unit, System and Position Components (Force Provider Configuration)**

At least six soldiers are required to unpack the Shower, Enclosed Unit, System in preparation for use. Refer to this work package for information regarding the inventory of shower items.



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**WARNING**

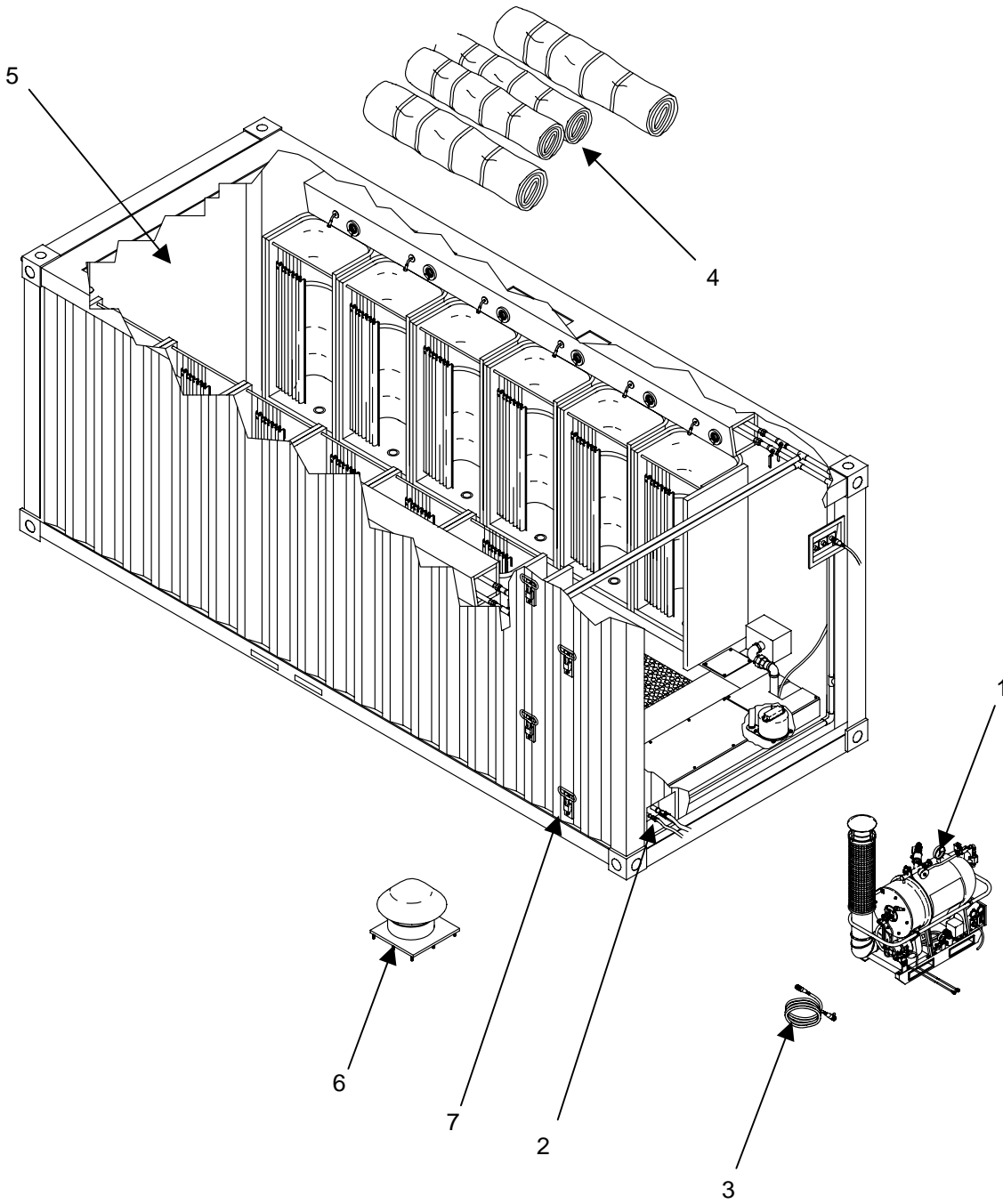
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The equipment to be positioned is heavy (480 lbs.), awkward, and difficult to maneuver. To prevent injury, seven or eight persons are required to remove and carry it.

**NOTE**

Unpack and position only the components listed below. Other components will be unpacked after the TEMPER has been put up.

1. Locate and unpack the M-80 water heater **(1)** and its components from Force Provider TRICON container 4E (refer to TM 10-5419-206-13).
2. Carry the M-80 water heater downward from prevailing winds to a position about six to ten feet from the water service panel **(2)** of the container.
3. Remove all hoses and power cables **(3)** from TRICON container 4B and place next to M-80.
4. Remove TEMPER components **(4)** from TRICON container 4B. Place components about ten feet off to the side of the personnel door entrance **(5)**.
5. Remove the exhaust fan **(6)** from the shower container and place it approximately five feet from the container steps **(7)**.



**Unpack and Position the Shower, Enclosed Unit, System Components**

**Inventory the Shower, Enclosed Unit, System (Force Provider Configuration)**

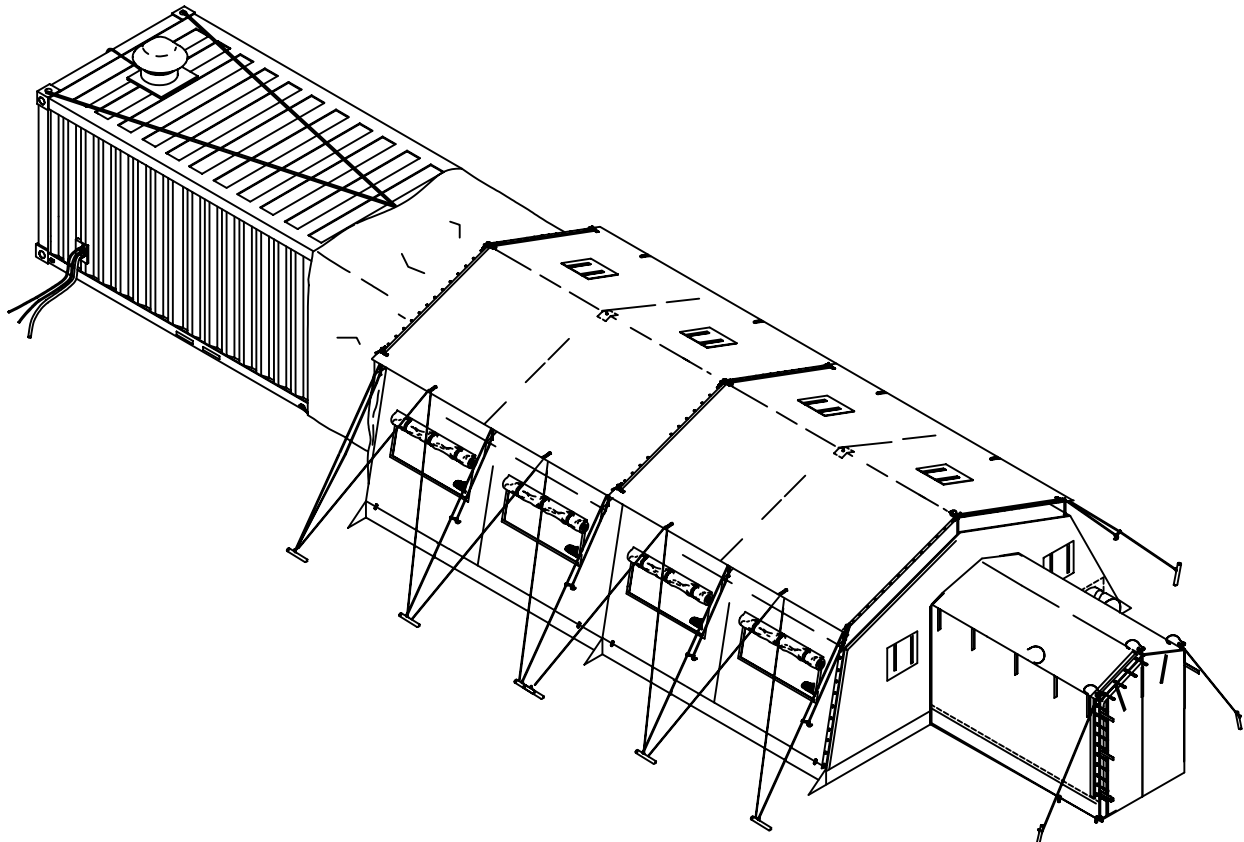
Inventory equipment and ensure the following items are available, clean, and ready for service.

**Table 1. Shower, Enclosed Unit, System Inventory.**

Description of Item	Quantity	Location
Air Conditioner Assembly, 54K BTU, 208V AC 3 phase	1 each	TRICON 4C
Apron, Toxicological Agents Protective	1 each	
Cord, Electrical, 3 wire, 110 V, 20ft long	2 each	Container
Exhaust Fan	1 each	Container
Freshwater Hose ¾in, 15ft long	1 each	Container
Freshwater Hose 1½in, 10ft long	1 each	Container
Freshwater Hose 1in, 10ft long	1 each	Container
Glove Set, Chemical Protective	1 each	
Goggles, Safety	1 each	
Graywater Hose 2in, 25ft long	1 each	Container
Hose, Drain, Shave Stand 1½in, 2ft 3in long	2 each	TRICON 4E
Hose, Drain, Shave Stand 1½in, 6ft 3in long	2 each	TRICON 4E
Hose, Supply, Shave Stand ¾in, 2ft 3in long	4 each	TRICON 4E
Hose, Supply, Shave Stand ¾in, 6ft 3in long	4 each	TRICON 4E
M-80 Water Heater	1 each	TRICON 4E
Power TEE, 20A 120/208 V 3 phase wye	1 each	Container
Shave stands	4 each	TRICON 4E
Technical Manual TM 10-4510-208-13&P	1 each	Container
TEE, 1½inM x 1½inF x ¾in M QD	1 each	Container
TEMPER 32ft w/modified end wall, vestibule, and lights	1 each	TRICON 4B

**PREPARE TEMPER WITH MODIFIED END SECTION FOR USE**

The following procedures provide detailed instructions for erecting a TEMPER window/door section, end section, and modified end section for use with the Shower, Enclosed Unit, System. For repair procedures or more detailed information on the TEMPER, refer to TM 10-8340-224-13. The Shower, Enclosed Unit, System employs a 32-foot TEMPER assembly (four 8-foot sections) with a modified endwall (bootwall) attached to the shower container and a single vestibule attached to the standard endwall.



**32-Foot TEMPER Assembly for Shower, Enclosed Unit, System**

1. Close the personnel double doors on the container.
2. Inventory the TEMPER components. Use the following table to inventory the TEMPER components for the shower. Use WP 0065 00 to identify individual pieces of the TEMPER section.

**Table 2. TEMPER Components Inventory.**

<b>ITEM</b>	<b>QUANTITY</b>
Arch Assembly	5 each
Eave Extender	10 each
Header Assembly	5 each
Light Set, General Illumination	2 each
Line, Tent	16 each
Purlin Assembly	20 each
Ridge Extender	5 each
Slip, Tent Line	16 each
Strap, Light Support Assembly, Type I	4 each
TEMPER, End Section	1 each
TEMPER, End Section, Modified	1 each
TEMPER, Window Section	4 each
Tent Pin, Steel, 12-inch	52 each
Tent Pin, Wood, 24-inch	18 each



### WARNING

Frame assembly hinges can pinch or crush hands and fingers. Keep hands and fingers away from frame assembly ridges and eaves.

### CAUTION

Do not twist or turn frame components when handling. Damage to equipment may result.

### NOTE

The frame assemblies are erected in three stages: kneeling, partially-erect, and erect. These stages permit the attachment of components without the aid of ladders. Both rigid and sectionalized arch assemblies are in use in the field. After initial assembly, the sectionalized arch assembly does not vary in function from the rigid arch assembly. Erect tent from top to bottom, end section towards opposite end section.

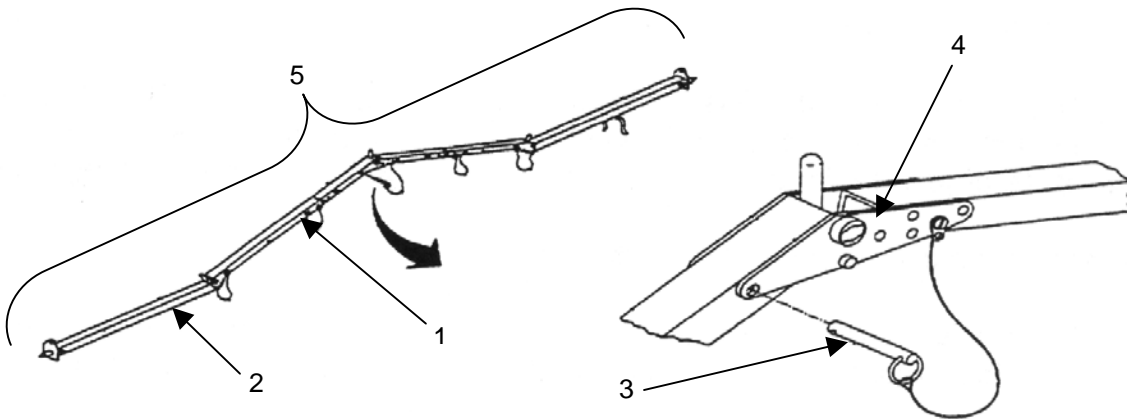
#### Arch Assembly

1. Remove roof arch assembly **(1)** and side arch assemblies **(2)** from frame sections cover assembly bundle. Ensure all quick release pins **(3)** are disengaged.

### CAUTION

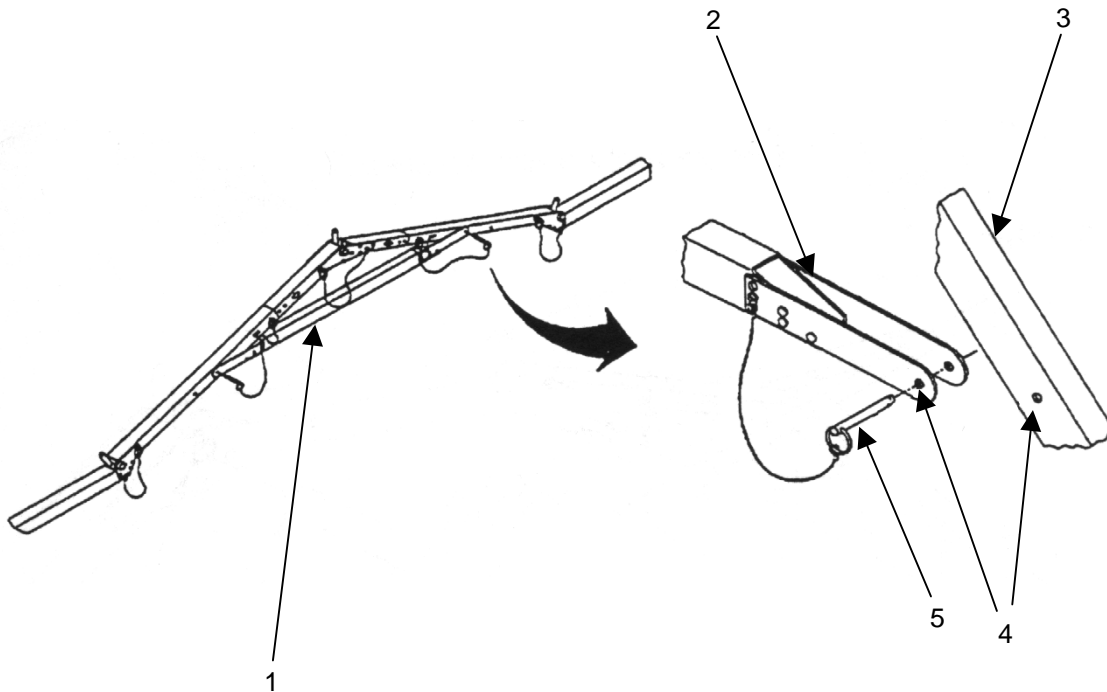
Insert quick release pins towards inside of tent end assemblies. Tent fabric may tear if inserted towards outside.

2. Align holes in roof arch assembly **(1)** with holes in ridge gusset plate **(4)**. Insert quick release pin **(3)**.
3. Unfold side arch assembly **(2)** away from roof arch assembly **(1)**.
4. Connect roof arch assembly **(1)** and side arch assemblies **(2)** to form arch assembly **(5)**. Insert quick release pins. Lay arch assembly flat on the ground, and repeat steps 1 through 5 for remaining arch assemblies.



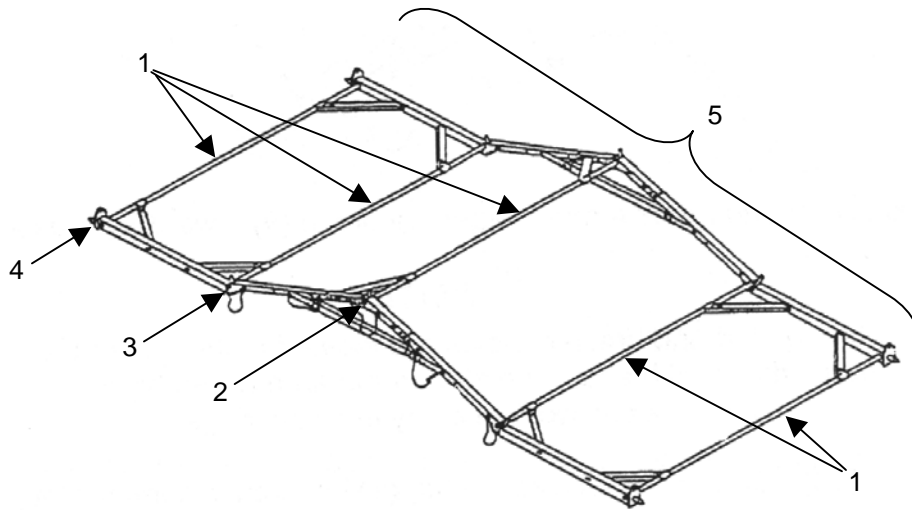
## Header Assembly

1. Identify the header assembly **(1)**. Slide the header assembly end plates **(2)** over arch assembly **(3)**.
2. Align arch assembly **(3)** and header assembly end plate holes **(4)** and insert quick release pin **(5)**. Lay assembly on the ground, and repeat steps 1 and 2 for each arch assembly. The Shower, Enclosed Unit, System will require five arch and header assemblies to complete the 32-foot TEMPER assembly.

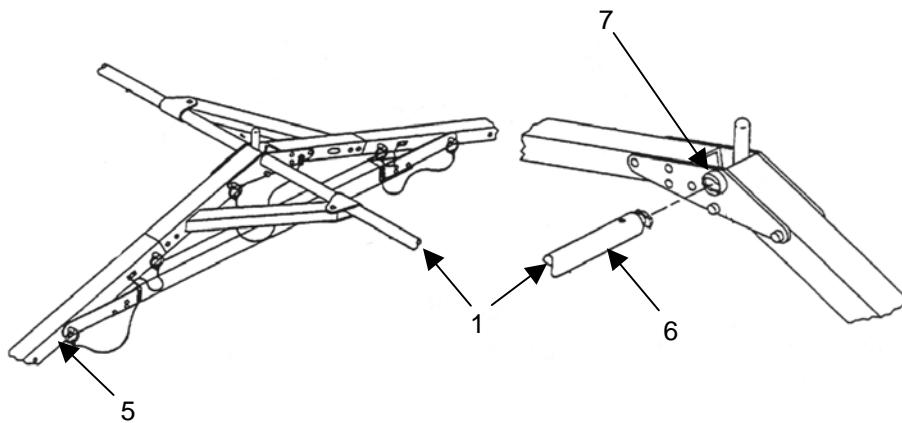


**Purlin Assembly**

1. Identify five purlins **(1)** for installation at ridge **(2)**, eaves **(3)**, and bases **(4)**. Starting at the end arch, hold two arch assemblies **(5)** upright and parallel, eight feet apart, in kneeling position.

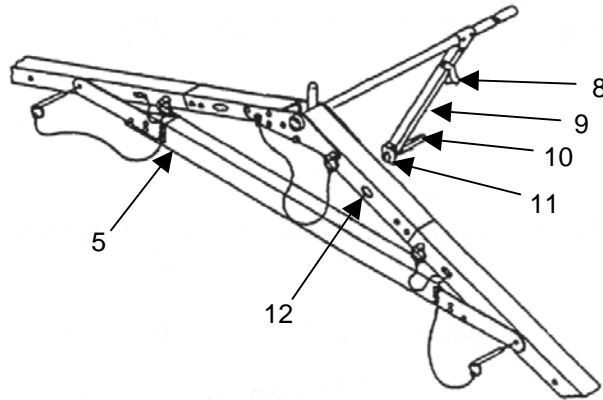


2. Start at the ridge **(2)**. Identify end fitting **(6)** on each end of purlin **(1)**. Fit end fitting **(6)** in each arch assembly boss **(7)** simultaneously. Rotate purlin 90° so that end fittings lock into boss at each arch assembly.





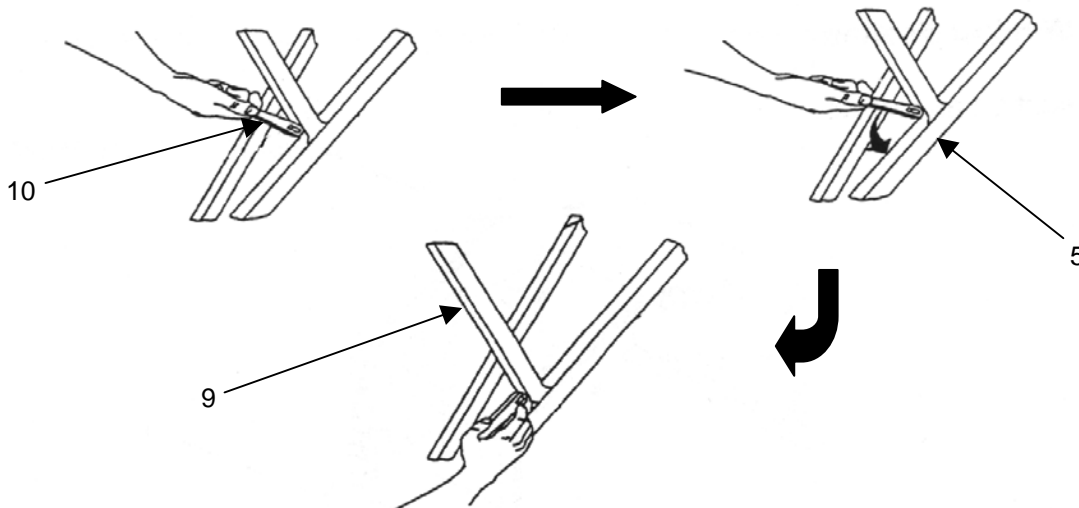
3. Unfasten retaining strap (8) and rotate a purlin diagonal brace (9) toward arch assembly (5).
4. Holding brace shackle (10), align and place brace stud (11) in arch assembly slot (12) located two feet from ridge. Rotate brace shackle (10) 90° to lock brace stud (11) in place.



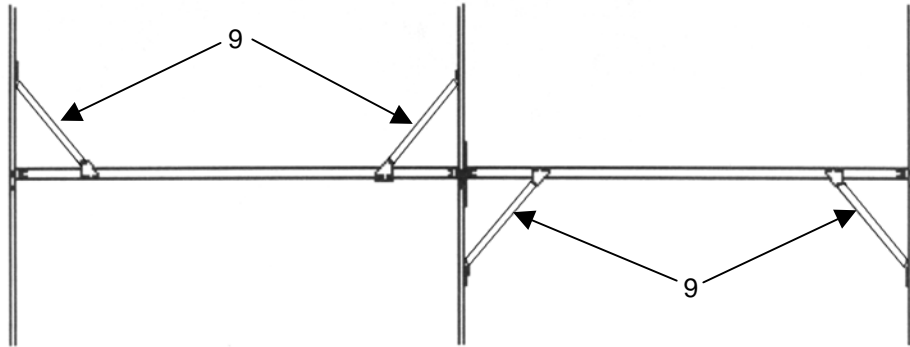
**WARNING**

Do not lock brace shackle toward purlin diagonal brace. Arch assembly may collapse causing injury to personnel or damage to equipment if improperly locked.

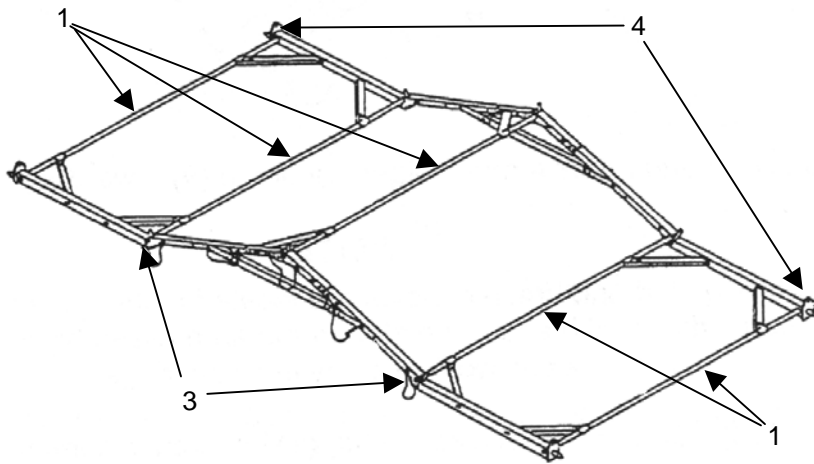
5. Lock purlin diagonal brace (9) by pressing brace shackle (10) down towards arch assembly (5) until it is secure.



6. Install remaining purlin diagonal braces (9) repeating steps 3 through 5 above. Stagger the placement of the diagonal braces as shown below.

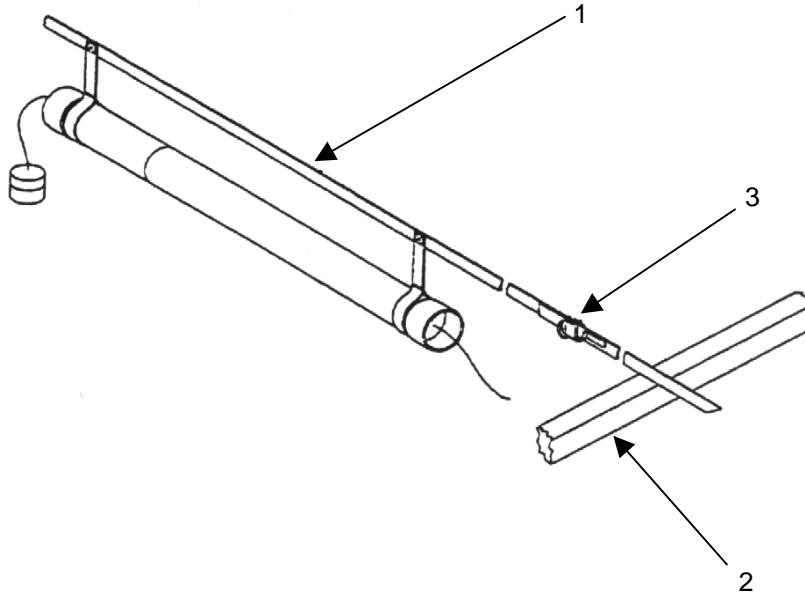


7. Install purlin (1) at each eave (3) repeating steps above. Begin at step "2. Start at the ridge..." Then, install purlin (1) at each base (4) repeating steps above. Begin at step "2. Start at the ridge..."
8. Add eight foot TEMPER frame sections as required by installing additional purlin assemblies, repeating steps 1 through 7. When completed, the frame section is now in a kneeling position.



### Install the Light Supports

1. Identify light support strap assembly **(1)** in light set case. Wrap each running end of light support strap assembly once around header **(2)** at header/arch joint so the double D-ring **(3)** faces the tent roof.
2. Secure end of light support strap assembly **(1)** through double D-ring **(3)** assembly on standing end of strap. Tighten webbing until taut.

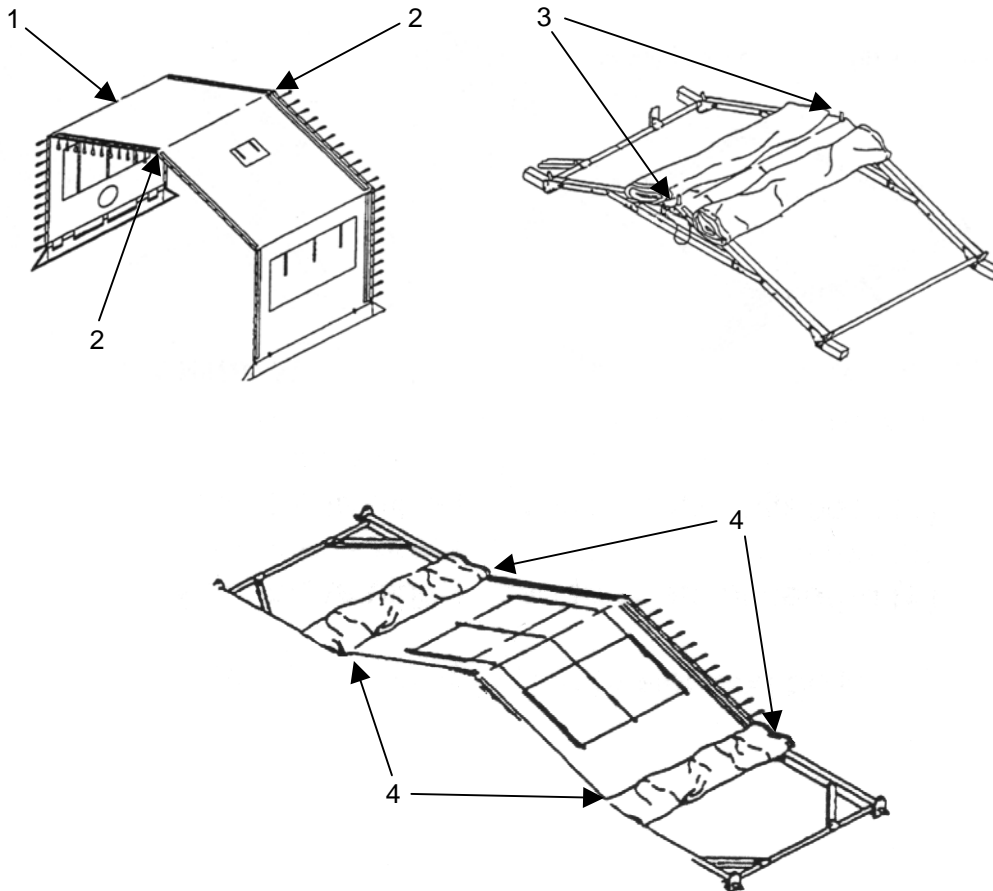


## Placement of Window / Door Section

### NOTE

Window and door sections are both used for the shower TEMPERs. With the exception of exterior fittings (windows vs. doors) they are identical. The door section will be placed furthest from the container. Four soldiers are required to carry the window or door section to the frame section ridge.

1. Identify the window and door sections **(1)**. Place window / door section **(1)** next to extendable frame.
2. Identify large, spindle grommets **(2)** at the center of each side of the window / door section **(1)**.
3. Roll window / door section from both sides up to the ridge.
4. Place the large spindle grommets over ridge spindles **(3)**.
5. Unroll tent fabric until fabric reaches eave spindles **(4)**. Place grommets over each of the four eave spindles. Repeat procedure for remaining window / door sections.



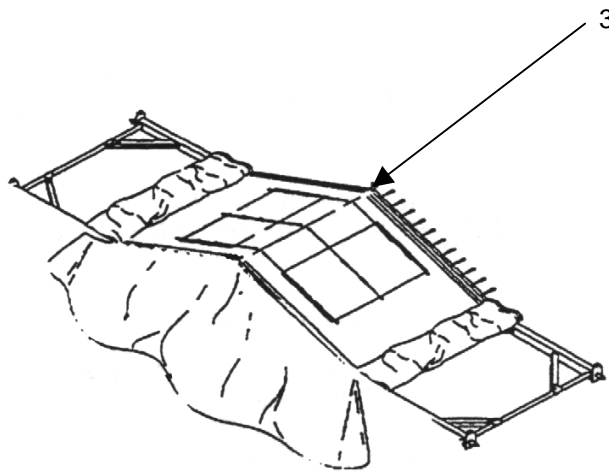
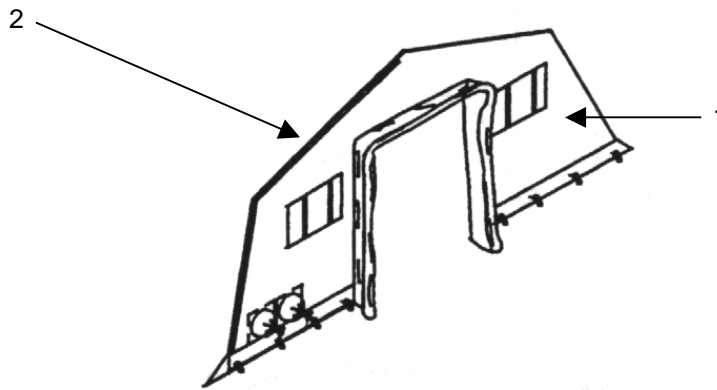
**Placement of Modified End Section (ISO Bootwall)**

1. Identify modified end section (bootwall) **(1)**. Modified end section should be stenciled "ISO Bootwall".

**NOTE**

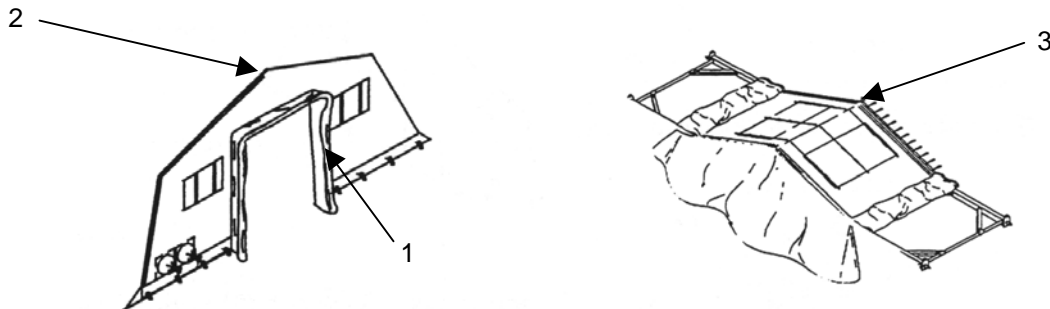
Place the modified end section on the side of the frame assembly facing the container; it connects to the container at a later stage.

2. Identify large spindle grommet **(2)** at peak of modified end section (bootwall). Place large spindle grommet located at peak of modified end section over ridge spindle **(3)** facing the container.



### Placement of End Section

1. Identify end section **(1)**. Regular end section has zip doors **(2)** rather than the bootwall attachment on the modified end section.
2. Place large spindle grommet located at peak of end section over ridge spindle **(3)** opposite container.

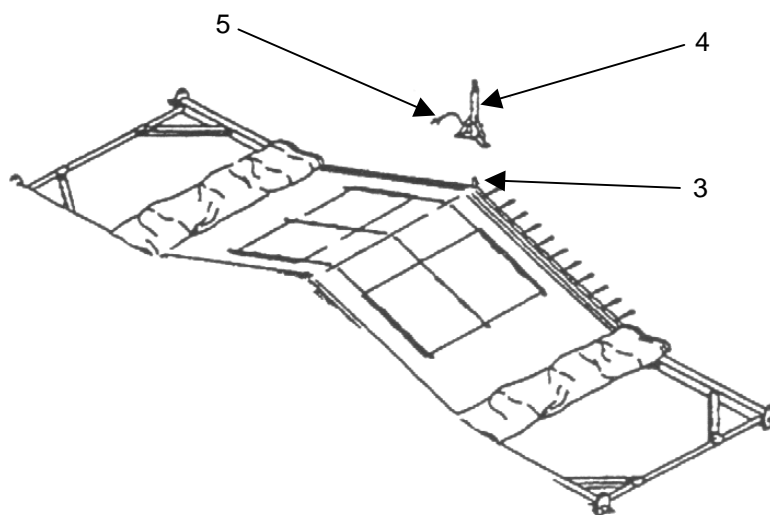


3. Identify the ridge extender **(4)**. Place the ridge extender over the ridge spindle **(3)** opposite the container.
4. Align holes in ridge spindle **(3)** and ridge extender **(4)**.

### NOTE

Ensure that the weather flap fabric is slid under the ridge extender before inserting the hitch pin.

5. Install the attached hitch pin **(5)** through holes in ridge extender **(4)** and spindle **(3)**, ensuring it secures both components.



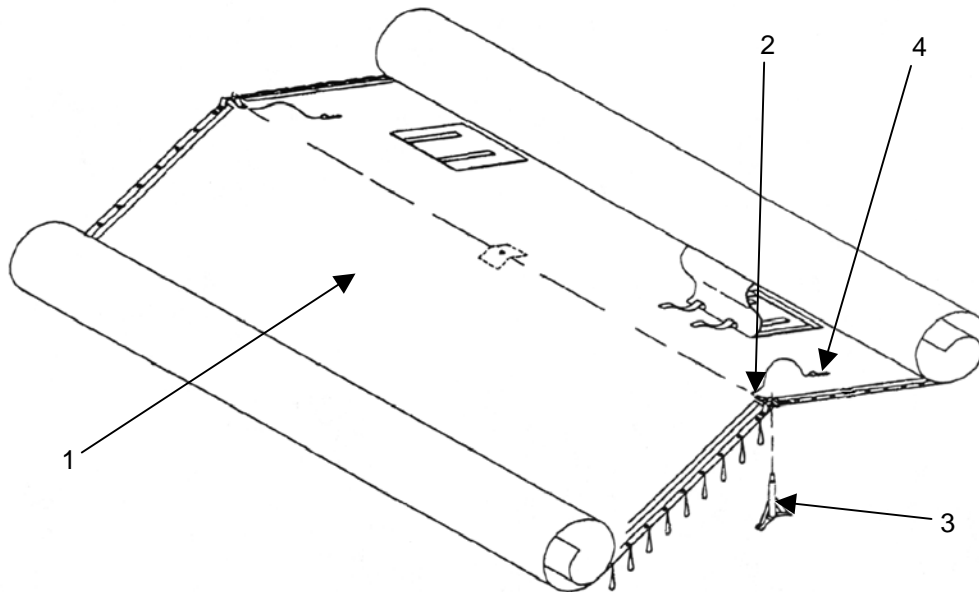
## Placement of Tent Flies

1. Identify tent flies **(1)** and lay out beside window / door sections. Two 16-foot tent flies are used on the Shower, Enclosed Unit, System TEMPER.

### NOTE

Be sure that the becket laces on one tent fly line up with the becket grommets of the adjoining tent fly.

2. Identify the large, ridge extender spindle grommet **(2)**.
3. Roll up both sides of fly **(1)** to large, ridge extender spindle grommet.
4. With a minimum of one individual placed at each large ridge extender spindle grommet **(2)**, lift and move fly **(1)** to frame section ridge purlin.
5. Place the large, ridge extender spindle grommets **(2)** on the ridge extender spindles **(3)**.
6. Place the fly hitch clip pins **(4)** through the holes in the ridge extender spindles **(3)** that protrude through the large ridge extender spindle grommets **(2)**.



**Becket Lacing Window and End Sections**

At this point, lacing together of window/door sections, end sections, and tent fly may be accomplished simultaneously. Begin all lacing from the ridge line and work towards the eave. Becket lacing procedure is the same throughout the erection process and is accomplished as follows:

**CAUTION**

Do not step on tent components. Material may be torn and dirt ground into tent fabric.

**NOTE**

For easier lacing, place eave grommets with becket laces over eave spindles first, to provide fabric tension, then overlap adjoining window section and end section eave grommet without laces.

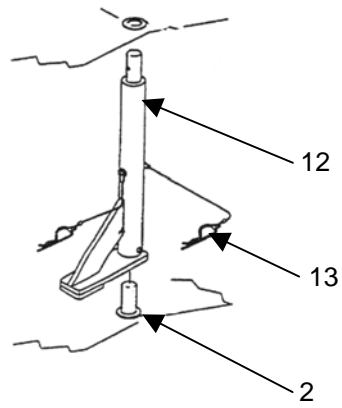
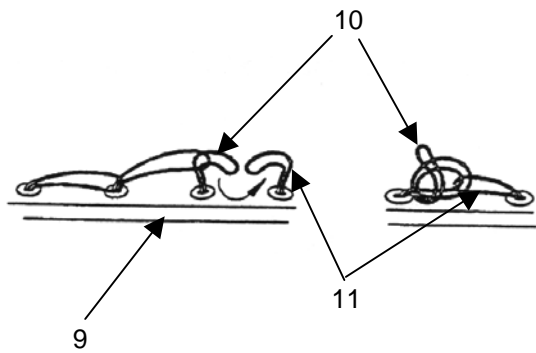
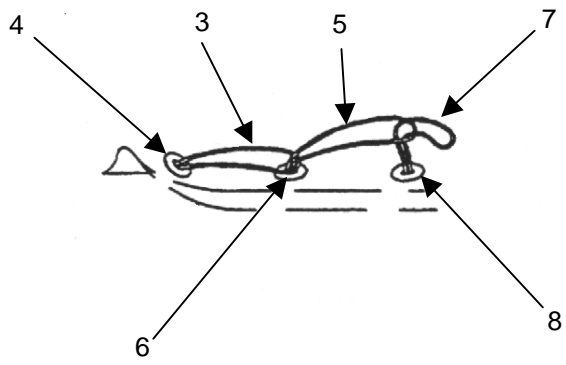
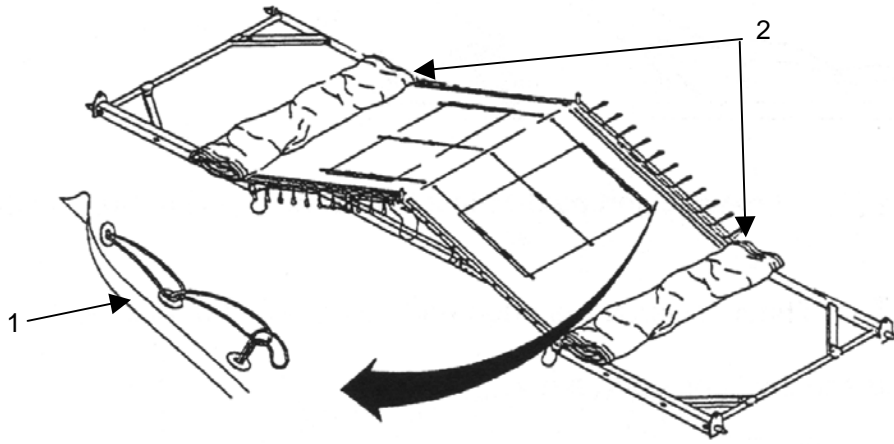
1. Place becket side **(1)** eave grommet over eave spindles **(2)**.
2. Identify first becket lace **(3)** and becket grommet **(4)** near the ridge.
3. Insert the first becket lace **(3)** through first becket grommet **(4)** and second becket lace **(5)** through second becket grommet **(6)**.
4. Insert second becket lace **(5)** through the loop of first becket lace **(3)**.
5. Pull second becket lace **(5)** tight away from ridge.
6. Insert third becket lace **(7)** through grommet **(8)** and through loop of second becket lace **(5)**.
7. Pull third becket lace **(7)** tight away from the ridge.
8. Continue lacing and close hook and pile weather flap **(9)** until reaching the last becket lace **(10)**.

**NOTE**

Ensure weather flap fabric is slid under the ridge extender brace.

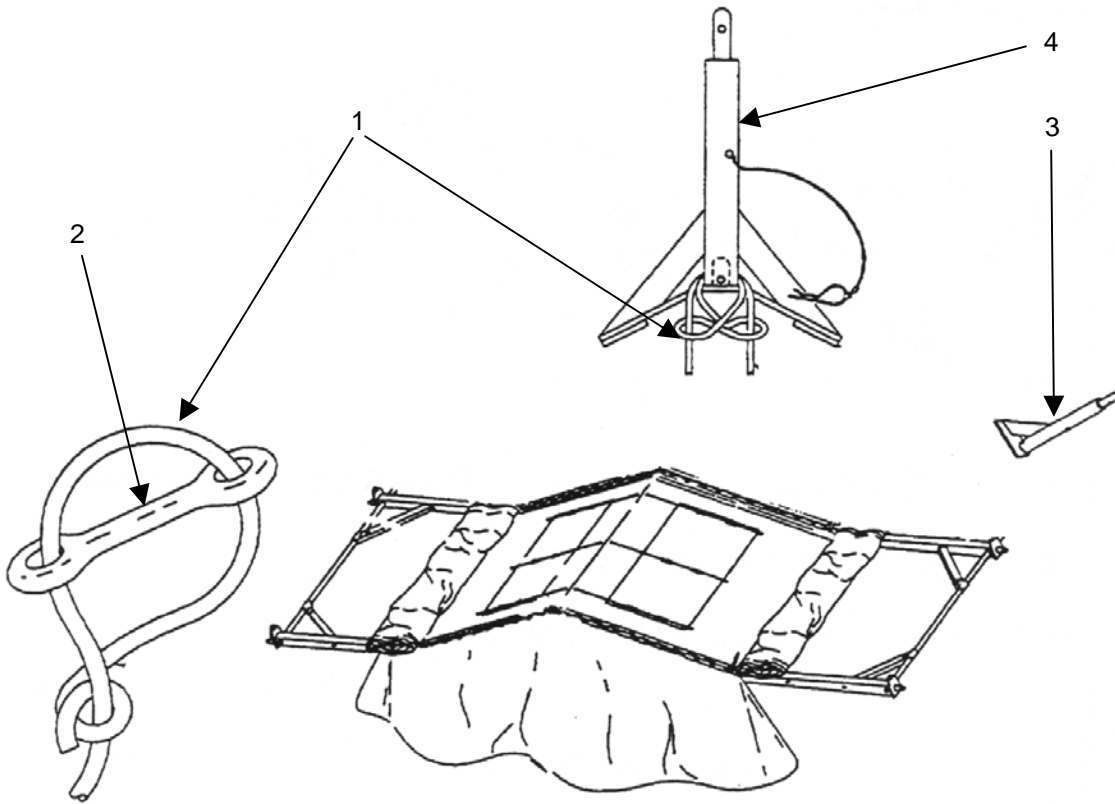
9. Place remaining window and end section grommets over eave spindles.
10. Upon reaching last becket lace **(10)** at eave, insert next-to-last becket face **(11)** through loop of last becket lace.
11. Pull the next-to-last becket lace **(11)** back towards the ridge and tie off with half-hitch knot.
12. Complete lacing all window and end sections up to eave.
13. Identify the eave extenders **(12)**. Place eave extenders on eave spindle **(2)** with brace towards ridge.
14. Align holes on spindle **(2)** and eave extender **(12)** and insert the hitch clip pin **(13)** ensuring it secures both components. Do not leave any becket below the eave at this time.





**Install Guy Line**

1. Identify one 19-foot guy line **(1)** and one tent slip **(2)** for placement at each of the four eave extender **(3)** bases. Identify two 19-foot guy lines **(1)** and tent slips **(2)** for placement at the end ridge extender **(4)** base.
2. Thread the guy line **(1)** through one side of the tent slip **(2)** and then through the brace and around the pole of the eave **(3)** extender. Thread two guy lines through the ridge extender **(4)**.
3. Bring guy line **(1)** through other side of tent slip **(2)** and tie an overhand knot at end of guy line. Repeat steps 1 through 4 above for all extenders.



## Raising the Frame to Partially-Erect Position

### CAUTION

Avoid folding wall fabric into joints. Material may rip or tear if caught in joint.

1. Fold wall fabric **(1)** towards ridge **(2)** to expose eave gussets **(3)**. Place folded fabric on ridge fabric **(4)**.
2. Identify quick release pin **(5)** and ensure it is hanging free. Identify the locking hole in the side arch assembly **(6)** and ensure it is free of debris.



### WARNING

Two soldiers should be placed at each arch leg to raise frame. Lift tent from correct squatting position, using your legs to avoid back injury.

### CAUTION

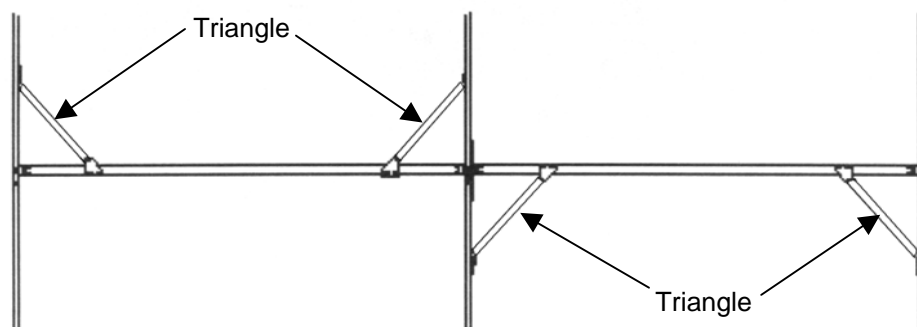
Tent frame must be raised uniformly to avoid twisting or turning. Damage to frame can result.

3. Step in next to the eave gusset **(3)**.

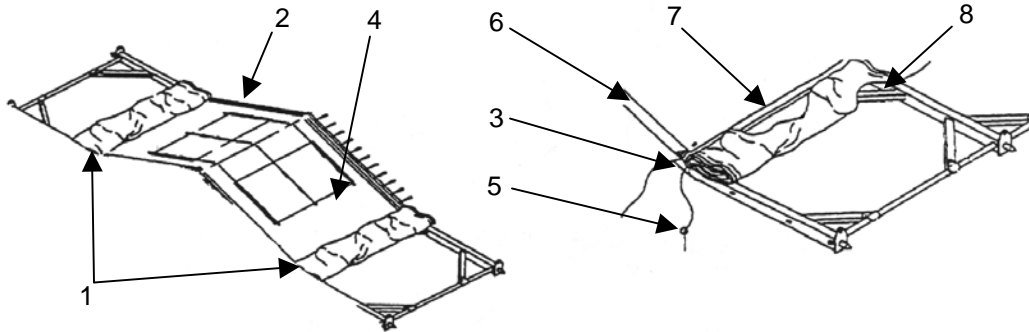


### WARNING

Frame assembly hinges can pinch, crush, or amputate hands and fingers. Keep hands and fingers away from frame assembly ridges and eaves. An expedient way to keep clear of potential danger areas is to keep your hands "outside the triangle" at all times.



- Place one hand on the side arch assembly (6) and one hand on the eave purlin (7) outside the diagonal brace (8).

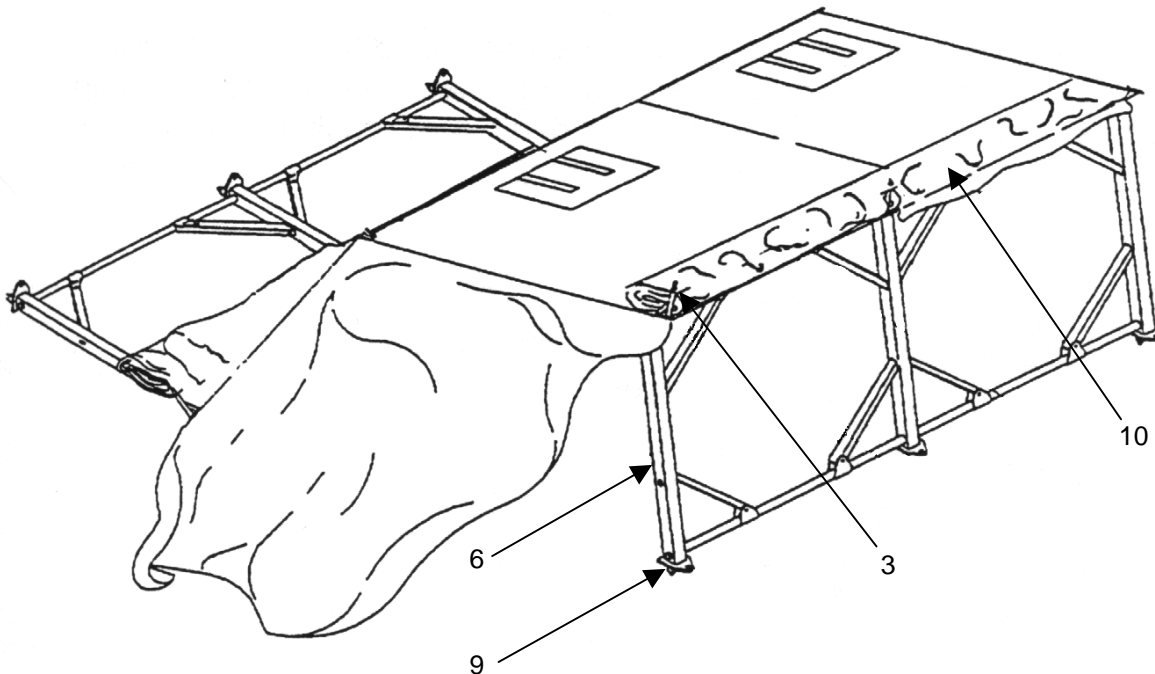


- Get in a stable squatting position. Lift frame straight up to shoulder height; drag side arch assembly (6) inward. Place weight of the frame on side arch assembly foot (9).

**CAUTION**

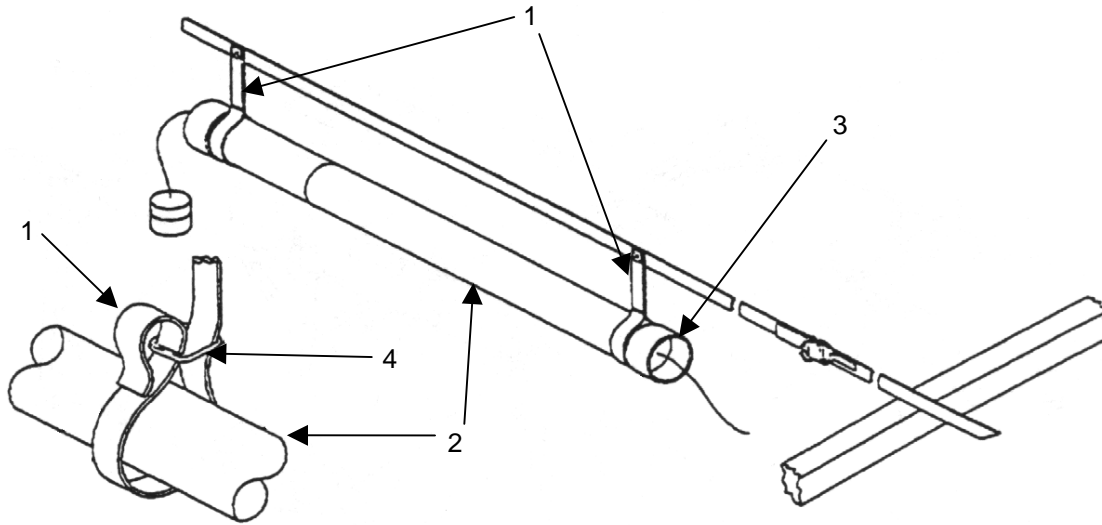
Insert quick release pins towards inside of tent on end assemblies. Tent fabric may tear if inserted towards outside.

- Align holes of eave gusset (3) and side arch assembly (6) and install quick release pin.
- Identify purlin flap (10) on interior of window/roof section. Secure purlin flap (10) to frame at eave purlin using hook and pile fasteners.



**Install Lights**

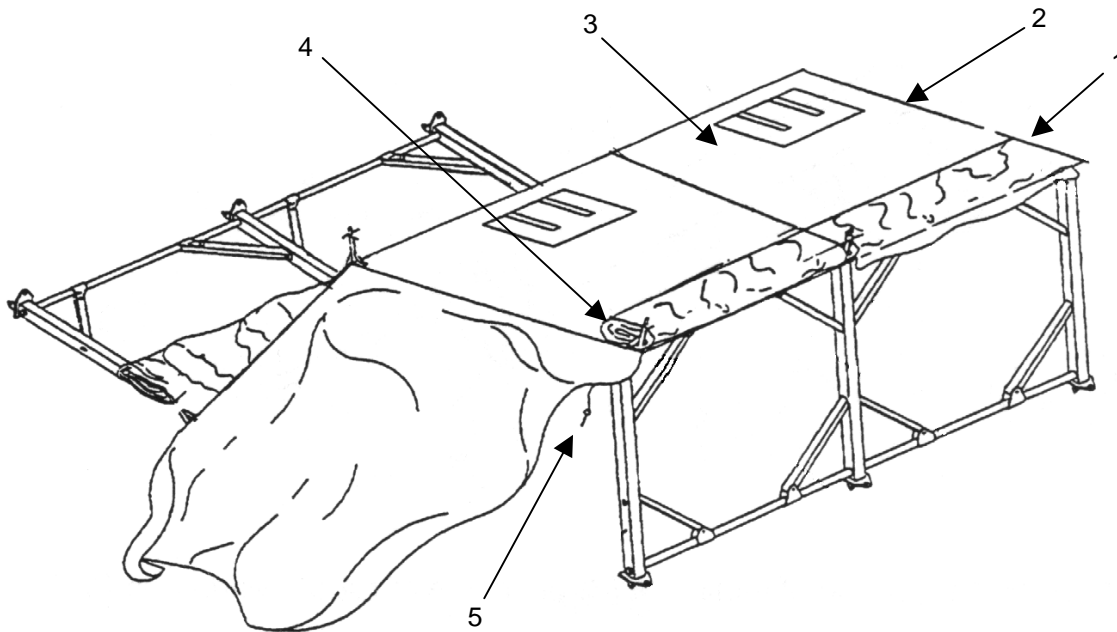
1. Wrap light hanger strap (1) around each end of luminaire (2) on inside of rubber end caps (3).
2. Pull strap (1) up through the D-ring (4) and press down to engage hook and pile fastener.
3. Mate plug properly to next luminaire (2), ensuring reflecting surface faces up and lamp faces down.
4. Repeat for second luminaire on other side of TEMPER section. Plug the luminaires together on the end opposite the container.



**Fully Erecting the Frame****CAUTION**

Avoid folding wall fabric into joints. Material may rip or tear.

1. Fold wall fabric **(1)** towards ridge fabric **(2)** and lay on roof **(3)** to expose eave gussets **(4)**.
2. Identify quick release pin **(5)** and ensure it is hanging free.
3. Identify the locking hole in the side arch assembly **(6)** and ensure it is free of debris.





### WARNING

Two soldiers should be placed at each arch to raise frame. Lift tent from correct squatting position, using your legs to avoid back injury.

### CAUTION

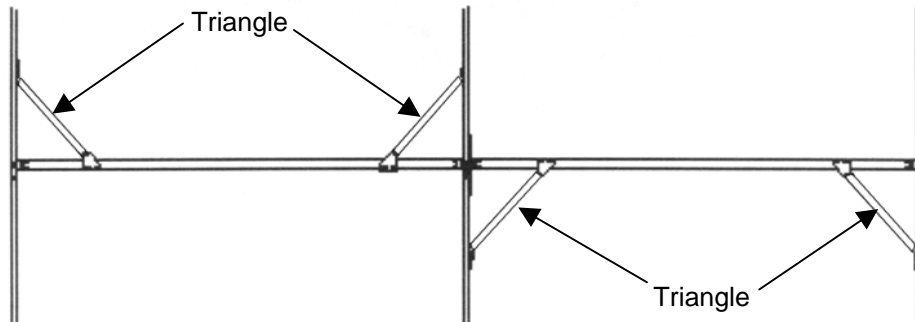
Tent frame must be raised uniformly to avoid twisting or turning. Damage to frame can result if lifted unevenly.

4. Step in next to the eave gusset **(4)**.



### WARNING

Frame assembly hinges can pinch, crush, or amputate hands and fingers. Keep hands and fingers away from frame assembly ridges and eaves. An expedient way to keep clear of potential danger areas is to keep your hands "outside the triangle" at all times.



5. Place one hand on the side arch assembly **(6)** and one hand on the eave purlin **(7)** outside the diagonal brace **(8)**.
6. Get in a stable squatting position and lift frame straight up to shoulder height, dragging side arch assembly **(6)** inward.
7. Place weight of the frame on side arch assembly foot **(9)**.

### CAUTION

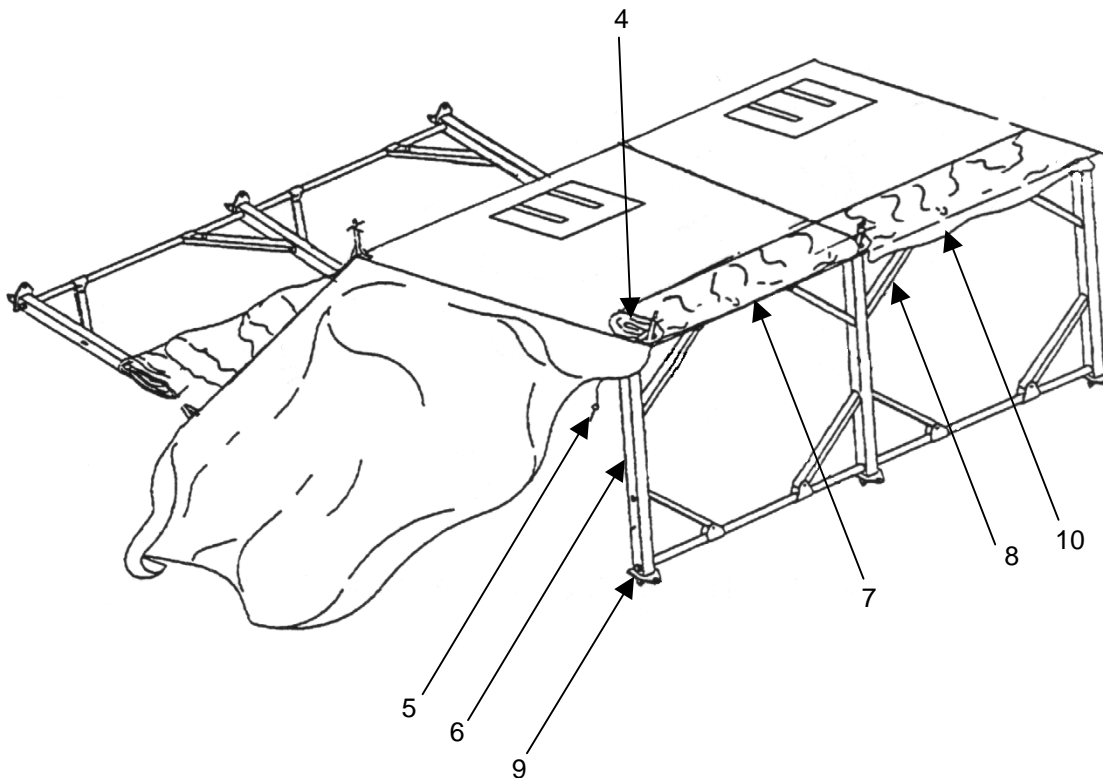
Insert quick release pins towards inside of tent on end assemblies. Tent fabric may tear if inserted towards outside.

- Align holes of eave gusset (4) and side arch assembly (6) and install quick release pin (5). Identify purlin flap (10) on interior of window/roof section.
- Secure purlin flap (10) to frame at eave purlin (7) using hook and pile fasteners.

### CAUTION

Frame bases set more than 20-feet 4-inches apart may cause end section fasteners to tear apart.

- Set frame bases 20-feet 4-inches apart.





## Move the TEMPER Section Into Position



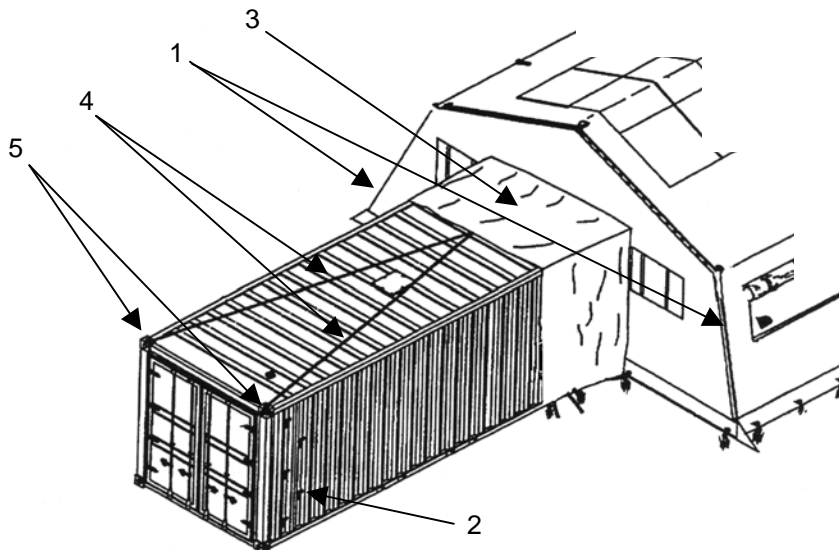
### WARNING

The assembled TEMPER is heavy. At least eighteen persons are required to move the 32-foot TEMPER into position. Personnel should be placed at each arch leg and at each base purlin. Additional personnel, if available, should be stationed at base purlins.

### CAUTION

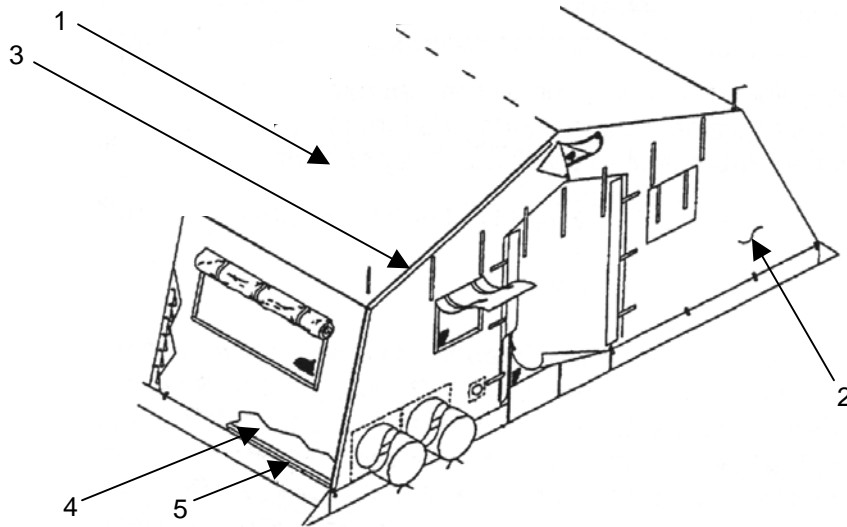
The TEMPER must be lifted evenly in order to prevent twisting the frame. Failure to do so may result in frame and fabric damage to the entire TEMPER assembly.

1. Using two soldiers at each arch assembly **(1)** and one at each base purlin, pick up and move the TEMPER section against the container, centering the ridge on the TEMPER section with the center of the closed personnel doors.
2. Have two soldiers access the top of the container using the hinged steps **(2)**. Pull the boot **(3)** over the container end and lay loosely on the container roof. Locate two bootwall lines **(4)** attached to the bootwall fabric and pull them towards the opposite corners of the container as shown. Fasten the lines to the ISO fittings **(5)**.

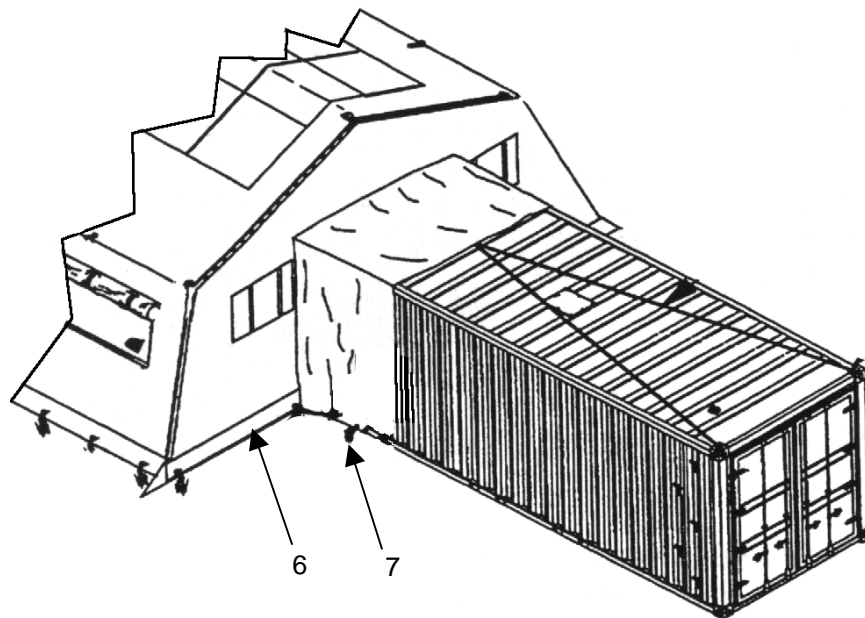


### Complete Becket Lacing and Bootwall Attachment

1. Have two soldiers on the ground complete lacing the window section (1) and the end sections (2) together. Secure weather seal flap (3).
2. Pull sod cloth (4) under base purlins (5) and end wall section (2).



3. Secure the lower end (6) of the bootwall with to the ground with 12-inch steel pins (7).



## Stakes and Guy Lines



### WARNING

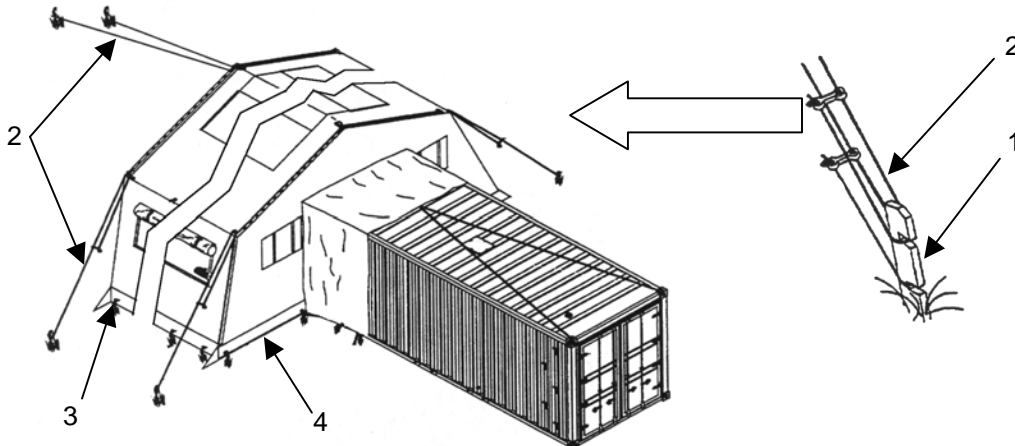
Stakes and guy lines must be used to prevent excessive movement of the tent section in high winds. Failure to stake and tie down tent section may result in personal injury or damage to equipment.

1. Place a 24-inch wooden stake **(1)** approximately ten feet from the sides at the corners of the tent section at each eave extender and slant stake(s) towards tent.
2. Place two stakes **(1)** approximately ten feet from the rear of the tent section at the ridge extender with stakes slanted towards tent.
3. Connect loop of eave extender guy line **(2)** and ridge extender guy lines **(2)** to bottom notch of wooden stake **(1)**.
4. Stake tent frame foot to ground using 12-inch steel pins **(3)**.
5. Stake foot loops **(4)** to ground and tighten guy lines **(2)**.

### CAUTION

Ensure that personnel door does not hit or damage luminaires.

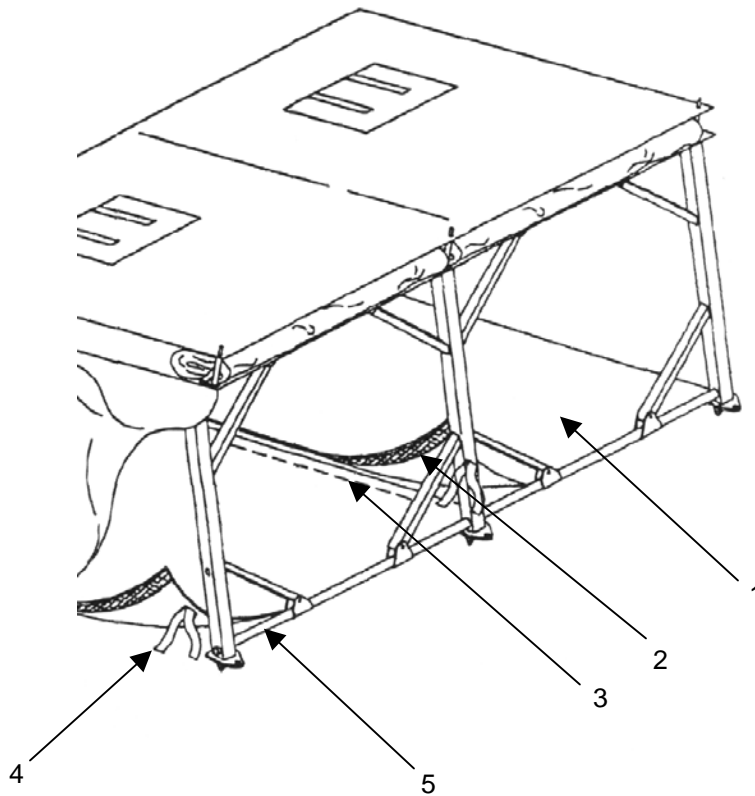
6. Open the container personnel door.



**Install Single Ply Floor****CAUTION**

Clear and level ground before installing floor. Sharp objects or depressions can damage tent floor.

1. Identify single ply floor sections **(1)**. The Shower, Enclosed Unit, System utilizes four 8-foot floor sections.
2. Unroll floor sections and install black side down. Place all floor sections alternating hook and pile fasteners **(2,3)**.
3. Secure tie tapes **(4)** on narrow edge of floor to base purlins **(5)** on raised side of tent.



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**Install the Vestibule**

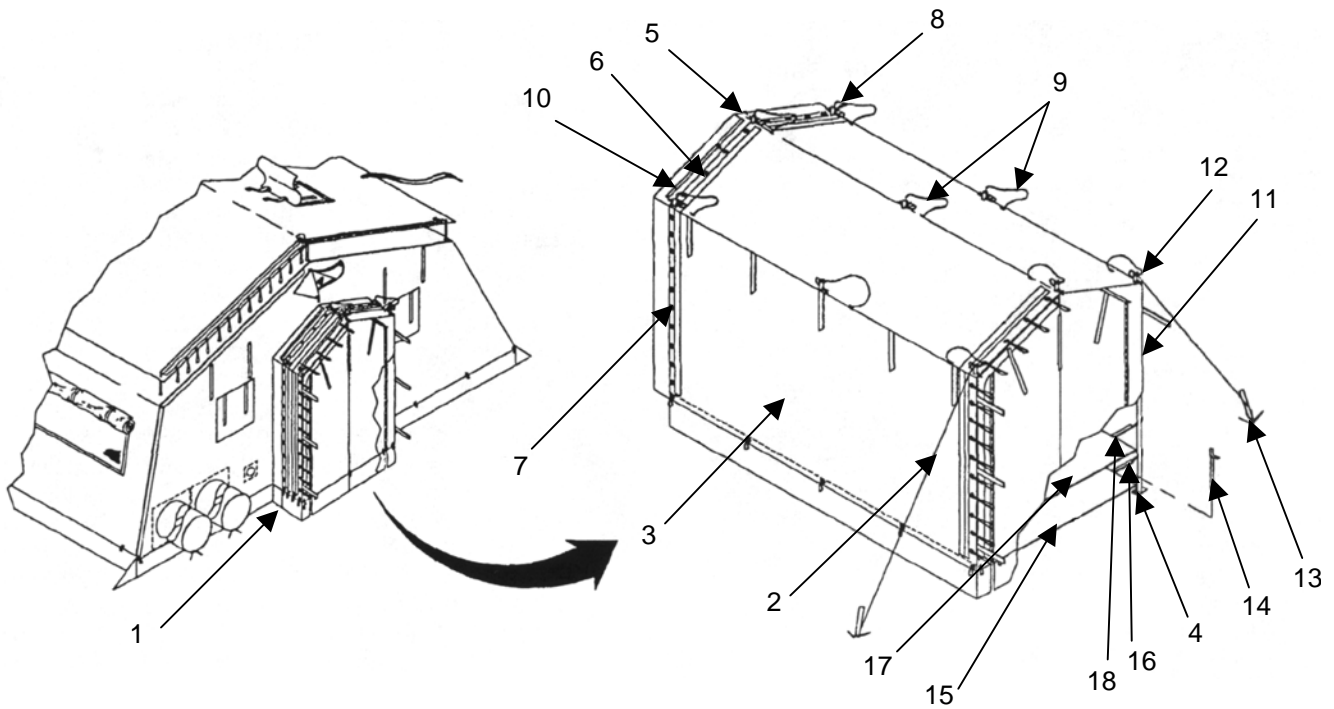
1. Unroll vestibule adapter **(1)** tent door.
2. Identify and lay out guy lines **(2)**.
3. Identify and lay out vestibule fabric **(3)**.
4. Identify, lay out and assemble vestibule frame sections **(4)** inside of TEMPER tent.
5. Identify ridge spindle grommets **(5)** at one end of vestibule **(3)** and vestibule adapter **(1)**.
6. Align vestibule spindle grommets **(6)** with vestibule adapter spindle grommet **(7)**.
7. Insert vestibule frame spindles **(8)** in vestibule adapter and vestibule spindle grommets **(6,7)**.
8. Secure ridge grommets **(5)** with hitch clip pins **(9)**.
9. Becket lace the vestibule fabric **(3)** to the adapter **(1)** starting at the ridge and working towards each eave.
10. Tie off at eave with half hitch knot.
11. Cover with weather seal flaps **(10)**.
12. Install remaining hitch clip pins **(9)**.
13. Complete becket lacing.
14. Carefully bring one completed vestibule frame **(4)** underneath vestibule **(1)**.
15. Place completed vestibule frame spindles **(8)** through three grommets **(6)** at center of vestibule.
16. Place hitch clip pins **(9)** through spindles.

**CAUTION**

Orient the hitch clip pins towards inside of vestibule at vestibule door frame so that the rounded end of the pin is against the fabric of the vestibule. Vestibule door fabric may tear if the hitch clip pins are oriented towards the outside.

17. Carefully bring one completed vestibule frame **(4)** underneath vestibule **(1)**.
18. Place completed vestibule frame spindles **(8)** through three grommets **(6)** at end of vestibule.
19. Install vestibule door **(11)** and secure ridge hitch clip pins **(9)**.
20. Becket lace from ridge to eave, seal weather flap **(10)** install remaining hitch clips pins **(9)** and complete becket lacing.
21. Extend frames **(4)** and fabric **(3)**.
22. Install two guy lines **(2)** under hitch clip pins **(9)** on eave spindles **(12)** of last vestibule frame.

23. Place 24-inch wooden stakes (13) about six feet out, facing towards vestibule door.
24. Tie guy lines (2) to stakes (13) and tighten.
25. Secure vestibule fabric (3) to vestibule frame (4) with tie tapes.
26. Install a 12-inch steel pin (14) in base plates of end vestibule frame (4).
27. Identify and install single ply floor (15) and secure with tie tapes (16) to vestibule frame (3).
28. Install insulated floor (17) on top of single ply floor (15).
29. Secure with tie tapes (18).



## Prepare M-80 Water Heater for Use

Prepare the water heater for use in accordance with TM 10-4520-259-13&P.

### Install Exhaust Fan

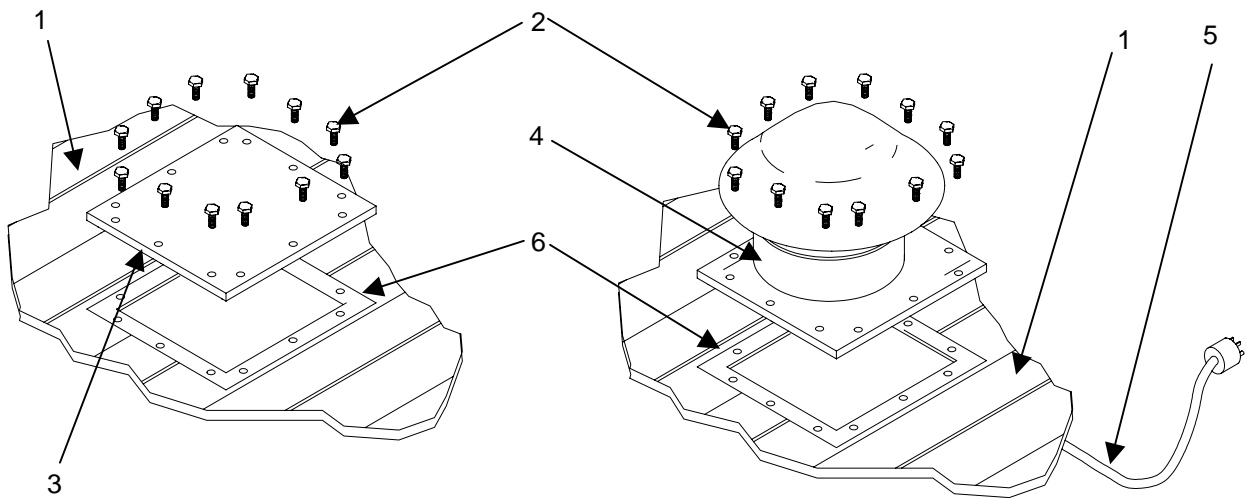
1. Use the steps to access the top of the container (1).
2. Use an adjustable wrench to remove the panel bolts (2).
3. Remove the panel (3). Hand the panel down to personnel on the ground and stow the panel inside the container.



### WARNING

The equipment to be handled is heavy, awkward, and difficult to maneuver. To prevent injury, four persons are required for the following procedure – two on the ground, and two on top of the container.

4. Lift exhaust fan (4) onto roof of shower and drop power cord (5) over the side of the container near the power service panel.
5. Place exhaust fan (4) onto mount (6), aligning holes.
6. Place bolts (2) into holes, and tighten securely.
7. Plug power cord (5) into the twistlock, single phase 20A outlet located on the side of the container.



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**Prepare Shave Stands for Use**

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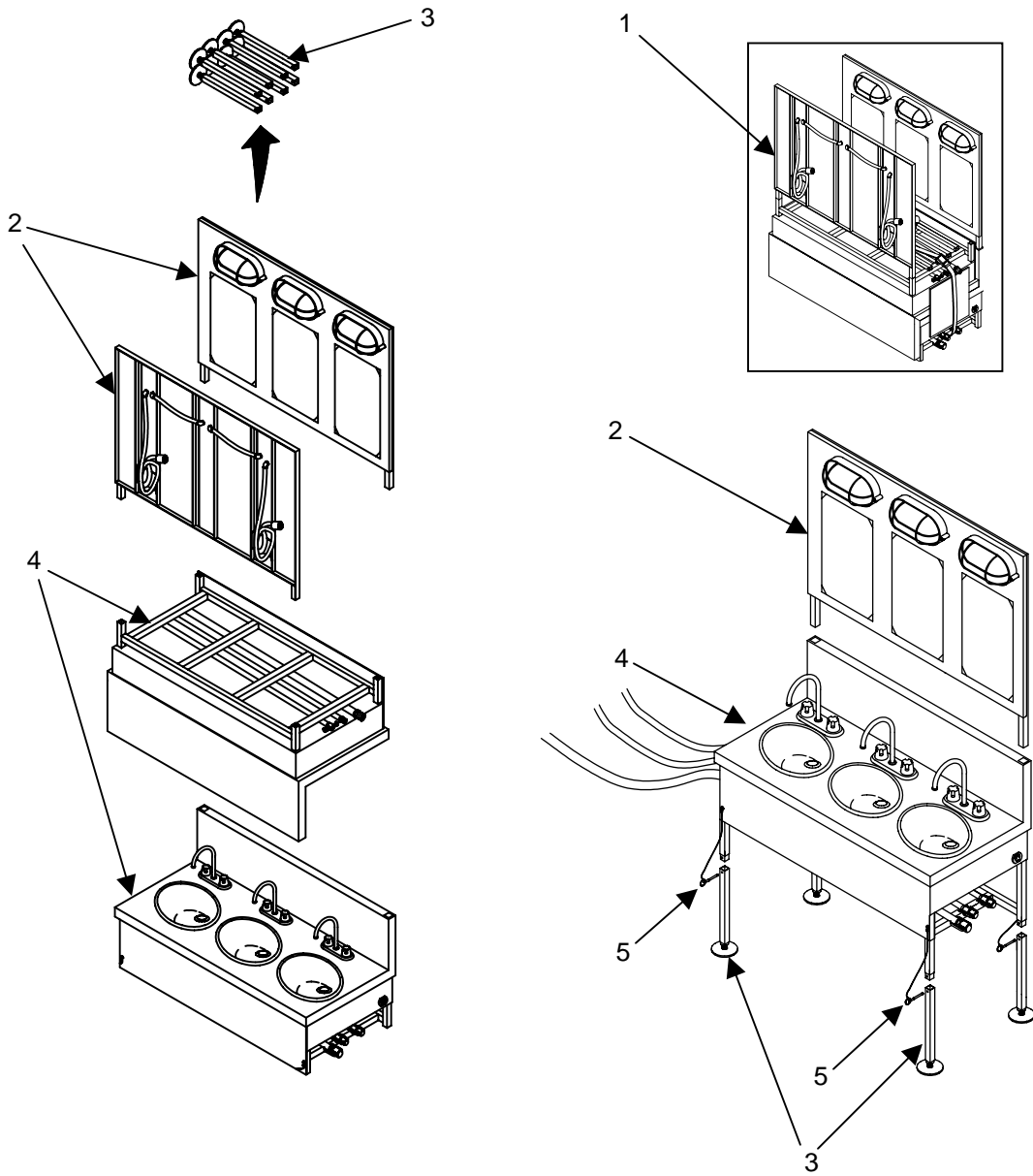
**WARNING**

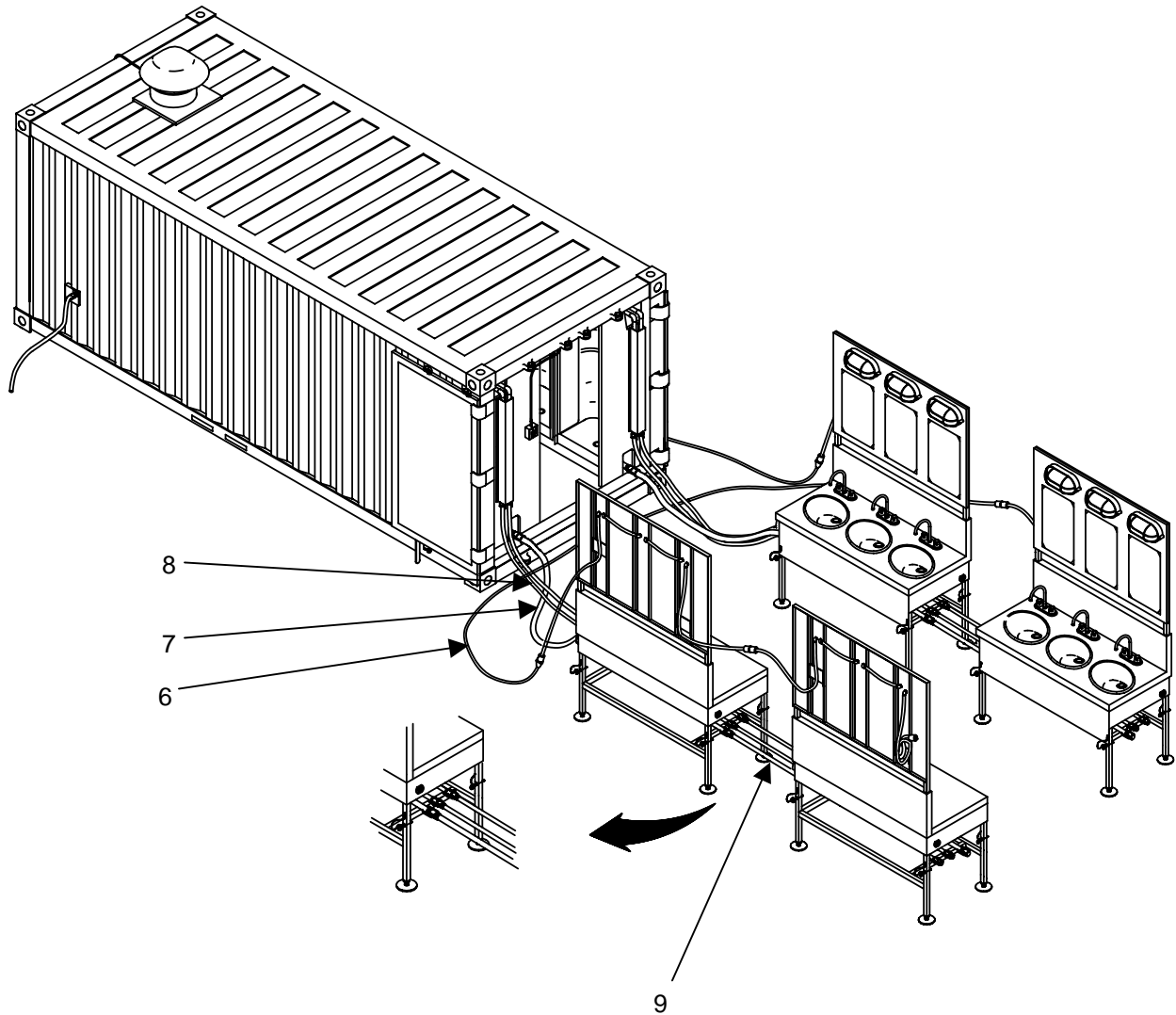
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The equipment to be assembled and moved is heavy, awkward, and very difficult to maneuver. To prevent injury, eight persons are required for the following procedure.

1. Use a forklift to transport the packed shave stands **(1)** from the TRICON to the shower container. If a forklift is not available, the packed shave stands are an eight-man lift.
2. Start with one packed shave stand. Remove the mirrors **(2)**, and place them inside the container until they are needed. Remove the legs **(3)**, and place them in a shower stall.
3. Unstrap the two basin assemblies **(4)**.
4. Install four legs on the upper basin assembly **(4)**. Secure the legs **(3)** with the attached pins **(5)**.
5. Lift the upper basin assembly **(4)**, turn it upright, and place it in position.
6. Tip remaining basin assembly **(4)** on its back.
7. Install four legs on the basin assembly **(4)**, and secure the legs **(3)** with the attached pins **(5)**.
8. Place the shave stands into position.
9. Install the mirrors **(2)** on the shave stands.
10. Repeat steps 2 through 9 for the remaining packed shave stands
11. Connect a 50-foot 110V AC extension cord **(6)** between a shave stand and the convenience outlet on the power service panel of the Shower, Enclosed Unit, System. Ensure that the cord is placed out of the way, and does not present a tripping hazard.
12. Connect the 6-foot by 1½-inch graywater hose **(7)** to the shower and the shave stand closest to the container. (Refer to the following pages for more information on laying out the hoses.)
13. Connect the 6-foot by ¾-inch cold and hot water supply hoses **(8)** to the shower and the shave stand closest to the container. (Refer to the following pages for more information on laying out the hoses.)
14. Connect the remaining shave stand to the first using the installed electrical receptacles and hose connections. The second shave stand will use the 2-foot lengths **(9)** of ¾-inch and 1½-inch hose. (Refer to the following pages for more information on laying out the hoses.)
15. Connect the ¾-inch dust caps together. Drape all the dust caps over the frame of the shave stand basin assembly to keep them out of the way.





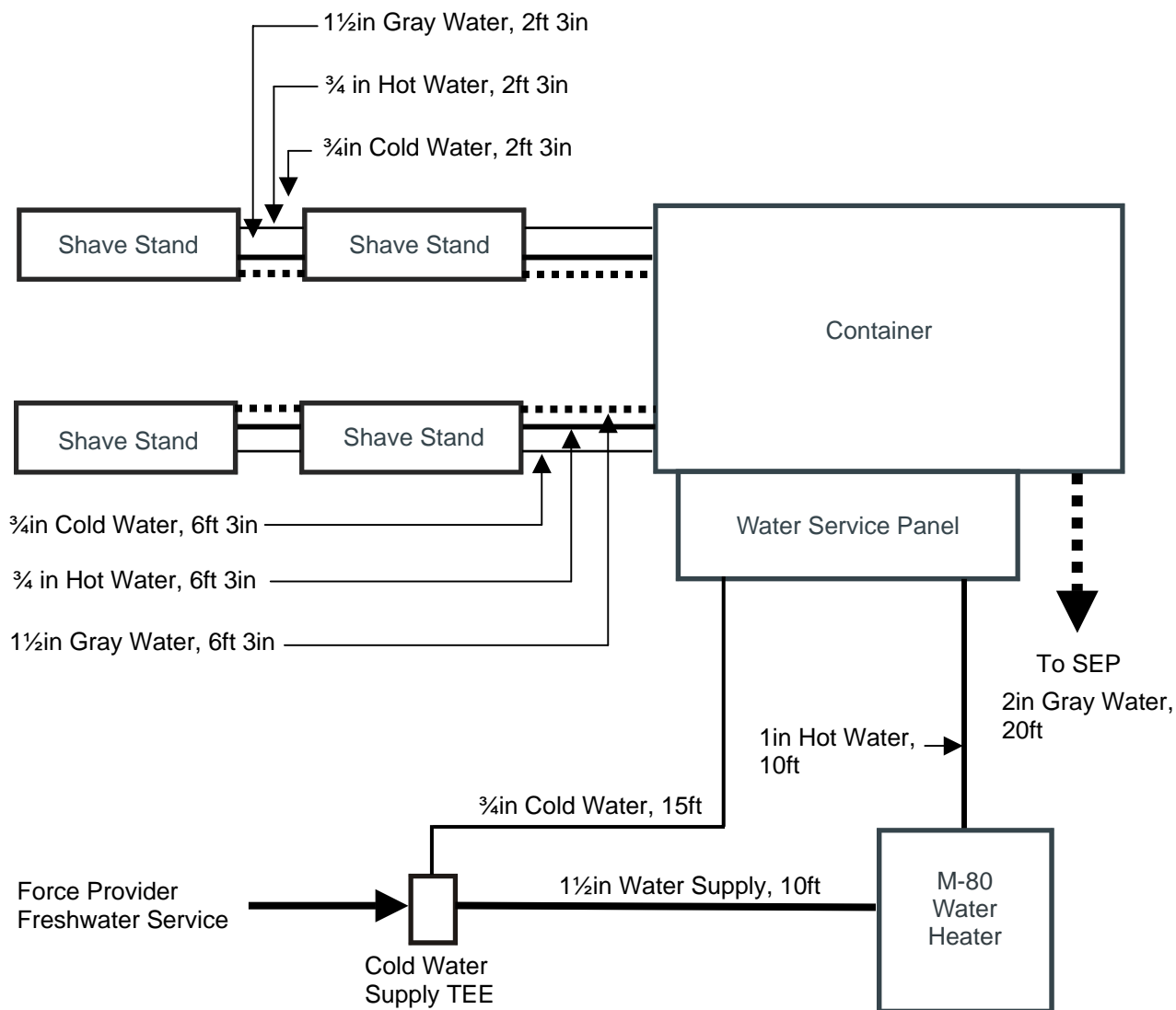


**Connect Power and Distribution System Cables to Shower, Enclosed Unit, System**

The Shower, Enclosed Unit, System is powered through Force Provider electrical service, and must be connected as a component of the Force Provider system.

**Lay Out Hoses, Shower, Enclosed Unit, System (Force Provider Configuration)**

Lay out the water supply and graywater drain hoses as shown in the suggested layout configuration below, or in a modified version to fit local conditions.



**Hose Layout, Shower, Enclosed Unit, System (Force Provider Configuration)**

### **Water Supply and Graywater Drain System**

All freshwater and graywater hoses used with the shower are fitted with quick disconnect couplings (QDC) to permit rapid assembly and disassembly of the system.

The proper disposal of liquid waste is necessary to minimize rodent and insect problems and potential contamination of water supply or surface waters. The safest way to dispose of liquid waste from the shower is to discharge to or transport it to a wastewater treatment facility.

The shower wastewater will most likely be stored in bladders or tanks on-site before disposal. Care should be taken to ensure that spills and leaks do not occur and the wastewater is disposed of properly. Ensure the piping and fixtures don't leak and site selection will facilitate rapid drainage and minimize water pooling. Contact the local field preventive medicine unit or field sanitation team to assist in site selection. If these precautions are ignored, serious environmental and sanitation problems could occur particularly during extended operations and deployment.

The shower wastewater is not a hazardous waste and contains only soaps and substances washed from the users bodies. It is considered gray water. Currently, there are no specific regulations governing gray water generated from the shower. However, if the wastewater from the shower is disposed of in a surface water anywhere in the United States, a discharge permit is required from the State or Environmental Protection Agency (EPA). In a foreign country the local standards or EPA standards should be used.

When the use of an existing disposal facility is not an option, use a unit constructed field expedient wastewater disposal method delineated in FM 21-10 and FM 21-10-1. All disposal methods must comply with federal, state, and local regulations.

When disposing of liquid waste and wastewater from the shower, the following regulatory information is essential.

In the United States, rules and regulations for wastewater discharge are established by the U.S. Environmental Protection Agency (or a State with an EPA approved program) under the National Pollutant Discharge Elimination System (NPDES), established under the Clean Water Act (CWA). Dischargers must apply for and obtain a site-specific NPDES (or State equivalent) permit or a general NPDES permit.

Foreign governments will have their respective country's waste disposal guidance for training exercises or deployments. Coordinate with the installation point of contact or the environmental coordinator in the foreign country and the country's permitting agency to obtain information on applying for a permit to discharge. In some instances, it may be applicable to compare EPA discharge standards to those of the foreign country and apply the more stringent requirements.

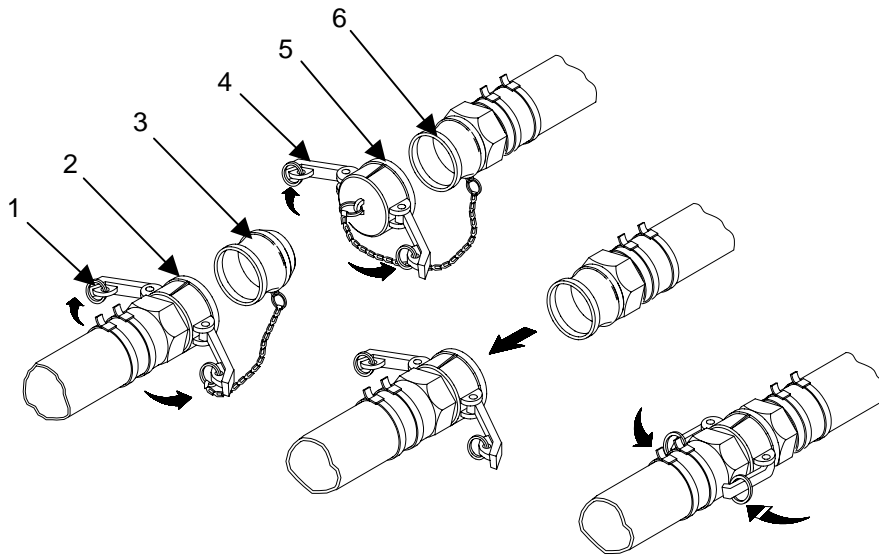
To make a QDC connection when caps and plugs are in place, proceed as follows:

### **CAUTION**

To prevent damage to the equipment, use care when connecting couplings to avoid getting dirt on the coupling mating surfaces or into the hoses. To prevent leaks and ensure tight connections, ensure gaskets are installed in all female couplings.

1. Lift the locking arms **(1)** of the female coupling **(2)** up and out.
2. Remove the plug **(3)** from the female coupling **(2)**.

3. Lift the locking arms (4) of the cap (5) up and out.
4. Remove the cap (5) from the male coupling (6).
5. Position the male coupling (6) in the female coupling (2) and hold in place.
6. Pull both locking arms (1) back at the same time against the body of the female coupling (2).
7. Reverse the procedure to disconnect a QDC.



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**Connection of Water System, Shower, Enclosed Unit, System (Force Provider Configuration)**

Make the following connections as described and shown on the Hose Layout illustration detailed on the previous pages:

1. Connect a 15-foot long  $\frac{3}{4}$ -inch freshwater hose between the cold water supply TEE and the water service panel cold water input coupling.
2. Connect a 10-foot long  $1\frac{1}{2}$ -inch freshwater supply hose between the cold water supply TEE and the M-80 water heater input manifold.
3. Connect a 10-foot long 1-inch freshwater hose between the M-80 water heater output manifold and the water service panel hot water input coupling.
4. Connect the 25-foot long 2-inch graywater drain hose to the graywater drain coupling and the intended discharge receptacle.
5. Connect the cold water supply TEE to the Force Provider freshwater system. Coordinate with Facilities Support Section Power Generation Personnel, Prime Power Team, or Utilities Team as necessary to facilitate required connections.

**Prepare Shower Air Conditioner for Use**

Refer to TM 10-5419-206-13 when authorized to install air conditioning units.

**END OF WORK PACKAGE**

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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
OPERATION UNDER USUAL CONDITIONS – OPERATING PROCEDURES**

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**OPERATING PROCEDURES**

Both models of shower have similar operating procedures. The Containerized Shower has additional equipment to allow it to operate as a stand-alone installation. The Shower, Enclosed Unit, System operates exclusively as a component of Force Provider, and is dependent on the Force Provider power, freshwater, and waste water grids. Procedures or steps pertaining to only one model are noted as either (Containerized Shower only) or (Shower, Enclosed Unit, System only).

To operate either shower model, ensure that an adequate freshwater supply is available and has been turned on. Place all water distribution system shutoff valves in the open position. Place all circuit breakers in the circuit breaker panel in the ON position (Containerized Shower only). To operate shower components, proceed as follows:

**Operation of Container**

Operate in accordance with TM 55-8115-204-23&P.

**Operation of 3000 gallon Water Tank (Containerized Shower only)**

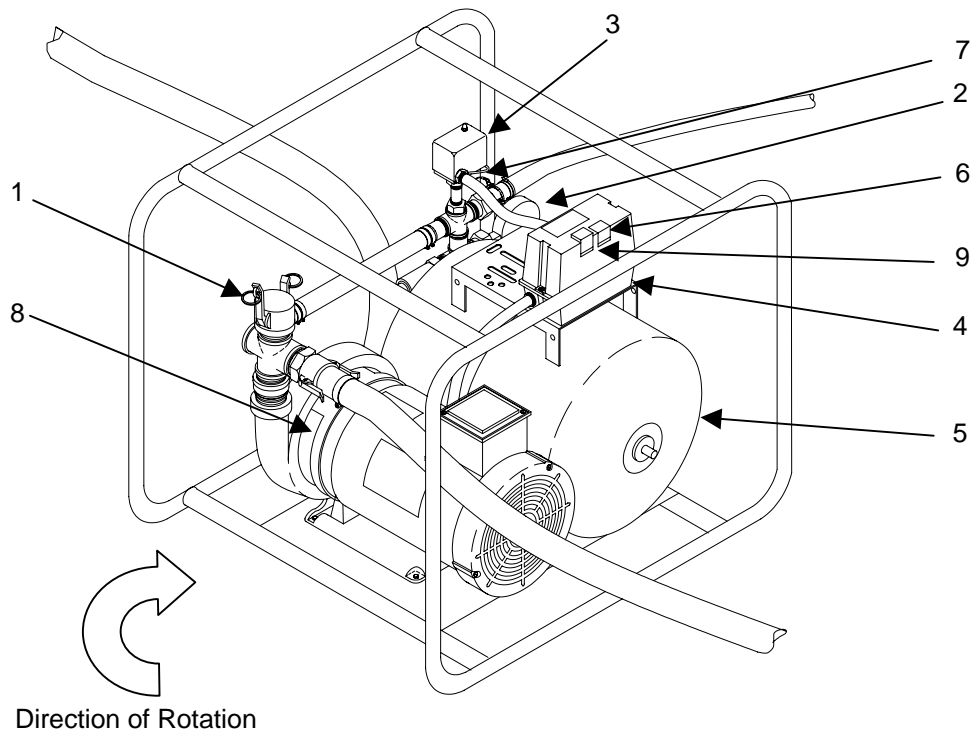
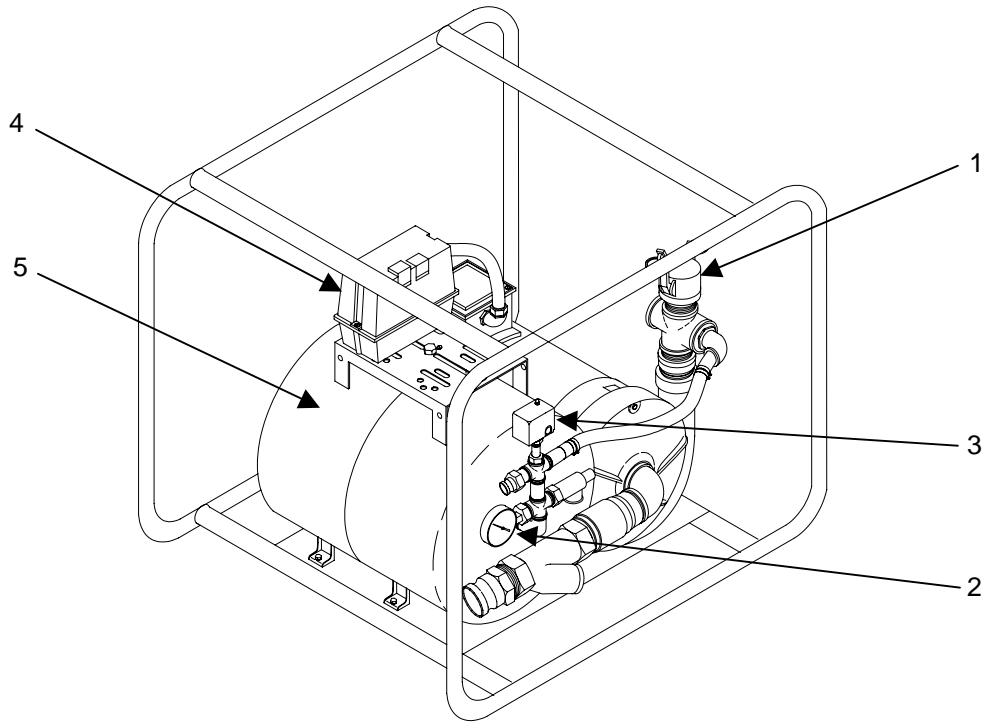
Operate in accordance with TM 10-5430-237-12&P.

**Operation of Sewage Ejection Pump (SEP)**

Operate in accordance with TM 10-4630-206-13&P.

**Operation of 30 gpm Water Pump (Containerized Shower only)**

1. Ensure M-80 water heater is OFF (alarm will sound if M-80 power switch is turned ON). Refer to TM 10-4520-259-13&P for operating instructions.
2. Locate and remove cap from unused 1½-inch QDC fitting **(1)** on pump. Using a bucket or hose, pour freshwater into the fitting until pump is full. Recap QDC fitting.
3. Locate the pump water pressure gauge **(2)** below the pressure switch **(3)**.
4. Locate the motor controller **(4)**, mounted on the pump system pressure tank **(5)**.
5. Depress the green push button **(6)** on the motor controller **(4)**.
6. Lift the override lever **(7)** on the pressure switch **(3)**. Pump will operate immediately.
7. Check rotation of pump. An arrow on the pump body **(8)** indicates the proper direction of rotation. If pump is rotating in the opposite direction, shut down power to the pump and notify Unit Maintenance.
8. Release the override lever **(7)** when the water pressure gauge **(2)** indicates 25 psi.
9. Pump will operate automatically when pressure drops below 20 psi, and will shut off at 40 psi.
10. The pump may be shut down by depressing the red button **(9)** on the motor controller.





## Flush Freshwater Lines

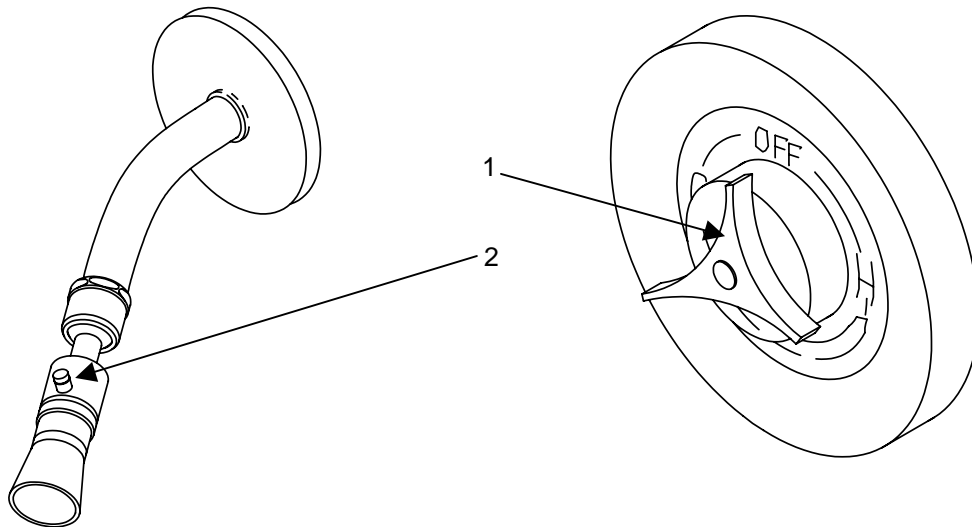
### **WARNING**

Both the Containerized Shower and the Shower, Enclosed Unit, System ship with an antifreeze solution pumped into the freshwater lines. The antifreeze solution is nontoxic, but unsuitable for drinking or washing. **DO NOT OPERATE THE SHOWER** until the freshwater lines have been flushed.

Once the shower is functional, flush the freshwater lines by opening all shower valves and shave stand faucets and allowing the system to flush for approximately three minutes.

### Operation of Showers

1. Turn on shower valve **(1)** and adjust water temperature to desired temperature.
2. Operate showerhead cutoff valve **(2)** to shut off shower and retain temperature setting.

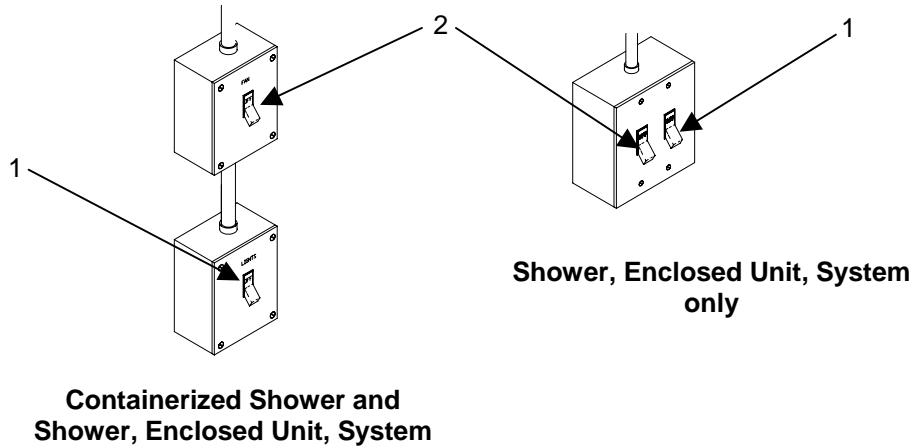


**Operation of Interior and Shave Stand Lights**

1. Operate interior lights from the ON/OFF switch **(1)** located at the personnel door.
2. The shave stand lights are on when connected to the service panel (Containerized Shower only) or the Force Provider power supply (Shower, Enclosed Unit, System).

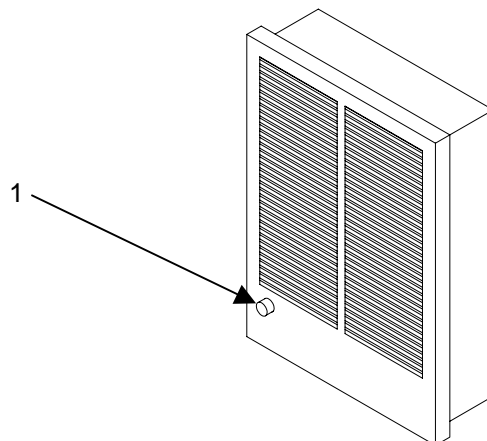
**Operation of Exhaust Fan**

Operate exhaust fan from the ON/OFF switch **(2)** located adjacent to the interior light switch.



**Operation of Space Heater (Containerized Shower only)**

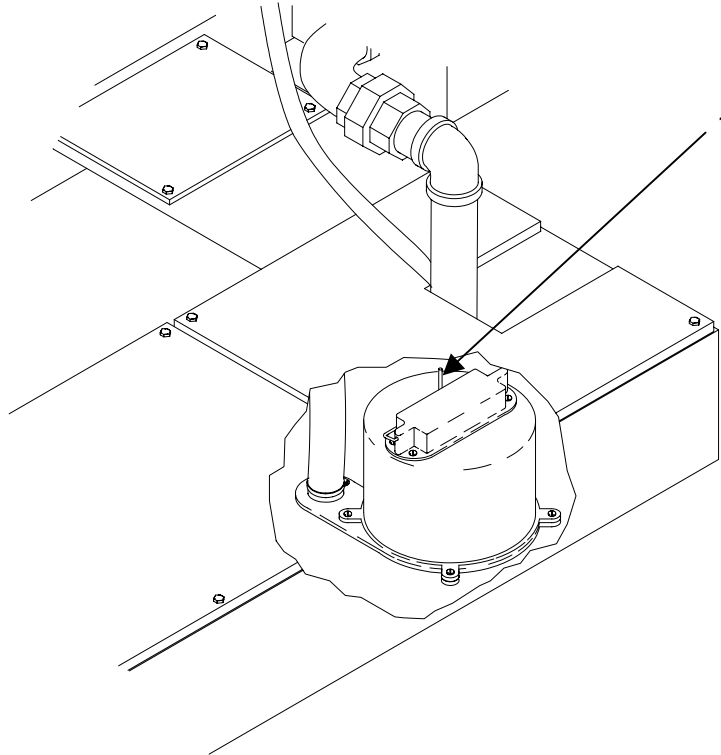
1. Place circuit breaker No. 3/5 to the ON position.
2. Turn thermostat knob **(1)** to desired setting.



**Operation of Sump Pump**

The sump pump located in the graywater tank is operated automatically by a float switch.

1. Place circuit breaker No. 8 in the ON position (Containerized Shower only). The pump is set to turn on when the water level in the tank reaches 7-inches and will turn off when it is lowered to 3-inches.
2. Turn the sump pump switch to ON (Shower, Enclosed Unit, System only).
3. The sump pump may be manually operated by activating the override switch **(1)**, adjacent to the pump discharge.

**Operation of M-80 Water Heater**

Operate the M-80 Water Heater in accordance with TM 10-4520-259-13&P.

**Operation of TEMPER**

Operate the TEMPER in accordance with TM 10-8340-224-13.



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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
OPERATION UNDER USUAL CONDITIONS – PREPARE FOR MOVEMENT**

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**SCOPE**

This work package covers the preparation for movement of the Containerized Shower (stand alone) only. Refer to work package 0009 00 to prepare the Shower, Enclosed Unit, System (Force Provider) for movement.

**PREPARATION FOR ADMINISTRATIVE STORAGE**

To prepare the Containerized Shower for storage, refer to TM 740-90-1, Administrative Storage of Equipment; and FM 38-701, Packing.

**PREPARATION FOR MOVEMENT**

To prepare the Containerized Shower for movement proceed as follows:

**NOTE**

Before utilities are disconnected in preparation for movement, the interior of the shower as well as the shave stands in the TEMPER must be thoroughly cleaned, and the graywater hoses and holding tank flushed. See WP 0022 00 for instructions.

1. After the interior of the shower, the shave stands, and all components have been cleaned, turn off the M-80 water heater and 30 gpm water pump, and close freshwater supply.

**WARNING**

Let water heater and hot water hose couplings cool before disconnecting to prevent injuries. Failure to observe safety precautions may result in serious injury to personnel.

**NOTE**

After draining hoses of antifreeze, they do not need to be refilled with antifreeze.

2. Disconnect and drain all freshwater hoses between the shower and the water source.
3. Disconnect and drain all fresh and graywater hoses between the shower and the shave stands.
4. Disconnect and drain the graywater hose from disposal connection used and the water service panel.
5. **Prepare Water Heater for Movement.** Refer to TM 10-4520-259-13&P.
6. **Prepare Water Pump for Movement.** Allow pump to drain. Reinstall QDC caps on pump inlet, pump discharge to M-80 water heater, and pump discharge to container service panel.
7. **Prepare Container for Movement.** Refer to TM 55-8115-204-23&P.

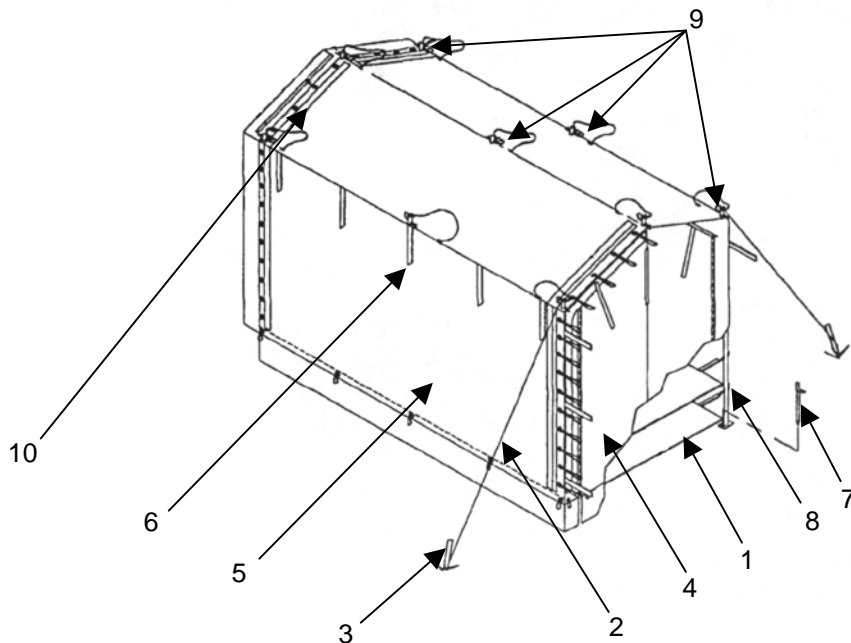
8. **Prepare Sewage Ejection Pump (SEP) for Movement.** Refer to TM 10-4630-206-13&P.

**PREPARE TEMPER FOR MOVEMENT**

To prepare the TEMPER section for movement, follow the procedures outlined below. Refer to TM 10-8340-224-13 as necessary.

**Striking Procedure**

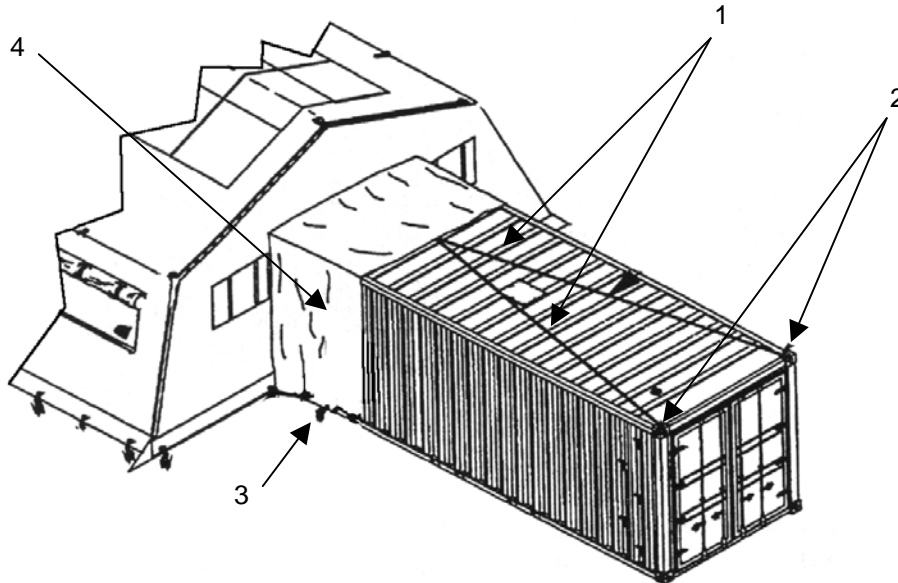
1. Locate the frame section cover and the light set storage container.
2. Remove single ply floors **(1)** in vestibule.
3. Release tension on vestibule guy lines **(2)** and remove stakes **(3)**.
4. Unlace vestibule door **(4)** sides from vestibule **(5)**.
5. Untie vestibule tie tapes **(6)**.
6. Remove steel pins **(7)** in vestibule footstops and frame base plates.
7. Collapse vestibule and position frames **(8)** against endwall.
8. Remove hitch pins **(9)** and complete door removal.
9. Remove frames and disassemble.
10. Open weather seal flap **(10)**, unlace vestibule, remove and fold.



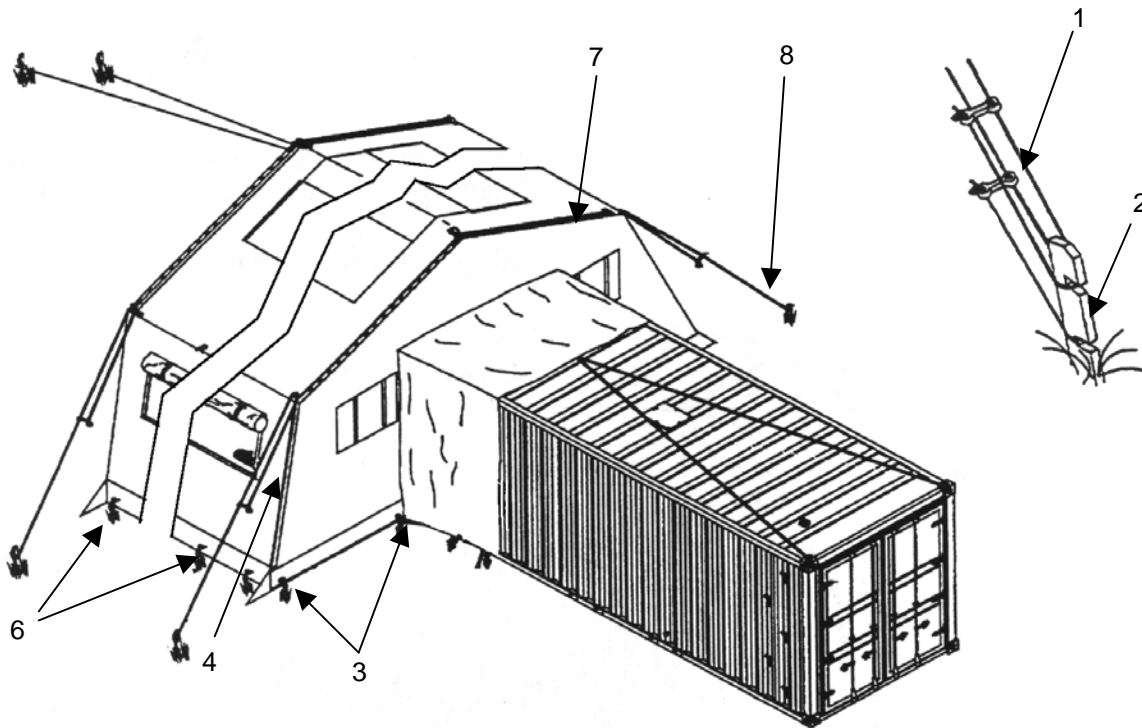
## CAUTION

Use caution when closing container doors to avoid damage to lights.

11. Close the personnel double doors.
12. Have two soldiers on top of container loosen the bootwall lines **(1)** to the upper ISO fittings **(2)** at the opposite end of the container.
13. Have two soldiers on ground remove tent stakes **(3)** from the lower end **(4)** of the bootwall.
14. Fold bootwall back towards TEMPER section and coil bootwall lines **(1)**.
15. Have a soldier on the ground unplug power cord used for TEMPER interior lights from the container power panel.
16. Disconnect power cord from lights, coil cord, and place in shower stall.



17. Release tension from both guy lines at ridge **(1)** and disconnect from wooden stakes **(2)**.
18. Remove the stakes **(2)** from rear of TEMPER section and remove footstop tent pins **(3)**.
19. Disconnect all becket laces **(4)** up to eave.
20. Close all windows and doors on all fabric sections.
21. Remove frame foot tent pins **(6)**.
22. Lift fabric **(7)** from side of tent and roll up onto roof section.
23. Release tension from guy lines **(8)** at eaves and disconnect from wooden stakes **(2)**.



**WARNING**

The assembled TEMPER section is heavy. At least ten soldiers are required to move the 16-foot TEMPER away from the shower container. Failure to observe safety precautions may result in serious injury to personnel.

**CAUTION**

Do not attempt to move the TEMPER sections until the shave stands have been removed.

24. Using one soldier at each arch assembly leg and one soldier at each base purlin, move the TEMPER section away from the shower container approximately six feet to be clear of the shower container.



## Lowering the Frame



### WARNING

Frame assembly hinges can pinch or crush hands and fingers. Keep hands and fingers away from frame assembly ridges and eaves.

### CAUTION

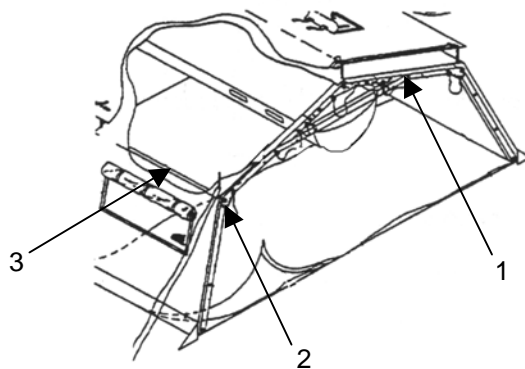
Avoid folding wall fabric into joints. Material may rip if caught in joint.

1. Place two soldiers at each arch **(1)** on side of tent being lowered.
2. On command, remove quick release pins **(2)** holding arches erect.

### CAUTION

Do not twist or turn frame components when handling. Damage to equipment may occur.

3. Keeping clear of tent section, place one hand below eave joint of arch **(1)** and one on the eave purlin **(3)**.
4. Swing out side frame and lower side. Extra soldiers may assist in lowering frame.
5. Remove luminaires and light strap assemblies from inside tent section.
6. Store light components in retrieved light case.
7. Disconnect eave purlin flaps.
8. Repeat these steps to lower other side of tent section.



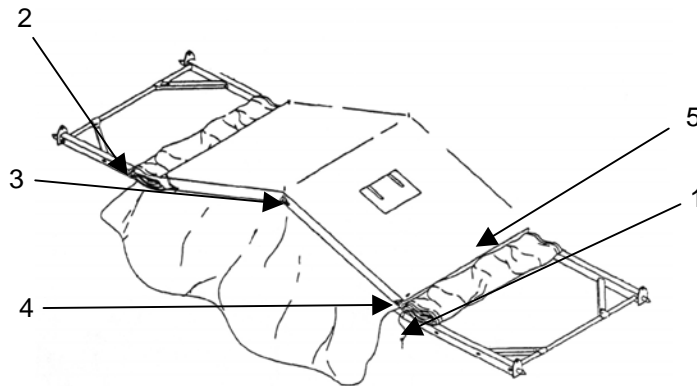
### Removing the Fabric

1. Disconnect hitch clip pins **(1)** from eave extenders **(2)**.
2. Remove eave extenders **(2)**.
3. Untie tie off point and disconnect becket lacing of roof section.
4. Remove hitch clip pin from ridge extender **(3)**.
5. Remove ridge extender **(3)**.
6. Remove modified end section **(4)** and regular end section on opposite side of frame.

### NOTE

Fold fabric label side out to allow for easy identification of endwall sections.

7. Remove window section **(5)** from frame.



## Frame Disassembly

### NOTE

Disassembly sequence is from base to ridge.

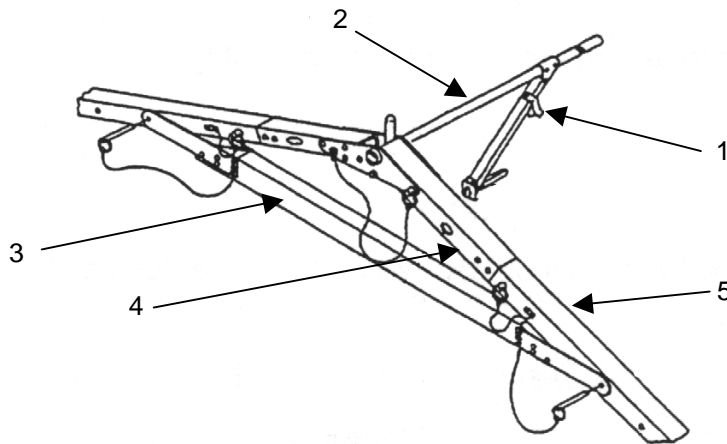
1. Disconnect each purlin diagonal brace **(1)**, fold, and secure.



### WARNING

Position one soldier at each ridge arch to hold arch upright during frame disassembly. Failure to hold frame upright may allow frame to fall and cause serious injury or death to personnel.

2. Rotate purlins **(2)** and remove.
3. Remove headers **(3)**.
4. Disassemble roof arch **(4)** and side arch assembly **(5)** and fold.
5. Pack frame components in TEMPER frame section cover assembly.



**Prepare Water Tank for Movement (if applicable)**

Refer to TM 10-5430-237-12&P.

**Prepare Power Cables for Movement****WARNING**

Power source must be shut down before disconnecting any cables. Failure to do so may result in serious injury or death to personnel.

**NOTE**

If deployed with Force Provider, coordinate with Facilities Support Section Power Generation Personnel, Prime Power Team, or Utilities Team as necessary to facilitate required power connections.

1. Turn OFF power supply.
2. Place all circuit breakers in the circuit breaker panel in the OFF position.
3. Disconnect 100-foot long 60A power service cable from power service panel and pigtail (two 50-foot cables may be issued to some units).
4. Disconnect pigtail from the power supply.
5. Disconnect the 20A Tee power cable from the M-80 water heater, the 30 gpm water pump, and the 20A connector on the power service panel.
6. Unplug the 110V AC shave stand extension cord from the convenience outlet on the power service panel, and the shave stand cord. Unplug the shave stand power cords.
7. Install dust caps on disconnected power cables.

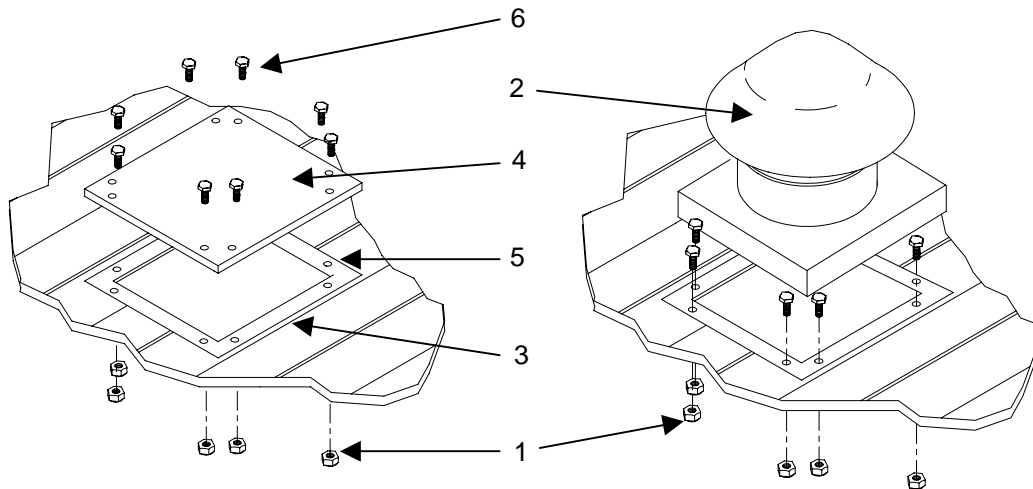
## Removal of Exhaust Fan



### WARNING

The exhaust fan is heavy, awkward, and difficult to maneuver. To prevent injury, four persons are required to remove and lower it – two on the container roof and two on the ground.

1. Unplug exhaust fan power cord from the 20A connector on the power service panel.
2. From inside the container, remove nuts **(1)** securing exhaust fan **(2)** to mount **(3)**.
3. Using hinged steps, have two persons access the top of the container.
4. Remove exhaust fan **(2)**, then install panel **(4)**, aligning holes **(5)**.
5. Remove bolts **(6)** from fan, remove fan and install in panel **(4)**.
6. Install nuts **(1)** onto bolts **(6)** from inside the shower.



**Inventory Containerized Shower**

Inventory equipment and ensure the following items are available, clean and ready to be packed into the shower container.

**Table 1. Packing Inventory for Containerized Shower.**

Description of Item	Quantity
30 gpm Water Pump (if furnished)	1 each
3000 Gallon Water Tank (If furnished)	1 each
Exhaust Fan	1 each
Extension Cord 110V AC, 50ft long	2 each
Freshwater Hose 1½in, 20ft long	1 each
Freshwater Hose 1½in, 5ft long	1 each
Freshwater Hose 1in, 10ft long	1 each
Freshwater Hose ¾in, 15ft long	1 each
Freshwater Hose ¾in, 2ft 3in long	2 each
Freshwater Hose ¾in, 6ft 3in long	2 each
Fuel Drum Adapter	1 each
Graywater Hose 1½in, 2ft 3in long	1 each
Graywater Hose 1½in, 6ft 3in long	1 each
Graywater Hose 2in, 20ft long	1 each
Ground Rod	1 each
M-80 Water Heater and stack assembly	1 each
Pigtail 4ft Long, 60A	1 each
Power cable with TEE, 20A	1 each
Power service cable 60A, 100ft (Two 50ft 60A cables may be furnished instead)	1 each
Reducer, 2in QDC x 1½in QDC	1 each
Shave stand assembly w/ legs and backs	2 each
TM 10-4510-208-13&P	1 each
TEMPER 16ft with modified end wall and lights	1 each

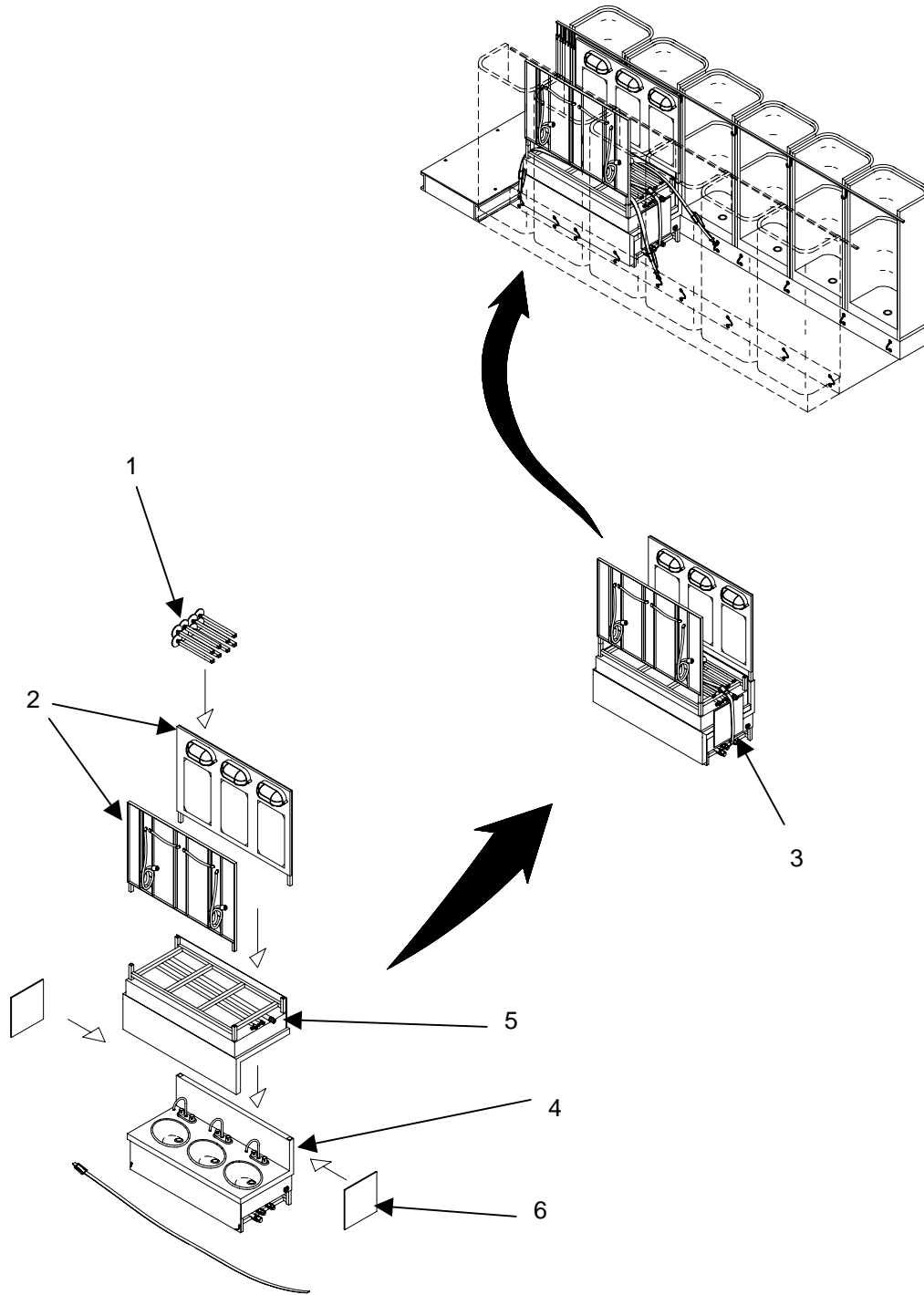
**Pack Containerized Shower**

Use the following procedure to pack the Containerized Shower. Use the packing diagram found at the end of this WP as necessary to position components and straps.

**WARNING**

The equipment to be moved is heavy, awkward, and difficult to maneuver. To prevent injury, eight persons are required to install and move it.

1. Remove the leg extensions **(1)** and upper panels **(2)** from the shave stands.
2. Lay an extended 2-inch strap **(3)** on the ground.
3. Place one shave stand basin assembly **(4)** on top of the strap.
4. Place the second stand **(5)** on top of the first upside down.
5. Slide the shave stand upper panels **(2)** into the leg mounts of the upper disassembled shave stand.
6. Place the leg extensions **(1)** on top of the second shave stand basin.
7. Connect the ends of the 2-inch strap **(3)**, but do not tighten.
8. Insert the plywood dunnage **(6)** on both ends of the shave stands.
9. Tighten the 2-inch strap **(3)**.
10. Carry the assembled shave stands through the open personnel doors, and place the assembled shave stands in the shower container aisle. Do not place the shave stands up against the equipment mounting platform. (Leave about six inches.)
11. Attach two 2-inch straps to each of the center padeyes in the shower container aisle. Hang the free ends of the two straps over the packed shave stand assembly.
12. Cross the shave stands with two 2-inch straps, and secure the straps at the two padeyes closest to the equipment mounting platform.





13. Place the first 3000 Gallon Fabric Water Tank in either shower stall third from the personnel door.
14. Place the second 3000 Gallon Fabric Water Tank opposite the first.
15. Attach two 2-inch straps to the next available hooks closest to the shave stands.
16. Hang the free ends of the two straps over the nearest shower stalls.
17. Place the TEMPER frames in the aisle up against the shave stands. Be sure to leave the space clear in front of the shower stalls closest to the personnel entrance.
18. Place the TEMPER vestibule frames on top of the TEMPER frame.
19. Place all hoses on top of the TEMPER frame components.
20. Place all electrical cables in the space adjacent to the hoses.
21. Place tent pins, stakes and grounding rod adjacent to the vestibule frame and cables.

### **NOTE**

The TEMPER floor liner is placed on top of all other TEMPER components.

22. Place the TEMPER fabric components on top of the TEMPER frames, cables, and hoses.
23. Place the rolled up floor mat in a shower stall closest to the personnel entrance.
24. Place the footlocker across the aisle so that it rests in the first shower stalls (closest to the personnel door).
25. Cross the two free 2-inch straps over the hoses, TEMPER components, and the exhaust fan and secure the straps at the two padeyes closest to the personnel entrance.
26. Place the exhaust fan on top of the footlocker.
27. Run a 1-inch strap over the exhaust fan, and secure it to the padeyes closest to the personnel entrance.



### **WARNING**

The M-80 water heater requires at least six persons to lift and carry. Failure to observe safety precautions may result in serious injury to personnel.

### **CAUTION**

When placing the M-80 on the equipment mounting platform, place it in the center and then slowly move it away from the mixer valve.

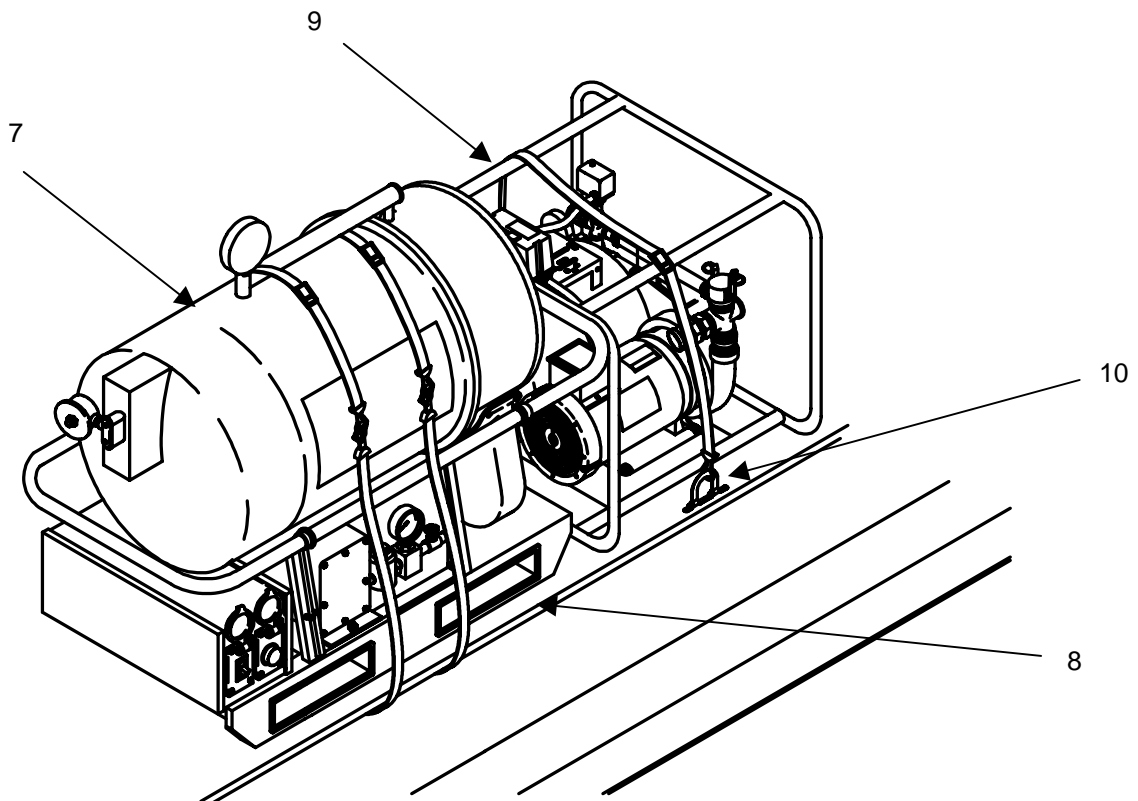
28. Disassemble two 2-inch straps by removing the ratchet assemblies.
29. Run the straps under the equipment mounting platform, spaced approximately 2-feet and 3-feet from the mixer valve.

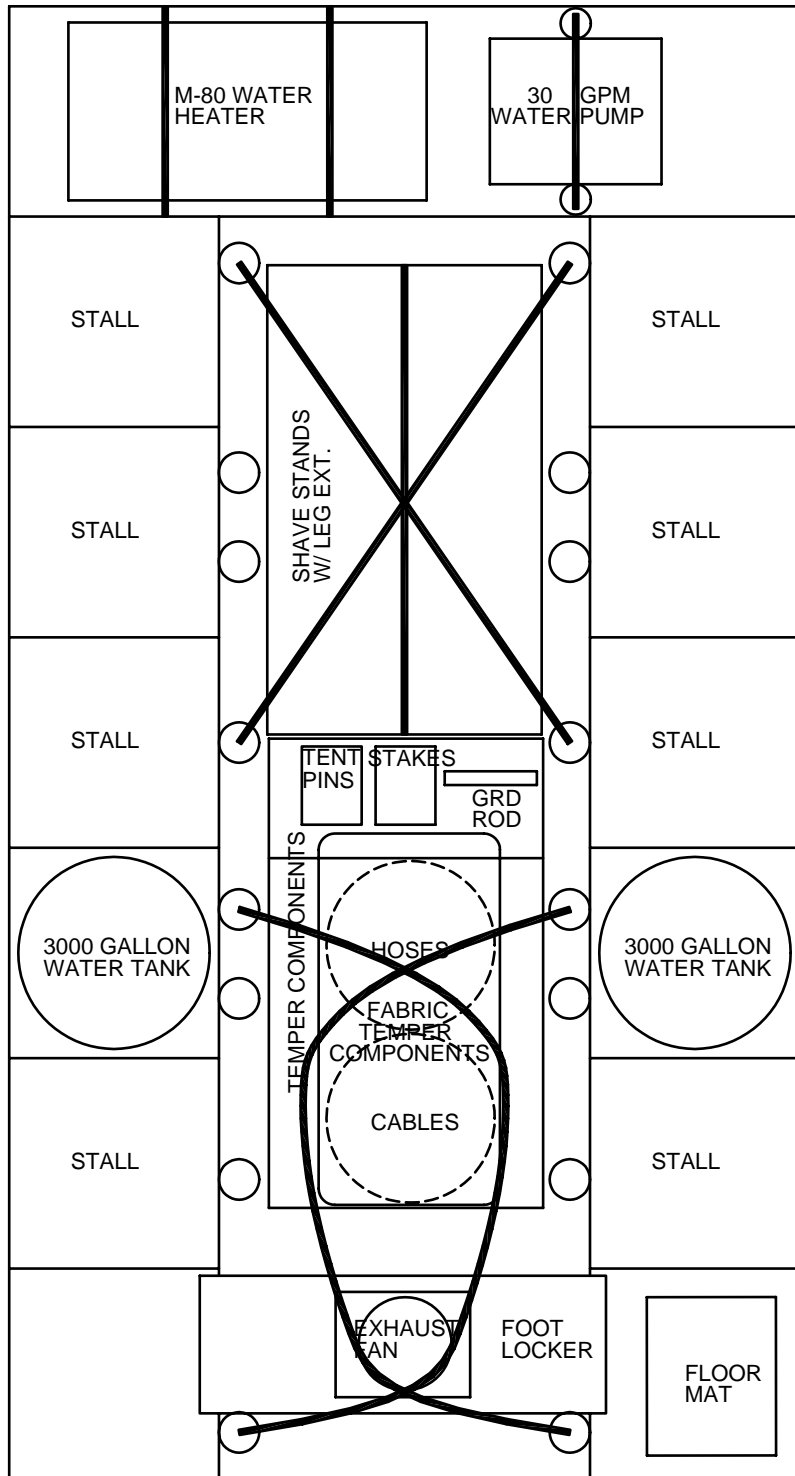
30. Install the ratchet assemblies on the 2-inch straps.
31. Place the M-80 water heater (7) on top of the mounting platform (8).

### CAUTION

The M-80 must be securely strapped to the equipment mounting platform before any other packing is performed. The M-80 must not be able to move when strapped down.

32. Attach the ends of the 2-inch straps together and tighten.
33. Place the 30 gpm water pump (9) on the equipment mounting platform, centered between the two padeyes (10).
34. Attach a 2-inch strap to the padeyes and tighten over the 30 gpm water pump.
35. Close and latch the container service doors.
36. Close and latch the container personnel doors.





Packing Diagram for Containerized Shower



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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
SHOWER, ENCLOSED UNIT, SYSTEM  
OPERATION UNDER USUAL CONDITIONS – PREPARE FOR MOVEMENT**

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**SCOPE**

This work package covers the preparation for movement of the Shower, Enclosed Unit, System (Force Provider) only. Refer to work package 0008 00 to prepare the Containerized Shower (stand alone) for movement.

**PREPARATION FOR ADMINISTRATIVE STORAGE**

To prepare the Containerized Shower for storage, refer to TM 740-90-1, Administrative Storage of Equipment; and FM 38-701, Packing.

**PREPARATION FOR MOVEMENT**

To prepare the Shower, Enclosed Unit, System for movement proceed as follows:

**NOTE**

Before utilities are disconnected in preparation for movement, the interior of the shower as well as the shave stands in the TEMPER must be thoroughly cleaned, and the graywater hoses and holding tank flushed. See WP 0022 00 for instructions.

1. After the interior of the shower, the shave stands, and all components have been cleaned, turn off the M-80 water heater and close freshwater supply.



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**WARNING**

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Let water heater and hot water hose couplings cool before disconnecting to prevent injuries. Failure to observe safety precautions may result in serious injury to personnel.

**NOTE**

After draining hoses they don't have to be refilled with antifreeze.

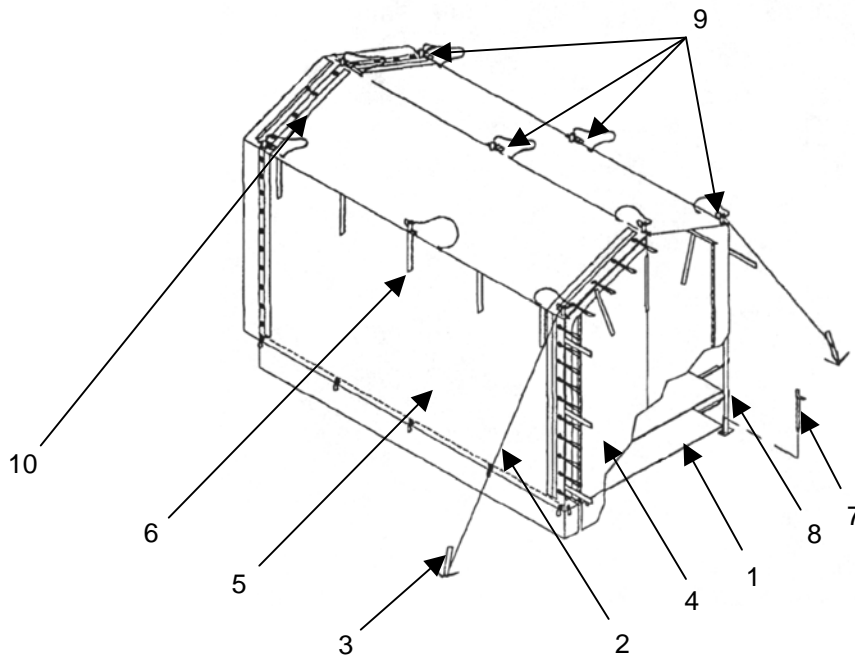
2. Disconnect and drain all freshwater hoses between the shower and the water source.
3. Disconnect and drain all fresh and graywater hoses between the shower and the shave stands.
4. Disconnect and drain all fresh and graywater hoses between the shower and the shave stands.
5. Disconnect and drain the graywater hose from disposal connection used and the water service panel.
6. **Prepare M-80 Water Heater for Movement.** Refer to TM 10-4520-259-13&P.
7. **Prepare Container for Movement.** Refer to TM 55-8115-204-23&P.
8. **Prepare Sewage Ejection Pump for Movement.** Refer to TM 10-4630-206-13&P.

**PREPARE TEMPER FOR MOVEMENT**

To prepare the TEMPER section for movement, follow the procedures outlined below. Refer to TM 10-8340-224-13 as necessary.

**Striking Procedure**

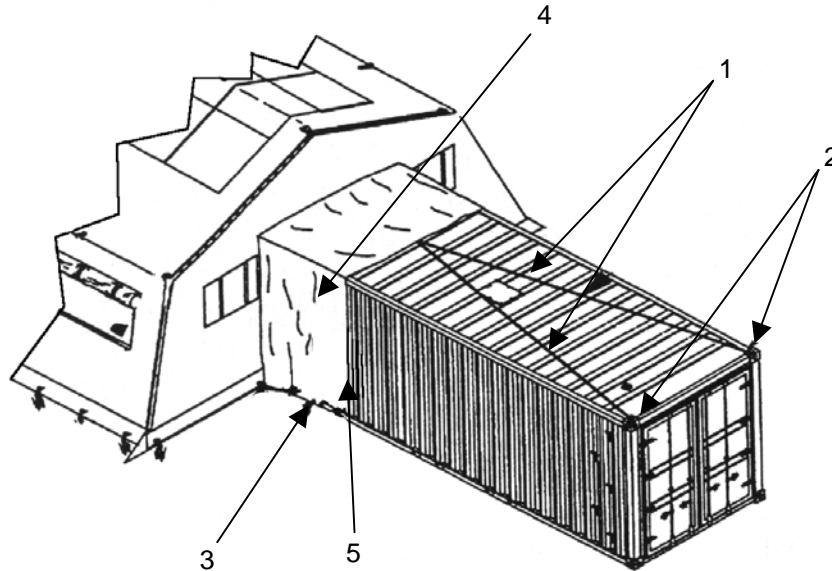
1. Locate the frame section cover and the light set storage container.
2. Remove single ply floors (1) in vestibule.
3. Release tension on vestibule guy lines (2) and remove stakes (3).
4. Unlace vestibule door (4) sides from vestibule (5).
5. Untie vestibule tie tapes (6).
6. Remove steel pins (7) in vestibule footstops and frame base plates.
7. Collapse vestibule and position frames (8) against endwall.
8. Remove hitch pins (9) and complete door removal.
9. Remove frames and disassemble.
10. Open weather seal flap (10), unlace vestibule, remove and fold.

**CAUTION**

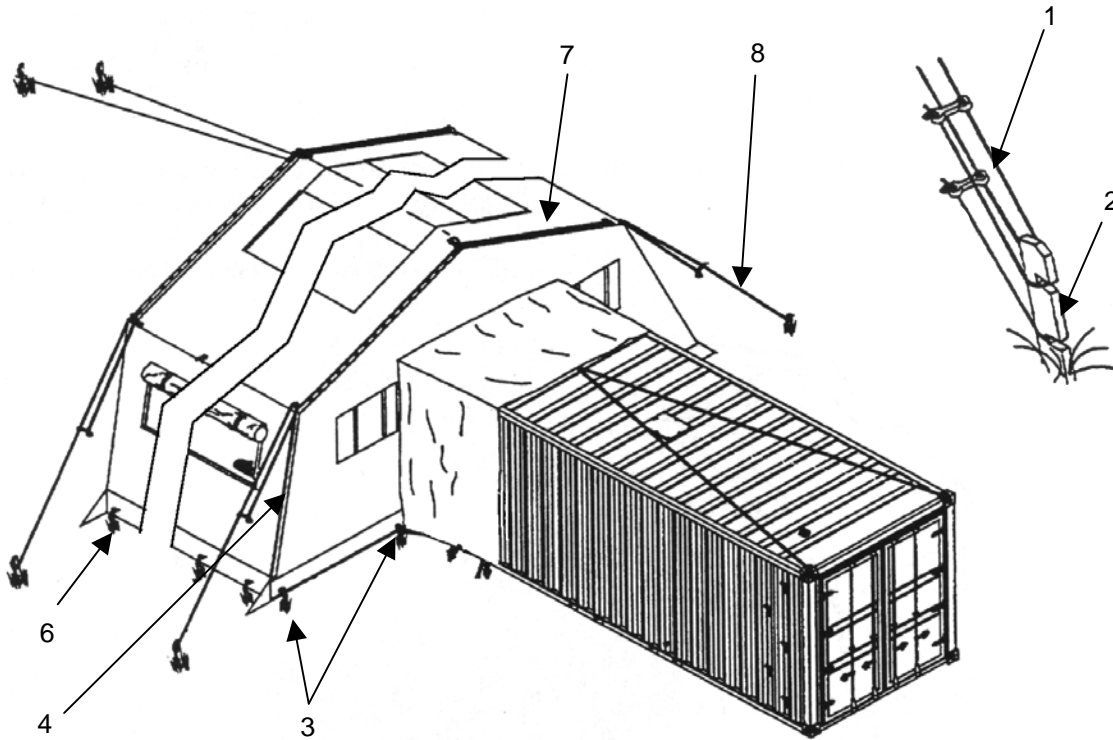
Use caution when closing container doors to avoid damage to lights.

11. Close the personnel double doors.

12. Have two soldiers on top of container loosen the bootwall lines **(1)** to the upper ISO fittings **(2)** at the opposite end of the container.
13. Have two soldiers on ground remove tent stakes **(3)** from the lower end **(4)** of the bootwall.
14. Fold bootwall back towards TEMPER section and coil bootwall lines **(1)**.
15. Have a soldier on the ground unplug power cord **(5)** used for TEMPER interior lights from the container power panel.
16. Disconnect power cord from lights, coil cord, and place in shower stall.



17. Release tension from both guy lines at ridge **(1)** and disconnect from wooden stakes **(2)**.
18. Remove the stakes **(2)** from rear of TEMPER section and remove footstop tent pins **(3)**.
19. Disconnect all becket laces **(4)** up to eave.
20. Close all windows and doors on all fabric sections.
21. Remove frame foot tent pins **(6)**.
22. Lift fabric **(7)** from side of tent and roll up onto roof section.
23. Release tension from guy lines **(8)** at eaves and disconnect from wooden stakes **(2)**.



**WARNING**

The assembled TEMPER section is heavy. At least eighteen soldiers are required to move the 32-foot TEMPER away from the shower container.

**CAUTION**

Do not attempt to move the TEMPER sections until the shave stands have been removed. Failure to observe this precaution may result in damage to the TEMPER fabric.

24. Using one soldier at each arch assembly leg and one soldier at each base purlin, move the TEMPER section away from the shower container approximately six feet to be clear of the shower container.



## Lowering the Frame



### WARNING

Frame assembly hinges can pinch or crush hands and fingers. Keep hands and fingers away from frame assembly ridges and eaves.

### CAUTION

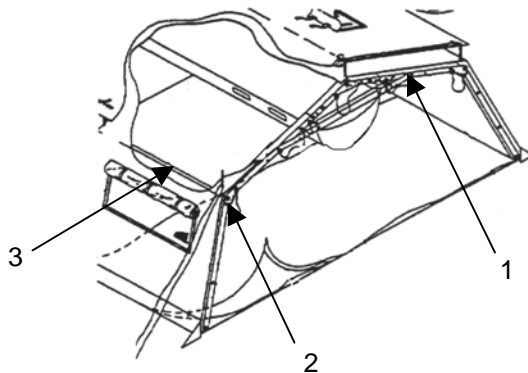
Avoid folding wall fabric into joints. Material may rip if caught in joint.

1. Place two soldiers at each arch **(1)** on side of tent being lowered.
2. On command, remove quick release pins **(2)** holding arches erect.

### CAUTION

Do not twist or turn frame components when handling. Damage to equipment may occur.

3. Keeping clear of tent section, place one hand below eave joint of arch **(1)** and one on the eave purlin **(3)**.
4. Swing out side frame and lower side. Extra soldiers may assist in lowering frame.
5. Remove luminaires and light strap assemblies from inside tent section.
6. Store light components in retrieved light case.
7. Disconnect eave purlin flaps.
8. Repeat these steps to lower other side of tent section.



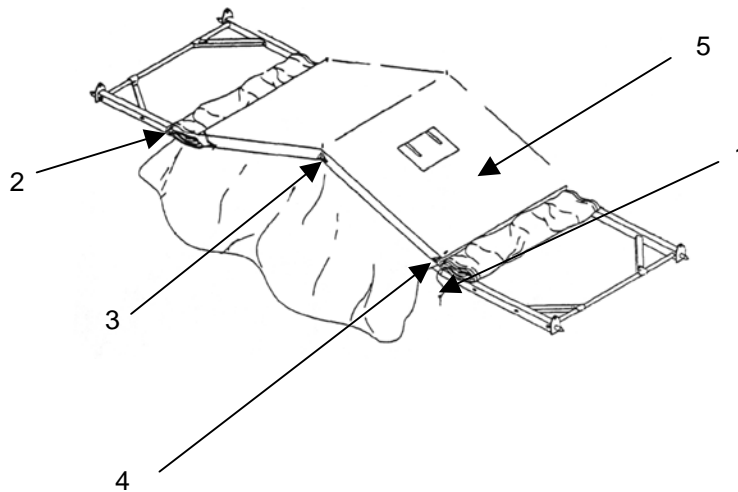
### Removing the Fabric

1. Disconnect hitch clip pins **(1)** from eave extenders **(2)**.
2. Remove eave extenders **(2)**.
3. Untie tie-off point and disconnect becket lacing of roof section.
4. Remove hitch clip pin from ridge extender **(3)**.
5. Remove ridge extender **(3)**.
6. Remove modified end section **(4)** and regular end section on opposite side of frame.

### NOTE

Fold fabric label side out to allow for easy identification of endwall sections.

7. Remove window section **(5)** from frame.



## Frame Disassembly

### NOTE

Disassembly sequence is from base to ridge.

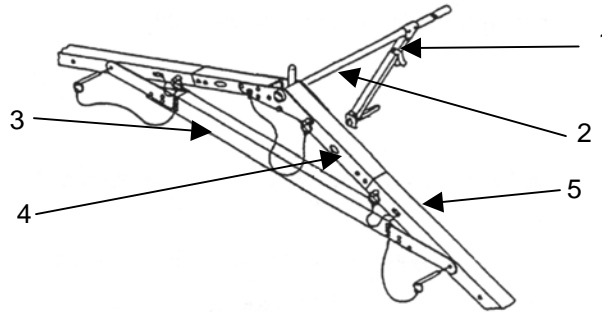
1. Disconnect each purlin diagonal brace **(1)**, fold, and secure.



### WARNING

Position one soldier at each ridge arch to hold arch upright during frame disassembly. Failure to hold frame upright may allow frame to fall and cause serious injury or death to personnel.

2. Rotate purlins **(2)** and remove.
3. Remove headers **(3)**.
4. Disassemble roof arch **(4)** and side arch assembly **(5)** and fold.
5. Pack frame components in TEMPER frame section cover assembly.



### WARNING

Power source must be shut down before connecting or disconnecting any cables. Failure to do so may result in serious injury or death by electrocution.

### NOTE

Coordinate with Force Provider Facilities Support Section Power Generation Personnel, Prime Power Team, or Utilities Team as necessary to facilitate required power connections.

6. Turn OFF power supply.
7. Unplug the shave stand power cords.
8. Install dust caps on disconnected power cables.

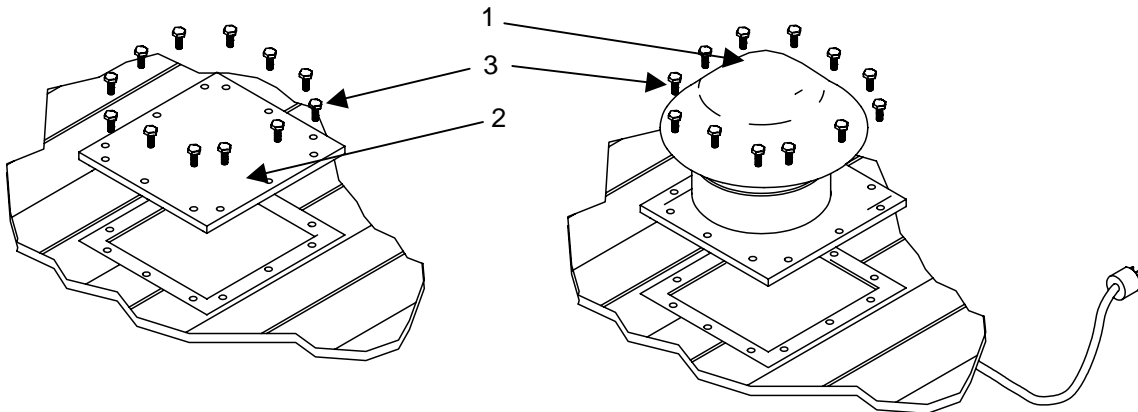
## Removal of Exhaust Fan



### **WARNING**

The exhaust fan is heavy, awkward, and difficult to maneuver. To prevent injury, four persons are required to install and move it – two on the container roof and two on the ground.

1. Unplug exhaust fan power cord from the 20A connector on the power service panel.
2. Using hinged steps, have two persons access the top of the container.
3. Unbolt exhaust fan **(1)**.
4. Remove exhaust fan **(1)**, then install panel **(2)**, aligning holes **(3)**.
5. Remove bolts **(4)** from fan, and install in panel **(2)**.



**Inventory Shower, Enclosed Unit, System (Force Provider Configuration)**

Inventory equipment and ensure the following items are available, clean and ready to be packed into the shower container and TRICON containers designated 4B, 4C, and 4E.

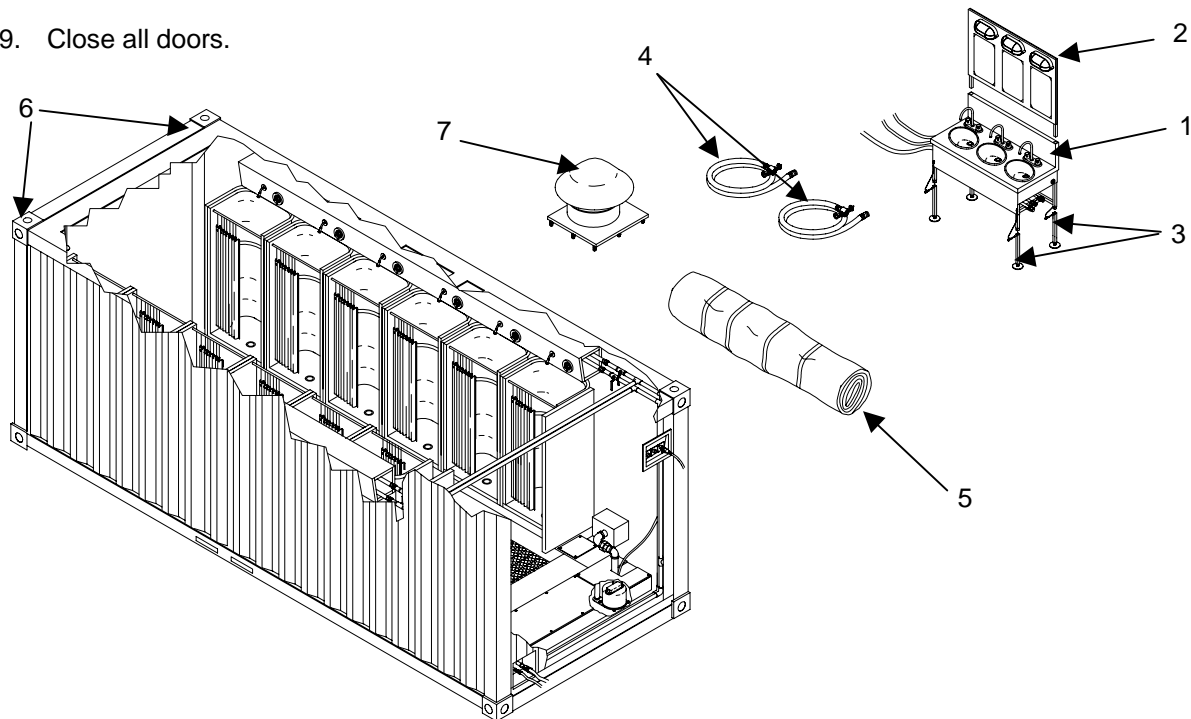
**Table 1. Shower, Enclosed Unit, System Packing Inventory.**

Description of Item	Quantity	Location
Air Conditioner Assembly, 54K BTU, 208V AC 3 phase	1 each	TRICON 4C
Cord, Electrical, 3 wire, 110 V, 20ft long	2 each	Container
Exhaust Fan	1 each	Container
Freshwater Hose 1½in, 10ft long	1 each	Container
Freshwater Hose 1in, 10ft long	1 each	Container
Freshwater Hose ¾in, 15ft long	1 each	Container
Graywater Hose 2in, 20ft long	1 each	Container
Hose, Drain, Shave Stand 1½in, 6ft 3in long	2 each	TRICON 4E
Hose, Drain, Shave Stand 1½in, 2ft 3in long	2 each	TRICON 4E
Hose, Supply, Shave Stand ¾in, 2ft 3in long	4 each	TRICON 4E
Hose, Supply, Shave Stand ¾in, 6ft 3in long	4 each	TRICON 4E
M-80 Water Heater	1 each	TRICON 4E
Power TEE, 20A 120/208 V 3 phase wye	1 each	Container
Shave stands	4 each	TRICON 4E
Technical Manual - TM 10-4510-208-13&P	1 each	Container
TEE, 1½inM x 1½inF x ¾inM QD	1 each	Container
TEMPER 32ft w/modified end wall, vestibule, and lights	1 each	TRICON 4B

**Pack Shower, Enclosed Unit, System (Force Provider Configuration)****WARNING**

The equipment to be moved is heavy, awkward, and difficult to maneuver. To prevent injury, four persons are required to install and move it.

1. Pack M-80 water heater and its components in Force Provider TRICON container 4E as described in TM 10-5419-206-13.
2. Disassemble shave stands (1), removing upper panels (2) and leg extensions (3).
3. Pack four shave stands (1) in Force Provider TRICON container 4E as described in TM 10-5419-206-13.
4. Thoroughly drain all water hoses. Coil drained water hoses (4) and connect the ends of each hose together. Place these on top of the TEMPER (5).
5. Pack all hoses (4) in Force Provider TRICON container 4E as described in TM 10-5419-206-13.
6. Pack the TEMPER (5) and its components in Force Provider TRICON container 4B as described in TM 10-5419-206-13.
7. Open personnel doors (6).
8. Place exhaust fan (7) in center aisle.
9. Close all doors.



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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
OPERATION UNDER UNUSUAL CONDITIONS**

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**OPERATION IN UNUSUAL ENVIRONMENT/WEATHER CONDITIONS**

Precautions can be taken to lessen the effect of unusual and potentially dangerous weather or other environmental conditions. The following steps are designed to prevent damage to the either model and avoid possible injury to personnel.

**High Winds**

- Refer to TM 10-8340-224-13 for TEMPER operating procedures in high winds.
- Refer to TM 10-4520-259-13&P for M-80 water heater operating procedures in high winds.
- Refer to TM 10-5430-237-12&P for water tank operating procedures in high winds.
- Refer to TM 10-4630-206-13&P for Sewage Ejection Pump (SEP) operating procedures in high winds.
- Keep Containerized Shower double service doors closed and secured.
- Keep Containerized Shower circuit breaker panel box closed and secured.
- Frequently check ground stakes for security.

**Dusty Or Sandy Conditions**

- Refer to TM 10-8340-224-13 for TEMPER operating procedures in dusty or sandy conditions.
- Refer to TM 10-4520-259-13&P for M-80 water heater operating procedures in dusty or sandy conditions.
- Refer to TM 10-5430-237-12&P for water tank operating procedures in dusty or sandy conditions.
- Refer to TM 10-4630-206-13&P for Sewage Ejection Pump (SEP) operating procedures in dusty or sandy conditions.
- Keep Containerized Shower double service doors closed and secured.
- Keep Containerized Shower circuit breaker panel box closed and secured.
- Ensure that fuel and water service is protected from sand, dust, and grit.

**Rain/Wet Climate**

- Refer to TM 10-4520-259-13&P for M-80 water heater operating procedures in rain or wet conditions.
- Refer to TM 10-8340-224-13 for TEMPER operating procedures in rain or wet conditions.
- Refer to TM 10-4630-206-13&P for Sewage Ejection Pump (SEP) operating procedures in rain or wet conditions.
- Keep Containerized Shower double service doors closed and secured.
- Keep Containerized Shower circuit breaker panel box closed and secured.
- To minimize the effects of potential flooding, dig a trench around the TEMPER to evacuate excess water.

**Snow and Extreme Cold**

- The Containerized Shower (stand alone configuration) cannot be used at temperatures below 32° Fahrenheit (0° Celsius).
- If the temperature is sustained at 32° Fahrenheit (0° Celsius) or below, prepare containerized shower for movement as outlined in WP 0008 00.
- If the temperature is intermittently at 32° Fahrenheit (0° Celsius) or below, for example, overnight, shut down shower operation and set up the Containerized Shower as follows:
  - Operate space heater.
  - Disconnect, drain, and coil all hoses. Store inside the shower container.
  - Keep all doors on container closed.
  - Drain all water from M-80 water heater and 30 gpm water pump.
  - Store M-80 water heater and 30 gpm water pump inside TEMPER.
- Refer to TM 10-5430-237-12&P for water tank operating procedures in snow and extreme cold.
- Refer to TM 10-4630-206-12&P for Sewage Ejection Pump (SEP) operating procedures in snow and extreme cold.
- Refer to TM 10-8340-224-13 for TEMPER operating procedures in snow and extreme cold.
- Refer to TM 10-4520-259-13&P for M-80 water heater operating procedures in snow and extreme cold.
- Refer to TM 10-5419-206-13 for operation and winterization of the Shower, Enclosed Unit, System (Force Provider configuration).

**Extreme Heat**

- Refer to TM 10-8340-224-13 for TEMPER operating procedures in extreme heat.
- Activate air conditioning, if installed.
- Alternately, open all doors on container and TEMPER and tie them back.
- Turn the exhaust fan to ON.

**High Altitude**

The M-80 water heater is the only piece of equipment, which could be effected by high altitude operation. Refer to TM 10-4520-259-13&P.

**Nuclear, Biological, And Chemical (NBC) Decontamination****WARNING**

For immediate decontaminating procedures use ONLY hot soapy water for spot decontamination of hot surfaces of the M-80 water heater and stack. Shut down and cool the heater for any additional decontamination procedures. DO NOT spray DS2 or any other combustible decontamination solutions or compounds on an operating heater or stack. DO NOT spray DS2 or any other combustible decontamination solutions or compounds on any equipment surfaces or components where the operating temperatures reach or exceed the flashpoint of DS2 (160° Fahrenheit or 71.1° Celsius).

Perform immediate operational or thorough decontamination procedures in accordance with FM 3-5 as the mission, resources, and tactical situation permit.



**CHAPTER 3**

**TROUBLESHOOTING PROCEDURES  
FOR  
CONTAINERIZED SHOWER  
AND  
SHOWER, ENCLOSED UNIT, SYSTEM**



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**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
OPERATOR TROUBLESHOOTING**

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**GENERAL INFORMATION**

This manual cannot list all malfunctions that may occur, or all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify unit maintenance. There are no lubrication requirements for either shower model.

**Malfunction Symptom Index**

The malfunction symptom index is a quick reference index for finding troubleshooting procedures. Associated with each symptom name is a procedure sequence number representing the starting point in a troubleshooting sequence. Should any one symptom require more than one troubleshooting sequence to arrive at the most likely area of investigation, the additional starting point numbers are also provided.

As the troubleshooting activity progresses through to the conclusion of a particular sequence, a reference is made to the next logical troubleshooting sequence by procedural sequence number or by referring to the malfunction/symptom index to locate the next failure symptom procedure. This type of activity continues until successful fault isolation is achieved.

**NOTE**

Be sure to read all **WARNINGS** in front of manual before troubleshooting. Before you use the troubleshooting tables, be sure you have performed all applicable operating checks and verified that a malfunction exists. When a corrective action is performed, verify that the action has corrected the malfunction. All malfunctions deferred to the next higher level of maintenance must be reported according to the instructions given in DA PAM 738-750.

**Troubleshooting Procedures**

The troubleshooting procedures contain tables listing the malfunctions, tests or inspections, and corrective action required to return the shower to normal operation. Perform the steps in the order they appear in the tables.

Each procedure is headed by an initial setup. This setup outlines what is needed as well as certain conditions that must be met before starting the task. **DO NOT START THE TASK UNTIL:**

- You understand the task.
- You understand what you are to do.
- You understand what is needed to do the work.
- You have the things you need.



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
MALFUNCTION SYMPTOM INDEX**

**LEAKAGE TROUBLESHOOTING PROCEDURES**

<b>MALFUNCTION</b>	<b>Work Package</b>	<b>Item</b>
Water leaking inside shower.	0013 00	1

**INTERIOR LIGHTING TROUBLESHOOTING PROCEDURES**

<b>MALFUNCTION</b>	<b>Work Package</b>	<b>Item</b>
Interior lights inoperative.	0014 00	1

**SPACE HEATER TROUBLESHOOTING PROCEDURES**

<b>MALFUNCTION</b>	<b>Work Package</b>	<b>Item</b>
Space Heater inoperative.	0015 00	1

**POWER OUTLET TROUBLESHOOTING PROCEDURES**

<b>MALFUNCTION</b>	<b>Work Package</b>	<b>Item</b>
Power outlets inoperative.	0016 00	1

**EXHAUST FAN TROUBLESHOOTING PROCEDURES**

<b>MALFUNCTION</b>	<b>Work Package</b>	<b>Item</b>
Fan inoperative.	0017 00	1
Fan operates with excessive noise or vibration.	0017 00	2

**WATER TROUBLESHOOTING PROCEDURES**

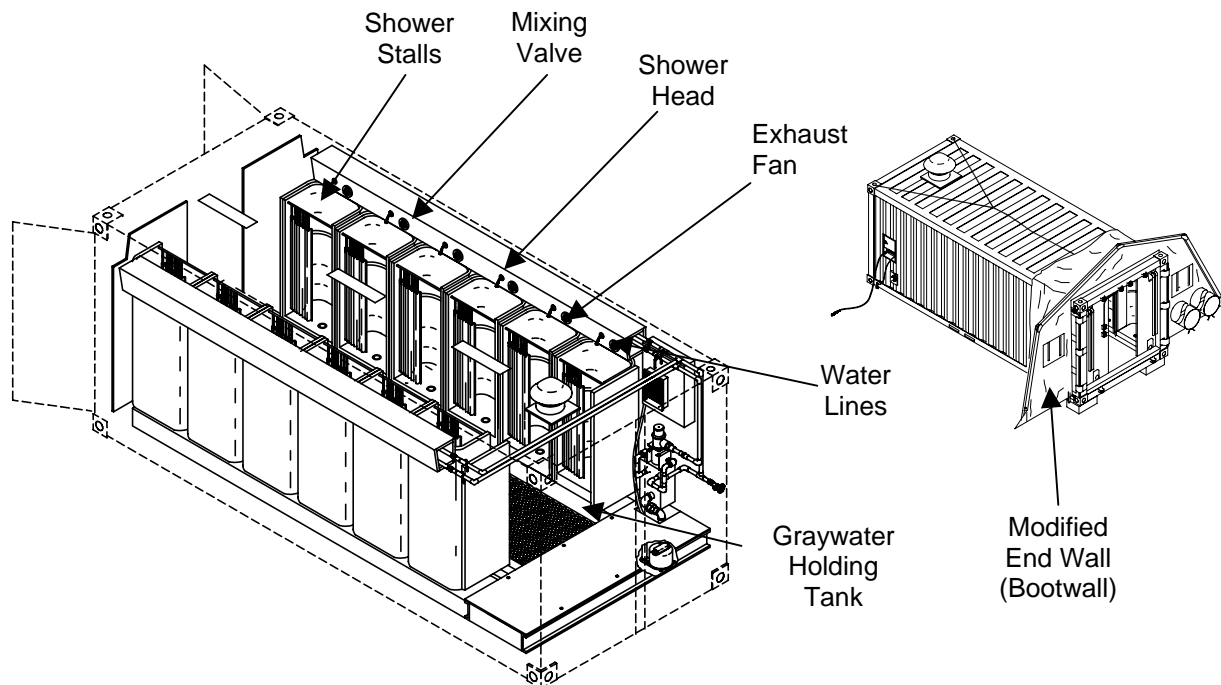
<b>MALFUNCTION</b>	<b>Work Package</b>	<b>Item</b>
No water to shower.	0018 00	1
No hot water.	0018 00	2
Graywater not discharging.	0018 00	3
No water from 30 gpm water pump (Containerized Shower only).	0018 00	4
No water at shower head.	0018 00	5



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSE UNIT, SYSTEM  
WATER LEAKAGE TROUBLESHOOTING PROCEDURES**

**Table 1. Water Leakage Troubleshooting Procedures.**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. WATER LEAKING INSIDE SHOWER	<p>Step 1. Check all interior water lines and hoses for leaks. Check shower heads and shower valves for leaks. Check shower stall for cracks.</p> <p>Step 2. Check if graywater holding tank is overflowing.</p> <p>Step 3. Check exhaust fan for secure fitting in shower roof.</p> <p>Step 4. Check modified endwall for proper fit.</p>	<p>Turn off shower valves left on. Mark a cracked shower stall as unusable. Report leaky pipes and hoses to unit maintenance.</p> <p>Refer to work package 0022 00.</p> <p>Ensure proper fit of exhaust fan and tightness of nuts and bolts. Refer to WP 0005 00 or WP 0006 00 as applicable.</p> <p>Adjust attachment to achieve a snug fit of the end wall.</p> <p>If condition persists, notify unit maintenance.</p>




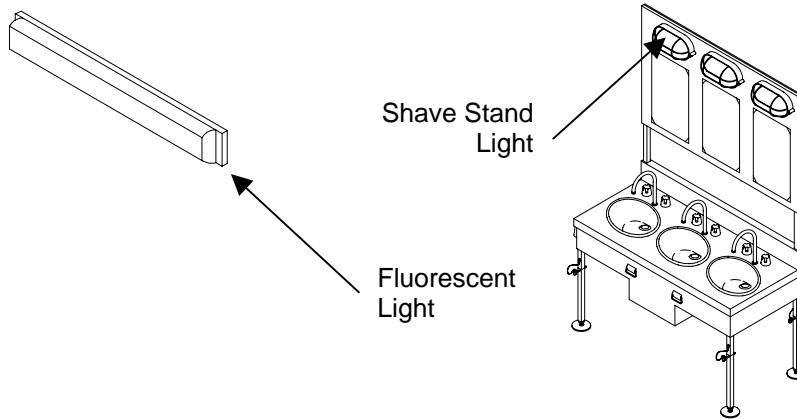




**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
INTERIOR LIGHTING TROUBLESHOOTING PROCEDURES**

**Table 1. Interior Lighting Troubleshooting Procedures.**


<b>MALFUNCTION</b>	<b>TEST OR INSPECTION</b>	<b>CORRECTIVE ACTION</b>
<p>1. LIGHTS INOPERATIVE</p>	<div style="text-align: center;">  <p><b><u>WARNING</u></b></p> </div> <p>Lethal voltage is present when light set is connected to power source.</p> <p>Step 1. If all lights are inoperative, check external power and cable connection to the power input panel.</p> <p>Step 2. Check interior light or convenience outlet GFCI and circuit breaker (Containerized Shower only), or shave stand lights extension cord connection.</p> <p>Step 3. If only individual light(s) are inoperative, check the bulbs for proper seating.</p>	<p>Ensure an external power source is connected to the power input panel. Refer to WP 0005 00 or WP 0006 00 as applicable.</p> <p>Reset GFCI or circuit breaker by turning switch OFF, then ON. (Containerized Shower only), or (re)connect extension cord.</p> <p>Replace bulbs on all individual, inoperative lights. Refer to WP 0023 00.</p> <p>If condition persists, notify Unit Maintenance.</p>

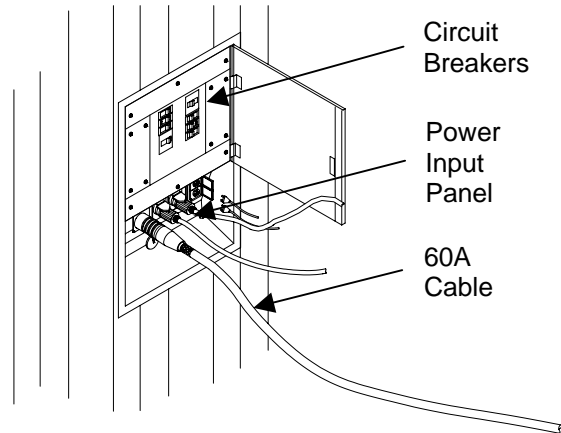
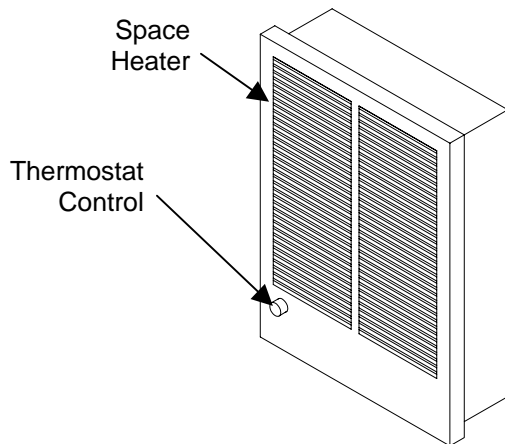




**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
SPACE HEATER TROUBLESHOOTING PROCEDURES**

**Table 1. Space Heater Troubleshooting Procedures (Containerized Shower Only).**


MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. SPACE HEATER INOPERATIVE</p>	<div style="text-align: center;">  <p><b>WARNING</b></p> </div> <p>Lethal voltage is present when the heater is connected to power source.</p> <p>Step 1. Check that thermostat is turned ON.</p> <p>Step 2. Check space heater circuit breaker.</p> <p>Step 3. Check main circuit breaker.</p>	<div style="text-align: center;"> <p><b>NOTE</b></p> </div> <p>Refer to WP 0004 00 for exact location of circuit breakers.</p> <p>Turn thermostat ON – wait at least five minutes for heater to come on.</p> <p>Reset circuit breaker by switching breaker OFF, then ON.</p> <p>Reset circuit breaker by switching breaker OFF, then ON.</p> <p>If condition persists, notify Unit Maintenance.</p>

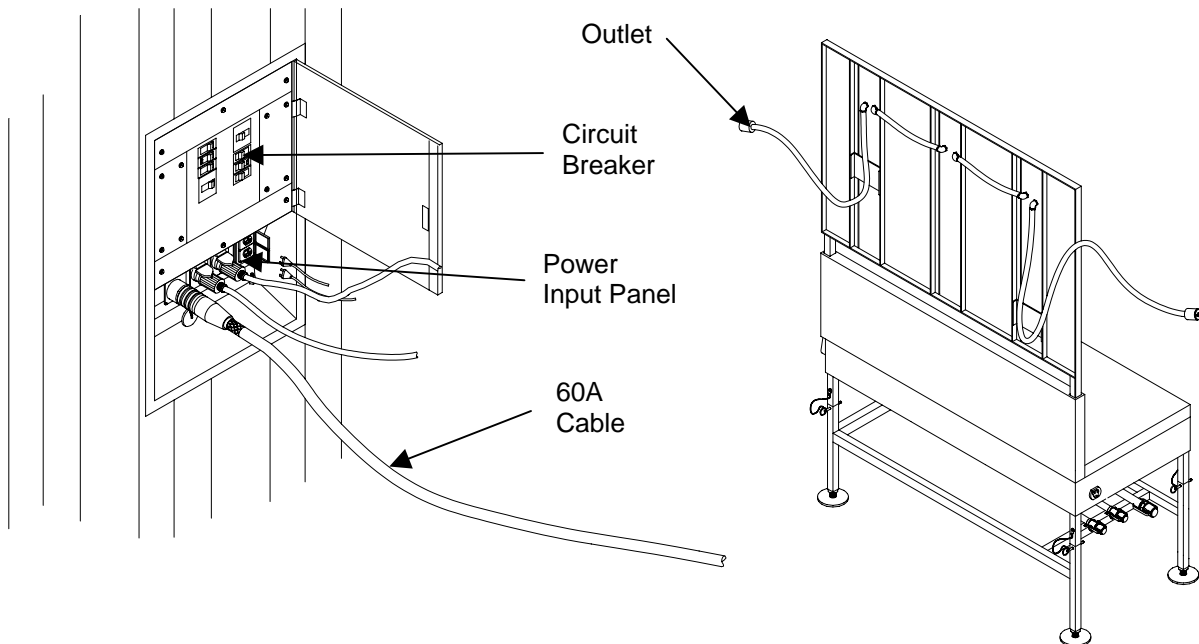




**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
POWER OUTLET TROUBLESHOOTING PROCEDURES**

**Table 1. Power Outlet Troubleshooting Procedures.**


MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. POWER OUTLETS INOPERATIVE</p>	<div style="text-align: center;">  <p><b>WARNING</b></p> <p>Lethal voltage is present when connected to power source.</p> <p>Step 1. If all power outlets are inoperative, check external power connection to distribution box.</p> <p>Step 2. Check power outlet circuit breakers (Containerized Shower only).</p> </div>	<p>Notify Unit Maintenance.</p> <p>Reset power outlet circuit breakers.</p> <p>If condition persists, notify Unit Maintenance.</p>





**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
EXHAUST FAN TROUBLESHOOTING PROCEDURES**

**Table 1. Exhaust Fan Troubleshooting Procedures.**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. FAN INOPERATIVE</p>	<div style="text-align: center;">  <p><b><u>WARNING</u></b></p> <p>Lethal voltage is present when the exhaust fan is connected to power source.</p> <p>Step 1. Check that fan switch is ON.</p> <p>Step 2. Check exhaust fan circuit breaker. (Containerized Shower only)</p> <p>Step 3. Check main circuit breaker. (Containerized Shower only)</p> <p>Step 4. Check power input panel connection.</p> </div>	<p>Turn fan switch ON.</p> <p>Reset circuit breaker.</p> <p>Reset circuit breaker.</p> <p>Notify Unit Maintenance.</p> <p>If condition persists, notify Unit Maintenance.</p>

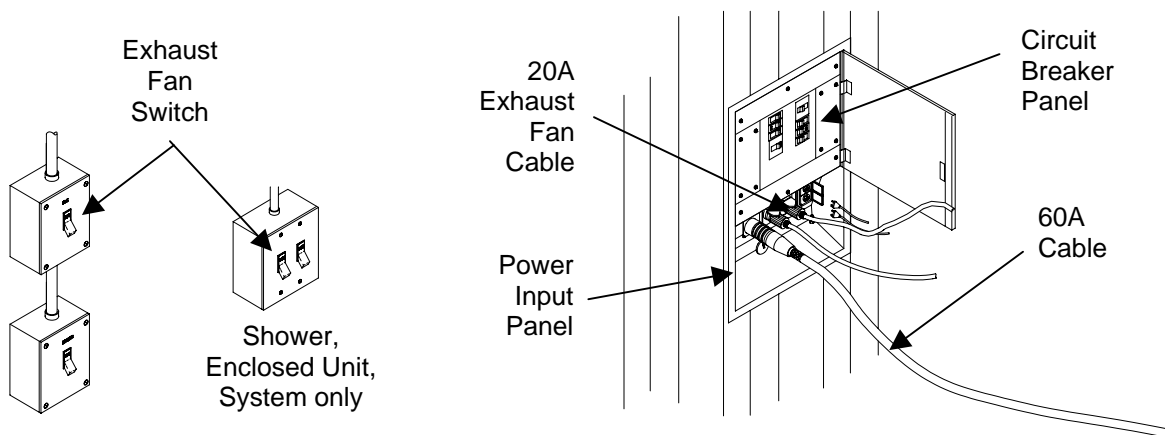

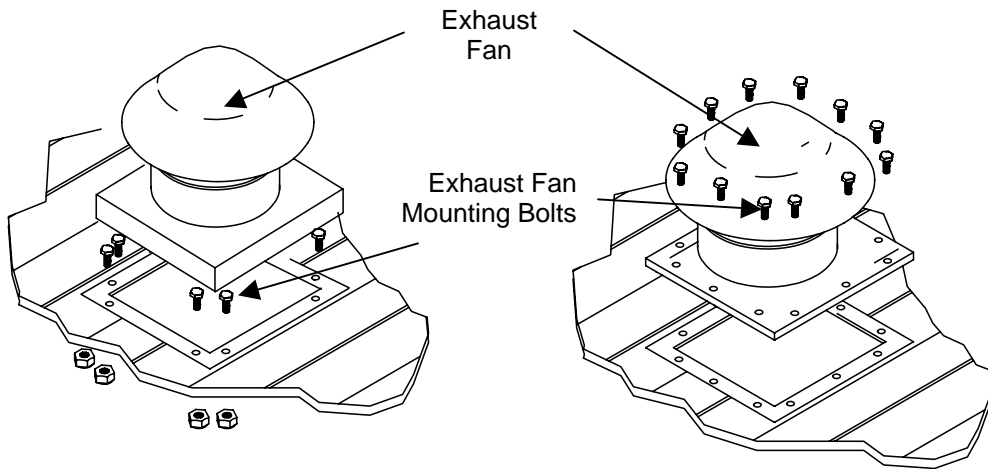


Table 1. Exhaust Fan Troubleshooting Procedures – Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. FAN OPERATES WITH EXCESSIVE NOISE OR VIBRATION</p>	<div style="text-align: center;">  <p><b>WARNING</b></p> <p>Lethal voltage is present when the exhaust fan is connected to power source.</p> <p>Step 1. Check that fan is correctly and tightly mounted.</p> </div>	<p>Tighten exhaust fan mounting bolts.</p> <p>If condition persists, notify Unit Maintenance.</p>



Containerized Shower

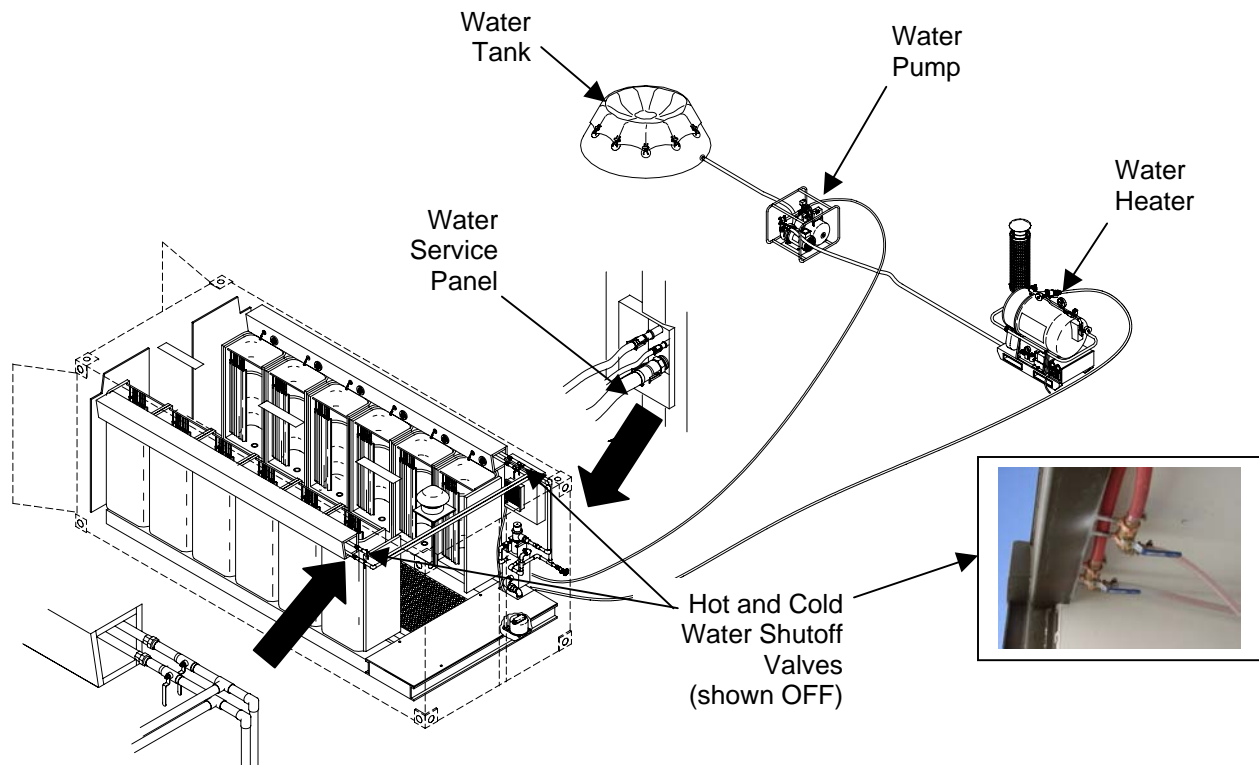
Shower, Enclosed Unit, System



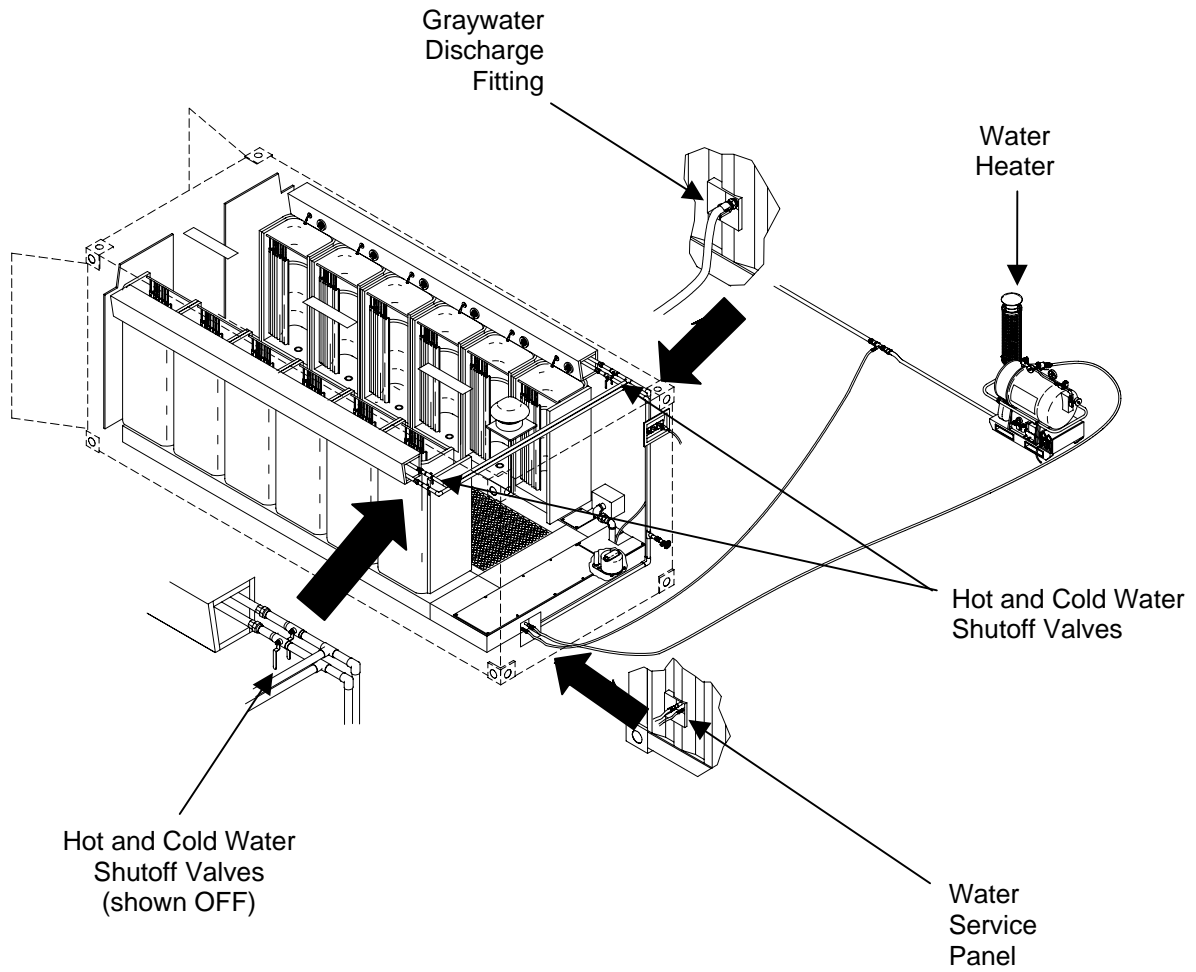
**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
WATER TROUBLESHOOTING PROCEDURES**

**Table 1. Water Troubleshooting Procedures.**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>1. NO WATER TO SHOWER</p>	<p>Step 1. Ensure water service feed is connected to water source and water is available at the source. Check all valves to make sure they are open.</p> <p>Step 2. Ensure 30 gpm water (Containerized Shower only) pump and M-80 water heater are operating properly, and water hose connections are tight.</p> <p>Step 3. Ensure hot and cold water shutoff valves are in the ON position.</p>	<p>Check to ensure water feed is connected properly. Refer to WP 0005 00 or 0006 00, as applicable.</p> <p>Verify pump (Containerized Shower only) and M-80 water heater are turned ON and reconnect water hoses as necessary.</p> <p>Open hot and cold water shutoff valves.</p> <p>If problem continues, notify unit maintenance.</p>



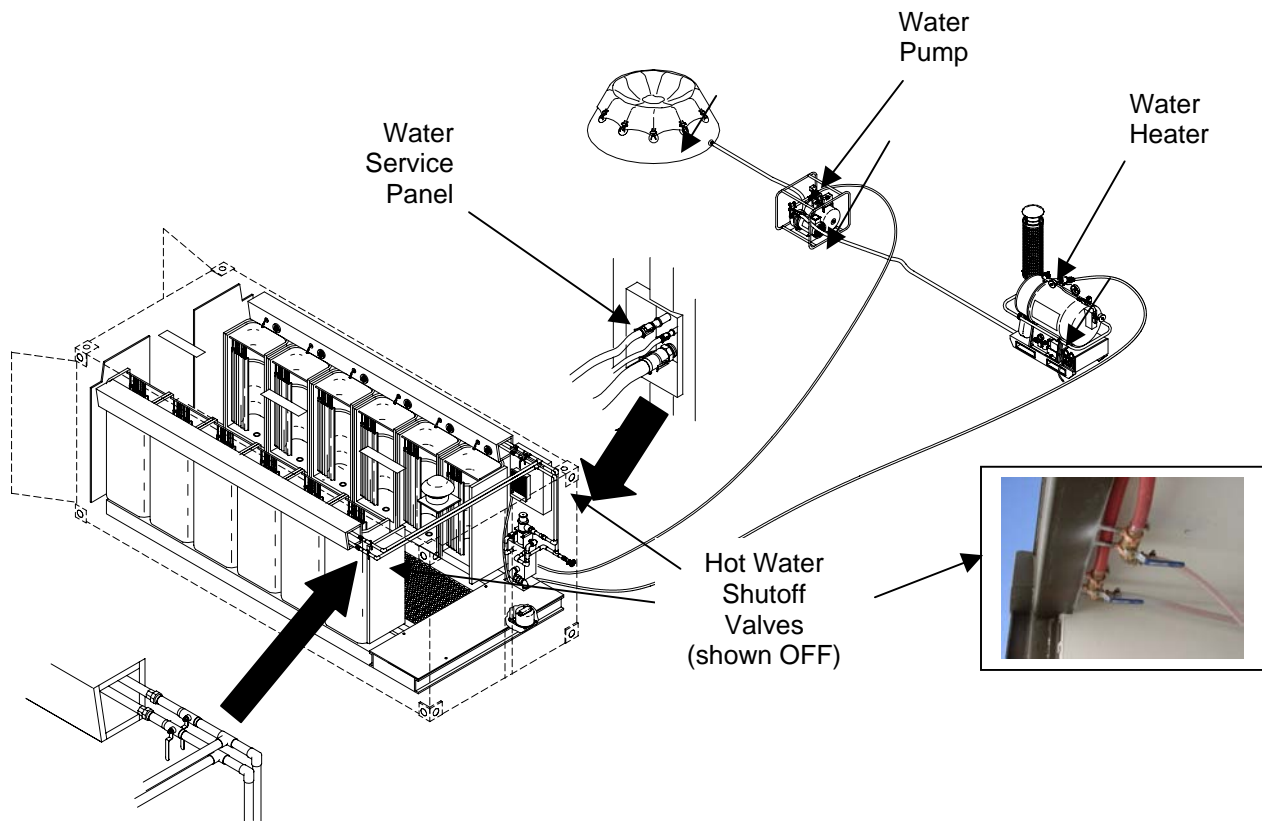
**CONTAINERIZED SHOWER**



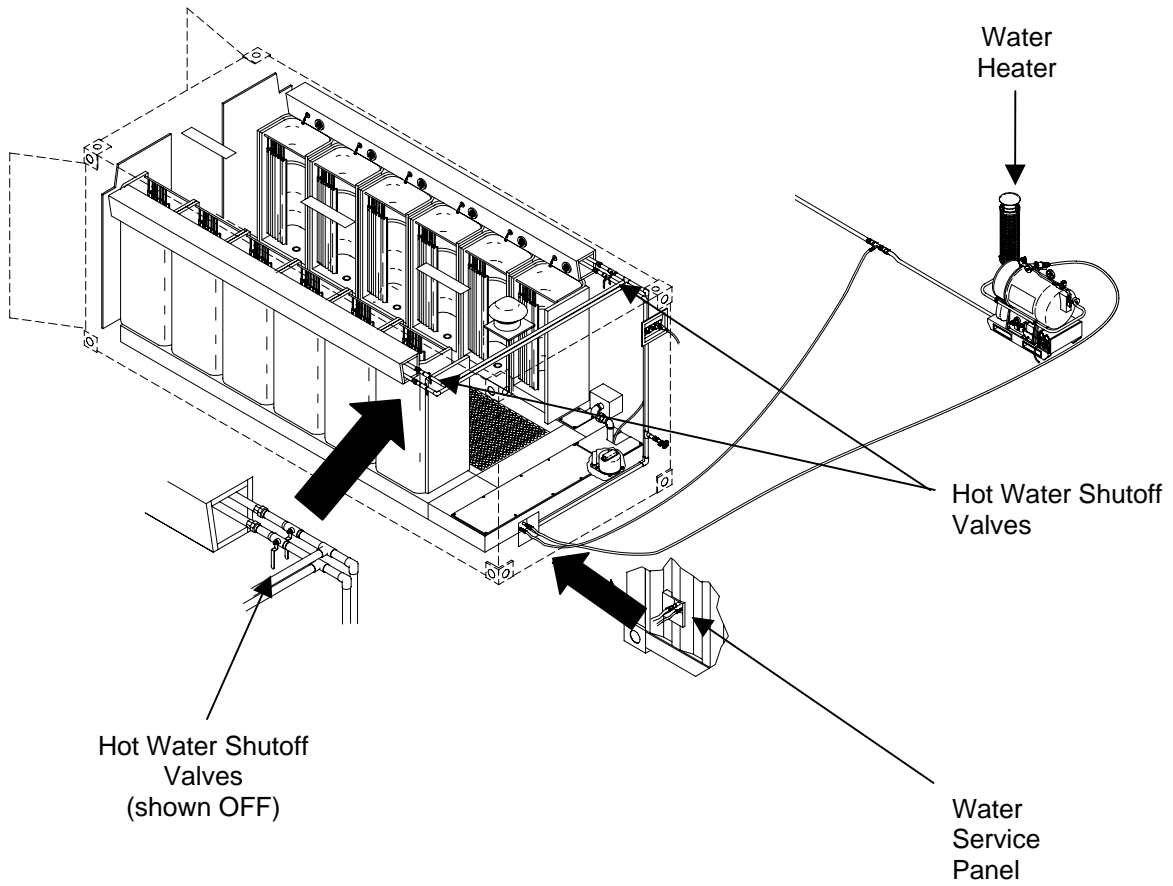
**SHOWER, ENCLOSED UNIT, SYSTEM**

Table 1. Water Troubleshooting Procedures-Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>2. NO HOT WATER AVAILABLE</p>	<p>Step 1. Ensure water service hose is connected to water heater and between the heater and the water input connector on the shower container.</p> <p>Step 2. Ensure water heater is operating properly.</p> <p>Step 3. Check that hot water shutoff valves are in ON position.</p>	<p>(Re)connect hoses as necessary. Refer to WP 0005 00 or 0006 00 as applicable.</p> <p>Refer to TM 10-4520-259-13&amp;P to verify proper water heater operation.</p> <p>Open hot water shutoff valves.</p> <p>If condition persists, notify unit maintenance.</p>



CONTAINERIZED SHOWER



**SHOWER, ENCLOSED UNIT, SYSTEM**

Table 1. Water Troubleshooting Procedures-Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. GRAYWATER IS NOT DISCHARGING</p>	<p>Step 1. Ensure graywater discharge hose is properly connected to the discharge fitting on the water service panel of the container.</p> <p>Step 2. Check for kinks or sharp bends in the graywater hose and ensure the end of the hose is located lower than the water service panel. Ensure the shower container is level.</p>	<p>(Re)connect discharge hose as necessary. Refer to WP 0005 00 or 0006 00 as applicable.</p> <p>Straighten kinks in hose and ensure hose is not elevated higher than the water service panel at any point. Ensure that end of drain hose is located lower than the water service panel at the shower container.</p> <p>If condition persists, notify Unit Maintenance.</p>

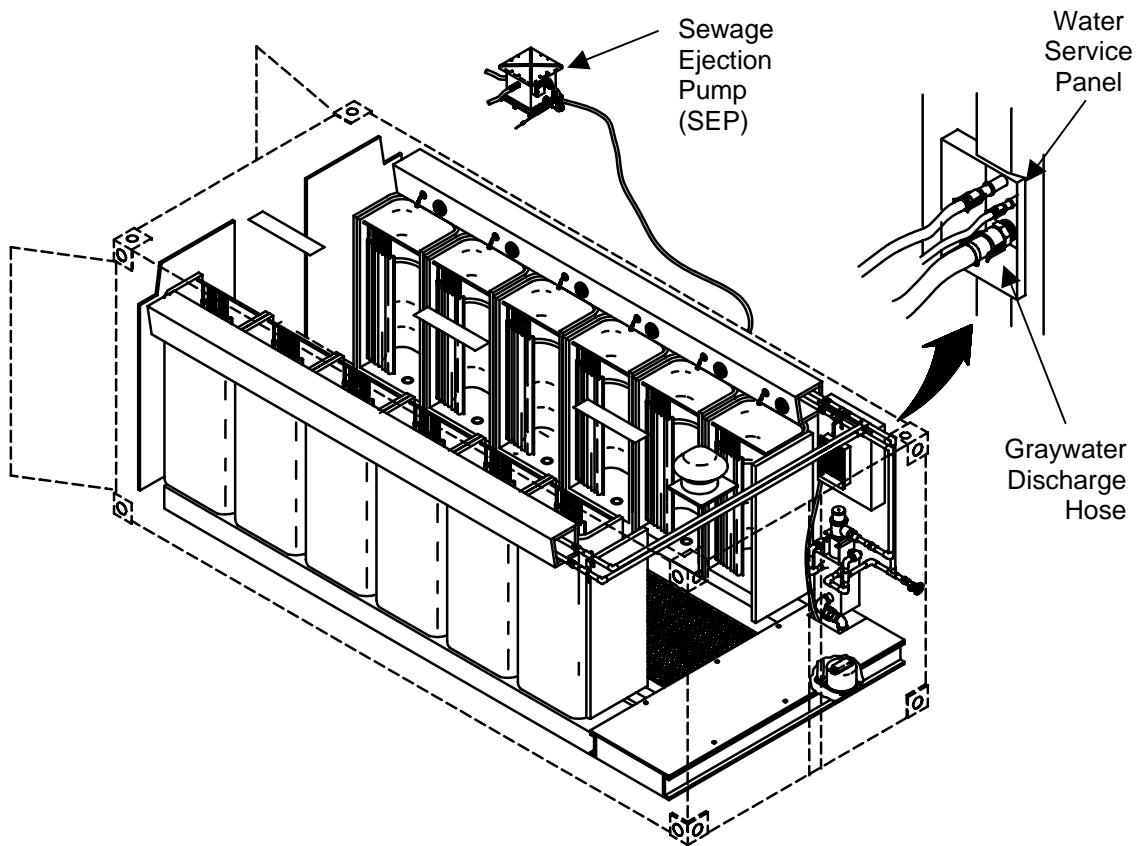
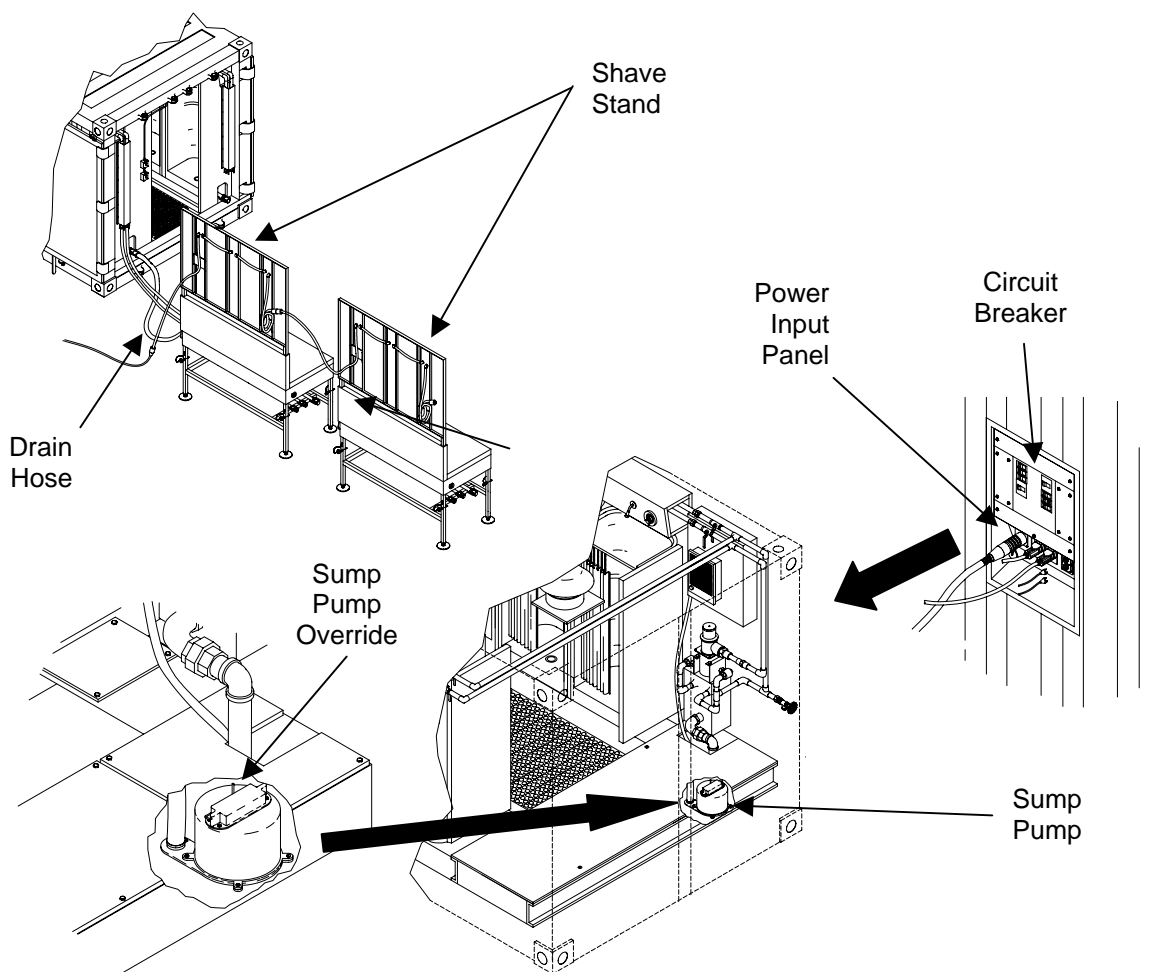


Table 1. Water Troubleshooting Procedures-Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>3. GRAYWATER IS NOT DISCHARGING - continued</p>	<p>Step 3. Check shave stands for proper connection of drain hoses; ensure sink is not clogged.</p> <p>Step 4. Check sump pump for proper operation. Check circuit breaker.</p>	<p>Disconnect hoses and check for clogging. Reconnect hoses. Refer to WP 0005 00 or 0006 00, as applicable.</p> <p>Reset sump pump circuit breaker No. 8 by switching the breaker OFF, then ON (Containerized Shower only). Operate sump pump override.</p> <p>If condition persists, notify Unit Maintenance.</p>



**Table 1. Water Troubleshooting Procedures-Continued.**

<b>MALFUNCTION</b>	<b>TEST OR INSPECTION</b>	<b>CORRECTIVE ACTION</b>
<p>4. NO WATER FROM 30 GPM WATER PUMP (Containerized Shower only)</p>	<p>Step 1. Ensure water service feed is connected to water source and water is available at the source. Check all valves to make sure they are open. Ensure water hose connections are tight.</p> <p>Step 2. Ensure power connections to the shower and pump are secure Ensure the main breaker (No.7/9/11) and the pump breaker (No.2/4/6) on the circuit breaker panel are ON.</p> <p>Step 3. Ensure that pump is turned ON at the motor controller.</p> <p>Step 4. Ensure that pump is primed.</p> <p>Step 5. Ensure that pump is rotating in the proper direction.</p>	<p>Check to ensure water feed is connected properly. Refer to WP 0005 00.</p> <p>Reconnect power connections as necessary. Reset tripped circuit breakers by switching them OFF, then ON.</p> <p>Press OFF (red) button on motor controller, then press ON button (green). Operate pressure switch override until pressure reaches 20 psi on gauge.</p> <p>Turn pump OFF at motor controller by pressing the red button. Turn OFF circuit breaker No.2/4/6 at the shower circuit breaker panel. Prime pump (refer to WP 0007 00). Reset circuit breaker No.2/4/6 by switching OFF, then ON. Turn pump ON by pressing the green button on the motor controller. Operate pressure switch override until pressure reaches 20 psi on gauge.</p> <p>Notify Unit Maintenance.</p>

Table 1. Water Troubleshooting Procedures-Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>4. NO WATER FROM 30 GPM WATER PUMP - continued (Containerized Shower only)</p>	<p>Step 6. Ensure that strainer is clear.</p>	<p>Turn pump OFF at motor controller by pressing the red button. Turn OFF circuit breaker No.2/4/6 at the shower circuit breaker panel. Secure water supply at water tank (refer to TM 10-5430-237-12&amp;P). Remove strainer element, clean, and reinstall. Open water supply at water tank. Turn ON circuit breaker No.2/4/6. Turn ON motor controller by pressing the green button. Operate pressure switch override until pressure reaches 20 psi on gauge.</p> <p>If problem persists, notify unit maintenance.</p>

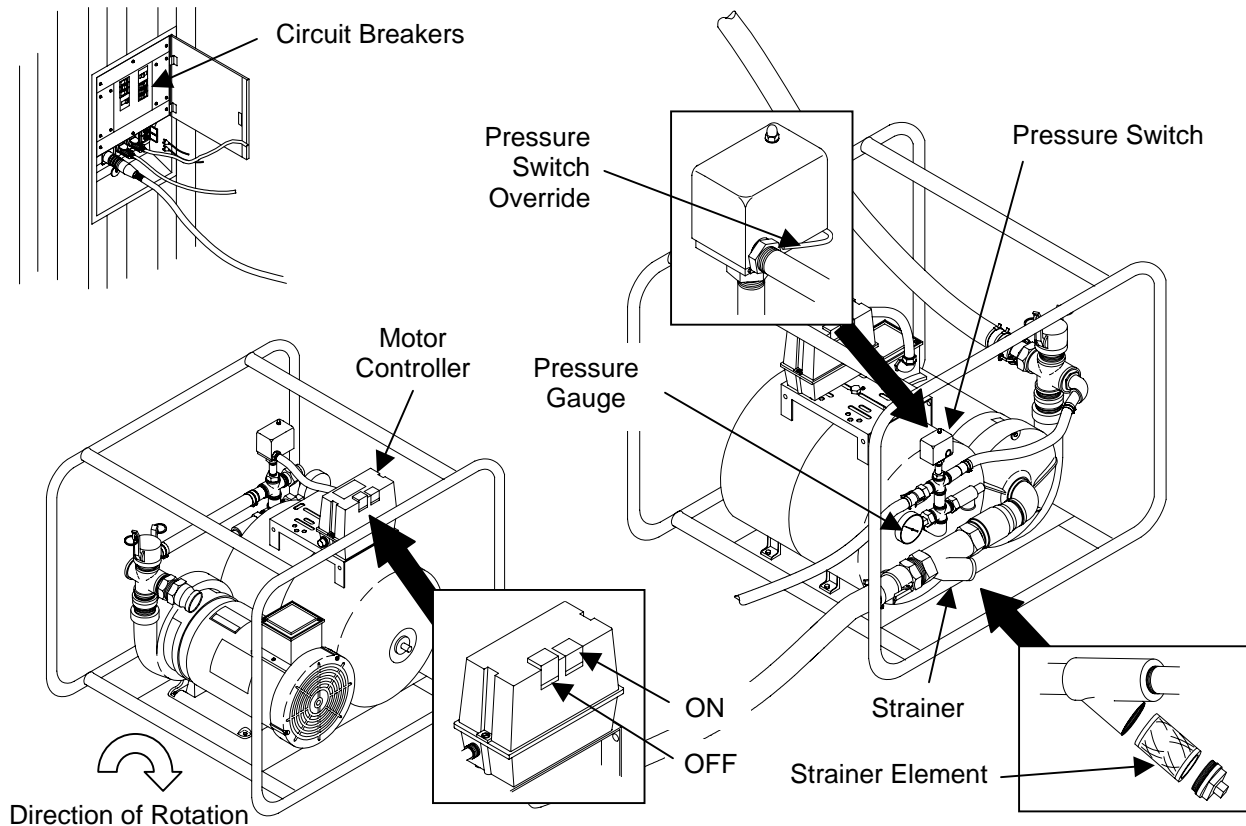
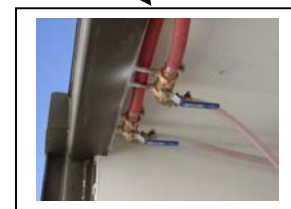
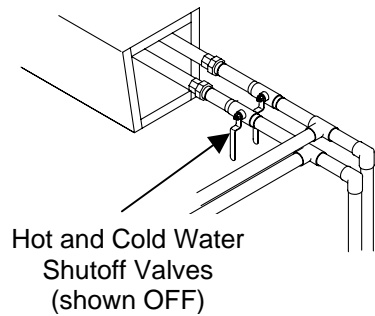
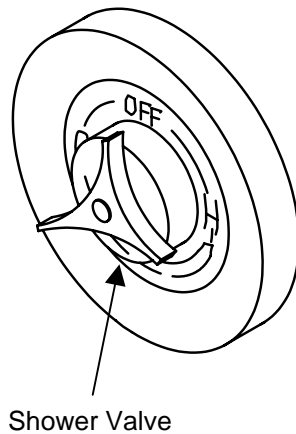
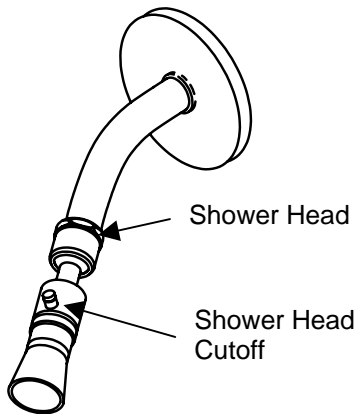




Table 1. Water Troubleshooting Procedures-Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>5. NO WATER AT SHOWERHEAD</p>	<p>Step 1. Press showerhead cutoff.</p> <p>Step 2. Inspect showerhead for damage or clogged opening.</p> <p>Step 3. Inspect shower valve for proper operation.</p> <p>Step 4. Perform troubleshooting procedures (malfunction) 1 and 2 described in WP 0018 00.</p>	<p>If showerhead cutoff is damaged or difficult to move, replace the showerhead with a new one. Showerhead should be hand tight.</p> <p>Clean any obstructions or replace a damaged showerhead. If showerhead is damaged or difficult to remove, replace the showerhead with a new one. Showerhead should be hand tight.</p> <p>Turn hot and cold water shutoff valves to OFF position, and remove shower head. Turn shower valve ON. Turn hot and cold water shutoff valves ON.</p> <p>Perform troubleshooting procedures (malfunction) 1 and 2 described in WP 0018 00.</p> <p>If condition persists, notify unit maintenance.</p>





**CHAPTER 4**

**OPERATOR MAINTENANCE INSTRUCTIONS  
FOR  
CONTAINERIZED SHOWER  
AND  
SHOWER, ENCLOSED UNIT, SYSTEM**



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**OPERATOR MAINTENANCE**  
**CONTAINERIZED SHOWER AND SHOWER, ENCLOSED UNIT, SYSTEM**  
**PREVENTATIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INTRODUCTION**

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**INTRODUCTION**

Preventive Maintenance Checks and Services (PMCS) are performed to keep the Containerized Shower and Shower, Enclosed Unit, System in good operating condition. The checks are used to find, correct, or report problems. Unit personnel are to do the PMCS jobs as shown in the PMCS table. PMCS are done every day the shower is operated, using the PMCS table. Pay attention to **WARNING** and **CAUTION** statements. A **WARNING** means someone could be hurt. A **CAUTION** means equipment could be damaged.

- Before you begin using the shower, do **Before** PMCS.
- During use of the shower, do **During** PMCS.
- After using the shower, do **After** PMCS.
- Once a week, do **Weekly** PMCS if the shower has been in use.
- Do **Monthly** PMCS once a month if the shower has been in use.

If you find something wrong when performing PMCS, fix it using troubleshooting and/or maintenance procedures.

The right-hand column of the PMCS table lists conditions that make the shower not fully mission capable. Write up the faults not fixed on DA Form 2404 for unit maintenance. For further information on how to use this form, see DA PAM 738-750.

If tools required to perform PMCS are not listed in procedures, notify your supervisor.

**INSPECTION**

Look for signs of trouble. Senses help here. You can feel, smell, hear, or see many problems that can be eliminated before they get worse. Inspect to see if items are in good condition. Are components correctly installed and secured? Is any damage to the fabric or frame components visible? Correct any faults or notify unit or direct support maintenance.

There are some common items to check on the shower. These include the following:

- Shower container, including doors, circuit breaker box, interior lights, heater, and exhaust fan.
- Freshwater and graywater hose conditions and connections.
- Power cable condition and connections.
- Shave stands.
- Graywater holding tank and sump pump.
- 30 gpm water pump and 3000 gallon freshwater tank (if used).

Perform PMCS on the M-80 Water Heater as described in TM 10-4520-259-13&P.

Perform PMCS on the TEMPER as described in TM 10-8340-224-13.

Perform PMCS on the 3000 Gallon Freshwater Tank (if used) as described in TM 10-5430-237-12&P.

Perform PMCS on the General Cargo Container as described in TM 55-8115-204-23&P.

Perform PMCS on the Sewage Ejection Pump (SEP) as described in TM 10-4630-206-13&P.

**LUBRICATION SERVICE INTERVALS**

Refer to TM 55-8115-204-23&P for general cargo container lubrication instruction.

**CLEANING**

Proper cleaning of the shower components is an integral part of maintenance. It can help prevent possible problems in the future, so make it a habit to clean all shower components whenever necessary. Clean the inside of the shower stalls, rubber mat, aisle floor, and shave stand sinks with hot soapy water or a chlorine cleaning agent periodically. Clean shower components as described in the separate technical manuals listed on the previous page.

**LEAKAGE DEFINITION FOR PERFORMING PMCS****CAUTION**

Equipment operation is allowable with minor leakages (Class I or II). Of course, consideration must be given to fluid capacity in the system. When in doubt, notify your supervisor. When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS. Class III leaks should be reported immediately to your supervisor.

Class I - Leakage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

Class II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.

Class III - Leakage of fluid great enough to form drops that fall from items being checked/inspected.

It is necessary for you to know how fluid leakage affects the status of the equipment. The caution statement above lists the types/classes of leakage to determine the status of the water system. Learn these leakage definitions and remember - when in doubt, notify your supervisor.

**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER AND SHOWER, ENCLOSED UNIT, SYSTEM  
PREVENTATIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**

**THIS SECTION COVERS:**

PMCS Checks and Services, Shower Interior

**INITIAL SETUP:**

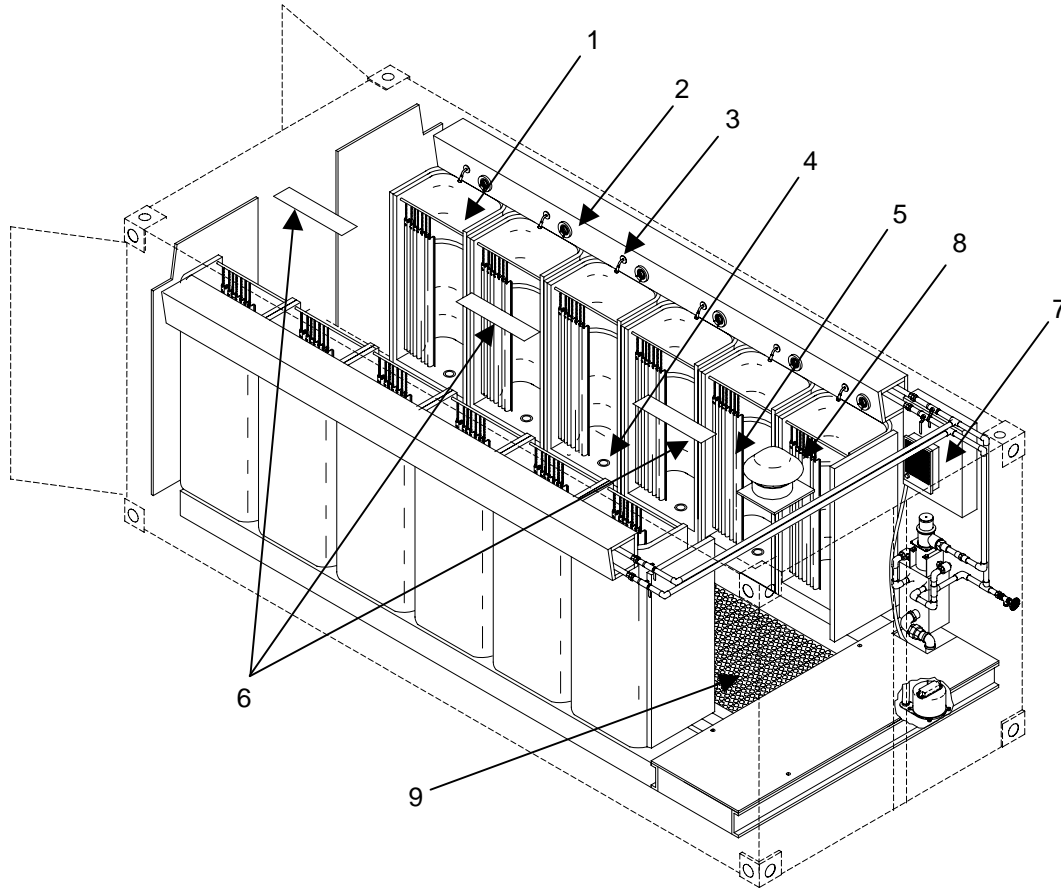
Containerized Shower or Shower, Enclosed Unit, System set up

**Maintenance Level**

Operator

**Table 1. Preventive Maintenance Checks and Services for Containerized Shower and Shower, Enclosed Unit, System.**

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Equipment Not Ready/ Available If:
1	Before	Shower Interior	Inspect shower stalls <b>(1)</b> for cracks or punctures. Check security of shower valve <b>(2)</b> and showerhead <b>(3)</b> . Inspect for clogged drain <b>(4)</b> . Check shower curtain <b>(5)</b> for serviceability. Check interior lights <b>(6)</b> , space heater <b>(7)</b> , exhaust fan <b>(8)</b> for damage. Check aisle floor mat <b>(9)</b> for damage and serviceability. Inspect container interior for general cleanliness.	Shower stall(s) cracked, punctured or leaking. Lights inoperative. Shower valve(s) or shower head(s) damaged or inoperative. Shower interior dirty.





**THIS SECTION COVERS:**

PMCS Checks and Services, Shave Stands

**INITIAL SETUP:**

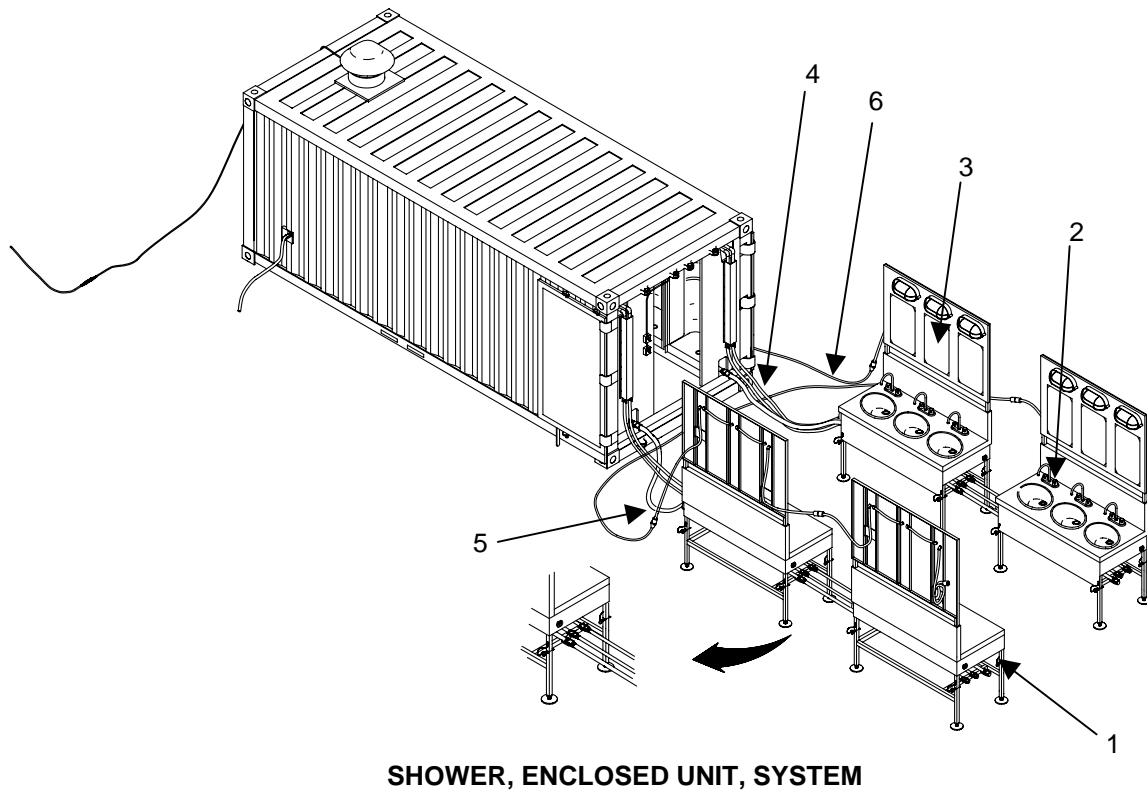
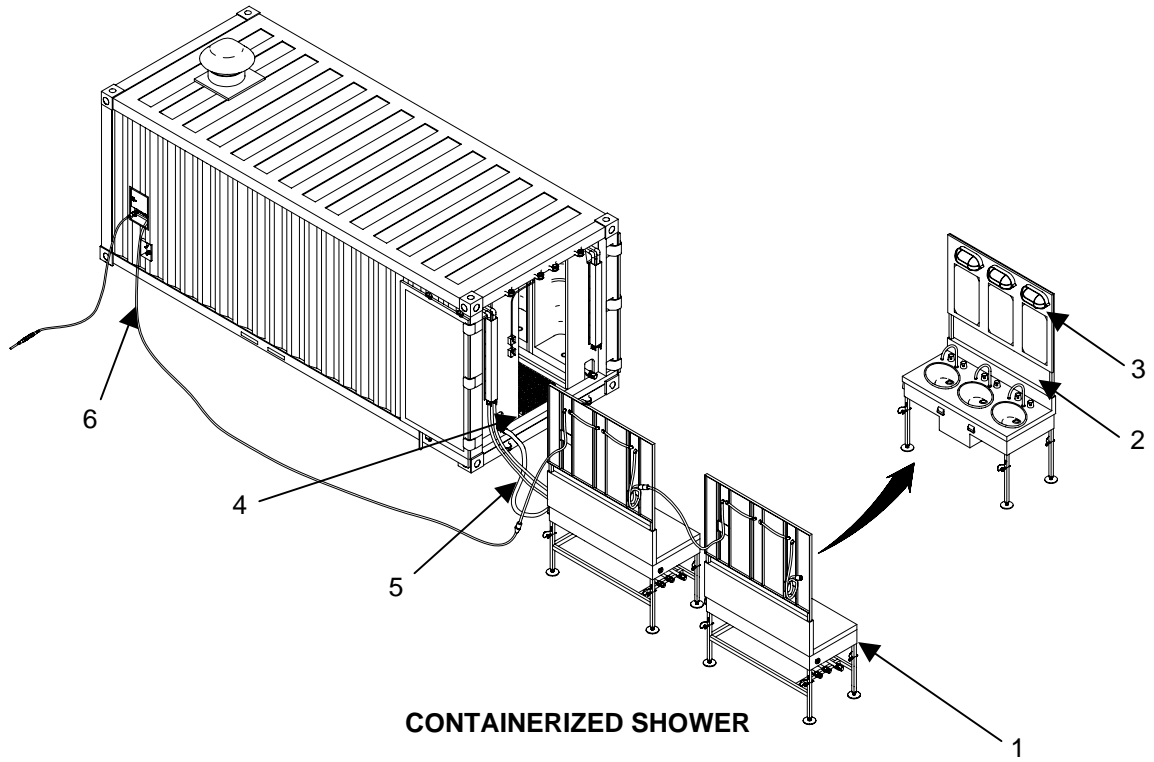
Containerized Shower or Shower, Enclosed Unit, System set up

**Maintenance Level**

Operator

**Table 1. Preventive Maintenance Checks and Services for Containerized Shower and Shower, Enclosed Unit, System - continued**

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Equipment Not Ready/ Available If:
2	Before	Shave Stands	Visually inspect the shave stands <b>(1)</b> for damage. Check for operation of the faucets <b>(2)</b> and serviceability of the mirror <b>(3)</b> . Check hot and cold water supply hoses <b>(4)</b> for leaks and damage. Check the graywater hoses <b>(5)</b> for leaks, clogs or damage. Inspect the power cords <b>(6)</b> for damage or fraying, and proper connections.	Shave stand(s) damaged or parts missing. Sinks clogged, water lines/hose leaking. Power cords missing or ripped.



**THIS SECTION COVERS:**

PMCS Checks and Services, Exterior Hoses

**INITIAL SETUP:**

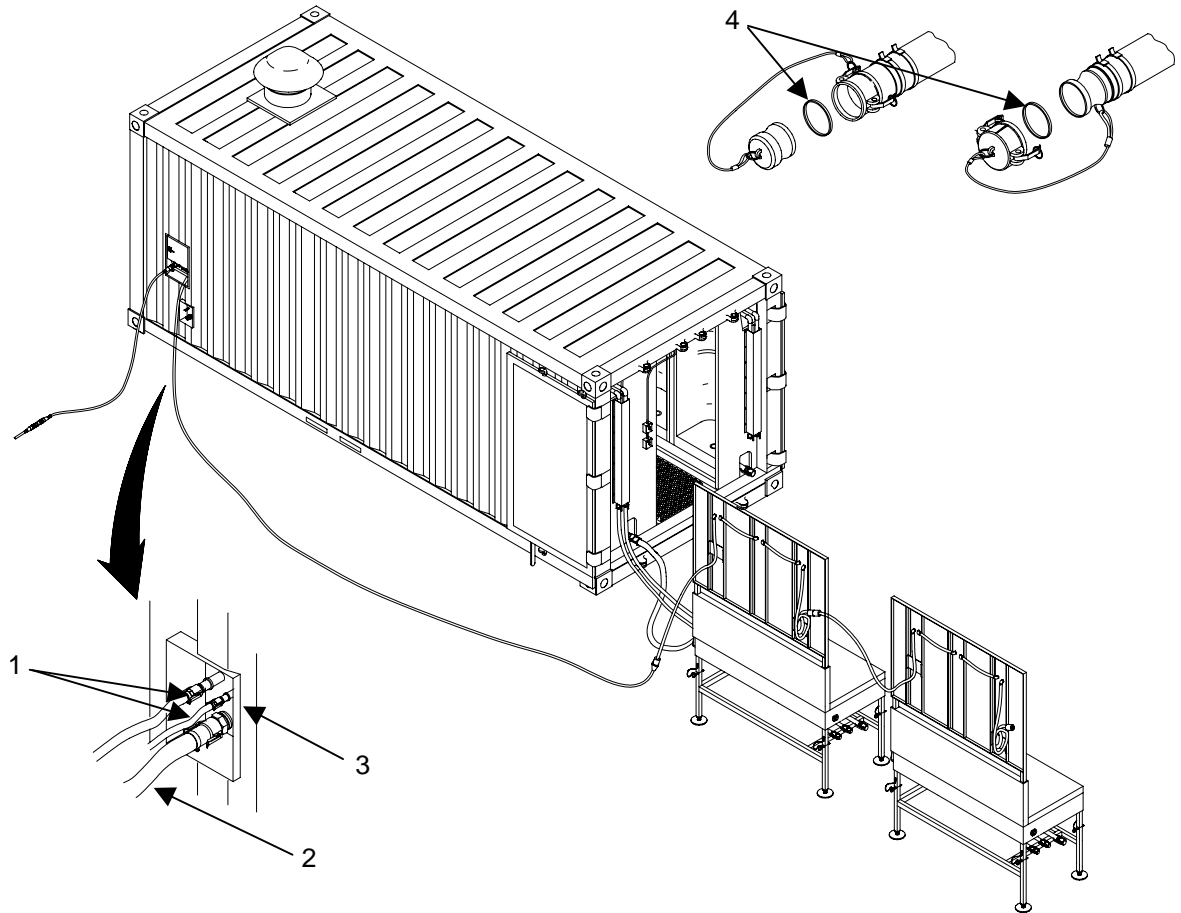
Containerized Shower or Shower, Enclosed Unit, System set up

**Maintenance Level**

Operator

**Table 1. Preventive Maintenance Checks and Services for Containerized Shower and Shower, Enclosed Unit, System - continued**

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Equipment Not Ready/ Available If:
3	Before	Freshwater and Graywater Hoses and Service Panel	Inspect all freshwater supply <b>(1)</b> and graywater drain <b>(2)</b> hoses for visible damage. Check all hoses for proper connections to the water service panel <b>(3)</b> . Ensure all hose gaskets <b>(4)</b> are serviceable.	Water hoses not serviceable (torn, frayed, punctured, or QDC damaged). Gaskets missing or unserviceable (torn, cracked). Refer to WP 0026 00.



**THIS SECTION COVERS:**

PMCS Checks and Services, Electrical Supply


**INITIAL SETUP:**

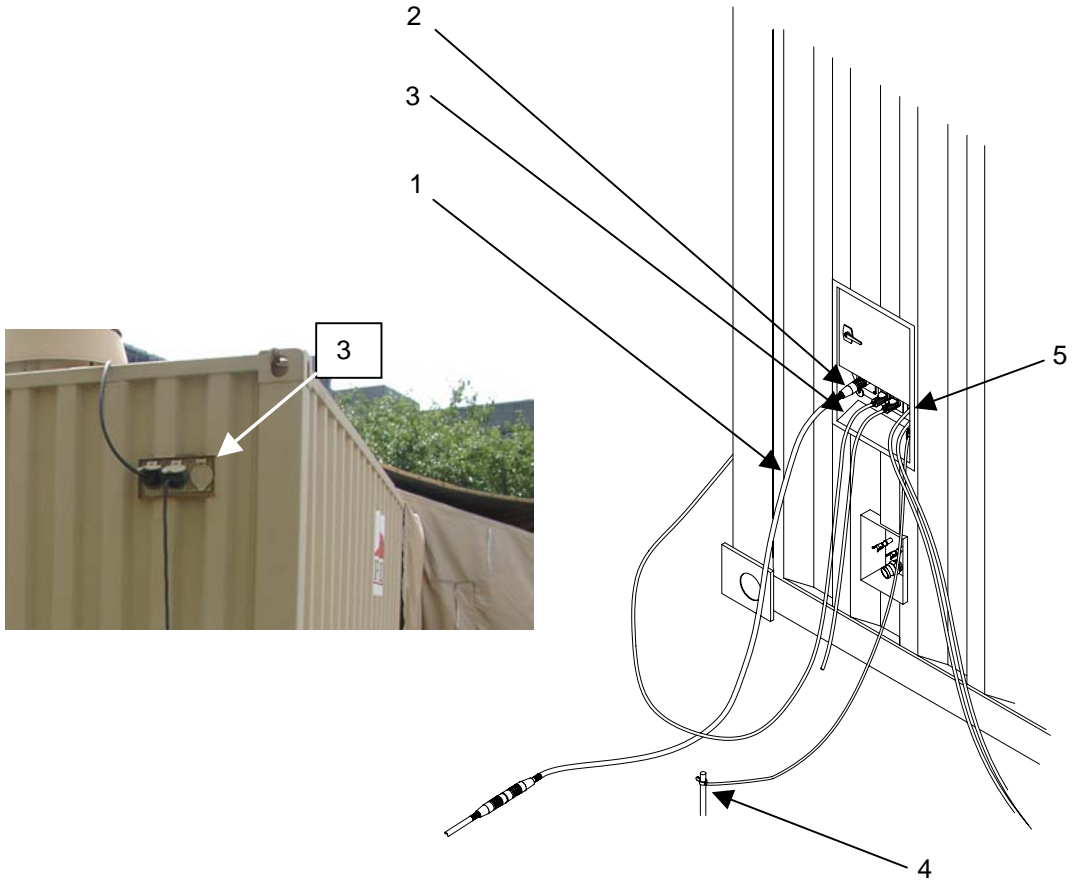
Containerized Shower or Shower, Enclosed Unit, System set up

**Maintenance Level**

Operator

**Table 1. Preventive Maintenance Checks and Services for Containerized Shower and Shower, Enclosed Unit, System - continued**

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Equipment Not Ready/ Available If:
4	Before	Power Cables, Service Panel, and Grounding Rod/Connector	<div style="text-align: center;">  <p><b>WARNING</b></p> </div> <p>Lethal voltage is present if the Containerized Shower or Shower, Enclosed Unit, System is connected to a power source. Ensure power source is OFF during PMCS.</p> <p>Inspect the power supply cables <b>(1)</b> for visible damage. Check for frayed insulation, loose connections <b>(2)</b>, or cables laying in water. Check the connections to the power service panel <b>(3)</b>. Inspect grounding rod (if used) <b>(4)</b> for secure emplacement and connection to grounding terminal <b>(5)</b>.</p>	Frayed or other-wise damaged power supply cable. Improper connections on power service panel. Container not properly grounded.



**THIS SECTION COVERS:**

PMCS Checks and Services, Containerized Shower and Shower, Enclosed Unit, System


**INITIAL SETUP:**

Containerized Shower or Shower, Enclosed Unit, System set up and operating

**Maintenance Level**

Operator

**Table 1. Preventive Maintenance Checks and Services for Containerized Shower and Shower, Enclosed Unit, System - continued**

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Equipment Not Ready/ Available If:
5	During	Shower	<div style="text-align: center;">  <p><b>WARNING</b></p> </div> <p>Lethal voltage is present if the Containerized Shower or Shower, Enclosed Unit, System is connected to a power source.</p> <p>Monitor shower and system components for proper operation. Check operation of showers <b>(1)</b>, clogged drains <b>(2)</b>, leaking shower valves <b>(3)</b> or showerheads <b>(4)</b>. Check sump pump <b>(5)</b> for proper operation. Check for proper water supply and drainage at shave stand sinks <b>(6)</b>. Check water supply <b>(7)</b> and drainage hoses <b>(8)</b> for leaks. Check power cables <b>(9)</b> for damage and improper connections.</p> <p>User must thoroughly wash the CS's interior walls and floors, shaving sinks, and floor mats at least once per 8-hour operational shift, twice during heavy usage.</p>	<p>Shower stall(s) shower valve(s) shower head(s) damaged or drain clogged. Sump pump inoperative. Shave stand sinks clogged. Water hoses damaged. Power cables damaged.</p>

**THIS SECTION COVERS:**

PMCS Checks and Services, Containerized Shower and Shower, Enclosed Unit, System

**INITIAL SETUP:**

Containerized Shower or Shower, Enclosed Unit, System set up and operating

**Maintenance Level**

Operator

**Table 1. Preventive Maintenance Checks and Services for Containerized Shower and Shower, Enclosed Unit, System - continued**

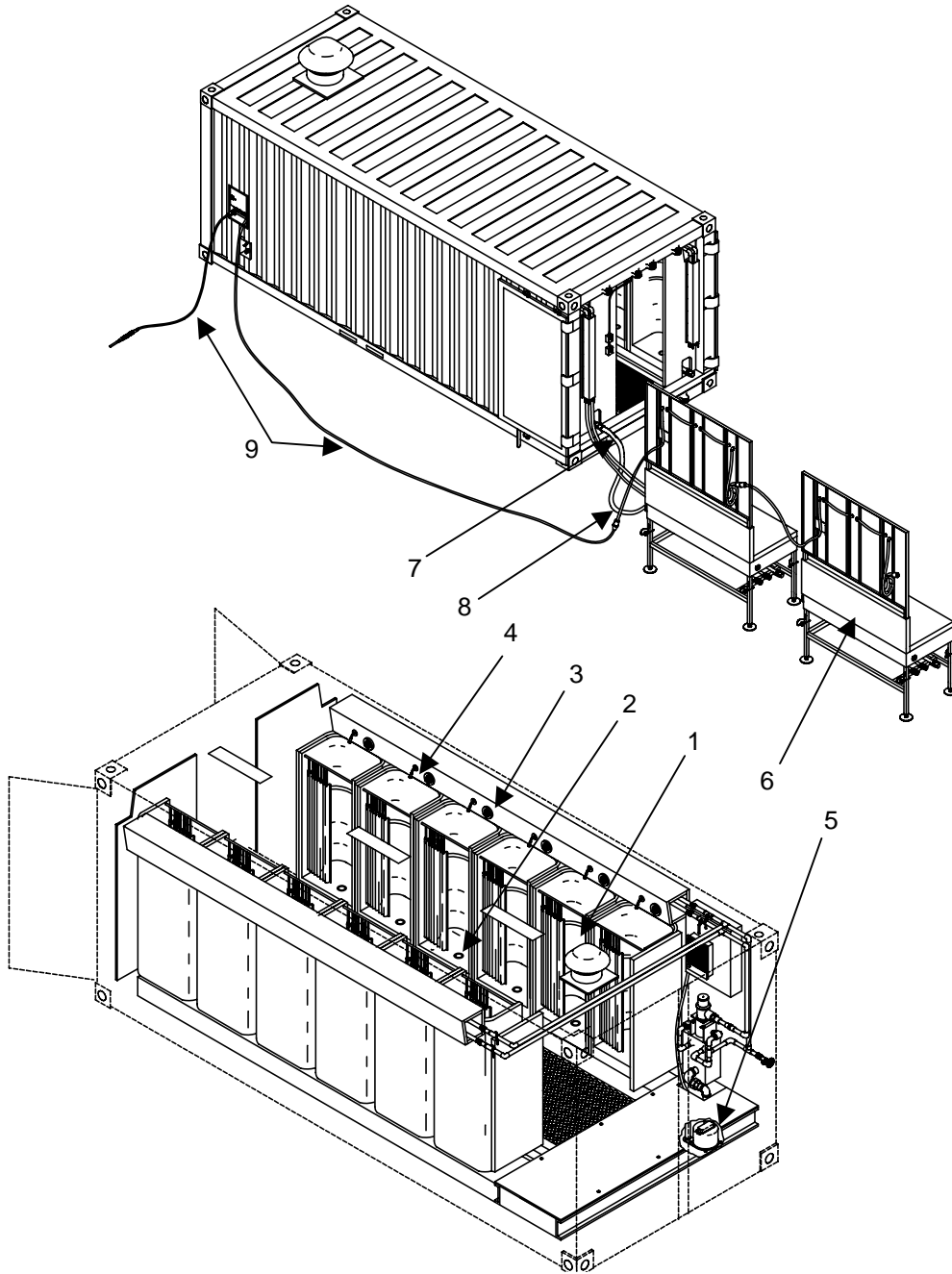


**WARNING**

Protective clothing and equipment must be worn. Heavy-duty rubber apron, rubber gloves, safety splash goggles and/or face shield are required when potential exists for contact with waste water or contaminated surfaces. Wastewater and surfaces may be contaminated with pathogenic microorganisms, bacteria or viruses that present a risk of serious illness or death to personnel.

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Equipment Not Ready/ Available If:
6	Weekly	Graywater tank	Turn sump pump (5) OFF. Flush graywater tank (10) with chlorine solution by pouring solution in shave stand sinks (7) and allow to drain. Let solution sit in tank for at least one hour. Turn sump pump ON, and allow drainage system to operate normally.	Graywater tank soiled or clogged.
7	During, After		Clean graywater tank (10) after 30 days continuous service, or prior to preparing the shower for storage or movement. Refer to WP 0036 00.	Graywater tank soiled or clogged.





**THIS SECTION COVERS:**

PMCS Checks and Services, Containerized Shower 30 gpm Water Pump

**INITIAL SETUP:**

Containerized Shower set up

**Maintenance Level**

Operator

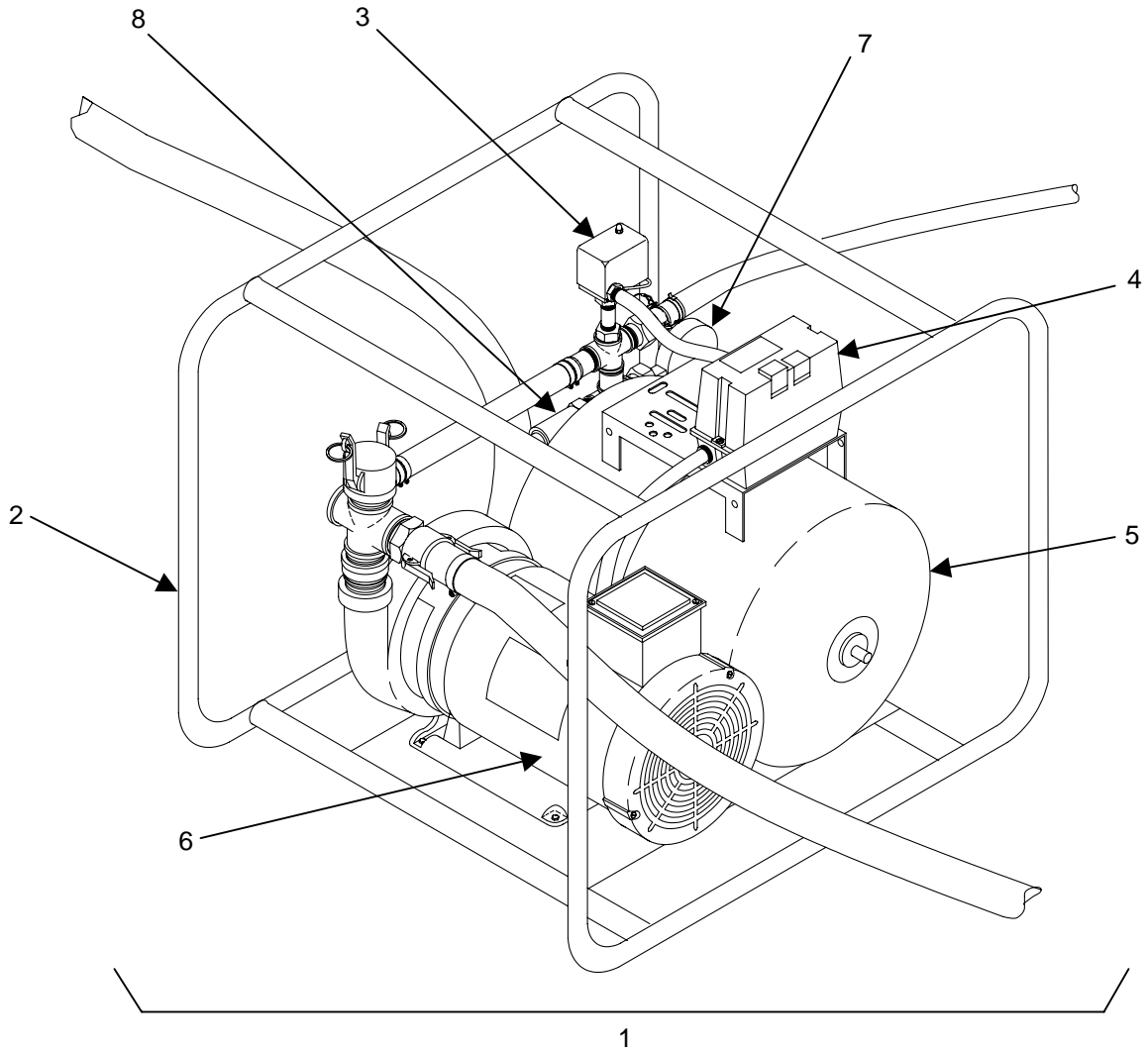
**Table 1. Preventive Maintenance Checks and Services for Containerized Shower and Shower, Enclosed Unit, System - continued**



**WARNING**

Protective clothing and equipment must be worn. Heavy-duty rubber apron, rubber gloves, safety splash goggles and/or face shield are required when potential exists for contact with waste water or contaminated surfaces. Wastewater and surfaces may be contaminated with pathogenic microorganisms, bacteria or viruses that present a risk of serious illness or death to personnel.

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Equipment Not Ready/ Available If:
8	Before	30 gpm Water Pump	Inspect pump assembly (1) and components for material damage. Check pump frame (2) for bends and cracks. Check all pipe connections on pump assembly for leaks. Ensure that all components are secure in pump frame (2). Check that pump is securely placed and will not slide.	Pump assembly or any component damaged. Pressure switch (3) damaged or wiring exposed. Motor starter (4) damaged or wiring exposed. Pressure tank (5) damaged or leaking water or air. Pressure tank or pump motor (6) loose in pump frame. Visible water leaks from any component.
9	During	30 gpm Water Pump	Monitor pump operation. Check water pressure gauge (7) to ensure that pump cycles on at 20 to 25 psi and off at 40 to 45 psi. Check for leaks on all pump assembly components. Check for water discharge from pressure relief valve (8).	Pump operating out of parameters for pressure. Class III water leaks. Water discharge from pressure relief valve (8).





**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
OPERATOR MAINTENANCE INSTRUCTIONS**

**GENERAL**

Operator maintenance is applicable to some components of the Containerized Shower & Shower, Enclosed Unit, System. Refer to the table below and applicable technical manuals to determine if Operator maintenance is authorized.

**Reference List for Operator Maintenance**

TM	Nomenclature
TM 10-4520-259-13&P	Operator's, Unit and Direct Support Maintenance Manual (including Repair Parts and Special Tools List) for Heater, Water, Liquid Fuel M80 & M85.
TM 10-8340-224-13	Operator's, Unit and Direct Support Maintenance Tent, Extendable, Modular, Personnel (TEMPER)
TM 10-5430-237-12&P	Operator's and Unit Maintenance Manual (including Repair Parts and Special Tools List) for Tank, Fabric, Collapsible, Self Supporting, Open Top, Water Storage, 3000 Gallons

**OPERATOR MAINTENANCE UPON RECEIPT****Flush Freshwater Lines****WARNING**

Both the Containerized Shower and the Shower, Enclosed Unit, System ship with an antifreeze solution pumped into the freshwater lines. The antifreeze solution is nontoxic, but unsuitable for drinking or washing. **DO NOT OPERATE THE SHOWER** until the freshwater lines have been flushed.

Once the shower is functional, flush the freshwater lines by opening all shower valves and shave stand faucets and allowing the system to flush for approximately three minutes.



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SHOWER  
SERVICE**

**INITIAL SETUP****Tools**

Hose Assembly, Garden (Item 1, WP 0048 00)  
Nozzle (Item 3, WP 0048 00)

**Personnel Required**

Two

**Materials/Parts**

Bleach (Item 6, WP 0075 00)  
Brush Sanitary (Item 8, WP 0075 00)  
Detergent (Item 13, WP 0075 00)

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit,  
System set up and operating.

**SERVICE****Clean Shower Stalls**

User must thoroughly wash the CS's interior walls and floors, shaving sinks, and floor mats at least once per 8-hour operational shift, twice during heavy usage.

**WARNING**

Use caution when using chlorine solutions for cleaning. Wear protective clothing and gloves to prevent irritation from chlorine solutions. Avoid breathing chlorine fumes/vapors. Failure to observe safety precautions may result in serious eye, skin and respiratory injury to personnel.

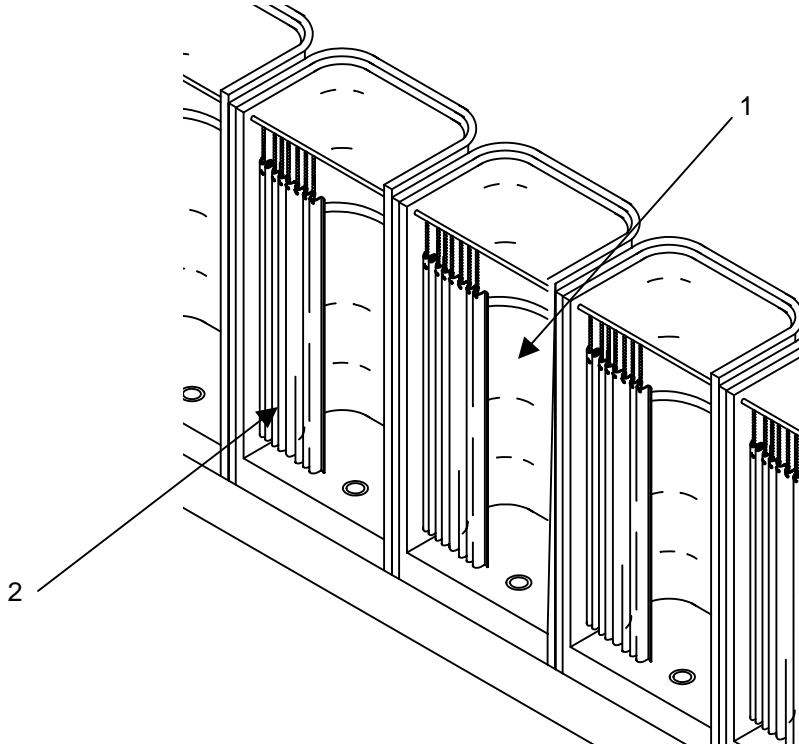
**WARNING**

Never mix chemicals or detergent and sanitizing solutions; this may produce highly toxic or poisonous gas that can cause serious illness or death to personnel.

**CAUTION**

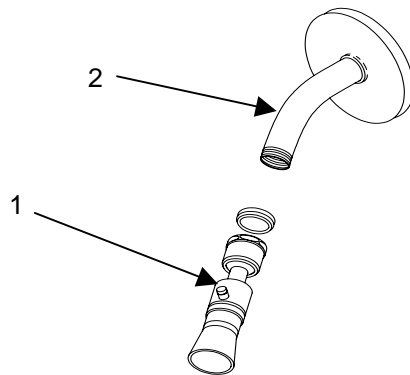
Never use abrasive materials or abrasive cleaners on the shower stall surface.

1. For routine sanitizing, use a two-gallon container, mix 2-ounces of household bleach in two gallons of warm water. Refer to TB MED 577 as necessary for additional information on sanitization.
2. Clean the individual shower stalls **(1)** using hot, soapy water or chlorine and a long handle brush.
3. Clean the shower curtains **(2)** using hot, soapy water or chlorine and a long handle brush.



### Clean Showerhead Debris Screen

1. Unscrew the showerhead (1) from the supply line (2).
2. Clean debris screen in showerhead of any noticeable clogs/debris.
3. Wrap anti-seize tape clockwise around supply line threads.
4. Thread the showerhead hand tight onto the supply line.

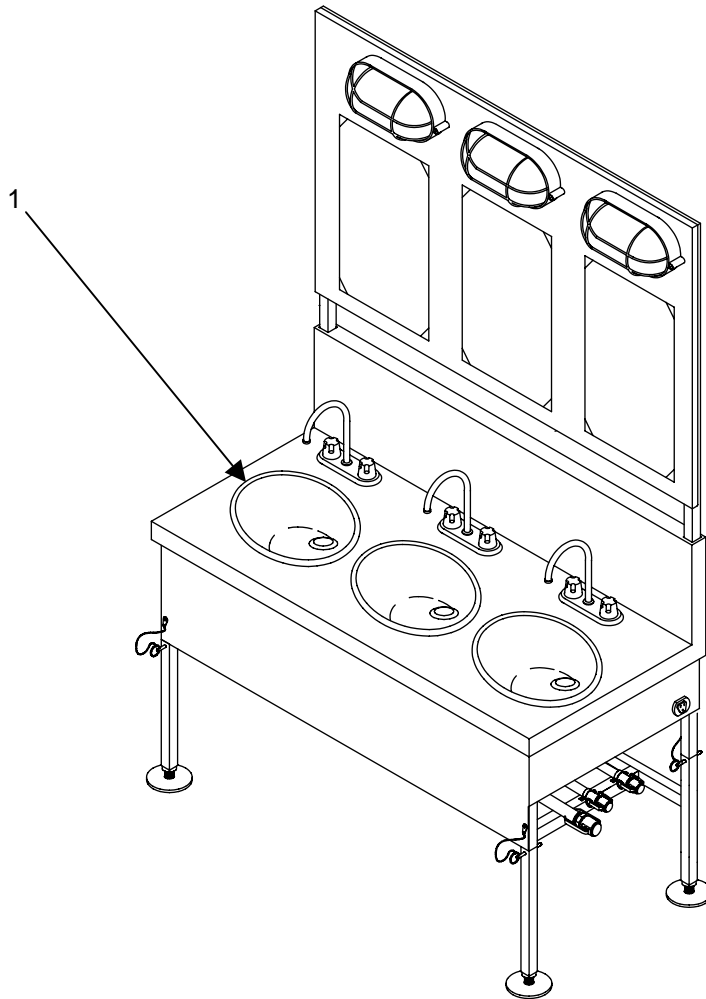




**Clean Drain System****NOTE**

The sump pump must be in operation during this procedure.

1. Clean with hot soapy water or chlorine and flush out shave stand sinks **(1)** with fresh water (refer to this WP).
2. As necessary, but at least every 30 days if the shower is in constant use, clean or flush out the graywater holding tank as described in WP 0036 00.



**Clean Floor Mat****WARNING**

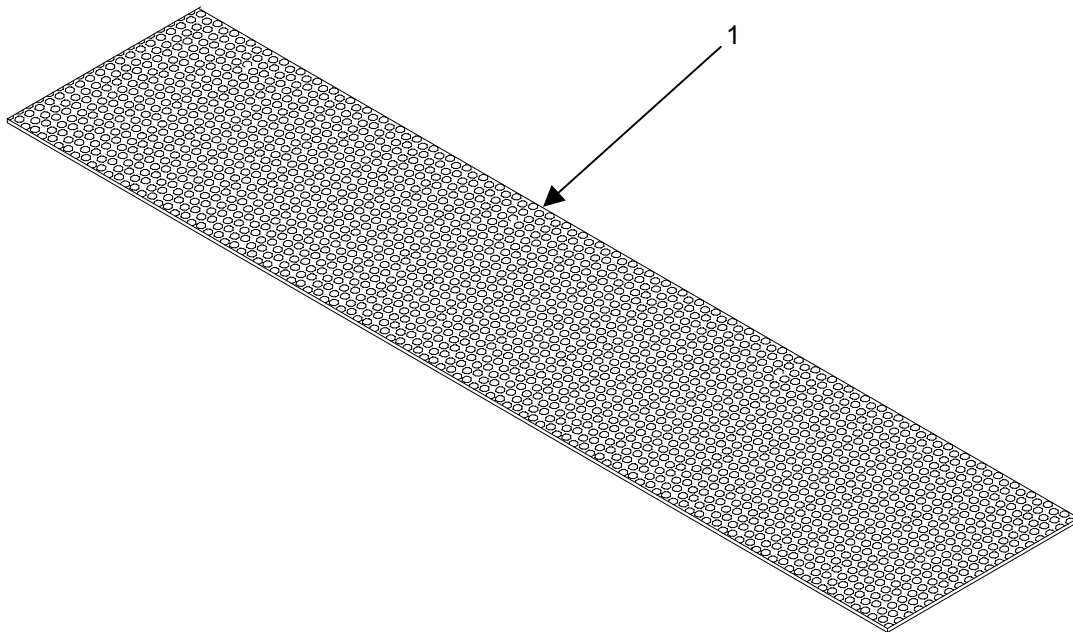
The floor mat is heavy, awkward and difficult to maneuver. To prevent injury, two persons are required to remove and carry it. Failure to observe safety precautions may result in serious injury to personnel.

1. Remove floor mat **(1)** from center aisle and carry it outside.

**WARNING**

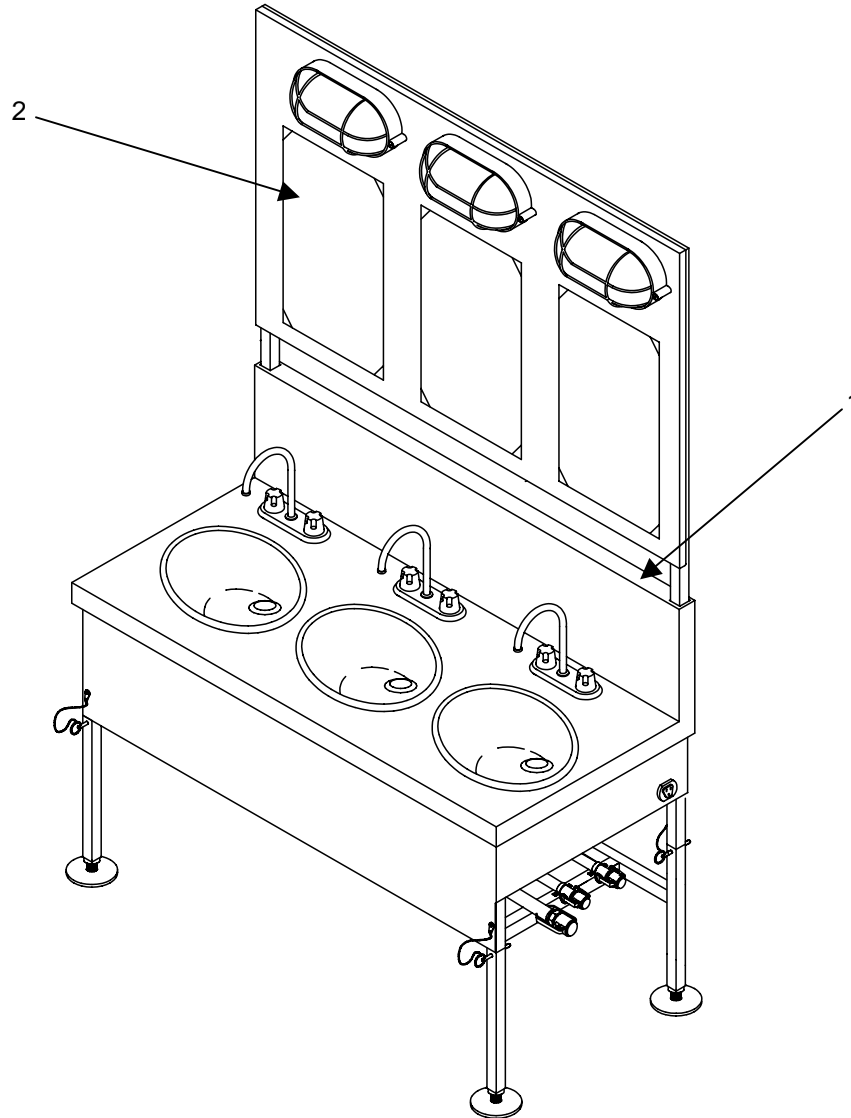
With the floor mat removed, the center aisle presents a slipping hazard. Personnel entering should ensure they have a secure foothold before attempting any task. Failure to observe safety precautions may result in serious injury or death to personnel.

2. Clean the floor mat with hot soapy water and a long handle brush.
3. Let the floor mat air dry.
4. Clean the center aisle with hot soapy water and a long handle brush, then flush with water.
5. Replace floor mat, knob side down.



**Clean and Maintain the Shave Stands**

1. Clean the shave stands (1) as necessary with hot, soapy water and a long handle brush.
2. Clean mirrors (2).

**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
ELECTRIC ASSEMBLY  
INSPECT**

**INITIAL SETUP**

**Tools**

**Personnel Required**

One

**Materials/Parts**

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit,  
System set up.

**INSPECT**

**Inspect Fluorescent Light Assembly**

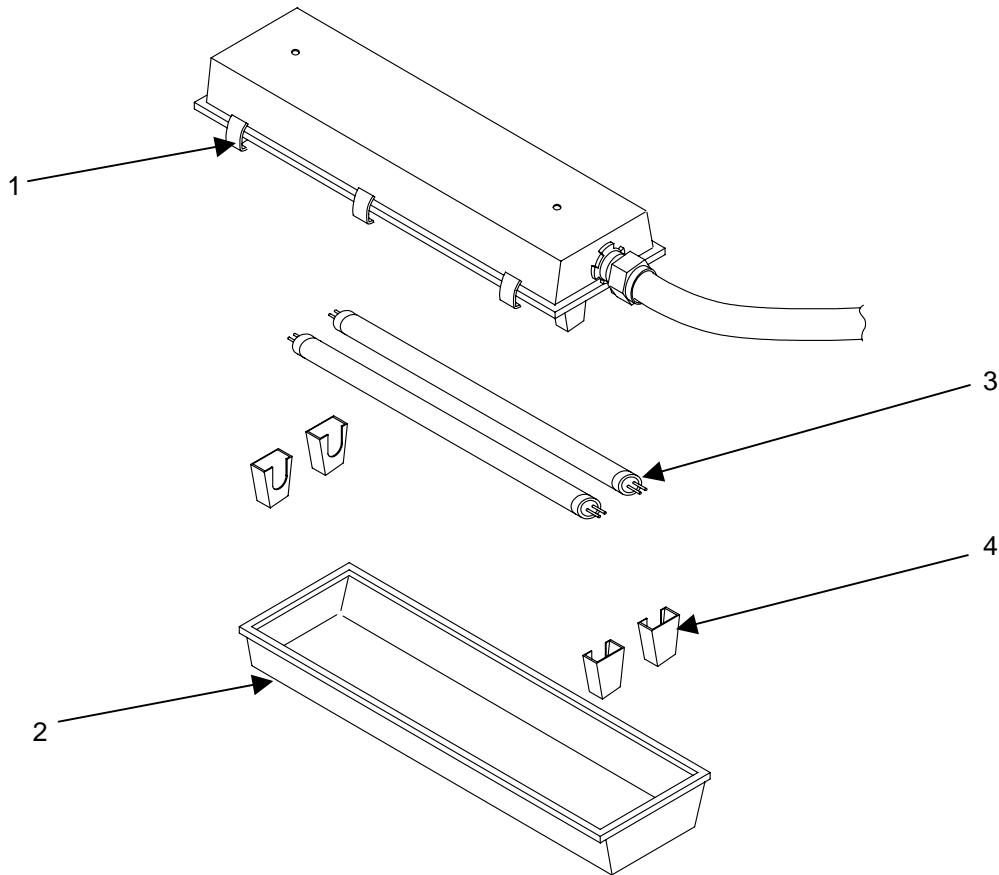
Inspect fluorescent light assembly **(1)** for material damage such as unlit bulbs or a missing, cracked, or broken lens.



**Inspect Fluorescent Bulb****NOTE**

A step aid may be required for this procedure.

1. Unclip the six retaining clips **(1)** and remove plastic lens cover **(2)**.
2. Ensure that fluorescent light bulbs **(3)** and bulb retaining clips **(4)** are properly installed. Report any burned out or broken bulbs to unit maintenance.
3. Install the plastic lens cover **(2)** and secure with the six retaining clips **(1)**.



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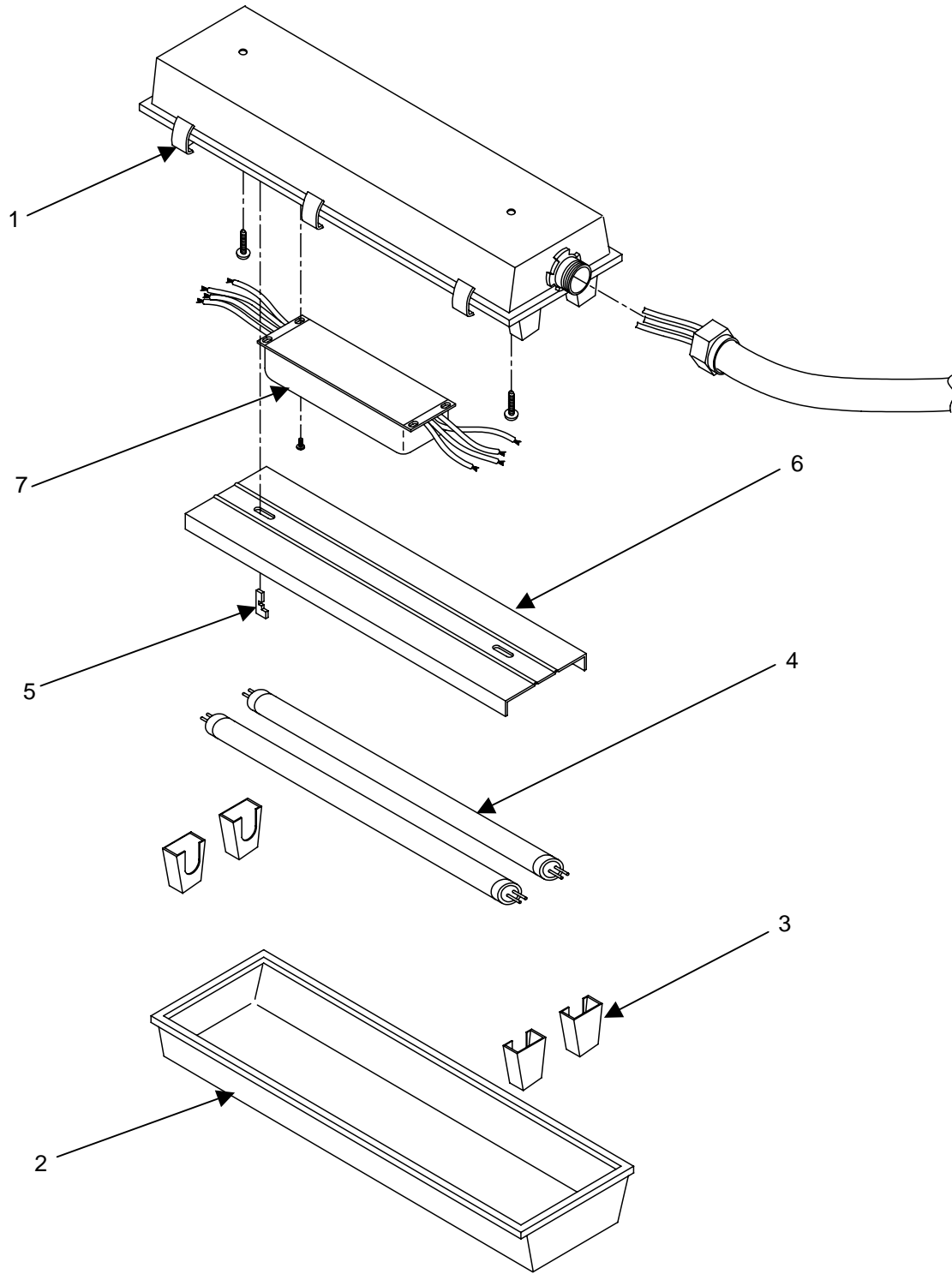
**Inspect Fluorescent Light Assembly Ballast****WARNING**

Always secure and tap circuit breaker in OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. The shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

**NOTE**

A step aid may be required for this procedure.

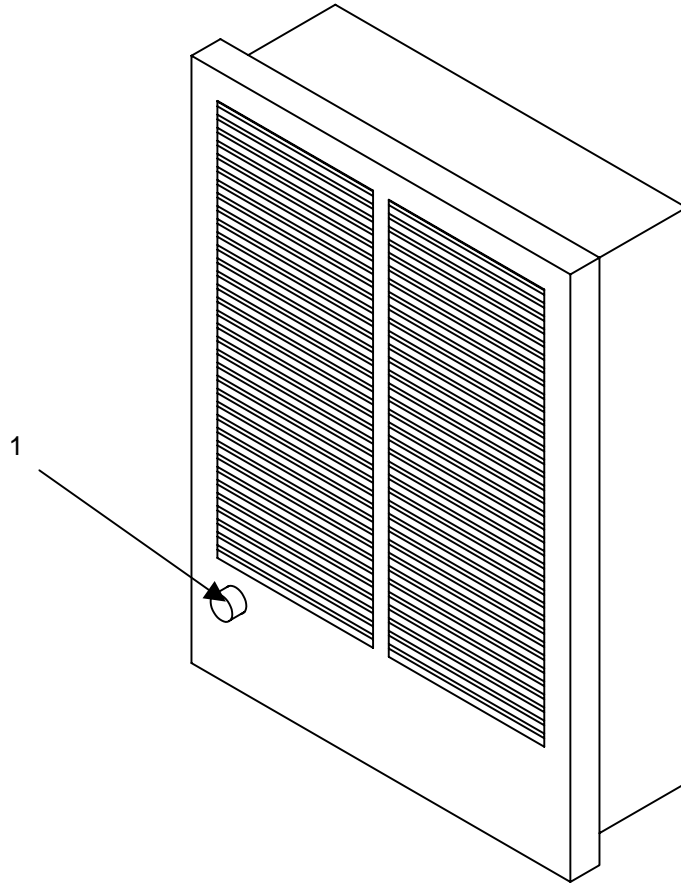
1. Unclip the six retaining clips **(1)** and remove plastic lens cover **(2)**.
2. Remove the bulb retaining clips **(3)** (2 per bulb).
3. Support fluorescent bulb **(4)** firmly and twist.
4. Remove fluorescent light bulbs **(4)** from light assembly.
5. Remove the twist fastener **(5)**.
6. Remove the reflector **(6)**.
7. Inspect the ballast **(7)** for leaking fluid and burnt areas on the case. Report a suspect or unserviceable ballast to unit maintenance.
8. Install the reflector **(6)**, and secure with the twist fastener **(5)**.
9. Install the fluorescent bulbs **(4)** and the bulb retaining clips **(3)**.
10. Install the plastic lens cover **(2)** and secure it with the six retaining clips **(1)**.





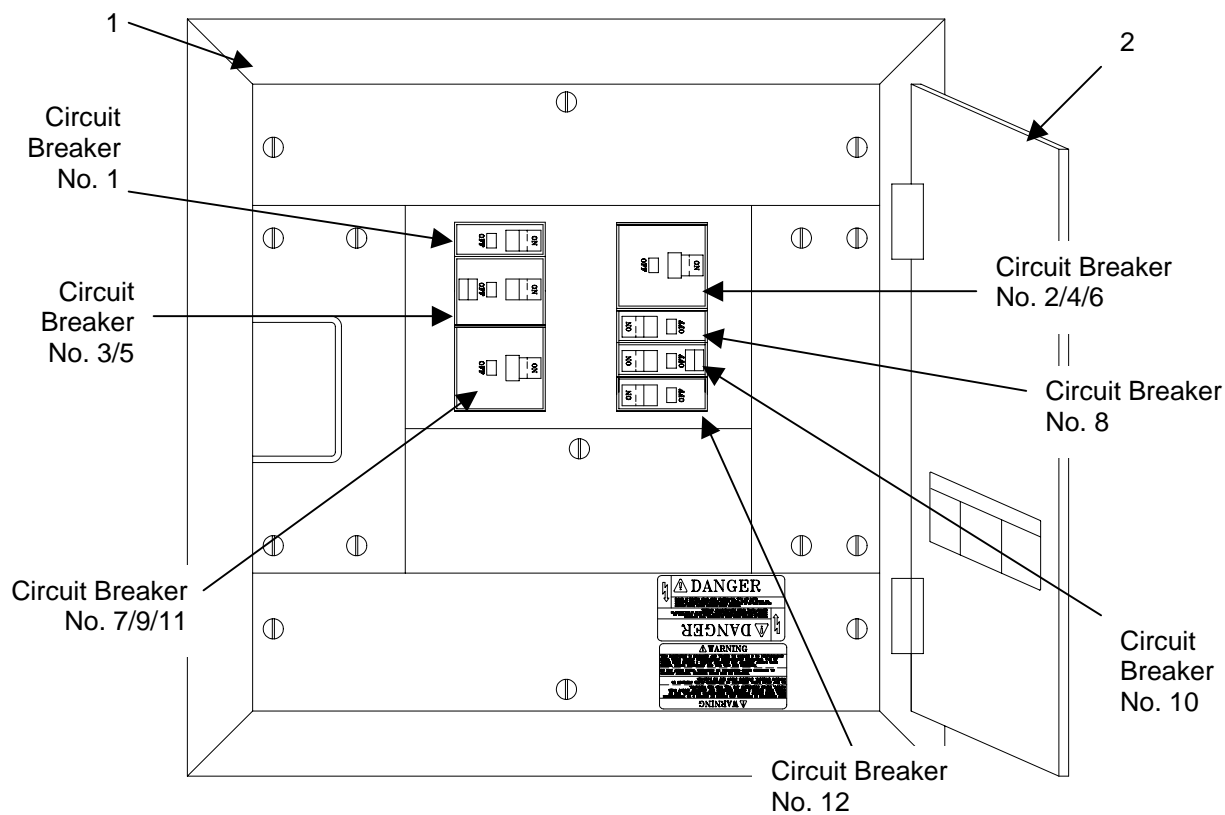
**Inspect Heater Assembly (Containerized Shower only)**

Inspect heater assembly for material damage and missing thermostat knob (1).



**Inspect Circuit Breaker Panel (Containerized Shower only)**

1. Inspect circuit breaker panel (1) and door (2) for material damage, corrosion, dirt or missing hardware. Ensure that a legible circuit breaker diagram is posted on the panel door.
2. Inspect all circuit breakers for material damage, dirt, or signs of internal malfunction, such as melted or burned components.



CIRCUIT BREAKER NO.	ITEM	FUNCTION
1	Circuit Breaker 20A, 1 Pole	110V AC, Interior Lights
2/4/6	Circuit Breaker 20A, 3 Poles	208V AC 3 phase, M-80 Water Heater and 30 gpm Water Pump
3/5	Circuit Breaker 20A, 2 Poles	208V AC, Space Heater
7/9/11	Circuit Breaker 60A, 3 Poles	208V AC 3 phase, Main Breaker
8	Circuit Breaker 20A, 1 Pole	110V AC, Sump Pump
10	Circuit Breaker 20A, 1 Pole	110V AC, Exhaust Fan
12	Circuit Breaker 20A, 1 Pole	110V AC, GFCI Convenience Outlet

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**Inspect Power Service Panel Components**

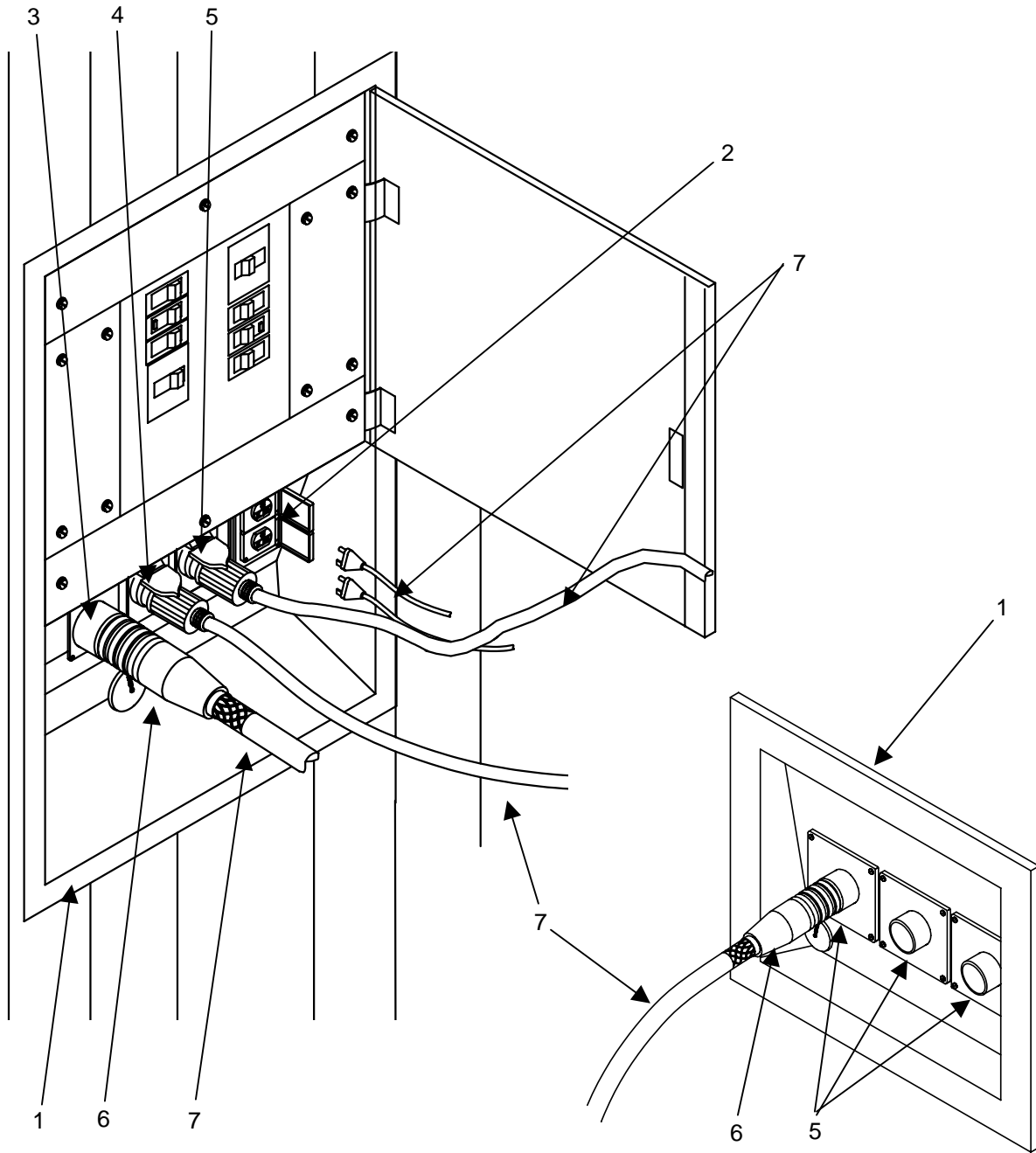
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**WARNING**

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Use caution when inspecting power service panel components. Remember that the shower is a wet environment, inside and out. Touching a live wire can cause serious injury or death to personnel.

1. Inspect the power service panel **(1)** for material damage and corrosion.
2. Inspect the convenience outlets connection **(2)** for material damage or corrosion (Containerized Shower only).
3. Inspect 60A power input connection **(3)** for evidence of material damage, loose hardware, corrosion, dirt, or missing cap (Containerized Shower only).
4. Inspect the 20A 120/208V 3 phase connection **(4)** for evidence of material damage, loose hardware, corrosion, dirt, or missing cap (Containerized Shower only).
5. Inspect the 20A 120V connection **(5)** for evidence of material damage, loose hardware, corrosion, dirt, or missing cap.
6. Inspect the twistlock connectors **(6)** on the power cables **(7)** for material damage, such as dents, cracks.
7. Visually inspect the power cables **(7)** for material damage such as ripped insulation, exposed wires, or burned or melted components.

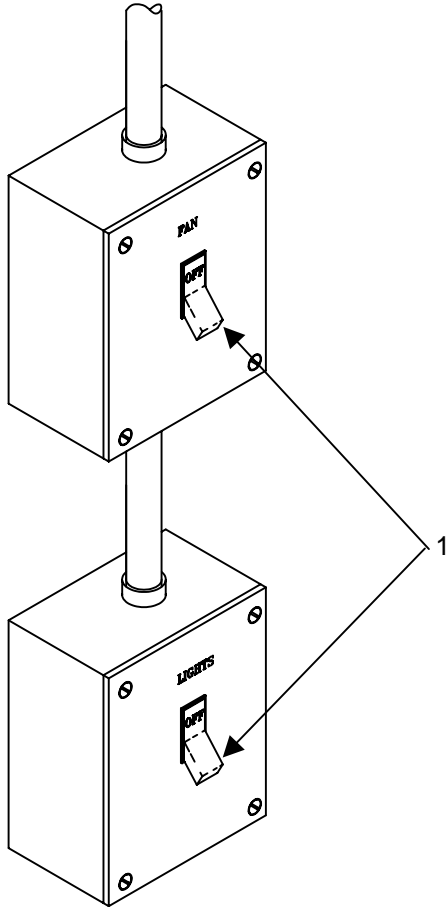


**Containerized Shower**

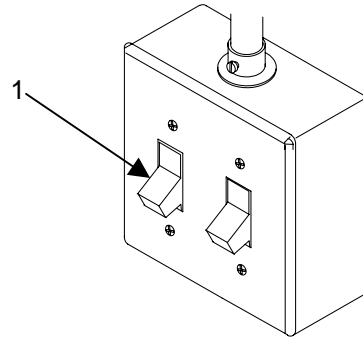
**Shower, Enclosed Unit, System**

**Inspect Exhaust Fan Switch and Light Switch**

Inspect the exhaust fan and light switches (1) for material damage, excessive rust, corrosion, or missing hardware.



**Containerized Shower  
and Shower, Enclosed Unit, System**



**Shower, Enclosed Unit, System only  
(Cover removed for clarity)**

**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
FLOOR MAT  
INSPECT, REPLACE**

**INITIAL SETUP**

**Tools**

**Personnel Required**

Two

**Materials/Parts**

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit,  
System set up.

**INSPECT**

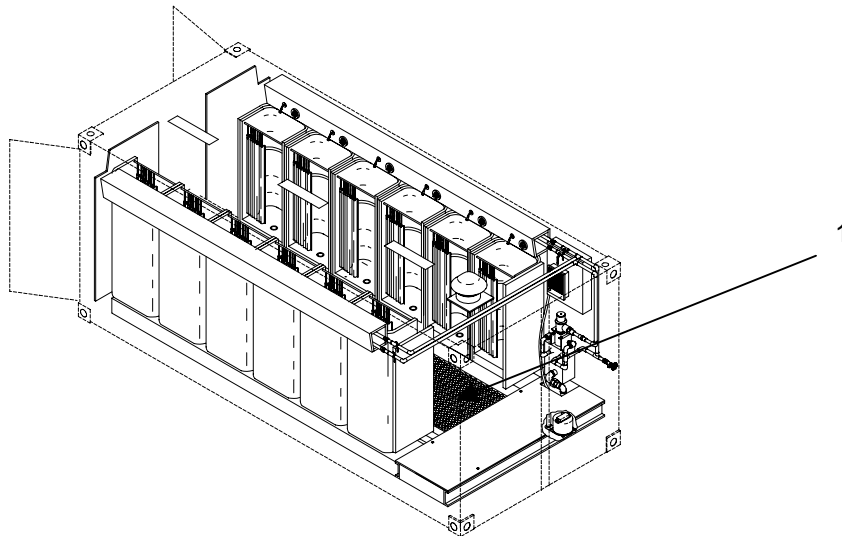


**WARNING**

Protective clothing and equipment must be worn. Heavy-duty rubber gloves are required when potential exists for contact with wastewater or contaminated surfaces. Surfaces may be contaminated with pathogenic microorganisms, bacteria or viruses that present a risk of serious illness or death to personnel.

**Inspect the Floor Mat**

Inspect floor mat (1) for material damage such as a rips or wear.



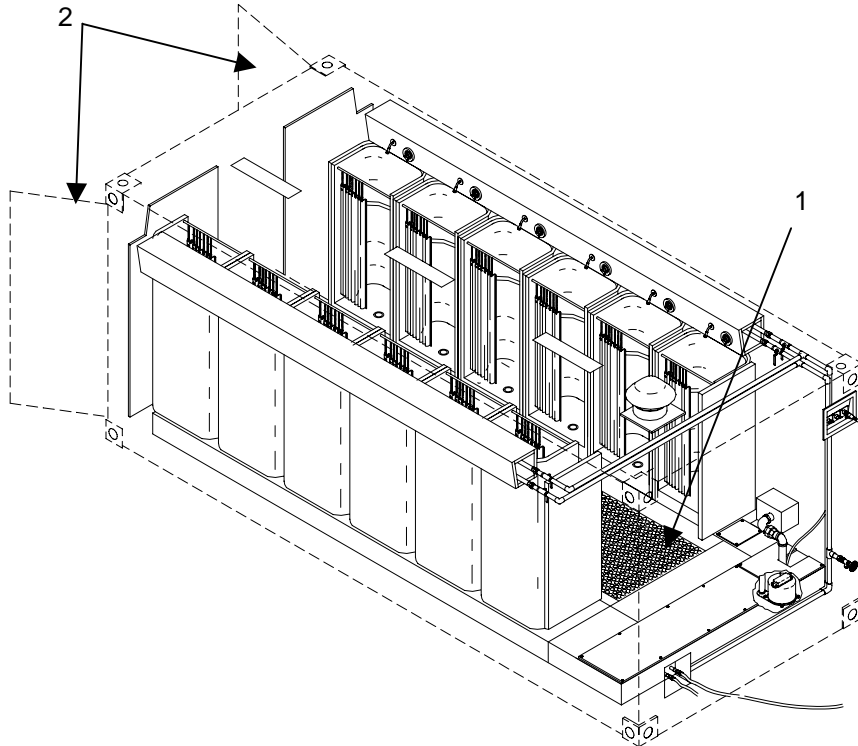
**REPLACE****Replace a Damaged Floor Mat****WARNING**

The floor mat is heavy, awkward, and difficult to maneuver. To prevent injury, two persons are required to remove and carry it.

**WARNING**

With the floor mat removed, the center aisle presents a slipping hazard. Personnel entering should ensure they have a secure foothold before attempting any task.

1. Remove unserviceable floor mat **(1)** through the personnel entrance **(2)**.
2. Install new floor mat, knob side down, through the personnel entrance **(2)**. Ensure mat is flat in the center aisle, with no bends or buckles.

**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
EXHAUST FAN ASSEMBLY  
INSPECT**

**INITIAL SETUP**

**Tools**

**Personnel Required**

One

**Materials/Parts**

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit, System set up.

**INSPECT**

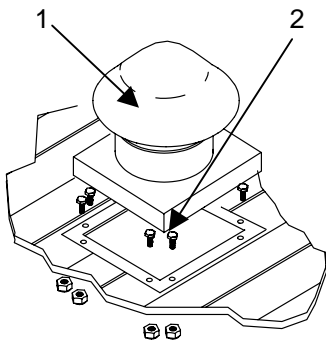
Inspect the Exhaust Fan



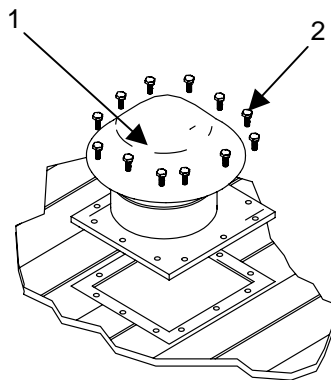
**WARNING**

Be sure to secure all power to the exhaust fan by turning OFF Main breaker No. 7/9/11 before attempting this inspection. Touching a live wire can cause serious injury or death.

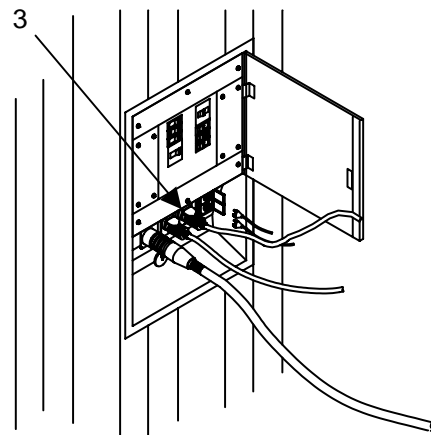
Inspect the exhaust fan (1) for material damage, corrosion, loose fit, loose or missing bolts (2), or damaged electrical cord (3).



**Containerized Shower**



**Shower, Enclosed Unit, System**



**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
PLUMBING  
INSPECT, REPLACE**

**INITIAL SETUP****Tools****Materials/Parts**

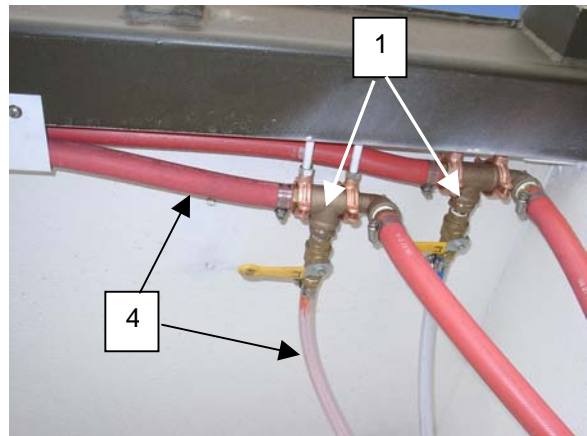
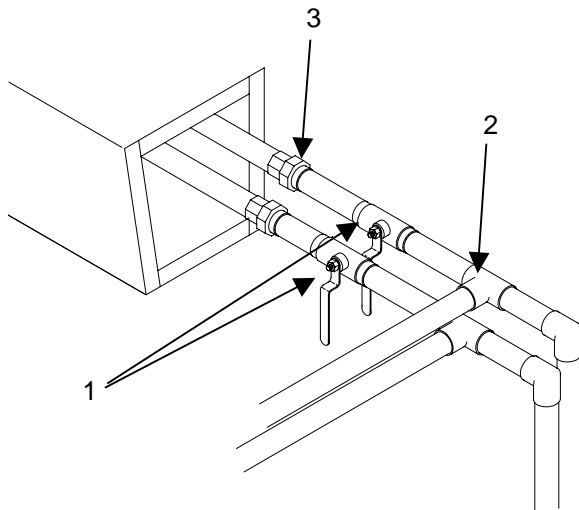
Tape, Anti-seize (Item 42, WP 0075 00)

**Personnel Required**

One

**Equipment Condition**Containerized Shower / Shower, Enclosed Unit,  
System set up.**INSPECT****Inspect Shower Plumbing**

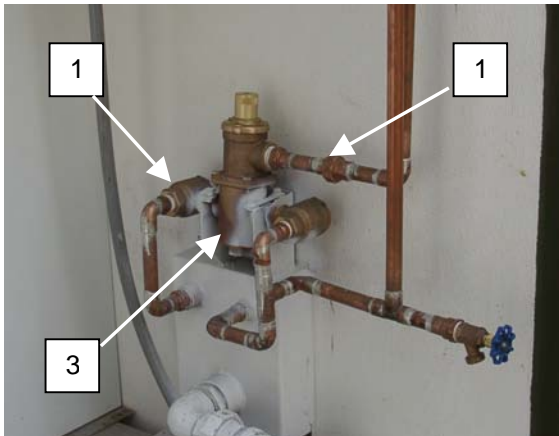
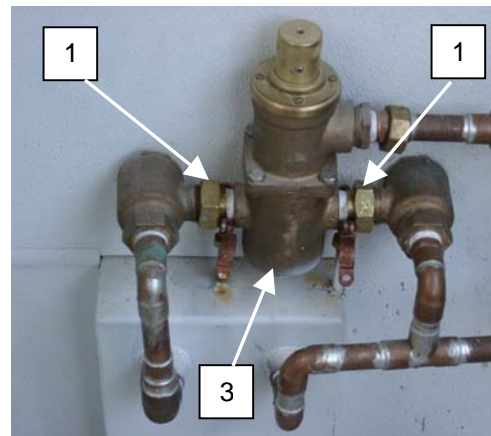
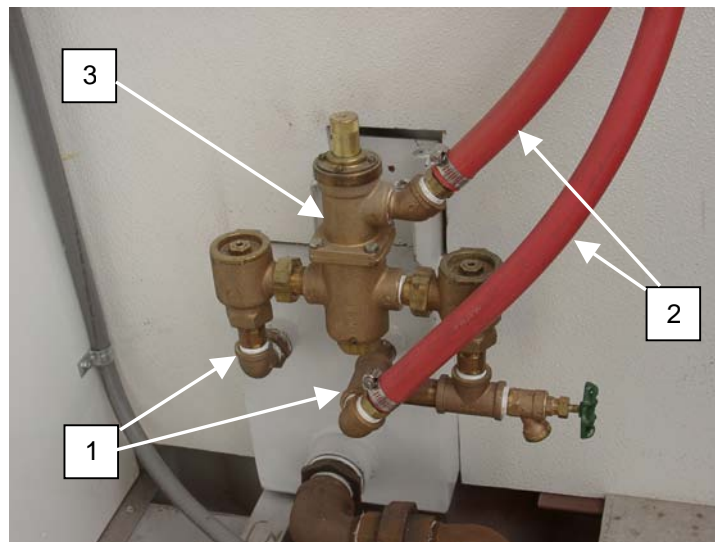
1. Inspect the shutoff valves **(1)**, soldered fittings **(2)**, and unions **(3)** on external and internal piping for physical damage, corrosion or leaking.
2. Inspect the connecting hoses **(4)** for physical damage such as cuts, abrasions, or bulging. (late production Containerized Shower only).



**Late Production Containerized Shower Only**

**Inspect Mixer Valve (Containerized Shower only)**

1. Check the external connector fittings **(1)** for physical damage or leakage.
2. Inspect the hoses **(2)** and hose connections for fit, leaks, and damage. (Late production Containerized Shower only.)
3. Inspect mixer valve body **(3)** for leaks, corrosion, or material damage.
4. Check temperature gage on outlet of mixer valve. If the temperature is higher than 115° Fahrenheit, notify unit maintenance.

**Mixer Valve With Fabricated Mount****Mixer Valve With Pipe Hanger Mount****Mixer Valve With Flexible Hose Water Distribution**

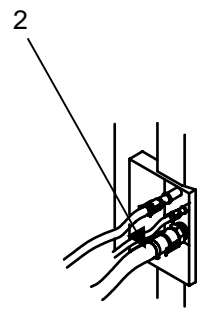
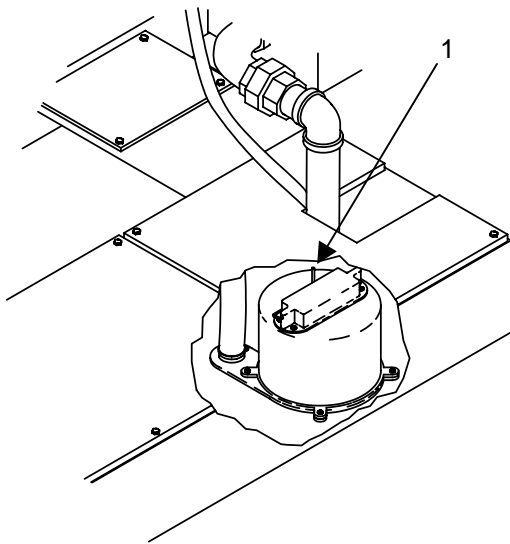
## Inspect Sump Pump Assembly

Operate the pump manually using the sump pump override (1).

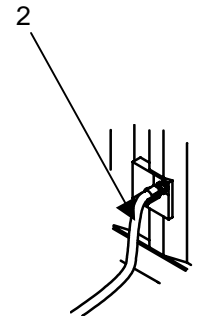
### CAUTION

Do not allow the sump pump to operate on an empty tank.

1. Listen for unusual noises, such as whining or scraping. (A sucking sound indicates that the pump is operating on an empty tank).
2. Note whether pump is discharging by having an assistant monitor the discharge hose (2). A hose that bucks as the pump is turned ON and OFF indicates a correctly operating pump.



Containerized  
Shower



Shower,  
Enclosed Unit,  
System



### WARNING

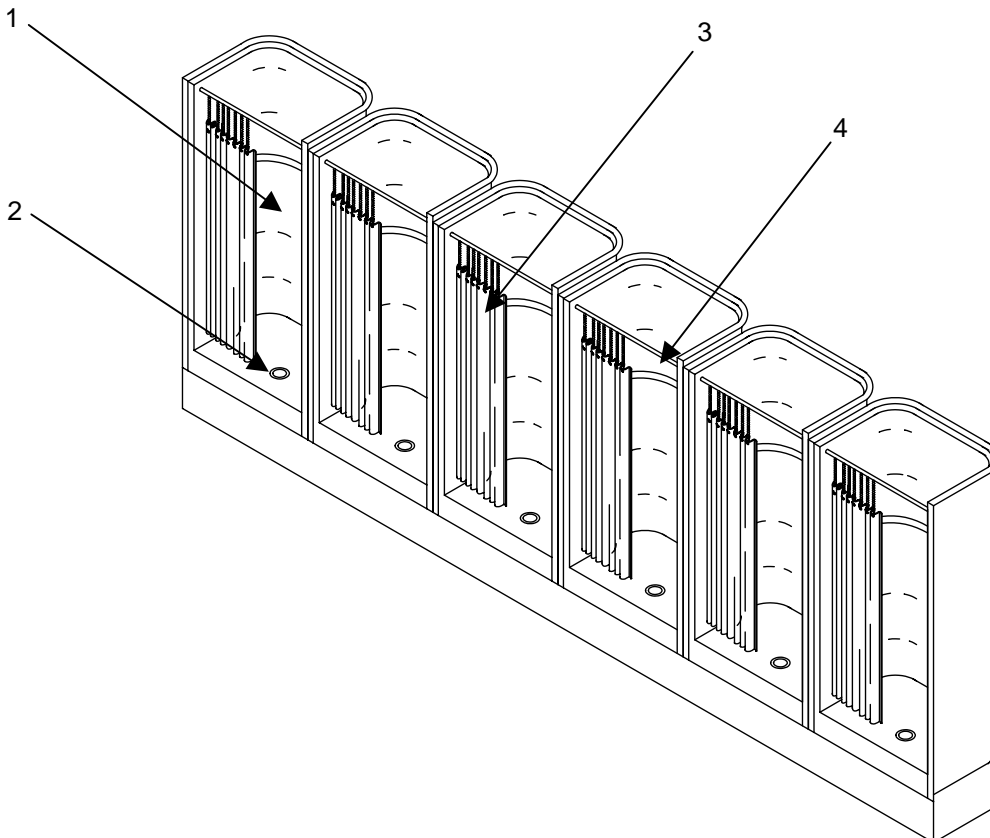
Protective clothing and equipment must be worn. Heavy-duty rubber apron, rubber gloves, safety splash goggles and/or face shield are required when potential exists for contact with waste water or contaminated surfaces. Wastewater and surfaces may be contaminated with pathogenic microorganisms, bacteria or viruses, which present a risk of serious illness or death to personnel.

#### **Inspect Shower Assembly**

1. Inspect the shower stall **(1)** surface for cleanliness and any material damage, such as holes or cracking.
2. Ensure the drain **(2)** is clear of debris to prevent clogging.

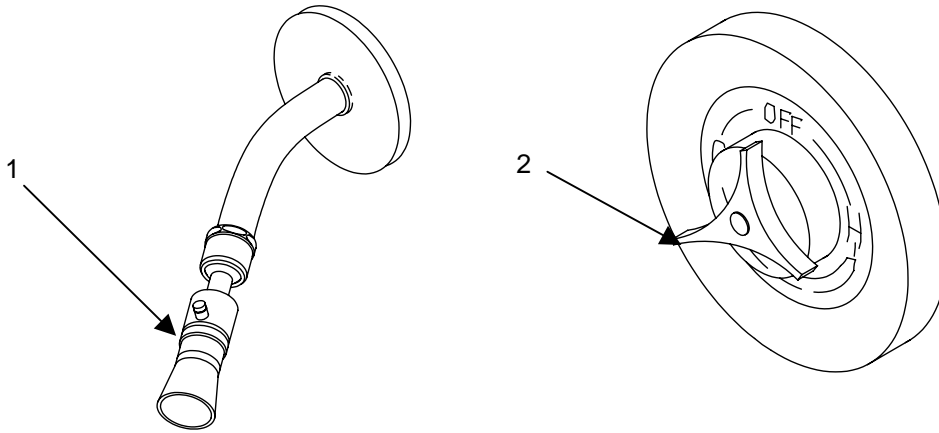
#### **Inspect Shower Curtain**

1. Inspect the shower curtain **(3)** for material damage, such as rips, holes, cracks, or mold.
2. Inspect the shower curtain rod **(4)** for bending and dents.



**Inspect the Shower Box Assembly**

1. Inspect the showerheads **(1)** for damage, clogging, or improper installation.
2. Inspect the shower valves **(2)** for ease of operation, physical damage, corrosion, or leaking.

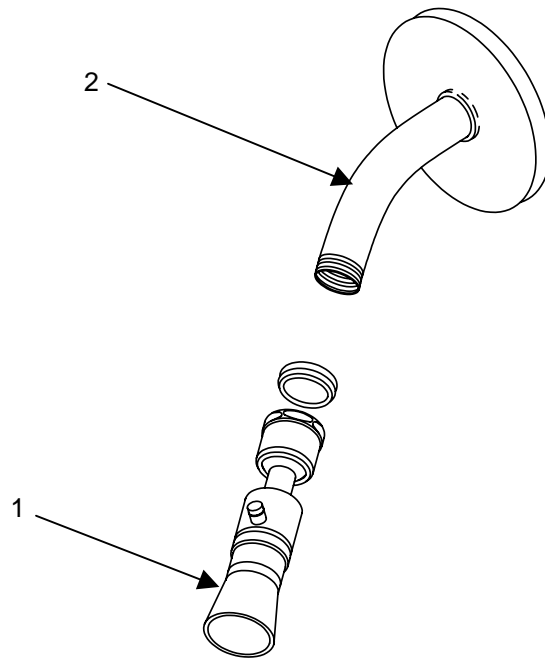


**REPLACE****NOTE**

A step aide may be required.

**Replace a Showerhead**

1. Unscrew the showerhead **(1)** from the supply line **(2)**.
2. Wrap anti-seize tape clockwise around supply line threads.
3. Thread the replacement showerhead hand tight onto the supply line.

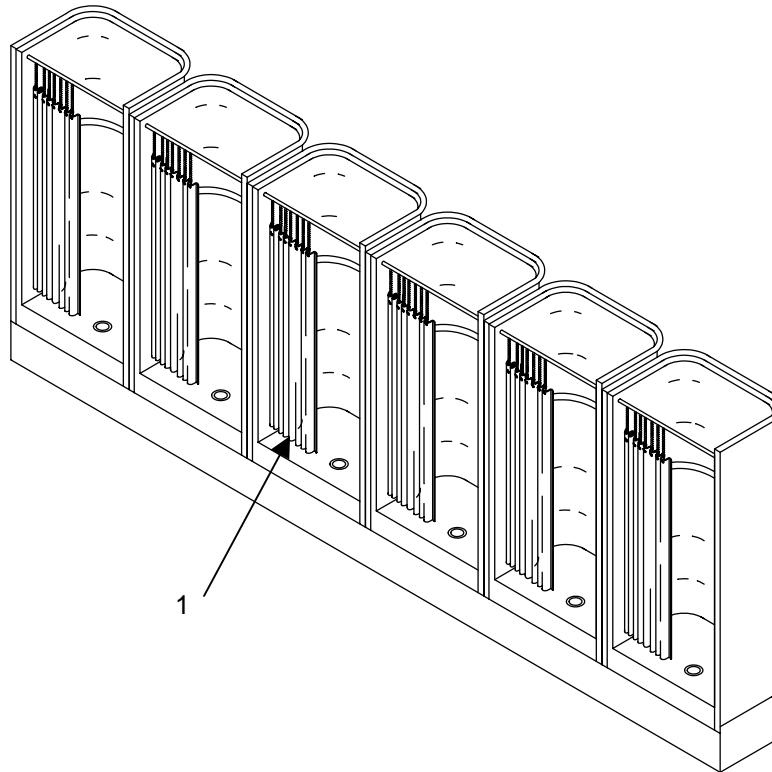




**Replace Shower Curtain****WARNING**

Protective clothing and equipment must be worn. Heavy-duty rubber apron, rubber gloves, safety splash goggles and/or face shield are required when potential exists for contact with waste water or contaminated surfaces. Wastewater and surfaces may be contaminated with pathogenic microorganisms, bacteria or viruses, which present a risk of serious illness or death to personnel.

Replace a ripped or otherwise unserviceable shower curtain **(1)**.



**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
HOSES  
INSPECT**

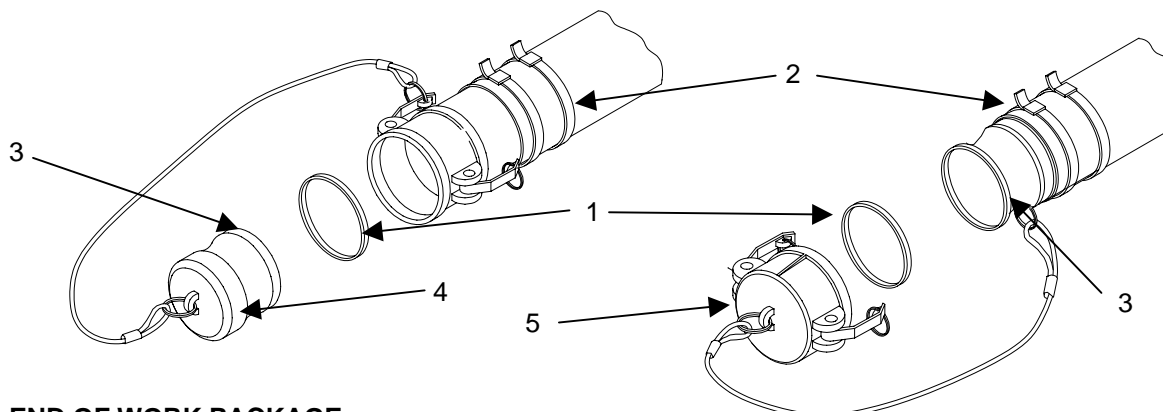
**INITIAL SETUP****Tools****Personnel Required**

One

**Materials/Parts****Equipment Condition**Containerized Shower / Shower, Enclosed Unit,  
System set up.**INSPECT****Inspect Hoses****WARNING**

Protective clothing and equipment must be worn. Heavy-duty rubber apron, rubber gloves, safety splash goggles and/or face shield are required when potential exists for contact with waste water or contaminated surfaces. Wastewater and surfaces may be contaminated with pathogenic microorganisms, bacteria or viruses, which present a risk of serious illness or death to personnel.

1. Inspect the hoses for the serviceability of gaskets **(1)**. A class III leak out from the fitting indicates an unserviceable or missing gasket.
2. Inspect the hoses for loose or missing banding **(2)**, and any signs of physical damage, such as holes, chafing, or rips.
3. Inspect the QDC hose fittings **(3)** for corrosion and material damage, such as cracks and chips.
4. Inspect the dust plugs **(4)** and dust caps **(5)** for damage.
5. Notify unit maintenance of any discrepancies that are found.

**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
TEMPER & ISO BOOTWALL  
INSPECT, REPLACE**

---

**INITIAL SETUP****Tools****Personnel Required**

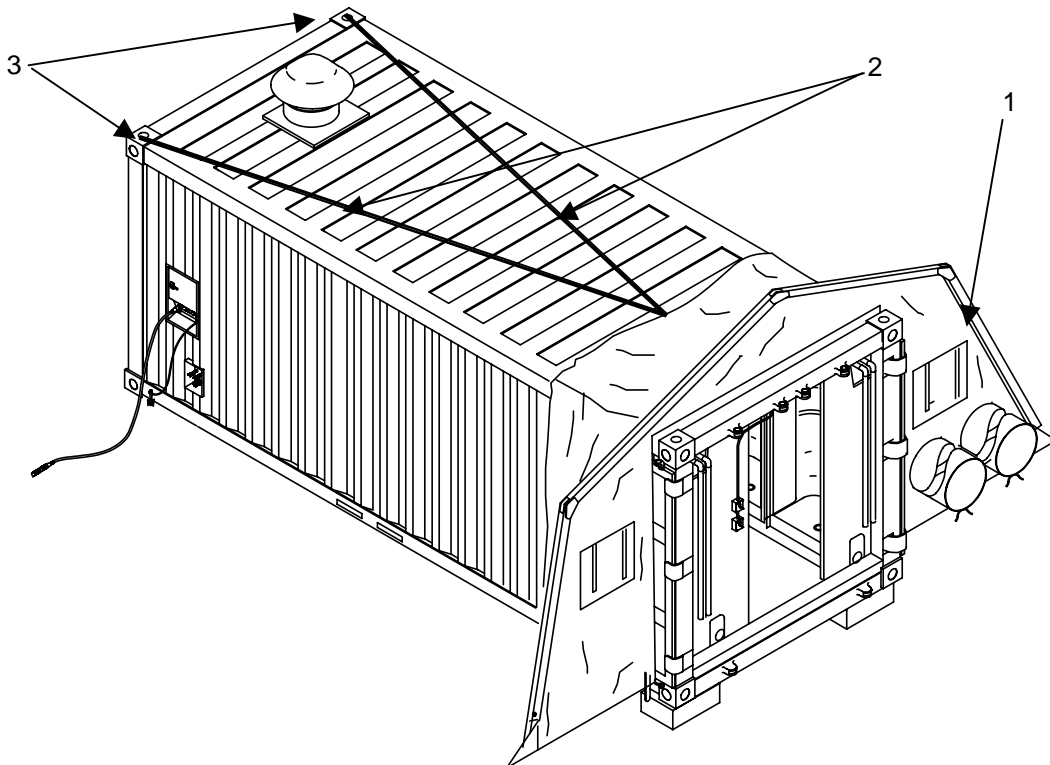
One

**Materials/Parts****Equipment Condition**Containerized Shower / Shower, Enclosed Unit,  
System set up.

---

**INSPECT****Inspect the ISO Bootwall**

1. Inspect the bootwall fabric **(1)** for material damage such as rips, tears, missing hardware, condition of hook and pile fasteners, and tie down straps.
2. Using the hinge steps on the side of the container, access the top of the container.
3. Inspect the bootwall lines **(2)** for material damage such as chafing and cuts. Ensure that the bootwall lines are securely fastened to the container ISO fittings **(3)**.

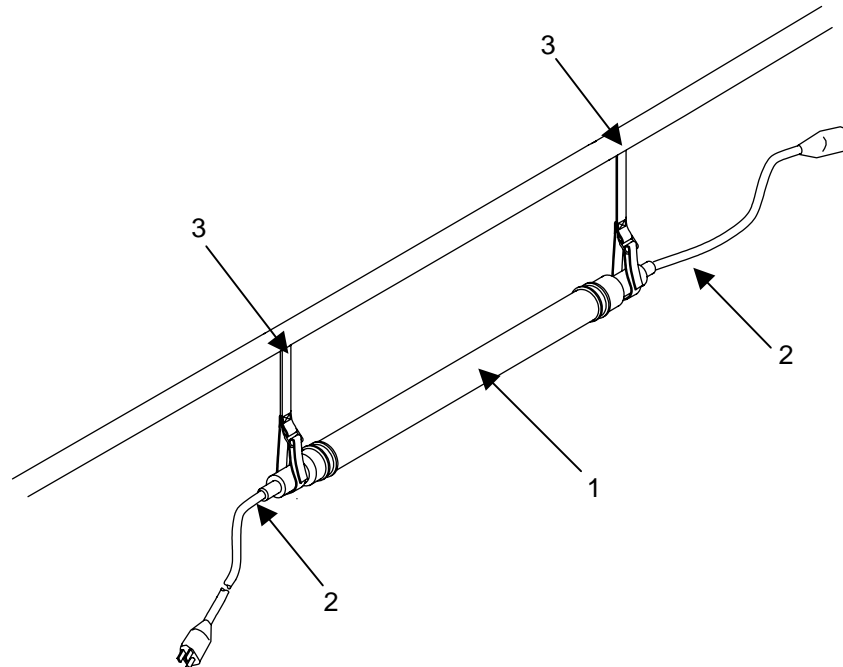


**Inspect TEMPER Lights**

1. Inspect the TEMPER light assembly **(1)** for material damage, improperly installed or burned out light bulbs.
2. Inspect individual light covers for cracks or discoloration.
3. Inspect power cords **(2)** on individual lights for frayed or chafed cords, or damaged plugs.
4. Inspect support straps **(3)** for wear or damage.
5. Unplug the light assembly and replace inoperative or unserviceable light assemblies.

**REPLACE****Replace a TEMPER Light Assembly**

1. Unplug light assembly **(1)**.
2. Slip light assembly from support straps **(3)**.
3. Replace light assembly.

**END OF WORK PACKAGE**

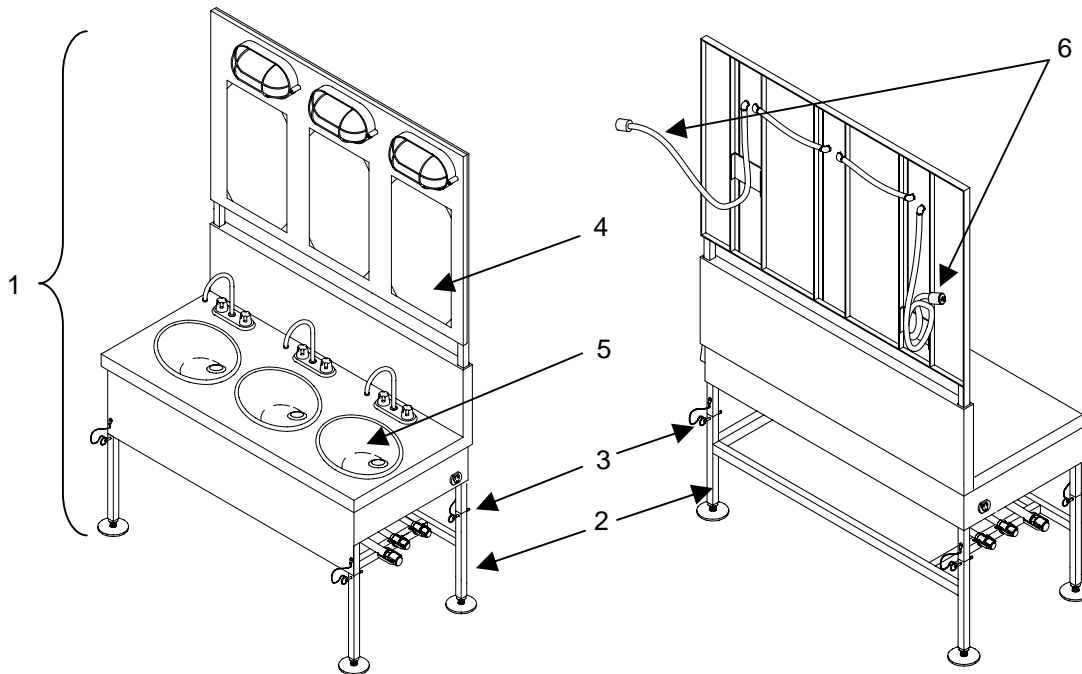
**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SHAVE STAND ASSEMBLY  
INSPECT**

**INITIAL SETUP****Tools****Personnel Required**

One

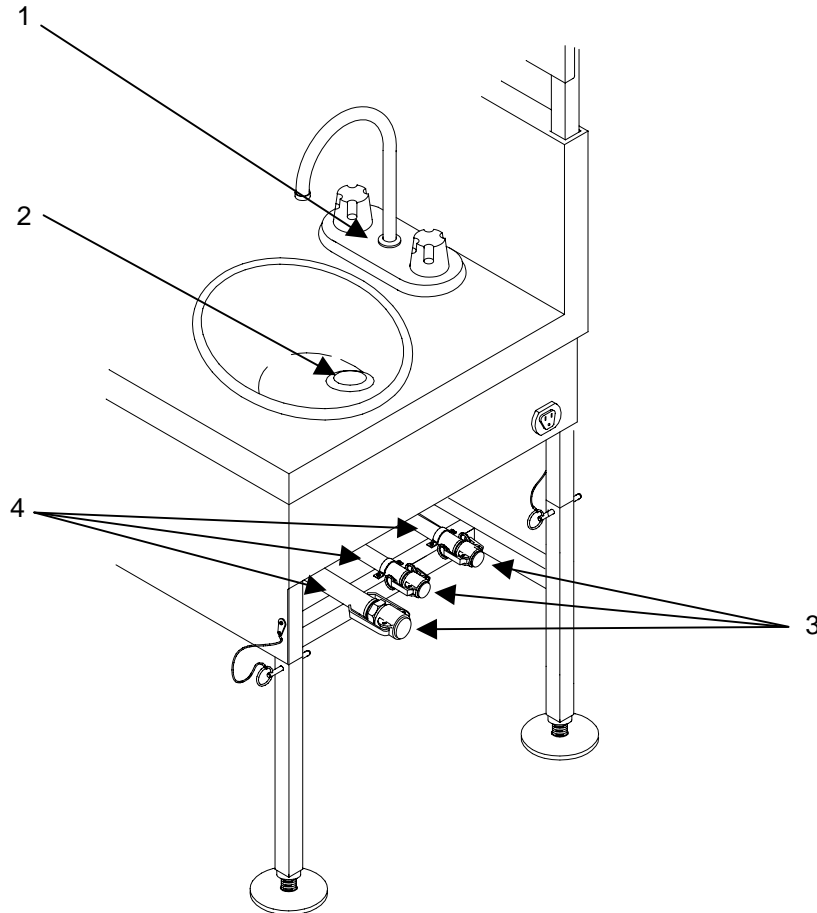
**Materials/Parts****Equipment Condition**Containerized Shower / Shower, Enclosed Unit,  
System set up.**INSPECT****Inspect Shave Stand Assembly**

1. Inspect the shave stand assembly **(1)** for material damage, such as dents or bends.
2. Inspect the shave stand legs **(2)** for missing or bent legs and retaining pins **(3)**.
3. Inspect the shave stand mirror and light assembly for missing or scratched mirrors **(4)**.
4. Inspect the shave stand basins **(5)** for proper fit and leaks.
5. Inspect the electrical cords **(6)** for material damage and exposed wires.
6. Report any discrepancies to unit maintenance.



**Inspect Shave Stand Faucets and Plumbing**

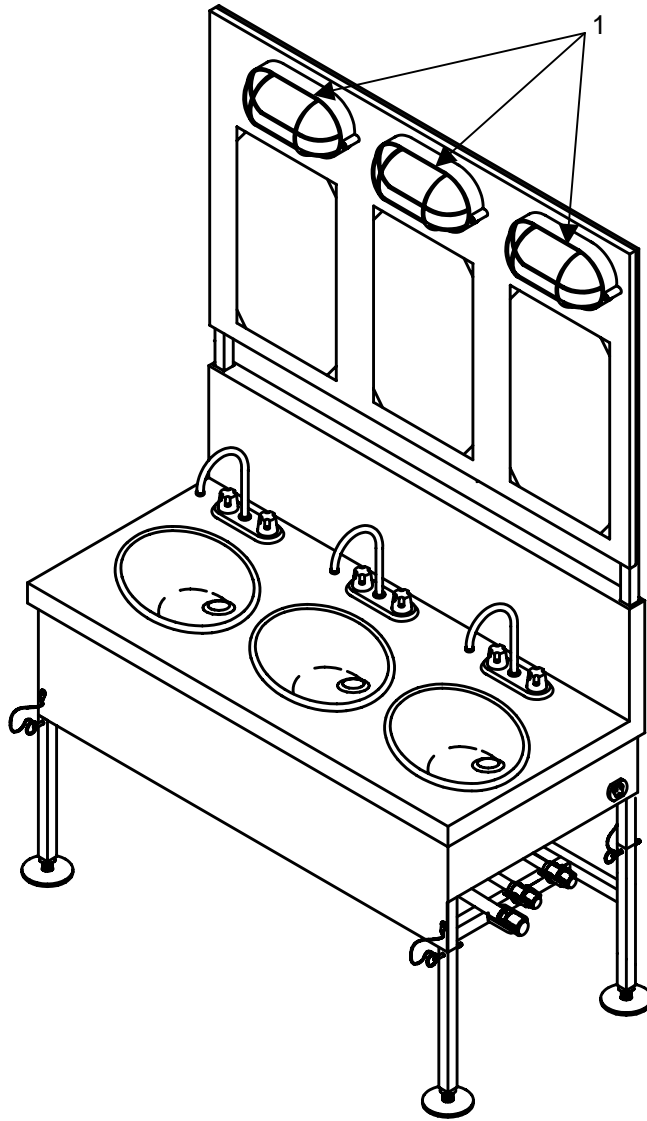
1. Inspect the faucets **(1)** for material damage, such as broken components, pitting, and leaks.
2. Ensure the drain **(2)** is clear of debris to prevent clogging.
3. Inspect the QDC fittings **(3)** for leaks.
4. Inspect all water supply pipes and drain pipes **(4)** for material damage and leaks.





**Inspect Shave Stand Lights**

Inspect the shave stand light fixtures (1) for material damage, improperly installed or burned out light bulbs.



**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
FRESH WATER PUMP ASSEMBLY  
INSPECT**

---

**INITIAL SETUP****Tools****Personnel Required**

One

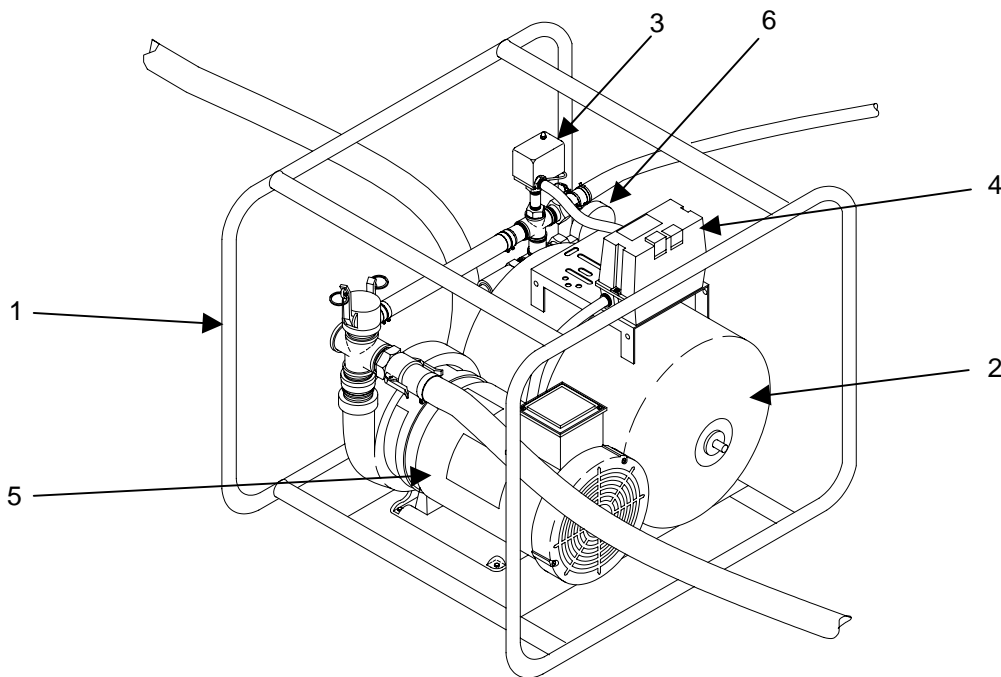
**Materials/Parts****Equipment Condition**

Containerized Shower set up.

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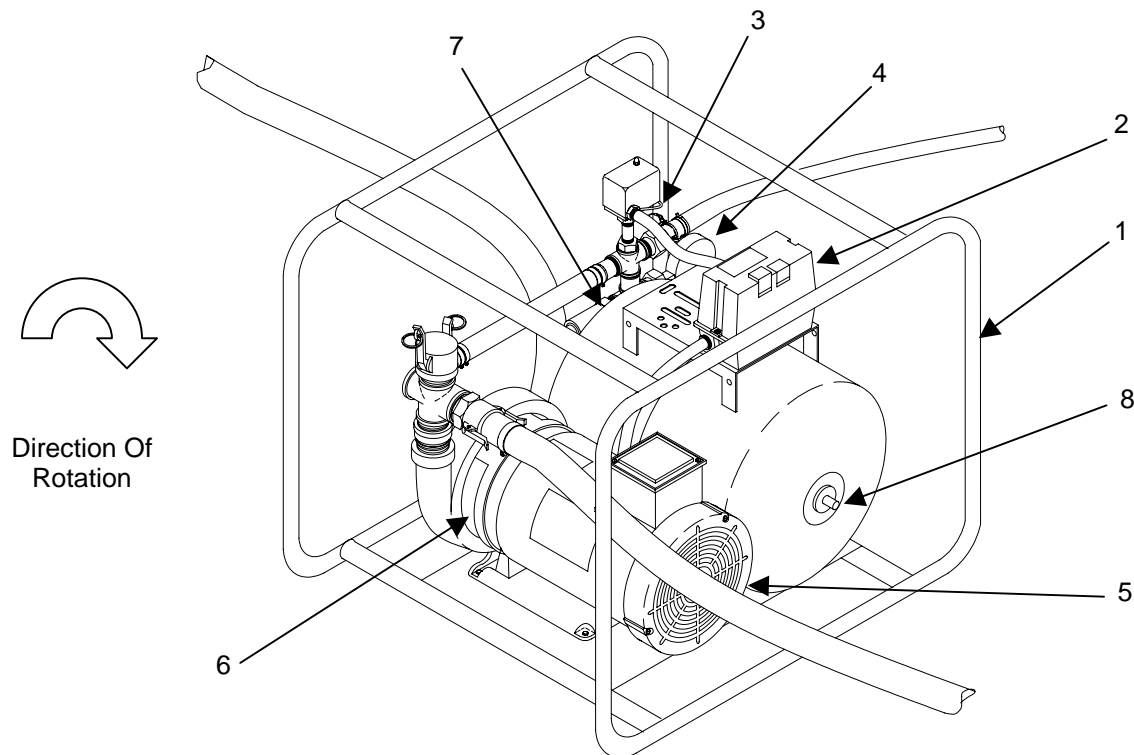
**INSPECT****Inspect the Pump Assembly**

1. Inspect the pump frame **(1)** for cracks, dents, and broken tubing and welds.
2. Inspect the pump pressure tank **(2)** for leaking air or water. Ensure the pressure tank is securely mounted in the frame.
3. Inspect the pump pressure switch **(3)** for material damage or missing cover.
4. Inspect the motor starter and overload relay assembly **(4)** for material damage. Ensure secure mounting.
5. Inspect the fresh water pump **(5)** for material damage, secure mount in frame, and leaks.
6. Inspect the pump pressure gauge **(6)** for material damage or leaks. Pressure gauge should not have water in face, and scale should be legible.



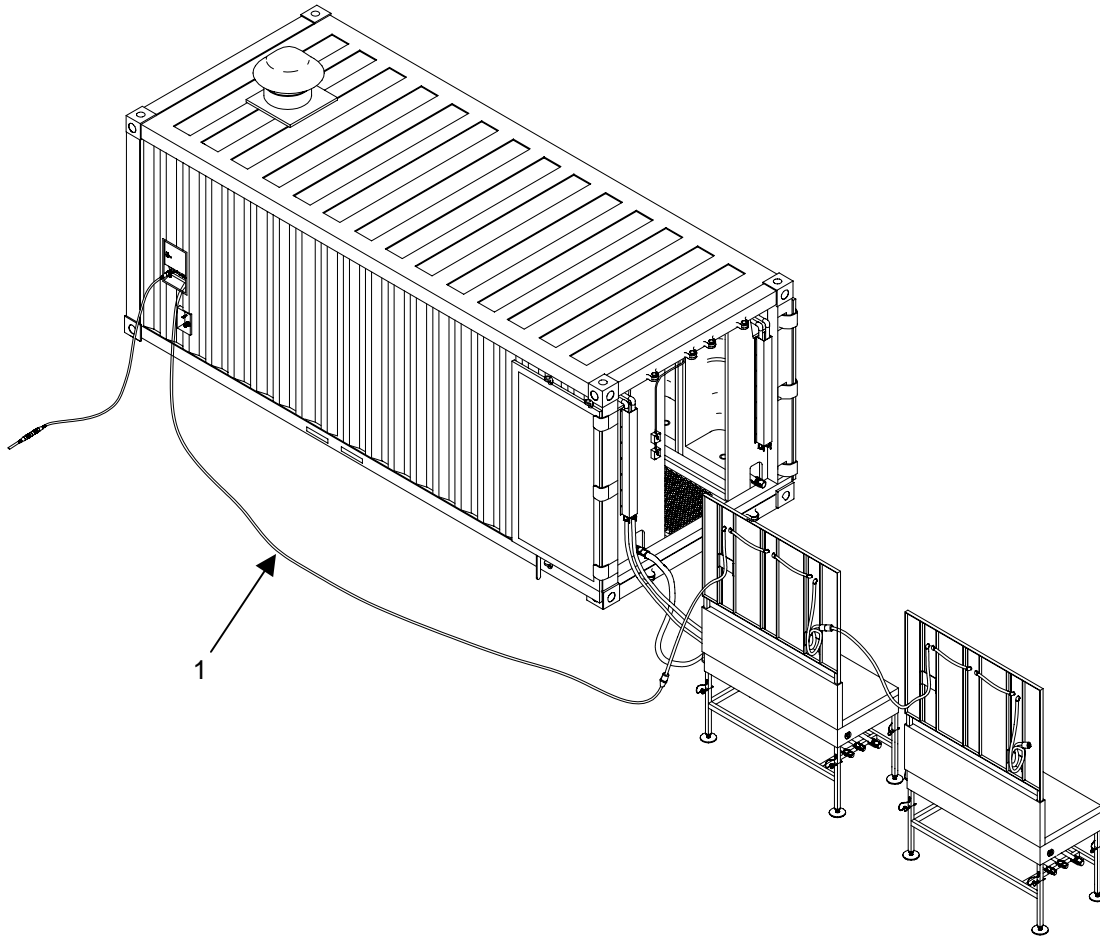
**Monitor Pump for Normal Operation**

1. Turn pump assembly **(1)** ON at motor starter **(2)** by pressing the green button.
2. Hold pressure switch override **(3)** to activate pump.
3. Check pump rotation by noting rotation at end of pump motor **(5)**. Compare rotation with direction indicated on pump body **(6)**. (Direction should be clockwise when viewed from the fan end.)
4. If rotation does not match, switch the pump OFF by pressing the red button on the motor starter **(2)** and notify unit maintenance.
5. If rotation does match, release override when pressure reaches 20 psi on the pressure gauge **(4)**.
6. Check all fittings for leaks.
7. Monitor pressure gauge **(4)**. Pump should cycle OFF at 40 to 45 psi, and ON at 20 to 25 psi. If the pressure is below or above these ranges, notify unit maintenance.
8. Monitor pressure relief valve **(7)**. There should be no discharge of water from this valve at any time. Notify unit maintenance if pressure relief valve is leaking or discharging water.
9. Turn pump assembly OFF at Motor Starter **(2)** by pressing the red button.



**Inspect the Extension Cords**

Inspect the 50-foot 110V extension cords **(1)** for any torn insulation, pulled plugs, bent prongs, and exposed wiring.



**END OF WORK PACKAGE**



**CHAPTER 5**

**UNIT MAINTENANCE INSTRUCTIONS  
FOR  
CONTAINERIZED SHOWER  
AND  
SHOWER, ENCLOSED UNIT, SYSTEM**





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**UNIT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
UNIT MAINTENANCE INSTRUCTIONS AND SERVICE UPON RECEIPT**

---

**GENERAL**

Unit maintenance is applicable to some components of the Containerized Shower & Shower, Enclosed Unit, System. Refer to the table below and applicable technical manuals to determine if Unit maintenance is authorized.

**Reference List for Unit Maintenance**

<b>TM</b>	<b>Nomenclature</b>
TM 10-4520-259-13&P	Operator's, Unit and Direct Support Maintenance Manual (including Repair Parts and Special Tools List) for Heater, Water, Liquid Fuel M80 & M85.
TM 10-8340-224-13	Operator's, Unit and Direct Support Maintenance Tent, Extendable, Modular, Personnel (TEMPER)
TM 10-5430-237-12&P	Operator's and Unit Maintenance Manual (including Repair Parts and Special Tools List) for Tank, Fabric, Collapsible, Self Supporting, Open Top, Water Storage, 3000 Gallons

**UNIT MAINTENANCE UPON RECEIPT****Flush Freshwater Lines**


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**WARNING**


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Both the Containerized Shower and the Shower, Enclosed Unit, System ship with an antifreeze solution pumped into the freshwater lines. The antifreeze solution is nontoxic, but unsuitable for drinking or washing. **DO NOT OPERATE THE SHOWER** until the freshwater lines have been flushed.

Once the shower is functional, flush the freshwater lines by opening all shower valves and shave stand faucets and allowing the system to flush for approximately three minutes.



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**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
LIGHT ASSEMBLY  
REPLACE**

---

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Item 1, WP 0048 00)

**Personnel Required**

One

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit, System set up. Set circuit breaker No. 10 and Main Breaker No. 7/9/11 to OFF. Wire tags applied to breaker.

**Materials/Parts**

Tags, Wire (Item 41, WP 0075 00)  
Tape, Electrical (Item 44, WP 0075 00)

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**REPLACE****Replace Fluorescent Light Bulbs**


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**WARNING**

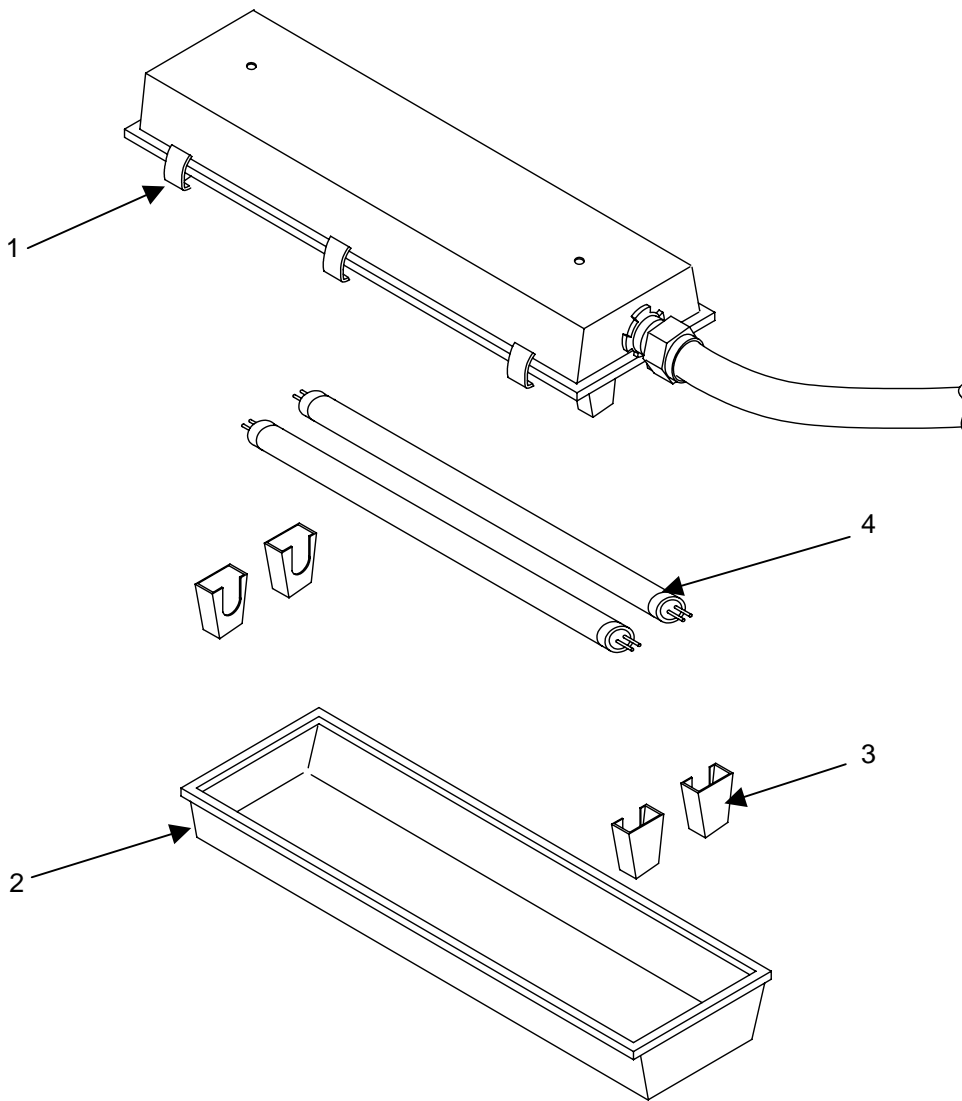
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Always secure and tag circuit breakers OFF before attempting any electrical repairs, even minor tasks such as replacing a bulb. Remember that the shower is a wet environment, and capable of posing a shock hazard even when personnel are not in direct contact with metal parts. Failure to observe safety precautions may result in serious injury or death to personnel.

**NOTE**

If no light fixtures are working, notify Direct Support maintenance.

1. Unclip the six retaining clips **(1)** and remove plastic lens cover **(2)**.
2. Remove the bulb retaining clips **(3)**, if fitted (2 per bulb).
3. Support fluorescent bulb **(4)** firmly and twist.
4. Remove old bulb and replace with a new fluorescent bulb of equal size and wattage.
5. Insert new bulb **(4)** in sockets and twist to lock.
6. Install the bulb retaining clips **(3)**, if fitted (2 per bulb).
7. Install the plastic lens cover **(2)**, and secure with the six retaining clips **(1)**.



---

**Replace Ballast**

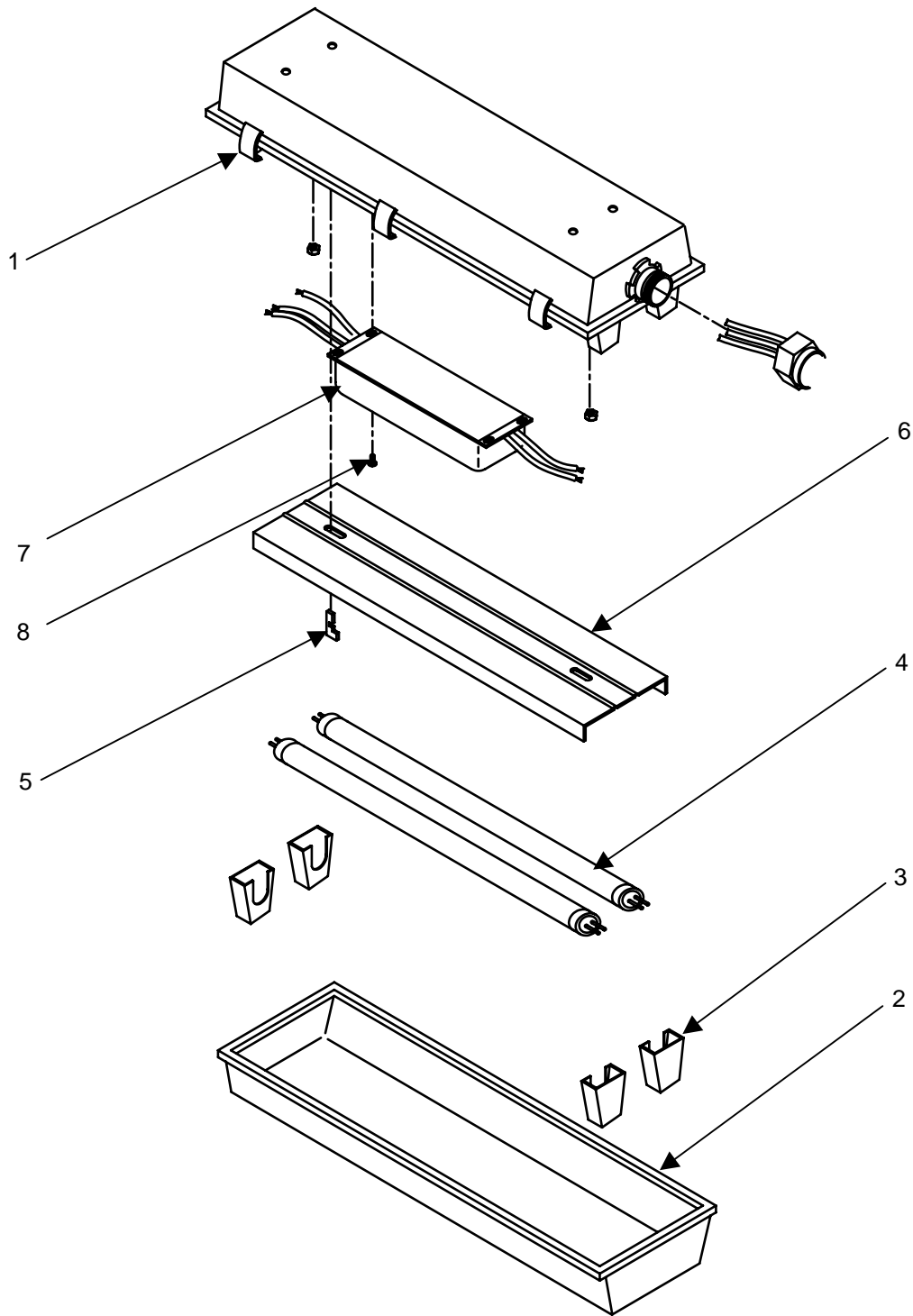
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**WARNING**

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Always secure and tag circuit breakers in the OFF position before attempting any electrical repairs. Remember that the shower is a wet environment, and capable of posing a shock hazard even when personnel are not in direct contact with metal parts. Failure to observe safety precautions may result in serious injury or death to personnel.

1. Unclip the six retaining clips **(1)** and remove plastic lens cover **(2)**.
2. Remove the bulb retaining clips **(3)**, if fitted (2 per bulb).
3. Support fluorescent bulb **(4)** firmly and twist.
4. Remove fluorescent light bulbs **(4)** from light assembly.
5. Remove the twist fastener **(5)**.
6. Remove the reflector **(6)**.
7. Disconnect wire nuts and tag wires from ballast **(7)**.
8. Remove ballast retaining screw **(8)**.
9. Remove ballast **(7)**.
10. Replace with new ballast.
11. Secure new ballast **(7)** with ballast retaining screw **(8)**.
12. Connect wires with wire nuts and tape wire nuts with electrical tape.
13. Install reflector **(6)** and secure with twist fastener **(5)**.
14. Install fluorescent light bulbs **(4)**.
15. Install bulb retaining clips, if fitted **(3)** (2 per bulb).
16. Position lens cover **(2)** and secure with the six retaining clips **(1)**.



END OF WORK PACKAGE

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**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
HEATER ASSEMBLY  
TEST, SERVICE, REPLACE**

---

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Materials/Parts**

Cloth, Wiping (Item 12, WP 0075 00)  
Tags, Wire (Item 41, WP 0075 00)

**Personnel Required**

One

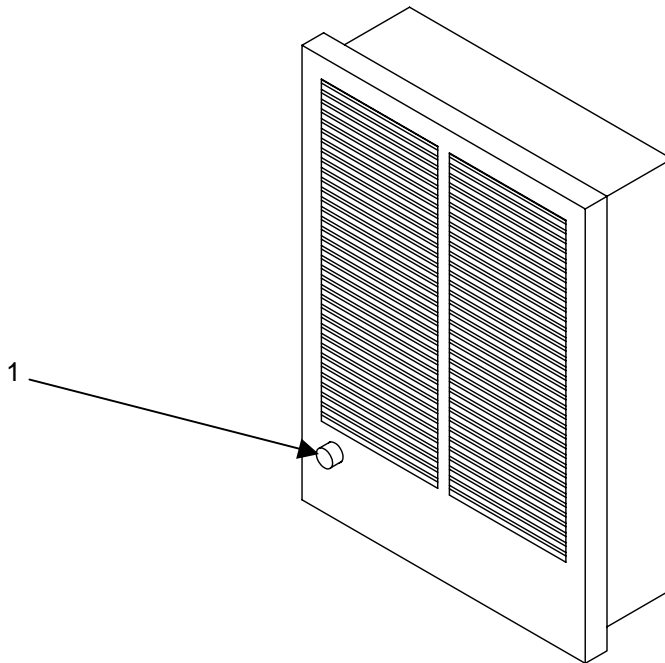
**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit, System set up. Main Breaker No. 7/9/11, circuit breaker No. 3/5, and space heater thermostat turned OFF. Wire tags applied to breaker.

---

**TEST****Test the Space Heater for Proper Operation**

1. Rotate thermostat knob **(1)** counterclockwise until control stops.
2. Switch the main breaker No. 7/9/11 and circuit breaker No. 3/5 to the ON position. Heater should not operate.
3. Rotate thermostat knob **(1)** clockwise until control stops. Wait two minutes. Heater fan should operate after two minutes.
4. Inoperative or malfunctioning space heaters must be replaced.



**SERVICE****Clean the Heater Assembly****WARNING**

Always secure and tag circuit breaker in OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. The shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

**NOTE**

The heater assembly may be found installed 180° from the way depicted in this TM. Either way is correct.

1. Remove thermostat knob **(1)**.
2. Remove four screws **(2)** from heater from front cover.
3. Remove front cover **(3)**.
4. Remove two screws **(4)** from heater assembly **(5)**.

**NOTE**

The heater assembly will have to clear the screw retaining tabs in the back box to be removed. This may be done by first prying the top, and then the bottom of the back box.

5. Remove heater assembly **(5)** from back box **(6)**.

**WARNING**

Eye protection must be worn when using compressed air. Failure to observe this safety warning may result in serious eye injury to personnel.

**CAUTION**

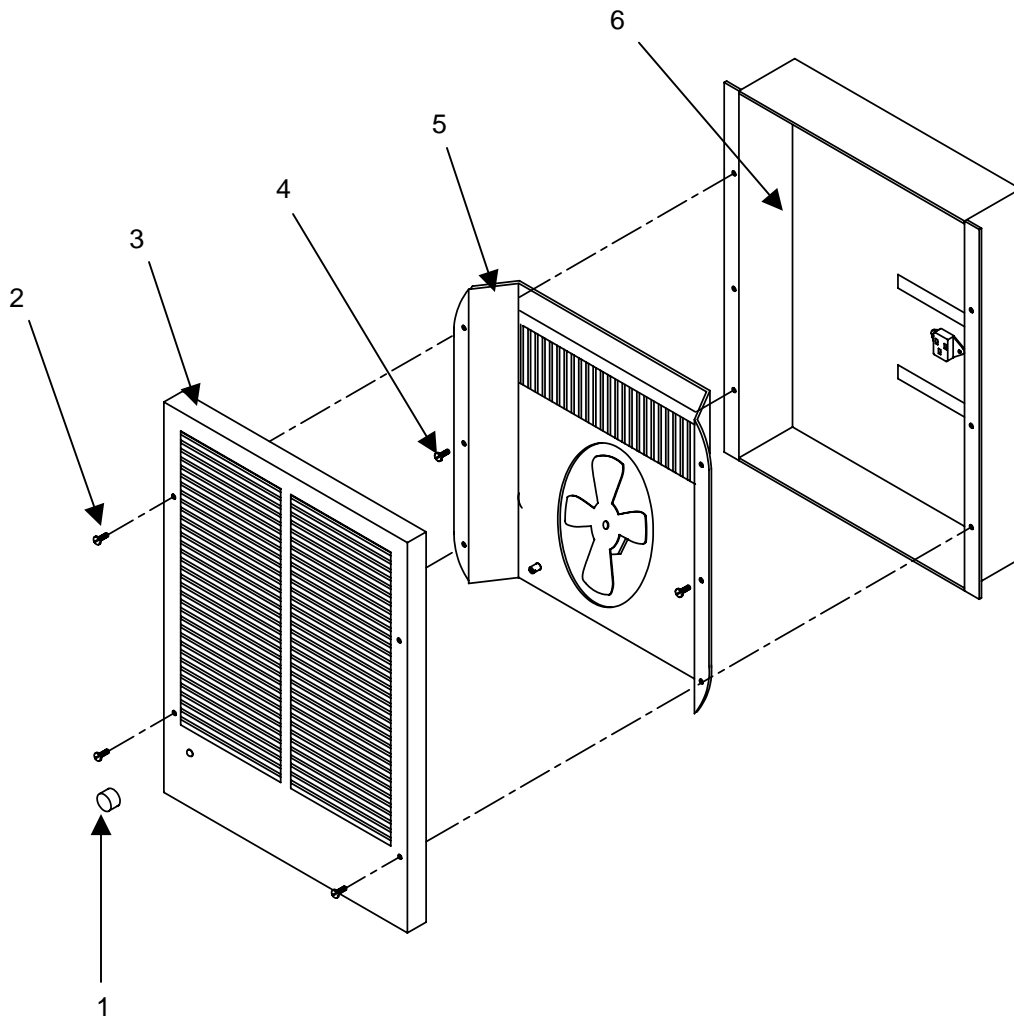
Use compressed air, if available, to clean heater assembly components. Do not use solvents or cleaning agents to clean heater components. Some solvents may cause corrosion to components, and all solvents will remove lubrication from the fan motor. Do not use metal tools to pick heater fins clean, as this may damage the heater element.

6. Clean heater assembly and fan of dust with a dry rag or compressed air, if available.
7. Install heater assembly **(5)** in back box **(6)**.
8. Secure heater assembly with two screws **(4)**.
9. Install front cover **(3)**.



10. Secure front cover with four screws (2).

11. Install thermostat knob (1).



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**REPLACE****Replace an Inoperative or Malfunctioning Space Heater**

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**WARNING**

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If the space heater malfunctions during operation, it may still be hot enough to cause burns. Allow time for the unit to cool before servicing. Do not attempt to handle a heater assembly without gloves. Failure to observe safety precautions may result in serious injury to personnel.

1. Remove thermostat knob **(1)**.
2. Remove four screws **(2)** from heater from front cover.
3. Remove front cover **(3)**.
4. Remove two screws **(4)** from heater assembly **(5)**.
5. Remove heater assembly **(5)** from back box **(6)**.



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**WARNING**

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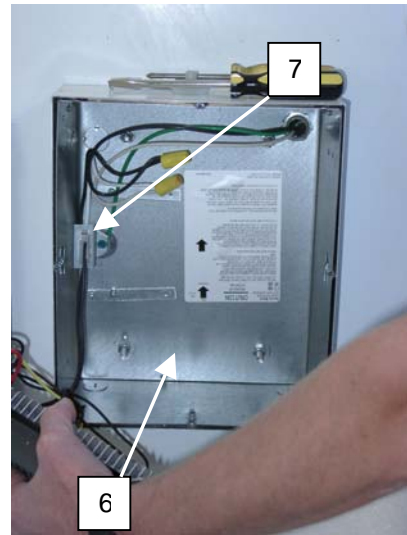
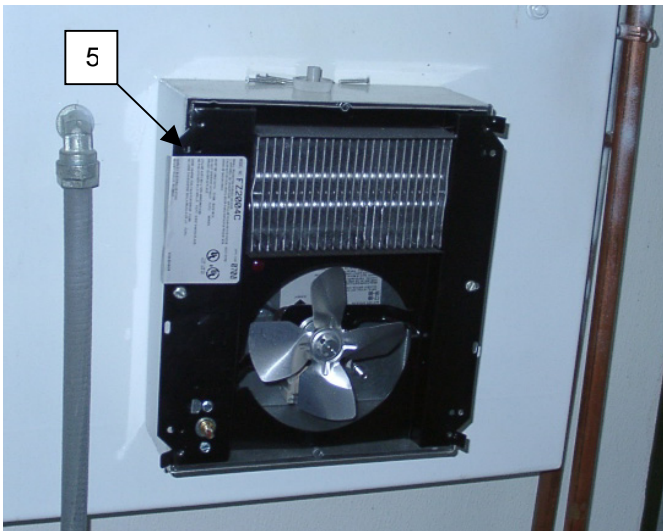
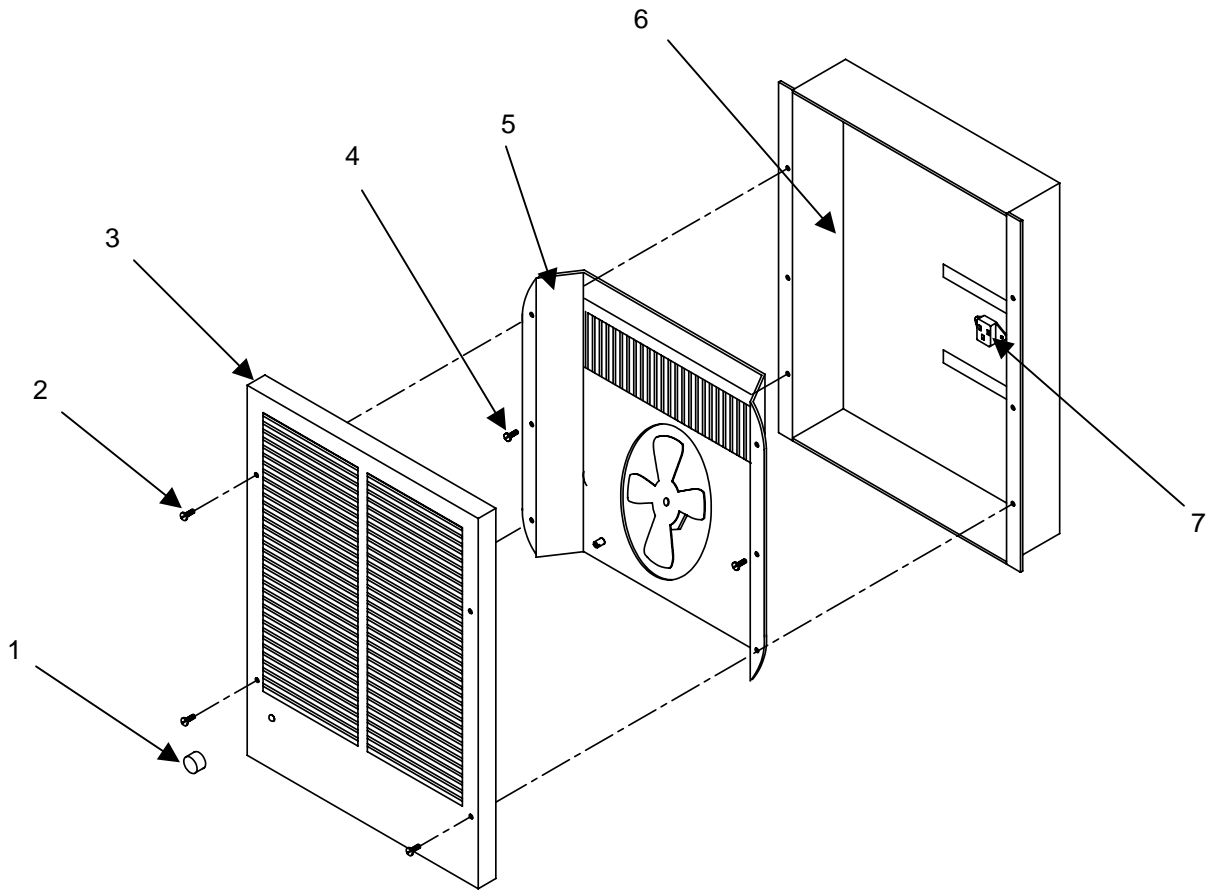
Always secure and tag circuit breaker in OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. The shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

6. Unplug disconnect socket **(7)** from heater assembly **(5)**.

**NOTE**

The replacement heater assembly will require disassembly prior to installation. Follow steps 1 through 6 above to disassemble the replacement heater assembly. After disassembling the replacement heater assembly, discard the back box – it will not be replaced.

7. Attach disconnect socket **(7)** to replacement heater assembly.
8. Place heater assembly **(5)** into back box **(6)**.
9. Secure with two retaining screws **(4)**.
10. Replace front cover **(3)**.
11. Reinstall screws **(2)** into heater.
12. Replace thermostat knob **(1)**.



**END OF WORK PACKAGE**



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**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
EXHAUST FAN ASSEMBLY  
TEST, REPLACE**

---

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Materials/Parts**

Tags, Wire (Item 41, WP 0075 00)

**Personnel Required**

Four

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit, System set up  
Circuit breaker No. 1. (Containerized shower only) set to the OFF position. Apply tag or unplug cord (Shower, Enclosed Unit, System).

---

**TEST****Test Exhaust Fan**

1. Set main breaker No. 7/9/11 and circuit breaker No. 1 to the ON position (Containerized Shower only).
2. Turn exhaust fan switch ON.



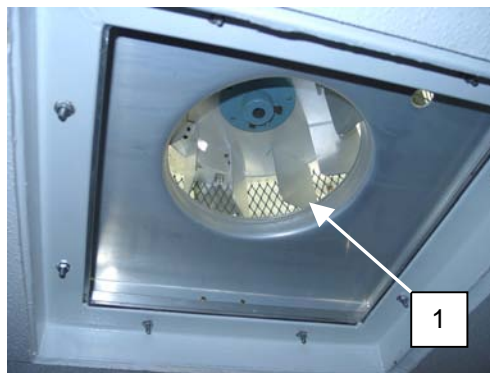
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**WARNING**

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Do not attempt to clear objects from installed fan with fingers, tools, or foreign objects. Fan blades can cause serious injury or death by cutting or by missile hazard.

3. Exhaust fan should come on without delay. Monitor for unusual sounds that might come from mechanical failure or foreign objects in contact with fan blades **(1)**. Monitor for unusual levels of vibration.
4. Malfunctioning or damaged exhaust fans must be replaced.



**REPLACE**

**Replace a Damaged Fan Assembly**

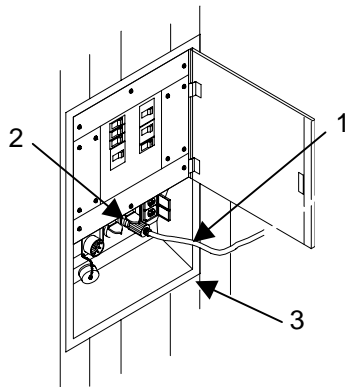
1. Unplug fan power cord (1) from the twistlock outlet (2) on the power service panel (3).
2. From inside the shower, remove nuts (4) and bolts (5) securing the exhaust fan (6) to mount (7) (Containerized Shower only).



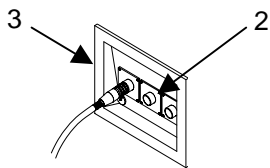
**WARNING**

The exhaust fan is heavy, awkward, and difficult to maneuver. Two persons should be stationed on the container roof to handle the exhaust fan, and two on the ground.

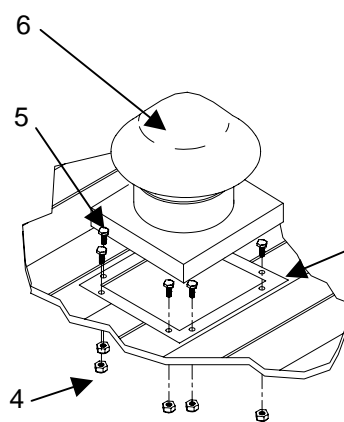
3. Using hinged steps, climb on top of the shower container, remove bolts (5) from exhaust fan (6) (Shower, Enclosed Unit, System only) and then remove exhaust fan from mount (7).
4. Place operational fan on mount (7), aligning holes (8).
5. Install the fan mounting bolts (5) (Shower, Enclosed Unit, System only).
6. From inside the shower, install nuts (4) onto exhaust fan mounting bolts (5) (Containerized Shower only).
7. Plug power cord (1) into twistlock outlet (2) on power service panel (3).



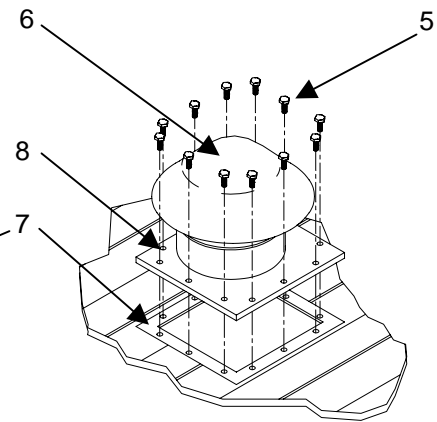
**Containerized Shower**



**Shower, Enclosed Unit, System**



**Containerized Shower**



**Shower, Enclosed Unit, System**

**END OF WORK PACKAGE**

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**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
PLUMBING  
REPAIR, REPLACE**

---

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)  
Tool Kit, General Mechanics: Automotive (Item 7, WP 0048 00)

**Materials/Parts**

Flux (Item 16, WP 0075 00)  
Paper, Abrasive (Item 31, WP 0075 00)  
Solder (Item 36, WP 0075 00)  
Tape, Anti-seize (Item 42, WP 0075 00)

**Personnel Required**

One

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit, System set up. Shut down water supply and drain system. Set circuit breaker No. 2/4/6 to the OFF position (Containerized Shower only).

---

**REPAIR****Repair a Leak in the Spigot (Containerized Shower only)**

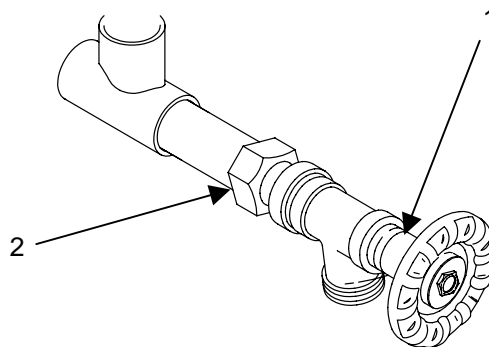
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**WARNING**

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Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

1. Tighten the spigot valve stem packing nut **(1)** using an adjustable wrench.
2. Tighten the spigot **(2)** using a pipe wrench.
3. If leaking continues, replace the spigot **(2)**.



---

**Repair a Leak in the Internal Piping (Shower, Enclosed Unit System and Early Production Containerized Shower only)****WARNING**

Soldering and unsoldering require the use of an open flame, which can burn skin and eyes. Keep open flame away from combustible materials. Failure to observe safety precautions may result in fire or serious injury to personnel.

**NOTE**

The Shower, Enclosed Unit, System and early production Containerized Showers use copper piping for the internal water lines. Later production Containerized Showers have been improved to ease field repair, and are fitted with flexible plastic hoses secured with hose clamps. Ensure that you know which model you have before proceeding.

**NOTE**

The water system must be thoroughly drained before proceeding. The unsoldering procedure will not work on pipes with water inside. If necessary, blow compressed air through the system to remove remaining water.

1. Ensure circuit breaker No. 2/4/6 is set to the OFF position, the water supply has been disconnected and all pressure relieved from system. Ensure water system has been completely drained before proceeding.
2. Unsolder the damaged or leaking joints by applying a torch to the pipe **(1)** adjacent to the fitting **(2)**.

**WARNING**

Heated pipe, fittings, and solder are capable of producing serious burns. Wear heat resistant gloves, and always use pliers to handle work being soldered and unsoldered. Failure to observe safety precautions may result in serious injury to personnel.

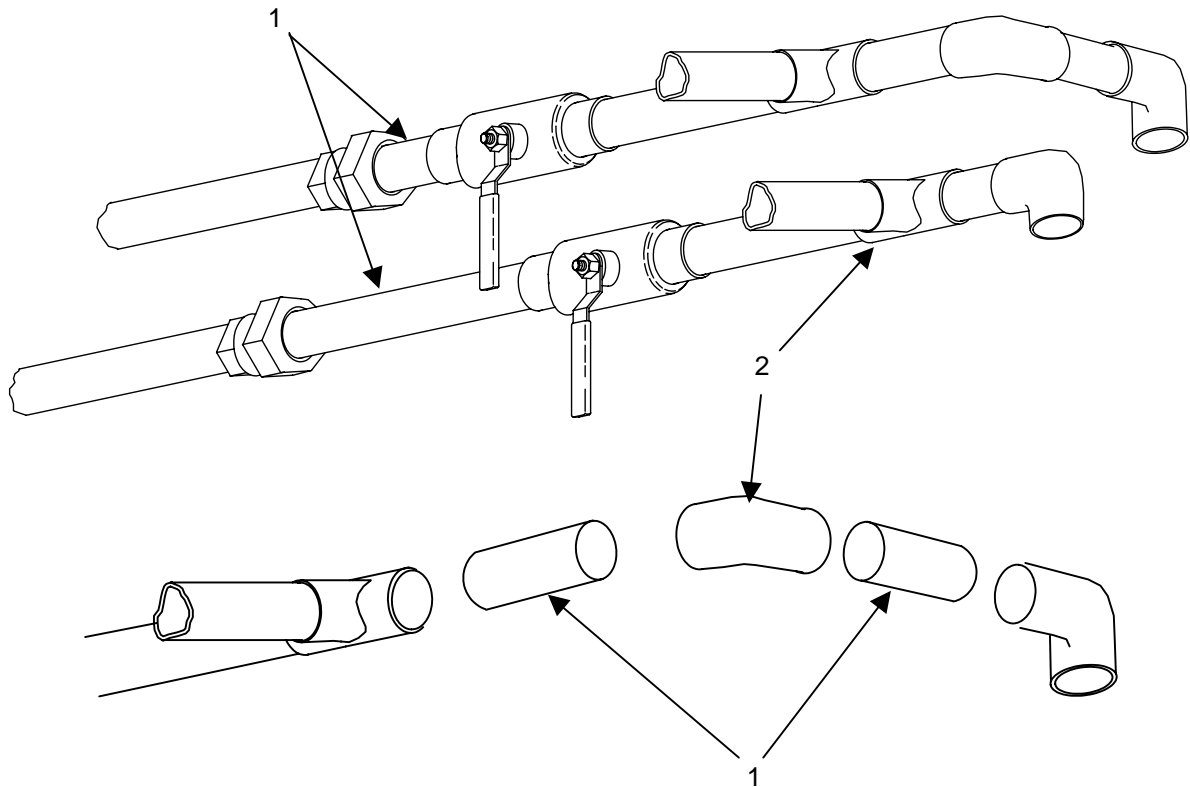
3. When solder is shiny and fluid, use pliers to remove pipe **(1)** from fitting **(2)**.
4. Allow pipe to cool.
5. Use sandpaper to clean pipe and fitting to be joined.
6. Apply flux to pipe and fitting at joints
7. Join pipe **(1)** and fitting **(2)**.
8. Apply heat to fitting **(2)** with torch.



**NOTE**

When soldering, remember to apply heat to where that you want the solder to flow, and then apply the solder to the part you've heated. The part being soldered will melt the solder and draw the solder into the joint. Do not apply heat directly to the solder, as it will drip and splatter.

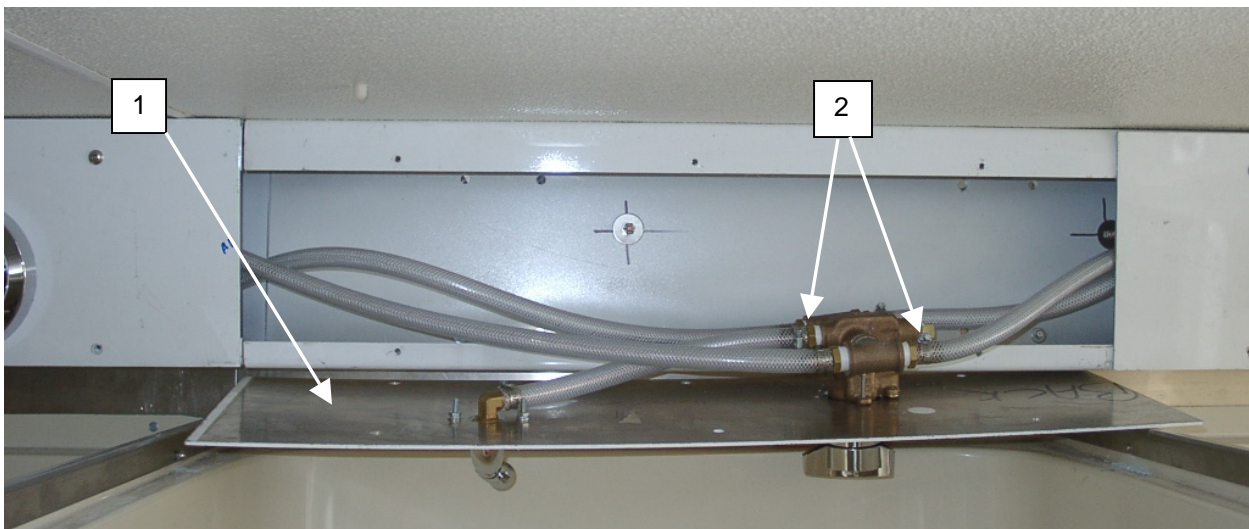
9. Apply solder to fitting **(2)** at joint.
10. Allow joint to cool.
11. Clean cooled joint with sandpaper.
12. Inspect joint for thorough soldering. Solder should show as a thin silver colored ring around circumference of joint.
13. If joint is insufficiently soldered, repeat steps 1 through 11.
14. If leaking continues, replace the entire section of pipe **(1)** or fitting **(2)**.



**Repair a Leak in the Internal Water Hoses (Late Production Containerized Shower only)****NOTE**

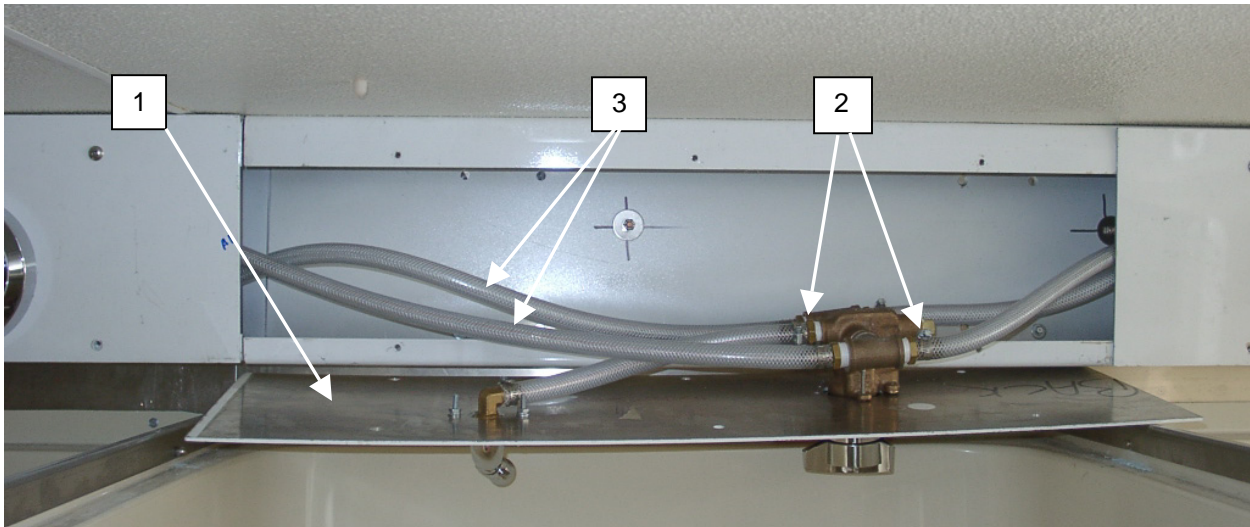
The Shower, Enclosed Unit, System and early production Containerized Showers use copper piping for the internal water lines. Later production Containerized Showers have been improved to ease field repair, and are fitted with flexible plastic hoses secured with hose clamps. Ensure that you know which model you have before proceeding.

1. Remove the individual shower fascia plate **(1)**, if necessary.
2. Tighten the hose clamp **(2)**.
3. Install any fascia plate(s) **(1)** removed, and retain with screws.



**REPLACE****Replace the Internal Water Hoses (Late Production Containerized Shower only)**

1. Ensure circuit breaker No. 2/4/6 is set to the OFF position and the water supply has been disconnected.
2. Remove the individual fascia panel(s) **(1)** as necessary to provide access to both ends of the hose **(2)**.
3. Loosen the hose clamps **(3)** on both ends of the hose **(2)**.
4. Remove the hose **(2)**.
5. If necessary, cut the replacement hose to a length approximately ½-inch longer than the damaged hose.
6. Loosely install the hose clamps **(3)** on the replacement hose **(2)**.
7. Install the replacement hose **(2)**, and tighten the hose clamps **(3)**.
8. Place the internal water system under pressure, and inspect for leaks. Tighten the hose clamps **(3)** as necessary to correct any leaks.
9. Install the fascia panel(s) **(1)**.



---

**Replace Mixer Valve (Early Production Containerized Shower only)****NOTE**

Early production Containerized Showers have the mixer valve connected by unions into copper pipes. Later production Containerized Showers are connected by flexible plastic hoses. Ensure that you know which model you have before proceeding.

1. Ensure circuit breaker No. 2/4/6 is set to the OFF position and that water is turned OFF at pump, and all pressure had been relieved from the system.

**CAUTION**

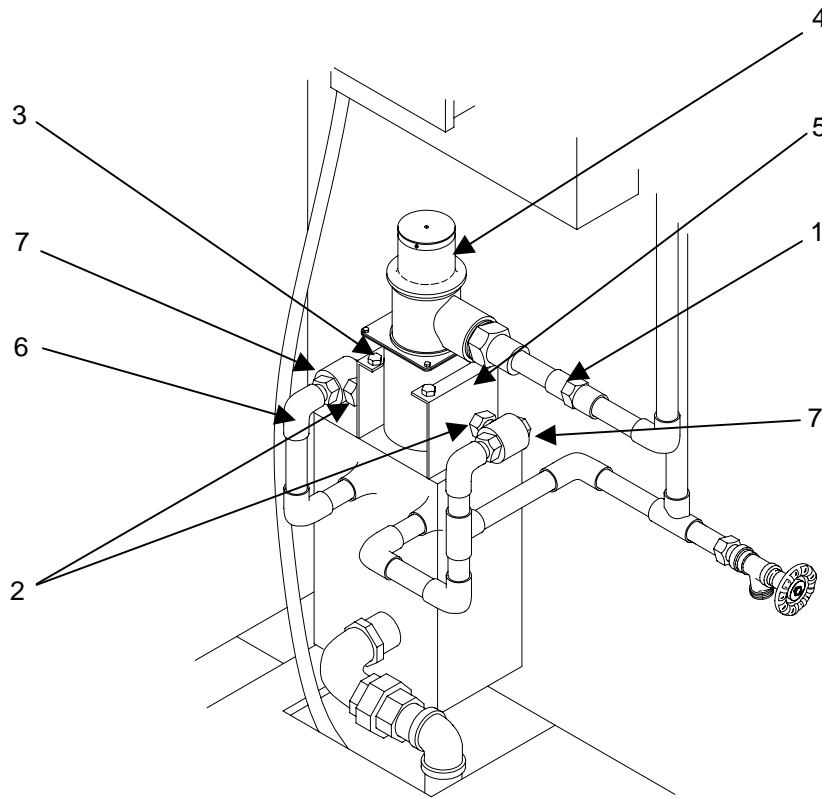
Always use two pipe wrenches when tightening or loosening a pipe union. Use one pipe wrench to turn the larger union ring, and another to secure the pipe attachment. Failure to do so can twist the union on the pipe, damaging both.

2. Using a pipe wrench, loosen three unions **(1, 2)**.

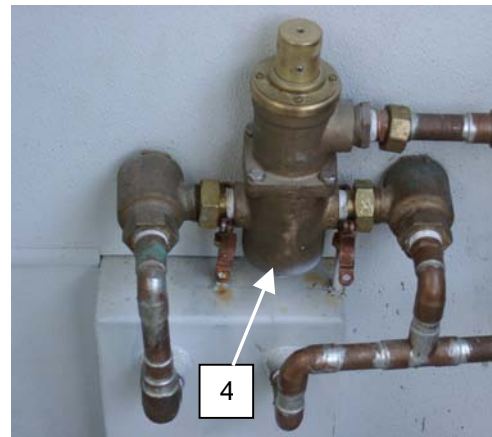
**NOTE**

Some Containerized Showers mount the mixer valve to pipe hangers.

3. Remove bolts **(3)** securing mixer valve **(4)** to mount **(5)**.
4. Use a pipe wrench to move pipe **(6)** counter clockwise approximately ½-inch.
5. Remove mixer valve.
6. Remove discharge union **(1)** from mixer valve.
7. Install discharge union on new mixer valve.
8. Remove stop valves **(7)** from mixer valve plumbing.
9. Install new stop valves from new mixer valve on mixer valve plumbing.
10. Install new mixer valve.
11. Use a pipe wrench to move pipe **(6)** clockwise approximately ½-inch.
12. Secure mixer valve to mount with bolts **(3)**.
13. Join and tighten three pipe unions **(1, 2)**.
14. Connect shower water supply and inspect for leaks.



Mixer Valve With Fabricated Mount

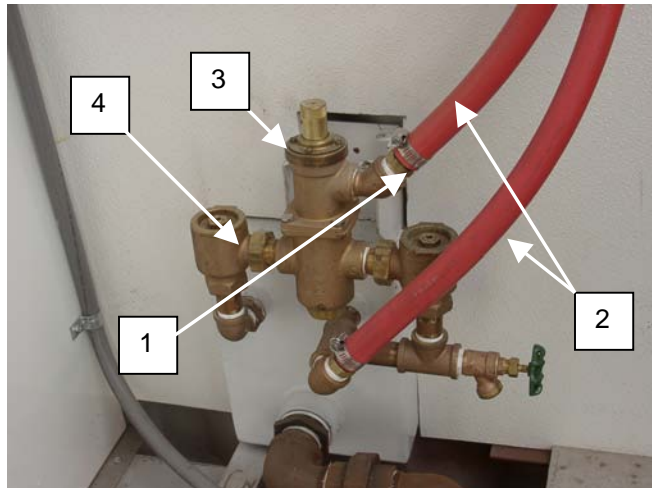


Mixer Valve With Pipe Hanger Mount

**Replace Mixer Valve (Late Production Containerized Shower only)****NOTE**

Early production Containerized Showers have the mixer valve connected by unions into copper pipes. Later production Containerized Showers are connected by flexible plastic hoses. Ensure that you know which model you have before proceeding.

1. Ensure circuit breaker No. 2/4/6 is set to the OFF position, the water supply is turned OFF at the pump and all pressure has been relieved from the system.
2. Loosen the hose clamp **(1)** retaining the hose **(2)** to the mixer valve **(3)**.
3. Remove the hose **(2)** from the mixer valve **(3)**.
4. Remove the hose nipple from the pipefitting.
5. Remove the pipe fittings **(4)** from the mixer valve **(3)**.
6. Unscrew the unions securing the mixer valve **(3)** to the adjacent fixtures.
7. Remove the mixer valve **(3)**.
8. Install the replacement mixer valve **(3)** on the adjacent fixtures, and tighten the unions.
9. Wrap the pipe fitting with anti-seize tape and install the hose nipple on the pipefitting.
10. Wrap the pipe fittings with anti-seize tape and install the pipe fittings **(4)** onto the mixer valve **(3)**.
11. Install the hose **(2)** onto the mixer valve **(3)**.
12. Tighten the hose clamps **(1)**.
13. Pressurize the water system, and inspect for leaks. Tighten the hose clamps **(1)** as necessary to correct any leaks at the joints.



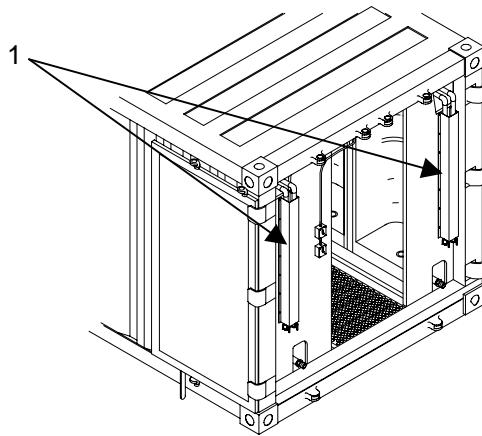
**Replace a Shower Valve (Shower, Enclosed Unit System and Early Production Containerized Shower only)****CAUTION**

Always use two pipe wrenches when tightening or loosening a pipe union. Use one pipe wrench to turn the larger union ring, and another to secure the pipe attachment. Failure to do so can twist the union on the pipe, damaging both.

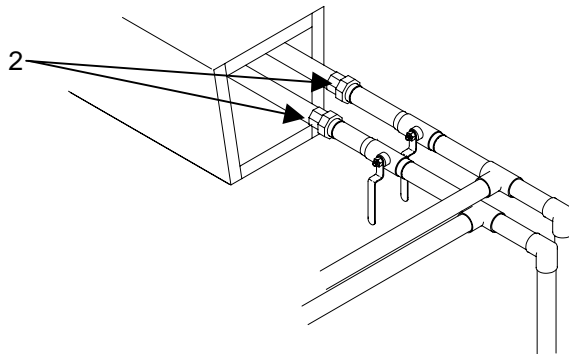
**NOTE**

The Shower, Enclosed Unit, System and early production Containerized Showers use copper piping for the internal water lines. Later production Containerized Showers have been improved to ease field repair, and are fitted with flexible plastic hoses secured with hose clamps. Ensure that you know which model you have before proceeding.

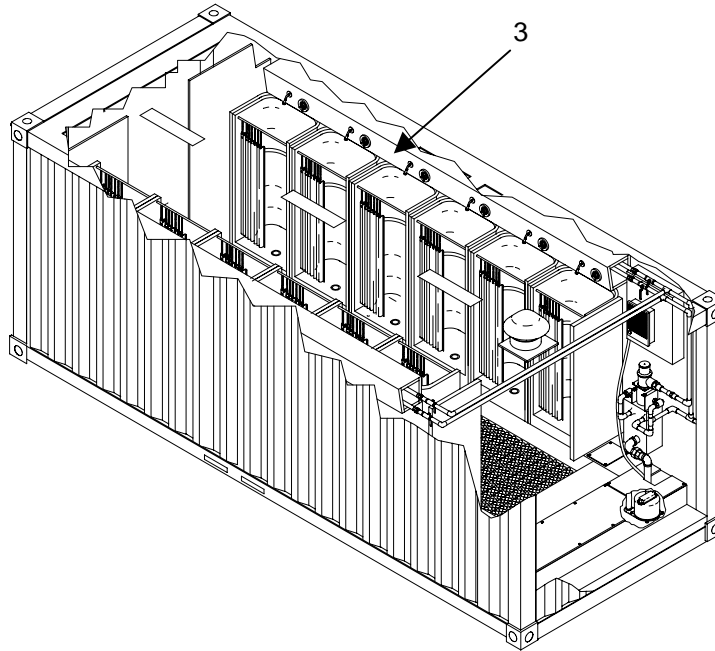
1. Ensure circuit breaker No. 2/4/6 is set to the OFF position, the water is turned OFF at the pump, and all the pressure has been relieved from the system.
2. Remove the shave stand water connection cover (1) on the side requiring replacement.



3. Loosen the two unions (2) on each end of the plumbing (four total).



4. Remove the 36 screws retaining the fascia plate (3).



### WARNING

The fascia plate is heavy and over 18-feet long. Wear gloves when handling. Removal of the fascia plate will require at least three people. Failure to observe safety precautions may result in serious injury to personnel.



### WARNING

The fascia plate may have sharp edges or corners. Wear gloves when handling. Failure to observe safety precautions may result in serious injury to personnel.

### NOTE

Removing the shower curtains may make it easier to handle the fascia plate.

5. Remove the fascia plate and shower plumbing as an assembly out the personnel door.
6. Pry the cover (4) from the shower valve handle (5).
7. Remove the screw (6) and handle (5) from the shower valve to be replaced.
8. Remove screws (7) and face plate (8).
9. Unscrew the showerhead (9) and remove collar (10).



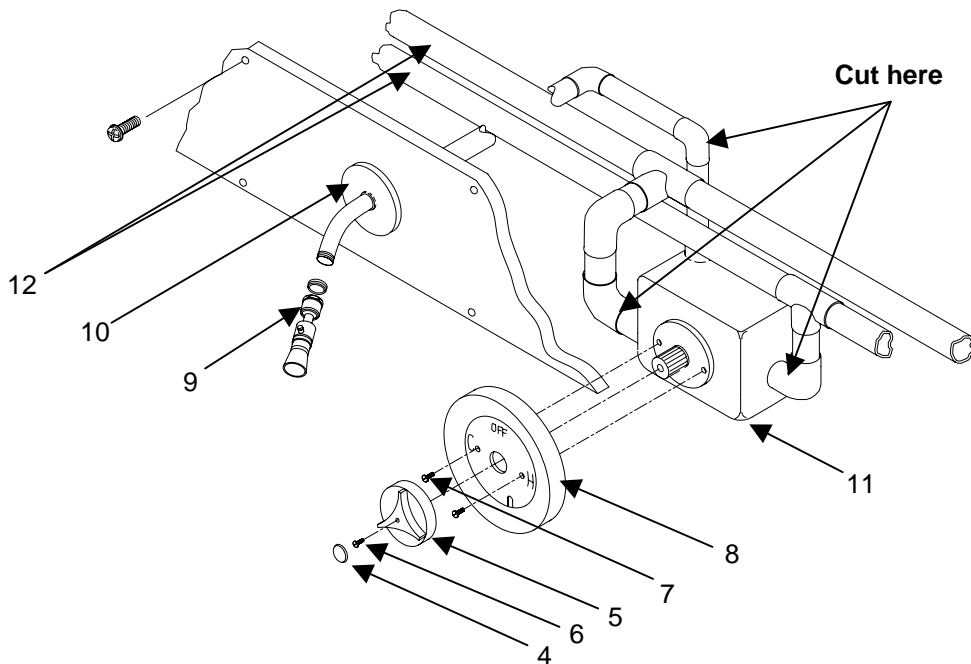
10. Repeat steps 5 through 8 on adjacent shower valves and showerhead as necessary to allow movement of the piping.
11. Use a hacksaw to cut the pipes attached to the shower valve.



**WARNING**

Soldering and unsoldering require the use of an open flame, which can burn skin and eyes. Keep open flame away from combustible materials. Failure to observe safety precautions may result in fire or serious injury to personnel.

12. Unsolder faulty shower valve (11) from water lines (12) by applying a torch to the pipe adjacent to the fitting. Remove valve from fascia plate assembly.

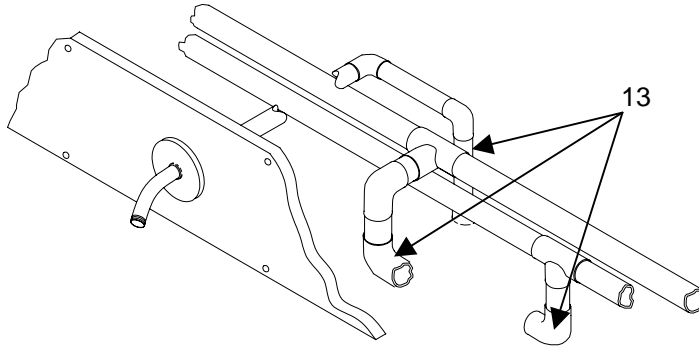




### WARNING

Heated pipe, fittings, and solder are capable of producing serious burns. Wear heat resistant gloves, and always use pliers to handle work being soldered and unsoldered. Failure to observe safety precautions may result in serious injury to personnel.

13. Apply a torch to cut elbows **(13)** on fascia plate assembly.
14. When solder is shiny and fluid, use pliers to remove elbows from pipe.



15. Allow pipe to cool.
16. Assemble replacement shower valve with new elbows. Cut ½-inch copper tubing as necessary to replace piping on replacement valve.
17. Use sandpaper or emery cloth to clean pipe and fitting to be joined.
18. Apply flux to pipe and fitting at joints.
19. Join pipe and fitting.
20. Apply heat to fitting with torch.

### **NOTE**

When soldering, remember to apply heat to where that you want the solder to flow, and then apply the solder to the part you've heated. The part being soldered will melt the solder and draw the solder into the joint. Do not apply heat directly to the solder, as it will drip and splatter.

21. Apply solder to shower valve **(11)** at joint.
22. Allow joint to cool.
23. Clean cooled joint with sandpaper.
24. Inspect joint for thorough soldering. Solder should show as a thin silver colored ring around circumference of joint.
25. Position faceplate **(8)** and install screws **(7)**.

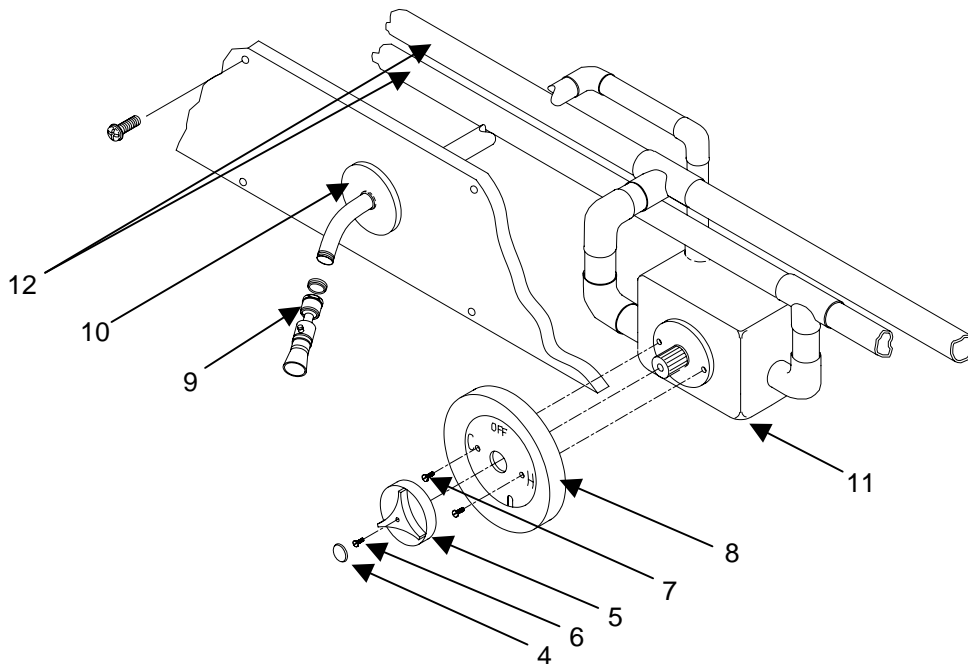
26. Install handle (5), screw (6), and cover (4).

### NOTE

Install showerhead hand tight only. Use anti-seize tape if necessary.

27. Install collar (10) and shower head (9).

28. Repeat steps 24 through 26 as necessary for additional shower valves.



29. Install the fascia plates (9) and plumbing as an assembly.

30. Secure the fascia plates with 36 screws (10).

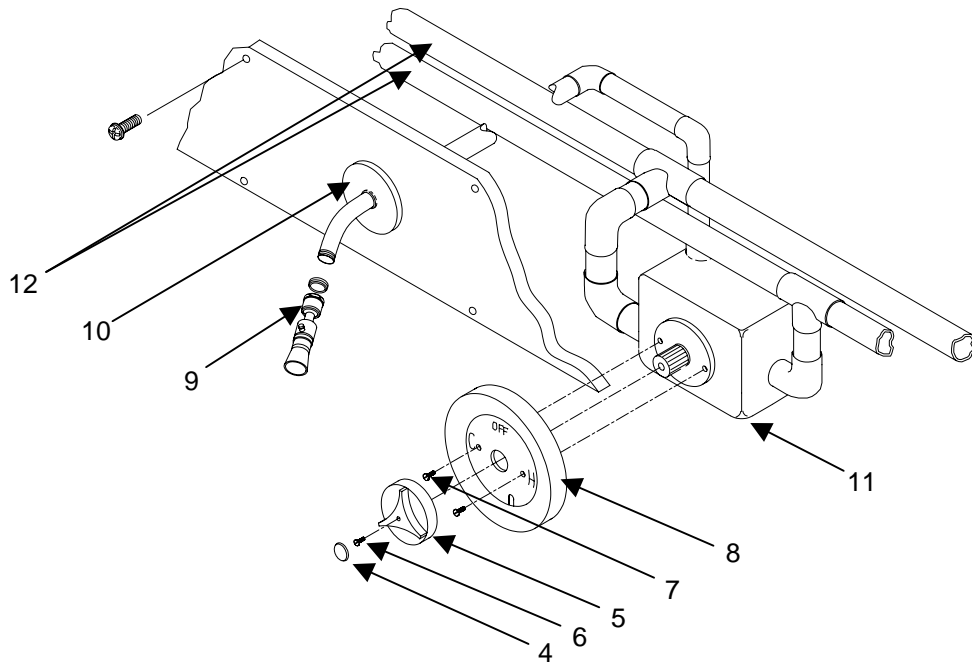
### CAUTION

Always use two pipe wrenches when tightening or loosening a pipe union. Use one pipe wrench to turn the larger union ring, and another to secure the pipe attachment. Failure to do so can twist the union on the pipe, damaging both.

31. Reattach the two unions on each end of the plumbing (four total).

32. Replace the shave stand water connection cover.

33. Connect shower water supply and inspect for leaks.



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**Replace a Shower Valve (Late Production Containerized Shower only)****NOTE**

The Shower, Enclosed Unit, System and early production Containerized Showers use copper piping for the internal water lines. Later production Containerized Showers have been improved to ease field repair, and are fitted with flexible plastic hoses secured with hose clamps. Ensure that you know which model you have before proceeding.

1. Ensure circuit breaker No. 2/4/6 is set to the OFF position, the water supply has been disconnected and pressure has been relieved from the system.
2. Pry the cover **(1)** from the shower valve handle **(2)**.
3. Remove the screw retaining the handle **(2)** from the shower valve **(3)** to be replaced, and remove the handle.
4. Remove the valve cover.
5. Remove screws retaining the face plate **(4)**, and remove the face plate.
6. Remove the screws retaining the individual fascia panel **(5)**, and remove the fascia panel to provide access to the shower valve **(3)**.
7. Tag the hose ends **(6)** connected to the shower valve **(3)**.
8. Loosen the hose clamps **(7)** on the four hose ends **(6)** connected to the shower valve **(3)**.
9. Remove the shower valve **(3)**.
10. Remove fittings from shower valve. Wrap fittings with anti-seize tape and install on the replacement shower valve.
11. Install the replacement shower valve **(3)**, and retain in place with faceplate **(4)** and screws.
12. Install the hose ends **(6)** onto the replacement shower valve **(3)** as tagged, and tighten the hose clamps **(7)**.

**NOTE**

Pressurize the system and check for leaks before replacing the panel.

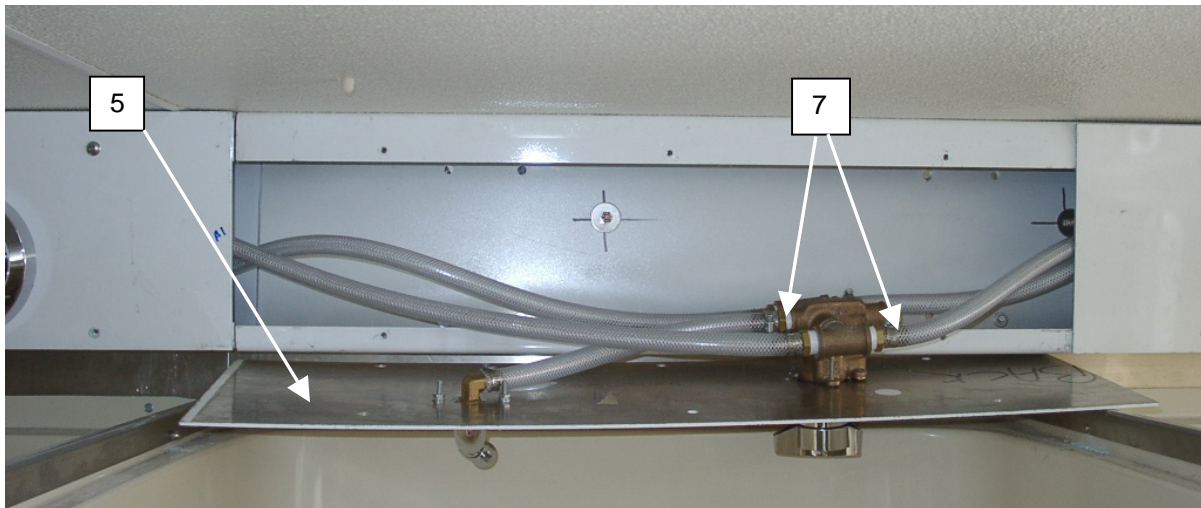
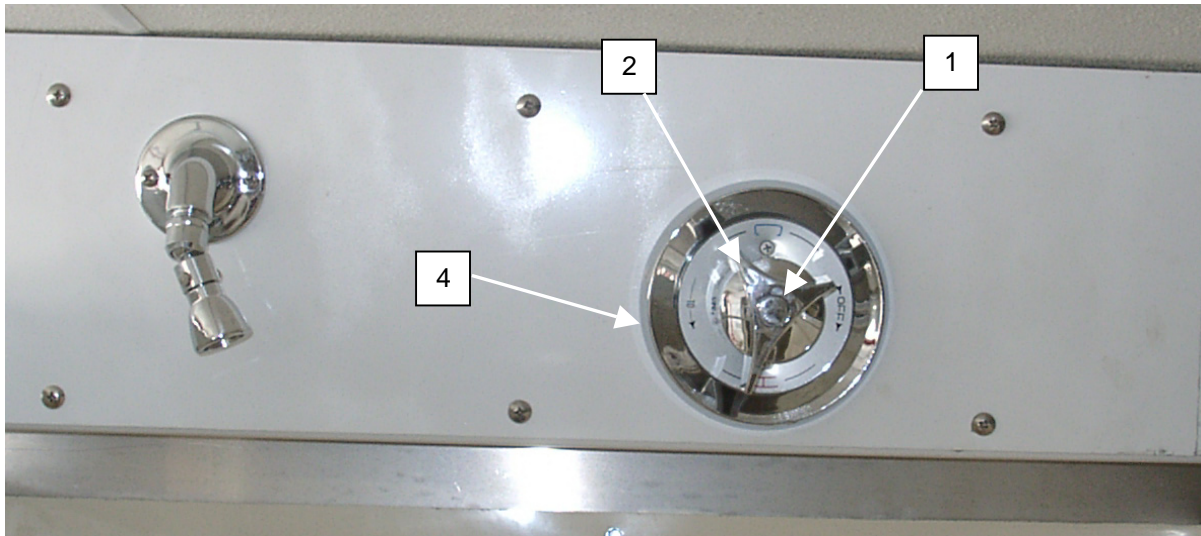
13. Place the internal water system under pressure, and inspect for leaks. Tighten the hose clamps **(7)** as necessary to correct any leaks.
14. Install the fascia panel **(5)**, and retain with screws.
15. Install the valve cover.

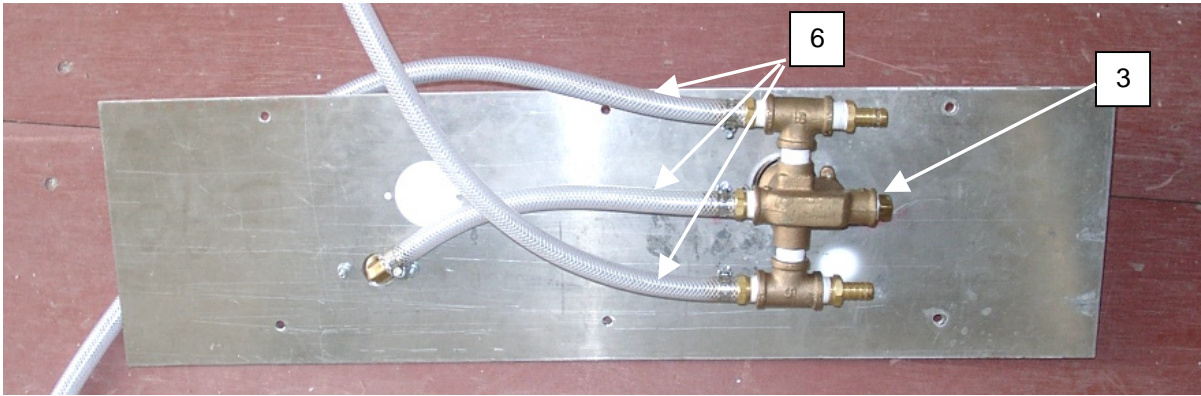
**NOTE**

Ensure the handle is aligned in the OFF position before retaining in place.

16. Install handle **(2)** and retain with screw.

17. Snap the cover **(1)** into place.





**END OF WORK PACKAGE**





**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SUMP PUMP TANK  
SERVICE**

**INITIAL SETUP****Tools**

Garden Hose (Item 1, WP 0048 00)  
Shop Equipment Automotive Maintenance and  
Repair: Organizational Maintenance, Common  
No. 1 (Item 4, WP 0048 00)

**Personnel Required**

Two

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit,  
System set up.

**Materials/Parts**

Bleach (Item 6, WP 0075 00)  
Brush Sanitary (Item 8, WP 0075 00)  
Detergent (Item 13, WP 0075 00)

**SERVICE****Clean the Graywater Holding Tank****NOTE**

When the shower is in operation on a more or less daily basis, the graywater tank must be cleaned approximately every 30 days. To prepare the tank for cleaning requires two persons. The graywater tank on the Containerized Shower may be easier to access by opening the service doors. The Shower, Enclosed Unit, System, does not have service doors, and must be accessed from the interior of the shower.

1. Remove the screws **(1)** securing the equipment mounting platform **(2)** and the padeyes **(3)** to the mounting rails **(4)** (Containerized Shower only).

**WARNING**

The equipment mounting platform is heavy, awkward, and difficult to maneuver. Wear protective gloves before handling. To prevent injury, two persons are required to remove and carry it. Failure to observe safety precautions may result in serious injury to personnel.

**WARNING**

The equipment mounting platform has sharp edges or corners. Wear protective gloves before handling. Failure to observe safety precautions may result in serious injury to personnel.

2. Lift the equipment mounting platform **(2)** and place it outside the shower container (Containerized Shower only).
3. Remove the bolts securing the graywater tank cover plates **(5)** and duct cover plates **(6)** in place, and remove the plates.

**WARNING**

Protective clothing and equipment must be worn. Heavy-duty rubber apron, rubber gloves, safety splash goggles and/or face shield are required when potential exists for contact with wastewater or contaminated surfaces. Wastewater and surfaces may be contaminated with pathogenic microorganisms, bacteria or viruses, which present a risk of serious illness or death.

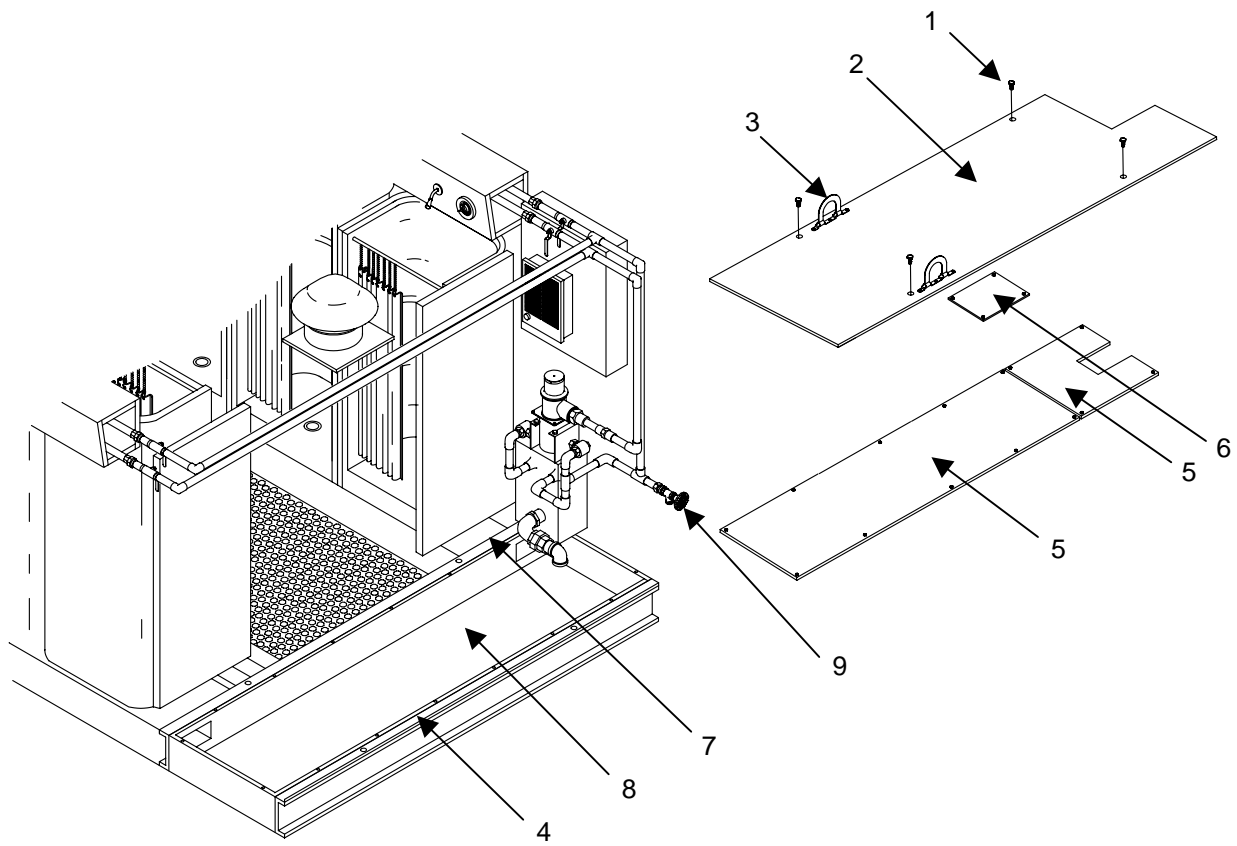
**WARNING**

Never mix chemicals or detergent and sanitizing solutions, this may produce highly toxic or poisonous gas that can cause serious illness or death to personnel.

**NOTE**

The sump pump must be in operation during this procedure to evacuate the tank.

4. Manually pump the graywater tank, using the sump pump override.
5. Using hot, soapy water or chlorine solution, long handle brushes, and a garden hose, clean the duct **(7)** and tank **(8)**.
6. Rinse the cleaned areas with fresh water, using a garden hose connected to the spigot **(9)**.
7. Manually pump the graywater tank.
8. Place the tank cover plates **(5)** and duct cover plates **(6)** into position and bolt them in place.





**WARNING**

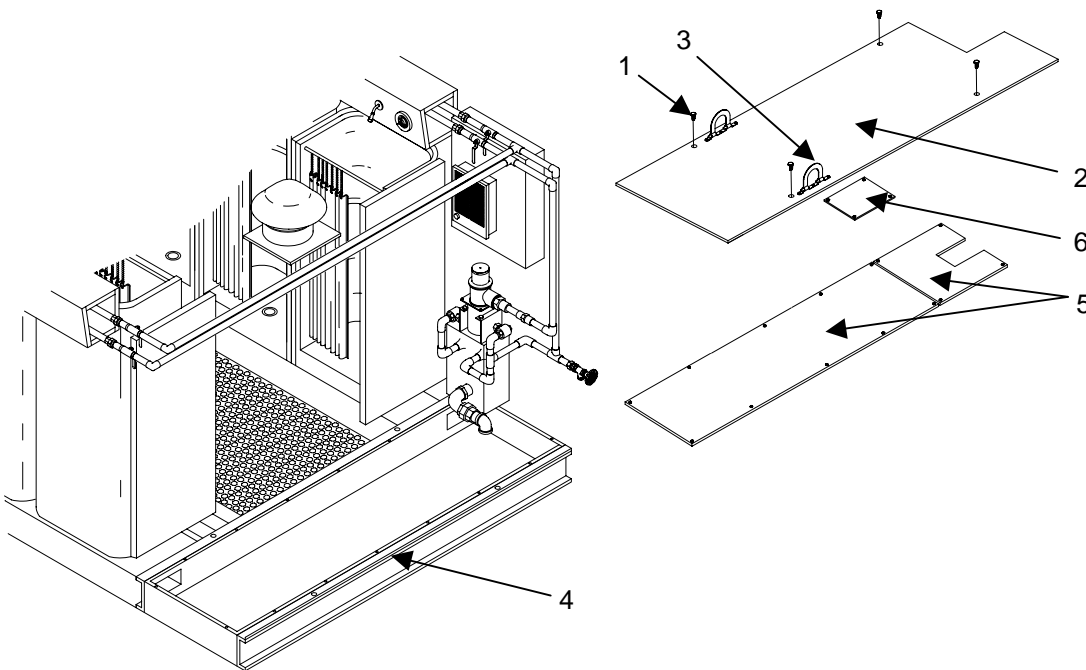
The equipment mounting platform is heavy, awkward, and difficult to maneuver. Wear protective gloves before handling. To prevent injury, two persons are required to remove and carry it. Failure to observe safety precautions may result in serious injury to personnel.



**WARNING**

The equipment mounting platform may have sharp edges or corners. Wear protective gloves before handling. Failure to observe safety precautions may result in serious injury to personnel.

9. Place the equipment mounting platform **(2)** onto mounting rails **(4)**. Install the screws **(1)** securing the equipment mounting platform to the mounting rails (Containerized Shower only).
10. Install the padeyes **(3)** on the equipment mounting platform (Containerized Shower only).



**END OF WORK PACKAGE**

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**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
HOSES  
REPLACE**

---

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Personnel Required**

One

**Equipment Condition**

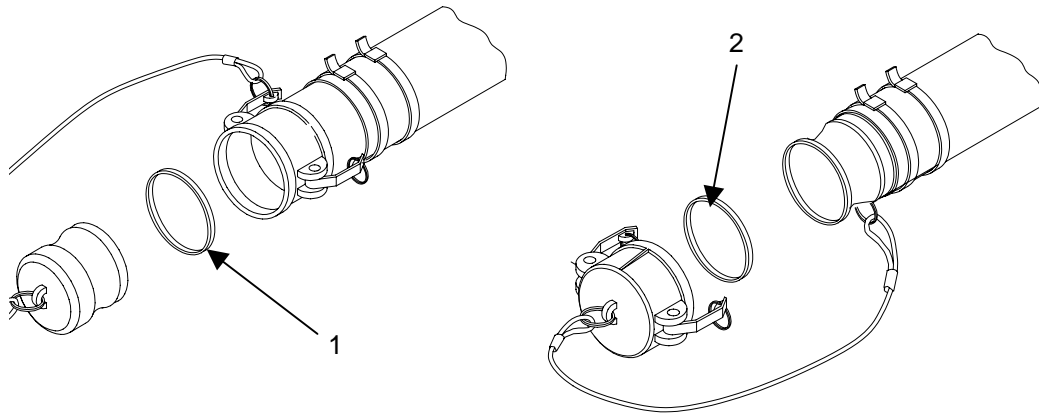
Containerized Shower / Shower, Enclosed Unit, System set up. Shut down water supply.

**Materials/Parts**

---

**REPLACE****Replace a Damaged Hose**

1. Refer to WP 0005 00 or 0006 00 as applicable to replace hoses.
2. Replace damaged gaskets **(1)** and **(2)**.



**END OF WORK PACKAGE**



**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
TEMPER & ISO BOOTWALL  
REPLACE**

**INITIAL SETUP**

**Tools**

**Personnel Required**

Four

**Materials/Parts**

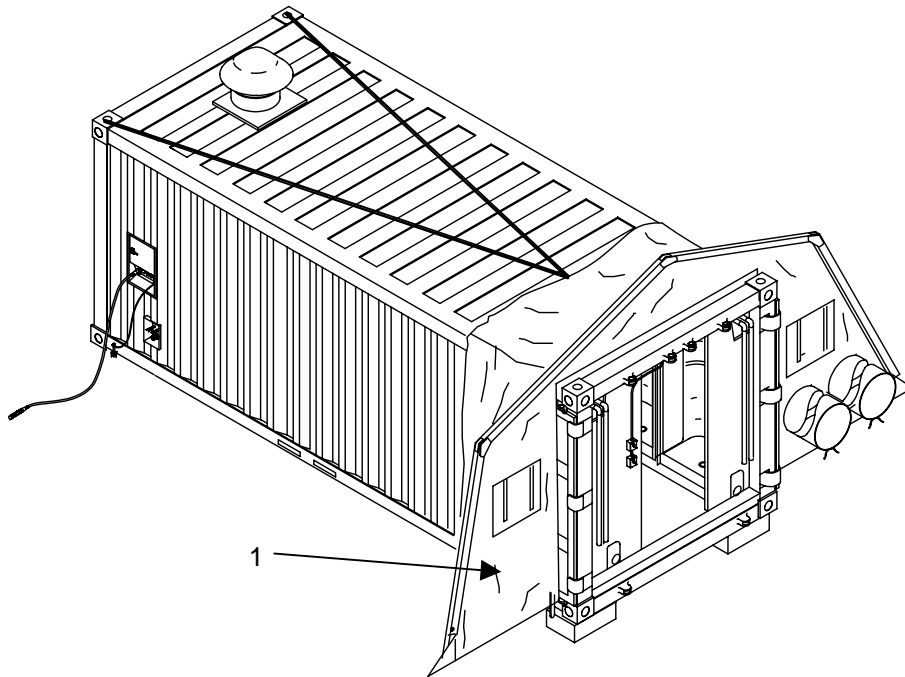
**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit,  
System set up.

**REPLACE**

**Replace an ISO Bootwall (Modified Endwall)**

1. Strike TEMPER tent IAW WP 0005 00 or 0006 00 as applicable.
2. Replace the entire bootwall **(1)** when unserviceable. Refer to WP 0005 00 or 0006 00 as applicable.



**END OF WORK PACKAGE**





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**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SHAVE STAND ASSEMBLY  
REPAIR, REPLACE**

---

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Materials/Parts**

Flux (Item 16, WP 0075 00)  
Paper, Abrasive (Item 31, WP 0075 00)  
Solder (Item 36, WP 0075 00)  
Tape, Anti-seize (Item 42, WP 0075 00)

**Personnel Required**

Two

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit, System set up, power and water supply disconnected.

---

**REPAIR****Repair a Leak in the Shave Stand Quick Disconnect Fittings**

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**WARNING**

---

Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

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**CAUTION**

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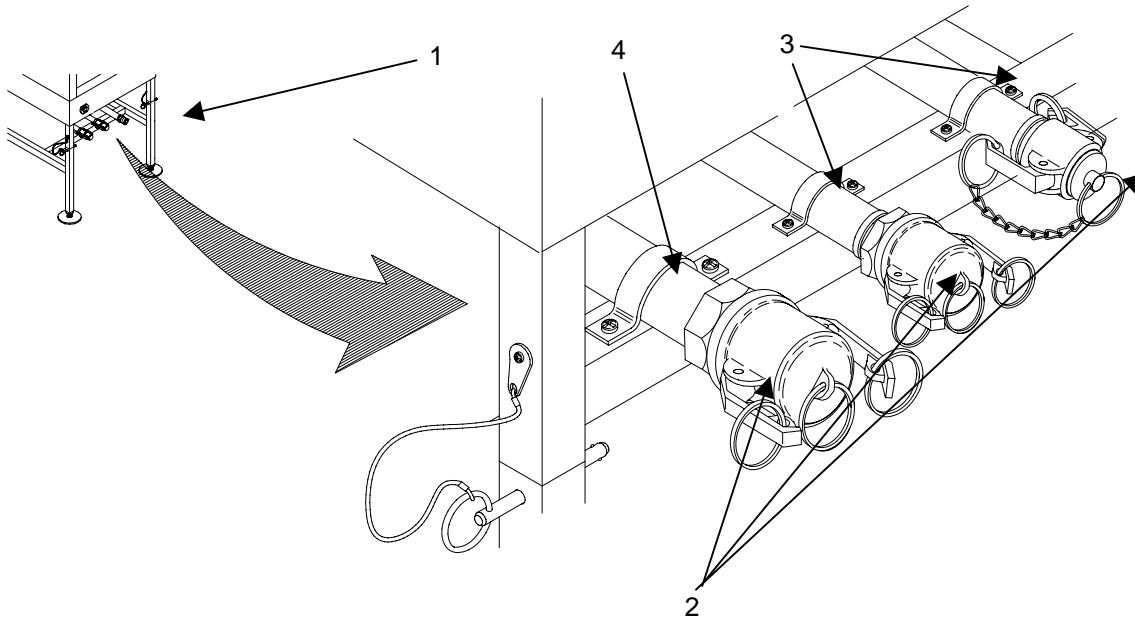
Always use two pipe wrenches when tightening or loosening pipe fittings. Use one pipe wrench to turn the fitting, and another to secure the pipe. Failure to do so can twist the fitting on the pipe, damaging both.

**NOTE**

Ensure all water is drained from sink stand plumbing before proceeding. To drain the shave stands, ensure the water supply to the shower is shut OFF. Disconnect the hoses from the shave stand, and open the faucet.

1. Remove the quick disconnect hoses from both sides of the shave stand **(1)**.
2. On either side of the shave stand **(1)**, locate the quick disconnect fittings **(2)**.
3. Remove the quick-disconnect fittings **(2)** from the hot and cold water lines **(3)** and the drain pipe **(4)**.
4. Clean the fittings **(2)**. Clean all threads on the water lines **(3)** and drain pipe **(4)**.
5. Apply anti-seize tape to the threads and reconnect fittings **(2)** to water lines **(3)** and drain pipe **(4)**.

6. Reattach hoses, connect water supply to shave stand, and check for leaks.



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**Repair a Leak in the Internal Piping**

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**WARNING**

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Soldering and unsoldering require the use of an open flame, which can burn skin and eyes. Keep open flame away from combustible materials. Failure to observe safety precautions may result in fire or serious injury to personnel.

**NOTE**

Ensure all water is drained from sink stand plumbing before proceeding. To drain the shave stands, ensure the water supply to the shower is shut OFF. Disconnect the hoses from the shave stand, and open the faucet.

1. Disconnect hose from both ends of the shave stand.
2. Unsolder the damaged or leaking joints by applying a torch to the pipe **(1)** next to the fitting **(2)**.



---

**WARNING**

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Heated pipe, fittings, and solder are capable of producing serious burns. Wear heat resistant gloves and always use pliers to handle work being soldered and unsoldered. Failure to observe safety precautions may result in serious injury or death to personnel.

3. When solder is shiny and fluid, use pliers to remove pipe **(1)** from fitting **(2)**.
4. Allow pipe to cool.
5. Use sandpaper to clean pipe and fitting to be joined.
6. Apply flux to pipe and fitting at joints.
7. Join pipe **(1)** and fitting **(2)**.
8. Apply heat to fitting **(2)** with torch.

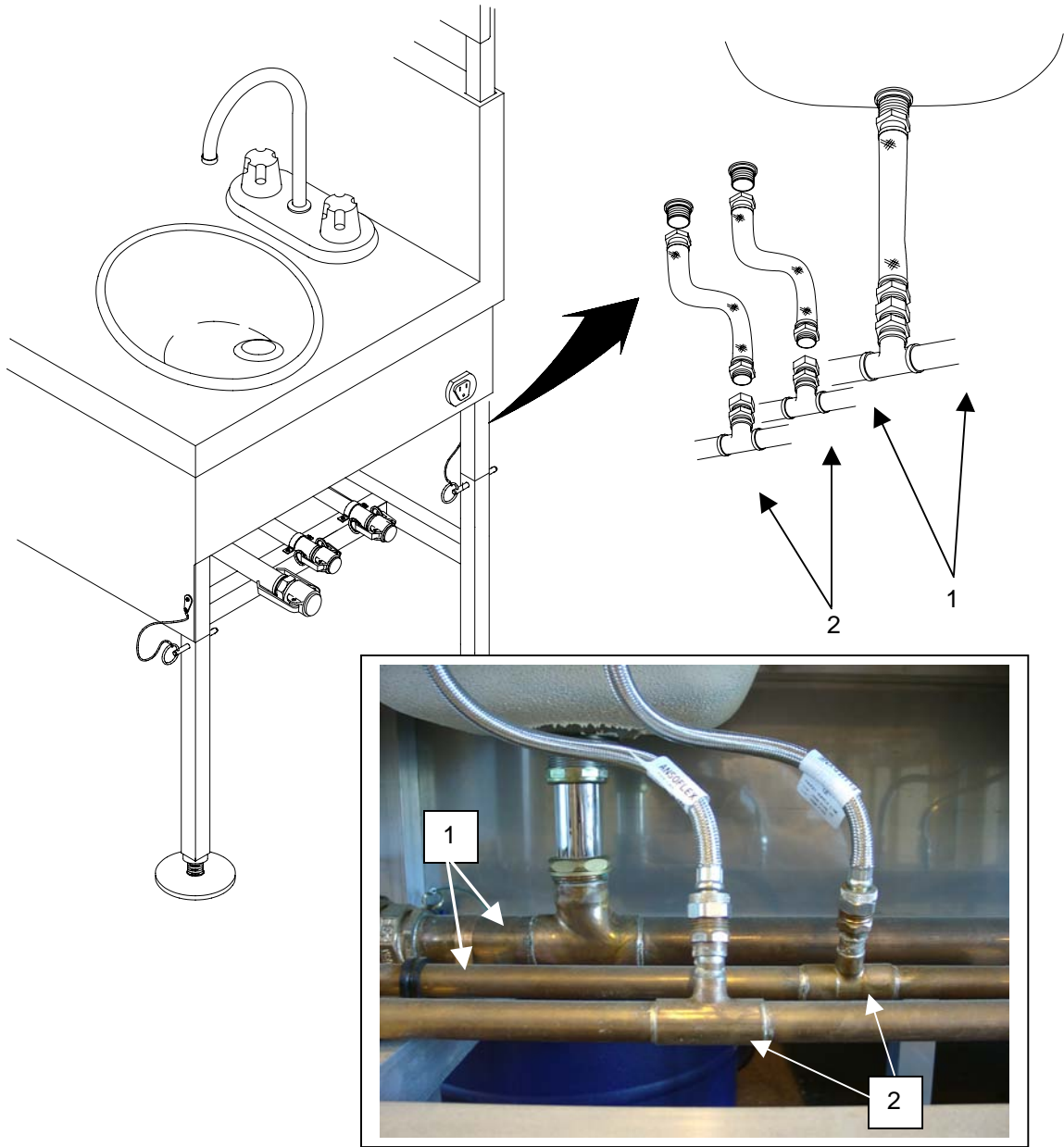
**NOTE**

When soldering, remember to apply heat to where that you want the solder to flow, and then apply the solder to the part you've heated. The part being soldered will melt the solder and draw the solder into the joint. Do not apply heat directly to the solder, as it will drip and splatter.

9. Apply solder to fitting **(2)** at joint.
10. Allow joint to cool.
11. Clean cooled joint with sandpaper.
12. Inspect joint for thorough soldering. Solder should show as a thin silver colored ring around circumference of joint.

13. If joint is insufficiently soldered, repeat steps 1 through 11.

14. If leaking continues, replace the entire section of pipe (1) or fitting (2).



**REPLACE****Replace the Plumbing****WARNING**

Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

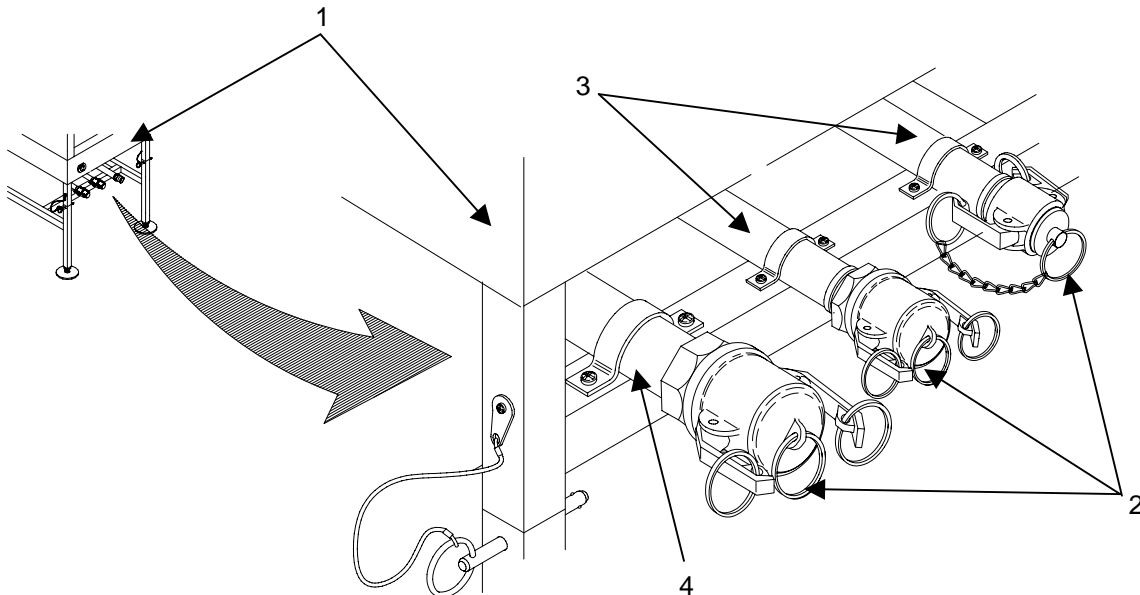
**CAUTION**

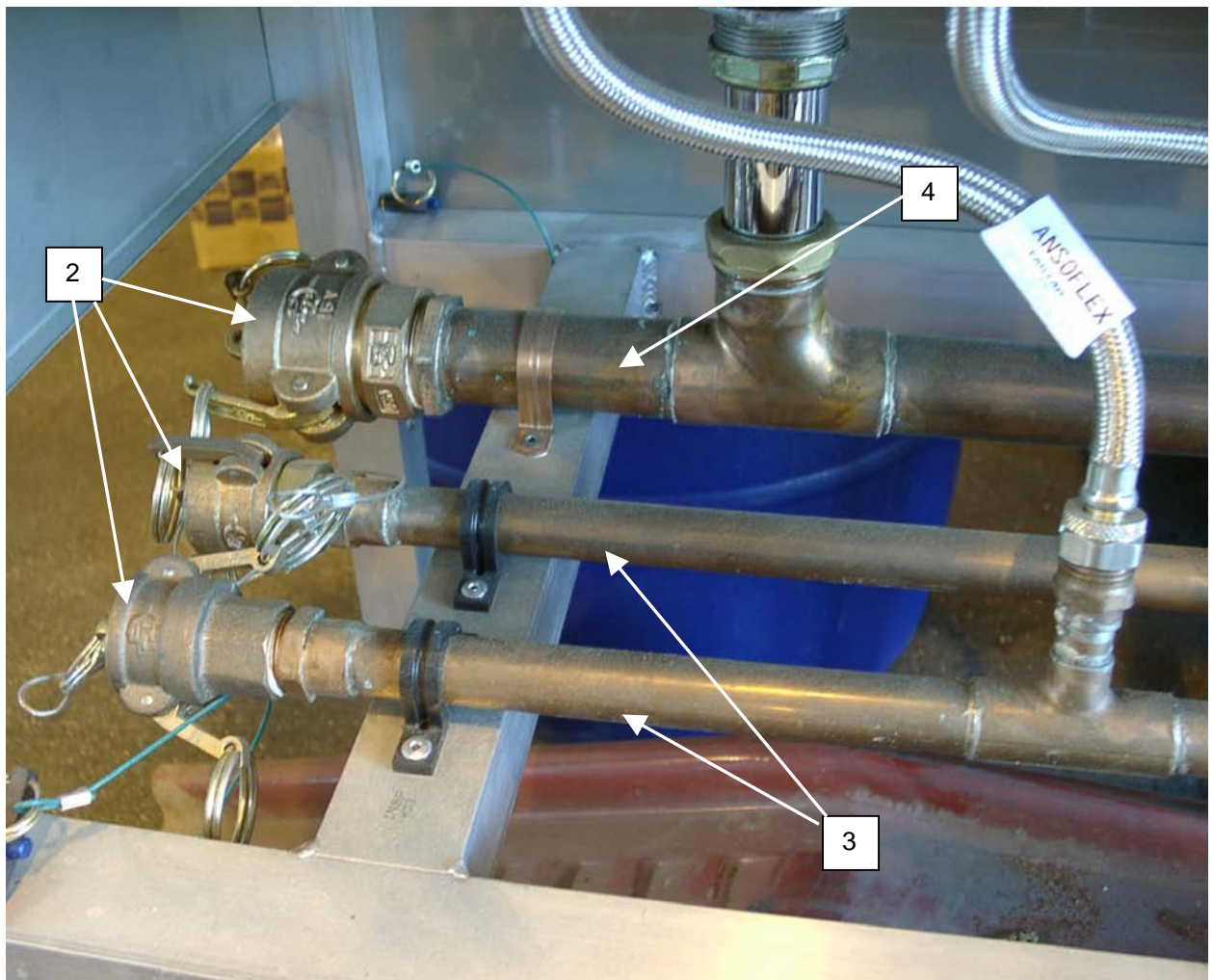
Always use two pipe wrenches when tightening or loosening pipe fittings. Use one pipe wrench to turn the fitting, and another to secure the pipe. Failure to do so can twist the fitting on the pipe, damaging both.

**NOTE**

Ensure all water is drained from sink stand plumbing before proceeding. To drain the shave stands, ensure the water supply to the shower is shut OFF. Disconnect the hoses from the shave stand, and open the faucet.

1. Remove the quick disconnect hoses from both sides of the shave stand **(1)**. Locate the quick disconnect fittings **(2)**.
2. Use a pipe wrench to remove the quick-disconnect fittings **(2)** from the hot and cold water lines **(3)** and the drain pipe **(4)**.
3. Apply anti-seize tape to the threads and connect new fittings **(2)** to water lines **(3)** and drain pipe **(4)**.





## Replace Faucet Assembly



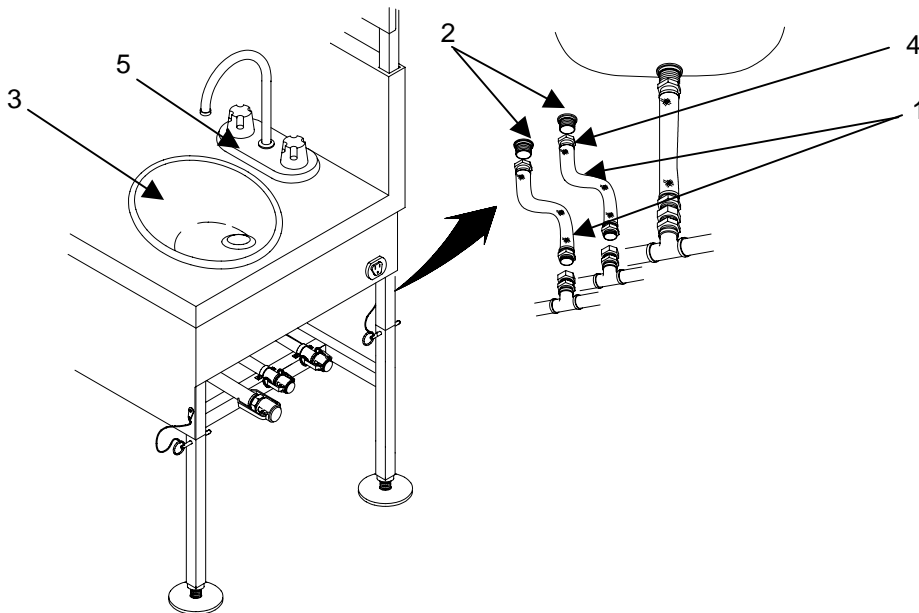
### WARNING

Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

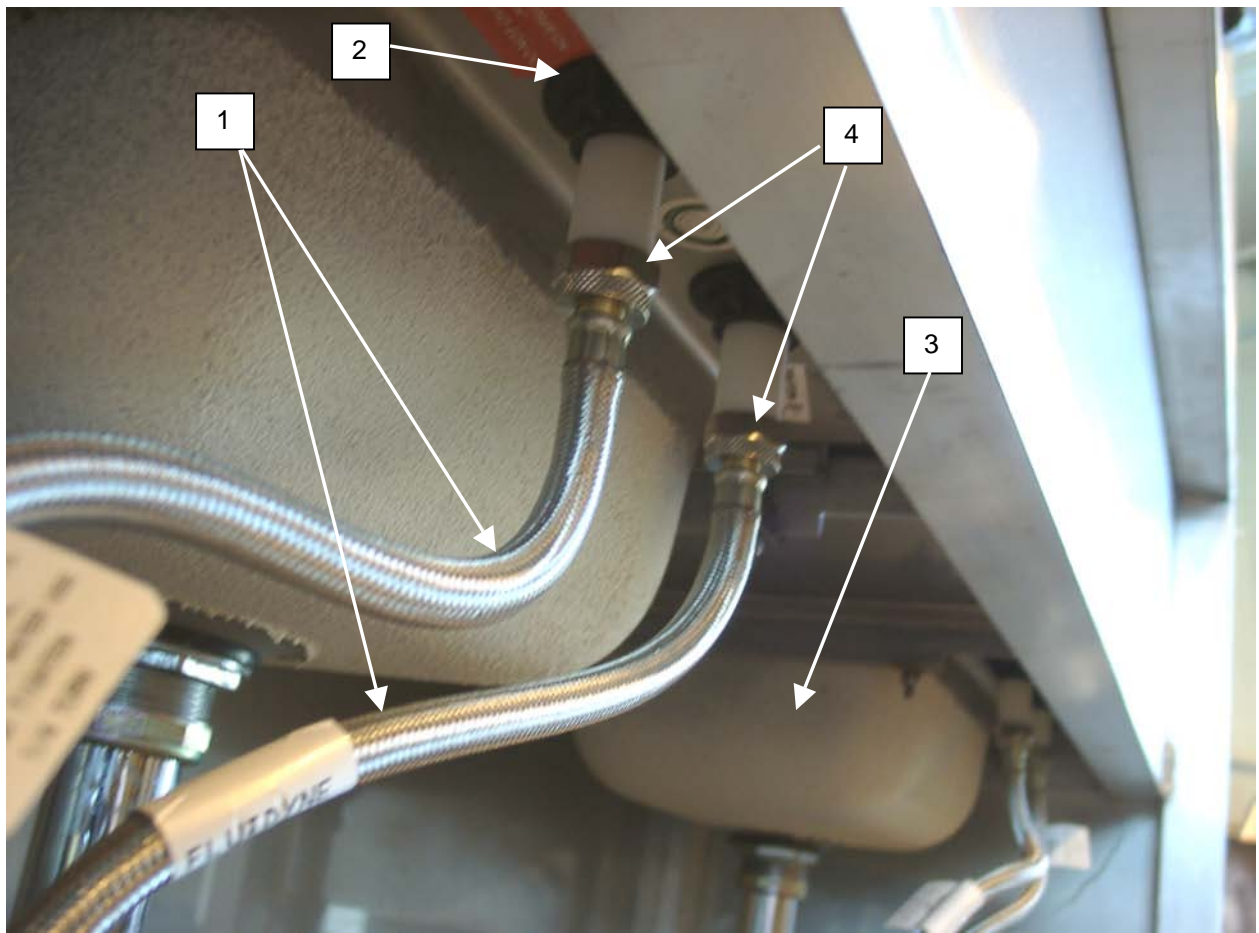
### NOTE

Ensure all water is drained from sink stand plumbing before proceeding. To drain the shave stands, ensure the water supply to the shower is shut OFF. Disconnect the hoses from the shave stand, and open the faucet.

1. Remove the QDC hoses from both ends of the shave stand.
2. Disconnect water supply hoses **(1)** at faucet connections **(2)** underneath basin **(3)**.
3. Unscrew faucet retaining nuts **(4)**.
4. Remove faucet assembly **(5)**.
5. Replace faucet assembly **(5)**.
6. Secure faucet assembly **(5)** with retaining nuts **(4)** underneath basin **(3)**, and tighten.
7. Replace and tighten water supply hoses **(1)** underneath basin **(3)**.
8. Turn on water supply at valves and check for leaks.









## Replace Shave Stand



### NOTE

Ensure all water is drained from sink stand plumbing before proceeding. To drain the shave stands, ensure the water supply to the shower is shut OFF and remove the QDC hoses from both ends of the shave stand.

1. Disconnect all shave stand extension cords.
2. Disconnect all hoses **(1)** leading to and from the shave stand to be replaced.



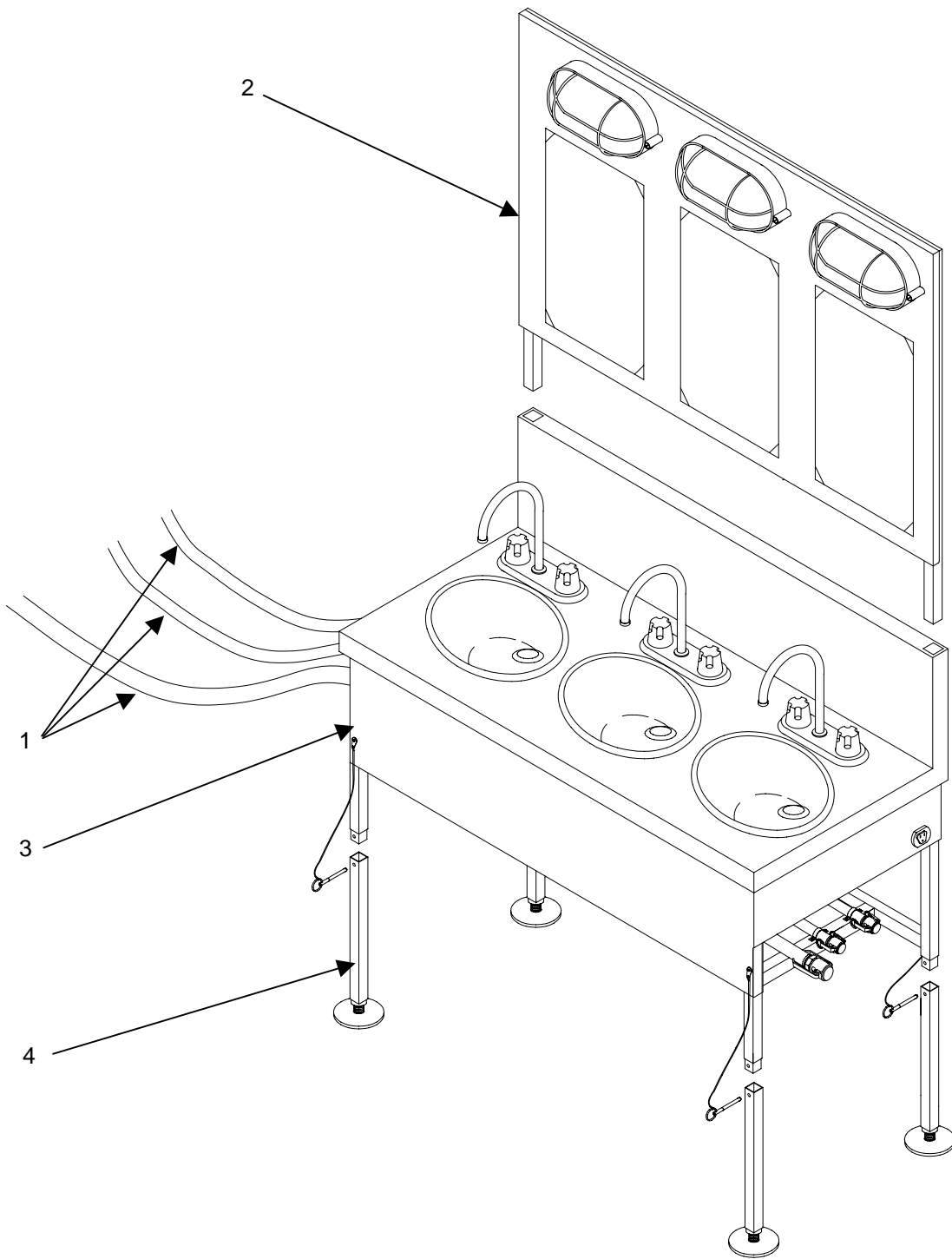
### WARNING

The shave stand and its components are heavy, awkward, and difficult to maneuver. To prevent injury, four persons are required to install and remove it. Failure to observe safety precautions may result in serious injury to personnel.

### CAUTION

Ensure that the shave stand is far enough away from the TEMPER and TEMPER lights during disassembly. Shave stand components may tear TEMPER fabric or damage TEMPER lighting.

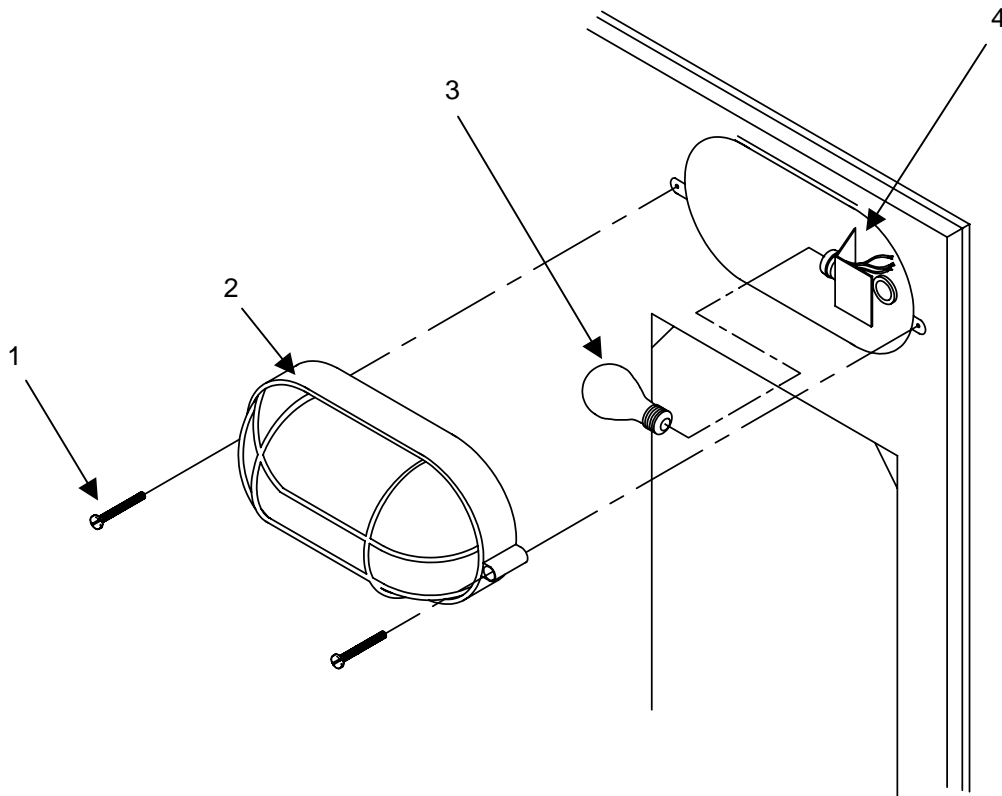
3. Remove shave stand mirror and light assembly **(2)** and replace if necessary.
4. Place shave stand basin **(3)** assembly on its back.
5. Remove shave stand legs **(4)** and replace if necessary.



**Replace Incandescent Light Bulb****WARNING**

Always secure and tag circuit breaker in the OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. The shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

1. Remove two screws **(1)** retaining lens guard and lens **(2)**.
2. Remove lens guard and lens **(2)** as an assembly.
3. Unscrew light bulb **(3)** from light assembly **(4)** and replace.
4. Reinstall lens, lens guard **(2)** and retaining screws **(1)**.



## Replace the Light Assembly



### **WARNING**

Always secure and tag circuit breaker in the OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. The shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

1. Unscrew retaining screws **(1)** and remove lens guard and lens **(2)** as an assembly.
2. Unscrew light bulb **(3)** from light assembly **(4)**.
3. Remove the reflector layer from the light assembly **(4)**.
4. Tag and disconnect wires **(5)**.
5. Disconnect conduit **(6)** from light assembly **(4)**.
6. Remove two mounting screws **(7)** and nuts **(8)**.

### **NOTE**

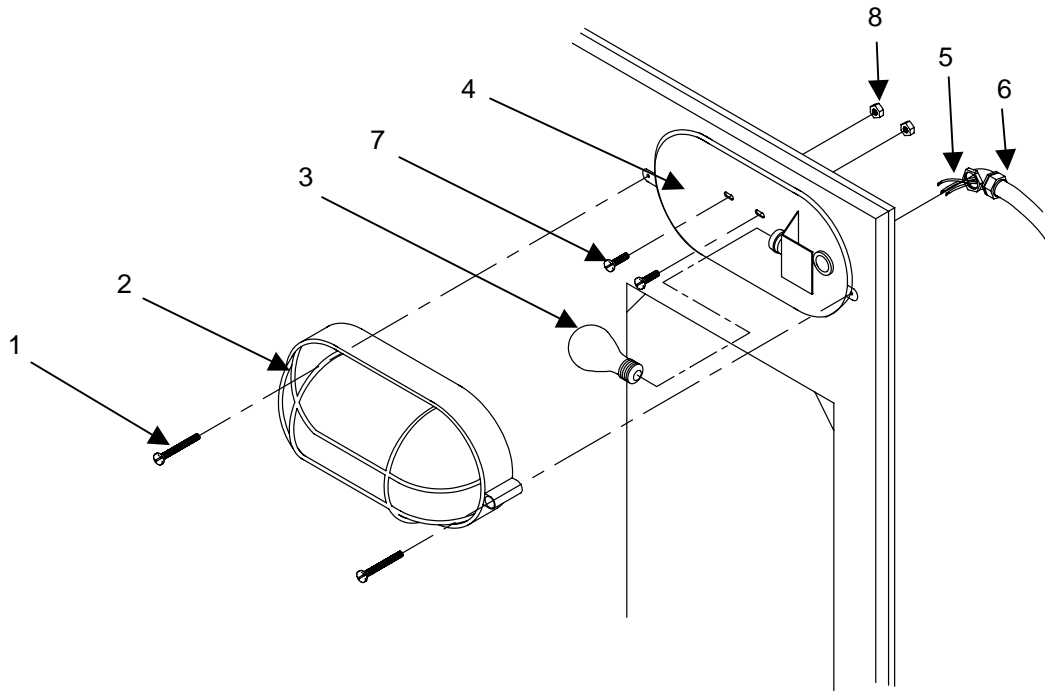
The replacement light assembly must be disassembled prior to installation. Follow steps 1 through 3 above to disassemble the replacement light assembly.

7. Remove and replace light assembly **(4)**.
8. Secure replacement light assembly with screws **(7)** and nuts **(8)**.
9. Install reflector layer onto light assembly.
10. Install conduit **(6)** onto light assembly **(4)**.

### **NOTE**

The green ground wire must be reattached to the ground screw.

11. Reconnect wires as tagged.
12. Install light bulb **(3)**.
13. Install lens and lens guard **(2)**, and secure with screws **(1)**.



END OF WORK PACKAGE



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**UNIT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
FRESH WATER PUMP ASSEMBLY  
REPAIR, REPLACE**

---

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Materials/Parts**

Tags, Wire (Item 41, WP 0075 00)  
Tape, Anti-seize (Item 42, WP 0075 00)

**Personnel Required**

One

**Equipment Condition**

30 GPM Pump set up.  
Set circuit breaker No. 2/4/6 to the OFF position and tag. Power TEE disconnected. Shut down and disconnect water supply, all water pressure relieved from system.

---

**REPAIR****Repair Leaks at Pipe Connections**

---

**WARNING**

---

Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

1. Ensure the pump **(1)** is drained and all pressure is relieved from the system.

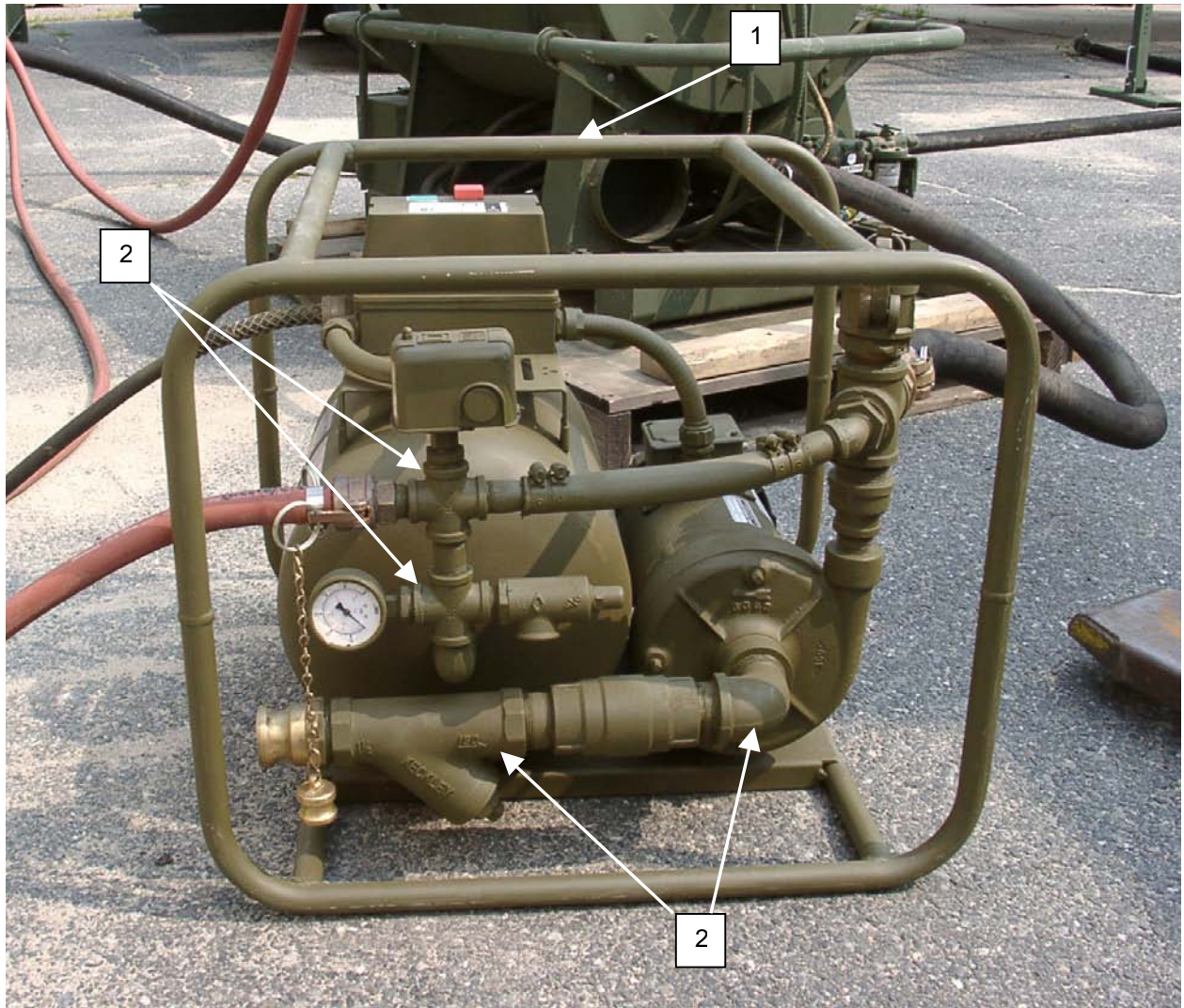
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**CAUTION**

---

Always use two pipe wrenches when tightening or loosening pipefittings. Use one pipe wrench to turn the fitting, and another to secure the pipe. Failure to do so can twist the fitting on the pipe, damaging both.

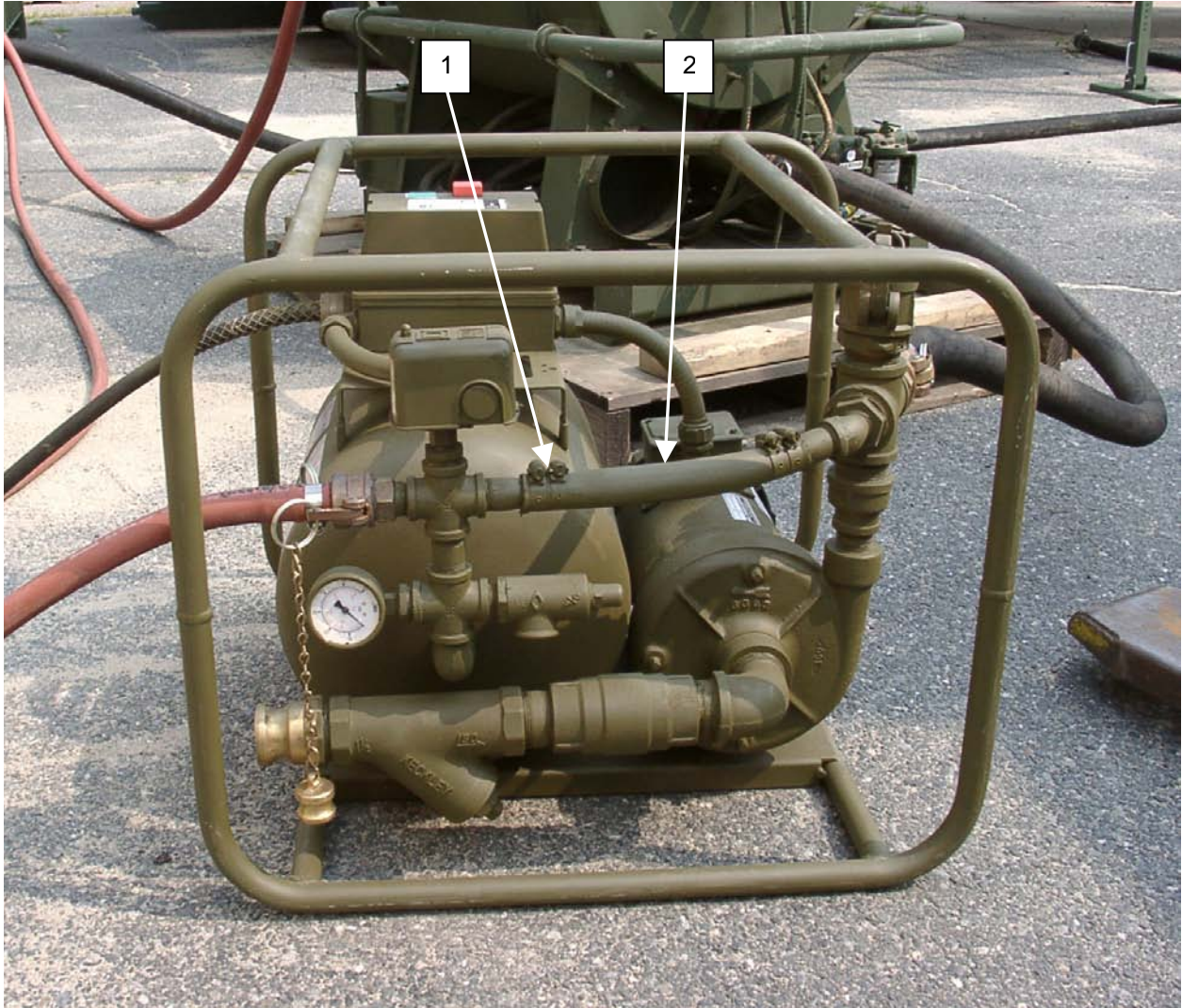
2. Using a pipe wrench, disconnect leaking pipe-fittings **(2)**.
3. Clean disassembled pipe-fittings **(2)**.
4. Coat connections with anti-seize tape.
5. Reassemble and tighten pipe-fittings **(2)**.
6. If leak persists, replace pipe-fittings **(2)** as necessary.





**Repair Leak at 3/4-inch Pump Discharge Hose**

1. Tighten hose clamps **(1)** with screwdriver.
2. If leak persists, replace hose **(2)**.



**REPLACE****Replace the Pressure Tank****WARNING**

Always secure and tag circuit breaker in the OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. Remember, the shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

1. Ensure the pump is drained and all pressure is relieved from the system.
2. Remove the motor starter and overload relay mount retaining bolt **(1)**, and remove the motor starter and overload relay mount **(2)**.
3. Remove the  $\frac{3}{4}$ -inch discharge hose **(3)**.
4. Remove the cover from the pressure switch **(4)**.
5. Disconnect and tag the four wires at the pressure switch terminals.
6. Remove the locknut on the pressure switch conduit **(5)**.
7. Disconnect the pressure switch ground wire.
8. Remove the pressure switch conduit **(5)**.
9. Remove the four pressure tank mounting bolts **(6)**.

**WARNING**

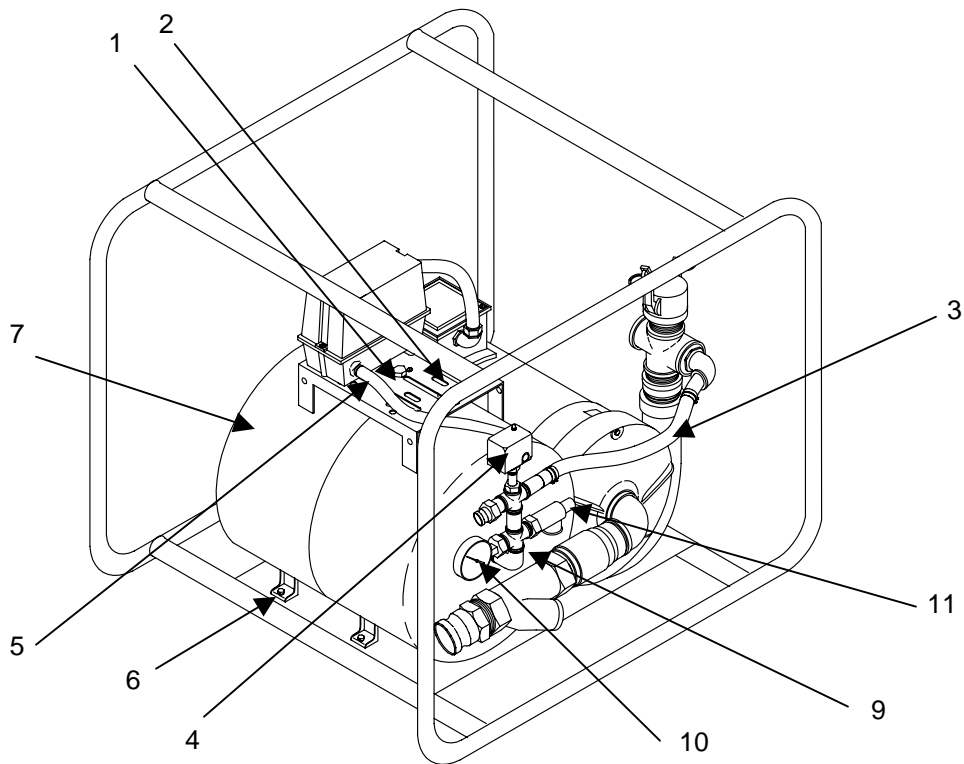
The pressure tank is heavy, bulky and is a tight fit in the pump frame. Two people are required to remove the pressure tank from the frame. Failure to observe safety precautions may result in hand and finger injuries.

10. Remove the pressure tank **(7)** from the pump frame **(8)**.
11. Secure the pressure tank **(7)** with an adjustable wrench, and unscrew the cross fitting **(9)** with pressure switch **(4)**, pressure gauge **(10)**, and relief valve **(11)** as an assembly from the pressure tank **(8)**.
12. Wrap the replacement pressure tank fitting with 3 to 5 turns of anti-seize tape.
13. Install the cross fitting **(9)** with pressure switch, pressure gauge, and relief valve as an assembly onto the pipe fitting of the replacement pressure tank.

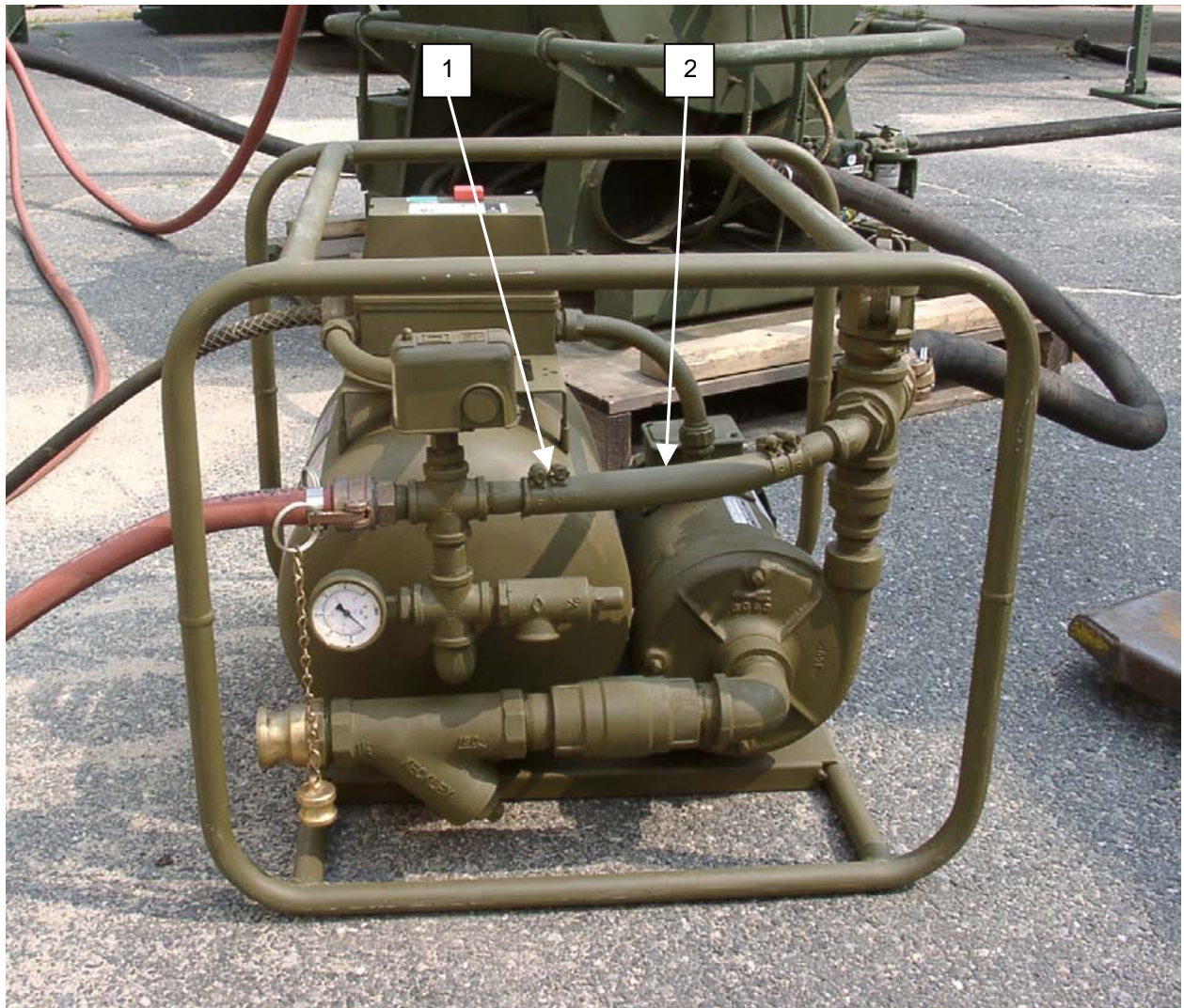
**WARNING**

The pressure tank is heavy, bulky and is a tight fit in the pump frame. Two people are required to remove the pressure tank from the frame. Failure to observe safety precautions may result in hand and finger injuries.

14. Replace the pressure tank **(7)** in the pump frame **(8)**, and secure with the four pressure tank mounting bolts **(6)**.
15. Install the pressure switch conduit **(5)**, and secure with the conduit locknut.
16. Install the pressure switch wires on the appropriate terminals.
17. Replace the cover on the pressure switch **(4)**.
18. Replace the  $\frac{3}{4}$ -inch discharge hose **(3)**, and secure with hose clamps.
19. Install the motor overload and relay mount **(2)**, and secure with mounting bolt **(1)**.







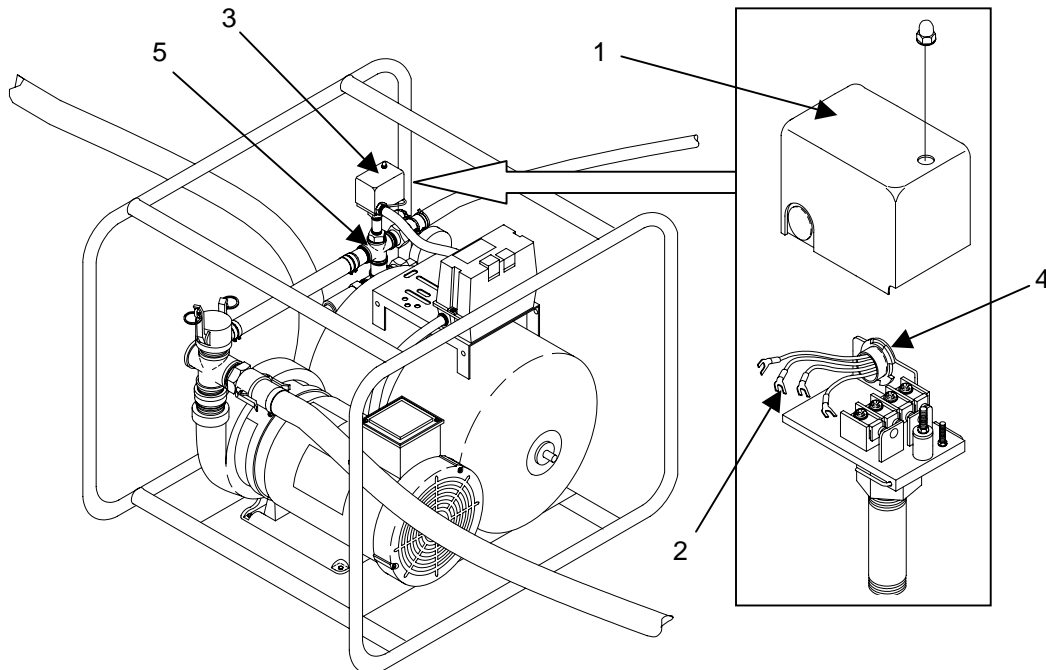
## Replace the Pressure Switch



### WARNING

Always secure and tag circuit breaker in the OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. Remember, the shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

1. Release water pressure from the system.
2. Remove the pressure switch cover (1).
3. Disconnect and tag all wires (2) in the pressure switch (3).
4. Disconnect the switch electrical conduit (4).
5. Secure the plumbing cross (5) immediately below the pressure switch (3) with a pipe wrench.
6. Unscrew the pressure switch (3) from the cross (5).
7. Coat the threads of the replacement pressure switch with pipe sealant.
8. Installation of the pressure switch is the reverse of the above.



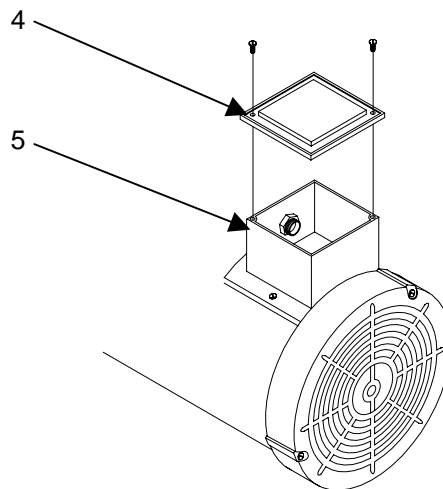
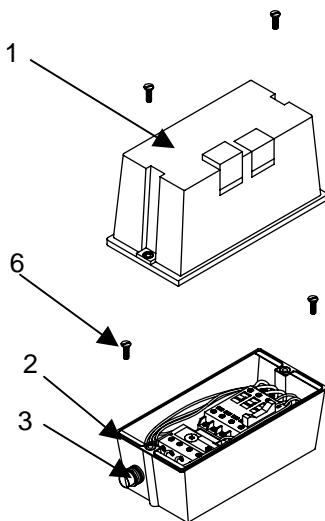
## Replace the Motor Starter, Contactor, and Overload Relay



### WARNING

Always secure and tag circuit breaker in the OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. Remember, the shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

1. Unscrew the cover **(1)** to the motor starter, contactor, and overload relay **(2)**.
2. Disconnect and tag the A1, L1, L2, L3, T1, T2, T3, and ground wires.
3. Remove wire nut from the ground wires.
4. Remove the conduit locknuts in the three conduits **(3)** leading into the motor starter, contactor, and overload relay.
5. Remove the cover **(4)** to the motor junction box **(5)**.
6. Tag and disconnect the two wires leading from the pressure switch conduit through the motor starter, contactor and overload relay to the motor conduit.
7. Disconnect the three electrical conduits **(3)** attached to the motor starter, contactor, and overload relay.
8. Unscrew them motor starter, contactor, and overload relay mounting bolts **(6)**, and remove the motor starter, contactor, and overload relay from its mount.
9. Installation of the motor starter, contactor, and overload relay is the reverse order of the above.



---

**Replace the Contactor and Overload Relay****WARNING**

Always secure and tag circuit breaker in the OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. Remember, the shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

**NOTE**

The overload relay must be removed in order to remove the contactor.

1. Unscrew the cover **(1)** to the motor starter, contactor, and overload relay **(2)**.
2. Disconnect and tag the T1, T2, T3, 2T1, 4T2, and 6T3 wires.
3. Slide overload relay **(3)** from mount.

**NOTE**

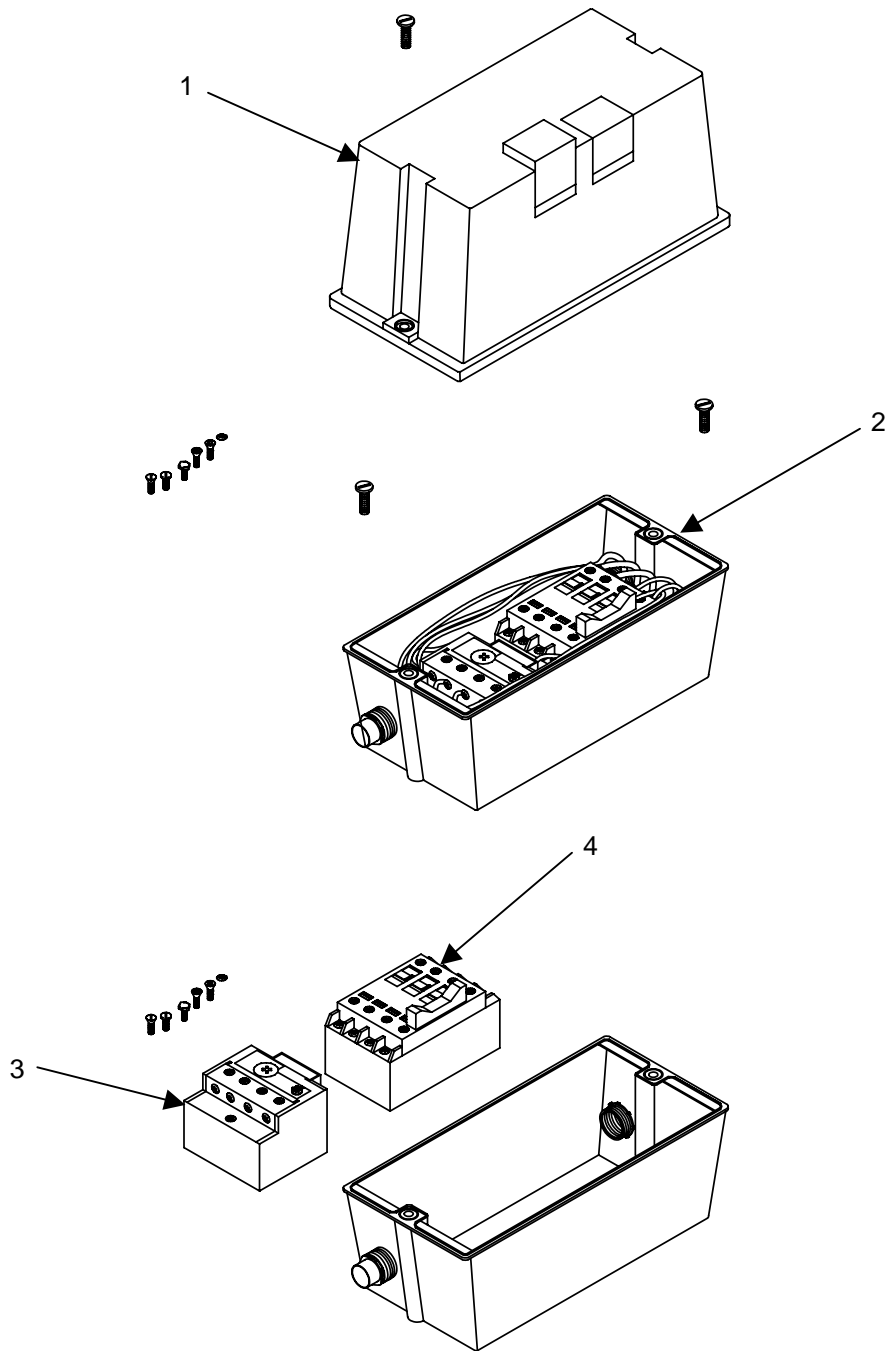
If the overload relay alone requires replacement, skip steps 4 through 7.

4. Disconnect and tag the L1, L2, and L3 wires.

**NOTE**

Install the jumper wires from the old contactor to the replacement one by removing and installing each wire one by one. Make a diagram, if necessary.

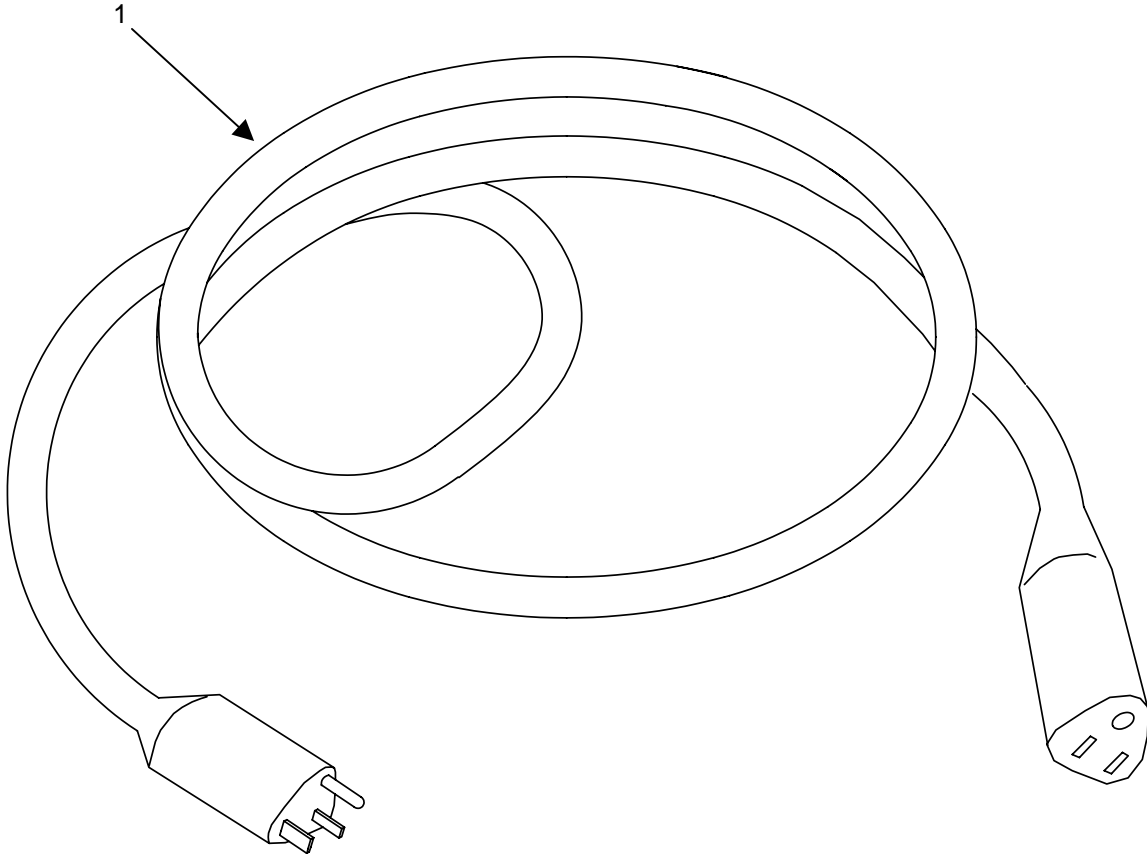
5. Remove the contactor **(4)** from mount.
6. Install the replacement contactor.
7. Connect the T1, T2, T3, 2T1, 4T2, and 6T3 wires.
8. Slide the overload relay **(3)** onto its mount.
9. Connect L1, L2, and L3 to the overload relay.
10. Install the cover **(1)** on the motor starter, contactor, and overload relay **(2)**.





**Replace Extension Cord**

Replace any extension cord **(1)** or power cable that is unserviceable or questionable due to physical damage.



---

**Replace the Freshwater Pump****WARNING**

Always secure and tag circuit breaker in the OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. Remember, the shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

1. Remove all connected supply and discharge hoses.
2. Remove two screws **(1)** from junction box cover **(2)**.
3. Remove junction box cover **(2)**.

**NOTE**

A wiring diagram for the pump is affixed to the underside of the junction box cover. If the diagram is missing, make a diagram illustrating the wire to terminal connections.

4. Disconnect and tag all wires **(3)** leading from conduit **(4)**, including the ground wire.
5. Unscrew and remove conduit **(4)**.
6. Loosen hose clamps **(5)** on ¾-inch discharge hose **(6)**.
7. Remove ¾-inch discharge hose **(6)**.
8. Remove four bolts **(7)** securing freshwater pump **(8)** to frame **(9)**.
9. Remove pump **(8)** from frame **(9)**.

**NOTE**

Make note of the relative positions of the fittings removed from the freshwater pump. The fittings must be installed in the same position on the replacement pump.

10. Using a pipe wrench, remove pump inlet fittings and Y strainer **(10)** as an assembly from pump **(8)**.
11. Using a pipe wrench, remove pump discharge fittings **(11)** as an assembly from pump **(8)**.
12. Clean pipe threads on all fittings, and apply anti-seize tape to all pipe threads.

**NOTE**

Replacement freshwater pumps may be supplied with the motor alignment 90° off, creating interference problems between the motor junction box and the pump pressure tank. If this is the case, remove the four bolts securing the pump to the motor, turn the motor until the junction box is aligned with the pump discharge, and replace the four bolts.

13. Install discharge fittings **(11)** as an assembly on replacement pump discharge outlet **(12)**.
14. Install inlet fittings and Y strainer **(10)** as an assembly on replacement pump **(8)**.
15. Install replacement pump **(8)** with fittings in pump frame **(9)**.
16. Install four bolts **(7)** to secure pump **(8)** to frame **(9)**.
17. Install ¾-inch discharge hose **(6)**.
18. Tighten hose clamps **(5)** on ¾-inch discharge hose **(6)**.
19. Remove screws **(1)** retaining junction box cover **(2)** to junction box **(13)** on replacement pump **(8)**.
20. Remove junction box cover **(2)** on replacement pump **(8)**.

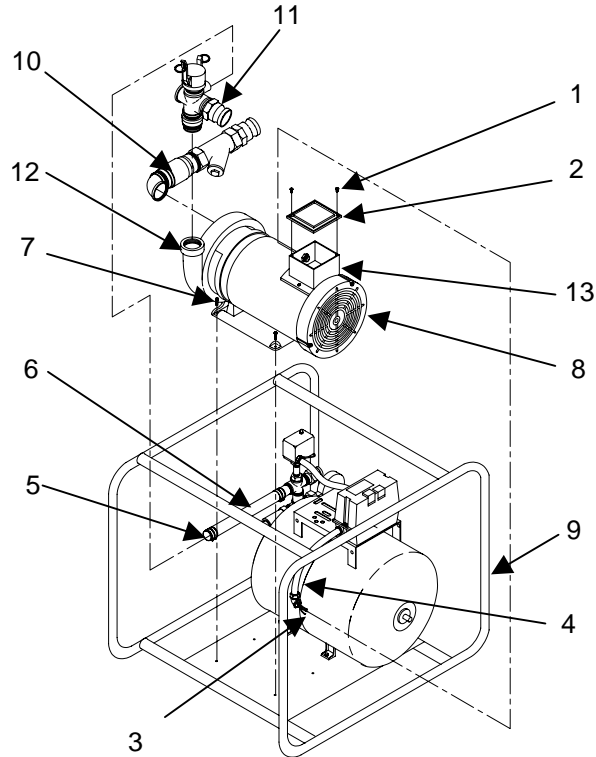
**NOTE**

Installing the conduit may require knocking out a hole in the side of the junction box. Examine the conduit connection hole on the old pump, and look for a precut knock out at the corresponding position on the replacement pump's junction box. The knock out may be removed by striking with a punch or screwdriver.

21. Install conduit **(4)** on replacement pump junction box **(13)** and secure with conduit locknut.
22. Install wires **(3)** on replacement pump **(8)**, including ground.
23. Install junction box cover **(2)**, and secure with junction box cover screws **(1)**.
24. Connect pump to power, and briefly operate to determine direction of rotation. This can be observed at the fan end **(1)** of the pump motor. Rotation should be clockwise when looking at the fan end on the pump.

**NOTE**

If pump rotation is incorrect and M-80 water heater motor rotation is also incorrect, do not proceed. Report this condition to direct support maintenance or other personnel authorized to service the electrical feed from the power supply.



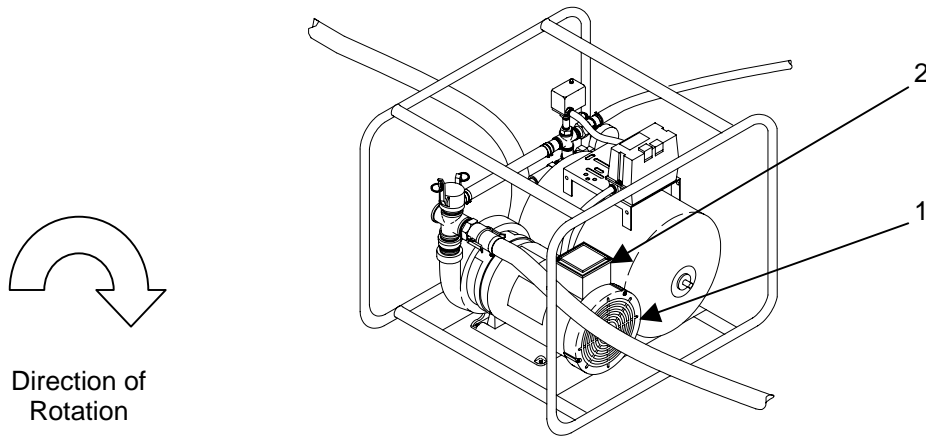
25. If pump rotation is incorrect, switch OFF power to pump and disconnect power cable.

**WARNING**

Always secure and tag circuit breaker in the OFF position or disconnect equipment's power cord from receptacle before attempting any electrical repairs, even minor repairs. Remember, the shower is a wet environment capable of posing an electrical shock hazard when personnel have direct contact with energized wires or metal parts. Failure to observe this safety warning may result in serious injury or death to personnel.

26. Remove junction box cover **(2)**.
27. Locate three wires coming out of the conduit.
28. Remove the wire nuts from any two and switch wires.
29. Install wire nuts.
30. Install junction box cover **(2)** and screws.

31. Connect pump to power, and briefly operate to determine direction of rotation. This can be observed at the fan end of the pump motor. Rotation should be clockwise when looking at the fan end on the pump.



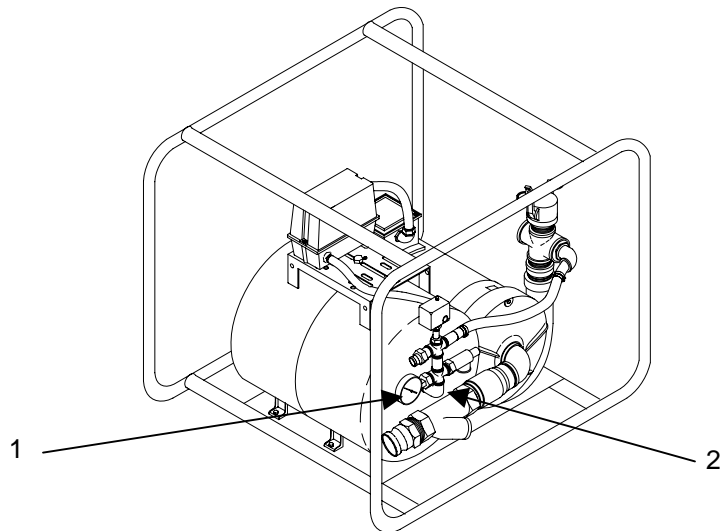
**Replace Pressure Gauge**

1. Relieve water pressure on the system.
2. Use an adjustable wrench to remove an unserviceable pressure gauge **(1)**.

**NOTE**

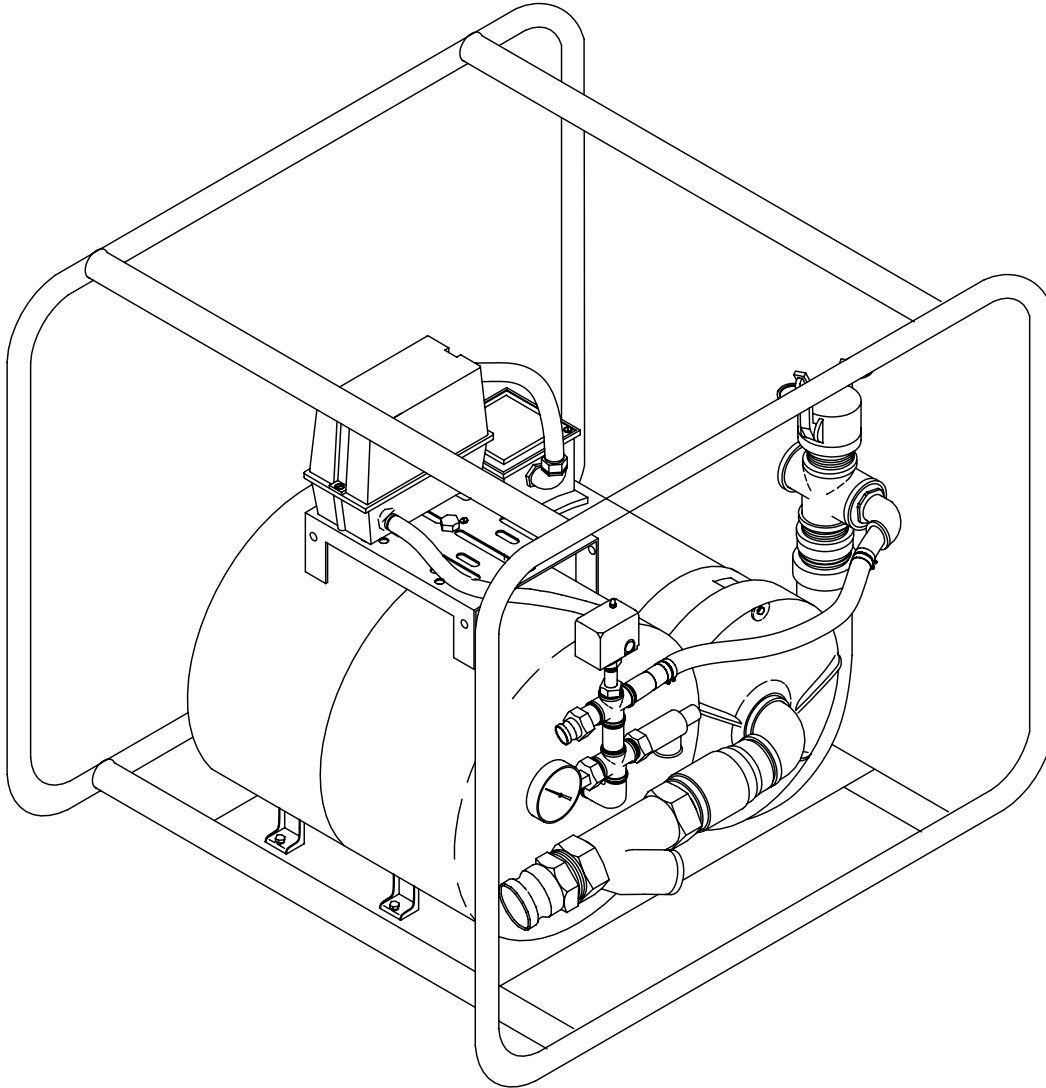
Do not use pipe sealant, as this may clog the opening for the pressure gauge.

3. Wrap antisieze tape around the threads of the replacement pressure gauge.
4. Thread replacement pressure gauge into the cross **(2)** and tighten.



**Replace Pump Assembly**

In the event the pump frame is unserviceable, or both the fresh water pump and pressure tank are unserviceable, unit maintenance is directed to order a complete pump assembly.

**END OF WORK PACKAGE**

**CHAPTER 6**

**DIRECT SUPPORT MAINTENANCE INSTRUCTIONS  
FOR  
CONTAINERIZED SHOWER  
AND  
SHOWER, ENCLOSED UNIT, SYSTEM**





**DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS**

**GENERAL**

Direct support maintenance is applicable to some components of the Containerized Shower & Shower, Enclosed Unit, System. Refer to the table below and applicable technical manuals to determine if direct support maintenance is authorized.

**Reference List for Direct Support Maintenance**

TM	Nomenclature
TM 10-4520-259-13&P	Operator's, Unit and Direct Support Maintenance Manual, including repair parts and special tool list. Heater, Water, Liquid Fuel M-80.
TM 10-83450-224-13	Operator's, Unit and Direct Support Maintenance Tent, Extendable, Modular, Personnel (TEMPER)

**DIRECT SUPPORT MAINTENANCE UPON RECEIPT**

**Flush Freshwater Lines**

**WARNING**

Both the Containerized Shower and the Shower, Enclosed Unit, System ship with an antifreeze solution pumped into the freshwater lines. The antifreeze solution is nontoxic, but unsuitable for drinking or washing. **DO NOT OPERATE THE SHOWER** until the freshwater lines have been flushed.

Once the shower is functional, flush the freshwater lines by opening all shower valves and shave stand faucets and allowing the system to flush for approximately three minutes.



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**DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
CIRCUIT BREAKERS  
TEST, REPLACE**

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**INITIAL SETUP****Tools**

Multi-meter (Item 2, WP 0048 00)  
Shop Equipment Automotive Maintenance and Repair:  
Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Materials/Parts**

Tags, Wire (Item 41, WP 0075 00)

**Personnel Required**

Two

**Equipment Condition**

Containerized Shower / Shower,  
Enclosed Unit, System set up.  
Main power and circuit breakers  
turned off. Power service cable  
disconnected.

---

**TEST****Test Circuit Breakers**

---

**WARNING**

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Ensure power service cable is disconnected before proceeding. Failure to observe safety precautions may result in serious injury or death by electrocution.

1. Turn off all circuit breakers **(1)** and disconnect 60A power service cable from power service panel.

**NOTE**

Remove the side plates first, then the upper and lower plates, and finally the center plates.

2. Remove screws securing circuit breaker panel plates **(2)**, and remove the plates.

**NOTE**

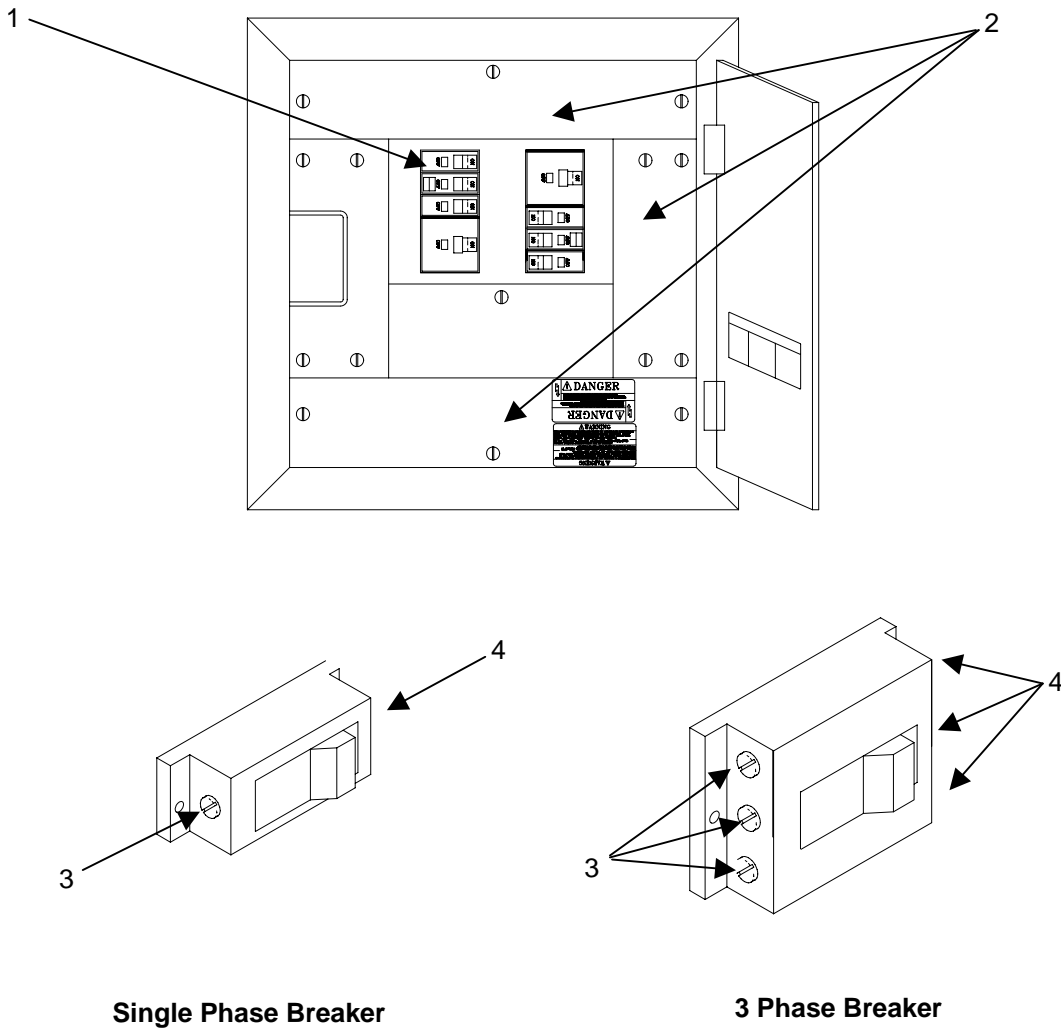
Do not attempt to test the breakers without disconnecting the wiring. Failure to disconnect the wires from the circuit breaker may give a false reading.

3. In turn, tag and remove the wires from each circuit breaker.
4. Set the circuit breaker to be tested to the OFF position, and then test from one pole **(3)** to the opposite pole **(4)** using a multi-meter set to read resistance (ohms -  $\Omega$ ). There should be no continuity.
5. Set the circuit breaker to be tested to the ON position, and test from one pole **(3)** to the opposite pole **(4)** using a multi-meter set to read resistance (ohms -  $\Omega$ ). Continuity should be present.

**NOTE**

3 phase breakers (No. 7/9/11 and No. 2/4/6) should be tested as three separate single phase breakers. If any leg of the 3 phase breaker is defective, the entire breaker must be replaced.

6. Test across phases on 3 phase breakers. There should be no continuity.
7. Identify defective circuit breaker(s).
8. Reinstall wiring, circuit breakers, and panel plates.

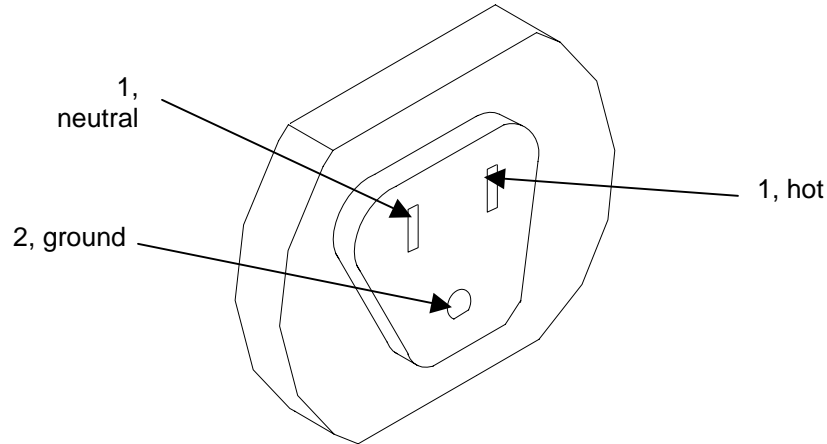


**Single Phase Breaker**

**3 Phase Breaker**

**Test Convenience Outlets**

1. Set all circuit breakers **(1)** to the ON position.
2. Using a multimeter set to read 250 AC volts, test for voltage between each power blade socket **(1)** (straight holes). There should be a reading between 108 volts and 125 volts.
3. Using a multimeter set to read AC volts, test for voltage between each power blade socket **(1)** (straight holes) and the ground pin socket **(2)** (round hole). There should be no reading of voltage between neutral to ground. There should be a reading of 108 to 125 volts between the hot and ground terminals.

**REPLACE****Replace Circuit Breakers****WARNING**

Ensure power service cable is disconnected before proceeding. Failure to observe safety precautions may result in injury or death by electrocution.

1. Turn off all circuit breakers **(1)** and disconnect 60A power service cable from power service panel.

**NOTE**

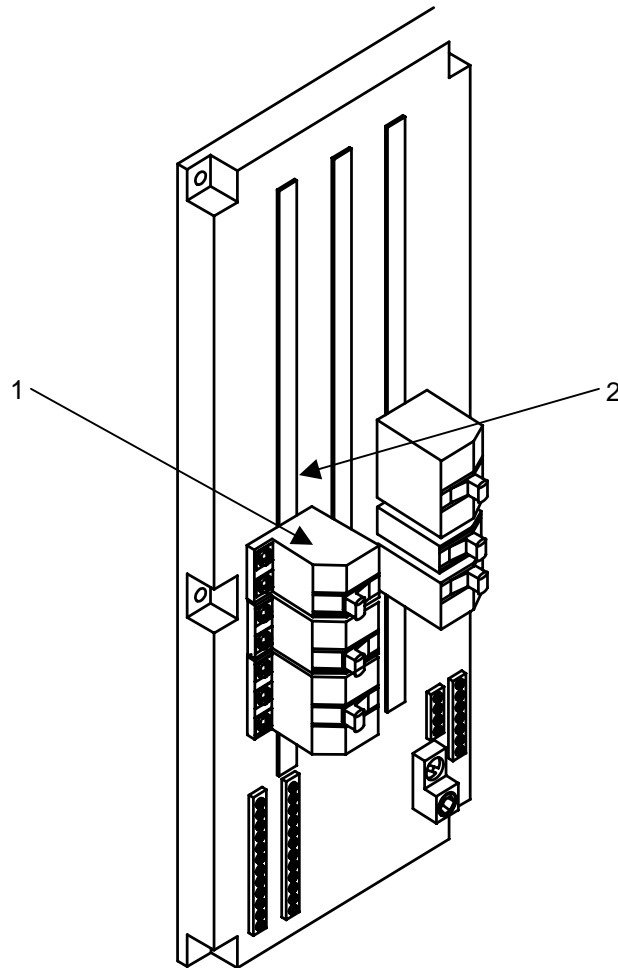
Remove the side plates first, then the upper and lower plates, and finally the center plates.

2. Remove screws securing circuit breaker panel plates, and remove the plates.

**NOTE**

Do not attempt to test the breakers without disconnecting the wiring. Failure to disconnect the wires from the circuit breaker may give a false reading.

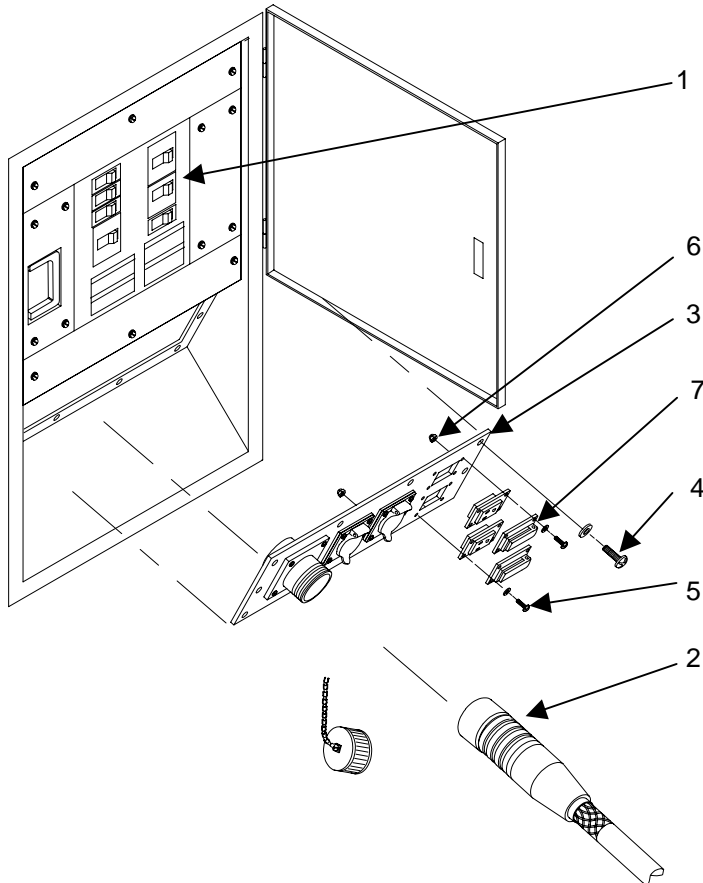
3. Tag and remove the wires from the circuit breaker to be replaced.
4. Remove the screws securing the breaker to the bus **(2)**, and remove the breaker.
5. Install the new breaker, and secure it with screws to the bus bar.
6. Reconnect wires to the new breaker.
7. Replace the circuit breaker panel plates.



**Replace the GFCI Protected Convenience Outlet****WARNING**

Ensure power service cable is disconnected before proceeding. Failure to observe safety precautions may result in injury or death by electrocution.

1. Set all circuit breakers **(1)** to the OFF position.
2. Disconnect 60A power service cable **(2)** from power service panel **(3)**.
3. Remove ten screws **(4)** from panel **(3)** and lower panel.
4. Remove screws **(5)** and nuts **(6)** securing convenience outlets and dust covers **(7)**.
5. Disconnect wires and tag.
6. Install replacement GFCI protected convenience outlet in reverse order of above.

**END OF WORK PACKAGE**





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**DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
ELECTRIC ASSEMBLY  
TEST, REPLACE**

---

**INITIAL SETUP****Tools**

Multi-meter (Item 2, WP 0048 00)

Shop Equipment Automotive Maintenance and Repair:

Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Materials/Parts**

Tags, Wire (Item 41, WP 0075 00)

Tape, Electrical (Item 44, WP 0075 00)

**Personnel Required**

One

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit, System set up. Main power and circuit breakers set to the OFF position. Wire tags applied (Containerized Shower only). Main power cable disconnected.

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**TEST****Test Receptacle**

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**WARNING**

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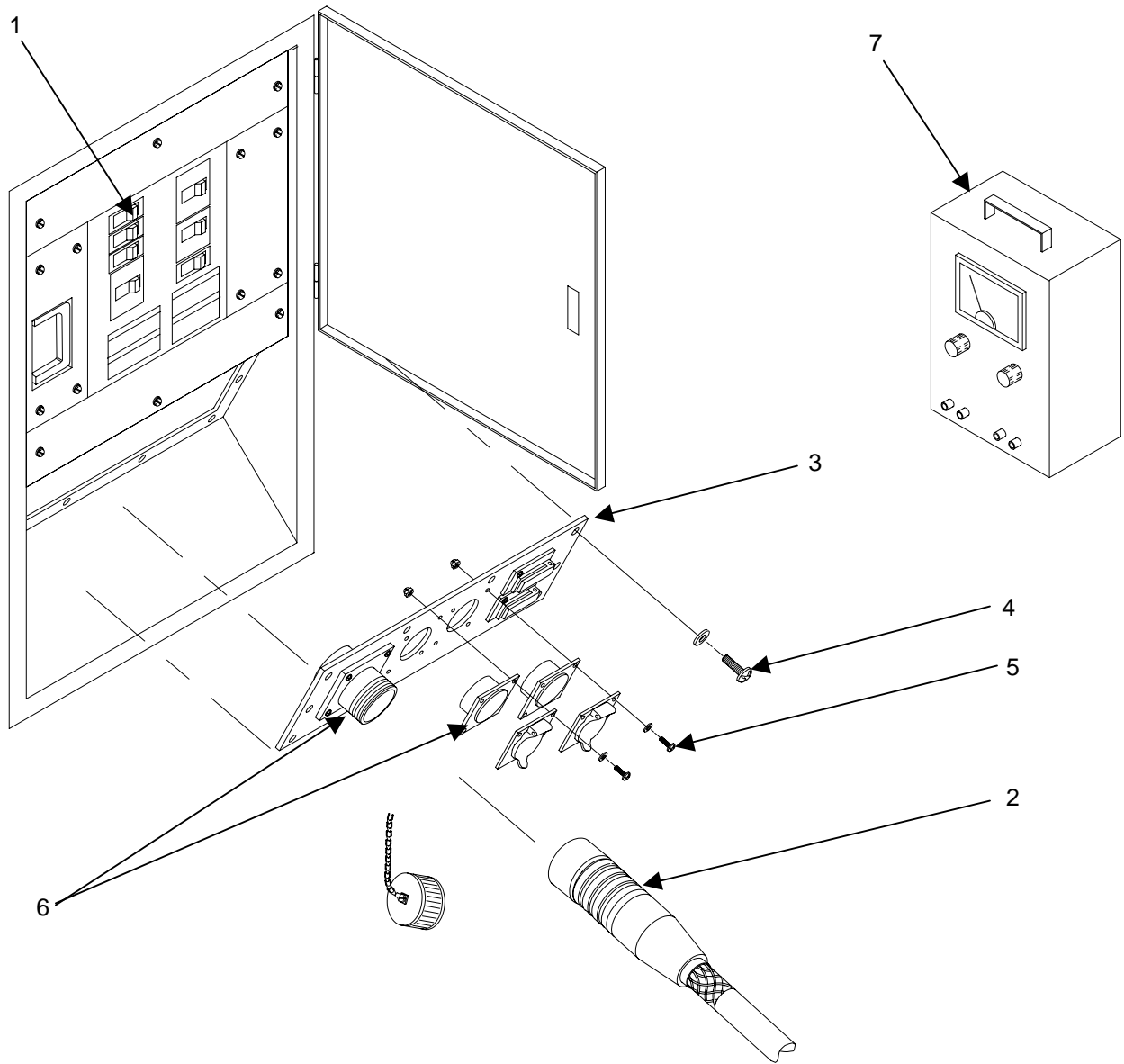
Ensure power service cable is disconnected before proceeding. Failure to observe safety precautions may result in serious injury or death by electrocution.

1. Set all circuit breakers **(1)** to the OFF position.
2. Disconnect 60A power service cable **(2)** from power input panel **(3)**.
3. Remove screws **(4)** securing panel **(3)** and remove panel.
4. Remove screws **(5)** washers, and nuts securing receptacles **(6)** to panel **(3)**.

**NOTE**

Remove and tag the wires from the 20A and 60A receptacles before testing. Failure to do so may result in a false reading.

5. Using a multimeter **(7)** set to test resistance (ohms  $\Omega$ ), test for continuity or short circuits between each prong and its corresponding terminal.
6. Connect wires to terminals on receptacle **(6)**.
7. Install screws **(5)**, washers, and nuts securing receptacle **(6)** to panel **(3)**.
8. Install screws **(4)** on panel **(3)**.
9. Reconnect 60A power service cable **(2)** to power service panel **(3)**.
10. Set all circuit breakers **(1)** to the ON position, as applicable.



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**Test Exhaust Fan Switch or Light Switch**

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**WARNING**

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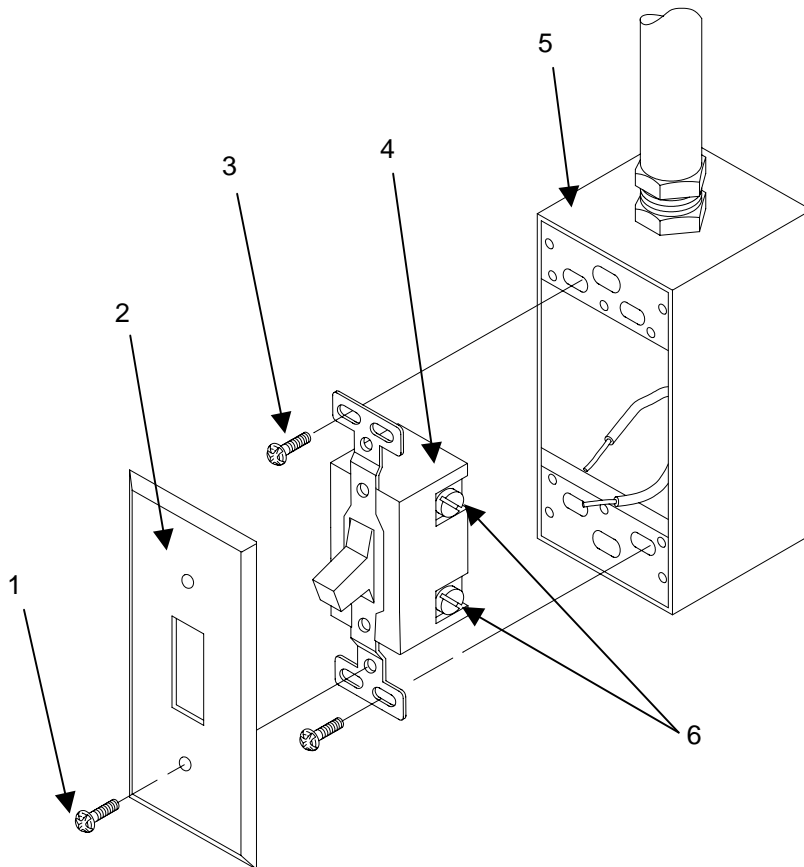
Always secure and tag circuit breakers OFF before attempting any electrical repairs, even minor tasks such as replacing a bulb. Remember that the shower is a wet environment, and capable of posing a shock hazard even when personnel are not in direct contact with metal parts. Failure to observe safety precautions may result in serious injury or death to personnel.

1. Remove the two switch cover screws **(1)**.
2. Remove the switch cover **(2)**.
3. Remove the two screws **(3)** securing the switch **(4)** to the switch box **(5)**.
4. Pull the switch out of the box.
5. Disconnect and tag the wiring at the switch.

**NOTE**

Do not attempt to test continuity with the switch in place. Electrical components still in line with the switch may give a false reading.

6. Place the switch in the ON position.
7. Use a multimeter set to read resistance (ohms  $\Omega$ ) to test for continuity across the two poles **(6)** of the switch.
8. If there is no continuity, replace the switch
9. Place the switch in the OFF position.
10. Use a multimeter set to read resistance (ohms  $\Omega$ ) to test for continuity across the two poles **(6)** of the switch.
11. If there is continuity, replace the switch.
12. Reinstall the switch in the reverse order of steps 1 through 6.



## REPLACE

### Replace a Defective Receptacle

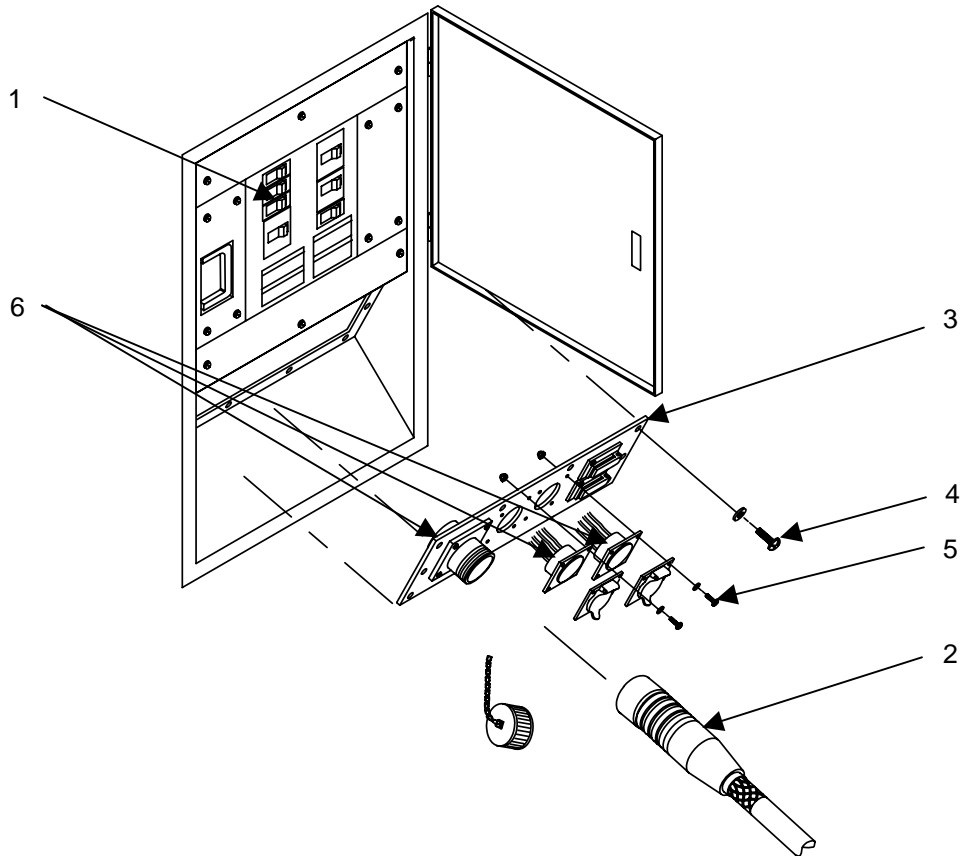


## WARNING

Always secure and tag circuit breakers OFF before attempting any electrical repairs, even minor tasks such as replacing a bulb. Remember that the shower is a wet environment, and capable of posing a shock hazard even when personnel are not in direct contact with metal parts. Failure to observe safety precautions may result in serious injury or death to personnel.

1. Set all circuit breakers **(1)** to the OFF position.
2. Disconnect 60A power service cable **(2)** from power input panel **(3)**.
3. Remove screws **(4)** securing panel **(3)** and remove panel.
4. Remove screws **(5)**, washers, and nuts securing receptacle **(6)** to panel **(3)**.

5. Note color coding before disconnecting wires from terminals on rear of receptacle **(6)**.
6. Connect wires to terminals on replacement receptacle **(6)**.
7. Install screws **(5)**, washers, and nuts securing receptacle **(6)** to panel **(3)**.
8. Install screws **(4)** on panel **(3)**.
9. Reconnect 60A power service cable **(2)** to power service panel **(3)**.
10. Set circuit breakers **(1)** to the ON position, as applicable.



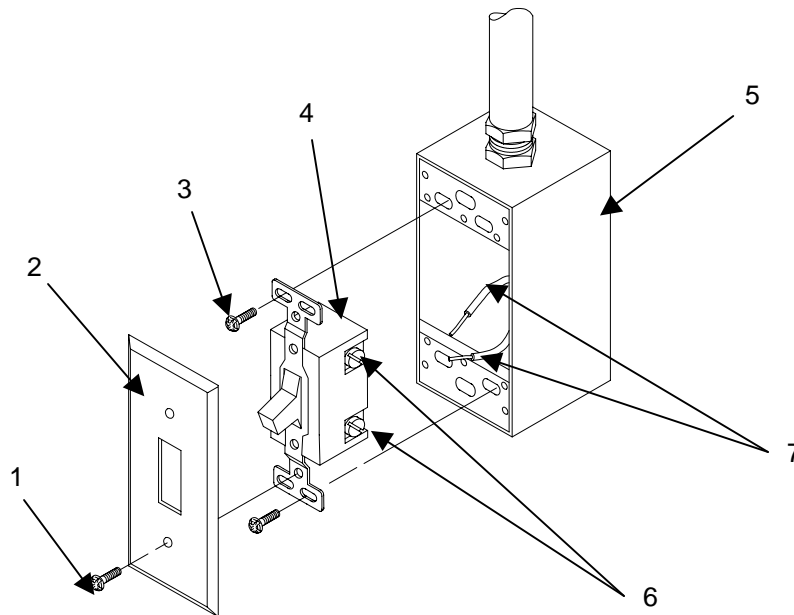
## Replace the Exhaust Fan Switch or Light Switch



### WARNING

Always secure and tag circuit breakers OFF before attempting any electrical repairs, even minor tasks such as replacing a bulb. Remember that the shower is a wet environment, and capable of posing a shock hazard even when personnel are not in direct contact with metal parts. Failure to observe safety precautions may result in serious injury or death to personnel.

1. Remove the two switch cover screws **(1)**.
2. Remove the switch cover **(2)**.
3. Remove the two screws **(3)** securing the switch **(4)** to the switch box **(5)**.
4. Pull the switch out of the box.
5. Disconnect and tag the wiring at the switch poles **(6)**.
6. Connect the wires **(7)** to the replacement switch at the switch poles.
7. Wrap electrical tape around the switch to insulate wire connections.
8. Place the replacement switch in the switch box, and secure with two screws.
9. Replace the switch cover, and secure with two screws.



**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
PLUMBING  
REPAIR, REPLACE**

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair:  
Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Materials/Parts**

Flux (Item 16, WP 0075 00)  
Paper, Abrasive (Item 31, WP 0075 00)  
Solder (Item 36, WP 0075 00)  
Tape, Anti-seize (Item 42, WP 0075 00)

**Personnel Required**

One

**Equipment Condition**

Containerized Shower / Shower,  
Enclosed Unit, System set up.  
Shut down water supply and  
drain system. Main power and  
circuit breaker No. 2/4/6 set to  
the OFF position (Containerized  
Shower only).

**REPAIR****Repair Leaks to External Service Panel****WARNING**

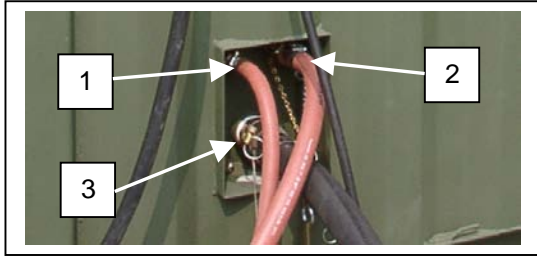
Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

1. Shut down water supply to the shower and drain system.

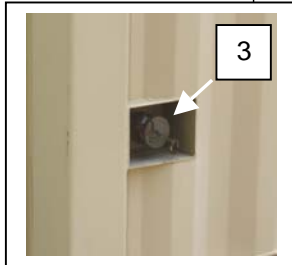
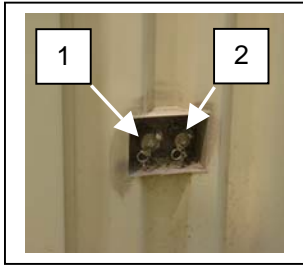
**WARNING**

Close the breaker panel door before proceeding. Striking the breaker panel door while performing this maintenance task can produce serious head injuries.

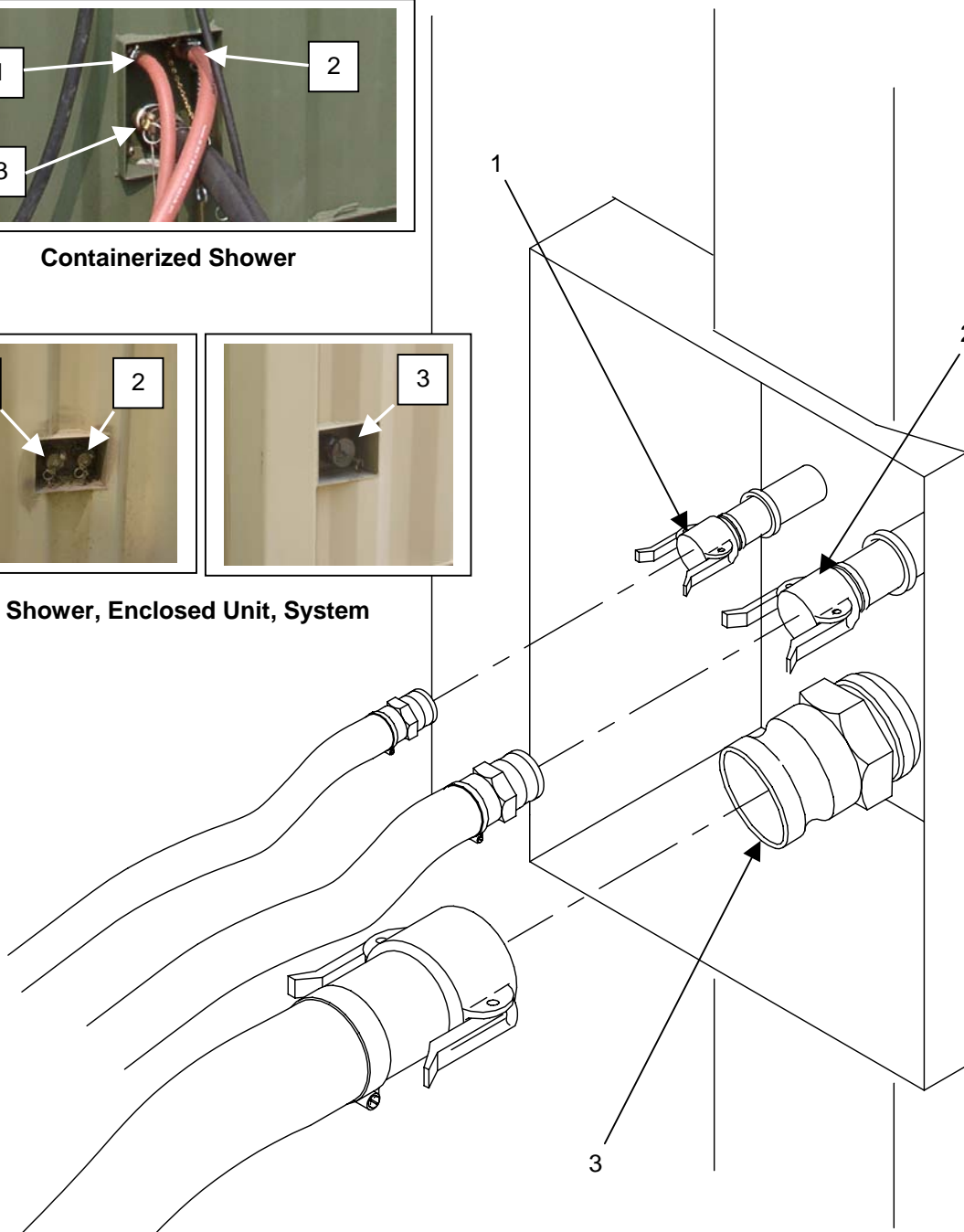
2. Disconnect all water hoses.
3. Using a basin wrench, tighten a leaking ¾-inch cold water supply QDC fitting **(1)**, a 1-inch hot water supply QDC fitting **(2)**, or a 2-inch drain fitting **(3)**.
4. If leakage continues, replace the leaking component.



**Containerized Shower**



**Shower, Enclosed Unit, System**





**REPLACE****Replace a Damaged Shutoff Valve (Shower, Enclosed Unit System and Early Production Containerized Shower only)****WARNING**

Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

**CAUTION**

Always use two pipe wrenches when tightening or loosening a pipe union. Use one pipe wrench to turn the larger union ring, and another to secure the pipe attachment. Failure to do so can twist the union on the pipe, damaging both.

**NOTE**

The Shower, Enclosed Unit, System and early production Containerized Showers use copper piping for the internal water lines. Later production Containerized Showers have been improved to ease field repair, and are fitted with flexible plastic hoses secured with hose clamps. Ensure that you know which model you have before proceeding.

**NOTE**

The water system must be thoroughly drained before proceeding. The unsoldering procedure will not work on pipes with water inside. If necessary, blow compressed air through the system to remove remaining water.

1. Disconnect union **(1)** and drain water.
2. Remove valve handle nut and valve handle **(2)**.
3. Remove valve packing nut.
4. Remove valve stem **(3)**.

**WARNING**

Soldering and unsoldering require the use of an open flame, which can burn skin and eyes. Keep open flame away from combustible materials. Failure to observe safety precautions may result in fire or serious injury to personnel.

5. Unsolder damaged or leaking joints by applying a torch to the pipe **(4)** adjacent to the valve **(5)**.



### **WARNING**

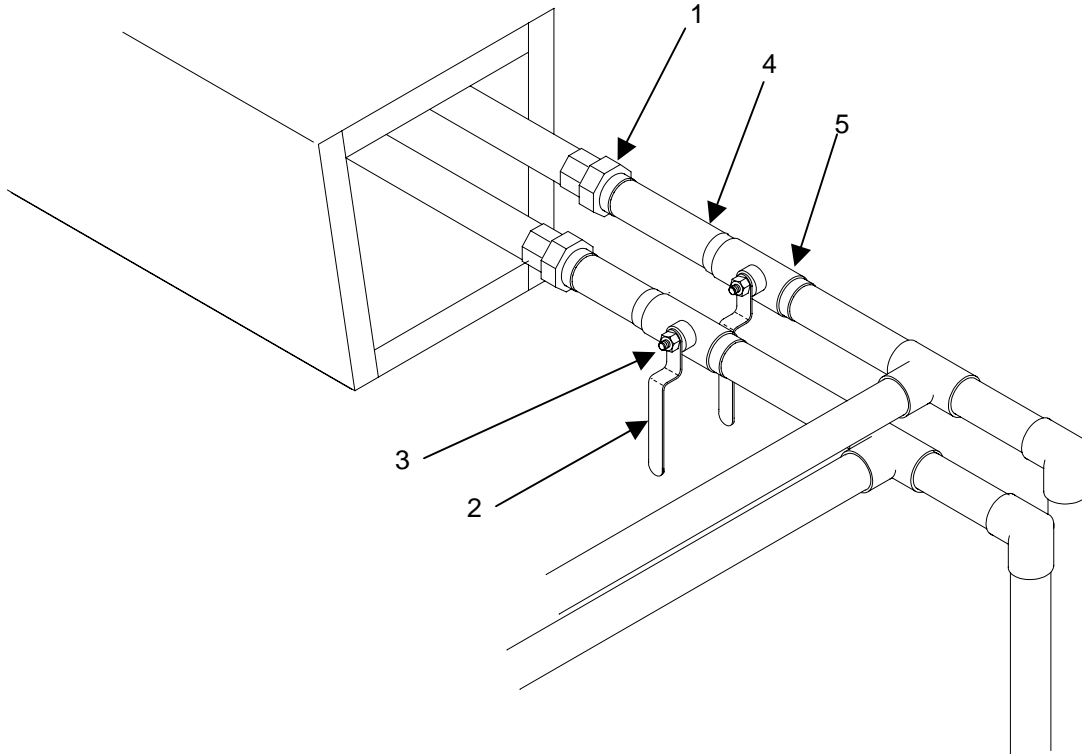
Heated pipe, fittings, and solder are capable of producing serious burns. Use pliers to handle work being soldered and unsoldered.

6. When solder is shiny and fluid, use pliers to remove valve **(5)** from pipe **(4)**.
7. Allow pipe to cool.
8. Remove valve handle and stem from new valve as described in steps 2 through 4 above.
9. Use sandpaper to clean pipe and valve to be joined.
10. Apply flux to pipe and valve at joints
11. Join pipe **(4)** and valve **(5)**.
12. Apply heat to valve **(5)** with torch.

### **NOTE**

When soldering, remember to apply heat to where that you want the solder to flow, and then apply the solder to the part you've heated. The part being soldered will melt the solder and draw the solder into the joint. Do not apply heat directly to the solder, as it will drip and splatter.

13. Apply solder to valve **(5)** at joint.
14. Allow joint to cool.
15. Clean cooled joint with sandpaper.
16. Inspect joint for thorough soldering. Solder should show as a thin silver colored ring around circumference of joint.
17. If joint is insufficiently soldered, repeat steps 5 through 16 above.
18. Replace valve stem, and secure with packing nut.
19. Replace valve handle, and secure with nut.
20. Apply anti-seize tape to threads. Using two pipe wrenches, tighten union **(1)**.



## REPLACE

### Replace a Damaged Shutoff Valve (Late Production Containerized Shower only)



### WARNING

Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

### CAUTION

Always use two pipe wrenches when tightening or loosening a pipefitting. Use one pipe wrench to turn the fitting, and another to secure the pipe or fitting the piece is attached to. Failure to do so can twist the fitting on the pipe, damaging both.

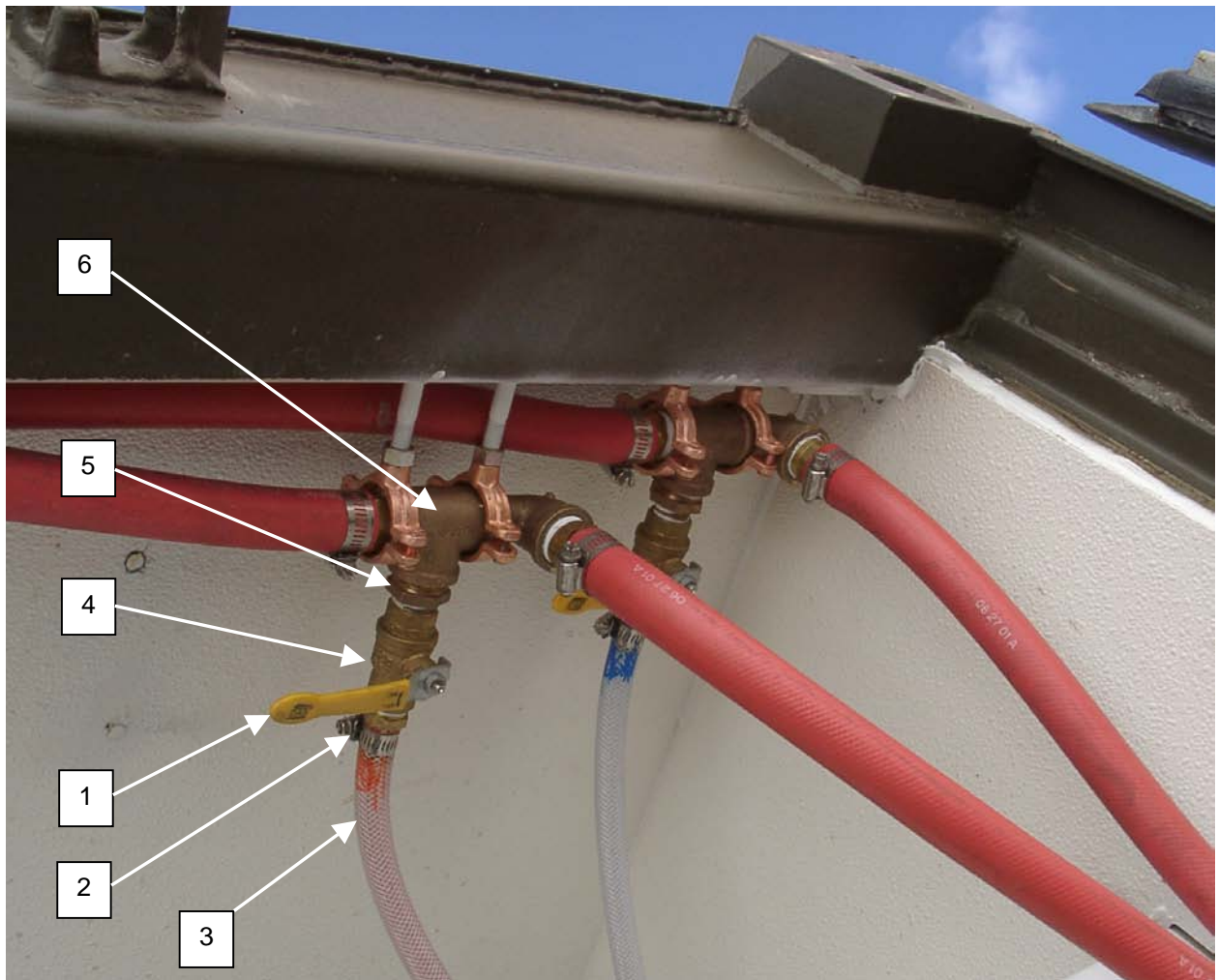
1. Ensure the water supply is disconnected and all water pressure relieved from the system.
2. Remove the nut retaining the valve handle **(1)**, and remove the valve handle.
3. Loosen the hose clamp **(2)** securing the water hose **(3)** to the valve **(4)**, and remove the hose from the valve assembly.

4. Use a wrench to secure the TEE. Use a second wrench to remove the valve assembly.
5. Use a wrench to secure the valve. Use a second wrench to remove the fitting from the valve.

### NOTE

The new valve will require a new nipple. Ensure the nipple is wrapped with 3 to 5 turns of anti-seize tape.

6. Remove the nut retaining the replacement valve handle **(1)**, and remove the valve handle.
7. Wrap the pipe threads of the replacement valve **(4)** with 3 to 5 turns of anti-seize tape clockwise around the pipe threads.
8. Install the retained pipe-fittings onto the replacement valve.
9. Use a wrench to secure the pipe bushing **(5)** in the pipe TEE **(6)**. Use a second wrench to tighten the valve **(4)** in the pipe bushing. Ensure the valve stem is in the correct position for the valve handle to operate correctly.
10. Install the hose **(3)** onto the hose adapter fitting, and retain with hose clamp **(2)**.
11. Install the valve handle **(1)** onto the valve stem, and retain with nut.
12. Connect the water supply, operate the Containerized Shower as indicated in WP 0005 00, and inspect for leakage.



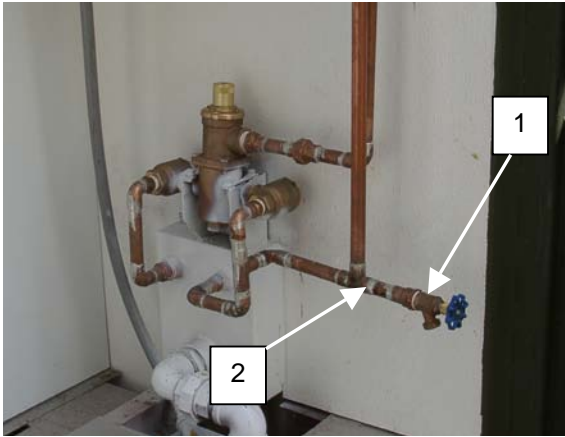
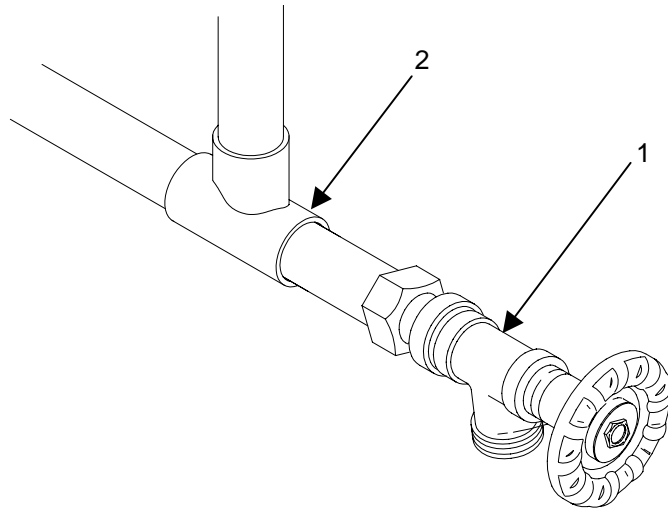
## Replace the Spigot



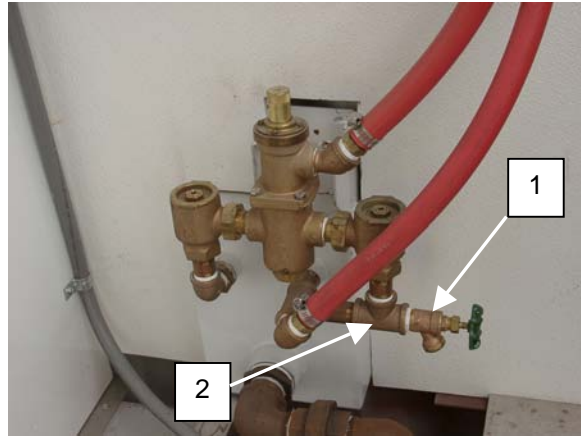
### WARNING

Repair of plumbing requires the use of tools in restricted spaces. Slipping wrenches can cause serious injury.

1. Using a pipe wrench, remove the spigot **(1)** from the TEE **(2)**.
2. Clean threads on the TEE and apply anti-seize tape to the threads of the new spigot **(1)**.
3. Thread new spigot **(1)** on TEE **(2)** and tighten.



Containerized Shower, Early  
Production



Containerized Shower, Late  
Production

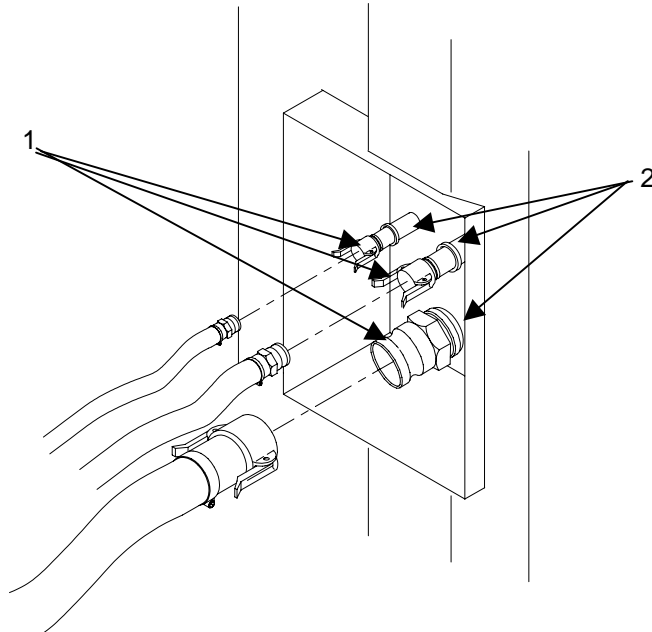
## Replace Damaged Fittings



### **WARNING**

Repair of plumbing requires the use of tools in confined spaces. Slipping wrenches can cause serious injury.

1. Using a wrench, remove damaged fitting(s) **(1)**.
2. Thoroughly clean threading on couplings **(2)**.
3. Wrap threading with 3 to 5 turns of anti-seize tape.
4. Connect new fitting(s) **(1)** to couplings **(2)** and tighten.



**END OF WORK PACKAGE**





**DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SUMP PUMP ASSEMBLY  
REPLACE**

**INITIAL SETUP****Tools**

Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Item 4, WP 0048 00)

**Materials/Parts**

Tags, Wire (Item 41, WP 0075 00)  
Tape, Anti-seize (Item 42, WP 0075 00)  
Tape, Electrical (Item 44, WP 0075 00)

**Personnel Required**

Two

**Equipment Condition**

Containerized Shower / Shower, Enclosed Unit, System set up, power supply disconnected. Set sump pump circuit breaker No. 8 to the OFF position (Containerized Shower only).

**REPLACE****Replace a Damaged Sump Pump****WARNING**

Protective clothing and equipment must be worn. Heavy-duty rubber apron, rubber gloves, safety splash goggles and/or face shield are required when potential exists for contact with waste water or contaminated surfaces. Wastewater and surfaces may be contaminated with pathogenic microorganisms, bacteria or viruses, which present a risk of serious illness or death to personnel.

1. Remove the padeyes **(1)** from the equipment mounting platform **(2)**. (Containerized Shower only.)
2. Remove the screws securing the equipment mounting platform **(2)**. (Containerized Shower only.)

**WARNING**

The equipment mounting platform is heavy, awkward, and difficult to maneuver. Wear protective gloves before handling. To prevent injury, two persons are required to remove and carry it. Failure to observe safety precautions may result in serious injury to personnel.

**WARNING**

The equipment mounting platform may have sharp edges and corners. Wear protective gloves before handling. Failure to observe safety precautions may result in serious injury to personnel.

3. Lift the equipment mounting platform **(2)** off the mounting rails **(3)** and place it outside the shower. (Containerized Shower only.)

4. Remove the bolts securing the graywater tank cover plate **(4)** in place, and remove the plate. Using a wrench, disconnect the discharge pipe **(5)**.
5. On the Containerized Shower, follow sump pump cord **(6)** through a conduit located to the left of the space heater **(7)**. At junction, power cord is hardwired into circuit breaker panel. On the Shower, Enclosed Unit, System, follow the cord to the sump pump switch box.



### **WARNING**

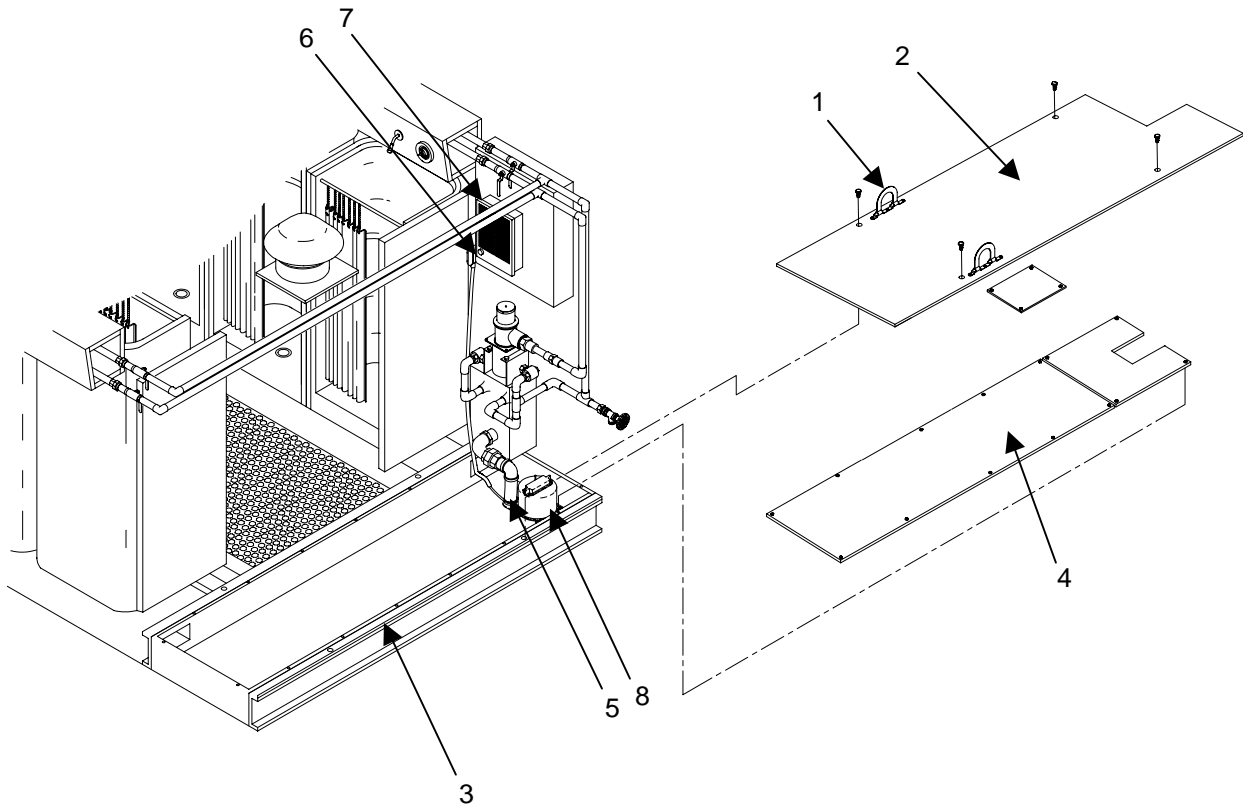
Always disconnect pump from its power source before handling. Do not stand in water when shutting off main power and unplugging the pump. Failure to observe safety precautions may result in injury or death to personnel.

6. Tag and disconnect power cord wires at junction. Lift out defective pump and position new pump **(8)** in place, ensuring that pump is level when installing.
7. Apply pipe sealant and reconnect discharge pipe **(5)**.

### **NOTE**

The replacement pump may be supplied with a standard grounded plug. If so, cut the power cord at the plug, and strip down the outer insulation and wire insulation to match the cord on the pump being replaced.

8. Reconnect power cord wires **(6)**.
9. Place tank cover plate **(4)** into position and install bolts to secure it in place.
10. Place the equipment mounting platform **(2)** onto the mounting rails **(3)**.
11. Install the screws securing the equipment mounting platform **(2)** to the mounting rails **(3)**.
12. Install the padeyes **(1)**.



END OF WORK PACKAGE



**CHAPTER 7**

**SUPPORTING INFORMATION  
FOR  
CONTAINERIZED SHOWER  
AND  
SHOWER, ENCLOSED UNIT, SYSTEM**



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
REFERENCES**

**SCOPE**

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

**Field Manuals**

First Aid for Soldiers .....	FM 21-11
Field Hygiene and Sanitation .....	FM 21-10
Packaging of Material: Packing .....	FM 38-701
Quartermaster, Force Provider Company .....	FM 42-424

**Forms**

Equipment Inspection and Maintenance Worksheet .....	DA Form 2404
Product Deficiency Report.....	SF 368
Recommended Changes to Equipment Technical Publications.....	DA Form 2028-2
Report of Discrepancy.....	SF 364
Transportation Discrepancy Report.....	SF 361

**Technical Manuals**

Administrative Storage of Equipment .....	TM 740-90-1
Destruction of Army Electronics Materiel to Prevent Enemy Use .....	TM 750-244-3
Unit and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List), General Cargo Container .....	TM 55-8115-204-23&P
Operator's and Unit Maintenance Manual (including Repair Parts and Special Tools List) for Tank, Fabric, Collapsible; Air Column Supported, Open Top, Water Storage, 3,000 Gallon.....	TM 10-5430-237-12&P
Operator, Unit, and Direct Support Maintenance Manual for Tent Extendable, Modular, Personnel (TEMPER).....	TM 10-8340-224-13
Operator's, Unit and Direct Support Maintenance Manual, (Including Repair Parts and Special Tools List) for Heater, Water Liquid Fuel M80, M85 .....	TM 10-4520-259-13&P
Operator's, Unit and Direct Support Maintenance Manual, (Including Repair Parts and Special Tools List) for Sewage Ejection Pump (SEP) ....	TM 10-4630-206-13&P
Operator's, Unit, Direct Support, and General Support Maintenance Manual for Force Provider.....	TM 10-5419-206-13

**Technical Bulletins**

Technical Bulletin, Sanitary Control and Surveillance of Field Water Supplies.....	TB MED 577
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**Pamphlets**

Functional Users Manual for the Army Maintenance Management System (TAMMS) .....	DA PAM 738-750
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**Common Table Of Allowance**

Army Medical Department Expendable/Durable Items .....	CTA 8-100
Expendable/Durable Items (Except: Medical, Class V, Repair Parts, Heraldic Items) .....	CTA 50-970





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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
MAINTENANCE ALLOCATION CHART (MAC), INTRODUCTION**

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## **INTRODUCTION**

### **The Army Maintenance System MAC**

This introduction provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

The MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

- Unit -- includes two subcolumns, C (operator/crew) and O (unit) maintenance.
- Direct Support -- includes an F subcolumn.
- General Support -- includes an H subcolumn.
- Depot -- includes a D subcolumn.

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

### **Maintenance Functions**

Maintenance functions are limited to and defined as follows:

1. **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). This includes scheduled inspection and gagings and evaluation of cannon tubes.
2. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.
3. **Service.** Operations required periodically to keep an item in proper operating condition; e.g. to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms.
4. **Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
5. **Align.** To adjust specified variable elements of an item to bring about optimum or desired performance.
6. **Calibrate.** To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

7. 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.
8. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as third position code of the Source, Maintenance, and Recoverability (SMR) code.
9. 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.

### NOTE

The following definitions are applicable to the "repair" maintenance function:

Services - Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly - The step by step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

10. 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. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
11. 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 (e.g., hours/miles) considered in classifying Army equipment/components.

### Explanation of Columns in the MAC

Column (1) - Group Number. Column (1) lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

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

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, refer to "Maintenance Functions" outlined above.)

Column (4) - Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as man hours in whole hours or decimals) in the appropriate sub-column. This work time 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 varies at different maintenance levels, appropriate work time figures are to 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 time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are shown as follows:

- C -- Operator or crew maintenance
- O -- Unit maintenance
- F -- Direct support maintenance
- L -- Specialized repair activity (SRA)
- H -- General support maintenance
- D -- Depot maintenance

#### NOTE

The "L" maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by a work time figure in the "H" column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) - Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools) common Test, Measurement, and Diagnostic Equipment (TMDE), and special tools, special TMDE, and support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) - Remarks Code. When applicable, this column contains a letter code, in alphabetic order, which is keyed to the remarks table entries.

#### Explanation of Columns in the Tools and Test Equipment Requirements

Column (1) - Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) - Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) - Nomenclature. Name or identification of tool or test equipment.

Column (4) - National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) - Tool Number. The manufacturer's part number, model number, or type number.

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**Explanation of Columns in Remarks**

Column (1) - Remarks Code. The code recorded in column (6) of the MAC.

Column (2) - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
MAINTENANCE ALLOCATION CHART (MAC)**

**Table 1. Maintenance Allocation Chart (MAC) for Containerized Shower  
and Shower, Enclosed Unit, System.**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00	SHOWER	Inspect Service Replace Test Repair	1.0						
01	CONTAINER						1,4,5	A	
0101	ELECTRIC ASSEMBLY	Inspect Test Replace	.10		.10			1,2	
010101	LIGHT ASSEMBLY	Inspect Test Replace	.10	.10				1	
01010101	FLUORESCENT TUBE	Inspect Replace	.10	.10					
01010102	BALLAST	Inspect Replace	.10	.40				1,2	
01010103	CLIPS	Replace	.10						
010102	HEATER ASSEMBLY	Inspect Test Service Replace	.10	.10 .10 .10				1	
010103	BREAKER PANEL	Inspect	.10						
01010301	CIRCUIT BREAKERS	Inspect Test Replace	.10		.25 .25			1,2	

**Table 1. Maintenance Allocation Chart (MAC) for Containerized Shower and Shower, Enclosed Unit, System – continued**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
01010302	20 AMP GFCI RECEPTACLE	Inspect	.10					1,2	
		Test			.10				
		Replace			.10				
01010303	60 AMP POWER INPUT	Inspect	.10		.10			1,2	
		Replace			.20				
01010304	20 AMP 120/208 VOLT 3 PHASE RECEPTACLE	Inspect	.10		.10			1,2	
		Replace			.25				
01010305	20 AMP 120 VOLT TWIST LOCK RECEPTACLE	Inspect	.10		.10			1,2	
		Replace			.20				
010104	EXHAUST FAN SWITCH	Inspect	.10					1,2	
		Test			.10				
		Replace			.10				
010105	LIGHT SWITCH	Inspect	.10					1,2	
		Test			.10				
		Replace			.10				
0102	FLOOR MAT	Inspect	.10						
		Replace	.10						
0103	EXHAUST FAN ASSEMBLY	Inspect	.10					1	
		Test		.10					
		Replace			.50				
0104	PLUMBING	Inspect	.10					1	
		Repair		.10					
		Replace			.50				
010401	MIXER VALVE	Inspect	.25					1,6	
		Replace		.40					

**Table 1. Maintenance Allocation Chart (MAC) for Containerized Shower and Shower, Enclosed Unit, System – continued**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
010402	SUMP PUMP ASSEMBLY	Inspect		.10				1	
		Service							
		Replace			.30				
010403	SHOWER ASSEMBLY	Inspect	.10					1	
		Service	1.0						
01040301	SHOWER CURTAIN	Inspect	.10						
		Replace	.25						
010404	SHOWER HEAD	Inspect	.10						
		Replace		.10					
01040401	SHOWER VALVE	Inspect							
		Replace		2.0					
02	HOSES	Inspect	.10					1	
		Replace		.30					
03	M80 WATER HEATER								B
04	TEMPER & ISO BOOTWALL						3		C
0401	TEMPER								C
0402	ISO BOOTWALL	Inspect	.10						
		Replace		.50					
0403	TEMPER LIGHT ASSEMBLY	Inspect	.10					1	
		Replace	.10						
05	SHAVE STAND ASSEMBLY	Inspect	.10					1	
		Repair		.25					
		Replace		.10					

**Table 1. Maintenance Allocation Chart (MAC) for Containerized Shower and Shower, Enclosed Unit, System – continued**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0501	FAUCET	Inspect	.10					1	
		Replace		.10					
0502	LIGHTS	Inspect		.10				1	
		Replace		.25					
050201	LIGHT BULB	Inspect		.10				1	
		Replace		.25					
0504	PLUMBING	Inspect	.10					1	
		Repair		.50					
		Replace		.20					
06	FRESH WATER PUMP ASSEMBLY	Inspect	.25					1	
		Repair		.10					
		Replace		.10					
0601	PRESSURE TANK	Inspect	.10					1,2	
		Replace		.30					
0602	PRESSURE SWITCH	Inspect	.10					1,2	
		Replace		.10					
0603	PUMP MOTOR STARTER	Inspect	.10					1,2	
		Replace		.90					
060301	PUMP MOTOR STARTER CONTACTOR	Inspect	.10					1,2	
		Replace		.90					
060302	PUMP MOTOR OVERLOAD RELAY	Inspect	.10					1,2	
		Replace		.90					
0604	EXTENSION CORD	Inspect	.10						
		Replace		.50					



**Table 1. Maintenance Allocation Chart (MAC) for Containerized Shower and Shower, Enclosed Unit, System – continued**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0605	FRESH WATER PUMP	Inspect Replace	.10		.50			1,2	
0606	PRESSURE GAUGE	Inspect Replace	.10	.10				1,2	
07	WATER TANK								D

**Table 2. Tools and Test Equipment Requirements for Containerized Shower and Shower, Enclosed Unit, System.**

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	C	Hose Assembly, Nonmetallic, Garden	4720-00-729-5334	
2	F	Multimeter	6625-01-139-2512	
3	C	Nozzle, Garden Hose	4730-00-595-1103	
4	O	Shop Equipment Automotive, Maintenance and Repair: Organizational Maintenance, Common No. 1	4190-00-754-0654	
5	O	Tentage Repair Kit	8340-00-262-5767	
6	F	Thermometer, Bimetallic	6685-00-444-6500	
7	O, F	Tool Kit, General Mechanic's: Automotive	5180-00-177-7033	

**Table 3. Remarks.**

REMARKS CODE	REMARKS
A	Perform maintenance of the container as directed in TM 55-8115-204-23&P.
B	Perform maintenance of the M-80 water heater as directed in TM 10-4520-259-13&P.
C	Perform maintenance of the TEMPER as directed in TM 10-8340-224-13.
D	Perform maintenance of the water tank as directed in TM 10-5430-237-12&P.

**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTNENACE  
CONTAINERIZED SHOWER & SHOWER, ENCLOSED UNIT, SYSTEM  
REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL), INTRODUCTION**

**SCOPE**

This RPSTL lists and authorizes spare and repair parts; special tools; special tests, measurement and diagnostic equipment (TMDE); and other special support equipment required for performance of unit and direct support maintenance of the Containerized Shower and Shower, Enclosed Unit, 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.

**GENERAL**

In addition to the Introduction work package, this RPSTL is divided into the following work packages:

1. **Repair Parts List Work Packages.** Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include 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. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed separately in their own functional group and work package. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.
2. **Special Tools List Work Packages.** Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.
3. **Cross-Reference Index.** There are two cross-reference indexes work packages in this RPSTL: the National Stock Number (NSN) Index work package and the Part Number (P/N) Index work package. The NSN index refers you to the figure and the item number. The part number index refers you to the figure and item number.

**EXPLANATION OF COLUMNS IN THE REPAIR PARTS AND SPECIAL TOOS LIST WORK PACKAGE**

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

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria and disposition instruction, as shown in the following breakout:

<b>Source Code</b>	<b>Maintenance Code</b>	<b>Recoverability Code</b>
<p><u>XX</u> 1<sup>st</sup> two positions: How you get an item.</p>	<p><u>XX</u> 3<sup>rd</sup> position: Who can install, replace or use the item.</p>	<p><u>X</u> 5<sup>th</sup> position: Who determines disposition action on unserviceable items.</p>

\* Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item. Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanation of source codes follows:

Source Code	Application/Explanation
PA PB PC PD PE PF PG	<p>Stock items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the level indicated by the code entered in the 3rd position of the SMR code.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Items coded PC are subject to deterioration.</p>
KD KF KB	<p>Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.</p>
MO - Made at Unit/ AVUM Level MF - Made at DS/ AVIM Level MH - Made at GS Level ML - Made at SRA MD - Made at Depot	<p>Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the P/N in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package 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.</p>
AO - Assembled by Unit/AVUM Level AF - Assembled by DS/AVIM Level AH - Assembled by GS level AL - Assembled by SRA AD - Assembled by Depot	<p>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 third position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.</p>
XA	<p>Do not requisition an "XA" coded item. Order its next higher assembly. (Also, refer to the NOTE below.)</p>
XB	<p>If an item is not available from salvage, order it using the CAGEC and P/N.</p>
XC	<p>Installation drawings, diagrams, instruction sheets, field service drawings, identified by manufacturer's P/N.</p>
XD	<p>Item is not stocked. Order an "XD" coded item through normal supply channels using the CAGEC and P/N given, if no NSN is available.</p>

**NOTE**

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

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:

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

**Maintenance Code****Application/Explanation**

- C -- Crew or operator maintenance done within unit/AVUM maintenance.
- O -- Unit level/AVUM 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 -- Specialized repair activity can remove, replace, and use the item.
- D -- Depot can remove, replace and use the item.

Fourth Position. 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 (perform all authorized repair functions).

**NOTE**

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

**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 (enter specialized repair activity designator) is the lowest level that can do complete repair of the item.
- D -- Depot is the lowest level that can do complete repair of the item.
- Z -- Nonreparable. No repair is authorized.

- B -- No repair is authorized. No parts or special tools are authorized for the maintenance of a "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

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

<b><u>Recoverability Code</u></b>	<b><u>Application/Explanation</u></b>
Z --	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3rd position of SMR Code.
O --	Reparable item. When uneconomically repairable, condemn and dispose of the item at the unit level.
F --	Reparable item. When uneconomically repairable, condemn and dispose of the item at the direct support level.
H --	Reparable item. When uneconomically repairable, condemn and dispose of the item at the general support level.
D --	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item are 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 (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

NSN (Column (3)). The NSN for the item is listed in this column.

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

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

### NOTE

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

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name, and when required, a minimum description to identify the item.
2. P/Ns of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.

3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.
4. The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list work packages.

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

**EXPLANATION OF CROSS-REFERENCE INDEX FORMAT AND COLUMNS**

1. National Stock Number (NSN) Index work package.

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.,

$$\begin{array}{c} \text{NSN} \\ \hline \text{(e.g., 5305-01-574-1476)} \\ \text{NIIN} \end{array}$$

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

FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list work packages.

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.

2. Part Number (P/N) Index Work Package. P/Ns in this index are listed by part number in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

PART NUMBER Column. Indicates the P/N assigned to the item.

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages.

ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in adjacent figure number column.

**SPECIAL INFORMATION**

UOC. The UOC 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 first line under the applicable item/nomenclature. Uncoded items are applicable to all models. Identification of the UOCs used in this RPSTL are:

<u>Code</u>	<u>Used On</u>
FRU	Containerized Shower
FSK	Shower, Enclosed unit, System

## HOW TO LOCATE REPAIR PARTS

### 1. When NSNs or P/Ns Are Not Known.

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

Second. Find the figure covering the functional or subfunctional group to which the item belongs.

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

Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

### 2. When NSN Is Known.

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

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

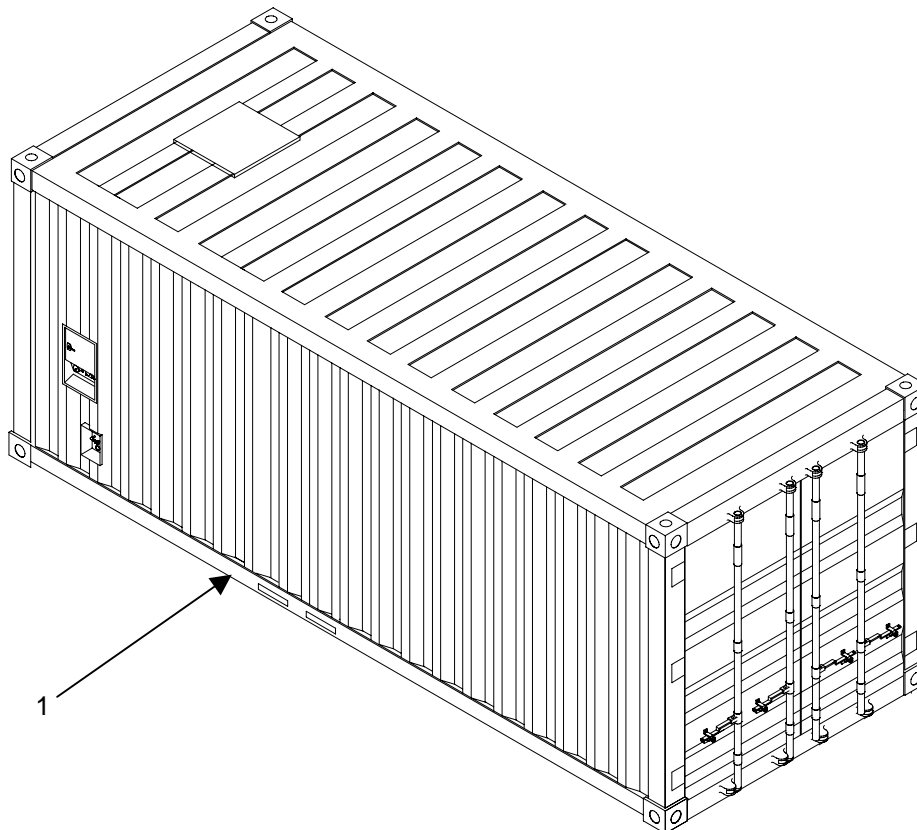
### 3. When P/N Is Known.

First. If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index work package. Identify the figure and item number.

Second. Look up the item on the figure in the applicable repair parts list work package.



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
CONTAINER  
REPAIR PARTS LIST**



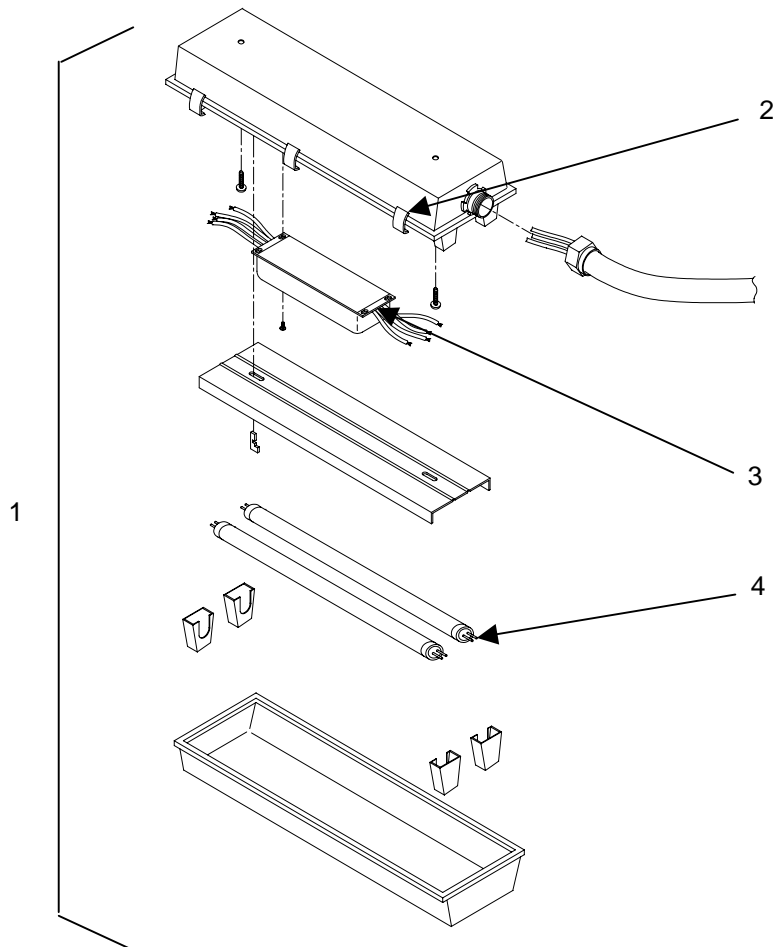
**Figure 1. Container**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ	8145-01-491-2678	58536	AA59272 Type II	GROUP 01 CONTAINER FIG. 1 CONTAINER CONTAINER, SPECIAL (TM 55-8115-304-23&P) UOC: FRU	1
1	PAOZZ	8145-01-488-6545	58536	AA59272 Type I	CONTAINER, SPECIAL (TM 55-8115-304-23&P) UOC: FSK <b>END OF FIGURE</b>	1





**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
LIGHT ASSEMBLY  
REPAIR PARTS LIST**

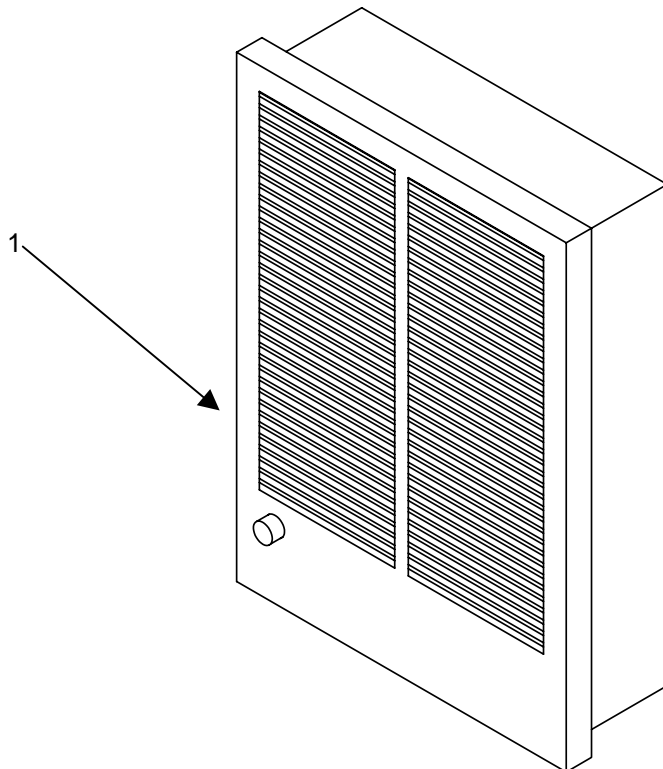


**Figure 2. Light Assembly**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 010101 LIGHT ASSEMBLY FIG. 2 LIGHT ASSEMBLY	
1	XDFFF		1LXT3	VT2 240DR- 120VLE3- WL-U	FIXTURE, LIGHTING UOC: FRU	3
1	XDFFF		1LXT3	3GY13	FIXTURE, LIGHTING UOC: FSK	3
2	XDOZZ		16543	U07531	.CLIP	18
3	PAFZZ	6250-00-892-5248	08595	8G1024WF	.BALLAST, LAMP UOC: FRU	3
3	PAFZZ	6250-00-242-0979	98775	2W769	.BALLAST, LAMP UOC: FSK	3
4	XDOZZ		1LXT3	3V477	.LAMP, FLUORESCENT UOC: FRU	6
4	PAFZZ	6240-01-344-9537	08805	F32T8SP41/ RS	.LAMP, FLUORESCENT UOC: FSK	6
					<b>END OF FIGURE</b>	



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
HEATER ASSEMBLY  
REPAIR PARTS LIST**



**Figure 3. Heater Assembly**

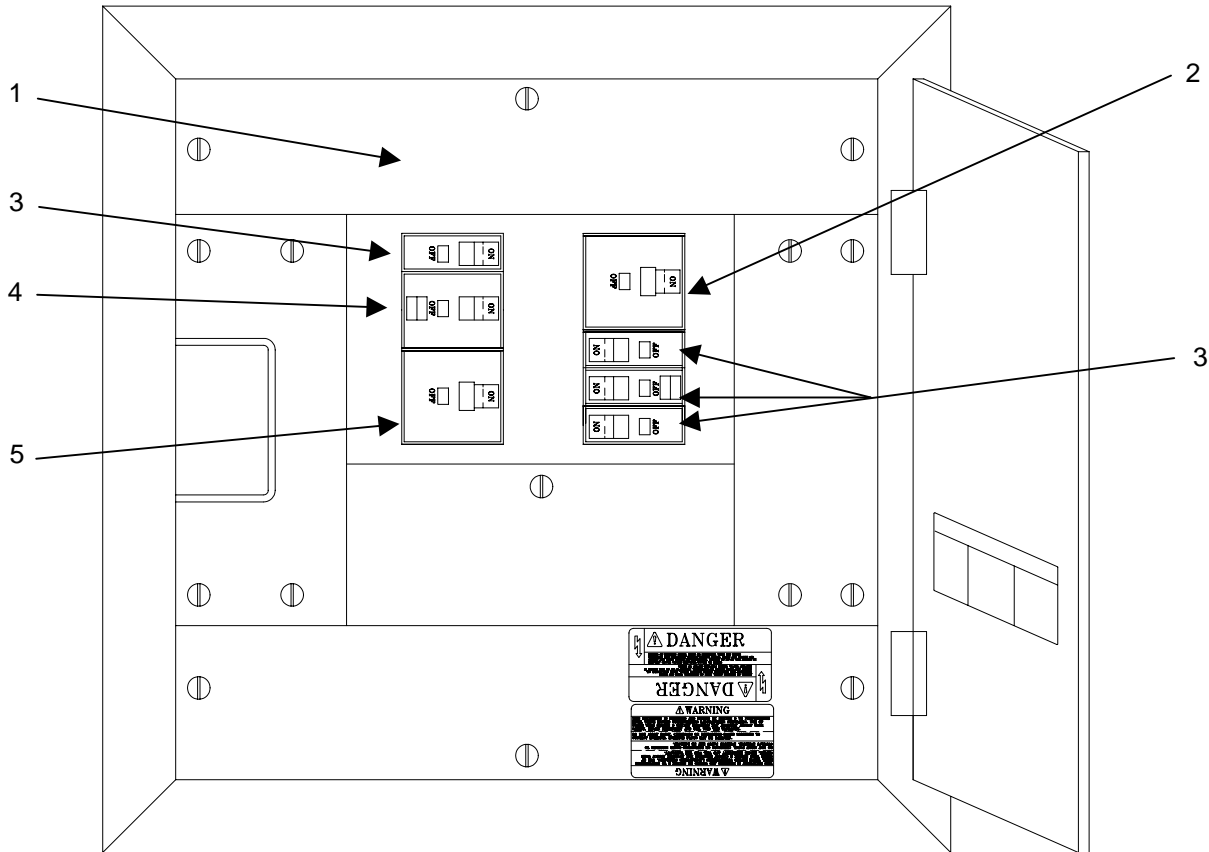
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	XDOZZ		0LBH0	C1524T2A	GROUP 010102 HEATER ASSEMBLY FIG. 3 HEATER ASSEMBLY HEATER, ELECTRIC	1
<b>END OF FIGURE</b>						







**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
CIRCUIT BREAKERS  
REPAIR PARTS LIST**

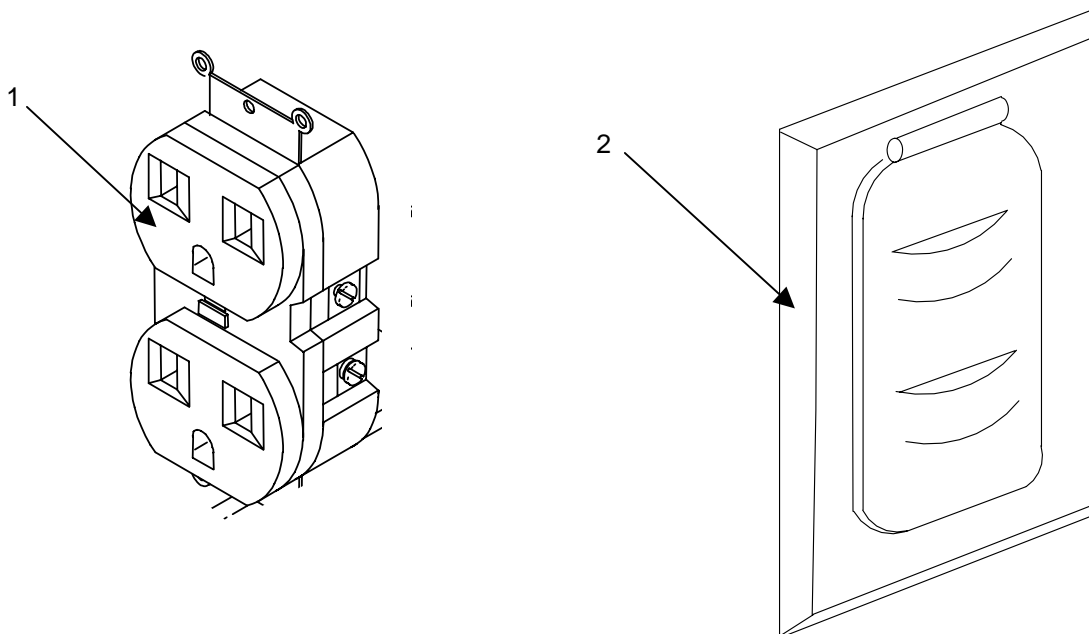


**Figure 4. Circuit Breakers**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01010301 CIRCUIT BREAKERS FIG. 4 CIRCUIT BREAKERS	
1	XDFZZ		K1426	MH20WP SER2	CIRCUIT BREAKER BOX	1
2	PAOZZ	5925-00-728-1968	56365	QOB320	.CIRCUIT BREAKER, 20 A, 3 Pole	1
3	PAOZZ	5925-00-728-1289	56365	QOB120	.CIRCUIT BREAKER, 20 A, 1 Pole	4
4	PAOZZ	5925-00-967-9874	56365	QOB220	.CIRCUIT BREAKER, 20 A, 2 Pole	1
5	PAOZZ	5925-00-936-3933	56365	QOB360	.CIRCUIT BREAKER, 60 A, 3- PA UOC: FRU	1
					<b>END OF FIGURE</b>	



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
20 AMP GFCI RECEPTACLE/60 AMP POWER INPUT AND CABLE  
REPAIR PARTS LIST**



**Figure 5. 20 Amp GFCI Receptacle**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01010302 20 AMP GFCI RECEPTACLE FIG. 5 20 AMP GFCI RECEPTACLE	
1	XDFZZ		74545	GF5352-1C	INTERRUPTER, GROUND FAULT, 20 AMP, GFCI, DUPLEX	1
2	PAOZZ	5935-00-114-8707	96906	MS90564-4C	.COVER, RECEPTACLE	1
<b>END OF FIGURE</b>						

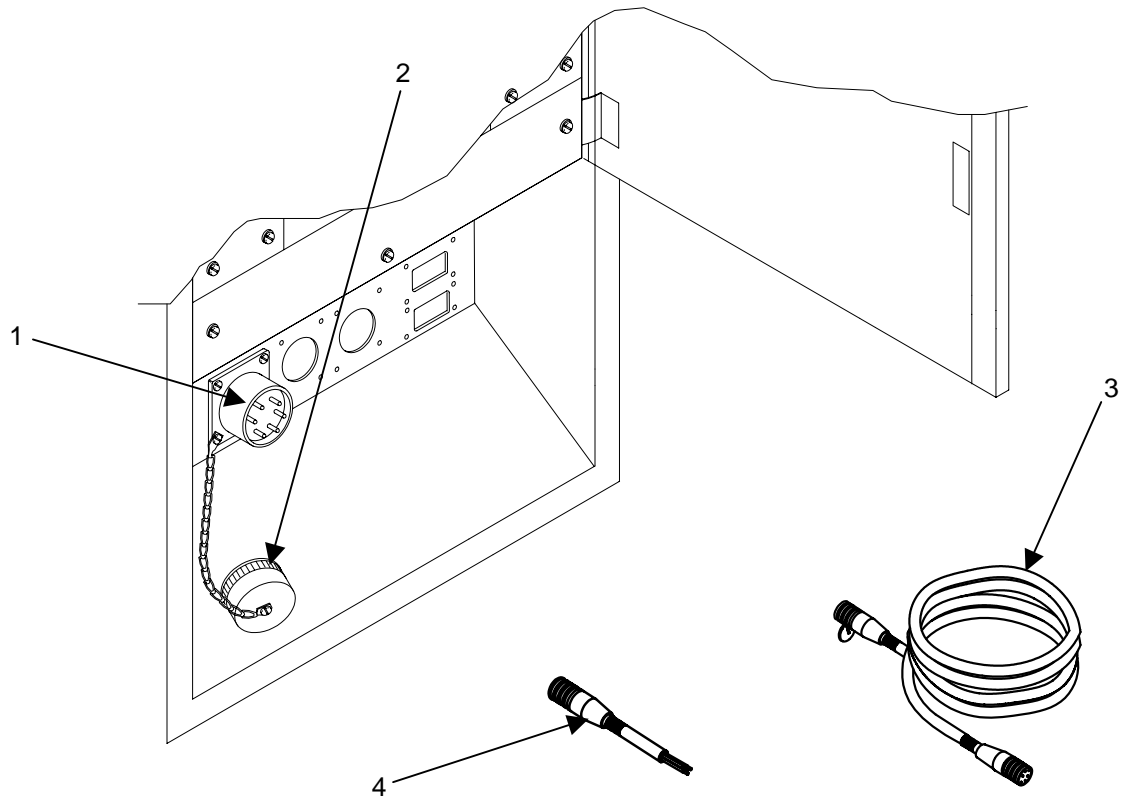


Figure 6. 60 Amp Power Input And Cable

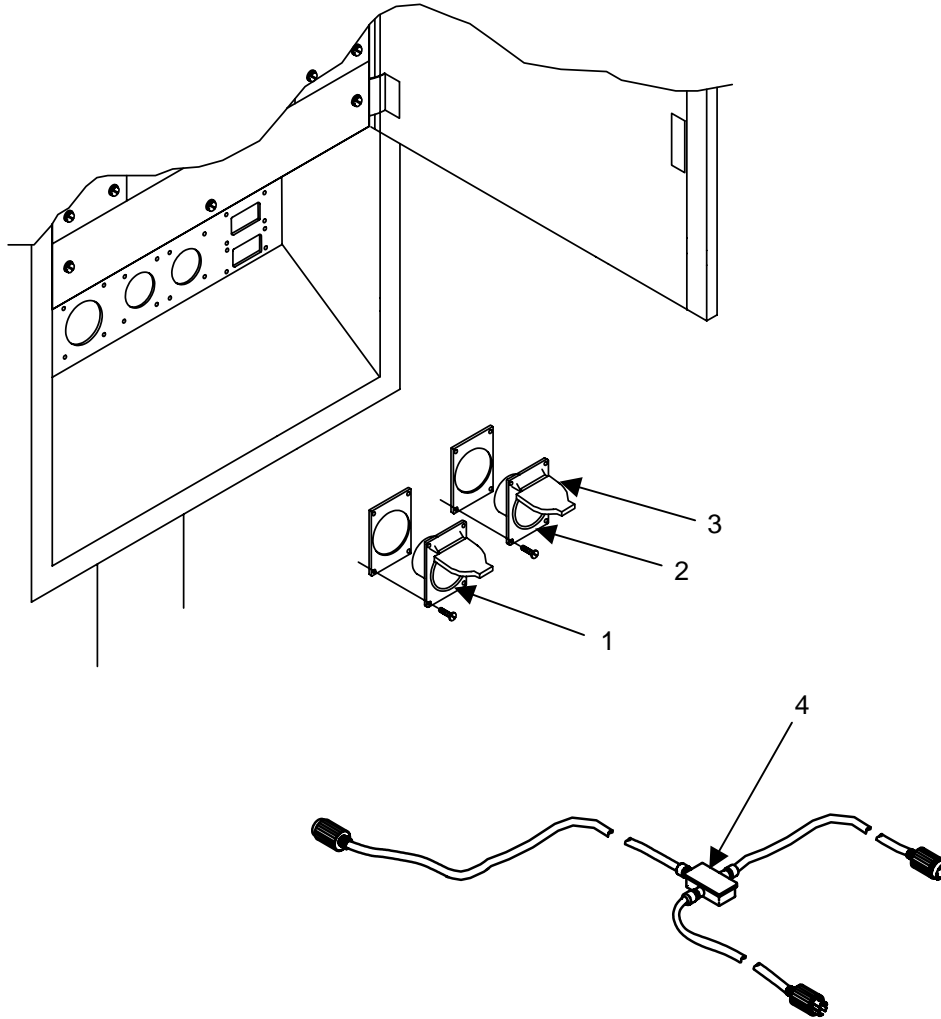
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01010303 60 AMP POWER INPUT FIG. 6 60 AMP POWER INPUT	
1	PAFZZ	5935-00-114-8708	77820	MS90558C32412P	RECEPTACLE, 60A	1
2	PAOZZ	5935-00-114-8707	96906	MS90564-4C	.COVER, RECPTACLE	1
3	PAOZZ	6150-01-220-5588	97403	M291841/302	CABLE, ASSEMBLY, POWER	1
4	PAOZZ	6150-01-256-6301	97403	13226E7019	CABLE, PIGTAIL, 60 A	1
<b>END OF FIGURE</b>						



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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
20 AMP TWIST LOCK RECEPTACLE AND CABLE  
REPAIR PARTS LIST**

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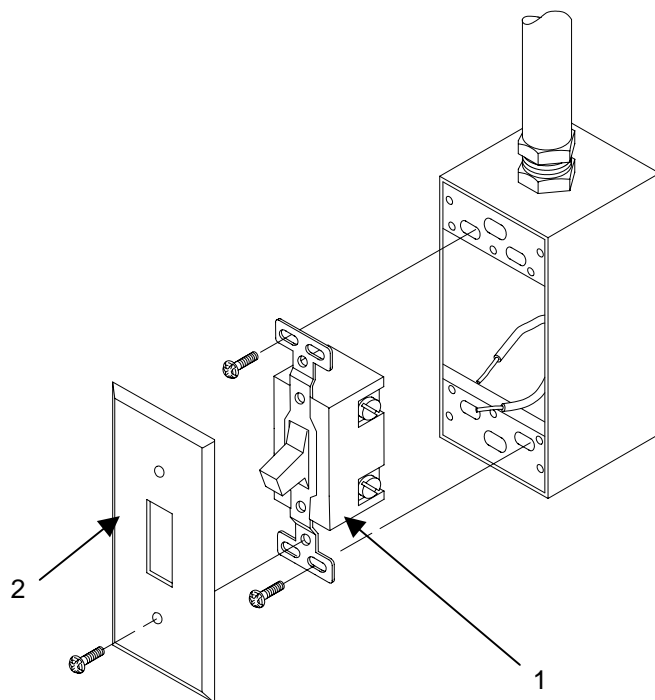
**Figure 7. 20 Amp Twist Lock Receptacle And Cable**



(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01010304 20 AMP 120/208 VOLT 3 PHASE RECEPTACLE	
					GROUP 01010305 20 AMP 120 VOLT TWIST LOCK RECEPTACLE FIG. 7 20 AMP TWIST LOCK RECEPTACLE AND CABLE	
1	PAFZZ	5935-00-515-6938	74545	HBL2516	FLANGED RECEPTACLE, 20A, 120/208V, 3 PH	1
2	PAFZZ	5935-00-299-8036	74545	HBL2316	FLANGED RECEPTACLE, 20A, 125V	1
3	PAFZZ	5975-01-242-6428	74545	WP-2	.PLATE, WALL, ELECTRICAL	2
4	XDOZZ		81337	6-1-0557	CABLE ASSEMBLY, POWER, ELECTRICAL, BRANCHED, 20 A UOC: FRU	1
4	PAFZZ	6150-01-214-0135	81337	6-1-8222	CABLE ASSEMBLY, POWER, 20 A UOC: FSK	1
<b>END OF FIGURE</b>						



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
EXHAUST FAN SWITCH/LIGHT SWITCH  
REPAIR PARTS LIST**

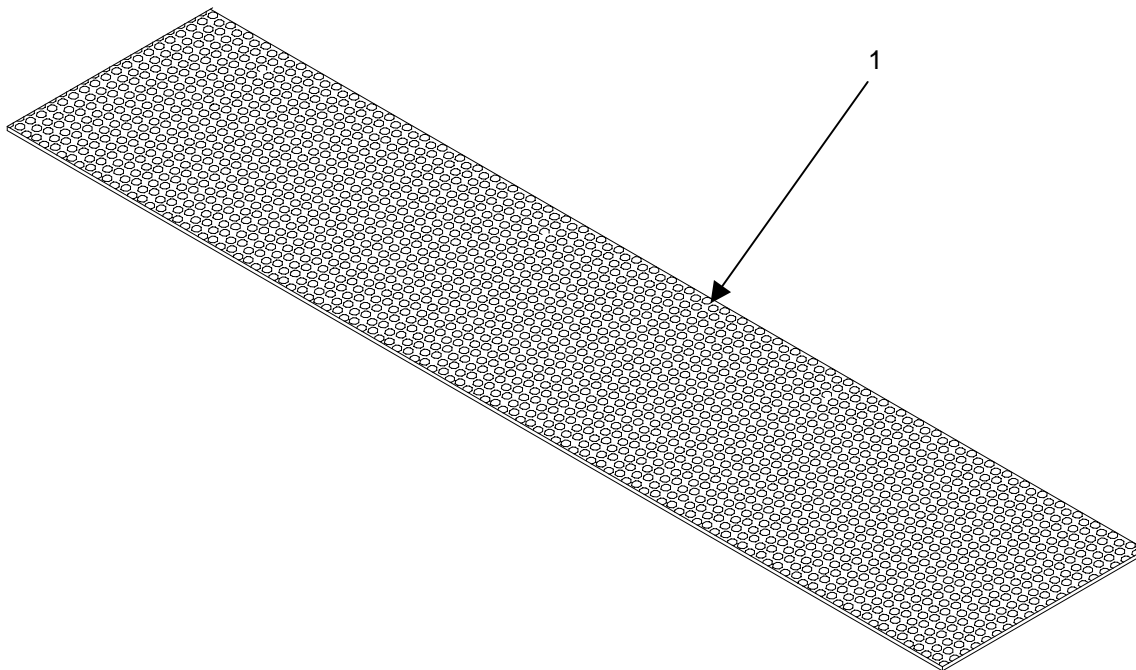


**Figure 8. Switch**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 010104 EXHAUST FAN SWITCH GROUP 010105 LIGHT SWITCH FIG. 8 SWITCH	
1	XDFZZ		9C264	CS1201	SWITCH, TOGGLE	2
2	XDOZZ		74545	5Z992	.WALL PLATE	2
					<b>END OF FIGURE</b>	



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
FLOOR MAT  
REPAIR PARTS LIST**

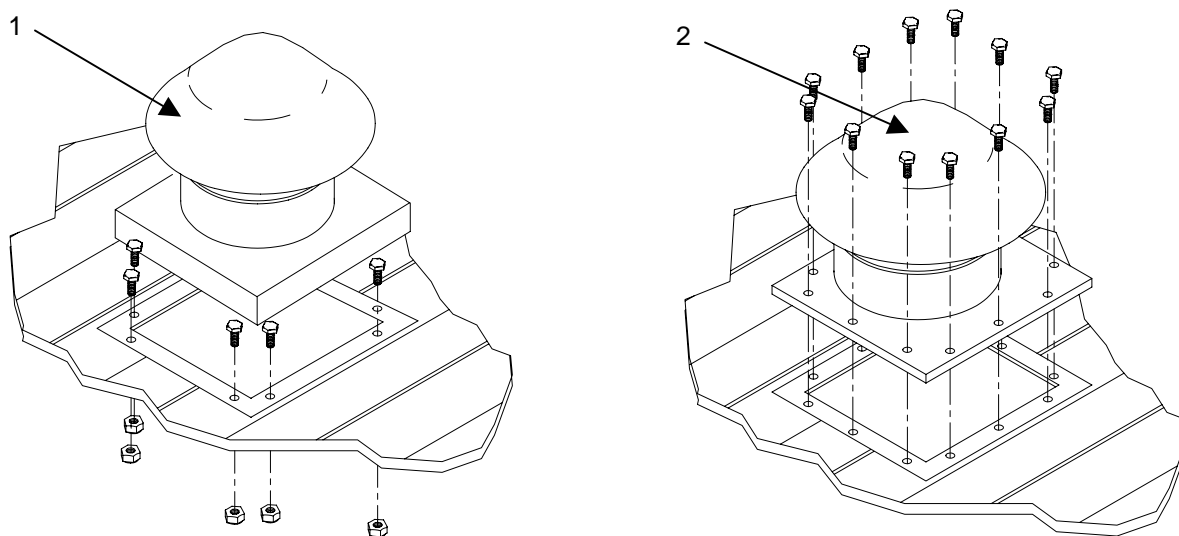


**Figure 9. Floor Mat**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	XDOZZ		IM360		GROUP 0102 FLOOR MAT FIG. 9 FLOOR MAT MAT, FLOOR, CUSTOM, 18FT X 2FT	1
<b>END OF FIGURE</b>						



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
EXHAUST FAN ASSEMBLY  
REPAIR PARTS LIST**



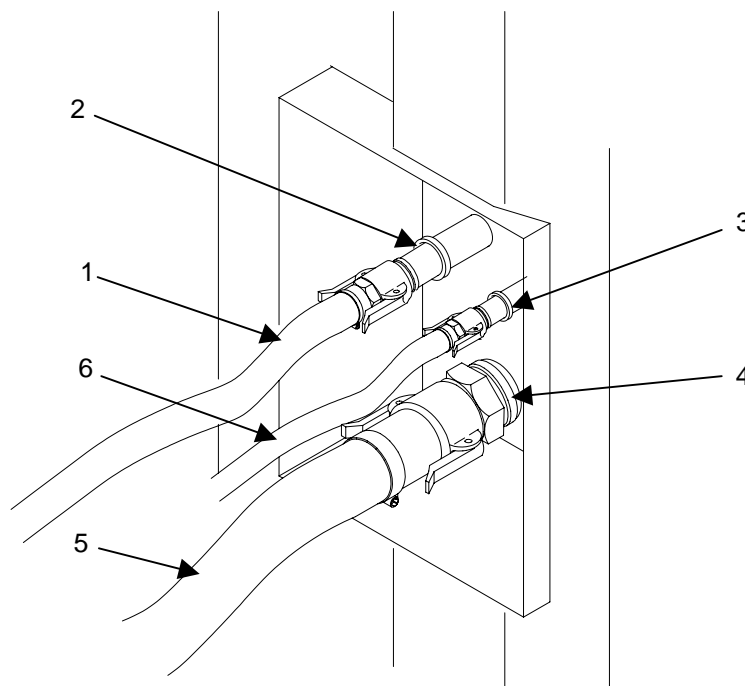
**Figure 10. Exhaust Fan Assembly**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0103 EXHAUST FAN ASSEMBLY FIG. 10 EXHAUST FAN ASSEMBLY	
1	XDFZZ		13584	DRX 11A	EXHAUST FAN UOC: FRU	1
2	XDFZZ		03939	135C10D	EXHAUST FAN UOC: FSK	1
					<b>END OF FIGURE</b>	





**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
PLUMBING  
REPAIR PARTS LIST**

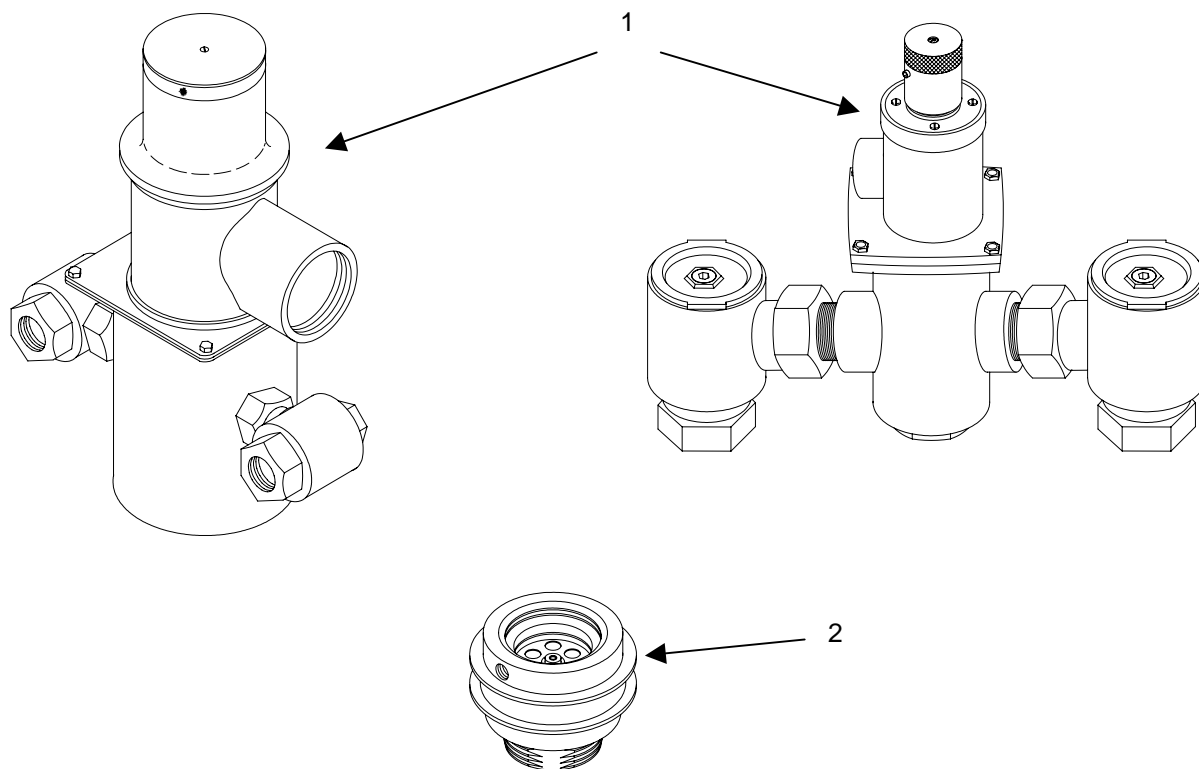


**Figure 11. Water Service And External Connector Fittings**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0104 PLUMBING FIG. 11 WATER SERVICE AND EXTERNAL CONNECTOR FITTINGS						
1	XDOZZ		81337	9-1-0633-1	HOSE	1
2	PAOZZ	4730-00-491-0030	58536	AA59236III23	.COUPLING, HALF, QUICK DISCONNECT	1
3	XDOZZ		58536	AA59236III22	.COUPLING, HALF, QUICK DISCONNECT	1
4	PAOZZ	4730-00-491-0040	58536	AA59236III26	.COUPLING, HALF, QUICK DISCONNECT	1
5	XDOZZ		81337	9-1-0633-3	HOSE	1
6	XDOZZ		81337	9-1-0633-2	HOSE	1
<b>END OF FIGURE</b>						



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
MIXER VALVE  
REPAIR PARTS LIST**

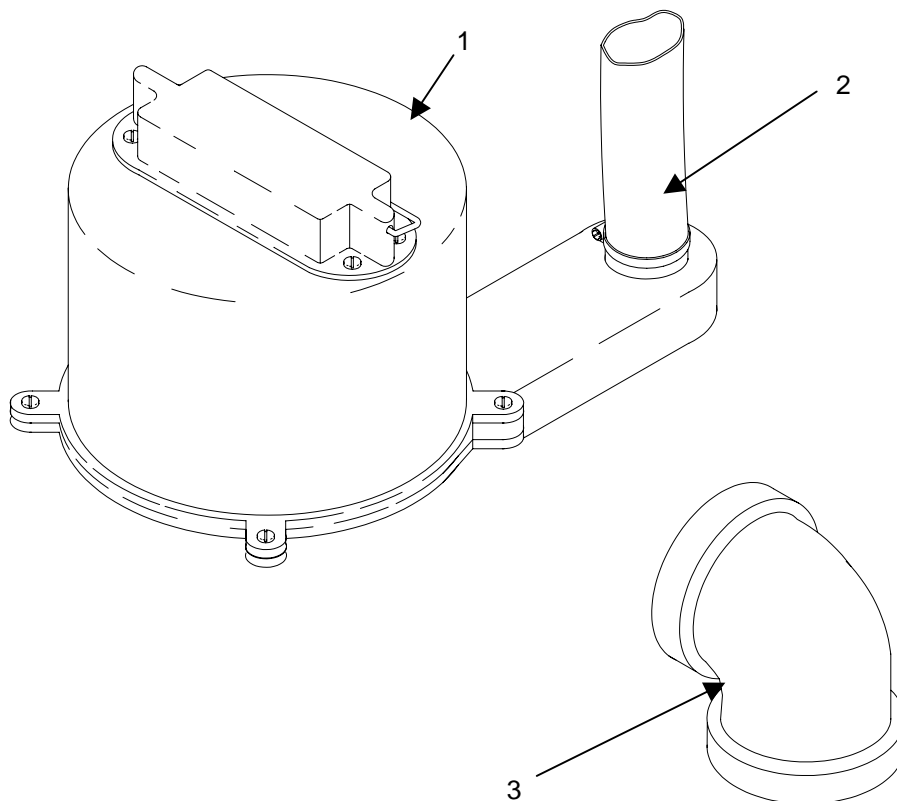


**Figure 12. Mixer Valve**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 010401 MIXER VALVE FIGURE 12 MIXER VALVE	
1	PAFZZ	4820-00-233-7928	91424	431-10-65	VALVE, REGULATING, TEMPERATURE UOC: FSK	1
	XBOZZ		91404	431-100 3/4"	VALVE, MASTER MIXING, POWERS CONTROLS (WATTS) UOC: FRU	1
2	XBOZZ		OU5N7	46512175	ADAPTER, DRIP FLANGE UOC: FRU	1
<b>END OF FIGURE</b>						



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SUMP PUMP ASSEMBLY  
REPAIR PARTS LIST**

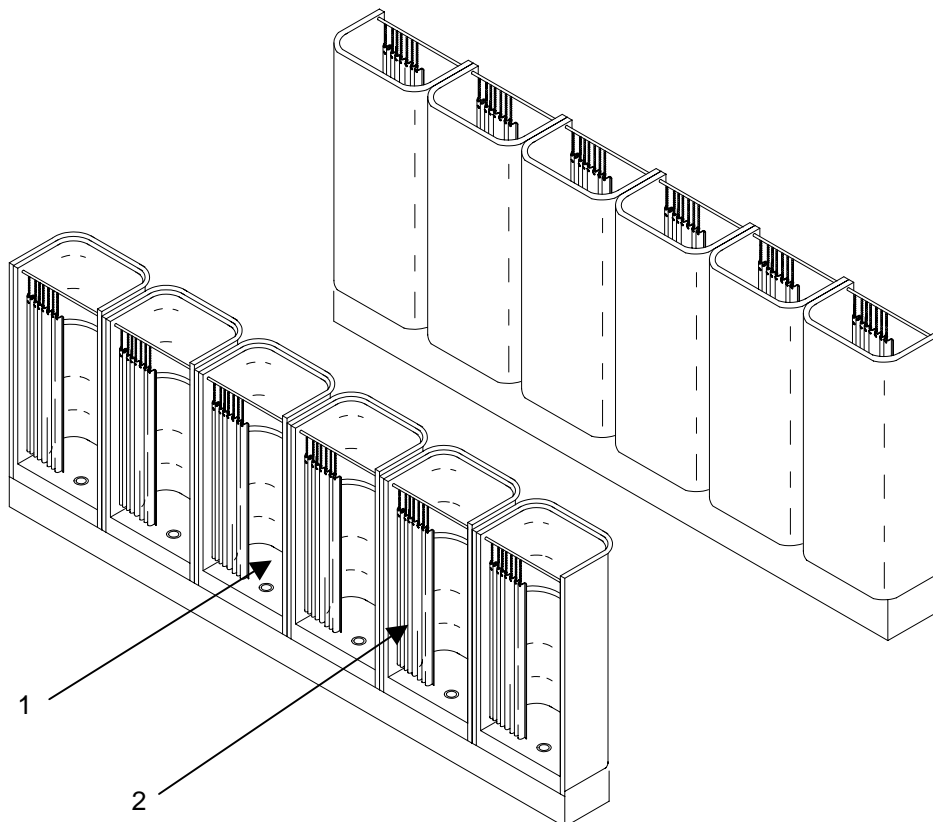


**Figure 13. Sump Pump Assembly**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 010402 SUMP PUMP ASSEMBLY FIG. 13 SUMP PUMP ASSEMBLY	
1	PAFZZ	4320-01-260-0573	3Y232	M53	PUMP UNIT, CONTRIFUGAL	1
2	PAFZZ	4730-01-481-8158	39428	44615K538	.NIPPLE, PIPE	1
3	PAFZZ	4730-01-481-5487	39428	44605K118	.ELBOW, PIPE	1
					<b>END OF FIGURE</b>	



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SHOWER ASSEMBLY  
REPAIR PARTS LIST**



**Figure 14. Shower Assembly**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 010403 SHOWER ASSEMBLY FIG. 14 SHOWER ASSEMBLY	
1	XDFZZ		3J496	S-32BO	SHOWER STALL	12
2	PACZZ	7230-00-247-1280	80244	A-A-2398 TY1SZ3	.CURTAIN, SHOWER	12
<b>END OF FIGURE</b>						







**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SHOWER HEAD  
REPAIR PARTS LIST**

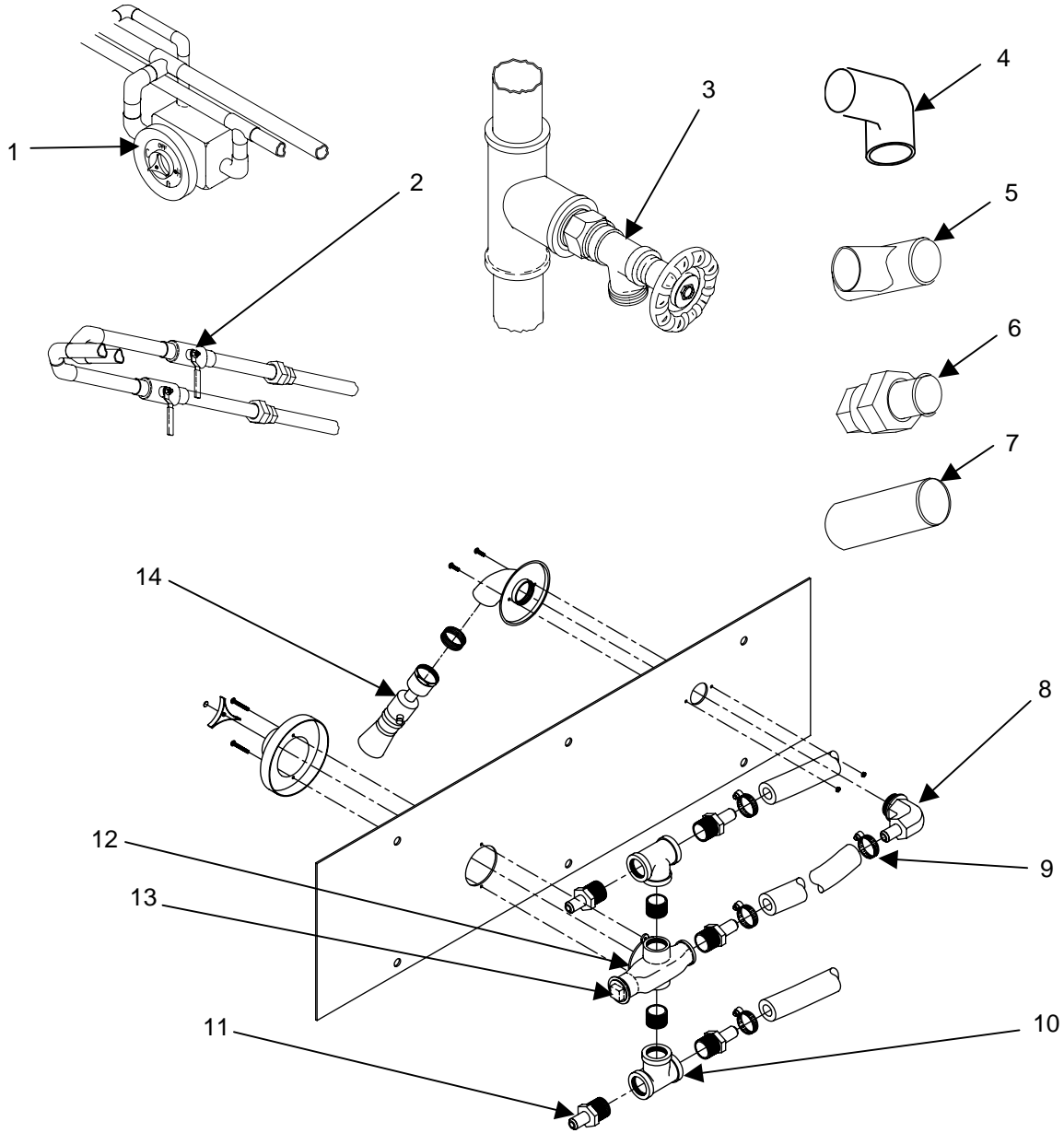


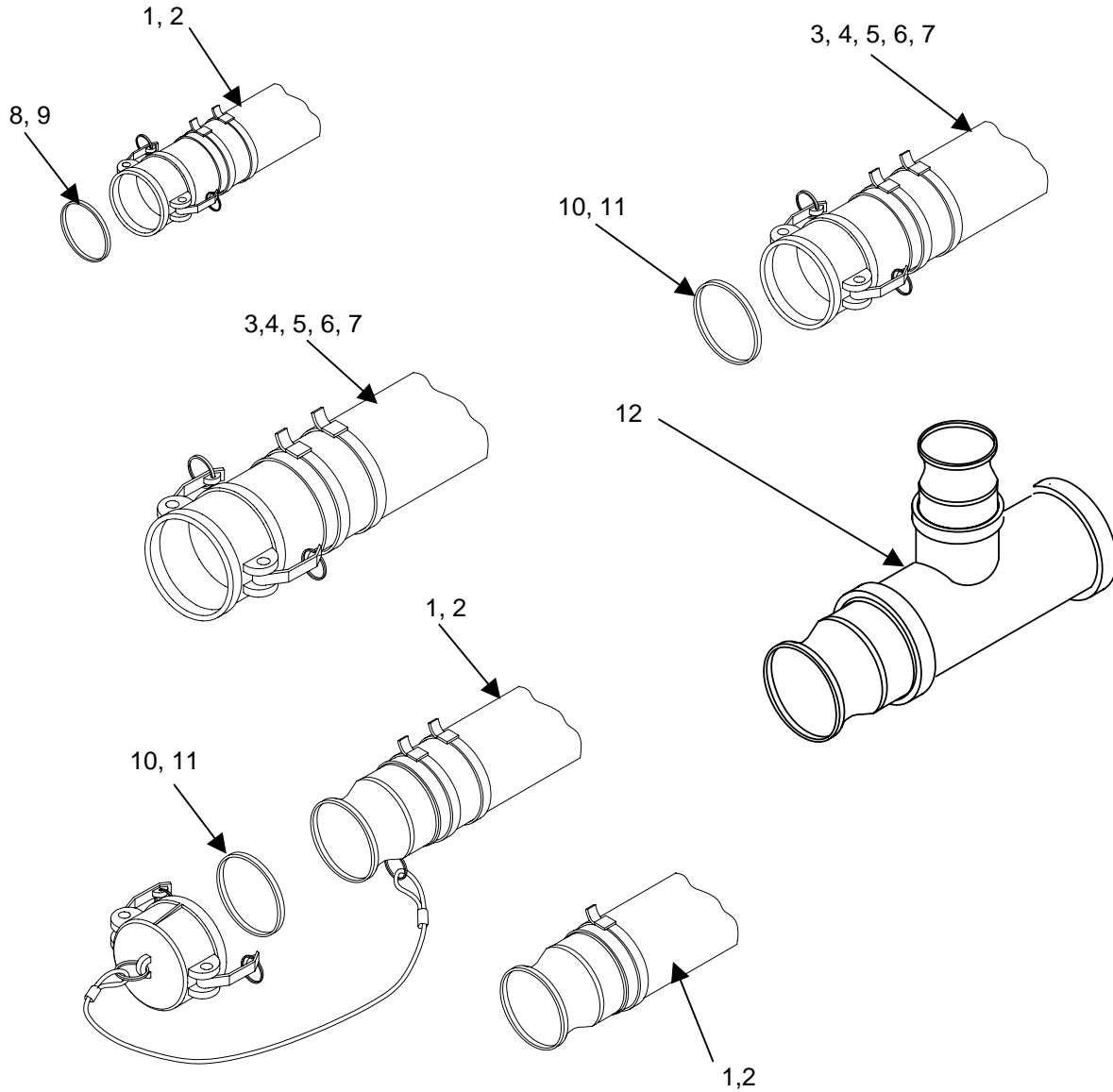
Figure 15. Shower Box Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 010404 SHOWER HEAD FIG. 15 SHOWER BOX ASSEMBLY	
1	PAFZZ	4820-01-469-6184	02977	S-96-1	VALVE, MIXING, SHOWER	12
2	XDFZZ		3J496	BA475B	¾ IN SHUTOFF VALVES (Solder Ends)	4
3	PAFZZ	4820-00-115-3942	14448	710-3/4	COCK, DRAIN, VALVE	1
4	PAFZZ	4730-01-245-1492	39428	5520K61	ELBOW TUBE, 90°, ½ IN COPPER	68
5	PAFZZ	4730-01-249-2009	39428	5520K71	TEE TUBE, ½ IN COPPER	24
6	PAFZZ	4730-01-248-3847	39428	5520K91	UNION, ½ IN COPPER	4
7	PAFZZ	4730-01-256-3594	39428	5520K31	COUPLING PIPE, ½ IN COPPER	2
8	XDFZZ		39428	5346K36	HOSE NIPPLE, ½ IN NPT, 90°	3
9	PAFZZ	4730-00-278-2523	39428	5416K15	HOSE CLAMP, WORM DRIVE	18
10	XDFZZ		39428	50785K324	TEE, BRASS, ½ IN F X ½ IN M X ½ IN F NPTF	3
11	PAFZZ	4730-01-226-3302	39428	5346K25	.ADAPTER, STRAIGHT	15
12	PAFZZ	4820-01-419-6184	02977	S-96-1-IPS	VALVE, MIXING	12
13	XDFZZ		2V507	9171K49	.PLUG, BRASS, ½ IN	3
14	PAFZZ	4570-00-202-7703	80244	A-A-240 TY1	SHOWER HEAD	12
<b>END OF FIGURE</b>						





**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
HOSES  
REPAIR PARTS LIST**



**Figure 16. Hoses**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 02 HOSES FIG. 16 HOSES	
1	XDFZZ		81337	9-1-0634-3	HOSE ASSEMBLY, ¾ IN HOSE 6 FT, 3 IN M/F, QD UOC: FRU	2
1	XDFZZ		81337	9-1-0634-3	HOSE ASSEMBLY, ¾ IN HOSE 6 FT, 3 IN M/F, QD UOC: FSK	4
2	XDFZZ		81337	9-1-0634-4	HOSE ASSEMBLY, ¾ IN HOSE 2 FT, 3 IN M/F, QD UOC: FRU	2
2	XDFZZ		81337	9-1-0634-4	HOSE ASSEMBLY, ¾ IN HOSE 2 FT, 3 IN M/F, QD UOC: FSK	4
3	XDFZZ		81337	9-1-0633-9	HOSE ASSEMBLY, 1 ½ IN DRAIN HOSE 6 FT F/F, QD UOC: FRU	1
3	XDFZZ		81337	9-1-0633-9	HOSE ASSEMBLY, 1 ½ IN DRAIN HOSE 6 FT F/F, QD UOC: FSK	2
4	XDFZZ		81337	9-1-0633-10	HOSE ASSEMBLY, 1 ½ IN DRAIN HOSE 2 FT F/F, QD UOC: FRU	1
4	XDFZZ		81337	9-1-0633-10	HOSE ASSEMBLY, 1 ½ IN DRAIN HOSE 2 FT F/F, QD UOC: FSK	2
5	XDFZZ		81337	9-1-0633-4	HOSE ASSEMBLY, 1 ½ IN HOSE 5 FT F/F, QD UOC: FRU	1
6	XDFZZ		81337	9-1-0633-8	HOSE ASSEMBLY, 1 ½ IN HOSE 10 FT F/F, QD UOC: FSK	1
7	XDFZZ		81337	9-1-0633-5	HOSE ASSEMBLY, 1 ½ IN HOSE 20 FT F/F, QD UOC: FRU	1
8	XDFZZ		96906	MS2727030-2	.GASKET, ¾ IN	9
9	PAOZZ	5330-01-242-2713	96906	MS27030-2	.GASKET, 1 IN	2
10	PAOZZ	5330-00-360-0595	14555	110-5	.GASKET, 1 ½ IN	6
11	PAOZZ	5330-00-612-2414	76364	66190J	.GASKET, 2 IN	2
12	XDFZZ		81337	9-1-0559	TEE ASSEMBLY, 1 ½ IN UOC: FSK	1
					<b>END OF FIGURE</b>	







**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
TEMPER AND ISO BOOTWALL  
REPAIR PARTS LIST**

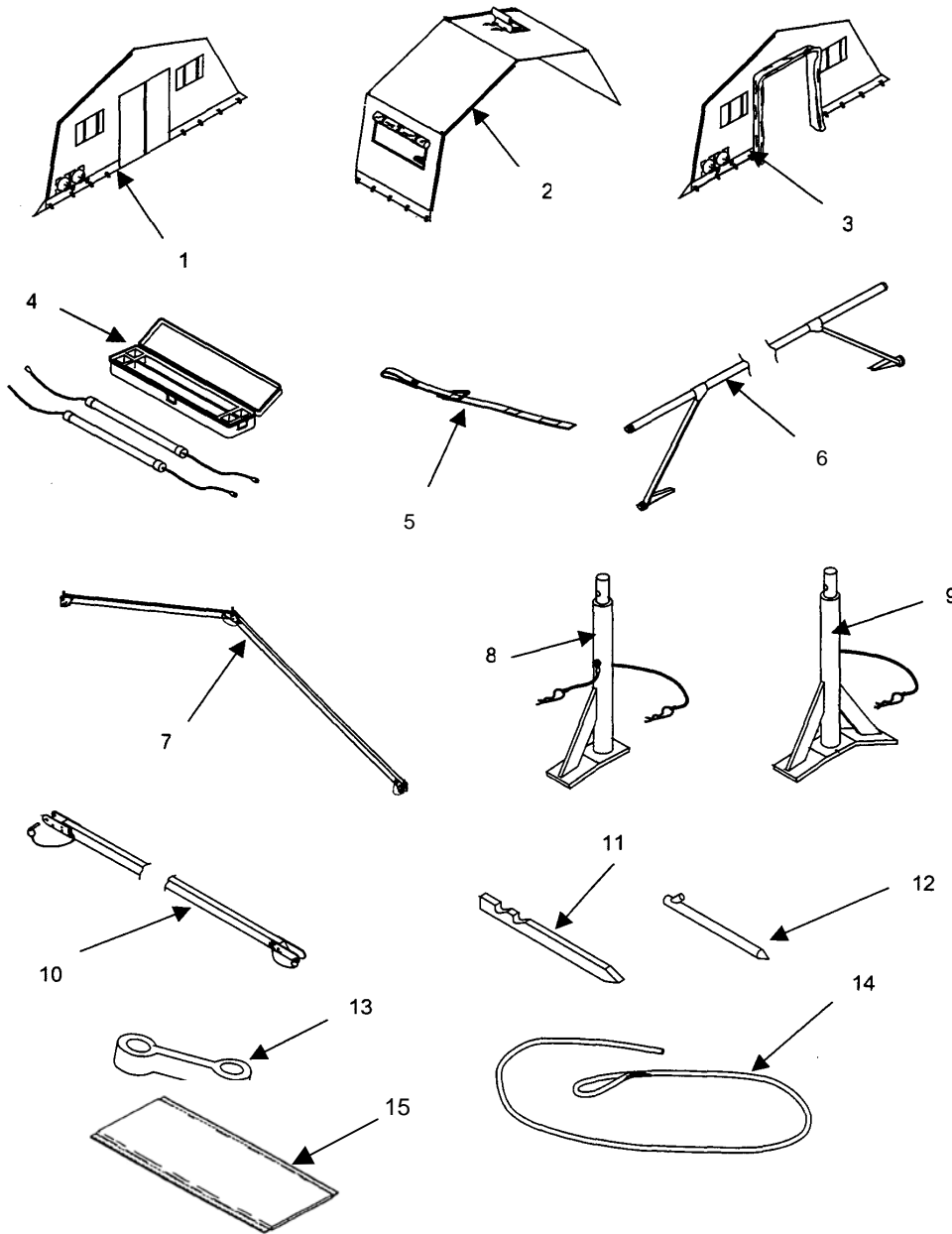


Figure 17. TEMPER and ISO Bootwall

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 04 TEMPER AND ISO BOOTWALL FIG.17 TEMPER AND ISO BOOTWALL	
1	PAFZZ	8340-01-186-3014	81337	5-4-3350-1	TENT SECTION (END)	1
2	PAFZZ	8340-01-186-3021	81337	5-4-3363-1	TENT SECTION, WINDOW UOC: FRU	4
3	XDFZZ		81337	9-1-0606	TENT SECTION, END SECTION MODIFIED	1
4	PACZZ	6230-01-465-8931	06967	F131-5004M	LIGHT SET, GENERAL ILLUMINATION UOC: FRU	1
4	PACZZ	6230-01-242-2016	17023	BR2005	LIGHT SET, GENERAL ILLUMINATION UOC: FSK	4
5	PACZZ	8465-01-220-1419	81337	5-4-4005	STRAP, WEBBING	4
6	PAFZZ	8340-01-186-3005	81337	5-4-3336	PURLIN, TENT UOC: FRU	20
7	PAFZZ	8340-01-240-5854	81337	5-4-4006	ARCH, TENT FRAME	5
8	PAFZZ	8340-01-186-3009	81337	5-4-3341	EAVE EXTENDER, TENT	10
9	PAFZZ	8340-01-186-3008	81337	5-4-3340	RIDGE EXTENDER, TENT	5
10	PAFZZ	8340-01-186-3004	81337	5-4-3335	HEADER, TENT FRAME	5
11	PACZZ	8340-00-261-9751	81337	5-4-1	PIN, TENT, 24" (WOOD)	18
12	PACZZ	8340-00-823-7451	81337	5-4-791	PIN, TENT, 12" (STEEL)	52
13	PACZZ	8340-00-205-2759	70167	23B280-45-1	SLIP, TENT LINE	16
14	PACZZ	8340-00-252-2273	81349	MIL-L-1709	LINE, TENT	16
15	PACZZ	8340-01-186-3025	81337	5-4-3369	FLOOR, TENT	4
					<b>END OF FIGURE</b>	

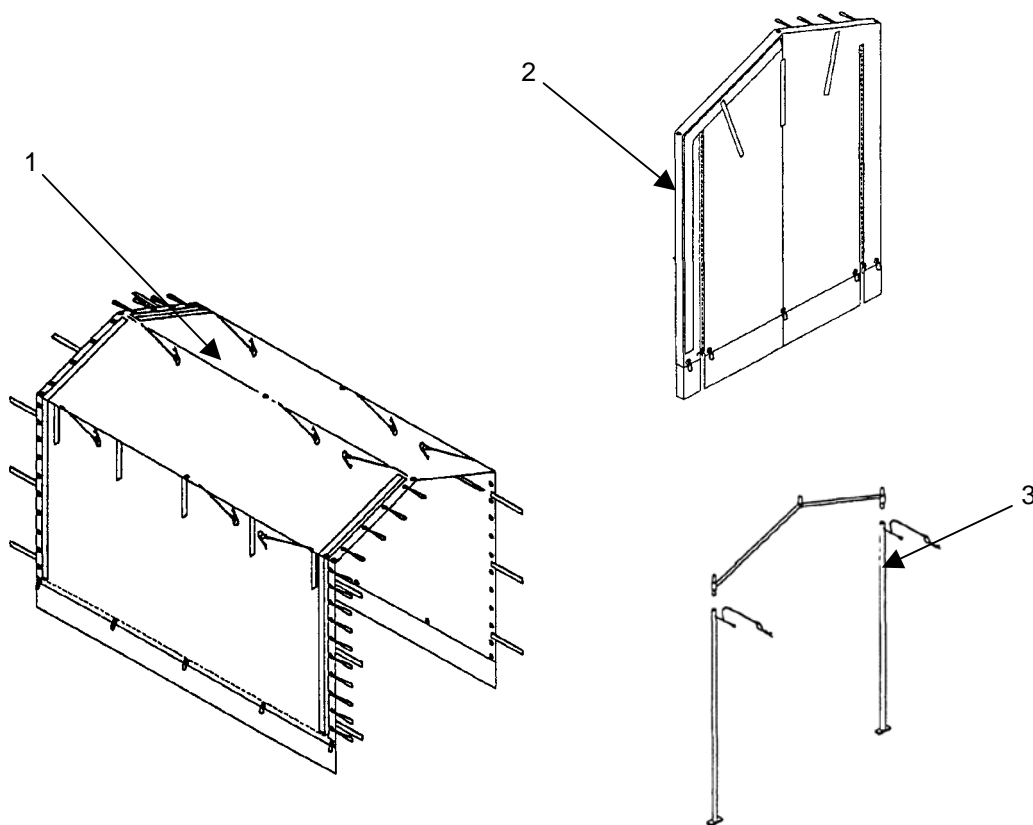
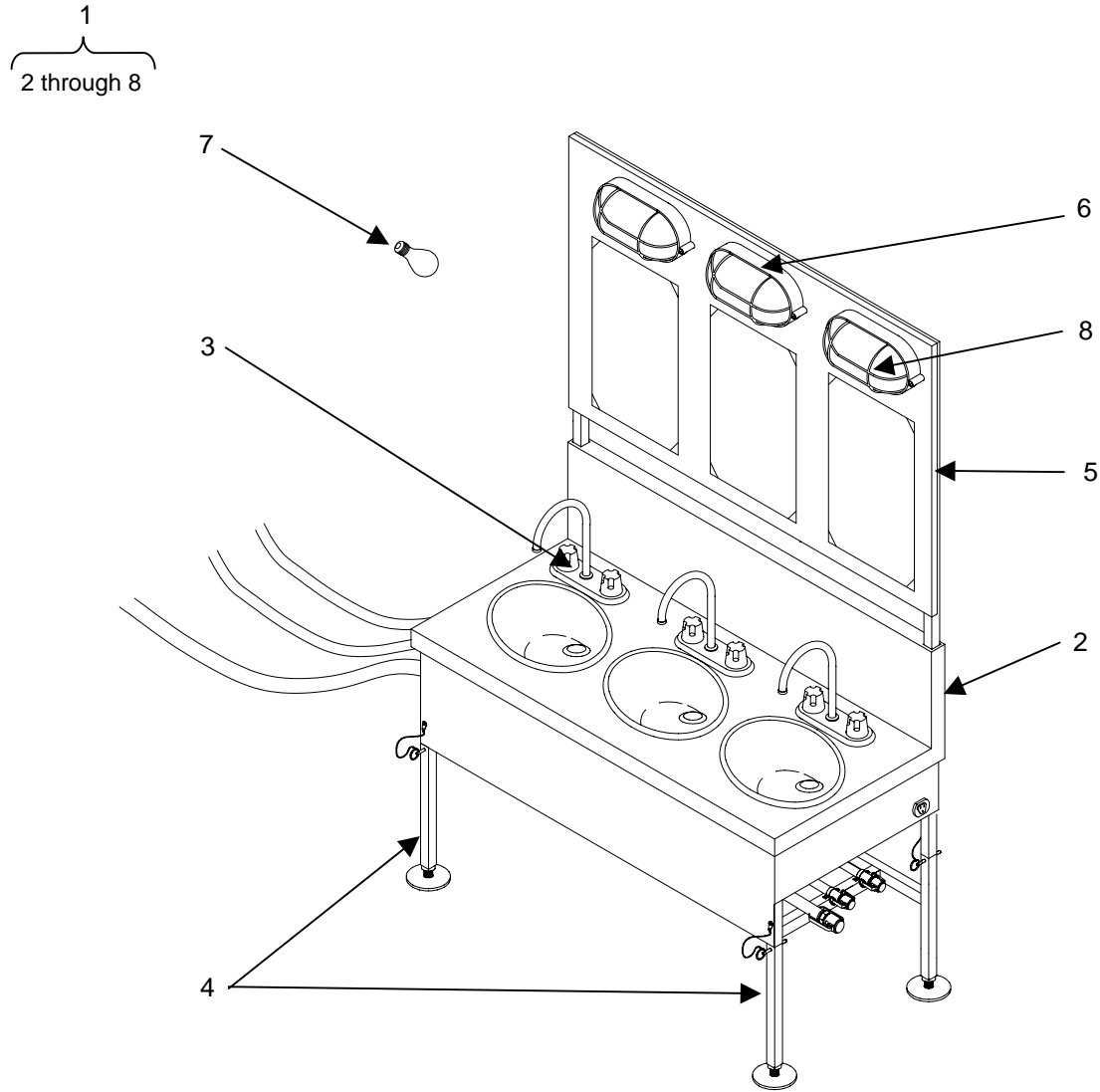


Figure 18. Vestibule

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 04 TEMPER AND ISO BOOTWALL FIG. 18 VESTIBULE	
1	PAFZZ	8340-01-186-3026	81337	5-4-3370-1	VESTIBULE, TENT	1
2	PAFZZ	8340-01-440-8901	81337	5-4-3371	.VESTIBULE DOOR	1
3	PAFZZ	8340-01-186-3010	81337	5-4-3343	.FRAME, SECTION, TENT	3
<b>END OF FIGURE</b>						



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SHAVE STAND ASSEMBLY  
REPAIR PARTS LIST**



**Figure 19. Shave Stand Assembly**

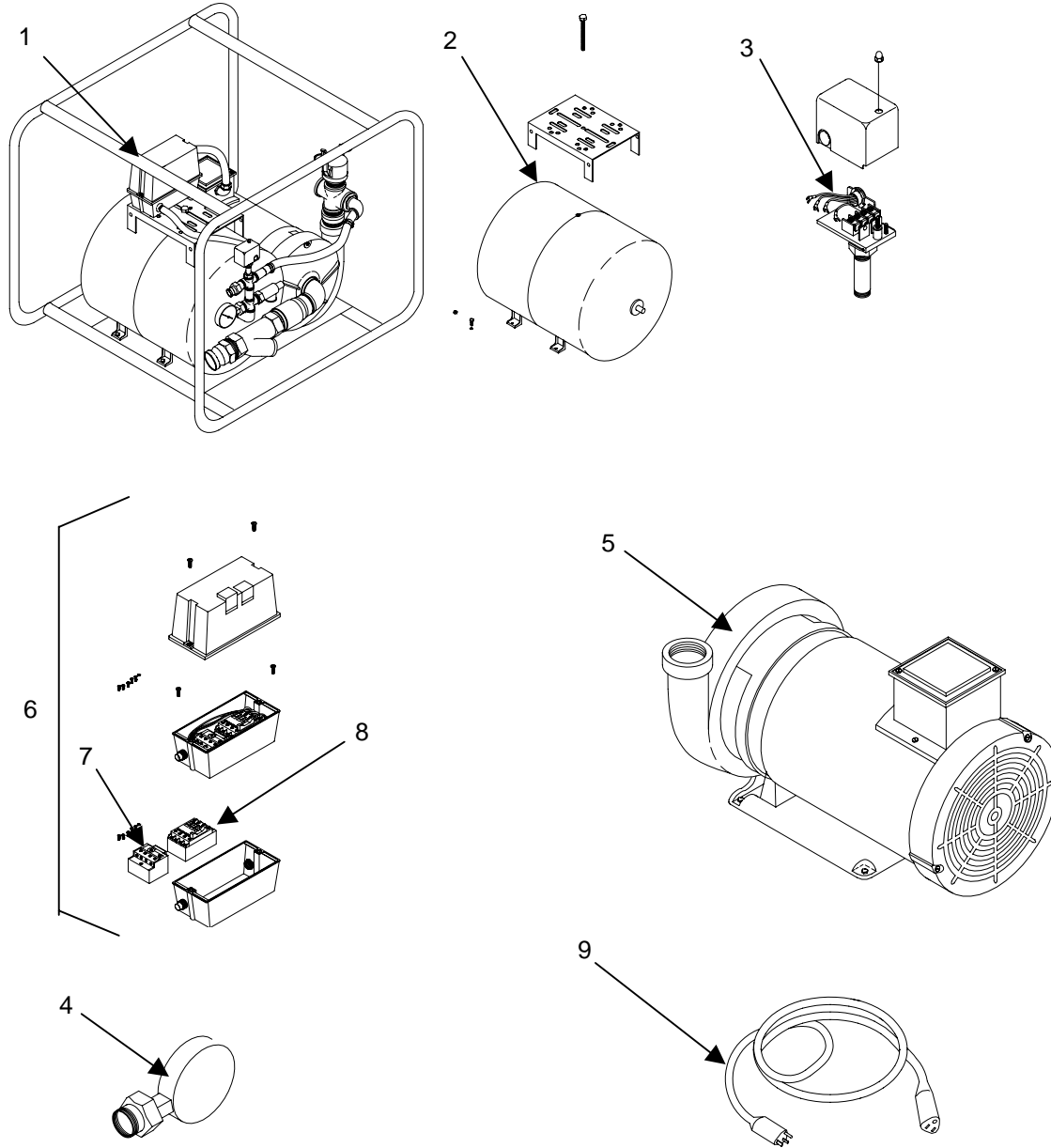
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 05 SHAVE STAND ASSEMBLY FIG. 19 SHAVE STAND ASSEMBLY	
1	XDFZZ		81337	9-1-0616	SHAVE STAND	2
2	XDFZZ		81337	9-1-0596	.BASIN ASSEMBLY, SHAVE STAND UOC: FRU	2
3	XDFZZ		02977	5-60-G-H	FAUCET	6
4	XDFZZ		81337	9-1-0597	.LEG ASSEMBLY, SHAVE STAND UOC: FRU	8
5	XDFZZ		81337	9-1-0595	MIRROR & LIGHT ASSEMBLY UOC: FRU	2
6	XDFZZ		80704	BO1-02	.LIGHT FIXTURES UOC: FRU	6
7	XDOZZ		2G295	5V728	..INCANDESCENT LIGHT BULB 100 WATT UOC: FRU	6
8	XDOZZ		80704	BOG-02	.GLOBE GUARD	8
					<b>END OF FIGURE</b>	







**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
FRESH WATER PUMP ASSEMBLY  
REPAIR PARTS LIST**

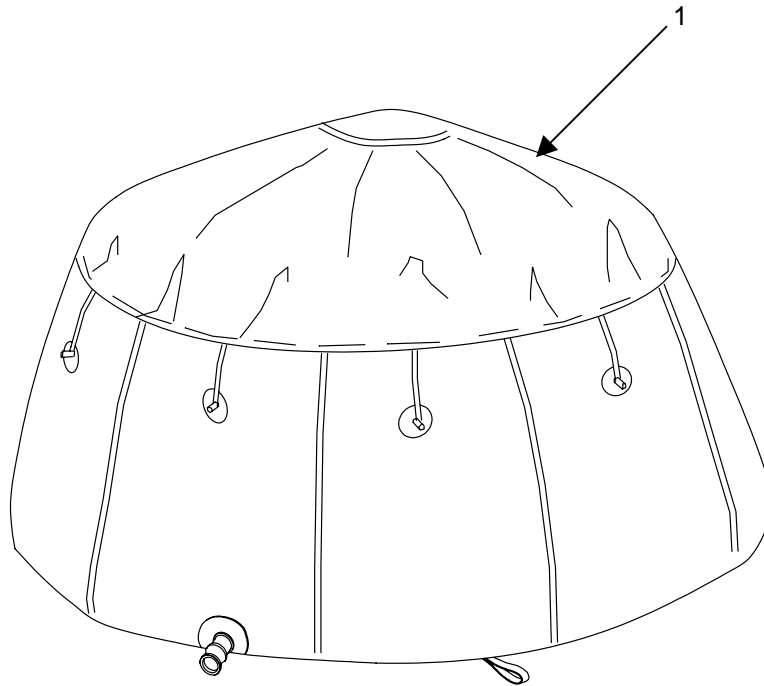


**Figure 20. Fresh Water Pump Assembly**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 06 FRESH WATER PUMP ASSEMBLY FIG. 20 FRESH WATER PUMP ASSEMBLY	
1	XDFZZ		81337	5-13-6761	PUMP ASSEMBLY	1
2	XDFZZ		1LXT3	4P833A	PRESSURE TANK	1
3	XDFZZ		K1425	9013GSG2J99	PRESSURE SWITCH	1
4	PAOZZ	6685-00-111-1123	61349	P505A	PRESSURE GAUGE	1
5	XDFZZ		00705	AVC56T34F5325	PUMP	1
6	XDFZZ		1WYC9	JC0906P1G-J/JL1N	MOTOR STARTER, CONTACTOR, AND OVERLOAD RELAY	1
7	XDFZZ		1WYC9	JL1N	OVERLOAD RELAY	1
8	XDFZZ		0ME39	JC0906P1G	CONTACTOR	1
9	PAOZZ	6510-01-131-4882	81337	9-1-0557	EXTENSION CORD	2
					<b>END OF FIGURE</b>	



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
WATER TANK  
REPAIR PARTS LIST**



**Figure 21. Water Tank**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PACZZ	5430-01-170-6984	81349	MIL-T-53048	GROUP 07 WATER TANK FIG. 21 WATER TANK TANK, FABRIC, COLLAPSIBLE, 3,000 GALLON WATER  END OF FIGURE	1



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
BULK MATERIALS LIST**



**Figure. BULK Material**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 08 BULK MATERIAL FIG. BULK	
1	XDOZZ		0ABC1	K3150RF-8	TUBING, FLEXIBLE, BRAIDED, ½ IN ID UOC: FRU	RO
2	XDOZZ		0ABC1	K3150RF-12	TUBING, FLEXIBLE, FRAIDED, ¾-IN ID	RO
<b>END OF FIGURE</b>						





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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
SPECIAL TOOLS LIST**

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**SPECIAL TOOLS LIST**

No special tools are required.



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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
NATIONAL STOCK NUMBER (NSN) INDEX**

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<b>STOCK NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>	<b>STOCK NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>
6685 -00-111-1123	20	4	8340 -01-186-3009	17	8
5935 -00-114-8707	5	2	8340 -01-186-3010	18	3
5935 -00-114-8707	6	2	8340 -01-186-3014	17	1
5935 -00-114-8708	6	1	8340 -01-186-3021	17	2
4820 -00-115-3942	15	3	8340 -01-186-3025	17	15
4570 -00-202-7703	15	14	8340 -01-186-3026	18	1
8340 -00-205-2759	17	13	6150 -01-214-0135	7	4
4820 -00-233-7928	12	1	8465 -01-220-1419	17	5
6250 -00-242-0979	2	3	6150 -01-220-5588	6	3
7230 -00-247-1280	14	2	4730 -01-226-3302	15	11
8340 -00-252-2273	17	14	8340 -01-240-5854	17	7
8340 -00-261-9751	17	11	6230 -01-242-2016	17	4
4730 -00-278-2523	15	9	5330 -01-242-2713	16	9
5935 -00-299-8036	7	2	5975 -01-242-6428	7	3
5330 -00-360-0595	16	10	4730 -01-245-1492	15	4
4730 -00-491-0030	11	2	4730 -01-248-3847	15	6
4730 -00-491-0040	11	4	4730 -01-249-2009	15	5
5935 -00-515-6938	7	1	4730 -01-256-3594	15	7
5330 -00-612-2414	16	11	6150 -01-256-6301	6	4
5925 -00-728-1289	4	3	4320 -01-260-0573	13	1
5925 -00-728-1968	4	2	6240 -01-344-9537	2	4
8340 -00-823-7451	17	12	4820 -01-419-6184	15	12
6250 -00-892-5248	2	3	8340 -01-440-8901	18	2
5925 -00-936-3933	4	5	6230 -01-465-8931	17	4
5925 -00-967-9874	4	4	4820 -01-469-6184	15	1
6510 -01-131-4882	20	9	4730 -01-481-5487	13	3
5430 -01-170-6984	21	1	4730 -01-481-8158	13	2
8340 -01-186-3004	17	10	8145 -01-488-6545	1	1
8340 -01-186-3005	17	6	8145 -01-491-2678	1	1
8340 -01-186-3008	17	9			



**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
PART NUMBER (PN) INDEX**

<b>PART NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>	<b>PART NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>
431-10-65	12	1	5V728	19	7
110-5	16	10	BOG-02	19	8
MZ91841/302	6	3	9-1-0606	17	3
135C10D	10	2	9-1-0616	19	1
DRX11A	10	1	9-1-0633-1	11	1
5-60-G-H	19	3	9-1-0633-10	16	4
415-993	9	1	9-1-0633-2	11	6
44605K118	13	3	9-1-0633-3	11	5
44615K538	13	2	9-1-0633-4	16	5
BA475B	15	2	9-1-0633-5	16	7
4P833A	20	2	9-1-0633-8	16	6
50785K324	15	10	9-1-0633-9	16	3
5-13-6761	20	1	9-1-0634-3	16	1
S-32BO	14	1	9-1-0634-4	16	2
5346K25	15	11	13226E7019	6	4
5346K36	15	8	5-96-1-IPS	15	12
5-4-1	17	11	A-A-2398 TY1SZ3	14	2
5416K15	15	9	A-A-240 TY1	15	14
5-4-3335	17	10	AA59236III22	11	3
5-4-3336	17	6	AA59236III23	11	2
5-4-3340	17	9	AA59236III26	11	4
5-4-3341	17	8	A-A-59272 Type I	1	1
5-4-3343	18	3	9-1-0597	19	4
5-4-3350-1	17	1	9-1-0595	19	5
5-4-3363-1	17	2	C1524T2A	3	1
5-4-3369	17	15	23B280-45-1	17	13
5-4-3370-1	18	1	3GY13	2	1
5-4-3371	18	2	P505A	20	4
5-4-4005	17	5	U07531	2	2
5-4-4006	17	7	F131-5004M	17	4
5-4-791	17	12	F32T8SP41/RS	2	4
5520K31	15	7	3V477	2	4
5520K61	15	4	GF5362	5	1
5520K71	15	5	CS1Z01	8	1
5520K91	15	6	HBL2316	7	2
6-1-0557	7	4	HBL2516	7	1
66190J	16	11	JC0906P1G	20	9
710-3/4	15	3	JC0906P1G-J/JL1N	20	7
K3150RF-12	BULK	2	JL1N	20	8
8G1024WF	2	3	K3150RF-8	BULK	1
9013GSG2J99	20	3	9-1-0596	19	2
AVC56T34F5325	20	5	M53-D	13	1
9-1-0559	16	12	MH20WPSE2	4	1
6-1-8222	7	4	MIL-T-53048	21	1
BO1-02	19	6	MIL-L-1709	17	14

Table 1. Part Number (PN) Index - continued

<b>PART NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>	<b>PART NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>
MS27030-2	16	9	QOB360	4	5
MS2727030-2	16	8	S-96-1	15	1
MS90558C32412P	6	1	9171K49	15	13
MS90564-4C	6	2	VT2 240DR-120VLE3-WL-U	2	1
MS90564-4C	5	2	WP2	7	3
P505A	20	6	A-A-59272 TYPE II	1	1
QOB120	4	3	ZW769	2	3
QOB220	4	4	5Z992	8	2
6TG	4	2			

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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LIST**

---

**INTRODUCTION****Scope**

This work package lists COEI and BII for the Containerized Shower and Shower, Enclosed Unit, System to help you inventory items for safe and efficient operation of the equipment.

**General**

The COEI and BII information is divided into the following lists:

Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements. These items are part of the Containerized Shower and Shower, Enclosed Unit, System. As part of the end item, these must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Basic Issue Items (BII). These essential items are required to place the Containerized Shower and Shower, Enclosed Unit, System in operation, operate it, and do emergency repairs. Although shipped separately packaged, BII must be with the shower during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

**Explanation of Columns in the COEI List and BII List.**

Column (1) -- Illus. Number. Gives you the number of the item illustrated.

Column (2) -- National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (3) -- Description, CAGEC, and Part Number. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the CAGEC (commercial and Government entity code) (in parentheses) and the part number.

Column (4) -- Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

<u>Code</u>	<u>Used On</u>
FRU	Containerized Shower
FSK	Shower, Enclosed Unit, System

Column (5) -- Unit of Measure (U/M). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) -- Qty. Rqr. Indicates the quantity required.

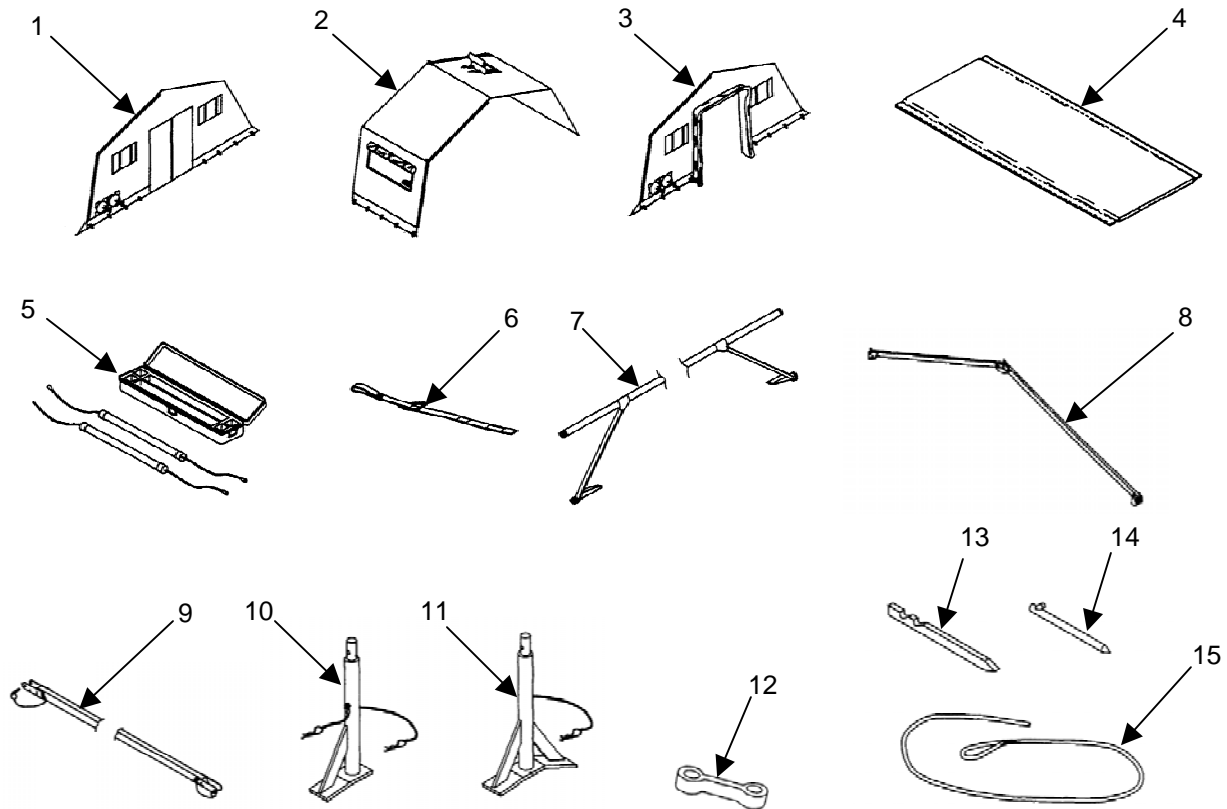


Table 1. Components of End Item List.

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
1	8340-01-186-3014	TEMPER, END SECTION, ISO, 5-4-3350-1 (81337)		EA	1
2	8340-01-186-3021	TEMPER, WINDOW SECTION, ISO, 5-4-3363-1 (81337)	FRU	EA	2
3		TEMPER, END SECTION, MODIFIED, ISO, 9-1-0606 (81337)		EA	1
4	8340-01-186-3025	FLOOR, INSULATED, ISO, 5-4-3369 (81337)	FRU	EA	2
5	6230-01-465-8931	LIGHT SET, GENERAL ILLUMINATION, ISO, F131-5004M (06967)	FRU	EA	1
6	8465-01-220-1419	STRAP, LIGHT SUPPORT ASSEMBLY, TYPE I, ISO, 5-4-4005 (81337)	FRU	EA	2
7	8340-01-186-3005	PURLIN ASSEMBLY, ISO, 5-4-3336 (81337)	FRU	EA	10
8	8340-01-240-5854	ARCH ASSEMBLY, ISO, 5-4-4006 (81337)	FRU	EA	3
9	8340-01-186-3004	HEADER ASSEMBLY, ISO, 5-4-3335 (81337)	FRU	EA	3
10	8340-01-186-3009	EAVE EXTENDER, ISO, 5-4-3341 (81337)	FRU	EA	6
11	8340-01-186-3008	RIDGE EXTENDER, ISO, 5-4-3340 (81337)	FRU	EA	3
12	8340-00-205-2759	SLIP, TENT LINE, ISO, CMC 8197 (81337)	FRU	EA	8
13	8340-00-261-9751	TENT PIN, WOOD, 24", ISO, 5-4-1 (81337)	FRU	EA	10
14	8340-00-823-7451	TENT PIN, STEEL, 12", ISO, 5-4-791 (81337)	FRU	EA	26
15	8340-00-252-2273	LINE, TENT, ISO, M-L-1709 (81337)	FRU	EA	8



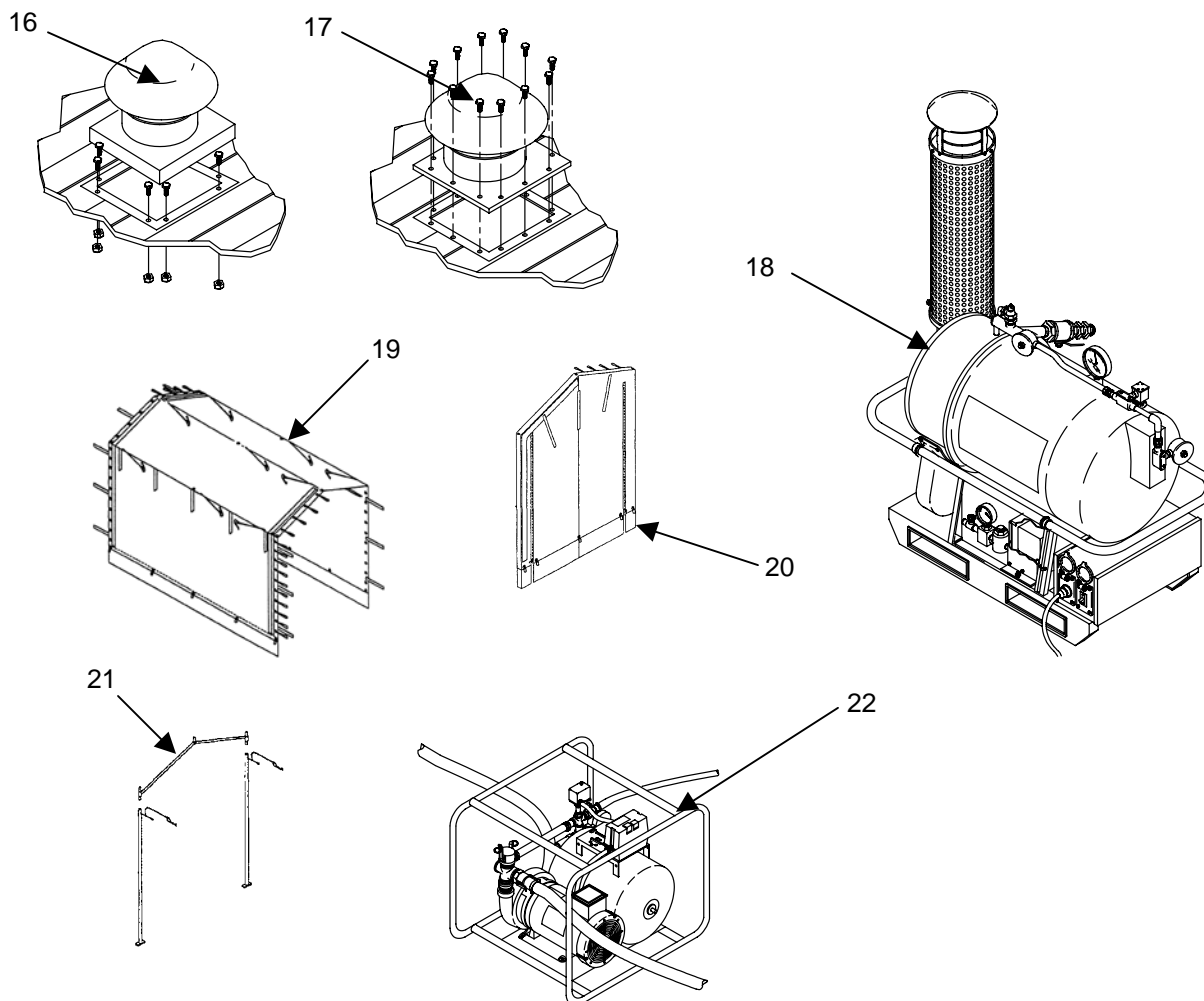


Table 1. Components of End Item List (Continued)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
16		EXHAUST FAN, ISO, 1-6-2909 (81337)	FRU	EA	1
17		EXHAUST FAN, ISO, 135C10D(03939)	FSK	EA	1
18	4520-01-162-0385	M80 WATER HEATER, ISO 6-1-6200 (81337)	FRU	EA	1
19	8340-01-186-3026	VESTIBULE, ISO, 5-4-3370-1 (81337)	FRU	EA	1
20	8340-01-440-8901	VESTIBULE DOOR, ISO, 5-4-3371-1 (81337)	FRU	EA	1
21	8340-01-186-3010	VESTIBULE FRAME ASSEMBLY, ISO, 5-4-3343 (81337)	FRU	EA	3
22		WATER PUMP, 30GPM, ISO, 5-13-6761 (81337)	FRU	EA	1

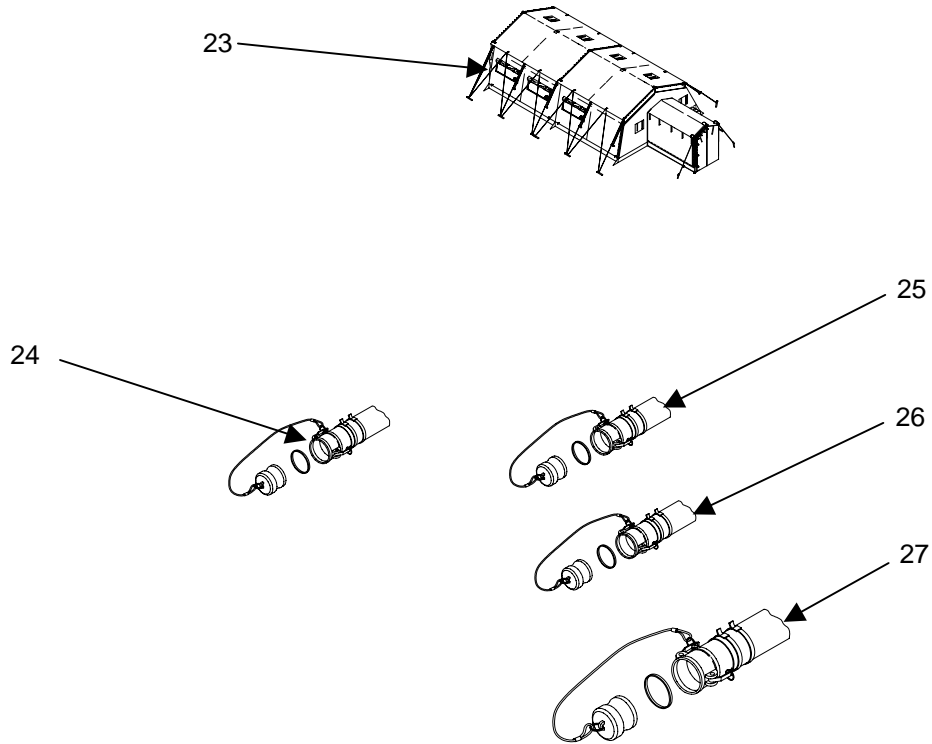


Table 1. Components of End Item List (Continued)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
23	8340-01-257-8478	TEMPER, 32 FOOT, 4B, MIL-T-44271, Type XI (81337)	FSK	EA	1
24		HOSE, 3/4 INCH, QD, F/M, 2' 3", ISO 9-1-0634-4 (81337)	FRU	EA	2
24		HOSE, 3/4 INCH, QD, F/M, 2' 3", ISO 9-1-0634-4 (81337)	FSK	EA	4
25		HOSE, 3/4 INCH, QD, F/M, 6' 3", ISO 9-1-0634-3 (81337)	FRU	EA	2
25		HOSE, 3/4 INCH, QD, F/M, 6' 3", ISO 9-1-0634-3 (81337)	FSK	EA	4
26		HOSE, 3/4 INCH, QD, F/F, 15 FOOT, ISO 9-1-0633-2 (81337)		EA	1
27		HOSE, 1 INCH, QD, F/F, 10 FOOT, ISO 9-1-0633-1 (81337)		EA	1

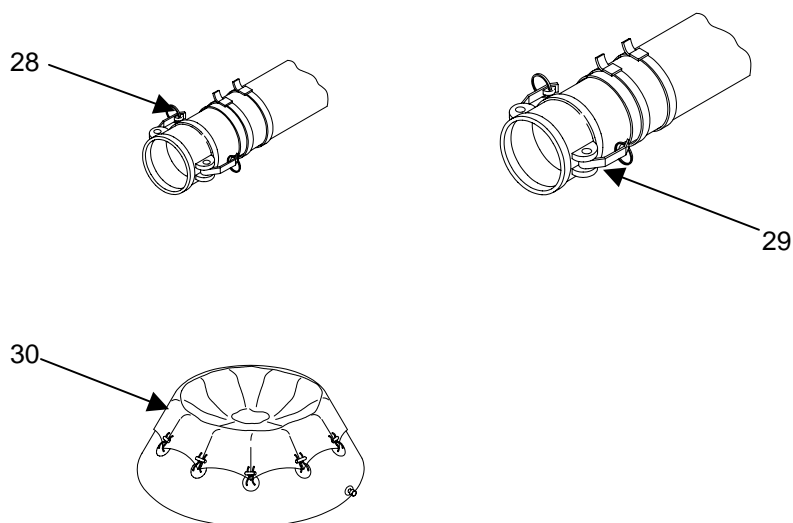


Table 1. Components of End Item List (Continued)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
28		HOSE, 1 1/2 INCH, 2' 3", F/F, ISO, 9-1-0633-10 (81337)	FRU	EA	1
28		HOSE, 1 1/2 INCH, 2' 3", F/F, 4A, 9-1-0633-10 (81337)	FSK	EA	2
28		HOSE, 1 1/2 INCH, 5 FOOT, F/F, ISO, 9-1-0633-4 (81337)	FRU	EA	1
28		HOSE, 1 1/2 INCH, 6' 3", F/F, ISO, 9-1-0633-9 (81337)	FRU	EA	1
28		HOSE, 1 1/2 INCH, 6' 3", F/F, 4A, 9-1-0633-9 (81337)	FSK	EA	2
28		HOSE, 1 1/2 INCH, 10 FOOT, F/F, 4A, 9-1-0633-8 (81337)	FSK	EA	1
28		HOSE, 1 1/2 INCH, QD, F/F, 20 FOOT, FLEXIBLE, ISO, 9-1-0633-5 (81337)	FRU	EA	1
29		HOSE, 2 INCH, QD, F/F, 20 FOOT, FLEXIBLE, ISO, 9-1-0633-3 (81337)		EA	1
30	5430-01-170-6984	TANK, FABRIC, 3000 GALLON, ISO	FRU	EA	1

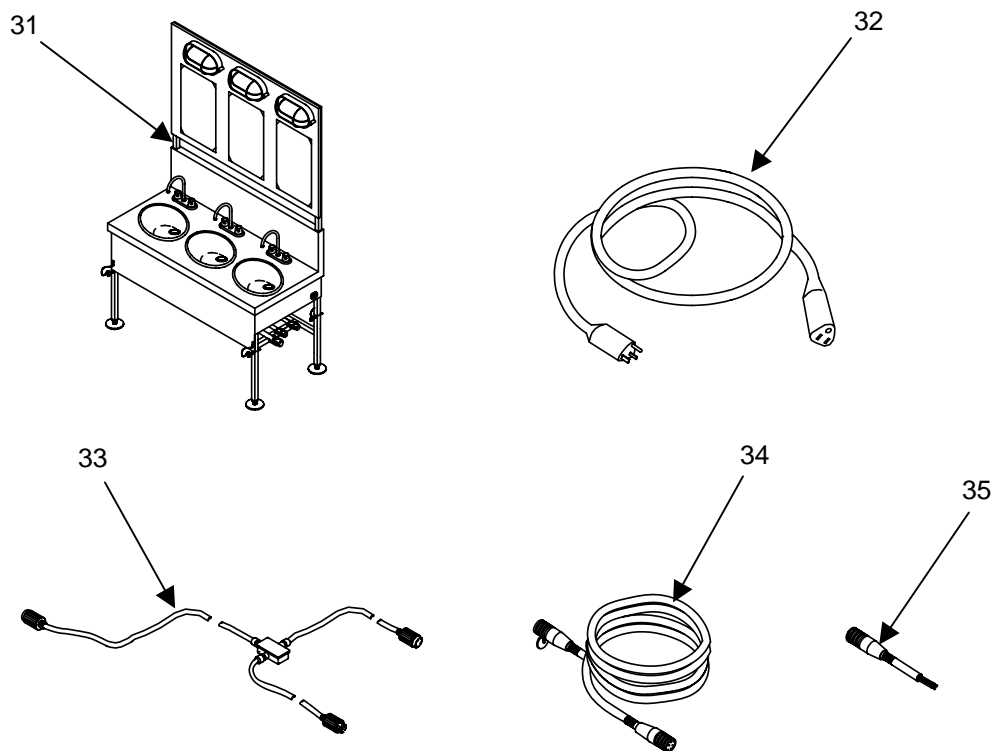


Table 1. Components of End Item List (Continued)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
31		SHAVE STAND, ISO, 9-1-0616 (81337)	FRU	EA	2
31		SHAVE STAND, 4E, 9-1-0616 (81337)	FSK	EA	4
32	6150-01-131-4882	EXTENSION CORD, 50 FOOT, COMMERCIAL, 15 AMP 9-1-0557 (81337)	FRU	EA	2
32	6150-01-131-4882	EXTENSION CORD, 50 FOOT, COMMERCIAL, 15 AMP 9-1-0557 (81337)	FSK	EA	1
33		CABLE ASSEMBLY, POWER, ELECTRICAL, BRANCHED, 20 AMP, 4A, 9-1-0584 (81337)	FSK	EA	1
33		CABLE ASSEMBLY, POWER, ELECTRICAL, BRANCHED, 20 AMP ISO, 6-1-6270-1 (81337)	FRU	EA	1
34	6150-01-220-5588	CABLE, POWER, 100 FOOT, 60 AMP 13226E7023-2 (97403)	FRU	EA	1
35	6150-01-256-6301	CABLE, PIGTAIL, 60 AMP 13226E7019 (97403)	FRU	EA	1

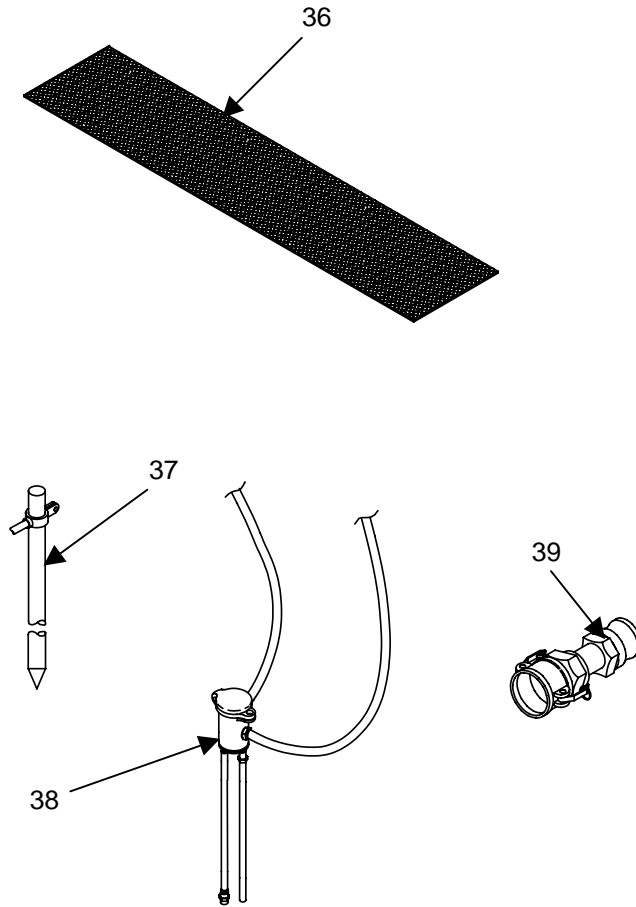


Table 1. Components of End Item List (Continued)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
36		FLOOR MAT, ISO, 415-993 (IM360)		EA	1
37	5975-00-878-3791	ROD, GROUND, ISO, 13763 (25567)	FRU	EA	1
38	4510-01-214-9139	ADAPTER, FUEL, ISO, 6-1-6274 (81337)	FRU	EA	1
39	4730-00-957-3295	REDUCER, 2" F CAM X 1 1/2" M CAM, ISO, 633BA-2X1-1/2AL (81718)	FRU	EA	1

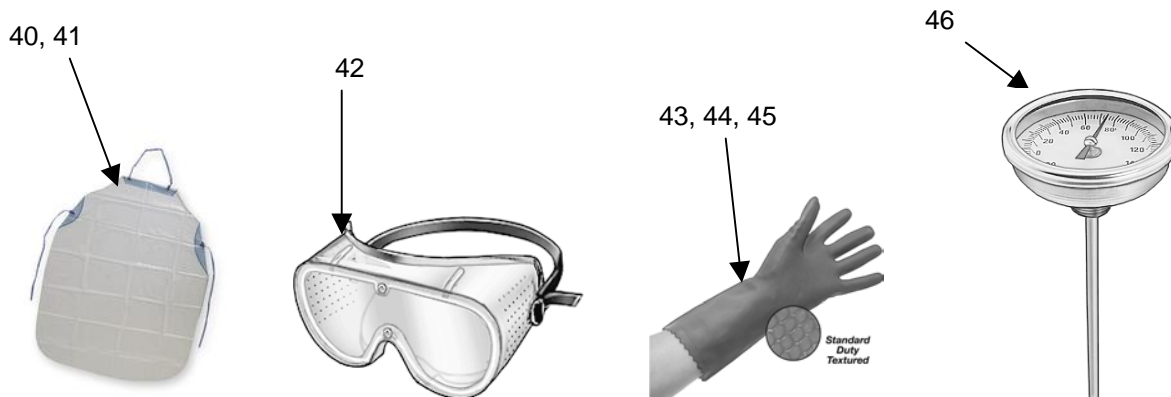
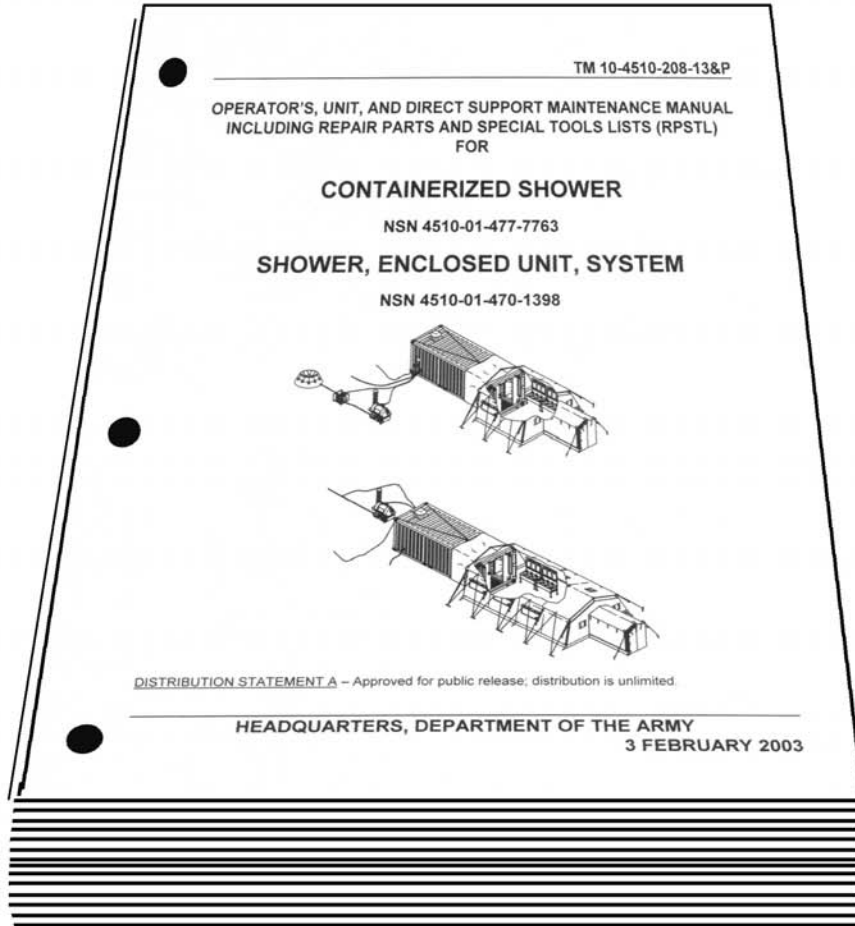


Table 1. Components of End Item List (Continued)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
40	8415-00-281-7814	Apron, Toxicological Agents Protective, Medium (81349) MIL-A-2334		EA	1
41	8415-00-281-7813	Apron, Toxicological Agents Protective, Small (81349) MIL-A-2334		EA	1
42	4240-01-292-2818	Goggles, Safety (08895) 9301-S345C		PR	1
43	8415-01-033-3519	Glove Set, Chemical Protective (81349) MIL-G-43976		PR	1
44	8415-01-033-3517	Glove Set, Chemical Protective (81349) MIL-G-43976		PR	1
45	8415-01-033-3518	Glove Set, Chemical Protective (81349) MIL-G-43976		PR	1
46	6685-00-444-6500	THERMOMETER (0BSZ7) 6072-1	FRU	EA	2



**Table 2. Basic Issue Items List.**

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
1	N/A	TM 10-4510-208-13&P		EA	1





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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
ADDITIONAL AUTHORIZATION LIST (AAL)**

---

**INTRODUCTION****Scope**

This work package lists additional items you are authorized for the support of the Containerized Shower and Shower, Enclosed Unit, System.

**General**

This list identifies items that do not have to accompany the Containerized Shower and Shower, Enclosed Unit, System and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

**Explanation of Columns in the AAL:**

Column (1) -- National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) -- Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (in parentheses) and the part number.

Column (3) -- Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

<u>Code</u>	<u>Used On</u>
FRU	Containerized Shower
FSK	Shower, Enclosed unit, System

Column (4) -- Unit of Measure (U/M). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) -- Qty Recm. Indicates the quantity recommended.

Table 1. Additional Authorization List.

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION, CAGEC, AND PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
4720-00-729-5334	HOSE ASSEMBLY, NONMETALLIC, GARDEN (81348) L-H-520		EA	1
4730-00-595-1103	NOZZLE, GARDEN HOSE (04024) 5100-243 (FOREST SERVICE SPEC)		EA	1
4570-00-202-7703	SHOWER HEAD (80244) A-A-240 TY1		EA	6
4820-01-469-6184	SHOWER VALVE (02977) S-96-1		EA	1
	SHOWER VALVE (02977) S-96-2-IPS	FRU	EA	1
5120-00-900-6098	SLEDGE HAMMER, 12 POUND, FIBERGLASS HANDLE, 34 IN (58536) A-A-1293		EA	1
4320-01-260-0573	SUMP PUMP (3Y232) 1453		EA	1
6685-00-444-6500	THERMOMETER (OBSZ7) 6072-1	FRU	EA	1

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**OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE  
CONTAINERIZED SHOWER  
(NSN 4510-01-477-7763)  
SHOWER, ENCLOSED UNIT, SYSTEM  
(NSN 4510-01-470-1398)  
EXPENDABLE AND DURABLE ITEMS LIST**

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## INTRODUCTION

### Scope

This work package lists expendable and durable items that you will need to operate and maintain the Containerized Shower and Shower, Enclosed Unit, System. This list is for information only and is not authority to requisition the listed items. 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.

### Explanation of Columns in the Expendable/Durable Items List

Column (1) -- Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use brake fluid (item 25, WP 0098 00)).

Column (2) -- Level. This column identifies the lowest level of maintenance that requires the listed item (C = Operator/Crew).

Column (3) -- National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) -- Item name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides the other information you need to identify the item.

Column (5) -- Unit of Measure (U/M) this code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. Expendable and Durable Items List.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
1	C	7920-01-339-6928	Absorbent Material, Spill Cleanup (66735) F91D248	EA
2	C	8415-00-281-7814	Apron, Toxicological Agents Protective, Medium (81349) MIL-A-2334	EA
3	C	8415-00-281-7813	Apron, Toxicological Agents Protective, Small (81349) MIL-A-2334	EA
4	C	8105-01-221-3239	Bag, Plastic Contaminated Waste, Size 3 (58536) A-A-2299	RL
5	C	8105-00-285-4744	Bag, Sand, Burlap, Class A, Color 1 (80244) MIL-B-12233	HD
6	C	6810-00-598-7316	Bleach, Sodium Hypochlorite (58536) A-A-1427	GL
7	C	7920-00-291-8305	Broom, Upright, Type 2 (80244) H-B-0051	EA
8	C	7920-00-772-5800	Brush, Sanitary, Type 1, Class 1, AA3069/1A (80244) A-A-3069	EA
9	C	7920-00-240-7174	Brush, Scrub (80244) 7920-00-240-7174	EA
10	O	5350-00-187-6289	Cloth, Crocus, Abrasive, 50 YD. (45.7 M) (58536) A-A-1048	RL
11	O	7920-00-292-9204	Cloth, Wiping, 100 EA (58536) A-A-162	EA
12	O	8030-01-104-5392	Compound, Thread Sealing, 10CC Bottle (05972) 242-21	EA
13	C	7930-00-985-6911	Detergent, General Purpose, Mild (81349) MIL-D-16791	GL
14	C	6545-00-919-6650	First Aid Kit, General Purpose (64616) IRR A-6882	EA
15	C	6545-00-656-1094	First Aid Kit, General Purpose, Type 3 (80244) GG-K-391	EA
16	O		Flux, Paste, ASTM B-486, Grade 77, Alloy Comp SN50, Type OA	CN
17	C	8415-01-033-3519	Glove Set, Chemical Protective (81349) MIL-G-43976	PR
18	C	8415-01-033-3517	Glove Set, Chemical Protective (81349) MIL-G-43976	PR
19	C	8415-01-033-3518	Glove Set, Chemical Protective (81349) MIL-G-43976	PR
20	C	8415-00-268-8353	Gloves, Men's, Medium (81349) MIL-G-3866	PR

Table 1. Expendable and Durable Items List - continued

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
21	C	8415-00-258-8354	Gloves, Men's, Small (81349) MIL-G-3866	PR
22	C	8415-00-753-6552	Gloves, Toxicological Agents Protective (81349) MIL-G-12223	PR
23	C	4240-01-292-2818	Goggles, Safety (08895) 9301-S345C	PR
24	O	6240-00-152-2987	Lamp, Fluorescent (08108) F40CW	EA
25	O	6240-01-344-9537	Lamp, Fluorescent (08805) F32T8SP41/RS	EA
26	C	7920-00-141-5550	Mop Head, Wet, Type 1, Style 1, Class 15 (80244) T-M-561	BX
27	C	3510-00-841-8384	Net, Laundry (81348) JJ-N-180	EA
28	C	7920-00-659-9175	Pad, Scouring (80244) L-P-0050TY1SZ1	PK
29	C	7240-00-773-0975	Pail, Utility (81348) RRP53	EA
30	O	8010-01-193-0518	Paint, Epoxy Primer Kit (81349) MIL-P-53022	EA
31	O	5350-00-224-7203	Paper, Abrasive, 320 Grit (58536) A-A-1047	PK
32	C	7920-00-205-1711	Rags, Wiping (58536) A-A-2522	LB
33	C	8040-01-331-8047	Sealant, RTV, Type 1, Group 1 (80244) MIL-A-46106	EA
34	O	7930-00-965-4868	Soap, Cake, Hand (58536) A-A-1375	BX
35	C	8520-00-129-0803	Soap, Toilet (58536) A-A-51	BX
36	O	3439-00-043-3623	Solder, SN6-, 1LB (0.45KG) Roll (81348) QQ-S-571	LB
37	C	7920-00-884-1115	Sponge, Cellulose (58536) A-A-2073	BX
38	C	7920-00-884-1116	Sponge, Cellulose, Type 2, Porosity A, Class Z3 (80244) L-S-00626	BX
39	C	5350-00-242-4404	Steel Wool, Type 3, Class 1 (80244) A-A-1043	LB
40	O	9905-00-027-4577	Strap, Tiedown, Adjustable, Plastic, 50 EA (96906) MS3367-2	PK

Table 1. Expendable and Durable Items List – continued

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
41	O	9905-00-537-8954	Tags, Identification, 50 EA (81349) MIL-T-12755	PK
42	C	8030-00-889-3535	Tape, Anti-seize, 1/2 IN Wide X 260 IN Long, Size II (80244) MIL-T-27730	RL
43	C	7930-00-103-2254	Tape, Duct (07124) C-519	RL
44	O	5970-00-644-3167	Tape, Electrical, 85FT (25.9M) (58536) A-A-2094	RL
45	C	8540-00-530-3770	Toilet Tissue, Single Ply (Roll), Box, White, Single Ply, Unglazed (58536) A-A-697	BX
46	C	7210-01-051-5837	Towels, Bath, Cotton, Terry, Type 1, Class 1, Style A, B or C (80244) DDD-T-551	DZ
47	O		Tubing, ½-IN ID Flexible Braided (0ABC4) K3150-08	RL

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By Order of the Secretary of the Army:

PETER J. SCHOOMAKER  
General, United States Army  
*Chief of Staff*

Official:

  
SANDRA R. RILEY  
*Administrative Assistant to the  
Secretary of the Army*  
0507701

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## These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" whomever@avma27.army.mil

To: amssbriml@natick.army.mil

Subject: DA Form 2028

1. **From:** Joe Smith
2. **Unit** home
3. **Address:** 4300 Park
4. **City:** Hometown
5. **St:** MO
6. **Zip:** 77777
7. **Date Sent:** 19-OCT-93
8. **Pub no:** 55-2840-229-23
9. **Pub Title:** TM
10. **Publication Date:** 04-JUL-85
11. **Change Number:** 7
12. **Submitter Rank:** MSG
13. **Submitter FName:** Joe
14. **Submitter MName:** T
15. **Submitter LName:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem:** 1
18. **Page:** 2
19. **Paragraph:** 3
20. **Line:** 4
21. **NSN:** 5
22. **Reference:** 6
23. **Figure:** 7
24. **Table:** 8
25. **Item:** 9
26. **Total:** 123
27. **Text:**

This is the text for the problem below line 27.



<b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b> For use of this form, see AR 25-30; the proponent agency is ODISC4.						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	<b>DATE</b> 21 October 2003
<b>TO:</b> (Forward to proponent of publication or form) (Include ZIP Code) COMMANDER U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND ATTN: AMSTA-LC-CECT 15 KANSAS STREET NATICK, MA 01760-5052						<b>FROM:</b> (Activity and location) (Include ZIP Code)  <i>PFC Jane Doe</i> <i>CO A 3<sup>rd</sup> Engineer BR</i> <i>Ft. Leonardwood, MO 63108</i>	
<b>PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS</b>							
<b>PUBLICATION/FORM NUMBER</b> TM 10-1670-296-23&P				<b>DATE</b> 30 October 2002	<b>TITLE</b> Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems		
<b>ITEM NO.</b>	<b>PAGE NO.</b>	<b>PARA-GRAPH</b>	<b>LINE NO. *</b>	<b>FIGURE NO.</b>	<b>TABLE NO.</b>	<b>RECOMMENDED CHANGES AND REASON</b> <i>(Provide exact wording of recommended changes, if possible).</i>	
	0036 00-2				1	<i>In table 1, Sewing Machine Code Symbols, the second sewing machine code symbol should be MD ZZ not MD 22.</i>  <i>Change the manual to show Sewing Machine, Industrial: Zig-Zag; 308 stitch; medium-duty; NSN 3530-01-181-1421 as a MD ZZ code symbol.</i>	
<small>*Reference to line numbers within the paragraph or subparagraph.</small>							
<b>TYPED NAME, GRADE OR TITLE</b>  Jane Doe, PFC				<b>TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION</b>  508-233-4141		<b>SIGNATURE</b>  Jane Doe <i>Jane Doe</i>	

<b>TO:</b> <i>(Forward direct to addressee listed in publication)</i> COMMANDER U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND ATTN: AMSTA-LC-CECT 15 KANSAS STREET NATICK, MA 01760-5052	<b>FROM:</b> <i>(Activity and location) (Include ZIP Code)</i> <i>PFC Jane Doe</i> <i>CO A 3<sup>rd</sup> Engineer BR</i> <i>Ft. Leonardwood, MO 63108</i>	<b>DATE</b> <i>21 October 2003</i>
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**PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

<b>PUBLICATION NUMBER</b> TM 10-1670-296-23&P	<b>DATE</b> 30 October 2002	<b>TITLE</b> Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
0066 00-1					4			<i>Callout 16 in figure 4 is pointed to a <u>D-Ring</u>. In the Repair Parts List key for figure 4, item 16 is called a <u>Snap Hook</u>. Please correct one or the other.</i>

SAMPLE

**PART III – REMARKS** *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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<p align="center"><b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b></p> <p>For use of this form, see AR 25-30; the proponent agency is ODISC4.</p>						Use Part II ( <i>reverse</i> ) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: ( <i>Forward to proponent of publication or form</i> ) ( <i>Include ZIP Code</i> ) Commander, U.S. Army Tank-automotive and Armament Command ATTN: AMSTA-LC-CECT 15 Kansas Street Natick, MA 01760-5052						FROM: ( <i>Activity and location</i> ) ( <i>Include ZIP Code</i> )	
<b>PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS</b>							
PUBLICATION/FORM NUMBER TM 10-4510-208-13&P				DATE 30 April 2005	TITLE Containerized Shower and Shower, Enclosed Unit, System		
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON ( <i>Provide exact wording of recommended changes, if possible.</i> )	
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE	

TO: <i>(Forward direct to addressee listed in publication)</i> Commander, U.S. Army Tank-automotive and Armament Command ATTN: AMSTA-LC-CECT 15 Kansas Street Natick, MA 01760-5052	FROM: <i>(Activity and location) (Include ZIP Code)</i>	DATE
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**PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

PUBLICATION NUMBER TM 10-4510-208-13&P	DATE 30 April 2005	TITLE Containerized Shower and Shower, Enclosed Unit, System
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

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**PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

PUBLICATION NUMBER TM 10-4510-208-13&P	DATE 30 April 2005	TITLE Containerized Shower and Shower, Enclosed Unit, System
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

**PART III - REMARKS** *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

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PUBLICATION/FORM NUMBER TM 10-4510-208-13&P				DATE 30 April 2005	TITLE Containerized Shower and Shower, Enclosed Unit, System		
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible).</i>	
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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 decigrams = .035 ounce  
 1 dekagram = 10 grams = .35 ounce  
 1 hectogram = 10 dekagrams = 3.52 ounces  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

## Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

## Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

## Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 feet

## Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
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

**PIN: 082364-000**