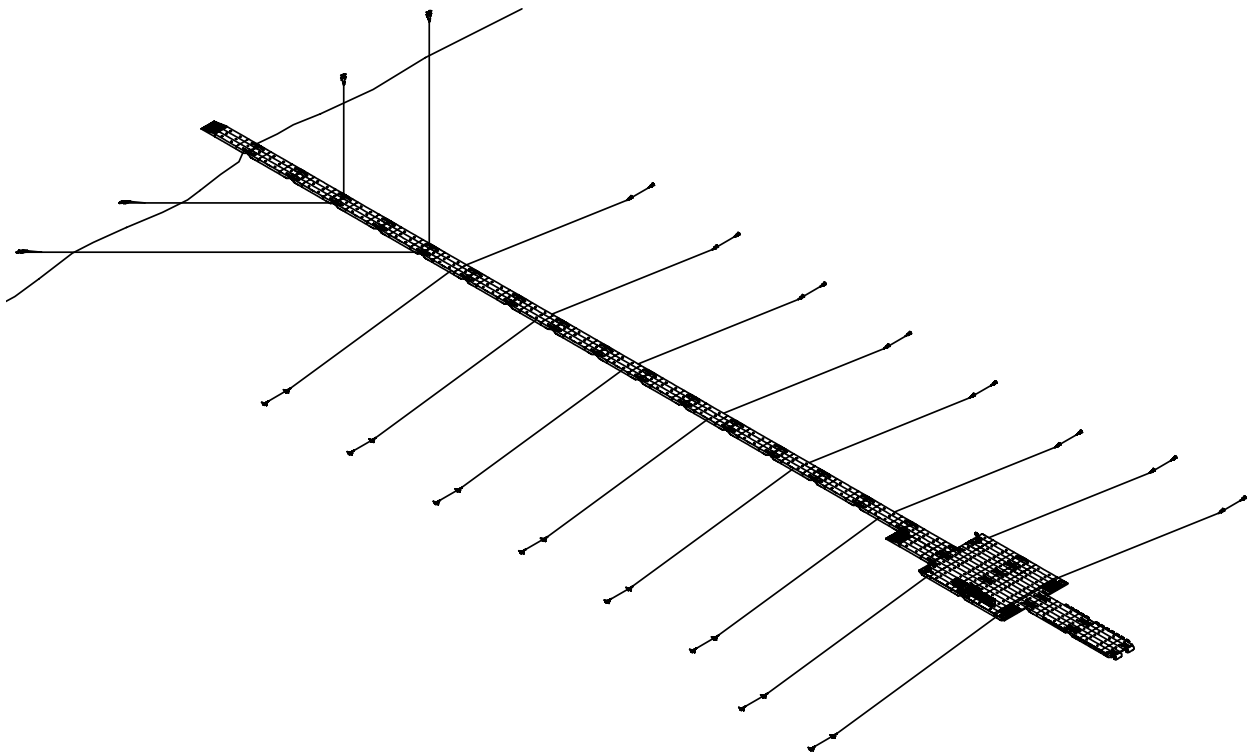


TM 55-1945-227-10

TECHNICAL MANUAL

OPERATOR'S MANUAL
FOR

**MODULAR CAUSEWAY SYSTEM (MCS)
FLOATING CAUSEWAY (FC)
NSN 1945-01-505-1665**



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

HEADQUARTERS, DEPARTMENT OF THE ARMY

MARCH 2006

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance 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 the technical manual.

GENERAL SAFETY WARNINGS DESCRIPTION



HEAVY OBJECTS

WARNING

Handling heavily weighted objects can cause bodily injury. Do not lift materials or equipment over 50 lb without using appropriate material handling equipment.



ELECTRICAL

WARNING

Use extreme caution when checking energized circuits. Always place power off warning tags on power supply switches so that no one will apply power while performing maintenance.



EAR PROTECTION

WARNING

Single hearing protection must be worn when inside the generator container 10 kW (TQG) when generator is operating and during all rolling cargo movements.

Single hearing protection is required when the WT winch is operated. Failure to wear hearing protection may result in hearing loss.



SLICK FLOOR

WARNING

Cold weather operations could create ice buildup on exposed surfaces producing hazardous footing conditions. Use extreme care when operating under icing conditions; death or serious injury to personnel could occur.

EXPLANATION OF SAFETY WARNING ICONS



EAR PROTECTION

EAR PROTECTION - headphones over ears shows that noise level will harm ears.



ELECTRICAL

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



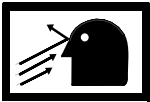
ELECTRICAL

ELECTRICAL - electrical wire to hand with electricity symbol running through hand shows that shock hazard is present.



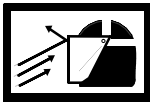
FALLING PARTS

FALLING PARTS - arrow bouncing off human shoulder and head shows that falling parts present a danger to life or limb.



FLYING PARTICLES

FLYING PARTICLES - arrows bouncing off face shows that particles flying through the air will harm face.



FLYING PARTICLES

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



HEAVY OBJECTS

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



HEAVY PARTS

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

EXPLANATION OF SAFETY WARNING ICONS - Continued



HEAVY PARTS

HEAVY PARTS - foot with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS

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



HEAVY PARTS

HEAVY PARTS - heavy object pinning human figure against wall shows that heavy, moving parts present a danger to life or limb.



HELMET PROTECTION

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



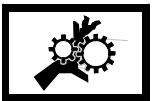
HOT AREA

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



MOVING PARTS

MOVING PARTS - human figure with an arm caught between gears shows that the moving parts of the equipment present a danger to life or limb.



MOVING PARTS

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



MOVING PARTS

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



SHARP OBJECT

SHARP OBJECT - pointed object in hand shows that a sharp object presents a danger to limb.

EXPLANATION OF SAFETY WARNING ICONS - Continued



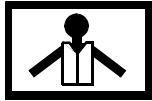
SHARP OBJECT

SHARP OBJECT - pointed object in foot shows that a sharp object presents a danger to limb.



SLICK FLOOR

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



VEST

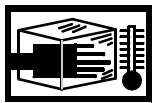
VEST - life preserver on human figure shows life preserver must be worn to prevent drowning.

EXPLANATION OF HAZARDOUS MATERIALS ICONS



CHEMICAL

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



CRYOGENIC

CRYOGENIC - hand in block of ice shows that the material is extremely cold and can injure human skin or tissue.



EXPLOSION

EXPLOSION - rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition or high pressure.



EYE PROTECTION

EYE PROTECTION - person with goggles shows that the material will injure the eyes.



FIRE

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

EXPLANATION OF HAZARDOUS MATERIALS ICONS - Continued



POISON

POISON - skull and crossbones shows that a material is poisonous or is a danger to life.



VAPOR

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

HAZARDOUS MATERIALS DESCRIPTION

WARNING



CHEMICAL

FUELS

Personnel must wear chemical resistant gloves when handling fuels. Promptly wash exposed skin and change fuel-soaked clothing.

WARNING



CHEMICAL

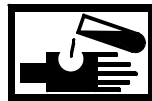


EYE PROTECTION

COOLANTS

Before opening coolant system, allow time to cool and wear effective hand, eye and skin protection.

WARNING



CHEMICAL



VAPOR



EYE PROTECTION

HAND-HELD FIRE EXTINGUISHER

Evacuate the personnel shelter after discharging the dry chemical fire extinguisher. Personnel must wear dust masks, hand, eye and skin protective equipment before re-entering the shelter to clean up residue.

WARNING



CHEMICAL



EXPLOSION

BATTERIES

Do not smoke around batteries.

SAFETY INSTRUCTIONS

NO SMOKING

Smoking is prohibited aboard this vessel.

JEWELRY

Remove rings, bracelets, wristwatches, and neck chains before working around or on a unit.

HAZARD REPORTING

Report all hazards. It is your responsibility to report hazards through your chain-of-command.

NUCLEAR, BIOLOGICAL OR CHEMICAL

In the event equipment has been exposed to nuclear, biological or chemical warfare, the equipment shall be handled with extreme caution and decontaminated in accordance with *FM 3-5*.

Unprotected personnel can experience injury or death if residual toxic agents or radioactive material are present. If equipment is exposed to radioactive, biological or chemical agents, personnel must wear protective mask, hood, protective overgarments, chemical gloves and chemical boots in accordance with *FM 3-5*.

WELDING OR GRINDING

Personnel must use a gas-free meter before performing module repair that requires welding or grinding.

LIST OF EFFECTIVE PAGES / WORK PACKAGES

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

Original 17 March 2006

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 48 AND TOTAL NUMBER OF WORK PACKAGES IS 45 CONSISTING OF THE FOLLOWING:

Page / WP No.	*Change No.	Page / WP No.	*Change No.
Front Cover (2 pgs)	0	WP 0033 00 (2 pgs)	0
Warning Summary (a-f pgs)	0	WP 0034 00 (2 pgs)	0
List of Effective Pages (A-B pgs)	0	WP 0035 00 (2 pgs)	0
Title Block Page (1 pg)	0	WP 0036 00 (2 pgs)	0
Table of Contents (ii-viii pgs)	0	WP 0037 00 (2 pgs)	0
How to Use This Manual (ix-xii pgs)	0	WP 0038 00 (2 pgs)	0
Chp 1 title page (2 pgs)	0	WP 0039 00 (4 pgs)	0
WP 0001 00 (4 pgs)	0	WP 0040 00 (36 pgs)	0
WP 0002 00 (34 pgs)	0	WP 0041 00 (38 pgs)	0
WP 0003 00 (2 pgs)	0	Chp 5 title page (2 pgs)	0
Chp 2 title page (2 pgs)	0	WP 0042 00 (2 pgs)	0
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WP 0006 00 (30 pgs)	0	WP 0045 00 (4 pgs)	0
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WP 0008 00 (16 pgs)	0		
WP 0009 00 (22 pgs)	0		
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WP 0011 00 (14 pgs)	0		
WP 0012 00 (4 pgs)	0		
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WP 0031 00 (2 pgs)	0		
WP 0032 00 (2 pgs)	0		

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C., 17 MARCH 2006

TECHNICAL MANUAL
OPERATOR'S MANUAL
FOR
MODULAR CAUSEWAY SYSTEM (MCS)
FLOATING CAUSWAY
NSN 1945-01-505-1665

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <https://aeeps.ria.army.mil>. The DA Form 2028 is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or E-mail your letter or DA Form 2028 direct to: AMSTA-LC-LMIT / TECH PUBS, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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HOW TO USE THIS MANUAL

This manual contains certain features to improve the convenience of using this manual and increase the user's efficiency. These features include:

a. Accessing Information

Information is accessed by referring to the Table of Contents, located in the front of this manual, or by looking in the Alphabetical Index, located in the back of this manual.

b. Illustrations

Various methods are used to locate and repair components. Locator illustrations in Controls and Indicator tables, PMCS tables, exploded views and cut-away diagrams make the information in the manual easier to understand and follow.

c. Using This Manual

When using this manual, read and understand the entire maintenance action before performing the task. Also, read and understand all warnings, cautions and notes as well as general safety precautions that apply to the task to be performed. The warning summary will inform personnel of hazards associated with the equipment to be worked on. However, the summary is not all inclusive and personnel should be aware at all times of hazardous conditions that may arise.

Prior to starting the procedures in this manual, the initial setup requirements are located directly above each procedure. The information is given to ensure all materials, expendables, tools and any other equipment necessary are readily available for use. The initial setup will be accomplished prior to starting the actual steps of each maintenance procedure.

Locating Major Components

Obtain the manual for the system to be worked on. Open to the Table of Contents located in the front of this manual. Find Chapter 1, Description and Theory of Operation. Under the chapter title you will find the work package titled Location and Description of Major Components. Turn to the work package indicated. This work package will give a brief description of the major components, and show an illustration of what the component looks like and its location.

The Alphabetical Index, located in the back of this manual, contains an alphabetical list of all sections of this manual. Location and Description of Major Components is found in section L. The work package is found on the right side of the title where the Location and Description of Major Components is located. Turn to the work package indicated to find the description and location of each component.

Operator Instructions

To locate an operator task, open the manual to the Table of Contents located in the front of this manual. Locate the procedure that is to be performed. Next to the procedure, on the right, locate the work package number. Turn to the work package number in the manual. Perform the initial setup by obtaining the expendables, tools, materials and other items listed prior to starting the task. Perform the listed steps in order. The Alphabetical Index can also be used to locate the item and procedures to follow.

Tools: Lists all tools (standard or special) required to perform the task. Tools are identified with an item number and work package number from the Tool Identification List located in Chapter 5, Supporting Information.

Materials/Parts: Lists all parts or materials necessary to perform the task. Expendable and durables are identified with an item number from the applicable work package located in Chapter 5, Supporting Information.

Personnel Required: Lists all personnel necessary to perform the task.

Equipment Condition: Notes the conditions that must exist before starting the task. The equipment condition will also include any prerequisite maintenance tasks to be performed with reference to the work package number or to the TM number.

References: Includes any other manuals necessary to complete the task. When there are no references listed, all steps necessary to complete the task are contained within this manual. A listing of reference materials is contained in the work package References in Chapter 5, Supporting Information.

Location of Controls and Indicators

To locate a particular control and/or indicator, open the manual to the Table of Contents located in the front of the manual. Find Chapter 2, Operator Instructions. Locate the work package titled Description and Use of Operator Controls and Indicators. Turn to the work package indicated. Locate the control and, or indicator that you are attempting to identify. Take note of the number pointing to the control or indicator. Refer to the table below the picture and find the number in the column on the far left hand side. Reading from left to right, find the number that matches the number from the picture, then read the name of the control/indicator and following function of the item, as detailed in the far right hand column.

Troubleshooting Procedures

The Table of Contents or Alphabetical Index may be used to locate sections within this manual. To locate a particular troubleshooting procedure, open the manual to the Table of Contents located in the front of this manual. Find Chapter 3, Troubleshooting Procedures. Under this section, find a work package titled Troubleshooting Index. Turn to the work package indicated, which lists all of the troubleshooting procedures. Look down the list until you find the appropriate work package for the problem you are trying to solve. To the right side of the procedure will be a work package number. Turn to the work package indicated and follow the steps to complete the troubleshooting procedure. The procedures list the malfunction, symptom and the corrective action. The corrective action will indicate which maintenance procedure to go to for the repair of the symptom or what level of maintenance is capable of repair of the problem. Follow the procedures indicated to complete the task. At the top of the task you will have a section called INITIAL SETUP. There are five basic headings listed under INITIAL SETUP.

Test Equipment: Lists all test equipment (standard or special) required to troubleshoot, test and inspect the equipment covered in this manual. The test equipment is identified with an item number and work package number from the Tool Identification List located in Chapter 5, Supporting Information.

Tools: Lists all tools (standard or special) required to perform the task. Tools are identified with an item number and work package number from the Tool Identification List located in Chapter 5, Supporting Information.

Personnel Required: Lists all personnel necessary to perform the task.

Equipment Condition: Notes the conditions that must exist before starting the task. The equipment condition will also include any prerequisite maintenance tasks to be performed with reference to the work package number or to the TM number.

References: Includes any other manuals necessary to complete the task. When there are no references listed, all steps necessary to complete the task are contained within this manual. A listing of reference materials is contained in the work package References in Chapter 5, Supporting Information.

Maintenance Instructions

To locate a maintenance procedure, open the manual to the Table of Contents located in the front of this manual. Find Chapter 4, Maintenance Instructions. Look down the list and find the maintenance procedure to be accomplished. On the right side of the maintenance procedure will be a work package number. Turn to the work package indicated.

Before beginning the maintenance task, look through the procedure to familiarize yourself with the entire maintenance procedure. At the top of the task you will have a section called INITIAL SETUP. There are five basic headings listed under INITIAL SETUP.

Tools: Lists all tools (standard or special) required to perform the task. Tools are identified with an item number and work package number from the Tool Identification List located in Chapter 5, Supporting Information.

Materials/Parts: Lists all parts or materials necessary to perform the task. Expendable and durables are identified with an item number from the applicable work package located in Chapter 5, Supporting Information.

Personnel Required: Lists all personnel necessary to perform the task.

References: Includes any other manuals necessary to complete the task. When there are no references listed, all steps necessary to complete the task are contained within this manual. A listing of reference materials is contained in the work package References in Chapter 5, Supporting Information.

Equipment Condition: Notes the conditions that must exist before starting the task. The equipment condition will also include any prerequisite maintenance tasks to be performed with reference to the work package number or to the TM number.

Test Equipment: Lists all test equipment (standard or special) required to troubleshoot, test and inspect the equipment covered in this manual. The test equipment is identified with an item number and work package number from the Tool Identification List located in Chapter 5, Supporting Information.

CHAPTER 1

**DESCRIPTION AND THEORY OF OPERATION
FOR
MODULAR CAUSEWAY SYSTEM (MCS)
FLOATING CAUSEWAY (FC)**

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERAL INFORMATION**

SCOPE

This manual contains descriptions and operation instructions for the Floating Causeway (FC).

Type of Manual: Operator's Manual.

Purpose of Equipment: The system supports two lighter vessels discharging containerized, rolling and break bulk cargo to the beach where the beach gradient is too shallow to allow lighters to discharge directly to the beach.

MAINTENANCE FORMS, RECORDS AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, Functional Users Manual for The Army Maintenance Management System (TAMMS) and AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If any component in your system needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368, Product Quality Deficiency Report. Mail it to the address specified in DA PAM 738-750, Functional Users Manual for The Army Maintenance Management System (TAMMS), or as specified by the acquiring activity. We will send you a reply.

HAND RECEIPT (HR) MANUALS

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). TM 55-1945-227-10-HR consists of preprinted hand receipts that list end item related equipment (i.e., COEI, BII, and AAL) that must be accounted for. As an aid to property accountability, additional HR manuals may be requisitioned through normal publication channels.

CORROSION PREVENTION AND CONTROL (CPC)

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 and plastic. Unusual cracking, softening, swelling or breaking of the materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using an 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. The form should be submitted to the address specified in DA PAM 738-750, Functional Users Manual for The Army Maintenance Management System (TAMMS).

OZONE DEPLETING SUBSTANCES (ODS)

The continued use of ODS has been prohibited by Executive Order 12856 of 3 August 1993.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

The procedures for destruction of Army materiel to prevent enemy use are contained in TM 750-244-6.

PREPARATION FOR STORAGE OR SHIPMENT

Reference WP 0040 00for preparation for storage or shipment of the FC system.

LIST OF ABBREVIATIONS/ACRONYMS

Abbreviation/Acronym	Name
AC	Alternating Current
AEPS	Army Electronic Product Support
AF	Audio Frequency
amp	Ampere
AOAP	Army Oil Analysis Program
AR	Army Regulation
BII	Basic Issue Items
C	Centigrade
CAGEC	Commercial and Government Entity Code
CBSE	Combination Beach/Sea End
CF	Causeway Ferry
cm	Centimeters
CO ₂	Carbon Dioxide
COEI	Components of End Item
COMDTINST	Commandant Instruction
COTS	Commercial Off the Shelf
DA PAM	Department of Army Pamphlet
dB	Decibels
DC	Direct Current
Deg	Degrees
DIP	Dual Inline Package (switch)
EASY	Emergency Anchor System
CPC	Corrosion Prevention Control
EIR	Equipment Improvement Recommendations
F	Fahrenheit
FC	Floating Causeway
FGC	Functional Group Code
fl	Fluid
FM	Field Manual
ft	Feet
GAL	Gallon
GFI	Ground Fault Interrupter
GPH	Gallons Per Hour
HP	Horse Power
hr	Hour
Hz	Hertz
in.	Inches
ISO	International Standards Organization
ISOPAK	International Standards Organization Package
lb	Pound
kg	Kilograms
kHz	Kilohertz
kW	Kilowatt
J-LOTS	Joint-Logistics-Over-The-Shore
LCU	Landing Craft Utility
LED	Light Emitting Diode
LMSR	Large Medium Speed Roll-On/Roll-Off vessel
LOTS	Logistics-Over-The-Shore
LSV	Logistics Support Vessel
m	Meters
mA	MilliAmpere
MAC	Maintenance Allocation Chart
MBT	Main Battle Tank

LIST OF ABBREVIATIONS/ACRONYMS (CONT'D)

Abbreviation/Acronym Name

MCF	Modular Causeway Ferry
MCS	Modular Causeway System
MHz	Megahertz
ml	Milliliters
MTBE	Methyl Tertiary Butyl Ether
MTO&E	Modified Table of Organization and Equipment
NAVMOOR	Naval Mooring
NBC	Nuclear, Biological, or Chemical
NCOIC	Noncommissioned Officer in Charge
NEMA	National Electrical Manufacturers Association
NHA	Next Higher Assembly
Ni-Cd	Nickel Cadmium
N-m	Newton-Meters
NOAA	National Oceanic and Atmospheric Administration
NSN	National Stock Number
ODS	Ozone Depleting Substance
OIC	Officer in Charge
OMC	Outboard Marine Corporation
oz	Ounces
PMCS	Preventive Maintenance Checks and Services
PN	Part Number
PSI	Pounds Per Square Inch
PTT	Push To Talk
rcv	Receive
RF	Radio Frequency
RHIB	Rigid Hull Inflatable Boat
Ro/Ro	Roll-on/Roll-off
RPM	Revolutions Per Minute
RPSTL	Repair Parts and Special Tools List
RRDF	Roll-On/Roll-Off Discharge Facility
RTCH	Rough Terrain Container Handler
SF	Standard Form
SINAD	Signal (plus) Noise And Distortion
SMR	Source, Maintenance Recoverability
SOLAS	Safety Of Life At Sea
SRA	Specialized Repair Activity
SS	Sea State
TACOM	United States Army Tank-Automotive and Armaments Command
TAMMS	The Army Maintenance Management System
TM	Technical Manual
TMDE	Test, Measurement and Diagnostic Equipment
TO&E	Table of Organization and Equipment
TQG	Tactical Quiet Generator
Tx	Transmit
US	United States
uv	Ultra Violet
V	Volt
VAC	Volts Alternating Current
VDC	Volt Direct Current
VHF/FM	Very High Frequency/Frequency Modulation
W	Watt
WP	Work Package
WT	Warping Tug

QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this (insert manual or IETM). If quality of material requirements are not stated in this (insert manual or IETM), the material must meet the requirements of the drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
EQUIPMENT DESCRIPTION AND DATA**

EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES

FLOATING CAUSEWAY

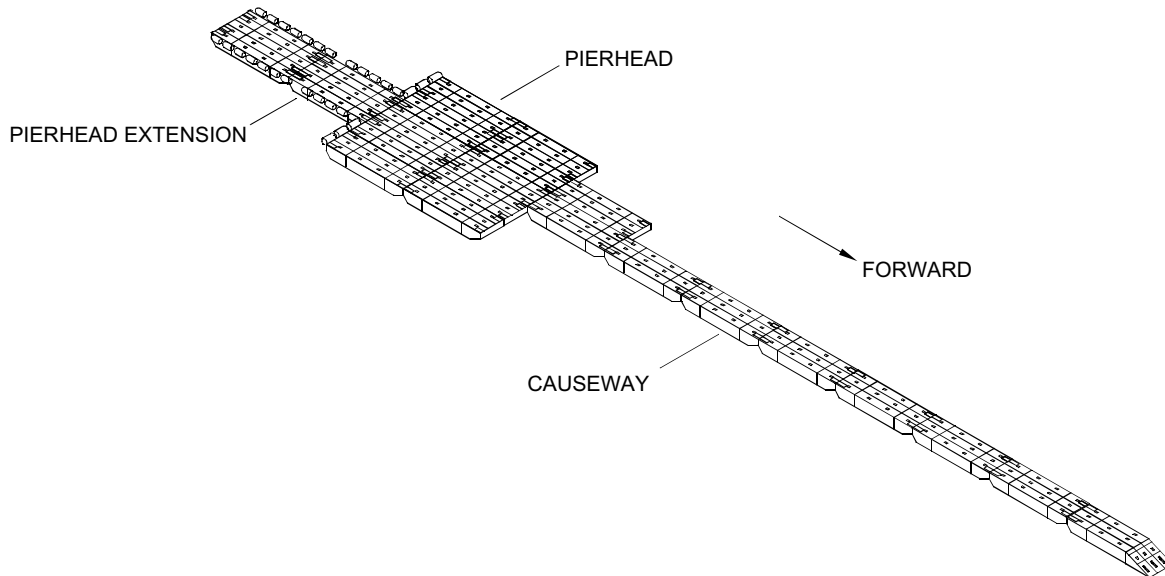


Figure 1. Floating Causeway

NOTE

This platform is fully mission capable from the two lane trident pier, 32 1/3 section configuration down to the Port Opening one lane 10 section and 1 CBSE section platform. A platform of less than 10 sections and 1 CBSE section is considered nonmission capable. If the pierhead mean low tide water depth is less than 15 ft, limited operation may be required.

The Floating Causeway (FC) is a floating platform used during Logistics Over The Shore (LOTS) operations. The FC consists of three major segments; pierhead extension, pierhead and causeway. Each major segment consists of non-powered floating modules that are assembled into module strings and intermediate sections.

The pierhead extension is the five string wide set of modules that run from the pierhead out to sea. This pierhead extension will be used by the lighter vessels to moor to the floating causeway. The overall dimensions of the pierhead extension is 40 ft wide by 160 ft long.

The pierhead consists of ten intermediate sections. The overall dimensions of the pierhead is 120 ft wide by 160 ft long.

The causeway consists of one or more intermediate sections connected lengthwise, with one end connected to the pierhead and the other end connected to a combination beach/sea end section. The overall dimension is determined by adding the total length of intermediate sections to the length of the combination beach/sea end section. The causeway length depends on how far offshore, from the beach, the causeway must extend to give the required water depth. The overall width of the causeway is 24 ft wide.

The pierhead extension, pierhead and the causeway are assembled to each other by flexor connectors.

WARNING

Operations should cease in SS 3 conditions. Due to the greatly increased risk for potential equipment damage and personal injury, only emergency operations should be conducted in SS 3.

The FC shall operate in sea conditions ranging from Sea State 0 up to and including Sea State 2 (see table 1), in surf conditions up to 5 ft with alongshore currents up to 2 knots, and in beach gradients up to 1:200. The FC system shall survive Sea State 4 conditions and be capable of being put back into service within 48 hours of the higher Sea State.

Table 1. Sea State (SS) Conditions.

SS	SIGNIFICANT WAVE HEIGHTS (FT)	MODAL WAVE PERIODS (SECONDS)
0	0.0 - 0.5	0.3 - 1.3
1	0.5 - 1.5	0.8 - 3.8
2	1.5 - 3.0	1.3 - 6.0
3	3.5 - 5.0	2.0 - 7.7
4	6.0 - 7.5	2.7 - 9.4
5	8.0 - 12.0	3.1 - 11.9

Other major components of the FC are the personnel shelter, generator shelter, the trailer-mounted light towers, communications equipment and the offshore and onshore anchor mooring system.

The FC is maneuvered into place by warping tugs.

INTERMEDIATE MODULAR CAUSEWAY SECTION

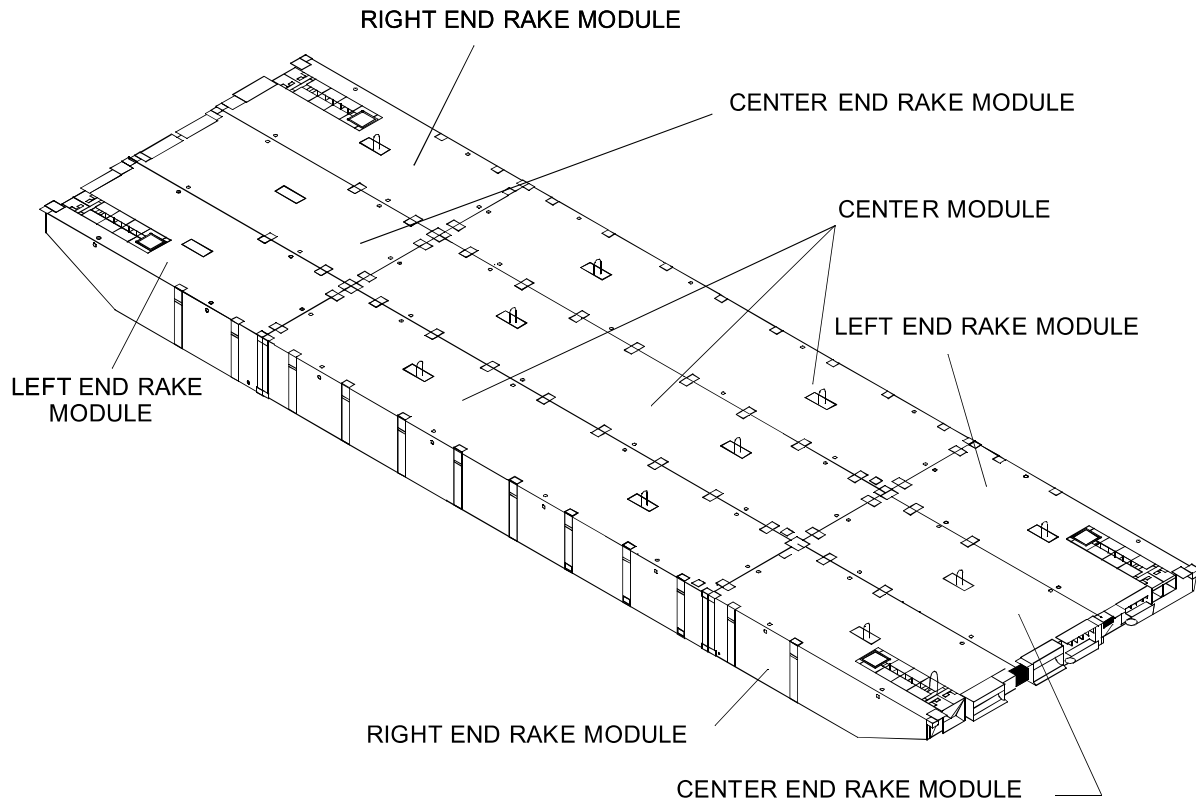


Figure 2. Intermediate Modular Causeway Section

The intermediate section consists of three non-powered center modules and six end rake modules; two center rake modules, two right hand rake modules and two left-hand rake module. Individual modules connect together by means of male and female connector assemblies located around the perimeter of each module. These intermediate sections are assembled to other intermediate sections by means of flexor connectors. The center module is 8 ft wide and 40 ft long. Each end rake is 8 ft wide and 20 ft long. All of the modules have a depth of 4 ft 6 in. The complete assembled intermediate section weighs approximately 142,500 lb.

GENERATOR CONTAINER

The generator container is mounted on the deck of the FC and houses a skid mounted tactical quiet 10 kW diesel generator set which provides electrical power to the personnel shelter.

The generator container is equipped with fluorescent lighting, auxiliary DC lighting system, ventilation system, fire suppression system, 1,000 gallon fuel system and accessories required to support operation of the personnel shelter for 90 days.

PERSONNEL SHELTER

The personnel shelter provides a weatherproof, temperature controlled environment for personnel on the FC.

The personnel shelter is outfitted with fluorescent lighting, tables, benches, heating/cooling unit, communications equipment, electrical outlets, emergency lighting, portable fire extinguishers and a rest room with an electrically powered incinerator toilet

LIGHTING SYSTEM

The lighting equipment is provided to illuminate the deck of the FC and consists of four trailer-mounted light towers. Each light tower is self-contained with its own diesel-fueled power source capable of providing an average of 30 foot-candles of illumination over the area of six sections.

ANCHOR MOORING SYSTEM

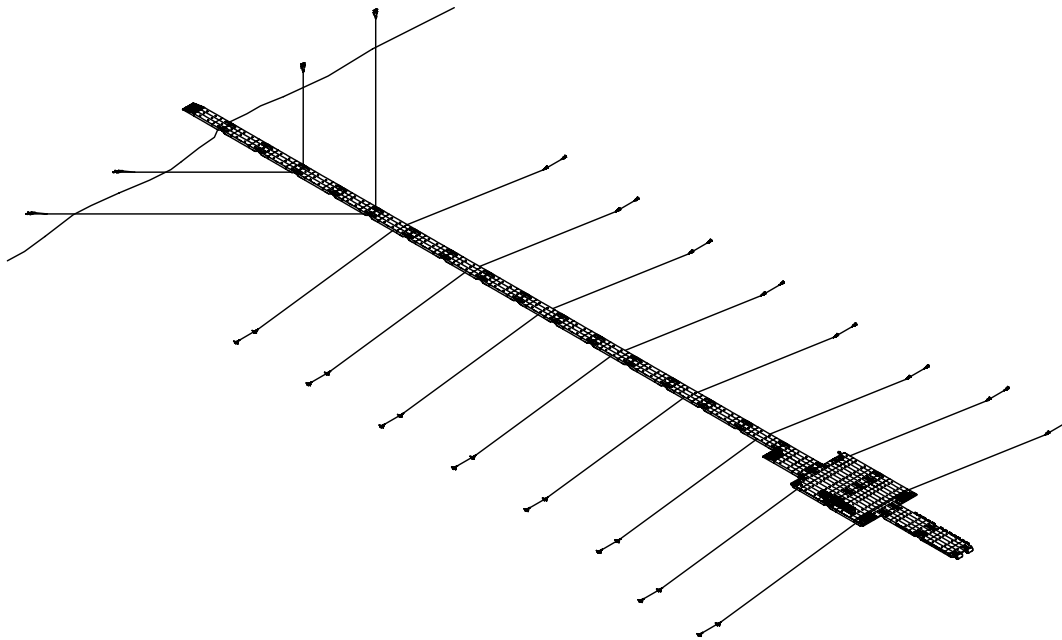


Figure 3. FC Anchor Mooring System

The anchor mooring system is designed to hold the floating causeway in place during Logistics Over The Shore (LOTS) operations in sea conditions up to Sea State 3. The offshore mooring leg is designed to perform in soft soils and sand. The onshore mooring leg is designed to perform in soft soils, sand and competent rock.

In addition to Sea State, the capability of the anchor mooring system to hold the floating causeway in position is highly dependent on the alongshore current speed and number and type of vessels mooring to the floating causeway. It is also dependent on the water depth at the vessel's location. The complete system, which has 16 offshore mooring legs and four onshore mooring legs, is required for a full floating causeway that is 1,500 ft long. The following table (table 2) shows the estimated current speeds for the anchor mooring system to hold the floating causeway in place when one or two lighters are moored alongside the five string wide pierhead extension of the floating causeway.

Table 2. Floating Causeway Anchor Mooring System Current Speeds.

MOORED VESSEL(S)	WATER DEPTH	LIMITING CURRENT CAPACITY (KNOTS)
1 LCU-2000	10 ft	2
1 LCU-2000	15 ft	2.8
1 LCU-2000	20 ft	3.5
2 LCU-2000	10 ft	1.5
2 LCU-2000	15 ft	2.2
2 LCU-2000	20 ft	2.7
1 LSV	15 ft	1.1
1 LSV	20 ft	1.5
2 LSV	15 ft	0.9
2 LSV	20 ft	1.1

COMMUNICATION EQUIPMENT

The communication equipment consists of four Very High Frequency/Frequency Modulation (VHF/FM) handheld transceivers powered by Direct Current (DC) batteries.

A battery charging station for the transceivers is located in the personnel shelter.

FENDERS

There are three types of fenders authorized for use on the FC: 5 ft X 10 ft, 4 ft X 12 ft and 3 ft X 5 ft. The 5 ft X 10 ft fender weighs approximately 1,500 lb. The 4 ft X 12 ft fender weighs approximately 1,450 lb. The 3 ft X 5 ft fender weighs approximately 300 lb.

CORNER FENDERS

The corner fenders provides protection for the corners of the FC platform.

MOORING BITTS

The mooring bitts are used for securing lines from other vessels and fenders to the FC and are mounted in the module guillotine connectors.

DECK MATTING

The deck matting protects the deck of the FC under the ramps of lighter vessels without interfering with their operations and are secured to the deck with fasteners.

DECK FITTINGS

The sections of the FC are provided with D-ring and deck cleat fittings to meet various operational needs.

TOWING BRIDLE AND TOWING INTERFACE

The towing bridle and towing interface allow the FC to be stern towed by commercial and military tugs when platform relocation is required.

BASIC ISSUE ITEMS CONTAINER

The Basic Issue Items (BII) container provides FC personnel with all the necessary tools and equipment required to assemble, operate and maintain the FC and its supporting equipment.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

CENTER MODULE

Location

The center modules are located between and attached to the end rake modules.

Description

The center module is a hollow structure. Each center module has two 25 ton capacity lifting shackles which are flush mounted in the deck. The textured deck and smooth bottom are free of any protrusions that might obstruct packing. Access for internal leak detection of each compartment is provided by three recessed threaded plugs located on the top of the module. Alternating male and female connectors are equally spaced along both sides and ends of the module. These lock assemblies are stowed flush with the surface and, when deployed, they connect modules with minimum clearance.

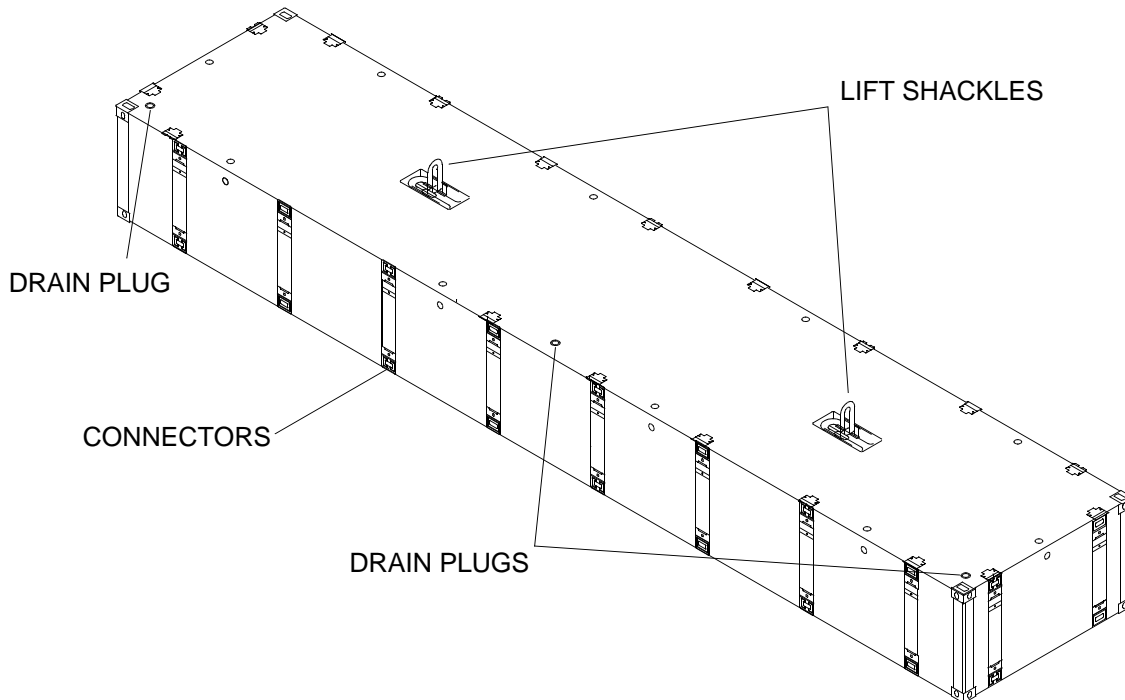


Figure 4. Center Module

CENTER END RAKE MODULE

Location

The center end rake modules are attached to the center module.

Description

The center end rake module is a hollow structure. Each center end rake module has one 25 ton capacity lifting shackle, which is flush mounted in the deck. The textured deck and smooth bottom are free of any protrusions that might obstruct packing. Access for internal leak detection of each compartment is provided by a recessed threaded plug located on the top of the module.

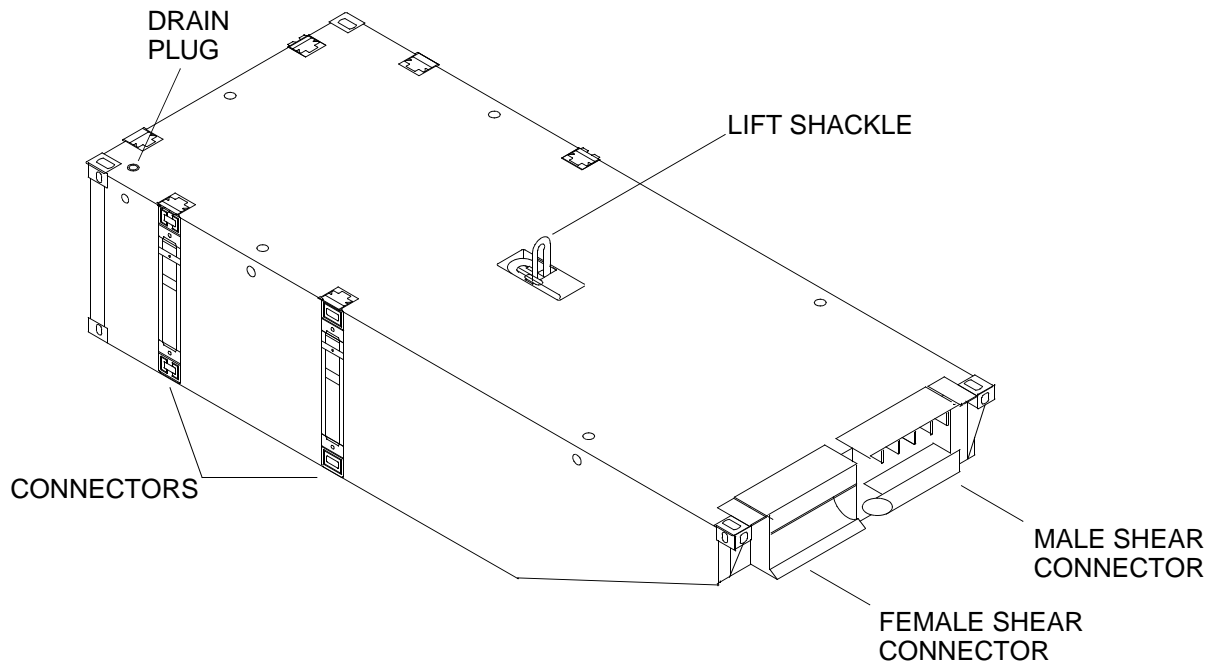


Figure 5. Center End Rake Module

LEFT AND RIGHT END RAKE MODULES

Location

The left and right end rake modules are attached to the center modules.

Description

The left and right end rake modules are hollow structures. Each left and right end rake module has one 25 ton capacity lifting shackle, which is flush mounted in the deck. The textured deck and smooth bottom are free of any protrusions that might obstruct packing. Access for internal leak detection of each compartment is provided by a recessed threaded plug located on the top of the module. The left end rake has a flexor connector pocket for flexor connector installation in the outboard forward corner of the module. The right end rake has a flexor connector pocket for flexor connector installation in the outboard forward corner of the module. The left end rake has a male shear connector and the right end rake has a female shear connector. These are used as a mating device during assembly and act as a hinge during operation.

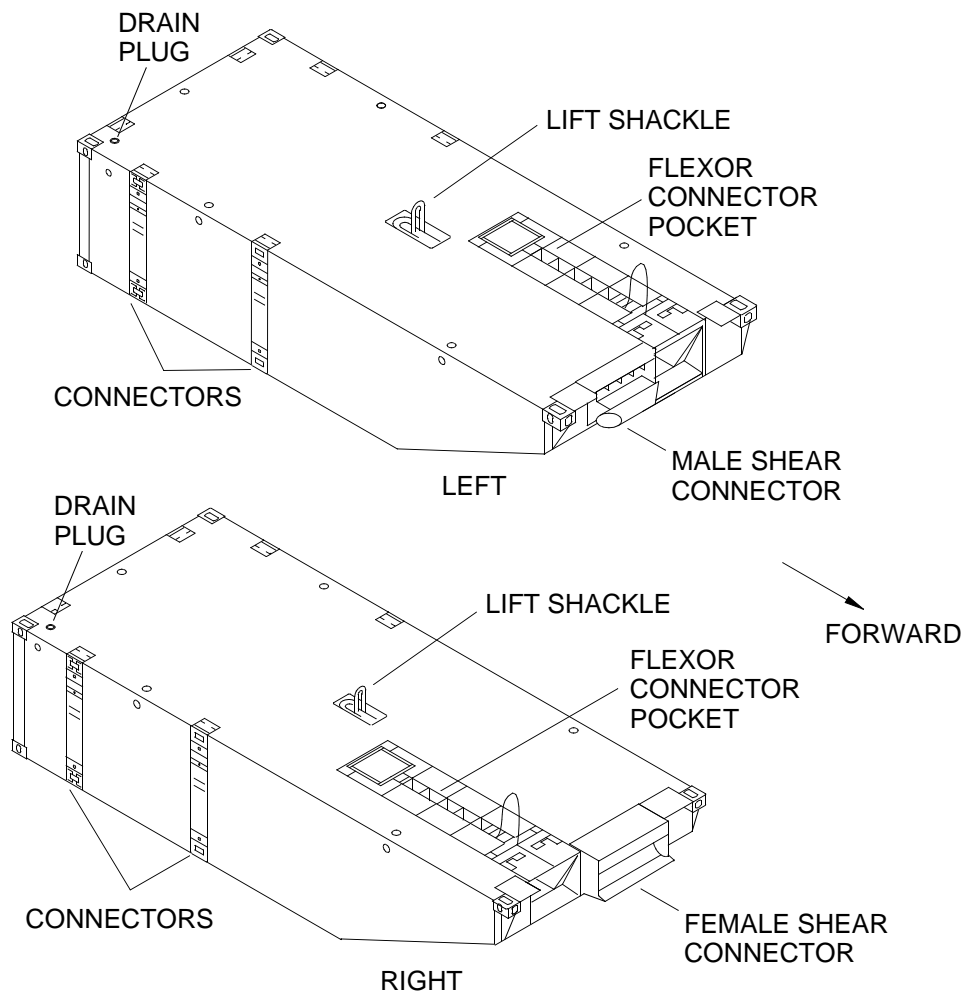


Figure 6. Left and Right End Rake Modules

COMBINATION BEACH/SEA END SECTION

Location

One combination beach/sea end section is attached to the last intermediate section of the beachward end of the causeway and another is attached to the pierhead.

Description

The combination beach/sea end section is made up of three center modules (non-powered), three end rake modules (left, center, and right) and three beach/sea end rake modules. The complete assembled combination beach/sea end section is 85 ft long, 24 ft wide and weighs approximately 141,900 lb.

The combination beach/sea end module is a hollow structure with a ramp slope of 10°. Each CBSE has two 25 ton lifting padeyes, which are flush mounted one per side. Access for internal leak detection of each compartment is provided by a recessed threaded plug located on top of CBSE.

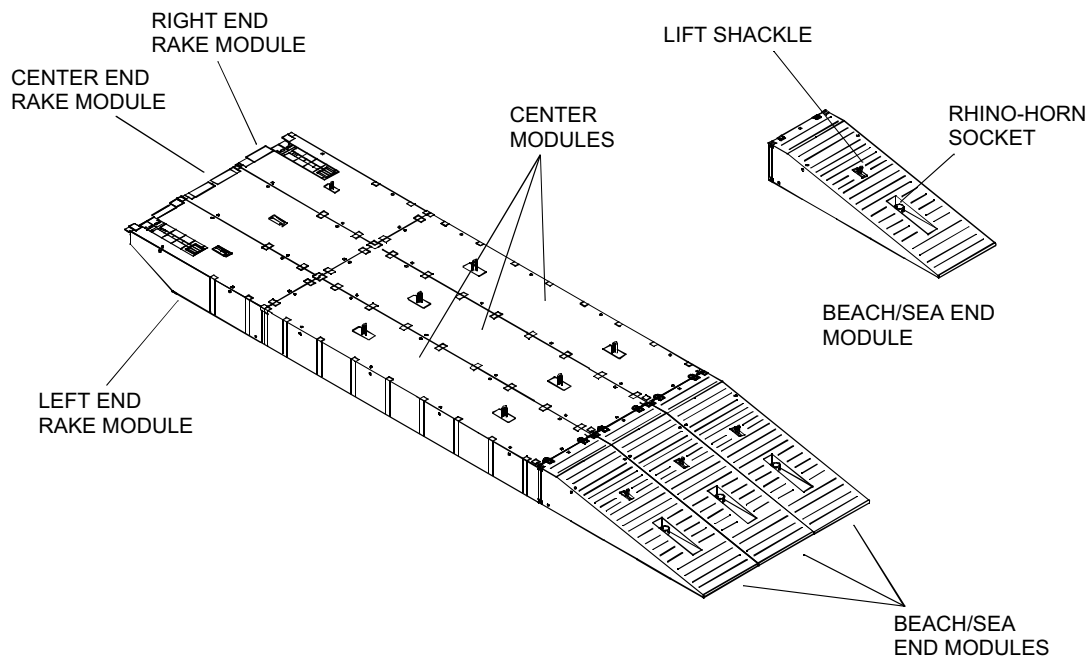


Figure 7. Combination Beach/Sea End Section

INTERCONNECT GUILLOTINES AND FLEXOR CONNECTORS**Location**

The interconnect guillotines are mounted to the sides and ends of the modules.

The flexor connectors are stowed in the left end rake modules.

Description

The interconnect guillotines secure the sides of modules together during assembly of the FC platform. The female guillotine interlocks with the male guillotine connecting pin and lock when the guillotines are flush with the deck.

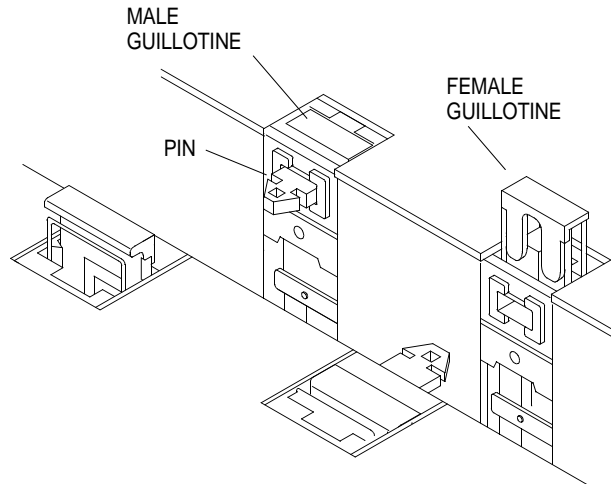


Figure 8. Interconnect Guillotines

The flexor connectors secure the end rake modules together during assembly of the FC platform.

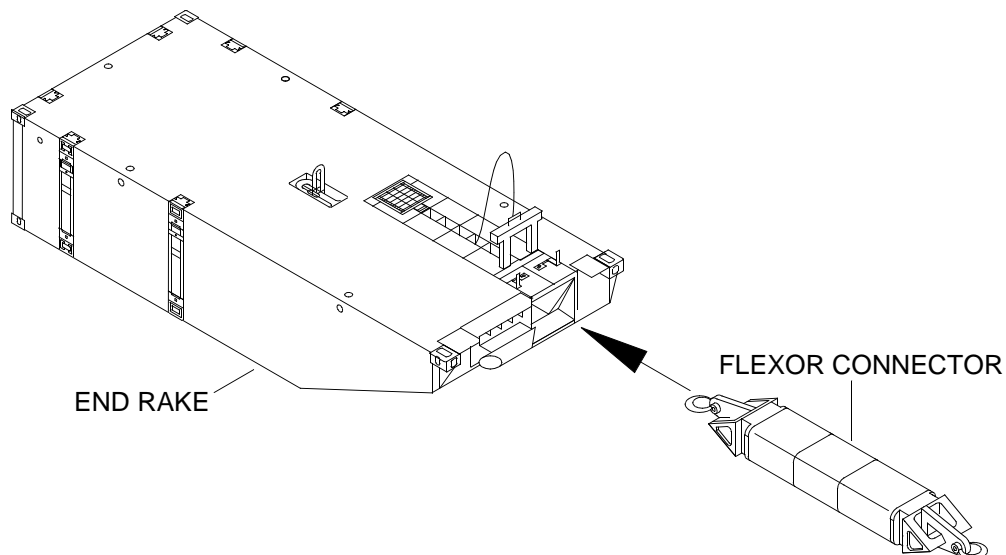


Figure 9. Flexor Connectors

FC STRING

Location

The module string is attached to other strings to make up an intermediate section.

Description

The module string may be assembled in five different configurations: a center module with two center end rake modules, a center module with one left and one right end rake module, a center module with a center end rake and a combination beach/sea end module, a center module with a left end rake and a combination beach/sea end module or a center module with a right end and a combination beach/sea end module.

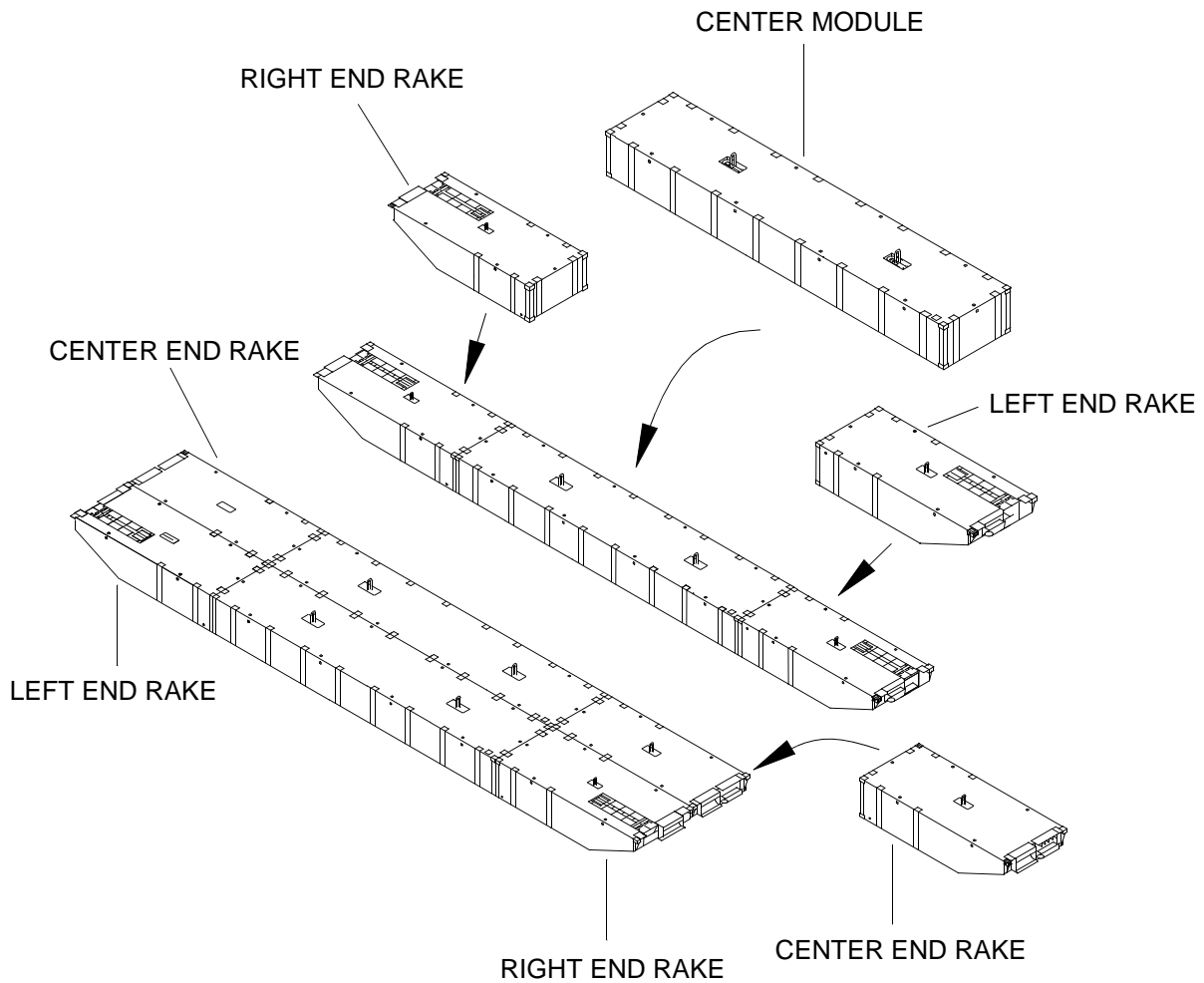


Figure 10. FC String Components

INTERMEDIATE SECTION

Location

The intermediate section is attached to other intermediate sections to construct an FC segment.

Description

An intermediate section is composed of three strings: two outboard strings and a center string. The two outboard strings consist of a center module, left end rake module and right end rake module. The center string consists of a center module and two center end rake modules. Strings are connected using male and female connectors.

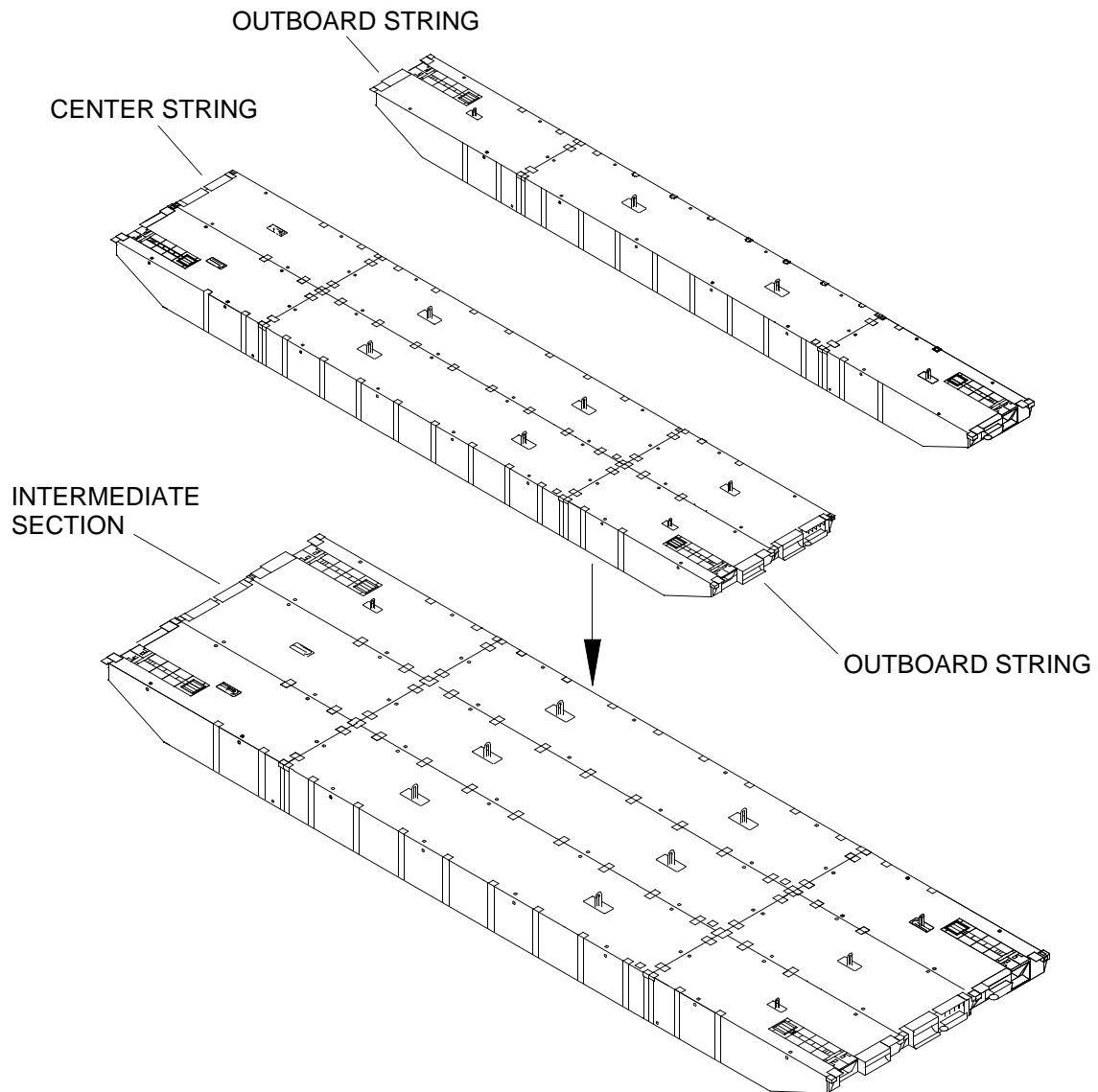


Figure 11. Intermediate Section

PIERHEAD

Location

The pierhead is located at the seaward end of the causeway.

Description

The pierhead is a floating platform for loading and unloading ocean-going sealift vessels. The pierhead consists of two sections: a floating platform which is made up of 10 intermediate modular sections that are assembled by connecting two segments of five wide, making the overall dimensions of the pierhead 160 ft long x 120 ft wide, and a pierhead extension which is made up of 10 module strings, two segments of five wide connected end to end run from the pierhead out to sea. This pierhead extension will be used by the lighter vessels to moor to the floating causeway. The overall dimensions of the pierhead extension is 40 ft wide x 160 ft long. The pierhead is capable of supporting two M-1 Abrams tanks and one sealift vessel's cargo ramp foot on the platform surface. The pierhead will withstand cargo loading through Sea State 2 conditions.

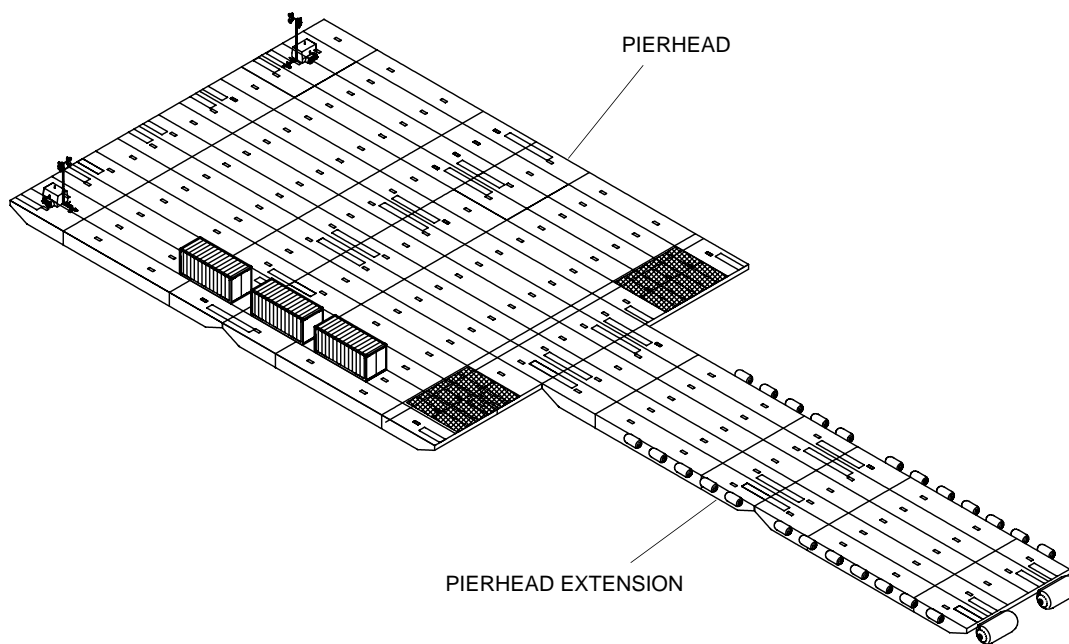


Figure 12. Pierhead

CAUSEWAY**Location**

The causeway extends from the beach, seaward to the pierhead.

Description

The causeway is made up of one or more intermediate sections and one combination beach/sea section interconnected end-to-end to form a floating platform from the pierhead to the beach. The overall length is determined by adding the total length of intermediate sections to the length of the combination beach/sea end section configuration used. The causeway length depends on how far off shore, from the beach, the causeway must extend to give the required water depth. The overall width of the causeway is 24 ft wide.

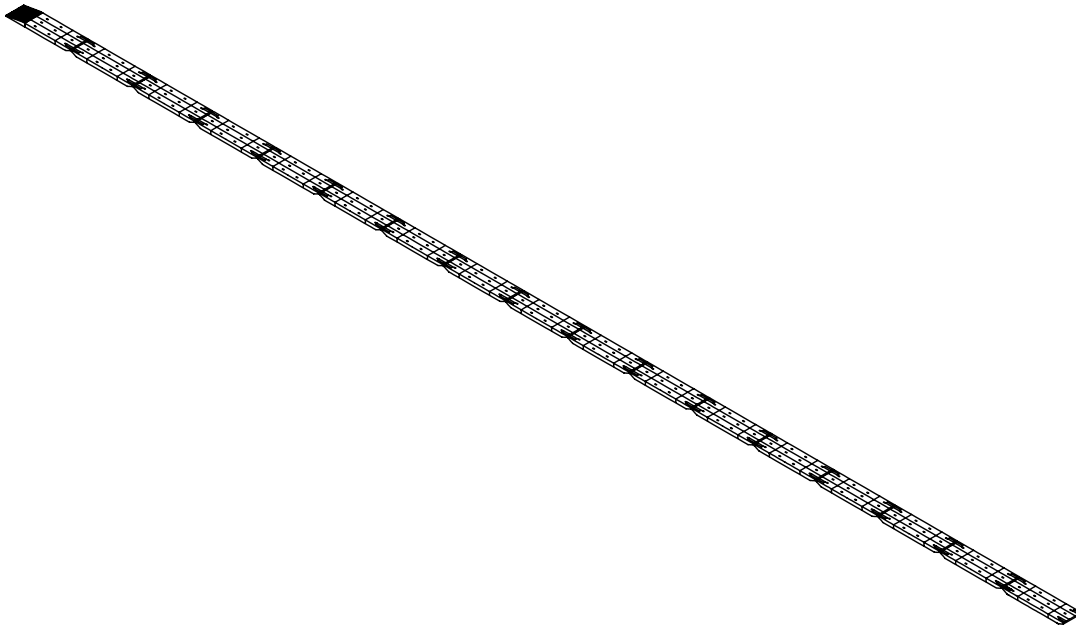


Figure 13. Causeway

OFFSHORE ANCHOR SYSTEM

Location

The offshore mooring legs are attached to the FC with two on each side of the pierhead and, beginning after the pierhead, each alternate section of the causeway is moored.

Description

Sixteen offshore mooring legs are available to secure the FC from drifting. The offshore mooring leg container is a 20 ft full access ISO container that provides stowage for two anchor mooring legs and supports the installation of the mooring legs from the FC deck. An offshore mooring leg contains the following items:

- Two 2,400 lb NAV-MOOR-2 anchors
- Two 150 ft lengths of 1 1/4 in. wire rope
- One vertical padeye
- One 30 ft length of 1 1/4 in. wire rope
- One 45 ft length of 1 1/4 in. wire rope
- One 10 ft length of 1 in. wire rope
- One anchor buoy
- One 1½ in. swivel
- Eight 1 3/8 in. bolt type anchor shackles
- One 1 in. shackle
- Two plastic cable ties

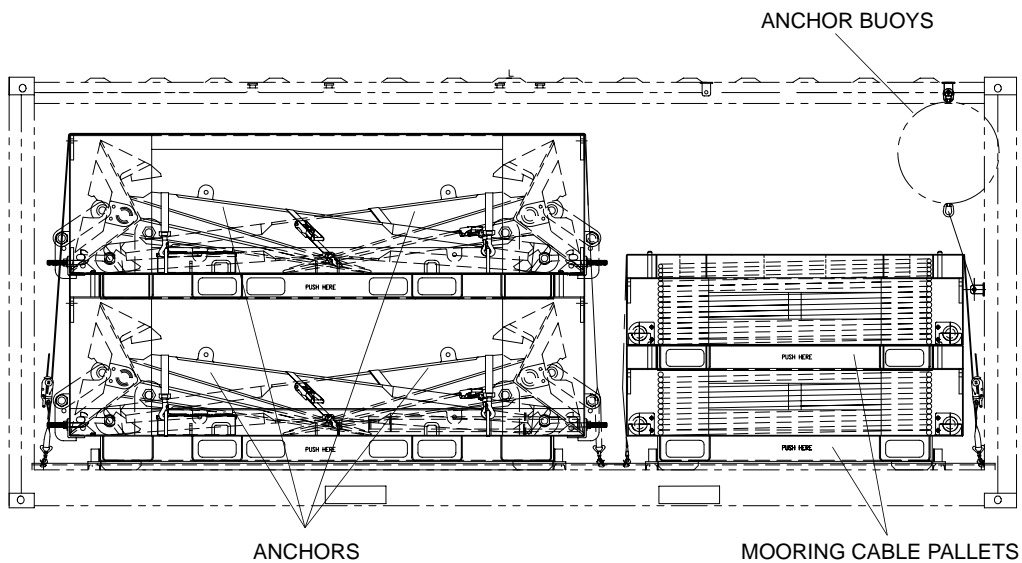


Figure 14. Offshore Anchor Container

ONSHORE ANCHOR SYSTEM

Location

The onshore mooring legs are attached to the causeway segment and located on the third and fifth intermediate sections from the beach.

The onshore mooring legs secure the shoreward end of the causeway to the beach. The four onshore legs for the causeway are stowed and transported in a 20 ft open end ISO container. The onshore mooring leg is designed to perform in soft soils, sand and competent rock.

Description

The onshore mooring container is placed on the deck of the first beach end causeway section. Once the FC is beached, the wire rope assemblies, padeyes and necessary shackles for the first two onshore legs can be assembled and brought ashore for attachment to bulldozers. The remainder of the container contents can be assembled with the container on the FC or the container may be moved to the beach before the remaining contents are assembled. An onshore mooring leg contains the following items:

- Four 120 lb NAVMOOR anchors
- One or two 300 ft long, 1 in. wire rope assemblies
- One horizontal padeye
- One or two 1 3/8 in. shackles
- Four 1/2 in. anchor shackles
- Two 7/8 in. shackles
- Seven 1 in. shackles
- Two carpenter stop assemblies
- One snatch block
- One hoist hook cable
- One griphoist
- One master link
- One flounder plate
- Two anchor bridles
- Two rings
- Two 1/2 in. chain assemblies
- One anchor pendant

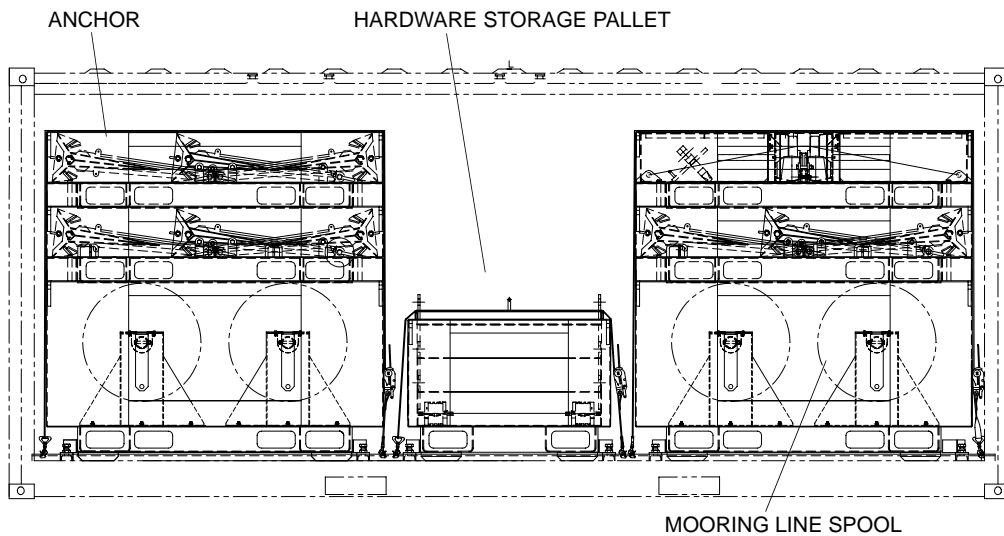


Figure 15. Onshore Anchor Container

10 KW GENERATOR AND CONTAINER

Location

The 10 kW generator is located in a 20 ft container. The container is located on the FC platform.

Description

The description and specifications for the 10 kW generator may be found in TM 9-6115-642-10.

The generator is supplied with fuel by the generator mounted day fuel tank. A 1,000 gallon base fuel tank is mounted in the container. Fuel is transferred to the day fuel tank utilizing an electric fuel transfer pump. A hand operated fuel transfer pump is provided in case of electric fuel transfer pump failure. A fuel level indicator on the generator instrument panel aids in the refueling of the day tank. The 1,000 gallon fuel tank may be refueled inside or outside the container. Fuel level indicator lights are mounted on the inside and outside of the container to aid in refueling the 1,000 gallon fuel tank. The generator container weighs 15,000 lb.

A stainless steel motorized louver provides air to the generator for cooling. Generator exhaust is routed outside of the container. A stainless steel motorized vent provides ventilation for the generator container. Aluminum covers are used while in storage to protect the louvers from the elements.

The container is equipped with a CO₂ fire suppression system. The fire suppression system may be operated automatically or manually. In the automatic mode, one of two fixed temperature heat detector elements will activate the fire suppression system when the temperature exceeds 200°F. When the system activates, an alarm bell sounds, a 24 VDC horn strobe will flash and sound, and CO₂ from one 100 lb cylinder is then discharged through two multijet nozzles to flood the container. The system may be operated in the manual mode using the manual pull station when electrical power is available or by pulling the pin and raising the actuator handle when electrical power is not available. The two elements are located on the generator container roof centerline.

The CO₂ fire suppression system is controlled by the control module. Two 12 VDC rechargeable batteries provide backup power for the module. Upon sensing that a fire is present, the control module activates the fire suppression sequence. A time delay between the initial alarm condition and operation of the shutdown relay occurs. This delay may be programmed for 0, 10, 20 or 30 seconds by the user. The shutdown relay shuts down the generator and allows personnel time to vacate the shelter. After the delay sequence is completed, a second delay before actuation of the fire extinguishing agent occurs. This second delay may be programmed for 0, 10, 20 or 30 seconds by the user. When using the manual pull station, the delays used in the automatic mode are implemented by the control module.

A portable fire extinguisher is mounted on the generator container bulkhead adjacent to personnel access door.

Two warning signs designate the exit and are mounted on both the exterior and interior of the container.

The container is equipped with Alternating Current (AC) fluorescent light fixtures. A load center is used to control the AC system. A Direct Current (DC) lighting system, comprised of a spring wound timer switch, 12 volt battery with battery charger and light fixtures, supply light when AC lighting is not available.

An EMERGENCY STOP button is mounted inside the container personnel access door. When pressed, the EMERGENCY STOP button stops the generator.

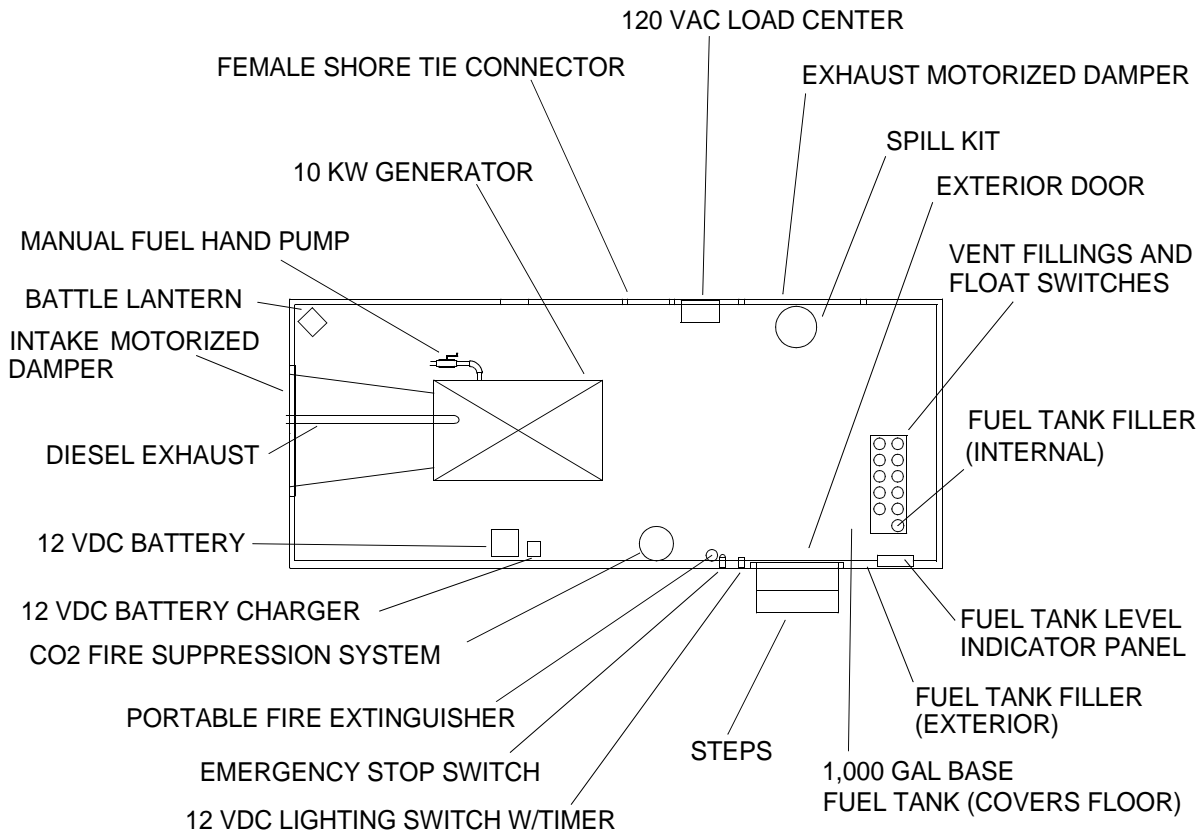


Figure 16. Generator Container

PERSONNEL SHELTER

Location

The personnel shelter is located on the deck of the FC platform.

The description and specifications for the packaged terminal air conditioner and heat pump may be found in TM 55-1945-220-14&P.

The description and specifications for the incinerator toilet may be found in TM 55-1945-219-14&P.

Description

The personnel shelter provides a controlled environment for soldiers supporting the FC platform. The personnel shelter equipment is contained in a 20 ft container. The shelter is equipped with an air conditioner and heat pump unit with remote thermostat, incinerator toilet, AC lighting system (red and white lights), portable fire extinguishers, a battle lantern, bench seating for personnel, a table, a personnel escape scuttle located in the wall over the bench seat and a handheld radio charging station. The personnel shelter receives electrical power from the 10 kW generator.

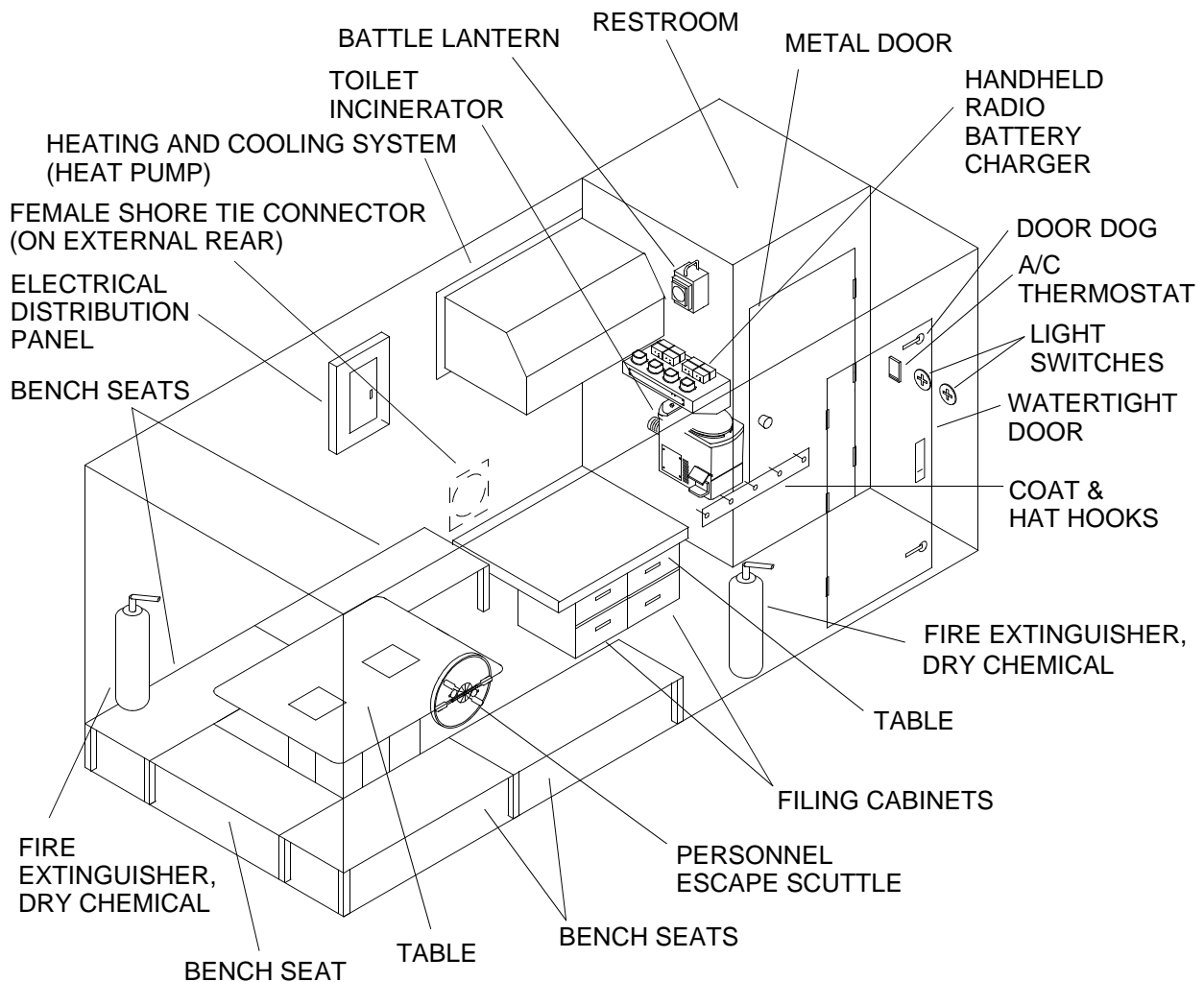


Figure 17. Personnel Shelter

LIGHT TOWERS

Location

The light towers are positioned on the FC platform to provide lighting during night operations. The light towers are positioned by the operators as desired.

The description and specifications for the light tower may be found in TM 55-1945-217-14&P.

The description and specifications for the light tower engine may be found in TM 55-1945-218-14&P.

Description

The light towers are commercially available, self contained lighting systems. The light towers illuminate the work area using four high pressure sodium 1,000 W lamps each. The light towers are powered by a three cylinder diesel engine. The light towers are stored in a 20 ft container when not in use. Each light tower is secured to its shipping pallet that serves as a spill containment pan/tray.

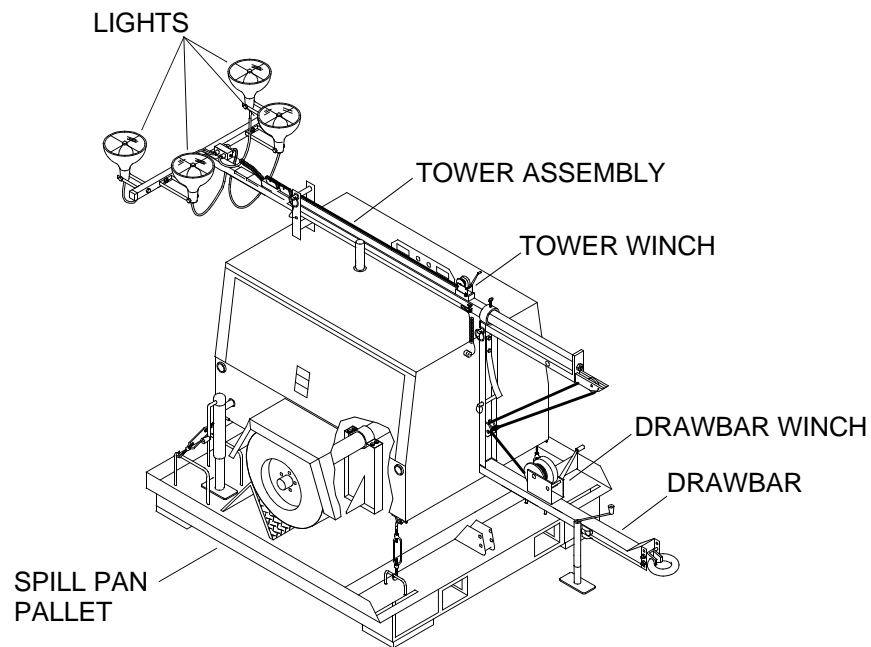


Figure 18. Light Tower Out of Container and Assembled

FENDERS

Location

The corner fenders are installed on protruding corners of the FC pierhead, though the location of the placement of cylindrical fenders will vary with the configuration of the FC.

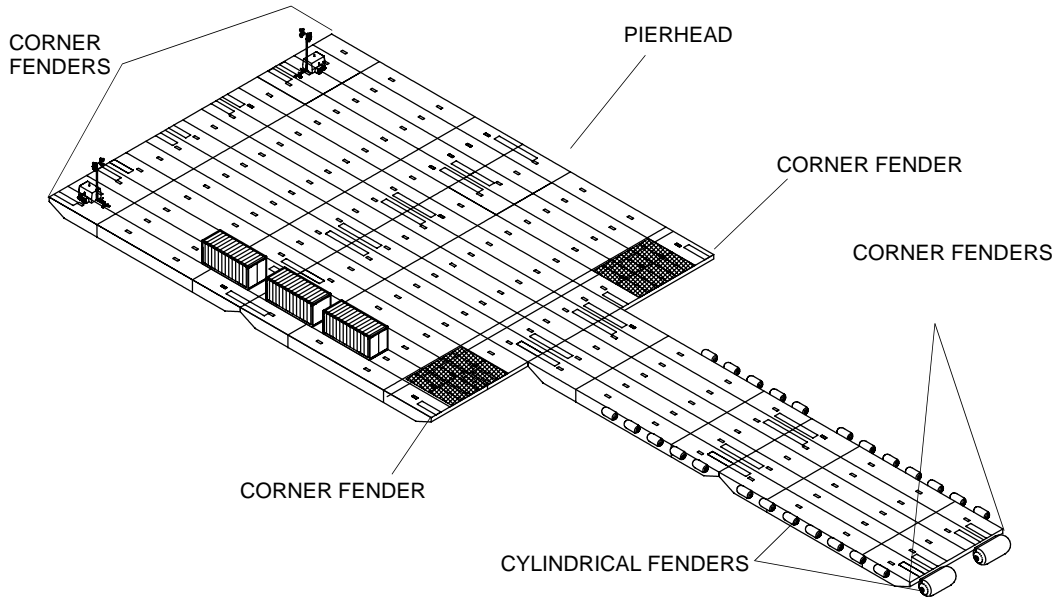


Figure 19. Fenders

Description

There are two types of fenders which are components of the FC. These fenders are cylindrical type and corner type.

Cylindrical Type: There are three sizes of cylindrical shaped fenders constructed of rubber, that are components of the FC. The 5 ft diameter by 10 ft long (2), 4 ft by 12 ft (3) and 3 ft by 5 ft. The 3 ft by 5 ft, 4 ft by 12 ft and 5 ft by 10 ft fenders are stowed on specially constructed pallets in their own 40 ft open top containers. The 3 ft by 5 ft and 4 ft by 12 ft fenders are used for stand-off from lighters. The 5 ft by 10 ft and fenders are used for stand-off from sealift vessels.

Corner Type: The one piece corner fenders (5) are installed on protruding ISO corners of the FC.

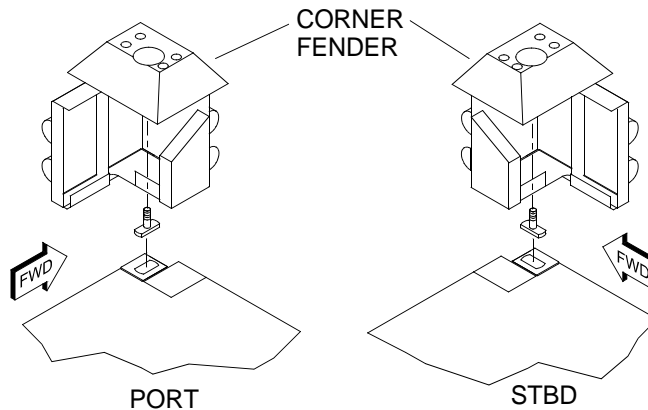


Figure 20. Corner Fenders

MOORING BITTS AND QUICK DISCONNECTS**Location**

The mooring bitts can be installed on any side of the FC that is exposed to the sea and accessible for mooring. Quick disconnect assemblies are attached to the mooring bitts.

Description

Mooring bitts incorporate two mounting connector pins that can only be installed into female module connector assemblies. The quick disconnect is used for creating a safe mooring connection to the mooring bitt. The quick disconnect is designed to break away if excessive pulling force is applied to the FC.

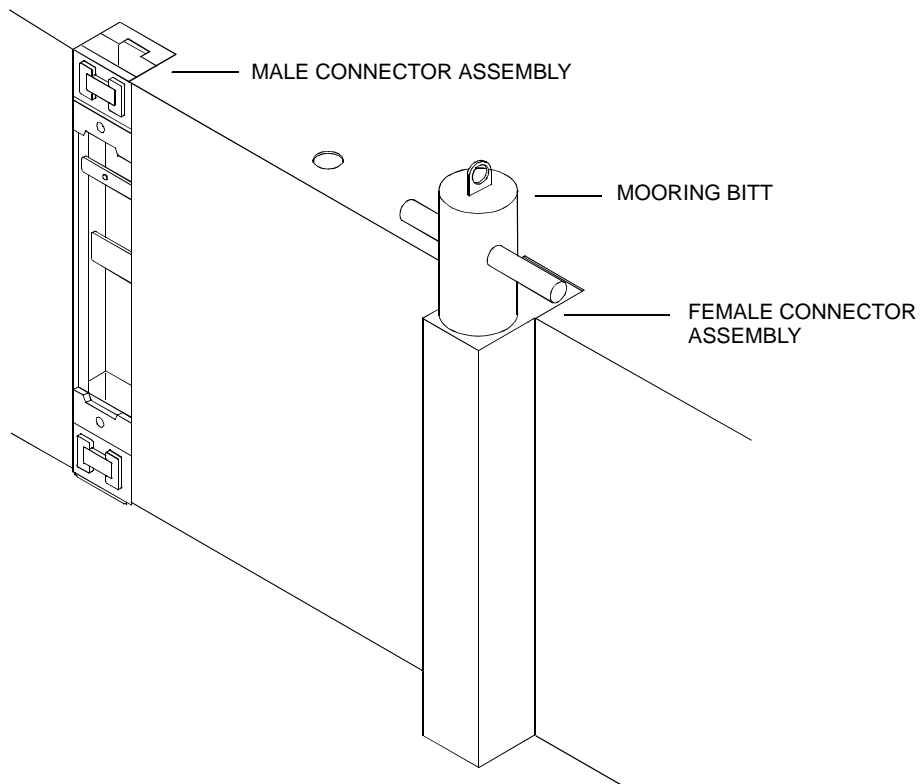


Figure 21. Mooring Bitt and Quick Disconnect

DECK MATS

Location

Individual deck mats are attached to a module ISO corner fitting and are placed where the cargo ramps of the sealift vessel and the lighters will land on the FC. When not in use, the mats are stacked horizontally on a pallet in 20 ft storage containers.

Description

Each deck mat is made of high density polyethylene material and has a hole near each corner that are used for securing the mat to the ISO corner fittings.

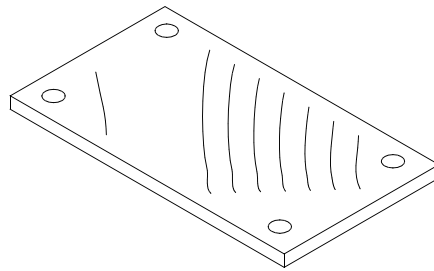


Figure 22. Deck Mat

D-RING AND DECK CLEAT FITTINGS

Location

D-ring and deck cleat fittings are installed in the module turn tubes located on the deck of the FC platform.

Description

These fittings have a 15,000 lb load capacity. There are ten tube turns per center module and five per end rake for mounting the fittings.

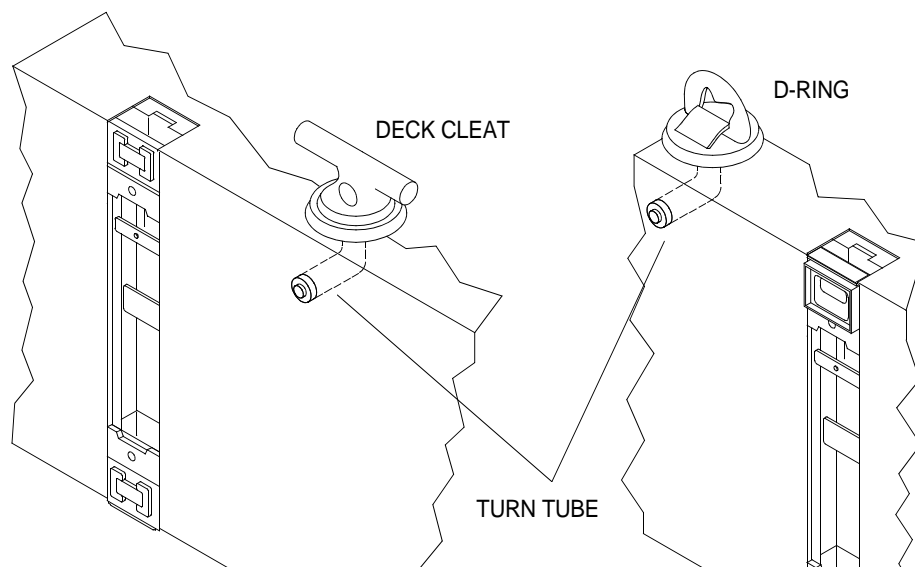


Figure 23. D-Ring and Deck Cleat Fittings

TOWING BRIDLE, TOWING INTERFACE AND TOWING LIGHTS

Location

The towing bridle is attached to towing interface and is stowed in the BII container when not in use.

The towing interface (flexor receiver inserts) are attached to the FC end rakes and are stowed in the BII container when not in use. A lifting device is provided for handling the flexor receiver inserts and is stowed in the EASY container when not in use.

The towing lights should be installed in accordance with the U.S. Coast Guard Navigational Regulations when towing the FC. The lights are stowed in the BII container when not in use.

Description

The towing bridle consists of a 500 ft long by 10 in. circumference nylon line and a 2 1/2 in. anchor swivel connected to spliced in eyes and thimbles of the two bridle legs. The bridle legs are 10 in. circumference 12 strand plaited nylon line. One towing bridle has 35 ft long legs and one towing bridle has 60 ft long legs. Each end of the of the towing bridle has a shackle used to attach the legs to the towing interface at the FC and the other end to a warping tug.

The towing interface is used along with the towing bridle to tow the FC up through Sea State 5 conditions. The flexor receiver insert lifting device is used to install the towing interface.

There are four types of towing lights used during towing of the FC. The towing lights are identified by the color of the lens, which are white, green, red and amber. The lenses are interchangeable and are adjustable for aiming purposes during towing operations. These lights are battery operated and have magnetic bases so no adaptors are needed for installation.

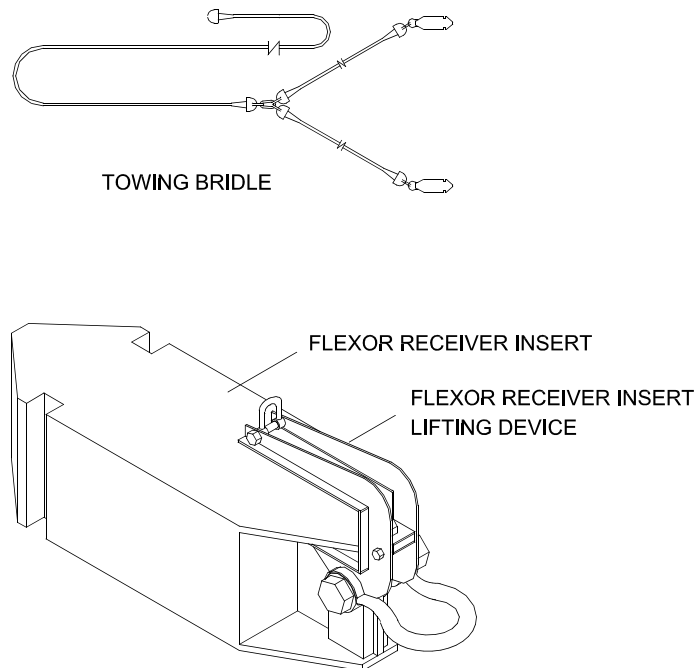


Figure 24. Towing Bridle

LIFE RING ASSEMBLIES

Location

The life ring assemblies are installed at various locations on the FC platform to assist in the rescue of personnel in the water.

Description

The components of the life ring assembly consists of a donut shaped flotation device, nylon rope and strobe light mounted on a turn tube type stanchion.

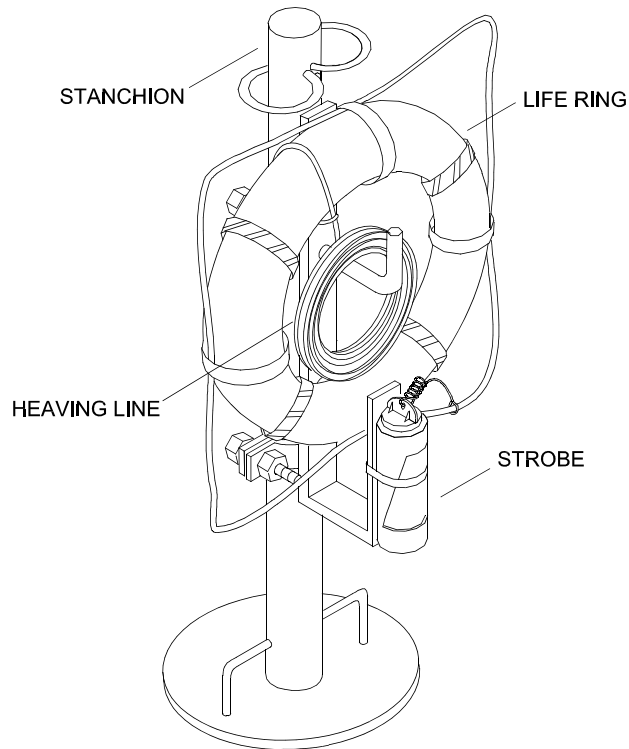


Figure 25. Life Ring Assembly

EQUIPMENT DATA**CENTER MODULE****Table 3. Center Module Data**

ITEM CHARACTERISTIC	DESCRIPTION
Width	8 ft
Length	40 ft
Depth	4 ft 6 in.
Weight	22,400 lb
ISO Compatible	Yes
Sea State Operation	SS 2

END RAKE MODULE**Table 4. End Rake Module Data**

ITEM CHARACTERISTIC	DESCRIPTION
Width	8 ft
Length	20 ft
Depth	4 ft 6 in.
Weight	12,500 lb
Weight (Flexor Stowed)	13,900 lb
ISO Compatible	Yes
Sea State Operation	SS 2

COMBINATION BEACH/SEA END MODULE**Table 5. Combination Beach/Sea End Module Data**

ITEM CHARACTERISTIC	DESCRIPTION
Width	8 ft
Length	25 ft
Depth	4 ft 6 in.
Weight	15,000 lb
ISO Compatible	Yes
Sea State Operation	SS 2

INTERMEDIATE SECTION**Table 6. Intermediate Section Data**

ITEM CHARACTERISTIC	DESCRIPTION
Center Modules (3 Per Section)	Non-Powered
End Rake Modules (6 Per Section)	Compatible With U.S. Navy flexor attachments and shear connectors
Width	24 ft
Length	80 ft
Depth	4 ft 6 in.
Weight of Assembled Intermediate Section	142,200 lb
ISO Compatible	Yes
Sea State Operation	SS 2

COMBINATION BEACH/SEA END SECTION**Table 7. Combination Beach/Sea End Section Data**

ITEM CHARACTERISTIC	DESCRIPTION
Beach/Sea End Modules (3 Per Section)	Non-Powered
Center Modules (3 Per Section)	Non-Powered
End Rake Modules (3 Per Section)	Compatible with U.S. Navy flexor attachments and shear connectors
Width	24 ft
Length	85 ft
Depth	4 ft 6 in.
Weight of Assembled Combination Beach/Sea End Section	149,700 lb
ISO Compatible	Yes
Sea State Operation	SS 2

FC PLATFORM (FULL SIDE)**Table 8. FC Platform (Full Side) Data**

ITEM CHARACTERISTIC	DESCRIPTION
Width	TBD ft
Length	TBD ft
ISO Compatible	Yes
Sea State Operation	SS 2

PERSONNEL SHELTER**Table 9. Personnel Shelter Data**

ITEM CHARACTERISTIC	DESCRIPTION
Width	8 ft
Length	20 ft
Depth	8.5 ft
Weight	9,000 lb
ISO Compatible	Yes

GENERATOR CONTAINER**Table 10. Generator Container Data**

ITEM CHARACTERISTIC	DESCRIPTION
Width	8 ft
Length	20 ft
Depth	8.5 ft
Weight	15,000 lb
ISO Compatible	Yes

DIESEL GENERATOR SET**Table 11. Diesel Generator Set Data**

ITEM CHARACTERISTIC	DESCRIPTION
10 kW Generator Set	Refer to TM 9-6115-642-10
ISO Compatible	Yes

LIGHT TOWERS**Table 12. Light Tower Data**

ITEM CHARACTERISTIC	DESCRIPTION
Width	79 in.
Length	174 in.
Depth	89 in. in travel position, 30 ft in assembled position
Weight	2,010 lb
Weight of Pallet	2,600 lb
Weight of ISO Container, Including Light Towers	19,000 lb
ISO Compatible	Yes

ONSHORE ANCHOR SYSTEM**Table 13. Onshore Anchor System Data**

ITEM CHARACTERISTIC	DESCRIPTION
Container Width	8 ft
Container Length	20 ft
Container Depth	8.5 ft
Container Weight	8,323 lb
ISO Compatible Container	Yes
Number of Onshore Anchor Mooring Legs	4

OFFSHORE ANCHOR SYSTEM**Table 14. Offshore Anchor System Container**

ITEM CHARACTERISTIC	DESCRIPTION
Container Width	8 ft
Container Length	20 ft
Container Depth	8.5 ft
Container Weight	8,345 lb
ISO Compatible Container	Yes
Number of Offshore Anchor Mooring Legs	16

COMMUNICATIONS EQUIPMENT**Table 15. Communications Equipment Data**

ITEM CHARACTERISTIC	DESCRIPTION
Communications Equipment	Consists of four VHF/FM handheld transceivers that are stored in the personnel shelter.

DECK MAT**Table 16. Deck Mat Data**

ITEM CHARACTERISTIC	DESCRIPTION
Material	High density polyethylene material
Width	4 ft
Length	10 ft
Depth	1 ½ in.
Weight	300 lb
Weight of Mat Pallet	13,100 lb
Weight of Deck Mat ISO Container With Deck Mats	22,000 lb
ISO Compatible	Yes

MOORING BITT**Table 17. Mooring Bitt Data**

ITEM CHARACTERISTIC	DESCRIPTION
Length	6 ft 11 in.
Weight	520 lb
Weight of Top Mooring Bitt Pallet (4 Bitts Per Pallet)	3,880 lb
Weight of Middle and Lower Mooring Bitt Pallets (3 Bitts Per Pallet)	3,360 lb each
Weight of ISO Container With Mooring Bitts	29,320 lb
ISO Compatible	Yes

5 FT BY 10 FT FENDER**Table 18. 5 ft by 10 ft Fender Data**

ITEM CHARACTERISTIC	DESCRIPTION
Weight	1,500 lb
Weight of Fender Pallet	2,400 lb
Weight of ISO Container with Fenders	25,200 lb
ISO Compatible	Yes

4 FT BY 12 FT FENDER**Table 19. 4 ft by 12 ft Fender Data**

ITEM CHARACTERISTIC	DESCRIPTION
Weight	1,450 lb
Weight of Fender Pallet	3,800 lb
Weight of ISO Container with Fenders	25,200 lb
ISO Compatible	Yes

3 FT BY 5 FT FENDER**Table 20. 3 ft by 5 ft Fender Data**

ITEM CHARACTERISTIC	DESCRIPTION
Weight	300 lb
Weight of Fender Pallet	3,000 lb
Weight of ISO Container with Fenders	25,200 lb
ISO Compatible	Yes

FLEXOR CONNECTOR**Table 21. Flexor Connector Data**

ITEM CHARACTERISTIC	DESCRIPTION
Weight	1,400 lb

EQUIPMENT CONFIGURATION**FLOATING CAUSEWAY PIERHEAD**

The pierhead is used for loading and unloading ocean going sealift vessels. It is capable of supporting two M-1 Abrams tanks and one sealift vessels' cargo ramp foot on the platform surface. The pierhead extension is used by lighter vessels to moor to the FC. The main platform supports the generator container, personnel shelter and light towers.

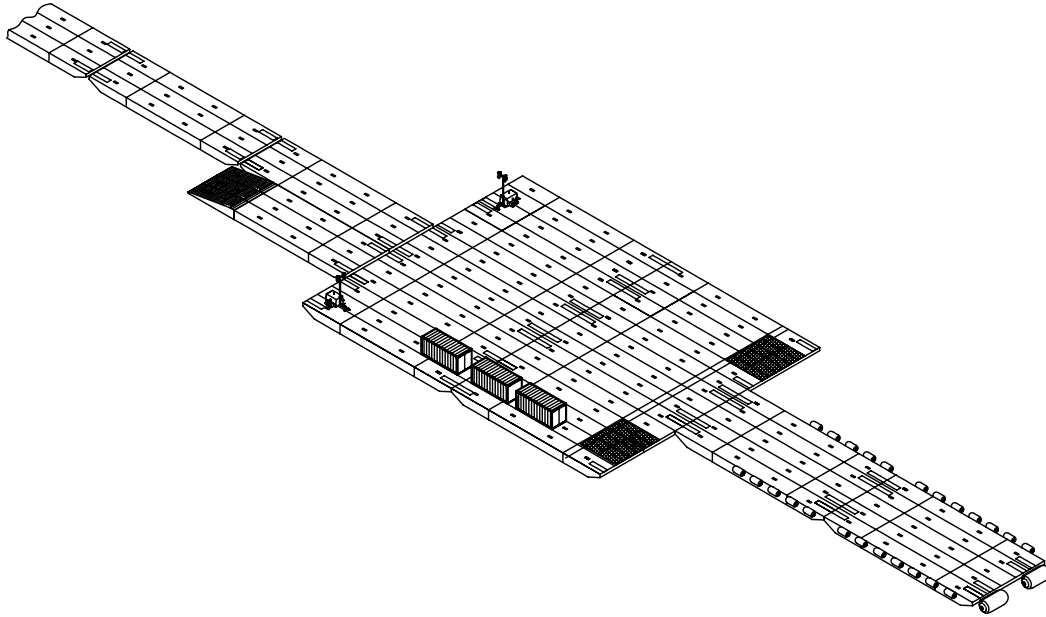


Figure 26. Floating Causeway Pierhead

FORCE OPENING FLOATING CAUSEWAY

The force opening floating causeway is an administrative pier used to get to 15 ft of water depth. It is a floating platform for loading and unloading ocean going sealift vessels. The causeway consists of one or more intermediate sections connected lengthwise and connected to a combination beach/sea end section. The length depends on how far offshore, from the beach, the causeway must extend to give the required water depth. The force opening floating causeway operating conditions are: SS 2 with five foot waves and a current of two knots.

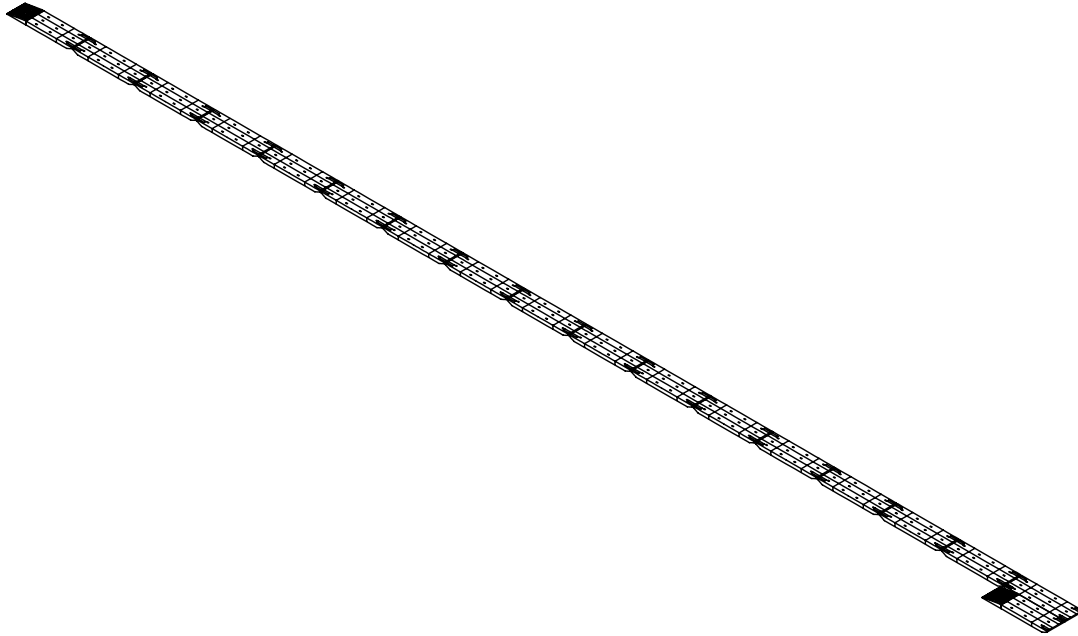


Figure 27. Force Opening Floating Causeway

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
THEORY OF OPERATION**

SYSTEM OPERATION

The Floating Causeway (FC) is a floating platform used during Joint Logistics Over The Shore (J-LOTS) operations on undeveloped beach area where flat underwater gradients are available, and no port area is available for direct shoreside discharge of vessels. The FC consists of three major segments; pierhead extension, pierhead and causeway. The pierhead extension is the most seaward part of the floating platform and is used for loading and unloading of more than one ocean-going sealift and lighter vessels. It may also be used to moor lighter vessels to the FC. The pierhead, connected between the pierhead extension and the causeway, is a floating platform used as a working area and a set up area for such items as the personnel shelter, diesel generator and light towers. The causeway extends from the pierhead to the beach, where a combination beach/sea end assembly is connected. The causeway is a docking pierhead and provides a means of delivering containers, vehicles and bulk cargo ashore. The FC may be set up in different configurations based on the operational situation and the best method of loading and unloading.

One configuration is the force opening floating causeway or an administrative pier with a single roadway extending from the beach out to 15 ft of water depth at the unloading and loading point. This configuration would be used for single point loading or unloading of cargo, as no pierhead or pierhead extension is used. The FC is held in place during J-LOTS operations by onshore and offshore anchor mooring legs. The structure of the FC will withstand cargo loading and unloading through Sea State 2 conditions.

10 KW SKID-MOUNTED TACTICAL QUIET GENERATOR

Refer to TM 9-6115-642-10 for the theory of operation of the 10 kW diesel generator set.

PERSONNEL SHELTER

The personnel shelter is contained in a 20 ft container. Power is supplied to the shelter from the tactical quiet generator through a power cable stored in the shelter and connected from a 100 amp connector on the backside of the shelter to a 100 amp connector on the generator container. The power provided by the generator supplies power to the electrical distribution panel, which is cabled to the incinerator toilet, heating and cooling unit, lighting and to the GFI receptacles in the personnel shelter.

6 KW TRAILER-MOUNTED LIGHT TOWER

The lighting system consists primarily of a self-contained, trailer mounted, 6 kW diesel generator, which illuminates the work area using four high pressure sodium 1,000 W lamps. The power to each lamp is controlled by individual switches on a control panel. The power is received from a 120 VAC, two phase alternator, which is cabled through two 25 amp circuit breakers, to the switches, to a ballast box and connected by quick disconnects to the lights.

VHF/FM HANDHELD TRANSCEIVER

The VHF/FM handheld transceivers are utilized for communicating between personnel during loading and unloading operations on the FC. The transceiver has a frequency range of 156.025 to 163.275 MHz, plus 10 weather channels. The transceiver has an RF power output with the CNB350 battery of 5.0 watts (high) and 1.0 watts (low). The operating voltage is 7.2 VDC. Current drain in standby mode is 40 mA, in receive mode 200 mA, in the transmit mode 1.8 amps (high power) and 0.7 amps (low power). The battery life (5% Tx, 5% rcv, 90% standby) is approximately 10 hrs (high mode) and 15 hrs (low mode). The audio response is within +2/-8 of 6 dB/octave pre-emphasis characteristic from 300 Hz to 3,000 Hz. The AF harmonic distortion of the transmitter is 3%. The transmitter has a hum and noise rating of 37 dB and a frequency stability (-20 Degrees to +50 Degrees C) of +/- 0.0005%. The receiver has a sensitivity rating of 20 dB, quieting at 0.35 uV and 12 dB SINAD at 0.30 uV. The squelch sensitivity (threshold) is 0.20 uV. Modulation acceptance bandwidth is + 4.5 kHz.

ANCHOR MOORING SYSTEM

The anchor mooring system is designed to hold the floating causeway during J-LOTS operations in sea conditions up to Sea State 3. The offshore mooring leg is designed to perform in soft soils and sand. The onshore mooring leg is designed to perform in soft soils, sand and competent rock. In addition to Sea State, the capability of the anchor mooring system to hold the floating causeway in position is highly dependent on the alongshore current speed and number and type of vessels mooring to the floating causeway. It is also dependent on the water depth at the vessel's location. The complete system, which has 16 offshore mooring legs and four onshore mooring legs, is required for a full floating causeway that is 1,500 ft long.

INCINERATOR TOILET

Refer to TM 55-1945-219-14&P for the theory of operation of the incinerator toilet.

CHAPTER 2

**OPERATOR INSTRUCTIONS
FOR
MODULAR CAUSEWAY SYSTEM (MCS)
FLOATING CAUSEWAY (FC)**

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
DESCRIPTION AND USE OF OPERATOR CONTROLS AND
INDICATORS**

GENERAL

The following paragraphs contain illustrations that show the location of each control and indicator for operation of the FC platform and installed items of equipment. Each control and indicator is clearly labeled as it appears on the equipment. Numbers on the illustrations are keyed to the tabular listing which contain the names, based on the equipment markings, and the functional description of each control and indicator.

10 KW GENERATOR CONTROLS AND INDICATORS

Refer to TM 9-6115-642-10 for generator operating procedures.

10 KW GENERATOR DAY FUEL TANK CONTROLS AND INDICATORS

Table 1 describes the controls and indicators for the 10 kW generator day fuel tank.

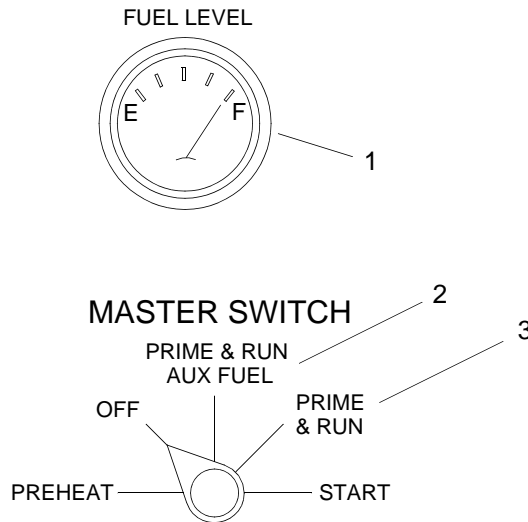


Figure 1. 10 kW Generator Day Fuel Tank Controls and Indicators

Table 1. 10 kW Generator Day Fuel Tank Controls and Indicators

KEY	CONTROL/INDICATOR	FUNCTION
1	Day FUEL LEVEL Gauge	Indicates the amount of fuel in the generator day tank.
2	MASTER SWITCH PRIME AND RUN AUX FUEL Position	Energizes generator set run circuits with auxiliary fuel pump operating.
3	MASTER SWITCH PRIME AND RUN Position	Energizes generator set run circuits with auxiliary fuel pump de-energized.

GENERATOR CONTAINER 1,000 GALLON FUEL TANK CONTROLS AND INDICATORS

Table 2 describes the controls and indicators for the generator container 1,000 gallon fuel tank.

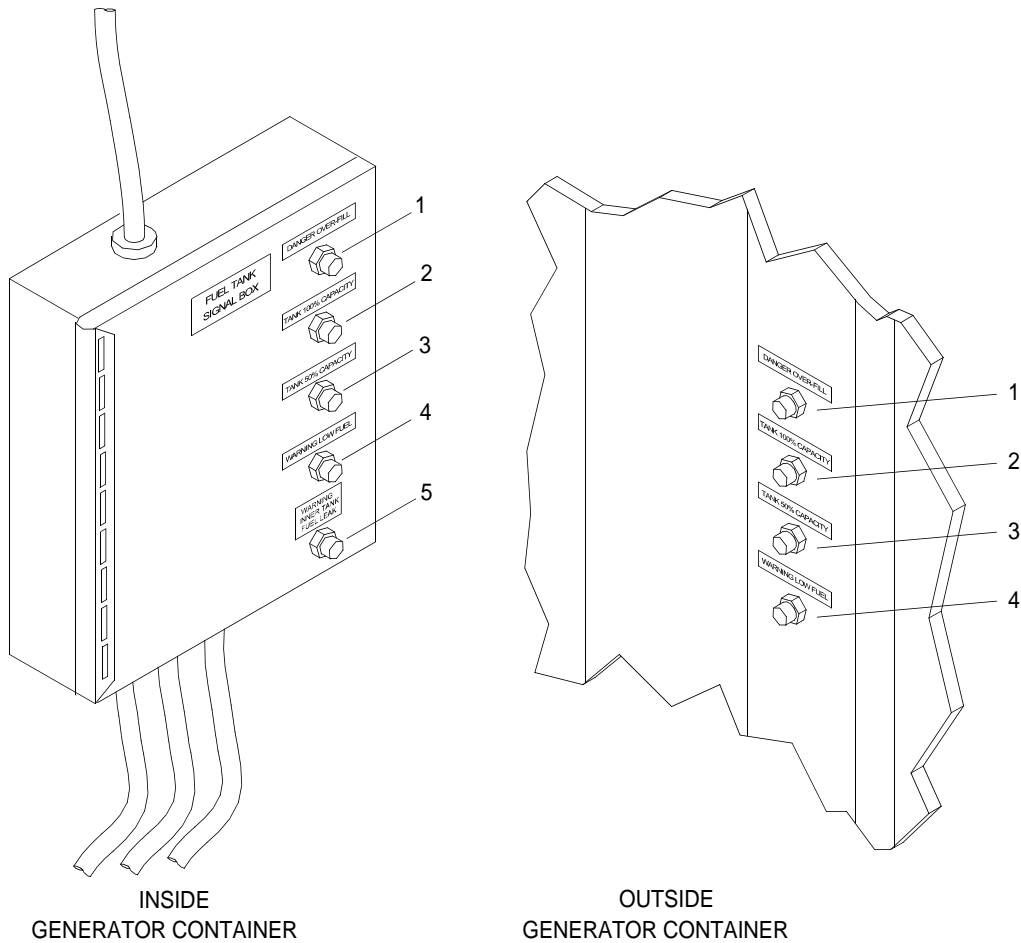


Figure 2. Generator Container 1,000 Gallon Fuel Tank Operator Controls and Indicators.

Table 2. Generator Container 1,000 Gallon Fuel Tank Operator Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	DANGER OVER-FILL Indicator Light	Light illuminates when tank is overfilled during refueling operations.
2	TANK 100% CAPACITY Indicator Light	Light illuminates when fuel tank is at 100% of capacity.
3	TANK 50% CAPACITY Indicator Light	Light illuminates when fuel tank has 50% of fuel remaining in tank.
4	WARNING LOW FUEL Indicator Light	Light illuminates when tank fuel level is low.
5	WARNING INNER TANK FUEL LEAK Indicator Light	Light illuminates when an inner tank fuel leak is detected.

GENERATOR CONTAINER OVERHEAD LIGHTS CONTROLS AND INDICATORS

Table 3 describes the controls and indicators for the generator container overhead lights.

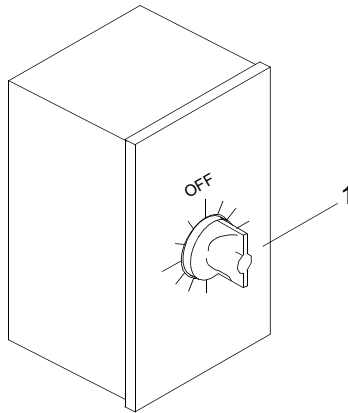


Figure 3. Generator Container Overhead Lights Operator Control.

Table 3. Generator Container Overhead Lights Operator Control.

KEY	CONTROL/INDICATOR	FUNCTION
1	Overhead Lighting Timer Switch	When timer switch is turned, overhead lighting illuminates. Duration of illumination is dependant upon time set on dial of switch.

GENERATOR EMERGENCY STOP CONTROLS AND INDICATORS

Table 4 describes the controls and indicators for the generator emergency stop.

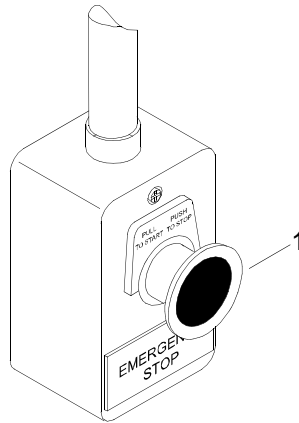


Figure 4. Generator Emergency Stop Operator Control.

Table 4.

KEY	CONTROL/INDICATOR	FUNCTION
1	Generator Emergency Stop	When pushed, stops generator. Switch must be pulled out to restart generator.

GENERATOR CONTAINER FIRE SUPPRESSION SYSTEM CONTROLS AND INDICATORS

Table 5 describes the controls and indicators for the generator container fire suppression system.

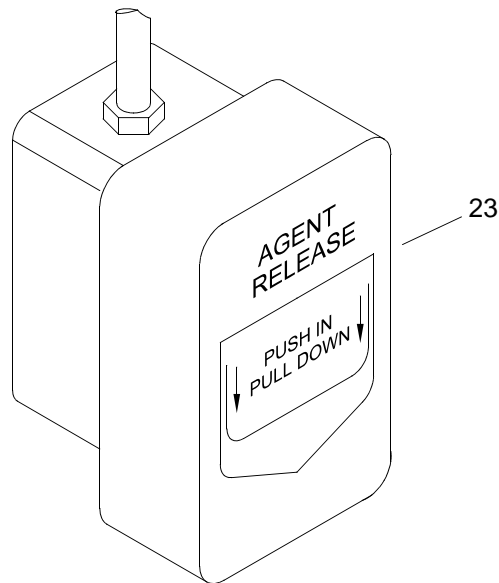
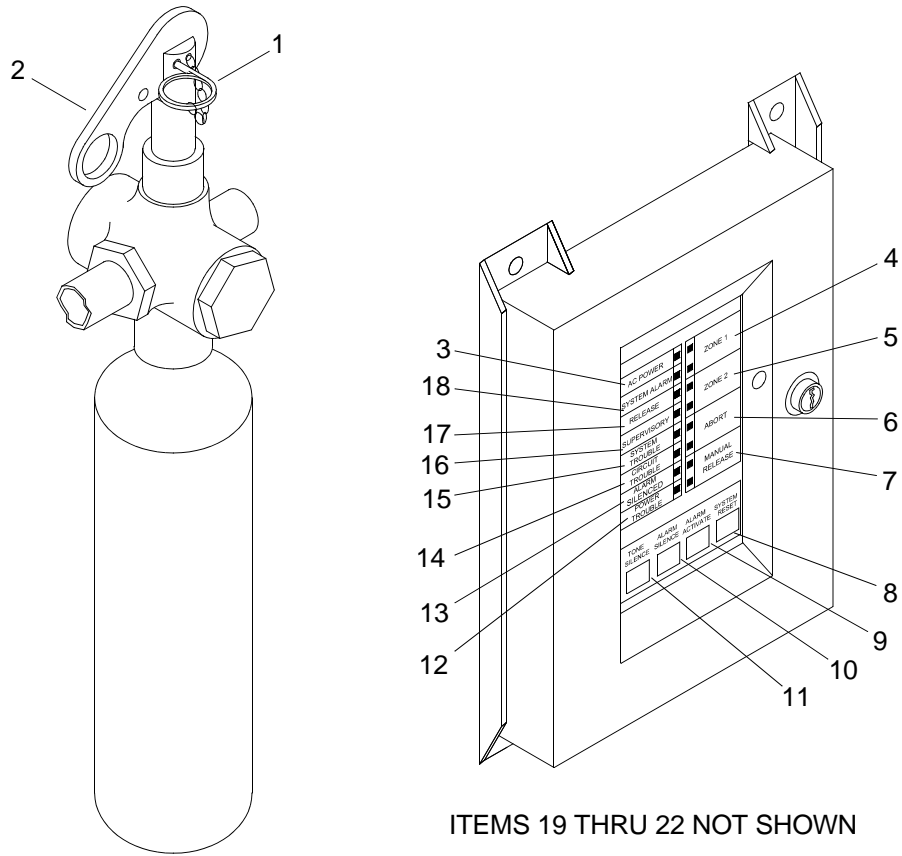


Figure 5. Generator Container Fire Suppression System Operator Controls and Indicators.

Table 5. Generator Container Fire Suppression System Operator Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	Ring Pin	Pull ring pin to allow manual activation of fire suppression system.
2	Manual Actuator Handle	Manually activates fire suppression system. 30 seconds later CO2 will discharge.
3	Control Module AC POWER Green LED Indicator	LED indicator is lit (steady green) when AC power is present.
4	Control Module ZONE 1 Red Alarm and Yellow Trouble LED Indicators	For ZONE 1, alarm LED indicator is lit (flashing red) for alarm condition and (steady red) for acknowledged alarm condition. Trouble LED indicator is lit (flashing yellow) for system or circuit trouble and (steady yellow) for acknowledged trouble condition.
5	Control Module ZONE 2 Red Alarm and Yellow Trouble LED Indicators	For ZONE 2, alarm LED indicator is lit (flashing red) for alarm condition and (steady red) for acknowledged alarm condition. Trouble LED indicator is lit (flashing yellow) for system or circuit trouble and (steady yellow) for acknowledged trouble condition.
6	Control Module ZONE 3 ABORT Red Abort and Yellow Abort Trouble LED Indicators.	For ZONE 3, abort LED indicator is lit (steady red) when an abort condition occurs. Abort trouble LED indicator is lit (steady yellow) when trouble condition exists in abort circuitry.
7	Control Module ZONE 4 MANUAL RELEASE Red Manual Release and Yellow Manual Release Trouble LED Indicators	For ZONE 4, manual release LED indicator is lit (steady red) when system is manually activated. Manual release trouble LED indicator is lit (steady yellow) when trouble condition exists in manual release circuitry.
8	Control Module RESET Switch	Pushbutton used to break power to all initiating circuits and will clear any activated output circuits. If alarm or trouble conditions still exist after RESET is depressed, conditions will reactivate control module. Holding RESET down will perform a lamp test and will test piezo.
9	Control Module ALARM ACTIVATE Switch	Pushbutton may be used to activate notification appliance circuits. Also activates system alarm relay. When ALARM ACTIVATE is depressed, notification circuits and system alarm relay are silenced, and ALARM SILENCED LED will illuminate. RESET must be depressed to return system to normal.
10	Control Module ALARM SILENCE Switch	Pushbutton used to acknowledge alarms and supervisories. When ALARM SILENCE is depressed, flashing LEDs turn steady, piezo silences and ALARM SILENCED LED will illuminate. RESET must be depressed to return system to normal.
11	Control Module TONE SILENCE Switch	Pushbutton is depressed to acknowledge alarms, troubles and supervisories. Control module alarm and trouble conditions will produce flashing LED indicators and sound piezo. When TONE SILENCE is depressed, flashing LEDs turn steady and piezo silences. A second trouble condition will resound piezo. Although trouble conditions are self-restoring, alarms require RESET to be depressed to clear conditions.

Table 5. Generator Container Fire Suppression System Operator Controls and Indicators. (Continued)

KEY	CONTROL/INDICATOR	FUNCTION
12	Control Module POWER TROUBLE Yellow LED Indicator	LED indicator is lit (flashing yellow) for low or disconnected batteries and earth fault conditions.
13	Control Module ALARM SILENCED Yellow LED Indicator	LED indicator is lit (steady yellow) when ALARM SILENCE switch has been depressed after an alarm.
14	Control Module CIRCUIT TROUBLE Yellow LED Indicator	LED indicator is lit (flashing yellow) for trouble conditions on output circuits (notification and releasing circuits).
15	Control Module SYSTEM TROUBLE Yellow LED Indicator	LED indicator is lit (flashing yellow) for all trouble conditions.
16	Control Module SUPERVISORY Yellow LED Indicator	LED indicator is lit (flashing yellow) upon activation of a supervisory device.
17	Control Module RELEASE Red LED Indicator	LED indicator is lit (steady red) when release occurs.
18	Control Module SYSTEM ALARM Red LED Indicator	LED indicator is lit (flashing red) when alarm occurs.
19	BATT Yellow LED Indicator (Internal)	LED indicator is lit on internal motherboard (steady yellow) when battery power is low or not detected.
20	EARTH Yellow LED Indicator (Internal)	LED indicator is lit on internal motherboard (steady yellow) when a ground fault condition exists.
21	MICRO FAIL LED Indicator (Internal)	LED indicator is lit on internal motherboard (steady yellow) when watchdog timer detects microprocessor failure.
22	Piezo (Local Buzzer) Alarm Tones (Internal)	Three specific tones from piezo indicate different alarm/ trouble conditions. * Alarm - generates a steady tone, no pulse. * Trouble - pulses one second on, one second off and repeats 30 pulses per minute. * Supervisory - pulses one-half second on, one-half second on and repeats 60 pulses per minute.
23	Electric Manual Pull Station	Manually initiates fire suppression system. Lift lever to actuate. Time delay circuit will activate.

GENERATOR CONTAINER ELECTRICAL DISTRIBUTION PANEL BOARD CONTROLS AND INDICATORS

Table 6 describes the controls and indicators for the generator container electrical distribution panel board.

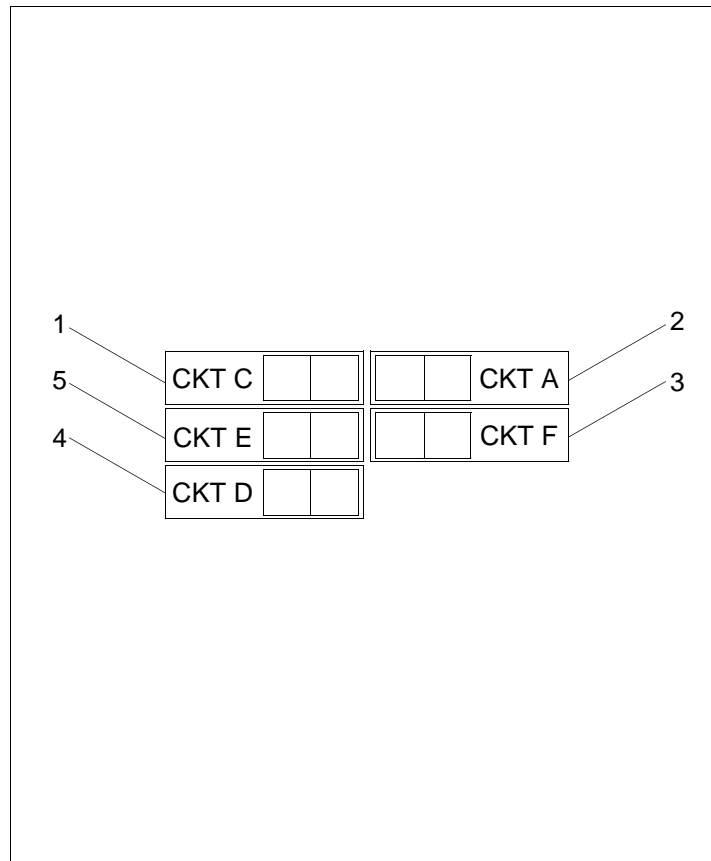


Figure 6. Generator Container Electrical Distribution Panel Board Operator Controls and Indicators.

Table 6. Generator Container Electrical Distribution Panel Board Operator Controls and Indicators

KEY	CONTROL/INDICATOR	FUNCTION
1	CIRCUIT BREAKER "C"	Provides circuit protection for overhead lighting. Rated at 20 amps.
2	CIRCUIT BREAKER "A"	Provides circuit protection for louver motor. Rated at 20 amps.
3	CIRCUIT BREAKER "F"	Provides circuit protection for float switches and battery charger. Rated at 20 amps.
4	CIRCUIT BREAKER "D"	Provides circuit protection for fire detection control module. Rated at 20 amps.
5	CIRCUIT BREAKER "E"	Provides circuit protection for charger receptacle. Rated at 20 amps.

PERSONNEL SHELTER HEATING AND AIR CONDITIONING SYSTEM AND ELECTRICAL DISTRIBUTION PANEL BOARD CONTROLS AND INDICATORS

Table 7 describes the controls and indicators for the personnel shelter heating and air conditioning system and electrical distribution panel board.

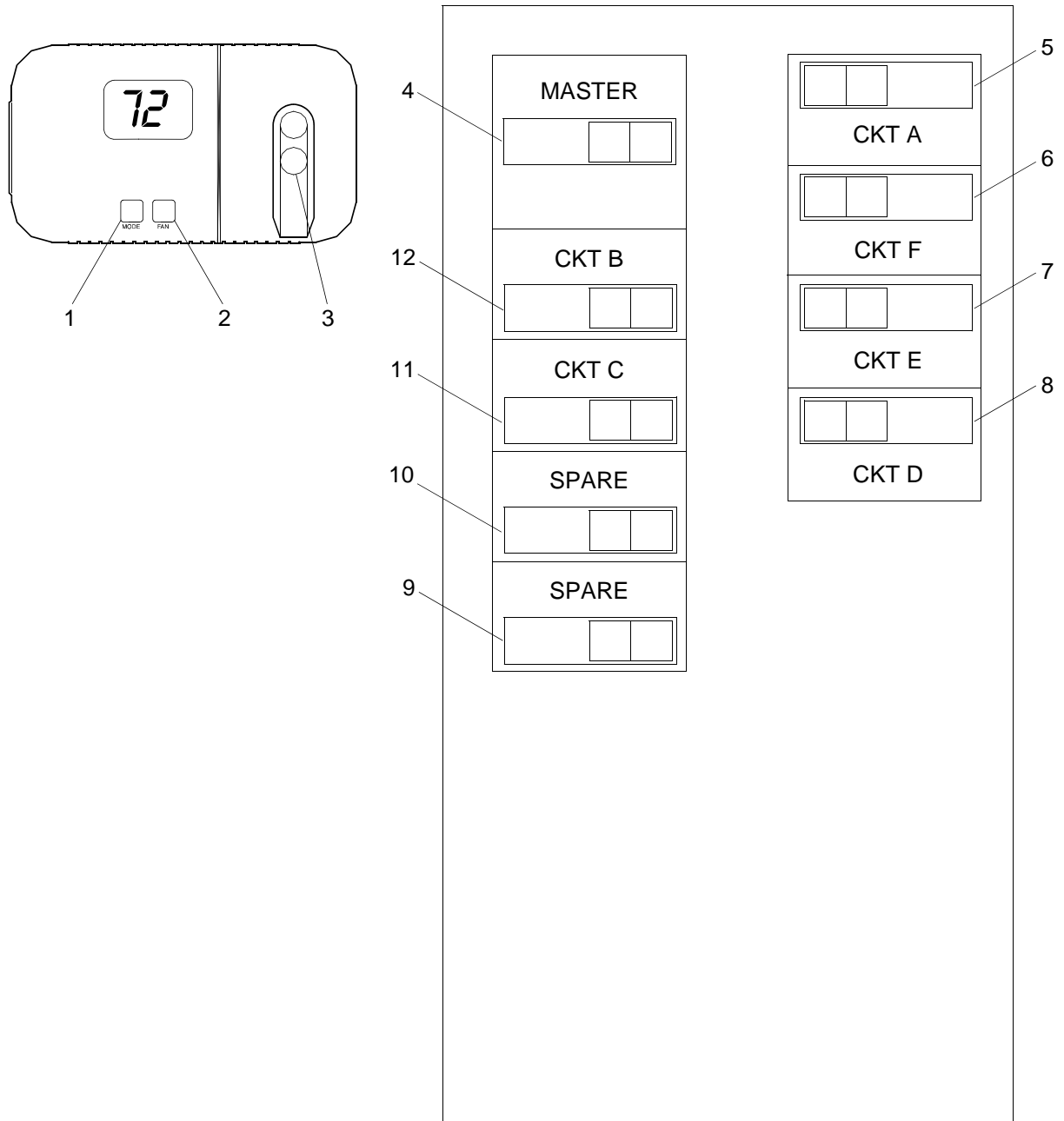


Figure 7. Personnel Shelter Heating and Air Conditioning System and Electrical Distribution Panel Board Operator Controls and Indicators.

Table 7. Personnel Shelter Heating and Air Conditioning System and Electrical Distribution Panel Board Operator Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	Mode Selector Switch	Selects the mode of operation for the heating and cooling system. In the COOL mode, the air conditioning system will cycle on at the thermostat setting. In the HEAT mode, the heating system will cycle on at the thermostat setting. In the OFF mode, the system does not operate.
2	FAN Switch	Selects mode of operation for fan. When in the ON position, fan operates continuously. When in the AUTO mode, fan operates in conjunction with the thermostat.
3	Thermostat Adjustment	Adjust the temperature at which the heating or cooling system will cycle on.
4	MASTER CIRCUIT BREAKER	Allows the operator to turn off all electrical power to electrical distribution panel board. Rated at 100 amps.
5	CIRCUIT BREAKER "A"	Provides circuit protection for heating and air conditioning system. Rated at 30 amps.
6	CIRCUIT BREAKER "F"	Provides circuit protection for Incinolet toilet. Rated at 20 amps.
7	CIRCUIT BREAKER "E"	Provides circuit protection for charger receptacle. Rated at 20 amps.
8	CIRCUIT BREAKER "D"	Provides circuit protection for toilet lighting and ventilation. Rated at 15 amps.
9	CIRCUIT BREAKER "SPARE"	Spare circuit. Rated at 15 amps.
10	CIRCUIT BREAKER "SPARE"	Spare circuit. Rated at 15 amps.
11	CIRCUIT BREAKER "C"	Provides circuit protection for overhead lighting. Rated at 15 amps.
12	CIRCUIT BREAKER "B"	Provides circuit protection for receptacles. Rated at 20 amps.

VHF/FM HANDHELD TRANSCEIVER CONTROLS AND INDICATORS

Table 8 describes the controls and indicators for the VHF/FM handheld transceiver.

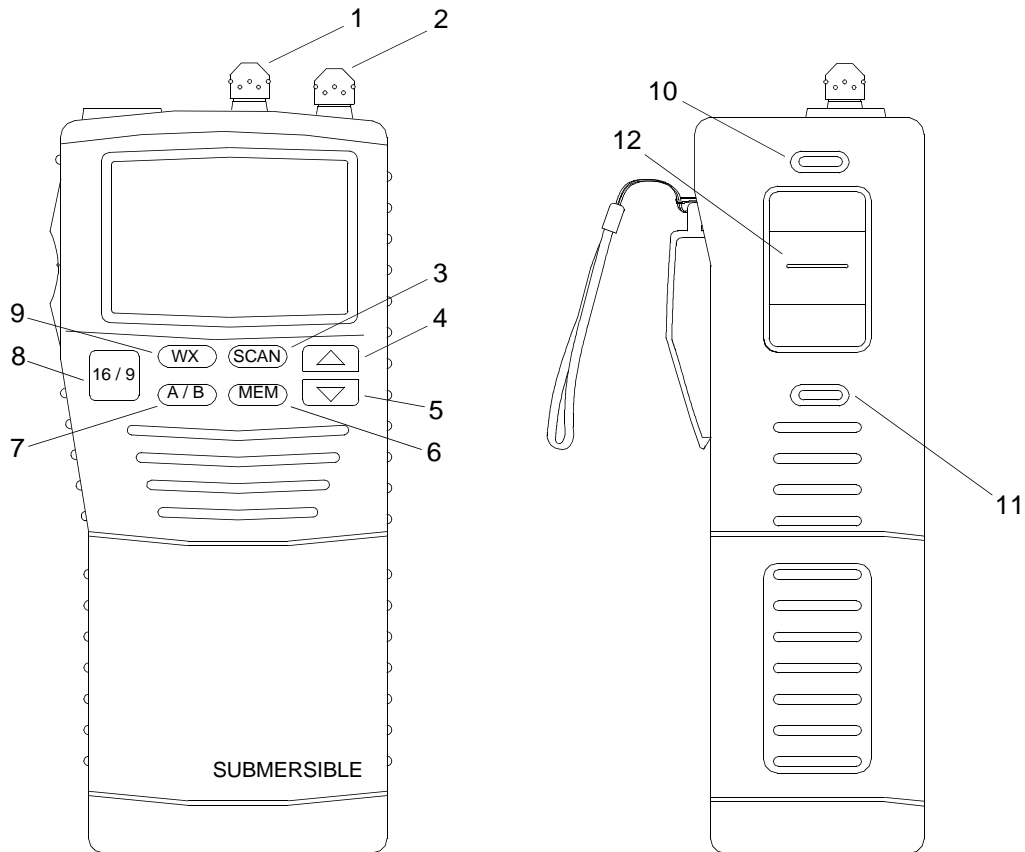


Figure 8. VHF/FM Handheld Transceiver Operator Controls and Indicators.

Table 8. VHF/FM Handheld Transceiver Operator Controls and Indicators.

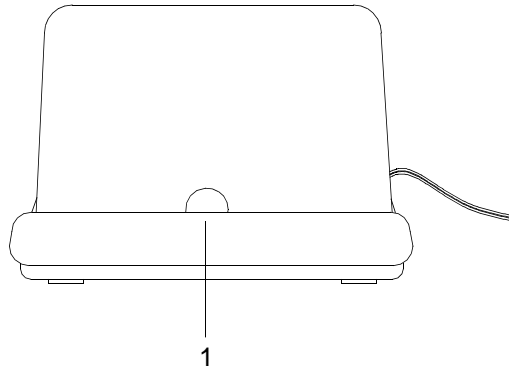
KEY	CONTROL/INDICATOR	FUNCTION
1	SQUELCH CONTROL Knob	Sets the threshold level of signals that will produce audio output from the speaker.
2	POWER/VOLUME Knob	Turns power on and off. Adjusts speaker level.
3	SCAN Key	Starts scanning programmed channels. Press key for at least one second to turn on and off priority scan during scan.
4	Up Arrow Key	Selects the desired channel. Each press increases the channel number. When held down, the channels increase continuously.
5	Down Arrow Key	Selects the desired channel. Each press decreases the channel number. When held down, the channels decrease continuously.
6	MEM Key	Memorizes the selected channel. When pressed again, deletes the selected channel.
7	A/B Key	Immediately recalls two user assigned channels from any channel location.

Table 8. VHF/FM Handheld Transceiver Operator Controls and Indicators. (Continued)

KEY	CONTROL/INDICATOR	FUNCTION
8	16/9 Key	Immediately recalls channel 16 from any channel location. Holding this key down recalls channel 9. When the WX key is pressed while holding this key, the mode toggles between USA, International and Canada.
9	WX Key	Immediately recalls a weather channel from any channel location. Recalls the previous channel when the WX key is pressed again.
10	LAMP/KEY LOCK Key	Turns the display lamp on and off. Hold down key to lock the displayed channel. Key symbol appears in display. Hold down until key symbol in display disappears to unlock.
11	H/L Key	Toggles between high and low power. To change from low power to high power, hold down key on Canada channel 13, USA channel 13 or 67.
12	MICROPHONE PUSH TO TALK (PTT) Switch	Press the push to talk switch to transmit. Release button to receive. A transmit timer limits continuous transmissions to 5 minutes.

VHF/FM HANDHELD TRANSCEIVER BATTERY CHARGER CONTROLS AND INDICATORS

Table 9 describes the controls and indicators for the VHF/FM handheld transceiver battery charger.

**Figure 9. VHF/FM Handheld Transceiver Battery Charger Operator Controls and Indicators.****Table 9. VHF/FM Handheld Transceiver Battery Charger Operator Controls and Indicators.**

KEY	CONTROL/INDICATOR	FUNCTION
1	Power On/Recharging Light	Red light on indicates the VHF/FM handheld transceiver is charging.

INCINOLET CONTROLS AND INDICATORS

Refer to TM 55-1945-219-14&P incinerator toilet controls and indicators.

HEATING AND COOLING UNIT CONTROLS AND INDICATORS

Refer to TM 55-1945-220-14&P for packaged terminal air conditioner and heat pump controls and indicators.

LIGHT TOWER AND LIGHT TOWER ENGINE CONTROLS AND INDICATORS

Refer to TM 55-1945-217-14&P for light tower controls and indicators.

Refer to 55-1945-218-14&P for light tower engine controls and indicators.

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER USUAL CONDITIONS
PREPARATION FOR USE**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)
Step, Ladder (Item 63, WP 0043 00)
Sling, Endless (8,400 lb.) (Item 54, WP 0043 00)
Sling, Endless (53,000 lb.) (Item 53, WP 0043 00)
Sling, Chain (Item 50, WP 0043 00)
Crowbar (Item 16, WP 0043 00)
Hammer, Hand (Item 26, WP 0043 00)

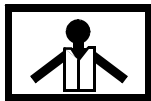
Materials/Parts

Cover, Flexor Well (Item 15, WP 0043 00)

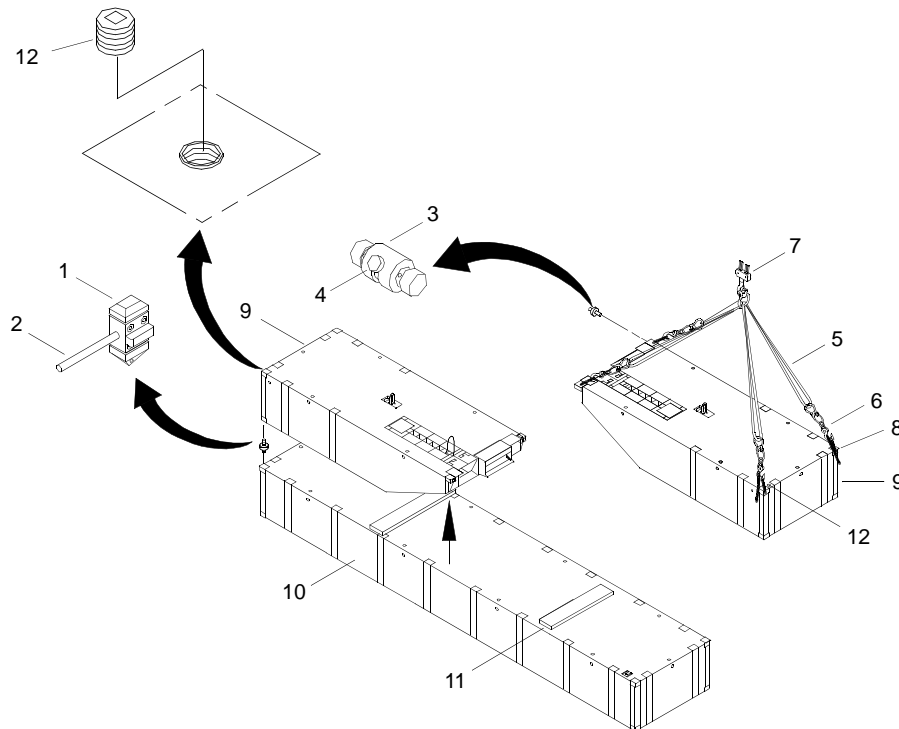
Personnel Required

Seaman 88K (2)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions may result in serious injury or death.

PREPARATION FOR USE
DISASSEMBLE MODULE ISOPAK**Figure 1. Module ISOPAK Disassembly**

1. Unlock four vertical twistlocks (figure 1, item 1) by rotating levers (figure 1, item 2).

NOTE

Either horizontal twistlocks or bridgelocks are used to connect two end rake modules.

2. Unlock and remove two horizontal twistlocks (figure 1, item 3) by rotating levers (figure 1, item 4) or remove bridgelocks.
3. Attach four 8,400 lb slings (figure 1, item 5) and 36,000 lb adjustable chain slings (figure 1, item 6) from crane (figure 1, item 7) to corners (figure 1, item 8) on end rake module (figure 1, item 9).

WARNING

**HEAVY PARTS**

Modules are very heavy. Stay clear of modules when they are lifted. Falling or swinging modules may cause serious injury or death.

4. Using slings (figure 1, items 5 and 6) and crane (figure 1, item 7), lift end rake module (figure 1, item 9) from top of center module (figure 1, item 10).

14. Remove 36,000 lb adjustable chain slings (figure 2, item 2) from padeyes (figure 2, item 4) on center module (figure 2, item 5).
15. Remove 53,000 lb slings (figure 2, item 1) from crane (figure 2, item 3).
16. Verify drain plugs (figure 2, item 6) on center module (figure 2, item 5) are installed and tight.

DISASSEMBLE COMBINATION BEACH/SEA END MODULE ISOPAK

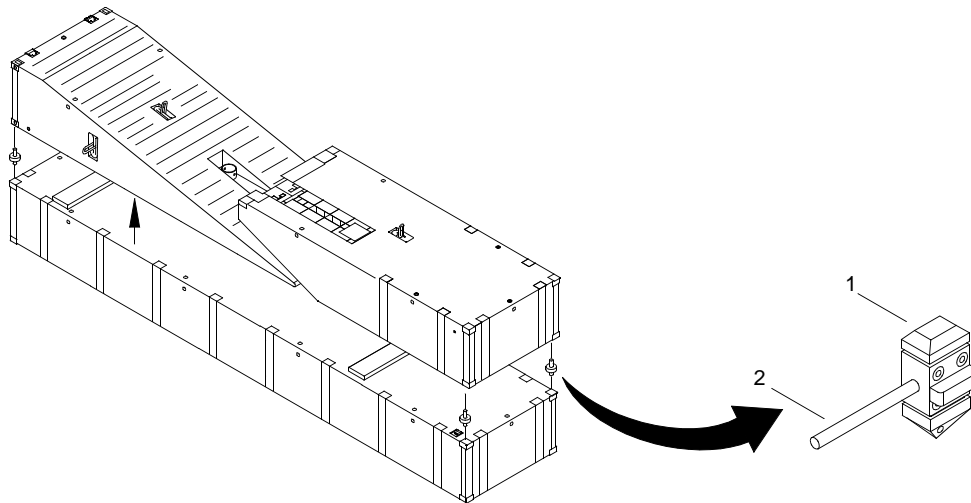


Figure 3. Combination Beach/Sea End Module Vertical Twistlocks

1. Unlock four vertical twistlocks (figure 3, item 1) by rotating levers (figure 3, item 2).

NOTE

Either a left, right or center end rake can be mounted on the center module with a CBSE.

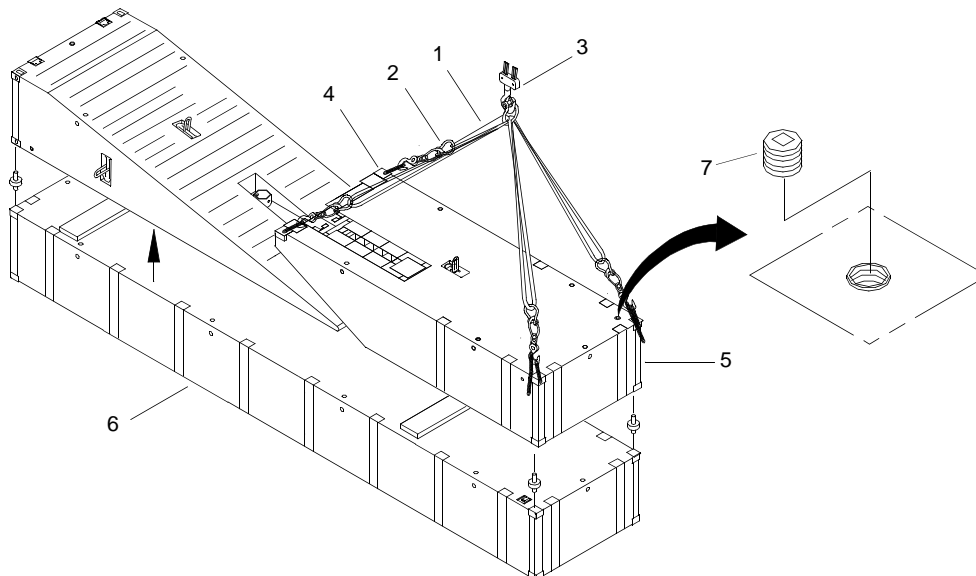


Figure 4. Lifting the End Rake Module

- Attach four 8,400 lb slings (figure 4, item 1) and 36,000 lb adjustable chain slings (figure 4, item 2) from crane (figure 4, item 3) to corners (figure 4, item 4) on end rake module (figure 4, item 5).

WARNING

**HEAVY PARTS**

Modules are very heavy. Stay clear of modules when they are lifted. Falling or swinging modules may cause serious injury or death.

- Using slings (figure 4, items 1 and 2) and crane (figure 4, item 3), lift end rake module (figure 4, item 5) from top of center module (figure 4, item 6).
- Remove 36,000 lb adjustable chain slings (figure 4, item 2) from corners (figure 4, item 4) on end rake module (figure 4, item 6).
- Verify drain plugs (figure 4, item 7) on end rake modules (figure 4, item 6) are installed and tight.

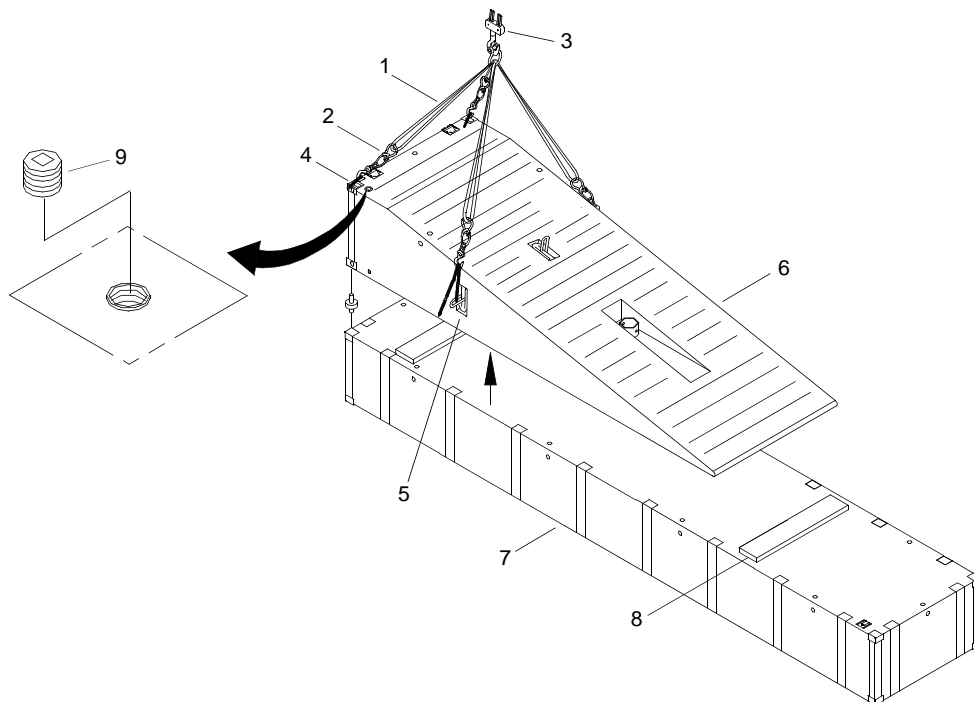


Figure 5. Lifting the CBSE Module

- Attach four 8,400 lb slings (figure 5, item 1) and 36,000 lb adjustable chain slings (figure 5, item 2) from crane (figure 5, item 3) to two corners (figure 5, item 4) and two side padeyes (figure 5, item 5) on CBSE module (figure 5, item 6).
- Using slings (figure 5, items 1 and 2) and crane (figure 5, item 3), lift CBSE module (figure 5, item 6) from top of center module (figure 5, item 7).

8. Remove 36,000 lb adjustable chain slings (figure 5, item 2) from two corners (figure 5, item 4) and two side padeyes (figure 5, item 5) on CBSE module (figure 5, item 6).
9. Remove 8,400 lb slings (figure 5, item 1) from crane (figure 5, item 3).
10. Remove wood planks (figure 5, item 8) from top of center module (figure 5, item 7).
11. Verify drain plug (figure 5, item 9) on CBSE module (figure 5, item 6) is installed and tight.

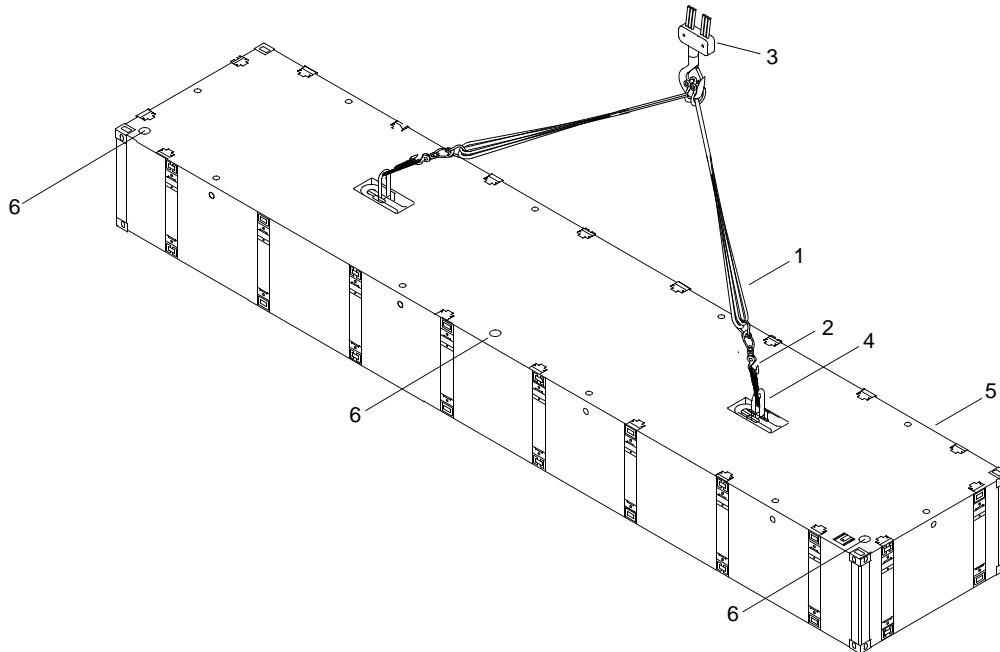


Figure 6. Lifting the Center Module

12. Attach two 53,000 lb slings (figure 6, item 1) and 36,000 lb adjustable chain slings (figure 6, item 2) from crane (figure 6, item 3) to padeyes (figure 6, item 4) on center module (figure 6, item 5).

WARNING



HEAVY PARTS

Modules are very heavy. Stay clear of modules when they are lifted. Falling or swinging modules may cause serious injury or death.

13. Using slings (figure 6, items 1 and 2) and crane (figure 6, item 3), lift center module (figure 6, item 5).
14. Remove 36,000 lb adjustable chain slings (figure 6, item 2) from padeyes (figure 6, item 4) on center module (figure 6, item 5).
15. Remove 53,000 lb slings (figure 6, item 1) from crane (figure 6, item 3).
16. Verify drain plugs (figure 6, item 6) on center module (figure 6, item 5) are installed and tight.

OPERATE MALE AND FEMALE GUILLOTINE CONNECTORS**NOTE**

The following procedure is typical for all module side and end connectors.

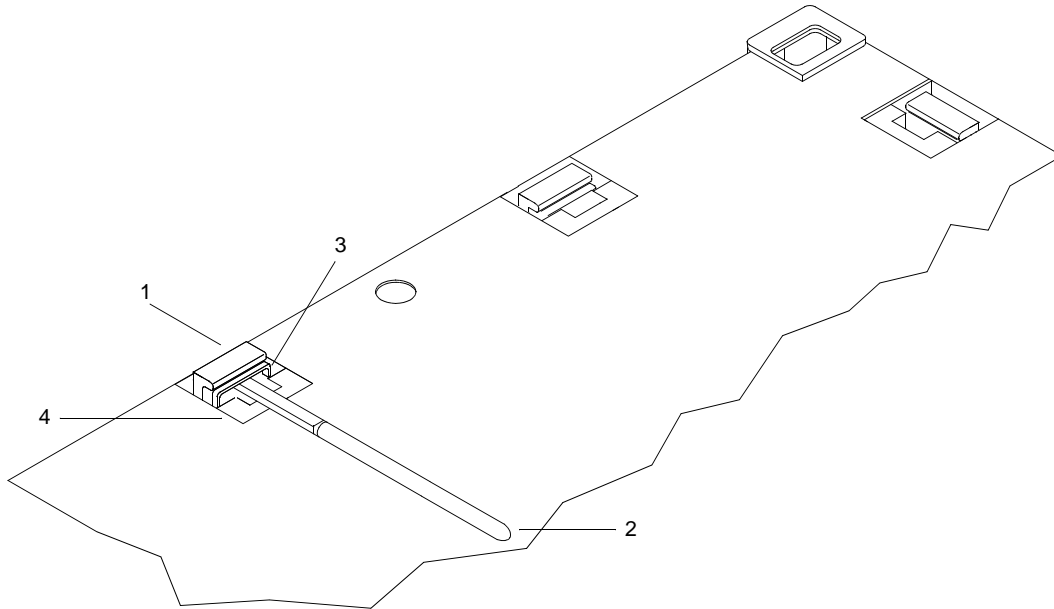


Figure 7. Raising the Female Guillotine Connectors

1. Raise female guillotine connector (figure 7, item 1).
 - a. Insert crowbar (figure 7, item 2) behind spring bar (figure 7, item 3) under female guillotine connector (figure 7, item 1).
 - b. Rotate crowbar (figure 7, item 2) downward to clear spring bar (figure 7, item 3) from deck overhangs (figure 7, item 4) and allow female guillotine connector (1) to move upward.
 - c. Raise female guillotine connector (figure 7, item 1) approximately 6 in. until it stops.

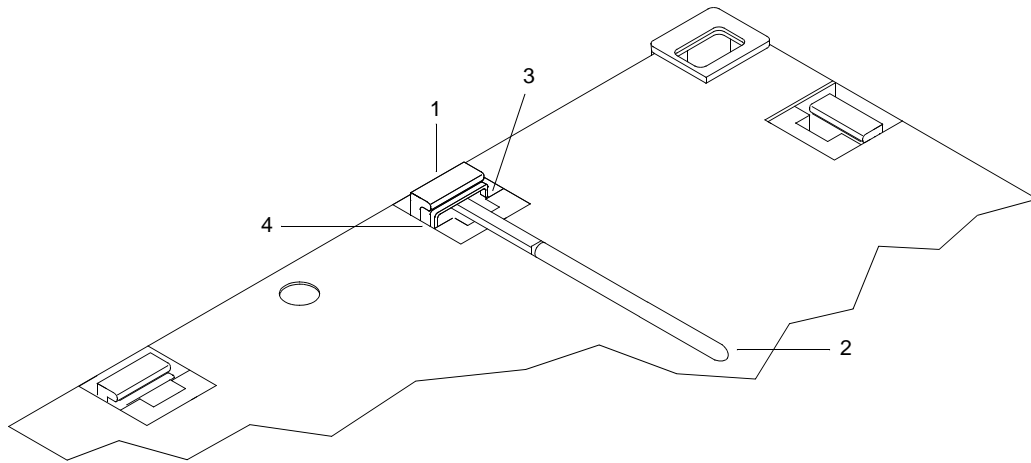


Figure 8. Raising the Male Guillotine Connectors

2. Raise male guillotine connector (figure 8, item 1).
 - a. Insert crowbar (figure 8, item 2) behind spring bar (figure 8, item 3) under male guillotine connector (figure 8, item 1).
 - b. Rotate crowbar (figure 8, item 2) downward to clear spring bar (figure 8, item 3) from deck overhangs (figure 8, item 4) and allow male guillotine connector (figure 8, item 1) to move upward.

NOTE

You should hear two clicks as both pins extend or, if the module is in the water, personnel should see the first pin extend and continue to pull up until one can hear or feel the second lower pin extend.

- c. Raise male guillotine connectors (figure 8, item 1) approximately 6 in. until it stops, allowing male connector pins to fully extend.
- d. Remove crowbar (figure 8, item 2).
- e. Drive male guillotine connector (figure 8, item 1) back into stowed position using a sledgehammer to secure the male connector pins (figure 9, item 1) in the fully extended position.

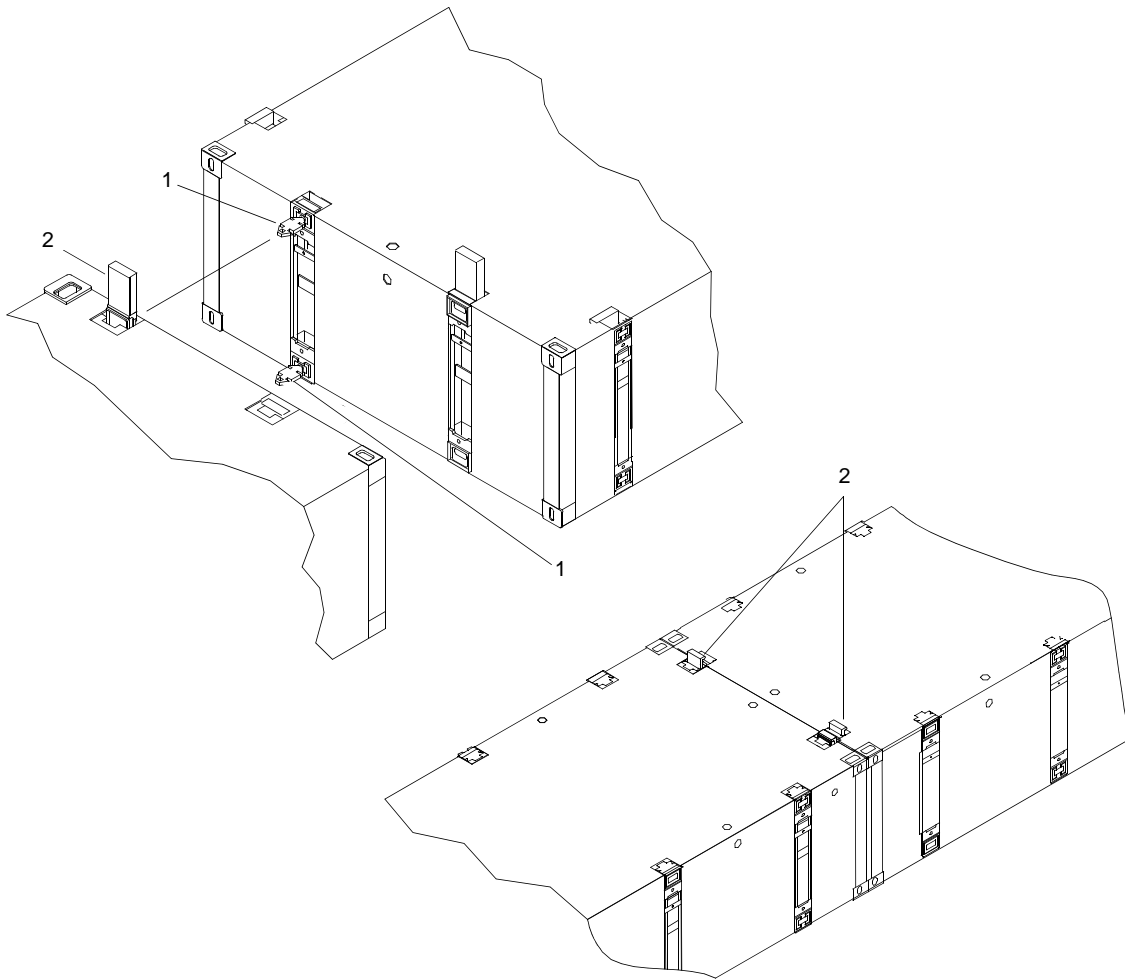


Figure 9. Connecting the Modules

3. Position the modules to be connected so male connector pins (figure 9, item 1) and female guillotine connectors (figure 9, item 2) are aligned.
4. Using a sledgehammer, drive each female guillotine connector (figure 9, item 2) down.
5. If female guillotine connector (figure 9, item 2) does not close completely, lift female guillotine connector (figure 9, item 2) completely.
6. Raise male guillotine connector (figure 8, item 1) two to three inches to allow play in male connector pin (figure 9, item 1).
7. Push or pull sections together.
8. Using a sledgehammer, drive female guillotine connector (figure 9, item 2) down.
9. Using a sledgehammer, drive male guillotine connector (figure 8, item 1) down.

ASSEMBLY OF MODULE STRINGS ON DECK OF SEALIFT VESSEL**NOTE**

This procedure is typical of attaching left, or right end rakes to center modules.

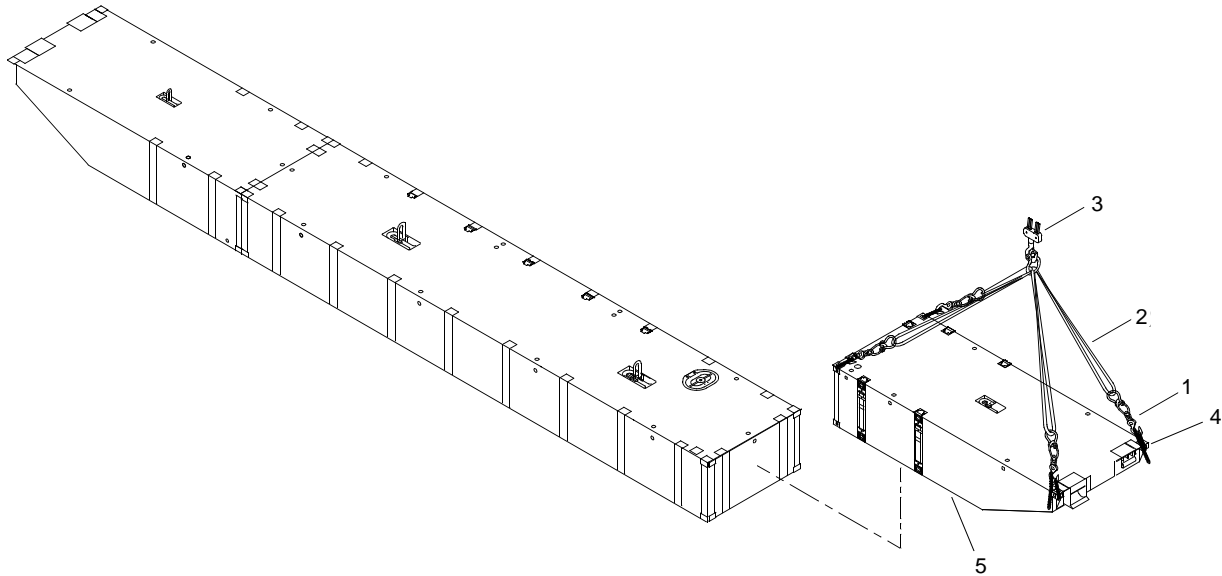


Figure 10. Assembly of Module Strings on Deck of Sealift Vessel

1. Attach four 36,000 lb adjustable chain slings (figure 10, item 1), four 8,400 lb slings (figure 10, item 2) and crane (figure 10, item 3) to ISO corner fittings (figure 10, item 4) on end rake module (figure 10, item 5).

WARNING



HEAVY PARTS

Modules are very heavy. Stay clear of modules when they are lifted. Falling or swinging modules may cause serious injury or death.

2. Lift end rake module (figure 10, item 5).

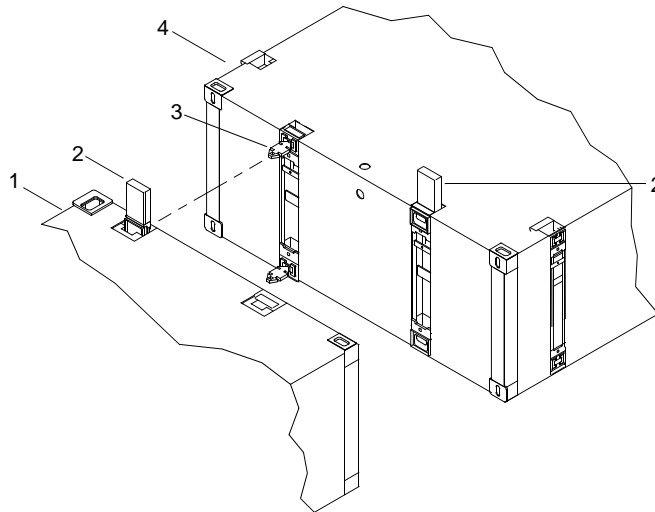


Figure 11. Aligning Male and Female Connectors

3. Position end rake module (figure 11, item 1) so that female connectors (figure 11, item 2) align with male connectors (figure 11, item 3) on center module (figure 11, item 4).
4. Operate male and female guillotine connectors. (See “Operate Male and Female Guillotine Connectors” in this WP.)

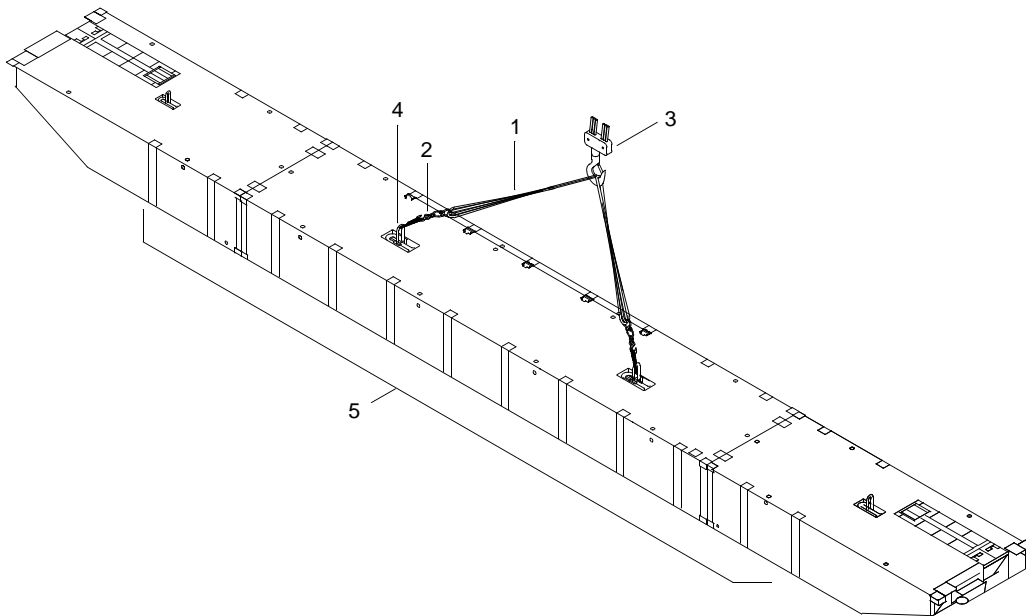


Figure 12. Lifting a Module String

5. Attach two 53,000 lb slings (figure 12, item 1) and 36,000 lb adjustable chain slings (figure 12, item 2) from crane (figure 12, item 3) to padeye shackles (figure 12, item 4) on module string (figure 12, item 5).

WARNING

**HEAVY PARTS**

Module strings are very heavy. Stay clear of module strings when they are lifted. Falling or swinging module strings may cause serious injury or death.

6. Using slings (figure 12, items 1 and 2) and crane (figure 12, item 3), lift module string (figure 12, item 5) and position for assembly.
7. Remove 36,000 lb adjustable chain slings (figure 12, item 1) from padeye shackles (figure 12, item 4) on module string (figure 12, item 5).
8. Remove 53,000 lb slings (figure 12, item 1) from crane (figure 12, item 3).

ASSEMBLY OF MODULE STRINGS IN WATER**NOTE**

This procedure is typical of attaching left, or right end rakes to center modules.

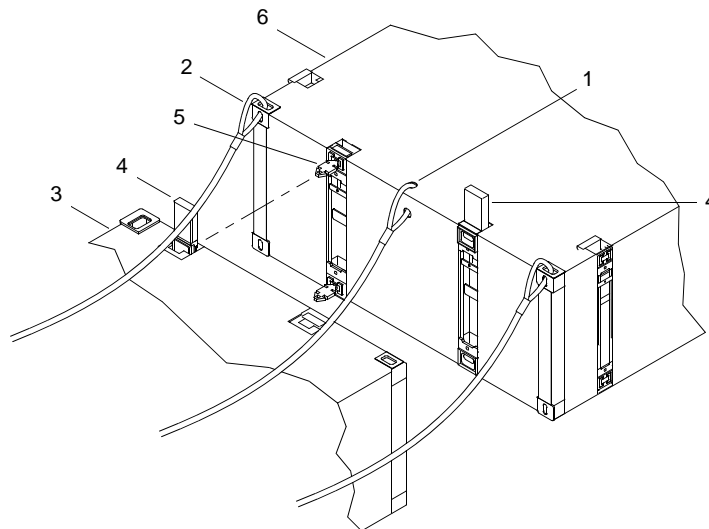


Figure 13. Aligning Male and Female Connectors in Water

1. Attach tag lines to turn tubes (figure 13, item 1) and ISO corner fittings (figure 13, item 2).

WARNING

Do not loop ropes/lines around hands so that in an emergency the lines can be released quickly to prevent being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

2. Using tag lines, maneuver end rake module (figure 13, item 3) so that female connectors (figure 13, item 4) align with male connectors (figure 13, item 5) on center module (figure 13, item 6).

3. Operate male and female guillotine connectors. (See “Operate Male and Female Guillotine Connectors” in this WP.)
4. Remove tag lines.

ASSEMBLY OF INTERMEDIATE SECTION ON SEALIFT VESSEL

NOTE

This procedure is typical of attaching module strings together on a sealift vessel.

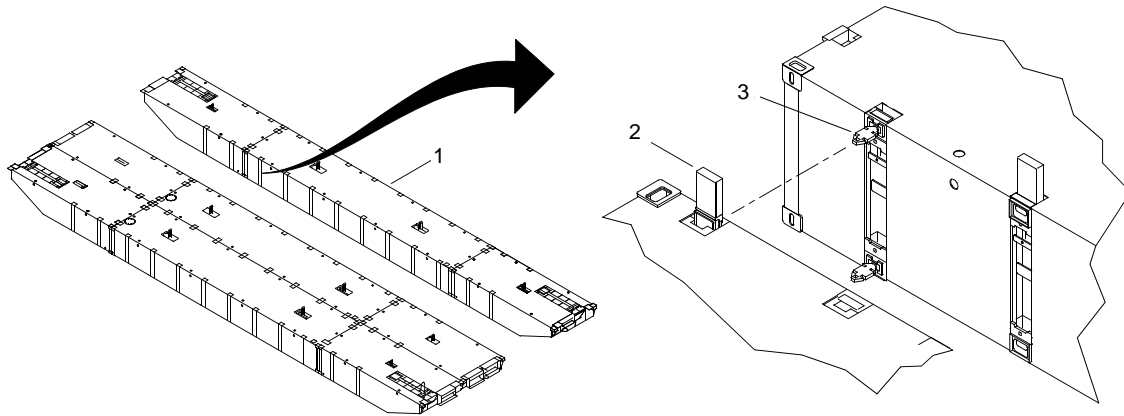


Figure 14. Assembly of Intermediate Section on a Sealift Vessel

1. Position module string (figure 14, item 1) so that female connectors (figure 14, item 2) align with male connectors (figure 14, item 3) on the other module strings (figure 14, item 1).
2. Operate male and female guillotine connectors. (See “Operate Male and Female Guillotine Connectors” in this WP.)

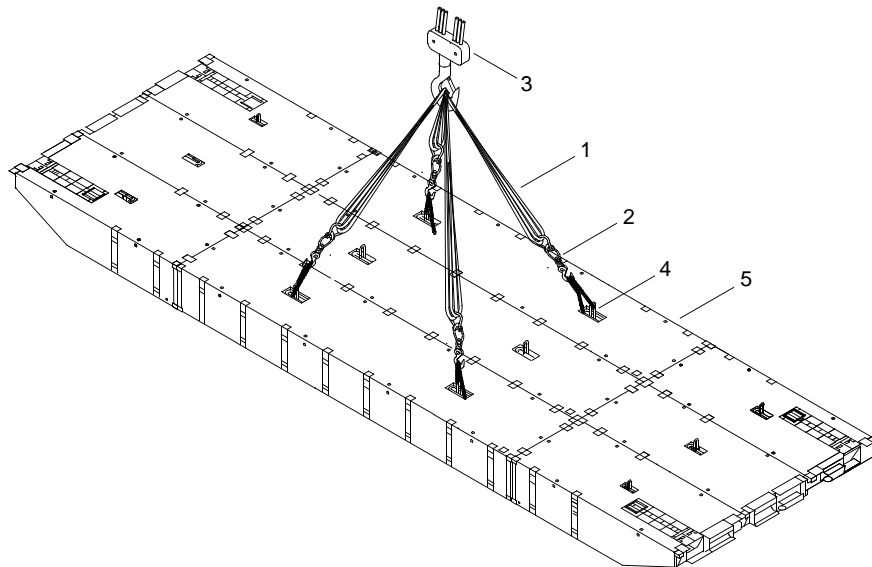


Figure 15. Lifting an Intermediate Section

- Attach four 53,000 lb slings (figure 15, item 1) and 36,000 lb adjustable chain slings (figure 15, item 2) from crane (figure 15, item 3) to pad eye shackles (figure 15, item 4) on intermediate section (figure 15, item 5).

WARNING



HEAVY PARTS

Intermediate sections are very heavy. Stay clear of intermediate sections when they are lifted. Falling or swinging intermediate sections may cause serious injury or death.

- Using slings (figure 15, items 1 and 2) and crane (figure 15, item 3), lift intermediate section (figure 15, item 5).
- Remove 36,000 lb adjustable chain slings (figure 15, item 2) from pad eye shackles (figure 15, item 4) on intermediate section (figure 15, item 5).
- Remove 53,000 lb slings (figure 15, item 1) from 36,000 lb adjustable chain slings (figure 15, item 2) and crane (figure 15, item 3).

ASSEMBLY OF INTERMEDIATE SECTION IN WATER

NOTE

This procedure is typical of attaching module strings together in water.

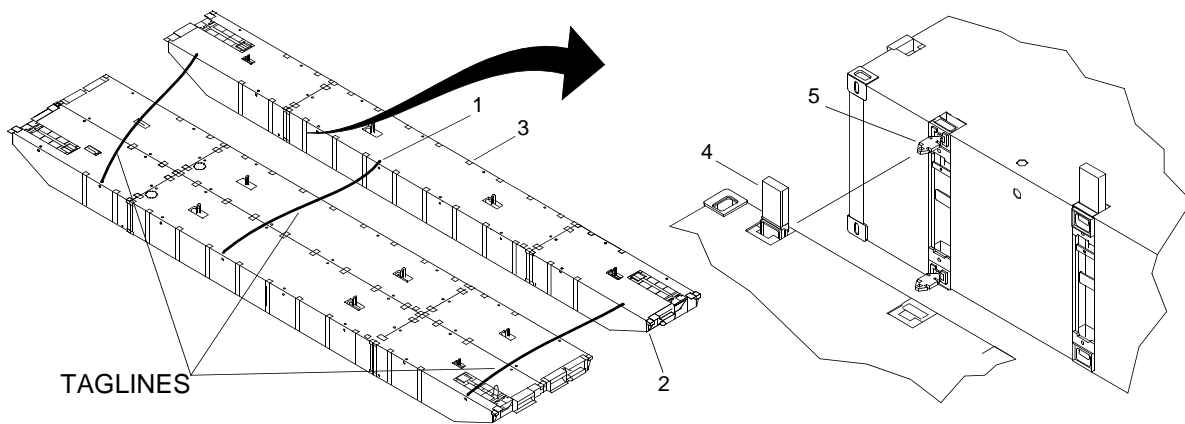


Figure 16. Assembly of Intermediate Section in Water

- Attach tag lines to turn tubes (figure 16, item 1) and ISO corner fittings (figure 16, item 2).

WARNING

Do not loop ropes/lines around hands so that in an emergency the lines can be released quickly to preclude being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

- Using tag lines, maneuver module strings (figure 16, item 3) so that female connectors (figure 16, item 4) align with male connectors (figure 16, item 5).

3. Operate male and female guillotine connectors. (See “Operate Male and Female Guillotine Connectors” in this WP.)
4. Remove tag lines.

ASSEMBLY OF COMBINATION BEACH/SEA END SECTION ON SEALIFT VESSEL

NOTE

This procedure is typical of attaching module strings together on a sealift vessel.

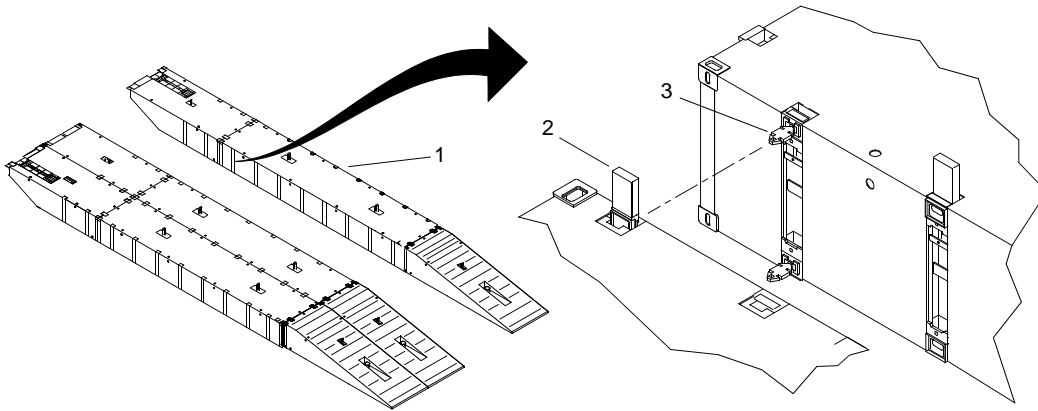


Figure 17. Assembly of Combination Beach/Sea End Section on a Sealift Vessel

1. Position module string (figure 17, item 1) so that female connectors (figure 17, item 2) align with male connectors (figure 17, item 2) on the other module strings (figure 17, item 1).
2. Operate male and female guillotine connectors. (See “Operate Male and Female Guillotine Connectors” in this WP.)

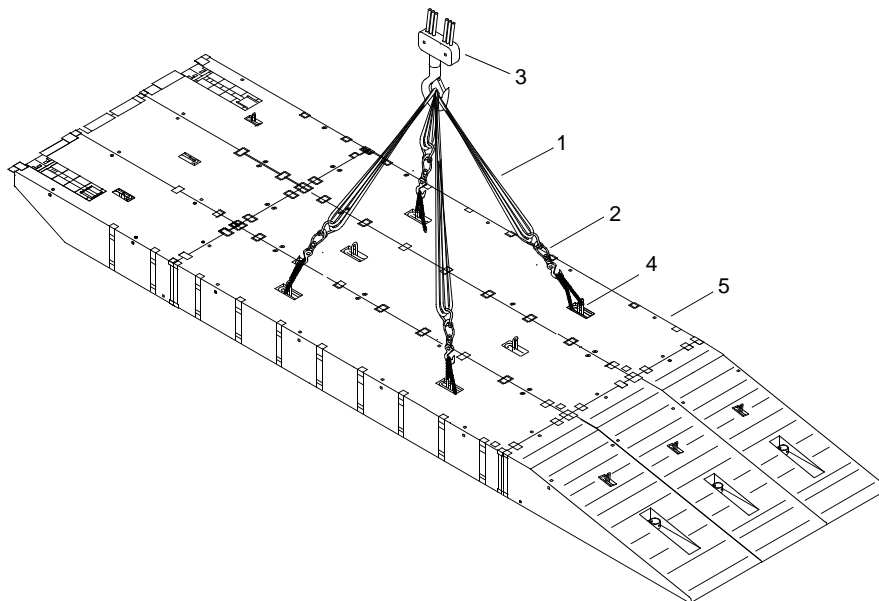


Figure 18. Lifting Combination Beach/Sea End Section

- Attach four 53,000 lb slings (figure 18, item 1) and 36,000 lb adjustable chain slings (figure 18, item 2) from crane (figure 18, item 3) to padeye shackles (figure 18, item 4) on combination beach/sea end section (figure 18, item 5).

WARNING



HEAVY PARTS

Combination beach/sea end sections are very heavy. Stay clear of sections when they are lifted. Falling or swinging sections may cause serious injury or death.

- Using slings (figure 18, items 1 and 2) and crane (figure 18, item 3), lift combination beach/sea end section (figure 18, item 5).
- Remove 36,000 lb adjustable chain slings (figure 18, item 2) from padeye shackles (figure 18, item 7) on combination beach/sea end section (figure 18, item 5).
- Remove 53,000 lb slings (figure 18, item 1) from 36,000 lb adjustable chain slings (figure 18, item 2) and crane (figure 18, item 3).

ASSEMBLY OF COMBINATION BEACH/SEA END SECTION IN WATER

NOTE

This procedure is typical of attaching module strings together in water.

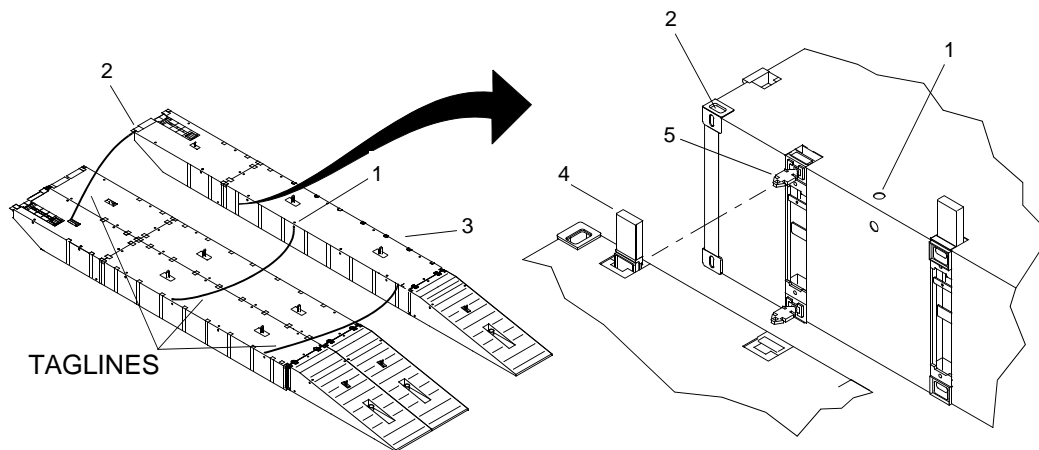


Figure 19. Assembly of Combination Beach/Sea End Section in Water

- Attach tag lines to turn tubes (figure 19, item 1) and ISO corner fittings (figure 19, item 2).

WARNING

Do not loop ropes/lines around hands so that in an emergency the lines can be released quickly to preclude being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

2. Using tag lines, maneuver module strings (figure 19, item 3) so that female connectors (figure 19, item 4) align with male connectors (figure 19, item 5).
3. Operate male and female guillotine connectors. (See “Operate Male and Female Guillotine Connectors” in this WP.)
4. Remove tag lines.

ASSEMBLY OF SEGMENTS

NOTE

This procedure is typical for assembly of segments.

A segment consists of one or more side-connected intermediate sections/module strings.

WARNING

Do not loop ropes/lines around hands so that in an emergency, the lines can be released quickly to prevent being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

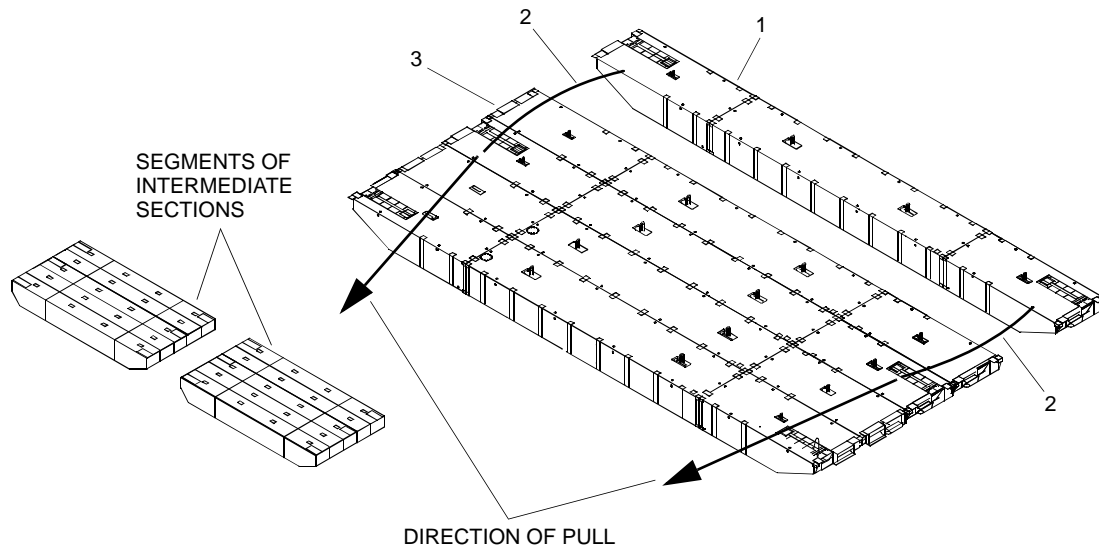


Figure 20. Segment Assembly

1. Position intermediate section (figure 20, item 1) using rope/lines (figure 20, item 2), flush turn tubes, deck cleats, and warping tug, so that the tapered surfaces of male and female connectors mate together in general alignment on the other intermediate section (figure 20, item 3).

2. Operate male and female guillotine connectors. (See “Operate Male and Female Guillotine Connectors” in this WP.)

CONNECTING SEGMENTS

NOTE

This procedure is typical for connecting segments together.

WARNING

Do not loop ropes/lines around hands so that in an emergency, the lines can be released quickly to prevent being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

1. Maneuver and assemble two segments together, end to end, using warping tugs, ropes/lines, flush turn tubes and lift lugs so that the tapered surfaces of male and female shear connectors mate together in general alignment.

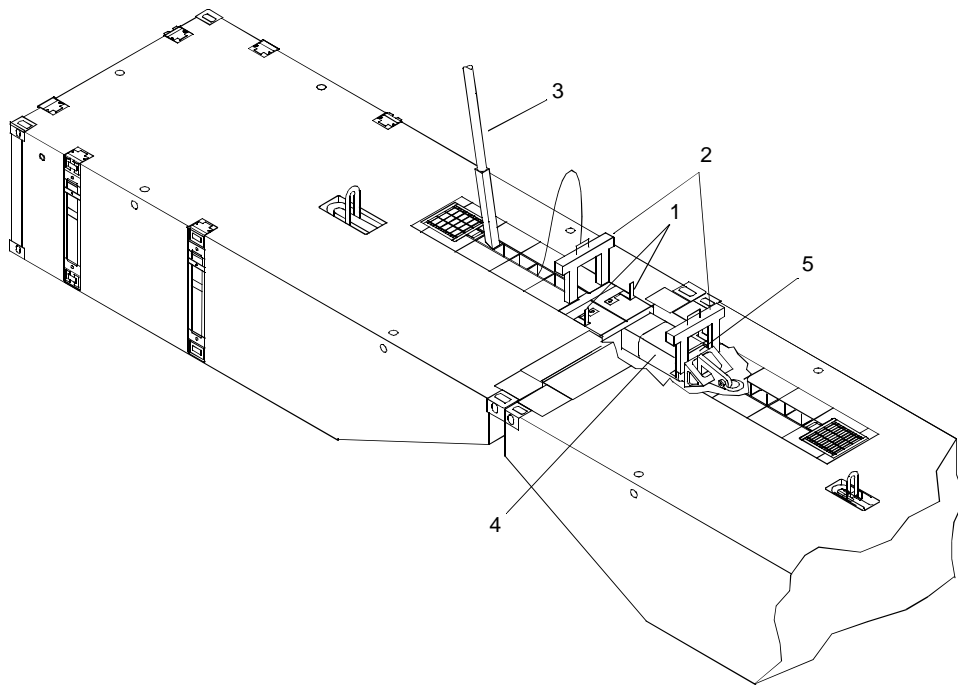


Figure 21. Connecting Segments (1)

2. Rotate and pull chute bolts (figure 21, item 1) to UNLOCKED position.
3. Lift guillotine plates (figure 21, item 2) from flexor connector slots.
4. Using a crowbar (figure 21, item 3) push each flexor connector (figure 21, item 4) from the left rake end into corresponding pocket of right end rake until guillotine plates (figure 21, item 2) are aligned with flexor connector slots (figure 21, item 5).
5. Using a sledgehammer, drive guillotine plates (figure 21, item 2) down into flexor connector slots (figure 21, item 5).

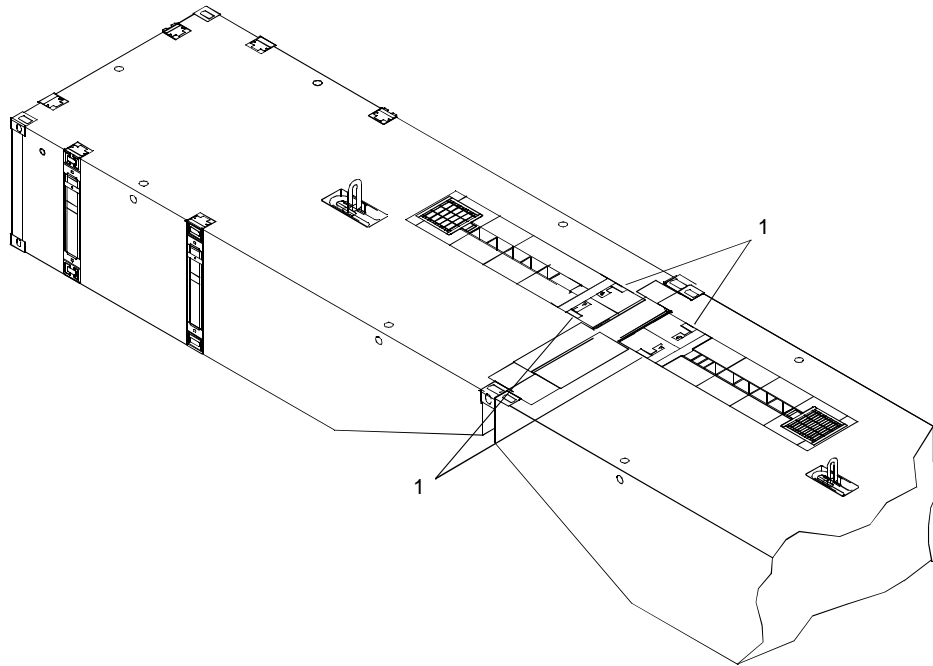


Figure 22. Connecting Segments (2)

6. Push chute bolts (figure 22, item 1) to LOCKED position and rotate to CLOSED position.

ASSEMBLY OF PIERHEAD

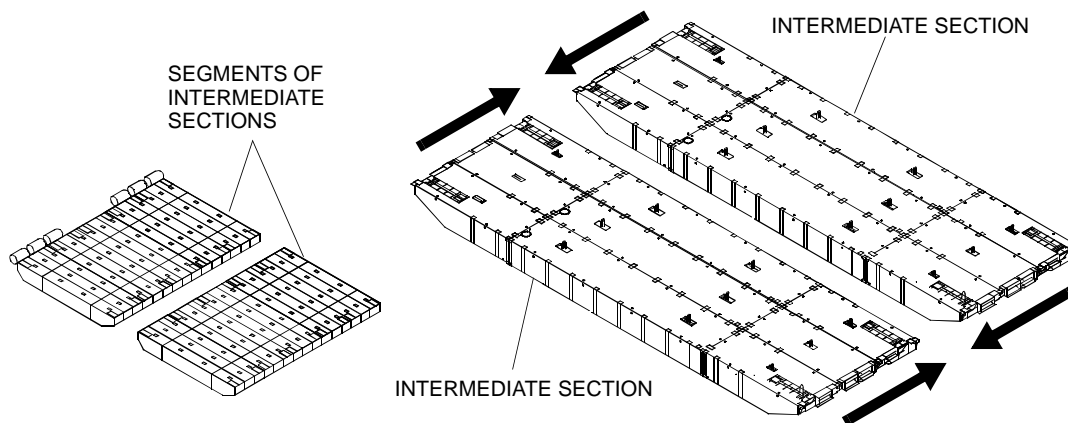


Figure 23. Assembling Pierhead

1. Assemble ten intermediate sections of three module strings each. (See “Assembly of Intermediate Section on Sealift Vessel” or “Assembly of Intermediate Section in Water” in this WP.)
2. Assemble two segments of five intermediate sections each. (See “Assembly of Segments” in this WP.)
3. Connect the two segments together. (See “Connecting Segments” in this WP.)

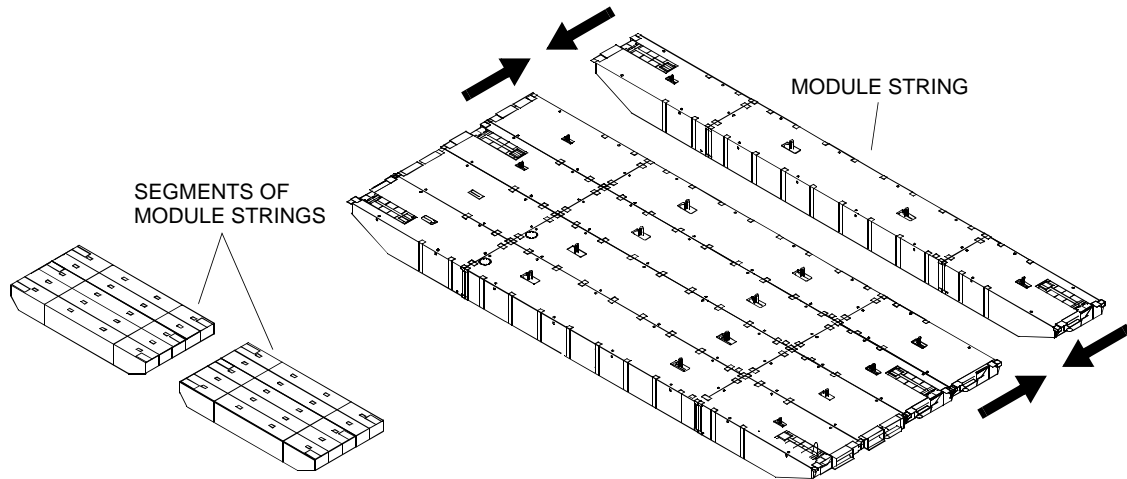
ASSEMBLY OF PIERHEAD EXTENSION


Figure 24. Assembling Pierhead Extension

1. Assemble two segments of five module strings each. (See “Assembly of Segments” in this WP.)
2. Connect the two segments together. (See “Connecting Segments” in this WP.)

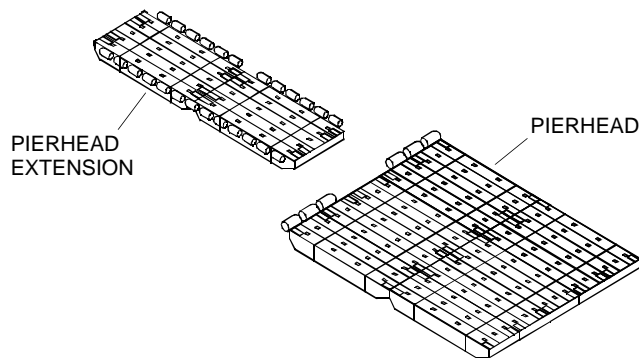
ASSEMBLY OF PIERHEAD EXTENSION TO PIERHEAD


Figure 25. Pierhead and Pierhead Extension

1. Connect the pierhead extension to the pierhead. (See “Connecting Segments” in this WP.)

DETERMINING CAUSEWAY LENGTH

NOTE

Causeway sections are numbered from the beach to seaward.

The requirement for a minimum depth of water (6 ft) plus the tide range at the offshore end of the causeway, the Sea State and the bottom slope dictate the minimum causeway length. The causeway length depends on how far offshore the causeway must extend to give the required water depth.

One-half wave height applies at low-tide when it is necessary to have the additional depth in order to have the minimum 6 ft depth at the bottom of wave troughs.

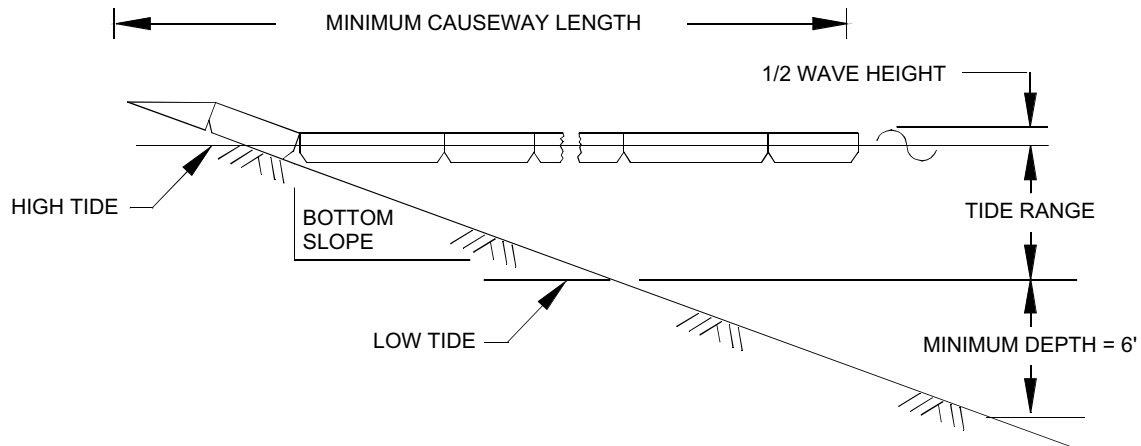


Figure 26. Effect of Tide Range, Bottom Slope and Wave Height on Causeway Length

1. The following figures show graphs for Sea State 0 through 3. They give the required number of causeway sections for a given bottom slope, Sea State and tide range.

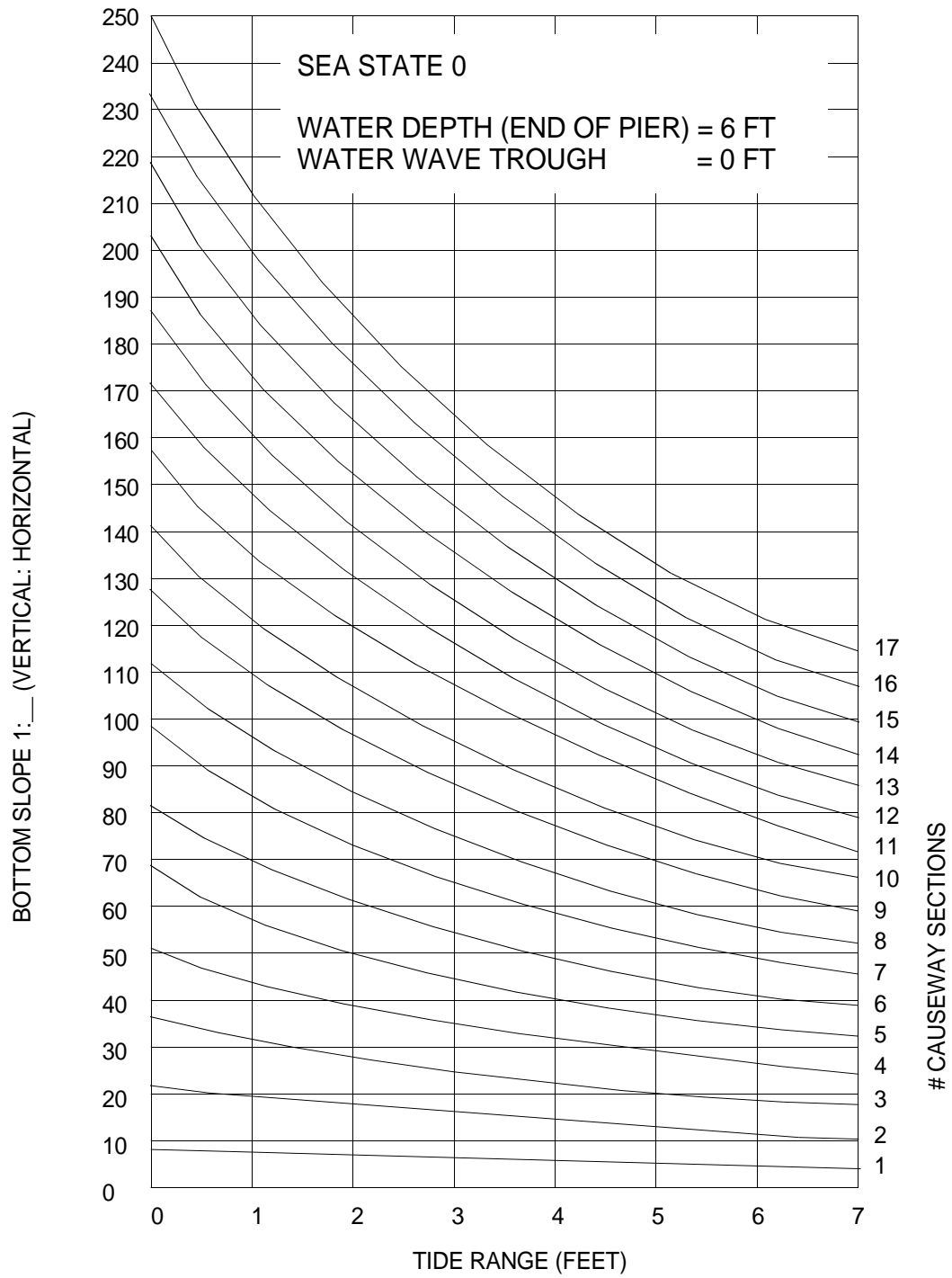


Figure 27. Causeway Sections at Sea State 0

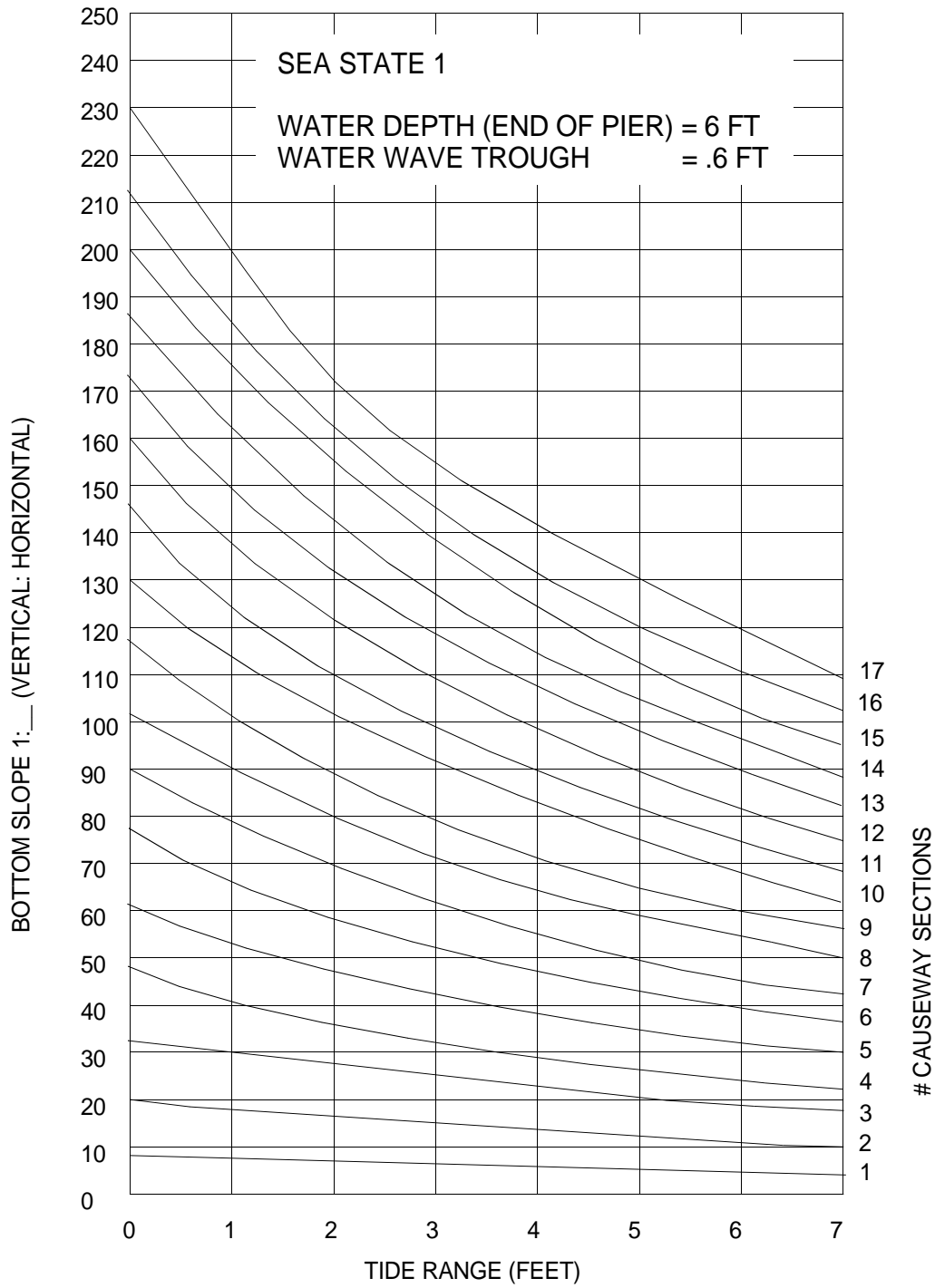


Figure 28. Causeway Sections at Sea State 1

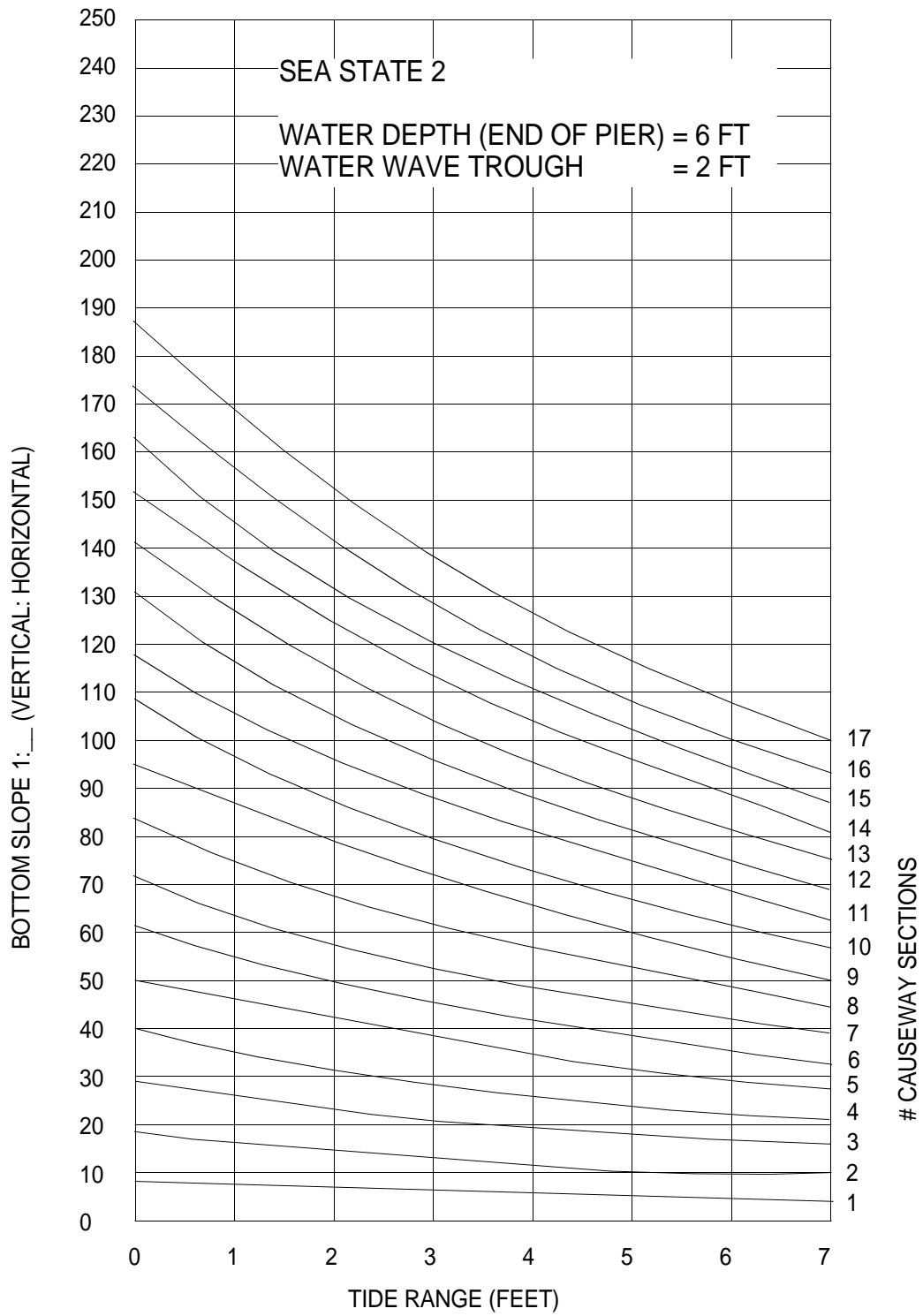


Figure 29. Causeway Sections at Sea State 2

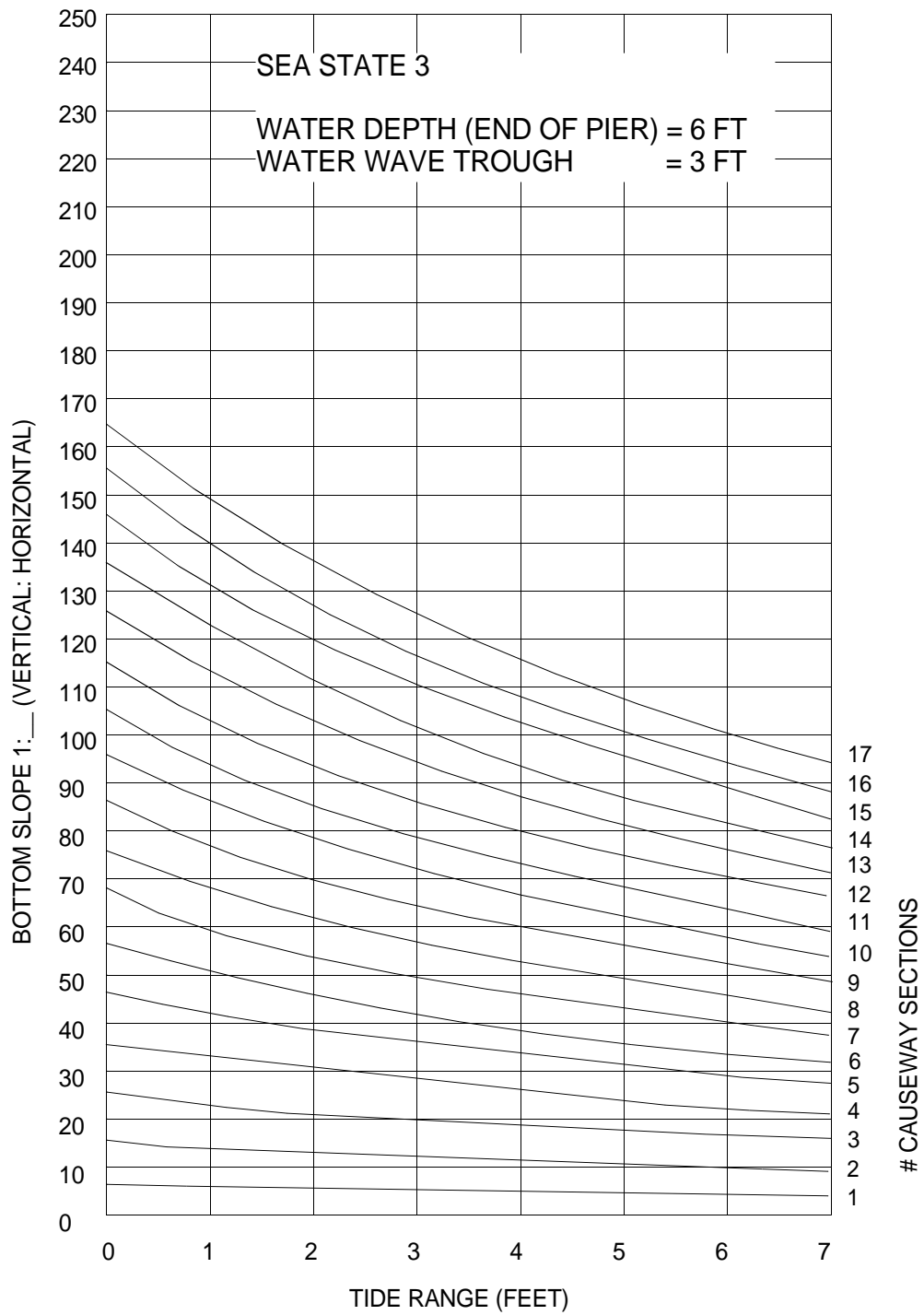


Figure 30. Causeway Sections at Sea State 3

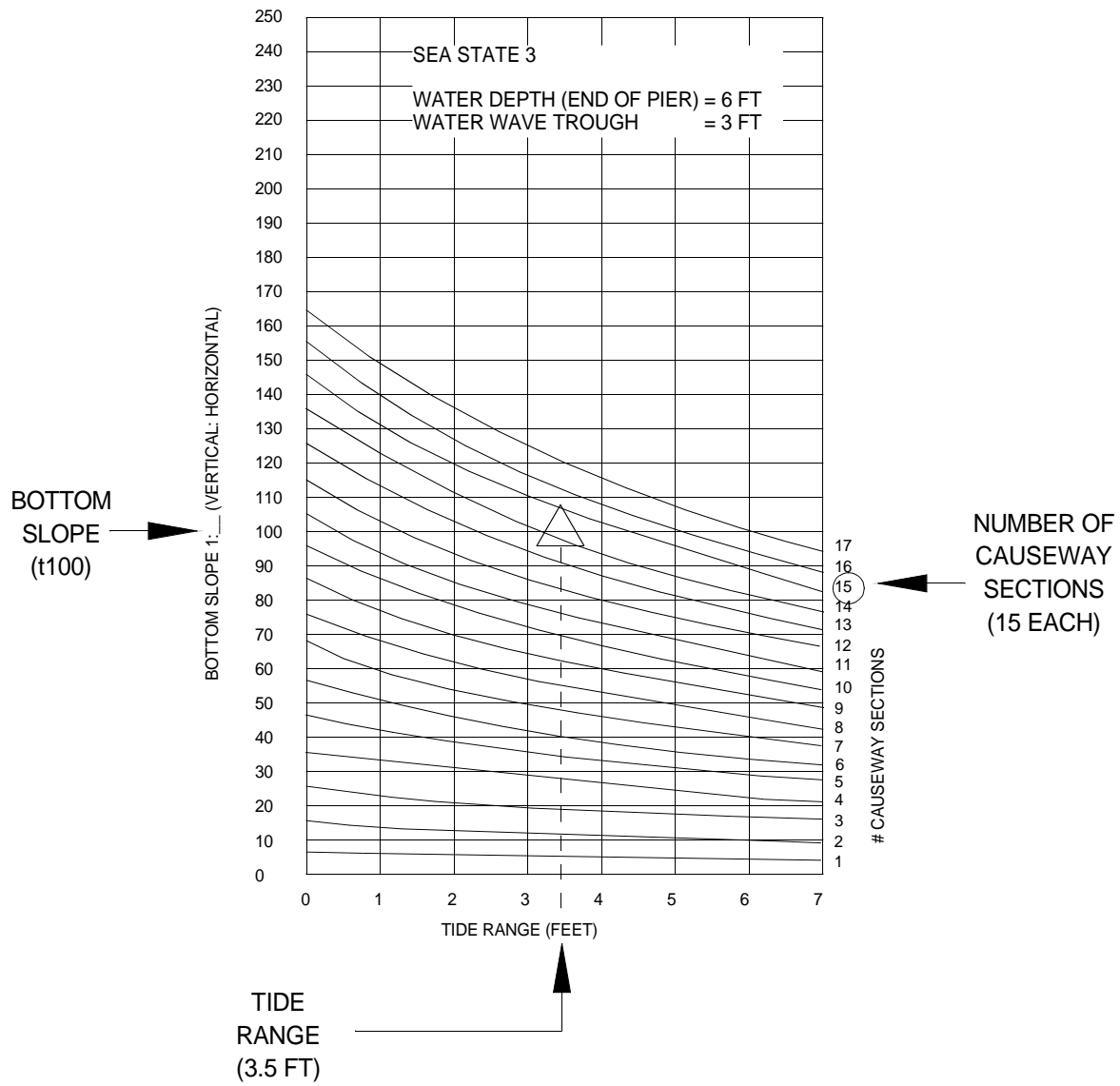


Figure 31. Example of Sea State 3

2. As an example, assume the following conditions (figure 31):
 - a. Sea State: 3
 - b. Tide Range: 3.5
 - c. Bottom Slope: 1:100
3. Using Sea State 3 graph (figure 30), locate intersection of bottom slope and tide range. If intersection of bottom slope and tide range falls between two curves, select curve for the larger number of causeway sections. A fifteen section causeway is required for example conditions (figure 31).

ASSEMBLY OF CAUSEWAY

1. Assemble the required number of intermediate sections. (See “Assembly of Intermediate Section on Sealift Vessel” or “Assembly of Intermediate Section in Water” in this WP.)

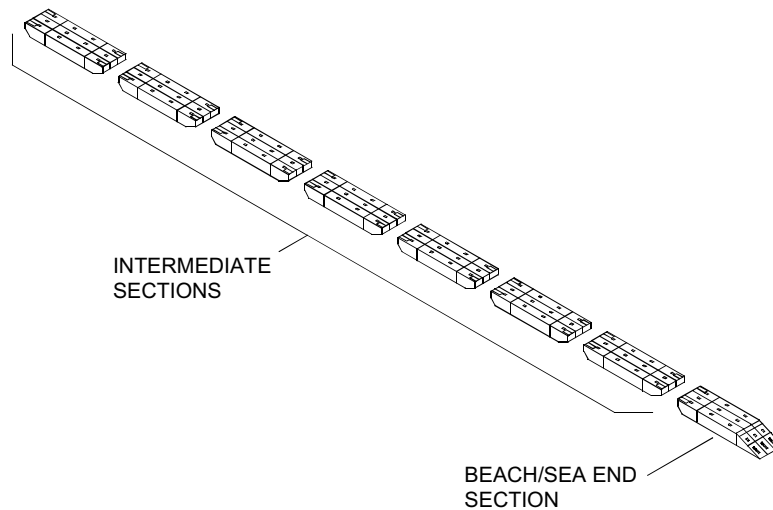


Figure 32. Causeway Segment

2. Maneuver intermediate sections together, with beach/sea end toward the shore line, using warping tugs, ropes/lines, flush turn tubes and lift lugs so that the tapered surfaces of male and female shear connectors mate together in general alignment.
3. Connect the intermediate sections to form segments. (See “Connecting Segments” in this WP.)

INSERTING CAUSEWAY IN SEGMENTS

CAUTION

Surf conditions and swells are independent of open water Sea State conditions. If wave height exceed five foot swells, operations should be ceased. If the surf conditions sustained five foot swells for an extended period of time, the FC should be towed to a safe harbor. Failure to comply could result in equipment damage.

NOTE

Causeway sections may be off-loaded and assembled into causeway segments in lengths less than the total length of the causeway. The first causeway segment to be inserted on the beach (the shore end) should be a minimum of five sections long. The more gentle the bottom gradient, the greater the length of the causeway segment needed, allowing enough depth of water at the offshore end for the WT to operate. The table below dictates minimum lengths of causeway segments for beaching. The shorter the causeway, the easier it will be to control and steer with the warping tug. For segments over four sections, one or two additional tender craft may be required to steer the front end.

Beaching of the causeway should be timed to be at high tide. Beaching at other than high tide can require extensive relocation and adjustments of the anchor and mooring lines as the tide rises.

Ensure mooring lines are coiled on deck before beaching.

1. Insert causeway using warping tugs.
2. Connect follow-on segments (see “Connecting Segments” in this WP), as required, seaward from the initial segment to obtain the necessary causeway length. (See “Determining Causeway Length” in this WP.)

ASSEMBLY OF FORCE OPENING FLOATING CAUSEWAY

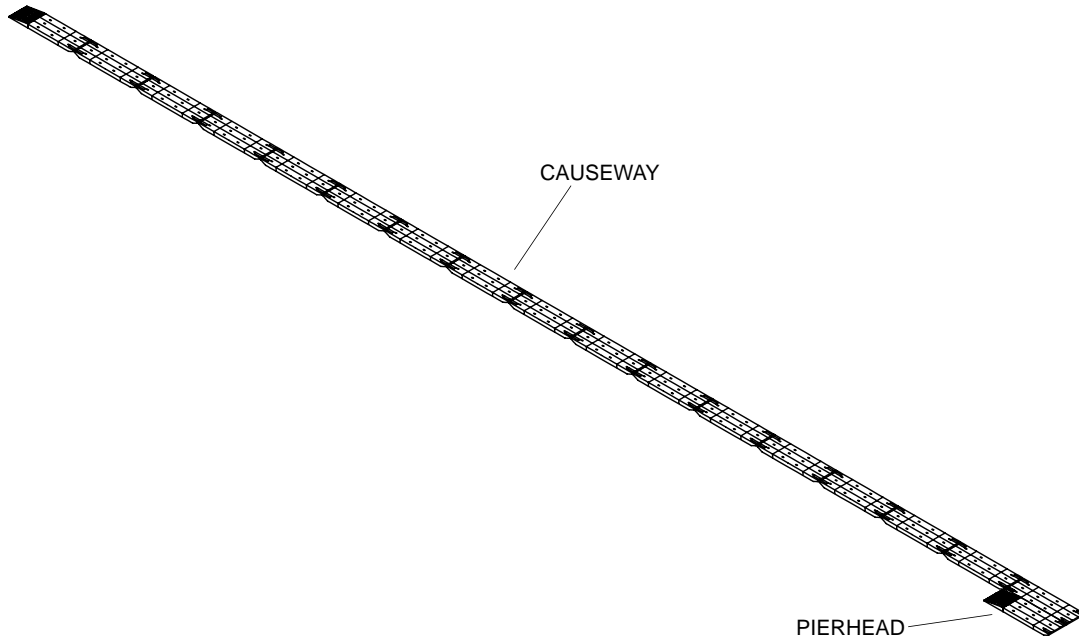


Figure 33. Force Opening Floating Causeway

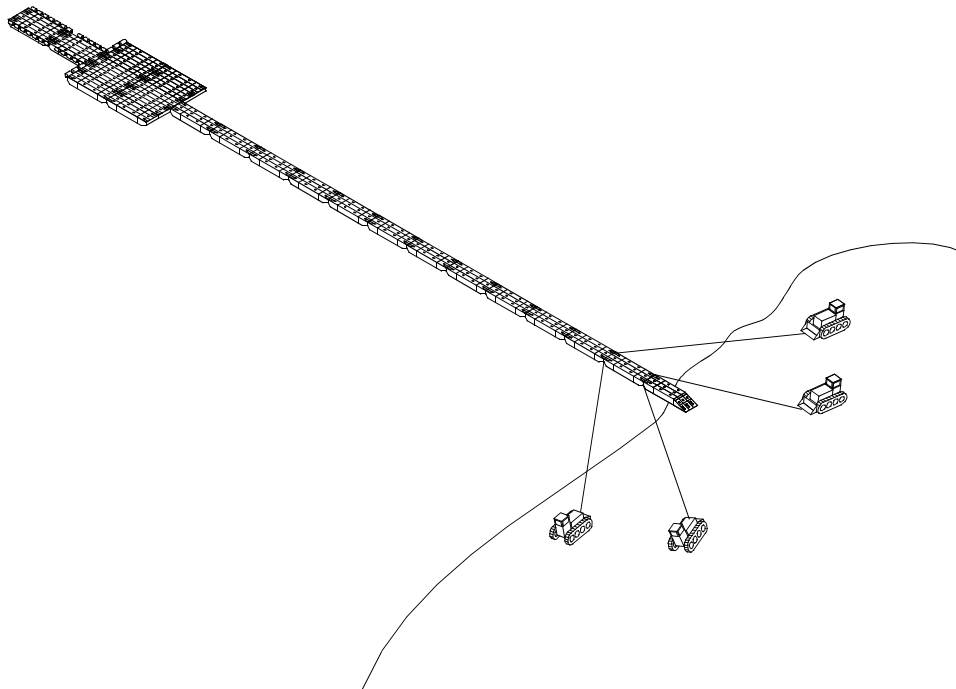
1. Assemble required number intermediate sections to form the force opening pierhead. (See “Assembly of Intermediate Section on Sealift Vessel” or “Assembly of Intermediate Section in Water” in this WP.)
2. Determine causeway length. (See “Determining Causeway Length” in this WP.)
3. Assemble causeway. (See “Assembly of Causeway” in this WP.)
4. Connect pierhead to causeway. (See “Connecting Segments” in this WP.)

BEACHING CAUSEWAY

BOTTOM SLOPE	NUMBER CAUSEWAY SECTIONS
1:85	5
1:105	6
1:125	7
1:145	7
1:165	8
1:185	9
1:205	10
1:225	11
1:245	12

Figure 34. Minimum Number of Causeway Sections for Initial Beaching

1. Refer to figure 34 to determine the minimum number of causeway sections for initial beaching.
2. To beach the FC on a virgin beach:
 - a. With two WT secured on each side of FC last section and operating under full power, beach/stab the FC into the designated landing point on the beach.

**Figure 35. Beaching Causeway on Virgin Beach**

- b. Using onshore anchor mooring lines the bulldozers, aided by the WTs pushing, pull the FC further into the beach until approximately one half of first FC section is above the high water line.
3. To beach the FC using duck pond:

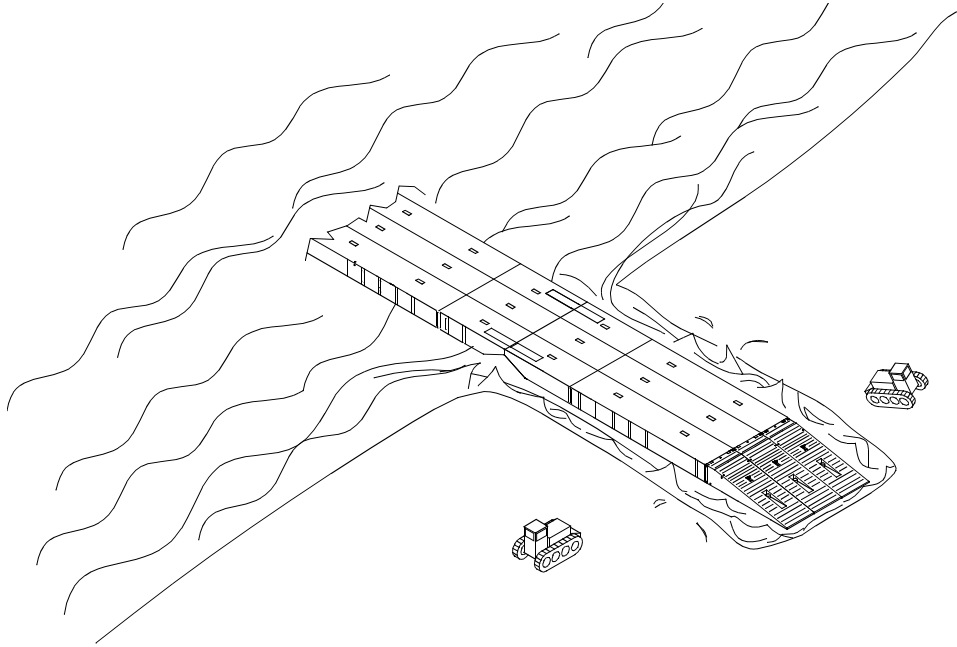


Figure 36. Beaching Causeway Using Duck Pond

- a. To ensure the beach/sea end of FC fully penetrates the beach during high tide, use bulldozers to create a duck pond during low tide with minimum dimensions of 2 ft deep by 30 ft wide by 70 - 90 ft in length.
 - b. With two WTs secured on each side of FC last section and operating under full power, beach/stab FC into duck pond.
 - c. Use bulldozers to fill in cavity surrounding perimeter of beach/sea end, displacing remaining water in duck pond.
4. Deploy onshore mooring legs. (WP 0006 00)
 5. Deploy offshore mooring legs. (WP 0006 00)

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER USUAL CONDITIONS
PREPARATION FOR USE**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)
 Crowbar (Item 16, WP 0043 00)
 Hammer, Hand (Item 26, WP 0043 00)
 Assembly, Container Push Rod (push-pull) (Item 4, WP 0043 00)
 Adapter, Forklift (Item 1, WP 0043 00)
 Socket, Socket Wrench, 1-5/16 in. (Item 58, WP 0043 00)
 Socket, Socket Wrench, 1-1/2 in. (Item 59, WP 0043 00)

Personnel Required

Seaman 88K (2)

Equipment Condition

Previous preparations for use completed (WP 0005 00)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

WARNING

**EAR PROTECTION**

Single hearing protection is required when the WT winch is operated. Failure to wear hearing protection may result in hearing loss.

PREPARATION FOR USE
UNPACK ONSHORE ANCHOR SYSTEM

WARNING


HEAVY PARTS

The containers are very heavy. Stay clear when they are lifted. Falling or swinging containers may cause serious injury or death.

NOTE

Onshore container is positioned parallel with and on first intermediate section to allow for deployment on beach.

WTs hold FC in position while placing onshore mooring legs on outboard end rakes of shore CBSE and first intermediate section.

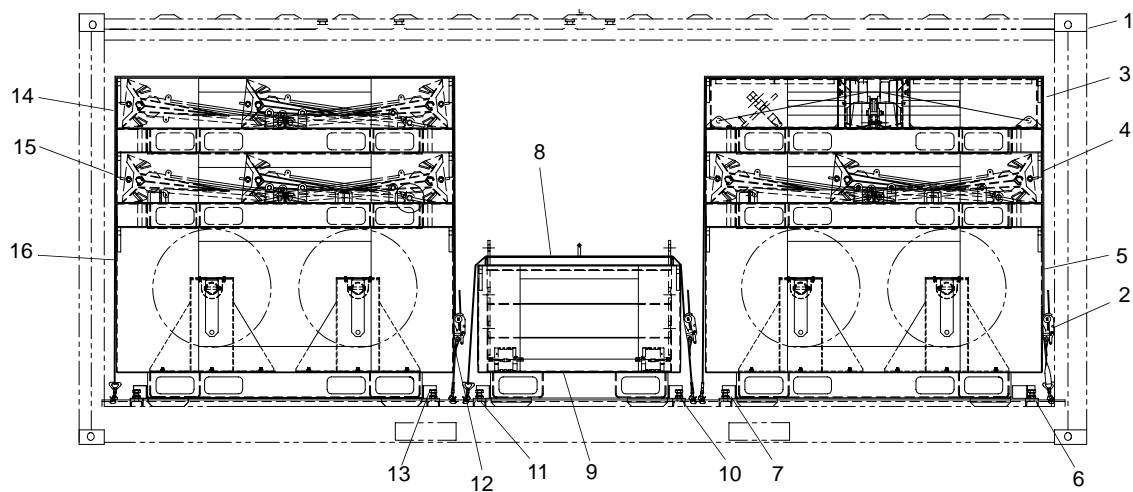


Figure 1. Onshore Anchor Container

1. Using crane, position onshore container (figure 1, item 1) on FC platform.
2. Unlatch and open container (figure 1, item 1) doors.

WARNING

Doors must be secured and latched in the open position. Failure to comply could result in injury to personnel.

3. Secure doors open with locking bars and pins or hooks.
4. Loosen and unhook two tie down straps (figure 1, item 2) from door end of tracks. Pull the straps to each side of the pallet stack and lay them on the floor of the container so that they are out of the way.

NOTE

The locking mechanism shown in figure 2 is typical of all track stops in the onshore anchor container.

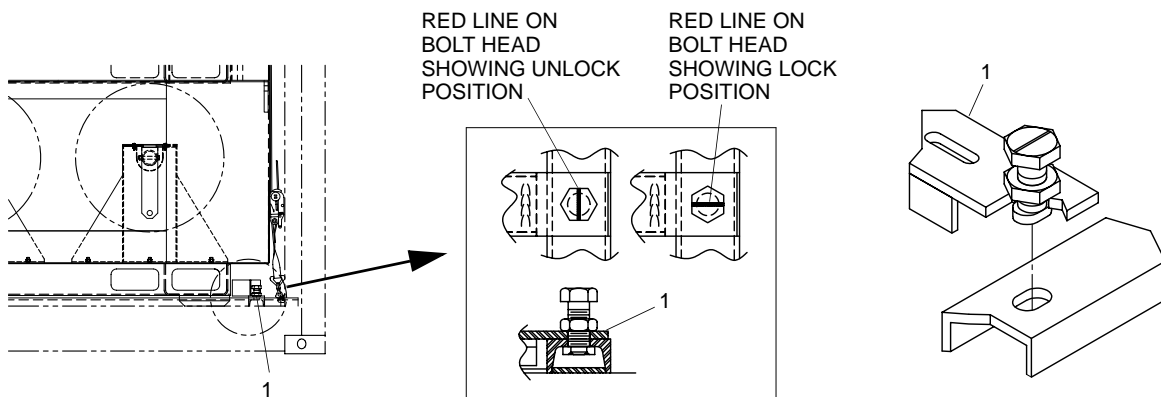


Figure 2. Door End Track Stop and Locking Mechanism

5. Unlock and remove door end track stop (figure 2, item 1 and figure 1, item 6).

WARNING

HEAVY PARTS

The pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

NOTE

If using bulldozers as anchoring points, the anchors, ground tackle and tensioning gear do not need to be placed ashore.

6. Using forklift, remove storage box pallet (figure 1, item 3) from onshore container (figure 1, item 1) and position on FC platform.
7. Using forklift, remove anchor pallet (figure 1, item 4) from onshore container (figure 1, item 1) and position on FC platform.
8. Using forklift, remove mooring cable pallet (figure 1, item 5) from onshore container (figure 1, item 1) and position on FC platform.
9. Unlock and remove the second track stop (figure 1, item 7). (See also figure 2.)
10. Unhook two tie down straps (figure 1, item 2) from tracks. Place the straps so that they are out of the way.
11. Loosen and unhook two tie down straps (figure 1, item 8) from tracks. Pull the straps to each side of the storage pallet (figure 1, item 9) and lay them on the floor of the container so that they are out of the way.

12. Unlock and remove the third track stop (figure 1, item 10). (See also figure 2.)
13. Using forklift and adapter, pull storage pallet (figure 1, item 9) to edge of container door.
14. Using forklift, remove hardware storage pallet (figure 1, item 9) from onshore container (figure 1, item 1) and position on FC platform.
15. Unlock and remove the fourth track stop (figure 1, item 11). (See also figure 2.)
16. Unhook two tie down straps (figure 1, item 8) from tracks. Place the straps so that they are out of the way.
17. Loosen and unhook two tie down straps (figure 1, item 12) from tracks. Pull the straps to each side of the pallet stack and lay them on the floor of the container so that they are out of the way.
18. Unlock and remove the fifth track stop (figure 1, item 13). (See also figure 2.)
19. Using forklift and adapter, pull pallet stack (figure 1, items 14, 15 and 16) to edge of container door.
20. Using forklift, remove upper anchor pallet (figure 1, item 14) from onshore container (figure 1, item 1) and position on FC platform.
21. Using forklift, remove lower anchor pallet (figure 1, item 15) from onshore container (figure 1, item 1) and position on FC platform.
22. Using forklift, remove mooring cable pallet (figure 1, item 16) from onshore container (figure 1, item 1) and position on FC platform.

WARNING**HEAVY OBJECTS**

The anchors are heavy. Use an assistant when lifting or serious injury may result.

NOTE

The following procedural step is typical for the removal of all the onshore anchors from the pallets.

Each anchor pallet holds five onshore anchors. The storage box pallet holds one anchor.

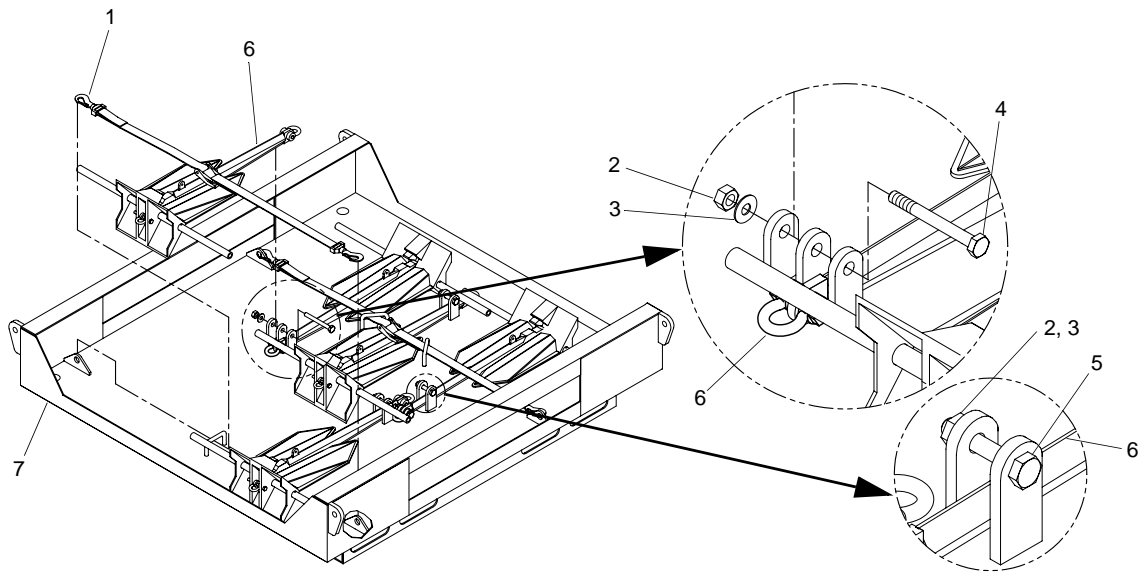


Figure 3. Onshore Anchor Stowage

23. Remove the onshore anchors from the pallets.
 - a. Remove tie down straps (figure 3, item 1).
 - b. Remove nuts (figure 3, item 2), washers (figure 3, item 3) and bolts (figure 3, items 4, 5) securing onshore anchor (figure 3, item 6) to pallet (figure 3, item 7). Lay the hardware in the pallet (figure 3, item 7).
 - c. Using assistant, lift the anchor (figure 3, item 6) out of the pallet (figure 3, item 7) and position anchor (figure 3, item 6) on beach.

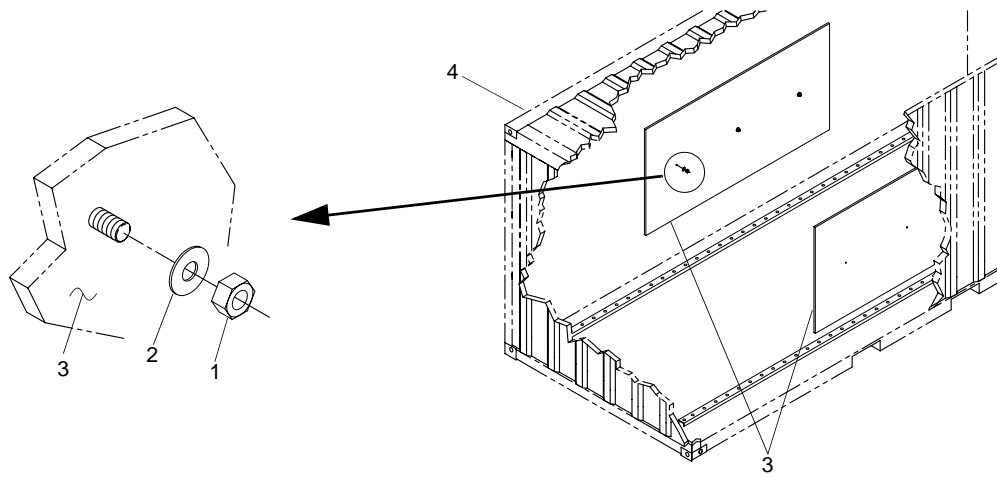


Figure 4. Plywood Storage

24. Remove nuts (figure 4, item 1) and washers (figure 4, item 2) securing plywood sheets (figure 4, item 3) to container (figure 4, item 4) walls. Position plywood sheets (figure 4, item 3) near anchors on beach.

WARNING**HEAVY PARTS**

The drawer cover and drawers are heavy. Stay clear when they are lifted. Falling cover or drawer may cause serious injury or death.

NOTE

The top storage drawer is empty and is intended for future storage needs.

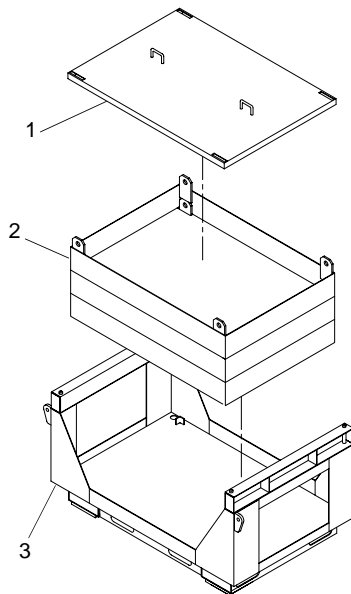


Figure 5. Hardware Storage Pallet

25. Using forklift, remove drawer cover (figure 5, item 1) from top drawer (figure 5, item 2) in pallet (figure 5, item 3).
26. Using forklift and slings, remove each drawer (figure 5, item 2) from pallet (figure 5, item 3) and place them on deck.

WARNING**HEAVY OBJECTS**

The ground tackle and tensioning gear are heavy. Use care when lifting or serious injury may result.

27. Remove ground tackle and tensioning gear from drawers in hardware storage pallet (figure 5, item 2) and position items on beach near anchors.

28. Using forklift and slings, place drawers (figure 5, item 2) in pallet (figure 5, item 3).
29. Using forklift, place drawer cover (figure 5, item 1) over top drawer (figure 5, item 2).

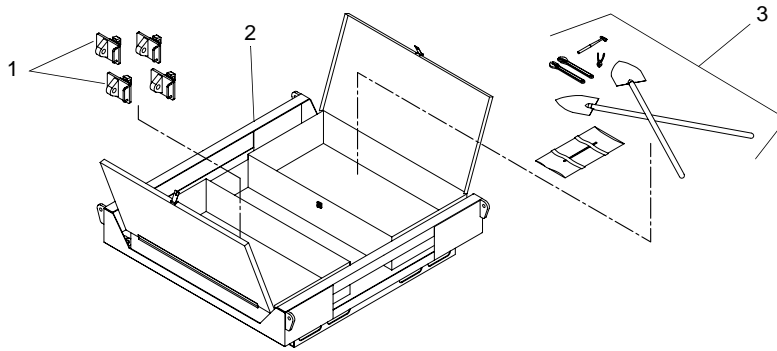


Figure 6. Storage Box Pallet

30. Remove horizontal deadman padeyes (figure 6, item 1) from storage box pallet (figure 6, item 2) and position them on the FC platform.
31. Remove ground tackle and tools (figure 6, item 3) from storage box pallet (figure 6, item 2) and position items on beach near anchors.

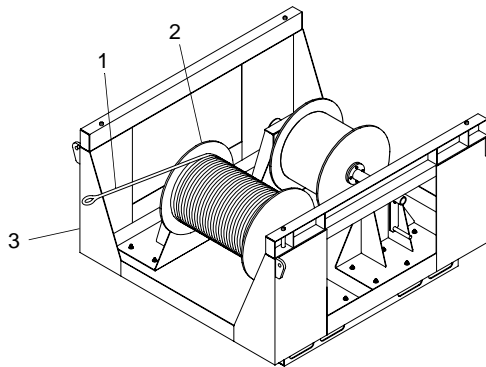


Figure 7. Mooring Cable Pallet

32. Using hand crank on spool (figure 7, item 2), unreel mooring cable (figure 7, item 1) from spool (figure 7, item 2) in mooring cable pallet (figure 7, item 3) and position on causeway, near mounting points.

WARNING



HEAVY PARTS

The pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

33. Stow pallets and loose items in onshore anchor container (figure 1, item 1).

-
- a. Using forklift, place the lower anchor pallet (figure 1, item 15) on top of mooring cable pallet (figure 1, item 16).
 - b. Using forklift, place the upper anchor pallet (figure 1, item 14) on top of the lower anchor pallet (figure 1, item 15).
 - c. Using forklift, position the pallet stack (figure 1, items 14, 15 and 16) inside the container (figure 1, item 1) door.
 - d. Using forklift and push-pull rod, push the pallet stack (figure 1, items 14, 15 and 16) to rear of container (figure 1, item 1), against track stop.
 - e. Install and lock track stop (figure 1, item 13) in front of mooring cable pallet (figure 1, item 16). (See also figure 2.)
 - f. Pull two tie down straps (figure 1, item 12) over the pallets and attach the loose ends to the floor track. Tighten tie down straps (figure 1, item 12).
 - g. Install and lock hardware storage pallet track stop (figure 1, item 11) at the red marks on the floor track. (See also figure 2.)
 - h. Hook one end of two tie down straps (figure 1, item 8) to floor tracks. Lay the straps on the floor, to the sides of the container.
 - i. Using forklift, position the hardware storage pallet (figure 1, item 9) inside the container door.
 - j. Using forklift and push-pull rod, push the hardware storage pallet (figure 1, item 9) in container (figure 1, item 1), against track stop (figure 1, item 11).
 - k. Install and lock pallet track stop (figure 1, item 10) in front of hardware storage pallet (figure 1, item 9). (See also figure 2.)
 - l. Pull two tie down straps (figure 1, item 8) over the storage pallet and attach the loose ends to the floor track. Tighten tie down straps (figure 1, item 8).
 - m. Hook one end of two tie down straps (figure 1, item 2) to floor tracks. Lay the straps on the floor, to the sides of the container.
 - n. Install and lock pallet track stop (figure 1, item 7) at the red marks on the floor track. (See also figure 2.)
 - o. Using forklift, place the mooring cable pallet (figure 1, item 5) in container (figure 1, item 1), pushing it against track stop (figure 1, item 7).
 - p. Using forklift, place anchor pallet (figure 1, item 4) on top of mooring cable pallet (figure 1, item 5).
 - q. Using forklift, place storage box pallet (figure 1, item 3) on top of anchor pallet (figure 1, item 4).
 - r. Install and lock mooring cable pallet track stop (figure 1, item 6).
 - s. Pull two tie down straps (figure 1, item 2) over the pallets and attach the loose ends to the floor track. Tighten tie down straps (figure 1, item 2).

ATTACH ONSHORE MOORING LEGS TO FC
NOTE

The following procedure is typical for attachment of onshore mooring legs.

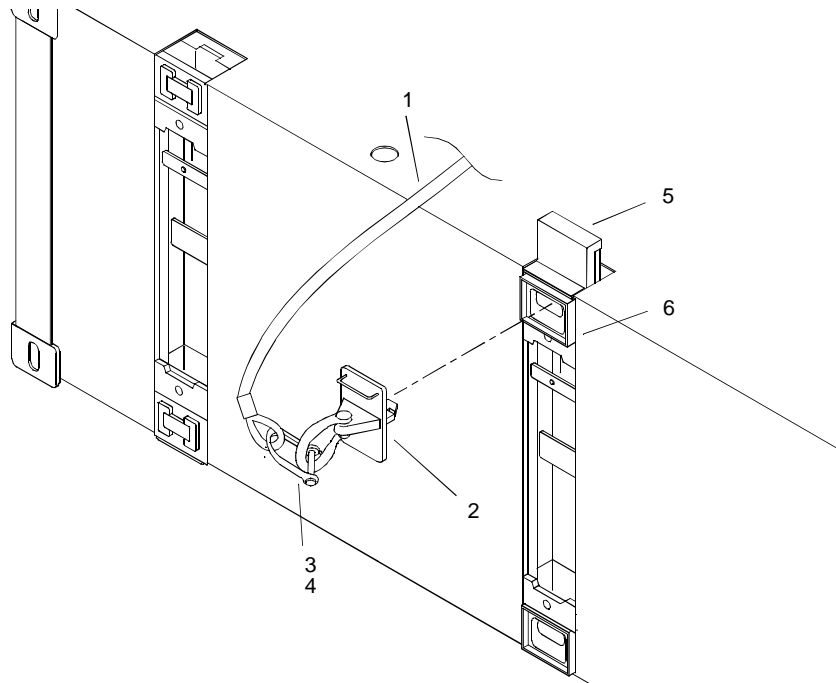


Figure 8. Onshore Mooring Leg Attachment

1. Attach mooring cable (figure 7, item 1 and figure 8, item 1) to horizontal deadman padeye (figure 8, item 2) with 1 3/8 in. shackle (figure 8, item 3) and pin (figure 8, item 4).
2. Using crowbar, raise female guillotine (figure 8, item 5).
3. Install horizontal deadman padeye (figure 8, item 2) in female guillotine upper fitting (figure 8, item 6).
4. Using sledgehammer, drive down female guillotine (figure 8, item 5) to lock horizontal deadman padeye (figure 8, item 2).

WARNING

**HEAVY OBJECTS**

The mooring cables are heavy. Use care when lifting or serious injury may result.

5. Using assistant, pull mooring cables (figure 8, item 1) onto beach.

NOTE

Two inner and two outer onshore mooring legs are required to anchor the FC. An outer leg differs from an inner only with an additional 300 ft mooring cable and attaching shackle.

- For the two outer mooring legs, attach an additional 300 ft mooring cable to the end of mooring cable (figure 8, item 1) with a 1 3/8 in. shackle (figure 8, item 3) and pin (figure 8, item 4).

DEPLOY AND USE BULLDOZERS FOR ONSHORE ANCHORING MOORING LEGS**NOTE**

Bulldozers may be used instead of onshore anchors as anchoring points for mooring cables.

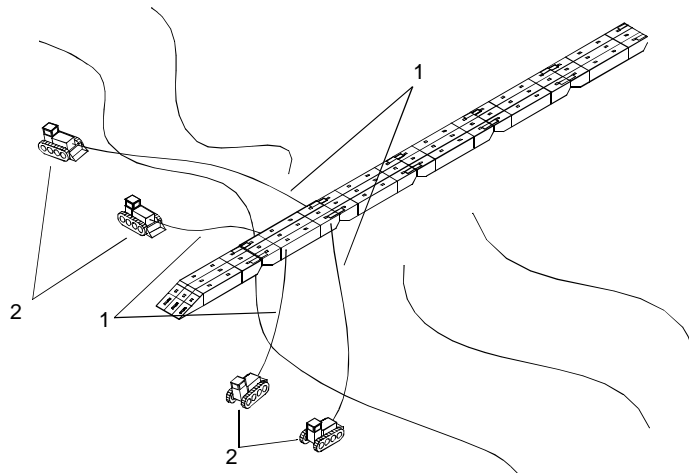


Figure 9. Using Bulldozers to Anchor Mooring Legs

- Attach first pair of mooring cables (figure 9, item 1) to bulldozers (figure 9, item 2).
- Using bulldozers (figure 9, item 2), pull and stretch mooring cables (figure 9, item 1) at 45° angles from FC platform to anchor FC on beach.

ASSEMBLE ONSHORE MOORING LEGS WITH ANCHORS**NOTE**

Two inner and two outer onshore mooring legs are required to anchor the FC. An outer leg differs from an inner only with an additional 300 ft. mooring cable and attaching shackle.

The following procedure is typical for the assembly of onshore mooring legs.

WARNING**HEAVY OBJECTS**

Mooring leg components are heavy. Use care when lifting or serious injury may result.

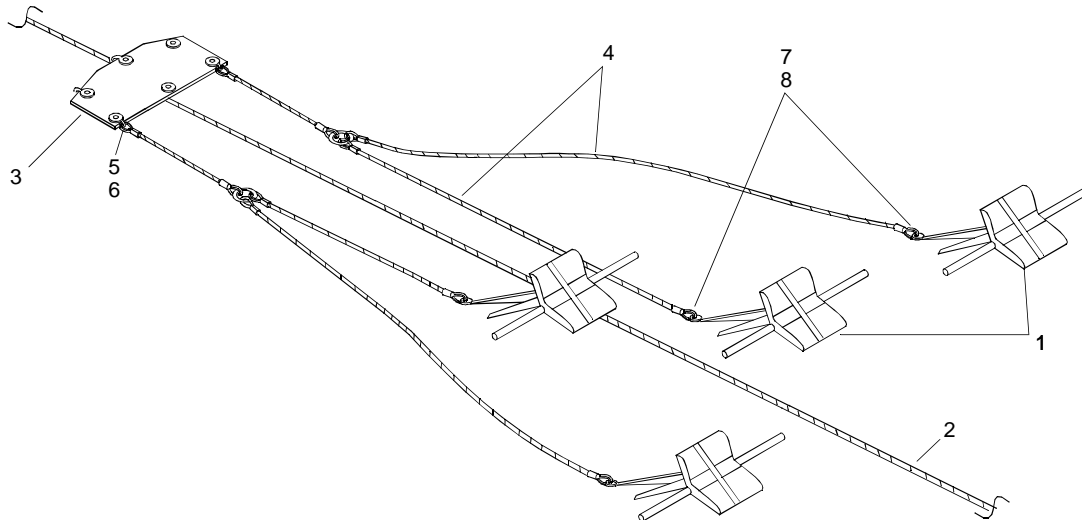


Figure 10. Onshore Mooring Cables and Anchor Bridles

1. Position anchors (figure 10, item 1), mooring cables (figure 10, item 2), ground tackle and tensioning gear in approximate locations for mooring leg assembly and placement.
2. Attach first pair of mooring cables (figure 10, item 2) to bulldozers (figure 9, item 2).
3. Using bulldozers (figure 9, item 2), pull and stretch mooring cables (figure 10, item 2) at 45° angles from FC platform to temporarily hold tension on mooring cables (figure 10, item 2) near assembly point.
4. Center flounder plate (figure 10, item 3) on mooring cable (figure 10, item 2).
5. Attach anchor bridle (figure 10, item 4) to flounder plate (figure 10, item 3) with 7/8 in. shackle (figure 10, item 5) and pin (figure 10, item 6).

NOTE

Long legs of anchor bridles are placed outside short legs. Do not lay out anchor bridles with long leg running between two short legs. Anchors will drag 20 - 25 ft before performing in tandem and reaching maximum holding capacity. Initial layout of the anchors must allow for anchor drag distance when considering distance above high water mark where anchors will be fully embedded.

6. Attach anchor bridles (figure 10, item 4) to anchor shackles with 1/2 in. shackle (figure 10, item 7) and pin (figure 10, item 8).
7. Space anchors (figure 10, item 1) wide enough apart to prevent anchor nearest flounder plate (figure 10, item 3) from pulling up on adjacent anchor bridle (figure 10, item 4) leg as the anchor digs in.

NOTE

Pieces of plywood (figure 4, item 3) are provided inside onshore container to prevent dirt and debris from fouling ratchet mechanism of griphoist.

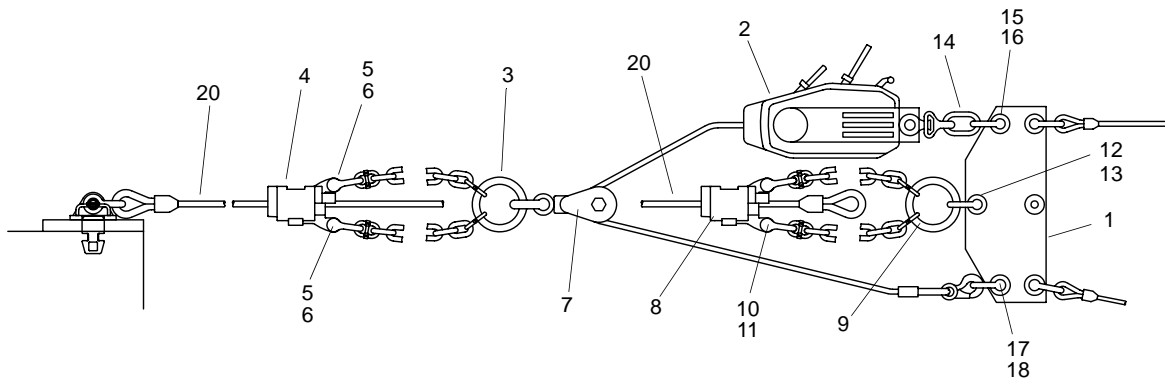


Figure 11. Onshore Mooring Equipment Setup

8. Place a plywood sheet (figure 4, item 3) under flounder plate (figure 11, item 1) and griphoist (figure 11, item 2).
9. Connect first carpenter stop (figure 11, item 4) to ring and chain assembly (figure 11, item 3) with 1 in. shackles (figure 11, item 5) and pins (figure 11, item 6).
10. Connect ring and chain assembly (figure 11, item 3) to shackle on snatch block (figure 11, item 7).
11. Connect second carpenter stop (figure 11, item 8) to ring and chain assembly (figure 11, item 9) with 1 in. shackles (figure 11, item 10) and pins (figure 11, item 11).
12. Connect ring and chain assembly (figure 11, item 9) to flounder plate (figure 11, item 1) with 1 in. shackle (figure 11, item 12) and pin (figure 11, item 13).
13. Connect 1 in. master link (figure 11, item 14) to flounder plate (figure 11, item 1) with 1 in. shackle (figure 11, item 15) and pin (figure 11, item 16).
14. Attach 1 in. shackle (figure 11, item 17) and pin (figure 11, item 18) to flounder plate (figure 11, item 1).
15. Connect fixed end of griphoist (figure 11, item 2) to master link (figure 11, item 14).
16. Route griphoist (figure 11, item 2) cable through snatch block (figure 11, item 7) and attach free end of cable to 1 in. shackle (figure 11, item 17).
17. Center equipment layout on mooring cable (figure 11, item 20).
18. Clamp mooring cable (figure 11, item 20) in first carpenter stop (figure 11, item 4).

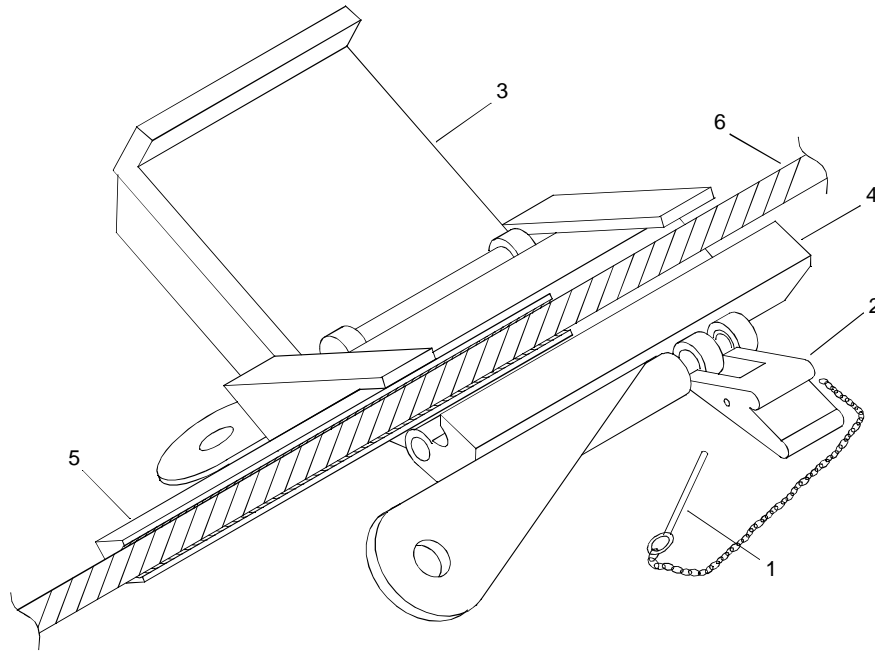


Figure 12. Carpenter Stop

- a. Pull latch pin (figure 12, item 1), open latch (figure 12, item 2) and raise cover (figure 12, item 3) of first carpenter stop (figure 11, item 4 and figure 12, item 4).
 - b. Withdraw wedge (figure 12, item 5) as far as possible from first carpenter stop (figure 12, item 4).
 - c. Lay mooring cable (figure 12, item 6) in wedge (figure 12, item 5).
 - d. Close cover (figure 12, item 3) and latch (figure 12, item 2) and secure with latch pin (figure 12, item 1).
 - e. Hammer wedge (figure 12, item 5) into first carpenter stop (figure 12, item 4) to clamp and hold mooring cable (figure 12, item 6).
19. Disconnect mooring cable (figure 11, item 20) from bulldozer.

DEPLOY ONSHORE MOORING LEGS WITH ANCHORS**NOTE**

The following procedure is typical for the deployment of onshore mooring legs.

1. Manually or using bulldozer, excavate a depression in sand where anchors are to be embedded in beach.

WARNING**HEAVY OBJECTS**

Mooring leg components are heavy. Use care when lifting or serious injury may result.

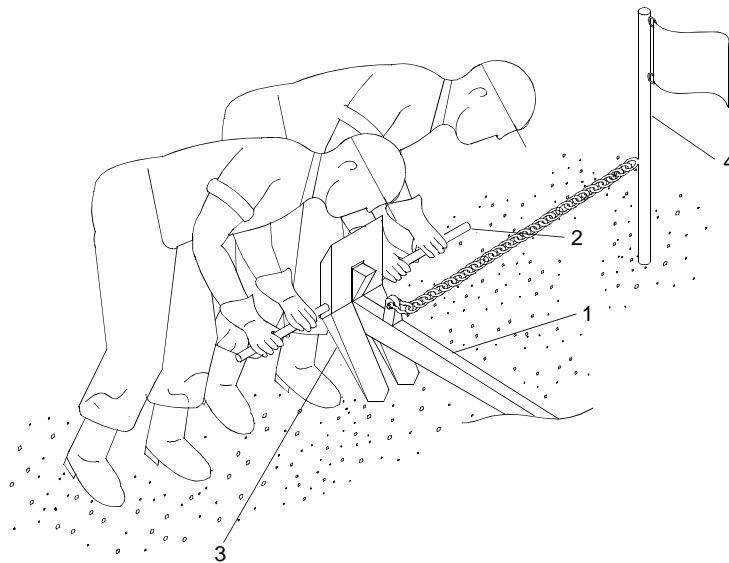


Figure 13. Embedding Onshore Anchors in Beach

2. Using assistant, lift anchors (figure 13, item 1) by stabilizers (figure 13, item 2) and position flukes (figure 13, item 3) into sand depression.
3. Push down on the anchor (figure 13, item 1) to embed flukes (figure 13, item 3) deeply in sand.

NOTE

Anchor pendant assembly is used to visually mark location of buried anchors.

4. Attach anchor pendant assembly (figure 13, item 4) to anchor (figure 13, item 1).
5. Bury anchors (figure 13, item 1) in sand to stabilize them and minimize movement.

CAUTION

The hoist hook cable should be reeled and unreel in a straight line to prevent loops and kinks. Kinked wire rope will not work in cable hoist.

Use only hoist hook cable provided. Other wire ropes deform under pressure of the jaws, causing hoist malfunctions.

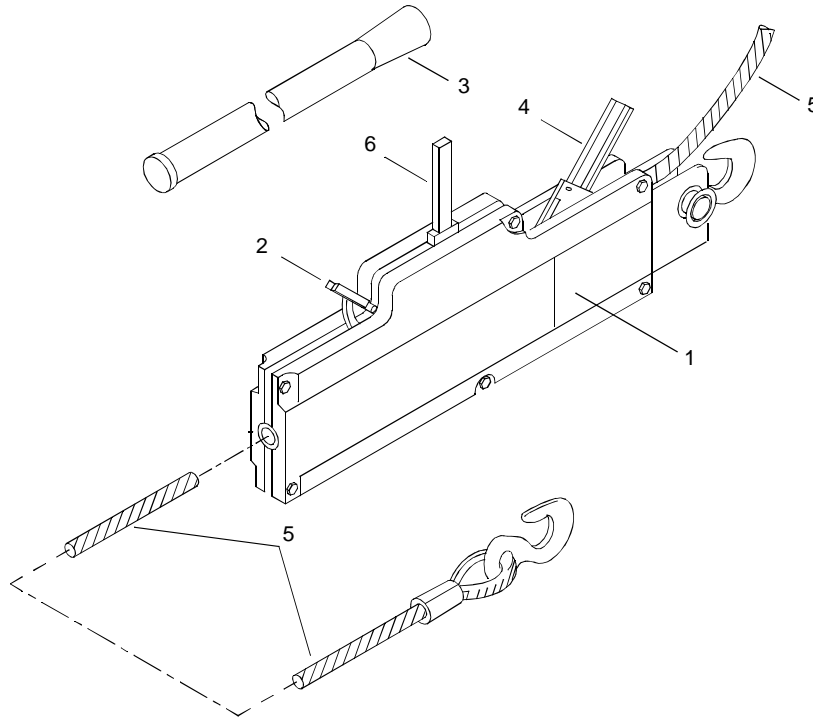


Figure 14. Griphoist

6. Operate griphoist (figure 14, item 1) to tension mooring cables.
 - a. Move wire rope release lever (figure 14, item 2) to the lock position by striking it with a sharp blow of the hand.
 - b. Place operating handle (figure 14, item 3) on power stroke lever (figure 14, item 4).
 - c. Work operating handle (figure 14, item 3) back and forth to pull hoist cable (figure 14, item 5) through griphoist (figure 14, item 1).

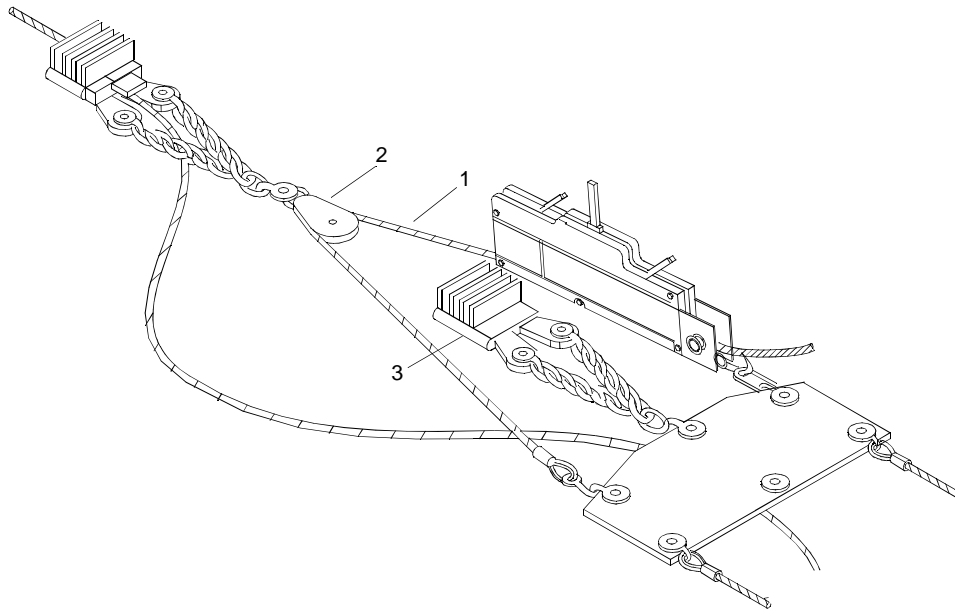


Figure 15. Tensioning Mooring Cable (1)

- d. Continue taking up hoist cable (figure 15, item 1) until snatch block (figure 15, item 2) nears second carpenter stop (figure 15, item 3).

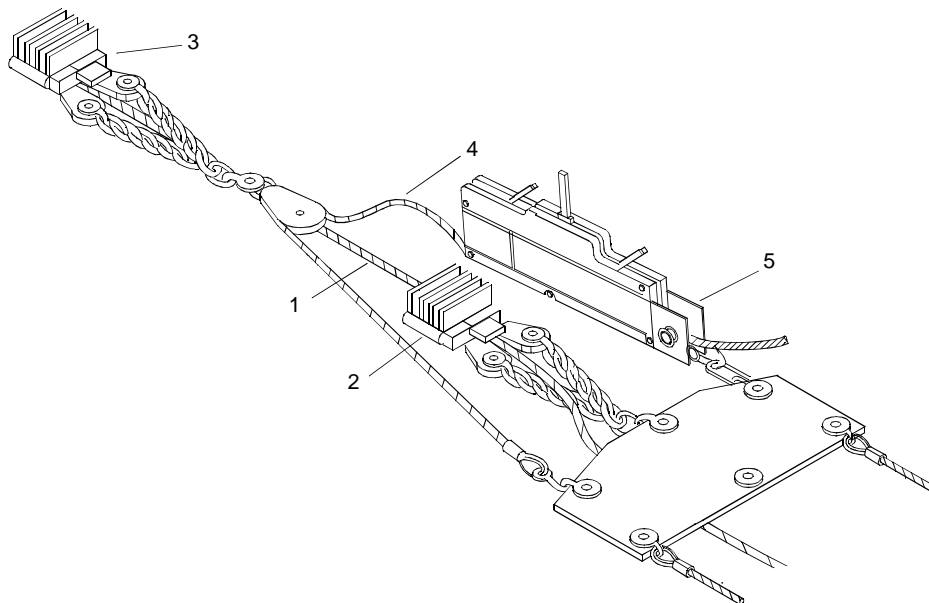


Figure 16. Tensioning Mooring Cable (2)

- e. Clamp mooring cable (figure 16, item 1) in second carpenter stop (figure 16, item 2) with no slack in mooring cable (figure 16, item 1) between carpenter stops (figure 16, item 2 and item 3).
- f. Place operating handle (figure 14, item 3) on reversing lever (figure 14, item 6) to pay out hoist cable (figure 16, item 4) by working back and forth until second carpenter stop (figure 16, item 2) is holding mooring cable (figure 16, item 1).

- g. Unlock griphoist (figure 16, item 5), allowing hoist cable (figure 16, item 4) to run free.

WARNING

Never open a carpenter stop that is holding a cable under tension. Sudden release of tension can cause end of cable to whip around causing serious injury or death to personnel.

- h. Release mooring cable (figure 16, item 1) from first carpenter stop (figure 16, item 3) and relocate down mooring cable (figure 16, item 1) as far as hoist cable (figure 16, item 4) will allow.
- i. Clamp first carpenter stop (figure 16, item 3) to mooring cable (figure 16, item 1) and reinsert hoist cable (figure 16, item 4) in griphoist (figure 16, item 5), if required.
- j. Repeat step a through step i until mooring cable (figure 16, item 1) clears water and anchors are firmly in place.
7. Repeat previous steps to deploy all onshore mooring legs.

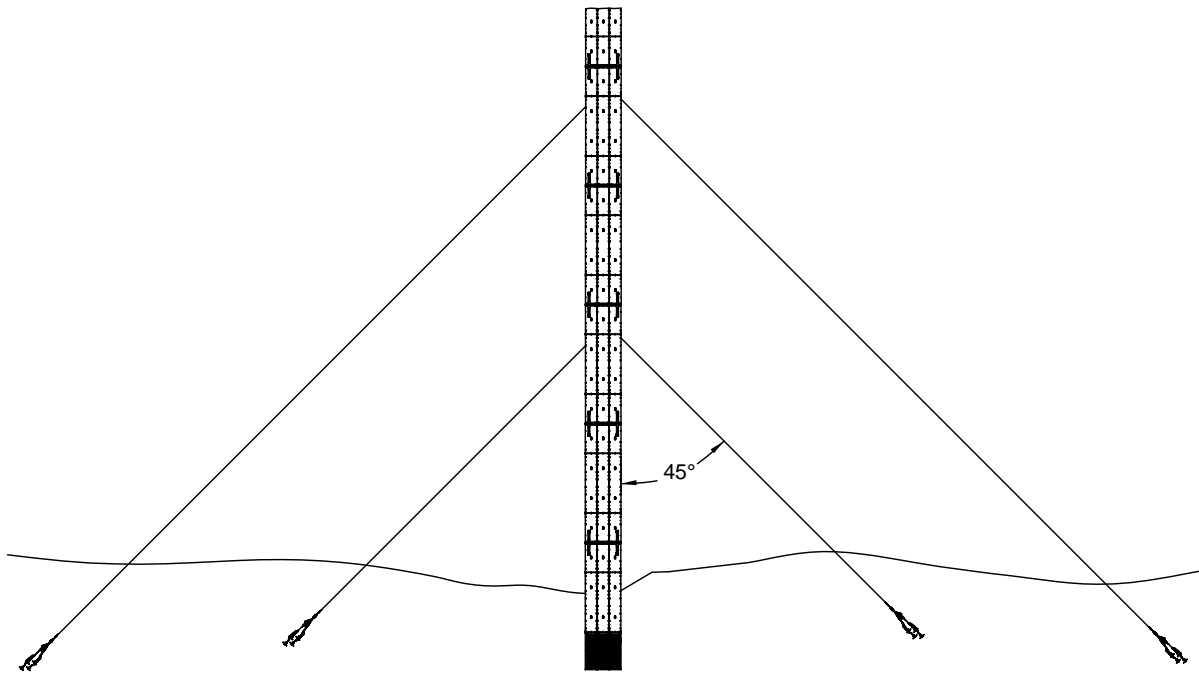


Figure 17. Onshore Mooring Leg Deployment

WARNING

Place warning flags on onshore mooring lines. Failure to comply could allow personnel and/or equipment to run into raised mooring lines, causing injury to personnel or damage to equipment.

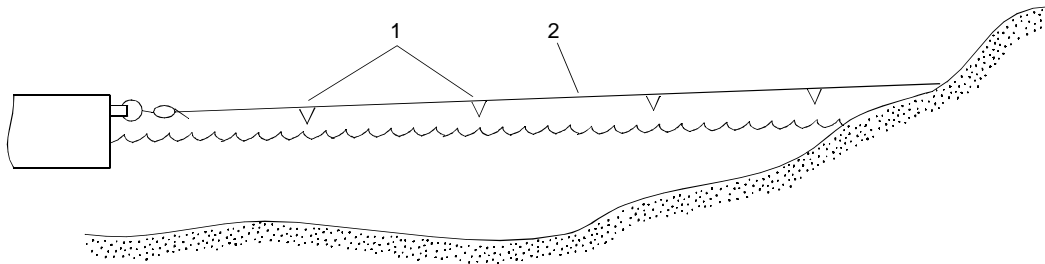


Figure 18. Warning Flags

8. Place warning flags (figure 18, item 1) on mooring lines (figure 18, item 2) to prevent equipment and personnel from running into raised mooring lines (figure 18, item 2).
9. Stow plywood and tools in onshore anchor container.
10. Remove locking hooks, pins and bars and close container side and end doors.
11. Latch and secure container doors.
12. Using crane, remove onshore anchor container from FC platform.

UNPACK OFFSHORE ANCHOR SYSTEM

WARNING



HEAVY PARTS

The containers are very heavy. Stay clear when they are lifted. Falling or swinging containers may cause serious injury or death.

NOTE

Eight offshore containers are required to moor the FC. Each offshore container contains two mooring legs. Each mooring leg consists of two anchors, a buoy and one set of cables with accessories.

Offshore containers are positioned parallel with and on alternate intermediate sections to allow for mooring leg assembly before deployment.

The following procedure is typical for unpacking offshore anchor containers.

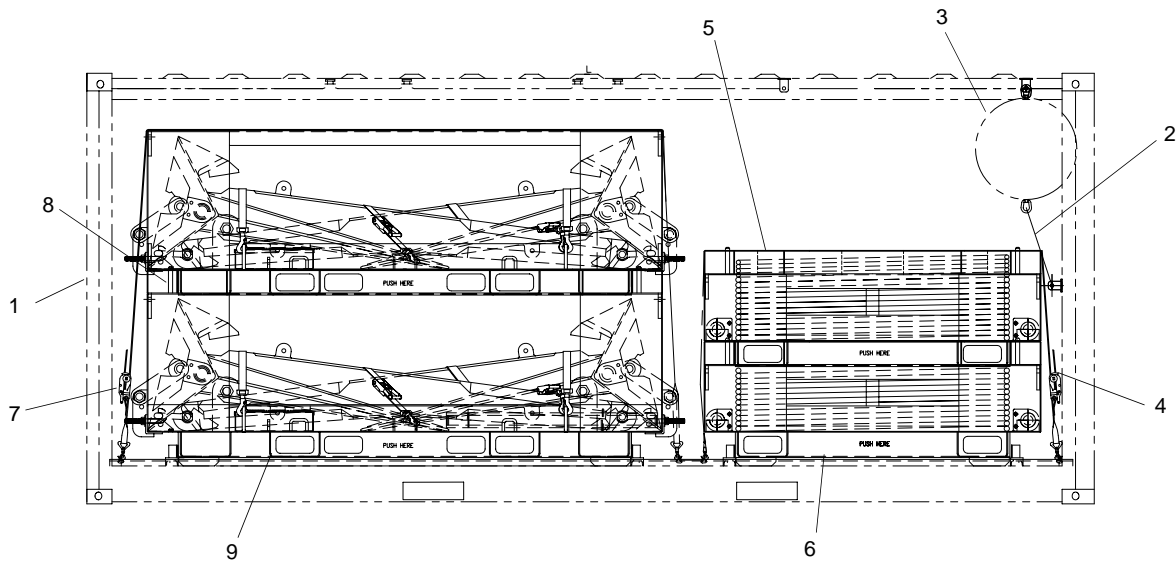


Figure 19. Offshore Anchor Container

1. Using crane, position offshore anchor container (figure 19, item 1) on FC platform.
2. Unlatch and open container (figure 19, item 1) end and side doors.

WARNING

Doors must be secured and latched in the open position. Failure to comply could result in injury to personnel.

3. Secure doors open with locking bars and pins or hooks.
4. Loosen anchor buoy tie down strap (figure 19, item 2) and unhook front end of strap.
5. Pull anchor buoy tie down strap (figure 19, item 2) through loops on ends of anchor buoys (figure 19, item 3) and lay tie down strap (figure 19, item 2) at back of container.
6. Loosen two mooring cable pallet tie down straps (figure 19, item 4) and pull straps over mooring cable pallets (figure 19, items 5, 6). Lay the tie down straps (figure 19, item 4) out of the way to allow for removal of mooring cable pallets (figure 19, items 5, 6).

WARNING



HEAVY PARTS

The mooring cable pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

7. Using forklift, remove mooring cable pallets (figure 19, items 5, 6) from container (figure 19, item 1) and position on FC platform.

WARNING**HEAVY PARTS**

The mooring leg cables are very heavy. Stay clear when they are lifted. Falling cables may cause serious injury or death.

NOTE

The following procedural steps apply to unpacking both the upper and lower mooring leg pallets.

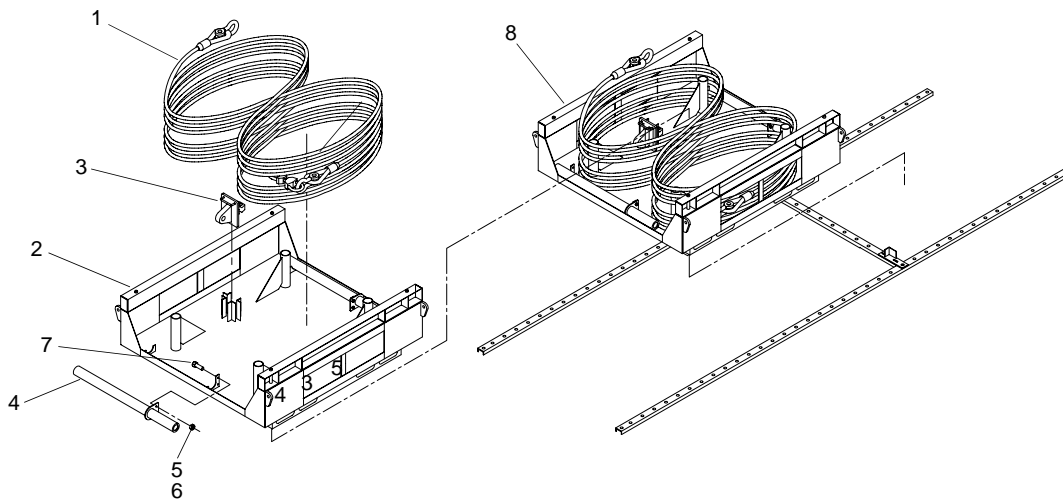


Figure 20. Mooring Leg Stowage

8. Using forklift, remove mooring leg cable assemblies (figure 20, item 1) from upper mooring cable pallet (figure 20, item 2) and place them on the FC platform for mooring leg assembly.
9. Remove the deadman padeye (figure 20, item 3) from upper mooring cable pallet (figure 20, item 2).

WARNING**HEAVY OBJECTS**

The anchors stabilizers are heavy. Use care when lifting or serious injury may result.

10. Remove two anchor stabilizers (figure 20, item 4) from upper mooring cable pallet (figure 20, item 2) by removing nuts (figure 20, item 5), lockwashers (figure 20, item 6) and bolts (figure 20, item 7). Retain all parts for later installation on anchors.

WARNING**HEAVY PARTS**

The cable pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

11. Using forklift, remove upper mooring cable pallet (figure 20, item 2) from lower mooring cable pallet (figure 20, item 8) and place on FC platform.
12. Repeat step 8 through step 10 to unpack the lower mooring cable pallet (figure 20, item 8).

WARNING**HEAVY OBJECTS**

The anchors buoys are heavy. Use care when lifting or serious injury may result.

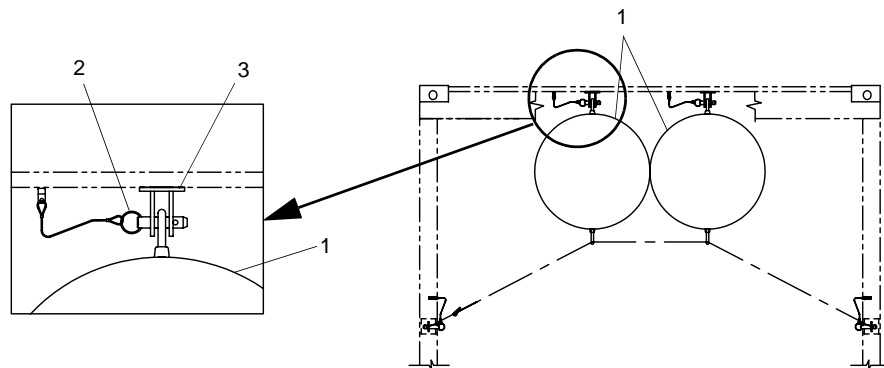


Figure 21. Anchor Buoy Stowage

13. Using assistant, support weight of anchor buoy (figure 21, item 1), remove pin (figure 21, item 2) from container bracket (figure 21, item 3), remove and position anchor buoy (figure 21, item 1) on FC platform. Repeat this step for second anchor buoy (figure 21, item 1).
14. Loosen and remove two anchor pallet tie down straps (figure 19, item 7). Place straps in rear of container (figure 19, item 1).

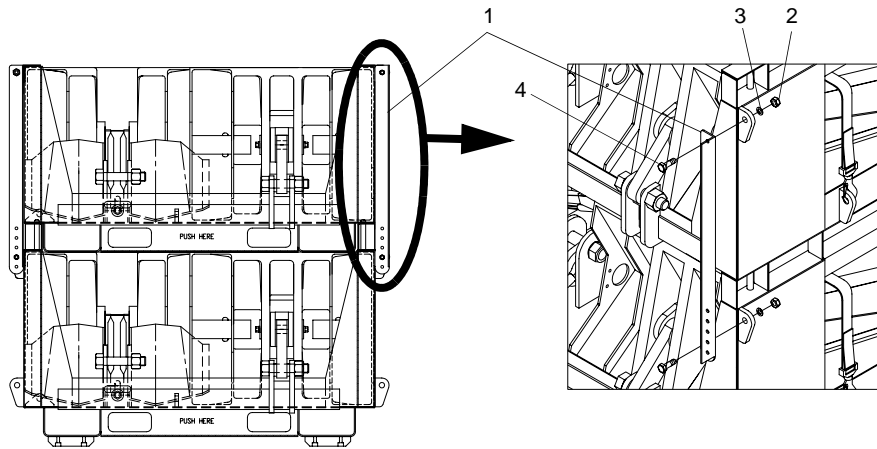


Figure 22. Anchor Pallet Tie Bars

15. Remove four anchor pallet tie bars (figure 22, item 1) by removing nuts (figure 22, item 2), washers (figure 22, item 3) and bolts (figure 22, item 4) from each end of bars (figure 22, item 1). Reinstall hardware in bars (figure 22, item 1) to prevent loss. Place bars (figure 22, item 1) in rear of container (figure 19, item 1).

WARNING



HEAVY PARTS

The anchor pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

16. Using forklift, remove upper anchor pallet (figure 19, item 8) from container (figure 19, item 1) and position on FC platform.
17. Using forklift, remove lower anchor pallet (figure 19, item 9) from container (figure 19, item 1) and position on FC platform.

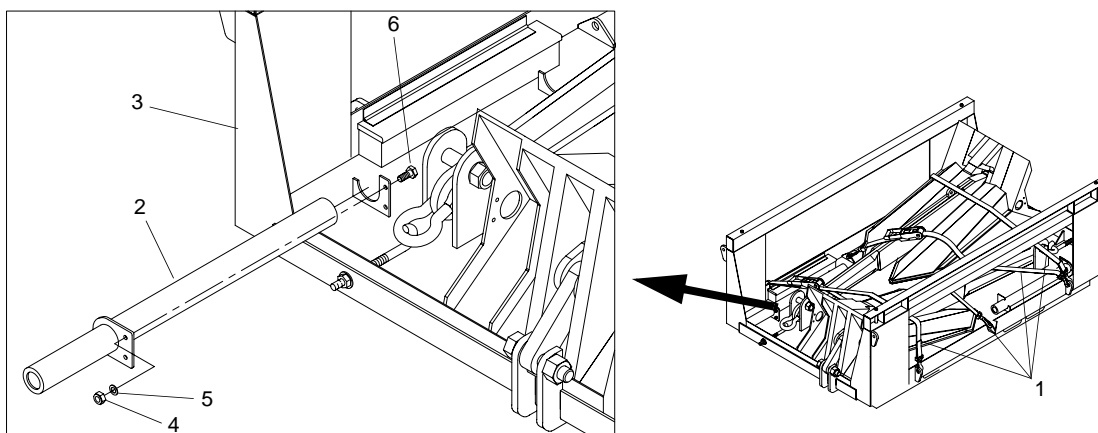


Figure 23. Anchor Stabilizers on Anchor Pallets

18. Remove four tie down straps (figure 23, item 1) from pallet.

WARNING

**HEAVY OBJECTS**

The anchors stabilizers are heavy. Use care when lifting or serious injury may result.

NOTE

Two anchor stabilizers are stored on each of the anchor pallets. The following procedural step is typical for the removal of anchor stabilizers from the anchor pallets.

19. Remove two anchor stabilizers (figure 23, item 2) from anchor pallet (figure 23, item 3) by removing nuts (figure 23, item 4), lockwashers (figure 23, item 5) and bolts (figure 23, item 6). Retain all parts for later installation on anchors.

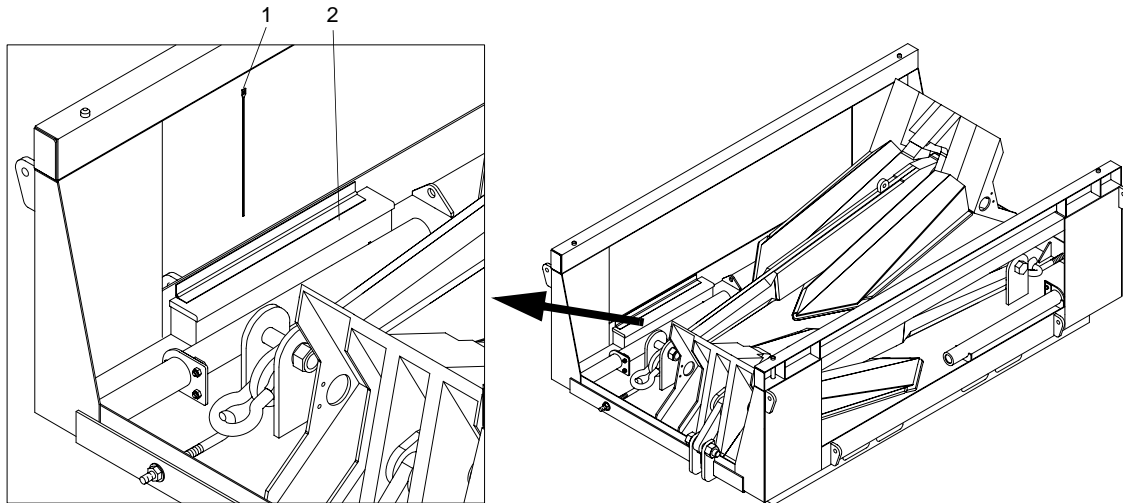


Figure 24. Plastic Cable Tie Stowage

20. Remove two plastic cable ties (figure 24, item 1) from each anchor pallet toolbox (figure 24, item 2).

WARNING**HEAVY PARTS**

The anchors are very heavy. Stay clear when they are lifted. Falling anchors may cause serious injury or death.

NOTE

Place anchors as close as possible to the edge of the deck to reduce dragging of anchors on FC platform during deployment.

The following procedural step is typical for the removal of all the offshore anchors from the pallets.

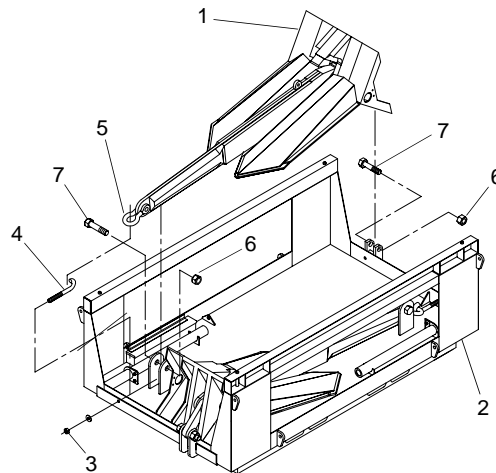


Figure 25. Offshore Anchor Stowage

21. Remove the offshore anchors (figure 25, item 1) from the anchor pallets (figure 25, item 2).
 - a. Loosen nut (figure 25, item 3) until hook (figure 25, item 4) clears anchor shackle (figure 25, item 5).
 - b. Remove nuts (figure 25, item 6) and bolts (figure 25, item 7) securing both ends of anchor (figure 25, item 1) to pallet (figure 25, item 2). Store hardware in pallet toolbox (figure 24, item 2).
 - c. Using forklift and forklift lifting adaptor, remove anchor (figure 25, item 1) from pallet (figure 25, item 2) and position on FC platform.

WARNING**HEAVY OBJECTS**

The anchors stabilizers are heavy. Use care when lifting or serious injury may result.

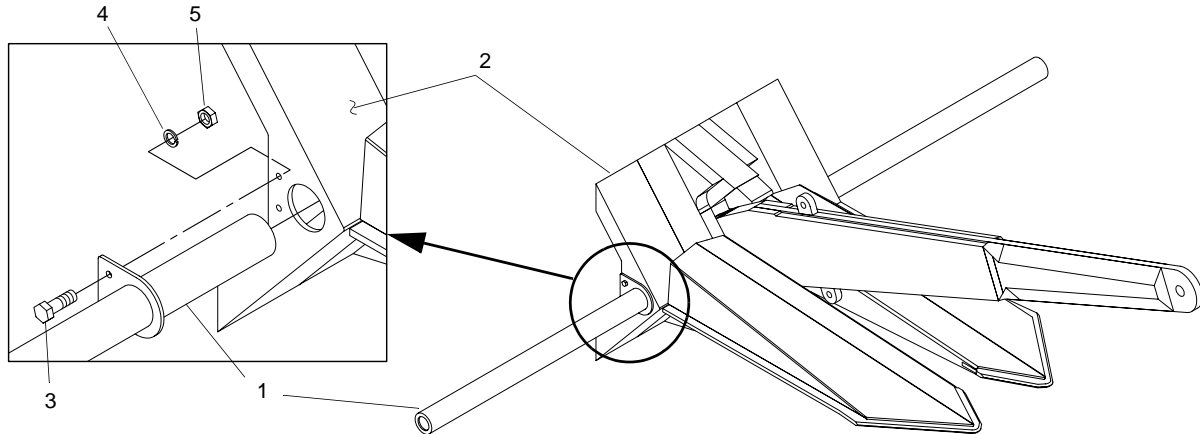


Figure 26. Anchor Stabilizer Installation

22. Install two stabilizers (figure 26, item 1) on anchor (figure 26, item 2) using previously removed bolts (figure 26, item 3), new lockwashers (figure 26, item 4) and nuts (figure 26, item 5). Tighten bolts (figure 26, item 3) and nuts (figure 26, item 5).

WARNING**HEAVY PARTS**

The pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

23. Stow pallets and loose items in offshore anchor container (figure 19, item 1).
- Using forklift, place the upper anchor pallet (figure 19, item 8) on top of the lower anchor pallet (figure 19, item 9).
 - Install four anchor pallet tie bars (figure 22, item 1) on anchor pallets with nuts (figure 22, item 2), washers (figure 22, item 3) and bolts (figure 22, item 4). Tighten nuts (figure 22, item 2) and bolts (figure 22, item 4).
 - Using forklift, place the anchor pallets (figure 19, items 8 and 9) in container (figure 19, item 1), pushing them to the rear of container, against track.
 - Using forklift, place upper mooring cable pallet (figure 19, item 5) on top of lower mooring cable pallet (figure 19, item 6).

- e. Using forklift, place mooring cable pallets (figure 19, items 5, 6) in container (figure 19, item 1), pushing them to the rear of container, against track.

24. Remove locking hooks, pins and bars and close container side and end doors.
25. Latch and secure container doors.
26. Using crane, remove offshore anchor containers (figure 19, item 1) from FC platform.

ASSEMBLE OFFSHORE MOORING LEGS

NOTE

The following procedure is typical for assembly and attachment of mooring legs.

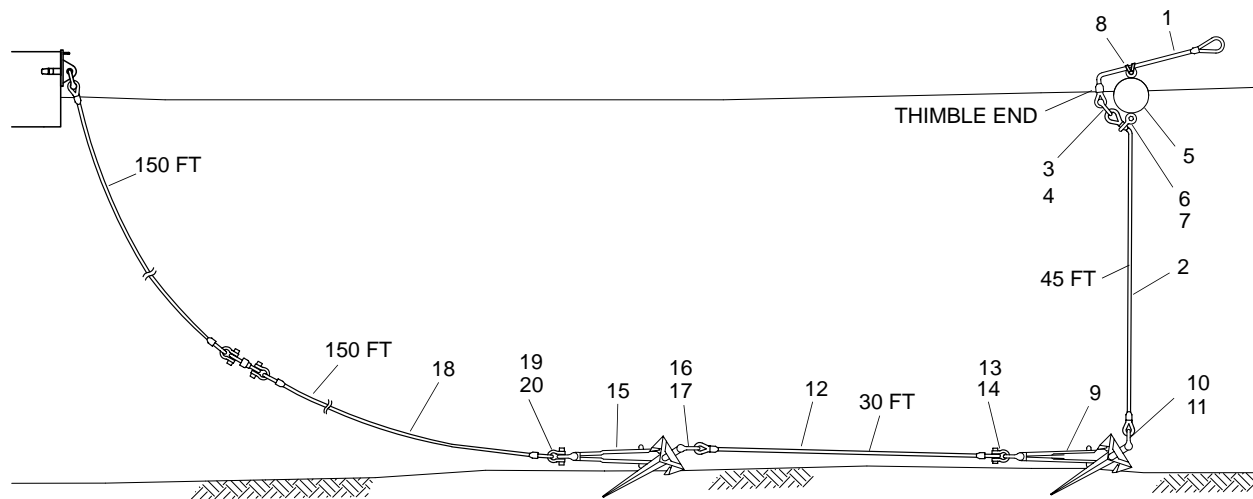


Figure 27. Offshore Mooring Leg Assembly

1. Attach the thimble end of 10 ft cable (figure 27, item 1) to 45 ft anchor buoy cable (figure 27, item 2) with shackle (figure 27, item 3) and pin (figure 27, item 4).
2. Position anchor buoy (figure 27, item 5) on 45 ft anchor buoy cable (figure 27, item 2) and install shackle (figure 27, item 6) and pin (figure 27, item 7).
3. Attach 10 ft cable (figure 27, item 1) to top of anchor buoy (figure 27, item 5) with two plastic cable ties (figure 27, item 8).
4. Attach 45 ft anchor buoy cable (figure 27, item 2) to first anchor (figure 27, item 9) foot with shackle (figure 27, item 10) and pin (figure 27, item 11).
5. Attach one end of 30 ft cable (figure 27, item 12) to first anchor (figure 27, item 9) shackle with shackle (figure 27, item 13) and pin (figure 27, item 14).
6. Attach other end of anchor to 30 ft anchor cable (figure 27, item 12) to second anchor (figure 27, item 15) foot with shackle (figure 27, item 16) and pin (figure 27, item 17).

NOTE

The 300 ft anchor-to-padeye cable consists of two 150 ft cables connected together with a swivel.

7. Attach one end of 300 ft cable (figure 27, item 18) to second anchor (figure 27, item 15) shackle with shackle (figure 27, item 19) and pin (figure 27, item 20).

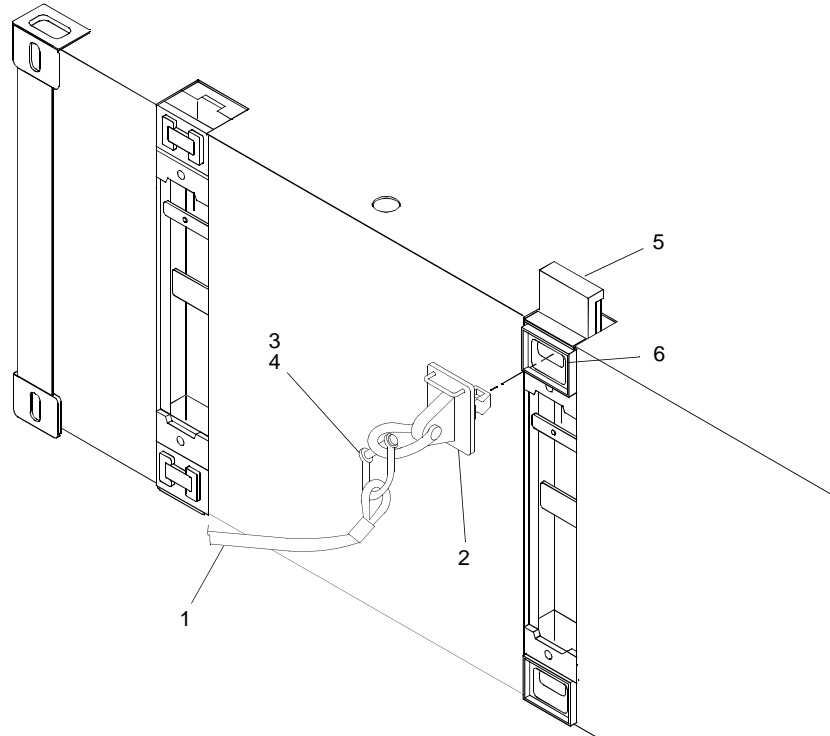


Figure 28. Anchor Cable Attachment

8. Attach other end of 300 ft cable (figure 27, item 18 and figure 28, item 1) to deadman padeye (figure 28, item 2) with shackle (figure 28, item 3) and pin (figure 28, item 4).
9. Using crowbar, raise female guillotine (figure 28, item 5).
10. Install deadman padeye (figure 28, item 2) in female guillotine upper fitting (figure 28, item 6).
11. Using sledgehammer, drive down female guillotine (figure 28, item 5) to lock deadman padeye (figure 28, item 2).

DEPLOY OFFSHORE MOORING LEGS**NOTE**

The following procedure is typical for deployment of mooring legs.

1. Make sure radio communication is established between WT operator and soldier in charge of mooring leg assembly and deployment on FC.

WARNING

**EAR PROTECTION**

Single hearing protection is required when the WT winch is operated. Failure to wear hearing protection may result in hearing loss.

CAUTION

The WT winch cable must be attached to the shackle, *not* the end of the 10 ft cable. Failure to comply will result in equipment damage.

2. Attach shackle (figure 27, item 3) to WT forward winch cable.
3. Throw anchor buoy (figure 27, item 5) and anchor buoy cable (figure 27, item 2) into water.

WARNING

**HEAVY PARTS**

The mooring leg assemblies are very heavy. Stay clear when they are towed off the FC. Failure to comply may cause serious injury or death.

4. Pull mooring leg assembly completely off FC platform by backing off WT perpendicular to long axis of FC.

CAUTION

To prevent pulling the padeye out of guillotine, do not overstress mooring leg cables with WT. Failure to comply will cause damage to the guillotine and loss of mooring leg assembly.

5. When mooring leg assembly is completely off deck and slack has been removed, cut backing power on WT to prevent overloading the cabling.
6. Allow weight of anchors to pull WT back towards FC until anchors land on bottom.
7. When anchor buoy cable goes slack, back off WT as not to over-run anchors.

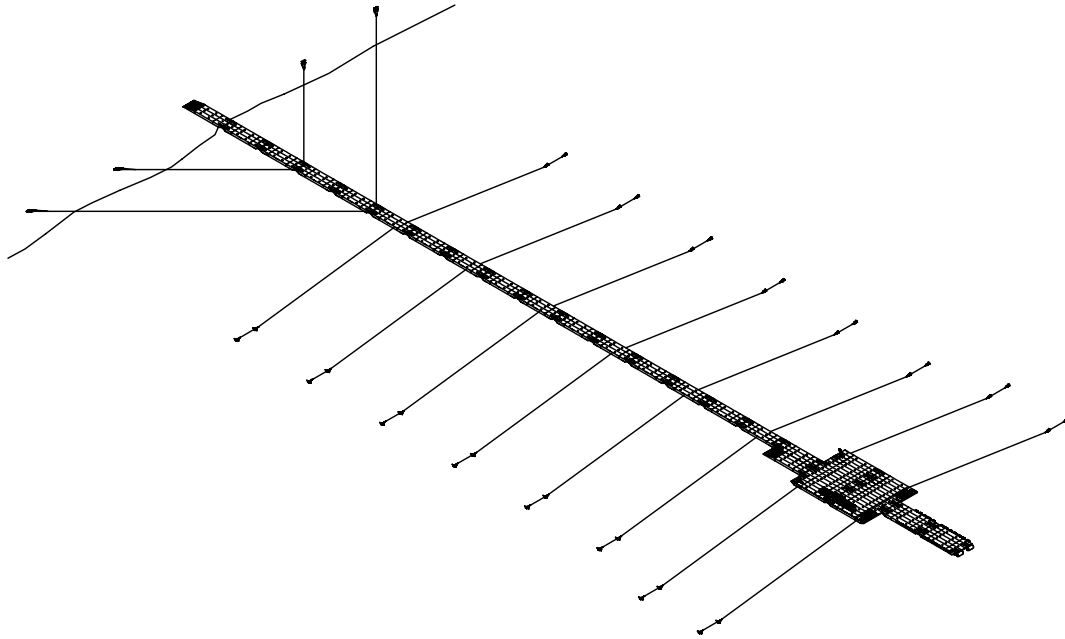


Figure 29. Mooring Leg Deployment Configuration

8. Raise WT forward winch cable and disengage from shackle (figure 27, item 3).
9. Deploy remaining offshore mooring legs to anchor FC platform (figure 29).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER USUAL CONDITIONS
PREPARATION FOR USE**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)
 Crowbar (Item 16, WP 0043 00)
 Hammer, Hand (Item 26, WP 0043 00)
 Sling, Endless (5,300 lb.) (Item 51, WP 0043 00)
 Assembly, Container Push Rod (push-pull) (Item 4, WP 0043 00)
 Socket, Socket Wrench (1-5/8 in.) (Item 56, WP 0043 00)
 Adapter, Socket Wrench (3/4 to 1/2 in. square drive) (Item 2, WP 0043 00)

Materials/Parts

Connector, Plug, Electrical (50 ft. nato slave) (Item 14, WP 0043 00)

Personnel Required

Seaman 88K (2)

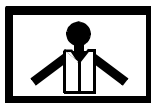
References

TM 9-6115-642-10

Equipment Condition

Previous preparations for use completed (WP 0006 00)

WARNING



VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

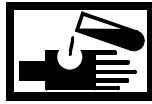
WARNING



EYE PROTECTION

Flying debris hazard. Failure to wear proper eye protection may result in serious injury.

WARNING

**CHEMICAL****EYE PROTECTION**

Chemical hazard. Failure to wear proper gloves, clothing and eye protection may result in serious injury.

PREPARATION FOR USE**INSTALLATION OF BII CONTAINER ON FC PIERHEAD**

1. Unlatch and open BII container doors.

WARNING

Doors must be secured in the open position. Unsecured doors can swing and may result in serious injury or death.

2. Secure container doors open with locking bars, pins or hooks.

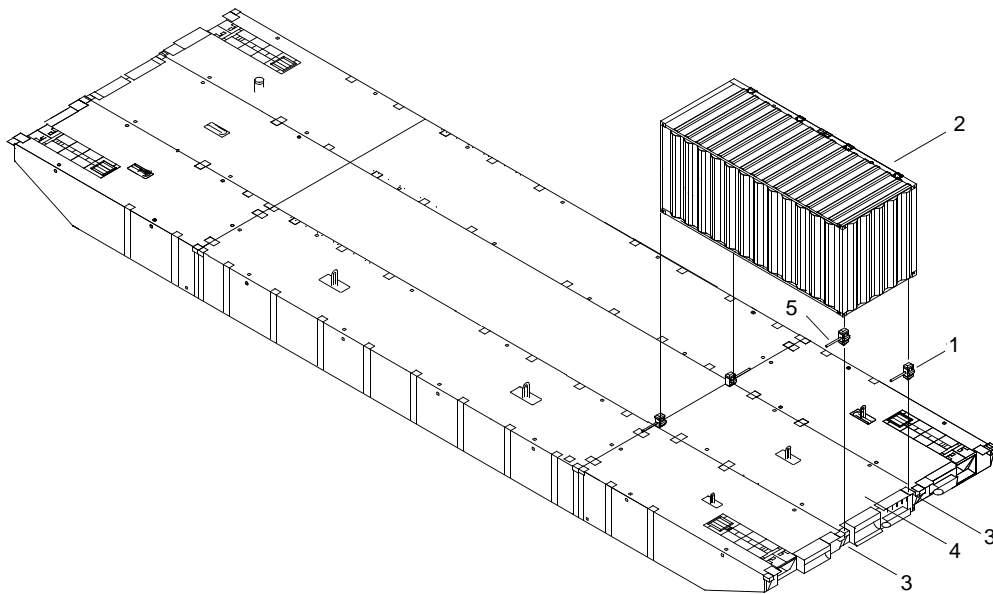


Figure 1. Installing BII Container on FC Platform

3. Remove four vertical twistlocks (figure 1, item 1) from BII container (figure 1, item 2).
4. Remove locking bars, pins or hooks to close container doors.
5. Close and latch container doors.
6. Position four vertical twistlocks (figure 1, item 1) in ISO corner fittings (figure 1, item 3) on center end rake (figure 1, item 4).

WARNING**HEAVY PARTS**

The BII container is very heavy. Stay clear of the container when lifted. Falling or swinging container may cause serious injury or death.

7. Using crane, position BII container (figure 1, item 2) on four vertical twistlocks (figure 1, item 1).
8. Lock four vertical twistlocks (figure 1, item 1) by rotating levers (figure 1, item 5) to secure BII container (figure 1, item 2) to center end rake (figure 1, item 4).

INSTALLATION OF SAFETY EQUIPMENT**NOTE**

The following procedure is typical for mounting all four life ring assemblies.

1. Remove life ring assemblies from BII container.
2. Determine location where life ring assemblies are to be mounted.

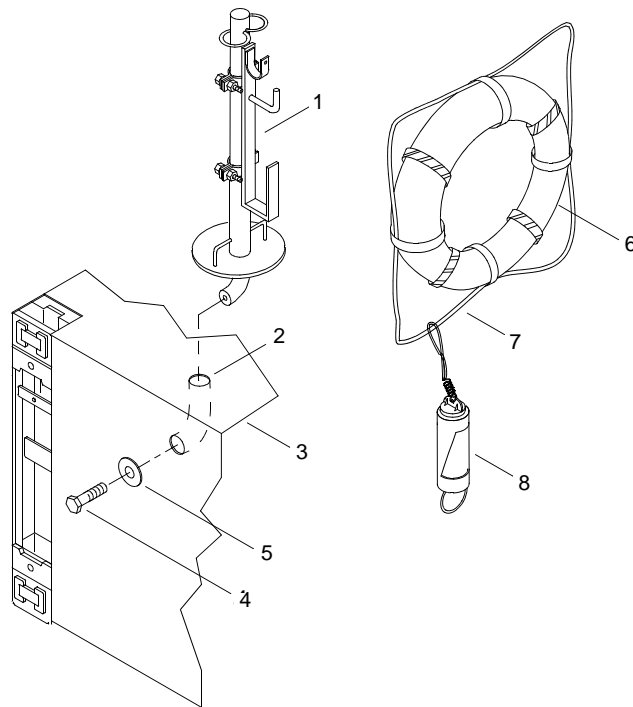


Figure 2. Life Ring Installation

3. Install life ring stanchion (figure 2, item 1) into turn tube (figure 2, item 2) on module (figure 2, item 3).

WARNING

Beware of other craft or objects coming alongside while working outboard installing the keeper plate and bolt on deck fittings, as the possibility exists of falling overboard. Failure to observe these precautions could result in death or injury to personnel.

4. Insert bolt (figure 2, item 4) through keeper plate (figure 2, item 5) and module (figure 2, item 3).
5. Install bolt (figure 2, item 4) into threaded portion of life ring stanchion (figure 2, item 1). Tighten bolt (figure 2, item 4).
6. Position life ring (figure 2, item 6) and rope (figure 2, item 7) in life ring stanchion (figure 2, item 1) and secure rope (figure 2, item 7) to strobe light (figure 2, item 8).

NOTE

Strobe light batteries are stowed in the BII container.

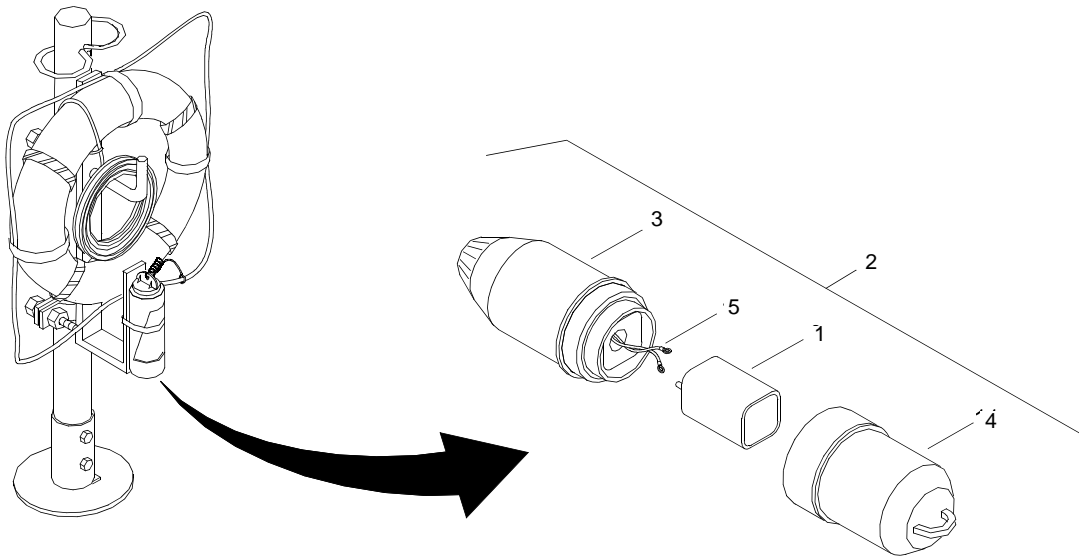


Figure 3. Strobe Light Battery Installation

7. Install strobe light batteries (figure 3, item 1) in life ring strobe lights (figure 3, item 2).
 - a. Unscrew strobe light housing (figure 3, item 3) from strobe light base (figure 3, item 4).
 - b. Position battery (figure 3, item 1) into strobe light base (figure 3, item 4).
 - c. Connect two battery wires (figure 3, item 5) to battery (figure 3, item 1).
 - d. Screw strobe light housing (figure 3, item 3) and strobe light base (figure 3, item 4) together.

INSTALLATION OF CORNER FENDERS

CAUTION

Opening doors while the container is on a soft or uneven surface will damage the container or doors.

Damage to container will occur if any door is open or unlocked while container is moved or lifted.

NOTE

The following procedure is typical for the installation of both port and starboard corner fenders.

1. Unlatch and open deck mat container doors.

WARNING

Doors must be secured in the open position. Unsecured doors can swing and may result in serious injury or death.

2. Secure container doors open with locking bars, pins or hooks.

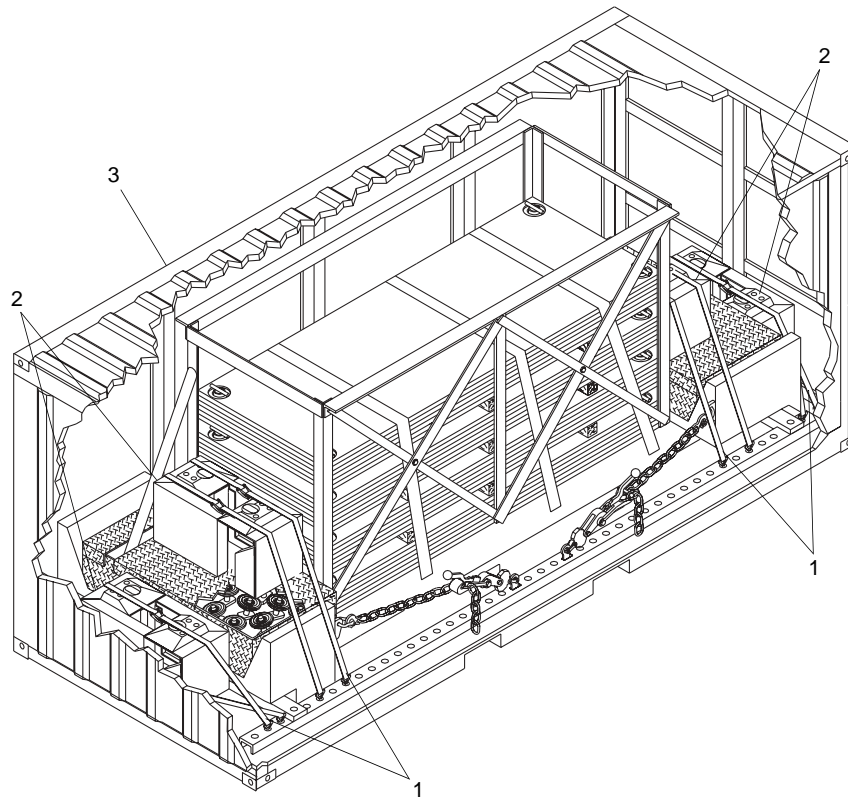


Figure 4. Deck Mat Container

3. Remove tie down straps (figure 4, item 1) securing corner fenders (figure 4, item 2) in deck mat container (figure 4, item 3).

WARNING**HEAVY OBJECTS**

The corner fenders are heavy. Use care when lifting or serious injury may result.

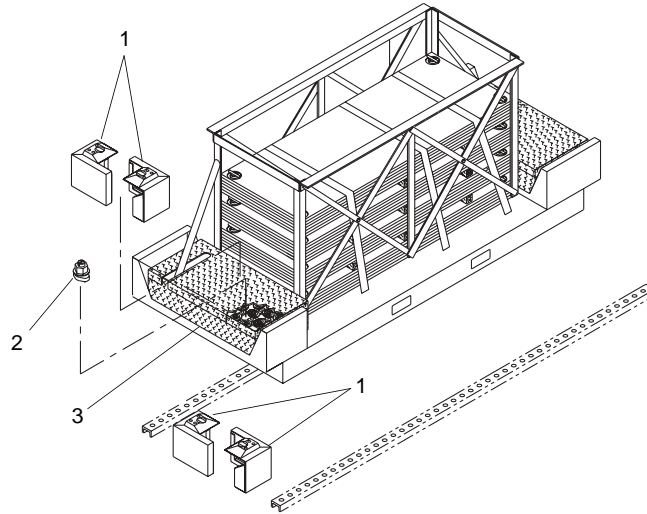


Figure 5. Corner Fenders and Mounting Assemblies

4. Using assistant, remove the corner fenders (figure 5, item 1) from the deck mat container and position them on the FC platform.
5. Remove the corner fender mounting assemblies (figure 5, item 2) from the deck mat pallet toolbox (figure 5, item 3).
6. Disassemble corner fender mounting assemblies (figure 5, item 2).

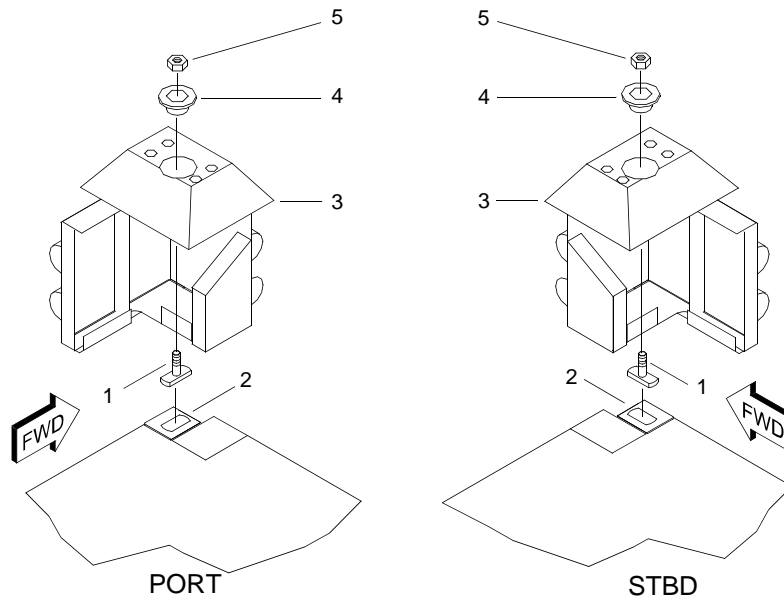


Figure 6. Installing Corner Fenders

7. Install tee bolt (figure 6, item 1) into end rake ISO corner fitting (figure 6, item 2).

WARNING



HEAVY OBJECTS

The corner fenders are heavy. Use care when lifting or serious injury may result.

8. Using assistant, install corner fender (figure 6, item 3) over tee bolt (figure 6, item 1) until threads are exposed through hole in top of corner fender (figure 6, item 3).
9. Install washer (figure 6, item 4) and nut (figure 6, item 5) to hold tee bolt (figure 6, item 1) in place.

NOTE

The 2 3/4 inch socket and 3/4 to 1/2 inch square drive adapter are located in the deck mat pallet toolbox. Use these with the 1/2 inch square drive socket wrench from the tool kit.

10. Turn tee bolt (figure 6, item 1) until it contacts inner surface of ISO corner fitting (figure 6, item 2) and hand-tighten nut (figure 6, item 5). Snug down nut (figure 6, item 5) with socket, adapter and wrench.
11. Stow tools in deck mat pallet toolbox.

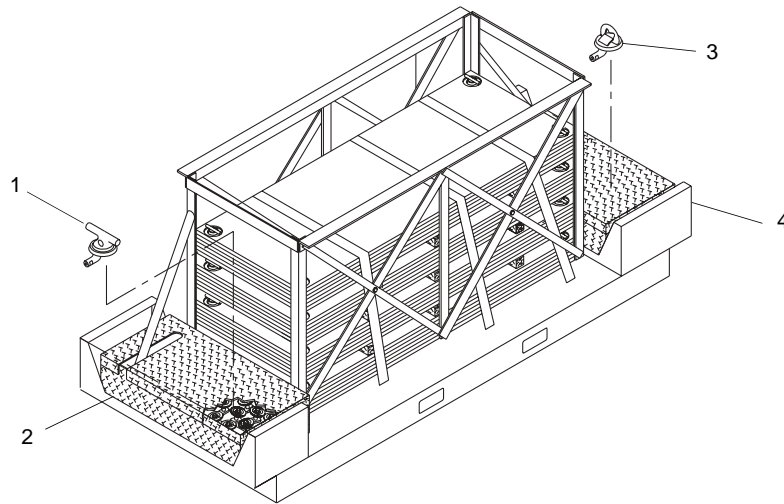
INSTALLATION OF D-RING AND DECK CLEAT FITTINGS


Figure 7. D-Ring and Deck Cleat Stowage

1. Remove all deck cleat fittings (figure 7, item 1) from port deck mat pallet toolbox (figure 7, item 2).
2. Remove all D-ring fittings (figure 7, item 3) from starboard deck mat pallet toolbox (figure 7, item 4).

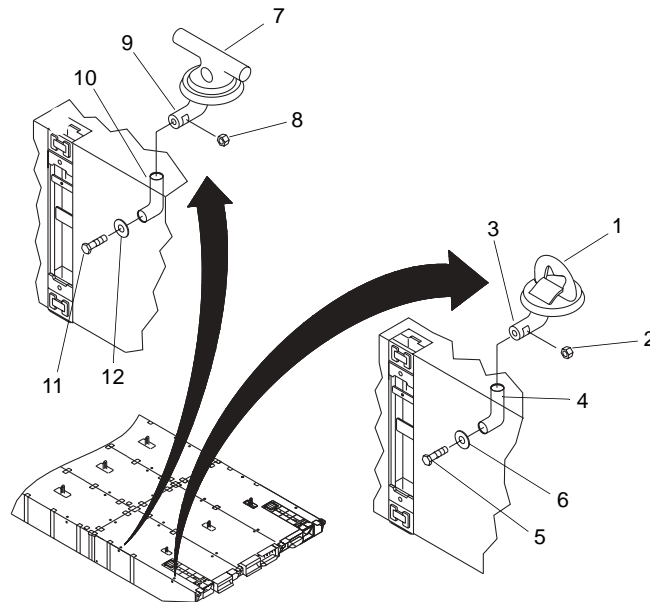


Figure 8. D-Ring and Deck Cleat Fitting Installation

3. Install D-ring fittings (figure 8, item 1) on modules.
 - a. Place nut (figure 8, item 2) in slot in tailpiece (figure 8, item 3) of D-ring fitting (figure 8, item 1).
 - b. Insert D-ring fitting (figure 8, item 1) into module turn tube (figure 8, item 4).

WARNING

Beware of other craft or objects coming alongside while working outboard installing the bolt and keeper plate. Serious injury may result if body parts are crushed between module and other craft or objects.

- c. Insert bolt (figure 8, item 5) through keeper plate (figure 8, item 6) and thread it into nut (figure 8, item 2) in tailpiece (figure 8, item 3). Tighten bolt (figure 8, item 5).
4. Install deck cleat fitting (figure 8, item 7) on modules.
 - a. Place nut (figure 8, item 8) in slot in tailpiece (figure 8, item 9) of deck cleat fitting (figure 8, item 7).
 - b. Insert deck cleat fitting (figure 8, item 7) into module turn tube (figure 8, item 10).

WARNING

Beware of other craft or objects coming alongside while working outboard installing the bolt and keeper plate. Serious injury may result if body parts are crushed between module and other craft or objects.

- c. Insert bolt (figure 8, item 11) through keeper plate (figure 8, item 12) and thread it into nut (figure 8, item 8) in tailpiece (figure 8, item 3). Tighten bolt (figure 8, item 11).

INSTALLATION OF DECK MATS

NOTE

The following procedure is typical for all deck mats.

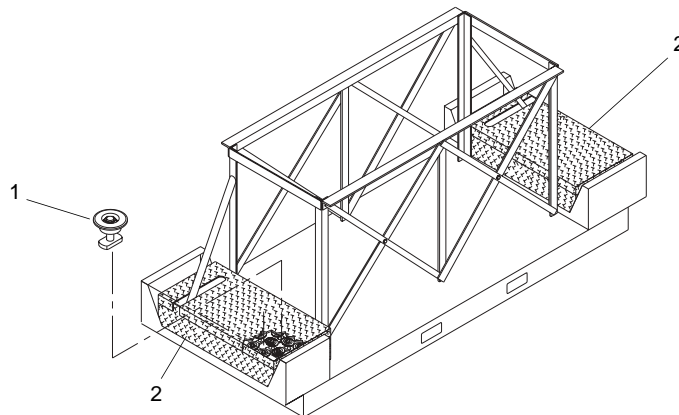


Figure 9. Deck Mat Lockdown Assembly

1. Remove all deck mat lockdown assemblies (figure 9, item 1) from container toolboxes (figure 9, item 2).

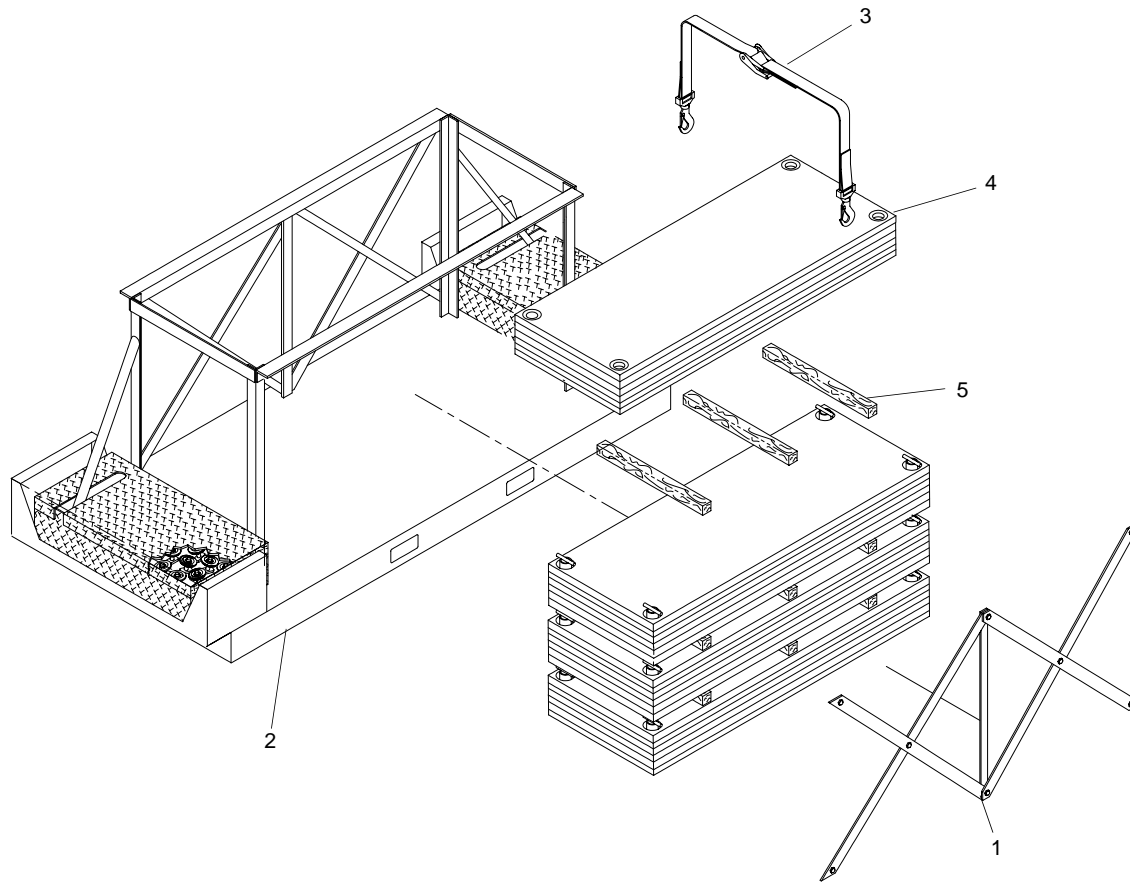


Figure 10. Deck Mat Container

2. Remove flat bars (figure 10, item 1) from side of deck mat pallet (figure 10, item 2).
3. Remove ratchet strap tie downs (figure 10, item 3).

WARNING



HEAVY PARTS

Deck mats are heavy. Stay clear when they are moved. Failure to comply may cause serious injury or death.

4. Remove deck mat (figure 10, item 4) stacks.
 - a. Using forklift, or appropriate handling device, remove first stack of deck mats (figure 10, item 4) from deck mat pallet (figure 10, item 2).
 - b. Remove wood beams (figure 10, item 5) from container.
5. Repeat previous step for removal of remaining deck mat (figure 10, item 4) stacks from deck mat pallet (figure 10, item 2).

6. Remove first deck mat (figure 10, item 4) from stack.

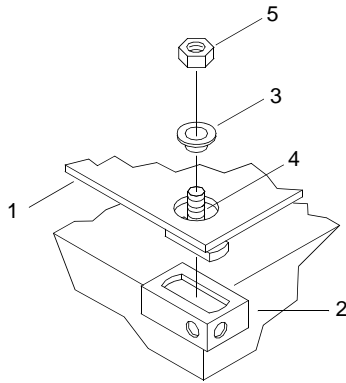


Figure 11. Deck Mat Installation

7. Position and place deck mat (figure 11, item 1) on the appropriate intermediate section with corner held over ISO corner fitting (figure 11, item 2).
8. Place washer (figure 11, item 3) over tee bolt (figure 11, item 4).
9. Start nut (figure 11, item 5) on threaded portion of tee bolt (figure 11, item 4).
10. Tilt tee bolt (figure 11, item 4) and place through deck mat (figure 11, item 1) corner hole and into ISO corner fitting (figure 11, item 2).

NOTE

The 1 5/8 inch socket and 3/4 to 1/2 inch square drive adapter are located in the deck mat pallet toolbox. Use these with the 1/2 inch square drive socket wrench from the tool kit.

11. Turn tee bolt (figure 11, item 4) until it contacts inner surface of corner fitting (figure 11, item 2) and hand-tighten nut (figure 11, item 5). Snug down nut (figure 11, item 5) with socket, adapter and wrench.
12. Stow tools in deck mat pallet toolbox.
13. Remove locking bars, pins or hooks to close container doors.
14. Close and latch container doors.

UNPACKING MOORING BITTS

1. Unlatch and open 4 ft by 12 ft fender container doors.

WARNING

Doors must be secured in the open position. Unsecured doors can swing and may result in serious injury or death.

2. Secure container doors open with locking bars, pins or hooks.

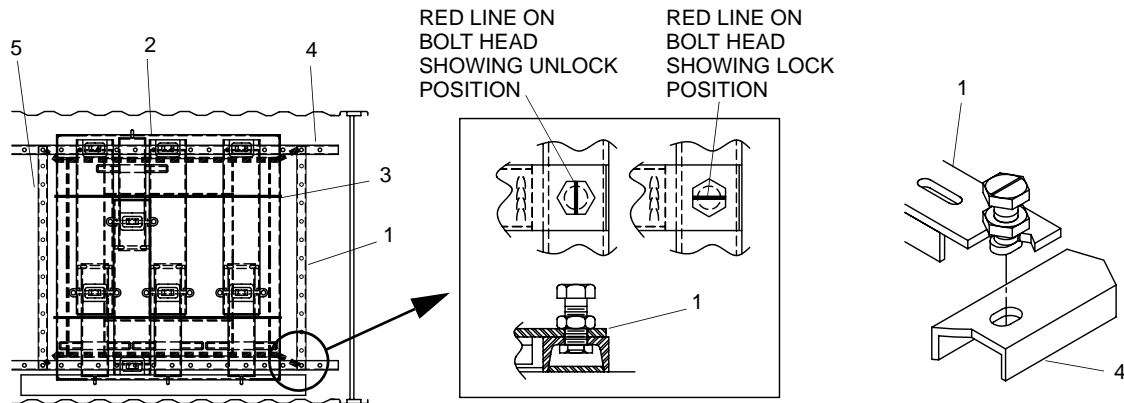


Figure 12. 4 ft by 12 ft Fender Container

3. Remove track stop (figure 12, item 1) from in front of mooring bitt pallets (figure 12, item 2).
4. Unhook front ends of two ratcheting tie down straps (figure 12, item 3) securing pallets (figure 12, item 2) to track (figure 12, item 4). Pull straps toward rear of container and place them out of the way.

WARNING

**HEAVY PARTS**

Pallets are very heavy. Stay clear of pallets when they are moved. Failure to comply may cause serious injury or death.

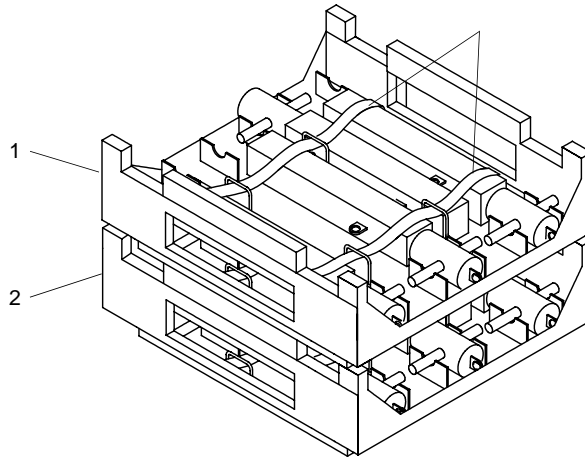


Figure 13. Mooring Bitt Pallets

5. Using forklift, remove upper mooring bitt pallet (figure 13, item 1) from container.
6. Using forklift, remove lower mooring bitt pallet (figure 13, item 2) from container.

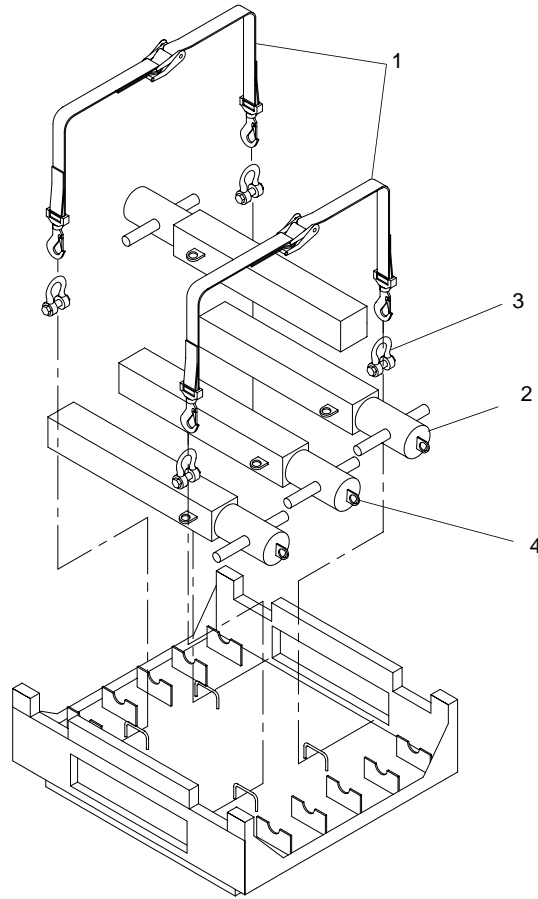


Figure 14. Unpacking Mooring Bitts

7. Remove tie down straps (figure 14, item 1) securing mooring bitts (figure 14, item 2) to shackles (figure 14, item 3) in pallets.

WARNING



HEAVY PARTS

The mooring bitts are heavy. Stay clear of the bitts when lifted. Falling or swinging mooring bitts may cause serious injury or death.

8. Using forklift and slings, remove the mooring bitts (figure 14, item 2) from the pallets.
9. Remove four shackles (figure 14, item 3) from each pallet.
10. Install a shackle (figure 14, item 3) on the end (figure 14, item 4) of each mooring bitt (figure 14, item 2).

WARNING

**HEAVY PARTS**

Pallets are very heavy. Stay clear of pallets when they are moved. Failure to comply may cause serious injury or death.

11. Using forklift, place lower mooring bitt pallet (figure 13, item 2) in container, pushing it against track stop (figure 12, item 5).
12. Using forklift, place upper mooring bitt pallet (figure 13, item 1) on top of lower pallet (figure 13, item 2).
13. Route two ratcheting tie down straps (figure 12, item 3) through fork openings in upper mooring bitt pallet (figure 13, item 1) and hook front ends to track (figure 12, item 4). Tighten tie down straps (figure 12, item 3).
14. Remove locking bars and pins to close mooring bitt container doors.
15. Latch and secure mooring bitt container doors.

INSTALLATION OF MOORING BITTS

WARNING

Attempting to install mooring bitts in sea conditions higher than Sea State 0 could cause serious injury or death and/or equipment damage.

NOTE

The following procedure is typical for installation of mooring bitts.

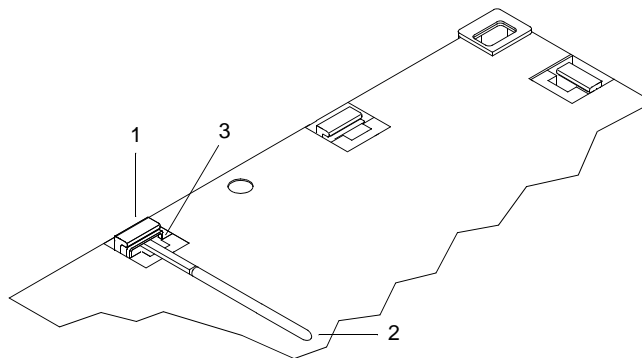


Figure 15. Raising Female Guillotine Bar

1. Raise female guillotine bar (figure 15, item 1).
 - a. Insert crowbar (figure 15, item 2) behind spring bar (figure 15, item 3) under female guillotine bar (figure 15, item 1).

- b. Rotate crowbar (figure 15, item 2) downward to clear spring bar (figure 15, item 3) from deck overhangs and allow female guillotine bar (figure 15, item 1) to move upward.
- c. Raise female guillotine bar (figure 15, item 1) approximately six inches until it stops.
- d. Remove crowbar (figure 15, item 2).

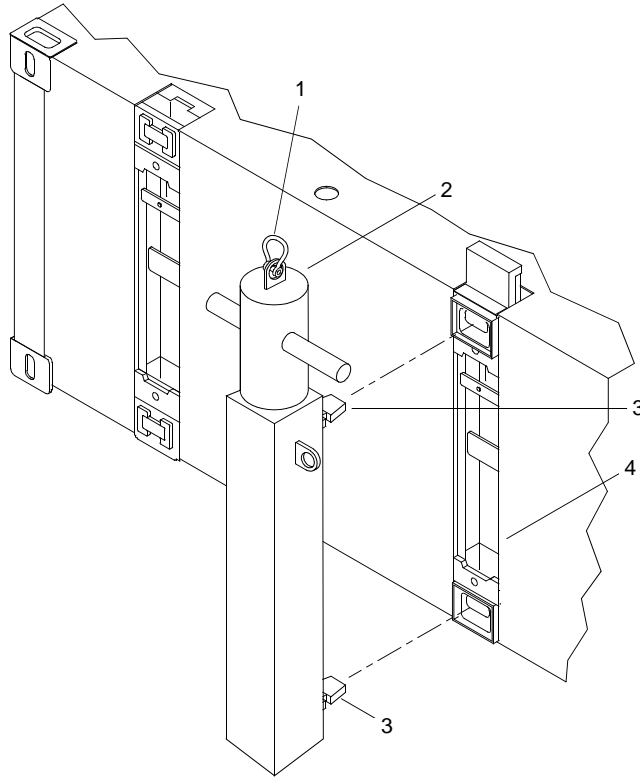
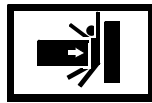


Figure 16. Installing Mooring Bitt

2. Attach sling to shackle (figure 16, item 1) on mooring bitt (figure 16, item 2).
3. Using forklift, take up tension on sling and shackle.

WARNING



HEAVY PARTS

Mooring bits are heavy. Stay clear of mooring bits when they are moved. Failure to comply may cause serious injury or death.

4. Using forklift, sling and shackle, align mooring bitt male connectors (figure 16, item 3) with female guillotine assembly (figure 16, item 4).
5. Drive female guillotine bar (figure 15, item 7) down using a sledgehammer.

INSTALLATION OF 4 FT BY 12 FT FENDERS**NOTE**

The following procedure is typical for the installation of all 4 ft by 12 ft fenders.

Fenders are attached to mooring bitts and/or D-ring deck fittings. Placement of fenders is dependent upon actual conditions. See "Fenders," in WP 0002 00 for more information.

1. Unlatch and open 4 ft by 12 ft fender container doors.

WARNING

Doors must be secured in the open position. Unsecured doors can swing and may result in serious injury or death.

2. Secure container doors open with locking bars, pins or hooks.

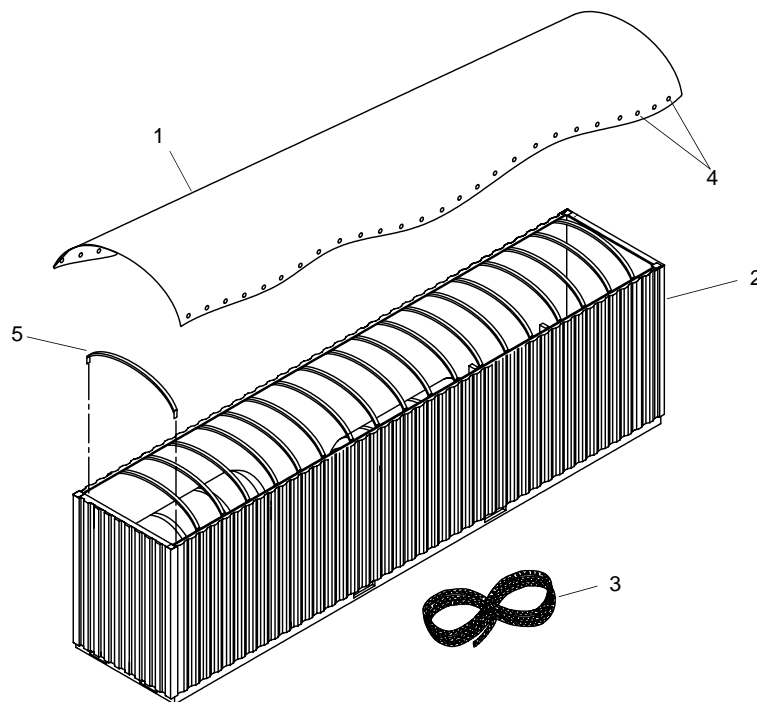


Figure 17. Opening the Fender Container

3. Remove cable (figure 17, item 3) attaching tarp (figure 17, item 1) to container (figure 17, item 2).
4. Remove tarp (figure 17, item 1) from bows (figure 17, item 5).

NOTE

Center ceiling bow is welded and cannot be removed.

5. Remove ceiling bows (figure 17, item 5).

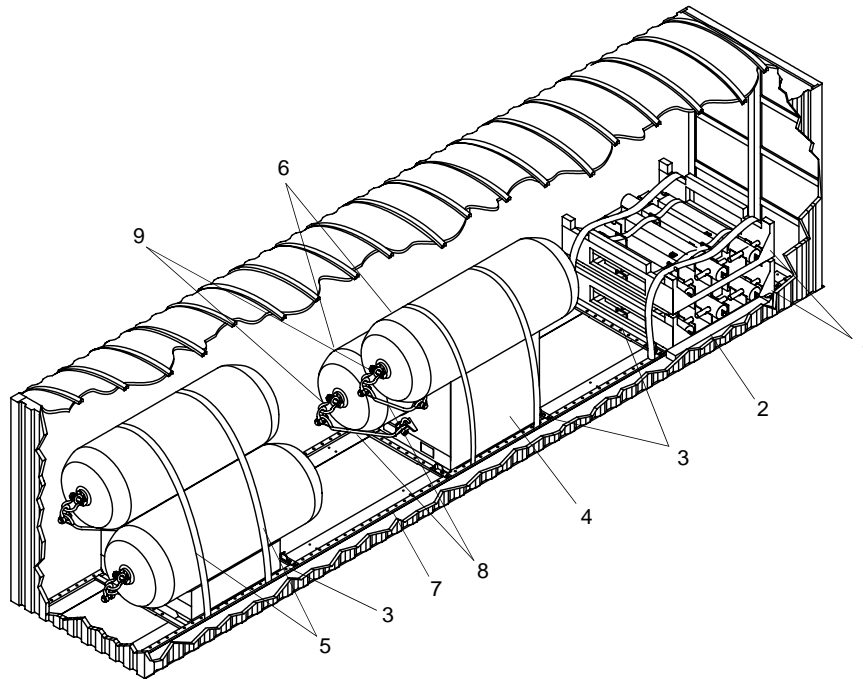


Figure 18. 4 ft by 12 ft Fender Container

6. Remove mooring bitt pallets (figure 18, item 1). (See “Unpacking Mooring Bitts,” in this WP.)
7. Remove forklift push-pull rod (figure 18, item 2).
8. Remove the track stops (figure 18, item 3) in front of first fender pallet (figure 18, item 4). (See also figure 21.)
9. Remove two tie down straps (figure 18, item 5) securing pallet (figure 18, item 4) and fenders (figure 18, item 6) to track (figure 18, item 7).
10. Disconnect straps (figure 18, item 8) from fenders shackles (figure 18, item 9) securing fenders (figure 18, item 6) to pallet (figure 18, item 4).
11. Using forklift and push-pull rod (figure 18, item 2), move first pallet (figure 18, item 4) toward front of container so pallet will clear center ceiling bow when pallet is lifted.

WARNING



HEAVY PARTS

The fenders are very heavy. Stay clear of the fenders when they are lifted. Falling or swinging fenders may cause serious injury or death.

12. Using crane, slings and shackles, lift fenders (figure 18, item 6) from first pallet (figure 18, item 4) and move to installation location on FC pierhead.

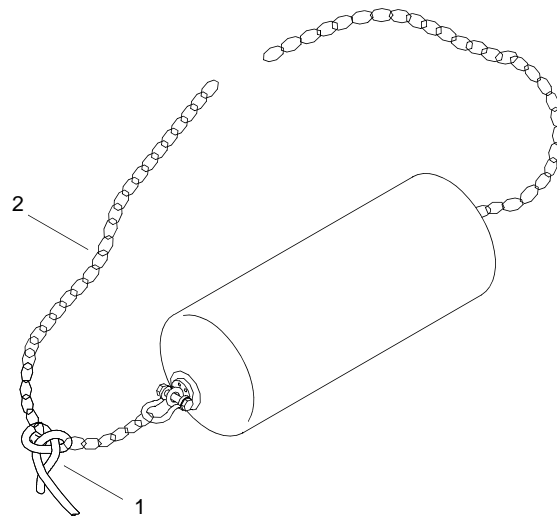


Figure 19. Tag Lines on Anchor Chains

13. Attach tag lines (figure 19, item 1) to ends of securing chains (figure 19, item 2).
14. Attach fenders (figure 18, item 6) to FC as required.

WARNING



HEAVY PARTS

The fenders are heavy and may roll on deck. Use care when rolling them over the side. Failure to comply may cause serious injury or death.

15. Roll fender (figure 18, item 6) over side of FC pierhead into water.
16. Using forklift and push-pull rod (figure 18, item 2), position empty pallets (figure 18, item 4) in container, making sure to install track stops (figure 18, item 3) as pallets are loaded.
17. Secure pallets (figure 18, item 4) to track (figure 18, item 7) with two tie down straps (figure 18, item 5).
18. Install ceiling bows (figure 17, item 5) on container.
19. Install tarp (figure 17, item 1) on bows (figure 17, item 5).
20. Thread cable (figure 17, item 3) through grommet holes (figure 17, item 4) in tarp (figure 17, item 1) and attach to brackets on side of container (figure 17, item 2) to secure tarp (figure 17, item 1).
21. Remove locking bars, pins or hooks to close container doors.
22. Close and latch container doors.

INSTALLATION OF 3 FT BY 5 FT AND 5 FT BY 10 FT FENDERS
NOTE

There are two different 3 ft by 5 ft and 5 ft by 10 ft fender containers. One container has three 3 ft by 5 ft fender pallets and the other has four.

The following procedure is typical for the installation of all 3 ft by 5 ft and 5 ft by 10 ft fenders.

Fenders are attached to mooring bits and/or D-ring deck fittings. Placement of fenders is dependent upon actual conditions. See "Fenders," in WP 0002 00 for more information.

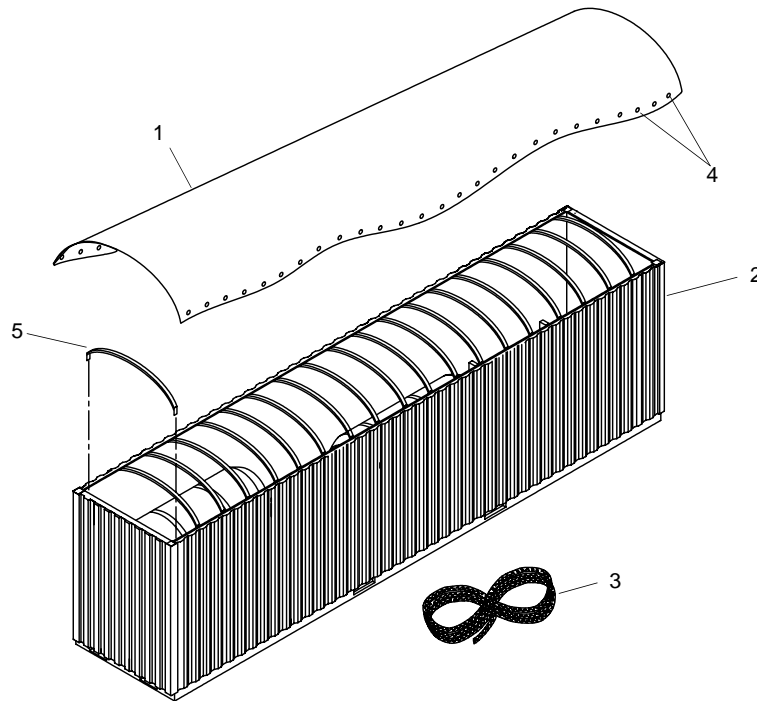


Figure 20. Opening the Fender Container

1. Release tarp (figure 20, item 1) from container (figure 20, item 2) by removing cable (figure 20, item 3) from grommet holes (figure 20, item 4) in tarp (figure 20, item 1).
2. Remove tarp (figure 20, item 1) from bows (figure 20, item 5).

NOTE

Center ceiling bow is welded and cannot be removed.

3. Remove ceiling bows (figure 20, item 5).
4. Unlatch and open 3 ft by 5 ft and 5 ft by 10 ft fender container doors.

WARNING

Doors must be secured in the open position. Unsecured doors can swing unexpectedly and may result in serious injury or death.

5. Secure container doors open with locking bars, pins or hooks.

NOTE

All removable track stops in fender containers are secured as shown in figure 21.

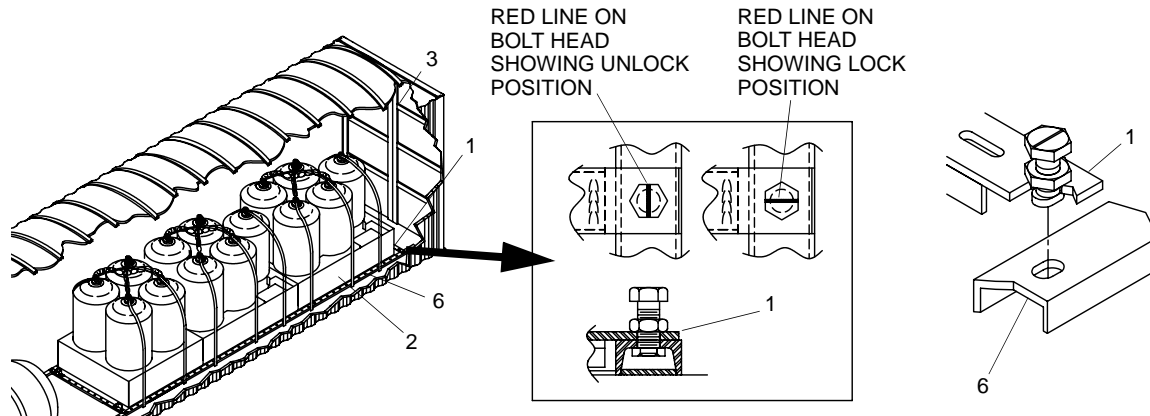


Figure 21. Track Stop

6. Remove track stop (figure 21, item 1) from in front of fender pallet (figure 21, item 2) nearest container (figure 21, item 3) doors.

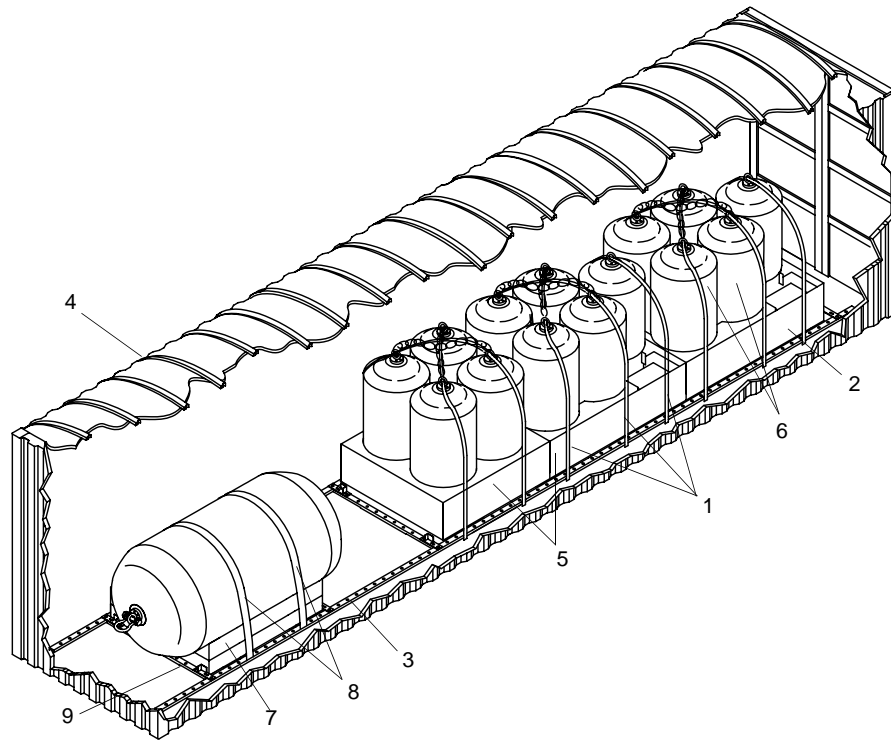
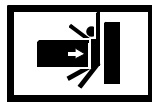


Figure 22. 3 ft by 5 ft and 5 ft by 10 ft Fender Container

7. Remove tie down straps (figure 22, item 1) securing first 3 ft by 5 ft fender pallet (figure 22, item 2) to tracks (figure 22, item 3).

WARNING



HEAVY PARTS

Pallets and fenders are heavy. Stay clear when they are moved. Failure to comply may cause serious injury or death.

8. Using forklift, remove pallet (figure 22, item 2) from container (figure 22, item 4) and position on FC platform.
9. Using forklift and push-pull rod, remove remaining 3 ft by 5 ft fender pallets (figure 22, item 5) and position on FC pierhead.
10. Using crane, slings and shackles lift fenders (figure 22, item 6) from pallets and move to installation location on FC pierhead.
11. Remove track stop (figure 21, item 1) in front of 5 ft by 10 ft fender pallet (figure 22, item 7).
12. Remove tie down straps (figure 22, item 8) securing 5 ft by 10 ft fender pallet (figure 22, item 7) to track (figure 22, item 4).

13. Using forklift and push-pull rod, pull 5 ft by 10 ft fender pallet (figure 22, item 7) into position in container (figure 22, item 4) so that the fender will clear the center ceiling bow when lifted.

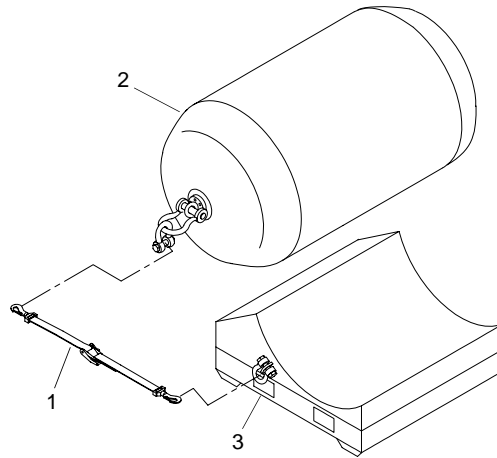


Figure 23. 5 ft by 10 ft Fender and Pallet

14. Remove two tie down straps (figure 23, item 1) securing 5 ft by 10 ft fender (figure 23, item 2) to pallet (figure 23, item 3).
15. Using crane, slings and shackles lift fender (figure 23, item 2) and position on FC pierhead.
16. Attach tag lines (figure 19, item 1) to ends of securing chains (figure 19, item 2).
17. Attach fenders to FC as required.

WARNING



HEAVY PARTS

The fenders are heavy and may roll on deck. Use care when rolling them over the side. Failure to comply may cause serious injury or death.

18. Roll fenders over side of FC platform into water.
19. Using forklift, position 5 ft by 10 ft fender pallet (figure 22, item 7) in container (figure 22, item 4).
20. Using forklift and push-pull rod, push 5 ft by 10 ft fender pallet (figure 22, item 7) to rear of container, against fixed track stop (figure 22, item 9).
21. Install track stop (figure 21, item 1) in front of 5 ft by 10 ft fender pallet (figure 22, item 7).
22. Secure fender pallet (figure 22, item 7) to track (figure 22, item 3) with tie down straps (figure 22, item 8).
23. Install track stop (figure 21, item 1) at red marks for 3 ft by 5 ft fender pallets (figure 22, item 5).
24. Using forklift, position empty 3 ft by 5 ft fender pallet (figure 22, item 5) in container (figure 22, item 4).

25. Using forklift and push-pull rod, push fender pallet (figure 22, item 5) towards rear of container (figure 22, item 4), against track stop.
26. Secure pallet (figure 22, item 5) to track (figure 22, item 3) with tie down straps (figure 22, item 1).
27. Continue to load remaining fender pallets, securing them with tie down straps (figure 22, item 1).
28. Install track stop (figure 21, item 1) in front of 3 ft by 5 ft fender pallet (figure 22, item 2) closest to container door.
29. Install ceiling bows (figure 20, item 5) on container (figure 20, item 2).
30. Install tarp (figure 20, item 1) on bows (figure 20, item 5).
31. Thread cable (figure 20, item 3) through grommet holes (figure 20, item 4) in tarp (figure 20, item 1) and attach to brackets on side of container (figure 20, item 2) to secure tarp (figure 20, item 1).
32. Remove locking bars, pins or hooks to close container doors.
33. Close and latch container doors.

INSTALLATION OF 10KW GENERATOR CONTAINER**NOTE**

Generator container must be located next to personnel shelter on same intermediate section.

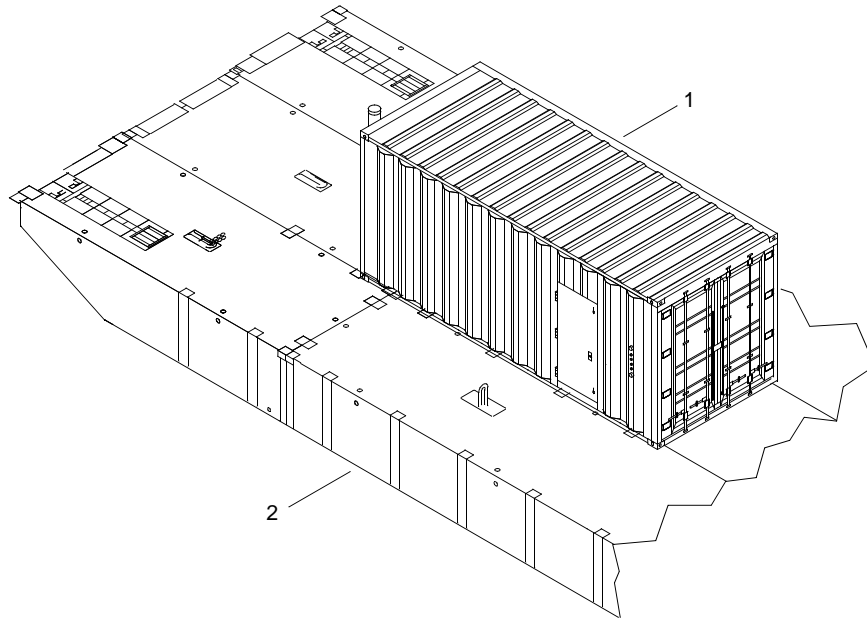


Figure 24. Generator Container

1. Using crane, position generator container (figure 24, item 1) on FC pierhead (figure 24, item 2).

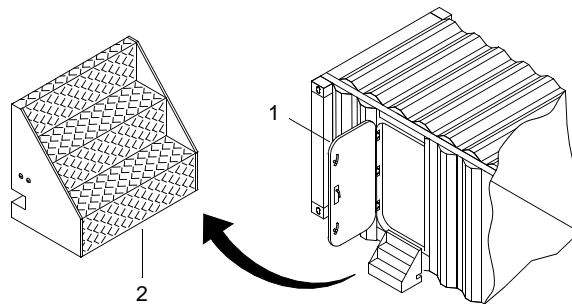


Figure 25. Installing Steps on Generator Container

2. Unlock, undog and open generator container exterior door (figure 25, item 1).

NOTE

Generator container door will not shut with steps lowered for access. The door will not secure when opened. Secure door open if necessary with a tag line.

3. Fold out steps (figure 25, item 2).

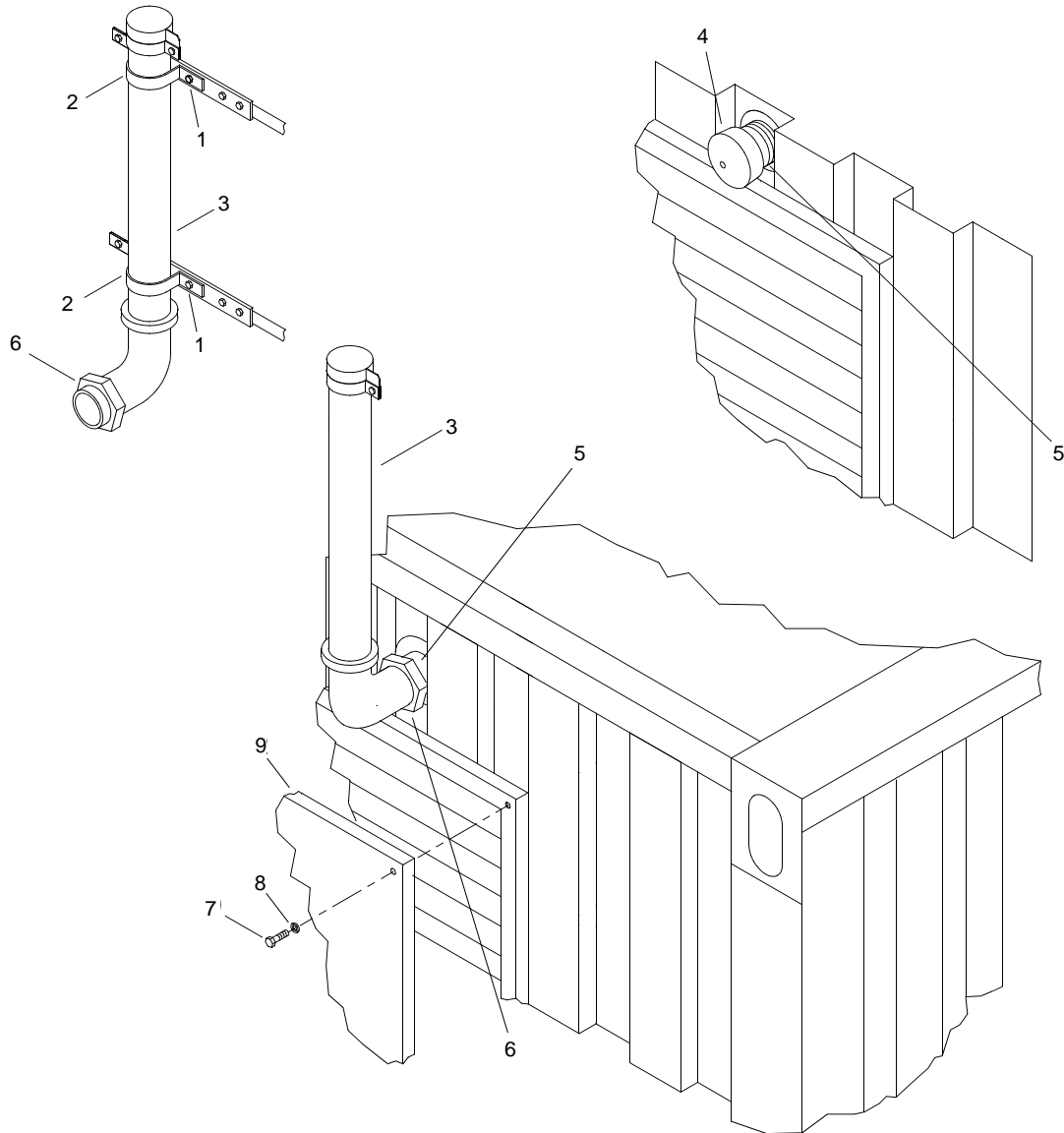


Figure 26. Exhaust Pipe Installation and Louver Covers Removal

4. Remove bolts (figure 26, item 1) from stowage brackets (figure 26, item 2) from interior of container.
5. Remove exhaust pipe (figure 26, item 3) from stowage brackets (figure 26, item 2) from interior of container.
6. Remove protective cover (figure 26, item 4) from exhaust outlet (figure 26, item 5). Stow protective cover (figure 26, item 4) in container.
7. Position exhaust pipe (figure 26, item 3) on exhaust outlet (figure 26, item 5) and tighten flange nut (figure 26, item 6).
8. Remove six hex bolts (figure 26, item 7) with lockwashers (figure 26, item 8) and remove louver covers (figure 26, item 9) from exhaust and intake dampers. Stow louver covers (figure 26, item 9) in container.
9. Install ground cable. (See “Ground Cable Installation,” in this WP.)

10. Place generator container in service. (WP 0039 00)

GROUND CABLE INSTALLATION

NOTE

This procedure is typical for the both the generator container and personnel shelter.

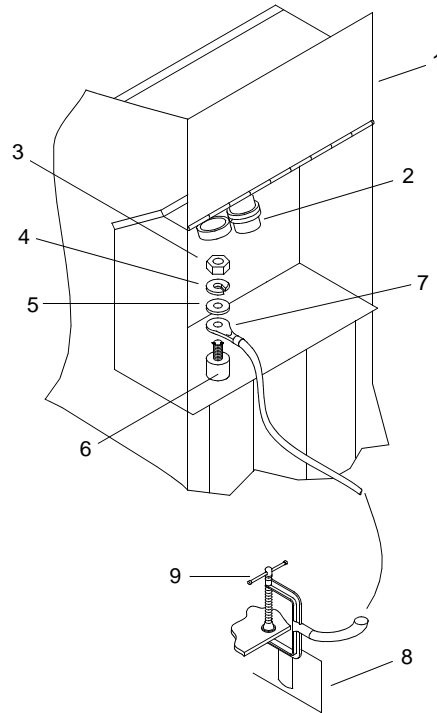


Figure 27. Ground Cable Installation

1. Open hinged cover (figure 27, item 1) over shore tie connector fitting (figure 27, item 2) and latch in open position.
2. Remove nut (figure 27, item 3), lockwasher (figure 27, item 4) and flat washer (figure 27, item 5) from ground stud (figure 27, item 6).

WARNING

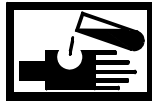


EYE PROTECTION

Flying debris hazard. Failure to wear proper eye protection may result in serious injury.

3. Using wire brush, clean shoulder of ground stud (figure 27, item 6) so grounding surface has a smooth, bright finish.

WARNING

**CHEMICAL EYE PROTECTION**

Chemical hazard. Failure to wear proper gloves, clothing and eye protection may result in serious injury.

4. Apply a thin coating of antiseize compound to ground stud (figure 27, item 6) and ground cable terminal (figure 27, item 7).
5. Install ground cable terminal (figure 27, item 7) on ground stud (figure 27, item 6).
6. Install flat washer (figure 27, item 5), new lockwasher (figure 27, item 4) and nut (figure 27, item 3) on ground stud (figure 27, item 6). Tighten nut (figure 27, item 3).

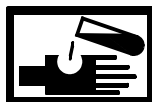
WARNING

**EYE PROTECTION**

Flying debris hazard. Failure to wear proper eye protection may result in serious injury.

7. Using wire brush, remove paint from ISO fitting (figure 27, item 8) so grounding surface has a smooth, bright finish.
8. Using wire brush, clean ground cable C-clamp (figure 27, item 9) grounding surface.

WARNING

**CHEMICAL EYE PROTECTION**

Chemical hazard. Failure to wear proper gloves, clothing and eye protection may result in serious injury.

9. Apply a thin coating of antiseize compound to ISO fitting (figure 27, item 8) grounding surface.
10. Attach ground cable C-clamp (figure 27, item 9) to ISO fitting (figure 27, item 8). Tighten C-clamp (figure 27, item 9).

INSTALLATION OF PERSONNEL SHELTER**NOTE**

Personnel shelter must be located next to generator container on same intermediate section.

WARNING**HEAVY PARTS**

The personnel shelter is very heavy. Stay clear when it is lifted. A falling or swinging container may cause serious injury or death.

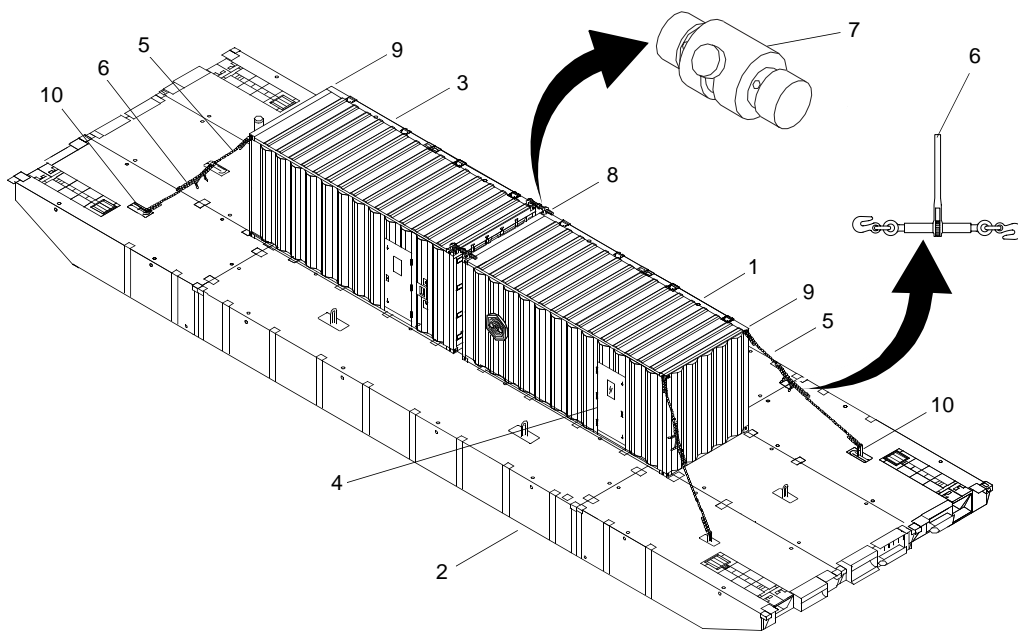


Figure 28. Personnel Shelter

1. Using crane, position personnel shelter (figure 28, item 1) on FC pierhead (figure 28, item 2) next to generator container (figure 28, item 3).
2. Secure personnel shelter (figure 28, item 1) and generator container (figure 28, item 3) to FC pierhead (figure 28, item 2).

NOTE

The door will not secure when opened. Secure door open if necessary with a tag line.

- a. Unlock, undog and open personnel shelter exterior door (figure 28, item 4).
- b. Remove chains (figure 28, item 5), chain binders (figure 28, item 6) and horizontal twistlocks (figure 28, item 7) or bridgelocks from the personnel shelter (figure 28, item 1).

- c. Install horizontal twistlocks (figure 28, item 7) or bridgelocks between personnel shelter (figure 28, item 1) and generator container (figure 28, item 3) on inboard top ISO corners (figure 28, item 8). Tighten horizontal twistlocks (figure 28, item 7) or bridgelocks.
 - d. Loop chains (figure 28, item 5) between outboard top ISO corners (figure 28, item 9) and end rake padeye lifting shackles (figure 28, item 10) on each side of personnel shelter (figure 28, item 1).
 - e. Lock chains (figure 28, item 5) tight with chain binders (figure 28, item 6).
 - f. Loop chains (figure 28, item 5) between outboard top ISO corners (figure 28, item 9) and end rake padeye lifting shackles (figure 28, item 10) on each side of generator container (figure 28, item 3).
 - g. Lock chains (figure 28, item 5) tight with chain binders (figure 28, item 6).
3. Install ground cable. (See "Ground Cable Installation," in this WP.)

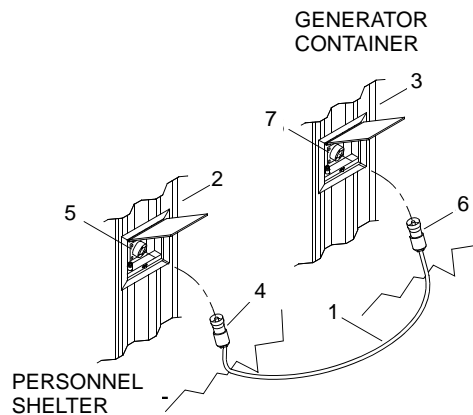


Figure 29. Shore Tie Connection

4. Install shore tie power cable (figure 29, item 1) between personnel shelter (figure 29, item 2) and generator container (figure 29, item 3).
 - a. Connect female end (figure 29, item 4) of shore tie power cable (figure 29, item 1) to personnel shelter male shore tie connector (figure 29, item 5).
 - b. Connect male end (figure 29, item 6) of shore tie power cable (figure 29, item 1) to female shore tie connector (figure 29, item 7) on generator container (figure 29, item 3).
5. Verify circuit breakers inside personnel shelter are positioned to ON. (WP 0004 00)
6. Place personnel shelter in service. (WP 0039 00)
7. Operate 10 kW generator to supply electrical power to personnel shelter. (TM 9-6115-642-10)

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER USUAL CONDITIONS
PREPARATION FOR USE**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)
Sling, Endless (5,300 lb.) (Item 51, WP 0043 00)
Assembly, Container Push Rod (push-pull) (Item 4, WP 0043 00)

Materials/Parts

Shackle (2 ton, 1/2 in.) (Item 47, WP 0043 00)

Personnel Required

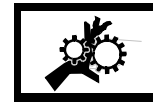
Seaman 88K (6)

Equipment Condition

Previous preparations for use completed (WP 0007 00)

PREPARATION FOR USE**INSTALLATION OF LIGHT TOWER**

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

NOTE

The light towers are mounted on pallets and moved as assemblies.

The following procedures are typical of all light tower installations and setups.

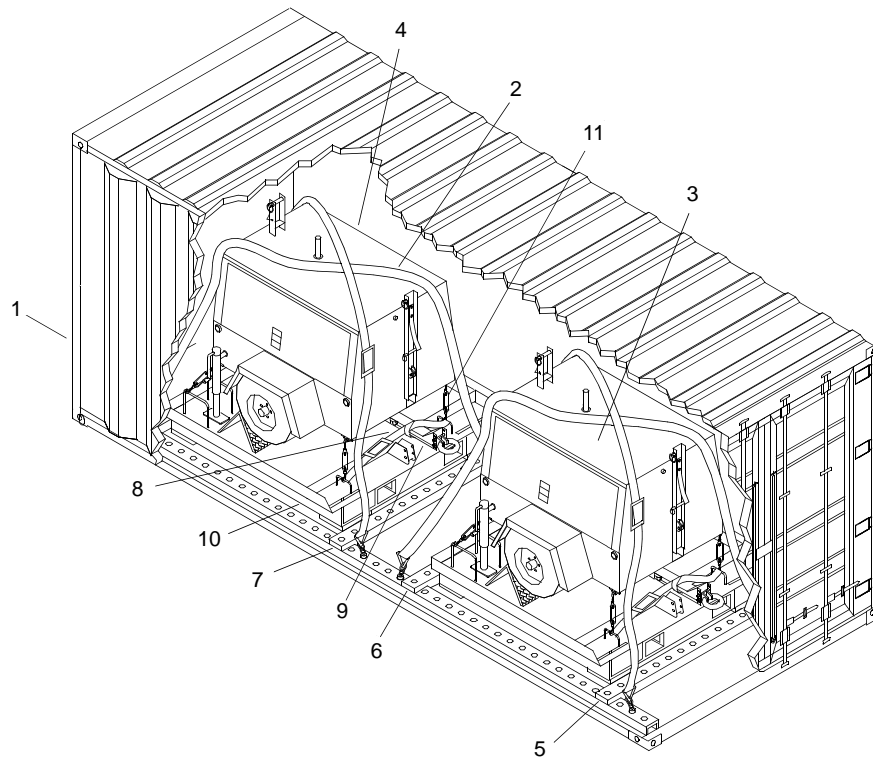


Figure 1. Light Tower Container

1. Using crane, position light tower container (figure 1, item 1) on FC platform.
2. Unlatch and open light tower container doors.

WARNING

Doors must be secured in the open position. Unsecured doors can swing and may result in serious injury or death.

3. Secure container doors open with locking bars, pins or hooks.
4. Remove ratcheting tie downs (figure 1, item 2) securing forward (figure 1, item 3) and aft (figure 1, item 4) light towers to light tower container (figure 1, item 1).
5. Remove forward light tower (figure 1, item 3) front track stop (figure 1, item 5).

WARNING**HEAVY PARTS**

Light towers are heavy. Stay clear when they are moved. Failure to comply may cause serious injury or death.

6. Using forklift, remove forward light tower (figure 1, item 3) from light tower container (figure 1, item 1) and position on FC platform.
7. Remove forward light tower (figure 1, item 3) rear track stop (figure 1, item 6).
8. Remove aft light tower (figure 1, item 4) front track stop (figure 1, item 7).
9. Using forklift and push rod, remove aft light tower (figure 1, item 4) from light tower container (figure 1, item 1) and position on FC platform.
10. Stow track stops (figure 1, items 5, 6, 7) and ratcheting tie downs (figure 1, item 2) inside light tower container (figure 1, item 1).
11. Using load restraining devices, secure light towers (figure 1, items 3, 4) to FC platform.
12. Remove ratcheting tie downs (figure 1, item 8) on both ends securing drawbars (figure 1, item 9) to light tower pallets (figure 1, item 10).
13. Stow ratcheting tie downs (figure 1, item 8) inside light tower container (figure 1, item 1).
14. Remove turnbuckles (figure 1, item 11) from pallets (figure 1, item 10) and light towers (figure 1, items 3, 4).
15. Using assistant, remove drawbars (figure 1, item 9) from beneath light tower pallets (figure 1, item 10) and position near front of each light tower (figure 1, items 3, 4).
16. Install turnbuckles (figure 1, item 11) on pallets (figure 1, item 10) and light towers (figure 1, items 3, 4).

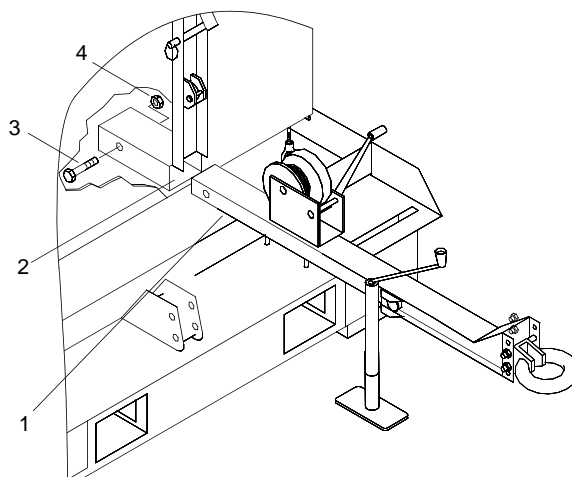


Figure 2. Drawbar Installation

17. Position drawbar (figure 2, item 1) into drawbar receptacle (figure 2, item 2) and secure with bolt (figure 2, item 3) and nut (figure 2, item 4). Tighten nut (14).

NOTE

The towers for both light towers are mounted on brackets attached to the interior side walls of the container.

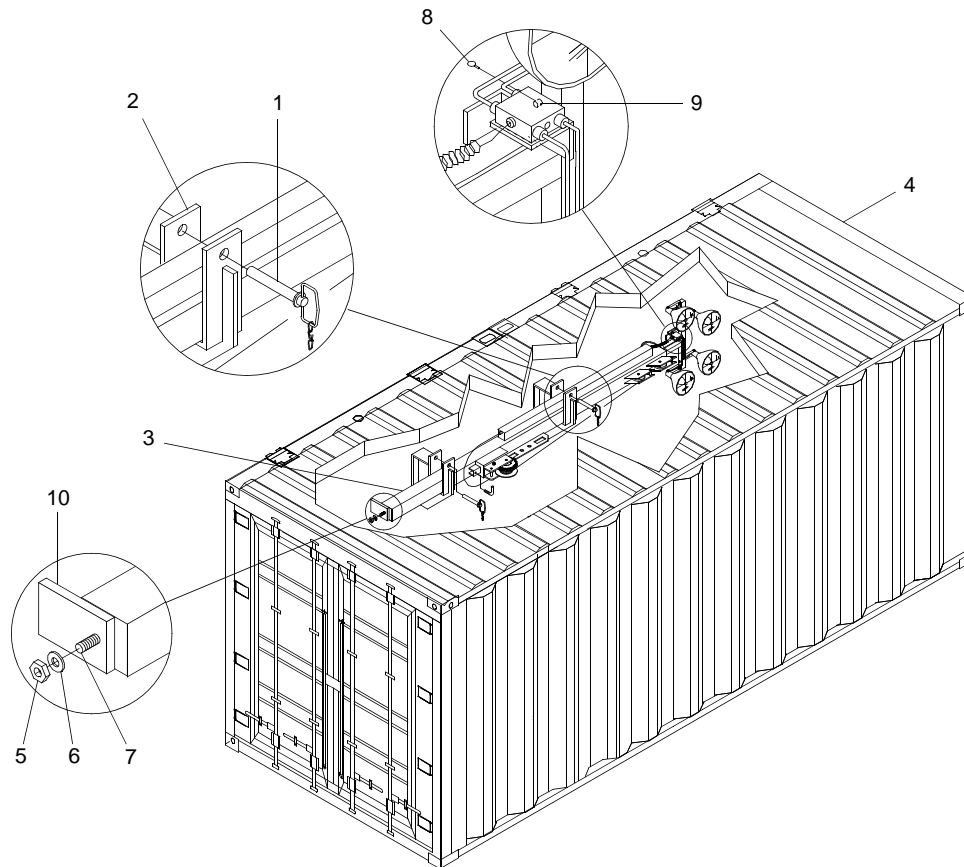


Figure 3. Removing Towers from Container

18. Remove hitch pins (figure 3, item 1) from wall brackets (figure 3, item 2) securing tower (figure 3, item 3) to side wall of light tower container (figure 3, item 4).
19. At the lower end of tower (figure 3, item 3), remove nut (figure 3, item 5) and washer (figure 3, item 6) from stud (figure 3, item 7).
20. At the upper end of tower (figure 3, item 3), remove quick release pin (figure 3, item 8) from locator pin (figure 3, item 9).
21. Slide tower (figure 3, item 3) so that it clears the locator pin (figure 3, item 9) at the upper end and the tower stud (figure 3, item 7) clears the bracket (figure 3, item 10) at the lower end.

WARNING**HEAVY OBJECTS**

The towers are heavy. Use at least six people to move them from the container. Failure to comply could cause serious injury or death.

22. Using six people, remove tower (figure 3, item 3) from light tower container (figure 3, item 4).

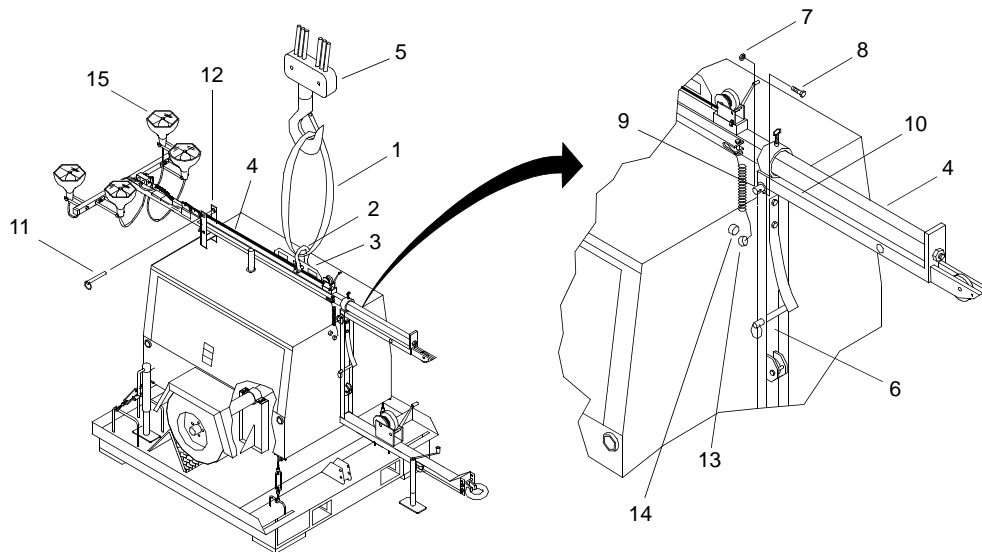


Figure 4. Tower Installation

23. Attach 5,300 lb sling (figure 4, item 1) and shackle (figure 4, item 2) to lift point (figure 4, item 3) on tower (figure 4, item 4).
24. Using crane (figure 4, item 5), sling (figure 4, item 1) and shackle (figure 4, item 2), position tower (figure 4, item 4) over tower support (figure 4, item 6).
25. Remove nut (figure 4, item 7), retaining bolt (figure 4, item 8) and pivot pin (figure 4, item 9) from upper end of tower support (figure 4, item 6).
26. When guide holes align on tower support (figure 4, item 6) and tower pivot support (figure 4, item 10), install pivot pin (figure 4, item 9).
27. Install retaining bolt (figure 4, item 8) and nut (figure 4, item 7) on pivot pin (figure 4, item 9). Tighten nut (figure 4, item 7).
28. Remove tower rest retaining pin (figure 4, item 11) from tower rest (figure 4, item 12).

WARNING**HEAVY PARTS**

The tower is heavy. Use care when lowering it. Failure to comply may result in serious injury or death.

NOTE

When fully retracted, holes in tower align to allow tower to rest on guide pin of tower rest. If necessary, operate tower winch to align holes.

29. Lower tower (figure 4, item 4) onto tower rest (figure 4, item 12) and secure tower (figure 4, item 4) with tower rest retaining pin (figure 4, item 11).
30. Remove sling (figure 4, item 1) and shackle (figure 4, item 2) from lift point (figure 4, item 3) on tower (figure 4, item 4).

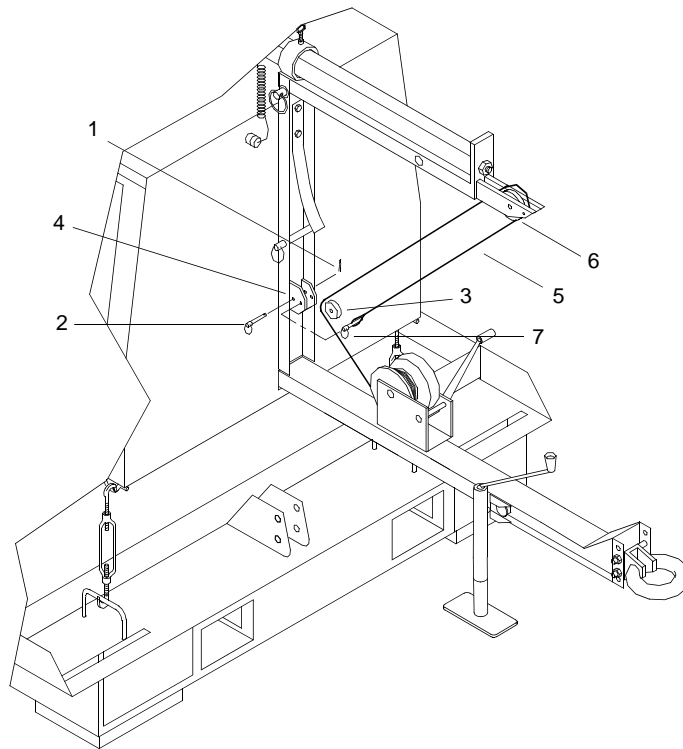


Figure 5. Drawbar Setup for Raising Tower

31. Remove cotter pin (figure 5, item 1) and pulley pin (figure 5, item 2) securing tower support pulley (figure 5, item 3) to tower support pulley bracket (figure 5, item 4) inner holes. Discard cotter pin (figure 5, item 1).
32. Route drawbar winch cable (figure 5, item 5) under tower support pulley (figure 5, item 3) and install tower support pulley (figure 5, item 3) on tower support pulley bracket (figure 5, item 4) with pulley pin (figure 5, item 2) and new cotter pin (figure 5, item 1).

33. Route drawbar winch cable (figure 5, item 5) over pivot support pulley (figure 5, item 6) and back to tower support pulley bracket (figure 5, item 4).
34. Remove quick release pin (figure 5, item 7) from tower support pulley bracket (figure 5, item 4) outer holes.
35. Position end loop of drawbar winch cable (figure 5, item 5) in tower support bracket (figure 5, item 4) and install quick release pin (figure 5, item 7).
36. Connect tower junction box electrical cable plug (figure 4, item 13) to 125V receptacle (figure 4, item 14) on front of light tower to supply power to lights (figure 4, item 15).

NOTE

Tower lights must be correctly positioned before raising the tower.

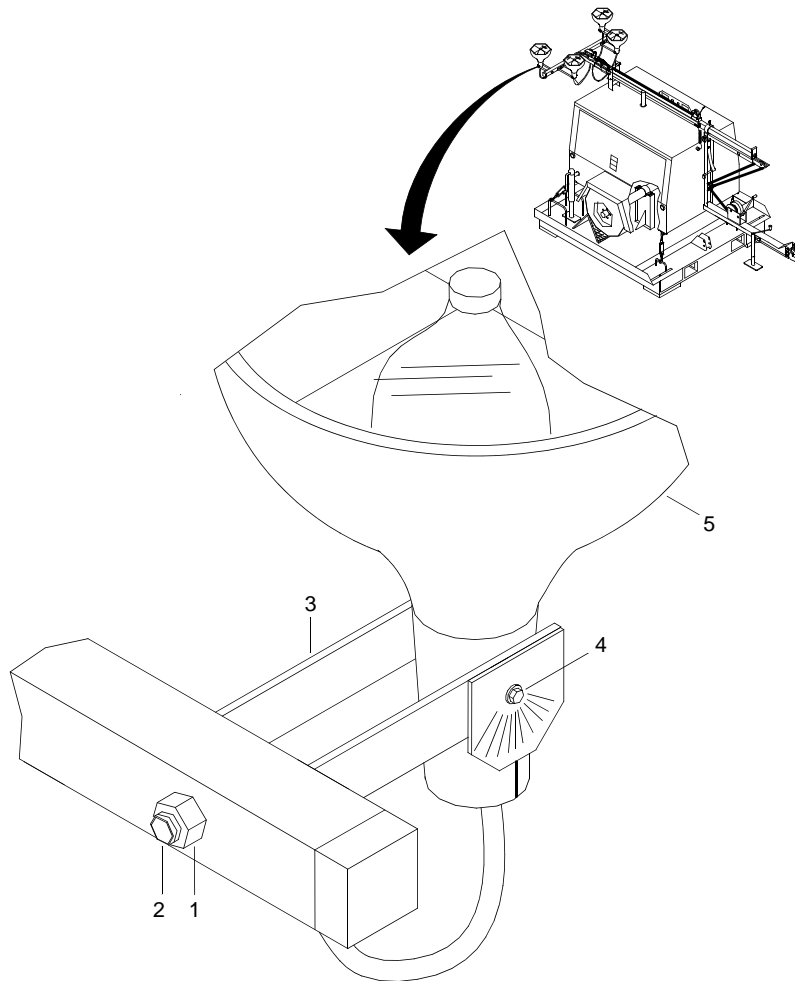


Figure 6. Light Adjustment

37. Loosen nut (figure 6, item 1) on bolt (figure 6, item 2) of light mounting bracket (figure 6, item 3)
38. Loosen light bracket retention bolts (figure 6, item 4) on both sides of light (figure 6, item 5).

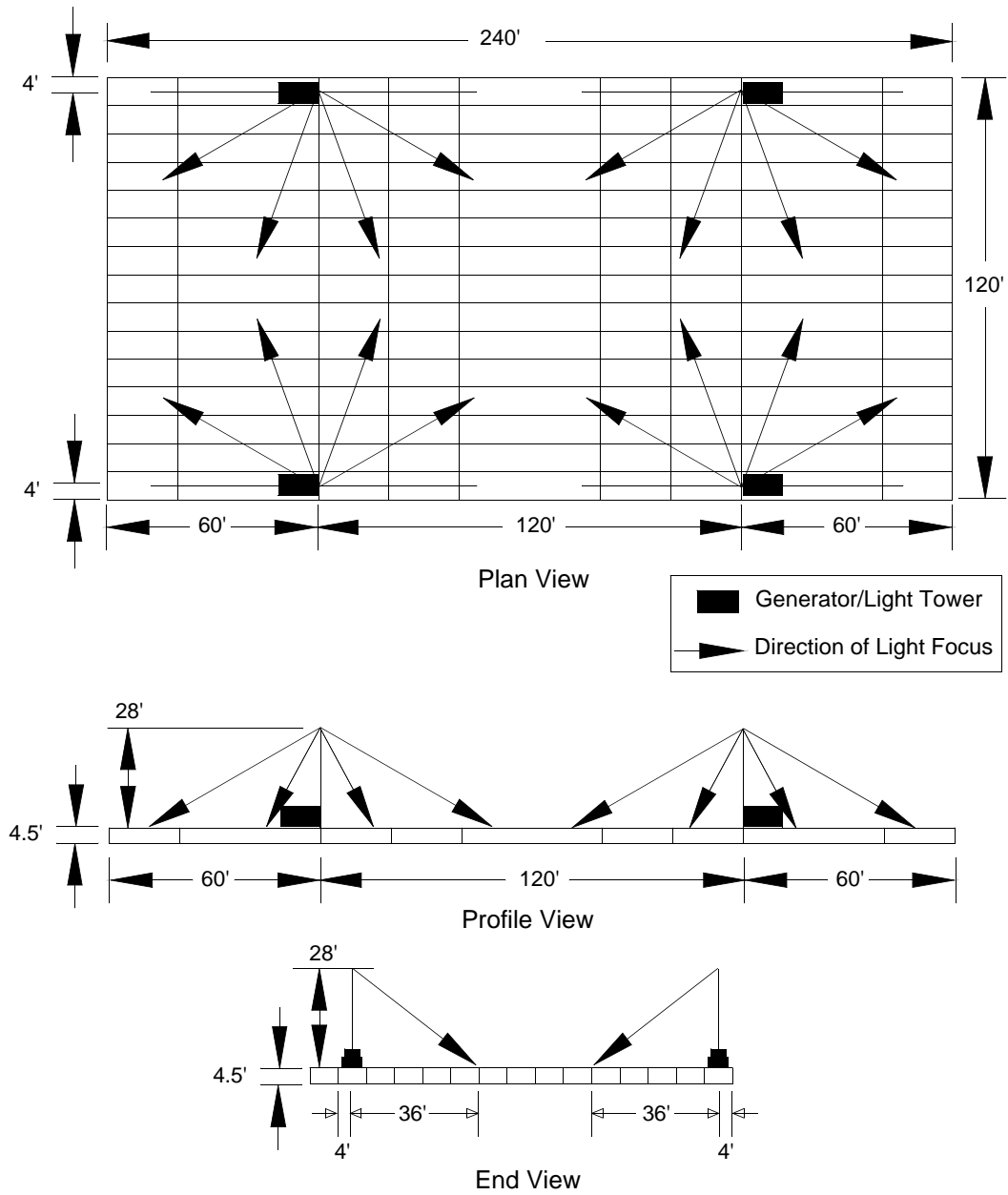


Figure 7. Light Positioning Angles

39. Rotate and pivot light (figure 6, item 5) to desired position as required. Refer to figure 7.
40. Tighten all nuts (figure 6, item 1) and bolts (figure 6, items 2, 4) to prevent movement of light (figure 6, item 5).

WARNING

Do not operate light tower with damaged cables. Damaged cables must be replaced as they may break during tower operation allowing light tower to fall. A falling light tower could cause injury or death.

NOTE

The following procedure is typical for raising all towers.

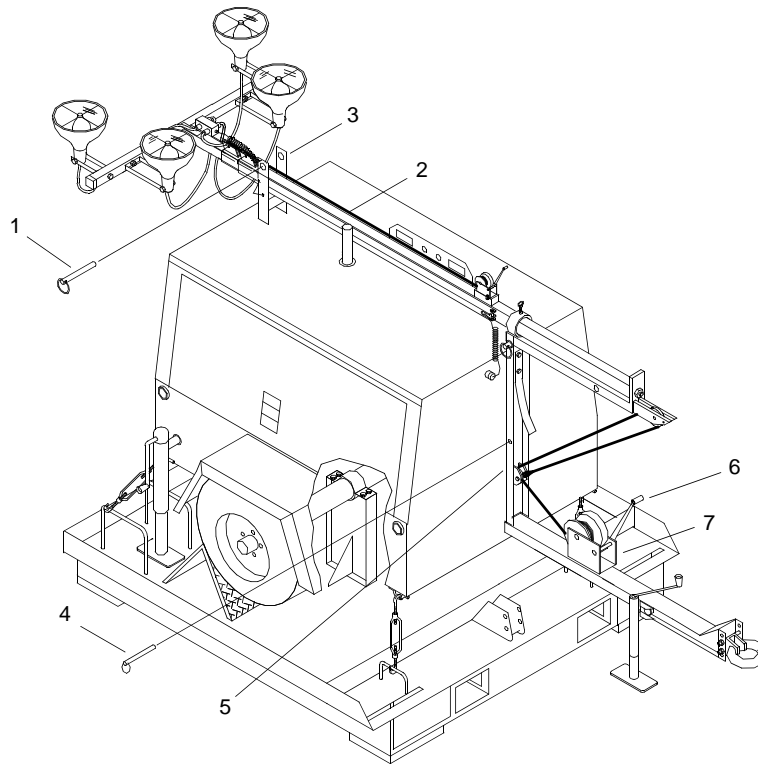
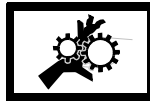


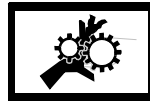
Figure 8. Raising the Tower

41. Remove tower rest retaining pin (figure 8, item 1) securing tower (figure 8, item 2) to tower rest (figure 8, item 3).
42. Remove lock pin (figure 8, item 4) from tower support (figure 8, item 5).

WARNING**MOVING PARTS**

Stay clear of the tower and cables when raising the tower. Failure to comply may result in serious injury or death.

43. Turn hand crank (figure 8, item 6) on drawbar winch (figure 8, item 7) clockwise to raise tower (figure 8, item 3).
44. Once tower (figure 8, item 3) is vertical and rests against tower support (figure 8, item 5), insert lock pin (figure 8, item 4) through holes in tower (figure 8, item 3) and tower support (figure 8, item 5) to secure tower (figure 8, item 3) in upright position.
45. Install tower rest retaining pin (figure 8, item 1) in tower rest (figure 8, item 3).

WARNING**HEAVY PARTS****MOVING PARTS**

Extend, retract or use the tower in the vertical position only, with no overhead obstruction within 40 ft. Falling light tower may result in serious injury or death.

NOTE

Do not extend tower past upright marks on tower inner and outer tubes.

The following procedure is typical for extending all towers.

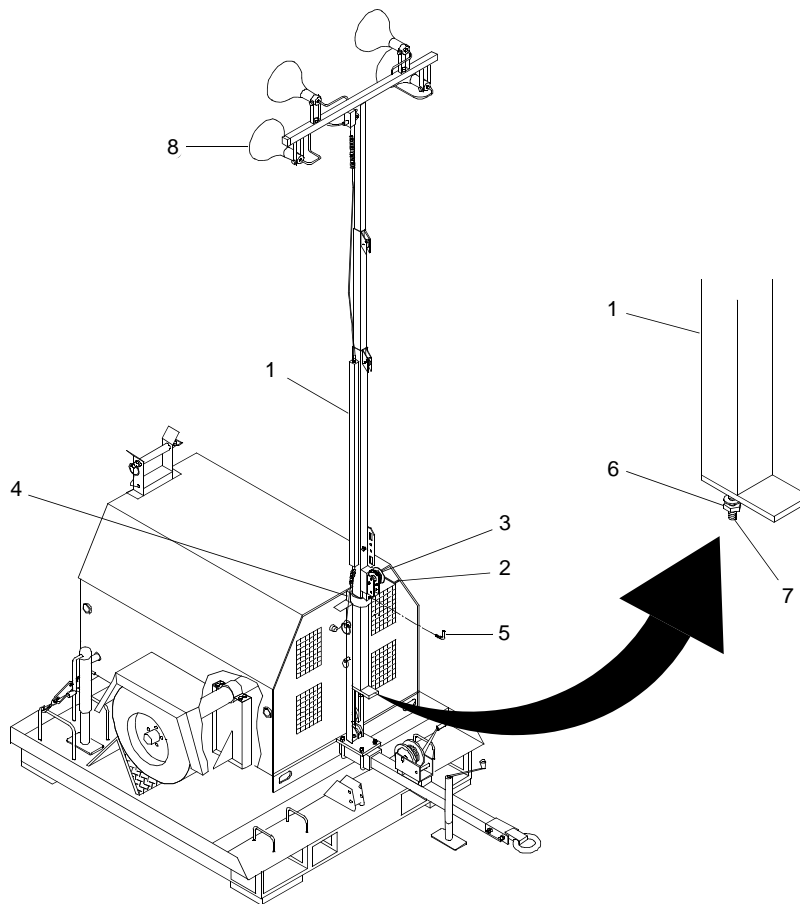


Figure 9. Extending the Tower

46. With tower (figure 9, item 1) in vertical position, turn hand crank (figure 9, item 2) on tower winch (figure 9, item 3) clockwise to extend tower (figure 9, item 1) to approximately 28 ft above pivot support (figure 9, item 4) collar.

47. Loosen bolt (figure 9, item 5) on pivot support (figure 9, item 4) collar and tower pivot support nut (figure 9, item 6) on base stud (figure 9, item 7) of tower (figure 9, item 1) to rotate tower (figure 9, item 1) for aiming lights (figure 9, item 8) to desired location.
48. Tighten bolt (figure 9, item 5) and tower pivot support nut (figure 9, item 6).

NOTE

Tower must be lowered before readjusting light positions.

49. If adjustment of lights (figure 9, item 8) is necessary, repeat step 37 through step 40.

SETUP VHF/FM HANDHELD TRANSCEIVER

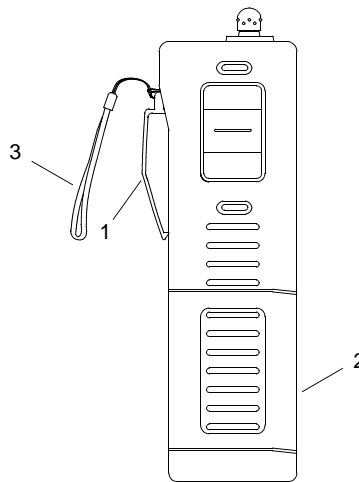


Figure 10. VHF/FM Handheld Transceiver

1. Install belt clip (figure 10, item 1) on transceiver (figure 10, item 2), if desired.
2. Install nylon strap (figure 10, item 3) on belt clip (figure 10, item 1), if desired.

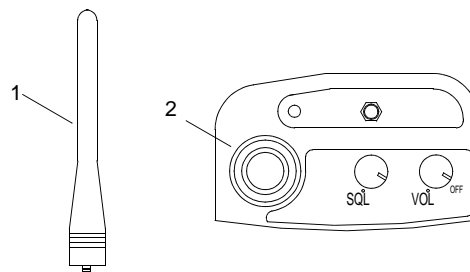


Figure 11. Antenna Installation

3. Install antenna (figure 11, item 1) in transceiver antenna receptacle (figure 11, item 2).

WARNING

A metal object shorting the terminals may cause the battery to explode. Failure to observe this precaution could result in serious injury or death.

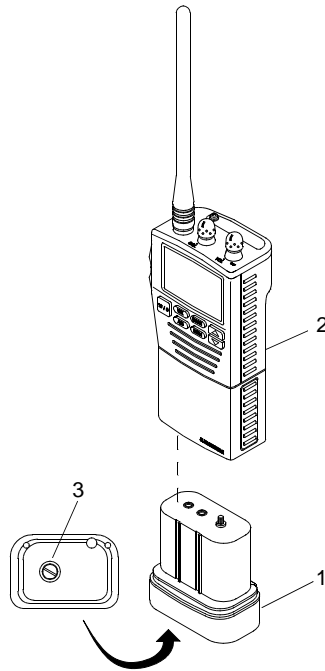


Figure 12. Battery Installation

4. Install CNB350 nickel cadmium battery pack (figure 12, item 1) in transceiver (figure 12, item 2).
 - a. Slide battery pack (figure 12, item 1) into battery cavity.
 - b. Rotate battery lock screw (figure 12, item 3) clockwise and tighten.
5. Charge the battery.

WARNING

Shorting the battery terminals that charge the transceiver can cause sparks, severe overheating, burns and battery damage. Do not place an uninstalled battery pack in the vicinity of metal objects that may short the terminals. Failure to observe this precaution could result in serious injury or death.

NiCad batteries must be disposed of per local procedures. Battery may explode if incinerated, causing injury or death. Contact unit supply for proper disposal instructions.

CAUTION

Never plug the power supply to the CCA250 charge adaptor except with a CAW240, CWC230 or CWC232 adaptor. Damage to power supply could occur.

Charging the transceiver battery for more than 16 hours with the battery charge system can shorten battery life and cause other components to fail. Battery packs may be left in the CSA280 chargers without harm to either the battery pack or charger.

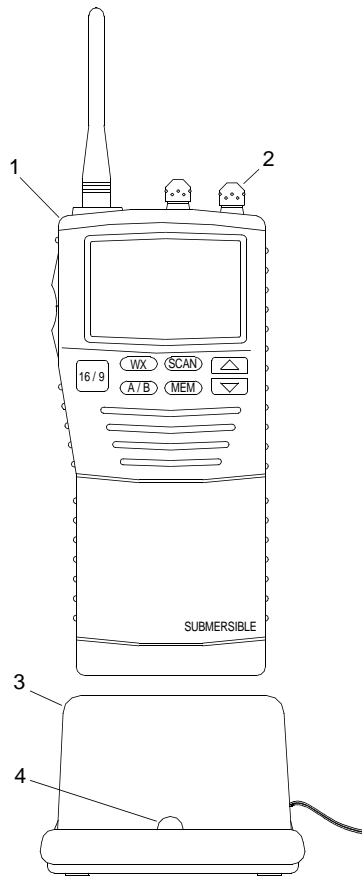


Figure 13. Battery Charger

- a. Turn transceiver (figure 13, item 1) off by turning POWER/VOLUME knob (figure 13, item 2) counterclockwise to the OFF position.

- b. Insert transceiver (figure 13, item 1) into charger (figure 13, item 3). Charge indicator (figure 13, item 4) lights up to show that the battery is charging.
- c. Remove transceiver (figure 13, item 1) from charger (figure 13, item 3) when battery charge time has elapsed.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER USUAL CONDITIONS
OPERATING PROCEDURES**

INITIAL SETUP:**Materials/Parts**

Spill Clean-Up Kit, Hazardous Material (Item 61, WP 0043 00)

Personnel Required

Seaman 88K (1)

Engineer 88L (1)

References

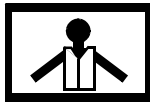
TM 9-6115-642-10

Equipment Condition

Preparations for use completed (WP 0006 00)

Generator running (TM 9-6115-642-10)

WARNING



VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

WARNING



EAR PROTECTION

Personnel must wear hearing protection during the fire alarm test. Failure to comply may result in permanent hearing loss.

OPERATING PROCEDURES**REFUEL GENERATOR CONTAINER BASE FUEL TANK****NOTE**

The following procedure is typical for refueling both outside and inside fill ports.

1. Before fueling, check the base tank fuel level.

2. Service base fuel tank with specified fuel. (TM 9-6115-642-10)

WARNING



EXPLOSION



FIRE

The generator container, generator and fuel nozzle must be grounded before beginning refueling operation. Failure to observe these precautions could result in serious injury or death.

Smoking is not permitted during refueling operations. Failure to observe these precautions could result in explosion and/or fire causing serious injury or death to personnel and/or damage to equipment.

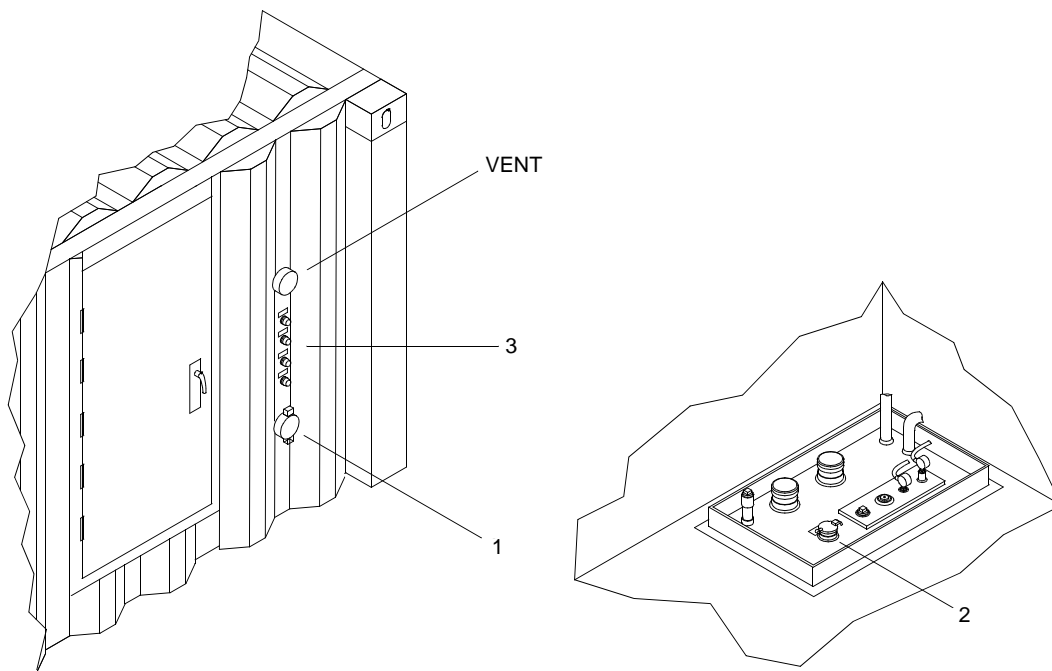


Figure 1. Generator Container Base Fuel Tank Fill Ports

3. Attach fuel nozzle to external fill port (figure 1, item 1) or internal fill port (figure 1, item 2).
4. While observing the four indicator lights (figure 1, item 3), fill tank until fuel reaches desired level.
5. Detach fuel nozzle from external fill port (figure 1, item 1) or internal fill port (figure 1, item 2).
6. Clean up any spilled fuel with a spill kit and dispose of spill kit waste per local procedures.

GENERATOR CONTAINER, ELECTRICALLY TRANSFERRING FUEL FROM BASE TO DAY FUEL TANK

NOTE

Operation of the electric (24 VDC) fuel pump is preset to automatically transfer fuel from the base tank to the day tank with the generator control panel master switch.

Running generator with master switch in PRIME & RUN position will not automatically refuel day tank.

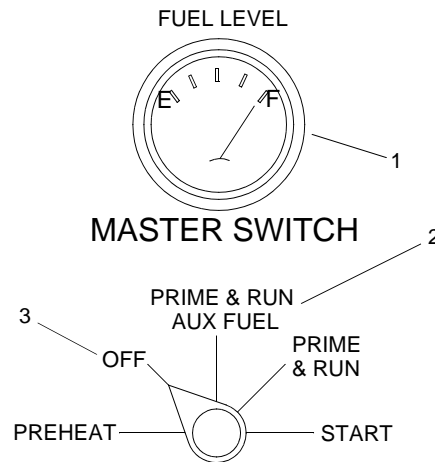


Figure 2. Generator Fuel Level Gauge and Master Switch

7. Verify level of fuel in day tank on fuel gauge (figure 2, item 1).
8. If fuel level is low, rotate master switch to PRIME & RUN AUX FUEL position (figure 2, item 2).
9. Rotate master switch to OFF position (figure 2, item 3) when the desired fuel level is reached.

GENERATOR CONTAINER, MANUALLY TRANSFERRING FUEL FROM BASE TO DAY FUEL TANK

WARNING



EXPLOSION



FIRE

Fire extinguisher and spill kit must be present during transfer of fuel from base tank to day tank. Failure to comply could result in injury to personnel.

NOTE

The hand pump can pump 10 gallons of fuel per minute, approximately 100 revolutions of handle.

1. If running, shut down generator. (TM 9-6115-642-10)

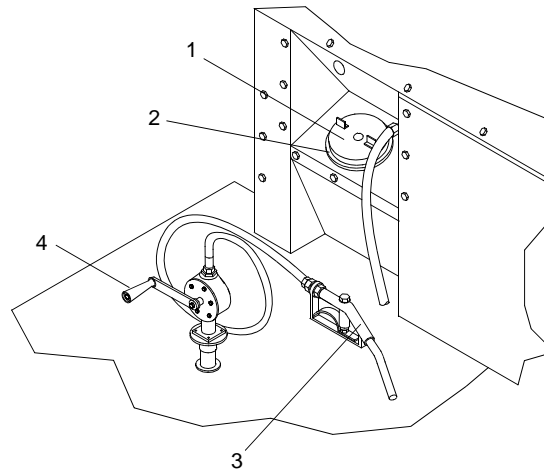


Figure 3. Generator Fuel Hand Pump

2. Remove cap (figure 3, item 1) from generator fuel inlet (figure 3, item 2).
3. Insert manual fuel pump nozzle (figure 3, item 3) in generator fuel inlet (figure 3, item 2)
4. While depressing handle on manual fuel pump nozzle (figure 3, item 3), turn rotary hand pump handle (figure 3, item 4) clockwise to transfer fuel.
5. While observing generator control panel fuel gauge (figure 2, item 1), fill tank until fuel reaches desired level.
6. Release handle and remove manual fuel pump nozzle (figure 3, item 3).
7. Install and tighten cap (figure 3, item 1) on generator fuel inlet (figure 3, item 2)
8. Check for fuel leaks.
9. Clean up any spilled fuel with a spill kit and dispose of spill kit waste per local procedures.

GENERATOR CONTAINER FIRE SUPPRESSION SYSTEM

WARNING



VAPOR

Fire in protected compartments or accidental activation of the CO₂ system while personnel occupy compartment could result in loss of life if CO₂ is released. Personnel must listen for siren, recognize its sound and evacuate space immediately (within 20 seconds).

Do not depress fire suppression control head lever during normal maintenance. Death or injury to personnel could occur if CO₂ is inhaled.

Prior to entering the shelter after discharge of CO₂, the shelter shall be completely cleared of any CO₂ that may remain. Death or injury to personnel could occur if CO₂ is inhaled.

1. Shut down generator. (TM 9-6115-642-10)

NOTE

The generator is now shut down.

The fire alarm control panel key is located in the generator storage box.

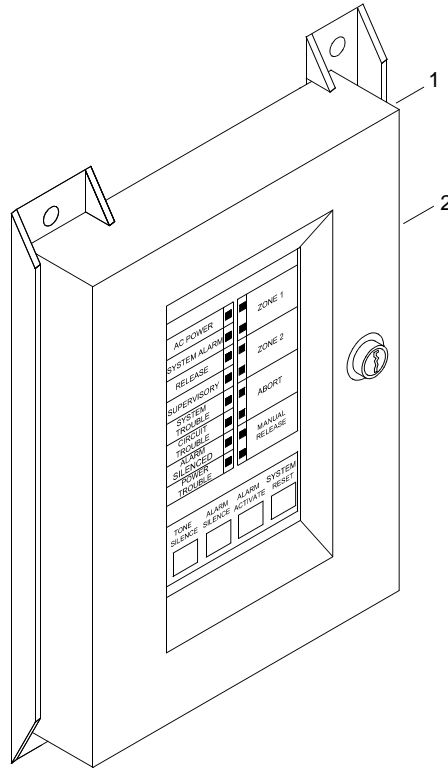


Figure 4. Fire Alarm Control Panel

2. On fire alarm control panel (figure 4, item 1), unlock and open front cover (figure 4, item 2)

WARNING

The Dual Inline Package (DIP) switches are preset by the operator prior to operation of generator. Repositioning of the DIP switches will cause loss of 20 second time delay. Loss of 20 second time delay could cause death or injury to personnel.

NOTE

DIP switches are located under cover below “Alarm Activate” and “System Reset” buttons.

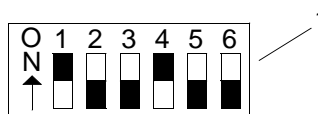


Figure 5. DIP Switch Positions

3. Verify Dual Inline Package (DIP) switches (figure 5, item 1) are in following positions:
 - a. DIP switch 1 (Cross Zone) set to ON.
 - b. DIP switch 2 (Supervisory) set to OFF.
 - c. DIP switch 3 (Delay Timer) set to OFF.
 - d. DIP switch 4 (Delay Timer) set to ON.
 - e. DIP switch 5 (Abort Option) set to OFF.
 - f. DIP switch 6 (Abort Option) set to OFF.

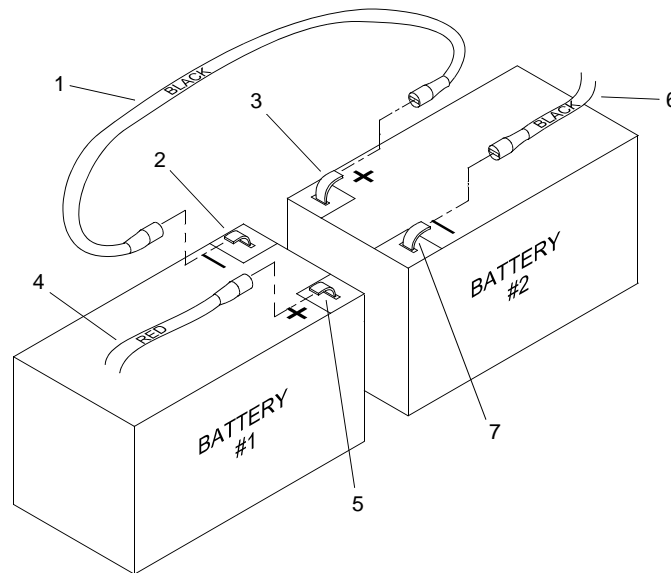


Figure 6. Fire Alarm Control Internal Batteries

4. Install black jumper wire (figure 6, item 1) between battery #1 negative terminal (figure 6, item 2) and battery #2 positive terminal (figure 6, item 3).
5. Connect red primary battery lead (figure 6, item 4) to battery #1 positive terminal (figure 6, item 5).
6. Connect black primary battery lead (figure 6, item 6) to battery #2 negative terminal (figure 6, item 7).
7. Close and lock front cover (figure 4, item 2).

WARNING**EAR PROTECTION**

Personnel must wear hearing protection during the following test. Failure to comply may result in permanent hearing loss.

8. Test fire alarm control panel lamps and sounder.

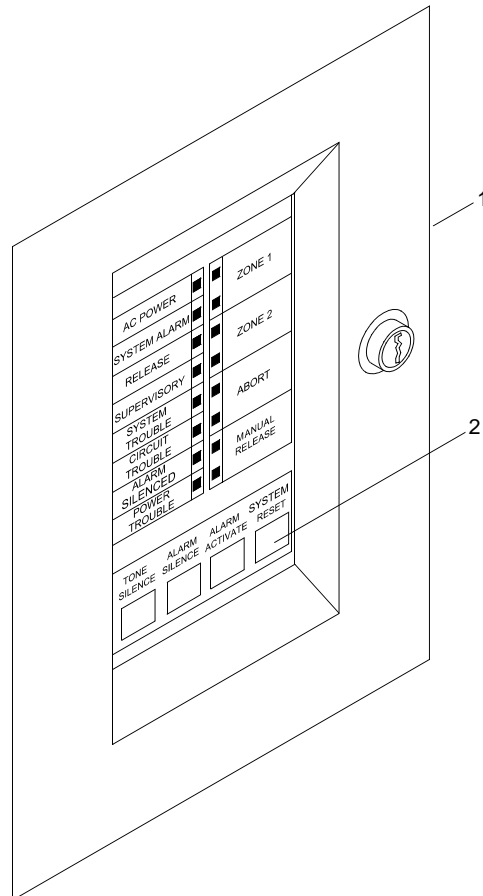


Figure 7. Fire Alarm System Reset Button

- a. At the fire alarm control panel (figure 7, item 1), press and hold SYSTEM RESET button (figure 7, item 2) to illuminate LED indicators and activate sounder.
- b. Refer to troubleshooting procedures if light or sounder is inoperative. (WP 0015 00)

NOTE

If an alarm or trouble condition still exists after pressing the SYSTEM RESET button, the alarm control panel will reactivate.

- c. Press SYSTEM RESET button (figure 7, item 2) before fire suppression is released.

OPERATING THE VHF/FM HANDHELD TRANSCEIVER**CAUTION**

Never key the transceiver without the antenna attached. Damage to the transceiver will occur.

NOTE

Water resistance of the transceiver is assured only when the battery pack and antenna are attached to the transceiver.

1. To **turn on** the VHF/FM Handheld Transceiver:

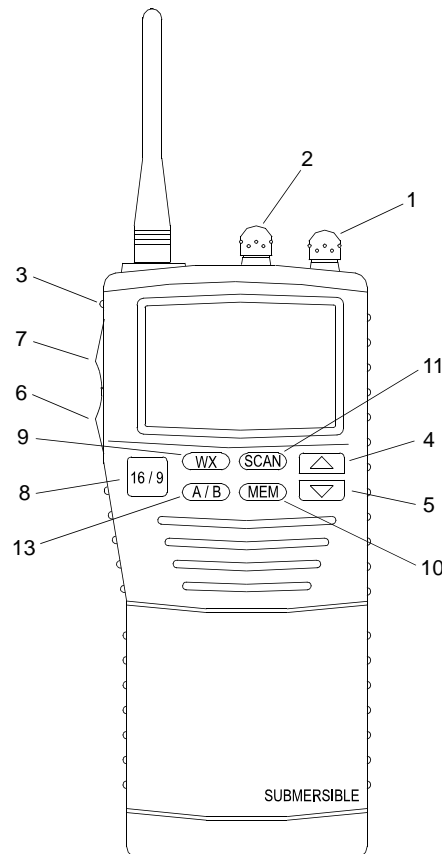


Figure 8. VHF/FM Handheld Transceiver

- a. Turn POWER/VOLUME knob (figure 8, item 1) clockwise.
- b. Rotate SQUELCH CONTROL knob (figure 8, item 2) fully counterclockwise to SQUELCH OFF position.

- c. Rotate POWER/VOLUME CONTROL knob (figure 8, item 1) until noise or audio from the speaker can be heard.
 - d. Select a channel that has no voice transmissions occurring.
 - e. To find squelch threshold, rotate SQUELCH CONTROL knob (figure 8, item 2) clockwise until noise stops.
 - f. To turn on radio light for 5 seconds, press LAMP/KEY LOCK key (figure 8, item 3).
 - g. To turn off light sooner than 5 seconds, press LAMP/KEY LOCK key (figure 8, item 3).
2. To **receive** radio transmissions:
- a. Press UP ARROW key (figure 8, item 4) or DOWN ARROW key (figure 8, item 5) to change channels.
 - b. Press LAMP/KEY LOCK key (figure 8, item 3) for one second to lock channel in operating mode.

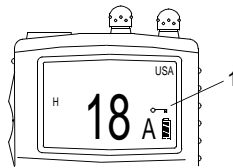


Figure 9. Key Lock Symbol

- c. Make sure that the key lock symbol (figure 9, item 1) appears on the display, showing that the channel is locked.
- d. To unlock channel, press LAMP/KEY LOCK key (figure 8, item 3) for one second.

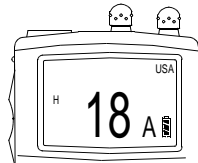


Figure 10. Display Showing Channel Unlocked

- e. Make sure that the key lock symbol is no longer displayed (figure 10), showing that the channel is unlocked.
3. To **transmit**:
- a. Press UP ARROW key (figure 8, item 4) or DOWN ARROW key (figure 8, item 5) to change channels.
 - b. Adjust squelch as required.
 - c. Press LAMP/KEY LOCK key (figure 8, item 3) for one second to lock channel in operating mode.
 - d. To unlock channel, press LAMP/KEY LOCK key (figure 8, item 3) for one second.

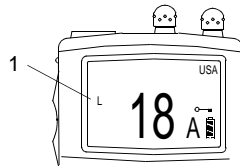


Figure 11. Low Power Transmission Displayed

- e. Press H/L key (figure 8, item 6) until L (figure 11, item 1) is displayed for transmissions over a short distance.
 - f. If low power is not effective, press H/L key (figure 8, item 6) until H is displayed.
 - g. Press PTT switch (figure 8, item 7) to transmit.
 - h. Release PTT switch (figure 8, item 7) when transmission is completed.
4. To change **operating modes**:

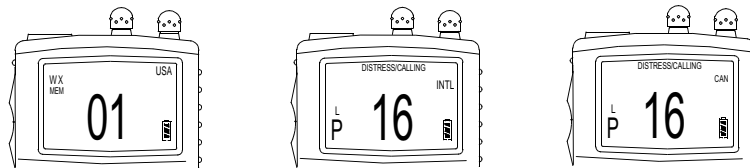


Figure 12. Operating Modes Displayed

- a. To access an operating mode, hold down 16/9 key (figure 8, item 8) and press WX key (figure 8, item 9) to change mode of receiver to USA, INTERNATIONAL or CANADA (figure 12).
5. To access **NOAA Weather Channels**:

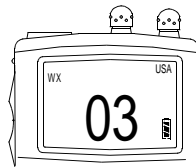


Figure 13. Weather Channel Displayed

- a. Press WX key (figure 8, item 9) to receive a weather channel.
 - b. Press UP ARROW key (figure 8, item 4) or DOWN ARROW key (figure 8, item 5) to change to other weather channels
 - c. Press WX key (figure 8, item 9) to exit from weather channels and return to the previous non-weather channel.
6. To **scan channels**:
- a. Select desired channel to be scanned using UP ARROW key (figure 8, item 4) or DOWN ARROW key (figure 8, item 5).

-
- b. Press MEM key (figure 8, item 10) to store channel into transceiver's memory.
 - c. Repeat step a through step b until all channels to be scanned are stored in transceiver's memory.
 - d. Press SCAN key (figure 8, item 11) to start scan.
 - e. Press SCAN key (figure 8, item 11) to stop scan.

7. To **delete scan channels**:

- a. Select desired channel to be deleted using UP ARROW key (figure 8, item 4) or DOWN ARROW key (figure 8, item 5).
- b. Press MEM key (figure 8, item 10) while channel number to be deleted from scan memory is displayed.

NOTE

This following step resets the transceiver to factory default settings.

8. To **delete all scan channels**:

- a. Turn transceiver off using POWER/VOLUME knob (figure 8, item 1).
- b. Press and hold the SCAN key (figure 8, item 11) and WX key (figure 8, item 9) while turning on transceiver.

9. To set the **priority scan**:

- a. To change from channel 16 to channel 09 and set the priority channel, hold down 16/9 key (figure 8, item 8) and press MEM key (figure 8, item 10).
- b. Press MEM key (figure 8, item 10) to change to channel number programmed as A channel.
- c. Press MEM key (figure 8, item 10) to change to channel number programmed as B channel.
- d. Press SCAN key (figure 8, item 11) for at least one second for priority scanning during normal scanning.

NOTE

A loud tone will indicate that the transceiver is in the weather alert mode. When a weather alert is received, scanning stops and the transceiver enters the weather alert mode.

10. To access **weather alerts**:

- a. Press SCAN key (figure 8, item 11) to start scanning memorized weather channels along with other regularly scanned channels.
- b. Press WX key (figure 8, item 9) to stop alert tone and receive voice information on weather channel.

11. To **set channel A/B** instant access:

NOTE

Ensure that a blinking letter A and dashes appear on the display (figure 14) to indicate that no channel has been selected for A.

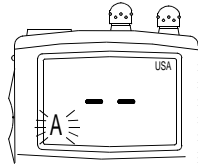


Figure 14. Channel A Blinking

- a. Press A/B key (figure 8, item 13) and turn transceiver on.
- b. Use UP ARROW key (figure 8, item 4) or DOWN ARROW key (figure 8, item 5) to select the desired channel.

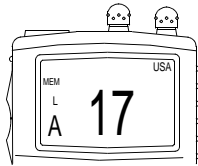
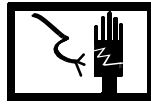


Figure 15.

- c. Channel A Stored
- d. Press MEM key (figure 8, item 10) to stop displayed A blinking and display A channel (figure 15).
- e. Turn radio off and back on to return to normal radio mode.

START LIGHT TOWER ENGINE**WARNING****ELECTRICAL**

After starting light tower engine, electrical power is present. Electrical shocks could cause injury or death.

NOTE

The engine in this unit is protected with sensors for high coolant temperature and low oil pressure. Should either of these conditions occur, the engine will automatically stop causing a loss of power to all lamps and receptacles (except control panel). Before restarting the unit, check fuel level and engine/radiator thoroughly and correct the problem. The lamps should not be restarted for approximately fifteen minutes.

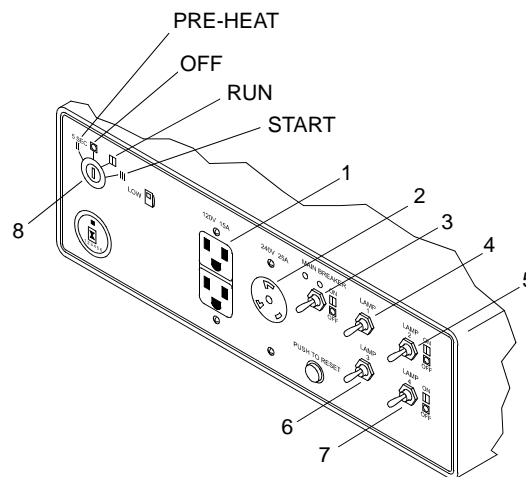


Figure 16. Light Tower Control Panel

1. Unplug external loads from receptacles (figure 16, items 1 and 2)
2. Position main breaker (figure 16, item 3) to OFF position.
3. Position all lamp switches (figure 16, items 4, 5, 6 and 7) to OFF (down) position.

CAUTION

Do not use ether in conjunction with the glow plug preheat system. Failure to comply will result in engine damage.

4. Turn rotary switch (figure 16, item 8) to PREHEAT for 5 seconds prior to starting.

CAUTION

Do not crank for more than fifteen seconds without allowing starter to cool for thirty seconds. Failure to comply could result in starter damage.

5. Turn rotary switch (figure 16, item 8) to START immediately.

CAUTION

Keep side doors closed while running for optimum cooling of unit. Failure to comply could result in engine damage.

6. Release rotary switch (figure 16, item 8) after engine continues to run.

NOTE

Allow engine to warm-up for 3–5 minutes before lamp switches (figure 16, items 4, 5, 6 and 7) and receptacles (figure 16, items 1 and 2) can be used.

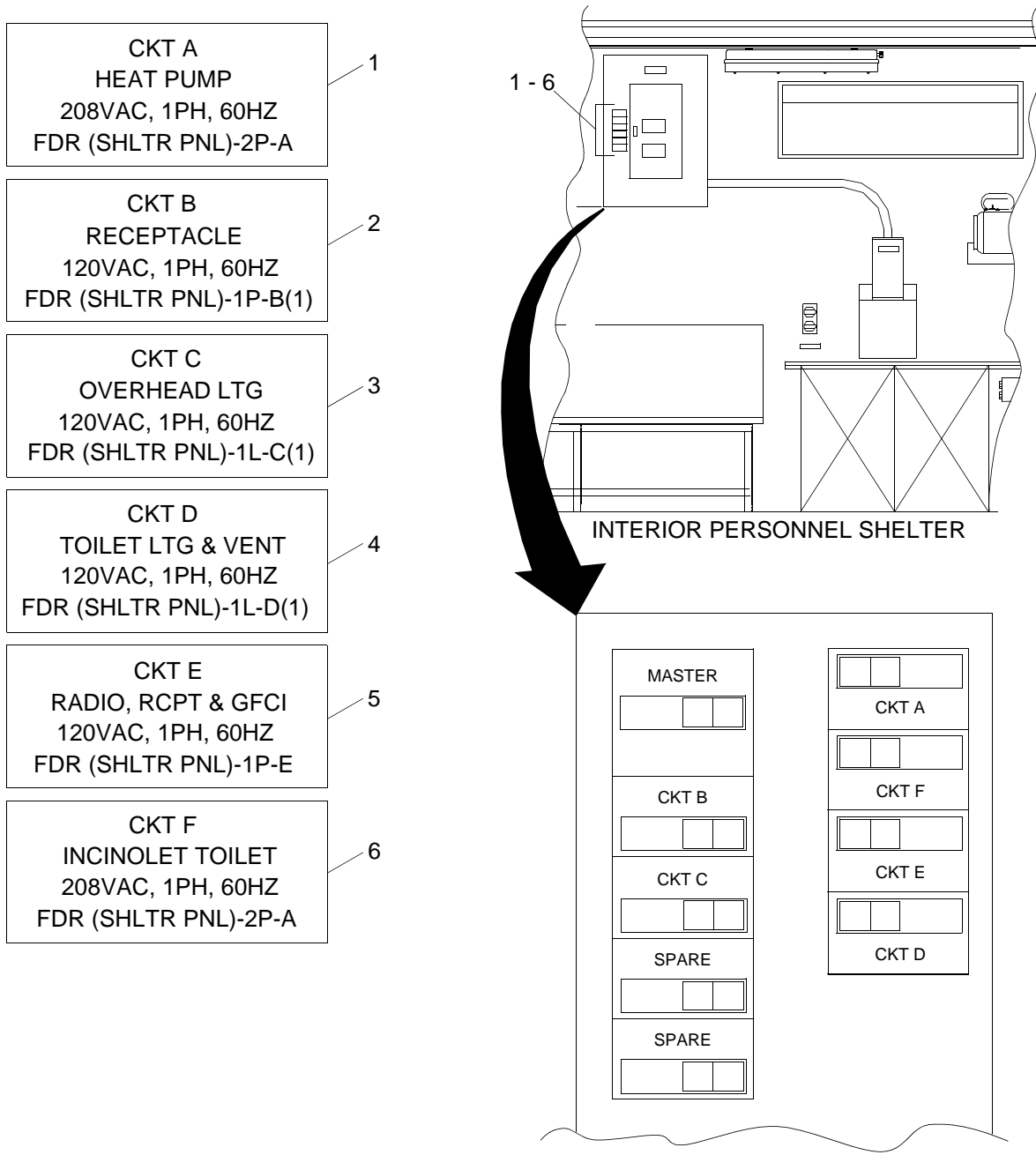
7. If engine stops unexpectedly, refer to troubleshooting procedures. (TM 55-1945-217-14&P)
8. Plug external loads into receptacles as required (figure 16, items 1 and 2).
9. Position main breaker (figure 16, item 3) to ON position.
10. Position all lamp switches (figure 16, items 4, 5, 6 and 7) to ON (up) position as required.

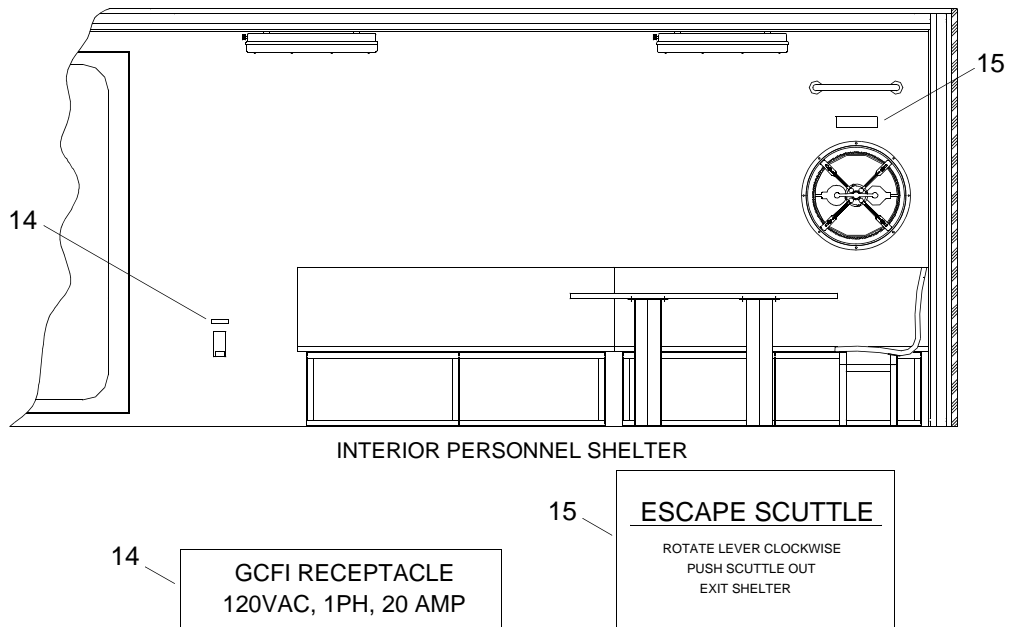
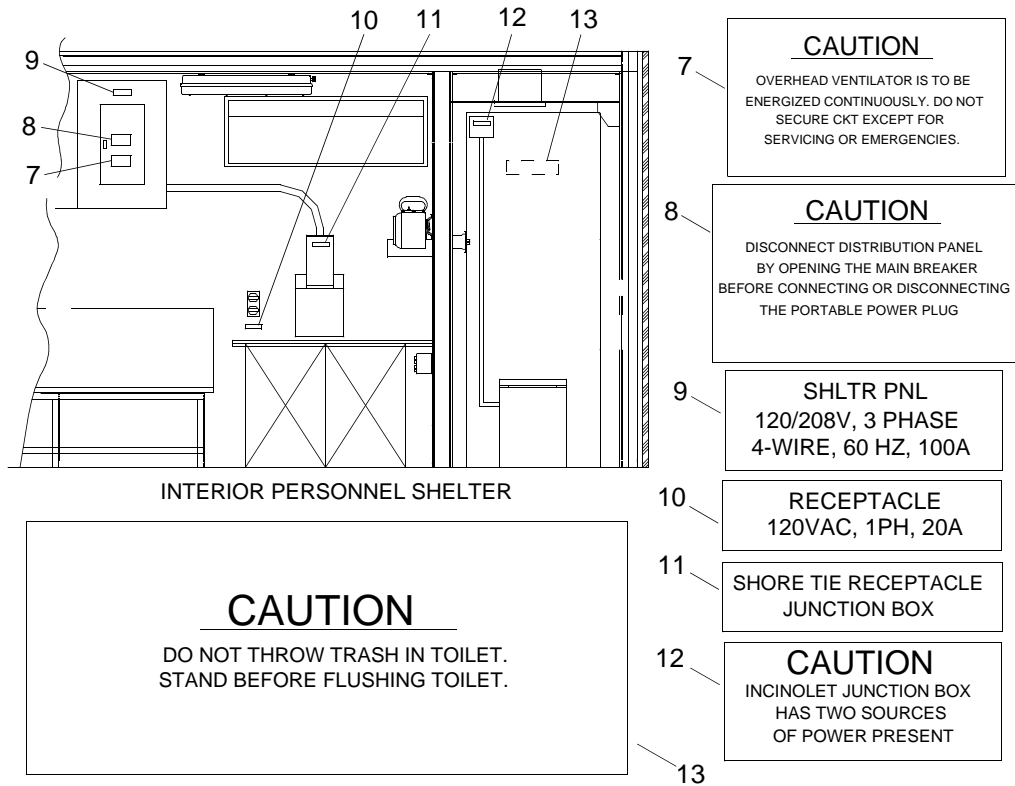
STOP LIGHT TOWER ENGINE

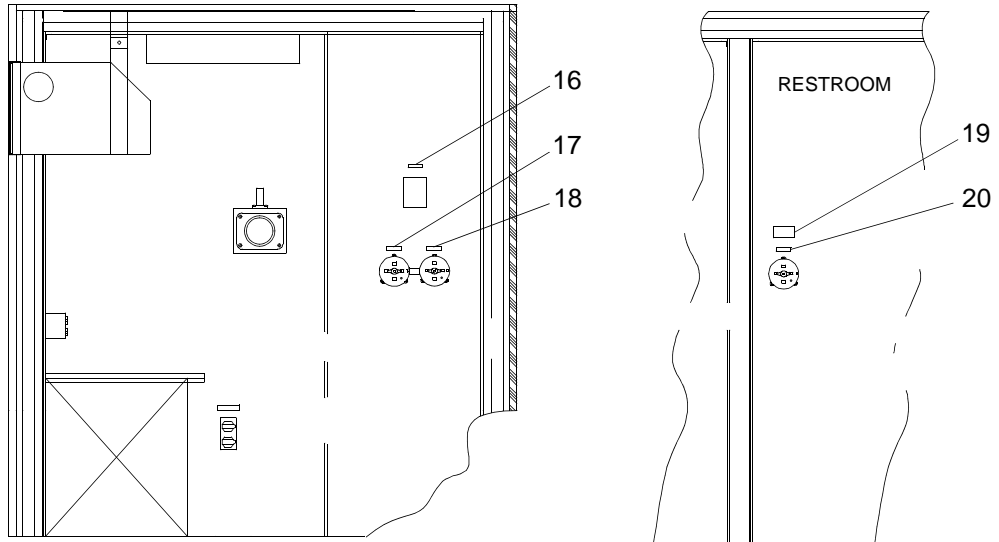
1. Position main breaker (figure 16, item 3) to OFF position.
2. Unplug all external loads from receptacles as required (figure 16, items 1 and 2).
3. Position all lamp switches (figure 16, items 4, 5, 6 and 7) to OFF (down) position.
4. Turn rotary switch (figure 16, item 8) to OFF.

DECALS AND INSTRUCTION PLATES

The following illustrations show the locations and descriptions of decals and instruction plates. Each index number is shown twice, first to show location and second to show the decal or instruction plate information.





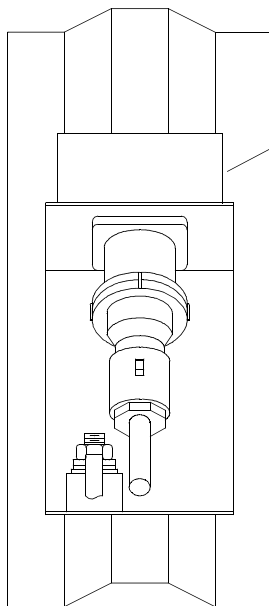


INTERIOR PERSONNEL SHELTER

- 16 THERMOSTAT
- 17 OVRHD RED LTG
- 18 OVRHD WHITE LTG

19 WHEN THE ELECTRIC TOILET IS ENERGIZED, THE OVERHEAD VENTILATOR IS DISABLED

20 RESTROOM LTG

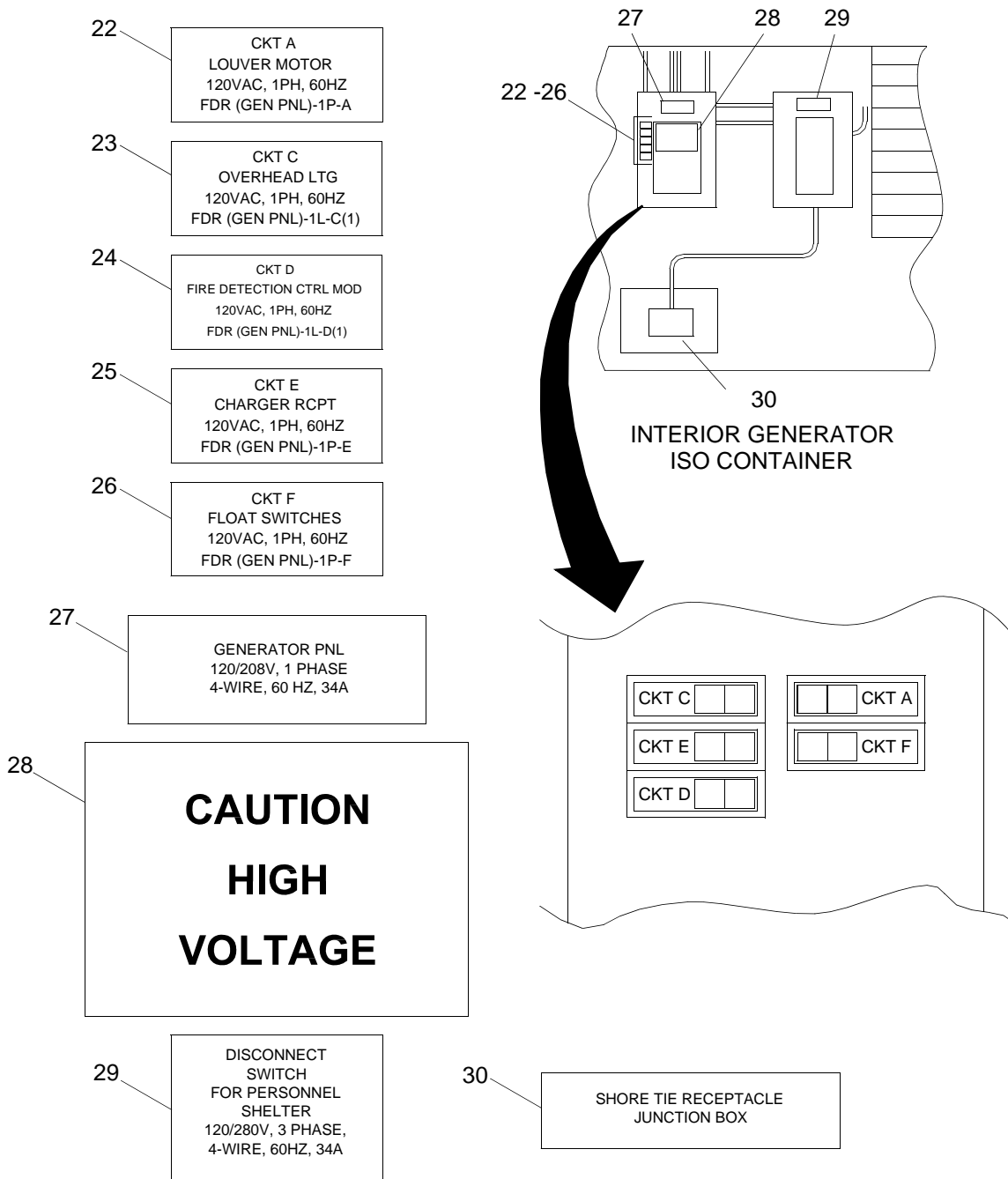


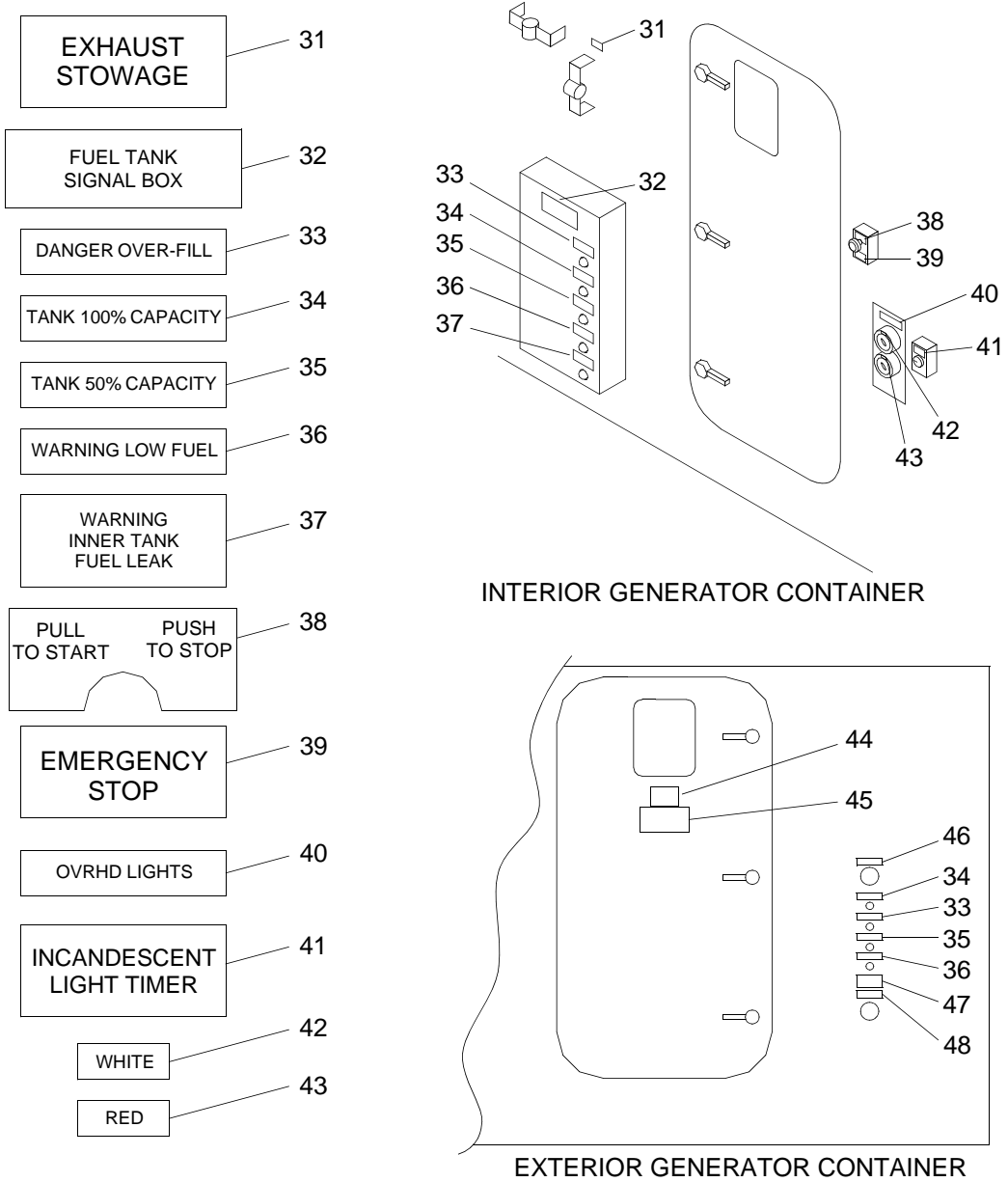
CAUTION

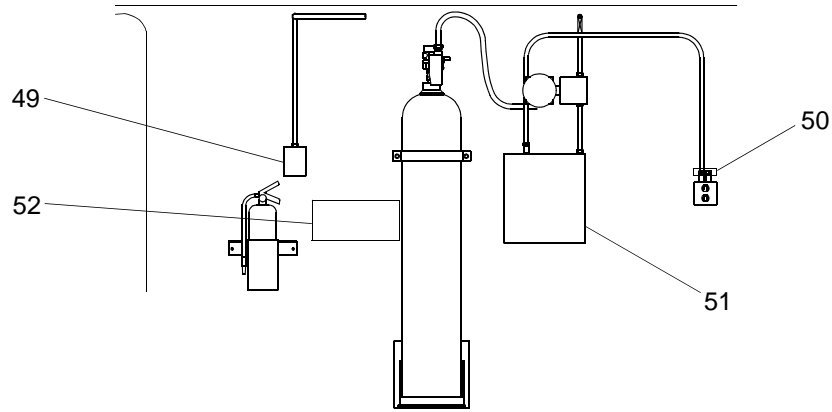
USE CARE WHEN CONNECTING AND DISCONNECTING THE PORTABLE POWER CABLE AND PLUG. PUSH CONNECTOR INTO THE INLET, TWIST AND LOCK.

100A SHORE TIE INLET
208VAC, 52A, 3 PHASE, 60 HZ

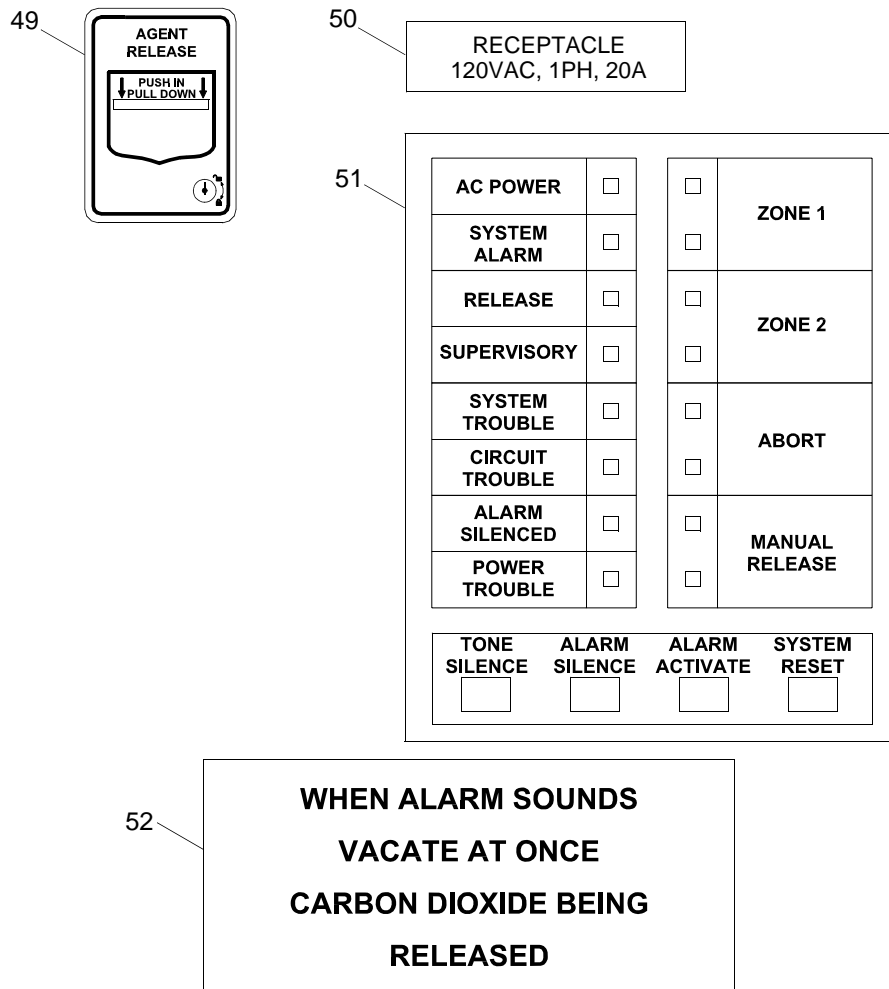
EXTERIOR OF PERSONNEL SHELTER

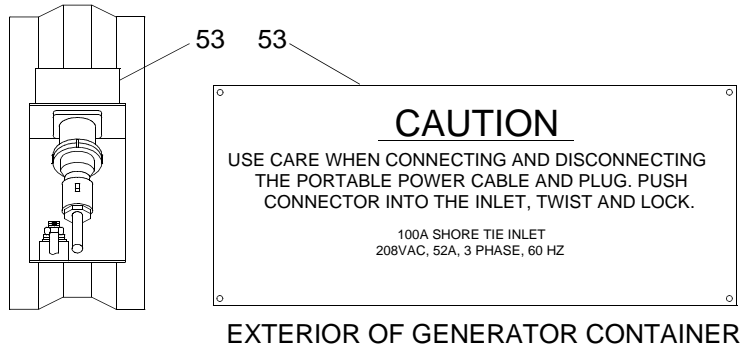




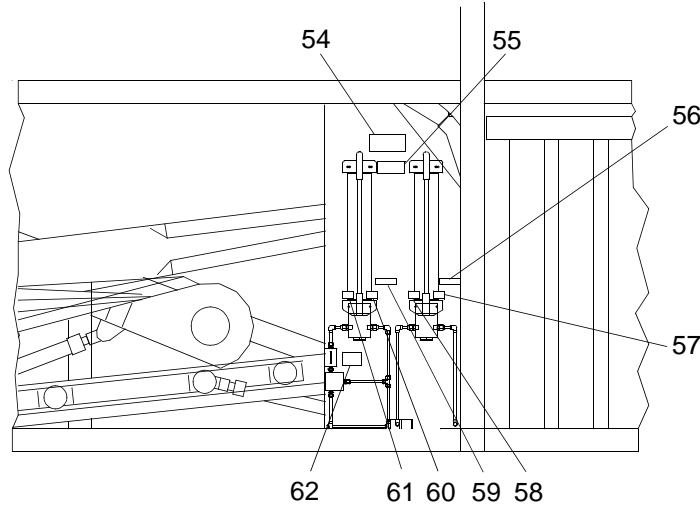


INTERIOR GENERATOR CONTAINER





EXTERIOR OF GENERATOR CONTAINER



EASY ANCHOR CONTAINER

CAUTION!
 BEFORE OPERATING HYDRAULIC PUMPS:
 1. OPEN CONTAINER ANCHOR END DOORS
 2. REMOVE SHIPPING LINKS (4) ON ANCHOR DOOR
 3. REMOVE ANCHOR SECURING BELT

CAUTION!
 EXTEND ANCHOR DRAWER BEFORE ELEVATING ANCHOR SLIDE
 LOWER ANCHOR SLIDE BEFORE RETRACTING ANCHOR DRAWER

ANCHOR DRAWER

OUT →

← IN

ANCHOR LIFT

DOWN →

← LIFT

OPEN ↻
RAISING ANCHOR:
 CLOSE VALVE, MOVE PUMP ARM TO "LIFT", PRESSURIZE PUMP.
LOWER ANCHOR:
 OPEN VALVE, MOVE PUMP ARM TO "DOWN", PRESSURIZE PUMP.
 ↻ **CLOSE**

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER USUAL CONDITIONS
PREPARATION FOR MOVEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)
Crowbar (Item 16, WP 0043 00)
Hammer, Hand (Item 26, WP 0043 00)
Adapter, Forklift (Item 1, WP 0043 00)
Sling, Endless (5,300 lb.) (Item 51, WP 0043 00)

Materials/Parts

Light, Navigational, Marine (white) (Item 32, WP 0043 00)
Lights, Navigational, Marine, Set (Item 33, WP 0043 00)
Shackle (2 ton, 1/2 in.) (Item 47, WP 0043 00)

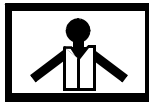
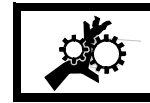
Personnel Required

Seaman 88K (3)

References

TM 9-6115-642-10
COMDTINST M16672.2D

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions may result in serious injury or death.

PREPARATION FOR MOVEMENT**REMOVE DECK MATS****NOTE**

The following procedure is typical for removing all deck mats.

The 1 5/8 inch socket and 3/4 to 1/2 inch square drive adapter are located in the deck mat pallet toolbox in a canvas bag. Use these with the 1/2 inch square drive socket wrench from the tool kit.

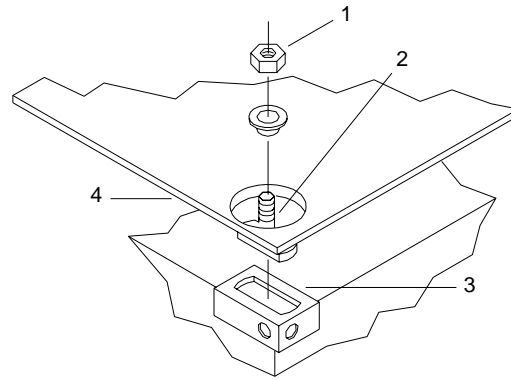


Figure 1. Deck Mat Removal

1. Using socket, adapter and wrench, loosen nut (figure 1, item 1) on tee bolt (figure 1, item 2).
2. Rotate tee bolt (figure 1, item 2) until aligned with slot in fitting (figure 1, item 3).
3. Lift tee bolt (figure 1, item 2) through top hole of corner fitting (figure 1, item 3) and deck mat (figure 1, item 4).

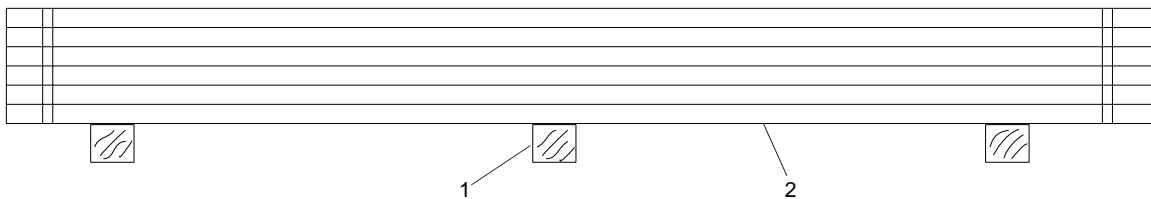


Figure 2. Stacking Deck Mats

4. Position three 4 in. X 4 in. wood beams (figure 2, item 1) on FC pierhead in an area where deck mats (figure 2, item 2) can be stacked.

WARNING



HEAVY OBJECTS

The deck mats are heavy. Use care when lifting or serious injury may result.

5. Remove deck mat (figure 2, item 2) and stack on three 4 in. X 4 in. wood beams (figure 2, item 1).
6. Stack deck mats (figure 2, item 2) one on top of the other, six mats per stack.
7. Repeat above procedure for remaining deck mats (figure 2, item 2).
8. Stow deck mat stacks. (WP 0040 00)

LOWER LIGHT TOWERS**NOTE**

The following procedure is typical for lowering all light towers.

1. Stop light tower engine, if running. (WP 0009 00)

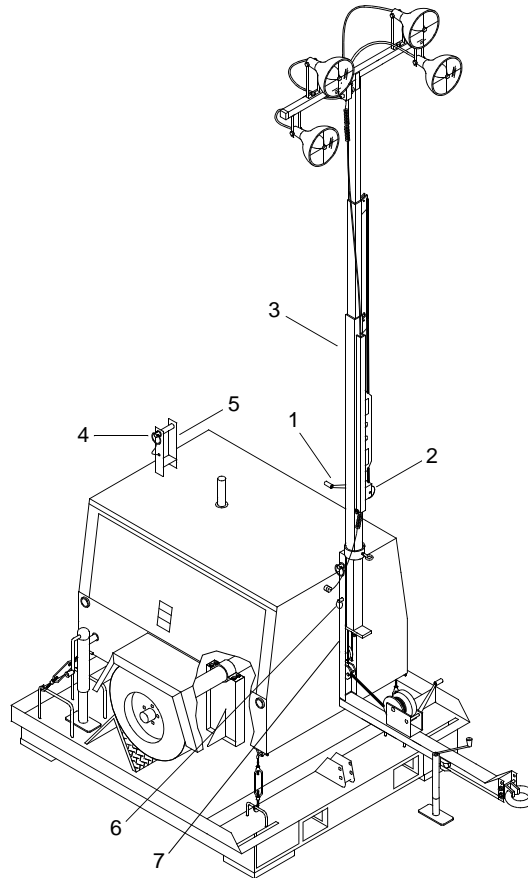


Figure 3. Lowering Light Tower

2. Turn hand crank (figure 3, item 1) on tower winch (figure 3, item 2) counterclockwise to lower tower (figure 3, item 3) from extended position.
3. Remove tower rest retaining pin (figure 3, item 4) from tower rest (figure 3, item 5)
4. Remove lock pin (figure 3, item 6) from tower support (figure 3, item 7)

WARNING**HEAVY PARTS**

The tower is heavy. Stay clear of the tower when it is lowered. Falling tower may cause serious injury or death.

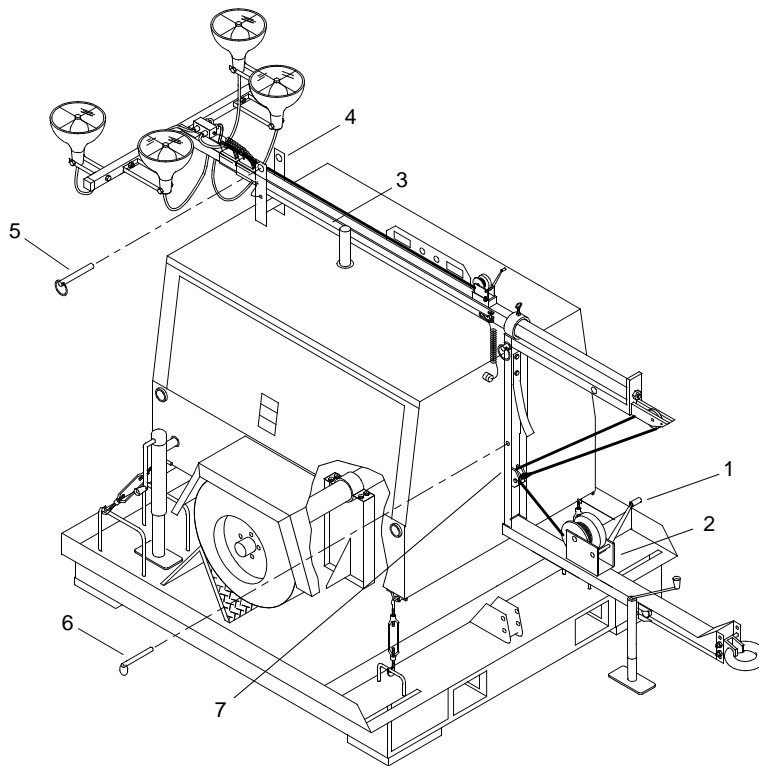


Figure 4. Stowing Light Tower

5. Turn hand crank (figure 4, item 1) on drawbar winch (figure 4, item 2) counterclockwise to lower tower (figure 4, item 3) onto tower rest (figure 4, item 4).
6. Install tower rest retaining pin (figure 4, item 5) into tower rest (figure 4, item 4).
7. Install lock pin (figure 4, item 6) into tower support (figure 4, item 7).

REMOVE CORNER FENDERS**NOTE**

The following procedure is typical for the removal of both port and starboard corner fenders.

The 2 3/4 inch socket and 3/4 to 1/2 inch square drive adapter are located in the deck mat pallet toolbox. Use these with the 1/2 inch square drive socket wrench from the tool kit.

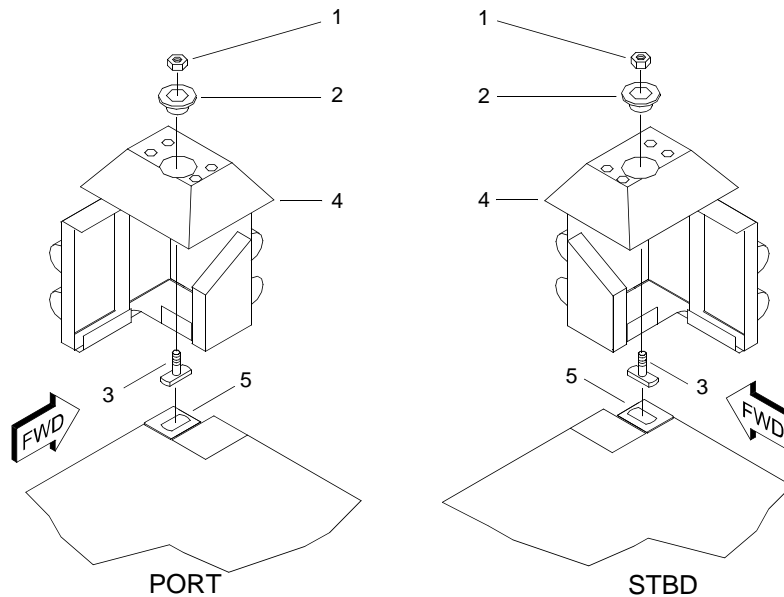


Figure 5. Removing Corner Fenders

1. Using socket, adapter and wrench, remove nut (figure 5, item 1) and washer (figure 5, item 2) from tee bolt (figure 5, item 3).
2. Remove corner fender (figure 5, item 4) from tee bolt (figure 5, item 3).
3. Turn tee bolt (figure 5, item 3) until aligned with slot and remove from ISO corner fitting (figure 5, item 5).
4. Stow corner fenders. (WP 0040 00)

RAISE FENDERS FROM WATER
NOTE

The following procedure is typical for raising all cylindrical fenders in preparation for FC movement.

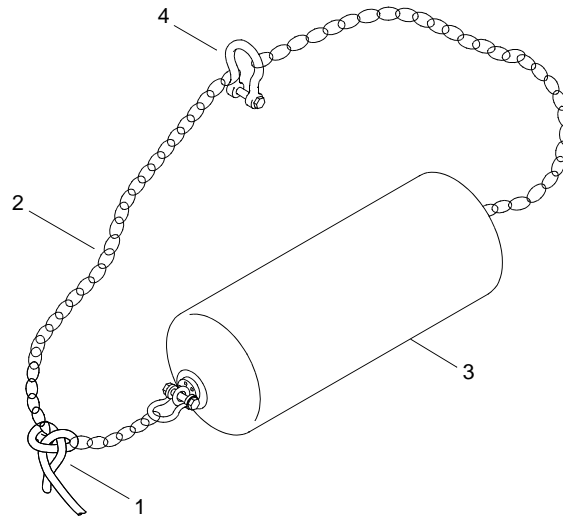
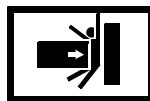


Figure 6. Raising Fender from Water

1. Attach tag lines (figure 6, item 1) to securing chains (figure 6, item 2) on fender (figure 6, item 3).
2. Disconnect securing chains (figure 6, item 2) from FC platform.
3. Using shackle (figure 6, item 4), secure two ends of securing chains (figure 6, item 2) together.

WARNING

**HEAVY PARTS**

The fenders are heavy. Stay clear of the fenders when they are lifted onto the deck. Failure to comply may cause serious injury or death.

4. Using warping tug, raise fender (figure 6, item 3) from water and position on FC deck.
5. Remove shackle (figure 6, item 4) from securing chains (figure 6, item 2).
6. Disconnect tag lines (figure 6, item 1) from securing chains (figure 6, item 2) on fender (figure 6, item 3).
7. Secure fender (figure 6, item 3) to FC deck as required.

REMOVE D-RING AND DECK CLEAT FITTINGS**WARNING**

Beware of other craft or objects coming alongside while working outboard removing the keeper plate and bolt on deck fittings, as the possibility exists of falling overboard or being crushed. Failure to observe these precautions could result in death or injury to personnel.

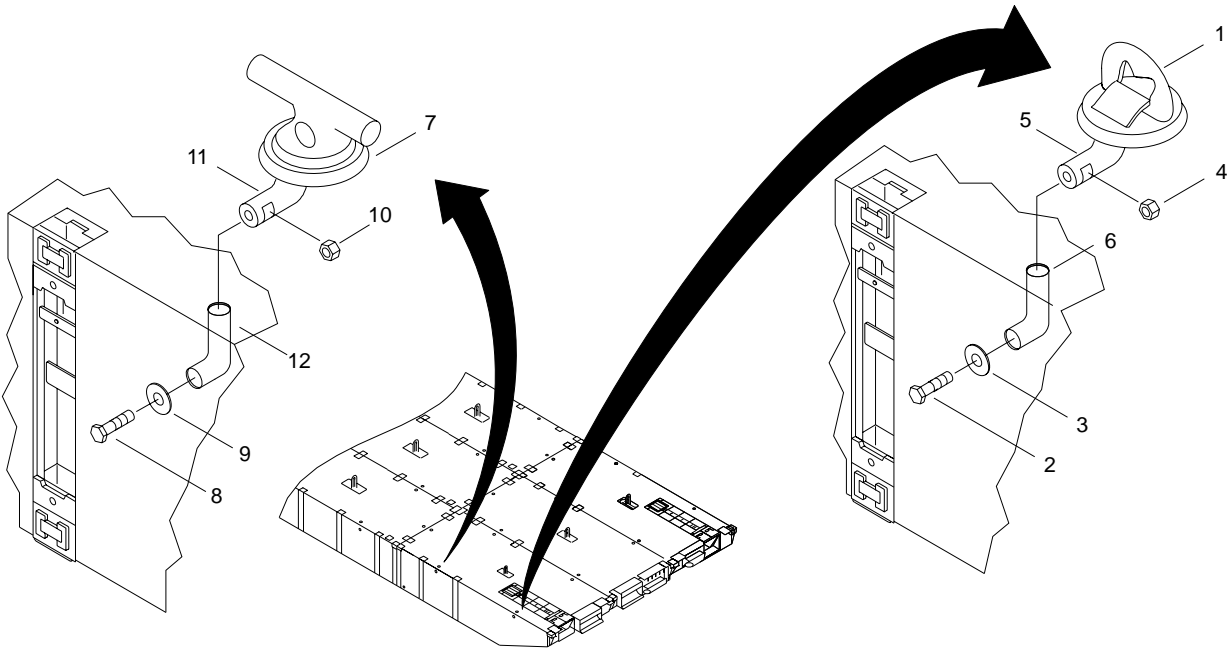


Figure 7. D-Ring and Deck Cleat Fitting Installation

1. Remove D-ring fittings (figure 7, item 1).
 - a. Remove bolt (figure 7, item 2) and keeper plate (figure 7, item 3) from nut (figure 7, item 4) and tailpiece (figure 7, item 5).
 - b. Remove D-ring (figure 7, item 1) from module turn tube (figure 7, item 6).
 - c. Install bolt (figure 7, item 2) and keeper plate (figure 7, item 3) into nut (figure 7, item 4) in tailpiece (figure 7, item 5).
 - d. Stow D-ring fittings. (WP 0040 00)
2. Remove deck cleat fittings (figure 7, item 7).
 - a. Remove bolt (figure 7, item 8) and keeper plate (figure 7, item 9) from nut (figure 7, item 10) and tailpiece (figure 7, item 11).
 - b. Remove deck cleat fitting (figure 7, item 7) from module turn tube (figure 7, item 12).
 - c. Install bolt (figure 7, item 8) and keeper plate (figure 7, item 9) into nut (figure 7, item 10) in tailpiece (figure 7, item 11).

- d. Stow deck cleat fittings. (WP 0040 00)

REMOVE SAFETY EQUIPMENT

NOTE

The following procedure is typical for the removal of life ring assemblies.

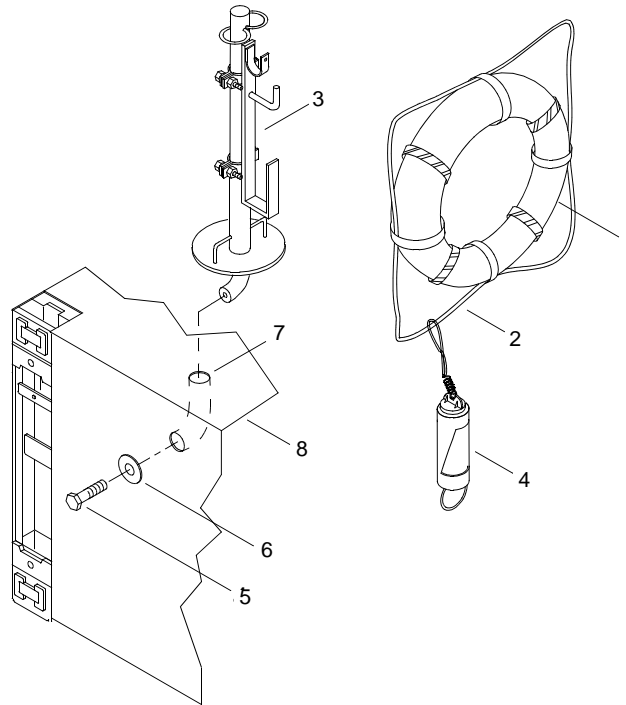


Figure 8. Life Ring Removal

1. Remove life ring (figure 8, item 1) and rope (figure 8, item 2) from life ring stanchion (figure 8, item 3).
2. Remove strobe light (figure 8, item 4) from rope (figure 8, item 2).

WARNING

Beware of other craft or objects coming alongside while working outboard removing the keeper plate and bolt on deck fittings, as the possibility exists of falling overboard or being crushed. Failure to observe these precautions could result in death or injury to personnel.

3. Remove bolt (figure 8, item 5) and keeper plate (figure 8, item 6) from threaded portion of life ring stanchion (figure 8, item 3).
4. Remove life ring stanchion (figure 8, item 3) from turn tube (figure 8, item 7) on module (figure 8, item 8).
5. Install bolt (figure 8, item 5) and keeper plate (figure 8, item 6) in life ring stanchion (figure 8, item 3) to prevent loss.

NOTE

Strobe light batteries are stowed in the BII container.

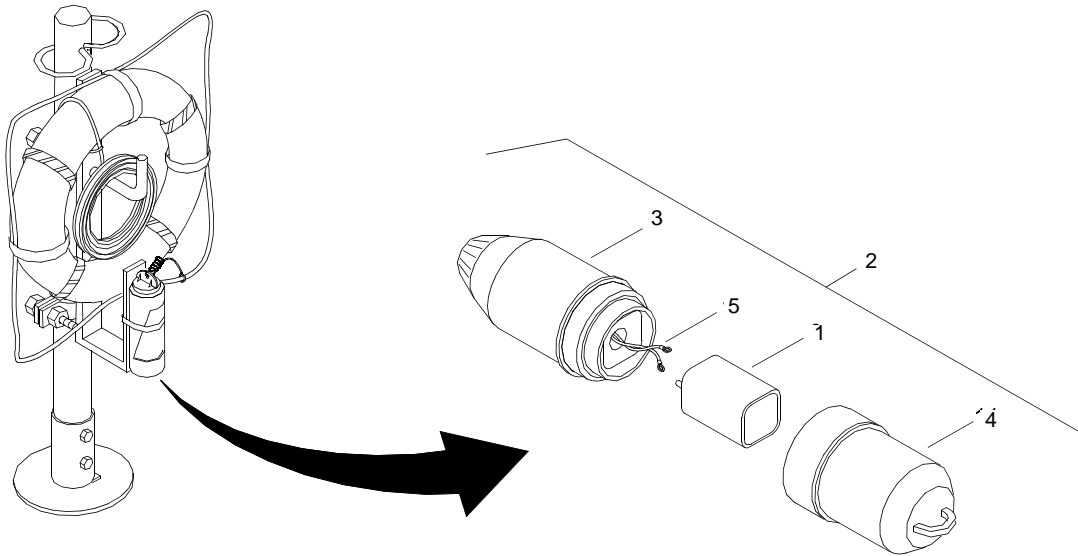


Figure 9. Strobe Light Battery Removal

6. Remove strobe light batteries (figure 9, item 1) in life ring strobe lights (figure 9, item 2).
 - a. Unscrew strobe light housing (figure 9, item 3) from strobe light base (figure 9, item 4).
 - b. Disconnect two battery wires (figure 9, item 5) from battery (figure 9, item 1).
 - c. Remove battery (figure 9, item 1) from strobe light base (figure 9, item 4).
 - d. Screw strobe light housing (figure 9, item 3) and strobe light base (figure 9, item 4) together.
 - e. Stow batteries in BII container.
7. Rinse all life ring assembly components with fresh water before packing. Allow to thoroughly air dry.
8. Stow life ring assemblies in BII container.

REMOVE MOORING BITTS

WARNING

Attempting to remove mooring bitts in sea conditions higher than Sea State 0 could cause serious injury or death and/or equipment damage.

NOTE

The following procedure is typical for removal of mooring bitts.

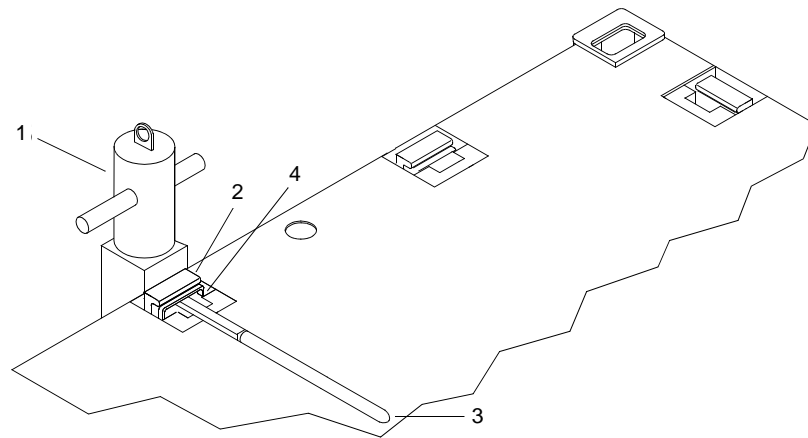
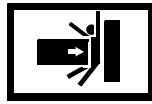


Figure 10. Raising Female Guillotine Bar

1. Using forklift and sling, take up tension to support mooring bitt (figure 10, item 1).
2. Raise female guillotine bar (figure 10, item 2).
 - a. Insert crowbar (figure 10, item 3) behind spring bar (figure 10, item 4) under female guillotine bar (figure 10, item 2).
 - b. Rotate crowbar (figure 10, item 3) downward to clear spring bar (figure 10, item 4) from deck overhangs and allow female guillotine bar (figure 10, item 2) to move upward.
 - c. Raise female guillotine bar (figure 10, item 2) approximately six inches until it stops.
 - d. Remove crowbar (figure 10, item 3).

WARNING

**HEAVY PARTS**

Mooring bits are heavy. Stay clear of mooring bits when they are moved. Failure to comply may cause serious injury or death.

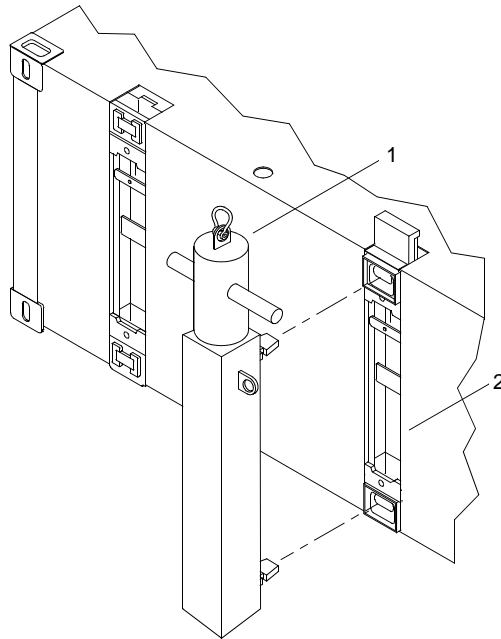


Figure 11. Removing Mooring Bitt

3. Using forklift and sling, remove mooring bitt (figure 11, item 1) from female guillotine assembly (figure 11, item 2).
4. Drive female guillotine bar (figure 10, item 2) down using a sledgehammer.
5. Remove sling from mooring bitt (figure 11, item 1).
6. Stow mooring bits. (WP 0040 00)

RECOVER OFFSHORE MOORING LEGS

WARNING

**HEAVY PARTS**

The mooring leg assemblies are very heavy. Stay clear when they are recovered. Failure to comply may cause serious injury or death.

NOTE

The following procedure is typical for the recovery of offshore mooring legs.

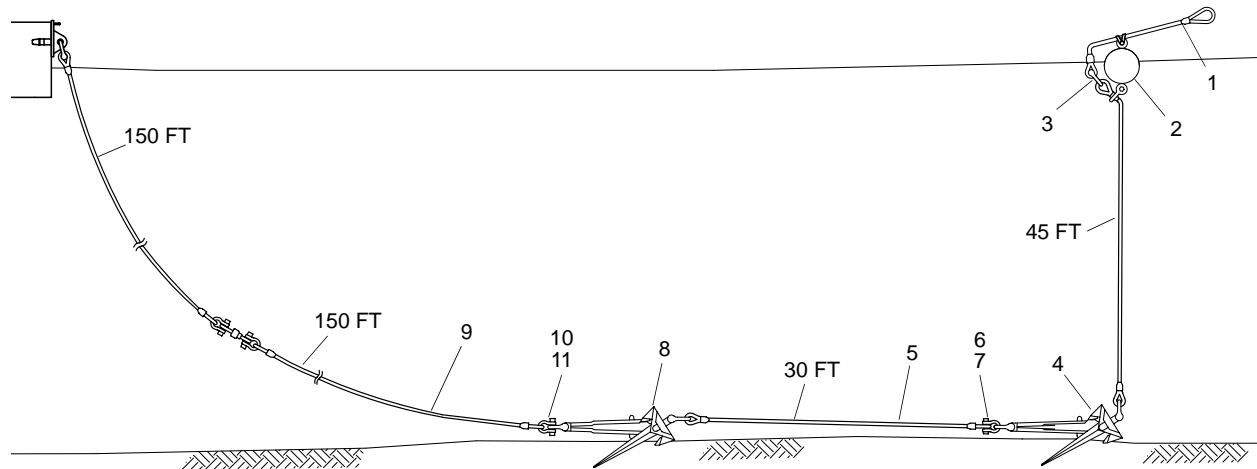


Figure 12. Offshore Mooring Leg Assembly

1. Make sure radio communication is established between WT operator and soldier in charge of mooring leg retrieval on FC.
2. From the WT, use a boat hook to retrieve the 10 ft anchor buoy cable (figure 12, item 1) and buoy (figure 12, item 2) and place them on the WT forward deck.

WARNING**EAR PROTECTION**

Single hearing protection is required when the WT winch is operated. Failure to wear hearing protection may result in hearing loss.

CAUTION

The WT winch cable must be attached to the shackle, *not* the end of the 10 ft cable. Failure to comply will result in equipment damage.

3. Attach buoy shackle (figure 12, item 3) to WT forward winch cable.
4. Using WT winch, raise first anchor (figure 12, item 4) and position on WT deck.
5. Disconnect WT forward winch cable from buoy shackle (figure 12, item 3).
6. Connect WT forward winch cable to eye of 30 ft anchor-to-anchor cable (figure 12, item 5).
7. Remove pin (figure 12, item 6) and shackle (figure 12, item 7) between first anchor (figure 12, item 4) and 30 ft anchor-to-anchor cable (figure 12, item 5).

8. Using WT winch, raise second anchor (figure 12, item 8) and position on WT deck.
9. Remove WT forward winch cable from eye of 30 ft anchor-to-anchor cable (figure 12, item 5).

NOTE

The 300 ft anchor-to-padeye cable consists of two 150 ft cables connected together with a swivel.

10. Connect WT forward winch cable to eye of 300 ft cable (figure 12, item 9).
11. Remove pin (figure 12, item 10) and shackle (figure 12, item 11) between second anchor (figure 12, item 8) and 300 ft cable (figure 12, item 9).

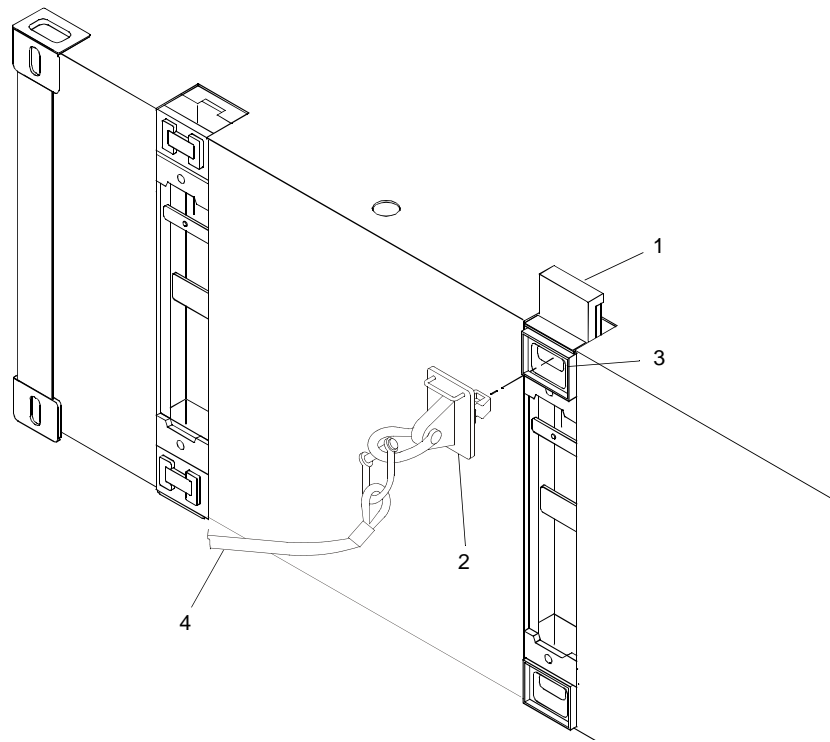


Figure 13. Anchor Cable Attachment

12. Using crowbar, raise female guillotine (figure 13, item 1) securing deadman padeye (figure 13, item 2) in female guillotine upper fitting (figure 13, item 3).
13. Remove deadman padeye (figure 13, item 2) and 300 ft cable (figure 13, item 4) from female guillotine upper fitting (figure 13, item 3) and let fall in water.
14. Using sledgehammer, drive down female guillotine (figure 13, item 1).
15. Using WT winch, raise 300 ft cable (figure 12, item 9) and position on WT deck.
16. Remove WT forward winch cable from eye of 300 ft cable (figure 12, item 9).
17. Using forklift, transfer mooring leg components from WT to FC deck.
18. Secure mooring leg components to FC deck as necessary.

RECOVER ONSHORE MOORING LEGS

WARNING

**HEAVY PARTS**

The mooring leg assemblies are very heavy. Stay clear when they are recovered. Failure to comply may cause serious injury or death.

NOTE

The following procedure is typical for the recovery of onshore mooring legs.

Easing tension on mooring cables can be accomplished using either bulldozer or carpenter stops and griphoist.

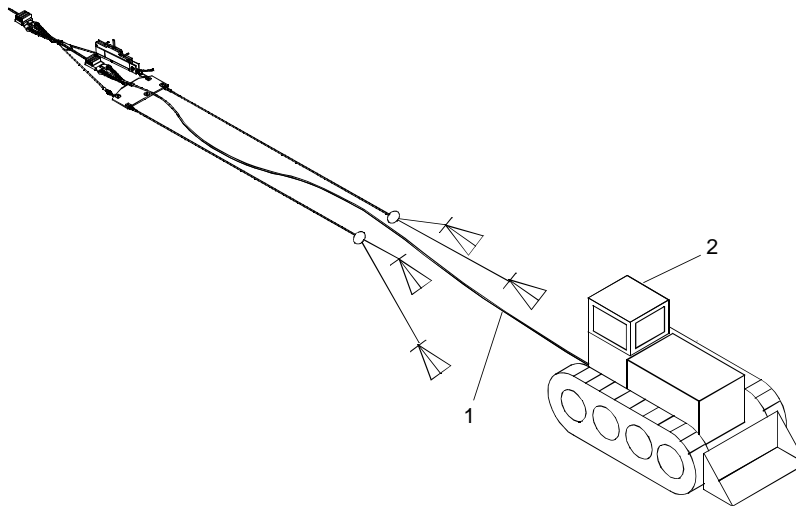


Figure 14. Easing Mooring Cable Tension with Bulldozer

1. Ease mooring cable (figure 14, item 1) tension using bulldozer (figure 14, item 2).
 - a. Attach shore end of mooring cable (figure 14, item 1) to bulldozer (figure 14, item 2).

WARNING

Never open a carpenter stop that is holding a cable under tension. Sudden release of tension can cause the end of the cable to whip around causing serious injury or death to personnel.

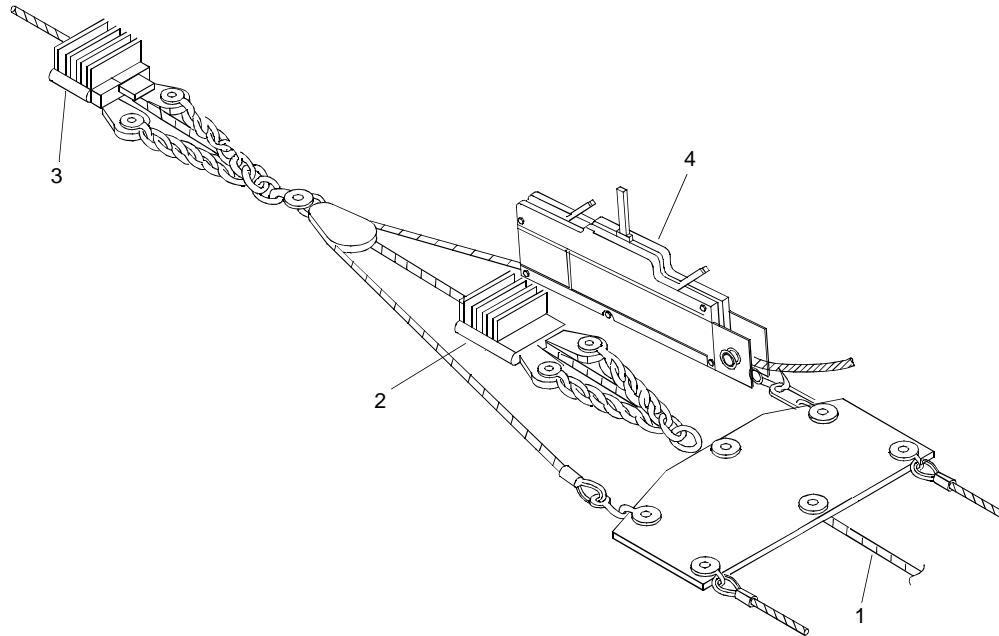


Figure 15. Onshore Mooring Leg Tackle

- b. Using bulldozer (figure 14, item 2), pull on mooring cable (figure 14, item 1 and figure 15, item 1) until tension is relieved on both carpenter stops (figure 15, items 2 and 3).

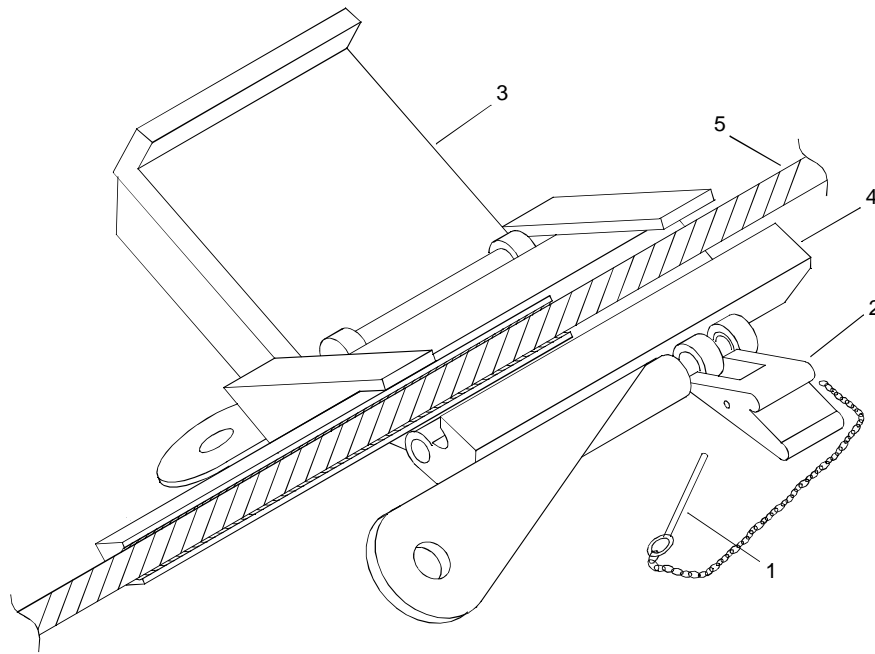


Figure 16. Carpenter Stop

- c. Pull latch pin (figure 16, item 1), open latch (figure 16, item 2) and raise cover (figure 16, item 3) of carpenter stop (figure 16, item 4).
 - d. Remove mooring cable (figure 16, item 5) from carpenter stop (figure 16, item 4).
 - e. Close cover (figure 16, item 3) and latch (figure 16, item 2) and secure with latch pin (figure 16, item 1).
 - f. Repeat for other carpenter stop (figure 15, item 3).
2. Ease mooring line (figure 15, item 1) tension, using carpenter stop (figure 15, item 2) and griphoist (figure 15, item 4).

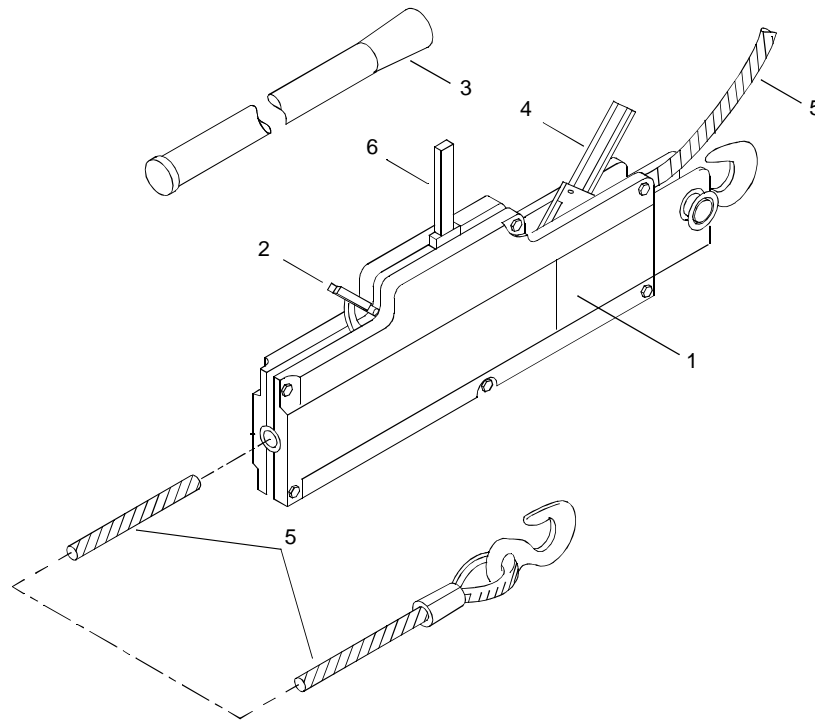


Figure 17. Griphoist

- a. Move wire rope release lever (figure 17, item 2) to the lock position by striking it with a sharp blow of the hand.
- b. Place operating handle (figure 17, item 3) on power stroke lever (figure 17, item 4).
- c. Work operating handle (figure 17, item 3) back and forth to pull hoist cable (figure 17, item 5) through griphoist (figure 17, item 1) to relieve tension on mooring cable (figure 18, item 1).

WARNING

Never open a carpenter stop that is holding a cable under tension. Sudden release of tension can cause the end of the cable to whip around causing serious injury or death to personnel.

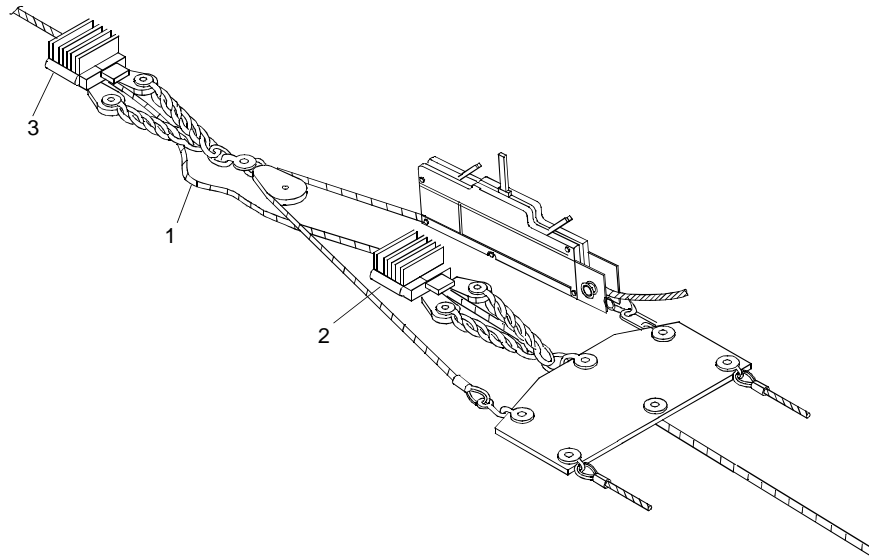


Figure 18. Using Griphoist to Relieve Mooring Cable Tension Between Carpenter Stops

- d. When tension is relieved on mooring line (figure 18, item 1) between carpenter stops (figure 18, items 2 and 3), pull latch pin (figure 16, item 1), open latch (figure 16, item 2) and raise cover (figure 16, item 3) of carpenter stop (figure 18, item 2).
 - e. Remove mooring cable (figure 16, item 5) from carpenter stop (figure 16, item 4).
 - f. Close cover (figure 16, item 3) and latch (figure 16, item 2) and secure with latch pin (figure 16, item 1).
 - g. Move wire rope release lever (figure 17, item 2) to the unlock position.
 - h. Place operating handle (figure 17, item 3) on reversing lever (figure 17, item 6) to pay out hoist cable (figure 17, item 5) until hoist cable goes slack.
 - i. Remove mooring line (figure 18, item 1) from other carpenter stop (figure 18, item 3).
3. Using forklift, pull mooring cable onto FC deck.

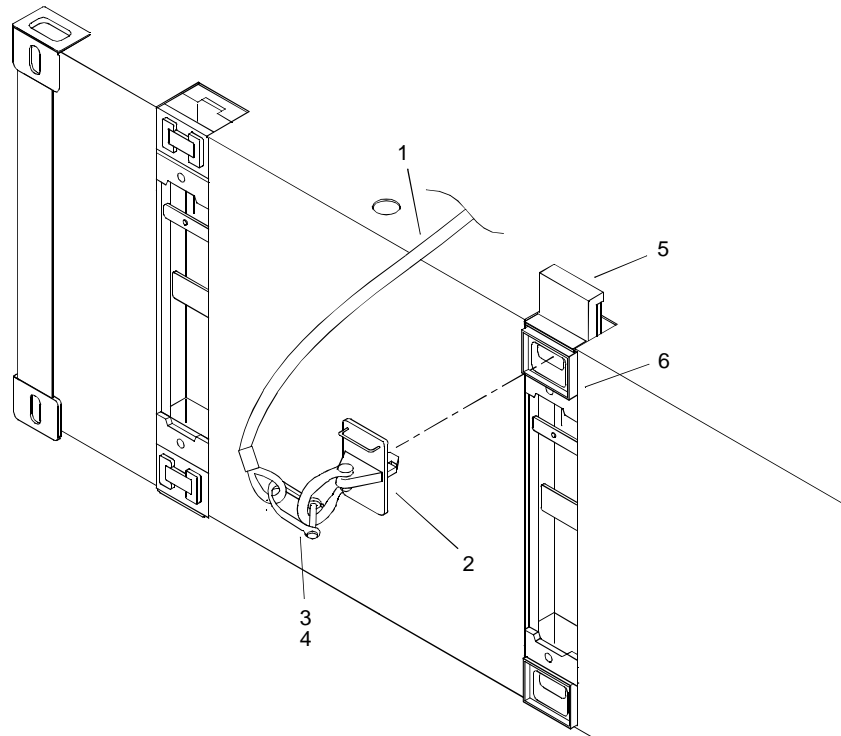


Figure 19. Onshore Mooring Leg Attachment

4. Disconnect mooring cable (figure 19, item 1) from horizontal deadman padeye (figure 19, item 2) by removing shackle (figure 19, item 3) and pin (figure 19, item 4).

WARNING



HEAVY OBJECTS

The mooring cables are heavy. Use care when lifting or serious injury may result.

5. Using assistant, pull mooring cable (figure 19, item 1) onto FC deck.
6. Using crowbar, raise female guillotine (figure 19, item 5).
7. Remove horizontal deadman padeye (figure 19, item 2) from female guillotine upper fitting (figure 19, item 6).
8. Using sledgehammer, drive down female guillotine (figure 19, item 5).
9. Excavate sand from around onshore anchors.

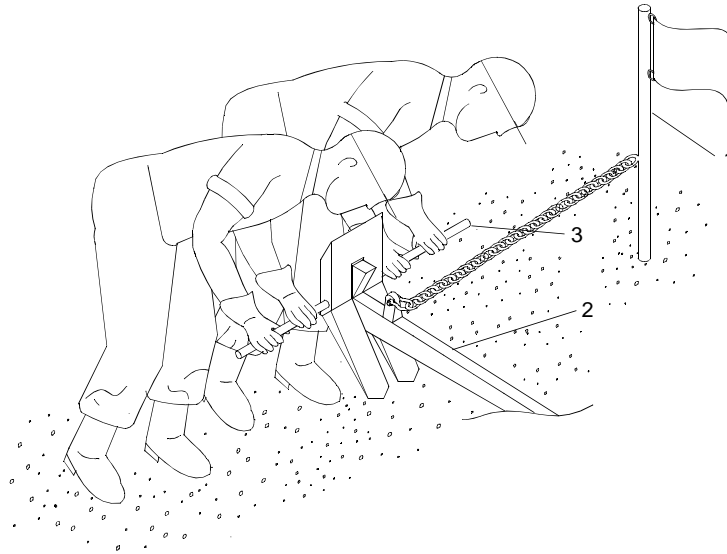


Figure 20. Extracting Onshore Anchors from Beach

10. Remove anchor pendant assembly (figure 20, item 1) from anchor (figure 20, item 2).

WARNING



HEAVY OBJECTS

Mooring leg components are heavy. Use care when lifting or serious injury may result.

NOTE

Anchors can be extracted by using a forklift or manually lifting from sand.

11. Using forklift and forklift adaptor, extract anchor (figure 20, item 2) from sand or, using assistant, lift anchors (figure 20, item 2) by stabilizers (figure 20, item 3) from sand.

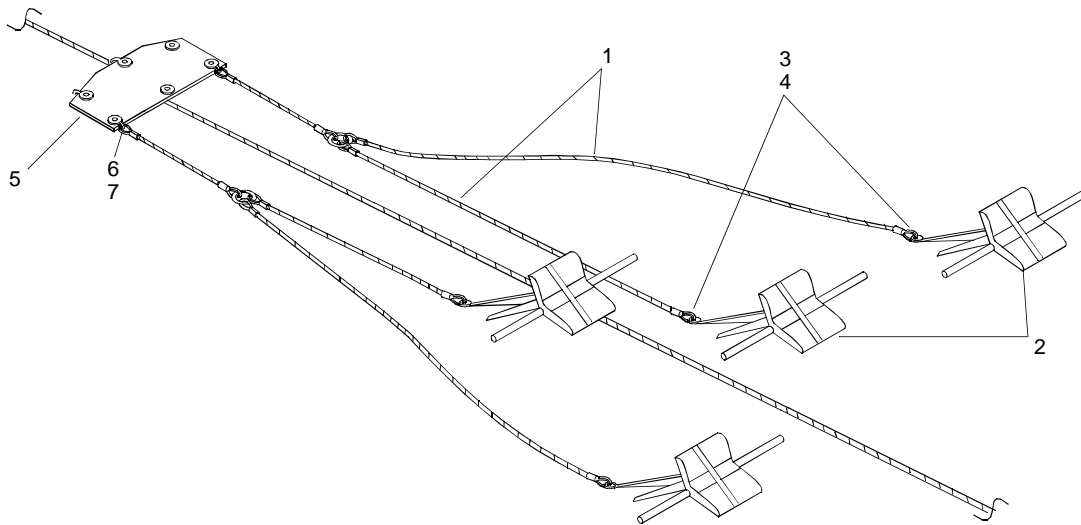


Figure 21. Onshore Mooring Cables and Anchor Bridles

12. Separate anchor bridles (figure 21, item 1) from anchor (figure 21, item 2) shackles by removing 1/2 in. shackle (figure 21, item 3) and pin (figure 21, item 4).
13. Separate anchor bridle (figure 21, item 1) from flounder plate (figure 21, item 5) by removing 7/8 in. shackle (figure 21, item 6) and pin (figure 21, item 7).

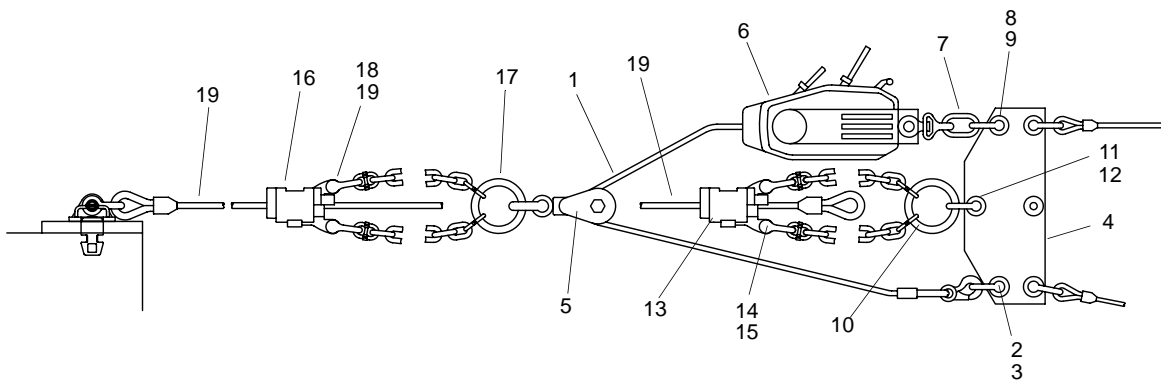


Figure 22. Onshore Mooring Tackle

14. Disconnect free end of griphoist cable (figure 22, item 1) from 1 in. shackle (figure 22, item 2).
15. Remove 1 in. shackle (figure 22, item 2) and pin (figure 22, item 3) from flounder plate (figure 22, item 4).
16. Route griphoist cable (figure 22, item 1) through snatch block (figure 22, item 5).
17. Disconnect fixed end of griphoist (figure 22, item 6) from master link (figure 22, item 7).
18. Disconnect master link (figure 22, item 7) by removing 1 in. shackle (figure 22, item 8) and pin (figure 22, item 9) from flounder plate (figure 22, item 4).

19. Disconnect ring and chain assembly (figure 22, item 10) from flounder plate (figure 22, item 4) by removing 1 in. shackle (figure 22, item 11) and pin (figure 22, item 12).
20. Disconnect second carpenter stop (figure 22, item 13) from ring and chain assembly (figure 22, item 10) by removing 1 in. shackles (figure 22, item 14) and pins (figure 22, item 15).
21. Disconnect first carpenter stop (figure 22, item 16) from ring and chain assembly (figure 22, item 17) by removing 1 in. shackles (figure 22, item 18) and pins (figure 22, item 19).
22. Disconnect ring and chain assembly (figure 22, item 17) from shackle on snatch block (figure 22, item 5).
23. Transfer mooring components to FC deck.

REMOVE GROUND CABLE

NOTE

This procedure is typical for the both the generator container and personnel shelter.

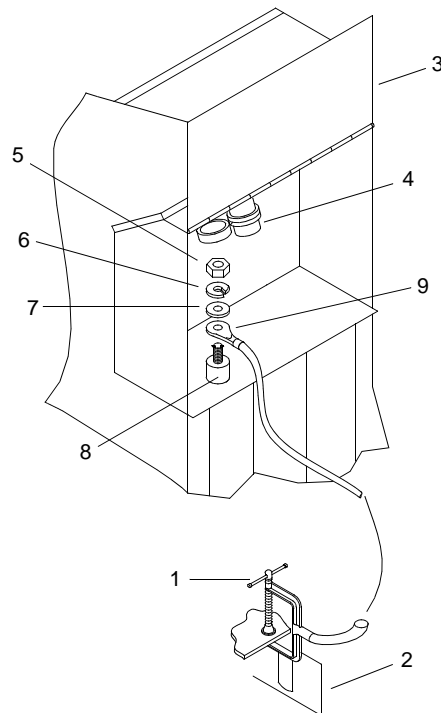


Figure 23. Ground Cable Installation

1. Remove ground cable C-clamp (figure 23, item 1) from ISO fitting (figure 23, item 2).
2. Open hinged cover (figure 23, item 3) over shore tie connector fitting (figure 23, item 4) and latch in open position.
3. Remove nut (figure 23, item 5), lockwasher (figure 23, item 6) and flat washer (figure 23, item 7) from ground stud (figure 23, item 8).
4. Remove ground cable (figure 23, item 9) from ground stud (figure 23, item 8). Stow ground cable in container.

REMOVE PERSONNEL SHELTER

1. Shut down 10 kW generator. (TM 9-6115-642-10)
2. Remove ground cable. (See "Remove Ground Cable," in this WP.)

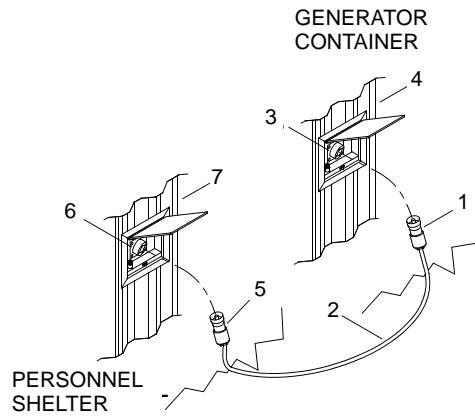


Figure 24. Shore Tie Connection

3. Disconnect male end (figure 24, item 1) of shore tie power cable (figure 24, item 2) from female shore tie connector (figure 24, item 3) on generator container (figure 24, item 4).
4. Disconnect female end (figure 24, item 5) of shore tie power cable (figure 24, item 2) from personnel shelter male shore tie connector (figure 24, item 6).
5. Stow shore tie power cable (figure 24, item 2) inside personnel shelter (figure 24, item 7).

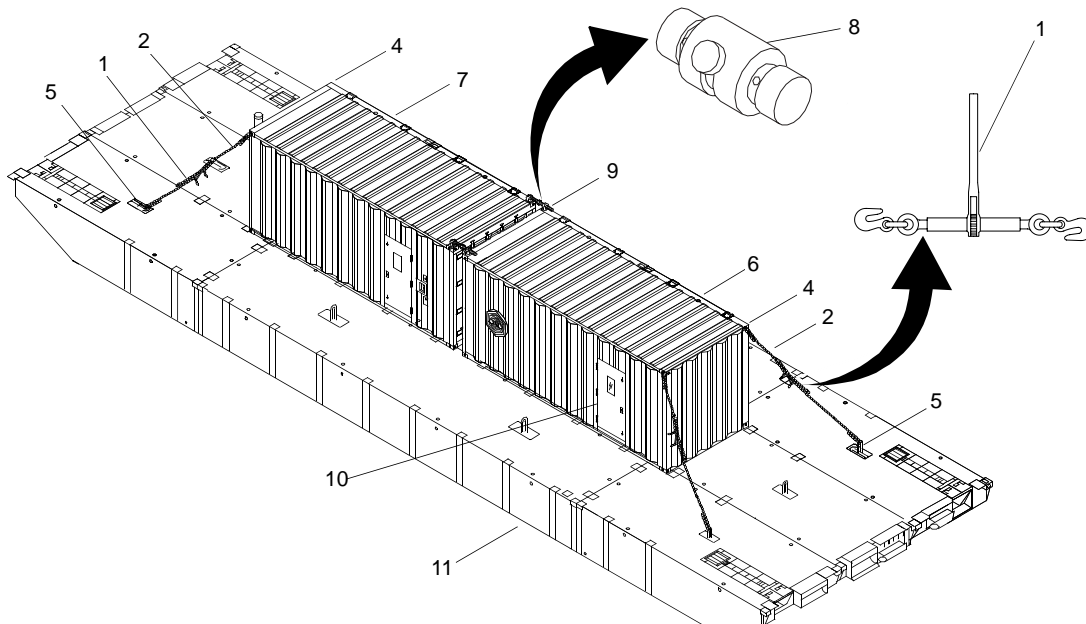


Figure 25. Personnel Shelter

6. Loosen chain binders (figure 25, item 1) to remove tension from chains (figure 25, item 2).
7. Remove chains (figure 25, item 2) between outboard top ISO corners (figure 25, item 4) and end rake padeye lifting shackles (figure 25, item 5) on each side of each side of personnel shelter (figure 25, item 6) and generator container (figure 25, item 7).

NOTE

Either horizontal twistlocks or bridgelocks are used to connect the personnel shelter and generator container.

8. Remove horizontal twistlocks (figure 25, item 8) or bridgelocks between personnel shelter (figure 25, item 6) and generator container (figure 25, item 7) on inboard top ISO corners (figure 25, item 9).
9. Stow chains (figure 25, item 2), chain binders (figure 25, item 1) and horizontal twistlocks (figure 25, item 8) or bridgelocks in the personnel shelter (figure 25, item 6).
10. Close, lock and dog personnel shelter exterior door (figure 25, item 10).

WARNING



HEAVY PARTS

The personnel shelter is very heavy. Stay clear when it is lifted. A falling or swinging container may cause serious injury or death.

11. Using crane, remove personnel shelter (figure 25, item 6) from FC pierhead (figure 25, item 11).

REMOVE 10KW GENERATOR CONTAINER

1. Shut down 10 kW generator. (TM 9-6115-642-10)
2. Remove ground cable. (See "Remove Ground Cable," in this WP.)

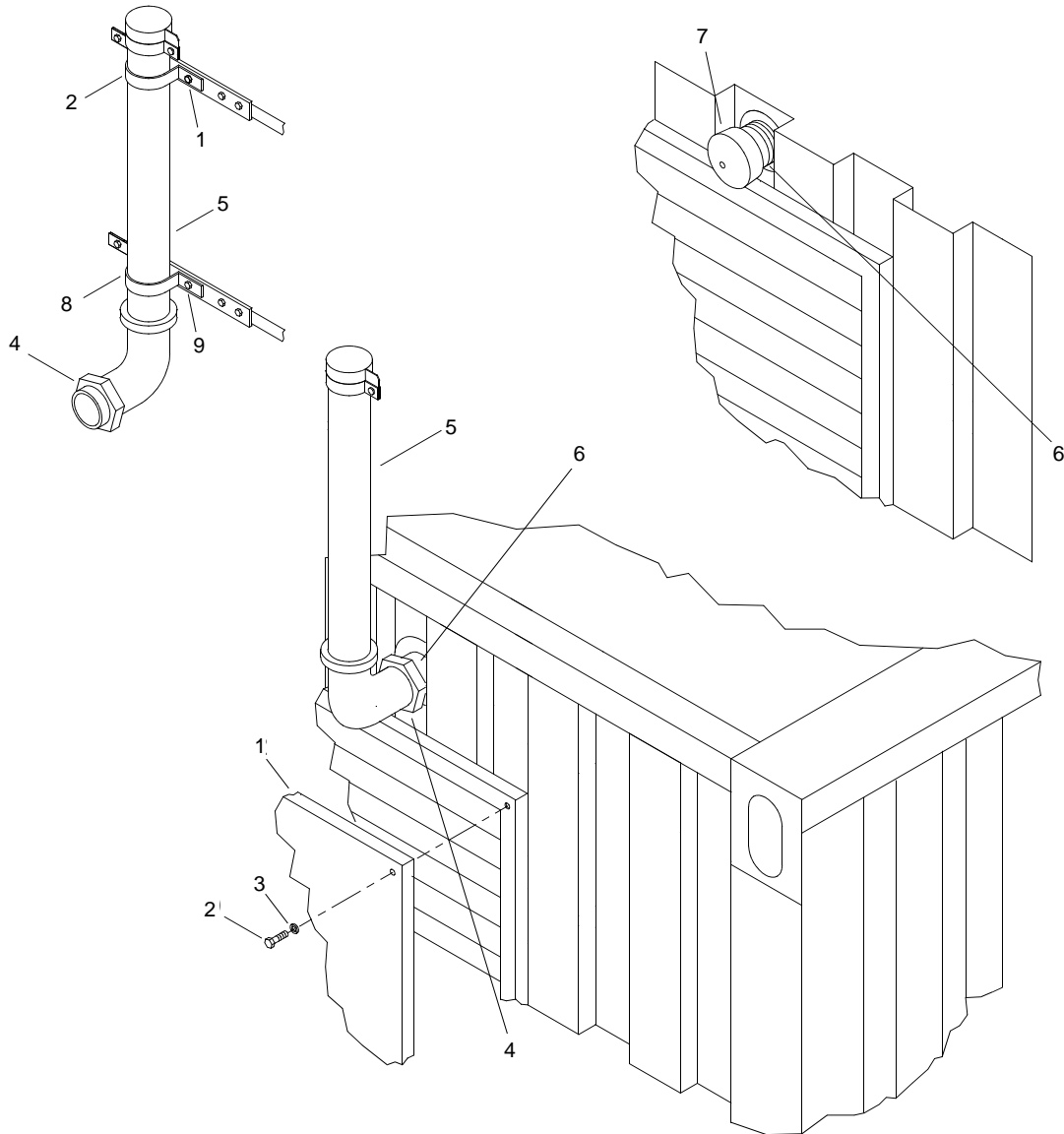


Figure 26. Exhaust Pipe and Louver Covers

3. Remove louver covers (figure 26, item 1) from inside the generator container.
4. Position louver covers (figure 26, item 1) over exhaust and intake dampers and secure with six hex bolts (figure 26, item 2) and lockwashers (figure 26, item 3).
5. Loosen flange nut (figure 26, item 4) connecting exhaust pipe (figure 26, item 5) to exhaust outlet (figure 26, item 6). Remove exhaust pipe (figure 26, item 5).
6. Remove protective cover (figure 26, item 7) from container and install on exhaust outlet (figure 26, item 6).
7. Place exhaust pipe (figure 26, item 5) in stowage brackets (figure 26, item 8) in interior of container.
8. Install and tighten bolts (figure 26, item 9) in stowage brackets (figure 26, item 8).

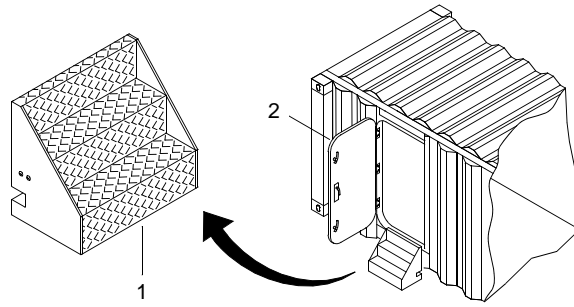


Figure 27. Steps on Generator Container

9. Fold up steps (figure 27, item 1).
10. Close, lock and dog generator container exterior door (figure 27, item 2).

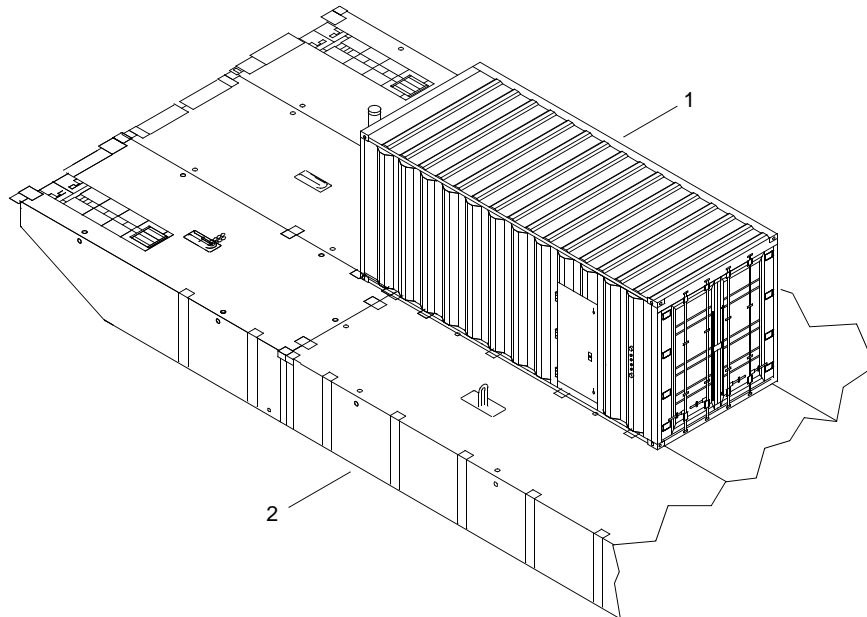


Figure 28. Generator Container

11. Using crane, remove generator container (figure 28, item 1) from FC pierhead (figure 28, item 2).

REMOVE BII CONTAINER

1. Close and latch container doors.

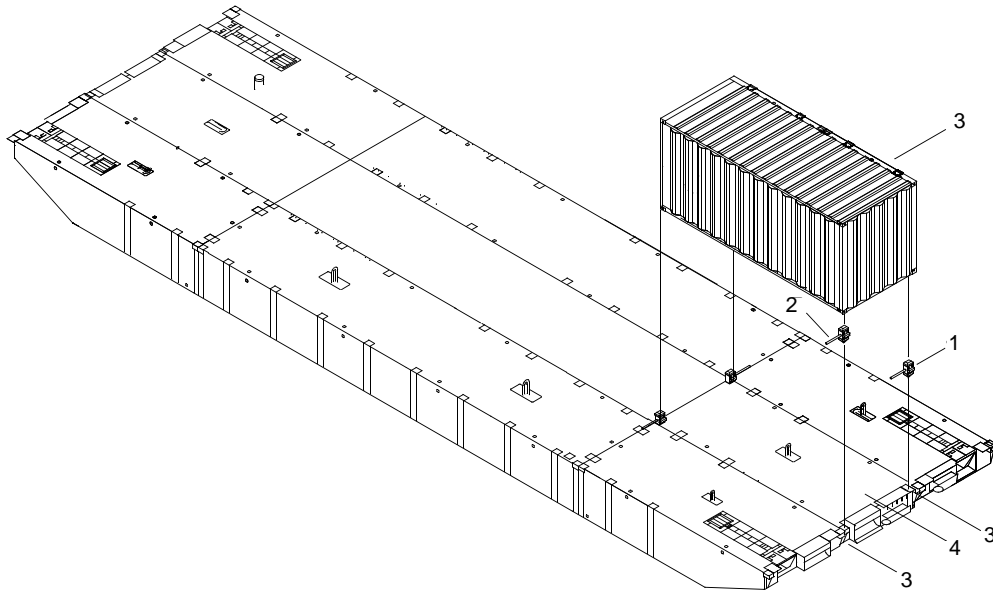


Figure 29. BII Container on FC Platform

2. Unlock four vertical twistlock (figure 29, item 1) by rotating levers (figure 29, item 2) securing BII container (figure 29, item 3) to center end rake (figure 29, item 4).

WARNING



HEAVY PARTS

The BII container is very heavy. Stay clear of the container when lifted. Falling or swinging container may cause serious injury or death.

3. Using crane, remove BII container (figure 29, item 3) from center end rake (figure 29, item 4).
4. Unlatch and open BII container doors.

WARNING

Doors must be secured in the open position. Unsecured doors can swing and may result in serious injury or death.

5. Secure container doors open with locking bars, pins or hooks.
6. Stow four vertical twistlocks (figure 29, item 1) from BII container (figure 29, item 3).
7. Remove locking bars, pins or hooks to close container doors.

8. Close and latch container doors.
9. Position four vertical twistlocks (figure 29, item 1) in ISO corner fittings (figure 29, item 3) on center end rake (figure 29, item 4).

INSTALL TOWING LIGHTS

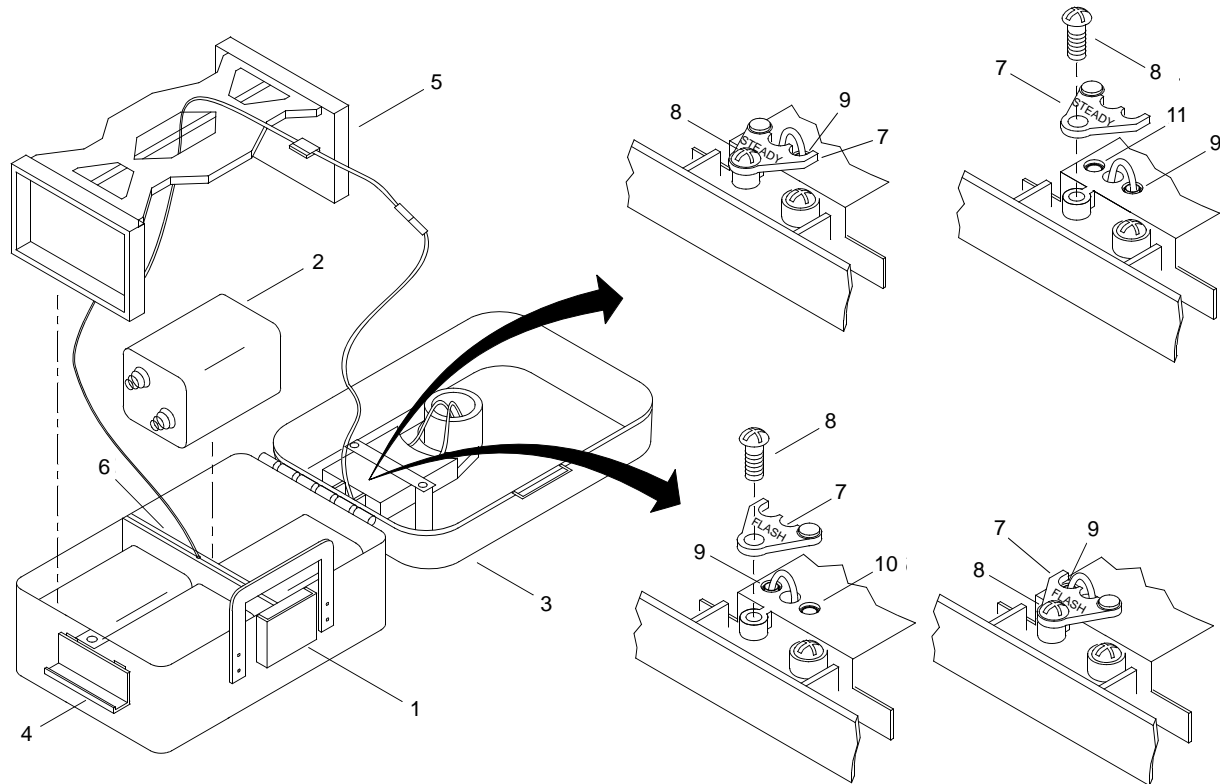


Figure 30. Towing Lights

1. Remove towing lights (figure 30, item 1) and batteries (figure 30, item 2) from BII container.
2. Open light cover (figure 30, item 3) by unlatching clasp (figure 30, item 4).
3. Remove battery bracket (figure 30, item 5).
4. Position two batteries (figure 30, item 2) on each side of conductor plate (figure 30, item 6) in towing light case (figure 30, item 1).
5. Position battery bracket (figure 30, item 5) over batteries (figure 30, item 2) and conductor plate (figure 30, item 6).

NOTE

Battery bracket must be flat in bottom of towing light case or light cover will not close.

6. Push battery bracket (figure 30, item 5) down evenly, over batteries (figure 30, item 2).

NOTE

The red lamp selector changes the lamp between FLASH and STEADY lighting.

7. Verify red lamp selector (figure 30, item 7) is positioned to FLASH or STEADY, as required.
8. If FLASH is required and STEADY is selected, change red lamp selector (figure 30, item 7) as follows.
 - a. Remove screw (figure 30, item 8) securing red lamp selector tab (figure 30, item 7) to light cover (figure 30, item 3).
 - b. Remove socket plug (figure 30, item 9) from receptacle (figure 30, item 10).
 - c. Install socket plug (figure 30, item 9) in receptacle (figure 30, item 11).
 - d. Turn red lamp selector (figure 30, item 7) over to read FLASH.
 - e. Install screw (figure 30, item 8) to secure red lamp selector (figure 30, item 7) to light cover (figure 30, item 3). Tighten screw (figure 30, item 8).
9. Close light cover (figure 30, item 3) and latch clasp (figure 30, item 4).
10. Position towing lights (figure 30, item 1) on FC deck per U. S. Coast Guard navigation requirements. (COMDTINST M16672.2D)

REMOVE TOWING LIGHTS

1. Remove towing lights (figure 30, item 1) from FC deck.
2. Open light cover (figure 30, item 3) by unlatching clasp (figure 30, item 4).
3. Remove battery bracket (figure 30, item 5).
4. Remove two batteries (figure 30, item 2) from each side of conductor plate (figure 30, item 6) in towing light case (figure 30, item 1).
5. Position battery bracket (figure 30, item 5) over conductor plate (figure 30, item 6).

NOTE

Battery bracket must be flat in bottom of towing light case or light cover will not close.

6. Push battery bracket (figure 30, item 5) down evenly.
7. Close light cover (figure 30, item 3) and latch clasp (figure 30, item 4).
8. Stow towing lights (figure 30, item 1) and batteries (figure 30, item 2) in BII container.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER USUAL CONDITIONS
PREPARATION FOR MOVEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)
 Crowbar (Item 16, WP 0043 00)
 Hammer, Hand (Item 26, WP 0043 00)
 Adapter, Forklift (Item 1, WP 0043 00)
 Assembly, Lifting Device (flexor) (Item 4, WP 0043 00)
 Sling, Endless (5,300 lb.) (Item 51, WP 0043 00)
 Sling, Endless (8,400 lb.) (Item 54, WP 0043 00)
 Sling, Endless (53,000 lb.) (Item 53, WP 0043 00)
 Sling, Chain (Item 50, WP 0043 00)
 Tool, Pin Retract (Item 64, WP 0043 00)

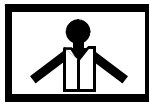
Personnel Required

Seaman 88K (3)

Equipment Condition

Previous preparations for movement completed (WP 0010 00)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions may result in serious injury or death.

PREPARATION FOR MOVEMENT**INSTALL TOWING BRIDLE AND TOWING INTERFACE**

1. Unlatch and open end doors of BII container.

WARNING

Doors must be secured in the open position. Unsecured doors can swing and may result in serious injury or death.

2. Secure container doors open with locking bars and pins.

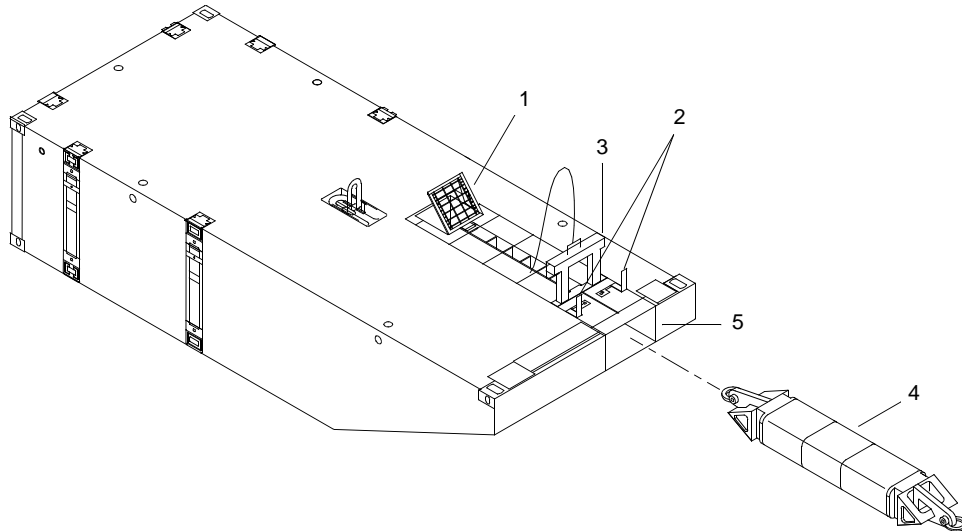


Figure 1. Flexor

3. Open flexor hatch (figure 1, item 1) on left end rake to be used for towing.
4. Rotate chute bolts (figure 1, item 2) and pull chute bolts (figure 1, item 2) to UNLOCKED position.
5. Remove guillotine (figure 1, item 3).
6. Using WT and slings, remove flexor (figure 1, item 4) from flexor well pocket (figure 1, item 5) and place on FC deck.
7. Using load restraining device, secure flexor (figure 1, item 4) to centerline of FC deck.
8. Repeat step 3 through step 7 for flexor in right end rake.

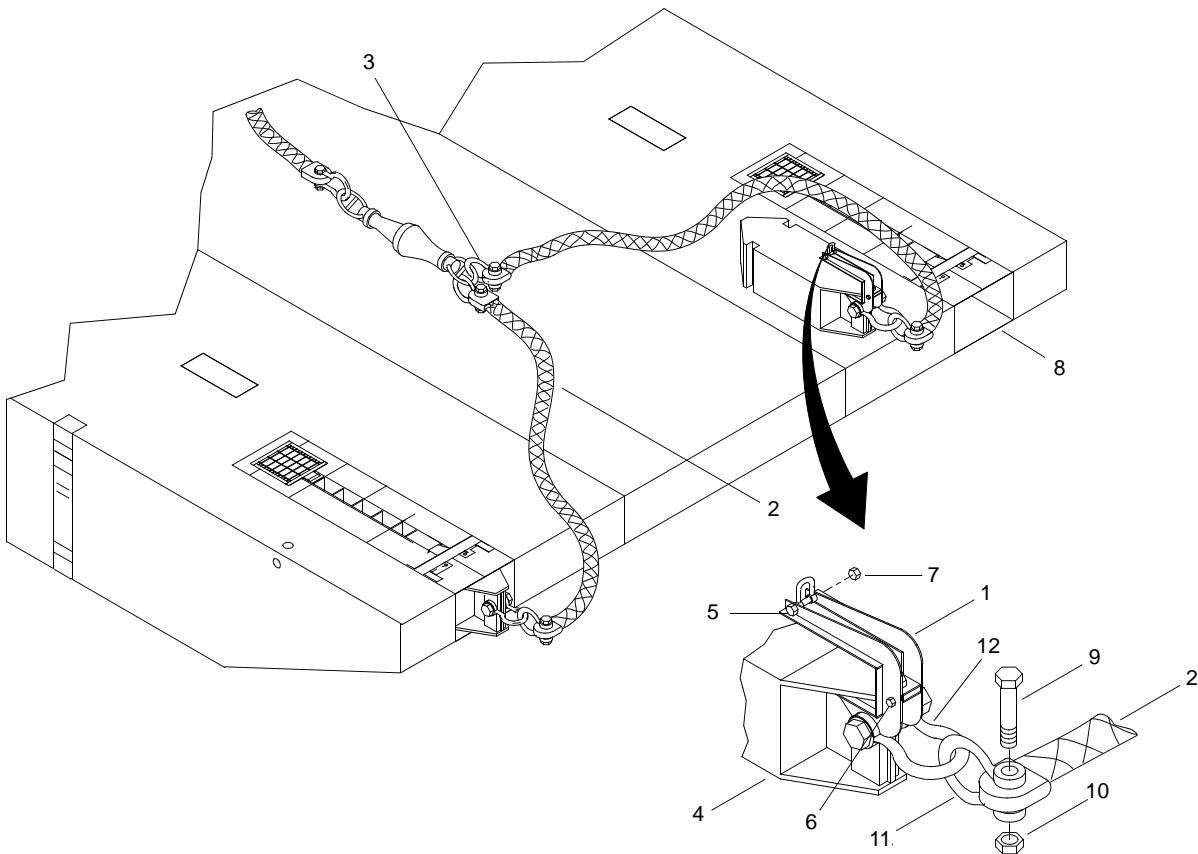


Figure 2. Towing Bridle

9. Remove flexor receiver insert lifting device (figure 2, item 1), forklift adapter and slings from BII container.
10. Using assistants, remove towing bridle (figure 2, item 2) from BII container.
11. Secure a tag line between anchor swivel (figure 2, item 3) and FC deck to prevent slippage of towing bridle (figure 2, item 2) overboard.
12. Position flexor receiver insert lifting device (figure 2, item 1) over end of flexor receiver insert (figure 2, item 4) in BII container.
13. Install bolts (figure 2, items 5 and 6).
14. Tighten bolt (figure 2, item 6).
15. Install nut (figure 2, item 7) on bolt (figure 2, item 5).
16. Tighten nut (figure 2, item 7).

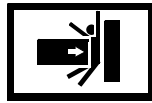
WARNING

**HEAVY PARTS**

The flexor receiver insert is heavy. Stay clear of the insert when it is being moved. Failure to comply may cause serious injury or death.

17. Using forklift, forklift adaptor, sling and flexor receiver insert lifting device (figure 2, item 1), remove flexor receiver insert (figure 2, item 4) from BII container and position near end rake flexor pocket (figure 2, item 8).
18. Remove bolt (figure 2, item 9) and nut (figure 2, item 10) from shackle (figure 2, item 11) on leg of towing bridle (figure 2, item 2).
19. Attach shackle (figure 2, item 11), nut (figure 2, item 10) and bolt (figure 2, item 9) to flexor receiver insert shackles (figure 2, item 12). Tighten nut (figure 2, item 10).

WARNING

**HEAVY PARTS**

The flexor receiver insert is heavy. Stay clear of the insert when it is being moved. Failure to comply may cause serious injury or death.

20. Using a forklift, forklift adaptor, sling and flexor receiver lifting device (figure 2, item 1), position flexor receiver insert (figure 2, item 4) in flexor well pocket (figure 2, item 8).
21. Insert guillotine (figure 1, item 3).
22. Drive guillotine (figure 1, item 3) down into flexor slot using a sledgehammer.
23. Push chute bolts (figure 1, item 2) to LOCKED position and rotate chute bolts (figure 1, item 2) to STOWED position.
24. Close flexor hatch (figure 1, item 1).
25. Remove flexor receiver insert lifting device (figure 2, item 1) from flexor receiver insert (figure 2, item 4).
26. Repeat step 12 through step 25 for second flexor receiver insert (figure 2, item 4).
27. Stow flexor lifting device (figure 2, item 1), forklift adapter and slings in BII container.
28. Close and latch BII container doors.

REMOVE TOWING BRIDLE AND TOWING INTERFACE

1. Unlatch and open end doors of BII container.

WARNING

Doors must be secured in the open position. Unsecured doors can swing and may result in serious injury or death.

2. Secure container doors open with locking bars and pins.
3. Secure a tag line between anchor swivel (figure 2, item 3) and FC deck to prevent slippage of towing bridle (figure 2, item 2) overboard.
4. Remove flexor lifting device (figure 2, item 1), forklift adapter and slings from BII container.
5. Position flexor receiver insert lifting device (figure 2, item 1) over end of flexor receiver insert (figure 2, item 4) in end rake flexor pocket (figure 2, item 8).
6. Install bolts (figure 2, items 5 and 6).
7. Tighten bolt (figure 2, item 6).
8. Install nut (figure 2, item 7) on bolt (figure 2, item 5).
9. Tighten nut (figure 2, item 7).
10. Rotate chute bolts (figure 1, item 2) and pull chute bolts (figure 1, item 2) to UNLOCKED position.
11. Remove guillotine (figure 1, item 3).

WARNING

**HEAVY PARTS**

The flexor receiver insert is heavy. Stay clear of the insert when it is being moved. Failure to comply may cause serious injury or death.

12. Using forklift, forklift adaptor, sling and flexor receiver insert lifting device (figure 2, item 1), remove flexor receiver insert (figure 2, item 4) from end rake flexor pocket (figure 2, item 8).
13. Remove shackles (figure 2, item 11), nuts (figure 2, item 10) and bolts (figure 2, item 9) connecting leg of towing bridle (figure 2, item 2) to flexor receiver insert shackles (figure 2, item 12).
14. Install shackles (figure 2, item 11), bolts (figure 2, item 9) and nuts (figure 2, item 10) on leg of towing bridle (figure 2, item 2).
15. Using forklift, forklift adaptor, sling and flexor receiver insert lifting device (figure 2, item 1), place flexor receiver insert (figure 2, item 4) in BII container.
16. Remove flexor receiver insert lifting device (figure 2, item 1) from flexor receiver insert (figure 2, item 4).

17. Repeat step 5 through step 16 for second flexor receiver insert (figure 2, item 4).
18. Using WT and slings, install flexor (figure 1, item 4) in flexor well pocket (figure 1, item 5).
19. Insert guillotine (figure 1, item 3).
20. Drive guillotine (figure 1, item 3) down into flexor slot using a sledgehammer.
21. Push chute bolts (figure 1, item 2) to LOCKED position and rotate chute bolts (figure 1, item 2) to STOWED position.
22. Close flexor hatch (figure 1, item 1).
23. Repeat step 18 through step 22 for second flexor (figure 1, item 4).
24. Using assistants, place towing bridle (figure 2, item 2) in BII container.
25. Stow flexor lifting device (figure 2, item 1), forklift adapter and slings in BII container.
26. Close and latch BII container doors.

DISCONNECTING SEGMENTS

NOTE

This procedure is typical for connecting segments together.

WARNING

Do not loop ropes/lines around hands so that in an emergency, the lines can be released quickly to prevent being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

1. Secure segments to be disconnected with lines so segments are secured.
2. Maneuver and assemble two segments together, end to end, using warping tugs, ropes/lines, flush turn tubes and lift lugs so that the tapered surfaces of male and female shear connectors mate together in general alignment.

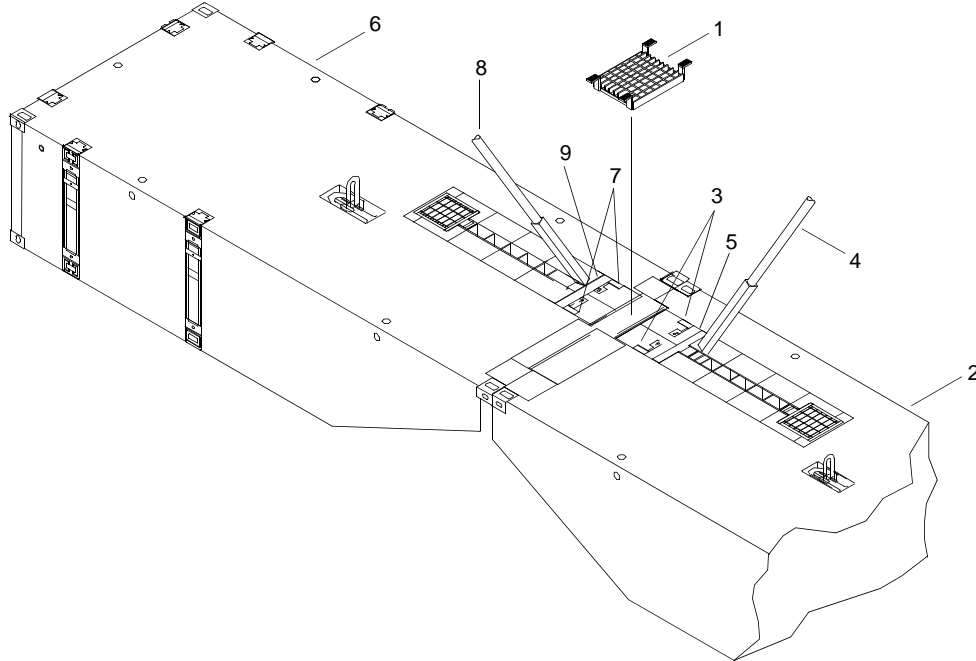


Figure 3. Disconnecting Segments

3. Remove flexor well covers (figure 3, item 1).
4. Rinse flexor well covers (figure 3, item 1) with fresh water and allow to air dry.
5. Stow flexor well covers (figure 3, item 1) in BII container.
6. Release flexor connectors on right end rakes (figure 3, item 2).
 - a. Rotate and pull chute bolts (figure 3, item 3) to UNLOCKED position.
 - b. Using crowbar (figure 3, item 4), lift guillotine plates (figure 3, item 5) up from flexor connector slots.
7. Stow flexor connectors in left hand rakes (figure 3, item 6).
 - a. Rotate and pull chute bolts (figure 3, item 7) to UNLOCKED position.
 - b. Using crowbar (figure 3, item 8), lift guillotine plates (figure 3, item 9) up from flexor connector slots.
 - c. Using crowbar (figure 3, item 4), move flexor from right end rakes (figure 3, item 2) into left hand rakes (figure 3, item 6) flexor connector pockets.
 - d. Align outboard guillotine slot on flexor with slot in left end rake module (figure 3, item 6).
 - e. Install guillotine plates (figure 3, item 9) on left end rakes (figure 3, item 6).
 - f. Install guillotine plates (figure 3, item 5) on right end rakes (figure 3, item 2).
8. Using warping tugs, separate segments.

DISASSEMBLY OF SEGMENTS**NOTE**

This procedure is typical for disassembly of segments.

A segment consists of one or more side-connected intermediate sections/module strings.

WARNING

Do not loop ropes/lines around hands so that in an emergency, the lines can be released quickly to prevent being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

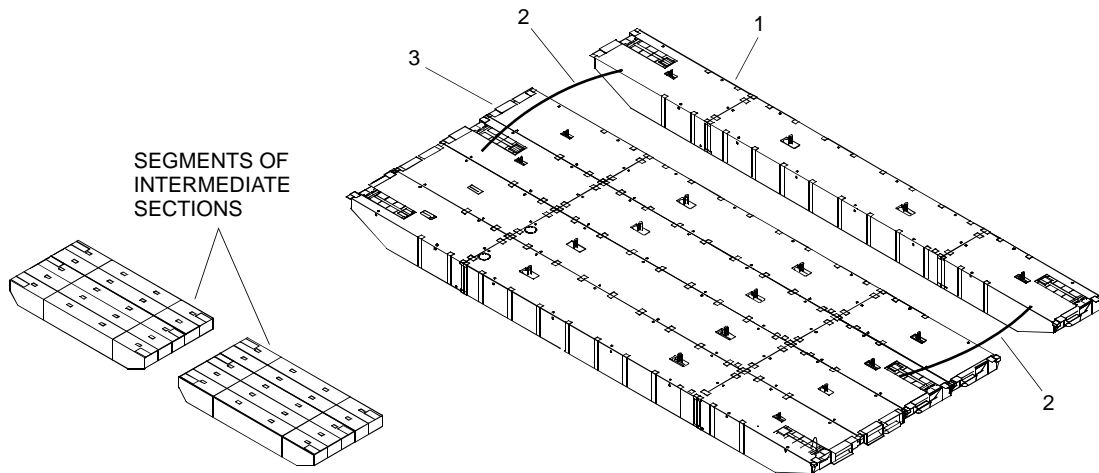


Figure 4. Segment Disassembly

1. Secure intermediate section (figure 4, item 1) to be separated to neighboring section (figure 4, item 3) using rope/lines (figure 4, item 2), flush turn tubes and deck cleats.
2. Operate male and female guillotine connectors. (WP 0005 00)
3. Using tag lines and/or WT, maneuver intermediate sections/module strings into position for disassembly.
4. Stow male and female guillotine connectors. (See “Stowage of Guillotine Connectors,” in this WP.)

DISASSEMBLY OF INTERMEDIATE AND COMBINATION BEACH/SEA END SECTIONS ON SEALIFT VESSEL

NOTE

This procedure is typical for the disassembly of intermediate and CBSE sections on Sealift vessels. The CBSE is shown here.

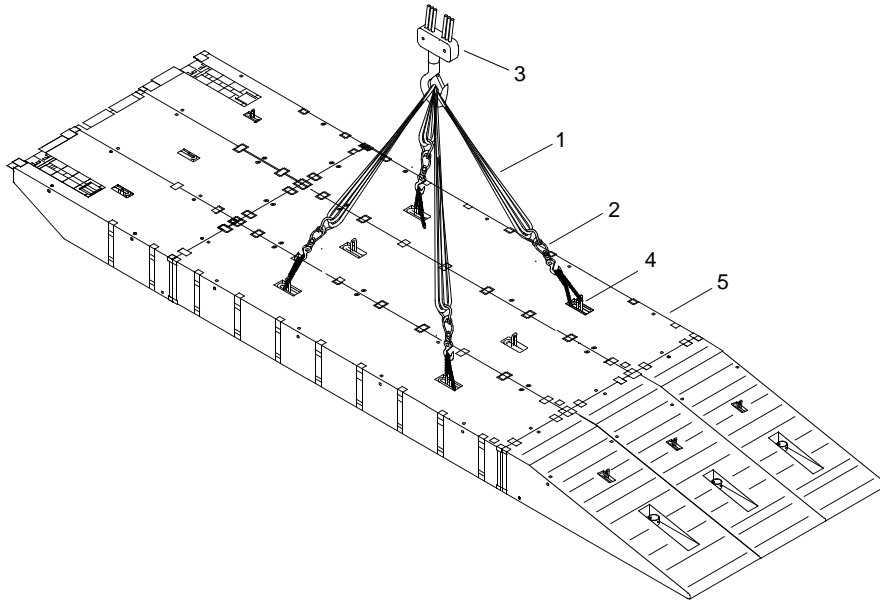


Figure 5. Lifting Combination Beach/Sea End Section

1. Attach four 53,000 lb slings (figure 5, item 1) and 36,000 lb adjustable chain slings (figure 5, item 2) from crane (figure 5, item 3) to padeye shackles (figure 5, item 4) on combination beach/sea end or intermediate section (figure 5, item 5).

WARNING



HEAVY PARTS

Combination beach/sea end sections are very heavy. Stay clear of sections when they are lifted. Falling or swinging sections may cause serious injury or death.

2. Using slings (figure 5, items 1 and 2) and crane (figure 5, item 3), lift combination beach/sea end section (figure 5, item 5) onto vessel deck.
3. Remove 53,000 lb slings (figure 5, item 1) from 36,000 lb adjustable chain slings (figure 5, item 2) and crane (figure 5, item 3).
4. Remove 36,000 lb adjustable chain slings (figure 5, item 2) from padeye shackles (figure 5, item 7) on combination beach/sea end section (figure 5, item 5).
5. Operate male and female guillotine connectors. (WP 0005 00)

6. Using crowbar, separate CBSE section into module strings.
7. Stow male and female guillotine connectors. (See “Stowage of Guillotine Connectors,” in this WP.)

DISASSEMBLY OF INTERMEDIATE AND COMBINATION BEACH/SEA END SECTIONS IN WATER

NOTE

This procedure is typical for the disassembly of intermediate and CBSE sections in water. The CBSE is shown here.

WARNING

Do not loop ropes/lines around hands so that in an emergency the lines can be released quickly to preclude being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

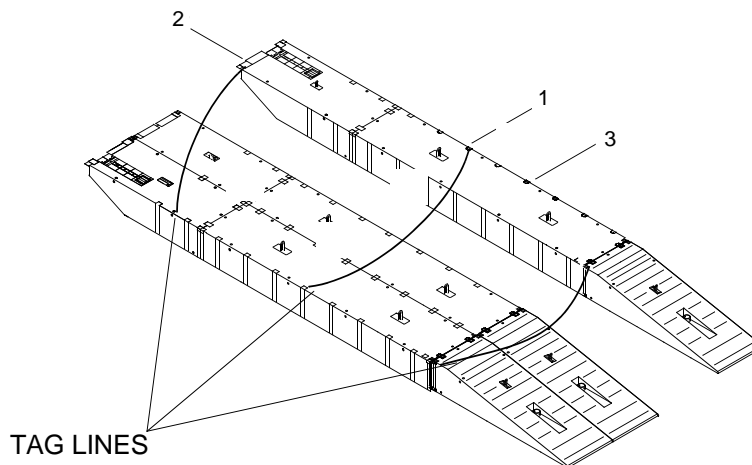


Figure 6. Disassembly of Combination Beach/Sea End Section in Water

1. Attach tag lines to turn tubes (figure 6, item 1) and ISO corner fittings (figure 6, item 2).
2. Operate male and female guillotine connectors. (WP 0005 00)
3. Using crowbar, separate CBSE sections into module strings (figure 6, item 3).
4. Using tag lines, maneuver module strings (figure 6, item 3) into position for disassembly.
5. Stow male and female guillotine connectors. (See “Stowage of Guillotine Connectors,” in this WP.)

DISASSEMBLY OF MODULE STRINGS ON DECK OF SEALIFT VESSEL**NOTE**

This procedure is typical for separating left end rakes, right end rakes, CBSE modules and center modules.

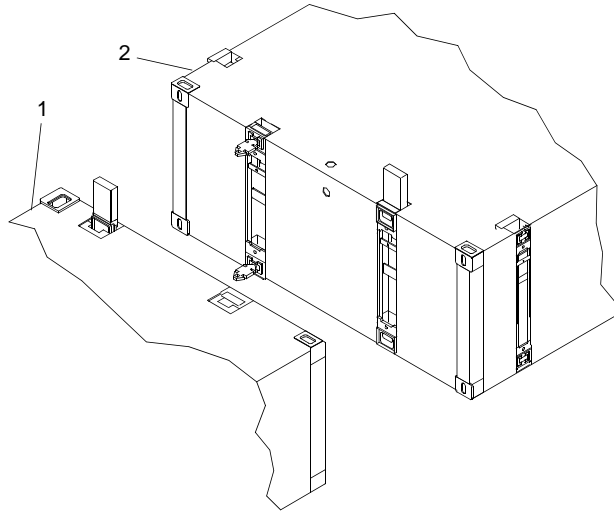


Figure 7. Separating Module Strings

1. Operate male and female guillotine connectors. (WP 0005 00)
2. Using crowbar, separate end rake/CBSE modules (figure 7, item 1) from center module (figure 7, item 2).
3. Stow male and female guillotine connectors. (See “Stowage of Guillotine Connectors,” in this WP.)

DISASSEMBLY OF MODULE STRINGS IN WATER**NOTE**

This procedure is typical for separating left end rakes, right end rakes, CBSE modules and center modules.

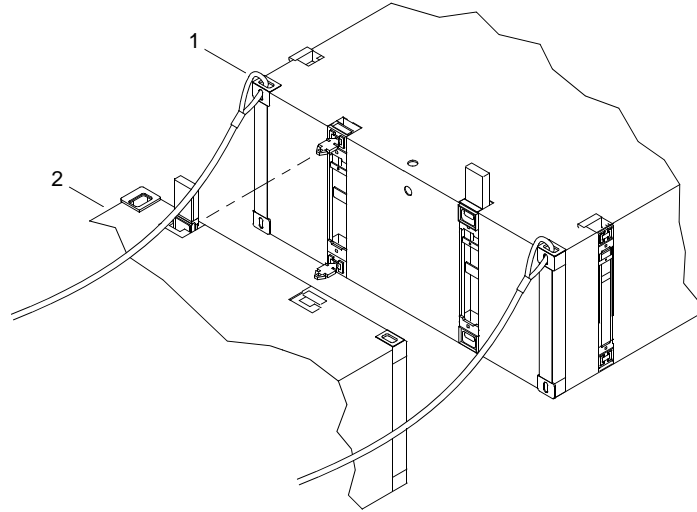


Figure 8. Separating Module Strings in Water

1. Attach tag lines to ISO corner fittings (figure 8, item 1).
2. Operate male and female guillotine connectors. (WP 0005 00)
3. Using crowbar, separate module strings.

WARNING

Do not loop ropes/lines around hands so that in an emergency the lines can be released quickly to prevent being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

4. Using tag lines, maneuver modules (figure 8, item 2) into position for stowage.
5. Stow male and female guillotine connectors. (See “Stowage of Guillotine Connectors,” in this WP.)

STOWAGE OF GUILLOTINE CONNECTORS
NOTE

Guillotine connectors are properly stowed when flush with module deck.

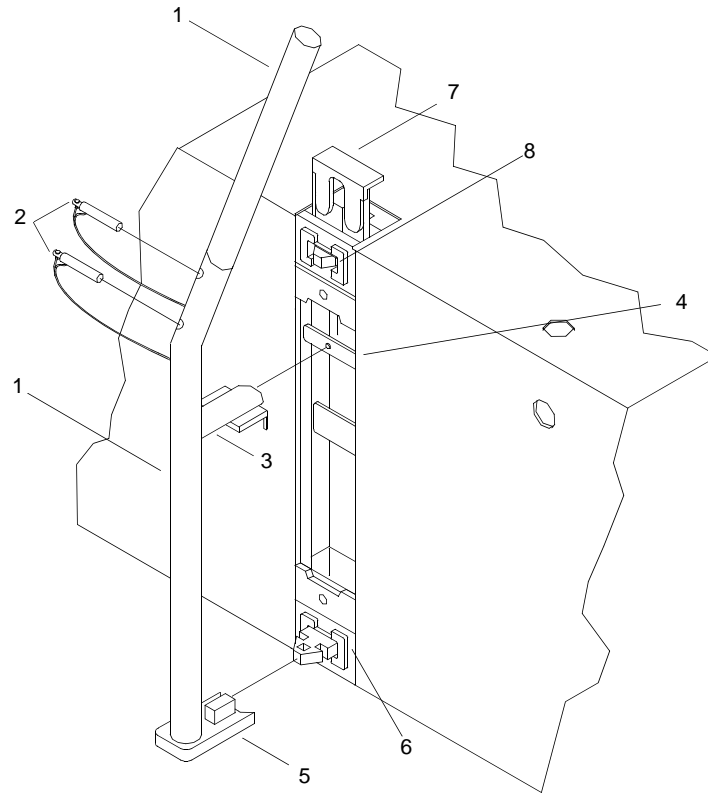


Figure 9. Pin Retraction Tool for Lower Male Connector

1. Stow male connectors.
 - a. Assemble two-piece pin retraction tool (figure 9, item 1) and secure with two quick release pins (figure 9, item 2).
 - b. Rest pin retraction tool support fitting (figure 9, item 3) on guillotine cross bracket (figure 9, item 4).
 - c. Position foot (figure 9, item 5) of pin retraction tool (figure 9, item 1) over lower male guillotine connector (figure 9, item 6) and press connector inwards by levering pin retraction tool (figure 9, item 1) upwards.
 - d. Lower guillotine (figure 9, item 7) with sledgehammer to partially engage lower male guillotine connector (figure 9, item 6).
 - e. Remove pin retraction tool (figure 9, item 1).
 - f. While holding upper lock male guillotine connector (figure 9, item 8) inward against spring, complete lowering guillotine connector (figure 9, item 7) with sledgehammer to engage both male guillotine connectors (figure 9, items 6, 8).

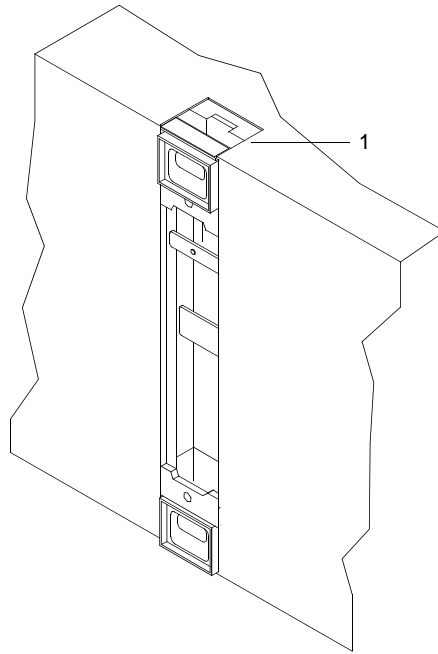


Figure 10. Female Connector

2. Using sledgehammer, strike guillotine (figure 10, item 1) of female connectors until flush with deck.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER UNUSUAL CONDITIONS
UNUSUAL ENVIRONMENT/WEATHER**

INITIAL SETUP:**Personnel Required**

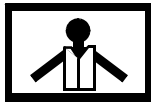
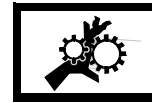
Seaman 88K (2)

Equipment Condition

Preparations for movement completed. (WP 0010 00)

HEAVY SEAS/STRONG STORM FORECAST**CONFIGURE FLOATING CAUSEWAY FOR TOWING**

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions may result in serious injury or death.

Ensure all equipment is stowed and secured to the deck. Failure to observe these precautions could result in serious injury or death.

1. Disassemble FC intermediate sections along sides as required by raising the female connector guillotines. (WP 0005 00)
2. Disassemble FC intermediate sections along the ends, as required. (WP 0005 00)

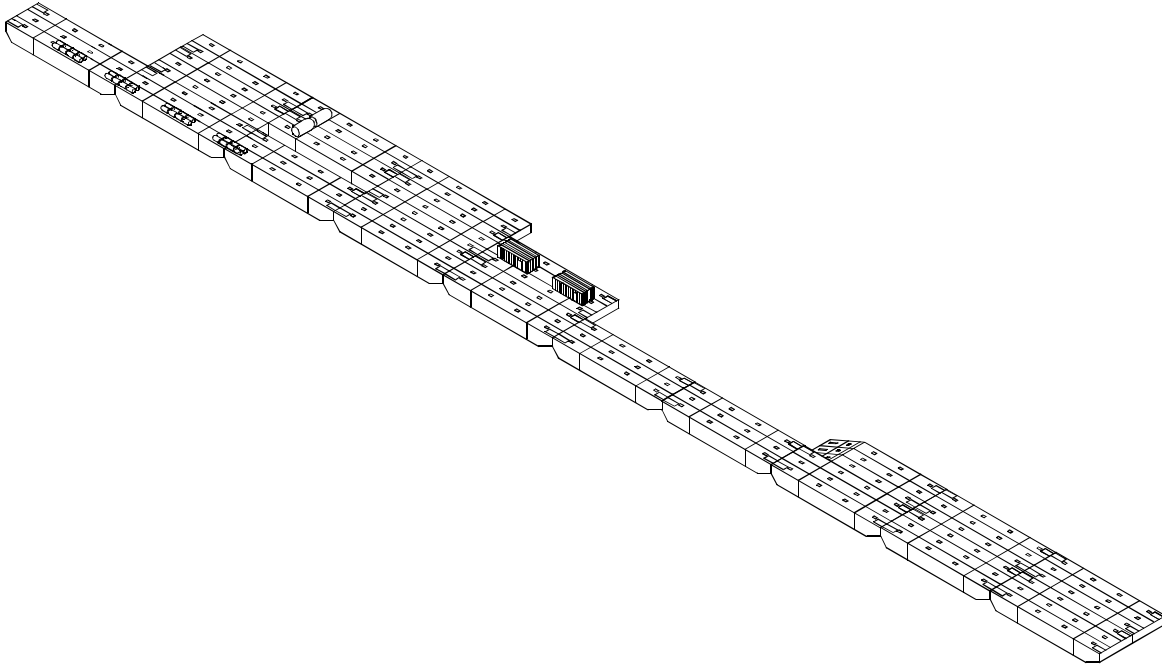


Figure 1. FC Towing Configuration

3. Position FC intermediate sections, as required, into a towing configuration using a WT (figure 1).
4. Connect FC intermediate sections along sides, as required, with guillotine connectors. (WP 0005 00)
5. Connect floating causeway intermediate sections end to end, as required. (WP 0005 00)
6. Using load restraining devices, secure offshore mooring legs to centerline of FC deck.
7. Using load restraining devices, secure onshore mooring legs to centerline of FC deck.
8. Using load restraining devices, secure deck mats to centerline of FC deck.
9. Using load restraining devices, secure cylindrical fenders to centerline of FC deck.
10. Temporarily secure corner fenders in BII container.
11. Using load restraining devices, secure BII container to centerline of FC deck.
12. Using load restraining devices, secure personnel shelter to centerline of FC deck.
13. Using load restraining devices, secure generator container to centerline of FC deck.
14. Using load restraining devices, secure light towers to centerline of FC deck.

SECURE FLOATING CAUSEWAY FROM TOWING

1. Disassemble FC intermediate sections along sides as required by raising the female connector guillotines. (WP 0005 00)
2. Disassemble FC intermediate sections along the ends, as required. (WP 0005 00)

3. Position FC intermediate sections, as required, to a pierhead floating causeway configuration using a WT. (WP 0005 00)
4. Remove towing bridle, towing interface and towing lights. (WP 0010 00)
5. Install fenders. (WP 0007 00)
6. Install deck mats. (WP 0007 00)
7. Install light towers. (WP 0008 00)
8. Install generator container. (WP 0007 00)
9. Install personnel shelter. (WP 0007 00)
10. Position BII container on FC deck, as required. (WP 0007 00)
11. Deploy onshore mooring legs. (WP 0006 00)
12. Deploy offshore mooring legs. (WP 0006 00)

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
OPERATION UNDER UNUSUAL CONDITIONS
EMERGENCY PROCEDURES**

INITIAL SETUP:

Personnel Required
Seaman 88K (1)

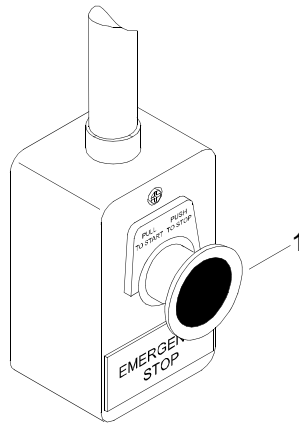
EMERGENCY PROCEDURES**EMERGENCY STOP OF TACTICAL QUIET GENERATOR**

Figure 1. Generator Emergency Stop Operator Control.

1. Push EMERGENCY STOP button (figure 1, item 1) to shut down generator.
2. Pull EMERGENCY STOP button (figure 1, item 1) to reset emergency stop switch before starting generator.

GENERATOR CONTAINER FIRE SUPPRESSION SYSTEM ACTIVATION USING LOCAL MANUAL RELEASE

WARNING

Fire in protected compartments or accidental activation of the CO₂ system while personnel occupy compartment could result in serious injury or death to personnel if CO₂ is released.

Do not depress fire suppression control head lever during normal maintenance. Serious injury or death to personnel could result if CO₂ is inhaled.

Prior to entering the shelter after discharge of CO₂, the shelter shall be completely cleared of any CO₂ that may remain. Serious injury or death to personnel could result if CO₂ is inhaled.

1. Locate fire suppression pull station in the interior of the generator container.

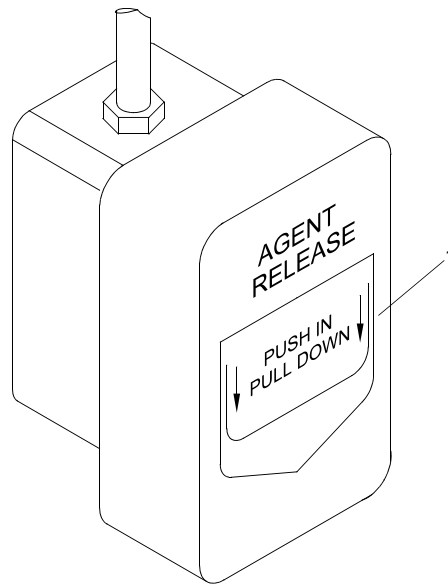


Figure 2. Manual Release

2. Push in and pull down lever (figure 2, item 1) to activate fire suppression system. A twenty second delay will occur before CO2 is discharged.
3. Immediately evacuate the generator container.

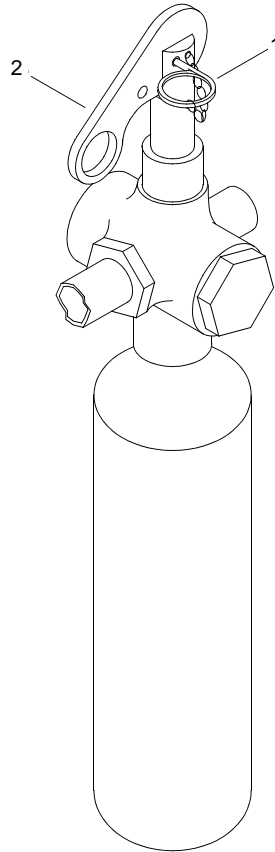
**GENERATOR CONTAINER FIRE SUPPRESSION SYSTEM ACTIVATION USING
MANUAL/AUTOMATIC ACTUATOR**

Figure 3. Manual/Automatic Actuator

1. Grasp and pull ring (figure 3, item 1) to remove safety pin.
2. Pull upwards on handle (figure 3, item 2) to activate fire suppression system. A twenty second delay will occur before CO2 is discharged.
3. Immediately evacuate the generator container.

EMERGENCY ESCAPE OF PERSONNEL SHELTER

WARNING

The personnel shelter is not a safe haven when an Officer in Charge (OIC) or Noncommissioned Officer in Charge (NCOIC) orders cessation of operations and/or clearing of the FC due to unsafe weather or sea state conditions. Do not remain in the personnel shelter if ordered to evacuate the FC. Failure to comply will result in injury or death to personnel.

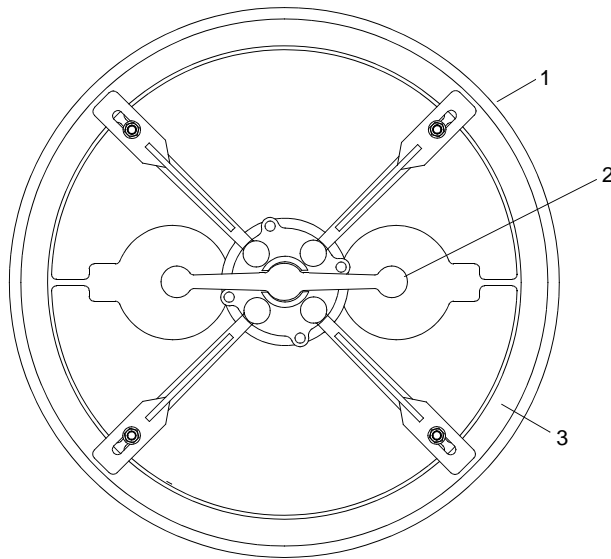


Figure 4. Escape Scuttle

1. Locate emergency escape scuttle (figure 4, item 1).
2. Grasp emergency escape scuttle handle (figure 4, item 2), push in and turn one quarter turn clockwise to release scuttle door (figure 4, item 3)
3. Push scuttle door (figure 4, item 3) open.
4. Crawl through scuttle opening and exit personnel shelter.

END OF WORK PACKAGE

CHAPTER 3

**TROUBLESHOOTING PROCEDURES
FOR
MODULAR CAUSEWAY SYSTEM (MCS)
FLOATING CAUSEWAY (FC)**

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
TROUBLESHOOTING INDEX**

Malfunction/Symptom

Troubleshooting Procedure

GENERATOR CONTAINER

NOTE

For 10 kW Tactical Quite Generator malfunctions, refer to TM 9-6115-642-10 for troubleshooting procedures

- 1. Fuel Tank Signal Box Warning Light Inoperative..... WP 0015 00
- 2. Electric Fuel Transfer Pump Inoperative..... WP 0015 00
- 3. Fire Suppression System Inoperative WP 0015 00
- 4. Generator Container Fluorescent Lights Do Not Operate WP 0015 00
- 5. Generator Container Incandescent Lights Do Not Operate..... WP 0015 00

LIGHT TOWER CONTAINER

NOTE

For Light Tower malfunctions, refer to TM 55-1945-217-14&P for troubleshooting procedures.

For Light Tower Engine malfunctions, refer to TM 55-1945-217-14&P for troubleshooting procedures.

PERSONNEL SHELTER

NOTE

For Air Conditioner and Heat Pump malfunctions, refer to TM 55-1945-220-14&P for troubleshooting procedures.

For Incinerator Toilet malfunctions, refer to TM 55-1945-219-14&P for troubleshooting procedures.

- 1. Personnel Shelter Fluorescent Lights Do Not Operate..... WP 0015 00

VHF/FM TRANSCEIVER

- 1. VHF/FM Transceiver Has No Power WP 0015 00
- 2. VHF/FM Transceiver Does Not Receive..... WP 0015 00
- 3. VHF/FM Transceiver Does Not Transmit WP 0015 00

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
TROUBLESHOOTING PROCEDURE**

INITIAL SETUP:**Personnel Required**

Engineer 88L (1)

TROUBLESHOOTING PROCEDURE**FUEL TANK SIGNAL BOX WARNING LIGHT INOPERATIVE****SYMPTOM**

A fuel warning light will not illuminate.

MALFUNCTION

Fuel tank signal lamp has failed.

CORRECTIVE ACTION

1. If lamp is open, replace lamp. (WP 0026 00)
2. Perform operational check. If lamp fails to operate, contact unit maintenance.

ELECTRIC FUEL TRANSFER PUMP INOPERATIVE**SYMPTOM**

Fuel transfer pump is inoperative.

MALFUNCTION

No power to fuel transfer pump.

CORRECTIVE ACTION

Contact unit maintenance.

MALFUNCTION

Fuel transfer pump malfunctioning.

CORRECTIVE ACTION

Contact unit maintenance.

FIRE SUPPRESSION SYSTEM INOPERATIVE**SYMPTOM**

Fire suppression system does not work.

MALFUNCTION

No continuity in the fire suppression system.

CORRECTIVE ACTION

Contact Specialized Repair Activity.

GENERATOR CONTAINER FLUORESCENT LIGHTS DO NOT OPERATE**SYMPTOM**

Fluorescent lights will not illuminate.

MALFUNCTION

Light switch is not turned on.

CORRECTIVE ACTION

Position light switch to ON (WP 0004 00).

MALFUNCTION

OVERHEAD LTG circuit breaker C is open.

CORRECTIVE ACTION

1. Position OVERHEAD LTG circuit breaker C in electrical distribution panel to ON (WP 0004 00).
2. Perform operational check by positioning light switch to ON (WP 0004 00).

MALFUNCTION

Fluorescent light bulb(s) burned out.

CORRECTIVE ACTION

1. Replace fluorescent light bulb(s) (WP 0022 00).
2. Perform operational check by positioning light switch to ON (WP 0004 00).

MALFUNCTION

Fluorescent lights still will not illuminate.

CORRECTIVE ACTION

Contact unit maintenance.

GENERATOR CONTAINER INCANDESCENT LIGHTS DO NOT OPERATE**SYMPTOM**

Incandescent lights will not illuminate.

MALFUNCTION

Light switch is not turned on.

CORRECTIVE ACTION

1. Position light switch to ON (WP 0004 00).

MALFUNCTION

12 volt battery not charged.

CORRECTIVE ACTION

1. Charge battery.
2. Perform operational check by positioning light switch to ON (WP 0004 00).

MALFUNCTION

Incandescent light bulb(s) burned out.

CORRECTIVE ACTION

1. Replace incandescent light bulb(s) (WP 0023 00).
2. Perform operational check by positioning light switch to ON (WP 0004 00).

MALFUNCTION

Incandescent lights still will not illuminate.

CORRECTIVE ACTION

Contact unit maintenance.

PERSONNEL SHELTER FLUORESCENT LIGHTS DO NOT OPERATE**SYMPTOM**

Fluorescent lights will not illuminate.

MALFUNCTION

Light switch is not turned on.

CORRECTIVE ACTION

1. Position light switch to ON (WP 0004 00).

MALFUNCTION

OVERHEAD LTG circuit breaker C is open.

CORRECTIVE ACTION

1. Position OVERHEAD LTG circuit breaker C in electrical distribution panel to ON (WP 0004 00).
2. Perform operational check by positioning light switch to ON (WP 0004 00).

MALFUNCTION

MASTER circuit breaker in electrical panel is open.

CORRECTIVE ACTION

1. Position MASTER circuit breaker in electrical distribution panel to ON (WP 0004 00).
2. Perform operational check by positioning light switch to ON (WP 0004 00).

MALFUNCTION

Personnel shelter main switching panel in generator container is not turned on.

CORRECTIVE ACTION

1. Position personnel shelter main switching panel in generator container to ON (WP 0004 00).
2. Perform operational check by positioning light switch to ON (WP 0004 00).

MALFUNCTION

Fluorescent light bulb(s) burned out.

CORRECTIVE ACTION

1. Replace fluorescent light bulb(s) (WP 0029 00).
2. Perform operational check by positioning light switch to ON (WP 0004 00).

MALFUNCTION

Fluorescent lights still will not illuminate.

CORRECTIVE ACTION

Contact unit maintenance.

VHF/FM TRANSCEIVER HAS NO POWER**SYMPTOM**

Transceiver has no power.

MALFUNCTION

Transceiver power/volume knob turned off.

CORRECTIVE ACTION

Turn power/volume knob clockwise to turn transceiver on (WP 0009 00).

MALFUNCTION

Battery discharged.

CORRECTIVE ACTION

Replace battery (WP 0008 00).

MALFUNCTION

Transceiver defective.

CORRECTIVE ACTION

Replace transceiver.

VHF/FM TRANSCEIVER DOES NOT RECEIVE**SYMPTOM**

Transceiver does not receive.

MALFUNCTION

Transceiver power/volume knob turned off.

CORRECTIVE ACTION

Turn power/volume knob clockwise to turn transceiver on (WP 0009 00).

MALFUNCTION

Low battery indicator displayed on transceiver.

CORRECTIVE ACTION

Replace battery (WP 0008 00).

MALFUNCTION

Transceiver antenna damaged or missing.

CORRECTIVE ACTION

Contact unit maintenance.

VHF/FM TRANSCEIVER DOES NOT TRANSMIT**SYMPTOM**

Transceiver does not transmit.

MALFUNCTION

Transceiver power/volume knob turned off.

CORRECTIVE ACTION

Turn power/volume knob clockwise to turn transceiver on (WP 0009 00).

MALFUNCTION

Low battery indicator displayed on transceiver.

CORRECTIVE ACTION

Replace battery (WP 0008 00).

MALFUNCTION

Transceiver antenna damaged or missing.

CORRECTIVE ACTION

Contact unit maintenance.

END OF WORK PACKAGE

CHAPTER 4

**MAINTENANCE INSTRUCTIONS
FOR
MODULAR CAUSEWAY SYSTEM (MCS)
FLOATING CAUSEWAY (FC)**

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PMCS PROCEDURES INTRODUCTION**

INTRODUCTION

General

Preventive Maintenance Checks and Services (PMCS) are performed to keep the FC equipment in operating condition. The checks are used to find, correct or report problems. Crew members are to do the PMCS as shown in the PMCS table. PMCS is performed every day the equipment 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 operating the equipment, do "Before PMCS".

During operation, do "During PMCS".

After operation, do "After PMCS".

Do "Monthly PMCS" once a month. If the equipment has not been operated in a month, also do "After PMCS" at the same time.

If you are operating the equipment for the first time, do the "Monthly PMCS" the first time you do your "Before PMCS".

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

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

Leakage Definition

It is necessary for you to know how fluid leakage affects the status of the FC. Following are types/classes of leakage you need to know to be able to determine the status of the (enter component/equipment name). Learn these leakage definitions and remember - when in doubt, notify your supervisor.

CAUTION

Equipment operation is allowed with minor leakage's (Class I or II). Consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.

When operating with Class I or II leaks, continue to check fluid levels as required in the PMCS.

Class III leaks should be reported immediately to your supervisor.

- (1) Class I — Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
- (2) Class II — Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.
- (3) Class III — Leakage of fluid great enough to form drops that fall from item being checked/inspected.

Inspection

Look for signs of a problem or trouble. Senses help here. You can feel, smell, hear or see many problems. Be alert when on the equipment.

Inspect to see if items are in good condition. Are they correctly assembled, stowed, secured, excessively worn, leaking, corroded or properly lubricated? Correct any problems found or notify unit maintenance.

There are some common items to check all over the equipment. These include the following:

Bolts, clamps, nuts and screws: Continuously check for looseness. Look for chipped paint, bare metal, rust or corrosion around bolt and screw heads and nuts. Tighten them when you find them loose. If tools are not available, contact unit maintenance.

1. Welds: Many items on the equipment are welded. To check these welds, look for chipped paint, rust, corrosion or gaps. When these conditions exist, notify unit maintenance on DA Form 2404.
2. Electrical wires, connectors and harnesses: Tighten loose connectors. Look for cracked or broken insulation, bare wires and broken connectors. If any are found, notify unit maintenance.
3. Hoses and fluid lines: Look for wear, damage and leaks, and make sure clamps and fittings are tight. Wet spots mean a leak. A stain by a fitting or connector can also mean a leak. When you find a leak, notify unit maintenance.

Lubrication Service Intervals - Normal Conditions

For safer, more trouble free operations, make sure that your equipment is serviced when it needs it. For the proper lubrication and service intervals, see the PMCS section of this manual.

Lubrication Service Intervals - Unusual Conditions

Your equipment will require extra service and care when you operate under unusual conditions. High or low temperatures, long periods of hard use, or continued use in sand, mud, or snow will break down the lubricant, requiring you to add or change lubricant more often.

Oil Filters

Oil filters shall be serviced/cleaned/changed, as applicable, when:

- They are known to be contaminated or clogged,
- Service is recommended by AOAP laboratory analysis, or
- At prescribed hardtime intervals.

Army Oil Analysis Program (AOAP)

This FC is not enrolled in the Army Oil Analysis Program. HARDTIME INTERVALS APPLY.

Warranty

For equipment under manufacturer's warranty, hardtime oil service intervals shall be followed. Intervals shall be shortened if lubricants are known to be contaminated or if operation is under adverse conditions (such as longer-than-usual operating hours, extended idling periods, extreme dust).

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PMCS PROCEDURES**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)
Lubricating Gun, Hand (Item 34, WP 0043 00)

Materials/Parts

Antifreeze (Item 1, WP 0045 00)
Cleaner (Item 6, WP 0045 00)
Compound, Antiseize (Item 7, WP 0045 00)
Grease, Aircraft (Item 14, WP 0045 00)
Grease, Automotive and Artillery (Item 15, WP 0045 00)
Grease, Wire Rope-Exposed Gear (Item 17, WP 0045 00)
Lubricating Oil, Engine, 15W40 Grade (Item 25, WP 0045 00)
Lubricating Oil, Exposed Gear (Item 27, WP 0045 00)
Lubricating Oil, Gear, 80W90 Grade (Item 28, WP 0045 00)
Rag, Wiping, Wiping (Item 31, WP 0045 00)

Personnel Required

Seaman 88K (1)
Engineer 88L (1)

References

29 CFR
46 CFR
TM 9-6115-642-10
TM 55-1945-217-14&P
TM 55-1945-219-14&P
TM 55-1945-220-14&P

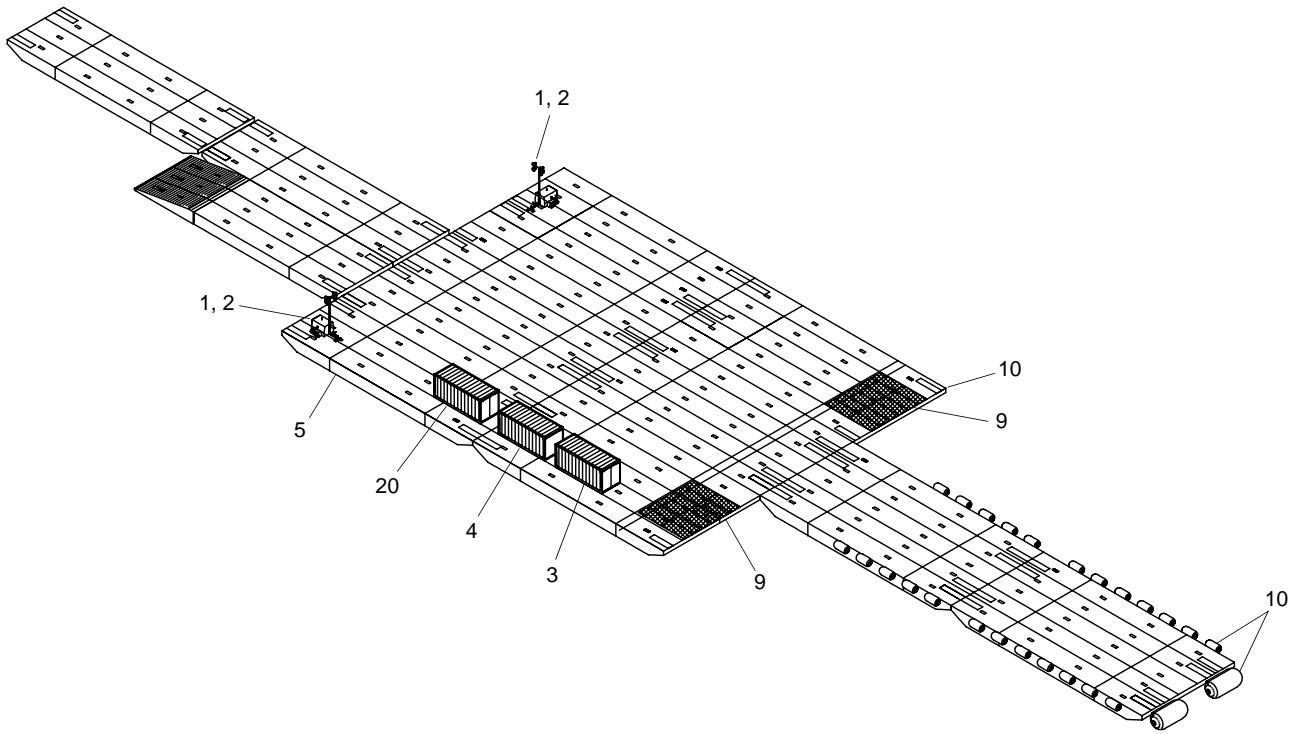


Figure 1. FC Check Points

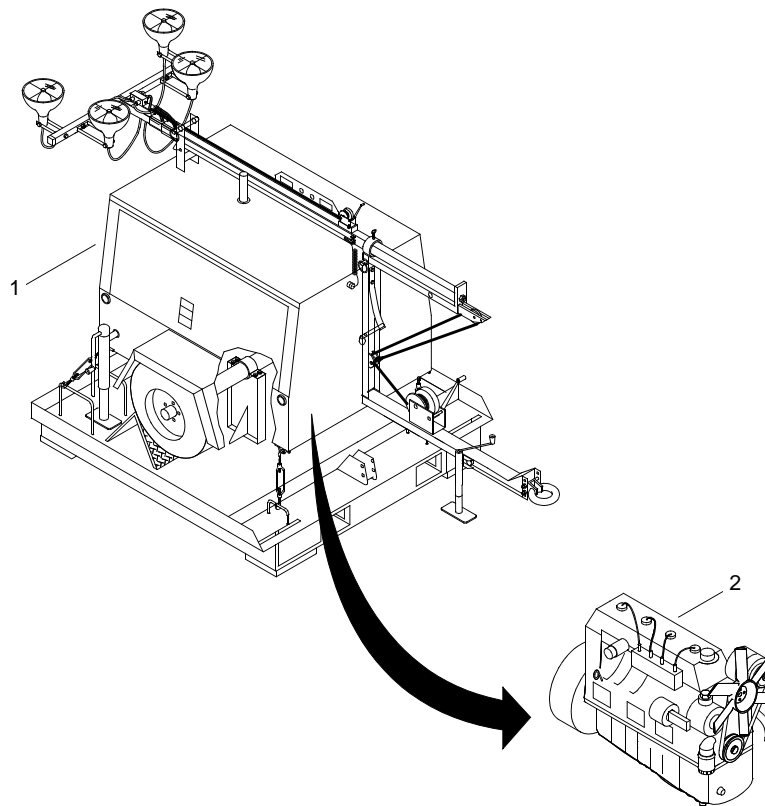


Figure 2. Light Tower and Engine

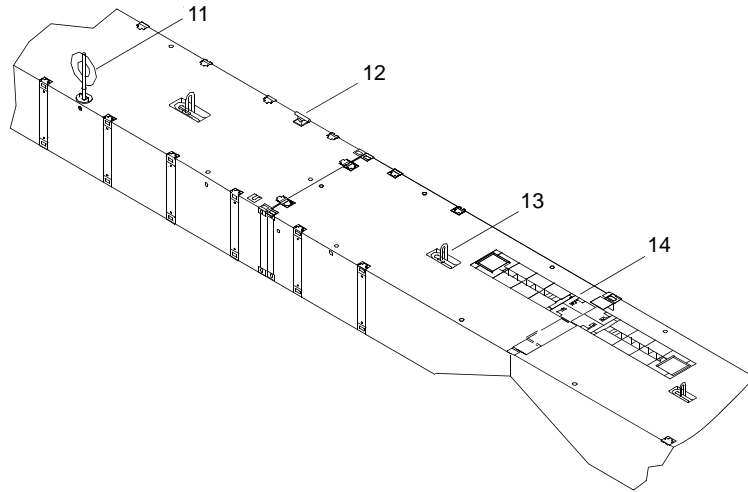


Figure 3. Life Ring Stanchions, Deck Fittings, Lift Shackles and Flexors

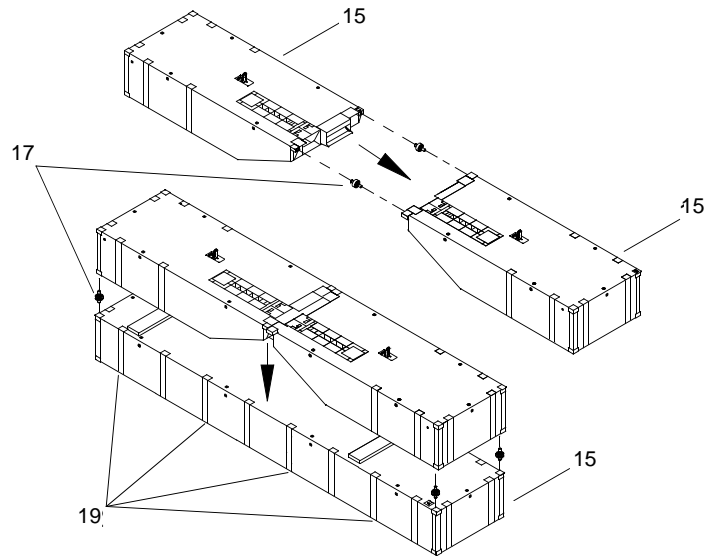


Figure 4. Modules and Interlocks

Table 1. Preventive Maintenance Checks and Services for FC.

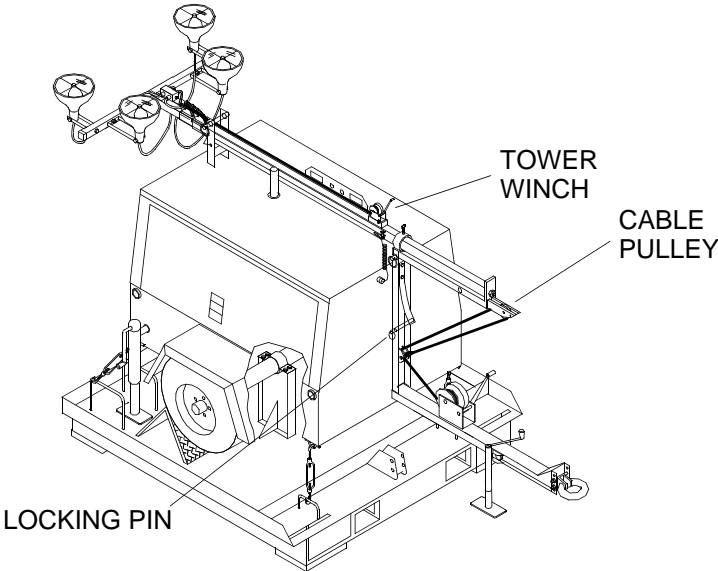
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before	.1	Light Tower	<ol style="list-style-type: none"> 1. Check winch cables to ensure ends are securely attached. Check cables for fraying and other damage. If cables are frayed or damaged, contact unit maintenance. 2. Check cable pulleys for damage. If pulleys are damaged, contact unit maintenance. 3. Check for missing tower locking pins (figure 5). If locking pins are missing, contact unit maintenance. <div style="text-align: center;">  </div> <p style="text-align: center;">Figure 5. Light Tower</p> <ol style="list-style-type: none"> 4. Check for flat tires. Check tire inflation with tire pressure gage. Tires should be inflated to 32 PSI. If tires are flat, contact unit maintenance. 5. Check the electrical control compartment for damaged or burned wiring. If wiring is damaged or burned, contact unit maintenance. 6. Check for damaged or faded warning and caution decals. If decals are damaged or faded, contact unit maintenance. 7. Clear air vents of obstructions. 	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

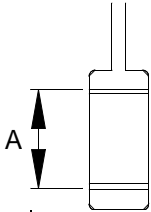
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Before	.4	Light Tower Engine	<p>8. Check acoustic material on light set enclosure panels for damage or missing material. If panels are damaged or missing, contact unit maintenance.</p> <p>9. Check for evidence of arcing on electrical terminals. If arcing is found, contact unit maintenance.</p> <p>10. Inspect electrical wiring to ensure that it is securely connected, clean and undamaged. If wiring is not securely connected, dirty or damaged, contact unit maintenance.</p> <p>11. Check all accessible fuse terminal blocks and connections to see that they are securely connected and supported, that insulation is not cracked or chafed and that conduit and shielding are secure and in good condition. If terminal blocks are not securely connected or supported, insulation is cracked or chafed or shielding is damaged, contact unit maintenance.</p> <p>1. Verify oil level registers FULL on dipstick (figure 6). Engine must be cool when reading level. If hot, allow to cool for 20 minutes. If necessary, add Lubricating Oil, Engine, 15W40 Grade, to achieve desired level. DO NOT OVER FILL. Use a rag to wipe up any spillage that may occur.</p> <div style="text-align: center;">  <p>A: ENGINE OIL LEVEL WITHIN THIS RANGE IS PROPER</p> </div> <p>Figure 6. Engine Oil Level</p>	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">WARNING</p> <p>Use approved procedures when cleaning up fuel spills. Take proper precautions when removing or installing any fuel system component. Failure to comply may result in serious injury to death to personnel.</p> <ol style="list-style-type: none"> 2. Make a visual inspection for oil leaks around filters and external oil lines. If oil leaks are found, contact unit maintenance. 3. Check for leaks around fuel tank and fuel lines. If leaks are found, contact unit maintenance. 4. Examine fuel lines and flexible hoses for leaks. Check that fittings, clamps and ties are secure. Hoses must not be resting on or touching shafts, couplings, heated surfaces, sharp edges or other areas that might sever or rupture fuel system parts. If fuel leaks, fittings, clamps and ties are not secure or hoses are resting on or touching shafts, couplings, heated surfaces or sharp edges, contact unit maintenance. 5. Verify fuel tank is full by checking sight level or using a fuel stick. If necessary, add fuel. (TM 55-1945-217-14&P) DO NOT OVER FILL. Tank capacity is 30 gallons (114 liters). Fill to 95%. 6. Check cooling system fluid level. Add coolant as necessary. Service with antifreeze. 7. Check for missing or damaged components. If components are damaged or missing, contact unit maintenance. 8. Check for cut, frayed or damaged electrical wiring. If electrical wiring is cut, frayed or damaged, contact unit maintenance. 	<p>Class III oil leaks are found.</p> <p>Class I fuel leakage is found.</p> <p>Class I fuel leakage is found.</p>

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

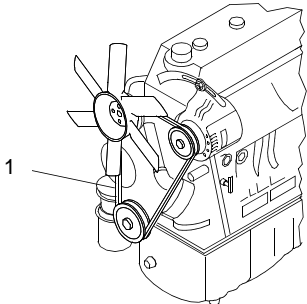
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
3		.2	Generator Container	<p style="text-align: center;">WARNING</p> <p>Do not reverse battery polarity. Reversing polarity may cause explosion or sudden discharge of electrolyte. Failure to comply could result in injury or death.</p> <ol style="list-style-type: none"> 9. Inspect battery system for damage. If battery is damaged, contact unit maintenance. 10. Check electrolyte level in battery. Level should be above plates in cells. Add distilled water as necessary. 11. Ensure all battery cable clamps and hold downs are tight. Make sure all are secure and free of corrosion. Tighten and clean if necessary. 12. Check for dirt and foreign objects in radiator fins. Clean as necessary with wiping rags. 13. Check fan belt (figure 7, item 1) for looseness or fraying. Fan belt should not move more than 1/2 inch when pushed at the center of the belt. If belts are frayed or loose, contact unit maintenance. 	<p>Battery will not start light tower.</p> <p>Battery will not start light tower.</p> <p>Battery will not start light tower.</p>
				<div style="text-align: center;">  </div> <p style="text-align: center;">Figure 7. Fan Belt</p> <ol style="list-style-type: none"> 1. Check exterior of container for damage. If damage is found, contact unit maintenance 2. Check personnel access door for proper operation, damaged seal or broken glass. If door does not operate properly or seal or glass is damaged, contact unit maintenance 	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>3. Check AC lighting system for burned out bulbs. Replace bulbs as needed (WP 0022 00).</p> <p>4. Check AC lighting system for operation. If lighting system does not operate, contact unit maintenance.</p> <p>5. Check electrolyte level in DC lighting system battery. Level should be above plates in cells. Add distilled water as necessary.</p> <p>6. Ensure DC lighting battery cable clamps and hold downs are tight. Make sure all are secure and free of corrosion. Tighten and clean if necessary.</p> <p>7. Check DC lighting system battery charger for frayed wires and proper operation. If DC lighting system battery charger has frayed wires or does not operate, contact unit maintenance.</p> <p>8. Check DC lighting system for burned out bulbs. Replace bulbs as needed (WP 0023 00).</p> <p>9. Check DC lighting system for operation. If DC lighting system does not operate, contact unit maintenance.</p> <p>10. Check fire suppression system for proper operation. (WP 0009 00)</p> <p>11. AC power Light Emitting Diode (LED) should be lit on control panel when generator is operating. (WP 0004 00) If inoperative, contact unit maintenance.</p> <p>12. Inspect for discharge, leakage or expansion. Look for damaged or broken seals. If discharge, leakage, expansion or damaged or broken seals are found, contact unit maintenance</p>	<p>Fire suppression system is inoperative.</p> <p>Yellow or red LED is illuminated.</p>

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
	Before	.2		<p style="text-align: center;">WARNING</p> <p>Use approved procedures when cleaning up fuel spills. Take proper precautions when removing or installing any fuel system component. Failure to comply may result in serious injury to death to personnel.</p> <p>13. Check 1,000 gallon fuel tank and fuel pumps for evidence of fuel leakage. If evidence of fuel leakage is found, contact unit maintenance.</p> <p>14. Check for leaks around fuel tank and fuel lines. If evidence of fuel leakage is found, contact unit maintenance.</p> <p>15. Examine fuel lines and flexible hoses for leaks. Check that fittings, clamps and ties are secure. If evidence of leaks, loose fittings, clamps or ties are found, contact unit maintenance.</p> <p>16. Verify fuel tank is full by checking sight level or using a fuel stick. If necessary, add fuel. (TM 9-6115-642-10) DO NOT OVER FILL. Tank capacity is 30 gallons (114 liters). Fill to 95%.</p> <p>17. Inspect portable fire extinguisher for discharge nozzle obstruction, proper mounting, tag signed within last month and that all seals and pins are in place. If discharge nozzle obstruction, improper mounting is found or seals or pins are missing, contact unit maintenance.</p> <p>18. Perform PMCS on generator. (TM 9-6115-642-10)</p>	<p>Class I fuel leakage is found.</p> <p>Class I fuel leakage is found.</p> <p>Class I fuel leakage is found.</p> <p>Fire extinguisher is inoperative.</p>
4	Before	.1	Personnel Shelter	<p>1. Check exterior of container for damage. If damage is found, contact unit maintenance.</p> <p>2. Check personnel access door, seal and glass for proper operation. If door does not operate properly or seal or glass is damaged, contact unit maintenance.</p>	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
5	Before	.05	Mooring Bitts	<ol style="list-style-type: none"> 3. Check personnel escape scuttle seals and latches for damage. If scuttle seals or latches are damaged, contact unit maintenance. 4. Inspect portable fire extinguisher for discharge nozzle obstruction, proper mounting, tag signed within last month and that all seals and pins are in place. If discharge nozzle obstruction or improper mounting is found or seals or pins are missing, contact unit maintenance. 5. Check shelter lighting for operation and burned out bulbs. If lighting does not operate or bulbs are burned out, replace burned out bulbs. (WP 0029 00) 6. Check heating and air conditioning system for proper operation. (TM 55-1945-217-14&P) If heating and air conditioning system does not operate, contact unit maintenance. 7. Check incinerator toilet for proper operation. (TM 55-1945-219-14&P) If incinerator toilet does not operate, contact unit maintenance. 8. Functionally test battle lantern for proper operation. Replace batteries (WP 0037 00) or bulb (WP 0038 00) as needed. 9. Check for damaged or missing handheld transceiver batteries. Replace as needed (WP 0008 00). 10. Check for missing or damaged handheld transceiver knobs. If damage is found or knobs are missing, contact unit maintenance. 11. Check for handheld transceiver damage that would prevent operation. If damage is found, contact unit maintenance. 12. Functionally check handheld transceivers and chargers for proper operation. (WP 0009 00) If handheld transceivers do not operate, contact unit maintenance. 1. Check for cracked, loose or damaged mooring bitts. If mooring bitts are cracked, loose or bent, contact unit maintenance. 	Fire extinguisher is inoperative.

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

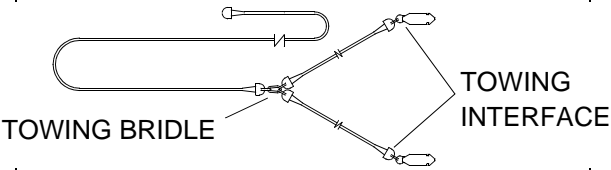
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
6	Before	.05	Towing Bridle	<p>1. Check for damage. If towing bridle (figure 8) is damaged, contact unit maintenance.</p>  <p style="text-align: center;">Figure 8. Towing Bridle and Interface</p>	
7	Before	.05	Towing Interface	<p>1. Check for damage. If towing interface (figure 8) is damaged, contact unit maintenance.</p>	
8	Before	.05	Towing Lights	<p>1. Check for damage and operation. If towing lights are damaged or do not operate, contact unit maintenance.</p>	
9	Before	.05	Deck Mats	<p>1. Check deck mats for tears or missing pieces. If deck mats are damaged, contact unit maintenance.</p>	
10	Before	.3	Fenders	<p>1. Inspect cylindrical fenders, shackles and chains for damage or wear. If damage is found, contact unit maintenance.</p> <p>2. Inspect corner fenders for damage or wear. If damage is found, contact unit maintenance.</p>	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

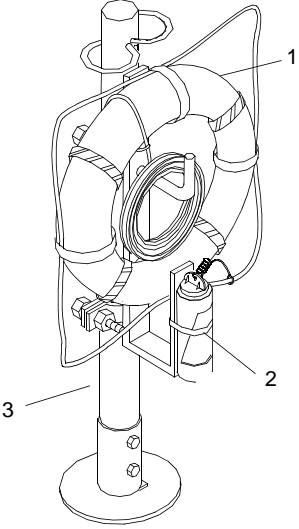
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
11	Before	.2	Life Ring Stanchions	<p>1. Check life rings (figure 9, item 1) for damage. If damage is found that would prevent proper operation of life rings, contact unit maintenance.</p>  <p style="text-align: center;">Figure 9. Life Ring Stanchion</p> <p>2. Check life ring strobes (figure 9, item 2) for proper operation. If strobes do not operate, contact unit maintenance.</p> <p>3. Inspect life ring stanchions (figure 9, item 3) for broken welds, missing or broken bolts and broken connectors. If broken welds or broken connectors are found or bolts are broken or missing, contact unit maintenance.</p>	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

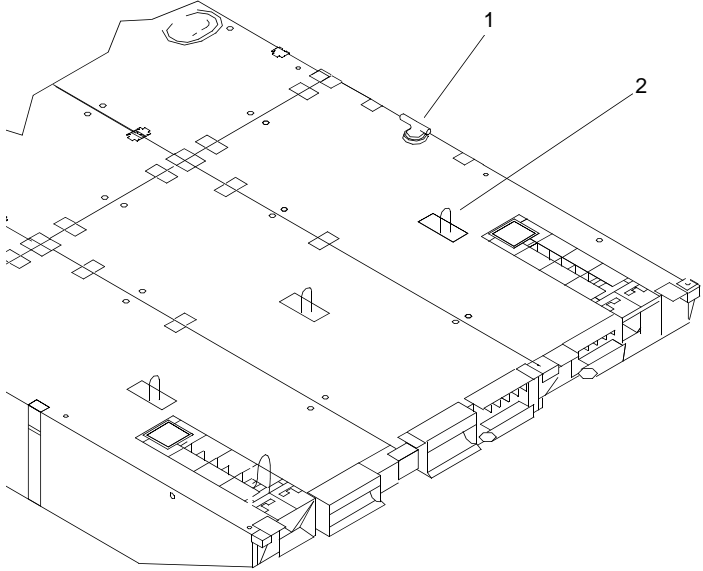
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
12	Before	.1	Deck Fittings	<p>1. Inspect deck fittings (figure 10, item 1) for corrosion, breakage or missing parts. If corrosion or breakage is found or parts are missing, contact unit maintenance.</p> 	
13	Before	.05	Lift Shackles	<p>1. Check for presence of water in lift shackle (figure 10, item 2) padeyes. If present, contact unit maintenance.</p>	

Figure 10. Deck Fittings and Lift Shackles

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

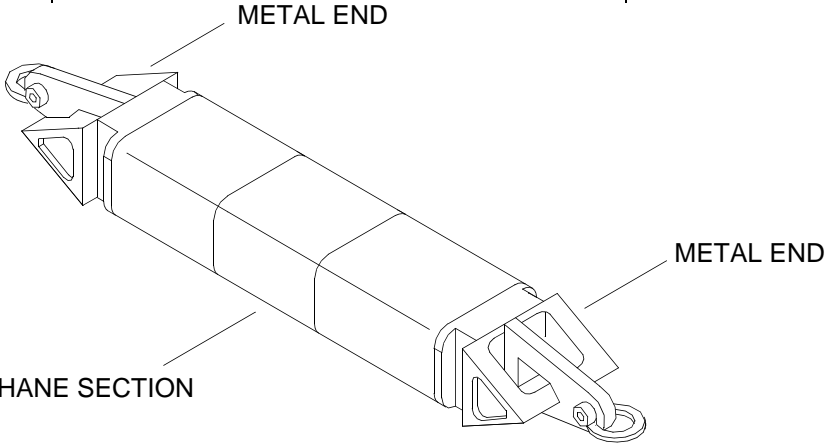
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
14	Before	.5	Flexors	<p>1. Inspect uninstalled flexors for separation of polyurethane material in the center (figure 11). If separation of polyurethane material in center of flexor is found, contact unit maintenance.</p>  <p style="text-align: center;">Figure 11. Flexor</p> <p>2. Inspect uninstalled flexors for cracks in external weldments on ends (figure 11). If cracks in external weldments on ends of flexor are found, contact unit maintenance.</p>	Separation of polyurethane material in center of flexor is found.
15	Before	1.0	Non-Powered Modules	<p>1. Inspect modules for broken welds, cracks, punctures and corrosion. If found, contact unit maintenance.</p>	Broken welds, cracks or punctures are present.
1	During	.05	Light Tower Engine	<p>1. Check fuel level. If necessary, service with diesel fuel. (TM 55-1945-217-14&P)</p> <p>2. Check for proper gage indications on control panel. (WP 0009 00) If gages do not have proper indication, contact unit maintenance.</p>	
3	During	.05	Generator Container	<p>1. Check fire suppression system for proper operation. AC power LED should be illuminated on control panel when generator is operating. (WP 0009 00) If AC power light is not illuminated, contact unit maintenance.</p>	Fire suppression system is inoperative. Yellow or red LED is illuminated.

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	During	.05	Personnel Shelter	2. Check fuel level in fuel tank. If necessary, service with diesel fuel. (TM 9-6115-642-10) 1. Check incinerator toilet for proper operation. (TM 55-1945-219-14&P) If incinerator toilet does not operate properly, contact unit maintenance. 2. Inspect portable fire extinguisher for broken seal, damage to nozzle or RED zone indication on gage. If seal is broken, nozzle is damaged or RED zone indication is on gage, contact unit maintenance. 3. Check for red light while radios are placed in chargers. (WP 0008 00) If red light is not on, contact unit maintenance.	Fire extinguisher is inoperative.
5	During	.05	Mooring Bitts	1. Check for cracked, loose or bent mooring bitts. If mooring bitts are cracked, loose or bent, contact unit maintenance.	
10	During	.3	Fenders	1. Inspect cylindrical fenders, shackles and chains for damage or wear. If damage is found, contact unit maintenance.	
14	During	.5	Flexors	1. Inspect visible portions of installed flexors for separation of polyurethane material in the center (figure 11). If separation of polyurethane material in center of flexor is found, contact unit maintenance. 2. Inspect visible portions of installed flexors (figure 11) for cracks in external weldments on ends. If found, flexor must be replaced immediately.	Separation of polyurethane material in center of flexor is found. Cracks are discovered in external weldments on ends of flexor.
1	After	1.0	Light Tower	1. Wash exterior of light tower with water and mild soap.	
2	After	1.0	Light Tower Engine	2. Prior to cleaning engine and generator, cover air cleaner intake, generator air intake, exhaust opening, rear of control panel box, generator output electrical connection box and battery charging alternator. (TM 55-1945-217-14&P)	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p style="text-align: center;">WARNING</p> <p>Do not use petroleum products (solvents, fuel oils or gasoline) under high pressure as these can penetrate the skin, resulting in serious injury or death.</p> <p style="text-align: center;">CAUTION</p> <p>Do not use high pressure water, steam or solvent on the exterior finish of the unit housing. This could result in equipment damage.</p> <ol style="list-style-type: none"> 3. Wash exterior of engine and generator with Type II cleaner. 4. Rinse engine and generator with water at a moderate pressure. 5. Dry engine and generator with compressed air. 6. Remove covering installed to seal out water and Type II cleaner. 7. Start engine and run until normal operating temperature is reached. <p style="text-align: center;">WARNING</p> <p>Use approved procedures when cleaning up fuel spills. Take proper precautions when removing or installing any fuel system component. Failure to comply may result in serious injury to death to personnel.</p> <ol style="list-style-type: none"> 8. Check for leaks around fuel tank and fuel lines. If leaks are found, contact unit maintenance. 	<p>Class I fuel leakage is found.</p>

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
3	After	.4	Generator Container	<p>9. Examine fuel lines and flexible hoses for leaks. Check that fittings, clamps and ties are secure. Hoses must not be resting on or touching shafts, couplings, heated surfaces, sharp edges or other areas that might sever or rupture fuel system parts. If fuel leaks, fittings, clamps and ties are not secure or hoses are resting on or touching shafts, couplings, heated surfaces or sharp edges, contact unit maintenance.</p> <p>10. Verify fuel tank is full by checking sight level or using a fuel stick. If necessary, add fuel. (TM 55-1945-217-14&P) DO NOT OVER FILL. Tank capacity is 30 gallons (114 liters). Fill to 95%.</p> <p>11. Make a visual inspection for oil leaks around filters and external oil lines. If oil leaks are found, contact unit maintenance.</p> <p>12. Verify oil level registers FULL on dipstick (figure 6). Engine must be cool when reading level. If hot, allow to cool for 20 minutes. If necessary, add Lubricating Oil, Engine, 15W40 Grade, to achieve desired level. DO NOT OVER FILL. Use a rag to wipe up any spillage that may occur.</p> <p>13. Check for damage that may have occurred during operation. If damage is found, contact unit maintenance.</p> <p>1. Check exterior of container for damage. If damage is found, contact unit maintenance.</p> <p style="text-align: center;">WARNING</p> <p style="text-align: center;">Use approved procedures when cleaning up fuel spills. Take proper precautions when removing or installing any fuel system component. Failure to comply may result in serious injury to death to personnel.</p> <p>2. Check 1,000 gallon fuel tank and fuel pumps for evidence of fuel leakage. If evidence of fuel leakage is found, contact unit maintenance.</p>	<p>Class I fuel leakage is found.</p> <p>Class III oil leaks are found.</p> <p>Class I fuel leakage is found.</p>

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	After	.1	Personnel Shelter	3. Check for leaks around fuel tank and fuel lines. If evidence of fuel leakage is found, contact unit maintenance.	Class I fuel leakage is found.
				4. Examine fuel lines and flexible hoses for leaks. Check that fittings, clamps and ties are secure. If evidence of leaks, loose fittings, clamps or ties are found, contact unit maintenance.	Class I fuel leakage is found.
				5. Verify fuel tank is full by checking sight level or using a fuel stick. If necessary, add fuel. (TM 9-6115-642-10) DO NOT OVER FILL. Tank capacity is 30 gallons (114 liters). Fill to 95%.	
				6. Perform PMCS on generator. (TM 9-6115-642-10)	
				7. Clean exterior of container with clean water.	
				8. Clean interior floor with a mop and clean water.	
				9. Clean fire suppression system components with a clean dry wiping rag.	
				1. Check exterior of container for damage. If damage is found, contact unit maintenance.	
				2. Inspect portable fire extinguisher for broken seal, damage to nozzle or RED zone indication on gage. If seal is broken, nozzle is damaged or RED zone indication is on gage, contact unit maintenance.	Fire extinguisher is inoperative.
5	After	.05	Mooring Bitts	3. Clean VHF/FM transceivers with a soft bristled brush to remove all dirt.	
				4. Clean surface of heating and air conditioning unit with a wiping rag.	
6	After	.05	Towing Bridle	5. Clean benches and table with clean water.	
				1. Check for cracked, loose or bent mooring bitts. If cracked, loose or bent mooring bitts are found, contact unit maintenance.	
6	After	.05	Towing Bridle	1. Check for damage. If towing bridle (figure 8) is damaged, contact unit maintenance.	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
7	After	.05	Towing Interface	1. Check for damage. If towing interface (figure 8) is damaged, contact unit maintenance.	
8	After	.05	Towing Lights	1. Check for damage and operation. If towing lights are damaged or do not operate, contact unit maintenance.	
9	After	.05	Deck Mats	1. Check deck mats for tears or missing pieces. If deck mats are damaged, contact unit maintenance.	
10	After	.3	Fenders	1. Inspect cylindrical fenders, shackles and chains for damage or wear. If damage is found, contact unit maintenance. 2. Inspect corner fenders for damage or wear. If damage is found, contact unit maintenance.	
11	After	.2	Life Ring Stanchions	1. Check life rings (figure 9, item 1) for damage. If damage is found that would prevent proper operation of life rings, contact unit maintenance. 2. Check life ring strobes (figure 9, item 2) for proper operation. If strobes do not operate, contact unit maintenance. 3. Inspect life ring stanchions (figure 9, item 3) for broken welds, missing or broken bolts and broken connectors. If broken welds or broken connectors are found or bolts are broken or missing, contact unit maintenance.	
13	After	.05	Lift Shackles	1. Check for presence of water in lift shackle (figure 10, item 2) padeyes. If present, contact unit maintenance.	
14	After	1.0	Flexors	1. Inspect uninstalled flexors for separation of polyurethane material in the center (figure 11). If separation of polyurethane material in center of flexor is found, contact unit maintenance. 2. Inspect uninstalled flexors for cracks in external weldments on ends (figure 11). If cracks in external weldments on ends of flexor are found, contact unit maintenance.	Separation of polyurethane material in center of flexor is found. Cracks are discovered in external weldments on ends of flexor.

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
15	After	.4	Non-Powered Modules	1. Inspect modules for broken welds, cracks, punctures and corrosion. If found, contact unit maintenance.	Broken welds, cracks or punctures are present.
16	After	.2	Lifting Slings	1. Check lifting slings for cuts, loose stitching and fraying. If slings are cut, frayed or have loose stitching, contact unit maintenance.	Slings are cut, have loose stitching or are frayed.
20	After	.5	BII Container	1. Check BII container interior for loose or damaged equipment. If loose or damaged equipment is found, contact unit maintenance. 2. Check BII container exterior for rust, cracks, indentions or splits that would impair waterproofing or serviceability. If container damage is found, contact unit maintenance.	
2	Weekly During Operational Periods	.5	Light Tower Engine	1. Start engine. If light tower engine cannot be started, contact unit maintenance.	Engine will not start.
4	Weekly During Operational Periods		Personnel Shelter	1. Empty the incinerator toilet ashpan. (TM 55-1945-219-14&P) 2. Clean outer stainless steel surfaces with clean water.	
16	Monthly	1.0	Lifting Slings	1. Using lubricating gun, lubricate padeye lifting shackles with Grease, Aircraft.	
3	Monthly	.5	Generator Container	1. Test fire suppression control panel LED indicators and sounder. (WP 0035 00) If LEDs or sounder is inoperative, contact unit maintenance. 2. Remove portable fire extinguisher and agitate dry chemical by turning extinguisher upside down and shaking. Sign and date fire extinguisher inspection tag.	Fire suppression system is inoperative. Yellow or red LED is illuminated. Fire extinguisher is inoperative.

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Monthly	.5	Personnel Shelter	<ol style="list-style-type: none"> 1. Remove portable fire extinguisher and agitate dry chemical by turning extinguisher upside down and shaking. Sign and date fire extinguisher inspection tag. 2. Clean indoor air inlet filters. (TM 55-1945-220-14&P) 	Fire extinguisher is inoperative.
14	Monthly	1.0	Flexors	<ol style="list-style-type: none"> 1. Inspect uninstalled flexors for separation of polyurethane material in the center (figure 11). If separation of polyurethane material in center of flexor is found, contact unit maintenance. 2. Inspect uninstalled flexors for cracks in external weldments on ends (figure 11). If cracks in external weldments on ends of flexor are found, contact unit maintenance. 	<p>Separation of polyurethane material in center of flexor is found.</p> <p>Cracks are discovered in external weldments on ends of flexor.</p>
16	Monthly	.5	Lifting Slings	<ol style="list-style-type: none"> 1. Check lifting slings for cuts, loose stitching and fraying. If slings are cut, frayed or have loose stitching, contact unit maintenance. 	Slings are cut, have loose stitching or are frayed.
19	Monthly	5.0	Module Interlock Connector (Male Locking Pin)	<ol style="list-style-type: none"> 1. Check male connector pin for deformation, twisting, bending and flatness. If any deformation of pin is present, remove pin from service. Contact unit maintenance. 2. Check contact area where pins seat against guillotine bars for wear. If excessive wear is present, remove pin from service. Contact unit maintenance. 3. Check pin to ensure stop bar is attached. If stop bar is removed, remove pin from service and replace stop bar. Contact unit maintenance. 4. Check connector pin for cracks and/or unusual damage (missing material, notches, etc.). If any cracks and/or unusual damage is present, remove pin from service. Contact unit maintenance. 	<p>Any deformation of the pin is present.</p> <p>Excessive wear is present.</p> <p>Stop bar is removed.</p> <p>Any cracks and/or unusual damage is present.</p>
3	Quarterly	1.0	Generator Container	<ol style="list-style-type: none"> 1. Lubricate generator container door hinges. Lubricate with Grease, Aircraft. Grease by hand. 	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

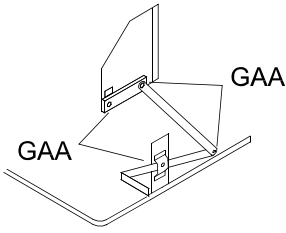
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Quarterly	.5	Personnel Shelter	<ol style="list-style-type: none"> Lubricate personnel shelter door hinges. Lubricate with Grease, Aircraft. Grease by hand. Clean incinerator toilet interior of dust and paper bits. (TM 55-1945-219-14&P) Grease all moving parts of incinerator toilet flushing assembly and foot pedal (figure 12). (TM 55-1945-219-14&P)  <p>The diagram shows a mechanical assembly with two points labeled 'GAA' indicating where grease should be applied. One point is on a hinge mechanism, and the other is on a foot pedal assembly.</p> <p>Figure 12. Incinerator Toilet Grease Points</p> <ol style="list-style-type: none"> Clean blower assembly, blower housing and vent line elbow. (TM 55-1945-219-14&P) 	
3	Annually	2.5	Generator Container	<ol style="list-style-type: none"> Inspect fire suppression system in accordance with 46 CFR Parts 91.25-20 and 97.15-60. Contact Specialized Repair Activity (SRA). 	Fire suppression system is inoperative.
4	Annually	.5	Personnel Shelter	<ol style="list-style-type: none"> Inspect incinerator toilet catalyst level. (TM 55-1945-219-14&P) Clean outdoor vent filter, fan and outdoor coil, blower wheel, blower scroll, electric heater and all drain passages. (TM 55-1945-220-14&P) 	
17	Annually	.1 each	Horizontal and Vertical Connectors	<ol style="list-style-type: none"> Lubricate annually and on condition (before and after operation). Service with Grease, Aircraft. Grease by hand. 	
18	Annually	2.0	Steel Weight Lifting Chains, Rings, Hooks, Shackles and Swivels	<ol style="list-style-type: none"> Anneal all steel weight lifting chains, rings, hooks, shackles and swivels per 29 CFR Parts 1919.16 and 1919.36. Contact Specialized Repair Activity (SRA). 	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

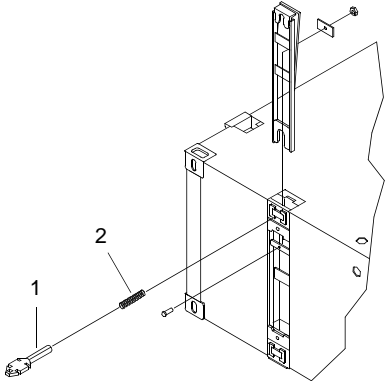
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
19	Annually	.3 each	Module Interlock Connector and Spring	<p>1. Lubricate interlock connector (figure 13, item 1) and spring (figure 13, item 2) annually and on condition (before and after operation). Service with Grease, Aircraft. Grease by hand. If damaged, contact unit maintenance.</p> 	
1	Every 100 Hours of Operation	.1	Light Tower	<p>1. Check all hinges, nuts, bolts clamps, rivets and latches for looseness. If loose hinges, nuts, bolts clamps, rivets or latches are found, contact unit maintenance.</p> <p>2. Check all enclosure panels for warping, bending and tearing and for positive sealing. If warping, bending, tearing or defective seals are found, contact unit maintenance.</p> <p>3. Check engine intake and exhaust systems for loose, damaged or deteriorated components. If loose, damaged or deteriorated components are found, contact unit maintenance.</p>	
2	Every 150 Hours of Operation	.2	Light Tower Engine	<p>1. Check air intake hoses for damage. If hoses are damaged, contact unit maintenance.</p>	
2	Every 250 Hours of Operation	.3	Light Tower Engine	<p>1. Check radiator and oil cooler. Ensure unrestricted airflow is maintained through radiator and oil cooler. If airflow is restricted, clean radiator or oil cooler.</p>	
3	6 Years	1.0	Generator Container	<p>1. Hydrostatically test portable fire extinguisher and replace O-rings. Contact Specialized Repair Activity (SRA).</p>	

Table 1. Preventive Maintenance Checks and Services for FC. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
3	6 Years	1.0	Personnel Shelter	1. Hydrostatically test portable fire extinguisher and replace O-rings. Contact Specialized Repair Activity (SRA).	

MANDATORY REPLACEMENT PARTS

No mandatory replacement parts are specified for the FC.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
FLEXOR RECEIVER INSERT REPAIR**

INITIAL SETUP:

Tools

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Cleaner (Item 6, WP 0045 00)

Rag, Wiping (Item 31, WP 0045 00)

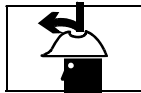
Personnel Required

Engineer 88K (1)

WARNING



VEST



HELMET PROTECTION



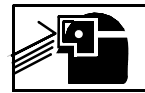
HEAVY PARTS



POISON



CHEMICAL



EYE PROTECTION

All personnel must wear personal flotation device, hard hat, safety shoes, eye protection and gloves during FC operations and maintenance. Wear proper eye and hand protection when working with chemicals. Failure to observe these precautions could result in serious injury or death.

NOTE

Repair is limited to the replacement of defective parts.

DISASSEMBLE FLEXOR RECEIVER INSERT

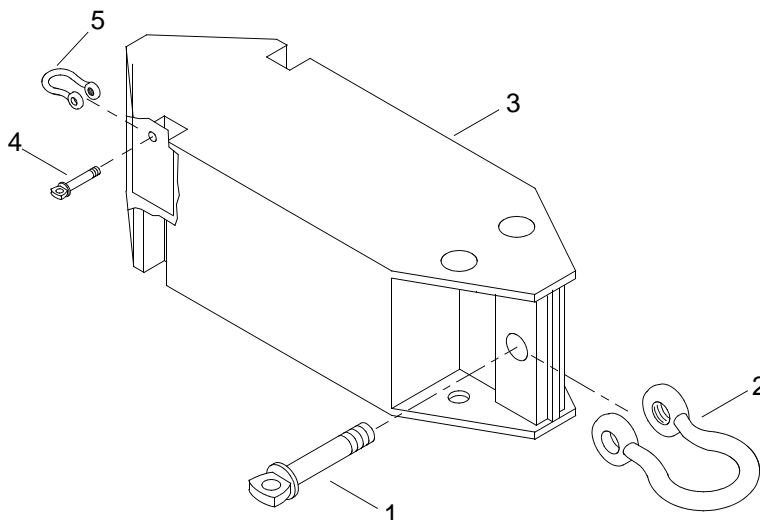


Figure 1. Flexor Receiver Insert

1. Remove pin (figure 1, item 1) from shackle (figure 1, item 2).
2. Remove shackle (figure 1, item 2) from flexor receiver insert (figure 1, item 3).
3. Remove pin (figure 1, item 4) from shackle (figure 1, item 5).
4. Remove shackle (figure 1, item 5) from flexor receiver insert (figure 1, item 3).

CLEAN FLEXOR RECEIVER INSERT

WARNING



CHEMICAL



EYE PROTECTION

Wear protective gloves and eye protection when working with chemicals. Failure to comply may result in serious injury or death.

1. Using wiping rags soaked with cleaner, remove debris from all components.
2. Using fresh water, rinse cleaner residue from all components. Dispose of rinse water per local procedures.
3. Air dry all components.
4. Dispose of contaminated rags per local procedures.

INSPECT FLEXOR RECEIVER INSERT

1. Inspect all items for cracks and bending. Replace damaged items.
2. Inspect shackles and pins for stripped threads. Replace damaged items.

ASSEMBLE FLEXOR RECEIVER INSERT

1. Position shackle (figure 1, item 5) on flexor receiver insert (figure 1, item 3).
2. Install pin (figure 1, item 4) in shackle (figure 1, item 5) and tighten.
3. Position shackle (figure 1, item 2) on flexor receiver insert (figure 1, item 3).
4. Install pin (figure 1, item 1) in shackle (figure 1, item 2) and tighten.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
FLEXOR RECEIVER INSERT LIFTING DEVICE REPAIR**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Cleaner (Item 6, WP 0045 00)

Rag, Wiping (Item 31, WP 0045 00)

Personnel Required

Engineer 88K (1)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****POISON****CHEMICAL****EYE PROTECTION**

All personnel must wear personal flotation device, hard hat, safety shoes, eye protection and gloves during FC operations and maintenance. Wear proper eye and hand protection when working with chemicals. Failure to observe these precautions could result in serious injury or death.

NOTE

Repair is limited to the replacement of defective parts.

The lower right half of the lifting device assembly has the nut welded to the leg and cannot be removed.

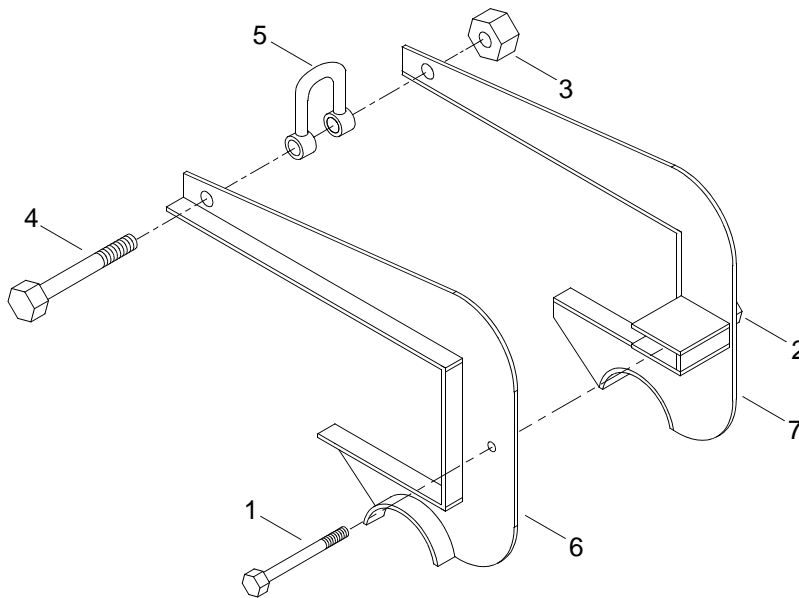
DISASSEMBLE FLEXOR RECEIVER INSERT LIFTING DEVICE


Figure 1. Flexor Receiver Insert Lifting Device

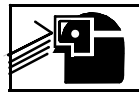
1. Remove hex head bolt (figure 1, item 1) from welded hex locknut (figure 1, item 2).
2. Remove hex locknut (figure 1, item 3), hex head bolt (figure 1, item 4) and shackle (figure 1, item 5).
3. Separate lifting device assembly left (figure 1, item 6) and right (figure 1, item 7) halves.

CLEAN FLEXOR RECEIVER INSERT LIFTING DEVICE

WARNING



CHEMICAL



EYE PROTECTION

Wear protective gloves and eye protection when working with chemicals. Failure to comply may result in serious injury or death.

1. Using wiping rag soaked with cleaner, remove debris from all components.
2. Using fresh water, remove cleaner residue from all components.
3. Air dry components.
4. Dispose of contaminated rags per local procedures.

INSPECT FLEXOR RECEIVER INSERT LIFTING DEVICE

1. Inspect all items for cracks and bending. Replace damaged items.
2. Inspect nuts and bolts for stripped threads. Replace damaged items.

ASSEMBLE FLEXOR RECEIVER INSERT LIFTING DEVICE

1. Position shackle (figure 1, item 5) between lifting device assembly left (figure 1, item 6) and right (figure 1, item 7) halves.
2. Install hex head bolt (figure 1, item 4) and new hex locknut (figure 1, item 3). Tighten hex locknut (figure 1, item 3).
3. Install hex head bolt (figure 1, item 1) into welded hex locknut (figure 1, item 2). Tighten hex head bolt (figure 1, item 1).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER STEPS REMOVAL AND INSTALLATION**

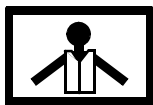
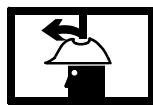
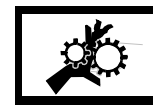
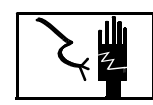
INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

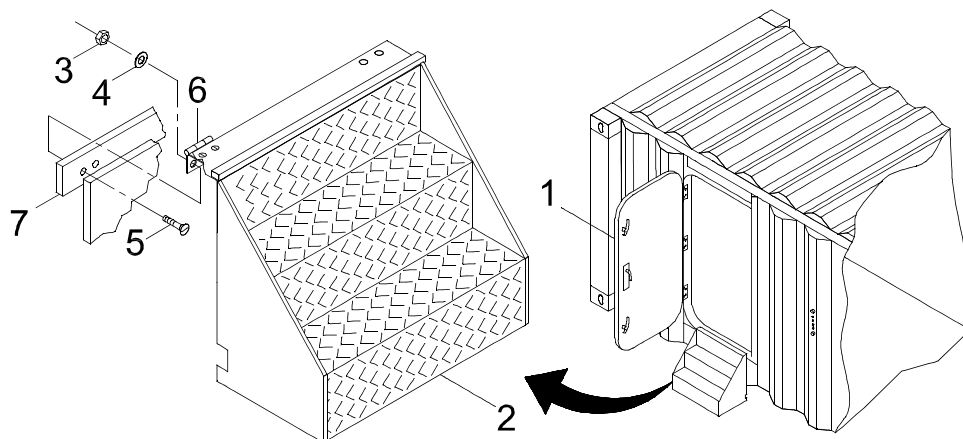
Personnel Required

Engineer 88K (2)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS****ELECTRICAL**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

REMOVE GENERATOR CONTAINER STEPS**Figure 1. Generator Container Steps**

1. Open generator container exterior door (figure 1, item 1).
2. Using assistant, support steps (figure 1, item 2) to access locknuts (figure 1, item 3).
3. Remove locknuts (figure 1, item 3) and washers (figure 1, item 4) from bolts (figure 1, item 5) securing step hinges (figure 1, item 6) to hinge supports (figure 1, item 7).
4. Remove bolts (figure 1, item 5) from hinges (figure 1, item 6) and hinge supports (figure 1, item 7).
5. Remove steps (figure 1, item 2).

INSTALL GENERATOR CONTAINER STEPS

1. Using assistant, align step hinges (figure 1, item 6) with hinge supports (figure 1, item 7).
2. Install bolts (figure 1, item 5) through holes in hinges (figure 1, item 6) and hinge supports (figure 1, item 7).
3. Install new locknuts (figure 1, item 3) and washers (figure 1, item 4) on bolts (figure 1, item 5) and tighten locknuts (figure 1, item 3).
4. Fold steps (figure 1, item 2) up.
5. Close generator container exterior door (figure 1, item 1).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER DAMPER LOUVERS CLEANING**

INITIAL SETUP:

Tools

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Cleaner (Item 6, WP 0045 00)
Rag, Wiping (Item 31, WP 0045 00)
Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

TM 9-6115-642-10
FM 55-502

Equipment Condition

Generator shut down. (TM 9-6115-642-10)
Secure generator and tag out. (FM 55-502)

WARNING



VEST



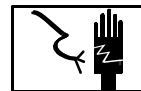
HELMET PROTECTION



HEAVY PARTS



MOVING PARTS



ELECTRICAL



EYE PROTECTION



POISON



CHEMICAL

All personnel must wear personal flotation device, hard hat, safety shoes, eye protection and gloves during FC operations and maintenance. Wear proper eye and hand protection when working with chemicals. Failure to observe these precautions could result in serious injury or death.

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

CLEAN GENERATOR CONTAINER DAMPER LOUVERS

1. Using a wire brush, remove debris from louvers.
2. Apply cleaner sparingly to a rag and remove all dirt, dust and foreign matter from inside area of louvers.
3. Using a wire brush and cleaner, remove salt water deposits and corrosion from louvers.

4. Dispose of contaminated wiping rags per local procedures.
5. Remove warning tag from generator.
6. Start generator. (TM 9-6115-642-10)
7. Verify equipment operates.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER FLUORESCENT LIGHT BULBS
REPLACEMENT**

INITIAL SETUP:**Materials/Parts**

Bulb, Fluorescent (TM 55-1945-227-24P)
Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

FM 55-502

Equipment Condition

Circuit breaker C set to OFF and tagged out. (FM 55-502)

WARNING



ELECTRICAL

Repair or replace components only after the circuit breaker has been turned off and tagged out. Performing maintenance while the circuit is energized could result in serious injury or death.

NOTE

This task is typical for the removal and installation of generator container fluorescent light bulbs.

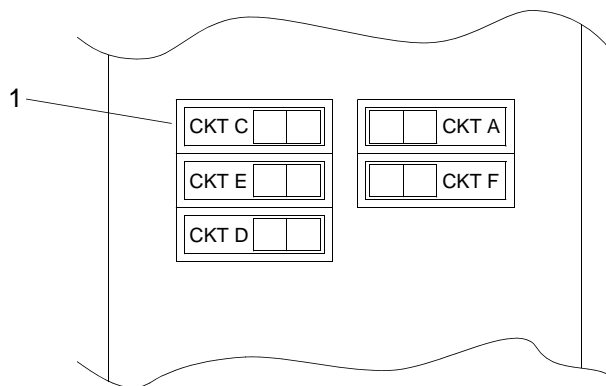
REMOVE GENERATOR CONTAINER FLUORESCENT LIGHT BULBS

Figure 1. Circuit C Breaker

1. Verify CKT C circuit breaker (figure 1, item 1) in electrical distribution panel is positioned to OFF (open) and tagged out.

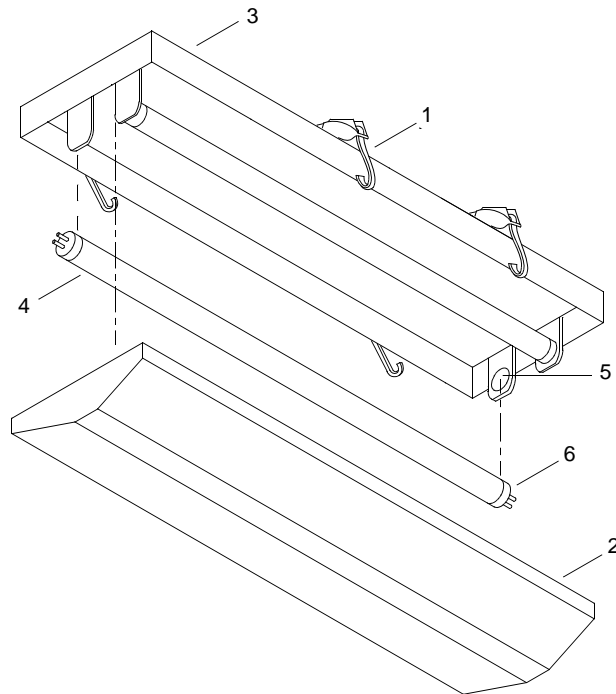


Figure 2. Fluorescent Light Bulb Removal/Installation

2. Disengage four latches (figure 2, item 1) holding light cover (figure 2, item 2) on light fixture (figure 2, item 3).
3. Remove light cover (figure 2, item 2).
4. Grasp light bulb (figure 2, item 4) and turn 90° clockwise.
5. Pull down on light bulb (figure 2, item 4) and remove from receptacle (figure 2, item 5).

INSTALL GENERATOR CONTAINER FLUORESCENT LIGHT BULBS

1. Position new light bulb (figure 2, item 4) near receptacle (figure 2, item 5).
2. Slide light bulb pins (figure 2, item 6) into receptacle (figure 2, item 5).
3. Turn light bulb (figure 2, item 4) 90° until tube clicks into place.
4. Position light cover (figure 2, item 2) over light fixture (figure 2, item 3).
5. Engage four latches (figure 2, item 1).
6. Remove warning tag from circuit breaker CKT C circuit breaker (figure 1, item 1) and set circuit breaker to ON.
7. Perform operational check.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER INCANDESCENT LIGHT BULBS
REPLACEMENT**

INITIAL SETUP:**Materials/Parts**

Bulb, Incandescent, 12 Volt (TM 55-1945-227-24P)

Personnel Required

Seaman 88K (1)

NOTE

This task is typical for the removal and installation of generator container incandescent light bulbs.

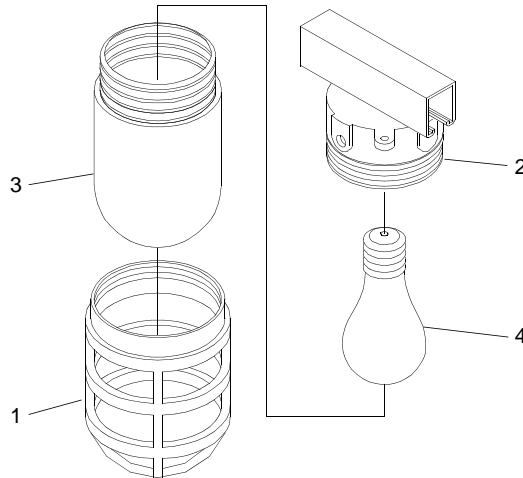
REMOVE GENERATOR CONTAINER INCANDESCENT LIGHT BULBS

Figure 1. Incandescent Light Bulb Removal/Installation

1. Remove guard (figure 1, item 1) from fixture base (figure 1, item 2).
2. Remove globe (figure 1, item 3) from fixture base (figure 1, item 2).
3. Remove bulb (figure 1, item 4) from fixture base (figure 1, item 2) and discard.

INSTALL GENERATOR CONTAINER INCANDESCENT LIGHT BULBS

1. Install new bulb (figure 1, item 4) in fixture base (figure 1, item 2).
2. Install globe (figure 1, item 3) onto fixture base (figure 1, item 2).
3. Install guard (figure 1, item 1) onto fixture base (figure 1, item 2).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER FUEL TANK SIGNAL BOX FUSE
REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Fuse (TM 55-1945-227-24P)

Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

TM 9-6115-642-10

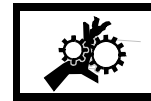
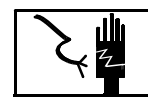
FM 55-502

Equipment Condition

Generator shut down. (TM 9-6115-642-10)

Secure generator and tag out. (FM 55-502)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS****ELECTRICAL**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER FUEL TANK SIGNAL BOX RELAY
REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Relay (TM 55-1945-227-24P)

Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

TM 9-6115-642-10

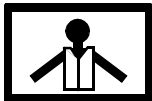
FM 55-502

Equipment Condition

Generator shut down. (TM 9-6115-642-10)

Secure generator and tag out. (FM 55-502)

WARNING



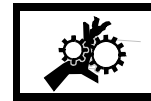
VEST



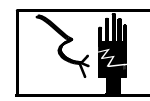
HELMET PROTECTION



HEAVY PARTS



MOVING PARTS



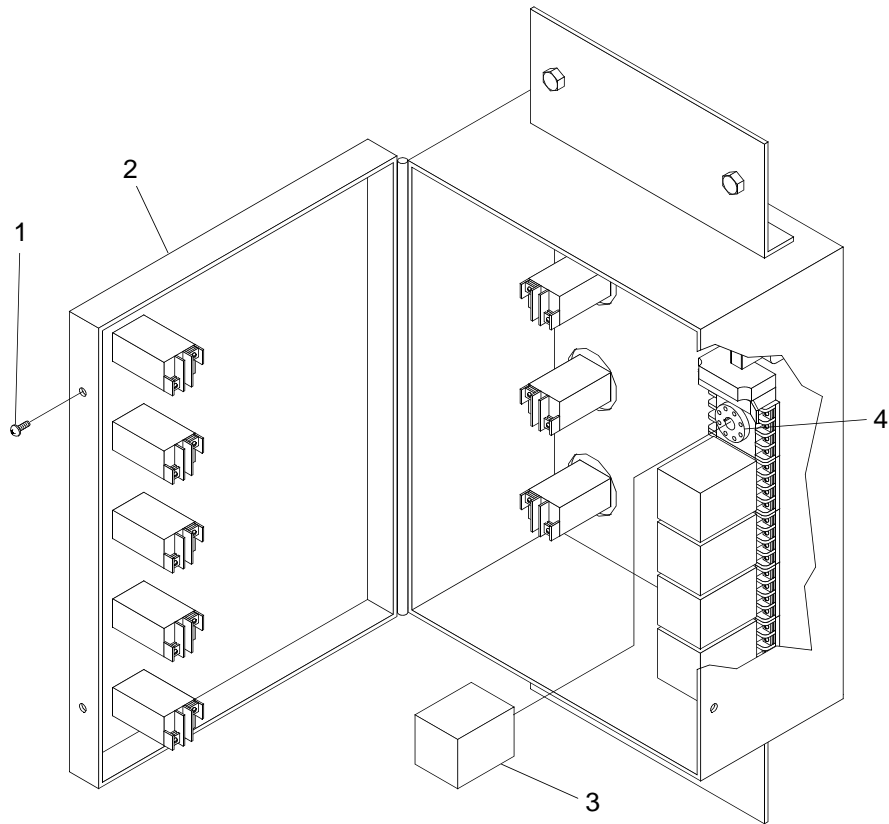
ELECTRICAL

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

NOTE

The following procedure is typical for the replacement of fuel tank signal box relays.

REPLACE GENERATOR CONTAINER FUEL TANK SIGNAL BOX RELAY**Figure 1. Fuel Tank Signal Box Relay**

1. Remove screws (figure 1, item 1) and open fuel tank signal box door (figure 1, item 2).
2. Firmly grasp relay (figure 1, item 3) and pull it out from relay socket (figure 1, item 4). Discard relay (figure 1, item 3).
3. Align pins at base of new relay (figure 1, item 3) with holes in relay socket (figure 1, item 4) and firmly seat relay (figure 1, item 3) in relay socket (figure 1, item 4).
4. Close fuel tank signal box door (figure 1, item 2) and secure with screws (figure 1, item 1).
5. Remove warning tag from generator.
6. Start generator. (TM 9-6115-642-10)
7. Verify equipment operates.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER FUEL TANK SIGNAL BOX LAMP
REPLACEMENT**

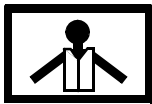
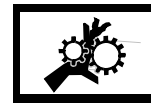
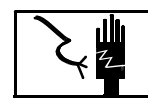
INITIAL SETUP:**Materials/Parts**

Lamp, Miniature 24V (TM 55-1945-227-24P)

Personnel Required

Engineer 88L (1)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS****ELECTRICAL**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

NOTE

The following procedure is typical for the replacement of internal and external panel generator container fuel tank signal box lamps.

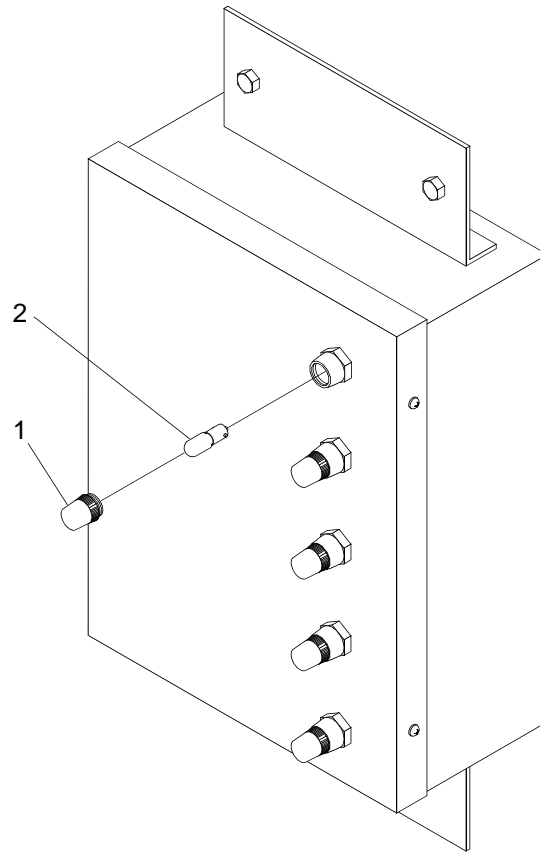
REPLACE GENERATOR CONTAINER FUEL TANK SIGNAL BOX LAMP

Figure 1. Fuel Tank Signal Box Lamp

1. Remove lamp cap (figure 1, item 1).
2. Remove lamp (figure 1, item 2) by pushing in slightly, then rotating approximately 1/4-turn counterclockwise. Discard lamp (figure 1, item 2)
3. Align pins on base of new lamp (figure 1, item 2) with slots in receptacle and insert into receptacle.
4. While pushing in slightly on the lamp (figure 1, item 2), rotate the lamp (figure 1, item 2) approximately 1/4-turn clockwise until lamp is fully engaged in receptacle.
5. Install lamp cap (figure 1, item 1).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER ELECTRICAL DISTRIBUTION PANEL
SINGLE POLE CIRCUIT BREAKER REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Circuit Breaker (TM 55-1945-227-24P)

Grease, Silicone Insulated Electric Motor (Item 16, WP 0045 00)

Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

TM 9-6115-642-10

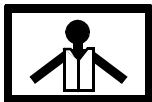
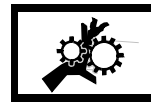
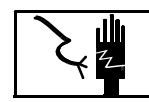
FM 55-502

Equipment Condition

Generator shut down. (TM 9-6115-642-10)

Secure generator and tag out. (FM 55-502)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS****ELECTRICAL**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

**REPLACE GENERATOR CONTAINER ELECTRICAL DISTRIBUTION
PANEL SINGLE POLE CIRCUIT BREAKER**

NOTE

The following procedure is typical for the removal and installation of generator container single pole circuit breakers.

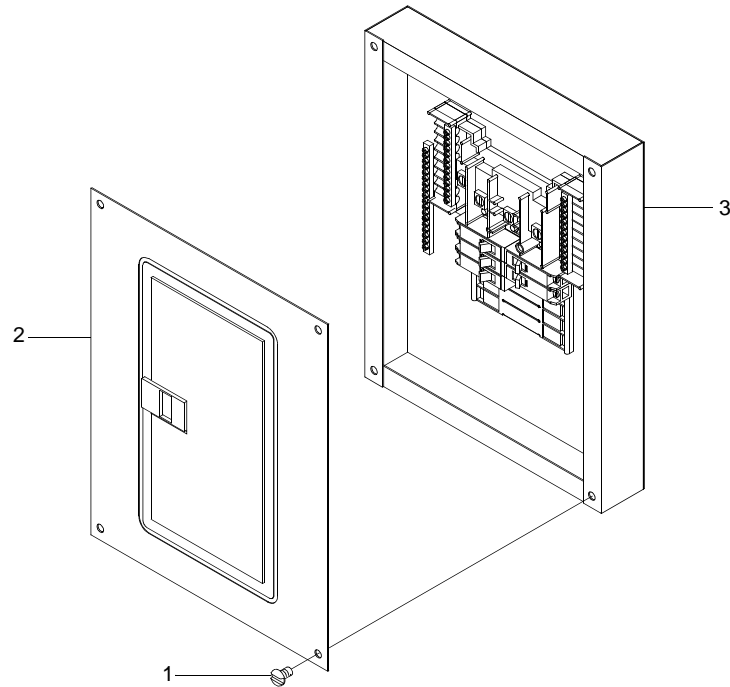


Figure 1. Generator Container Electrical Distribution Panel Access Cover

1. Remove four screws (figure 1, item 1) from panel access cover (figure 1, item 2).
2. Remove panel access cover (figure 1, item 2) from load distribution box (figure 1, item 3).

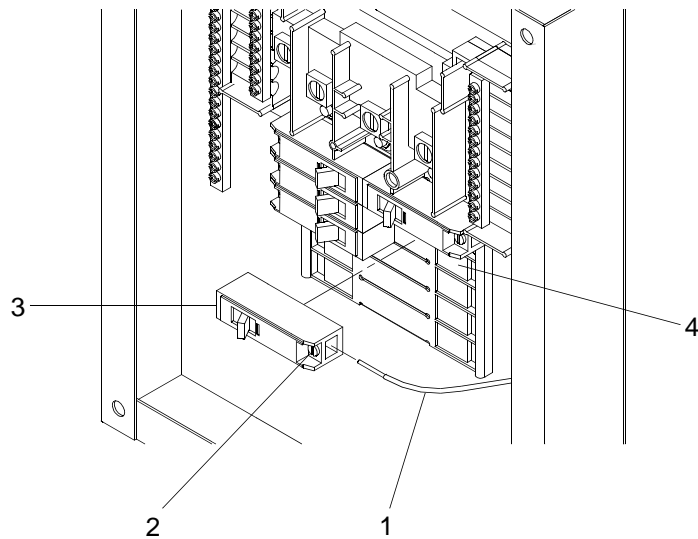


Figure 2. Circuit Breaker Replacement

3. Label wire (figure 2, item 1).
4. Loosen screw (figure 2, item 2).

-
5. Pull wires (figure 2, item 1) straight out of circuit breaker (figure 2, item 3).
 6. Firmly grasp circuit breaker (figure 2, item 3), rotate circuit breaker (figure 2, item 3) outward from mounting cleat (figure 2, item 4) and remove. Discard circuit breaker (figure 2, item 3).
 7. Install back side of new circuit breaker (figure 2, item 3) into mounting cleat (figure 2, item 4).
 8. Rotate circuit breaker (figure 2, item 3) until it snaps into position.
 9. Coat wire (figure 2, item 1) with silicone grease.
 10. Install wire (figure 2, item 1) into circuit breaker (figure 2, item 3) and remove label.
 11. Tighten screw (figure 2, item 2).
 12. Position panel access cover (figure 1, item 2) on load distribution box (figure 1, item 3).
 13. Install four screws (figure 1, item 1) through panel access cover (figure 1, item 2) and tighten.
 14. Position circuit breaker (figure 2, item 3) to on position.
 15. Remove warning tag from generator.
 16. Start generator. (TM 9-6115-642-10)
 17. Verify equipment operates.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
GENERATOR CONTAINER DISCONNECT BOX FUSE
REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)
Puller, Fuse (TM 55-1945-227-24)

Materials/Parts

Fuse, Time Delay, Class RK5, 70 Amp (TM 55-1945-227-24P)
Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

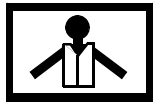
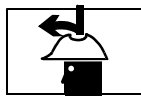
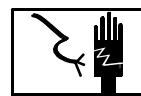
References

TM 9-6115-642-10
FM 55-502

Equipment Condition

Generator shut down. (TM 9-6115-642-10)
Secure generator and tag out. (FM 55-502)

WARNING

**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS****ELECTRICAL****EYE PROTECTION**

All personnel must wear personal flotation device, hard hat, safety shoes, eye protection and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

NOTE

The following procedure is typical for the removal and installation of generator container disconnect box fuses.

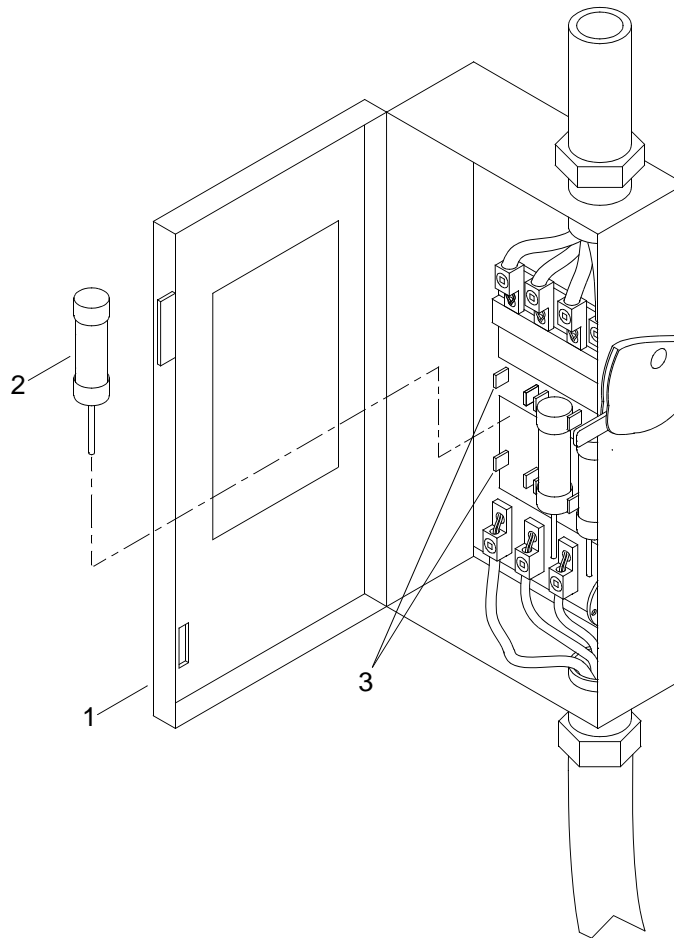
REPLACE GENERATOR CONTAINER DISCONNECT BOX FUSE

Figure 1. Disconnect Box Fuse

1. Unlatch and open disconnect box cover (figure 1, item 1).
2. Using fuse puller, remove fuse (figure 1, item 2) from electrical contacts (figure 1, item 3). Discard fuse (figure 1, item 2).
3. Using fuse puller, press new fuse (figure 1, item 2) into electrical contacts (figure 1, item 3).
4. Close and latch disconnect box cover (figure 1, item 1).
5. Remove warning tag from generator.
6. Start generator. (TM 9-6115-642-10)
7. Verify that equipment operates.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PERSONNEL SHELTER FLUORESCENT LIGHT BULBS
REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Bulb, Fluorescent (TM 55-1945-227-24P)

Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

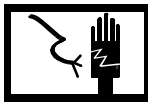
References

FM 55-502

Equipment Condition

Circuit breaker C set to OFF and tagged out. (FM 55-502)

WARNING



ELECTRICAL

Repair or replace components only after the circuit breaker has been turned off and tagged out. Performing maintenance while the circuit is energized could result in serious injury or death.

NOTE

This task is typical for the removal and installation of personnel shelter fluorescent light bulbs.

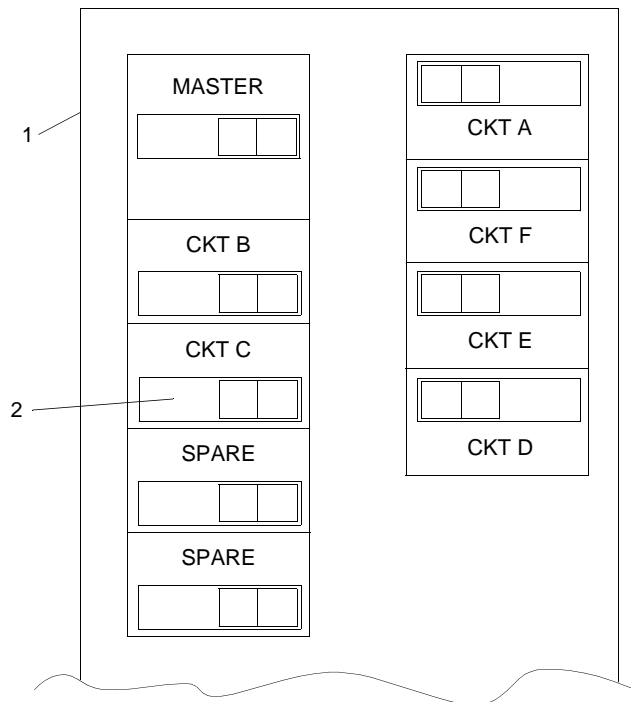
REMOVE PERSONNEL SHELTER FLUORESCENT LIGHT BULBS


Figure 1. Master Circuit Breaker

1. At personnel shelter electrical distribution panel (figure 1, item 1), position circuit breaker C (figure 1, item 2) to OFF (open) and tag out (FM 55-502).

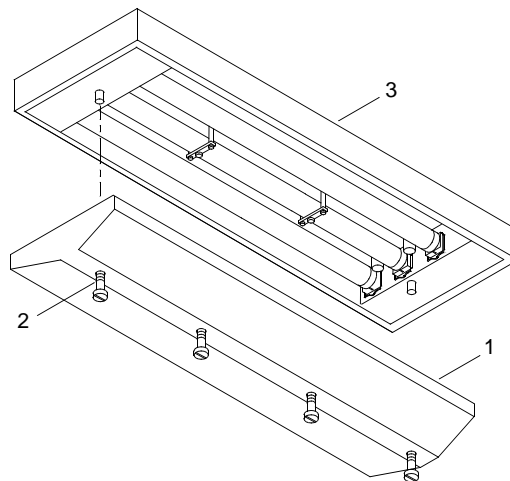


Figure 2. Light Cover Removal/Installation

2. Remove light cover (figure 2, item 1).
 - a. Loosen four captive screws (figure 2, item 2) holding light cover (figure 2, item 1) on light fixture (figure 2, item 3).

- b. Remove light cover (figure 2, item 1).

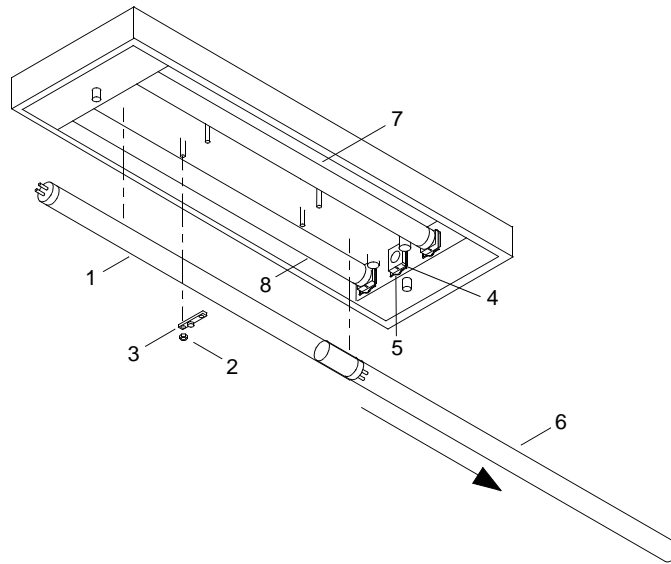


Figure 3. Fluorescent Light Bulb Removal/Installation

3. Remove middle light bulb (figure 3, item 1).
 - a. Loosen screws (figure 3, item 2) from brackets (figure 3, item 3) on middle light bulb (figure 3, item 1).
 - b. Remove brackets (figure 3, item 3).
 - c. Disengage light bulb lock (figure 3, item 4) from each end of middle light bulb (figure 3, item 1) that requires replacement.
 - d. Grasp middle light bulb (figure 3, item 1) and turn 90° clockwise.
 - e. Pull down on middle light bulb (figure 3, item 1) and remove from receptacle (figure 3, item 5).

NOTE

If middle light bulb is to be replaced, the red sleeve will be reused.

4. Remove sleeve (figure 3, item 6) from middle light bulb (figure 3, item 1).
5. Remove outer light bulbs (figure 3, items 7, 8).
 - a. Disengage outer light bulb lock (figure 3, item 4) from each end of outer light bulb (figure 3, items 7, 8) that requires replacement.
 - b. Grasp outer light bulb (figure 3, items 7, 8) and turn outer light bulb 90° clockwise.
 - c. Pull down on outer light bulb (figure 3, items 7, 8) and remove from receptacle (figure 3, item 5).

INSTALL PERSONNEL SHELTER FLUORESCENT LIGHT BULBS

1. Install middle light bulb (figure 3, item 1).
 - a. Slide sleeve (figure 3, item 6) onto middle light bulb (figure 3, item 1).
 - b. Position middle light bulb (figure 3, item 6) near receptacle (figure 3, item 5).
 - c. Slide end of middle light bulb (figure 3, item 6) into receptacle (figure 3, item 5).
 - d. Turn middle light bulb (figure 3, item 6) 90° until it clicks into place.
2. Install brackets (figure 3, item 3) and screws (figure 3, item 2) over middle light bulb (figure 3, item 6).
3. Install outer light bulbs (figure 3, items 7, 8).
 - a. Position outer light bulb (figure 3, items 7, 8) near receptacle (figure 3, item 5).
 - b. Slide end of outer light bulb (figure 3, items 7, 8) into receptacle (figure 3, item 5).
 - c. Turn outer light bulb (figure 3, items 7, 8) 90° until they click into place.
4. Position light cover (figure 2, item 1) over light fixture (figure 2, item 3).
5. Tighten four captive screws (figure 2, item 2) hand tight.
6. Remove warning tag from circuit breaker C (figure 1, item 2) and set circuit breaker to ON.
7. Perform operational check.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PERSONNEL SHELTER ELECTRICAL DISTRIBUTION PANEL
ACCESS COVER REMOVAL AND INSTALLATION**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

TM 9-6115-642-10

FM 55-502

Equipment Condition

Generator shut down. (TM 9-6115-642-10)

Secure generator and tag out. (FM 55-502)

WARNING



ELECTRICAL

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

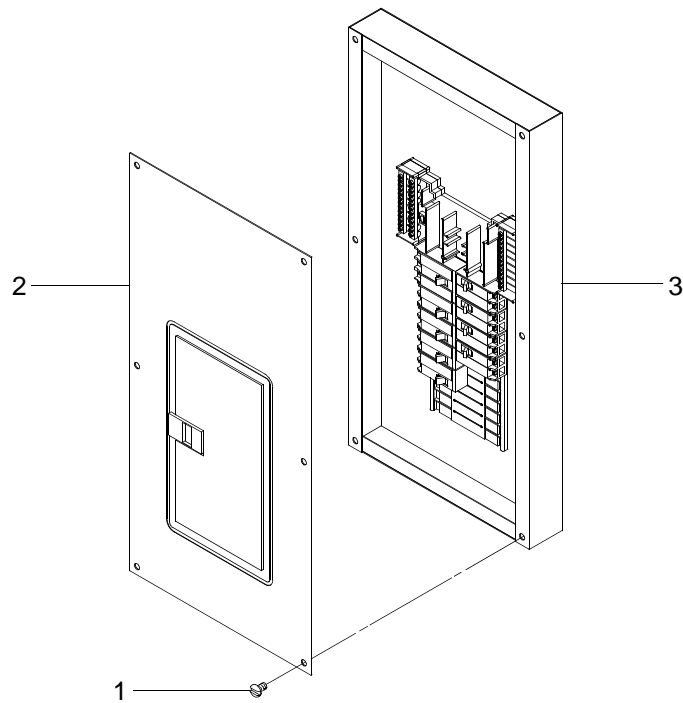
REMOVE PERSONNEL SHELTER ELECTRICAL DISTRIBUTION PANEL ACCESS COVER

Figure 1. Electrical Distribution Panel Access Cover

1. Remove six screws (figure 1, item 1) from panel (figure 1, item 2).
2. Remove panel (figure 1, item 2) from load distribution box (figure 1, item 3).

INSTALL PERSONNEL SHELTER ELECTRICAL DISTRIBUTION PANEL ACCESS COVER

1. Position panel (figure 1, item 2) on load distribution box (figure 1, item 3).
2. Install six screws (figure 1, item 1) through panel (figure 1, item 2) and tighten.
3. Remove warning tag from generator.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PERSONNEL SHELTER ELECTRICAL DISTRIBUTION PANEL THREE
POLE CIRCUIT BREAKER REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Circuit Breaker (TM 55-1945-227-24P)

Grease, Silicone Insulated Electric Motor (Item 16, WP 0045 00)

Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

TM 9-6115-642-10

FM 55-502

Equipment Condition

Generator shut down. (TM 9-6115-642-10)

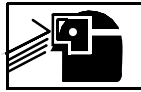
Secure generator and tag out. (FM 55-502)

Electrical distribution panel cover removed. (WP 0030 00)

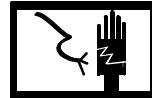
WARNING



CHEMICAL



EYE PROTECTION



ELECTRICAL

Wear proper eye and hand protection when working with chemicals. Failure to observe these precautions could result in serious injury or death.

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

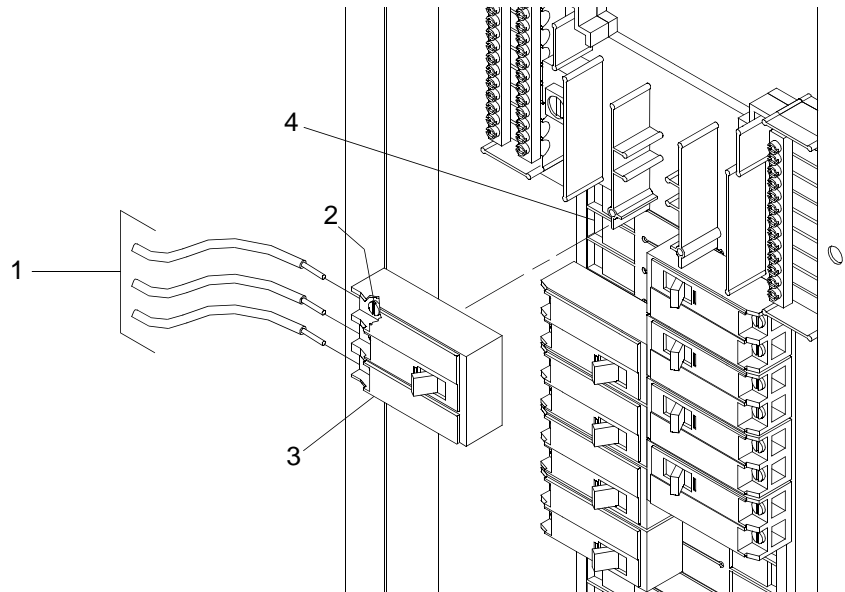
**REPLACE PERSONNEL SHELTER ELECTRICAL DISTRIBUTION
PANEL THREE POLE CIRCUIT BREAKER**

Figure 1. Three Pole Circuit Breaker

1. Label three wires (figure 1, item 1).
2. Loosen three screws (figure 1, item 2).
3. Pull wires (figure 1, item 1) straight out of circuit breaker (figure 1, item 3).
4. Firmly grasp circuit breaker (figure 1, item 3), rotate circuit breaker (figure 1, item 3) outward and remove from mounting cleats (figure 1, item 4). Discard circuit breaker (figure 1, item 3).
5. Install back side of new circuit breaker (figure 1, item 3) into mounting cleats (figure 1, item 4).
6. Rotate circuit breaker (figure 1, item 3) onto until it snaps into position.
7. Coat wires (figure 1, item 1) with silicone grease.
8. Install wires (figure 1, item 1) into circuit breaker (figure 1, item 3) and remove labels.
9. Tighten three screws (figure 1, item 2).
10. Install personnel shelter electrical distribution panel access cover. (WP 0030 00)
11. Position circuit breaker (figure 1, item 3) to ON position.
12. Remove warning tag from generator.
13. Start generator. (TM 9-6115-642-10)
14. Verify affected equipment operates.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PERSONNEL SHELTER ELECTRICAL DISTRIBUTION PANEL
DOUBLE POLE CIRCUIT BREAKER REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Circuit Breaker (TM 55-1945-227-24P)

Grease, Silicone Insulated Electric Motor (Item 16, WP 0045 00)

Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

TM 9-6115-642-10

FM 55-502

Equipment Condition

Generator shut down. (TM 9-6115-642-10)

Secure generator and tag out. (FM 55-502)

Electrical distribution panel cover removed. (WP 0030 00)

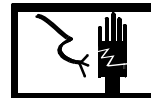
WARNING



CHEMICAL



EYE PROTECTION



ELECTRICAL

Wear proper eye and hand protection when working with chemicals. Failure to observe these precautions could result in serious injury or death.

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

NOTE

The following procedure is typical for the removal and installation of personnel shelter two pole circuit breakers.

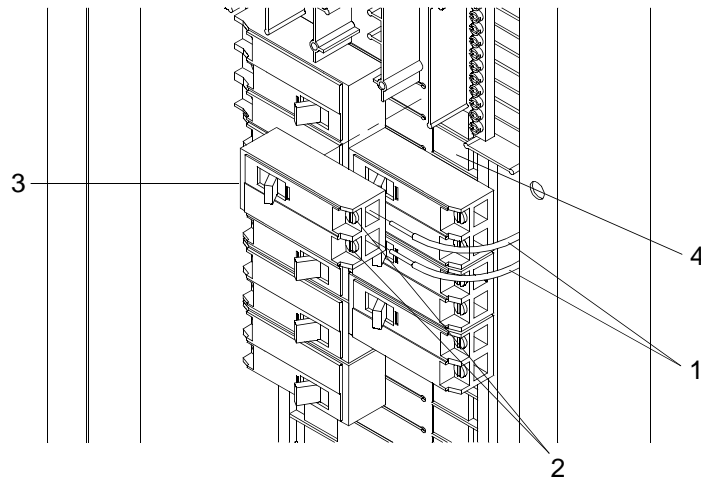
**REPLACE PERSONNEL SHELTER ELECTRICAL DISTRIBUTION
PANEL TWO POLE CIRCUIT BREAKER**

Figure 1. Two Pole Circuit Breaker

1. Label two wires (figure 1, item 1).
2. Loosen two screws (figure 1, item 2).
3. Pull wires (figure 1, item 1) straight out of circuit breaker (figure 1, item 3).
4. Firmly grasp circuit breaker (figure 1, item 3), rotate circuit breaker (figure 1, item 3) outward from mounting cleats (figure 1, item 4) and remove. Discard circuit breaker (figure 1, item 3).
5. Install back side of new circuit breaker (figure 1, item 3) into mounting cleats (figure 1, item 4).
6. Rotate circuit breaker (figure 1, item 3) until it snaps into position.
7. Coat wires (figure 1, item 1) with silicone grease.
8. Install wires (figure 1, item 1) into circuit breaker (figure 1, item 3) and remove labels.
9. Tighten two screws (figure 1, item 2).
10. Install personnel shelter electrical distribution panel access cover. (WP 0030 00)
11. Position circuit breaker (figure 1, item 3) to ON position.
12. Remove warning tag from generator.
13. Start generator. (TM 9-6115-642-10)
14. Verify affected equipment operates.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PERSONNEL SHELTER ELECTRICAL DISTRIBUTION PANEL
SINGLE POLE CIRCUIT BREAKER REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Circuit Breaker (TM 55-1945-227-24P)

Grease, Silicone Insulated Electric Motor (Item 16, WP 0045 00)

Tag, Danger (Item 35, WP 0045 00)

Personnel Required

Engineer 88L (1)

References

TM 9-6115-642-10

FM 55-502

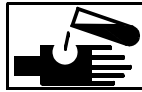
Equipment Condition

Generator shut down. (TM 9-6115-642-10)

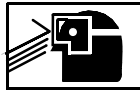
Secure generator and tag out. (FM 55-502)

Electrical distribution panel cover removed. (WP 0030 00)

WARNING



CHEMICAL



EYE PROTECTION



ELECTRICAL

Wear proper eye and hand protection when working with chemicals. Failure to observe these precautions could result in serious injury or death.

Make sure generator power is secured using proper tag-out procedure. Repair or replace components only after the generator has been shut down and tagged out. Performing maintenance while the generator is running could result in serious injury or death.

NOTE

The following procedure is typical for the removal and installation of personnel shelter single pole circuit breakers.

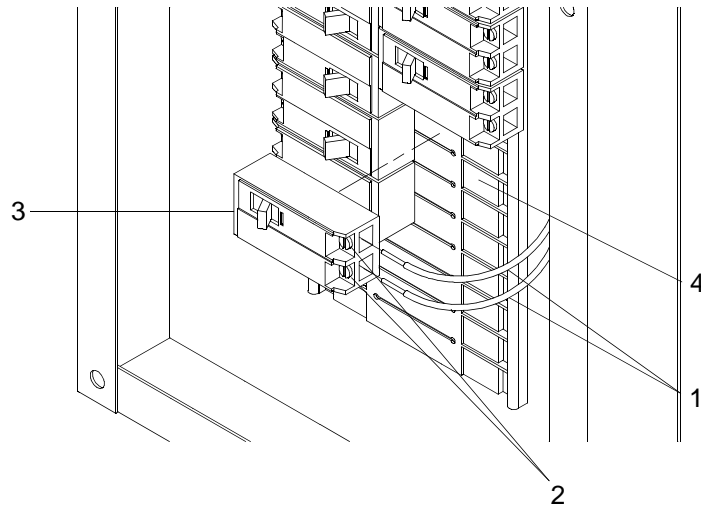
**REPLACE PERSONNEL SHELTER ELECTRICAL DISTRIBUTION
PANEL TWO POLE CIRCUIT BREAKER**

Figure 1. Single Pole Circuit Breaker

1. Label wires (figure 1, item 1).
2. Loosen two screws (figure 1, item 2).
3. Pull wires (figure 1, item 1) straight out of circuit breaker (figure 1, item 3).
4. Firmly grasp circuit breaker (figure 1, item 3), rotate circuit breaker (figure 1, item 3) outward from mounting cleats (figure 1, item 4) and remove. Discard circuit breaker (figure 1, item 3).
5. Install back side of new circuit breaker (figure 1, item 3) into mounting cleat (figure 1, item 4).
6. Rotate circuit breaker (figure 1, item 3) until it snaps into position.
7. Coat wires (figure 1, item 1) with silicone grease.
8. Install wires (figure 1, item 1) into circuit breaker (figure 1, item 3) and remove labels.
9. Tighten screws (figure 1, item 2).
10. Install personnel shelter electrical distribution panel access cover. (WP 0030 00)
11. Position circuit breaker (figure 1, item 3) to ON position.
12. Remove warning tag from generator.
13. Start generator. (TM 9-6115-642-10)
14. Verify affected equipment operates.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
TOWING LIGHT BATTERY REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

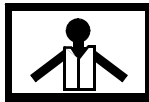
Materials/Parts

Battery, non-rechargeable, 6 volt (Item 4, WP 0045 00)

Personnel Required

Seaman 88K (1)

WARNING



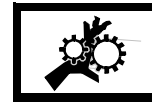
VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions may result in serious injury or death.

NOTE

This task is typical for the removal and installation of towing light batteries.

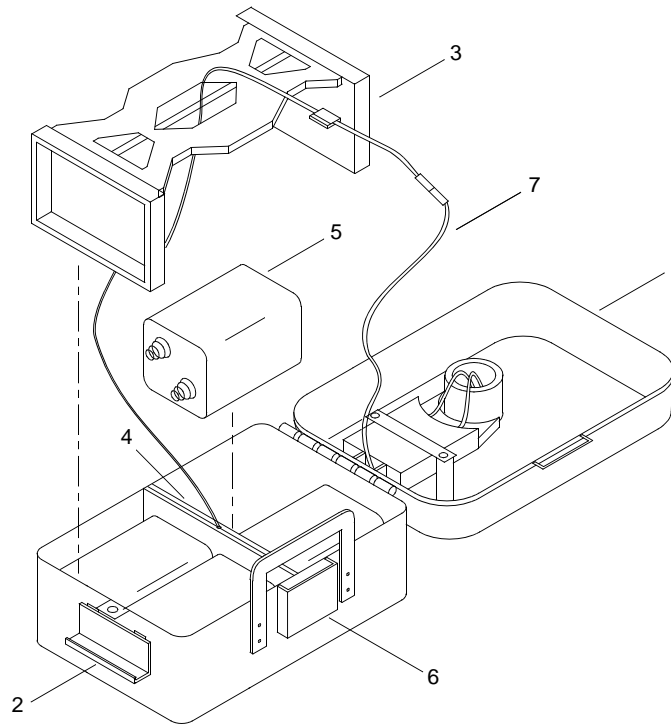
REMOVE TOWING LIGHT BATTERY

Figure 1. Towing Light Battery

1. Open towing light cover (figure 1, item 1) by unlatching clasp (figure 1, item 2).
2. Remove battery bracket (figure 1, item 3).
3. Remove conductor plate (figure 1, item 4).
4. Remove four batteries (figure 1, item 5) from light housing (figure 1, item 6).
5. Dispose of batteries per local procedures.

INSTALL TOWING LIGHT BATTERY

1. Install four new batteries (figure 1, item 5) in light housing (figure 1, item 6).
2. Install conductor plate (figure 1, item 4).
3. Install battery bracket (figure 1, item 3).
4. Position wire (figure 1, item 7) away from edges of light housing (figure 1, item 6).
5. Close towing light cover (figure 1, item 1) and latch clasp (figure 1, item 2).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
TOWING LIGHT INCANDESCENT BULB REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

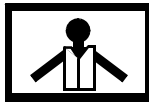
Materials/Parts

Bulb, Incandescent (TM 55-1945-227-24P)

Personnel Required

Seaman 88K (1)

WARNING



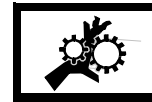
VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions may result in serious injury or death.

NOTE

The following procedure is typical for the removal and installation of towing light incandescent bulbs.

A spare bulb is located in each towing light.

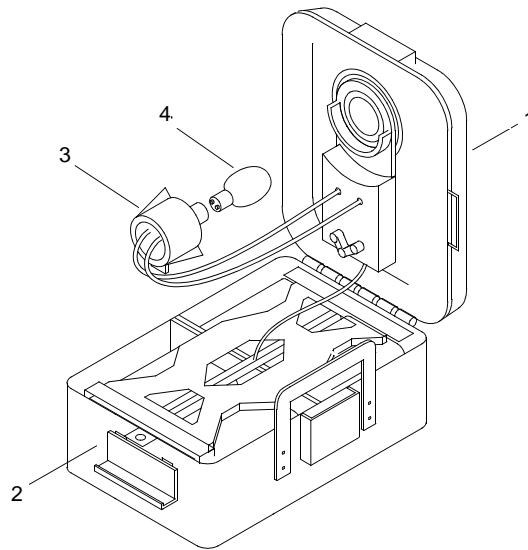
REMOVE TOWING LIGHT INCANDESCENT BULB

Figure 1. Towing Light Incandescent Bulb Replacement

1. Open towing light cover (figure 1, item 1) by unlatching clasp (figure 1, item 2).
2. Remove bulb holder (figure 1, item 3) from towing light cover (figure 1, item 1) by rotating counterclockwise and pulling out.
3. Remove bulb (figure 1, item 4) from bulb holder (figure 1, item 3) by pushing down, rotating counterclockwise and pulling out. Discard bulb (figure 1, item 4).

INSTALL TOWING LIGHT INCANDESCENT BULB

1. Install new bulb (figure 1, item 4) into bulb holder (figure 1, item 3) by pushing down and rotating clockwise.
2. Install bulb holder (figure 1, item 3) into towing light cover (figure 1, item 1) by pushing down and rotating clockwise.
3. Close towing light cover (figure 1, item 1) and latch clasp (figure 1, item 2).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
LIFE RING STROBE LIGHT BATTERY REPLACEMENT**

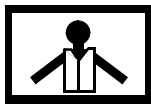
INITIAL SETUP:**Materials/Parts**

Battery, non-rechargeable, 6 volt (Item 4, WP 0045 00)

Personnel Required

Seaman 88K (1)

WARNING



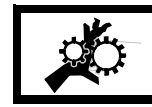
VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions may result in serious injury or death.

NOTE

The following procedure is typical for the removal and installation of life ring strobe light batteries.

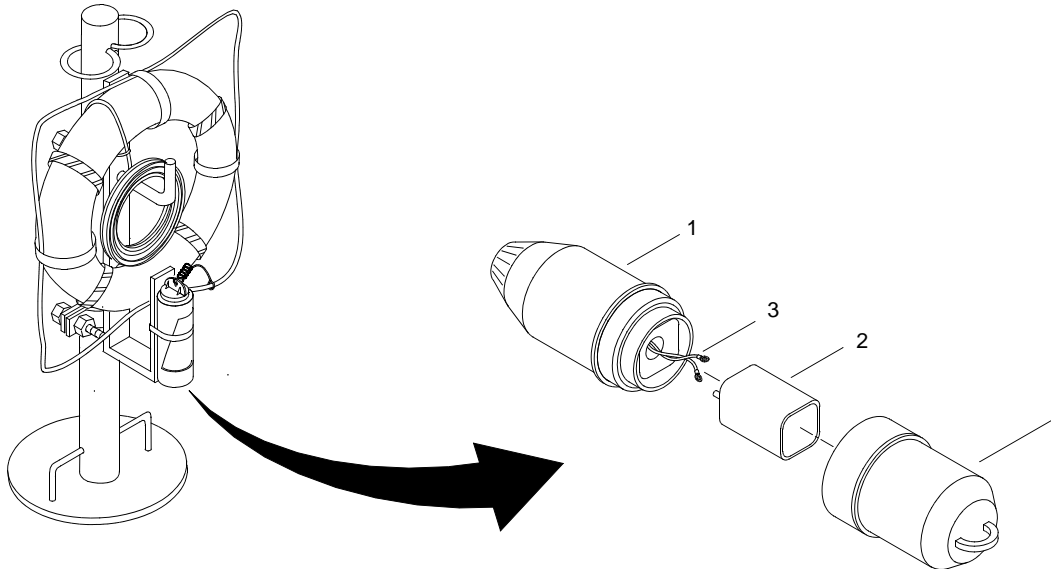
REMOVE LIFE RING STROBE LIGHT BATTERY

Figure 1. Towing Light Incandescent Bulb Replacement

1. Unscrew strobe light housing (figure 1, item 1) to expose battery (figure 1, item 2).

2. Disconnect two wires (figure 1, item 3) from battery (figure 1, item 2).
3. Remove battery (figure 1, item 2) and dispose of per local procedures.

INSTALL LIFE RING STROBE LIGHT BATTERY

1. Position new battery (figure 1, item 2) inside strobe light housing (figure 1, item 1).
2. Connect two wires (figure 1, item 3) to battery (figure 1, item 2).
3. Position both sides of the strobe light housing (figure 1, item 1) together and screw shut. Tighten strobe light housing (figure 1, item 1).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
HAND LANTERN BATTERIES REPLACEMENT**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Battery, non-rechargeable, 6 volt Qty 2 (Item 4, WP 0045 00)

Personnel Required

Seaman 88K (1)

NOTE

The following procedure is typical for the removal and installation of hand lantern batteries.

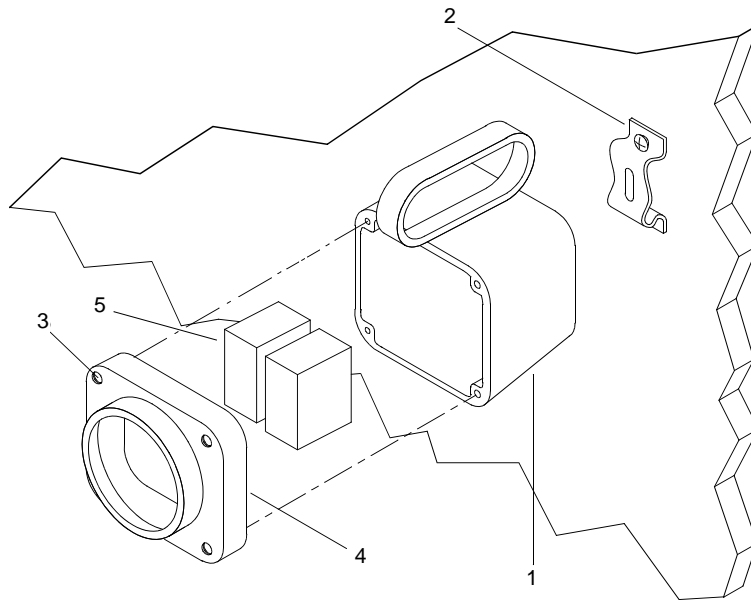
REMOVE HAND LANTERN BATTERIES

Figure 1. Hand Lantern Batteries Replacement

1. Rotate hand lantern (figure 1, item 1) 90° and remove from mounting bracket (figure 1, item 2).
2. Loosen four captive screws (figure 1, item 3) on cover (figure 1, item 4).
3. Remove cover (figure 1, item 4) and position hand lantern (figure 1, item 1) face up on work bench.
4. Remove two batteries (figure 1, item 5) from hand lantern (figure 1, item 1) and dispose of per local procedures.

INSTALL HAND LANTERN BATTERIES

1. Install two new batteries (figure 1, item 5) in hand lantern (figure 1, item 1).
2. Position cover (figure 1, item 4) on hand lantern (figure 1, item 1).
3. Tighten four captive screws (figure 1, item 3) to secure cover (figure 1, item 4) to hand lantern (figure 1, item 1).
4. Position hand lantern (figure 1, item 1) on mounting bracket (figure 1, item 2) and rotate 90°.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
HAND LANTERN INCANDESCENT BULB REPLACEMENT**

INITIAL SETUP:**Tools**

Tool Kit, General Mechanic's (Item 65, WP 0043 00)

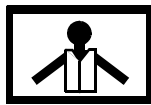
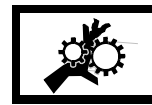
Materials/Parts

Lamp, Incandescent (TM 55-1945-227-24P)

Personnel Required

Seaman 88K (1)

WARNING

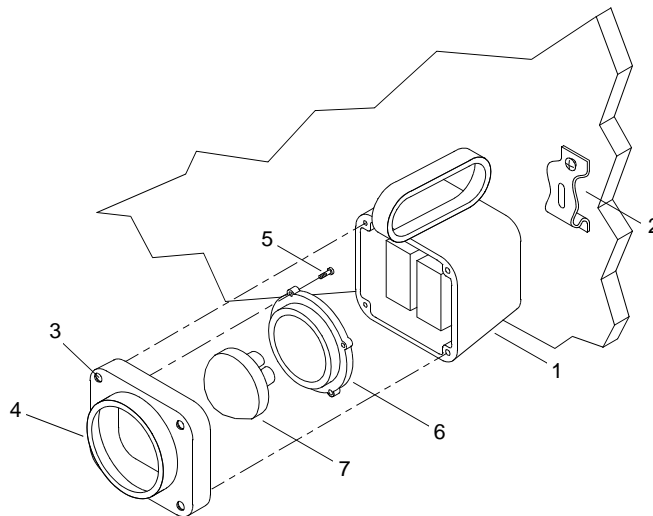
**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.

NOTE

These procedures are typical for the replacement of hand lantern incandescent bulbs.

A spare bulb is located in each hand lantern.

REPLACE HAND LANTERN INCANDESCENT BULB**Figure 1. Hand Lantern Bulb**

1. Rotate hand lantern (figure 1, item 1) 90° and remove from mounting bracket (figure 1, item 2).
2. Loosen four captive screws (figure 1, item 3) on cover (figure 1, item 4).
3. Remove cover (figure 1, item 4) and position face down on work bench.
4. Remove four retaining screws (figure 1, item 5) securing retaining ring (figure 1, item 6) over bulb (figure 1, item 7).
5. Remove retaining ring (figure 1, item 6) and bulb (figure 1, item 7) from cover (figure 1, item 4). Discard bulb (figure 1, item 7).
6. Position new bulb (figure 1, item 7) into cover (figure 1, item 4).
7. Position retaining ring (figure 1, item 6) over bulb (figure 1, item 7).
8. Install four retaining screws (figure 1, item 5) to secure retaining ring (figure 1, item 6) over the bulb (figure 1, item 7). Tighten screws (figure 1, item 5).
9. Position cover (figure 1, item 4) on hand lantern (figure 1, item 1).
10. Tighten four captive screws (figure 1, item 3) to secure cover (figure 1, item 4) to hand lantern (figure 1, item 1).
11. Position hand lantern (figure 1, item 1) on mounting bracket (figure 1, item 2) and rotate 90°.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PLACING IN SERVICE**

INITIAL SETUP:**Tools**

Toolkit, General Mechanic's (Item 65, WP 0043 00)

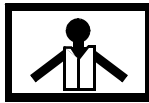
Personnel Required

Engineer 88L (1)

References

DA Form 2258
LO 9-6115-642-12
TM 9-6115-642-10
TM 55-1945-219-14&P
TM 55-1945-220-14&P
TM 55-1945-217-14&P
TM 55-1945-218-14&P

WARNING



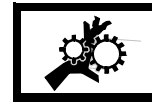
VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions may result in serious injury or death.

EQUIPMENT NOT REQUIRING DEPRESERVATION

Intermediate Section ISOPAKs
Combination Beach/Sea End Section ISOPAKs
Fendering System Containers
Deck Mat Container

DEPRESERVE BII CONTAINER

1. Remove tape from around doors.
2. Remove eight 80 unit silica gel desiccant bags from floor and stow in BII container.

DEPRESERVE GENERATOR CONTAINER

1. Refer to DA Form 2258 and TM 9-6115-642-10 for de-preservation procedures on 10 kW generator.
2. Remove tape from around the edges of two damper cover plates, limited access cover plate, shore tie access cover, and entry door.

3. Drain 30W preservative lubricating oil. (MIL-PRF-21260 Grade 2) from 10 KW generator engine.
4. Fill engine with lubricating oil in accordance with Lubrication Order (LO 9-6115-642-12).
5. Remove tape from all engine openings.
6. Remove tape from two tank breather openings.
7. Install two tank breather vents.
8. As required, fill base fuel tank.
9. Remove tape from all 10 KW generator access doors.
10. Tension generator drive belt.
11. Install one twelve volt battery on each side of the 10 KW generator.
12. Attach generator battery cables to batteries.
13. Install 12 VDC light battery.
14. Attach 12 VDC light battery cables to battery.
15. Remove two damper cover plates.
16. Remove limited access cover.

NOTE

The desiccant may be reactivated or "dried out" for future use.

Refer to reactivation instructions attached to each bag for information on the temperature and time interval for reactivation.

17. Open shore tie access cover and remove one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
18. Open fuel system electrical junction box and remove one 1/2 unit size silica gel desiccant bag and one corrosion inhibitor.
19. Open 120 VAC panel board and remove one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
20. Open three-pole disconnect switch and remove one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
21. Open agent releasing control panel and remove one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
22. Remove cylinder cap from CO₂ cylinder.
23. Retrieve plastic bag containing discharge head from overhead conduit. Remove discharge head from bag.
24. Install on discharge head on top of CO₂ cylinder.
25. Remove protective cover from control port on discharge head.

-
26. Stow protective cover and cylinder cap.
 27. Remove tape from flexible discharge hose end opening.
 28. Attach flexible discharge hose to discharge head.
 29. Remove the electrical/mechanical control head from overhead conduit.
 30. Connect electrical/mechanical control head to discharge head.
 31. Install 6 VDC battery in hand lantern. (WP 0037 00)
 32. Install two batteries in the agent releasing control panel. (WP 0009 00)
 33. Remove twenty 80 unit size silica gel desiccant bags from floor of container.
 34. Stow desiccants and corrosion inhibitors in containers in BII container.

DEPRESERVE PERSONNEL SHELTER

1. Refer to TM 55-1945-220-14&P for specific de-preservation procedures on package terminal air conditioner and heat pump.
2. Refer to TM 55-1945-219-14&P for specific de-preservation procedures on toilet.
3. Remove caution tag, desiccants and corrosion inhibitors from electrical distribution panel.
4. Stow desiccants and corrosion inhibitors in containers in BII container.

DEPRESERVE LIGHT TOWERS

1. Remove Corrosion Intercept Stretch Wrap from power unit.

NOTE

The desiccant may be reactivated or “dried out” for future use.

Refer to reactivation instructions attached to each bag for information on the temperature and time interval for reactivation.

2. Remove three 80 unit size silica gel desiccant bags.

NOTE

Do not use No. 2 diesel fuel, as the Army has experienced fuel line fouling from bio-growth. This Kubota engine has not been tested with JP-8 fuel; use of this fuel is not recommended.

Important: Be sure to use a strainer when filling the fuel tank, or dirt or sand in the fuel may cause trouble in the fuel injection pump.

3. Fill fuel tank with JP-5 fuel. The tank capacity is 30 US gallons.
4. Verify coolant levels and test consistency in radiator and reserve reservoir. Replenish with water and antifreeze (50/50 mixture). (TM 55-1945-217-14&P)

5. Install a fresh battery equivalent to battery removed during preservation. Ensure the battery posts and attached cables are clean, using a wire brush if required. Apply a light coat of grease found in the BII to the terminals and cable ends. Use either the supplied grease gun with a 10 oz. tube, or grease from the 1 qt. pail. (TM 55-1945-217-14&P)
6. Inspect the level of water in the battery. If required, add only distilled water. (TM 55-1945-217-14&P)
7. Charge battery to full charge. (TM 55-1945-217-14&P)
8. Check fuel/water separator and drain if necessary. (TM 55-1945-217-14&P)
9. Bleed the fuel system. (TM 55-1945-217-14&P)
10. Drain engine preservation oil and replace with oil conforming to MIL-PRF-2104G, or having properties of API classification CD/CE grades. (TM 55-1945-217-14&P)
11. Replace engine oil filter. (TM 55-1945-218-14&P)
12. Adjust drive belt tension. (TM 55-1945-218-14&P)
13. Fill the fuel tank. (TM 55-1945-217-14&P)
14. Remove tape (ASTM D5486 Type IV) from all engine openings.
15. Stow desiccants in containers in BII container.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PREPARATION FOR STORAGE OR SHIPMENT**

INITIAL SETUP:**Tools**

Adapter, Forklift (Item 1, WP 0043 00)
Assembly, Container Push Rod (push-pull) (Item 4, WP 0043 00)
Sling, Endless (8,400 lb.) (Item 54, WP 0043 00)
Sling, Endless (53,000 lb.) (Item 53, WP 0043 00)
Sling, Chain (Item 50, WP 0043 00)
Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Corrosion Preventive Compound, Class I, Grade I (Item 8, WP 0045 00)
Corrosion Preventive Compound, Class I, Grade II (Item 9, WP 0045 00)
Grease, Aircraft (Item 14, WP 0045 00)
Lubricating Oil, Exposed Gear (Item 27, WP 0045 00)
Lubricating Oil, Engine, 15W40 Grade (Item 25, WP 0045 00)
Lubricating Oil, Gear, 80W90 Grade (Item 28, WP 0045 00)
Lubricating Oil, General Purpose (Item 29, WP 0045 00)
Rag, Wiping, Wiping (Item 31, WP 0045 00)

Personnel Required

Cargo Specialist 88H (1)
Seaman 88K (1)
Engineer 88L (1)

References

TB 43-0144
MIL-HDBK-138
TM 55-1945-227-24

NOTE**REINSPECTION OF ALL MODULES AND ISO CONTAINERS**

THE MCS modules have been tested and certified to conform to the Convention for Safe Containers (CSC) protocol and 49 CFR 451. This certification makes the modules eligible for commercial and defense intermodal movement. The CSC certification is represented by the CSC safety plates affixed to every module. To maintain this intermodal eligibility, every module must be reinspected by a certified inspector IAW 49 CFR 452 before the reinspection date stamped on the CSC safety plate. Modules should not be offered to the intermodal transportation systems with less than 60 days of certification remaining. This reinspection requirement also applies to ISO containers. Containers must be reinspected in accordance with MIL-HDBK-138.

STORAGE DEFINITIONS

Short Term Storage - Shipment within continental United States (CONUS) or storage up to 90 days.

Long Term Level A - Storage in non-humidity controlled environment for up to 36 months, such as above deck storage on an ocean going vessel.

Long Term Level B - Storage in a humidity controlled environment for up to 36 months, such as may be found below deck in an ocean going vessel where humidity is restricted to less than 50%.

PRESERVE INTERMEDIATE SECTION MODULES FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A & -B)

1. Drain water from modules. (TM 55-1945-227-24)
2. Remove rust, corrosion and marine growth from external surfaces. (TB 43-0144)
3. Wash and dry.
4. Paint all disturbed exterior surfaces of the modules. (TB 43-0144)
5. Lubricate connector pins and springs with aircraft grease.
6. Spray water displacing lubricating oil onto moving parts and exposed surfaces of flexors, lifting shackle padeyes, and guillotine assemblies.

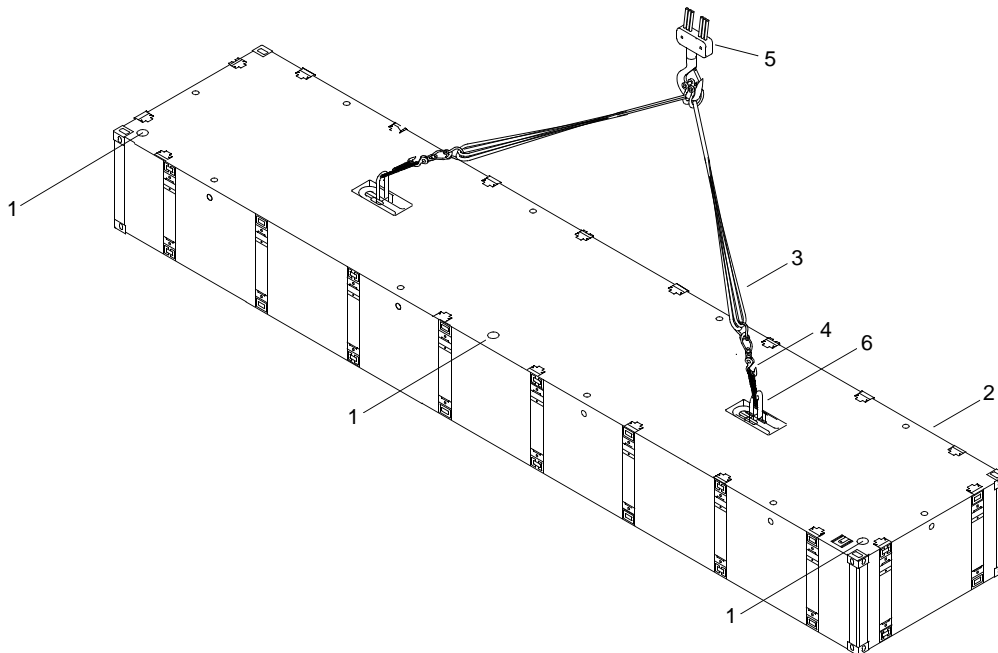
ASSEMBLE MODULE ISOPAK

Figure 1. Lifting the Center Module

1. Verify drain plugs (figure 1, item 1) on center module (figure 1, item 2) are installed and tight.
2. Attach two 53,000 lb slings (figure 1, item 3) and 36,000 lb adjustable chain slings (figure 1, item 4) from crane (figure 1, item 5) to padeyes (figure 1, item 6) on center module (figure 1, item 2).

WARNING**HEAVY PARTS**

Modules are very heavy. Stay clear of modules when they are lifted. Falling or swinging modules may cause serious injury or death.

3. Using slings (figure 1, items 3 and 4) and crane (figure 1, item 5), lift center module (figure 1, item 2) and place in position for storage or shipment.
4. Remove 36,000 lb adjustable chain slings (figure 1, item 4) from padeyes (figure 1, item 6) on center module (figure 1, item 2).
5. Remove 53,000 lb slings (figure 1, item 3) from crane (figure 1, item 5).

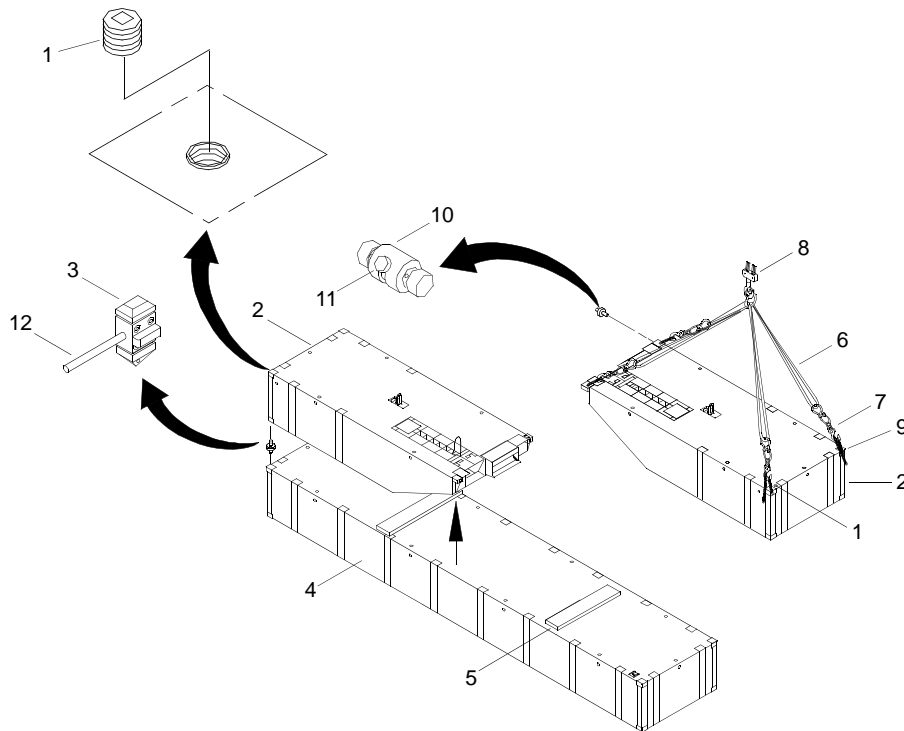


Figure 2. Module ISOPAK Assembly

6. Verify drain plugs (figure 2, item 1) on end rake modules (figure 2, item 2) are installed and tight.
7. Place four vertical twistlocks (figure 2, item 3) in corners of center module (figure 2, item 4).
8. Place wood planks (figure 2, item 5) on top of center module (figure 2, item 4).
9. Attach four 8,400 lb slings (figure 2, item 6) and 36,000 lb adjustable chain slings (figure 2, item 7) from crane (figure 2, item 8) to corners (figure 2, item 9) on end rake module (figure 2, item 2).

WARNING

**HEAVY PARTS**

Modules are very heavy. Stay clear of modules when they are lifted. Falling or swinging modules may cause serious injury or death.

10. Using slings (figure 2, items 6 and 7) and crane (figure 2, item 8), lift end rake module (figure 2, item 2) and place on top of center module (figure 2, item 4).
11. Remove 36,000 lb adjustable chain slings (figure 2, item 7) from corners (figure 2, item 9) on end rake module (figure 2, item 2).
12. Repeat step 9 through step 11 for second end rake module (figure 2, item 2).
13. Remove 8,400 lb slings (figure 2, item 6) from crane (figure 2, item 8).

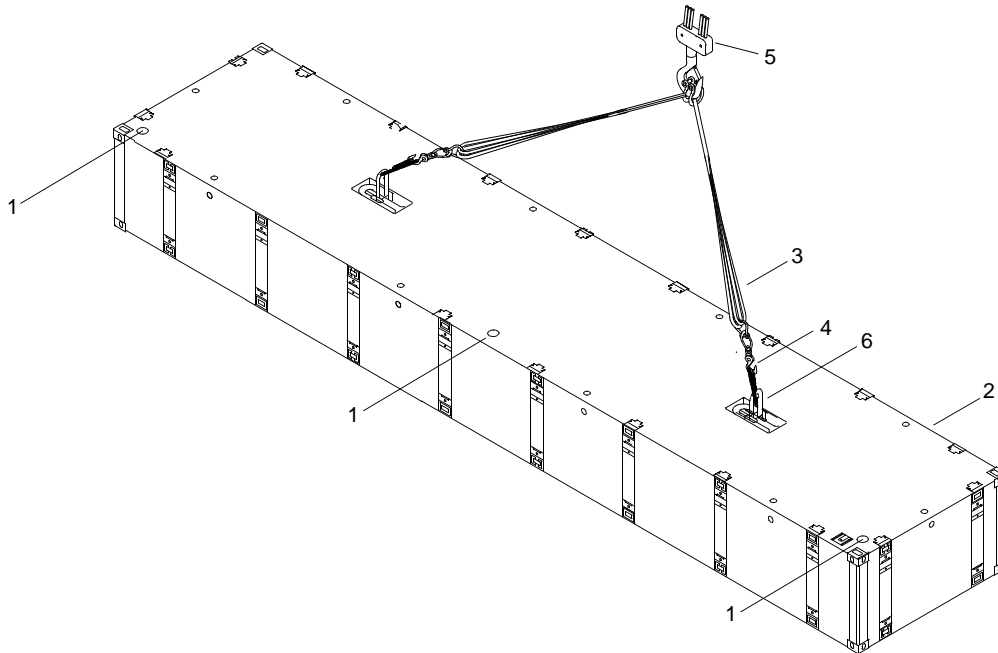
CAUTION

Either horizontal twistlocks or bridgelocks may be used to connect two end rake modules. Bridgelocks are not as strong as twistlocks and must *not* be used when ISOPAKs are to be transported commercially by ship, rail or truck. Bridgelocks may only be used when ISOPAKs are to be transported by truck or rail locally, on-post or transport under military control. Failure to follow these instructions may result in equipment damage.

14. Install two horizontal twistlocks (figure 2, item 10) or bridgelocks between end rake modules (figure 2, item 2). Tighten horizontal twistlocks (figure 2, item 10) by rotating levers (figure 2, item 11).
15. Lock four vertical twistlocks (figure 2, item 3) by rotating levers (figure 2, item 12).

PRESERVE COMBINATION BEACH/SEA END SECTION MODULES FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A & -B)

1. Drain water from modules. (TM 5-1945-227-24)
2. Remove rust, corrosion and marine growth from external surfaces. (TB 43-0144)
3. Wash and dry.
4. Paint all disturbed exterior surfaces of the modules. (TB 43-0144)
5. Lubricate connector pins and springs with aircraft grease.
6. Spray water displacing lubricating oil onto moving parts and exposed surfaces of flexors, lifting shackle padeyes, and guillotine assemblies.

ASSEMBLE COMBINATION BEACH/SEA END MODULE ISOPAK**Figure 3. Lifting the Center Module**

1. Verify drain plugs (figure 3, item 1) on center module (figure 3, item 2) are installed and tight.
2. Attach two 53,000 lb slings (figure 3, item 3) and 36,000 lb adjustable chain slings (figure 3, item 4) from crane (figure 3, item 5) to padeyes (figure 3, item 6) on center module (figure 3, item 2).

WARNING**HEAVY PARTS**

Modules are very heavy. Stay clear of modules when they are lifted. Falling or swinging modules may cause serious injury or death.

3. Using slings (figure 3, items 3 and 4) and crane (figure 3, item 5), lift center module (figure 3, item 2) and place in position for storage or shipment.
4. Remove 36,000 lb adjustable chain slings (figure 3, item 4) from padeyes (figure 3, item 6) on center module (figure 3, item 2).
5. Remove 53,000 lb slings (figure 3, item 3) from crane (figure 3, item 5).

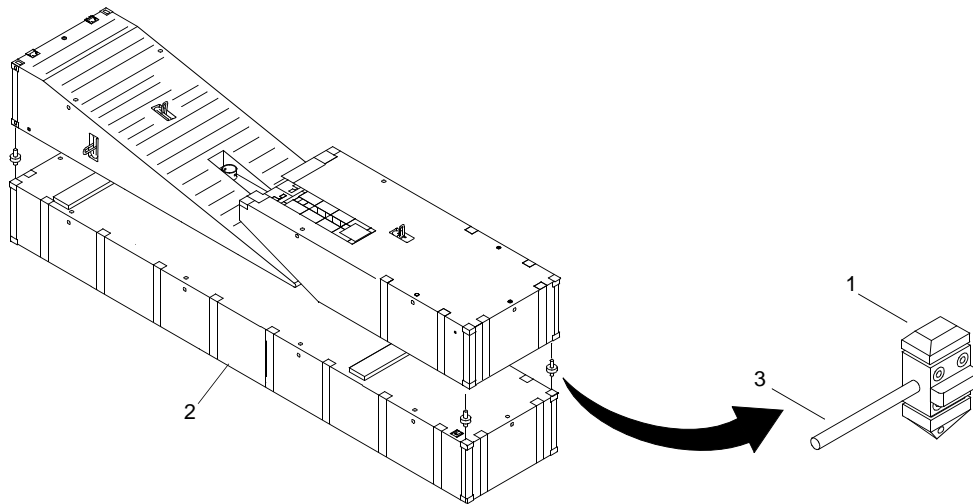


Figure 4. Combination Beach/Sea End Module Vertical Twistlocks

6. Place four vertical twistlocks (figure 4, item 1) in corners of center module (figure 4, item 2).

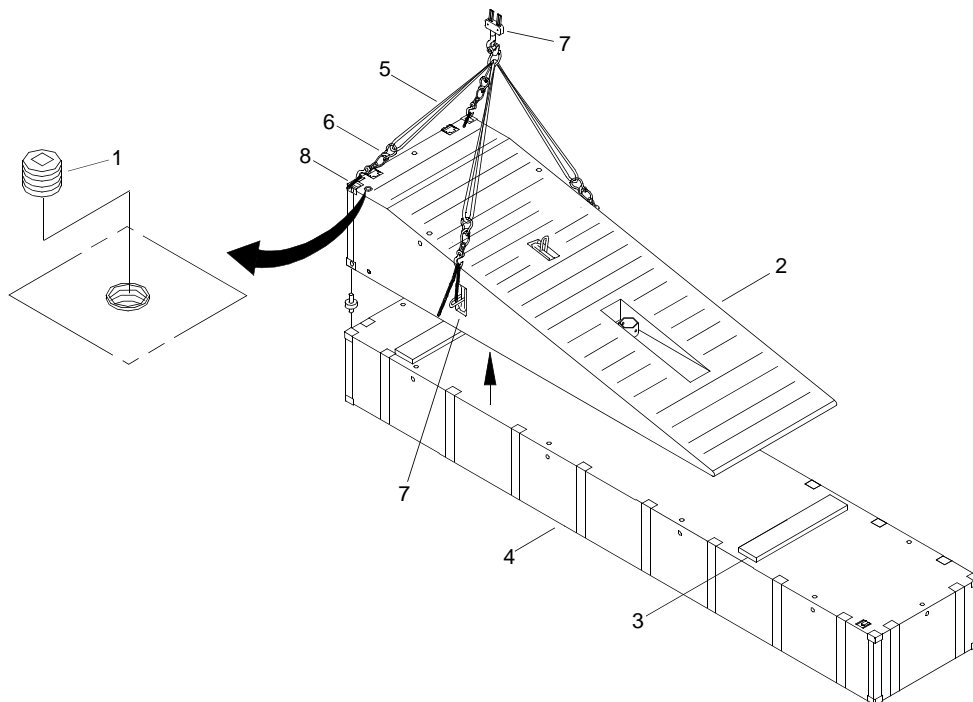


Figure 5. Placing the CBSE Module

7. Verify drain plug (figure 5, item 1) on CBSE module (figure 5, item 2) is installed and tight.
8. Place wood planks (figure 5, item 3) from top of center module (figure 5, item 4).
9. Attach four 8,400 lb slings (figure 5, item 5) and 36,000 lb adjustable chain slings (figure 5, item 6) from crane (figure 5, item 7) to two corners (figure 5, item 8) and two side padeyes (figure 5, item 7) on CBSE module (figure 5, item 2).

10. Using slings (figure 5, items 5 and 6) and crane (figure 5, item 7), lift CBSE module (figure 5, item 2) from top of center module (figure 5, item 4).
11. Remove 36,000 lb adjustable chain slings (figure 5, item 6) from two corners (figure 5, item 8) and two side padeyes (figure 5, item 7) on CBSE module (figure 5, item 2).
12. Remove 8,400 lb slings (figure 5, item 5) from crane (figure 5, item 7).

NOTE

Either a left, right or center end rake can be mounted on the center module with a CBSE.

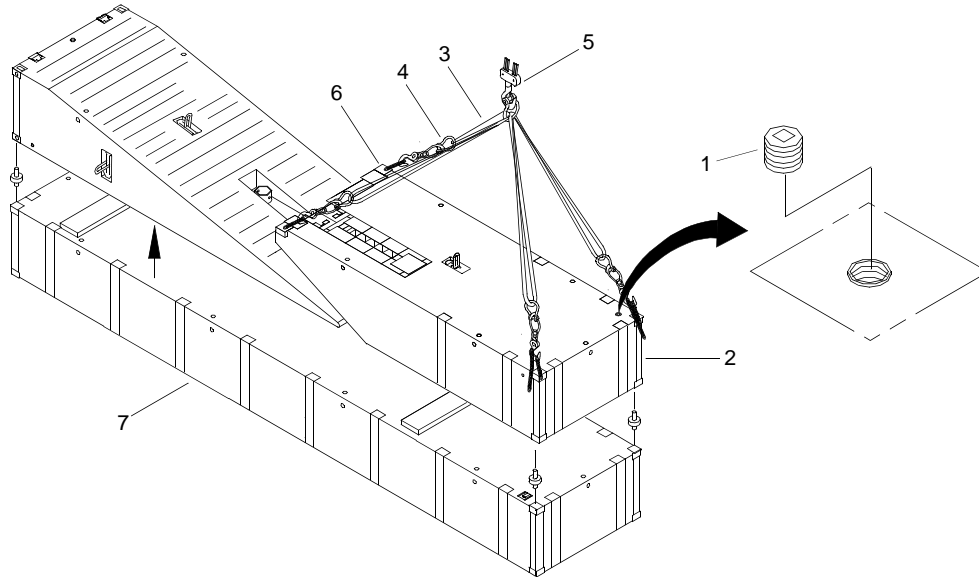


Figure 6. Placing the End Rake Module

13. Verify drain plugs (figure 6, item 1) on end rake modules (figure 6, item 2) are installed and tight.
14. Attach four 8,400 lb slings (figure 6, item 3) and 36,000 lb adjustable chain slings (figure 6, item 4) from crane (figure 6, item 5) to corners (figure 6, item 6) on end rake module (figure 6, item 2).

WARNING



HEAVY PARTS

Modules are very heavy. Stay clear of modules when they are lifted. Falling or swinging modules may cause serious injury or death.

15. Using slings (figure 6, items 3 and 4) and crane (figure 6, item 5), lift end rake module (figure 6, item 2) and place on top of center module (figure 6, item 7).
16. Remove 36,000 lb adjustable chain slings (figure 6, item 4) from corners (figure 6, item 6) on end rake module (figure 6, item 2).

17. Lock four vertical twistlocks (figure 4, item 1) by rotating levers (figure 4, item 3).

PREPARE 3 FT BY 5 FT & 5 FT BY 10 FT SHIP FENDERING SYSTEMS AND CONTAINERS FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A & -B)

NOTE

There are two different 3 ft by 5 ft and 5 ft by 10 ft fender containers. One container has three 3 ft by 5 ft fender pallets and the other has four.

The following procedure is typical for the preparation all 3 ft by 5 ft and 5 ft by 10 ft fenders and containers.

1. Open container and remove pallets. (WP 0007 00)
2. Inspect ISO container. (MIL-HDBK-138)
3. Wash all fenders and pallets with fresh water and allow to thoroughly dry.
4. Remove rust and corrosion from surfaces of pallets and containers. (TB 43-0144)
5. Paint surfaces of pallets and containers. (TB 43-0144)
6. Lubricate fender chains, end swivels and shackles with lubricating oil (exposed gear).

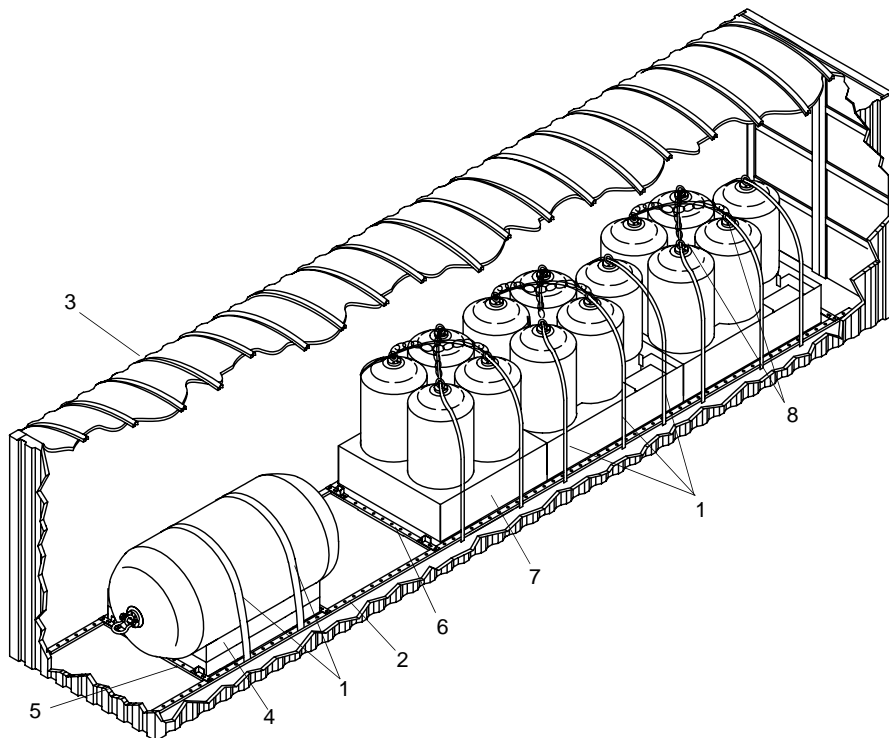


Figure 7. 3 ft by 5 ft & 5 ft by 10 ft Fender Container

7. Attach two tie down straps (figure 7, item 1) to the port side floor track (figure 7, item 2), at the rear of the container (figure 7, item 3). Place the straps out of the way to allow loading.

8. Using forklift, place 5 ft by 10 ft fender pallet (figure 7, item 4) inside the door of the container (figure 7, item 3), between the floor tracks (figure 7, item 2).
9. Using forklift and push-pull rod, position 5 ft by 10 ft fender pallet (figure 7, item 4) in container (figure 7, item 3) so fender will clear center ceiling bow when loaded into pallet.

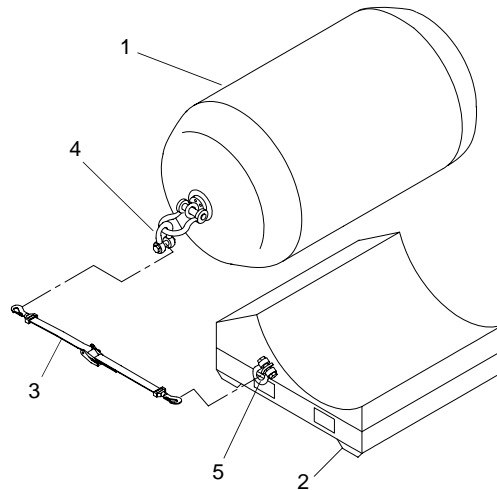


Figure 8. 5 ft by 10 ft Fender and Pallet

10. Using crane, slings and shackles place 5 ft by 10 ft fender (figure 8, item 1) in pallet (figure 8, item 2).
11. Attach tie down straps (figure 8, item 3) to the fender shackles (figure 8, item 4) and pallet shackles (figure 8, item 5). Tighten straps (figure 8, item 3).
12. Using forklift and push-pull rod, push the fender pallet (figure 7, item 4) to the rear of container (figure 7, item 3) and against fixed track stop (figure 7, item 5).
13. Pull tie down straps (figure 7, item 1) over fender and pallet (figure 7, item 4) and attach loose ends to other floor track (figure 7, item 2). Tighten straps (figure 7, item 1).
14. Install a track stop (figure 7, item 6) in front of 5 ft by 10 ft fender pallet (figure 7, item 4). (WP 0007 00)
15. Install a track stop (figure 7, item 6) at the red marks for the next pallet.
16. Attach one end of tie down straps (figure 7, item 1) to floor track (figure 7, item 2) for the next pallet.

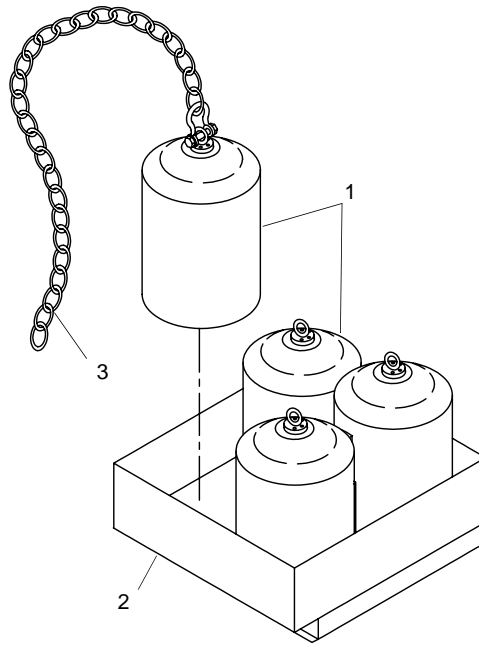


Figure 9. 3 ft by 5 ft Fenders and Pallet

17. Using crane and slings, place 3 ft by 5 ft fenders (figure 9, item 1) in pallet (figure 9, item 2).
18. Place fender chains (figure 9, item 3) in the center of the pallet (figure 9, item 2), between fenders (figure 9, item 1).
19. Using forklift, place a 3 ft by 5 ft fender pallet (figure 7, item 7) inside the door of the container (figure 7, item 3), between the floor tracks (figure 7, item 2).
20. Using forklift and push-pull rod, push the fender pallet (figure 7, item 7) towards the rear of container (figure 7, item 3) and against the track stop (figure 7, item 6).
21. Pull tie down straps (figure 7, item 1) over fenders and pallet (figure 7, item 7), routing them through the fender shackles (figure 7, item 8).
22. Attach loose ends of tie down straps (figure 7, item 1) to other floor track (figure 7, item 2). Tighten straps (figure 7, item 1).

NOTE

One container holds three 3 ft by 5 ft fender pallets and the other holds four.

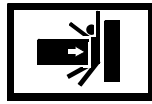
23. Repeat step 16 through step 22 for the remaining 3 ft by 5 ft fender pallets (figure 7, item 7).
24. Install a track stop (figure 7, item 6) in front of last 5 ft by 10 ft fender pallet (figure 7, item 4). (WP 0007 00)
25. Install ceiling bows and tarp. (WP 0007 00)
26. Close and latch container doors.

PREPARE 3 FT BY 5 FT & 5 FT BY 10 FT SHIP FENDERING SYSTEMS AND CONTAINERS FOR SHORT TERM STORAGE OR SHIPMENT

1. Open container and remove pallets. (WP 0007 00)
2. Inspect ISO container. (MIL-HDBK-138)
3. Wash all fenders and pallets with fresh water and allow to thoroughly dry.
4. Repeat step 6 through step 26 under “Prepare 3 ft by 5 ft & 5 ft by 10 ft Ship Fendering Systems and Containers for Long Term Storage or Shipment (Level-A & -B)” in this WP.

PREPARE 4 FT BY 12 FT SHIP FENDERING SYSTEM & MOORING BITTS AND CONTAINER FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A & -B)

1. Open container and remove pallets and push-pull rod. (WP 0007 00)
2. Inspect ISO container. (MIL-HDBK-138)
3. Wash all fenders, mooring bitts and pallets with fresh water and allow to thoroughly dry.
4. Remove rust and corrosion from surfaces of pallets and container. (TB 43-0144)
5. Paint surfaces of pallets and container. (TB 43-0144)
6. Lubricate fender chains, end swivels and shackles with lubricating oil (exposed gear).

WARNING**HEAVY PARTS**

Pallets and fenders are very heavy. Stay clear when they are lifted or moved. Failure to comply may cause serious injury or death.

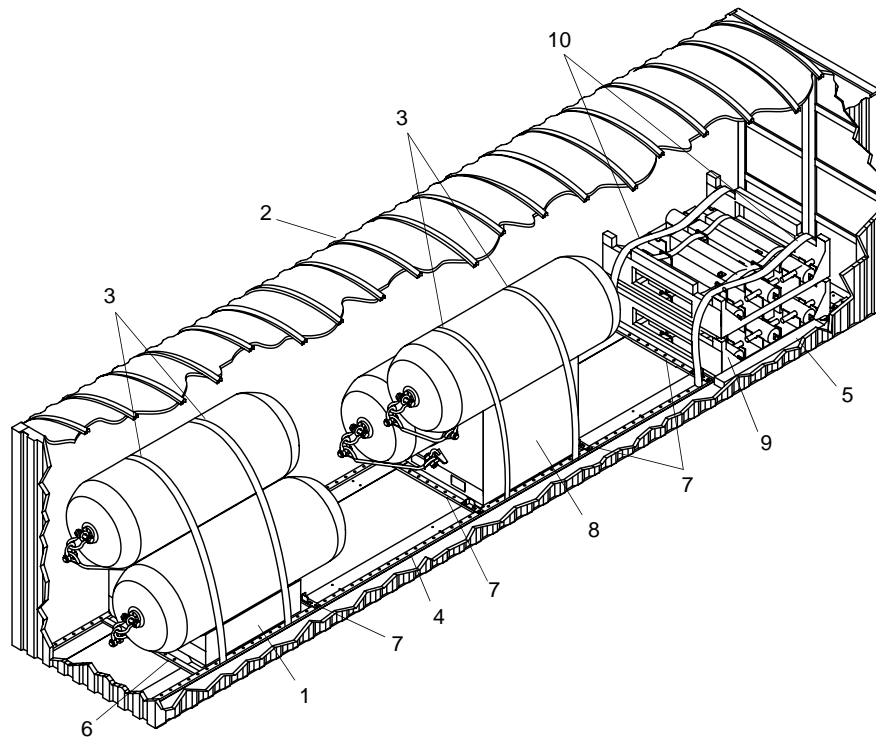


Figure 10. 4 ft by 12 ft Fender & Mooring Bitt Container

7. Using forklift, position first empty fender pallet (figure 10, item 1) in container (figure 10, item 2) so that fenders will clear center ceiling bow when placed on pallet.
8. Attach one end of two tie down straps (figure 10, item 3) to one side of the floor track (figure 10, item 4), at the first fender pallet (figure 10, item 1) position. Place straps out of the way for loading.

NOTE

Fenders and pallets have centerline markings to help with alignment.

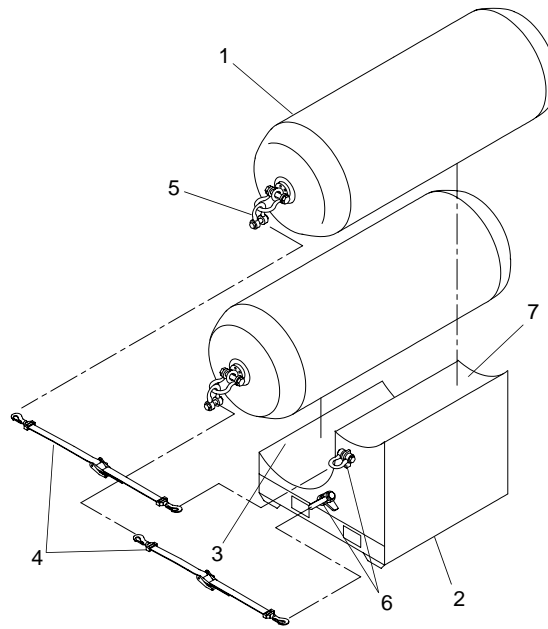


Figure 11. 4 ft by 12 ft Fender and Pallet

9. Using crane, slings and shackles place 4 ft by 12 ft fender (figure 11, item 1) in pallet (figure 11, item 2), centered in the lower pallet position (figure 11, item 3).
10. Attach tie down straps (figure 11, item 4) to the fender shackles (figure 11, item 5) and pallet shackles (figure 11, item 6). Tighten straps (figure 11, item 4).
11. Using crane, slings and shackles place 4 ft by 12 ft fender (figure 11, item 1) in pallet (figure 11, item 2), centered in the upper pallet position (figure 11, item 7).
12. Attach tie down straps (figure 11, item 4) to the fender shackles (figure 11, item 5) and pallet shackles (figure 11, item 6). Tighten straps (figure 11, item 4).
13. Using forklift and push-pull rod (figure 10, item 5), push fender pallet (figure 10, item 1) to rear of container (figure 10, item 2) and against fixed track stop (figure 10, item 6).
14. Pull two tie down straps (figure 10, item 3) over fenders and pallet (figure 10, item 1) and attach free ends to opposite floor track (figure 10, item 4). Tighten straps (figure 10, item 3).
15. Install a track stop (figure 10, item 7) in front of first pallet (figure 10, item 1). (WP 0007 00)
16. Install a track stop (figure 10, item 7) at the red marks for second fender pallet (figure 10, item 8). (WP 0007 00)
17. Attach one end of two tie down straps (figure 10, item 3) to one side of the floor track (figure 10, item 4), at the second fender pallet (figure 10, item 8) position. Place straps out of the way for loading.

WARNING

The fender pallets must be oriented in opposite directions as shown in figure 10. Failure to comply will cause the container to be unbalanced when lifted, which may result in the serious injury, death, or equipment damage.

18. Using forklift, position second fender pallet (figure 10, item 8) inside container (figure 10, item 2) doors, oriented in opposite direction of first fender pallet (figure 10, item 1).
19. Repeat step 9 through step 12 for remaining fenders and second pallet (figure 10, item 8).
20. Using forklift and push-pull rod (figure 10, item 5), push second fender pallet (figure 10, item 8) to rear of container (figure 10, item 2) and against track stop (figure 10, item 7).
21. Pull two tie down straps (figure 10, item 3) over fenders and pallet (figure 10, item 8) and attach free ends to opposite floor track (figure 10, item 4). Tighten straps (figure 10, item 3).
22. Install a track stop (figure 10, item 7) in front of second pallet (figure 10, item 8). (WP 0007 00)
23. Install a track stop (figure 10, item 7) at the red marks for mooring bitt pallets (figure 10, item 9). (WP 0007 00)
24. Secure push-pull rod (figure 10, item 5) to side of container (figure 10, item 2) using a tie down strap attached to container corner cleats.

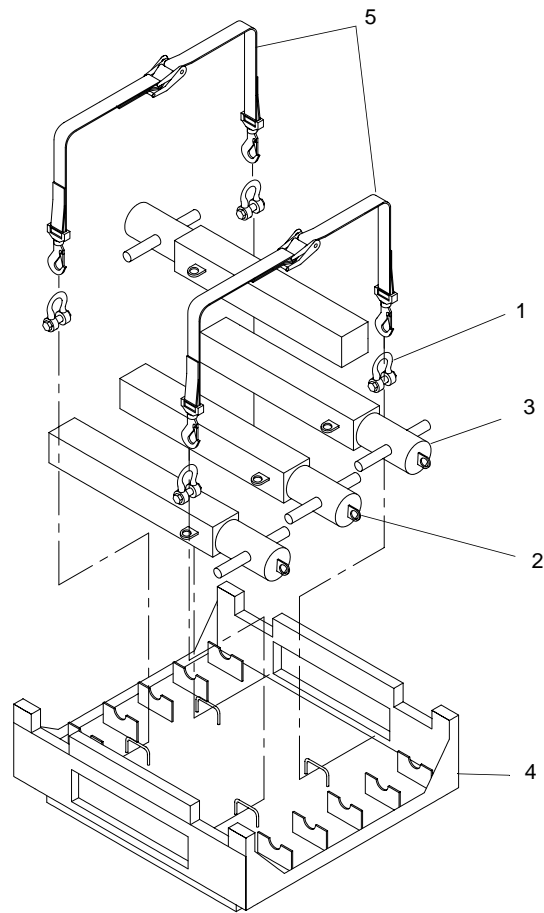


Figure 12. Packing Mooring Bitts

25. Remove shackles (figure 12, item 1) from ends (figure 12, item 2) of mooring bitts (figure 12, item 3).
26. Install four shackles (figure 12, item 1) in bottom of each pallet (figure 12, item 4).

WARNING**HEAVY PARTS**

The mooring bitts are heavy. Stay clear of the bitts when lifted. Falling or swinging mooring bitts may cause serious injury or death.

NOTE

The lower mooring bitt pallet has nylon blocks on the bottom.

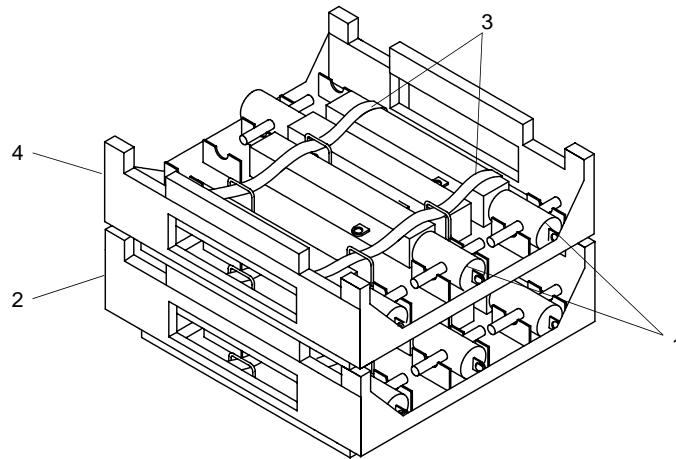


Figure 13. Mooring Bitts and Pallets

27. Using forklift and slings, place the mooring bitts (figure 13, item 1) in the lower pallet (figure 13, item 2).
28. Install and tighten two tie down straps (figure 12, item 5 and figure 13, item 3) to secure mooring bitts (figure 13, item 1) to shackles (figure 12, item 1) in lower pallet (figure 13, item 2).
29. Using forklift, place upper pallet (figure 13, item 4) on top of lower pallet (figure 13, item 2).
30. Using forklift and slings, place the mooring bitts (figure 13, item 1) in the upper pallet (figure 13, item 4).
31. Install and tighten two tie down straps (figure 12, item 5 and figure 13, item 3) to secure mooring bitts (figure 13, item 1) to shackles (figure 12, item 1) in upper pallet (figure 13, item 4).
32. Attach one end of two tie down straps (figure 10, item 10) to each floor track (figure 10, item 4), at mooring bitt pallets (figure 10, item 9) position. Place straps out of the way for loading.
33. Using forklift, position mooring bitt pallets (figure 10, item 9) inside container (figure 10, item 2) and against track stop (figure 10, item 7).
34. Install a track stop (figure 10, item 7) in front of mooring bitt pallets (figure 10, item 9). (WP 0007 00)
35. Pull two tie down straps (figure 10, item 10) through fork openings in upper pallet and attach free ends to floor tracks (figure 10, item 4). Tighten straps (figure 10, item 3).

36. Install ceiling bows and tarp. (WP 0007 00)

37. Close and latch container doors.

PREPARE 4 FT BY 12 FT SHIP FENDERING SYSTEM & MOORING BITTS AND CONTAINER FOR SHORT TERM STORAGE OR SHIPMENT

1. Open container and remove pallets and push-pull rod. (WP 0007 00)
2. Inspect ISO container. (MIL-HDBK-138)
3. Wash all fenders, mooring bitts and pallets with fresh water and allow to thoroughly dry.
4. Perform step 7 through step 37 under “Prepare 4 ft by 12 ft Ship Fendering System & Mooring Bitts and Container for Long Term Storage or Shipment (Level-A & -B)” in this WP.

PREPARE ONSHORE ANCHOR SYSTEM AND CONTAINER FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A & -B)

1. Open container and remove pallets. (WP 0006 00)
2. Inspect ISO container. (MIL-HDBK-138)
3. Remove rust and corrosion from surfaces of pallets and container. (TB 43-0144)
4. Paint surfaces of pallets and container. (TB 43-0144)
5. Wash all components with fresh water and allow to thoroughly dry.
6. Preserve metallic parts (pins, shackles, swivels, etc.) by coating with corrosion prevention compound, Grade II.
7. Coat all unplated threads and exposed fittings with corrosion prevention compound, Grade II.
8. Preserve the griphoists.
 - a. Open release lever.

NOTE

An excess of lubrication will not cause the wire rope to slip; there is no risk of overlubricating.

- b. Thoroughly lubricate internal mechanisms by pouring lubricating oil (80W90) inside the machine through its casing openings (lever openings and oil hole).
 - c. Alternately operate forward lever and reversing lever.
 - d. Close release lever.
 - e. Lubricate accompanying wire rope on metal reel with a rag soaked in lubricating oil (15W40).
 - f. Lubricate hook latch at one end of wire rope with lubricating oil (15W40).
 - g. Repeat for remaining griphoists.
9. Preserve mooring cables by coating with corrosion prevention compound, Grade I.

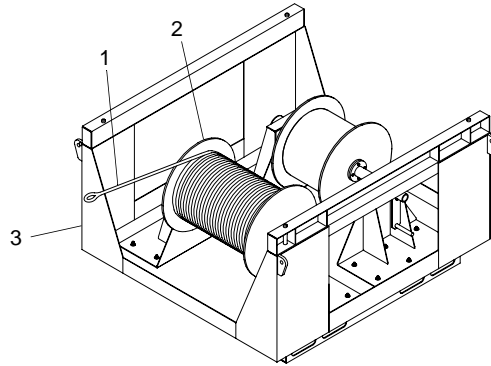


Figure 14. Mooring Cable Pallet

10. Using hand crank on spool (figure 14, item 2), reel mooring cable (figure 14, item 1) onto spool (figure 14, item 2) in mooring cable pallet (figure 14, item 3).

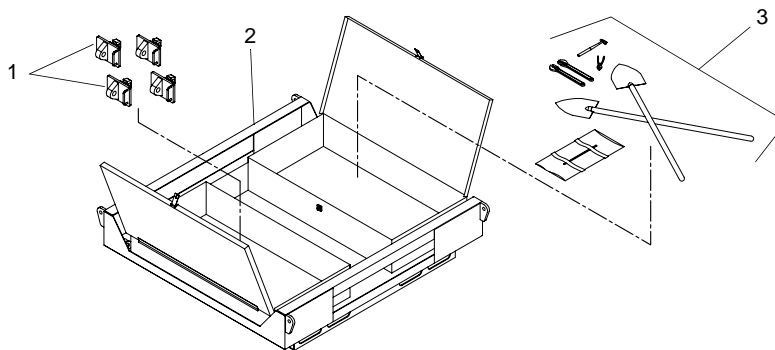


Figure 15. Storage Box Pallet

11. Place horizontal deadman padeyes (figure 15, item 1) in storage box pallet (figure 15, item 2).
12. Place ground tackle and tools (figure 15, item 3) in storage box pallet (figure 15, item 2). Close and latch storage box pallet (figure 15, item 2) doors.

WARNING

**HEAVY PARTS**

The drawer cover and drawers are heavy. Stay clear when they are lifted. Falling cover or drawer may cause serious injury or death.

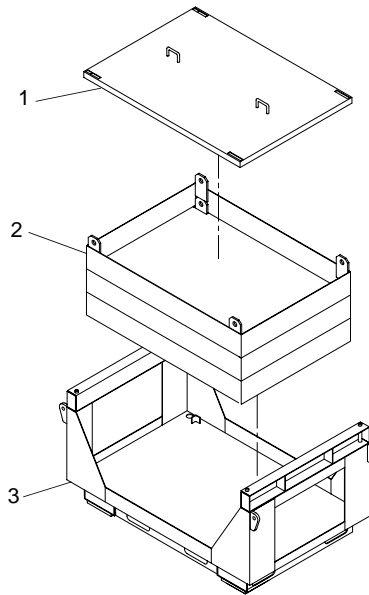


Figure 16. Hardware Storage Pallet

13. Using forklift, remove drawer cover (figure 16, item 1) from top drawer (figure 16, item 2) in pallet (figure 16, item 3).

NOTE

The top storage drawer is empty and is intended for future storage needs.

14. Using forklift and slings, remove each drawer (figure 16, item 2) from pallet (figure 16, item 3) and place them on deck.

WARNING

**HEAVY OBJECTS**

The ground tackle and tensioning gear are heavy. Use care when lifting or serious injury may result.

15. Store ground tackle and tensioning gear in drawers (figure 16, item 2).

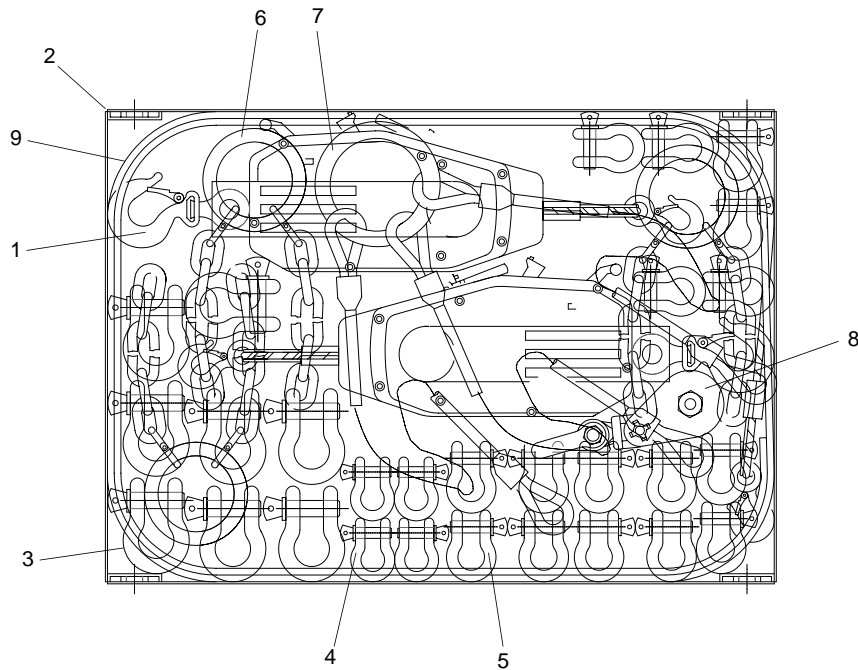


Figure 17. Middle Drawer Storage Arrangement

- a. Stow two griphoists (figure 17, item 1) in middle drawer (figure 17, item 2).
- b. Stow six 1 3/8 in. shackles (figure 17, item 3) in middle drawer (figure 17, item 2).
- c. Stow eight 7/8 in. shackles (figure 17, item 4) in middle drawer (figure 17, item 2).
- d. Stow 28 1 in. shackles (figure 17, item 5) in middle drawer (figure 17, item 2).
- e. Stow eight ring and chain assemblies (figure 17, item 6) in middle drawer (figure 17, item 2).
- f. Stow four 10 ft multi-leg cable assemblies and four 5 ft multi-leg cable assemblies (figure 17, item 7) in middle drawer (figure 17, item 2).
- g. Stow one snatch block (figure 17, item 8) in middle drawer (figure 17, item 2).
- h. Stow two griphoist cable assemblies (figure 17, item 9) in middle drawer (figure 17, item 2).

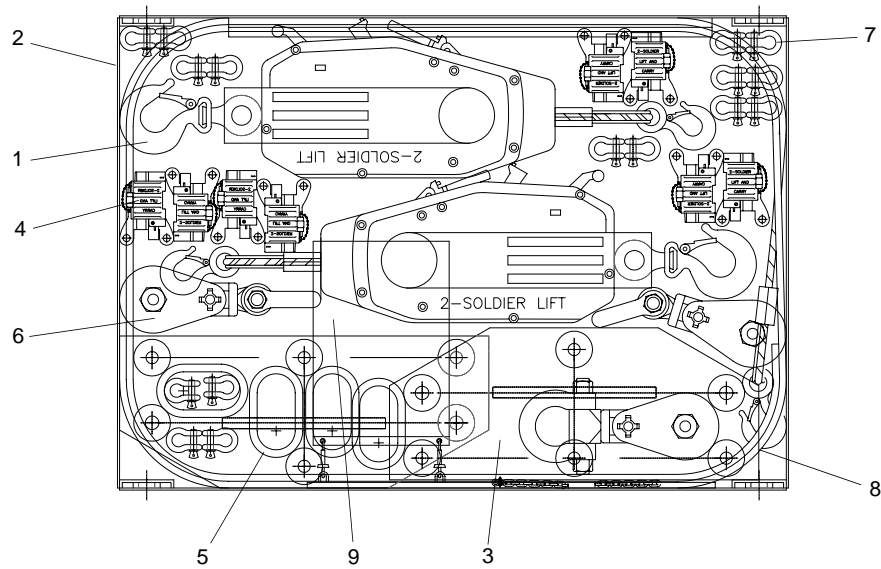


Figure 18. Bottom Drawer Storage Arrangement

- i. Stow two griphoists (figure 18, item 1) in bottom drawer (figure 18, item 2).
 - j. Stow four flounder plates (figure 18, item 3) in bottom drawer (figure 18, item 2).
 - k. Stow eight carpenter stops (figure 18, item 4) in bottom drawer (figure 18, item 2).
 - l. Stow four master links (figure 18, item 5) in bottom drawer (figure 18, item 2).
 - m. Stow three snatch blocks (figure 18, item 6) in bottom drawer (figure 18, item 2).
 - n. Stow 16 1/2 in. shackles (figure 18, item 7) in bottom drawer (figure 18, item 2).
 - o. Stow two griphoist cable assemblies (figure 18, item 8) in bottom drawer (figure 18, item 2).
 - p. Stow four anchor pendant assemblies (figure 18, item 9) in bottom drawer (figure 18, item 2)
16. Using forklift and slings, place storage drawers (figure 16, item 2) in pallet (figure 16, item 3).
 17. Using forklift, place drawer cover (figure 16, item 1) on top drawer (figure 16, item 2) in pallet (figure 16, item 3).

WARNING**HEAVY OBJECTS**

The anchors are heavy. Use an assistant when lifting or serious injury may result.

NOTE

The following procedural step is typical for the stowage of all the onshore anchors.

Each anchor pallet holds five onshore anchors. The storage box pallet holds one anchor.

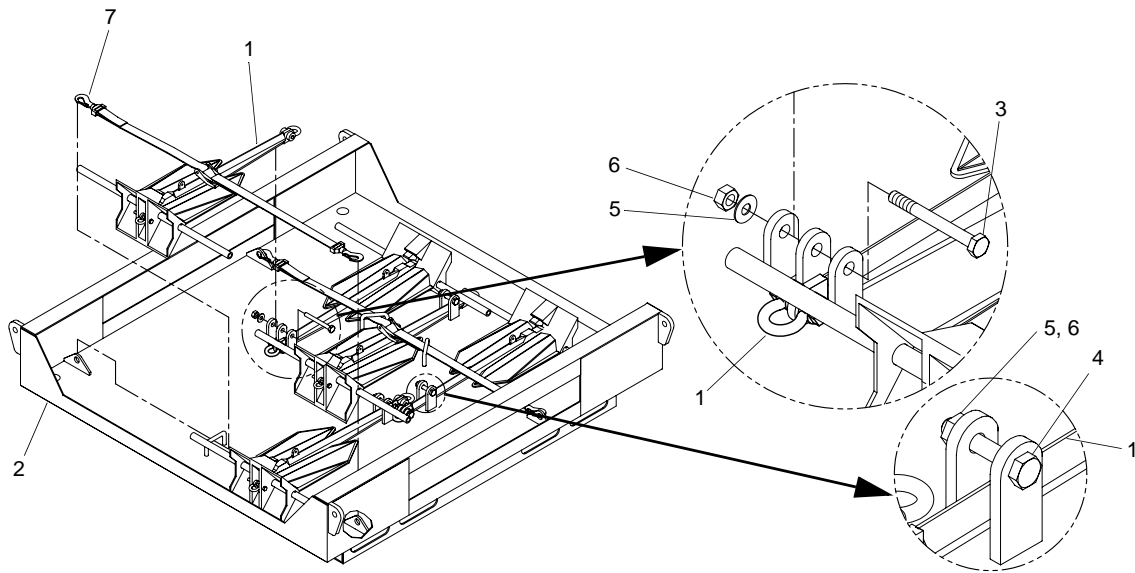


Figure 19. Onshore Anchor Stowage

18. Install the onshore anchors on the pallets.
 - a. Using assistant, place the anchors (figure 19, item 1) in pallet (figure 19, item 2).
 - b. Install bolts (figure 19, items 3, 4), washers (figure 19, item 5) and nuts (figure 19, item 6) to secure onshore anchor (figure 19, item 1) to pallet (figure 19, item 2).
 - c. Install and tighten tie down straps (figure 19, item 7).

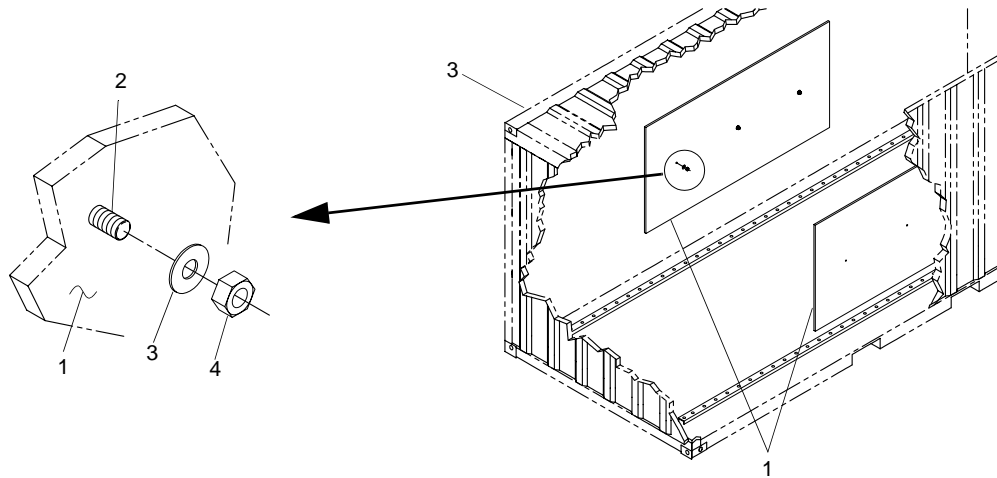


Figure 20. Plywood Stowage

19. Position plywood sheets (figure 20, item 1) on studs (figure 20, item 2) on container (figure 20, item 3) walls.
20. Install washers (figure 20, item 3) and nuts (figure 20, item 4) on studs (figure 20, item 2) to secure plywood sheets (figure 20, item 1) to container walls. Tighten nuts (figure 20, item 4).

WARNING



HEAVY PARTS

The pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

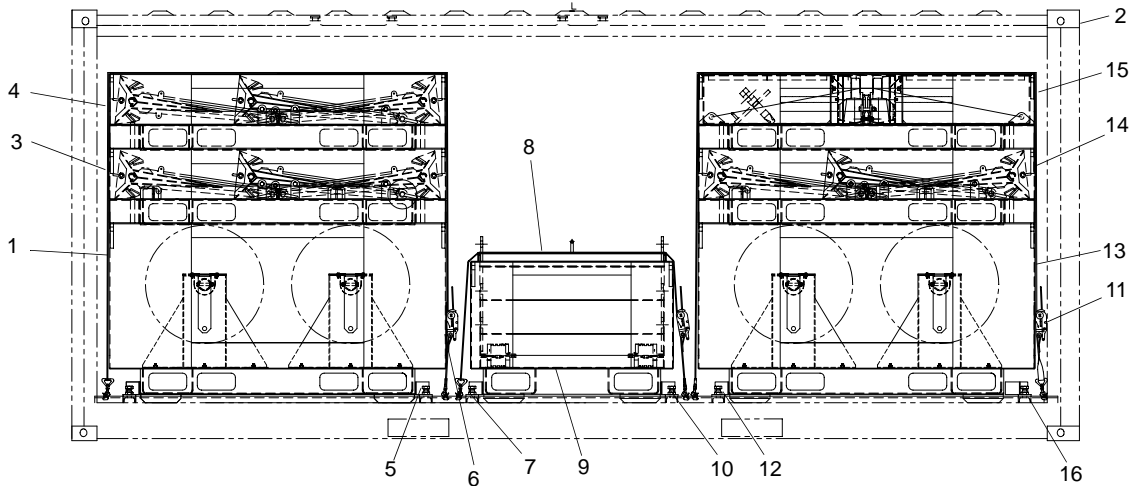


Figure 21. Onshore Anchor Container

21. Using forklift, position a mooring cable pallet (figure 21, item 1) inside the container (figure 21, item 2) door.

22. Using forklift, place the lower anchor pallet (figure 21, item 3) on top of mooring cable pallet (figure 21, item 1).
23. Using forklift, place the upper anchor pallet (figure 21, item 4) on top of the lower anchor pallet (figure 21, item 3).
24. Using forklift and push-pull rod, push the pallet stack (figure 21, items 4, 3 and 1) to rear of container (figure 21, item 2), against track stop.
25. Install and lock track stop (figure 21, item 5) in front of mooring cable pallet (figure 21, item 1).
26. Pull two tie down straps (figure 21, item 6) over the pallets and attach the loose ends to the floor track. Tighten tie down straps (figure 21, item 6).
27. Install and lock hardware storage pallet track stop (figure 21, item 7) at the red marks on the floor track.
28. Using forklift, position the hardware storage pallet (figure 21, item 9) inside the container door.
29. Hook one end of two tie down straps (figure 21, item 8) to floor tracks. Lay the straps on the floor, to the sides of the container.
30. Using forklift and push-pull rod, push the hardware storage pallet (figure 21, item 9) in container (figure 21, item 2), against track stop (figure 21, item 7).
31. Install and lock pallet track stop (figure 21, item 10) in front of hardware storage pallet (figure 21, item 9).
32. Pull two tie down straps (figure 21, item 8) over the hardware storage pallet (figure 21, item 9) and attach the loose ends to the floor track. Tighten tie down straps (figure 21, item 8).
33. Hook one end of two tie down straps (figure 21, item 11) to floor tracks. Lay the straps on the floor, to the sides of the container.
34. Install and lock pallet track stop (figure 21, item 12) at the red marks on the floor track.
35. Using forklift, place the mooring cable pallet (figure 21, item 13) in container (figure 21, item 2), pushing it against track stop (figure 21, item 12).
36. Using forklift, place anchor pallet (figure 21, item 14) on top of mooring cable pallet (figure 21, item 13).
37. Using forklift, place storage box pallet (figure 21, item 15) on top of anchor pallet (figure 21, item 14).
38. Install and lock mooring cable pallet track stop (figure 21, item 16).
39. Pull two tie down straps (figure 21, item 11) over the pallets and attach the loose ends to the floor track. Tighten tie down straps (figure 21, item 11).
40. Close and latch container doors

PREPARE ONSHORE ANCHOR SYSTEM AND CONTAINER FOR SHORT TERM STORAGE OR SHIPMENT

1. Open container and remove pallets. (WP 0006 00)
2. Inspect ISO container. (MIL-HDBK-138)
3. Wash all components with fresh water and allow to thoroughly dry.

4. Perform step 8 through step 40 under "Prepare Onshore Anchor System and Container for Long Term Storage or Shipment (Level-A & -B)" in this WP.

PREPARE OFFSHORE ANCHOR SYSTEM AND CONTAINERS FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A & -B)

1. Open container and remove pallets. (WP 0006 00)
2. Inspect ISO container. (MIL-HDBK-138)
3. Remove rust and corrosion from surfaces of pallets and container. (TB 43-0144)
4. Paint surfaces of pallets and container. (TB 43-0144)
5. Wash all components with fresh water and allow to thoroughly dry.
6. Preserve metallic parts (pins, shackles, swivels, etc.) by coating with corrosion prevention compound, Grade II.
7. Coat all unlapped threads and exposed fittings with corrosion prevention compound, Grade II.
8. Preserve mooring cables by coating with corrosion prevention compound, Grade I.

WARNING



HEAVY OBJECTS

The anchors stabilizers are heavy. Use care when lifting or serious injury may result.

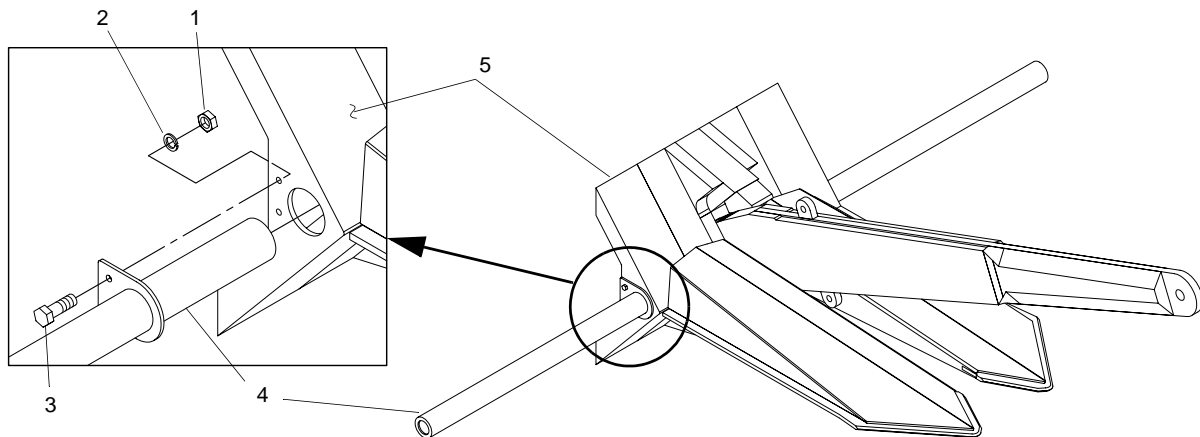


Figure 22. Anchor Stabilizer Removal

9. Remove nuts (figure 22, item 1), washers (figure 22, item 2) and bolts (figure 22, item 3) securing stabilizers (figure 22, item 4) to all anchors (figure 22, item 5). Keep hardware for later use.
10. Remove stabilizers (figure 22, item 4) from all anchors (figure 22, item 5).

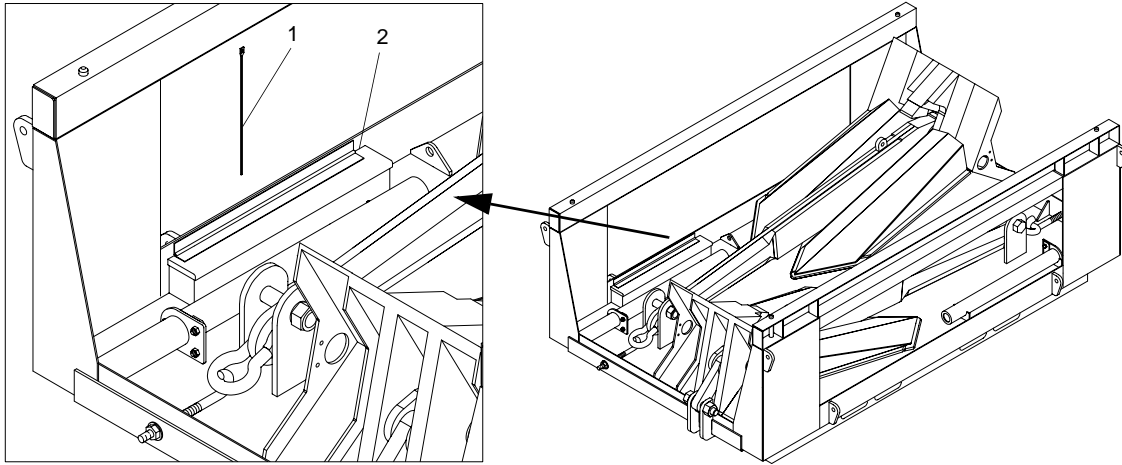


Figure 23. Plastic Cable Tie Stowage

11. Place two plastic cable ties (figure 23, item 1) in each anchor pallet toolbox (figure 23, item 2).

WARNING



HEAVY PARTS

The anchors are very heavy. Stay clear when they are lifted. Falling anchors may cause serious injury or death.

NOTE

The following procedural step is typical for the installation of all offshore anchors to the pallets.

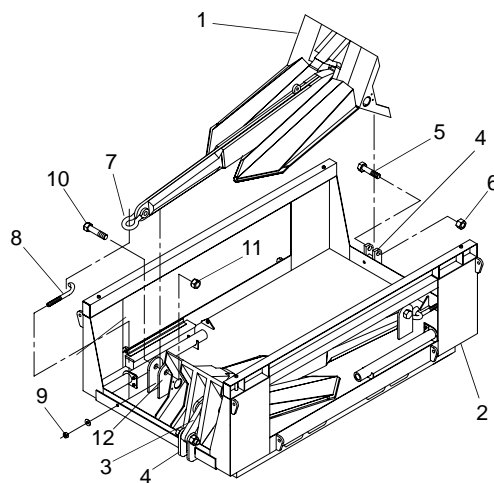


Figure 24. Offshore Anchor Stowage

12. Install the offshore anchors (figure 24, item 1) on anchor pallets (figure 24, item 2).

- a. Remove hardware from pallet toolbox (figure 23, item 2).
- b. Using forklift and forklift lifting adaptor, position anchor (figure 24, item 1) in pallet (figure 24, item 2), aligning hole in anchor foot (figure 24, item 3) with pallet bracket (figure 24, item 4).
- c. Insert bolt (figure 24, item 5) through pallet bracket (figure 24, item 4) and anchor foot (figure 24, item 3).
- d. Install and tighten nut (figure 24, item 6) on bolt (figure 24, item 5).
- e. Place anchor shackle (figure 24, item 7) in hook (figure 24, item 8) and tighten nut (figure 24, item 9).
- f. Install and tighten bolt (figure 24, item 10) and nut (figure 24, item 11) in pallet bracket (figure 24, item 12).

WARNING



HEAVY OBJECTS

The anchors stabilizers are heavy. Use care when lifting or serious injury may result.

NOTE

Two anchor stabilizers are stored on each of the anchor pallets. The following procedural step is typical for the installation of anchor stabilizers on the anchor pallets.

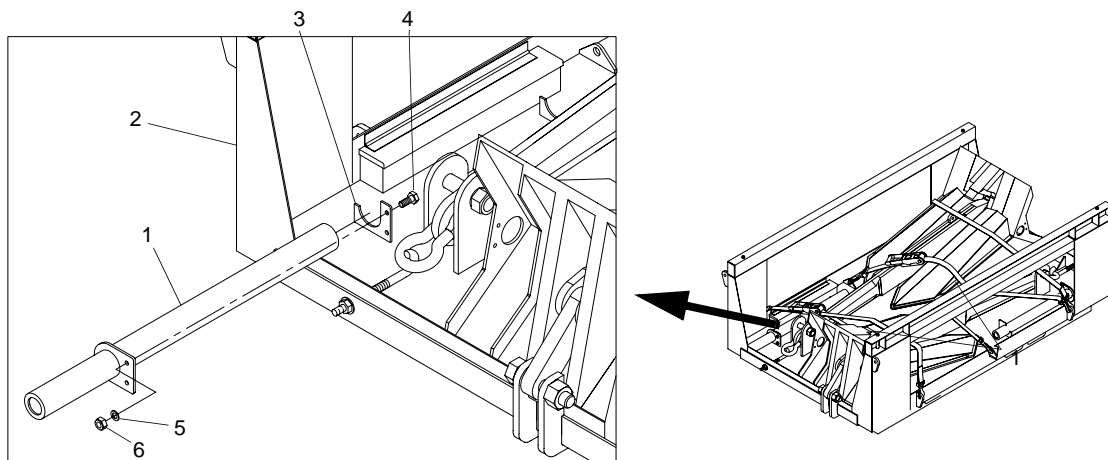


Figure 25. Anchor Stabilizers on Anchor Pallets

13. Install two anchor stabilizers (figure 25, item 1) on each anchor pallet (figure 25, item 2).
 - a. Insert anchor stabilizers (figure 25, item 1) in brackets (figure 25, item 3) on anchor pallet (figure 25, item 2).

NOTE

Attaching hardware was removed at step 9.

- b. Insert bolts (figure 25, item 4) through brackets (figure 25, item 3) and stabilizers (figure 25, item 1).
 - c. Install lockwashers (figure 25, item 5) and nuts (figure 25, item 6) on bolts (figure 25, item 4) and tighten.
14. Install two tie down straps (figure 25, item 1) on anchor pallets (figure 25, item 2).

WARNING**HEAVY OBJECTS**

The anchors stabilizers are heavy. Use care when lifting or serious injury may result.

NOTE

The following procedural steps apply to both the upper and lower mooring leg pallets.

Attaching hardware was removed at step 9.

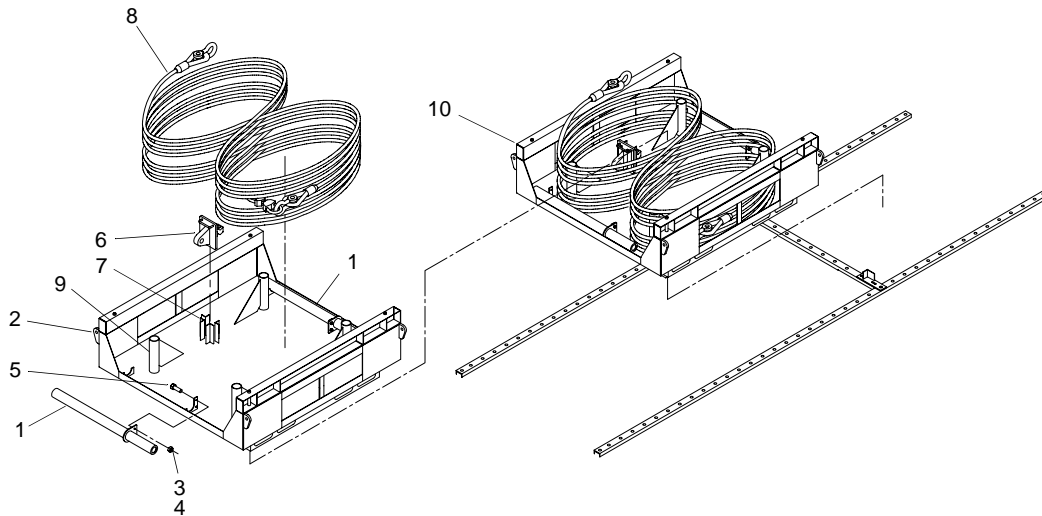


Figure 26. Mooring Leg Stowage

- 15. Secure two anchor stabilizers (figure 26, item 1) to upper mooring cable pallet (figure 26, item 2) with nuts (figure 26, item 3), lockwashers (figure 26, item 4) and bolts (figure 26, item 5).
- 16. Place the deadman padeye (figure 26, item 6) in pallet fixture (figure 26, item 7).

WARNING**HEAVY OBJECTS**

The mooring leg cables are very heavy. Use care when lifting or serious injury may result.

17. Using assistant, wind the mooring leg cable assemblies (figure 26, item 8) in a figure eight pattern around the cable guides (figure 26, item 9).
18. Repeat step 15 through step 17 for lower mooring cable pallet (figure 26, item 10)

WARNING**HEAVY PARTS**

The cable pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

19. Using forklift, place upper mooring cable pallet (figure 26, item 2) on lower mooring cable pallet (figure 26, item 10).

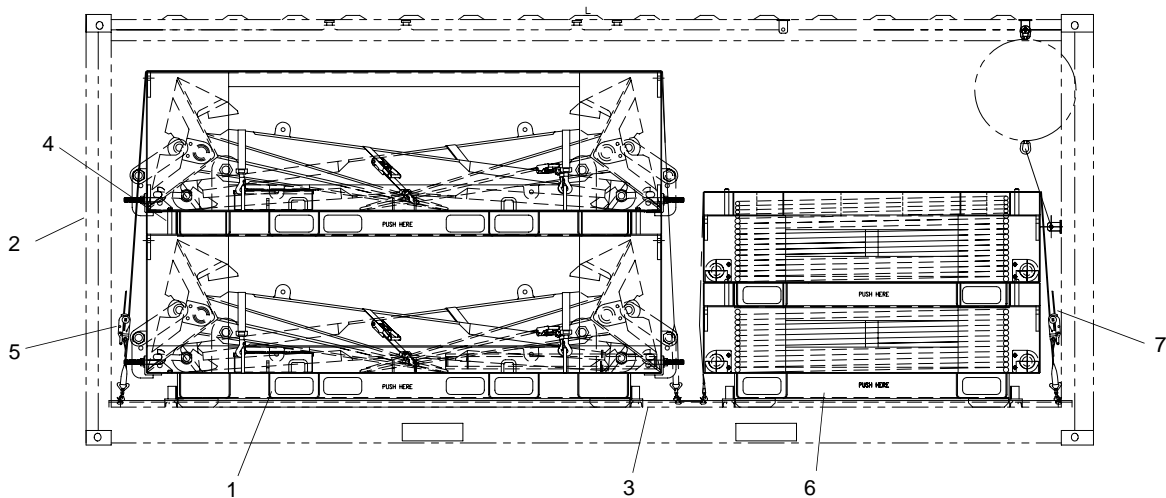


Figure 27. Offshore Anchor Container

WARNING

**HEAVY PARTS**

The anchor pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

20. Using forklift, place lower anchor pallet (figure 27, item 1) in container (figure 27, item 2), against track stop (figure 27, item 3).
21. Using forklift, place upper anchor pallet (figure 27, item 4) on top of lower anchor pallet (figure 27, item 1).

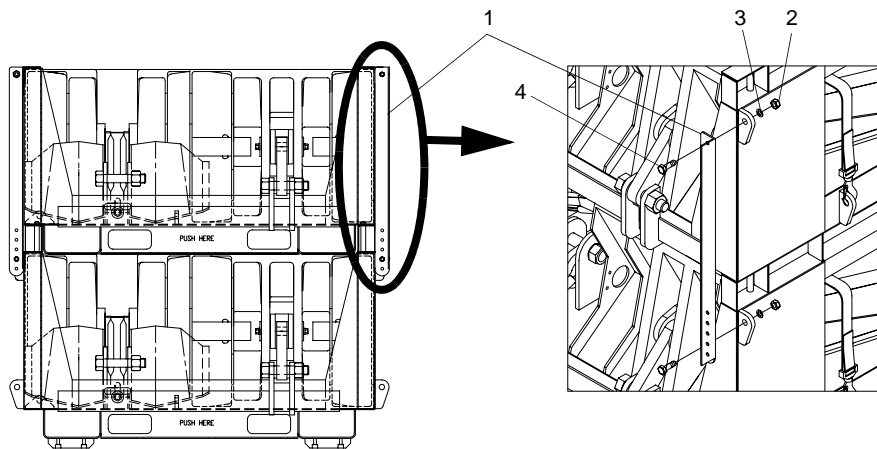


Figure 28. Anchor Pallet Tie Bars

22. Install four anchor pallet tie bars (figure 28, item 1) between upper anchor pallet (figure 27, item 4) and lower anchor pallet (figure 27, item 1) with nuts (figure 28, item 2), washers (figure 28, item 3) and bolts (figure 28, item 4) at each end of bars (figure 28, item 1). Tighten bolts (figure 28, item 4) and nuts (figure 28, item 2).
23. Install and tighten two anchor pallet tie down straps (figure 27, item 5).

WARNING

**HEAVY PARTS**

The mooring cable pallets are very heavy. Stay clear when they are lifted. Falling pallets may cause serious injury or death.

24. Using forklift, place mooring cable pallets (figure 27, item 6) in container (figure 27, item 2).
25. Install and tighten two mooring cable pallet tie down straps (figure 27, item 7).

WARNING**HEAVY OBJECTS**

The anchor buoys are heavy. Use care when lifting or serious injury may result.

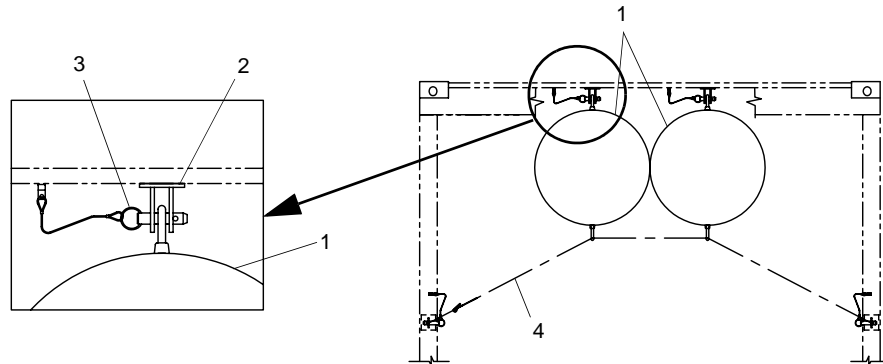


Figure 29. Anchor Buoy Stowage

26. Using assistant, position anchor buoy (figure 29, item 1) in container bracket (figure 29, item 2) and install pin (figure 29, item 3). Repeat this step for second anchor buoy (figure 29, item 1).
27. Pull anchor buoy tie down strap (figure 29, item 4) through loops on ends of anchor buoys (figure 29, item 1) and attach free end to container. Tighten strap (figure 29, item 4).
28. Close and latch container doors.

PREPARE OFFSHORE ANCHOR SYSTEM AND CONTAINER FOR SHORT TERM STORAGE OR SHIPMENT

1. Open container and remove pallets. (WP 0006 00)
2. Inspect ISO container. (MIL-HDBK-138)
3. Wash all components with fresh water and allow to thoroughly dry.
4. Perform step 9 through step 28 under “Prepare Offshore Anchor System and Containers for Long Term Storage or Shipment (Level-A & -B)” in this WP.

PREPARE DECK MATS AND CONTAINER FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A & -B)

1. Inspect ISO container. (MIL-HDBK-138)
2. Wash all deck mats, lockdowns, corner fenders, deck cleats and D-ring fittings with fresh water and allow to thoroughly dry.
3. Remove rust and corrosion from surfaces of pallets and container. (TB 43-0144)
4. Paint surfaces of pallets and container. (TB 43-0144)
5. Lubricate lockdowns, deck cleats and D-ring fittings with lubricating oil (exposed gear).

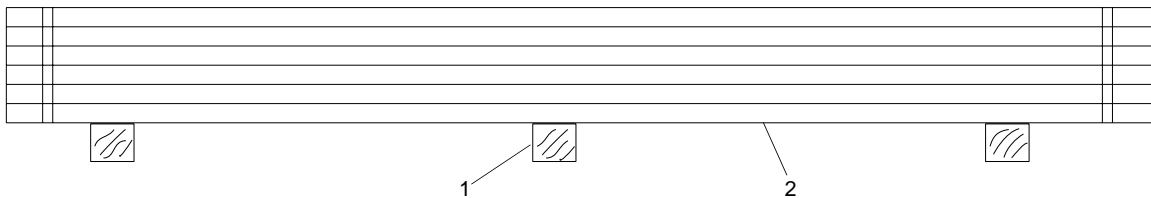


Figure 30. Stacking Deck Mats

6. Position three 4 in. X 4 in. wood beams (figure 30, item 1) on FC pierhead in an area where deck mats (figure 30, item 2) can be stacked.

WARNING

**HEAVY OBJECTS**

The deck mats are heavy. Use care when lifting or serious injury may result.

7. Stack deck mat (figure 30, item 2) on three 4 in. X 4 in. wood beams (figure 30, item 1).
8. Continue to stack deck mats (figure 30, item 2) one on top of the other, six mats per stack.
9. Repeat above procedure for remaining deck mats (figure 30, item 2).

WARNING**HEAVY PARTS**

Deck mats are heavy. Stay clear when they are moved. Failure to comply may cause serious injury or death.

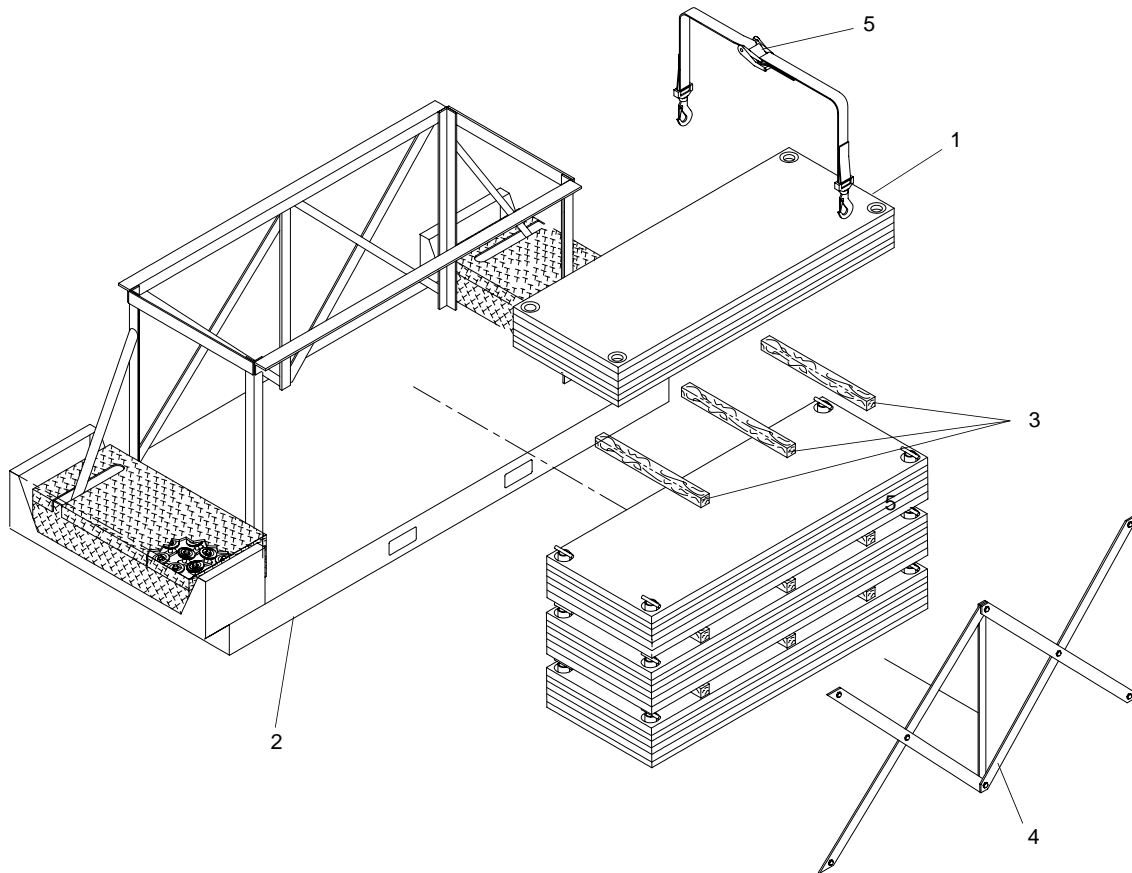


Figure 31. Deck Matt Pallet Stowage

10. Stow deck mat stacks (figure 31, item 1) on deck mat pallet (figure 31, item 2).
 - a. Position three wood beams (figure 31, item 3) on deck mat pallet (figure 31, item 2).
 - b. Using forklift, or appropriate handling device, place first stack of deck mats (figure 31, item 1) on deck mat pallet (figure 31, item 2).
11. Repeat previous step for remaining deck mat stacks (figure 31, item 1).
12. Install flat bars (figure 31, item 4) on side of deck mat pallet (figure 31, item 2).
13. Install ratchet strap tie downs (figure 31, item 5).

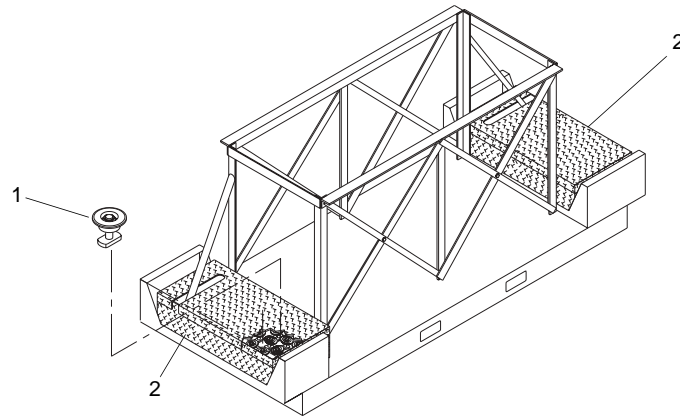


Figure 32. Deck Mat Lockdown Assembly Stowage

14. Place all deck mat lockdown assemblies (figure 32, item 1) in container toolboxes (figure 32, item 2).

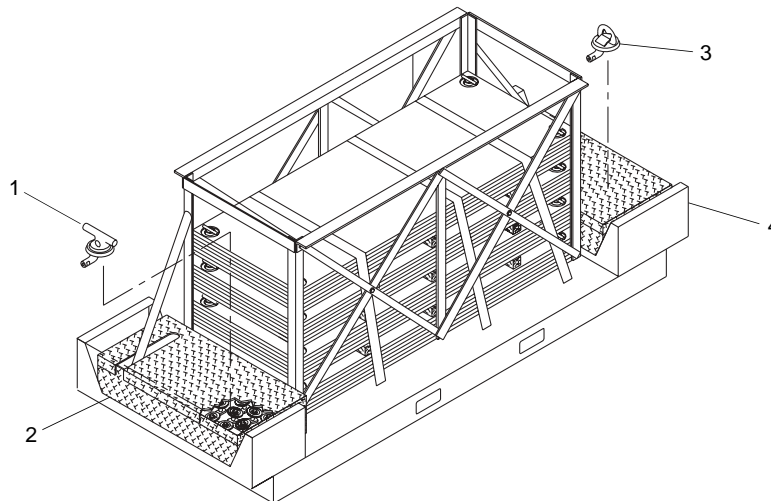


Figure 33. D-Ring and Deck Cleat Stowage

15. Place all deck cleat fittings (figure 33, item 1) in port deck mat pallet toolbox (figure 33, item 2).

16. Place all D-ring fittings (figure 33, item 3) in starboard deck mat pallet toolbox (figure 33, item 4).

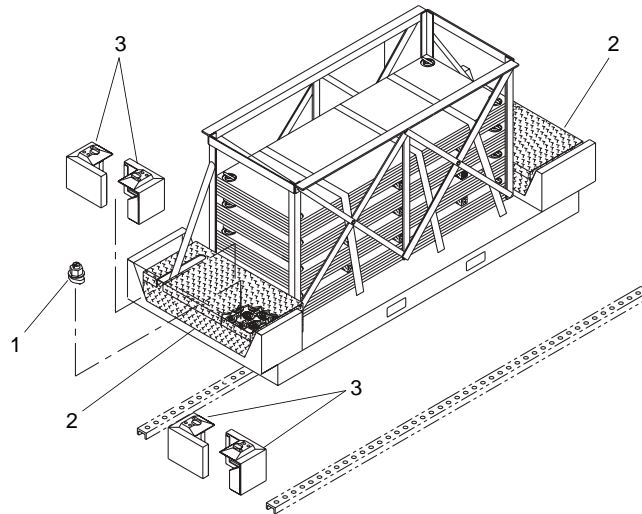


Figure 34. Corner Fender and Mounting Assembly Stowage

17. Stow corner fender mounting assemblies (figure 34, item 1) in each pallet toolbox (figure 34, item 2).

WARNING



HEAVY OBJECTS

The corner fenders are heavy. Use care when lifting or serious injury may result.

NOTE

Two corner fenders are stowed on top each pallet toolbox, and two are stowed on the container floor by each toolbox.

18. Using assistant, place the corner fenders (figure 34, item 3) in the deck mat container (figure 34, item 2).

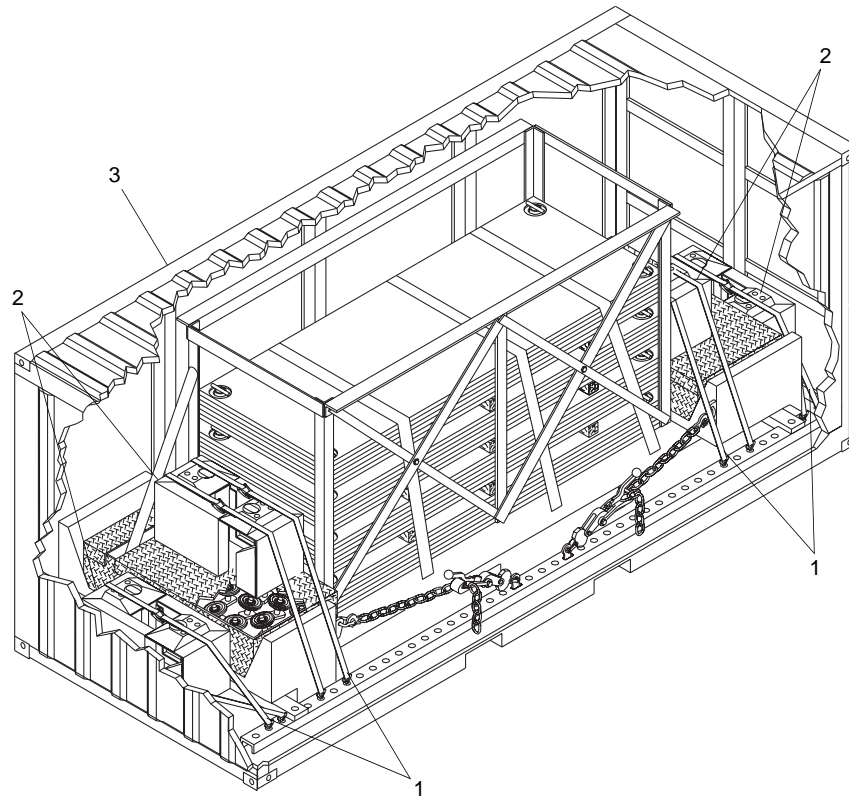


Figure 35. Securing Corner Fenders

19. Install tie down straps (figure 35, item 1) to secure corner fenders (figure 35, item 2) in deck mat container (figure 35, item 3).
20. Close and latch container doors.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
PREPARATION FOR STORAGE OR SHIPMENT**

INITIAL SETUP:**Tools**

Assembly, Container Push Rod (push-pull) (Item 4, WP 0043 00)
Pan, Spill (Item 37, WP 0043 00)
Toolkit, General Mechanic's (Item 65, WP 0043 00)

Materials/Parts

Antifreeze (Item 1, WP 0045 00)
Bag, Plastic (Item 3, WP 0045 00)
Desiccant, Silica Gel, 1/2 Unit Size (Item 10, WP 0045 00)
Desiccant, Silica Gel, 1 Unit Size (Item 11, WP 0045 00)
Desiccant, Silica Gel, 80 Unit Size (Item 12, WP 0045 00)
Indicator, Humidity, Card (Item 19, WP 0045 00)
Inhibitor, Corrosion (Item 20, WP 0045 00)
Lubricating Oil, Engine, 15W40 Grade (Item 25, WP 0045 00)
Lubricating Oil, Engine, 30W Grade (Item 26, WP 0045 00)
Lubricating Oil, General Purpose (Item 29, WP 0045 00)
Rag, Wiping (Item 31, WP 0045 00)
Shrink Wrap, Corrosion Intercept (Item 32, WP 0045 00)
Stabilizer Additive (Item 33, WP 0045 00)
Stretch Wrap, Corrosion Intercept (Item 34, WP 0045 00)
Tag, Danger (Item 35, WP 0045 00)
Tape, Pressure Sensitive Adhesive (Item 37, WP 0045 00)
Window, Observation (Item 38, WP 0045 00)

Personnel Required

Cargo Specialist 88H (1)
Seaman 88K (1)
Engineer 88L (6)

References

TB 43-0144
MIL-HDBK-138
TM 9-6140-200-14
TM 55-1945-217-14&P
TM 55-1945-218-14&P
TM 55-1945-219-14&P
TM 55-1945-220-14&P

NOTE

REINSPECTION OF ALL MODULES AND ISO CONTAINERS

THE MCS modules have been tested and certified to conform to the Convention for Safe Containers (CSC) protocol and 49 CFR 451. This certification makes the modules eligible for commercial and defense intermodal movement. The CSC certification is represented by the CSC safety plates affixed to every module. To maintain this intermodal eligibility, every module must be reinspected by a certified inspector IAW 49 CFR 452 before the reinspection date

stamped on the CSC safety plate. Modules should not be offered to the intermodal transportation systems with less than 60 days of certification remaining. This reinspection requirement also applies to ISO containers. Containers must be reinspected in accordance with MIL-HDBK-138.

STORAGE DEFINITIONS

Short Term Storage - Shipment within continental United States (CONUS) or storage up to 90 days.

Long Term Level A - Storage in non-humidity controlled environment for up to 36 months, such as above deck storage on an ocean going vessel.

Long Term Level B - Storage in a humidity controlled environment for up to 36 months, such as may be found below deck in an ocean going vessel where humidity is restricted to less than 50%.

PREPARE GENERATOR CONTAINER FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A)

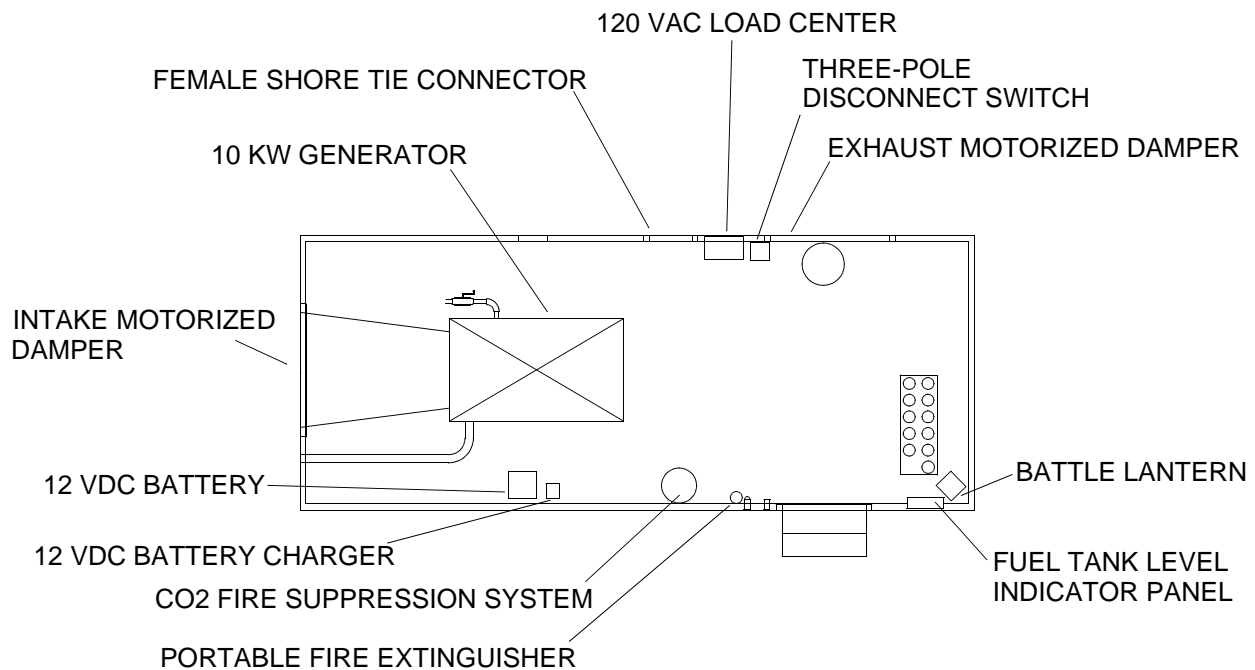


Figure 1. Generator Container Layout

1. Inspect ISO container. (MIL-HDBK-138)
2. Remove rust and corrosion from surfaces of container. (TB 43-0144)
3. Paint surfaces of container. (TB 43-0144)
4. Preserve the generator engine.
 - a. Drain engine oil.
 - b. Fill engine to operating level with 30W preservative lubricating oil. (MIL-PRF-21260 Grade 2)
 - c. Attach a tag to the unit in a visible location that states the following:

“ENGINE OIL IN UNIT FOR PRESERVATION OR SHORT ENGINE ‘EXCERSIZING’ DURING STORAGE ONLY. BEFORE PLACING UNIT INTO OPERATION, OIL MUST BE DRAINED AND REPLACED WITH OPERATING OIL.”

- d. Drain cooling system.
- e. Fill cooling system with equal parts antifreeze and water.
- f. Disconnect fuel intake line at fuel tank fitting.
- g. Disconnect fuel return line from the fuel tank and allow fuel to drain into drain pan.
- h. Fill a container with operating fuel.
- i. Fill a container with preservation oil. (P-10, MIL-PRF-21260 Grade 10)
- j. Place the fuel intake line in the container holding fuel.
- k. Start the engine and run for four minutes.

NOTE

Note any color difference between the preservation oil and the operating fuel as an aid to determining when preservation oil is exiting the fuel return line.

- l. Move the fuel intake line to the container holding the preservation oil and shut down engine when preservation oil is seen exiting the fuel return line.
- m. Connect fuel intake line at fuel tank fitting.
- n. Connect fuel return line to the fuel tank.

NOTE

To avoid engine hydrostatic lockup when preserving combustion chambers and valves, do not atomize more than one ounce of preservation oil per cylinder (four ounces total).

- o. Preserve combustion chambers and valves.
 - (1) Remove air inlet tube from intake manifold inlet.

NOTE

Do not exceed 25 psi for atomizing spray pressure.

Atomize 1/2 of the total of one ounce of preservation oil per cylinder (two ounces total).

- (2) Spray atomized preservation oil (PE-10, MIL-PRF-21260 Grade 10) into air inlet while turning engine over for one minute.
- (3) Install air inlet tube on intake manifold inlet
- (4) Remove the air cleaner element.

NOTE

Do not exceed 25 psi for atomizing spray pressure.

Atomize 1/2 of the total of one ounce of preservation oil per cylinder (two ounces total).

- (5) Spray atomized preservation oil (P-10, MIL-PRF-21260 Grade 10) through air cleaner housing while turning engine over for 30 seconds.
- (6) Install air cleaner element.

NOTE

Do not exceed 25 psi for atomizing spray pressure.

Atomize 1/2 of the total of one ounce of preservation oil per cylinder (two ounces total).

- (7) Spray atomized preservation oil (P-10, MIL-PRF-21260 Grade 10) into muffler outlet for 30 seconds.
 - p. Seal all engine openings with tape. (ASTM D5486 Type IV)
 - q. Spray all rubber hoses and electric cables with silicone. (G623)
 - r. Attach a tag to the unit in a visible location that states the following:

“ENGINE PRESERVED — DO NOT OPERATE WITHOUT
DEPRESERVATION”
 - s. Remove drain pan and dispose of contents in accordance with local procedures.
 - t. Clean up spilled fluid with a spill kit and dispose of spill kit waste and wiping rags per local procedures.
5. Preserve the fuel storage tank.
 - a. Drain the fuel tank.
 - b. Spray inside of tank with atomized preservation oil. (P-10, MIL-PRF-21260 Grade 10)
 - c. Remove two tank breather vents.
 - d. Seal tank breather openings with tape. (ASTM D5486 Type IV)
 6. Release drive belt tension.
 7. Coat all hinges, latches and other moving metal parts with preservative oil. (exposed gear)
 8. Secure all generator access doors with tape. (ASTM D5486 Type IV)
 9. Lubricate chains and binders used for securing container to FC with lubricating oil (exposed gear).
 10. Remove generator batteries and turn into unit maintenance per local procedures.
 11. Spray generator battery cables with silicone. (G623)
 12. Install a tag on the unit in a visible location that states:

“GENERATOR BATTERIES REMOVED. INSTALL BATTERIES AT
STARTUP”

13. Remove 12 VDC light battery and turn into unit maintenance per local procedures.
14. Spray 12 VDC light battery cables with silicone. (G623)
15. Install a tag near the battery containment box in a visible location that states:

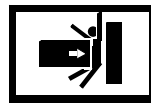
“12 VDC LIGHTING BATTERY REMOVED. INSTALL BATTERY AT
DEPRESERVATION.”
16. Attach the two damper cover plates to the exterior of the container with the appropriate hardware.
17. Attach the limited access cover to the exterior of the container with the appropriate hardware.
18. Open shore tie access cover and preserve interior with one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
19. Attach the shore tie female receptacle cover.
20. Close and secure the shore tie access cover.
21. Open fuel system electrical junction box and preserve interior with one 1/2 unit size silica gel desiccant bag and one corrosion inhibitor.
22. Open 120 VAC panel board and preserve interior with one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
23. Open three-pole disconnect switch and preserve interior with one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
24. Open agent releasing control panel and preserve interior with one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
25. Attach a tag to the electrical enclosures and shore tie access cover that states:

“CAUTION: REMOVE INTERNAL DESICCANTS AND CORROSION
INHIBITORS BEFORE APPLYING POWER.”
26. Preserve fire suppression system.

WARNING



VAPOR



HEAVY PARTS

All personnel shall be clear of the generator container and the container shall be left open while CO₂ disconnects are being made. The carbon dioxide gas used in this system is stored in cylinders under extremely high pressure, equipped with high rate discharge valves, which when actuated, will open, remain open, and cannot be closed. An uncontrolled release of this high pressure gas from an accidental discharge, improper handling, or damage to parts can result in a violent and rapid propulsion of the cylinder(s), capable of causing severe equipment damage, personal injury, or death to personnel. Use extreme caution.

Because CO₂ reduces the available oxygen in the atmosphere, it will not support life. Extreme caution must be used when handling components in this system. Accidental discharge of this agent can cause serious injury or death to personnel.

Fire in protected compartments or accidental activation of the CO₂ system while personnel occupy compartment could result in loss of life if CO₂ is released. Personnel must listen for siren, recognize its sound and evacuate space immediately (within 20 seconds).

Prior to entering the shelter after discharge of CO₂, the shelter shall be completely cleared of any CO₂ that may remain. Death or injury to personnel could occur if CO₂ is inhaled.

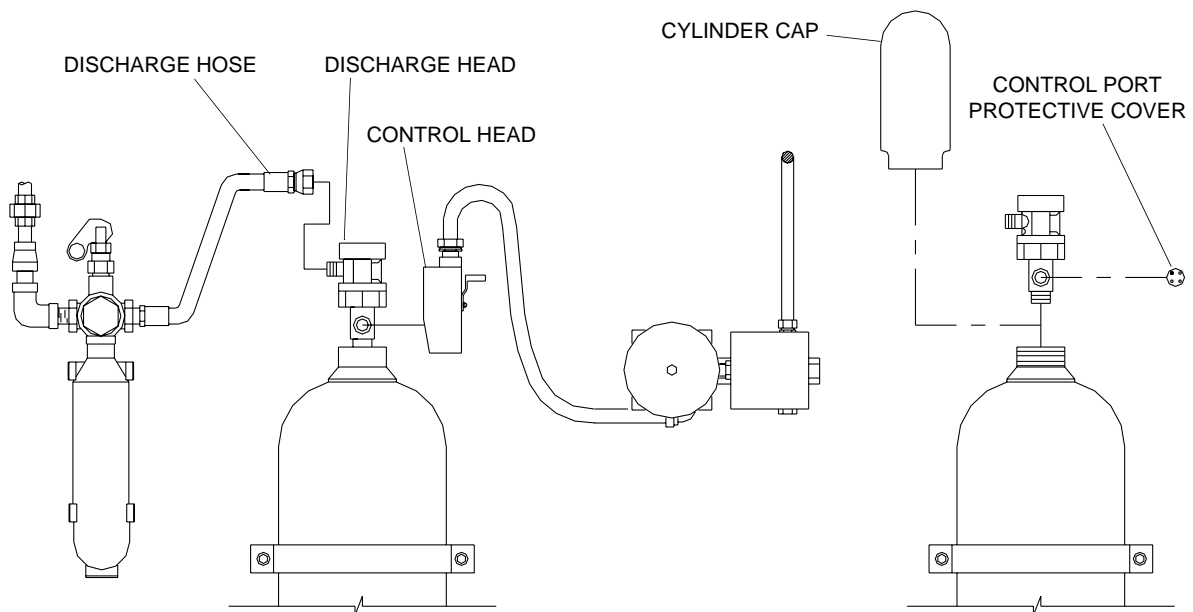


Figure 2. CO₂ Bottle

- a. Remove the batteries located in the agent releasing control panel and turn into unit maintenance per local procedures.
- b. Disconnect the electrical/mechanical control head from the CO₂ cylinder.

-
- c. Secure the electrical/mechanical control head to overhead conduit.
 - d. Disconnect the flexible discharge hose from the discharge head.
 - e. Tape flexible discharge hose end opening.
 - f. Remove the cylinder cap and control port protective cover from storage.
 - g. Attach the control port protective cover over the control port on the discharge head.
 - h. Remove the discharge head from the CO₂ cylinder.
 - i. Put the discharge head in a plastic bag and secure it to overhead conduit.
 - j. Screw the cylinder cap onto the cylinder.
 - k. Spray agent releasing control panel battery cables with silicone. (G623)
 - l. Install a red tag that states:

“RECONNECT THE CONTROL HEAD, THE DISCHARGE HEAD, AND
THE DISCHARGE HOSE PRIOR TO OPERATION. INSTALL TWO
BATTERIES IN THE AGENT RELEASING CONTROL PANEL.”

27. Remove 6 VDC battery from hand lantern and turn into unit maintenance per local procedures. (WP 0037 00)
28. Place twenty 80 unit size silica gel desiccant bags on floor.
29. Seal around the edges of two damper cover plates, limited access cover plate, shore tie access cover, and entry door with tape (ASTM D 5486 Type IV).
30. Install humidity indicator cards in observation windows. See “Installation of Humidity Indicator Cards” near the end of this WP.

PRESERVATION EXERCISES DURING LONG TERM STORAGE OR SHIPMENT OF GENERATOR CONTAINER (LEVEL-A)

1. Monthly, inspect reversible humidity indicator cards.
 - a. The humidity indicator card is divided into three equal pie sectors showing 20, 40 and 60 percent relative humidity values. The current relative humidity inside the container may be roughly determined by observing the coloration of the indicator card. Blue coloration of a pie sector indicates the internal humidity level is below the value shown in the sector. Lavender sector color indicates the humidity level is approaching the sector humidity value. Pink sector color indicates the relative humidity is at or has exceeded the sector value.
 - b. The internal humidity level should not exceed 50%. As long as the “60” pie sector is blue, or only slightly lavender, the internal relative humidity has not yet reached 50%.

NOTE

Saturated desiccant may be reactivated or “dried out” for reuse. Reactivated desiccant should retain 80% of its original water vapor adsorption rate and 90% of its original adsorption capacity.

Refer to the reactivation instructions attached to each bag for information on the temperature and time interval over which reactivation occurs.

The humidity indicator cards are most accurate for temperatures around 75° F. Temperatures significantly higher or lower require a small adjustment factor (only about 2% for each 10° F). For high temperatures in excess of 75° F, the card will indicate a lower humidity than is actually the case; for temperatures significantly below 75° F the card will indicate a higher humidity level than is actually the case.

The humidity indicator cards are reversible. When container relative humidity falls, the coloration of the disk sector will change from pink, to lavender, to blue.

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

- c. When the “60” pie sector turns lavender or slightly pink, the internal relative humidity is around 50% or higher. Replace desiccant as necessary to bring the humidity level back down below 50%.

NOTE

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

2. Annually, open container and inspect equipment.
3. Annually, replace electrical enclosure corrosion inhibitors.

PREPARE GENERATOR CONTAINER FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-B)

1. Perform step 1 through step 27 under “Prepare Generator Container for Long Term Storage or Shipment (Level-A)” in this WP.
2. Close and latch container doors.

PRESERVATION EXERCISES DURING LONG TERM STORAGE OR SHIPMENT OF GENERATOR CONTAINER (LEVEL-B)**NOTE**

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

1. Annually, open container and inspect equipment.
2. Annually, replace electrical enclosure corrosion inhibitors.

PREPARE GENERATOR CONTAINER FOR SHORT TERM STORAGE OR SHIPMENT

1. Inspect ISO container. (MIL-HDBK-138)
2. Preserve generator engine.
 - a. Ensure engine oil is full.
 - b. Ensure cooling system is full. Fill with equal parts of antifreeze and water.
3. Perform step 16 through step 26 under “Prepare Generator Container for Long Term Storage or Shipment (Level-A)” in this WP.
4. Drain 1,000 GAL fuel tank.
5. Charge generator batteries.
6. Charge 12 VDC incandescent light battery.
7. Close and latch container doors.

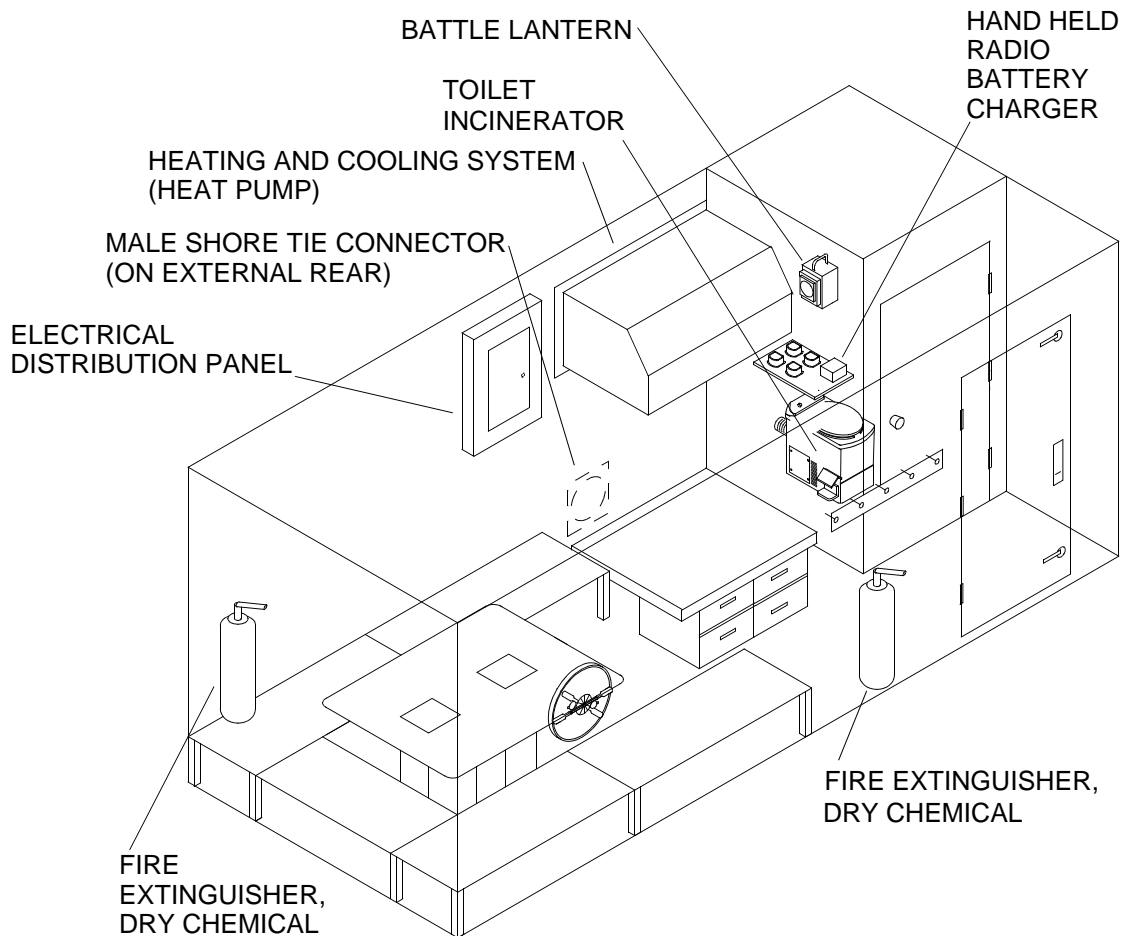
**PREPARE PERSONNEL SHELTER FOR LONG TERM STORAGE OR SHIPMENT
(LEVEL-A)**


Figure 3. Personnel Shelter Layout

1. Inspect ISO container. (MIL-HDBK-138)
2. Remove rust and corrosion from surfaces of container. (TB 43-0144)
3. Paint surfaces of container. (TB 43-0144)
4. Lubricate chains and binders used for securing container to FC with lubricating oil (exposed gear)
5. Open shore tie access cover and preserve interior with one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
6. Attach the shore tie female receptacle cover.
7. Close and secure the shore tie access cover.
8. Install head exhaust vent cover on exterior of container with supplied hardware.
9. Install heat pump vent cover on exterior of container with supplied hardware.

10. Open electrical distribution panel and preserve interior with one 1 unit size silica gel desiccant bag and two corrosion inhibitors.
11. Hang a caution tag from electrical distribution panel stating:

“CAUTION: REMOVE INTERNAL DESICCANTS AND CORROSION
INHIBITORS BEFORE APPLYING POWER.”
12. Preserve the heat pump. (TM 55-1945-220-14&P)
13. Secure drawers closed with tape. (ASTM D5486 Type IV)
14. Preserve Incinolet toilet. (TM 55-1945-219-14&P)
 - a. Remove top of the toilet complete with bowl sections. Clean interior.
 - b. Lightly grease all moving joints of the flushing assembly and foot pedal.
 - c. Clean blower assembly and blower wheels.
 - d. Inspect level of catalyst and add if low.
15. Remove 6 VDC battery from hand lantern and turn into unit maintenance per local procedures. (WP 0037 00)
16. Place twenty 80 unit size silica gel desiccant bags on floor.
17. Close entrance door and seal door gap and all container openings with tape (ASTM D5486 Type IV).
18. Install humidity indicator cards in observation windows. See “Installation of Humidity Indicator Cards” near the end of this WP.

**PRESERVATION EXERCISES DURING LONG TERM STORAGE OR SHIPMENT
OF PERSONNEL SHELTER (LEVEL-A)**

1. Monthly, inspect reversible humidity indicator cards.
 - a. The humidity indicator card is divided into three equal pie sectors showing 20, 40 and 60 percent relative humidity values. The current relative humidity inside the container may be roughly determined by observing the coloration of the indicator card. Blue coloration of a pie sector indicates the internal humidity level is below the value shown in the sector. Lavender sector color indicates the humidity level is approaching the sector humidity value. Pink sector color indicates the relative humidity is at or has exceeded the sector value.
 - b. The internal humidity level should not exceed 50%. As long as the “60” pie sector is blue, or only slightly lavender, the internal relative humidity has not yet reached 50%.

NOTE

Saturated desiccant may be reactivated or “dried out” for reuse. Reactivated desiccant should retain 80% of its original water vapor adsorption rate and 90% of its original adsorption capacity.

Refer to the reactivation instructions attached to each bag for information on the temperature and time interval over which reactivation occurs.

The humidity indicator cards are most accurate for temperatures around 75° F. Temperatures significantly higher or lower require a small adjustment factor (only about 2% for each 10° F). For high temperatures in excess of 75° F, the card will indicate a lower humidity than is actually the case; for temperatures significantly below 75° F the card will indicate a higher humidity level than is actually the case.

The humidity indicator cards are reversible. When container relative humidity falls, the coloration of the disk sector will change from pink, to lavender, to blue.

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

- c. When the “60” pie sector turns lavender or slightly pink, the internal relative humidity is around 50% or higher. Replace desiccant as necessary to bring the humidity level back down below 50%.

NOTE

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

2. Annually, open container and inspect equipment.
3. Annually, replace electrical enclosure corrosion inhibitors.

PREPARE PERSONNEL SHELTER FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-B)

1. Perform step 1 through step 15 under “Prepare Personnel Shelter for Long Term Storage or Shipment (Level-A)” in this WP.
2. Close and latch container doors.

PRESERVATION EXERCISES DURING LONG TERM STORAGE OR SHIPMENT OF PERSONNEL SHELTER (LEVEL-B)**NOTE**

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

1. Annually, open container and inspect equipment.
2. Annually, replace electrical enclosure corrosion inhibitors.

PREPARE PERSONNEL SHELTER FOR SHORT TERM STORAGE OR SHIPMENT

1. Inspect ISO container. (MIL-HDBK-138)
2. Open shore tie access cover and preserve interior with one 1 unit size silica gel desiccant bag and one corrosion inhibitor.
3. Attach the shore tie female receptacle cover.
4. Close and secure the shore tie access cover.
5. Install head exhaust vent cover on exterior of container with suitable hardware.
6. Install heat pump vent cover on exterior of container with suitable hardware.
7. Open electrical distribution panel and preserve interior with one 1 unit size silica gel desiccant bag and two corrosion inhibitors.
8. Hang a caution tag from electrical distribution panel stating:

“CAUTION: REMOVE INTERNAL DESICCANTS AND CORROSION
INHIBITORS BEFORE APPLYING POWER.”
9. Preserve Incinolet toilet. (TM 55-1945-219-14&P)
 - a. Empty ash pan.
 - b. Disconnect from electrical power source.
 - c. Clean surfaces with detergent and water. Do not hose down.
10. Close and latch shelter door.

**PREPARE LIGHT TOWERS, POWER UNITS AND CONTAINERS FOR
LONG TERM STORAGE OR SHIPMENT (LEVEL-A)**

1. Inspect ISO container. (MIL-HDBK-138)
2. Rinse light towers and power units with fresh water and allow to thoroughly dry.
3. Remove rust and corrosion from surfaces of containers, light towers and power units. (TB 43-0144)
4. Paint surfaces of containers, light towers and power units. (TB 43-0144)

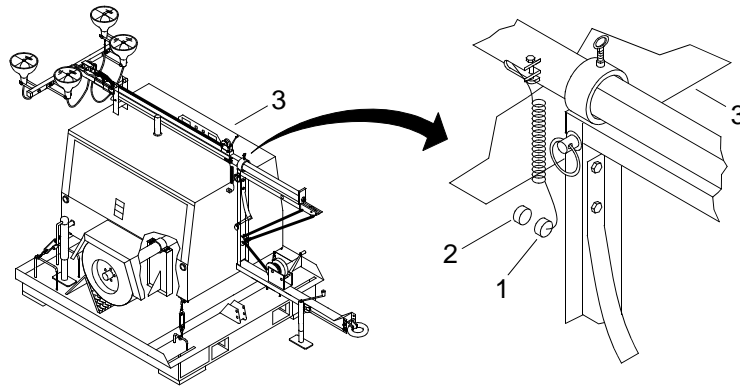


Figure 4. Tower Electrical Cable

5. Disconnect tower junction box electrical cable plug (figure 4, item 1) from 125V receptacle (figure 4, item 2) on front of light tower (figure 4, item 3).

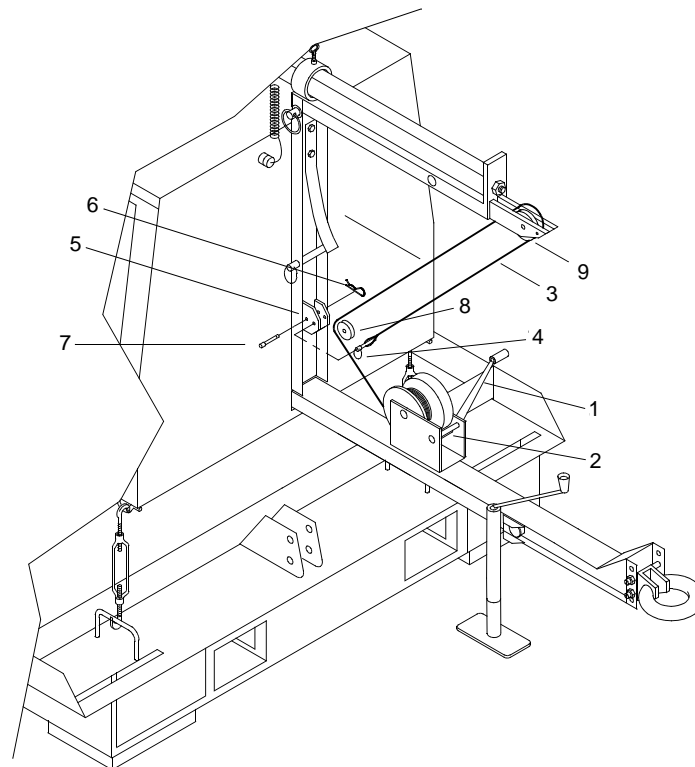


Figure 5. Cable Removal

6. Turn hand crank (figure 5, item 1) on drawbar winch (figure 5, item 2) counterclockwise to provide slack in drawbar winch cable (figure 5, item 3).
7. Remove quick release pin (figure 5, item 4) from tower support pulley bracket (figure 5, item 5) to remove end loop of drawbar winch cable (figure 5, item 3).
8. Install quick release pin (figure 5, item 4) in tower support pulley bracket (figure 5, item 5).

9. Remove cotter pin (figure 5, item 6) and pulley pin (figure 5, item 7) securing tower support pulley (figure 5, item 8) to tower support pulley bracket (figure 5, item 5). Discard cotter pin (figure 5, item 6).
10. Route drawbar winch cable (figure 5, item 3) backwards over pivot support pulley (figure 5, item 9) and load drawbar winch cable (figure 5, item 3) onto drawbar winch (figure 5, item 2) by turning hand crank (figure 5, item 1) clockwise.
11. Position tower support pulley (figure 5, item 8) on tower support pulley bracket (figure 5, item 5) and secure with pulley pin (figure 5, item 7) and new cotter pin (figure 5, item 6).

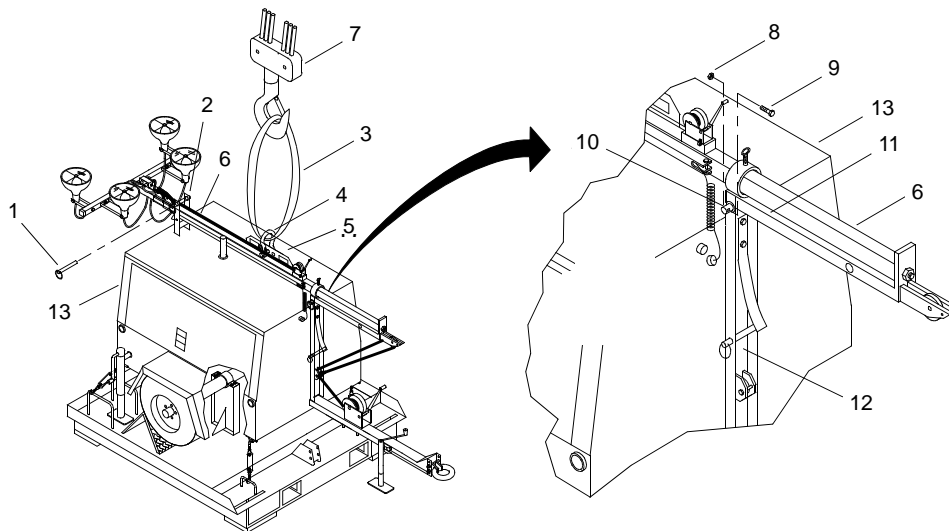


Figure 6. Tower Removal

12. Remove tower rest retaining pin (figure 6, item 1) from tower rest (figure 6, item 2).
13. Attach 5,300 lb sling (figure 6, item 3) and shackle (figure 6, item 4) to lift point (figure 6, item 5) on tower (figure 6, item 6).
14. Using crane (figure 6, item 7), sling (figure 6, item 3) and shackle (figure 6, item 4), lift tower (figure 6, item 6) off tower rest (figure 6, item 2).
15. Remove nut (figure 6, item 8) and retaining bolt (figure 6, item 9) from pivot pin (figure 6, item 10).
16. Remove pivot pin (figure 6, item 10) securing tower pivot support (figure 6, item 11) to tower support (figure 6, item 12).
17. Using crane (figure 6, item 7), sling (figure 6, item 3) and shackle (figure 6, item 4), lift tower (figure 6, item 6) off light tower (figure 6, item 13).
18. Install pivot pin (figure 6, item 10) in tower support (figure 6, item 12).
19. Install retaining bolt (figure 6, item 9) and nut (figure 6, item 8) on pivot pin (figure 6, item 10). Tighten nut (figure 6, item 8).

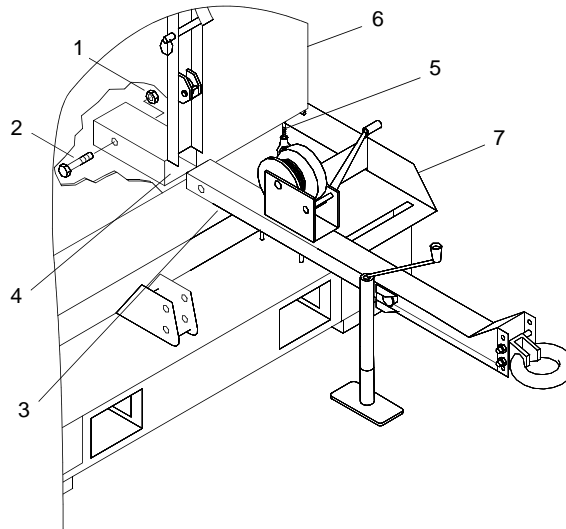


Figure 7. Drawbar Removal

20. Remove nut (figure 7, item 1) and bolt (figure 7, item 2) securing drawbar (figure 7, item 3) to drawbar receptacle (figure 7, item 4).
21. Loosen and remove turnbuckle (figure 7, item 5) from light tower (figure 7, item 6) and pallet (figure 7, item 7).
22. Using assistant, remove drawbar (figure 7, item 3) from light tower (figure 7, item 6).
23. Stow drawbar (figure 7, item 3) beneath light tower (figure 7, item 6) and secure on both ends with tie downs to the pallet.
24. Install turnbuckle (figure 7, item 5) on light tower (figure 7, item 6) and pallet (figure 7, item 7) and tighten.
25. Replace crankcase oil with preservation oil (MIL-PRF-21260E). (TM 55-1945-218-14&P)
26. Attach a tag to the unit in a visible location that states the following:

“CAUTION: ENGINE OIL IN UNIT FOR PRESERVATION OR SHORT ENGINE “EXERCISING” DURING STORAGE ONLY. BEFORE PLACING UNIT INTO OPERATION, OIL MUST BE DRAINED AND REPLACED WITH OIL CONFORMING TO MIL-PRF-2104G OR HAVING PROPERTIES OF API CLASSIFICATION CD/CE GRADES.”
27. Replace engine oil filter. (TM 55-1945-218-14&P)
28. Verify coolant levels and test consistency in radiator and reserve reservoir. Replenish with water and antifreeze (50/50 mixture). (TM 55-1945-217-14&P)
29. Preserve fuel system.
 - a. Disconnect engine fuel intake line from fuel supply tank. (TM 55-1945-218-14&P)
 - b. Disconnect injector fuel return line at the fuel tank and allow fuel to drain into drain pan. (TM 55-1945-218-14&P)

-
- c. Fill a container with operating fuel.
 - d. Fill a container with preservation oil (P-10, MIL-PRF-21260 Grade 10).
 - e. Place the fuel intake line in the container holding fuel.
 - f. Start engine and operate at fast idle until thoroughly warm.
 - g. Accelerate engine to 3/4 speed.

NOTE

Note any color difference between the preservation oil and the operating fuel as an aid to determining when preservation oil is exiting the fuel return line.

- h. While operating engine at 3/4 speed, move fuel intake line to container holding preservation oil. Run engine until preservation oil is observed exiting fuel return line.
 - i. Stop engine.
 - j. Reconnect engine fuel intake line at fuel supply tank. (TM 55-1945-218-14&P)
 - k. Reconnect injector fuel return line at fuel tank. (TM 55-1945-218-14&P)
30. Preserve combustion chambers and valves.
- a. Allow engine to cool to cylinder head temperature of 100° F or less, measured at injector nozzle flange area surfaces of each cylinder.
 - b. Remove intake manifolds, exhaust manifolds, and rocker arm covers. (TM 55-1945-218-14&P)
 - c. Completely close throttle.

NOTE

To avoid engine hydrostatic lockup when preserving combustion chambers and valves, do not atomize more than 1/2 ounce of preservation oil per cylinder (1-1/2 ounces total).

Do not exceed 25 psi for atomizing spray pressure.

Atomize 1/4 of the total of 1/2 ounce of preservation oil per cylinder (3/8 ounce total).

- d. Manually depress and hold open each intake valve while spraying 1/4 of total atomized preservation oil (PE-10, MIL-PRF-21260 Grade 10) into each cylinder through open intake port. (TM 55-1945-218-14&P)
- e. Manually depress and hold open each exhaust valve while spraying 1/4 of total atomized preservation oil (PE-10, MIL-PRF-21260 Grade 10) into each cylinder through open exhaust port. (TM 55-1945-218-14&P)

NOTE

To reduce likelihood of engine firing and running on preservation oil, avoid continuous rotation of engine crankshaft with starting motor.

- f. Rotate engine crankshaft with starting motor until all pistons have completed a full cycle.

-
- g. Repeat step d through step e above, using all remaining preservation oil (PE-10, MIL-PRF-21260 Grade 10). Do not repeat step f.

NOTE

Replace gaskets if original gaskets are damaged.

- h. Replace exhaust and intake manifolds. (TM 55-1945-218-14&P)
- i. Spray atomized preservation oil (PE-10, MIL-PRF-21260 Grade 10) onto rocker arm assemblies, springs, guides, valve stems, push rods and the insides of rocker arm covers. (TM 55-1945-218-14&P)

NOTE

Replace gaskets if original gaskets are damaged.

- j. Install rocker arm covers. (TM 55-1945-218-14&P)
31. Attach a tag to the unit in a visible location that states the following:
- “ENGINE PRESERVED - DO NOT OPERATE WITHOUT
DEPRESERVATION.”
32. Remove air cleaner assembly. (TM 55-1945-218-14&P)
33. Spray one ounce of atomized preservation oil (MIL-PRF-21260, Grade 30) into air intake tube.
34. Open air cleaner assembly and remove air filter element. (TM 55-1945-218-14&P)

NOTE

Exercise care to prevent preservative oil from contacting nonmetallic elements.

35. Spray unpainted, uncoated interior air cleaner metal surfaces with atomized preservation oil (MIL-PRF-21260, Grade 30).
36. Reinstall air filter element in air cleaner assembly. (TM 55-1945-218-14&P)
37. Reinstall air cleaner assembly. (TM 55-1945-218-14&P)
38. Relieve drive belt tension. (TM 55-1945-218-14&P)
39. Attach a tag to the unit in a visible location that states the following:
- “BELT TENSION RELIEVED - ADJUST PRIOR TO STARTING ENGINE”
40. Spray interior surfaces of exhaust piping with atomized preservation oil (MIL-PRF-21260, Grade 30). (TM 55-1945-217-14&P)
41. Disconnect battery and turn into unit maintenance per local procedures. Attach a tag to the power unit stating the following:
- “BATTERY REMOVED FOR STORAGE. INSTALL BATTERY UPON
DEPRESERVATION.”
42. Drain the fuel tank. (TM 55-1945-217-14&P)

43. Lubricate tower and drawbar winch ropes. (TM 55-1945-217-14&P)
44. Spray all exposed rubber and electrical connections with silicone. (G623)
45. Seal all engine openings with tape (ASTM D5486 Type IV).
46. Wrap each light tower power unit with Corrosion Intercept Stretch Wrap. See "Corrosion Intercept Stretch Wrap Procedures" near the end of this WP.
47. Place three 80 unit size silica gel desiccant bags inside barrier wrap encasing each light tower power unit.
48. Install humidity indicator card inside barrier wrap encasing each light tower power unit.

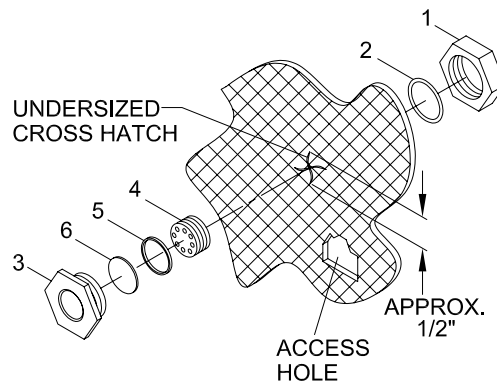


Figure 8. Humidity Card Installation in Barrier Wrap

- a. Cut an undersized cross hatch (figure 8) through barrier wrap (approx. 1/2 in. long).
- b. Cut access hole into barrier wrap large enough to pass hand through.
- c. Remove outer nut (figure 8, item 1) and gasket (figure 8, item 2) from observation window (figure 8, item 3).

NOTE

When removing lockscrew and teflon spacer from inside of observation window, ensure loose transparent window and retaining seal remain seated in the bottom of the observation window.

- d. Remove lockscrew (figure 8, item 4) from inside of observation window (figure 8, item 3).
- e. Remove lockscrew (figure 8, item 4) and teflon spacer (figure 8, item 5) from observation window (figure 8, item 3).
- f. Place humidity indicator card (figure 8, item 6) down inside the observation window (figure 8, item 3) with text facing down. Ensure rubber seal immediately beneath the indicator card (figure 8, item 6) and the transparent window beneath the seal are properly aligned in the observation window.
- g. Position teflon spacer (figure 8, item 5) on top of the indicator card (figure 8, item 6).
- h. Thread lockscrew (figure 8, item 4) into observation window (figure 8, item 3), compressing the teflon spacer (figure 8, item 5) and indicator card (figure 8, item 6) against the rubber seal and transparent window. Tighten lockscrew (figure 8, item 4).

- i. Carefully insert the assembled observation window (figure 8, item 3) through the undersized cross hatch for a snug fit.
- j. Holding the assembled observation window (figure 8, item 3) with one hand, reach through the access hole with the other hand and slide the gasket (figure 8, item 2) and outer nut (figure 8, item 1) onto the observation window (figure 8, item 3) threads.
- k. Snug the outer nut (figure 8, item 1) onto the observation window (figure 8, item 3).
- l. Seal the access hole with tape.

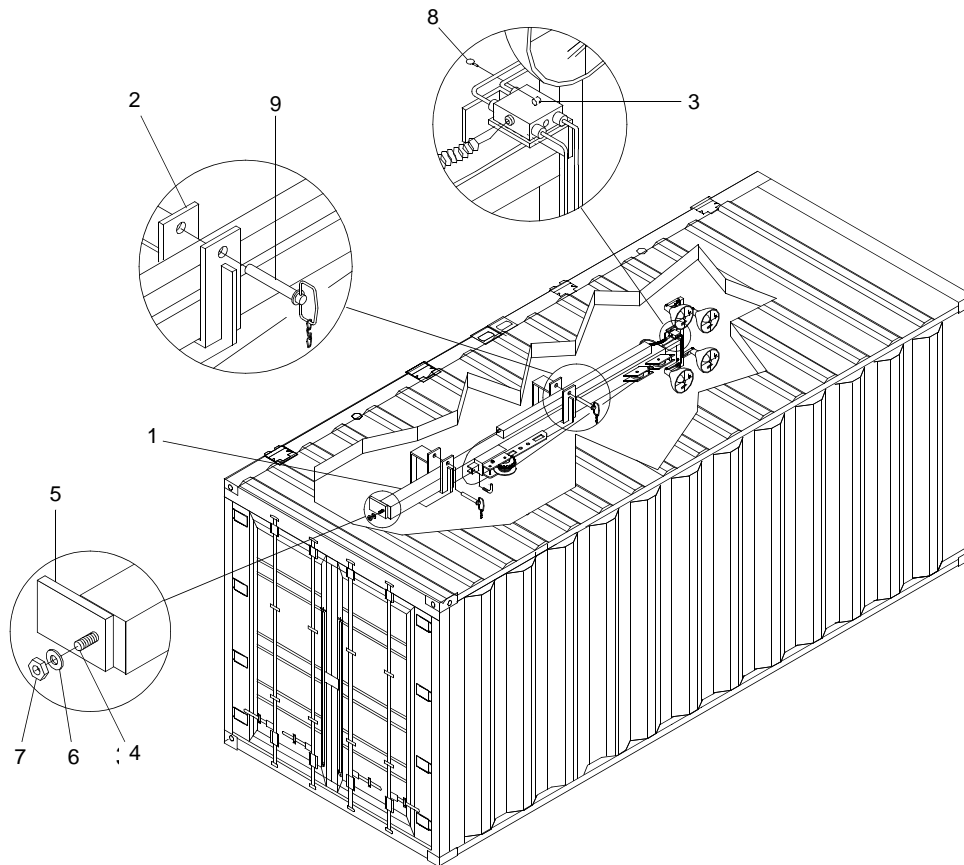


Figure 9. Tower Storage

WARNING



HEAVY OBJECTS

The towers are heavy. Use at least six people to move them from the container. Failure to comply could cause serious injury or death.

49. Using six people, lift and position tower (figure 9, item 1) on light tower container wall brackets (figure 9, item 2).

50. Slide tower (figure 9, item 1) so that it engages the locator pin (figure 9, item 3) at the upper end and the tower stud (figure 9, item 4) engages the bracket (figure 9, item 5) at the lower end.
51. At the lower end of tower (figure 9, item 1), install washer (figure 9, item 6) and nut (figure 9, item 7) on stud (figure 9, item 4) and tighten nut (figure 9, item 7).
52. At the upper end of tower (figure 9, item 1), install quick release pin (figure 9, item 8) on locator pin (figure 9, item 3).
53. Install hitch pins (figure 9, item 9) in light tower container wall brackets (figure 9, item 2).

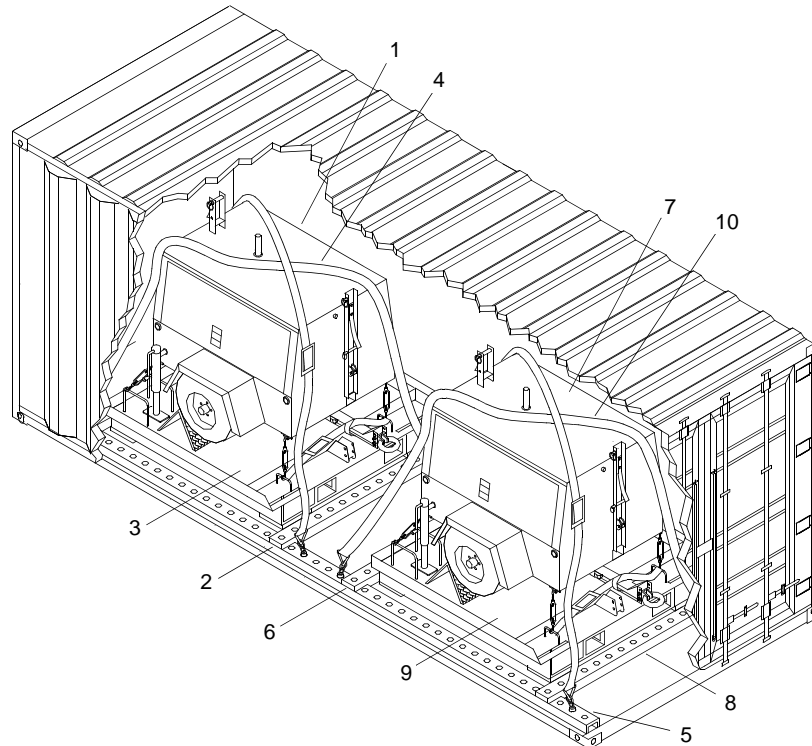


Figure 10. Light Tower Storage

54. Using forklift, position aft light tower (figure 10, item 1) inside light tower container.
55. Using forklift and push-pull rod, position aft light tower (figure 10, item 1) in rear of light tower container.
56. Install forward track stop (figure 10, item 2) in front of aft light tower pallet (figure 10, item 3).
57. Use two ratcheting tie down straps (figure 10, item 4) to secure aft light tower (figure 10, item 1) to light tower container tracks (figure 10, item 5).
58. Install rear track stop (figure 10, item 6) for forward light tower (figure 10, item 7) placement.
59. Using forklift, position forward light tower (figure 10, item 7) inside light tower container.
60. Install forward track stop (figure 10, item 8) in front of forward light tower pallet (figure 10, item 9).

61. Use two ratcheting tie down straps (figure 10, item 10) to secure forward light tower (figure 10, item 7) to light tower container tracks (figure 10, item 5).
62. Close and latch container doors.

PRESERVATION EXERCISES DURING LONG TERM STORAGE OR SHIPMENT OF LIGHT TOWERS, POWER UNITS AND CONTAINERS (LEVEL-A)

1. Monthly, inspect reversible humidity indicator cards.
 - a. The humidity indicator card is divided into three equal pie sectors showing 20, 40 and 60 percent relative humidity values. The current relative humidity inside the container may be roughly determined by observing the coloration of the indicator card. Blue coloration of a pie sector indicates the internal humidity level is below the value shown in the sector. Lavender sector color indicates the humidity level is approaching the sector humidity value. Pink sector color indicates the relative humidity is at or has exceeded the sector value.
 - b. The internal humidity level should not exceed 50%. As long as the "60" pie sector is blue, or only slightly lavender, the internal relative humidity has not yet reached 50%.

NOTE

Saturated desiccant may be reactivated or "dried out" for reuse. Reactivated desiccant should retain 80% of its original water vapor adsorption rate and 90% of its original adsorption capacity.

Refer to the reactivation instructions attached to each bag for information on the temperature and time interval over which reactivation occurs.

The humidity indicator cards are most accurate for temperatures around 75° F. Temperatures significantly higher or lower require a small adjustment factor (only about 2% for each 10° F). For high temperatures in excess of 75° F, the card will indicate a lower humidity than is actually the case; for temperatures significantly below 75° F the card will indicate a higher humidity level than is actually the case.

The humidity indicator cards are reversible. When container relative humidity falls, the coloration of the disk sector will change from pink, to lavender, to blue.

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

- c. When the "60" pie sector turns lavender or slightly pink, the internal relative humidity is around 50% or higher. Replace desiccant as necessary to bring the humidity level back down below 50%.
2. Annually, verify coolant levels and test consistency in radiator and reserve reservoir. Replenish with water and antifreeze (50/50 mixture). (TM 55-1945-217-14&P)
3. Annually, lubricate valve guides and valve stem seals with engine oil before starting the engine. Run engine under no load for approximately five minutes. (TM 55-1945-218-14&P)

PREPARE LIGHT TOWERS, POWER UNITS AND CONTAINERS FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-B)

1. Perform step 1 through step 45 under "Prepare Light Towers, Power Units and Containers for Long Term Storage or Shipment (Level-A)" in this WP.
2. Perform step 49 through step 62 under "Prepare Light Towers, Power Units and Containers for Long Term Storage or Shipment (Level-A)" in this WP.

PRESERVATION EXERCISES DURING LONG TERM STORAGE OR SHIPMENT OF LIGHT TOWERS, POWER UNITS AND CONTAINERS (LEVEL-B)

1. Annually, verify coolant levels and test consistency in radiator and reserve reservoir. Replenish with water and antifreeze (50/50 mixture). (TM 55-1945-217-14&P)
2. Annually, lubricate valve guides and valve stem seals with engine oil before starting the engine. Run engine under no load for approximately five minutes. (TM 55-1945-218-14&P)

PREPARE LIGHT TOWERS, POWER UNITS AND CONTAINERS FOR SHORT TERM STORAGE OR SHIPMENT

1. Inspect ISO container. (MIL-HDBK-138)
2. Verify crankcase oil level is full. (TM 55-1945-217-14&P)
3. Verify radiator coolant level is full. (TM 55-1945-217-14&P)
4. Verify battery fluid levels and replenish with distilled water. (TM 55-1945-217-14&P)
5. Verify battery charge level and recharge. (TM 9-6140-200-14)
6. Verify battery connections are clean and secure. (TM 55-1945-217-14&P)
7. Verify fuel tank is empty. (TM 55-1945-217-14&P)
8. Rinse light towers and power units with fresh water and allow to thoroughly dry.
9. Perform step 5 through step 24 under "Prepare Light Towers, Power Units and Containers for Long Term Storage or Shipment (Level-A)" in this WP.
10. Perform step 49 through step 62 under "Prepare Light Towers, Power Units and Containers for Long Term Storage or Shipment (Level-A)" in this WP.

PREPARE BII CONTAINER FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-A)

1. Inspect ISO container. (MIL-HDBK-138)
2. Remove rust and corrosion from surfaces of container. (TB 43-0144)
3. Paint surfaces of container. (TB 43-0144)
4. Remove 6 VDC batteries.
5. Remove D-sized batteries.
6. Fully charge battery packs prior to installing in VHF/FM handheld transceivers. (WP 0008 00)
7. Store high pressure sodium lamps in protective cardboard sheaths. Use additional packing materials to protect lamps in cabinet drawers.
8. Store 75 W incandescent lamps in protective coverings. Use additional packing materials to protect lamps in cabinet drawers.

-
9. Store 20 W fluorescent lamps in protective coverings. Use additional packing materials to protect lamps in cabinet drawers.
 10. Preserve the griphoist.
 - a. Open release lever.

NOTE

An excess of lubrication will not cause the wire rope to slip; there is no risk of overlubricating.

- b. Thoroughly lubricate internal mechanisms by pouring lubricating oil (80W90) inside the machine through its casing openings (lever openings and oil hole).
 - c. Alternately operate forward lever and reversing lever.
 - d. Close release lever.
 - e. Lubricate accompanying wire rope on metal reel with a rag soaked in lubricating oil (15W40).
 - f. Lubricate hook latch at one end of wire rope with lubricating oil (15W40).
11. Remove batteries from towing lights. (WP 0034 00)
 12. Remove batteries from hand lanterns. (WP 0037 00)
 13. Remove batteries from watertight flashlights.
 14. Remove batteries from life ring strobe lights. (WP 0036 00)
 15. Place eight 80 unit size silica gel desiccant bags inside container on floor.
 16. Close container doors and seal with tape.
 17. Install humidity indicator cards in observation windows. See "Installation of Humidity Indicator Cards" near the end of this WP.

PRESERVATION EXERCISES DURING LONG TERM STORAGE OR SHIPMENT OF BII CONTAINER (LEVEL-A)

1. Monthly, inspect reversible humidity indicator cards.
 - a. The humidity indicator card is divided into three equal pie sectors showing 20, 40 and 60 percent relative humidity values. The current relative humidity inside the container may be roughly determined by observing the coloration of the indicator card. Blue coloration of a pie sector indicates the internal humidity level is below the value shown in the sector. Lavender sector color indicates the humidity level is approaching the sector humidity value. Pink sector color indicates the relative humidity is at or has exceeded the sector value.
 - b. The internal humidity level should not exceed 50%. As long as the "60" pie sector is blue, or only slightly lavender, the internal relative humidity has not yet reached 50%.

NOTE

Saturated desiccant may be reactivated or “dried out” for reuse. Reactivated desiccant should retain 80% of its original water vapor adsorption rate and 90% of its original adsorption capacity.

Refer to the reactivation instructions attached to each bag for information on the temperature and time interval over which reactivation occurs.

The humidity indicator cards are most accurate for temperatures around 75° F. Temperatures significantly higher or lower require a small adjustment factor (only about 2% for each 10° F). For high temperatures in excess of 75° F, the card will indicate a lower humidity than is actually the case; for temperatures significantly below 75° F the card will indicate a higher humidity level than is actually the case.

The humidity indicator cards are reversible. When container relative humidity falls, the coloration of the disk sector will change from pink, to lavender, to blue.

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

- c. When the “60” pie sector turns lavender or slightly pink, the internal relative humidity is around 50% or higher. Replace desiccant as necessary to bring the humidity level back down below 50%.

NOTE

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

2. Annually, open container and inspect equipment.

PREPARE BII CONTAINER FOR LONG TERM STORAGE OR SHIPMENT (LEVEL-B)

1. Perform step 1 through step 14 under “Prepare BII Container for Long Term Storage or Shipment (Level-A)” in this WP.
2. Close and latch container doors.

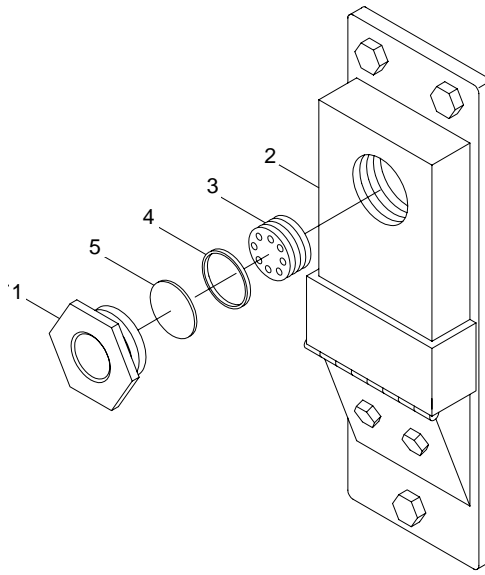
PRESERVATION EXERCISES DURING LONG TERM STORAGE OR SHIPMENT OF BII CONTAINER (LEVEL-B)**NOTE**

If entry into container is required and doors are difficult to open, relieve container vacuum pressure by opening the vent at the bottom of the vent cover assembly.

1. Annually, open container and inspect equipment.

PREPARE BII CONTAINER FOR SHORT TERM STORAGE OR SHIPMENT

1. Inspect ISO container. (MIL-HDBK-138)
2. Perform step 6 through step 10 under “Prepare BII Container for Long Term Storage or Shipment (Level-A)” in this WP.
3. Close and latch container doors.

INSTALLATION OF HUMIDITY INDICATOR CARDS**Figure 11. Vent Cover**

1. Locate vent cover assembly with observation window (figure 11, item 1) in upper exterior of container.
2. Unscrew observation window (figure 11, item 1) from vent cover (figure 11, item 2).

NOTE

When removing lock screw and teflon spacer from inside of observation window, ensure loose transparent window and retaining seal remain seated in the bottom of the observation window.

3. Remove lock screw (figure 11, item 3) and teflon spacer (figure 11, item 4) from observation window (figure 11, item 1).
4. Situate humidity indicator card (figure 11, item 5) down inside the observation window (figure 11, item 1) with text facing down. Ensure rubber seal immediately beneath the indicator card (figure 11, item 5) and the transparent window beneath the seal are properly situated in the observation window.
5. Position teflon spacer (figure 11, item 4) on top of the indicator card (figure 11, item 5).
6. Thread lock screw (figure 11, item 3) into observation window (figure 11, item 1), compressing the teflon spacer (figure 11, item 4) and indicator card (figure 11, item 5) against the rubber seal and transparent window. Tighten lock screw (figure 11, item 3).
7. Screw the observation window (figure 11, item 1) into the vent cover (figure 11, item 2) and tighten.

CORROSION INTERCEPT STRETCH WRAP PROCEDURES

1. Make sure the item to be wrapped is clean, dry, and free from oil, fingerprints and alkaline residue. Wrap the item as soon as possible after cleaning.

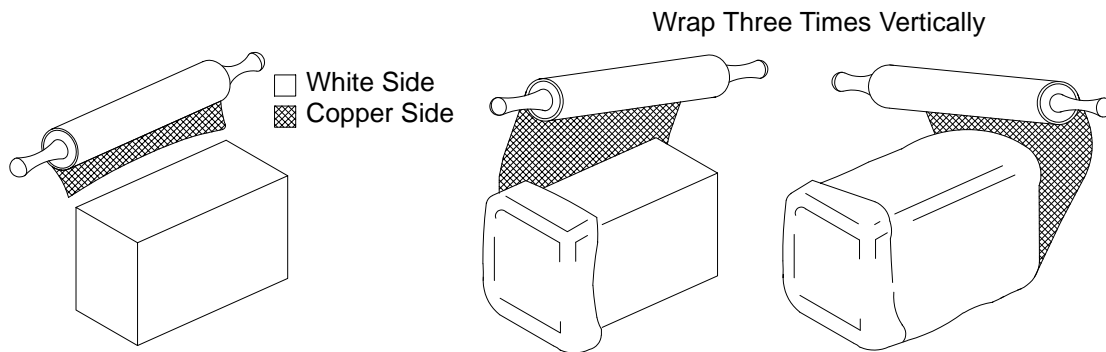


Figure 12. Vertical Wrap

2. Place three wraps in a vertical direction with the *copper* side facing the item being wrapped (figure 12).

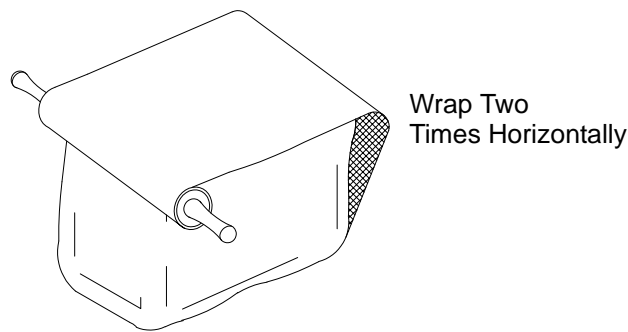


Figure 13. Horizontal Wrap

3. Wrap two times in the horizontal direction with the *copper* side facing the item being wrapped (figure 13).

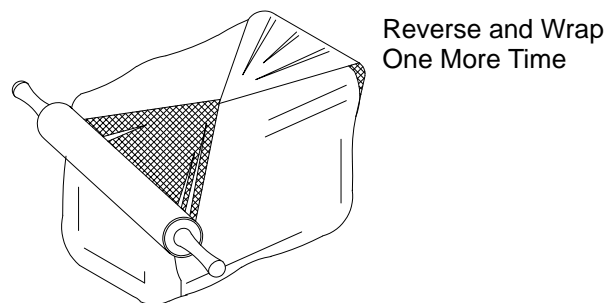


Figure 14. Twist in Film

4. Start another wrap and reverse twist the film so that the *white* side is facing the product, then continue to wrap the item until it completely covered (figure 14).

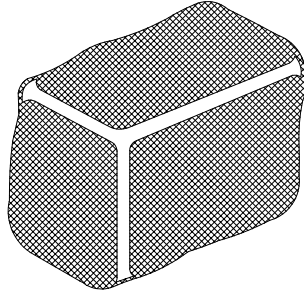


Figure 15. Wrapped Item

5. The properly wrapped item will have the *copper* side of the film facing out, away from the item (figure 15).

END OF WORK PACKAGE

CHAPTER 5

**SUPPORTING INFORMATION
FOR
MODULAR CAUSEWAY SYSTEM (MCS)
FLOATING CAUSEWAY (FC)**

**UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE
FLOATING CAUSEWAY
REFERENCES**

SCOPE

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

ARMY REGULATIONS

AR 700-138 Army Logistics Readiness and Sustainability

CODE OF FEDERAL REGULATIONS

29 CFR Labor, Parts 1911 to 1925

46 CFR Shipping, Parts 90 to 139

DA PAMPHLETS

DA PAM 738-750 Functional Users Manual for the Army Maintenance Management Systems (TAMMS)

FIELD MANUALS

FM 3-5 NBC, Decontamination

FM 55-502 Watercraft Safety

FORMS

DA Form 2028 Recommended Changes to Publications and Blank Forms

DA Form 2258 Depreservation Guide for Vehicles and Equipment

DA Form 2404 Equipment Inspection and Maintenance Worksheet

SF 368 Product Quality Deficiency Report

MISCELLANEOUS

ASME Y14.38-1999 The American Society of Mechanical Engineers Abbreviations and Acronyms

COMDTINST M16672.2D Navigation Rules, International-Inland

CTA 8-100 Common Table of Allowances, Army Medical Department Expendable/Durable Items

CTA 50-970 Common Table of Allowances, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items)

MIL-HDBK-138 Container Inspection Handbook for Commercial and Military Intermodal Containers

SUPPLY CATALOGS

SC 4910-95-A68	Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Wheeled Vehicles, Post, Camp and Station, Set C, Less Power
SC 4910-95-A72	Shop Equipment, Automotive Maintenance and Repair, Organizational Maintenance, Common No. 2
SC 4940-95-A64	Shop Equipment, Welding, Shelter Mounted
SC 5180-95-N26	Shop Equipment, General Mechanic's Automotive

TECHNICAL BULLETINS

TB 43-0144	Painting of Watercraft
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TECHNICAL MANUALS

TM 5-805-7	Welding: Design, Procedures and Inspection, for Minor Weld Repairs
TM 9-6115-642-10	Generator Set (10 KW), Skid Mounted, Tactical Quiet
TM 9-6140-200-14	Unit, Direct and General Support Maintenance Manual for Lead-Acid Storage Batteries
TM 55-1945-227-10-HR	Hand Receipt, Covering Contents of Components of End Item (COEI), Basic Issue Items (BII) and Additional Authorization List (AAL) for Floating Causeway
TM 55-1945-217-14&P	Operator, Unit, Direct Support and General Support Maintenance Manual (including Repair Parts and Special Tools List) for Light Tower (Ingersol-Rand)
TM 55-1945-218-14&P	Operator, Unit, Direct Support and General Support Maintenance Manual (including Repair Parts and Special Tools List) for Light Tower Engine (Kubota)
TM 55-1945-219-14&P	Operator, Unit, Direct Support and General Support Maintenance Manual for Incinerator Toilet (Incinolet)
TM 55-1945-220-14&P	Operator, Unit, Direct Support and General Support Maintenance Manual (including Repair Parts and Special Tools List) for Packaged Terminal Air Conditioner and Heat Pump (Carrier)
TM 750-244-6	Destruction of TACOM Equipment

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII)
LISTS**

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

INTRODUCTION

Scope

This work package lists COEI and BII for the Floating Causeway 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 Floating Causeway. As part of the end item, these items 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 Floating Causeway in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the Floating Causeway 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) Item Number. A reference number for the item.

Column (2) National Stock Number (NSN) and Illustration. Identifies the stock number of the item to be used for requisitioning purposes. An illustration of the item appears below the NSN.

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 (UOC). When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5) Unit of Issue (U/I). 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. (COEI)


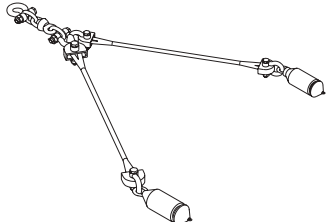
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
1		<p>ASSEMBLY, STANCHION, RING: consisting of the following components (BII container, storage room shelf and wall) (34712) E38873</p> <p>RING, BUOY, LIFE SAVING: (7T351) JB-0-30</p> <p>LIGHT, STROBE: (18560) SM-2</p> <p>HANGER, BRACKET: (34712) E34682</p> <p>ASSEMBLY, STANCHION: (34712) E38203</p> <p>ROPE: (39428) 3856T18</p>		EA	4
2	<p>XXXX-XX-XXX-XXXX</p>  <p>XXXX-XX-XXX-XXXX</p> <p>4030-00-185-0489</p> <p>4030-01-175-3570</p> <p>XXXX-XX-XXX-XXXX</p>	<p>ASSEMBLY, BRIDLE, TOWING: consists of the following items (BII container, storage room, center) (34712) E34993</p> <p>ROPE, FLEXOR: 35 ft (BII container, storage room, center) (34712) E35011</p> <p>ROPE, FLEXOR: 60 ft (BII container, storage room, center) (34712) E35721</p> <p>SHACKLE: 2 in., 35 ton, anchor type, bolt with cotter key (BII container, storage room, 30 gal. drum) (75535) 1018650</p> <p>SHACKLE: 1/2 in., 2-ton, anchor shackle, screw-pin type (BII container, cabinet C1) (75535) 1018455</p> <p>SHACKLE: anchor type, 2-1/2 in., 55 ton, bolt-type with cotter key (BII container, storage room floor, 30 gal. drum) (75535) 1019695</p> <p>SWIVEL, ANCHOR: for 2-1/2 in. chain (BII container, storage room floor) (50194) 2.5U-3SW</p>		EA	1

Table 1. Components of End Item. (COEI) (Continued)

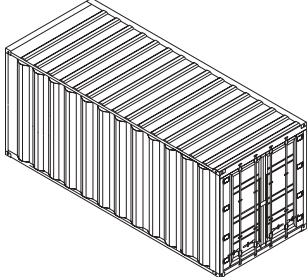
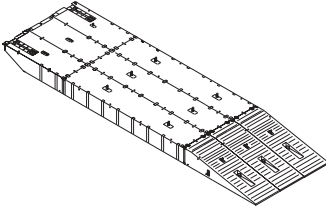
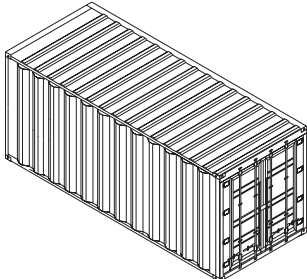
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
3		BASIC ISSUE ITEMS (BII), STOWAGE ARRANGEMENT: 20 ft. ISO cargo container (34712) E50765		EA	1
4		CBSE SECTION: 85 ft. x 24 ft. x 4.5 ft. Each section consists of the following modules: (34712) E19183 40 FT NON POWERED PONTOON (P40): (34712) E02803 20 FT RIGHT RAKE PONTOON (P20RR): (34712) E02813 20 FT CENTER RAKE PONTOON (P20CR): (34712) E02823 20 FT LEFT RAKE PONTOON (P20LR): (34712) E02833 25 FT BEACH END MODULE (P25B): (34712) E02853		EA	2
5		CONTAINER, GENERATOR (10 KW): 20 ft. x 8 ft. 6 in. x 8 ft. ISO cargo container, open end (34712) E33228		EA	1

Table 1. Components of End Item. (COEI) (Continued)

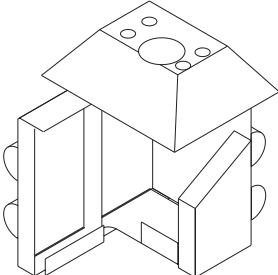
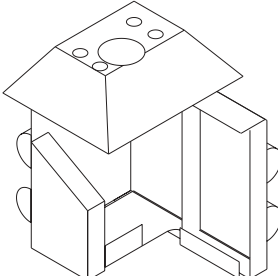
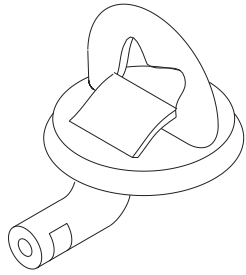
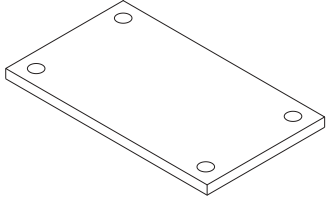
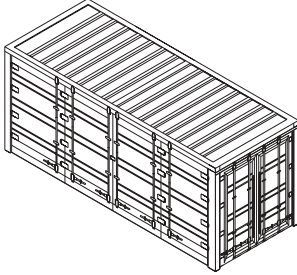
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
6		CORNER FENDER ASSEMBLY, LH: (deck mat container) (34712) E34793		EA	4
7		CORNER FENDER ASSEMBLY, RH: (deck mat container) (34712) E34553		EA	4
8		D-RING ASSEMBLY: (deck mat container) (34712) E07803		EA	8
9		DECK MAT: 4 ft. x 10 ft. x 1.5 in. (34712) E33811		EA	24
10		DECK MAT STOWAGE ARRANGEMENT: 20 ft. x 8 ft. 6 in. x 8 ft. ISO cargo container, all access full opening (34712) E50685		EA	1

Table 1. Components of End Item. (COEI) (Continued)

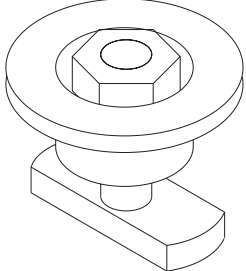
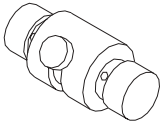
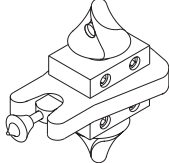
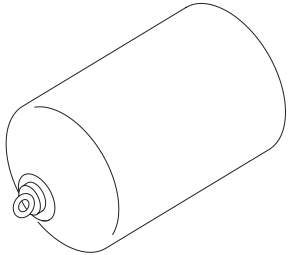
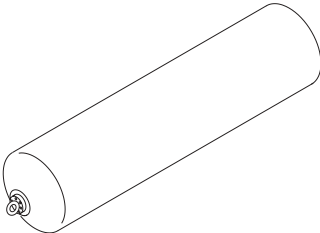
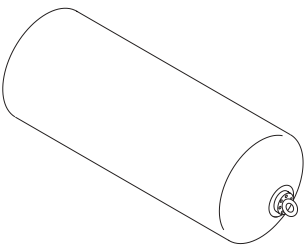
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
11		DECK MAT LOCK DOWN DOG ASSEMBLY: (deck mat container) (34712) E33823		EA	30
12	3040-01-387-4048 	FASTENER, POSITIVE LOCK: horizontal twistlock (BII container storage room, box 1) (94658) CTC1012-23-1		EA	176
13	5325-01-495-6300 	FASTENER, POSITIVE LOCK: vertical twistlock (BII container storage room, box 2) (94658) CTC2000-L-CH		EA	376
14		FENDER ASSEMBLY: 3 ft. by 5 ft. marine fender (59990) G03X05-2579		EA	30
15		FENDER ASSEMBLY: 4 ft. by 12 ft. marine fender (59990) G04X12-2456		EA	4
16		FENDER ASSEMBLY: 5 ft. by 10 ft. marine fender (59990) G05X10-2237		EA	2

Table 1. Components of End Item. (COEI) (Continued)

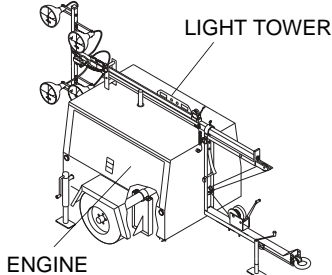
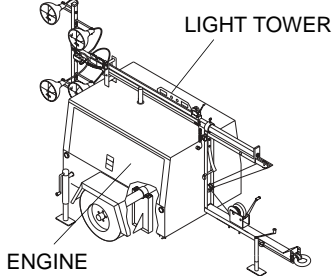
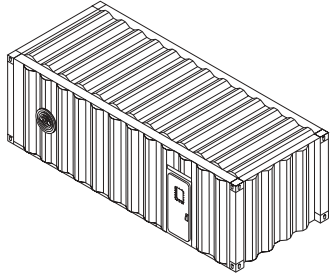
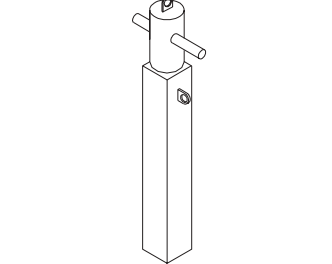
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21	6220-01-505-1610 	LIGHT TOWER: portable 2-wheel trailer with diesel-driven generator and telescoping tower with four 1000-watt high-pressure sodium lamps (34712) E35658		EA	2
22	2815-01-505-1614 	LIGHT TOWER ENGINE: diesel (0XWR1) MODEL D905-B		EA	2
23		MCS PERSONNEL SHELTER ARRANGEMENT: 20 ft. x 8 ft. 6 in. x 8 ft. ISO cargo container, open end (34712) E32708		EA	1
24		MOORING BITT: 24 in. x 80 in. x 180 in., 520 lbs., steel (in 4 ft x 12 ft fender stowage container) (34712) E32718		EA	8

Table 1. Components of End Item. (COEI) (Continued)

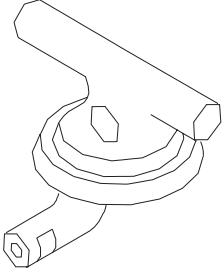
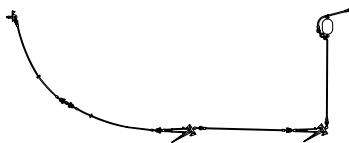
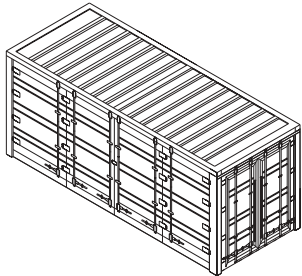
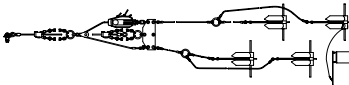
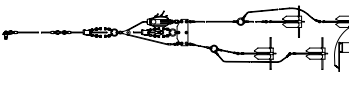
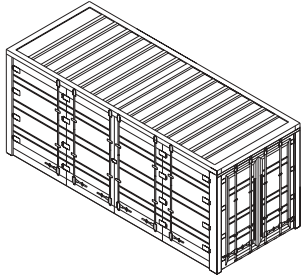
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
25		MOORING CLEAT ASSEMBLY: deck cleats (34712) E07723		EA	8
26		OFFSHORE LEG MOORING SYSTEM: (offshore mooring stowage container) (34712) E50123		EA	16
27		OFFSHORE MOORING CONTAINER STOWAGE ARRANGEMENT: 20 ft. x 8 ft. 6 in. x 8 ft. ISO cargo container, all access full opening (34712) E49913		EA	8
28		ONSHORE LEG MOORING SYSTEM, INNER: (onshore mooring stowage container) (34712) E52343		EA	2
29		ONSHORE LEG MOORING SYSTEM, OUTER: (onshore mooring stowage container) (34712) E52003		EA	2
30		ONSHORE MOORING CONTAINER STOWAGE ARRANGEMENT: 20 ft. x 8 ft. 6 in. x 8 ft. ISO cargo container, all access full opening (34712) E50213		EA	1

Table 1. Components of End Item. (COEI) (Continued)

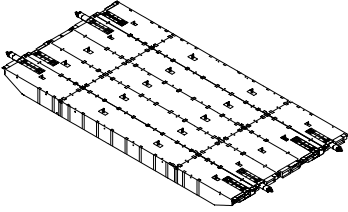
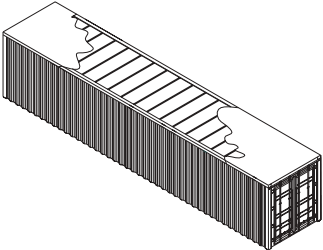
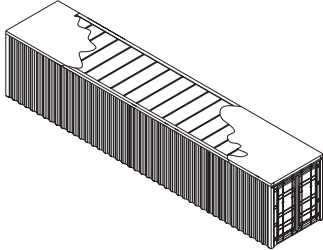
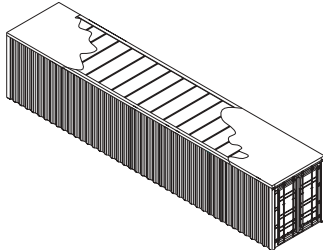
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
31		<p>PIERHEAD SECTION: extension. Each section consists of the following modules: (34712) E48663</p> <p>40 FT NON POWERED PONTOON (P40): (34712) E02803</p> <p>20 FT RIGHT RAKE PONTOON (P20RR): (34712) E02813</p> <p>20 FT CENTER RAKE PONTOON (P20CR): (34712) E02823</p> <p>20 FT LEFT RAKE PONTOON (P20LR): (34712) E02833</p>		EA	2 5 4 2 4
32		<p>SHIP FENDERING (3 X 5 & 5 X 10) STOWAGE ARRANGEMENT: 40 ft. x 8 ft. 6 in. x 8 ft. ISO cargo container, open top (34712) E50735</p>		EA	1
33		<p>SHIP FENDERING (3 X 5 & 5 X 10) STOWAGE ARRANGEMENT: 40 ft. x 8 ft. 6 in. x 8 ft. ISO cargo container, open top (34712) E50745</p>		EA	1
34		<p>SHIP FENDERING (4 X 12) & MOORING BITT STOWAGE ARRANGEMENT: 40 ft. x 8 ft. 6 in. x 8 ft. ISO cargo container, open top (34712) E50695</p>		EA	1

Table 1. Components of End Item. (COEI) (Continued)

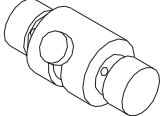
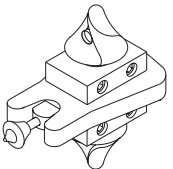
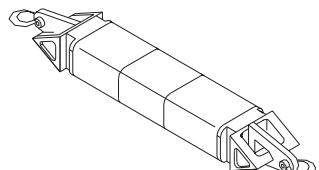
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
ON BOARD SPARES					
35	3040-01-387-4048 	FASTENER, POSITIVE LOCK: horizontal twistlock (BII container storage room, box 1) (94658) CTC1012-23-1		EA	10
36	5325-01-495-6300 	FASTENER, POSITIVE LOCK: vertical twistlock (BII container storage room, box 2) (94658) CTC2000-L-CH		EA	20
37	2040-01-092-3081 	FLEXOR COUPLING, PONTOON CAUSEWAY: (BII container, storage room floor, center) (34712) E02783		EA	6

Table 2. Basic Issue Items. (BII)

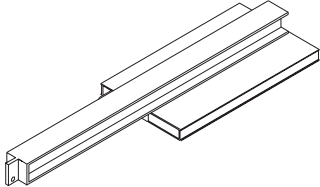
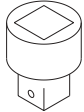
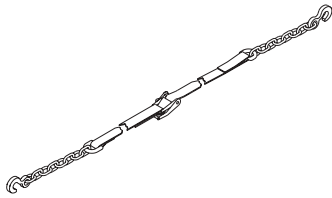
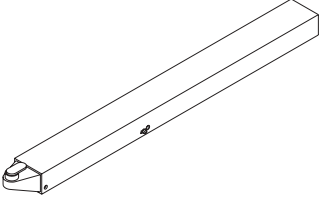
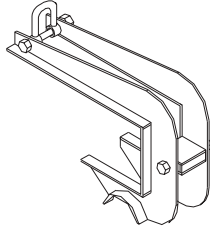
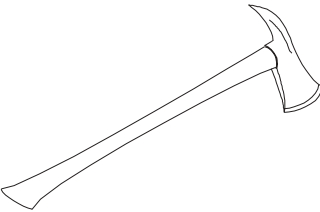
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
1	3930-01-499-8041 	ADAPTER, FORKLIFT: (BII container, storage room, center) (34712) E35332		EA	2
2	5120-00-144-5207 	ADAPTER, SOCKET WRENCH: (deck mat container) (39428) 5523A38		EA	1
3	4010-01-477-0497 	ASSEMBLY, ANCHOR CHAIN: 30 ft. (BII container, cabinets A5, C7, D8) (23755) 20489		EA	15
4	XXXX-XX-XXX-XXXX 	ASSEMBLY, CONTAINER PUSH ROD: push-pull (4 X 12 ft. fender container) (34712) E35863		EA	1
5	XXXX-XX-XXX-XXXX 	ASSEMBLY, LIFTING DEVICE: flexor (BII container, storage room) (34712) E49591		EA	1
6	4210-00-142-4949 	AX, PICK HEAD: hickory handle, overall length 34.5", axe blade on one end, pick on other end (BII container, storage room shelf) (76109) GGGA296TYPE2		EA	2

Table 2. Basic Issue Items. (BII) (Continued)

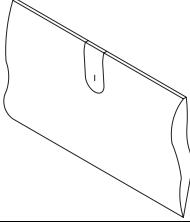

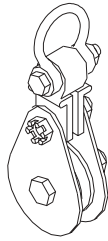

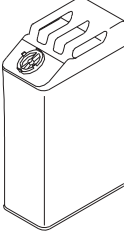
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
7	8105-01-438-9279 	BAG, TOOLS AND SPARE PARTS: (deck mat container) (39428) 6565A11		EA	1
8	6510-01-439-0862 	BLANKET, BURN: 72 in. x 60 in. (BII container, cabinet F) (1BJ97) 7260C		EA	1
9	3940-01-500-1241 	BLOCK, TACKLE: 8 in. sheave size, 20 ton load limit, steel (BII container, storage room shelf, 30 gal. drum) (75535) 121022		EA	3
10	7240-01-337-5269 	CAN, GASOLINE, MILITARY: 5 gal. rectangular, olive drab, plastic (BII container, storage room shelf) (56161) 10502788		EA	4
11	7240-00-089-3827 	CAN, WATER, MILITARY: 5 gal. water container, plastic, rectangular (BII container, storage room shelf) (81349) MIL-C-43613 TYPE 1		EA	4

Table 2. Basic Issue Items. (BII) (Continued)

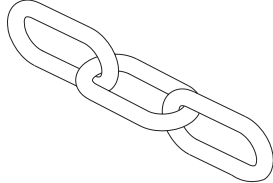
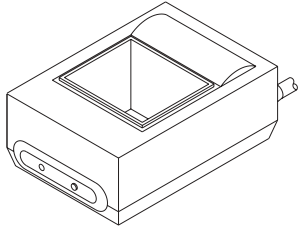
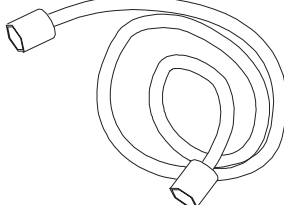
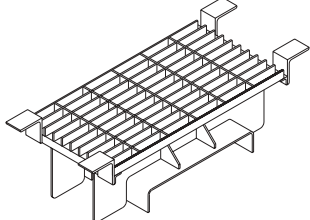
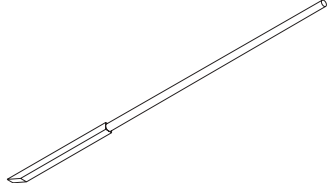

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12	XXXX-XX-XXX-XXXX 	CHAIN, OPEN LINK: 6 ft. (BII container, storage room, drum) (50194) 1/2" LLLC		EA	74
13	XXXX-XX-XXX-XXXX 	CHARGER, RADIO: marine band radio (personnel shelter) (1SU04) CSA280		EA	4
14	XXXX-XX-XXX-XXXX 	CONNECTOR, PLUG, ELECTRICAL: cable, 50 ft. nato slave (BII container, cabinet C8) (61090) TGC2336-2		EA	1
15	XXXX-XX-XXX-XXXX 	COVER, FLEXOR WELL: (BII container, storage room shelf) (34712) E32782		EA	46
16	5120-00-224-1390 	CROWBAR: 60" pinch point bar (BII container; 8 in bar rack at front side of port cabinet; 4 on storage room port shelf) (56161) 10501985		EA	12
17	XXXX-XX-XXX-XXXX 	EXTENSION, SOCKET: 1 in. square drive, 18 in. long, rigid (BII container, cabinet C1) (39428) 5525A16		EA	3

Table 2. Basic Issue Items. (BII) (Continued)

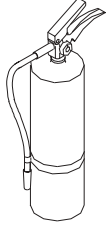
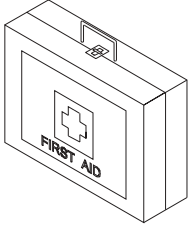
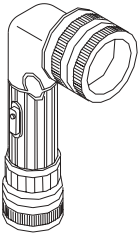
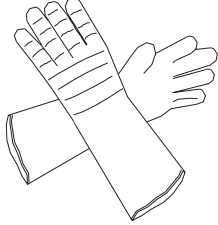
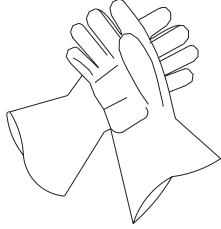
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18	4210-00-889-2491 	EXTINGUISHER, FIRE: 10 lb. dry chemical, stored pressure, refillable, for type A, B, and C fires (BII container, cabinet D7) (80244) A-A-393 TY1CL1SZ10		EA	2
19	6545-00-116-1410 	FIRST AID KIT, GENERAL PURPOSE: (BII container, cabinet D1) (64616) UA-68-1371		EA	2
20	6230-00-264-8261 	FLASHLIGHT: watertight, regular, standard, right-angle, 2-cell (D-size) (BII container, cabinet C2) (80063) MX991U		EA	6
21	8415-01-267-9661 	GLOVES, ANTIFLASH: 19" x 5", cotton flannel, flame retardant, elastic braid at wrist and elbow (BII container, cabinet C6) (81349) MIL-G-2874		PR	18
22	8415-00-634-4658 	GLOVES, MEN'S AND WOMEN'S: 2-1/2" x 5-1/4", leather palm, 5" lg. gauntlet, leather knuckle reinforcement (BII container, cabinet D4) (58536) A-A-50021		PR	18

Table 2. Basic Issue Items. (BII) (Continued)


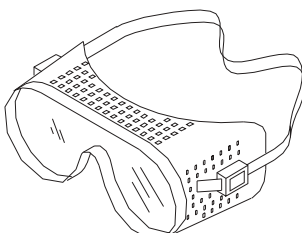
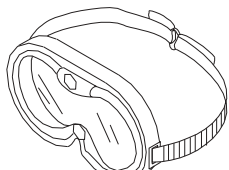
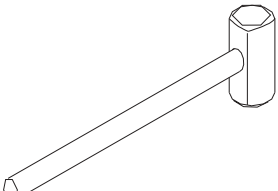
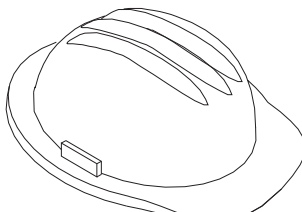
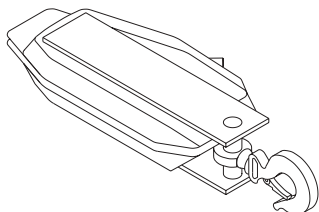
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
23	8415-00-266-8677 	GLOVES, RUBBER, INDUSTRIAL: black, size 10, 14" long (BII container, cabinet D4) (81349) MIL-DTL-32066 TYPE I STYLE 1 SZ 10		PR	6
24	4240-00-052-3776 	GOGGLES, INDUSTRIAL: 7-1/4" wide x 5-1/2" tall, perforated, PVC plastic frame, polycarbonate lens (BII container, cabinet A2) (7J761) CRE2220		PR	18
25	8465-01-004-2893 	GOGGLES, SUN, WIND AND DUST: rubber frame, two plastic lenses provided, clear and neutral grey, with carrying case (BII container, cabinet A2) (81349) MIL-G-43914 TYPE 1 CLASS 2		PR	18
26	5120-00-243-2957 	HAMMER, HAND: 34" hickory handle, 10 lb double faced head (BII container, cabinet racks) (94563) 11206		EA	12
27	8415-00-935-3135 	HELMET, SAFETY: brown (BII container, cabinet F) (80204) ISEA/ANSI Z89.1		EA	12
28	3950-01-495-8333 	HOIST, WIRE ROPE: 8000 lb. rating, 13" x 27" x 6.125", 105 lbs. (BII container, cabinet room, port side floor, beside cabinet F) (12708) TU-32		EA	2

Table 2. Basic Issue Items. (BII) (Continued)

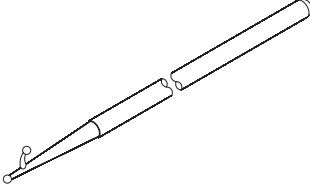
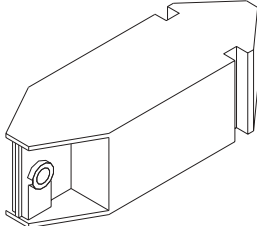
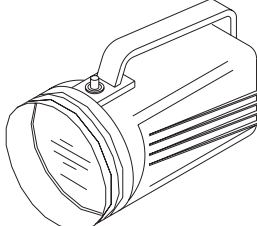
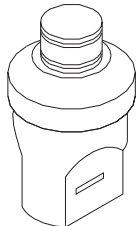
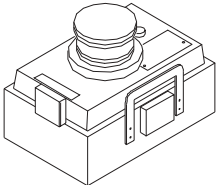
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
29	2040-00-268-9250 	HOOK, BOAT: wooden pole, 10' long with cast metal hook (BII container, storage room, starboard wall) (81349) MILH3496		EA	2
30	XXXX-XX-XXX-XXXX 	INSERT, FLEXOR: 300 lbs., 10" x 41" x 14", steel (BII container, storage room floor, right) (34712) E34712		EA	4
31	6230-01-315-8506 	LANTERN, ELECTRIC: 6-volt plastic hand lantern (BII container, cabinet E3) (1XRW6) MODEL2206		EA	2
32	6220-01-495-5953 	LIGHT, NAVIGATIONAL, MARINE: 4.75" dia. x 9.5" high, white and black (BII container, cabinets B5, D6, E3, E4) (50818) 556-60-14		EA	30
33	XXXX-XX-XXX-XXXX  6220-01-501-6430 6220-01-501-6439	LIGHTS, NAVIGATIONAL, MARINE, SET: (BII container, cabinets B3, B4) set contains the following navigational lights (34712) E53528 LIGHT, NAVIGATIONAL, MARINE: incandescent with base magnet, amber lens, flashing illumination (0AGB3) 98-23400M LIGHT, NAVIGATIONAL, MARINE: incandescent with base magnet, red lens, steady illumination (0AGB3) 98-23804M		SET	2

Table 2. Basic Issue Items. (BII) (Continued)

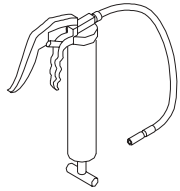
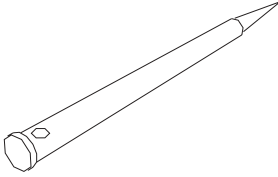
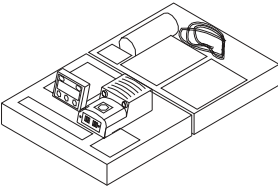
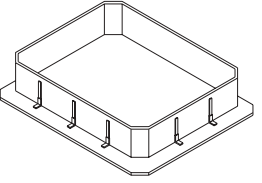
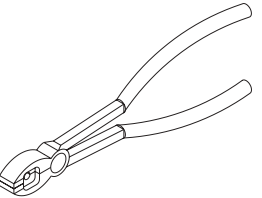
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	6220-01-501-6441 XXXX-XX-XXX-XXXX	LIGHT, NAVIGATIONAL, MARINE: incandescent with base magnet, green lens, steady illumination (0AGB3) 98-23805M LIGHT, NAVIGATIONAL, MARINE: incandescent with base magnet, white lens, steady illumination (0AGB3) 98-23803M			
34	4930-00-965-0288 	LUBRICATING GUN, HAND: lever operated (BII container, cabinet C3) (77335) 30415		EA	2
35	5120-00-224-9440 	MARLINESPIKE: 16 in. long, metal (BII container, cabinet C4) (80244) 5120-00-224-9440		EA	16
36	6680-01-499-8403 	METER, GAS VOLUME, DRY TEST: kit contains gas detection unit, 25' long sample line, 1' probe, plastic belt clip, protective leather jacket, and plastic carrying case (BII container, cabinet C2) (7J761) US ARMY-112160		KT	1
37	XXXX-XX-XXX-XXXX 	PAN, SPILL: (BII container, storage room shelf) (7J761) BRE8308		EA	1
38	5110-01-423-8503 	PLIERS: combination wide flat nose/wire cutter (BII container, cabinet C4) (55719) 659ACP		EA	4

Table 2. Basic Issue Items. (BII) (Continued)

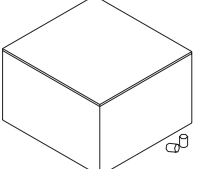
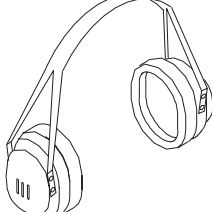
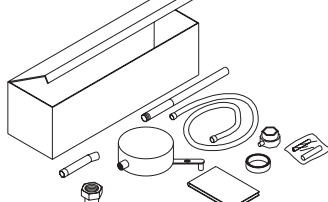
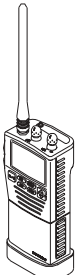
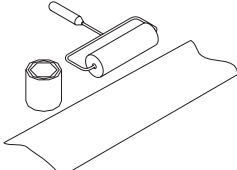
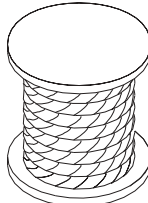
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
39	6515-00-137-6345 	PLUG, EAR: box of 400 plugs, cylindrical, disposable (BII container, cabinet D3) (89875) 4-375		BX	1
40	4240-00-022-2946 	PROTECTOR, HEARING: earmuffs with headband (BII container, cabinet D3) (58536) A-A-58084		EA	4
41	4320-01-500-9383 	PUMP, ROTARY: box contains pump, nozzle, teflon tape, steel telescoping suction pipe, owners manual, 2" tank adapter, pipe fittings, waste deflector, and 8' static guard hose (BII container, cabinet B6) (08915) FR112		KT	1
42	XXXX-XX-XXX-XXXX 	RADIO, VHF, SUBMERSIBLE: VHF/FM (BII container, cabinets F1, F2) (61057) HX350SAS1S1		EA	4
43	8340-01-501-5741 	REPAIR KIT, COVERS: kit includes 3' x 5' canvas sheet, qt. vinyl cement, wooden roller (BII container, cabinet C5) (1B651) A149		KT	1
44	4020-00-752-8879 	ROPE, FIBROUS: reel of 4 in. circumference, 3-strand twisted nylon, 600 ft. continuous (BII container, storage room, center) (81349) MILR17343-4CRCM		RL	3

Table 2. Basic Issue Items. (BII) (Continued)

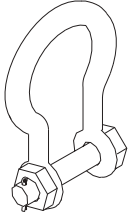
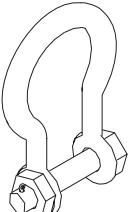
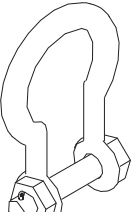
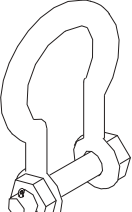
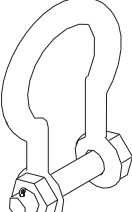
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
45	4030-01-251-7677 	SHACKLE: 5/8 in. nominal size, 3-1/4 ton, anchor shackle, with cotter pin and nut (BII container, storage room floor, box 2) (39428) 8966T52		EA	8
46	4030-00-343-5433 	SHACKLE: 3/4 in. nominal size, 4-3/4 ton, anchor shackle, with cotter pin and nut (BII container, storage room floor, box 2) (75535) 1019515		EA	8
47	4030-01-499-9284 	SHACKLE: 2 ton, 1/2 in. bolt type anchor shackle with nut and cotter pin (BII container, storage room floor, 30 gal. drum) (75535) 1019472		EA	236
48	4030-01-499-9284 	SHACKLE: 2 ton, 1/2 in. bolt type anchor shackle with nut and cotter pin (BII container, storage room floor, box 2) (75535) 1019472		EA	8
49	XXXX-XX-XXX-XXXX 	SHACKLE: 1-1/2 in. nominal size, 30 ton, anchor type, with cotter pin and nut (BII container, storage room shelf, 30 gal. drum) (75535) 1021110		EA	8

Table 2. Basic Issue Items. (BII) (Continued)


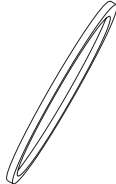

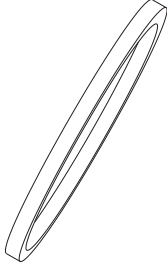
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
50	 4010-01-477-8666 4030-01-500-9386	SLING, CHAIN: 36,000 lb. adjustable, consisting of the following (BII container, wall hooks) LINK, CHAIN, END: 1-1/4 in. nominal, grade 8 steel alloy, 36000 lbs. nominal (75535) 1014342 CHAIN, WELDED: 54 in. lg., 5/8 in. trade size, alloy steel (75535) SPECTRUM 8 HOOK, GRAB: 5/8 in. Clevis Grab Hook (75535) 1027695 CONNECTING, LINK: alloy connecting link, 5/8 in. (75535) 1015145		EA	4
51	3940-01-501-0972 	SLING, ENDLESS: 5,300 lb. rated capacity, 6ft. long, green (BII container, cabinet B2) (OVNA1) EN60X6FT		EA	4
52	3940-01-501-0980 	SLING, ENDLESS: 5,300 lb. rated capacity, 4 ft. long, green (BII container, cabinet B2) (OVNA1) EN60X4FT		EA	4
53	3940-01-501-1210 	SLING, ENDLESS: 53,000 lb. rated capacity, 25 ft. long, brown (BII container, storage room, center) (OVNA1) EN600X25FT		EA	8

Table 2. Basic Issue Items. (BII) (Continued)

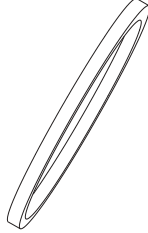
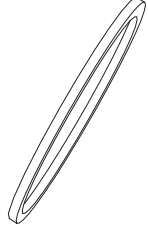
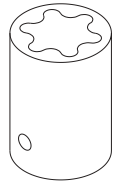
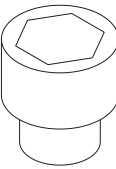
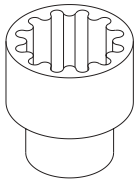
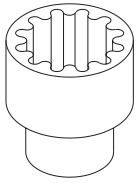
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
54	3940-01-501-1216 	SLING, ENDLESS: 8400 lb. rated capacity, 20 ft. long, yellow (BII container, storage room, center) (OVNA1) EN90X20FT		EA	4
55	3940-01-501-1220 	SLING, ENDLESS: 5,300 lb. rated capacity, 5ft. long, green (BII container, cabinet A6) (OVNA1) EN60X5FT		EA	4
56	5120-00-199-7765 	SOCKET, SOCKET WRENCH: 1-5/8 in., 3/4 in. sq. drive, 6 pt. (deck mat container) (39428) 5547A24		EA	1
57	5120-01-514-2231 	SOCKET, SOCKET WRENCH: 2-3/4 in., 3/4 in. sq. drive, 6 pt.(deck mat container) (45225) 1923		EA	1
58	5120-01-382-2742 	SOCKET, SOCKET WRENCH: 1/2 in. square drive, 12 pt., 1-5/16 in. (BII container, cabinet C5) (39428) 5545A91		EA	1
59	XXXX-XX-XXX-XXXX 	SOCKET, SOCKET WRENCH: 1/2 in. square drive, 12 pt., 1-1/2 in. (BII container, cabinet C5) (39428) 5545A94		EA	1

Table 2. Basic Issue Items. (BII) (Continued)

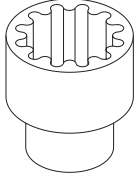
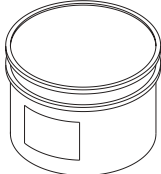
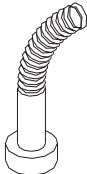
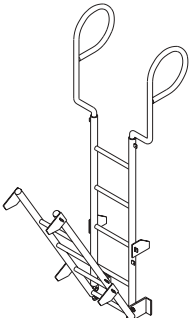
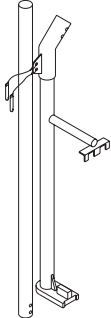
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
60	XXXX-XX-XXX-XXXX 	SOCKET, SOCKET WRENCH: 1 in. square drive, 12 pt., 2-15/16 in. (BII container, cabinet C1) (39428) 5546A44		EA	3
61	4235-01-416-8465 	SPILL CLEAN-UP KIT, HAZARDOUS MATERIAL: bright white 20 gallon drum, 22" dia. x 17" high (BII container, storage room shelf) (50378) P-SKFL31		KT	2
62	7240-00-177-6154 	SPOUT, CAN, FLEXIBLE: 16 in. long, 1.25 in. dia., with filter screen (BII container, cabinet A1) (19207) 11677020		EA	2
63	5440-01-499-8039 	STEP, LADDER: 85" x 28" x 20" folded, steel (BII container, storage room center floor, top level) (34712) E32973		EA	2
64	5120-01-501-6717 	TOOL, PIN RETRACT: tool consists of two pieces of 2-7/8" pipe, 65-1/2" long and 52-1/2" long with angle piece, two 4 in. long quick release pins, and two lanyards (BII container, storage room cage) (34712) E56222		EA	2

Table 2. Basic Issue Items. (BII) (Continued)

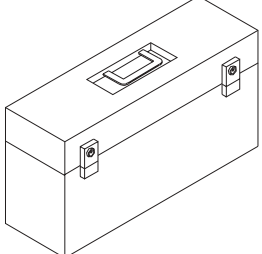
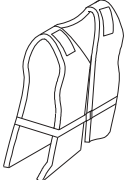
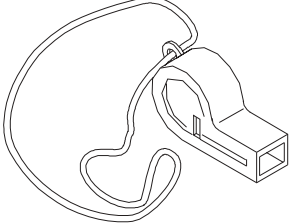
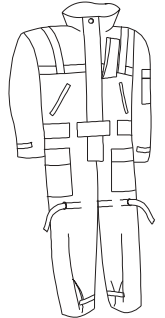
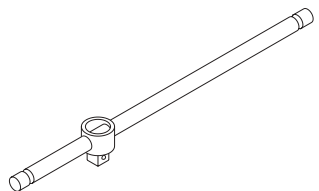
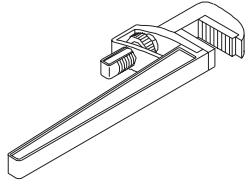
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
65	5180-00-177-7033 	TOOLKIT, GENERAL MECHANIC'S: rail and marine diesel engine tool kit (BII container, storage room floor) (34712) E53548		EA	1
66	XXXX-XX-XXX-XXXX 	VEST, WORK, STEARNS: (BII container, cabinets A, B, C, E) (6D887) 290EFRT		EA	18
67	8465-00-254-8803 	WHISTLE, BALL: plastic with cork ball and lanyard (BII container, cabinet C2) (58536) A-A-55106		EA	24
68	XXXX-XX-XXX-XXXX 	WORKSUIT: (BII container, cabinets D, E) (6D887) I580OXL		EA	18
69	XXXX-XX-XXX-XXXX 	WRENCH, SOCKET: 1 in. square drive, sliding t-handle, 20 in. long (BII container, cabinet C1) (39428) 5525A32		EA	3

Table 2. Basic Issue Items. (BII) (Continued)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER AND ILLUSTRATION	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) UOC	(5) U/I	(6) QTY RQR
70	5120-00-277-1462 	WRENCH, PIPE: 24 in. iron and steel (BII container, cabinet C4) (19204) TKCX1D		EA	2

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
ADDITIONAL AUTHORIZATION LIST (AAL)**

ADDITIONAL AUTHORIZATION LIST (AAL)

INTRODUCTION

Scope

This work package lists additional items you are authorized for the support of the FC.

General

This list identifies items that do not have to accompany the FC 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.

Column (4) Unit of Issue (U/I). 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.

ADDITIONAL AUTHORIZED LIST ITEMS

Table 1. Additional Authorization List.

(1) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC, AND PART NUMBER	(3) USABLE ON CODE	(4) U/I	(5) QTY RECM
	Fastener, Positive Lock, 1 bridgelock (94658) PH2703-13-3N		EA	10

**OPERATOR MAINTENANCE
FLOATING CAUSEWAY
EXPENDABLE AND DURABLE ITEMS LIST (EDIL)**

EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope

This work package lists expendable and durable items that you will need to operate and maintain the Floating Causeway. 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 5, WP 0098 00).").

Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item (C = Operator/Crew, F = Direct Support).

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 Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (3).

EXPENDABLE AND DURABLE ITEMS LIST

Table 1. Expendable and Durable Items List.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC AND PART NUMBER	(5) U/I
1	C	6850-01-446-9125	Antifreeze, 1 gallon liquid (58536) A-A-52624 TY I RECYCLED	GL
2	C	8135-00-224-8885	Barrier Material, Greaseproofed-Waterproofed, Flexible (81349) MIL-PRF-121	RL
3	C	8105-00-054-0939	Bag, Plastic, (8 in. by 10 in.) (8C914) 2110R	EA
4	C	6135-01-333-6737	Battery, non-rechargeable, (6 volt) (80205) 908A	EA
5	C	6135-00-835-7210	Battery, non-rechargeable, (D size) (90303) AL2	PKG
6	C	6850-01-431-9025	Cleaner, Type II (81349) MIL-C-29602	CO
7	C	8030-01-275-5050	Compound, Antiseize, pint container (71984) MOLYKOTE G-N	PT

Table 1. Expendable and Durable Items List. (Continued)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC AND PART NUMBER	(5) U/I
8	C	8030-00-231-2345	Corrosion Preventive Compound, Class I, Grade I, preservative (81349) MIL-C-16173	GL
9	C	8030-00-244-1297	Corrosion Preventive Compound, Class I, Grade II, preservative (81349) MIL-C-16173	GL
10	C		Desiccant, Silica Gel, 1/2 Unit Size, Bag (16210) 1/2UNITSPS	DR
11	C		Desiccant, Silica Gel, 1 Unit Size, Bag (16210) 1UNITSPS	DR
12	C		Desiccant, Silica Gel, 80 Unit Size, Bag (16210) 03610730169	DR
13	C	6550-01-310-1677	Distilled Water, Reagent, Gallon (07TA6) C4350-1A	GL
14	C	9150-00-145-0268	Grease, Aircraft, General Purpose (81349) 001450268	CN
15	C	9150-01-197-7693	Grease, Automotive and Artillery, 14 oz. cartridge (81349) M-10924-2-F	CA
16	F	9150-00-257-5358	Grease, Silicone Insulated Electric Motor, Molykote 44, 8 oz. tube, conforms to PPP-C-186, Group B, Class 1 or 2 (81349) MIL-L-15719	TU
17	C	9150-00-530-6814	Grease, Wire Rope-Exposed Gear, 35 lb can, petroleum oil based (81349) MIL-G-18458	CN
18	C	6665-00-878-0797	Indicator, Carbon Monoxide (55799) 803943	BX
19	C	6685-01-280-3475	Indicator, Humidity, Card, MIL-I-8835 (08992) TA356-HC-246P	EA
20	C		Inhibitor, Corrosion, Foam Block (44695) A-HCIIDV	EA
21	C		Kit, Flare Alert, 12-Gauge Alert/Locate Deluxe (1JAB0) 904	KT
22	C		Kit, Flare Alert, 12-Gauge Alerter Plus (1JAB0) 928	KT

Table 1. Expendable and Durable Items List. (Continued)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC AND PART NUMBER	(5) U/I
23	C	6260-01-334-4274	Light, Chemiluminescent, 50 per box (83289) 95277-80	BX
24	C	9150-00-111-3199	Lubricating Oil, Engine, 10W Grade (81349) MIL-PRF-21260	CN
25	C	9150-01-293-7696	Lubricating Oil, Engine, 15W40 Grade (81349) MIL-PRF-21260	CN
26	C	9150-00-111-0209	Lubricating Oil, Engine, 30W Grade (81349) MIL-PRF-21260	CN
27	C	9150-00-234-5197	Lubricating Oil, Exposed Gear (81348) VVL751	CN
28	C	9150-01-035-5392	Lubricating Oil, Gear, 80W90 Grade (81349) M2105-1-80W90	QT
29	C	9150-00-231-9045	Lubricating Oil, General Purpose, Penetrating, Water Displacing (81349) MIL-PRF-32033	GAL
30	C	8540-00-530-3770	Paper, Toilet, case (81348) UU-P-00556	CS
31	C	7920-00-148-9666	Rag, Wiping, White (80244) 7920-00-148-9666	LB
32	C		Shrink Wrap, Corrosion Intercept, Roll (48884) ISF-14-175	RL
33	C	6850-01-167-4789	Stabilizer Additive, Diesel Fuel (81349) MIL-S-53021	CN
34	C		Stretch Wrap, Corrosion Intercept, Roll (3BVZ5) CI-STR-181000	RL
35	C	0116-LF-115-4300	Tag, Danger, (used for lockout/tagout) (none) no part number	BX
36	C	5970-00-240-0617	Tape, Insulation, Electrical, Black (75037) SCOTCH 23 3/4 IN. BLACK	RL
37	C	7510-00-074-4952	Tape, Pressure Sensitive Adhesive, Roll (81346) ASTM D 5486 Type IV	RL
38	C	9330-01-143-7788	Window, Observation, Humidity Indicator Card (08992) TA456	EA
39	C	8520-00-782-3554	Wipes, Hand (81348) UU-T-1790	BX

Table 1. Expendable and Durable Items List. (Continued)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC AND PART NUMBER	(5) U/I
40	C	9525-00-803-3044	Wire, Mousing roll (81348) QQ-N-281	RL

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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: "Whoever" whomever@avma27.army.mil
To: whomever@avma27.army.mil
To: TACOM-TECH-PUBS@ria.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:** 55-1915-200-10
9. **Pub Title:** TM
10. **Publication Date:** 11-APR-88
11. **Change Number:** 12
12. **Submitter Rank:** MSG
13. **Submitter Name:** Joe
14. **Submitter FName:** T
15. **Submitter Lname:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem:** 1
18. **Page:** 1
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.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE Date form is filled out
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>) Mailing address found on title block page.						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>) Your mailing address.	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM XX-XXXX-XX-XX						DATE Date of the TM	TITLE Title of the TM
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
	0019 00-1	3	1	1		Step No. 2 says to secure doors open with locking bar or hooks from where to what? The bars or hooks are not identified.	
	0019 00-4	4	1	1		Step No. 19 states to remove locking bar, pins or hooks from where to what? The bars, pins or hooks are not identified. Where are they stored?	
SAMPLE							
<i>* Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE Doe, John, CPL					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION 755-1313		SIGNATURE CPL John Doe

TO: (Forward direct to addressee listed in publication)				FROM: (Activity and location) (Include ZIP Code)			DATE	
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS								
PUBLICATION NUMBER TM XX-XXXX-XX-XX				DATE Date of the TM			TITLE Title of the TM	
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.)								
TYPED NAME, GRADE OR TITLE Doe, John, CPL			TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION 755-1313			SIGNATURE CPL John Doe		

SAMPLE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA						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>)						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 55-1945-227-10						DATE 17 March 2006	TITLE Operator's Manual for Modular Causeway System (MCS) Floating Causeway (FC)
ITEM	PAGE	PARA- GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
<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>				FROM: <i>(Activity and location) (Include ZIP Code)</i>				DATE	
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS									
PUBLICATION NUMBER				DATE			TITLE		
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 <i>(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.)</i>									
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE		

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
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TO: <i>(Forward direct to addressee listed in publication)</i>				FROM: <i>(Activity and location) (Include ZIP Code)</i>				DATE	
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS									
PUBLICATION NUMBER				DATE			TITLE		
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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TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE		

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
For use of this form, see AR 25-30; the proponent agency is OAASA							
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>)				FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)			
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
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TM 55-1945-227-10					17 March 2006	Operator's Manual for Modular Causeway System (MCS) Floating Causeway (FC)	
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* Reference to line numbers within the paragraph or subparagraph.							
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE	

TO: <i>(Forward direct to addressee listed in publication)</i>				FROM: <i>(Activity and location) (Include ZIP Code)</i>				DATE	
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PUBLICATION NUMBER				DATE			TITLE		
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PART III - REMARKS <i>(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.)</i>									
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE		

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:

A handwritten signature in black ink, reading "Joyce E. Morrow", is written over a horizontal line. The signature is enclosed in a rectangular box that is open on the right side.

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0420308

DISTRIBUTION: To be distributed in accordance with the initial distribution requirements for IDN: 256808, requirements for TM 55-1945-227-10.

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 cu. 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
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