

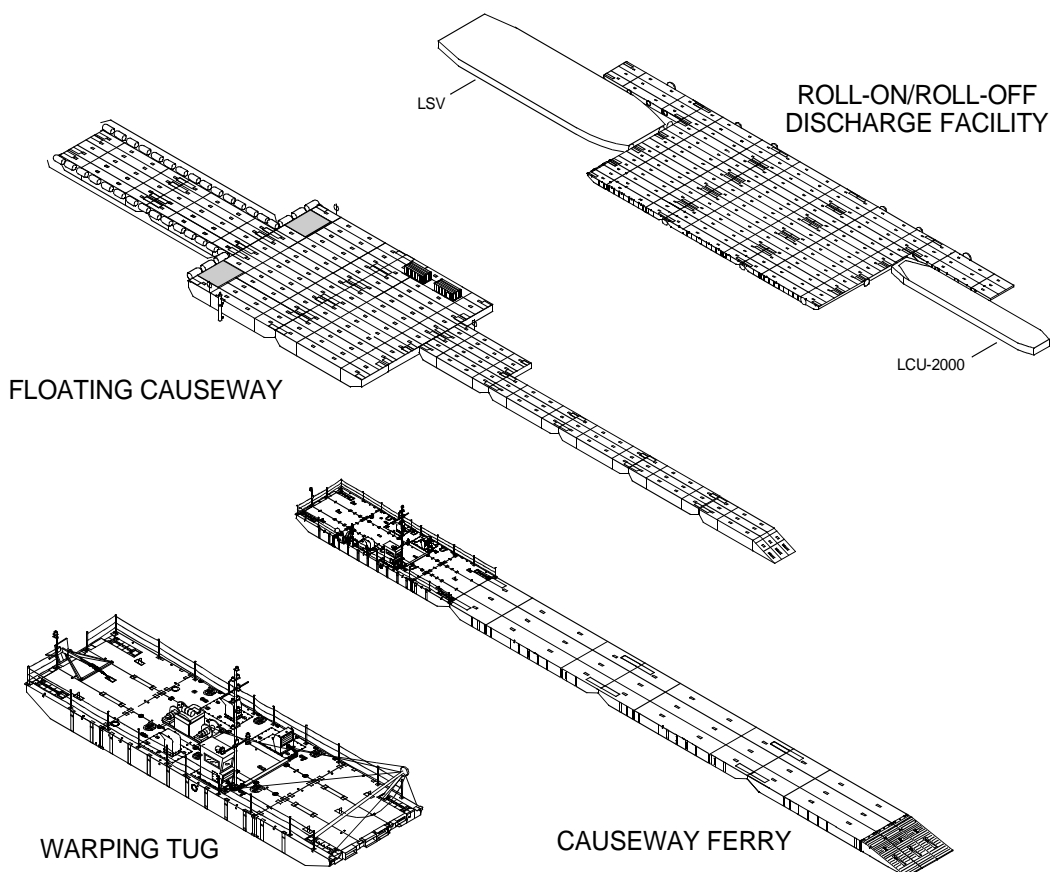
# TM 55-1945-205-10-4

TECHNICAL MANUAL

OPERATORS MANUAL  
FOR

## MODULAR CAUSEWAY SYSTEM (MCS) FLOATING CAUSEWAY(FC) FC-1

NSN 1945-01-473-2162



This manual supersedes TM 55-1945-205-10 dated 29 August 1997 including all changes.

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

**HEADQUARTERS, DEPARTMENT OF THE ARMY**  
**15 MAY 2002**



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## WARNING SUMMARY

### **NO SMOKING**

Smoking is prohibited aboard this vessel.

### **JEWELRY**

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

### **HEAVY OBJECTS**

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

### **BATTERIES**

Do not smoke around batteries. Personnel must wear goggles and chemical resistant gloves when adding electrolyte and cleaning up spills.

### **HAZARD REPORTING**

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

### **HIGH VOLTAGE**

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.

### **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, instructions for Immediate, Operational and Through decon procedures adapted for the marine environment. 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 MOPP - level prescribed by the OIC or NCOIC.

### **FUELS**

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

### **COOLANTS**

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

### **NOISE**

Single hearing protection must be worn when inside the generator shelter container (15 kW TQG) when generator is operating and during all rolling cargo movements.

### **ICE BUILDUP**

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.

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**SAFETY WARNING ICONS**



**EAR PROTECTION**

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



**ELECTRICAL**

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



**ELECTRICAL**

**ELECTRICAL 2** - Electrical wire to arm with electricity symbol running through hand shows that shock hazard is present.



**EYE PROTECTION**

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



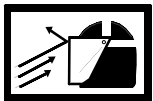
**FALLING PARTS**

**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 2** - Arrows bouncing off face with face shield shows that particles flying through the air will harm face.



**HEAVY OBJECTS**

**HEAVY OBJECTS** - Human figure stooping over heavy object shows physical injury potential from improper lifting technique.



**HEAVY PARTS**

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



**SAFETY WARNING ICONS - CONTINUED**



**HEAVY PARTS**

**HEAVY PARTS 2** - Hand with heavy object on top shows that heavy parts can crush and harm.



**HEAVY PARTS**

**HEAVY PARTS 3** - Heavy object on human figure shows that heavy parts present a danger to life or limb.



**HEAVY PARTS**

**HEAVY PARTS 4** - Heavy object pushed up against human figure shows that heavy parts present a danger to life or limb.



**HELMET PROTECTION**

**HELMET** - 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** - Hand with fingers caught between rollers shows that the moving parts of the equipment present a danger to life or limb.



**MOVING PARTS**

**MOVING PARTS 2** - 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 3** - Human figure with an arm caught between gears shows that the moving parts of the equipment present a danger to life or limb.



**SHARP OBJECT**

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

**SAFETY WARNING ICONS - CONTINUED**



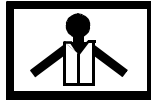
**SHARP OBJECT**

**SHARP OBJECT 2** - Sharp object on hand 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**

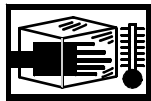
**VEST** - Life preserver on human figure shows life preserver must be worn to prevent drowning.

**HAZARDOUS MATERIAL WARNING ICONS**



**CHEMICAL**

**CHEMICALS** - Drops of liquid on hand shows that the material will cause burns or irritation to human skin or tissue.



**CRYOGENIC**

**CRYOGENICS** - 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.



**FIRE**

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



**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.

**LIST OF EFFECTIVE PAGES / WORK PACKAGES**

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

Original 15 MAY 02

**TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 28 AND TOTAL NUMBER OF WORK PACKAGES IS 107 CONSISTING OF THE FOLLOWING:**

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**TECHNICAL MANUAL**  
**OPERATORS MANUAL**  
**FOR**  
**MODULAR CAUSEWAY SYSTEM (MCS)**  
**FLOATING CAUSEWAY (FC)**  
**FC-1**  
**NSN 1945-01-473-2162**

Current as of 15 MAY 2002

**This manual supersedes TM 55-1945-205-10 dated 29 August 1997 including all changes.**

**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 2028-2 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <http://aeps.ria.army.mil>. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS website. Fill out the form and click on "SUBMIT". Using this form on the AEPS website will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, E-mail or fax your letter, DA Form 2028, or DA Form 2028-2 directly to: Commander, U.S. Army Tank-Automotive and Armaments Command, ATTN: AMSTA-LC-CIP-WT, Rock Island, IL 61299-7630. The E-mail address is [TACOM-TECH-PUBS@ria.army.mil](mailto: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 4, *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 4, *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 4, *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 4, *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 4, *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 4, *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 4, *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 4, *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 4, *Supporting Information*.

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**CHAPTER 1**

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





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERAL INFORMATION**

---

**SCOPE**

This manual contains descriptions and instructions for the floating causeway.

Type of Manual: Operator Maintenance.

Purpose of Equipment: The system provides the capability to move rolling cargo from lighters for movement ashore.

**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, 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, or as specified by the contracting activity. We will send you a reply.

**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 AND SHIPMENT REFERENCE**

Reference 0058 00 through 0068 00 for preparation of storage or shipment of the Floating Causeway system.

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**LIST OF ABBREVIATIONS/ACRONYMS**

<b>Abbreviation/Acronym</b>	<b>Name</b>
AC	Alternating Current
AF	Audio Frequency
amp	Ampere
AR	Audio Response
BII	Basic Issue Items
C	Centigrade
CAGEC	Commercial and Government Entity Code
CBSE	Combination Beach Sea End
cm	Centimeters
COEI	Components of End Item
CPC	Corrosion Prevention Control
dB	Decibels
DC	Direct Current
Deg	Degrees
EIR	Equipment Improvement Recommendations
F	Fahrenheit
FC	Floating Causeway
FCAMS	Floating Causeway Anchor Mooring System
fl	Fluid
ft	Feet
GAL	Gallon
GFI	Ground-Fault Interrupter
GPH	Gallons Per Hour
HP	Horse Power
hz	Hertz
hrs	Hours
in.	Inches
ISO	International Standards Organization
ISOPAK	International Standards Organization Package
lb	Pounds
kg	Kilograms
khz	Kilohertz
KW	Kilowatt
LCU	Landing Craft Utility
LED	Light Emitting Diode
LOTS	Logistics-Over-the-Shore
LSV	Logistics Support Vessel
m	Meters
ma	Milliampere
mhz	Megahertz
ml	Milliliters
MTBE	Methyl Tertiary Butyl Ether
MTO&E	Modified Table Of Organization And Equipment
NEMA	National Electrical Manufacturers Association
NICAD	Nickel Cadmium
N-m	Newton-Meters
NOAA	National Oceanic And Atmospheric Administration

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**LIST OF ABBREVIATIONS/ACRONYMS (CONT'D)**

<b>Abbreviation/Acronym</b>	<b>Name</b>
ODS	Ozone Depleting Substance
oz	Ounces
PMCS	Preventive Maintenance Checks And Services
PSI	Pounds Per Square Inch
PTT	Push To Talk
rcv	Receive
RF	Radio Frequency
RPM	Revolutions Per Minute
SINAD	Signal (plus) Noise And Distortion
SS	Sea State
TAMMS	The Army Maintenance Management System
Tx	Transmit
uv	Ultra Violet



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MAJOR COMPONENTS  
DESCRIPTION AND DATA**

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**EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES**

The floating causeway (FC) is a floating platform used during logistics over the shore (LOTS) operations. The FC consists of three major segments, trident pierhead extension, trident pierhead and causeway. Each major segment consists of non-powered floating modules that are assembled into module strings and intermediate sections.

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

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

The causeway consists of one or more intermediate sections connected length wise, with one end connected to the trident 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 trident pierhead extension, trident pierhead and the causeway are assembled to each other by flexor connectors.

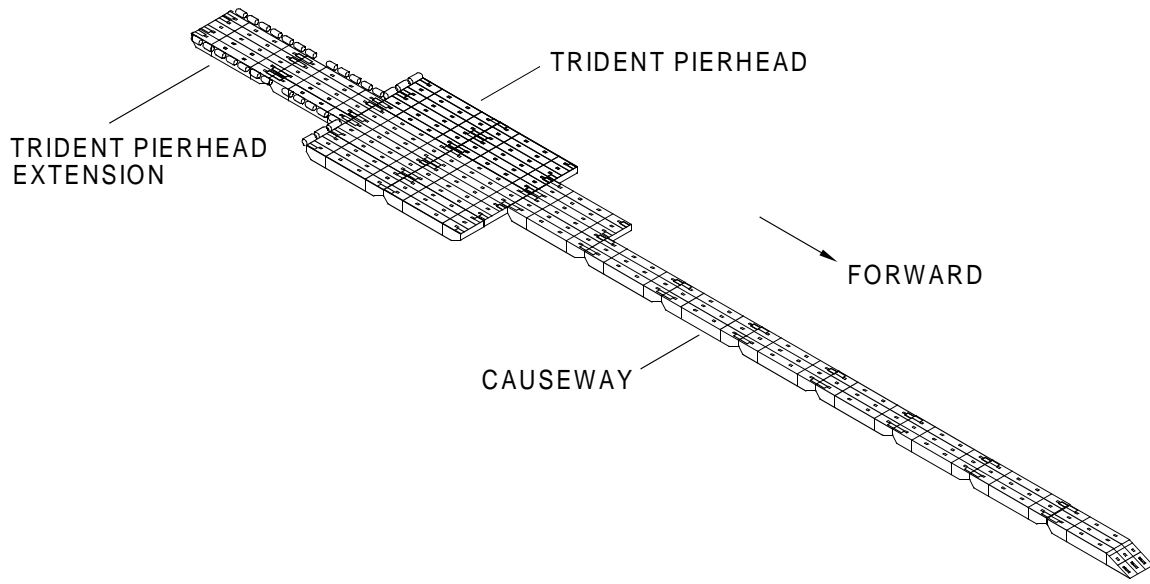
The FC shall operate in sea conditions ranging from Sea State 0 up to and including Sea State 2 (see Table 1), in surf conditions up to 5 ft with along-shore currents up to 2 knots, and in beach gradients up to 1:200. The FC system shall survive Sea State 4 conditions and be capable of being put back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

**Table 1. SEA STATE (SS) Conditions.**

<b>SS</b>	<b>SIGNIFICANT WAVE HEIGHTS (FT)</b>	<b>MODAL WAVE PERIODS (SECONDS)</b>
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

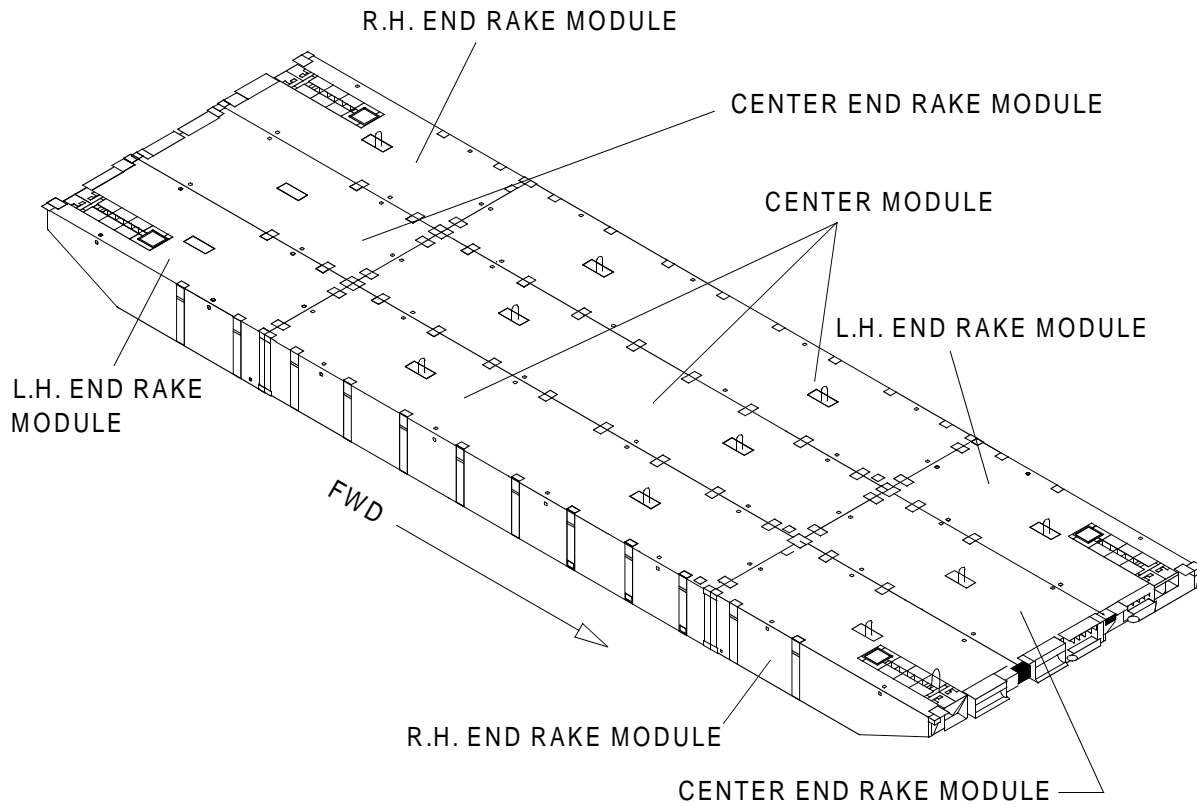
Other major components of the FC are the personnel shelter and generator shelter, the trailer-mounted light towers, the lifeline subsystem, communications equipment and the off shore and onshore anchor mooring system.

The FC is maneuvered into place by warping tugs.



### 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 lbs.



### PERSONNEL SHELTER

The personnel shelter is a 20 ft ISO container which has been outfitted with insulation, interior bulkheads, fluorescent lighting, electrical power distribution, table, benches, heating/cooling unit, communications equipment, electrical outlets, emergency lighting and a rest room with an electrically powered incinerator toilet.

### DIESEL GENERATOR SET

The skid mounted tactical quiet 10 KW or 15 KW diesel generator set is provided to power electrical loads in the personnel shelter. It is contained in a 20 ft ISO container which will be located near the personnel shelter. It is equipped with controls, instruments, fire suppression system, 1000 gallon fuel system and accessories necessary for operation. The generator set consists of a diesel engine, brushless generator, excitation system, speed governing system, 24 volts DC starting system, control system and fault system. A power cable with a plug end, stored in the personnel shelter, is used to connect to the generator set. (Refer to TM 9-6115-642-10 or TM 9-6115-642-10 for additional information.).

### LIGHTING SYSTEM

The FC lighting system consists of two trailer-mounted light towers which are stowed in two 20 ft ISO containers. Each light tower is powered by a 6 KW diesel generator and supports four metal-halide lamps. Each lamp delivers 1000 watts of light intensity. Lamps are a high pressure sodium bulbs with a NEMA 6 design for large area coverage. The aluminum reflector housings have tempered impact resistant glass lenses. The lamps come with weather resistant twist-lock connections for connecting floodlights to the light tower.

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The light tower is a three-section telescoping mast which extends from 12 ft to 30 ft and has a rotation range of 360° with a position lock. The mast is easily extended with dual hand-operated winches that incorporate an automatic safety brake. The tower retracts and stows horizontally for travel.

The light system comes with a 30-gallon translucent polyethylene fuel tank, single point lifting bail, forklift slots, heavy-duty outriggers, leveling indicator and removable drawbar. The control panel comes with one GFI protected 120 volts 20 amp duplex receptacle, one 240 volts 25 amp receptacle, individual lamp switches, and a non-resettable hour meter to track records for periodic maintenance.

The overall length is (in./cm) 174/442, width is (in./cm) 79/201, height is (in./cm) 89/226 (travel position), standard tower height is (ft/m) 30/9 and shipping weight is (lb/kg) 2010/912.

### **LIFELINE SUBSYSTEM**

The lifeline subsystem is installed along the causeway sides and trident pierhead sides and shoreward end to protect personnel from falls overboard. The stanchions for the lifelines are installed in the turn-tube fittings and ISO corner fittings of the section modules. The lifelines, life rings, nylon rope and strobe lights are installed on the inboard side of the lifeline stanchion. Chain is used to span the gap between the sections. Lifeline arrangement may vary depending on FC configuration.

### **COMMUNICATIONS EQUIPMENT**

The communications equipment consists of four HX350S VHF/FM handheld transceivers. The transceivers have a frequency range of 156.025 to 163.275 mhz. All channels currently allocated in the USA, Canadian and International channels are available for use, plus ten weather channels.

The HX350S 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 volts DC. The 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) and 15 hrs (low).

The dimensions of the unit are 5.51 in. X 2.17 in. X 1.50 in. The weight is 1.0 lb.

The transmitter has a conducted spurious emissions of 65 dB (high) and 55 dB (low). The Audio Response (AR) is within +2/-8 of 6 dB/octave pre-emphasis characteristic from 300 hz to 3000 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°C to +50°C) of  $\pm 0.0005\%$ .

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  $\pm 4.5$  khz. Receiver selectivity: spurious and image rejection 60 dB, inter modulation regulation 60 dB and channel spacing 25 khz selectivity.

### **DECK MATTING**

The deck matting is used as dunnage and is placed where the cargo ramps of the sealift vessel and the lighters will land on the FC deck. The individual mats are a high density polyethylene material and are approximately 10 ft long by 4 ft wide and 1½ in. thick. Each mat weighs 300 lbs.

### **DECK CLEAT AND D-RING/CLOVER LEAF FITTINGS**

The modular sections are provided with deck fittings to meet various operational needs. These fittings have a 15,000 lb load capacity and are inserted into the tube turns. There are ten tube turns per non-powered module and five per end rake.



## MOORING BITT

The mooring bitts provide securing points on the trident pierhead for lighters and for fenders. They attach to the platform at the module connector locks. The bitts are designed for up to a 6 in. circumference mooring line. The mooring bitts are lifted and installed using the forklift adaptor. Each bitt weighs 235 lbs and is 6 ft 5 in. long. Eight mooring bitts are provided with the FC system.

## FENDERS (WITH ATTACHMENT CHAINS)

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 1500 lbs. The 4 ft X 12 ft fender weighs approximately 1450 lbs. The 3 ft X 5 ft fender weighs approximately 300 lbs.

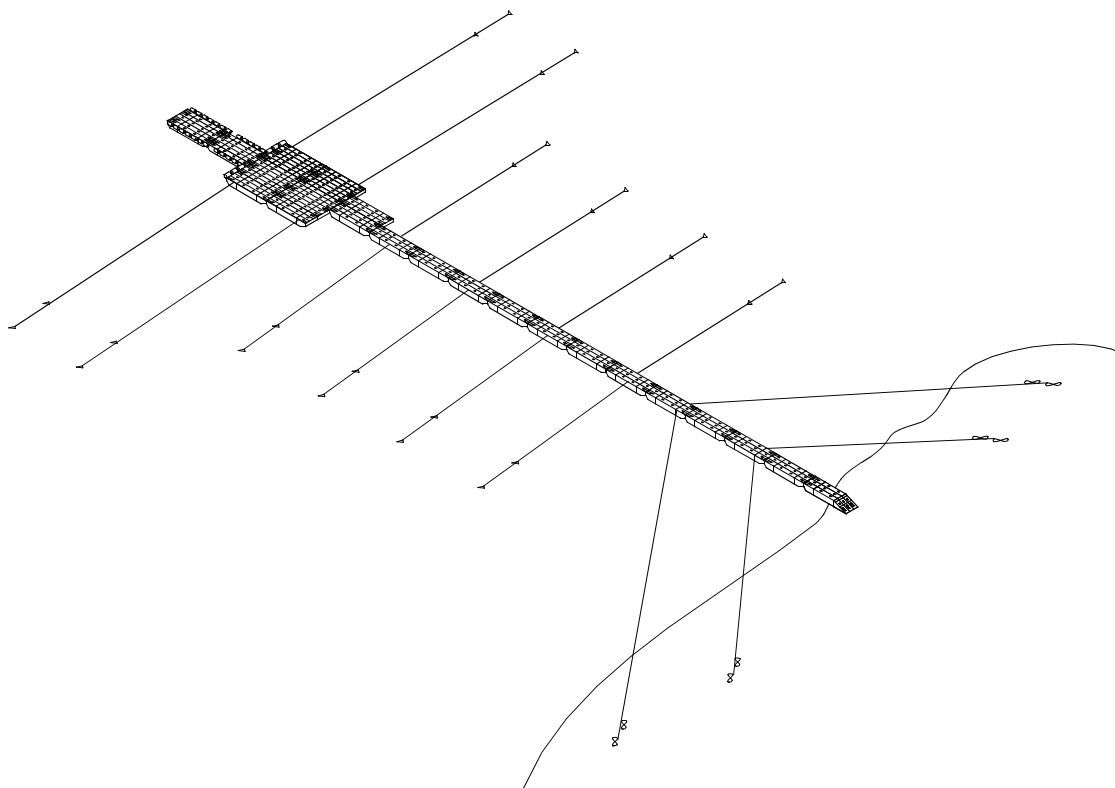
## CORNER FENDERS

The corner fenders are installed on protruding corners of the FC. The corner fender assembly has two parts and is installed on the ISO corner fittings

## FLOATING CAUSEWAY ANCHOR MOORING SYSTEM (FCAMS)

The FCAMS 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 FCAMS 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 1500 ft long. The following table shows the estimated current speeds for the FCAMS to hold the floating causeway in place when one or two lighters are moored alongside the five string wide trident pierhead extension of the floating causeway.



**Table 2. Floating Causeway Anchor Mooring System.**

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

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
DESCRIPTION AND DATA**

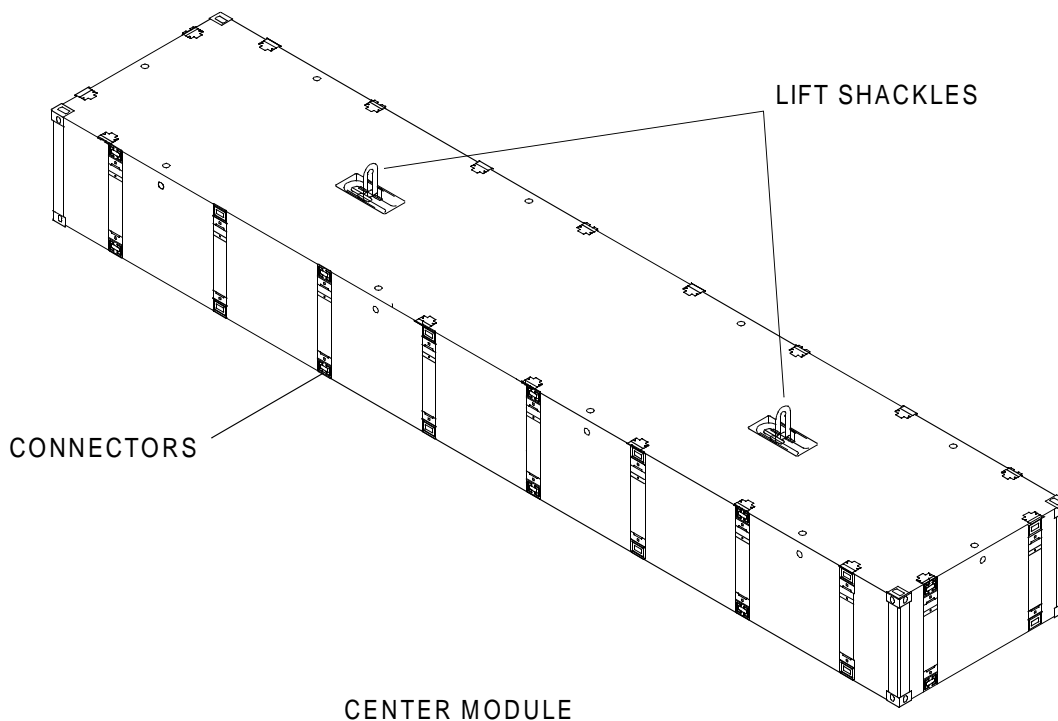
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**LOCATION AND DESCRIPTION OF MAJOR COMPONENTS****CENTER MODULE****Location**

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

**Description**

The center module is an empty container. Nominal dimensions of the center module are 8 ft wide, 40 ft long and 4 ft 6 in. deep. 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. 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. Weight of the center module is approximately 22,500 lbs.



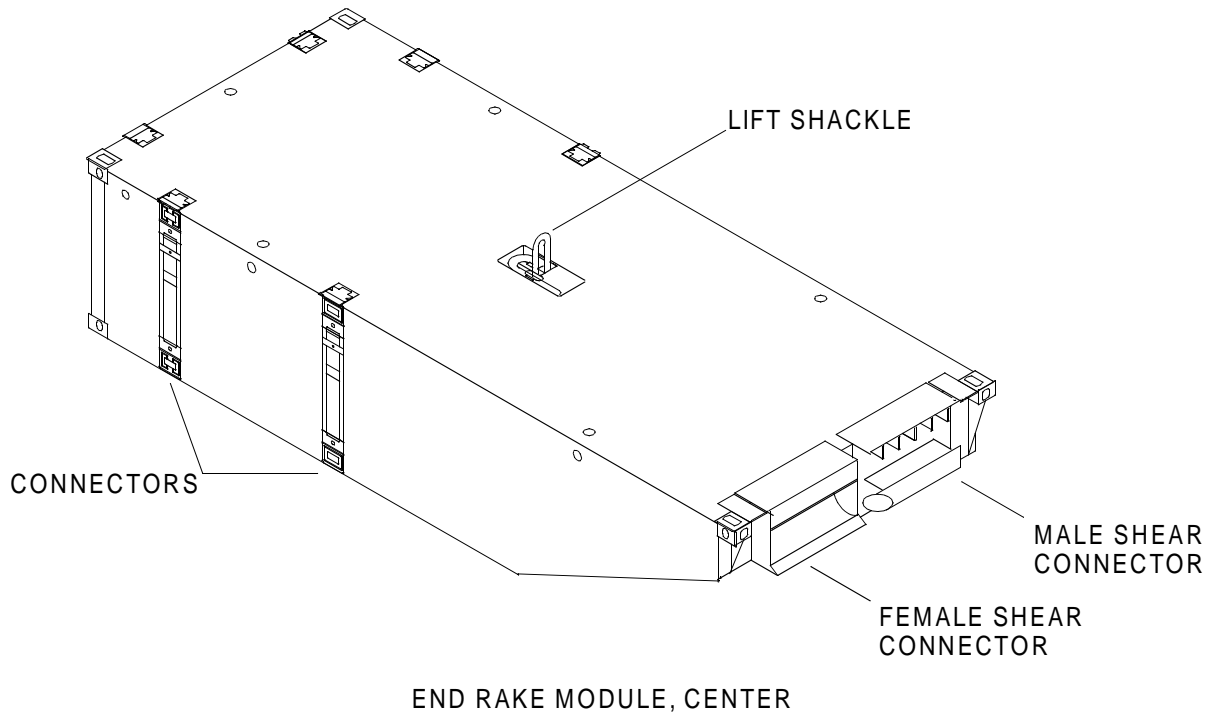
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**CENTER END RAKE MODULE****Location**

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

**Description**

The center end rake module is an empty container. Nominal dimensions of the center end rake module are 8 ft wide, 20 ft long and 4 ft 6 in. deep. 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. Weight of the center end rake module is approximately 12,500 lbs.



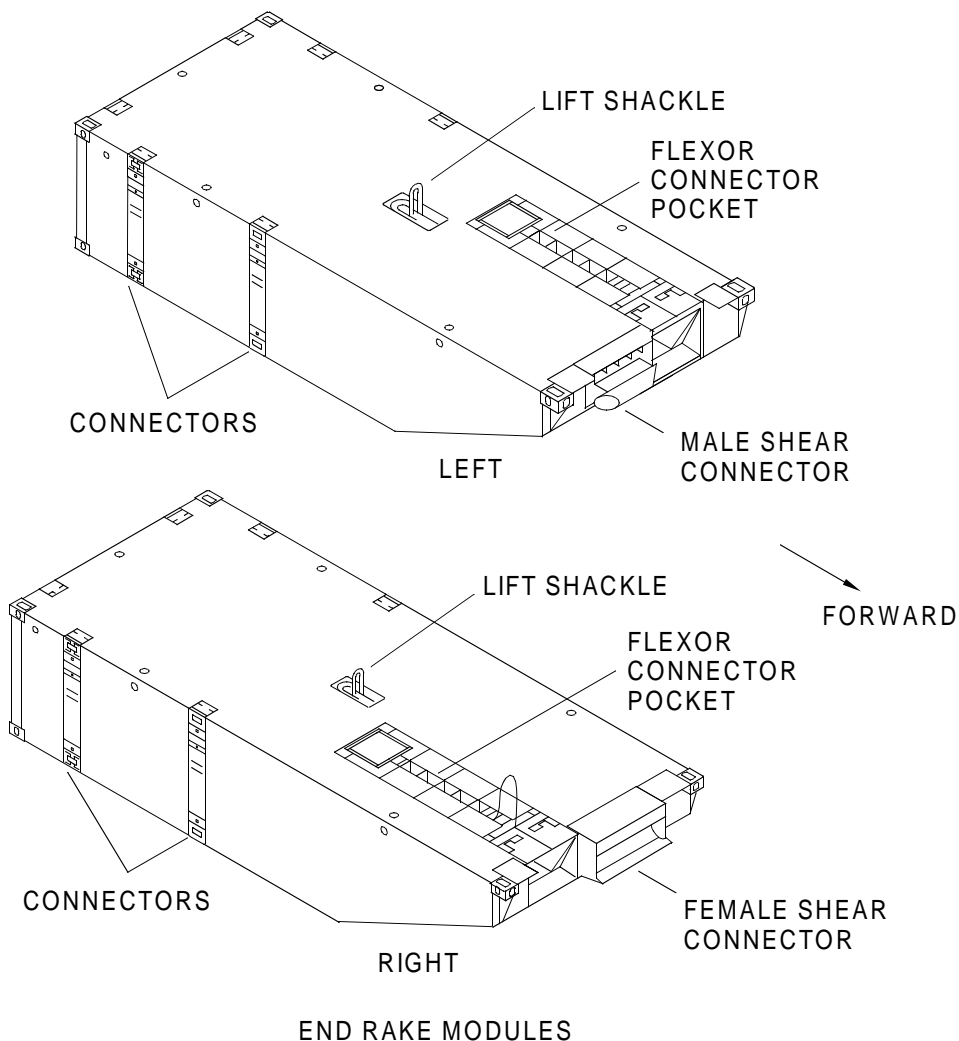
**LEFT AND RIGHT END RAKE MODULES**

**Location**

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

**Description**

The left and right end rake modules are empty containers. Nominal dimensions of the left and right end rake modules are 8 ft wide, 20 ft long and 4 ft 6 in. deep. 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. 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. Weight of the left and right end rake modules is approximately 12,500 lbs.



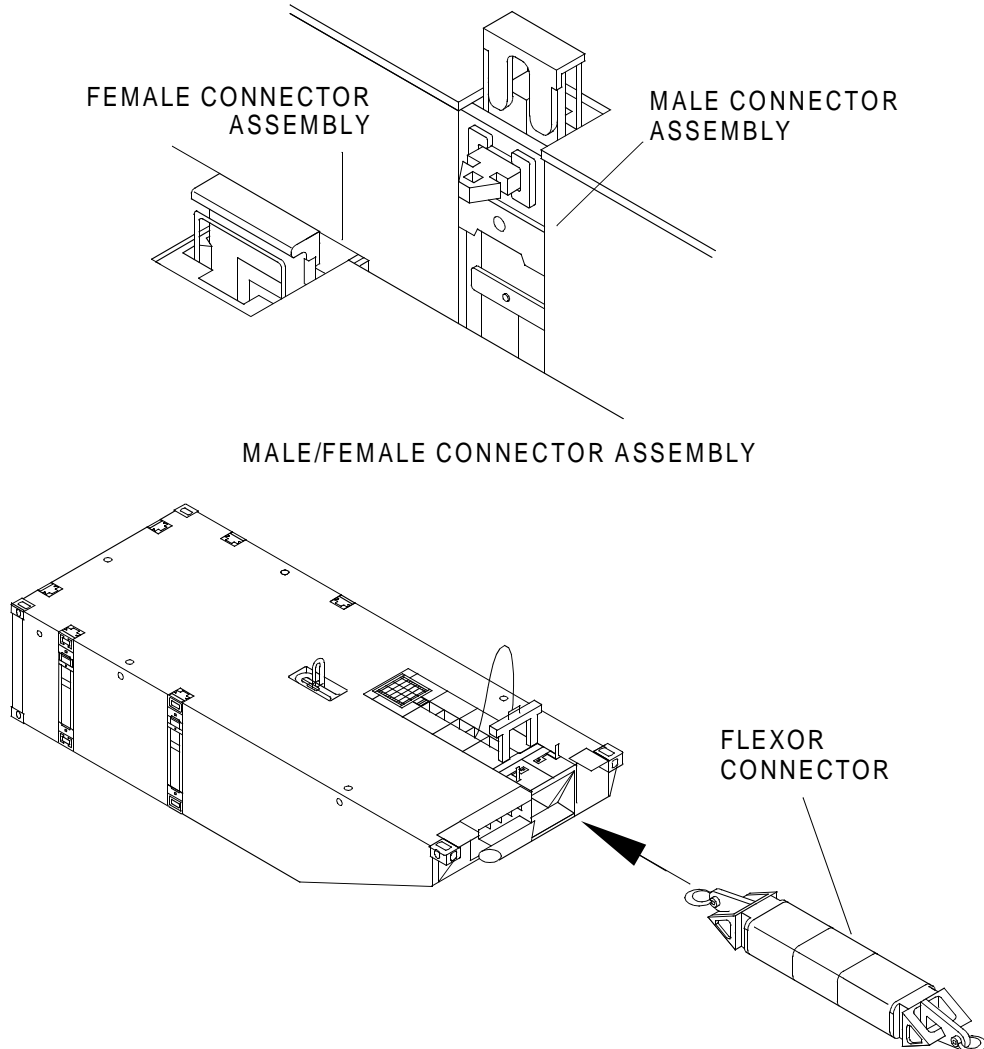
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**MALE AND FEMALE CONNECTOR ASSEMBLIES****Location**

The male and female connectors are attached to the sides of the modules. The flexor connectors are attached to the ends of the left and right end rake modules.

**Description**

Two types of connectors are used in the assembly of the FC platform. A male/female vertical connector is used to connect modules to modules. Flexor connectors are used to connect sections to sections.



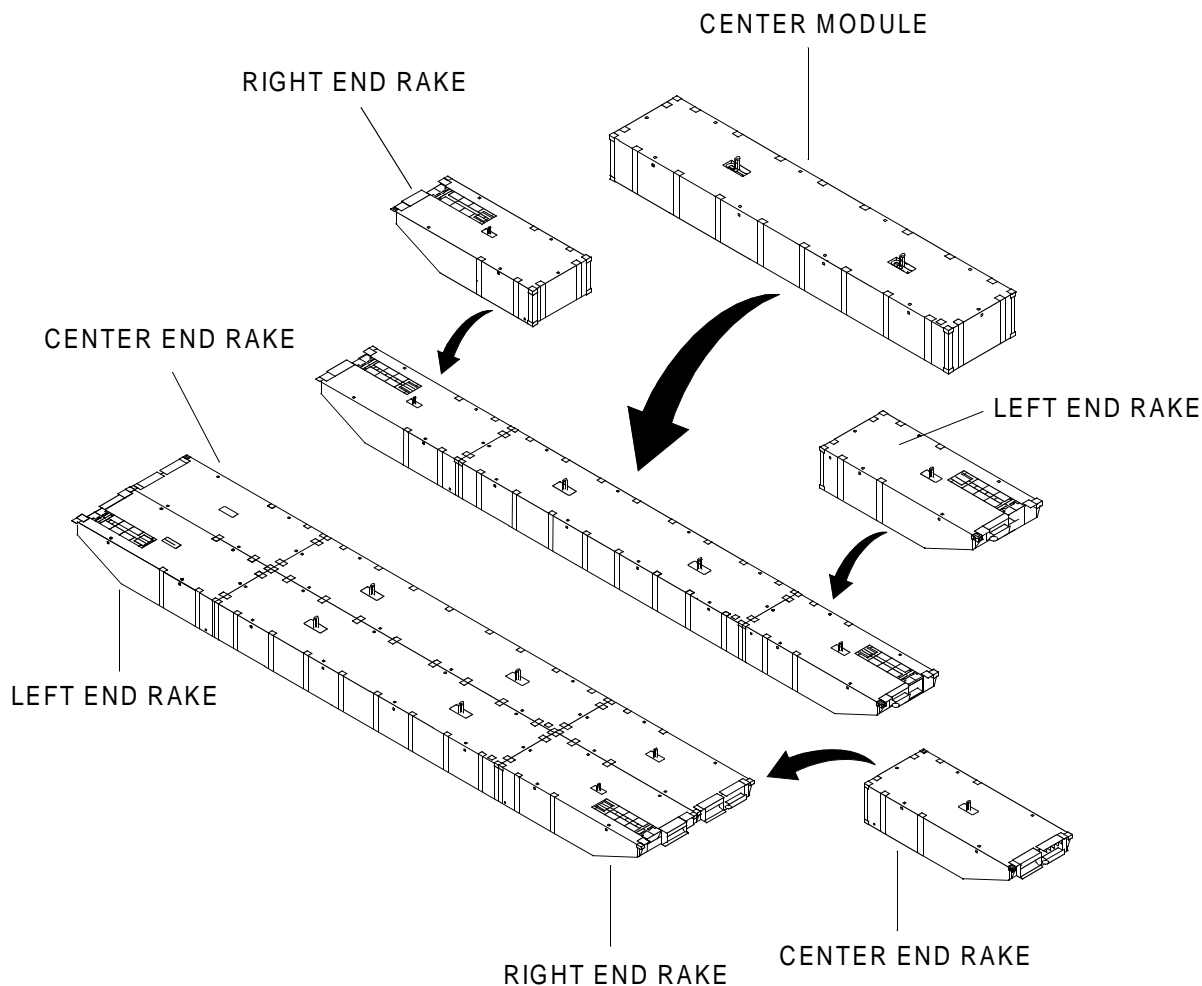
**FC STRING**

**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 center end rakes and a beach/sea end, a center module with a left end rake and a beach/sea module or a center module with a right end rake and a beach/sea end. (The beach/sea end modules are discussed later. A center module with two end rake modules weighs 47,500 lbs. A string is 8 ft wide, 80 ft long and 4 ft 6 in. deep. A center module, end rake and beach/sea end string weighs 39,500 lbs, is 8 ft wide, 85 ft long and 4 ft 6 in. high.



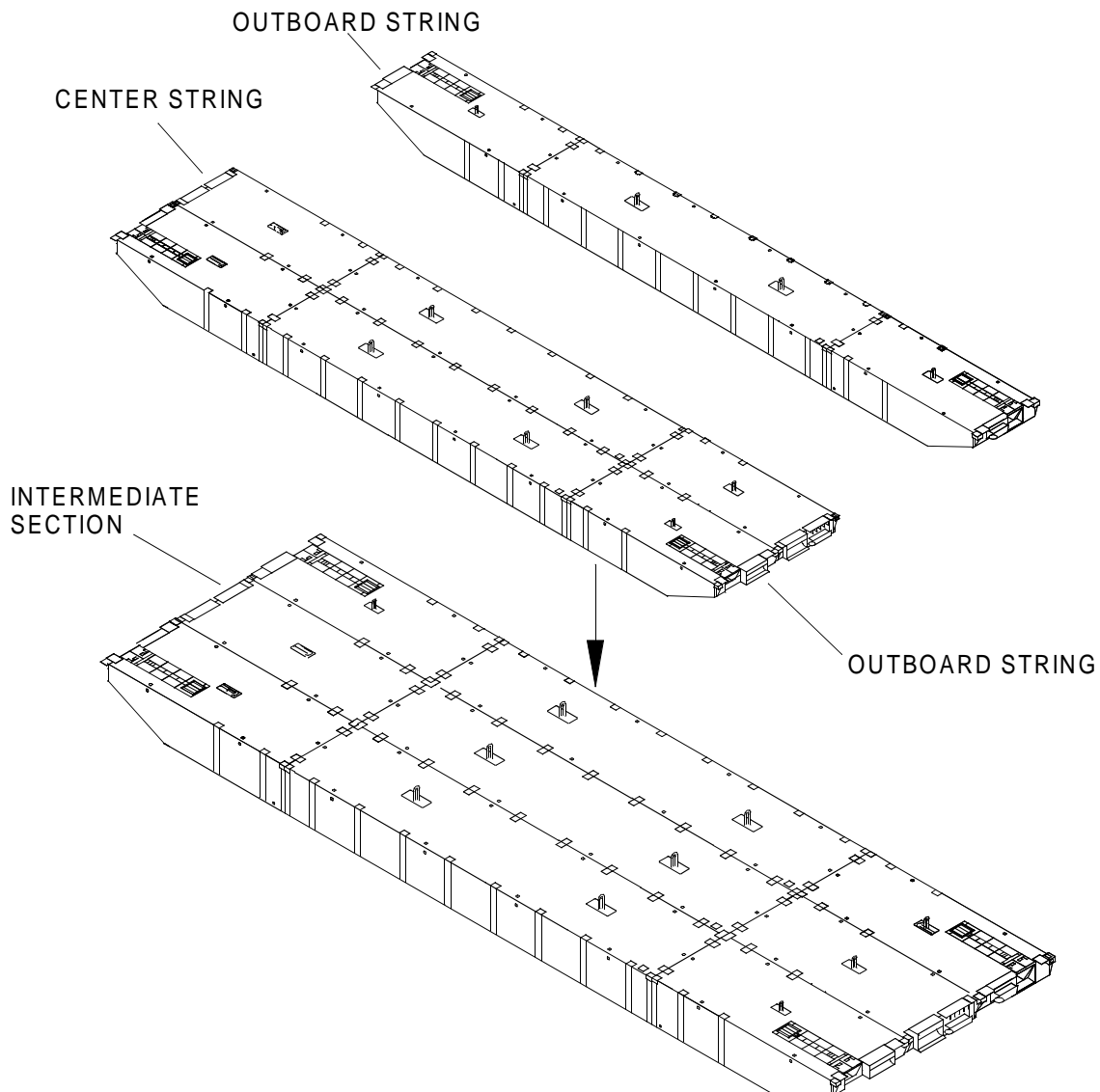
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**FC INTERMEDIATE SECTION**
**Location**

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.



The intermediate section is lifted with the intermediate module lifting sling. The intermediate module lifting sling consists of a spreader beam with a 2½ in. safety anchor shackle in the top center lifting eye along with 1 ¾ in. diameter 6 X 37 IWRC two leg and wire rope bridles with 2¼ in. X 8 in. X 16 in. master links attached to bottom lift eyes of the spreader beam using 1¾ in. safety shackles. Bridle IWRC legs are 22 ft, pull to pull, with thimbles on each end. One 1¾ in. screw pin anchor shackle is attached to the lift end of each bridle leg.



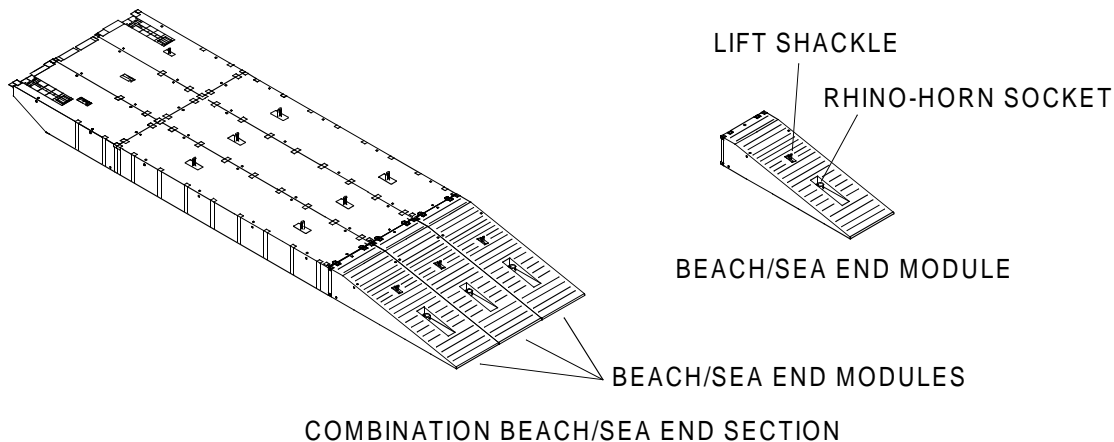
**BEACH/SEA END MODULE**

**Location**

The beach/sea end module is attached to the center module of the combination beach/sea end section.

**Description**

The beach/sea end module is 8 ft wide, 25 ft long, 4 ft 6 in. deep with a ramp slope of 10° and weighs approximately 4500 lbs.



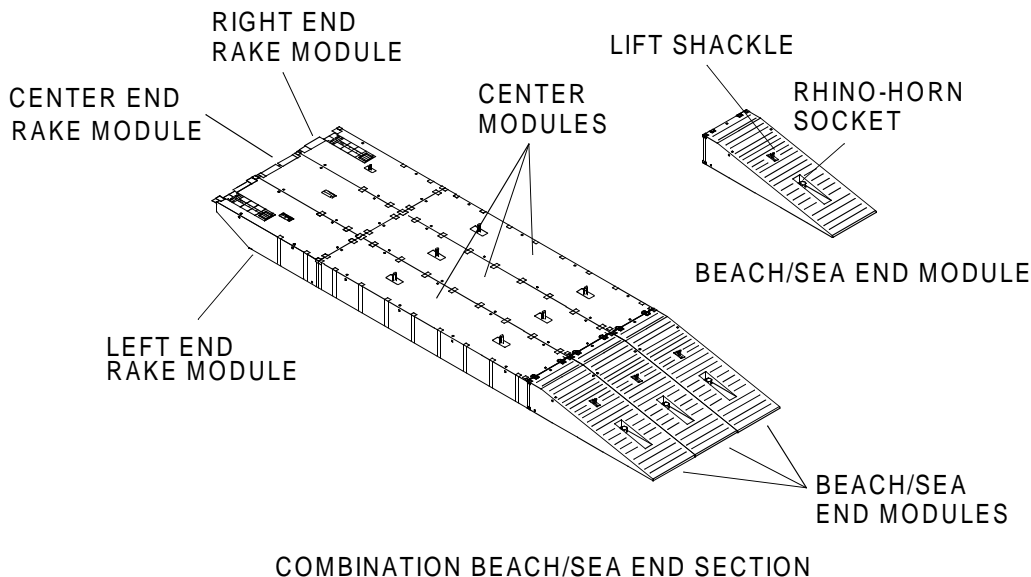
**BEACH/SEA END SECTION**

**Location**

The combination beach/sea end section is attached to the last intermediate section of the beachward end of the causeway.

**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 lbs.



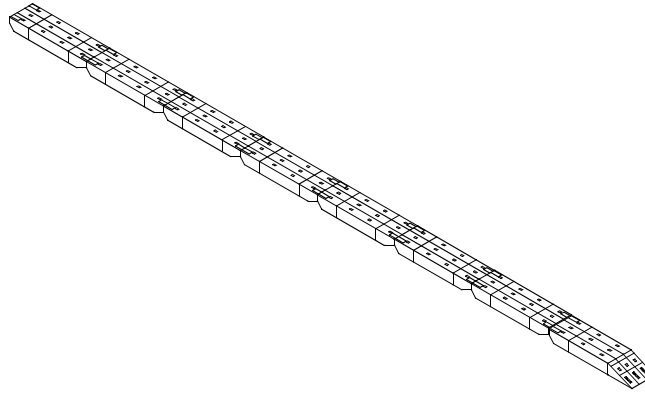
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**CAUSEWAY**
**Location**

The causeway extends from the beach seaward to the trident 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 trident 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.



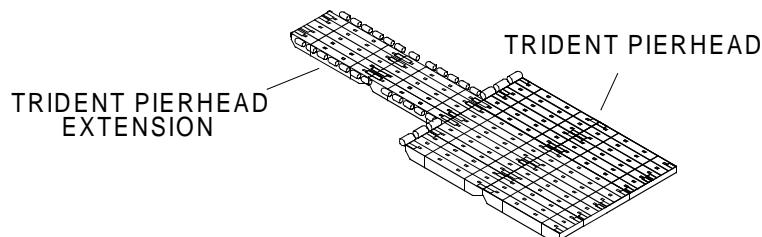
CAUSEWAY

**TRIDENT PIERHEAD****Location**

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

**Description**

The trident pierhead is a floating platform for loading and unloading ocean-going sealift vessels. The trident 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 5 wide, making the overall dimensions of the trident pierhead 160 ft long by 120 ft wide, and a trident pierhead extension which is made up of 10 module strings, two segments of 5 wide connected end to end run from the trident pierhead out to sea. This trident pierhead extension will be used by the lighter vessels to moor to the floating causeway. The overall dimensions of the trident pierhead extension is 40 ft wide by 160 ft long. The trident pierhead is capable of supporting two M-1 Abrams tanks and one sealift vessel's cargo ramp foot on the platform surface. The trident pierhead will withstand cargo loading through Sea State 2 conditions.



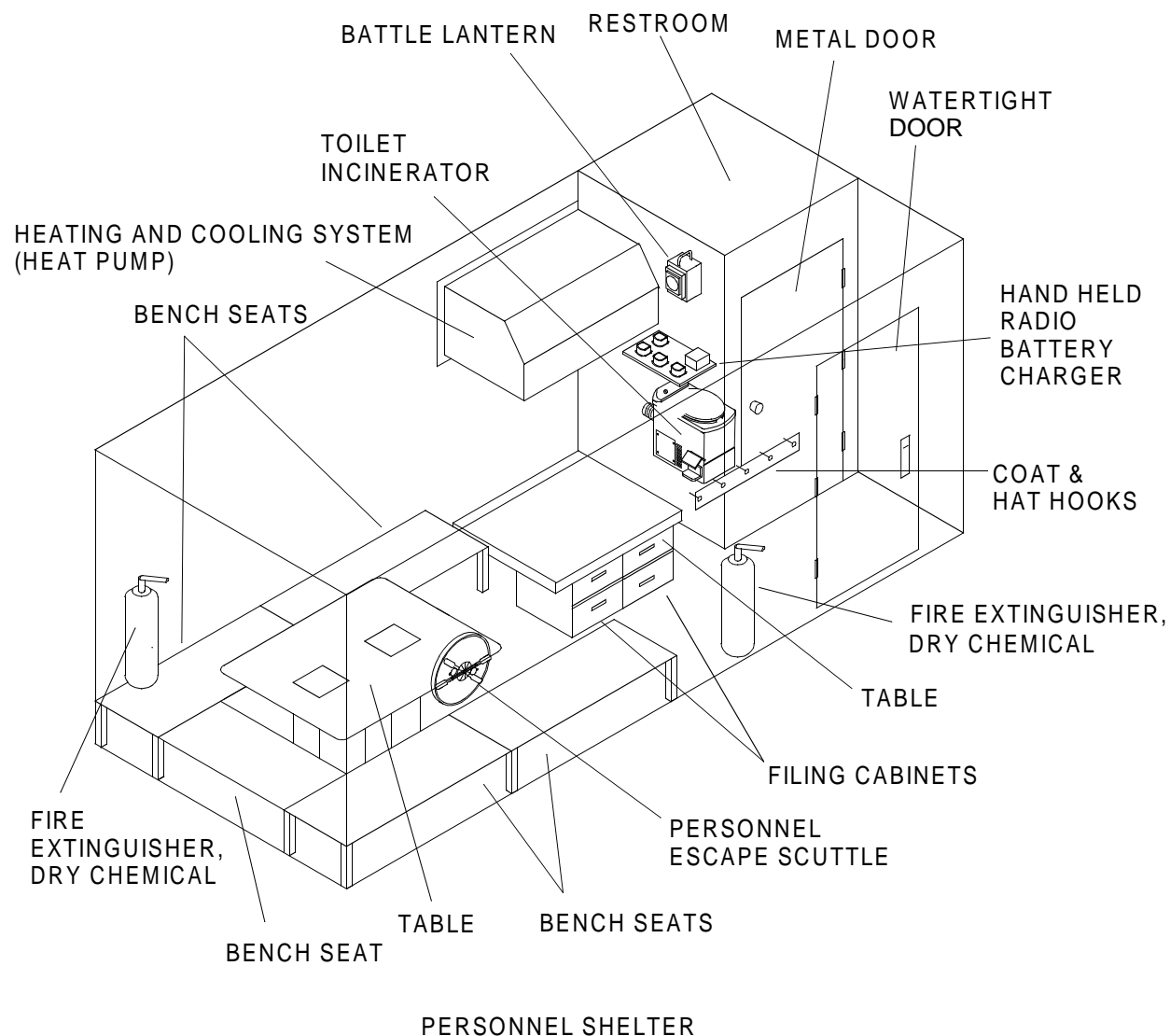
**PERSONNEL SHELTER**

**Location**

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

**Description**

The personnel shelter provides a controlled environment for soldiers supporting the FC platform. The personnel shelter equipment is contained in a 20 ft ISO container. The shelter is equipped with a heating and cooling system (heat pump), incinerator toilet, AC lighting system, portable fire extinguishers, a battle lantern, bench seating for personnel, a table and a personnel escape scuttle located in the wall over the bench seat. The personnel shelter receives electrical power from the 10 Kw or 15 Kw tactical quiet generator. The personnel shelter weighs 9000 lbs.



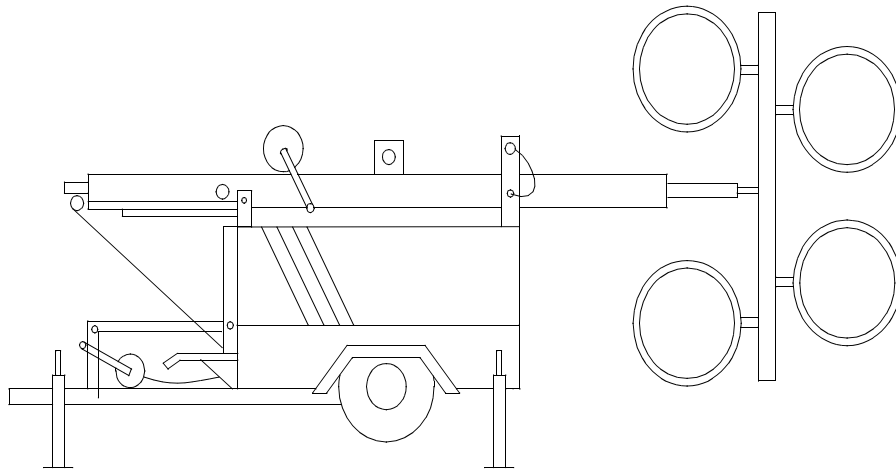
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**LIGHT TOWERS****Location**

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.

**Description**

The light towers are commercially available, self contained lighting systems. The light towers illuminate the work area using four high pressure sodium 1000 watt lights each. The light towers are powered by a 3 cylinder diesel engine. The light towers are stored in a 20 ft ISO container when not in use. The light tower container, with light towers, weights 19,000 lbs.

**TACTICAL QUIET GENERATOR AND ISO CONTAINER****Location**

The tactical quiet generator is located in the generator 20 ft ISO container. The ISO container is located on the FC platform.

**Description**

There are two types of tactical quiet generators authorized for use on the FC, 10 KW and 15 KW. The description and specifications for the 15 KW tactical quiet generator may be found in TM 9-6115-642-10 and the description and specifications for the 10 KW tactical quiet generator may be found in TM 9-6115-642-10.

The tactical quiet generator is supplied with fuel by the generator mounted day fuel tank. A 1000 gallon base fuel tank is mounted in the ISO 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 gauge on the generator instrument panel aids in the refueling of the day tank. The 1000 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 1000 gallon fuel tank.

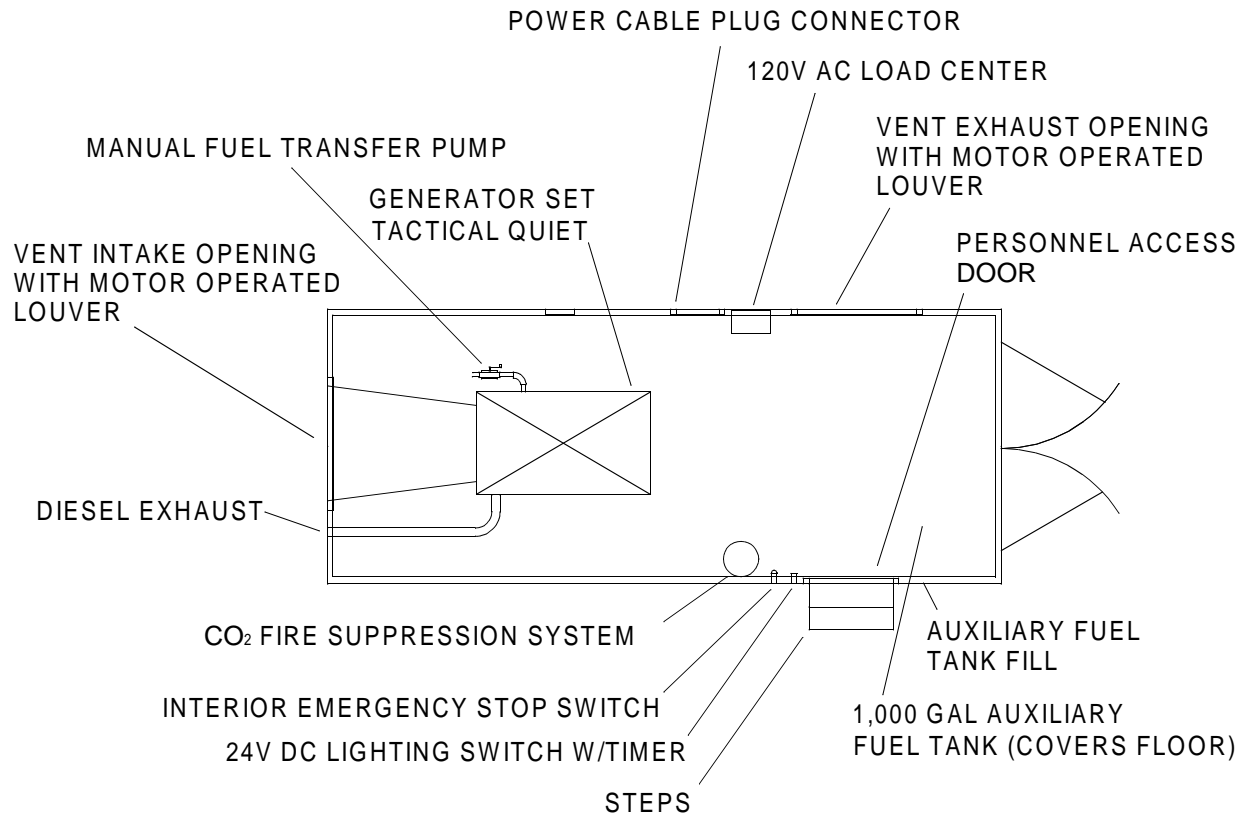
Stainless steel motorized louvers provide air to the generator for cooling. Generator exhaust is routed outside of the container. A stainless steel motorized vent provides ventilation for the generator shelter. Aluminum covers are used while in storage to protect the louvers from the elements.

The ISO container is equipped with a CO<sub>2</sub> fire suppression system. The fire suppression system may be operated automatically or manually. In the automatic mode, a linear detection wire activates the fire suppression system when the temperature exceeds 356°F. 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 pressing the actuator knob when electrical power is not available.

The CO<sub>2</sub> fire suppression system is controlled by the control 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 5, 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.

The shelter is equipped with alternating current (AC) fluorescent light fixtures. A load center is used to control the alternating current system. A direct current (DC) lighting system, comprised of a spring wound timer switch and light fixtures, supply light when AC lighting is not available.

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



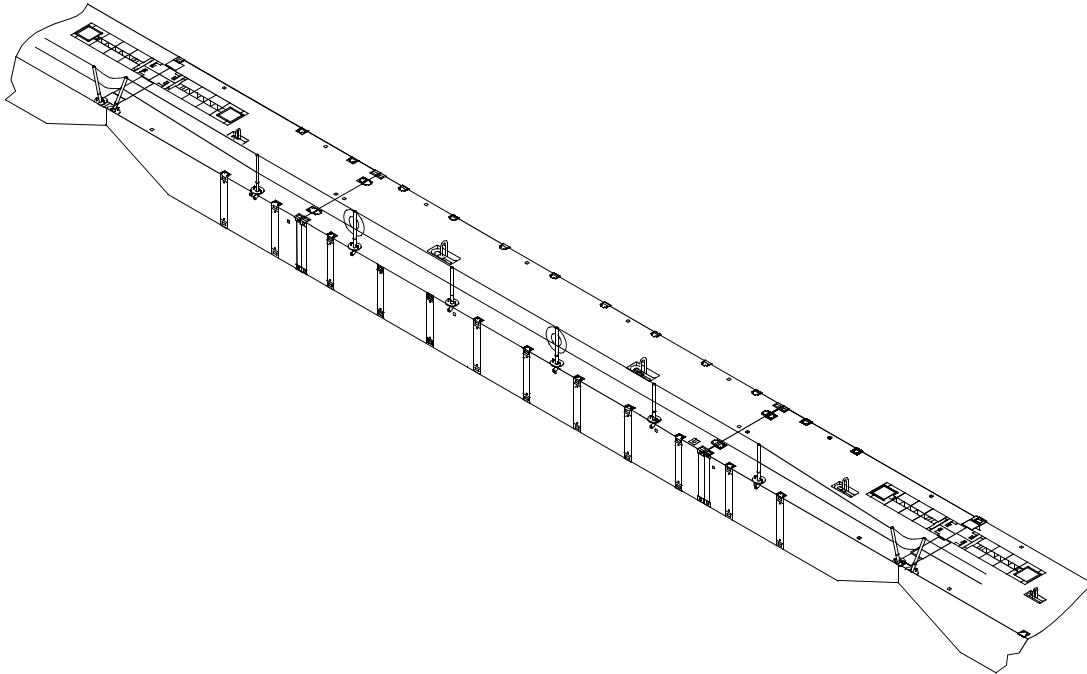
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**LIFELINE AND LIFE RING SUBSYSTEM****Location**

The lifeline subsystem is installed along the causeway sides and trident pierhead sides and shoreward end to protect personnel from falling overboard. The stanchions for the lifelines are installed in the turn-tube fittings and ISO corner fittings of the section modules. The lifelines, life rings, nylon rope and strobe lights are attached to the inboard side of lifeline stanchions. Chain is used to span the gap between section openings. The lifeline arrangement will vary depending on FC configuration.

**Description**

The components of the lifeline subsystem consist of stanchions (two types), deck fittings (two types) and chain to span the spaces between sections. The components of the life ring subsystem consist of a donut shaped flotation device, nylon rope and strobe light.



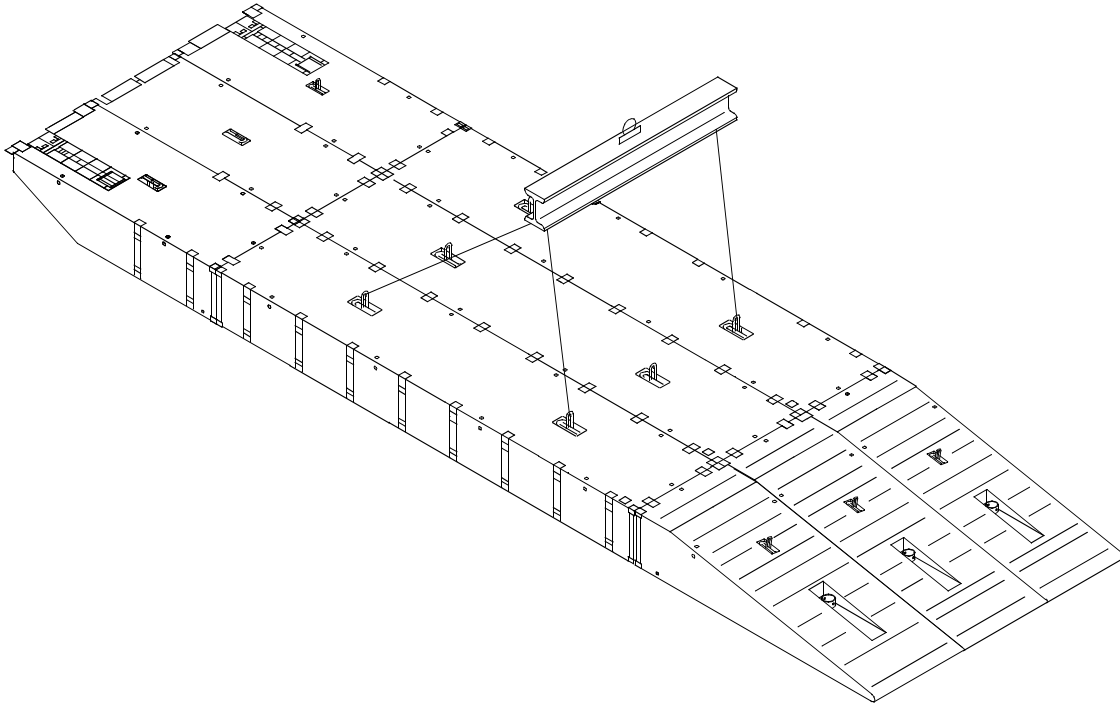
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**LIFTING SLING****Location**

Lifting slings are located in the BII container.

**Description**

The lifting sling consists of a spreader beam with a 2½ in. safety anchor shackle in the top center lifting eye along with 1¾ in. diameter 6 X 37 IWRC two leg and wire rope bridles with 2¼ in. X 8 in. X 16 in. master links attached to bottom lift eyes of the spreader beam using 1¾ in. safety shackles. Bridle IWRC legs are 22 ft, pull to pull, with thimbles on each end. One 1¾ in. screw pin anchor shackle is attached to the lift end of each bridle leg.



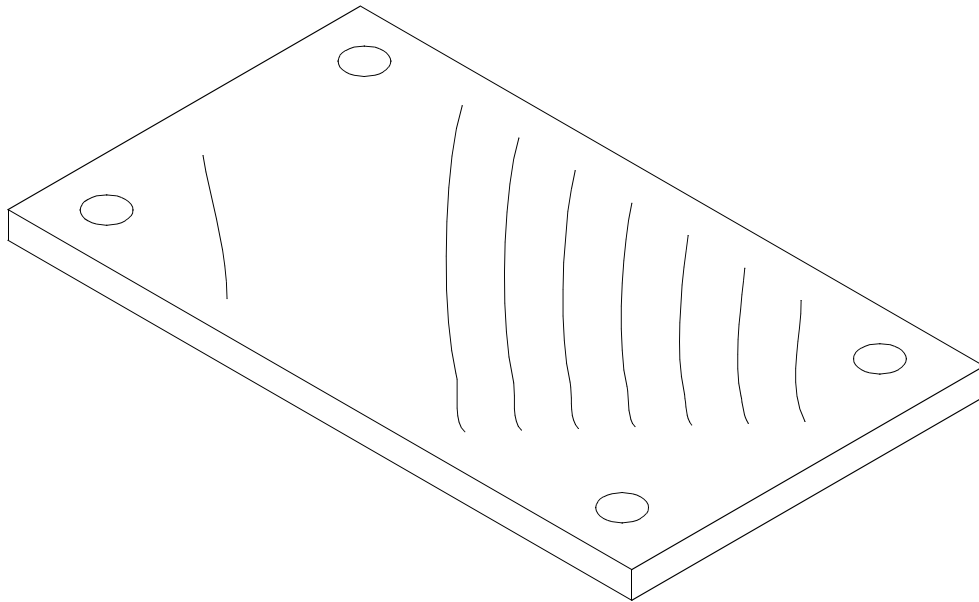
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**DUNNAGE MATS****Location**

Individual dunnage 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 the 20 ft ISO storage containers.

**Description**

Each dunnage mat is approximately 4 ft wide X 10 ft long X 1 ½ in. thick and made of high density polyethylene material. Each mat weighs 300 lbs and has a hole near each corner that is used for securing the mat to the ISO corner fittings.





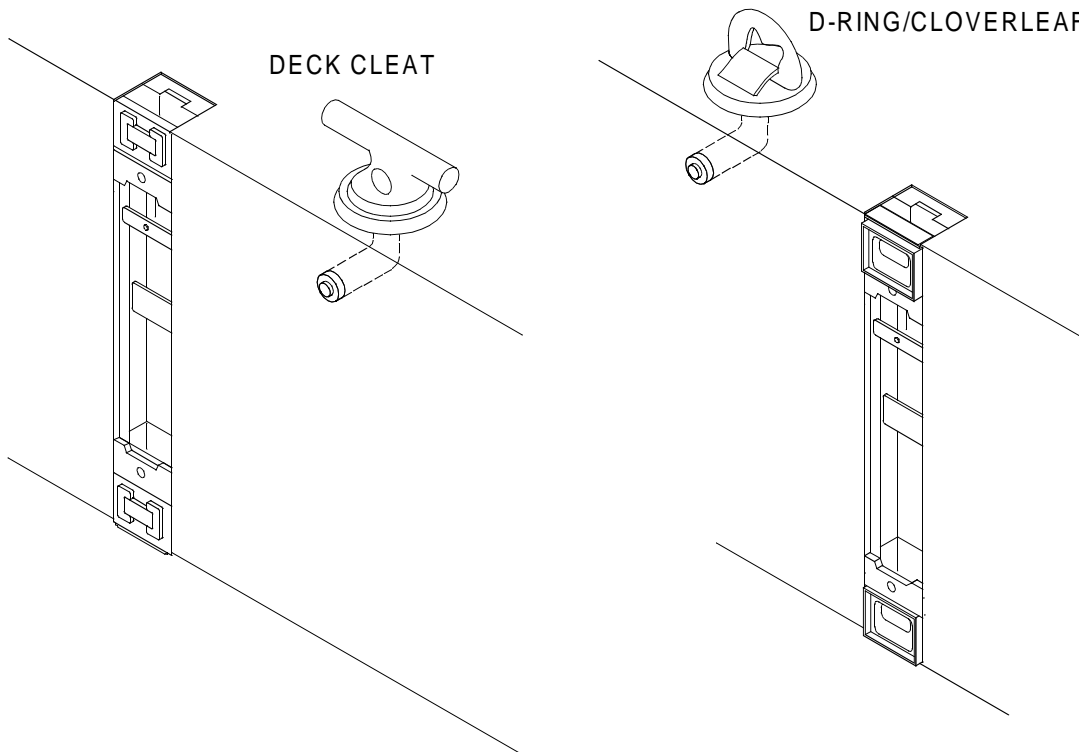
**D-RING/CLOVERLEAF FITTINGS AND DECK CLEAT FITTINGS**

**Location**

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

**Description**

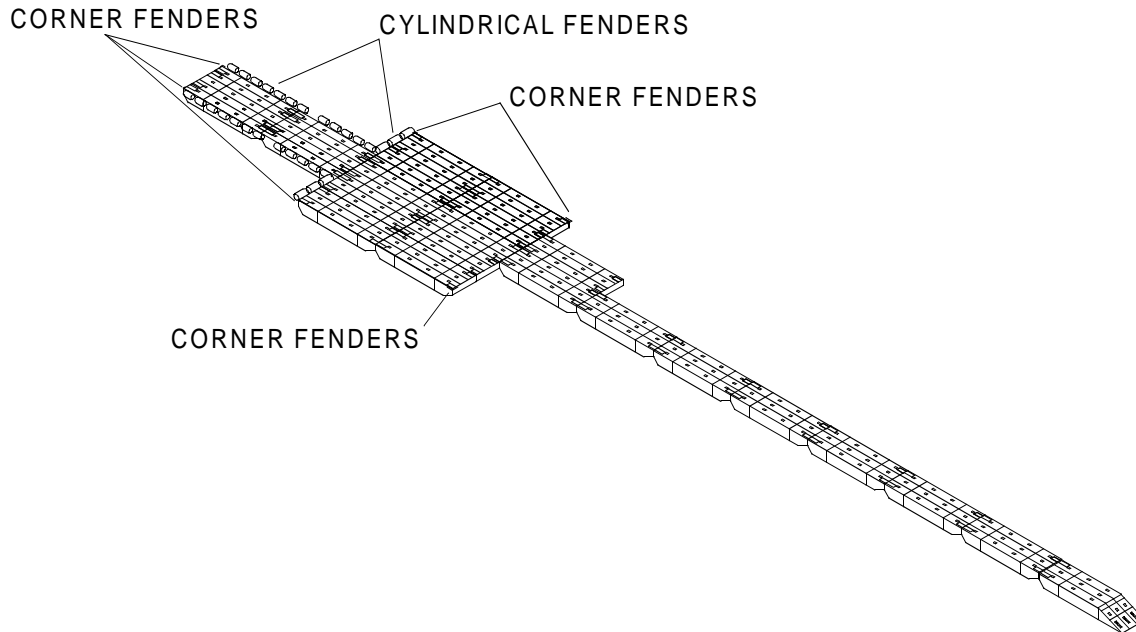
These fittings have a 15,000 lb load capacity. There are ten tube turns per center module and five per end rake.



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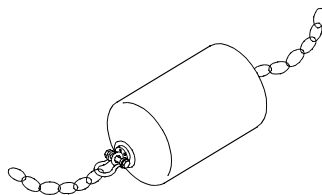
**FENDERS****Location**

The corner fenders are installed on protruding seaward corners of the trident pierhead, while the cylindrical fenders are installed around the seaward perimeter of the trident pierhead and on the two sides of the trident pierhead extension. The configuration depicting all fenders is shown below.

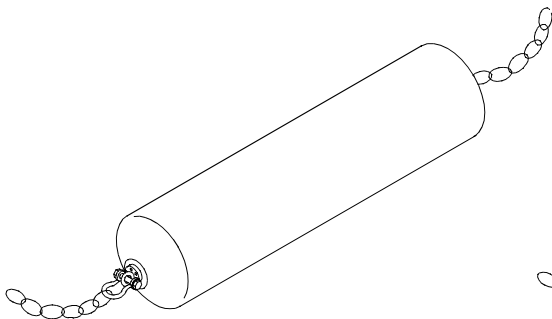
**Description**

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

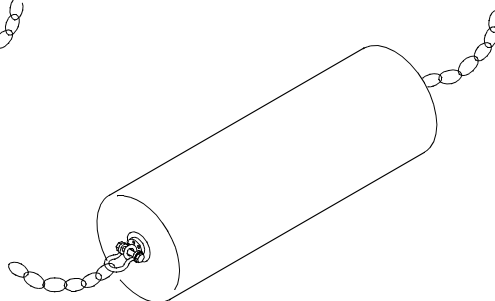
**Cylindrical Type:** There are three sizes of cylindrical shaped fenders that are components of the FC. The cylindrical fenders are constructed of rubber and are used for stand-off from the FC. The three sizes are 3 ft diameter X 5 ft long, 4 ft diameter by 12 ft long, 5 ft diameter by 10 ft long. The fenders each have 25 ft of 1½ in. chain attached at each end for securing to the trident pierhead modules.



3' X 5' LIGHTER FENDER

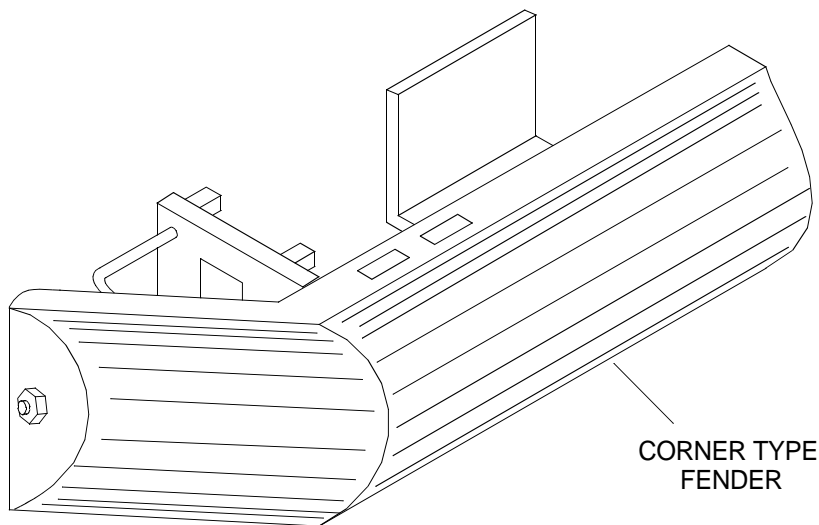


4' X 12' LIGHTER FENDER



5' X 10' LIGHTER FENDER

Corner Type: The corner fenders are installed on protruding corners of the FC. The corner fender assembly has two parts and is installed on the ISO corner fittings. An example of a corner fitting is shown below.



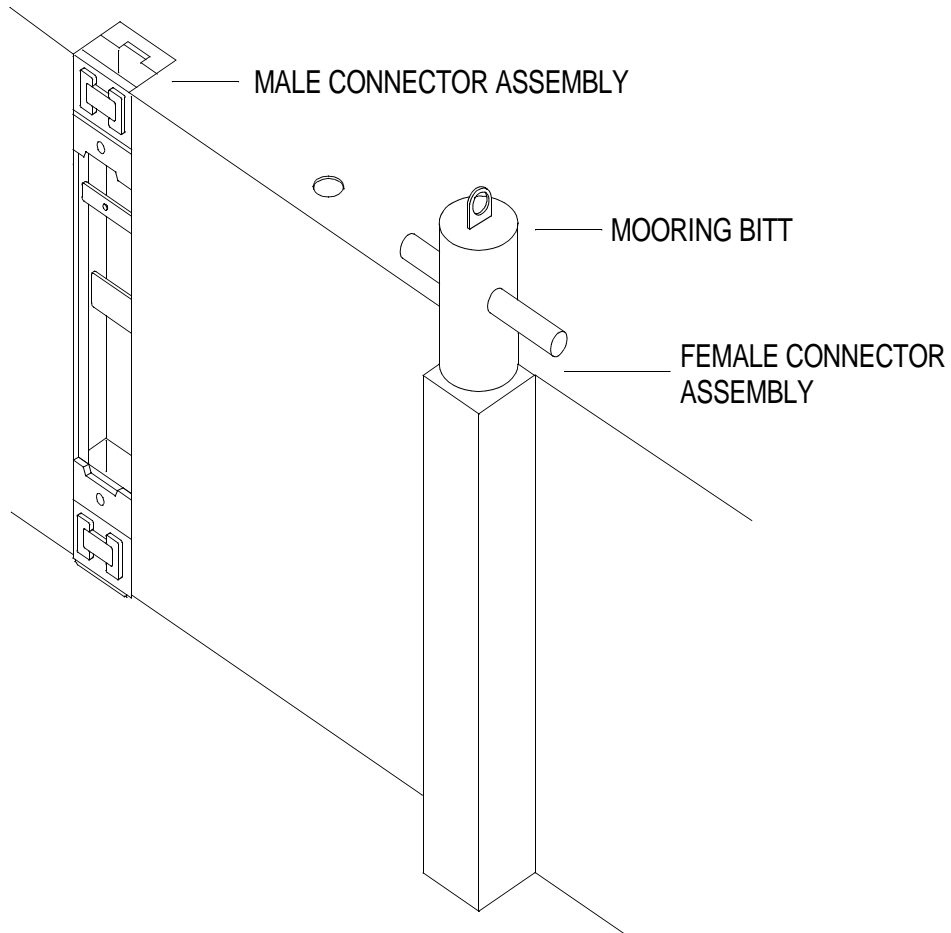
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**MOORING BITTS****Location**

Mooring bitts can be installed on any side of the FC that is exposed to the sea and accessible for mooring.

**Description**

Mooring bitts incorporate two mounting connector pins that can only be installed into female module connector assemblies.



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**TOWING BRIDLE, TOWING INTERFACE AND TOWING LIGHTS**
**Location**

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

The towing interface is attached to the FC end rakes. It is stowed in the BII container when not in use.

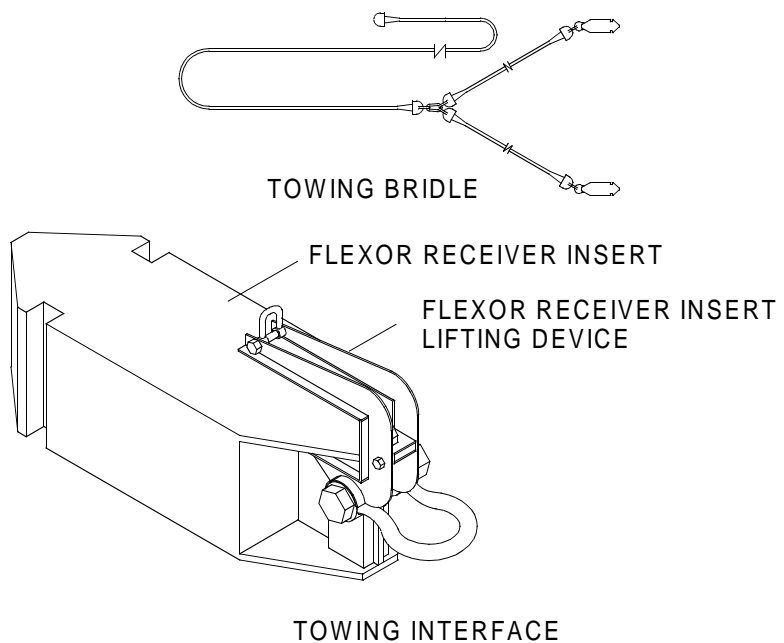
The towing lights are attached to the left side (red lens), right side (green lens), front center (white lens) and the aft end (amber lens) when towing the FC. The lights are stowed in the BII container when not in use.

**Description**

The towing bridle consists of a 500 ft long X 10 in. circumference nylon line and a 2 1/8 in. pear link connected to spliced in eyes and thimbles of the two bridle legs. The bridle legs, are 10 in. circumference, 12 strand plaited nylon line 35 ft long. Each leg of the towing bridle has a shackle use to attach the legs to the flexor interface at the FC and other end to the warping tug.

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

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.



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**OFFSHORE ANCHOR MOORING LEGS****Location**

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

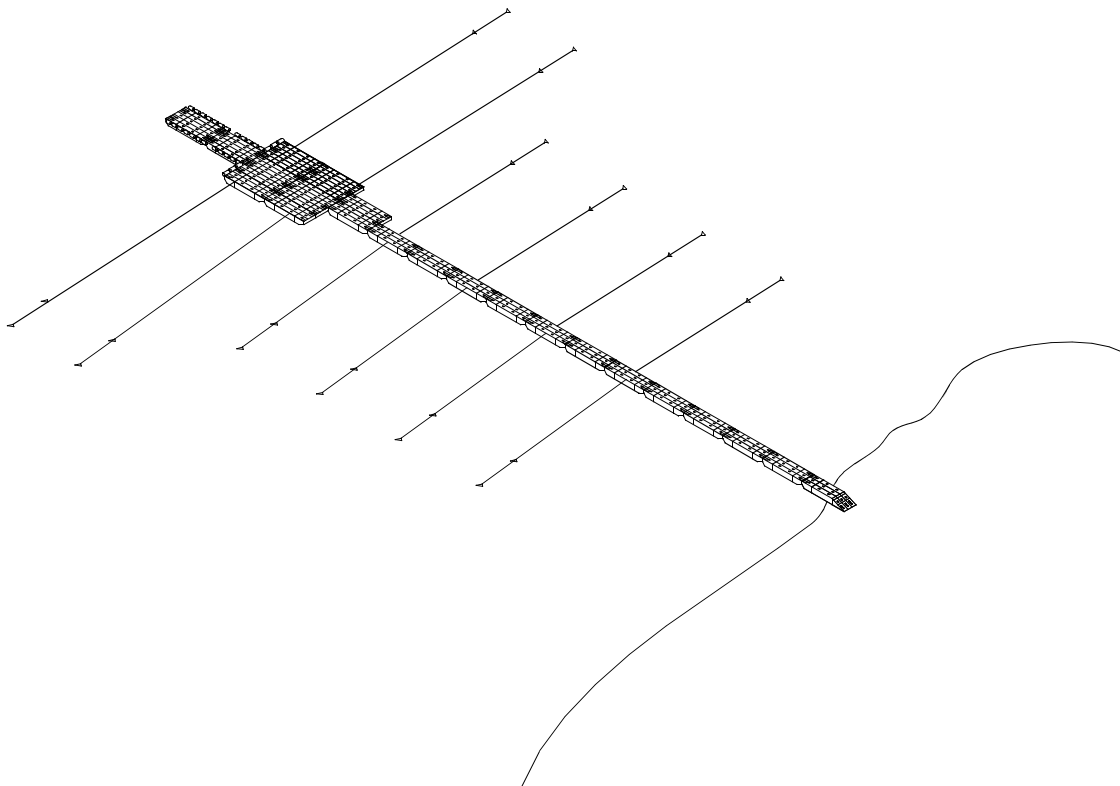
**Description**

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 NAVMOOR anchors.
- Two 150 ft lengths of 1¼ in. wire rope.
- One vertical padeye.
- Two 30 ft lengths of 1¼ in. wire rope.
- One mooring buoy.
- One 1½ in. swivel.
- Eight 1 3/8 in. bolt type anchor shackles.

The offshore mooring container is placed on alternate sections of the FC deck, when preparing to set the anchor legs. The anchor leg components are stowed in the container in a way that allows an entire mooring leg to be pulled from each end of the container and set by a warping tug. After the mooring legs are set, the container is removed from the FC to the beach.



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## ONSHORE MOORING LEGS

### 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 full access 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 CF 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 more 1 in. wire rope assembly that is 300 ft long.

- One horizontal padeye.

- One 1 3/8 in. bolt type anchor shackle.

- Two carpenter stop assemblies.

- One snatch block.

- One hoist hook cable.

- One griphoist.

- One master link.

- Five 1 in. shackles.

- One flounder plate.

- Two anchor bridles.

- Four 7/8 in. shackles.





**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
DESCRIPTION AND DATA**

**EQUIPMENT DATA**

The following tables provides data applicable to major component levels.

**Table 1. FC Equipment Data.**

ITEM CHARACTERISTIC	DESCRIPTION
<b>CENTER MODULE</b>	
Width	8 ft
Length	40 ft
Depth	4 ft 6 in.
Weight	22,500 lbs
ISO Compatible	Yes
Sea State Operation	SS 2
<b>END RAKE MODULES</b>	
Width	8 ft
Length	20 ft
Depth	4 ft 6 in.
Weight	12,500 lbs
ISO Compatible	Yes
Sea State Operation	SS 2
<b>BEACH/SEA END MODULES</b>	
Width	8 ft
Length	25 ft
Depth	4 ft 6 in.
Weight	13,600 lbs
ISO Compatible	Yes
Sea State Operation	SS 2
<b>INTERMEDIATE SECTION</b>	
Center Modules (3 Per Section)	Non-Powered
Width	8 ft
Length	40 ft
Depth	4 ft 6 in.

Table 1. FC Equipment Data. (Continued)

ITEM CHARACTERISTIC	DESCRIPTION
End Rake Modules (6 Per Section)	Compatible With U.S. Navy Flexor Attachments And Shear Connectors
Width	8 ft
Length	20 ft
Depth	4 ft 6 in.
Weight of Assembled Intermediate Section	142,500 lbs
ISO Compatible	Yes
Sea State Operation	SS 2
<b>COMBINATION BEACH/SEA END SECTION</b>	
Center Modules (3 Per Section)	Non-Powered
Width	8 ft
Length	40 ft
Depth	4 ft 6 in.
End Rake Modules (3 Per Section)	Compatible with U.S. Navy flexor attachments and shear connectors
Width	8 ft
Length	20 ft
Depth	4 ft 6 in.
Beach/Sea End Modules (3 Per Section)	
Width	8 ft
Length	25 ft
Depth	4 ft 6 in.
Weight of Assembled Combination Beach/Sea End Section	145,800 lbs
ISO Compatible	Yes
Sea State Operation	SS 2
<b>FLOATING CAUSEWAY</b>	
Trident Pierhead	A combination of intermediate section.
Width	120 ft
Length	160 ft
Trident Pierhead Extension	A set of modules that is five strings wide. It runs from the trident pierhead out to sea.

Table 1. FC Equipment Data. (Continued)

ITEM CHARACTERISTIC	DESCRIPTION
Width	40 ft
Length	160 ft
Causeway	Consists of one or more intermediate sections and a combination beach/sea end section.
Width	24 ft
Length	Length depends on how far offshore, away from the beach, the causeway must extend to give the required water depth.
<b>PERSONNEL SHELTER</b>	
Width	8 ft
Length	20 ft
Depth	8.5 ft
Weight	9,000 lbs
ISO Compatible	Yes
<b>GENERATOR CONTAINER</b>	
Width	8 ft
Length	20 ft
Depth	8.5 ft
Weight	15,000 lbs
ISO Compatible	Yes
<b>DIESEL GENERATOR SET</b>	
10 KW Generator Set	Refer to TM 9-6115-642-10
15 KW Generator Set	Refer to TM 9-6115-642-10
ISO Compatible	Yes
<b>LIGHT TOWERS</b>	
Width	79 in.
Length	174 in.
Depth	89 in. in travel position, 30 ft in assembled position
Weight	2,010 lbs
Weight of Pallet	2,600 lbs
Weight of ISO Container, Including Light Towers	19,000 lbs
ISO Compatible	Yes

Table 1. FC Equipment Data. (Continued)

ITEM CHARACTERISTIC	DESCRIPTION
<b>FLOATING CAUSEWAY ANCHOR MOORING SYSTEM (FCAMS)</b>	
ISO Containers	Staged on the FC and are stored on the beach once they are emptied.
Width	8 ft
Length	20 ft
Depth	8.5 ft
Onshore Mooring Legs	4
Offshore Mooring Legs	12
<b>COMMUNICATIONS EQUIPMENT</b>	
Communications Equipment	The equipment consists of four VHF/FM handheld transceivers that are stored in the personnel shelter.
<b>DUNNAGE MATS</b>	
Mats	Made of high density polyethylene material
Width	4 ft
Length	00 ft
Depth	1 ½ in.
Weight	300 lbs
Weight of Mat Pallet	13,100 lbs
Weight of Dunnage Mat ISO Container With Dunnage Mats	24,000 lbs
ISO Compatible	Yes
<b>MOORING BITTS</b>	
Length	6 ft 5 in.
Weight	235 lbs
Weight of Top Mooring Bitt Pallet (4 Bitts Per Pallet)	1,800 lbs
Weight of Middle and Lower Mooring Bitt Pallets (3 Bitts Per Pallet)	1,600 lbs each
Weight of ISO Container With Mooring Bitts	27,000 lbs
ISO Compatible	Yes

Table 1. FC Equipment Data. (Continued)

ITEM CHARACTERISTIC	DESCRIPTION
<b>5 ft X 10 ft FENDERS</b>	
Weight	1,500 lbs
Weight of Fender Pallet	2,400 lbs
ISO Compatible	Yes
<b>4 ft X 12 ft FENDERS</b>	
Weight	1,450 lbs
Weight of Fender Pallet	3,800 lbs
Weight of ISO Container with Fenders	25,200 lbs
ISO Compatible	Yes
<b>3 ft X 5 ft FENDERS</b>	
Weight	300 lbs
Weight of Fender Pallet	3,000 lbs
Weight of ISO Container with Fenders	25,200 lbs
ISO Compatible	Yes
<b>CORNER FENDERS</b>	
Corner Fenders	The corner fenders are installed on protruding corners of the FC. The corner fender assembly has two parts and is installed on the ISO corner fittings.
<b>FLEXOR CONNECTORS</b>	
Weight	1,400 lbs
Weight of Flexor Connector Pallet	2,700 lbs



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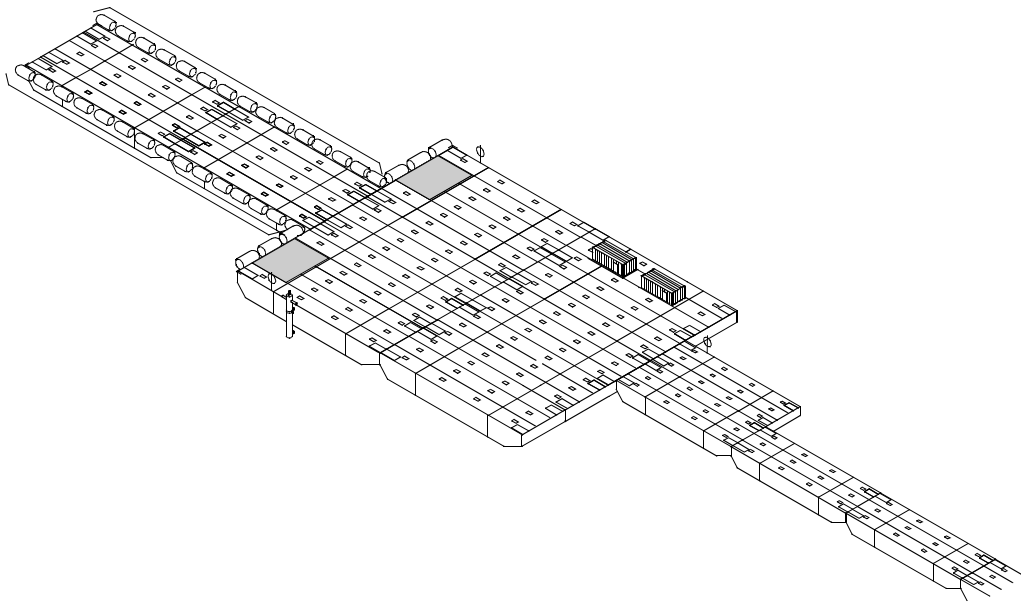
**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
DESCRIPTION AND DATA**

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**EQUIPMENT CONFIGURATION****General**

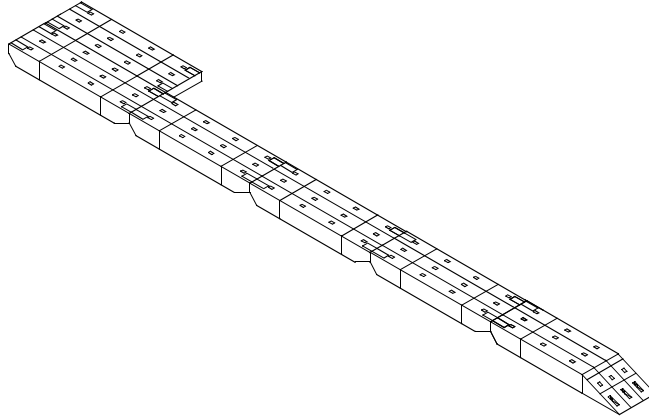
Following are two typical configurations that may be used as floating causeway platform during logistics over the shore (LOTS) operations. The trident pierhead is used for loading and unloading ocean going sealift vessels. It is capable of supporting two M-1 Abrams Tanks and one sealift vessels's cargo ramp foot on the platform surface. The trident pierhead extension is used by lighter vessels to moor to the floating causeway.

The force opening floating causeway is an administrative pier used to get to 15 ft of water depth and does not use a trident pierhead. It is a floating platform for loading and unloading ocean-going sealift vessels. The causeway consists of one or more intermediate sections connected length wise 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: Sea State 2 with five foot waves and a current of two knots

**Floating Causeway Trident Pierhead**

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Force Opening Floating Causeway



FORCE OPENING FLOATING CAUSEWAY



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
THEORY OF OPERATION**

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**SYSTEM OPERATION**

The floating causeway (FC) is a floating platform used during logistics over the shore (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; trident pierhead extension, trident pierhead, and causeway. The trident 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 trident pierhead, connected between the trident 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 trident pierhead to the beach, where a combination beach/sea combination is connected. The causeway is a docking pier head 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 trident pierhead or trident pierhead extension is used.

The FC is held in place during LOTS operations by the floating causeway anchor mooring system (FCAMS). The structure of the FC will withstand cargo loading and unloading through Sea State 2 conditions.

**10 KW OR 15 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.

Refer to TM 9-6115-642-10 for the theory of operation of the 15 KW diesel generator set.

**PERSONNEL SHELTER**

The personnel shelter is contained in a 20 ft ISO 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. 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, fire suppression system and to the ground-fault interrupter (GFI) receptacles in the personnel shelter.

**6 KW TRAILER MOUNTED LIGHT TOWER**

The lighting system consists of a self-contained, trailer mounted, 6 KW diesel generator which provides 6 KW of power at 60 hz to four high pressure sodium, 1000 watt lamps. The power to each lamp is controlled by individual switches on a control panel. The power is received from a 120 VAC - 2 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 TRANSCEIVER**

The VHF/FM transceiver is 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 Volts DC. Current drain in standby mode is 40 ma, in receive mode 200 ma, in the transmit mode 1.8 A (high power) and 0.7 A (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 3000 hz. The AF harmonic distortion of the transmitter is 3%. The transmitter has a hum and noise

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rating of 37 dB and a frequency stability (-20 ° to +50 ° C) of  $\pm 0.0005\%$ . 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  $\pm 4.5$  khz.

### **INCINERATOR TOILET**

Refer to TM 55-1925-257-14&P for the theory of operation of the incinerator toilet.

### **FLOATING CAUSEWAY ANCHOR MOORING SYSTEM (FCAMS)**

The FCAMS is designed to hold the floating causeway 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 FCAMS 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 1500 ft long.

**CHAPTER 2**

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



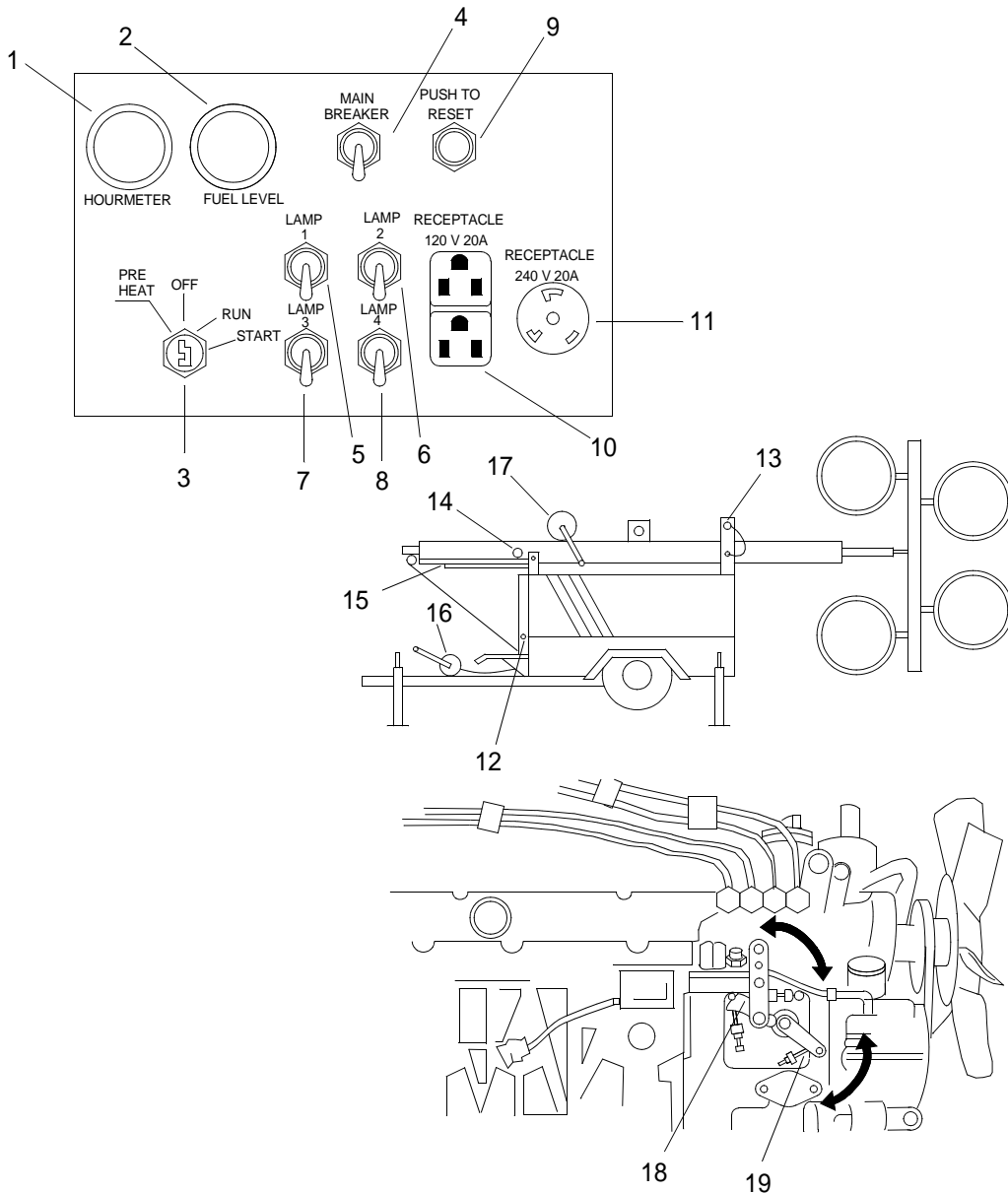
**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
DESCRIPTION AND USE OF OPERATOR  
CONTROLS AND INDICATORS**

**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. Find numbers on the illustration are keyed to the tabular listing which contains the name, based on the equipment markings and the functional description of each control and indicator.

**LIGHT TOWER CONTROLS AND INDICATORS**

Table 1 describes the controls and indicators for the light tower.

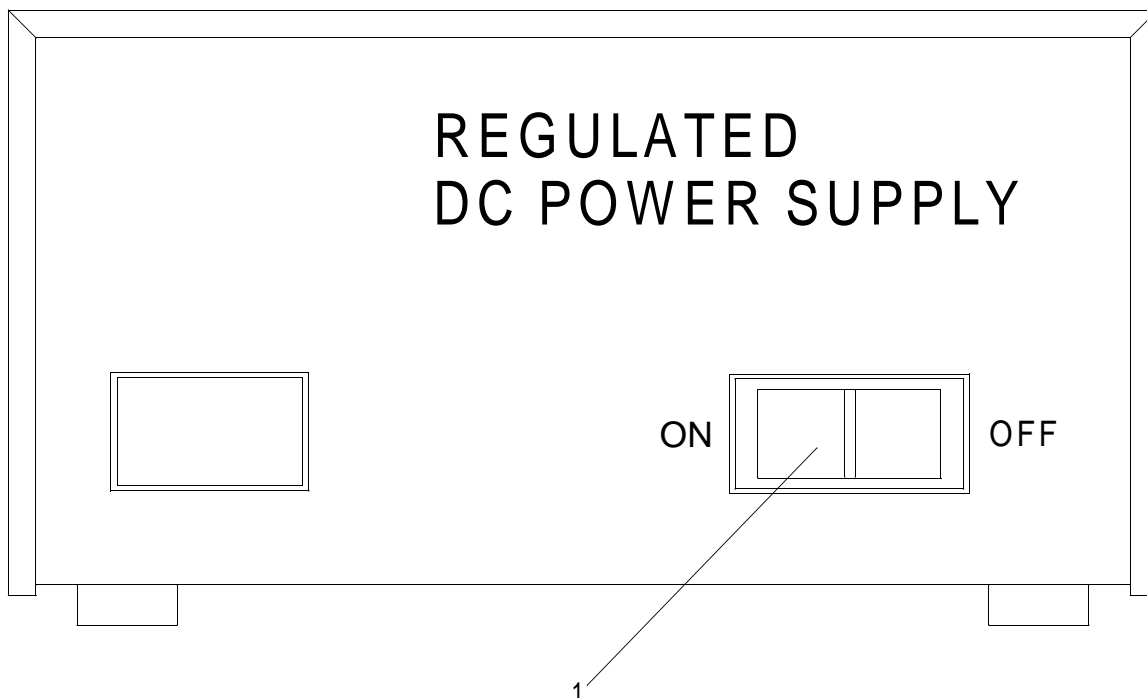


**Table 1. Light Tower Operator Controls and Indicators.**

<b>KEY</b>	<b>CONTROL/INDICATOR</b>	<b>FUNCTION</b>
1	HOUR METER	Indicates elapsed time in hours that the light tower engine has operated.
2	FUEL LEVEL	Indicates the fuel level in the light tower fuel tank.
3	Ignition Switch	Allows the operator to select between preheat, run, start and off. The PREHEAT position preheats the glow plugs to aid starting. The START position allows for starting of the engine. The ignition switch is spring loaded to the RUN position when the key is released after starting. The OFF position allows the operator to turn the light tower engine off after use.
4	MAIN BREAKER	Allows the operator to turn off all electrical power to the lights and receptacles. The main breaker is rated at 35 amps.
5	LAMP 1	Circuit breaker switch allows the operator to turn on and off lamp number one on the light tower.
6	LAMP 2	Circuit breaker switch allows the operator to turn on and off lamp number two on the light tower.
7	LAMP 3	Circuit breaker switch allows the operator to turn on and off lamp number three on the light tower.
8	LAMP 4	Circuit breaker switch allows the operator to turn on and off lamp number four on the light tower.
9	PUSH TO RESET	Circuit breaker for light power circuit.
10	RECEPTACLE, 120 V 20A	120 volt, 20 amp electrical receptacle.
11	RECEPTACLE, 240 V 20A	240 volt, 20 amp electrical receptacle.
12	Locking Pin	Secures light tower in upright position.
13	Locking Pin	Locks light tower in the stowed position for transport.
14	Eye Bolt	Allows light tower to rotate. Prevents rotation when tightened.
15	Locking Pin	Locks light tower in position for angled operation.
16	Winch	Raises light tower when turned from the stowed position. Returns light tower to stowed position after operation.
17	Winch	Extends light tower to desired height.
18	Speed Control Lever	Controls engine speed during operation.
19	Engine Stop Lever	Allows operator to stop engine without returning to control panel.

**DC POWER SUPPLY FOR VHF HANDHELD TRANSCEIVER CONTROLS AND INDICATORS**

Table 2 describes the controls and indicators for the DC power supply for the VHF handheld transceiver.

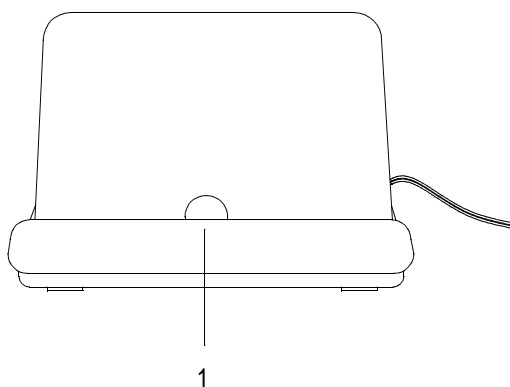


**Table 2. DC Power Supply for VHF Handheld Transceiver Operator Controls and Indicators.**

KEY	CONTROL/INDICATOR	FUNCTION
1	ON/OFF Switch	Rocker switch turns power on and off.

**HANDHELD RADIO BATTERY CHARGER CONTROLS AND INDICATORS**

Table 3 describes the controls and indicators for the handheld radio battery charger.

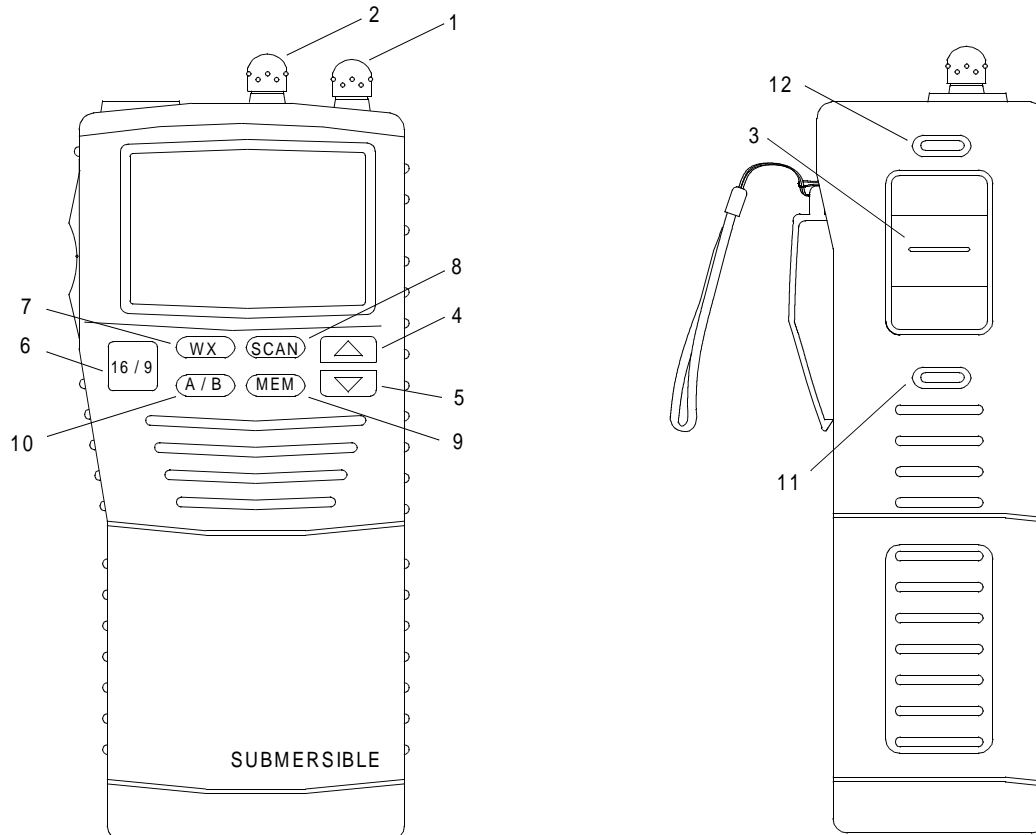


**Table 3. Handheld Radio Battery Charger Operator Controls and Indicators.**

KEY	CONTROL/INDICATOR	POSITION/FUNCTION
1	Power On/Recharging Light	Red light on indicates the handheld radio is charging.

## VHF HANDHELD TRANSCEIVER CONTROLS AND INDICATORS

Table 4 describes the controls and indicators for the VHF handheld transceiver.



**Table 4. VHF Handheld Transceiver Operator Controls and Indicators.**

KEY	CONTROL/INDICATOR	FUNCTION
1	POWER/VOLUME Knob	Turns power on and off. Adjusts speaker level.
2	SQUELCH CONTROL Knob	Sets the threshold level of signals that will produce audio output from the speaker.
3	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.
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.

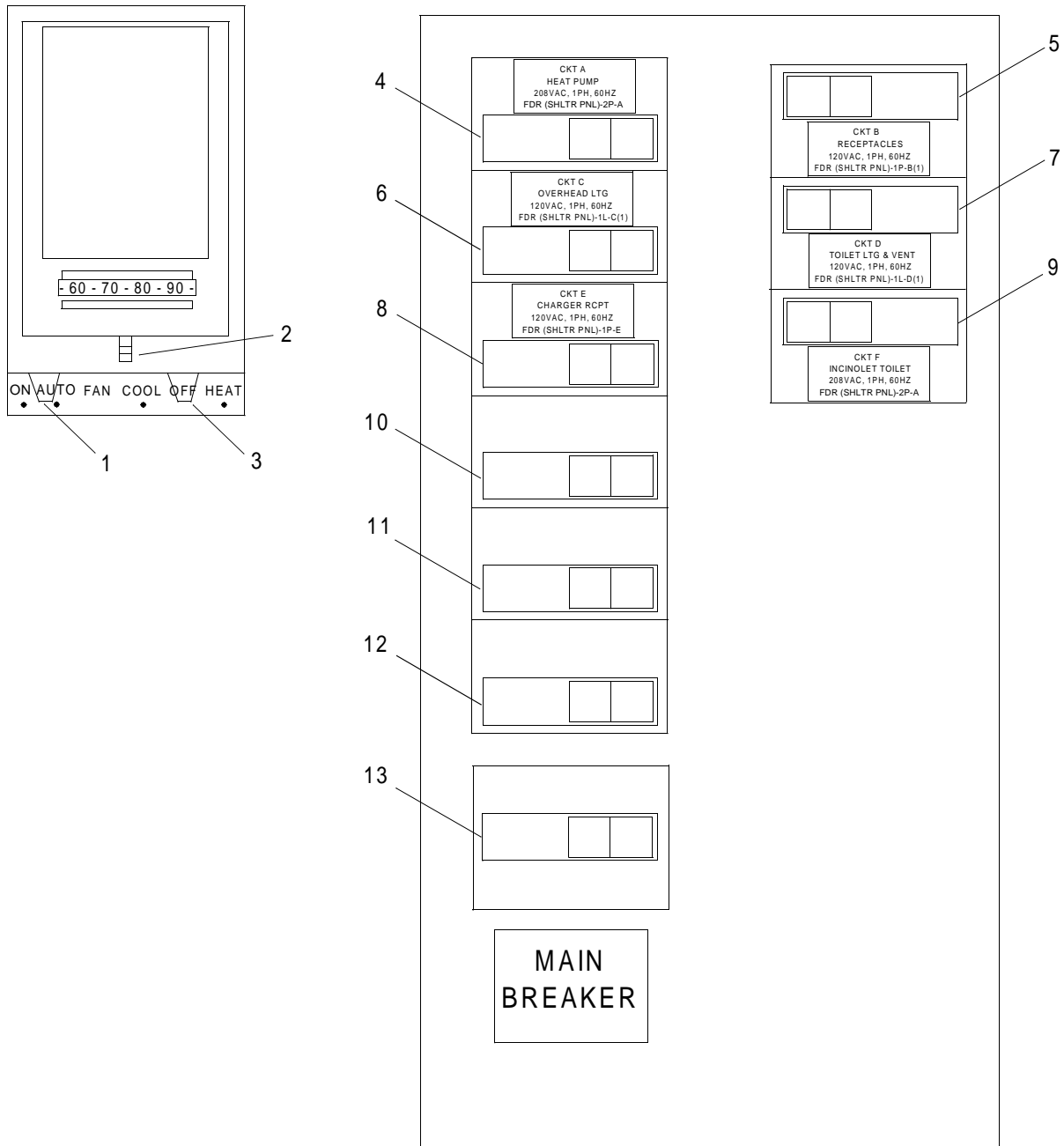


Table 4. VHF Handheld Transceiver Operator Controls and Indicators. (Continued)

KEY	CONTROL/INDICATOR	FUNCTION
6	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.
7	WX Key	Immediately recalls a weather channel from any channel location. Recalls the previous channel when the WX key is pressed again.
8	SCAN Key	Starts scanning programmed channels. Press key for at least one second to turn on and off priority scan during scan.
9	MEM Key	Memorizes the selected channel. When pressed again, deletes the selected channel.
10	A/B Key	Immediately recalls two user assigned channels from any channel location.
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	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.

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

Table 5 describes the controls and indicators for the personnel shelter heating and air conditioning system and electrical distribution panel board.



**Table 5. Personnel Shelter Heating and Air Conditioning System and Electrical Distribution Panel Board Operator Controls and Indicators.**

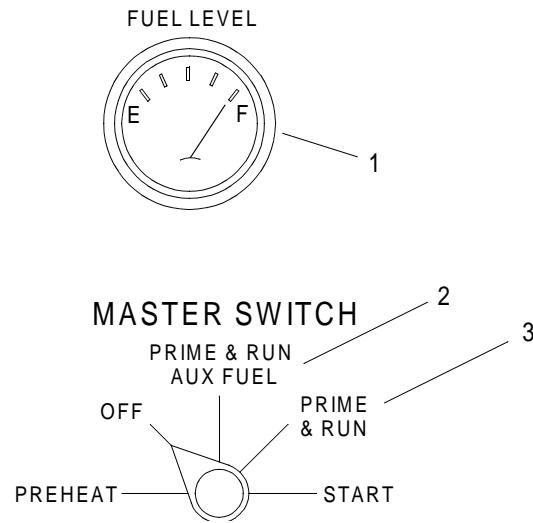
<b>KEY</b>	<b>CONTROL/INDICATOR</b>	<b>FUNCTION</b>
1	FAN Switch	Selects mode of operation for fan. When in the on position, fan operates continuously. when in the auto mode, fan operates in conjunction with the thermostat.
2	Thermostat Adjustment	Adjust the temperature at which the heating or cooling system will cycle on.
3	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.
4	CIRCUIT BREAKER "A"	Provides circuit protect for heating and air conditioning system. Rated at 25 amps.
5	CIRCUIT BREAKER "B"	Provides circuit protect for receptacles. Rated at 20 amps.
6	CIRCUIT BREAKER "C"	Provides circuit protect for overhead lighting. Rated at 15 amps.
7	CIRCUIT BREAKER "D"	Provides circuit protect for toilet lighting and ventilation. Rated at 15 amps.
8	CIRCUIT BREAKER "E"	Provides circuit protect for charger receptacle. Rated at 20 amps.
9	CIRCUIT BREAKER "F"	Provides circuit protect for Incinolet toilet. Rated at 20 amps.
10	CIRCUIT BREAKER "SPARE"	Spare circuit. Rated at 15 amps.
11	CIRCUIT BREAKER "SPARE"	Spare circuit. Rated at 15 amps.
12	CIRCUIT BREAKER "SPARE"	Spare circuit. Rated at 15 amps.
13	MAIN CIRCUIT BREAKER	Allows the operator to turn off all electrical power to electrical distribution panel board. Rated at 100 amps.

#### **INCINOLET CONTROLS AND INDICATORS**

Refer to Incinerator Toilet/Urinal Galley/Water Heater TM 55-1925-257-14&P.

**10 KW OR 15 KW TACTICAL QUIET GENERATOR DAY FUEL TANK CONTROLS AND INDICATORS**

Table 6 describes the controls and indicators for the 10 KW or 15 KW tactical quiet generator day fuel tank.

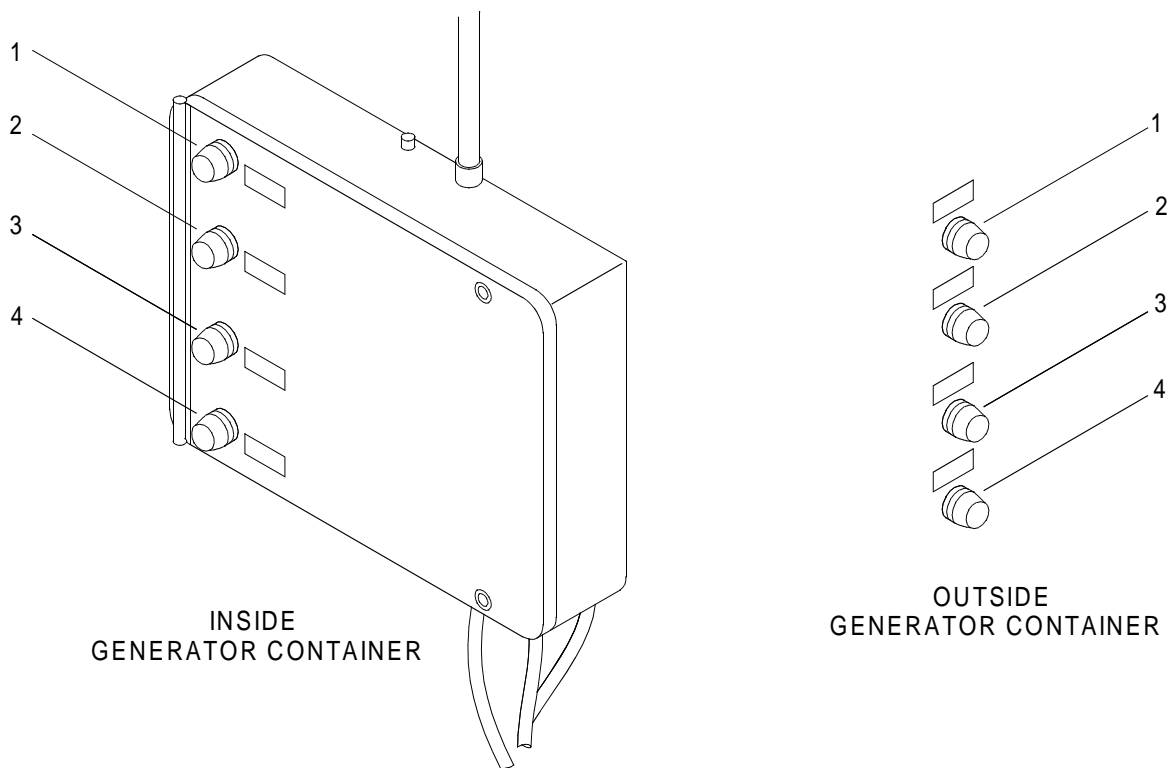


**Table 6. 10 KW or 15 KW Tactical Quiet Generator Day Fuel Tank Operator Controls and Indicators.**

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 1000 GALLON FUEL TANK CONTROLS AND INDICATORS**

Table 7 describes the controls and indicators for the generator container 1000 gallon fuel tank.



**Table 7. Generator Container 1000 Gallon Fuel Tank Operator Controls and Indicators.**

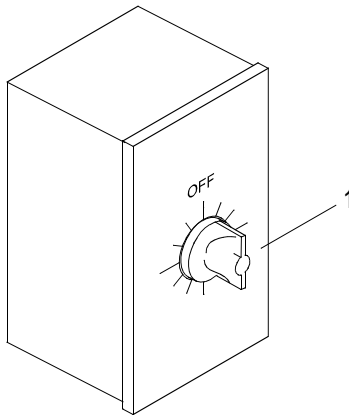
KEY	CONTROL/INDICATOR	FUNCTION
1	DANGER OVER-FULL INDICATOR Light	Light illuminates when tank is overfilled during refueling operations.
2	TANK 100% CAPACITY INDICATOR Light	Light illuminates when fuel tank is at 100% of capacity.
3	TANK 50% CAPACITY INDICATOR Light	Light illuminates when fuel tank has 50% of fuel remaining in tank.
4	WARNING LOW FUEL INDICATOR Light	Light illuminates when tank fuel level is low.

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**GENERATOR CONTAINER DC LIGHTING SYSTEM CONTROLS AND INDICATORS**


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Table 8 describes the controls and indicators for the generator container DC lighting system.

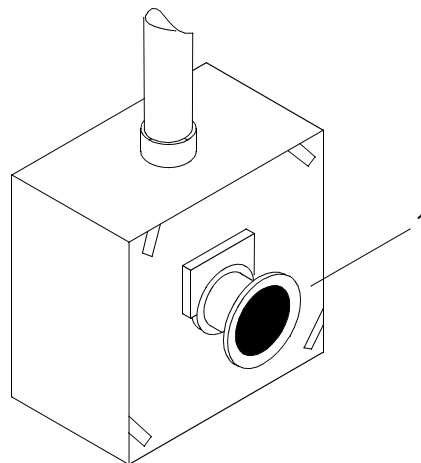


**Table 8. Generator Container DC Lighting System Operator Controls and Indicators.**

KEY	CONTROL/INDICATOR	FUNCTION
1	DC Light Interval Timer	Spring wound timer that automatically turns off light after a preset time period. Rotate knob to set timer. Rotate clockwise to increase time, counterclockwise to decrease time.

**GENERATOR EMERGENCY STOP CONTROLS AND INDICATORS**

Table 9 describes the controls and indicators for the generator emergency stop.

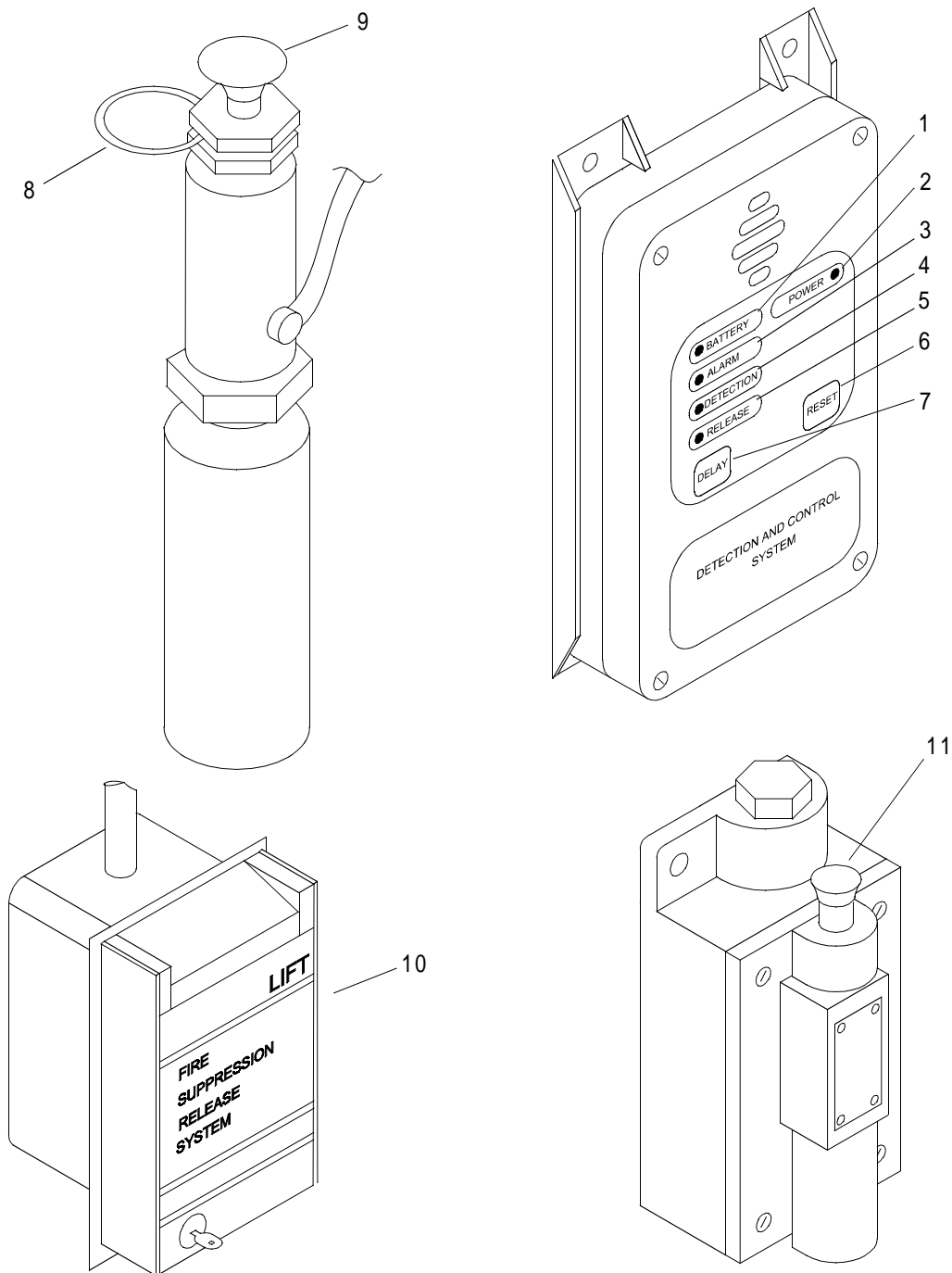


**Table 9. Generator Emergency Stop Operator Controls and Indicators.**

KEY	CONTROL/INDICATOR	FUNCTION
1	Generator Emergency Stop	When pushed, stops generator. Pull switch out to restart generator.

**GENERATOR CONTAINER FIRE SUPPRESSION SYSTEM CONTROLS AND INDICATORS**

Table 10 describes the controls and indicators for the generator container fire suppression system.



**Table 10. Generator Container Fire Suppression System Operator Controls and Indicators.**

KEY	CONTROL/INDICATOR	FUNCTION
1	Control Module BATTERY LED Indicator	The control module battery LED indicator is lit when the fire suppression system is operating on battery power.

**Table 10. Generator Container Fire Suppression System Operator Controls and Indicators.**

<b>KEY</b>	<b>CONTROL/INDICATOR</b>	<b>FUNCTION</b>
2	Control Module POWER LED Indicator	The control module power LED indicator is lit when power is supplied to the fire suppression system.
3	Control Module ALARM LED Indicator	Alarm LED indicates that an alarm has been initiated. Upon receiving an alarm input signal, the LED flashes once per second. After the alarm shutdown time delay has expired, the LED flashes three times per second. After fire suppression system discharge, the LED flashes once every six seconds to indicate that fire suppression has occurred.
4	Control Module DETECTION LED Indicator	The detection LED lights when the fire detection devices send a signal to the control module that a fire has been detected.
5	Control Module RELEASE LED Indicator	The release LED lights when the fire suppression system releases the fire extinguishing agent.
6	RESET Button	The reset button allows the operator to perform the following functions: set relays in correct position upon installation, reset and/or defer alarm-to-shutdown delay if pressed or held down during the period, reset control module after system operation when replacement of detection wire/thermal detectors is complete.
7	DELAY Button	The delay button allows the operator to repeat the shutdown time delay, if pressed before the shutdown time delay has expired.
8	Ring Pin	Pull ring pin to allow manual activation of fire suppression system.
9	Manual Actuator Knob	Manually activates fire suppression system for immediate discharge of fire extinguishing agent.
10	Electric Manual Pull Station	Manually initiates fire suppression system. Lift lever to actuate. Time delay circuit will activate.
111	15 KW Tactical Generator Pneumatic Cutoff Switch	Cutoff switch is pneumatically activated when the fire suppression system is discharged. Cutoff switch must be reset before attempting to start the tactical generator.



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MODULE ISOPAK  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Life Preserver, Vest (Item 31, WP 0104 00)  
Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
Helmet, Safety (Item 27, WP 0104 00)  
Ladder (Item 30, WP 0104 00)

**Personnel Required**

Seaman 88K

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**PREPARATION FOR USE - DISASSEMBLY OF MODULE ISOPAK****DISASSEMBLE MODULE ISOPAK**

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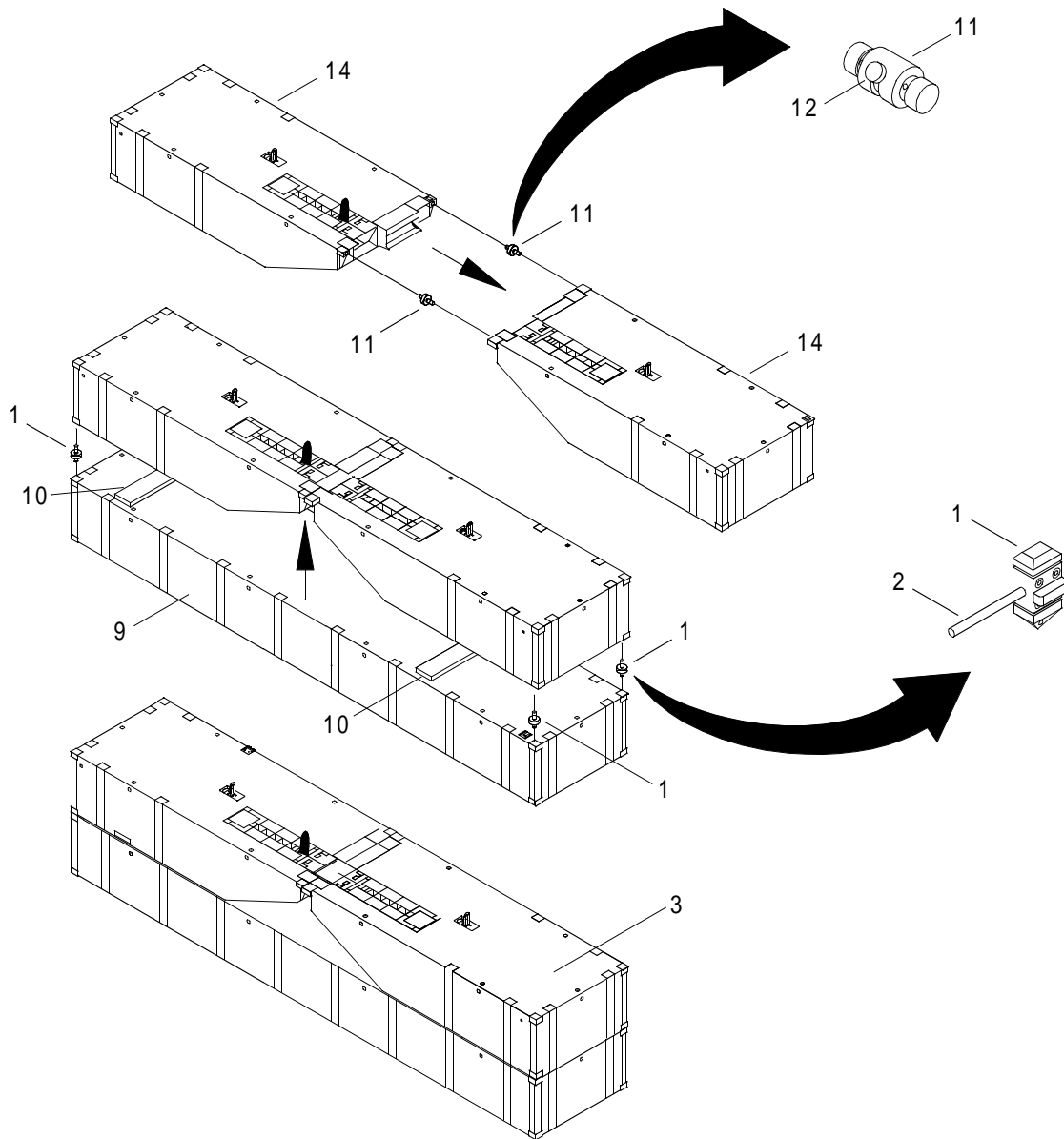
**WARNING**

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

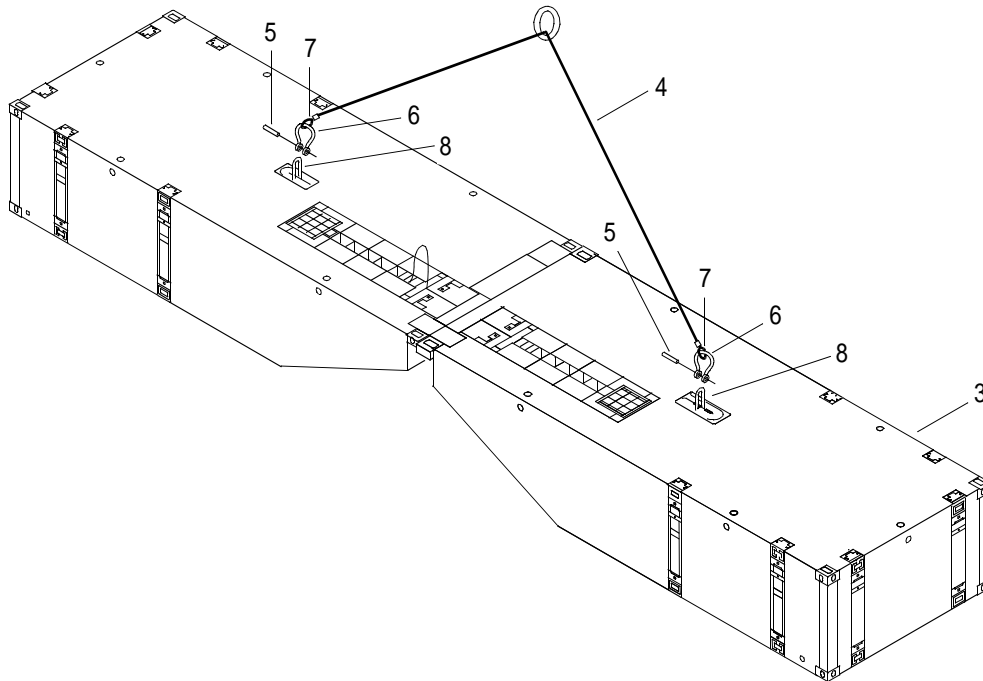
**All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

1. Unlock four ISOPAK vertical connectors (1), one at each corner, by moving the lever (2).



2. Obtain ladder from BII container and climb to top of connected end rake modules (3).

3. Attach two leg sling (4) to connected end rake modules (3).



- a. Remove shackle pins (5) from shackles (6).
  - b. Insert shackle (6) and sling eye (7) through module lifting shackle (8).
  - c. Install shackle pins (5) in shackles (6).
4. Descend from top of module ISOPAK and stow ladder in BII container.

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**WARNING**

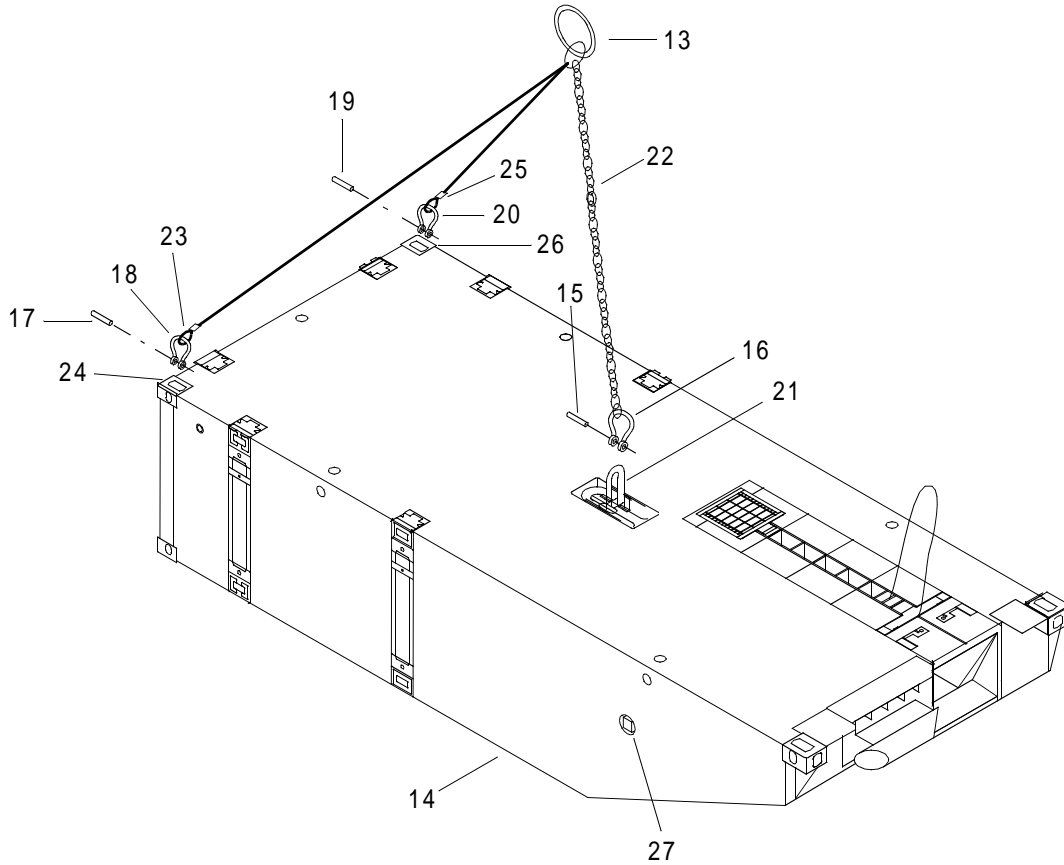
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**HEAVY PARTS**

5. Lift connected end rake modules (3) by two leg sling (4) and remove from top of center module (9).
6. Remove connectors (1) and dunnage (10) from corners of center module (9).
7. Unlock the two horizontal ISOPAK connectors (11) by moving the lever (12).

8. Install three leg sling (13) on end rake module (14).



- a. Remove shackle pin (15) from shackle (16).
- b. Remove shackle pin (17) from shackle (18).
- c. Remove shackle pin (19) from shackle (20).
- d. Insert shackle (16) through module lifting shackle (21) and chain (22).
- e. Install shackle pins (15) in shackle (16).
- f. Insert shackle (18) through sling eye (23) and module ISO fitting (24).
- g. Install shackle pin (17) in shackle (18).
- h. Insert shackle (20) through sling eye (25) and module ISO fitting (26).
- i. Install shackle pin (19) in shackle (20).

---

**WARNING**

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**HEAVY PARTS**

9. Using three leg sling (13), lift and separate end rake modules (14).

---

**WARNING**

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**HEAVY PARTS**

10. Remove ISOPAK horizontal connectors (11).

**NOTE**

Drain plug location may vary.

11. Inspect modules to ensure drain plugs (27) are installed and tight in all modules.

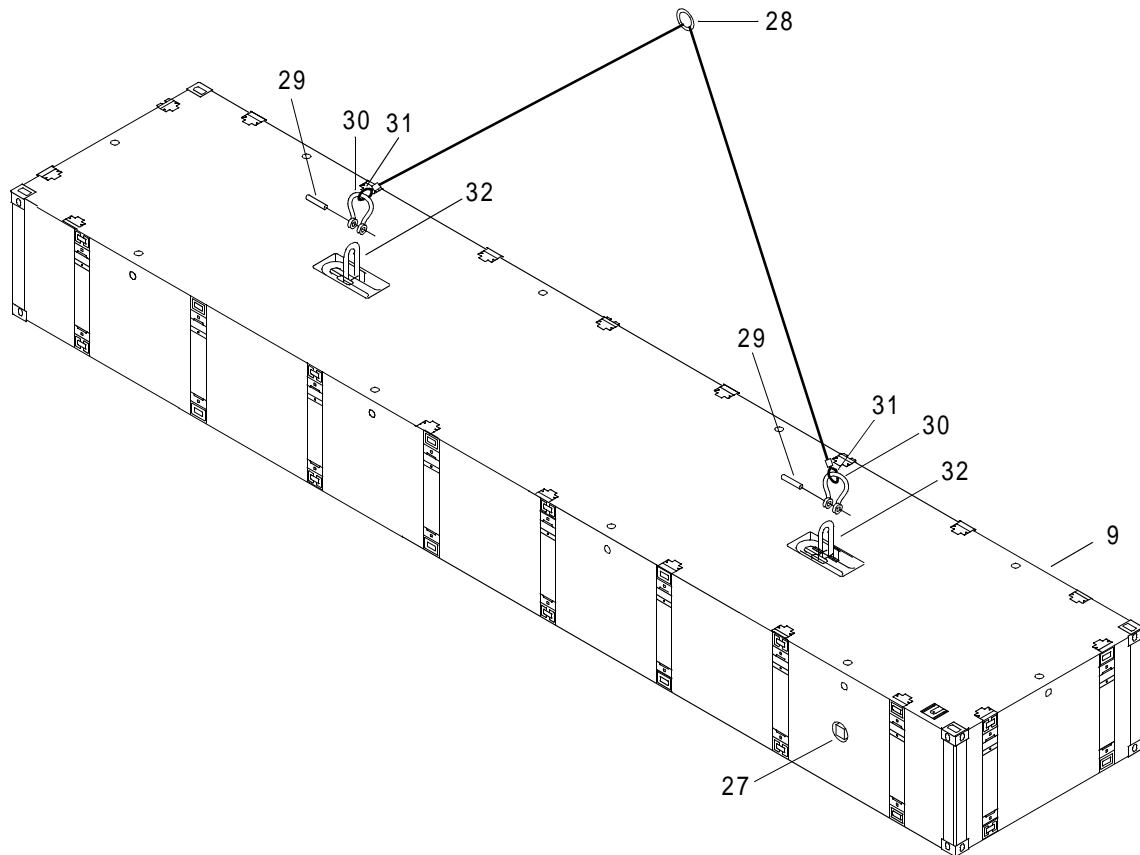
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**WARNING**

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**HEAVY PARTS**

12. Lift center module (10) with two leg sling (28).



- a. Remove shackle pins (29) from shackles (30).
- b. Insert shackle (30) and sling eye (31) through module lifting shackle (32).
- c. Install shackle pins (29) in shackles (30).

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**WARNING**

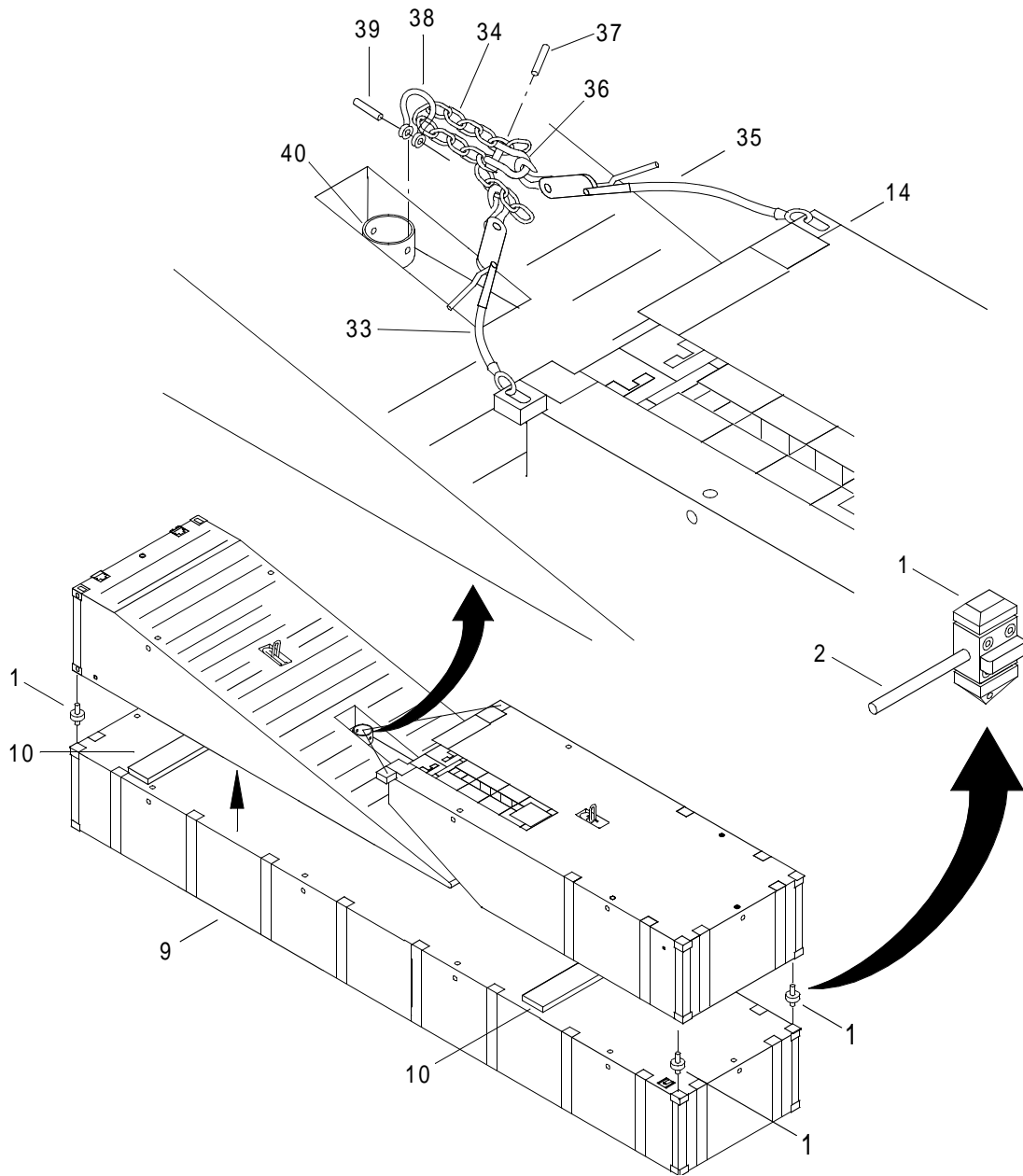
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**HEAVY PARTS**

- d. Using the crane, remove the center module (9).

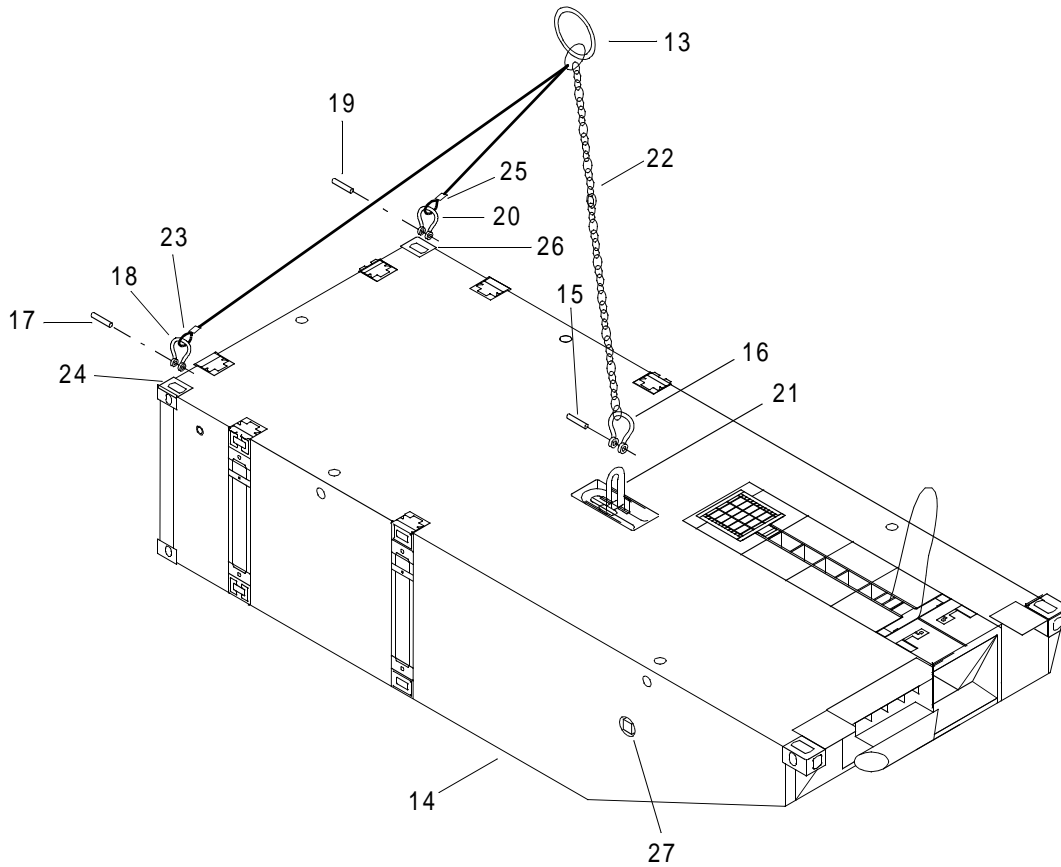
**DISASSEMBLE COMBINATION BEACH SEA END (CBSE) MODULE ISOPAK**

1. Unlock four ISOPAK vertical connectors (1), one at each corner, by moving the lever (2).



2. Remove tie down cable (33) from end rake (14) and chain (34).
3. Remove tie down cable (35) from end rake (14) and shackle (36).
4. Remove pin (37) from shackle (36) and remove shackle (36).
5. Remove chain (34) from shackle (38).
6. Remove pin (39) from shackle (38).
7. Remove shackle (38) from rhino horn fitting (40).

8. Install three leg sling (13) on end rake module (14).

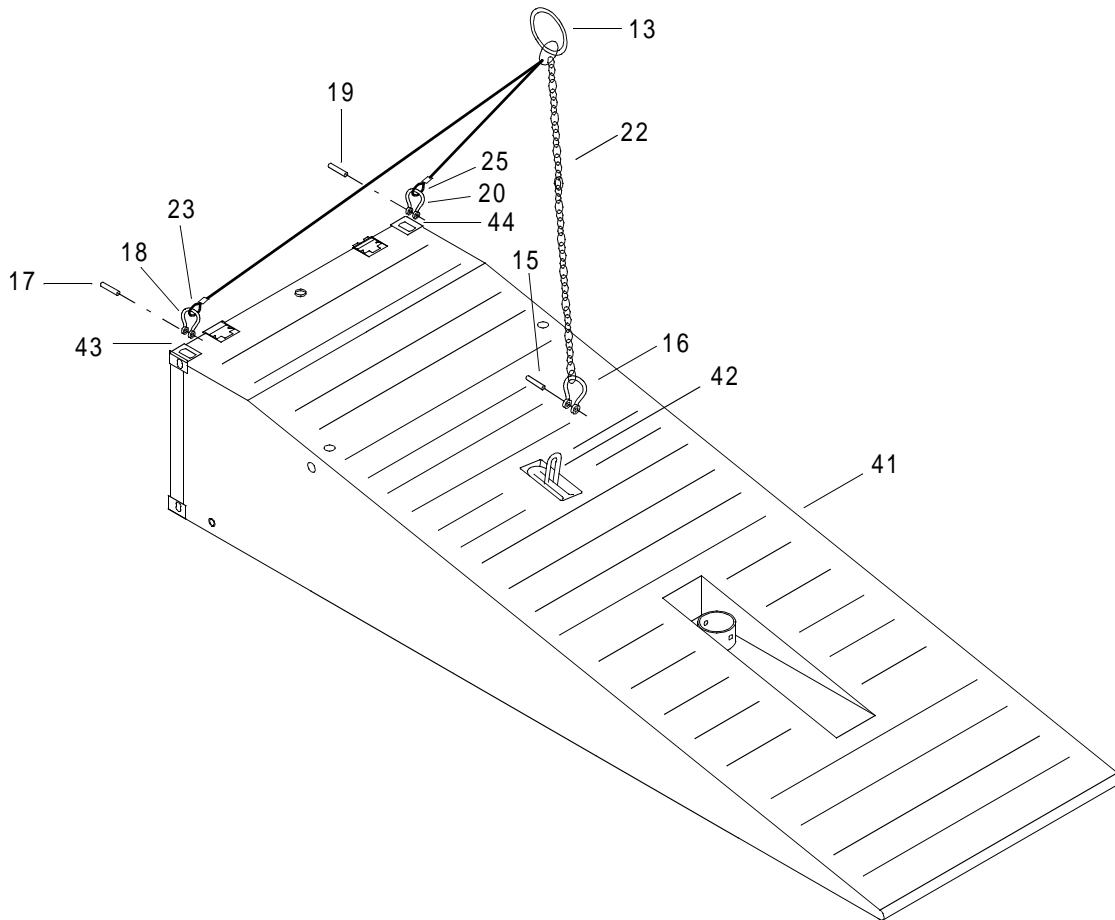


- a. Remove shackle pin (15) from shackle (16).
- b. Remove shackle pin (17) from shackle (18).
- c. Remove shackle pin (19) from shackle (20).
- d. Insert shackle (16) through module lifting shackle (21) and chain (22).
- e. Install shackle pins (15) in shackle (16).
- f. Insert shackle (18) through sling eye (23) and module ISO fitting (24).
- g. Install shackle pin (17) in shackle (18).
- h. Insert shackle (20) through sling eye (25) and module ISO fitting (26).
- i. Install shackle pin (19) in shackle (20).



**WARNING****HEAVY PARTS**

- j. Using crane, remove end rake module (14).
9. Install three leg sling (13) on CBSE module (41).



- a. Remove shackle pin (15) from shackle (16).
- b. Remove shackle pin (17) from shackle (18).
- c. Remove shackle pin (19) from shackle (20).
- d. Insert shackle (16) through module lifting shackle (42) and chain (22).
- e. Install shackle pins (15) in shackle (16).
- f. Insert shackle (18) through sling eye (23) and module ISO fitting (43).
- g. Install shackle pin (17) in shackle (18).

- h. Insert shackle (20) through sling eye (25) and module ISO fitting (44).
- i. Install shackle pin (19) in shackle (20).

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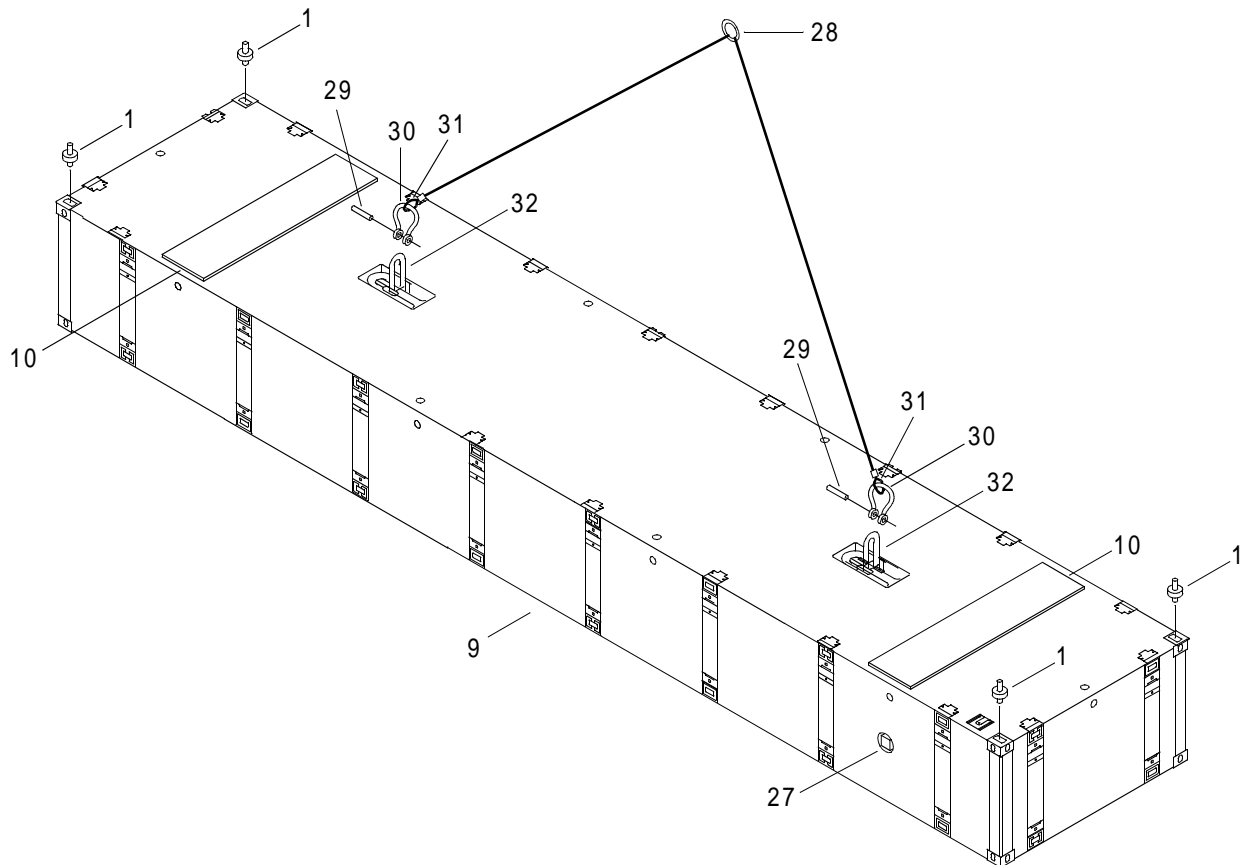
**WARNING**

---



**HEAVY PARTS**

- j. Using crane, remove CBSE module (41).
10. Remove connectors (1) and dunnage (10) from corners of center module (9).



**NOTE**

Drain plug location may vary.

11. Inspect modules to ensure drain plugs (27) are installed and tight in all modules.

---

**WARNING**

---

**HEAVY PARTS**

12. Lift center module (10) with two leg sling (28).
  - a. Remove shackle pins (29) from shackles (30).
  - b. Insert shackle (30) and sling eye (31) through module lifting shackle (32).
  - c. Install shackle pins (29) in shackles (30).

---

**WARNING**

---

**HEAVY PARTS**

13. Using crane, remove intermediate module (41).

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MALE AND FEMALE GUILLOTINE CONNECTORS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:**

**Tools**

- Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)
- Life Preserver, Vest (Item 31, WP 0106 00)
- Gloves, Men's and (Leather Palm) (Item 23, WP 0106 00)
- Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0106 00)
- Helmet, Safety (Item 27, WP 0106 00)
- Crowbar (Item 14, WP 0106 00)
- Hammer, Hand (10 lb Sledge) (Item 26, WP 0106 00)

**Personnel Required**

Seaman 88K

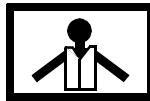
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**PREPARATION FOR USE - OPERATION OF MALE AND FEMALE GUILLOTINE CONNECTORS**

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**WARNING**

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VEST



HELMET PROTECTION



HEAVY PARTS



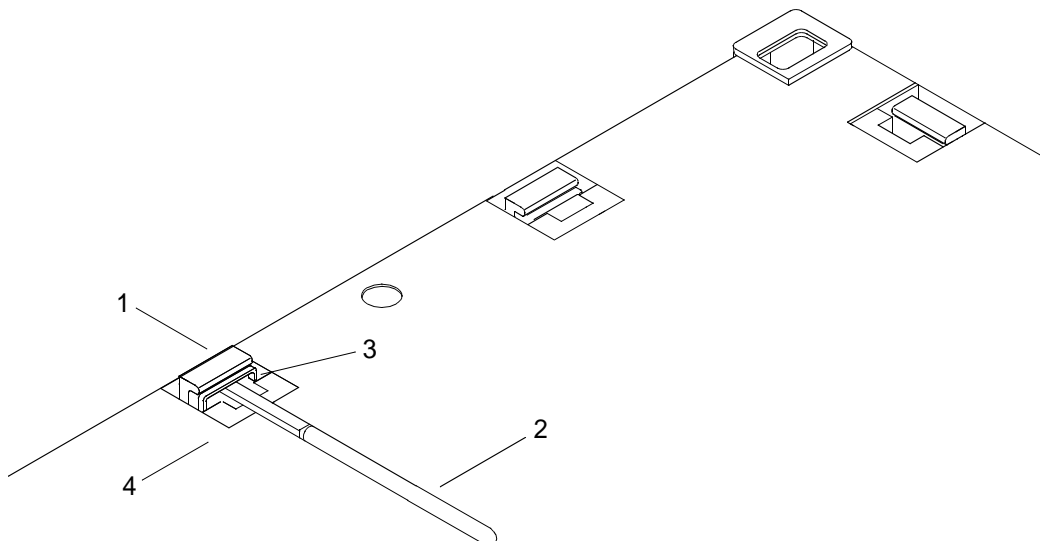
MOVING PARTS

**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.**

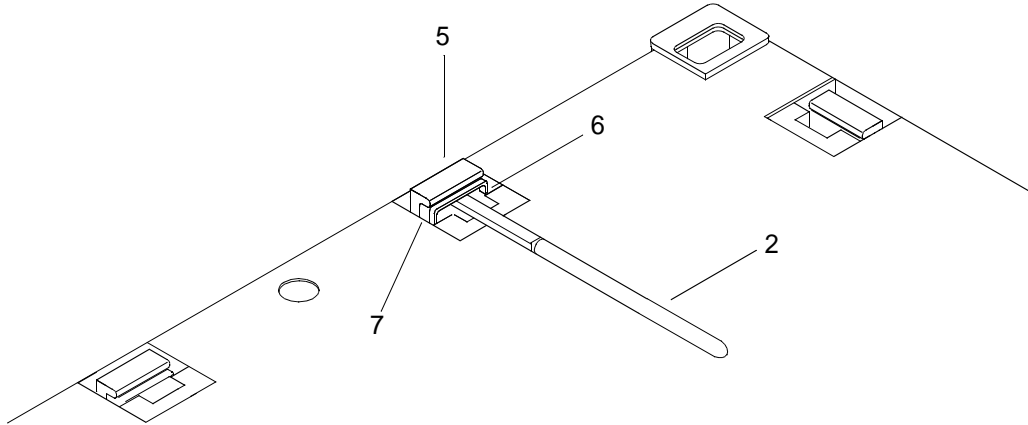
**NOTE**

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

1. Raise the female guillotine connectors (1).



- a. Insert crowbar (2) behind the spring bar (3) under the female guillotine connector (1).
  - b. Rotate the crowbar (2) downward to clear spring bar (3) from deck overhangs (4) and allow the female guillotine connector (1) to move upward.
  - c. Raise the female guillotine connector (1) approximately 6 in. until it stops.
2. Raise the male guillotine connectors (5).



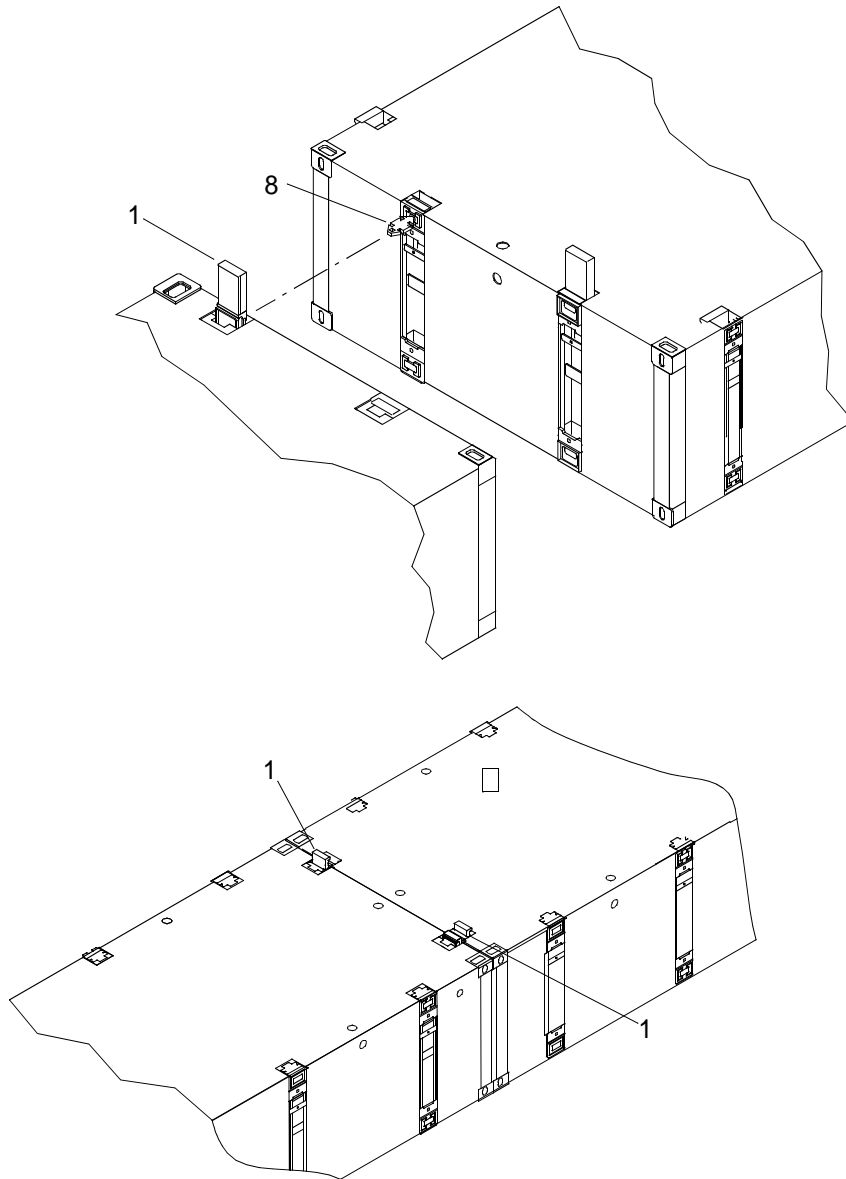
- a. Insert crowbar (2) behind the spring bar (6) under the male guillotine connector (5).
- b. Rotate the crowbar (2) downward to clear spring bar (6) from deck overhangs (7) and allow male guillotine connector (5) to move upward.

### NOTE

Personnel 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 the male guillotine connector (5) approximately 6 in. until it stops, allowing male connector pins to fully extend.
- d. Remove the crowbar (2).
- e. Drive the guillotine connector (5) back into stowed position using a sledgehammer to secure the male connector pins (8) in the fully extended position.

3. Position modules to be connected so male connector pins (8) and female connectors (1) are aligned.



4. Using a sledgehammer, drive each female guillotine connector (1) down.
5. If female guillotine connector does not close completely, lift female guillotine connector (1) two to three in.
6. Raise male guillotine connector (5) two to three in.
7. Using a sledgehammer, drive male guillotine connector (5) down.
8. Using a sledgehammer, drive female guillotine connector (1) down.
9. Raise female guillotine connector (1).
10. Using crowbars, pry sections apart.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
D-RING/CLOVERLEAF AND DECK CLEAT FITTINGS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

ISOPAK Disassembled (WP 0008 00)  
 Operation Of Male And Female Guillotine Connectors (WP 0009 00)

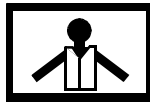
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**PREPARATION FOR USE - INSTALLATION OF D-RING/CLOVERLEAF FITTINGS  
AND DECK CLEAT FITTINGS**

---

**WARNING**

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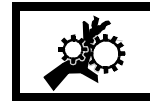
**VEST**



**HELMET PROTECTION**



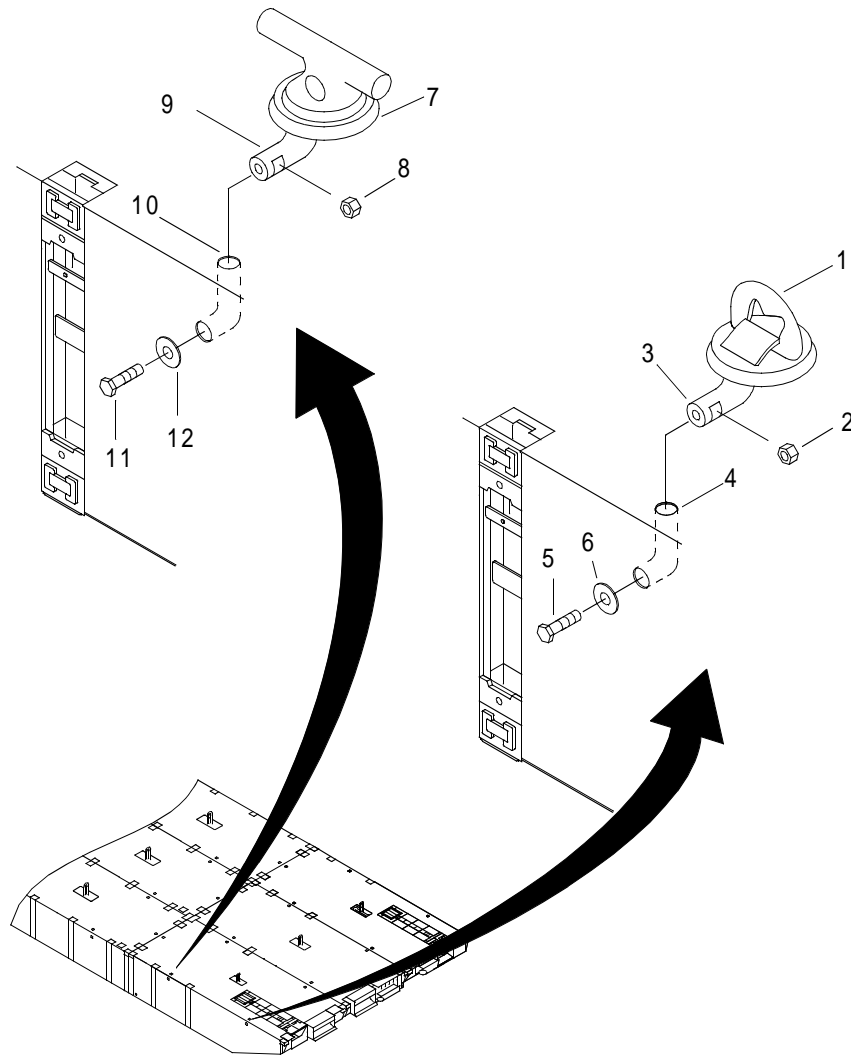
**HEAVY PARTS**



**MOVING PARTS**

**All personnel must wear a 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.**

1. Install D-Ring/Cloverleaf fittings (1) on modules as required.



### **WARNING**

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

**Use extreme caution while working outboard and lifting heavy objects as the possibility of falling overboard exists. Failure to observe these precautions could result in serious injury or death.**

- a. Place nut (2) in slot in the tailpiece (3) of the D-ring/Cloverleaf fitting (1).
- b. Insert D-ring/Cloverleaf fitting (1) into module turn tube (4).
- c. Insert bolt (5) through keeper plate (6) and thread it into nut (2) in tailpiece (3).
- d. Tighten bolt (5).

2. Install deck cleat (7) on modules as required.
  - a. Place nut (8) in slot in the tailpiece (9) of the deck cleat fitting (7).
  - b. Insert deck cleat fitting (7) into module turn tube (10).
  - c. Insert bolt (11) through keeper plate (12) and thread it into nut (8) in tailpiece (9).
  - d. Tighten bolt (11).

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MODULE STRINGS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26,3 WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Module ISOPAK Disassembled (WP 0008 00)  
 Operation Of Male And Female Guillotine Connectors (WP 0009 00)

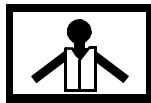
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**PREPARATION FOR USE - ASSEMBLY OF MODULE STRINGS**


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**WARNING**

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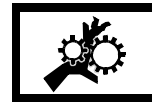
VEST



HELMET PROTECTION



HEAVY PARTS



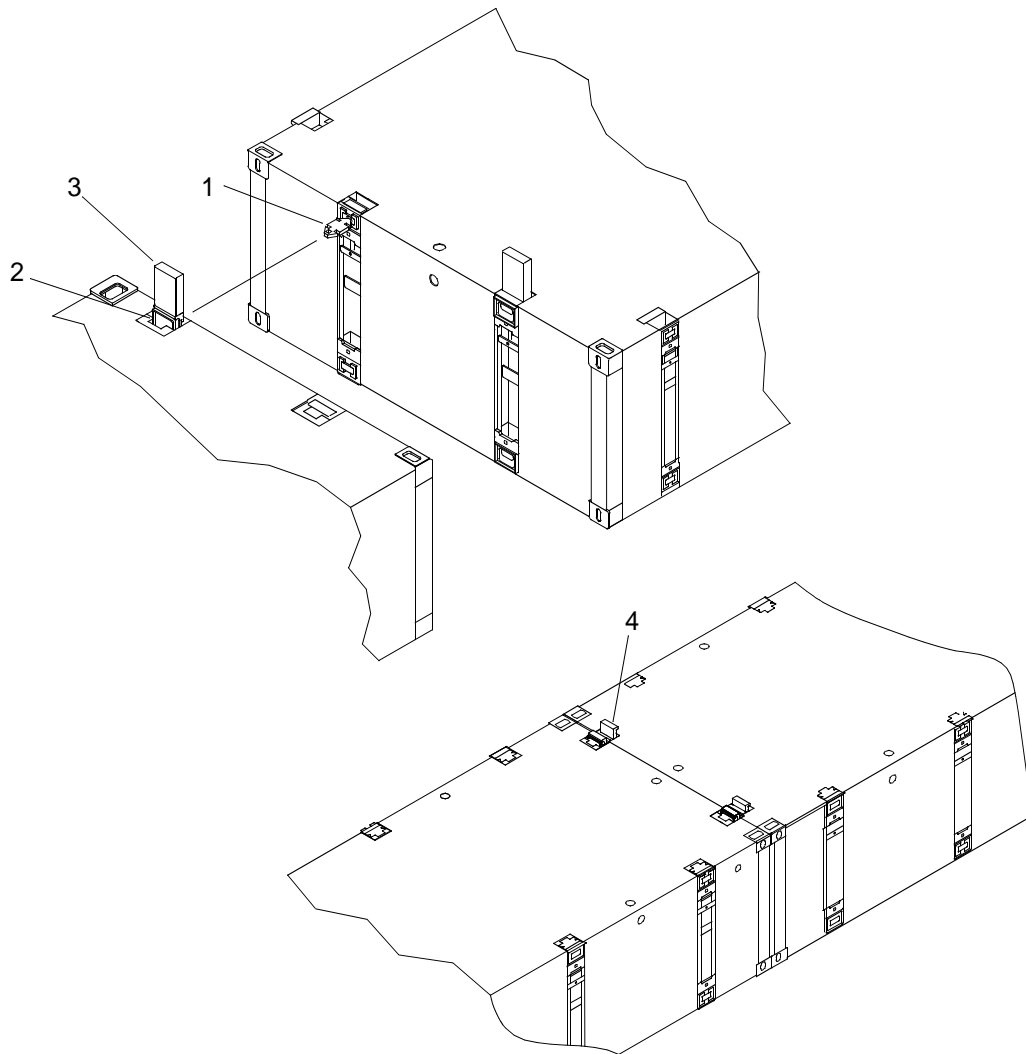
MOVING PARTS

**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**

Ensure that end rake modules and center module are completely aligned before locking the guillotine connectors.

1. Align male (1) and female (2) connectors on end rake module with connectors on center module.



2. As the extended and locked male connector pins (1) enter the female lock housing (2), use a sledgehammer to drive the female guillotine bar (3) downward into engagement with the extended male connector pin (1).
3. Lift male guillotine bar (4) 2 to 3 in. and repeat step two if female guillotine (3) does not close completely.
4. Attach end rake module to opposite end of center module.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
INTERMEDIATE SECTION  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)  
 30 Ton 1 ½ in. Anchor Bolt Shackle (Item 3, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Module ISOPAK Disassembled. (WP 0008 00)  
 Operation Of Male And Female Guillotine Connectors. (WP 0009 00)  
 D-Rings/Cloverleaf Fittings And Deck Cleat Fittings Installed. (WP 0010 00)  
 Module String Assembled. (WP 0011 00)

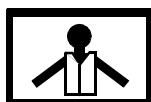
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**PREPARATION FOR USE - ASSEMBLY OF INTERMEDIATE SECTION**


---

**WARNING**

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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.**

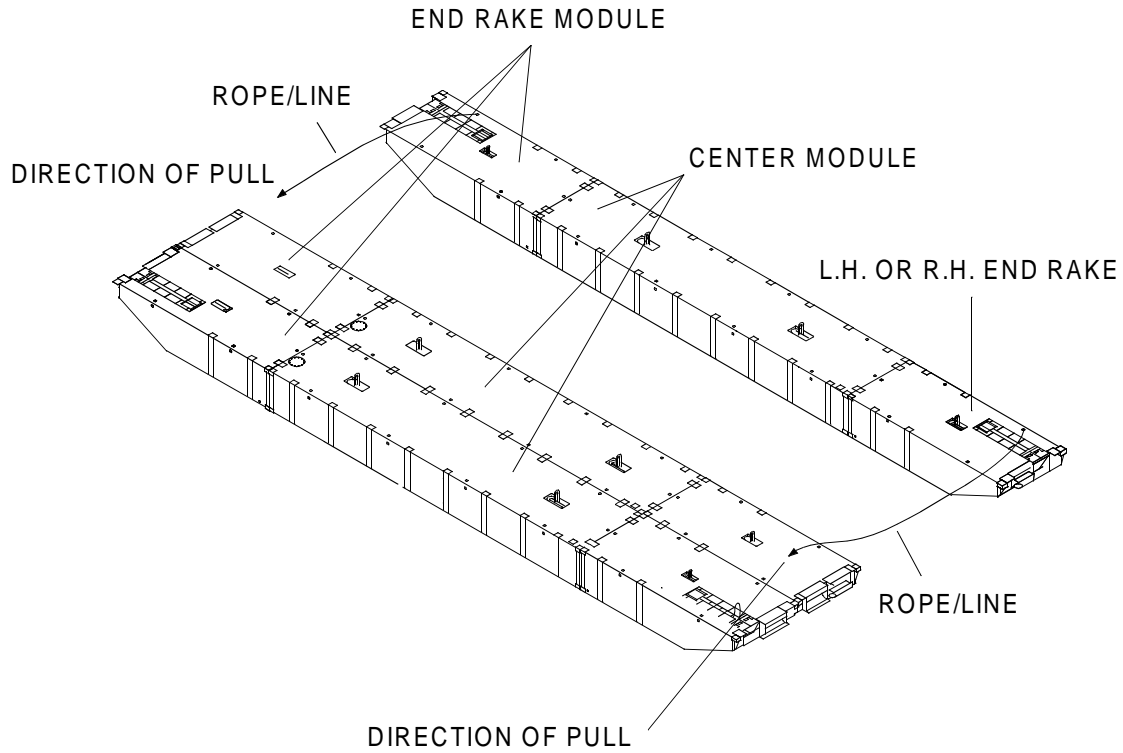
**Place the hands on top or on the outside of ropes/lines so that in an emergency the lines can be released quickly to preclude being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.**

**NOTE**

Utilize fenders when bringing strings along side.

1. Pull strings together using rope/lines.

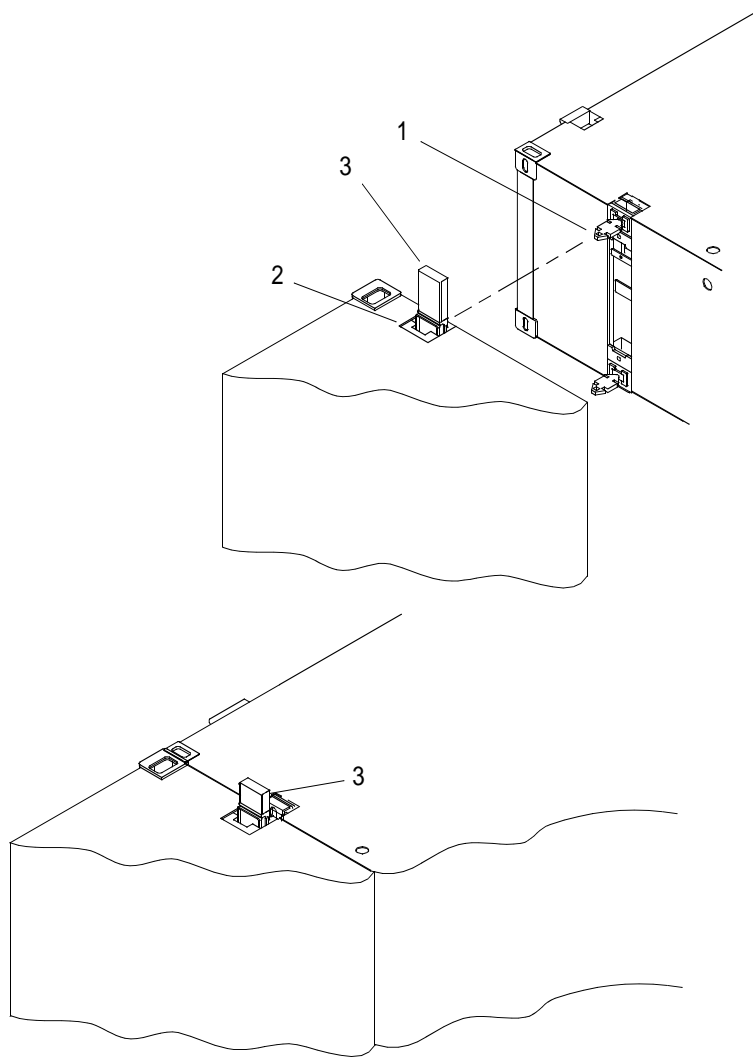
- Align male and female guillotine connectors so that the tapered surfaces of each connector is in general alignment.

**NOTE**

Ensure the strings are completely aligned before locking the connectors.

- As the locked male connector pin (1) enters the female lock housing (2) use a sledgehammer to drive the female guillotine bar (3) downward into engagement with the extended connector pins (1).





4. If female guillotine does not close completely, lift male guillotine bar two to three inches and repeat step 3.

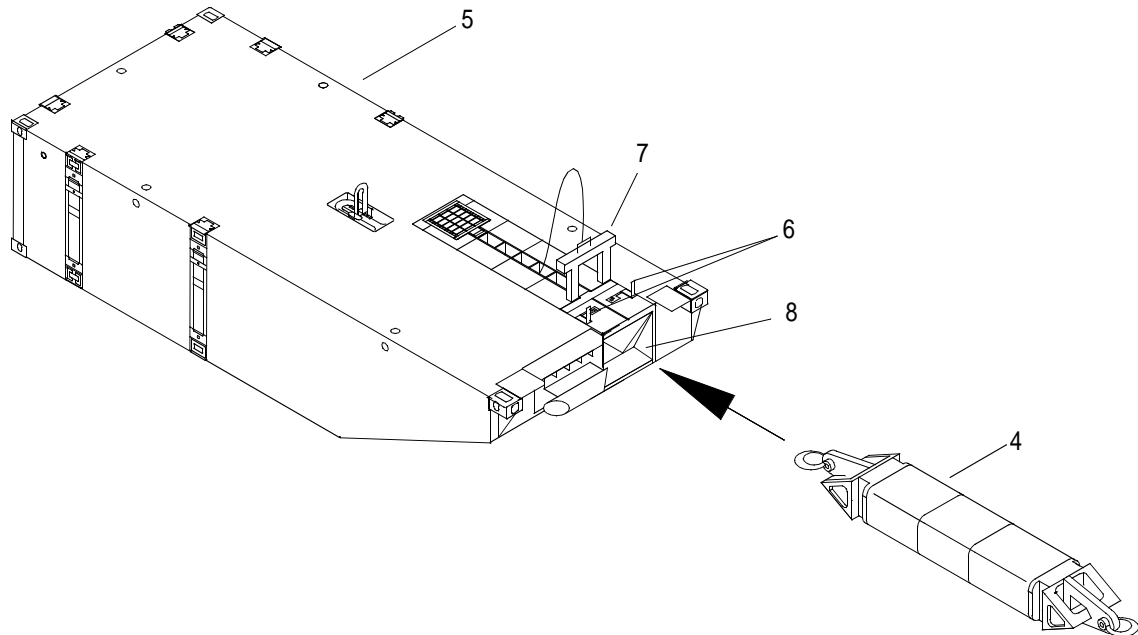
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**WARNING**

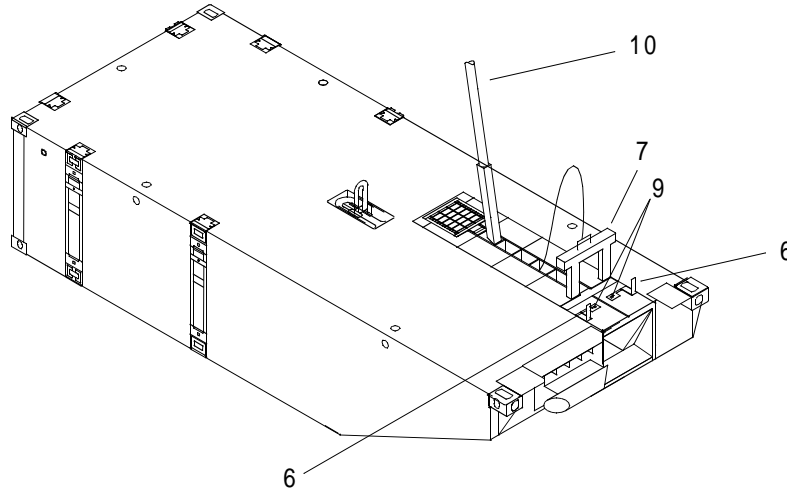
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The flexor connector weighs approximately 1400 lb. Failure to use caution during handling could cause severe injury or death to personnel.

5. Install flexor connectors (4) in left end rakes (5).

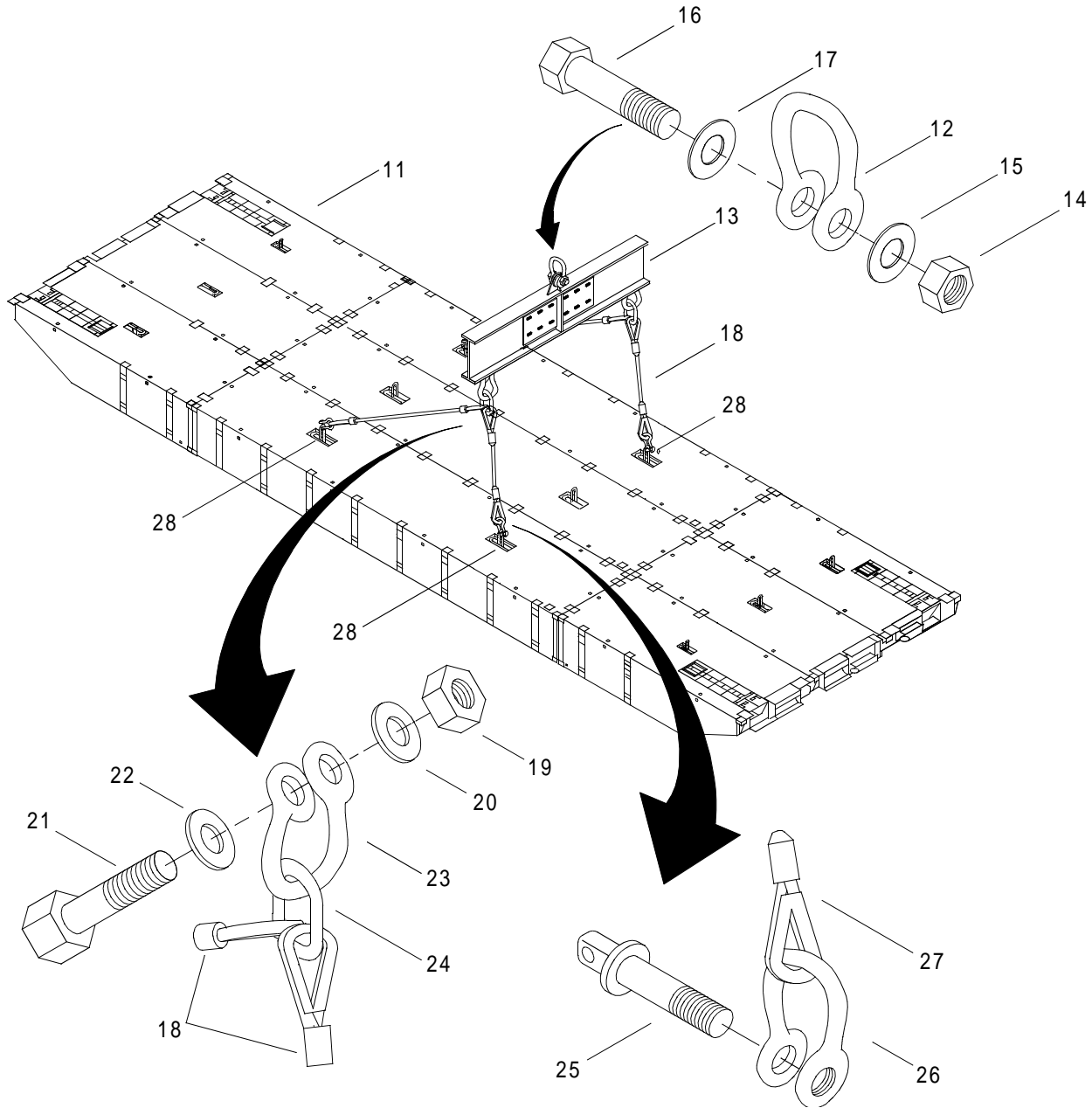


- a. Rotate and pull the chute bolts (6) to unlocked position.
- b. Lift guillotine plate (7) from slots.
- c. Lift flexor connector (4) using a forklift or crane and insert flexor connector (4) into left end rake flexor pocket (8).
- d. Push flexor connector (4) into flexor pocket (8) until flexor connector (4) is fully stowed.
- e. Insert guillotine plate (7) into flexor connector pocket (9). Use crowbar (10) to position flexor connector (4).



- f. Using sledge hammer, drive guillotine (7) into flexor slot (9).
- g. Push chute bolts (6) to locked position and rotate to closed position.

6. Lift intermediate section (11).



- a. Install 110 ton shackle (12) on spreader beam (13).
  - {1} Remove nut (14) and washer (15) from shackle bolt (16).
  - {2} Remove bolt (16) and washer (17) from shackle (12).
  - {3} Align hole in spreader beam (13) with holes in shackle (12).
  - {4} Install shackle bolt (16) and washer (17) through shackle (12) and spreader beam (13).
  - {5} Install washer (15) and nut (14) on shackle bolt (16).
  - {6} Tighten nut (14).

---

**NOTE**

This step is typical for both two leg bridle slings.

- b. Install two leg bridle sling (18) on spreader beam (13).
  - {1} Remove nut (19) and washer (20) from shackle bolt (21).
  - {2} Remove bolt (21) and washer (22) from 55 ton shackle (23).
  - {3} Insert two leg bridle sling master link (24) on shackle (23).
  - {4} Align holes in shackle (23) with hole on bottom of spreader beam (13).
  - {5} Install shackle bolt (21) and washer (22) through shackle (23) and spreader beam (13).
  - {6} Install washer (20) and nut (19) on bolt (21).
  - {7} Tighten nut (19).

**NOTE**

This step is typical for all four attachment points.

- c. Attach spreader beam (13) to intermediate module (11).
  - {1} Remove shackle pin (25) from 35 ton shackle (26).
  - {2} Install two leg bridle sling thimble (27) on shackle (26).
  - {3} Insert shackle (26) through intermediate section lifting lug (28).
  - {4} Install shackle pin (25) in shackle (26).

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**WARNING**

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**HEAVY PARTS**

- d. Using crane, lift intermediate section (11) and place in water.

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
COMBINATION BEACH/SEA END SECTION  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Module ISOPAK Disassembled. (WP 0008 00)  
 Operation of Male And Female Guillotine Connectors. (WP 0009 00)  
 D-Ring/Cloverleaf Fittings And Deck Cleat Fittings Installed. (WP 0010 00)  
 Module String Assembled. (WP 0011 00)

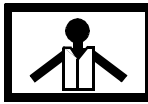
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**PREPARATION FOR USE - ASSEMBLY COMBINATION BEACH/SEA END SECTION**


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**WARNING**

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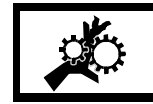
VEST



HELMET PROTECTION



HEAVY PARTS

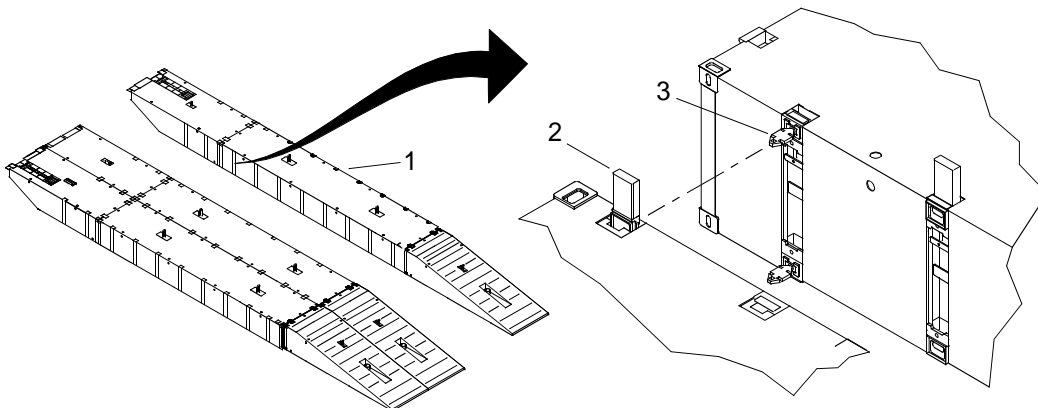


MOVING PARTS

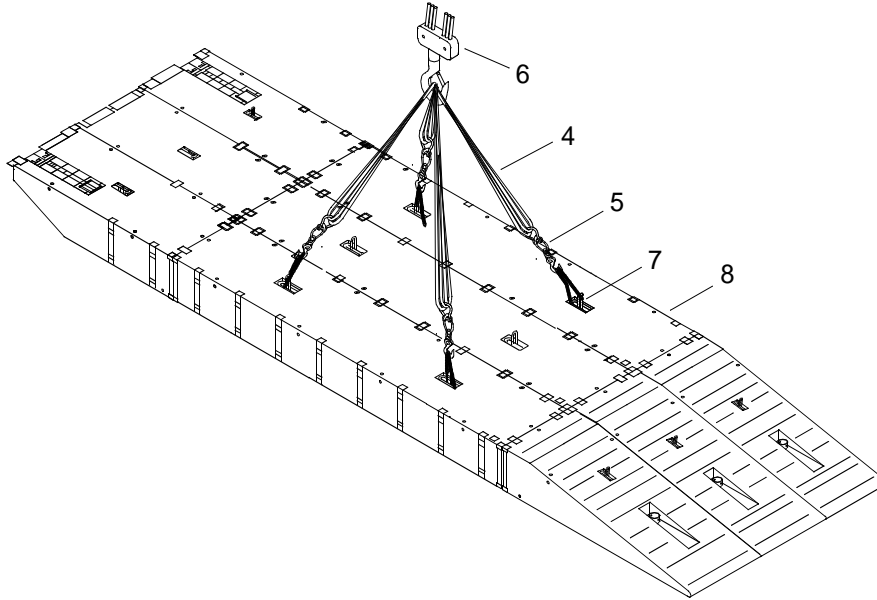
**All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

**ASSEMBLE COMBINATION BEACH/SEA END SECTION DECK OF SEALIFT VESSEL**

1. Position module string (1) so that female connectors (2) align with male connectors (3) on the other module strings (1).



2. Operate the male and female connectors. (WP 0009 00)
3. Attach four 53,000 lb slings (4) and 36,000 lb adjustable chain slings (5) from crane (6) to pad eye shackles (7) on combination beach/sea end section (8).




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**WARNING**

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**HEAVY PARTS**

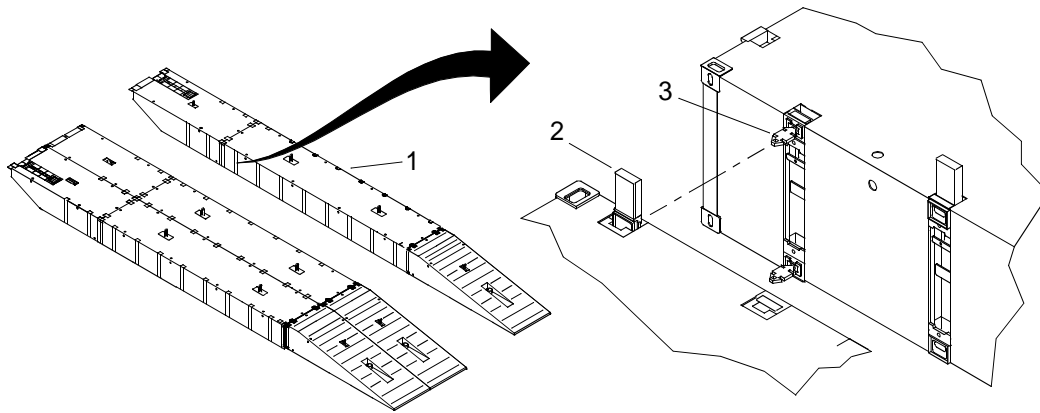
4. Using slings (4 and 5) and crane (6), lift combination beach/sea end section (8).
5. Remove 36,000 lb adjustable chain slings (5) from pad eye shackles (7) on intermediate section (8).
6. Remove 53,000 lb slings (4) from 36,000 lb adjustable chain slings (5) and crane (6).

**ASSEMBLY OF COMBINATION BEACH/SEA END SECTION IN WATER**

**NOTE**

This procedure is typical of attaching module strings in water.

1. Attach tag lines to turn tubes (9) and ISO corner fittings (10).

**WARNING**

Place the hands on top or on the outside of ropes/lines 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 (1) so that female connectors (2) align with male connectors (3).
3. Operate male and female guillotine connectors. (WP 0009 00)
4. Remove tag lines.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
TRIDENT PIERHEAD/EXTENSION  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Module ISOPAK Disassembled. (WP 0008 00)  
 Operation Of Male And Female Guillotine Connectors. (WP 0009 00)  
 D-Rings/Cloverleaf Fittings And Deck Cleat Fitting Installed. (WP 0010 00)  
 Module String Assembled. (WP 0011 00)  
 Intermediate Section Assembled. (WP 0012 00)

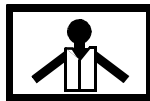
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**PREPARATION FOR USE - ASSEMBLY OF TRIDENT PIERHEAD/EXTENSION****ASSEMBLE TRIDENT PIERHEAD**


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**WARNING**

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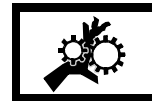
VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

**All personnel must wear a 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 to personnel.**

1. Assemble ten intermediate sections.

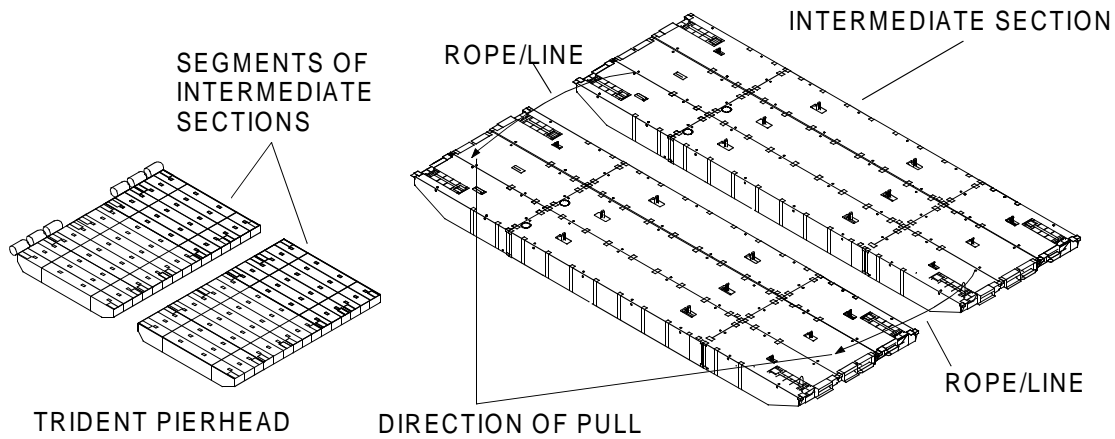
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**WARNING**

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**Place the hands on top or on the outside of ropes/lines 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. Assemble two, five intermediate sections together side by side, using rope/lines, flush turn tubes, deck cleats, and warping tug so that the tapered surfaces of male and female connectors mate together in general alignment.

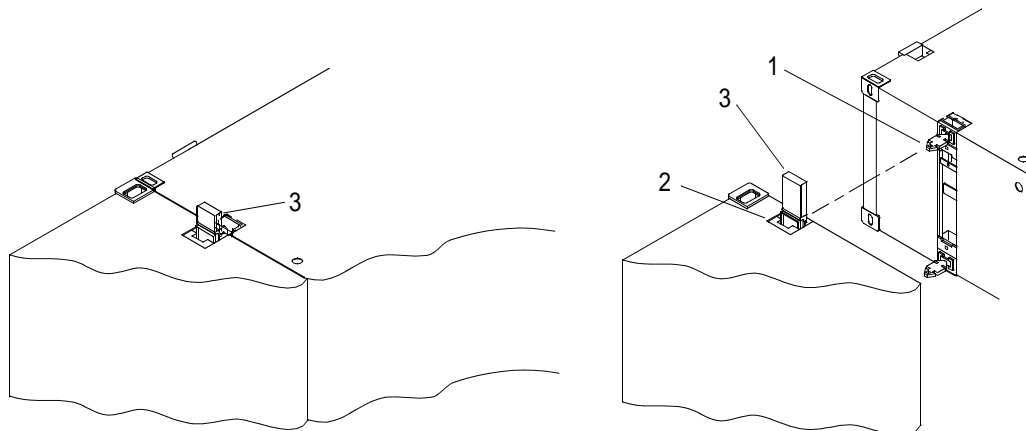


### NOTE

Ensure that intermediate sections or strings are completely aligned before locking the connectors.

At engagement, the female guillotine lock bar snaps under the overhanging projections of the female lock housing preventing unintentional release of the lock.

- a. As extended and locked male connector pin (1) enters female connector (2), use a sledgehammer to drive female guillotine bar (3) down.



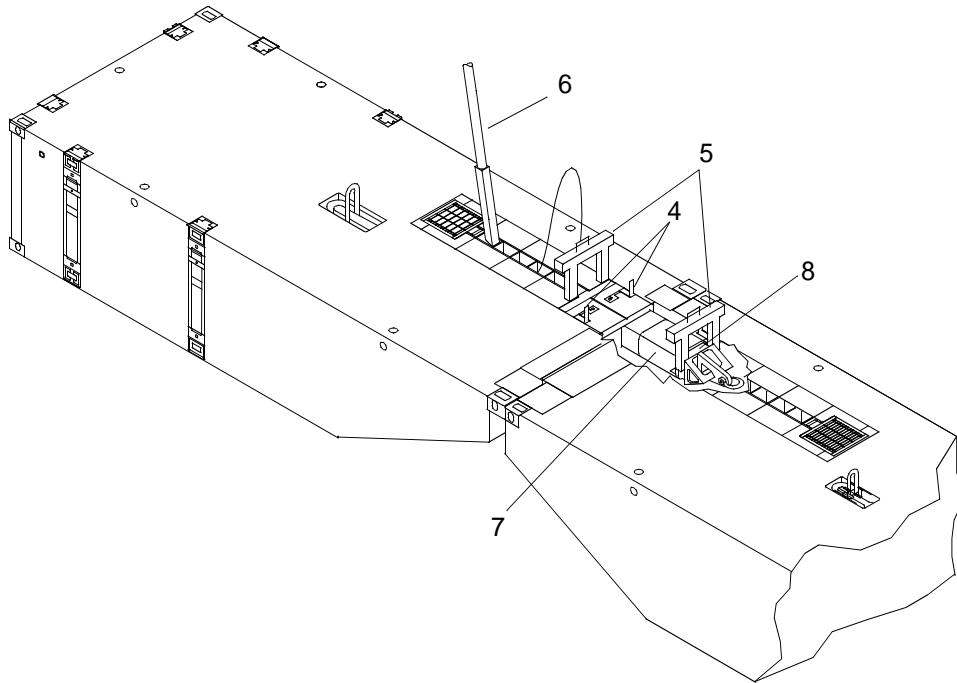
4. If female guillotine does not close completely, lift male guillotine bar two to three inches and repeat step c.

### WARNING

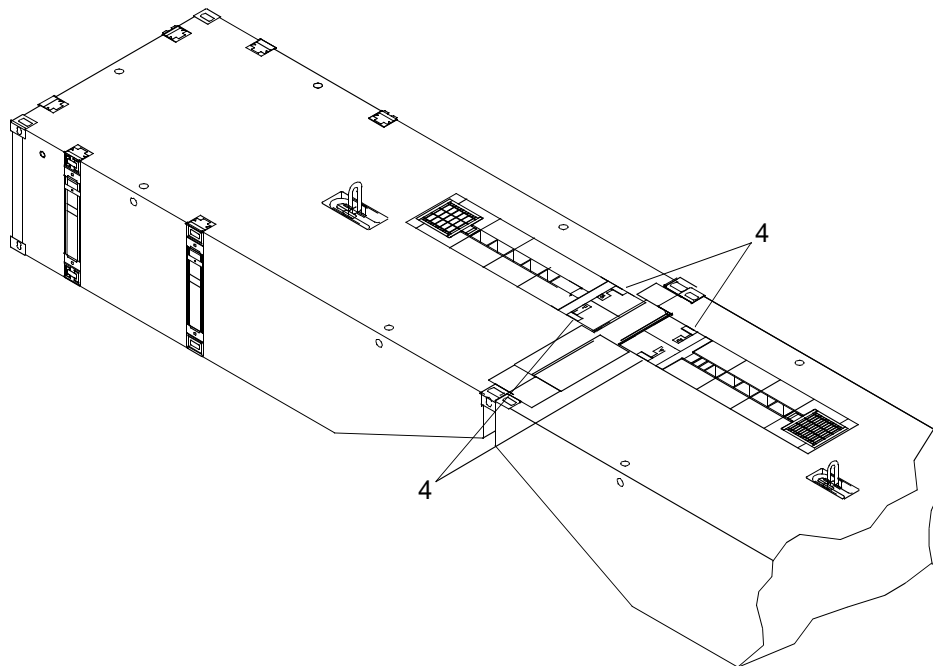
**Place the hands on top or on the outside of ropes/lines so that in an emergency the lines can be released quickly to preclude being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.**

5. 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.

6. Rotate and pull chute bolts (4) to unlocked position.



7. Lift guillotine plates (5) from flexor connector slots.
8. Using a crowbar (6) push each flexor connector (7) from the left rake end into corresponding pocket of right end rake until guillotine plates (5) are aligned with flexor connector slots (8).
9. Using a sledgehammer, drive guillotine plates (5) down into flexor connector slots (8).
10. Push chute bolts (4) to locked position and rotate to closed position.



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**ASSEMBLE TRIDENT PIERHEAD EXTENSION**

1. Assemble 10 intermediate module strings.

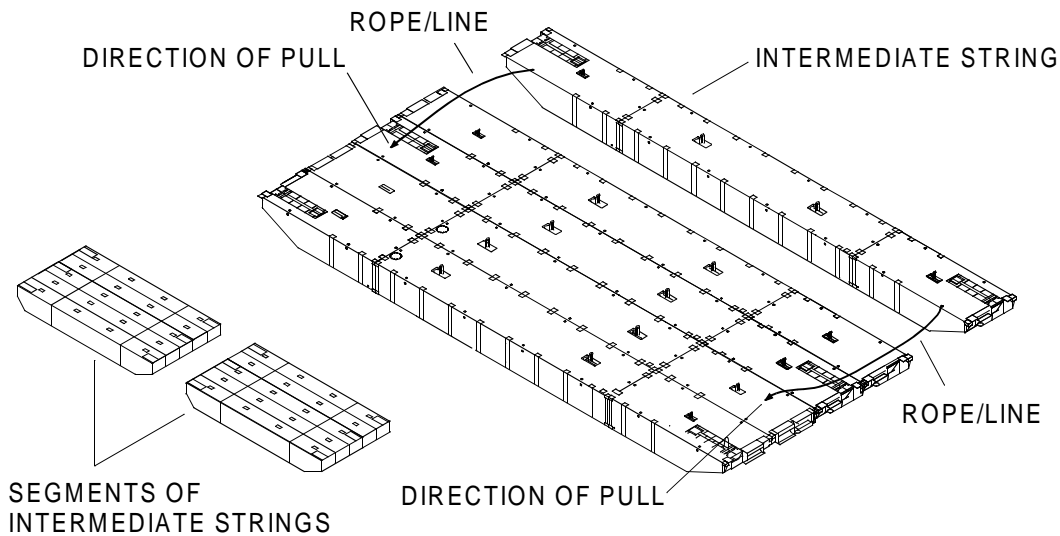
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**WARNING**


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**Place the hands on top or on the outside of ropes/lines 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. Assemble two, five segments of intermediate strings together side by side, using rope/lines, flush turn tubes, deck cleats, and warping tug so that the tapered surfaces of male and female connectors mate together in general alignment.



3. Repeat steps 1c through 1j.

**ASSEMBLE TRIDENT PIERHEAD TO TRIDENT PIERHEAD EXTENSION**

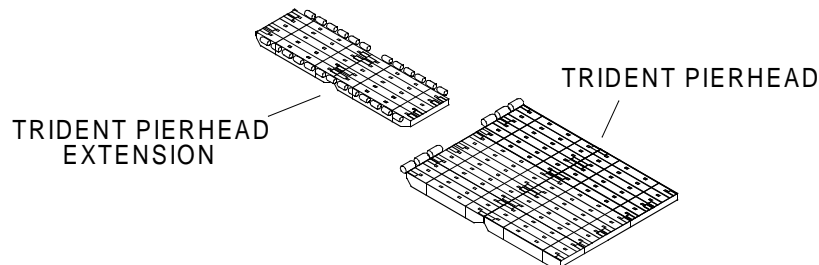

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**WARNING**


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**Place the hands on top or on the outside of ropes/lines 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.**

1. Maneuver and assemble trident pierhead and trident pierhead extension 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.



- 
2. Repeat steps 1f through 1j.
  3. Install mooring bitts. (WP 0017 00)
  4. Install fenders. (WP 0019 00)
  5. Install safety equipment. (WP 0020 00)
  6. Install generator container. (WP 0021 00)
  7. Install personnel shelter. (WP 0022 00)
  8. Install light towers. (WP 0023 00)
  9. Install dunnage mats. (WP 0024 00)

**END OF WORK PACKAGE**



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

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
Life Preserver, Vest (Item 31, WP 0104 00)  
Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
Helmet, Safety (Item 27, WP 0104 00)  
Crowbar (Item 14, WP 0104 00)  
Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Module ISOPAK Disassembled. (WP 0008 00)  
Operation Of Male And Female Guillotine Connectors. (WP 0009 00)  
D-Ring/Cloverleaf Fittings And Deck Cleat Fittings Installed. (WP 0010 00)  
Module String Assembled. (WP 0011 00)  
Intermediate Section Assembled. (WP 0012 00)  
Combination Beach/Sea End Section Assembled. (WP 0013 00)

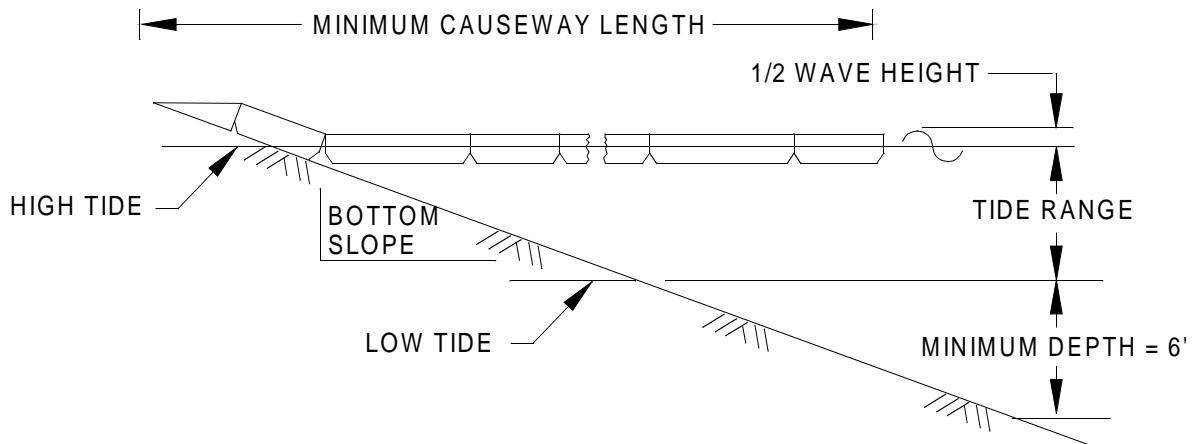
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**PREPARATION FOR USE - ASSEMBLY OF CAUSEWAY****DETERMINING CAUSEWAY LENGTH****NOTE**

Causeway sections are numbered from the beach seaward.

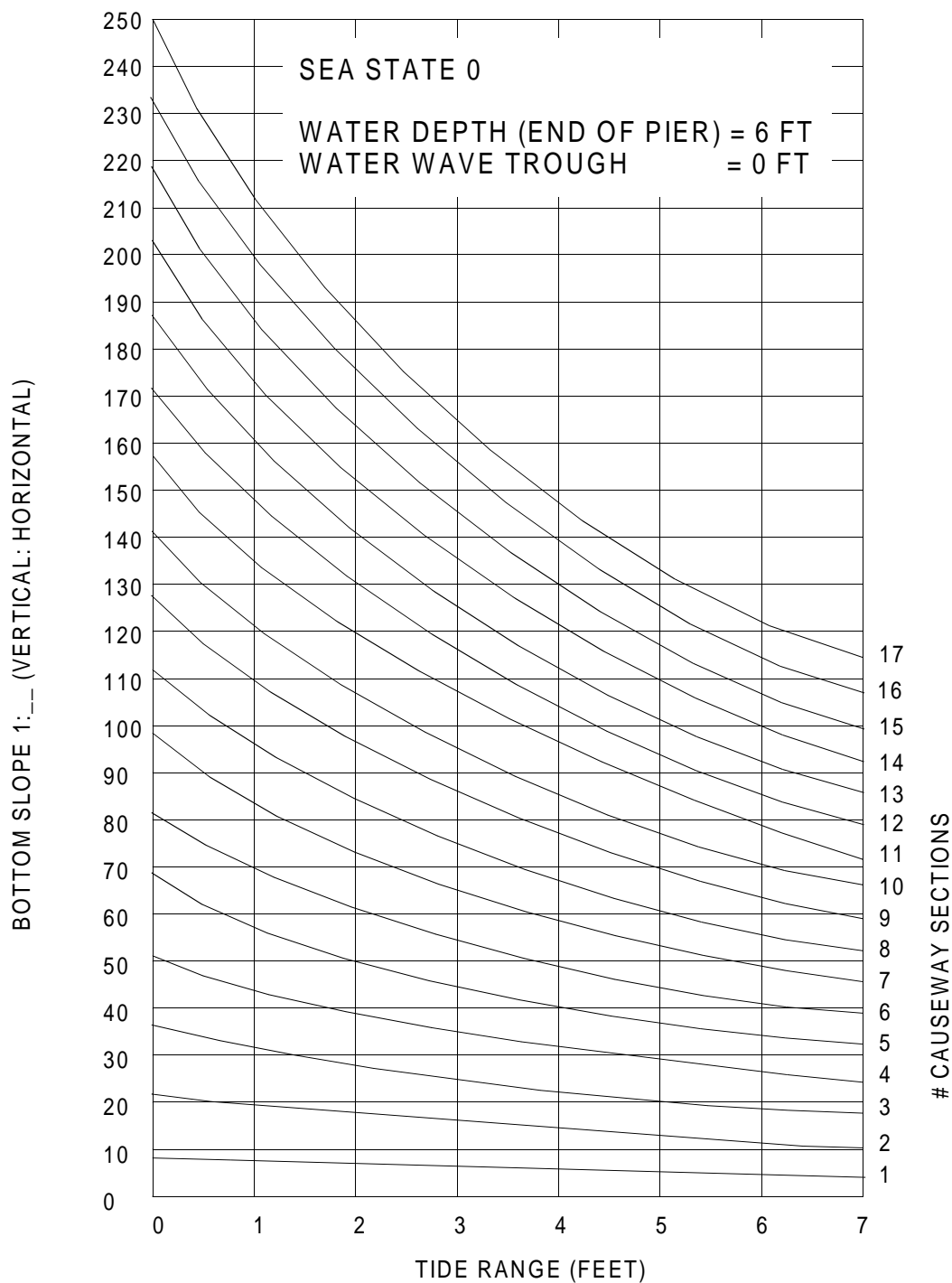
1. The requirement for a minimum depth of water (6 ft) plus the tide range at the offshore end of the causeway, the Sea State and the bottom slope dictate the minimum causeway length. The causeway length depends on how far offshore the causeway must extend to give the required water depth.
2. One-half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

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

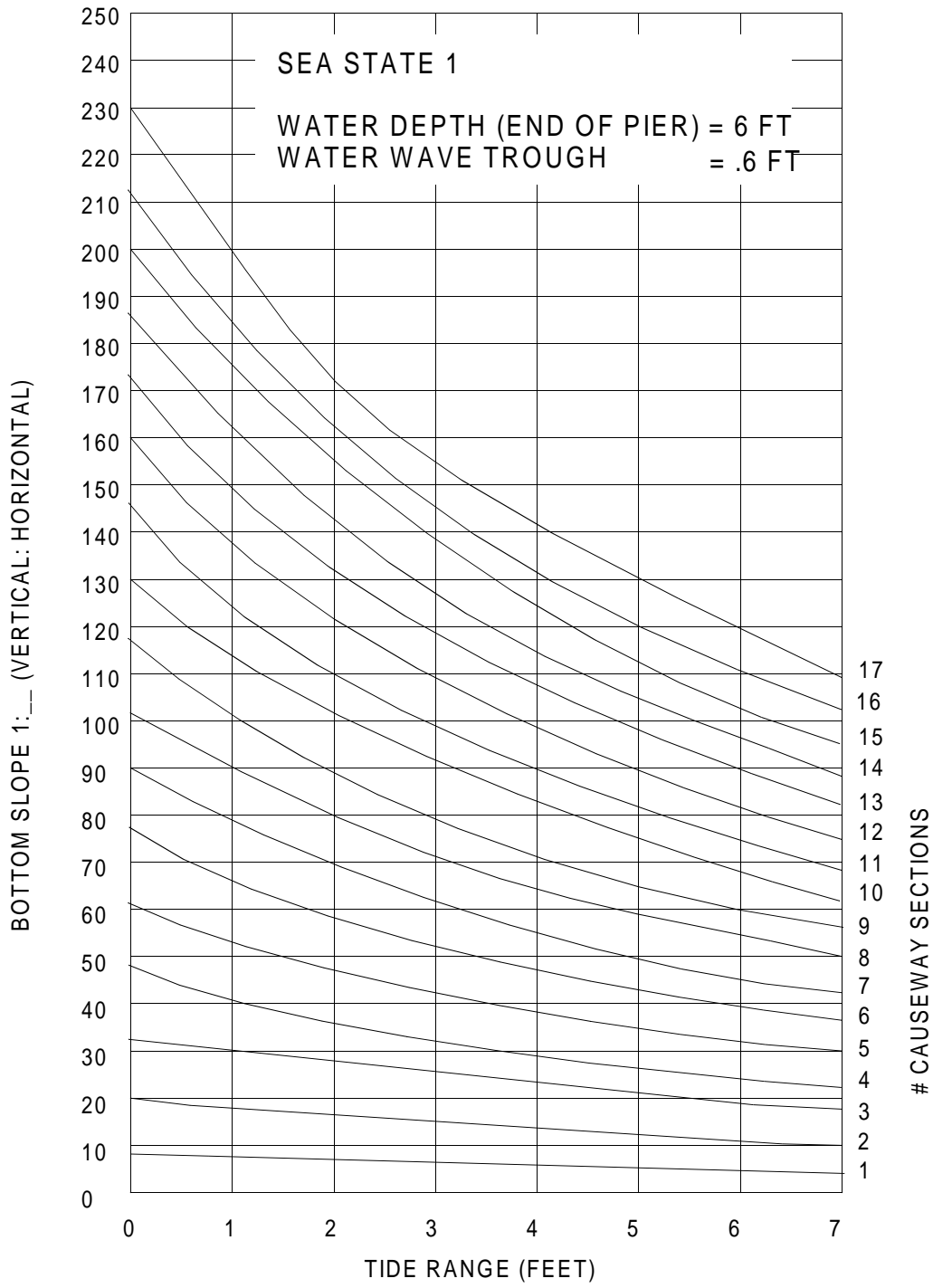


EFFECT OF TIDE RANGE, BOTTOM SLOPE AND WAVE HEIGHT ON CAUSEWAY LENGTH

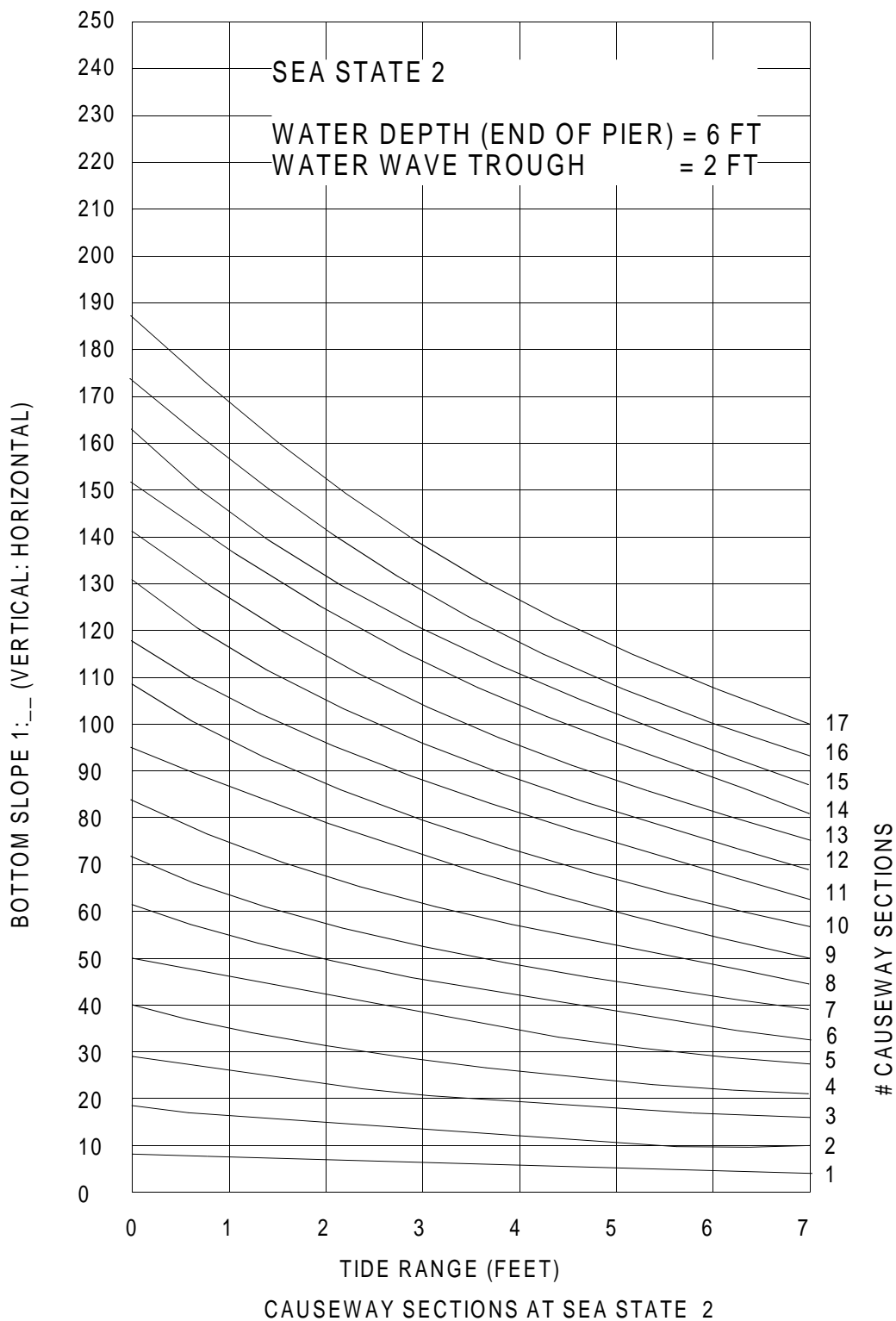


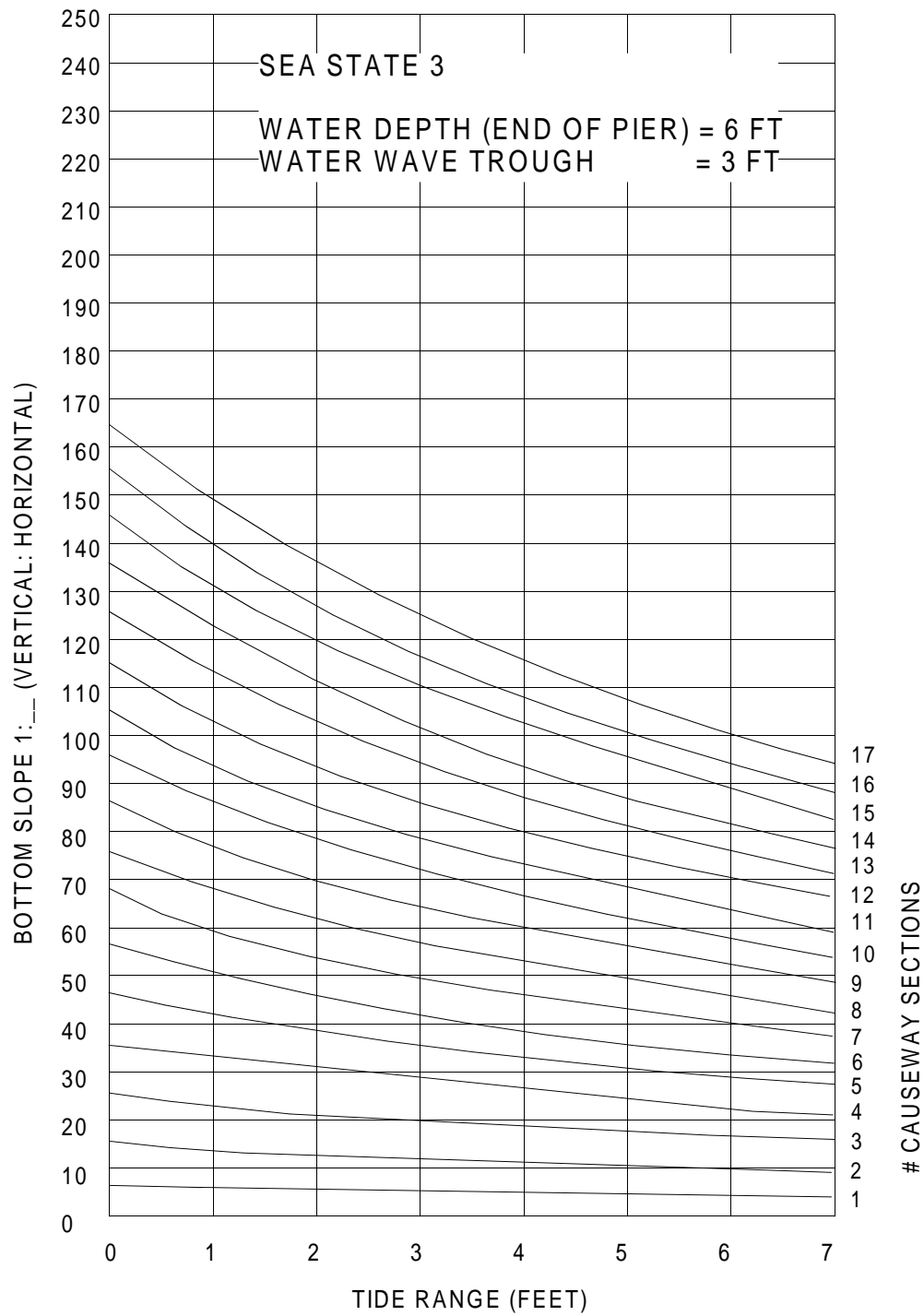


CAUSEWAY SECTIONS AT SEA STATE 0



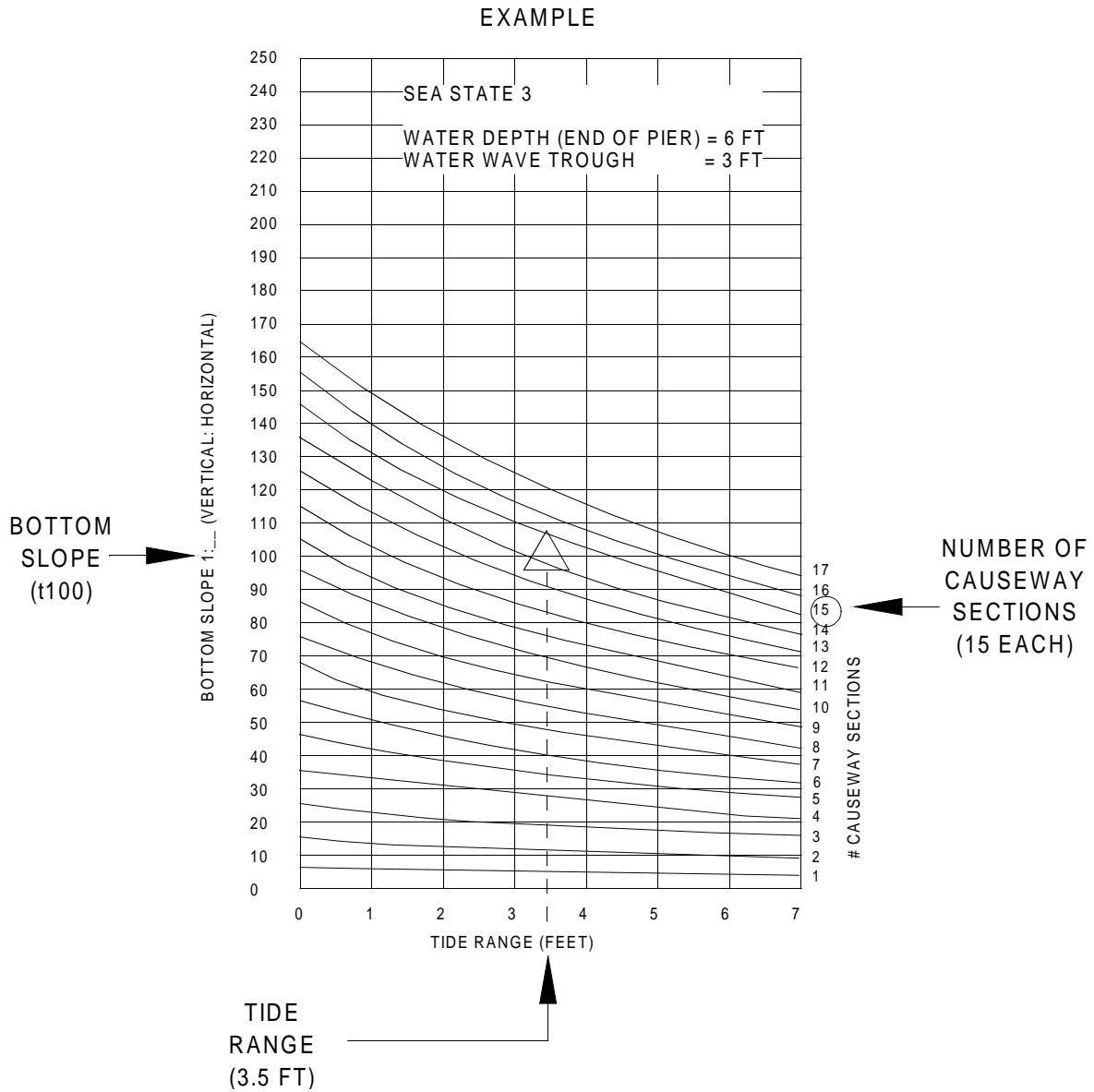
CAUSEWAY SECTIONS AT SEA STATE 1





CAUSEWAY SECTIONS AT SEA STATE 3

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



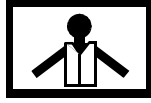
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**ASSEMBLING CAUSEWAY**


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**WARNING**


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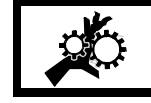
VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

All personnel must wear personal a 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 to personnel.

Place the hands on top or on the outside of ropes/lines so that in an emergency the lines can be released quickly to preclude being pulled in the equipment. Failure to observe these precautions could result in serious injury or death.

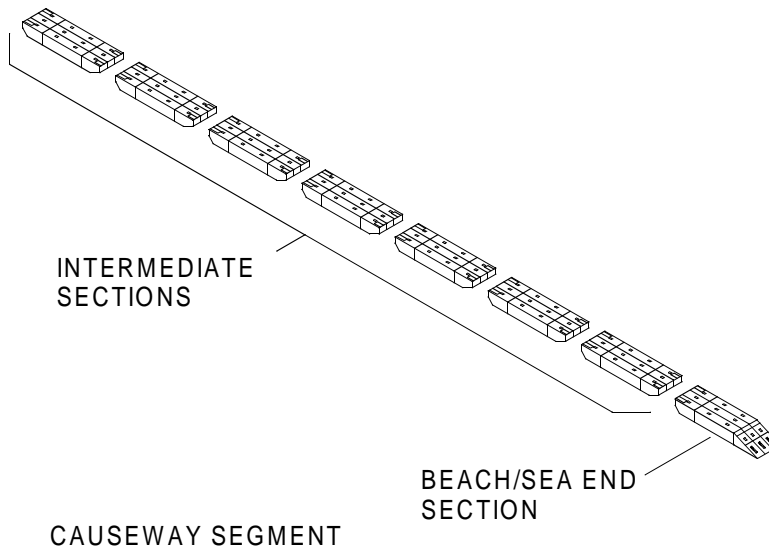
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**CAUTION**

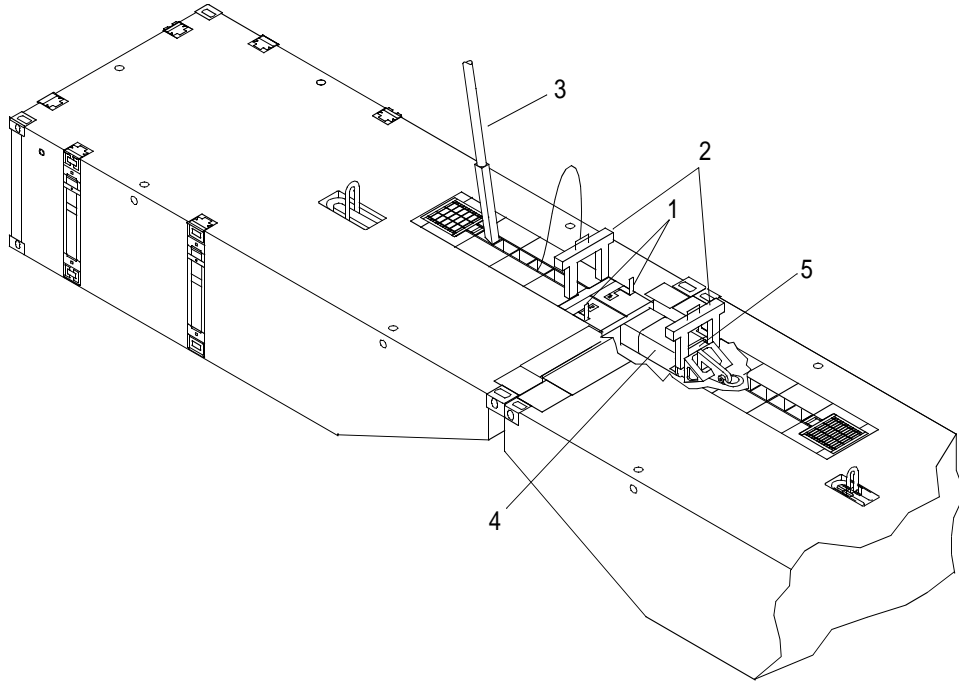

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Surf conditions and swells are independent of open water Sea State conditions. If wave height exceed five foot swells, operations should be curtailed. If the surf conditions sustain five foot swells for an extended period of time, the FC should be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

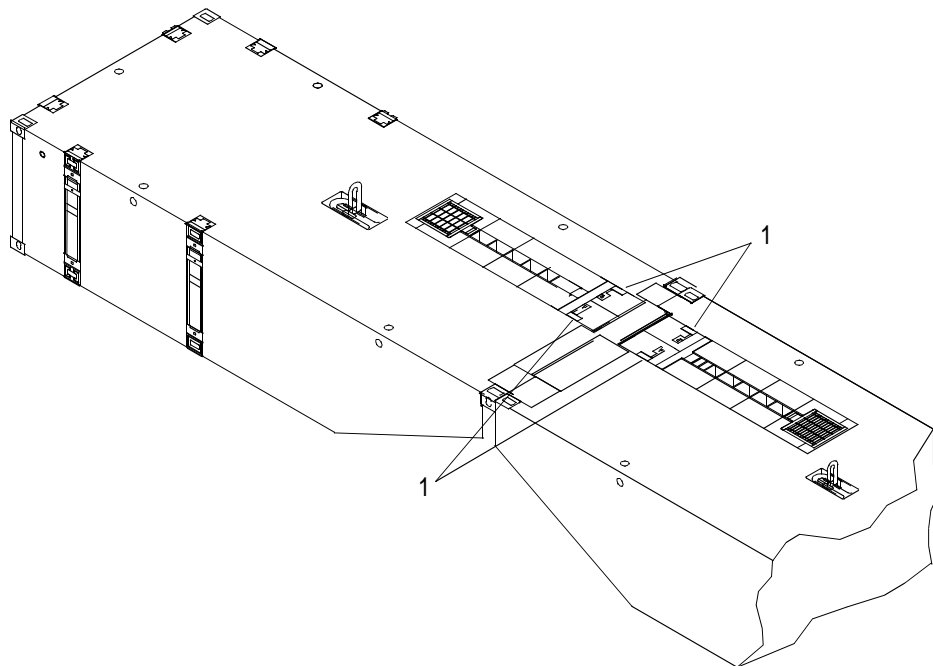
1. Assemble the required number of intermediate sections.
2. Maneuver intermediate sections together, with beach/sea end toward the shore line, using warping tugs, ropes/lines, flush turn tubes and lift lugs so that the tapered surfaces of male and female shear connectors mate together in general alignment.



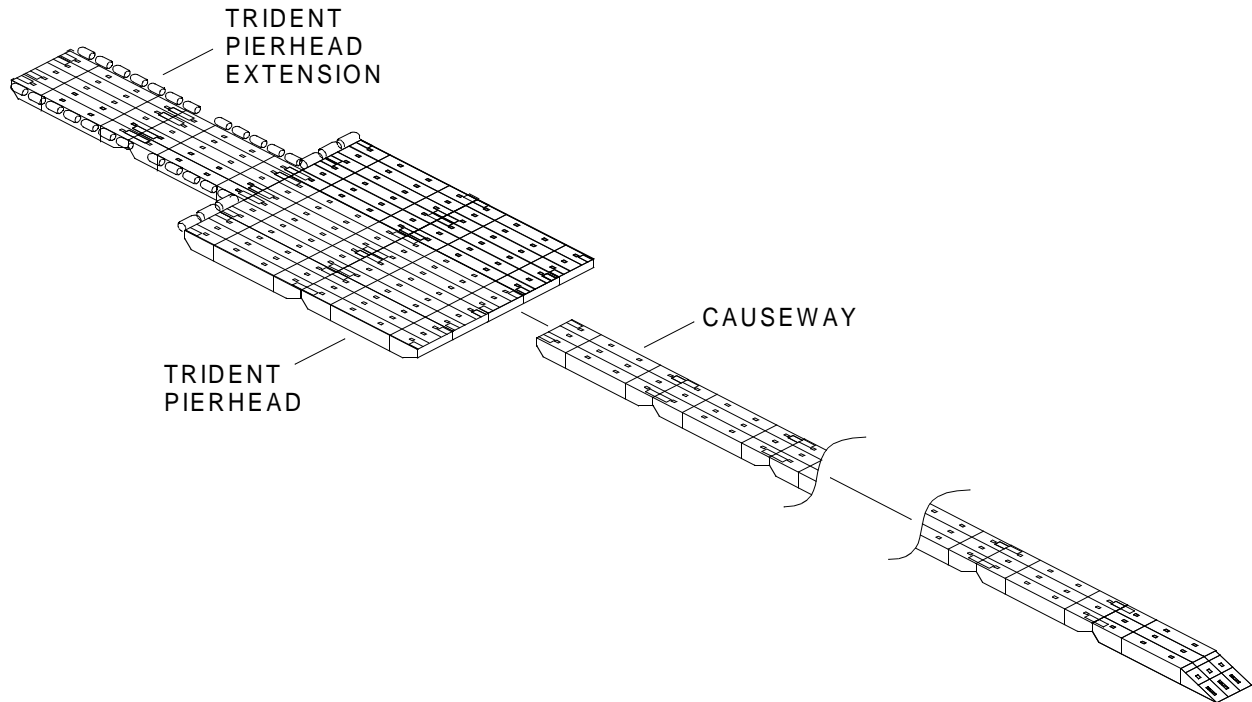
3. Rotate and pull the chute bolts (1) to unlocked position.



4. Lift guillotine plates (2).
5. Using a crowbar (3) push each flexor connector (4) from left end rake into corresponding pocket of right end rake until guillotine plates (2) are aligned with flexor connector slots (5).
6. Using a sledgehammer, drive guillotines plates (2) down into flexor connector slots (5).
7. Push chute bolts (1) to locked position and rotate to closed position.



8. Install mooring bitts, as required. (WP 0017 00)
9. Maneuver and assemble trident pierhead/extension and causeway, with beach/sea end toward the shore line, together end to end using warping tugs, ropes/line, flush turn tubes and lift lugs so the tapered surfaces of male and female shear connectors mate together in general alignment.



#### 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 curtailed. 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 SLWT 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 faked out on deck before beaching.

1. Insert causeway using warping tugs.



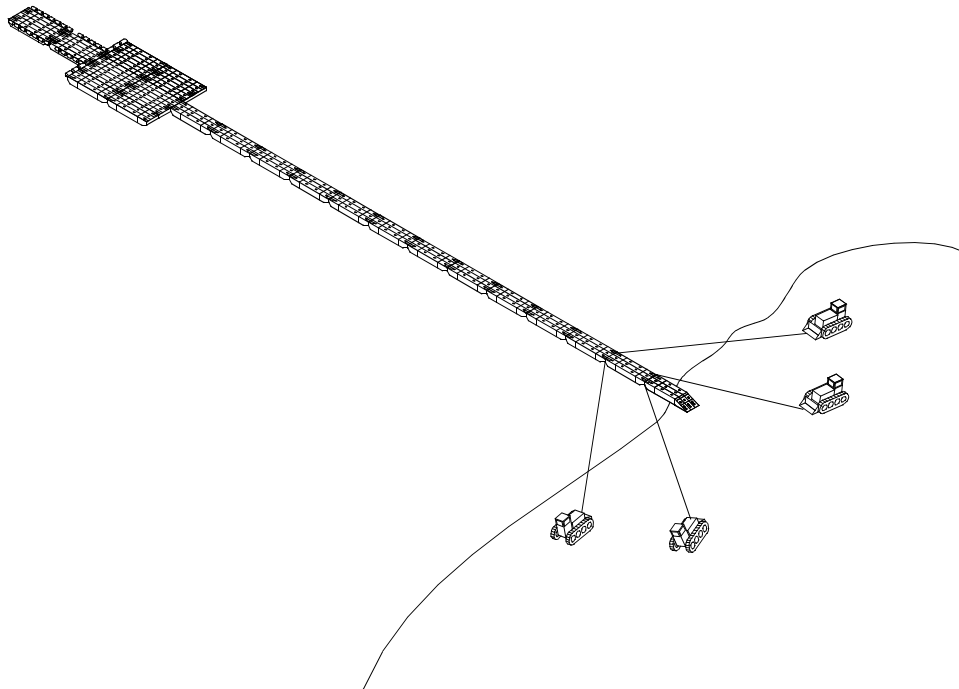
BOTTOM SLOPE	NUMBER CAUSEWAY SECTIONS
1:85	5
1:105	6
1:125	7
1:145	7
1:165	8
1:185	9
1:205	10
1:225	11
1:245	12

Minimum Number of Causeway Sections for Initial Beaching

2. Connect follow-on segments, as required, seaward from the initial segment until the designed causeway length is achieved.

**BEACHING CAUSEWAY**

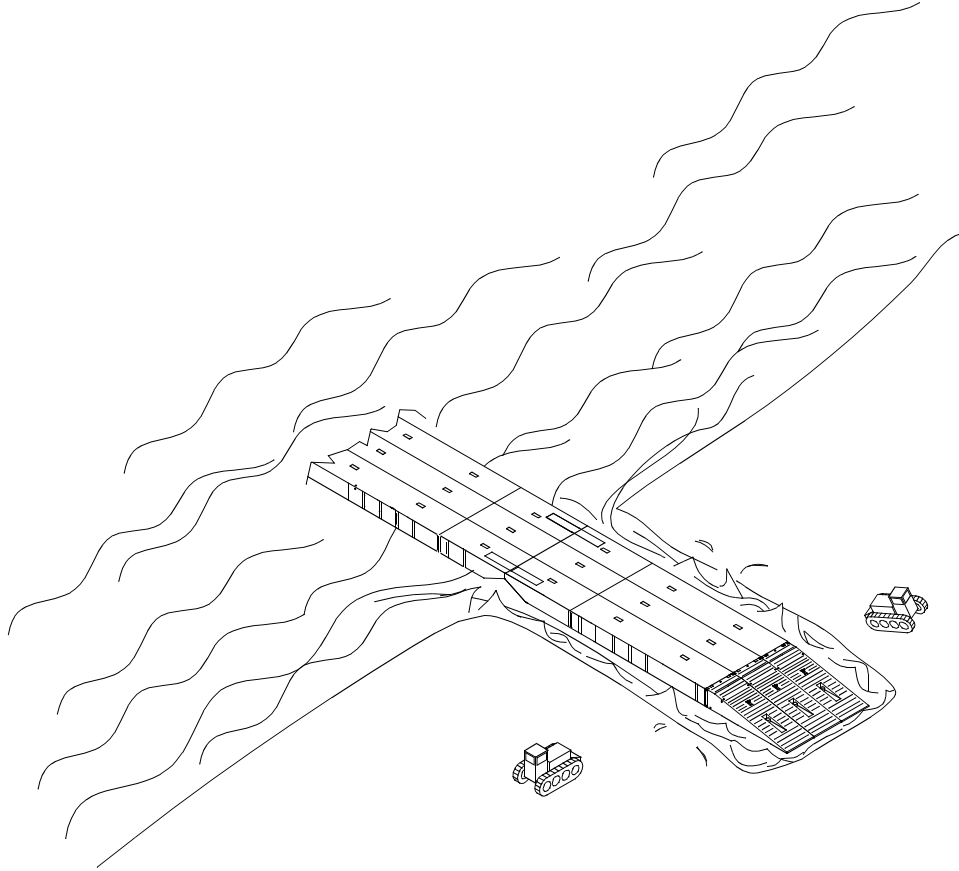
1. Beaching FC on a virgin beach.
  - a. Two WT secured on each side of FC last section, and operating under full power, beach/stab the FC into the designated landing point on the beach.
  - b. Using onshore anchor mooring lines the bulldozers, aided by the WTs pushing, pull the FC further into the beach until approximately one half of first FC section is above the high water line.



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2. Beaching FC using duck ponds.

- a. To ensure the beach/sea end of FC fully penetrates the beach during high tide, bulldozers 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. Two WTs, secured on each side of FC last section and operating under full power, beach/stab FC into duck pond.
- c. Bulldozers fill in cavity surrounding perimeter of beach/sea end, displacing remaining water in duck pond.
3. Deploy onshore mooring legs. (WP 0034 00)
4. Deploy offshore mooring legs. (WP 0033 00)

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
FORCE OPENING  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Module ISOPAK Disassembled. (WP 0008 00)  
 Operation Of Male And Female Connectors. (WP 0009 00)  
 D-ring/cloverleaf Fittings And Deck Cleat Fittings Installed. (WP 0010 00)  
 Module String Assembled. (WP 0011 00)  
 Intermediate Section Assembled. (WP 0012 00)  
 Combination Beach/Sea End Section Assembled (WP 0013 00)

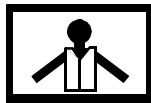
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**PREPARATION FOR USE - ASSEMBLY OF FORCE OPENING FLOATING CAUSEWAY****ASSEMBLE PIERHEAD**


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**WARNING**

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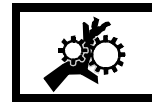
VEST



HELMET PROTECTION



HEAVY PARTS

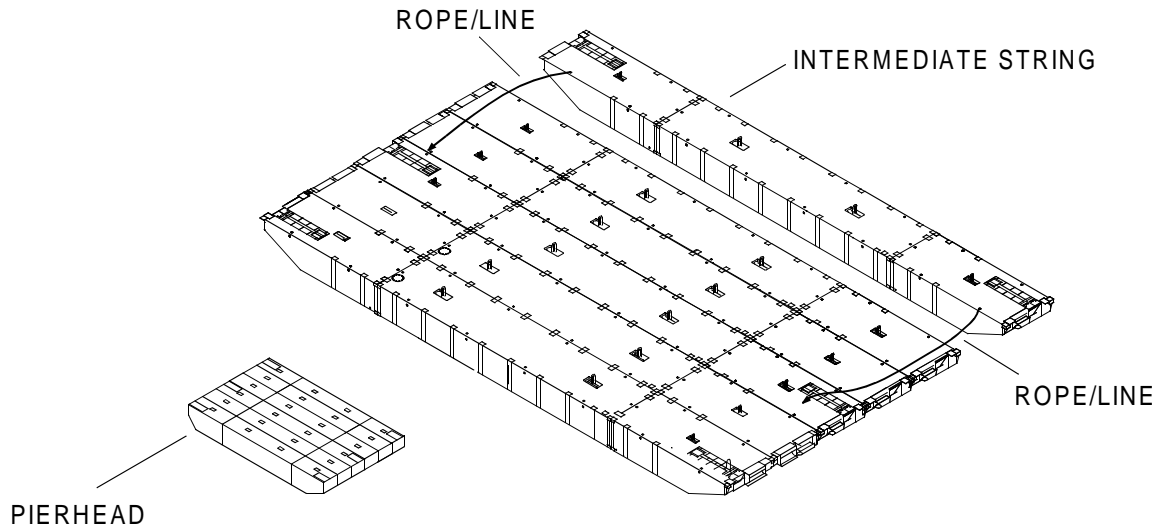


MOVING PARTS

**All personnel must wear a 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 to personnel.**

**Place the hands on top or on the outside of ropes/lines 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.**

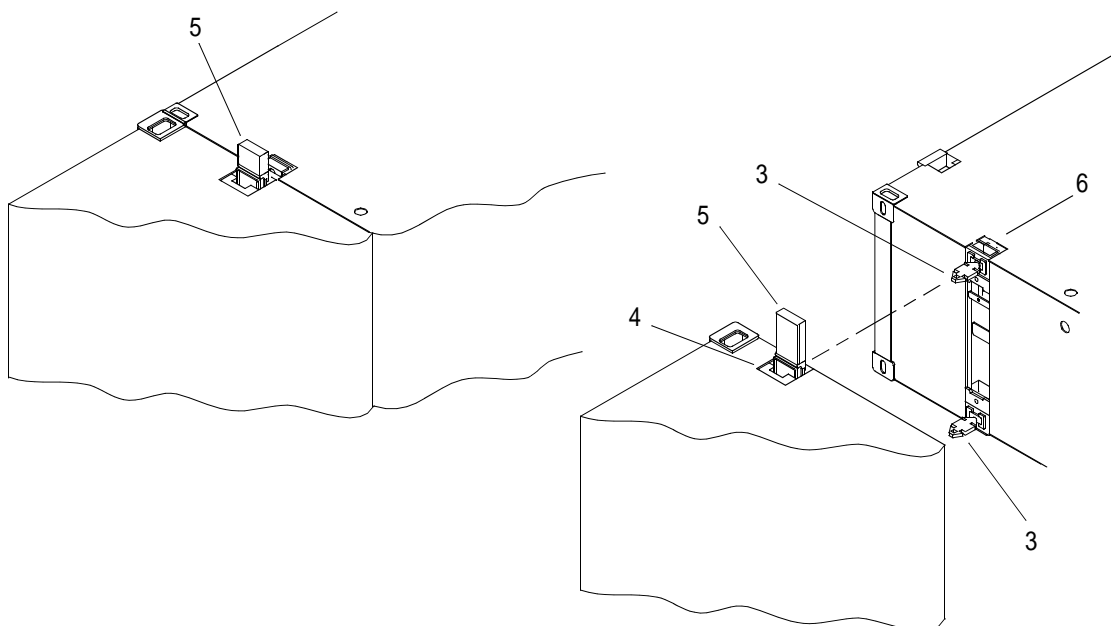
1. Assemble required number of intermediate strings together side by side, using rope/lines, flush turn tubes, deck cleats, and warping tug so tapered surfaces of male and female connectors mate together in general alignment, to form pierhead.



### NOTE

Ensure intermediate sections are completely aligned before locking the connectors.

2. As extended and locked male connector pin (3) enters the female connector (4), use a sledgehammer to drive female guillotine bar (5) downward into locking position.



### NOTE

At engagement, the female guillotine lock bar snaps under overhanging projections of female lock housing preventing unintentional release of lock.

3. If female guillotine connector does not close completely, lift male guillotine bar (6) two or three inches and repeat step 1b.
4. Assemble causeway. (WP 0015 00)

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**ASSEMBLE PIERHEAD TO CAUSEWAY**


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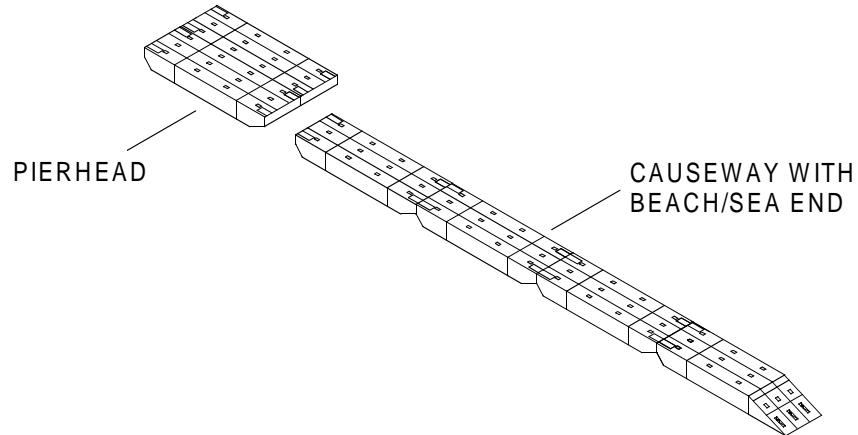
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**WARNING**

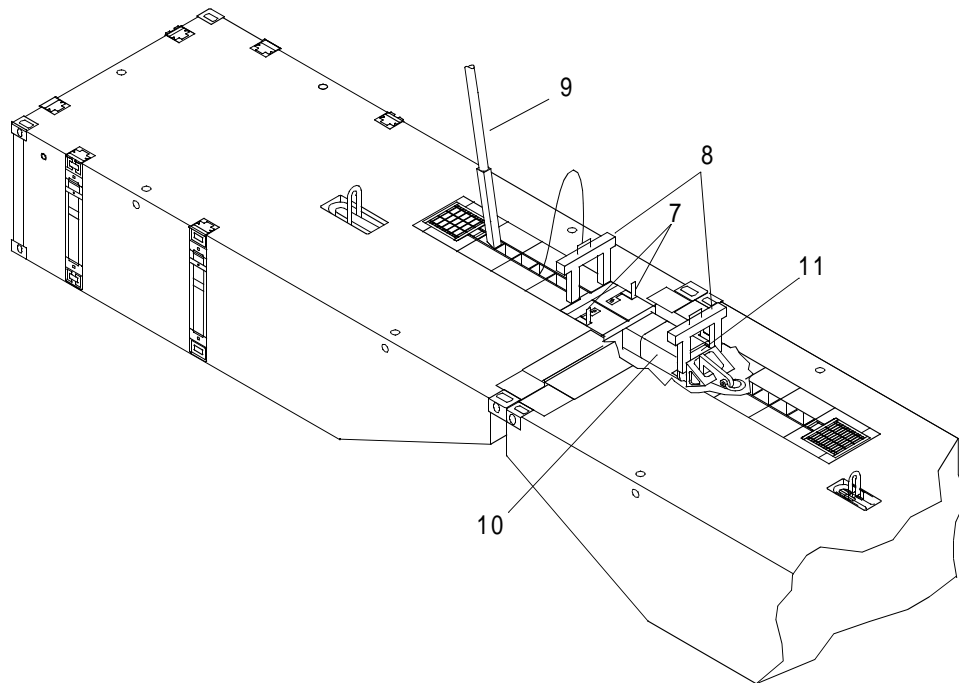

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Place the hands on top or on the outside of ropes/lines so that in an emergency the lines can be released quickly to preclude being pulled into the equipment. Failure to observe these precautions could result in serious injury or death.

1. Maneuver and assemble intermediate sections and combination beach/sea end section together end to end, using warping tugs, ropes/lines, flush turn tubes and lift lugs so tapered surfaces of male and female shear connectors mate together in general alignment.

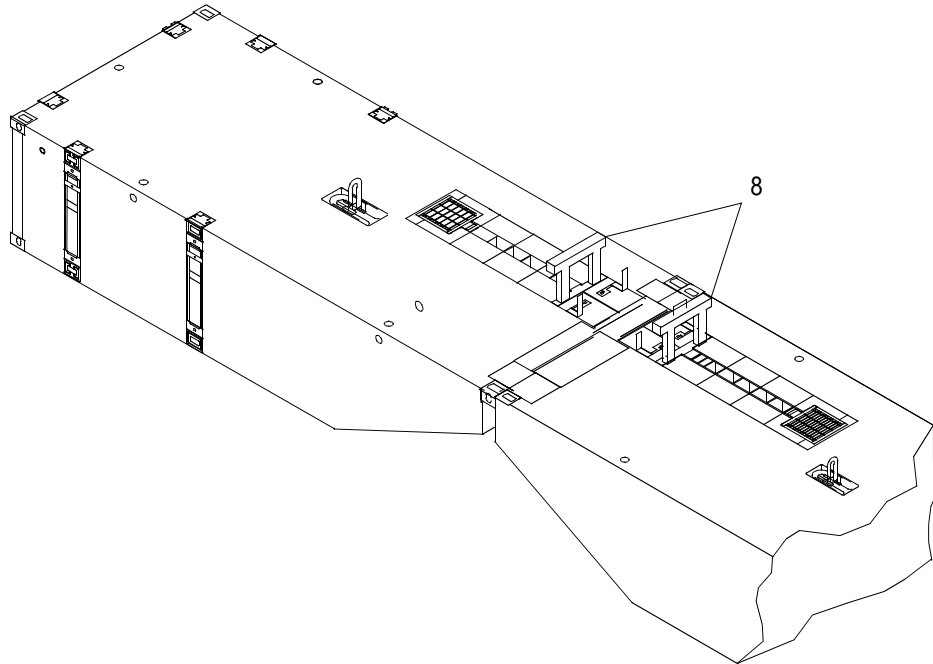


2. Rotate and pull chute bolts (7) to unlocked position.
3. Lift guillotine plates (8).

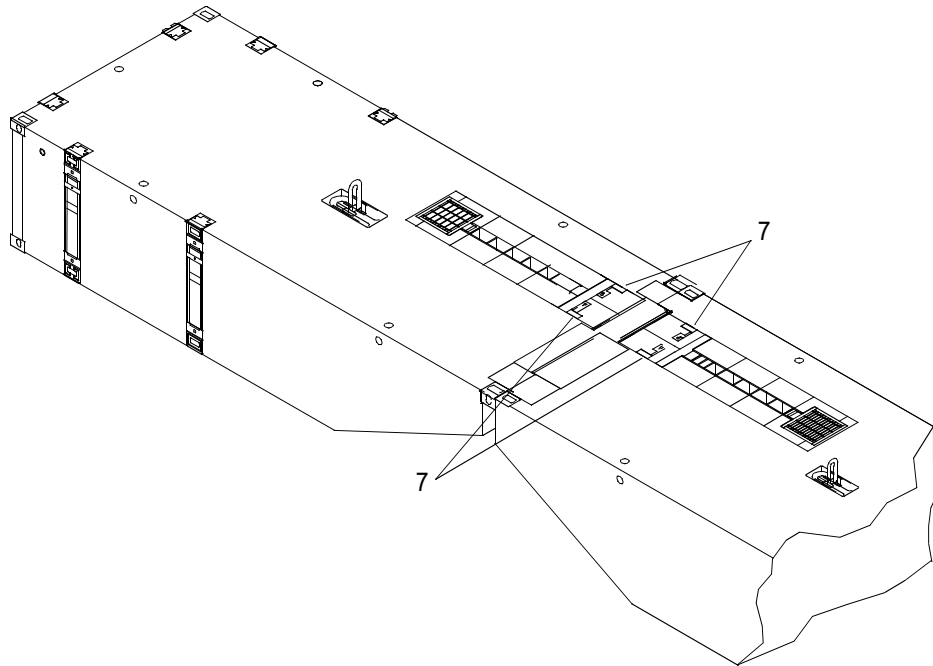


4. Using crowbar (9) push each flexor connector (10) from left rake end into corresponding pocket of right end rake until guillotine plates (8) are aligned with the flexor connector slots (10).

5. Using a sledgehammer, drive guillotines plates (8) down into flexor connector slots (11).



6. Push chute bolts (7) to locked position and rotate to closed position.



**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MOORING BITTS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)  
 Forklift Adapter (Item 19, WP 0104 00)  
 Push Rod (Item 42, WP 0104 00)  
 Chain, ½ in. General Purpose, (Item 12, WP 0104 00)

**Personnel Required**

Seaman 88K

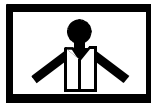
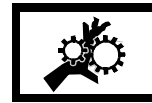
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**PREPARATION FOR USE - INSTALLATION OF MOORING BITTS****REMOVE MOORING BITTS FROM CONTAINER**


---

**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.**

1. Remove straps securing mooring bitt pallets to ISO container.

---

**WARNING**

---

**HEAVY PARTS**

2. Using forklift and fork extenders, remove first stack of pallets from ISO container.
3. Remove one fork extender from forklift and install push-pull rod.

---

**WARNING**

---

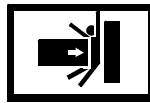
**HEAVY PARTS**

4. Using forklift and push-pull rod, hook second stack of pallets and pull pallets to ISO container door.
5. Remove forklift push-pull rod and install fork extender.

---

**WARNING**

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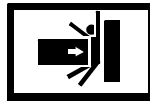
**HEAVY PARTS**

6. Using forklift, remove second stack of pallets from ISO container.
7. Remove one fork extender from forklift and install push-pull rod.

---

**WARNING**

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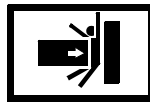
**HEAVY PARTS**

8. Using forklift and push-pull rod, hook third stack of pallets and pull pallets to ISO container door.
9. Remove forklift push-pull rod and install fork extender.

---

**WARNING**

---

**HEAVY PARTS**

10. Using forklift, remove third stack of pallets from ISO container.
11. Separate pallets from stacks.
12. Remove straps securing mooring bits to pallets.



---

**INSTALL MOORING BITTS**

---

---

**WARNING**

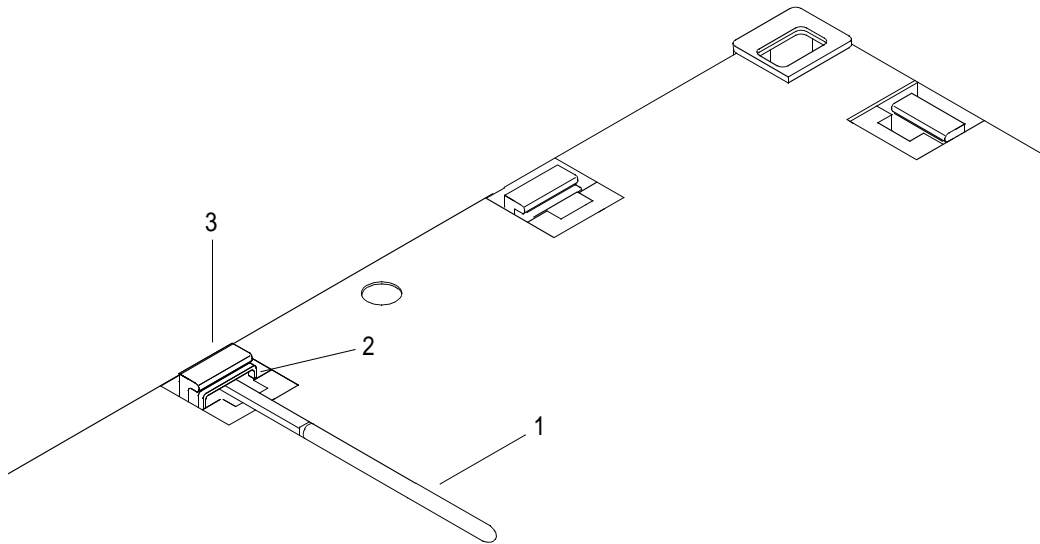
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Attempting to install mooring bitts on the FC in higher sea conditions other than Sea State 0 could cause injury or possible death to personnel and/or damage equipment.

**NOTE**

Mooring bitts can only be installed on female connector assemblies.

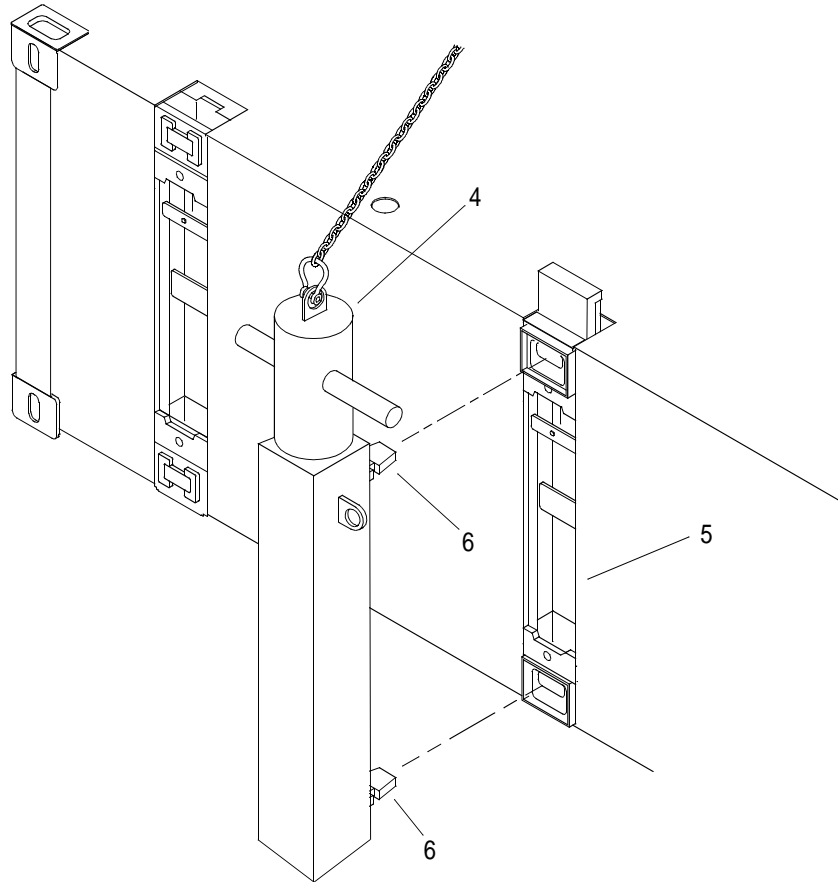
1. Raise female guillotine bar.
  - a. Insert crowbar (1) behind the spring bar (2) under female guillotine bar (3).



- b. Rotate crowbar (1) downward to clear spring bar (2) from deck overhangs and allow female guillotine bar (3) to move upward.
    - c. Raise female guillotine bar (3) approximately six in. until it stops.
    - d. Remove crowbar (1).
2. Lift mooring bitt (4) using fork lift and lift chain for installation.

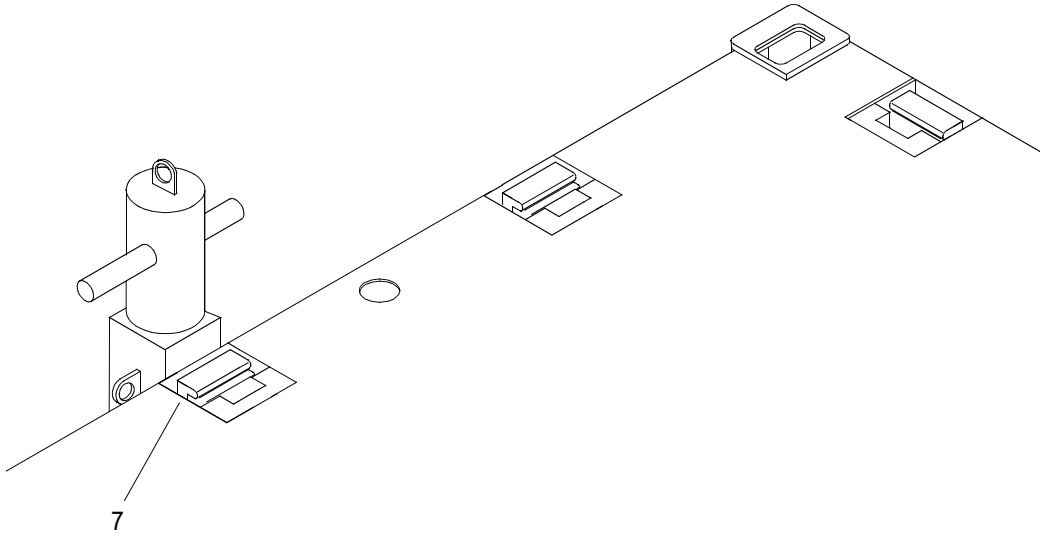
**WARNING****HEAVY PARTS**

- a. Align mooring bitt (4) with female connector assembly (5).



- b. Insert mooring bitt male connecting pins (6) into female connector assembly (5).

- c. Drive female guillotine bar (7) down using sledgehammer.



**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
TOWING BRIDLE, TOWING INTERFACE AND TOWING LIGHTS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Lifting Device Assembly (Item 32, WP 0104 00)  
 Forklift Adaptor (Item 19, WP 0104 00)  
 Towing Lights (Item 55, WP 0104 00)  
 MCS Tow Bridle (Item 19, WP 0103 00)  
 Flexor Receiver Insert (Item 18, WP 0104 00)

**Personnel Required**

Seaman 88K

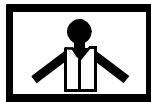
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**PREPARATION FOR USE - INSTALLATION OF TOWING BRIDLE, TOWING INTERFACE AND TOWING LIGHTS****INSTALL TOWING INTERFACE**


---

**WARNING**

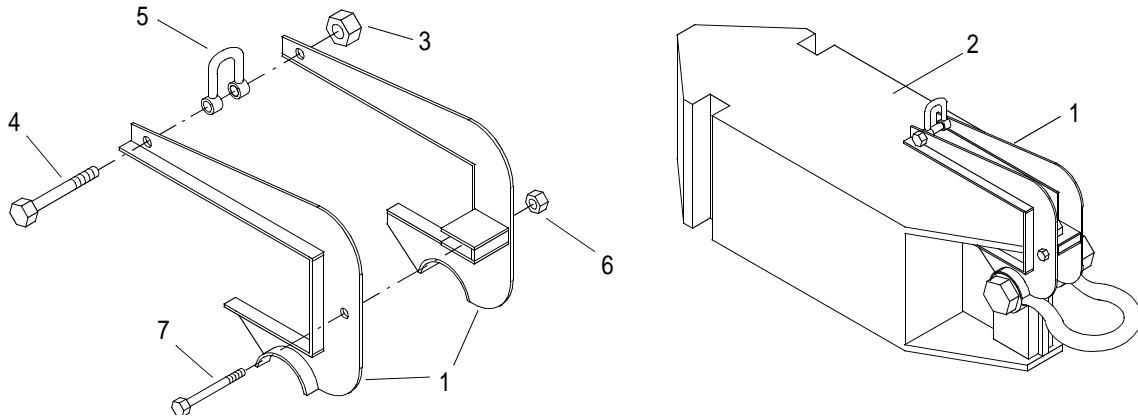
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**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

**All personnel must wear a 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.**

1. Remove flexor lifting device (1) and flexor receiver insert (2) from BII container.

2. Attach flexor lifting device (1) to flexor receiver insert (2).



- a. Remove nut (3), bolt (4) and shackle (5) from flexor lifting device (1).
  - b. Remove nut (6) and bolt (7) from flexor lifting device (1).
  - c. Position lifting device (1) over flexor receiver insert (2).
  - d. Install shackle (5) on flexor lifting device (1) and flexor receiver insert (2).
    - {1} Align shackle (5) and flexor receiver insert lifting device (1).
    - {2} Install bolt (4) in flexor receiver insert lifting device (1).
    - {3} Install nut (3) on bolt (4).
    - {4} Tighten nut (3) until snug.
  - e. Install bolt (7) in flexor lifting device (1) and flexor receiver insert (2).
    - {1} Install nut (6) on bolt (7).
    - {2} Tighten nut (6) until snug.
3. Install flexor receiver inserts in rake modules.

### **WARNING**

**Be sure no other floating objects are nearby that could come in contact with the soldier while installing the flexor receiver insert. Do not work alone. Failure to observe these precautions could result in death or injury to personnel.**

- a. Attach a tag line to the inner end of flexor receiver insert to help in guiding it into rake module flexor pockets.

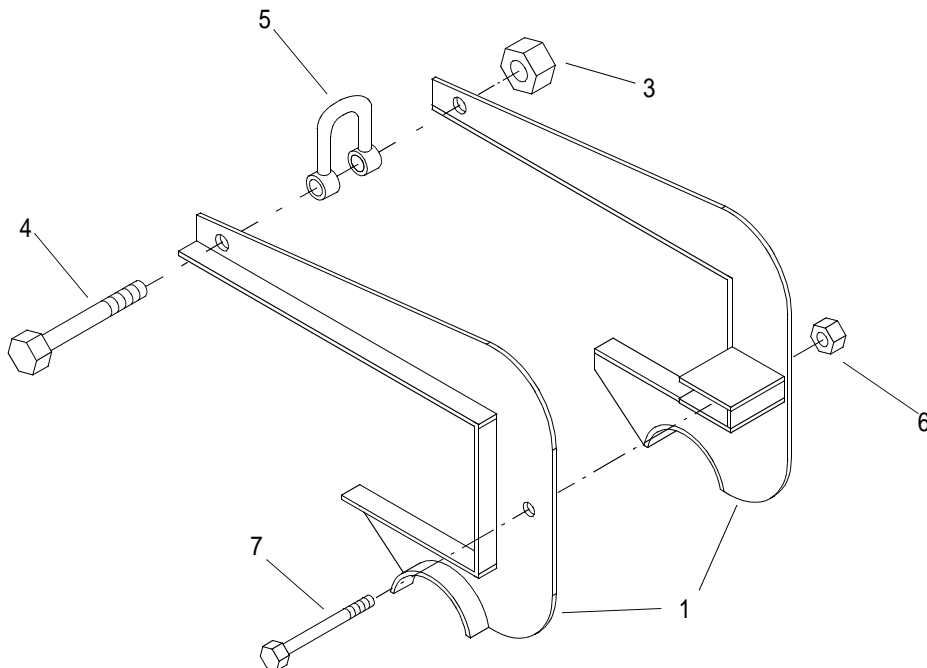
**WARNING****HEAVY PARTS**

- b. Using forklift lifting adaptor and flexor lifting device, place each flexor receiver insert in the appropriate flexor pocket.
  - c. Install guillotine bar to secure flexor receiver insert. (WP 0012 00)
4. Remove flexor receiver insert lifting device.

**WARNING**

**Be sure no other floating objects are nearby that could come in contact with the soldier while removing the lifting device. Do not work alone. Failure to observe these precautions could result in death or injury to personnel.**

- a. Remove nut (6) from bolt (7).
- b. Loosen nut (3) from bolt (4).

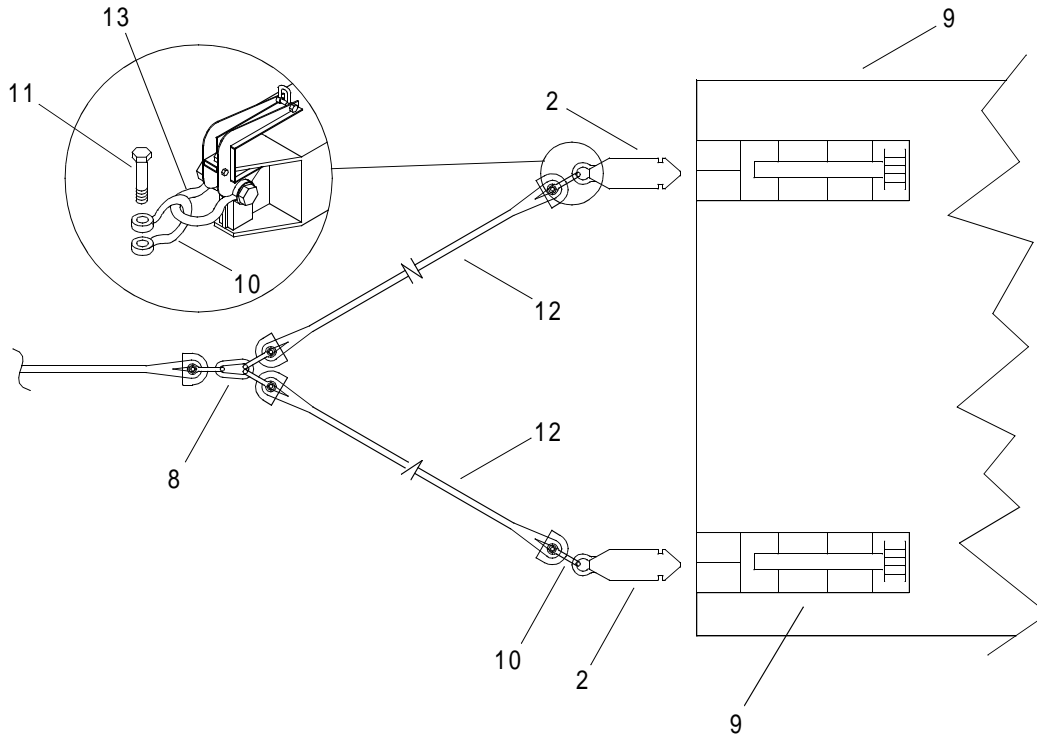


- c. Remove flexor lifting device (1) by spreading device halves to clear shackle cheeks.
5. Repeat procedure for second flexor receiver insert.
6. Stow flexor lifting device in BII container.

**INSTALL TOWING BRIDLE****WARNING**

**Be sure no other floating objects are nearby that could come in contact with the soldier while installing the towing bridle. Do not work alone. Failure to observe these precautions could result in death or injury to personnel.**

1. Using forklift and forklift adaptor, position towing bridle (8) over end rakes (9) of FC.
2. Attach towing bridle (8) to flexor receiver inserts (2).



- a. Remove shackles (10) and pins (11) from ends of mooring bridle legs (12).
- b. Attach shackles (10) to shackles (13) and install pins (11).

**INSTALL TOWING LIGHTS**

1. Remove towing lights from BII container.
2. Install batteries in towing lights.
3. Place a towing light with green lens on right side of FC.
4. Place a towing light with red lens on left side of FC.
5. Place a towing light with amber lens on back of FC.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
FENDERS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

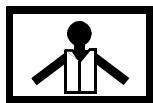
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**PREPARATION FOR USE - INSTALLATION OF FENDERS**


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**WARNING**

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VEST



HELMET PROTECTION



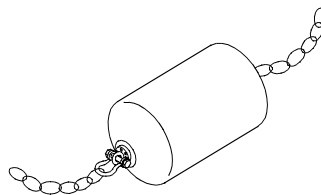
HEAVY PARTS



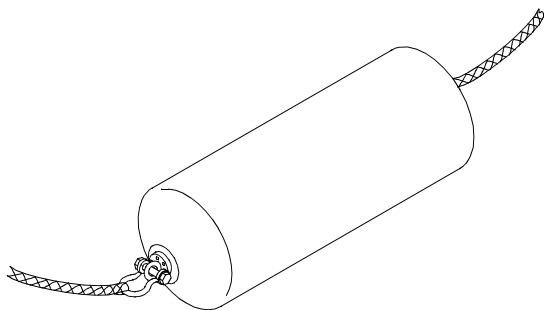
MOVING PARTS

**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.**

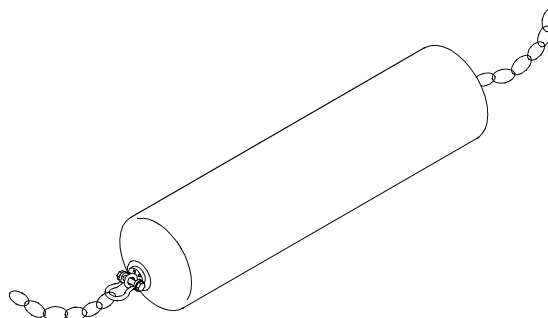
1. Install cylindrical fenders.



3 FT X 5 FT LIGHTER FENDER



5 FT X 10 FT SEALIFT VESSEL FENDER



4 FT X 12 FT LIGHTER FENDER

---

**WARNING**

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**HEAVY OBJECTS**

- a. Remove fender from special pallet in their own 40 ft open top container.
- b. Loosen cable attaching waterproof covering to ISO container.
- c. Remove the waterproof covering from the ISO container.
- d. Remove waterproof covering bows.
- e. Remove straps securing fenders to pallets.

---

**WARNING**

---

**HEAVY OBJECTS**

- f. Using clevises, chains and crane, lift the fenders from the ISO container pallets and move to the installation location on the FC deck edge.
- g. Attach tag lines to the ends of the securing chains or lines.

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**WARNING**

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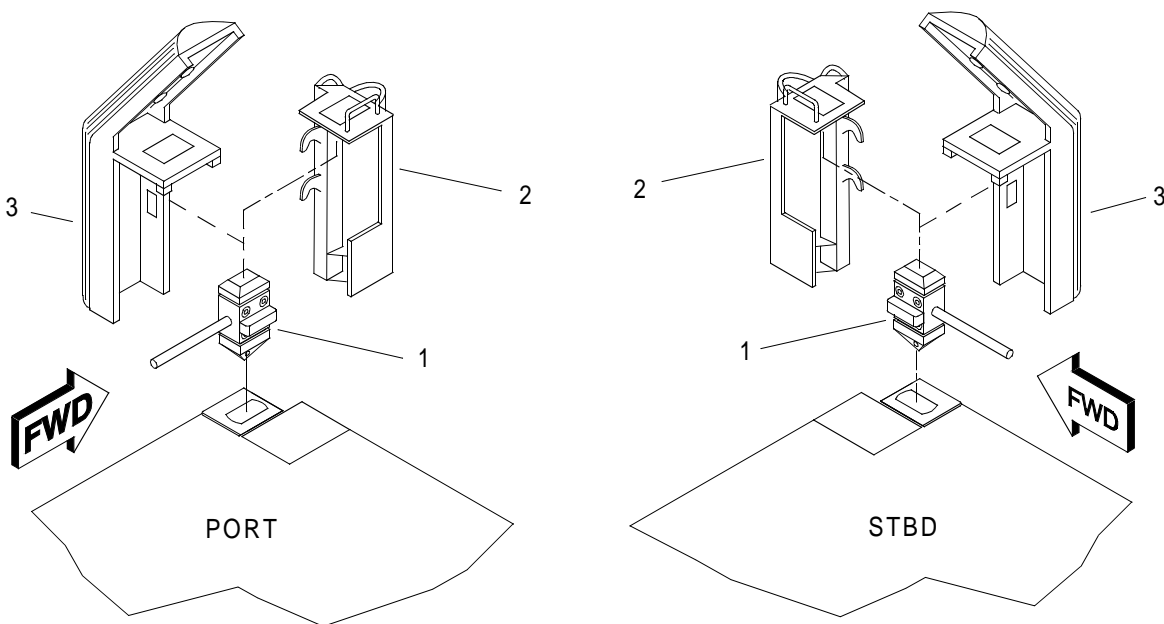
**HEAVY OBJECTS**

- h. Manning the tag lines, roll the respective fender over the side.
  - i. Install waterproof cover bows on ISO container.
  - j. Install waterproof covers on ISO containers.
  - k. Tighten cable attaching waterproof cover to ISO container.
2. Install corner fenders.

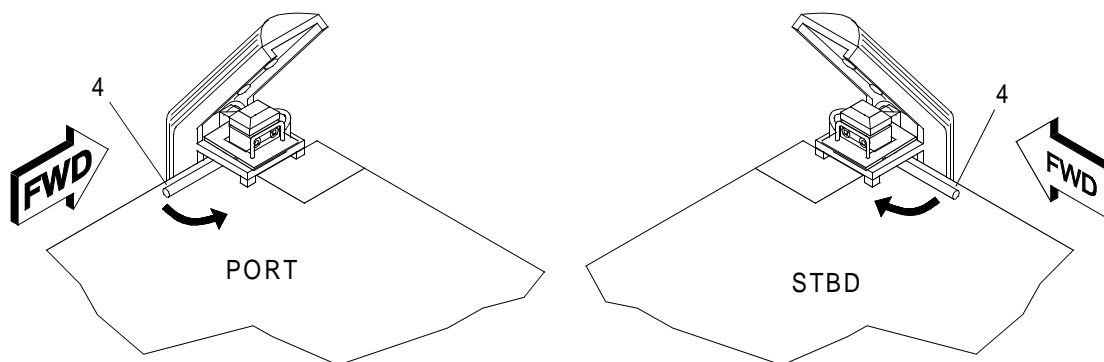
**NOTE**

There are two configurations of corner fenders, left hand (port) and right hand (starboard).  
Each fender configuration consists of two pieces.

- a. Install ISOPAK vertical connector (1) in port and starboard ISO corner fitting.



- b. With hooks facing aft, push straight portion (2) of fender assembly down, over ISOPAK vertical connector (1).
- c. Align slots on angled portion (3) of corner fender assembly, with hooks on straight portion (2) of port and starboard corner fender assembly.
- d. Install angled portion (3) of port and starboard corner fender assembly over ISOPAK vertical connector (1).
- e. Move lever on ISOPAK vertical connector (4) to lock two portions of port and starboard fender assembly in place.



**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
SAFETY EQUIPMENT  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

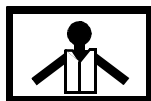
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**PREPARATION FOR USE - INSTALLATION OF SAFETY EQUIPMENT****INSTALL LIFELINES**


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**WARNING**

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VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

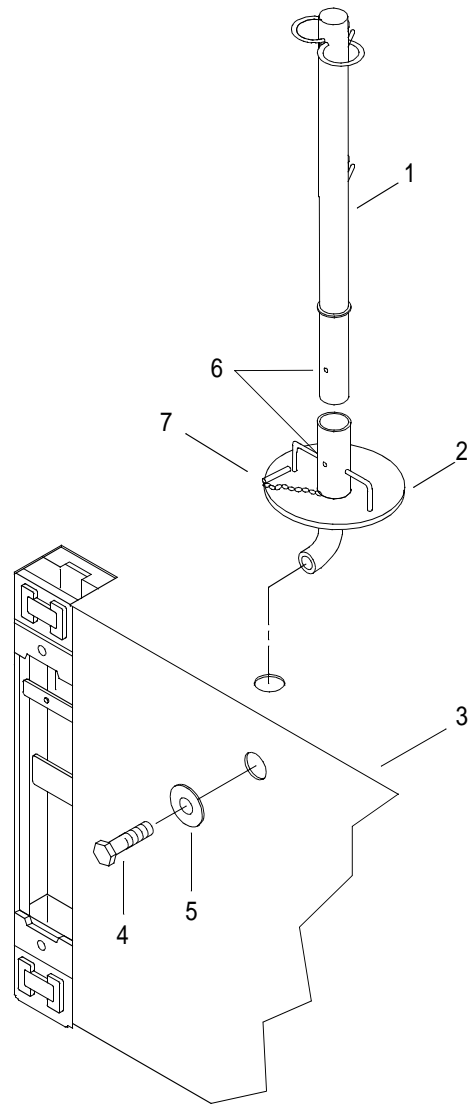
**All personnel must wear a personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

**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.**

**NOTE**

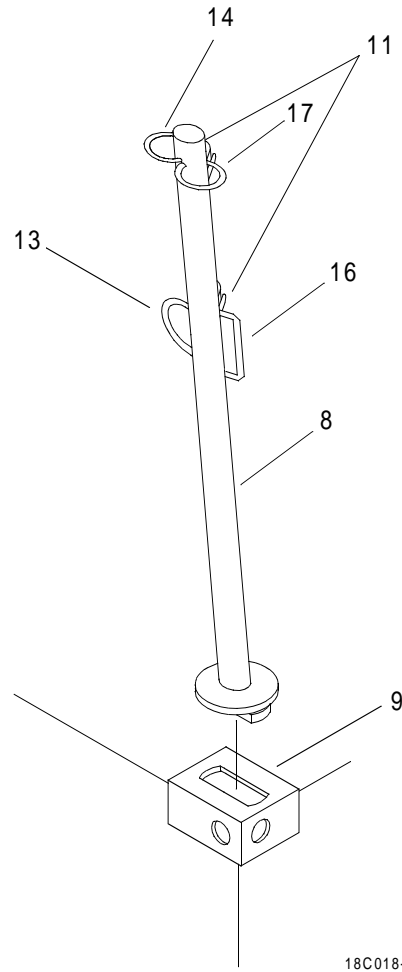
Installation of the lifelines will vary depending on FC configuration. The following provides procedures on installation of lifeline system components.

1. Install vertical stanchion (1) into turn tubes (2) on modules (3).



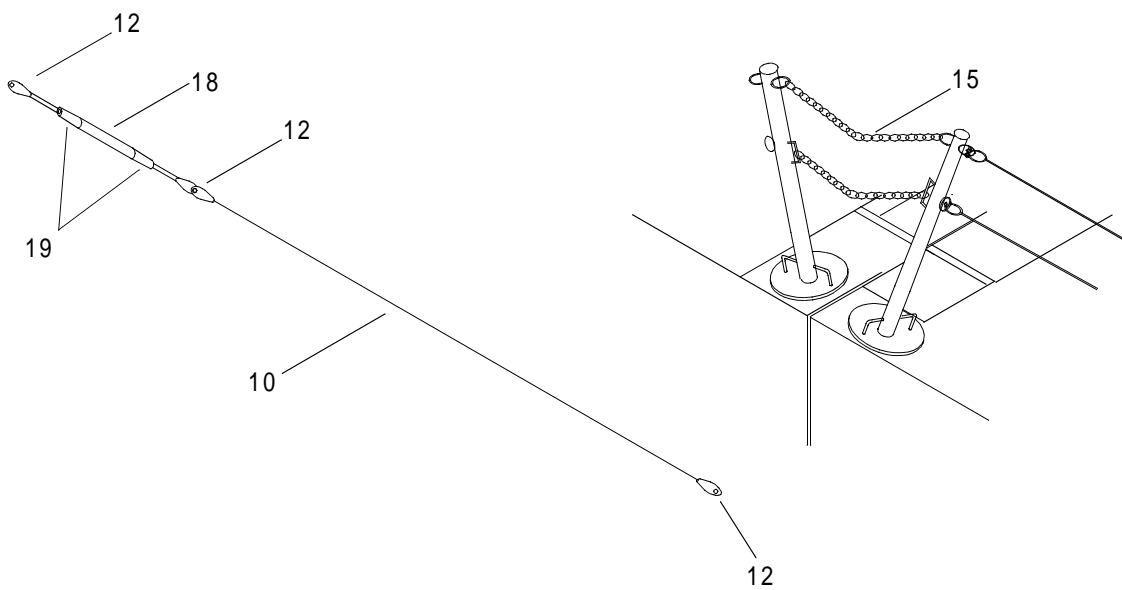
2. Insert bolt (4) through keeper plate (5) and module (3).
3. Install bolt (4) into threaded portion of turn tube (2) and tighten.
4. Insert stanchion (1) into turn tube (2) being careful to align holes (6) located near the base.
5. Install attached toggle pin (7) through holes (6).

6. Insert corner stanchion (8) into ISO corner fitting (9) and twist ¼ turn.



18C018-2

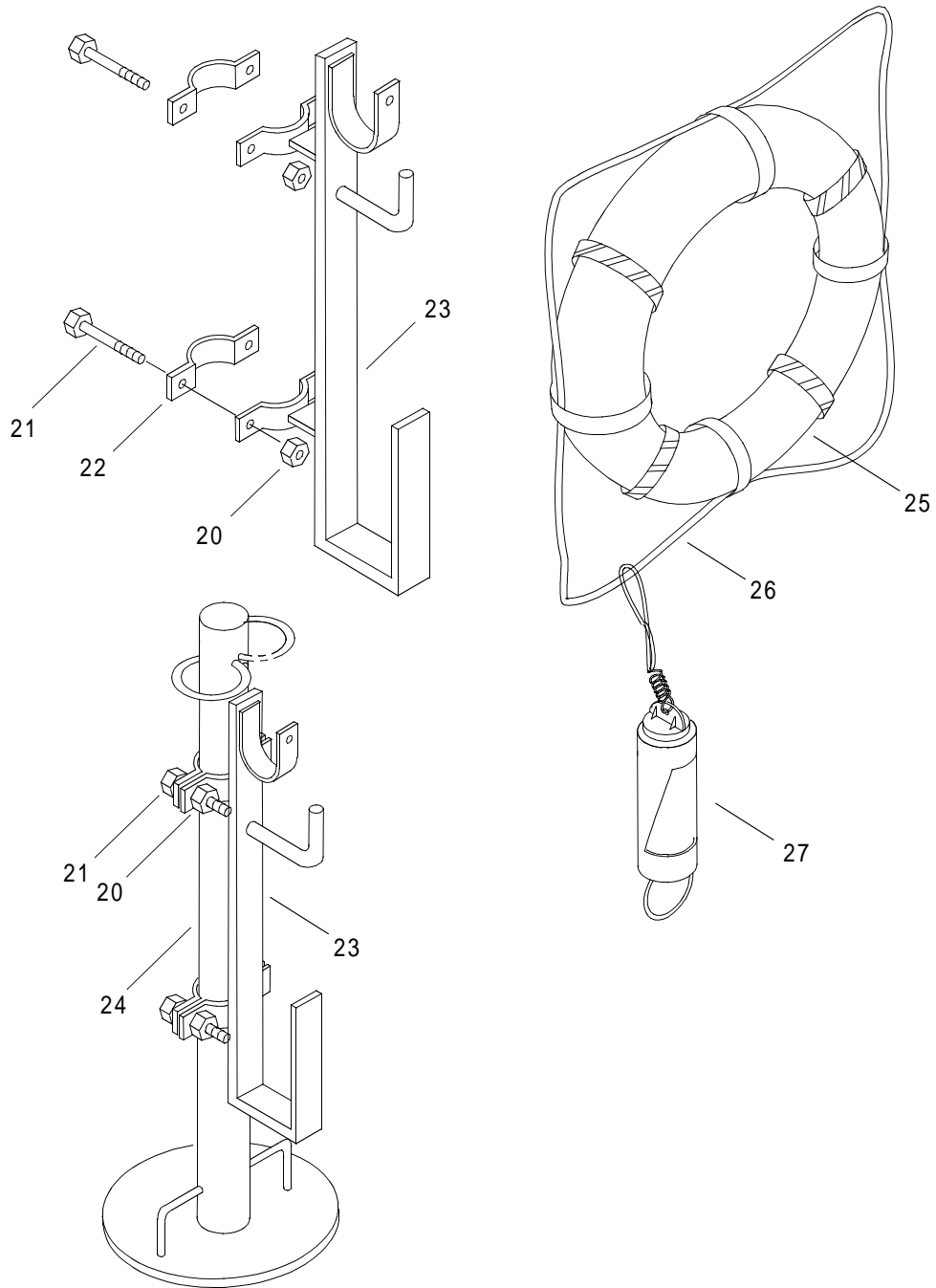
7. Lay out lifelines (10) on the deck near the stanchions.



8. Install the lifelines (10) through the pigtail fairleads (11) on each stanchion and secure the clevis (12) to staple fittings (13,14) on the corner stanchion (8).
9. Attach safety chains (15) to staple fittings (16,17) on corner stanchion (8).
10. Take up slack using turnbuckles (18) and set the turnbuckle locknuts (19).

**INSTALL LIFE RINGS**

1. Remove nuts (20) from bolts (21) and separate life ring bracket retaining clamp half (22).





- 
2. Position life ring bracket (23) on desired vertical stanchion (24).
  3. Position clamp half (22) and install bolt (21) and tighten nut (20).
  4. Position life ring (25) and rope (26) in life ring bracket (23) and secure rope (26) to strobe light (27).

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Gloves, Chemical (Item 22, WP 0104 00)  
 Plug, Ear (Item 40, WP 0104 00)

**Materials/Parts**

Antiseize Compound (Item 2, WP 0105 00)

**Personnel Required**

Seaman 88K

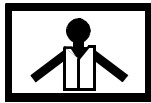
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**PREPARATION FOR USE - INSTALLATION OF TACTICAL QUIET GENERATOR CONTAINER ON TRIDENT PIERHEAD**

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**WARNING**

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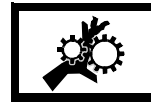
VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS



EAR PROTECTION

**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.**

**All personnel must wear hearing protection during tactical generator operation. Failure to observe this precaution could result in permanent hearing loss.**

1. Lift generator container onto trident pierhead.
2. Position generator container in desired location.
3. Tie generator container at four corners to trident pierhead using tiedown straps.

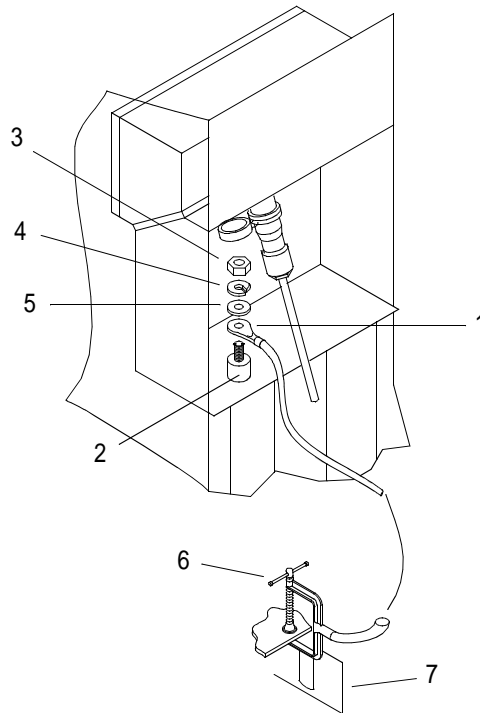
**REMOVE STEPS FROM GENERATOR CONTAINER**

1. Secure generator container access door in open position.
  - a. Loosen turnbuckle on the right side of step assembly until hook is free from round bar.
  - b. Remove hook from round bar and stow.
2. Pull steps from container to allow access.

3. Close generator container access door.

### INSTALL GENERATOR CONTAINER GROUND CABLE

1. Open exterior hinged cover of the electrical shore tie and secure in open position.
2. Attach ground cable (1) to generator connector ground stud (2).



- a. Remove nut (3), lock washer (4) and flat washer (5) from generator ground stud (2).

### WARNING



EYE PROTECTION

- b. Clean shoulder of ground stud until grounding surface has a smooth, bright finish. Use a wire brush.

### WARNING



CHEMICAL

- c. Apply a thin coating of antiseize compound to ground stud base.
- d. Install ground cable (1) on ground stud (2).

---

**WARNING**

---

**CHEMICAL**

- e. Apply a thin coating of antiseize compound to ground cable terminal.
  - f. Install flat washer (5), lock washer (4) and nut (3) on ground stud (2)
  - g. Tighten ground stud nut (3).
3. Attach generator ground cable C-clamp (6) to module deck ISO fitting (7).

---

**WARNING**

---

**EYE PROTECTION**

- a. Remove paint from ISO fitting (7) until grounding surface has a smooth, bright finish. Use a wire brush.

---

**WARNING**

---

**CHEMICAL**

- b. Apply a thin coating of antiseize compound to ISO fitting (7) grounding surface.

---

**WARNING**

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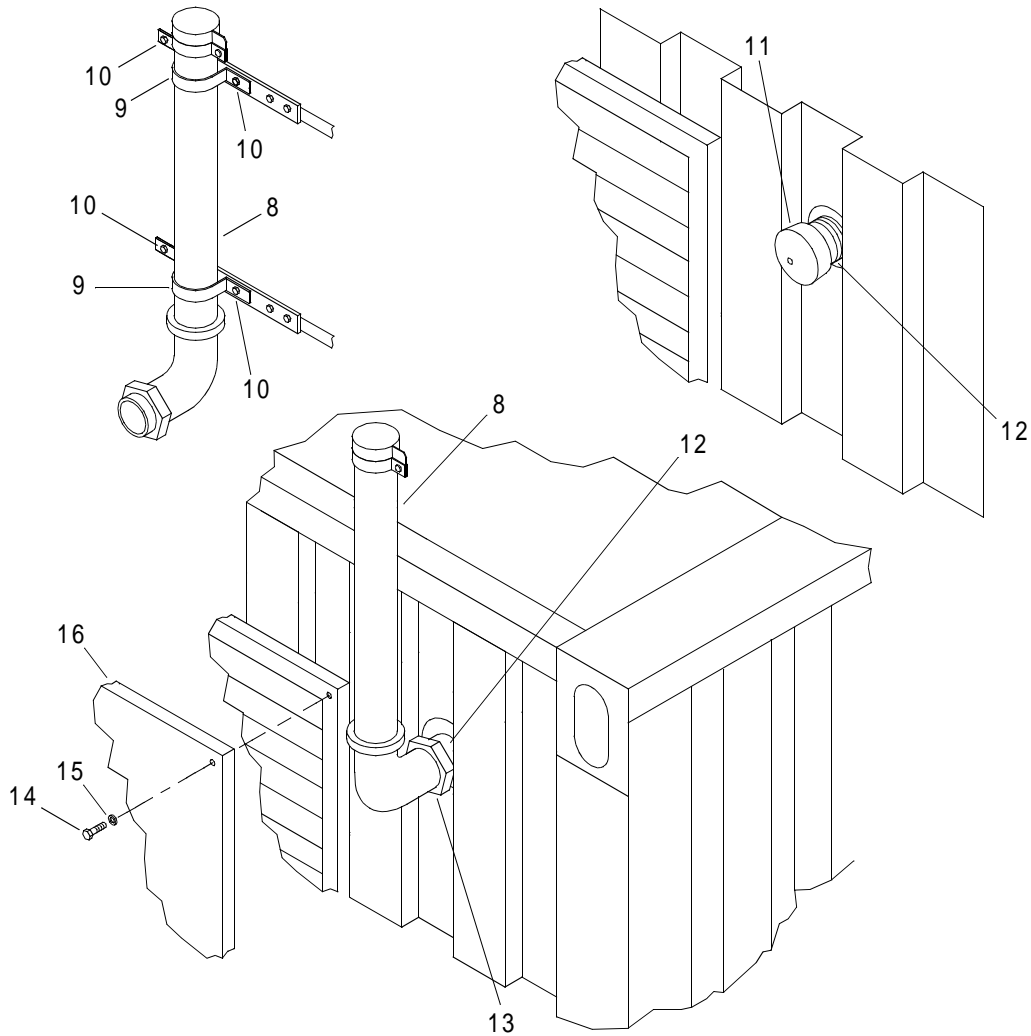
**EYE PROTECTION**

- c. Clean C-clamp (6) grounding surface. Use a wire brush.
- d. Attach grounding clamp (6) to module ISO fitting (7).

---

**INSTALL GENERATOR CONTAINER EXHAUST STACK**

1. Remove generator exhaust pipe (8) from generator container storage brackets (9).



- a. Remove bolts (10) and mounting brackets (9).
  - b. Remove exhaust pipe (8).
2. Remove protective cover (11) from container generator exhaust outlet (12).
  3. Position generator exhaust pipe (8) on container generator exhaust outlet (12).
  4. Tighten flange nut (13).
  5. Remove six hex bolts (14) with lock washers (15) and remove louver covers (16) from container end and side. Stow covers in container.

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PERSONNEL SHELTER  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Materials/Parts**

Antiseize Compound (Item 2, WP 0105 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Generator Container Installed On Trident Pierhead. (WP 0021 00)

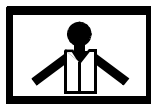
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**PREPARATION FOR USE - INSTALLATION OF PERSONNEL SHELTER****INSTALL PERSONNEL SHELTER ON TRIDENT PIERHEAD**

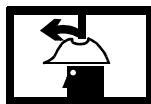

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**WARNING**

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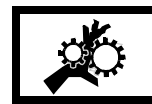
VEST



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**

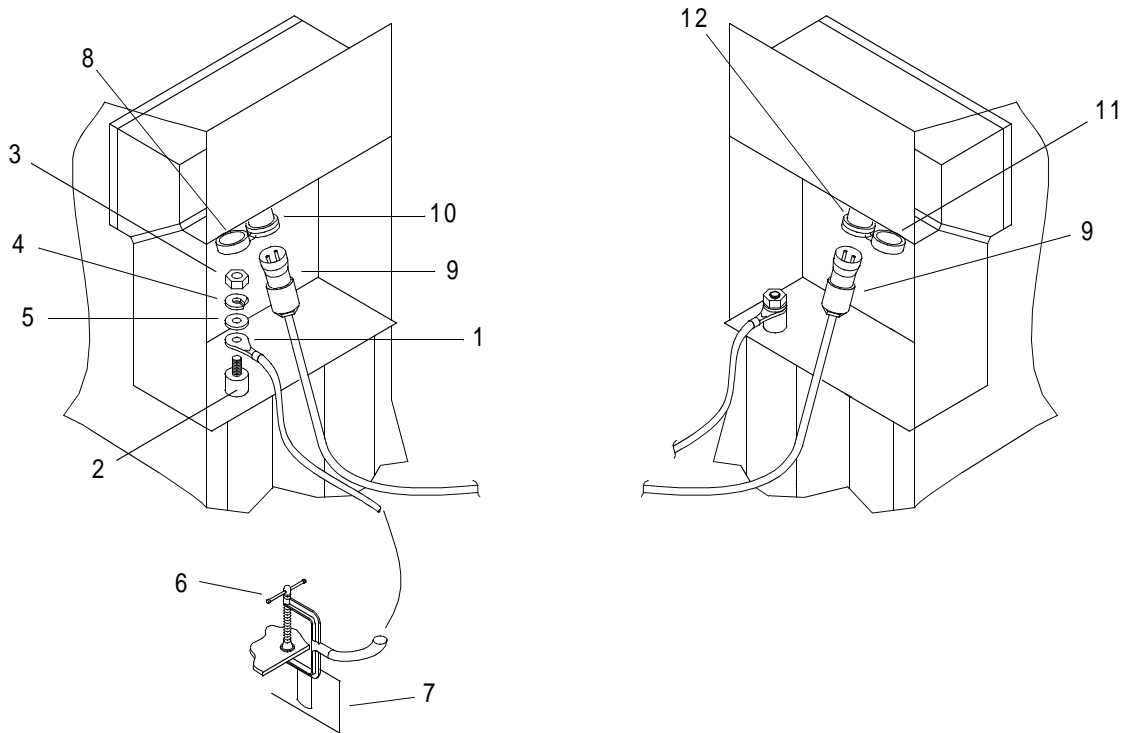
Personnel shelter must be on the same platform section with generator container.

1. Using crane, lift personnel shelter onto trident pierhead.
2. Position personnel shelter in desired location.
3. Tie personnel shelter at four corners to trident pierhead using tie down straps.

---

**GROUND PERSONNEL SHELTER**

1. Open exterior hinged cover of electrical shore tie and secure in open position.
2. Attach ground cable (1) to personnel shelter ground stud (2).



- a. Remove nut (3), lock washer (4) and flat washer (5) from personnel shelter ground stud (2).

---

**WARNING**


---



**EYE PROTECTION**

- b. Using a wire brush, clean ground stud (2) shoulder to ensure that grounding surface has a smooth, bright finish prior to grounding.

---

**WARNING**


---



**CHEMICAL**

- c. Apply thin coating of antiseize compound to ground stud (2) base.
- d. Install ground cable (1) on ground stud (2).



---

**WARNING**

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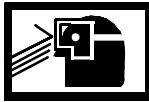
**CHEMICAL**

- e. Apply a thin coating of antiseize compound to ground cable (1) terminal.
  - f. Install flat washer (5), lock washer (4) and nut (3) on ground stud (2).
  - g. Tighten ground stud nut (3).
3. Attach generator ground cable C-clamp (6) to module deck ISO fitting (7).

---

**WARNING**

---

**EYE PROTECTION**

- a. Use wire brush to remove paint from ISO fitting (7) to ensure that ISO fitting grounding surface has a smooth, bright finish prior to grounding.

---

**WARNING**

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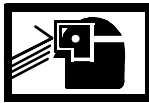
**CHEMICAL**

- b. Apply a thin coating of antiseize compound to the grounding surface.

---

**WARNING**

---

**EYE PROTECTION**

- c. Using wire brush, clean C-clamp (6) grounding surface.
- d. Attach grounding clamp (6) to module ISO fitting (7).

---

**INSTALL PERSONNEL SHELTER POWER CABLE**

1. Remove personnel shelter power cable cover (8).
2. Connect power cable (9) to personnel shelter power receptacle (10).
3. Remove generator container power cable cover (11).
4. Connector power cable (9) to generator container power receptacle (12).

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWERS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

---

**PREPARATION FOR USE - INSTALLATION OF LIGHT TOWER UNIT****REMOVE FORWARD AND AFT LIGHT TOWER UNIT FROM CONTAINER**


---

**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 following procedure is typical for the forward and aft light tower units installed in the ISO container, except the light tower must be installed on the aft light tower unit.

1. Release tiedowns and remove light tower trailer drawbar (1) and drawbar jack (2) from ISO container.

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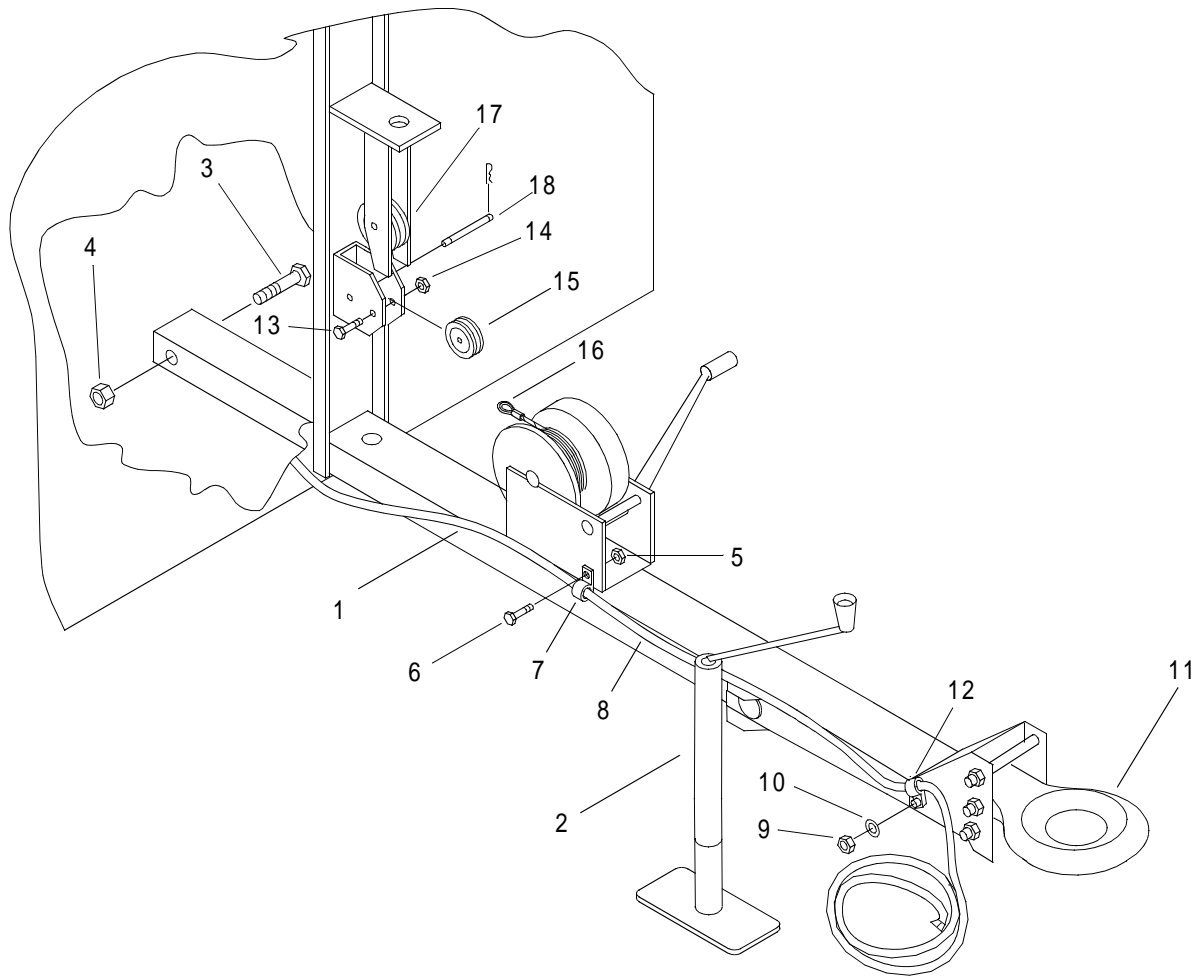
**WARNING**

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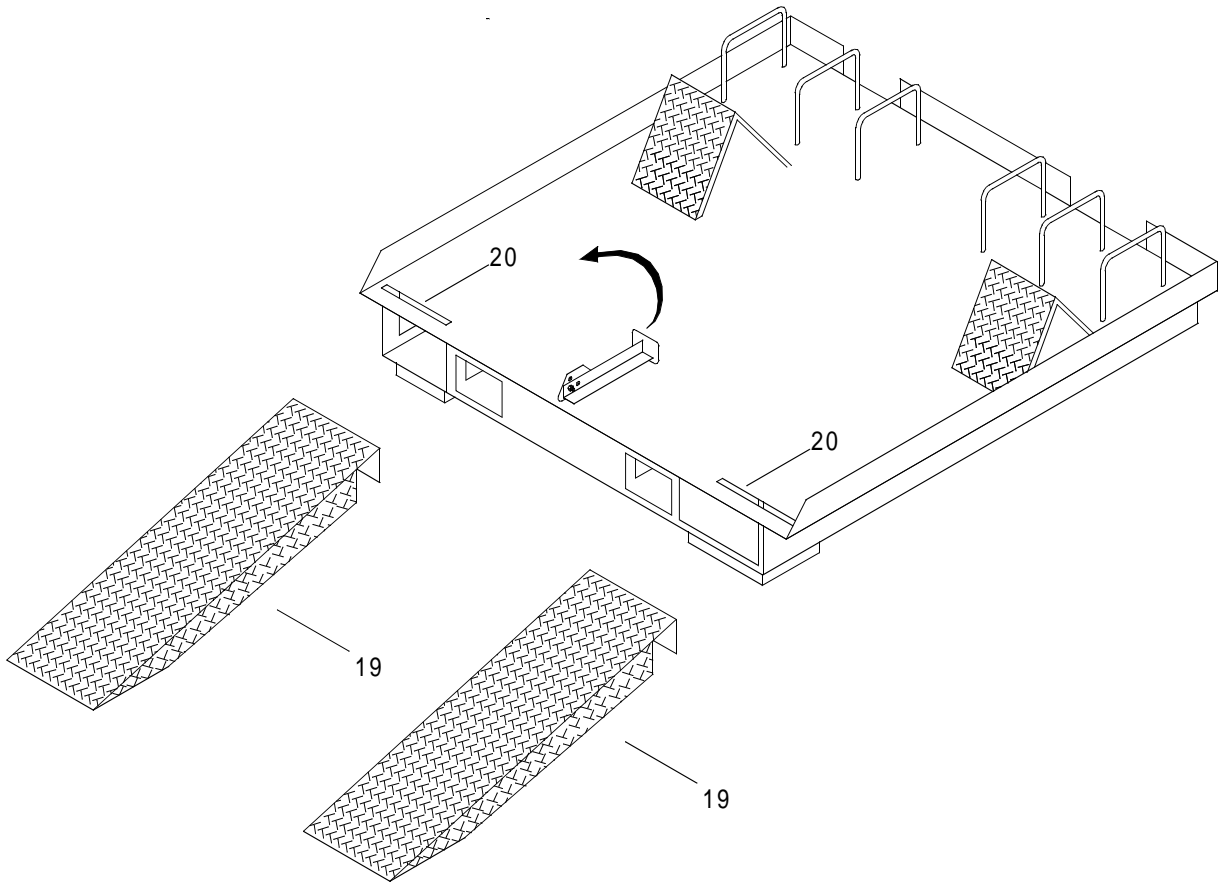
HEAVY PARTS

2. Using forklift pull light tower trailer and pallet from container.
3. Install trailer drawbar (1) and drawbar jack (2) on light tower trailer with bolt (3) and nut (4) and set up on drawbar jack (2).



4. Remove right forward nut (5) from bolt (6) on trailer drawbar hand crank.
5. Position and install electric wire clamp (7) and trailer wire harness (8) to hand crank bracket with nut (5) and bolt (6).
6. Remove nut (9) and washer (10) on right hand side of trailer drawbar, behind drawbar eye (11).
7. Position wire clamp (12) and trailer light harness on bolt and install nut (9) and washer (10).
8. Remove bolt (13) and nut (14) from lower pulley bracket.
9. Remove lower pulley (15).
10. Thread cable (16) on pulley (15), replace pulley (15) and secure with nut (14) and bolt (13).
11. Thread cable (16) around upper pulley (17) and back to lower cable bracket.
12. Remove quick release pin (18) from lower cable pulley bracket.
13. Position cable end loop (16) and attach with quick release pin (18).
14. Connect drawbar eye (11) to towing pintle of fork lift truck.

15. Install ramps (19) into slots (20) of pallet and release tiedowns.



**WARNING**



**HEAVY PARTS**

16. Tow light tower trailer off pallet.

---

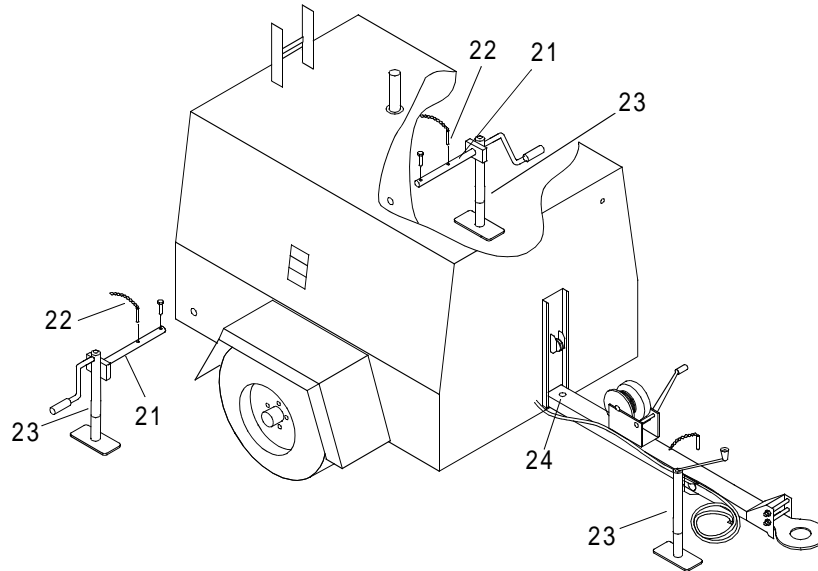
**INSTALL LIGHT TOWER ON AFT LIGHT TOWER UNIT**

---

**NOTE**

Light tower is already attached on forward light tower unit.

1. Disconnect drawbar eye (11) from fork lift truck towing pintle.
2. Extend both outriggers (21) and install locking pins (22) fully.



3. Level unit using jacks (23) and bubble level indicator (24) on drawbar (calm water) or measure from deck at four corners of unit.
4. Secure light tower trailer to FC platform with tiedowns.

---

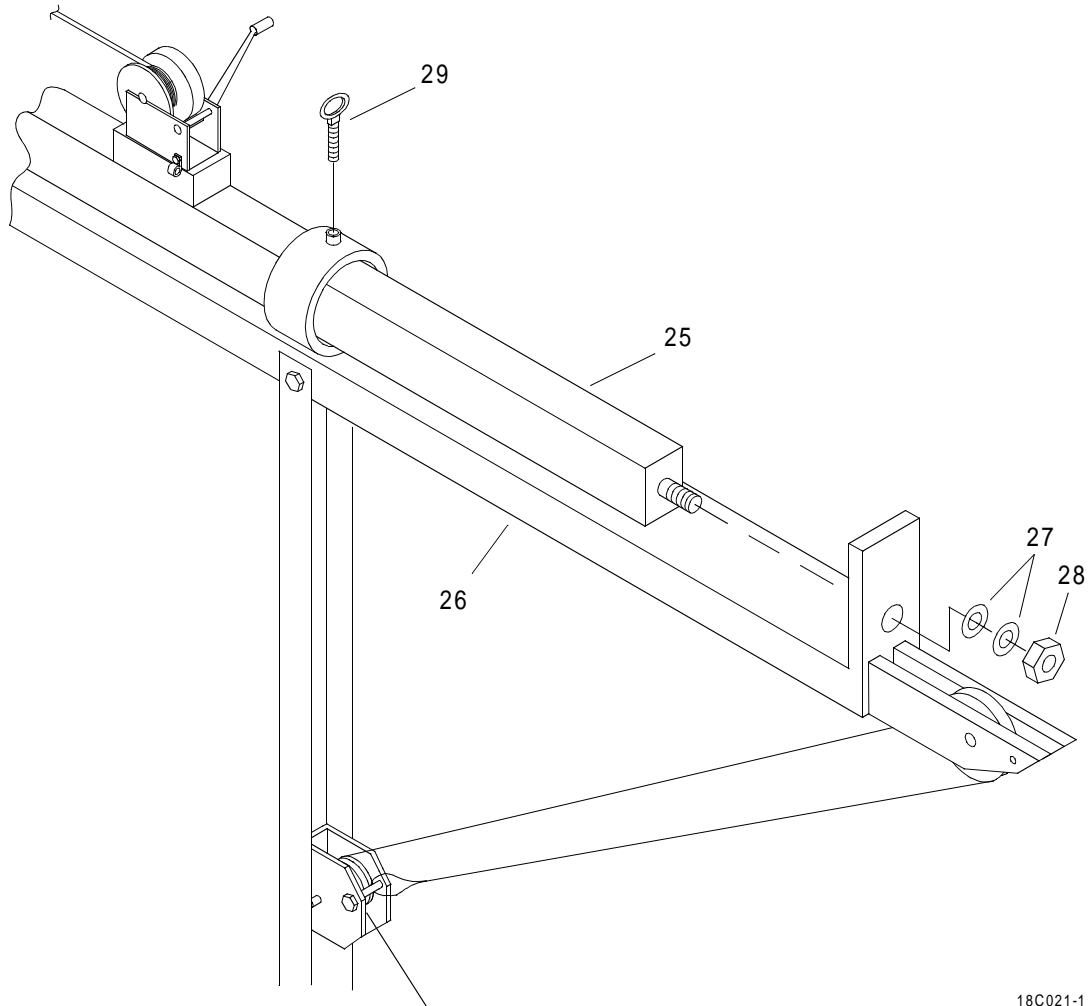
**WARNING**

---

**HEAVY PARTS**

5. Remove hitch pins from upper light tower stowage on container side and remove tower from container.

6. Position and attach upper light tower (25) to aft light tower trailer (26) with 2 washers (27) and nut (28).



7. Tighten eye bolt (29) on boom.

### INSTALL LIGHT TOWER BOOM LIGHTS

#### WARNING

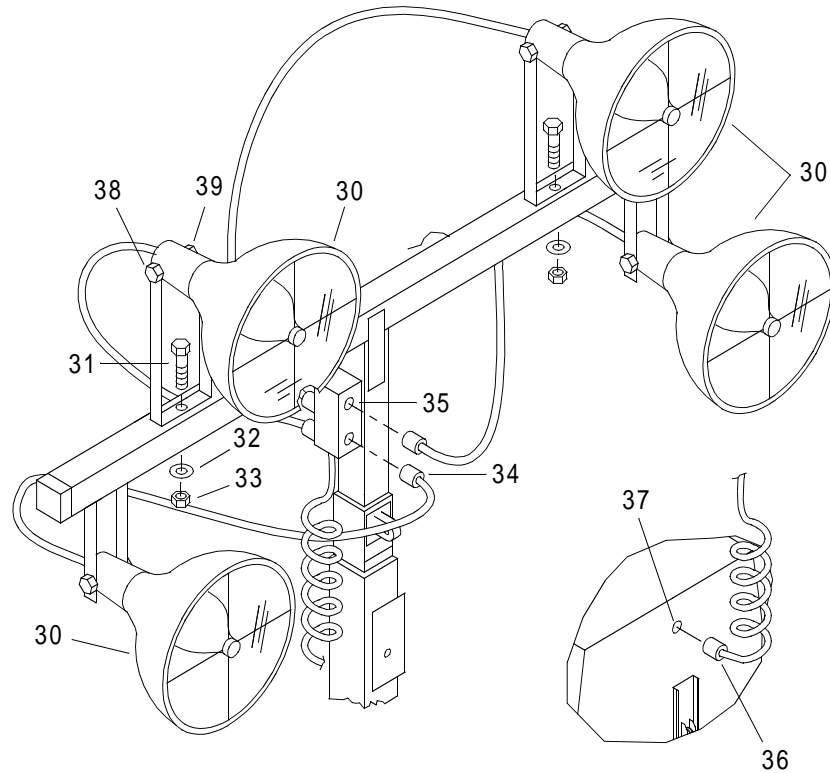


#### HEAVY PARTS

1. Open light tower engine compartment and remove light tower boom lights.
2. Close engine compartment doors.

**WARNING****HEAVY PARTS**

3. Position lights (30) on light tower crossmember and secure with bolts (31), washers (32) and nuts (33).



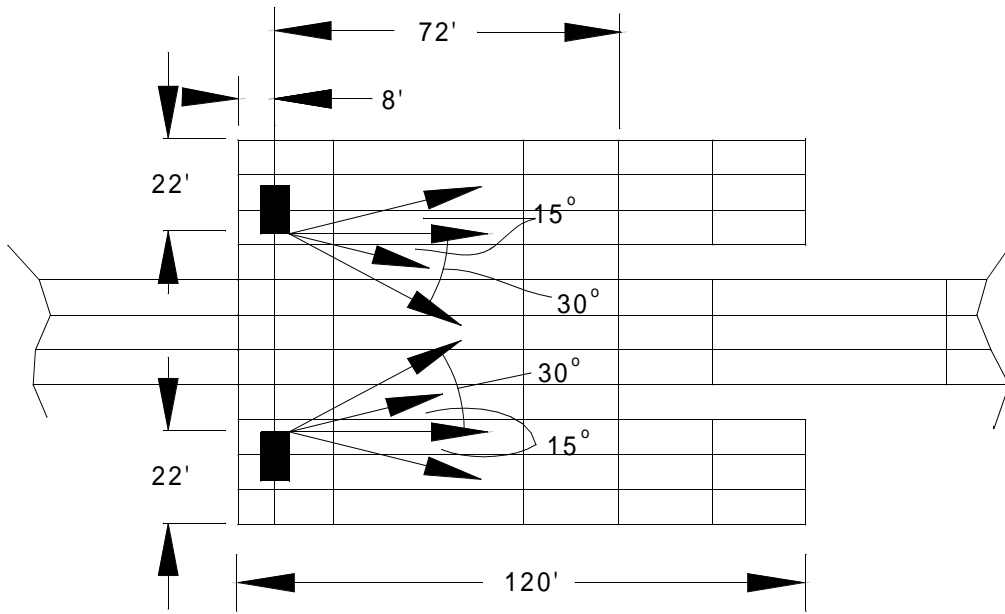
4. Connect light plugs (34) to light tower sockets(35).
5. Connect light tower electrical plug (36) to electrical receptacle (37) on forward top of light trailer.



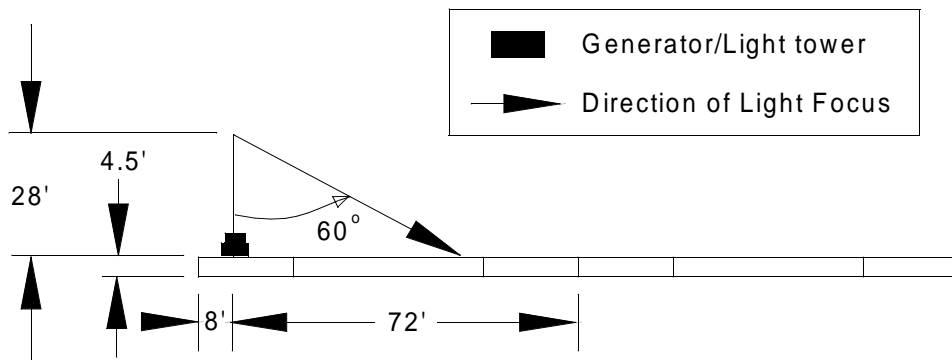
AIM LIGHT TOWER LAMPS

**NOTE**

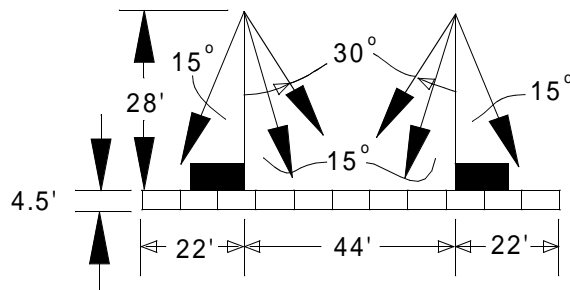
Light tower lamps must be correctly positioned prior to raising the tower.



Plan View



Profile View



End View

1. Loosen bolt (38) and nut (39) to rotate lamp (30).

2. Rotate lamp(s) to desired position.
3. Tighten bolt (38) and nut (39).
4. Repeat adjustment until aiming of light is satisfactory.

### RAISE TOWER

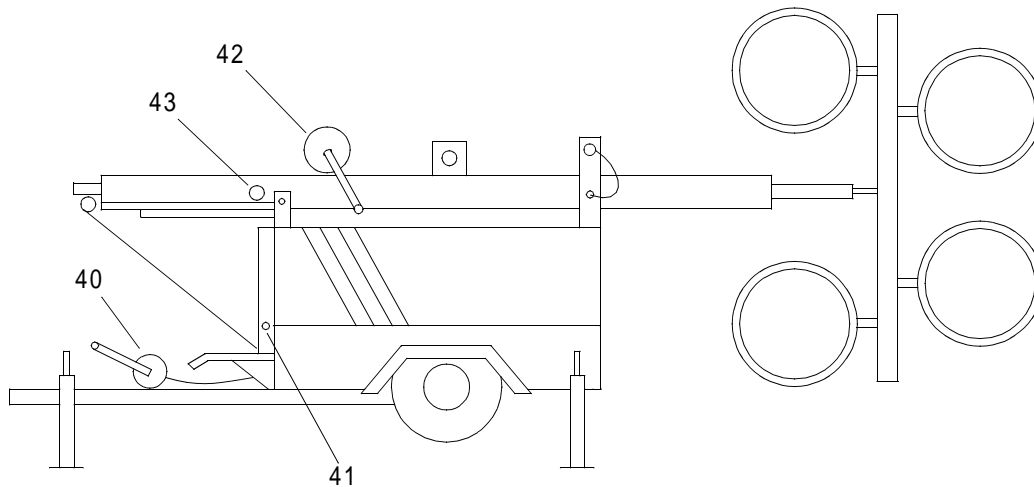
#### **WARNING**

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

**Extend, retract or use in vertical position only. Ensure pin is secure. Falling tower can cause severe injury or death.**

**Ensure no overhead obstruction is within 40 ft. Injury to personnel could occur.**

1. Operate winch (40) to raise tower.



2. Insert and lock pin (41) to secure tower in upright position.

### EXTEND TOWER FOR UPRIGHT OPERATION

#### **NOTE**

Do not extend mast tower past upright mark on tower.

1. With tower in upright position, operate winch (42) to extend tower to 28 ft above collar. Do not extend past upright mark on tower.
2. Loosen eye bolt (43) to rotate tower to desired position.
3. Tighten eye bolt (43).

### END OF WORK PACKAGE

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
DUNNAGE MATS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Tee Handle (Item 9, WP 0103 00)

**Personnel Required**

Seaman 88K

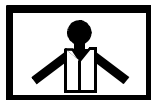
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**PREPARATION FOR USE - INSTALLATION OF DUNNAGE MATS****INSTALL DUNNAGE MATS**


---

**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.**

**Each 4 ft X 10 ft dunnage mat weighs 300 lbs. Exercise care and use appropriate equipment when handling heavy weighted objects. Do not lift materials or equipment over 50 lbs without using appropriate material handling equipment as injury to personnel could occur.**

**Container doors must be latched in the open position. Failure to comply could result in serious injury or death to personnel.**

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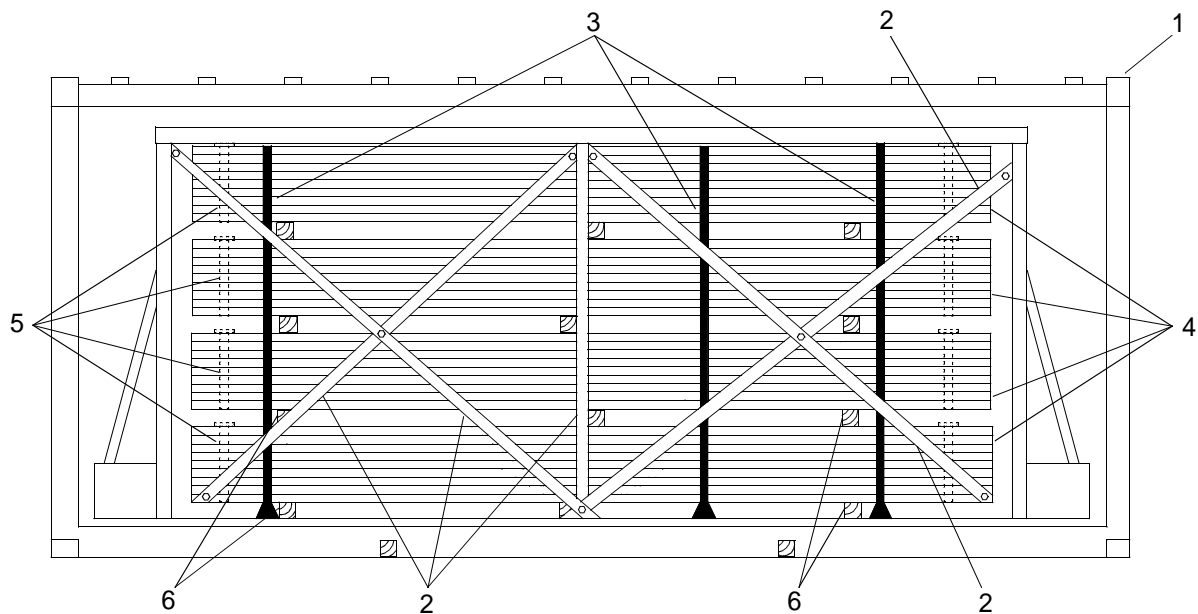
**CAUTION**

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**Opening doors while the ISO container is on a soft or uneven surface; or, moving or lifting container with doors open will damage the container and/or doors.**

1. Open ISO container (1) side doors and latch in open position.

2. Remove flat bars (2) from side of container (1).



3. Remove ratchet strap tiedowns (3).

---

**WARNING**

---



**HEAVY PARTS**

4. Using forklift, or appropriate handling device, remove first dunnage mat (4) stack from container (1).
5. Remove two dunnage mat rods (5) from dunnage mat (4) stack and store in container tool box.
6. Remove 4 X 4 dunnage wood (6) from container.
7. Repeat previous steps for removal of remaining dunnage mat (4) stacks from container (1).
8. Remove first dunnage mat (4) from stack.

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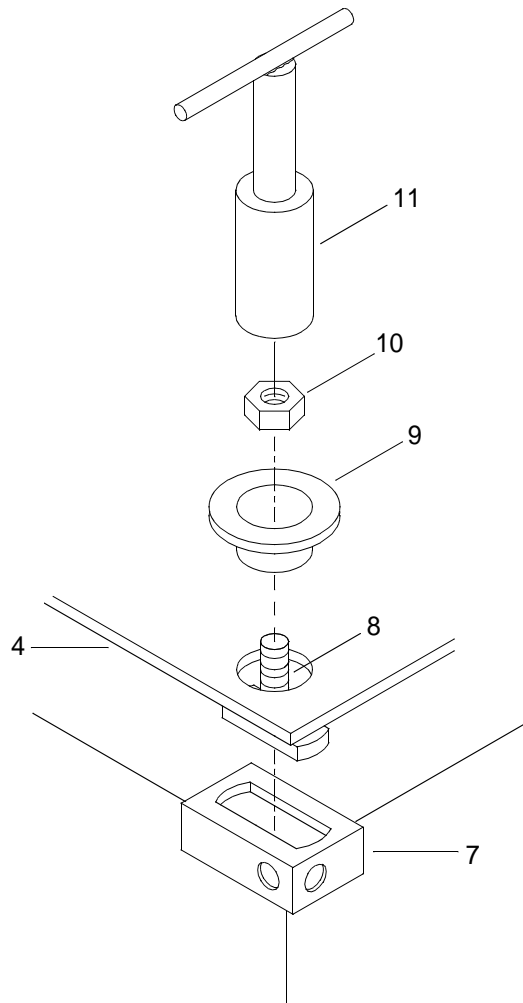
**WARNING**

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**HEAVY PARTS**

9. Position and place dunnage mat (4) on appropriate intermediate section with corner hole over ISO corner fitting (7).



11. Install Tee bolt (8) into under side of dunnage mat (4).
12. Install 5 5/8 in. diameter washer (9) on top of dunnage mat (4) over threaded Tee bolt.
13. Install 1 in. nut (10) to hold Tee bolt in place.
14. Install Tee bolt (8) into the ISO corner fitting (7).
15. Turn Tee bolt (8) 1/4 turn, hold against bottom upper surface of corner fitting (7) and finger tighten nut (10).
16. Using Tee handle (11), tighten nut (9).
17. Repeat above procedure for remaining corners and dunnage mats.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
TACTICAL QUIET GENERATOR  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Personnel Required**

Seaman 88K

**References**

TM 9-6115-643-10

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**OPERATING PROCEDURES - OPERATE TACTICAL QUIET GENERATOR****NOTE**

The 15 KW tactical generator pneumatic cutoff switch is activated when the fire suppression system is discharged. The cutoff switch must be reset before starting the 15 KW tactical quiet generator.

Refer to TM 9-6115-643-10 for 15 KW Tactical Quiet Generator Operating Instructions.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER BASE FUEL TANK  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Extinguisher, Fire (10 lb) (Item 15, WP 0104 00)

**Materials/Parts**

Diesel Fuel, Summer Grade, DF2 (Item 8, WP 0105 00)  
 Spill Clean-Up Kit, Hazardous Material (Item 52, WP 0104 00)

**Personnel Required**

Seaman 88K

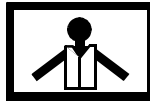
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**OPERATING PROCEDURES - REFUELING TACTICAL QUIET GENERATOR BASE FUEL TANK**


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**WARNING**

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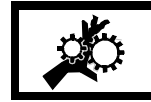
VEST



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.**

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

---

**WARNING**


---

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

---

**CAUTION**


---

Fuel Level: Fill using **CLEAN DIESEL** fuel (as required) and at the end of the day to minimize condensation. Refer to Table 1 for correct diesel fuel for the environment where equipment is being operated, otherwise damage to equipment could occur.

---

**NOTE**

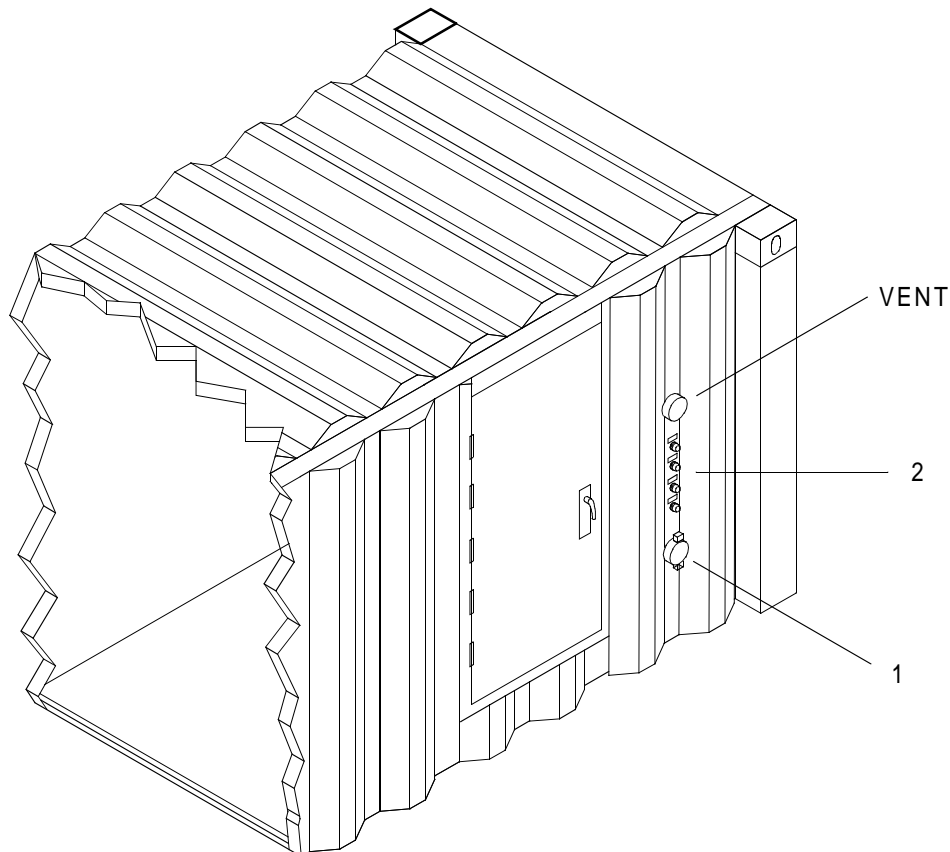

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Fire extinguisher and spill kit must be present during refueling.

Table 1. Diesel Fuel.

AMBIENT TEMPERATURE	DIESEL FUEL
+20°F to +120°F (-7°C to +49°C)	W-F-800 Grade DF-2 JP4, JP5, JP8
0°F to +20°F (-17°C to +7°C)	W-F-800 Grade DF1 JP4, JP5 JP8
-25°F to 0°F (-32°C to -17°C)	W-F-800 Grade DF-1
-25°F to 0°F (-32°C to -17°C)	W-F-800 Grade DF-A

- Attach fuel nozzle to fill port (1). Procedure is the same for outside or inside fill port.



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**WARNING**

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**FIRE****EXPLOSION**

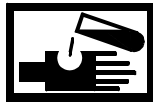
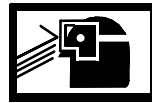
Ensure there is no smoking during refueling operations. Failure to observe these precautions could result in explosion and/or fire causing serious injury or death to personnel or damage to equipment.

3. While observing the four indicator lights (2), fill tank until fuel reaches desired level.

---

**WARNING**

---

**CHEMICAL****EYE PROTECTION**

4. Detach fuel nozzle from fill port (1).
5. Check for fuel leaks.

---

**WARNING**

---

**CHEMICAL****EYE PROTECTION****SLICK FLOOR**

6. Clean up spilled fluid with a spill kit and dispose of spill kit waste in accordance with local procedures.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
OPERATIONS UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and (Leather Palm) (Item 23, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Gloves, Chemical (Item 22, WP 0104 00)  
 Goggles, Industrial (chipping, chemical) (Item 24, WP 0104 00)  
 Extinguisher, Fire (10 lb) (Item 15, WP 0104 00)

**Materials/Parts**

Spill Clean-Up Kit, Hazardous Material (Item 52, WP 0104 00)

**Personnel Required**

Seaman 88K

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**OPERATING PROCEDURES - TRANSFERRING FUEL FROM TACTICAL QUIET GENERATOR BASE  
FUEL TANK TO DAY FUEL TANK**

**REFUEL GENERATOR DAY FUEL TANK**


---

**WARNING**

---



VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS



EXPLOSION

**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.**

**Ensure container and generator are grounded before beginning refueling operation. Failure to observe these precautions could result in serious injury or death.**

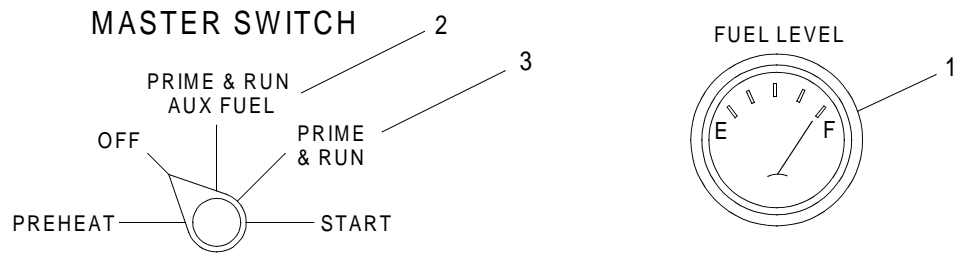
**Transferring fuel to day tank must not be attempted while generator is operating as it presents a safety hazard. Failure to observe this warning could result in serious injury or death to personnel.**

**NOTE**

Fire extinguisher and spill kit must be present during transfer of fuel from base tank to day tank.

Transfer of fuel to day tank should be performed prior to starting operation or at end of operation.

1. Transfer fuel from the 1000 gallon tank to the day tank using auxiliary electric fuel pump.



- a. Observe the fuel gauge (1) to determine the fuel level in the day tank.

### NOTE

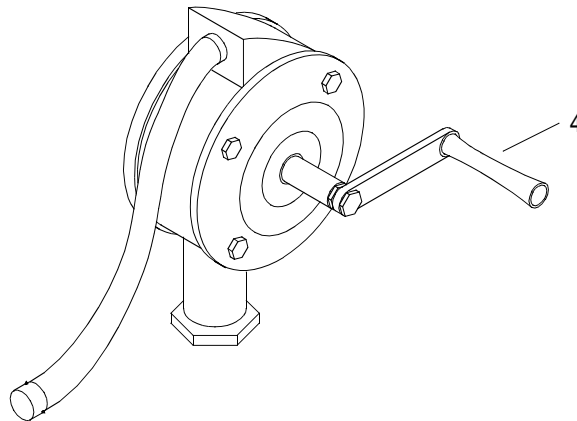
Operation of the electric (24V DC) fuel pump is preset to automatically transfer fuel from the base tank to the day tank with the generator control panel master switch.

- b. Rotate the master switch to the PRIME & RUN AUX FUEL position (2)
  - c. Ensure that the master switch is not in the PRIME & RUN position (3) as it will not automatically refuel the day tank
3. Transfer fuel using rotary hand pump.

### NOTE

The hand pump can pump 10 gallons of fuel per minute (approximately 100 revolutions of the handle).

- a. Grasp handle (4).

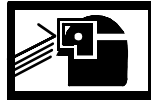


- b. Turn manual pump handle (4) in clockwise direction to transfer fuel.
4. While observing the generator control panel fuel gauge (1), fill tank until fuel reaches desired level.
  5. Check for fuel leaks.

---

**WARNING**

---

**CHEMICAL****EYE PROTECTION****SLICK FLOOR**

6. Clean any fuel spills using spill kit.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER FIRE SUPPRESSION SYSTEM  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Personnel Required**

Seaman 88K

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**OPERATING PROCEDURES - OPERATE GENERATOR CONTAINER FIRE  
SUPPRESSION SYSTEM****TEST CONTROL MODULE LED INDICATORS AND SOUNDER**

---

**WARNING**

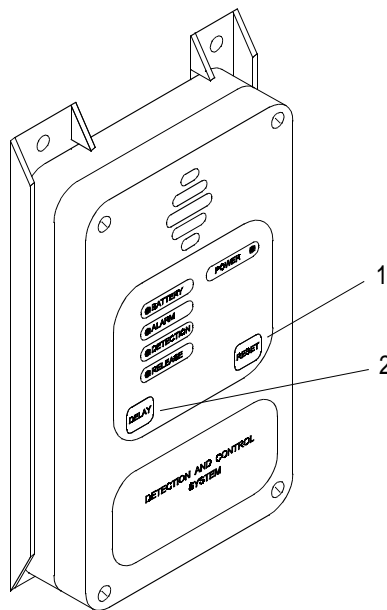
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**Fire in protected compartments or accidental activation of the CO<sub>2</sub> system while personnel occupy compartment could result in loss of life if CO<sub>2</sub> is released. Personnel must listen for siren, recognize its sound and evacuate space immediately (within 30 seconds).**

**Do not depress fire suppression control head lever during normal maintenance. Death or injury to personnel could occur if CO<sub>2</sub> is inhaled.**

**Prior to entering the shelter after discharge of CO<sub>2</sub>, the shelter shall be completely cleared of any CO<sub>2</sub> that may remain. Death or injury to personnel could occur if CO<sub>2</sub> is inhaled.**

1. Locate control module.
2. Press RESET button (1) to illuminate LED indicators and activate sounder.



3. Refer to troubleshooting procedures if light or sounder is inoperative.

---

**CANCEL ACTIVATED ALARM AND REINITIALIZE CONTROL MODULE**

1. Locate control module.
2. Press RESET button (1) before fire suppression is released.

**RESTART SHUTDOWN DELAY TIMER****NOTE**

Shutdown delay timer cannot be restarted after release delay timer has been initiated.

1. Locate control module.
2. Press DELAY button (2) before release delay timer is initiated.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PERSONNEL SHELTER  
OPERATION UNDER USUAL CONDITIONS**

---

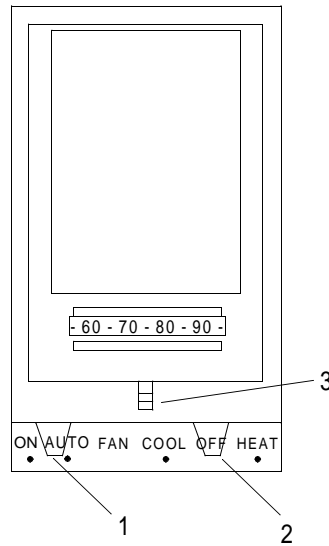
**INITIAL SETUP:****Personnel Required**

Seaman 88K

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**OPERATING PROCEDURES - PERSONNEL SHELTER HEATING AND AIR CONDITIONING SYSTEM****TEMPERATURE CONTROL**

1. Place fan control switch (1) in the AUTO position.



2. Select heat or cool using selector (2).
3. Increase temperature by moving the slide lever (3) to the right.
4. Decrease temperature by moving the slide lever (3) to the left.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
INCINERATOR TOILET/URINAL GALLEY (INCINOLET)  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

**References**

TM 55-1925-257-14&P

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**OPERATING PROCEDURES - INCINERATOR TOILET/URINAL GALLEY EQUIPMENT AND  
ELECTRIC WATER HEATER (INCINOLET)**

Refer to Incinerator Toilet/Urinal Galley/Water Heater TM 55-1925-257-14&P.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
PERSONNEL SHELTER ISO CONTAINER  
VHF/FM HANDHELD TRANSCEIVER  
OPERATION UNDER USUAL CONDITIONS**

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**INITIAL SETUP:****Personnel Required**

Seaman 88K

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**OPERATING PROCEDURES - OPERATE THE VHF/FM HANDHELD TRANSCEIVER****INITIAL SETUP OF VHF/FM HANDHELD TRANSCEIVER**

---

**WARNING**

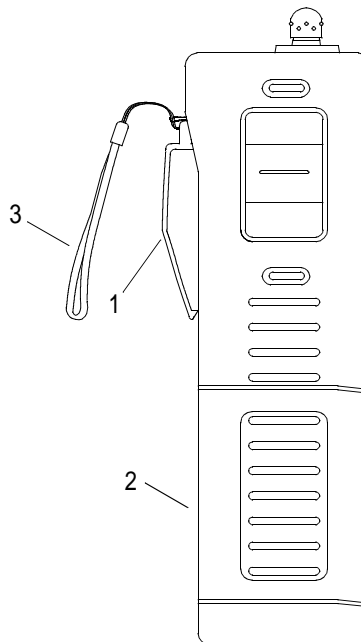
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**EXPLOSION**

**To avoid the risk of explosion, do not operate radio where explosive vapors may be present. Failure to observe these precautions could result in serious injury or death.**

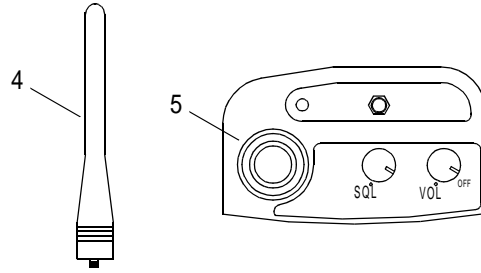
**A metal object shorting the terminals may cause the battery to explode. Failure to observe this precaution could result in serious injury or death.**

1. Install the belt clip (1) on the transceiver (2), if desired.

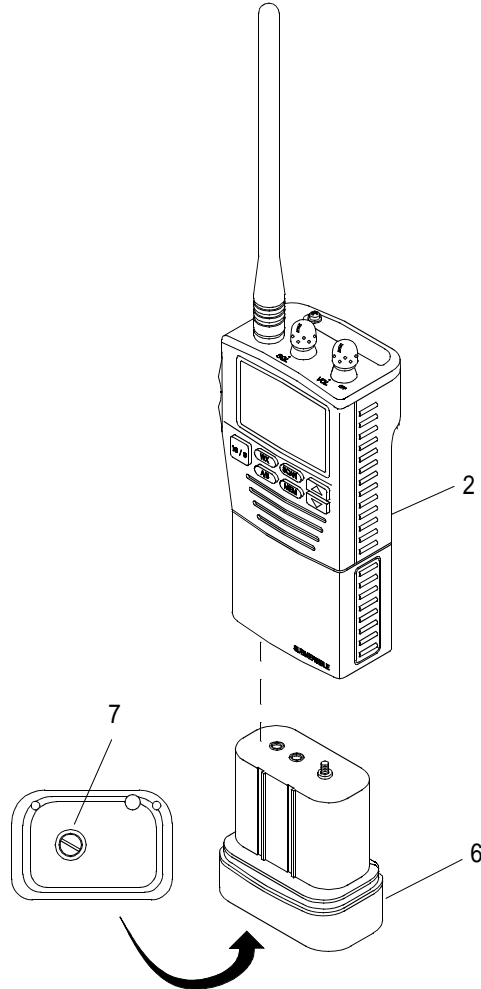


2. Install the nylon strap (3) on the belt clip (1), if desired.

3. Install the antenna (4) in the transceiver antenna receptacle (5).



4. Install the CNB350 nickel cadmium battery pack (6) in the transceiver (2).



- Slide the battery pack (6) into the battery cavity.
- Rotate the battery lock screw (7) counterclockwise two revolutions prior to tightening.
- Turn the battery lock screw (7) clockwise until hand tight.



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**BATTERY CHARGING**

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**WARNING**

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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.

To avoid risk of explosion and injury, do not operate radio where explosive vapors may be present. Failure to observe these precautions could result in serious injury or death.

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

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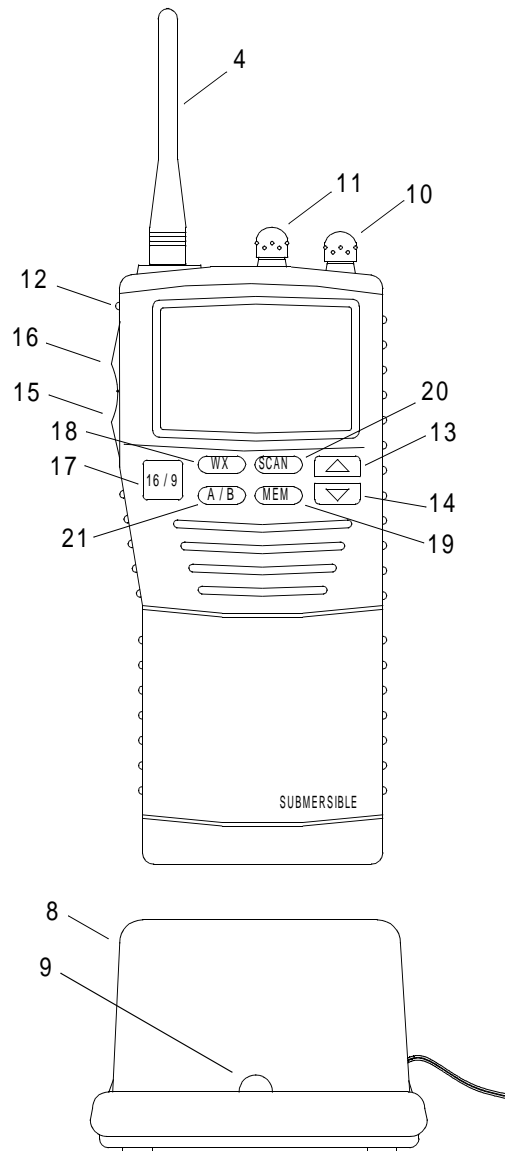
**CAUTION**

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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.

1. Turn the transceiver off.
2. Insert the transceiver (2) into the charger (8) to light charge indicator (9) and to begin charging.



3. Remove the transceiver (2) from the charger (8) when battery charge time has elapsed.

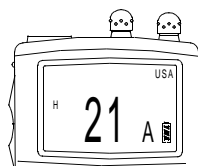
### TURNING THE RADIO ON

#### NOTE

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

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

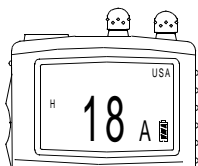
1. Turn the POWER/VOLUME knob (10) clockwise to turn the transceiver on.



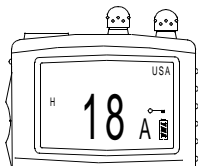
2. Rotate the SQUELCH CONTROL knob (11) fully counterclockwise to the SQUELCH OFF position.
3. Rotate the POWER/VOLUME CONTROL knob (10) until the noise or audio from the speaker can be heard.
4. Select a channel that has no voice transmissions occurring.
5. To find the squelch threshold, rotate the SQUELCH CONTROL knob (2) clockwise until the noise stops.
6. To turn on the radio light for 5 seconds, press the LAMP key (12)
7. To turn off the light sooner than 5 seconds, press the LAMP key (12).

### RECEIVING RADIO TRANSMISSIONS

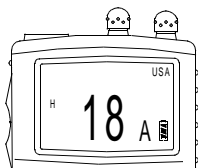
1. Press the UP ARROW key (13) or DOWN ARROW key (14) to change channels.



2. Press the LAMP/KEY LOCK key (12) for 1 second to lock the channel in the operating mode.
3. Ensure that the key lock symbol (12) appears on the display to indicate that the channel is locked.

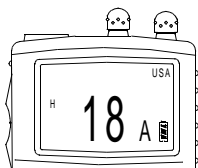


4. To unlock the channel, press the LAMP/KEY LOCK key (12) for 1 second.
5. Ensure that the key lock symbol disappears from the display to indicate that the channel is unlocked.



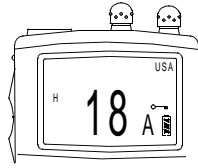
### TRANSMITTING

1. Press the UP ARROW key (13) or DOWN ARROW key (14) to change channels.

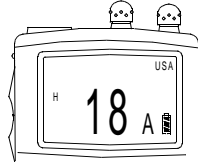


2. Adjust squelch as required.

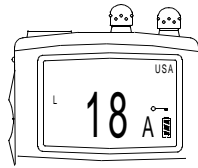
- Press the LAMP/KEY LOCK key (12) for 1 second to lock the channel in the operating mode.



- To unlock the channel, press the LAMP/KEY LOCK key (12) for 1 second.

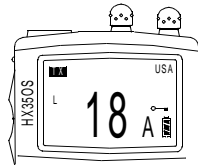


- Press the H/L key (15) until L is displayed for transmissions over a short distance.



- If low power is not effective, press the H/L key (15) until H is displayed.

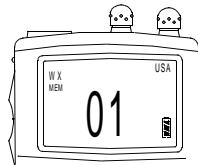
- Press the PTT switch (16) to transmit.



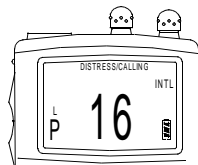
- Release the PTT switch (16) when transmission is completed.

## OPERATING MODES

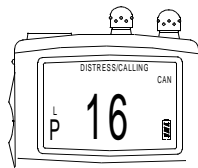
- To access the USA operating mode, hold down the 16/9 key (17) and press the WX key (18) to change the mode of the receiver to USA.



- To access the INTERNATIONAL operating mode, hold down the 16/9 key (17) and press the WX key (18) to change the mode of the receiver to INTL.

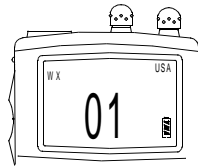


- To access the CANADIAN operating mode, hold down the 16/9 key (17) and press the WX key (18) to change the mode of the receiver to CAN.

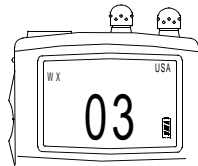


## NOAA WEATHER CHANNELS

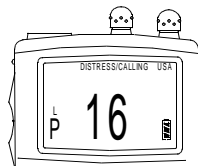
- Press the WX key (18) to receive a weather channel.



- Press the UP ARROW key (13) or DOWN ARROW key (14) to change to other weather channels.

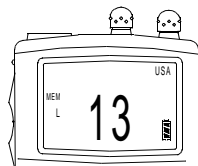


- Press the WX key (18) to exit from the weather channels and return to the previous non-weather channel.



## SCANNING

- Select the desired channel to be scanned using the UP ARROW key (13) or DOWN ARROW key (14).
- Press the MEM key (19) to store the channel into the transceiver's memory.



- Repeat steps one and two until all channels to be scanned are stored in the transceiver's memory.
- Press the SCAN key (20) to start scan.
- Press the SCAN key (20) to stop the scan.

---

**DELETE SCAN MEMORY**

1. To delete a channel from the transceiver's scan memory, select the desired channel using the UP ARROW key (13) or DOWN ARROW key (14).
2. Press the MEM key (19) while the channel number to be deleted from the scan memory is displayed.
3. Delete the complete scan memory by resetting the transceiver's microprocessor.
  - a. Turn the transceiver off using the POWER/VOLUME CONTROL knob (10).
  - b. To return to the factory default settings, press the SCAN key (20) and the WX key (18) while turning on the transceiver.

**PRIORITY SCAN**

1. To change from channel 16 to channel 09 and set the priority channel, hold down the 16/9 key (17) and press the MEM key (19).
2. Press MEM key (19) to change to channel number programmed as A channel.
3. Press MEM key (19) to change to channel number programmed as B channel.
4. Press the SCAN key (20) at least 1 second for priority scanning during normal scanning.

**WEATHER ALERT****NOTE**

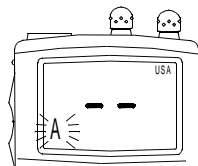
A loud tone will indicate that the transceiver is in the weather alert mode. When a weather alert is received, scanning stops and the transceiver enters the weather alert mode.

1. Press the SCAN key (20) to start scanning the memorized weather channels along with the other regularly scanned channels.
2. Press the WX key (18) to stop the alert tone and receive the voice information on the weather channel.

**CHANNEL A/B INSTANT ACCESS****NOTE**

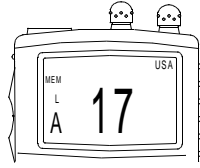
Ensure that a blinking letter A and dashes appear on the display to indicate that no channel has been selected for A.

1. Press the A/B key (21) and turn the transceiver on.



2. Using the UP ARROW key (13) and DOWN ARROW key (14), enter the desired channel.

- 
3. Press the MEM key (19) to stop displayed A blinking and display the A channel.



4. Turn the radio off and back on to return to normal radio mode.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWERS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

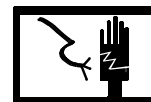
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**OPERATING PROCEDURES - OPERATING PROCEDURES FOR LIGHT TOWERS****STARTING LIGHT TOWERS**


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**WARNING**

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**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.**

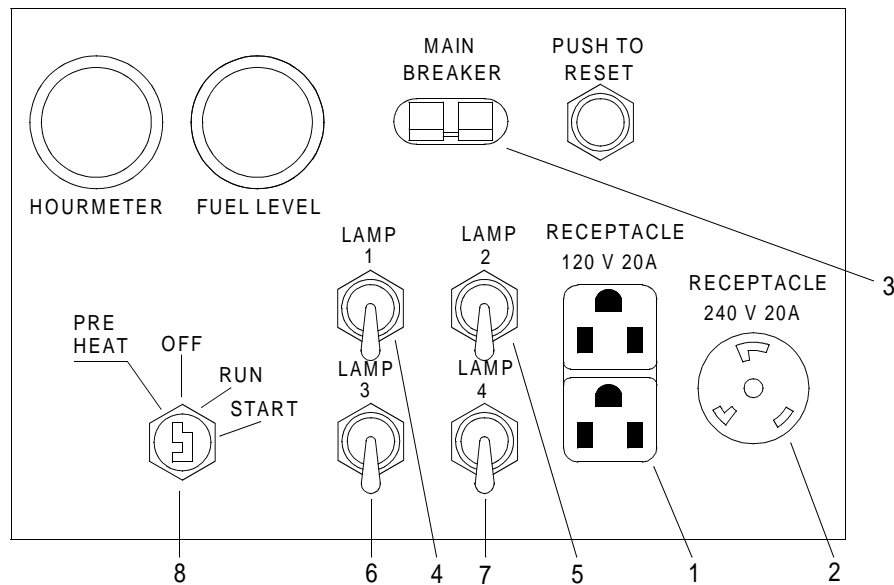
**Electrical power is present upon cranking engine. Electrical shocks could cause injury or death.**

**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 (except the control panel) and receptacles. Before restarting the unit, check fuel level and engine/radiator thoroughly and correct the problem.

The lamps should not be restarted for approximately fifteen (15) minutes.

1. Unplug plugs from RECEPTACLES (1) and (2).



2. Position MAIN BREAKER (3) to off (down) position.
3. Position LAMP switches (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 (8) to PRE HEAT for 5 seconds prior to starting.

### **CAUTION**

**Do not crank for more than 15 seconds without allowing starter to cool for 30 seconds. Failure to comply could result in starter damage.**

5. After 5 seconds, turn rotary switch (8) to START.

### **CAUTION**

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

6. Release rotary switch (8) after engine continues to run.
7. Allow engine to run for 3 to 5 minutes before using RECEPTACLES (1) and (2) and LAMP switches (4), (5), (6) and (7).
8. If engine stops unexpectedly, refer to troubleshooting procedures.
9. Plug external loads into RECEPTACLES (1) and (2), as required.
10. Position MAIN BREAKER (3) to the on (up) position.
11. Position LAMP SWITCHES (4), (5), (6) and (7) to on (up) positions, as required.

---

**STOPPING LIGHT TOWERS**

1. Position MAIN BREAKER (3) to off (down) position.
2. Remove plugs from RECEPTACLES (1) and (2).
3. Position all LAMP SWITCHES (4), (5), (6) and (7) to off (down).
4. Turn rotary switch (8) to OFF.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
OFFSHORE ANCHOR MOORING LEGS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)  
 Forklift Adaptor (Item 19, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Floating Causeway Assembled. (WP 0015 00)

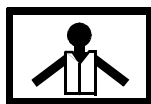
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**OPERATING PROCEDURES - DEPLOY OFFSHORE ANCHOR MOORING LEGS****UNPACK OFFSHORE CONTAINER**


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**WARNING**

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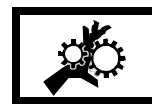
VEST



HELMET PROTECTION



HEAVY PARTS



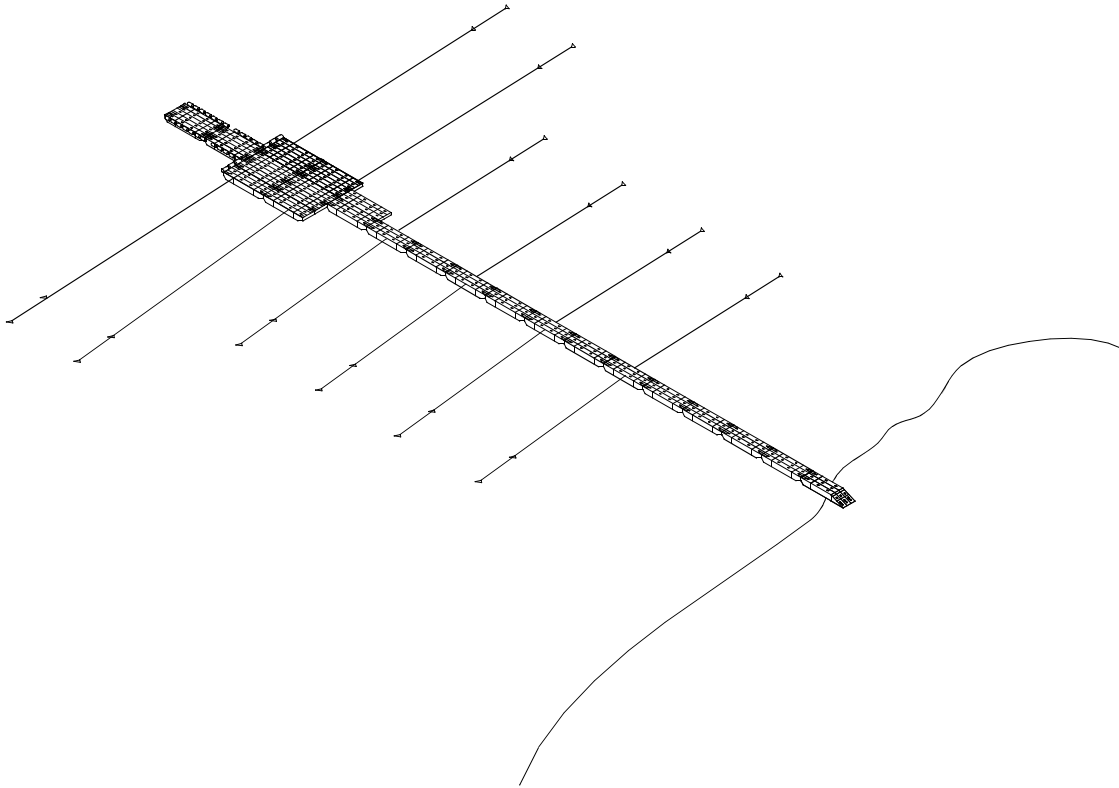
MOVING PARTS

**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 following procedure is typical for the assembly and deployment of offshore anchor mooring legs. Two anchors, a buoy and one set of cables with accessories make up one mooring leg.

1. Position offshore containers parallel with and on alternate FC intermediate sections for assembly of mooring legs prior to deployment.



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**WARNING**

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Ensure that each door is latched in the open position before releasing control of door, or lock each door in closed position when doors are not being handled. Failure to comply could result in death or serious injury to personnel.

2. Unlatch and open container side doors and secure to container with locking hooks.

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**WARNING**

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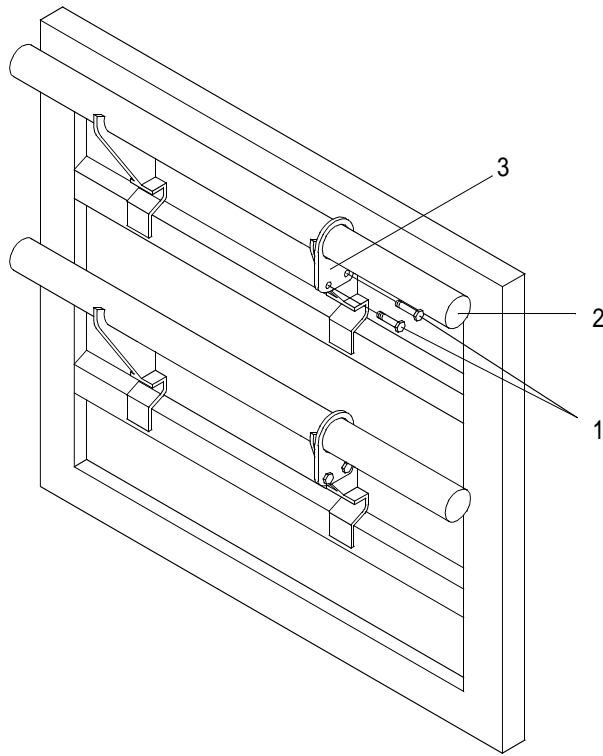
**HEAVY PARTS**

3. Using forklift, remove upper cable tray from side door access and set on deck close to selected mooring leg assembly point.

**NOTE**

Two anchor stabilizers are located on each inner and outer side door. A ratchet and socket is provided on the interior of a side door for stabilizer bolt removal and installation.

4. Remove bolts (1) securing stabilizer (2) to inner side door mount (3).

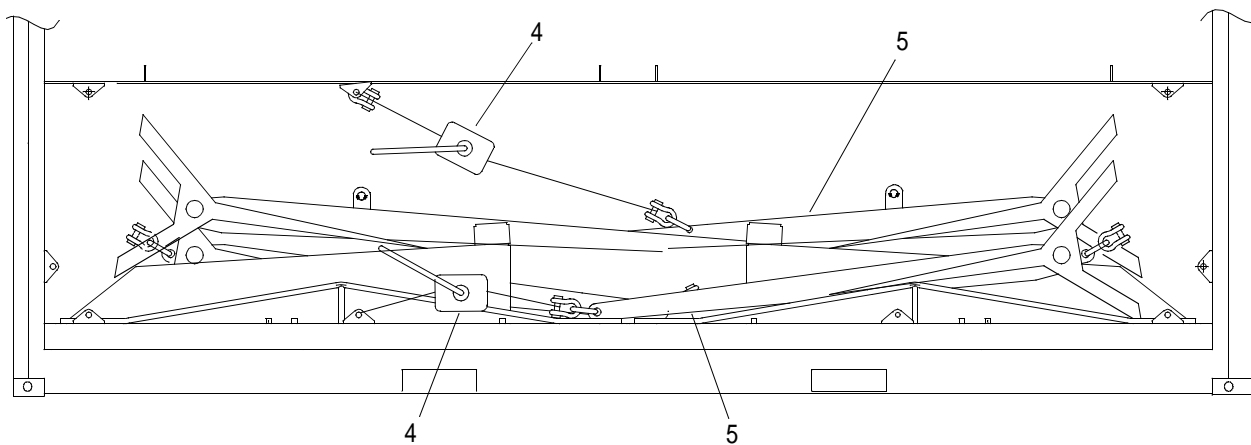


**WARNING**



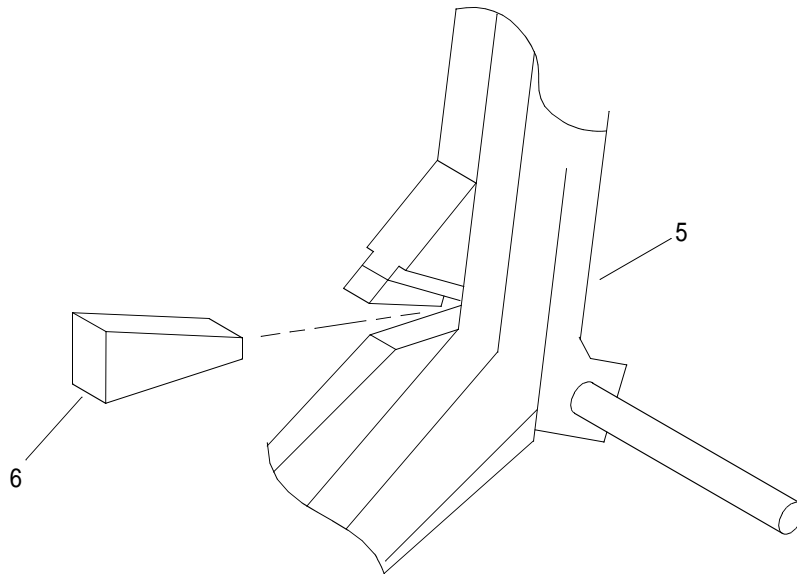
**HEAVY PARTS**

5. Remove stabilizer (2) and place close to selected mooring leg assembly point.
6. Retain removed bolts (1) for installation of stabilizer (2).
7. Remove lever hoist ratchet (4) securing anchor (5) to container.



8. Place lever hoist ratchet (4) out of the way.

9. Unlatch and open container end doors.
10. Secure doors to container with locking bars.
11. Remove aluminum wedge (6) from the toolbox.



12. Install wedge (6) in anchor (5) to keep anchor flukes from moving while being lifted.

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**WARNING**

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**HEAVY PARTS**

13. Using forklift and forklift lifting adaptor, remove anchor (5) through end doors.

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**WARNING**

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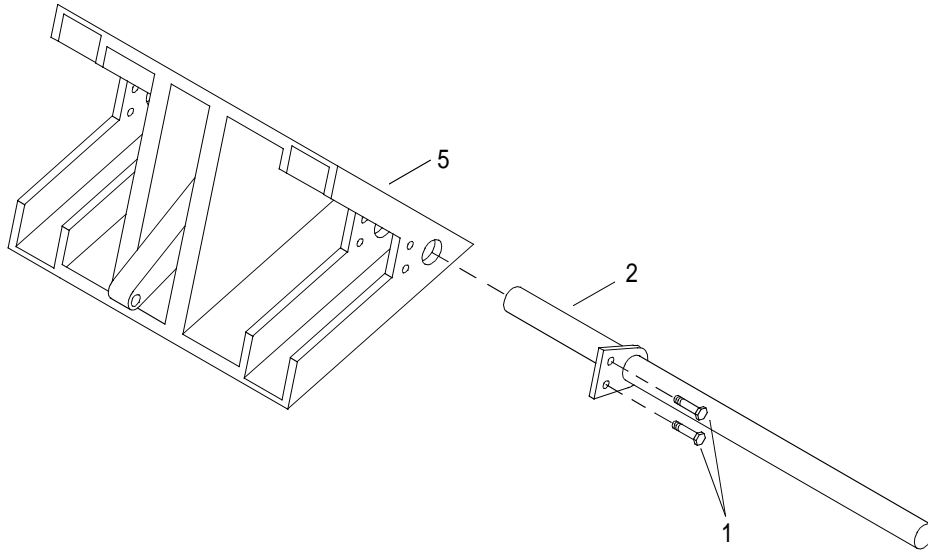
**HEAVY PARTS****NOTE**

It is recommended that anchors be placed as close as possible to the edge of the deck to prevent unnecessary dragging of the anchors during deployment.

14. Place anchor (5) in close proximity to selected mooring leg assembly point.
15. Remove wedge (6) from anchor.
16. Use wedge on second anchor, remove and return wedge to toolbox.



17. Using previously removed bolts (1), install two stabilizers (2) on anchor (5).



18. Tighten bolts (1) securely.

19. Return ratchet and socket to its inner door location in container.

20. Remove buoy (7) from container.

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**WARNING**

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**HEAVY PARTS**

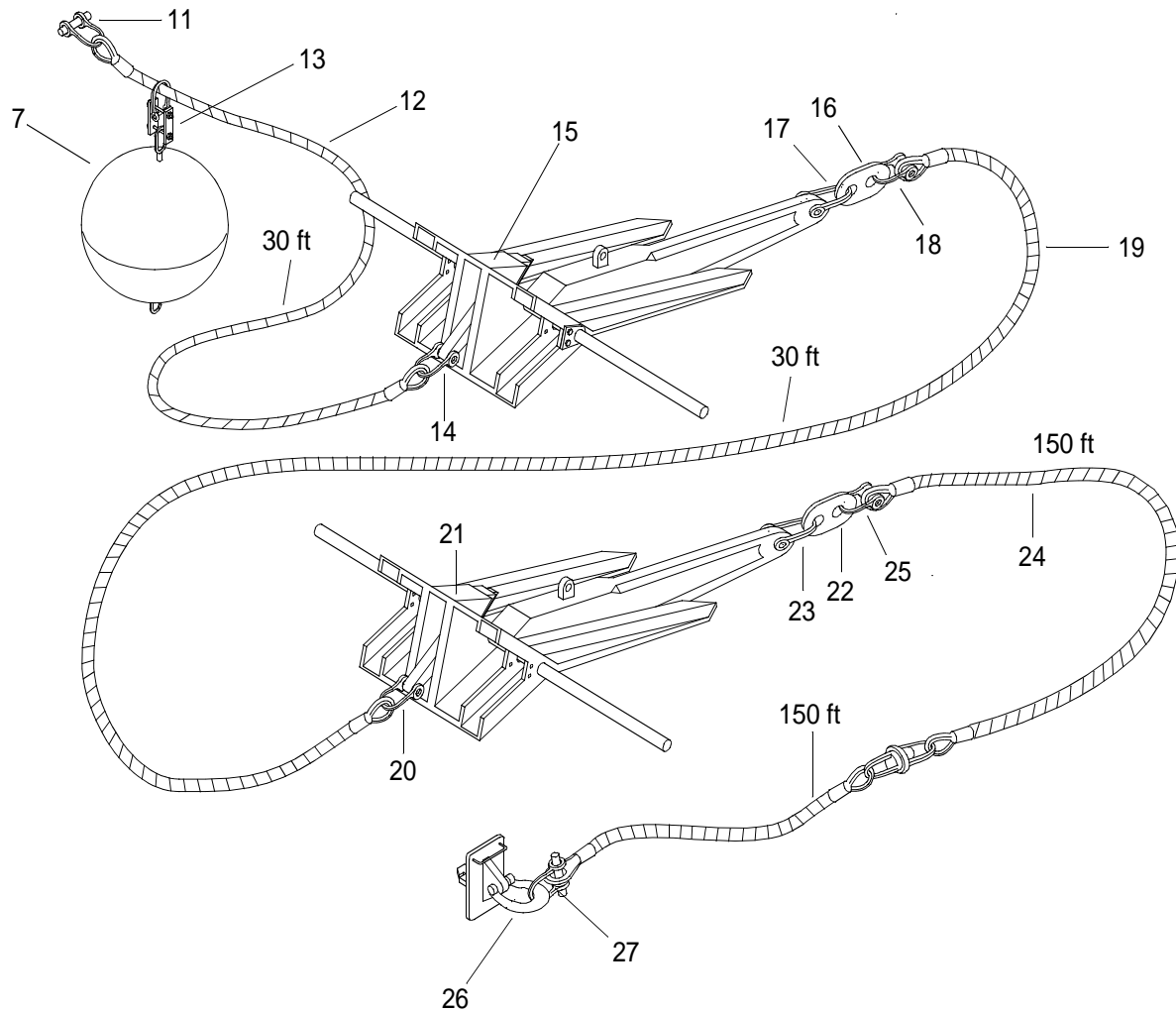
a. Remove quick release pin (8) from pin (9).



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**ASSEMBLE MOORING LEGS**

## 1. Assemble mooring leg.




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**WARNING**


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**HEAVY PARTS**

- a. Using forklift remove mooring cables from upper cable tray and place on deck.
- b. Fake out all mooring cables on deck.
- c. Remove shackle (retrieval pendant) (11) from end of 30 ft buoy cable (12).
- d. Pass end of 30 ft buoy cable (12) through shackle assembly (13) of buoy (7).
- e. Install shackle (retrieval pendant) (11) on end of buoy cable (12).

- 
- f. Attach buoy cable (12) to shackle (14) on bottom of anchor (15) tandem link.
  - g. Attach one end of eye to eye swivel (16) to anchor shackle (17) and opposite end of swivel to shackle (18).
  - h. Attach 30 ft cable (19) between shackle (18) and shackle (20) on bottom of anchor (21) tandem link.
  - i. Attach eye to eye swivel (22) to anchor shackle (23).
  - j. Attach two 150 ft cables (24), with swivel, to eye to eye swivel (22) using shackle (25).
  - k. Remove vertical padeye (26) from toolbox.
  - l. Attach opposite end of 150 ft cable (24) to vertical padeye (26) with shackle (27).

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**WARNING**

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**HEAVY PARTS**

- m. Using forklift, return emptied upper cable tray to upper shelf of container.
2. Remove container locking bars.
3. Close and latch container end doors.

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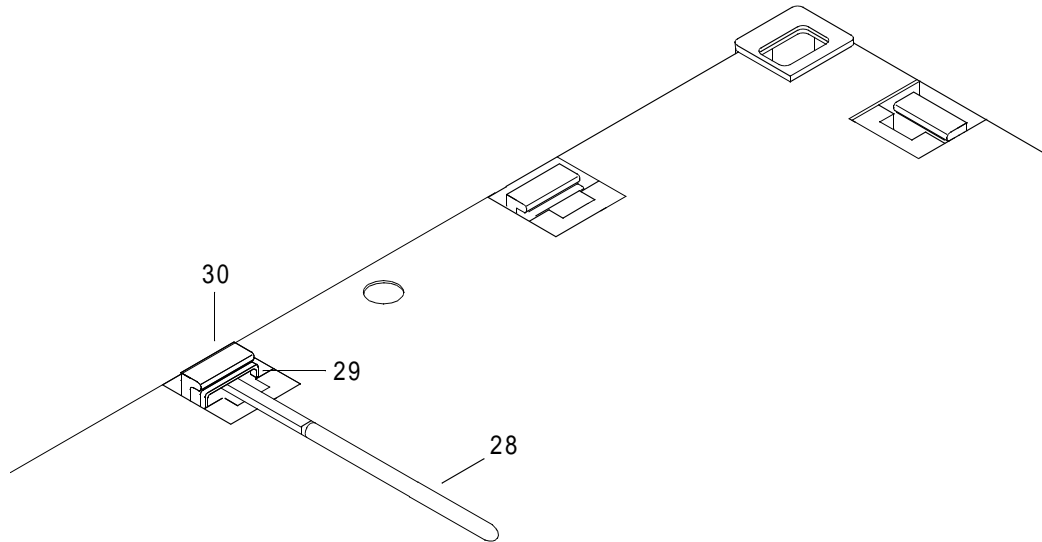
**WARNING**

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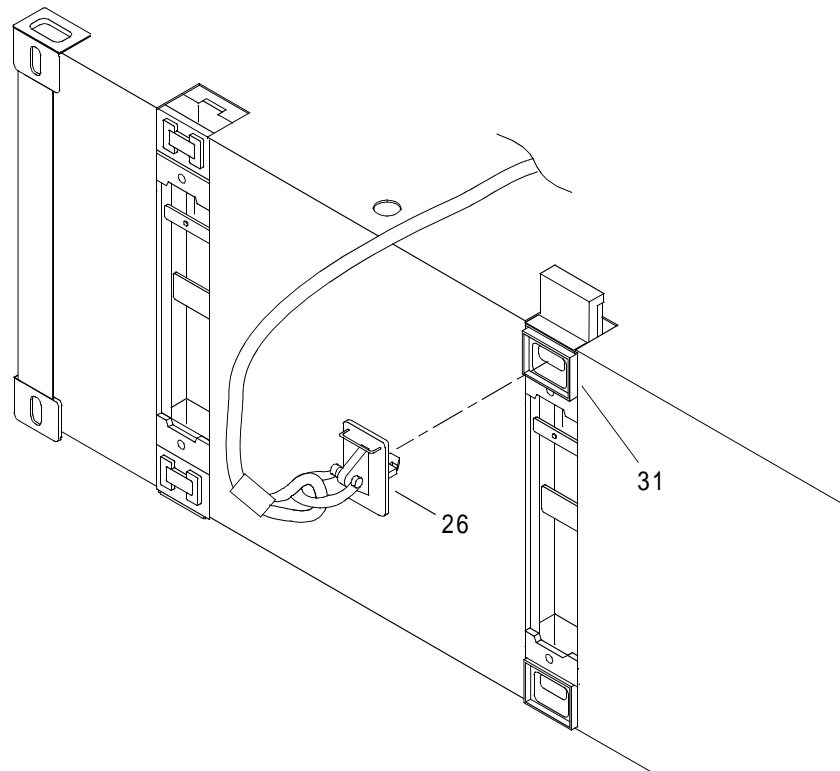
**HEAVY PARTS**

4. Remove container from FC.
5. Install vertical padeye (26) to FC module.

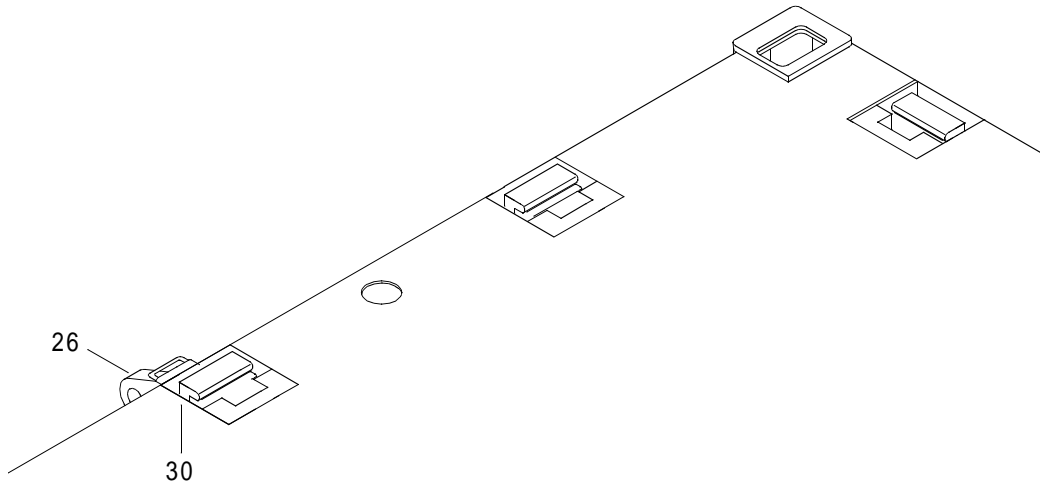
- a. Insert crowbar (28) behind spring bar (29) under female guillotine bar (30).



- b. Press crowbar (28) downward to clear spring bar (29) from deck fitting and allow female guillotine bar (30) to move upward.
- c. Raise female guillotine bar (30) approximately six in. until it stops.
- d. Remove crowbar (28).
- e. Install vertical padeye (26) into female upper connector (31).



- 
- f. Drive female guillotine bar (28) down, using sledgehammer, to secure padeye (22) in place.



### DEPLOY MOORING LEGS

1. Deploy mooring leg.
  - a. Assure radio communications are established between WT operator and soldier in charge of mooring leg assembly and deployment on FC.
  - b. Attach shackle (retrieval pendant) (11) to WT forward winch cable.
  - c. Throw buoy (7) in water.
  - d. Pull mooring leg assembly completely off deck by backing down warping tug perpendicular to the long axis of FC.

### CAUTION

**Do not overstress the mooring cable with the WT to prevent pulling the padeye out of the guillotine. Failure to comply will cause damage to the guillotine and loss of the mooring leg assembly.**

- e. When mooring cable (19) and (23) is completely off deck and slack has been removed, cut backing power on WT as not to overload mooring wire.
- f. Allow weight of anchors (15) and (21) to pull WT back toward FC until anchors land on bottom.
- g. When buoy cable (12) goes slack, take way off WT as not to over-run the anchors.
- h. Raise forward winch cable and disengage shackle (retrieval pendant) (11).

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
ONSHORE ANCHOR MOORING LEGS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)  
 Forklift Adaptor (Item 19, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Floating Causeway Assembled. (WP 0015 00)

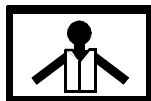
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**OPERATING PROCEDURES - DEPLOY ONSHORE ANCHOR MOORING LEGS****UNPACK ONSHORE CONTAINER**


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**WARNING**

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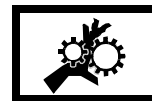
VEST



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 following procedure is typical for the assembly and deployment of the onshore anchor mooring legs.

1. Position onshore anchor container parallel with the structure on the deck of the first FC section from beach.
2. Unlatch and open container side doors.

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**WARNING**

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**Ensure that each door is latched in the open position before releasing control of the door or lock each door in the closed position when the doors are not being handled. Failure to comply could result in death or serious injury to personnel.**

3. Secure doors open with locking hooks

4. Unlatch and open container end doors

---

**WARNING**

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**Ensure that each door is latched in the open position before releasing control of the door or lock each door in the closed position when the doors are not being handled.  
Failure to comply could result in death or serious injury to personnel.**

5. Secure doors open with locking bars and pins.

---

**WARNING**

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**HEAVY PARTS**

**NOTE**

Should bulldozers be used as the anchoring point, the anchors, ground tackle and tensioning gear need not be placed ashore.

6. Using forklift and forklift adaptor, remove the anchors from the container and place ashore, if required.

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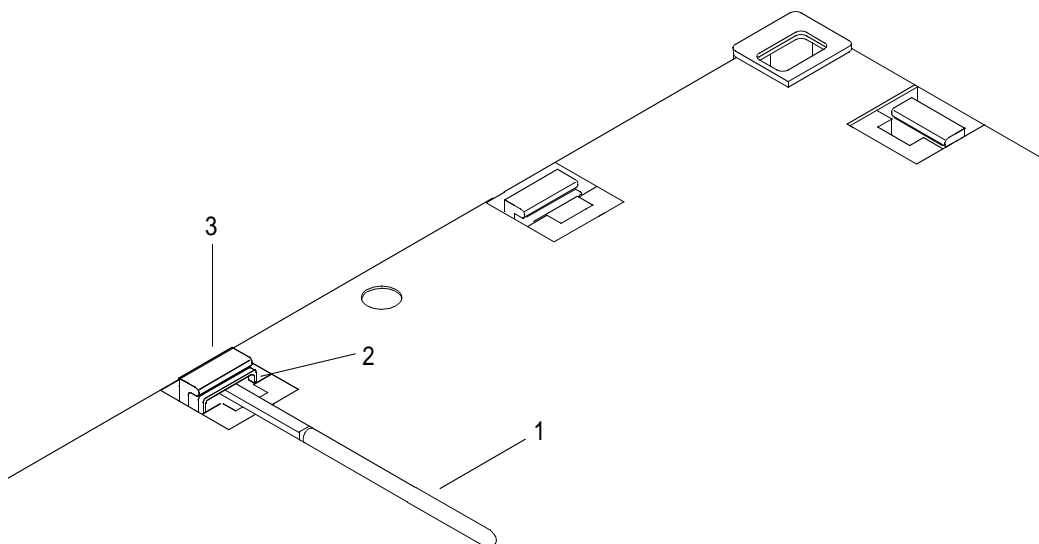
**WARNING**

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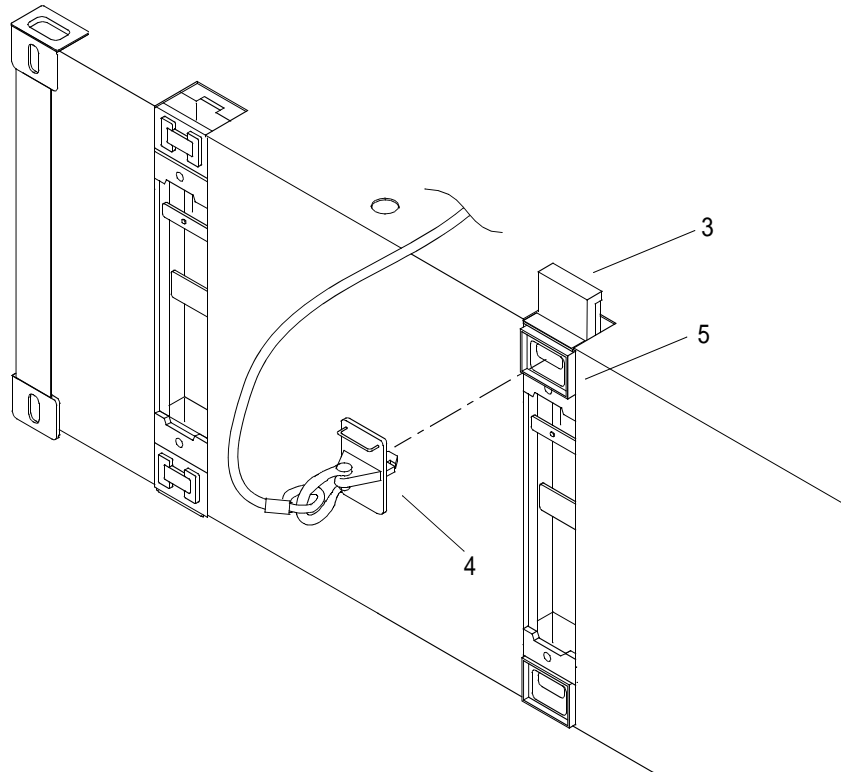
**HEAVY PARTS**

7. Remove ground tackle and tensioning gear from container and place ashore, if required, in close proximity to the anchors.
8. Install horizontal padeyes.
- a. Remove horizontal padeyes from container.
  - b. Insert crowbar (1) behind the spring bar (2) under the female guillotine bar (3).

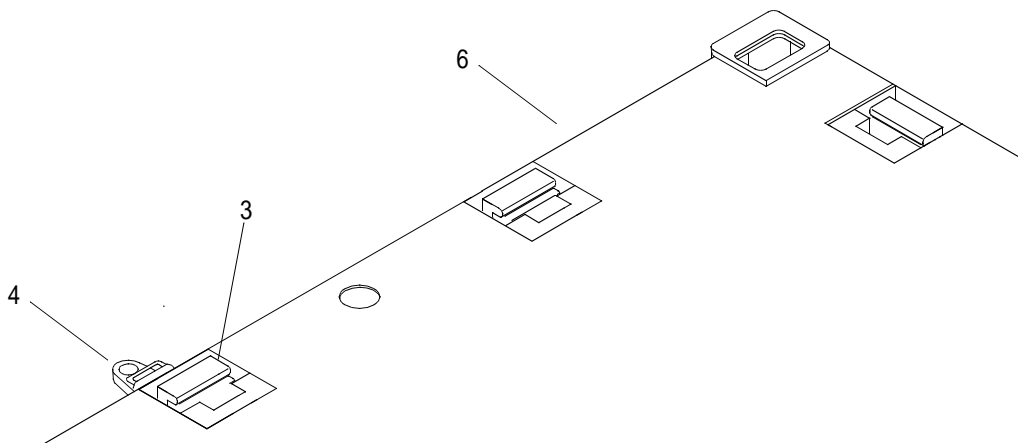




- c. Press downward on the crowbar (1) to clear spring bar (2) and allow the female guillotine bars (3) to move upward.
- d. Raise the female guillotine bar (3) approximately six inches until it stops.
- e. Remove the crowbar (1).
- f. Align horizontal padeye (4) with female connector assembly (5).



- g. Install horizontal padeye connecting pins (4) into female connector assembly (5).
- h. Drive female guillotine bar (3) down using sledgehammer.



- i. Repeat steps for all padeye placements on module (6).

9. If anchors, ground tackle and tension gear is not used, place in container.

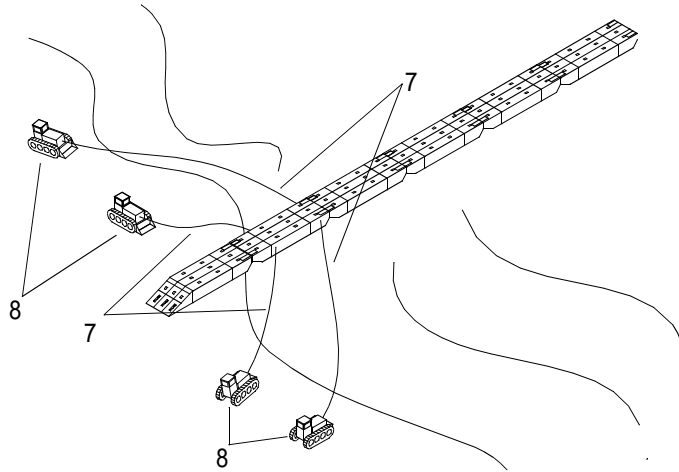
### DEPLOY THE MOORING LINES

1. Position first pair of onshore mooring lines.

#### NOTE

The warping tugs hold the FC in position while the onshore mooring legs are emplaced.

- a. Unreel and extend first pair of mooring lines from container down FC outer edges, toward beach.
  - b. Unreel and fake remaining lines down FC side.
  - c. Attach ends of mooring lines to horizontal padeyes with 1 3/8 in. shackles.
  - d. Manually pull mooring lines ashore and lay out along the outside edges of FC.
2. Attach first pair of mooring lines (7) to the bulldozers (8).



#### WARNING



HEAVY PARTS

#### NOTE

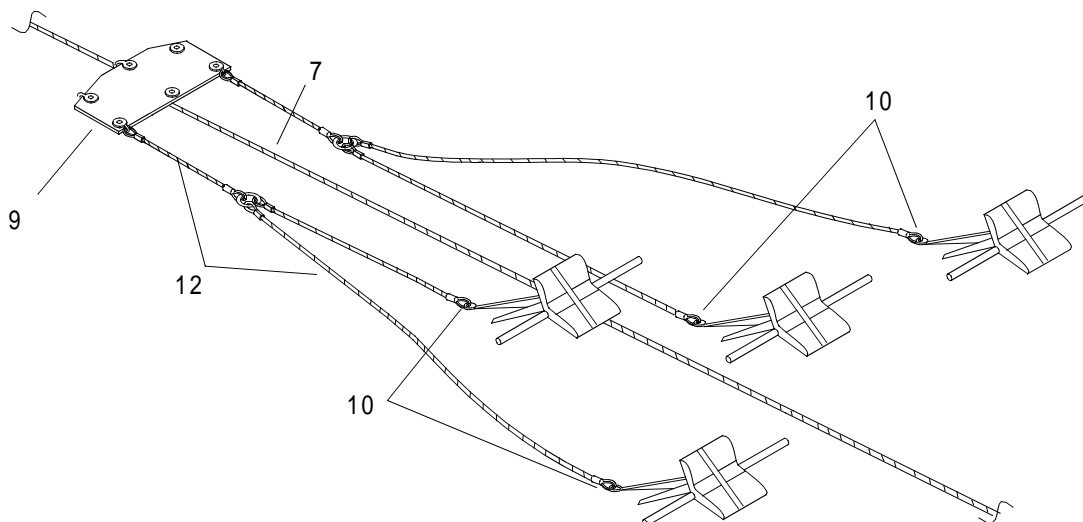
Bulldozers may be used in lieu of onshore anchors to provide a temporary anchoring point for mooring lines.

3. Using bulldozers (8), pull and stretch mooring lines (7) onto beach until lines are at 45° angles to FC.

**ASSEMBLE ONSHORE ANCHOR ASSEMBLIES****WARNING****HEAVY PARTS****NOTE**

the following assembly and deployment of onshore anchor procedures need not be performed should bulldozers be used as anchoring point.

1. Lay out onshore anchors, ground tackle and tensioning gear to facilitate assembly.



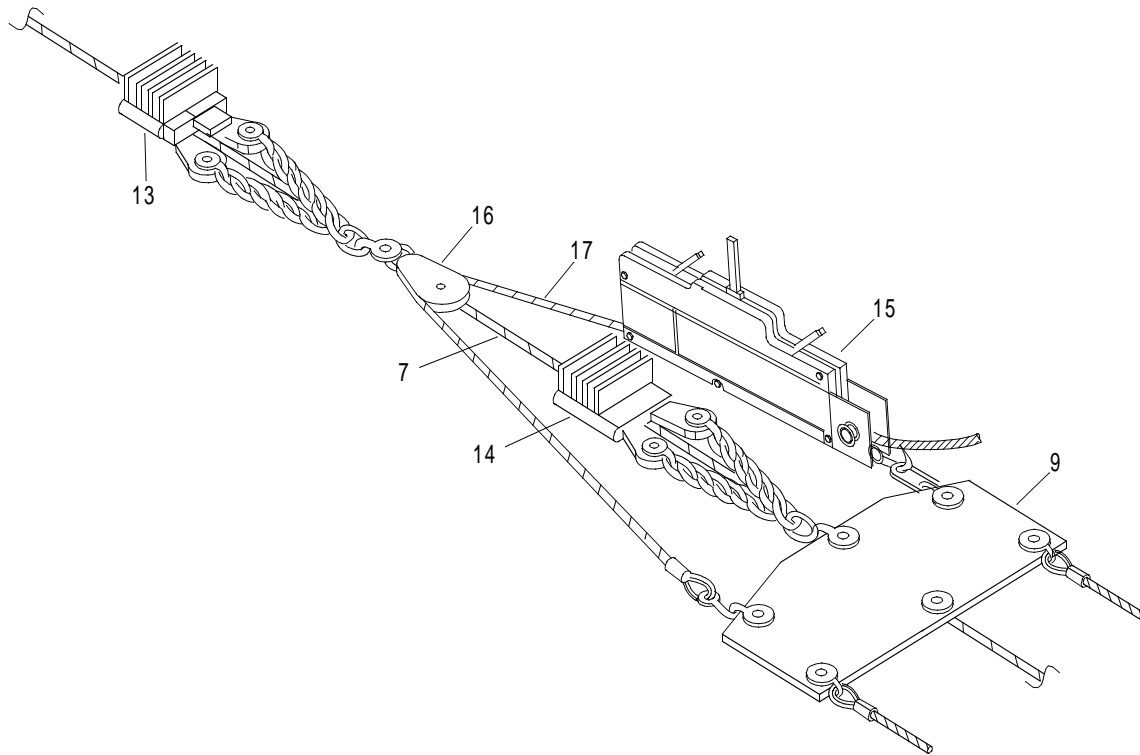
2. Center flounder plate (9) on mooring line (7).
3. Attach anchor bridle (10) to flounder plate (9).

**NOTE**

Long legs of the anchor bridles are placed outside short legs. Do not lay out anchor bridles with a 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.

4. Attach anchor bridles (10) to anchor shackles (11).
5. Space anchors (12) wide enough a part to prevent anchor nearest flounder plate (9) from pulling up on adjacent bridle leg (10) as anchor digs in.

6. Connect carpenter stop (13), carpenter stop (14), griphoist (15), snatch block (16) and hoist cable (17).

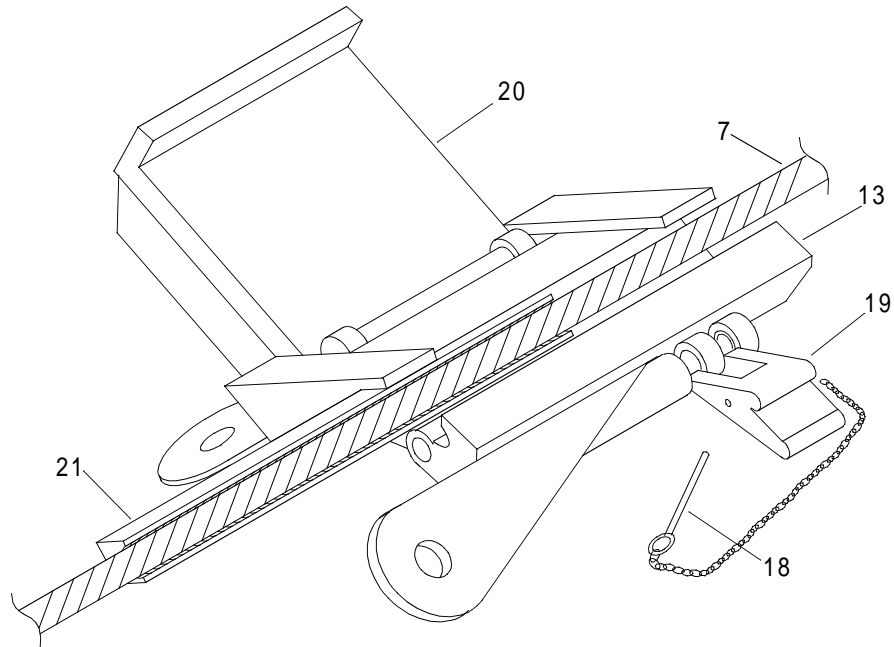


### NOTE

Pieces of plywood are provided in the onshore container to prevent dirt and debris from fouling the ratchet mechanism.

7. Place piece of plywood under flounder plate (9) and grip hoist (15)
8. Center equipment layout on mooring line (7).
9. Clamp mooring line (7) in carpenter stop (13).
  - a. Disconnect mooring line (7) from bulldozer (8).

- b. Pull latch pin (18) and open latch (19).



- c. Raise carpenter stop cover (20) open.
- d. Withdraw wedge (21) as far as possible from carpenter stop (13).
- e. Lay mooring line (7) in wedge (21).
- f. Close cover (20).
- g. Close latch (19) and secure by inserting latch pin (18).
- h. Hammer wedge (21) into carpenter stop (13), clamping mooring line (7).

#### DEPLOY ASSEMBLED ONSHORE ANCHORS

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

#### WARNING

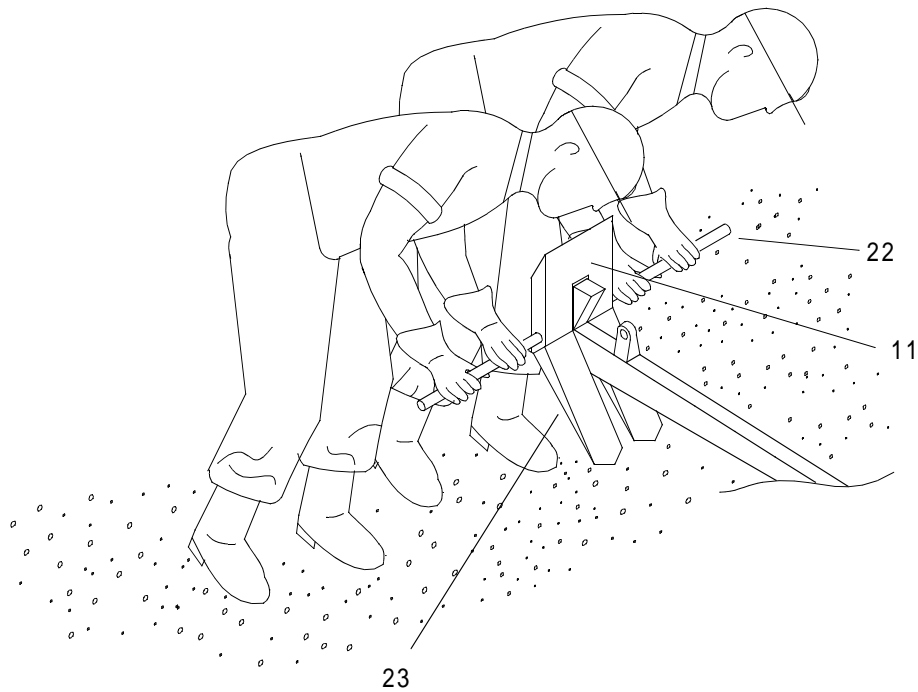


HEAVY OBJECTS



HEAVY PARTS

2. Using two onshore personnel, lift anchors (11) by stabilizers (22) until lower fluke (23) drops down pointing into sand depression.



3. Place downwards pressure on anchor (11) to dig flukes (23) deeply in sand.

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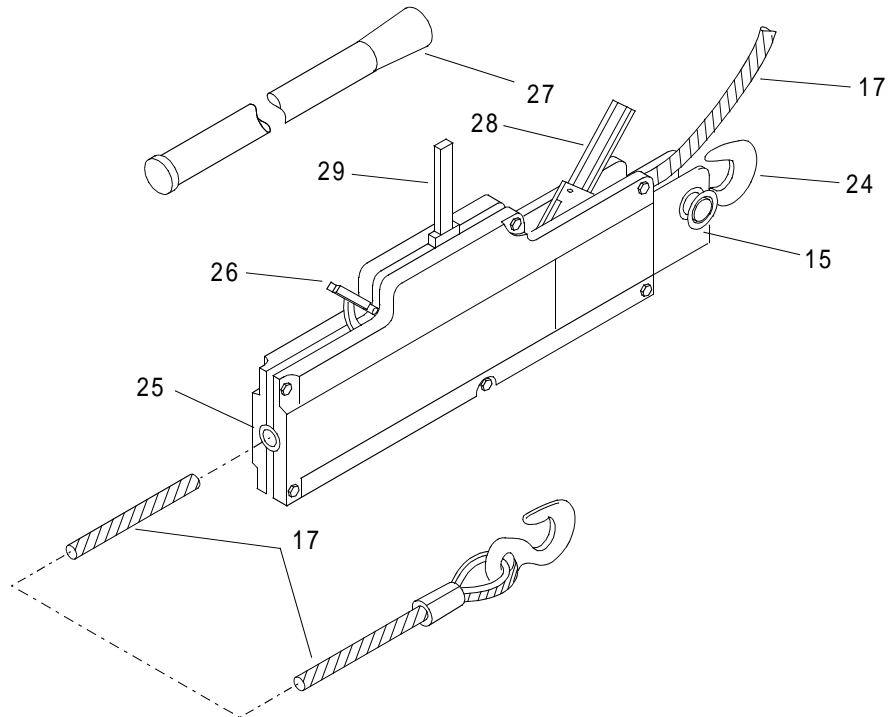
**WARNING**

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**HEAVY OBJECTS**

4. Bury anchors (11) in sand to assist with stability and minimize movement.
5. Operate the griphoist (15) to tension the onshore mooring lines (7).

- a. Remove anchoring hook (24) from end of griphoist (15).

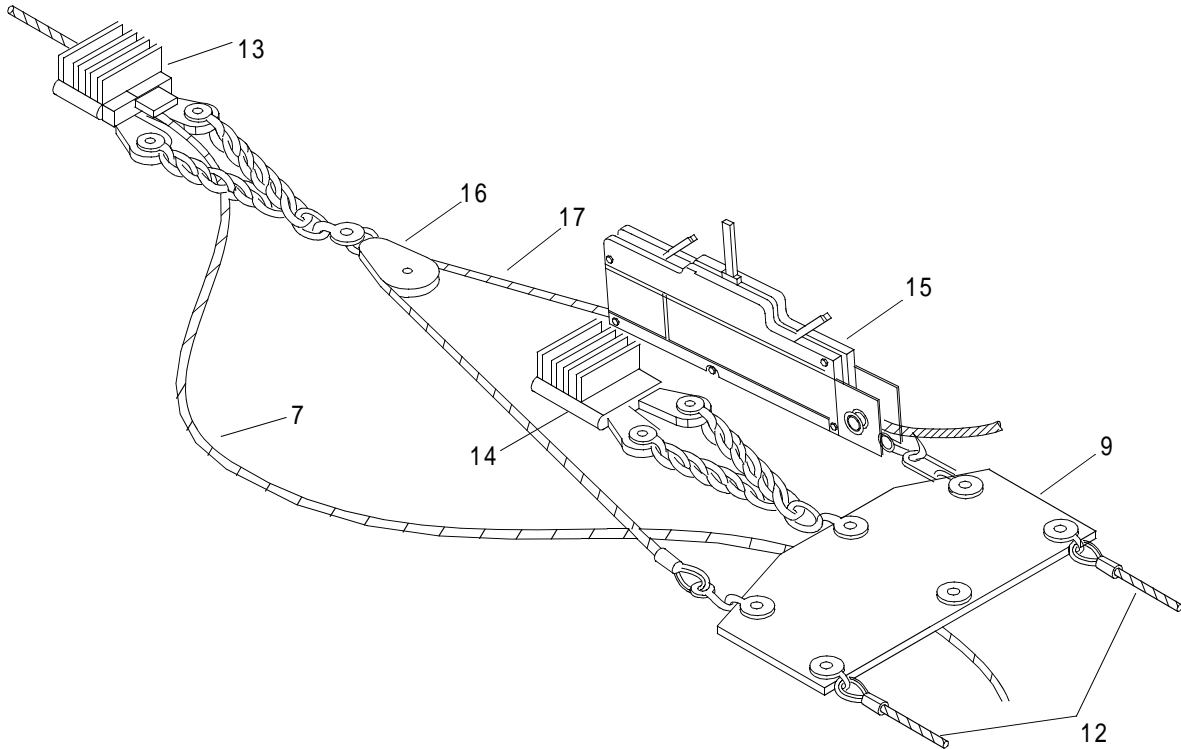


### **CAUTION**

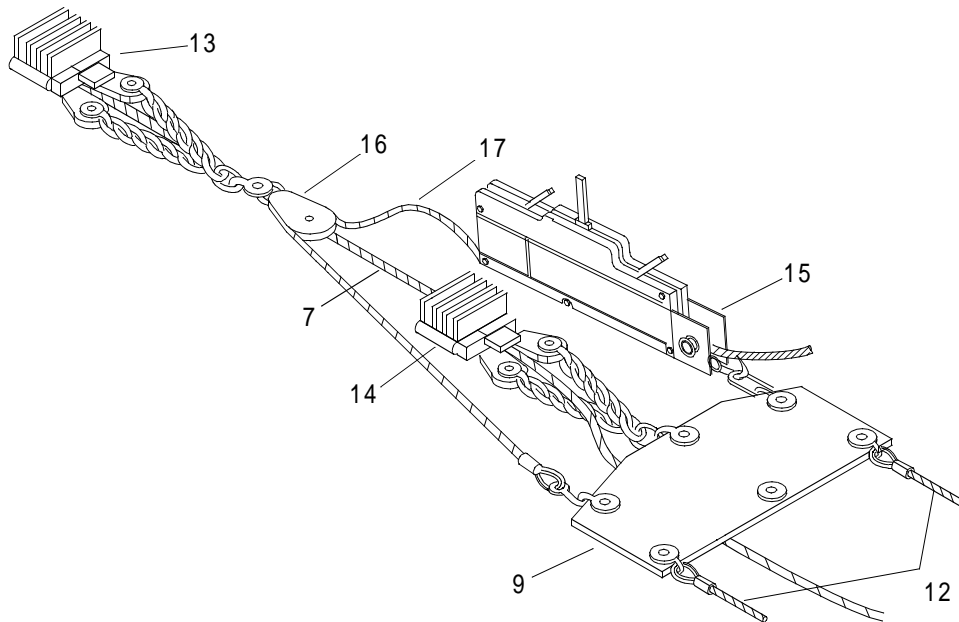
**The hoist hook cable should be reeled and unreeled in a straight line to prevent loops and kinks. Kinked wire rope will not work in the griphoist. Use only the hoist hook cable provided. Other wire ropes deform under pressure of the jaws, causing hoist malfunctions.**

- b. Feed hoist cable (17) into the griphoist at the feed end (25) and pull it clear of anchoring hook (24) attachment point.
- c. Install anchoring hook (24) on griphoist (15).
- d. Move wire rope release lever (26) to lock position by striking it with a sharp blow of hand.
- e. Place operating handle (27) on power stroke lever (28).
- f. Work the handle (27) back and forth to pull hoist cable (25) through griphoist (15).

- g. Continue taking up hoist cable (17) until snatch block (16) nears carpenter stop (14).



- h. Clamp mooring line (7) in carpenter stop (14) with no slack in mooring line between carpenter stops (13) and (14).



- i. Place operating handle (27) on reversing lever (29) to pay out hoist cable (17) by working back and forth until carpenter stop (14) is holding mooring line (7).
- j. Unlock griphoist (15), allowing hoist cable (17) to run free.



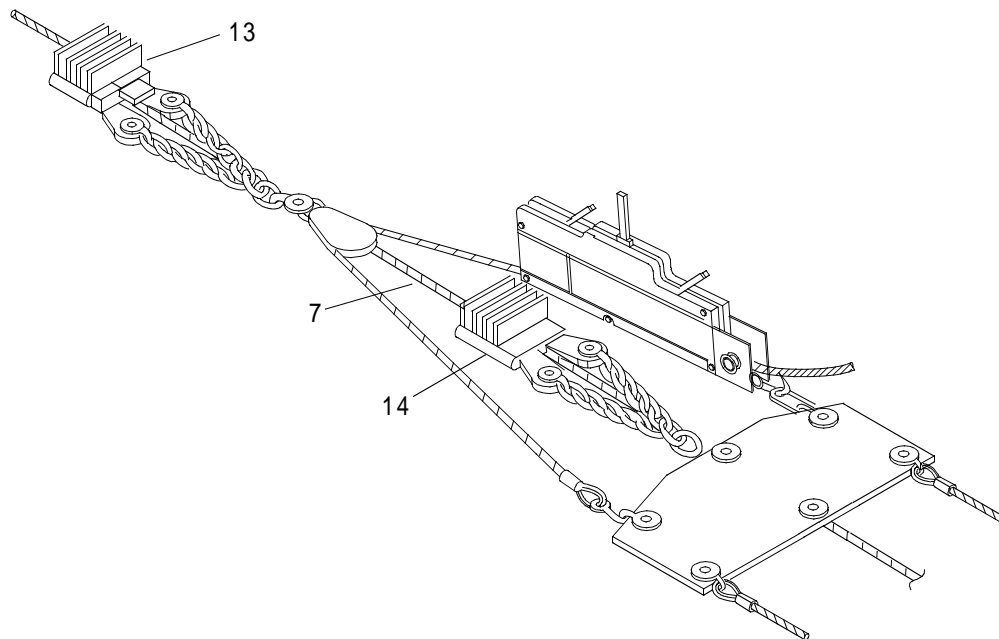
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**WARNING**


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**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.**

- k. Release mooring line (7) from carpenter stop (13) and relocate stop (13) down mooring line (7) as far as hoist cable (17) will allow.



- l. Clamp carpenter stop (13) to mooring line (7) and reinsert hoist cable (17) in griphoist (15), if required.  
 m. Repeat steps 4a thru 4l until mooring line (7) clears water and anchors (11) are firmly in place.

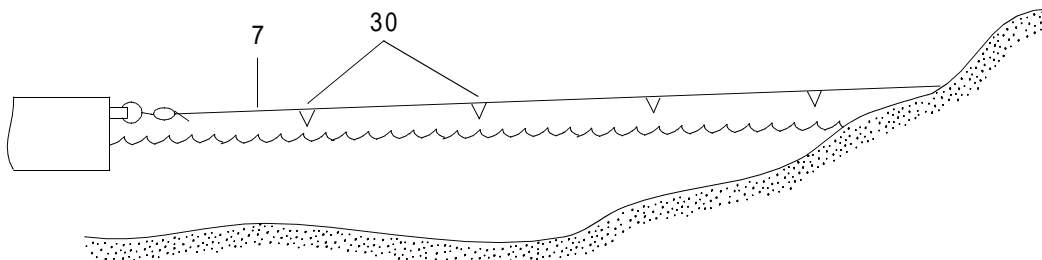
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**WARNING**

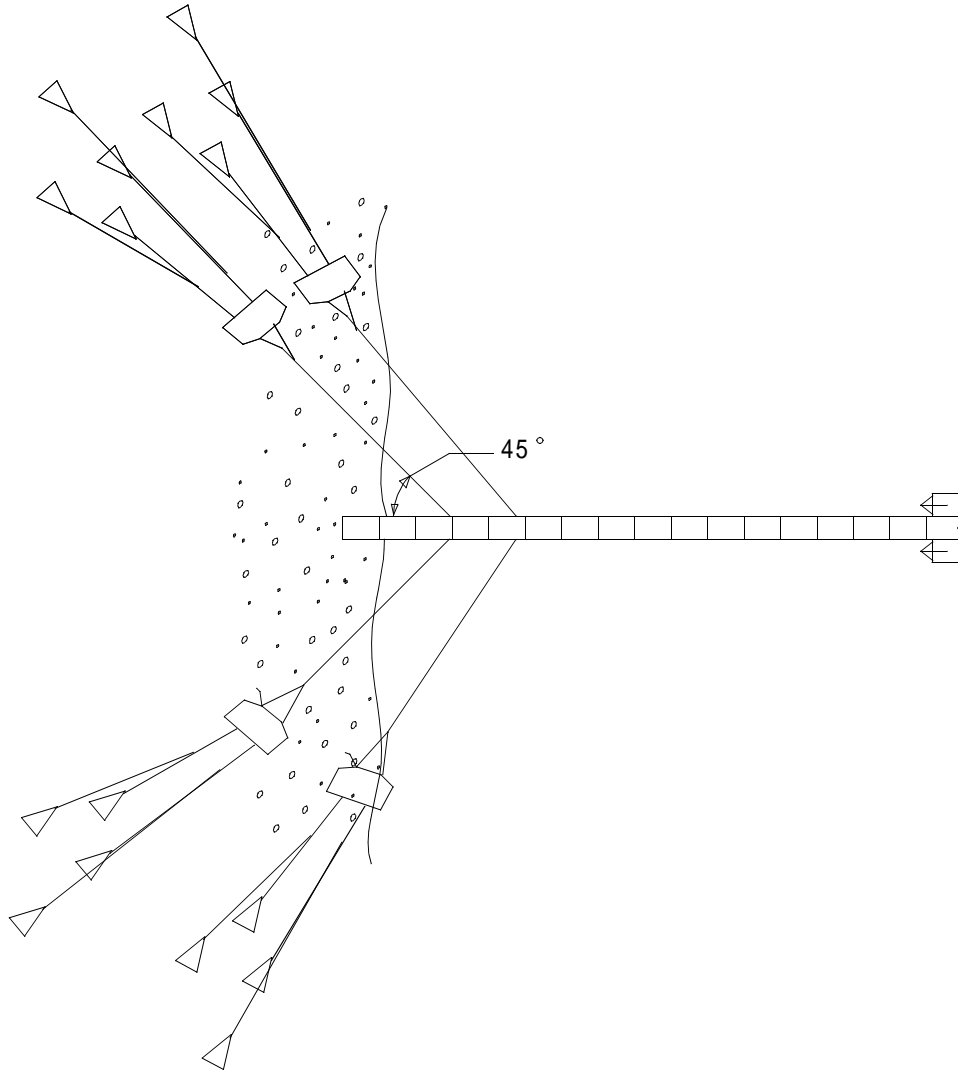

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**Failure to place warning flags could allow personnel and/or equipment to run into raised mooring lines causing injury to personnel or damage to equipment.**

6. Place warning flags (30) on mooring line (7) to prevent equipment and personnel from running into raised mooring line.



- 
7. Repeat previous steps to assemble onshore anchors and deploy assembled onshore anchors.



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**WARNING**

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Ensure that each door is latched in the open position before releasing control of the door or lock each door in the closed position when the doors are not being handled.  
Failure to comply could result in death or serious injury to personnel.

8. Close and latch shut side and end doors on container.

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**WARNING**

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HEAVY PARTS

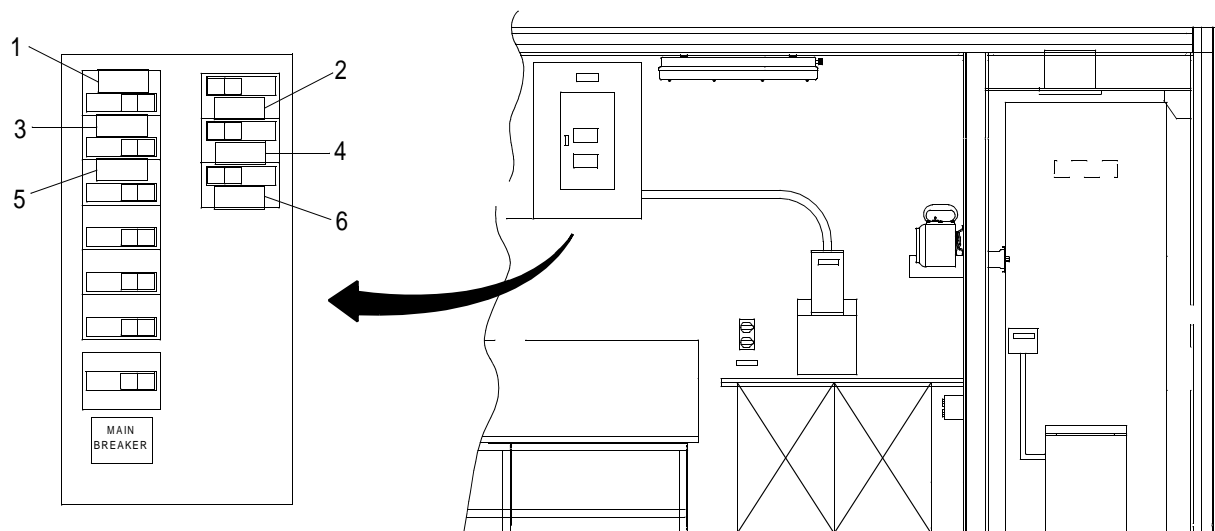
9. Remove container from FC.

**END OF WORK PACKAGE**

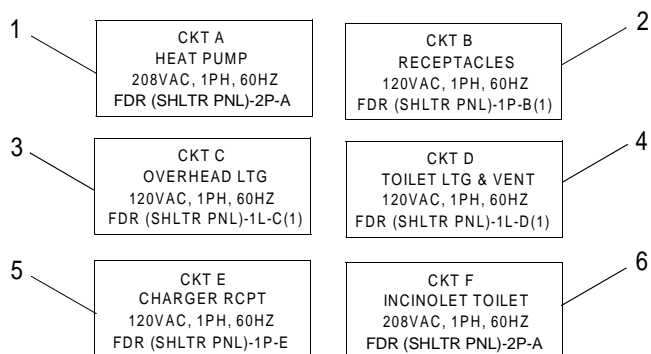
**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
DECALS AND INSTRUCTION PLATE LOCATIONS**

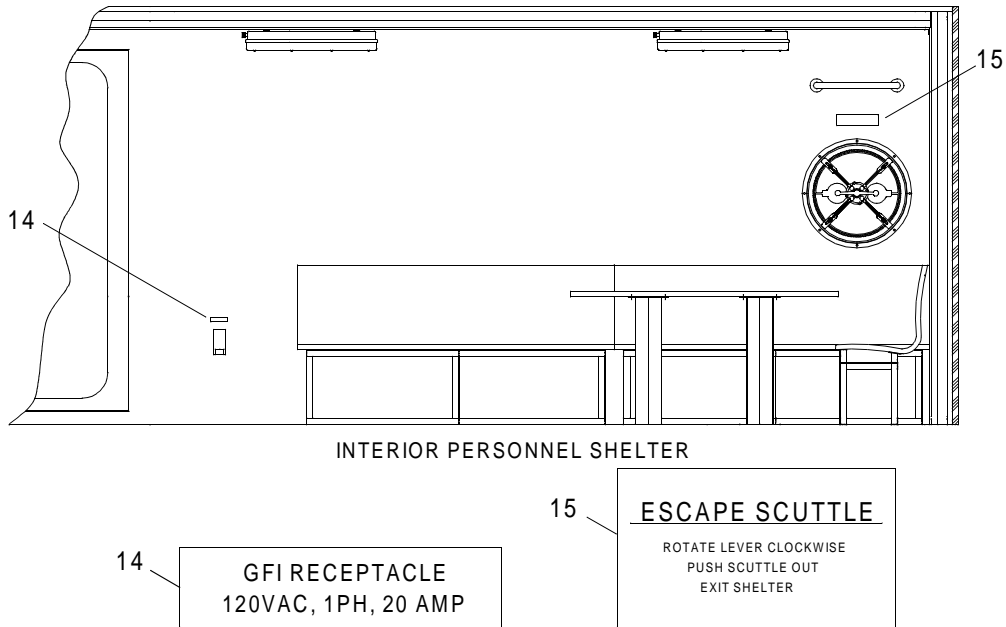
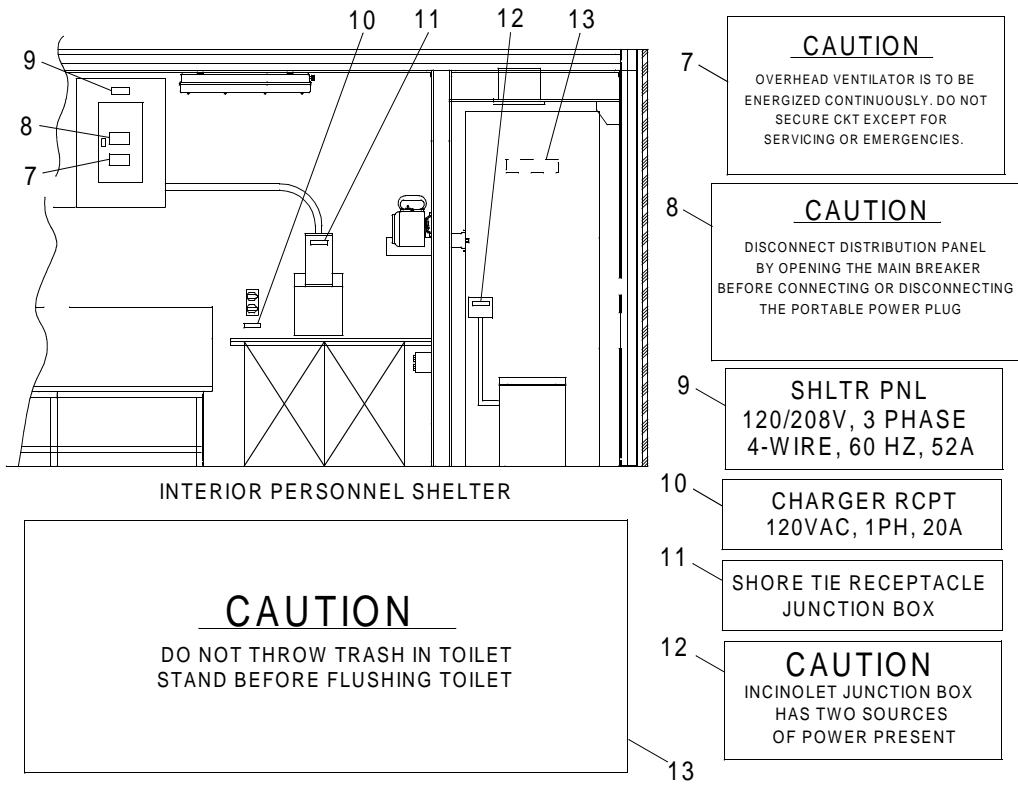
**DECALS AND INSTRUCTION PLATE LOCATIONS**

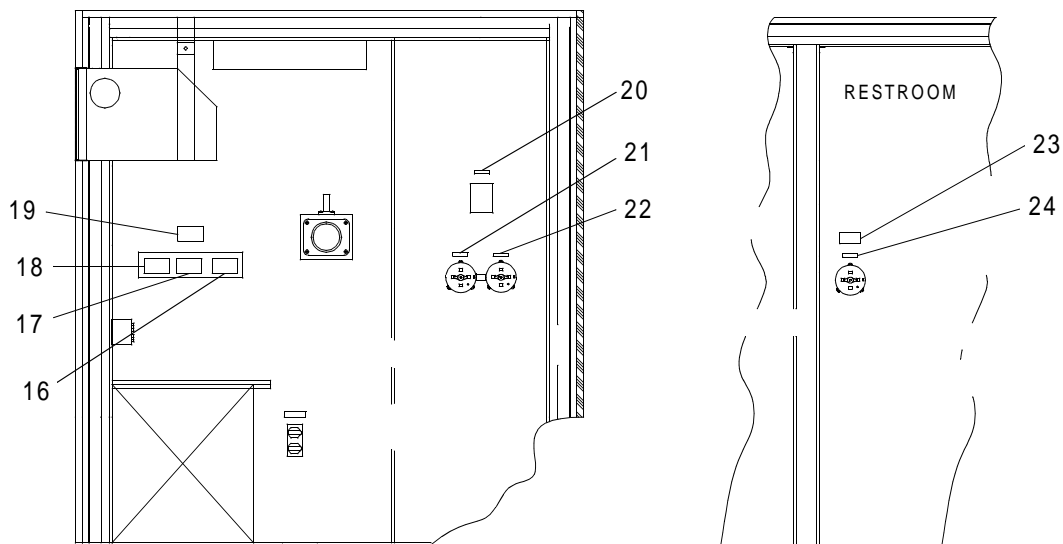
This work package provides location and description of decals and instruction plates. Each index number is shown twice, once to show location and the other to show decal or instruction plate information.



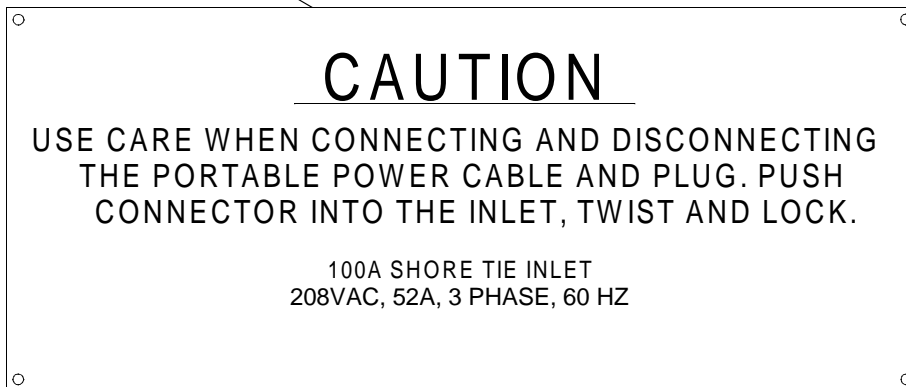
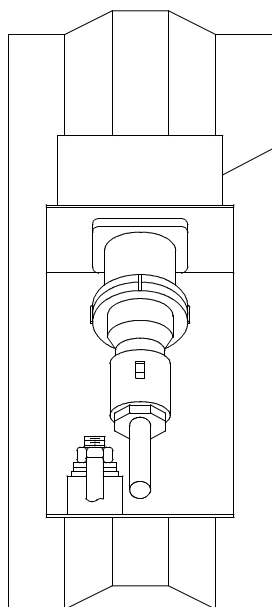
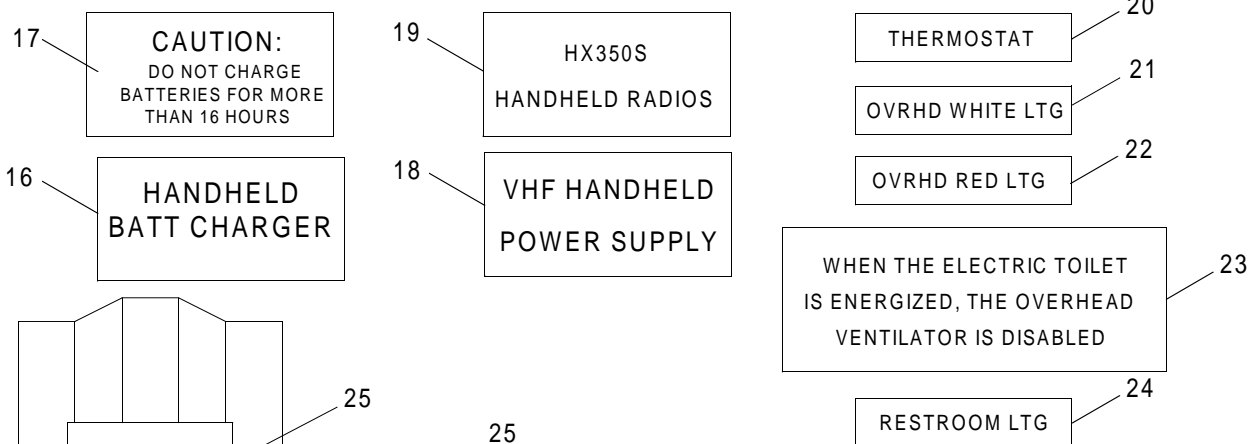
**INTERIOR PERSONNEL SHELTER**



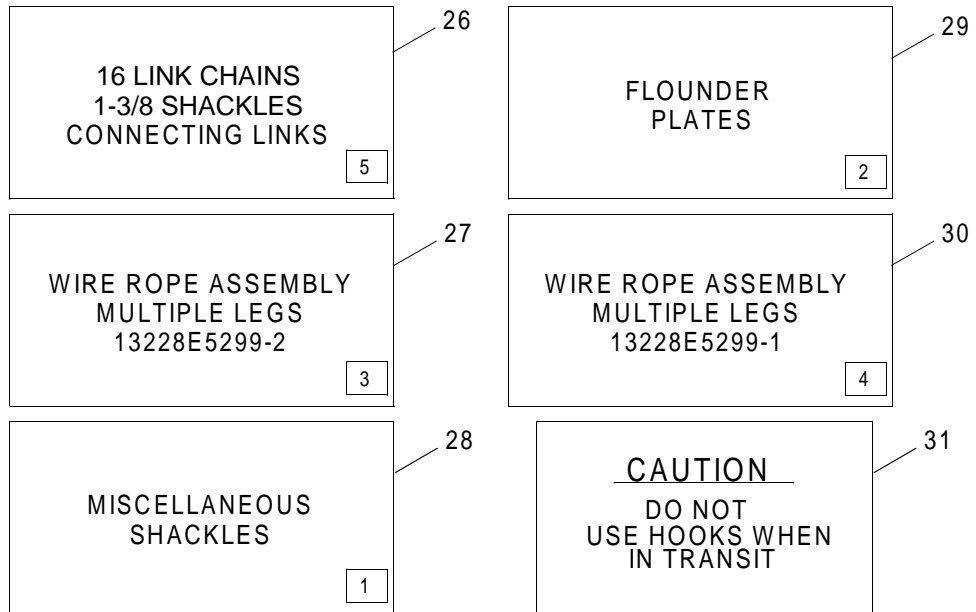
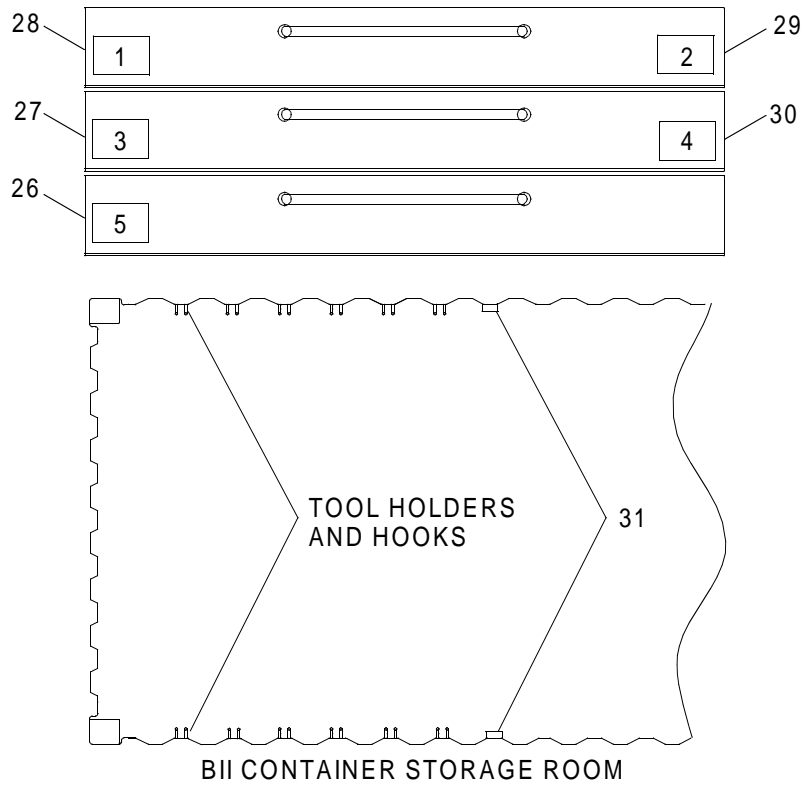


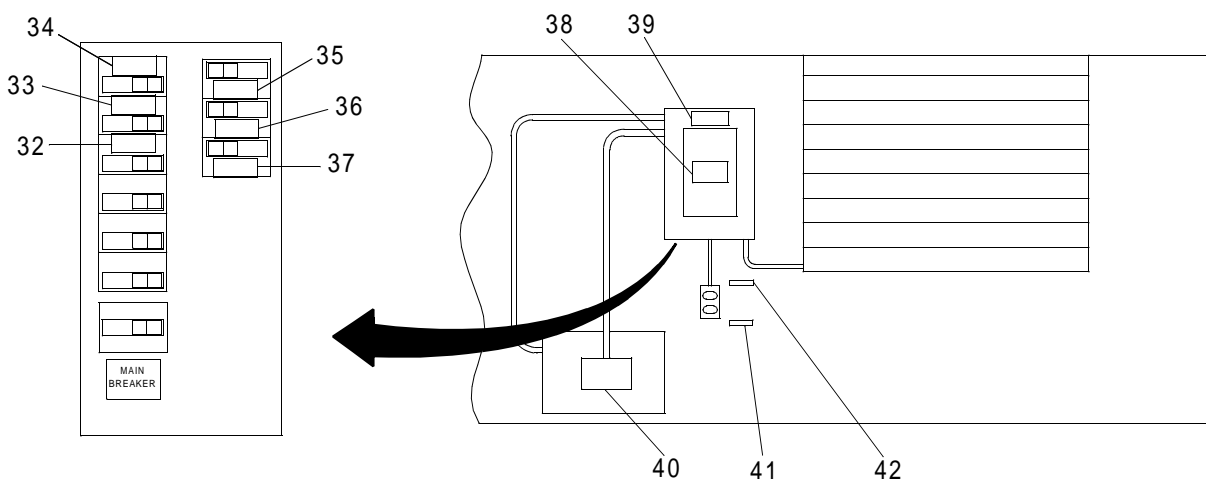


INTERIOR PERSONNEL SHELTER



EXTERIOR OF PERSONNEL SHELTER





INTERIOR GENERATOR CONTAINER

32 — CKT E  
CHARGER RCPT  
120VAC, 1PH, 60HZ  
FDR (GEN PNL)-1P-E

33 — CKT C  
OVERHEAD LTG  
120VAC, 1PH, 60HZ  
FDR (GEN PNL)-1L-C(1)

34 — CKT A  
LOUVER MOTORS  
208VAC, 1PH, 60HZ  
FDR (GEN PNL)-2P-A

35 — CKT B  
RECEPTACLES  
120VAC, 1PH, 60HZ  
FDR (GEN PNL)-1P-B(1)

36 — CKT D  
FIRE DETECTION CTRL MOD  
120VAC, 1PH, 60HZ  
FDR (GEN PNL)-1L-D(1)

37 — CKT F  
FLOAT SWITCHES  
208VAC, 1PH, 60HZ  
FDR (GEN PNL)-2P-A

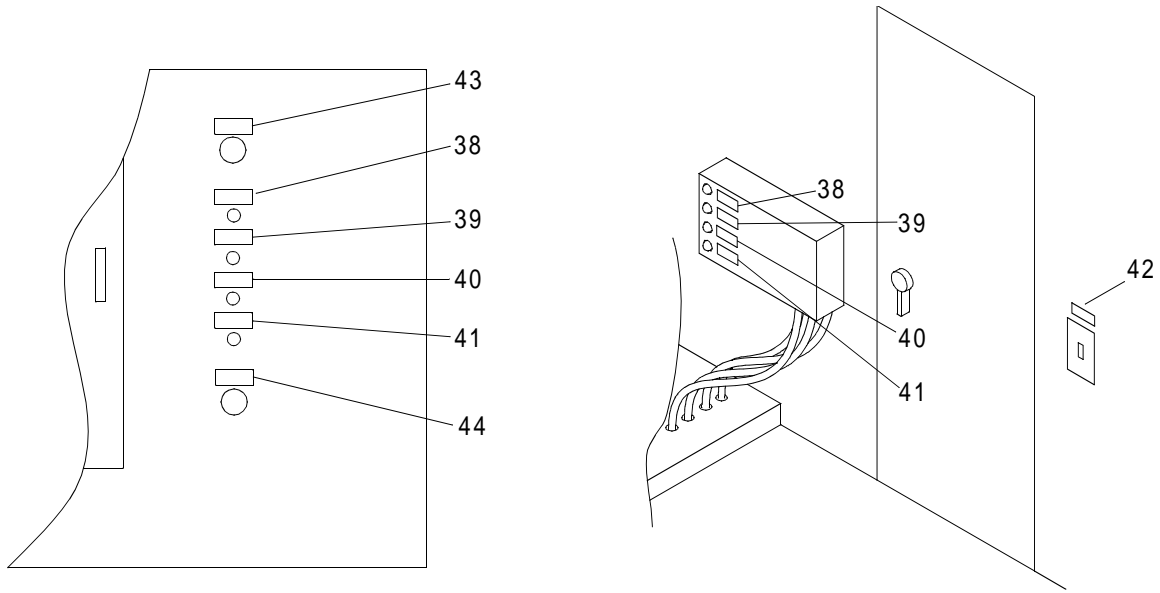
38 — **CAUTION**  
DISCONNECT DISTRIBUTION PANEL  
BY OPENING THE MAIN BREAKER  
BEFORE CONNECTING OR DISCONNECTING  
THE PORTABLE POWER PLUG

39 — **GENERATOR PNL**  
120/208V, 3 PHASE  
4-WIRE, 60 HZ, 52A

40 — **SHORE TIE RECEPTACLE  
JUNCTION BOX**

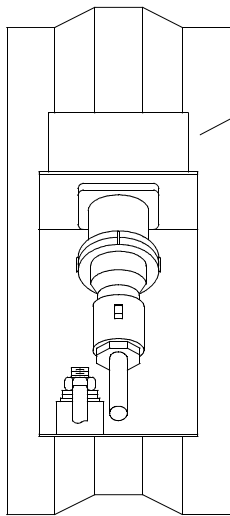
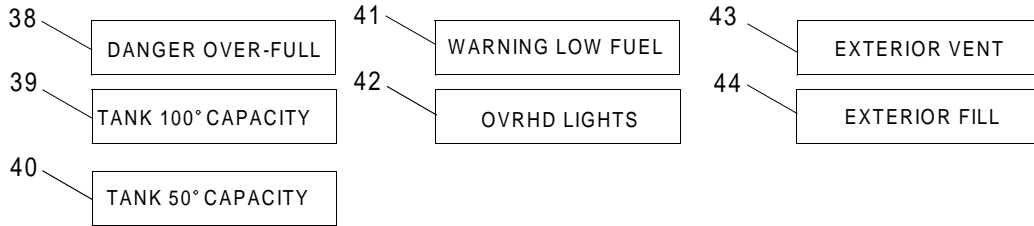
41 — **GFI RECEPTACLE**  
120VAC, 1PH, 20 AMP

42 — **RECEPTACLE**  
120VAC, 1PH, 20 AMP



EXTERIOR GENERATOR CONTAINER

INTERIOR GENERATOR CONTAINER



**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 GENERATOR CONTAINER



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
DUNNAGE MATS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)

Life Preserver, Vest (Item 31, WP 0104 00)

Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)

Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)

Helmet, Safety (Item 27, WP 0104 00)

Tee Handle (Item 9, WP 0104 00)

**Personnel Required**

Seaman 88K

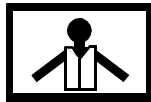
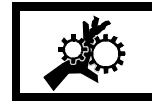
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**PREPARATION FOR MOVEMENT - REMOVAL OF DUNNAGE MATS****REMOVE DUNNAGE MATS**


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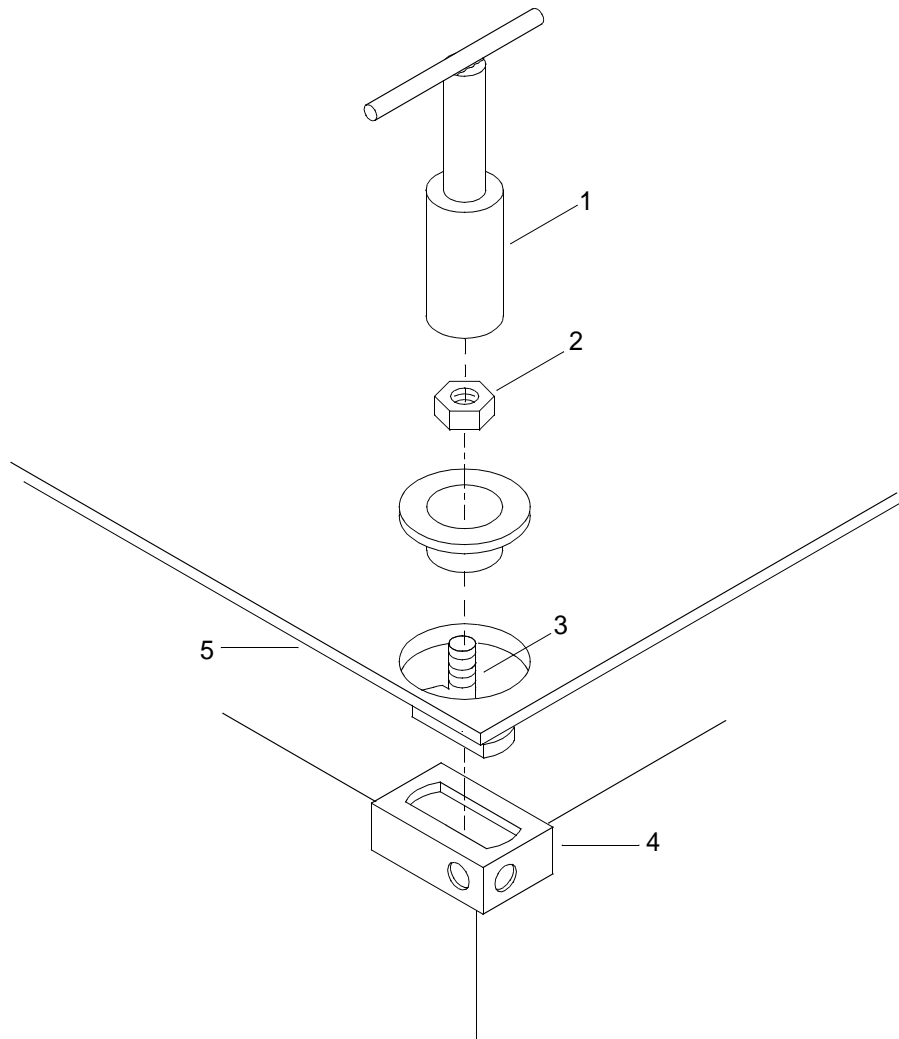
**WARNING**

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**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.**

1. Using the provided tee handle (1), loosen nut (2) on dog (3).

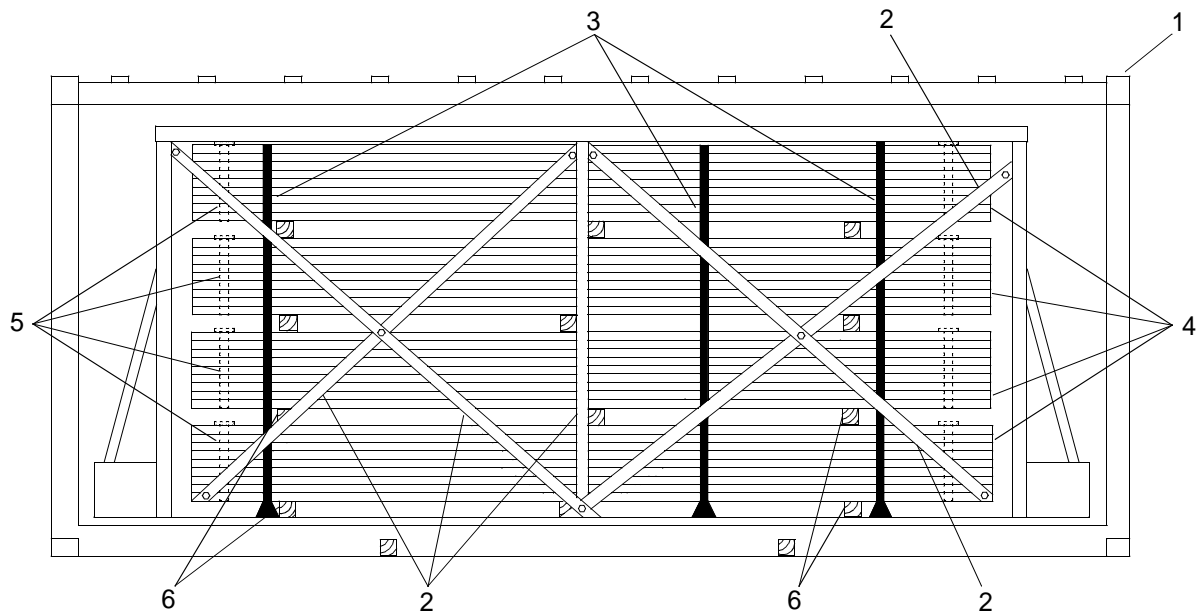


2. Using the tee handle (1), rotate the dog (3) until aligned with slot in ISO fitting (4).
3. Lift the dog (3) through the top hole of the ISO corner fitting (4) and dunnage mat (5).

**WARNING**

**Do not lift materials or equipment over 50 lbs without using appropriate material handling equipment. Lifting heavy objects could cause injury to personnel.**

4. Install two dunnage mat rods (6) in the holes at each end of the stack of dunnage mats (5).



5. Place dunnage wood (7) on the FC platform in an area where the dunnage mats (5) can be stacked on them.
6. Remove dunnage mat (5) from the FC and stack on the dunnage wood (7).
7. Stack the dunnage mats (5), one on top the other, eight mats per stack.
8. Repeat the above procedure for the remaining corners and mats.

#### INSTALL DUNNAGE MATS IN ISO CONTAINER

#### CAUTION

**Container doors must be latched in the open position. Failure to comply could result in serious injury or death to personnel and damage to equipment.**

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

1. Open the ISO container (8) side doors and latch in the open position.

#### WARNING



**HEAVY PARTS**

2. Place three 4 X 4 dunnage wood blocks (7), spaced evenly apart, on the container (8) where the dunnage mats (5) can be stacked on them.

---

**WARNING**

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**HEAVY PARTS**

3. Using forklift or appropriate handling device, install the first stack of dunnage mats (5) in the 20 ft ISO container (8).
4. After installation of the first stack of dunnage mats (5), install three 4 X 4 dunnage wood blocks (7) on top of the dunnage mats (5) to prepare for adding the two remaining stacks of dunnage mats (5).

**NOTE**

A total of twenty four mats are stored in each container.

5. Repeat previous steps for installation of the remaining two stacks of dunnage mats in the ISO container until all three stacks of dunnage mats are installed in the ISO container.
6. Install ratchet strap tiedowns (9) to secure dunnage mats (5) to ISO container pallet.
7. Install flat bars (10) on side of container to secure dunnage mats (5) in ISO container (8).

---

**CAUTION**

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**Prior to moving or lifting ISO container, ensure doors are closed and locked. Damage to ISO container will occur if any door is open or unlocked while container is moved or lifted.**

8. Close the ISO container (8) side doors and latch in the closed position.

**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWERS  
OPERATION UNDER USUAL CONDITIONS**

**INITIAL SETUP:**

**Tools**

- Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)
- Life Preserver, Vest (Item 31, WP 0104 00)
- Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)
- Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)
- Helmet, Safety (Item 27, WP 0104 00)

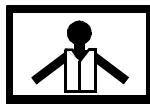
**Personnel Required**

Seaman 88K

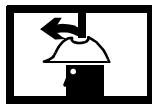
**PREPARATION FOR MOVEMENT - REMOVAL OF LIGHT TOWERS**

**REMOVE LIGHT TOWER**

**WARNING**



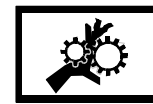
**VEST**



**HELMET PROTECTION**



**HEAVY PARTS**



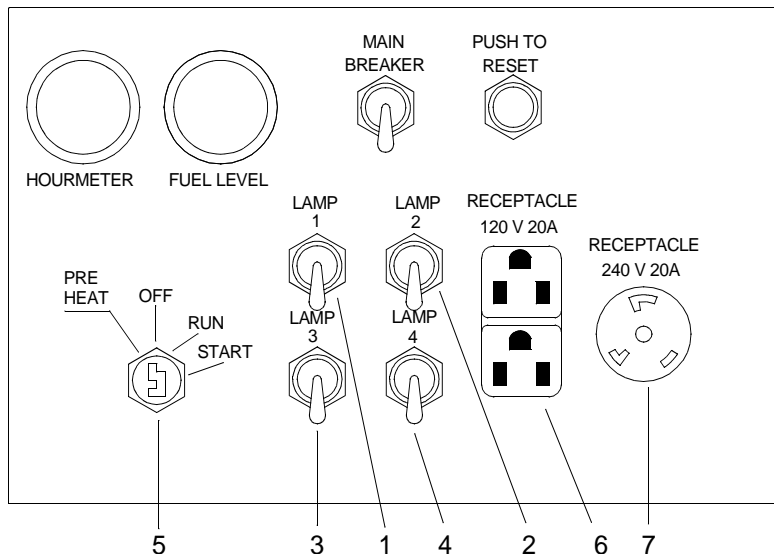
**MOVING PARTS**

**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 following procedures is typical for the forward and aft light tower units to be stowed in the ISO container, except the light tower must be removed from the aft light tower unit.

1. Prior to lowering tower, perform the following:
  - a. Position LAMP 1 through LAMP 4 switches (1), (2), (3) and (4) off.

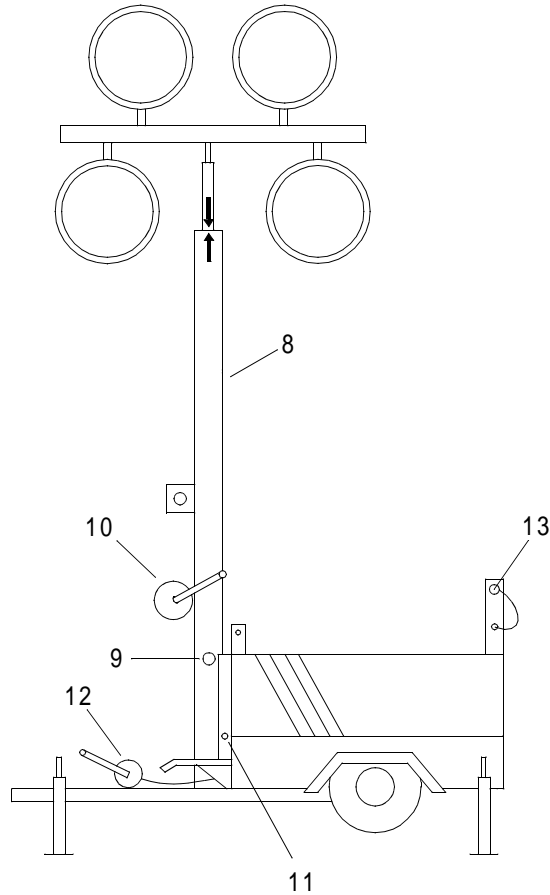


- b. Position engine switch (5) to OFF.
- c. Disconnect any equipment plugged into external power RECEPTACLE (6) and (7).
- d. Allow lamps to cool for at least 10 minutes.

**WARNING**

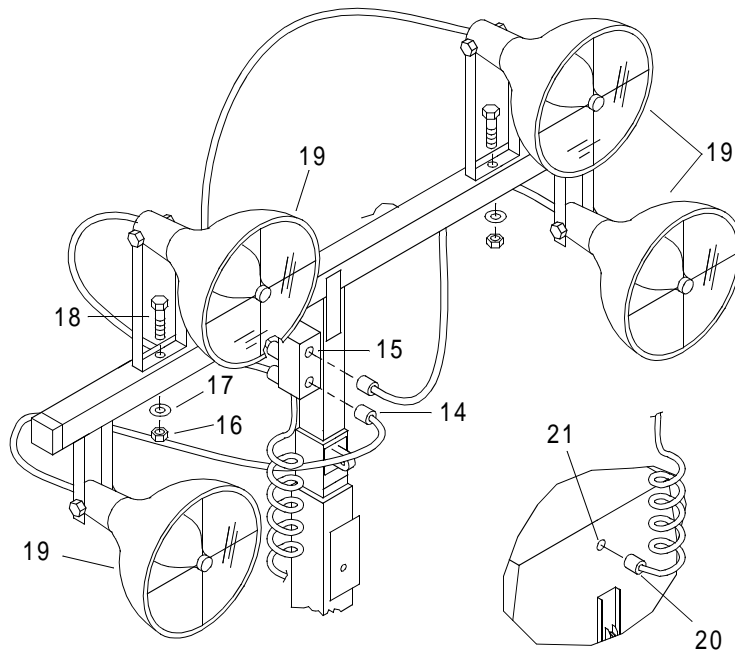
**Damaged cables may break during tower operation allowing the tower to fall, which could cause death or injury to personnel.**

2. Lower tower assembly (8).



- a. Loosen eye bolt (9).
- b. Rotate tower (8) mast until the indicating arrows are aligned.
- c. Operate extend winch (10) to lower tower (8) until lights are in stowed position.
- d. Unlock and remove lock pin (11).
- e. Operate raise/lower winch (12) to lower tower (8) assembly to horizontal position.
- f. Insert and lock pin (13) before moving or lifting.

## 3. Remove light tower boom lights.

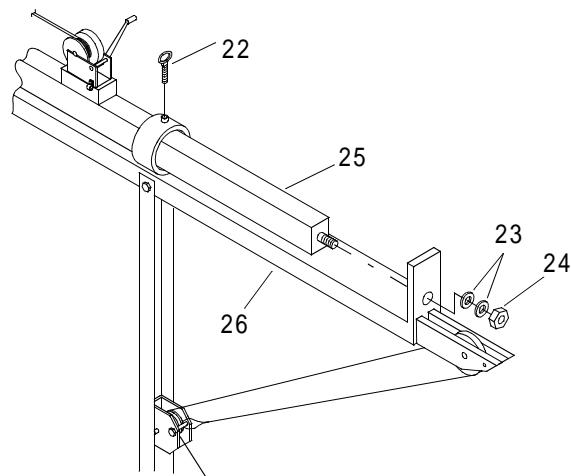


- a. Disconnect light plugs (14) from light tower sockets (15).
- b. Remove nut (16), washer (17) and bolt (18) from light bracket and remove light tower boom lights (19).
- c. Open light tower engine compartment and stow lights (19).
- d. Close engine compartment doors.
- e. Disconnect light tower electrical plug (20) from electrical receptacle (21) on top of light tower trailer.

**NOTE**

The upper light tower is only removed on the trailer that is stowed in the aft position in the container.

## 4. Remove upper light tower from light tower trailer.



- a. Ensure eye bolt (19) and lock pin are removed.

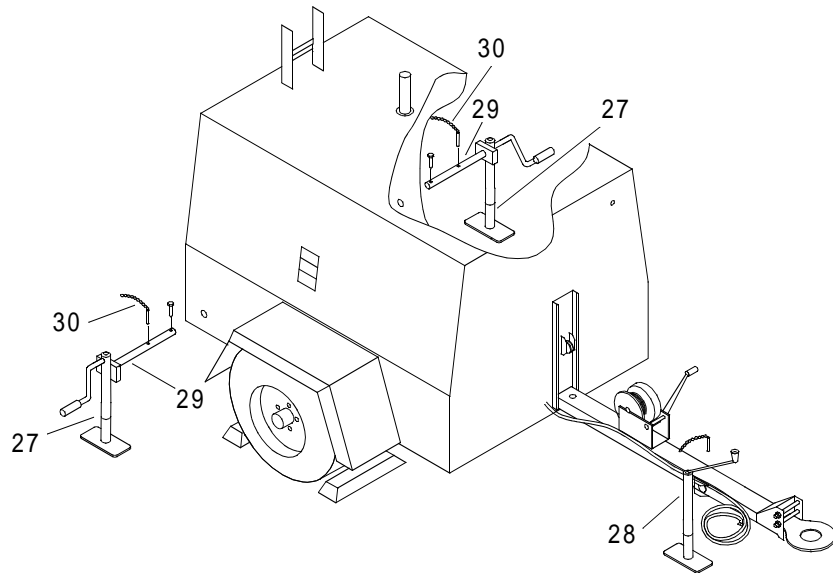
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**WARNING**

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**HEAVY OBJECTS**

- b. Remove nut (23) and two washers (24) and slide upper light tower (25) from aft light tower trailer (26).
5. Remove and stow upper light tower (25) in container on side stowage brackets and secure with hitch pins.
  6. Prior to moving trailer, perform the following:



- a. Remove tiedowns.
- b. Lower jacks (27) and (28).
- c. Chock tires.
- d. Remove jacks (27) and (28).
- e. Slide both outriggers (29) to stored position, install locking pins (30).



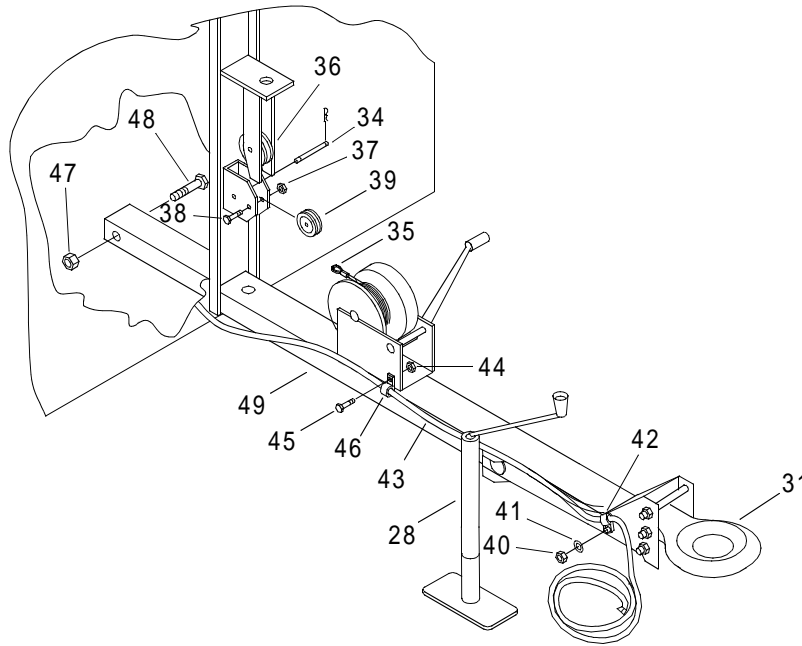
7. Install aft light tower unit in container.

**WARNING**

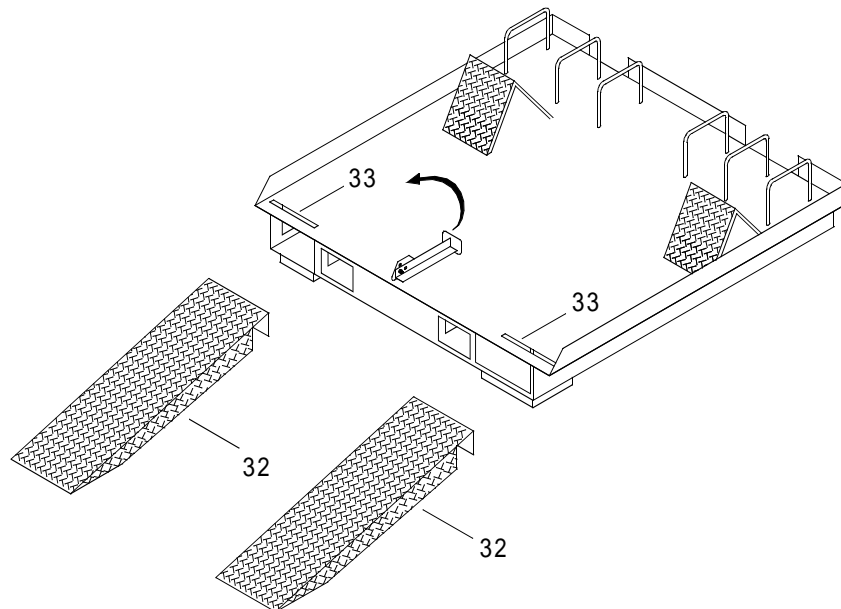


**HEAVY PARTS**

a. Connect trailer drawbar eye (31) to forklift truck pintle.



b. Install ramps (32) into pallet slots (33).



c. Remove wheel chocks.

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**WARNING**

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**HEAVY PARTS**

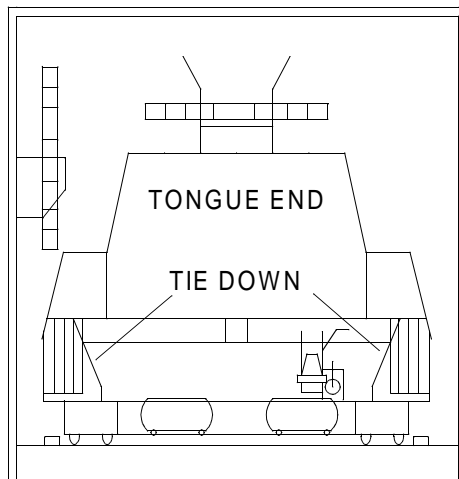
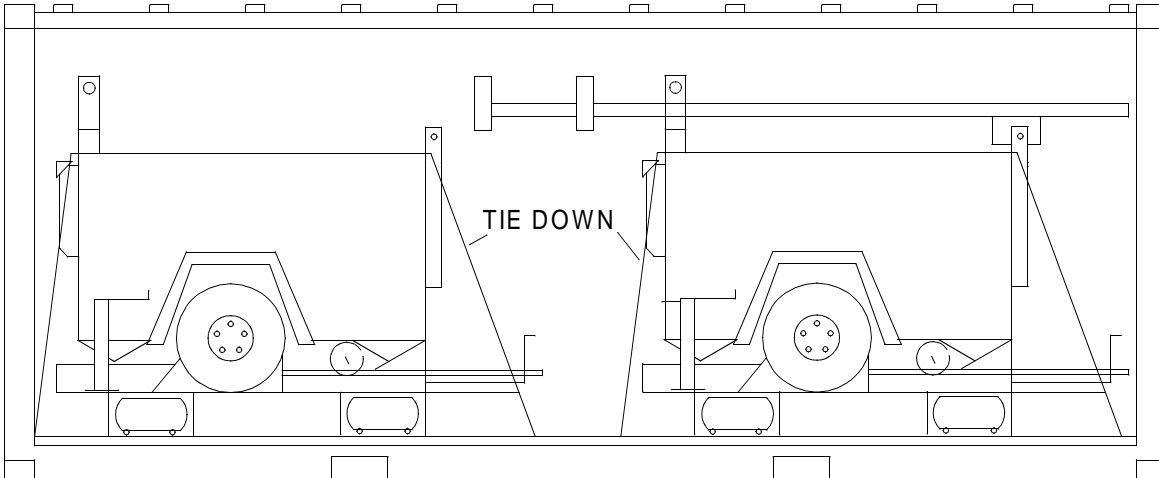
- d. Using forklift truck, push light trailer onto pallet and secure with tiedowns.
- e. Disconnect trailer drawbar eye (31) from forklift truck pintle.
- f. Remove quick release pin (34) from lower cable pulley bracket.
- g. Attach quick release pin (34).
- h. Remove cable (35) from upper pulley (36).
- i. Remove nut (37) and bolt (38) from lower pulley (39).
- j. Remove cable (35) from pulley (39).
- k. Reinstall pulley (39) with bolt (38) and nut (37).
- l. Operate winch to take up slack on cable (35).
- m. Remove nut (40) and washer (41).
- n. Remove wire clamp (42) and trailer light harness (43).
- o. Reinstall washer (41) and nut (40) on trailer drawbar.
- p. Remove right forward nut (44) from bolt (45) on trailer drawbar hand crank.
- q. Remove wire clamp (46) and trailer light harness (43).
- r. Reinstall bolt (45) and nut (44).
- s. Remove nut (47) and bolt (48).
- t. Remove trailer drawbar (49) and drawbar jack (28) from light tower trailer.
- u. Secure in container with tiedowns.

**WARNING**



**HEAVY PARTS**

- Using forklift truck, push light tower trailer and pallet into container.



**PLACEMENT IN CONTAINER**

- Secure light tower trailer and pallet to container deck track with tiedowns.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PERSONNEL SHELTER  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

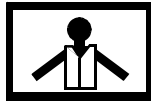
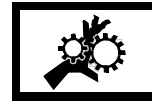
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**PREPARATION FOR MOVEMENT - REMOVAL OF PERSONNEL SHELTER****REMOVE PERSONNEL SHELTER**


---

**WARNING**

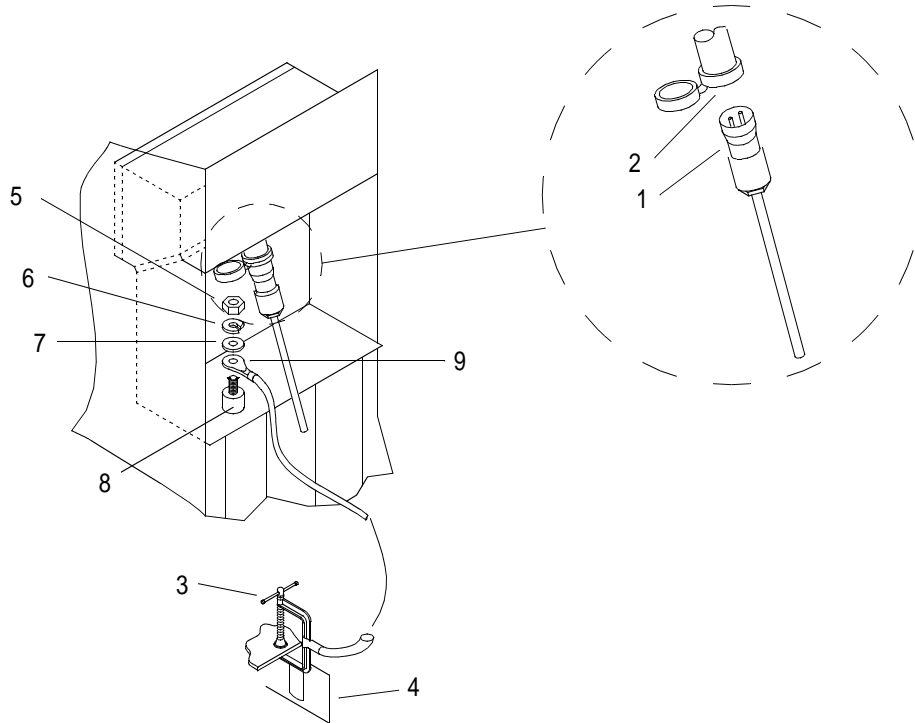
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**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

**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.**

1. Detach personnel shelter container power cable from generator container power receptacle.

2. Detach power cable (1) from personnel shelter power receptacle (2).



3. Remove ground cable.
- Detach ground cable C-Clamp (3) from module ISO fitting (4).
  - Remove nut (5), lock washer (6) and flat washer (7) from personnel shelter ground stud (8).
  - Remove ground cable (9) from personnel shelter ground stud (8).
  - Install flat washer (7), lock washer (6) and nut (5) on ground stud (8).
  - Tighten nut (5).
4. Close exterior hinged cover of the electrical shore tie and secure.
5. Remove tiedown straps securing personnel shelter container to FC platform.

### WARNING



**HEAVY PARTS**

6. Using crane, lift personnel shelter container from FC platform.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

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**PREPARATION FOR MOVEMENT - REMOVAL OF GENERATOR CONTAINER****REMOVE GENERATOR CONTAINER EXHAUST PIPE**


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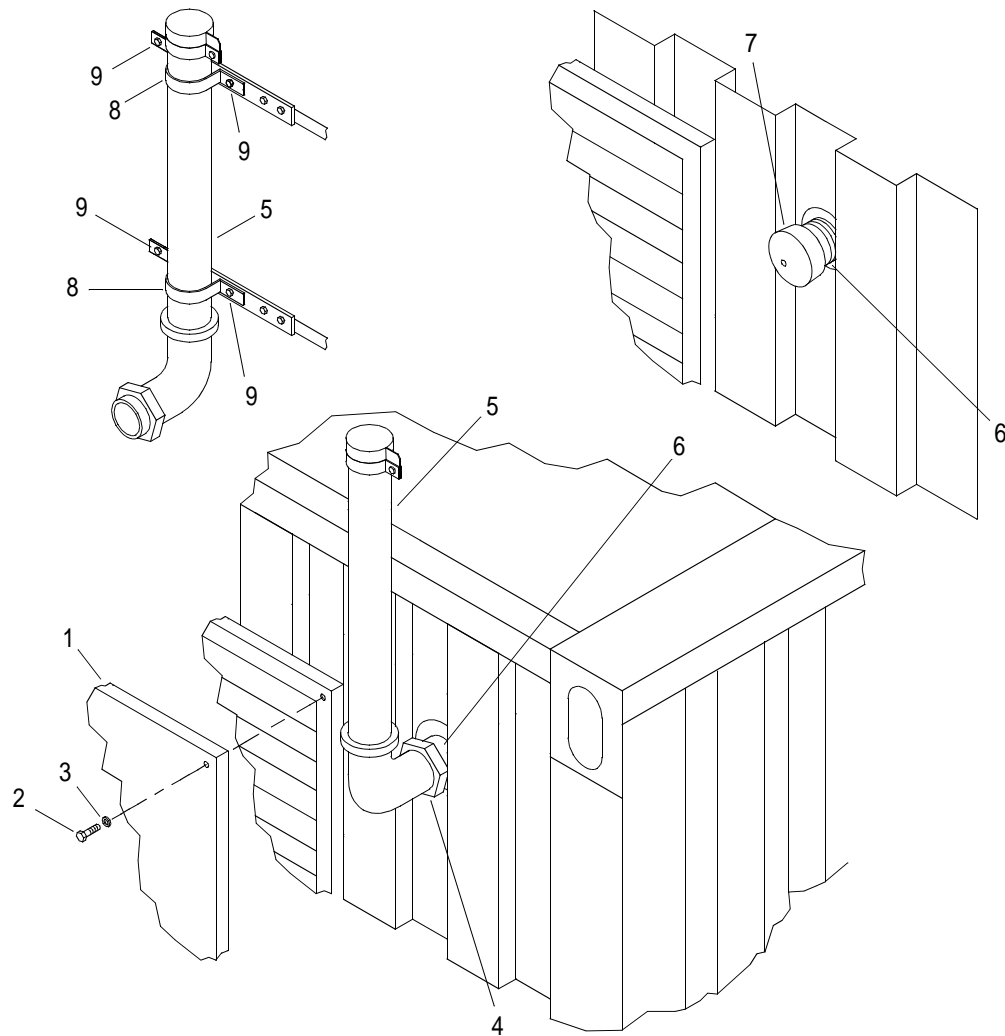
**WARNING**

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**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.**

1. Retrieve louver covers (1) from container.



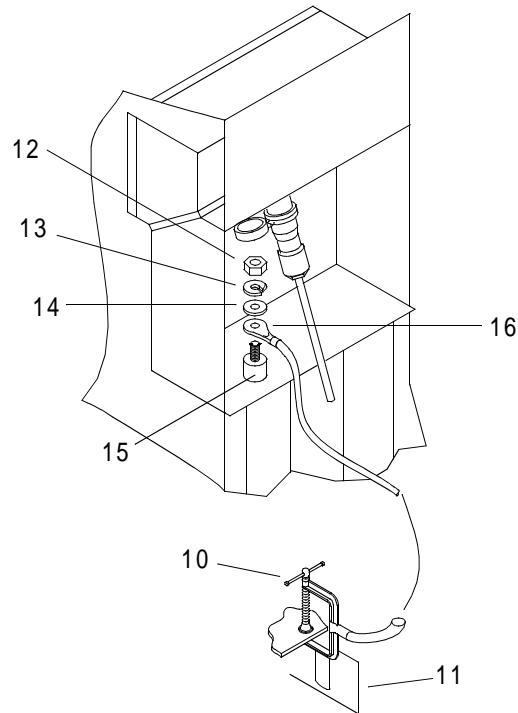
3. Install louver covers on container end and side using six hex bolts (2) with lockwashers (3).
4. Loosen flange nut (4).
5. Remove generator exhaust pipe (5) from generator container exhaust outlet (6).
6. Install protective cover (7) on generator container exhaust outlet (6).
7. Install generator exhaust pipe (5) in container.
  - a. Position exhaust pipe (5) in place.
  - b. Position brackets (8) in place and install bolts (9).



---

**REMOVE GENERATOR CONTAINER GROUND CABLE**

1. Remove ground cable C-Clamp (10) from module ISO fitting (11).



2. Remove nut (12), lock washer (13) and flat washer (14) from ground stud (15).
3. Remove ground cable (16) from ground stud (15).
4. Reinstall flat washer (14), lock washer (13) and nut (12) on ground stud (15).
5. Tighten nut (12).

**REMOVE GENERATOR CONTAINER FROM FC PLATFORM**

1. Remove tiedown straps securing generator container to FC platform.

---

**WARNING**


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**HEAVY PARTS**

2. Using crane, lift generator container from FC platform.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
FENDERS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

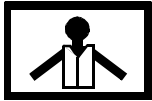
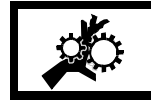
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**PREPARATION FOR MOVEMENT - REMOVAL OF FENDERS****REMOVE FENDERS**


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**WARNING**

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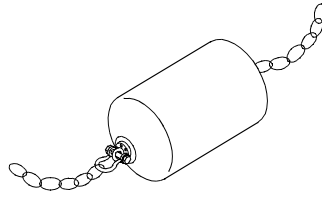
**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS****HEAVY PARTS**

**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.**

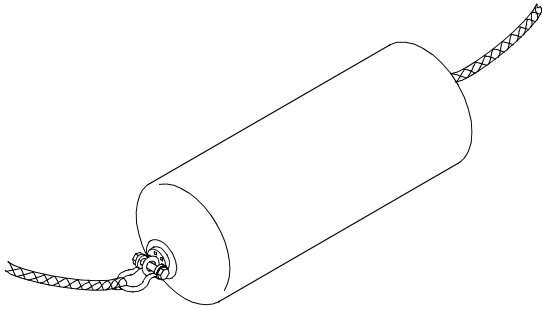
**NOTE**

In the event it is necessary to place fender on deck of the trident pierhead, it must be chocked to prevent uncontrolled movement

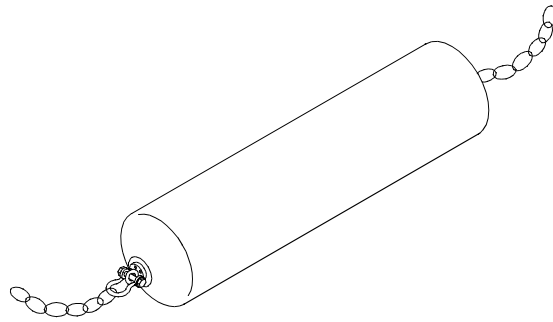
1. Remove cylindrical fenders.



3 FT X 5 FT LIGHTER FENDER



5 FT X 10 FT SEALIFT VESSEL FENDER



4 FT X 12 FT LIGHTER FENDER

- a. Connect tag lines to securing chains or lines.
- b. Disconnect fender's securing chain or lines from trident pierhead securing eyes on the mooring bitts or deck cleat fittings.

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**WARNING**


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**HEAVY PARTS**

- c. Using the warping tug, man the tag lines and raise the 3 ft X 5 ft, 4 ft X 12 ft and 5 ft X 10 ft fender from the water onto the FC deck.
- d. Disconnect tag lines from the ends of the securing chains or lines.

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**WARNING**


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**HEAVY PARTS**

- e. Using the crane or fork lift, place the fenders on their respective pallet.
- f. Install and tighten tiedown straps to secure fenders to pallets.
- g. Loosen cable attaching waterproof covering to ISO container.

- h. Remove waterproof covering from ISO container.
- i. Remove waterproof bows from ISO container.

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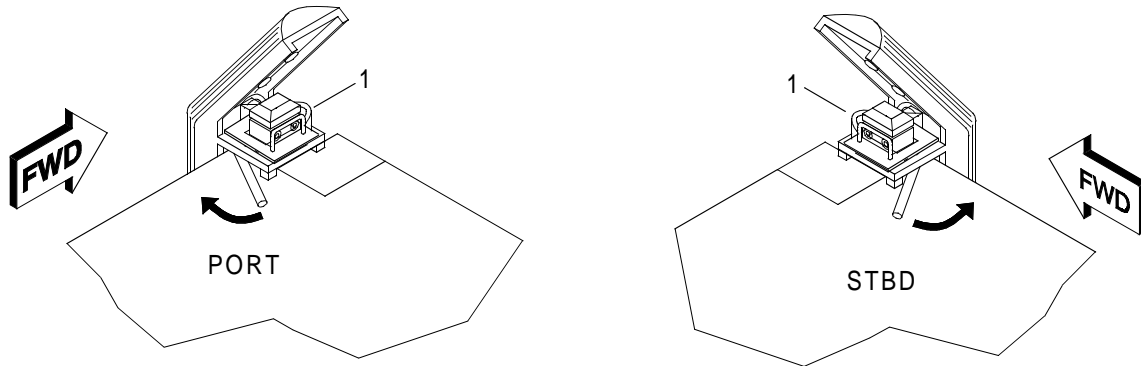
**WARNING**

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**HEAVY PARTS**

- j. Using clevises, chains and the crane or fork lift, install pallets and fenders in 40 ft open top container.
  - k. Install waterproof cover bows on ISO containers.
  - l. Install waterproof covers on ISO containers.
  - m. Tighten cable attaching waterproof cover to ISO container.
2. Remove corner fenders from FC platform.
- a. Rotate handle on ISOPAK vertical connector (1) to unlock starboard corner fender assembly.




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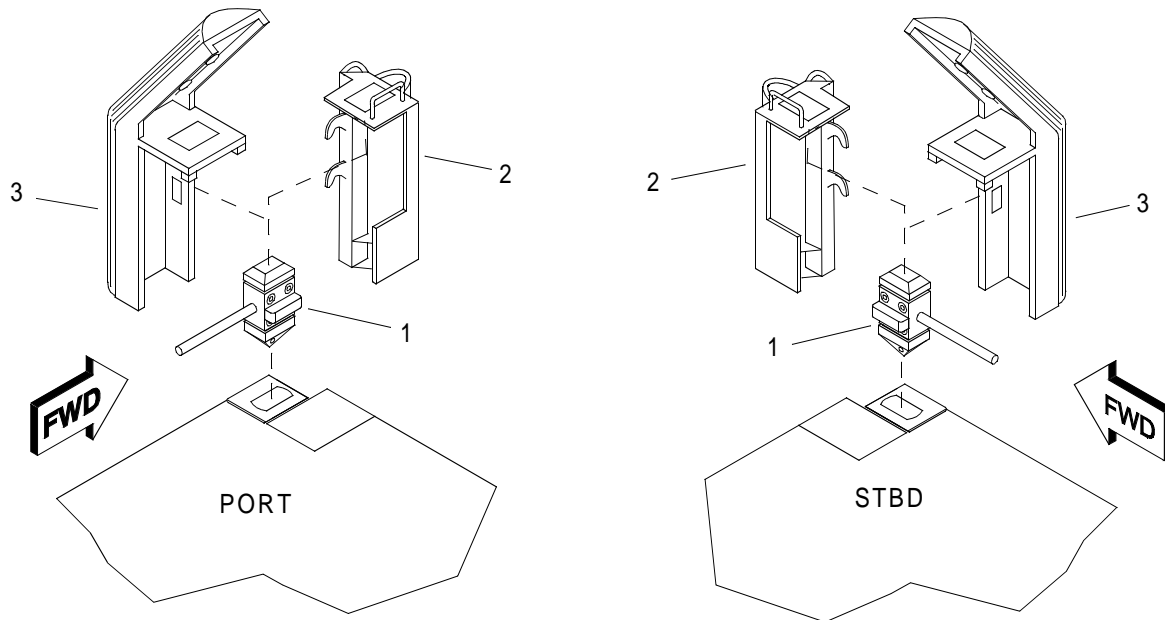
**WARNING**

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**HEAVY PARTS**

- b. Pull straight portion (2) of fender assembly up until over ISOPAK vertical connector (1) to disengage hooks on straight portion (2) of corner fender assembly from slots on angled portion (3) of corner fender assembly.



- c. Remove straight portion (2) of corner fender assembly.
- d. Pull straight up on angled portion (3) of corner fender assembly over ISOPAK vertical connector (1).
- e. Remove angled portion (3) of corner fender assembly.
- f. Remove ISOPAK vertical connector (1) from ISO corner fitting.
- g. Stow corner fender assemblies (2, 3) and ISOPAK vertical connector (1) in BII container.

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
SAFETY EQUIPMENT  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

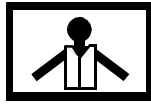
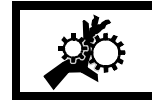
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**PREPARATION FOR MOVEMENT - REMOVAL OF SAFETY EQUIPMENT****REMOVE LIFE RINGS**


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**WARNING**

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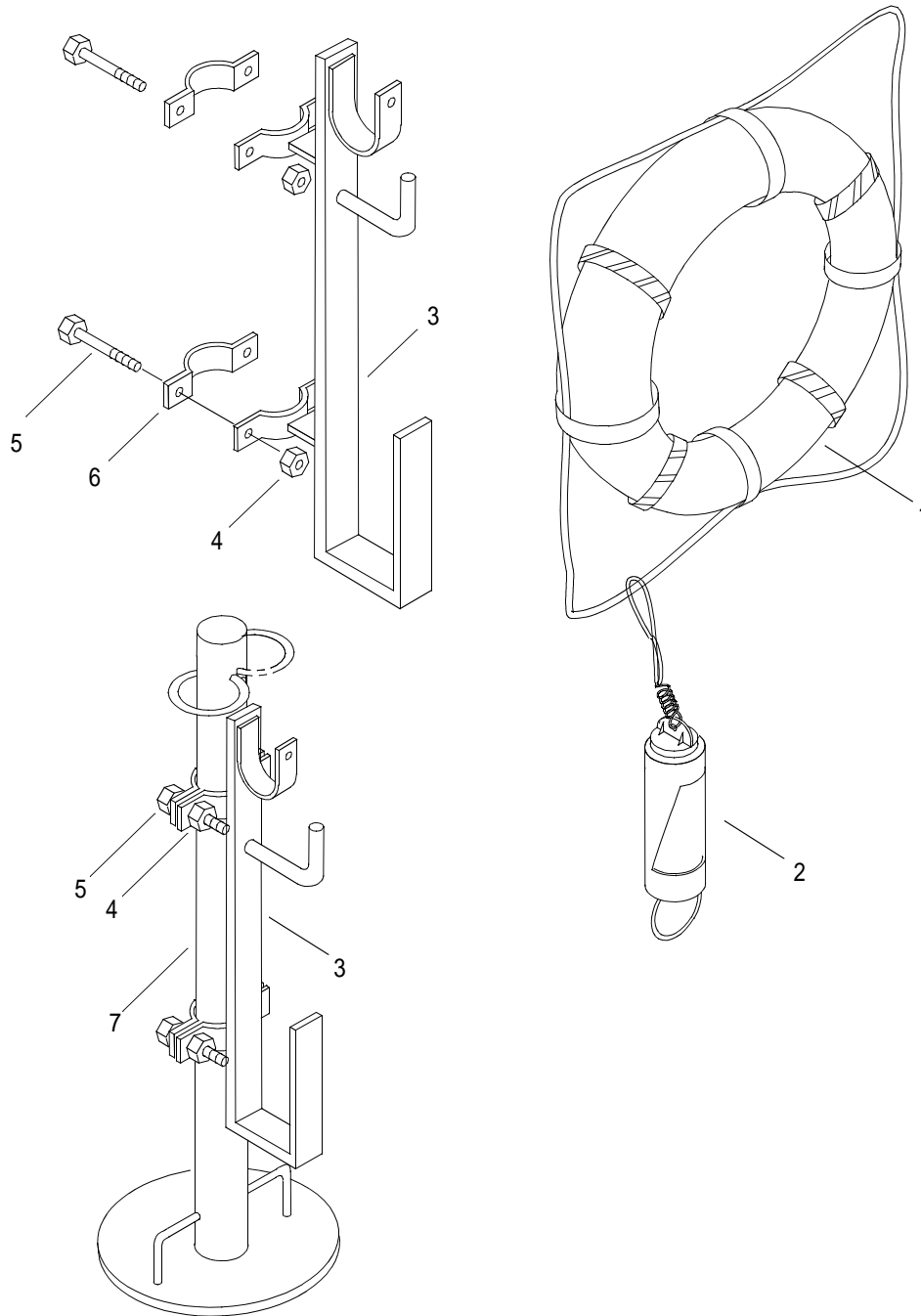
**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

**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.**

**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 which could cause death or injury to personnel.**

1. Remove life ring (1) with strobe (2) from life ring bracket (3).
2. Remove nuts (4) from bolts (5) and separate life ring bracket retaining clamps half (6).

3. Remove life ring bracket (3) from stanchion (7).

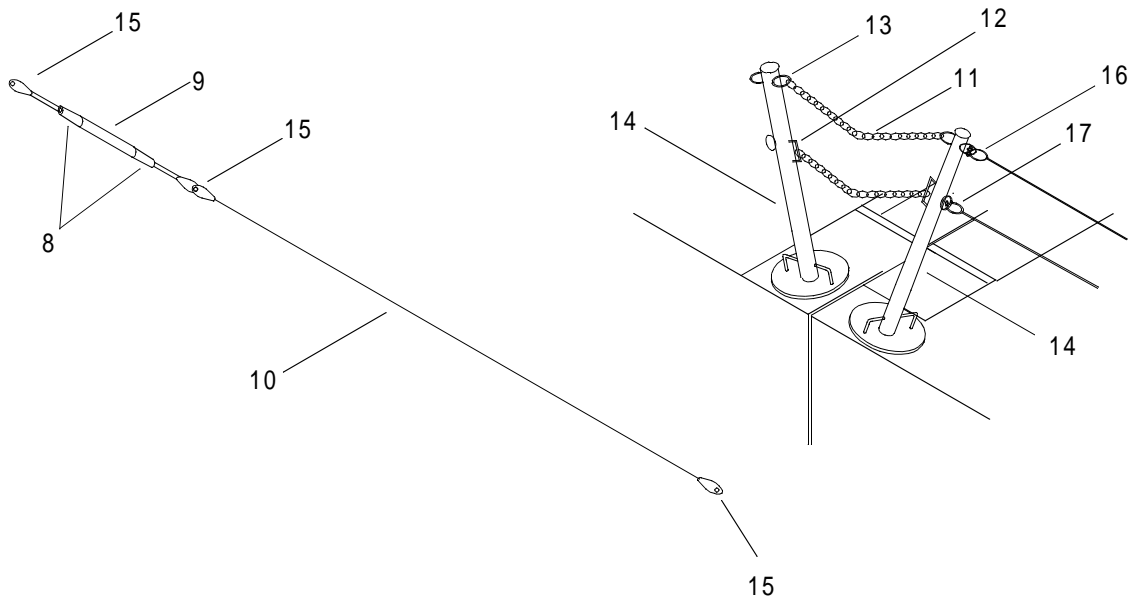


4. Stow life ring (1) with strobe light (2) and bracket (3) as required in BII container. (WP 0065 00).



**REMOVE LIFELINES**

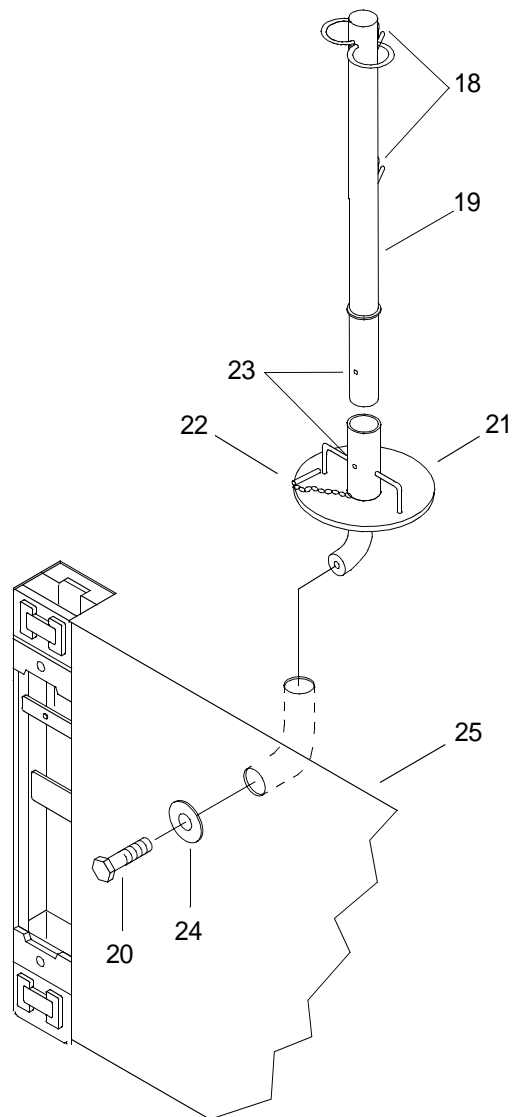
1. Loosen turnbuckle lock nuts (8) and loosen turnbuckles (9) on lifelines (10).



2. Remove safety chains (11) from staple fittings (12, 13) on corner stanchion (14).
3. Remove clevis hook ends (15) of lifelines (10) from staple fittings (16, 17) on corner stanchion (14) and remove lifelines (10) from pigtail fairleads (18) on each vertical stanchion (19).

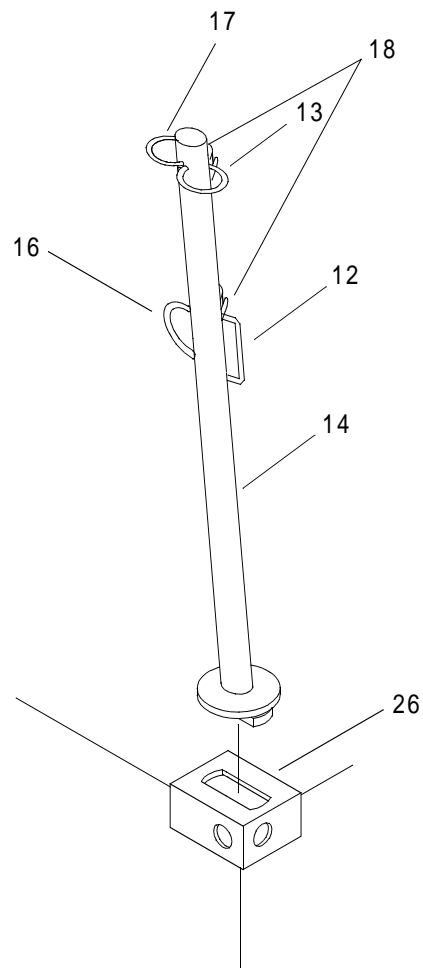
**REMOVE STANCHION**

1. Loosen bolt (20) from threaded portion of deck fitting (21).



2. Remove toggle pin (22) from holes (23) located near the base of the vertical stanchion deck fitting (21) and remove stanchion (19).
3. Remove bolt (20) and keeper plate (24) from module (25).

- 
4. Remove deck fitting (21) from turn tube on module (25).



5. Twist corner stanchion (14)  $\frac{1}{4}$  turn and remove from ISO corner fitting (26).
6. Stow lifelines (10), safety chains (11) and stanchions (19, 14) as required.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
TOWING BRIDLE, TOWING INTERFACE AND TOWING LIGHTS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Lifting Device Assembly (Item 32, WP 0104 00)  
 Forklift Adaptor (Item 19, WP 0104 00)  
 Towing Lights (Item 55, WP 0104 00)  
 MCS Tow Bridle (Item 19, WP 0103 00)  
 Flexor Receiver Insert (Item 18, WP 0104 00)

**Personnel Required**

Seaman 88K

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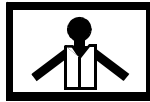
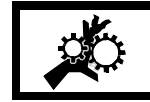
**PREPARATION FOR MOVEMENT - REMOVAL OF TOWING BRIDLE, TOWING INTERFACE AND TOWING LIGHTS**

**REMOVE TOWING LIGHTS**


---

**WARNING**

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**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.**

1. Remove towing light with amber lens from back of FC.
2. Remove towing light with red lens from left side of FC.
3. Remove towing light with green lens from right side of FC.
4. Remove batteries from towing lights.
5. Stow towing lights and batteries in BII container.

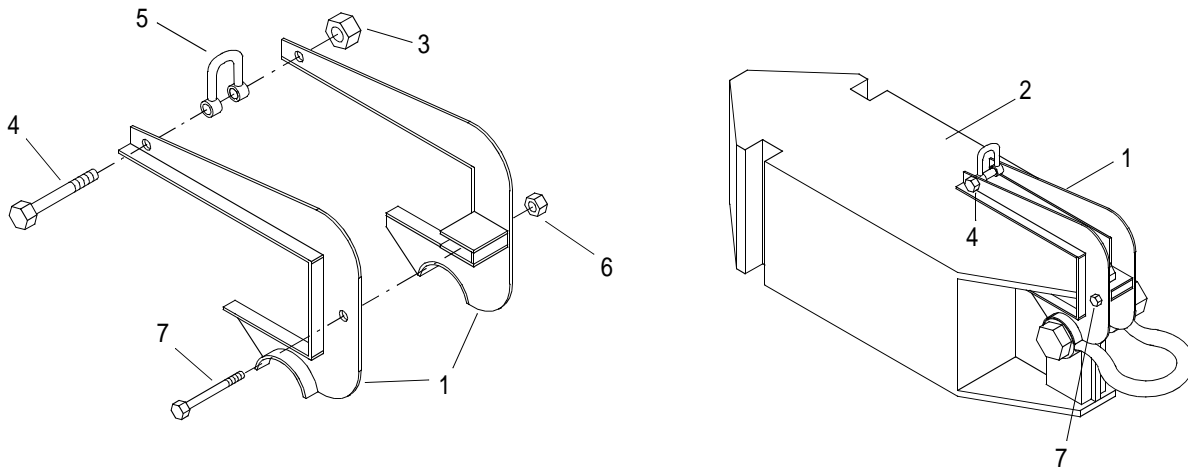
**REMOVE TOWING INTERFACE****WARNING****HEAVY PARTS**

Removal of the towing interface requires working outboard of the FC. Be sure no other floating objects are nearby that could come in contact with the soldier while removing the towing interface. Do not work alone. Failure to observe these precautions could result in death or injury to personnel.

**NOTE**

Remove towing interface and towing bridle as an assembly.

1. Attach flexor lifting device (1) to flexor insert (2).



- a. Remove nut (3) from bolt (4) and shackle (5) from flexor lifting device (1).
- b. Remove nut (6) and bolt (7) from flexor lifting device (1).
- c. Position flexor lifting device (1) over flexor insert (2).
- d. Install shackle (5) on flexor lifting device (1).
  - {1} Align shackle (5) and flexor lifting device (1).
  - {2} Install bolt (4) in flexor lifting device (1).
  - {3} Install nut (3) on bolt (4).
  - {4} Tighten nut (3) until snug.

e. Install bolt (7) in the flexor lifting device (1) and flexor insert (2).

{1} Install nut (6) on bolt (7).

{2} Tighten nut (6) until snug.

2. Disconnect guillotine bar to remove flexor insert. (WP 0012 00)

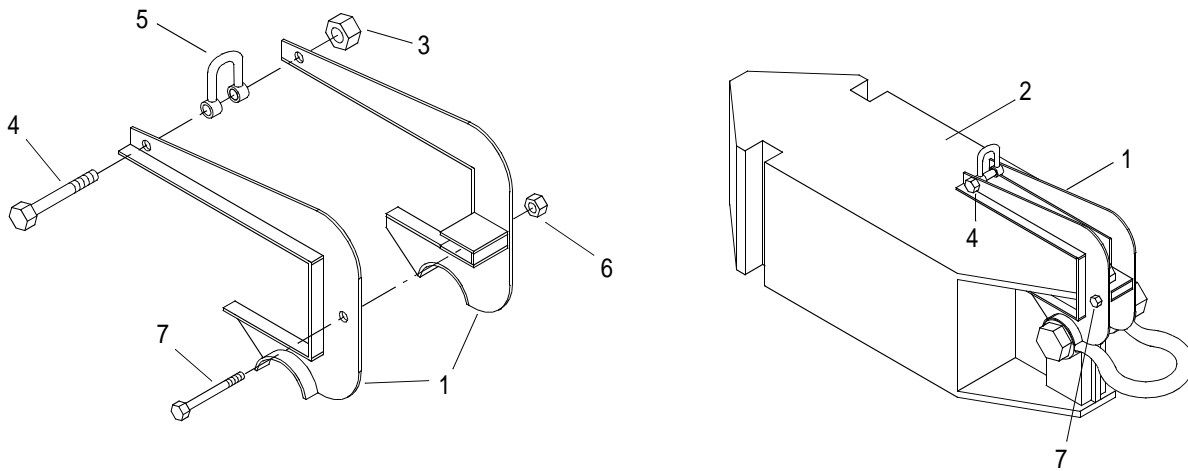
### WARNING



HEAVY PARTS

3. Using a forklift and forklift adaptor, place towing interface with towing bridle on deck of FC.

4. Remove flexor lifting device (1) from flexor insert (2).



a. Remove nut (3), bolt (4) and shackle (5) from flexor lifting device (1).

b. Remove nut (6) and bolt (7) from flexor lifting device (1).

c. Remove flexor lifting device (1) from flexor insert (2).

d. Install bolt shackle (5) on flexor lifting device (1).

{1} Align shackle (5) and flexor lifting device (1).

{2} Install bolt (4) in flexor lifting device (1).

{3} Install nut (3) on bolt (4).

{4} Tighten nut (3) until snug.

{5} Install nut (4) on bolt (2).

{6} Tighten nut (4) until snug.

e. Install bolt (7) in the flexor lifting device (1) and flexor insert (2).

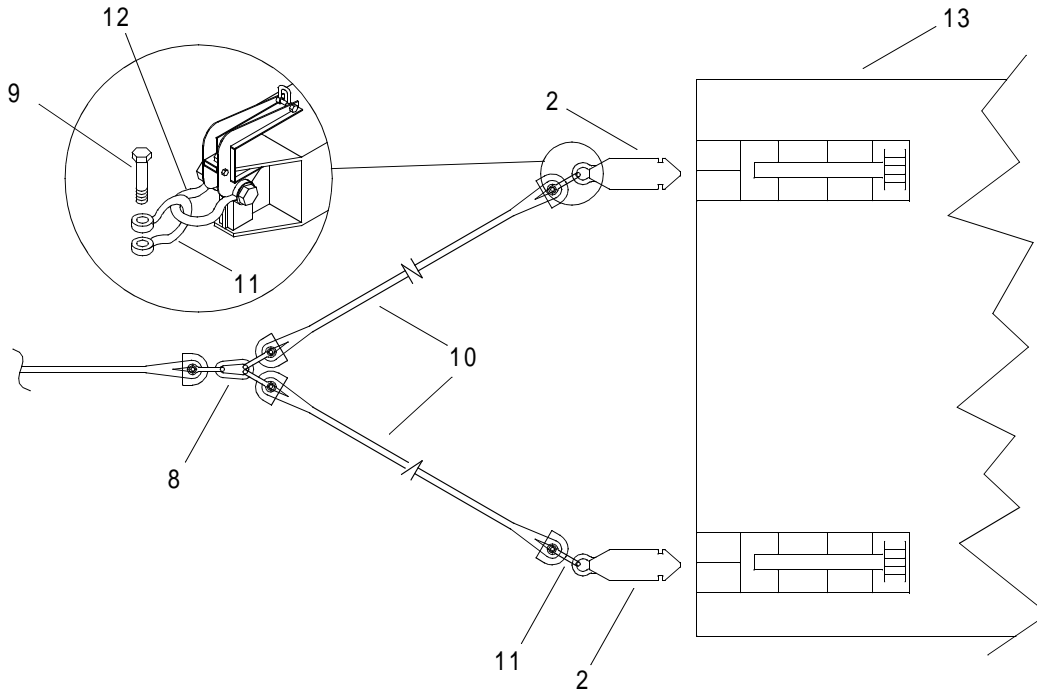
{1} Install nut (6) on bolt (7).

{2} Tighten nut (6) until snug.

5. Repeat procedure for second flexor insert.

### REMOVE TOWING BRIDLE

1. Remove towing bridle (8) from flexor inserts (2).



a. Remove shackle pin (9) and remove towing bridle leg (10).

b. Remove shackle (11) from flexor insert shackle (12).

2. Repeat steps to remove second leg of towing bridle leg (10) from flexor insert (2).

3. Install shackles (11) with shackle pins (9) on each leg of towing bridle (10).

4. Clean towing bridle (8) with fresh water and let dry on FC deck (13).

5. Clean flexor inserts (2) with fresh water and let dry on FC deck (13).

6. Place dried towing bridle (8) and flexor inserts (2) in BII container.

### END OF WORK PACKAGE



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MOORING BITTS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)  
 Chain, ½ in. General Purpose (Item 12, WP 0104 00)  
 Forklift Adapter (Item 19, WP 0104 00)  
 Push Rod (Item 42, WP 0104 00)

**Personnel Required**

Seaman 88K

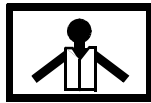
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**PREPARATION FOR MOVEMENT - REMOVAL OF MOORING BITTS****REMOVE MOORING BITT**


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**WARNING**

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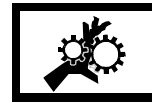
VEST



HELMET PROTECTION



HEAVY PARTS

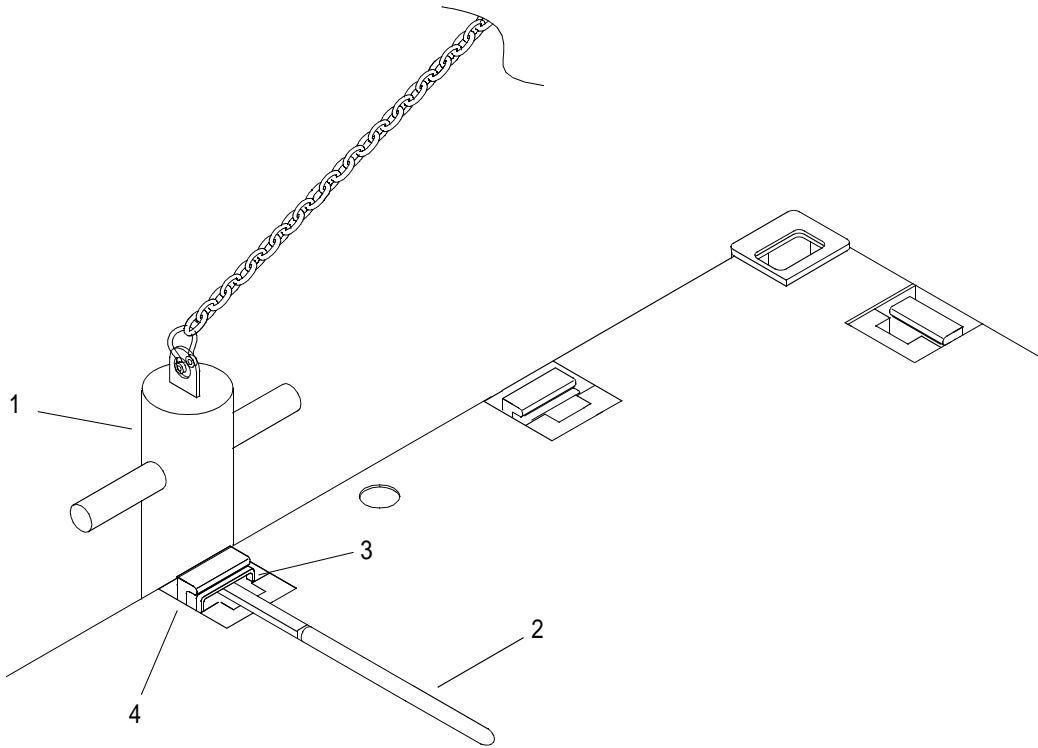


MOVING PARTS

**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.**

**Attempting to remove mooring bitts from the FC in higher sea conditions than Sea State 0 could cause injury or possible death to personnel and/or damage equipment.**

1. Use fork lift and lift chain to support mooring bitt (1).



3. Insert crowbar (2) behind spring bar (3) under female guillotine bar (4).
4. Rotate crowbar (2) downward to clear spring bar (3) from deck overhangs and allow female guillotine bars (4) to move upward.
5. Raise female guillotine bar (4) approximately six in. until it stops.
6. Remove crowbar (2).

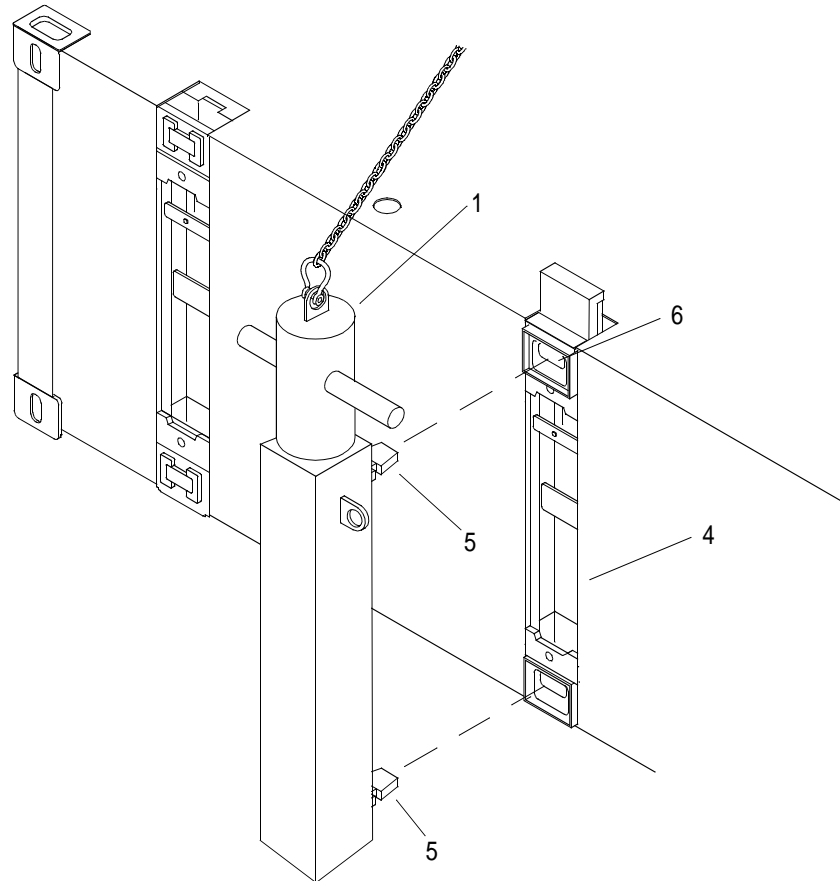
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**WARNING**

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**HEAVY PARTS**

7. Move mooring bitt (1) horizontally until male connector pins (5) clear female connector assembly (6).




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**WARNING**


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**HEAVY PARTS**

8. Install mooring bitts (1) on ISO container pallets.
9. Fill pallets with mooring bitts (1) and secure bitts to pallet with tie down straps.
10. Stack pallets for installation in ISO container.

---

**WARNING**


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**HEAVY PARTS**

11. Using forklift and fork extenders, install first stack of pallets in ISO container.
12. Remove one fork extender from forklift and install forklift hooked extender.

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**WARNING**

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**HEAVY PARTS**

13. Using forklift and forklift hooked extender, push first stack of pallets to the rear of ISO container.
14. Remove forklift hooked extender from forklift and install fork extender.

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**WARNING**

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**HEAVY PARTS**

15. Using forklift, install second stack of pallets in ISO container.
16. Remove one fork extender from forklift and install forklift hooked extender.

---

**WARNING**

---

**HEAVY PARTS**

17. Using forklift and forklift hooked extender, push second stack of pallets to the rear of the ISO container.
18. Remove forklift hooked extender from forklift and install fork extender.

---

**WARNING**

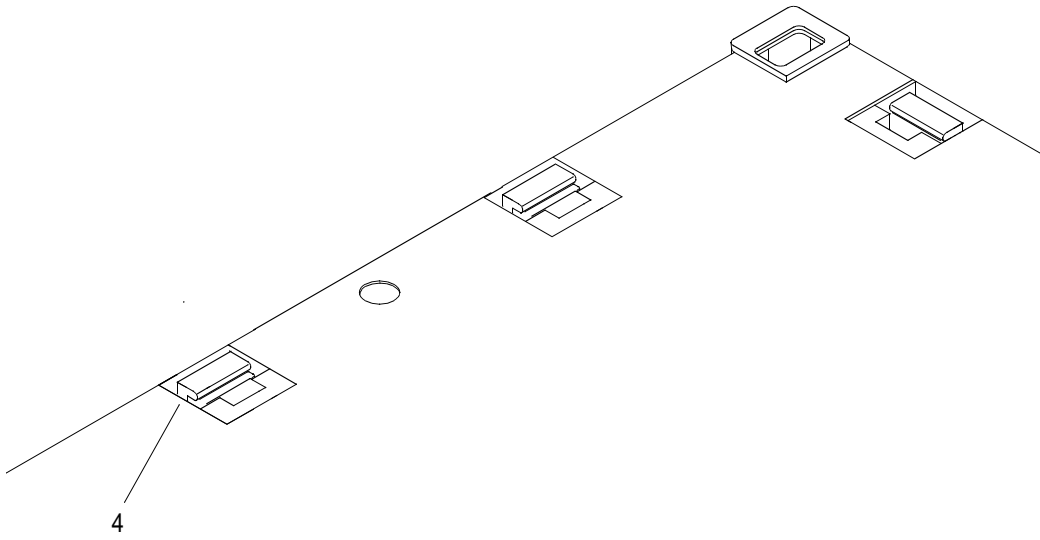
---

**HEAVY PARTS**

19. Using forklift, install third stack of pallets in ISO container.
20. Install straps to secure pallets to ISO container.

---

21. Drive female guillotine bar (4) down using sledgehammer.



**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
D-RING/CLOVERLEAF AND DECK CLEAT FITTINGS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

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**PREPARATION FOR MOVEMENT - REMOVAL OF D-RING/CLOVERLEAF AND DECK  
CLEAT FITTINGS**

**REMOVE D-RING/CLOVERLEAF FITTINGS**


---

**WARNING**

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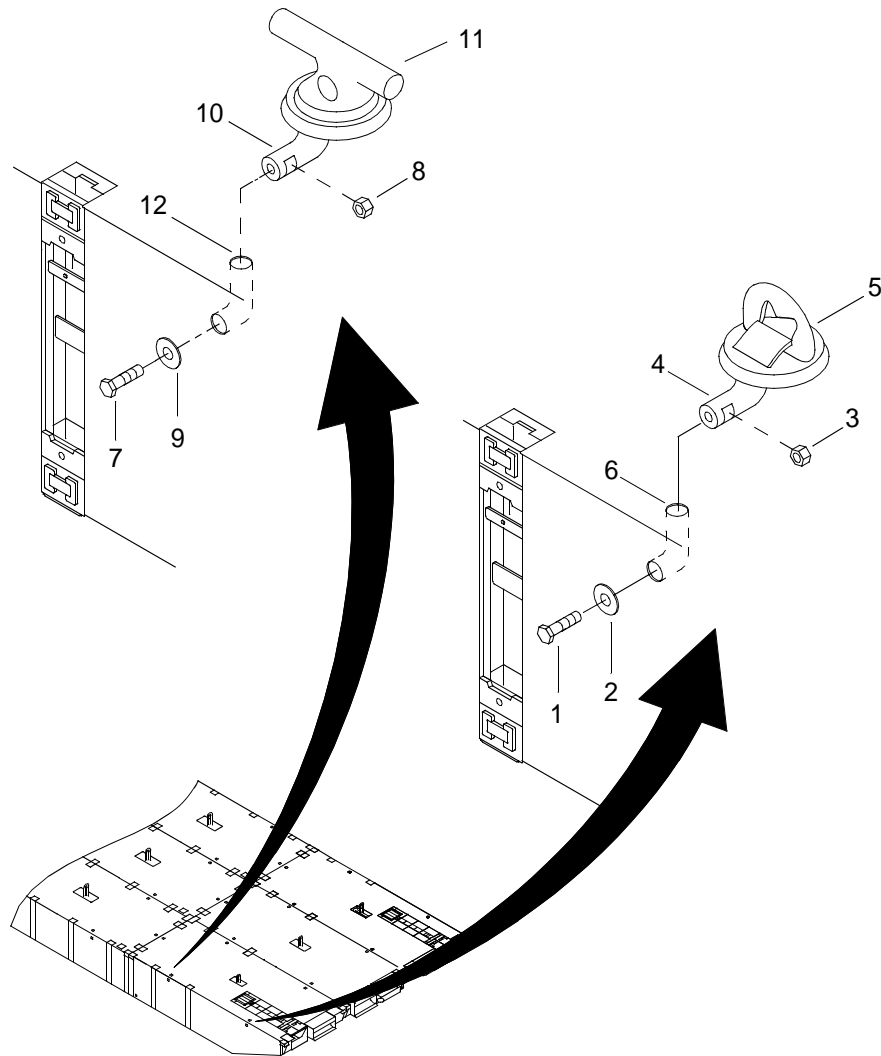
**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

**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.**

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

**Use extreme caution while working outboard and lifting heavy objects as the possibility of falling overboard exists, which could cause serious injury or death.**

1. Remove bolt (1) and keeper plate (2) from nut (3) and tailpiece (4).



2. Remove D-Ring/Cloverleaf fittings (5) from module turn tube (6).
3. Install bolt (1) through keeper plate (2) and thread it into nut (3) in tailpiece (4).

#### **REMOVE DECK CLEAT FITTINGS**

1. Remove bolt (7) and keeper plate (9) from nut (8) and tailpiece (10).
2. Remove deck cleat (11) from module turn tube (12).
3. Install bolt (7) through keeper plate (9) and thread it into nut (8) and tailpiece (10).

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
ONSHORE ANCHOR MOORING LEGS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Industrial (chipping, chemical) (Item 24, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)  
 Gloves, Chemical (Item 22, WP 0104 00)  
 Apron, Utility (Item 1, WP 0106 00)  
 Respirator, Air Filtering (Item 5, WP 0106 00)  
 Forklift Adaptor (Item 19, WP 0104 00)  
 Shovel, Hand (Item 6, WP 0104 00)

**Materials/Parts**

Cleaner, Type II (Item 5, WP 0105 00)  
 Corrosion, Preventive Compound, Class I, Grade II, (Item 6, WP 0105 00)  
 Corrosion, Preventive Compound, Class I, Grade II, (Item 7, WP 0105 00)  
 Lubricating Oil, 80W90 Grade (Item 16, WP 0105 00)  
 Rag, Wiping (Item 19, WP 0105 00)

**Personnel Required**

Seaman 88K (2)

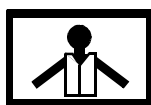
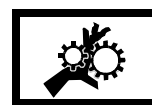
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**PREPARATION FOR MOVEMENT - RECOVER ONSHORE ANCHOR MOORING LEGS****RECOVER ONSHORE ANCHOR MOORING LEGS**


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**WARNING**

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

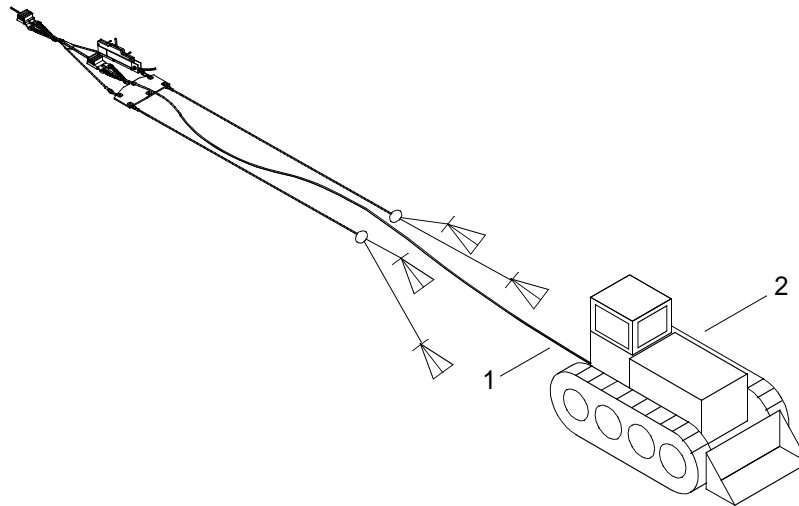
**All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

**NOTE**

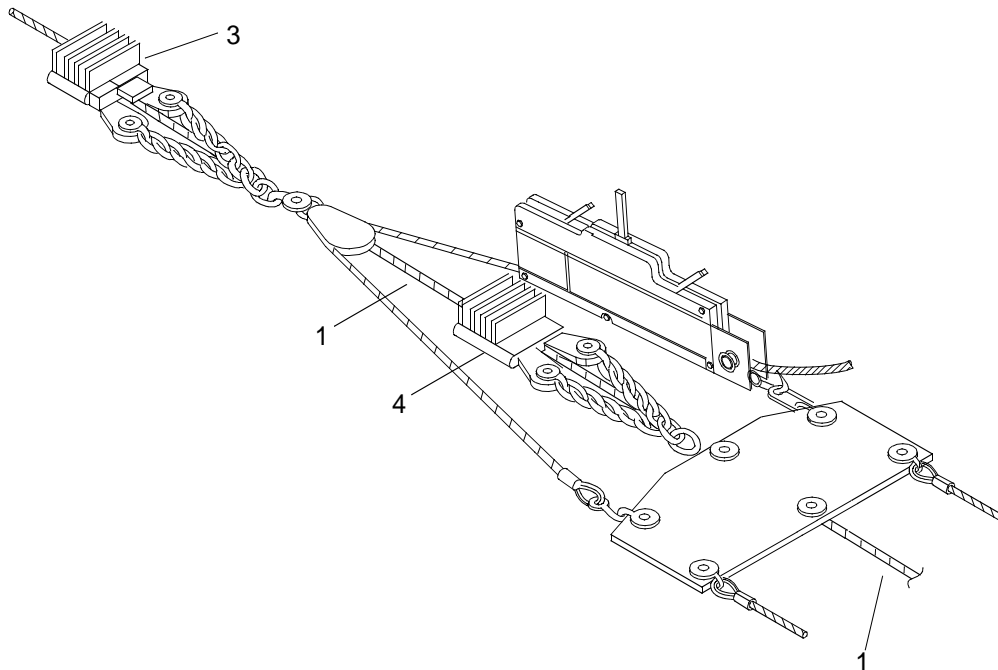
The following procedure is typical for recovery and stowage of onshore anchor mooring legs. Easing tension on mooring lines can be accomplished using either bulldozer or carpenter stops and griphoist.

1. Ease mooring line (1) tension using bulldozer (2).

- a. Attach end of the mooring line (1) to bulldozer (2).



- b. Pull on mooring line (1) with bulldozer (2) until tension on carpenter stop (3) and (4) is relieved.

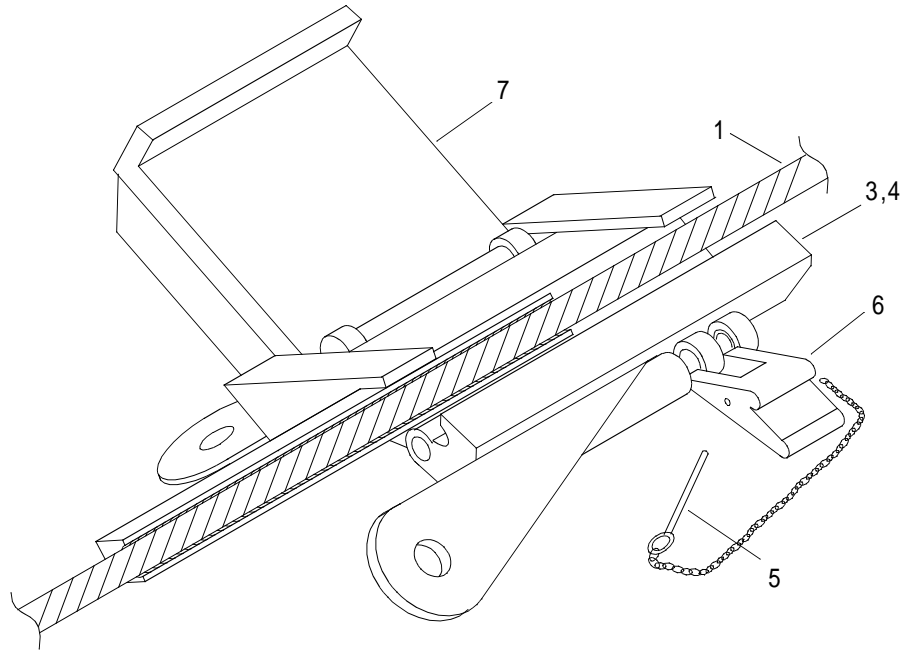


**WARNING**

**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.**

- c. Remove carpenter stop (3) latch pin (5) from latch (6).

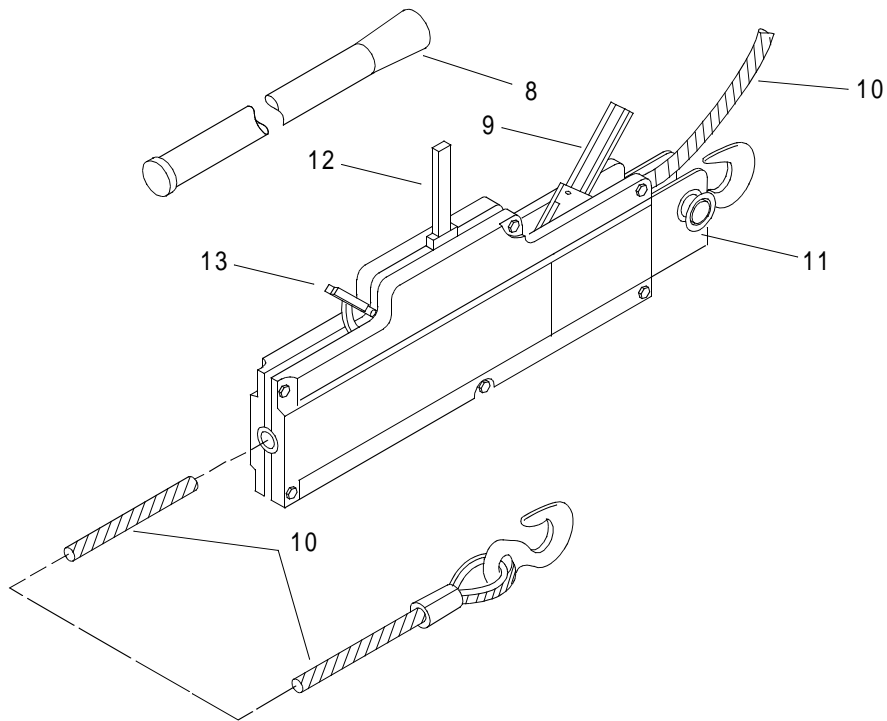
- d. Rotate latch (6) to unlock stop cover (7).



- e. Open carpenter stop (3) and remove mooring line (1).

- f. Repeat steps c through e for carpenter stop (4).

2. Ease mooring line (1) tension, using carpenter stop (4) and griphoist (11).



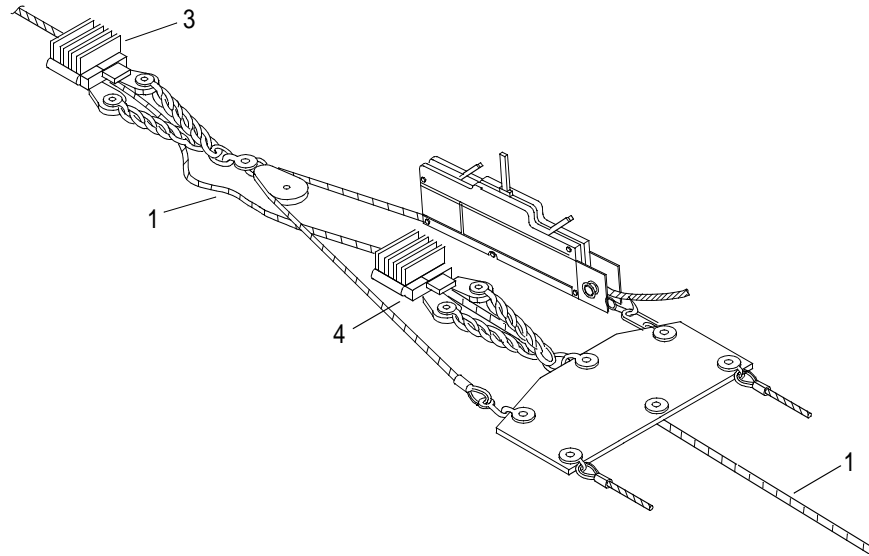
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**WARNING**

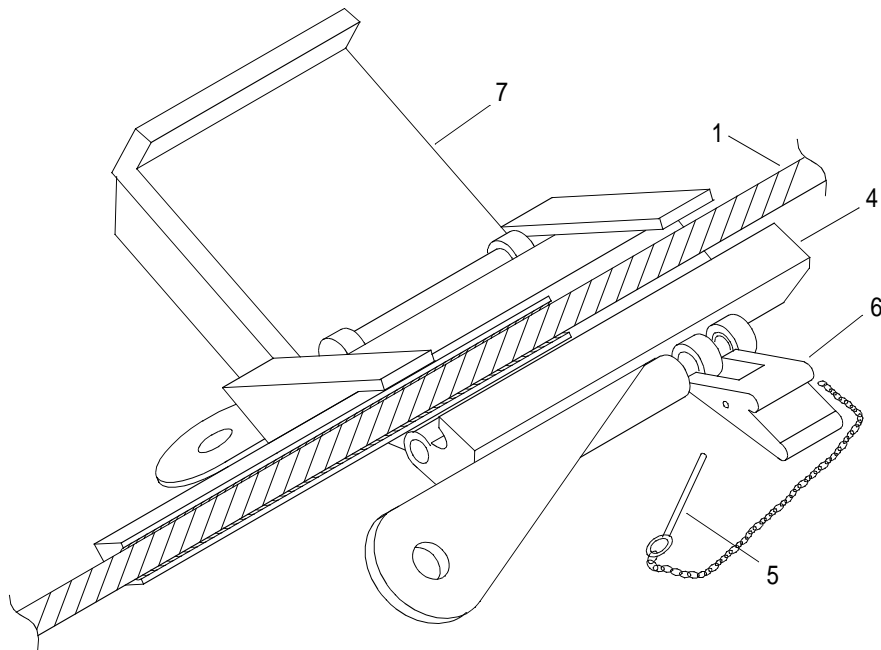

---

**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 to personnel.**

- a. Place operating handle (8) on power stroke lever (9) and work handle back and forth to pull hoist cable (10) through grip hoist (11) to relieve tension on mooring line (1).

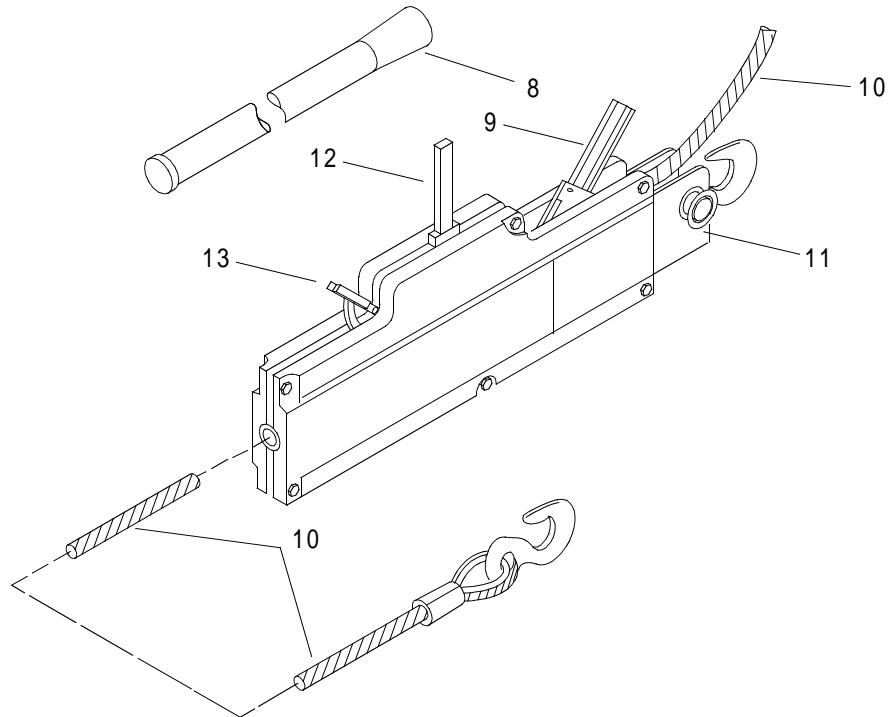


- b. When tension is relieved on mooring line (1), between carpenter stop (3) and (4), on carpenter stop (4) remove latch pin (5) from latch (6).



- c. Rotate latch (6) to unlock stop cover (7).
- d. Remove mooring line (1).

- e. Move hoist cable release lever (13) to unlock position.



- f. Place operating handle (8) on reversing lever (12) and work it back and forth to pay out hoist cable (10).

- g. When all tension has been relieved on hoist cable (10), on carpenter stop (3), repeat steps b through d.

3. Pull mooring line (1) to the FC ramp using bulldozer (2).

### NOTE

Extracting the anchor can be accomplished using forklift or manually.

4. Use forklift and forklift adaptor to extract anchors (14).

- a. Attach one end of line to anchor crown base, link/shackle.

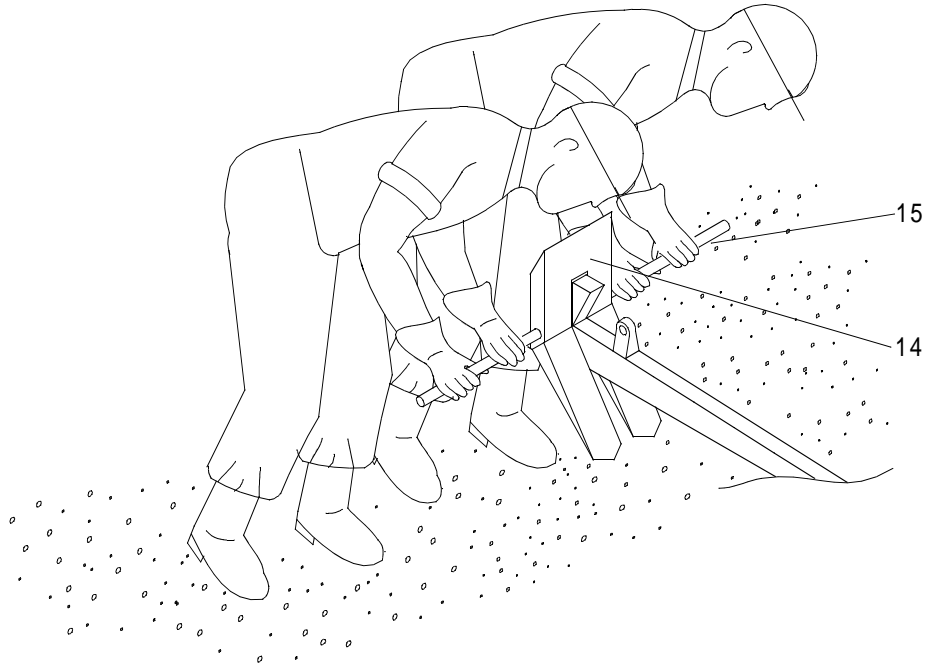
### WARNING



HEAVY PARTS

- b. Lift and raise anchor (14) out of ground.

- 
5. Use two men to extract anchors (14).



- a. Excavate the anchor (14) using a shovel.

---

**WARNING**

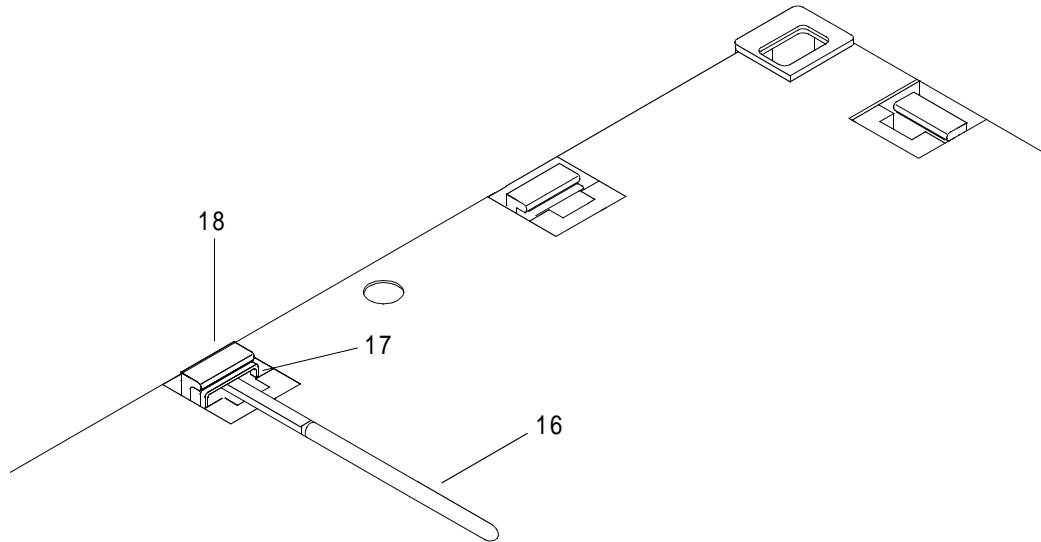
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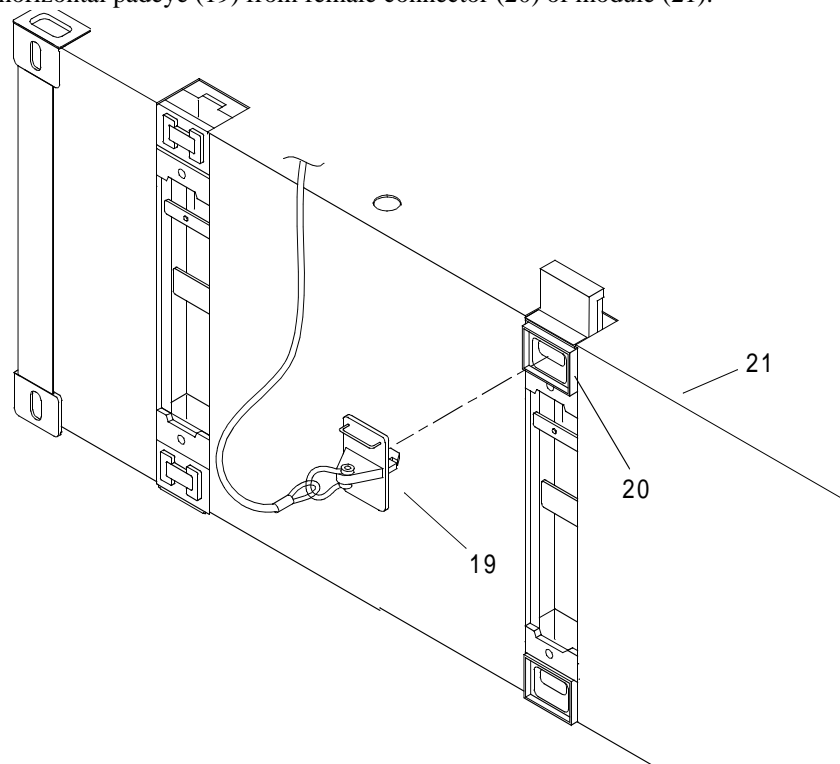
**HEAVY OBJECTS**

- b. Grasping stabilizers (15) raise anchor (14).
6. Remove horizontal padeye.

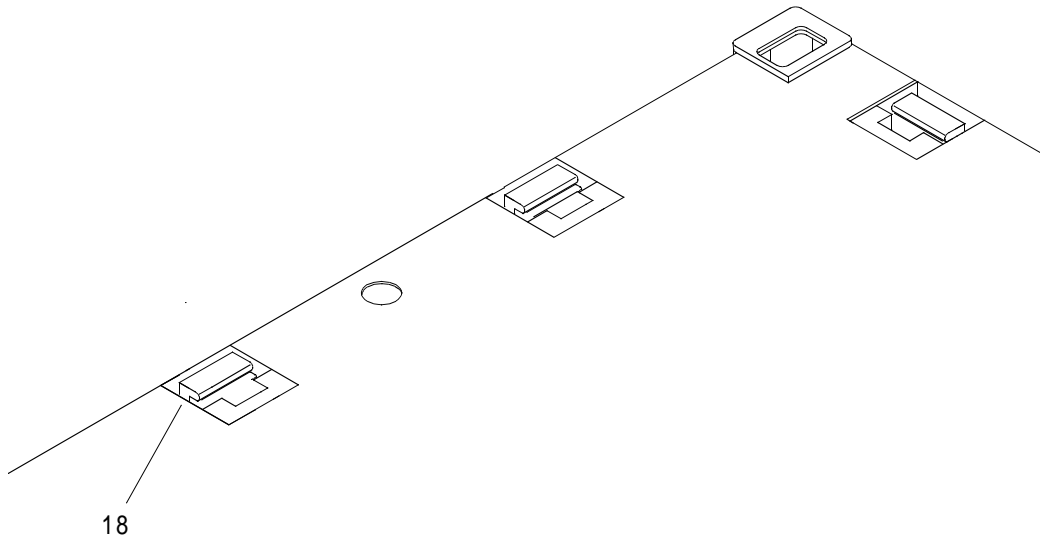
- a. Insert crowbar (16) behind spring bar (17) under female guillotine bar (18).



- b. Press crowbar (16) downward to clear spring bar (17) from deck overhangs and allow female guillotine bars (18) to move upward.
- c. Raise female guillotine bar (18) approximately six in. until it stops.
- d. Remove crowbar (16).
- e. Remove horizontal padeye (19) from female connector (20) of module (21).



- 
- f. Drive female guillotine bar (18) down using sledgehammer.



### CLEAN ONSHORE ANCHOR WIRE ROPE

#### **WARNING**



CHEMICAL



EYE PROTECTION

#### **CAUTION**

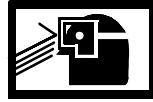
**Follow all cleaning and lubrication instructions carefully. Failure to do so can result in damage to equipment.**

#### **NOTE**

Use fresh water with cleaner to thoroughly wash all equipment exposed to salt water or salt spray.

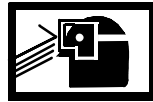
1. Clean wire rope with cleaner and wire brush.
2. Wipe with clean wiping rag and allow all parts to dry thoroughly



**PRESERVE WIRE ROPE****WARNING****CHEMICAL****EYE PROTECTION****VAPOR****NOTE**

Lubricate all equipment at conclusion of operation before storing equipment.

1. Preserve wire rope by coating with corrosion prevention compound, grade I.

**WARNING****CHEMICAL****EYE PROTECTION****VAPOR**

2. Coat all unplated ferrous fittings with corrosion prevention compound, grade II.

**CLEAN ONSHORE ANCHOR SWIVELS AND SHACKLES****WARNING****CHEMICAL****EYE PROTECTION****CAUTION**

**Follow all cleaning and lubrication instructions carefully. Failure to do so can result in damage to equipment.**

**NOTE**

Use fresh water with cleaner to thoroughly wash all equipment exposed to salt water or salt spray.

1. Clean swivels and shackles using cleaner, wire brushes and rags.
2. Wipe with clean wiping rag and allow all parts to dry thoroughly.

---

**PRESERVE ONSHORE ANCHORS AND SHACKLES**


---

**WARNING**


---



CHEMICAL



EYE PROTECTION



VAPOR

1. Preserve swivels and shackles by coating with corrosion prevention compound, grade I.

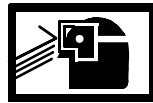
---

**WARNING**


---



CHEMICAL



EYE PROTECTION



VAPOR

2. Coat all unplated threads and exposed fittings with corrosion prevention compound, grade II.

**CLEAN ONSHORE ANCHOR GRIP HOISTS**

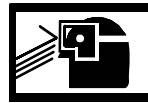

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**WARNING**


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CHEMICAL



EYE PROTECTION

---

**CAUTION**

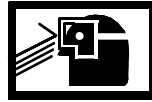

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**Follow all cleaning and lubrication instructions carefully. Failure to do so can result in damage to equipment.**

**NOTE**

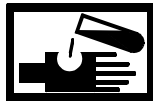
Use fresh water with cleaner to thoroughly wash all equipment exposed to salt water or salt spray. Lubricate all equipment at conclusion of operation before storing equipment.

1. Dip the grip hoist into cleaner.
2. To dislodge foreign matter, shake grip hoist while it is submerged in cleaner.
3. Lift grip hoist from cleaner and quickly turn upside down to dislodge foreign matter.
4. Wipe with clean wiping rag and allow grip hoist to dry thoroughly.

**LUBRICATE ONSHORE GRIP HOISTS****WARNING****CHEMICAL****EYE PROTECTION****POISON****CAUTION**

**Lack of lubrication may cause grip hoist malfunction. Failure to comply could result in damage to equipment.**

1. Apply lubricating oil, through grip hoist openings into internal mechanism in direction of jaws.
2. Allow lubricant to penetrate all parts of the mechanism, alternately moving the power stroke and reversing levers.

**WARNING****CHEMICAL****EYE PROTECTION****VAPOR**

3. Coat unplated, exposed metallic parts with corrosion preventative compound grade II.

**PACK ONSHORE MOORING LEGS IN ISO CONTAINER****NOTE**

Packing of the onshore mooring leg ISO container is normally done ashore.

1. Unlatch and open container end doors.
2. Secure doors open with locking bars and pins.
3. Unlatch and open container side doors.
4. Secure doors open with locking hooks.
5. Reel onshore mooring lines (1) onto the reels inside the container.

**WARNING**

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**HEAVY PARTS**

6. Using a forklift and forklift lifting adaptor, place onshore anchors (14) in container.
7. Place remaining onshore components in drawers.
8. Close and latch shut container side and end doors.

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
OFFSHORE ANCHOR MOORING LEGS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)  
 Gloves, Chemical (Item 22, WP 0104 00)  
 Goggles, Industrial (chipping, chemical) (Item 24, WP 0104 00)  
 Apron, Utility (Item 1, WP 0104 00)  
 Forklift Adaptor (Item 19, WP 0104 00)  
 Hook, Boat (Item 29, WP 0104 00)  
 Respirator, Air Filtering (Item 5, WP 0106 00)

**Materials/Parts**

Cleaner, Type II (Item 6, WP 0105 00)  
 Corrosion, Preventive Compound, Grade I (Item 7, WP 0105 00)  
 Corrosion, Preventive Compound, Grade II (Item 8, WP 0105 00)  
 Rag, Wiping (Item 16, WP 0105 00)

**Personnel Required**

Seaman 88K

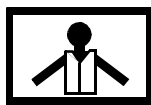
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**PREPARATION FOR MOVEMENT - RECOVERY OF OFFSHORE ANCHOR MOORING LEGS****RECOVER OFFSHORE ANCHOR MOORING LEGS**

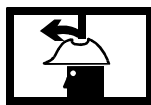

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**WARNING**

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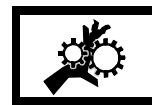
VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

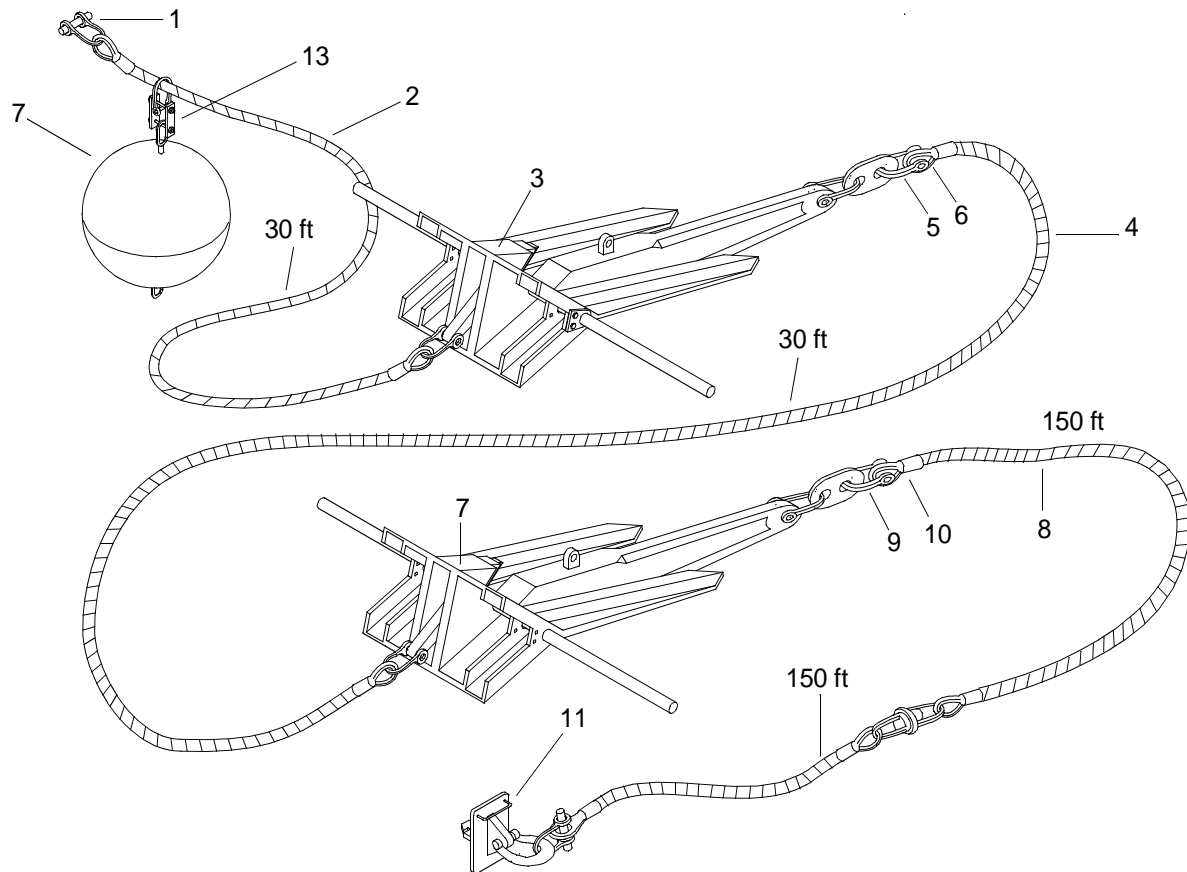
**All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

**NOTE**

Packing of the mooring legs in the offshore container is normally done ashore.

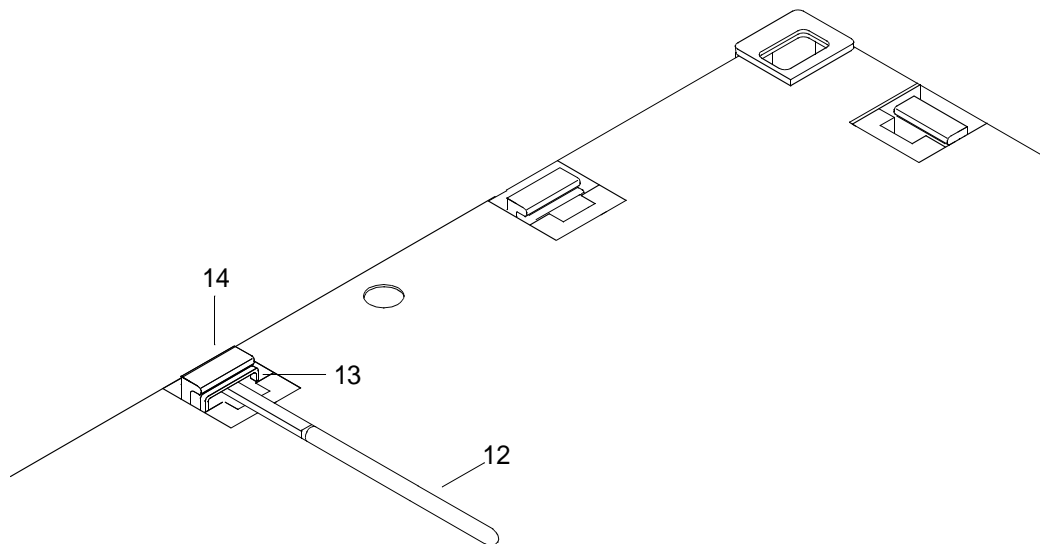
The following procedure is typical for the recovery and stowage of the offshore anchor mooring legs.

1. Using a boat hook, capture shackle (retrieval pendant) (1) on 30 ft buoy cable (2).

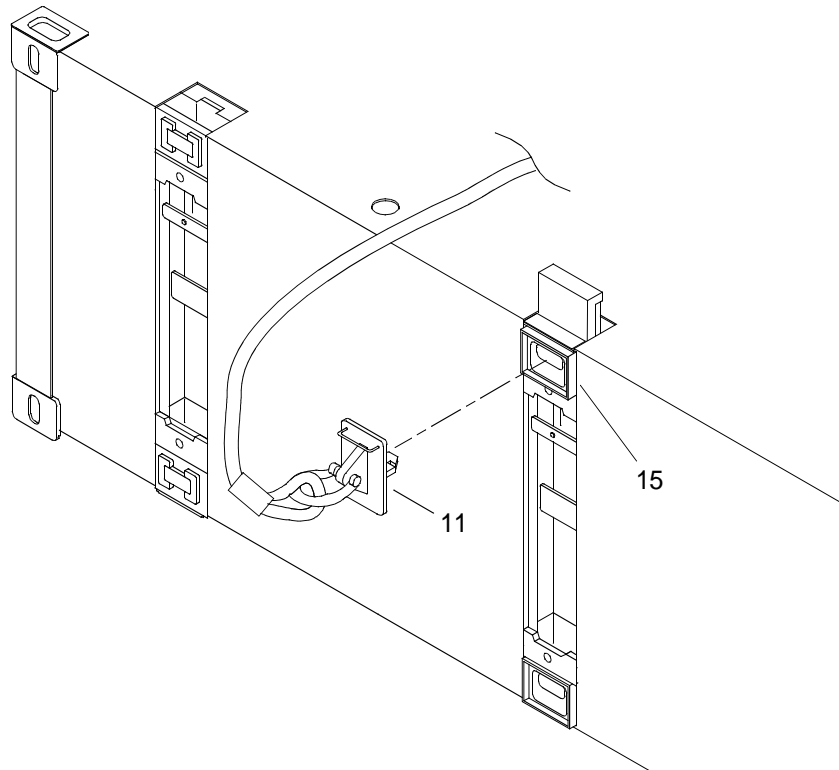


2. Connect shackle (retrieval pendant) (1) to WT forward winch cable.
3. Lift first anchor (3) off bottom and place it on WT deck, using winch.
4. Remove 30 ft. cable (4) from the shackle (5).
5. Connect the WT forward winch cable to eye (6) of 30 ft cable (4).
6. Lift second anchor (7) off bottom and place on WT deck, using the winch.
7. Remove two 150 ft cables, with swivel, (8) from the shackle (9).
8. Connect the WT forward winch to cable eye (10).
9. Remove vertical padeye (11).

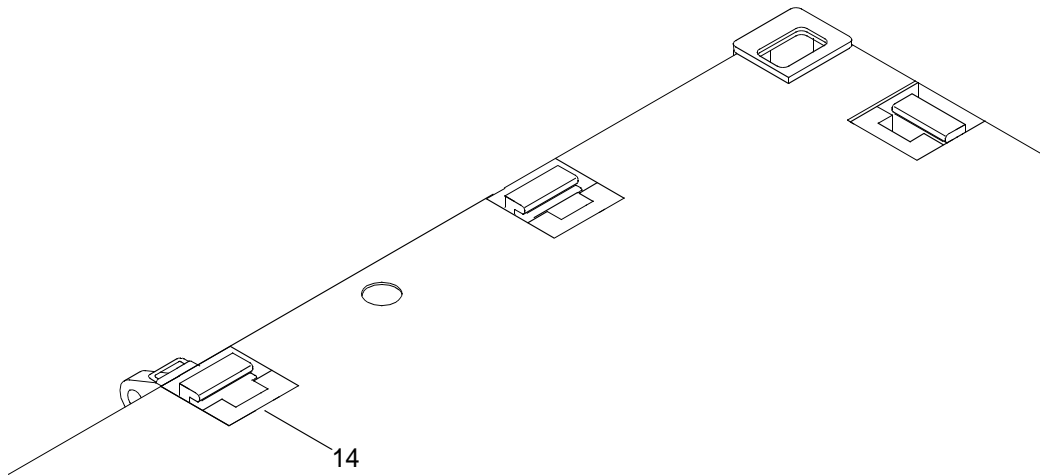
- a. Insert crowbar (12) behind the spring bar (13) under the female guillotine bar (14).



- b. Press crowbar (12) downward to clear spring bar (13) from deck fitting and allow the female guillotine bar (14) to move upward.
- c. Raise female guillotine bar (14) approximately six in. until it stops.
- d. Remove crowbar (12).
- e. Remove the padeye (11) from the female connector (15).



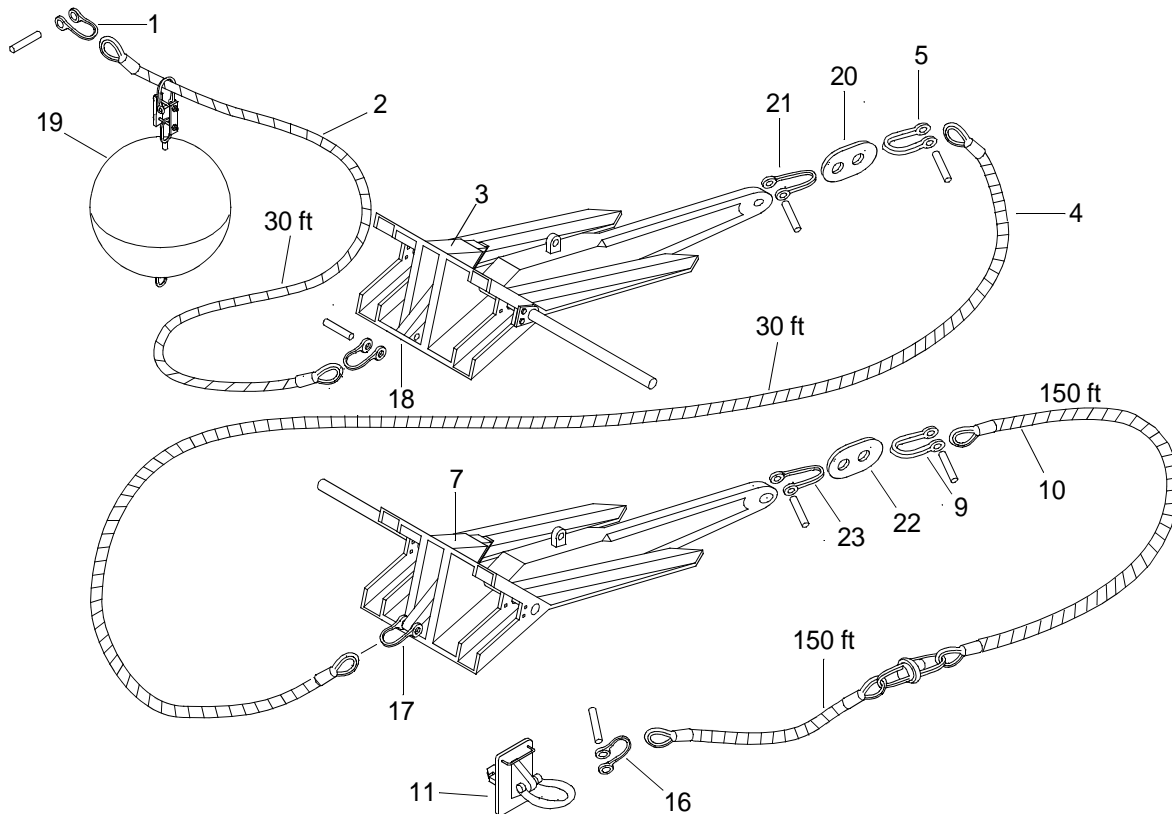
- f. Drive female guillotine bar (14) down, using a sledgehammer.



10. Lift two 150 ft cables, with swivel, and padeye (11) off bottom and place on WT deck, using the winch.
11. Transfer the anchors, buoys, cables and padeyes ashore using the WT winch for further disassembly, cleaning and stowage.

#### DISASSEMBLE MOORING LEGS

1. Remove shackle (16) from padeye (11) and from cable (8). and reinstall on cable.



2. Reinstall shackle (16) to cable (8).



3. Remove shackle (17) from anchor (7) and remove from 30 ft cable (4) from shackle.
4. Reinstall shackle (17) on bottom of anchor (7).
5. Remove shackle (18) from bottom of anchor (3) and remove 39 ft buoy cable (2) from shackle.
6. Reinstall shackle (18) on bottom of anchor (13).
7. Remove shackle (retrieval pendant) (1) from 30 ft buoy cable (2).
8. Slide buoy (19) off 30 ft buoy cable (2).
9. Reinstall shackle (retrieval pendant) (1) on 30 ft buoy cable (2).
10. Remove shackle (5) from eye to eye swivel (20).
11. Remove eye to eye swivel (20) from anchor shackle (21).
12. Remove shackle (9) from eye to eye swivel (22).
13. Remove eye to eye swivel (22) from anchor shackle (23).

#### CLEAN OFFSHORE ANCHOR WIRE ROPE

#### NOTE

Use fresh water with cleaner to thoroughly wash all equipment exposed to salt water or salt spray.

1. Clean wire rope with cleaner and wire brush.
2. Wipe clean with clean wiping rag and allow to dry thoroughly.

#### LUBRICATE WIRE ROPE

#### WARNING



CHEMICAL



EYE PROTECTION



VAPOR

#### NOTE

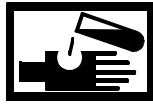
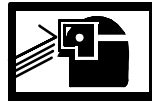
Lubricate all equipment at conclusion of operation before storing equipment.

1. Preserve wire rope by coating with Corrosion Prevention Compound, Grade I.

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**WARNING**


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**CHEMICAL****EYE PROTECTION****VAPOR**

2. Coat all un-plated ferrous fittings with Corrosion Prevention Compound, Grade II.

**CLEAN OFFSHORE ANCHOR SWIVELS AND SHACKLES****NOTE**

Use fresh water with cleaner to thoroughly wash all equipment exposed to salt water or salt spray.

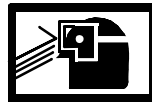
1. Clean swivels and shackles using cleaner, wire brushes and rags.
2. Wipe clean with clean wiping rag and allow to dry thoroughly.

**PRESERVE OFFSHORE ANCHORS AND SHACKLES**


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**WARNING**


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**CHEMICAL****EYE PROTECTION****VAPOR****NOTE**

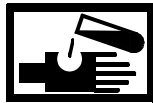
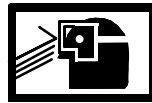
Lubricate all equipment at conclusion of operation before storing equipment.

1. Preserve swivels and shackles by coating with Corrosion Prevention Compound, Grade II.

---

**WARNING**


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**CHEMICAL****EYE PROTECTION****VAPOR**

2. Coat all un-plated threads and exposed fittings with Corrosion Prevention Compound, Grade II.

**CLEAN OFFSHORE ANCHOR MOORING BUOY****NOTE**

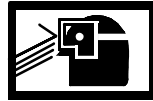
Use fresh water with cleaner to thoroughly wash all equipment exposed to salt water or salt spray.

1. Clean anchor mooring buoy and attendant parts using cleaner, wire brush and rags.
2. Wipe clean with clean wiping rag and allow to dry thoroughly.

**PRESERVE OFFSHORE ANCHOR MOORING BUOY****WARNING****CHEMICAL****EYE PROTECTION****VAPOR****NOTE**

Lubricate all equipment at conclusion of operation before storing equipment

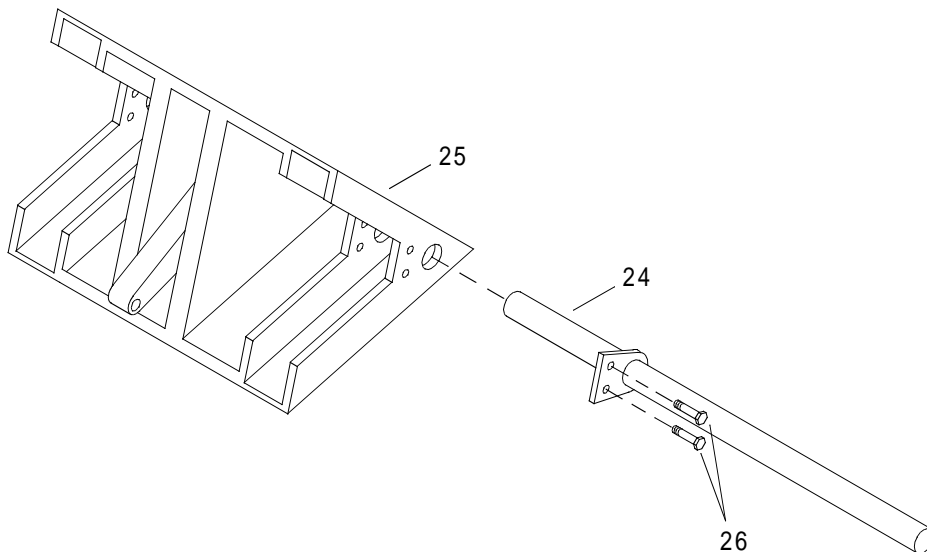
1. Preserve metallic parts by coating with Corrosion Prevention Compound, Grade II.

**WARNING****CHEMICAL****EYE PROTECTION****VAPOR**

2. Coat all un-plated, metallic threads and exposed fittings with Corrosion Prevention Compound, Grade II.

**PACK OFFSHORE CONTAINER**

1. Unlatch and open container inner and outer side doors.
2. Secure open with locking hooks.
3. Unlatch and open container end doors.
4. Secure open with locking bars and pins.
5. Remove both anchor stabilizers (24) from anchor sides (25).



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**NOTE**

A ratchet and socket is provided on the interior of a side door for stabilizer bolt removal and installation.

This task is typical for all anchor stabilizer removals.

- a. Remove two bolts (26) from stabilizer (24), and retain bolts for installation of the stabilizers in container.

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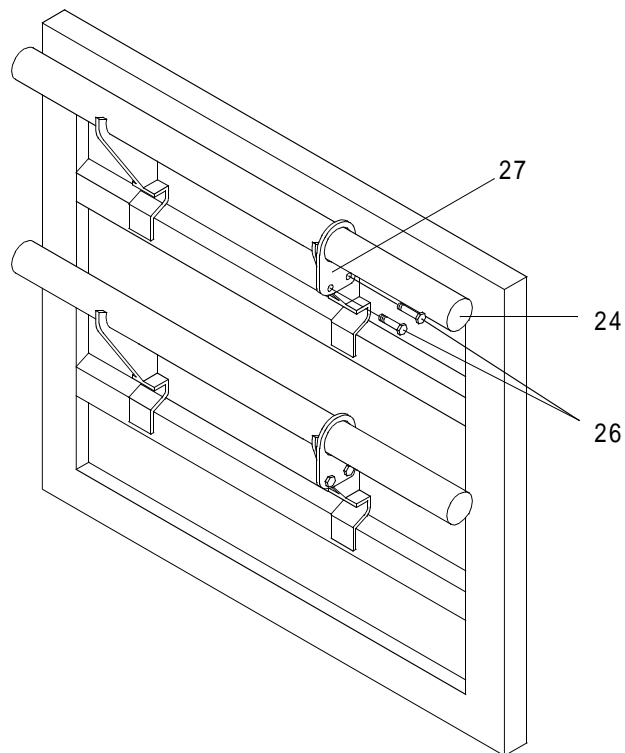
**WARNING**

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**HEAVY PARTS**

- b. Remove stabilizer (24).
  - c. Repeat steps to remove all stabilizers (24) from all anchors sides (25).
6. Install anchor stabilizers (24) on container side doors.



---

**WARNING**

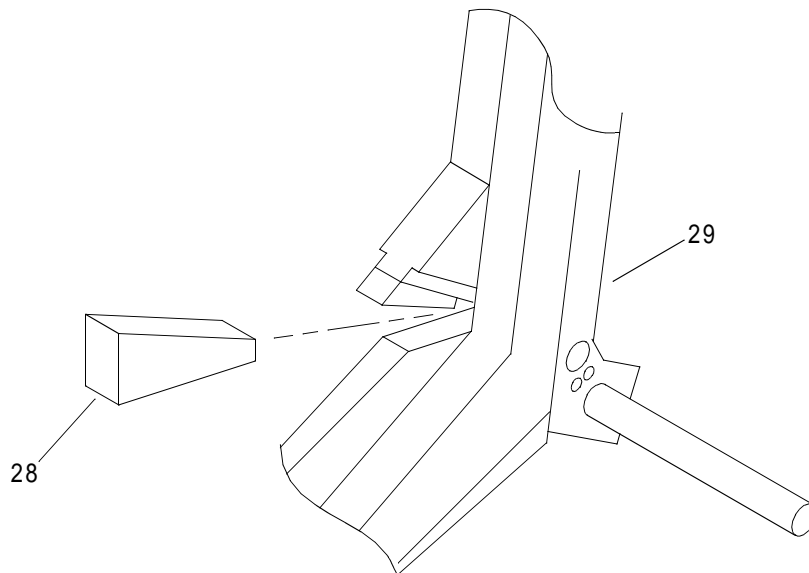
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**HEAVY PARTS****NOTE**

Two anchor stabilizers are located on each inner and outer side door.

A ratchet and socket is provided on the interior of a side door for stabilizer bolt removal and installation.

- a. Position stabilizer (24) on door bracket (27).
  - b. Install two bolts (26) to attach stabilizer (24) to door bracket (27).
  - c. Repeat steps to install all stabilizers (24) on inner and outer side door brackets (27).
  - d. Return ratchet and socket to its inner door location in the container.
7. Install anchors in container.
- a. Obtain aluminum wedge (28) from toolbox.



- b. Install aluminum wedge (28) in anchor (29) to prevent anchor flukes from moving while being lifted.

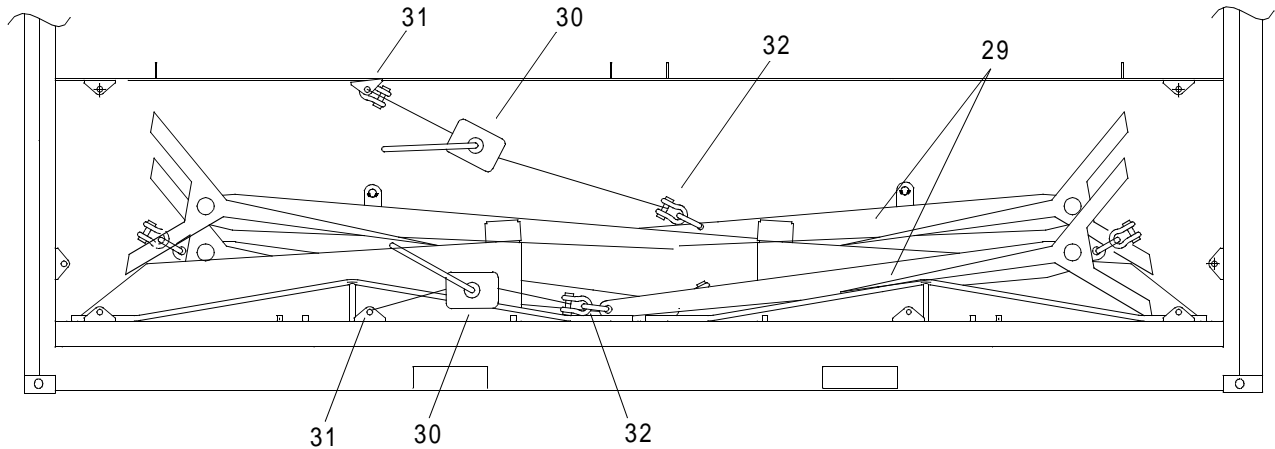
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**WARNING**


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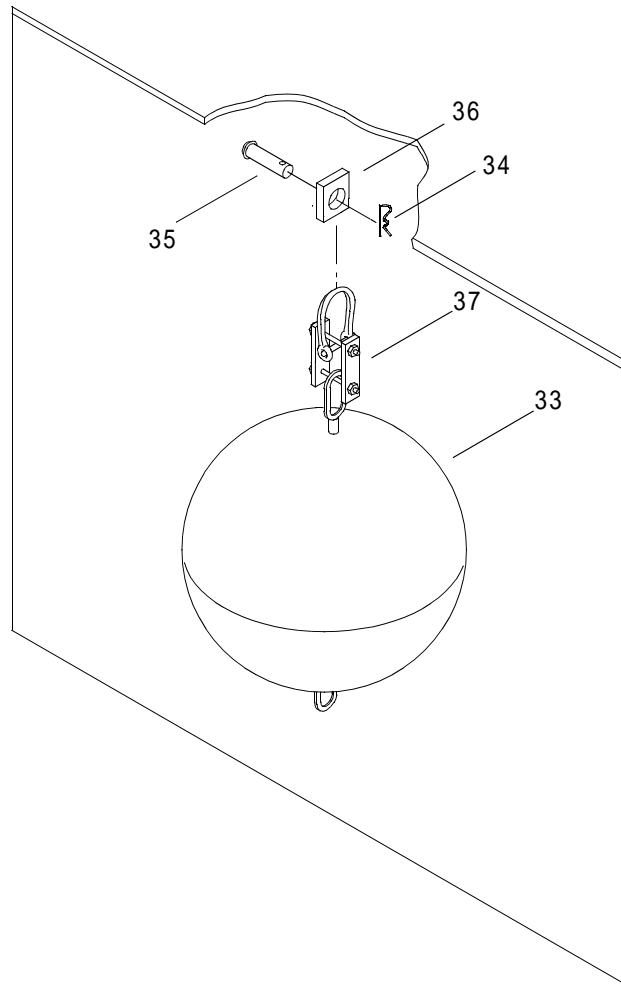
**HEAVY PARTS**

- c. Using forklift and forklift lifting adaptor, position anchor (29) on its associated mount inside the container.



- d. Connect one end of chain hoist (30) to container frame bracket (31).
- e. Connect other end of chain hoist (30) to shackle (32) on end of anchor (29).
- f. Tighten chain hoist (30) securely.
- g. Repeat steps for installing and securing anchors (29) in container.
- h. Return aluminum wedge (28) to toolbox.
8. Pack upper cable trays.
- a. Using forklift, remove upper cable tray from side door access and place near cables.
- b. Using forklift, lift 150 ft cable, with swivel, above tray.
- c. Manually place cable in tray in a figure 8 pattern.
- d. Repeat step for remaining cables.
- e. Place padeye, shackle and eye to eye swivel in tray.
- f. Using forklift, install upper cable tray through side door access, place tray on container upper shelf and secure.
- g. Repeat these steps for packing all cables and padeyes.

9. Secure the buoy (33) to container.



- a. Remove quick release pin (34) from pin (35).
- b. Remove pin (34) from container bracket (36).

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**WARNING**

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**HEAVY PARTS**

- c. Supporting weight of buoy (33), place buoy shackle assembly (37) over container bracket (36).
- d. Insert pin (35) through container bracket (36) under buoy shackle assembly (37).
- e. Install quick release pin (34) through pin (35).

10. Close and latch shut side and end doors on container.

**END OF WORK PACKAGE**





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

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Dunnage Mats Removed. (WP 0036 00)  
 Light Towers Removed. (WP 0037 00)  
 Personnel Shelter Container Removed. (WP 0038 00)  
 Tactical Quiet Generator Container Removed. (WP 0039 00)  
 Fenders Removed. (WP 0040 00)  
 Safety Equipment Removed. (WP 0041 00)  
 Towing Bridle, Towing Interface And Towing Lights Removed. (WP 0042 00)  
 Mooring Bitts Removed. (WP 0043 00)  
 D-Ring/Cloverleaf And Deck Cleat Fittings Removed. (WP 0044 00)  
 Recover Onshore Anchor Mooring Legs. (WP 0045 00)  
 Recover Offshore Anchor Mooring Legs. (WP 0046 00)

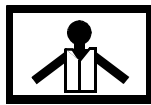
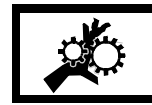
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**PREPARATION FOR MOVEMENT - DISASSEMBLY OF CAUSEWAY****DISASSEMBLE CAUSEWAY**


---

**WARNING**

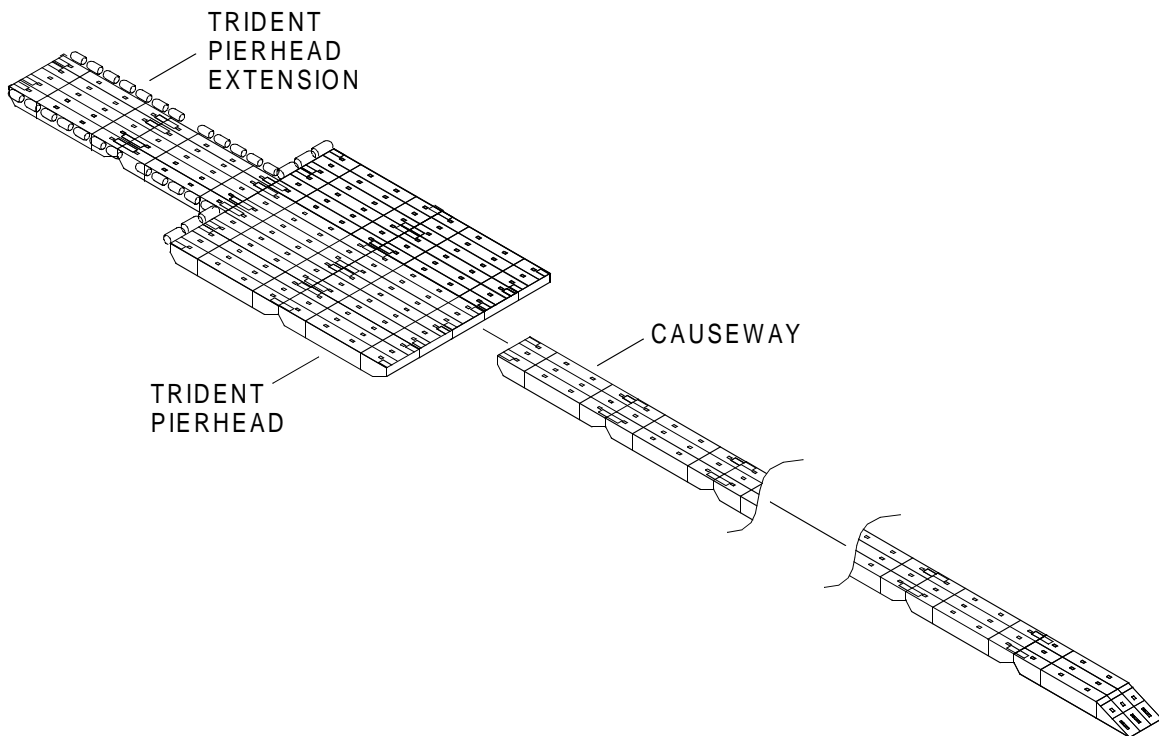
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**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

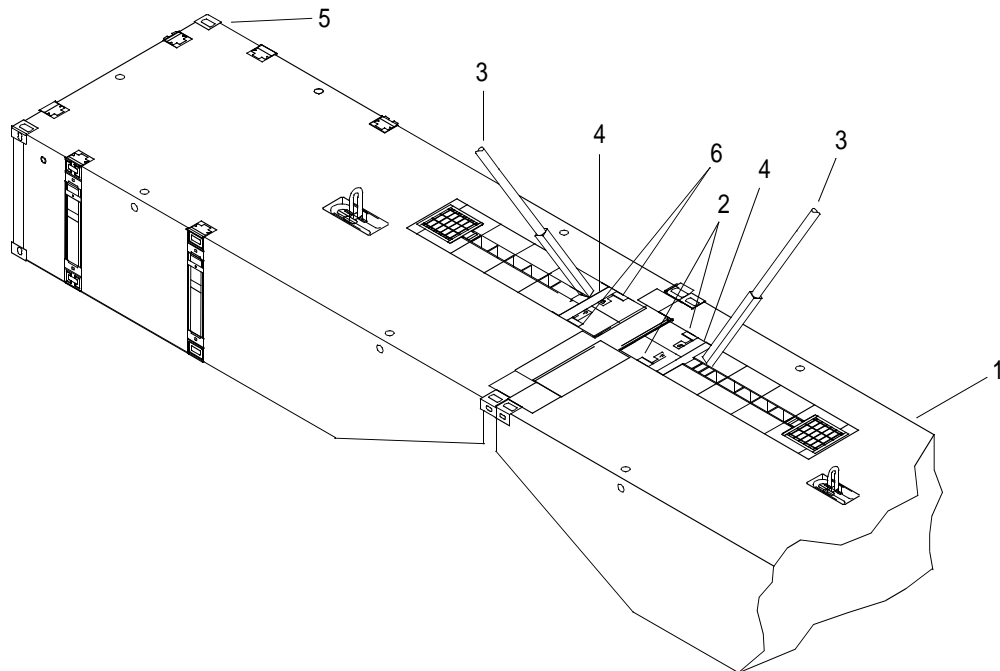
**All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

**Place the hands on top or on the outside of ropes and lines 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.**

1. Disassemble causeway from trident pierhead using warping tugs, ropes/lines, flush turn tubes and lift lugs.



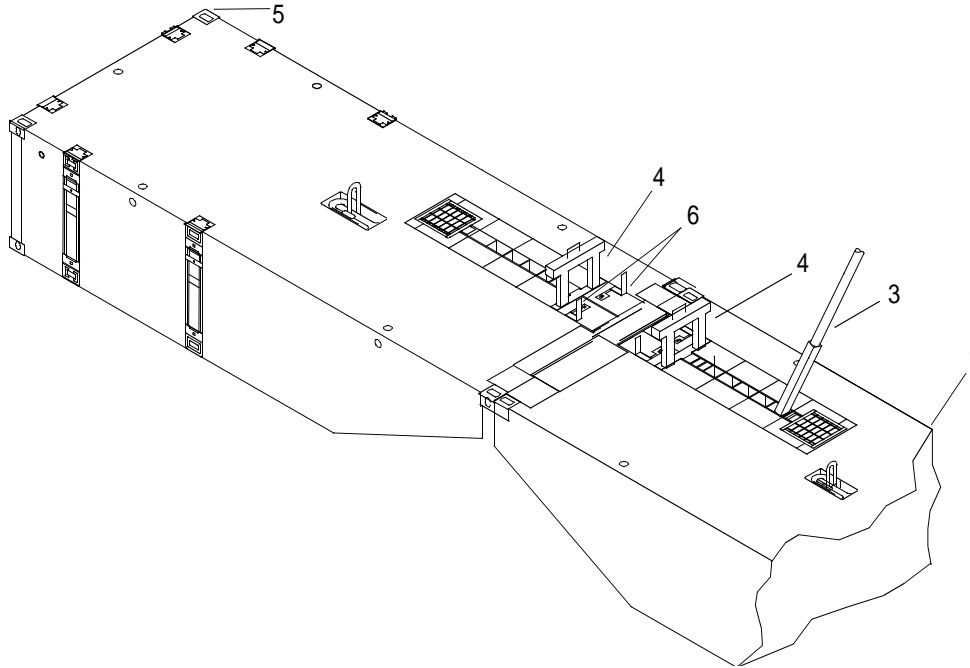
2. Release flexor connectors on right end rakes (1).



- a. Rotate and pull chute bolt (2) to unlocked position.
- b. Using crowbar (3), lift guillotine plate (4) from flexor connector slots.

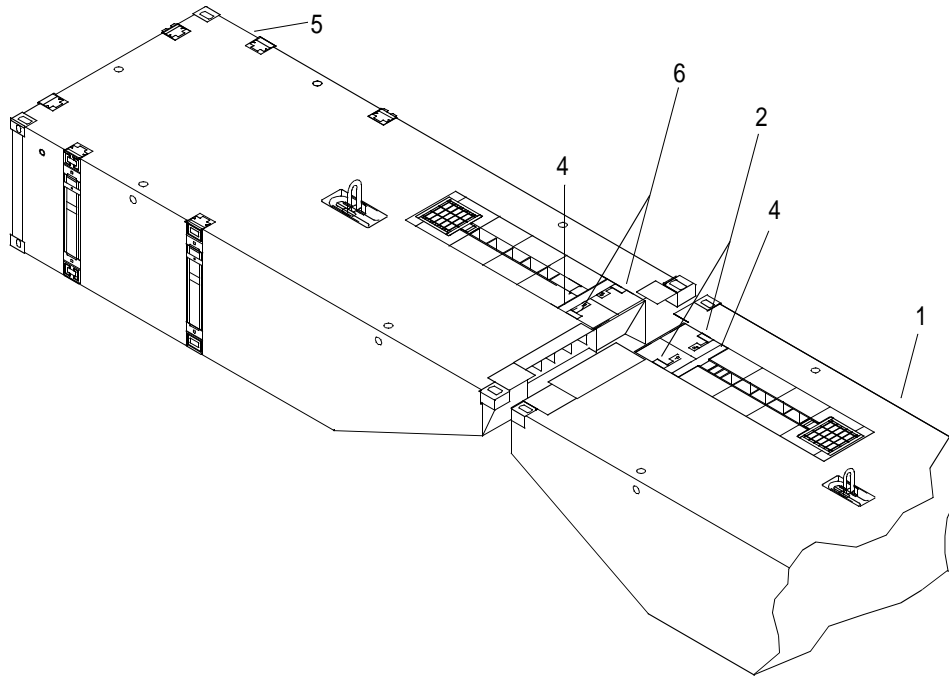
**WARNING****HEAVY PARTS**

3. Stow flexor connectors in left end rakes (5).



- a. Rotate and pull the chute bolts (6) to unlocked position.
- b. Using the crowbar (3), lift guillotine plates (4) from flexor connector slots.

- c. Using crowbar (3), move flexor from right end rakes (1) into left end rakes (5) flexor connector pockets.



- d. Align outboard guillotine slot on flexor with slot in left end rake module.
- e. Install guillotine plates (4) on left end rakes (5).
- f. Install guillotine plates (4) on right end rakes (1).
- g. Push chute bolts (1) to locked position and rotate to closed position.

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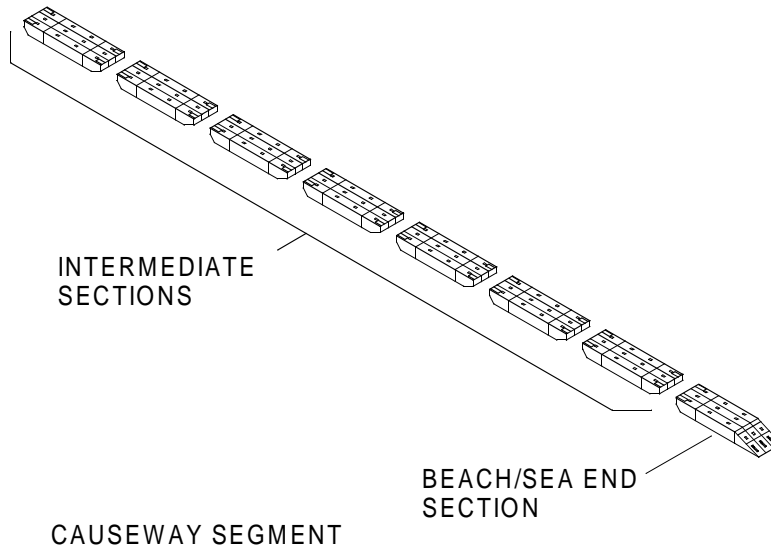
**WARNING**

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**HEAVY PARTS**

4. Secure causeway intermediate sections to be separated with line so sections to be removed are secured tightly.

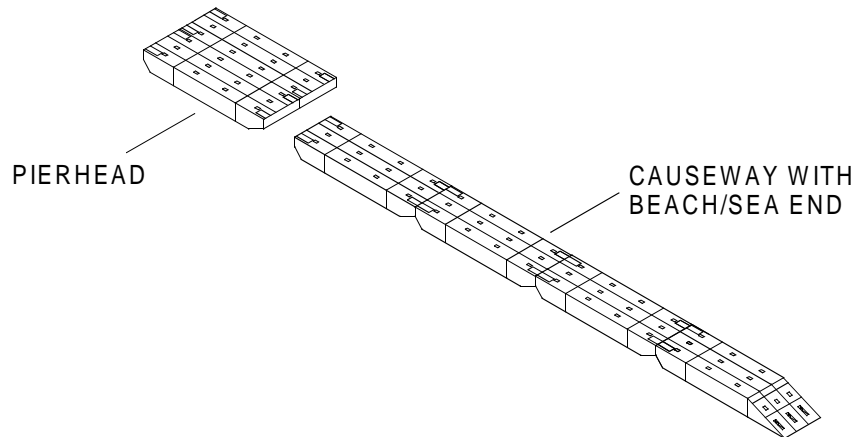
- Using warping tugs separate causeway into intermediate sections.



- Repeat step 2 and 3.
- Untie line securing intermediate sections together.
- Separate intermediate sections. (WP 0050 00)

**DISASSEMBLE FORCE OPENING FLOATING CAUSEWAY**

- Disassemble causeway from pierhead using warping tugs, ropes/lines, flush turn tubes and lift lugs.



- Repeat steps 2 and 3.
- Untie lines securing causeway to pierhead segments together.
- Repeat steps 1 through 8 and disassemble causeway.
- Disassemble pierhead. (WP 0048 00)

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
TRIDENT PIERHEAD/EXTENSION  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Dunnage Mats Removed. (WP 0036 00)  
 Light Towers Removed. (WP 0037 00)  
 Personnel Shelter Container Removed. (WP 0038 00)  
 Tactical Quiet Generator Container Removed. (WP 0039 00)  
 Fenders Removed. (WP 0040 00)  
 Safety Equipment Removed. (WP 0041 00)  
 Towing Bridle, Towing Interface And Towing Lights Removed. (WP 0042 00)  
 Mooring Bitts Removed. (WP 0043 00)  
 D-Ring/Cloverleaf And Deck Cleat Fittings Removed. (WP 0044 00)  
 Recover Onshore Anchor Mooring Legs. (WP 0045 00)  
 Recover Offshore Anchor Mooring Legs. (WP 0046 00)

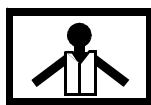
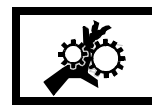
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**PREPARATION FOR MOVEMENT - DISASSEMBLY OF TRIDENT PIERHEAD/EXTENSION**
**DISASSEMBLE TRIDENT PIERHEAD**


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**WARNING**

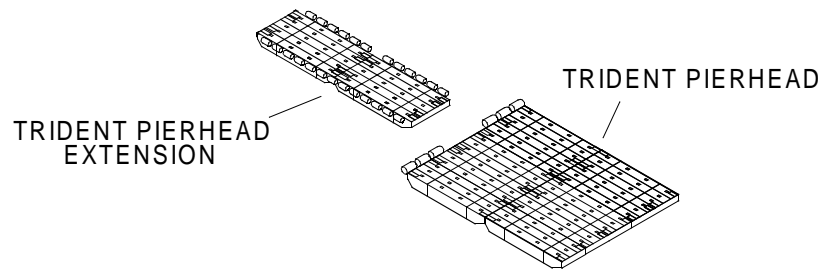

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**VEST****HELMET PROTECTION****HEAVY PARTS****MOVING PARTS**

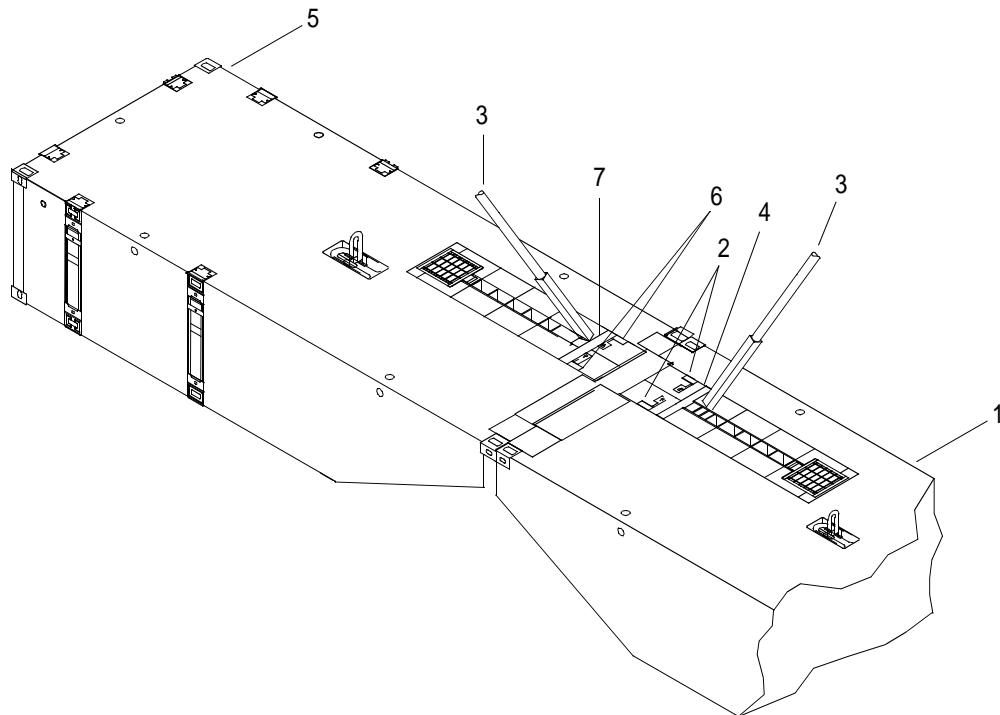
**All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

**Place the hands on top or on the outside of ropes and lines 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.**

1. Disassemble trident pierhead from trident pierhead extension using warping tugs, ropes/lines, flush turn tubes and lift lugs.



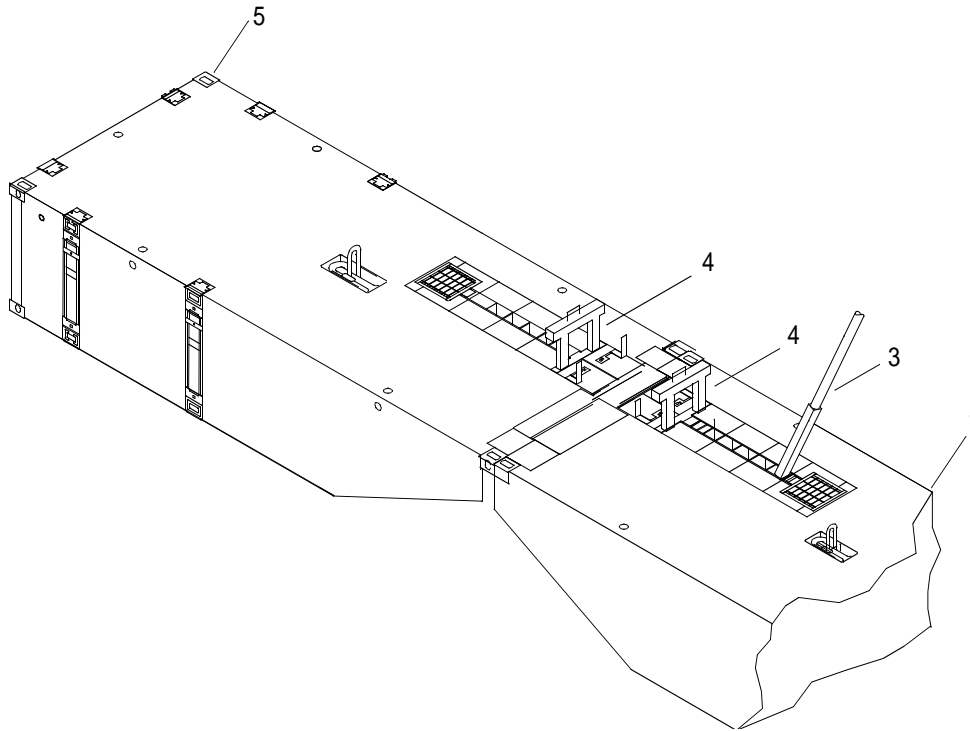
3. Release flexor connectors on right end rake (1).



- a. Rotate and pull chute bolt (2) to unlocked position.

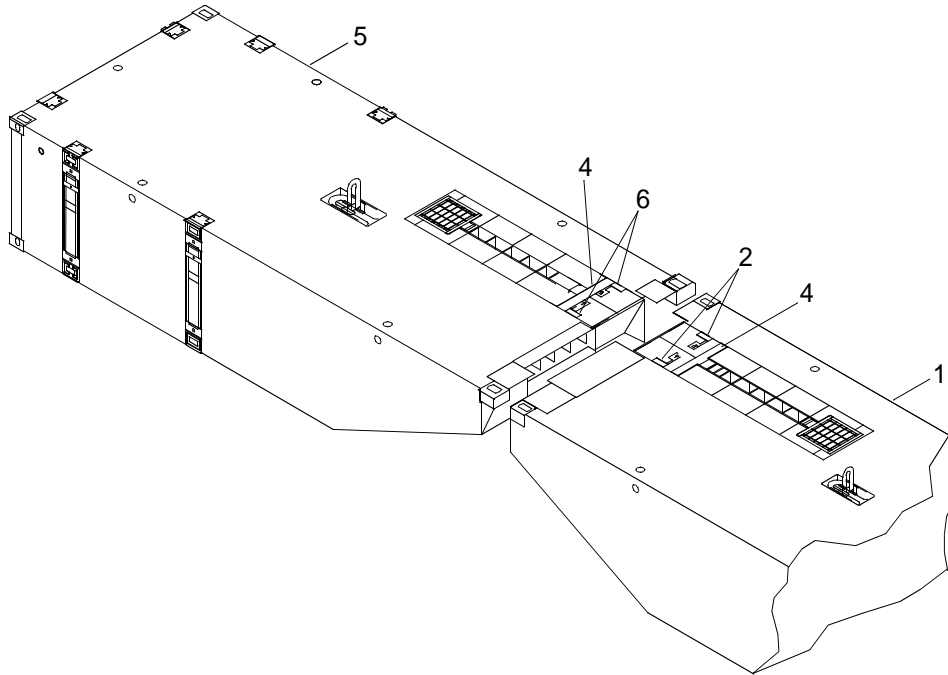


- b. Using crowbar (3), lift guillotine plate (4) from flexor connector slots.



4. Stow flexor connectors in left end rake (5).
- Rotate and pull chute bolt (6) to unlocked position.
  - Using crowbar (3), lift guillotine plate (4) from flexor connector slots.
  - Using crowbar (3), move flexor from right end rake (1) into left end rake (5) flexor connector pocket.

- d. Align outboard guillotine slot on flexor with slot in left end rake module.



- e. Install guillotine plates (4) on left end rake (5).
- f. Install guillotine plates (4) on right end rake (1).
- g. Push chute bolts (1) to locked position and rotate to closed position.

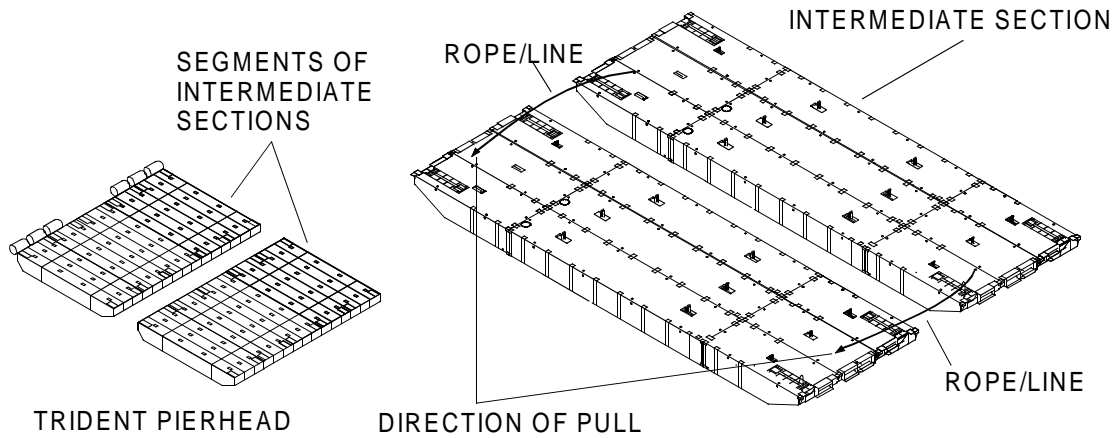
WARNING



HEAVY PARTS

5. Secure trident pierhead intermediate segments to be separated with line so segments to be separated are secured tightly.

- Using warping tugs, separate trident pierhead into intermediate segments.



- Repeat steps 2 and 3.
- Untie line securing intermediate segments together.

**WARNING**



**HEAVY PARTS**

- Secure trident pierhead intermediate segment to be separated with line so sections to be removed are secured tightly.
- Using warping tugs, separate trident pierhead segment into intermediate sections. (WP 0050 00)

**DISASSEMBLE TRIDENT PIERHEAD EXTENSION**

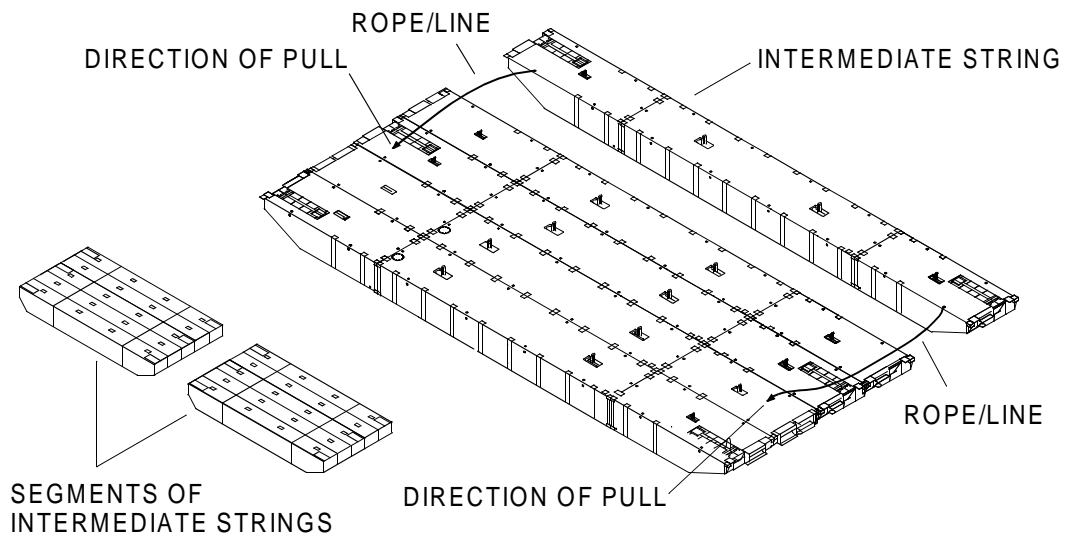
**WARNING**



**HEAVY PARTS**

- Secure trident pierhead extension intermediate segments to be separated with line so segments to be removed are secured tightly.

- Using warping tugs, separate trident pierhead extension segments into segments of intermediate strings.



- Repeat steps 2 and 3.
- Untie line securing segments of intermediate strings together.
- Separate intermediate strings. (WP 0050 00)

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
COMBINATION BEACH SEA END SECTION  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)

**Personnel Required**

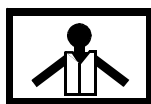
Seaman 88K

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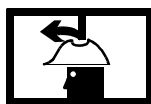
**PREPARATION FOR MOVEMENT - DISASSEMBLY OF FLOATING CAUSEWAY COMBINATION  
BEACH/SEA END SECTION**

**DISASSEMBLE FLOATING CAUSEWAY COMBINATION BEACH/SEA END SECTION**

**WARNING**



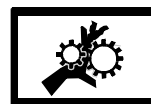
VEST



HELMET PROTECTION



HEAVY PARTS

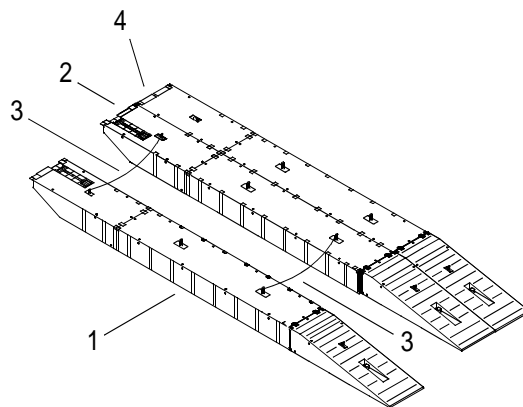


MOVING PARTS

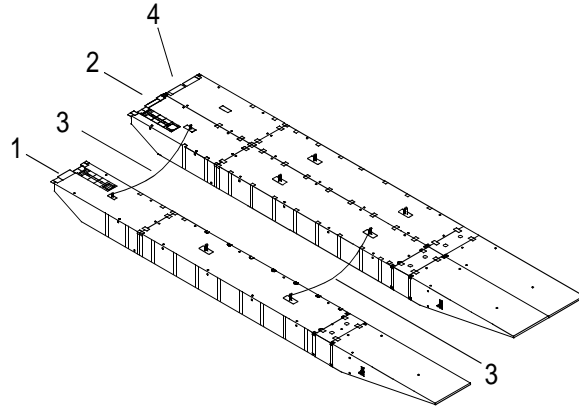
**All personnel must wear personal flotation device, hard hat, safety shoes, and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

**NOTE**

Disassemble the floating causeway beach/sea end section into strings in the water. Lift strings onto deck of ship for disassembly.

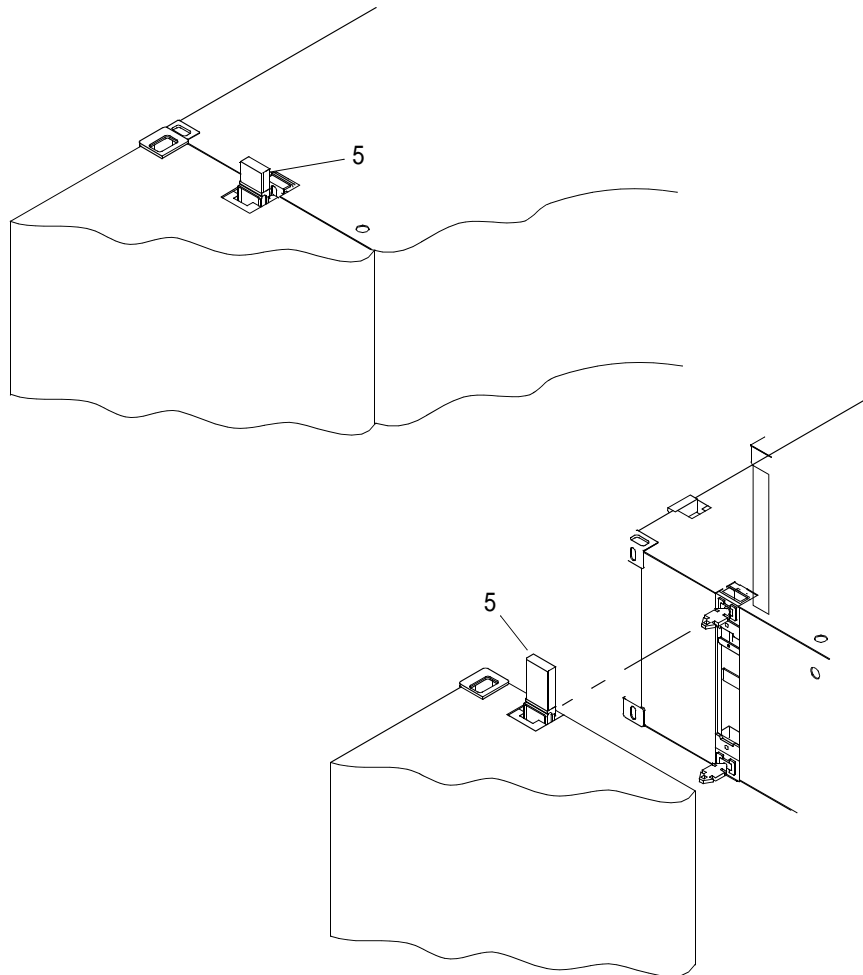


FLOATING CAUSEWAY BEACH/SEA END SECTION



FLOATING CAUSEWAY BEACH/SEA END SECTION  
ALTERNATE CONFIGURATION (USING P3 ADAPTER)

1. Secure outboard string (1) to center string (2) with line (3).
2. Using a crowbar, raise side female guillotine connectors (5) to release one outboard string (1).



3. Separate outboard string (1) from center string (2).
4. Repeat steps to separate outboard string (4) from center string (2).

- 
5. Stow male and female connector guillotines. (WP 0052 00)
  6. Using crane and slings, lift string out of water for disassembly.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
INTERMEDIATE SECTION  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

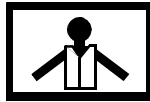
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**PREPARATION FOR MOVEMENT - DISASSEMBLY OF INTERMEDIATE SECTION****DISASSEMBLE INTERMEDIATE SECTION**


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**WARNING**

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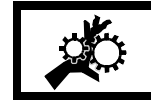
VEST



HELMET PROTECTION



HEAVY PARTS



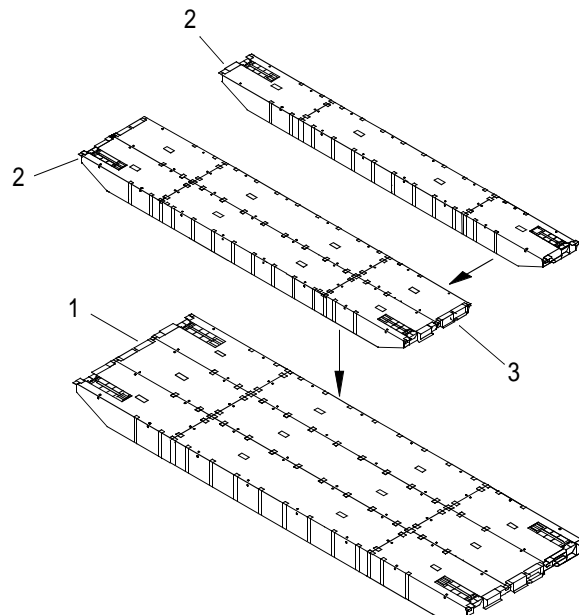
MOVING PARTS

**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**

Disassemble the intermediate section into strings in the water. Lift strings onto deck of ship for disassembly.

1. Disassemble intermediate section (1) into strings by raising female connector guillotines. (WP 0009 00)



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**WARNING**

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**HEAVY PARTS**

2. Separate the two outboard strings (2) and one center string (3).
3. Stow male and female connector guillotines. (WP 0052 00)

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MODULE STRINGS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)

**Personnel Required**

Seaman 88K

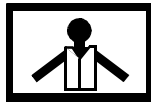
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**PREPARATION FOR MOVEMENT - DISASSEMBLY OF MODULE STRINGS****DISASSEMBLE MODULE STRINGS**


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**WARNING**

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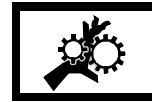
VEST



HELMET PROTECTION



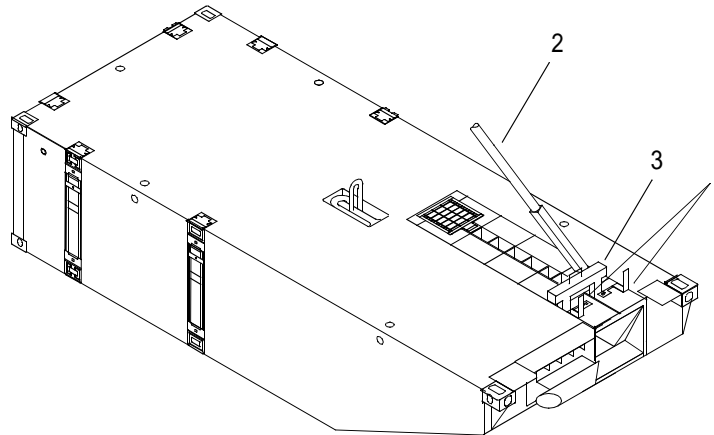
HEAVY PARTS



MOVING PARTS

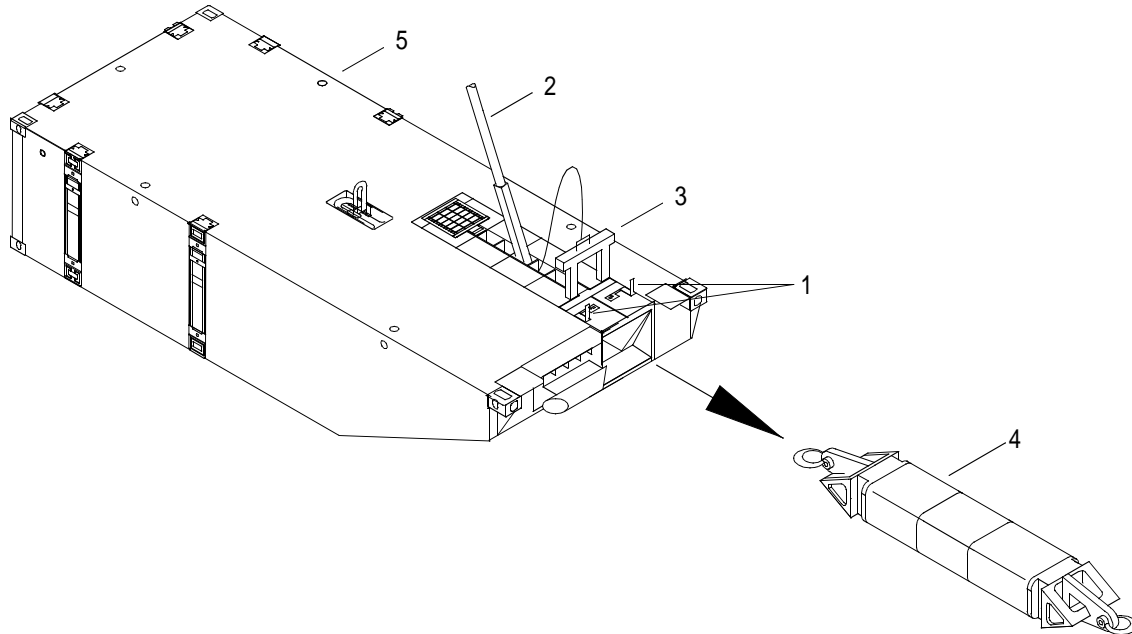
**All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

1. Remove flexor connectors.
  - a. Rotate the chute bolts (1) and pull the chute bolts (1) to the unlocked position.



- b. Using a crowbar (2), lift the guillotine plate (3) up from the flexor connector slots.

- c. Move the flexor (4) forward using a crowbar (2).

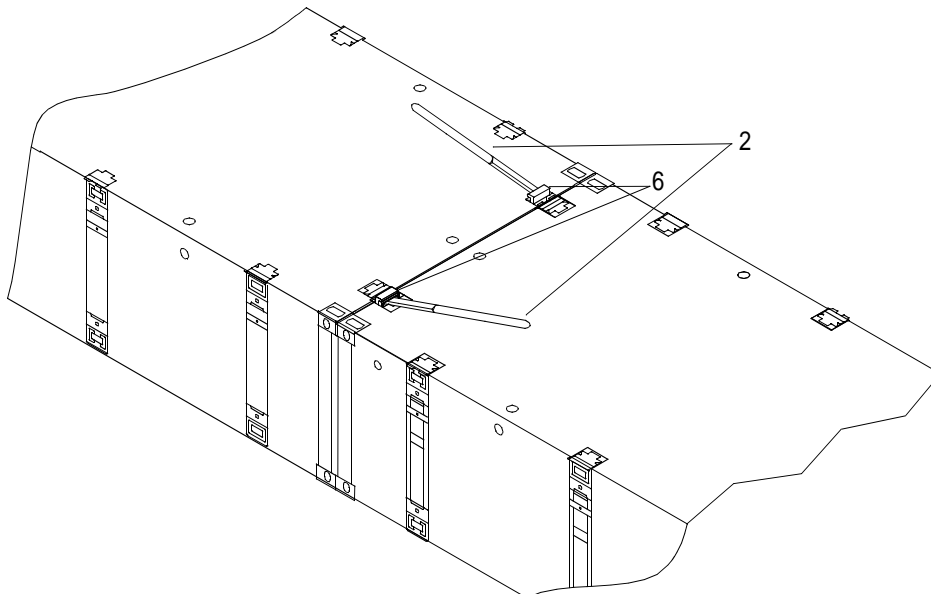


**WARNING**

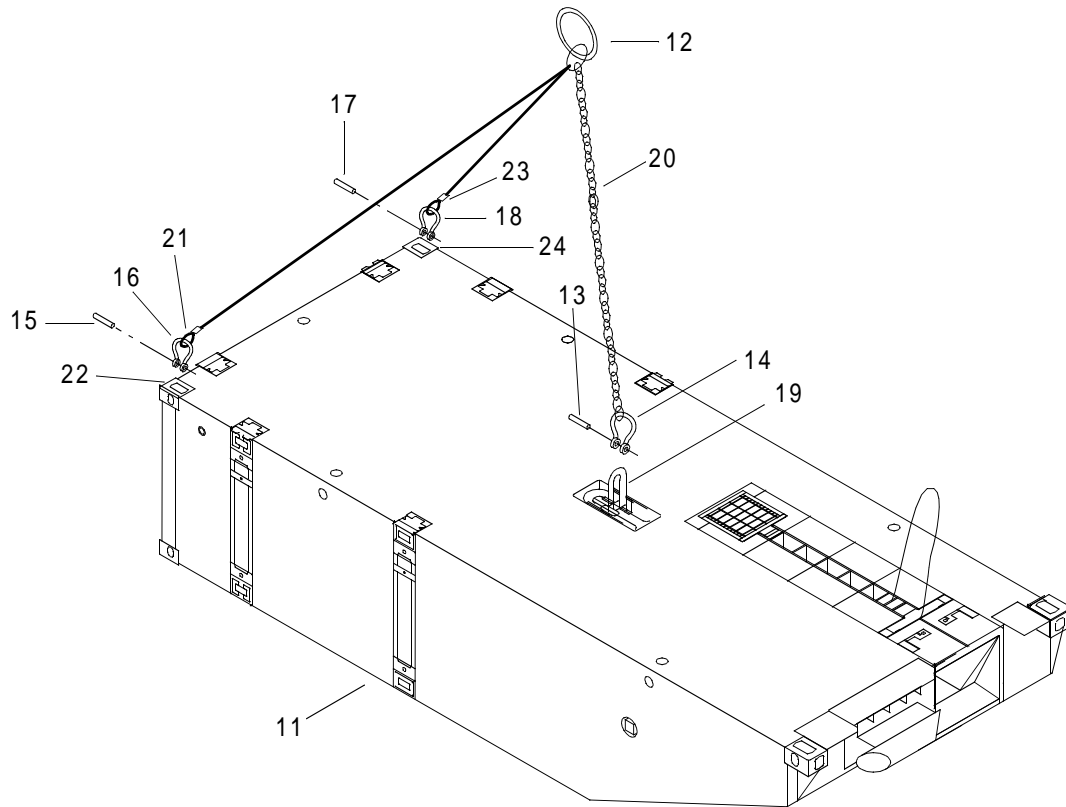


**HEAVY PARTS**

- d. Remove the flexor connector (4) from the end rake (5) using a forklift.
- e. Stow guillotine (3) and lock chute bolts (1).
2. Using the crowbar (2), raise the female guillotine (6) to unlocked position.



3. Install three leg sling (7) on end rake module (5).



- a. Remove shackle pin (8) from shackle (9).
- b. Remove shackle pin (10) from shackle (11).
- c. Remove shackle pin (12) from shackle (13).
- d. Insert shackle (9) through module lifting shackle (14) and chain (15).
- e. Install shackle pins (8) in shackle (9).
- f. Insert shackle (11) through sling eye (16) and module ISO fitting (17).
- g. Install shackle pin (10) in shackle (11).
- h. Insert shackle (13) through sling eye (18) and module ISO fitting (19).
- i. Install shackle pin (12) in shackle (13).

**WARNING****HEAVY PARTS**

4. Lift and separate module.
5. Stow the male and female connector guillotines and pins. (WP 0052 00)

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MALE AND FEMALE GUILLOTINE CONNECTORS  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)

**Personnel Required**

Seaman 88K

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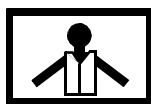
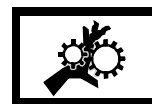
**PREPARATION FOR MOVEMENT - STOWAGE OF MALE AND FEMALE  
GUILLOTINE CONNECTORS**

**STOW MALE CONNECTORS**


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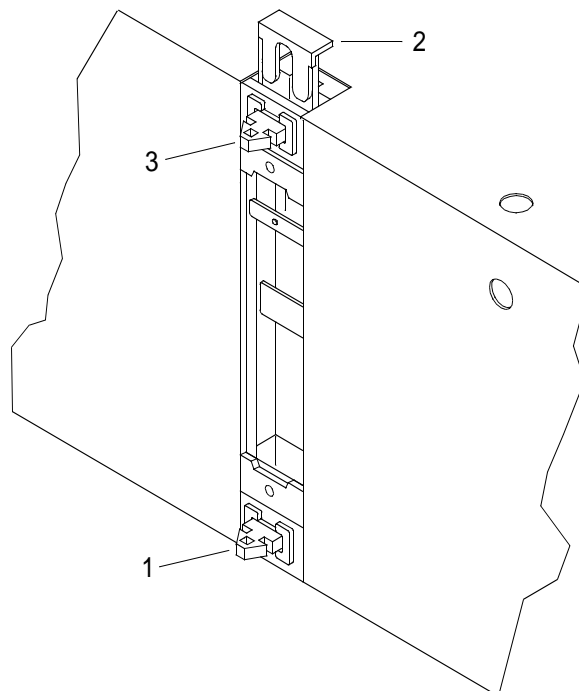
**WARNING**

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**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.**

1. Depress and hold, with palm of hand, lower male lock pin (1) against its deployment spring into lower male housing.



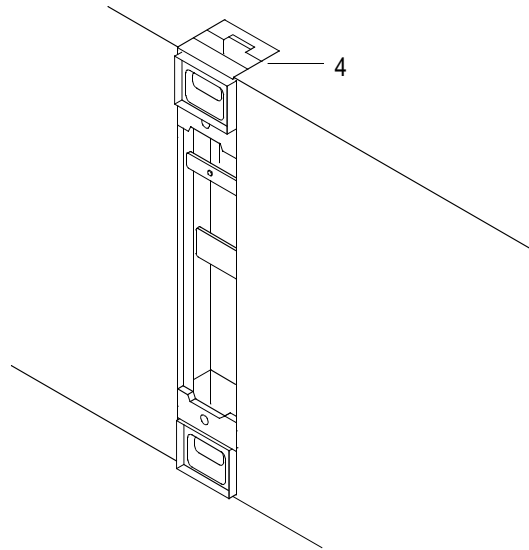
2. Lower guillotine connector (2) slightly with sledgehammer to engage and restrain lower pin without coming in physical contact with any other connector parts.
3. Depress and hold, with palm of hand, upper male lock pin (3) against its deployment spring into upper male housing.
4. Lower guillotine connector (2) completely down with sledgehammer to engage and restrain upper pin.

### STOW FEMALE CONNECTORS

#### NOTE

Connectors are properly stowed when guillotines are flush with module deck.

1. Using sledgehammer, strike guillotine (4) of female connectors until completely flush with deck.



2. Ensure guillotines are flush with module deck to assure that connectors are properly stowed.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MODULE ISOPAK  
OPERATION UNDER USUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Ladder (Item 30, WP 0104 00)

**Personnel Required**

Seaman 88K

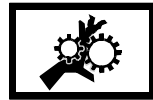
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**PREPARATION FOR MOVEMENT - ASSEMBLY OF MODULE ISOPAK****ASSEMBLE END RAKE MODULE ISOPAK**


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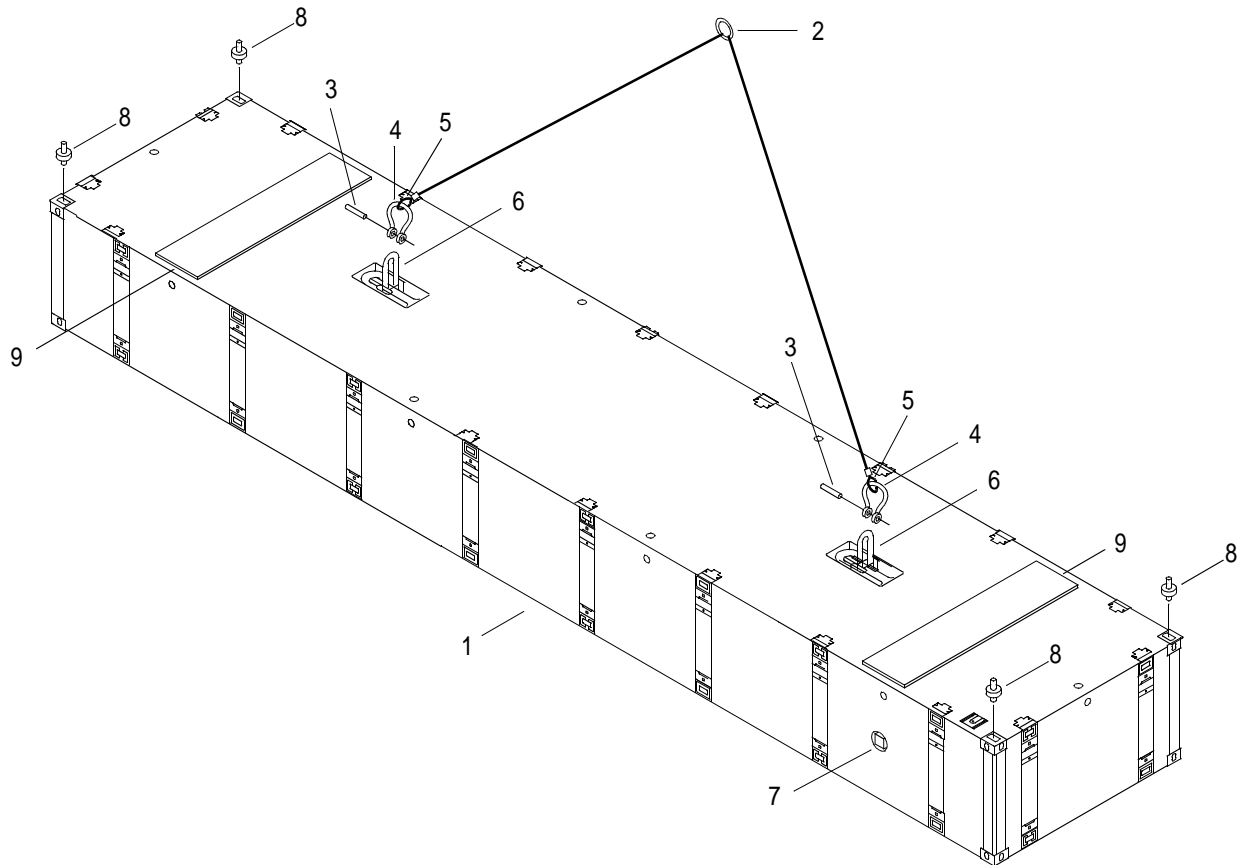
**WARNING**

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

1. Lift center module (1) with two leg sling (2).



- a. Remove shackle pins (3) from shackles (4).
- b. Insert shackle (4) through sling eye (5) and module lifting shackle (6).
- c. Install shackle pins (3) in shackles (4).

### NOTE

Drain plug location may vary.

2. Inspect modules to ensure drain plugs (7) are installed and tight in all modules.

### WARNING

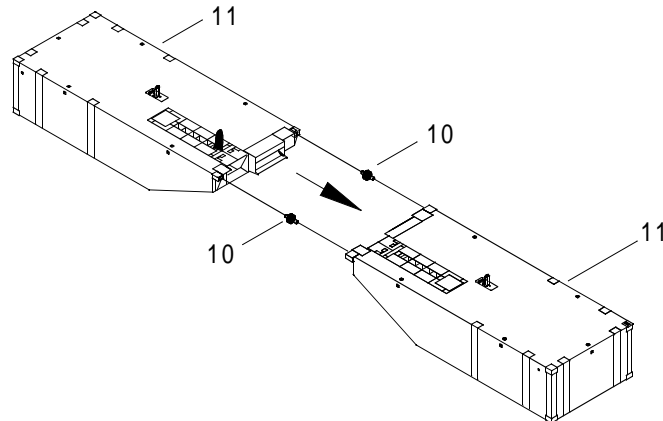


HEAVY PARTS

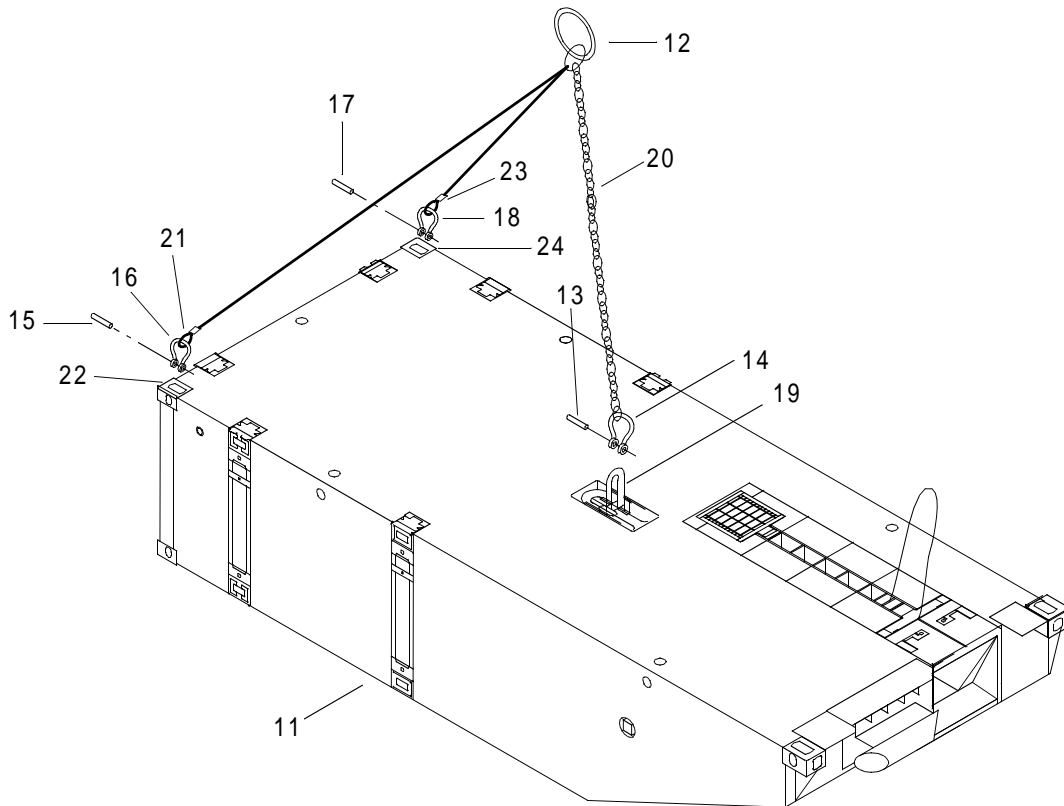
3. Using crane position center module (1) where necessary.
4. Remove two leg sling (2).
5. Install four connectors (8) and dunnage (9) on center module (1).

**WARNING****HEAVY PARTS**

6. Install ISOPAK horizontal connectors (10) in end rake modules (11).



7. Install three leg sling (12) on end rake module (11).



- a. Remove shackle pin (13) from shackle (14).
- b. Remove shackle pin (15) from shackle (16).

- c. Remove shackle pin (17) from shackle (18).
- d. Insert shackle (14) through module lifting shackle (19) and chain (20).
- e. Install shackle pins (13) in shackle (14).
- f. Insert shackle (16) through sling eye (21) and module ISO fitting (22).
- g. Install shackle pin (15) in shackle (16).
- h. Insert shackle (18) through sling eye (23) and module ISO fitting (24).
- i. Install shackle pin (17) in shackle (18).

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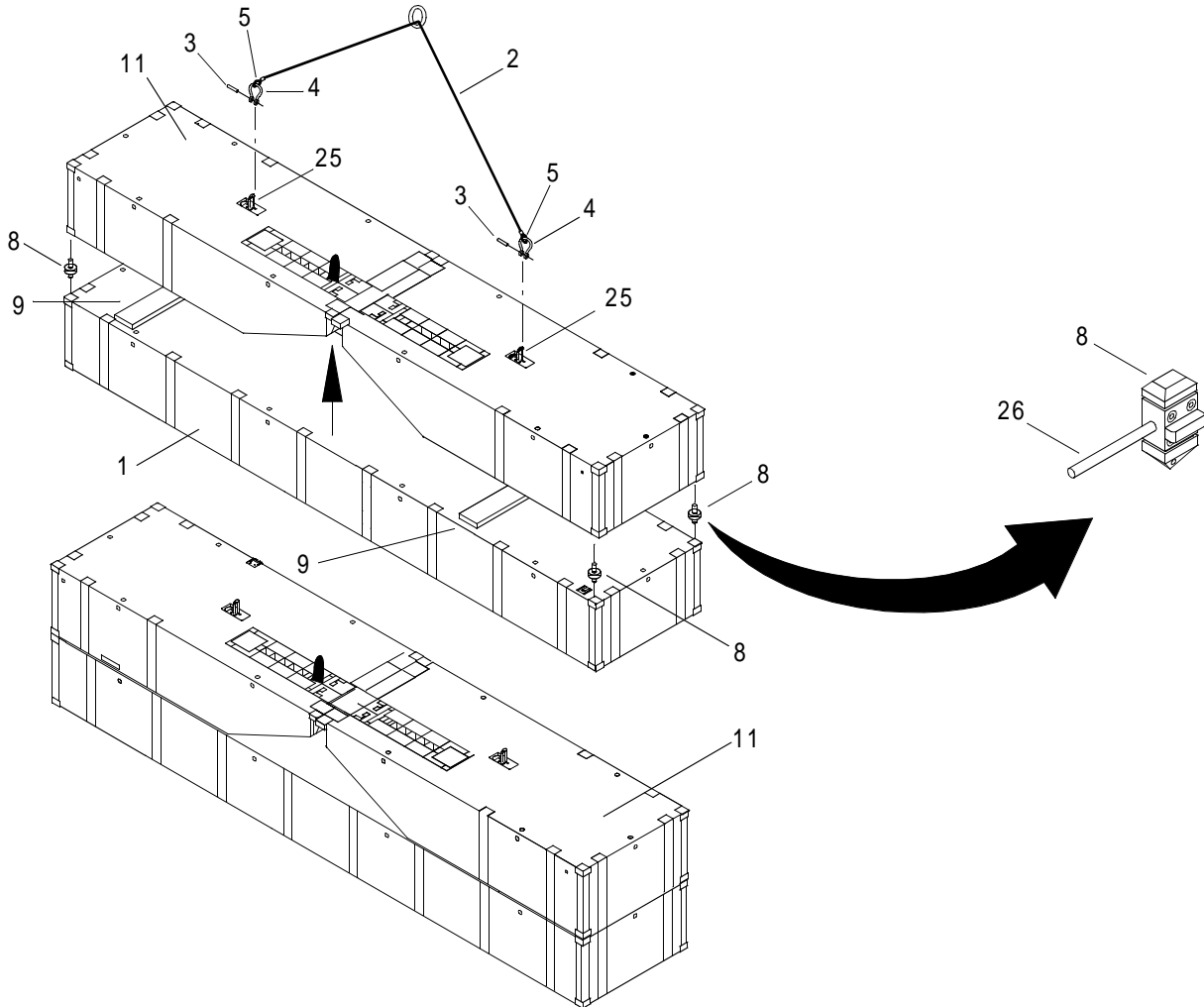
**WARNING**

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**HEAVY PARTS**

- j. Lift and connect end rake modules (11) with horizontal connectors (10).
8. Remove three leg sling (12).

9. Attach two leg sling (2) to connected end rake modules (11).



- a. Remove shackle pins (3) from shackles (4).
- b. Insert shackle (4) through sling eye (5) through module lifting shackle (25).
- c. Install shackle pins (3) in shackles (4).

**WARNING**



**HEAVY PARTS**

10. Lift connected end rake modules (11) by two leg sling (2) and install on top of center module (1).

11. Lock four ISOPAK vertical connectors (8), one at each corner, by moving the lever (26).

12. Remove two leg sling (2).

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**ASSEMBLE COMBINATION BEACH SEA END (CBSE) MODULE ISOPAK**


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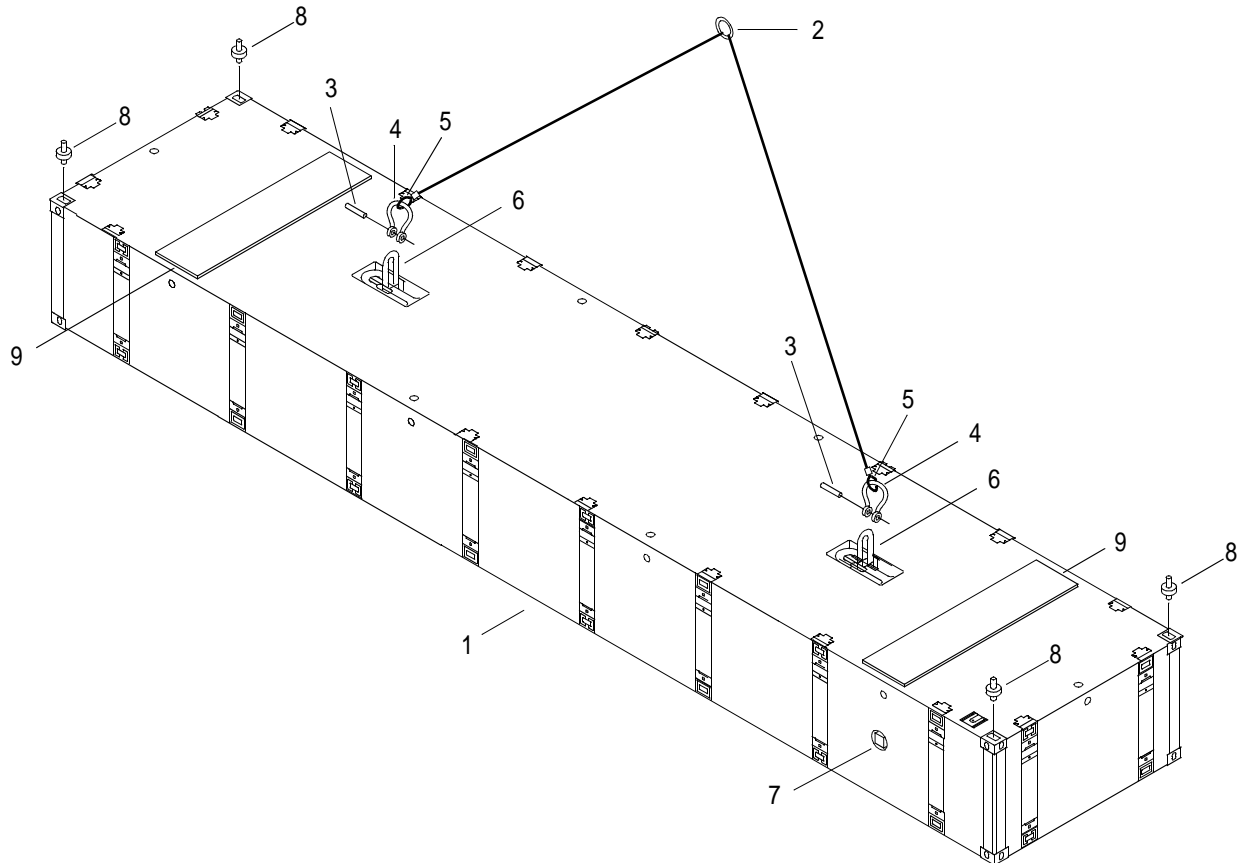
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**WARNING**


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**HEAVY PARTS**

1. Lift center module (1) with two leg sling (2).



- a. Remove shackle pins (3) from shackles (4).
- b. Insert shackle (4) and sling eye (5) through module lifting shackle (6).
- c. Install shackle pins (3) in shackles (4).

---

**WARNING**


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**HEAVY PARTS**

- d. Using crane and sling (2), lift center module (1).

**NOTE**

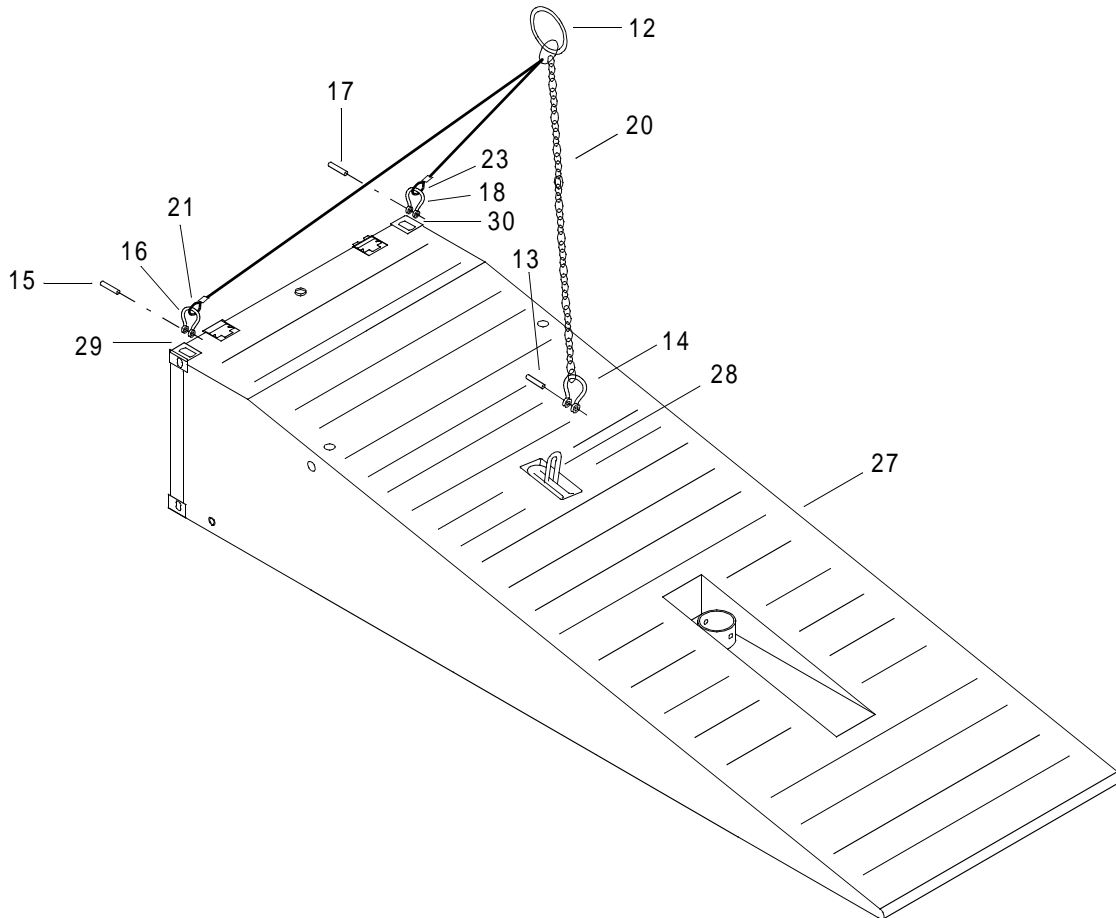
Drain plug location may vary.

2. Inspect modules to ensure drain plugs (7) are installed and tight in all modules.

**WARNING**

**HEAVY PARTS**

3. Using crane position intermediate module (1) where necessary.
4. Remove two leg sling (2).
5. Install four connectors (8) and dunnage (9) on center module (1).
6. Install three leg sling (12) on CBSE module (27).



- a. Remove shackle pin (13) from shackle (14).
- b. Remove shackle pin (15) from shackle (16).

- c. Remove shackle pin (17) from shackle (18).
- d. Insert shackle (13) through module lifting shackle (28) and chain (20).
- e. Install shackle pins (13) in shackle (14).
- f. Insert shackle (16) through sling eye (21) and module ISO fitting (29).
- g. Install shackle pin (15) in shackle (16).
- h. Insert shackle (18) through sling eye (23) and module ISO fitting (30).
- i. Install shackle pin (17) in shackle (18).

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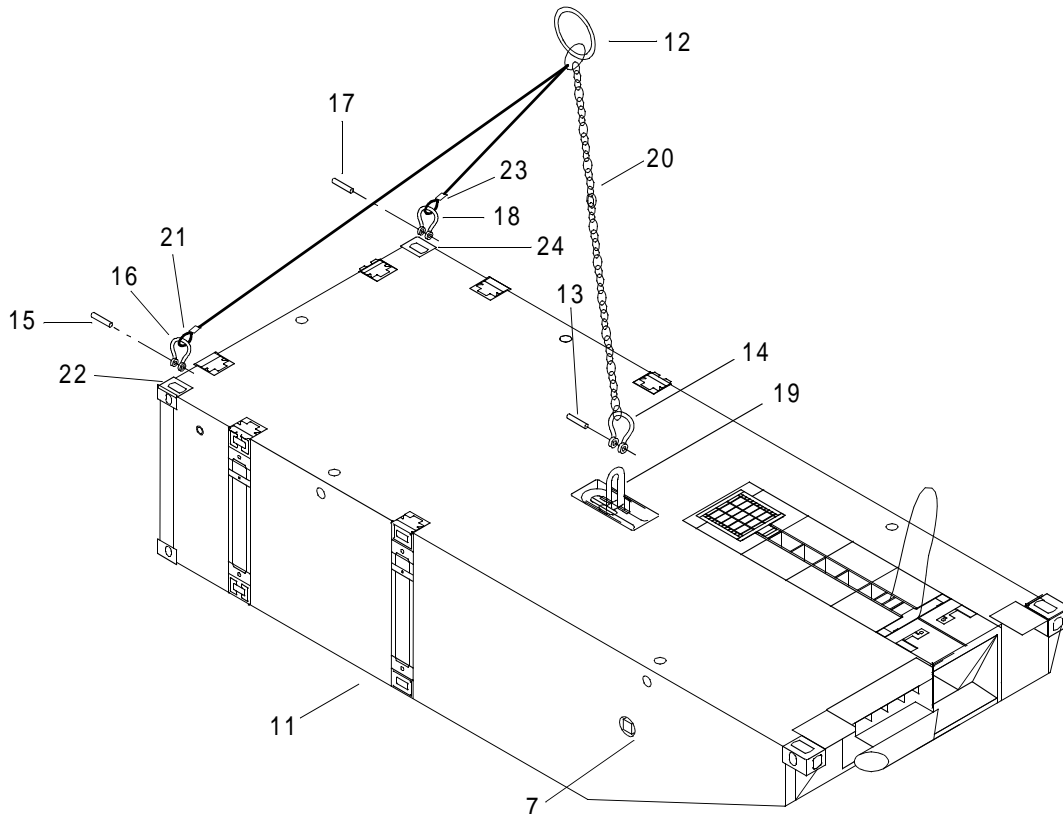
**WARNING**

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**HEAVY PARTS**

7. Using crane, lift and position CBSE module (27) on two vertical connectors (8) on center module (1).
8. Lock two ISOPAK vertical connectors (8), by moving the lever (26).
9. Remove three leg sling (12).
10. Install three leg sling (12) on end rake module (11).





- 
- a. Remove shackle pin (13) from shackle (14).
  - b. Remove shackle pin (15) from shackle (16).
  - c. Remove shackle pin (17) from shackle (28).
  - d. Insert shackle (13) through module lifting shackle (19) and chain (20).
  - e. Install shackle pins (13) in shackle (14).
  - f. Insert shackle (16) through sling eye (21) and module ISO fitting (22).
  - g. Install shackle pin (15) in shackle (16).
  - h. Insert shackle (18) through sling eye (23) and module ISO fitting (24).
  - i. Install shackle pin (17) in shackle (18).

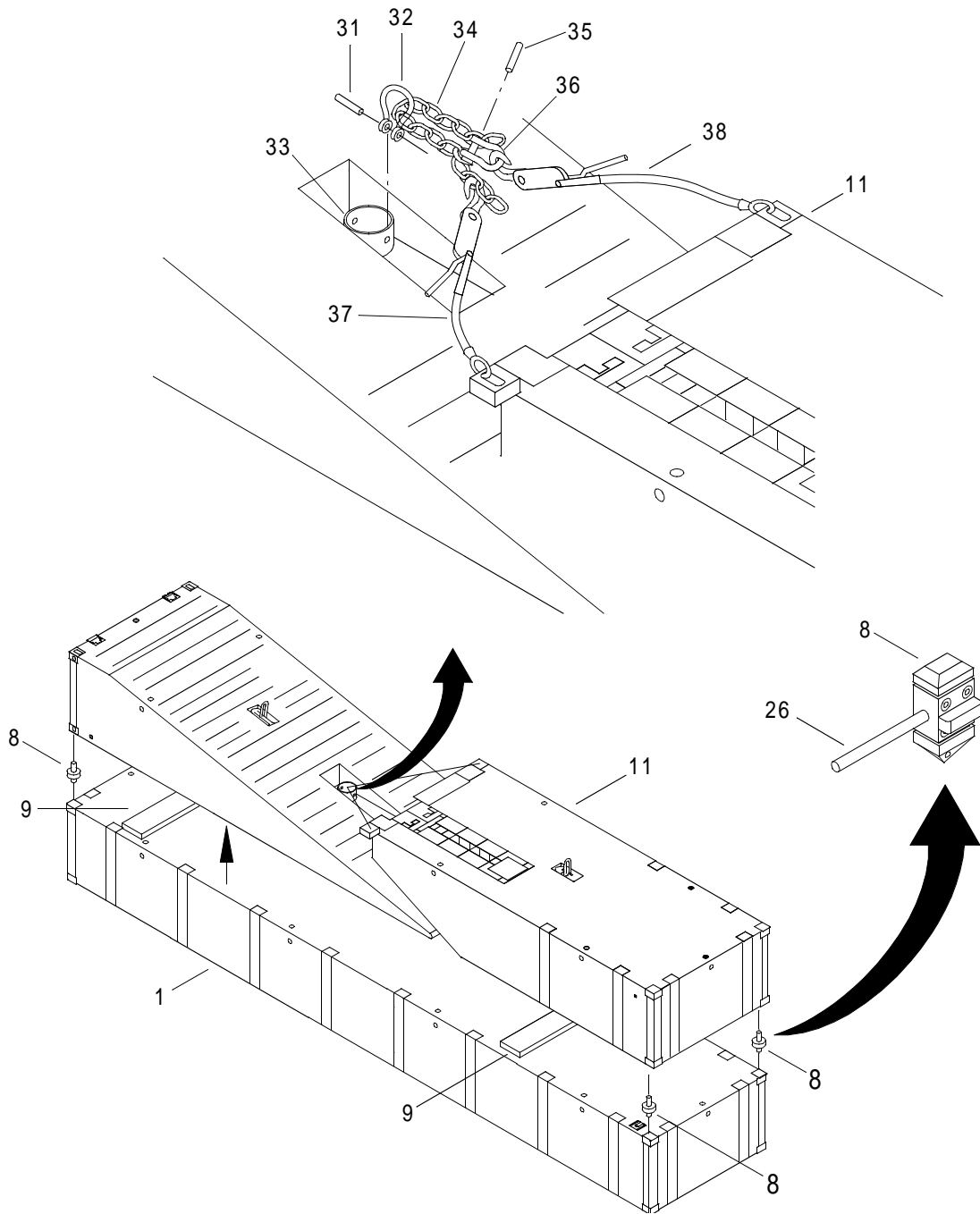
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**WARNING**

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**HEAVY PARTS**

11. Using crane, lift and position end rake module (11) on two vertical connectors (8) on center module (1).



12. Lock two ISOPAK vertical connectors (8), by moving the lever (26)
13. Remove three leg sling (12).
14. Remove pin (31) from shackle (32).
15. Install shackle (32) on rhino horn fitting (33).
16. Install chain (34) through shackle (32).
17. Remove pin (35) from shackle (36).

18. Install shackle (36) on chain (34).
19. Install tie down cable (37) from end rake (11) and chain (34).
20. Install tie down cable (38) from end rake (11) and shackle (36).
21. Tighten and secure tie down cables (37 and 38).

**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
TACTICAL QUIET GENERATOR  
OPERATIONS UNDER UNUSUAL CONDITIONS**

**INITIAL SETUP:**

**Tools**

- Life Preserver, Vest (Item 31, WP 0104 00)
- Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)
- Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)
- Helmet, Safety (Item 27, WP 0104 00)
- Plug, Ear (Item 40, WP 0104 00)

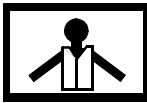
**Personnel Required**

Seaman 88K

**EMERGENCY PROCEDURE - EMERGENCY STOP OF TACTICAL QUIET GENERATOR**

**ACTIVATE EMERGENCY STOP OF TACTICAL QUIET GENERATOR**

**WARNING**



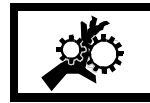
**VEST**



**HELMET PROTECTION**



**HEAVY PARTS**



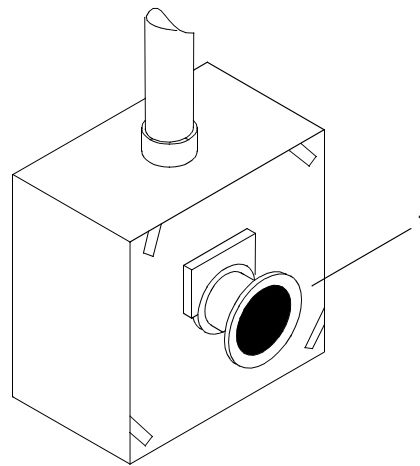
**MOVING PARTS**



**EAR PROTECTION**

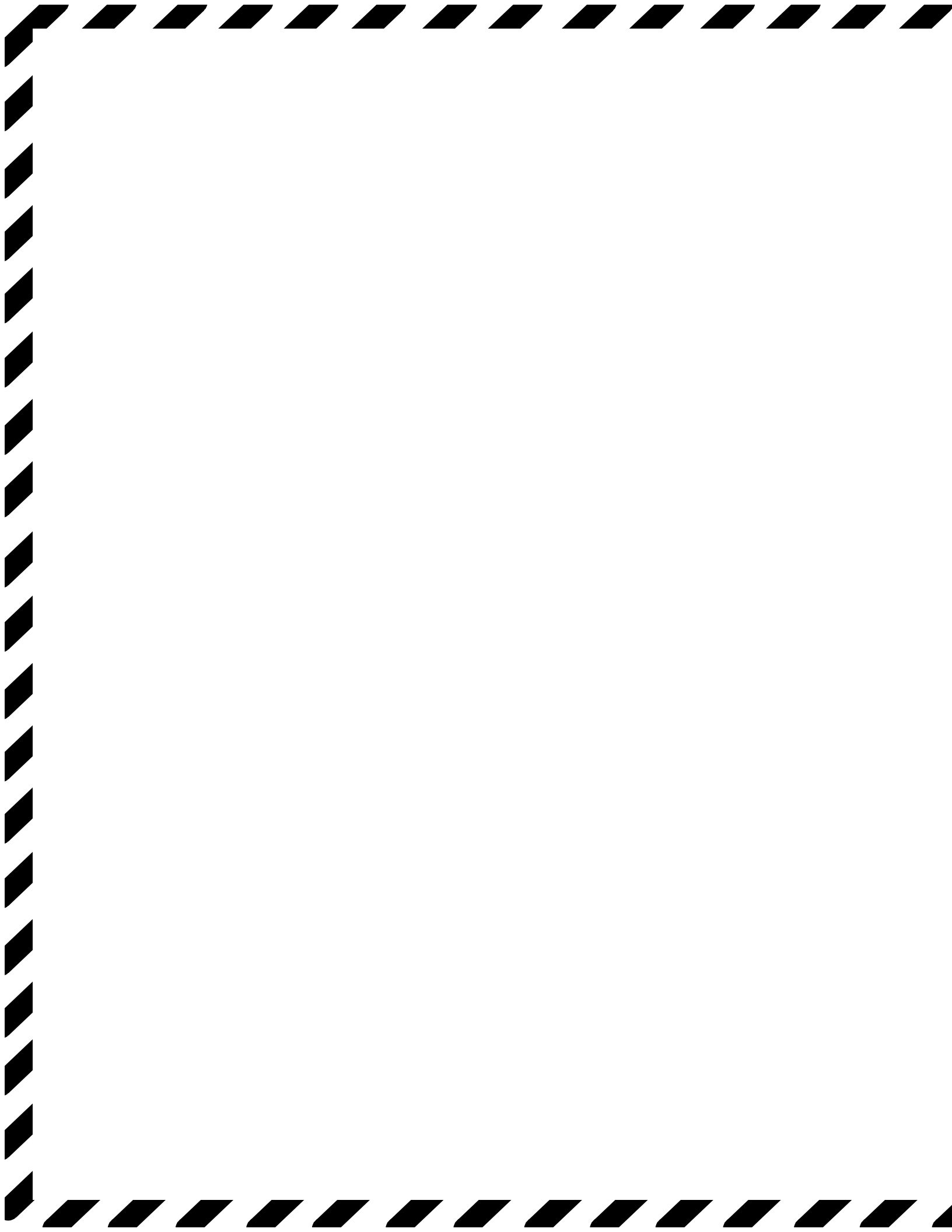
**All personnel must wear personal flotation device, hard hat, safety shoes and gloves during FC operations and maintenance. Failure to observe these precautions could result in serious injury or death.**

1. Push EMERGENCY STOP button (1).



2. Pull EMERGENCY STOP button (1) to reset emergency stop switch.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER FIRE SUPPRESSION SYSTEM  
OPERATIONS UNDER UNUSUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Life Preserver, Vest (Item 31, WP 0104 00)  
Gloves, Men's and (Leather Palm) (Item 23, WP 0104 00)  
Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
Helmet, Safety (Item 27, WP 0104 00)  
Plug, Ear (Item 41, WP 0104 00)

**Personnel Required**

Seaman 88K

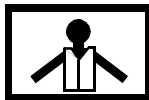
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**EMERGENCY PROCEDURE - MANUAL OPERATION OF TACTICAL QUIET GENERATOR FIRE SUPPRESSION SYSTEM****ACTIVATE FIRE SUPPRESSION SYSTEM WITH ELECTRIC MANUAL PULL**

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**WARNING**

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

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.

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.

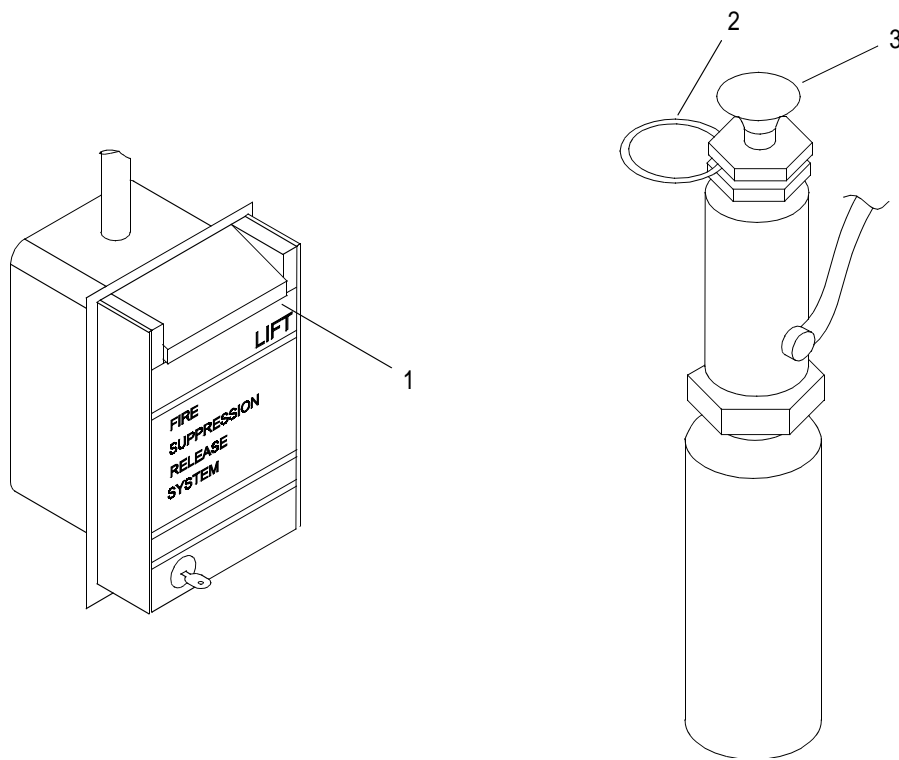
Prior to entering the shelter after discharge of CO2, the shelter shall be completely cleared of any CO2 that may remain. Serious injury or death to personnel could result if CO2 is inhaled.

1. Locate pull station.

**NOTE**

A delay of up to thirty seconds will occur before CO2 is discharged.

2. Lift lever (1) to activate fire suppression system.



#### ACTIVATE FIRE SUPPRESSION SYSTEM WITH ACTUATOR

1. Grasp and pull ring (2) to remove safety pin.

#### NOTE

A delay of up to thirty seconds will occur before CO<sub>2</sub> is discharged.

2. Firmly push down on actuator knob (3) to activate fire suppression system.

END OF WORK PACKAGE



**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PERSONNEL SHELTER  
OPERATION UNDER UNUSUAL CONDITION**

**INITIAL SETUP:**

**Tools**

- Life Preserver, Vest (Item 31, WP 0104 00)
- Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)
- Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)
- Helmet, Safety (Item 27, WP 0104 00)

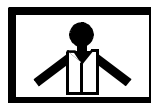
**Personnel Required**

Seaman 88K

**EMERGENCY PROCEDURE - EVACUATION OF PERSONNEL SHELTER**

**EVACUATION OF PERSONNEL SHELTER**

WARNING



**VEST**



**HELMET PROTECTION**



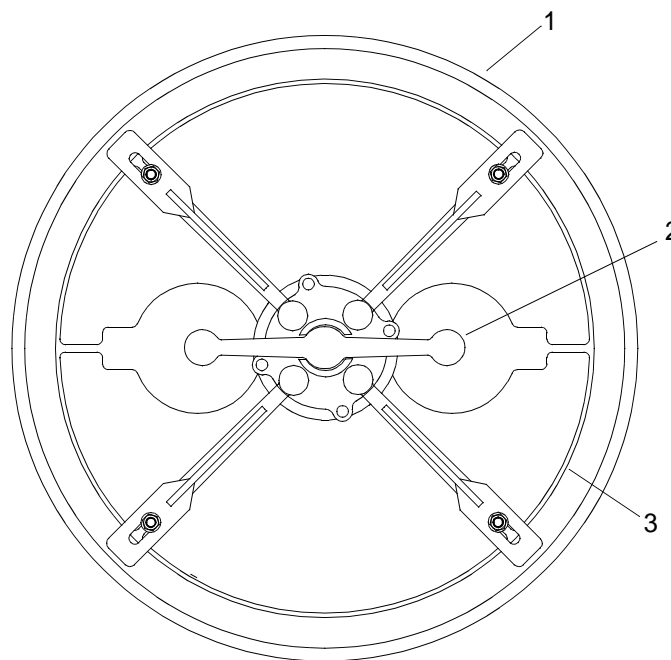
**HEAVY PARTS**



**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.**

1. Locate emergency escape scuttle (1).



- 
2. Grasp emergency escape scuttle handle (2) and turn one quarter turn clockwise to release scuttle door (3).
  3. Push scuttle door (3) open.
  4. Crawl through scuttle opening and exit shelter.

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
OPERATION UNDER UNUSUAL CONDITIONS**

---

**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
 Life Preserver, Vest (Item 31, WP 0104 00)  
 Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
 Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
 Helmet, Safety (Item 27, WP 0104 00)  
 Crowbar (Item 14, WP 0104 00)  
 Hammer, Hand (10 lb Sledge) (Item 26, WP 0104 00)

**Personnel Required**

Seaman 88K

**Equipment Condition**

Off Shore Mooring Legs Stowed. (WP 0063 00)  
 On Shore Mooring Legs Stowed. (WP 0064 00)  
 Dunnage Mats Removed And Stowed. (WP 0036 00, WP 0058 00)  
 Fenders Removed And Stowed. (WP 0040 00, WP 0066 00, WP 0067 00)  
 Light Towers Removed And Stowed. (WP 0037 00, WP 0062 00)

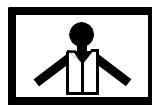
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**PREPARATION FOR TOWING-UNUSUAL ENVIRONMENT/WEATHER****PREPARE THE TRIDENT PIERHEAD FLOATING CAUSEWAY FOR TOWING**

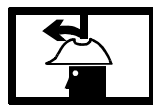

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**WARNING**

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VEST



HELMET PROTECTION



HEAVY PARTS



MOVING PARTS

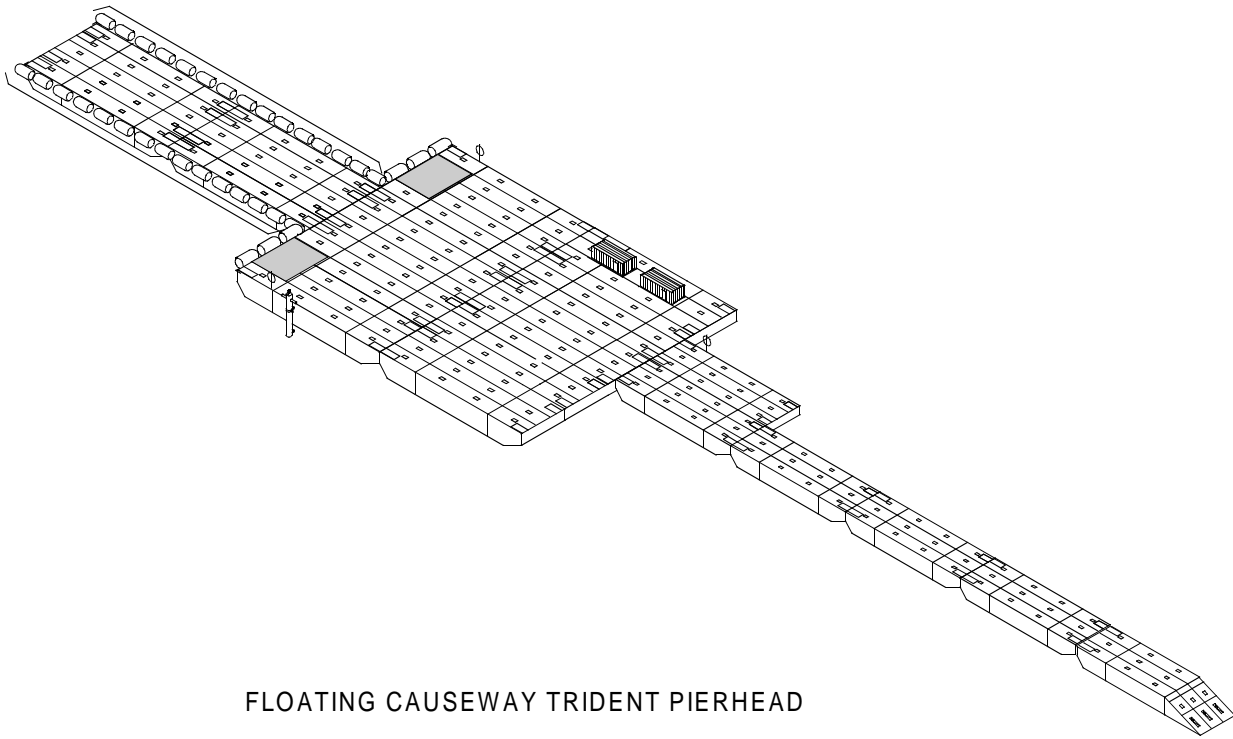


HEAVY PARTS

**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.**

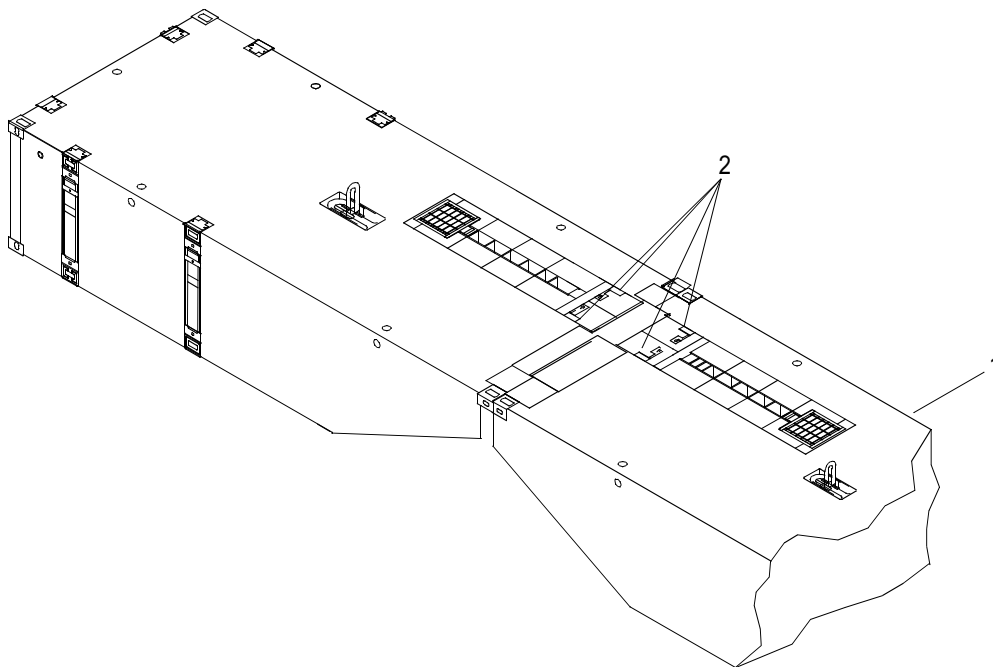
**Ensure any ancillary equipment is stowed and secured to the deck. Failure to observe these precautions could result in serious injury or death.**

1. Disassemble floating causeway for towing configuration.



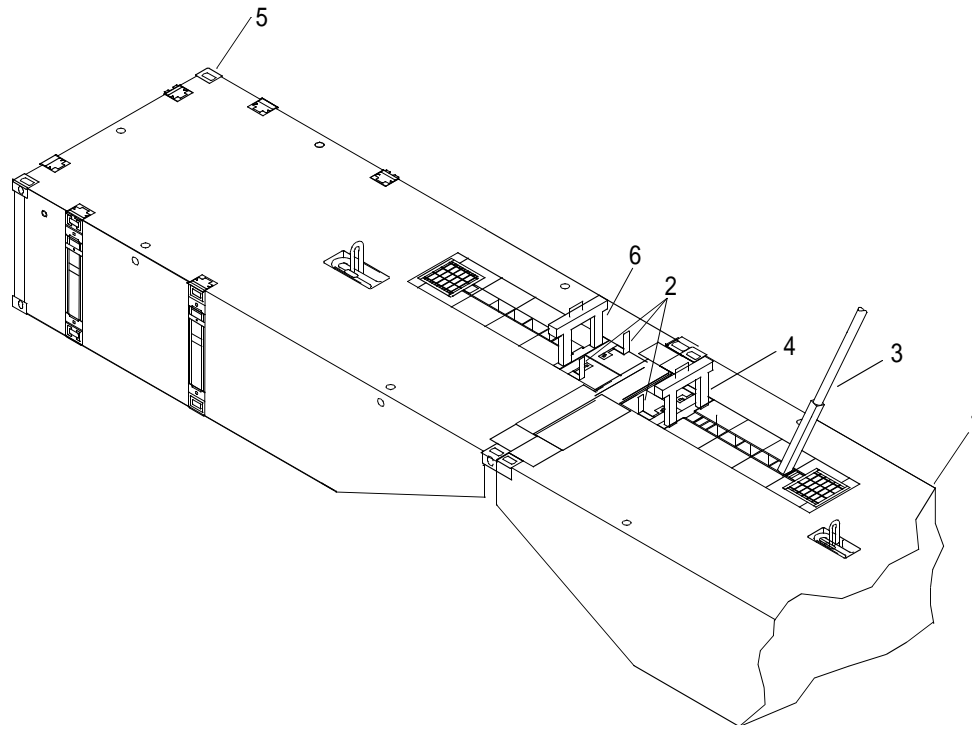
## FLOATING CAUSEWAY TRIDENT PIERHEAD

3. Disassemble floating causeway intermediate sections along sides as required by raising the female connector guillotines. (WP 0050 00)
4. Disassemble floating causeway intermediate sections along the ends, as required.
  - a. Release flexor connectors on right end rake (1).



{1} Rotate and pull chute bolts (2) to unlocked position.

{2} Using crowbar (3), lift guillotine plate (4) from flexor connector slots.



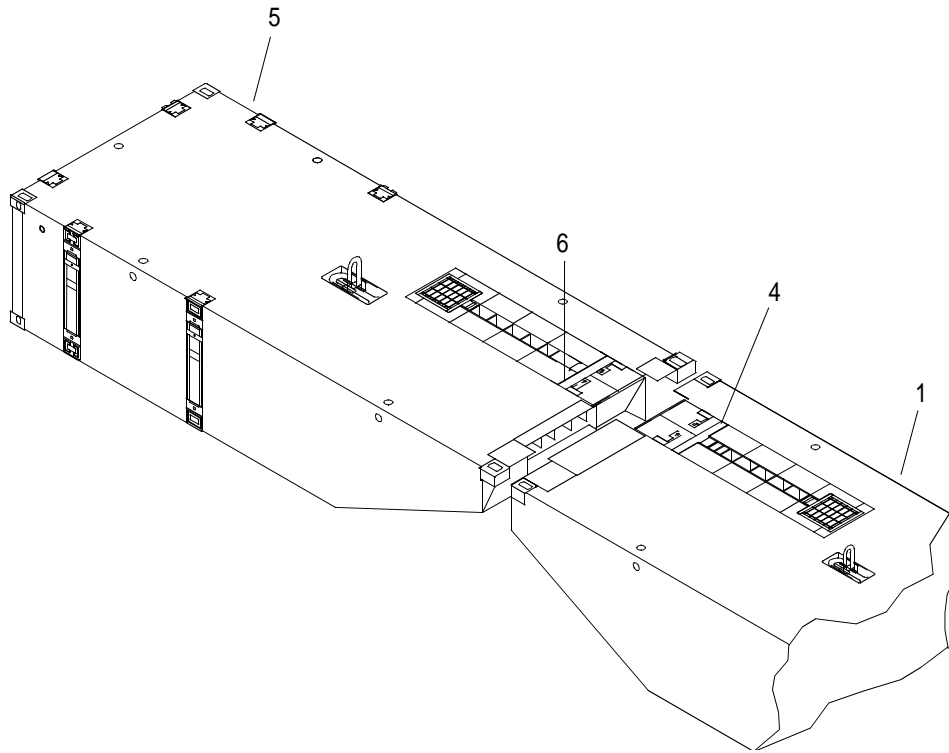
b. Stow flexor connectors in left end rake (5).

{1} Rotate and pull chute bolts (2) to unlocked position.

{2} Using crowbar (3), lift the guillotine plate (6) from flexor connector slots.

{3} Using crowbar (3), move flexor from right end rake (1) into left end rake (5) flexor connector pocket.

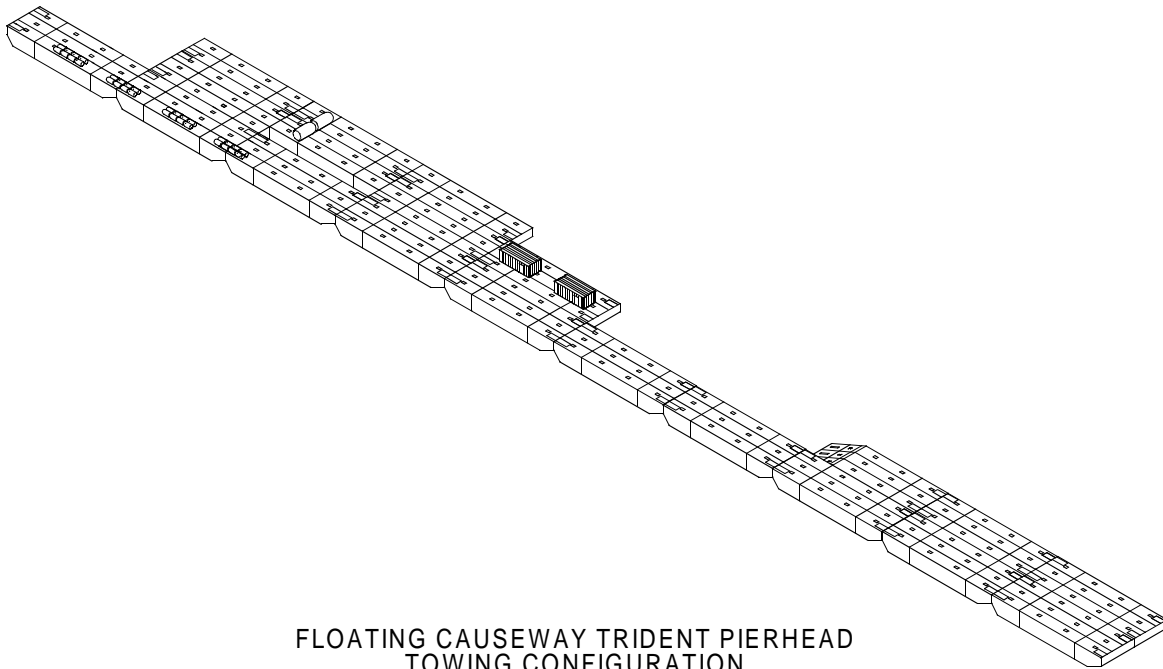
{4} Align outboard guillotine slot on flexor with slot in left end rake module.



{5} Install guillotine plates (6) on left end rake (5).

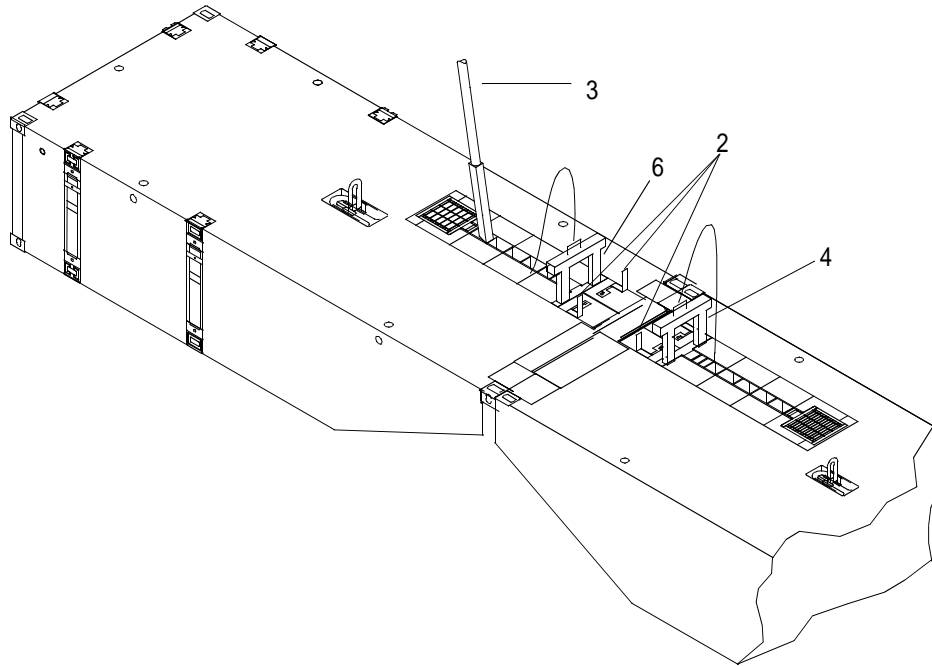
{6} Install guillotine plates (4) on right end rake (1).

5. Position floating causeway intermediate sections, as required, into a towing configuration using a warping tug.



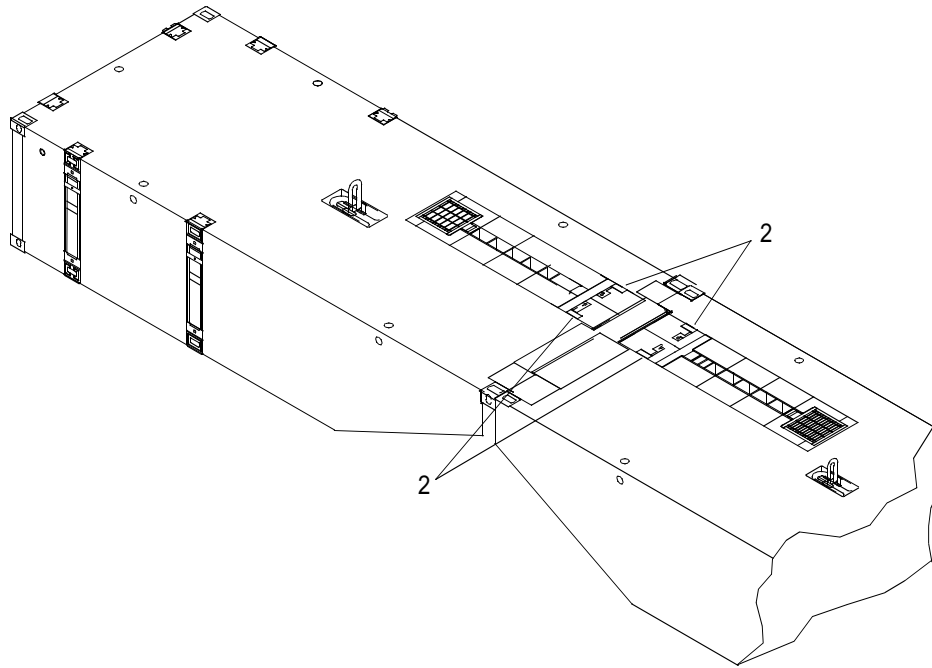
FLOATING CAUSEWAY TRIDENT PIERHEAD  
TOWING CONFIGURATION

6. Connect floating causeway intermediate sections along sides, as required, with guillotine connectors. (WP 0012 00)
7. Connect floating causeway intermediate sections end to end, as required.
  - a. Rotate and pull chute bolts (2) to unlocked position.



- b. Lift guillotines (4) and (6) from flexor connector slots.
- c. Using a crowbar (3) push each flexor connector from the left end rake into corresponding pocket of right end rake until guillotines plates (4) and (6) are aligned with the flexor connector slots.
- d. Using a sledgehammer, drive guillotine plates (4) and (6) down into flexor connector slots.

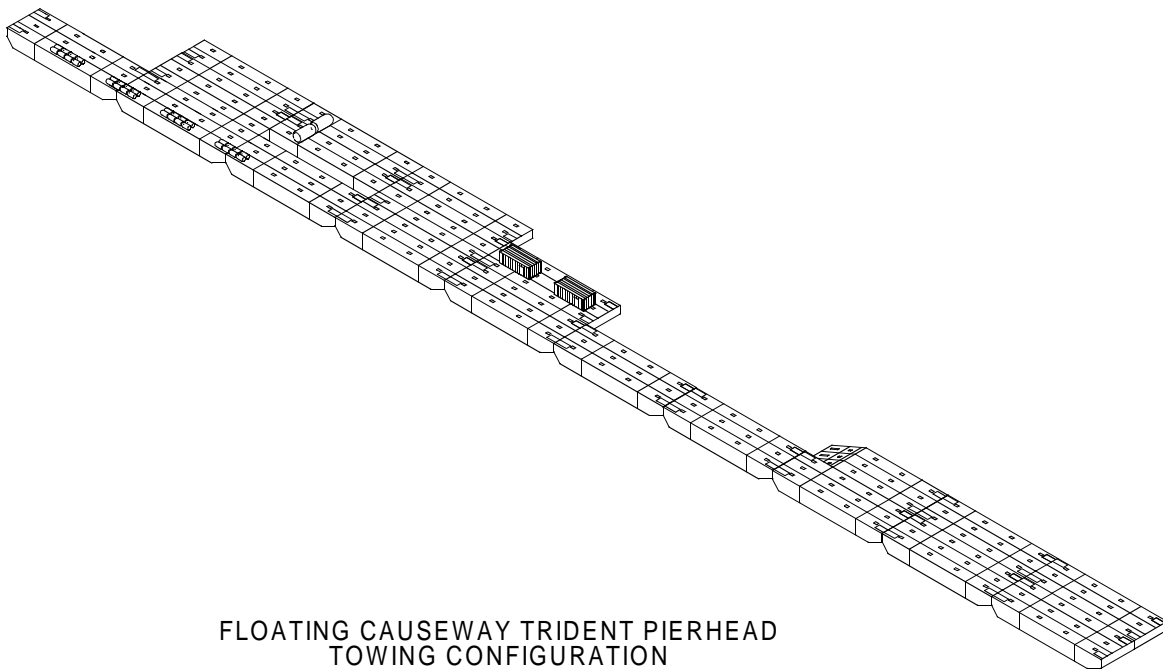
- e. Push chute bolts (2) to the locked position and rotate to closed position.



8. Install towing bridle, towing interface and towing lights. (WP 0018 00)

#### **SECURE THE TRIDENT PIERHEAD FLOATING CAUSEWAY FROM TOWING**

1. Disassemble floating causeway towing configuration intermediate sections, as required, for a trident pierhead floating causeway configuration.



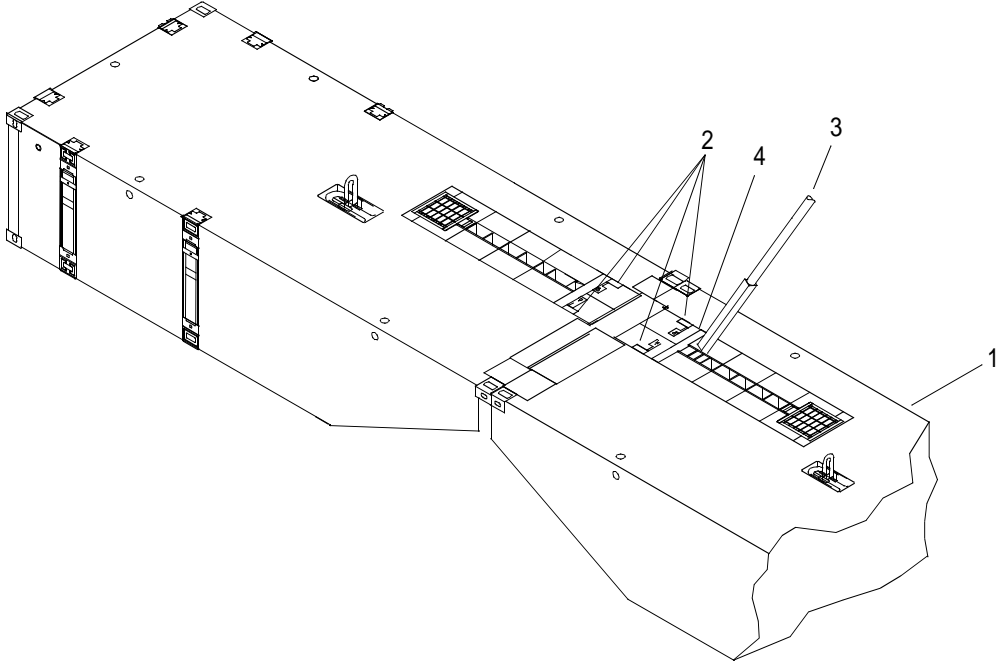
**FLOATING CAUSEWAY TRIDENT PIERHEAD  
TOWING CONFIGURATION**

2. Disassemble floating causeway intermediate sections along sides as required by raising female connector guillotines. (WP 0050 00)



3. Disassemble floating causeway intermediate sections on ends, as required.

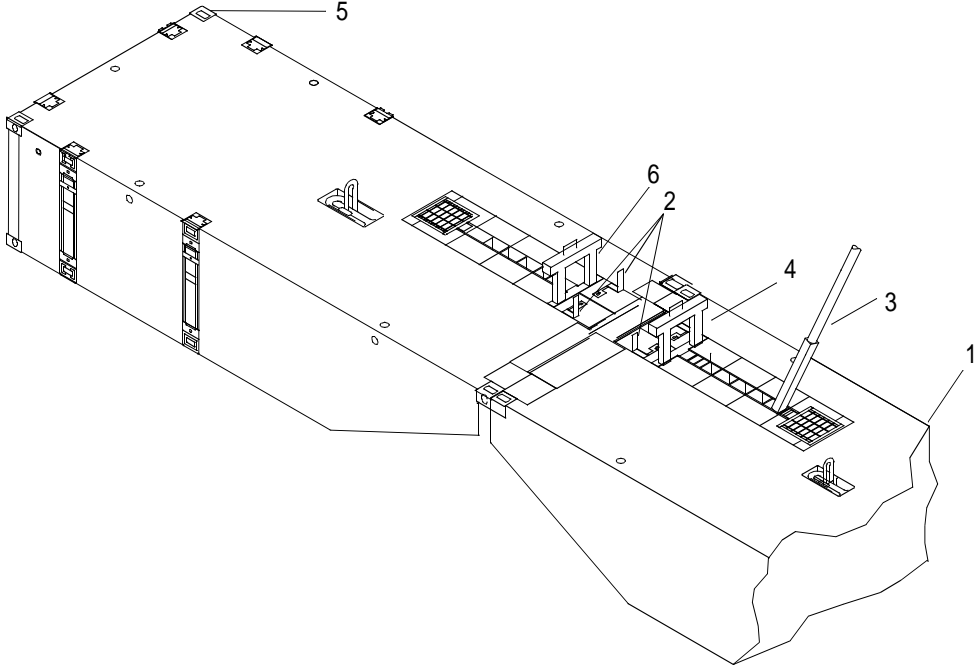
a. Release flexor connectors on right end rake (1).



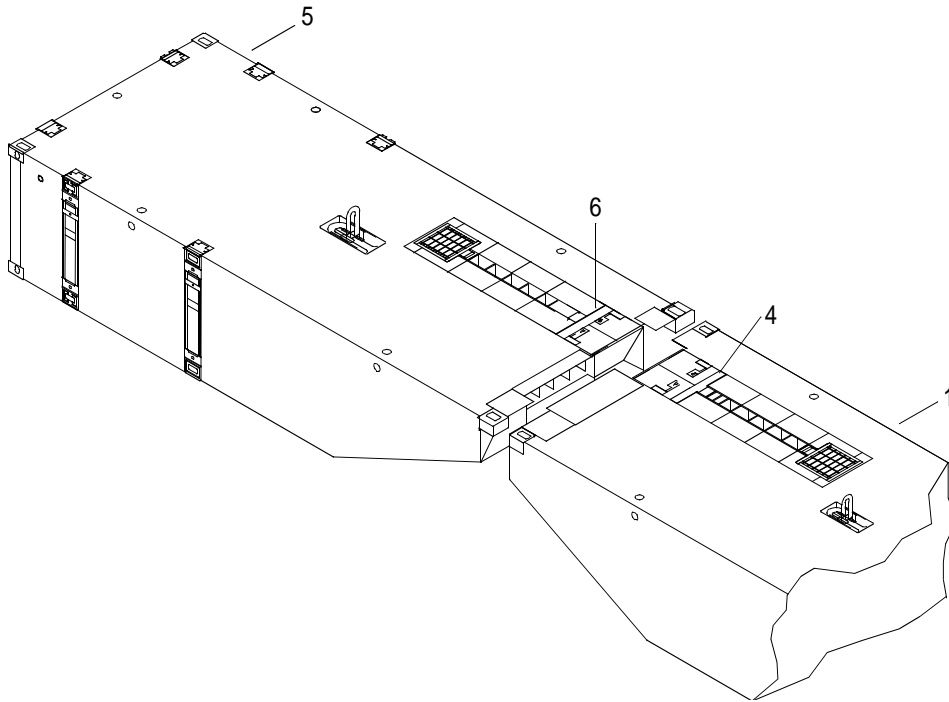
{1} Rotate and pull chute bolts (2) to unlocked position.

{2} Using crowbar (3), lift guillotine plate (4) up from the flexor connector slots.

b. Stow flexor connectors in left end rake (5).

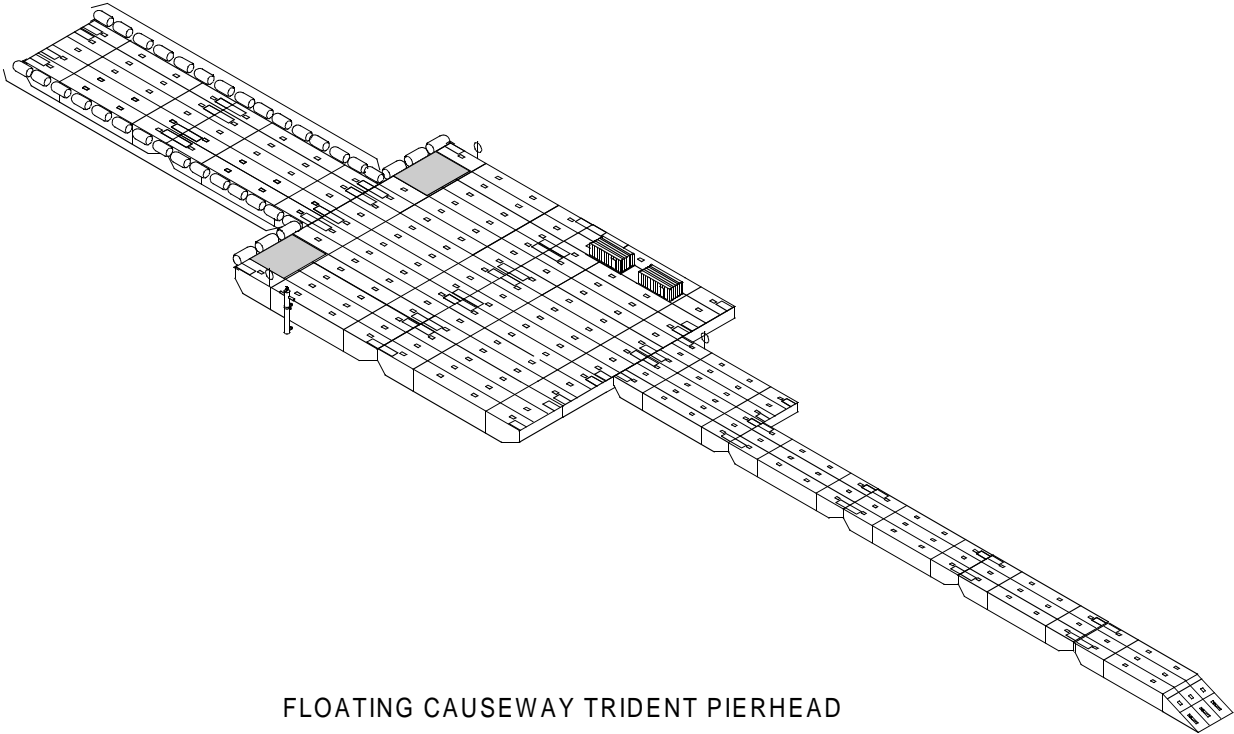


- 
- {1} Rotate and pull chute bolts (2) to unlocked position.
  - {2} Using crowbar (5), lift guillotine plate (6) from flexor connector slots.
  - {3} Using crowbar (3), move flexor from right end rake (1) into left end rake (5) flexor connector pocket.
  - {4} Align outboard guillotine slot on flexor with slot in left end rake module.



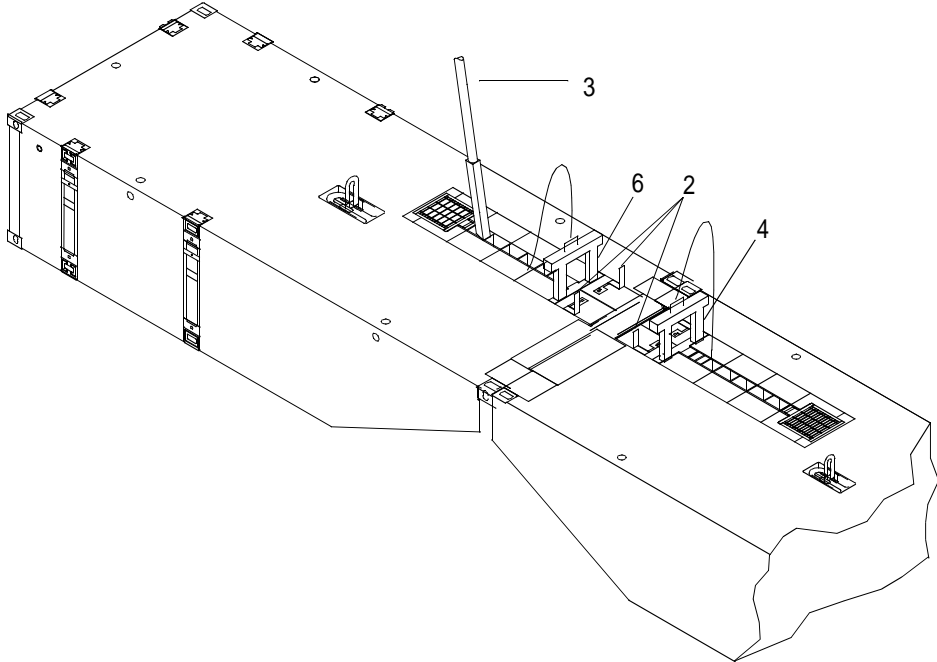
- {5} Install guillotine plates (6) on left end rake (5).
- {6} Install guillotine plates (5) on right end rake (1).

- 4. Position floating causeway intermediate sections, as required, to a trident pierhead floating causeway configuration using a warping tug.

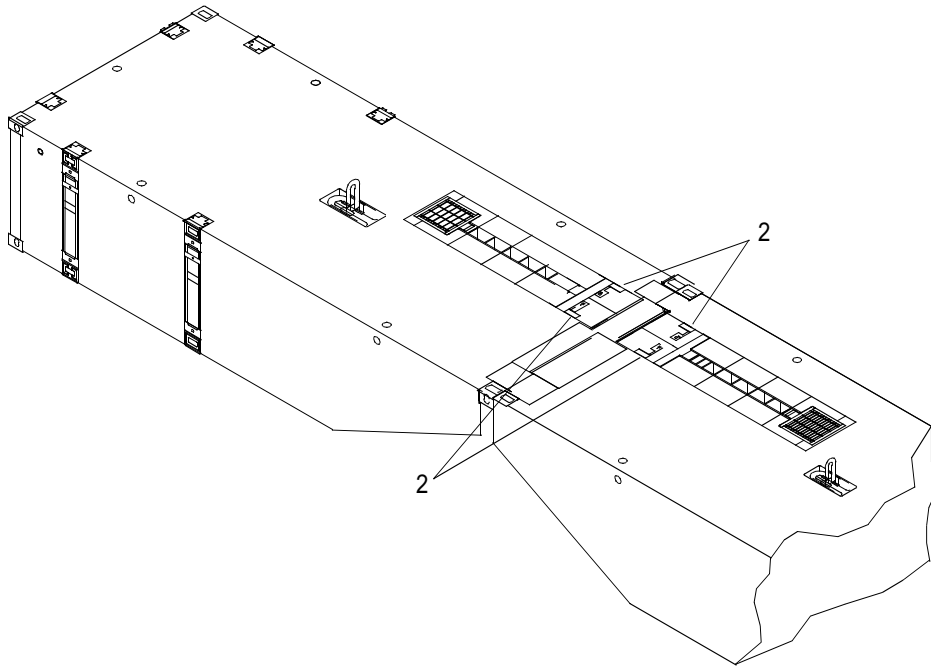


FLOATING CAUSEWAY TRIDENT PIERHEAD

- 5. Connect floating causeway intermediate sections along sides, as required, with guillotine connectors. (WP 0012 00)
- 6. Connect floating causeway intermediate sections end to end, as required.
  - a. Rotate and pull the chute bolts (2) to unlocked position.



- b. Lift guillotine plates (4) and (6) from flexor connector slots.
- c. Using crowbar (3) push each flexor connector from left end rake into corresponding pocket of right end rake until guillotines (4 and 6) are aligned with flexor connector slots.
- d. Using a sledgehammer, drive guillotines (4) and (6) down into flexor slots.
- e. Push chute bolts (2) to locked position and rotate to closed position.



7. Install fenders, as required.
8. Install light towers, as required.
9. Remove towing bridle, towing interface and towing lights. (WP 0042 00)
10. Deploy off shore mooring legs. (WP 0033 00)
11. Deploy on shore mooring legs. (WP 0034 00)

**END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
DUNNAGE MATS  
STOWAGE**

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## **INTRODUCTION**

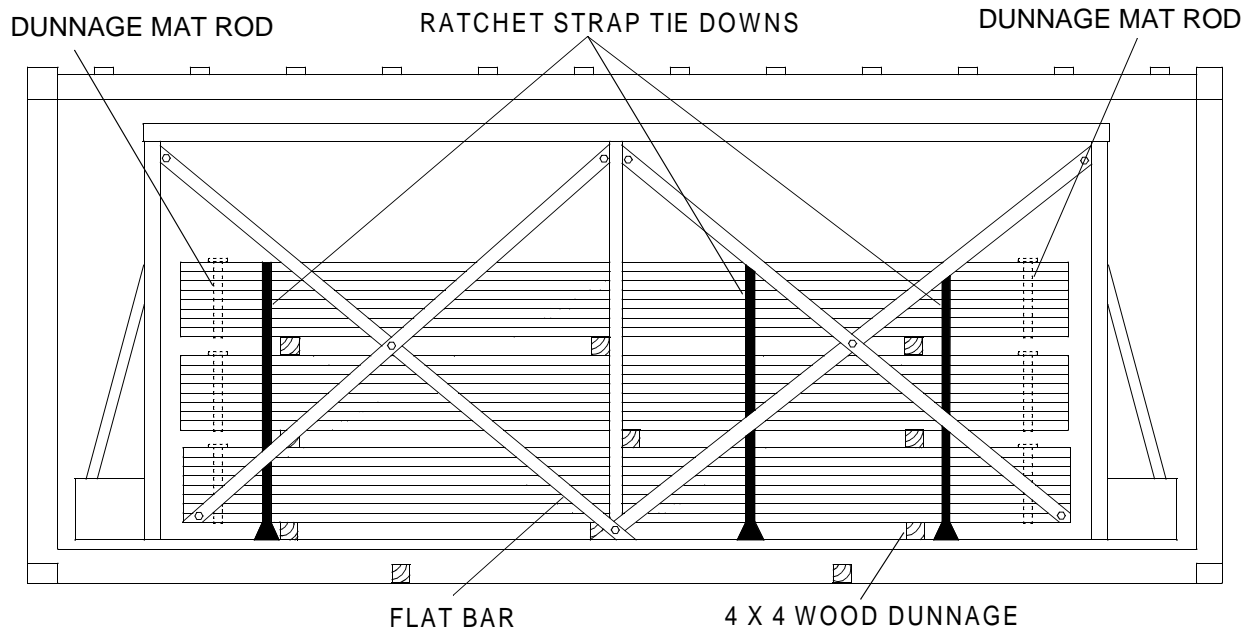
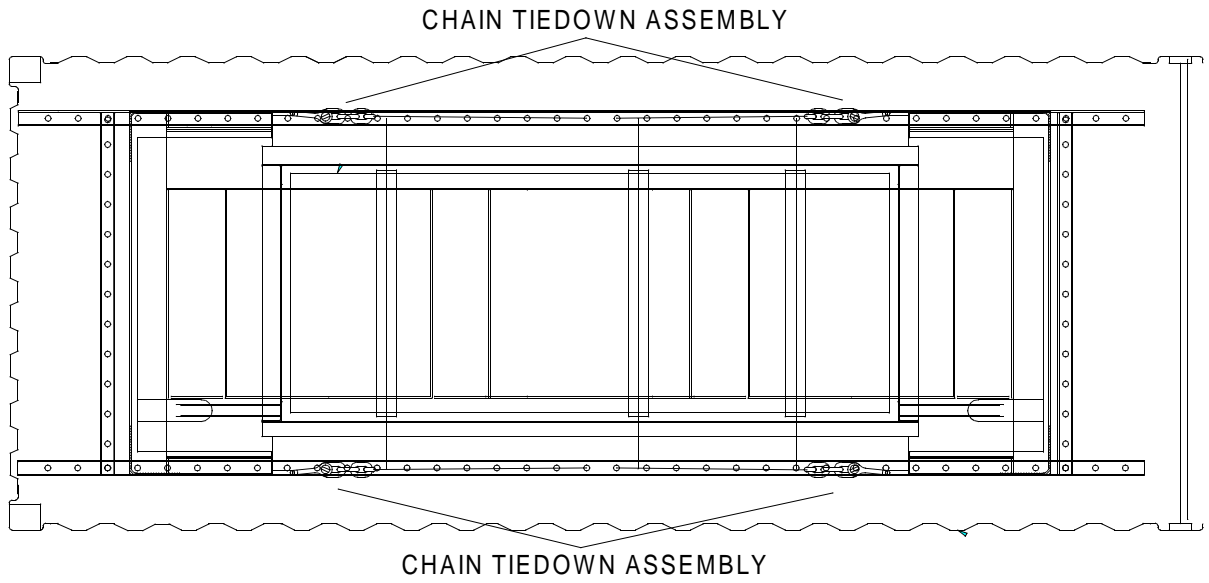
### **Scope**

This work package covers stowage of the dunnage mats in the 20 ft side opening container.

### **Stowage of Dunnage Mats**

The following procedures are required prior to stowage of the dunnage mats:

The 4 ft by 10 ft dunnage mats are stowed horizontally. Dunnage is placed on the pallet and 8 dunnage mats are stacked on the dunnage. Two additional stacks of 8 dunnage mats are stowed on dunnage on top of the first stack. Once stowed on the pallet, the mats are secured to the pallet with ratchet strap tie downs. The pallet is secured to the deck tracks with chain tie downs.



**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
FLEXOR CONNECTORS  
STOWAGE**

**INTRODUCTION**

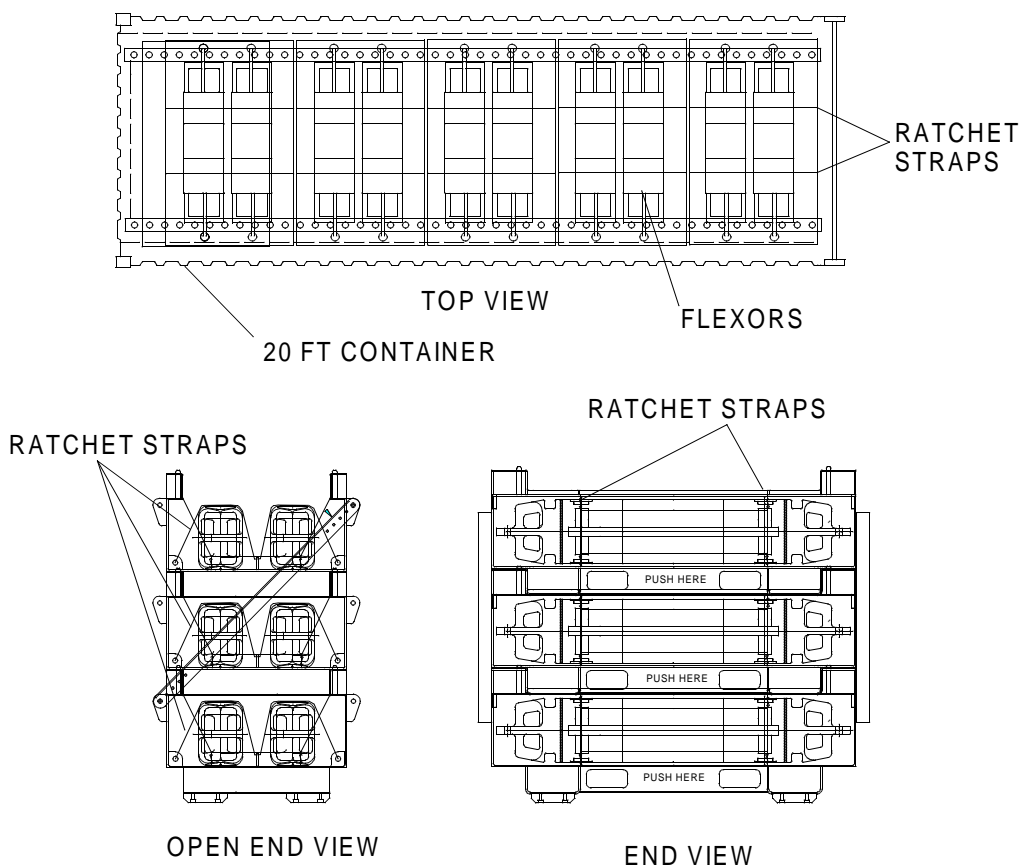
**Scope**

This work package covers stowage of the flexor connectors in the 20 ft opening end container.

**Stowage of Flexor Connectors**

The following procedures are required prior to stowage of the flexor connectors:

The flexor connectors are stowed horizontally, two to a pallet, in stacks of three high and are secured using two ratchet strap tie downs per pallet. The pallets and flexor connectors are placed in the 20 ft open end container. The stacks are secured to the container deck tracks using two ratchet strap tie downs per stack. The 20 ft open end container accommodates 30 flexor connectors.







---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
EQUIPMENT IN PERSONNEL SHELTER  
STOWAGE**

---

## **INTRODUCTION**

### **Scope**

This work package covers stowage of equipment in 20 ft personnel container.

### **Stowage of Equipment in Personnel Shelter**

The following items are removed or stowed in the personnel shelter:

**HAND HELD RADIOS:** Stow in the TRICON container.

**INCINERATOR TOILET ASH PAN:** Ensure it is cleaned prior to stowage.

**POWER CABLE:** Stow the power cable on the floor of the personnel container.

**GROUND CABLE:** Stow the ground cable on the floor of the personnel container.



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
STOWAGE**

---

## **INTRODUCTION**

### **Scope**

This work package covers stowage of the generator container.

### **Stowage of Generator Container**

The following procedures are required prior to stowage of the tactical quiet generator set:

Refer to TM 9-6115-642-10 for 10 KW Tactical Quiet Generator Stowage Instructions.

Refer to TM 9-6115-643-10 for 15 KW Tactical Quiet Generator Stowage Instructions.

**GROUND WIRE:** Stow on the floor of the ISO container.



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWERS  
STOWAGE**

---

## INTRODUCTION

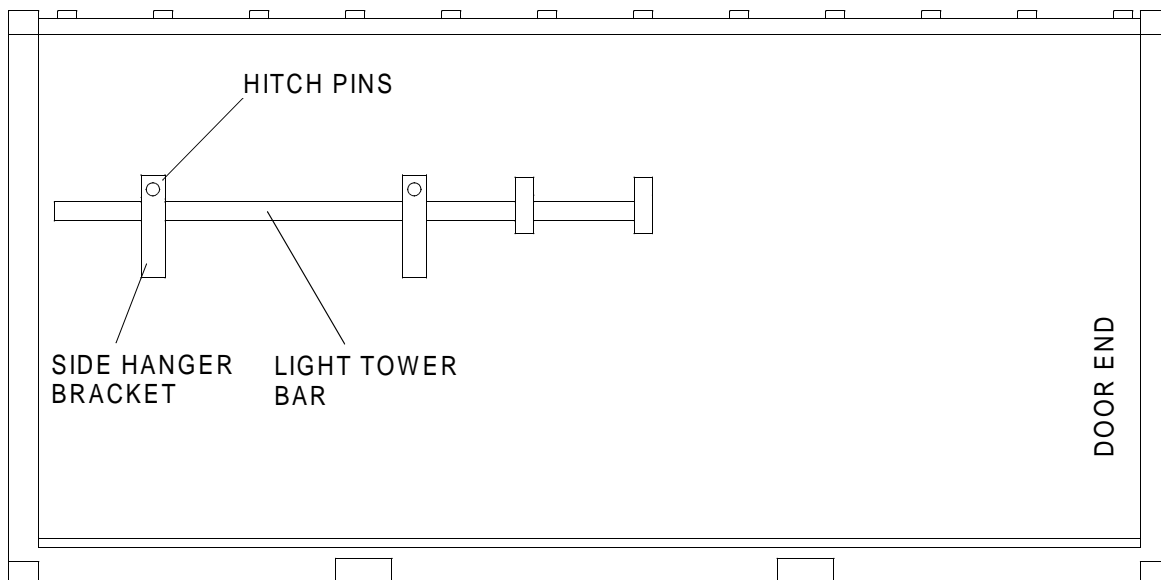
### Scope

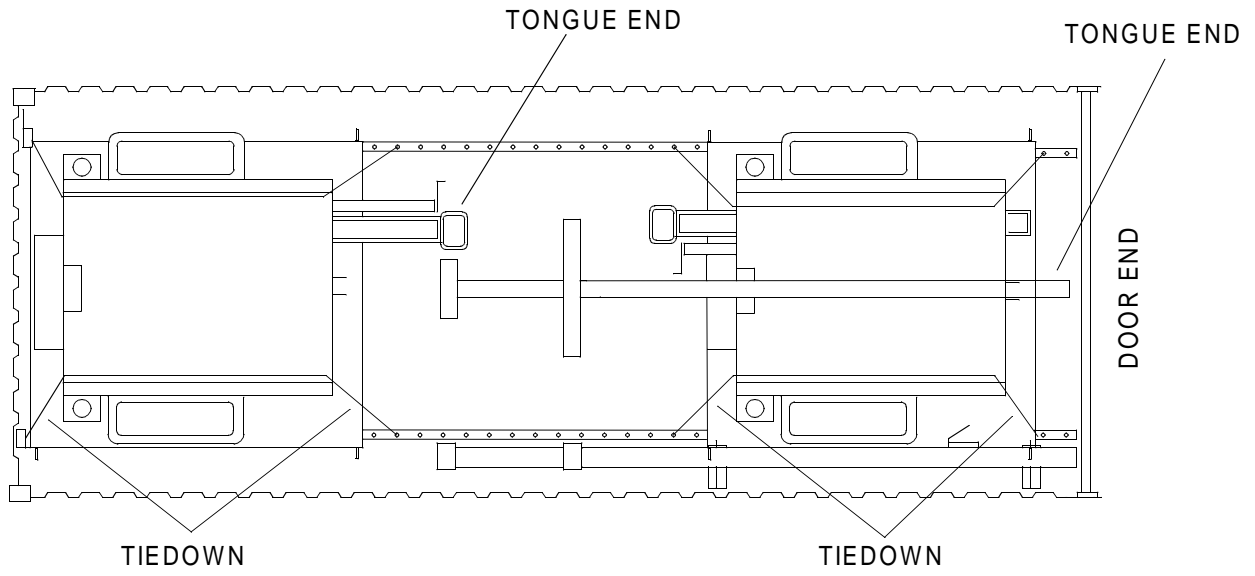
This work package covers stowage of the light towers in the 20 ft open end container.

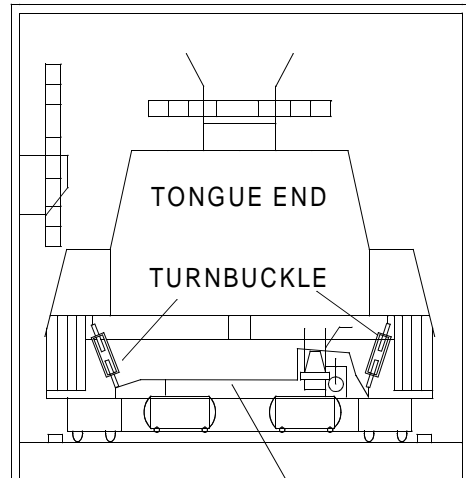
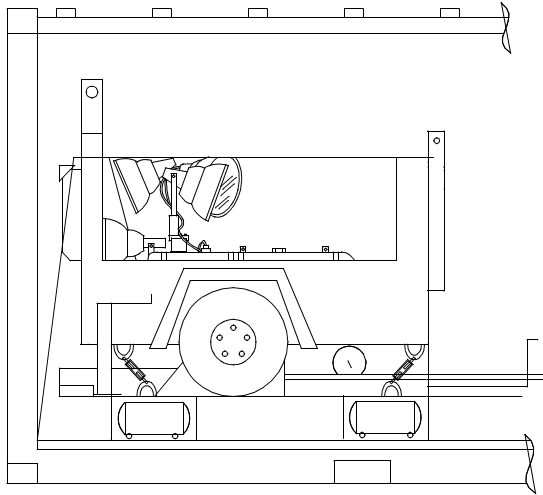
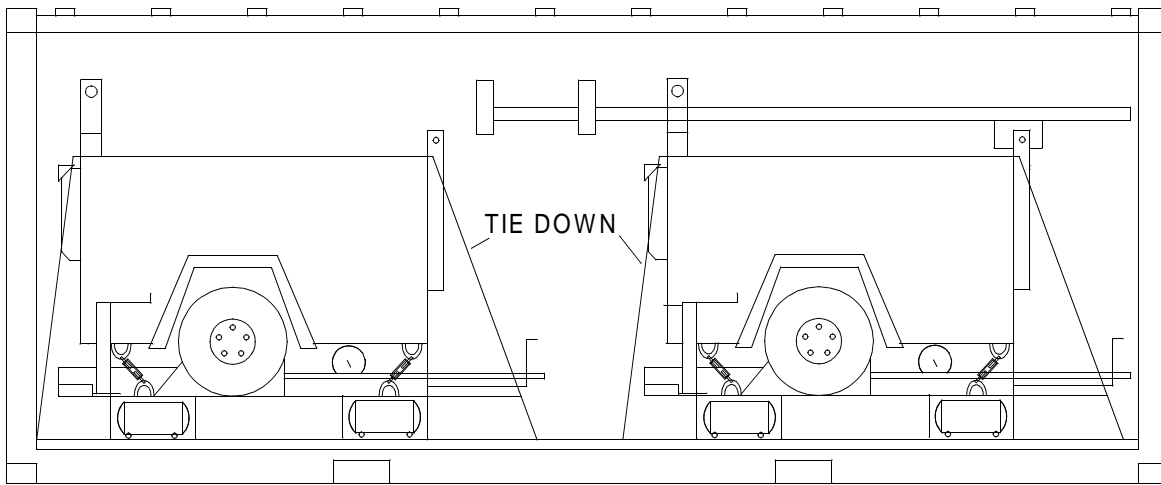
### Stowage of Light Towers

The following procedures are required prior to stowage of the light towers:

Prior to stowing light tower trailers, the light tower trailer that is placed in the container first must have the light tower removed. The lamps and tow bars must be removed. The removed light tower is placed in side hanger brackets on the 20 ft open end container and secured with hitch pins. The tow bars are secured below the trailers with tie downs. The light tower lamps are stowed in the engine compartment of each trailer. The light tower trailers are placed on pallets with the wheels chocked. The pallets are then placed in the 20 ft open end container and secured with two adjustable tie downs. Each 20 ft open end container accommodates two light towers.







RATCHET STRAP

PLACEMENT IN CONTAINER





---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
OFFSHORE ANCHOR MOORING LEGS  
STOWAGE**

---

## INTRODUCTION

### Scope

This work package covers stowage of the offshore anchor mooring legs.

### Stowage of Offshore Anchor Mooring Legs

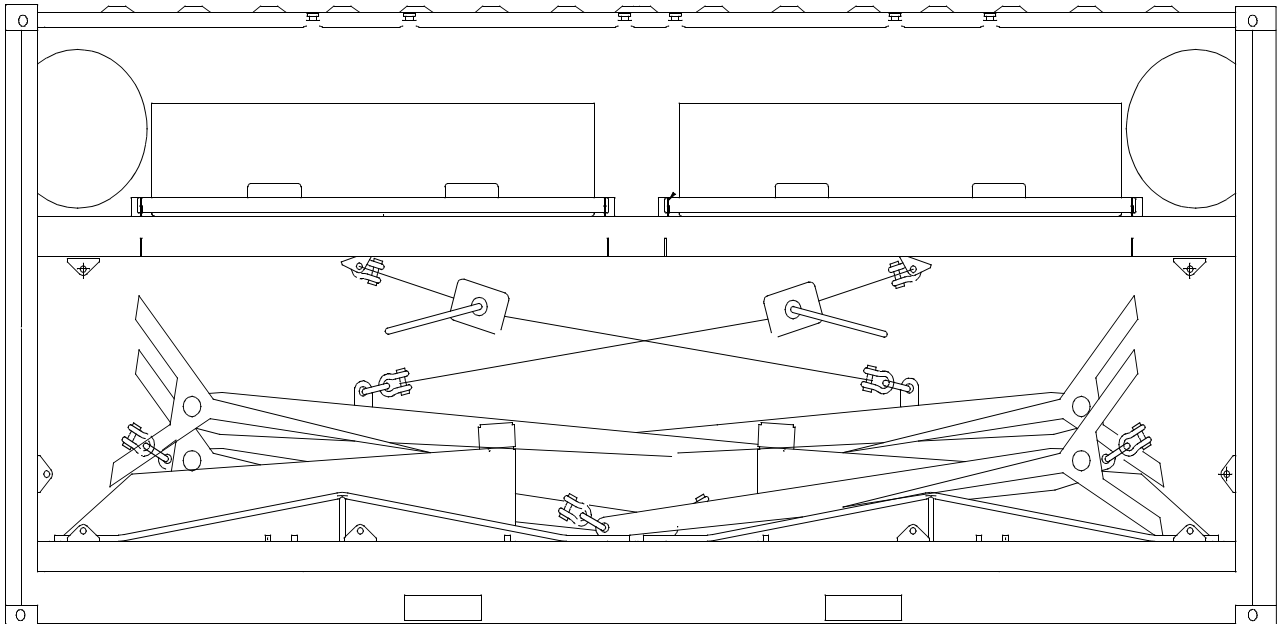
The following procedures are required prior to stowage of the offshore anchor mooring legs:

#### **NOTE**

Packing of the onshore mooring leg ISO container is normally done ashore.

Prior to packing, components should be inspected, cleaned, preserved  
and/or lubricated. (WP 0046 00)

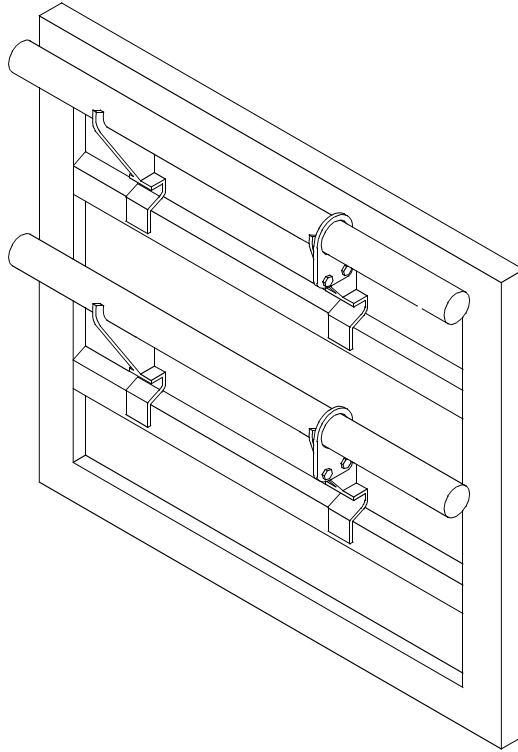
The offshore mooring legs are secured in the ISO container by four lever hoist ratchets. The mooring leg pallets are secured together by anchor tray locks. The anchor cable is stored in a figure eight pattern in the cable storage boxes.



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**Stowage of Anchor Stabilizers**

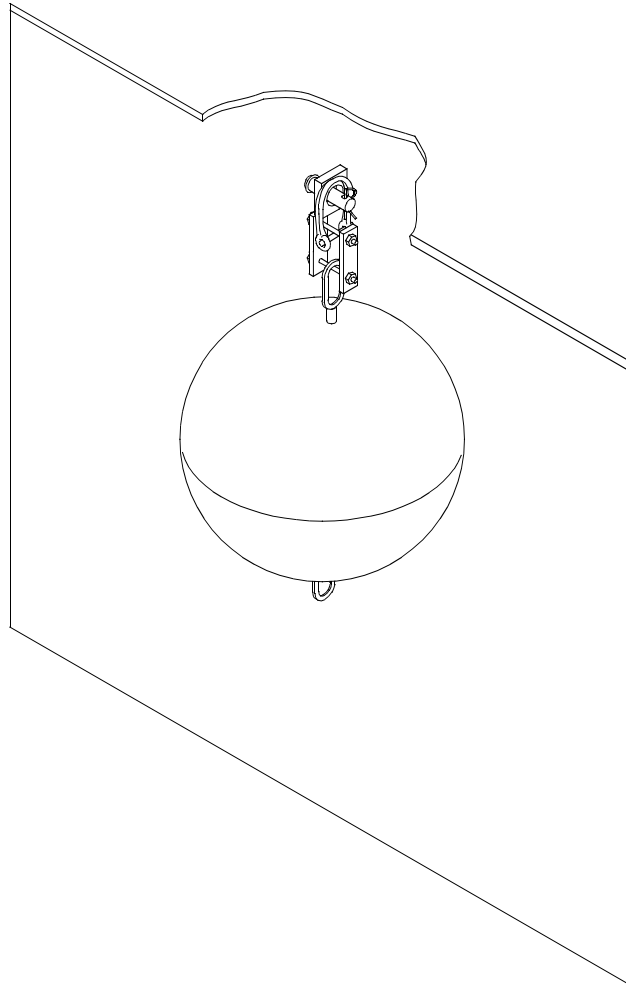
Anchor stabilizers are secured in brackets on ISO container side doors by bolts.



---

**Stowage of Buoy**

The buoy is stowed in the ISO container by use of quick release pin.





**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
ONSHORE ANCHOR MOORING LEGS  
STOWAGE**

**INTRODUCTION**

**Scope**

This work package covers stowage of the onshore anchor mooring leg components in 20 ft ISO container.

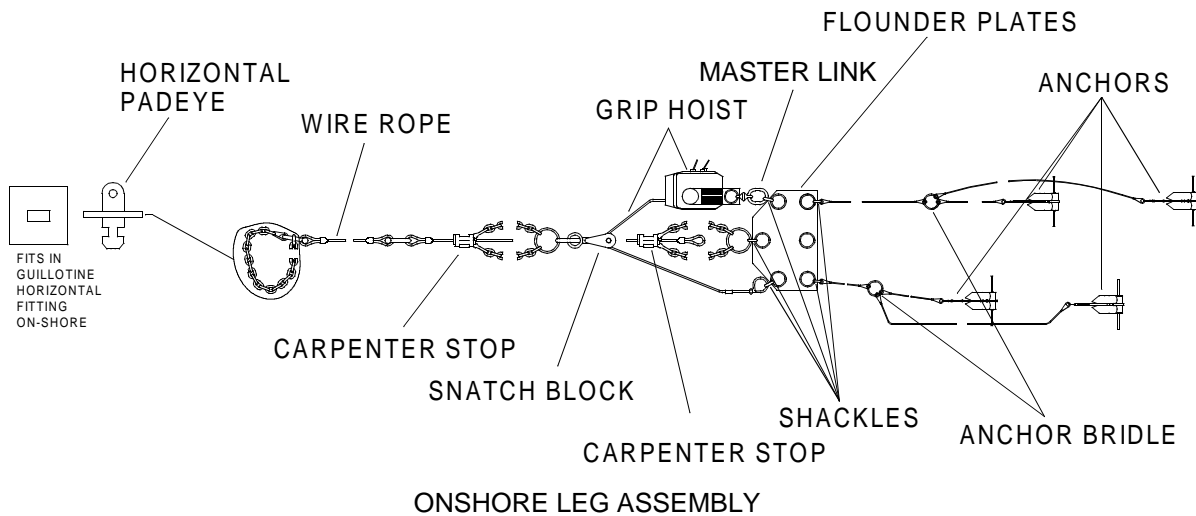
**Stowage of Onshore Anchor Mooring Legs**

The following procedures are required prior to stowage of the onshore anchor mooring legs:

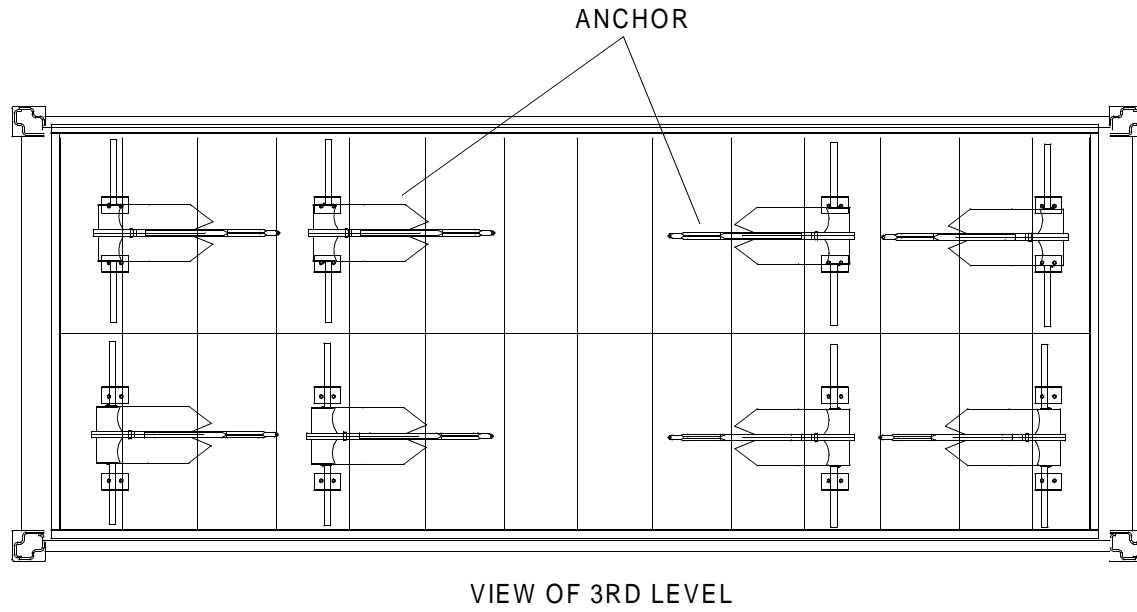
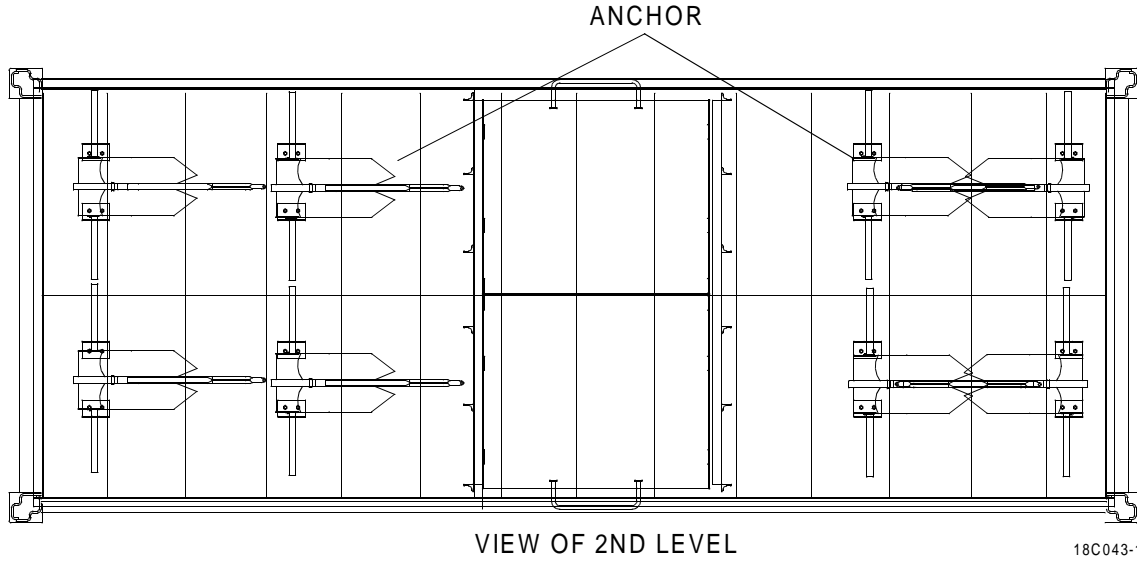
**NOTE**

Packing of the onshore mooring leg ISO container is normally done ashore.

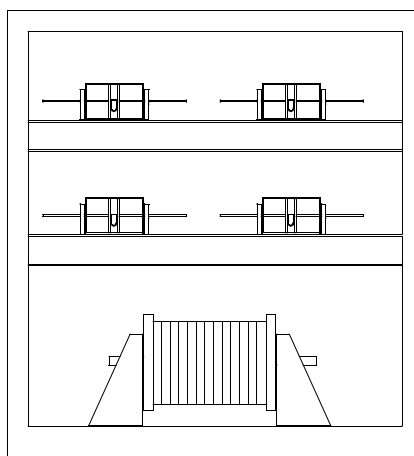
Prior to packing, components should be inspected, cleaned, preserved and/or lubricated. (WP 0045 00)



ANCHORS: Stow anchors in appropriate chocks on 2nd and 3rd levels of container.



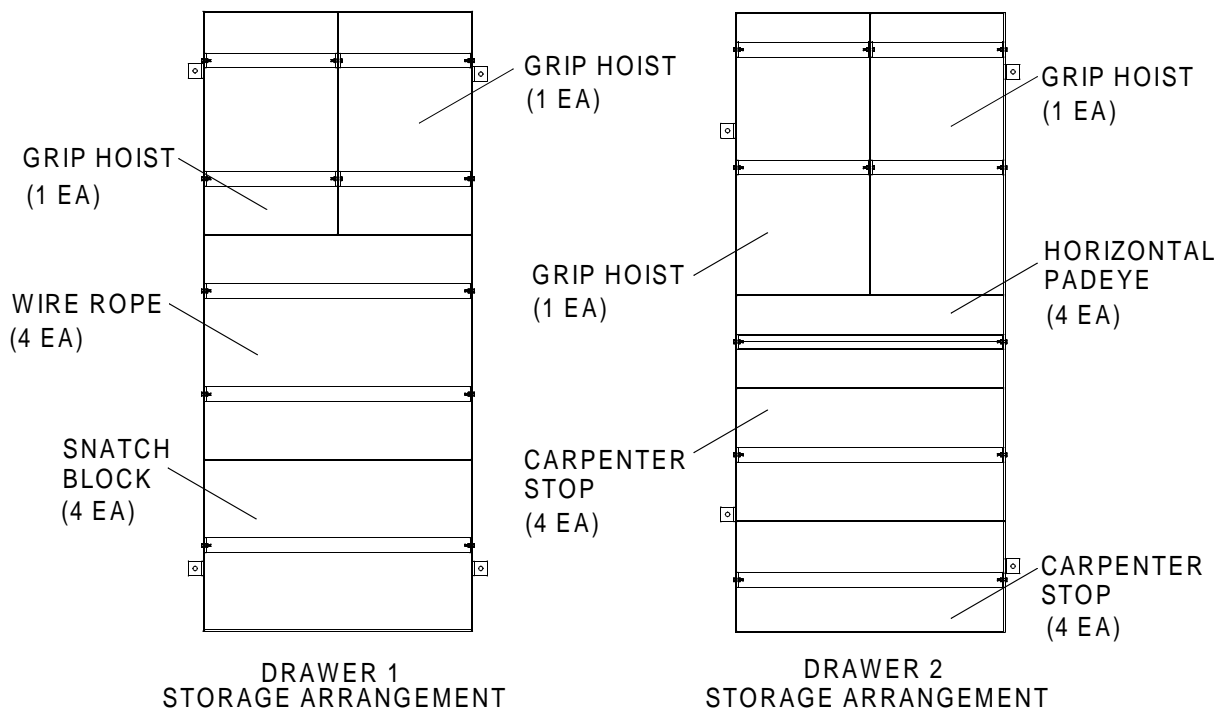
**ANCHOR WIRE ROPE:** Reel onshore wire anchor rope onto reel. Place reels in appropriate reel support brackets on the 1st level of container.



END VIEW

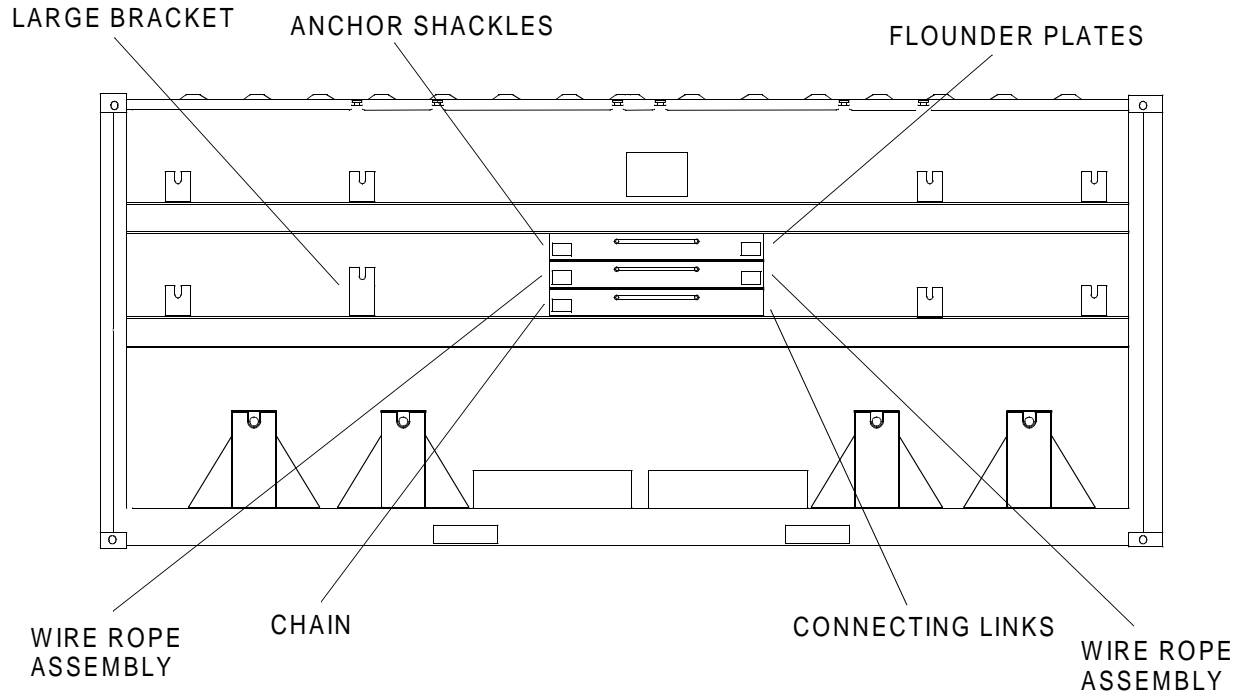
**GRIP HOIST:** Stow grip hoists in appropriately labeled drawers, one grip hoist per drawer.

**SNATCH BLOCKS:** Stow snatch blocks in appropriately labeled drawers, four to a drawer.



**PAIDEYES:** Stow paideyes in appropriately labeled drawers, four to a drawer.

CARPENTER STOPS: Stow carpenter stops in appropriately labeled drawers, four to a drawer.



DRAWER STORAGE ARRANGEMENT

ANCHOR SHACKLES: Stow anchor shackles in appropriately labeled drawers, 20 to a drawer.

FLOUNDER PLATES: Stow flounder plates in appropriately labeled drawers.

CHAINS and SHACKLES: Stow chains (16 each) and 1 3/8 in. shackles (16 each) in appropriately labeled drawers.

WIRE ROPE ASSEMBLIES: Stow wire rope assemblies in appropriately labeled drawers, eight to a drawer.

CONNECTING LINKS: Stow connecting links in appropriately labeled drawer, 50 to a drawer.

### **CAUTION**

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

Close and secure all doors on ISO container.



**OPERATOR MAINTENANCE  
 FLOATING CAUSEWAY  
 BASIC ISSUE ITEMS (BII)  
 STOWAGE**

**INTRODUCTION**

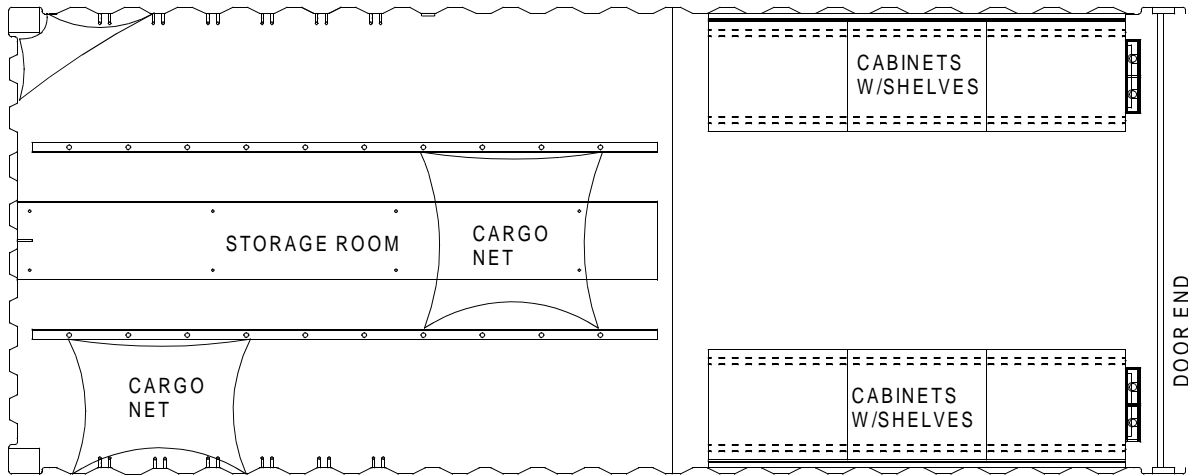
**Scope**

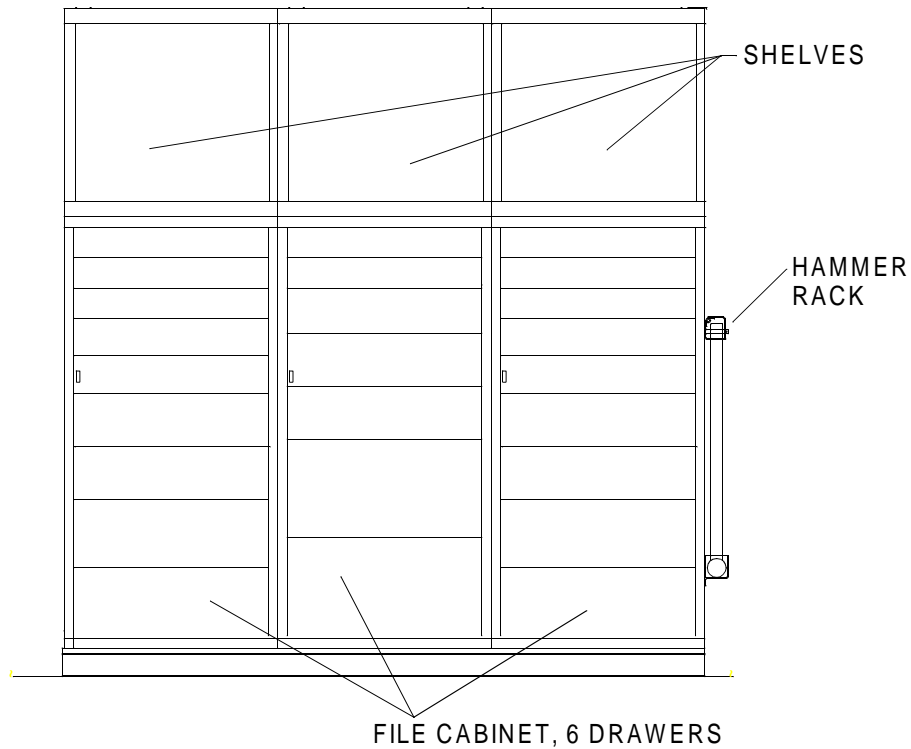
This work package covers stowage of the BII.

**Stowage of BII**

The following procedures are required prior to stowage of the BII:

The BII for the Floating Causeway (FC) is stowed in the BII container. The BII is stowed in the cabinets, storage room and on the shelves. The packing list in the BII container may be consulted for additional information.





DESCRIPTION	QTY	LOCATION
Adaptor, Forklift	2	Storage Room
Assembly, Flexor Receiver Insert Lifting	1	Storage Room
Ax, Pickhead	2	Storage Room on Hooks
Blanket, Fire (72 in. x 60 in.)	1	Storage Room
Block, Snatch (8 in. Diameter)	3	Storage Room
Bridle, Towing	1	Storage Room
Can, Fuel, Military	4	Storage Room
Can, Water, Military	4	Storage Room
Chain Anchor Assembly, Series 1500	15	Storage Room
Chain Sling, Adjustable, 36,000 lbs	4	Storage Room
Chain, Open Link, ½ in. Open Link, 6 ft pieces	74	Drum in Storage Room
Connector, Plug, Electrical (NATO Slave Cable)	1	Storage Room
Corner Fender	8	Storage Room
Cover, Flexor Well	46	Storage Room

DESCRIPTION	QTY	LOCATION
Crowbar	12	Storage Room
Extinguisher, Fire (10 lb)	2	Storage Room
First Aid Kit, General Purpose	1	Cabinets
Flashlight	6	Cabinets
Gloves, Antiflash	18	Cabinets
Gloves, Chemical	6	Cabinets
Gloves, Men's and Women's (Leather Palm)	18	Cabinets
Goggles, Industrial (Chipping)	18	Cabinets
Goggles, Sun, Wind and Dust	18	Cabinets
Hammer, Hand (Sledge)	12	Hammer Rack and Storage Room
Helmet, Safety (Brown)	12	Storage Room on Hooks
Hoist, Wire Rope	2	Storage Room
Hook, Boat	2	Storage Room
Insert, Flexor	4	Storage Room
Kit, Spill	1	Storage Room
Kit, Tarp Repair	1	Cabinets
Ladder, ISOPAK	2	Storage Room
Life Preserver, Vest (Stearns Work Vest)	18	Cabinets
Life Ring with Light and Stanchions	4	Storage Room
Light Set, Towing	2	Shelves
Light, Anchor	30	Storage Room
Lubricating Gun, Hand	2	Cabinets
Marlinspike (16 in.)	16	Cabinets
Meter, Gas Free	1	Cabinets
Mooring Cleat Assembly	8	Storage Room
Pan, Drain	1	Storage Room
Pliers (Combination Wire Cutter)	4	Cabinets
Plug, Ear (Box)	1	Storage Room

DESCRIPTION	QTY	LOCATION
Protector, Hearing	4	Storage Room and Cabinets
Pump, Defueling (With Hoses)	1	Storage Room
Receiver/Xmtr (VHF/FM Handheld Transceiver)	4	Cabinets
Rope, Fibrous, 4 in. Diameter, 3 Strand (Spool)	2	Storage Room
Shackle, ½ in., 2 Ton	8	Cabinets
Shackle, ½ in., With Cotter Pin	236	Cabinets
Shackle, ¾ in., 4.75 Ton	8	Cabinets
Shackle, 1 1/8 in., 21 Ton	8	Cabinets
Shackle, 5/8 in., 3.25 Ton	8	Cabinets
Sling, 20 ft, 8400 lbs (Yellow)	4	Cabinets
Sling, 25 ft, 53,000 lbs (Brown)	8	Storage Room
Sling, 4 ft, 5300 lbs (Green)	4	Cabinets
Sling, 5 ft, 5300 lbs (Green)	4	Cabinets
Sling, 6 ft, 5300 lbs (Green)	4	Cabinets
Spotlight, Hand Held	2	Cabinets
Spout, Can, Flexible	2	Cabinets
Tool, Pin Retraction	2	Storage Room
Twist Locks, Horizontal	176	Drum in Storage Room
Twist Locks, Vertical	376	Drum in Storage Room
Whistle, Ball	24	Cabinets
Work Suit, Stearns	18	Cabinets
Wrench, Pipe (24 in.)	2	Cabinets

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
3 FT X 5 FT AND 5 FT X 10 FT FENDERS  
STOWAGE**

---

## INTRODUCTION

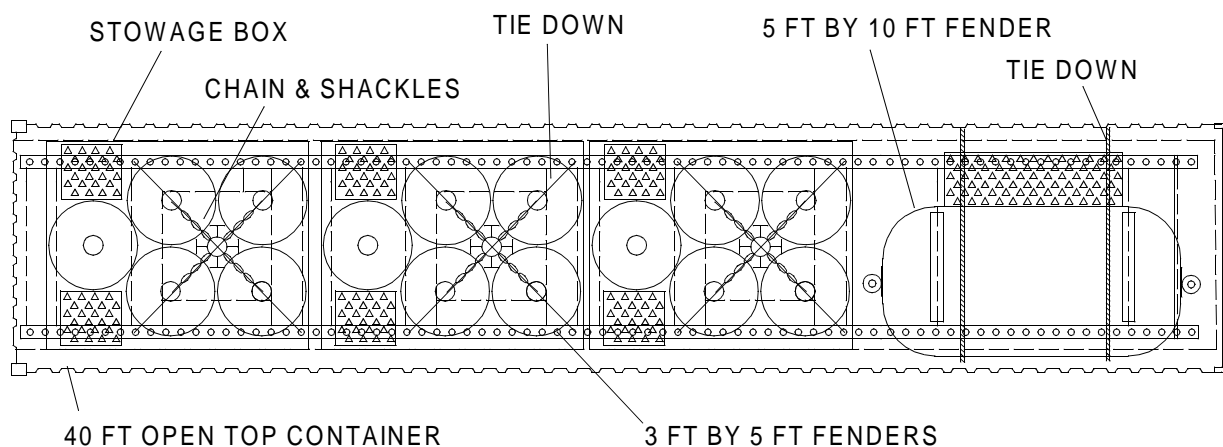
### Scope

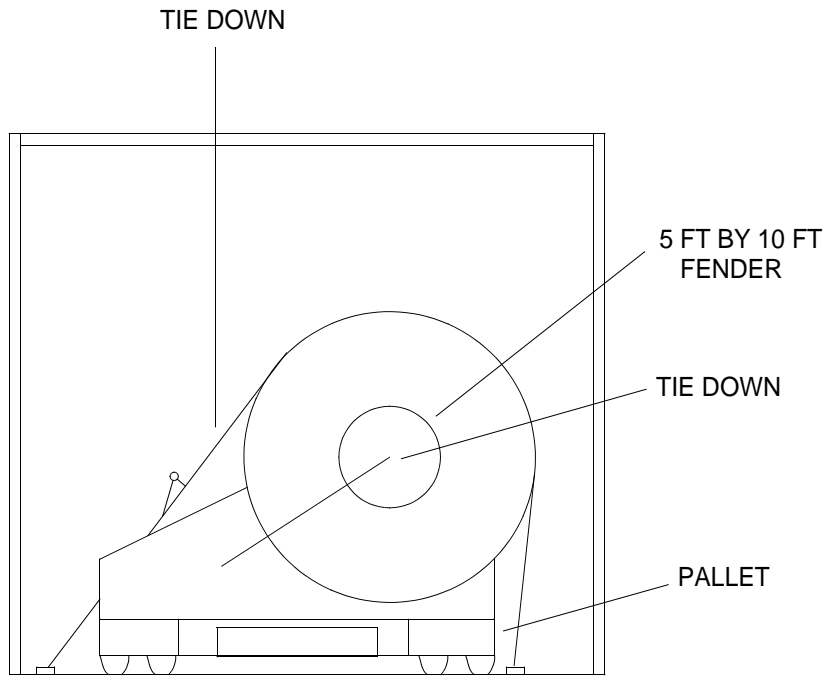
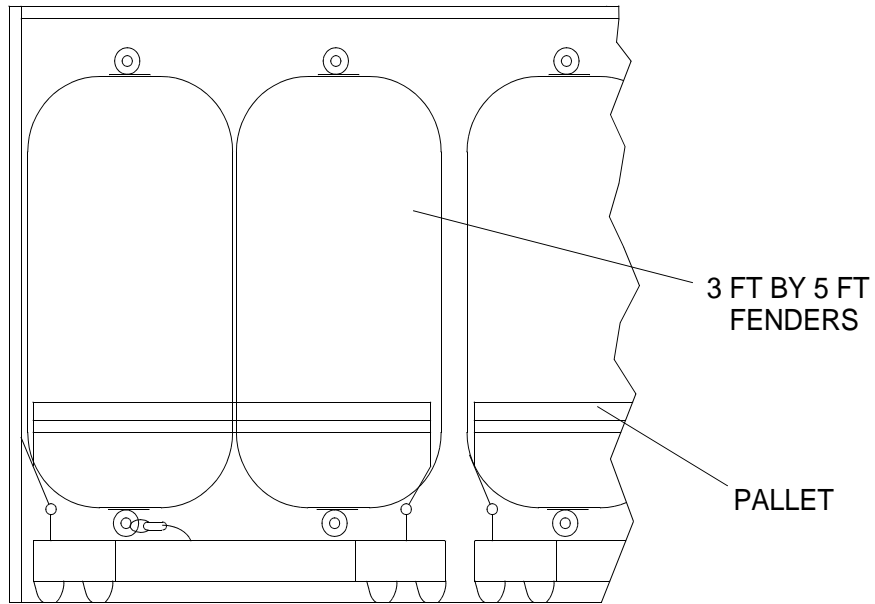
This work package covers stowage of the 3 ft by 5 ft and 5 ft by 10 ft fenders in the 40 ft open top container.

### Stowage of 3 ft by 5 ft and 5 ft by 10 ft Fenders

The following procedures are required prior to stowage of the 3 ft by 5 ft and 5 ft by 10 ft fenders:

The 3 ft by 5 ft fenders are stowed vertically 5 to a pallet with chain and shackles on top of the pallet center pedestals. The pallets with fenders are stowed in the 40 ft open top container and secured to container deck tracks using ratchet strap tie downs. The 5 ft by 10 ft fenders are stowed horizontally one to a pallet and secured to the pallet tie down pad using 2 ratchet straps. The pallet with fender is stowed in the 40 ft open top container and secured to the container deck tracks using 2 ratchet strap tie downs. The 40 ft open top container accommodates fifteen 3 ft by 5 ft fenders and one 5 ft by 10 ft fender.





**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
4 FT BY 12 FT FENDERS  
STOWAGE**

**INTRODUCTION**

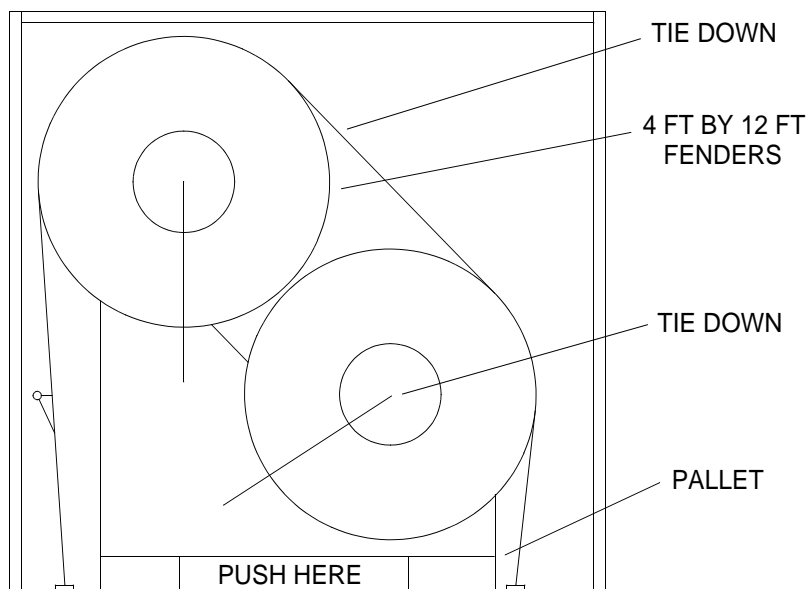
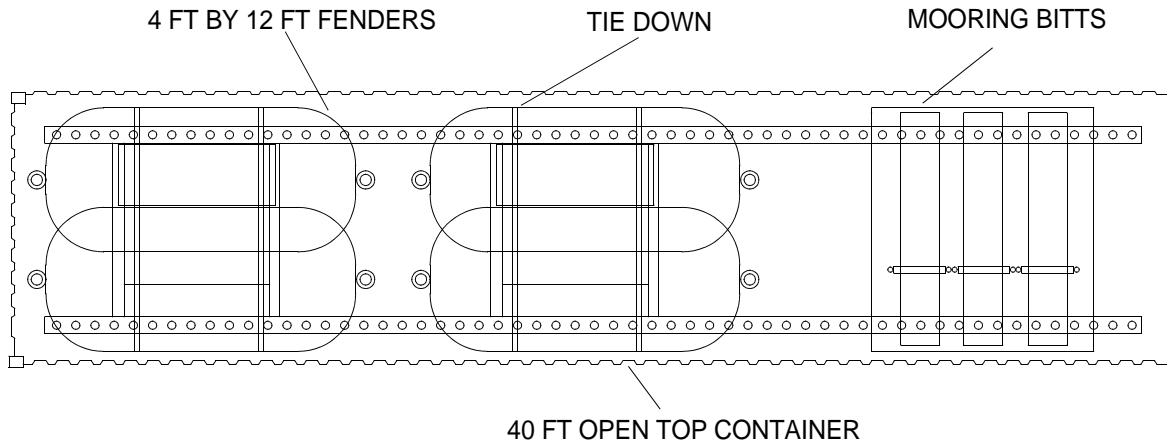
**Scope**

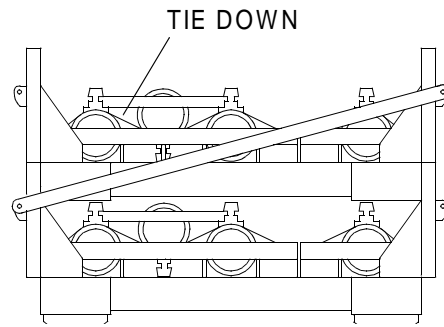
This work package covers stowage of the 4 ft by 12 ft fenders in the 40 ft open top container. Eight mooring bitts are stowed in the same container.

**Stowage of 4 ft by 12 ft Fenders**

The following procedures are required prior to stowage 4 ft by 12 ft fenders:

The 4 ft by 12 ft fenders are stowed horizontally 2 to a pallet. The pallets and fenders are placed in the 40 ft open top container. The fenders are secured to the pallet tie down pads using 4 ratchet strap tie downs per pallet. The pallet and fenders are secured to the container deck tracks using 2 ratchet strap tie downs per pallet. The 40 ft open top container accommodates four 4 ft by 12 ft fenders. In addition, 8 heavy duty mooring bitts are stowed in the container.







**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MOORING BITTS  
STOWAGE**

**INTRODUCTION**

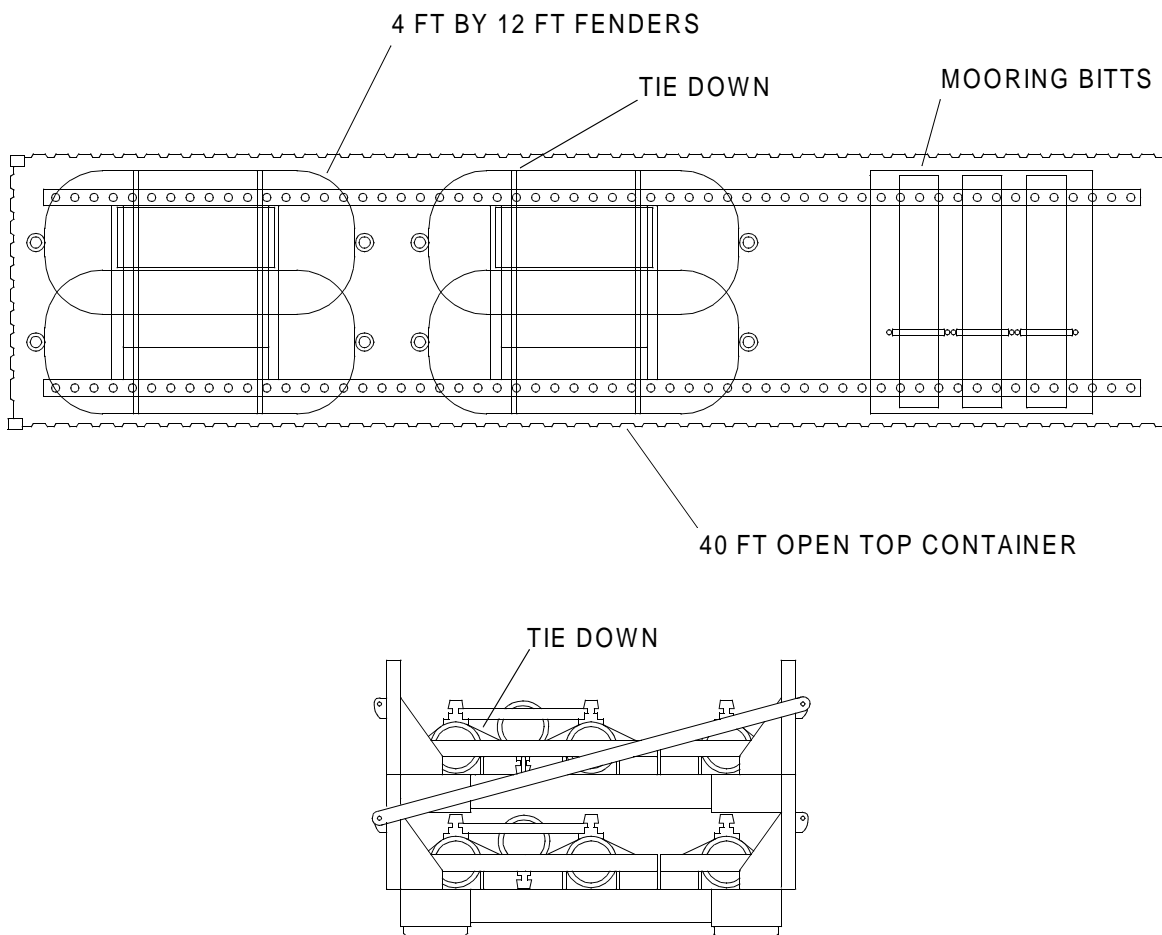
**Scope**

This work package covers stowage of the mooring bitts.

**Stowage of Mooring Bitts**

The following procedures are required prior to stowage of the mooring bitts:

The mooring bitts are stowed 4 to a pallet and secured with ratchet strap tie downs. Once the mooring bitts are placed on the pallets and secured, they are stacked 2 pallets high. The pallets are placed in the 40 ft open end container with the 4 ft by 12 ft fenders. The stack of mooring bit pallets are secured to the container deck tracks with ratchet strap tie downs. The 40 ft open end container accommodates 8 mooring bitts.





**CHAPTER 3**

**OPERATOR TROUBLESHOOTING PROCEDURES  
FOR  
MODULAR CAUSEWAY SYSTEM (MCS)  
FLOATING CAUSEWAY (FC)**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
INDEX  
TROUBLESHOOTING PROCEDURES INDEX**

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**MALFUNCTION/SYMP TOM****TROUBLESHOOTING PROCEDURE****GENERATOR CONTAINER**

DC Lights Will Not Operate	WP 0071 00
Day Tank Fuel Level Indication System Is Inoperative	WP 0072 00
Manual Fuel Transfer Pump Will Not Prime	WP 0073 00
Manual Fuel Transfer Pump Pumps Slowly	WP 0074 00
Manual Fuel Transfer Pump Leaks	WP 0075 00
Electric Fuel Transfer Pump Inoperative	WP 0076 00
Fire Suppression System Inoperative	WP 0077 00

**VHF/FM TRANSCEIVER**

Transceiver Does Not Receive	WP 0083 00
Transceiver Does Not Transmit	WP 0084 00
Transceiver Has No Power	WP 0082 00

**HEATING AND AIR CONDITIONING SYSTEM**

Fan Does Not Operate Continuously	WP 0078 00
Thermostat Does Not Operate System	WP 0079 00
Heater Does Not Produce Warm Air	WP 0080 00

**INCINERATOR TOILET**

Reference Only	WP 0081 00
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**LIGHT TOWER**

Lights Will Not Illuminate	WP 0085 00
Excessive Engine Vibration	WP 0087 00
Engine Fails to Shut Down	WP 0088 00
Engine Has Insufficient Output	WP 0093 00
Engine is Difficult to Start	WP 0092 00
Engine Oil Lamp Lights Up During Operation	WP 0096 00
Engine Overheats	WP 0097 00

**MALFUNCTION/SYMPTOM****TROUBLESHOOTING PROCEDURE****TACTICAL QUIET GENERATOR**

Reference Only	WP 0070 00
Engine Stops Running	WP 0086 00
Engine Suddenly Stops	WP 0094 00
Engine Will Not Start/Run	WP 0089 00
Fluctuating Generator Frequency/Voltage and/or Oscillating Engine Speed	WP 0091 00
Large Quantity of Black Smoke from Engine Exhaust	WP 0095 00
No Generator Output Voltage	WP 0090 00

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
TACTICAL QUIET GENERATOR (REFERENCE ONLY)  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

**References**

TM 9-6115-642-10

TM 9-6115-643-10

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**TROUBLESHOOTING PROCEDURE**

Refer to TM 9-6115-642-10 for 10 KW Tactical Quiet Generator Operating Instructions.

Refer to TM 9-6115-643-10 for 15 KW Tactical Quiet Generator Operating Instructions.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

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**TROUBLESHOOTING PROCEDURE**

DC LIGHTS WILL NOT OPERATE

**SYMPTOM**

DC lights will not illuminate.

**MALFUNCTION**

DC power circuit breaker is tripped.

**CORRECTIVE ACTION**

Reset DC power circuit breaker. (WP 0007 00)

Perform operational check on generator. (WP 0025 00)

**MALFUNCTION**

Light bulb(s) burned out.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

DAY TANK FUEL LEVEL INDICATION SYSTEM IS INOPERATIVE

**SYMPTOM**

Day tank fuel level indication system is inoperative.

**MALFUNCTION**

Fuel level indication system fuse is blown.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

MANUAL FUEL TRANSFER PUMP WILL NOT PRIME

**SYMPTOM**

Manual fuel transfer pump will not prime.

**MALFUNCTION**

Fuel supply is depleted from the 1000 gallon base fuel tank.

**CORRECTIVE ACTION**

Resupply the 1000 gallon base fuel tank. (WP 0026 00)

**MALFUNCTION**

Transfer pump suction line is leaking.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

**MANUAL FUEL TRANSFER PUMP PUMPS SLOWLY**

**SYMPTOM**

Manual fuel transfer pump supplies fuel slowly.

**MALFUNCTION**

Transfer pump screen dirty or clogged.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**





---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

**MANUAL FUEL TRANSFER PUMP LEAKS**

**SYMPTOM**

Manual fuel transfer pump is leaking.

**MALFUNCTION**

Transfer pump seal is dirty.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Engineer 88L

---

**TROUBLESHOOTING PROCEDURE**

ELECTRIC FUEL TRANSFER PUMP INOPERATIVE

**SYMPTOM**

Fuel transfer pump is inoperative.

**MALFUNCTION**

No power to fuel transfer pump.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
GENERATOR CONTAINER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

FIRE SUPPRESSION SYSTEM INOPERATIVE

**SYMPTOM**

Fire suppression system does not work.

**MALFUNCTION**

No continuity in the fire suppression system.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PERSONNEL SHELTER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

FAN DOES NOT OPERATE CONTINUOUSLY WHEN ELECTRICAL POWER IS SUPPLIED TO PERSONNEL SHELTER

**SYMPTOM**

Fan does not operate continuously when electrical power is supplied to personnel shelter.

**MALFUNCTION**

Power switch on the heating and air conditioning unit is not turned on.

**CORRECTIVE ACTION**

Turn on power switch on unit. (WP 0007 00)

Perform operational check of heating and air conditioning system. (WP 0029 00)

**MALFUNCTION**

Heating and cooling circuit breaker is not engaged on personnel shelter electrical distribution panel board.

**CORRECTIVE ACTION**

Engage heating and cooling circuit breaker on the circuit breaker panel. (WP 0007 00)

Perform operational check of heating and air conditioning system. (WP 0029 00)

**MALFUNCTION**

No power applied to the heating and air conditioning system.

**CORRECTIVE ACTION**

Check the external shore tie connection from the generator container to the personnel shelter.

Perform operational check of heating and air conditioning system. (WP 0029 00)

If connection is mated properly, contact unit maintenance.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PERSONNEL SHELTER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

THERMOSTAT DOES NOT OPERATE SYSTEM

**SYMPTOM**

Thermostat does not operate heating and cooling system.

**MALFUNCTION**

Selector switch is in the OFF mode.

**CORRECTIVE ACTION**

Move selector switch to either COOL or HEAT mode. (WP 0007 00)

Perform operational check of heating and air conditioning system. (WP 0029 00)

**MALFUNCTION**

Heating and cooling circuit breaker is not engaged on personnel shelter electrical distribution panel board.

**CORRECTIVE ACTION**

Engage heating and cooling circuit breaker on the electrical distribution panel board. (WP 0007 00)

Perform operational check of heating and air conditioning system. (WP 0029 00)

**MALFUNCTION**

No power applied to heating and cooling system.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
HEATING AND AIR CONDITIONING SYSTEM  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

HEATER DOES NOT PRODUCE WARM AIR

**SYMPTOM**

The heater is not producing warm air.

**MALFUNCTION**

The primary limit switch is not operating properly.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PERSONNEL SHELTER INCINERATOR TOILET  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

**References**

TM 55-1925-257-14&P

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**TROUBLESHOOTING PROCEDURE**

INCINERATOR TOILET - REFERENCE ONLY

Refer to Incinerator Toilet/Urinal Galley/Water Heater **TM 55-1925-257-14&P**.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
VHF/FM TRANSCEIVER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

TRANSCEIVER HAS NO POWER

**SYMPTOM**

Transceiver has no power.

**MALFUNCTION**

Transceiver power/volume knob is turned off.

**CORRECTIVE ACTION**

Turn the power/volume knob clockwise to turn the transceiver on. (WP 0031 00)

**MALFUNCTION**

Battery is discharged.

**CORRECTIVE ACTION**

Remove battery. Install a fully charged battery. (WP 0031 00)

**END OF WORK PACKAGE**





---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
VHF/FM TRANSCEIVER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

TRANSCEIVER DOES NOT RECEIVE

**SYMPTOM**

Transceiver does not receive.

**MALFUNCTION**

Transceiver has no power.

**CORRECTIVE ACTION**

Troubleshoot transceiver for no power. (WP 0082 00)

**MALFUNCTION**

Low battery indicator is displayed on transceiver.

**CORRECTIVE ACTION**

Remove battery. Install a fully charged battery. (WP 0031 00)

**MALFUNCTION**

Transceiver antenna is damaged or missing.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
VHF/FM TRANSCEIVER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

TRANSCEIVER DOES NOT TRANSMIT

**SYMPTOM**

Transceiver does not transmit.

**MALFUNCTION**

Transceiver has no power.

**CORRECTIVE ACTION**

Turn the power/volume knob clockwise to turn the transceiver on. (WP 0031 00)

**MALFUNCTION**

Low battery indicator is displayed on transceiver.

**CORRECTIVE ACTION**

Remove battery. Install a fully charged battery. (WP 0031 00)

**MALFUNCTION**

Transceiver antenna is damaged or missing.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

LIGHTS WILL NOT ILLUMINATE

**SYMPTOM**

Light(s) on tower assembly do not illuminate.

**MALFUNCTION**

MAIN BREAKER on control panel is off.

**CORRECTIVE ACTION**

Position MAIN BREAKER to on. (WP 0007 00)

**MALFUNCTION**

LAMP toggle switch(s) on control panel is off.

**CORRECTIVE ACTION**

Position control panel LAMP toggle switch(s) to on. (WP 0007 00)

**MALFUNCTION**

Light tower junction box electrical cable is not plugged into 125V receptacle.

**CORRECTIVE ACTION**

Connect light tower junction box electrical cable into 125V receptacle. (WP 0023 00)

**MALFUNCTION**

Light(s) power cable is not plugged into electrical system junction box.

**CORRECTIVE ACTION**

Connect light(s) power cable into electrical system junction box. (WP 0023 00)

**MALFUNCTION**

Light bulb(s) is defective.

**CORRECTIVE ACTION**

Replace light bulb. Contact unit maintenance.

**MALFUNCTION**

Light tower light(s) still will not illuminate.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

ENGINE STOPS RUNNING

**SYMPTOM**

Engine shutdown.

**MALFUNCTION**

Unit out of fuel.

**CORRECTIVE ACTION**

Check unit fuel level and refuel. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine coolant temperature too high.

**CORRECTIVE ACTION**

Check the engine coolant level and add as required. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine oil level low.

**CORRECTIVE ACTION**

Check the engine oil level and add as required. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine fuel filter clogged.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**





---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE****EXCESSIVE ENGINE VIBRATION****SYMPTOM**

Light tower engine has excessive vibration.

**MALFUNCTION**

Engine fuel filter clogged.

**CORRECTIVE ACTION**

Drain fuel filter bowl. (WP 0099 00)

**MALFUNCTION**

Engine rubber mounts are damaged.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

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**TROUBLESHOOTING PROCEDURE**

ENGINE FAILS TO SHUTDOWN

**SYMPTOM**

Engine cannot be shutdown.

**MALFUNCTION**

Faulty engine oil pressure switch.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

ENGINE WILL NOT START/RUN

**SYMPTOM**

Light tower engine will not start/run.

**MALFUNCTION**

Unit is out of fuel.

**CORRECTIVE ACTION**

Refuel the unit. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine coolant temperature is too high.

**CORRECTIVE ACTION**

Check the engine coolant level and add as required. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Low oil pressure.

**CORRECTIVE ACTION**

Check the engine oil level and add as required. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Clogged engine fuel filters.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Loose wire connections.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

NO GENERATOR OUTPUT VOLTAGE

**SYMPTOM**

No generator output voltage.

**MALFUNCTION**

Main circuit breaker is in the OFF position.

**CORRECTIVE ACTION**

Turn the main circuit breaker to the ON position. (WP 0032 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Receptacle circuit breaker is in the OFF position.

**CORRECTIVE ACTION**

Use PUSH TO RESET button to restore the receptacle circuit breaker. (WP 0032 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Electrical output overload.

**CORRECTIVE ACTION**

Reduce electrical output. (WP 0032 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Loose wire connections.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Low engine power.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

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**TROUBLESHOOTING PROCEDURE**

FLUCTUATING GENERATOR FREQUENCY/VOLTAGE AND/OR OSCILLATING ENGINE SPEED

**SYMPTOM**

Fluctuating generator frequency/voltage and/or oscillating engine speed.

**MALFUNCTION**

Light tower unit is not level.

**CORRECTIVE ACTION**

Reposition unit so that it is level. (WP 0023 00)

**MALFUNCTION**

Main circuit breaker is in the OFF position.

**CORRECTIVE ACTION**

Turn the main circuit breaker to the ON position. (WP 0007 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Ambient temperature is greater than 125° Fahrenheit (52° Celsius).

**CORRECTIVE ACTION**

Do not operate light tower.

**MALFUNCTION**

There is an electrical output overload.

**CORRECTIVE ACTION**

Reduce electrical output. (WP 0032 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine fuel filters are clogged.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Engine air filter element is dirty.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

ENGINE IS DIFFICULT TO START

**SYMPTOM**

Engine is difficult to start.

**MALFUNCTION**

Engine fuel filter is contaminated with water or other debris.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Air in the fuel system.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

ENGINE HAS INSUFFICIENT OUTPUT

**SYMPTOM**

Engine has little or no power.

**MALFUNCTION**

Unit is low on fuel.

**CORRECTIVE ACTION**

Check unit fuel level and refuel. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine oil level is low.

**CORRECTIVE ACTION**

Check engine oil level and add as required. (WP 0099 00)

Perform operational check of light tower. (WP 0034 00)

**MALFUNCTION**

Engine fuel filter is contaminated with water or debris.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Air in the fuel system.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Engine still has little or no power.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

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**TROUBLESHOOTING PROCEDURE**

## ENGINE SUDDENLY STOPS

**SYMPTOM**

Engine suddenly stopped.

**MALFUNCTION**

Unit is low on fuel.

**CORRECTIVE ACTION**

Check unit fuel level and refuel. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine oil level is low.

**CORRECTIVE ACTION**

Inspect and service engine oil system as required. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine fuel filter is contaminated with water or debris.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Air in the fuel system.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:**

**Personnel Required**

Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

LARGE QUANTITY OF BLACK SMOKE FROM ENGINE EXHAUST

**SYMPTOM**

Large quantity of black smoke from engine exhaust.

**MALFUNCTION**

Poor quality of fuel.

**CORRECTIVE ACTION**

Contact unit maintenance

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

ENGINE OIL LAMP LIGHTS UP DURING OPERATION

**SYMPTOM**

Engine oil lamp lights up during operation.

**MALFUNCTION**

Engine oil level is low.

**CORRECTIVE ACTION**

Inspect and service engine oil system. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine oil lamp still lights up during operation.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
LIGHT TOWER ENGINE  
TROUBLESHOOTING PROCEDURES**

---

**INITIAL SETUP:****Personnel Required**Seaman 88K

---

**TROUBLESHOOTING PROCEDURE**

## ENGINE OVERHEATS

**SYMPTOM**

Engine overheats.

**MALFUNCTION**

Engine radiator coolant level is too low.

**CORRECTIVE ACTION**

Inspect and service engine radiator coolant system. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Engine oil level is low.

**CORRECTIVE ACTION**

Inspect and service engine oil system. (WP 0099 00)

Perform operational check of light tower. (WP 0032 00)

**MALFUNCTION**

Fuel is of poor quality.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Engine radiator fins are clogged.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Fan belt is loose or broken.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Fan is defective.

**CORRECTIVE ACTION**

Contact unit maintenance.

**MALFUNCTION**

Engine is leaking water.

**CORRECTIVE ACTION**

Contact unit maintenance.

**END OF WORK PACKAGE**

**CHAPTER 4**

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





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)  
PROCEDURES INTRODUCTION**

---

**INTRODUCTION****General**

Preventive Maintenance Checks and Services (PMCS) are performed to keep the floating causeway 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. Preventative maintenance checks and services are performed every day the equipment is operated, using the PMCS table.

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 list 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**


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**CAUTION**

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**Equipment operation is allowed with minor leakages (Class I or II), except for fuel leaks. Of course, consideration must be given to the fluid capacity of the item or system being checked. When in doubt, ask your supervisor. Failure to maintain proper fluid levels could result in damage to equipment.**

When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS.

Class III leaks should be reported immediately to your supervisor.

It is necessary to know how fluid leakage affects the status of the equipment. The following are definitions of the classes of leakage an operator or crew member needs to know to be able to determine the condition of the leak. Learn and then be familiar with them and REMEMBER - WHEN IN DOUBT, ASK YOUR SUPERVISOR.

Leakage definitions for Crew/Operator PMCS.

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

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CLASS II - Leakage of fluid great enough to form drops, but not enough to cause drops to drip from item being checked.

CLASS III - Leakage of fluid great enough to form drops that fall from the item being checked.

### **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:

1. 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.
2. 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.
3. 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.
4. 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 or long periods of hard use will break down the lubricant, requiring you to add or change lubricant more often.

### **Lubrication Interval Symbols**

The following lubrication interval symbols are used in the PMCS table:

D - daily	W - weekly
M - monthly	Q - quarterly
S - semiannually	H - hours operated
A - annually	

---

**Lubrication Symbols**

The following lubrication symbols are used in the PMCS table:

PE-15/40-1 - Lubricating Oil, Internal Combustion Engine, Preservative and Break-In, Grade 15W/40, Temperature range -25 to +150F.

LUBRIPLATE - Grease, wire rope, exposed gear, 1200-2, MIL-G-18458.

Anti-Freeze, Multi-Engine Type P/N A-A-52624

**Oil Filters**

Oil filters shall be serviced/cleaned/changed, as applicable, at prescribed hard time intervals.

**Army Oil Analysis Program (AOAP)**

The components of the FC are not enrolled in the Army Oil Analysis Program. Hardtime intervals apply.

**Warranty Information**

For equipment under manufacturer's warranty, hard time 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 period or extreme dust.

**Cleaning And Lubrication**

Proper cleaning and lubrication can aid in avoiding possible problems or trouble, so make it a habit to do the following:

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**CAUTION**

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**Follow all cleaning and lubrication instructions carefully, failure to do so can result in damage to equipment.**

1. Thoroughly wash all equipment exposed to salt spray with clean, fresh water.
2. Clean parts to be lubricated with dry cleaning cleaner, type II, MIL-C-29602, or equivalent. Do not use fluid or semi-fluid lubricant on SFD coated surface. Wipe surface dry before lubricating.
3. Clean grease fittings before lubrication.
4. Lubricate all equipment at conclusion of the operation before equipment storage.
5. Always use the PMCS lubrication instructions as a guide.
6. Never use too much lubricant.
7. Never use the wrong type or grade of lubricant.
8. Lubricate more during constant use and less during inactive periods.
9. Use the correct grade of lubricant for seasonal temperature expected.

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**Corrosion Prevention And Control (CPC)**

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

1. Corrosion is typically associated with rusting of metals or galvanic corrosion which produces a white powder. The category of corrosion also includes deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of the materials may be a corrosion problem.
2. 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.

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)  
AND LUBRICATION PROCEDURES**

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**INITIAL SETUP:****Tools**

Tool Kit, General Mechanic's (Rail and Marine) (Item 7, WP 0106 00)  
Life Preserver, Vest (Item 31, WP 0104 00)  
Gloves, Men's and Women's (Leather Palm) (Item 23, WP 0104 00)  
Goggles, Sun, Wind and Dust (safety) (Item 25, WP 0104 00)  
Helmet, Safety (Item 27, WP 0104 00)  
Gloves, Chemical (Item 22, WP 0104 00)  
Goggles, Industrial (chipping, chemical) (Item 24, WP 0104 00)  
Lubricating Gun, Hand (Item 34, WP 0104 00)  
Apron, Utility (Item 1, WP 0106 00)  
Gage, Tire Pressure (10 - 50 PSI) (Item 2, WP 0106 00)  
Mop (Item 3, WP 0106 00)  
Oiler, Hand (Item 4, WP 0106 00)  
Shovel, Hand (Item 6, WP 0106 00)

**Materials/Parts**

Antifreeze, Multi-Engine Type (Item 1, WP 0105 00)  
Antiseize Compound (Item 2, WP 0105 00)  
Cleaner, Type II (Item 5, WP 0105 00)  
Corrosion, Preventive Compound, Class I, Grade II, (Item 6, WP 0105 00)  
Corrosion, Preventive Compound, Class I, Grade II, (Item 7, WP 0105 00)  
Diesel, Fuel, Summer Grade (Item 8, WP 0105 00)  
Grease, Aircraft, General Purpose, (Mobil Grease 28) (Item 10, WP 0105 00)  
Grease, General Purpose (Lubriplate TU) (Item 11, WP 0105 00)  
Grease, Wire Rope, Exposed (Item 12, WP 0105 00)  
Lubricating Oil, Gear Grade 15W40 (Item 13, WP 0105 00)  
Lubricating Oil, 80w90 Grade (Item 14, WP 0105 00)  
Rag, Wiping (Item 16, WP 0105 00)  
Water, Distilled, 5 Gallon (Item 18, WP 0105 00)

**Personnel Required**

Seaman 88K  
Engineer 88L

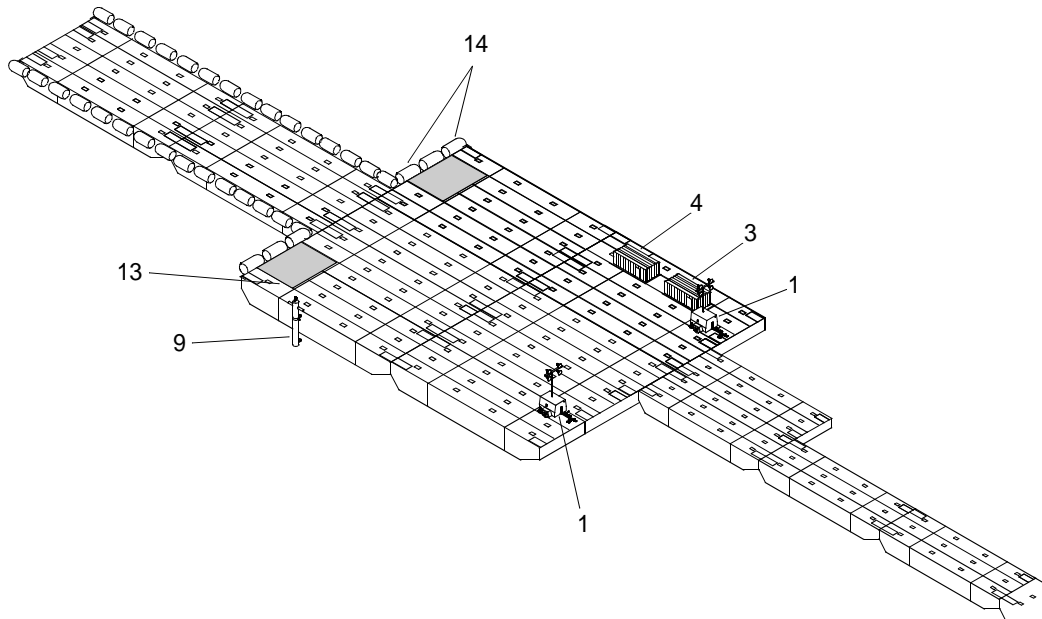
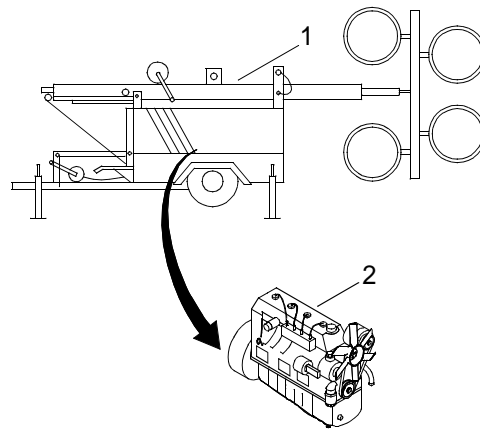
**References**

TM 55-1925-257-14&P  
TM 9-6115-642-10  
29 CFR  
46 CFR

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1. Light Tower
2. Light Tower Engine
3. Generator Container
4. Personnel Shelter
5. Onshore Anchor Container
6. Onshore Mooring System
7. Offshore Anchor Container
8. Offshore Anchor Mooring System
9. Mooring Bitts
10. Towing Bridle
11. Towing Interface
12. Towing Lights
13. Dunnage Mats
14. Fenders
15. Stanchions and Life Ring
16. Deck Fittings
17. Lift Shackles
18. Flexors
19. Non-Powered Modules
20. Lifting Slings
21. Module Interlock Connector (Male Locking Pins)
22. Horizontal and Vertical Connectors
23. Steel Weight Lifting Chains, Rings, Hooks, Shackles and Swivels

ITEMS 5, 6, 7, 8, 10, 11, 12,  
20 AND 23 NOT SHOWN



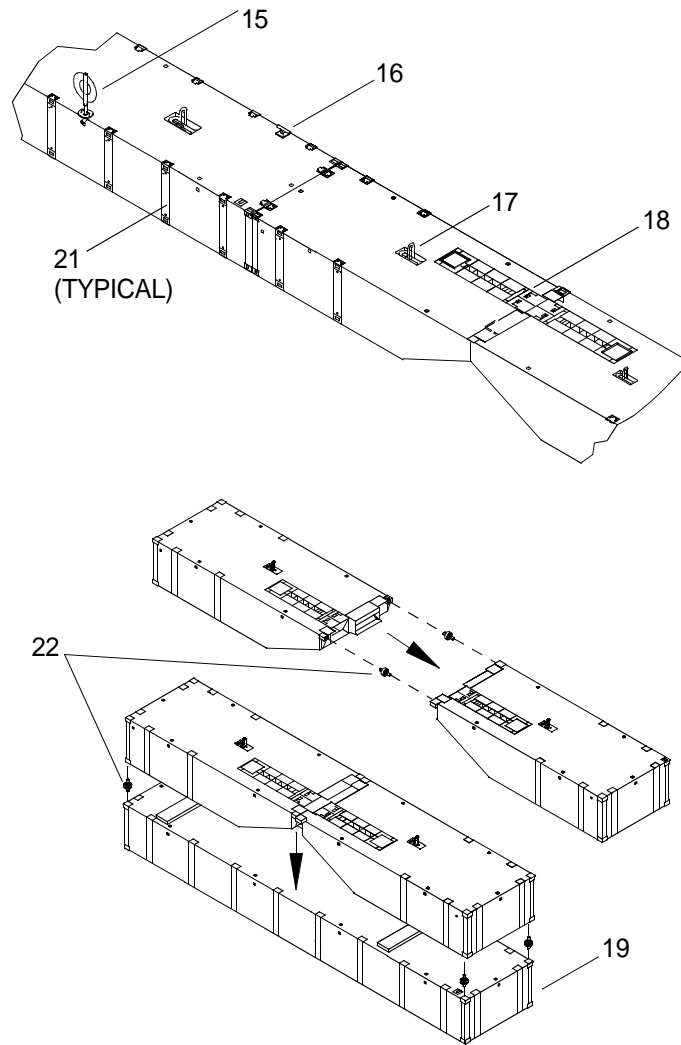


Table 1. Preventive Maintenance Checks and Services.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before	.1	Light Tower	1. Check winch cables to ensure that the 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. If locking pins are missing, contact unit maintenance.	

**Table 1. Preventive Maintenance Checks and Services. (Continued)**

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before	.1	Light Tower (Cont'd)	<p>4. Check for flat or dry rotted tires. Check tire inflation with tire pressure gage. Tires should be inflated to 32 PSI. If tires are flat or dry rotted, contact unit maintenance.</p> <div> </div> <p>5. Check the electrical control compartment for damaged or burned wiring. If wiring is damaged or burned, contact unit maintenance.</p> <p>6. Check for damaged or faded warning and caution decals. decals are damaged or faded, contact unit maintenance.</p> <p>7. Clear the air vents of obstructions.</p> <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>	



Table 1. Preventive Maintenance Checks and Services. (Continued)


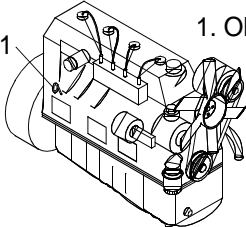
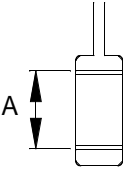
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before	.1	Light Tower (Cont'd)	11. Check all accessible fuse terminal blocks and connections to see that they are securely connected and supported, that insulation is not cracked or chafed and that 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>WARNING</p>					
					
<p>EYE PROTECTION</p>					
2	Before	.4	Light Tower Engine	<p>1. Check the engine oil level.</p> <p>a. Verify that it registers FULL on the dipstick. Engine must be cool when reading level. If hot, allow to cool for 20 minutes. If necessary, add Lubricating Oil, Internal Combustion Engine, Grade 15W40 to achieve desired level. <b>DO NOT OVERFILL.</b> Use a rag to wipe any spillage that may occur.</p>	
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div>  <p>1. OIL LEVEL GAUGE</p> </div> <div>  </div> <div> <p>A: ENGINE OIL LEVEL WITHIN THIS RANGE IS PROPER</p> </div> </div>					
				<p>b. Make a visual inspection for oil leaks around the filters and the external oil lines. If oil leaks are found, contact unit maintenance.</p>	Class III oil leaks are found.

Table 1. Preventive Maintenance Checks and Services. (Continued)








ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> <div style="text-align: center;">  <p>FIRE</p> </div> <div style="text-align: center;">  <p>SLICK FLOOR</p> </div> </div> <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>					
2	Before	.4	Light Tower Engine (Cont'd)	<p>2. Check fuel system.</p> <p>a. Check for leaks around fuel tank and fuel lines. If leaks are found, contact unit maintenance.</p> <p>b. 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>Class I fuel leakage is found.</p> <p>Class I fuel leakage is found.</p>
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>FIRE</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> </div>					
				<p>c. Verify fuel tank is full by checking sight level or using a fuel stick. If necessary, add fuel. DO NOT OVER FILL. Service with diesel fuel, Summer Grade, DF-2 from -25°F to +150°F. Tank capacity is 30 gallons (114 liters). Fill to 95%.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)







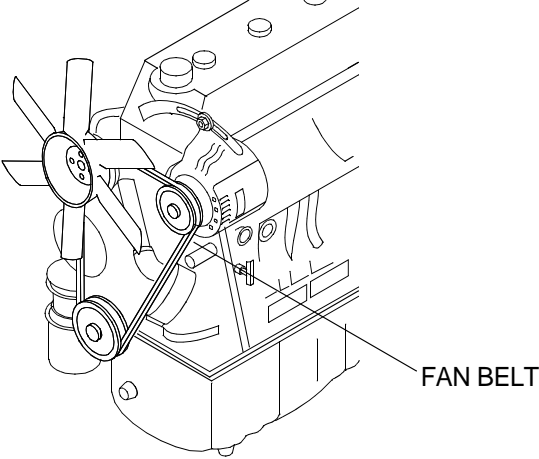
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<hr/> <p>WARNING</p> <hr/> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> <div style="text-align: center;">  <p>POISON</p> </div> </div>					
2	Before	.4	Light Tower Engine (Cont'd)	<p>3. Check cooling system.</p> <p style="padding-left: 20px;">a. Check cooling system fluid level. Add coolant as necessary. Service with antifreeze.</p> <p style="padding-left: 20px;">b. Check all coolant hoses for leakage. If leakage is found, contact unit maintenance.</p> <p>4. Check for missing or damaged components. If components are damaged or missing, contact unit maintenance.</p> <p>6. Check for cut, frayed or damaged electrical wiring. If electrical wiring is cut, frayed or damaged, contact unit maintenance.</p>	Class III coolant leaks are found.
<hr/> <p>WARNING</p> <hr/> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>FIRE</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> </div> <p><b>Do not reverse battery polarity. Reversing polarity may cause explosion or sudden discharge of electrolyte. Failure to comply could result in injury or death.</b></p>					
				<p>7. Inspect battery system for damage. If battery is damaged, contact unit maintenance.</p> <p style="padding-left: 20px;">a. Check electrolyte level in battery. Level should be above plates in cells. Add distilled water as necessary.</p>	<p>Battery will not start light tower.</p> <p>Battery will not start light tower.</p>

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Before	.4	Light Tower Engine (Cont'd)	<p>b. Ensure all battery cable clamps and hold downs are tight. Make sure all are secure and free of corrosion. If battery cable clamps and hold downs are loose or corroded, contact unit maintenance.</p> <p>9. Check fan belts for looseness or fraying. Fan belt should not move more than ½ 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.
					
3	Before	.2	Generator Container	<ol style="list-style-type: none"> <li>1. Check exterior of container for damage. If damage is found, contact unit maintenance.</li> <li>2. Check personnel access door for proper operation. If door does not operate properly, contact unit maintenance.</li> <li>3. Check AC lighting system for operation and burned out bulbs. If lights do not operate or bulbs are burned out, contact unit maintenance.</li> </ol>	

**Table 1. Preventive Maintenance Checks and Services. (Continued)**

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
3	Before	.2	Generator Container (Cont'd)	4. Check DC lighting system for operation and burned out bulbs. If lights do not operate or bulbs are burned out, contact unit maintenance.	

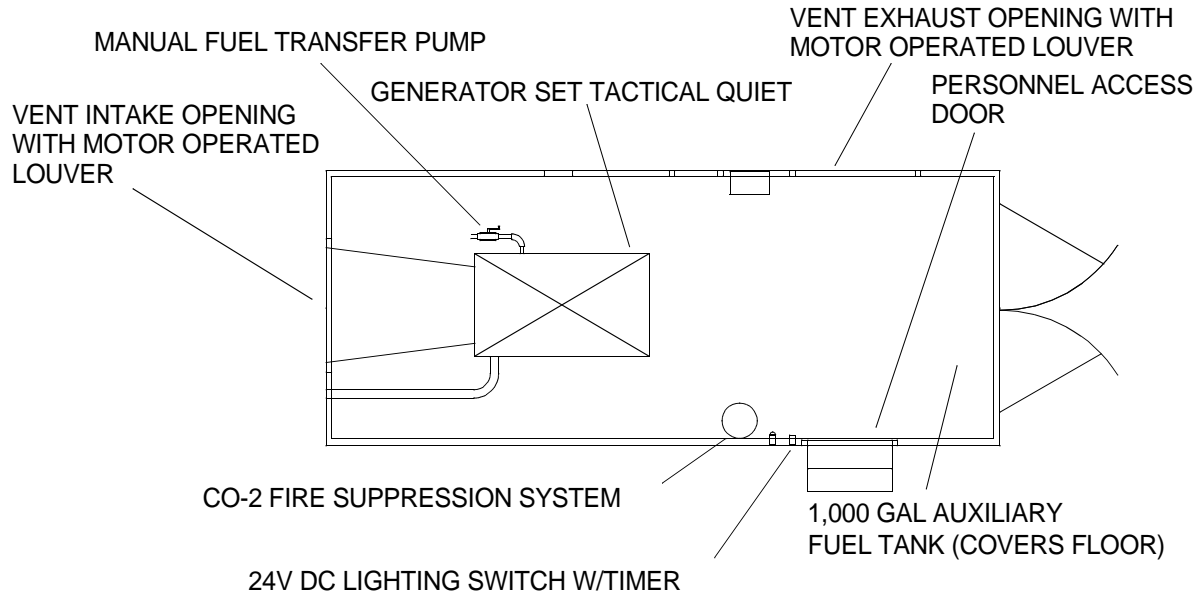


Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p><b>WARNING</b></p> <p><b>Use extreme care when inspecting or servicing. Failure to comply could result in injury or death.</b></p>					
3	Before	.2	Generator Container (Cont'd)	<p>5. Check fire suppression system for proper operation. (WP 0028 00)</p> <p>a. Power light should be lit on control panel. (WP 0007 00) If LED is not lit, contact unit maintenance.</p>	
				<p>b. 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>	

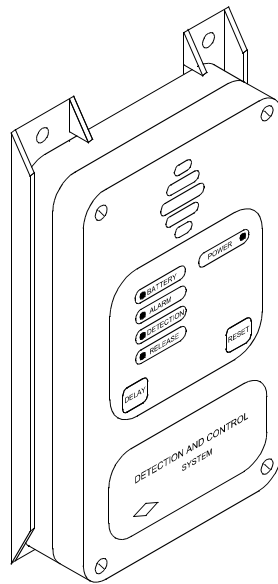


Table 1. Preventive Maintenance Checks and Services. (Continued)








ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p><b>WARNING</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>FIRE</b> </div> <div style="text-align: center;">   <b>SLICK FLOOR</b> </div> </div> <p><b>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 or death to personnel.</b></p>					
3	Before	.2	Generator Container (Cont'd)	<p>6. 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 style="margin-left: 20px;">a. Check for leaks around fuel tank and fuel lines. If evidence of fuel leakage is found, contact unit maintenance.</p> <p style="margin-left: 20px;">b. 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>Class I fuel leakage is found.</p> <p>Class I fuel leakage is found.</p> <p>Class I fuel leakage is found.</p>
<p><b>WARNING</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>FIRE</b> </div> </div>					
				<p>c. Verify fuel tank is full by checking capacity lamps or using a fuel stick. If necessary, add fuel. <b>DO NOT OVER FILL.</b> Service with diesel fuel, W-F-800 DF-2 from -25°F to +150°F. Tank capacity is 1000 gallons. Fill to 95%.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
3	Before	.2	Generator Container (Cont'd)	<p>7. Inspect portable fire extinguisher for discharge nozzle obstruction, proper mounting, tag signed within the 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>8. Perform PMCS on generator. (TM 9-6115-642-10)</p>	Fire extinguisher is inoperative.
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 for proper operation. If door does not operate properly, contact unit maintenance.</p> <p>3. Check personnel escape scuttle seals and latches for damage. If scuttle seals or latches are damaged, contact unit maintenance.</p> <p>4. Inspect portable fire extinguisher for discharge nozzle obstruction, proper mounting, tag signed within the 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.</p> <p>5. Check shelter lighting for operation and burned out bulbs. If lighting does not operate or bulbs are burned out, contact unit maintenance.</p> <p>6. Check heating and air conditioning system for proper operation. (WP 0029 00) If heating and air conditioning system does not operate, contact unit maintenance.</p>	Fire extinguisher is inoperative.



Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Before	.1	Personnel Shelter (Cont'd)	<p>7. Check incinerator toilet for proper operation. (TM 55-1925-257-14&amp;P) If incinerator toilet does not operate, contact unit maintenance.</p> <p>8. Functionally test battle lantern for proper operation. If battle lantern does not operate, contact unit maintenance</p>	
				<p>9. Check for damaged or missing handheld transceiver batteries. If damage is found or batteries are missing, contact unit maintenance.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Before	.1	Personnel Shelter (Cont'd)	<p>10. Check for missing or damaged handheld transceiver knobs. If damage is found or knobs are missing, contact unit maintenance</p> <p>11. Check for handheld transceiver damage that would prevent operation. If damage is found, contact unit maintenance</p> <p>12. Functionally check handheld transceivers and chargers for proper operation. (WP 0031 00) If handheld transceivers do not operate, contact unit maintenance.</p>	

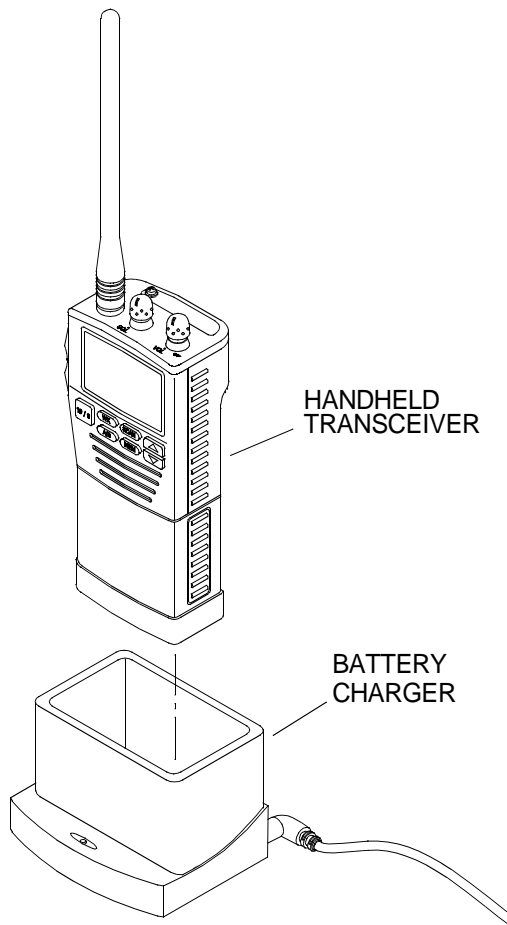


Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
5	Before	.2	Onshore Anchor Container	1. Check exterior of container for damage. If damage is found, contact unit maintenance.	
6	Before	.5	Onshore Mooring System	2. Check cables to ensure that the ends are securely attached. Check cables for fraying and other damage. If cable ends are not securely attached or cables are frayed, contact unit maintenance.  a. Check cables for elongation or broken strands. If cable elongation or broken strand are found, contact unit maintenance.  b. Check cable thimbles and swage fittings for cracking and corrosion. If cable thimbles or swage fittings are cracked or corroded, contact unit maintenance.  2. Check for damage to anchor system components. If anchor system components are damaged, contact unit maintenance.	

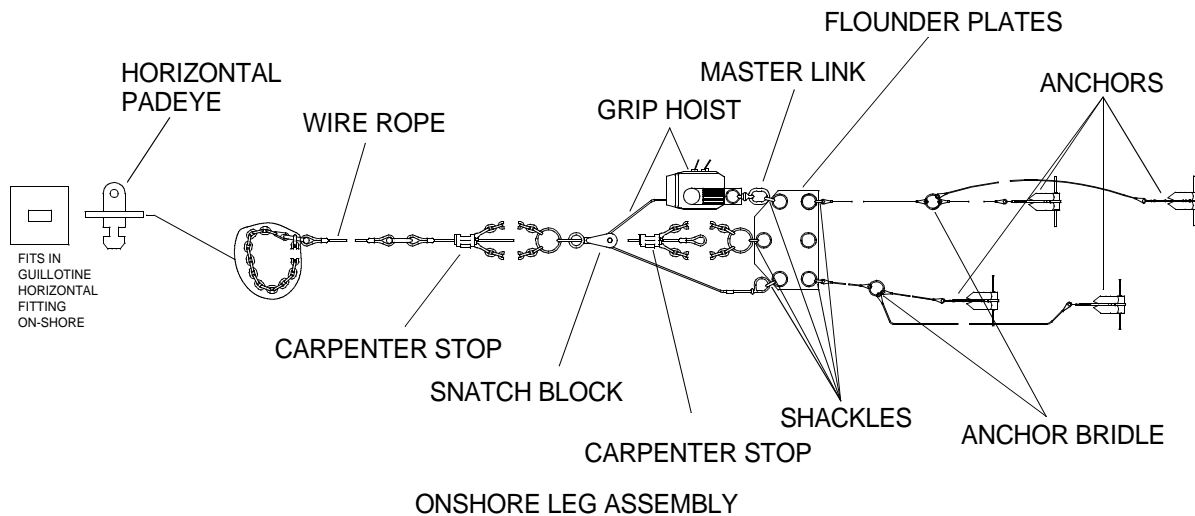


Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
6	Before	.5	Onshore Mooring System (Cont'd)	3. Check grip hoist for damage and loose or missing levers. If damage or loose or missing hardware is discovered, contact unit maintenance.	
<p>The diagram illustrates the components of a grip hoist. It features a main horizontal beam labeled 'GRIP HOIST'. Attached to this beam are several levers: 'OPERATING HANDLE' (a long cylindrical handle), 'REVERSING LEVER', 'RELEASE LEVER', and 'POWER STROKE LEVER'. A 'WIRE ROPE' is shown running through the mechanism, with one end connected to an 'ANCHOR HOOK' and another end extending downwards. A detailed view of the lower part of the hoist shows the 'WIRE ROPE' and its connection to the 'GRIP HOIST'.</p>					
				<p>a. Check release lever, reversing lever and power stroke lever to ensure they move freely and operate as designed. If levers do not operate or move freely, contact unit maintenance.</p> <p>b. Check for corrosion, stress cracks and bent levers. If corrosion, stress cracks or bent levers are found, contact unit maintenance.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
6	Before	.5	Onshore Mooring System (Cont'd)	4. Check flounder plates for elongated holes, loose, damaged or missing hardware. If elongated holes, loose, damaged or missing hardware is discovered, contact unit maintenance.	
				5. Check horizontal pad eyes for cracks, damage or corrosion. If cracks, damage or corrosion is found, contact unit maintenance.	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
6	Before	.5	Onshore Mooring System (Cont'd)	6. Check carpenter stop for loose or missing hardware. If loose or missing hardware is discovered, contact unit maintenance.	
				<p>a. Check latch for proper locking operation. If latch does not lock, contact unit maintenance.</p> <p>b. Check hinges for cracks and looseness. If hinges are loose or cracked, contact unit maintenance.</p> <p>7. Check snatch block for cracks, loose or missing hardware and proper operation of pulley. If cracks or loose or missing hardware is discovered, or pulley will not operate, contact unit maintenance</p> <p>8. Check anchor swivels and shackles for wear, distortion and corrosion. Check for missing or improperly installed cotter pins. If distortion, corrosion, wear is found or cotter pin are missing or improperly installed, contact unit maintenance.</p>	
7	Before	.2	Offshore Anchor Container	Check exterior of container for damage. If damage is found, contact unit maintenance.	

Table 1. Preventive Maintenance Checks and Services. (Continued)

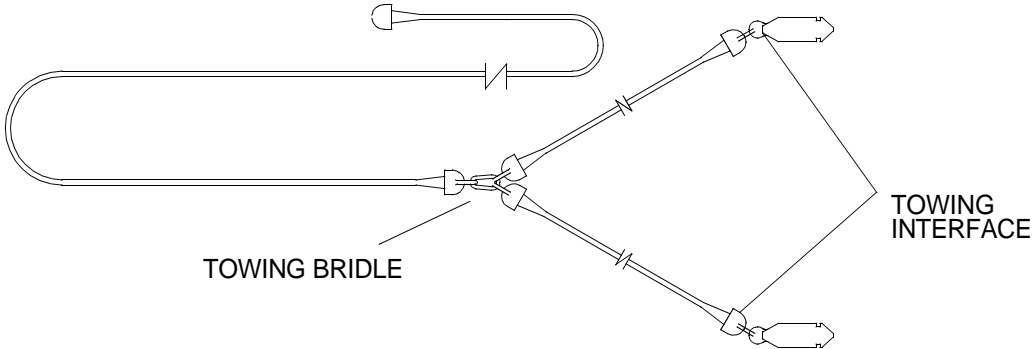
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	Before	.5	Offshore Anchor Mooring System	1. Check cables to ensure that the ends are securely attached. Check cables for fraying and other damage. If cable ends are not securely attached or cables are frayed or damaged, contact unit maintenance.	
				2. Check anchor trays for cracks, corrosion and damaged or missing hardware. If cracks, corrosion or damaged or missing hardware is discovered, contact unit maintenance.	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	Before	.5	Offshore Anchor Mooring System (Cont'd)	<p>3. Check lever hoist ratchets for proper operation loose or missing hardware and corrosion. If corrosion, damaged or missing hardware is discovered or ratchet does not operate properly, contact unit maintenance.</p> <p>4. Check anchor stabilizers for cracks, corrosion and elongated bolt holes. If cracks, corrosion or elongated bolts holes are found contact unit maintenance.</p> <p>5. Check anchor buoy for punctures that would affect buoyancy. If punctures are found contact unit maintenance.</p> <p>a. Inspect metallic parts of buoy for excessive wear, corrosion and distortion. If excessive wear, corrosion or distortion are found contact unit maintenance.</p> <p>b. Inspect buoy shackle for excessive wear, corrosion and distortion. Check to see that cotter pins are correctly installed. If excessive wear, corrosion or distortion is found or cotter pins are missing or improperly installed, contact unit maintenance.</p>	
9	Before	.05	Mooring Bitts	Check for cracked, loose or damaged mooring bitts. If cracks, loose or damaged mooring bitts are found contact unit maintenance.	



Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
10	Before	.05	Towing Bridle	Check for damage. If damage is found, contact unit maintenance.	
					
11	Before	.05	Towing Interface	Check for damage. If damage is found, contact unit maintenance.	
12	Before	.05	Towing Lights	Check for damage and operation. If damage is found or towing lights are inoperative, contact unit maintenance.	
13	Before	.05	Dunnage Mats	Check dunnage mats for tears or missing pieces. If damage is found contact unit maintenance.	
14	Before	.3	Fenders	Inspect fenders, shackles and chains for damage or wear. If damage or wear is found, contact unit maintenance.	

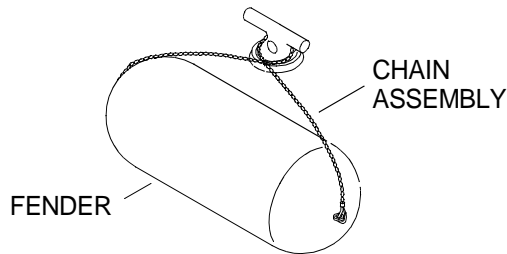


Table 1. Preventive Maintenance Checks and Services. (Continued)

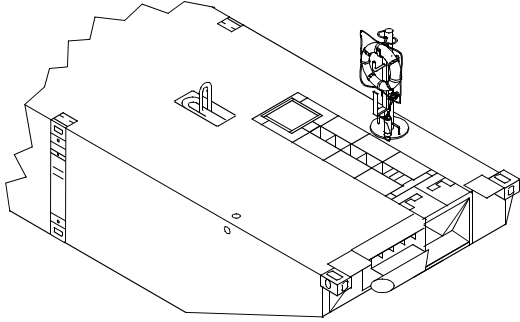
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
15	Before	.2	Stanchions and Life Rings	<p>1. Check life rings for damage. If damage is found that would prevent proper operation of life rings, contact unit maintenance.</p> <p>2. Check life ring strobes for proper operation. If strobes do not operate, contact unit maintenance.</p> <p>3. Inspect life ring stanchions 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>	
					
16	Before	.1	Deck Fittings	Inspect D-rings and cleats for corrosion, breakage or missing parts. If corrosion or breakage is found or parts are missing, contact unit maintenance.	

Table 1. Preventive Maintenance Checks and Services. (Continued)

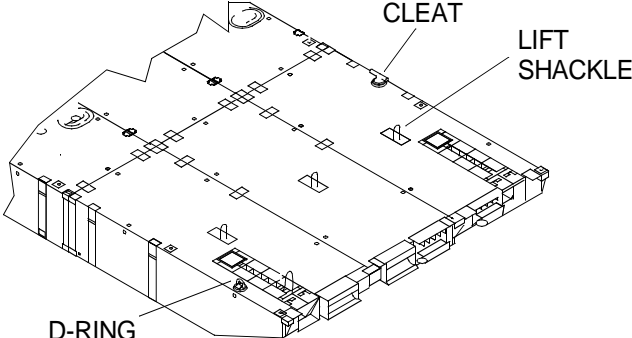
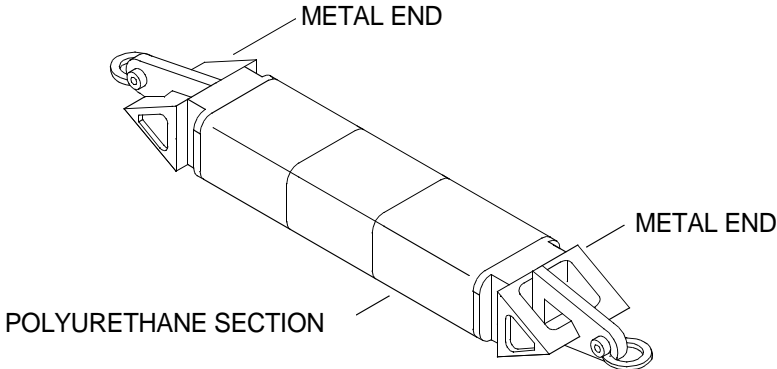



ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
17	Before	.05	Lift Shackles	Remove water from lift shackles.	
					
18	Before	0.5	Flexors	<p>1. Inspect uninstalled flexors for separation of the polyurethane material in the center. If separation of the polyurethane material in the center of the flexor is found, contact unit maintenance.</p> <p>2. Inspect uninstalled flexors for cracks in the external weldments on the ends. If cracks in the external weldments on the ends of the flexor are found, contact unit maintenance.</p>	<p>Separation of the polyurethane material in the center of the flexor is found.</p> <p>Cracks are discovered in the external weldments on the ends of the flexor.</p>
					
19	Before	1.0	Non-Powered Modules	Inspect modules for broken welds, cracks, punctures and corrosion. If found, contact unit maintenance.	Any damage to deck fittings is found that would affect operation.
1	During	.05	Light Tower	Check tower lights for operation. If lights do not operate, contact unit maintenance.	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> <div style="text-align: center;">  <p>FIRE</p> </div> </div>					
2	During	.05	Light Tower Engine	<ol style="list-style-type: none"> <li>1. Check fuel level. If necessary, service with diesel fuel, summer grade DF-2.</li> <li>2. Check for proper gage indications on control panel. (WP 0007 00) If gages do not have proper indication, contact unit maintenance.</li> </ol>	
3	During	.05	Generator Container	<ol style="list-style-type: none"> <li>1. Check fire suppression system for proper operation. Power light should be illuminated on control module. (WP 0028 00) If power light is not illuminated, contact unit maintenance.</li> </ol>	

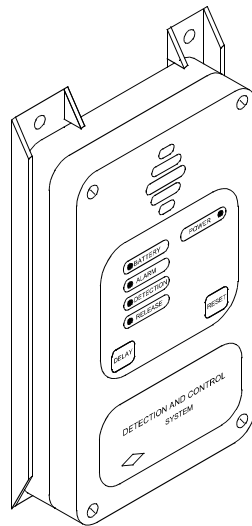


Table 1. Preventive Maintenance Checks and Services. (Continued)




ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> <div style="text-align: center;">  <p>FIRE</p> </div> </div>					
3	During	.05	Generator Container (Cont'd)	2. Check fuel level in fuel tank. If necessary, service with Diesel Fuel, Summer Grade DF-2.	
4	During	.05	Personnel Shelter	<p>1. Check incinerator toilet for proper operation. (TM 55-1925-257-14&amp;P)</p> <p>2. Inspect 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.</p> <p>3. Check battery chargers for red light while handheld transceivers are placed in chargers. (WP 0031 00) If red lights do not illuminate, contact unit maintenance.</p>	Fire extinguisher is inoperative.
6	During	.05	Onshore Mooring System	Check cables for security, looseness and fraying. If cables are loose or frayed or cables are not secured, contact unit maintenance.	
8	During	.05	Offshore Mooring System	Check padeyes and visible cables for security, fraying and looseness. If padeyes are loose or cables are frayed, contact unit maintenance.	
9	During	.05	Mooring Bitts	Check for cracked, loose or bent mooring bitts. If mooring bitts are cracked, loose or bent, contact unit maintenance.	

Table 1. Preventive Maintenance Checks and Services. (Continued)

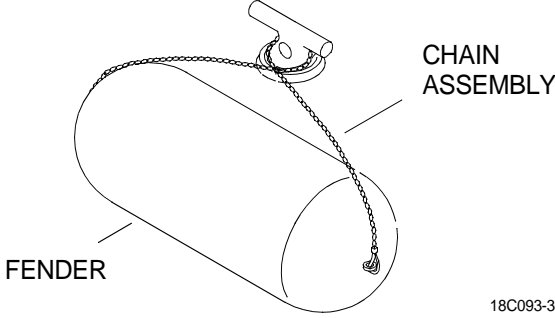
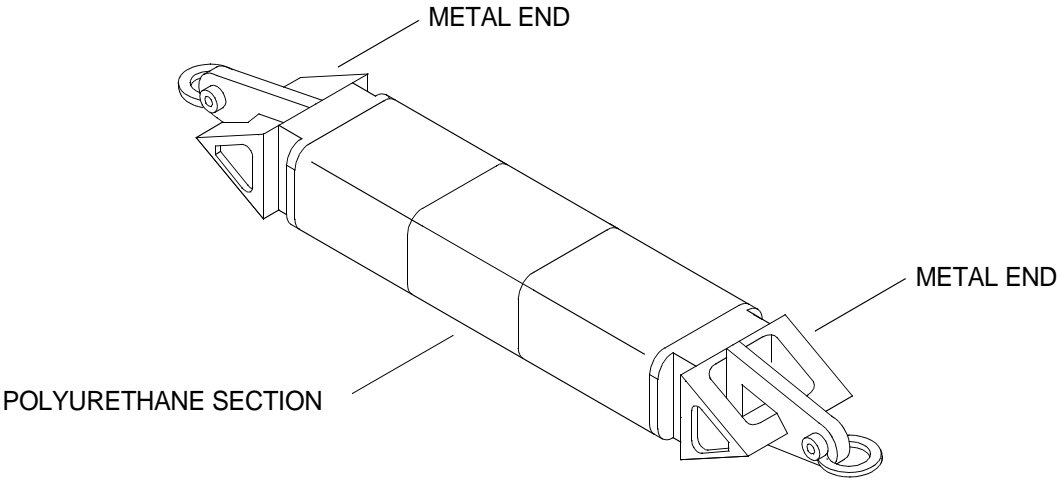
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
14	During	.3	Fenders	Inspect fenders, shackles and chains for damage or wear. If damage is found, contact unit maintenance.	
					
18	During	.5	Flexors	<ol style="list-style-type: none"> <li>1. Inspect visible portions of installed flexors for separation of the polyurethane material in the center. If found, the flexor must be replaced after the exercise or operation is completed.</li> <li>2. Inspect visible portions of installed flexors for cracks in the external weldments on the ends. If found, the flexor must be replaced immediately.</li> </ol>	<p>Separation of the polyurethane material in the center of the flexor is found.</p> <p>Cracks are discovered in the external weldments on the ends of the flexor.</p>
					

Table 1. Preventive Maintenance Checks and Services. (Continued)






ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	After	1.0	Light Tower	1. Wash the exterior of the light tower with water and a mild soap.  2. Prior to cleaning the engine and generator, cover the air cleaner intake, generator air intake, exhaust opening, the rear of the control panel box, the generator output electrical connection box and the battery charging alternator with plastic and seal with tape.	
<hr/> WARNING <hr/>					
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>FIRE</b> </div> <div style="text-align: center;">   <b>SLICK FLOOR</b> </div> </div>					
<p><b>Do not use petroleum products (solvents, fuel oils or gasoline) under high pressure as this can penetrate the skin and result in serious illness.</b></p>					
<hr/> CAUTION <hr/>					
<p><b>Do not use high pressure water, steam or solvent on the exterior finish of the unit housing. This could result in damage to equipment.</b></p>					
				3. Wash the exterior of the engine and generator with cleaner.  4. Rinse the engine and generator with water at a moderate pressure.	
<hr/> WARNING <hr/>					
<div style="text-align: center;">   <b>EYE PROTECTION</b> </div>					
				5. Dry engine and generator with compressed air.  6. Remove all plastic and tape installed to seal out water and cleaner.	

Table 1. Preventive Maintenance Checks and Services. (Continued)


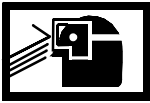



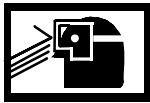

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	After	1.0	Light Tower (Cont'd)	7. Start engine and run until normal operating temperature is reached.	
<hr/> WARNING <hr/>					
   					
CHEMICAL      EYE PROTECTION      FIRE      SLICK FLOOR					
<b>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.</b>					
2	After	.2	Light Tower Engine	1. Check for leaks around fuel tank and fuel lines. If any leaks are found, contact unit maintenance.  a. Examine fuel lines and flexible hoses for leaks. Check that fittings, clamps and ties are secure. If lines or hoses are leaking or fittings, clamps or ties are not secure, contact unit maintenance.	Class I fuel leakage is found.  Class I fuel leakage is found.
<hr/> WARNING <hr/>					
  					
CHEMICAL      EYE PROTECTION      FIRE					
				b. Verify fuel tank is full by checking indicator gage or using a fuel stick. If necessary, add fuel. <b>DO NOT OVER FILL.</b> Service with Diesel Fuel, Summer Grade DF2 from -25°F to +150°F. Tank capacity is 30 gallons (114 liters). Fill to 95%.	



Table 1. Preventive Maintenance Checks and Services. (Continued)




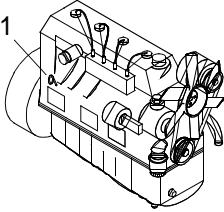
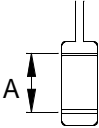

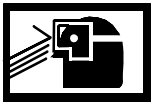



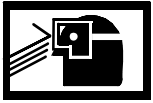

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p><b>WARNING</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> <div style="text-align: center;">  <p><b>FIRE</b></p> </div> </div>					
2	After	.2	Light Tower Engine (Cont'd)	<p>2. Check for oil leaks. If oil leaks are found, contact unit maintenance.</p> <p>a. Verify that it registers FULL on the dipstick. Engine must be cool when reading level. If hot, allow to cool for 20 minutes. If necessary, add Lubricating Oil, Internal Combustion Engine, Grade 15W40 to achieve desired level. DO NOT OVERFILL.</p>	Class III oil leakage is found.
<div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p>1. OIL LEVEL GAUGE</p>  <p>A: ENGINE OIL LEVEL WITHIN THIS RANGE IS PROPER</p> </div> </div>					
				<p>b. Make a visual inspection for oil leaks around the filters and the external oil lines. If found contact unit maintenance.</p> <p>3. Check for damage that may have occurred during operation. If damage is found, contact unit maintenance.</p>	Class III oil leakage is found.

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
3	After	.4	Generator Container	1. Check exterior of container for damage. If damage is found, contact unit maintenance.	
<hr/> <p>WARNING</p> <hr/>					
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>FIRE</b> </div> <div style="text-align: center;">   <b>SLICK FLOOR</b> </div> </div>					
<p><b>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.</b></p>					
				2. Check 1,000 gallon fuel tank and fuel pumps for evidence of fuel leakage. If fuel leakage is found, contact unit maintenance.  a. Check for leaks around fuel tank and fuel lines. If fuel leakage is found, contact unit maintenance.  b. Examine fuel lines and flexible hoses for leaks. Check that fittings, clamps and ties are secure. If fuel leakage is found or loose fittings, clamps or ties are found, contact unit maintenance.	Class I fuel leakage is found.  Class I fuel leakage is found.  Class I fuel leakage is found.
<hr/> <p>WARNING</p> <hr/>					
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>FIRE</b> </div> </div>					
				c. Verify fuel tank is full by checking capacity lamps or using a fuel stick. If necessary, add fuel. <b>DO NOT OVER FILL.</b> Service with Diesel Fuel, W-F-800 DF2 from -25°F to +150°F. Tank capacity is 1000 gallons. Fill to 95%.	

**Table 1. Preventive Maintenance Checks and Services. (Continued)**

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
3	After	.4	Generator Container (Cont'd)	3. Perform PMCS on generator. (TM 9-6115-642-10)  4. Clean generator container. a. Clean the exterior of the shelter with clean water. b. Clean the interior floor with a mop and clean water. c. Clean the fire suppression system components with a clean dry wiping rag.	
4	After	.1	Personnel Shelter	1. Check exterior of container for damage. If damage is found, contact unit maintenance.  2. Inspect portable fire extinguishers for broken seal, damage to nozzle or RED zone indication on gage. If broken seal, damaged nozzle or RED zone indication on gage is found, contact unit maintenance.  3. Clean the personnel shelter. a. Clean the VHF/FM handheld transceivers with a soft bristled brush to remove all dirt b. Clean surface of heating and air conditioning unit with a wiping rag. c. Clean benches and table with clean water.	Fire extinguisher is inoperative.

**Table 1. Preventive Maintenance Checks and Services. (Continued)**



















ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:			
8	After	.5	Onshore Mooring System	1. Clean onshore mooring legs.				
<hr/> WARNING <hr/>								
<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center; vertical-align: middle;">  <p><b>CHEMICAL</b></p> </td> <td style="width: 33%; text-align: center; vertical-align: middle;">  <p><b>EYE PROTECTION</b></p> </td> <td style="width: 33%; vertical-align: top; padding-left: 20px;"> <p>a. Using wiping rags soaked with Type II cleaner, remove debris from all components.</p> </td> </tr> </table>						 <p><b>CHEMICAL</b></p>	 <p><b>EYE PROTECTION</b></p>	<p>a. Using wiping rags soaked with Type II cleaner, remove debris from all components.</p>
 <p><b>CHEMICAL</b></p>	 <p><b>EYE PROTECTION</b></p>	<p>a. Using wiping rags soaked with Type II cleaner, remove debris from all components.</p>						
<hr/> WARNING <hr/>								
<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center; vertical-align: middle;">  <p><b>CHEMICAL</b></p> </td> <td style="width: 33%; text-align: center; vertical-align: middle;">  <p><b>EYE PROTECTION</b></p> </td> <td style="width: 33%; vertical-align: top; padding-left: 20px;"> <p>b. Using clean water, remove cleaner residue from all components.</p> <p>c. Air dry all components.</p> </td> </tr> </table>						 <p><b>CHEMICAL</b></p>	 <p><b>EYE PROTECTION</b></p>	<p>b. Using clean water, remove cleaner residue from all components.</p> <p>c. Air dry all components.</p>
 <p><b>CHEMICAL</b></p>	 <p><b>EYE PROTECTION</b></p>	<p>b. Using clean water, remove cleaner residue from all components.</p> <p>c. Air dry all components.</p>						
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<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center; vertical-align: middle;">  <p><b>CHEMICAL</b></p> </td> <td style="width: 33%; text-align: center; vertical-align: middle;">  <p><b>EYE PROTECTION</b></p> </td> <td style="width: 33%; vertical-align: top; padding-left: 20px;"> <p>d. Clean all wire ropes using a wire brush and Type II cleaner.</p> </td> </tr> </table>						 <p><b>CHEMICAL</b></p>	 <p><b>EYE PROTECTION</b></p>	<p>d. Clean all wire ropes using a wire brush and Type II cleaner.</p>
 <p><b>CHEMICAL</b></p>	 <p><b>EYE PROTECTION</b></p>	<p>d. Clean all wire ropes using a wire brush and Type II cleaner.</p>						

Table 1. Preventive Maintenance Checks and Services. (Continued)



ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>					
8	After	.5	Onshore Mooring System (Cont'd)	<p>e. Dispose of contaminated rags in accordance with local procedures.</p> <p>2. Check cables to ensure that the ends are securely attached. Check cables for fraying and other damage. If cable ends are not securely attached or cables are frayed or damaged, contact unit maintenance.</p> <p>a. Dispose of contaminated rags in accordance with local procedures.</p> <p>b. Check cable thimbles and swage fittings for cracking and corrosion. If cable thimbles or swage fittings are cracked or corroded, contact unit maintenance.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	After	.5	Onshore Mooring System (Cont'd)	3. Check for damage to anchor system components. If components are damaged, contact unit maintenance.	

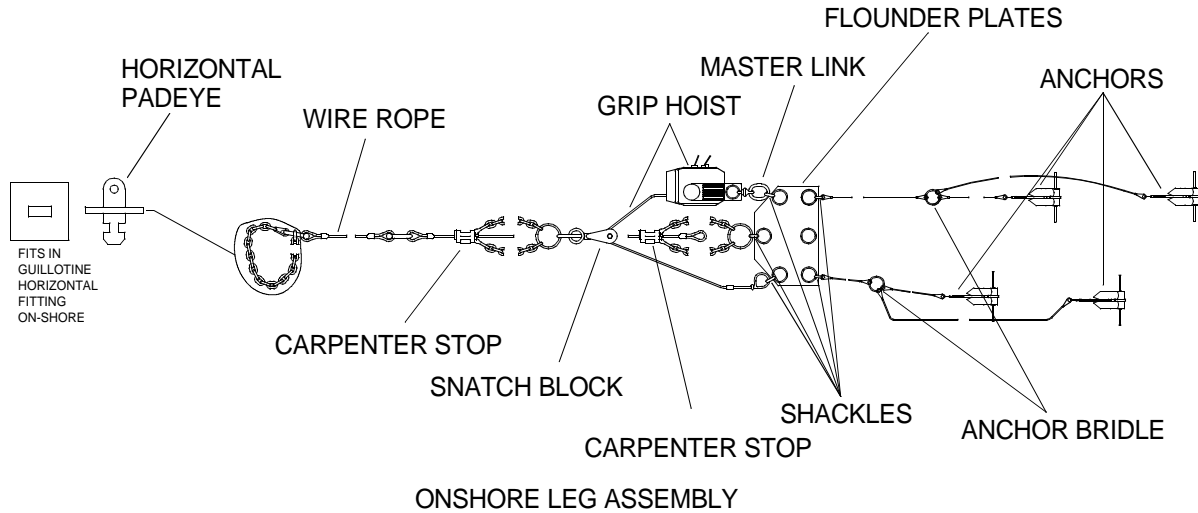


Table 1. Preventive Maintenance Checks and Services. (Continued)

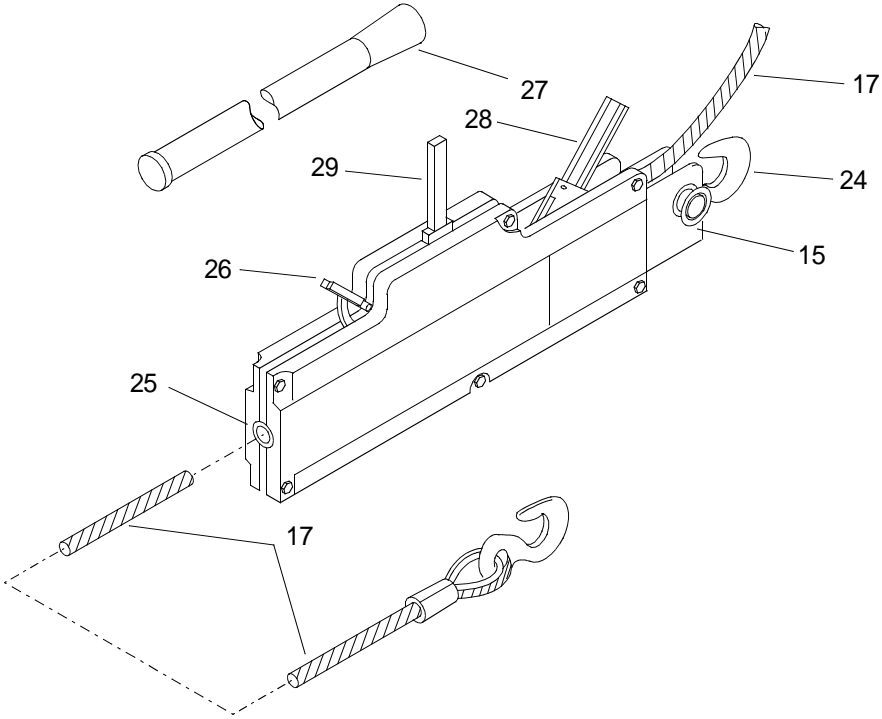
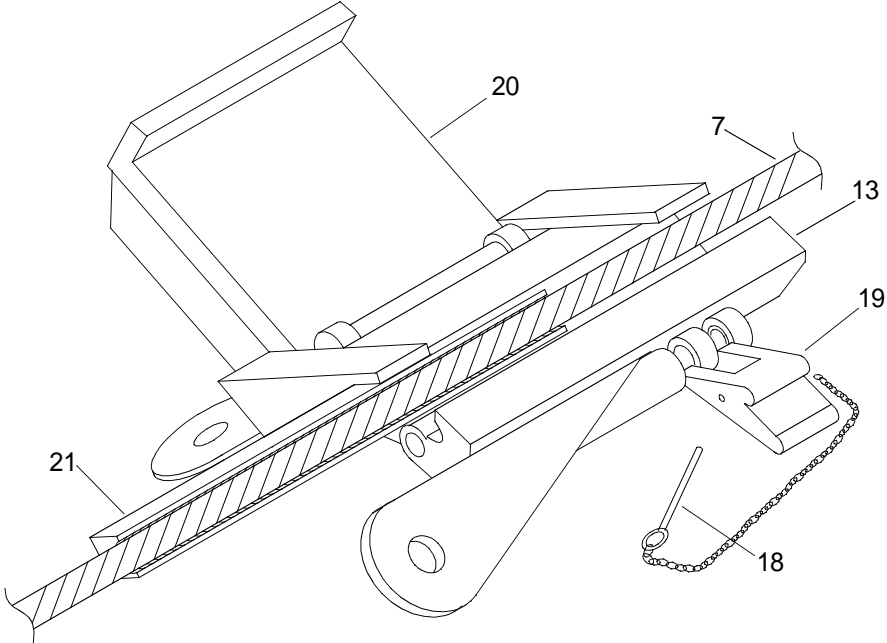
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	After	.5	Onshore Mooring System (Cont'd)	4. Check grip hoist for damage and loose or missing levers. If damage or missing or loose levers are discovered, contact unit maintenance.	
					
				<p>a. Check release lever, reversing lever and power stroke lever to ensure they move freely and operate as designed. If levers do not operate freely, contact unit maintenance.</p> <p>b. Check for corrosion, stress cracks and bent levers. If corrosion, stress cracks or bent levers are found, contact unit maintenance.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	After	.5	Onshore Mooring System (Cont'd)	5. Check flounder plates for elongated holes, loose damaged or missing hardware. If elongated holes or loose or missing hardware is discovered, contact unit maintenance.	
				6. Check pad eyes for cracks, damage or corrosion. If pad eye is cracked, damaged or corroded, contact unit maintenance.	



Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	After	.5	Onshore Mooring System (Cont'd)	7. Check carpenter stop for loose or missing hardware. If loose or missing hardware is discovered, contact unit maintenance.	
				<p>a. Check latch for proper locking operation. If latch does not lock properly, contact unit maintenance.</p> <p>b. Check hinges cracks and looseness. If hinges are cracked or loose, contact unit maintenance.</p>	
				<p>8. Check snatch block for cracks, loose or missing hardware and proper operation of pulley. If cracks, loose or missing hardware is discovered, contact unit maintenance. If pulley does not operate properly, contact unit maintenance.</p>	

**Table 1. Preventive Maintenance Checks and Services. (Continued)**










ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	After	.5	Onshore Mooring System (Cont'd)	9. Check anchor swivels and shackles for wear, distortion and corrosion. Check for missing or properly installed cotter pins. If anchor swivels or shackles are worn, distorted or corroded or cotter pins are missing or improperly installed, contact unit maintenance.	
<hr/> WARNING <hr/>					
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> <div style="text-align: center;">  <p>VAPOR</p> </div> </div>					
				10. Preserve wire ropes by coating with Corrosion Preventive Compound, Grade I.	
<hr/> WARNING <hr/>					
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> <div style="text-align: center;">  <p>VAPOR</p> </div> </div>					
				11. Coat wire rope unplated ferrous fittings with Corrosion Preventive Compound, Grade II.	
<hr/> WARNING <hr/>					
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> <div style="text-align: center;">  <p>VAPOR</p> </div> </div>					
				12. Preserve shackles, carpenter stops, snatch blocks and associated hardware.	

Table 1. Preventive Maintenance Checks and Services. (Continued)













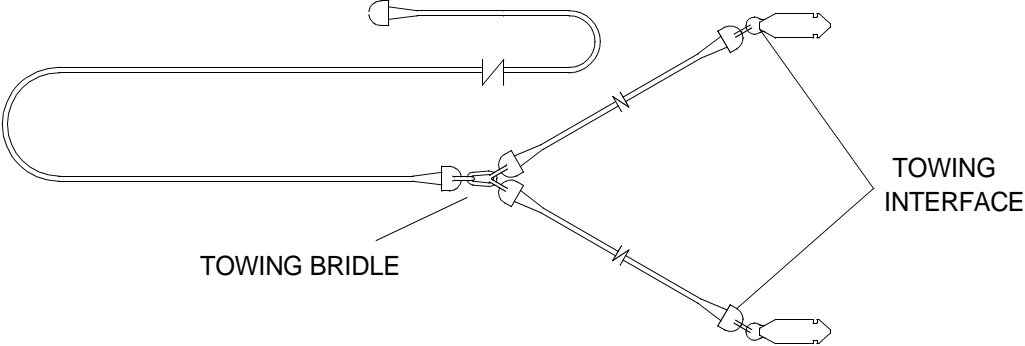
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>VAPOR</b> </div> </div>					
8	After	.5	Onshore Mooring System (Cont'd)	<p>a. Coat all unplated threads and exposed fittings with Corrosion Preventive Compound, Grade II.</p>	
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> </div>					
				<p>b. Coat all internal bearing surfaces with Antiseize Compound.</p>	
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>POISON</b> </div> </div>					
				<p>13. Preserve grip hoist by pouring 80W90 Grade Lubricating Oil into grip hoist openings. Allow excess oil to drain.</p> <p>14. Preserve anchors.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around;"> <p><b>CHEMICAL</b></p> <p><b>EYE PROTECTION</b></p> </div>					
8	After	.5	Onshore Mooring System (Cont'd)	a. Coat and preserve all shackle bolts and stabilizer arm bolts with antiseize compound.	
<p>WARNING</p> <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around;"> <p><b>CHEMICAL</b></p> <p><b>EYE PROTECTION</b></p> </div>					
9	After	.05	Mooring Bitts	b. Coat the opening in the anchor shank and the trunnion bearing surface with Antiseize Compound.	
10	After	.05	Towing Bridle	Check for cracked, loose or bent mooring bitts. If cracks, loose or bent mooring bitts are found contact unit maintenance.	
					
11	After	.05	Towing Interface	Check for damage. If damage is found, contact unit maintenance.	

**Table 1. Preventive Maintenance Checks and Services. (Continued)**

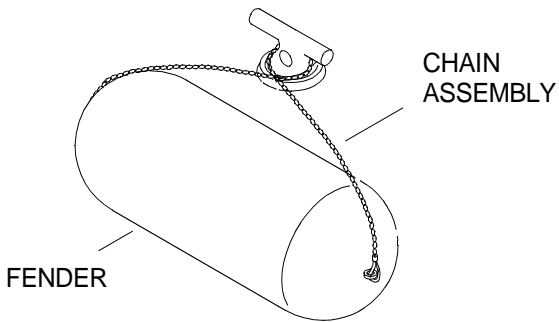


ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:	
12	After	.05	Towing Lights	Check for damage and inoperative lights. If damage or inoperative are found, contact unit maintenance.		
13	After	.05	Dunnage Mats	Check dunnage mats for tears or missing pieces. If damage is found, contact unit maintenance.		
14	After	.3	Fenders	Inspect fenders, shackles and chains for damage or wear. If damage or wear is found, contact unit maintenance.		
 <p>FENDER</p> <p>CHAIN ASSEMBLY</p>						
7	After	.5	Offshore Anchor Container	Check exterior of container for damage. If damage is found, contact unit maintenance.		
8	After	1.5	Offshore Anchor Mooring System	1. Clean onshore mooring legs.		
<p><b>WARNING</b></p>						
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>						
				<p>a. Using wiping rags soaked with Type II cleaner, remove debris from all components.</p>		

Table 1. Preventive Maintenance Checks and Services. (Continued)







ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> </div>					
8	After	1.5	Offshore Anchor Mooring System (Cont'd)	<p>b. Using clean water, remove cleaner residue from all components.</p> <p>c. Air dry all components.</p>	
<p>WARNING</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> </div>					
				<p>d. Clean all wire ropes using a wire brush and Type II cleaner.</p>	
<p>WARNING</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>CHEMICAL</p> </div> <div style="text-align: center;">  <p>EYE PROTECTION</p> </div> </div>					
				<p>e. Dispose of contaminated rags in accordance with local procedures.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:	
8	After	1.5	Offshore Anchor Mooring System (Cont'd)	2. Check cables to ensure that the ends are securely attached. Check cables for fraying and other damage. If ends are not securely attached or fraying or damage is found, contact unit maintenance.		
				<p>3. Check anchor trays for cracks, corrosion and damaged or missing hardware. If corrosion or damage is found, contact unit maintenance.</p> <p>4. Check lever hoist ratchets for proper operation loose or missing hardware and corrosion. If corrosion, damaged or missing hardware is discovered or ratchet does not operate properly, contact unit maintenance.</p>		

**Table 1. Preventive Maintenance Checks and Services. (Continued)**







ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	After	1.5	Offshore Anchor Mooring System (Cont'd)	<p>5. Check anchor stabilizers for cracks, corrosion and elongated bolt holes. If cracks, corrosion or elongated bolts holes are found contact unit maintenance.</p> <p>6. Check anchor buoy for punctures that would affect buoyancy. If punctures are found contact unit maintenance.</p> <p>a. Inspect metallic parts of buoy for excessive wear, corrosion and distortion. If excessive wear, corrosion or distortion are found contact unit maintenance.</p> <p>b. Inspect buoy shackle for excessive wear, corrosion and distortion. Check to see that cotter pins are correctly installed. If excessive wear, corrosion or distortion is found or cotter pins are missing or improperly installed, contact unit maintenance.</p>	
<hr/> <b>WARNING</b> <hr/>					
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> <div style="text-align: center;">  <p><b>VAPOR</b></p> </div> </div>					
				<p>7. Preserve wire ropes by coating with Corrosion Preventive Compound, Grade I.</p>	
<hr/> <b>WARNING</b> <hr/>					
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> <div style="text-align: center;">  <p><b>VAPOR</b></p> </div> </div>					
				<p>8. Coat wire rope unplated ferrous fittings with Corrosion Preventive Compound, Grade II.</p>	



Table 1. Preventive Maintenance Checks and Services. (Continued)












ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	After	1.5	Offshore Anchor Mooring System (Cont'd)	<p style="text-align: center;">WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>VAPOR</b> </div> </div> <p>9. Preserve shackles and associated hardware.</p>	
				<p style="text-align: center;">WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>VAPOR</b> </div> </div> <p>a. Coat all unplated threads and exposed fittings with Corrosion Preventive Compound, Grade II.</p>	
				<p style="text-align: center;">WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> </div> <p>b. Coat all internal bearing surfaces with antiseize compound.</p>	
				<p style="text-align: center;">WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CHEMICAL</b> </div> <div style="text-align: center;">   <b>EYE PROTECTION</b> </div> <div style="text-align: center;">   <b>POISON</b> </div> </div> <p>10. Preserve lever ratchet hoists by pouring 80W90 Grade Lubricating Oil into lever ratchet hoist openings. Allow excess oil to drain.</p> <p>11. Preserve anchors.</p>	

Table 1. Preventive Maintenance Checks and Services. (Continued)





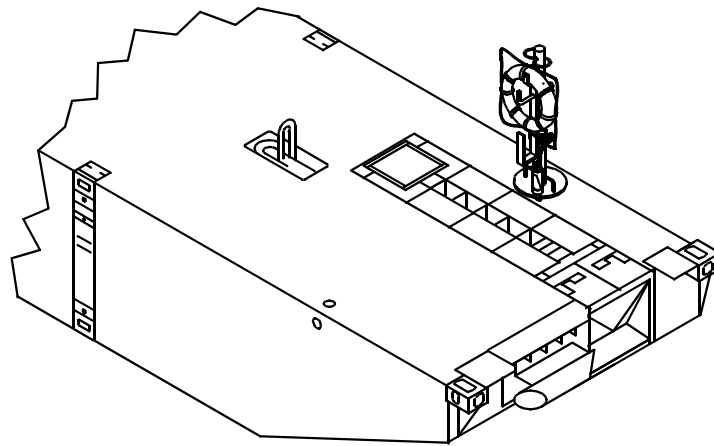
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>					
8	After	1.5	Offshore Anchor Mooring System (Cont'd)	a. Coat and preserve all shackle bolts and stabilizer arm bolts with Antiseize Compound.	
<p>WARNING</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>					
15	After	.2	Stanchions and Life Rings	<p>b. Coat the opening in the anchor shank and the trunnion bearing surface with antiseize compound.</p> <ol style="list-style-type: none"> <li>1. Check life rings for damage. If damage is found that would prevent proper operation of life rings, contact unit maintenance.</li> <li>2. Check life ring strobes for proper operation. If strobes do not operate, contact unit maintenance.</li> </ol>	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
15	After	.2	Stanchions and Life Rings (Cont'd)	<p>3. Inspect life ring stanchions 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> <p>3. Fresh water rinse stanchions, life rings and strobes to remove salt water.</p>	



17	After	.1	Lift Shackles	<p>Remove water from lift shackles. Lubricate lift shackles using general purpose grease and a hand lubricating gun.</p>	
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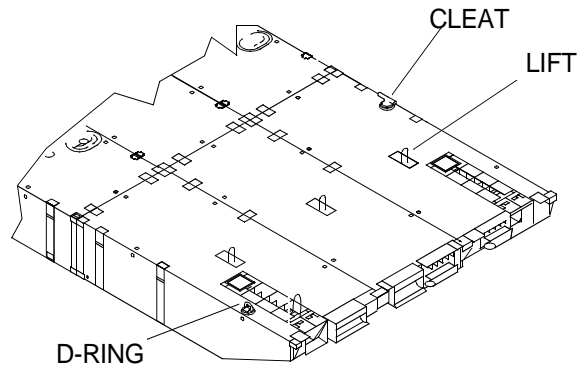


Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
18	After	0.5	Flexors	<p>1. Inspect uninstalled flexors for separation of the polyurethane material in the center. If separation of the polyurethane material in the center of the flexor is found, contact unit maintenance.</p> <p>2. Inspect uninstalled flexors for cracks in the external weldments on the ends. If cracks in the external weldments on the ends of the flexor are found, contact unit maintenance.</p>	<p>Separation of the polyurethane material in the center of the flexor is found.</p> <p>Cracks are discovered in the external weldments on the ends of the flexor.</p>
19	After	.4	Non-Powered Modules	<p>Inspect modules for broken welds, cracks, punctures and corrosion. If found, contact unit maintenance.</p> <p>Inspect all powered and non-powered modules for major deformation. If major deformation or leaks are found, contact unit maintenance.</p>	<p>Any damage to deck fittings is found that would affect operation.</p> <p>Major deformation is found.</p>
20	After	0.2	Lifting Slings	<p>Check lifting slings for cuts, loose stitching and fraying. If slings are cut, frayed or have loose stitching, contact unit maintenance.</p>	<p>Slings are cut, have loose stitching or frayed.</p>

**Table 1. Preventive Maintenance Checks and Services. (Continued)**

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Weekly During Operational Periods	.5	Light Tower Engine	Start engine. If engine cannot be started, contact unit maintenance.	
4	Weekly During Operational Periods	.1	Personnel Shelter	1. Empty the incinerator toilet ashpan. (TM 55-1925-257-14&P)  2. Clean out stainless steel surfaces of the incinerator toilet.	
3	Monthly	.5	Generator Container	1. Test the fire suppression control module LED indicator and sounder. (WP 0028 00) If LED or sounders is inoperative, contact unit maintenance.  2. Remove fire extinguisher and agitate the dry chemical by turning the extinguisher upside down and shaking. Sign and date the fire extinguisher inspection tag	Fire extinguisher is inoperative.
4	Monthly	.5	Personnel Shelter	Remove fire extinguisher and agitate the dry chemical by turning the extinguisher upside down and shaking. Sign and date the fire extinguisher inspection tag	Fire extinguisher is inoperative.

**Table 1. Preventive Maintenance Checks and Services. (Continued)**

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
18	Monthly	1.0	Flexors	1. Inspect uninstalled flexors for separation of the polyurethane material in the center. If found, contact unit maintenance.  2. Inspect uninstalled flexors for cracks in the external welds on the ends. If found, contact unit maintenance.	Separation of the polyurethane material in the center of the flexor is found.  Cracks are discovered in the external weldments on the ends of the flexor.
<p>The diagram shows a perspective view of a long, rectangular flexor assembly. It consists of two metal end fittings, each with a hook and a pin, connected by a central section of polyurethane material. The polyurethane section is divided into three segments by two vertical weld lines. Labels with leader lines point to the left metal end, the central polyurethane section, and the right metal end.</p>					
20	Monthly	.5	Lifting Slings	Check lifting slings for cuts, loose stitching and fraying. If cuts, fraying or loose stitching is found, contact unit maintenance.	
21	Monthly	5.0	Module Interlock Connector (Male Locking Pin)	1. Check male connector pin for deformation, twisting, bending and flatness. If any deformation of the pin is present, remove pin from service. Contact unit maintenance.  2. Check contact area where the pins seat against the guillotine bars for wear. If excessive wear is present, remove pin from service. Contact unit maintenance.	Any deformation of the pin is present.  Excessive wear is present.

**Table 1. Preventive Maintenance Checks and Services. (Continued)**





ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
21	Monthly	5.0	Module Interlock Connector (Male Locking Pin) (Cont'd)	3. Check the 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 the 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.	If stop bar is removed.  If any cracks and/or unusual damage is present.
<hr/> <b>WARNING</b> <hr/>					
					
		<b>CHEMICAL</b>	<b>EYE PROTECTION</b>		
3	Quarterly	1.0	Generator Container	Lubricate generator container door hinges. Lubricate with grease, MIL-G-81322. Grease by hand.	
<hr/> <b>WARNING</b> <hr/>					
					
		<b>CHEMICAL</b>	<b>EYE PROTECTION</b>		
4	Quarterly	.5	Personnel Shelter	1. Lubricate personnel shelter door hinges. Lubricate with grease, MIL-G-81322. Grease by hand.  2. Clean incinerator toilet interior of dust and paper bits.	

Table 1. Preventive Maintenance Checks and Services. (Continued)



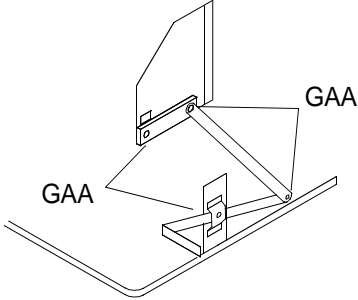


ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>					
4	Quarterly	.5	Personnel Shelter (Cont'd)	<p>3. Grease all moving parts of the incinerator toilet flushing assembly and foot pedal. (TM 55-1925-257-14&amp;P)</p>	
					
				<p>4. Clean the incinerator toilet blower assembly, blower housing and vent line elbow. (TM 55-1925-257-14&amp;P)</p>	
<p>WARNING</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>					
5	Quarterly	.5	Onshore Anchor Container	<p>Lubricate container door hinges. Lubricate with grease, MIL-G-81322. Grease by hand.</p>	



Table 1. Preventive Maintenance Checks and Services. (Continued)



ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p>WARNING</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>					
6	Quarterly	.5	Onshore Anchor Container	Lubricate container door hinges. Lubricate with grease, MIL-G-81322. Grease by hand.	
3	Annually	12.0	Generator Container	Inspect fire suppression system in accordance with 46 CFR Parts 91.25-20 and 97.15-60. Contact Specialized Repair Activity (SRA).	
4	Annually	.2	Personnel Shelter	Inspect incinerator toilet catalyst level. (TM 55-1925-257-14&P)	

Table 1. Preventive Maintenance Checks and Services. (Continued)



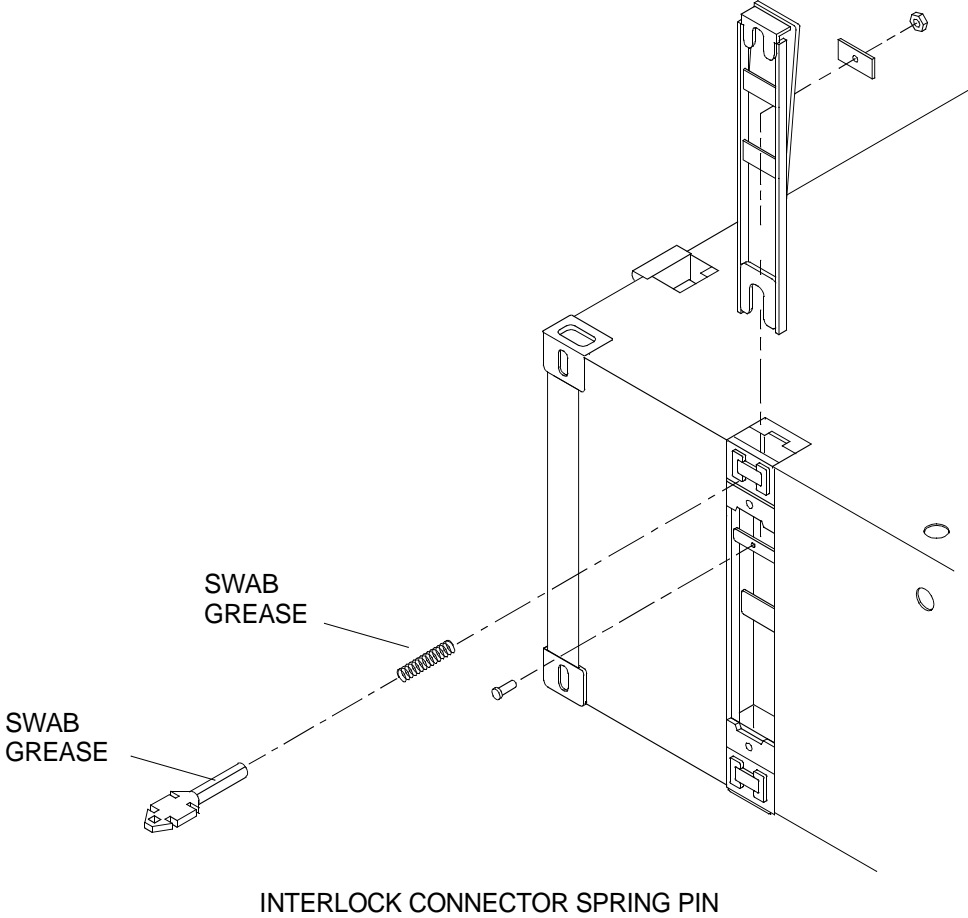
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p><b>WARNING</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>					
21	Annually	.3 each assembly	Module Interlock Connector and Spring	Lubricate annually and on condition (before and after operation). Lubricate with Grease, General Purpose. Grease by hand.	
					

Table 1. Preventive Maintenance Checks and Services. (Continued)



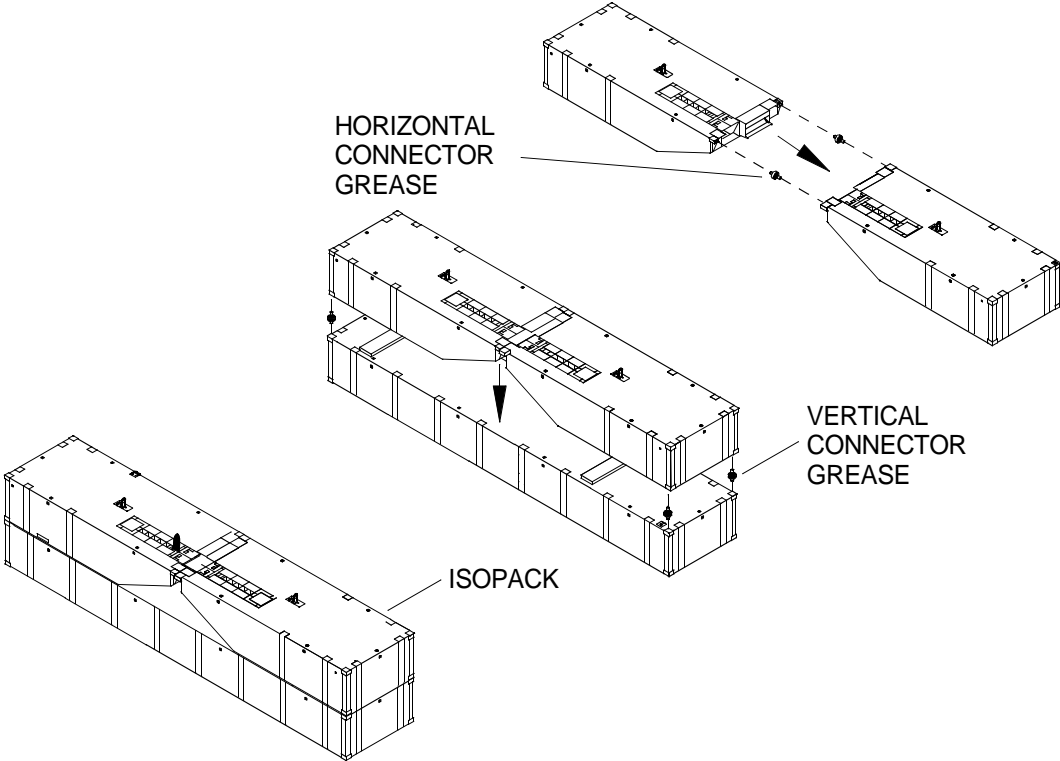
ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p><b>WARNING</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>CHEMICAL</b></p> </div> <div style="text-align: center;">  <p><b>EYE PROTECTION</b></p> </div> </div>					
22	Annually	.1 each connector	Horizontal and Vertical Connectors	Lubricate annually and on condition (before and after operation). Lubricate with Grease, General Purpose. Grease by hand.	
					
<p><b>HORIZONTAL AND VERTICAL CONNECTORS - MODULES</b></p>					
23	Annually	2.0	Steel Weight Lifting Chains, Rings, Hooks, Shackles and Swivels	Anneal all steel weight lifting chains, rings, hooks, shackles and swivels per 46 CFR Parts 1919.16 and 1919.36. Contact Specialized Repair Activity (SRA).	

Table 1. Preventive Maintenance Checks and Services. (Continued)

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
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>	
2	Every 100 Hours of Operation	.1	Light Tower Engine	Check engine intake and exhaust systems for loose, damaged or deteriorated components. If loose, damaged or deteriorated components are found, contact unit maintenance.	
2	Every 150 Hours of Operation	.2	Light Tower Engine	Check air intake hoses for damage. If hoses are damaged, contact unit maintenance.	
1	Every 250 Hours of Operation	.5	Light Tower	Check radiator and oil cooler. Ensure unrestricted airflow is maintained through radiator and oil cooler. If airflow is restricted, clean radiator or oil cooler.	
2	Every 250 Hours of Operation	.3	Light Tower Engine	Check all components of the cooling system. Ensure unrestricted airflow is maintained through radiator and oil cooler.	
3	6 Years	1.0	Generator Container	Hydrostatically test portable fire extinguisher and replace o-rings. Contact Specialized Repair Activity (SRA).	
4	6 Years	1.0	Personnel Shelter	Hydrostatically test portable fire extinguisher and replace o-rings. Contact Specialized Repair Activity (SRA).	

END OF WORK PACKAGE

**CHAPTER 5**

**OPERATOR SUPPORTING INFORMATION  
FOR  
MODULAR CAUSEWAY SYSTEM (MCS)  
FLOATING CAUSEWAY (FC)**



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**UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE  
FLOATING CAUSEWAY  
REFERENCES**

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**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                The Army Maintenance Management Systems (TAMMS)

**FIELD MANUAL**

FM 3-5                          NBC, Decontamination

FM 55-502                      Army Watercraft Safety

**FORMS**

DA Form 2028                  Recommended Changes to Publications and Blank Forms

DA Form 2028-2                Recommended Changes to Equipment Technical Publications

DA Form 2404                  Equipment Inspection and Maintenance Worksheet

SF 361                          Transportation Discrepancy Report

SF 368                          Product Quality Deficiency Report

**MISCELLANEOUS**

ASME Y14.38-1999              The American Society of Mechanical Engineers Abbreviations and Acronyms

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)

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**SUPPLY CATALOGS**

SC 4910-95-A68 Shop Equipment, Automotive Equipment and Repair, Field Maintenance  
SC 4910-95-A72 Shop Equipment, Automotive Equipment and Repair, Organizational Maintenance  
SC 5180-90-N55 Sets, Kits and Outfits for Tool Kit, General Mechanics, Diesel Engine

**TECHNICAL MANUALS**

TM 9-6115-642-10 Generator Set (10KW), Skid Mounted, Tactical Quiet  
TM 9-6115-642-24 Unit, Direct Support and General Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet 10 KW  
TM 9-6115-643-10 Generator Set (15KW), Skid Mounted, Tactical Quiet  
TM 9-6115-643-24 Unit, Direct Support and General Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet 15 KW  
TM 11-5820-890-10-8 SINGARS Operators Manual  
TM 11-5825-291-13 Operations and Maintenance Manual, Satellite Signals Navigations Sets  
TM 55-1925-257-14&P Operator, Unit, Direct Support and General Support Maintenance Manual for Incinerator Toilet/Urinal, Galley Equipment and Electric Water Heater  
TM 55-1945-205-24-4 Unit, Direct Support and Genreal Maintenance, Floating Causeway  
TM 55-1945-205-24P-4 Unit, Direct Support and General Maintenance, Repair Parts and Special Tools List, Floating Causeway  
TM 750-244-6 Destruction of TACOM Equipment



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MAINTENANCE ALLOCATION CHART (MAC)**

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## INTRODUCTION

### The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at various levels under the standard Army Maintenance System concept.

The MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit - includes two subcolumns, C (operator/crew) and O (unit) maintenance.

Direct Support - includes an F subcolumn.

General Support - includes an H subcolumn.

Depot - includes a D subcolumn.

The tools and test equipment requirements, immediately following the MAC, if applicable, list the tools and test equipment, both special tools and common tool sets, required for each maintenance function as referenced from the MAC.

The remarks, immediately following the tools and test equipment requirements, if applicable, contain supplemental instructions and explanatory notes for a particular maintenance function.

### Maintenance Functions

Maintenance functions are limited to and defined as follows:

1. Inspect. To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination, e.g., by sight, sound or feel. This includes scheduled inspection and gaugings and evaluation of cannon tubes.
2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.
3. Service. Operations required periodically to keep an item in proper operating conditions; e.g., to clean, includes decontaminate, when required, to preserve, to drain, to paint or to replenish fuel, lubricants, chemical fluids or gases. This includes scheduled exercising and purging of recoil mechanisms.
4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
7. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating or fixing into position a spare, repair part or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
8. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.
9. Repair. The application of the maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction or failure in a part, subassembly, module (component or assembly), end item or system.

### **NOTE**

The following definitions are applicable to the "repair" maintenance function:

Services - inspect, test, service, adjust, align, calibrate and/or replace.

Fault location/troubleshooting - the process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly - the step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions - welding, grinding, riveting, straightening, facing, machining and/or resurfacing.

10. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
11. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

### **Explanation of Columns in the MAC**

Column (1) - Group Number. Column (1) lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

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

Column (3) - Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). For a detailed explanation of these functions refer to "Maintenance Functions" outlined above.

---

Column (4) - Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figures represent the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

C - Operator or crew maintenance

O - Unit maintenance

F - Direct support maintenance

L - Specialized Repair Activity (SRA)

H - General support maintenance

D - Depot maintenance

#### **NOTE**

The "L" maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by a work time figure in the "H" column of column (4) and an associated reference code is used in the remarks column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) - Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) - Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

#### **Explanation of Columns in the Tools and Test Equipment Requirements**

Column (1) - Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) - Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) - Nomenclature. Name or identification of the tool or test equipment.

Column (4) - National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) - Tool Number. The manufacturer's part number, model number or type number.

**Explanation of the Columns in the Remarks**

Column (1) - Remarks Code. The code recorded in column (6) of the MAC.

Column (2) - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
MAINTENANCE ALLOCATION CHART (MAC)**

**MAINTENANCE ALLOCATION CHART**

**Table 1. MAC for Modular Causeway System. (MCS)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
0101	POWERED SECTION								
010101	POWERED MODULE								
01010101	DRIVE TRAIN								
0101010101	DIESEL ENGINE							A	
0101010102	MARINE GEAR							B	
0101010103	TRANSFER CASE							C	
0101010104	PUMP-JET	Inspect	0.5					E	
		Service		3.0			1	E	
		Repair				10.0		D	
		Replace				50.0		D	
010101010401	HYDRAULIC SYSTEM	Inspect	1.0					E	
		Service	1.0	3.0			1	E	
		Repair			3.0		2, 4, 7		
		Replace			6.0		2, 4, 7		
01010101040101	HYDRAULIC PUMP	Test	0.5					E	
		Inspect	1.0					E	
		Repair				4.0	2, 4, 7	E	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
01010101040101	HYDRAULIC PUMP (CONT'D)	Replace		6.0				1, 2, 4	
01010101040102	HYDRAULIC HAND PUMP	Inspect	1.0						E
		Repair					20.0		
		Replace		2.0				1, 2, 4	
01010101040103	HYDRAULIC WAY-VALVE	Repair				2.0		2, 4, 7	
		Replace		1.5				1, 2, 4	
010101010403	FEEDBACK UNIT	Inspect	1.0						E
		Repair				2.5		2, 4, 7	
		Replace			2.0			2, 4, 7	
0101010105	ALTERNATOR	Test			1.0			7, 14, 15	E
		Inspect	0.5						E
		Replace			2.0			7, 14, 15	
01010102	ENGINE EXHAUST SYSTEM	Clean		2.0				1, 3, 9	E
		Inspect		2.0				1, 3, 9	E
		Repair			6.0			3, 7, 9	
01010103	BILGE PUMP	Test		2.0				1	E
		Inspect	1.0						E
		Replace		8.0				1	F
01010104	FIRE SUPPRESSION SYSTEM	Test					3.0		E
		Inspect	2.0				3.0		E
		Repair					8.0		G
		Replace					24.0		G

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
01010105	FUEL SYSTEM	Test	1.0						E
		Inspect	1.0						E
		Repair			4.0			7	
		Replace			12.0			7	
0101010501	FUEL/WATER SEPARATOR	Clean	1.0						E
		Inspect	1.0						E
		Repair		2.0				1	
		Replace			4.0			7	
01010106	ELECTRICAL SYSTEM	Test			1.0			7, 14, 15	E
		Adjust			1.0			7, 14, 15	
		Repair			2.0			7, 14, 15	
		Replace			8.0			7, 14, 15	
01010107	EMERGENCY STEERING SYSTEM	Inspect	2.0						E
		Service	1.0						E
		Replace		4.0				1	
0101010701	STEERING UNIT	Inspect	0.5						E
		Replace		2.0				1, 2	
0101010702	STEERING ADAPTOR	Inspect	0.5						E
		Replace		1.5				1	
01010108	HULL								
0101010801	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
0101010801	EXTERIOR (CONT'D)	Repair		4.0				1, 16	
		Overhaul					24.0		
0101010802	INTERIOR	Clean					4.0		
		Inspect					2.0		
		Test		8.0			5.0	1, 25, 26	E
		Repair					6.0		
		Overhaul					50.0		
01010109	GUILLOTINE FITTINGS	Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
		Repair		3.0				1, 16	
		Replace		1.0				1	
01010110	HATCHES & HINGES	Clean	1.0					8, 9, 23, 24	E
		Inspect	0.5						E
		Service	0.5						E
		Repair		2.0				1, 16	
		Replace		2.0				1	
0101010111	FLEXORS	Inspect	0.5						E
		Replace	4.0						
010102	NON-POWERED MODULES								
01010201	HULL								
0101020101	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E



**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
0101020102	INTERIOR	Repair		4.0				1, 16	
		Overhaul					24.0		
		Clean					4.0		
		Inspect					2.0		
		Test					5.0	1, 25, 26	E
		Repair					6.0		
01010202	GUILLOTINE FITTINGS	Overhaul					50.0		
		Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
01010203	FLEXORS	Repair		3.0				1, 16	
		Replace		1.0				1	
		Inspect	0.5						E
01010301	MIDDLE CONTROL PANEL	Replace	4.0						
		010103	OPERATORS CAB						
01010302	LOWER CONTROL PANEL	Test			2.0			7, 14, 15	E
		Inspect			2.0			7, 14, 15	E
		Repair			3.0			7, 14, 15	
		Replace			16.0			7, 14, 15	
01010302	LOWER CONTROL PANEL	Test			2.0			7, 14, 15	E
		Inspect			2.0			7, 14, 15	E
		Repair			3.0			7, 14, 15	
		Replace			16.0			7, 14, 15	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
01010303	CIRCUIT BREAKER PANEL	Test			1.0			7, 14, 15	E
		Inspect			1.0			7, 14, 15	E
		Repair			2.0			7, 14, 15	
		Replace			12.0			7, 14, 15	
01010304	TERMINAL STRIP A-4	Test			1.0			7, 14, 15	E
		Inspect			1.0			7, 14, 15	E
		Repair			2.0			7, 14, 15	
		Replace			10.0			7, 14, 15	
01010305	SPOTLIGHT	Adjust		1.0				1	
		Replace		1.0				1	
01010306	DEFROSTER	Inspect	1.0						E
		Replace			4.0			7, 14, 15	
01010307	HEATER	Inspect		2.0				1	
		Repair			4.0			7, 14, 15	
		Replace			6.0			7, 14, 15	
01010308	WINDSHIELD WIPER	Repair		1.0				1	
		Replace		2.0				1	
01010309	COMMUNICATIONS EQUIPMENT								
0101030901	VHF/FM HANDHELD TRANSCEIVER	Repair					8.0		
		Replace		1.0				1	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0101030902	AN/PSN-11 INTERFACE & SWITCHBOX	Repair					6.0		
		Replace			1.0			7, 14, 15	
0101030903	LOUDHAILER	Repair					8.0		
		Replace	0.5						
0101030904	SINGARS RADIO								H
0101030905	VHF/FM DCS TRANSCEIVER	Repair					12.0		
		Replace		1.0				1	
01010310	NAVIGATION EQUIPMENT	Test	0.5						E
		Inspect	1.0						E
0101031001	COMPASS	Inspect	2.0.						E
		Replace		2.0				1	
		Calibrate		4.0				1	E
0101031002	PLGR								I
01010311	MAST	Inspect	3.0						E
		Repair		3.0				1	
0101031101	NAVIGATION LIGHTS	Repair			1.0			1	
		Replace			1.0			1	
0101312	OPERATORS CAB ELECTRICAL SYSTEM	Test			4.0			7, 14, 15	E
		Inspect			4.0			7, 14, 15	E
		Repair				6.0		7, 14, 15	
		Replace				10.0		7, 14, 15	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
010104	ANCHOR ASSEMBLY	Inspect	1.0						E
		Repair		1.0				1	
		Replace		1.0				1	
0102	INTERMEDIATE SECTION								
010201	NON-POWERED MODULES								
01020101	HULL								
0102010101	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E
		Repair		4.0				1, 16	
		Overhaul					24.0		
0102010102	INTERIOR	Clean					4.0		
		Inspect					2.0		
		Test		8.0			5.0	1, 25, 26	E
		Repair					6.0		
		Overhaul					50.0		
01020102	GUILLOTINE FITTINGS	Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
		Repair		3.0				1, 16	
		Replace		1.0				1	
01020103	FLEXORS	Inspect	0.5						E
		Replace	4.0						

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
0103	CAUSEWAY FERRY BEACH- END SECTION								
010301	NON-POWERED MODULE								
01030101	HULL								
0103010101	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E
		Repair		4.0				1, 16	
		Overhaul					24.0		
0103010102	INTERIOR	Clean					4.0		
		Inspect					2.0		
		Test		8.0			5.0	1, 25, 26	E
		Repair					6.0		
		Overhaul					50.0		
01030102	GUILLOTINE FITTINGS	Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
		Repair		3.0				1, 16	
		Replace		1.0				1	
01030103	FLEXORS	Inspect	0.5						E
		Replace	4.0						
0104	CONTAINERS	Clean	1.0						E
		Inspect	2.0						E
		Repair			4.0			7	
		Replace					8.0		

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
0101010101	DIESEL ENGINE	Inspect	4.0					E	
		Service	4.0	4.0				E	
		Repair				30.0		7, 27-218	
		Replace			120.0			7, 27-218	
		Overhaul					80.0		
010101010101	ENGINE BLOCK ASSEMBLY	Inspect	2.0					E, J	
		Repair				6.0		7, 27-52 J	
		Replace				120.0		7, 27-52 J	
010101010102	CYLINDER HEAD ASSEMBLY	Clean				5.0		7, 53-85 E, K	
		Repair				12.0		7, 53-85 K	
		Inspect			6.0			7, 53-85 E, K	
		Replace			8.0			7, 53-85 K	
010101010103	CRANKSHAFT ASSEMBLY	Repair			16.0			7, 86-106 L	
		Replace			24.0			7, 86-106 L	
010101010104	CAMSHAFT ASSEMBLY	Repair				12.0		7, 131-141	
		Replace				16.0		7, 131-141	
010101010105	FLYWHEEL ASSEMBLY	Inspect			3.0			7, 107-112 M	
		Replace			5.0			7, 107-112 M	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
010101010106	PISTON ASSEMBLY	Clean				2.0		7, 113-130	N
		Repair				3.0		7, 107-112	M
		Inspect				2.0		7, 113-130	N
		Rebuild				4.5		7, 113-130	N
		Replace				3.0		7, 113-130	N
010101010107	ENGINE BALANCE	Inspect				6.0		7, 131-141	O
		Adjust				3.0		7, 131-141	O
		Replace				8.0		7, 131-141	O
		Repair				8.0		7, 131-141	O
010101010108	FUEL SYSTEM	Inspect	0.5						E, P
01010101010801	FUEL PUMP	Inspect				1.0		7, 142-187	E
		Repair				4.0		7, 142-187	
		Replace				2.0		7, 142-187	
01010101010802	PRIMING PUMP	Inspect		1.5				1, 142-187	E
		Replace		2.0				1, 142-187	
010101010109	ELECTRIC GOVERNOR	Test			0.5				E
		Adjust		1.0				7, 142-187	
		Repair					5.0		
		Replace		2.0				1, 142-187	
010101010110	AIR INTAKE SYSTEM	Inspect	0.5						E, Q
		Clean		2.0				1, 188-195	E, Q
		Replace		3.0				1, 188-195	Q



Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
01010101011001	BLOWER	Inspect			2.0	2.0		7, 188-195	E
		Adjust				4.0		7, 188-195	
		Repair				18.0		7, 188-195	
01010101011002	TURBOCHARGER	Inspect		2.0				1, 188-195	E, R
		Replace			8.0			7, 188-195	
		Repair					18.0		
		Replace			6.0			7, 188-195	
010101010111	LUBE OIL SYSTEM	Service	5.0	5.0					E, S
		Inspect	1.0						E
01010101011101	LUBE OIL PUMP	Inspect				3.0		7, 196-203	E
		Repair				4.0		7, 196-203	
		Replace				4.0		7, 196-203	
01010101011102	LUBE OIL COOLER	Clean			2.0			7	E
		Test			1.5			7, 25, 26	E
		Inspect			2.0			7	E
		Repair			4.0			7	E
		Replace			2.0			7	
010101010112	FRESH WATER COOLING SYSTEM	Inspect	1.0						E, T
		Clean		1.0				1	
01010101011201	FRESH WATER PUMP	Inspect			2.5			7, 212-215	E
		Repair			6.0			7, 212-215	
		Replace			3.0			7, 212-215	
		Test			2.0			7, 25, 26	E

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
01010101011202	FRESH WATER COOLER	Clean			2.0			7	E
		Inspect			1.0			7	E
		Repair			4.0			7	
		Replace			3.0			7	
010101010113	RAW WATER COOLING SYSTEM	Inspect	1.0					E, U	
01010101011301	RAW WATER PUMP	Inspect		2.0				1	E
		Clean		2.0				1	E, U
		Repair			4.0			7, 212-215	
		Replace		2.5				1, 212-215	
010101010114	ELECTRICAL SYSTEM	Test			4.0			7, 14, 15	E, V
		Inspect			2.0			7, 14, 15	E, V
		Repair			3.0			7, 14, 15	V
		Replace			16.0			1, 7, 14, 15	V
01010101011401	STARTER	Inspect	1.0						E
		Repair				6.0		7, 14, 15	
		Replace		3.0				1, 14, 15	
01010101011402	COLD PACK STARTER	Clean		1.0				1	E
		Inspect	0.5						E
		Adjust		1.0				1, 14, 15	
		Repair		2.5				1, 14, 15	
		Replace		3.0				1, 14, 15	

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
010101010115	OVER SPEED GOVERNOR	Test				1.0		7	E
		Adjust				1.5		7, 184-187	
		Repair				5.0		7, 184-187	
		Replace				4.0		7, 184-187	
010101010116	AUTO SHUTDOWN SYSTEM	Test		1.0					E
		Adjust			2.0			7, 14, 15	
		Repair				6.0		7, 14, 15	
		Replace		4.0			8.0	1	

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
0101010102	MARINE GEAR	Inspect	1.0						E
		Align			2.0			7, 17	
		Service	1.0	4.0				1	E
		Rebuild					25.0		W
		Replace			28.0			4, 7, 17	
010101010201	OIL SYSTEM	Inspect	0.5						E, X
		Repair		.5				1, 11	X
01010101020101	OIL COOLER	Clean	1.0						E
		Inspect	1.0						E
		Replace		4.0				1	
01010101020102	LINES & HOSES	Inspect	0.5						E
		Repair		1.0				1	
01010101020103	OIL PUMP	Inspect	1.0						E
		Repair		2.0				1, 3	
01010101020104	ELECTRIC CONTROL VALVE	Repair					8.0		
		Replace			6.0			7, 14, 15	
010101010202	GEAR MOUNTS	Inspect	.05						E
		Replace			2.0			3,7	
010101010203	COUPLING BLOCKS	Clean			1.0			7	E
		Inspect			1.0			7	E
		Replace			4.0			3, 7	

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
010101010204	OUTPUT FLANGE	Inspect	0.5						E
		Align			2.0			3, 7, 17	
		Replace			4.0			3, 7, 17	
010101010205	OUTPUT SEAL	Inspect			2.0			7	E
		Replace			2.0			3, 7	
010101010206	INPUT FLANGE (ENGINE CONNECTION)	Inspect	0.5						E

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
0101010103	TRANSFER CASE	Clean		2.0				1	E
		Service	1.0	4.0				1	E
		Overhaul				24.0			
		Rebuild					24.0	2, 7, 17	Y
		Replace			24.0			2, 7, 17	
010101010301	OIL SYSTEM	Inspect	1.0						E
		Repair		2.5				1	
01010101030101	OIL PUMP	Inspect	4.0						E
		Replace		2.5				1	
01010101030102	HOSES & FITTINGS	Inspect	0.2						E
		Replace		2.0				1	
01010101030103	OIL COOLER	Inspect	0.2						E
010101010302	GEAR SHAFT	Inspect				5.0		7	E
		Replace		3.5				1	
		Repair				8.0		3, 7, 17	
		Replace				7.0		3, 7, 17, 19	
01010101030201	UPPER SHAFT	Inspect				5.0		7	X E
		Repair				8.0		3, 7, 17	
		Replace				7.0		3, 7, 17, 19	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0101010103020101	INPUT SEAL	Clean			2.0			7	E
		Inspect			2.0			7	E
		Replace			2.0			3, 7, 17, 19	
0101010103020102	OUTPUT SEAL	Clean			2.0			7	E
		Inspect			2.0			7	E
		Replace			2.0			3, 7, 17, 19	
01010101030202	INTERMEDIATE SHAFT	Inspect				2.5		7	E
		Repair				5.5		3, 7, 17	
		Replace				6.5		3, 7, 17, 19	
01010101030203	LOWER SHAFT	Inspect				4.0		7	E
		Repair				8.0		3, 7, 17	
		Replace				6.0		3, 7, 17, 19	
0101010103020301	INPUT SEAL	Clean			2.0			7	E
		Replace			2.0			3, 7, 17, 19	
		Inspect			2.0			7	E



**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
02	<b>ROLL-ON/ROLL- OFF DISCHARGE FACILITY (RRDF)</b>								
0201	INTERMEDIATE SECTION								
020101	NON-POWERED MODULE								
02010101	HULL								
0201010101	EXTERIOR	Clean		4.0			8, 9, 23, 24	E	
		Inspect	1.0					E	
		Repair		4.0			1, 16		
		Service	1.5					E	
		Overhaul				24.0			
		Inspect				2.0			
0201010102	INTERIOR	Clean				4.0			
		Test		6.0		5.0	1, 25, 26	E	
		Repair				6.0			
02010102	GUILLOTINE FITTINGS	Clean		1.0			8, 9, 23, 24	E	
		Overhaul				50.0			
		Inspect	0.5					E	
		Repair		3.0			1, 16		
		Replace		1.0			1		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
02010103	FLEXORS	Inspect	0.5						E
		Replace	4.0						
0202	COMBINATION BEACH-END SECTION								
020201	NON-POWERED MODULE								
02020101	HULL								
0202010101	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E
		Repair		4.0				1, 16	
		Overhaul					24.0		
		Inspect					2.0		
0202010102	INTERIOR	Clean					4.0		
		Test		6.0			5.0	1, 25, 26	E
		Repair					6.0		
		Overhaul					50.0		
02020102	GUILLOTINE FITTINGS	Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
		Repair		3.0				1, 16	
		Replace		1.0				1	
02020103	FLEXORS	Inspect	0.5						E
		Replace	4.0						
0203	GENERATOR SHELTER			4.0				1	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
020301	ARMY TACTICAL QUIET GENERATOR (ATQG)								AD
020302	FUEL SYSTEM	Inspect	1.0						E
		Repair			1.5			7	
		Replace		1.0				1	
02030201	MANUAL FUEL PUMP	Clean		1.0				1	E
		Inspect	1.0	1.0				1	E
		Repair		2.0				1	
		Replace		2.0				1	
020303	LOUVERS	Clean		1.0				1	E
		Inspect	1.0						E
		Service		1.0				1	E
		Repair		3.0				1	
		Replace		4.0				1	
020304	ELECTRICAL SYSTEM	Test			2.0			7, 14, 15	E
		Repair		2.0	3.0			1, 7, 14, 15	
		Replace			5.0			7, 14, 15	
020305	FIRE SUPPRESSION SYSTEM	Test					4.0		E, G
		Inspect	1.0						E
		Repair					4.0	1, 14, 15	G
		Replace					40.0		G
0204	PERSONNEL SHELTER								

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
020401	HEAT PUMP	Clean		4.0				1	E
		Inspect		1.0				1	E
		Service			3.0			7, 21	E
		Repair		2.0	4.0			1, 7, 14, 15, 21	
		Replace				8.0		7, 14, 15, 21	
		Rebuild					8.0	7, 14, 15, 21	
020402	INCINOLET							AE	
020403	ELECTRICAL SYSTEM	Inspect	2.0						E
		Repair		12.0	3.0			1, 7, 14, 15	
		Replace				12.0		7, 14, 15	
020404	COMMUNICATIONS EQUIPMENT								
02040401	VHF\FM HANDHELD TRANSCEIVER	Replace	1.0						
		Repair					8.0		
0205	LIGHT TOWER								
020501	ELECTRICAL SYSTEM	Inspect			0.5			10, 15	E
		Test			1.0			10, 15	E
02050101	BATTERIES	Repair			6.0			10, 15	
		Test			1.0			10, 13	E
		Inspect	0.5						E
		Replace		2.0			1		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
02050102	OIL PRESSURE UNIT	Test			1.0			10	E
		Repair			1.0			10	
		Replace			1.5			10	
02050103	STARTING CIRCUIT	Repair			2.0			10, 15	
		Replace			3.0			10, 15	
02050104	ENGINE TEMPERATURE UNIT	Test			1.0			10, 18	E
		Replace			2.5			10, 18	
		Repair			2.0			10, 18	
02050105	HOURMETER UNIT	Repair			1.5			10	
		Replace			2.0			10	
02050106	SHUTDOWN CIRCUIT	Repair			2.0			10	
		Replace			4.0			10	
02050107	LAMP SYSTEM	Test	1.0						E
		Repair			2.0			10, 15	
		Replace			6.0			10, 15	
02050108	LAMP BALLAST SYSTEM	Test			0.5			10, 15	E
		Repair			2.0			10, 15	
		Replace			3.0			10, 15	
020502	GENERATOR	Clean		2.0				1	E
		Inspect					12.0		
		Repair					18.0		
		Replace					24.0		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
02050202	CONTROL PANEL	Inspect	1.0						E
		Repair			3.0			10, 15	
		Replace			4.5			10, 15	
02050205	DIESEL ENGINE	Service	4.0	2.0				1	E
		Adjust		3.0				1	
		Overhaul					16.0		
		Repair				16.0		10	
		Replace			16.0			10	
		0205020501	ENGINE FUEL SYSTEM	Inspect	1.0				
020502050101	FUEL PUMP	Repair		4.0				1	
		Replace			8.0			10	
		020502050102	FUEL TANK	Inspect	1.0				
020502050101	FUEL PUMP	Repair				4.0		10	
		Replace			5.0			10	
		020502050102	FUEL TANK	Clean	2.0				
020502050102	FUEL TANK	Inspect	1.0						E
		Repair		2.0				1	
		Replace		2.0				1	
		0205020502	ENGINE AIR SYSTEM	Inspect	1.0				
0205020502	ENGINE AIR SYSTEM	Repair		2.0				1	
		Replace		4.0				1	
		0205020503	ENGINE COOLING SYSTEM	Inspect	1.0				
0205020503	ENGINE COOLING SYSTEM	Repair		3.0				1	
		Replace		2.0		5.0		1, 10	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
020502050301	FAN ASSEMBLY	Inspect	0.5						E
		Repair		1.5				1	
		Replace		2.0				1	
020502050302	COOLING WATER PUMP	Inspect			1.0			10	E
		Repair				4.0		10	
		Replace			5.0			10	
020502050303	RADIATOR	Clean	1.0						E
		Inspect		1.0				1	E
		Service	2.0	4.0				1	E
		Repair				4.0		10	
		Replace		2.0	3.0			1, 10	
0205020504	CYLINDER HEAD	Inspect		1.0				1	E
		Adjust					2.0		
		Repair					8.0		
		Replace					5.0		
0205020505	VIBRATION DAMPER	Repair					4.0		
		Replace					4.0		
0205020506	EXHAUST SYSTEM	Clean	1.5						E
		Inspect	1.0						E
		Repair		3.0				1, 16	
		Replace		5.0				1	
0205020507	CRANKSHAFT	Inspect					4.0		
		Repair					8.0		
		Replace					8.0		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0205020508	PISTON	Inspect					4.0		
		Repair					4.0		
		Replace					4.0		
02050206	RUNNING GEAR	Service		2.0				1	E
		Repair		2.0		2.0		1, 10	
		Replace		18.0				1	
0205020601	TIRES	Inspect	0.5						E
		Repair				1.0		10	
		Replace				1.0		10	
02050207	SUPPORT TOWER	Inspect	0.5						E
		Service	1.0						E
		Repair			2.0			10	
		Replace			6.0			10	
02050208	TOWER RAISING ASSEMBLY	Inspect	0.5						E
		Repair			1.0			10	
		Replace			3.0			10	
02050209	ENCLOSURE	Inspect	0.5						E
		Repair			2.0			10	
		Replace			6.0			10	
0206	EASY ANCHOR	Inspect	2.0						E
		Service		1.0				1	E
		Repair			4.0			6, 7	
		Replace			6.0			6, 7	
0207	RHIB (ZODIAC)								



**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
020701	STEERING & THROTTLE	Inspect	1.0						E
		Service	1.0						E
		Repair			4.0			10	
		Replace			8.0			10	
020702	CONTROL PANEL	Inspect			2.0			10, 15	E
		Repair			4.0			10, 15	
		Replace			6.0			10, 15	
020703	BOAT HULL	Inspect	1.0						E
		Repair		2.0		20.0		1, 219-230	
		Replace				18.0		1, 219-230	
020704	NAVIGATION SYSTEM	Repair			3.0		12.0	7	
		Replace		2.0				1	
020705	OUTBOARD ENGINE	Test		4.0					E
		Repair					12.0		
		Rebuild					12.0		
		Replace		4.0					
02070501	ENGINE COVER	Inspect	1.0						E
		Repair			2.0			10	
		Replace			2.0			10	
02070502	LOWER ENGINE COVER	Inspect	1.0						E
		Repair			2.0			10	
		Replace			2.0			10	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
02070503	ELECTRICAL STARTER	Repair			2.0			10, 15	
		Replace			3.0			10, 15	
02070504	POWER TRIM/TILT ELECTRICAL	Adjust		1.0				1	
		Repair			2.0			10, 15	
		Replace			2.5			10, 15	
02070505	IGNITION	Repair					8.0		
		Replace					8.0	2, 17	
02070506	INTAKE MANIFOLD	Inspect			1.0			10	E
		Repair			3.0			10	
		Replace			3.0			10	
02070507	CARBURETOR	Adjust		1.0				1	
		Repair			3.0			10	
		Replace			3.0			10	
02070508	ELECTRIC PRIMER SYSTEM	Repair			3.0			10, 15	
		Replace			2.0			10, 15	
02070509	FUEL TANK	Inspect	1.0						E
		Repair			3.0			10	
		Replace	2.0						
02070510	FUEL HOSE & PRIMER BULB	Repair		1.0				1	
		Replace	1.0						
02070511	FUEL PUMP	Repair			2.0			10	
		Replace			2.0			10	

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
02070512	CRANKSHAFT & PISTON	Inspect					6.0		
		Repair					8.0		
		Replace					8.0		
02070513	CYLINDER & CRANKCASE	Inspect					6.0		
		Rebuild					16.0		
		Replace					8.0		
02070514	EXHAUST HOUSING	Inspect	1.0					E	
		Repair			3.0		10		
		Replace			3.0		10		
02070515	POWER TRIM/TILT HYDRAULIC	Repair					4.0		
		Replace					3.0		
02070516	POWER TRIM/TILT MIDSECTION	Inspect					2.0		
		Repair					4.0		
		Replace					4.0		
02070517	GEARCASE	Inspect			3.0		10	E	
		Repair					8.0		
		Replace					8.0		
0207051701	BEARING HOUSING ASSEMBLY	Inspect					2.0		
		Repair					3.0		
		Replace					3.0		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0207051702	PROPELLER SHAFT ASSEMBLY	Inspect					2.0		
		Repair					4.0		
		Replace					3.0		
0207051703	IMPELLER ASSEMBLY	Inspect					4.0		
		Repair					4.0		
		Replace					4.0		
0207051704	WATER PUMP ASSEMBLY	Inspect					4.0		
		Repair					4.0		
		Rebuild					8.0		
		Replace					4.0		
02070518	STEERING LINK KIT	Inspect	1.0						E
		Repair		1.0				1	
		Replace		2.0				1	
02070519	BATTERY	Test			2.0			10, 13	
		Service			2.0			10	
		Replace			2.0			10	
0207051901	BATTERY CABLE	Clean	0.5						
		Inspect	0.5						E
		Repair		1.0				1	
		Replace		1.0				1	
020706	FIRE EXTINGUISHER	Inspect	0.5						E
		Replace	2.0						E

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0208	CONTAINERS	Inspect	2.0						E
		Clean	1.0						E
		Repair			4.0			7	
		Replace					8.0		

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
02	<b>ROLL-ON/ROLL- OFF DISCHARGE FACILITY (RRDF)</b>								
03	<b>MODULAR WARPING TUG (WT)</b>								
0301	POWERED SECTION								
030101	POWERED MODULE								
03010101	DRIVE TRAIN								
0301010101	DIESEL ENGINE							Z	
0301010102	MARINE GEAR							AA	
0301010103	TRANSFER CASE							AB	
0301010104	PUMP-JET ASSEMBLY	Inspect	0.5					E	
		Service		3.0			1	E	
		Repair				10.0		D	
		Replace				50.0			
030101010401	HYDRAULIC SYSTEM	Inspect	1.0				1	E	
		Service	1.0	3.0			1	E	
		Repair			3.0		2, 4, 7		
		Replace			6.0		2, 4, 7		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
03010101040101	HYDRAULIC PUMP	Test	0.5						E
		Inspect	1.0						E
		Repair				4.0		2, 4, 7	
		Replace		6.0				1, 2, 4	
03010101040102	HYDRAULIC HAND PUMP	Inspect	1.0						E
		Repair					20.0		
		Replace		2.0				1, 2, 4	
03010101040103	HYDRAULIC WAY-VALVE	Repair				2.0		2, 4, 7	
		Replace		1.5				1, 2, 4	
030101010402	FEEDBACK UNIT	Inspect	1.0						E
		Repair				2.5		2, 4, 7	
		Replace			2.0			2, 4, 7	
0301010105	ALTERNATOR	Test			1.0			7, 14, 15	E
		Inspect	0.5						E
		Replace			2.0			7, 14, 15	
03010102	ENGINE EXHAUST SYSTEM	Clean		2.0				1, 3, 9	E
		Inspect		2.0				1, 3, 9	E
		Repair			6.0			3, 7, 9	
03010103	BILGE PUMP SYSTEM	Test		2.0				1	E
		Inspect	1.0						E
03010104	FIRE SUPPRESSION SYSTEM	Test					3.0		E
		Inspect	2.0				3.0		E



**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
03010104	FIRE SUPPRESSION SYSTEM (CONT'D)	Repair					8.0		G
		Replace					24.0		G
03010105	FUEL SYSTEM	Test	1.0						E
		Inspect	1.0						E
		Repair			4.0			7	
		Replace			12.0			7	
0301010501		FUEL/WATER SEPARATOR	Clean	1.0					
	Inspect		1.0						E
	Repair			2.0				1	
	Replace				4.0			7	
03010106	ELECTRICAL SYSTEM	Test			1.0			7, 14, 15	E
		Adjust			1.0			7, 14, 15	
		Repair			2.0			7, 14, 15	
		Replace			8.0			7, 14, 15	
03010107	EMERGENCY STEERING SYSTEM	Inspect	2.0						E
		Service	1.0						E
		Replace		4.0				1	
0301010701	STEERING UNIT	Inspect	0.5						E
		Replace		2.0				1	
0301010702	STEERING ADAPTOR	Inspect	0.5						E
		Replace		1.5				1	
03010108	HULL								

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
0301010801	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E
		Repair		4.0				1, 16	
		Overhaul					24.0		
0301010802	INTERIOR	Clean					4.0		
		Inspect					2.0		
		Test					5.0	1, 25, 26	E
		Repair					6.0		
		Overhaul					50.0		
03010109	GUILLOTINE FITTINGS	Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
		Repair		3.0				1, 16	
		Replace		1.0				1	
03010110	HATCHES & HINGES	Clean	1.0						E
		Inspect	0.5					1	E
		Service	0.5						E
		Repair		2.0				1, 16	
		Replace		2.0				1	
03010111	FLEXORS	Inspect	0.5						E
		Replace	4.0						
030102	NON-POWERED MODULE								
03010201	HULL								

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
0301020101	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E
		Repair		4.0				1, 16	
		Overhaul					24.0		
0301020102	INTERIOR	Clean					4.0		
		Inspect					2.0		
		Test		8.0			5.0	1, 25, 26	E
		Repair					6.0		
		Overhaul					50.0		
03010202	GUILLOTINE FITTINGS	Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
		Repair		3.0				1, 16	
		Replace	1.0					1	
030103	OPERATORS CAB								
03010301	MIDDLE CONTROL PANEL	Test			2.0			7, 14, 15	E
		Inspect			2.0			7, 14, 15	E
		Repair			3.0			7, 14, 15	
		Replace			16.0			7, 14, 15	
03010302	LOWER CONTROL PANEL	Test			2.0			7, 14, 15	E
		Inspect			2.0			7, 14, 15	E
		Repair			3.0			7, 14, 15	
		Replace			16.0			7, 14, 15	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
03010303	CIRCUIT BREAKER PANEL	Test			1.0			7, 14, 15	E
		Inspect			1.0			7, 14, 15	E
		Repair			2.0			7, 14, 15	
		Replace			12.0			7, 14, 15	
03010304	TERMINAL BOARD A-4	Test			1.0			7, 14, 15	E
		Inspect			1.0			7, 14, 15	E
		Repair			2.0			7, 14, 15	
		Replace			10.0			7, 14, 15	
03010305	SPOTLIGHT	Adjust		1.0				1	
		Replace		1.0				1	
03010306	DEFROSTER	Inspect	1.0						E
		Replace			4.0			7, 14, 15	
03010307	HEATER	Inspect		2.0				1	E
		Repair			4.0			7, 14, 15	
		Replace			6.0			7, 14, 15	
03010308	WINDSHIELD WIPER	Repair		1.0				1	
		Replace		2.0				1	
03010309	COMMUNICATIONS EQUIPMENT								
0301030901	VHF/FM HANDHELD TRANSCEIVER	Repair					8.0		
		Replace		1.0				1	

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
0301030902	AN/PSN-11 INTERFACE & SWITCHBOX	Repair					6.0		
		Replace			1.0			7, 14, 15	
0301030903	LOUDHAILER	Test	0.5						E
		Repair					8.0		
		Replace	0.5						
0301030904	SINGARS RADIO								H
0301030905	VHF/FM DSC TRANSCEIVER	Repair					12.0		
		Replace		1.0				1	
03010310	NAVIGATION EQUIPMENT	Test	0.5						E
		Inspect	1.0						E
0301031001	COMPASS	Inspect	2.0						E
		Replace		2.0				1	
		Calibrate		4.0				1	
0301031002	PLGR								I
03010311	MAST	Inspect	3.0						E
		Repair		3.0				1	
0301031101	NAVIGATION LIGHTS	Repair		1.0				1	
		Replace		1.0				1	
03010312	OPERATORS CAB ELECTRICAL SYSTEM	Test			4.0			7, 14, 15	E
		Inspect			4.0			7, 14, 15	E
		Repair				6.0		7, 14, 15	
		Replace			10.0			7, 14, 15	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
030104	ANCHOR ASSEMBLY	Inspect	1.0						E
		Repair		1.0				1	
		Replace		1.0				1	
0302	CONTAINERS	Clean	1.0						E
		Inspect	2.0						E
		Repair			4.0			7	
		Replace					8.0		
0303	WINCH								AC
030301	WINCH DIESEL ENGINE								AD
030302	WINCH ASSEMBLY	Clean			8.0			7	E
		Test			4.0			7	E
		Inspect			4.0			7	E
		Service	4.0						
		Repair			4.0			7	
		Replace	3.0						

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
02	<b>ROLL-ON/ROLL- OFF DISCHARGE FACILITY (RRDF)</b>								
03	<b>MODULAR WARPING TUG (WT)</b>								
0301010101	DIESEL ENGINE	Inspect	4.0					E	
		Service	4.0	4.0				E	
		Repair				30.0	7, 27-218		
		Replace			120.0		7, 27-218		
		Overhaul				80.0			
030101010101	ENGINE BLOCK ASSEMBLY	Inspect	2.0					E, J	
		Repair				6.0	7, 27-52	J	
		Replace				120.0	7, 27-52	J	
030101010102	CYLINDER HEAD ASSEMBLY	Clean				5.0	7, 53-85	K	
		Inspect			6.0		7, 53-85	K	
		Repair				12.0	7, 53-85	K	
		Replace			8.0		7, 53-85	K	
030101010103	CRANKSHAFT ASSEMBLY	Repair			16.0		7, 86-106	L	
		Replace			24.0		7, 86-106	L	
030101010104	CAMSHAFT ASSEMBLY	Repair				12.0	7, 131-141		
		Replace				16.0	7, 131-141		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
030101010105	FLYWHEEL ASSEMBLY	Inspect			3.0			7, 107-112	M
		Repair				3.0		7, 107-112	M
		Replace			5.0			7, 107-112	M
030101010106	PISTON ASSEMBLY	Clean				2.0		7, 113-130	N
		Inspect				2.0		7, 113-130	N
		Rebuild				4.5		7, 113-130	N
		Replace				3.0		7, 113-130	N
030101010107	ENGINE BALANCE	Inspect				6.0		7, 131-141	O
		Adjust				3.0		7, 131-141	O
		Repair				8.0		7, 131-141	O
		Replace				8.0		7, 131-141	O
030101010108	FUEL SYSTEM	Inspect	0.5						E, P
03010101010801	FUEL PUMP	Inspect			1.0			7, 142-187	E
		Repair			4.0			7, 142-187	
		Replace			2.0			7, 142-187	
03010101010802	PRIMING PUMP	Inspect		1.5				1, 142-187	E
		Replace		2.0				1, 142-187	
030101010109	ELECTRIC GOVERNOR	Test		0.5					E
		Adjust			1.0			7, 142-187	
		Repair					5.0		
		Replace		2.0				1, 142-187	
030101010110	AIR INTAKE SYSTEM	Clean		2.0				1, 188-195	E, Q
		Inspect	0.5						E, Q
		Replace		3.0				1, 188-195	Q



Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
03010101011001	BLOWER	Inspect			2.0	2.0		7, 188-195	E
		Adjust				4.0		7, 188-195	
		Repair				18.0		7, 188-195	
		Replace			8.0			7, 188-195	
03010101011002	TURBOCHARGER	Inspect			2.0			1, 188-195	E, R
		Repair					18.0		
		Replace			6.0			7, 188-195	
030101010111	LUBE OIL SYSTEM	Service	5.0	5.0					E, S
		Inspect	1.0						E, S
03010101011101	LUBE OIL PUMP	Inspect				3.0		7, 196-203	E
		Repair				4.0		7, 196-203	
		Replace				4.0		7, 196-203	
03010101011102	LUBE OIL COOLER	Clean			2.0			7	E
		Test			1.5			7, 25, 26	E
		Inspect			2.0			7	E
		Repair			4.0			7	
		Replace			2.0			7	
030101010112	FRESH WATER COOLING SYSTEM	Inspect	1.0						E, T
		Clean		1.0				1	
03010101011201	FRESH WATER PUMP	Inspect			2.5			7, 212-215	E
		Repair			6.0			7, 212-215	
		Replace			3.0			7, 212-215	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
03010101011202	FRESH WATER COOLER	Clean			2.0			7	E
		Test			2.0			7, 25, 26	E
		Inspect			1.0			7	E
		Repair			4.0			7	
		Replace			3.0			7	
030101010113	RAW WATER COOLING SYSTEM	Clean	1.0						E, U
		Inspect		2.0				1	E, U
03010101011301	RAW WATER PUMP	Inspect		2.0				1	E
		Repair			4.0			7, 212-215	
		Replace		2.5				1, 211-215	
030101010114	ELECTRICAL SYSTEM	Test			4.0			7, 14, 15	E, V
		Inspect			2.0			7, 14, 15	E, V
		Repair			3.0			7, 14, 15	V
		Replace		4.0	16.0			1, 7, 14, 15	V
03010101011401	STARTER	Inspect	1.0						E
		Repair				6.0		7, 14, 15	
		Replace		3.0				1, 14, 15	
03010101011402	COLD PACK STARTER	Clean		1.0				1	E
		Inspect	0.5						E
		Adjust		1.0				1, 14, 15	
		Repair		2.5				1, 14, 15	
		Replace		3.0				1, 14, 15	

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
030101010115	OVER SPEED GOVERNOR	Test				1.0		7	E
		Adjust				1.5		7, 184-187	
		Repair				5.0		7, 184-187	
		Replace				4.0		7, 184-187	
030101010116	AUTO SHUTDOWN SYSTEM	Test		1.0					E
		Adjust			2.0			7, 14, 15	
		Repair				6.0		7, 14, 15	
		Replace		4.0			8.0	1	

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
02	<b>ROLL-ON/ROLL- OFF DISCHARGE FACILITY (RRDF)</b>								
03	<b>MODULAR WARPING TUG (WT)</b>								
0301010102	MARINE GEAR	Inspect	1.0					E	
		Align			2.0		7, 17		
		Service	1.0	4.0			1	E	
		Replace			28.0		4, 7, 17		
		Rebuild				25.0		W	
030101010201	OIL SYSTEM	Inspect	0.5					E, X	
		Repair		0.5			1, 11	X	
03010101020101	OIL COOLER	Clean	1.0					E	
		Inspect	1.0					E	
		Replace		4.0			1		
03010101020102	LINES & HOSES	Inspect	0.2					E	
		Repair		0.5			1		
		Replace		2.0			1		
03010101020103	OIL PUMP	Inspect	1.0					E	
		Replace			2.0		1, 3		
03010101020104	ELECTRIC CONTROL VALVE	Repair				8.0			
		Replace			6.0		7, 14, 15		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
030101010202	GEAR MOUNTS	Inspect	0.5						E
		Replace			2.0			3, 7	
030101010203	COUPLING BLOCKS	Clean			1.0			7	E
		Inspect			1.0			7	E
		Replace			4.0			3, 7	
030101010204	OUTPUT FLANGE	Inspect	0.5						E
		Align			2.0			3, 7, 17	
		Replace			4.0			3, 7, 17	
030101010205	OUTPUT SEAL	Inspect			2.0			7	E
		Replace			2.0			3, 7	
030101010206	INPUT FLANGE (ENGINE CONNECTION)	Inspect	0.5						E

**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
02	<b>ROLL-ON/ROLL- OFF DISCHARGE FACILITY (RRDF)</b>								
03	<b>MODULAR WARPING TUG (WT)</b>								
0301010103	TRANSFER CASE	Clean		2.0				1	E
		Service	1.0	4.0				1	E
		Overhaul				24.0			
		Rebuild					24.0	2, 7, 17	Y
		Replace			24.0			2, 7, 17	
030101010301	OIL SYSTEM	Inspect	1.0						E
		Repair		2.5				1	
03010101030101	OIL PUMP	Inspect	4.0						E
		Replace		2.5				1	
03010101030102	HOSES & FITTINGS	Inspect	0.2						E
		Replace		2.0				1	
03010101030103	OIL COOLER	Inspect	0.2						E
		Replace		3.5				1	
030101010302	GEAR SHAFT	Inspect				5.0		7	E
		Repair				8.0		3, 7, 17	
		Replace				7.0		3, 7, 17, 19	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
03010101030201	UPPER SHAFT	Inspect				5.0		7	E
		Repair				8.0		3, 7, 17	
		Replace				7.0		3, 7, 17, 19	
0301010103020101	INPUT SEAL	Clean			2.0			7	E
		Inspect			2.0			7	E
		Replace			2.0			3, 7, 17, 19	
0301010103020102	OUTPUT SEAL	Clean			2.0			7	E
		Inspect			2.0			7	E
		Replace			2.0			3, 7, 17, 19	
03010101030202	INTERMEDIATE SHAFT	Inspect				2.5		7	E
		Repair				5.5		3, 7, 17	
		Replace				6.5		3, 7, 17, 19	
03010101030203	LOWER SHAFT	Inspect				4.0		7	E
		Repair				8.0		3, 7, 17	
		Replace				6.0		3, 7, 17, 19	
0301010103020301	INPUT SEAL	Clean			2.0			7	E
		Inspect			2.0			7	E
		Replace			2.0			3, 7, 17, 19	



**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	<b>MODULAR CAUSEWAY SYSTEM (MCS)</b>								
01	<b>CAUSEWAY FERRY (CF)</b>								
02	<b>ROLL-ON/ROLL- OFF DISCHARGE FACILITY (RRDF)</b>								
04	<b>FLOATING CAUSEWAY (FC)</b>								
0401	INTERMEDIATE SECTION								
040101	NON-POWERED MODULE								
04010101	HULL								
0401010101	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E
		Repair		4.0				1, 16	
		Overhaul					24.0		
0401010102	INTERIOR	Clean					4.0		
		Inspect					2.0		
		Test		6.0			5.0	1, 25, 26	E
		Repair					6.0		
		Overhaul					50.0		
04010102	GUILLOTINE FITTINGS	Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
		Repair		3.0				1, 16	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
04010102	GUILLOTINE FITTINGS (CONT'D)	Replace		1.0				1	
04010103	FLEXORS	Inspect	0.5						E
		Replace	4.0						
0402	COMBINATION BEACH-END SECTION								
040201	NON-POWERED MODULES								
04020101	HULL								
0402010101	EXTERIOR	Clean		4.0				8, 9, 23, 24	E
		Inspect	1.0						E
		Service	1.5						E
		Repair		4.0				1, 16	
		Overhaul				24.0			
0402010102	INTERIOR	Clean				4.0			
		Inspect				2.0			
		Test				5.0	1, 25, 26		E
		Repair				6.0			
		Overhaul				50.0			
04020102	GUILLOTINE FITTINGS	Clean		1.0				8, 9, 23, 24	E
		Inspect	0.5						E
		Repair		3.0				1, 16	
		Replace		1.0				1	
04020103	FLEXORS	Inspect	0.5						E
		Replace	4.0						

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0403	GENERATOR SHELTER	Repair		4.0				1	
040301	ARMY TACTICAL QUIET GENERATOR (ATQG)								
040302	FUEL SYSTEM	Clean					1.0		E
		Inspect					1.0	7	
		Repair					5.0	1	
04030201	MANUAL FUEL PUMP	Clean		1.0				1	E
		Inspect	1.0	1.0				1	E
		Repair		2.0				1	
		Replace		2.0				1	
040303	LOUVERS	Clean		1.0				1	E
		Inspect	1.0						E
		Service		1.0					E
		Repair		3.0				1	
		Replace		4.0				1	
040304	ELECTRICAL SYSTEM	Test			2.0			7, 14, 15	E
		Repair		2.0	3.0			1, 7, 14, 15	
		Replace			5.0			7, 14, 15	
040305	FIRE SUPPRESSION SYSTEM	Test					4.0		E, G
		Inspect	1.0						E
		Repair		2.0			4.0	1, 14, 15	G
		Replace					40.0		G

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0404	PERSONNEL SHELTER								
040401	HEAT PUMP	Clean		4.0				1	E
		Inspect		1.0				1	E
		Service			3.0			7, 21	E
		Repair			4.0			1, 7, 14, 15, 21	
		Rebuild				8.0		7, 14, 15, 21	
		Replace			8.0			7, 14, 15, 21	
040402	INCINOLET								AE
040403	ELECTRICAL SYSTEM	Inspect	2.0						E
		Repair		12.0	3.0			1, 7, 14, 15	
		Replace			12.0			7, 14, 15	
040404	COMMUNICATIONS EQUIPMENT								
04040401	VHF/FM HANDHELD TRANSCEIVER	Replace	1.0					1	
		Repair					8.0		
0405	LIGHT TOWER								
040501	ELECTRICAL SYSTEM	Test			1.0			10, 15	E
		Inspect			0.5			10, 15	E
		Repair			6.0			10, 15	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
04050101	BATTERIES	Test			1.0			10, 13	E
		Inspect	0.5						E
		Replace		2.0				1	
04050102	OIL PRESSURE UNIT	Test			1.0			10	E
		Repair			1.0			10	
		Replace			1.5			10	
04050103	STARTING CIRCUIT	Repair			2.0			10, 15	
		Replace			3.0			10, 15	
04050104	ENGINE TEMPERATURE UNIT	Test			1.0			10, 18	E
		Repair			2.0			10, 18	
		Replace			2.5			10, 18	
04050105	HOUR METER UNIT	Repair			1.5			10	
		Replace			2.0			10	
04050106	SHUTDOWN CIRCUIT	Repair			2.0			10	
		Replace			4.0			10	
04050107	LAMP SYSTEM	Test	1.0						E
		Repair			2.0			10, 15	
		Replace			6.0			10, 15	
04050108	LAMP BALLAST SYSTEM	Test			0.5			10, 15	E
		Repair			2.0			10, 15	
		Replace			3.0			10, 15	
040502	GENERATOR	Clean		2.0				1	E
		Inspect					12.0		

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE	
			UNIT		DS	GS			DEPOT
			C	O	F	H			D
040502	GENERATOR (CONT'D)	Repair					18.0		
		Replace					24.0		
04050202	CONTROL PANEL	Test	1.0					E	
		Inspect	1.0					E	
		Repair			3.0			10, 15	
		Replace			4.5			10, 15	
04050205	DIESEL ENGINE	Service	4.0	2.0				1 E	
		Adjust		3.0				1	
		Repair				16.0		10	
		Overhaul					16.0		
		Replace			16.0			10	
0405020501	ENGINE FUEL SYSTEM	Inspect	1.0					E	
		Repair		4.0				1	
		Replace			8.0			10	
040502050101	FUEL PUMP	Inspect	1.0					E	
		Repair				4.0		10	
		Replace			5.0			10	
040502050102	FUEL TANK	Clean	2.0					E	
		Inspect	1.0					E	
		Repair		2.0				1	
		Replace		2.0				1	
0405020502	ENGINE AIR SYSTEM	Inspect	1.0					E	
		Repair		2.0				1	
		Replace		4.0				1	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0405020503	ENGINE COOLING SYSTEM	Inspect	1.0						E
		Repair		3.0				1	
		Replace		7.0				1, 10	
040502050301	FAN ASSEMBLY	Inspect	0.5						E
		Repair		1.5				1	
		Replace		2.0				1	
040502050302	COOLING WATER PUMP	Inspect						10	E
		Repair				4.0		10	
		Replace			5.0			10	
040502050303	RADIATOR	Clean	1.0						E
		Inspect		1.0				1	E
		Service	2.0	4.0				1	E
		Repair				4.0		10	
		Replace		2.0	3.0			1, 10	
0405020504	CYLINDER HEAD	Inspect		1.0				1	E
		Adjust					2.0		
		Repair					8.0		
		Replace					5.0		
0405020505	VIBRATION DAMPER	Repair					4.0		
		Replace					4.0		
0405020506	EXHAUST SYSTEM	Inspect	0.5						E
		Clean	1.5						E
		Repair			3.0			1, 16	
		Replace			5.0			1	

Table 1. MAC for Modular Causeway System. (MCS) (Continued)

(1) GROUP NO.	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP REF CODE	(6) REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0405020507	CRANKSHAFT	Inspect					4.0		
		Repair					8.0		
		Replace					8.0		
0405020508	PISTON	Inspect					4.0		
		Repair					4.0		
		Replace					4.0		
04050206	RUNNING GEAR	Service		2.0				1	E
		Repair		2.0				1, 10	
		Replace		18.0				1	
0405020601	TIRES	Inspect	0.5						E
		Repair				1.0		10	
		Replace				1.0		10	
04050207	SUPPORT TOWER	Inspect	0.5						E
		Service	1.0						E
		Repair			2.0			10	
		Replace			6.0			10	
04050208	TOWER RAISING ASSEMBLY	Inspect	0.5						E
		Repair			1.0			10	
		Replace			3.0			10	
04050209	ENCLOSURE	Inspect	0.5						E
		Repair			2.0			10	
		Replace			6.0			10	
0406	OFFSHORE ANCHOR	Clean	1.0						E
		Inspect	1.0						E



**Table 1. MAC for Modular Causeway System. (MCS) (Continued)**

(1)  GROUP NO.	(2)  COMPONENT/ASSEMBLY	(3)  MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5)  TOOLS AND EQUIP REF CODE	(6)  REMARKS CODE
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0406	OFFSHORE ANCHOR (CONT'D)	Repair			4.0			7	
		Replace		2.0				1	
0407	ONSHORE ANCHOR	Clean	1.0						E
		Inspect	1.0						E
		Repair			4.0			7	
		Replace		2.0				1	
0408	CONTAINERS	Clean	1.0						E
		Inspect	2.0						E
		Repair			4.0			7	
		Replace					8.0		

**Table 2. Remarks for Modular Causeway System. (MCS)**

REMARKS CODE	REMARKS
A	See MAC Chart for Causeway Ferry Diesel Engine Group Number 0101010101.
B	See MAC Chart for Causeway Ferry Marine Gear Group Number 0101010102.
C	See MAC Chart for Causeway Ferry Marine Gear Group Number 0101010103.
D	All repairs to the pump-jet must be done at depot level due to lack of technical information provided by the manufacturer, Schottel of Germany.
E	Preventive Maintenance Checks and Services (PMCS).
F	Includes replacement of level sensors, pump and motor.
G	Most work needs to be done by an authorized manufacturer's technical representative.
H	Refer to Army Technical Manual TM 11-5820-890-10-8.
I	Refer to Army Technical Manual TM 11-5825-291-13.
J	Includes cylinder liner, crankcase, crankcase breather and engine mounts.
K	Includes valves, springs, rocker arm, push rods, etc.
L	Includes valves, main bearings, vibration damper and crankshaft pulley.

Table 2. Remarks for Modular Causeway System. (MCS) (Continued)

REMARKS CODE	REMARKS
M	Includes drive shaft flex coupling.
N	Includes rings, connecting rod and connecting rod bearings.
O	Includes gear train, camshaft, idler gear, idler gear bearing, crankshaft timing gear, blower drive gear, and front and rear accessory drive gears.
P	Includes fuel water separator, fuel lines, fuel filter/strainer, fuel cooler, fuel manifold, fuel injector, fuel injector tube and valves.
Q	Includes air shutdown housing and air box check valves.
R	Includes intercooler and after cooler.
S	Includes lube oil pump driving gear, lube oil pressure regulator, lube oil relief valves, lube oil filter by-pass valve, lube oil cooler by-pass valve, lube oil pan and lube oil ventilation system.
T	Includes fresh water manifold and thermostat.
U	Includes raw water duplex strainer.
V	Includes starting batteries.
W	Rebuild of the marine gear is a depot level function.
X	Includes oil filter screen, pressure gage, temperature gage, selector valve, oil pump drive, output seal and gear mounts.
Y	Rebuild of the transfer case is a depot level function.
Z	See MAC Chart for Modular Warping Tug Diesel Engine Group Number 0301010101.
AA	See MAC Chart for Modular Warping Tug Marine Gear Group Number 0301010102.
AB	See MAC Chart for Modular Warping Tug Transfer Case Group Number 0301010103.
AC	Refer to Army Technical Manual TM 55-3950-204-14 & P.
AD	Refer to Army Technical Manual TM 5-2815-258-24.
AE	Refer to Army Technical Manual TM 55-1925-257-14&P.

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	O	General Mechanics Rail and Marine Tool Kit	5180-00-629-9783	
2	O	Torque Wrench, 30-150 in. lbs 3/8 in. Drive	5120-00-230-6380	
3	O	Torque Wrench, 30-150 ft lbs 1/2 in. Drive	5120-00-247-2540	
4	D	Torque Wrench, 100-500 ft lbs	5120-00-542-5577	
5	D	Pinch Pry Bar 60	5120-00-224-1384	
6	D	Hammer, Hand, (sledge hammer) 10 lb	5120-00-251-4489	
7	D	General Mechanics Tool Kit	5180-00-177-7033	
8	O	Hammer, Hand, Scaling	5120-00-224-4111	
9	O	Wire Brush	7920-00-291-5815	
10	D	Automotive Tool Kit	5810-00-177-7033	
11	O	Wrench, Strap	5120-00-776-1840	
12	D	Wrench, Monkey	5120-00-277-3120	
13	D	Electrolyte Solution Battery Tester	6630-00-171-5126	
14	O	Fuse Puller and Tester	5120-00-319-3295	
15	O	Multimeter	6625-00-171-5126	
16	O	Welder Tool Kit	5180-00-754-0661	
17	D	Dial Indicator	5120-00-402-9619	
18	D	Thermometer, Test	6685-00-056-3109	
19	G	Wheel Puller		
20	D	Pliers, Snap Ring		
21	D	Tool Kit, Compressor	5180-01-188-5075	
22		Megger	6625-01-015-1451	
23	O	Power Washer		
24	O	Scraper, Long Handle		

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
25	O	Air Tester		
26	O	Air Compressor		
27	D	Adaptor (1 5/8 in. Dia plugs) (Cylinder Block)		J21850
28	D	Aftercooler Adaptor Cup Plug Installer		J28711
29	D	Aftercooler Adaptor Plug Remover and Installer		J25275
30	D	Aftercooler Cup Plug Installer (2 1/2 in. Dia)		J24597
31	D	Alignment Tool		J21799
32	D	Block Assembly Wrench Set		J25451-B
33	D	Block Thread Repair Kit		J29513
34	D	Cup Plug Installer (1 in. Dia)		J33420
35	D	Cylinder Block Air Box Plugging Tool		J29571
36	D	Cylinder Block Line Boring Tool		J29005
37	D	Cylinder Block Tap		J25384
38	D	Cylinder Diameter Checking Gage		J5347-B
39	D	Cylinder Hone Set (2 1/2 in. to 5 3/4 in.)		J5902-01
40	D	Dial Bore Gage Master Setting Fixture		J23059-01
41	D	Dial Indicator Set		J22273-01
42	D	Diesel Engine Parts Dolly		J6387
43	D	Handle		J7079-02
44	D	Loctite "Chisel" Gasket Remover		PT7275
45	D	Master Ring Gage for Block Bore		J24564

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
46	D	Overhaul Stand (6V and 8V engines)		J29109
47	D	Overhaul Stand (12V and 16V engines)		J9384-04
48	D	Overhaul Stand Adaptor (6V and 8V engines)		J33850
49	D	Overhaul Stand Adaptor (12V and 16V engines)		J8650
50	D	Pipe Plug Remover/Installer (1/8 in. Dia)		J34650
51	D	Special Plug Remover (dry cylinder block)		J21995-01
52	D	Special Plug Remover		J23019
53	D	Load Cell Kit, Cam Follower Roller Fixture (Cylinder Head)		J33421-25
54	D	Cam Follower Service Fixture		J33421-A
55	D	Cylinder Head Bolt Hole Cleanout Tap		J25384
56	D	Cylinder Head Guide Studs (set of two)		J24748
57	D	Cylinder Head Holding Plate Set		J3087-01
58	D	Cylinder Head Lifting Fixture		J22062-01
59	D	Engine Barring Tool		J22582
60	D	Feeler Gage Set (.0015 in. to .015 in.)		J3172
61	D	Feeler Stock (.0015 in.)		J23185
62	D	Fuel Line Nut Wrench		J8932B
63	D	Injector Fuel Hole Brush		J8152
64	D	Pressure Checking Tool		J28454
65	D	Push Rod Remover (set of three)		J3092-01
66	D	Slide Hammer		J2619-01

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
67	D	Spring Tester		J22738-02
68	D	Valve Bridge Holding Fixture		J21772
69	D	Valve Bridge Gage Remover (broken)		J7453
70	D	Valve Bridge Guide Remover Set		J7091-01
71	D	Valve Bridge Guide Installer		J7482
72	D	Valve Guide Cleaner		J5437
73	D	Valve Guide Installer (machined)		J21520
74	D	Valve Guide Remover		J6569-A
75	D	Valve Seat Dial Gage		J8165-2
76	D	Valve Guide Oil Seal Installer		J35373
77	D	Valve Seat Grinder (Model VIP)		J7040-A
78	D	Valve Seat Grinder		J8165-1A
79	D	Valve Seat Grinder Adaptor Set		J24566
80	D	Valve Seat Insert Installer		J24357
81	D	Valve Seat Insert Remover Assembly		J23479-492
82	D	Valve Seat Insert Remover Collet		J23479-33
83	D	Valve Spring Checking Gage		J25076-B
84	D	Valve Spring Compressor		J7455-A
85	D	Water Nozzle Installer (intermediate)		J24857-A
86	D	Front Oil Seal Installer (6V and 8V) (Crankshaft)		J9783
87	D	Rear Oil Seal Installer (std and ovs seals)		J21112-B
88	D	Handle		J3154-A
89	D	Guide Studs (c/s with dowels)		J9727-2
90	D	Guide Studs (c/s without dowels)		J9727-5

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
91	D	Expander (std seal)		J4239
92	D	Handle		J8092
93	D	Guide Studs		J25002
94	D	Expander (ovs seal, no handle or guide studs)		J8682
95	D	Sleeve Installer (ovs seal)		J21983
96	D	Installer		J9727-A
97	D	Handle		J3154-1A
98	D	Expander (std seal, no handle)		J22425-A
99	D	Expander (ovs seal, no handle or guide studs)		J4195-01
100	D	Installer (ovs seal)		J4194-01
101	D	Dial Indicator Set		J5959-01
102	D	Engine Barring Tool		J22582
103	D	Flywheel Housing Alignment Studs		J1927-01
104	D	Micrometer Ball Attachment		J4757
105	D	Torque Wrench Adaptor (12V and 16V engines)		J22898-A
106	D	Universal Bar Type Puller		J24420-B
107	D	Flywheel Lifting Fixture (Flywheel)		J25026
108	D	Flywheel Lifting Tool		J6361-01
109	D	Oil Seal Removing and Replacing Tool Set		J3154-04
110	D	Slide Hammer Set		J5901-01
111	D	Flywheel Housing Aligning Studs (set of four) (Flywheel Housing)		J1927-01
112	D	Flywheel Housing Concentricity Gage Set		J9734-C

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
113	D	Connecting Rod Holding Fixture (Piston, Connecting Rod and Cylinder Liner)		J7632
114	D	Cylinder Liner Master Ring Gage		J24564
115	D	Cylinder Hone Set (2½ in. to 5¾ in. range)		J5902-01
116	D	Cylinder Liner Hold-Down Tool		J24565-02
117	D	Cylinder Liner Remover Set		J24563-A
118	D	Dial Bore Gage Setting Fixture		J23059-01
119	D	Dial Indicator Set		J24898
120	D	Feeler Gage Set		J3172
121	D	Micrometer Ball Attachment		J4757
122	D	Piston Crown Identification Gage		J25397-A
123	D	Piston Pin Alignment Tool		J24285
124	D	Piston Pin Retainer Installer		J23762-A
125	D	Piston Pin Retainer Leak Detector (plastic)		J23987-B
126	D	Piston Pin Retainer Leak Detector (all metal)		J35134
127	D	Piston Ring Compressor		J24227
128	D	Piston Ring Remover Installer		J8128
129	D	Piston to Liner Feeler Gage Set		J5438-01
130	D	Seal Ring Compressor		J24226
131	D	Accessory Drive Hub Oil Seal Aligning Tool (Camshaft)		J21166
132	D	Alternator Drive Step-Up Gear Aligning Gage		J29893
133	D	Balance Weight Cover Oil Seal Installer		J9791
134	D	Camshaft Gear Puller		J1902-B



Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
135	D	Camshaft Gear Puller Adaptor Plate Set		J6202-01
136	D	Camshaft and Oil Pump Gear Installer		J1903
137	D	Dial Indicator and Attachment Set		J5959-01
138	D	Puller Adaptor		J7932
139	D	Slide Hammer Set		J6471-02
140	D	Spring Scale		J8129
141	D	Universal Bar Type Puller		J24420-B
142	D	Pullers (Fuel & Governors)		J6270-1
143	D	Oil Seal Remover and Installer		J6270-3
144	D	Buffing Wheel (brass wire)		J7944
145	D	Fuel Pipe Socket		J8932-B
146	D	Fuel System Primer		J5956
147	D	Injector Auxiliary Tester		J22640-A
148	D	Injector Body Reamer		J21089
149	D	Injector Calibrator		J22410
150	D	Injector Carbon Remover Set		J9418
151	D	Injector Holding Fixture		J22396
152	D	Injector Nut Seal Ring Installer		J29197
153	D	Injector Service Tool Set		J23435-C
154	D	Body Brush		J8152
155	D	Nut Socket Wrench		J4983-01
156	D	Rack Hole Brush		J8150
157	D	Spray Hole Cleaner Vice		J4298-1
158	D	Spray Tip Carbon Remover (high sack)		J9464-01

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
159	D	Spray Tip Carbon Remover (low sack)		J24838
160	D	Spray Tip Driver and Brushing Cleaner		J129101
161	D	Wire Sharpening Stone		J8170
162	D	Injector Tag Remover and Installer		J24767
163	D	Injector Test Oil (5, 10, 30 and 55 GAL)		J26400
164	D	Injector Tester		J23010-B
165	D	DDEC Injector Adaptor Kit		J23010-500
166	D	Lapping Block Set		J22090-A
167	D	Master Injector Calibrating Kit		J35369
168	D	Needle Valve Lift Gage		J9462-02
169	D	Polishing Compound		J23038
170	D	Polishing Stick Set		J22964
171	D	Spray Tip Cleaning Wire (.007 in. Dia holes)		J21462-01
172	D	Spray Tip Flow Gage		J25600-B
173	D	Field Modification Kit		J25600-103
174	D	Spring Tester		J29196
175	D	Tip Conical. Gage and Rack Freeness Tester		J29584
176	D	Cylinder Head Holding Plate Set		J3087-01
177	D	Cylinder Liner Depth Gage		J22273-01
178	D	Injector Protrusion Gage		J25521
179	D	Injector Tube Service Tool Set		J22525-B
180	D	Injector Tube Swaging Tool		J28611-A
181	D	Fuel Pump Tool Set		J1508-E

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
182	D	Fuel Pump Wrench		J4242
183	D	Control Link Operating Lever Bearing Remover and Installer		J8985
184	D	Governor Cover Bearing Installer		J21068
185	D	Governor Cover Bearing Remover and Installer		J21967-01
186	D	High Speed Spring Retainer and Installer		J5345-12
187	D	Governor Weight Shaft Retaining Ring Installer		J36840
188	D	Blower Alignment Tool (Air System)		J33001
189	D	Blower Clearance Feeler Set		J1698-02
190	D	Blower Service Tool Set		J6270-G
191	D	Installer, Lip Type Oil Seal/Water Sleeve		J35787-A
192	D	Dial Indicator Set (magnetic base)		J7872
193	D	Turbocharger Inlet Shield		J26554-A
194	D	Adaptor Cup Plug Installer		J28711
195	D	Adaptor Plug Remover and Installer		J25275
196	D	Bar Type Gear Puller (Lubrication System)		J24420
197	D	Oil Pump Drive Gear Installer (16V)		J9380
198	D	Oil Pump Drive Shaft Gear Installer (6V and 8V)		J22397
199	D	Oil Pump Driven Gear Installer (16V)		J9381
200	D	Oil Pump Driven Shaft Gear Installer (6V and 8V)		J22398

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
201	D	Oil Pump Driving Gear Installer (6V and 8V)		J22285
202	D	Spring Tester (1-125 lbs)		J29196
203	D	Strap Wrench (spin-on filter)		J24783
204	D	Cooling System Radiator Cap Pressure Tester (Cooling System)		J24460-01
205	D	Fingers, Fan Hub Nut Socket (16V)		J6534-8
206	D	Handle		J7079-2
207	D	Oil Seal Installer		J8501
208	D	Pliers		J4646
209	D	Puller		J24420-A
210	D	Socket, Fan Hub Nut (16V)		J22556-2
211	D	Thermostat Seal Installer		J8550
212	D	Water Pump Bearing and Gear Installer		J25257
213	D	Water Pump Impeller/Gear Slip Torque Tool		J33765
214	D	Water Pump Seal Remover Set		J22150-B
215	D	Water Pump Impeller Slip Checking Fixture		J34034
216	D	Slide Hammer (Electrical Equipment)		J23907-1
217	D	Tachometer Drive Alignment Tool Set		J23068
218	D	Tachometer Drive Shaft Remover		J5901-3
219	O	Coveralls, Eye Protection, Respirator, Gloves (Zodiac Boat Hull)		
220	O	Grease Pencil Or Chalk		

Table 3. Tools and Test Equipment for Modular Causeway System. (MCS) (Continued)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
221	O	Saber Saw With Metal Cutting Blades		
222	D	Grinder or Disc Sander w/ Coarse Medium Grit		
223	O	Measuring Tape		
224	D	Scissors, Shears		
225	O	Cardboard, Kraft Paper		
226	D	Disposable Containers, Mixing Sticks		
227	D	Disposable Brushes, Putty Knife		
228	D	Polyethylene Sheet		
229	D	Heavy Cardboard, Thin Plywood, Sheet Metal		
230	D	Acetone		



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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
COMPONENTS OF END ITEM (COEI) LIST**

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## **INTRODUCTION**

### **Scope**

This work package lists COEI for the Floating Causeway to help you inventory items for safe and efficient operation of the equipment.

### **General**

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.

### **Explanation of Columns in the COEI List**

Column (1) - Illus Number. Gives you the number of the item illustrated.

Column (2) - National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (3) - Description, CAGEC, and Part Number. Identifies the Federal item name followed by a minimum description when needed. The stowage location of COEI is also included in this column. The last line below the description is the CAGEC (commercial and government entity code) (in parentheses) and the part number.

Column (4) - Usable on Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5) - Unit of Measure (U/M). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) - Qty Rqd. Indicates the quantity required.

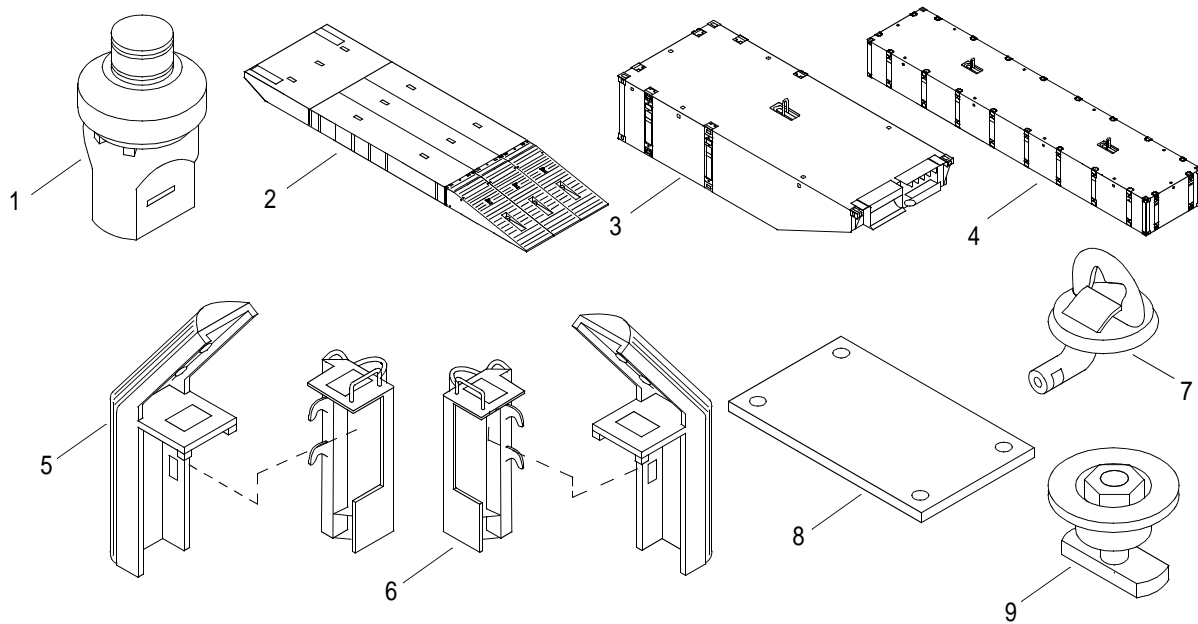
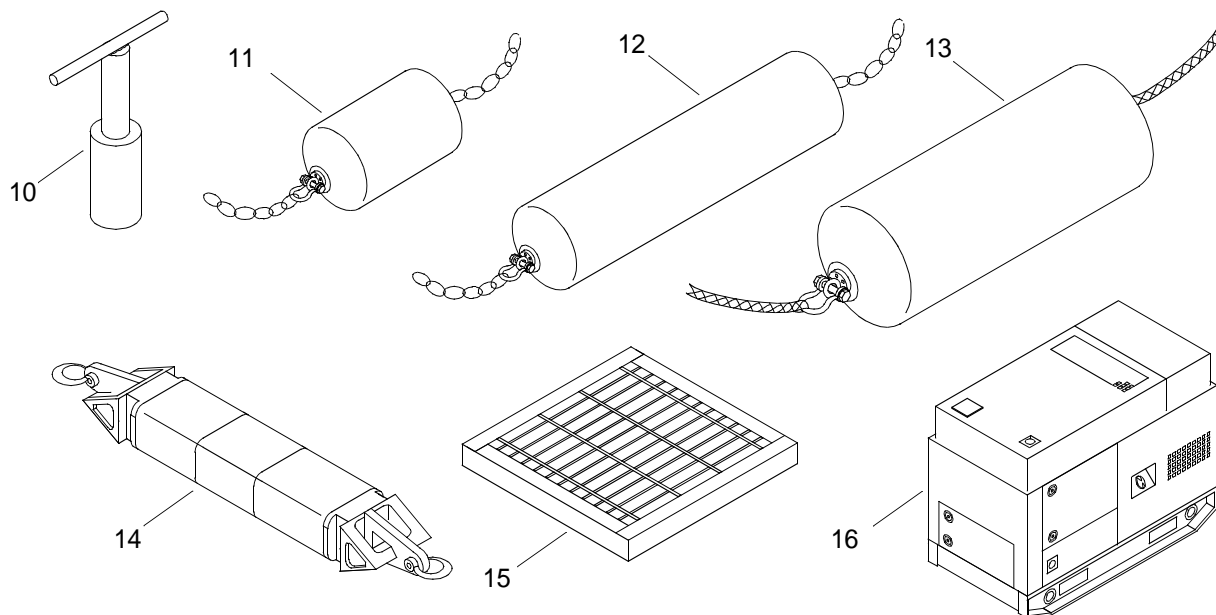


Table 1. Component of End Item. (COEI)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
1		ANCHOR MARKER LIGHT (clear) (BII container) (0Z3L4) 556-60-14		EA	30
2		BEACH END MODULE ASSEMBLY (ISOPAK) (34712) E02853		EA	6
3		CENTER END RAKE (ISOPAK) (34712) E02823		EA	58
4		CENTER MODULE (ISOPAK) (34712) E02803		EA	94
5		CORNER FENDER (left hand) (BII container) (81340) FC-582-003-LH		EA	8
6		CORNER FENDER (right hand) (BII container) (81340) FC-582-003-RH		EA	8
7		D-RING MOORING ASSEMBLY (34712) E07803		EA	8
8		DUNNAGE MATT (20 ft all-access container) (81340) FC-111-001-1		EA	24
9		DUNNAGE MATT LOCK DOWN DOG ASSEMBLY (20 ft all-access container) (81340) FC-111-001-1-11		EA	30





**Table 1. Component of End Item. (COEI)**

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
10		DUNNAGE MATT LOCK DOWN TEE HANDLE ASSEMBLY (20 ft all-access container) (81340) FC-111-001-1-10		EA	30
11		FENDER ASSEMBLY (3x5 marine fender) (40 ft open-top container) (5R766) MG-3x5		EA	30
12		FENDER ASSEMBLY (4x12 marine fender) (40 ft open-top container) (5R766) MG-4x12		EA	4
13		FENDER ASSEMBLY (5x10 marine fender) (40 ft open-top container) (5R766) MG-5x10		EA	2
14	2040-01-092-3081	FLEXOR COUPLING, PONTOON CAUSEWAY (left hand rakes) (80091) 6138992		EA	61
15		FLEXOR WELL COVER (BII container) (06101) MCS-99-673-001-129		EA	46
16	6155-01-274-7388	GENERATOR SET, DIESEL ENGINE (20 ft end-opening container) (30554) MEP 804A		EA	1

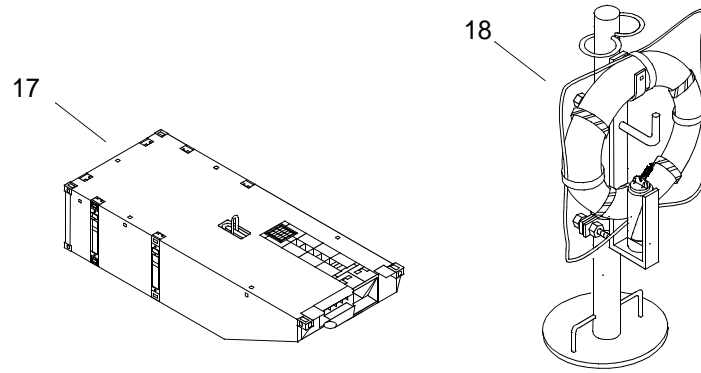


Table 1. Component of End Item. (COEI)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
17		LEFT END RAKE (ISOPAK) (34712) E02833		EA	62
18		LIFE RING BUOY AND STANCHION ASSEMBLY (BII container) Consisting Of: Ring, Buoy, Life Saving 4220-00-275-3157 (81340) SUBPART 160.050-30 IN Light, Marker, Distress 6230-01-143-4778 (0FDD9) SS777 Hanger, Bracket (06101) MCS-01-612-010-3 Stanchion (06101) MCS-01-612-010-1 Rubber Strip (39428) 9013K52 Nut (39428) 90473A031 Bolt (39428) 91309A628 Bracket Half (06101) MCS-01-612-010-4 Retainer (06101) MCS-01-612-010-2 Bolt (39428) 92245A716		EA	4

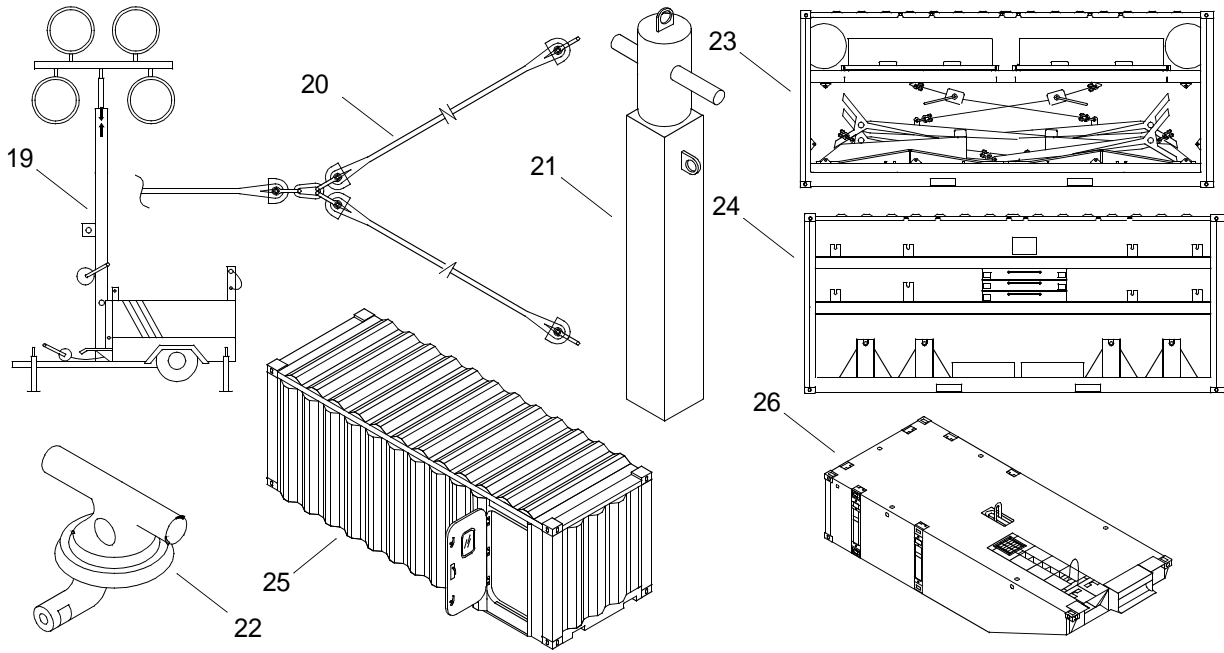


Table 1. Component of End Item. (COEI)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
19		LIGHT TOWER (20 ft end-opening container) (33968) 36043610		EA	2
20		MCS TOW BRIDLE (BII container) (19207) MCS-01-582-001		EA	1
21		MOORING BITT (4x12 fender container) (81340) FC-582-004		EA	8
22		MOORING CLEAT ASSEMBLY (BII container) (34712) E02783		EA	8
23		OFFSHORE ANCHOR (20 ft all-access container) (19207) MCSFC-99-581-001		EA	8
24		ONSHORE ANCHOR (20 ft all-access container) (19207) MCSFC-99-581-002		EA	1
25		PERSONNEL SHELTER (20 ft end-opening container) (81340) FC-621-001		EA	1
26		RIGHT END RAKE (ISOPAK) (34712) E02813		EA	62

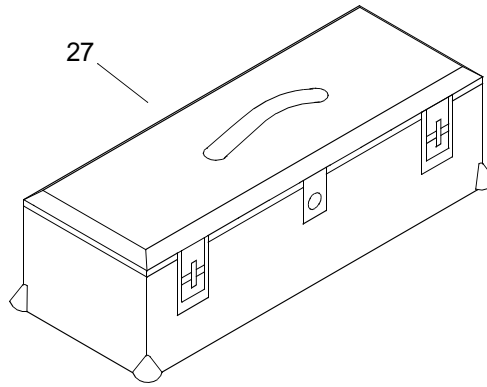


Table 1. Component of End Item. (COEI)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
27	5180-01-430-2911	TOOL KIT, GENERAL MECHANIC'S (personnel shelter) (1GM92) 007		KT	1
		<b>ON BOARD SPARES</b>			
		BOLTS, 3/4 in. x 7 in. LG (BII container) (0KEV6) 91469A861		EA	12
		BREAKER, 20 AMP (BII container) (16333) OS-416S-EO.F.O		EA	1
		CARRIAGE BOLT, 1/2 in. -13UNC x 2 in. LG (BII container) (0KEV6) 93548A720		EA	50
	5925-01-385-2027	CIRCUIT BREAKER (BII container) (89946) 452D837G04		EA	1
	2040-01-092-3081	FLEXOR COUPLING, PONTOON CAUSEWAY (unused left hand rakes) (80091) 6138992		EA	6
		FLEXOR WELL COVER (BII container) (06101) MCS-99-673-001-129		EA	2
		FUSE, CARTRIDGE (BII container) (75915) 251003		EA	2

Table 1. Component of End Item. (COEI)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
		GUILLOTINE, INTERCONNECT (BII container) (34712) E04282		EA	24
		LAMP, FLUORESCENT (BII ntainer) (62607) F48T12/LW/EW		EA	5
		LAMP, INCANDESCENT (BII container) (24545) BC25T8DC		EA	1
		LAMP, INCANDESCENT (BII container) (62607) HPR40		EA	2
		MFC, CONNECTING, INTERLOCK (BII container) (34712) E04222		EA	24
	5310-00-763-8921	NUT, PLAIN HEXAGON (BII container) (96906) MS51967-23		EA	12
	5310-00-762-6223	NUT, PLAIN HEXAGON (BII container) (96906) MS51967-41		EA	5
	5310-00-765-2280	NUT, PLAIN, HEXAGON (BII container) (4773) D7760D		EA	50
	5310-00-880-8188	NUT, PLAIN, HEXAGON (BII container) (96906) MS51967-47		EA	2
		NYLON ROPE SSR-1200 (BII container) (5A457) W7		RL	1
	5315-00-899-4116	PIN, COTTER (BII container) (80205) MS24665-520		HD	100
	4235-01-416-8465	SPILL CLEAN-UP KIT, HAZARDOUS MATERIAL (BII container) (50378) P-SKFL31		KT	1
		SPRING PIN (BII container) (34712) E04251		EA	24
		TWIST LOCKS, HORIZONTAL (BII container) (059E5) BLR1212		EA	10
		TWIST LOCKS, VERTICAL (BII container) (94658) F633L-C		EA	20

Table 1. Component of End Item. (COEI)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
	5310-00-809-5997	WASHER, FLAT (BII container) (0158B) MS27183-17		HD	50
	5310-00-982-6584	WASHER, FLAT (BII container) (96906) MS27183-26		EA	50

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
BASIC ISSUE ITEMS LIST (BII)**

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## **INTRODUCTION**

### **Scope**

This work package lists BII for the Floating Causeway to help you inventory items for safe and efficient operation of the equipment.

### **General**

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 BII List**

Column (1) - Illus Number. Gives you the number of the item illustrated.

Column (2) - National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (3) - Description, CAGEC, and Part Number. Identifies the Federal item name followed by a minimum description when needed. The stowage location of BII is also included in this column. The last line below the description is the CAGEC (commercial and government entity code) (in parentheses) and the part number.

Column (4) - Usable on Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5) - Unit of Measure (U/M). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) - Qty Rqd. Indicates the quantity required.

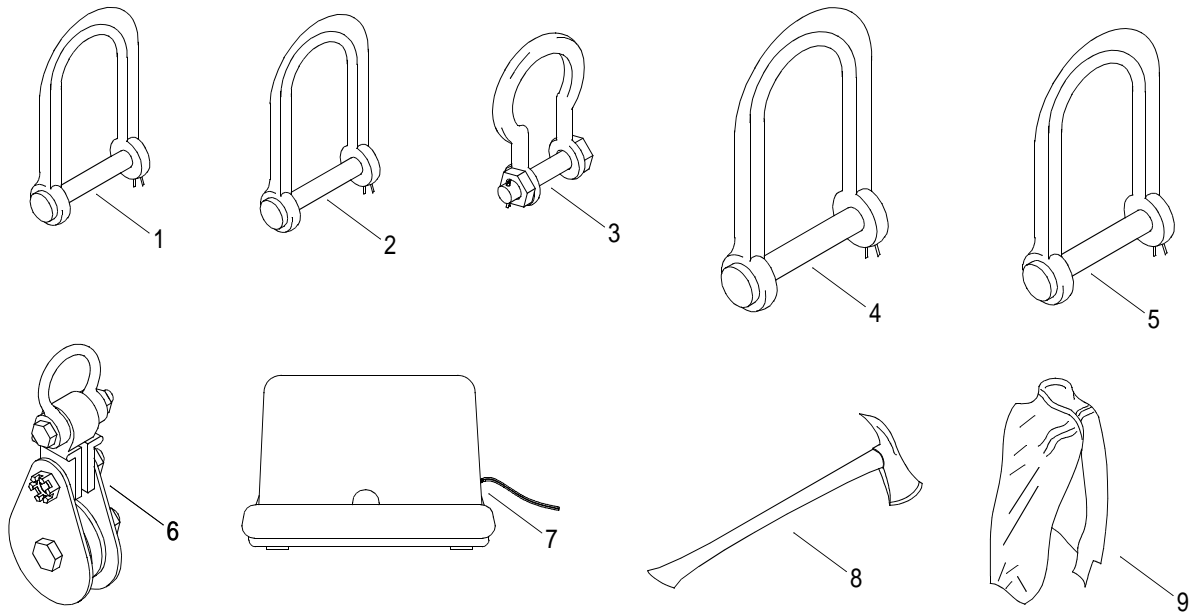


Table 1. Basic Issue Items. (BII)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
1		2-TON 1/2 in. ANCHOR SHACKLE (75535) 1019472		EA	8
2		2-TON 1/2 in. ANCHOR SHACKLE (75535) 1019472		EA	236
3		30-TON 1-1/2 in. ANCHOR BOLT SHACKLE (75535) 1021110		EA	8
4		3-1/4 TON 5/8 in. SHACKLE (75535) 75535		EA	8
5		4-3/4 TON 3/4 in. SHACKLE (75535) 1019515		EA	8
6		8 in. SNATCH BLOCK (75535) 121022		EA	3
7		ADAPTOR, CHARGER (OJDM6) 21-200016		EA	4
8	4210-00-142-4949	AX, PICKHEAD (76109) GGGA296TYPE2		EA	2
9		BLANKET, BURN (1BJ97) 7260C		PG	1



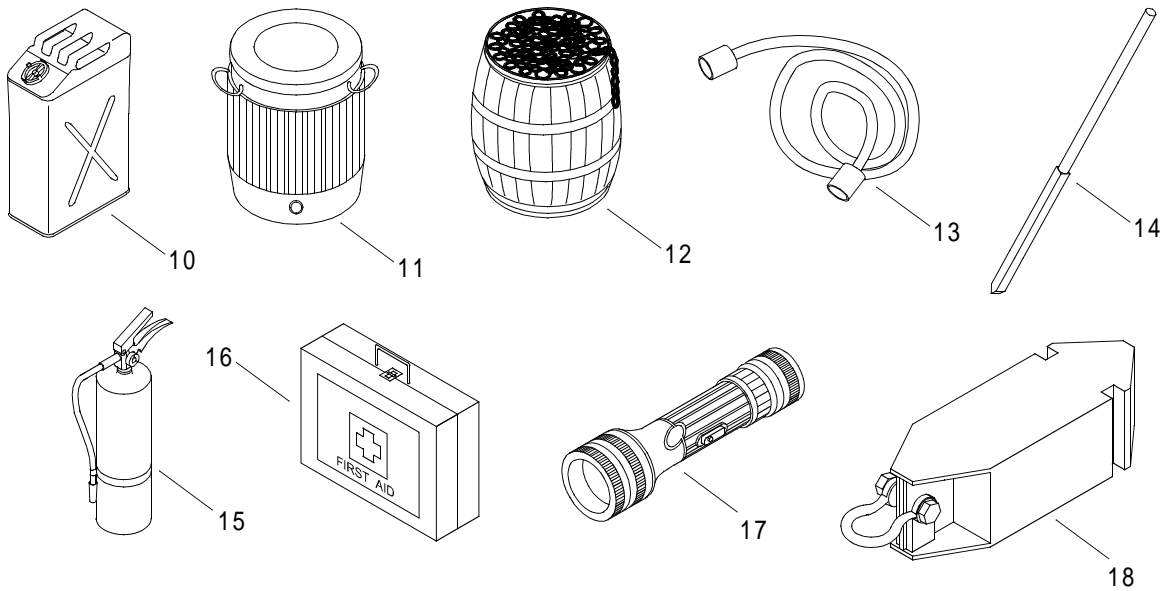


Table 1. Basic Issue Items. (BII) (Continued)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
10	7240-01-337-5269	CAN, GAS, MILITARY (81349) MIL-C-53109		EA	4
11	7240-00-089-3827	CAN, WATER, MILITARY (81349) MIL-C-43613		EA	4
12		CHAIN, 1/2 in., GENERAL PURPOSE, GRADE 30 (3A054) 3592T549		FT	74
13	5935-00-567-0128	CONNECTOR, PLUG, ELECTRICAL (19207) 1162338		EA	1
14	5120-00-224-1390	CROWBAR (58536) A-A-2563		EA	12
15	4210-00-889-2491	EXTINGUISHER, FIRE (10 lb) (58536) A-A-393		EA	2
16	6545-00-116-1410	FIRST AID KIT, GENERAL PURPOSE (64616) 68-1371		EA	2
17	6230-00-264-8261	FLASHLIGHT (81349) MIL-F-3747		EA	6
18		FLEXOR RECEIVER INSERT (19207) FCRRDF-99-581-001-70		EA	4

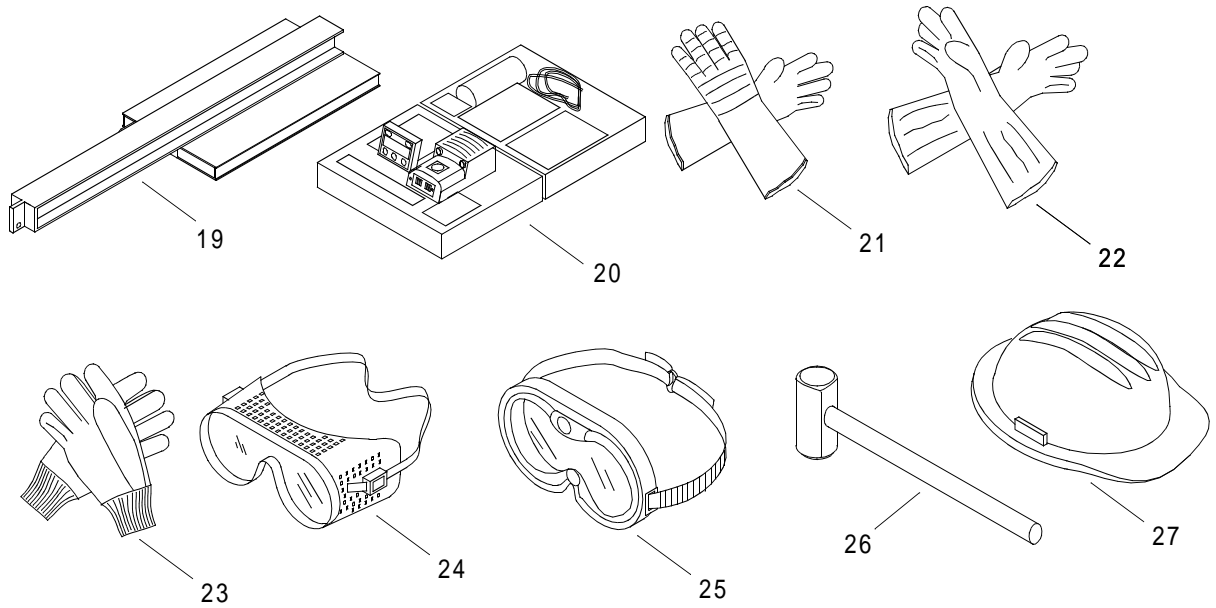


Table 1. Basic Issue Items. (BII) (Continued)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
19		FORKLIFT ADAPTOR (06101) MCS-673-99-001-167		EA	2
20		GAS-FREE METER (7J761) US ARMY-112160		EA	1
21	8415-01-267-9661	GLOVES, ANTIFLASH (81349) MIL-G-2874		PR	18
22	8415-00-266-8677	GLOVES, CHEMICAL (81349) ZZ-G-381		PR	6
23	8415-00-34-4658	GLOVES, MEN'S AND WOMEN'S (leather palm) (81348) ZZ-G-401		PR	18
24	4240-00-052-3776	GOGGLES, INDUSTRIAL (chipping, chemical) (80204) ANSI Z87.1		PR	18
25	8465-01-004-2893	GOGGLES, SUN, WIND AND DUST (safety) (81349) MIL-G-43914		PR	18
26	5120-00-243-2957	HAMMER, HAND (10 lb sledge) (58536) 75H		EA	12
27	8415-00-889-3768	HELMET, SAFETY (brown) (80204) ISEA/ANSI Z89.1		EA	12

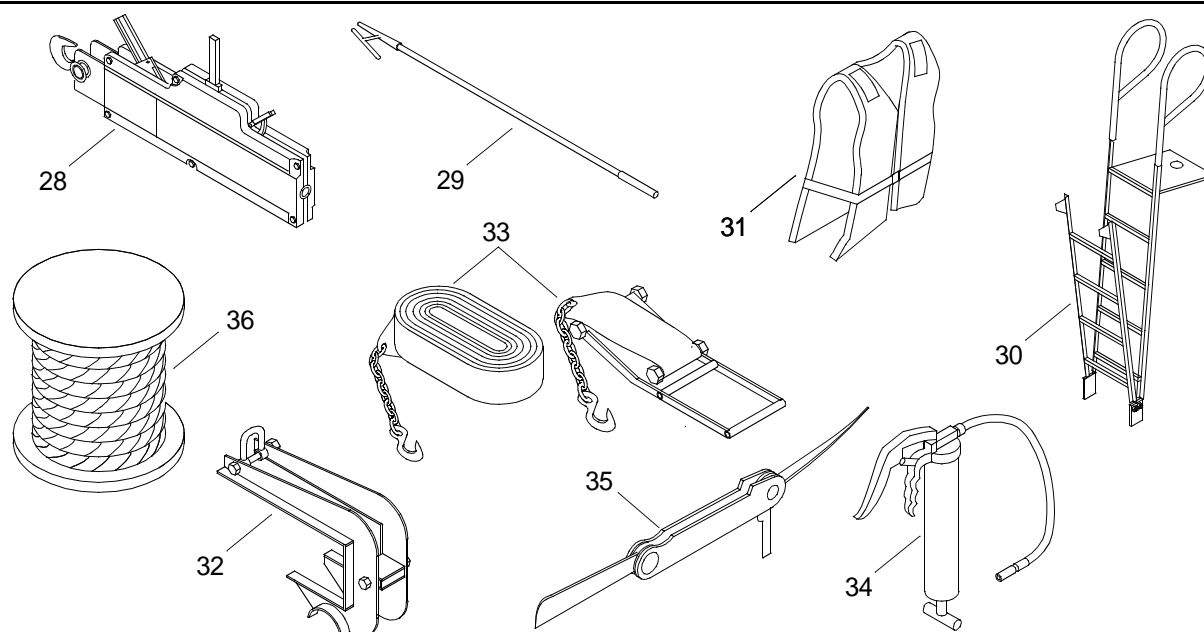


Table 1. Basic Issue Items. (BII) (Continued)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
28	3950-01-006-0723	HOIST, WIRE ROPE (12708) TU32		EA	2
29	2040-00-268-9250	HOOK, BOAT (21530) H389		EA	2
30		LADDER (06101) MCS-99-673-001-128		EA	2
31	4220-00-276-8926	LIFE PRESERVER, VEST (work vest) (81349) MIL-L-17653		EA	18
32		LIFTING DEVICE ASSEMBLY (BII container) (19207) FCRRDF-99-581-001-68		EA	1
33		LOAD RESTRAINING DEVICE, 30 ft, SERIES 15,000 ULTIMATE STRENGTH (3AJ34) 20489		EA	15
34	4930-00-965-0288	LUBRICATING GUN, HAND (77335) 30415		EA	2
35	5120-00-224-9440	MARLINESPIKE (80244) 51201-00-224-9440		EA	16
36		NYLON ROPE SSR-1200 (5A457) W7		RL	2

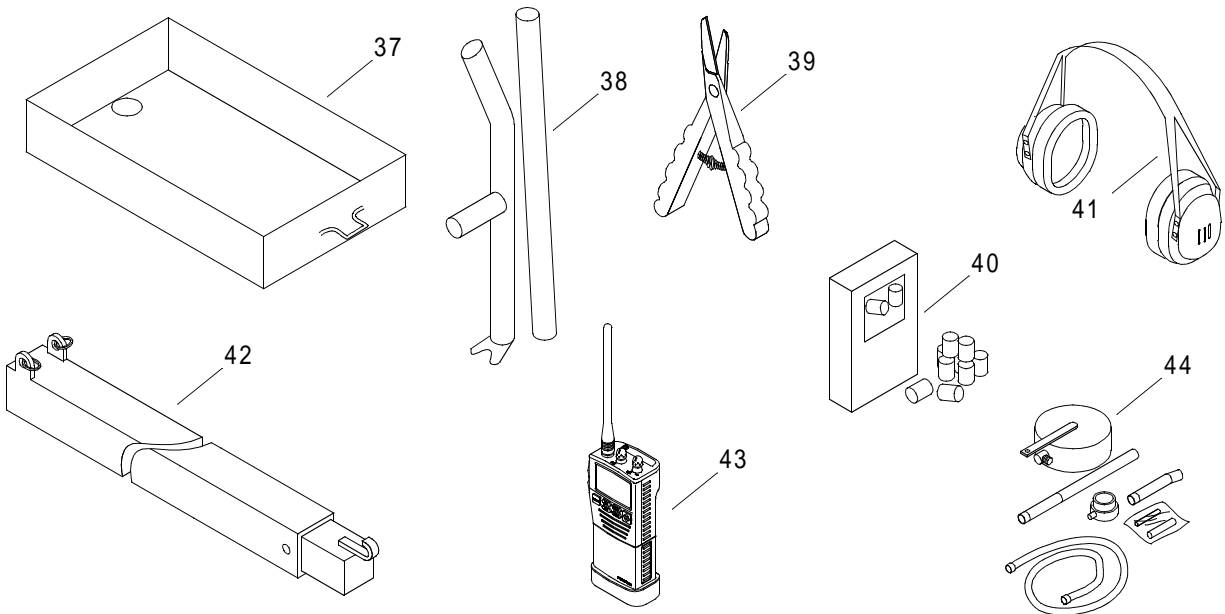


Table 1. Basic Issue Items. (BII) (Continued)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
37	4910-00-387-9592	PAN, DRAIN (81349) MIL-P-45819		EA	1
38		PIN RETRACTION TOOL (06101) MCS-99-673-001-132		EA	2
39	5110-01-423-8503	PLIERS (55719) 659ACP		EA	4
40	6515-00-137-6345	PLUG, EAR (89875) 4-375		BX	1
41	4240-00-022-2946	PROTECTOR, HEARING (58536) A-A-58084		EA	4
42		PUSH ROD (06101) FCRRDF-99-581-001-130		EA	1
43		RECEIVER/XMTR (OJDM6) 50-2000029		EA	4
44		ROTARY TRANSFER PUMP (25795) 1P893		EA	1

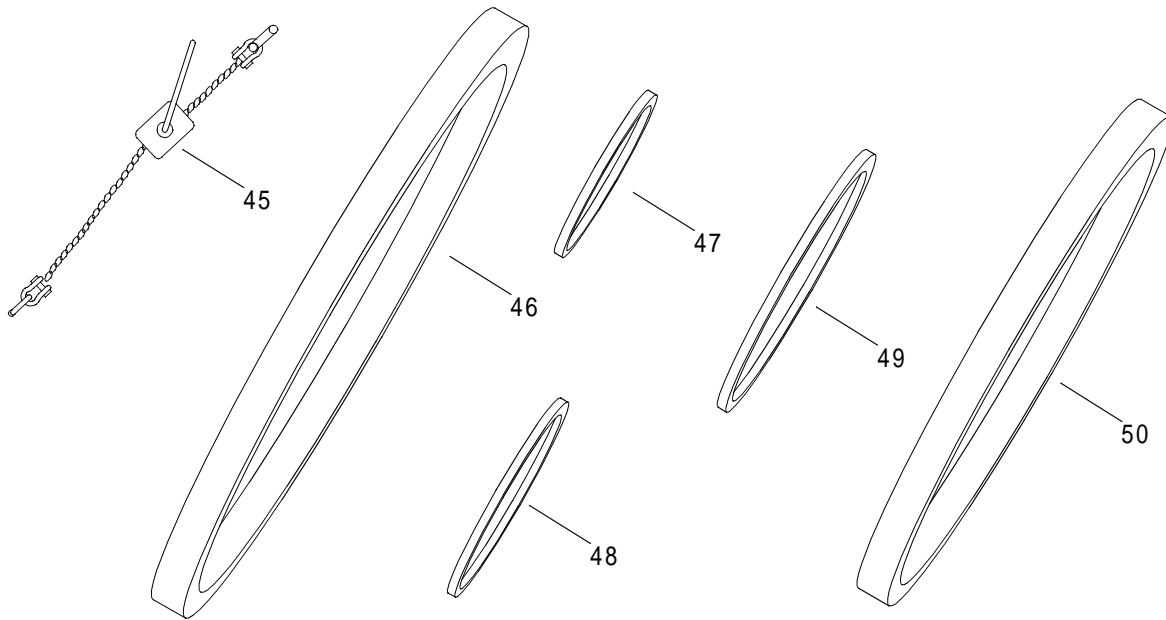


Table 1. Basic Issue Items. (BII) (Continued)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
45		SLING, 36,000 lb ADJUSTABLE CHAIN Consisting of: 1-1/4 in. Alloy Master Link (75535) 1014342 200 ft-5/8 in. Chain (75535) 273563 5/8 in. Clevis Grab Hook (75535) 1027695 5/8 in. Lokalloy (75535) 1014723		EA	4
46		SLING, LIFTING, 53,000 lb (brown) (3AJ34) EN600X25FT		EA	8
47		SLING, LIFTING, 5300 lb (green) (3AJ34) EN60X4FT		EA	4
48		SLING, LIFTING, 5300 lb (green) (3AJ34) EN60X5FT		EA	4
49		SLING, LIFTING, 5300 lb (green) (3AJ34) EN60X6FT		EA	4
50		SLING, LIFTING, 8400 lb (yellow) (3AJ34) EN90X20FT		EA	4

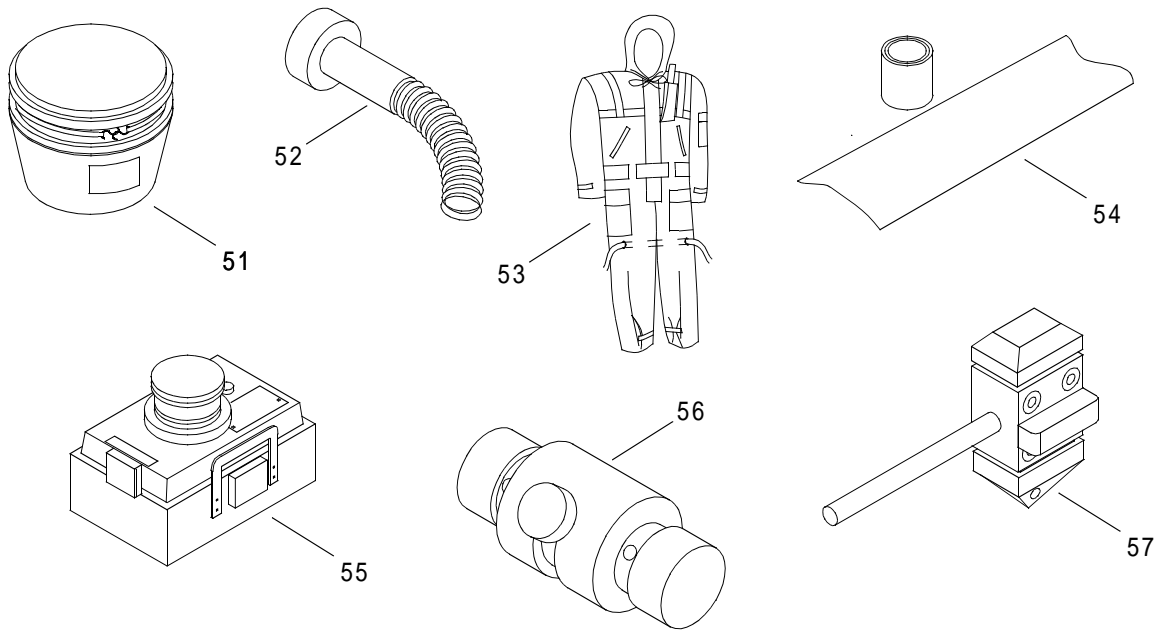


Table 1. Basic Issue Items. (BII) (Continued)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
51	4235-01-416-8465	SPILL CLEAN-UP KIT, HAZARDOUS MATERIAL (BII container) (50378) P-SKFL31		KT	1
52	7240-00-177-6154	SPOUT, CAN, FLEXIBLE (19207) 11677020		EA	2
53		SUIT, SURVIVAL, COLD (63806) ISS-590		EA	18
54		TARP REPAIR KIT (1B651) A149		EA	1
55		TOWING LIGHTS Navigational Barge Light (red) (OAGB3) 98-23804M Navigational Barge Light (green) (OAGB3) 98-23805M Navigational Barge Light (amber) (OAGB3) 98-23400M		EA	2
56		TWIST LOCKS, HORIZONTAL (059E5) BLR1212		EA	176
57		TWIST LOCKS, VERTICAL (94658) F633L-C		EA	376

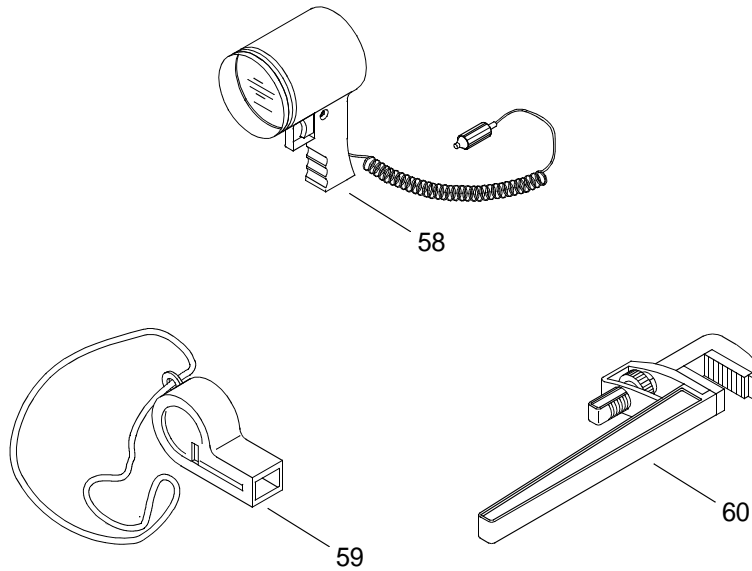


Table 1. Basic Issue Items. (BII) (Continued)

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQD
58		WATER PROOF LANTERN (0PL28) 2206		EA	2
59	8465-00-254-8803	WHISTLE, BALL (58536) A-A-55106		EA	24
60	5120-00-277-1462	WRENCH, PIPE (81348) TKCX1D		EA	2





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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
EXPENDABLE AND DURABLE ITEMS LIST (EDIL)**

---

**INTRODUCTION****Scope**

This work package lists expendable and durable items to help 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 listing and is referenced in the narrative instructions to identify the item (e.g., Use Antifreeze (Item 1, WP 0105 00).).

Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item.  
(C = Operator/Crew)

Column (3) - National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) - Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides the other information you need to identify the item.

Column (5) - Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

**EXPENDABLE AND DURABLE ITEMS LIST****Table 1. Expendable and Durable Items List. (EDIL)**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC AND PART NUMBER	(5) U/M
1	C	6850-01-441-3218	Antifreeze, 1 gallon liquid (58536) A-A-52624	GL
2	C	8030-01-275-5050	Antiseize Compound, (71984) MOLYKOTE G-N PT	CONT
3	C	6135-00-643-1310	Battery, non-rechargeable, (6 volt) (83740) EV90	PKG
4	C	6135-00-835-7210	Battery, non-rechargeable, (D size) (90303) MN1300	PKG
5	C	6850-01-431-9025	Cleaner, Type II (81349) MIL-C-29602	CO
6	C	8030-00-231-2345	Corrosion Preventive Compound, Class I, grade I preservative (81349) MIL-C-16173	GAL

Table 1. Expendable and Durable Items List. (EDIL) (Continued)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC AND PART NUMBER	(5) U/M
7	C	8030-00-244-1297	Corrosion Preventive Compound, Class I, Grade II preservative (81349) MIL-C-16173	GL
8	C	9140-01-413-7511	Diesel Fuel, Summer grade, DF2, low sulfur (81348) VV-F-800	BULK
9	C		Flare Alert/Locate Deluxe Kit, (1S7W6) 12AL-D	KT
10	C	9150-00-145-0268	Grease, Aircraft, General Purpose (81349) MIL-G-81322	CN
11	C	9150-01-197-7693	Grease, Automotive and Artillery, 14 oz. cartridge (81349) M-10924-B	CA
12	C	9150-00-929-7946	Grease, General Purpose, (lubriplate TU 1200-2) (76736) Dura-Lith Grease EP 2	CA
13	C	9150-00-530-6814	Grease, Wire Rope-Exposed, 35 lb can, petroleum oil based (81349) MIL-G-18458	CN
14	C	8520-00-782-3554	Hand Cleaner (58536) A-A-461	BX
15	C	6260-01-334-4274	Light, Chemiluminescent (0BY83) 9-42740	BX
16	C	9150-01-035-5392	Lubricating Oil, 80W90 Grade (81349) M2105-1-80W90	QT
17	C	9150-01-293-7696	Lubricating Oil, Engine, 15W40 Grade (81349) MIL-PRF-21260	CN
18	C	8540-00-530-3770	Paper, Toilet (58536) A-A-679	BX
19	C	7920-00-148-9666	Rag, wiping (80244) 7920-00-148-9666	LB
20	C	6550-01-310-1677	Water, distilled, four 1 gallon (96906) MS36300-5	PG
21	C	9525-00-803-3044	Wire, non-electrical (81348) QQ-N-281	SP

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**OPERATOR MAINTENANCE  
FLOATING CAUSEWAY  
TOOL IDENTIFICATION LIST (TIL)**

---

**INTRODUCTION****Scope**

This work package lists all common tools and supplements and special tool/fixtures needed to maintain the Floating Causeway.

**Explanation of Columns in the Tool Identification List**

Column (1) - Item Number. This number is assigned to the entry in the list and is referenced in the initial setup to identify the item (e.g., Respirator (Item 7, WP 0106 00)).

Column (2) - Item Name. This column lists the item by noun nomenclature and descriptive features (e.g. Gage, belt tension).

Column (3) - National Stock Number. This is the National Stock Number (NSN) assigned to the item; use it to requisition the item.

Column (4) - Part Number/CAGEC. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity) which controls design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. The manufacturer's Commercial and Government Entity Code (CAGEC) is also included.

Column (5) - Reference. This column identifies the authorizing supply catalog or RPSTL for items listed in this work package.

**TOOL IDENTIFICATION LIST****Table 1. Tool Identification List. (TIL)**

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER/CAGEC	(5) REFERENCE
1	Apron, utility	8415-00-082-6108	A-A-55063 (58536)	SC 4910-95-A72
2	Gage, tire pressure, 10 - 50 PSI	4910-01-117-2994	YA106 (55719)	SC 4910-95-A72
3	Mop			
4	Oiler, hand	4930-00-274-5713	A-A-50477B (58536)	SC 4910-95-A72
5	Respirator, air filtering	4240-01-088-8546	14130047 (79687)	SC 4910-95-A64
6	Shovel, hand	5120-00-293-3336	1050192 (56161)	

**Table 1. Tool Identification List. (TIL) (Continued)**

<b>(1)</b> <b>ITEM</b> <b>NO.</b>	<b>(2)</b> <b>ITEM NAME</b>	<b>(3)</b> <b>NATIONAL</b> <b>STOCK</b> <b>NUMBER</b>	<b>(4)</b> <b>PART</b> <b>NUMBER/CAGEC</b>	<b>(5)</b> <b>REFERENCE</b>
7	Tool Kit, General Mechanic's Rail and Marine	5180-00-629-9783	SC (50980)	SC 5180-90-N55
8	Wrench Set, Socket	5120-00-204-1999	B107.1 (05047)	SC 4910-95-A72

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These are the instructions for sending an electronic 2028.

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17 and 27.

**From:** "Whoever" [whomever@avma27.army.mil](mailto:whomever@avma27.army.mil)  
**To:** [whomever@avma27.army.mil](mailto:whomever@avma27.army.mil)  
**To:** [TACOM-TECH-PUBS@ria.army.mil](mailto: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 Fname:** Joe
14. **Submitter Mname:** 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.



<b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b> <small>For use of this form, see AR 25-32; the proponent agency is DAASA.</small>						Use Part II (reverse) 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) (Include ZIP Code)</i>						FROM: <i>(Activity and location) (Include ZIP Code)</i>	
<b>PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS</b>							
PUBLICATION/FORM NUMBER						DATE	TITLE
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
<small>* Reference to line numbers within the paragraph or subparagraph.</small>							
TYPED NAME, GRADE OR TITLE						TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

<b>TO:</b> <i>(Forward direct to addressee listed in publication)</i>			<b>FROM:</b> <i>(Activity and location) (Include ZIP Code)</i>				<b>DATE</b>	
<b>PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS</b>								
<b>PUBLICATION NUMBER</b>				<b>DATE</b>			<b>TITLE</b>	
<b>PAGE NO.</b>	<b>COLM NO.</b>	<b>LINE NO.</b>	<b>NATIONAL STOCK NUMBER</b>	<b>REFERENCE NO.</b>	<b>FIGURE NO.</b>	<b>ITEM NO.</b>	<b>TOTAL NO. OF MAJOR ITEMS SUPPORTED</b>	<b>RECOMMENDED ACTION</b>
<b>PART III - REMARKS</b> <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>								
<b>TYPED NAME, GRADE OR TITLE</b>				<b>TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION</b>			<b>SIGNATURE</b>	

By Order of the Secretary of the Army:

Official:



JOEL B. HUDSON

*Administrative Assistant to the  
Secretary of the Army*

05673

ERIC K. SHINSEKI  
*General, United States Army  
Chief of Staff*

To be distributed in accordance with the initial distribution number (IDN) 0207005 requirements for TM 55-1945-205-10-4.





## 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

### Weight

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

To change	To	Multiply by	To change	To	Multiply by
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.406	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.766	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	11.296			

## Temperature (Exact)

$^{\circ}\text{F}$  Fahrenheit temperature  $\frac{5}{9}$  (after subtracting 32)

$^{\circ}\text{C}$  Celsius temperature

