

Survival Once On Board

- Deploy the sea anchor (drogue). Some may automatically deploy. Make sure it is out and functioning properly. When the raft is on the wave crest, the sea anchor should be in the trough.
- Bail out the raft using bailing bucket and sponge provided. Hands, shoes and caps are also useful.
- Close down the entrance to protect the crew from exposure.
- Maintain your raft. Inflate the floor and repair any leaks. It may be necessary to re-distribute your weight to better stabilize your new home.
- Tend to the injured with the first aid kit contained in the emergency pack. If you have not attended a first aid class before or lack confidence in your medical skills, it would be advisable to sign up for a course. Remember, ma-in-law may choke on your T-bone and the skills learned may be useful.
- Locate your survival manual and read instructions aloud for all to hear.
- Assess the scene and make a calm estimate of your situation and plan your course of action. Assign duties to all uninjured.
- Inventory your emergency pack contents and don't leave items lying around on the floor. Distribute seasick tablets to all even if they have never been seasick. They have never been in a life raft in the open sea.
- Post a look-out team. Activate your EPIRB and review the proper use of visual distress signals.
- Check the condition of everyone. Use the buddy system to assist each other. Maintain morale and consistent leadership. Use your sense of humor; it is a powerful tool.
- Distribute food and water but be careful not to waste it. Drink NO seawater even if diluted. Eat NO fish, turtles or birds that may come near the raft. The fishing kit is for morale, not to eat the fish even if you can cook them with your flare.
- **PLAN TO STAY ALIVE AND RETURN HOME TO THE FAMILY!!**

Actions Prior to Abandonment

- Alarm Recognition
- Muster Location
- Personal Shelter Management (Dress for Survival)
- Recognize Specific Emergency Duties
- Equipment Familiarization
- Specialized Team Development
- Communications

Hazards Complicating Evacuation

- Night-Time Evacuation
- Injuries
- Missing Person
- Faulty or No Equipment
- Poor Weather Conditions
- Panic and Fear
- Lack of Leadership
- Inexperienced Crew

Initial Hazards Once in the Water

- Injuries During the Fall
- Cold Water
- Oil & Fire
- Surface Debris
- Dangerous Marine Life
- Missing and Injured Crew
- Crew Separation
- Lack of Preparation

Sample Briefing to Pass to Vessels Prior to Hoisting

“A Coast Guard helicopter is proceeding to your position and should arrive at approximately _____. Maintain a radio watch on _____ MHz / kHz Channel _____ VHF / FM; the helicopter will attempt to contact you. Provide a clear area for hoisting, preferably on the port stern. Lower all masts and booms that can be lowered. Secure all loose gear. Keep all unnecessary personnel clear of the hoist area. When the helicopter arrives, change course to place the wind 30 degrees on the port bow and maintain a steady course and steerageway. As the helicopter approaches, gale force winds may be produced by the rotors, making it difficult to steer. The helicopter will provide all of the equipment for the hoist. A line will probably be trailed from the helicopter for your crew to guide the rescue device as it is lowered to the deck. Before handling the rescue device, allow it to touch your vessel. This will discharge static electricity. If you have to move the rescue device from the hoist area to load the patient, unhook the cable from the rescue device and lay the loose hook on the deck so the helicopter can retrieve it. Do not attach the loose hook or the cable to your vessel. The helicopter may move to the side while the patient is being loaded. Have the patient wear a lifejacket and attach any important records, along with a record of medications that have been administered. If possible, brief the patient on the instructions pictured on the rescue device. When the patient is securely loaded, signal the helicopter to move into position and lower the hook. After allowing the hook to ground on the vessel, re-attach it to the rescue device. Signal the hoist operator with a “thumbs up” when you are ready for the hoist to begin. As the rescue device is being retrieved, tend the trail line to prevent the device from swinging. When you reach the end of the trail line, gently toss it over the side.”

Actions Prior to Rescue

- Follow Instruction from Crew
- Tend to Injured / They Go First
- Transfer Organization
- Prepare Safety Line for Transfer
- Wear Flotation During Transfer
- Stay in Raft if Transfer is Unsafe
- Take your Time. You're Almost There.

Guidelines for Hoisting to CG Helos

Initial Communications

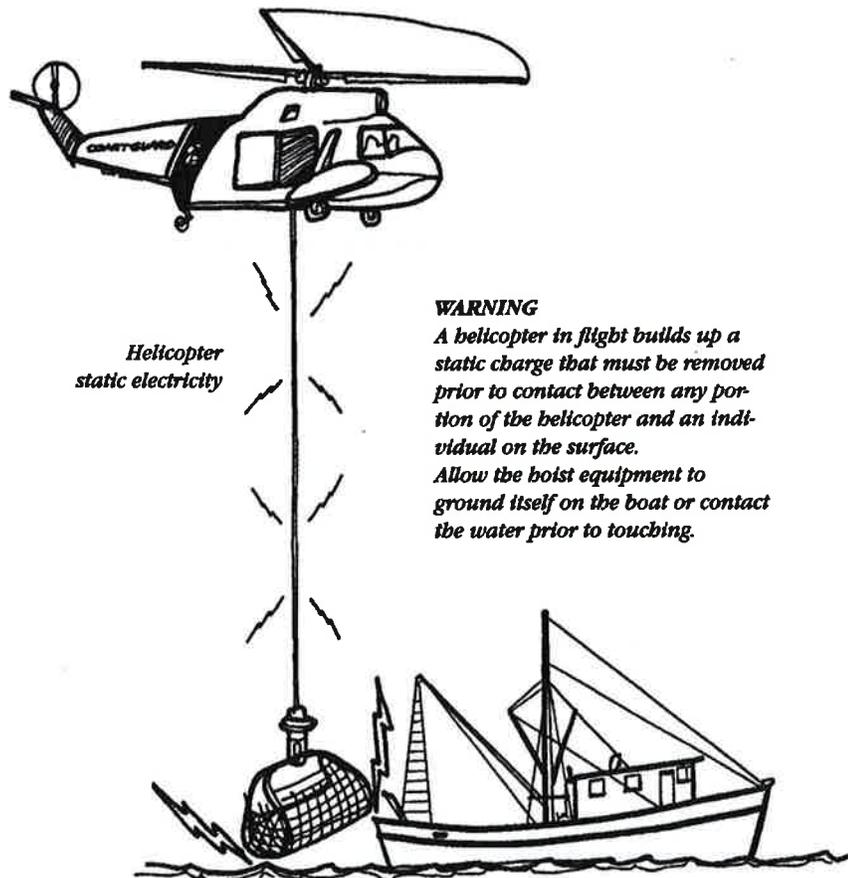
- Position (latitude / longitude)
- Any Injuries
- State of Vessel
- Signaling Devices Onboard
- Open Areas to Hoist to (usually port quarter)

Preparation for Hoisting

- If Underway: Bow Facing 30-45 right of wind line
- If DIW: Bow Facing 0-90 right of wind line
- Clear Hoisting Area: snag hazards, antennae, booms
- Life Jackets
- Somebody on Radio if Possible

During Hoisting

- Ground the Device
- Tending Trail Line
- Disconnecting Device (Don't hook cable to boat)
- Any Problems: Advise immediately over radio



STAY Rules-Seven Steps to Increase Your Odds of Survival

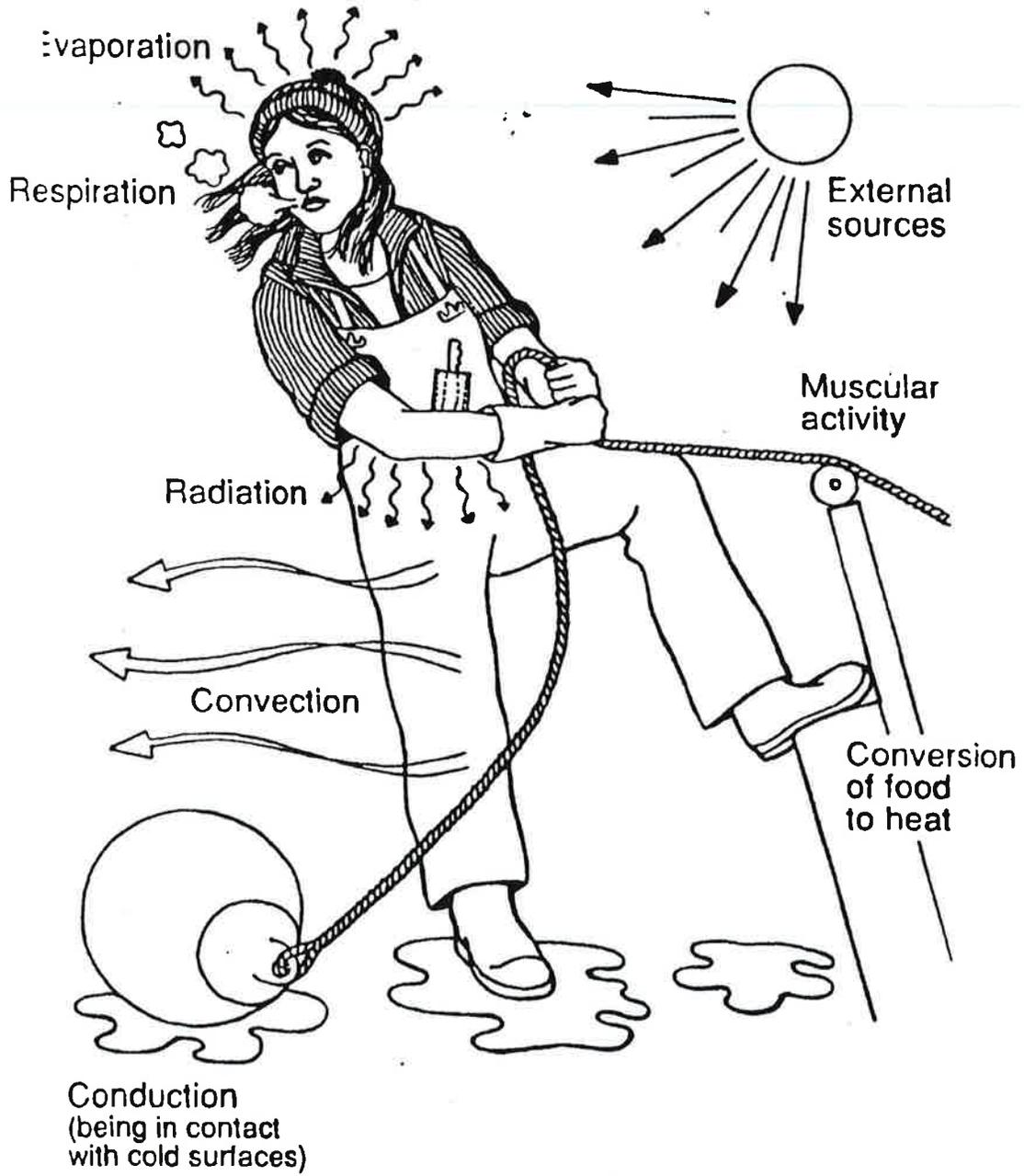
The following seven “STAY” rules will greatly improve your chances of surviving abandon ship emergency. They are from the AMSEA Marine Safety Instructor Training Manual, and have been “tested” during real marine emergencies.

- • **1. STAY Afloat:** wear a PFD and stay on top of floating objects, like the boat.
- • **2. STAY Still:** conserve heat and energy.
- • • **3. STAY Dry:** keeping your body out of the water will reduce heat loss through
• • • conduction.
- • • **4. STAY With the Boat:** the boat can be useful as something to hold on to and it will make you a bigger target.
- • **5. STAY Warm:** get out of the water, if possible. Protect your high heat loss areas.
- • **6. STAY Together:** it makes you an easier target, improves morale, and can reduce heat loss by using the HUDDLE position.
- • **7. STAY Sober:** alcohol increases heat loss and decreases judgement and coordination.

Hypothermia & Cold Water Survival

HEAT LOSS

HEAT GAIN



Hypothermia and Cold Water Survival

Hypothermia occurs when the body's CORE temperature drops. Submersion in cold water is a major cause of hypothermia because water conducts heat away from the body 25 times faster than air of the same temperature. Hypothermia can also result from a combination of wind and cool or cold temperatures, wet clothing or clothing that is not suitable for the weather.

Although hypothermia can easily occur when air temperatures are above freezing, it can be prevented by using good judgment, wearing layered clothing to stay warm but not sweaty, putting on rain gear before getting wet, and avoiding being immersed in cold water. It helps to remember that 50 percent of your body's heat is lost through your HEAD and NECK. Other high heat loss areas are your ARMPITS, CHEST and GROIN.

Signs and Symptoms

- Uncontrolled shivering
- Confusion
- Poor coordination
- Weak or irregular pulse
- Dilated (big) pupils
- Slurred / slow speech
- Poor judgment
- Drowsiness
- Slow / shallow breathing
- Unconsciousness

It is sometimes difficult to detect hypothermia because the affected person may not know or may deny that he is having a problem. In addition, signs and symptoms may be confused with or complicated by alcohol.

If you suspect that someone has hypothermia, check the person's pulse for 1 to 2 minutes when doing your primary survey. Treat the person GENTLY. If he is breathing and has a pulse, carefully remove his wet clothing and cover him with dry coverings.

To treat for hypothermia, remove the person from the cold environment and remove any wet clothing. Encase the individual in a sleeping bag and provide skin-to-skin contact with a warm person.

Give warm fluids only after uncontrolled shivering stops, when the person is alert enough to get a cup of hot drink to his mouth by himself without spilling it and can swallow without choking.

Check for and treat other injuries.

Cold Water Survival/Hypothermia

3 Stages of Hypothermia

Stage	Core Temperature	Signs & Symptoms
Mild Hypothermia	99° - 97°F Normal; Shivering can begin 97° - 95°F	Cold sensation and goose bumps. Unable to perform complex tasks with hands. Shiver can be mild to severe. Hands numb.
Moderate Hypothermia	95° - 93°F	<p>Shivering intense. Muscle incoordination becomes apparent. Movements slow and labored, stumbling pace, mild confusion, may appear. Use sobriety test, if unable to walk a 30 foot straight line, the person is hypothermic.</p> <p>At 93° - 90°F, violent shivering persists, difficulty speaking, sluggish thinking, and amnesia starts to appear. Gross muscle movements sluggish. Unable to use hands, stumbles frequently, and difficulty speaking. Signs of depression, withdrawn.</p>
Severe Hypothermia	90° - 86°F	<p>Shivering stops. Exposed skin blue or puffy. Muscle coordination very poor. Inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness</p> <p>At 86° - 82°F, muscle rigidity, semiconscious, stupor, and loss of awareness of others. Pulse and respiration rate decrease, possible heart fibrillation</p> <p>At 82° - 78°F, Unconscious. Heart beat and respiration erratic. Pulse may not be palpable</p> <p>At 78° - 75°F, pulmonary edema, cardiac and respiratory failure. Death may occur before this temperature is reached.</p>

Preventing Drowning on Initial Immersion

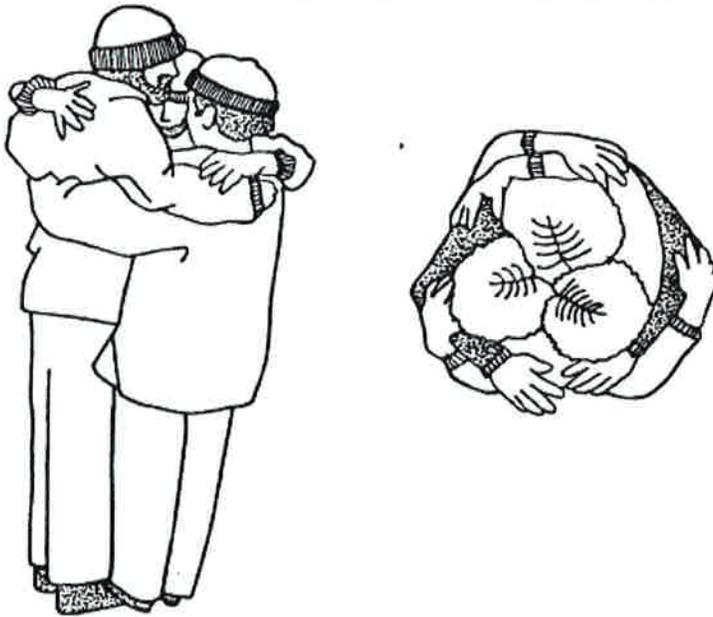
- **Protective Clothing**
- **Flotation**
- **Slow Entry for Slow Response**
- **Climatize**
- **Body Type (Fat vs. Muscle)**
- **Survival Techniques (Wave Spray Protection and Survival Swimming)**
- **Stay Out of Water**

HELP

(Heat Escape Lessening Position)



Huddle Position



Chain Swim



Minimizing the Effects of Unintentional Flooding

Approximately 70 percent of deaths involving commercial fishing industry vessels are related to stability. Maintaining proper stability on fishing vessels is one of the most difficult tasks for the fisherman. The more you learn about stability, especially the stability limit of your own boat, the safer you can be.

The most important concept for you to concern yourself with while fishing and stowing catch is to keep to a minimum the number of stability hazards present at the same time. For instance, while you are lifting the cod end aboard, be aware of the hazards posed by an open hatch. Be aware of the effects of shifting catch on deck, or of partially filled fish hold or ballast tank.

Stability changes with every gallon of fuel, ice and water that is used. It changes with every shift in ballast and with every load of fish; it makes a difference whether you put the cargo down below or on the deck. Finally, the stability of your boat changes with every wave that passes under the boat since the stability varies with the position of your vessel on the wave.

Common Small Vessel Flooding Sources

Small bull breach:
Located here possibly from impact with floating debris such as logs. Also possible from impact on hull by fishing gear, or in structural failure of wood hulls (broken framing).

Damaged rudder port fittings:
Packing problems with rudder posts results in many flooding cases. Structural failure (cracking) of the fitting housing has also been observed.

Large bull breach:
Known to result from impact from fishing gear (otter doors, etc.). Can also result from grounding and collision-type accidents.

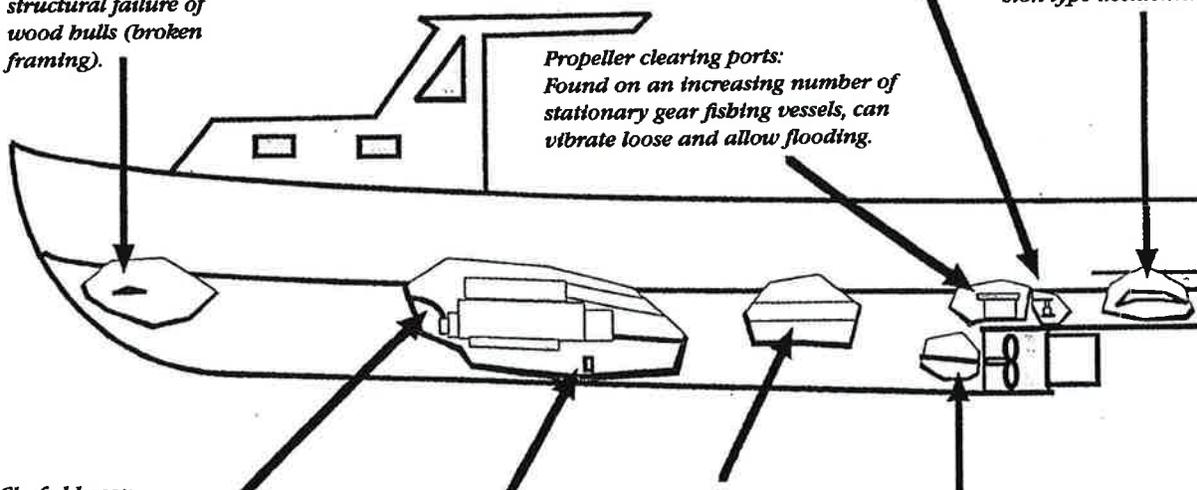
Propeller clearing ports:
Found on an increasing number of stationary gear fishing vessels, can vibrate loose and allow flooding.

Chafed hoses:
Resulting from vibration damage to hoses in washing and engine cooling systems.

Open seacocks:
Resulting from corrosion damage or improper hose connections.

Split piping:
Freeze damage to wet exhaust lines, or failures in pump system piping.

Main shaft packing gland:
A perpetual maintenance problem on boats, can also result from emergency maneuvers with fouled propellers.



Some Suggestions for Preserving Adequate Stability

The United States Coast Guard, in conjunction with the Commercial Fishing Industry Vessel Advisory Committee, recommends the following measures. You should consider this as preliminary guidance on matters influencing the safety of fishing vessels as specifically related to preserving vessel stability.

- All doorways and other openings through which water can enter the hull or deckhouses should be closed in adverse weather and when not in use.
- All closure devices should be maintained on board in good working condition.
- Hatch covers and flush deck scuttles should be kept securely closed when not in use during fishing.
- All deadlights should be maintained in good condition and securely closed in bad weather.
- All fishing gear and other large weights should be stowed, prevented from shifting and placed as low as possible.
- Care should be taken to maintain pull from fishing gear in line with the vessel's longitudinal centerline and to avoid maneuvering with trawls off the quarters or beams. (Trawls off the quarters or beam generate tremendous overturning forces that can easily capsize a vessel).
- The point of action of the weight is at the hoist block of the frame or point of suspension. (Haul back pull points should be shifted to lower points during trawl operations.) This lessens the magnitude of potential overturning forces generated when the trawl moves off the longitudinal centerline of the vessel.
- The gear to release the deck load on fishing vessels that carry catch such as herring on deck should be kept in good working order for immediate use when necessary.
- Freeing ports in bulwarks should always be open while underway
- When the weather deck is prepared for the carriage of deck loads by division with pound boards, there should be slots between them for adequate size to allow an easy flow of water to the freeing ports, *i.e.*, good drainage.
- Never carry fish in bulk without first being sure that the portable divisions in the fish hold are properly installed. **THE CARGO MUST NOT SHIFT!!**
- Minimize the number of partially filled tanks. Free surface can severely impair your vessel's stability.
- Observe any instructions given regarding the filling of water ballast tanks. Remember that partially filled tanks can be dangerous. They generate free surface.
- Closing devices provided for vents to fuel tanks should be secured in bad weather.
- Be alert to the danger of following or quartering seas. These may cause heavy rolling and/or difficult steering. If excessive heeling or yawing occurs reduce speed, alter course or both.
- Do not overload. Overloading increases draft and decreases reserve buoyancy, which decreases stability.
- Avoid icing conditions. Standing wire rigging will ice up to a greater extent than struts or yards. If icing cannot be controlled, leave the area.
- Maintain at least 1 foot of freeboard at all times.

Preserving Water Integrity

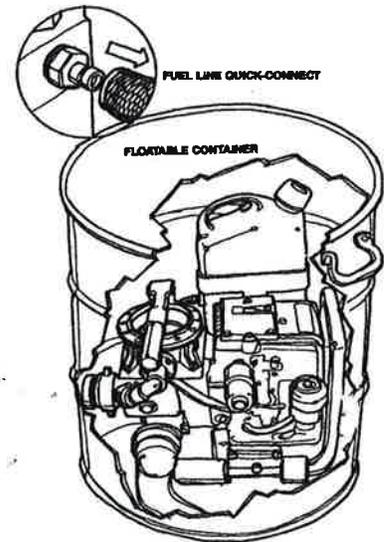
1. All watertight compartments should have a means of being pumped. In one-compartment type vessels, there should be at least two bilge suctions with one at the deepest part of the bilge and one at the stern.
2. All valves and pumping systems should be marked as to function.
3. Bilge water level alarms should be installed in all watertight compartments. Alarms are to be audible and visible.

Damage Control / Emergency Repair

1. Prior to vessel departure, inspect condition and proper working order of all engines, auxiliary motors, impellers, hoses and valves, which make up the pumping system.
2. All bilge suction lines shall be provided with screens.
3. Bilge is to be kept free of debris to ensure proper discharge of bilge water.
4. Spare parts and engine repair kits should be stowed aboard in the event that a pump system needs repair.
5. Materials such as steel plate patches, repair clamps, wooden plugs or any material that can be used to stop water from entering the vessel and the tools needed to fasten or hold the material in place, shall be stowed aboard.

Dewatering Equipment and Techniques

1. A minimum of two pumping systems, capable of pumping all compartments, should be installed with each pump powered from independent sources such as a main engine, generator or auxiliary engine.
2. The salt water systems should be insulated from the bilge pumping system and all bilge suctions should have check valves installed.
3. If the same pump is used for bilge and deck wash down purposes, a three-way valve must be installed and discharge line provided with a vent. No shutoff can be installed in the vent line.
4. When conditions do not allow for self-priming pumps, a raw line may be installed, provided it meets the following:
 - Shutoff valve is installed well above waterline.
 - Prime line is routed well above waterline.
 - Discharge pipe is vented on deck.
5. Delivery of Coast Guard Dewatering Pumps
 - Transmit proper MAYDAY following the written procedures.
 - Be sure to notify USCG about your situation, since pre-flight preparations include loading the proper gear for the type of emergency, *i.e.*, sinking needs pumps.
 - The Coast Guard will deliver a pump one of two ways, depending on distance from shore and sea condition — the direct method by air or the indirect method by jet.
 - Pump will be delivered inside a floatable container.



General Safety Instructions for Coast Guard Dewatering Pumps

Safety Instructions

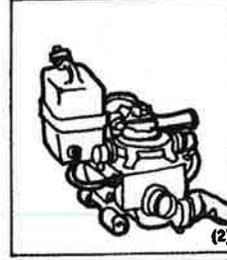
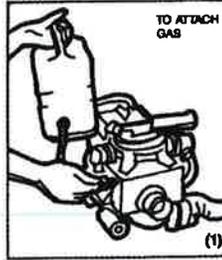
- Refuel only in well-ventilated areas.
- If gasoline is spilled, move pump away from spill.
- Do not refuel gasoline tank while engine is running.
- Do not run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless, colorless poison.
- To prevent accidental starting, always remove the spark plug before working on the engine or equipment.
- Do not tamper with the exhaust system.
- Do not operate the engine if the air cleaner is removed (except for adjustment).
- Always keep hands and feet clear of rotating parts.
- Do not disconnect either suction or discharge hose during pump operation.
- Do not check oil or fuel level while the engine is running.
- Use caution handling pump during and after running until engine has cooled.

Sample Instructions for the Dewatering Pump

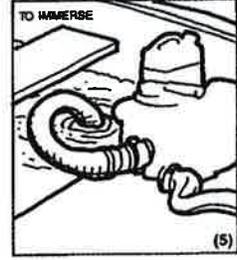
A. Before starting pump

- Mount fuel tank to engine and connect fuel line to quick connect/disconnect fitting (1,2).

- Put strainer end of suction inlet hose into water being pumped and connect coupling to pump. Be sure strainer and end of hose are submerged. If air gets into inlet hose or strainer, the pump will not pump. If strainer is not used, large solids may plug or damage the pump (3,4,5).



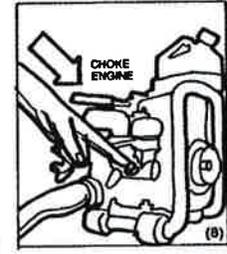
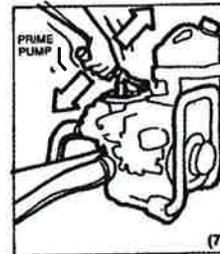
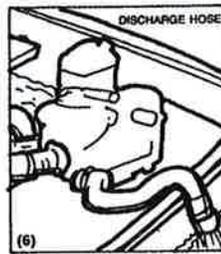
- Outlet (discharge) hose should be laid out with minimum kinks or sags and placed overboard (6).
- Prime the pump with water by actuating hand pump until water discharges from plastic outlet of the hand pump (7).



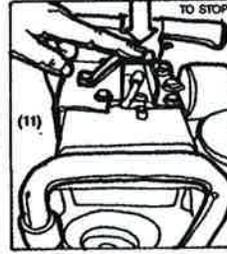
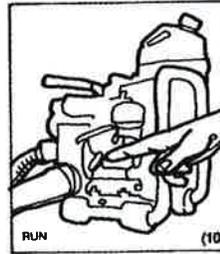
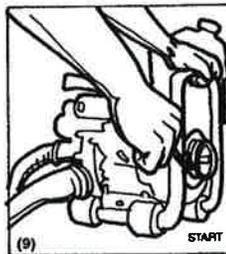
- Place choke lever on engine to "choke" (8).

B. Operating pump:

- Wrap starter rope on pulley and pull (9).
- After second pull (if engine hasn't started), set choke half way and crank again. Then set choke at 1/4 to prevent flooding the engine.



- After starting, adjust choke for best operation (10).
- After pump and engine are started, actuate hand priming pump until pump is pumping water.



- Be sure inlet hose and strainer are kept under water.
- Stop engine before adding gasoline (11).

- Keep pump and engine as nearly level as possible.

C. To stop engine and pump:

- Disconnect fuel line. Engine will continue pumping for approximately one minute and then stop.
- When finished pumping, drain and flush the pump and hoses with fresh water.

Damage Control Kit

Every vessel should have tools and materials on board for damage control. The items should be assembled and stored in a damage control kit. This kit should be stored where it is easily accessible, and up out of potentially flooded areas. In addition, all crew members should be aware of the kit and familiar with the uses of its contents.

Suggested content items are listed here. Some of these items may be omitted, or others might be added based on vessel design.

PLUGS & PATCHES

- Wedges
 - Various sizes
 - Soft wood that swells when wet
- Tapered Plugs
 - Two per sea cock: one in kit; one attached to sea cock
 - Soft wood that swells when wet
- Rubberized Strips and Sheets
 - Gasket material
 - Rubberized cloth
 - Inner tube strips
- Neoprene Fabric (such as pieces of old immersion suits)
- Rags
- Scrap Hose
- Nerf® Ball(s)
- Silicon or Graphite Impregnated Fiber
- Waterproof, Nonhardening Putty
- Plastic, Canvas or Nylon Tarp(s)

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&

Commercial Fishing Industry Vessel Safety Advisory Committee

Damage Control Kit

FASTENERS

- Grease Tape
- Duct Tape
- Bicycle Inner Tube Tape
- Hose Clamps in Various Sizes
- Wire Ties
- Twine
- Oakum
- Waterproof Epoxy & Backing Material

TOOLS



- Knife
- Shears
- Hacksaw
- Hammer
- Hatchet
- Screw Driver(s)
- Pipe Wrench
- Crescent Wrench
- Cordless Drill
- Nut Driver(s) including 5/16" for hose clamps
- Wooden or Rubber Mallet

DON'T FORGET . . .

- Storage Container With Light Attached to Handle
 - Small plastic tote with handle & snap on lid
 - Five-gallon plastic bucket with handle & lid
 - Duffie bag
- Waterproof Flashlight(s)
- Battery-Powered Headlamp
- Hand-held VHF Radio

Vessel Damage Control



Quick Reference Guide & Suggested Damage Control Kit Contents