

**RESCUE TEAM
TRAINING MANUAL**
for
JERICHO SAILING CENTRE



Revised March 2007

References and Acknowledgements

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While every precaution has been taken to ensure that the information contained in this manual is correct, neither the Jericho Sailing Centre Association, Its Directors nor any of the authors shall have any liability to any person nor entity with respect to injury, loss of life or damage caused or alleged to be caused by the instructions contained in this manual.

Foreword

Many, many current and past members of the Jericho Sailing Centre Association have contributed to the Rescue Team Program. Together these members have helped others and each other to gain a better understanding of the environment in which we play and the dangers not always so apparent to those at play.

Those who should be thanked, past and present are too numerous to mention but it is worth recognising two distinguished former Jericho members who contributed to it both in spirit and heroic deeds:

Dave Rayment volunteered immensely and helped us first form an organised rescue program. Dave went on to win the Governor General's Medal of Bravery for his attempted rescue of 6 people trapped in a capsized fishing boat that had collided with a ferry at the mouth of Active Pass. All were lost. Dave himself tragically drowned May 21, 1997, when the crane he was operating toppled off a barge into Ganges Harbour on Salt Spring Island. A reminder forever of danger around the water.

Lawrence Lemieux did not hesitate to abandon his second place position in a Finn Class Olympic race to save the life of a competitor who had become separated from his boat in 35-knot winds and 4 metre seas. Lawrence was decorated with a special Olympic award for exemplifying the Olympic ideals of sportsmanship, self-sacrifice and courage. He competed in the 1988 Seoul Olympics as a member of the Jericho Sailing Centre Association representing Canada. Let his spirit always inspire us.

Mike Cotter, JSCA General Manager
April 1998

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1 Introduction and Background

The Jericho Rescue Team's goals are to assist people in distress on the water and to improve the water safety knowledge of our members and the general public. Volunteers need many skills to achieve these goals: rescue techniques, good communication skills, motor boat handling and maintenance skills, an understanding of tide, weather and local hazards, basic first-aid and teaching skills.

The Jericho Rescue Program has been set up to assist Jericho Rescue Team volunteers to achieve these skills. The program consists of four successive levels with criteria for each level. The achievement of the criteria is self-directed by each volunteer. The resources available to each volunteer are the two day training course, the Jericho Rescue Team training manual, ongoing training drills, volunteers at higher levels, Jericho Staff, seminars, CPR and First aid courses. The most important component of the ongoing training is water time. Volunteers record their achievements in the Jericho logbooks and their personal logbook so that advancement to the next level is possible.

The purpose of the Jericho Rescue Team Training Manual is to assist the volunteers in the Jericho Rescue Program to reach the goals of improved safety knowledge, boat-handling skills, rescue techniques and safety teaching methods.

Jericho Sailing Centre is home to over 1500 small craft and supports over 3,000 members. We have sailing dinghies, catamarans, windsurfers, ocean kayaks, canoes, outrigger canoes and rowboats. Our rescue staff and volunteers perform an average of 200 small boat and windsurfer rescues each year and are an excellent resource for safety information.

NOTE: Feedback and comments about this manual are welcome and should be directed to the General Manager or the Jericho Safety Committee.

2

Required Boat Handling Skills & Knowledge

1. Layout of Vessel
2. Location of Safety/Rescue Equipment
3. Launching/Docking
4. Starting the Engine
5. Coming AlongSide of Other Vessels
6. Anchoring
7. Radio Use
8. Priorities of Rescue
9. Skipper Responsibilities
10. Crew Responsibilities
11. Man overboard Procedures
12. Trouble Shooting
13. Knots
14. Rules of the Road
15. Towing
16. Log Books

Rescue Team Levels

Rescue Team members are allowed on certain vessels, with (or without) other members of a specified “Level”, in specific wind conditions based on their certifications, skills, knowledge and experience.

A member can progress through the “Levels”, gaining greater “Privileges”, as they meet the “Requirements” for each Level.

Achievement of Requirements other than CPR, First Aid etc. certification must be recorded in the member’s personal logbook and endorsed by a member at the appropriate Level, the Safety Officer, or General Manager. The Safety Committee or General Manager must approve progression to the next Level

Trainee Level

Requirements:

- Signed & agrees to Abide by JSCA Rescue Team Code of Ethics.
- Signed JSCA Rescue Team Waiver.
- Has enrolled or has completed Rescue Team Training Course.

Privileges:

- May Crew or Helm any JSCA power Craft while under supervision of a Level IV.

Level I

Requirements:

- Trainee Level Requirements
- Successful completion of the Jericho Rescue Team Training Course.
- CCG Pleasure Craft Operator Card
- Radio Operator’s Licence
- 10 hours of boat handling under supervision of JSCA instructor.
- Demonstrate ability to operate the small inflatable (12-foot Zodiac).
- Demonstrate ability to use a personal logbook, vessel logbook, and rescue logbook.

Privileges:

- May skipper the 12-foot Zodiac solo to perform rescues in winds under 10 knots.
- May crew or helm any JSCA power craft when accompanied by a Level IV or higher in wind & sea conditions that are at the discretion of the Level IV skipper

Rescue Team Levels (continued)

Level II

Requirements:

- Level I requirements
- Current First Aid (Emergency) and CPR Certification
- Total of 30 hours on JSCA powerboats (minimum of 7 hours on each boat), including launching, retrieving, docking, and refuelling.
- Performed 10 rescues (tows & righting), must include one boardsail, monohull and multihull; including 2 in 15+ knots of wind.
- Proficient in boat handling in 20+ knots of wind
- Knowledge of charts, compass use, local landmarks, and tide and current tables.
- Demonstrates extended knowledge in the following areas:
 - Local conditions and hazards
 - Hypothermia signs and treatment
 - Rules of the road (power & sail)
 - Boat maintenance
 - Sailboats, rigging and sailing principles
 - Demonstrates knowledge of race mark setting.

Privileges:

- Can Endorse Level II Logbooks
- Perform rescues using the 12-foot Zodiac in all winds solo.
- Perform rescues using other boats when accompanied by another Level II or higher in winds up to 15 knots.
- Perform refuelling and minor tasks solo with permission from Safety Officer or General Manager.
- Issued a safety room key at the discretion of the General Manager or Safety Officer

Level III

Requirements:

- Level II requirements
- 1 season of active membership in program
- Performed 15 rescues in 20+ knots of wind
- Must show good judgement when operating JSCA power craft.
- Ability to set and retrieve race marks solo.
- 6 days of mark setting during Sunday and Tuesday racing
- 4 days of mark setting during regattas

Privileges:

- Perform rescues in any boat in all winds.
- Can endorse Level I, II, & III logbooks

Rescue Team Levels (continued)

Level IV

Requirements:

- Level III requirements
- Demonstrates competence in planning and executing training workshops.
- Co-ordinate a search.
- Conduct a search pattern.

Privileges:

- Can instruct and supervise all other levels of volunteers.
- Can endorse Level all logbooks
- Can educate JSCA general membership through Safety Seminars
- Can supervise rescues in all conditions

A review of all Rescue Team Members' skills will be conducted yearly to ensure they are designated at the correct level.

3

Canadian Coast Guard Boating Regulations

Copied with permission from the Safe Boating Guide

On April 1, 1999 the Canadian Coast Guard enacted regulations that will phase in mandatory operator competency standards over a ten-year period. This system affects operators of powered vessels and PWCs only, and involves operator competency training and age and horsepower restrictions. Currently, operators of power driven vessels are now required to carry operator competency certification with them at all times when operating a power driven pleasure craft. Certification can be obtained through training courses offered by private Course Providers. Training courses are based on the **Boating Safety Course Standard, which** was developed by the Coast Guard College and boater training organizations. The phase in period, restrictions and exemptions for the training and certification process are given below. As of September 15, 1999, all operators of **power driven pleasure craft** born after April 1 1983 must meet the specified training requirements.

- As of September 15, 2002, all operators of **power driven vessel less than 4 metres** (this includes personal watercraft) must meet the specified training requirements.
- As of September 15, 2009, all operators of **power driven pleasure craft** must meet the specified training requirements.

Exemptions to these requirements are as follows:

- People who have already graduated from a boating safety course prior to April 1 1999 will see their course certificates recognized as proof of competency.
- Experienced boaters will have the option of obtaining an operator's card by passing (minimum of 75%) an accredited test without first taking a course.
- Foreign visitors who bring a pleasure craft into Canada will be granted an exemption for the first 45 consecutive days their vessel is in Canada.
- Certification issued to foreign residents by their state or country of residence will be recognized in Canada.
- People renting a power driven vessel will be required to complete a dockside checklist.

Age & horsepower restrictions are now in effect for pleasure craft (April 1, 1999)

- If you are under 12 years of age you are limited to a maximum of 7.5 kW (10 hp) unless supervised by someone over 16 years of age.
- If you are at least 12 years old but not yet 16 years you are limited to a maximum of 30 kW (40 hp) unless supervised by someone over 16 years of age.
- If you are under the age of 16 you are not permitted to operate a personal watercraft even under supervision.

NOTE: a complete description of these regulations is available in the Safe Boating Guide.

4 Professionalism & Safety

Professionalism

Jericho Rescue is a high-profile organization. We are particularly visible when operating in an area where public motor vessel access is prohibited, i.e., in a swimming area. Always be aware that the public is watching. Operate the vessel in a fashion that you would expect from any other professional rescue agency. As members of Jericho Rescue, you should demonstrate responsible and safe boating practices, especially when operating in view of the watchful public eye. Through professionalism and safe conduct we set an example for other mariners.

Our primary task as members of the Jericho Rescue Team is to offer assistance to the members of the Jericho Sailing Centre and the public if they encounter difficulties while they are out in English Bay. We also increase the awareness of safe boating, sailing, swimming and recreating in English Bay. In performing this important public relations task, it is imperative that we perform this mission with a maximum of diplomacy. For example, if you educate boaters in a non-confrontational manner as to the reasons why they should stay 300m off shore, chances are they will. Negative and confrontational public relations attitudes will probably produce negative and confrontational behavior in return, and could jeopardize the reputation of the Jericho Rescue Program & Jericho Sailing Centre.

Personal Safety

Always ensure that you and your crew are holding on to the boat. As it is very easy to get pitched overboard. Always remember, one hand for yourself and one hand for the job at hand.

Passengers Policy

Guests shall only be taken aboard JSCA Rescue Craft (Hurricane/Marks) during Non-SAR related activities with the prior approval of the General Manager & Safety Committee. Jericho Sailing Centre's boats must not, at any time, be used for pleasure/joy rides or for water skiing.

Life Jackets

Life jackets MUST be WORN AT ALL TIMES on board Jericho Craft.

Kill Cords

The kill cord is the emergency shut off for the engine. ***The kill cord MUST always be securely attached to the helmsperson when underway.*** This will prevent a runaway boat in the event that the helmsperson gets ejected from the helm. Know where the spare kill cord is kept and make sure it is easily accessible.

Safe Driving

Dangerous driving, showing off, driving too fast for conditions or your skill level, put you, your crew, and any passengers at risk of injury. Always operate our boats in a safe, responsible, and professional manner. Know your limits; it is better to exercise caution or let the more experienced crewmember drive than to try and perform at a level above your capabilities.

Knives

It is a safe boating practice to carry a serrated knife that can cut wet rope in the event of an emergency. Members of the Jericho Rescue team are encouraged to purchase their own knife. Lines can complicate a rescue by getting tangled in equipment or in your propeller. You may need to quickly “abandon” a tow by cutting the towrope if you experience problems. For example, if the towing vessel sinks, or a crewmember goes overboard. In the event that a mariner becomes entangled in a line and is trapped under water, an easily accessible knife could save that person’s life. As such, a proper knife is an invaluable piece of safety equipment. The Hurricane and Marks are each equipped with a serrated knife, be sure and know the location of the knife onboard all of the Jericho boats.

Fire Extinguisher

Jericho Rescue, Jericho Marks and Albatross are equipped with fire extinguishers. Please make note of their locations so that in an emergency you know where to find them. If you use them, please inform the Safety Officer **and** the Office so that it may be replaced.

Paddles and bailers

There are two paddles stowed on board Jericho Rescue and Jericho Marks. You will quickly learn that paddling is not the most effective way to propel the boat, and hence self-rescue is not a particularly viable option if the boat breaks down.

There is a manual bailer on each boat. This is useful for bailing out boats that have become swamped. It may also be needed to bail out your own boat if it becomes swamped. As well, there is an electric bilge pump on the Hurricane and scuppers on the Marks boat. . See page 28, **Swamping** for more details.

Abuse

If anyone is found abusing any of the above mentioned rules or has acted in a manner that is deemed unsuitable. They may, at the discretion of the Board of Directors be removed or suspended from the Jericho Rescue Team.

Rules of the Road

We are a high profile service. As such we must meet a higher standard of professional conduct, courtesy, and boating etiquette. For specific rules of the road see the Canada Coast Guard Safe Boating Guide or the Collision Regulations (available in the JSCA Office). Some basic guidelines for rules of the road are as follows:

1. **It is everyone's responsibility to avoid a collision.**
2. A vessel shall, so far as is practical, avoid crossing traffic lanes but, if obliged to do so, shall cross on a heading as nearly at right angles to the general flow of traffic.
3. Motorized vessels should yield to wind powered vessels.
4. A vessel of less than 20 meters in length or a sailing vessel shall not impede the safe passage of a power-driven vessel following a traffic lane.
5. A vessel must keep clear of any vessel that has restricted manouverability.
6. Person powered vessels should yield to everyone.
7. Any vessel overtaking another shall keep clear.
8. A port tack sailing vessel shall keep clear of a starboard tack sailing vessel.
9. A windward sailing vessel shall keep clear of a leeward sailing vessel.
10. A vessel tacking or gibing shall keep clear of a vessel on a tack.
11. Power vessels in a channel should keep to the right.
12. Power vessels meeting head on should both alter course to starboard.
13. When power vessels are crossing courses the vessel on the others right hand side has the right of way.
14. The vessel required to give way must do so in a way as to be obvious to the stand on vessel
15. The stand on vessel must maintain course and speed to allow the give way vessel opportunity to avoid them; unless a collision is imminent
16. When two sailing vessels are both tacking or gibing at the same time, the one on the other's port shall keep clear.

Boating Etiquette

1. Stay clear of race courses and lesson groups
2. The area inside the can buoys is for transiting and beginners
3. Keep the ramps and beach next to ramps clear for launching and retrieval of boats.
4. Reduce wake near small boats when possible

5 On Water Training

1. Pre Launch Check

- A. MOTOR
 - Oil (engine must be vertical for an accurate reading)
 - Propeller condition and secured, cotter pin OK
 - Oil or grease leaks
 - Steering
 - Gas lines (connected)
- B. BOATS
 - Gas tanks Full? (If not first priority is to refuel)
 - Visual check
 - Check drain and hull plugs
 - Tubes firm? (Inflatables)
- C. TRAILER
 - Electric winch rope on shore is in good shape (no knots, twists etc.)
 - Tires on trailer inflated
 - Third wheel attached securely
 - Trailer winch line & mechanism
- D. SAFETY EQUIPMENT
 - First Aid Kit
 - Life jacket(s) (1 for each person onboard + 1 spare)
 - Paddle(s)
 - Towing Rope(s)
 - Bailer
 - Bilge Pump
 - Flares
 - Fire Extinguisher
 - Tool Kit
 - Bow Line
 - Heaving line (Floating Line)
 - Anchor(s)
- E. WINCH
 - see use of winch page 53

NOTE: Please see the Complete Pre-launch Checklist included in Training Package

On Water Training (Continued)

2. Launching (Trailer Boats)

- A. Get winch rope
- B. Ensure winch is operational
- C. Ensure ramp is clear at all times
- D. Secure 3rd wheel into hitch receiver on boat trailer (this will be demonstrated)
- E. Tie winch rope onto trailer with bowline (not 3rd wheel)
- F. Wrap winch rope around 3rd wheel handle
- G. Raise the motor to the full "up" position
- H. Stop boat at top of ramp
- I. Double check that the hull and drain plugs are in (if applicable)
- J. Wrap winch rope around winch bollard using "seaside/shore side method"
- K. Have 1 person push boat over hump and escort boat down ramp while other person belays the winch rope.
- L. Escort the boat down the ramp at a reasonable pace. At a low tide, if you can see sand at the end of the ramp, speed may be required to complete this manoeuvre.
- M. Put person in boat.
- N. Lower & start motor (if water is deep enough)
- O. Unhook trailer winch line
- P. Pull trailer back up ramp (utilizing winch)
- Q. Place empty trailer (Marks and Hurricane) under the deck

3. Boat Manoeuvres

- A. START MOTOR
 - Check cooling working
 - Any abnormal noises
 - Check oil light
- B. DRIVING
 - Backing up
 - Exit beach (leaving moorage with Albatross)
 - Use of power trim on outboard motor
 - High speed turns (manoeuvring the Albatross)
 - Turning radius
 - Reverse
 - Towing Characteristics
- C. Approaching a Vessel or Person
- D. Station Keeping Using a Can Buoy
- E. Docking manoeuvre (anchoring the Albatross)
- F. Beach Drop Off

On Water Training (Continued)

4. Hauling Out

Person on shore

Please see 2 A to F for specific initial instructions

- A. Bring trailer down to water level with winch rope attached properly.
- B. Guide the trailer into the water to the correct depth.
- C. Ensure that no one is behind the boat while it is being winched up the ramp
- D. Winch boat & trailer up ramp.

Person on the boat

- A. Drop someone off at the beach or beach the boat
- B. Guide the boat onto the trailer
- C. Secure trailer winch line to bow ring on the boat
- D. Turn off the motor and raise it
- E. Exit the boat while it is being winched up the ramp

5. Cleanup & Final Checks

- A. Pull drain plugs (if applicable)
- B. Flush motors (Trim motors up on Albatross)
- C. Wash boat & trailer down
- D. Put winch rope away
- E. Place all equipment in proper storage location
- F. **Fill out the logbooks!**

NOTE: Before proceeding with any on the water operations a skipper must be appointed to minimize any confusion. The highest level member shall be deemed skipper. If there are 2 or more crewmembers that are of equal Level then they shall take it upon themselves to appoint a skipper. The skipper is the person responsible for the safety of the crew and vessel. The skipper is not necessarily the helmsperson, but is the person who makes decisions regarding the operation of the vessel.

Basic Powerboat Operation

Outboard Cooling System

DO NOT start the motor if the cooling system does not have a source of water, (running a cold motor for 1 second during the pre-launch check is OK.) Before starting the motor make sure the water intake (and the propeller) are clear of marine growth (Albatross) and debris (i.e. plastic bags and people!) that might prevent the intake of water or damage the propeller. The propeller may spin slowly when the motor is in neutral.

The primary cooling system water intake is located on the lower leg of the motor, so the leg must be in the ocean. After the motor is started, check that the cooling system indicator is flowing (a small stream of water from the starboard aft quadrant of the engine cover); if it is not flowing the motor should be turned off immediately and the system checked. Often the indicator hose outlet gets plugged with sand and can be cleared out with a paper clip. When putting the boat away the salt water needs to be flushed out of the motor; a hose can be connected to the leg with “rabbit ears” and the motor run for 5 minutes (for small Zodiac). The Hurricane & Marks motors have an alternate hose attachment point just below the motor cover; this does not require running the motor.

Ignition System

The Hurricane, Marks and Albatross each have a battery switch. Before starting the motor(s) turn the switch to the #1 position. When the motor(s) are started turn the switch to the “all” position (turn the switch to the all position WITHOUT passing through the OFF position). Our 12ft Zodiac has an outboard motor with a twist throttle/steering arm and transmission lever attached directly to the motor. It starts with a pull cord and shuts off with a kill switch. .

Tiller Steering Outboard Operation (12 Foot Zodiac)

To activate the ignition system on our 12 foot Zodiac, insert the plastic “key” on the kill cord into the kill switch fitting at the base of the remote control box; **attach the kill cord around your leg**. Check that the transmission lever, which is on the throttle/steering arm, is in neutral. Ensure that the fuel line has been connected to the fitting on the front of the motor; open the vent at the top of the fuel tank. Squeeze the fuel primer bulb until it is firm. With the motor tilted down and fully submerged, pull the start cord with one hand and have the other hand on the top of the engine cover to prevent it from tilting up. You may have to pull on the start cord repeatedly until the motor starts. With the motor running at idle press the transmission control firmly into the selected position and twist the throttle control to increase/decrease speed.

Wheel Steering Outboard Operation (Hurricane/Marks/Albatross)

Our larger boats' outboard motors are driven with a steering wheel and a remote control unit control, which is located to starboard of the wheel. They are started by an electrical starter with a pull cord as a backup, and are turned off with the key or the kill switch. To activate the ignition system, insert the black plastic "key" on the kill cord into the kill switch fitting at the base of the remote control box; **attach the kill cord around your leg**. Next insert the key and turn it one stop. Electricity should now be supplied to all the gauges, check that the tilt meter, oil pressure warning light, and fuel gauge are all operating. Ensure the transmission control is in the neutral position (see below), then turn and hold the key one more stop and release once started (as with a car). The remote control box also has a smaller metal lever to increase the idle speed. This only works in neutral, the control arm will not move into gear if the fast idle lever is open. Use the fast idle lever when the engine stalls repeatedly after starting, usually with cold air temperatures. To operate the fast idle lever lift up on the lever to the half-way position and start the motor. Once the motor is running you may fine-tune the idle speed using the fast idle lever. The Albatross' engines have choke feature. To activate the choke push the key in while turning the key to activate the starter.

Transmission/Throttle Operation

Ensure the engine is in neutral before starting the engine. The transmission is in neutral when the control arm is at right angles to the control housing. Check for neutral by trying to move the control arm without squeezing the red tab; it should not move if it is in neutral. The engine should not start if the control arm is not in neutral, but it is possible for this safety feature to fail. The red tab is an important feature when the engine is running as well; it can prevent the control from being accidentally "bumped" into gear by a crewmember or victim, and it can also prevent transmission damage caused by shifting into gear at high RPMs. For this reason it is important to only squeeze the red tab when shifting from neutral into forward or reverse, do not squeeze the tab when adjusting the throttle or shifting into neutral.

Before putting the boat into gear do a 360° visual scan for traffic and debris. Ensure the motor is oriented in the direction you intend to go, and have a firm grip on the wheel. When shifting from neutral into gear ensure the engine RPM's are at idle, squeeze the red tab up into the throttle arm and firmly push the arm forward or backwards. If this is done too slowly a grinding of gears is heard, this is hard on the transmission and shortens its life. The further the arm is moved from the neutral position the greater the engine speed, power, and usually speed.

NOTE: About reversing; Please keep the use of reverse travel to a minimum. The engines receive unhealthy exposure to salt water and our boats will tend to take on water, especially when backed into waves.

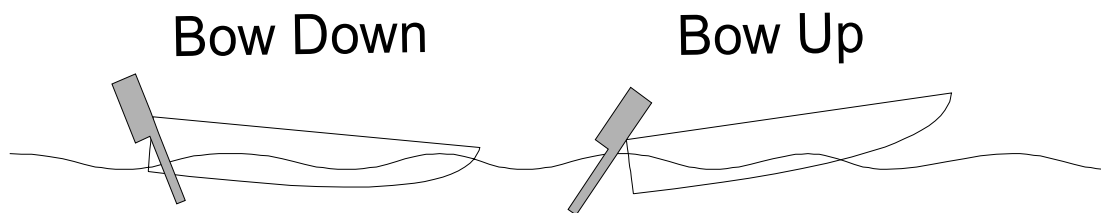
Steering

Like a car, we steer the Hurricane, Marks and Albatross with a wheel. However, boats do not handle at all like cars. Boats have no brakes. Speed must be controlled when approaching other vessels and objects. Modest use of reverse is used only when necessary to control forward momentum. A powerboat generally must have power to steer. This means that if you are coasting in neutral don't expect the boat to turn just because you turned the wheel. It will need propulsion for it to react predictably. Therefore manoeuvring a single propeller boat at slow speed is much more difficult than at high speed. Mostly steering a boat is all about direction of the thrust and PRACTICE!

Trim

On larger outboard and inboard/outboard motors the angle of the leg or legs in relation to the boat can be changed to affect the attitude or "trim" of the boat. By pivoting the leg up or down, a single engine boat can effectively raise or lower the bow of the boat while still on a plane. This effects how much hull is in the water and thus how much drag the hull produces.

How It Works:



As the two exaggerated diagrams show, the propeller pushes the bow up as it is raised through the water. A planning hull sits balanced on its aft section. The effect of the raised propeller pushes the leg down into the water raising the rest of the boat out of the water as it pivots on its aft section. When the leg is brought down towards the vertical there is less pivoting action and the hull will tend to ride lower in the water as shown.

Trim (continued)

How to adjust it: When and Where.

On flat water, trimming up results in more speed but less control when changing course. Because the propeller is higher in the water it is more likely to draw air from the surface. The propeller then loses its “bite” in the water and becomes less effective in driving the boat. When the trim is adjusted to the point just before this happens the boat should be near maximum hull speed because the bow is being forced up, less hull is in the water and as a result less drag is produced. However as the boat becomes inclined in a turn the propeller is effectively raised and if trimmed very high will lose bite. This is dangerous as the motor could over rotate from the sudden unloading, potentially causing serious mechanical damage. That is why when trimmed for speed in flat water it is advisable to trim down before initiating a turn.

When operating a high performance-planning hull (such as our Hurricane and Marks Boat) in heavy seas we quickly find out that boats generally work better in the water than in the air. For ride comfort and in extreme conditions to prevent the boat from flipping over, we trim down when heading into the waves. Be careful here because if the boat is trimmed too low the bow will bury into the waves and water will come over the bow. When large waves are following us (a following sea) we will want to control our speed and trim our bow up enough so as not to bury the bow into the back of a wave; but not too high, so that when the wave faces lift our stern we retain power and directional control. You are encouraged to experiment with trim as much as you can and see for yourself how it affects ride height, propeller bite and turning radius. Trim is very much “a feel thing” and practice is the only way to get the hang of it.

Getting Under Way

While you are walking down the gangway to the dock ask the fishers politely to move their lines if they will impede your leaving the dock. Always do a 360° visual check before moving off. “Getting under Way” is a term used for when moving from a stopped position. It is general practice at Jericho Sailing Centre to dock the boat “facing out” so that we are able to leave the dock very quickly. Before casting off any lines, start and warm the engine. During calm seas cast off both the bow and stern lines and push the boat away from the dock from the centre of the boat. When there is about 1 foot of separation place the boat in forward and move away from the dock at slow speed. During high seas, depending on the situation, you may not be able to push the boat away from the dock and will have to get under way while still touching the dock.

Docking

There are 2 methods for docking the boat. The first method is the preferred method as it minimizes the wear and tear and is “safer for the boat”. During high seas It is preferred that the boat be tied up to the inside of the dock, as it is more sheltered. With this in mind, it is more difficult to dock the boat using method #1 on the inside of the dock due to limited space and on a low tide due to the lack of water depth. Never step from the boat to the dock unless the helmsperson knows that you are about to step from the boat.

Method # 1

Approach the dock dead slow at a 45° angle; into the wind or into the current, whichever may have the greater effect on the boat. About 4 feet from the dock turn the helm hard over so that the boat is parallel to the dock, then turn the helm hard over in the opposite direction so that the propeller is facing the dock and give it a small “shot” of reverse. This will suck the stern end of the boat into the dock and bring the boat to a dead stop alongside the dock. The engine should be kept running until the boat has been made fast to the dock. Remember that this is quite a tricky manoeuvre and that the only way to perfect your docking skills is to practice.

Method # 2

With the boat parallel to the dock and about 4 feet past of the end of the dock, put the boat into reverse and “back” the boat along side of the dock. The disadvantage of this method is that it is more difficult in high seas and the motor may come into contact with the dock if done incorrectly. When using this method you need to take into consideration Propeller Walk (see section below)

Propeller Walk

Propeller walk is the tendency for a motor to pull a boat in the direction that the propeller is rotating. A clockwise rotating propeller will tend to turn the boat to starboard when travelling forward, and will tend to turn to port when in reverse. For this reason if you have a choice it is easiest to dock on port, as putting the boat in reverse even if the motor is straight will pull the boat towards the dock.

Shallow Water Operation

It is strongly advised to keep shallow water operation to a minimum. The risk of damaging the boat in shallow water is great. In some cases it is necessary, i.e. when you are beaching (see below) or when attending a vessel in need of assistance (possible grounded).

When operating in shallow water exercise the following precautions:

- Slow down.
- Post a look out for deadheads, rocks, etc.
- Watch for breaking waves and a change in water colour as these may indicate shallow water.
- Watch the depth sounder (if available) and raise the leg when necessary.

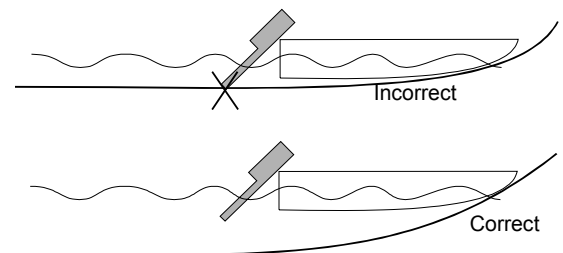
After shallow water operation it is prudent to check the cooling system indicator. It is not uncommon for sand to get stuck in the outflow tube.

Beaching

We regularly beach the boats at Jericho to pick up or drop off crew and equipment. The skipper of the boat must use his or her discretion to determine whether it is appropriate and safe to beach the boat depending on beach congestion and the current sea conditions. Some examples of when it is not appropriate to beach the boat is during an extremely low tide or when it is stormy out and the waves are big. If you are involved in an emergency situation you must also weigh these options in your head. Remember that when you beach the boat in big wave conditions you will be putting not only yourself your crew and the victim at risk, you will also put any of the people that are responding on shore at risk as well. It is a Vancouver City by-law that all vessels stay 300m from the shoreline at any bathing beach. When we come ashore at a bathing beach we are breaking that by-law. Use discretion about when & where you should beach, do not do so unless necessary, and if you do, exert the utmost caution and professionalism. The goal is to minimize your impact and presence.

Approach the shoreline at a right angle at slow speed, bringing your engine up, as water depth requires it. As you reach the water's edge the keel of the boat will gently wedge into the sand (see diagram). *Do not leave the boat unattended or turn off the engine when beached in this fashion.* Turning off the engine will compromise your ability to adjust your position quickly, and should the engine fail to restart, you will ground the vessel more permanently than intended.

Beaching using the grounding method is not recommended for extended periods of time. If the tide is outgoing you risk grounding yourself until the tide comes back in.



Beaching (continued)

Other concerns when beaching in this manner are waves coming into the shore at an angle. Such waves might push the stern of the vessel causing it to swing around so that the boat is no longer perpendicular to the shoreline. When not corrected the propeller could get rammed against the ground and/or wedged into the sand, causing damage or permanent grounding. To prevent this from occurring, get a crewmember to stand in the shallow water on the lee side of the boat. Have them lean or push against the side of the boat when necessary. Another way is to get the crewmember to go ashore and hold the bow of the boat and compensate for any stern movement by moving the bow. When waves are large, these techniques might not suffice in keeping the boat perpendicular with the shoreline. In these instances you should not be beached in this fashion. Instead, bring the boat to the dock instead. If it is too rough to dock or haul out at Jericho, ask the office to get permission to use the RVYC dock.

Beaching Procedure

1. Choose the bay or the area where there is the least amount of traffic.
2. Observe the precautions noted above (in shallow water operation). Bring the vessel in dead slow. Post a look out for swimmers and hazards below the water surface. Watch the depth sounder (if available) and raise the leg when necessary.
3. Remember that as the leg is raised you will have less control over the vessel, as less of the propeller is in the water. If you start to lose steering control lower the leg a little. But keep in mind that you must keep the propeller from touching the bottom.
5. Ensure that your vessel is not beached in a fashion that will leave you unable to depart quickly if needed.
6. When beaching, standard procedure is for one person to remain with the vessel and ensure its safety and security. The method of beaching that you use depends on how long you intend to stay, the reason for beaching, ocean conditions and location. Some methods do not involve the vessel touching shore.

Heavy Seas

Rules of Thumb

1. Reduce Speed
2. Maintain Control
3. Stay Alert
4. Stay Calm
5. Stay in Radio Communication

Speed

In most cases a reduction of speed is essential to handle a powerboat in heavy weather. Experience in these conditions is the best method of developing the skills necessary to assess the proper speed. A boat can be pitch-poled (flipped stern over bow) if going too fast or pooped if going too slow. You should continuously adjust the throttle to keep pace with the speed of the waves. You should attempt to keep the boat away from the crests of breaking waves.

Control

A powerboat may yaw (turn to the side) as the stern lifts because control is lost. The driver must be extremely alert to anticipate and correct any tendency to yaw. A yaw could turn into a broach (tipping over sideways) by the boat being pushed over sideways. This could possibly cause you to capsize. Often steering will be a problem. It is usually caused by following seas overtaking the boat. If you run directly into the waves your boat will receive a heavy pounding. The best method of coping with the waves is to take them at a 45-degree angle, off the bow or stern. You may have to alter course (similar to tacking and gibing) to reach your destination. Many adjustments will be required to maintain control steering in heavy seas.

Stay Alert

Stay very alert during high seas. Small sailboats and windsurfers are very difficult to see. You may almost be upon them before you realize they are there. Deadheads and driftwood are harder to see.

Stay Calm

Heavy seas are very dangerous. Stay calm and keep any passengers secure. Make sure that everyone has a lifejacket or Cruiser Suit ON and DONE UP . ***Ensure that the kill cord lanyard is attached to the helmsperson.***

Stay in Radio Communication

Always maintain radio contact at all times. If it is ESSENTIAL that if you go out of radio communication to make a rescue let Jericho Base know when you are leaving and the anticipated time that you will be back in communication. If you head South of Point Grey or East of First Narrows (Lions Gate Bridge) you will most likely be out of VHF radio range. You may need to relay communication through Vancouver Coastguard Radio. THERE IS NO SENSE IN RISKING YOUR LIFE!

Fog

Operation in fog requires special precautions. UNLESS THERE IS AN EXTREME EMERGENCY DO NOT GO OUT IN FOG. Utilize the Coast Guard if there is a grave situation. They are much better equipped to handle a fog situation.

1. Reduce your speed so that the boat can be stopped in half the distance of visibility.
2. Sound the fog signal required (see below)
3. Turn on navigation lights
4. Hoist radar reflector (If you have one)
5. Post a lookout on the bow
6. Manoeuvre to avoid a collision should another boat be encountered
7. Remember that no vessel has the right of way in fog.
8. Stay in radio communication with your base station
9. Use your GPS (if available)

In or near an area of restricted visibility, whether by day or night, the signals prescribed in this Rule shall be used as follows:

- A. A power-driven vessel making way through the water shall sound at intervals of not more than 2 minutes one prolonged blast (4-6 seconds).
- B. A power-driven vessel underway but stopped and making no way through the water shall sound at intervals of not more than 2 minutes two prolonged blasts in succession with an interval of about 2 seconds between them.
- C. A vessel not under command, a vessel restricted in her ability to manoeuvre, a vessel constrained by her draught, a sailing vessel, a vessel engaged in fishing and a vessel engaged in towing or pushing another vessel shall, instead of the signals prescribed in paragraph a) or b) of this Rule, sound at intervals of not more than 2 minutes three blasts, namely one prolonged followed by two short blasts (1 second)

* The above was copied with permission from the Collision Regulations

Note: If you are caught out in fog remember the above precautions and stay calm.

Man Overboard

"Man overboard" is one of the worst situations boaters may face and it can happen to the best. Every precaution should be taken to prevent it (e.g. stay seated while the boat is underway). Approved lifejackets must always be worn. It is also important to wear appropriate clothing that does not restrict your movements.

There are many different circumstances involved in a "man overboard" situation. We have outlined some basic procedures to assist you in a recovery. You must practice the procedure that is right for your boat. Remember the chances of your victim's survival depend on:

How Long Can the Person Stay Afloat?

- Is this person wearing a lifejacket
- Is this person conscious
- How cold is the water
- Is this person wearing restrictive clothing
- Is this person injured

Can This Person Be Found?

- Can you see the person (are the waves too high)
- Has the person drifted away
- Is this person wearing bright enough clothing

Can This Person be brought aboard?

- Can you lift this person into the boat
- Is this person injured
- Is this person conscious

A suggested "man overboard" drill is:

1. Yell "Man overboard"
2. Toss a lifejacket to mark the spot and if available press the MOB button on the GPS
3. If you have another crewperson have them keep the person in sight at all times
4. Helm hard over
5. Come around on a turning circle
6. Come head to wind alongside victim
7. Approach victim and pick up.

NOTE: The most important thing is to know and practice the drill for your particular boat. Your crew and passengers must also know the man overboard procedure.

Running Aground

If you ground your vessel the first thing you should do (after ensuring no one is injured) is to find out if you have put a hole in your boat. If you have, you must try to keep the boat afloat. If you have a bilge or bailing pump use it to try to keep the outflow ahead of the inflow! If there is no bilge or bailing pump use a hand bailer. Try to plug the hole. Try to attract help. Call or signal for assistance.

The Hurricane and Marks boat should be able to stay afloat even if they have been holed due to the tubes on the Hurricane and on the marks boat because the hull has been filled with foam that adds to the positive floatation.

If you have not holed your boat then determine what you are stuck on. If you are in tidal waters you can wait for the tide to come up and float your boat off. If you are stuck on a sand bar you can attempt to push your vessel off. You may be able to free the boat by unloading the crew.

Swamping

To swamp a boat means the boat has almost or completely filled with water. You lose most of the manoeuvrability and stability when this happens. Most of the buoyancy is lost but most small boats have enough floatation to keep the boat afloat. Stay with your boat if it has become swamped. Signal for help. Make sure you have your lifejacket on and done up. Take all possible precautions to ward off hypothermia.

Capsizing

Capsizing can be a dangerous situation. Capsizing is when the boat turns over and is bottom up. There are many reasons why this may occur. It may be due to overloading of the boat, reduced stability due to swamping, being overpowered by the wind, and inexperienced handling of the craft or weather conditions beyond the limits of the boat.

If you cannot upright the boat, stay with your boat. Make sure everyone has his or her lifejackets on. Take all possible precautions to ward off hypothermia. Try to attract help or use a handheld VHF Radio to call for assistance.

Distress Signals

You may need additional assistance at some point. The Coast Guard has standard Marine Distress Signals to alert others in case of emergency. See your Safe Boating Guide for an explanation of the distress signals.

Types of Distress Signals that you may see

Radio

VHF Channel 16 is the Coast Guard monitored channel.

- Mayday
- Pan, Pan
- Security

Flares

There are many types of flares to choose from.

- Type A: Parachute
- Type B: Multi-star
- Type C: Hand Held
- Type D: Buoyant or Hand Held Smoke

Arm Signal

The international distress signal is when outstretched arms are raised to shoulder height and lowered steadily and repeatedly.

Noise Makers

An air horn or whistle can carry much farther than your voice.

Flashlight

A flashlight can be used to signal SOS (3 short, 3 long, 3 short)

NOTE: See the Canadian Coast Guard Safe Boating Guide for more details on distress signals. Available in the JSCA Office

6 Rescue Priorities

In any rescue situation there is a fine line between the rescuer and the victim. When we “extend our hand” to help someone else we are putting ourselves at risk. It is extremely important to know and observe the rescue priorities when assisting someone on the water.

Every rescue means you assume some risk!

Before acting, weigh the risk involved with the safety of your vessel and crew in mind.

1. Self Preservation

As a rescuer your safety is the first and most important priority in a rescue scenario. It is as important to the victim as it is to you. If you become a victim, you cannot help anyone. Assess the risk to yourself before taking action.

2. Life

The victim’s life is the next priority. Take action that will remove the victim from danger (i.e. out of the water/primary first aid survey (A, B, C)).

3. Limb

The victim’s physical condition, “limb”, is the next priority. Similar to a secondary first aid survey, (i.e. cuts, bruises, sprains, head bonks, broken bones, etc.) Rescuers are particularly mindful of the signs of hypothermia.

4. Property

Once the victims’ life and limb are determined to be OK, their craft and equipment can now be rescued. It is important to treat a victim’s craft as carefully as you would your own. Ensure there are no loose parts or equipment that will be lost during the rescue.

Lifesaving Procedures

Lifesaving procedures on water are similar to land based emergency action principles of first aid while recognizing the *Rescue Priorities*.

1. **Situation Recognition**

What is the situation? Boat in distress? Capsized? People in the water? Is assistance necessary?

2. **Assessment**

Is there imminent danger present to the victims or rescuer? Is the scene safe? Assess the risk to all parties.

3. **Approach**

What is the best way to approach the scene? Upwind, downwind? What is the current doing? How can we keep the propeller as far away from people as possible? How will our wake affect the craft we are rescuing? Approach cautiously.

4. **Communication**

Initiate the communication: "How are you doing? Do you require assistance?" Assess the demeanour of the response. Calm or panicked? Explain who you are and that you can provide assistance if necessary. Make eye contact and use a strong, reassuring tone. Tell the victim exactly what you are going to do to assist them.

5. **Action**

Determine the appropriate action necessary, mindful of the rescue priorities and perform the rescue. Call for assistance or E.M.S. if necessary.

6. **Follow-up**

Ensure the victim receives the appropriate medical attention, if necessary. Record their name and particulars of the rescue in the rescue log book.

When to Call the Coast Guard

The Canadian Coast Guard operates many vessels. The vessels that you will most likely be in contact with are: Osprey and Osprey 1, they can be reached on VHF Radio on channel 16, 83A or 04A. Vancouver Coast Guard Radio can also be contacted on these channels, as well as by dialling *16 on your cell phone. Initial contact should be made with Vancouver Coast Guard Radio unless you know that either of the above mentioned boats have been dispatched.

1. **Injury**

If you come upon a victim that is injured...Call the Coast Guard for assistance. You must judge whether the victim must be transported immediately or whether to wait for the Coast Guard's assistance. Inform the Coast Guard of your decision and follow through with appropriate measures. The Coast Guard will notify E.M.S. (Emergency Medical Services). Make sure you clearly communicate and understand any rendezvous arrangements agreed upon; Royal Vancouver Yacht Club and Jericho Sailing Centre are often confused for each other. Our address is 1300 Discovery Street. The Jericho pier can be driven onto via the turnabout on the west side of the parking lot.

2. **Missing Person**

If you discover that a person is missing...Call the Coast Guard for assistance. State your situation and location. Use a landmark, freighter or GPS Coordinates to give your location. Be as precise as possible.

3. **Vessel Unaccounted for?**

If a vessel is unaccounted for, call the Coast Guard for assistance. Give a detailed description of the vessel, the number & names of people on board and when it left shore.

4. **Back up**

If the wind has picked up and you have too many rescues to handle or if conditions get too severe for our rescue vessels...Call the Coast Guard for assistance. Don't become your own victim.

5. **Operations with Hovercraft**

If the situation could be best handled by the Hovercraft...Call the Coast Guard for Hovercraft assistance.

6. **Radio Communications**

If you are having a breakdown in radio communications with the JSCA office and need assistance...Call the Coast Guard.

NOTE: Always remember that you are not alone...the Coast Guard is here to help and should be utilized when necessary

When to Call the Police

The Vancouver Police department operate several patrol boats, R.G. McBeath, VPD 99, VPD 98. You can reach them on VHF 16, 12 or via telephone at 911 when illegal activity is suspected.

Examples of such activity are:

1. An impaired person at the helm of a vessel
2. Dangerous/Reckless operation of a vessel (Jet Ski near beaches)
3. When a serious collision resulting in damage or injury has occurred.

NOTE: If the Vancouver Police cannot be contacted, RCMP and the Coast Guard remain as viable options.

When to Call the Lifeguards

The Lifeguards have staffed stations at: Spanish Banks West and East, Locarno, Jericho Beach, Kits Beach, Sunset, English Bay, Second Beach, and Third Beach, June through August weather depending. They do not monitor Marine VHF radio and can be contacted by phone at Kits Tower 604-738-8535 or 604-732-7027* (*Emergency Number) (see note below)

Call the Lifeguards if:

1. A First Aid situation calls for measures beyond your training (only after calling Emergency Medical Services).
2. A little bit of extra help on busy days is needed when we are overwhelmed with rescue victims.
3. You need a medical evacuation from a complex scene.
4. You notice a potential problem on a swim beach.

Expect a call from the Lifeguards when:

1. They spot small craft in trouble off one of their beaches.
2. They conduct a large-scale search for a missing swimmer.
3. If they are overwhelmed with rescue victims.

NOTE: The Lifeguard network can also be accessed by phone via the JSCA office staff

7 Rescue Procedures

Windsurfing Rescues

Windsurfers, as all sailors, have a responsibility to ensure their own safety. Windsurfing is an individual sport and thus the windsurfer must often rely on his or her own skills and ingenuity to ensure a safe, fun existence. ***Windsurfers should remember that it is required by law to have a lifejacket when windsurfing.***

Self Rescue

All accredited schools, as part of the beginner windsurfer's first lesson teach the self-rescue. Unfortunately, many new windsurfers never take a lesson and therefore never learn how to self-rescue. The self-rescue should be used when a windsurfer is in trouble, either from equipment failure, lack of skill, or excessive conditions. There are two ways to perform the self-rescue, one for light winds and one for heavier winds. In a non-life threatening situation a rescuer may choose to talk a windsurfer through a self-rescue. If this is done you must maintain a close watch on the person, to ensure they reach shore.

Light Wind Self Rescue

A windsurfer makes an excellent paddleboard (except for "sinker" boards that are used in high winds). This fact is utilized in the light wind self rescue. To perform the self-rescue the rig (mast, boom, and sail) should be placed across the stern of the windsurfer and balanced there. The sailor should lie on his or her stomach and place their feet on top of the boom or sail to assist in balancing the rig. Both hands should be utilized to paddle the windsurfer back to shore.

Heavy Wind Self Rescue

In heavier winds it is impossible to balance the rig of the windsurfer across the stern of the board. The sailor must then de-rig his or her sail. The first step is to undo the outhaul. This is the rope that ties the clew of the sail to the end of the boom. When this rope is untied, swing the boom parallel to the mast. You can then roll the sail along the leach, from the clew of the sail to the mast. You must take out any battens that you encounter. Try to tuck them into the sail so you don't lose them. When the sail is rolled, wrap the uphaul (the thick rope used to pull the sail up) around the sail and the boom. If there is a shock cord and clip on the end of the uphaul rope use this to secure the sail to the mast. If a shock cord does

Heavy Wind Self Rescue (continued)

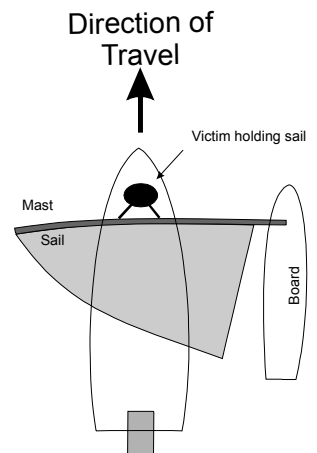
not exist, use a half hitch to secure the sail and boom to the mast. Place the mast towards the stern, parallel to the windsurfer. The sailor must lie on their stomach and use their feet to hold the rig in place. Both hands should be used to paddle safely to shore.

Equipment Failure

The most common equipment failure that you will see on a windsurfer is a broken universal joint (the part that holds the rig to the board). If your board separates from your rig, swim for the board immediately. The board will support your weight and can be used to paddle you to safety. The rig will not hold your weight and will sink under your weight. The board, because of its lightweight and small amount of drag will drift away quickly, so be aware. The rig has a great deal of drag and will not drift very far. A safety leash between the board and rig is highly recommended.

Small Boat Windsurfer Rescue (12ft Zodiac etc.) *

When using a small motorized boat to rescue a windsurfer remember your rescue priorities. A rescuer plus a victim plus a windsurfer in rough waters may swamp your vessel! Lives are more important than equipment no matter what your victim says. Windsurfers have a great deal of floatation and can be pulled alongside a small craft. This is often easier than towing a windsurfer and is much safer than bringing a windsurfer on board. A 12-foot Zodiac can bring two windsurfers in at one time if need be. The important thing to master with this rescue is the positioning of the victim(s) and the rig(s) (sails). The victim(s) should be placed in the bow of the boat. They should be seated facing the stern of the boat and given an emergency blanket if needed. Their board(s) should be placed on either side of the boat, parallel to the boat facing in the same direction. The clew end of the sail(s) should be brought into the boat thus leaving the mast extended out of the boat. The victims should sit on the bottom of the boat holding the boom(s) securely. If there are two victims the person to windward should have their rig on top of the persons to leeward. This will help hold the rigs steady as the boat moves. Proceed to shore at a slow pace.



NOTE: This method is also appropriate for use on the larger boats (Hurricane & Marks) on light wind days.

Large Boat Windsurfer Rescue (Hurricane/Marks)

If you have a larger rescue vessel available it may be advisable to bring the windsurfer on board your rescue vessel. This will save time as you can proceed to shore much more quickly than when towing a board. Approach the windsurfer from the leeward side. Let them drift onto you. It is very frightening for a small windsurfer to have a large vessel float onto them. Secure the windsurfer and assist the victim aboard. Attend to the needs of your victim (hypothermia etc.). De-rig the sail by untying the outhaul. A sharp knife may be of assistance here. DO NOT detach the mast from the board (unless absolutely necessary).

Scissor the boom and bring it parallel to the mast. Roll the sail from the clew along the leach. Remove battens if necessary. Wrap the uphaul around the mast, boom and sail to secure them. Bring the rig parallel with the board. Haul rig and board (mast still attached to the board) into the boat. Place the equipment along the port side of the Marks boat and in the forward area of the deck on the Hurricane. Proceed to shore.

Monohull Rescues

The following are proven methods used to **RIGHT** and **TOW** Monohulls.

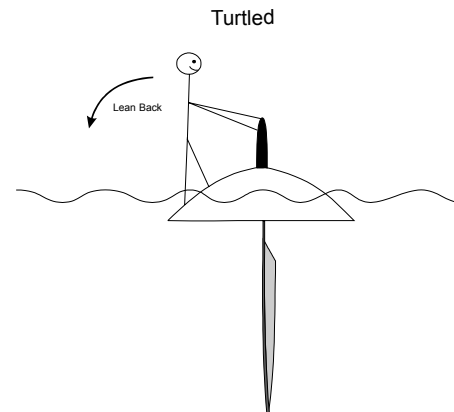
Small Monohulls (Lasers, etc.)

Approach

Approach the overturned boat slowly from the downwind (leeward) side constantly watching the boat & occupants; make sure skipper and crew are accounted for. Look carefully around the immediate area of the boat to ensure there are no loose lines, sheets, sails (or people!) that may tangle with your propeller. Make sure the crew can see you approach. By talking to the crew, determine if they are experienced in uprighting and self-rescue and find out if they want your help. Also, determine by their appearance, actions and lucidness whether or not they are over-tired or becoming hypothermic

Bow to Windward

If the crew is fit and able, they may require minimal help, rather than a tow to the beach. You will probably have to orient their boat in the right direction. The best boat position for uprighting is the bow facing the wind.



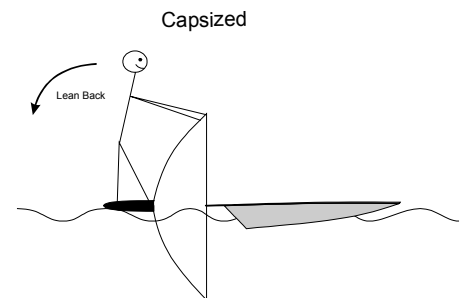
Small Monohulls (continued)

Mast Lying across Water

If this is a single-handed boat, have the skipper pull the boat on its side by pulling down the fully extended centreboard, so the boat is lying on its side with centreboard parallel to the water surface and the mast is lying across the water surface. **Make sure all sheets are uncleated, loose and free.**

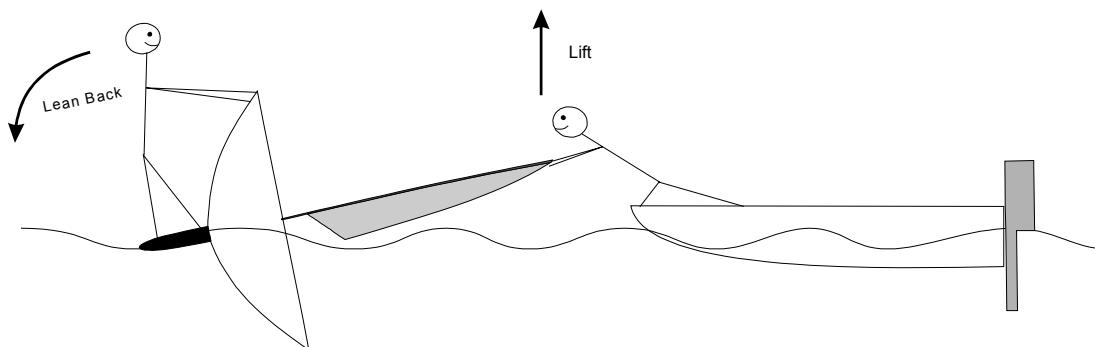
Lift Up Mast/Pull Down on Centreboard

Approach the top of the mast and slowly pull it out of the water. When the mast is just out of the water, have the skipper pull down on the centreboard and climb up on the now sloping centreboard and pull on the side stay or halyard. As the boat starts to upright, the skipper should climb over the gunwale as you are lifting and "walking" down the mast with your hands, lifting it further out of the water. In most cases, an experienced person should be able to upright a Laser without any assistance. If there are two or more crew, one may lift the mast out of the water to start the righting, instead of you, the rescue boat operator. Also, if there are two or more crew in the water, use extreme caution in making sure you have everyone in sight.



Powerboat Assisted Rescue Technique

Another option if the sailor is unable to right the boat is to help them by lifting up on the mast while they are using the technique that was detailed in the "Lift Up Mast/Pull Down Centreboard" section above.



Larger Monohulls (Enterprises etc.)

Approach

(Same as for small monohulls)

Mast to Windward

Another variation on the self-rescue technique is to position the boat so the mast is pointed in the windward direction. This is particularly useful for heavy boats with a relatively small sail area, such as Enterprises. The wind will help by lifting the sail and mast out of the water. This technique requires split-second timing on the part of the skipper and crew to ensure the boat doesn't keep going and capsizes over on the other side. If this happens you will probably be required to tow in the boat as a result of overtired or hypothermic sailors or due to equipment failure.

Turtled

A turtled boat will right itself when towed at the right speed. Ensure rudder, centreboard, etc. are firmly attached or on board the rescue boat. Attach towrope to towing eye. Tow slowly at first to reduce stress on rig and drain water. As the rig starts to come to the surface, increase speed gradually until the boat rights itself. Maintain a tight towline or the boat may capsize again.

You may also use the technique that is employed to right a Hobie that is detailed on page 41.

Towing

Preparation

If a tow is required, make sure all sails are down and safely stowed in the boat. Put the sails under the foredeck, if possible, or weight the sails in the boat so they don't catch the wind. Raise the centreboard and secure in the upright position. If the boat has a daggerboard, remove the daggerboard completely. It can be used to weight down the sails in the boat. The rudder should be left down and a crewperson should steer the boat so that it remains directly behind the rescue boat. While towing one person must be looking aft, managing the tow while a separate person acts as the skipper. The helmsman and the tow observer must be in verbal communication due to the danger of the bow eye fitting breaking off. When this happens the towline can act like a rubber band hurling a fitting or carabineer at the rescuers' heads. This is why if the boat is full of water, open up the self-bailers (if there are any) or open up the drain bung plugs. As you increase towing speed, a boat full of water will start to drain, easing the stresses on the

Towing Preparation (continued)

towing boat and the towed boat. Try to avoid towing boats filled with water. If you must tow a boat filled with water, tow at a dead slow speed, or you will damage both the towing boat and towed boat.

Towing Lines

Ideally, the boat should be towed from the bow eye, but not all boats have this feature. If not, tow from base of the mast. Wrap the carabiner end of the towline around the base of the mast and clip the line to itself. Secure the other end with several wraps on your tow post for a quick release if necessary. Use a sufficiently long tow line (40 to 70 feet) to ensure the towed boat doesn't crash into the rescue boat in the event of sudden slowing or stopping. Also, try to have the towed boat constantly climbing your wake at a safe distance. Always use a floating line.

Towing Speed/Drop Off

The towing speed should be moderate, not necessarily dead slow, but no planing please! As you approach the beach, make sure you have a wide berth, slow down, and tell your passengers or towed crew that you are going to change direction and release their boat into the shallow water beach area. When you are approximately 10 metres from shore cast off the towline and turn the rescue boat away from shore. The momentum of the tow will allow the boat to coast to shore. If you are in a heavy surf area, release the towed boat before the surf line, so you can avoid the breaking wave. Drop off your passengers and/or their gear at the beach (remember to lift your motor!). If the area is busy, it may be easier to beach the boat with the tow still attached, and when you are safely ashore pull the towed vessel in by hand. This method should only be used on lighter wind days as if you try it on a windy day 15kts + you may not be able to bring the boat in by hand.

Catamaran Rescues

Self Righting

1. Approach the overturned boat slowly from the downwind (leeward) side constantly watching the boat and occupants. Look carefully around the immediate area of the boat to ensure there are no loose lines, sheets, sails (or people!) that may tangle with your propeller. Make sure everyone is accounted for and the crew can see you approach. By talking to the crew, determine if they are experienced in uprighting and self rescue and find out if they require your help.

If a rescue is required:

- a) **Undo all sheets as loose as they will go.**
- b) Pull out the righting line which runs above each hull. Make sure the righting line is long enough to allow both the crew to hang out at least to a 45-degree angle from the vertical. If this line is too short they will not be able to get the boat up by themselves. They can take one of the sheets off one of the sails (preferably the jib)

Catamaran Rescues: Self Righting (continued)

to make the righting line longer. A simple figure eight can be used to shorten a righting line that is too long.

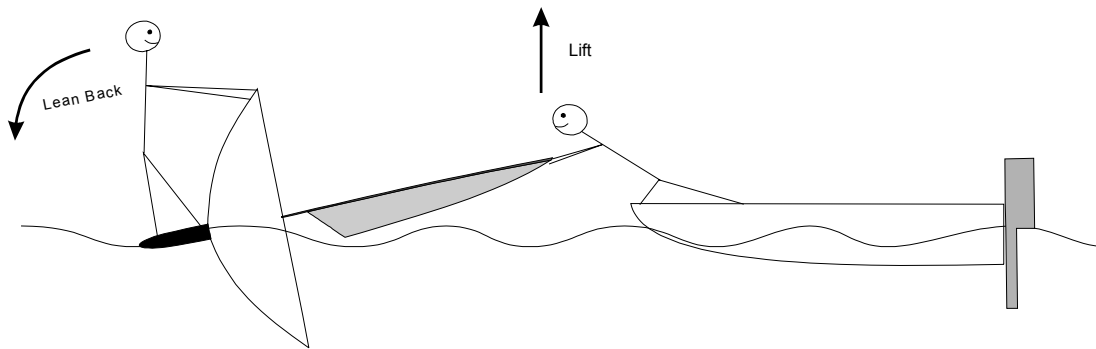
- c) Turn the boat so the hulls are to windward and the crew will be hanging out to leeward.
- d) The crew must hang out at a 45-degree angle downwind and wait for the boat to slowly start coming up. This process can take 5 or 10 minutes if there is a pocket of water in a sail or the mast is full of water. **BE PATIENT!** If the boat comes only half way up and won't come any farther you haven't been eating your pudding. In wind conditions with experienced crew sometimes an underweight crew can right a catamaran. However the average Hobie needs about 300lbs minimum to right without outside assistance.

Reasons for not coming up

- Sails are full of water (sheets tangled)
- Mast stuck in mud or fishing gear on bottom
- If you are on a Hobie the mast may be full of water and the water can't get out because they are supposed to be water tight masts
- It is not windy enough for the wind to blow against the trampoline and help push the boat up
- Righting line is too short
- You are on a Tornado and your combined crew weight is not at least 400-500lbs or it isn't blowing at least 20 knots to help blow the boat up. One trick you can do to get the boat up is to get the main sail off the mast. Another trick if you are athletic is to have one person sit or stand on the other person's shoulders and this helps you create a greater righting moment. If this fails, you better eat more pudding.

NOTE: Always keep the rescue boat downwind so you don't drift on top of the boat/people you are rescuing.

Powerboat Assisted Rescue Technique

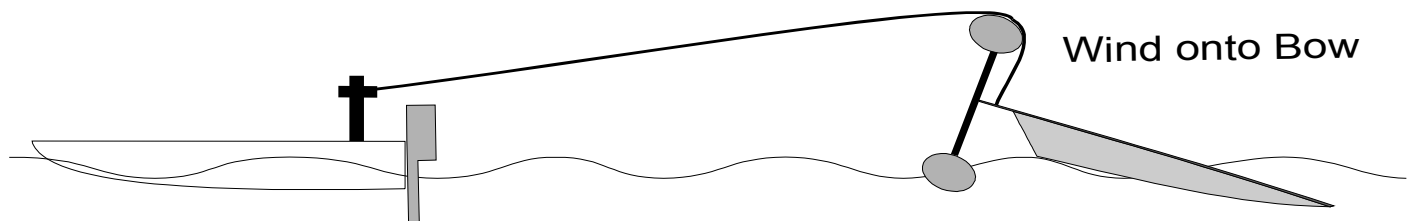


You may also use the technique indicated in the above diagram to assist in righting a Hobie.

Righting a Catamaran Assisted by a Powerboat

Using a powerboat to right your catamaran can be very easy or a disaster.

1. First make sure you have enough room between the powerboat and the sailboat to pull the sailboat up. The effective mast height is greater than its length and you must be careful to avoid getting hit in the head.
2. Have the crew prepare the boat to be righted (e.g. sheets and sails loose, boat pointing at a right angle to the wind, secure all loose gear etc.). Take your time and explain to the crew how you are going to right the boat as a team.
4. Take your towline and tie it over the windward hull and back to the base of the mast with a bowline so you can undo it easily. NOTE: always have a knife handy in case you must cut the line quickly.



Righting a Catamaran Assisted by a powerboat (continued)

4. If you have lots of time, have them try to get the boat up by themselves and just as they start righting the boat use your motor to help pull the boat up gently. The key-note is gently. With a 115HP motor you only need about $\frac{1}{4}$ - $\frac{1}{2}$ throttle (depending on wind/wave conditions) to pull up a 16- 20-ft catamaran. There are two reasons why you should try to have the crew right the boat themselves; they gain confidence in their seamanship; the boat has a better chance of staying straight down wind. When you use a powerboat to pull a catamaran up from a standing stop initially have the crew sit in the centre of the hull that is closest to the rescue boat. If the catamaran turns either to the left or to the right, you can overcome this by having one or more of the crew go to the end of the hull and create more drag by dangling their legs in the water to create drag to straighten out the boat. In the case of a Tornado, they are very light and have round bottomed hulls so that they can plane along the surface for quite a while before they will come up, unless both crew get in the water to create more drag.
5. As the catamaran comes up make sure you back off on your engine power so you don't destroy the rig with your towline. If it is too windy the boat will come up and blow over again, and this is why you have a 70ft towline to keep out of the way.
6. If it is really windy, 40 - 50 knots and above, you usually can only rescue the crew and put an anchor on the boat. If you right the boat in high wind, it will often start cart wheeling downwind tearing itself to pieces as it goes. Another solution is to cut the rig off it and save the hulls. A boat can be rescued by leaving only one shroud holding the rig. It's slow but it works.

Towing a Catamaran

If you get the catamaran up but some part of the gear or rig is broken and they can't sail home, you need to give them a tow. Get the sails down if possible and tow it in. Reset your towline to pull through the jib bridle from the base of the mast.

SOMEONE MUST REMAIN ON THE CATAMARAN TO STEER THE BOAT. THE CATAMARAN CANNOT BE TOWED WITHOUT SOMEONE STEERING.

NOTE: We have tried all sorts of slings and a wave or wind will always turn the boat away from the direction you are going, possibly damaging the boat.

Kiteboard Rescues

The Danger when rescuing a Kite board or a runaway kite is the possibility of the kite accidentally re-launching into the air. Whenever a kite is inflated, it is capable of lifting off the water and becoming airborne. A kite can be hazardous if it re-launches into the air as the kite lines can cut, or become tangled around someone.

Normally if a kiter releases the bar that they hold onto, the kite remains attached to them by one line, the leash line. The kite will lie flat on the water and has very little pull and no chance of re-launching accidentally.

If in an emergency situation when trying to rescue someone who is injured and/or when you have to immediately disable a kite for safety reasons, the best plan is to cut all but one of the lines attached to the kite. Most of the kites have 4 lines attached but some will have only two or three. Cut the lines as close to the kite as possible. The kite will then lie flat on the water and can't power up. Don't use this method unless the situation requires it. Normally if you have to pick up a kite surfer or kite, the following method will work very well.

The safest way to rescue a Kite board is to have the kite surfer wind up their kite lines and deflate the kite himself or herself while they are still in the water. If the person is unable to do this or if the kite is a runaway then you need to follow this procedure:

1. The first goal is to disable the kite. Grab the kite first, not the kite surfer and NEVER the kite lines. The kite will usually be downwind of the kite surfer and the lines and bar. Approach from across the wind to avoid the lines.
2. Keep clear of the kite lines. Do not grab the lines!! If you grab the kite lines and start pulling them in the action of you pulling on the lines may be enough to relaunch the kite.
3. Approach the kite from the side and grab its corner. If possible grab the upwind corner or wingtip. Avoid the lines.
4. Once you have grabbed the kite hang onto it and do not let go or it could become airborne and entangle you in the lines, let the rest of the kite flap downwind like a flag.
5. Most kites can be deflated like a beach toy. To deflate the leading edge bladder (like an inflatable mast) find the deflate valve halfway between the tips. It may have a Velcro strap over it. Open the valve and deflate the leading edge so that you can roll it up. The smaller struts/battens will still have air in them; roll the kite from one tip like rolling up a sail with battens.
6. With this done you can safely pull in all of the kite lines and the kite boarder.

Jericho Sailing Centre Site

A familiarization and introduction to the Jericho Sailing Centre site will be given. You will be shown the First Aid room and its equipment, the location of fire extinguishers, telephones, main power panel and the water shutoff valves. As well, you will be shown access points to the building and compound area, for emergency exits or ambulance access, if necessary.

For those of you who regularly use other facilities, you should know where the First Aid Room is located and know how to gain access to Police, Ambulance, Fire, (911) Coast Guard and Search and Rescue 1-800-567-5111 or *16 on your cell) telephone numbers at your site. As part of your familiarization of your facilities, look for the main power panel, water shutoff, and emergency access points. You will likely be in a position of responsibility at your facility, so ask for access to keys to these points. Make sure that all emergency access is not obstructed. Ensure that fire extinguishers are where they are supposed to be and charged for use.

8 Geographic Location

Boat Location - Landmarking

When calling for assistance or reporting an incident, always give your location relative to a geographical landmark or buoy on a marine chart. As you gain experience, you will become more adept at estimating distances over water. If your operational area is English Bay, or a similar area, you may be able to use a well-identified freighter (i.e. name of ship, name of shipping line, or unusual colours). Make sure the ship is at anchor; if there is smoke coming from the stack it may be preparing to move. A poor location description is time consuming and frustrating for a search crew. We have had many distress calls involving a small boat or windsurfer, "a couple of hundred yards from the black and white freighter". Also give a time of the last sighting at a particular location, so the rescuer can estimate the present location and narrow down the search area. You can also give your location as it is indicated on your GPS if you have one available on your boat.

Tide Tables

At the entrance to the Jericho Sailing Centre office, above the sailor's log sign-in sheet, is a photocopy of the current tide tables. The reference station used is Point Atkinson, since it is within sight of Jericho across English Bay. The times and heights are predicted and tabulated on a daily basis. Time is depicted on a 24-hour basis, i.e., 1600 is 4pm; 1935 is 7:35pm. The time on this board has already been corrected for DST if applicable so no correction is necessary. If you are getting the information somewhere other than this board keep in mind that it has not been corrected so during the summer 1600 is actually 5pm, 1935 is actually 8:35pm and 1100 is actually noon in terms of daylight saving time. The "heights in feet" columns are shaded to distinguish them from the "heights on meters" columns. Daytime Highs & Lows are also noted on the Marine Area Forecast Notice board.

Weather Forecasts

Weather forecasts on the local media do not give sufficient detail for nautical use. There is a continuous marine weather forecast and bulletin issued by Environment Canada, which you can listen to on the VHF radio on channel WX 3. This broadcast gives a synopsis of weather conditions on the West Coast, and local forecasts from the Strait of Juan de Fuca, Georgia Strait, Howe Sound, Johnstone Straits, West Coast of Vancouver Island, etc. Obviously our interests at Jericho are with the Georgia Strait forecast. This broadcast also gives weather observations from several locations, including Jericho (measured from the north end of the RVYC breakwater). These observations include visibility, sea condition, and wind speed and wind direction. This report can also be accessed by telephone by dialling 604-666-3655. You can also access this information on the internet at:

http://weatheroffice.ec.gc.ca/marine/marine_e.html?c-sog

Local Hazards

Most potential hazards are visible from the beach in front of the Jericho compound.

Jericho Pier

The pier immediately west of the sailing centre has a number of fishermen, both fin-fish fishermen (using fishing rods) and crab fishermen (using lines down to crab traps on the bottom). Occasionally, there are gill-net fishermen, but this is a very short season. Fishermen using rods are not always aware of the potential hazards they create by not seeing an approaching boat or windsurfer, or by not realizing how far they can cast. You may be hit with an inadvertent cast, as you approach this pier. You may also meet with monofilament fishing line that is above water, or you may tangle some line with your motor. Crab fishermen often use long lines to attach to their traps, either from the pier or from floats. These long lines may drift with the current for some distance away from the pier or their respective floats, enabling the lines to tangle with propellers, centreboards or rudders. The gill net fishermen usually fish with 30-50 ft nets and check them frequently, so look out for someone on the pier or on the beach with a line sloping into the water. The gill net floats are not easily seen. During low tides there is a line of old pilings approximately 5 meters from shore by ramps 3 & 4

Royal Vancouver Yacht Club & 5 Knot Zone

There is a considerable amount of boat traffic close to Jericho, especially on sunny summer weekends. Our closest neighbour is the Royal Vancouver Yacht Club to the east. Large sailboats leave and enter their harbour for cruises and races. Some skippers may not always be aware and may not even see small boats and windsurfers in close proximity. They have weekend races and a Wednesday evening race series in the summer.

A series of orange cans mark a 5-knot zone that extends from the Jericho Pier to the Royal Vancouver Yacht Club breakwater. **You must keep your vessels speed under 5 knots while operating within this area;** unless you are responding to an emergency situation.

Jericho Sailing Centre and Royal Vancouver Yacht Club have an agreement that prohibits racing yachts from sailing inside the 5-knot zone. If you witness someone that you believe is racing within the limits of the 5-knot zone please inform the JSCA office staff with the name of the yacht.

Beginners

In this mass of boat traffic around Jericho lurks another hazard; the learning individual. There are many dinghy sailing, windsurfing, ocean kayaking & rowing instructional programs based out of Jericho. Many of these students may not be aware of the rules of the road, or the rules may not be second nature to them, so, in a traffic snarl, these people may react unpredictably. Also, these people will panic more readily, so be cautious in the vicinity of classes.

Other Shoreline Hazards

Outside the immediate Jericho vicinity, lies the large flats on Spanish Banks (to the West). On a low low tide, the flats are quite evident. But on a medium low tide, these flats are covered with water at a very shallow depth. When operating in the area use caution. Stay to the outside of the range towers and can buoys so that you won't run aground. East of the Royal Vancouver Yacht Club are a series of rock ledges and reefs coming out from the Kitsilano shoreline. These areas are covered on a high tide, but you can readily hit these reefs and ledges with your propeller. The same applies for the shoreline at Stanley Park.

The shipping lanes to False Creek and the inner harbour are significant local hazards. The shipping lanes are well marked on the navigation charts. You can transit them, yielding to shipping traffic, but do not remain in them. Stay well away from tugs and their tows, as well as any large ships. There is a tug route approximately 1km. north of Jericho Sailing Centre with several tugs and tows running between False Creek and Georgia Strait every day.

Even a small looking barge has a very large wake in its immediate vicinity. The large ocean ships at anchor in English Bay pose a dormant hazard. These vessels swing freely with currents and winds. There is also a dead air area around these ships (front and back). The skippers or pilots of these ships cannot see any small boats in close proximity, so keep a safe distance.

Swimming

Swimming is prohibited in front of the Centre. If you see people swimming and or wading educate them about the dangers of swimming in a heavy boat traffic area. If they are belligerent or abusive ask the general manager to speak with them.

9 Equipment

Radios

Certification

In order to be qualified to use any of the Jericho craft solo, you must have your Radiotelephone Operators (Maritime Service) Restricted Certificate. This means you are legally entitled to use the VHF radios and you know the etiquette and general procedures.

Channels

As you should know, CH 16 is the call-up & emergency channel, CH 12 is for Vancouver Harbour traffic control, WX03 for continuous weather broadcasts. When talking with the CCG expect to be directed to use 83A or 04A. Jericho is licensed to use CH 80A for base (Jericho Base) to boat communication. Our frequency use is limited by our base radio license. Before going out, make sure you are monitoring the same channel as the base station and/or the race committee (usually on Albatross). Keep conversations to a minimum do not chat idly as we share our channel with a commercial operator. Incidentally, you MUST take out a hand-held VHF as a backup to the fixed radio.

Batteries

Before taking out a radio, ensure you have a fully charged battery. The batteries work fairly well towards the end of their charged cycle, and then die very suddenly. So a radio may sound OK when you try it, but the battery may be near the end of its charge.

Submersion

If you should have the misfortune of submerging a radio, turn it off and submerge it in a pail of freshwater IMMEDIATELY. We have salvaged radios at minimal cost with careful treatment after submersion. DO NOT just try to see if it works, as there are only a few submersions before the radio is a total write-off.

Boat Logs

The boat logs are located in the radio locker in the Safety Room (except for the small zodiac log book which is kept in the JSCA office). You **must always** record the use of each individual boat in their respective logbooks. Record the date, time and hours of use. (The boats have an hour meter) Record anything unusual such as odd noises, bottoming out, and chipped propeller(s). Also record if you added fuel or oil. When refuelling the boats, a separate fuel logbook must be filled out at the time of refuelling. This logbook is kept at the gas dock. If you see a deficiency in the boat and its equipment, please record it. You must also notify the office staff in writing to alert them if there are any potential problems. Also log any work performed on the boat. Always review the boat logs before launching to become aware of any problems that may exist with the boats that were logged by the previous operator.

10 Troubleshooting

The owner's manuals for the 3 different types of outboard motors (9.9Hp, 60Hp & 150Hp) that we use are located in the radio locker in the Safety Room. Please refer to these manuals for additional information and technical specifications of these motors.

Unless you are a certified Yamaha outboard mechanic please do not disassemble any of the motors at Jericho. The following troubleshooting guide is for emergency use only.

Fuel System

When a motor fails, or is hard to start, it may be due to a minor problem in the fuel and/or ignition system. Major mechanical problems are usually accompanied by an odd noise, immobility of moving mechanical parts, lack of cooling, etc. A running motor can be checked for proper cooling either by the water pressure gauge reading (if so equipped) or a stream of water running from the motor immediately below the engine cowling.

Most fuel system problems can be prevented by following good maintenance and operating practices, including:

1. Using fresh gasoline.
2. Using high-grade oil recommended by the manufacturer (Necessary for warranty protection).
3. Keeping the gasoline tanks full, to prevent condensation.
4. Organising and protecting gas lines from kinking and pinching.
5. Keeping fuel connections tight and periodically cleaning filters and the filter bowl. (Marks & Hurricane)
6. Insuring the vent is wide open when running the motor, and screwed shut when not in use (if the portable gas tanks have manual vents).

In addition, there may be two gas line inputs to the filter bowl such as on the Marks Boat. Each input line has a valve mounted on the transom on each side of the filter bowl. Ensure the valve of the gas line you are using is open, and the other line valve is firmly closed. The fuel delivery systems on all boats at Jericho operate on a vacuum principle. The fuel is drawn to the motor from the fuel tanks by means of a pump. This means the tanks must be vented when the motors are running. Before the motors start running, fuel must be delivered by some other means, which means priming. Where each fuel line enters the motor, there is an in line bulb. Squeezing this bulb a few times before starting the motor sends fuel to the carburetor.

Ignition System

Most engine problems attributed to the ignition system are usually caused by fouled spark plugs. Spark plug fouling is usually the result of incomplete fuel combustion, which will cause carbon accumulation on the spark plug electrodes. Wet or cracked plugs, loose spark plug wire connections, and electrical component failure may cause other ignition problems. As an operator, you should know how to remove the spark plugs, check their condition and wiring and check for spark delivery.

To remove the plugs, use the special plug wrench in the tool kit, to avoid damaging the insulator. Remove the high-tension lead; slip the wrench over the plug end turn in a counter clockwise direction. Dry and clean the plug if necessary. Check if the insulator (white part) is cracked. If everything looks good, check for spark by replacing the high-tension lead to the spark plug, and ground the plug to the cylinder head. Ensure your hand is well insulated. ENSURE THERE ARE NO GASOLINE FUMES AROUND THE MOTOR. Then crank the motor, by hand with the flywheel, or with the starter motor.

If the ignition system is functioning, there should be a spark arcing between the two electrodes. If there is no spark, there are two possibilities; the plug or the electrical components. Replace the plug if possible and check again. If there still is no spark or there are no spare plugs available, you can check if the electrical components are working. Remove the high-tension lead and hold the tip within a quarter of an inch of the engine head (carefully and insulate your hand carefully), with the engine cranking by hand or with the starter. No spark means electrical component failure and some shop work by the experts.

Lower Leg

There are two sources of potential problems in the lower drive unit of outboards: The first is the propeller and the second the cavitation plate. The propeller is attached to the drive shaft with a shear pin. This mechanism is used to minimize damage to the lower unit and the propeller, should the propeller hit something underwater. Extra shear pins and pliers should be in the tool kit. Ensure that there are some pins in the tool kit before going out, and if you use one, write it in the boat log. When you check for a broken pin, do not turn the propeller by hand if the motor is in gear, as you might start it accidentally. After you have removed the cap or propeller fastening, the old pin can be driven out with the new pin. Replace a broken pin or old used on with a new one.

Above the propeller, on the lower unit, is a flat horizontal plate called a cavitation plate and below the shaft tube a small skeg. The cavitation plate prevents air from the surface being drawn into the propeller and allows the propeller to cut into "solid" water. If the propeller blades are not biting into "solid" water, the motor over-revs as the propeller spins uselessly in a cavity of air or vapour. Ensure the cavitation plate is solid, without cracks or nicks. Also ensure there are no propeller blades missing and that all blades are not bent, cracked or nicked.

Trouble Shooting Points

1. FUEL

- gas (presence or absence)
- gas lines attached
- tank breathing (cap undone)
- Fuel line kinked
- Fuel system valve positions

2. ELECTRICAL

- check battery leads
- check ignition wires
- check for loose wires in engine compartment

3. MECHANICAL

- check abnormal noises
- check engine cooling
- e.g.: water spurting out of engine
- propeller & leg securely attached
- check blades on propeller
- shear pin (spare in tool box)

Use of the Winch

1. Clear all lines from the winch



2. Examine winch to ensure that all parts are functioning normally



3. Tie a bowline to the body of the trailer NOT the third wheel



4. When hauling a boat out of the water wrap the line around the capstan (clockwise) and turn the switch to "ON"



Use of the Winch (continued)

5. When lowering a boat follow steps 1 through 3 then make three wraps on the bollard have someone help you by pushing the boat and trailer over the “hump” when the line becomes taut let the line out slowly until the boat is partially in the water.



NOTE: A complete demonstration of these techniques will be part of your on the water training

Lines & Knots

(The following images and text have been copied with permission from the CCGA-P Crew Level One Training Guide)

Bowline

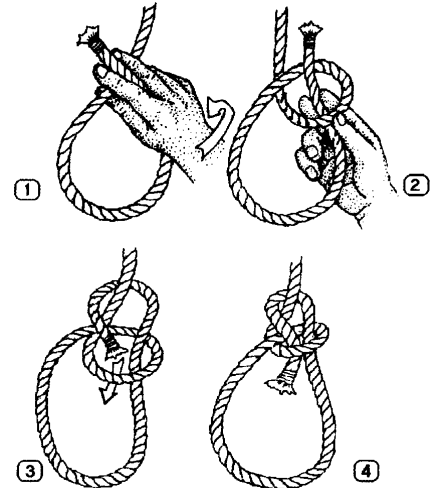
Purpose: The bowline is one of the most versatile knots and may be used for a wide variety of purposes.

Background: The bowline is known as the king of knots. Once mastered it is easy to tie and untie increases its grip as tension is applied and never jams.

Uses: Bending a heaving line to the eye of the towline.
Make a temporary eye in a line.

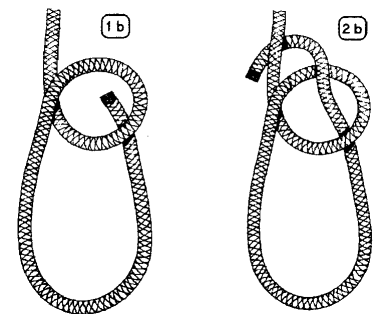
How to Tie:

1. Make a bight approximately the size of the eye required. With your palm down, hold the working end between you fore and index fingers, placing it over the standing part of the line. Grasp the standing part with your thumb.
2. Twist your wrist so your palm faces up and a loop has been formed in the line. The working end is through the loop.
3. Pass the working end bend behind the standing part and back through the loop. Remember, after one end passes under on part it must then pass over the next. Always alternating.
4. Snug up the parts before putting the knot into service.



Alternate method: used when the line is large and cannot be handled as in steps 1 & 2

1. (b) Make an overhand loop in the line.
2. (b) Pass the bitter end **up** through the loop.
Proceed with steps 3 and 4 to complete the knot.



***Practice using both methods**

Lines & Knots (continued)

Clove Hitch

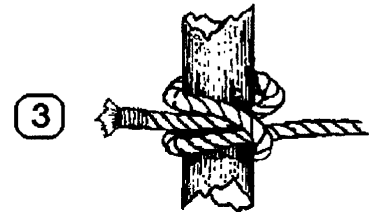
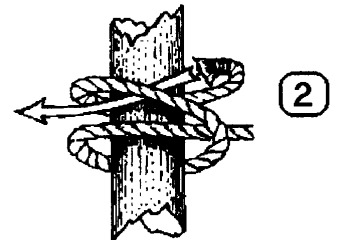
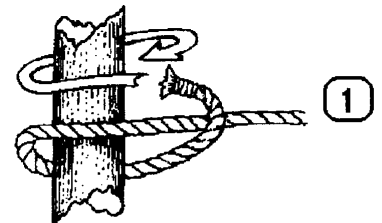
Purpose: This is essentially a temporary knot and may slip if the direction and strain changes.

Background: One of the first know knots used by Mariners for securing line to masts or poles. Its best feature is that it can easily be tied when there is a strain on the line.

Uses: Used for securing mooring lines on dockside rails.

How to Tie:

1. Take a turn around the rail or piling.
2. Take a second turn, this time crossing up and over the standing part of the line. (Turn is made in the same direction as the first) Tuck the end under and through the crossing turn you just made.
3. Pull both ends to snug up the knot. For additional security to the knot add two half hitches around the standing part of the line.



Reef knot (Square knot)

Purpose: The reef or square knot is one of the most common multipurpose knots used in seamanship when using small line.

Background: Basically the reef knot consists of two overhand knots made consecutively. This knot works well with small cordage, but it does have its drawbacks. They can jam badly under strain and does not hold lines of different sizes or those made of different materials effectively

Uses: Used as a common tie for bending two lines of equal size together.

How to Tie:

1. Take on e turn around the other line in one direction.
2. Double an end back against itself and make a turn around the other line end bent back. NOTE: Care must be taken to cross the ends opposite ways each time they are knotted. (i.e. right over left, then left over right, or vice versa) otherwise the result will be a granny knot.

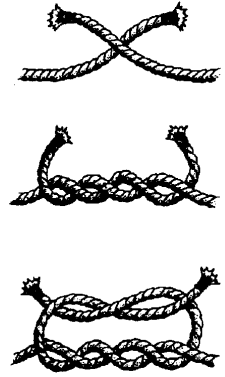


Improved Reef (Square knot)

Purpose: This version (at times called a surgeons knot) keeps tension on the first few turns while you tie the final loop. Has better holding power when working with slippery line.

How to Tie:

1. Cross the two lines.
2. Take one line and make **two** turns around the second.
3. Take the ends and make a single overhand knot, and pull up taut.



Becket / Sheet Bend

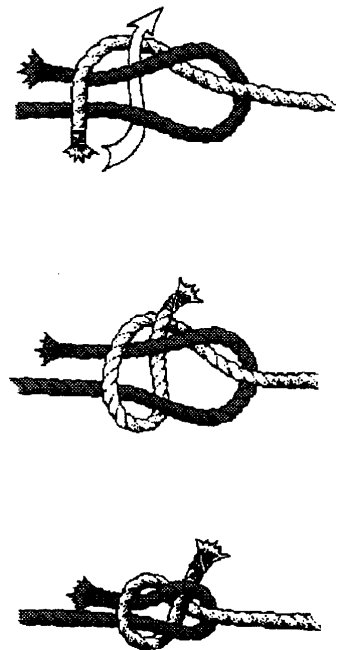
Purpose: A “bend” joins two ropes of equal or unequal size.

Background: A “sheet” on an old windjammer was any line that controlled the angle of the sail. Sailors would “bend” the sheet to eye splices at the corners using this knot because it would not come undone when the sails flapped in a storm.

Uses: To combine two shorter lines, or to attach a “messenger line” to a towline when passing it from vessel to vessel.

How to Tie:

1. Make a loop in the end of the thicker length of rope. Pass end of the other rope through and around the loop.
2. Now pull it under the loop and beneath itself as shown (centre drawing)
3. The working end should exit on the same side as the loop’s ended side.

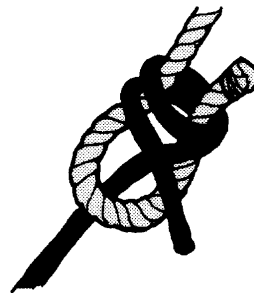


Double Becket / Sheet Bend

Purpose: The double becket / sheet bend is used to join lines of unequal size.

How to Tie: It is tied in the same manner as a single bucket or sheet bend, except for the following variation;

1. Make a single becket or sheet bend
2. Take the bitter end around behind both parts of the bight **twice**



Beaufort Wind Scale

Developed in 1805 by Sir Francis Beaufort of England

Force	Wind Speed <i>in Knots</i>	Description	Appearance of Wind Effects on the Water
0	0-1	Calm	Sea surface smooth and mirror-like
1	1 - 3	Light Air	Scaly ripples, no foam crests
2	4 - 6	Light Breeze	Small wavelets, still short, but more pronounced. Crests have a glassy appearance and do not break.
3	7 - 10	Gentle Breeze	Large wavelets. Crests begin to break. Foam of glassy appearance. Perhaps scattered whitecaps.
4	11 - 16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps
5	17 - 21	Fresh Breeze	Moderate waves 4-8 ft taking longer form, many whitecaps, some spray.
6	22 - 27	Strong Breeze	Larger waves 8-13 ft, whitecaps common, more spray
7	28 - 33	Near Gale	Sea heaps up, waves 13-20 ft, white foam streaks off breakers.
8	34 - 40	Gale	Moderately high (13-20 ft) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks.
9	41 - 47	Severe Gale	High waves (20 ft), sea begins to roll, dense streaks of foam spray may reduce visibility
10	48 - 55	Storm	Very high waves (20-30 ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility
11	56 - 63	Violent Storm	Exceptionally high (30-45 ft) waves, foam patches cover sea, visibility more reduced
12	64 +	Hurricane	Air filled with foam, waves over 45 ft, sea completely white with driving spray, visibility greatly reduced.