

Harpoon Handbook[®]



BOSTON
WHALER[®]

Harpoon Sailboats, Boston Whaler, Inc., 1149 Higham Street, Rockland, MA 02370, 617-871-1400

BOSTON
WHALER[®]

Dear Harpoon Owner:

All of us at Boston Whaler are happy you have chosen to join one of the fastest growing fleets in the country today. We hope you will take an active part in your local Harpoon Association and enjoy many years of happy sailing.

Your Harpoon has been designed, engineered and built with care and precision, as you undoubtedly noticed when you were making your purchase decision.

The following information in this, your Owner's Handbook, has been assembled to assure you the maximum use and sailing pleasure.

We trust you will find it helpful.

Happy Sailing!

Introduction

This manual is intended to help you know your new Harpoon. It is most important to familiarize yourself thoroughly with all aspects of operating and maintaining your yacht in a safe and efficient manner. Read your manual carefully as well as the manuals supplied by the manufacturers of components. If any questions arise to which you cannot find an answer, your Harpoon dealer will be pleased to help you or write to us directly.

On taking delivery of your yacht, be sure to read and understand the warranty. Fill in the warranty card, or the change of ownership card, and return it to us immediately.

We know you will have many satisfying and happy hours of sailing in your Harpoon.

CONTENTS

PAGE NO.

SAFETY EQUIPMENT

3

SAILS

Tips on care

4

How to fold

5

RIGGING

8

MAINTENANCE

13

WARRANTY

Claims procedures

17

Warranty

18

SAILING

Bending on the jib

20

The jib sheet

21

Mainsail battens

22

Bending on the mainsail

23

How to use cunningham & outhaul

25

How to use boom vang

26

Reefing — what it is

27

Reefing — what happens

27

How to reef

28

Capsizing — how it happens

31

How to right the boat

33

Solving downwind righting problems

35

Capsizing under spinnaker

37

Turtling

38

GO-FAST TECHNIQUES

The mainsail

40

The jib

41

Spinnakers

42

TRAILERING

Trailer

43

Sailboat launching & retrieval

44

Safety Equipment

Safety should be the first concern of every sailor and certain items should always be carried on your boat to ensure the well being of every person aboard.

1. *Personal flotation devices* (life jackets) for each person on board your vessel. Keep in mind the maximum number of people you could ever have on your vessel when equipping your Harpoon with life jackets. Be sure the jackets you purchase have the label "Coast Guard Approved" attached.

2. *One throwing device:* This can be a life saving cushion or a life ring, but it does not count as a life saving device for one of your crew members.

3. *Mouth or power operated horn or whistle:* Audible for at least half a mile.

4. *Chain and anchor lines* suitable for the boat. Overall length of the anchor line should allow sufficient scope relative to the maximum depth of water in which you will be anchoring. (A rule of thumb for proper length is depth x 5.)

5. *First Aid Kit*

6. *Adequate Compass*

7. *Fire extinguisher* if you intend to equip the boat with auxiliary outboard.

8. *Navigational lights* when operating after dark

9. *Local navigational chart* if you're not familiar with the area

10. *A paddle or paddle/boat hook combination*

The above items meet the requirements of the Coast Guard, but from a safety standpoint are minimal.

Tips on the Care of Your New Sails

Proper sail care is easy and takes very little time — but it can make a *big* difference in the life and performance of your new sails!

Store Sails Dry and Folded

Main and jib should be stored dry and folded in their sailbags, much like they were when you received them. It is best to avoid folding sails on the same creases each time — this will avoid permanent creases. Try to avoid excessively hot places (like the trunk of your car in summer); bolt ropes on mains occasionally shrink if they are stored in a very hot place.

Spinnakers do not need to be folded, but should definitely be stored dry. This will prevent color transfer from dark to light panels, and more important, improve the longevity of the nylon cloth used in these sails. You should always dry your spinnaker after each use, and wash it off with fresh water before storing for a long time. If you are expecting very light winds, it is helpful to "flake" (or fold) your spinnaker rather than stuff it, as this will eliminate many wrinkles and make the sail set smoothly as soon as it's set.

Clean Only When Necessary

To remove salt and surface dirt, hose sails off with fresh water at the dock, and go sailing until they're dry. This will prevent bolt ropes from shrinking and is probably the best way to get salt out of spinnakers.

Should your sails get so dirty that you absolutely can't stand it, soak them in lukewarm water and *mild* soap or detergent. Rub over the dirtiest areas with a sponge to loosen what dirt you can. Then rinse *well* with fresh water. It's best to dry your sails while sailing, but in lieu of this they can be dried flat on a lawn. Don't let them flop in a breeze. This can break down the fabric.

Never put your sails in the washing machine or dryer. Don't dry clean or iron them. Don't pour acid, bleach or other harsh chemicals on your new sails.

"An ounce of prevention . . ."

Tears an inch or two long aren't too serious if they're in the center of the sail. These can be fixed temporarily by placing a piece of white adhesive or duct tape on each side of the tear. Tears near the edges or corners of a sail or near a batten pocket should be mended properly. If in doubt, check with a sailmaker. It's cheaper and easier to repair a small tear than a spill panel, and your sail will be a lot better for it.

How to fold your sails.



1. Lay the sail out on a dry, flat surface, e.g. a dock or lawn. Make sure the foot of the sail is headed into the wind.



2. Beginning at the foot, start folding the sail toward the head. Use accordion folds. Important: when folding the jib, do not make a fold through the window.

3. As you work, keep tension on the fold between you and the person helping you. This insures a smooth, even fold.



4. Be sure to keep the width of each fold a bit shorter than the width of your sailbag.



5. Keep folding the sail until the sail forms a single, long rectangle, with the bolt rope laying flat along the top.



6. Next, fold each end of the sail so that they meet at the middle. In the case of the jib, roll the sail. Do not fold it.



7. Then, fold the sail again along the center.

8. Finally, put the folded sail into your sailbag in a horizontal position. This will prevent the sail from accidentally opening.

Rigging your Harpoon

Your Harpoon will arrive with mast, boom, standing and running rigging in a plastic sleeve for protection. When you remove the mast from the sleeve, you will find everything is taped to the mast. To keep the mast from being scratched, place it on two saw horses or cardboard boxes. It is also an easier working height. Remove each piece of rigging (note that each is labeled). The following is a list of what will be in the package:

- Mast, boom, with spreaders.
- Standing rigging: headstay with turnbuckle, port shroud, starboard shroud.
- Running rigging: main halyard, jib halyard, mainsheet 7/16", jib sheet 3/8", Cunningham 1/4", outhaul 3/16", vang tackle with blocks and pennants.

If you have ordered the spinnaker package, the following items will be in a separate package:

- Swivel block for spinnaker halyard, spinnaker pole, spinnaker halyard, two (2) color coded spinnaker sheets, pole, downhaul 1/4", swivel block for down haul, swivel block for pole lift, pole shock cord. All strap eyes for the attachment of the spinnaker package are on the spar. Once everything is unpackaged you can start rigging the spar.



1. First, turn the spar track down.

2. Install square portion of spreader into spreader brackets and install spreader-pin downwards. Install cotter pin in spreader pivot pin. It is only necessary to open the cotter pin slightly. When you visually inspect the spreader bracket, make sure there is a limiting pin in the spreader bracket. This pin limits the tip movement of the spreader. Save the seizing wire.



3. Next, install the port and starboard shrouds to the tang plates three quarters of the way up the mast.

4. Pull the shrouds straight, leading each one thru the slot in the spreader end. Cut the seizing wire into two equal halves. The spreader end has a slot and a hole in it. Seize the wire shroud so it stays in the slot. It is not necessary to seize the wire tightly, only enough so that the wire will not drop out of the spreader slot. Protect your sails from the end of the spreader. Carefully tape the spreader with chafe tape, not too bulky, but enough to protect any sharp edges from damaging your sail.

5. Install the headstay to the tang plate three quarters of the way up the fore side of the mast. Remove wrist pins in the turnbuckle, opening it all the way. All the way means to the point where you can still see wrist pin holes thru the barrel of the turnbuckle. Make certain that there are equal amounts of threading exposed at each end when you look thru the slot in the turnbuckle barrel.

6. Now install the running rigging. Beginning with the main halyard which leads over the top of the mast down the starboard side of the mast. Next, the jib halyard down the port side thru the jib halyard sheave block which is just under the headstay tang plate and thru the turning block near the base of the mast. The Cunningham can now be dead ended to the cleat on the port side of the mast, a few feet up from the base. Tie figure eight knots in the bitter ends of the halyards to prevent them from running out of the sheaves.

7. Install the blocks on the boom, the outhaul on the port side of the boom and the jiffy reefing line on the starboard side of the boom. (Note — the 4.6 does not have a jiffy reefing line.) Lead these lines thru the cam cleat port and starboard (port only for the 4.6 as there is only one line) then thru the fairleads and around the fixed turning block near the end of the boom. Once the sail is rigged, the outhaul goes thru the cringle of the sail, then to the strap eye on the opposite side. The reefing, if appropriate, is rigged in a similar manner.

8. Assuming the boat is on a trailer, place the heel of the mast on the trailer tongue, luff track down. Place the mast head in the boom mast crutch support (optional on the Harpoon 4.6) which you have inserted in the gudgeons on the transom. *Note: Please be cautious. Look around and be absolutely sure there are no overhead electrical cables in the area.* Assuming you may be in a launching area, be certain you have clear access to the launching ramp without overhead cable interference. If you have unhooked your trailer from your car you can not stand in the stern of the boat as it will be out of balance and tip up, throwing you off balance.

9. Attach the shroud tensioners to the chain plates. The shroud tensioners are delivered already connected to the shrouds. The shrouds should be connected to the shroud tensioners in hole number (7) seven from the top (Harpoon 5.2) or hole number (6) six from the top (Harpoon 4.6). Make certain it is the same part and starboard, as this will ensure that the mast will be straight in the boat athwartship: The suggested hole number from the top of the shroud tensioner has been determined from sailing trials to optimize sailing performance and helm balance.

10. Attach the jib halyard shackle to the tack fitting on the stem head. Check to be certain the jib halyard is clear and not fouled leading from the jib halyard sheave block. Check the headstay to be certain it is clear and in front of the mast. Uncleat the jib halyard and take the tail aft in your hand to a position just aft of the thwart seat.



11. Standing inside the boat near the mainsheet block's location, slide the mast aft until the heel of the mast can slip into the mast tabernacle. The mast is light, but do it slowly, as the shrouds which are connected to the chain plates may foul a fitting. Lower the mast heel into a slot in the mast tabernacle. Move forward and check that it has seated properly. Pull the jib halyard taught from the lead block on the port side of the mast. Make certain it is clear and not fouled.

CAUTION: Look around again for overhead electrical cables. Contacting an electrical cable with the mast could be fatal.



12. Lift the mast to shoulder height, pulling the jib halyard taught as you lift the spar. Note that the shrouds will serve as guide wires preventing the spar from falling to either side. Continue this process of pulling the jib halyard and lifting the spar until it is in standing position. The shrouds will tighten, restricting the mast from going too far forward. Pull the jib halyard tight and cleat it. This will hold the mast from falling backwards. Go forward and attach the headstay. When tightening the headstay, you can lean on the jib halyard making it easy to turn the barrel of the turnbuckle. Be sure the headstay is quite tight. Re-insert the wrist pins you removed from the turnbuckle when you were assembling the mast. (*Caution: The turnbuckle will unwind under way if you do not re-insert the wrist pins supplied with turnbuckle.*) It is not necessary to use tools to tighten the headstay.

13. Attach the boom to fixed gooseneck with the bolt supplied.

14. Install the mainsheet. Start the line thru the cam cleat portion of the mainsheet block mounted on the centerboard trunk, and continue to weave the sheet thru the remaining blocks.

15. Add vang and Cunningham.

16. Bend on the jib and mainsails. Install battens in the mainsails. Each batten is labelled. Camber in the upper mainsail batten should be suitable to a desired camber in the head of the sail. It is suggested that you begin with a slight curvature. More on this can be found in the section on Sailing.

Note: by rolling boom side ways (90°) the boom will stow against the mast when de-rigged. This will alleviate removal of the boom during de-rigging operations.

Maintenance

To be kept tidy and ship-shape, yachts require maintenance on a regular and frequent basis. The frequency will depend upon the conditions in which the yacht is being used. You should constantly check the running and standing rigging, rudder and assembly, centerboard and centerboard assembly and surface finishes for signs of needed maintenance.

Gelcoat Surfaces

Wash down the gelcoat surface of the hull and the deck regularly with fresh water and a good detergent. A sponge or soft brush should be used on a smooth surface and a stiffer brush should be used on the non-skid areas of the deck. Follow by rinsing with fresh water.

At least once a year, the topsides of the hull should be waxed with a good automotive or boat wax and polished. This will help the gelcoat to retain its color and appearance. Do not wax the non-skid surfaces of the deck.

Minor scratches in the gelcoat surfaces can be repaired by buffing with a light abrasive cleaner followed by a waxing and polishing. Scrapes or damage that have broken through the gelcoat surface can be repaired with the gelcoat repair kit (optional) which comes with your yacht. Directions for these repairs are included with the gelcoat repair kit. For major damage, where a large area of gelcoat has been removed or the damage extends into the glass lamination below the gelcoat, consult your Harpoon dealer or a qualified yacht marine yard.

Gelcoat surfaces below deck are cleaned with a good detergent and water and rinsed down with fresh water. These surfaces can also be waxed if required to maintain the appearance. Gelcoat surfaces will stain if the yacht is moored where leaves fall on the deck or birds roost. Surfaces should be scrubbed down very frequently or have a protective cover if this occurs.

Urethane Mahogany

Your mahogany seats and trim should also be rinsed with fresh water to remove salt build-up. Over time the sun's rays will cause your finish to fade. Sheen can be restored by a light sanding and application of two coats of high-grade urethane varnish.

Bottom of the Yacht

If the yacht is not to be dry sailed, a good anti-fouling bottom paint is recommended. It is important this paint be very carefully applied in the first instance. If it is, regular maintenance will keep it in relatively good shape for a considerable period of time. In any event, when applying bottom paint, read and follow the manufacturer's instructions carefully and explicitly.

The amount of maintenance required on the bottom is dictated by waters in which the yacht is sailed and to some extent, by the use it gets. If the waters are polluted or are conducive to marine growth, the yacht should be hauled quite frequently and the bottom scrubbed down with brushes, detergent and fresh water immediately upon hauling. If for any other reason the yacht is hauled and you plan to keep it out of the water for any length of time, the bottom should be scrubbed down immediately before any marine growth has the opportunity to dry and harden on the bottom.

If a smooth surface is required, the anti-fouling paint can be rubbed with a piece of burlap or sanded with a very fine wet sandpaper following the cleaning of the bottom. Any spots where the anti-fouling paint has been removed should be touched up with the same type of paint. When first purchasing the anti-fouling bottom paint, purchase an extra can for this purpose.

Cove Stripe

The cove stripe is colored mylar tape. The cove stripe may be cleaned by using a mild detergent solution. Replacement mylar tape can be purchased from your dealer.

Vinyl Rubbing Strip

The vinyl rubbing strip is located along the deck line where the deck is bonded to the hull. It may be cleaned using detergent and water. If hard to remove stains are encountered, an abrasive cleaner such as Ajax may be used.

Standing Rigging

Standing rigging is defined as fixed parts of the rigging which aid in support of the mast. The standing rigging and all the components listed under "Stainless Steel" should be checked each time before going sailing and given a detailed monthly examination. Turnbuckles should be checked to make sure cotter pins are in place at top and bottom and that cotter pin ends are turned back carefully and protected with plastic tape. Each spreader should be checked to be sure the pins are in, and that the spreader is not bent (up or down or aft). The end of the spreader, where the shroud passes through, must be taped. Also, be sure to examine standing rigging carefully for broken or protruding strands that could rip the sails. Check also for signs of

rust in wire rigging. Examine carefully where the wire enters the terminal end fitting for signs of rust or wear since this is a particularly vulnerable point when the yacht is sailed in a salt water area. If signs of rust or wear are found, the rigging should be replaced.

Running Rigging

Running rigging comprises all the gear that is normally used in handling and trimming of sails such as sheets, guys, halyards and vang. Main and jib halyards are subject to heavy loads and constant flexing as they pass over the sheave at the head of the mast and turning blocks at the foot of the mast. Consequently, halyards should be examined regularly for signs of stress and breaking strands. Rope halyards are not subject to as severe wear as wire halyards, but should be checked two or three times a season.

Blocks

Blocks normally require little maintenance but they should be examined regularly for damage. Sheaves and blocks can be sprayed with a silicone lubricant to keep them running freely. The sheaves at the head of the mast should be checked before the spar goes into the boat in the spring and a couple of times during the season to ensure they are turning freely and the halyard is not cutting a groove into the sheave. The sheaves for the main and jib halyards have Oil-lite bushings and normally do not require lubrication. All running rigging should be washed down with fresh water after sailing on salt water.

Care of Canvas

We use green cotton duck for covers subjected to repeated furling and deck traffic, wherein the canvas is either stored wet or subject to the abrasive effect of feet and sand. Vinyl is used for tops which store in more protected areas. Both canvas components require little maintenance. The vinyl can be periodically washed down with a mild soap and soft brush. It should, however, be dried before furling or storing in its boot. Mildew on the inside surface can be prevented by insuring that it is dry before storage. If mildew does develop, remove the canvas, laying it out on the boat or deck so that underside can be scrubbed with mild detergent. There are many mildew resistant sprays available on the market, specifically for canvas application. Some owners have used Lysol.

Brown and green cotton duck is used for flying top sets and mooring covers because of its durability. No other material combines the ability to exclude water and withstand abuse, including frequent setting and furling.

Although the canvas has been treated to resist mildew, warm dampness remains its principle enemy, particularly from fresh water. Remember, fresh water is the culprit and eventually the mildew-proofing will wash away.

Outboard Motor

When equipped with our optional Pony Motor Mount, your Harpoon can be powered by a long shaft outboard up to 4 h.p. The motor should be securely fastened directly to the wood mounting plate.

When cruising, the motor should be in the up (tilted) position, completely clear of the water, to prevent drag.

When racing, if not left ashore, the motor can be stowed in the cuddy cabin, providing it is secured. The fuel line should be turned off, and the gas tank cap securely closed.

A low-profile 6-gallon fuel tank will fit under the thwart seat, and should be placed on a fuel tank mat.

Pony Motor Mount Kit (15034000) and Installation Instructions are available from your dealer.

Warranty

Each Harpoon is built with care by competent craftsmen using top quality materials.

Your sailboat was loaded for shipment by our plant personnel who took every precaution to make sure your boat would arrive in excellent condition.

Please be sure that both you and your dealer have signed the Boat Warranty Registration form, and that you mail it to us immediately.

Warranty Claim Requirements and Procedure

We believe it is important that you be completely familiar with our Warranty Claim Procedure so that in the event a warranty claim must be filed, it can be handled expeditiously and finalized with a minimum of paper work and no misunderstanding.

1. Your Boat Warranty Registration form must be on file with Harpoon Sailboat, Boston Whaler. The warranty on the Harpoon is validated by the return of the Warranty Registration card within thirty (30) days from date of commission or delivery.

2. In order to initiate a warranty claim you should notify a Boston Whaler Harpoon dealer advising him of your boat serial number, the nature of the problem and the date of your purchase. In order to expedite any warranty problems your dealer can call our Service Department collect.

3. Your dealer is not authorized to commence any warranty work or replace any warranty items unless authorized by our Service Department. In some instances it will be necessary for you to return, *prepaid*, the defective part or the boat to your authorized dealer for inspection. At that time the dealer can contact us for immediate disposition of the problem.

Please take the time to carefully read your Harpoon warranty on the opposite page. If there's anything you do not understand, or is in any way unclear, contact your dealer.

Warranty

For the protection of its sailboat customers, Boston Whaler, Inc. offers —

1. A Limited Ten-Year Warranty for the Hull Structure.
2. A Limited Two-Year Warranty for Accessories supplied by Boston Whaler, Inc.
3. A Limited One-Year Warranty for Cosmetic Finishes.

1. Boston Whaler, Inc. provides each new boat with a *warranty registration card* which must be filled out and mailed to Boston Whaler, Inc., promptly after purchase, to help us fulfill our service obligations to our customers, and our legal obligations of the Federal Boat Safety Act. *Failure to complete and return the warranty registration card within 30 days of delivery of your boat to you may void the warranty.*

2. Boston Whaler, Inc. warrants each Boston Whaler hull manufactured by Boston Whaler, Inc. to be free from structural defects due to substandard material and workmanship, under conditions of normal use and service, for a period of ten years from the date of manufacture.

3. Accessories supplied by Boston Whaler, Inc., whether or not manufactured by Boston Whaler, Inc., are warranted against defective workmanship or materials for a period of two years from date of delivery to the original purchaser.

4. Boston Whaler, Inc. warrants each hull supplied by Boston Whaler, Inc. to be free from cosmetic defects due to substandard materials or workmanship, under conditions of normal use and service, for a period of one year from date of delivery to the original purchaser.

5. None of the foregoing hull and accessory warranties applies to any Boston Whaler boat which has been structurally altered, subjected to unreasonable use, negligence or accident.

6. The obligation of Boston Whaler, Inc. under these warranties is limited to repairing or replacing, within a reasonable time, such boat or part which shall, within the warranty period and to the satisfaction of Boston Whaler, Inc. in its sole discretion, be determined to have been defective in material or workmanship. Replacement or reimbursement for such boat or part will be prorated for use according to the portion of the warranty period elapsed when the claim is made. Boston Whaler, Inc. may require such boat or part

to be returned to an authorized dealer or the factory for examination, transportation charges prepaid. Boston Whaler, Inc. will reimburse these charges upon disclosure of a bona fide warranty claim.

Boston Whaler, Inc. makes no other express warranties, and intends no implied warranties, if any implied warranties be found to exist, such implied warranties will be subject to the time limits appearing at the top of this warranty. Boston Whaler, Inc. will not be liable for consequential damages of any kind resulting from a breach of any warranty expressed or implied.

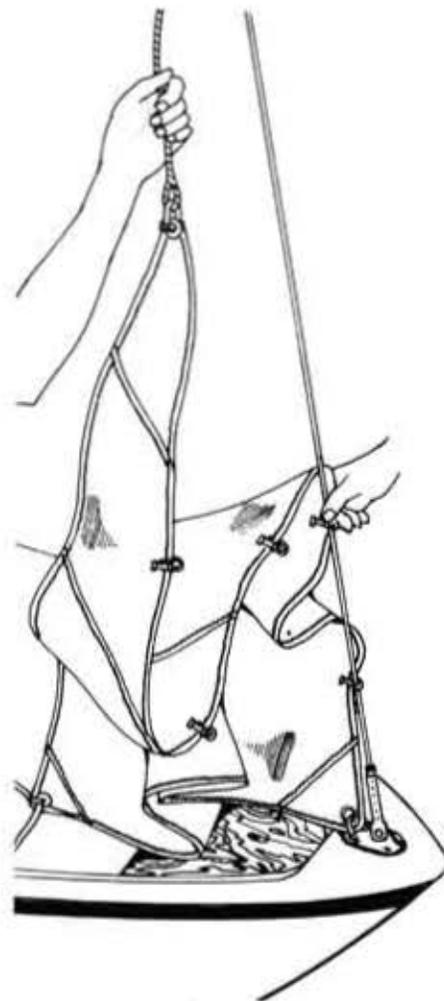
7. Boston Whaler, Inc. reserves the right to improve its products through changes in design or material without obligation to incorporate such changes on boats of prior manufacture.

8. To initiate a warranty claim, it is the responsibility of the purchaser to contact an authorized Harpoon dealer within a reasonable time after discovery of the defect, giving details as to the nature of the problem, hull identification number, date of purchase and from whom, and circumstances of the defect, and delivering to such dealer the boat with respect to which the warranty claim is made.

9. The structural warranty listed in Paragraph 2 is not limited to the original purchaser. It is transferable to all future owners of the boat.

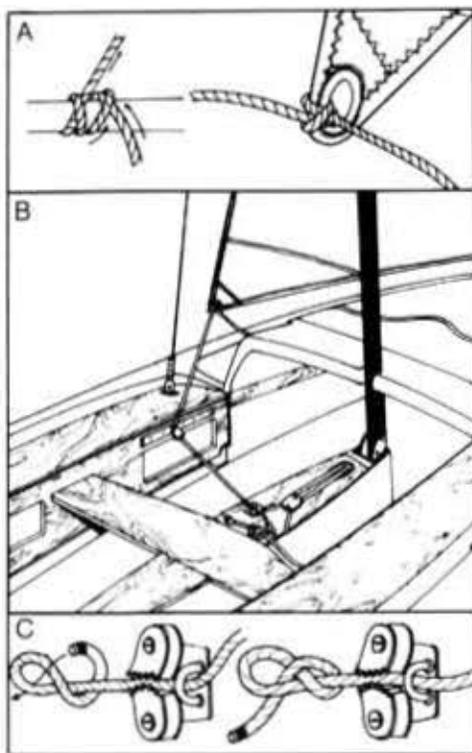
Bending on the jib.

To rig the jib, first connect the tack of the sail to the stem head. Next, hank the luff of the jib to the headstay. The open portion of each hank should face to starboard. Finally, clip the jib halyard to the head of the jib. Once the jib sheets are tied on, the sail is ready to be hoisted.



The Jib Sheet

A single line is used to make up the Harpoon's jib sheets. To rig it, run the line through the cringle in the clew of the jib until you reach the center. Then, knot the line as in Fig (A). Each sheet is then lead directly to the jib fairleads on either side of the deck, run from outboard to inboard and across the boat to the crew. In general, one person should be able to comfortably manage the Harpoon jib in most wind conditions. The jib can be temporarily secured at any time with the cam cleats that are directly inboard of the fairleads, Fig (B). **Warning:** In strong winds, never leave the jib sheet cleated or untended. A sudden shift or gust could capsize the boat unless the sheet is ready to be eased at all times. Before sailing, be sure to tie a stopper knot in the end of the sheet, to prevent it from running through the fairlead accidentally. Fig (C) shows how.



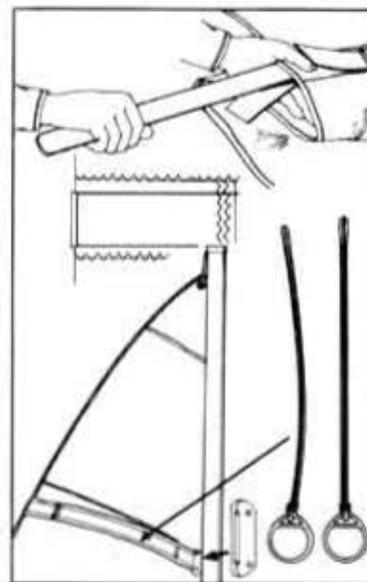
Mainsail Battens

Battens are critically important to the mainsail of most boats, and the Harpoon is no exception. They help maintain the leech of the sail in an extended position, as well as prevent curling or fluttering of the leech, which reduces the sail's efficiency.

Your Harpoon comes with four (4) fiberglass battens. Each one is tapered to provide a flexible forward end so that the sail assumes its proper aerodynamic shape.

You'll notice that special elasticized pockets are sewn into the leech of the mainsail to accommodate each batten. The upper batten is the only one that extends all the way to the mast. This is so that you can control the curvature of the upper portion of the sail. You do this by controlling the tension of the batten, with the help of an adjustable, velcro closure.

To obtain the most efficient shape possible in your mainsail, it is important that you understand how to properly adjust the upper batten's tension. In heavy winds, the batten should be under very little tension, and therefore relatively flat. In drifting conditions, the batten should be considerably compressed, providing a deeper shape for more power.



Bending on the mainsail

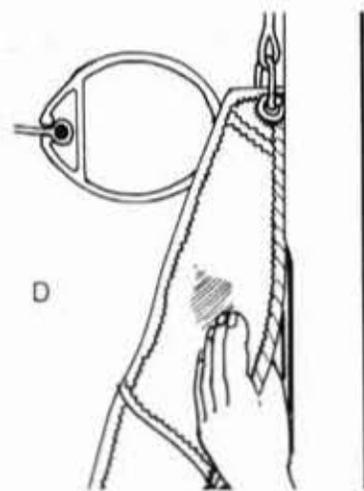
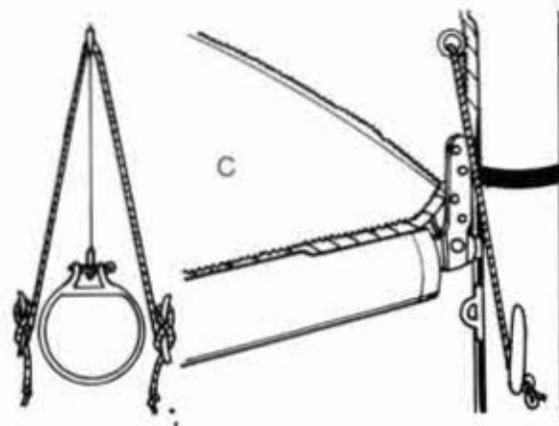
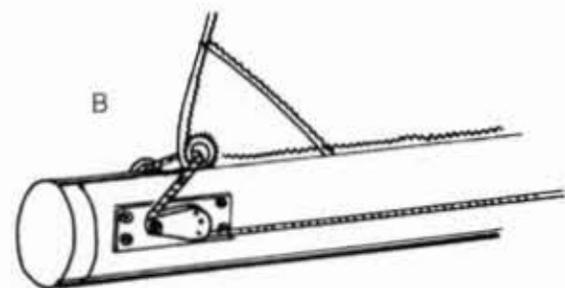
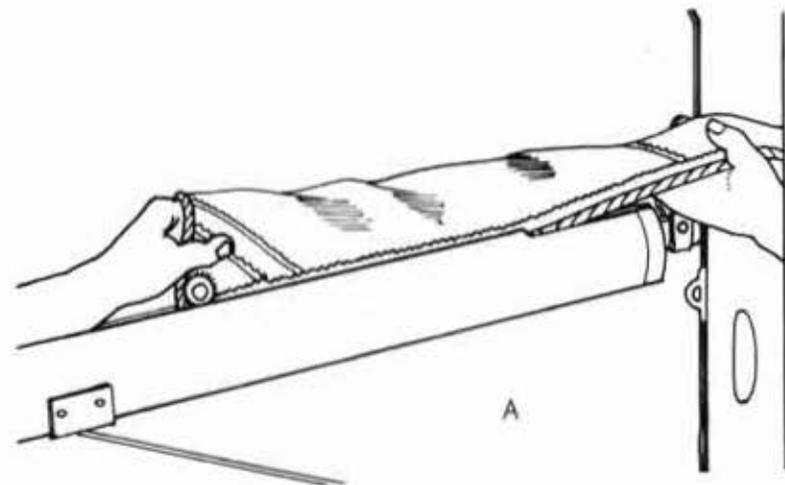
First, take the clew of the mainsail and carefully feed it into the groove along the top of the boom. Keep feeding the foot of the sail along the groove until the clew reaches the end of the boom, Fig (A).

Next, rig the outhaul to the clew, as in Fig (B).

Then, rig the cunningham, Fig (C).

Finally, take the head of the mainsail and feed it into the groove along the aft side of the mast, Fig (D). When you're ready to hoist, clip the main halyard to the head and be sure to feed the luff through the groove as the sail goes up.

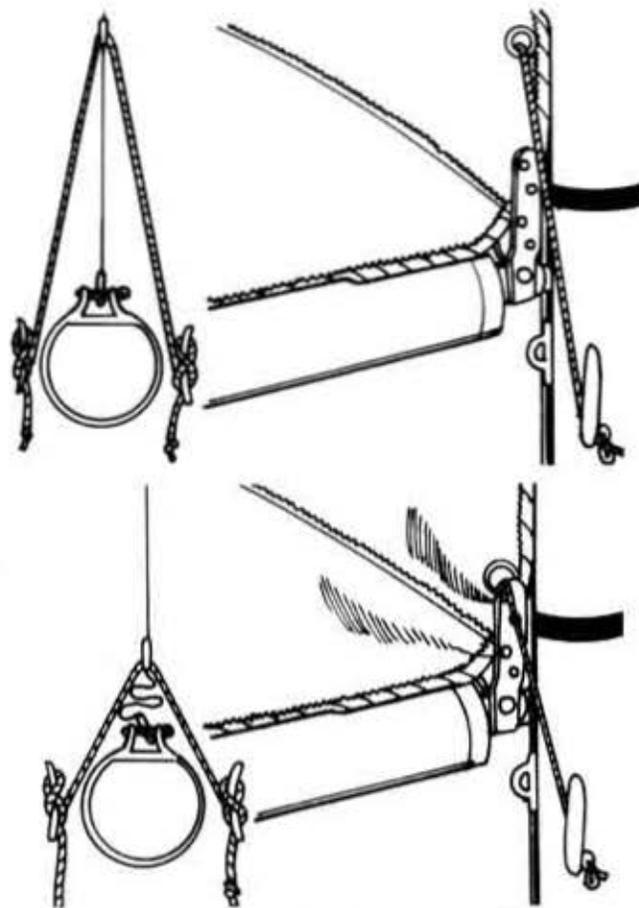
Hint: When the main is hoisted to its proper height, and the main halyard cleated, stick a short piece of tape to the mast near the halyard. Then, wrap another short piece around the halyard directly opposite the tape on the mast. Now, whenever you hoist the main, you can simply line up the two tapes and know that the main is fully hoisted.



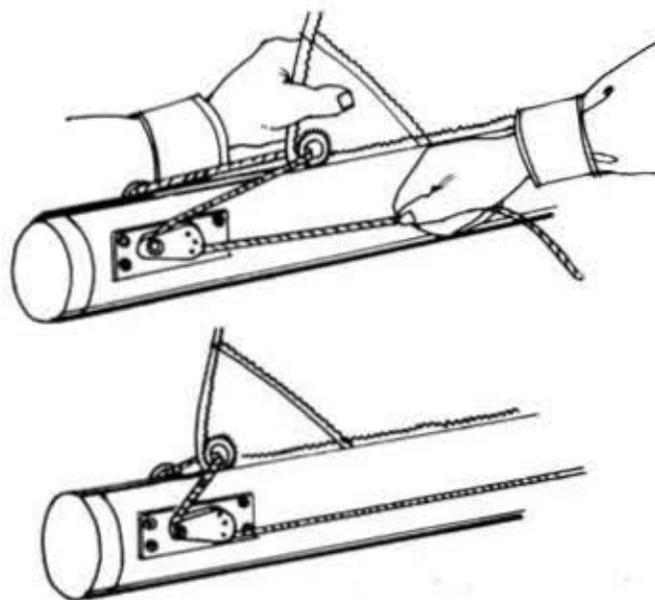
How to use the cunningham and outhaul.

The cunningham and outhaul are very important controls when trying to shape the mainsail for optimum performance. Each can have a dramatic effect on the speed of the boat.

The cunningham is used to position the draft of the sail fore and aft. The greater the tension, the farther forward the draft is moved.



The less the tension, the farther back it's moved. Since the draft tends to move back as the wind strengthens, you should harden down on the cunningham to bring it back up forward — generally within the forward 35 to 40% of the sail. When the wind gets very light, the draft should be farther back, and so you should loosen the cunningham. A good guide is that you should always use just enough tension to prevent the luff of the mainsail from forming wrinkles.



The outhaul is used to increase or reduce the amount of draft in the sail. Once again, the amount of tension is determined by the strength of the wind. For heavy winds, the outhaul should be stretched out tight, flattening the sail and depowering the boat. In the light stuff, it should be quite loose, putting more "bag" in the sail and increasing power. As with the cunningham, let the wrinkles be your guide.

How to use the boom vang.

The boom vang is used to control the amount of twist in the mainsail. This is an important feature for both speed and safety.

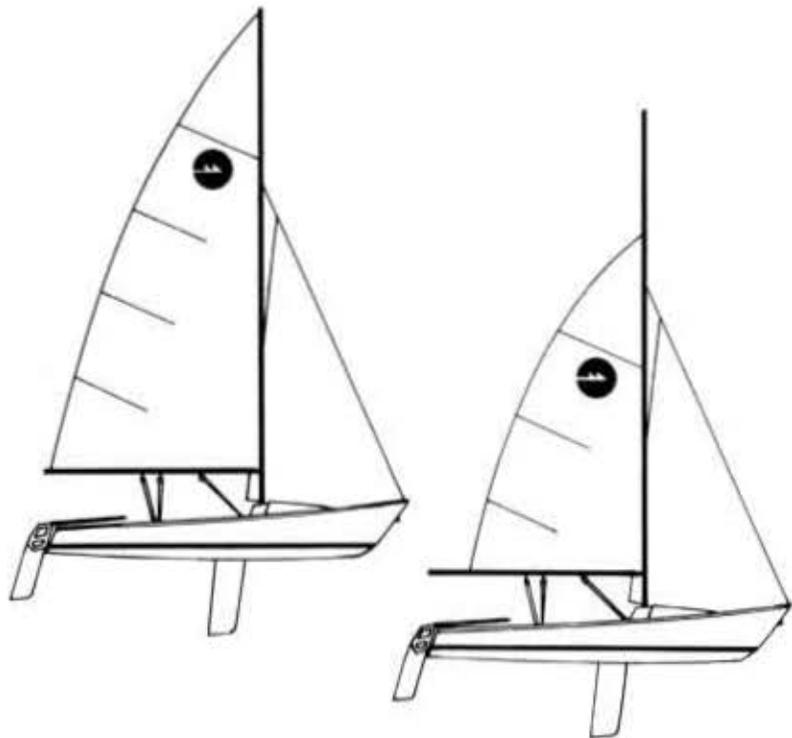
As the wind begins to blow harder, you'll notice that the boom begins to lift up. The stronger the wind, the more the boom will lift, causing the sail to describe an S-shape.

If you're racing, this is an extremely inefficient shape for the sail, and very slow. If you're daysailing with the family, it can be extremely dangerous, especially on a run. The wind can get around to the back side of the sail, blow it across the boat and cause an accidental jibe.

Generally, it is a good idea to keep just enough tension on the vang to keep the sail from twisting. What you want is a straight, smoothly arching leach. Be sure not to overdo it. Too much tension will make the leach too tight and the sail will stall, slowing the boat down.

Reefing — What it is.

Reefing is any time that the amount of sail area on the boat is temporarily reduced to cope with wind and sea conditions that would otherwise overpower the boat.



Reefing — What happens.

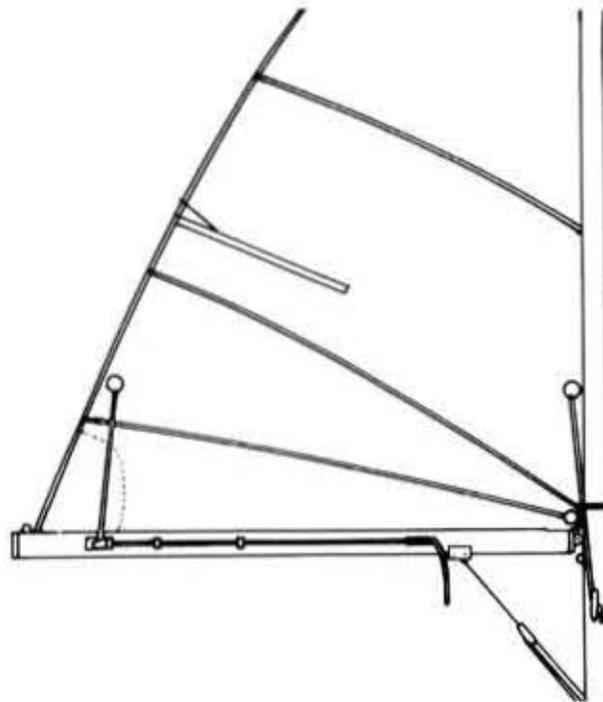
With a full main and jib, your Harpoon should sail with a nearly perfectly balanced helm, with only a slight pull to weather. When you reef, however, this balance is changed. The result can be either excessive lee helm, where the boat is continually trying to head away from the wind, or excessive weather helm, causing the boat to head up into the wind.

When you reef the mainsail on your Harpoon, the balance of the boat will be affected, but you can restore this balance by adjusting the position of the centerboard. As you raise the centerboard slightly, weather helm will be reduced. Keep raising the centerboard until the boat is sailing in a balanced condition.

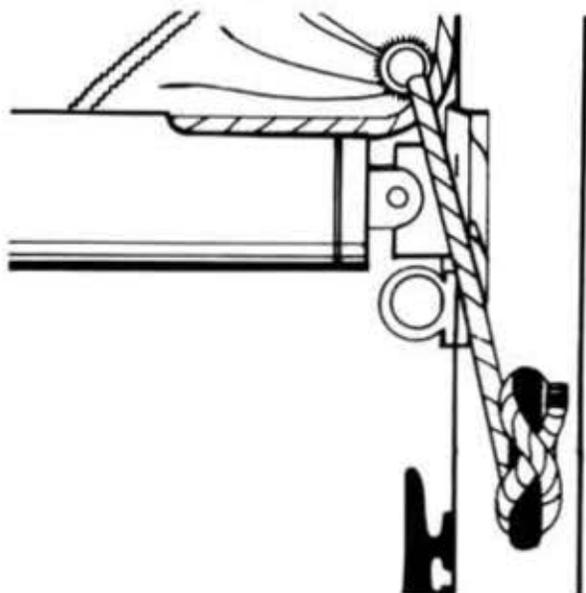
How to reef.

When the wind reaches between 15-18 knots, it is time to reef the mainsail. You'll know when the wind reaches that velocity because the boat will be heeling excessively, and the water will generally have scattered whitecaps.

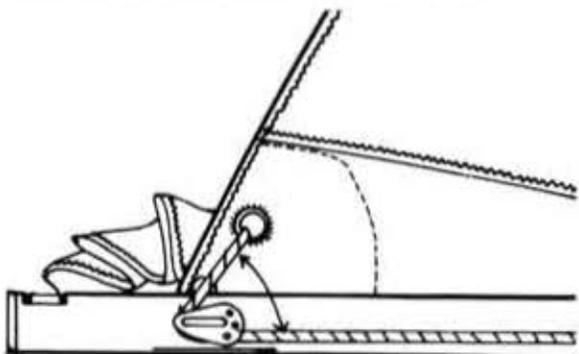
The Harpoon is equipped with a jiffy-reefing system that makes reefing a relatively simple, safe and fast procedure.



First, the helmsman releases the mainsheet until the mainsail is luffing. The mainsail halyard is then released, until the forward reef cringle is approximately 3 inches above the boom. A good idea is to mark the mast at the 3 inch point with a piece of tape. Then, when you lower the halyard, you simply line up the reef cringle with the tape.



Second, the crew hardens down on the forward reef line, stretching the cringle tightly down against the boom.



Finally, the crew pulls in on the aft reef line so that the aft reef cringle is tight against the boom. The sail is now reefed.

When sailing the boat in very heavy wind conditions, and only under a reefed main, it is safer not to tack the boat from a close-hauled course. If you don't do it exactly right, the boat could become trapped in irons. Instead, tack from one reach to the other.

This will enable the boat to carry more speed and assure that the boat will come all the way around through the eye of the wind.

Note: should the boat ever be caught in irons, you can escape by sailing backwards. This isn't as impossible as it sounds. Simply push the boom toward the wind so that the back side of the mainsail fills. At the same time, move the tiller to the side of the boat opposite the boom. The boat will move backwards and reposition itself so that the boom can be trimmed to its normal close-hauled position.

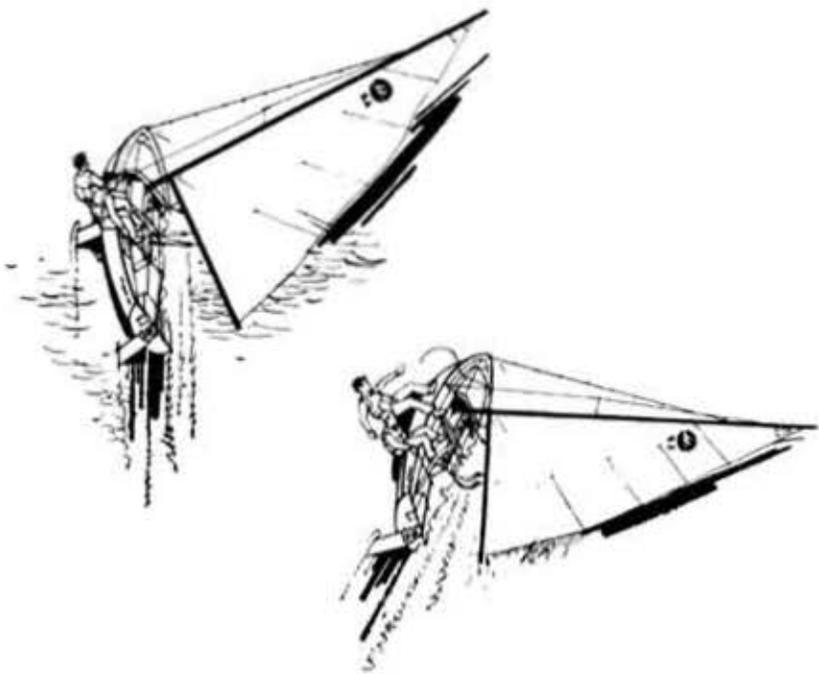
Warning: unless you are an expert sailor, never attempt to jibe the boat in severe weather. It is safer, when running downwind, to head up onto a reach, tack the boat, then head off onto the opposite jibe. If, however, you are forced to jibe the boat, be sure to keep the centreboard nearly all the way up so that the boat doesn't trip over itself and capsize.

Capsizing — How it happens.

Like all centreboard boats, the Harpoon can capsize. Even Olympic class sailors get dunked once in awhile, so if it happens to you, don't be surprised or get panicky. Capsizing is not at all dangerous if you know what to do.

Why boats capsize depends on a lot of factors, which, if you understand them, could help you prevent a capsize in your Harpoon.

Above all, be sure everyone in the boat is wearing a Coast Guard approved life jacket. Recovering from a capsize will be faster and easier if you don't have to waste time putting the jackets on in the water.



1. Capsizing is most likely to occur in strong winds. If the boat starts heeling to the point that the end of the boom is dragging in the water, a capsize is probably imminent.

2. Faulty gear, like a worn mainsheet that suddenly snaps, or a broken cotter pin that fails, can quickly capsize the boat. Be sure all standing and running rigging, as well as hardware is always in good condition.

3. Gusty wind conditions are tricky. A sudden lull, a radical shift when close-hauled, losing the tiller or mainsheet in a tense moment — all these can capsize the boat.

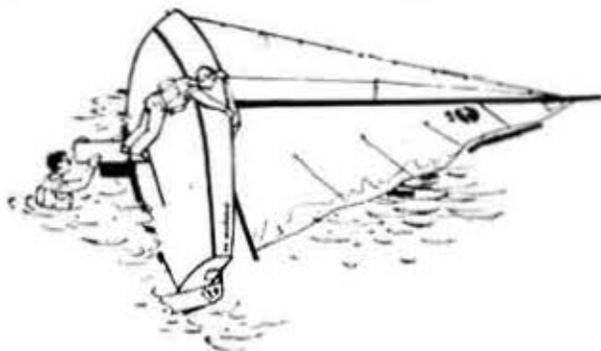
4. On a run, in strong winds, never let the mainsheet out too far. The boom should never be at a 90° angle with the centerline of the boat in these conditions.

5. A broach is another common cause of capsizing. This is when, on a run, the boat rolls over onto its windward side. You can prevent this from happening quite easily. Whenever you feel the boat rolling over to windward, pull in the main. Then, when it rolls to leeward, let the main out. Done properly, this technique should prevent the broach capsize and can also help prevent rolling.

6. Jibing the boat in a breeze can lead to a dunking, if not done properly. Always be sure the centerboard has no more than 4 or 6 inches protruding into the water. Any more than this could cause the boat to trip over itself when the jibe is executed.

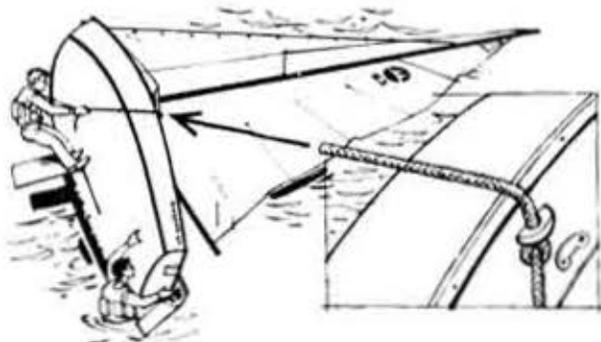
How to right the boat.

Let's assume the boat has capsized to leeward, that is, with the sails lying downwind of the hull. Here's what you do:



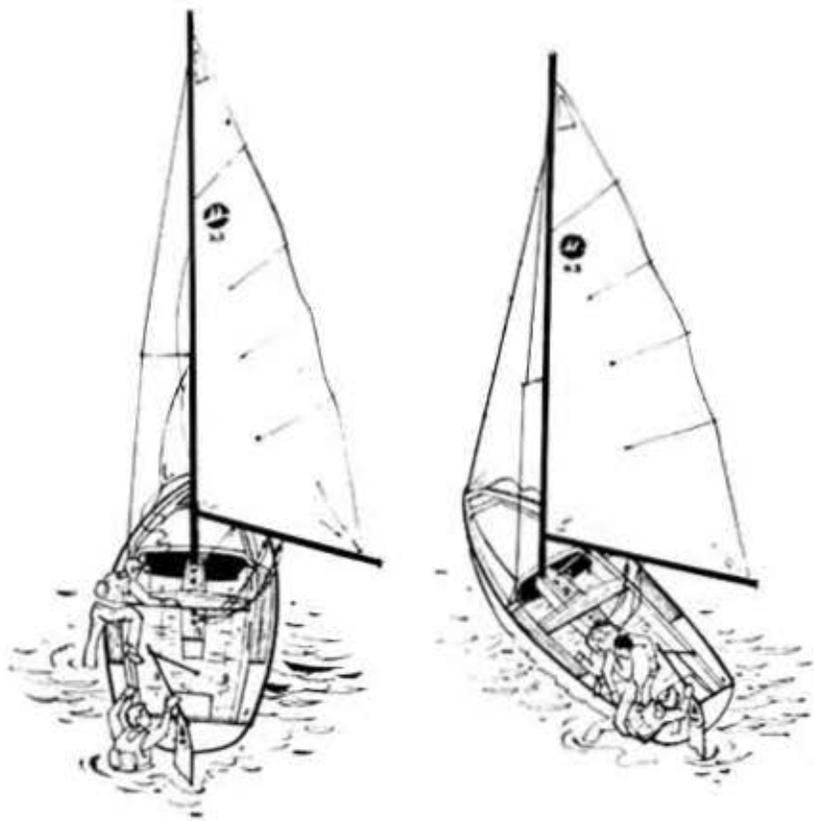
1. Have one person get upwind of the hull as quickly as possible, and hang onto the centerboard. Another person should then uncleat the mainsheet, jib sheet and boom vang, allowing all lines to run free. Under no circumstances should anyone be hanging onto the boat between the hull and the sails. This could potentially lead to a turtling situation (the boat upside down in the water).

2. While one person hangs on the centreboard, the other climbs onto it. It is best to stand on the board near the hull to prevent putting undo stress on the board.



3. The person on the centerboard then grabs the jib sheet and pulls it through the fairlead until the stopper knot comes up against it.

4. Then, leaning back with the sheet in his hands, the boat will begin to roll back up.



5. As the boat comes nearly upright, the person on the centerboard quickly steps over the gunwhale and into the boat.

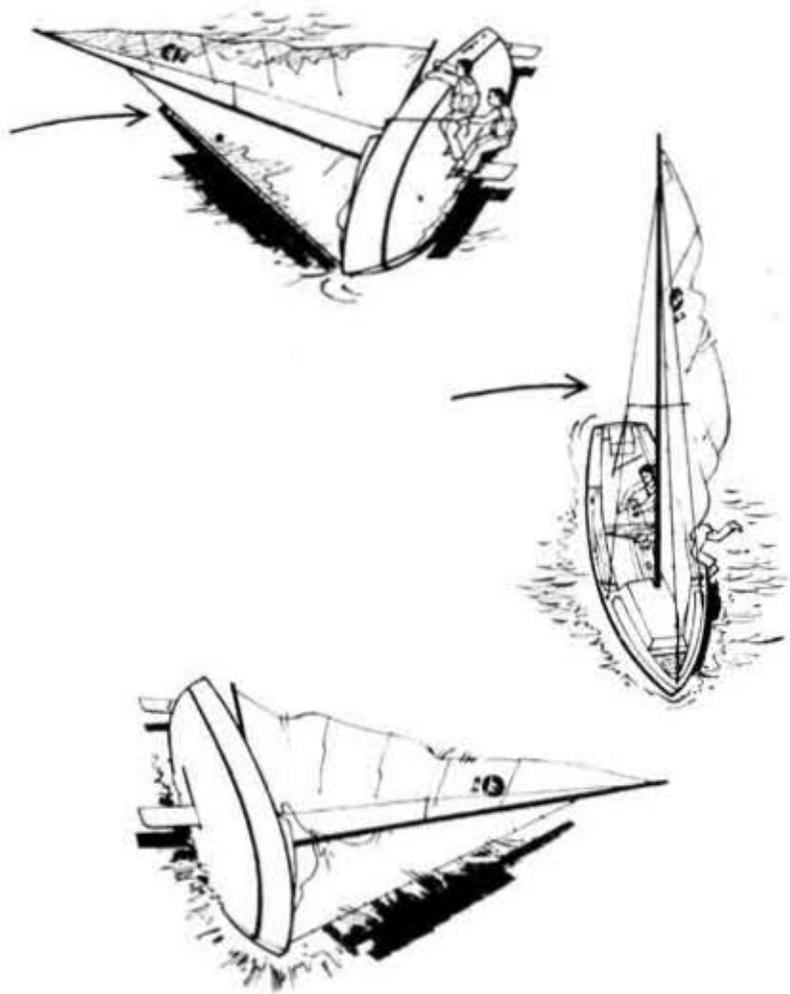
6. The person still in the water now swims to the stern and grabs the tiller and sheet so that he can balance the boat, and keep it from luffing into the wind.

7. The person on board then helps the person still in the water get into the boat. As you start sailing, the water in the bottom of the boat will automatically drain from the boat once you've opened the Elvstrom bailers.

Caution: Do not try to right boat by hanging on the rudder. This can damage the rudder head.

Solving downwind righting problems.

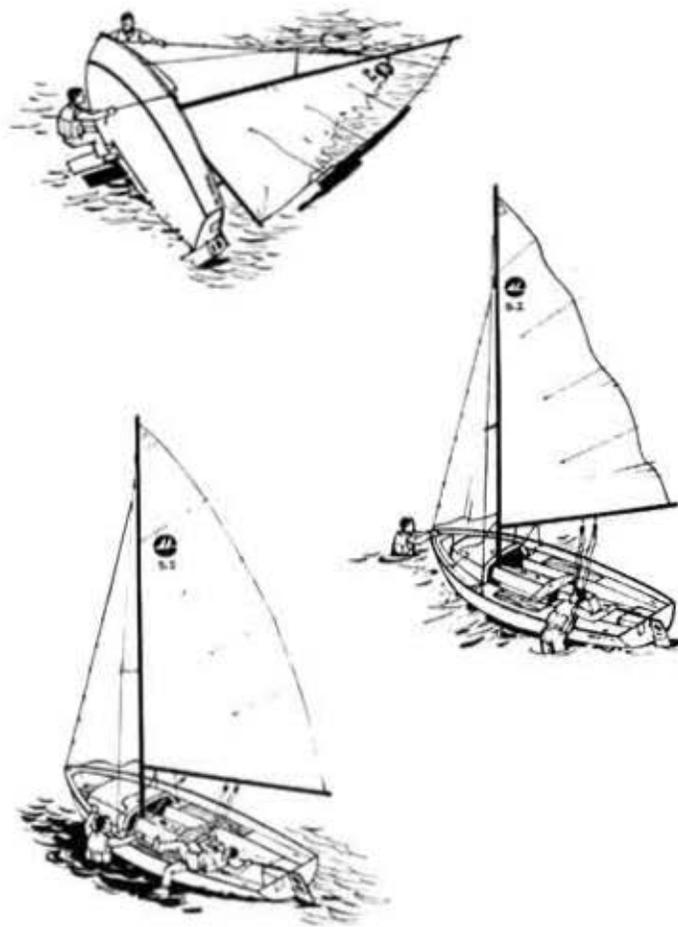
The Harpoon floats very high out of the water when capsized. Because of this, the boat may tend to orient itself with the hull downwind of the spars. Attempting to right the boat using the normal righting procedure will not work, because as soon as the boat is upright, the wind will blow the boat over to the downwind side.



The solution is for one person to swim to the bow and hold it serving as a sea anchor. This will help to point the boat into the wind.

In the meantime, the second person climbs onto the centerboard and rights the boat, while the person at the bow pulls down on the bow to lift the stern clear of the water.

The boat will quickly pivot on its bow with the stern downwind. Both crew now turn the boat with the wind directly abeam. One person then grabs the jib sheet and tiller and climbs in.

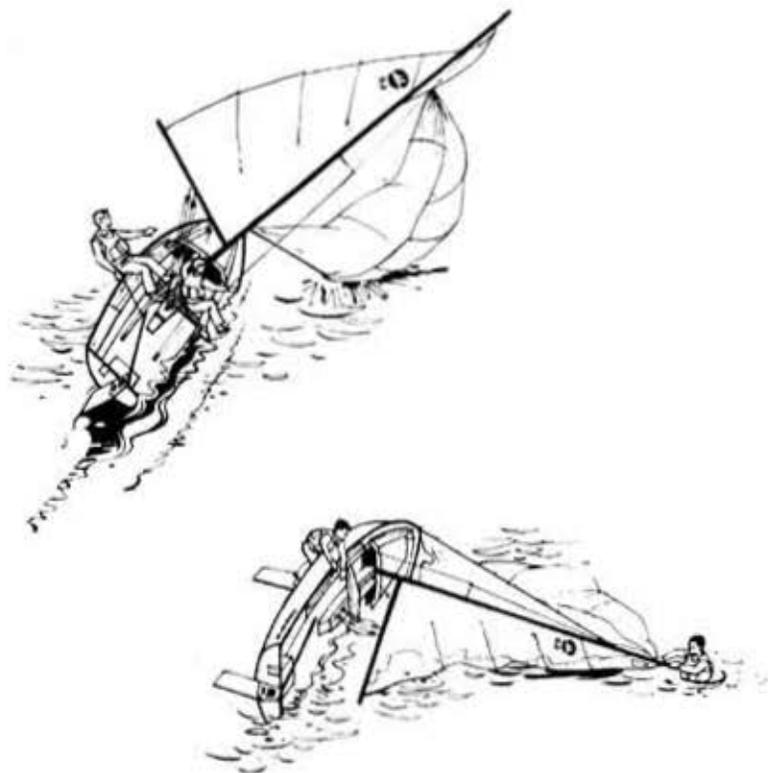


Capsizing under spinnaker

A capsize under spinnaker can create real problems. For one thing, the crew probably will have to swim out from under the sails. For another, a great tangle of sails, sheets, and lines will result.

In this situation, one person, using the centerboard, holds the boat horizontal. The other person unshackles the spinnaker, unsnarls the lines, takes down the sails, and collects any free-floating gear.

Capsizing is not uncommon. So before hoisting sail, make it standard practice to tie on paddles, mast chocks, and other small gear. And remember to wear your life jackets.



Turtling

Because of the foam flotation at the head of the sail and inside the mast of the Harpoon, turtling is very unlikely. But it's not impossible. So you should be prepared for it.

Of course, the best way to handle turtling is to prevent it. In the event of a capsize, be sure no one is hanging onto the boat between the deck and sails. This only helps to force the mast further underwater.

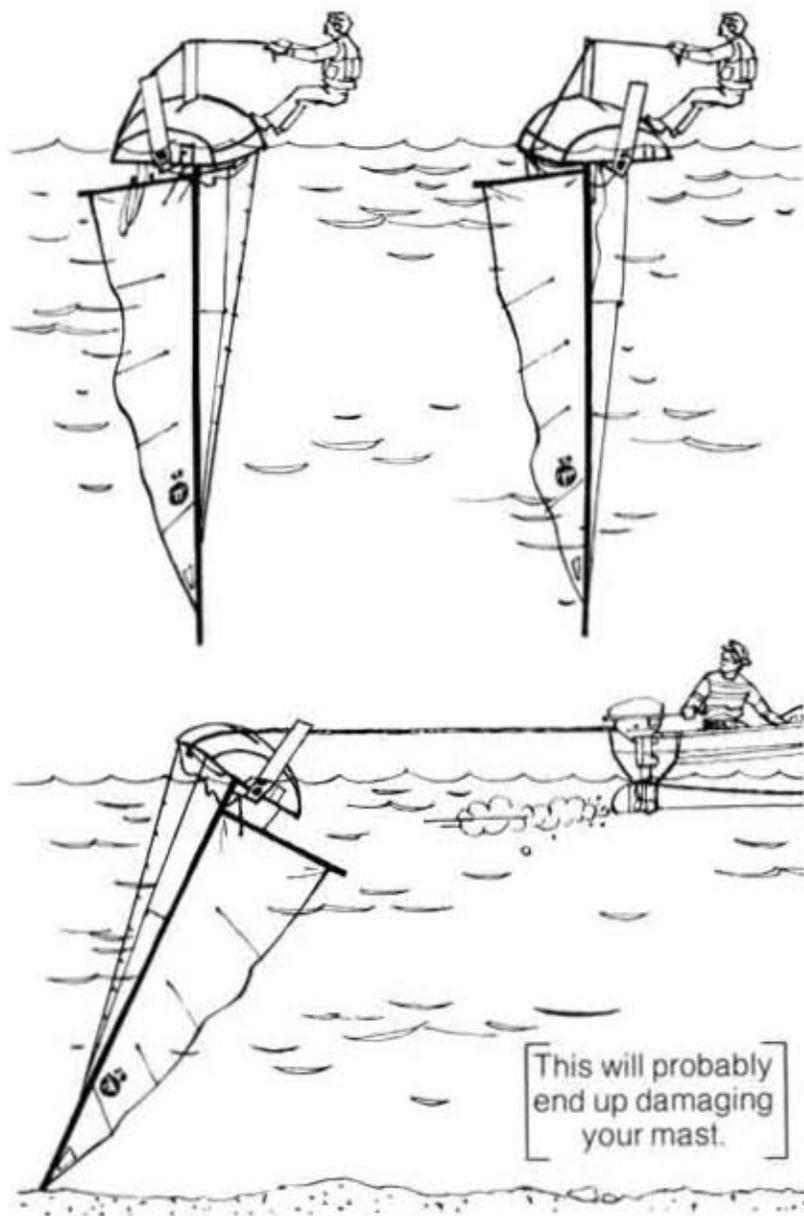


Recovering from a turtled position is not easy. But it can be done. Here's how:

First, make sure the centerboard is sticking all the way up. If it's fallen down into its case, you'll have to swing it back up. Use the cam cleat to hold it in place. Be sure all sheets and vang are uncleated.

Next, swim to the other side, grab the jib sheet, and pull it over the top of the centerboard. Then, standing on the opposite gunwhale, lean backwards. The boat will slowly start to come up once suction has broken under the hull.

It is possible that the top of the mast could become stuck in the mud. If it does, only a motorboat can free it. To do this, make fast a tow line to the base of the mast and lead it over the bottom of the hull (refer to illustrations). Have the motorboat gently pull the line and the boat should roll up.



The Mainsail

Mainsails are designed to be all-purpose sails for best all-around performance over a wide range of wind and sea conditions. Draft control is accomplished through outhaul tension, luff tension and mast bend.

Special Features — Standard on All Sails:

1. Twist foot shelf — allows for draft control through outhaul adjustment.
2. Maximum luff length and cunningham hole above the tack provides maximum sail area at all times and additional draft control.
3. Narrow, light-weight fiberglass battens of uniform and proper flexibility — for optimum shape in leech area.
4. End-access batten pockets — a neat, low windage pocket, yet battens are placed or removed easily.

Install compression (upper) batten with light tension to remove wrinkles. In light to medium conditions do not trim the mainsheet excessively so as to tighten the upper leech of the mainsail. The top batten should be twisting off at an angle which roughly corresponds to that of the boom, in 10 mph of breeze. To control this upper leech angle as the breeze increases, the vang can be used to tension the leech and the mainsheet should be used to control the angle of the boom off the centerline. In this manner, when the breeze really fills in, and in puffy conditions, the boat can be "powered through" the puffs by slacking the mainsheet and letting the boat sail through on its feet.

The cunningham should not be used to excessively stretch the luff of the mainsail. The cunningham control on the main positions the draft of the mainsail between the luff and the leech and does not necessarily control the sail's designed depth. In almost all conditions, the seams of the sail between the luff and the leech should have a fairly arc-like appearance with the maximum depth of this arc about 45% of the way aft from the mast. In no case should there appear to be a draft forward, straight in the back, airplane wing type section which results from the downhaul on the main being too tight. This mainsail reflects latest thinking in one-design sails and is cut to fit light air conditions, as well as being very fast in heavy air where there is a slight amount of mast bend and the sail has to have enough power to push the boat through the chop.

The Jib

To trim the sail correctly you must first have the jib lead in the proper fore and aft position. This is most easily done by moving it forward and backwards until all three of the tell-tales on your jib luff at the same time as you begin to pinch the boat above a close-hauled course. If you find that the windward tell-tale on the top of the sail luffs before the ones lower down, the lead is too far aft and should be moved forward. Conversely, should the windward tell-tale on the bottom of the sail luff before those higher than it, try moving the lead aft. Keep experimenting until all three tell-tales luff simultaneously as the boat is headed slightly above close-hauled. It is ideal to do this sort of testing in winds between 8 and 12 knots. Then perhaps in very heavy wind you might move your lead somewhat back to open the leech, and in very light wind, forward from your standard position. Remember that in very light wind you will be sheeting the jib more loosely and this is why farther forward compensates the amount that the leech has been eased off by the looser sheet, keeping constant twist.

The most critical adjustment you will make with your jib is that of the sheet tension itself, and the best way to gauge this is to pull the sheet in when you're going upwind so that the upper third of the leech is parallel to the centerline of the boat at the back end, or perhaps just to leeward from parallel.

To summarize, first be sure that your jib luff is tensioned such that there are no wrinkles behind the luff. Move the jib lead fore and aft so that all of your tell-tales are luffing and stalling evenly as you head up and down, and then pull in the jib sheets so that the upper third of the jib is parallel to the centerline of the boat.

Spinnakers

The all-purpose spherical spinnaker is one that will be sensitive enough to trim changes to flatten out for high reaching and still become full enough to be fast on a run. All our spinnakers are designed for such versatility. To achieve the maximum potential from your spinnaker, it is important that your boat be set up for proper sheeting, pole adjustment, and lead placement. The head of our standard spinnaker is made just full enough to facilitate flying. You should be able to carry a small (4"-8") fold flipping in and out of the luff without losing the whole sail. This is fast. An over-trimmed chute (one that never breaks) chokes down the slot, backwinds the main, and drives the boat sideways instead of forward. An overly flat spinnaker encourages overtrimming because of its tendency to collapse when it gets even a slight break.

The initial break in the luff of the chute should start about midway between head and clew. If it starts lower, your pole is too high; if higher, your pole is too low.

Adjusting pole setting is important to achieving the best spinnaker shape both reaching and running.

For reaching, the lead should be quite far aft to flatten the overall shape across the foot and open the leech behind the main. The pole should be raised just high enough to free and flatten the entry for close reaching, but not so high that the whole middle of the sail blows to leeward. When this happens the leech hooks and again closes the slot and backwinds the main. The boat may point higher, but it will go a lot slower. Downwind the pole should be lowered enough to round the weather luff slightly.

Trailing

Before you launch the boat, do all your rigging on shore, on as level ground as possible. Be sure all running rigging is ready, all your gear is in the boat ready to go. The boat will be easier to rig if the bow is pointed into the wind.

Once the boat is in the water, keep the bow headed into the wind, and have the crew get in the boat, keeping the tiller in line with the long axis of the boat. Now, push the boat away from shore, until you're in deep enough water to drop the centerboard, and sail off.

When beaching the boat, try to approach the launch area on a slight beat. Then, just before you get near shore, round up into the wind, and glide into shallow water. If the wind is blowing directly onshore, the stern of the boat will be pointed directly at the shore when you round up, and gliding into the launch area may not be possible. In this case, push the boom out so the wind blows against the back of the main and sail backwards. Make sure to pull up the centerboard and rudder before the water gets too shallow.

Finally, when you're ready to winch the boat up onto the trailer, be sure to line up the skeg on the bottom of the hull with the rollers on the trailer. The skeg helps align the boat automatically onto the trailer.

Sailboat Launching and Retrieval and General Information

1. At ramp, but not *on* ramp, rig boat including sail attachment, etc. **IMPORTANT:** Do not do this **ON** the ramp. **CAUTION:** Check for overhead power cables.
2. Remove rear tie-downs.
3. Attach bow line. Place miscellaneous loose gear in boat.



4. Back trailer down to the water insuring wheel bearings are 2" above water level. **DO NOT** submerge wheel bearings.



5. Pull trailer tilt-pin. Lift bow and push.

6. After launch, engage trailer tilt-pin and park the trailer. Before going back to the sailboat, pull winch line out and snap on rear trailer frame ready for retrieval.



7. Retrieval: Back trailer to water's edge. Again, do not submerge wheel bearings. Rear keel roller should be 2"-6" above water level at this point. If not, for example because of a shallow ramp, the trailer tilt frame will have to be used. In this case the tilting should allow the rear keel roller to come within 2"-6" off water level. *NEVER submerge the rear keel roller!*

8. Nose sailboat to rear keel roller and attach winch line.

9. When winching home watch the keel and keel rollers to insure boat does not twist off. *NOTE:* Keeping rear keel roller above water causes boat to rest heavily on it, preventing it from slipping off.

10. Bow stop should end up directly above bow eye. This will help prevent boat from riding up over the winch stand in a panic stop.

11. *General Trailer Information:*

a. Check tire inflation before long trips. Remember, small diameter tires travel much faster than your layered automobile tires. Low

inflation will cause tires to heat up excessively at high speeds.

- b. Check tail and stop lights each trip and carry an extra bulb or two in your car glove compartment.
- c. Periodically pump the wheel buddy bearings following instructions in your Trailer Owner Package.
- d. Trailer axle is not galvanized nor are wheels. To keep your trailer looking good, maintain each winter by sanding or wire brushing off rust and scale, priming and painting with any good quality metal paint.
- e. The boat may remain on the trailer for prolonged periods without damage to boat or trailer. During winter lay-up, jack trailer wheels off the ground and block. Remove wheels, deflate to 20 lbs. and store in garage or cellar.
- f. Periodically check winch rope for wear and replace when necessary with Boston Whaler's winch line shown in Accessory Catalog.
- g. For looks, you may decide to paint trailer cat-walk. If so, add special sand compound to paint for top surface. This is available from good paint stores or your marine dealer.
- h. An ideal accessory, but one requiring the do-it-yourself talent, is a set of rubber trailer fender flaps or mud flaps. These can be bolted on to the fender or attached to a horizontal angle iron welded to the trailer.
- i. Trailer tongue weight is the weight of the trailer hitch on the car. It is easily measured by placing a bathroom scale under the trailer or caster jack. To adjust tongue weight, move trailer axle forward or backward. The optimum is 10% of the gross load (boat and trailer). On small compact cars this may prove excessively heavy. Compensate by moving wheels forward and test drive. Too light a tongue weight will cause the trailer to sway from side to side.