

**JAVELIN
OWNERS MANUAL**

**Second Edition
June 1990**

For Javelin Club and Association

Important Information

Because of the variety of ways that a Javelin sailboat can be sailed, fitted out, transported, set up and taken down, the owner must satisfy himself as to the acceptability of each procedure, application, and use of equipment described in this manual.

The tables, checklists, and illustrations are intended solely to illustrate the principles of equipment installation and/or operational procedures.

For questions regarding this material, contact
dan.ribe4@gmail.com

For ongoing Q + A among Javelin Owners,
send an email to subscribe to:

JavelinSailors-subscribe@yahoo.com

For Javelin website, visit

<http://groups.yahoo.com/group/JavelinSailors>

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Introduction

Your Javelin is a sturdy dependable sailboat. It will give you good sailing performance in a wide variety of wind and wave conditions. It is comfortable and convenient for day sailing. Its simple rig and forgiving stability make it easy to race if you should care to. With minimal time spent on maintenance, your Javelin should out-last most other sailboats.

The purpose of this manual is to help you enjoy sailing your Javelin safely and with confidence. The manual covers a variety of topics compiled from years of Javelin sailing and racing experience.

You do not need to spend a lot of money to enjoy sailing. The Javelin is a simple sailboat that you can buy for a few hundred dollars. The Javelin's simplicity will keep you interested in sailing and you will want to read this manual and the Javelin manual. The Javelin manual is a list of Javelin members. We have a list of Javelin members and upon request.

Javelin Club, Inc.

Daniel Koler
201 Kendall Dr.

Obedin, OH 44024-1900

440 974-4342

Amber@javelinclub.com

Chapter 1 Road and Ramp Safety

Checklists

We present these checklists for your safety and convenience:

- o Trailering
- o Setting Up at the Ramp
- o Safety Equipment and Precautions
- o Taking Down at the Ramp

Trailering Checklist

The boat should be properly supported on the trailer and rest securely on the center rollers so the struts do not deform the hull. The trailering package should be equipped for safety.

- o The tongue weight should be approximately 40 lbs. You can measure it with a bathroom scale.
- o If the tongue weight is too heavy, move the winch post aft on the trailer tongue, moving the boat aft for correct balance.
- o The boat weight should be evenly distributed over the center rollers. Use the struts to keep the boat from leaning to one side or the other. The struts should NOT support much of the boat weight. Adjust rollers and struts to fit the hull.
- o Use self-adjusting "V" brackets to brace the bow. Locate them about about 3 ft. aft of the bow.
- o Cover the lengthwise struts and "V" brackets with carpet. Use roofing nails to secure the carpet.
- o Always use a boat tie-down strap. Be sure to release it when not on-the-road to reduce deformation of the hull by the struts.
- o Secure the mast at both ends.

WARNING: If the mast overhangs the transom by more than two feet, attach a red flag to lessen the chance of personal injury damage to your mast.

- o Secure the bow by winching up the line.

CAUTION: Be sure the winch line is strong. Polyethylene line deteriorates in sunlight and should be replaced yearly, if used at all.

- o Set tire pressure at 55-65 lbs.

- o Repack the bearings every couple of years or as needed, especially if the boat is trailered regularly. Always install new seals when repacking the bearings.
- o Add large mud flaps to the wheel cowlings to reduce the accumulation of road dirt on the hull. Flaps also protect the hull from flying pebbles.
- o Add a large caster or an adjustable-height third wheel to the trailer tongue just aft of the hitch. The convenience is worth the cost.
- o Use a positive-locking safety chain. Safety chain hooks have been known to fall off.
- o For safety on-the-road, check that the running lights, break, and directional lights are all working. Use a heavy duty flasher to increase the ON time of the directional lights.
- o Be sure that nothing is left unsecured in the boat that could be blown out of the boat at highway speeds.
- o Always carry an inflated spare trailer tire for car and trailer.
- o Check whether your automobile jack will work on the trailer. If not, purchase an auxiliary jack.
- o Carry a pair of wheel chocks (wedges) to be used when jacking up the trailer.
- o Carry a couple of extra lug nuts, a pair of bearing seals and an extra pair of bearings if you trailer frequently on long trips.
- o When stopping for gas or upon arrival, check the temperature of the bearing housing by touch. Also listen for noisy bearings when starting or stopping at low speed.

Setting up at the Ramp

When you divide the tasks evenly between skipper and crew, you can set up the boat easily in 15-20 minutes.

WARNING: Always be alert to avoid overhead power cables. Hitting a power line can be lethal if holding a sidestay.

The following checklist is meant to serve as a guide. Revise it to suit your needs. One person should work inside the boat (indicated by *), the other outside.

<u>Task</u>	<u>Skipper</u>	<u>Crew</u>
o Remove the boat cover	x	x
o Release the boat tie-down	x	x
o Release mast & boom tie-downs	x*	x
o Lay the boom in a convenient position	x*	
o Attach the masthead windvane, if you use one		x
Tabernacle model		
o Attach sidestays	x	
o With crew holding other end, connect the mast to the tabernacle. Then raise the mast (NOTE 1)	x*	x
Without tabernacle		
o Raise the mast (NOTE 2)	x*	
o Connect the forestay and side stays		x
o Set sail bags on the seat		x
o Set the boom gooseneck in the mast slot	x*	
o Pull back on the boom and rotate it 90° so the sail slot faces sideways (easier to bend on the Main)	x*	
o Bend the Main into the boom's sail slot	x*	
o Pull the sail aft through the sail slot		x
o Load the head of the Main into the mast slot, connect the halyard, and partially raise the Main	x*	
o Insert the battens	x*	
o Connect the jib head to the halyard	x*	
o Connect the jib tabs onto the forestay		x
o Connect the jib tack to the bow plate		x
o Connect the jib sheets, take up slack and cleat one sheet (prevents jib from falling off the deck)	x*	

<u>Task</u>	<u>Skipper</u>	<u>Crew</u>
o Connect the boom vang to the boom and mast	x*	
o Check that all running lines are clear	x*	
o Check that the centerboard line is cleated	x*	
o Set the rudder assembly in position with blade horizontal and locking mechanism in place		x
o Check that the drain plug is in place old model	x	
new model		x
o Review the Safety Checklist and place safety equipment on board	x	x
o Stow trailering equipment in the car		x
o Adjust rig tension according to the expected wind velocity (tighter in higher winds)	x	
o Attach the bow line to the boat		x
o Release the winch line from the bow eye		x
o Check wind direction to determine where the boat will drift when released from the trailer		x
o When backing down the ramp, stop quickly at the correct moment to give the boat a "shove"	x	
o Remember where the trailer and boat are parked (Don't lock the keys in the car)	x	

NOTE 1 Raising the Mast with tabernacle

- 1) Connect the base of the mast to the tabernacle.
- 2) Pivot the mast into position while the crew assists by pulling the forestay and connecting it to the bow plate.

CAUTION: Connect sidestays before raising the mast.

NOTE 2 Raising the Mast without the tabernacle

- 1) Standing on the deck, pick up the horizontal mast at the spreaders (balance point). Rotate the mast to a vertical position and place the base of the mast on the ground.
- 2) Raise the mast vertically to the deck.
- 3) Rest it next to the mast hole.
- 4) Aim for the mast step by looking thru the mast hole.
- 5) Lower the mast onto the mast step.

**Safety Equipment
and Precautions
Checklist**

Place the following equipment on board, and take the following precautions prior to setting sail.

Equipment

- o CG approved personal floatation device for each person
- o CG approved throwable personal floatation device
- o CG approved whistle or horn
- o CG approved distress flag
- o two paddles
- o anchor and line
- o bumpers (optional)
- o spare line with snap hook at one end (optional)
- o other optional equipment

Precautions

- o the rudder retainer is locked
- o the bailing buckets are secured
- o the cuddy door is closed and secured (new model)
- o the drain plug is closed
- o you checked the local weather forecast within the hour
- o skipper and crew are dressed suitably for air and water temperature, and for spray
- o the boat will not be overloaded (4 adults max)

Taking Down at the Ramp

Raise the centerboard and lower sails before loading the boat onto the trailer. Back the trailer until all but the front of the struts are awash. (Avoid putting the rear axel of the car into salt water.)

One person should position the boat while the other winches it onto the trailer. Clear the ramp without delay. Always be alert for overhead cables. When parked, follow this or a similar procedure to de-rig the boat (* person on board).

<u>Task</u>	<u>Skipper</u>	<u>Crew</u>
o Position the boat correctly on the rollers	x	x
o Remove battens	x*	
o Remove halyards and secure them	x*	
o Remove the Main from the boom	x*	
o Remove the Jib from the forestay and bow plate		x
o Remove the jib sheets	x*	x
o Remove the boom vang assembly	x*	
o Remove the rudder assembly and stow it		x
o Remove the boom from the mast	x*	
o Install the trailering equipment		x
Tabernacle model		
o Disconnect the forestay		x
CAUTION: Do NOT disconnect the side stays.		
o Lower the mast (NOTE 1)	x*	
Without tabernacle		
o Disconnect all stays	x*	assist
o Take down the mast (NOTE 2)	x*	assist
o Secure the mast and boom in trailering position	x*	x
o Secure the running lines	x*	
o Open the drain plug		x
o Stow equipment listed in the Safety Checklist	x	x
o Attach the cover	x	x
o Attach the boat tie-down strap	x	x

-
- o Fold and bag the sails after letting them dry x x
 - o Connect the cable to the trailering lights x
 - o Check that the safety chain is connected x

NOTE 1 Lowering the Mast with Tabernacle

- 1) The crew should disconnect the forestay, and use it to help ease the mast down.

CAUTION: Do not disconnect the side stays.

- 2) The crew should then move to the stern to catch the mast and place it in the cradle.

NOTE 2 Lowering the Mast Without Tabernacle

- 1) Secure all stays and halyards to the mast with shock cord and/or the free ends of the halyards. Use a small length of carpet to prevent the turnbuckles from scratching the mast.
- 2) Be sure that you freed the spinnaker halyard and removed the boom vang and any other line to the mast.
- 3) Lift the mast and rest it on the deck next to the mast hole.
- 4) Carry the mast vertically to the edge of the deck and lower it to the ground.
- 5) With the mast still vertical, reach up toward the spreaders and rotate the mast to horizontal. As it rotates, let it slide until you can grasp it at the spreader (balance point). Then set the mast in its trailering position.

Chapter 2 On the Water

Getting Underway

Always position the boat with the bow into the wind before raising sail. This may require turning the boat around, tying off the end of the dock, or whatever it takes.

Getting underway should be planned. It is best done starting with the bow into the wind and moving either backward or forward onto a close reach.

**Starting in Reverse
from Dock or Buoy**
(see figure 2-1)

With the bow into the wind, sails raised, centerboard partially down, the crew should push the boat backward from the dock. The crew should step on board while the skipper steers backward with a strong grip on the tiller.

- o Turn the tiller so the aft end points in the direction that you want the boat to move.
- o Steer the boat backwards until you clear the dock. Then turn gradually so that the bow swings onto the desired course. Tightening the jib sheet helps turn the boat.
- o Pull in the main sheet to drive the boat forward.
- o Do not attempt to steer in the forward direction until the boat is moving forward. Then steer normally.

**Starting to Windward
from the Dock**
(see figure 2-2)

With sails raised, bow into the wind, centerboard down and skipper at the helm, the crew walks the boat forward into the wind to gain momentum while holding onto the sidestay.

- o At the end of the dock, the crew steps on board as the skipper steers onto a close reach.
- o Sheet in the Jib and Main to gain speed.
- o Tack or bear off onto the desired course.

CAUTION: Avoid the following:

- o When at the dock, man-handling the boat with the sails up and cleated against the force of the wind
- o Starting on a reach where the boom will rake other boats at the dock as the boat drives forward
- o Having to gybe in close quarters

Figure 2-1
Starting in Reverse from a Dock or Buoy

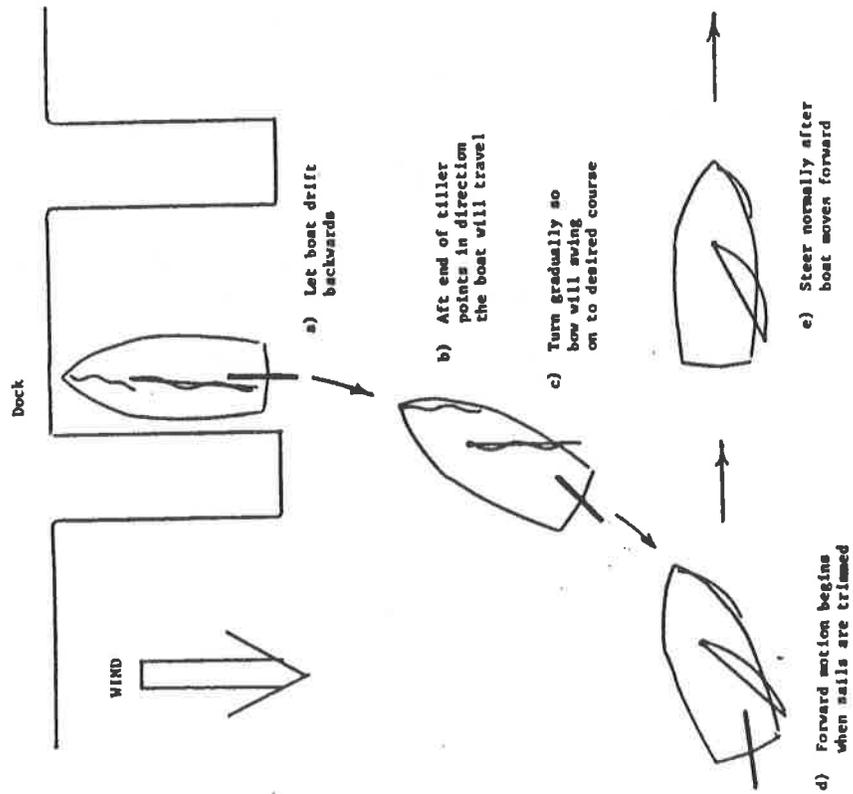
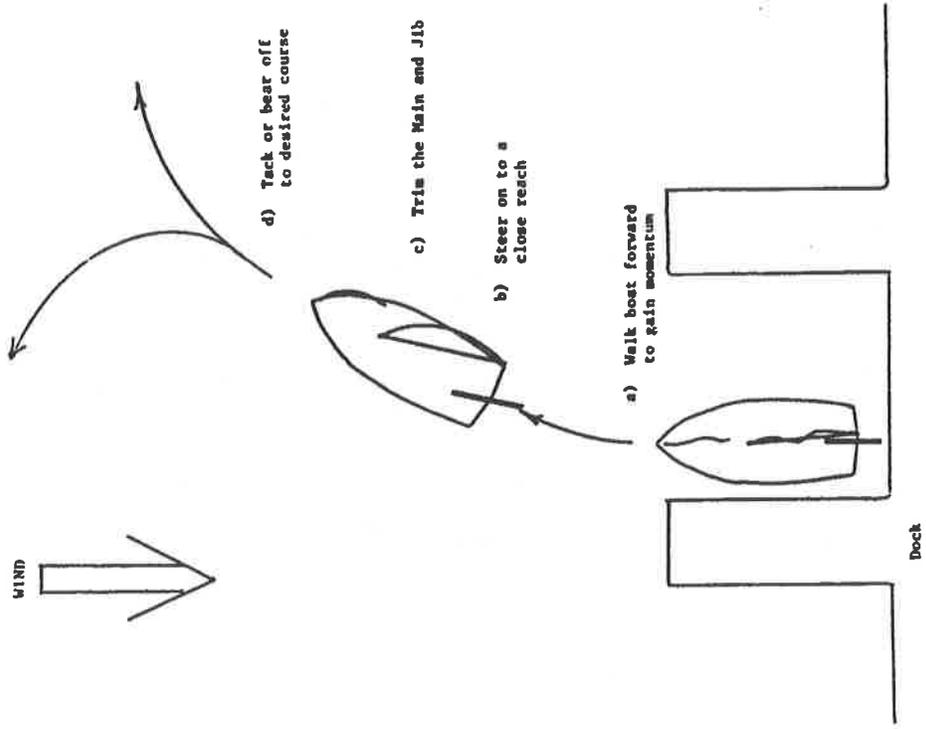


Figure 2-2
Starting to Windward from a Dock



Approaching a Dock or Mooring

The approach to a dock or mooring should be planned. Consider approaching by luffing to windward in order to slow the boat, and/or heading in on Jib alone.

Approach to Windward (see figure 2-3)

Approach a dock or mooring to windward by turning into the wind and luffing.

- o As a rule of thumb, the luff distance after the turn should be about a boat length for each mile-per-hour of boat speed prior to the turn.
- o If the boat is moving too rapidly after the turn, use the rudder as a brake by alternately steering hard to starboard and port.
- o Another way to slow down is to push the boom to windward using the Main as a brake.
- o Steer to port or starboard when within a boat length of the dock rather than hit it head-on.
- o When approaching a mooring buoy to windward, estimate the distance to mid-ships rather than to the bow so you can fetch the buoy from the crew's position.

Approaching a Dock Downwind (see figure 2-4)

Turn the boat into the wind when upwind of the dock by several boat lengths.

- o Lower the centerboard (if the water is deep enough)
- o Drop the Main as the boat slows
- o Have the crew fetch both jib sheet leads. They will be needed to control the Jib
- o Pull the boom to one side so you can steer
- o Steer the boat around and sail the remaining distance downwind (or on a reach) on the Jib
- o Drop the Jib (or release the jib sheet) when there is sufficient momentum to reach the dock
- o Steer to port or starboard when within a boat length of the dock to avoid hitting it head-on

Figure 2-4
Approaching a Dock Downwind

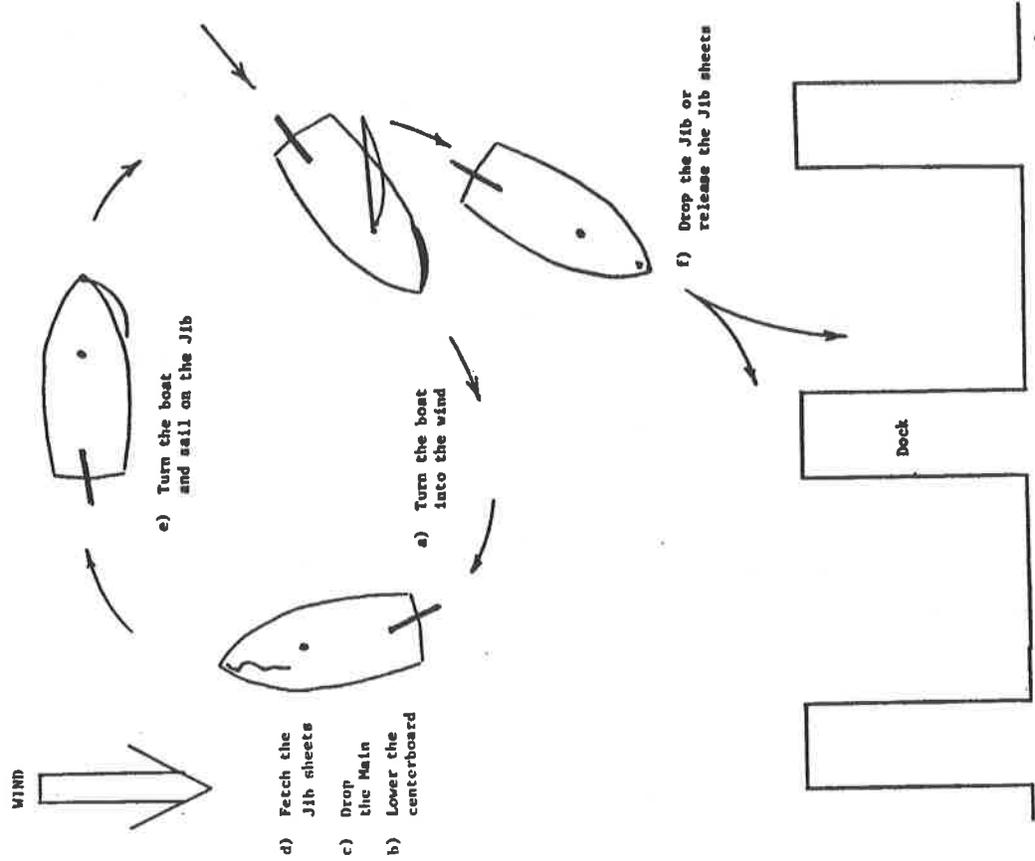
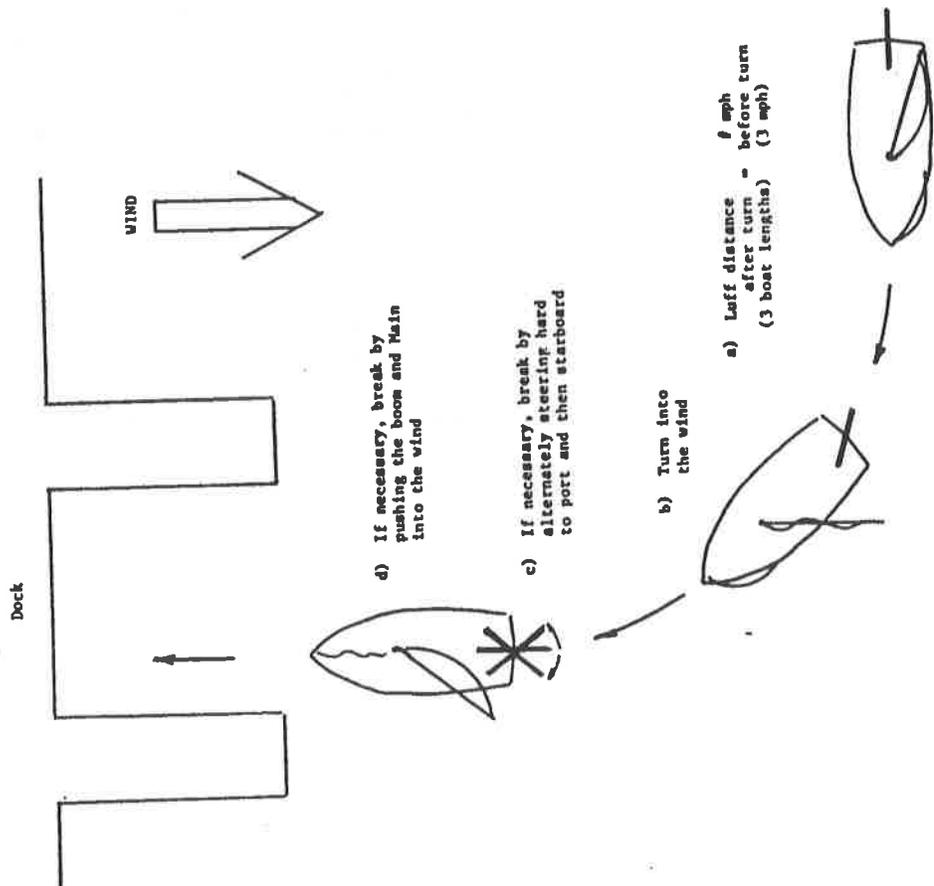


Figure 2-3
Approaching a Dock to Windward



CAUTION: Avoid the following:

- o Sailing to a dock on a reach or run with the Main powered. If the main is up, let it luff beforehand.

WARNING: A fast moving boat is dangerous to stop by man-handling.

- o Asking the crew to sit at the bow and use his/her legs as a shock absorber when approaching the dock too fast
- o Raking the end of the boom across the dock or other boats when approaching on a reach
- o Smashing into the dock or other boats because the approach was NOT planned in advance

Setting Your Sails Correctly

A rule of thumb for correctly setting your sails by the amount of sheet tension is the following:

Ease sheet tension and let out the sail until the sail begins to luff, then sheet in a little.

This applies to Jib and Main, beating or reaching, small boats and large.

The only exception is beating to windward in a race where you generally sheet in the jib fairly tight, and play the mainsheet and/or rudder to accommodate gusts and/or waves.

Shaping Your Sails

Proper sail shape is an intermediate topic reserved for the helmsman and crew who have gained self-confidence. However, these topics are essential to the skipper and crew who wish to push the limits of their skill and discover their boat's potential in a variety of sailing conditions.

Sail shape is important to the boat's performance. The shape of the sail can be controlled by tensioning its luff, foot and leech. When the sails are raised initially, the cloth should be stretched sufficiently to remove wrinkles but no further. In general, as the wind velocity increases, the tension on the sail should be increased, and vice versa.

Tensioning the Jib Halyard

Correct Jib halyard tension is important to obtaining good boat speed and prolonging the life of the sail.

Use as little tension as the wind will allow, just enough to avoid "scalloping" between luff tabs. This gives you the best possible boat speed.

Too much Jib halyard tension eventually destroys its shape and elasticity. Not enough jib halyard tension causes the luff to "scallop" between the tabs holding it to the forestay. This distorts the sail and eventually causes permanent damage.

Positioning the Jib Sheet Leads

The position of the jib sheet leads determines sail set. This is particularly important when beating to windward. Under most conditions, the sail's angle of entry to the wind should be constant over the entire luff of the sail.

If the jib sheet fairlead is too far aft, the upper portion of the sail will spill air and the slot between Main and Jib will be wider. Most of the jib sheet tension will be directed along the foot of the sail. Use this fairlead position in moderate to strong wind conditions and when sailing off the wind.

When the jib sheet fairlead is too far forward, the lower portion of the sail will luff before the upper portion. This position reduces the slot between the Main and Jib and partially back-winds the Main. Most of the jib sheet tension is directed along the leech of the sail. Use this position to when sailing to windward to minimize leech flutter (if the Jib leech is stretched) or when the wind is light.

The optimum position can be determined by observing whether the top or bottom of the Jib luffs first when the boat is slowly turned into the wind. Adjust the fairlead position so that the Jib starts to luff at the same time over its entire length along the luff. Mark that position on the jib sheet fairlead track. Deviate from that position aft in higher winds or forward if the jib leech flutters.

NOTE: You can repair the Jib to remove leech flutter. Open a 10 inch seam on both sides of the flutter area starting at the leech. Increase the overlap by about 1/4 inch at the leech, tapered to zero at the end of the seam opening. Use a zig-zag stitch if available.

Better yet, see your local sailmaker.

Setting the Main's Luff and Foot Tension

When Raising Sail

You cannot hoist the head of the Main above the pulley at the top of the mast, so don't over tighten the halyard. Use the Cunningham or boom downhaul to tension the luff. If the wind is blowing whitecaps, tighten the luff to the point where it induces a couple of vertical wrinkles running parallel to the mast. These will disappear when underway. Use less tension as the wind decreases.

Use the outhaul to tension the foot of the Main. Again, if the wind is blowing whitecaps, tighten the foot to the point where it induces a couple of wrinkles running parallel to the boom. These will disappear when underway. Use less tension as the wind decreases.

If Racing

Mark the mast at 19' 0" below the maximum halyard height. Do not downhaul the luff of the Main below this mark.

Mark the boom at 9' 6" aft of the gooseneck pin. Do not outhaul the foot of the Main beyond this mark.

When Underway

Use a boom vang to hold the boom horizontal and maintain good sail shape when sailing off the wind. In light air, reduce or remove vang tension. Increase the tension when the wind increases.

When sailing to windward in a moderate breeze, flatten the Main by tightening the luff with a Cunningham and the foot with the outhaul.

When sailing on a broad reach or run, (or to windward in heavy chop) add power to the Main by easing the outhaul and vang.

Balancing Your Boat to the Wind

A well balanced boat will track through the water going in the intended direction without a rudder. You can steer the boat by one or more of a combination of factors which affect its balance (amount of weatherhelm or leehelm). Disregarding one or more of these factors will cause the boat to sail slower than its potential.

Controlling Weatherhelm

Weatherhelm is the boat's tendency to steer into the wind (weather) when allowed to sail itself. A small amount makes the boat feel responsive. Excessive weatherhelm is literally a drag. It is fatiguing and slows the boat because you must continually pull the tiller (drag the rudder) to keep the boat on course.

Weatherhelm increases as the boat heels in stronger winds. Helmsman and crew can reduce weatherhelm underway by making one or more of the following adjustments:

- o Prevent the boat from heeling by hiking out and/or by spilling air from the Main
- o Move the centerboard aft by partially raising it
- o Position the helmsman and crew further aft
- o Ease the main sheet while tightening the jib sheet
- o Flatten the Main

Controlling Leehelm

On the other hand, leehelm makes the boat feel unresponsive as the wind lightens. The boat tends to sail itself away from the wind. In light air, it just won't go. You can minimize leehelm in light air (induce weatherhelm) by making one or more of the following adjustments:

- o Lower the centerboard to a vertical position
- o Heel the boat by sitting on the leeward side
- o Position the helmsman and crew well forward
- o When there are only vespers of a breeze and the water has glassy ripples, flatten the Main as much as possible but ease out the main sheet. Never use excessive main sheet tension in light-air.
- o Ease the jib sheet while tightening the main sheet
- o Don't try to point too high
- o Watch for changes in wind direction (wind shifts)

Mast Rake

The Javelin sails fastest in a wide variety of wind conditions when its mast is set nearly vertical to the waterline. This minimizes weatherhelm. The mast rake in the newer model Javelin is factory set to about 18 inches (measured from the gooseneck to a freely hanging Main halyard). Unless corrected to about 6 inches (see Recommended Adjustments), you may find it necessary to compensate for excessive weatherhelm in strong winds.

Centerboard Position

The centerboard should be able to drop to vertical when beating to windward in light wind conditions (1-6 knots). Unfortunately, the centerboard in the newer model Javelin drops only to 2/3's down. Unless corrected, you may find it necessary to compensate for excessive leehelm in light air. This is especially true if you removed some mast rake. (The Javelin appears to sail best to windward when the centerboard and mast are nearly vertical.)

A popular misconception about the centerboard is that it adds stability to a boat, especially in brisk winds. "The heavier the board and the lower its position, the safer and more stable will be the boat's performance." This is NOT necessarily so. The primary purpose of the centerboard is to prevent side-slipping. If the wind should increase well beyond whitecapping, consider raising the centerboard to a 2/3's up position, even when beating. First, this reduces weatherhelm. But more important, side-slipping reduces the heeling force of a sudden gust of wind. There is less chance of a knock-down. If you should find yourself planing or about to plane, raise the board to 2/3's up. Planing with the centerboard down is a sure way to capsize.

Position of the Rudder Blade

Sail with the rudder blade vertical. A swept-back rudder blade greatly increases weatherhelm as the wind increases to whitecapping. If necessary, tighten the rudder's pivot bolt.

If your boat has leehelm in light air, tilting the rudder blade back may reduce leehelm.

Crew Position

The Javelin performs best when floating exactly on its waterline. This requires that helmsman and crew be positioned as close to the boat's center of gravity as possible. In light air, sit further forward to add weatherhelm; in brisk winds, sit further aft to lessen weatherhelm.

The newer model Javelin is stern-heavy, so sit as far forward as possible. Consider adding a tiller extension.

The side-to-side position of the crew is also important. Obviously, hiking out in a brisk wind will help keep the boat from heeling. In very light air, sit on the leeward side to heel the boat as if you had some breeze. Besides leading others to believe that you have more breeze than they (obviously, because the boat is heeling), gravity holds curvature in the sails when the boat heels. When a zephyr of light breeze flows over your sails, it will not be wasted "shaping" the sails before making the boat go.

Tacking

Movement of skipper and crew can help or hinder tacking. Your movement can accentuate the boat's natural tendency for a crisp sharp tack with little loss of speed. You can make a smooth smart tack by adding heel going into the turn, pausing, then smoothly shifting position to the new windward side after the bow passes through head-to-wind. Practice, timing and a perception of the boat's natural tendency will improve your tacking.

The more courageous should consider roll-tacking. When going into the turn, purposely heel the boat to add weatherhelm. The boat will head into the wind. Do this by coming in from the rail and/or by shifting weight to the leeward side. When head-to-wind, hike back out momentarily on the old windward side. This pumps the Main across to the opposite side. Then quickly shift position to the new windward side and hike out hard to prevent an excessive momentary heel on the new tack. With practice, the tack can be made with little help from the rudder.

Summary of Sailing Tips

Here is a summary of tips to help you sail better.

If You Have this Problem

The boat is sluggish to windward in light air

Consider these solutions

You have a lee helm problem

- o Lower the centerboard all the way
- o Sit well forward to keep the transom out of the water
- o Heel the boat to leeward to let gravity shape the sails
- o Be constantly aware of wind direction and sail set
 - Let out sails til they luff. Then pull in a little.
 - When close hauled, don't over sheet the sails.
- o Concentrate on boat speed, less on pointing.

If these measures do not solve the lee helm problem, then consider changing the centerboard cable to let the centerboard drop more nearly vertical.

You have to tug on the tiller too much when beating

You have a weather helm problem

- o Raise the centerboard to 2/3 down
- o Be sure that the rudder blade is not swept back
- o Hike out to keep the boat from heeling more than 15°
- o Tighten the outhaul (foot tension) and Cunningham (luff tension) to flatten the Main
- o Ease the mainsheet a little
- o Tighten the jibsheet a little more
- o Sit a little further back in the boat

If these measures do not alleviate the weather helm problem, then consider raking the mast further forward after returning to shore.

If the boat seems slow on a reach or run

- o Set the centerboard about 1/3 down (reach) or less (run)
- o Let the sails out til they luff. Then sheet in a little. The jib is especially crucial. Play it constantly.
- o When running, set the Jib on the opposite side to the Main with a whisker pole
- o Ease the outhaul
- o Sit well forward
- o Concentrate on wind direction and sail set

Safe Sailing

The saying "An ounce of prevention is worth a pound of cure" is particularly applicable to sailing: not so much a "Let's not go" as "Let's go safely." For example, sail upwind on the first part of the excursion when you're fresh and have plenty of time. Coast home downwind or on a reach when you are tired or in a hurry. Be familiar with the sea breeze or lake effect where the difference in temperature between land and water sets up a local wind condition different from the prevailing wind. It may cause a sudden shift in wind velocity and direction in the morning and again in the late afternoon.

Listen to local weather reports for approaching squalls, fronts, or thunderstorms: especially in summer when afternoon thunderstorms are possible. Sail along the shore if you are sailing on a particularly large body of water. Sail in the company of one or more boats of your class. Don't overload your boat.

Dress appropriately. Air temperature over water in Spring and early Summer can be considerably cooler than over land. Be familiar with hypothermia, the effect of cold water on the body's ability to function. Hypothermia can be lethal. It's a matter of time and water temperature. Always wear a vest-type life jacket, hat, and sun screen.

If by chance the misfortune of a squall, thunderstorm, or some other adverse wind and wave conditions should overtake you, there are ways to cope. Consider the following and keep them in mind because they could guard against injury and/or damage to your boat.

- o Raise the centerboard to 1/3 down, even if beating
- o Avoid running with the wind
- o If your destination is to windward, ease the mainsheet to spill air. Let the Main luff and flog if necessary to keep the boat from heeling excessively
- o Drive on the Jib
- o If your destination can be reached on a beam reach or broad reach, sail on the Jib alone. Drop the Main and stow it before the squall hits
- o If conditions are too severe and you are NOT in danger of being blown onto a rocky shore, drop and stow both the Main and Jib. Secure the anchor line to a bow cleat or around the mast and drop anchor. The anchor will drag so give it plenty of line. If there is lightning, sit in the stern as far from the mast and sidestays as possible.

In the Event of a Capsize

A capsize can be more sudden and violent when running than when beating. Therefore, steer somewhat into the wind if the wind is getting too strong. (See **Safe Sailing**, above.)

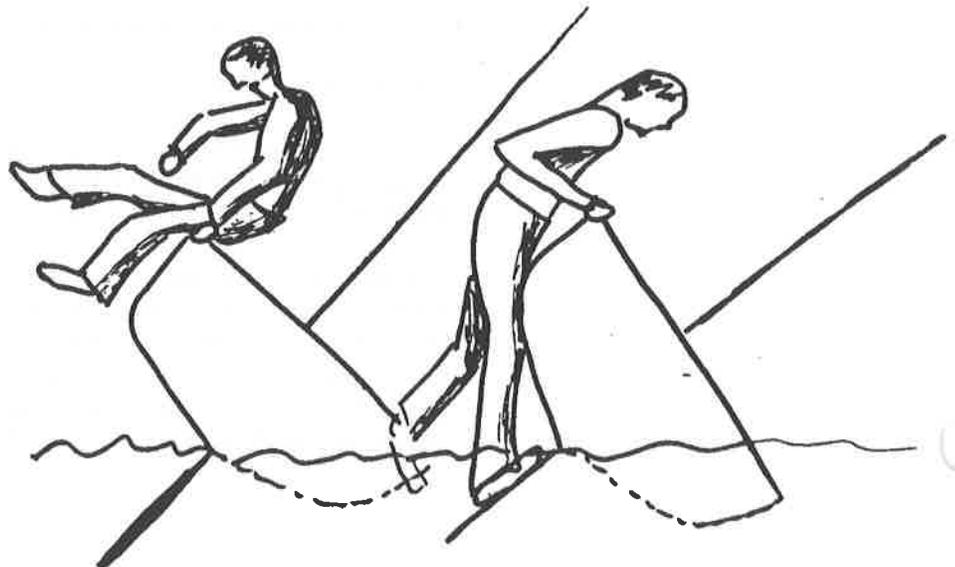
The newer model is self rescuing. When uprighted by skipper and crew, the cockpit will drain quickly, provided the cuddy door remained closed and water did not enter the lower bilge. The older model fills like a bath tub and is difficult to bail once uprighted. Try to keep either model from turning turtle (bottom up). Once this happens, you may need assistance from a motorboat to turn the boat upright. Equipment may sink or drift away. There is risk of damage to mast, rigging, and sails.

Once the angle of heel exceeds the critical angle of about 45° , the rudder can no longer turn the boat into the wind. Even if the main sheet is released, the boat may continue to heel until capsized. The action taken by the skipper and/or crew at the critical angle of heel may determine whether or not the boat will turn turtle.

Get to the Centerboard

If the skipper and crew have been hiking out, chances are good that one or both can swivel around over the side and plant a foot on the centerboard while holding the gunwale (figure 2-5). This must be done almost as a reflex action as the boat passes the critical angle. Otherwise, one or both people will drop into the water on the wrong side. At this point there is still a chance to reach the CB before it disappears into the trunk where it is very difficult to pry out. If you previously installed a CB safety stop, the CB should stay flush with the trunk opening so you can pry it out. See **Boat Modifications**, chapter 3.

Figure 2-5
Reacting to a Capsize



a) Swing over the side

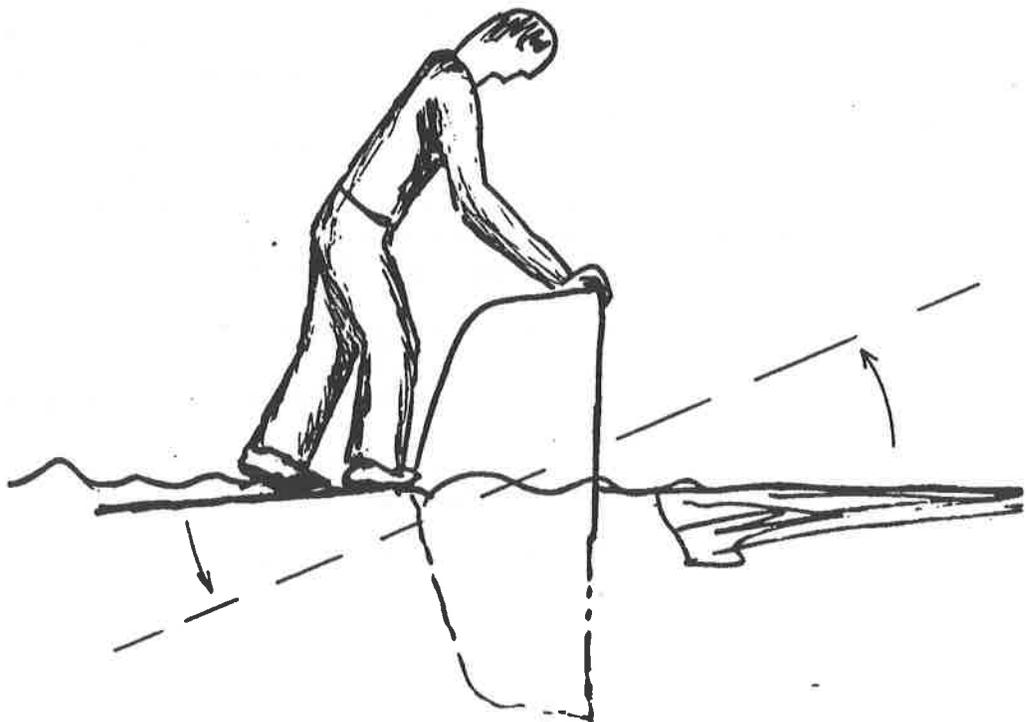
b) Planting a foot on the centerboard

Uprighting the Boat

With one person on the centerboard, proceed as follows to upright the capsized boat (if it has not turtled).

- o Release the CB line and fully extended the centerboard
- o Release the main sheet and jib sheets
- o Grab the masthead and swim the boat around to point the bow into the wind
- o Standing on the centerboard and holding onto the gunwale, lean back to increase the uprighting force. The sails will slowly break loose from the water (figure 2-6).
- o Flop into the boat as it comes upright
- o (old model) Drop the main and carefully attempt to sail the boat toward a leeward shore on Jib alone. Bailing the boat will be difficult because the gunwales will be awash
- o (new model) Sail on a reach to drain water from the cockpit. If the boat has water in the bilge, sailing will be tedious.

Figure 2-6
Uprighting a Capsized Boat



**Help from
a Motorboat**

We recommend that you upright the boat yourself before accepting help from a motorboat. An inexperienced motorboater could do more harm than good. See **Uprighting the Boat**, above.

CAUTION: Avoid towing a capsized boat. Damage to mast, sails, and rigging may result if you do not upright the boat first.

Once you have uprighted your boat, ask the motorboat to tow you in, especially if you are cold and fatigued.

- o For towing, drop sail
- o Raise the centerboard to 1/3 down
- o Steer as the boat is being towed

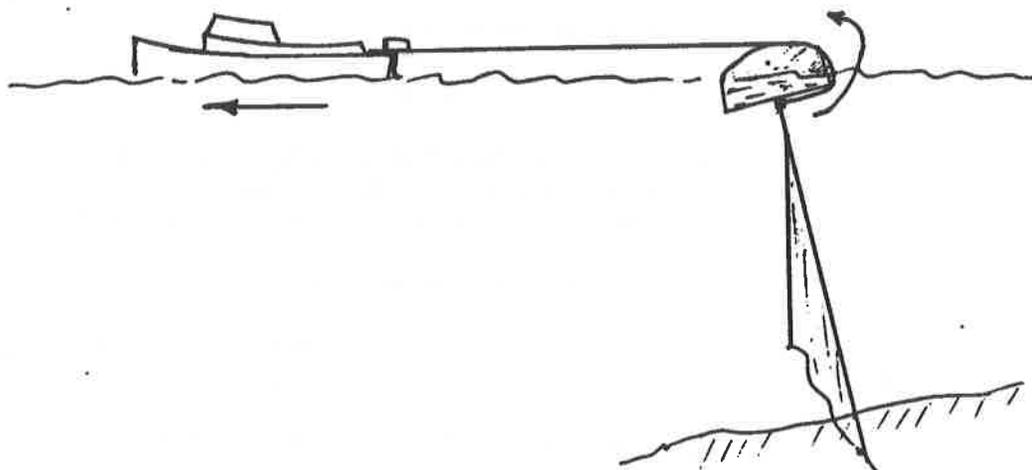
**Rescuing a
"Turtled" Boat**

If the boat should turn turtle, you will need assistance from a motorboat. Proceed as follows:

CAUTION: Do not tow a turtled boat. Damage to mast, rigging and sails may result. Upright the boat first.

- o With a free line in hand, go underwater and loop it around the mast, between the deck and tabernacle
- o Return to the surface with the free end of the line
- o Toss the line to the opposite side of the boat
- o If the line is too short, attach an extension
- o Toss or swim the line to the motor boat
- o Ask the motorboat to pull the boat upright in the direction perpendicular to the capsized boat so it will rotate as it is being pulled (figure 2-7)
- o If the boat is partially turtled with the masthead in the mud, pull the boat in the direction toward deeper water (opposite to the direction the mast is pointing)
- o Once upright, one person should steady the boat as the other drops sail
- o If you are fatigued or cold, ask the motorboat for a tow

Figure 2-7
Motorboat Assistance Uprighting a "Turtled" Boat



Putting It All Together

If you feel that you have a well-balanced boat and you are restless to conquer a new sailing goal, try this challenge: remove the rudder and sail the boat on all points of sail by applying weatherhelm and leehelm to steer the boat. Sailing without a rudder is fun.

You may wish to start by leaving the rudder attached but not using it. The following will help you get started.

- o Start with the centerboard in a half-way position, on a reach, with a 4-6 knot breeze
- o Stand on the deck next to the mast where you can easily shift your weight holding the main and/or jib sheets in one hand (or mouth) and the mast or sidestay with the other.
- o Observe the effect of shifting your weight laterally:
 - Out for weatherhelm, the boat heads up
 - In for leehelm, the boat bears off
- o Observe the effect of sheeting the Main:
 - In for weatherhelm, the boat heads up
 - Out for leehelm, the boat bears off
- o Observe the effect of sheeting the Jib:
 - Out for weatherhelm, the boat heads up
 - In for leehelm, the boat heads off
- o Observe the effect of centerboard position:
 - Down for weatherhelm, the boat heads up
 - 2/3's up for leehelm, the boat bears off

Next try gybing. With centerboard half down, bear off from a beam reach by inducing lee-helm:

- o Shift your weight out board
- o Ease the Main sheet
- o Tighten the Jib sheet
- o When the boat goes stern-to-wind, gybe the Main, cross the boat, stand on the rail, and lean out to prevent the boat from heading up too fast on the opposite tack
- o Settle the boat down to the new beam reach

Last try tacking up wind. Work with the CB line, jib sheets, and shifting your weight. Start on a beam reach.

- o Lean out to head up. Unsheet the Jib
- o Drop the board to turn the boat
- o Cross over when head-to-wind and sheet the Jib
- o Partially raise the board to maintain the new course
- o Steer by shifting your weight

You may very well experience going around in circles the first few attempts at tacking. Or, if you don't drop the centerboard, the boat may head up and stall putting you in irons. Be persistent. After a while you'll get the hang of it. When you do, it may become your sailing obsession.

Chapter 3 Recommended Boat Modifications

Evolution of the Javelin

The O'Day Company changed the boat's deck design and equipment layout twice subsequent to the boat's introduction in 1960. The purpose of the changes was to keep up with developments in the industry while maintaining the one-design character of the boat. Thus the rationale for some variation between Javelins.

The O'Day Company is no longer in business. To fill the void concerning technical assistance and repair information, the Javelin Class Association (JCA) authorized the formation of Beechlers Brook Boats by Gay and Dan Miller who have been actively involved in the JCA since its inception. Beechlers Brook Boats has introduced a number of kits to make the Javelin easier and safer to build. Kit modifications are intended to remain within the framework of overall character that O'Day defined for the Javelin during its evolution.

The Javelin Class Association takes pride in the design and simple rigging. It was designed as a day-sailer-cruiser that you can race if you want to. Many years of sailing and racing experience have contributed to modifications that the JCA recommends to improve the boat's:

- a. performance
- b. safety
- c. handling

Modifications You May Want to Consider

This chapter recommends solutions to performance, handling, and/or safety problems that you may encounter. Use the following table to identify problems and locate sections in the text that recommend solutions.

CAUTION: The Javelin is a well-designed boat that does not require modification. Our recommendations are the result of personal experimentation and the exchange of ideas and suggestions at JCA events.

Neither the JCA nor Beechlers Brook Boats is responsible for any problems or dissatisfaction resulting from your adaptation of these recommendations. You must be the sole judge as to whether a recommendation is suitable to your needs, and you must understand that if you make a modification, it is done at your own risk and expense.

For photos and descriptions of Recommended Boat Modifications found in this chapter, go to this website contributed by Mike Caskey: WWW.caskeyconstructioncompany.com/sonrise_1.htm

If You Have this Problem	Consider this Modification	On Page
	<u>For Convenience</u>	
The centerboard is difficult to raise	Convert to an easy-raise centerboard system	3-3
Raising the mast is a chore	Add a tabernacle (mast hinge)	3-4
The jib sheets hang up on the mast or O'Day tabernacle when tacking	Add a preventer	3-5
You prefer to drop sails faster	Change the halyard cleats	3-6
The rudder latch fails and/or you lost your rudder	Add a rudder safety stop Spare Parts, chapter 5	3-7
You want to hoist the boat	Add a lifting bridle	3-7
	<u>To Improve Your Sailing Performance</u>	
You cannot read the apparent wind	Add telltails	3-9
You can't shape the Main underway	Add an adjustable outhaul Add a Cunningham	3-9 3-10
Skipper and crew position hinder optimum boat balance	Add hiking straps Add a tiller extension	3-11 3-11
The boom rises and the main spills air on a reach	Add a boom vang	3-12
Sheeting the main is difficult because the lines twist and the swivel binds up	Convert to end-boom sheeting or 4:1 mid-boom sheeting with ball-bearing blocks	3-14 3-16
Mainsheet lines interfere with tiller extension when tacking	Move the main and jib sheet cleats forward	3-18
Jib sheets hang up in the cleat	Improve jib cleating system	3-18
The boat has too much weatherhelm in a 10+ knot breeze	Rake the mast forward	3-19
The centerboard slides beyond reach into the CB trunk when turtled	Add a CB safety stop	3-21
	<u>General Repair</u>	
The mast is bent, or bows on one tack more than on the other	Repair mast bend	3-20
Cuddy floor is deteriorating	Rebuild the floor	3-21
	<u>Spinnaker</u>	
You want to try a spinnaker	Add spinnaker equipment	22

Convert to Easy-raise CB System (new model)

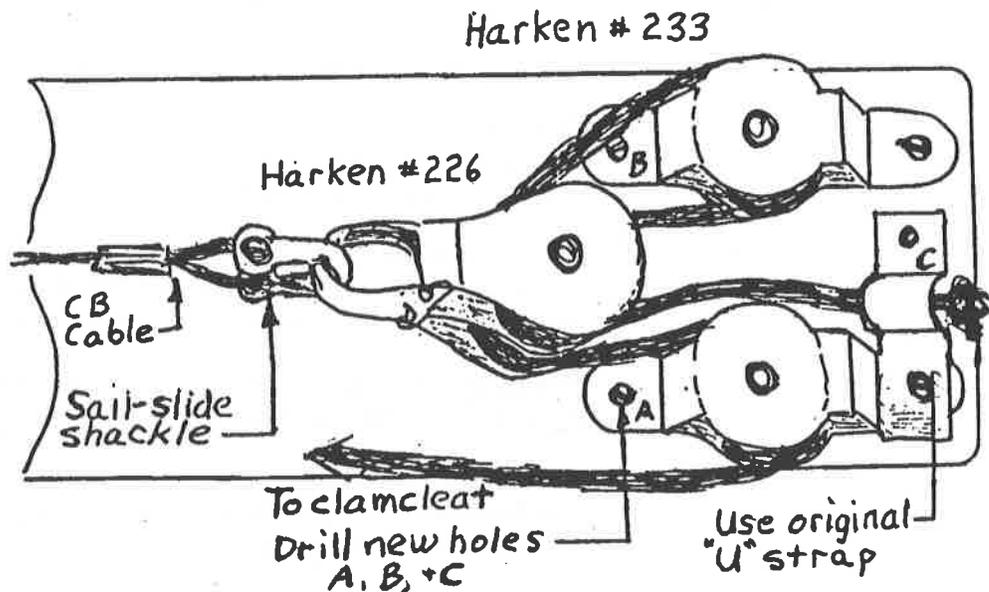
If you find the centerboard difficult to raise, you can change to an easier CB adjustment by converting to a 4:1 ball-bearing block and tackle system as follows:

- o Replace the three bullet blocks with four miniature ball bearing blocks. They roll noticeably easier under load.
- o Replace the horn cleat with a clam cleat.
- o Replace the block-and-tackle line with a new 1/4" dia. nylon or dacron line, about 10 feet long.

Parts Required:

- 2 Harken #233 micro cheek blocks
- 1 Harken #226 micro double block
- 1 Clamcleat CL-207
- 1 Shackle NF-1015
- 10 feet of 1/4" dia line

Figure 3-1
4:1 Ball-Bearing CB System



Follow these steps:

- 1) Remove the old cable from the running block.

CAUTION: Do NOT cut the cable loop. Cut the block.

- 2) Replace the two forward fixed blocks with ball bearing cheek blocks. Use the same screws and forward holes. Drill new aft holes for the cheek blocks.

- 3) Mount one of the old "U" straps between the cheek blocks as the attachment point for the new CB line.
- 4) Connect the double block to the CB cable with the sail-slide shackle.
- 5) Wind the new 10-foot CB line thru the blocks starting at a "U" strap at the front of the CB trunk.
- 6) Replace the old horn cleat with the clam cleat.
- 7) Mark the CB trunk for CB positions of 1/3, 1/2, and 2/3 down.
- 8) Re-use the original bullet blocks for an adjustable outhaul or for a Cunningham adjustment.

Add a Mast Tabernacle

Raising the mast is considerably easier with a tabernacle. Installation requires that you cut the mast.

- o For the new model, cut it a couple of inches above the deck (28" above the bottom end of the mast).
- o For the older model, cut it at deck level.

The lower section remains permanently in place. You attach the base of the cut mast to the tabernacle (hinge) and pivot the mast up into position.

You should also remove a short section from the bottom of the cut mast (not from the mast stump) equal to the thickness of the tabernacle so the shrouds fit as before installation.

The original O'Day tabernacle is no longer available. We

For an alternative tabernacle, contact
danreiber4@gmail.com.

Daye Aluminum
21 Commerce Dr.
No. Bradford Ct 06471 - Stock tabernacle consisting of:

Raised Mast Stop D211 IH
Mast Stop Casting D211 I

You must assemble the two pieces before installing.
Instructions specifically for the Javelin are not included.

Prevent Jib Sheet Hangup on the Mast (new model)

You can prevent the jib sheets from hanging up on mast cleats or tabernacle by running a short piece of nylon line or shock cord diagonally from the mast to the deck. Make it easily removable when taking down the mast.

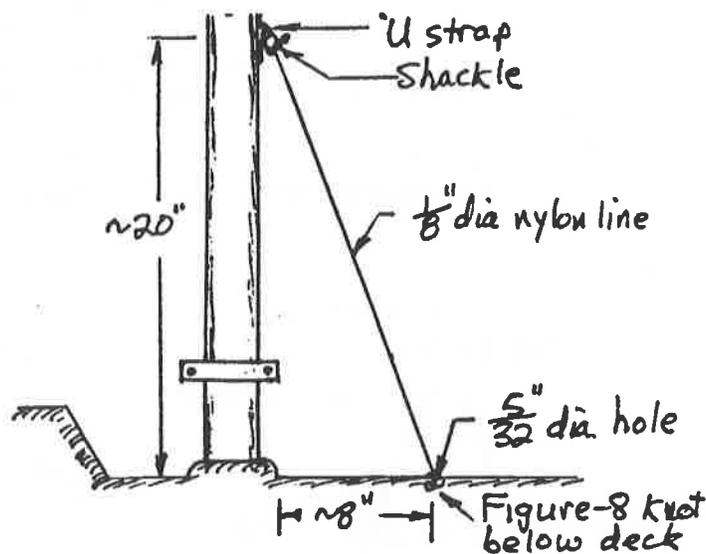
Parts:

- 1 small shackle NF-1008
- 1 "U" strap RL-313
- 2 #8 x 5/8" ss sheetmetal screws
- 2' 1/8" dia nylon line or 1/4" shock cord

Install it as follows:

- 1) Connect the "U" strap to the front of the mast about 20" above the deck (figure 3-2).
- 2) Drill a 5/32" hole (9/32" for shock cord) in the center of the deck, about 10" in front of the mast.
- 3) Push the end of the line or shock cord thru the hole and tie a figure-8 knot to secure it.
- 4) Connect a shackle to the other end of the line so that you stretch it slightly when connecting to the "U" strap.

Figure 3-2
Jibsheet Preventer



Quick-release Halyards (new model)

You may want to add a pair of cam cleats and turning blocks for faster and more convenient halyard operation. This also lets you easily adjust jib halyard tension under sail to improve boat speed to windward. Increase halyard tension just enough to prevent the jib luff from scalloping between hanks that hold the jib to the forestay.

If the wind is
light
strong

Then
ease luff tension
tighten luff tension

You prolong sail life by not over-tensioning the luff.

Parts:

2 Cam Cleats, Racelite RL 260 or Harken #200
2 Harken Micro Cheek Blocks #233
4 #8 x 5/8" ss selfthread screws

Install them as follows:

- 1) Install the cam cleats on the splash guard (figure 3-3), about three inches from the center (port and starboard).
- 2) Install the cheek blocks on the port and starboard sides of the mast just below the tabernacle. Locate them a little forward of center so the halyard exits the block in a direction toward the cam cleat (figure 3-4).

Important: Mount cheek blocks below the tabernacle. Otherwise, the halyards may interfere with the boom vang or enter the cam cleat from too steep an angle.

Figure 3-3
Position of Cam Cleats

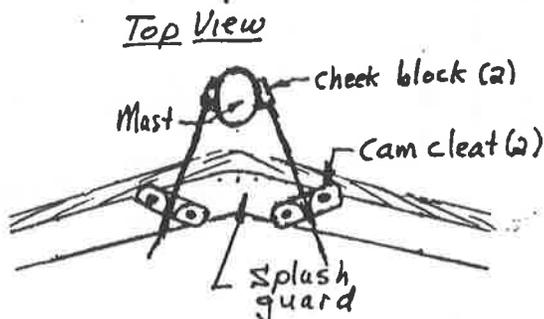
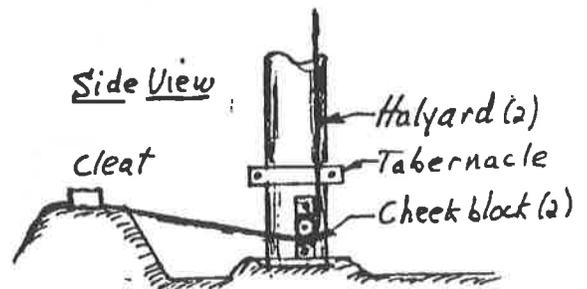


Figure 3-4
Position of Cheek Blocks



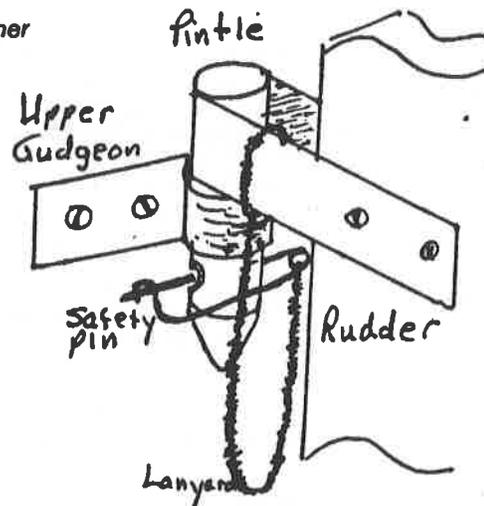
Change the Rudder Safety Latch (old model)

If you capsize and the boat turtles, the rudder can slide off the gudgeons and sink if the latch fails. Check it.

Consider replacing the tab with a safety-pin type retainer used to retain the chainplate clevis pins. Many newer model Javelins are already equipped this way (figure 3-5).

Drill a 1/16" dia hole near the bottom of the upper pintle. Lock the rudder in place with a retainer pin tethered to a 12" line connected to the rudder at the upper pintle.

Figure 3-5
Rudder Retainer



Add a Lifting Bridle (new model)

You can make an inexpensive lifting bridle that stows in the cuddy. The 3-part bridle fastens permanently inside the cuddy door (2 legs), and at the rear of the CB trunk with a removable shackle. Each leg of the nylon bridle is 4' long.

Parts Required:

- 1 3" dia x 1/2" thick welded iron ring
- 3 spinnaker halyard straps RL-318
- 3 screw-pin shackle NF-12425
- 2 #10 x 5/8" ss selfthread screws
- 4 #10 x 24 1" machine screws, nuts, & lockwashers
- 15' 3/8" dia nylon line

Follow these steps:

Make the bridle

- 1) Cut the 3/8" dia line into two pieces and seal the ends: 9' long and 6' long.
- 2) Find the center of the 9' line and attach it to the ring with a hitch (figure 3-6).

- 3) Tie one end of the 6' line to the ring with a bowline.
- 4) Tie the other end of the line to the screw-pin shackle with a bowline so the length of the leg is 4'. You may need to adjust the length of this leg later.

Attach the bridle

- 5) Mount a spinnaker halyard strap to the rear sloping surface of the CB trunk with 2 #10 x 5/8" ss selfthread screws. Place it about 2" from the top (figure 3-7).
- 6) Attach screw-pin shackles to spinnaker halyard straps, and tie a free end of the bridle to each with a bowline.
- 7) Mount the spinnaker halyard straps about 1" beyond each side of the cuddy hatch opening (port & starboard) and about 2" below the bottom of the opening (figure 3-7). Angle them slightly so both screws line up with the anticipated angle made by the bridle leg. Use #10 x 24 machine screws, lockwashers, and nuts. Tighten them, and add another nut as a locknut.

WARNING: Check that all three legs of the bridle are secure before using to guard against unexpected parting with possible personal injury and/or damage to the boat.

Never stand beneath a hoisted boat!

Figure 3-6
Bridle Hitch

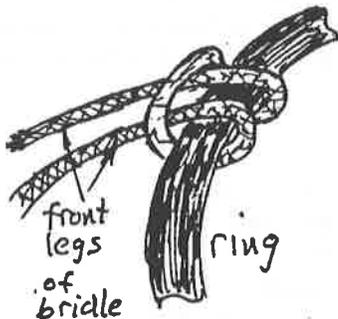
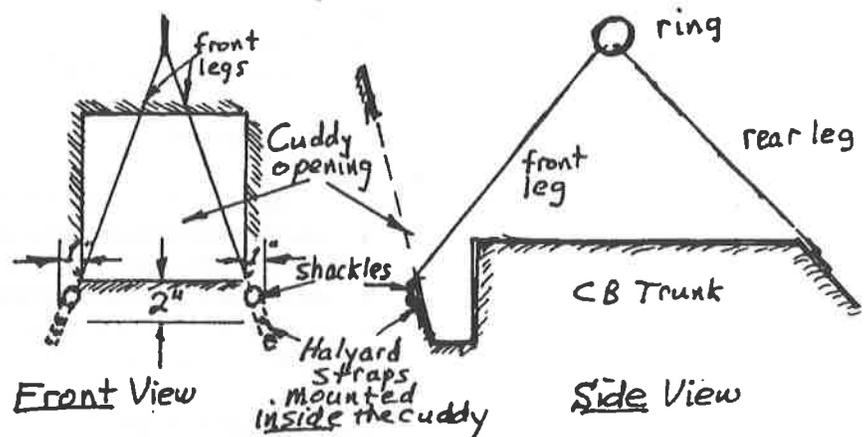


Figure 3-7
Bridle Attachment Points



Final adjustments

- 8) If the bow hangs too low, lengthen the rear leg.
- 9) If the stern hangs too low, shorten the rear leg.

Add Telltails

Telltails on sidestays indicate the apparent wind direction. Tie a 6" length of light fuzzy knitting yarn to each sidestay about 5 feet above the deck.

Jib telltails help you steer when beating to windward. They indicate if you are pointing too high (windward visible telltail is fluttering up and down) or pointing lower than necessary (shadow of the leeward telltail is fluttering up and down). Correct steering is indicated when the windward visible telltail is alternately flicking downward or horizontal, and the shadow of the leeward telltail is streaming aft.

Jib telltails aid the crew when the skipper is holding course. They indicate whether the Jib is in too far and stalled (windward visible telltail is fluttering) or out too far (shadow of leeward telltail is fluttering). Correct sail set is when both are streaming aft with little motion.

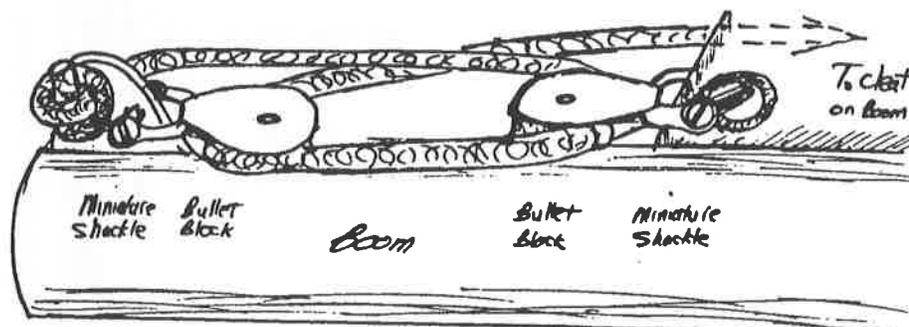
Cut Jib telltails from 6" lengths of audio cassette tape or light fuzzy knitting yarn. Attach them to the jib luff with electrical tape approximately 5" aft of the luff wire and 3 feet above the deck. Attach an optional second pair 5" from the luff wire and 6 feet above the deck.

Add an Adjustable Out-haul

Adjusting the Main's flatness or fullness with an outhaul can increase boat speed. Flatten the main when beating to windward, when the wind is whitecapping or is 2 Kn or less. Ease the outhaul when reaching or running.

Install a block and tackle with a 2:1 mechanical advantage by adding a small bullet block to the end of the boom. Connect the block to the smaller of the two holes in the end-boom casting with a small shackle, and connect an 8' length of 1/4" line to the larger of the two holes in the casting. Run the line forward thru the grommet at the clew of the Main, back thru the block on the end of the boom, then forward to a clam cleat with fairlead mounted to the underside of the boom about 2 feet from the gooseneck.

Figure 3-8
Adjustable Outhaul



Add a Cunningham

The Cunningham lets you position the point of maximum draft in the Main according to wind strength as follows:

If the wind is
light
strong

Then
Ease luff tension
Tighten luff tension

Often, the sail manufacturer installs a Cunningham grommet about 7" above the tack grommet.

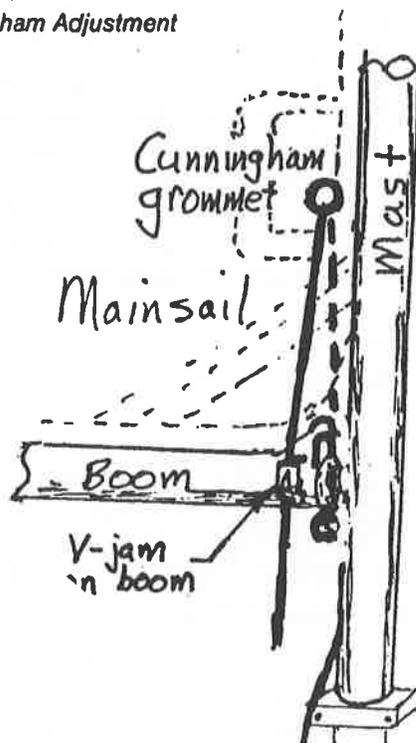
The curvature of the Main should have its maximum draft about 40% from luff to leach. A tight luff prevents the center of curvature from being blown aft in high winds. Ease tension as the breeze lightens. A blown-out Main has this location permanently shifted aft.

Install a downhaul with a 2:1 mechanical advantage. If your sail does not have a Cunningham grommet, sew a small bullet block securely to the luff seam, instead. Connect a V-jam to the boom just aft of the gooseneck. Use about 2' of 1/4" line anchored to the ring in the gooseneck (figure 3-9). You may want to turn the gooseneck upside down so the ring side is up. Use the vang to prevent the boom from sliding up the mast.

Parts Required:

- 1 V-jam NF-359
- 2 #6 x 1/2" ss selfthread screws
- 2' 1/4" dacron line

Figure 3-9
Cunningham Adjustment



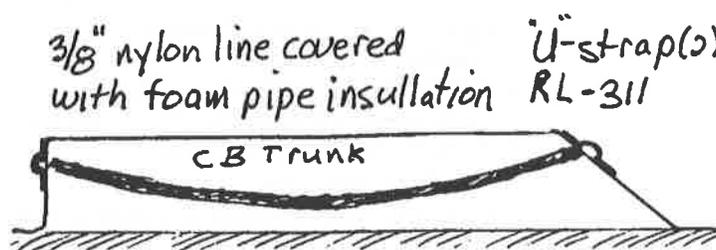
Add Hiking Straps

Hiking straps let helmsman and crew hike out by extending as much of their weight beyond the gunwale to windward as possible to counterbalance the heeling force of the wind.

Straps should be adjustable and positioned to minimize the possibility of tripping on them. Bolt them to the transom just above the water line or to the CB trunk. Connect the other end to the front of the CB trunk or to the cowling below the cuddy hatch. Use turnbuckles or a bowline knot to adjust their length. Some people prefer straps that are loose enough to lie on the floor of the boat. Others prefer straps that lie flat against the side of the CB trunk.

Helmsman and crew should position themselves in the boat, think through and try out various hiking strap arrangements before mounting them permanently.

Figure 3-10
Typical Hiking Strap Configuration for the New Model



Becher's Brook Boats - Price depends on your boat model and personal preferences. Please inquire.

Add a Tiller Extension

The tiller extension lets the helmsman sit well forward and hike out. Often the helmsman cannot sit at the optimum position without it. The tiller extension can be fixed in length or adjustable depending on cost and preference.

Mount it to the tiller the length of your fist aft of the end so you can grasp the tiller with out interference when NOT using the extension.

Becher's Brook Boats - Tiller Extension, adjustable with stainless steel universal joint.

Add a Boom Vang (new model)

The boom vang prevents the boom from rising and causing air to spill from the Main when sailing on a reach. It also keeps the boom from swinging wildly during a gybe. It is important to racing because it increases boat speed.

The Javelin's boom vang should:

- o have a 3:1 mechanical advantage
- o connect to the mast as close to the deck as possible
- o disconnect quickly from the boom

Typically, a boom vang should have a stainless steel cable at one or both ends. Fabricating the cable requires special tools. If you do not have access to them, we recommend that you purchase a kit specifically designed for the newer model Javelin with mast tabernacle.

Parts Required:

- 1 Fiddle block with V-jam NF-463
- 1 Block with becket NF-548
- 1 Shackle NF-1015
- 2 thimbles for 3/32" dia cable
- 3 Nico-press sleeves for 3/32" dia cable
- 20" 7x19 3/32" dia ss cable
- 4" 1/4" dacron line
- 1 4" x 1/2" dia aluminum pipe (spreader stock)

Tools Required:

- Nico-press swaging tool
- Cable cutter
- Electric drill & bits
- Screw driver
- 1/8" dia rat-tail file
- flat file
- hack saw

Figure 3-11
Lower Cable & Fitting

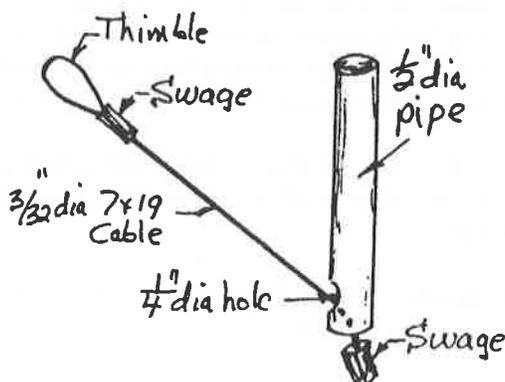
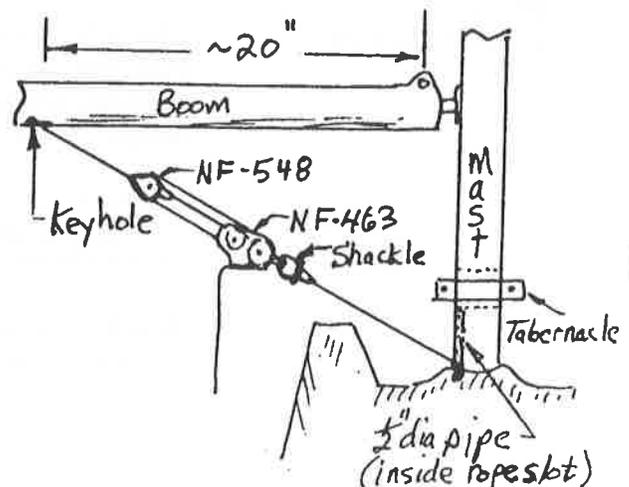


Figure 3-12
3:1 Boom Vang



Follow these steps:

Lower cable

- 1) Swage a thimble onto one end of a 13" 3/32" dia cable. Final length is about 10".
- 2) Measure the distance from the bottom of the tabernacle casting (that slides into the mast stump) to the deck. (The pipe in the next step will butt up against it.)
- 3) Cut the 1/2" dia pipe to this length plus 3/4".
- 4) Drill a 1/4" dia hole in the pipe, 3/8" up from the bottom.
- 5) Insert the other end of the cable thru the 1/4" dia hole in the pipe, and swage a ball or Nico-press sleeve to prevent the cable from pulling out. (figure 3-11).
- 6) Remove the mast stump, insert the pipe into the rope slot, slide it up to the tabernacle, and re-install the mast stump so the cable exits the mast hole just below deck level (figure 3-12).
- 7) With a shackle, attach the thimble-end of the lower cable to the fiddle block.

Upper Cable

- 8) Swage a block with becket to a 7" length of cable with a thimble and Nico-press sleeve (final length is about 5").
- 9) Swage a ball or Nico-press sleeve to the other end.
- 10) Drill a 3/8" dia hole in the underside off the boom, 20" from the gooseneck.
- 11) With the 1/8" dia rat-tail file, file a keyhole in the boom, extending forward 3/8" toward the gooseneck.
- 12) You insert the ball-end of the cable in the keyhole for a quick connection when setting up the vang.

Install the vang line

- 13) Tie the line to the block-with-becket, and wind the line thru the blocks ending at the V-jam in the fiddle block.

Convert to End-boom Sheeting (new model)

If you sail in 10+ knots of wind periodically and find that sheeting the Main is difficult, consider converting to:

- o end-boom sheeting described in this section
- o 4:1 mid-boom sheeting described in the next section

With end-boom sheeting, the mainsheet cleat swivels more freely in heavy wind, and sheeting the Main to windward is easier. End-boom sheeting has the disadvantage that gybing is more difficult because longer lines from the end of the boom can catch on an outboard motor (if you use one).

End-boom sheeting also lets you move the mainsheet cleat forward without losing mechanical advantage.
(see **Moving Main and Jib Sheet Cleats Forward**)

Parts:

- 1 Swivel block with becket Harken #169
- 2 Swivel bullet blocks Harken #168
- 1 Bail (block hanger) NF-130
- 4 #8 x 1/2" ss flathead self-threading screws
- 1 Bridle: 6' braided line
- 1 Mainsheet: 30' braided line

Follow these steps:

Remove the old mainsheet

- 1) The old 3/8" dia mainsheet is too short. Keep it in tack should you want to change back at some future time.

Install the bridle

- 2) Attach bullet block to center of the bridle with a hitch (figure 3-13). Make cleat-to-block distance about 33".
- 3) Slide each end of the bridle thru the hole in the aft deck cleats and tie a figure-8 knot (figure 3-14). If the cleat hole is too large, tie each end with a bowline knot.

Figure 3-13
Connect Block to Bridle

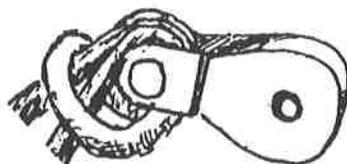
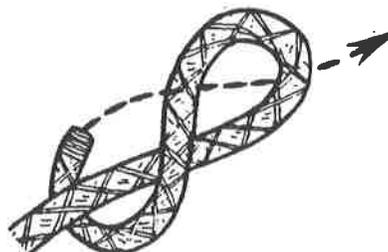


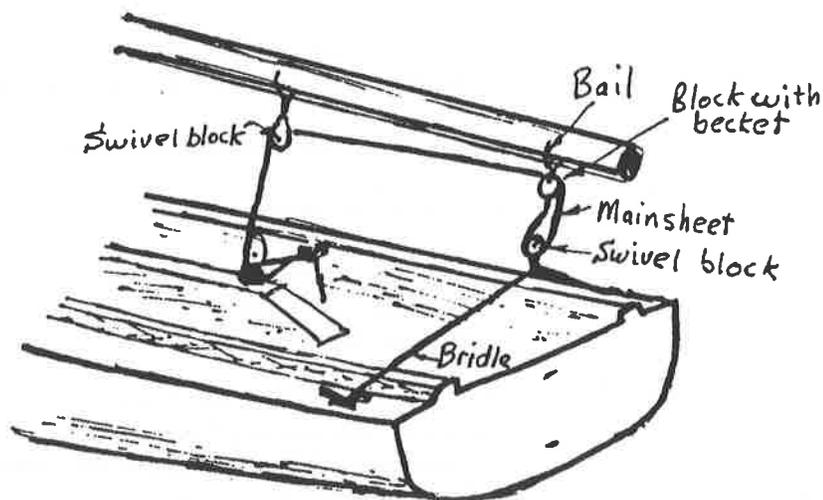
Figure 3-14
Figure-8 Knot



Connect the blocks and mainsheet

- 4) Raise the mast and Main to hold the boom in position.
- 5) Slide a swivel block with becket onto the bail and attach it near the end of the boom directly over the bridle. Use a pair of screws (port and strbrd) so the bail can swivel.
- 6) Attach the other bullet block to the middle of the boom at the bail slide.
- 7) Tie one end of the mainsheet to the becket on the end-boom block. Then wind the mainsheet thru the other blocks and mainsheet cleat. (Top pulley on mainsheet cleat is empty.)

Figure 3-15
End-boom Sheeting



Final adjustments

- 8) The end-boom and bridle blocks should just come together when the mainsheet is cleated tight. Shorten or lengthen the bridle by re-positioning the figure-8 knots. Keep the bridle legs equal in length.
- 9) The end-boom bail will swivel when you tighten the mainsheet. Secure it in its final position with another pair of screws.

Sheeters Book Deals - End boom sheeting kit

4:1 Mid-boom Sheeting with Ball-bearing Blocks (new model)

With this system, you add three new ball-bearing blocks and a new mainsheet, but retain your mainsheet cleat.

Parts:

- 1 Block with becket Harken #126
- 2 Swivel bullet blocks Harken #168
- 1 or 2 Bails (block hangers) NF-130
- 1 "U" strap RL-313
- 4 #10 x 5/8" ss flathead self-threading screws
- 1 Mainsheet: 30' braided line

Tools: electric drill & bits, screwdriver

Follow these steps:

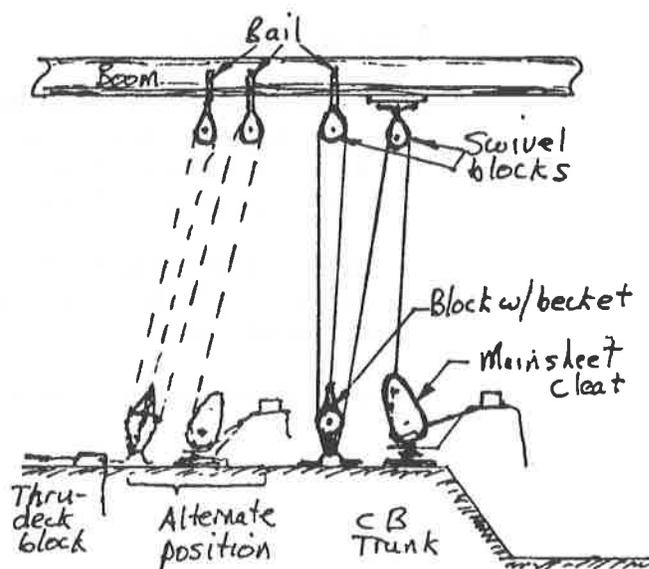
Remove the old mainsheet

- 1) The old 3/8" dia mainsheet is too short. Keep it in tack should you want to change back at some future time.

Connect the blocks and mainsheet

- 2) Raise the mast and Main to hold the boom in position.
- 3) Decide whether you want to move the mainsheet cleat forward or leave it alone. (see **Move Main and Jib Sheet Cleats Forward**).
- 4) optional - If moving the cleat forward, observe the angle of the mainsheet from vertical with the cleat in its new position. You could move the boom blocks forward but mechanical advantage is better for blocks further aft.

Figure 3-16
4:1 Mid-boom Sheeting



Important: If moving the mainsheet cleat forward, leave room for the block with becket between the mainsheet cleat and CB thru-deck turning block.

- 5) Mount the cleat with 4 #10 x 5/8" ss selfthread screws.

Important: Return the original 4 machine screws to their holes in the CB trunk, and tighten them.

- 6) (optional) Slide a swivel block onto a bail and mount it to the boom about directly above the mainsheet cleat in its new location. Use a pair of screws (port & starboard) so the bail can swivel.
- 7) Slide a swivel block onto a bail and mount it to the boom.

If the mainsheet
cleat is:

not moved

moved forward

Then mount
the new block

3" forward of the original block

3" behind the new block
(see previous step)

Use a pair of screws (port & starboard) so the bail can swivel.

- 8) Mount the other swivel block to the original block hanger.
- 9) Slide a block with becket onto the "U" strap and mount it to the CB trunk about 3" forward of the mainsheet cleat.
- 10) Tie one end of the mainsheet to the block with becket. Then wind the mainsheet thru the other blocks and mainsheet cleat. Omit using the mainsheet cleat's upper block.
- 11) The new boom bail may swivel somewhat when you tighten the mainsheet. Secure it in final position with another pair of screws.

Move Main and Jib Sheet Cleats Forward (new model)

The new model Javelin is heavier in the stern than the classic model. For good sailing performance you should sit as far forward as possible and use a tiller extension. However, the position of the main sheet cleat causes the main sheet to interfere with the tiller extension when tacking.

Consider moving the mainsheet cleat forward to a position just aft of the CB thru-deck block.

Then, you have a choice of jib sheet cleat locations:

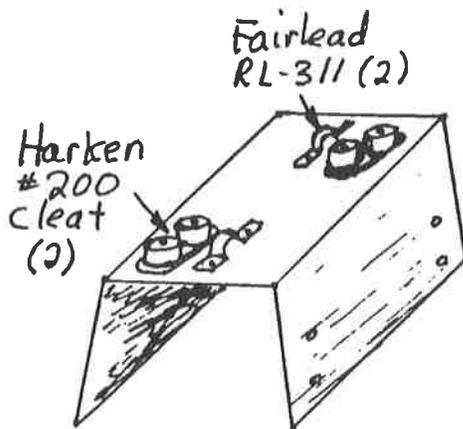
- o Leave them on the cowling track, but slide the cleat all the way forward. This location is OK for daysailing but somewhat clumsy if you race your boat.
- o Remove the cleats from the cowling-track assembly and put new cam cleats on a "bridge" that straddles the CB trunk. This location is convenient for daysailing and racing. See *Improving the Jib Cleating System*, below.

Improve the Jib Cleating System (new model)

The jib cleating configuration on the 1975 model Javelin (or later) is convenient when single handing the boat and when frequent jib sheet adjustment is not important. However, it is tedious to use off the wind (especially when racing) because you cannot play the jib sheet. Releasing it from the cleat is awkward. Also, when tacking in gusts, the cleat occasionally grips the released jib sheet which could cause a knock-down.

One alternative is to remove the jibsheet cleats from the cowling tracks, replace them with bullet blocks, and locate new jibsheet cleats on a bridge that spans the centerboard trunk. You can fabricate a bridge from a 5" x 14" sheet of 16 gauge stainless steel or 1/8" aluminum sheet by bending it into a U shape with two 100° bends (figure 3-17). Use RL-311 fairleads in front of Harken #200 cam cleats.

Figure 3-17
CB Bridge for Jibsheet Cleats and Fairleads



Install a pair of cam cleats with separate fairleads located in front of the cleats. Cam cleats with overhead fairleads will not work. When mounting the bridge, set it high enough so the CB block and tack have just enough room beneath.

Trackers Book: Boats - Jib Cleat Block Kit

Rake the Mast Forward to Correct Weatherhelm

If you experience excessive weatherhelm at wind velocities above 8 knots (the need to continually pull the tiller to keep the boat on course when going to windward), you should check mast rake. Do this by lining up the mast with a vertical object such as the side of a building when the boat is at rest in the water, or by observing where the main halyard lies when allowed to swing free. Typically, the factory-set mast has 14" to 18" of rake measured from free halyard to mast at the deck. A mast rake of about 6" will induce less considerably less weatherhelm.

Important: Be sure that you have corrected other causes of weatherhelm on the water:

rudder blade	Keep it vertical. Even a small angle aft can induce weatherhelm
centerboard	Raise it to 2/3 down
sail set	Jibsheet tight, Main eased a little
heeling	Hike out. Prevent heeling more than 15°

If you still have excessive weatherhelm, adjust mast rake:

- 1) Move the mast step aft its own length. Use the aft screw hole for the forward screw and drill a new hole for the aft screw. Be sure the slot in the step points aft. (Moving the mast step aft shifts the mast head forward.)
- 2) Alternately adjust sidestays and forestay until the mast is nearly vertical and the stays are fairly tight.
 - Lengthen sidestays as far as turnbuckles will allow.
 - Shorten the forestay turnbuckle to minimum length.
 - Re-adjust the sidestays. Keep them equal in length.

If the forestay is still a little too long, consider placing a 1/2" thick shim beneath the mast step. Use aluminum or hardwood to avoid compression or rot.

If the forestay is a little too long and you want to add a tabernacle, do NOT remove the thickness of the tabernacle from the bottom of the cut mast.

Repair Mast Bend

You can correct three types of mast bend:

- o due to insufficient rig tension
- o gradual bend to one side
- o crimped mast

Rig Tension

The Javelin mast is fairly flexible. Rig tension determines the amount of mast bend. Higher tension allows less bend. Limited mast bend is advantageous in a brisk breeze. Mast bend (over 18") is dangerous. The center of the mast bends to windward as the top bends to leeward. This opens the slot between Jib and Main and flattens the Main. Both are beneficial in brisk winds when sailing to windward.

Important: Be sure that the side stays are of equal length. The leeward sidestay should slacken as the wind increases.

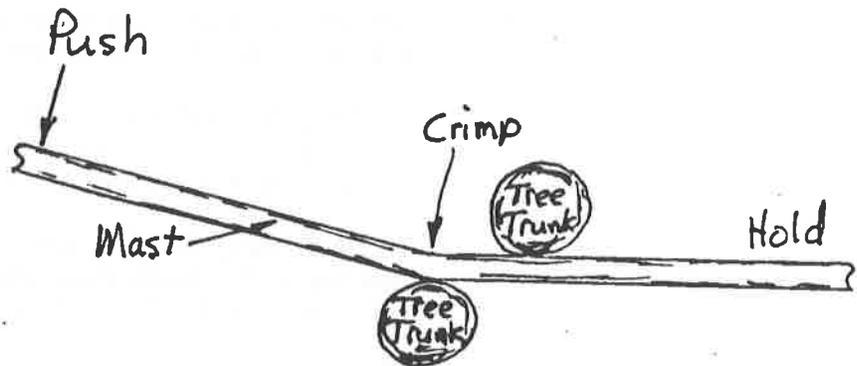
Gradual Mast Bend

If you find that mast bend is greater on one tack than the other, the mast could have a gradual bend in it. If so, you can correct it by suspending the mast from both ends and standing (bouncing) on it a couple of times.

Crimped Mast Bend

You can correct a slightly crimped mast by placing it in the crotch of double tree trunks with the crimp against one trunk (figure 3-18). Let your crew hold one end while you work out the bend by pushing against your end of the mast. This works for both side/side and fore/aft bends.

Figure 3-18
Straightening a Crimped Mast



Rebuild the Cuddy Floor

The cuddy floor in some new model Javelins has disintegrated due to excessive moisture in the bilge. To avoid this condition, provide adequate ventilation when storing the boat for the winter and during the sailing season.

Here are some suggestions:

- 1) Keep the bilge dry. Be sure the CB bolt is tight. Check for water in the bilge periodically thru the floor ports.
- 2) Remove the cuddy door when storing a covered boat on the trailer. Let outside air circulate beneath the cover
- 3) Occasionally sail with the cuddy door removed provided the wind is not strong. Avoid capsizing with the cuddy door removed. The boat will be difficult to rescue.

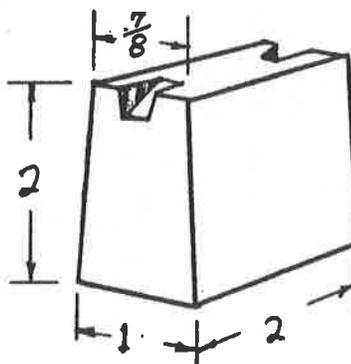
The Javelin Class Association offers a Cuddy Floor Kit that contains templates and instructions for rebuilding the floor. The plans were donated by Jean and David Metcalf after they wrote the procedure that appeared in the Dec. 87 Spearhead.

Add a Centerboard Safety Stop

If you capsize and turtle the boat, the centerboard slides into the CB trunk. It is about impossible to pry it out by hand. The safety stop helps prevent the CB from sliding beyond the trunk opening so you can pull it out.

Fabricate one from a piece of discarded urethane foam (not styrofoam) packing material, approximately 1" x 2" x 2".

Figure 3-19
CB Safety Stop



To install it, you must raise the boat off the trailer or turn it on its side at a beach. Loop a 4' line over the CB stop before inserting so you can retrieve it if it does not fit the first time. From below, place the stop about 18"-20" forward of the aft end of the trunk opening, and push it up all the way with a paddle. Friction holds it in place. Remove the line when satisfied the stop is positioned OK.

Spinnaker Layout

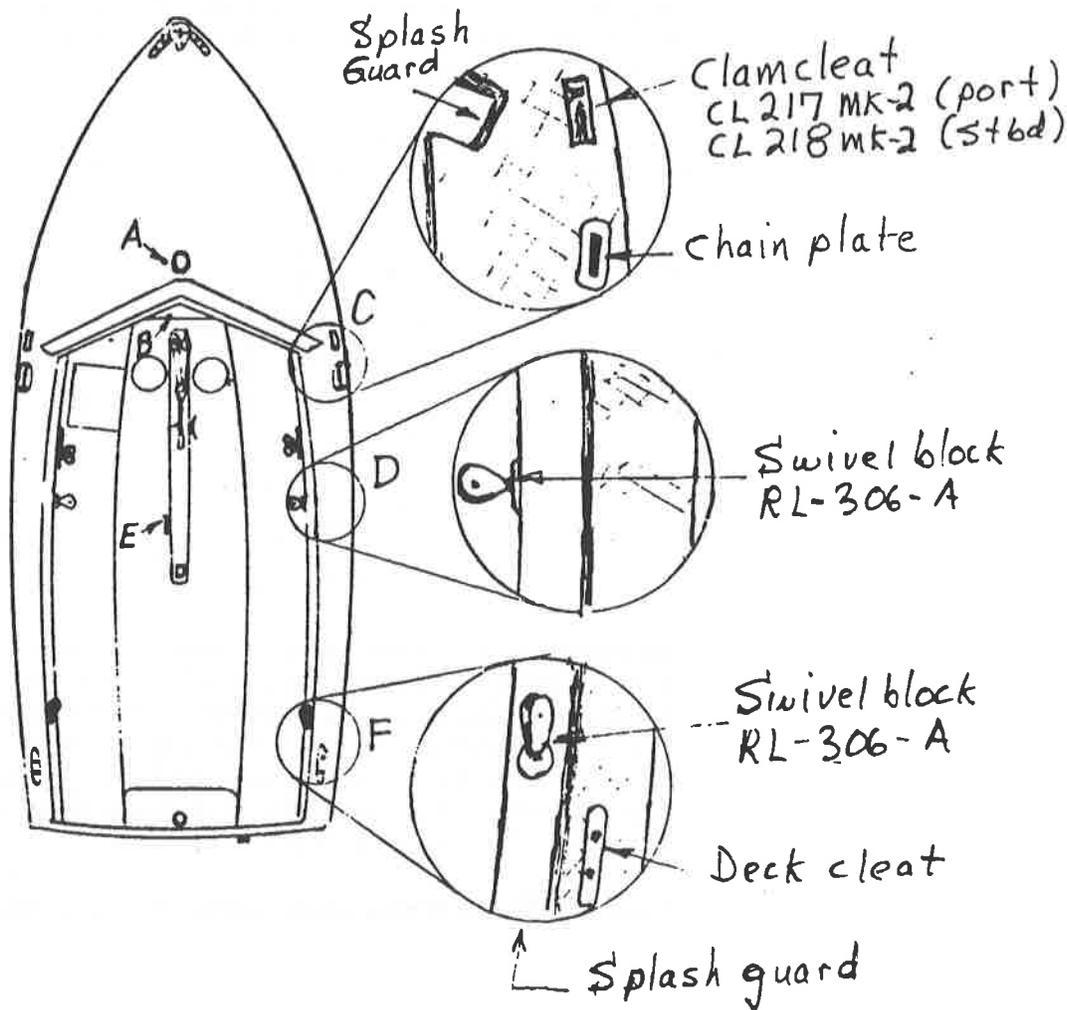
This relatively inexpensive spinnaker system should cost under \$150. Modify this example layout to suit your needs. Thanks to Gary Coryer, Garth Grimmer, and Bob Corpstein for sharing their spinnaker savvy.

A. Hull Parts and Locations

Qty	Title	Location	Part No.
1	grommet (or plain hole)	A 1" to port of mast hole	
1	grommet (or plain hole)	B below cuddy door	
1	guy hook & cleat (port)	C 5" forward of chainplate	CL-217MK2
1	guy hook & cleat (stbd)	5" forward of chainplate	CL-218MK2
2	midships swivel blocks	D 48" forward of the transom, inside splash guard near top.	RL-306-A
1	halyard clam cleat	E on port side of centerboard trunk, 12" from rear of trunk	CL-208
2	stern swivel blocks	F 12" forward of transom, on top of splash guard	RL-306-A

Part-number Key: CL = Clamcleat, RL = Racelite, D/DH = Dwyer, NF = Nicro Fico, Hark = Harken

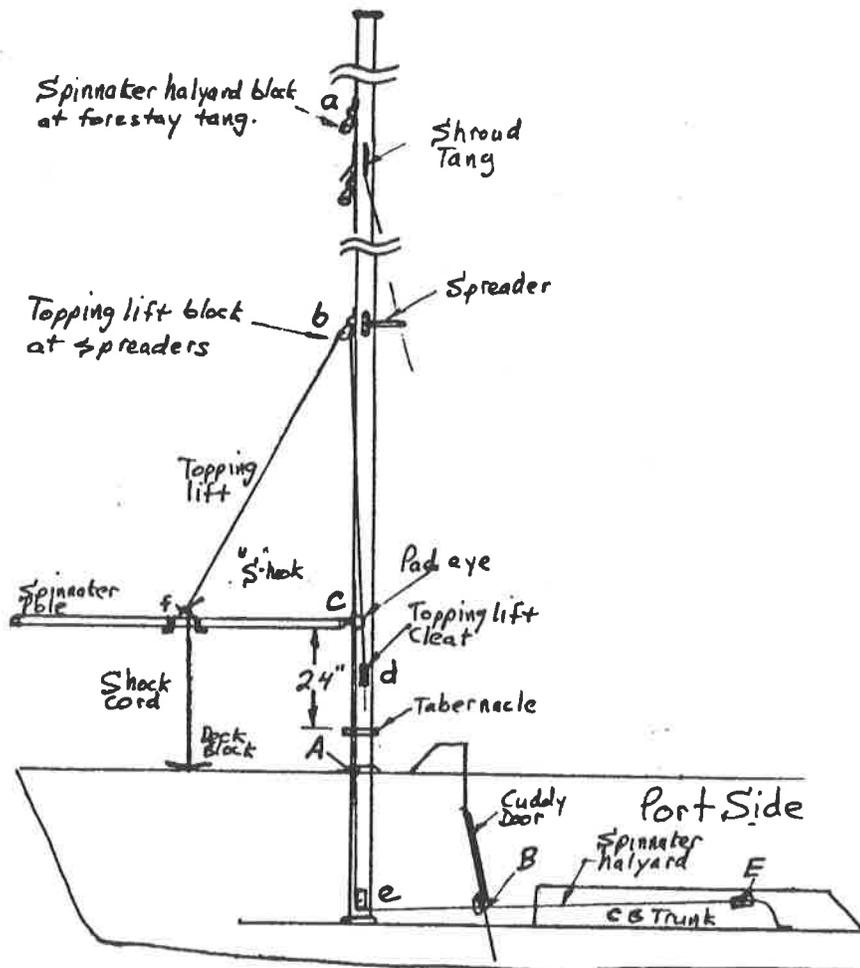
Layout



B. Mast Parts and Locations

Qty	Title	Location	Part No.
1	spinnaker halyard block	a 3" above the forestay tang	DH911 or RL221 D921 or RL319
1	U-strap		
1	topping lift block	b at spreaders	DH 911 or RL201 D921 or RL319
1	U-strap		
1	pad eye	c 24" above tabernacle	DH 602
1	topping lift cleat	d 8" above tabernacle (port)	CL-203
1	halyard cheekblock	e 3" above mast step (port)	Hark 233
1	spinnaker pole (Forespar)	5' 2" (has plastic pad eye)	ADJ-4-8-DL
1	U-strap on spnkr pole or 1.25" dia ss ring	f center of pole, attach with ss radiator-hose clamp(s)	NF 1046
1	S-hook or brass snap hook	f connects topping lift & down- haul to spinnaker pole	NF 237
1	shock cord 3'x5/16 dia	tie to deck block or thru 3/8" deck hole tie to S-hook with shock cord cleated to CB trunk so skipper can raise one continuous line, or two 25' lines	
1	topping lift 14'x3/16 dia		
1	spnkr halyard 36'x3/16 dia		
1	spnkr sheets 50'x1/4 dia		

Layout



Chapter 4 Maintenance

Inspection & Maintenance Check List

Check the following items yearly or when purchasing a used boat. We identify items specifically for the classic (old) model with (classic model) preceding the statement. All other statements apply to both the newer and classic models. Statements refer to numbered parts shown in figure 4-1.

Hull

- o The bottom should be smooth and well cared for, void of gouges and scrapes. (1)
- o Fill gouges and scrapes: Use Marinotex or epoxy putty. Wet sand with 400 grit sandpaper, as needed, in a fore-and-aft direction.
- o Use bottom coatings under the following conditions:

<u>water</u>	<u>usage</u>	<u>coating</u>
salt	moored	Antifouling paint applied just before putting in.
fresh	moored	Fresh water antifouling paint. Sponge off algae, weekly.
either	trailed	None
- o Plant growth is easiest to remove when the boat is just removed from the water. Use a sponge, 3M scrubber, teflon or metal spatula depending on the amount of growth.
- o To remove antifouling paint (or dried plant growth), wet sand with 50-150 grit sandpaper, stroke length-wise, wear a filter mask. Then wet-sand with progressively finer sandpaper up to 400 grit.
- o Keep freeboard condition and color bright. (2)
- o Upkeep: Use fiberglass cleaner/compound as needed. Softscrub also works well.
- o Keep deck condition and color bright. (3)
- o Upkeep: Use detergent, bleach, and scrubbing brush as needed. Softscrub also works well.
- o Inspect bottom of transom for chipped gelcoat. Fill in with epoxy putty as needed. (4)

- o (classic model) Keep rubrails free of black mold. Tilex works fairly well. Rinse thoroughly. Wear rubber gloves.
- o (classic model) Tap transom surface to detect dryrot of interior plywood. Drill holes and inject "Git Rot" or other liquid epoxy filler as needed. (5)
- o (classic model) Inspect beneath mahogany transom cap (old model) for dryrot (6). Treat with "Git Rot".
- o (classic model) Refinish mahogany woodwork such as floorboards, cross seats, splash guards, transom cap, shelf lip, as needed. Consider eurothane varnish. (7)
- o Open inspection ports and pump dry as needed. (8)
- o Open drain plug in transom. Elevate bow to drain. (9)
- o (classic model) Remove three drain plugs from seats and keelplate. Allow to drain. (10)
- o Check all bolts (including bow eye) and self-threading screws for tightness.
- o Replace any (rusted) iron fasteners, immediately.
- o Check that pulley blocks turn freely. Spray with WD-40
- o Check all cam cleat teeth for wear. If needed, remove cams and sharpened teeth with a triangular file.

Mast and Rigging

- o Check the slide at the center of the boom. If loose, drill out the rivets and replace them. Or, replace the slide with a bale. (11)
- o Check the gooseneck at the front of the boom. There should be no cracks or deterioration of the welds. (12)
- o Check bolt heads holding chain plates to gunwales. If bolts are bent or deformed, replace with stainless steel bolts and locking nuts of the next larger size. Re-drill the holes perpendicular to the gunwale to let the bolt heads rest evenly on the chain plate. (13)
- o Check the clevis pin retains. Safety-pin type and self-starting ring-dings are easy to use. (14)
- o Both sidestays should be identical in length. Adjust sidestay turnbuckles as needed. (15)

- o Check sidestay cables for broken strands at chainplate fork and spreader. Replace if strands are broken. (16)
- o Check that the optional O'Day tabernacle is not bent. Straighten as necessary. (17)
- o The holes for the O'Day tabernacle hinge pins should not be elongated. Replace if a safety hazard. (18)
- o The O'Day tabernacle should be fastened securely to the mast and mast stump. (19)
- o Mast stump should be fastened securely in the bilge. (20)
- o Check the forestay turnbuckle. Straighten threaded shaft(s) and lubricate as needed. (21)
- o Check the forestay cable for broken strands, especially at the deck fitting. Replace if strands are broken. (22)
- o The spreader hole at the mast fitting should not be elongated nor the adjacent metal worn or cracked. Replace spreader if necessary. You can salvage worn spreaders once by sawing off and redrilling the hole. (23)
- o The sidestays should be held firmly in the spreader slot by a stainless steel wire which is taped to protect the mainsail from chafing. (24)
- o The sidestays should be attached to the spreaders at the point where the spreader is perpendicular to the mast. [Check when mast is horizontal with spreaders pointing down.] (25)
- o Check that the sidestay and forestay tangs are securely riveted to the mast. (26)
- o The clevis pins holding the stays to the tangs on the mast should have stainless steel cotter pin retainers properly installed. (27)
- o The mast, standing freely, should not curve to either side. A curved mast can be straightened by suspending it from both ends and flexing it in the opposite direction by standing on it at the center of curvature and bouncing one or more times. (28a)
- o Check mast rake. The mast should be almost vertical to the waterline. (See chapter 3, **Rake the Mast Forward to Correct Weatherhelm**) (28b)
- o The pulleys in the mast head should turn freely and not be chipped. Lubricate with WD-40 if needed. (29)

Centerboard Assembly

- o Check the edges of the board for smoothness. If you find nodules, grind them smooth and paint. (30)
- o (optional) Bevel the left and right leading edge slightly. Paint the beveled surface. (31)
- o Check the centerboard cable for wear where it attaches to the board. If the cable needs replacing, see chapter 3, **Remove Leehelm by Lengthening the CB Cable.** (32)
- o Check the centerboard slot for wear due to the cable. Fill in any grooves with epoxy putty. (33)
- o Check the pivot bolt for excessive wear. Replace if necessary. (34)
- o Check the pivot bolt gasket for leaking. Tighten the nut or replace the gaskets as needed. (35)
- o Mark CB positions on the winch rope (classic model) or on the top of the CB trunk (new model) for these positions: 1/8 down for running, 1/3 down for reaching. (36)
- o NOTE: The cable hums when the board is extended.

Rudder Assembly

- o Adjust the tightness of the cheekbolt so that the rudder blade remains vertical when sailing. (37)
- o Check the screws holding the pintles (rudder posts) for tightness. (38)
- o Check the rudder locking device to insure that it locks. The rudder can sink if you capsize. (39)
- o The newer model has a safety-pin type retainer that fits through a hole in the upper pintle (post) just below the mating gudgeon (socket). (40)
- o The classic model has a stainless steel tab that you must depress to let the rudder pintle slide past the mating gudgeon. (Pressing the tab while lifting the heavy rudder assembly is difficult). Consider replacing the tab with the safety-pin type retainer. See chapter 3, **Change the Rudder Safety Latch** (41)
- o Check the tiller-stop on the rudder. It should not let the tiller scrape the deck when turning. Bend it up. (42)

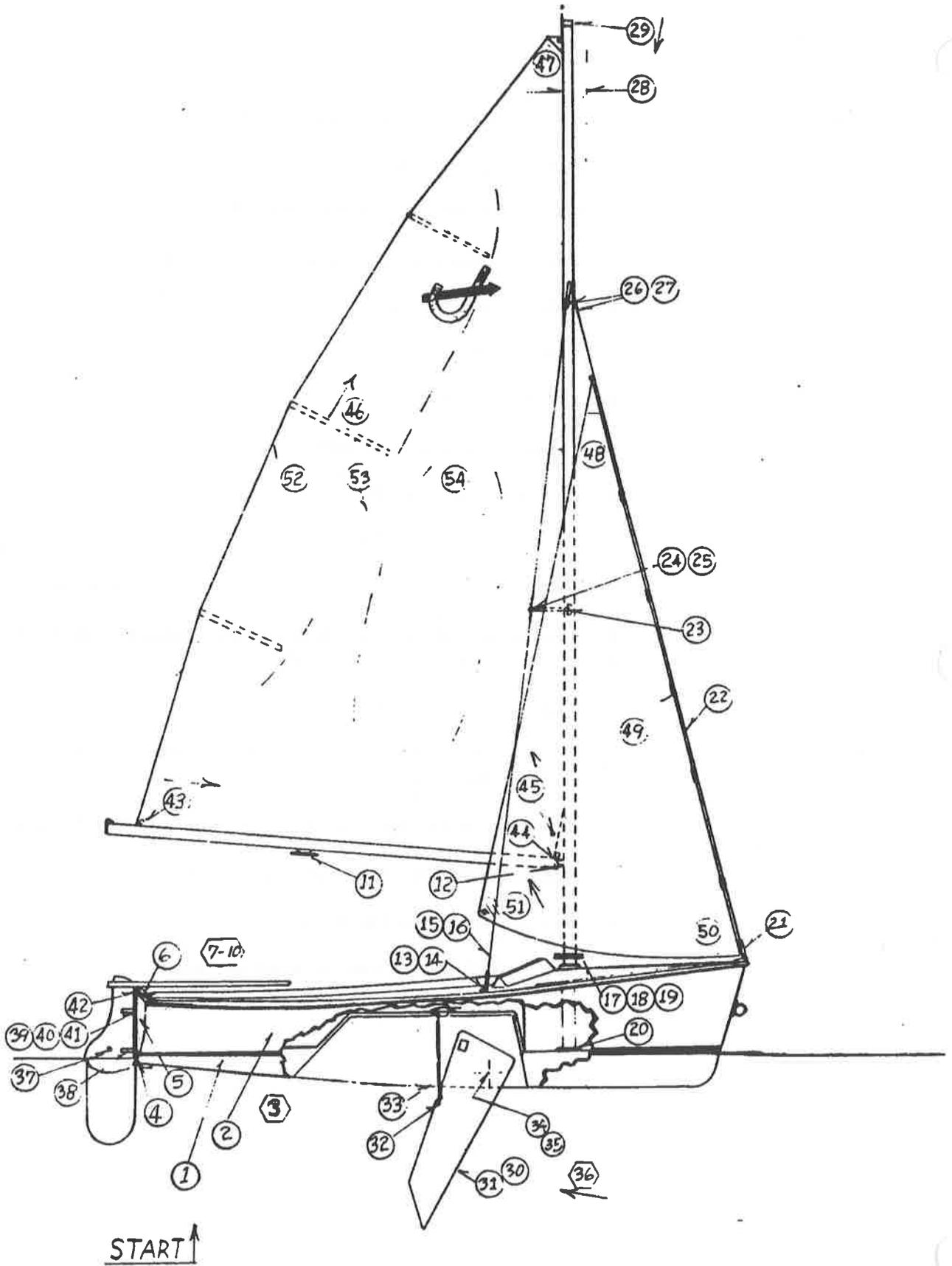
Sails

Check the following locations prone to wear for broken stitches, frayed cloth, rips, etc.:

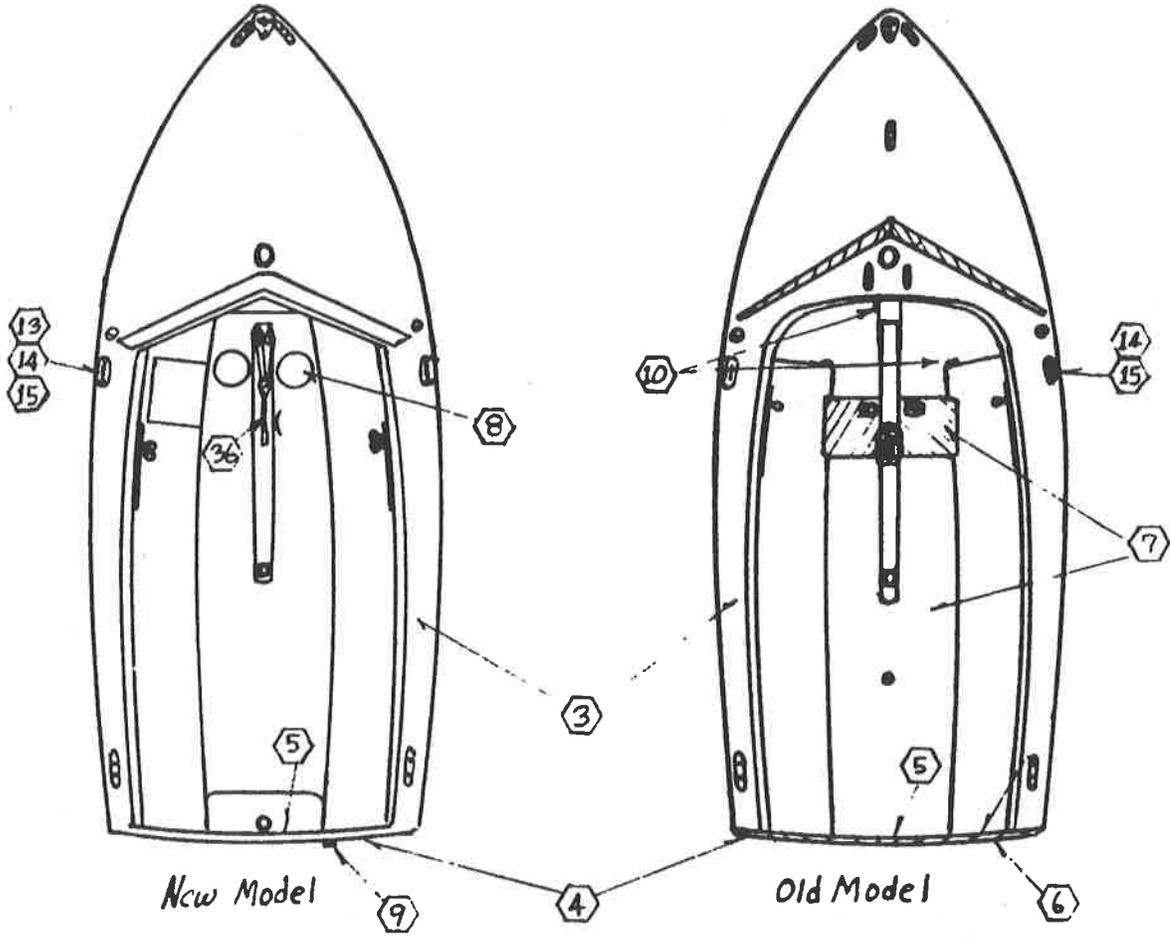
- o Outhaul grommet at the clew (43)
- o Gooseneck grommet at the tack (44)
- o Cunningham grommet above the tack (45)
- o Batten pockets (46)
- o Headboard (47)
- o Jib head (48)
- o Forestay tabs or clips (49)
- o Jib tack grommet (50)
- o Jib clew grommet (51)
- o Where the Main rubs against the shrouds when running.

Raise sails and observe them underway. Sails should be recut or replaced when you observe that:

- o The leech of the Main flutters. (52)
- o A protruding fold in the roach that follows the inner ends of the batten pockets (53)
- o The maximum draft of the Main is more than 50% aft. (54)
- o The leech of the jib flutters.
- o The Jib is flat and lacks drive.
- o The sail cloth has lost its hard surface.



See Top View



Chapter 5 Replacement Parts

Mail-order Marine Supply Stores

Most Javelin parts are standard, and available thru mail-order marine supply houses that have a toll-free phone service. Their catalogs generally are free. Deliveries take about a week when you use a credit card, longer if you send a check. Their prices generally are lower than at your local chandlery. We list a few for your convenience:

~~M & E Marine Supply Company
PO Box 601
Camden, NJ 08101
Direct Mail Order Line:
1-800-541-6501~~

~~E & B Discount Marine
201 Meadow Road
Edison, NJ 08818
Order Toll-free
1 800-533-5007~~

Annapolis Performance System
800 729-9767
www.APSLTD.com

Layline
800 542-5463
www.layline.com

West Marine
800 262-8464
www.WestMarine.com

Special Parts

The mast, standing rigging, rudder, and tabernacle are either made-to-order or require a special source, so we describe them separately.

Mast

Order a replacement mast from a supplier such as

Dwyer Aluminum Mast Co (DAMCO)
21 Commerce Dr
No. Branford, Ct 06471
phone (203) 484-0419

You can order the extrusion (DM275), and transfer the fittings from your disabled mast (less expensive but time consuming) or order a completely fitted mast. When ordering, we suggest that you:

- o state whether you have an older model Javelin (with wood trim) or a newer model (all fiberglass)
- o mail a copy of the correct replacement mast sketch
 - Old (Pre-1972) Model
 - New (Post-1972) Model
- o state if you have a tabernacle

Standing Rigging

Order replacement sidestays or forestay from suppliers such as Dwyer or M & E.

Measure before ordering

Typically, if the adjustable fitting at the lower end of the forestay is OK (threads not damaged), use the fitting and order the stay swaged to a threaded stud (figure 5-1).

Type & diameter of cable: 1x19 cable and 3/32" dia

Length of stay [1]:

typical forestay 15' 0"

typical sidestay 15' 6.5"

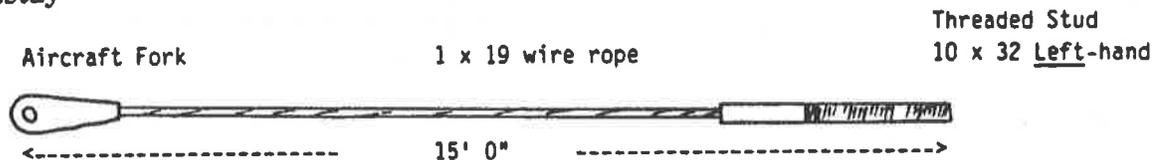
Thread size: 10x32 for new model or 1/4x20 for old model

Thread type: right-hand (normal) or left-hand (opposite)

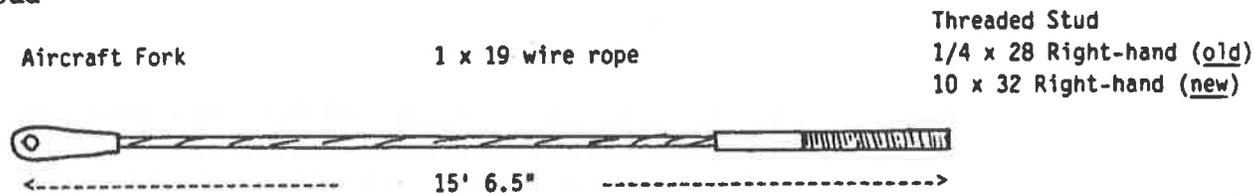
[1] **Important:** If retaining the adjustable end fitting, measure from the hole in the aircraft fork to the end of the threaded stud. If replacing the entire stay with both end fittings, measure from the hole in the aircraft fork to the hole in the adjustable fitting set at midpoint.

Figure 5-1
Standing Rigging

Forestay



Shroud



Typical costs are less than \$0.50/foot for the stainless steel cable, and less than \$10 labor to swage each end of the cable.

Build a Javelin Rudder

Every so often, an unhappy Javelin owner phones to ask about replacing the rudder that sank during a capsize. The alternative to buying one from Blue Fin Yachts, (current Javelin builder) for about \$400 is to make one. It won't kick up, but it's relatively quick and easy. It matches the original in size.

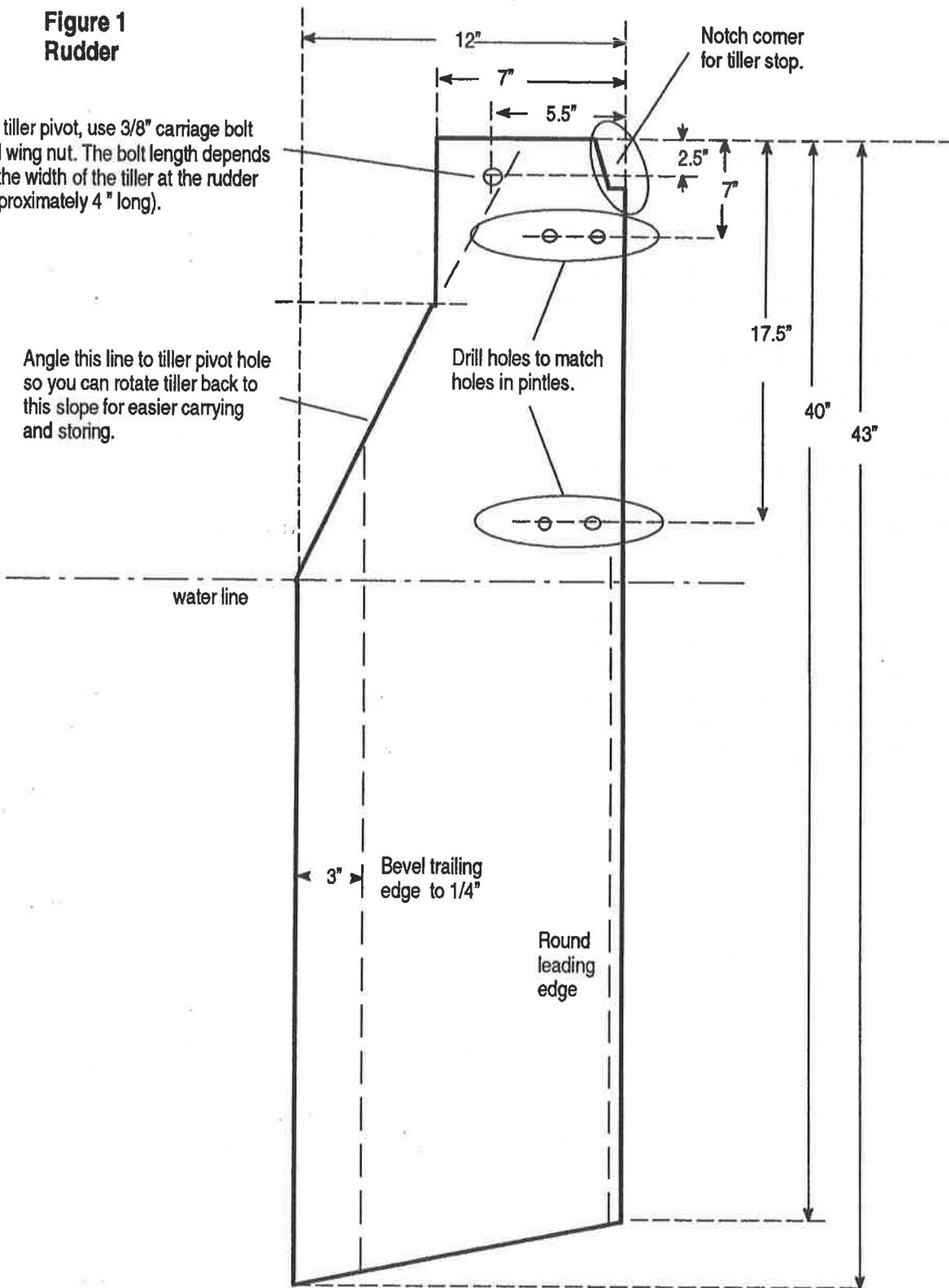
For the blade, use outdoor plywood, 1 ft x 4 ft x 1/4 inch, with good finish on both sides. Cut it to size, round the leading edge, and bevel the trailing edge to 1/4 inch (Figure 1). You may have to fill a few voids between laminates with fiberglass resin or wood filler. Sand smooth and paint white with primer plus two coats.

You can make the tiller from a 2"x 2" by 4 ft treated stock, short strips of hardwood, brass flat-head wood screws, glue, carriage bolt, and wing nut, all from your local hardware store (Figure 2). Finish with varnish.

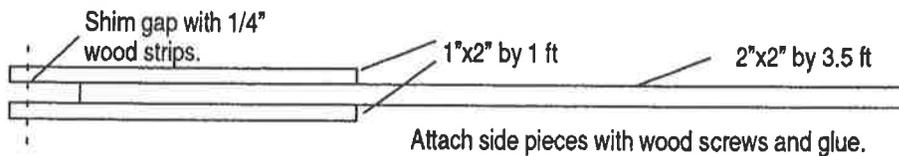
Order 3/8 dia. pintles from a mail-order marine supply house. The upper one should be shorter than the lower one for easier attachment to the boat. Order Racelite RL-390-L and RL-390-S at less than \$7 each. If you order from M&E Marine (1-800-541-6501) specify Stock # 9-B2787 and Order # 41143 and 41144.

**Figure 1
Rudder**

For tiller pivot, use 3/8" carriage bolt and wing nut. The bolt length depends on the width of the tiller at the rudder (approximately 4" long).



**Figure 2
Tiller**



**Javelin Mast Assembly
New (Post-1972) Model**

Measurement		Description	Qty	Cat No	Unit\$	Total
W/O Tabcl	With Tabcl					
<u>22' 11.5"</u>	<u>20' 7"</u>	Masthead with nylon sheaves	1	D107	13.25	13.25
<u>17' 7"</u>	<u>15' 2.5"</u>	* spinnaker eyestrap	1	D921	0.70	
		* spinnaker bullet block	1	DH911	2.60	3.30
<u>17' 2.5"</u>	<u>14' 10"</u>	tang	3	DH71-4	1.85	5.55
<u>17' 0.5"</u>	<u>14' 8"</u>	jib halyard eyestrap	1	D921	0.70	
		jib halyard bullet block	1	DH911	2.60	3.30
<u>10' 2.5"</u>	<u>7' 10"</u>	spreader brackets	2	D256	3.75	7.50
		spreaders (0.5"OD x 18"L)	2	D2510	5.45	10.90
<u>8' 10"</u>	<u>6' 5.5"</u>	* spinnaker toplift eyestrap	1	D921	0.70	
		* spinnaker toplift block	1	DH911	2.60	3.30
<u>4' 8"</u>	<u>2' 3.5"</u>	sail slot (4"L)	1	-	-	-
<u>4' 5"</u>	<u>2' 0.5"</u>	mast eye	1	DH602	7.50	7.50
<u>2' 7.5"</u>	<u>0' 3"</u>	halyard cleat	2	DH841	2.90	5.80
		halyard cleat (in rope slot)	1	DH8410	3.50	3.50
	<u>0' 0"</u>	base of mast at tabernacle				
	<u>2' 4.5"</u>	height of mast stump, about 2.5" above deck (high enough so mast, in horizontal position, just clears splash guard)				
<u>0' 0"</u>		base of mast without tabernacle				
		mast step	1	DH2111	5.65	
		Mast	1	DM-275	quoted \$	
		* optional				
					Total Fittings	\$63.90

Javelin Mast Assembly Old (Pre-1972) Model

Measurement		Description	Qty	Cat No	Unit\$	Total
W/O Tabcl	With Tabcl					
22' 11.5"	20' 9"	Masthead with nylon sheaves	1	D107	13.25	13.25
17' 7"	15' 4.5"	* spinnaker eyestay	1	D921	0.70	
		* spinnaker bullet block	1	DH911	2.60	3.30
17' 2.5"	15' 0"	tang	3	DH71-4	1.85	5.55
17' 0.5"	14' 10"	jib halyard eyestay	1	D921	0.70	
		jib halyard bullet block	1	DH911	2.60	3.30
10' 2.5"	8' 0"	spreader brackets	2	D256	3.75	7.50
		spreaders (0.5"OD x 18"L)	2	D2510	5.45	10.90
8' 10"	6' 7.5"	* spinnaker toplift eyestay	1	D921	0.70	
		* spinnaker toplift block	1	DH911	2.60	3.30
4' 8"	2' 5.5"	sail slot (4"L)	1	-	-	-
4' 5"	2' 2.5"	mast eye	1	DH602	7.50	7.50
3' 2"	0' 11.5"	halyard cleat	2	DH841	2.90	5.80
		halyard cleat (in rope slot)	1	DH8410	3.50	3.50
2' 5"	0' 2.5"	cheek blocks	2	DH908	6.80	13.60
	0' 0"	base of mast at tabernacle				
	2' 2.5"	height of mast stump flush with deck (check your own measurement to mast step)				
0' 0"		base of mast without tabernacle				
		mast step	1	DH2111	5.65	-
		Mast	1	DM-275	quoted \$	
		* optional				
				Total Fittings		\$77.50

Re: Rotted transom

Wed, Dec 8, 1999 8:52 AM

From: "Jeff Boggs" <j.boggs@amus.com>
 Reply-To: "Javelin Sailors" <JavelinSailors@listbot.com>
 To: "Javelin Sailors" <javelinsailors@listbot.com>
 Date: Thu, Nov 18, 1999, 2:00 PM
 Subject: Re: Rotted transom

Javelin Sailors

RE>Rotted transom

11/18/99

Does anyone know how to fix a rotted transom...Why yes, as a matter of fact I do. When I bought my Javelin in FL (my first ever boat) and brought it back to TN I discovered why most boat buyers take a screwdriver and tap all around the hull and deck - to spot areas of delamination!

My procedure was to get a copy of the free West System Epoxy book on fiberglass repair and learn the basics of how to use their products. Your ability to mix up the stuff and add the proper additives will make this job much easier.

I removed the outer fiberglass skin of the transom in one piece by using a router to cut through the fiberglass but not into the plywood laminate. When I pulled the skin off (using a metal putty knife and wood chisel because the inner surface of the skin was really stuck to the transom), I was now looking at the plywood core that had been fibreglassed over. If I remember right, it was 3/4 plywood. I replaced the rotted core with marine plywood cut to the same shape as what I removed. I did not tamper with the inner fiberglass skin (which is the aft surface of the cockpit) because that would mean having to re-fiberglass the interior sections of the cockpit with its curved areas.

I saw immediately why the transom has rotted and this was due to some fiberglass tabbing that had cracked and allowed water from the bilge into the transom core area. Before patching the cracks I removed the old Styrofoam buoyancy material and replaced it with new material plus added a bunch more.

The hardest part of the repair was using C-clamp and lag bolts to make the new plywood core bend enough to match the curve of the transom. I failed to notice how much the transom actually curved and it was quite a lot! After epoxying the new core into place I re-epoxyed the outer skin back on. After filling any voids with epoxy, I used fiberglass tape around the repair area and finished with fairing compound.

The repair looks absolutely stunning and no one can tell what was done. The new core was redrilled for the rudder hardware and I made sure to overdrill and fill with epoxy then redrill the holes ala the West System manual.

What I learned from this is the sheer macho rush that comes from sawing off the back of a boat and repairing it to where it looks brand new. I am now not afraid of fiberglass repairs and it was a lot of fun (in a sick sadistic sort of way).

You will learn a tremendous amount about fiberglass repair that will be useful for any other repairs you eventually make on the boat.

Enjoy,

Also visit www.odayjavelin.com by David Thierer

Jeff Boas

