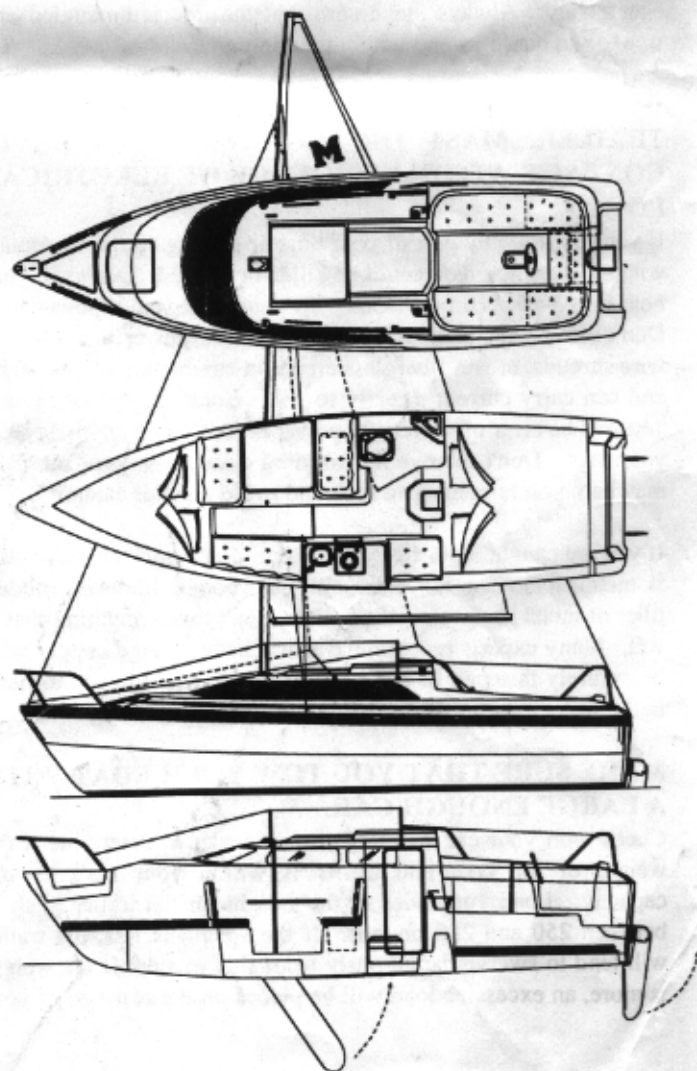


OWNER'S INSTRUCTIONS

MACGREGOR 26X

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1. SPECIAL SAFETY WARNINGS

NEVER POWER THE BOAT OVER 5 MILES PER HOUR WITH THE CENTERBOARD DOWN.

At high speed, the centerboard creates lots of sideways lift and can cause the boat to be unstable. It can roll the boat severely or possibly cause a capsize. Pull it all the way up into the boat and secure it well. It is extremely important to check the cable frequently while powering to be sure the board has not come loose and lowered itself. This is particularly important when the boat is pounding into waves and things tend to get jiggled loose. It is OK to leave the board down for low speeds (under 5 mph), where it will significantly enhance steering control.

IF YOU SAIL THE MACGREGOR 26X WITHOUT MAKING SURE THAT THE WATER BALLAST TANK IS COMPLETELY FULL, IT CAN TIP OVER.

Unless the water ballast tank is completely full, with 1400 pounds of water ballast, the sailboat is not self-righting. Without the water ballast, the boat will **not** return to an upright position if the boat is tipped more than 50 degrees, and will capsize like most non-ballasted sailboats. Always, before operating the boat, remove the 1" diameter vent plug located in the compartment under the cabin access step, and make sure that the water level is no more than 3" below the hole from which the plug was removed. Then reinstall the plug. If you have to sail the boat without ballast, do not cleat down any sail control line. You must hand hold them and release them quickly if the boat tips excessively. Always make sure that the line is untangled and free to run out to its end without jamming.

DO NOT ALLOW ANY PART OF THE BOAT, TRAILER, MAST OR RIGGING TO COME IN CONTACT WITH ANY SOURCE OF ELECTRICAL POWER.

If your mast or any part of your boat or rigging comes in contact with a power line, you could be killed or injured. Don't sail your boat into a power line. Don't step your mast into a power line. Don't move your boat, on its trailer, into a power line. Masts, wire shrouds, or wet fiberglass are good conductors of electricity and can carry current directly to you. Look up and make sure you will be clear of sources of power before doing anything with your boat. Don't remove the warning decal from your mast. It may help you remember to look and avoid a major calamity.

If you are caught in an electrical storm, don't touch anything that is metal, including the mast, shrouds, boom, lifelines, rudder, tiller or metal hardware. If possible, don't touch anything that is wet. Many experts recommend that a heavy gauge copper wire be securely fastened to one of the shrouds and allowed to hang in the water to carry off the electricity from a lightning strike.

MAKE SURE THAT YOU TOW YOUR BOAT WITH A LARGE ENOUGH CAR.

Check with your car manufacturer or dealer to determine if the weight of the boat and trailer is within your car's towing capacity. Load your boat so the weight on the trailer hitch is between 250 and 280 pounds. If the weight is less, the trailer will tend to swerve dangerously from side to side. If the weight is more, an excessive load will be placed on the rear end of your

car, and the trailer will be very difficult to hitch or unhitch. To protect your back when removing the trailer from the car, use the hitch jack or have an adult hang on the back of the boat to take some weight off the tongue.

NEVER OVERLOAD THE BOAT AND TRAILER. THE MAXIMUM WEIGHT IS 3500 POUNDS, AS SHOWN ON THE CERTIFICATION DECAL NEAR THE HITCH, ON THE LEFT (PORT) SIDE OF YOUR TRAILER.

Remember, the maximum gross vehicle weight (G.V.W.R.) includes the weight of the trailer as well as the weight of the boat and all gear in the boat. You may not deduct the weight that is carried on the hitch of the car in arriving at the G.V.W.R. Check your state law to determine if there are any other weight or braking requirements that must be met.

MAKE SURE THE WHEEL LUG NUTS ARE TIGHT BEFORE TRAILERING THE BOAT.

BEFORE TRAILERING THE BOAT, MAKE SURE THE NOSE OF THE BOAT IS TIED SECURELY TO THE TRAILER.

MAKE SURE THE OUTBOARD MOTOR AND MAST ARE ATTACHED FIRMLY TO THE BOAT WHEN THE BOAT IS BEING TRAILERED.

DO NOT TRAILER THE BOAT WITH ANY WATER IN THE BALLAST TANK. THE 1400 POUNDS OF WATER WILL SEVERELY OVERLOAD THE TRAILER AND THE CAR.

Open the filling valve, transom valve and vent, and drain the tank completely before trailering. Leave the valve open when trailering.

DON'T STORE FUEL CANS INSIDE THE BOAT.

Gas fumes are explosive. Keep all gasoline containers out of the boat. Store fuel tanks in the open compartments next to the steering pedestal.

BATTERIES ARE DANGEROUS. TREAT THEM CAUTIOUSLY.

Batteries can produce explosive gas, corrosive acid and levels of electrical current high enough to cause burns. Always wear eye protection or shield your eyes when working near any battery and remove all metal rings and jewelry. Never expose a battery to open flames or sparks. Do not smoke near a battery. It could blow up. Do not allow battery acid to contact eyes, skin, fabrics or painted surfaces. Flush any contacted area with water immediately and thoroughly. Get medical help if eyes are affected. Do not charge the battery, adjust post connections or use booster cables without making sure the battery compartment is properly ventilated. When charging the battery, carefully follow the instructions on the charger. Keep the battery filled to the proper level with distilled water. Always keep vent caps

tight. Do not allow metal tools or metal parts to contact the positive (+) terminal and the negative (-) terminal or any metal connected to these terminals.

DO NOT REMOVE ANY OF THE FOAM FLOTATION BLOCKS.

Loss of any of the foam could seriously impair the ability of the boat to stay afloat in the event of damage.

IF THE CABIN OF THE BOAT IS ENTIRELY FILLED WITH WATER, AND THE BOAT IS DEPENDENT ON THE FOAM FLOTATION TO KEEP IT AFLOAT, IT WILL BE VERY UNSTABLE, AND MAY TURN UPSIDE DOWN.

WHEN RAISING AND LOWERING THE MAST, DON'T ALLOW ANYONE TO STAND WHERE THE MAST OR SUPPORT WIRES COULD FALL IF SOMETHING, OR SOMEONE, LETS GO.

BE EXCEEDINGLY CAREFUL WHEN SAILING IN HIGH WINDS. LEARN BASIC SEAMANSHIP.

The Coast Guard Auxiliary Power Squadrons offer excellent courses at low cost. This is a worthwhile investment.

BE READY TO RELEASE SAIL CONTROL LINES (SHEETS) QUICKLY IF A GUST OF WIND CAUSES THE BOAT TO LEAN EXCESSIVELY.

Lines should be free of kinks and knots so they will run freely through the pulleys when it is necessary to let the sails out quickly. Tie a knot in the extreme end of the line to keep it in the pulley. Letting the lines go is your best protection from a knockdown. For best performance and safety, keep the boat from leaning (heeling) more than about 20 to 25 degrees.

ALWAYS SHUT OFF THE OUTBOARD MOTOR WHEN THE BOAT IS NEAR PEOPLE IN THE WATER. EVEN WITH LOW HORSEPOWER MOTORS, THE PROPELLER CAN DO SERIOUS DAMAGE.

Don't allow ropes to hang in the water (particularly the rudder ropes). They could tangle in the prop and stop or damage the motor.

EXCEPT WHEN FILLING OR EMPTYING THE WATER TANK, NEVER OPERATE THE BOAT WITHOUT SECURELY CLOSING THE TRANSOM VALVE, THE FILLING VALVE, AND THE VENT PLUG.

If the valves or vent plug are open, even slightly, the motion of the boat can drain the ballast water from the tank or allow the boat to fill with water. If either the vent plug or the filling valve is open, ballast can be lost when the boat leans over under sail. You may think the tank is full, and that the boat is self righting, but you may be unpleasantly surprised by an unexpected capsize.

If the transom valve is left open, the forward motion of the boat can drain the tank, resulting in capsize.

MAKE SURE THE STEP COVERING THE FILLING VALVE IS SECURELY FASTENED WITH THE WING NUT AND RETAINING STRAP.

The valve cover is also the step down into the boat from the cockpit. Always make sure that the step is securely fastened with the wing nut and retaining strap. If the step is loose, someone may dislodge it when entering the boat, and take a bad fall.

DON'T PULL THE BOAT OVER ON ITS SIDE USING THE MAIN HALYARD.

If you have to tip the boat for maintenance or for any other reason, use the jib halyard. Using the main halyard will break the mast.

NEVER POWER THE BOAT OVER 5 MILES PER HOUR WITH THE SAILS UP.

The forward speed of the boat can create enough wind to capsize the boat if the sails are up. The result could be instant capsize. If the water tank is empty, as it frequently is when powering, the boat will not be self righting.

BE CAUTIOUS WHEN MAKING TURNS UNDER POWER WITH THE BALLAST TANK PARTIALLY FULL.

If the ballast tank is not totally full, the water can slosh from side to side, changing the center of gravity and increasing the angle of tipping when the boat makes turns. Keep the speed down and make gentle turns until the tank is totally full or totally empty.

DO NOT SAIL OR POWER THE BOAT WITH THE STEERING SEAT IN THE RAISED POSITION.

If the motion of the boat or the wind causes the seat to fall into the lowered position, someone could be hurt. Make sure the seat is secured in the open position, with the snap cable to the lifeline, every time it is opened.

DO NOT OVERLOAD THE BOAT.

Six adults is about the limit. With more than this, the weight of the crew becomes very large in relation to the weight of the boat, and the stability of the boat might be compromised. It is important to use great care when carrying large crews to insure that the weight is evenly distributed so as not to cause undue tipping or instability.

WHEN POWERING OVER 8 MPH, THE RUDDERS SHOULD BE IN THE FULL UP POSITION.

For speeds over 8 MPH, connect the steering system to the engine, and steer with the engine and not the rudders. In tight turns, the rudders or rudder heads may be damaged if left in the down position.

2. GENERAL INFORMATION

TERMINOLOGY:

In the following instructions, we have tried to avoid the use of nautical terms wherever possible. If you are new to the sport, having to learn a new language while you are learning to rig and sail the boat can be grim. If you are an experienced sailor, be patient with our use of non-nautical words, rather than the more technically correct sailing language.

JOBS THAT ONLY HAVE TO BE DONE ONCE:

Much of what you will read in the following instructions will involve the initial setup and rigging of the boat, and will only have to be done once. For example, you will find detailed information on assembling the mast and connecting the mast support wires and lines to the mast. Once this is done, it will not have to be redone each time you sail. So don't be intimidated by the length and detail of these instructions.

TOOLS:

You will need two 7/16" end wrenches, two 9/16 end wrenches and a pair of pliers to do all of the assembly work. You can get by with the pliers and a small crescent wrench.

BOWLINE KNOTS:

It is essential to learn to tie a bowline knot. It is used all over the boat to tie stuff together. The bowline is shown below. Pull the loops tight. It will not jiggle loose, and can be easily undone even after being pulled tight under really heavy loads.

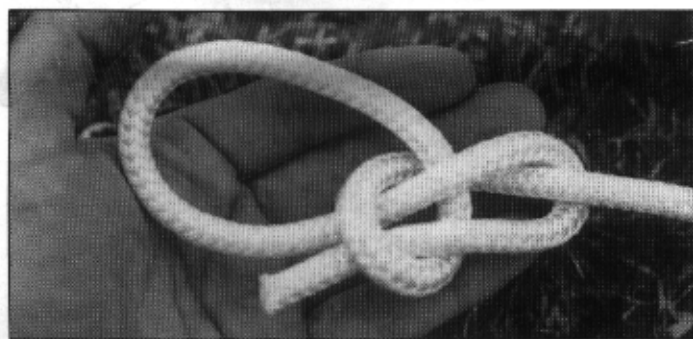
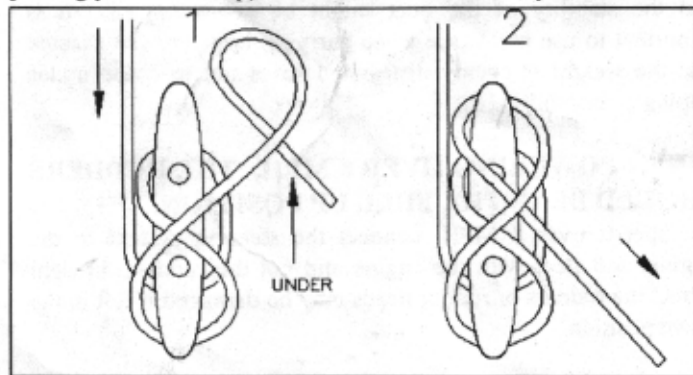


Photo 1 Bowline knot

SECURING A LINE TO A CLEAT:

The proper way to secure a line to a cleat is shown below. Make sure the last loop forms a half hitch (with the tail end of the line passing under the loop) in order for the line to stay secure.



Drawing 2 Securing a line to a cleat

3. RIGGING THE MAST

First, take a look at the photographs on the following pages to get a general idea of what the complete mast and rig will look like.

RIG BOX:

Open up the box of rigging that comes with the boat and do a complete inventory to make sure everything is there. A checklist, showing each item, is packed with the parts.

UPPER SHROUDS (UPPER SIDE SUPPORT WIRES):

Install the upper shrouds (2 ea) at the upper 3/8" hole located 4' from the top of the mast. Use a 3/8" x 4" bolt and lock nut. A pair of 1" x 6" stainless steel straps also mount on the bolt. The finished assembly is shown in below.

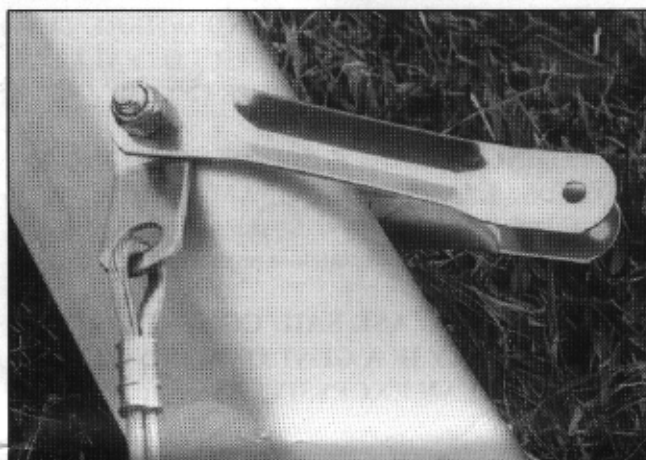


Photo 2 Upper shrouds

BACKSTAY (REAR MAST SUPPORT WIRE):

Install the backstay to the masthead fitting as shown in Photo 3. Note that the end without the stainless steel strap goes at the masthead. Use a 1/4" x 1 1/2" bolt and lock nut. Run the nut down as far as it will go.



Photo 3 Backstay

LOWER SHROUDS:

Using a 3/8 x 4" bolt and lock nut, attach the lower shrouds to the mast (Photo 4). Tighten the nut tight but not so tight as to deform the mast. The straps that are attached to the lower shrouds should point about 10 degrees to the rear (slotted) side of the mast.

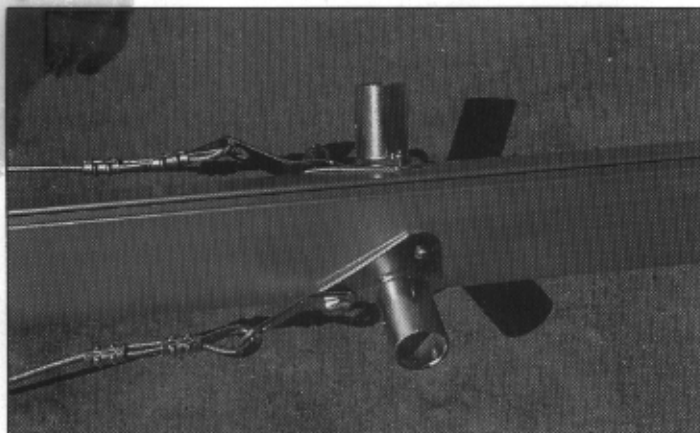


Photo 4 Lower shrouds and spreader sockets

FORESTAY (FORWARD MAST SUPPORT WIRE) AND JIB HALYARD BLOCK:

The forestay is attached to bottom end of the 1" x 6" stainless straps with a 1/4" x 2" bolt and locknut as shown in the Photo 5. Note that a pulley is mounted on the same bolt as the forestay. This pulley is used for the rope that hoists the jib.



Photo 5 Forestay and jib pulley

SPREADER TUBES:

Insert the spreaders into the spreader sockets as shown in Photo 6. Secure the spreaders with 1/4" x 2" bolts and lock nuts. The nuts go toward the bottom end of the mast.

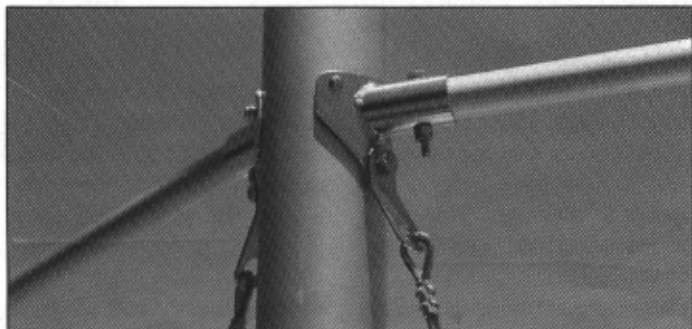
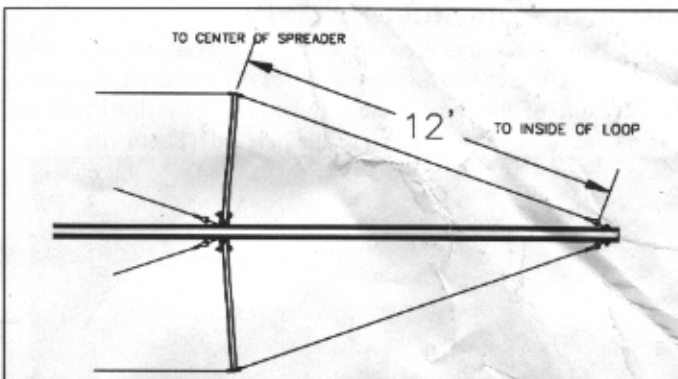


Photo 6 Spreader tube attachment

The end of the spreader tubes should be located as shown in Drawing 7. The measurement should be taken with the upper mast support wire pulled tight.



Drawing 7 Spreader position on upper shrouds

Connect the spreaders to the upper shrouds as shown in Photo 8. Make sure the spreader end fittings are clamped securely to the wires. Don't tighten the small screws too tight or the tips may strip. The spreader tip slots that hold the wire should be parallel to the mast.

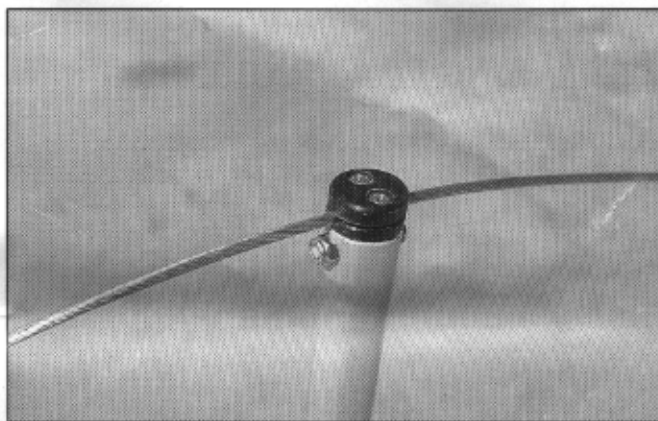


Photo 8 Spreader ends

MAIN HALYARD (MAINSAIL HOISTING LINE):

The main halyard passes through the block at the masthead (Photo 9). The forward end ties off to the cleat on the right side of the mast (right when looking forward). Use a bowline knot and tie a twist pin U shackle to the aft end of the halyard.

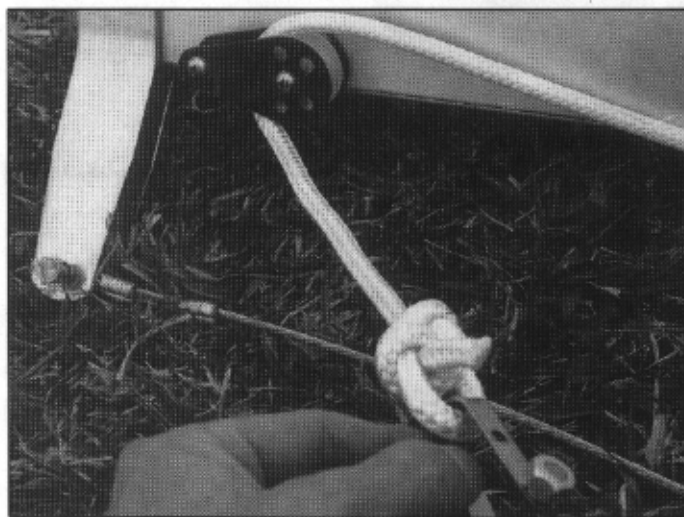


Photo 9 Main halyard

JIB HALYARD (JIB HOISTING LINE):

The line that hoists the forward sail (jib) passes through the pulley near the top of the forestay and ties off to the cleat on the left (port) side of the mast. Tie a twist pin U shackle (with a bowline knot) to the forward end of the halyard (Photo 10).

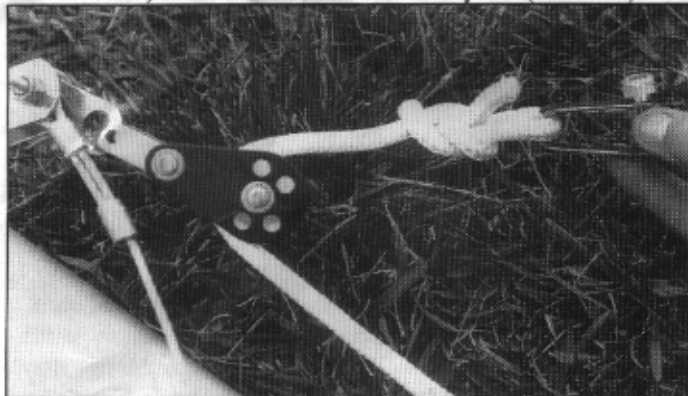


Photo 10 Jib halyard

4. PREPARING FOR TRAILERING

CARRYING THE MAST ON TOP OF THE BOAT:

The mast is carried on the boat with the bottom end forward and the slotted side down. Bolt the mast base to the forward rail with a 3/8 x 4 1/2" bolt and lock nut, as shown in Photo 11. This bolt also serves as the mast hinge. Use locknuts on all hardware holding the mast to the boat.

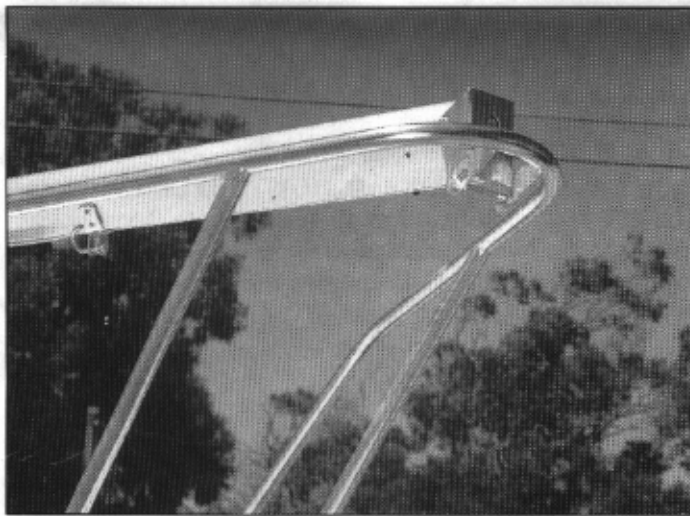


Photo 11 Mast bolted to front rail

Make sure the bolt is secure. Use the 9/16 wrenches. You will not believe the chaos if the front end of the mast gets loose while you are trailering. If you just tie the mast to the bow rail, a sudden stop could catapult the mast into your car or even into the car ahead of you. Again, the bolt is better than rope. Extra rope tie downs are always a good precaution.

Insert the mast carrier into the socket in the steering pedestal. (This can also serve as a boom crutch) Use a 3/8" x 4" bolt and lock nut to secure the mast to the carrier. (Photo 12)

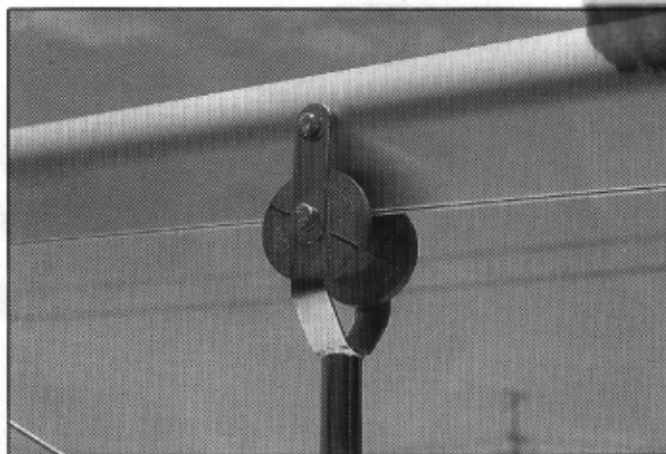


Photo 12 Bolt rear end of mast to mast carrier

Secure the mast with a line as shown below. (Photo 13) You should also tie a short piece of line around the mast near the rear crutch, and connect the top end of the mainsheet assembly (described later) to this line. This keeps the mainsheet organized and secures the rear carrier to the steering pedestal.

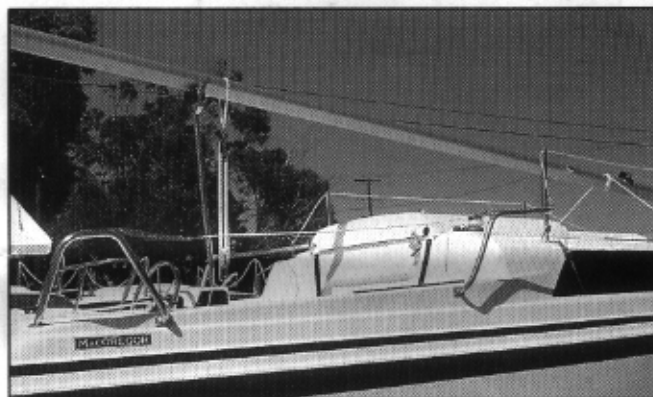


Photo 13 Mast tie down

When using the boat as a powerboat, the easiest place to store the mast is fully rigged in the upright position. It has no significant effect on performance under power, and it is out of the way. Having the mast rigged is a great safety feature. If the engine quits, it takes only a few seconds to get a sail up and start sailing. This might save you from drifting onto shore or from some other danger or embarrassment. It also beats trying to step the mast in rough seas.

SECURE ALL GEAR:

Stow all loose gear inside the cabin. Leave enough separation to avoid chafing. Make sure the outboard motor is clamped tight to the boat. Add a safety cable to make sure it stays with the boat. Most motors have holes in the bracket to permit bolting the bracket to the boat. This is a good idea. Be sure to use some sealant so the bolts won't leak.

When the mast is in its trailering position, neatly coil all mast support wires and lines, and tie them securely to the mast. If a wire or line gets loose and gets caught under the moving trailer wheel, or under the wheel of the following car, there will be big problems.

When the boat is on its trailer, don't load up the cockpit with gear and people unless the rear of the trailer is blocked up. The weight could cause the trailer and boat to tip backwards.

Make sure the outboard motor is secured in the up position for trailering.

Bolt the rudders in the full up position with 3/8" x 2 1/2" bolts and lock nuts. The rudders will get a lot shorter if they drag on the ground when the car is moving.

SECURING THE BOAT TO THE TRAILER:

Secure the trailer winch line to the nose of the boat as shown below.

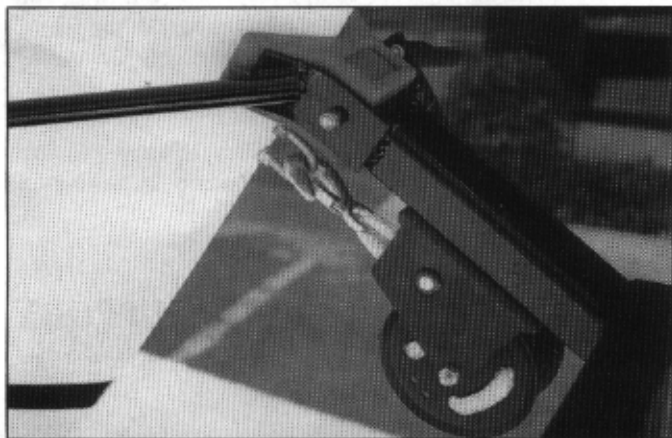


Photo 14 Trailer winch line

While keeping tension on the line, winch the nose of the boat snugly into the rubber bow support. Make sure these connections are good. If the line comes loose, the boat could slide off the trailer and end up on the street, or worse.

As an extra security measure, tie a line to one of the trailer side rails near the rear end of the trailer. Pass the line across the boat (under the lifelines). Pull it tight, and tie it to the other trailer rail.

Tiedown

5 PREPARING THE TRAILER

LUG NUTS:

It is the owners responsibility to check the lug nuts that secure the wheels to the axle before using the trailer. The wheels may have been removed in order to ship the boat to you or your dealer, and it is important for you to check to see that the lug nuts have been properly tightened. If they are loose, you may lose a wheel, with serious consequences. They should be **tight**. The proper setting, using a torque wrench, is 90 to 95 footpounds. Don't move the trailer one foot before checking these nuts.

TIRE REGISTRATION:

It is a federal law that the first licensed purchaser of any vehicle with tires register the tires with the vehicle manufacturer. This is done by completing the Tire Registration data on your warrantee card and returning it to MacGregor. Your name, address, tire

serial numbers, trailer serial number and date of purchase must appear on this card.

TIRE PRESSURE:

Before using the trailer, check the tire pressure. The recommended pressure can be found on the side wall of the tire near the tire size. Always check the tire pressure when the tires are cold. Under inflation can cause excessive sway at certain speeds and could cause loss of vehicle control. Over inflation could cause a tire to blow out, which also is very dangerous. Check tire pressure at frequent, regular intervals.

HITCHING UP:

Place the trailer coupler over the ball on your car, and make sure the snap latch is all the way down and locked. Try to lift the trailer off the ball to make sure the hitch is securely fastened to the ball. Insert a 1/4 x 1 1/2" bolt and lock nut thru the locking hole in the tongue to make sure the trailer doesn't jump off. Tongue weight should be between 250 and 280 pounds.

The ball should be 2" in diameter. You are responsible for making sure that the trailer hitch ball is secured properly to your car. Get some qualified help in mounting the hitch to the solid structure of your vehicle.

SAFETY CHAIN:

Secure the safety chain to a solid bumper brace or through the hole normally provided in your hitch. Leave enough slack so that the trailer and car may turn without putting tension on the chain. Secure the end of the chain to itself with the locking device mounted on the end of the chain. This must be a solid connection. Be sure to remove the nose wheel caster.

TOTAL WEIGHT:

The weight of the boat, trailer and all other items cannot exceed 3500 pounds. The empty boat weighs 2400 pounds. The trailer weighs 720 pounds.

$$\begin{array}{r} 2400 \\ + 720 \\ \hline 3120 \text{ lbs} \end{array}$$

LIGHT WIRES:

Our trailers come with a trunk harness (you will find it plugged into the trailer harness near the hitch). The exposed ends of the trunk harness must be wired into the light wiring of your car. The other end should be plugged into the trailer wiring harness. The wires on the trunk harness and trailer wiring are color coded as follows:

- White - Ground
- Brown - Running lights or tail lights
- Yellow - Left turn signal and brake light
- Green - Right turn signal and brake light

Make sure you have a good ground or you won't have lights. The light mounting brackets and ground wire must contact metal (you may have to scratch through the paint). Don't use the trailer unless all lights are working. You must have the following:

- One red tail light at each rear corner of the trailer.
- One red clearance light as part of the above lights.
- One clear license plate illuminator.
- One amber clearance light mounted at the outboard

rear corner of each fender. (These must be visible from the front.)

One 3 lens gang light centered on the rear of the trailer.

You must have a red light at the extreme rear end of the load (normally on the end of the mast). During the day, a red flag may be used. Here again, check your state laws for this and other requirements that you have to meet.

If your trailer has brakes, make sure the ground wire is connected to the trailer frame, and not to the moving portion of the brake actuator.

HYDRAULIC SURGE BRAKES:

State laws concerning brakes vary. Check with your dealer or with your appropriate state agency to determine whether or not trailer brakes are required in your area.

If your trailer is equipped with brakes, read the following carefully to make sure you understand their operation.

When you apply your car brakes, the trailer will try to push forward against the car. This push compresses the actuator mounted as part of the hitch, which applies force to the master cylinder, which creates hydraulic pressure to operate the trailer brakes. The harder you stop, the more hydraulic pressure you generate, and the more forcefully the brakes will be applied. The safety chain must be loose enough to permit free motion of the actuator assembly.

The surge brake system has a breakaway chain that connects to the car (this is not the same as the safety chain mentioned above). If the trailer gets loose from the car, the breakaway chain will cause the brakes to engage and try to stop the trailer. Make sure that this chain is fastened securely to the tow vehicle. It should have some slack so that it will not engage the brakes while the trailer is still connected to the car. The chain should be loose enough, even during turns, so that the breakaway lever is released (pointing all the way to the rear of the trailer) while the car and trailer are engaged. Check this each time before you use the trailer. No teeth on the breakaway lever should be engaged in the leaf spring. Accidental application of the lever will cause the trailer brakes to engage, drag, heat up and perhaps burn out. Do not use the emergency breakaway system as a parking brake.

The surge brake actuator linkage and the sliding mechanisms should work freely through the full range of travel. Do not mistake shock absorber resistance in the system for binding. Nylon bearings and the plated shafts do not normally need lubrication, but should be checked periodically. If you encounter erratic or unusual braking performance, investigate the cause immediately. The trailer should not push the tow vehicle, or try to jackknife during stops. The brakes should release when the trailer is pulled from a dead stop. To be sure the brakes are releasing properly, pull gently from a dead stop and then slowly stop so that the actuator ends up in a fully extended position. Then, with the vehicle stopped, tap each brake drum with a metal object. The brake drums should ring clearly when the brakes are released.

6. TOWING THE BOAT AND TRAILER

TURNING:

Don't try to make really tight turns. Extreme turns, while going forward or backwards, may damage the actuator or other parts of the trailer or car.

TOWING WITH HYDRAULIC BRAKES:

When you back up, the brakes may apply and you will get some brake pressure. Damp brakes may tend to seize when backing. Back slowly and steadily. You may have trouble with brake actuation if you try to back up a steep hill or driveway.

Make sure that the trailer is towed in a level position. It should never be towed with the tongue lower than the rear of the frame, as this will cause the brakes to activate and stay on during normal towing.

Make sure your car brakes stay dry. They are less efficient when wet. Be extra careful just after ramp launching or recovery.

7. ATTACHING THE MAST SUPPORT WIRES TO THE BOAT

UPPER AND LOWER SHROUDS:

The upper and lower shrouds should be connected to the chainplates (on both sides of the boat) with stay adjusters as shown in Photo 15.

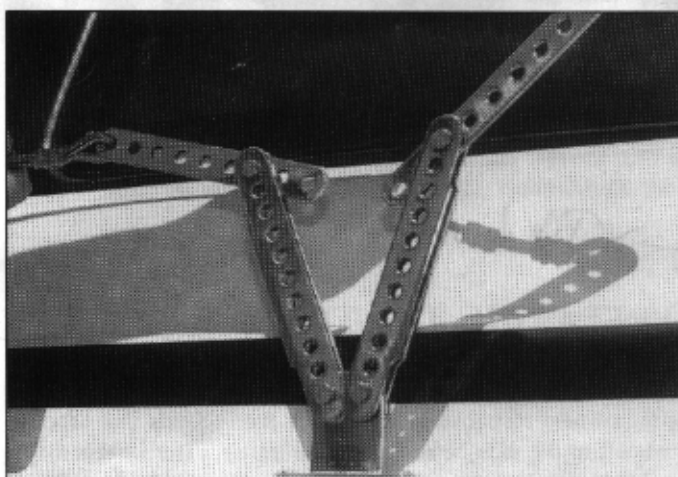


Photo 15 Side shrouds and stay adjuster channels

The upper shroud goes in the rear chainplate hole.

Use 1/4" clevis pins and cotter rings, and mount them as shown. Put the clevis pins through the third hole in the strap as shown, and thru the end hole in each channel.

Note that the open side of the stay adjusters face each other. The cotter rings should go toward the inside of the chainplate, so the jib sheets won't pull them off.

BACKSTAY

Connect the backstay to the backstay chainplate at the rear of the boat as shown below.

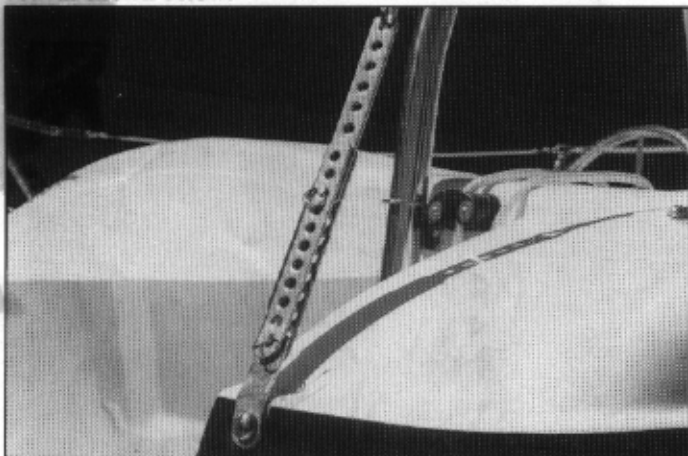


Photo 16 Backstay and stay adjuster channels

FORESTAY AND TURNBUCKLE:

Attach a turnbuckle to the forestay. Adjust the turnbuckle so that it is 1/3 closed. Don't attach it to the forestay chainplate at the front of the boat until the mast is raised.

8. RAISING THE MAST**ATTACH THE MAST TO THE MAST HINGE:**

Unbolt the mast from the forward rail, and unbolt it from the rear support. The 3/8" x 4 1/2" bolt and lock nut that holds the mast to the forward rail for trailering also serves as the pivot pin for the hinged mast step. With the rear of the mast supported by the mast carrier, move the forward end of the mast back to the hinge area. Insert the hinge pin (see Photo 17) and make sure the lock nut is on tight enough that the plastic seal engages the threads. (You will need two 9/16" end wrenches for this.) It is not necessary to run the nut down tight on the hinge plates. Just make sure the nut is on tight enough so that you can't turn it with your fingers.

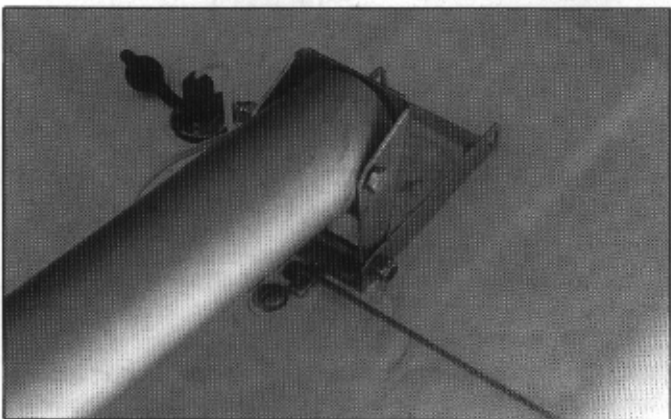


Photo 17 Mast hinge

LIFTING THE MAST:

Make sure all mast support wires except the forestay are connected to the mast and boat.

Make sure that the mast wires are not entangled on the boat or trailer, and then raise the mast (Photo 18). This is best accomplished by standing on the cabin top, aft of the mast, and lifting the mast into position.

Be careful not to hit a power line with the mast or rigging. You could be injured or killed.



Photo 18 Lifting the mast

The mast lifting task is made much easier if a second person stands on the foredeck and pulls on the forestay as the mast goes up. Look up to make sure the wires are not kinked on their attachment fittings, or tangled on the boat or trailer.

CONNECTING THE FORESTAY:

After the mast is up, tie the jib halyard to the bow rail to keep the mast from falling backwards while you connect the forestay to the forward hole in the forestay chainplate (at the front of the boat). Make sure both ends of the line are secured to keep the mast from falling backwards. Insert the clevis pin that comes with the turnbuckle to secure the forestay to the chainplate. Then install the ring ding so the pin can't come out. (Whenever you use a ring ding, make sure that it is turned fully onto the pin, and that the ring ding can then be rotated freely without coming out of the hole in the pin). Do not release forward pressure on the mast until the forestay is connected. If you have to move the boat after the mast is up, be watchful that you don't run it into a power line.

9. RAISING THE MAST WITH THE OPTIONAL MAST RAISING SYSTEM**GENERAL:**

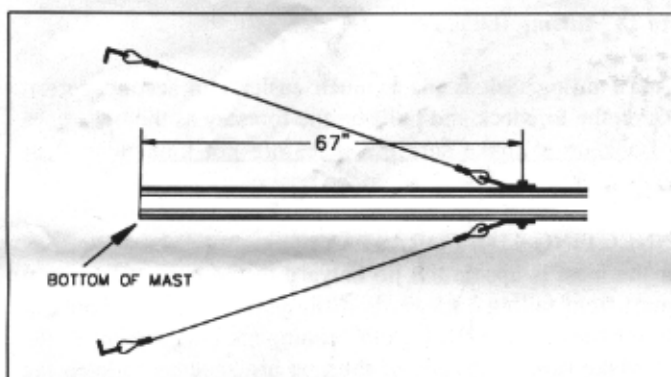
Photo 19 on the following page gives you an idea of how the optional mast raising system works. There are a pair of wire cables (side support wires) that keep the mast from falling sideways as it goes up and down. There is a mast raising pole that provides leverage to lift the mast. A block and tackle goes from the end of the pole to a fitting on the deck near the nose of the boat. This block and tackle, along with the jib winch, provides the power to lift the mast. The jib halyard attaches to the end of the pole. This is the line that lifts the mast.



Photo 19 Optional mast raising system

SIDE SUPPORT LINES:

After the mast pivot pin is in place, with top end of the mast resting in the mast crutch in the cockpit, connect the side support wires to the mast as shown Photo 20. Use a $3/8$ x $4 1/2$ " bolt and lock nut. Make sure the nut is secure.



Drawing 20 Side support wires, - attachment to mast.

The angles on the lower end of each mast support wire fit into straps about 2' to the right and left of the mast hinge, as shown in Photo 21. Slide the fittings into the strap and secure them with a $1/4$ " x 1" bolt. The bolt should pass thru the angle bracket, but not be so tight as to damage the fiberglass underneath.

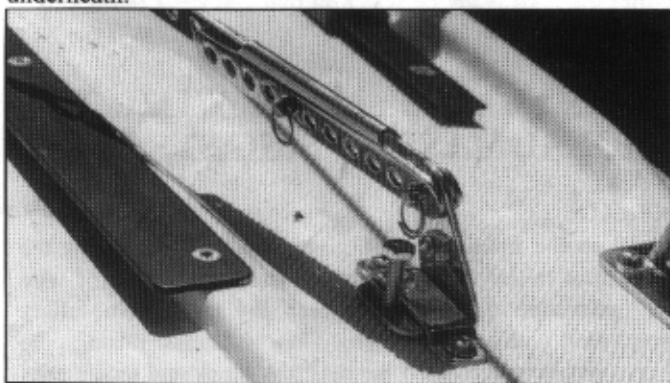


Photo 21 Side support wires, attachment to deck

Adjust the stay adjusters so that the wires are free of slack, but not really tight. $1/2$ " of play is about right.

MAST RAISING POLE:

Connect the end of the mast raising pole to the forward holes in the mast base as shown below. Use a $3/8$ x $4 1/2$ " bolt and lock nut.

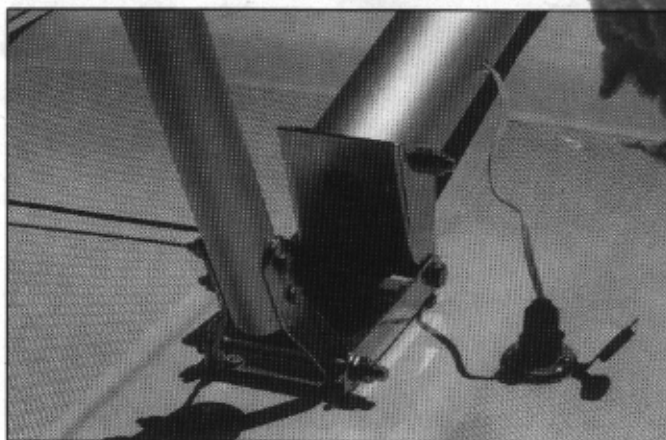


Photo 22 Mast raising pole attachment

Rig the block and tackle to the end of the pole as shown in photos 23 and 24.

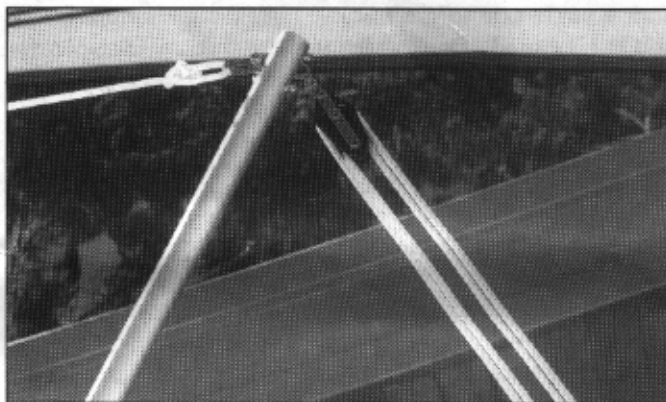


Photo 23 Mast raising block and tackle, top (pole) end.

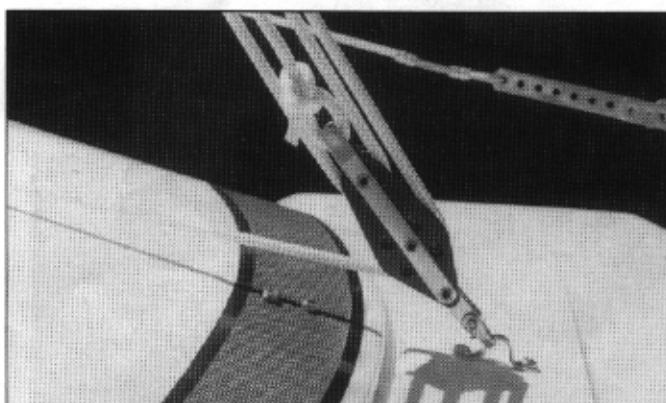
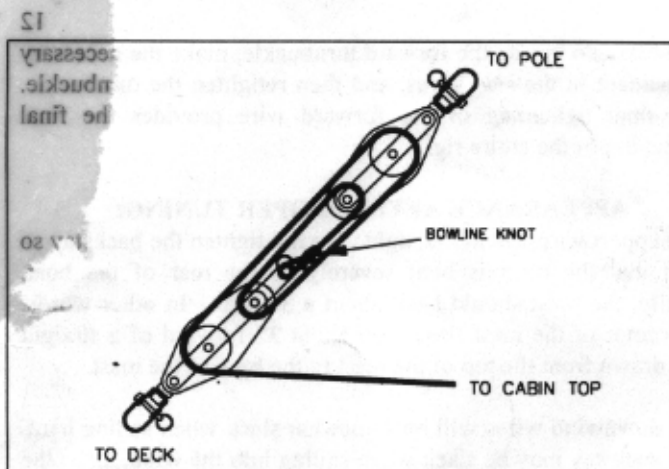


Photo 24 Mast raising block and tackle, bottom (deck) end.

Drawing 25 on the following page shows how the line is fed thru the pulleys. Use a bowline to secure the line to the lower block. Run the other end of the line back to the jib winch on the port side of the boat (the left side when you face forward).



Drawing 25 Mast raising line

Tie the end of the jib halyard to the eye on top of the pole. Use a bowline knot as shown in Photo 1. Pull on the other end of the jib halyard until the pole end is about 10 degrees to the rear of vertical. Then tie off the other end of the halyard to one of the cleats on the mast, (located about 5' above the mast hinge). Use the wrap shown in Photo 2. Make sure the line is really secure at both ends. If it comes loose, the mast will fall and someone may get badly hurt. When the lines are all tight, the mast raising pole should be at right angles to the mast as shown in Photo 19.

Take 3 wraps clockwise around the jib winch. Insert the winch handle securely in the winch and begin cranking up the mast. Keep pulling on the end of the line to keep it from slipping on the winch. The loads will be heavier at first, but lighten as the mast goes up.

Look around to make sure all mast wires are clear and free of tangles. Again, make sure you are clear of all overhead power lines and that the mast won't hit them when it goes up or when you have to move the trailer after the mast is up.

Look up at the rig to make sure that none of the loops in the wire ends are kinked or hooked over the stainless steel fittings to which the wires attach.

All of the comments in the section describing how to raise the mast manually still apply to raising the mast with the optional pole. The optional system simply reduces the physical effort involved in the mast lifting.

Don't stand under the mast or under the mast raising pole. If something lets go, or the mast falls, these are not the places to be.

When the mast is up, pull the rope tight, and fasten the line securely to the jib cam cleat near the winch.

Now connect the bottom end of the forestay turnbuckle to the forward hole in the stainless steel fitting at the nose of the boat (Photo 25). Don't release tension on the mast raising line until the forestay is secure and the clevis pin is in place.

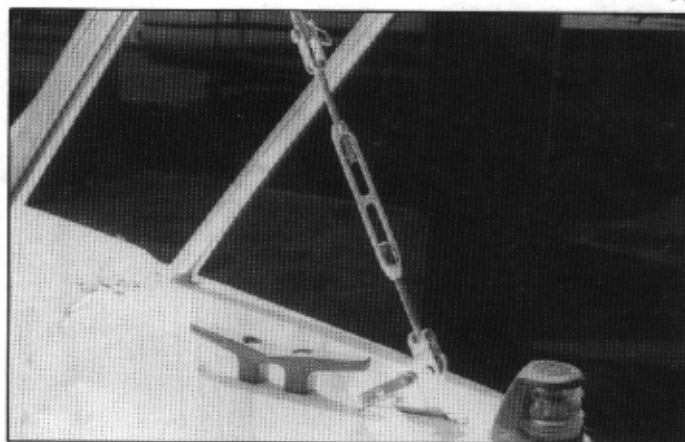


Photo 25 Forestay connection

Tighten down on the turnbuckle so the rig is really snug. Then secure the turnbuckle with its cotter pins. Make sure they are spread to their full open position. Fold the pointed ends back so they won't cut hands or tear sails. One nice thing about this setup is that you will not have to adjust the turnbuckle after it is once set. The pulleys provide sufficient power to stretch the rig enough to remove the pin. (This is the only disconnect that you have to make for raising and lowering the mast.)

LOWERING THE MAST:

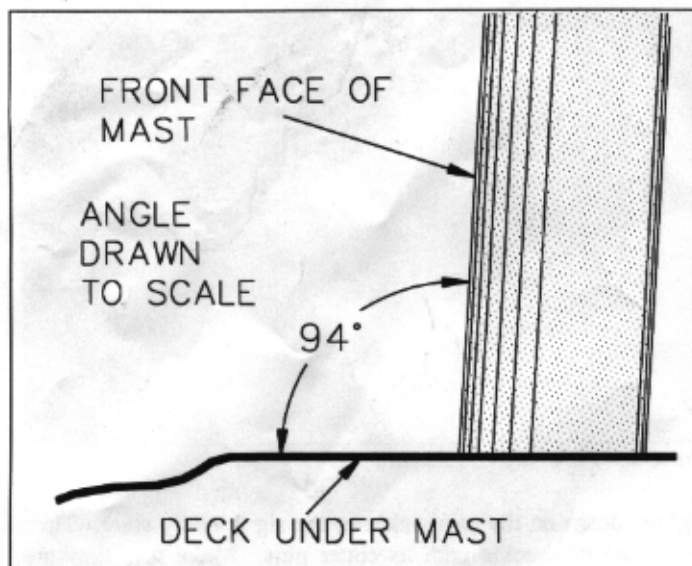
To lower the mast, reverse the process used for either the standard or optional system. First, remove the boom. Before you lower the mast, put the mast support in its holder in the cockpit. Otherwise the mast will come down on the cabin hatch and cause damage. Remember, the load gets greater as the mast gets lower. Be prepared. Get a good grip on the line or the mast and don't be fooled by the very small loads while the mast is close to vertical. Hold down on the mast when you try to remove the hinge pin. It will want to pop up when the pin is released.

People have been killed or badly injured as a result of masts or support wires coming into contact with overhead power lines. Be watchful whenever you rig, launch, trailer or do anything else with your boat that might involve contact with power lines. If there is a threatening power line anywhere near areas where you sail, call or write to the power company and try to get them to move it or bury it. Notify us and we will also lean on them. Don't remove the warning sticker on the mast. The repeated warnings may get boring, but power lines are life threatening risks.

10. ADJUSTING THE MAST SUPPORT WIRES

MAST POSITION:

The drawing on the following page (Drawing 26) shows the proper angle of the mast in relation to the cabin top just aft of the base of the mast. The angle should be 94 degrees. Make a larger pattern on a piece of cardboard using the drawing as a guide. The angle in the drawing is to exact scale.



Drawing 26 Mast angle in relation to the cabin top

When properly tuned, all of the mast support wires should be quite snug. Use the following sequence to set the rigging.

BACKSTAY:

Adjust the backstay to give the mast the proper fore and aft position.

FORESTAY:

Take up the slack in the forestay by adjusting the turnbuckle.

UPPER SHROUD:

Adjust the upper shrouds so that the mast is straight from side to side. Try to make them snug. The stay adjuster channels are designed as "verniers" to provide adjustments in 1/8" increments. This is accomplished by having the holes in the wire straps spaced at different intervals than the holes in the adjuster channels. As the wire is extended every 1/8", a new set of holes will line up, allowing very precise tuning adjustments. A small screwdriver can be inserted in one of the sets of non-aligning holes to provide leverage to get tension on the wires while the clevis pin is being inserted in the proper holes. Use the 1/4" clevis pins and cotter rings to connect the channels to the straps fastened to the support wires.

These channels are stronger than turnbuckles, better able to stand the bending loads resulting from raising and lowering the mast, and less likely to accidentally come loose.

LOWER SHROUDS:

Adjust the lower shrouds as described above. Don't get them too tight or the center of the mast will be pulled toward the rear of the boat.

ALTERNATE METHOD OF TENSIONING THE WIRES:

With all the rigging in place, grip the upper shroud about 4 feet above the deck and pull inboard toward the center of the boat. The lower wire will go slack and allow another hole to be taken up in the adjuster channel. To adjust the upper wires, pull inboard on the lower wire. This method takes 2 people, and can get the rigging tighter than is desirable.

You can also loosen the forward turnbuckle, make the necessary adjustment in the side wires, and then retighten the turnbuckle. The final tightening of the forward wire provides the final tightening of the entire rig.

MAST APPEARANCE AFTER PROPER TUNING:

All support wires should be tight. Do not tighten the backstay so tight that the mast is bent severely to the rear of the boat. Ideally, the mast should have about a 3" bow. In other words, the center of the mast should be about 3" forward of a straight line drawn from the top of the mast to the base of the mast.

The downwind wires will be somewhat slack when sailing hard. The backstay may be slack when sailing into the wind, since the mainsail takes over the task of supporting the mast from the rear.

SECURE ALL COTTER PINS AND RINGS:

Make sure all the cotter pins and rings are in place and the cotter pins are opened and secured. Once again, the ring dings should be fully on the pin, so they can be rotated freely 360 degrees without coming out of the hole in the pin.

INSPECTION OF THE RIGGING:

It is a good idea to periodically inspect the mast and rigging. Look for broken strands in the wire bundles, signs of wear, and for kinks in the wire. Inspect the nicopress swagings to make sure the wire hasn't slipped thru the fittings. Replace any damaged wire.

11. RAMP LAUNCHING

Remove the trailer lights. Attach a 15' line to the nose of the boat. Back the trailer into the water until the boat floats free. Do not untie the nose of the boat from the trailer winch until the boat is in the water. On a reasonably steep ramp, the boat could slide off the trailer before it gets near the water. This is a good way to look really stupid. If you leave the car for any reason, make sure the brake is well set, or the whole works may end up under water. This will look even worse.

Make sure the rudder and the outboard motor are secure in the full up position so they won't hit the ground when launching and recovering the boat.

After the boat is launched, go inside and look to make sure there are no leaks. If you raise the mast after the boat is in the water, first fill the water ballast tank to give yourself a more stable platform.

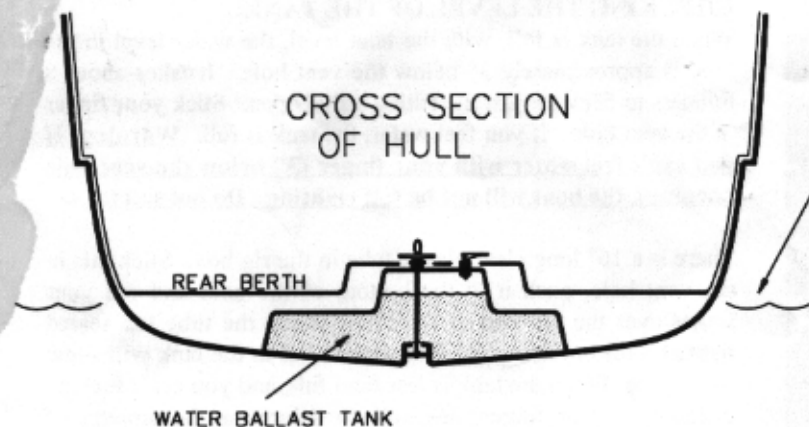
12. THE WATER BALLAST SYSTEM

FILLING AND EMPTYING THE BALLAST TANK:

Underneath the step down into the cabin (shown in Photo 27) you will find a vent plug and the water ballast tank filling valve. The step is removed by undoing the wing nut at the base of the step on the starboard side, and by sliding the step to starboard to free it from the retaining strap on the port side of the step.

WATER BALLAST SYSTEM

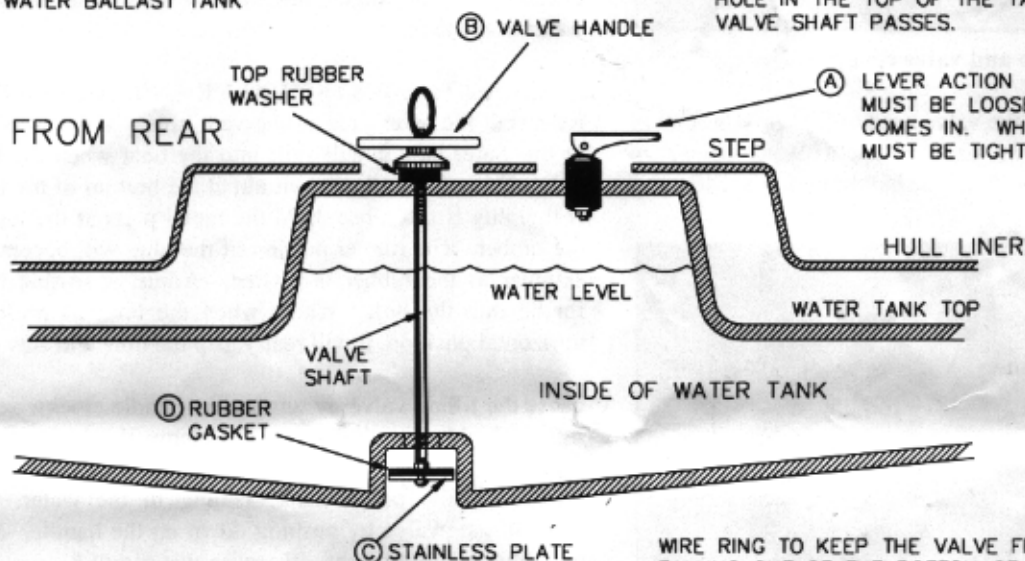
CROSS SECTION OF HULL



WATER LEVEL OUTSIDE THE BOAT. WITH THE VALVE OPEN, THE LEVEL IN THE TANK WILL SEEK THE SAME LEVEL AS THE LEVEL OF THE WATER SURROUNDING THE BOAT.

TURNING THE VALVE HANDLE (B) CLOCKWISE DRAWS THE VALVE SHAFT AND STAINLESS STEEL PLATE (C) UP, WHICH SQUEEZES THE RUBBER GASKET (D) AGAINST THE HULL, CLOSING OFF THE WATER ACCESS HOLES. THIS ALSO PASSES THE TOP OF THE BALLAST TANK, SEALING OFF THE HOLE IN THE TOP OF THE TANK THROUGH WHICH THE VALVE SHAFT PASSES.

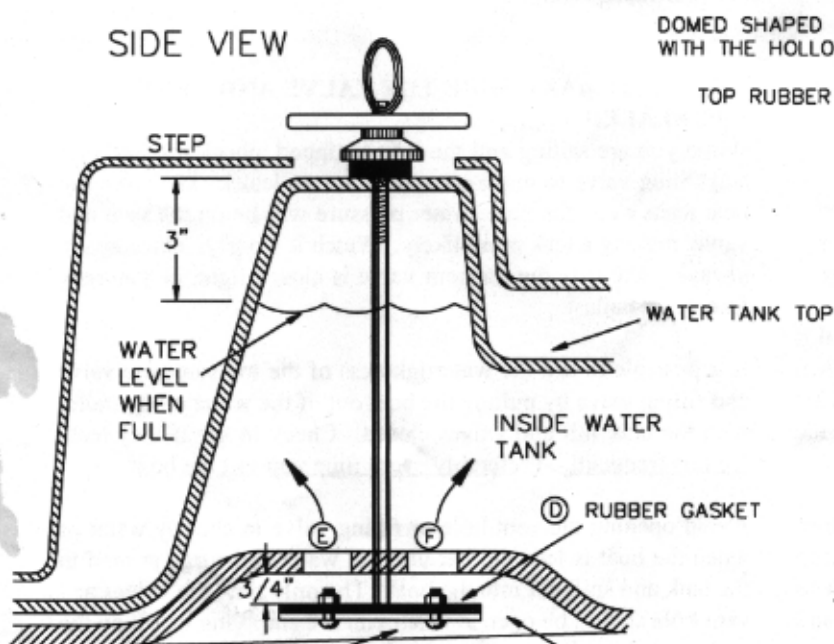
VIEW FROM REAR



(A) LEVER ACTION AIR VENT PLUG. PLUG MUST BE LOOSE TO LET AIR OUT AS WATER COMES IN. WHEN TANK IS FULL, PLUG MUST BE TIGHT.

WIRE RING TO KEEP THE VALVE FROM FALLING OUT OF THE BOTTOM OF THE BOAT. DO NOT REMOVE.

SIDE VIEW



DOMED SHAPED WASHER, MOUNTED WITH THE HOLLOW SIDE DOWN.

TOP RUBBER WASHER

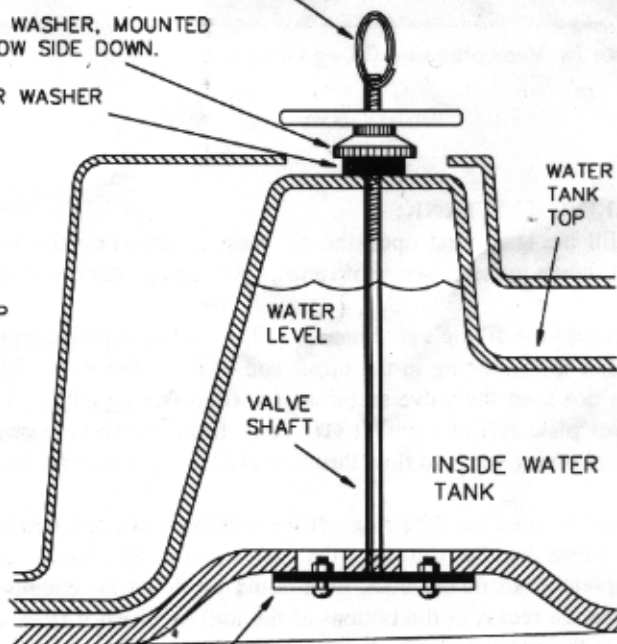
WATER TANK TOP

INSIDE WATER TANK

(D) RUBBER GASKET

(C) STAINLESS STEEL PLATE WELDED TO THE END OF THE VALVE SHAFT. MUST BE PARALLEL TO HULL IN ORDER TO SEAL

VALVE OPEN



VALVE CLOSED

HULL BOTTOM

When replacing the step, always secure it firmly with the retaining strap and wing nut. If it is loose, the next person coming down the entryway may take a fall.



Photo 27 Cabin entry step and valve cover

The following photo shows the valve used to fill the ballast tank, and the vent plug that allows air to escape as water comes in. The vent hole is also used to check the ballast tank water level.

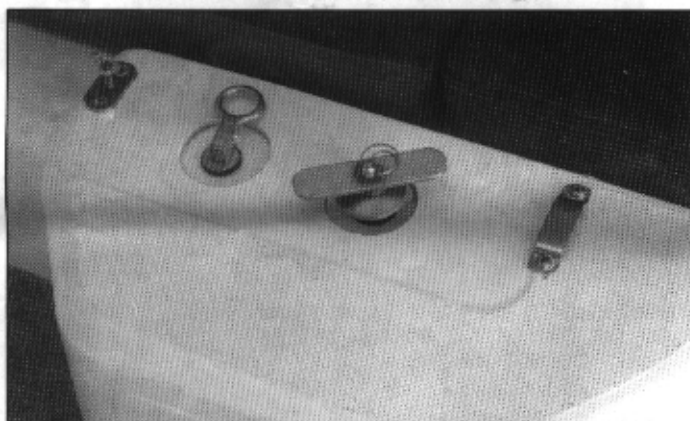


Photo 28 Vent plug and filling valve

FILLING THE TANK:

To fill the tank, first open the air vent by removing the lever plug shown in the above photo and as item (A) on the drawing.

Then turn the filling valve handle (B) counterclockwise until it touches the wire ring in the upper end of the valve stem. Then push down on the valve as far as it will go (about 3/4"). This moves plate (C) and gasket (D) away from the surface of the hull, allowing water to flow thru holes (E) and (F) into the tank.

Do not remove the wire ring. If it is off the shaft, and you turn the valve handle too far, the valve assembly could drop completely out of the boat, or it could go down far enough to escape the recess in the bottom of the hull in which it rides and jam in the open position. Again, **do not remove the wire ring.** If you want to speed up the filling process, also open the gate valve on the transom by pulling upward on the valve handle.

This handle is located just to the right of the engine (as you face aft). Remember to close it after filling the tank.

CHECKING THE LEVEL OF THE TANK:

When the tank is full, with the boat level, the water level in the tank is approximately 3" below the vent hole. It takes about 8 minutes to fill with just the filling valve open. Stick your finger in the vent hole. If you feel water, the tank is full. **Warning: If you can't feel water with your finger (3" below the vent hole opening), the boat will not be self righting. Do not sail it.**

There is a 16" long clear plastic tube in the rig box. Stick this in the vent hole, push it to the bottom of the boat and put your finger over the top end of the tube. Keep the tube top sealed tight and lift out the tube. The water level in the tank will show in the tube. When the tank is less than full, and you can't feel the water with your finger, use tube to determine the amount of water in the tank.

CLOSING THE WATER VALVE AND AIR VENT:

Re-install the lever plug in the vent hole. Make sure it is tight, or the water ballast will spill into the boat when the boat leans over. There is an adjustment nut at the bottom of the lever plug. If the plug is too loose, hold the metal parts at the top and turn the rubber. The rubber portion of the plug will become fatter or skinnier as the rubber is rotated. Adjust it so that it must be forced into the hole. Then, when the lever is pressed to the horizontal position, it will really grip the hole and stay put.

Close the filling valve by turning the handle clockwise until it is **tight**. Tightening the valve will clamp the base of the valve against the bottom of the hull, and the top of the valve against the top of the ballast tank, sealing in the water. Close the transom gate valve by pushing down on the handle. Make sure the valve is closed tight, otherwise water will be sucked out by the forward motion of the boat and ballast will be lost, making the boat capsizable.

CHECK TO MAKE SURE THE VALVE AND VENT ARE SEALED:

While you are sailing and the boat is tipped, check the air vent and filling valve to make sure there are no leaks. The more the boat leans over, the more water pressure will be on the vent and valve, making a leak more likely. Watch it closely. Once again, always make sure the transom valve is closed tight, or you may lose water ballast.

It is possible to test the watertightness of the transom gate valve and filling valve by pulling the boat out of the water on its trailer with the tank full and valves closed. Check to see if they leak. **Do this frequently. Preferably every time you sail the boat.**

Avoid opening the vent hole or filling valve in choppy water or when the boat is leaning, because the water can surge around in the tank and spill out into the boat. The only time the valves and vent hole should be open is when you are emptying or filling the tank, or when the boat is out of the water. Do not leave the valves and vent hole open and unattended.

PREVENTION OF ALGAE IN THE BALLAST TANK:

If you leave the ballast tank full of water for long periods, drop in a few swimming pool chlorine tablets to prevent a bad case of algae. Be cautious when handling the chlorine tablets. Follow the directions on the chlorine tablet container very carefully. Don't put chlorine in the galley water tank. Don't leave water in the tank in freezing weather. Damage could result.

13. RETURNING THE BOAT TO ITS TRAILER

Simply drive the boat onto its trailer. Try to steer the nose into the V on the front of the trailer. Leave the outboard running to hold the boat against the rubber V pad, and go forward to secure the nose to the trailer.

Before pulling the boat out of the water, winch the nose to the trailer to prevent the boat from sliding backward off of the trailer. Make sure the boat is centered on the trailer.

If you pull the boat out of the water and find that the nose of the boat is not quite in its rubber pad, drive the car and trailer forward at low speed and tap the brakes. The boat will easily slide into the rubber block. This saves having to overload the winch and line to move the boat. Don't go too fast or make a real hard stop, or the boat may end up in or on your car. Carefully store and secure all lines and mast support wires to avoid entanglement in the trailer wheels while towing.

14. EMPTYING THE BALLAST TANK

This section describes emptying the tank when the boat is being pulled out of the water at a launch ramp. Emptying the tank when the boat is still in the water is described near the end of these instructions in the Powering section.

To drain the tank, make sure both the vent and the transom valve are open.

Remove the water tank vent plug inside the boat. Pull the boat slowly out of the water, and the water ballast will begin to drain out of the boat and back into the ocean. As the boat comes out of the water, the water level in the tank will be higher than the water level surrounding the boat. The water in the tank will try to seek the level of the surrounding water, and the tank will drain.

If the ramp is steep, and the air vent is open, the nose of the boat may be higher than the vent hole in the top of the tank, and some water may spill into the boat from inside the tank. This can be remedied by pulling the boat out slowly, or by keeping the valve and air vent closed until the boat and trailer reach level ground at the top of the ramp. This is the time to check the gate valve and filling valve seals. If the ramp is steep or slippery, or if your car is feeble, it may not be able to pull the boat and the 1400 lbs of water up the ramp. If so, move forward just a small amount and wait for some water to drain. Then move forward some more, and let more water drain. Keep inching forward until the water

is gone. In this manner, you will never have to pull out the entire 1400 lbs in one swoop.

Do not try to tow the boat with water in the tank. The trailer was not designed to carry the extra 1400 lb load. Trailering with the water ballast in the tank will overload the trailer and probably your car. When trailering, leave the valve open so all the water can slosh out. There is no sense in carrying around unnecessary water.

15. CONNECT THE BOOM TO THE MAST

The finished assembly is shown below. (Photo 29) Use a 1/4 x 1 1/2" bolt and lock nut to secure the boom to the mast bracket.

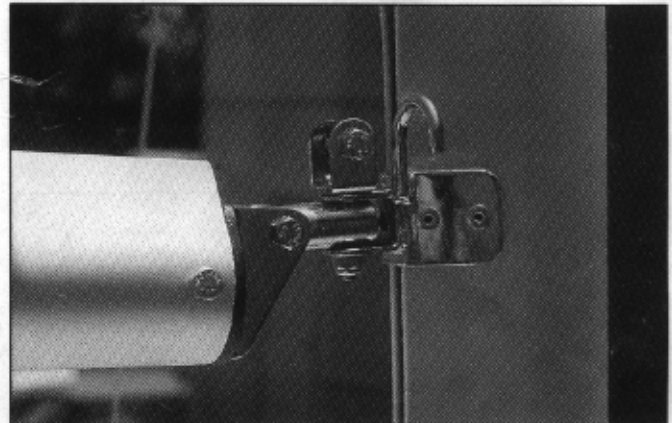


Photo 29 Connect boom to mast

16. MAINSHEET

The lower end of the mainsheet (mainsail control line) is attached to the top of the steering pedestal as shown in Photo 30.

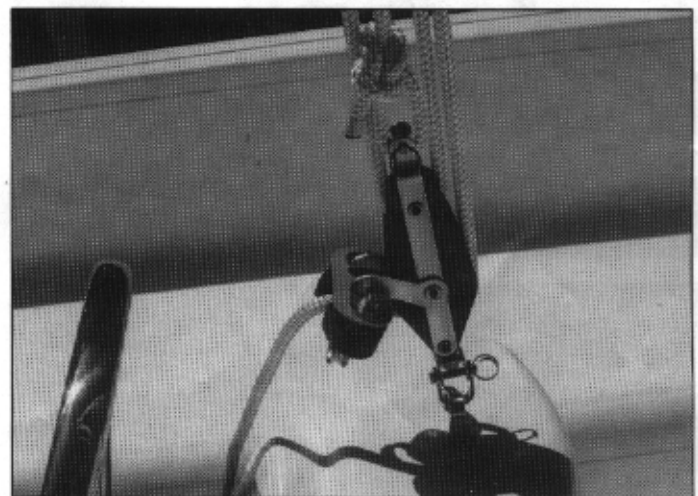


Photo 30. Mainsheet attached to steering pedestal

The upper end of the mainsheet is attached to the boom as shown in Photo 31.

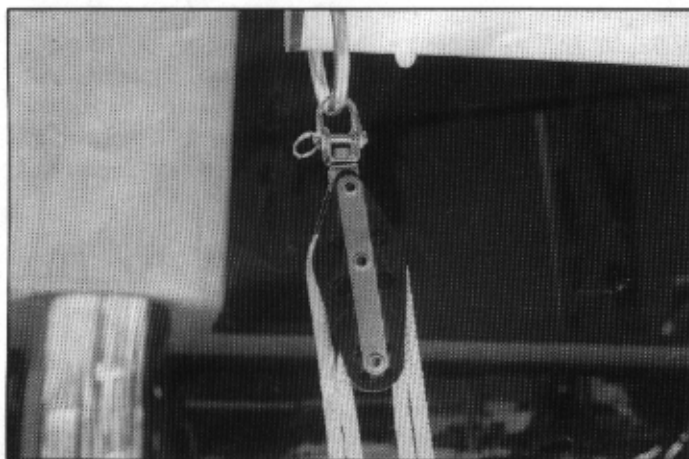
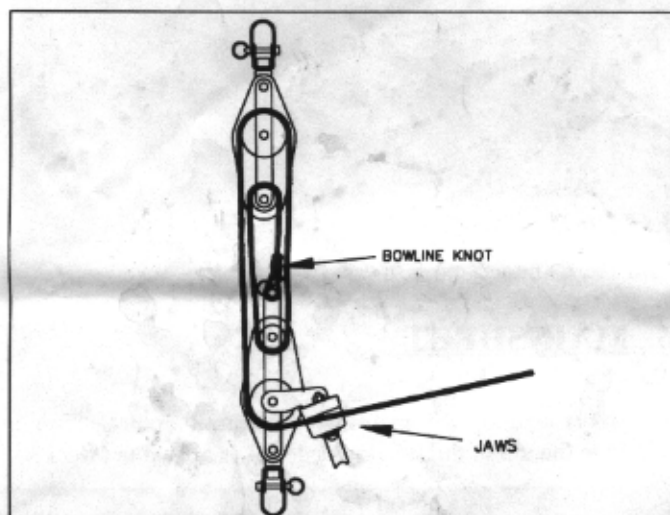


Photo 31 Mainsheet attached to boom

The mainsheet threads its way thru the pulleys as shown in the following drawing.



Drawing 32 Mainsheet

17. MAINSAIL

Feed the lower rear corner of the mainsail into the open slot in the front end of the boom and pull it along the full length of the boom as shown in Photo 33.

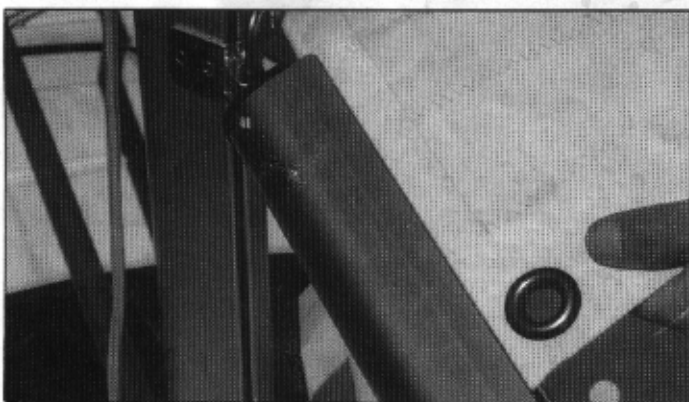


Photo 33 Feeding mainsail onto the boom

Connect the main halyard snap shackle to the top of the sail, and start feeding the rope on the leading edge of the sail into the spread portion of the mast. (Photo 34).

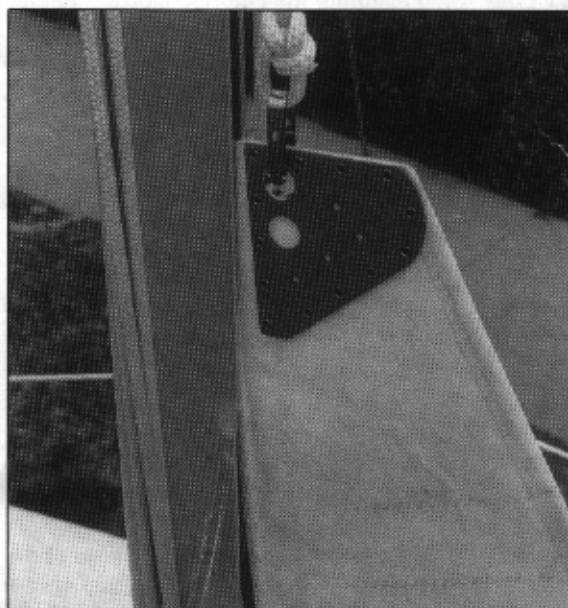


Photo 34 Attaching the mainsail to the mast

BATTENS:

Insert the 4 fiberglass battens in the pockets in the rear edge of the sail as shown in Photo 35. The short batten goes in the top pocket. The other three battens are of equal length. Make sure that the rear edge of the batten is tucked into the pocket sewn into the rear edge of the batten slot. If it is not secure, the batten will work its way out of the sail when you are sailing.

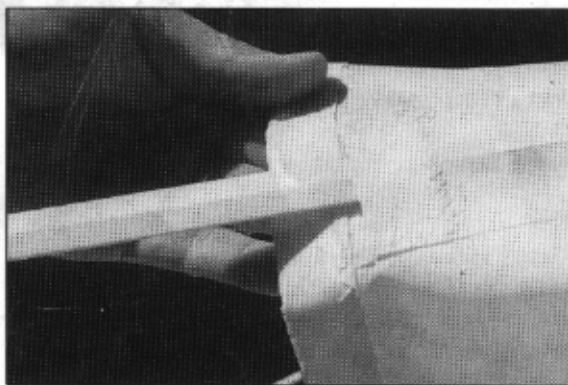


Photo 35 Batten, partially inserted

With the boat pointed directly into the wind, hoist the sail while guiding the rope into the slot in the mast. The ring in the front lower corner of the sail attaches to the stainless steel ears on the gooseneck with a 1/4 x 1 1/2" bolt and lock nut.

Secure the end of the main halyard to the mast cleat on the right side of the mast (when looking forward) with a trucker's hitch, as shown in Photo 36. First make a loop in the line about 2' above the cleat.

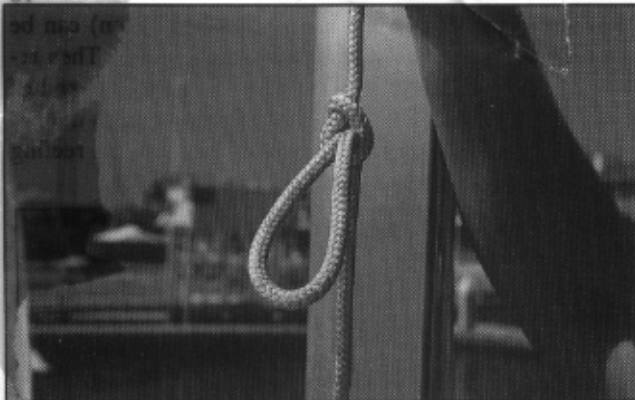


Photo 36 Trucker's hitch, top loop

Wrap the loose end of the line around the cleat just once and then pass it thru the loop that you made above the cleat.



Photo 37 Trucker's hitch, complete

When you pull down on the loose end, you will get a 2 to 1 power advantage. (For every pound of pull you put on the loose end, you will get a 2 pound pull on the halyard). When the mainsail is up, secure the loose end to the cleat as shown at the beginning of these instructions. The front edge of the sail should be stretched tight, but not so tight that vertical wrinkles appear in the front of the sail.

Run the rope at the rear end of the boom thru the sail and tie the line tight to the cleat at the end of the boom (Photo 38).

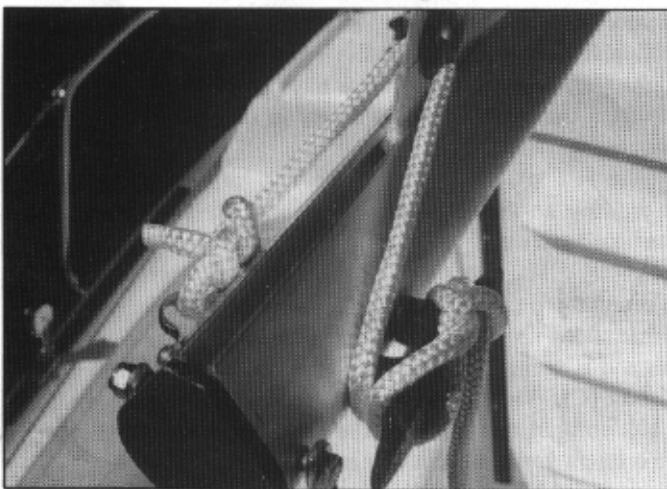


Photo 38 Mainsail attachment, lower rear corner

For light winds, the sail should be full and somewhat baggy along the boom. As the wind increases, the sail can be flattened for better efficiency by tightening the halyard and boom end line (outhaul). A common error is not having the halyard tight enough. However, don't get it so tight that the sail has long vertical wrinkles along the mast.

18. JIB (FORWARD SAIL)

Attach the forward corner of the jib to the rear hole in the forestay chainplate, using a shackle as shown in Photo 39.



Photo 39 Jib, forward lower corner

Clip the jib to the forestay with the bronze snaps on the sail, and tie the jib sheet as shown (Photo 40).

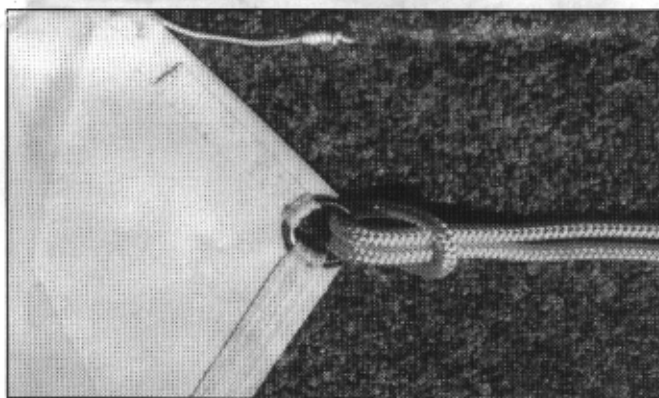


Photo 40 Jib sheet

When the jib is raised, use a trucker's hitch. Get the halyard really tight. Secure the halyard to the left (port) cleat on the mast. The jib sheets go thru the low profile blocks that slide on the jib tracks on the cabin top (Photo 41). Make sure the blocks are pinned securely so they don't fly off the ends of the tracks. The lines then go directly to the jib winches at the rear of the cabin top.

The position of the blocks on the tracks is very important for good performance. When you turn the boat up into the wind, if the top portion of the jib collapses and loses its shape before the bottom part of the sail, move the blocks forward. If the bottom half of the sail collapses first, move the blocks to the rear.

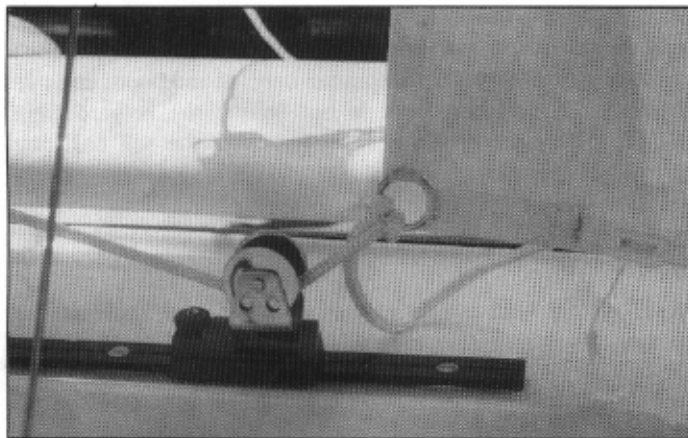


Photo 41 Jib sheet blocks

There should be no scallops or sagging between the clips on the jib sail. A loose leading edge is a very common error and hurts the boat's windward performance.

When sailing properly, the short strings (tell-tales) on **both** sides of the jib or genoa should be streaming to the rear of the sail.

19. GENOA (OPTION)

The genoa is similar to the jib, except that it is longer along the base. It adds a lot of power and is particularly effective in light winds.

The genoa is installed and handled just like the jib, except the genoa sheets go to the spring mounted standup blocks on the coaming aft of the cabin as shown in the following photo. The lines go outside of the shrouds that hold up the mast, and then inside the cockpit lifelines.

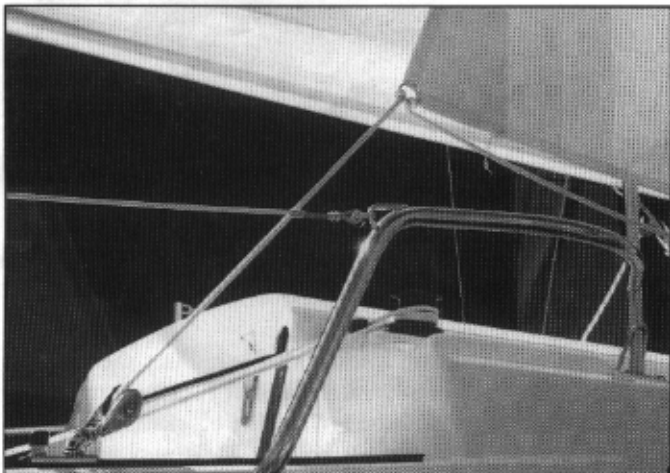


Photo 42 Genoa sheet blocks

20. REDUCING THE AREA OF THE MAINSAIL (REEFING)

Don't hesitate to reef when it blows hard. The boat will be more manageable and usually faster. To reef, release the mainsail halyard and lower the sail until the reefing eye on the front edge

of the sail (about as high on the sail as the first batten) can be hooked into the hook that holds the boom to the mast. Then retighten the halyard. Release the line that holds the rear end of the sail to the boom. Pass the line thru the reefing eye on the (near the bottom batten), around the boom, back thru the reefing eye, then to the cleat at the end of the boom (Photo 43).

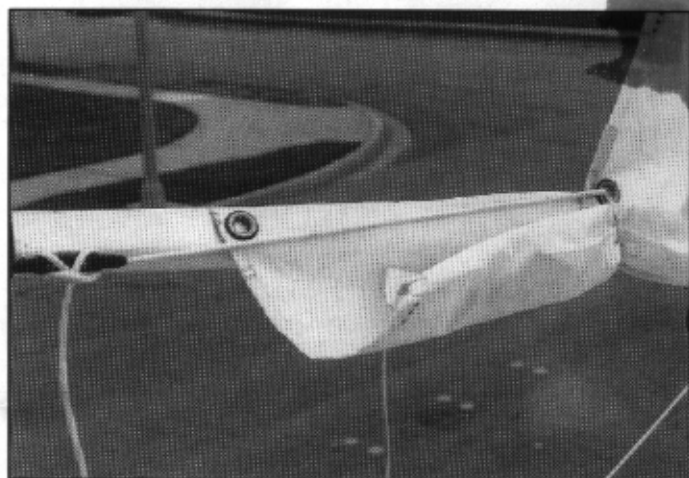


Photo 43 Reefed mainsail, lower rear corner

21. CENTERBOARD

The centerboard is raised and lowered by the line at the rear end of the cabin on the starboard side.

The centerboard should be fully lowered when sailing into the wind, to keep the boat from sliding sideways. It should be raised completely for sailing downwind. When sailing at right angles to the wind, leave the board about half way down. This will move the center of the boat's resistance to the rear and reduce load on the rudder. When sailing with just the mainsail, the centerboard should be about 1/2 way down, or the boat will try to point into the wind. At low speed under power, the boat steers a lot better when the board is about 1/4 down. When powering over 5 mph, the board must be all the way up.

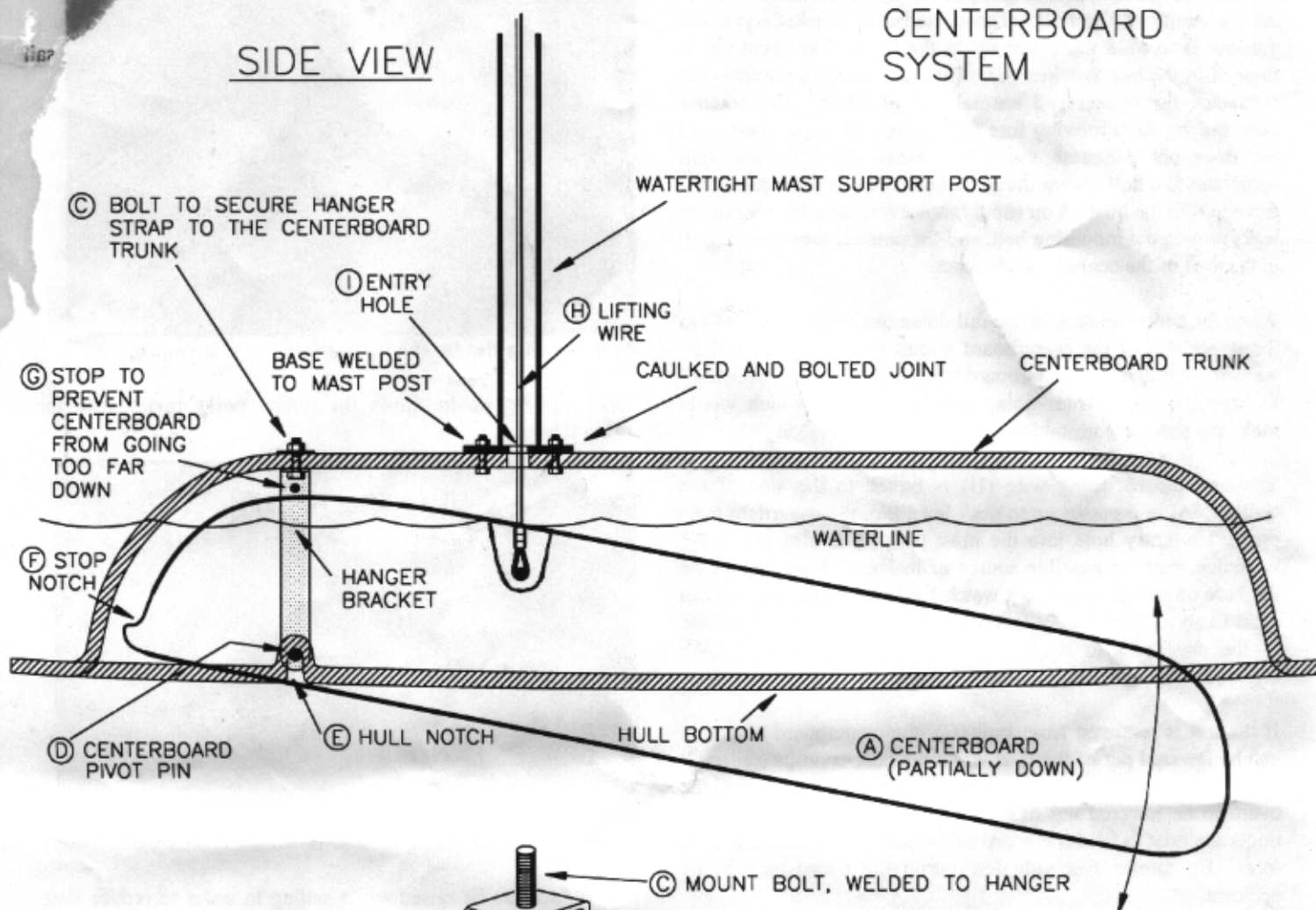
As a general guideline, when sailing on any angle to the wind, if the boat tries to turn up hard into the wind with the wheel centered, or if you have to try to turn the boat away from the direction from which the wind is coming in order to sail in a straight line, pull the board up a bit. If the boat tries to turn away from the wind when the wheel is centered, let the board down some.

The drawing on the following page show various views of the centerboard system.

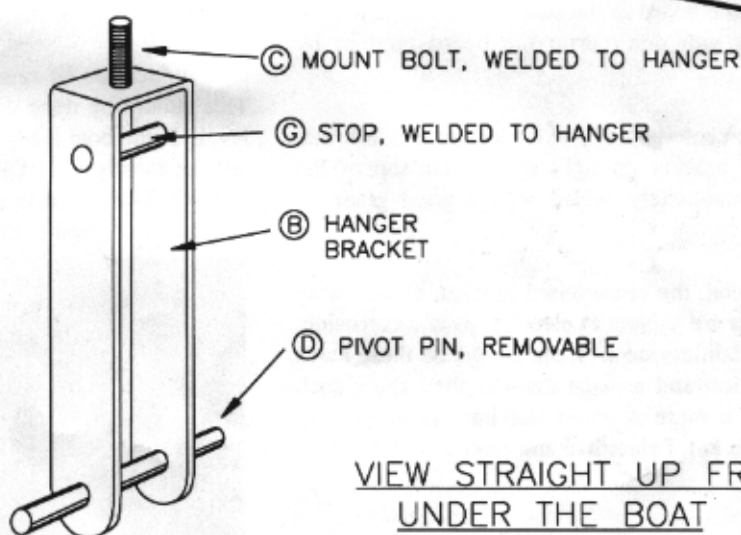
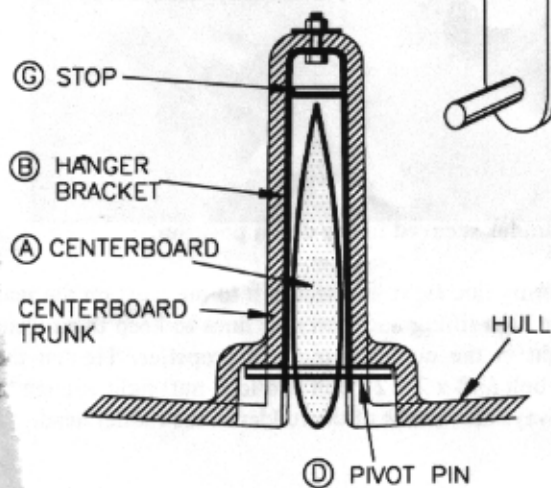
The centerboard (A) is housed in a stainless steel hanger bracket (B) that slides up into a recess on the inside of the centerboard trunk and is secured to the top of the centerboard trunk with a 3/8" bolt (C). The bolt is above the waterline. The portion of the bolt and nut that is inside the boat is visible in the storage compartment under the front dinette seat.

CENTERBOARD SYSTEM

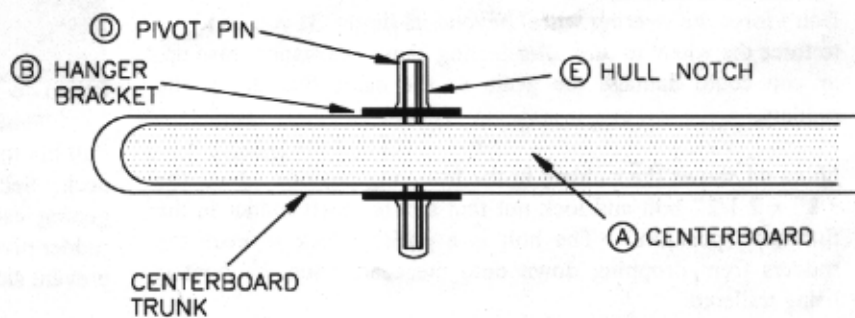
SIDE VIEW



FRONT VIEW



VIEW STRAIGHT UP FROM UNDER THE BOAT



The pivot pin (D) passes thru the centerboard and the centerboard bracket, and is gripped firmly in an indentation on the underside of the hull. The centerboard bracket's primary purpose is to hold the board up in the boat. The pivot pin is trapped in the hull notches (E). The hull laminate provides the resistance for impact and normal sailing loads. The notches keep the pin from moving fore and aft, or sideways. The pivot pin does not penetrate the hull. Since the mounting bolt penetrates the hull above the waterline, there is less chance for leakage into the boat. You should, however, keep an eye out for leaks around the mounting bolt, and for unusual wear on the hull in the area of the centerboard bracket.

When the centerboard is in the full down position, a notch (F) in the upper end of the centerboard comes to rest against a 3/8" welded pin (G) in the centerboard bracket. This stop is necessary to keep the board from going too far forward, which would make the boat very unstable at high speed.

The centerboard lifting wire (H) is bolted to the side of the centerboard, and passes up to deck level thru the watertight mast post. The entry hole into the mast post (I) is also above the waterline, but is a possible source of leakage. Keep an eye on the base of the mast post and watch for leaks. Any leakage can most likely be stopped by loosening the bolts that hold the base of the mast post to the centerboard trunk, applying a good marine sealant, and retightening the bolts.

If the nut is removed from bolt (C), the centerboard assembly can be lowered out of the boat while the boat is on its trailer. It is necessary to leave slack in the centerboard cable to allow the board to be lowered out of the boat. Having a second person under the boat to hold the board as the bolt is removed is a good idea. Be careful that you don't drop the board on him by accident.

When you reinstall the centerboard, make sure that the bolt that holds the centerboard bracket up tight against the top of the centerboard trunk is completely sealed with a good grade of marine sealant.

Like all underwater metal, the centerboard bracket, bolts, lifting wire and its end fittings are subject to electrolysis and corrosion, even though they are stainless steel. Keep an eye on these items for signs of deterioration and replace them if they show such signs. The problem is more acute if the boat is moored in harbors where there is a lot of electrical and electronic activity.

22. RUDDERS

Don't force the steering wheel beyond its limits. If you continue to force the wheel to turn after feeling heavy resistance, ease up, or you could damage the gears or the cable that drives the rudders.

Photo 44 shows the rudders in the trailering position. Note the 3/8" x 2 1/2" bolt and lock nut that secures each rudder in the full "up" position. The bolt is a positive lock to keep the rudders from dropping down onto the road when the boat is being trailered.

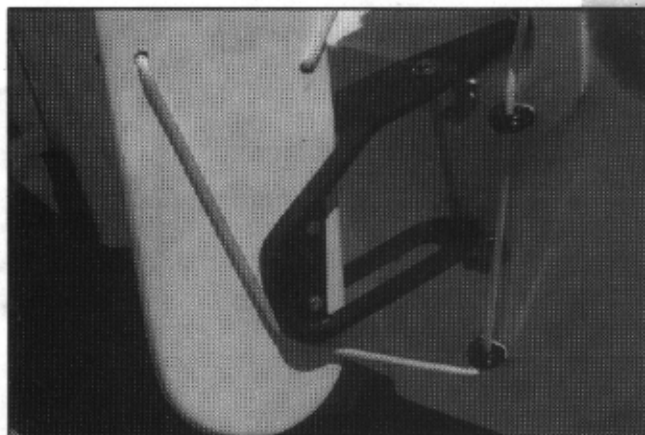


Photo 44 Rudder in the up position

The following photo shows the rudder being raised with the lifting line.

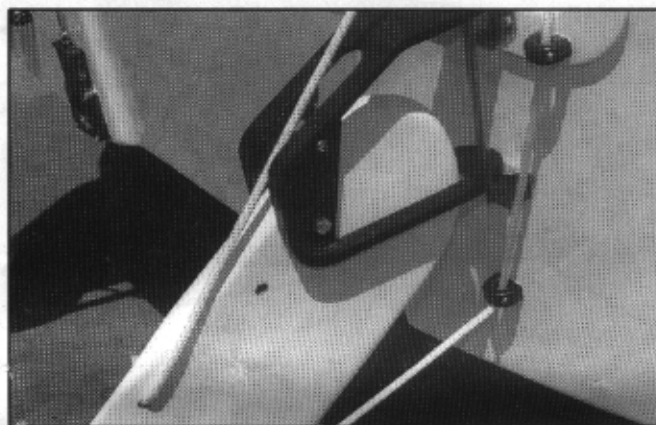


Photo 45 Rudder being raised.

One rudder can be raised while sailing in order to reduce drag. This should be done only in light airs when the boat is sailing level. If the boat leans beyond 20 degrees, the windward rudder will be mostly out of the water. If it is the only rudder down, you will lose your steering control. The following photo shows the rudder secured in the down position.

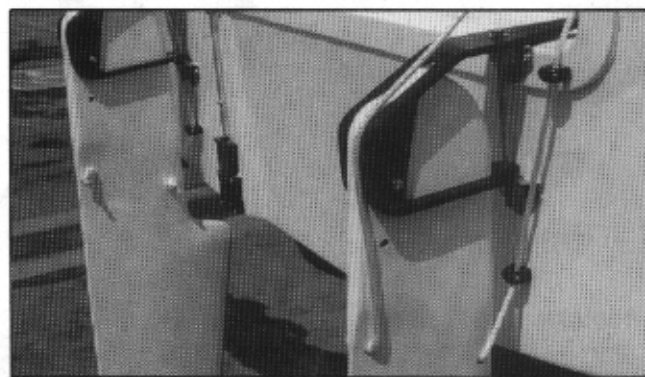


Photo 46 Rudder secured in the down position.

Pull the lowering line **tight** and secure it to the cleat on the rear deck. Secure both lifting and lowering lines to keep them from getting caught in the outboard motor's propeller. Tighten the rudder pivot bolt (3/8 x 2 1/2" bolt and lock nut) tight enough to prevent sideways movement of the rudder in the rudder head,

but loose enough to allow the rudder to be moved up and down easily. Watch for wear on the rudder lines, and replace them as necessary. Do not operate the boat under sail or power with the rudders partially up. If the rudder is not fully up or down, the center of effort on the rudder blade is far behind the pivot pin, and the loads on the rudder and steering system will be enormous. If steering becomes difficult, make sure the rudders are fully down and secured.

When powering faster than 8 mph, pull the rudders full up and steer with the engine. The rudders add a lot of unnecessary drag (about 1 to 2 mph worth) and might be damaged when turning the boat at high speed under power. (See Powering, Section 27)

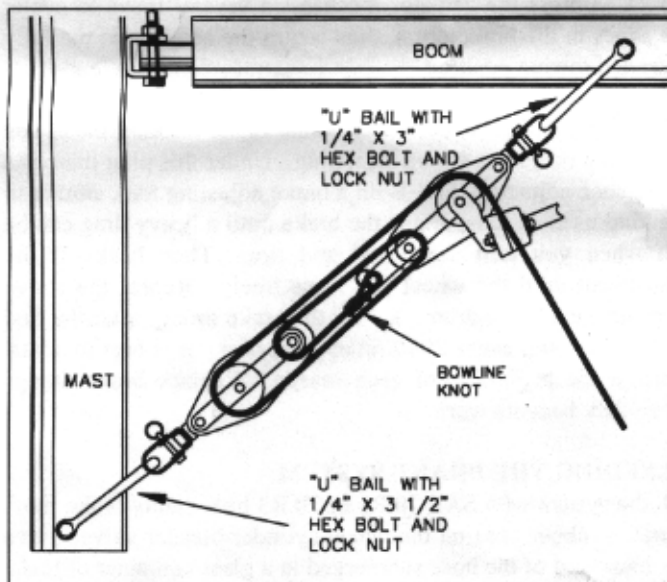
23. HATCHES

SECURING HATCHES IN HEAVY WEATHER:

In windy conditions, make sure all hatches are secured, so no water can get into the boat if the boat leans over or gets buried in a wave. The last thing you need is a boat full of water.

24. BOOM VANG

The optional vang is used to take the twist out of the mainsail and is very important for good performance. The hardware is just like the mainsheet, and attaches to the mast and boom as shown below.



Drawing 47 Boom vang

25. SELF-RIGHTING CAPABILITY

With sails rigged to the mast and boom, the water ballast tank full, and the masthead pulled to the level of the water, the boat, when released, should return to an upright position. With virtually any sailboat, it is possible for the belly of the sails to trap enough water to hold the boat down on its side if the sheets (sail control lines) are not released. In the event of a knockdown, release all sheets to prevent this possibility. In

rough seas, it is possible for waves to enter the cabin through hatches if the boat is held on its side. While sailing in rough weather, it is advisable to keep all hatches closed and secured.

26. FOAM FLOTATION

With the normal gear and crew, the MacGregor 26X has sufficient solid foam flotation material to keep the boat afloat in the event the cabin fills. When completely filled with water, the boat will be relatively unstable, and can roll over.

Do not remove the foam flotation blocks from the interior of your boat under any circumstances.

27. POWERING

The boat is designed for an outboard motor of no more than 50 horsepower. Do not use a larger engine.

The boat will be a lot slower with the ballast tank full. It is possible to drain the water tank while moving under power. You have to be going about 8 mph. Open the vent plug and open the gate valve on the transom. The nose of the boat will be high and will help the water to drain. It takes about 5 to 7 minutes at 8 mph to empty it completely. With the nose high and in rough water, some water may spill out the vent hole while the tank is still full. Watch this carefully, or you may flood the boat.

When the tank is empty, immediately close the vent plug and the transom valve, or the tank will again fill with water. Always make sure the vent and valve are closed except for times when the tank is emptying or filling. (At dockside, a hose end siphon will empty the tank in about 12 minutes.)

When powering at any speed over 5 mph, make sure the centerboard is all the way up. At high speed, with the board down, the board will create lifting forces to the right and left as the boat moves thru the water, tending to make it unstable. This could possibly cause capsize. Check frequently to make sure the board stays up during powering. This is important. Re-read the first item on the "warnings" list at the beginning of these instructions.

If the boat is loaded with a lot of weight on one side, it may capsize if you make tight turns at high speed. Make sure the weight in the boat is placed so that the boat remains reasonably level when underway when traveling in a straight line.

Do not power over 5 mph with the sails up. If you are going 20 miles per hour in calm air, and the boat is turned, it will slide sideways and you will now have a wind of 20 mph filling your sails. The result could be an instant capsize. The problem is made worse by the fact that your water tank will probably be empty while powering, making the boat more prone to capsize.

Make sure the mast support wires are tight when powering fast. The pounding and slamming can otherwise make your mast really rattle around.

We have a linkage system available that will allow you to connect the steering system to the rudders only, to the motor only, or to both at once. For sailing, the steering system should be connected to the rudders, as it comes from the factory. When powering over 8 mph, the steering system should be connected only to the engine, and the rudders should be completely out of the water to avoid damage. When powering at 8 mph or less, you can steer with just the engine, or just the rudders, or both. At such low speed, you will have far better control, particularly in reverse, with the steering system connected to both the engine and rudders.

The turning radius at high speed is relatively large, so allow yourself lots of room.

Most outboard motors have a kill switch that shuts off the engine if you fall out of the boat. This involves a cable that attaches to the switch and to you. It is an excellent safety feature, and should be used.

28. BOAT MAINTENANCE

LEAKS:

It is a good idea to check the watertank, cockpit, outboard well and galley vents and drains to make sure all connections are tight and waterproof. Check the water ballast valve for leakage as described earlier. Pull the boat out of the water frequently with the water tank full. If anything is leaking, you will see water coming out.

INSPECTING THE HULL AND DECK:

Periodically inspect the boat for cracks, delaminations, blisters or signs of impact damage. Gel coat, the outer cosmetic finish, is fairly brittle and occasionally cracks and crazes where it is stressed. This is normally cosmetic only. If crazing appears, check to see if the fiberglass itself, and not just the colored gel coat, is damaged.

INSPECTING MAST SUPPORT WIRES:

The mast support wires should be checked frequently to make sure there are no broken strands. If you find a broken strand, replace the wire immediately.

INSPECTING HARDWARE:

Also check all bolted-on hardware to make sure everything is tight and leak proof. Squirt the boat with a hose and look for leaks. If one is found, make sure the bolts are tight and all joints are sealed.

EXTERIOR FINISH:

The fiberglass finish should be protected in the same manner as an automobile finish. An occasional polishing and waxing (with any good quality automotive polish and wax) will keep the surface in excellent condition. If the boat is left in the water (either fresh or salt water), apply a coat of top grade anti-fouling bottom paint with an 18 mil thick (.018") epoxy undercoat. Without good bottom paint and epoxy primer, the white gel coat exterior surface may blister.

29. TRAILER MAINTENANCE

GENERAL:

A good periodic inspection and clean up can add years to the trailer's life.

Frequently check the trailer to insure that all bolts and nuts are tight, that all welds look solid, and that there are no cracks or bends in the trailer structure. Inspect tires for wear, cuts, bad bruises.

Replace tires if they become worn or damaged.

All of the maintenance and operation procedures mentioned are very important as there are no warranties of any kind on brake systems for boat trailers.

Always hose the trailer down with fresh water after immersing in salt water. Salt water is very corrosive, and removing it will add years to the life of the trailer.

BRAKE ADJUSTMENT: (FOR TRAILERS EQUIPPED WITH SURGE BRAKES.)

To adjust the brakes, go through the following steps:

- (1). Jack up and support the trailer with the wheels mounted, brake drums cool, and the actuator in the towing position.
- (2). Compress the actuator mechanism several times to center the shoes in the brake drum, then return the actuator to the fully extended towing position.
- (3). On the inside or back side of the brake backing plate, you will find a rubber or spring steel plug. Under this plug there is a brake shoe adjusting slot. With a brake adjusting tool, similar to the kind used on cars, adjust the brake until a heavy drag can be felt when you turn the wheel and tire. Then back off the adjustment until the wheel just turns freely. Repeat the above steps on each brake drum. Adjust the brake linings after the first 1000 miles, and every 2000 miles thereafter. It is best to adjust them at the beginning of each season. Replace brake linings when they become worn.

BLEEDING THE BRAKE SYSTEM:

Fill the system with SAE 70 R1 or 70 R3 heavy duty brake fluid. Install a rubber hose on the wheel cylinder bleeder valve. Have the loose end of the hose submerged in a glass container of brake fluid to observe bubbling. By loosening the bleeder screw on the wheel cylinder one turn, the system is open to the atmosphere. Pump the actuator with long steady strokes. The bleeding operation is complete when the bubbling stops. Be sure to close the bleeder screw securely. Repeat the bleeding operation at each wheel cylinder. During the bleeding process, replenish the brake fluid, so the fluid level does not fall below 1/2 full in the master cylinder reservoir. After bleeding is completed, refill the master cylinder and securely install the filler cap. Replace cloudy, dirty or watery brake fluid.

AXLE MAINTENANCE:

Buy a small grease gun for the hubs and use a high quality multi-purpose non-fibrous grease, similar to the grease used in automobile wheel bearings. Put in enough grease to move the spring loaded piston about 1/8" outward from its seated position. Check the lubricant level in the hub by pressing the edge of the spring loaded piston. If you can move or rock the piston, the hub has sufficient grease. If it cannot be moved, add grease with the grease gun. Do not overfill.

TRAILER LIGHT CARE:

The lights are equipped with quick disconnect electrical plugs. All lights should be removed before backing the trailer into the water. Put a dab of petroleum jelly (Vaseline) on each of the quick disconnects. Be sure to disconnect the trailer harness from the trunk harness of the towing vehicle before backing the trailer into the water.

30. LIMITED WARRANTY

MacGregor Yacht Corp. makes the following warranty to purchasers:

SAILBOATS AND SAILBOAT PARTS AND EQUIPMENT:

For a period of two years from the date of sale to the first use purchaser, MacGregor Yacht Corp. will, through its selling dealers, repair or replace any sailboat part or sailboat equipment manufactured by MacGregor which is proven to MacGregor's satisfaction to be defective by reason of faulty workmanship or material.

TRAILERS AND TRAILER PARTS AND EQUIPMENT:

For a period of six months from the date of sale to the first use purchaser, MacGregor Yacht Corp. will, through its selling dealers, repair or replace any trailer part or trailer equipment manufactured by MacGregor which is proven to MacGregor's satisfaction to be defective by reason of faulty workmanship or material.

The above warranties will be in effect only if such part is promptly returned to the dealer with a sum sufficient to pay transportation charges to the MacGregor plant.

This warranty shall not apply to the following:

- (1) All items determined by MacGregor to be the responsibility of the dealer in launching or otherwise handling or preparing a new boat or vessel.
- (2) All items installed by the dealer or anyone else other than MacGregor.
- (3) Any failure resulting from lack of maintenance, normal wear and tear, negligent operations or maintenance. Negligent operation includes, but is not limited to, failure to properly and completely fill the water ballast tank when sailing, failure to empty the water ballast tank before trailering, failure to heed

adverse weather warnings, and failure to use care when operating the boat near sources of electrical power.

- (4) All accessories or equipment not manufactured by MacGregor. Any warranty furnished by the manufacturer, if possible, will be passed on to the boat owner.
- (5) Trailer brake systems and trailer lighting systems.
- (6) Exterior paint and gel coat finishes. Although we use the finest finishes available in the industry, they cannot be warranted because they are affected by climate and use conditions beyond the control of MacGregor Yacht Corp.
- (7) Any other person than the first use purchaser of the boat.
- (8) Any boat or part manufactured by MacGregor which shall have been altered in any way so as to impair its original characteristics.

The foregoing warranties are made in lieu of all other warranties, obligations, liabilities, or representation on the part of MacGregor, and the purchaser waives all other warranties, guaranties, or liabilities, expressed or implied, arising by law or otherwise, including without limitations any liability of MacGregor for consequential damages.

The purchaser should understand that the dealer is not an agent of MacGregor Yacht Corp. and MacGregor does not authorize the dealer or any other person to assume for MacGregor Yacht Corp. any liability in connection with such warranty or any liability or expense incurred in the replacement or repair of its products other than those expressly authorized herein.

MacGregor reserves the right to improve its products through changes in design or material without being obligated to incorporate such changes in products of prior manufacture.

FOREIGN CUSTOMERS

The foregoing limited warranty shall be null and void (and MacGregor Yacht Corporation expressly disclaims all warranties of any kind, express or implied, including the implied warranty of merchantability and fitness for a particular purpose), if a foreign customer (in other words, a retail customer not located in the United States or Canada) purchases a MacGregor boat and/or trailer directly from a United States dealer of MacGregor Yacht Corporation rather than from an authorized foreign dealer of MacGregor Yacht Corporation.

The terms of the above paragraph are necessary because of the extremely complex legal and certification requirements of most foreign countries. It is essential for our protection and for the protection of the customer that foreign sales and service are handled by authorized foreign dealers who thoroughly understand the complex rules of the countries in which they sell, and who can modify the boats to meet these requirements.

DEALER'S RESPONSIBILITY

The processing of claims against the transportation company for any damage occurring during shipment, or by deliberate act of

vandalism or by normal intransit hazards shall be the dealer's responsibility. MacGregor Yacht Corporation's responsibility for safety against damage to the boat ceases at the time the boat leaves the MacGregor Yacht Corp. facility; thereafter responsibility is either that of the common carrier or the dealer.

It is further the responsibility of the dealer to furnish guidance and information to the purchaser on matters pertaining to service and maintenance during the warranty period, and in addition to process any claims under the warranty to MacGregor Yacht Corp. The dealer is responsible for making sure that the owner receives the Owner's Instructions and understands all information contained therein.

OWNER'S RESPONSIBILITY

Purchasers are to take the following steps in pursuing a warranty claim:

- (1) Fill out and return, within ten days after the delivery, the attached Warranty Registration Card.
- (2) The Owner's Instructions, as well as any instructions furnished with any accessories installed on the boat, shall be placed in a large envelope and remain aboard the boat. Purchasers should make special effort to make sure that this literature is delivered to them by the dealer or MacGregor Yacht Corporation. Careful attention to these instructions will add many years to the life of the boat and equipment.
- (3) It is understood that all matters of service are handled with the selling dealer. Purchaser should notify his selling dealer regarding any problems under the warranty.
- (4) The dealer shall be given an opportunity to supply parts needed for all repairs for which a claim is to be made.
- (5) The purchaser agrees to use the boat in a reasonable and safe manner. It is necessary for the owner or operator to use extreme caution when operating the boat in severe weather, when operating the boat, trailering, or raising and lowering the mast near power lines or sources of electrical power (contact between a power line and the mast or rigging could cause injury or death), and when preparing the boat for trailering.
- (6) The purchaser must use care to assure that the boat is not sailed unless the ballast tank is completely full and the valve is closed and sealed.
- (7) The purchaser must familiarize himself with all information contained in the Owner's Instructions, particularly warnings contained in pages 1, 2 and 3.

31. GLOSSARY OF SAILING TERMS

FORWARD	Toward the front, called the bow, pronounced like 'take a bow'.
AFT	Toward the back, called the stern.
PORT	The left side as you face forward.
STARBOARD	The right side as you face forward.
MAST	The tall, vertical aluminum tube.. It supports all sails.
BOOM	A smaller horizontal tube. It fastens to the mast and the bottom of the main sail.
SHROUD	A wire that supports the mast sideways.
STAY	A wire that supports the mast front or back. i.e. the forestay and backstay.
LINE	The nautical term for any rope.
HALYARD	A line used to pull up (set or hoist) a sail.
SHEET	A line attached to the boom or lower back corner of a sail. It is used to control the shape or angle of the sail.
MAINSAIL	The primary rear sail which attaches to the aft side of the mast, and to the boom.
JIB	A small sail that fits in the triangle made by the mast and forestay.
GENOA	A large jib. It extends further aft, usually overlapping the mast.
TRANSOM	The flat rear end of the boat on which the engine and rudders are mounted

August 27, 1996