NØR'SEA 27

owner's

manual

Instructions

NOR'SEA 27 MAST LOWERING KIT

THEORY OF OPERATION

The NOR'SEA mast is designed to be lowered by tilting forward. With the standard 60 ft. main sheet it may be lowered for bridges (Figure 2). With a 90 ft. or longer main sheet the mast may be lowered to the bow pulpit (Figure 3). The mast is raised and lowered by the main sheet block system pulling on the topping lift. The kit consists of two sets of guy wires and turnbuckles. Set "A" keeps the boom from falling off to the side as the mast goes down and the boom becomes upright or verticle. Set "B" keeps the mast from falling off to the side as it is lowered by maintaining tension on the upper shrouds. All guy wires have turnbuckles for fine adjustment.

This system requires that the turnbuckles on the upper and lower shrouds, forestay, and backstay be near final (sailing trim) adjustment. For this reason we suggest that a newly delivered NOR'SEA have its mast stepped for the first time with a crane. After rigging is adjusted, the trailering guy wire kit can be used to raise and lower the mast.

This kit is designed for use only where the boat is stable, level, and free of overhead obstructions. It can be used underway in calm water, but care should be exercised to avoid wakes which might cause the boat to roll while the mast is partially down and supported only by the temporary guy wires.

PLACING THE MAST INTO THE TABERNACLE

The NOR'SEA is normally trailed or shipped with the mast lashed on deck. Moving the mast from the deck position with a small crew requires some care and forethought.

The bow pulpit is usually used as a steady-rest upon which to slide the mast forward. (See Figure 3). A loose lashing (C) should be used to prevent the mast from sliding sideways off the pulpit.

As the mast is slid forward, the forward end will begin to outweigh the butt end. This weight could become greater than the crew can easily handle until the butt end is through bolted to the tabernacle. If so, a preventer line (D) should be thrown over the butt end of the mast and lashed to opposite side chainplates to help the crew steady the butt end. This should also be done when removing the mast from the tabernacle (BEFORE PULLING THE PIN) if the crew is uncertain of their ability to handle the butt end of the mast.

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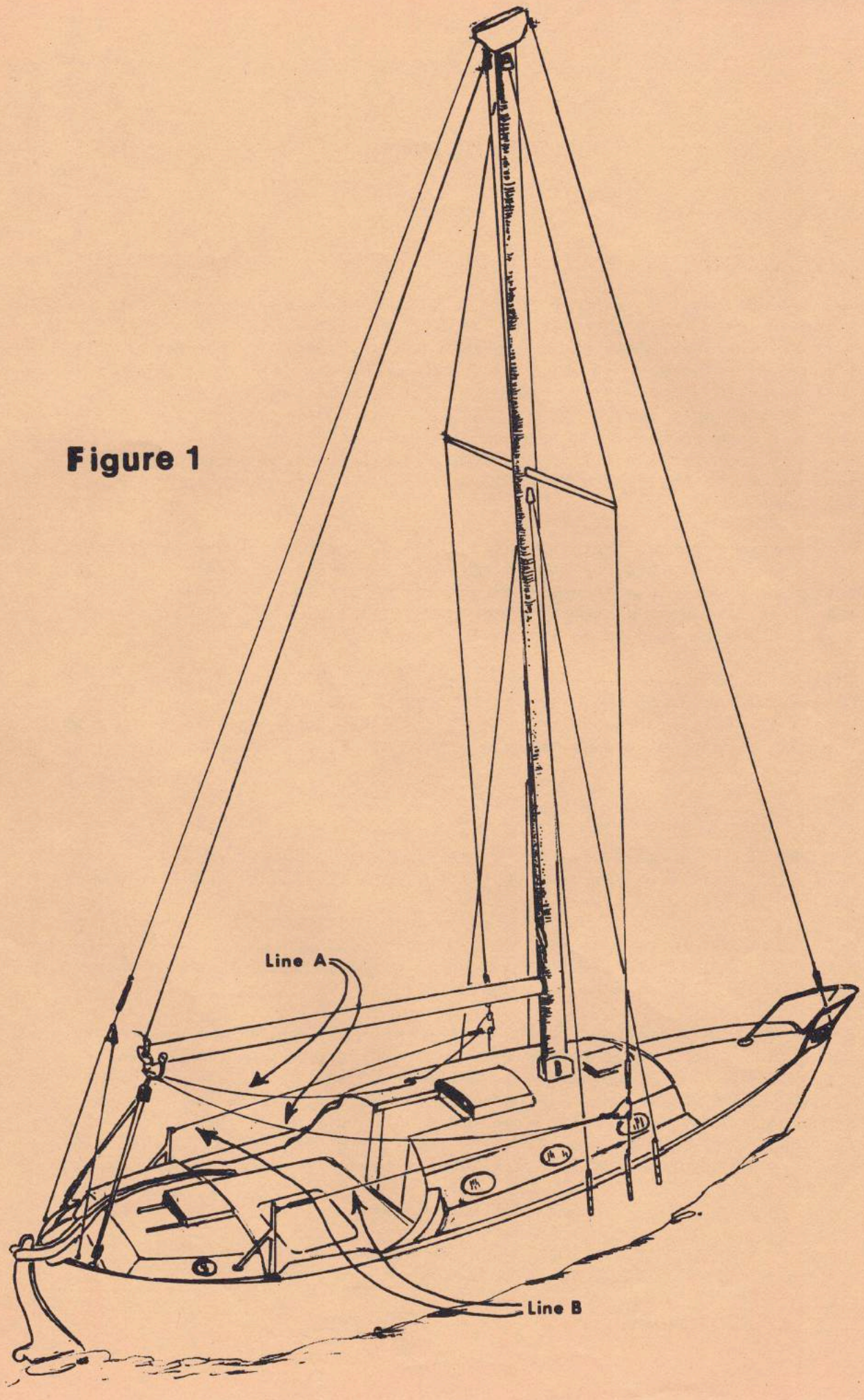
Figure 1



TO LOWER MAST

1. Hook up guy wires as shown in Figures 1 and 4. Connect pair "A" turnbuckles to the boom bail and the thimble eyes to the rapid links on the upper shroud triangles. Connect pair "B" turnbuckles to the aft lifeline gates and the thimble eyes to the rapid links on the upper shroud triangles.

2. If the mast is to be lowered to the bow pulpit, replace the main sheet with a line 90 ft. or longer. Most owners use the stern anchor line.

3. Using the turnbuckles, take up slack on the "B" lines until they are snug but not tight. (Figure 5)

4. Tighten the turnbuckles on the "A" lines. The "A" lines will be slack with the mast in the UP position.

5. Check to be certain the topping lift is attached to the boom end and securely cleated to the mast at the bitter end.

6. Loosen--but do not remove--the bolt securing the base of the mast at the tabernacle.

7. Disconnect the aft lower shrouds from their chainplates.

8. Loosen the turnbuckles on the upper shrouds several turns.

9. Tighten the mainsheet and cleat. This will support the mast when the backstay is disconnected.

10. Disconnect backstay.

11. The mast is now ready to be lowered by paying out the lengthened mainsheet line. To start the mast downward it will be necessary to have a crew member pull in on the headstay while the mainsheet is eased slightly.

12. As the mast begins to lean forward, check to see that the "B" lines are still snug but not tight. Adjust turnbuckles if necessary.

13. As the mast goes down, the boom will rise putting increasing tension on the "A" lines. The "A" line turnbuckles should be slackened as the boom progresses upward to maintain a slight, even tension on the boom to prevent it from moving off to either side. NOTE: This adjustment is necessary only on the first lowering. Once proper "A" turnbuckle adjustment is established, it will not be necessary to re re-adjust each time up or down.

14. Lower mast to clear bridge or, if the longer main sheet has been installed, to the bow pulpit.

when moving mast on roller, be sure to light bow/spreader light over roller

RAISING THE MAST

Raising the mast from the lowered position is simple, consisting of hauling in the mainsheet until the mast is up, reconnecting and adjusting the stays and shrouds. NOTE: As the mast nears the verticle position, it may be necessary to loosen the upper shroud turnbuckles slightly to prevent excessive tension. (The entire mast will rise slightly as the front edge of the mast contacts the bottom of the tabernacle.)

If you have any questions regarding these operations, please do not hesitate to contact us.

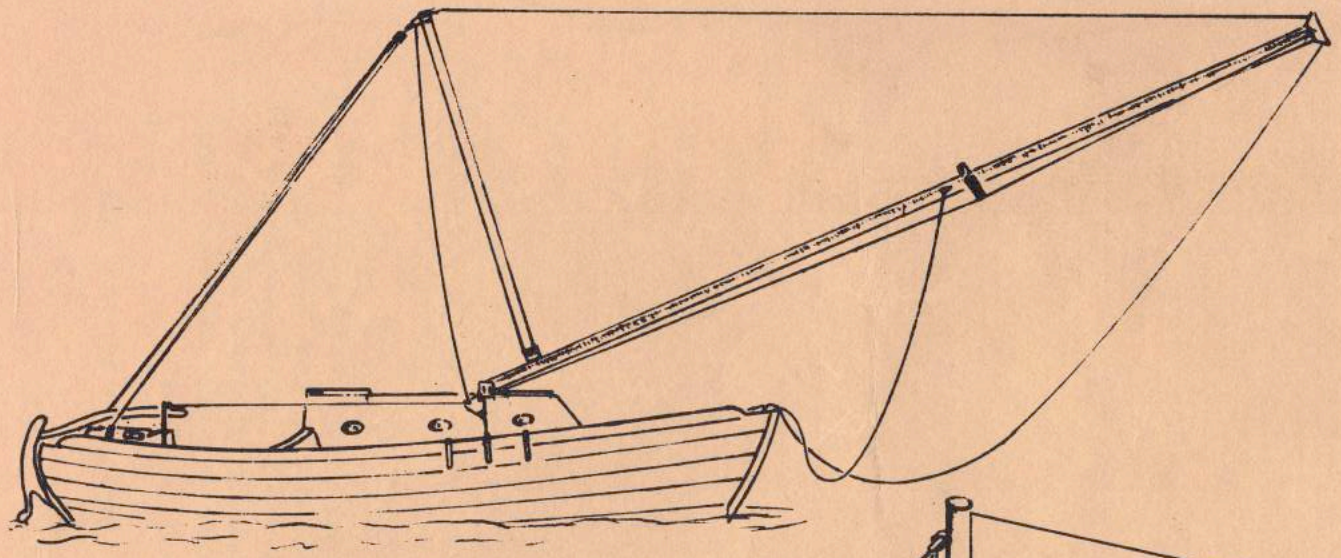


Figure 2

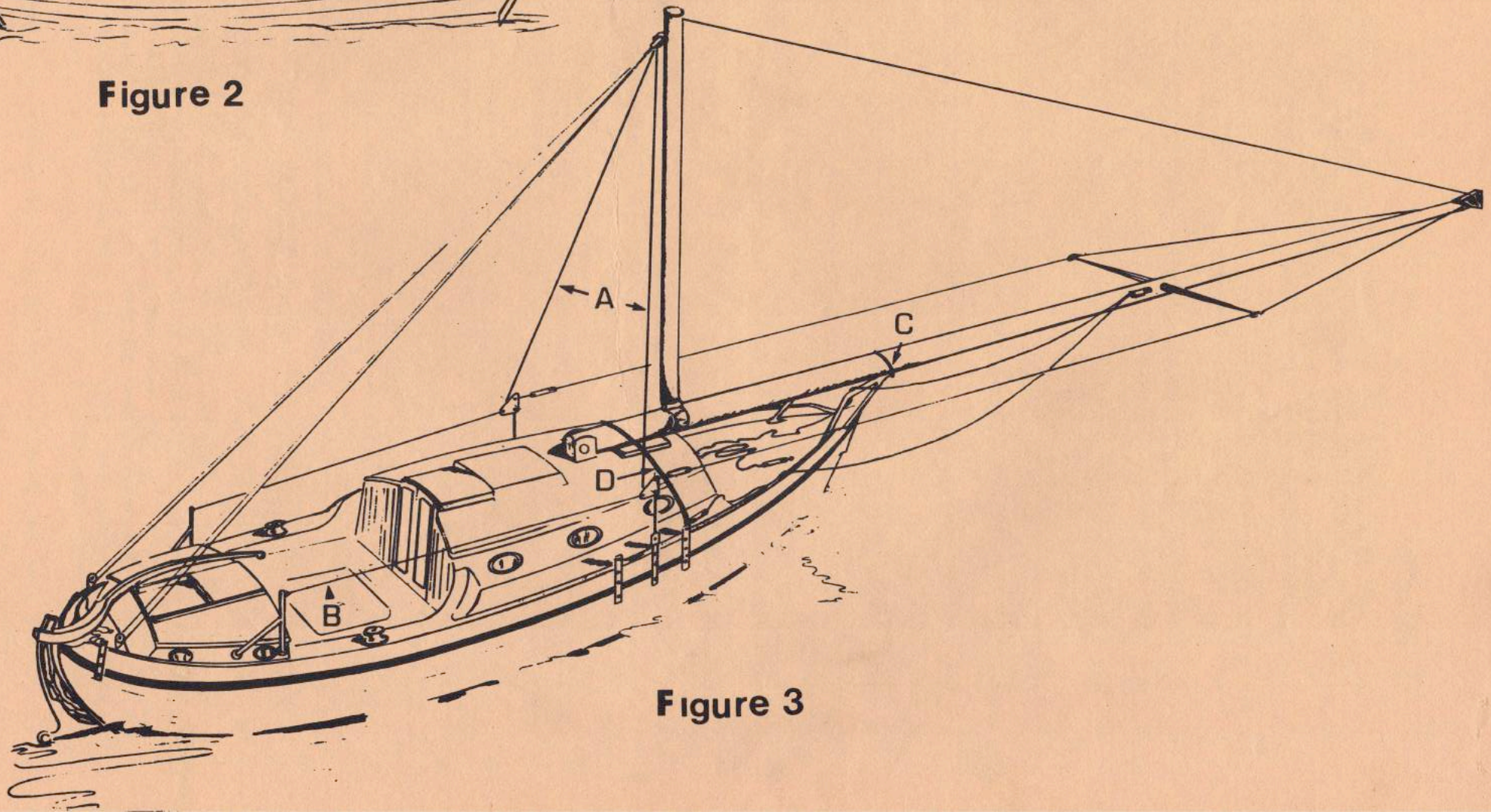
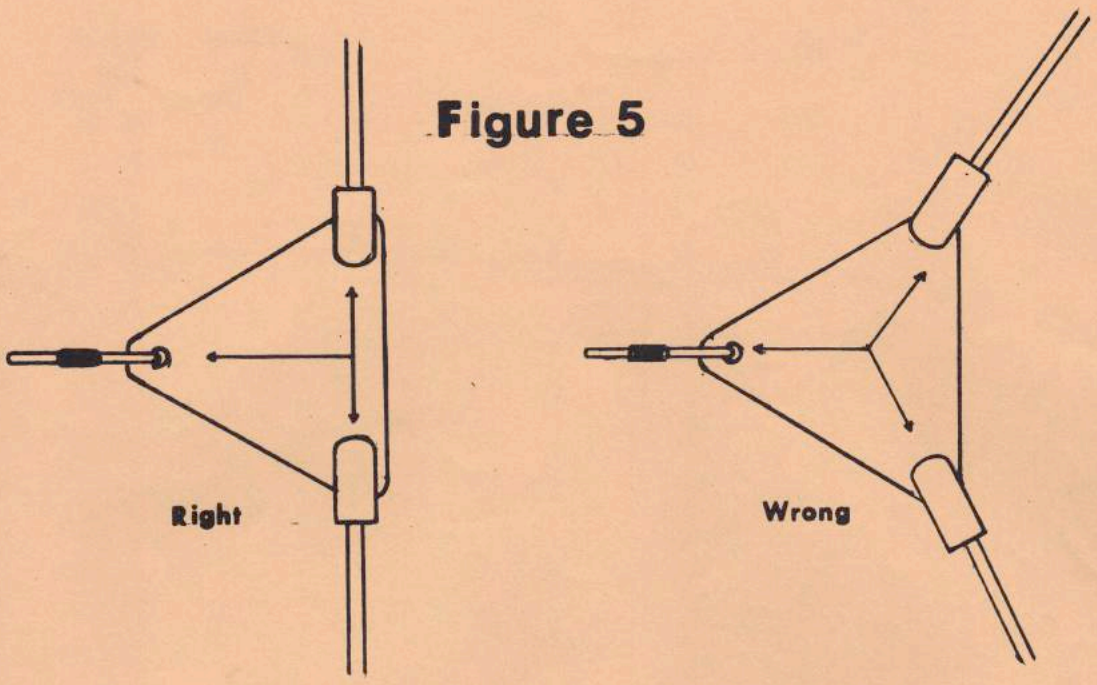


Figure 3

Figure 5



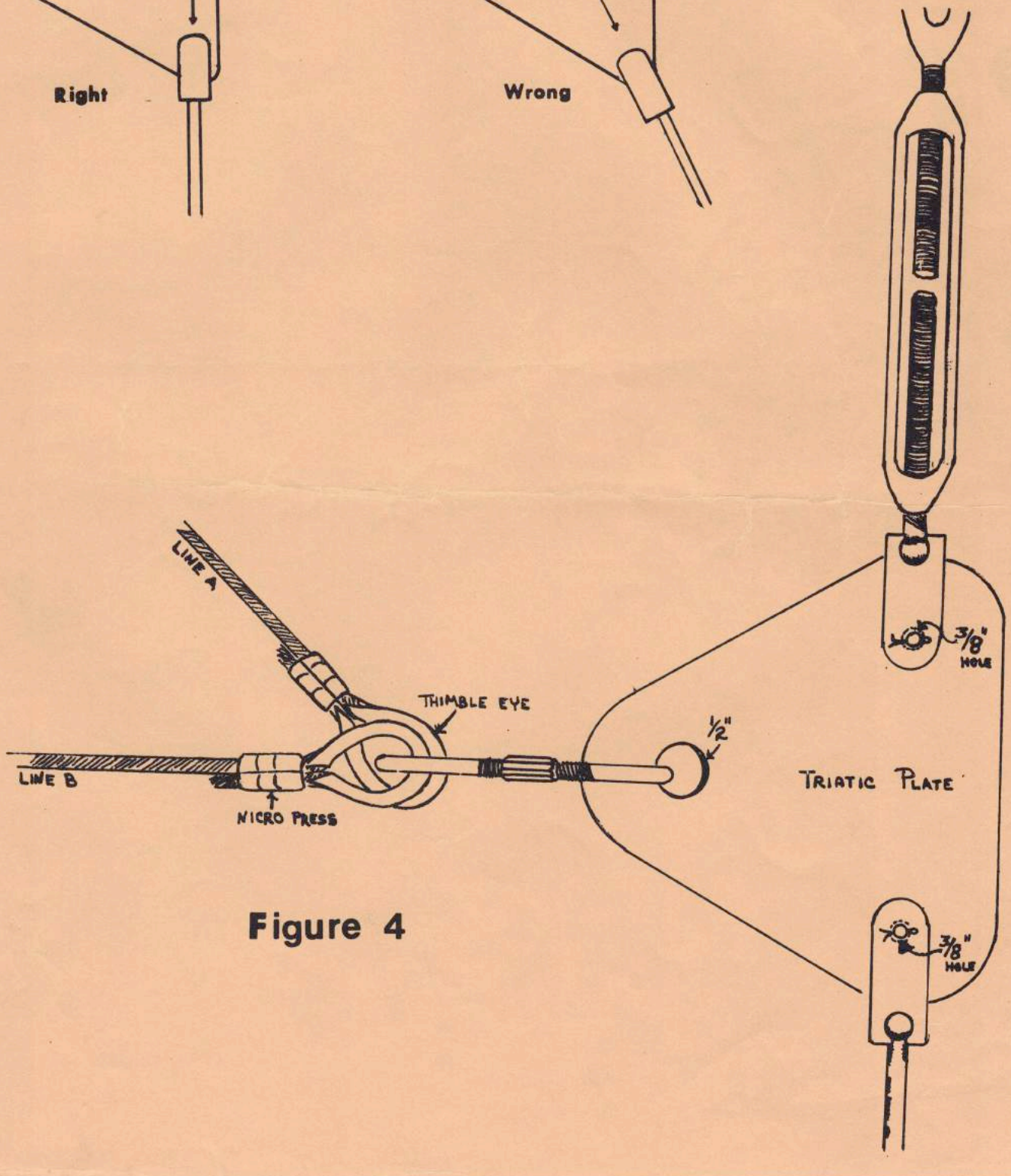
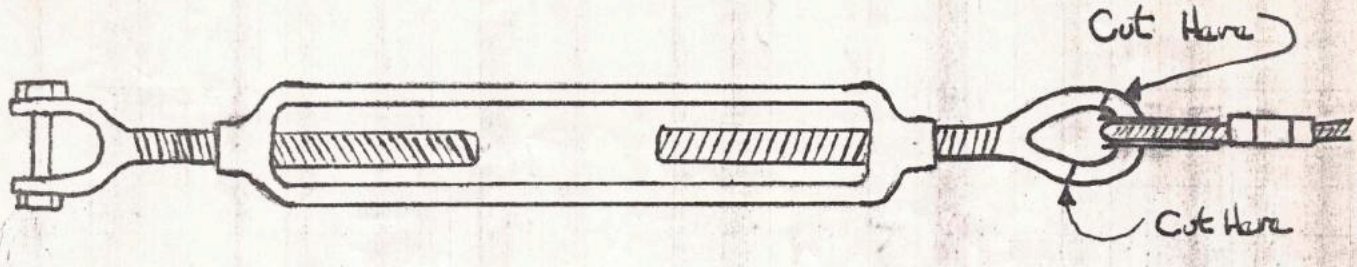
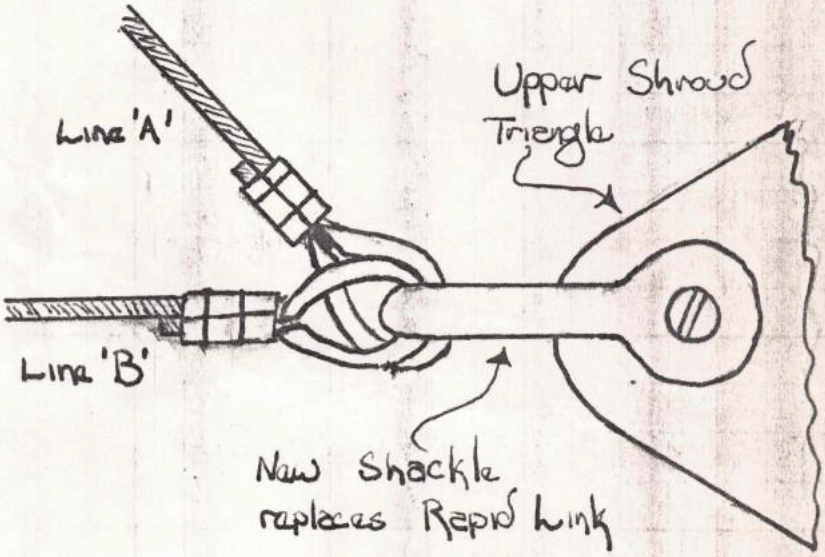
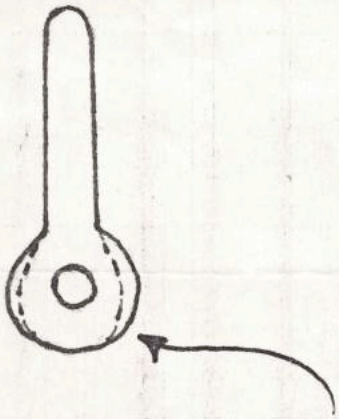


Figure 4







In order to fit the new shackle through the two cable end eyes it may be necessary the threaded side of the shackle

BHW '98

NO	DESCRIPTION	QTY	NO	DESCRIPTION	QTY

HERITAGE MARINE INC. NOR'SEA YACHTS LONG BEACH, CAL.	SCALE DRAWN DATE	TITLE Trailering Plug Retro-fit	REVISED

Towing the Nør'Sea

Be certain that you have an adequate tow vehicle when trailing your NOR'SEA. Become familiar with your trailer's Owner's Manual. Trailering regulations vary from state to state. Familiarize yourself with local regulations and states you may be trailing through.

The custom NOR'SEA trailer is rated at 10,000 lbs. gross vehicle weight. The trailer itself weighs about 1,300 lbs. Thus usable payload is about 8,700 lbs. We recommend that the NOR'SEA be trailed with near empty tanks and as much heavy cruising gear as possible carried in the tow vehicle in order to not approach or exceed the G.V.W. of the trailer. Tongue weight of the trailer is 700 - 800 lbs. The trailer is equipped with four-wheel hydraulic surge brakes which you will find quite effective. The brake master cylinder is located inside the sliding tongue of the trailer. Whenever the trailer tends to overtake the tow vehicle, the trailer slides forward on the tongue and activates the trailer brakes. On long mountain downgrades the trailer brakes will be working even when the tow vehicle brakes are not applied. Under these conditions, pull off periodically and check the trailer brake drums for overheating.

Backing the trailer closes the sliding tongue coupling and activates the trailer brakes. Normally this does not create a problem. However, if the trailer is backed up a hill, sufficient braking force may be applied to prevent backing. If it is not possible to avoid backing up a hill, the trailer brakes may be temporarily disabled by carefully observing the following routine: Start the trailer up the hill until the braking force becomes too great. Stop the vehicle and set parking gear and brakes. While standing well clear to avoid spray, loosen the hydraulic hose fitting at the rear of the master cylinder until brake fluid begins to ooze out. Tighten the fitting after most, but not all, of the pressure is bled off. Refill master cylinder with brake fluid if necessary. Braking pressure is now lessened and you should be able to back up easily. If the trailer is pulled forward, the master cylinder will be recharged. If further backing is then necessary, the bleeding off process must be repeated.

Trailer sway is sometimes a problem at higher speeds. Excessive sway can be dangerous and should be corrected before a problem occurs. Sway can be minimized by the highest possible tire pressures on trailer and tow vehicle, adjusting the tongue weight and load within the boat, by the use of anti-sway bars on the tow vehicle, and by the use of load leveler type hitch. Load leveler hitches which connect to the trailer aft of the sliding tongue coupling may have an adverse effect on trailer

braking, especially if adjusted too tightly. We suggest you first tow the trailer at low speeds without the load leveler and get the "feel" of the brakes. Then install and adjust the load levelers so that the effect on braking is negligible.

The most effective way to prevent sway, however, is to tow at reasonable speeds where it does not accur, and reduce speed further on downhills where sway is more likely to occur.

There are many load leveling devices on the market, and the trailer cannot be made to adapt to all of them. Welding of adaptor brackets to the trailer may be necessary to fit your device.

If you plan to pick up your trailer at the factory, please request the trailer light connector plug be sent to you in advance for installation on tow vehicle. This will avoid delays hooking up at the factory.

If the idea of towing a large vessel such as the NOR'SEA is intimidating, we suggest you familiarize yourself by first towing an empty trailer. This will help you establish turn radii, backing, etc. The key to relaxed towing is: slow down so that you can anticipate turns, traffic, stops, etc. You will probably agree (after the first day or two) that towing at moderate speeds is by far the most relaxing.

Ramp Launching

Ramp launching methods will vary with ramp types, state of tide, etc. The following is a general guide which can be modified as local conditions warrant.

Due to the NOR'SEA's draft, the trailer must be taken at least ten feet farther down a given ramp than most " trailer boats." Some ramps in tidal areas may not be long enough at low or mid tide. Many ramps which are swept by currents will have a drop-off at the end. For these reasons it is best to launch at high tide and obtain local knowledge of the length of the ramp, etc. Here is the method we use:

> Back the trailer down the ramp until the trailer wheels are near the water -- but still on the dry, non-slippery part of the ramp. Block up the trailer wheels. With engine running, release brakes on the tow vehicle and back down on the blocks. The blocks should hold the weight of BOTH the trailer and tow vehicle. This insures the blocks will hold the trailer when the tow vehicle is released. Release the trailer hitch; pull tow vehicle forward; slide out the extension tongue and secure the tongue locking pins in the extended position. Attach large ramp wheel. Connect the tow vehicle; crank up the jack wheel. Pull ahead slightly; remove the blocks; and back slowly into the water until the stern begins to float.

The ten foot extension tongue may not be of adequate length on some ramps having a shallow angle. In this case, the trailer can be lowered to adequate depth by use of a long chain, with the weight of the tongue resting on the large ramp wheel (NOT the jack wheel) which should be fully cranked up.

Retrieving the boat is essentially the reverse of the launching procedure. Many owners temporarily fasten fiberglass or bamboo poles to their trailer to show its location underwater. Do not attempt to pull the boat off the ramp with the extension tongue, as the change of angle of the top of the ramp may put an undue strain on the extension tongue.

Loading the Nør'Sea

The NOR'SEA has immense storage capacity. Careful placement of stores and equipment is important to the stability and performance of the craft.

Heavy objects, canned goods, chain, etc. should be stowed as low in the boat as possible, preferably below the waterline where weight will enhance the stability of the boat.

The NOR'SEA should be loaded so that she settles evenly in the water, with bow and stern submerged an equal amount. A "bow down" or 'stern down "condition could upset the NOR'SEA's fine sailing characteristics. Level loading is not always easy, as the most commodious storage is forward - yet the boat is most bouyant aft. This requires careful planning and loading in order to load heavy items midships and aft.

HEAVY WEATHER SAILING

Before you actually sail your NOR'SEA in heavy weather, we suggest you practice changing sails, reefing the sails, heaving to under shortened sails and bare poles. This will allow you to experiment with sail configurations and rudder positions which will maintain the boat at the proper attitude for heaving to.

For heavier weather, we advise stringing additional chest-high lifelines from the pulpits through the shrouds and aft as far as possible. Additional lines inboard of the rail for fastening safety harnesses will facilitate moving around the boat.

If the boat is sailed downwind in high seas, we suggest closing the valve at the exhaust thru-hull (if fitted). If your boat is not equipped with an exhaust output valve, we suggest idling the engine to prevent water from being sloshed over the exhaust riser and into the engine under extreme downwind conditions.

Care

With proper care and maintenance your NOR'SEA will last and look good for decades. When most of today's boats are gone, your NOR'SEA will be an heirloom passed down for generations.

Ultra-violet rays of the sun do more than any other element to make a boat look old, baking oil out of teak, blistering varnish and oxidizing the fiberglass gel coat finish. Any attempts to cover the boat from the sun's rays will be greatly rewarded in decreased maintenance.

When your NOR'SEA is delivered, the interior and exterior teak has already had several coats of oil. It needs MANY more. Use a non-darkening oil such as Pettit Teak-Cote and apply oil many times within the first few months. "Enough" is when the teak is fully saturated and will no longer soak up oil. We do not recommend letting the teak "bleach out" until it has been oiled and seasoned for a year or two. Failure to keep the teak saturated during this time will result in checking and cracking.

By the time you take delivery of your NOR'SEA, exterior varnish on the tiller and cheekplates will be thoroughly cured and ready for additional coats. Two or three more coats will produce a lasting finish.

The interior gloss surfaces are coated with a clear polyester and should not require re-finishing for many years.

The gel coat fiberglass finish on your NOR'SEA will last for decades if properly maintained. Maintenance is limited to polishing and waxing, twice a year if possible. Your favorite automotive waxes and polishes are excellent for this purpose. If after a few years the finish becomes dull and hazy, a machine buffing with light rubbing compound, followed by waxing, will restore the gloss and color. Gel coat patching kits are available from the factory for minor repairs.

The cutting board in the galley should be oiled periodically using a vegetable oil or liquid shortening to prevent warping.

Maintenance

Periodic inspections when underway:

DAILY -	Engine belts, mounts and lubricant; bilge pumps; alternator pulley nut, water and fuel tank levels. Check sails, running rigging, splices, etc. for chafing or undue wear.
WEEKLY-	Standing rigging pins, toggles, swages, turnbuckles and cotter pins; chainplates, hoses, hose clamps, engine fittings. Engine shaft stuffing box adjustment. Engine lubrication per instruction manual. Check battery levels. Check battery terminals and tie-down straps for corrosion.
MONTHLY-	Standing rigging, swaged fittings, pins, toggles and terminations below and aloft, running rigging and blocks, condition of through-hull fittings, all hoses and clamps, operation of valves and sea-cocks. Check electrical fittings and terminations for corrosion.
SEMI-ANNUALLY-	Disassemble and lubricate winches, remove and check for corrosion under mast and boom cleats and fittings. Check engine alignment.
EVERY HAULOUT -	Examine all underwater fittings for signs of corrosion or electrolysis. Renew zincs as necessary. Check rudder pintles and gudgeons for wear. (Clearance between pintle pins and gudgeons should not be more than 1/16") Check propeller shaft bearing for wear. Propeller shaft should not move side-to-side or up and down more than 3/32" at propeller end. Check condition of propeller, securing nut, and cotter pin.
FIRST LAUNCHING-	Check bilges, through-hull fittings for leaks as soon as the boat is in the water. Your NOR'SEA is normally shipped with all through-hull fittings closed. Before starting the engine, check engine and gearbox oil and engine controls for familiarity and proper operation. Be certain that engine water intake valve (and exhause valves if installed) are open. Close engine and muffler drain valves. While the boat is still securely tied at dock, start engine in neutral. Water should appear at the exhaust within one minute. If it does not appear, shut off engine and check for water leaks or overheating. Allow engine to run as long as possible, preferably a half hour, before leaving the dock. While securely tied to the dock, check adjustment of engine throttle and gear controls by cycling the engine through forward, neutral and reverse several times getting the "feel" of the gearshift and noting the boat s response. Check that full OFF position of the throttle stops the engine. Always be sure to follow engine shutoff with turning off of the "ignition key" or switch. Fill fuel and water tanks, check for leaks in tanks, fittings and hoses. Pour a little water in the bilge sump (under the engine) and check operation of hand and electric bilge pumps.

Diesel engines generate considerable vibration and "knock" when first starting up. These noises should diminish once the engine is warm. After warm-up, "strange" noises should be quickly investigated. Loose alternator pulleys, loose engine mounting or adjustment bolts are not uncommon causes of unusual noises and should be corrected immediately.

ENGINE OPERATION- Follow your engine manual's recommendations carefully during the break-in period. Change engine oil when specified. The first few hours of your engine's life are the most critical it will ever encounter.

The key to successful diesel operation is CLEAN FUEL. Your engine has a fuel filter as standard equipment which is adequate for normal operation. If you use your engine very little or must take on fuel that may be contaminated we recommend that you pre-strain the fuel as it goes in and install another larger water separator/primary filter. Periodically condition the fuel with water absorbing and anti-algae additives such as BIOBOR. Most marine fuel docks or marine hardware stores should have these additives.

Do not allow your tanks to run out of fuel. This creates an air lock in the fuel system and your engine will probably not restart when fuel is added without going through the air bleeding operation described in your engine manual.

Diesel engines are much more reliable than gasoline engines. However, the "outside" equipment -- fuel pumps, water pumps, belts, hoses, etc. require the same maintenance, inspection and replacement as those on gasoline engines. Don't ignore your auxiliary because "it's a reliable diesel." Take care of it and it will serve you magnificantly.

Many owners will want to carry engine spare parts. For light cruising the engine manufacturer recommends:

Water pump impeller and gasket
Belts
Hoses, clamps, etc.
Fuel filters

For more far-flung cruising, add:

More fuel filters
Head gasket
Injection nozzle
Thermostat
Fuel pump
Rubber engine mounts (optional)

In areas where water is muddy, contains debri or algae, etc. we recommend a filter in the engine intake water supply.

When checking fuel tank levels with a dipstick or gauge, bear in mind that the tank is wide at the top and narrow at the bottom. Thus 1/2 on the stick or gauge indicates that there is MUCH LESS than 1/2 tank of fuel.

THE STUFFING BOX -

The propeller shaft stuffing box occasionally needs adjustment. The function of the stuffing box is to allow the shaft to turn freely yet keep the water out. This is accomplished by tightening a nut down on soft sealing material which then "squeezes" around the shaft. The stuffing box depends on incoming seawater for its lubrication and a balance must be struck between too much or too little water passing through. Too much means a full bilge and too little means an overheated stuffing box. It is difficult to describe what is 'right." As it leaves the factory, the stuffing box is a little loose and leaky. We suggest you gradually tighten down until there are only a few drops per hour passing through while occasionally checking that the stuffing box is not running hot. (It should never be too hot to hold onto) To adjust the stuffing box, loosen the lock nut located aft of the adjusting nut. Turn the adjusting nut inward as necessary (1/4 to 1/2 turn is usually adequate). Tighten the lock nut against the adjusting nut.

The Marine Head

The current no-overboard discharge laws present a cruising boat builder and owner with an incredible dilemma -- what kind of head to install on a boat used both inland and offshore. We couple the NOR'SEA's standard marine head (originally intended for overboard discharge) to a recirculating chemical treatment tank. This tank can be emptied at a dock-side facility or pumped over the side via an electrical or mechanical pump when in non-restricted waters. This allows our world cruising owners to convert the standard marine head to its original overboard discharge function by installing appropriate thru hulls, etc. by-passing the recirculating tank when on the open sea.

The pumpout fitting is on deck, marked 'waste." It is a standard pipe thread fitting. It is not possible to pump the tank completely dry. For a thorough cleaning the tank can be flushed with water and pumped several times.

Use only the special degradable toilet paper with recirculating heads. This paper is available at most Marine or RV stores. Failure to use the special paper will assuredly result in a clogged holding tank necessitating its removal for cleaning of the tank and filter screen. It's not a fun job!

To charge the tank after pumpout, empty an envelope of recommended chemicals such as Monochem T-5 into the toilet bowl; add water to the bowl while operating the head in the "flush" cycle. Continue to add water until water is being pumped into as well as out of the bowl. The head is now ready for use.

Fresh Water System

Fresh water is carried in two tanks located under the forward end of the aft cabin berths. Filler caps are located on the top of each tank. Outflow valves are on the front of each tank and are accessible through the forward engine hatch. It is imperative that both outflow valves NOT be open at the same time. One valve or the other must always be closed to prevent the high side tank from draining through the low side tank, out the vent, and into the bilge during extended tacks.

Freezing Conditions

If the boat is to be stored, shipped or operated in freezing conditions, the engine, muffler, hoses, pumps, head, holding tank, etc. must be drained. Refer to equipment manuals on how to drain the engine and head. The muffler, tanks, hoses, etc. can be drained by disconnecting. Operate bilge and galley pumps with the supply disconnected to flush out internal water.

Sailing With Safety

Sailing and Seamanship is a mixture of science and art, and is beyond the scope of this little booklet. The majority of NOR'SEA owners are experienced seamen. Most have taken Coast Guard Auxiliary courses, etc. Only the Skipper can be the judge of how well he is able to insure the safety of the boat and crew under varying conditions. For those of lesser experience, we highly recommend the Coast Guard and Power Squadron courses, sailing schools, etc. before you venture out in your new vessel.

SAILING YOUR NOR'SEA

Every Skipper should acquaint himself with peculiarities of his vessel which involve crew safety. On the NOR'SEA, we have noted that the tops of the main and aft cabins invite sitting or standing. This could be hazardous in case of a tack, jibe or the rudder being put hard over. Additionally, a person standing in the cockpit could be injured by a swinging boom. We emphasize that the only safe position for crew on deck during maneuvers is sitting in the cockpit.

The crew should understand that the lifelines are intended primarily for steadying support, and are not designed to positively prevent an out-of-control person from falling overboard. We recommend the use of safety harnesses for inexperienced crew in all weather and for even highly experienced crew in heavy weather.

Crew and particularly landlubber guests should wear nonskid deck shoes and be advised to step only on the textured fiberglass nonskid surfaces of the boat. We heartily concur with the rule "one hand for the boat and one for yourself" as the best method of preventing accidents on deck.

We also subscribe to the old adage, "If you are thinking about shortening sail, it's time to do it." The NOR'SEA will sail better, faster and with an easier helm if sail is shortened to prevent excessive heeling.

Although we are not qualified sailing instructors, we are always ready to share our experience with our customers. Please do not hesitate to call on us.

On vehicles having power brakes, all backing must be done with engine running to insure adequate braking power. The trailer winch line should be left connected until the boat is running and ready to be backed off.

When retrieving, the winch will be used to pull the boat forward to the bow stop. It may be necessary to release some winch tension as the boat begins to come out of the water. This is due to the stern dropping down onto the trailer, thereby raising the bow and putting great strain on the winch and trailer as the boat emerges from the water.

Some ramps are slippery. We usually carry a can of sand or dirt in the tow vehicle to spread ahead of the tires on slippery ramps.

A word of caution: after the trailer has been submerged the trailer brakes may temporarily lose their effectiveness until they dry out. We recommend that you test the brakes before venturing out into traffic.

If you have any problems, comments or suggestions not covered in this booklet, we would greatly appreciate hearing from you. It is our intent to build every NOR'SEA a little bit better than the last, and your input will help us to this end.

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