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**Appendix A**

Important Information About J/120 Optional Carbon Fiber Mast & Boom . . . . . By Hall Spars

## ***Introduction***

Welcome Aboard and welcome to the "J/family" of owners. Your boat is designed and engineered to be the strongest, best performing, easiest-to-use, and most comfortable sailing boat of its type.

J/Boats has prepared this guide to familiarize you with rigging, tuning and operating the J/120. Before we begin please be sure to:

***Complete the warranty card included and mail to TPI, Inc.***

This guide is furnished for your benefit, but shall in no way be construed as any sort of warranty or contract, express or implied, creating any obligation on the part of J Boats, Inc., with respect to any fact or facts or any advise or opinions contained herein.

The sole and exclusive warranty of the product is the TPI, Inc. Warranty described in the appendix hereto and on the Warranty Card furnished with the yacht.

***J/Boats, Inc. hereby disclaims any and all warranties, express or implied, including any warranty of fitness for a particular purpose or any implied warranty of merchantability.***

# Commissioning Checklist

## Pre-Launch

- |  |   |
|--|---|
| <input type="checkbox"/> Read Equipment Owner Manuals            | <input type="checkbox"/> De-winterize engine and check status of:   |
| <input type="checkbox"/> Pre-rig mast and check installation of: | 1. engine oil/ filter   |
| 1. Halyards  | 2. coolant level  |
| 2. Blocks  | 3. transmission fluid level   |
| 3. Electronics   | 4. water intakes/filter   |
| 4. Shrouds   | 5. fuel lines/filter  |
| 5. Spreader Chafe Guards   | <input type="checkbox"/> Check all engine control cable attachments |
| 6. Lifeline Pins   | <input type="checkbox"/> Hook-up coupling bolts                     |
| <input type="checkbox"/> Pre-rig boom                            | <input type="checkbox"/> Check battery charge                       |
| <input type="checkbox"/> Bottom painted or touched up            | <input type="checkbox"/> Align prop vertically & mark shaft         |
| <input type="checkbox"/> Check propeller/strut/zinc              | <input type="checkbox"/> Check all hose clamps, tighten as required |
| <input type="checkbox"/> Instrument transducer installation      | <input type="checkbox"/> Close all seacocks                         |

## Loose Gear

- |  |   |
|--|---|
| <input type="checkbox"/> Fenders       | <input type="checkbox"/> Bilge pump handle            |
| <input type="checkbox"/> Dock lines    | <input type="checkbox"/> Mast wedges ready            |
| <input type="checkbox"/> Winch handles | <input type="checkbox"/> Double-check sling locations |
| <input type="checkbox"/> Ignition keys |   |

## Launch

- Check for leaks
- Check seacocks
- Check stuffing box

## Engine Start

- |   |   |
|---|---|
| <input type="checkbox"/> Read engine owner's manual           | <input type="checkbox"/> Check oil press, water temp, charging gauges |
| <input type="checkbox"/> Align engine and shaft               | <input type="checkbox"/> Check transmission- forward/reverse          |
| <input type="checkbox"/> Start engine                         | <input type="checkbox"/> Check stuffing box                           |
| <input type="checkbox"/> Check exhaust for cooling water flow |   |

## Step Mast

- |   |  |
|---|--|
| <input type="checkbox"/> Hoist spar and lower into boat                         | <input type="checkbox"/> Attach all shrouds and hand tighten |
| <input type="checkbox"/> Attach headstay to sternhead fitting                   | <input type="checkbox"/> Install wedges and mast boot        |
| <input type="checkbox"/> Attach backstay & hydraulic cylinder to backstay plate | <input type="checkbox"/> Connect mast junction box wires     |

## Rigging

- |   |   |
|---|---|
| <input type="checkbox"/> Install boom                               | <input type="checkbox"/> Install and connect boom vang    |
| <input type="checkbox"/> Lead all halyards to stoppers on cabin top | <input type="checkbox"/> Rough tune spar per tuning guide |
| <input type="checkbox"/> Rig reef lines                             |   |

## Systems Check

- Fill fuel tanks
- Check operation of electrical systems and pumps
- Check electronics (optional)

## Trial Sail

- Raise and lower sails to check for fit
- Monitor engine performance and check stuffing box
- Check bilge for leaks
- Check electronics (optional)
- Check reef points and lines
- Tighten shrouds to straighten mast on both tacks

---

## Getting Started With Your J/120

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Generally, your dealer will help you prepare your boat before launching. And in most instances with a boat this size they will undertake the entire commissioning job. They are experts in the field and are capable of completing most commissioning tasks.

### **Before Getting Started**

Before you begin assembling your boat, you should become familiar with the different sail control systems and associated hardware. All running rigging and loose deck hardware items are shipped from the factory in parts boxes complete with parts inventory sheets. To help you properly install these items please refer to the rigging sections and the hardware diagrams in the next section.

The **Commissioning Checklist** on page 2 will help you insure that your J/120 is assembled properly and all systems and rigging function properly. If a boatyard other than an authorized J/Boat dealer is performing the work, review this list with them to establish what has to be done and by whom.

- **Topsides:** Wash off all the dirt and grime accumulated from delivery. Use only non-abrasive cleaners on the gelcoat. Then apply a coat of high quality carnauba boat wax or a synthetic poly-based coating. Either finish will prolong the life and sheen of the gelcoat.
- **The Bottom:** preparation is critical to long-lasting enjoyment. To ensure a professional finish carefully review the paint manufacturer's recommendations for preparing the bottom, and have your dealer roll or spray it on.

### **Deck Equipment**

- **Lifelines:** The lifelines are white vinyl coated 5/32" 7x7 wire. They run the length of the boat and are fastened at either end by stainless forks and turnbuckles. Each lifeline is clearly marked for easy installation.
  - Insert all lifeline stanchions into the sockets provided along the toe-rail. Secure each stanchion in place by tightening down the base set screws. Drip a small amount of blue Lock-tight on the threads of the set screws to prevent them from working loose.
  - Attach the turnbuckle to the bow pulpit and remove the threaded end from the turnbuckle to feed through each stanchion (snake lifeline through the optional comfort pads), attach to stern pulpit.
  - Finish off the job by tightening the turnbuckles and taping off the turnbuckle "split rings".
  - Install a "net" of lightweight nylon parachute cord from the bow to the second stanchion between the lower lifeline and a taught line secured between the stanchion bases to help keep the asymmetric spinnaker sock neatly on deck.
- **Skylight Hatches:** are made of anodized extruded aluminium frames with scratch-resistant lexan covers, and are "ready-to-use." Each hatch has a "vent" and "closed" position, both lockable.

- Fixed Ports & Optional Opening Ports: are made with painted extruded aluminum frames and smoke colored Lexan. The optional opening ports maximize interior comfort and cross-flow ventilation.

**DO NOT PERMIT ACETONE OR TEAK CLEANER TO COME IN CONTACT WITH PORTS, FRAMES, OR HATCHES AS THIS WILL DISINTEGRATE THE LEXAN AND DESTROY THE FRAME FINISH.**

### ***Steering System***

The steering system is carefully engineered to provide finger-tip control. This is achieved by utilizing high quality Harken rudder bearings. The rudder itself is made of unidirectional glass, with two molded halves bonded together, and a highly reinforced fiberglass shaft. It's engineered to withstand tremendous shear loads under storm conditions.

### ***Wheel***

- Pedestal: is custom molded fiberglass. Inside the "compass cowl" is a standard Edson chain sprocket which is connected to 7x19 wire to the custom aluminium quadrant. Adjustment to this linkage is achieved by a set of turnbuckles connected to the steering wire. These can be accessed through the lazarette locker to port of the rudder post.
- Wheel: is an Edson Diamond Series aluminum wheel with an elkhide cover. It is easily mounted on the pedestal by aligning the "keyhole" slots together and sliding the wheel onto the steering shaft. The chrome "Edson nut" screws down over the exposed thread to secure the wheel in place.
- Emergency Tiller: is installed by removing the access plate, and placing the base of the tiller over the head of the rudder stock. Fit the emergency tiller NOW to see how the system works BEFORE you get caught in a situation where you may not have time!
- Before Launching: check the system of cables, quadrant, and sheaves to ensure they are working smoothly. If the steering seems loose, tighten the turnbuckles by hand and repin them. Beware that you do not overtighten the cables. Please note that your steering should be checked periodically for "tightness" and for presence of properly bent cotter-pins.

### ***J/120 Rigging***

The running and standing rigging items supplied with your boat are designed for efficiency. A wealth of racing and cruising experience has gone into the deck layout to make sailing and boat handling safe and easy to handle by a couple and for a racing crew.

The most unique feature of your J/120 is the J/Sprit with asymmetrical spinnaker. We believe this system is a major improvement over conventional systems and so let's start by explaining how it works.

- Carbon Fiber J/Sprit: The carbon fibre pole is custom made by TPI and is designed to withstand the loads associated with the asymmetric spinnaker without any additional support. The J/Sprit consists of a carbon tube which is faired smooth and finished with an



off-white Awlgrip high gloss paint, and two molded end fittings. The forward end fitting has a "U" bolt which serves as the tack attachment point for the spinnaker as well as the attachment for the ATN snuffer block. The aft end fitting houses all hardware necessary for the adjuster line and shock cord retrieval system.

- **J/Sprit Launching Line:** The line which pulls the J/Sprit out is designed to be operated without leaving the cockpit. Lead the line through the hole in the forward most bulkhead in the forepeak and tie a stopper knot. The line then leads through the thru-pole blocks on the aft end fitting of the carbon fibre pole (be sure the "U" bolt on the other end of the pole is up), forward to a turning block and aft through the head, main cabin, aft cabin and exiting into the cockpit to a cam cleat on the back of the cabin house to starboard. **A figure eight knot should be positioned near the end of the line to prevent the pole from over-retracting into the boat and banging into the head bulkhead. There is also a preventer line which is rigged by threading the forward end through the forward bulkhead and tying a stopper knot. The aft end of the preventer line is attached to the aft end of the pole.**
- **Shock Cord Retrieval System:** The heavy duty shock cord system allows the J/Sprit to automatically retract when you uncleat the launching line. To rig: attach one end of shock cord to the pole end fitting, lead through the Harken becket block (shipped loose) mounted on padeye on head bulkhead, lead cord through the bullseye on the bottom of the pole end fitting to the forward single Harken block, back through the bullseye to the becket on the block, tension the cord. You may need to experiment once or twice to get the appropriate tension on the shock cord. It should be relatively easy to extend the pole fully, and when released, should quickly retract into the boat.
- **Mast:** Rigging the J/120 mast is a straight forward procedure, though it is best handled by a qualified marine rigger. Be sure all mast related electronics are installed prior to stepping.
- **Hydraulic Backstay:** The J/120 is equipped with an integral hydraulic backstay to help you fine tune your rig and sails for optimum performance. This hydraulic unit is simple to operate, easy to maintain, and highly reliable. The cylinder is affixed to the S.S. backstay tang on the transom and to the backstay. In order to make the cylinder fit, you must pull out the S.S. shaft and fully extend it.
- **Boom:** Run the reef lines. (see rigging diagram).
- **Boom Vang:** The **Hall Quik Vang** is a mechanically operated spring loaded boom vang with a Harken block and tackle purchase system. This vang system allows for quick and easy adjustment and acts as a boom topping lift at anchor. The vang is affixed to the vang plate welded underneath the boom and to the mast at the vang gooseneck located just above the mast collar. For proper operation and adjustment see the Quik Vang operating instructions. It is important to be sure the internal spring and stop are properly positioned so that the boom firmly resists being pushed down too far.

### **Sail Control Systems**

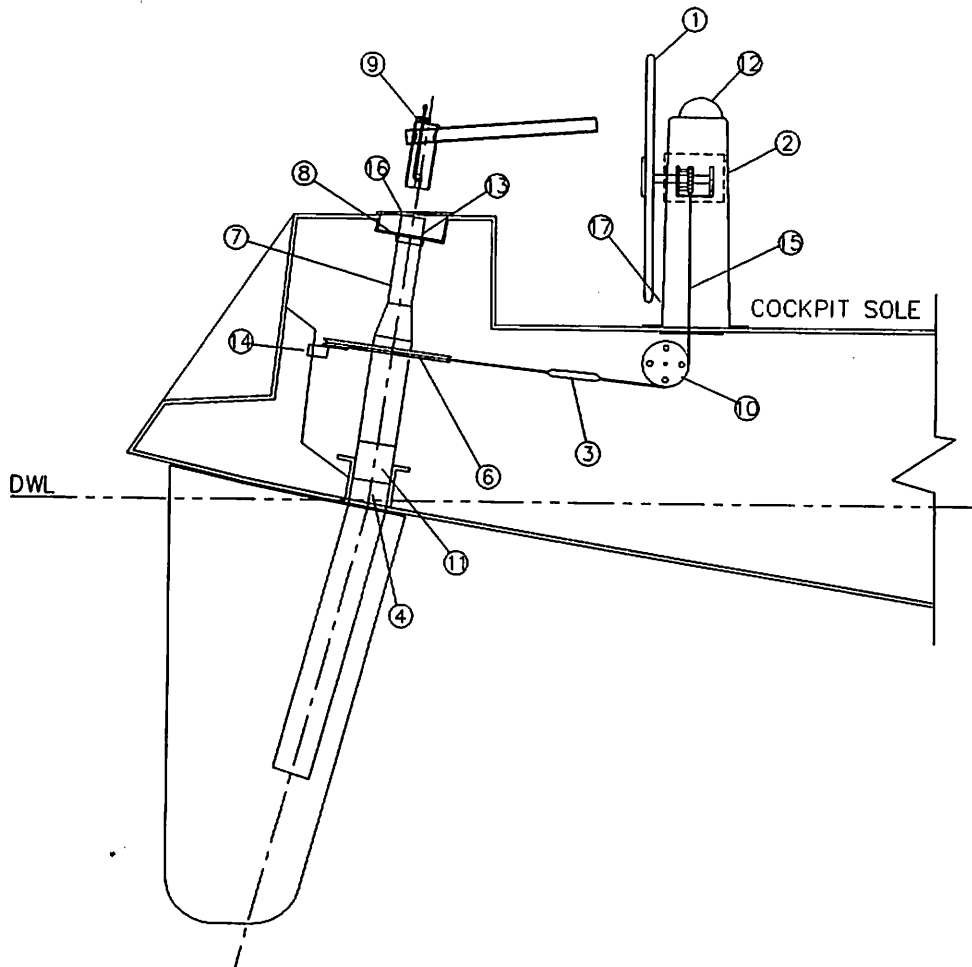
After stepping the mast and connecting the boom, Hall Quick Vang, Harken Roller-Furler, and integral backstay, lead all halyards and set up the remaining sail control systems. These systems are designed for maximum efficiency and ease of handling.

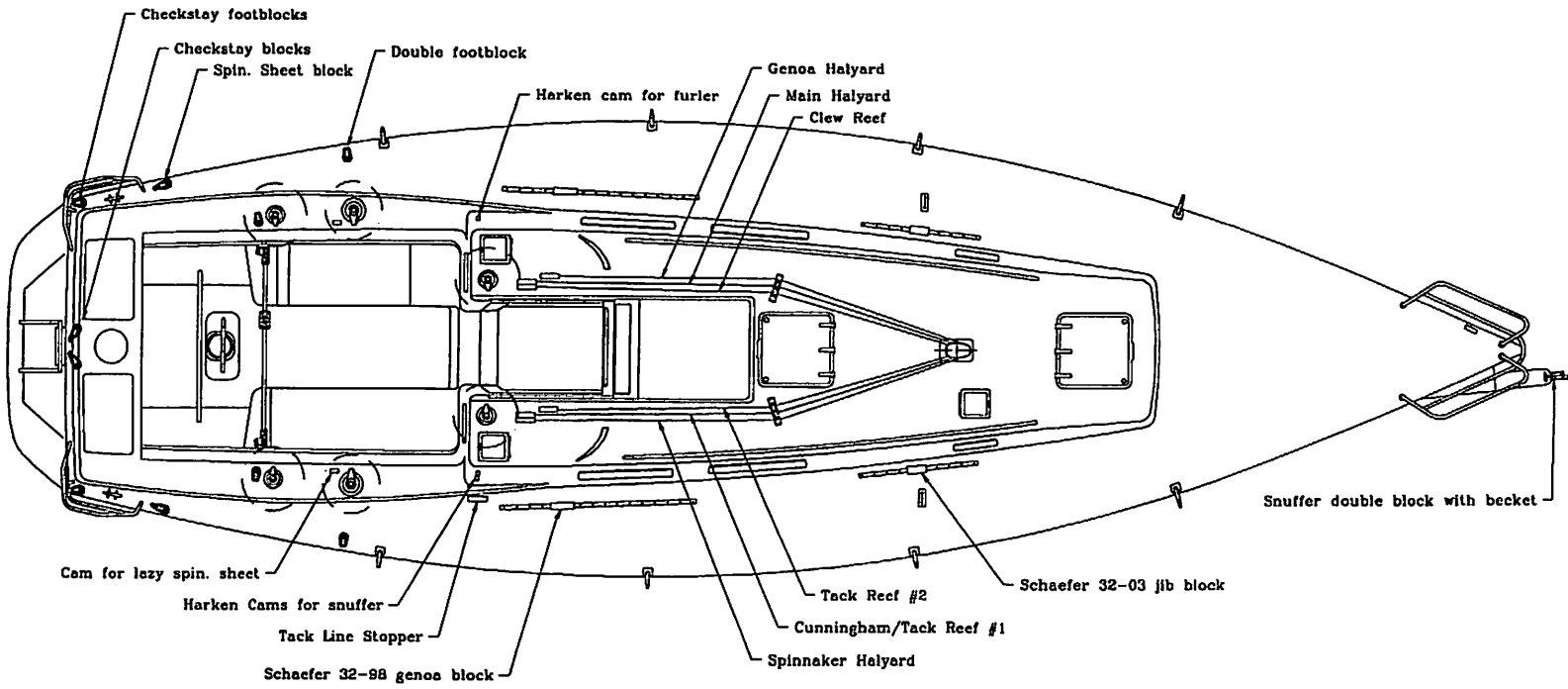
- **Main Halyard:** exits the mast on the port side, runs through a turning block at the mast collar, through the middle port organizer sheave and then aft through the port double stopper (outboard hole) and finally to the halyard winch. The tail end is stored in the supplied line bag which should be mounted outboard and forward of the stopper.
- **Jib Halyard:** exits the mast to port, leads through the forward mast base block, aft to the outboard sheave on the organizer block, through the outboard single stopper. Store tail in line bag.
- **Spinnaker Halyard:** exits the mast to starboard and leads similar to the Jib Halyard to port.
- **Mainsheet Traveler:** is a Harken low friction system. The 4:1 purchase system on each side controls a Harken traveler car mounted on a high beam Harken track (see diagram).
- **Outhaul:** is adjusted on the boom and is pre-assembled from Hall Spars.
- **Cunningham:** The cunningham doubles as the starboard tack reef line. To rig as a cunningham simply tie a bowline with the tail to the padeye on the port side of the mast, lead through the grommet on the sail, through the cheek block on the starboard side of the mast, down to mast base turning block, through middle organizer sheave and aft to the outboard hole in the double stopper.
- **Mainsheet:** is an 2:1 double ended system (see diagram). The system is designed to allow easy adjustments of the main-sheet by the helmsman with two Lewmar 44 self tailing winches. Two Harken single blocks are attached to the traveler car and one to the boom bale.
- **Genoa Sheet:** is continuous and attaches to the roller-furler headsail by a simple knot, leads to the genoa block on the track, aft to the primary winch.
- **Spinnaker Sheets:** lead from the clew of the spinnaker aft outside the lifelines through the Harken blocks w/hanging tabs (shipped loose) turning forward to the upper sheave of the double fairlead blocks along the rail and then to the primary cockpit winches or secondary cabin-top winches. A small Harken cam is mounted next to the primary winch on each side of the cockpit to allow the spinnaker sheets to be cleated **when not in use**. These cleats are not intended to handle spinnaker sheets under load.
- **Snuffer Control Loop:** run through the starboard sheave of the double block fixed to the end of the J/Sprit aft under the pulpit to the upper Harken cam cleat on the starboard side of the cabin trunk, back through the middle cam cleat forward to the port sheave on the sprit block and reattached to the snuffer bridle using the same knot as ATN. (not a slip knot).



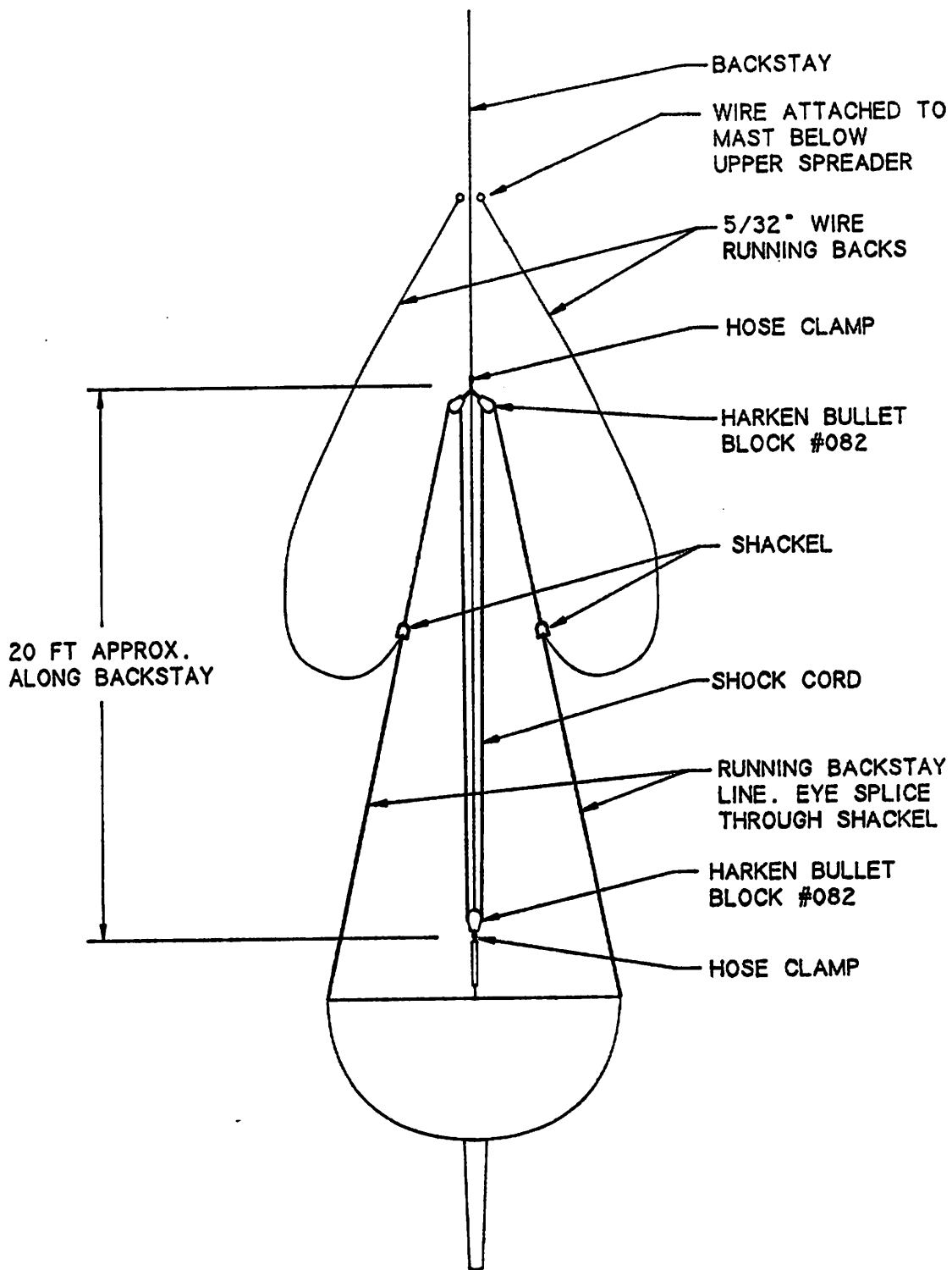
Steering Systems

BILL OF MATERIALS			
ITEM#	QTY	TPI PART #	ITEM DESCRIPTION
1	1	21061	48" HELMS WHEEL
2	1	21291	EDSON NEEDLE BEARING
3	2	21092	TURN BUCKLE W/ LOCK NUTS
4	1	21301	HARKEN BEARING
5	1	53853	FRP STUFFING BOX
6	1	51009	RADIAL QUADRANT
7	1	19179	SS SLEEVE UPPER
8	1	21187	HARKEN BEARING
9	1	75690	EMERGENCY TILLER
10	1	21019	IDLER
11	1	21209	G10 SLEEVE LOWER
12	1	10156	COMPASS
13	1	21316	PIN
14	1	21310	RUDDER STOP S.S.
15	1	21088	CHAIN ASSY.
16	1	10587	DECK HATCH
17	1	10346	DECK HATCH 4"
18			
19			
20			

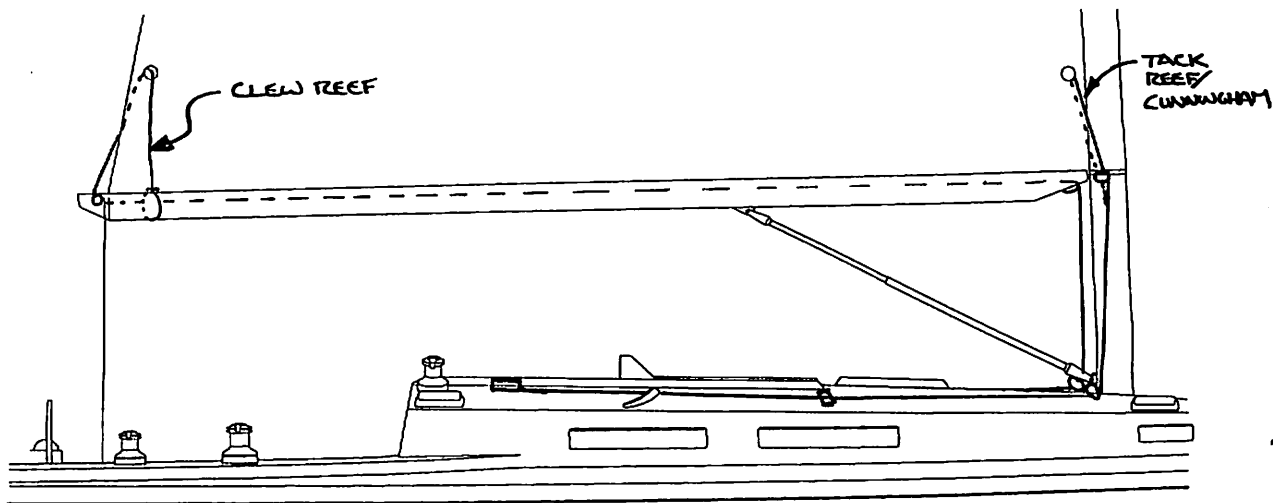
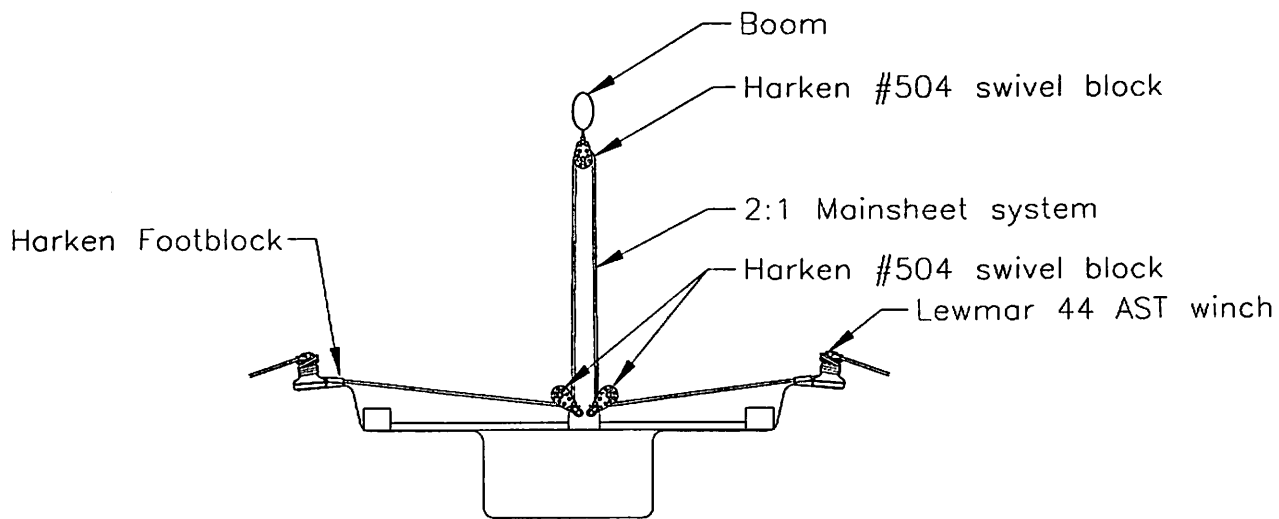




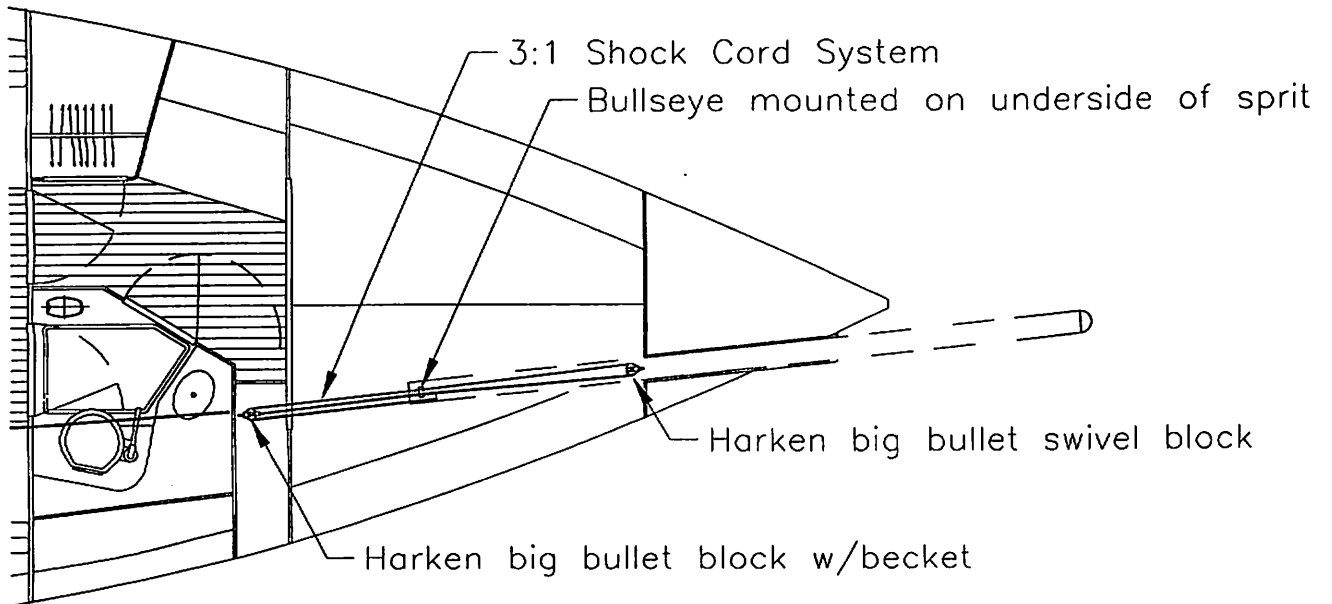
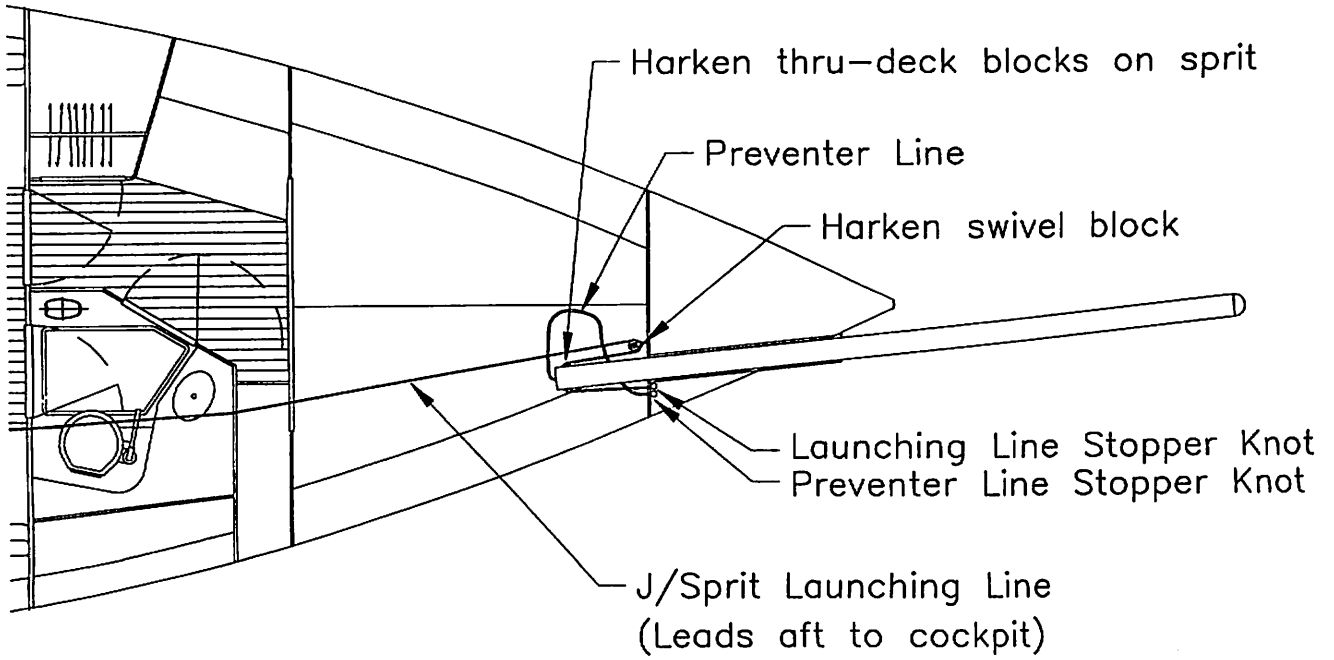
**Running Backstay Retrieval System**



**Mainsheet & Reef/Cunningham Systems**

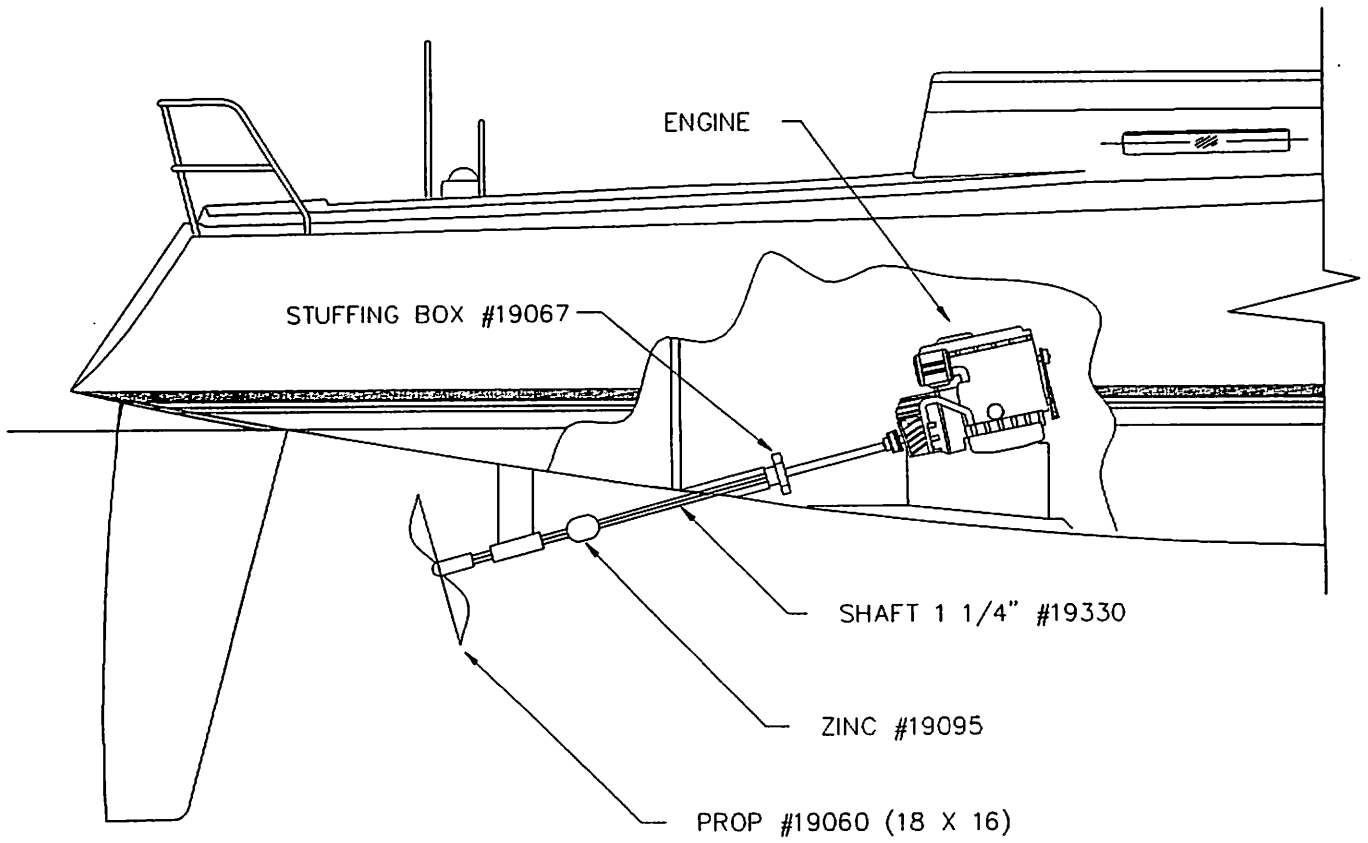


**J/Sprit System**

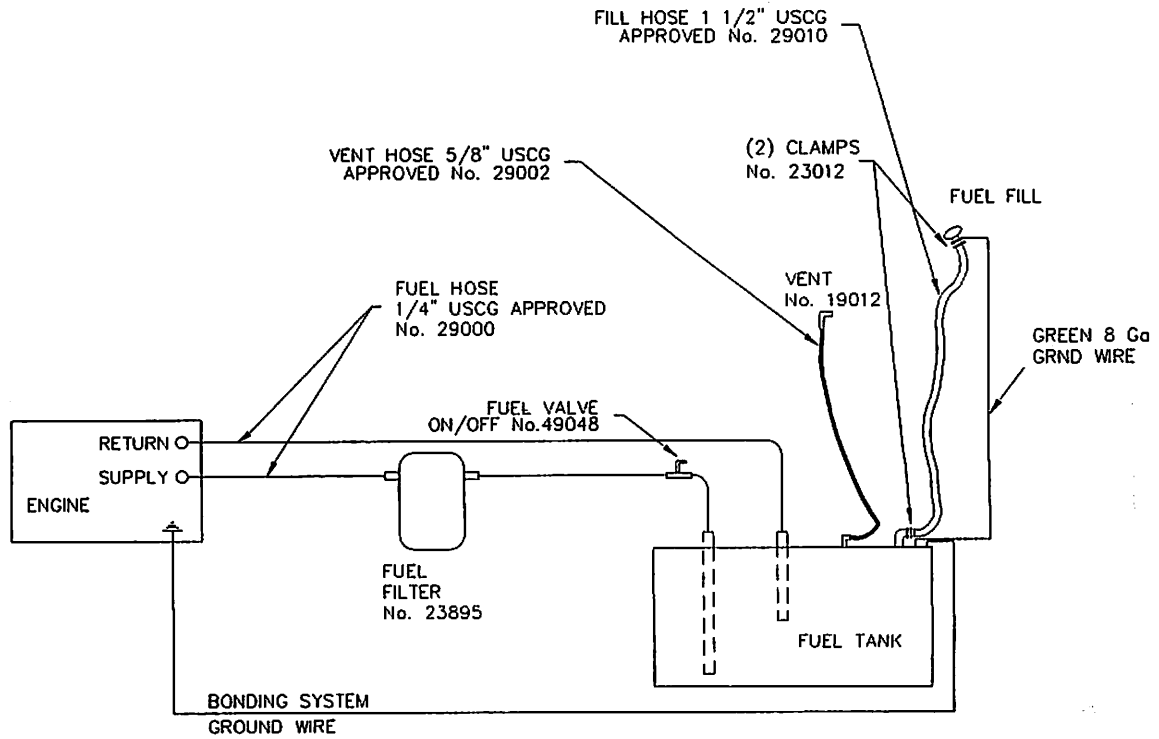




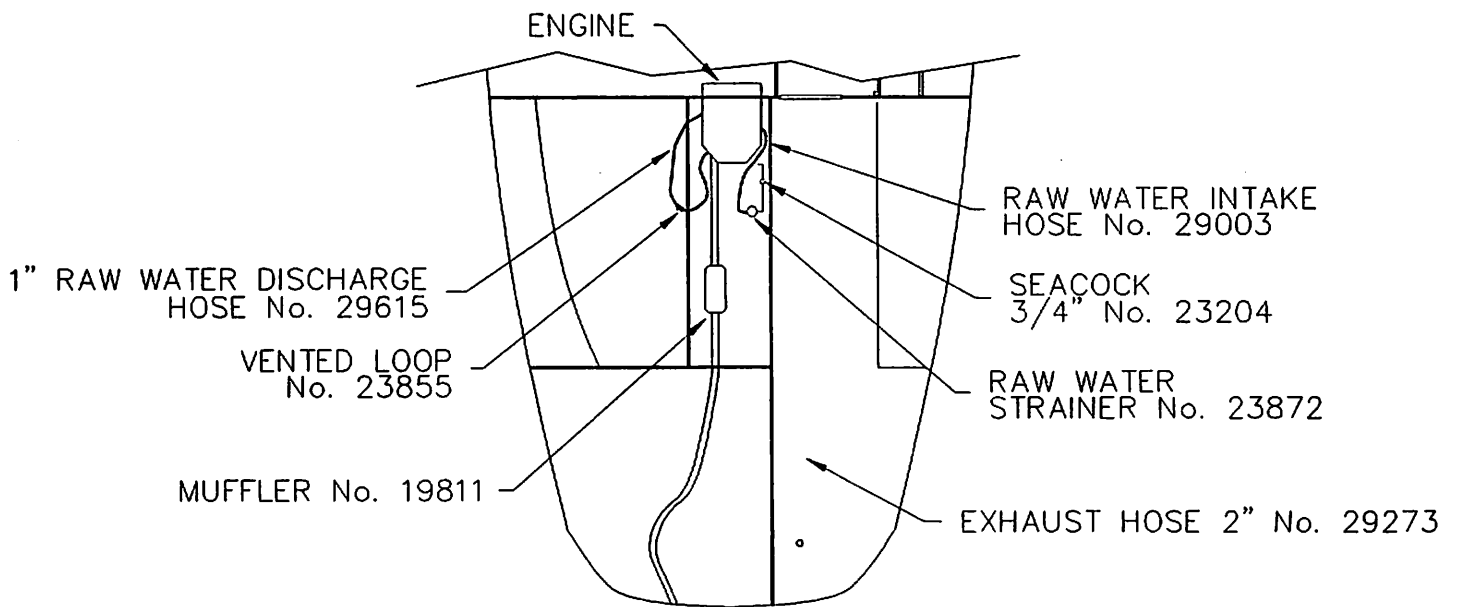
**Engine Drive Train**



**Fuel System**

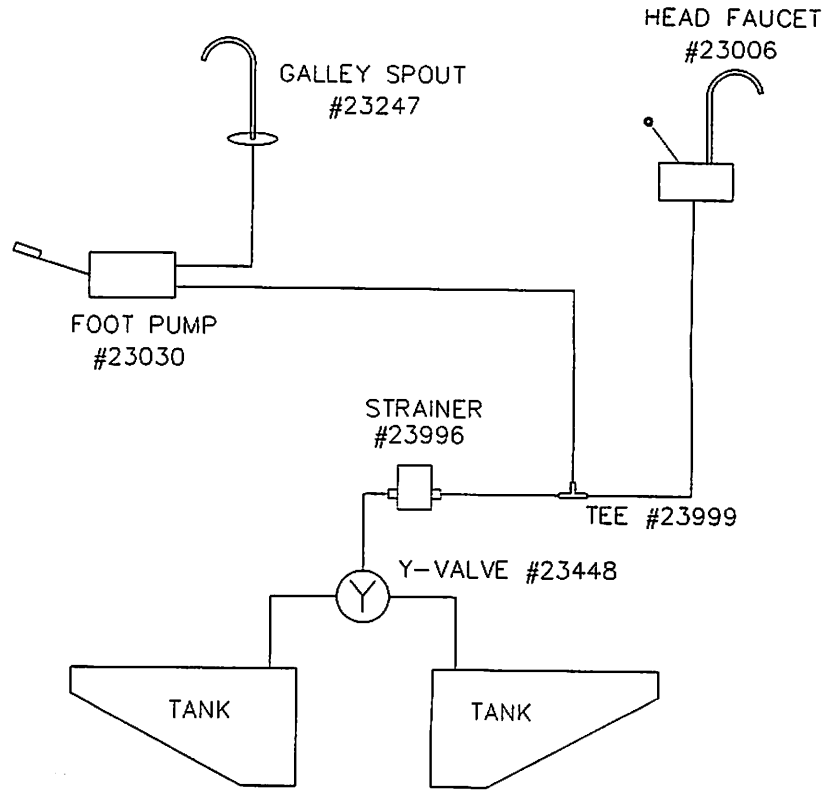


**Engine Cooling System**

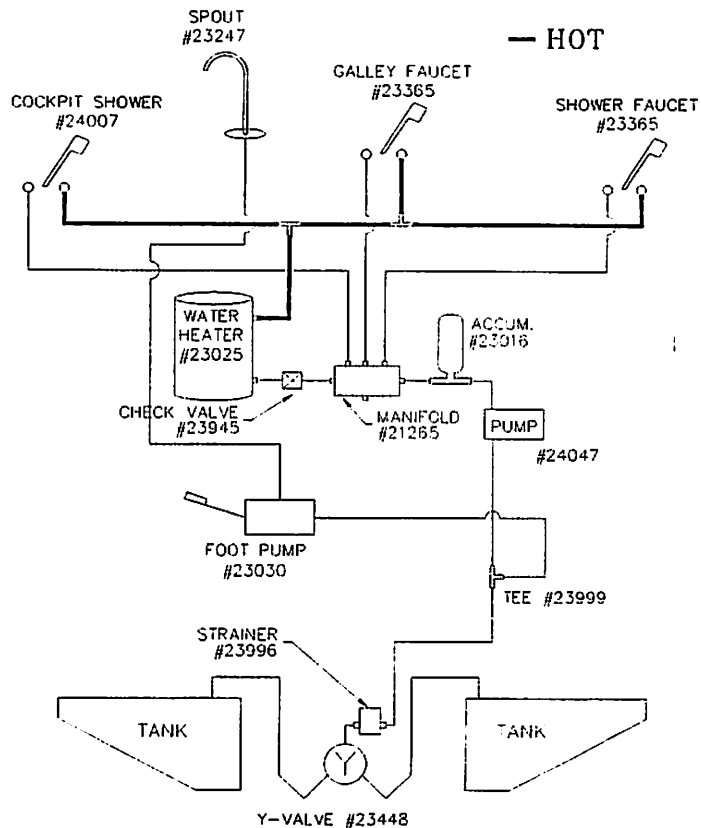


**Fresh Water Systems**

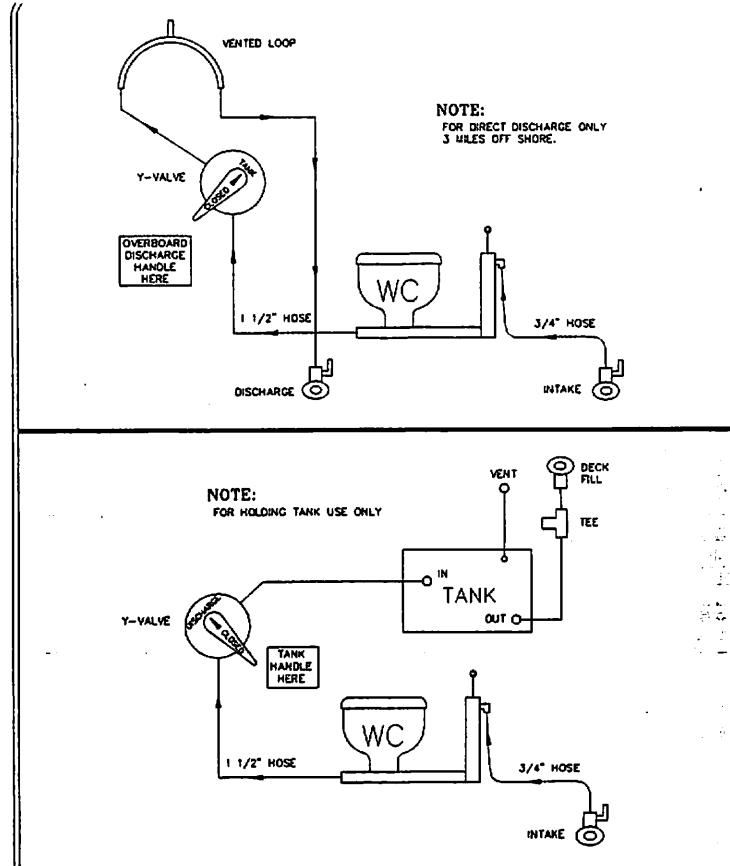
STANDARD  
FRESH WATER SYSTEM



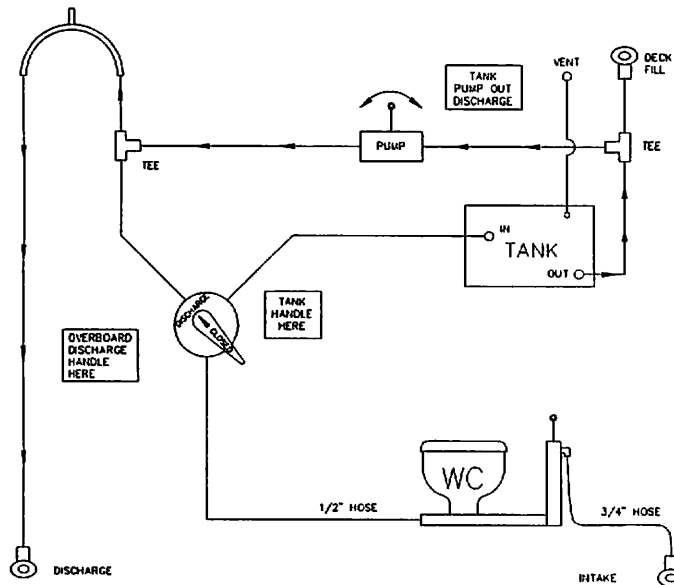
OPTIONAL WATER  
PRESSURE SYSTEM



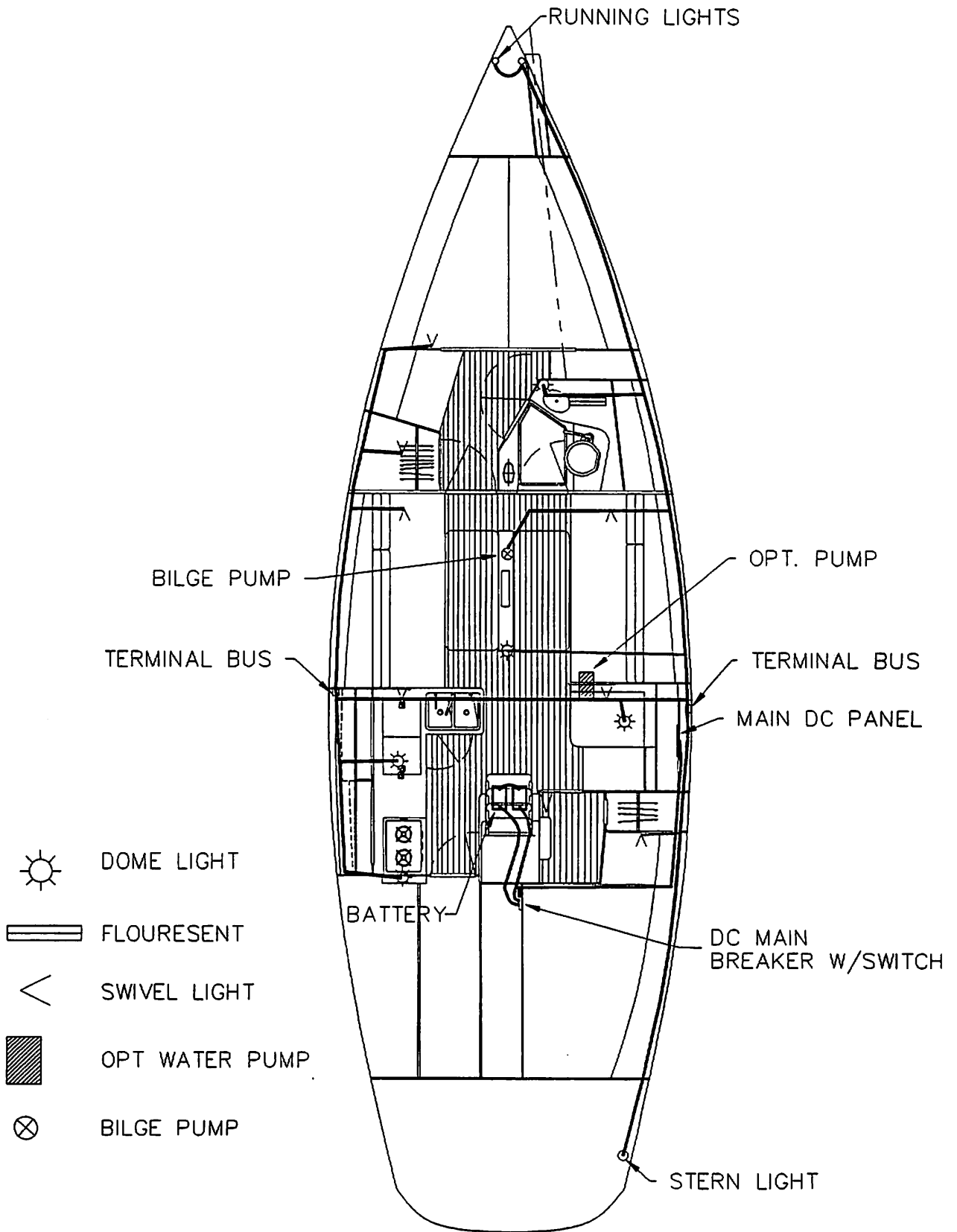
Head System



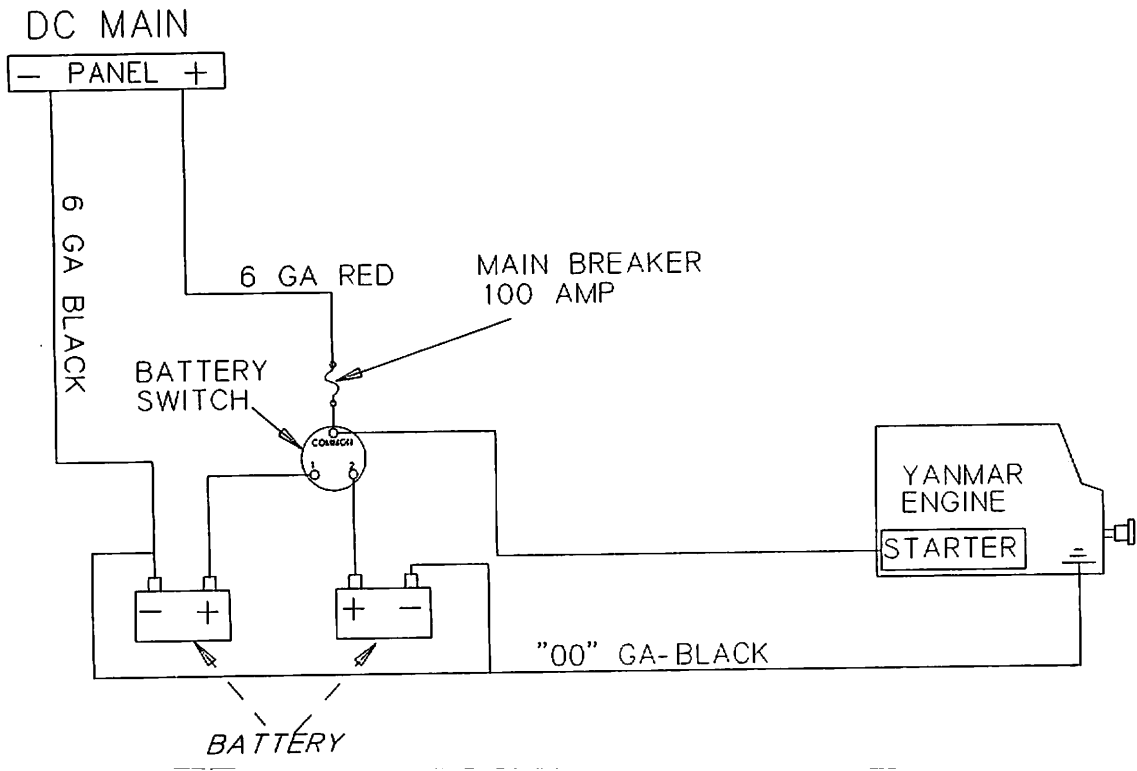
HOLDING TANK PUMP OUT SYSTEM



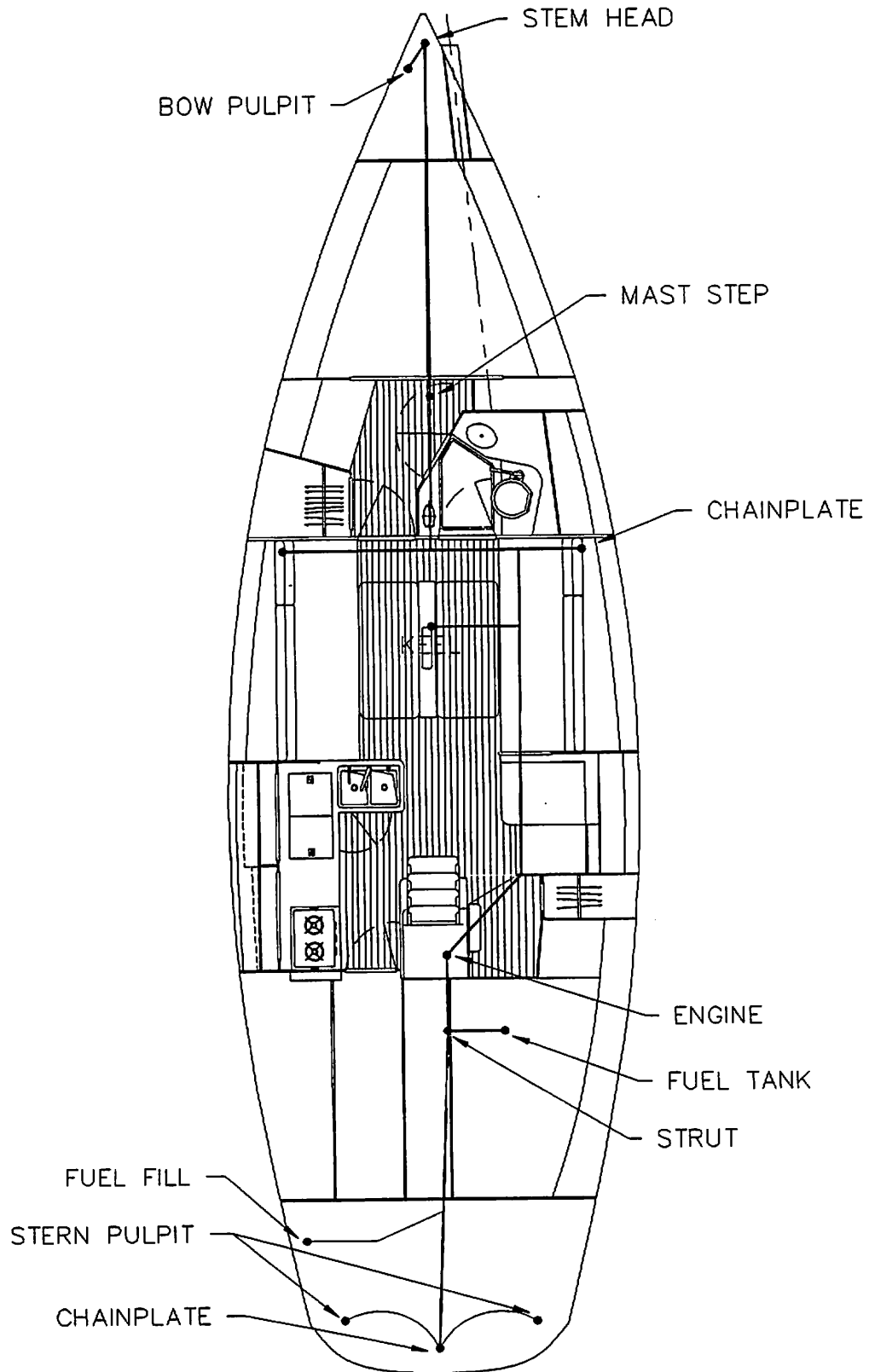
**Electrical Wiring System**



**Battery Wiring Diagram**



**Lightning Bonding System**





## ***Tuning Your J/120 Rig***

Tuning is a straightforward, step-by-step process which achieves a predictable end; a boat tuned for maximum efficiency and safety.

### ***Tuning at the dock***

- Headstay length is standard with about 2.5 inches of thread showing under the Harken Drum. The backstay is set-up with a toggle under the hydraulic cylinder to set the handle forward and release aft. Mast step bolts are positioned in the middle of the slots. No mast wedges are installed to start.
- After taking up the shrouds hand-taught, center the mast by using the main halyard to equalize the distance to each side of the boat outboard of the chainplate. This centers the top of the mast in the boat. Apply about 2,000 lbs. of pressure to the backstay to bend the mast.
- Tighten the upper shrouds equally to port and starboard with a wrench as far as you dare without stripping the threads of the turnbuckle.
- Now tighten the intermediates 1-2 turns tighter than hand-tight.
- Next, release the backstay and if necessary run a sheet around the front of the mast from one turning block to the other and winch back the mast to permit insertion of the forward mast wedge. Insert the remaining mast wedges and mast boot.
- Tighten lower shrouds about 4 turns tighter than hand tight. Be sure to leave your mast bent in heavy air by NOT releasing the backstay going downwind.
- Double check your handy-work by looking up the backside and front side of the mast to be sure that it is straight from side to side.

Be sure you have consulted with your sailmaker for proper "pre-bend" in the mast...it will help determine the location of your mast-step. Also, ask him to go sailing with you to help with the tuning and the fit of the sails.

### ***Tuning Test Sail***

Try to pick a day with a steady, moderate breeze of 10-15 knots as this will give you the proper amount of pressure on the rig to tune it for all conditions.

- Sail close-hauled with about 15-20 degrees of heel, and check the slackness of the leeward upper shroud. If it is loose enough to swing in over a 1" arc, tighten the upper shrouds even turns to eliminate excess slack. **TIGHTEN ONLY THE LEEWARD SHROUD TO PREVENT STRIPPING THE TURNBUCKLE THREAD!!**
- Sight up the mainsail luff groove. What are you looking for? Check the straightness of the mast through the shroud attachment points to ensure they line up with the masthead. Why? If you've centered the masthead you can use this as the point of reference. Chances are likely the mast will be sagging off to leeward and to straighten it will require working from the bottom up. In other words, begin with the lower shrouds, then move to the intermediates.

- Sail along on a tack, check the mast sag, **tack to make an adjustment to the lower shroud**, then immediately tack back to determine if more adjustment is needed. Continue this process on both tacks until the lower panel (deck level to first spreader) of the mast is aligned with the masthead.
- Adjust the *intermediate shrouds* in the same manner until the upper mast aligns with the masthead. You will find that little pressure is needed on these to straighten the upper portion.
- Pin the shroud turnbuckles and tape thoroughly to prevent your beautiful tuning job from getting out of line!
- Follow-up: after sailing in good breeze for 10-15 hours be sure to re-check your rig as even rod rigging can stretch a little.

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## **Asymmetrics & Snuffers From The Cockpit**

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Once you learn how, the snuffer system is easy, allowing two people to safely control a spinnaker in strong winds - an otherwise impossible and dangerous task on a large boat (over 30 feet). Like anything really new, old knowledge must be discarded first and a few critical new techniques practiced until mastered.

### **Snuffer Design**

A word of caution. There are a number of snuffer designs on the market. The ones we've found to be most effective have the following features: (a) a good, heavy-duty swivel shackle inside the sock for attaching the head of the spinnaker; (b) a second sleeve in a contrasting color that captures the up-and-down snuffer control line, outside of the main sleeve containing the spinnaker, which avoids the problem of control becoming snagged and also serves as a visible indicator of a twisted snuffer; (c) a light-weight Kevlar composite, fairlead collar instead of a wire hoop at the bottom; and (d) polypropylene braided line (similar to Marlow) for the snuffer control that's light, won't absorb water and get heavy, and is kink-resistant.

### **Length of the Snuffer**

The length from the bearing point of the upper eye attached to the halyard and the attachment knot of the "snuffer down control line" at the bottom of the snuffer cone bridle, when pulled down hard: Should be about 6 inches shorter than the straight-line distance between the halyard shackle when fully hoisted and the control's block on the end of the sprit (or bow). This allows you to completely gobble up the spinnaker in an emergency while putting some tension on the sock to keep it from flopping in the wind.

### **Loading the Snuffer**

Attach the spinnaker halyard to the top of the snuffer (so you don't lose the end as it's turned inside out), then reach in from the bottom, allowing the sock to accordion over your arm, to grab the swivel shackle for the halyard inside the sock. Attach the head of the spinnaker, then draw it inside the sock, making sure that neither the sock nor the spinnaker is twisting in the process.

### **Lower Control Block Set-up**

A cockpit-operated snuffer is a great safety feature. You don't want to be on the foredeck when there are only two people aboard, in conditions which make you want to get rid of the chute. This system also places the control lines at the luff of the spinnaker which makes them easier to operate and avoids them being twisted if the spinnaker is jibed.

*On typical cruising rigs, the procedure is to bear off so the mainsail blankets the spinnaker, then go on the foredeck to operate the controls with the spinnaker still up (and boat rolling about). This is a bit dicey and assumes the spinnaker hasn't been jibed to wrap the control lines around the headstay.*

The best snuffer control block at the end of the pole, or on the bow, is a non-swiveling double with a becket (Harken 004 or similar) that is attached in such a way that the sheaves are lined up fore-and-aft. The spinnaker tack line is run through the becket, keeping the block upright & aligned with the sail. The two snuffer control lines are run, side-by-side, through the double sheaves.

### ***Rigging the Snuffer***

Detach the snuffer control line from the rope bridle on the snuffer cone, remembering how to re-tie the knot which secures it firmly in the center of the bridle. If it slips off to one side or the other, the snuffer cocks under load, creates friction and doesn't work well. With a J/Sprit, reeve this loose end forward over the pulpit, aft through the starboard sheave of the Harken 004 on the end of the Sprit, back under the pulpit and aft to pass through the **UPPER** of two Harken "snuffer control" camcleats with eyestraps (or the new fairleads) installed on the starboard side of the cabin trunk. Then, make a continuous loop, which stays in the cockpit, by reversing to reeve it forward through the **LOWER** camcleat, along the deck, under the pulpit, forward through the port sheave of the 004, back over the pulpit, re-tying it securely in the middle of the snuffer bridle. **BOTH SNUFFER CONTROL LINES** (and snuffer cone bridle) **SHOULD BE ON THE STARBOARD SIDE & FORWARD OF THE TACK** (and tack line). The colored stripe (outer sleeve of the snuffer) should be facing forward as you look up when the snuffer is hoisted. There's a proper order from bow to stern of the lines. In front are controls, then tack line then sheets.

### ***Stowing the Snuffer System***

There's a big advantage in not having to disconnect and then re-connect all the lines & snuffer each time one sets the spinnaker. In fact, I leave mine completely hooked up all season, including the snuffer control lines, tack line, sheets and halyard (when sailing with 100% LP jib). It's simple. Just drop it down the forward hatch and lock the hatch down (in the vent position) on top of the lines. If one needs to sleep in the V-berth, stow it all on deck in the spinnaker's (hopefully waterproof) original bag.

### ***Tack Line***

The tack line needs to be about twice the "J" measurement in length. With a J/Sprit one can set up the tack so that spinnaker will automatically be pulled out of the hatch and snuffer cone, almost to the clew as the J/Sprit is extended. Here's how to set up the tack line. A length of 7/16 Dacron braid is tied to the tack of the sail exiting to port of the braided snuffer control lines, leading over the pulpit, to the **LEFT AND UNDER** the snuffer downhaul line, over and back through the plastic becket of a Harken 004 shackled to the bale at the end of the Sprit, then under the pulpit and back to the bow cleat, where it is secured, so that the length of the tack line from the tack to the cleat equals the distance from the cleat to the end of the sprit when fully extended.

The tack is then **AUTOMATICALLY** pulled to the end of the sprit as the sprit is pulled out: Make a mark on the tack line where its inboard end is secured on the bow cleat. On a J/105, the tack of the sail is even with the front of the bow cleat when the J/Sprit is fully retracted in the boat. That leaves a corner of the sail on deck when sailing to windward. It's OK. There's not enough sail between that point and the hatch, when its closed down on top of the control lines/corner of the sail/halyard/sheets to create a problem. Or, one can simply take the extra step of pulling the tack out to the mark prior to hoisting the spinnaker, so the corner of the sail doesn't have to be on deck when not in use.

### ***Halyard Feed***

Assuming that one is sailing with the #3, 100% jib, the halyard goes out from under the hatch, **AND UNDER & OUTBOARD OF THE JIB SHEETS**. When the system is stored down the

hatch, the halyard is held off to the base of the shrouds with a hook or snap shackle, then tensioned to keep from slapping around. Place a snap shackle on both port & starboard sides, so it doesn't matter which side of the headstay the snuffer is dropped on.

### ***Attach The Spinnaker Sheets***

Spinnaker sheets go from spinnaker sheet turning blocks aft, outside the lifelines (flop them up over & inboard to avoid dragging them in the water) then forward around the headstay behind the snuffer control lines or directly to the clew, depending on which side of the headstay the snuffer control lines are located. It's a good idea to put tape completely around the shackle and base of the furler system, just above the drum where the genoa is attached and over the knot (or drill a second hole and run the furler line back inside the drum before tying the "dead-end" knot) on the top of the furler drum - to keep these projections from catching the spinnaker sheets or rolling them up with the genoa.

### ***Snuffer Limitation When Hoisting***

First you must realize that it's impossible to slide the snuffer sleeve up over the spinnaker, without first exposing the clew and knots of the spinnaker sheets. Otherwise, the sock/sail combo bunches up and goes nowhere. There are two ways of doing this: (1) pulling it out prior to hoisting the snuffer or (2) sliding the snuffer cone up over the clew, by holding onto the headstay and reaching forward to either slide the cone up (or with help from the cockpit, yanking the sail out the bottom from the cone) after the snuffer is hoisted. I prefer the former to avoid having to go on the foredeck once the halyard has been pulled up. But, you may have to do the latter if you've snuffed completely and want to un-snuff without dropping the whole program on deck.

### ***Duties on the Hoist***

Assume just two people on board, only one of which is experienced (X). It's best always to hoist and drop on the windward side of the jib, so you don't risk dropping the entire system overboard. Here's the process:

- X goes forward and in a flowing motion, frees the halyard from the shroud base on the way, opens the hatch, pulls the bottom of the spinnaker and cone on deck, then slides the cone above the clew, until the spinnaker sheets are exposed.
- X returns to the cockpit and pulls out the J/Sprit and makes sure the windward spinnaker sheet is free and the leeward sheet is secured in the "broad-reach" mode.
- X then hands the tail of the spinnaker halyard to the inexperienced friend, helmsman (H), after insuring that the halyard stopper is in the "lock" mode. He instructs H to take up the slack while keeping the boat on course - when X hoists the sock.
- X returns to the mast to jump the halyard where it comes out of the mast. There's little load, because the spinnaker is still in the sock.
- X looks up to insure that the sock and lines are not twisted and that the sock is hoisted fully, then throws the hoisted tube around to the leeward side of the headstay.
- X returns to the cockpit to roll up the jib and operate the snuffer by releasing the DOWN and pulling the UP controls. X double-checks that the cone of the snuffer is going up smoothly without a build-up of sail inside above the cone.

- X then applies lots of tension to the UP and moderate tension to the DOWN, cleating both lines to insure that these snuffer control lines aren't waving loosely - which can foul the spinnaker in a jibe.

### ***If the Sail Bunches Up Inside Sock***

If the cone is restricted from sliding up by such an inside build-up, X has two remedies.

- Pull the cone back down to the clew by releasing the UP and pulling the DOWN. Then put some tension on the spinnaker leeward spinnaker sheet, so that this pressure will help the sail emerge and start to fill, automatically pulling more cloth out the bottom on the hoist. Or,
- X must go forward and grab the foot of the sail near the cone, forcefully yanking out as much sail as possible from the snuffer until the bunched up section above the cone is pulled out.

### ***Snuffer Take-Downs***

- X unrolls the jib then applies a loose trim and cleats it to take some air flow from the spinnaker.
- X releases the spinnaker sheet then immediately releases snuffer UP and pulls the DOWN to snuff out the spinnaker all the way to the bottom.
- X then hands the tail of the spinnaker halyard to H with one wrap around the cabin top winch, tells H to, "Hold with tension, until I start pulling down the sock. Then ease the tail of the halyard as fast as I can pull it from you, no faster, because we don't want to drop it in the water."
- X then releases the spinnaker halyard stopper. It's OK. The chute's completely contained by the sock now.
- X let's the pole retract about 3 feet, by uncleating then recleating the pole launcher line. This is so, he can reach the sock without letting go of the headstay. If it doesn't want to come back, yank the tack line when you get on the foredeck.
- X goes forward on the windward side, (a) throws open the hatch, (b) **THROWS THE WINDWARD JIB SHEET AFT AND TO LEEWARD OF THE HATCH** (c) puts an arm around the sock from the windward side of the headstay and begins to drop down in a crouch while pulling the middle of the sock toward the open foredeck hatch (**FORWARD AND WINDWARD OF THE JIB SHEETS**), as H eases the halyard.

### **WARNING**

The most important lesson of snuffing! **ALWAYS TAKE THE SNUFFER TUBE IN ON THE WINDWARD SIDE OF THE HEADSTAY.** By doing so, the system with tack line & control lines can be made to drop between the uprights of the bow pulpit and is captured by the jib and lifelines on the foredeck, so you don't risk dropping the tube over the side. If the tube goes over the side, cone facing forward, the water rushes in and tries to climb to the masthead, the boat stops. The water doesn't get to the masthead, but its weight pulls down hard, tearing the halyard out of H's hand. The Loch Ness monster comes alive alongside the boat and it's almost impossible to pull in.

- X closes and secures the hatch (one knob will do), pulling the spinnaker halyard loop off to the base of the windward shrouds where it is attached. (or detaching it, if using genoa)

- H takes up slack in the halyard

### ***Dropping Without Snuffer***

If not using the snuffer, we've found the best way is to rig a supplementary "dousing" line from the tack, directly over the pulpit, to windward of the headstay and down the forward hatch. Then follow this procedure: (1) unroll the jib and set a loose trim (2) release the spinnaker sheet and retract Sprit (3) have a "below-decks" person start hauling on the dousing line, with help from someone on deck, to pull the sail in around the headstay on the windward side of the jib (and forward/outboard of the jib sheets) Then stuff it down the forward hatch, leaving everything attached (except halyard. with genoa).

### ***Helpful Hints***

- Tie a 1/8 inch cord horizontally between upper and intermediate shrouds about one foot above the lower spreader. The sock often gets blown aft through the opening and then gets wedged, cleat-like in the "V" when dropped.
- Use more 1/8 inch Dacron cord to create netting between deck and upper lifeline forward of the mast. Instead of making holes in the toe rail, form the base line of your net by stringing a piece of 3/16 Kevlar cord very tightly between the base of the pulpit and the 1st and 2nd stanchions back. Then lace onto that as you would the top lifeline and middle lifeline with a series of
- Three clove hitches or modified rolling hitches between uprights.
- Use Harken camcleats on deck abutting each primary winch to hold loose tail of spinnaker or jib sheet when not in use.

## ***J/120 Boat Handling (Racing)***

The J/120 is perhaps easier to sail short-handed than it is with lots of folks on the rail. More people on a boat inevitably leads to more confusion, but if you're racing at top level PHRF events, you'll need to be prepared for at least 8 people on the boat to keep up with the other boats stacking the rail. The following is a general descriptive of how to run through the racing maneuvers on your J/120 if you're not using the spinnaker snuffer. Of course, nothing beats actual practice. Plan to run through at least one spinnaker set, several jibes and one takedown before every race.

### ***Boat Handling***

The J/120 is a very responsive boat. Your goal for every maneuver (tack, set, jibe, takedown) is to minimize the loss in boatspeed. Speed is typically lost from oversteering, over or under trimming, and improper transfer of crew weight resulting in the boat being out of balance. If you can get the whole crew to minimize 1) the time of the maneuver, 2) the talking, and 3) the jumping up & down, you'll gain several boatlengths around the course.

### ***Tacking***

The critical element of the tack is the timing between the Helmsman and the Trimmer. The Helmsman must carve a smooth turn, leaving the Trimmer just enough time to trim the genoa in 90% without needing a winch handle. The wheel should be turned slowly at first, then a little harder in the middle of the tack, and then smoothly brought back to center as the boat nears its new close-hauled course. While tacking the jib sheet is kept in until the first 2' of the luff begins to break, then it's released and trimmed in on the new side. In breezier conditions, the mainsheet should be automatically released 6-10" after the tack, until everyone is back up on the rail.

### ***Spinnaker Set***

The asymmetric spinnaker should be launched and taken down through the front hatch. While it may be tempting to use a spinnaker turtle on the rail, we find the spinnaker is at greater risk of going into the water. The spinnaker should be set up for an inside jibe, meaning the spinnaker sheets rigged aft of and below the tack line, allowing the spinnaker clew to jibe between the spinnaker luff and the headstay. An outside jibe (when clew passes in front of spinnaker luff) only makes sense on a very windy day with the big chute. We usually rig a takedown line directly to the spinnaker tack. This makes it easier for the Bowman to gather the spinnaker during the takedown. Approaching the windward mark, things will generally go in the following sequence:

- During last port tack approach, the spin halyard is attached.
- Six lengths from the mark, the sprit is extended.
- The tack of the spinnaker is fed all the way out
- Make sure lazy (windward) spinnaker sheet has lots of slack
- Leeward spinnaker sheet is loaded on the leeward secondary winch. Bear off around mark.
- HOIST. As spinnaker is hoisted, aggressively spread the corners by trimming the sheet (otherwise you can get a big wrap).



- In order to fill the chute initially after a set or jibe, the Trimmer must slightly overtrim the sheet. Immediately after the chute fills or "pops" **the Trimmer must be ready to quickly ease the sheet**. In heavy air, after a jibe, this becomes more important.
- When the chute is up, roll up the headsail.
- Ease off outhaul, cunningham, and backstay. Leave about 800-1000 lbs on the backstay to counteract the spinnaker's tendency to invert the mast.

### ***Jibe***

There are a few techniques which will help you optimize your jibing. First, only begin the jibe if the spinnaker is full and pulling (i.e. the spinnaker sheet has tension). Otherwise, the sail will resist rotating forward and end up caught on the wrong side once the boom goes across. The J/120 spinnaker is big, and so it helps to have the Bowman (positioned at the new leeward shrouds) assist the Trimmer by pulling directly on the new spinnaker sheet to skirt the clew around the headstay.

Again, the timing between the Helmsman and Trimmer is critical. The old spinnaker sheet must be eased at a pace equal to the turn of the boat. As the old sheet is released, the new sheet needs aggressive trimming. The Trimmer should watch the spinnaker clew closely through the jibe. While he eases the old sheet the clew will move forward. After the clew has passed the headstay, he should **stop easing the old sheet for an instant**. This allows the transfer of the sheet load to the new sheet while **minimizing** the amount of new sheet that needs to be pulled in on the new side. Think of it this way, the further forward you let the old sheet past the headstay, the more you'll have to pull in on the new sheet. In more than 10 knots of wind, have one person release and the other trim. Again, the Trimmer & Helmsman must remember that an asymmetric spinnaker is naturally overtrimmed after filling on the new jibe, and that the new sheet must be immediately eased 4-5 feet to prevent the rudder from loading up.

### ***Takedown***

In light to moderate winds (under 18 knots) we prefer doing a windward spinnaker takedown. Not only does this allow the spinnaker to be pre-set for the next windward mark, it also keeps the slot clear allowing greater boatspeed around the leeward mark. Because the asymmetric spinnaker is larger than a normal spinnaker and flies further from the boat, we find it is most easily tamed by releasing the sheet and gathering in at the tack (genoa style), making sure the halyard is given a controlled release. Coming into a leeward mark on port tack, we run through the following in order:

- Pre-set mainsail/jib controls for upwind
- Unroll or hoist genoa with sheet eased so spinnaker stays full
- Bear off to help blanket spinnaker
- Release spinnaker sheet
- With spinnaker luffing, retract bow sprit (**KEEP TACK LINE CLEATED!!**)
- Bowman pulls in on takedown line

- Pull spinnaker around headstay and stuff down hatch. (Halyard is released only as quickly as people are gathering)
- Once 90% of spinnaker is below, release tack line
- Remove halyard and clip to handrail
- Run spinnaker luff before next set

**WARNING: Never Release The Bow Sprit Outhaul Line When The Spinnaker Is Full. The Pressure Of The Spinnaker Will Tend To Shove The Pole Aft With Great Force.**

If its windy (18 knots plus) or you're performing a tight reach takedown (without the luxury of being able to bear off), take the spinnaker in to leeward. We suggest leaving the sprit extended, and simply do a stretch and blow conventional takedown where the halyard is released about 10-15' and the spinnaker is gathered in under the genoa. The halyard is further released when the spinnaker is under control. Watch out for the spinnaker foot dragging in the water, and **NEVER RELEASE THE TACK LINE UNTIL THE ENTIRE SPINNAKER IS IN THE BOAT**, or you will have an incredible sea anchor. Another note, always send a crew below to gather the chute in through the front hatch, and initially use the lazy sheet to pull the spinnaker into the boat.

### ***Jibe/Windward Float Drop***

Sounds fancy but is very effective in winds under 12 knots when approaching the leeward mark on starboard tack. Here, you plan a jibe about 3-4 boatlengths to windward of the mark (on port jibe layline), only as you jibe, leave the spinnaker trimmed to the port side. As the boom comes across, and the spinnaker comes into the boat, drop the halyard. The beauty of this takedown is that the spinnaker is over the deck during the entire takedown, and the maneuver is FAST. This can be trickier in high winds, because the spinnaker tends to plaster itself against the mast/spreaders after the boom goes across.

### ***Troubleshooting***

We all have our moments of glory, those unforeseen instances where reality and not in your wildest dreams become one and the same. You can be especially thankful of one thing on the J/120. The asymmetric spinnaker eliminates the possibility of windward death-rolling. There are however a few less dramatic instances you should prepare yourself for.

Accidental release of tackline while spinnaker is flying: This can happen if the tackline rigged is too small for the cleat on a windy day, it's not cleated properly, or someone accidentally uncleats it. Best remedy if the tack line is accidentally released?: Ease spinnaker sheet to luff spinnaker. Then have all crew on rail pull tack line on counts of 3,2,1 until tack of spinnaker reaches pole. Then retrim spinnaker sheet.

Jibe too quickly and spinnaker is trapped to windward: Remedy: jibe back ASAP before spinnaker wraps. Get spinnaker flying again, then go into jibe making sure spinnaker sheet is eased at same pace as boat is turning.

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## Engine System

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The engine and fuel systems are engineered to be conveniently accessible for repairs and general maintenance. Located behind the companionway ladder. There is access to the starboard side through the aft cabin bulkhead and to the front, top and port side by removal of the molded engine cover. All important functions can be reached; including water strainer, fuel injectors, fuel filter, fuel primer, expansion chamber, and alternator.

Before starting the engine read the engine manufacturer's owner's manual for proper break-in and operating procedures. Once the engine is running, inspect it for any discrepancies, like oil leaking, excessive water leaks, or anything out of the ordinary.

- **Engine Control Panel** is mounted in the cockpit. It contains the starter, warning lights, and gauges. The throttle and gearshift are mounted on the port cockpit wall. Double-check all mechanical connections between engine and on-deck equipment.
- **Engine Bed:** is constructed of highly reinforced fiberglass. This provides a superior mount over wood and is also rot-proof. The engine sits on heavy duty rubber shock mounts to help isolate the engine vibration from the boat. Check to see that the engine is sitting correctly on them and the bolts tightly secured.

### Drive Train

This is the complete system which propels your boat. It includes the following components; coupling, stuffing box, shaft log, shaft, strut, and the propeller.

- **Transmission** is attached to the aft end of the engine and houses the reduction and reverse gears. These gears generally need little maintenance, but the oil level should be checked periodically.
- **Stuffing Box** is aft of the engine where the propeller shaft passes through the hull. It is a waterproof housing consisting of a rubber "jacket" attached to the tube and a brass bearing with hose clamps. When the engine is running, check to see that intermittent drips of water appear where the shaft enters the stuffing box. If the drips are a continuous stream, ie. more than one every ten seconds, you must tighten the compression nut on the forward end of the stuffing box. This requires two large pipe wrenches to tighten the forward nut over the aft "core nut." It should not get hot when running.
- **Propellor** is a MARTEC folding prop of high quality bronze alloy. Check to see that the blades on the prop open almost perpendicular to the shaft. The prop is simple to care for and can withstand years of hard use. However, there are a few easy precautions which can prolong its life:
  - Coat it with an excellent silicone grease film.
  - Check to see that the joints in the folding prop have a good coating of waterproof grease.
  - Check that all cotter pins are bent over properly.
  - Check that the blades are smooth.
- **Prop Shaft** is stainless and is supported at the inboard end by the shaft coupling and at the outboard end by the strut containing a rubber "cutlass bearing." Before launching attach a "shaft zinc" to minimize corrosion. The zinc should be replaced every time the

boat is hauled. Check the **"cutlass bearing"** within the strut periodically for wear and tear. If it is loose, replace it.

- **Engine/Shaft alignment** is set by the dealer to ensure that the engine, shaft, stuffing box, and prop are properly adjusted to minimize engine vibration. If there seems to be excessive vibration, notify your dealer and have them investigate.

### **Fuel System**

The Fuel System is located in the boat for effective weight distribution. It consists of the fuel tank, fill hoses and caps; fuel lines and filters and the vent. Use only **Diesel** fuel in the system.

- **Fuel Tank & Line** run from underneath the starboard aft cabin berth to the fuel primer pump. From there fuel flows into the injectors. The tank is aluminium and baffled to prevent fuel slosh.
- **Fuel Level Gauge** is located next to the engine panel. The ***gauge reflects level (height) of fuel in the tank, not the quantity***. Try to maintain a minimum level of 1/3 to 1/2 tank filled at all times.
- **Fuel Line Shut-Off Valve** sits atop the tank at its aft end. Since many diesel engines require bleeding after they have been deprived of fuel, it's important that the shut-off valve be in the "ON" position (lever parallel to piping) anytime the engine is started.
- **Fuel Tank Access Plate** is atop the fuel tank and provides access inside to clean the tank or check the fuel gauge.

### **Engine Cooling System**

The engine utilizes a closed system in which a mixture of water and anti-freeze is circulated within the engine for cooling. This liquid is cooled by a heat exchanger which uses sea water, in a similar fashion to the radiator on a car which uses air to cool the contained liquid.

- **Filler Cap** for the fresh water (closed) cooling system is located on top of the engine manifold, and looks like a radiator cap. Check the level in the manifold frequently (ensure engine is cool). If additional liquid is necessary, add only a mixture of anti-freeze/fresh water. In colder climates where freezing may occur over the winter, be sure to test the coolant anti-freeze/water mixture for freezing point and add anti-freeze as needed if the system is not drained for winter layup. Follow engine manual recommendations for proper water/anti-freeze ratios.
- **Water Strainer** is located in the engine compartment and has a two-stage design to prevent "clogging" of the cooling system. Its simple design facilitates periodical cleaning. To clean: Ensure the engine water intake thru-hull is closed. Check that the lever is perpendicular to the intake. Unscrew the wing-nuts atop the filter and remove the strainer from inside the glass case. Wash thoroughly with water or replace with a new one if badly soiled. Replace strainer into case and tightly affix lid with the wing-nuts.

### **Exhaust System**

The J/120 is equipped with a water-injected exhaust system which cools the exhaust. It is designed to both dissipate heat and act as the exhaust muffler. If the flow of cooling water is interrupted and the engine overheats severely, the rubber hose coming from the engine exhaust elbow may melt. Always check this hose after an occurrence of overheating. Water can accumulate in the bottom of the water lift "pot." In fall de-commissioning, the pot should be

drained using the drain plug, or anti-freeze added to the pot so residual water doesn't freeze. If the engine does not start after a prolonged period of cranking over (starting), be sure to drain the pot or exhaust loop. Water accumulates here and may fill enough to flow back into engine manifold if engine does not start.

### **General Hints To Avoid Problems**

- Monitor brightness of cabin lighting and charge batteries as required by running engine. Batteries are charged by running the engine.

### **NEVER START THE ENGINE WITH SHORE POWER CONNECTED**

- Stop engine with throttle fuel cut-off, then turn ignition key "off".
- NEVER turn battery switch to OFF position while engine is running.
- CRUISING R.P.M. - Refer to the engine manual for recommended cruising RPMs, usually 2400 works well. Vary RPM levels periodically when cruising under power for a long distance.
- Do not run engine at full throttle for sustained period, as breakdown may occur. Most importantly, find an RPM that runs smoothly. Avoid "vibrating" RPM speeds.
- Mark the shaft at the coupling where blades are vertical causing least resistance when motor is stopped and in neutral. Turn shaft by hand to "feather" prop then lock by putting gear shift in "REVERSE".
- Keep engine gear shift lever in "REVERSE" position while sailing to prevent possible "free-wheeling" of shaft.

### **Engine Safety Precautions**

Due to high temperatures it is recommended that after running the diesel for more than two hours you reduce speed to idle and allow excess heat to dissipate for five to ten minutes.

The most common cause of trouble is contaminated or dirty fuel. Your boat is equipped with a primary fuel filter located in the engine compartment and a secondary filter on the engine. The wise skipper carries replacement filter cartridges.

Familiarize yourself with the bleeding procedure for the engine and try bleeding it yourself. The procedure only takes a few minutes after you are acquainted with it, but can be exasperating to the uninitiated.

### **Starting the Engine**

- If installed, turn VHF, LORAN, GPS "OFF."
- Transmission/ Throttle lever:
 

VERTICAL =	Neutral
FORWARD =	Forward
AFT =	Reverse

- Pull silver knob on side of throttle/transmission lever out fully, then squeeze the black release lever and move throttle forward 1/3 to set initial RPM's at about 1500.
- Turn ignition key to "ON" position. Audible alarm indicates low oil pressure, and will continue until engine starts. There is an oil pressure alarm test switch on the cockpit engine panel.
- Push "START" position on panel. Release immediately after start. If it does not start in ten seconds, release button. Advance throttle slightly and after ten seconds, repeat.
- Oil pressure light and audible alarm should go out after starting. If not, stop engine.
- Once engine starts, set throttle at about 1,500 RPM. Check transom for exhaust water. If no water, shut down engine immediately, check to be sure through hull valve to engine cooling system is open, or if the sea water strainer is clogged. If indications are normal, warm up ten minutes.
- Test forward and reverse and use of lock button for gear at dock with docking lines in place. Shifting should be done below 850 RPM's AT ALL TIMES.
- Check for exhaust water from transom periodically. Engine is cooled by sea water via a heat exchange and enclosed fresh water system. Water should exit from the stern at all times. Without water exhaust discharge, engine will burn up.
- The best cruising RPM is approximately 2400 RPM. Check sea water strainer for debris. Ensure thru-hull is open. If necessary, check under hull to see if intake is blocked.
- It is best to keep fuel tank 1/2 full (diesel #2) to avoid debris intake and air locks.

### ***Turning Engine Off***

- Place throttle lever in idle position (vertical).
- Let engine cool down.
- Pull fuel shut-off knob until engine stops.
- When audible alarm sounds, turn key off. DO NOT use key to stop engine. Do not stop engine with decompression lever except in extreme emergency. If decompression lever is used to stop engine, fuel will spray out and accumulate on top of pistons, creating danger of explosion the next time engine is started.
- When under sail you may hear propeller "windmilling" underneath. After shut down put engine in reverse gear and it will stop. The folding prop will close as speed builds up!

### ***Fueling the 27 Gallon Tank***

When preparing to take on fuel, the following safety precautions should be followed at all times:

- Properly secure the boat to the dock using bow, stern and spring lines.
- Shut off all equipment: Engine, Battery Switch, Stove, Radios, Lights, etc...

- Remove fuel fill plug and clean threads of both plug and deck plate carefully so no dirt falls into filler opening. Place the fuel hose nozzle into the fill pipe.
- Fill slowly. **DO NOT OVERFILL.** Marine fuel expands with an increase in temperature. Thus, fill only to 95% capacity. If you cannot see the fuel pump, ask the attendant or a crew member to call out the total gallons.
- If fuel tank is overfilled, fuel will leak out the tank vent located on the transom. This spillage should be cleaned up immediately.
- After fueling, replace fill plate and wash up any spillage. Go below deck and check for fumes or leakage. Check bilge. **IF EITHER FUMES OR LIQUID FUEL ARE PRESENT, CORRECT THE SITUATION BEFORE PROCEEDING.** Open all hatches and ports to facilitate ventilation.
- Only after you are totally satisfied that no potentially dangerous condition exists, leave the fuel dock. Be considerate of fellow yachtsmen.
- In the event of a serious spillage, **STOP FUELING IMMEDIATELY.** Replace fill plate, notify attendant so he may warn others and wash down thoroughly all traces of fuel or source of fumes.

### **Engine Maintenance**

Check the engine, batteries, and engine mounts once a month. Ensure the engine is fastened securely to the engine mount frames and look for any problems, such as fuel or oil spillage. If you need help, consult a professional marine mechanic or the engine manufacturer's licensed mechanics.

Run the engine frequently and at occasional high speeds, even if it is not in gear. One reason why sailboat engines may burn out within a few years is that they are run infrequently and lubricating oil is not thoroughly and evenly distributed on all moving parts. Be sure to check oil and coolant levels often. If you have any doubts about the purity of the fuel you are buying, use a strainer to filter out water and dirt.

If there is excessive vibration, in other than specific RPM points, loosen the coupling and insert a feeler gauge all the way around to determine if the engine is properly aligned. If aligned and vibration persists, check prop for proper balance and uniform opening/closing and be sure that the strut mounting is secure. If there is still a problem, contact your nearest Yanmar Service Representative.

## Construction

### Background

J/Boats are manufactured by TPI, INC in the Warren, Rhode Island facility. TPI is renowned throughout the industry as the pioneer and expert in quality fiberglass yacht construction. Their extensive staff of craftsmen, engineers, production specialists, and quality control inspectors ensure that your J/120 has been carefully built and thoroughly inspected.

The technology developed by TPI for constructing sailboats is the most advanced in the marine industry. Only the highest quality materials are utilized and they undergo constant testing in TPI laboratories to ensure they meet stringent construction and material specifications.

### Materials

- **Gelcoat:** All J/BOATS have an *neo pentyl glycol (NPG) isophthalic gelcoat*. NPG iso gelcoats yield a denser, more frequently branched molecular network which inhibits migration of water molecules. Because of their structure, these gelcoats offer superior resistance to moisture penetration, blistering, and fading. They're formulated to "yield" more than other gelcoats and this "flexibility" improves cracking resistance. Testing also indicates that NPG ISO GELCOATS produce the highest gloss and the best color retention under harsh exposure.
- **Glass fabrics:** High performance unidirectional, biaxial, and triaxial fibers are used throughout the hull and deck. Their use in the sandwich laminate offers superior strength and stiffness to conventional cloth and woven roving laminates. These unidirectional fibers are oriented in the laminate structures along lines of stress for greatly improved hull/deck strength and stiffness. These specially woven fabrics also require less resin for lamination than low cost fabric matrixes; producing stronger, lighter structures without excess weight.
- **Resins:** Resins are chemically formulated to TPI's exacting specifications to incorporate the best balance of properties based on extensive testing. For the hull, a special vinylester resin is used as a barrier coat behind the gelcoat to prevent moisture penetration. This reduces the likelihood of blistering within the laminate structure. It is also formulated, like the gelcoat, to reduce "cracking." The combination of this vinylester resin with NPG ISO gelcoats and properly specified glass fibers yields the most blister resistant hull in the industry. A high quality polyester is used to complete inside and deck laminates. Again, a superior chemical formulation is specified to assure resistance to "cracking" and "fatigue." Furthermore, its properties also assure high strength and stiffness for the life of the boat.
- **Sandwich Construction:** is used in all J/BOAT hulls and decks to produce lighter, stronger, and faster performing boats. A fiberglass sandwich functions similarly to an "I" beam. "I" beams are used for construction because they make the most efficient structural use of materials. The inner and outer skins of the sandwich function in much the same way as the horizontal top and bottom flanges of the "I" beam, and the core works similarly to the vertical support of the "I" beam. This means consistently lighter hulls and decks can be produced which are stiff and stronger than conventional solid glass hulls or decks. Many different cores are available for sandwich construction. TPI uses **LLOYD'S OF LONDON** approved **CONTOURKORE** end-grain balsa core manufactured by **BALTEK CORPORATION**. It has superior physical properties in performance over any other type, plus excellent "thermal stability" in warm climates or direct sunlight. Fatigue properties of



the end-grain balsa core are far superior to foam cores, assuring greater longevity and higher resale value. Balsa also provides excellent impact and puncture resistance.

### **Structural Components**

- **Hull & Deck:** The J/120 utilizes the most advanced molding technique available in the production boat industry. The technology is a patented resin-infusion system which allows higher glass to resin ratios, a virtual void free laminate, and exacting weight control. This translates into the strongest, stiffest and lightest hull & deck possible for the price. An added benefit is a cleaner environment due to reduced toxic VOC emissions into the atmosphere.
- **Bulkheads:** The major structural framing and bulkheads aboard the J/120 are glassed both to the hull and deck using non-woven biaxial glass fabric. This provides an incredibly strong bond between the hull, deck, and frames.
- **Hull/Deck Joints:** Extremely strong and watertight hull-to-deck joints are created chemically with aerospace elastomer adhesives, and 3M 5200 high strength urethane adhesive sealant. The hull and deck flanges have extra glass laminates and are designed to withstand high local area stresses.
- **Hardware:** To make your sailing as enjoyable and trouble-free as possible, equipment is chosen from the best suppliers in the business, such as Harken, Schaeffer, Hall Spars & Rigging, Lewmar, Origo, Edson, and Force 10. All internal and external hardware fastenings are engineered or specified for longevity and durability. Backing plates and additional laminates are incorporated when necessary to ensure reliable fastening of high load hardware.
- **Thru-Hull Fittings:** All thru-hull fittings are sealed with 5200 sealant to ensure watertightness. The hull core terminates several inches from the thru-hull fittings and is replaced with solid glass to prevent water contact with the core.
- **Keel Stub/Sump:** This critical hull area is designed using multi-layered solid glass laminates to accommodate the locally high loads induced by the keel. The keel is seated in epoxy and thru-bolted to the keel stub. A specially formulated epoxy which adheres well to lead is used to bed the keel. It's highly resistant to water permeation and cracking due to "thermal cycling". The keel is manufactured to factory specified templates and molds. It is cast of lead, reinforced with antimony (for strength) and high-strength monel stainless J-bolts. Keels made in this manner are far superior to other configurations.
- **Electrical System:** has a pre-assembled wiring harness and breaker protected central panel to ensure safety and organization. The wiring follows the industry accepted coloring codes of the American Boat and Yacht Council.

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## Plumbing Systems

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The plumbing systems in your J/120 consist of manual fresh water, manual pumps, and a Raritan head (toilet). This section will describe their locations and how they operate.

### **Fresh Water**

Water Tanks are made of polypropylene and located under the main cabin settee berths. Total combined capacity of these tanks is 75 gallons. A "Y" valve is located below the cabin sole on centerline to select the current tank. Each tank has a deck fill mounted just forward of the main bulkhead on each side.

### **Thru-Hulls**

All thru-hull fittings are made of brass or glass reinforced nylon. For safety reasons, we recommend that you tape a soft wooden plug adjacent to all thru-hull fittings in the event of a hose or valve failure. These fittings each have valve-handles. To reduce confusion, remember the **long end of the handle indicates the direction of flow**.

### **Pump Systems**

Pumps are easy to maintain and just as easily forgotten...they always happen to seize up when you need them most. Consequently, take care to keep their screens clean and rubber gaskets/bellows working correctly.

- **Manual Bilge Pump:** The manual Henderson bilge is installed in the cockpit and is operated by opening the plastic cover, inserting the pump handle (shipped loose) into the socket and vigorously pumping with up and down strokes.
- **Electric Bilge Pump:** the pump is wired direct with an in line fuse to the battery switch, so it is always "on." This useful feature helps eliminate any accumulation of water in the bilge.
- **Optional Pressure Water Pump:** (included with Systems Group Option) is located under the aft end of the starboard settee. The pump operates off the DC electrical system and pressurizes the entire water system. Should any problems arise, read it's manual. The most common breakdown is the rubber gasket and/or it's seal; or the pump mechanism itself.
- **Optional Shower Sump Pump:** (included with Systems Group Option) is located in the head and is a direct in-line pump which drains the shower sump into the head sink. An independent switch controls the pump and it is manually operated from within the head while taking a shower (not automatic).

### **Head System**

The J/120 is equipped with a certified marine head which is capable of discharging effluents into a holding tank or overboard (in compliance with U.S.C.G. regulations). It is easy to operate and with correct usage and proper maintenance, will provide many years of use. If it is not taken care of you will most certainly have trouble.

Before operating the **HEAD**, ensure you have read its manual thoroughly and understand the proper procedures. Silly mistakes can cause severe "head"-aches at the worst possible time! And a word to the wise:

**PLEASE TRAIN YOUR GUESTS ON HEAD OPERATION.  
NEVER, NEVER ASSUME THEY KNOW HOW TO USE IT!!**

The head is a large pump which takes in seawater and flushes waste into the holding tank or overboard. Both the salt-water intake and the discharge thru-hulls are in the head area. Remember open/closed positions on these thru-hulls. It is good seamanship to close the intake and discharge seacock for the head when not in use...otherwise the head may fill with water.

- Y-Valve: is installed to give you the option to pump effluents over-board when the vessel is operated outside U.S. territorial waters. Some waters prohibit the existence of a "y" valve, so the device should be removed (or bolted to the holding tank position) for navigation in these areas. Conformance with sanitation laws is an owner responsibility.
- Holding Tank: is attached to the head system to satisfy federal regulations. It is for the retention of sewage and, like the water tank, is collapsible and removable.

When seawater and effluent are pumped through the head, they're pumped into the holding tank by the action of pumping the toilet handle. The waste discharge fitting on deck is provided so a shoreside pump-out station (ie. vacuum cleaner) can empty the tank. With the standard holding tank, it is not necessary to "pre-charge" the tank by adding water before using the system. Care should be taken not to overfill the holding tank as effluent can block the vent hose and may damage the tank... or worse, burst the hose. If the toilet is difficult to pump, check to see if the holding tank is overfilled. "When in doubt, pump it out!"

The holding tank must be pumped out before winter storage. Pumping a quart of anti-freeze through the head will prevent the seals and equipment from cracking. For your information, the following hoses are connected to the tank:

- Waste Discharge Hose from the head
- Pump-out Hose leading to the deck fitting
- Vent Hose to vent the tank overboard.

***The Final Word!***

***Be certain the pump on the toilet is pumped 15 to 20 strokes after waste is emptied from the toilet bowl to insure the waste is pumped fully through the hoses.***

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## ***Electrical System***

The following section describes the electrical system aboard your J/120, how it operates, where it leads, and how not to get yourself in trouble. Please read this section over more than once. For wiring code information please refer to the color code diagram.

### ***DC Electrical System***

A **12 Volt D.C.** electrical system is used throughout for lighting and operation of pumps and various accessories. The J/120 is standard with two 12 volt 105 amp hour deep cycle gel-cell batteries.

- **Electrical Panel:** is the "nerve center" of the system as it controls distribution and contains all circuit breakers and switches. The J/120 is equipped with a Bass electrical panel with breaker switches. The wiring harness runs from the back of this panel to all electrical components in the boat. The battery delivers power to the panel with its power replenished by the engine alternator each time the engine is run.

For a 12 volt current to be delivered to a component, the following criteria must be met:

- Charge in the battery
  - Battery switch switched to "Both" position.
  - Circuit breaker for the component switched "on" (cabin lights, running lights, etc.).
  - Local switch on the component itself switched "on".
- **Mast Wiring Terminal Box:** is located on the upper portion of the bulkhead just inside the head. The mast wiring harness exits the mast just beneath the deck, and is wired directly into the D.C. system.
  - **Battery Switch:** The battery switch turns access to the batteries on or off to the main panel and the engine. The standard J/120 comes configured with two batteries selectable on the switch. This enables full use of the switch and allows one battery to be reserved exclusively for the engine and the ability to double up the cranking amps for cold starting in the "both" position. The engine alternator will only charge the battery selected by the switch, so it is wise to have the switch set to both.
  - **Alternator:** is attached to the engine and will create a charging current only when the engine is running. The output is connected directly to the battery switch to distribute the current to the batteries.
  - **Accessories:** such as navigation instruments, stereos, and radars can be added to the electrical panel and the 12 volt DC system. Extreme care and forethought should be taken in their installation as these are, in general, sensitive instruments and require some measure of protection. Such work should be performed by a marine electrician. Be sure all sensitive accessories are not only grounded properly but that "fast blow" fuses are run off the panel for extra insurance against damage to their components.

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## **Safety**

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### **Lightening Protection**

The J/120 is completely grounded in accordance with industry practice. The mast, shroud chainplates, stemhead fitting, backstay fitting, engine, and electrical system are grounded to the keel. In spite of this grounding, there can be no assurance that personnel or the boat will not suffer injury if the boat is hit by lightning. The following are suggestions only and in no way guarantee safety in the event of a lightning strike.

- If possible, remain inside a closed boat during a lightning storm. Do not contact any metallic objects inside or outside the boat.
- Avoid contact with any items connected to the lightning conductive system (mast, shrouds, etc) and especially in a manner to act as a bridge between them (mast to shroud, etc).
- Avoid swimming during a lightning storm.

If the boat is mildly struck by lightning, check all compasses and electrical gear to determine that no damage or change in calibration has taken place.

### **Galley Stove**

A 2-burner non-pressurized alcohol stove with oven is standard and is in "ready-to-use" condition. It is significantly safer than older pressurized models and is a remarkably fast heating stove, nearly equaling the heating of home ranges. It can boil a 2 quart pot of water in 8 to 10 minutes. Engineered with high quality stainless steel, it will last for years with proper care. Be sure to read the stove manufacturer's instructions on use and the filling of its cannisters. You will find it easy to use as long as you follow proper precautions.

To begin stove operation, you must first fill the cannisters with alcohol fuel. Inside the cannister is a "wick-like" material which absorbs alcohol which once filled will last three to four hours.

### **Optional Propane Force-10 Stove w/Oven.**

The optional propane (LP) gas stove/oven system is engineered for the marine environment and built with high-grade stainless steel. It's heating is comparable to a home range. Be sure to read the manufacturer's operating manual.

The propane tank is located in a specially designed compartment in the stern and is ventilated to specifically eliminate the accumulation of potentially dangerous gases.

### **Safety Equipment**

You can never be prepared enough for emergencies which may arise at sea. The following are basic guidelines to help you in your preparation, but they do not represent, by any means, the most comprehensive list. In fact, contact your local U.S. Coast Guard office for up to date USCG safety requirements.

**IT IS THE OWNER'S RESPONSIBILITY TO COMPLY WITH ALL FEDERAL AND STATE REGULATIONS WITH RESPECT TO SAFETY EQUIPMENT; OPERATION OF THEIR VESSEL; AND SAFETY OF ALL PASSENGERS**

U.S.C.G. regulations require specific safety and emergency equipment on board. **KNOW HOW TO BOTH OPERATE AND MAINTAIN THEM!** Basic requirements include the following equipment:

- **Distress Signals:** have specific colors to indicate certain emergencies. They can be deployed in two ways; hand-held or "pistol" fired (parachute flares). Keep them up to date and in their plastic bags. Some have aluminium cannisters and will last longer.
- **Floatation Devices:** are required for each passenger aboard, generally a Type III PFD. Also, keep a horseshoe life ring or seat float cushion handy in or close to the cockpit in the event of a man-overboard. Safety harness are a necessity when sailing in storm conditions, squalls, or at night.
- **Fire Extinguishers:** should be located for quick access. Two are required. Preferably one near the galley and another forward. There are different types of extinguishers (foams, chemicals, water), be sure to select the correct type.
- **Ground Tackle:** should be carried with proper size rode. Two anchors with nylon anchor rode and heavy chain is suitable for most conditions. The general "rule of thumb" for determining length of anchor rode is 7 feet of rode to 1 foot of water depth, ie. a 7:1 ratio. In some areas an all chain rode is recommended to prevent rope chafe. It's the owner's responsibility to determine the number and size of anchors and rode to be carried aboard and when and where to use them.
- **Additional Equipment:** should include softwood plugs for the seacocks (preferably taped onto the hose adjacent to them); hand and air horns; flashlights; first aid kit; bucket with lanyard; radar reflector; heaving line; and tools and spare parts.

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## ***Taking Care Of Your J/120***

Even though modern construction has helped reduce upkeep, regular attention should be given to the maintenance of your boat. This includes the fiberglass exterior surfaces, the interior wood surfaces, and the mechanical and electrical systems.

A well maintained boat will not only bring you years of enjoyment, but most importantly, will bring you greater personal pride and joy.

### ***Fiberglass/Gelcoat***

Apply a marine wax at least twice annually to preserve the "factory fresh" appearance for many years. Be sure fiberglass surfaces are clean and free of salt before waxing. Abrasive cleansers should never be used for general cleaning as they can severely mar the shiny gelcoat finish.

### ***Bottom Paint***

Keeping your bottom clean is of paramount importance as it not only keeps off bottom growth, but maintains passage-making speed. Even though you have applied anti-fouling paint, take a swim once a month or so (or hire a diver) and scrub the bottom and propeller with a scrub brush or abrasive sponge pad. Be sure to remove stains on the waterline which might accumulate from harbor pollution.

Check areas of the bow, leading edges of the rudder and keel for excess wear of bottom paint. If you followed the ideas presented earlier, you will easily see wear if the last coat is beginning to show through. Have your dealer or yard professionally apply a new coat of paint for the new season...spraying is preferred for an ultra-smooth, uniform finish.

### ***Zincs***

The shaft zinc should be inspected for electrolysis. If it is severely pitted, replace it. Remember, it is a sacrificial anode to protect the propeller and shaft from electrolysis. It can deteriorate quickly, so inspect it frequently.

### ***Deck Hardware/Running Rigging***

Wash deck hardware frequently with fresh water to remove accumulated salt and grime. Wash down the genoa sheets, spinnaker sheets, and other lines in fresh water. Check for chafe and turn sheets end-for-end once a year to more equally distribute wear.

Check the blocks and also wash them with fresh water. Most ball-bearing blocks need only hot water to cleanse them, then spray with a dry teflon lubricant. On conventional sheave/pin blocks, wash off, dis-assemble, clean, rub a light waterproof lubricant on the center pin, then reassemble.

Furthermore, check and lubricate the sheaves and blocks on the mast. Also, ensure the turnbuckles are clean and well lubricated. Without proper care they can "freeze up" and not turn. Apply an anhydrous lanolin (from a local pharmacy) or a dry lubricant.

In general, it is handy to keep a spray can of a light lubricant, such as TRIFLON, in your tool kit for frequent squirts of blocks, shackles, mainsheet travelers, and other moving fittings.

### **Winches**

Read the manufacturer's manuals on winch repair and maintenance. Winches are fine pieces of machinery which take little effort to maintain. However, all too frequently, they suffer neglect because no one can see how much they wear down or get dirty.

Clean and Lubricate Them! It takes little time to disassemble and put back together. Note that the gears and bearings are lubricated with special winch grease and pawls. Pawl springs need only a light oil. Keep spare pawls and springs in a kit for replacement.

### **Deck Hatches**

Hatches need lubrication of their hinges with a silicone grease once a year. Also check the seals to see they are not unduly cracked, or are losing their ability to seal correctly.

To increase traction on the plastic hatch covers, apply a non-skid tape fore and aft.

### **Cabin Ports**

The ports are made of "Lexan" and are highly impact resistant. However, avoid highly abrasive cleansers which can scratch them. Instead, use mild soap and water to clean ports. Avoid chemical solvents, notably acetone, which can "melt" the ports...ie. smear its smooth finish.

**DO NOT PERMIT ACETONE OR TEAK CLEANER TO GET ON PORTS OR HATCHES AS THEY WILL DISINTEGRATE AND "BLUR."**

### **Stainless/Chrome**

Hardware above and below decks like the steering wheel pedestal guard, stanchions, bow/stern pul- pits, and winches can be treated with "Neverdull" or other light abrasive cleansers, even toothpaste works well. After applying cleanser, polish to a gleam with a clean cotton rag.

### **Steering System**

Check the system regularly. Examine and lubricate the sheaves and make sure the stuffing box around the rudder post is not leaking. **Periodically flush bearings with fresh hot water to eliminate leftover residue from marine life or saltwater.** A small dose of "dry" silicone lubricant is helpful to maintain the "lubricity" of the bearing. **Thoroughly rinse the upper and lower rudder bearings with fresh water when de-commissioning or before commissioning.**

### **Fiberglass/Gelcoat/Formica**

Interior gelcoat surfaces should be cleaned periodically with non-abrasive cleansers and smooth areas should be waxed. Use a coating like "Armor All" to maintain non-skid areas. Formica should be cleansed with non-abrasive cleaners.



**Wood**

On unfinished teak, scrub off the grey weathered look and any dirt with water and a scrub brush and apply one of the many available teak cleaners. It is best to remove the companionway ladder to perform this operation.

On oiled surfaces, additional coats can be easily applied with a foam brush or sponge. For an even finish the oil should be rubbed with a rag shortly after application. If desired, the factory applied oil finish can be varnished.

On varnished surfaces, consult your dealer or a professional as to the best procedures. It takes great care, time, and patience to do the job correctly.

**Bilge**

The bilge is painted with air-dry gelcoat to prevent water permeation and the accumulation of mildew. It should be washed regularly with strong solvents to keep them smelling clean and to prevent the fouling of bilge pumps.

## **Annual Maintenance Checklist**

### **Running Rigging**

- Check running rigging lines for wear at splice, turning blocks, etc.
- Inspect blocks and shackles for wear. Clean and lubricate or replace as necessary.
- Service winches, check for free spinning operation (bearings) and ratchet stop action (pawls).

### **Deck Hardware**

- Check lifeline integrity, stanchion, and rail attachment to deck.
- Check all cleats for signs of fatigue. Tighten fasteners or replace as required.

### **Steering System**

- Consult Edson maintenance guide.
- Check rudder for impact damage or cracks.
- Check rudder post play in bearing tube.

### **Thru Hull & Seacocks**

- Check seacock integrity, operation, and watertightness. Replace, reassemble, and lubricate as required.
- Check hose attachment and clamps.

### **Electrical**

- Disconnect power source when making repairs or adjustments to electrical systems.
- Check battery charge, terminal connections.
- Check electrical panel, breakers, and switch condition and operation; tightness of wire connections.
- Check running light operation.
- Check ground wire attachment to keel, mast step, thru hulls, and engine.
- Check seal of electrical solenoid valve and ensure it closes when switched to "OFF" position. (Included only with propane stove option)

### **Engine & System**

- Read engine owner's manual maintenance guide.
- Check engine fluid levels and systems for leaks- shut-off controls.
- Check throttle action- start and stop controls, cable clamps, and locknut.
- Check shifter cable clamps and locknuts.
- Check exhaust system soundness, hose clamps.
- Check coolant system, hose clamps, intake, and filters.
- Check transmission shift lever action, control cables, clamps and locknut; fluid level and alignment.
- Check alignment of shaft, coupling, and prop attachment- key, nuts, and cotter pin.
- Check shaft log tube integrity, packing, hoses, and clamps.
- Check strut bolt attachment, cutlass bearing, and shaft bolts.
- Check all engine wire connections.

### **Fuel System**

- Check fuel tanks and gauges, hoses, clamps.
- Check fuel fill hoses and connections.
- Check fuel filters.

### **Keel**

- Check keel bolt nuts for tightness. Do not arbitrarily tighten bolts unless you've experienced a severe grounding. If there is concern for leakage, consult your dealer or professional yard.

### **Plumbing**

- Check bilge pump function, electrical wiring, hose clamps, and strainer. Clean, disassemble, lubricate as required.
- Check head and holding tank hoses, clamps, connections, and valves.

### **Water System**

- Check water tank hoses, clamps, valves, connections.
- Check water filters.

## ***Storage Tips***

Many of the maintenance problems surrounding boats can be pinpointed during the end-of-season haul-out, when the boat is prepared for winter. This is the time when a careful inspection will reveal the ravages of a long summer. If you live in colder climates, it is also the time to prepare the boat for what might be an even more brutal winter ashore.

First, clean your boat as thoroughly as possible. Get the yard to use a high-powered hose to clean off most of the growth before it dries onto the bottom paint. You may have to use a scrub brush and putty knife for heavy growth, like barnacles, and for areas around the propeller and shaft and underneath the keel.

### ***Rigging***

Sails and lines should be removed at the end of each season, rinsed thoroughly in fresh water and stored in a warm, dry place. This will prolong their useful life as mildew can affect even today's synthetic materials.

### ***Engine***

Check the engine owner's manual for maintenance guidance during the season and for the specific haul out procedures necessary to winterize the engine.

Fill fuel tank to minimize condensation and add an anti-bacterial agent.

In the exhaust system, water can accumulate in the bottom of the water lift "pot." The pot should be drained using the drain plug, or anti-freeze added to the pot so residual water doesn't freeze.

### ***Batteries***

It is preferable to remove the batteries and store in a heated area, recharging periodically to maintain full charge status. If you are in warmer climates, it is possible to leave the batteries aboard. Simply check them once a month to ensure they remain charged.

### ***Head***

Read the owner's manual for specific maintenance procedures. Generally, you will want to drain all water and replace with an anti-freeze agent. To maintain the lubrication of its internal seals, flush through a light oil. Again, follow the manufacturer's recommendations for winter maintenance.

### ***Water System***

Drain all tanks and add an anti-freeze solution specifically designed for marine potable water systems to the residual water in the water tanks, and pump with boat manual pumps until all lines are full of anti-freeze solution.

***DO NOT use automotive radiator-type anti-freeze, as most are poisonous and may damage the plumbing.***

***Bilges***

Pump bilges completely dry and use a strong cleaning solvent to eliminate all odors and bacteria.

***Electronics***

Remove as many of them as you can as they are sensitive to condensation caused by the extreme rise and fall of temperature and humidity that come with winter.

***Interior & Ventilation***

Clean the cabin thoroughly with a damp rag, for any salt left behind will breed mildew. Clean out the head and sinks. Any paper items- books, toilet paper, notepads- should be taken off so they don't mildew and rot.

Leave the dorade vents in place and open so the boat can circulate fresh air. If a winter cover is used, it is good to leave the hatches cracked open to enhance air circulation. This helps prevent mildew. Also, remove boat cushions and store indoors.

***Exterior***

If storing outdoors, a winter cover is recommended. It can be a simple piece of canvas forming a tent over the entire boat or heat-shrunk plastic. In either case, a tent-like support structure is necessary to prevent pools of water and to assure proper air circulation.

Ensure the entire deck is covered to prevent uneven discoloration of the gelcoat.

***Cradle***

It is critical the boat is adequately supported. The keel must rest solidly on the main beam and the vertical risers merely stabilize the boat. If it appears the boat is supported too much by the vertical risers, correct the problem as it could structurally damage the hull.

***Mast Storage***

Store masts on well padded supports and do not place any weights on them. Avoid tape on its surface as it leaves a difficult to remove residue. Wash all surfaces, sheaves, standing rigging with fresh water. If possible, remove all standing rigging, halyards and mast instruments and store indoors.



## J120/ J130 CARBON FIBER SPARS

### **A Word About Carbon Fiber**

Your mast and spreaders are made of carbon fiber.

#### **HALL SPARS**

17 Peckham Drive  
Bristol, RI 02809  
Tel: 401-253-4858  
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Each piece has been manufactured using heat and pressure autoclave curing, the best process available.

Regardless, carbon fiber has properties differing from aluminum, the conventional mast material. Though carbon composite is stronger than aluminum, it is less resistant to impact loads. Where aluminum will dent on severe impact, carbon composite could shatter or suffer serious delamination. Clearly, subjecting your carbon spars to severe impact is to be avoided.

Since carbon fiber composite is different than aluminum to drill, file, or otherwise process, always contact Hall Spars for advice before making any modifications to the mast.

### **Handling/ Storage**

When you receive your carbon fiber mast remove the plastic packaging bag immediately. If the mast is left in the plastic bag, the Awlgrip coating can be damaged. Do not store your mast with any type of cover.

Your carbon fiber mast in most cases can be handled like an aluminum mast. When rigging the mast, make sure the saw horses are adequately padded to protect the paint surface.

The mast can be lifted by conventional methods again making sure fork lifts, cranes or hoists are adequately padded to protect the mast from sharp impact.