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INTRODUCTION

WELCOME ABOARD and welcome to the "J/family". We take tremendous pride in our product and want you to feel the same. Your boat is designed and engineered to be the strongest, swiftest, easiest-to-use, and most comfortable sailing boat of its type. In order to maintain your boat for years of trouble-free enjoyment be sure to READ ON!

J/Boats has prepared this Owner's Manual to get you sailing safely and comfortably. This handbook is divided into three parts. The first part, the **REFERENCE SECTION**, includes important guidelines and descriptions of onboard systems and pertinent information needed to commission, rig, and find all components necessary to maintain, replace, or upgrade your present boat.

The next portion, the **APPLICATIONS SECTION**, is a brief discussion on "how to." Included are procedures for use of onboard systems and tips on how to make sailing safer and more comfortable.

The last segment, the **MAINTENANCE SECTION**, has helpful tips and checklists to be used periodically to keep your yacht operating in superb condition.

BE SURE TO FILL OUT YOUR WARRANTY CARD AND IMMEDIATELY SEND IT TO TILLOTSON-PEARSON, INC.

J/BOATS is committed to continually improving its products and with its builder (TILLOTSON-PEARSON) reserves the right to change, modify, or replace, or remove, or add equipment from either this manual or sales literature without prior notifications or obligations.

This handbook 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 Tillotson-Pearson, 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.

CONSTRUCTION

BACKGROUND

J/Boats are produced by TILLOTSON-PEARSON, INC (TPI) in their 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 yacht has been carefully built and thoroughly inspected.

The technology developed by TPI for designing and constructing the boats 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

The following describes the various materials used to build all fiberglass components:

1. **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.

2. **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.

3. **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.

4. **SANDWICH CONSTRUCTION:** It is used in all J/BOAT hulls and decks to produce lighter, 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. When compared to foam cores, the fatigue properties of the end-grain balsa core are far superior. It also has excellent impact and puncture resistance.

PRODUCTION CONTROL

Great care is taken in producing quality laminated structures, both in the exterior components (hull and deck) and in the interior components. The following quality control checks exemplify the factory's concern with achieving designed specifications:

1) Ultrasonic inspection of hulls and decks measures laminate thickness.
2) Weights of resins, glass, wood, balsa, are checked on a regular basis.
3) Resin burn-off tests are run randomly to check on the ratio of resin to glass built into the laminates...the only exact method to determine this balance.
4) Barcol hardness testers are used to check the relative cure of both resins and gelcoats.
5) Gelcoat application is carefully controlled and monitored to ensure the proper coating thickness. This is crucial to control blister resistance.
6) Proper catalyzation, thickness, and low porosity are constantly checked as they are key elements in producing a finish that will best resist the osmotic passage of moisture. Control of catalyzation is also critical for "weatherability."

AMERICAN BUREAU OF SHIPPING

Larger J/Boats are certified by the American Bureau of Shipping to its A-1 Offshore Yacht Standards. This means that a ***full-time*** inspector from the ABS Company is in the Tillotson-Pearson factory checking every construction, engineering, and electrical detail necessary to assure each "J" meets or exceeds the ABS Standards.

The American Bureau of Shipping is one of seven classification societys around the world. Its sole purpose is to ensure that sailboats, motor yachts,

ships, derricks, oil platforms, and assorted marine-related products or machinery meet an engineering/construction quality standard. ABS certifies vessels worldwide and to date has authorized certificates for 13,000 vessels and installations for ***SEVENTY EIGHT*** governments.

J/Boat plans are first submitted to the ABS Board for approval. Subsequently, an ABS inspector makes daily checks of the ***individual boats*** during the construction process! Upon approval of construction standards, each boat is awarded the ABS A-1 Offshore Yacht Bronze Plaque to be permanently mounted inside the boat.

The following items are surveyed for ABS rules for building and classing reinforced plastic vessels:

1. Materials
2. Fabrication and Quality control
3. Bottom Structure
4. Side Structure
5. Tanks
6. Watertight Bulkheads
7. Decks and Deck Openings
8. Deckhouses
9. Bulwarks, Rails, and Ports
10. Ceilings and Overheads
11. Rudders
12. Keel Attachment
13. Ventilators
14. Engines and Propulsion
15. Shafting and Propellors
16. Pumps and Piping Systems
17. Electrical Installations
18. Fire Extinguishers
19. Spars and Rigging
20. General Equipment

THE STRUCTURAL COMPONENTS

BULKHEADS: Major structural framing and bulkheads are glassed on both fore and aft faces to the hull and deck using non-woven biaxial glass fabric. This provides a strong bond between the hull, deck, and frames.

HULL/DECK JOINTS: Extremely strong and watertight hull-to-deck joints are created by through-bolting the hull and deck flanges on 4" centers, mechanically and chemically, with 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 produced by pounding seas.

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, BARIENT, SCHAEFFER, HALL OR KENYON SPARS, LEWMAR, ORIGO STOVE/OVENS, EDSON, and MERRIMAN. 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.

THRU-HULL FITTINGS: are high quality bronze or glass-reinforced nylon fittings. The metal fittings are individually grounded to protect against galvanic corrosion. All 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 section 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 and fairing compounds covers 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 made of lead reinforced with antimony (for strength) and has high-strength stainless L-bolts cast in. Keels made in this manner are far superior to other configurations, especially iron (which rusts).

ELECTRICAL SYSTEMS: have pre-assembled wiring harness and breaker protected central panels to ensure safety and organization. The wiring follows the industry accepted coloring codes of the A.B.Y.C.

JOINERY/WOODWORK: is of the finest woods available and is manufactured and finished off by hand. Curved and straight fiddles are usually laminated using the best wood resorcinol glues to ensure permanent and beautiful looks. And the finish is hand-sanded and oiled or varnished to bring out beauty and luster.

GETTING STARTED WITH YOUR J/44

GENERAL PREPARATION

Your boat is designed to be strong, simple, easy to care for, and easy to tune. If you take the time to read these instructions thoroughly, you will avoid unnecessary headaches later, prolonging the life of your sails, rigging, plumbing, and electrical systems.

THINGS TO KNOW ABOUT COMMISSIONING

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 LAUNCHING

Before you begin assembling your boat, do three things in order:

1) REVIEW THE parts box checklists!

2) READ THE OWNER'S MANUAL

3) REVIEW THE COMMISSIONING CHECKLIST

Your dealer will have completed # 1. Read the reference sections on 1) *Sail Control Systems*, 2) *Steering System*, 3) *Engine/Fuel Systems*, 4) *Plumbing Systems*, 5) *Electrical Systems*, and 6) *Propane Systems* to make yourself completely familiar with the various components and functions.

Refer to the **COMMISSIONING CHECKLIST** on page 8 to ensure the boat is assembled properly. If a yard other than an authorized J/Boat dealer is performing the commissioning work, review the list with them to establish what has to be done and by whom.

The **REFERENCE SECTION** of this manual is organized so that you can read and commission in sequence, from opening the boxes and rigging the deck to turning on the stove. We first begin with the exterior components, such as the hull, mast, boom, hydraulics, and then proceed to the interior to describe the plumbing and electrical systems.

THE TOPSIDES

Wash off all the dirt and grime accumulated from delivery. Use only soft scrub cleaners (non-abrasives) on the gelcoat. Then apply a coat of high quality carnauba car or boat wax or use a synthetic poly-based coating. Either finish will prolong the life and sheen of the gelcoat.

THE BOTTOM

Bottom preparation is critical to long-lasting enjoyment. When done properly a great looking, clean bottom means faster, safer passages.

To ensure a professional finish 1) READ the paint manufacturers recommendations for preparing the bottom, and 2) get your dealer to roll it or spray it on. This will give the smoothest and, more importantly, the most uniform application.

Do not go light on paint as it will come back to haunt you later in the season. Generally, at least two coats are best, preferably three. And if possible, paint the first layer a different color than the subsequent overcoats. This helps you more readily determine where paint is wearing off as the first layer begins to show through.

COMMISSIONING CHECKLIST

PRE-LAUNCH

___ Read owner's manuals
___ Pre-rig mast and check installation of:
1. halyards
2. blocks
3. electronics
4. shrouds

___ Pre-rig boom
___ Install lifeline stanchions and lifelines
___ Bottom painted or touched up
___ Check propeller/strut/zinc
___ De-winterize engine and check status of:
1. engine oil/ filter
2. coolant level
3. transmission fluid level
4. water intakes/filter
5. fuel lines/filter

___ Check battery charge
___ Align rudder on center and check alignment of wheel
___ Align prop vertically & mark shaft
___ Check all hose clamps, tighten as required
___ Instrument transducers
___ Close all seacocks

LOOSE GEAR

___ Fenders and lines
___ Dock lines
___ Winch handles
___ Ignition keys
___ Bilge pump handle
___ Install portlight screens
___ Mast wedges ready
___ Double-check sling locations

LAUNCH

___ Check for leaks
___ Check seacocks
___ Check stuffing box

ENGINE START

___ Read engine owner's manual
___ Check alignment and hook up couplings
___ Start engine
___ Check exhaust for cooling water flow
___ Check oil pressure, water temperature, charging gauges
___ Check transmission- forward/reverse
___ Check stuffing box

STEP MAST

___ Remove interior headliner piece around mast opening
___ Hoist spar and lower into boat
___ Attach spar compression turnbuckle
___ Attach headstay to stemhead fitting
___ Attach backstay and hydraulic cylinder to backstay plate
___ Attach all shrouds and hand tighten
___ Install wedges
___ Install mast boots
___ Install overhead trim
___ Make mast electronic connections at mast junction box

RIGGING

___ Install boom
___ Lead all halyards to stoppers on cabin top
___ Rig reef lines
___ Install and connect vang
___ Rough tune spar

J/44®

OWNER MANUAL

SYSTEMS CHECK

___ Fill water tanks- flush twice to eliminate non-toxic antifreeze
___ Check water pressure system, bleed air if necessary
___ Fill and check LPG system
___ Fill fuel tanks
___ Check operation of electrical systems and pumps
___ Check electronics (optional)
___ Check refrigeration (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

ENGINE/FUEL SYSTEMS

The engine and fuel system is engineered to be conveniently accessible for repairs and general maintenance.

Located beneath the companionway steps, the engine can be reached by sliding out the pins securing the cover and gently lifting the cover off the engine. There are additional access covers on both sides and behind the engine from which all important functions can be reached; including water strainer, fuel injectors, fuel filter, fuel primer, expansion chamber, and alternators.

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. Notify your local engine warranty center.

The **engine control panel** is mounted on the port side of the helmsmen cockpit. It contains the starter, kill switch, warning lights, and gauges. The throttle and gearshift are mounted under the helmsman's seat in a molded recess. Double-check all mechanical connections between engine and on-deck equipment.

The **engine bed** is constructed of heavily 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 (Fig. 1). It includes the following components; coupling, stuffing box, shaft log, shaft, strut, and the propeller.

The **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, (see Maintenance Schedule).

The **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.

The **PROPELLER** 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: 1) Coat it with an

excellent silicone grease film. 2) Check to see that the joints in the folding prop have a good coating of waterproof grease, 3) that all cotter pins are bent over properly, and 4) that the blades are smooth.

The **PROPELLER 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.

The **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** (FIG. 2) is located under the starboard aft quarter berth. It consists of the fuel tank, fill hoses and caps; fuel lines and filters and the vent.

Use only **DIESEL** fuel in the system.

The **fuel tank and line** run from underneath the starboard quarterberth, through the bulkhead, and up to the fuel primer pump. From there fuel flows into the injectors. The tank is aluminium and baffled to prevent fuel slosh.

The **fuel level gauge** sits atop the tank at the forward end. 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. There is also a remote fuel gauge next to the engine panel in the cockpit.

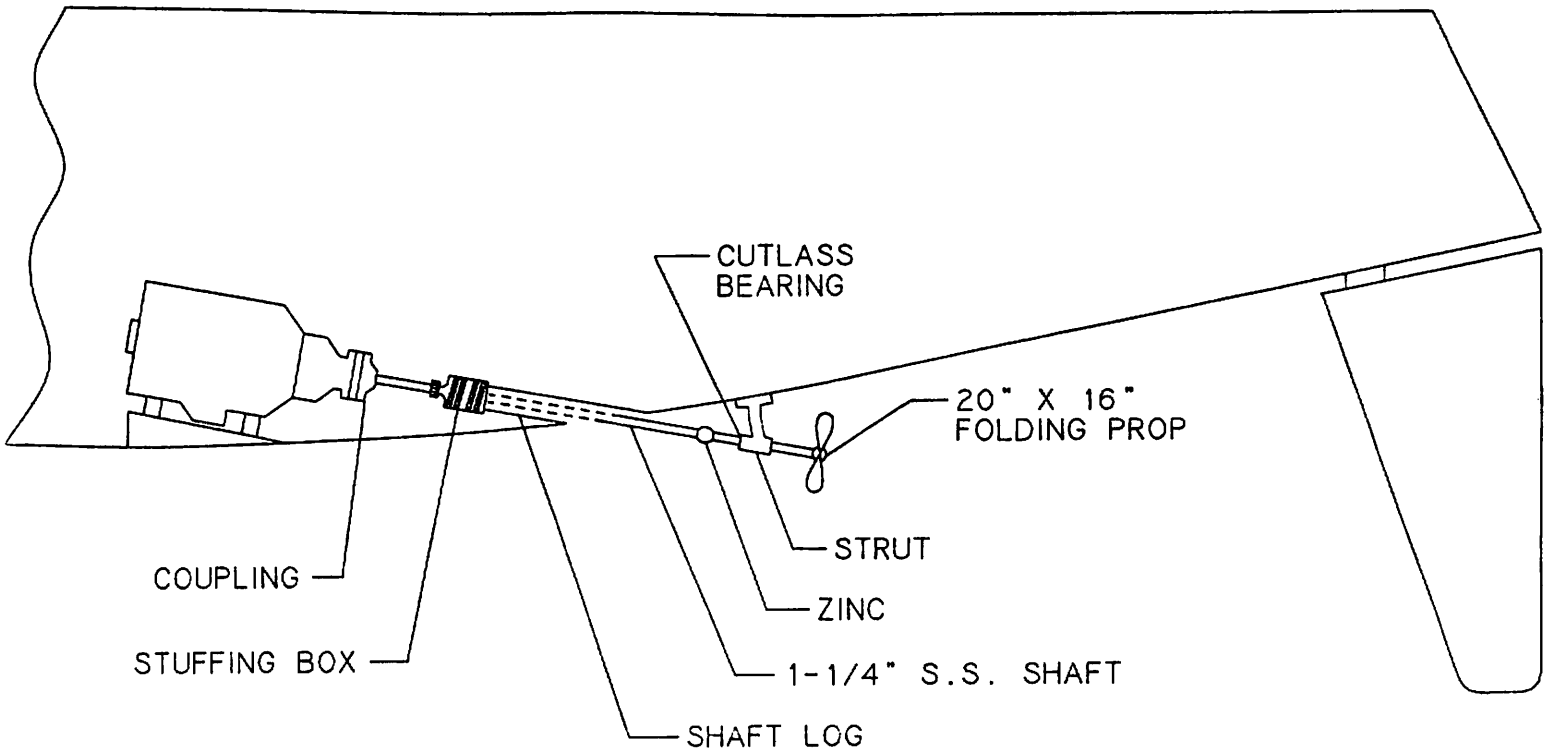
The **fuel line shut-off valve** also sits atop the tank at its forward end. Since diesel engines require bleeding after they have been deprived of fuel, it's important that the shut-off valve be in the "ON" position (lever parallel to piping) anytime the engine is started.

The **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 (FIG. 3) 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.

J/44 DRIVE TRAIN- FIG. 1



The 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.

The **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:

- 1) Ensure the engine water intake thru-hull is closed. Check that the lever is perpendicular to the intake.
- 2) 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.
- 3) Replace strainer into case and tightly affix lid with the wing-nuts.

EXHAUST SYSTEM

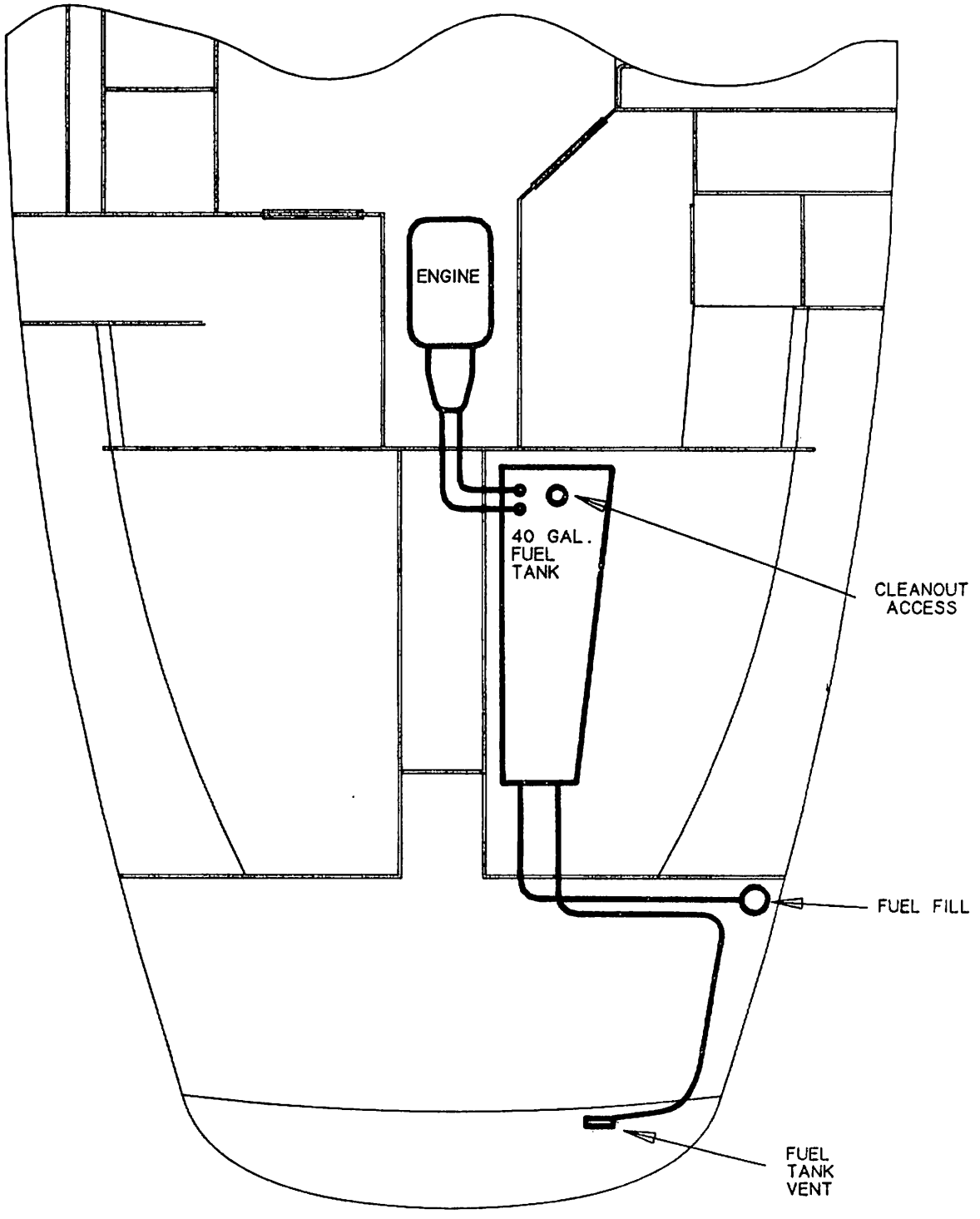
The boat is equipped with a water-injected exhaust system which cools the exhaust (FIG. 3). It is designed to both dissipate heat and act as the exhaust muffler.

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.

J/44 FUEL SYSTEM- FIG. 2



DECK EQUIPMENT

The following items are safety and comfort features. They are made of the highest quality materials and are engineered for your peace of mind and sailing enjoyment.

LIFELINES: The upper lifelines are white vinyl coated 3/16" 7x7 wire the lower lifelines are 1/8" vinyl coated 7x7 wire.. They run the length of the boat and are fastened at either end by stainless forks and turnbuckles. The lifeline height is 24" so that for most people, the upper lifeline will hit above the knee, reducing the likelihood of being "tripped" overboard by the lifeline itself.

Each lifeline is clearly marked and is intended to fit specific portions of the lifeline/stanchion system. The installation follows:

- 1) Insert all lifeline gates/stanchions into the sockets provided along the toe-rail. Secure each stanchion in place by tightening down the thru-bolts in each base.
- 2) Install all lifelines without tightening the turnbuckles. Remove the eyes at the ends of the lifelines and thread them through in the stanchions.
- 3) Finish off the job by tightening the turnbuckles, adjusting the lifeline gate pendants for the proper length, and taping off the turnbuckle "split rings" (or cotter pins) for a finished appearance.

VENTILATION HATCHES: are of anodized extruded aluminium frames with scratch-resistant lexan covers, and are "ready-to-use.". The Lewmar Super Hatches are unique in that they "ratchet" into three opening positions; venting, 1/2 open(45 deg.), full open (90 deg.), and flipped open (170 deg.).

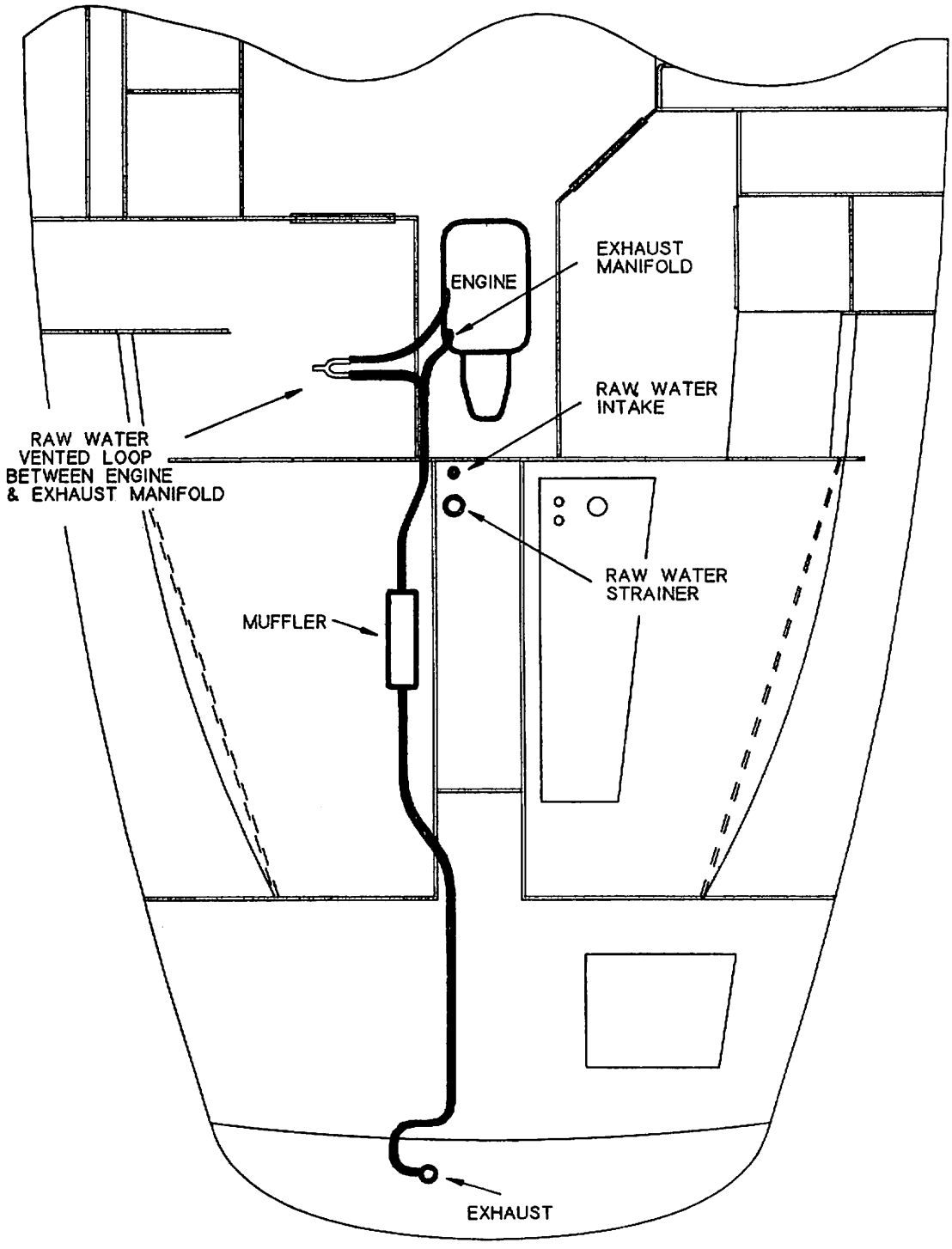
They rely on a specially formed rubber slug in the pivot point to hold the hatch in position. It is lubricated with a silicone grease.

WINDOWS: are of extruded aluminum frames with smoke colored Lexan (this keeps the inside cooler on warm days) and arrive "ready-to-use". They are specifically engineered to maximize interior comfort and cross-flow ventilation. There are nine opening ports and seven fixed ports.

Over time you may need to adjust the window "dogs"; the levers which hold the windows closed. Use an allen wrench and a small adjustable wrench to correctly adjust the lever, as it should close firmly. Test windows for leaks by spraying a hose. If a leak persists, check to see that the window frame is straight. If not notify your dealer immediately.

DO NOT USE ACETONE OR TEAK CLEANER ON PORTS AS THEY WILL MELT AND BECOME "BLURRY."

J/44 ENGINE COOLING & EXHAUST SYSTEM- FIG. 3



STEERING SYSTEM

The steering system (FIG. 4a) is carefully engineered to provide "FINGER-TIP" control. This is achieved by utilizing the highest quality bearings from Harken and a custom rudder quadrant which enables one to turn the wheel one turn lock-to-lock.

The **PEDESTAL** is a custom-molded fiberglass housing in front of the wheel. The wheel turns a chain on a sprocket inside the pedestal which, in turn, 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 by going through the port lazarette locker or quarter-berth and crawling around behind the aft edge of the cockpit.

The **WHEEL** is mounted on the pedestal by aligning the "keyhole" slots together and sliding the wheel onto the steering shaft. The plastic "Edson nut" screws down over the exposed thread to secure the wheel in place.

The **RUDDER** is made of unidirectional glass, with two halves bonded together, and a highly reinforced fiberglass shaft. It's engineered to withstand tremendous shear loads in storm conditions.

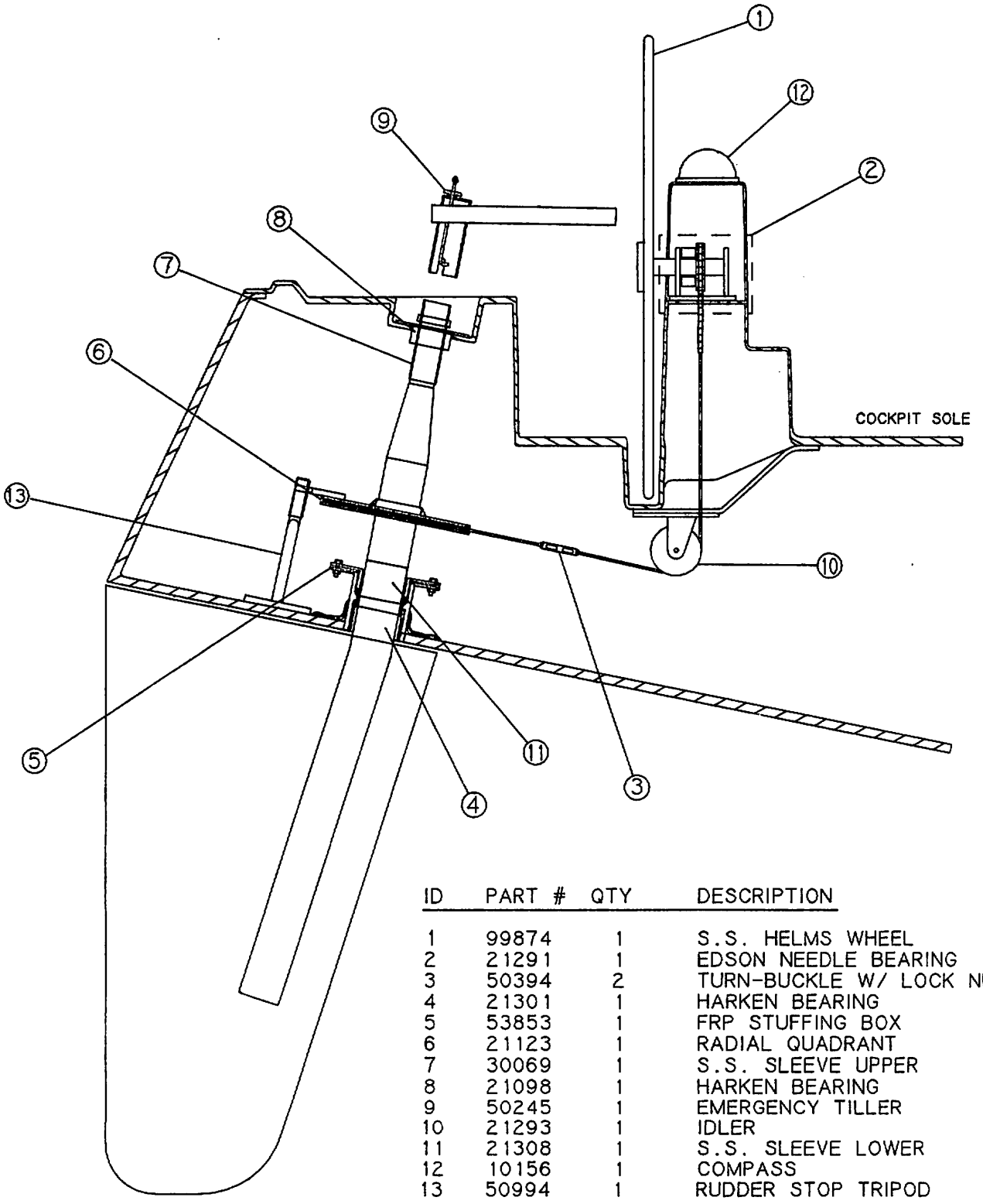
The **RUDDER STOCK STUFFING BOX** is located at the top of the fiberglass rudder tube beneath the decks. It is a simple design which prevents water from entering the hull. A stainless sleeve bearing surface surrounds the rudder tube at the point where a "stuffing" is forced against it to prevent water from rising up the tube. A circular flange is bolted down onto the rudder tube to hold the "stuffing" in position. (Fig. 4).

The **EMERGENCY TILLER** is operated by removing the helmsman's seat cushion, lifting off the access plate, and placing the base of the tiller over the head of the rudder stock.

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."

BEFORE LAUNCHING, CENTER THE RUDDER AND MARK THE WHEEL WITH TAPE OR A TURK'S HEAD KNOT ON CENTERLINE. THIS WILL HELP YOU CENTER THE RUDDER WHEN MANEUVERING.

J/44 WHEEL STEERING SYSTEM- FIG. 4



ID	PART #	QTY	DESCRIPTION
1	99874	1	S.S. HELMS WHEEL
2	21291	1	EDSON NEEDLE BEARING
3	50394	2	TURN-BUCKLE W/ LOCK NUTS
4	21301	1	HARKEN BEARING
5	53853	1	FRP STUFFING BOX
6	21123	1	RADIAL QUADRANT
7	30069	1	S.S. SLEEVE UPPER
8	21098	1	HARKEN BEARING
9	50245	1	EMERGENCY TILLER
10	21293	1	IDLER
11	21308	1	S.S. SLEEVE LOWER
12	10156	1	COMPASS
13	50994	1	RUDDER STOP TRIPOD

RIGGING GUIDE

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

Rigging the mast is a complex procedure and is best handled by a qualified marine rigger. Be sure to remind the dealer if you are installing marine electronics that may need to be wired and mounted on the mast.

Have the yard step the mast and hand tighten the rig to prevent it from swaying excessively at dockside.

TUNING THE RIG AT REST

1) Hand tighten all stays to prevent the mast from wobbling.

2) Measure aft equidistant from the bow to a position in line with the shroud chainplates and make a mark on the hull sheerline.

3) Using the centerline genoa halyard or the main halyard, attach a tape measure to the shackle and pull it to the masthead. Then measure side to side to the marks on the hull to center the mast athwartships; by hand tightening the upper shrouds. Once the mast is centered, further tighten the uppers with tools until you have difficulty spinning the turnbuckle screw. Then, STOP, before you risk the chance of stripping the threads. Double-check the position of the mast head.

a. Tighten the lower shrouds (the **D1's**) even turns (one turn =360) to straighten mast and establish the correct amount of pre-bend.

b. The middle section of the mast is held in place by "***Diagonal shrouds***"- referred to as **D1, D2, D3,** etc. starting with the lowers at the base. Most people tend to overtighten these on their first try. Start by tightening the **D2's** and **D3's** to **eliminate slack only** when the mast is lying on the ground... ie. this is less than hand tight. Then go sailing and sight up the rig to determine the fine tuning.

4) Check the amount of mast rake. Attach a measuring tape to your spinnaker halyard and hoist to the top. Your headstay should measure 68' to the stemhead pin centerline; this should leave you approximately 18" of rake measured from a plumb line from the masthead (the main halyard with a weight attached) perpendicular to the mast at deck level. Adjust the headstay turnbuckle to achieve the necessary rake.

5) Tighten the backstay turnbuckle so the backstay is just snug, such that, if you grab the backstay and "swing" it in a circle; the circle it prescribes in the air is under one foot.

THE BOOM

Rigging the boom is straightforward (FIG. 6). Run the reef lines so the red line (port) is led through the port sheaves and the green line (starboard) is led

through the starboard sheaves at both the outboard end and the gooseneck. Check the fit for the boom vang on the boom bale. It may need a little filing to smoothen out any sharp edges.

HYDRAULIC CONTROLS

The J/44 is equipped with Navtec hydraulics to help you fine tune your rig and sails for optimum performance. These hydraulics are simple, easy to maintain, and highly reliable.

The J/44 has adjustable, remotely controlled hydraulic cylinders for both the **backstay** and the **boom vang.** The control panel for both lies beneath the mainsheet traveller.

The **HYDRAULIC PANEL** (Fig. 5) is the control center for the hydraulic system. The hydraulic pump (operated by the handle) draws fluid from the reservoir and gets distributed to the cylinder selected by the control panel switch.

The **BOOM VANG CYLINDER** (Fig. 5) is affixed to the vang plate welded underneath the boom and to the mast at the vang gooseneck located just above the mast collar.

The hydraulic hose (with the S.S. fitting) exiting from the mast is attached to the "nipple" at the base of the vang cylinder. Do not tighten the fitting at this time.

NOTE- The vang is shipped with no air pressure. Contact your local Navtec dealer to "pump-up" the cylinder with 100 lbs. of air pressure. The cylinder will automatically extend when there is no hydraulic pressure applied. Do not worry about the boom "skying" into the air, this is normal. Once the hoses are filled with hydraulic fluid, the vang can be adjusted.

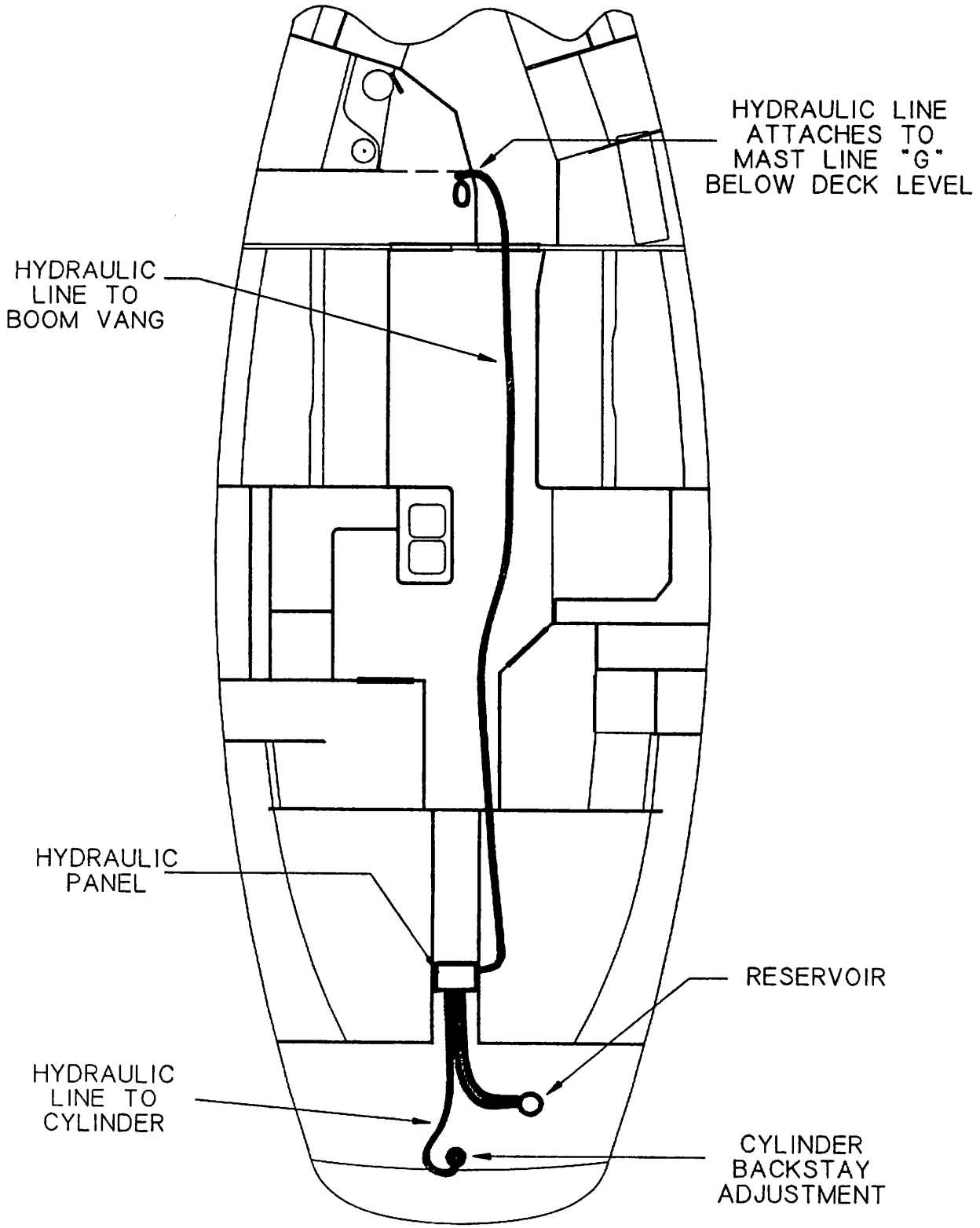
The **BACKSTAY CYLINDER** (Fig. 5) is affixed to the S.S. backstay tang on the transom and to the Navtec turnbuckle on the backstay. In order to make the cylinder fit, you must pull out the S.S. shaft and fully extend it. This cylinder needs no pressure to extend once installed as the natural pressure of the rig will do this.

"BLEEDING THE SYSTEM" is the final stage of installing the hydraulics. Two people are needed to perform this operation.

1) Get a 10' long 1/2" diameter clear tube and a funnel. Firmly attach the funnel to one end of the tube.
2) Insert the tube into the opening atop the hydraulic fluid reservoir located on the wall in the upper forward portion of the lazarette locker and hold the funnel end 4' above the cockpit sole.
3) Take the cans of **non-detergent** #40 weight motor oil and slowly pour into the funnel, taking care that copious amounts of rags are handy to wipe up any oil spill at the reservoir. Fill the reservoir completely, usually four quarts of oil.

4) Have one person go to the vang and unscrew the hose fitting...be sure to have a plastic bucket under the end of the hose and plenty of rags.
5) Turn the dial on the hydraulic panel to the **vang position**. Open the large thumbscrew on the panel by turning counter-clockwise 1/2 to 3/4 turn. This opens the valve to the vang hose and cylinder system.
6) Pump the handle continuously until fluid squirts out the hose in a steady stream (this ensures you elminate all air bubbles), then stop pumping.
7) Attach the hose fitting to the vang cylinder fitting and screw on 1 1/2 turns only.
8) Pump the handle at the hydraulic panel again to get fluid flowing out of the threads on the vang cylinder fitting until there are no bubbles. If there are none after three to four pumps, then firmly screw down the hose fitting on to the vang fitting.
9) Next, switch the dial on the hydraulic panel to the **backstay position**. Be sure to open the large thumbscrew on the panel by turning counter-clockwise 1/2 to 3/4 turn.
10) Remove the hose fitting from the backstay cylinder and repeat steps #4 to #8.
11) Finally, check the whole system by pumping both cylinders completely to ensure they are working. If you notice any time lag when the individual cylinders are pumped to the maximum, try releasing them completely and again pump to the maximum. If the time lag persists, ie. the cylinder doesn't continuously close as the hydraulic handle is pumped, then you may have "air" in the lines. In that case, repeat steps #4 to #8 to remove the air bubble in the specific cylinder/hose system.

J/44 HYDRAULIC SYSTEM - FIG. 5



SAIL CONTROL SYSTEMS

The sail control systems are designed for maximum efficiency and complete ease of handling, making for relaxing shorthanded sailing in most wind and sea conditions.

MAINSAIL:

The main is easily controlled from the cockpit to simplify singlehanding. Critical controls, including mainsail halyard and mainsheet are adjustable within the confines of the cockpit; especially by the skipper.

The **MAIN HALYARD** (FIG. 8a) exits the mast on the port side, runs through a turning block at the mast collar and then aft along the portside cabin top through the halyard stopper to the cockpit halyard winch.

HINT- If you are having difficulty running the halyard lines through blocks and stoppers, try wrapping a one foot piece of duct tape lengthwise around the end of the rope... this flat piece of tape leads through the stoppers far easier, plus it helps pull through the fat piece of rope.

The **MAINSHEET** (FIG. 7a) is a 2:1 continuous system running to both port and starboard side mainsheet winches. The line is lead from one winch through a turning block to one block on the traveller car, up to the single boom block, back down to the second block on the traveller car, out to a turning block and out to the other mainsheet winch.

The system is designed to allow extremely easy adjustments of the mainsheet by any size or age person. the self-tailing feature also facilitates single-handed sailing and rapid adjustments during sailing maneuvers. Be sure to put a "stopper knot" like a figure-eight at both ends of the sheet.

The **MAINSHEET TRAVELER** (FIG. 7a) consists of a traveler bar and traveler car. The car is controlled by a 6:1 purchase system led to either side of the cockpit. Put the spliced eye of the traveler control line (the fixed end) into the upper portion of the double block at the end of the traveler. This requires removing the bolt, inserting the plastic spacer into the rope eye, and replacing the bolt. Be sure the line exiting the lower sheave cage leads into the cleat correctly, if not, repeat the above steps.

The **MAINSAIL OUTHAUL** (FIG. 6) is adjusted underneath the boom and comes pre-assembled.

The **MAINSAIL REEF LINES** (FIG. 6) are designed to be fully functional from the cockpit. The mainsail **tack** reef lines lead from an eye on the port side of the mast below the gooseneck, up through the tack cringle in the mainsail, and back down through a cheek block mounted on the starboard side of the mast, down through a mast collar turning block, then aft to the starboard cockpit cabintop winches.

The mainsail **clew** reef lines exit the forward end of the boom, lead aft through the mast collar turning block to the port cockpit cabintop winches.

The **RUNNING BACKSTAY AND CHECKSTAY SYSTEM** is useful for upwind sailing to keep the mast from pumping in choppy conditions and to help fine

tune the mast bend. The system includes a series of bullet blocks, some shock cord, backstay wires, backstay tails, and toe rail lead blocks. Set up the backstays by inserting the tee terminal end in the mast and then inserting the rubber retaining plugs. The "handy lock" turnbuckle allows adjustment of the checkstay tension for mast bend fine tune.

GENOA:

The **GENOA HALYARDS** (FIG. 8a) exit the mast on either side,run through a turning block at the mast collar and lead aft to the cabin top halyard winches.

The **GENOA SHEET** is attached to the headsail by a bowline and, depending on the headsail size, led aft outside the shrouds to the genoa fairlead along the side-decks, then straight into the primary winches. If a dodger is installed, the sheet may be led to the large turning block mounted on the outboard edge of the cockpit coaming.

The **GENOA SHEET WINCHES** are the primary winches located at the forward end of the cockpit. They are three-speed self-tailing winches designed to allow virtually anyone to "grind" in a full-sized genoa.

The winches are installed by the factory and "ready-to-go", so no special installation or care is required to begin sailing immediately.

The **HARKEN ADJUSTABLE GENOA TRACKS** provide instant adjustment of the genoa lead. Take the lines marked for genoa tracks and lead them through the purchase system. They lead to a stopper and turning block on the forward edge of the cockpit island. Simply lead the line to a winch to position the lead. See FIG. 8b.

SPINNAKER EQUIPMENT:

The **SPINNAKER HALYARDS** (FIG. 8a) exit both sides of the mast and lead through a turning block at the mast collar to the halyard winches.

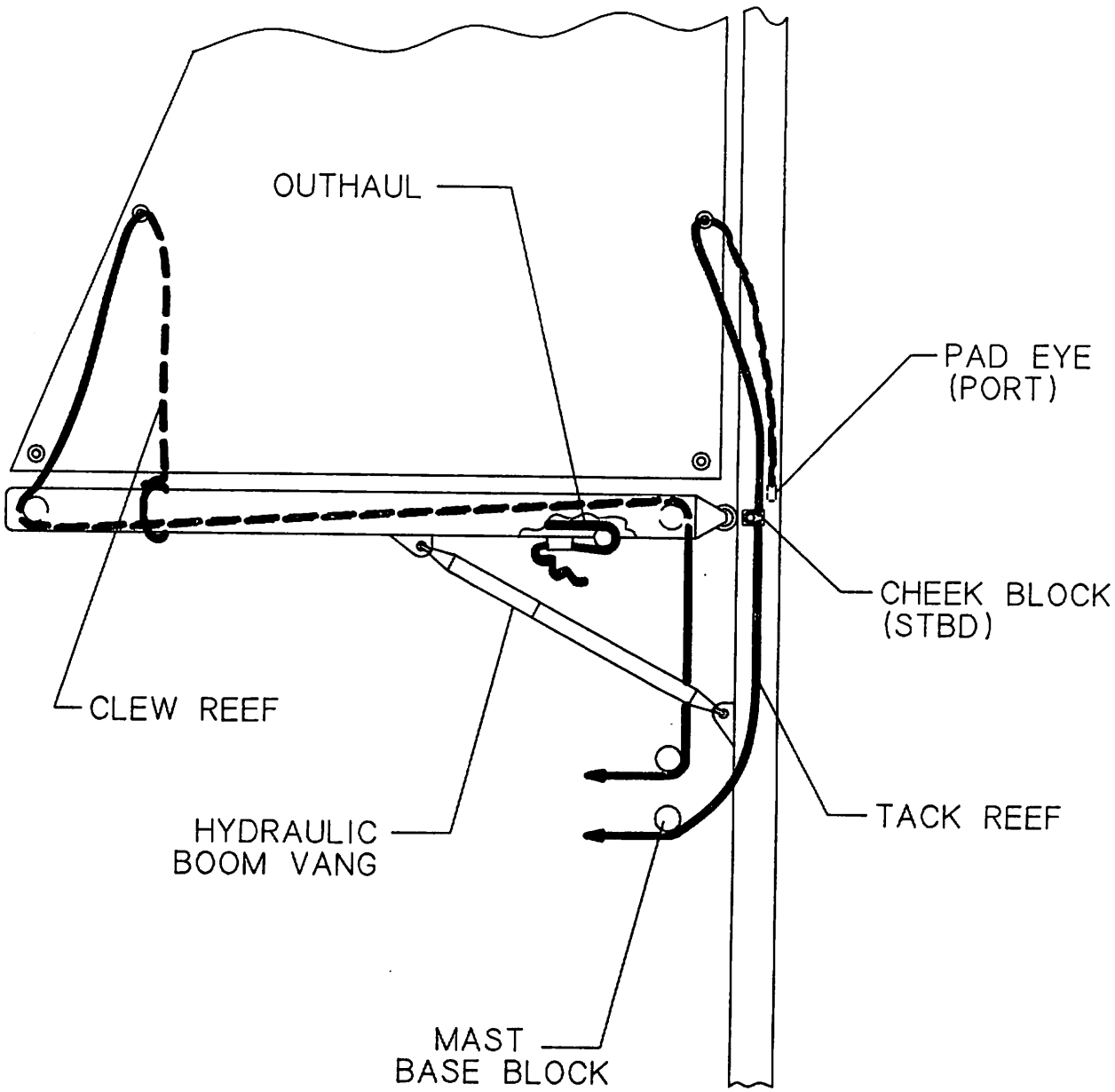
The **SPINNAKER SHEETS** lead from the clew of the spinnaker aft outside the lifelines through the spinnaker sheet spreacher blocks (spinnaker blocks on the rail) turning forward to the fairlead blocks with integral stoppers along the rail and then to the primary cockpit winches or secondary cabin-top winches.

The **SPINNAKER GUY SHEETS** are led aft inside the lifelines to the spinnaker afterguy blocks (the larger diameter, low friction blocks) located amidships on the rail and straight into the primary cockpit winches.

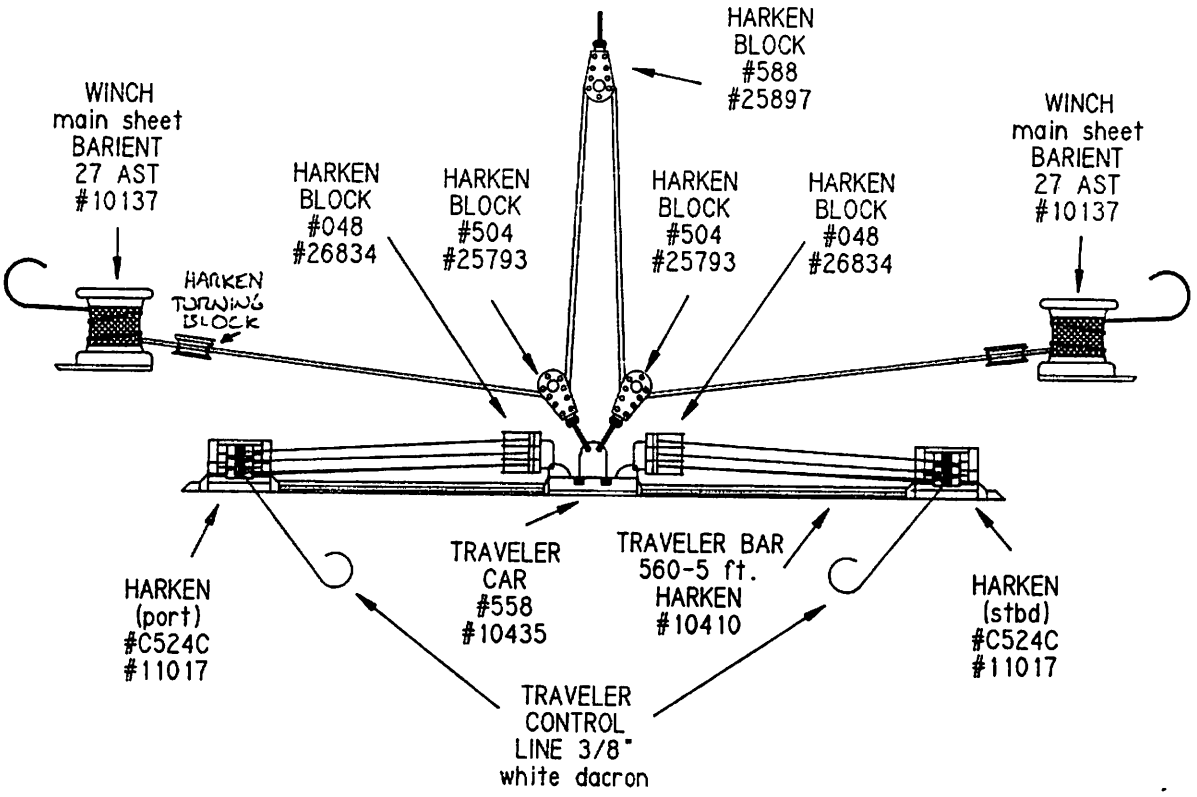
The **SPINNAKER POLE FOREGUY (downhaul)** (FIG. 8a) is led from the end of the spinnaker pole down through the foreguy block and runs aft along either side of the cabin top to Harken cleats on the cabinside.

The **SPINNAKER POLE TOPPING LIFT (uphaul)** (FIG. 8a) is led aft along the starboard cabin top, through the forward bank of stoppers.

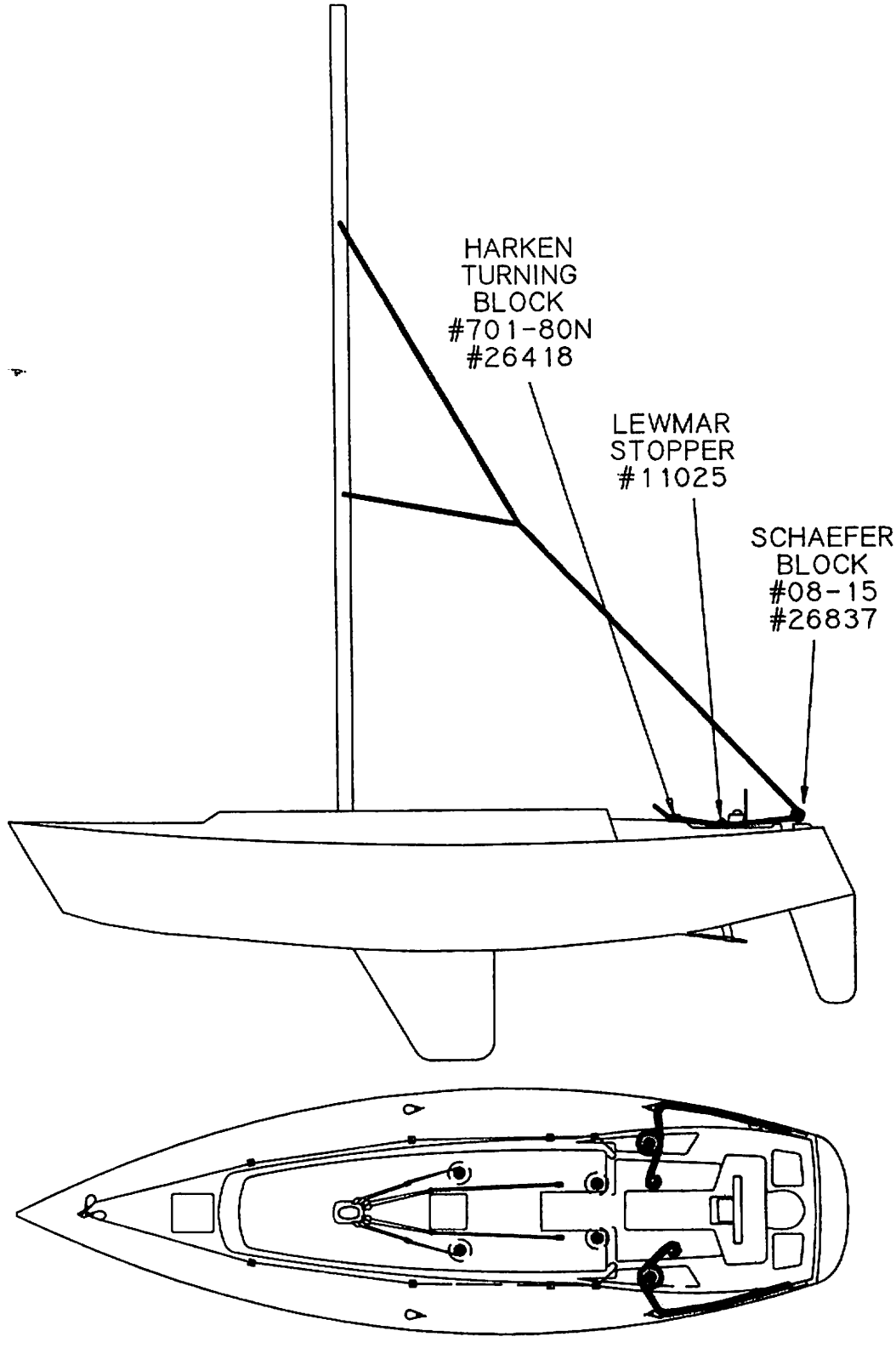
J/44 REEFING SYSTEM DIAGRAM- FIG. 6



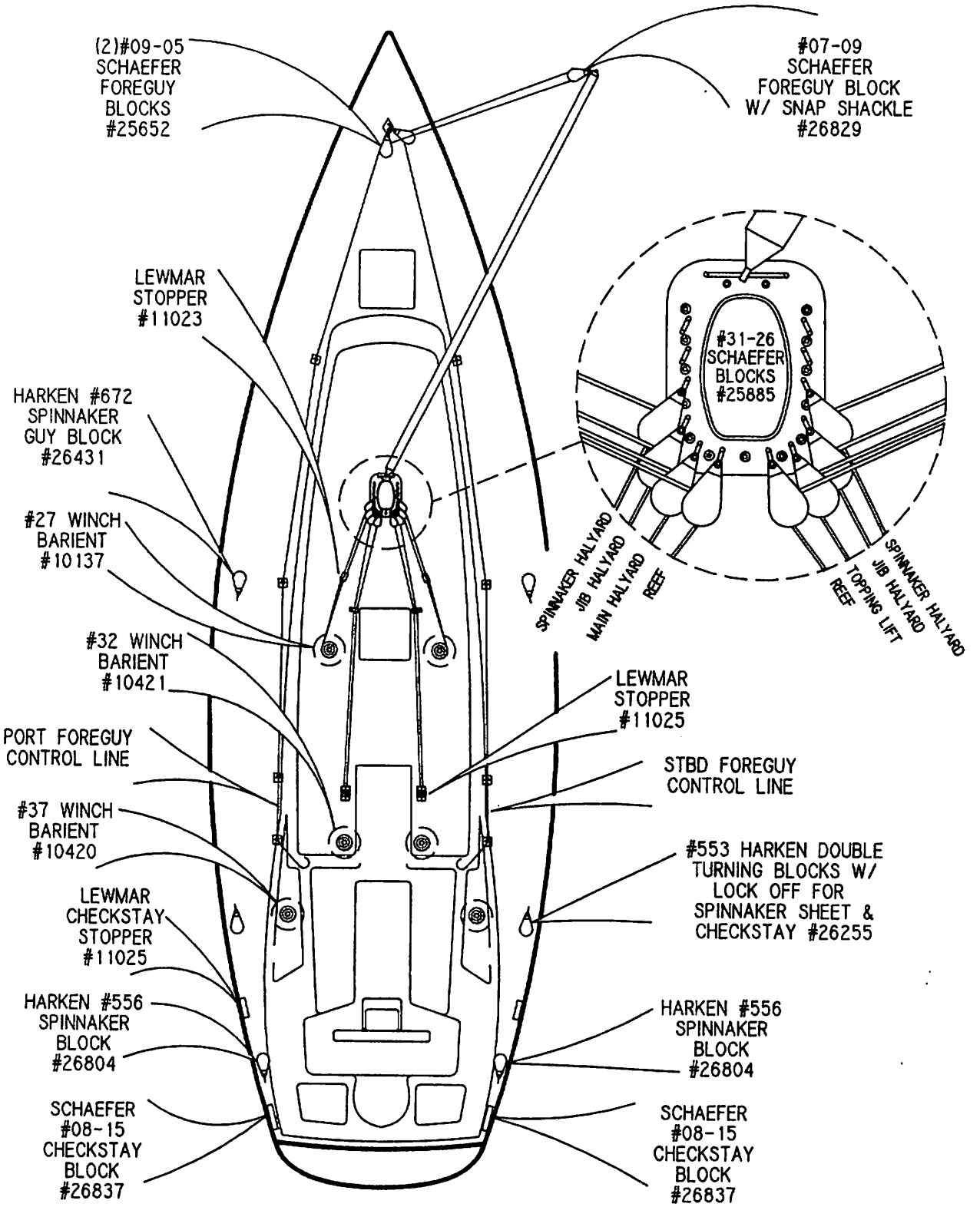
J/44 MAINSHEET DIAGRAM- FIG. 7a



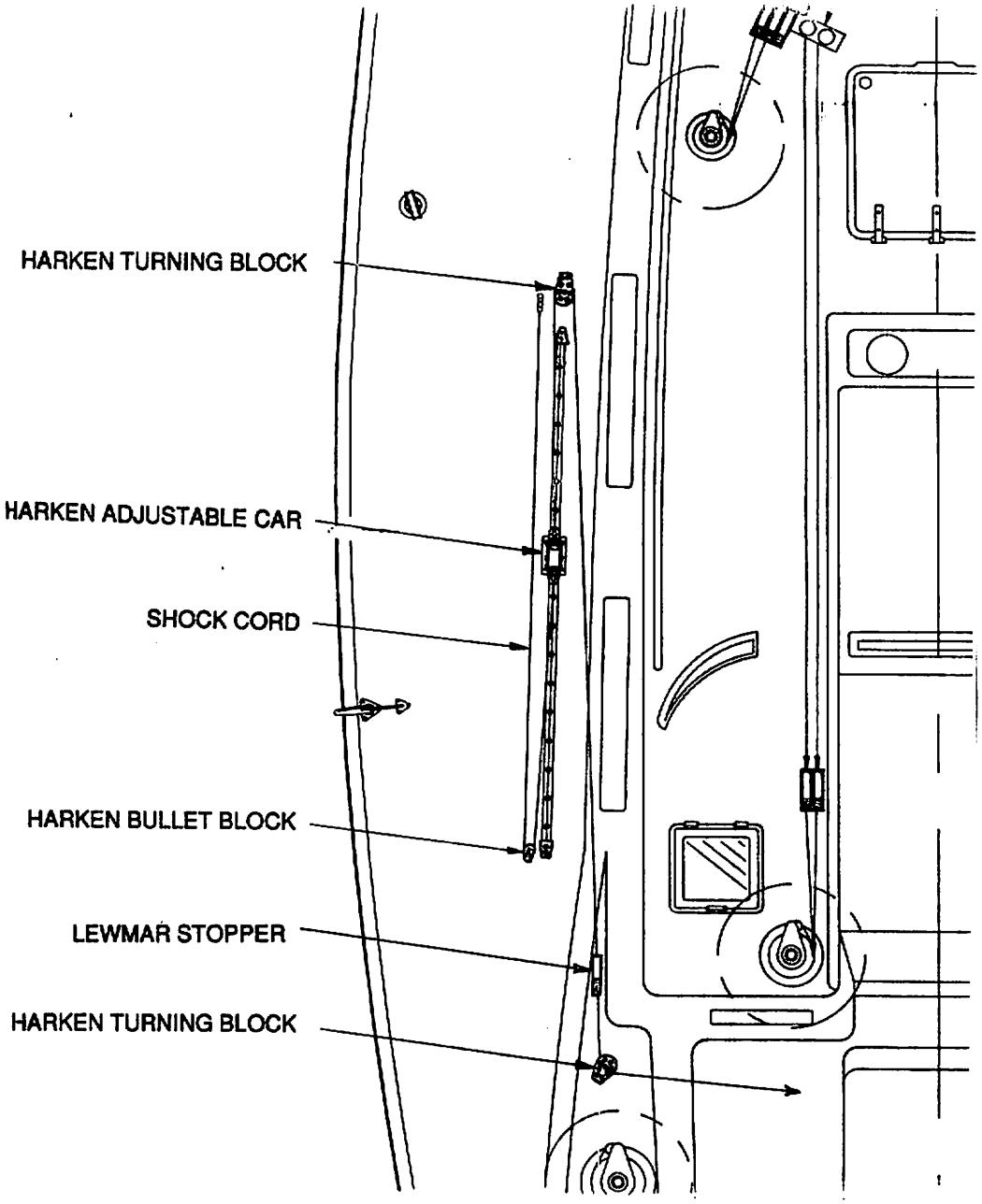
J/44 RUNNING BACKSTAY DIAGRAM- FIG 7b



J/44 RUNNING RIGGING/SPINNAKER GEAR- FIG. 8a



J/44 HARKEN ADJUSTABLE GENOA LEADS- FIG. 8b



TUNING FOR SPEED

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

First, let's briefly discuss theory. Helm balance is a function of both sail trim and mast rake. The latter is critical because it has the strongest affect on "weather or leeward helm" (the amount one must turn the rudder to keep the boat going straight). The principles which produce this tendency are **Center of Effort**(CE) and **Center of Lateral Resistance**(CLR). Center of Effort is a spot on your sailplan which indicates the sum of all aerodynamic pressure; usually halfway up and one third back on the mainsail. The Center of Lateral Resistance is a similar hydrodynamic pressure point on the keel. Whether or not a yacht develops weather helm is a function of where the CE is in relation to the CLR. If they both align vertically, the boat will have **neutral** helm. If the CE is aft of the CLR, you'll notice the wind pivots the bow into the wind, creating **weather** helm. Have you ever noticed why boats put up small steadying sails on the backstay at anchor? This forces the CE far aft of the CLR and makes the boat "weathervane" into the wind. Should the CE be forward of the CLR, the bow wants to blow away from the wind, developing the most disconcerting (and dangerous) tendency, **leeward** helm.

Consequently, **mast rake** (the fore and aft angling of the mast) is the primary determinant of weather helm. Aft rake moves the CE aft, creating more weather helm, while forward rake creates more leeward helm. What is the proper amount of weather helm and how is it determined? Sail upwind in a straight line, adjust the sails for proper upwind trim and let go of the helm. The boat should turn slowly into the wind.

In order to apply the foregoing principles follow this step-by-step process to tune the rig. **Be sure you have consulted with your sailmaker in regards to the correct amount of "pre-bend" in the mast**...it determines the location of your mast-step. In any case, it's recommended that you,

CONTACT YOUR SAILMAKER AND ASK HIM TO GO SAILING WITH YOU TO CHECK THE TUNING AND THE FIT OF THE SAILS.

TUNING THE RIG AT SEA

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 properly tune it for all conditions.

1) Sail close-hauled on a tack, at 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 uppers even turns to eliminate excess slack. **TIGHTEN ONLY THE LEEWARD SHROUD TO PREVENT STRIPPING THE TURNBUCKLE THREAD!!**

2) 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? You've centered the masthead so 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.

3) Sail along on a tack, check the sag, **tack to make an adjustment**, 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.

4) Next, adjust the ***intermediate diagonal shrouds***, the "D2's and D3's", in the same manner until the upper mast aligns with the masthead. You will find that little pressure is needed on the intermediates to straighten the upper portion.

5) Pin the shroud turnbuckles and tape thoroughly to prevent your beautiful tuning job from getting out of line! Cover the turnbuckles with a shroud boot.

After sailing in good breeze for 10-15 hours be sure to re-tighten your rig as you will have to compensate for stretch.

CONSULT A PROFESSIONAL RIGGING SPECIALIST OR SAIL-MAKER TO HELP YOU TUNE THE RIG. TUNING THE MAST CORRECTLY REQUIRES SENDING A PERSON UP THE MAST IN A "BOSUN'S CHAIR" OR "LIRAKIS SAFETY HARNESS" WITH TOOLS AND PINS TO PROPERLY ADJUST THE "D2's and D3's".

PLUMBING SYSTEMS

GENERAL

The plumbing systems in your J/44 consist of fresh water, manual and electrical pumps, and the heads (toilets). This section will describe their locations and how they operate.

FRESH WATER SYSTEM (FIG. 9a & b)

The **WATER TANKS** are made of rotationally molded polyethylene. One is to port amidships under the settee, the other is under the starboard settee. Connected to them are the following hoses: a) fill hose- is located on the tank top and connects to the deck water fill pipe; b) feed hose- located along the tank bottom connects to the water system at the water selection valve; c) vent hose- is internal and leads under the sheerline into the bow compartment.

The **WATER FILL** is located on deck (FIG. 9a). Be sure the water cap threads are cleansed of dirt for a better seal.

The water may develop a "taste" after a long period of time. Instead of flushing it out you can add a commercial water preservation agent, such as Sudbury Aqua Fresh crystals, to greatly improve the taste.

The **WATER TANK SELECTION VALVE** is located beneath the floor on centerline in front of the galley. Please note that ***at all times only one valve should be open***. When a tank runs dry, be sure to close the valve to the empty tank before opening the valve to the full tank; this will minimize the amount of air sucked in by the pressure water system when a tank is dry. After the tank is changed, open a water faucet to allow air to escape. When the water trickles out, close the faucet momentarily to allow the pump to build up pressure (check that it's turned on!); then open the faucet until a steady stream flows. It may be necessary to repeat the process several times to bleed all the air from the system.

The **WATER PRESSURE PUMP** is located in the plumbing compartment behind the engine. The pump operates off the DC electrical system and pressurizes the entire water system. Should any problems arise, read its manual. The most common breakdown is the rubber gasket and/or its seal; or the pump mechanism itself. The gasket is easily replaceable.

If the system is not pressurizing, first check that the pump is working correctly, ie. it's pumping water. Secondly, check that all hoses are securely connected to their fittings. Thirdly, ensure all air pockets are eliminated as outlined above. If there is still a problem, consult your dealer.

The **WATER HEATER** is located in the plumbing compartment behind the engine. Water is heated by either the engine or shore AC power.

If the water heater is on shore power ensure a continuous supply of water is available to it, otherwise the electrical element within it will burn out. Due to this potential risk, water heater elements are excluded from warranty. Thus, be certain the water pressure pump is always on while hooked up to shore power.

The **CITY WATER INLET** (OPTIONAL) is located on the starboard side of the helmsman's cockpit. This unique feature enables attachment of a hose from the town water system which will pressurize the entire water distribution system without using the pressure water pumps. **Before the hose is connected, check that all valves are closed to the water tanks.**

The **WATER PURIFIER** (OPTIONAL) is located under the sink and is a simple two-stage "macrocosm" filtration module. It has a replaceable filtration cartridge which should be routinely maintained.

To clean the water strainer, simply remove the top, pull out the strainer and wash under lukewarm water to eliminate impurities. If heavily soiled or "dirty" looking, replace it.

THRU-HULLS

All thru-hull fittings (FIG. 10) are of brass or glass reinforced nylon. Be sure to review the diagram carefully to become familiar with their locations. 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.

All thru-hull fittings 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.

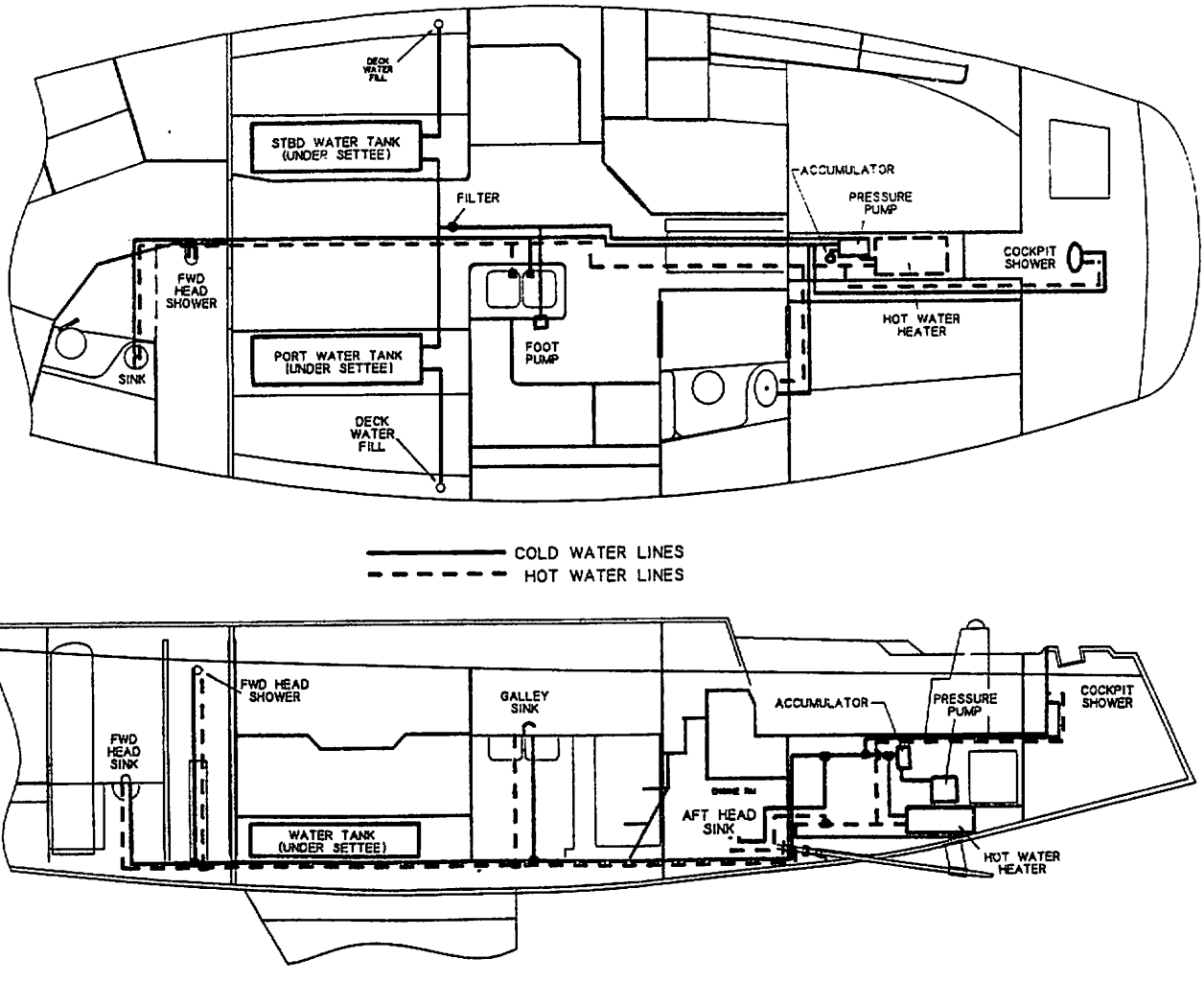
The **SINK DRAIN** empties directly overboard through a common thru-hull fitting beneath the sink.

The **ICEBOX DRAIN** valve is located under the bilge board and should be closed to keep in the cold air except when draining.

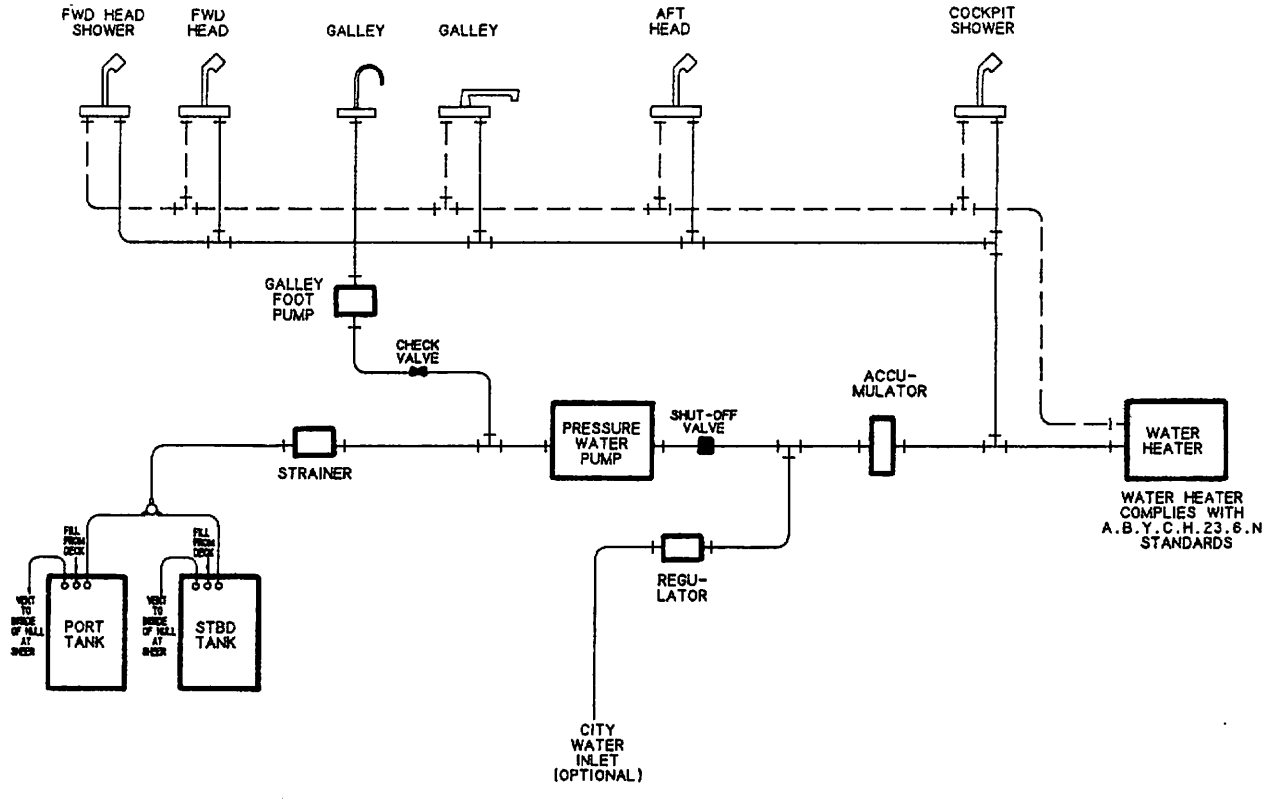
The **BILGE PUMPS** provided are both electrical and manual. Both are located in the keel stub under the main cabin floor. The **MANUAL** pump can be utilized from the cockpit. A second pump is provided in the interior with a hose capable of reachng the keel sump.

The **ELECTRICAL BILGE 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.

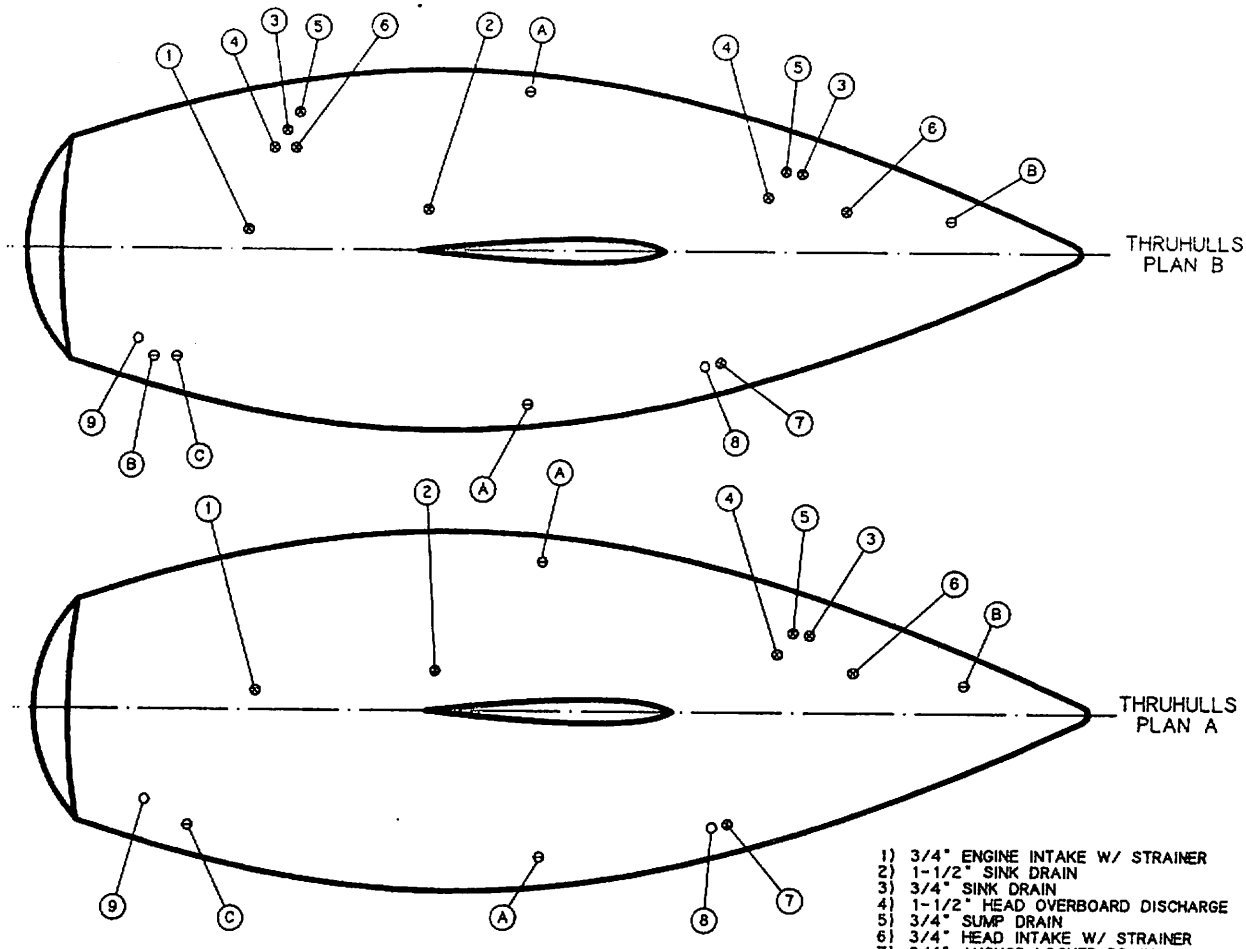
J/44 HOT & COLD WATER SYSTEM - FIG. 9a



J/44 FRESH WATER SYSTEM - FIG. 9b



J/44 DECK PLATES & SEACOCK LOCATIONS- FIG. 10



- ⊗ THRUHULL W/ SEACOCK
- O THRUHULL W/OUT SEACOCK
- ⊖ DECK PLATE

1) 3/4" ENGINE INTAKE W/ STRAINER
2) 1-1/2" SINK DRAIN
3) 3/4" SINK DRAIN
4) 1-1/2" HEAD OVERBOARD DISCHARGE
5) 3/4" SUMP DRAIN
6) 3/4" HEAD INTAKE W/ STRAINER
7) 3/4" ANCHOR LOCKER DRAIN
8) 1" MAIN BILGE PUMP
9) 3/4" LPG LOCKER DRAIN
A) WATER FILL
B) WASTE
C) FUEL FILL

HEAD SYSTEM

The boat is equipped with a certified marine head (Fig. 11) 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. It is silly mistakes which can cause severe "head"-aches at the worst possible time!

And a word to the wise,

PLEASE TRAIN YOUR GUESTS ON ITS 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 underneath the sink. 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.

The **Y-VALVE** is installed to give you the option to pump effluents overboard 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 waters. Conformance with sanitation laws is an owner responsibility.

The **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 made from polyethelene.

The following hoses are connected to the tank:

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

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

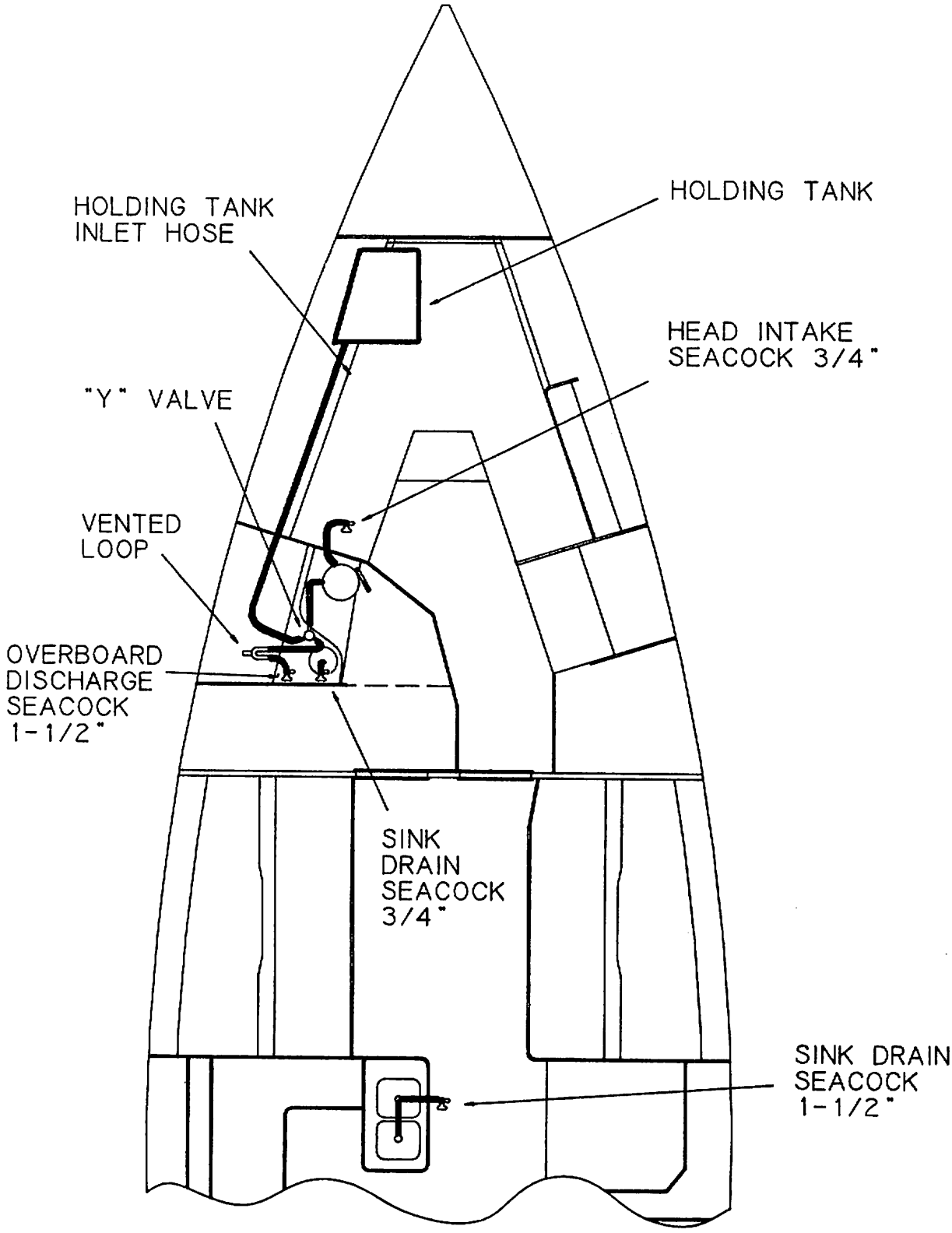
vent hose and may damage the tank... or worse, burst the hose. If the toilet is difficult to pump, check to see if the holding tank is overfilled. "When in doubt, pump it out!"

The holding tank must be pumped out before winter storage. Dumping a quart of anti-freeze through the heads will prevent the seals and equipment from cracking.

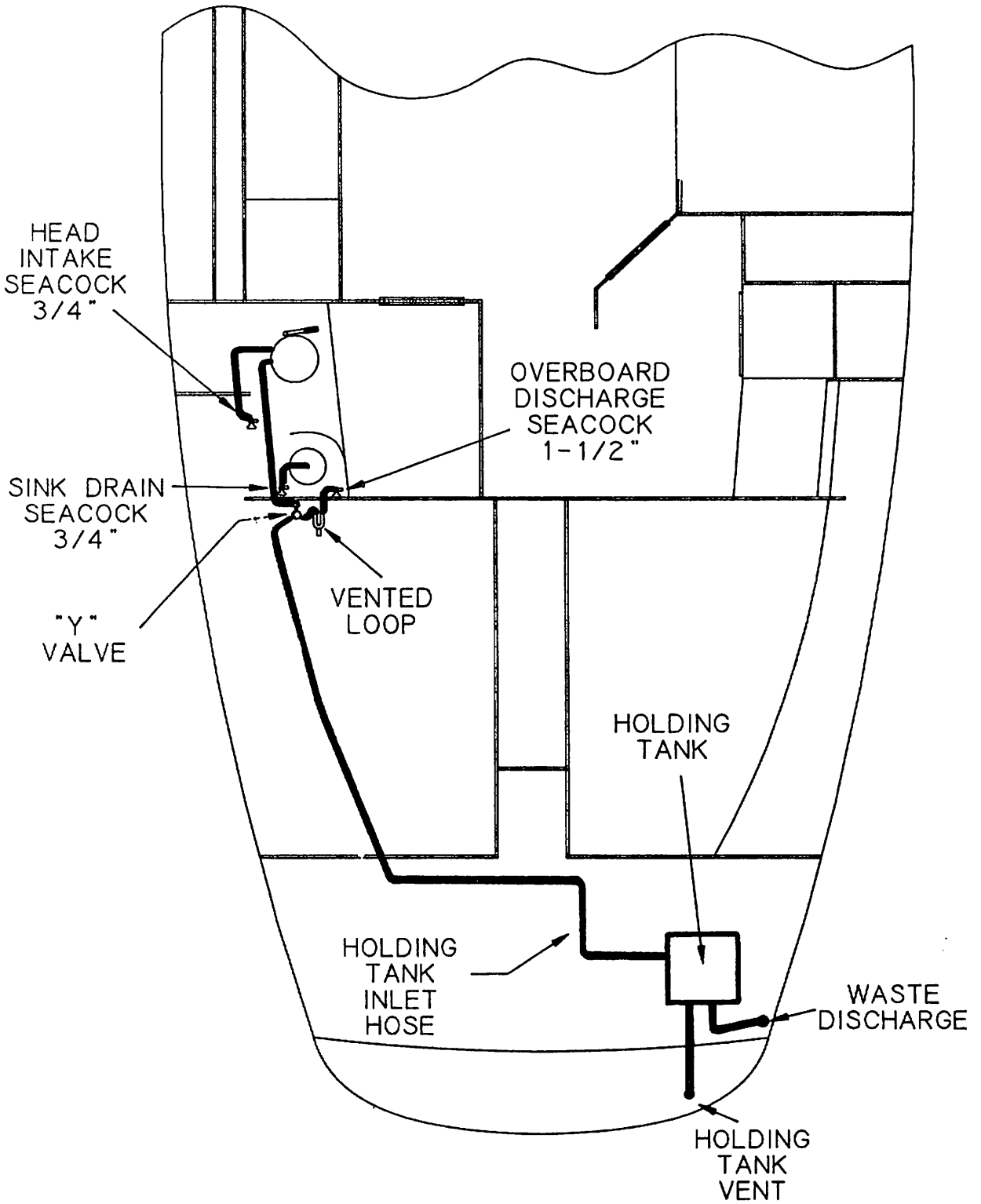
THE FINAL WORD!!

Be certain the pump on the toilet is pumped 15 to 20 strokesafter waste is emptied from the toilet bowl to insure the waste is pumped fully through the hoses and into the tank.

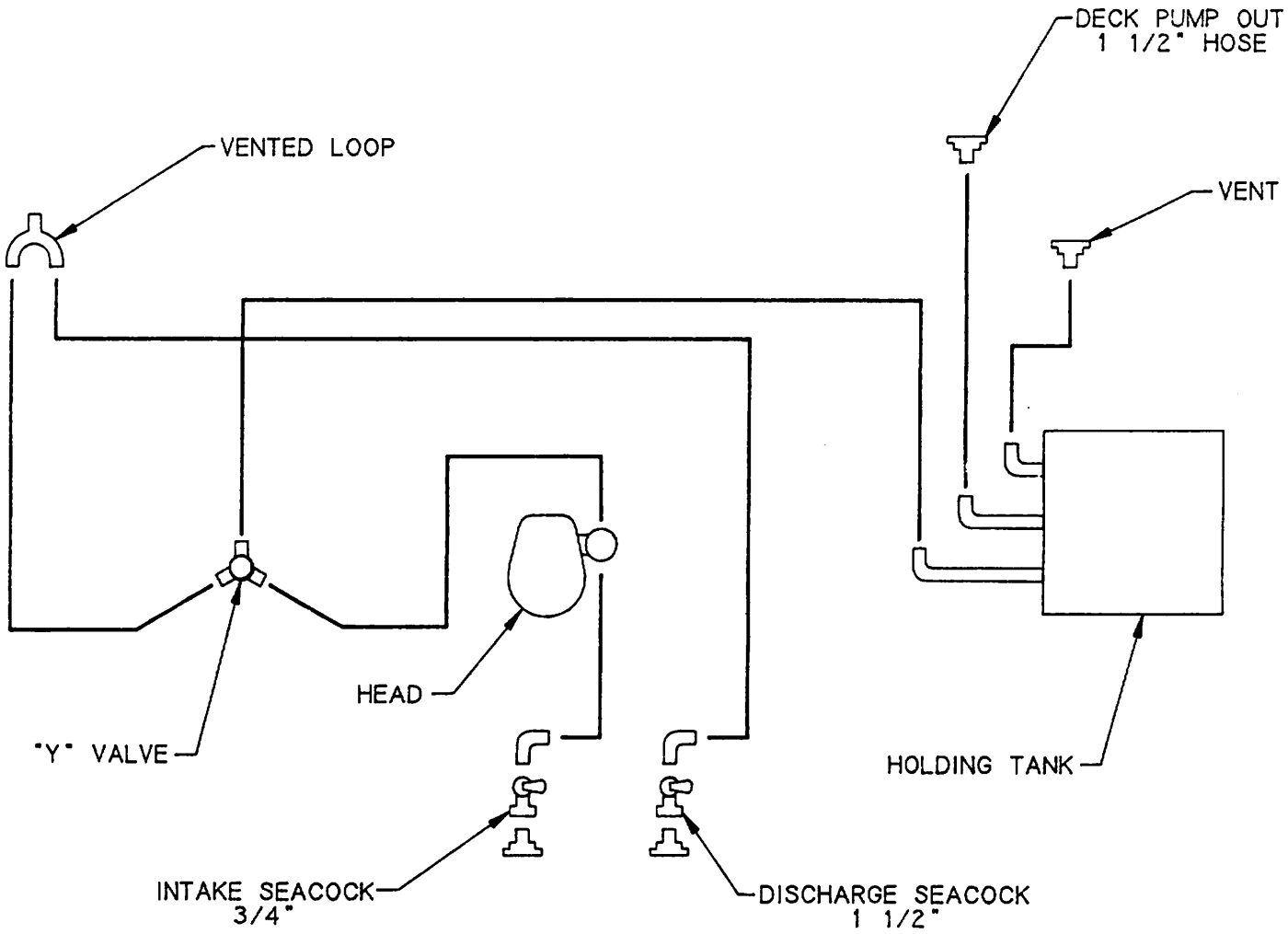
J/44 HEAD LAYOUT- FIG. 11a



J/44 OPTIONAL AFT HEAD LAYOUT - FIG. 11b



J/44 HEAD DISCHARGE SCHEMATIC- FIG. 11c



ELECTRICAL SYSTEMS

GENERAL

The following section describes the electrical systems aboard the boat, how they operate, where they lead, and how not to get yourself in trouble. Please read this section over more than once.

DC ELECTRICAL SYSTEM

A 12 VOLT D.C. electrical system is used throughout for lighting (FIG. 12b) and operation of pumps and various accessories (FIG. 13). The J/44 utilizes a system of three "gel cell" batteries.

GEL-CELL BATTERIES are a *maintenance-free* type. The gel electrolyte is a gooey substance containing silica, sulfuric acid, phosphoric acid and other chemicals. The advantages are: 1) up to *35 percent faster* recharging rate over other battery types; 2) a significantly higher cycling capability, upward of 400 cycles under sailing conditions; 3) protected against complete discharge- allows the battery to be drawn down to zero charge, left for 30 days, and then completely recharged to capacity; 4) no battery maintenance whatsoever; 5) in the event of capsize, nothing escapes from the battery; 6) extremely low self-discharge rate, especially during non-use periods (less than 2% per month); and 7) individual cell-venting to bleed off any buildup of gas pressure.

The **ELECTRICAL PANEL** (FIG. 12d) is the "nerve center" of the system as it controls distribution and contains all circuit breakers and switches. The J/44 is equipped with a deluxe electrical panel with L.E.D. indicators lights and digital meters. The wiring harness runs from the back of this panel. The batteries, charged by the engine feed the panel.

For any 12 V. current to be delivered, the following criteria must be met:

- 1. Charge in the battery
- 2. Battery switch in "Bat. 1", "Bat. 2", or "Both" position.
- 3. Master circuit breaker next to the two battery switches- "ON".
- 4. Circuit breaker for the appliance- "ON" (cabin lights, running lights, etc.).
- 5. Switch on the appliance- "ON".

The **MAST WIRING TERMINAL BOX** (FIG. 12c) is located on the upper portion of the bulkhead forward of the mast. A wiring harness exits the mast just beneath the deck and is wired directly into the D.C. system. Ensure the color coding matches so the switch at the master electrical panel corresponds with the instrument/light you're turning on.

The **BATTERY CHARGE MONITOR** is on the electrical panel and indicates the charge status of the battery(s) in volts. Flip the switch to either side to check battery status; the meter is connected directly to the battery switch. The battery monitor will show a high reading, between 13.6 and 14 V when the engine is on and the alternator is charging. When the battery is fresh and fully charged, the battery monitor will read between 12.8 & 13.6 V.

The **TWO BATTERY SWITCHES** (FIG. 14) are configured to totally isolate the ships power from the engine starting bank and still have the cross-over capabilities to have batteries "bank" in parallel for emergency starting power. Dual battery switches eliminate the problem of having the engine starter/generator sending out a voltage "spike" to the electronics--especially to the Loran, causing it to lose its position.

The **"ENGINE SWITCH"** in ***#2 position*** provides a dedicated engine battery and bypasses the electrical panel, it **is reserved solely for starting the engine.** If the engine battery is low or dead, move Engine switch to ***#1 position (be sure electronics are off)*** to access the House batteries.

The **"HOUSE SWITCH"** in ***#1 position*** is the **HOUSE SUPPLY.** If the House batteries are low or dead, move House switch to #2 position to access the engine battery.

To **CHARGE** the battery banks, the ENGINE switch should be in the #2 position for just a few minutes to keep the Engine battery up to charge. Otherwise, shift it to the #1 position to charge the HOUSE batteries.

THE ENGINE ALTERNATOR WILL CHARGE ONLY THE BATTERY SELECTED ON THE BATTERY SWITCH

The **DUAL ALTERNATORS** are attached to the engine and will create a charging current when the engine is running. The output is connected directly to the Battery switches to distribute the current to the battery banks.

ACCESSORIES such as navigation instruments, stereos, radars, lorans can be added to the electrical panel and the 12 V 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-both electrical and from the elements. 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.

110 VOLT A.C. SHOREPOWER SYSTEM

The 110 volt AC shorepower system (Optional on Plan A Boats)(FIG. 15) is functional only when the boat is plugged into suitable power from shore. The cord provided has the standard end for the amperage service. Depending on the wiring in the facility, various adaptors may be required to plug into the shore end. The boat end of the cord plugs into the inlet inside the cockpit. Ensure the plug prongs match those on the inlet, insert and twist to lock it. Then screw down the outer ring to seal the cord from water and to prevent it from pulling out.

The AC panel for shorepower is located on the Electrical panel. The functions on the panel are as follows:

The **ORANGE LIGHT** indicates that shore power is properly hooked up to an active shore system.

The **AC VOLTMETER** indicates line voltage being received from the shore circuit. The line voltage will vary with the number of appliances operating on the same circuit. In large marinas there may be a large number of boats on the same circuit, causing fluctuations

CAUTION– OPERATION OF AC MOTORS WITH LESS THAN 90 VOLTS IS LIKELY TO RESULT IN DAMAGE TO THE MOTORS.

AC NORMAL/AC REVERSE POLARITY LIGHT- The AC panel has a red light to show when the polarity is reversed. Care should be taken not to operate 110 AC systems on board with reversed polarity. Double-check shore connections. If problems still persist, then notify dockmaster to repair the shore plug.

NOTE- Even though the switches are in the appropriate position, the shore power system in no way assures safety of personnel using electrical apparatus.

The **WATER HEATER** supplies power to the water heater 110 AC element for hot water while dockside. Note the precautions regarding the use of electrical power to heat water are contained in the plumbing section of this manual.

OUTLETS located throughout the cabin supply power for 110 AC accessories. The entire system has "ground fault" protection.

CAUTION

These precautions should be exercised to avoid shock and fire hazards:

1. Turn off the boat's shore connections switch before connecting or disconnecting shore cable.
2. Connect the shore-power cable to the boat first.
3. Disconnect the shore-power cable at the shore-outlet first.

J/44 WIRING CODES- FIG. 12a

WIRING COLOR CODES

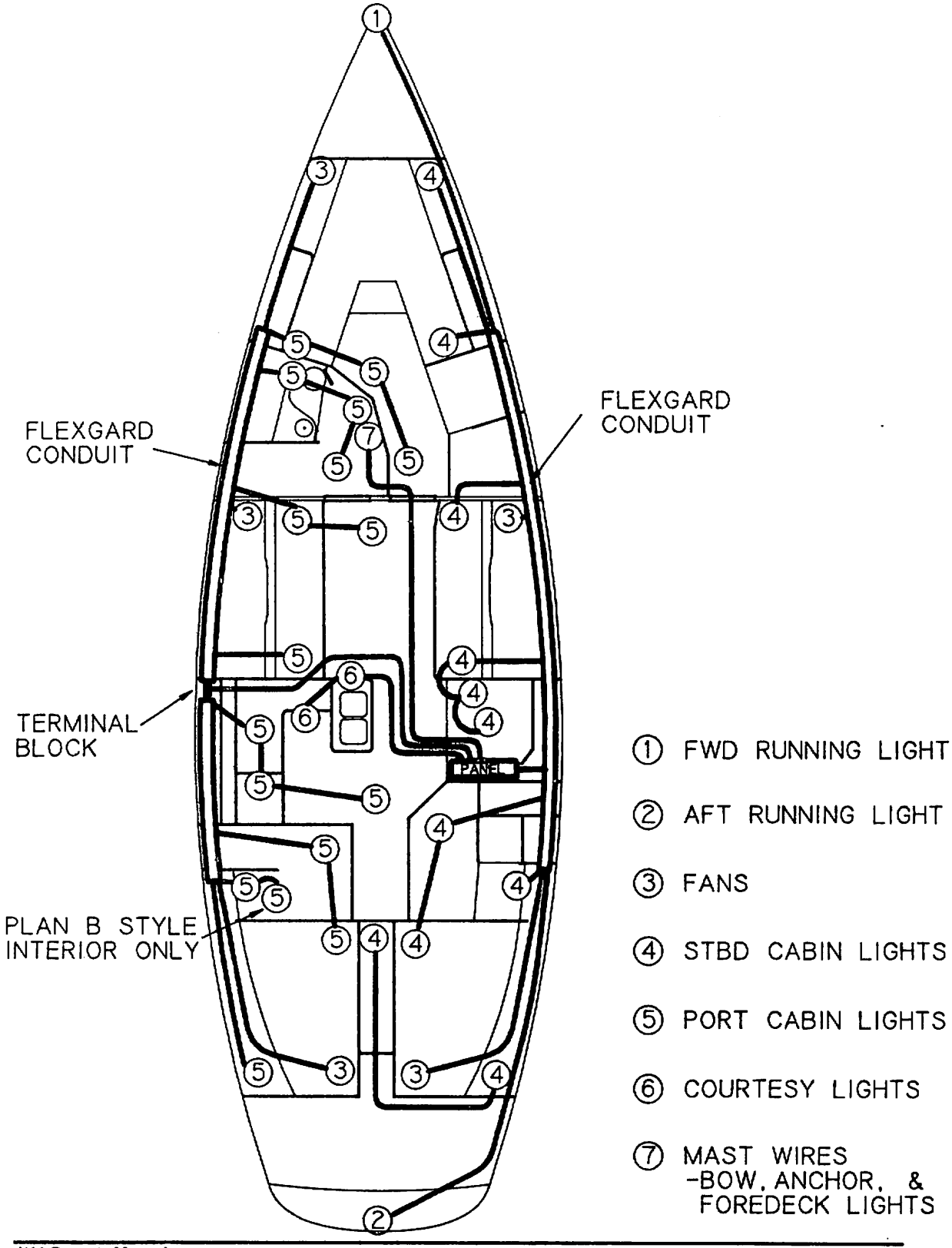
D.C.

WIRE	AMPS	COLOR	ITEM
12	30	BLUE	CABIN LIGHTS PORT/STBD
14	10	GRAY	RUNNING LIGHTS
14	5	GREEN	ANCHOR LIGHT
14	5	ORANGE	FOREDECK LIGHTS (OPT)
14	10	PURPLE	COURTESY LIGHTS
12	20	YELLOW	WATER PRESSURE (OPT)
16	5	RED	L.P. GAS (OPT)
12	5	BROWN	SUMPS FWD
12	10	BROWN-RED	BILGE PUMP
16	25	RED	REFRIGERATION (OPT)
14	5	GRAY	COMPASS LIGHT- PEDESTAL
14-16	10/5	PURPLE	INSTRUMENTS
8		RED	BATTERY CHARGER (OPTION)
2		RED	ENGINE STARTER
00		RED	BATTERY BANK
00		RED	ALTERNATOR CABLE
14	20	BROWN	SALT WATER PUMP
16	5	PINK	FUEL GAUGE

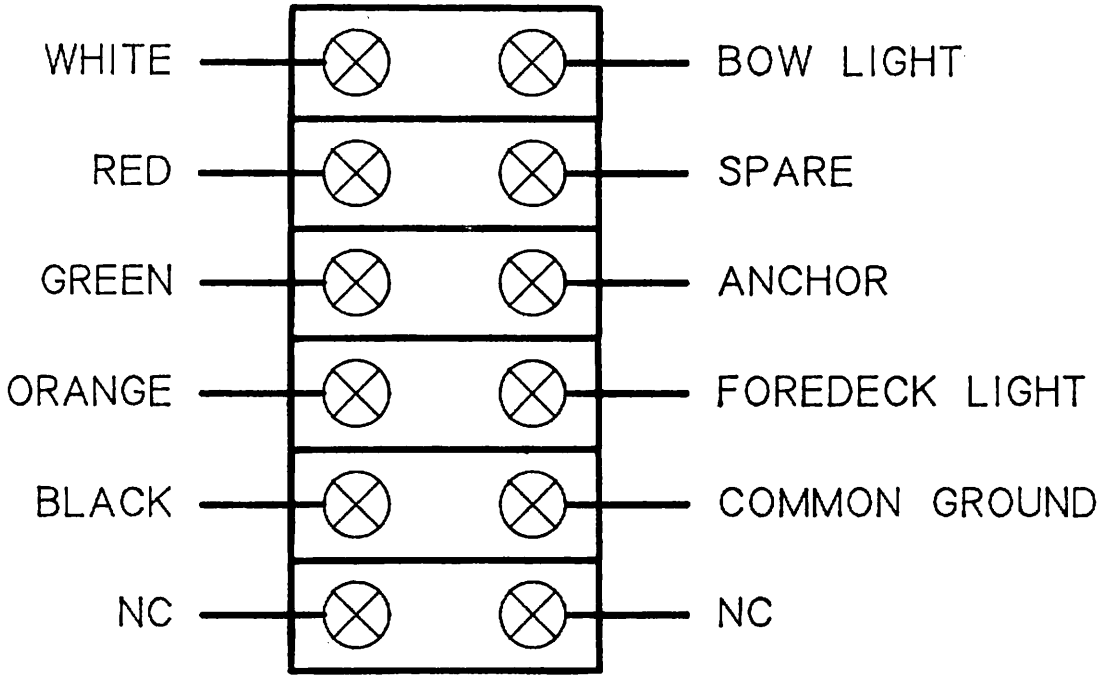
A.C.

WIRE	AMPS	COLOR CODE	ITEM
10	30	WHITE/BLK/GRN	AC MAIN
12	15	WHITE/BLK/GRN	HEATER
12	15	WHITE/BLK/GRN	CHARGER
12	15	WHITE/BLK/GRN	OUTLETS FWD/AFT
	WHITE -	NEUTRAL	
	BLACK -	HOT	
	GREEN-	GROUND	

J/44 12V DC LIGHT/MAST WIRING SYSTEM- FIG. 12b

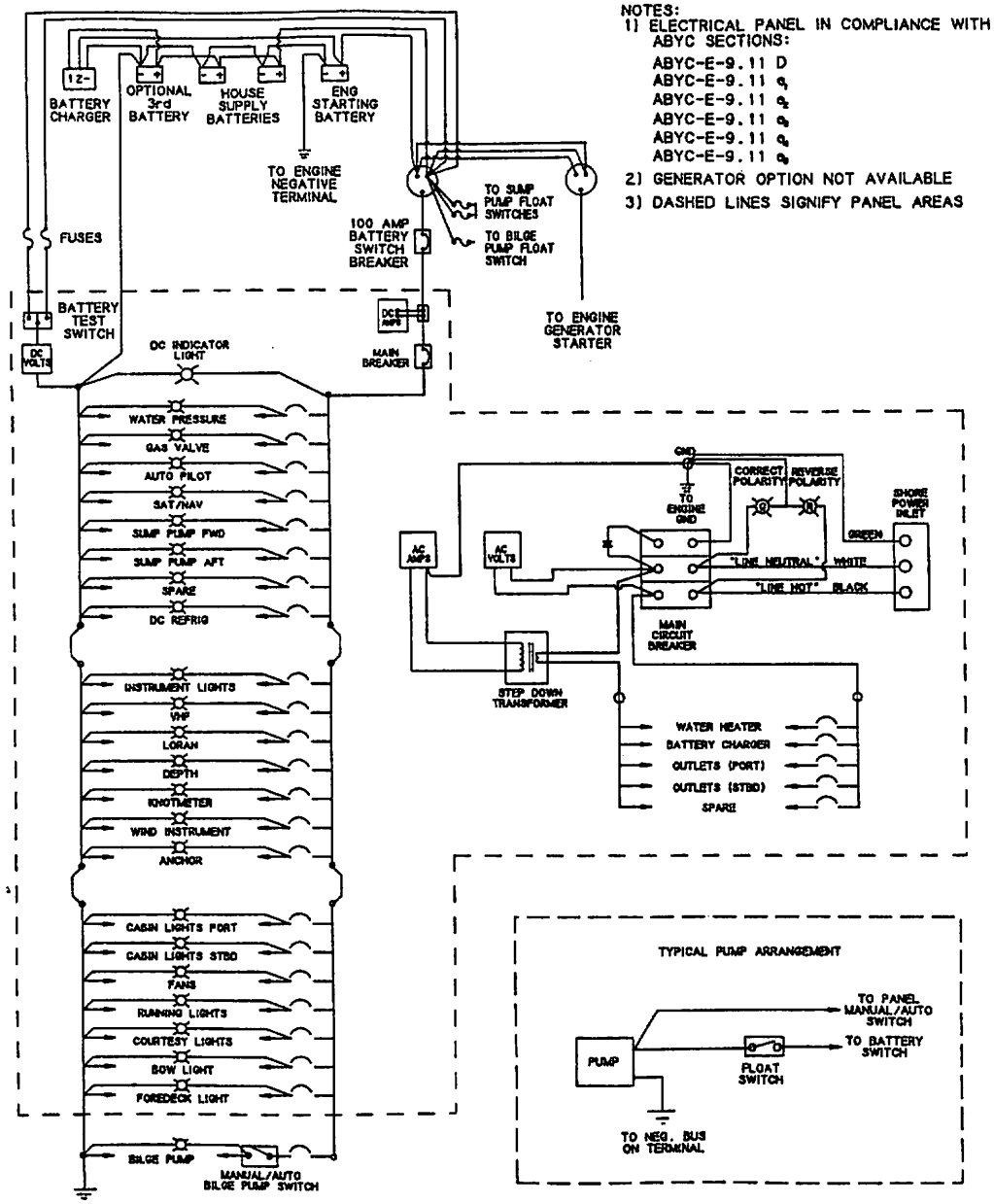


J/44 MAST WIRING DETAIL - FIG. 12c

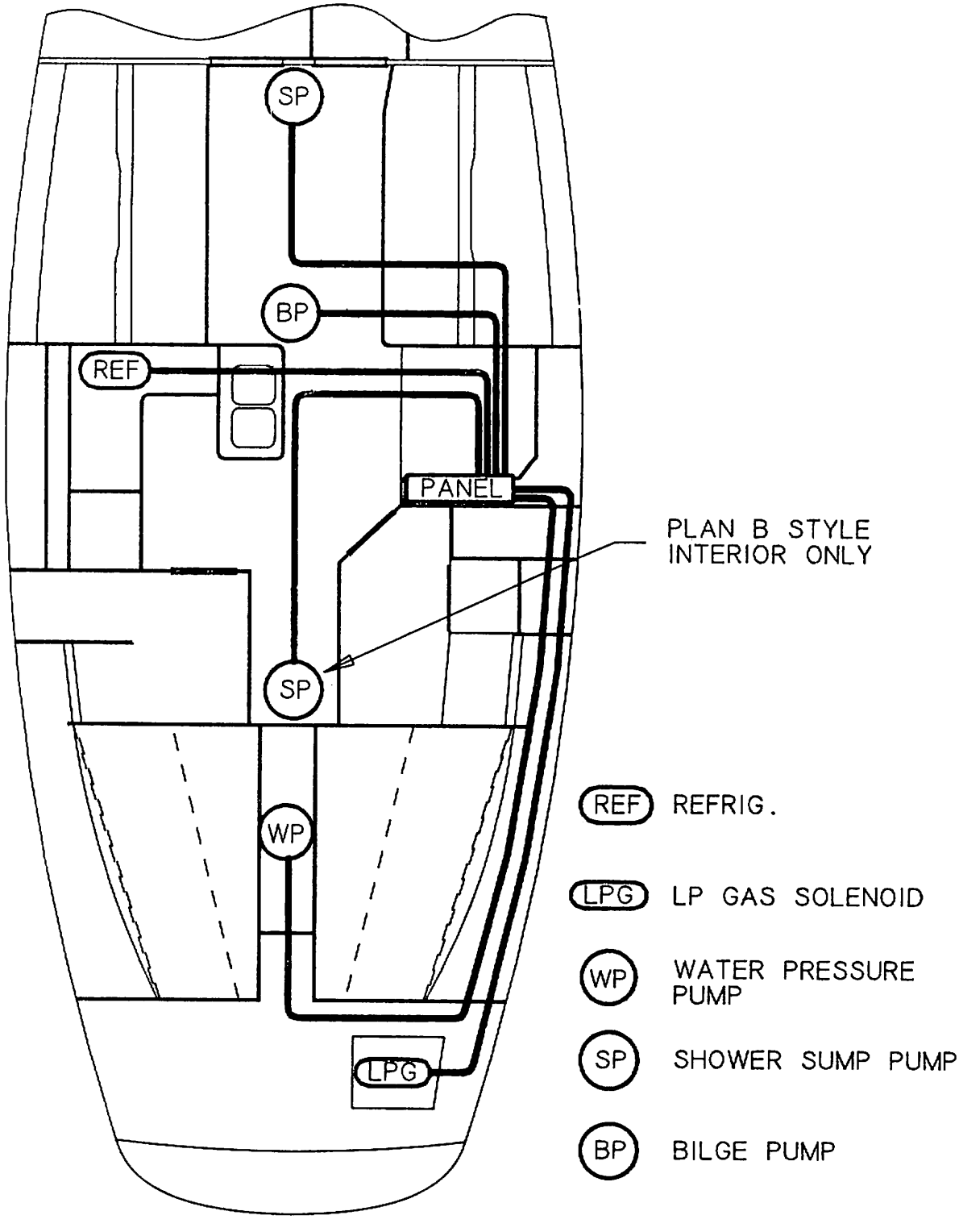


NOTE: TERMINAL BLOCK LOCATED
UNDER DECK HOUSE
NEXT TO MAST

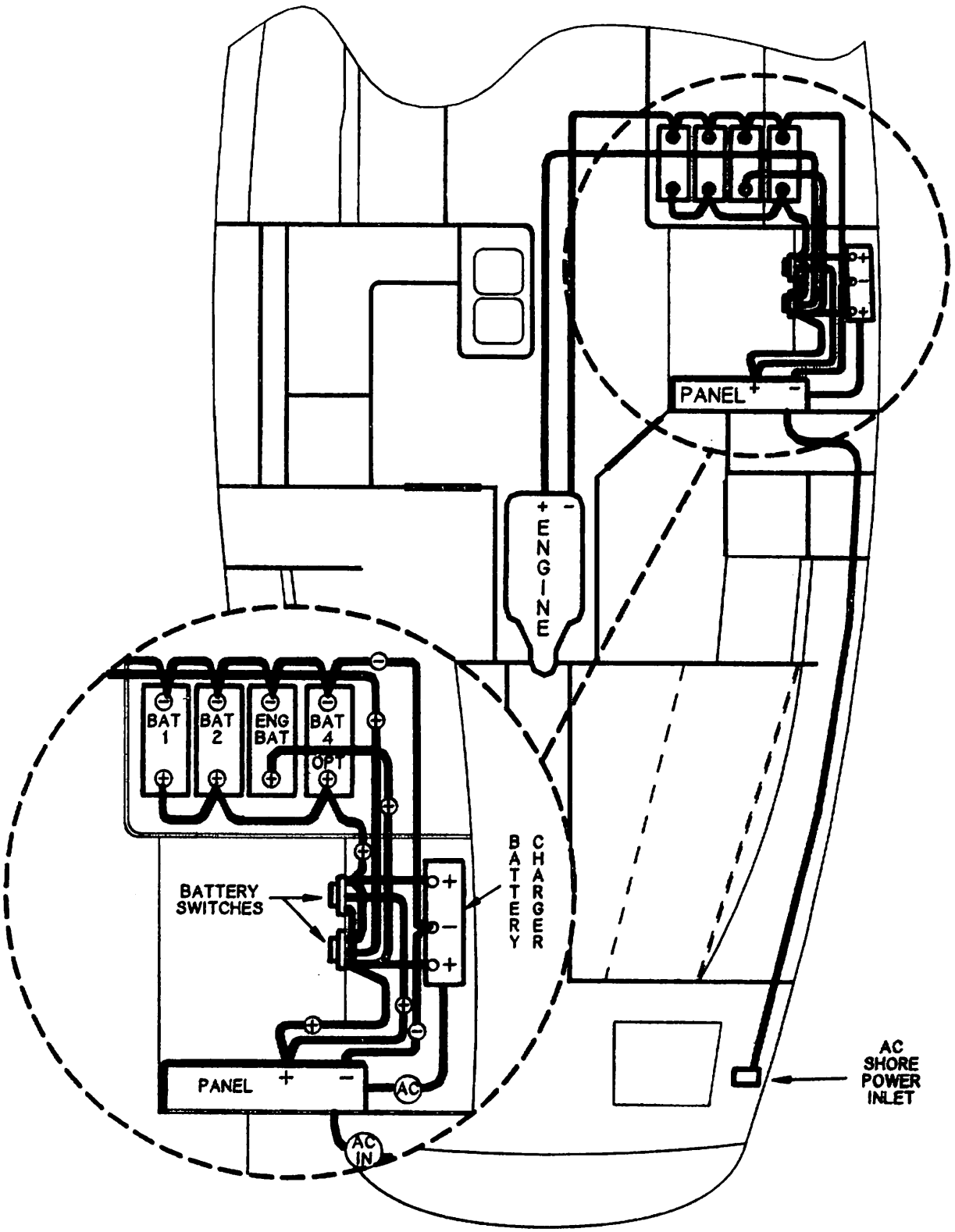
J/44 ELECTRICAL PANEL WIRING SCHEMATIC - FIG. 12d



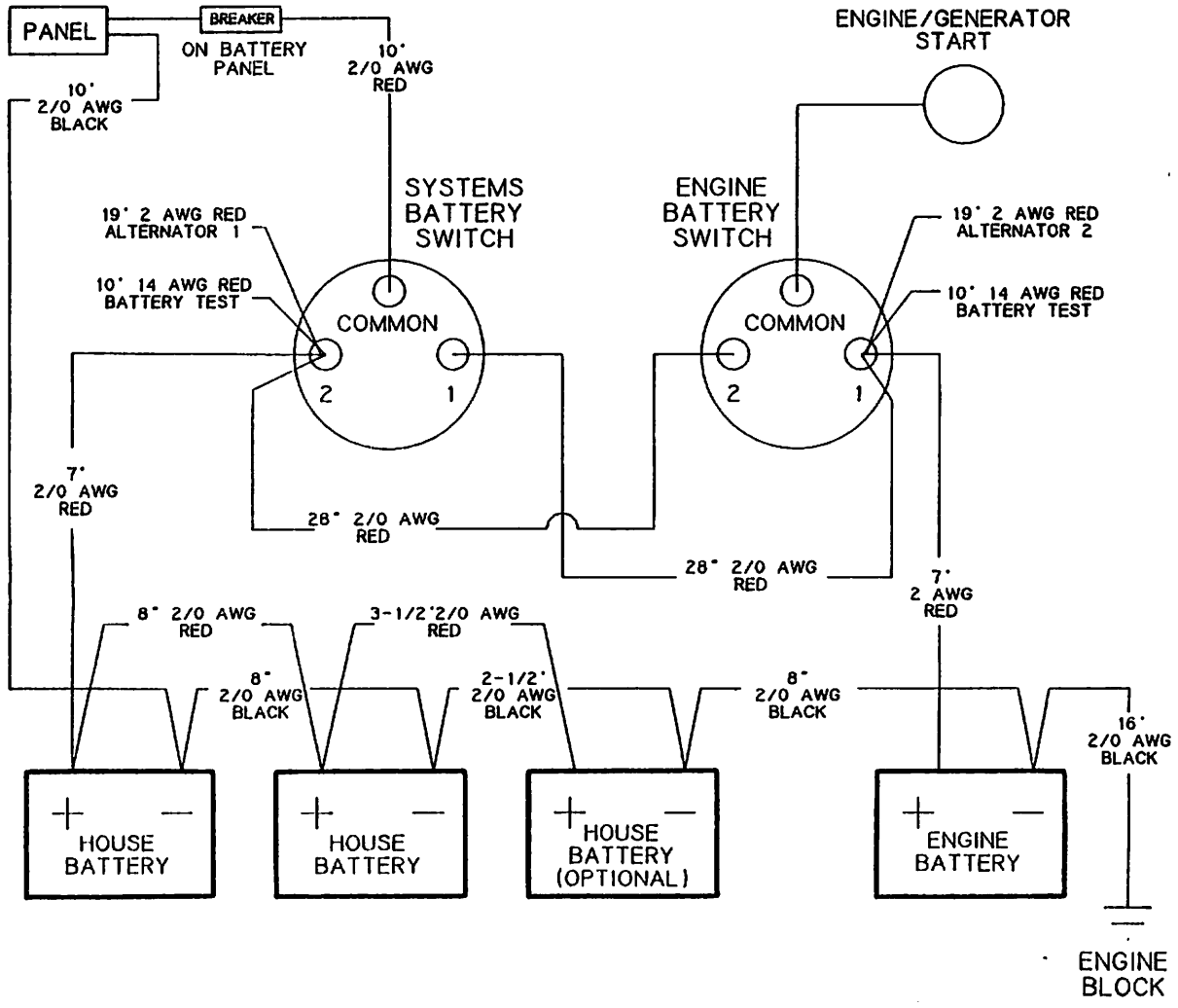
J/44 12V DC EQUIPMENT- FIG. 13



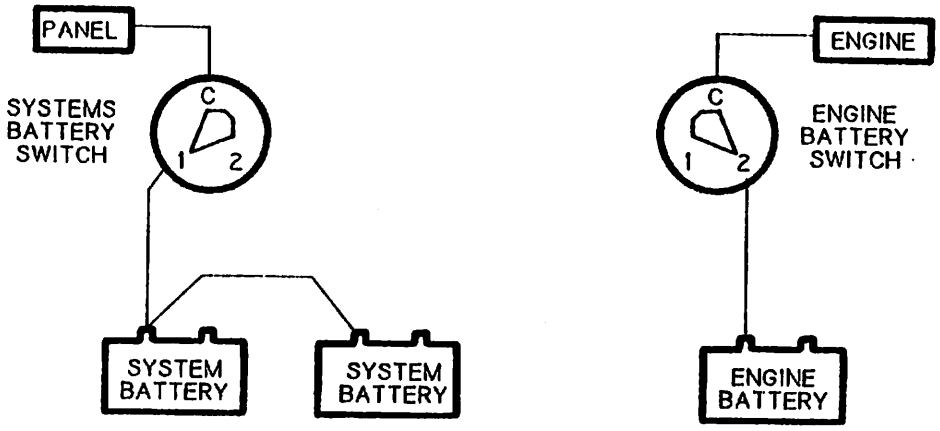
J/44 12V POWER SYSTEM- FIG. 14a



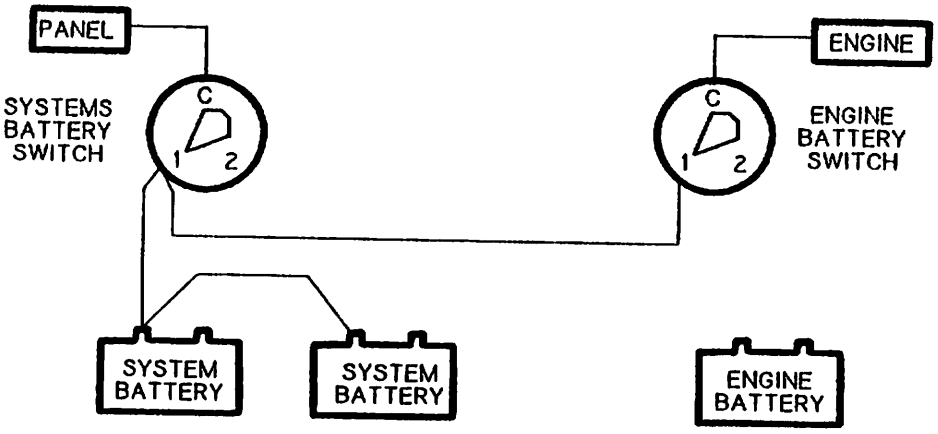
J/44 BATTERY CABLE SCHEMATIC - FIG. 14b



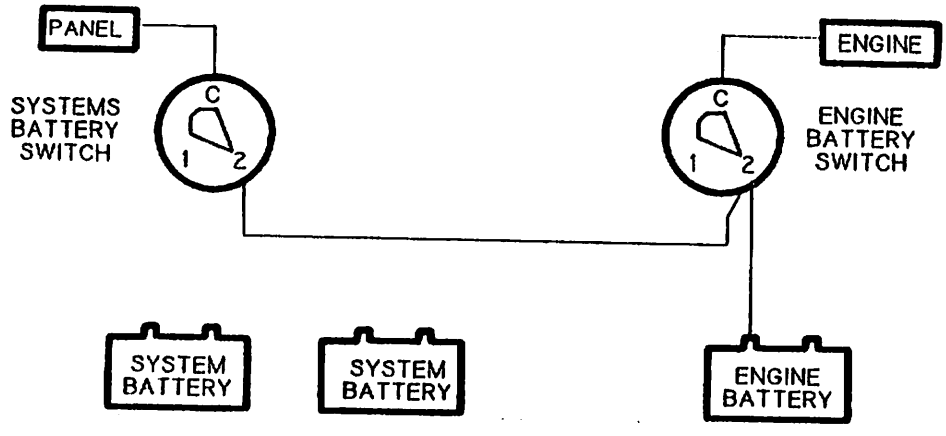
(NORMAL OPERATION) SYSTEM SUPPLY & ENGINE SUPPLY



USING SYSTEM BATTERIES TO START ENGINE

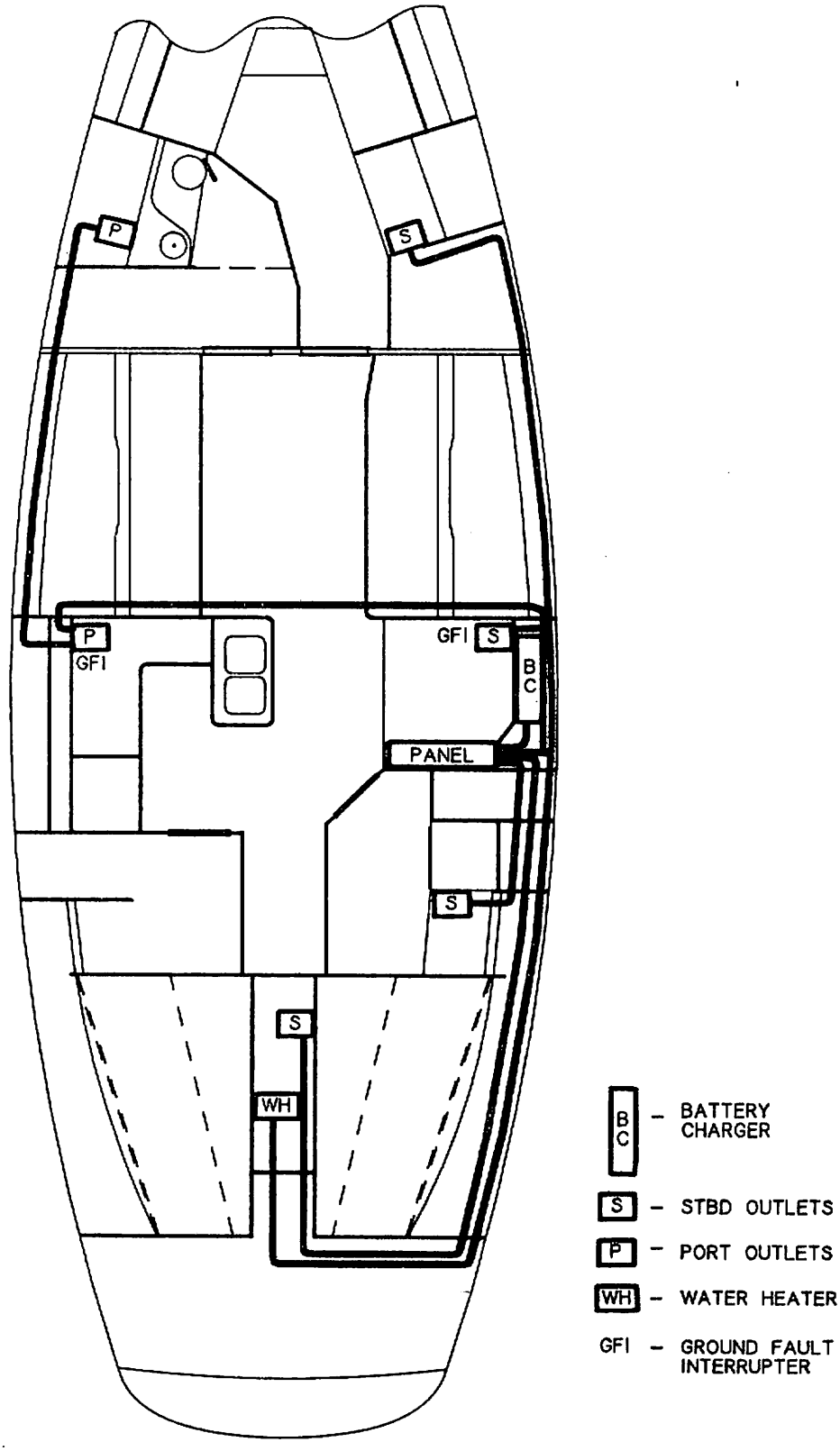


USING ENGINE BATTERY FOR SYSTEM (EMERGENCY ONLY)



NEG RUNS AND UNESSENTIAL RUNS ARE DELETED FOR CLARITY

110V AC SYSTEMS - FIG. 15



LIGHTNING PROTECTION

The boat is completely grounded in accordance with industry practice (FIG. 16). 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.

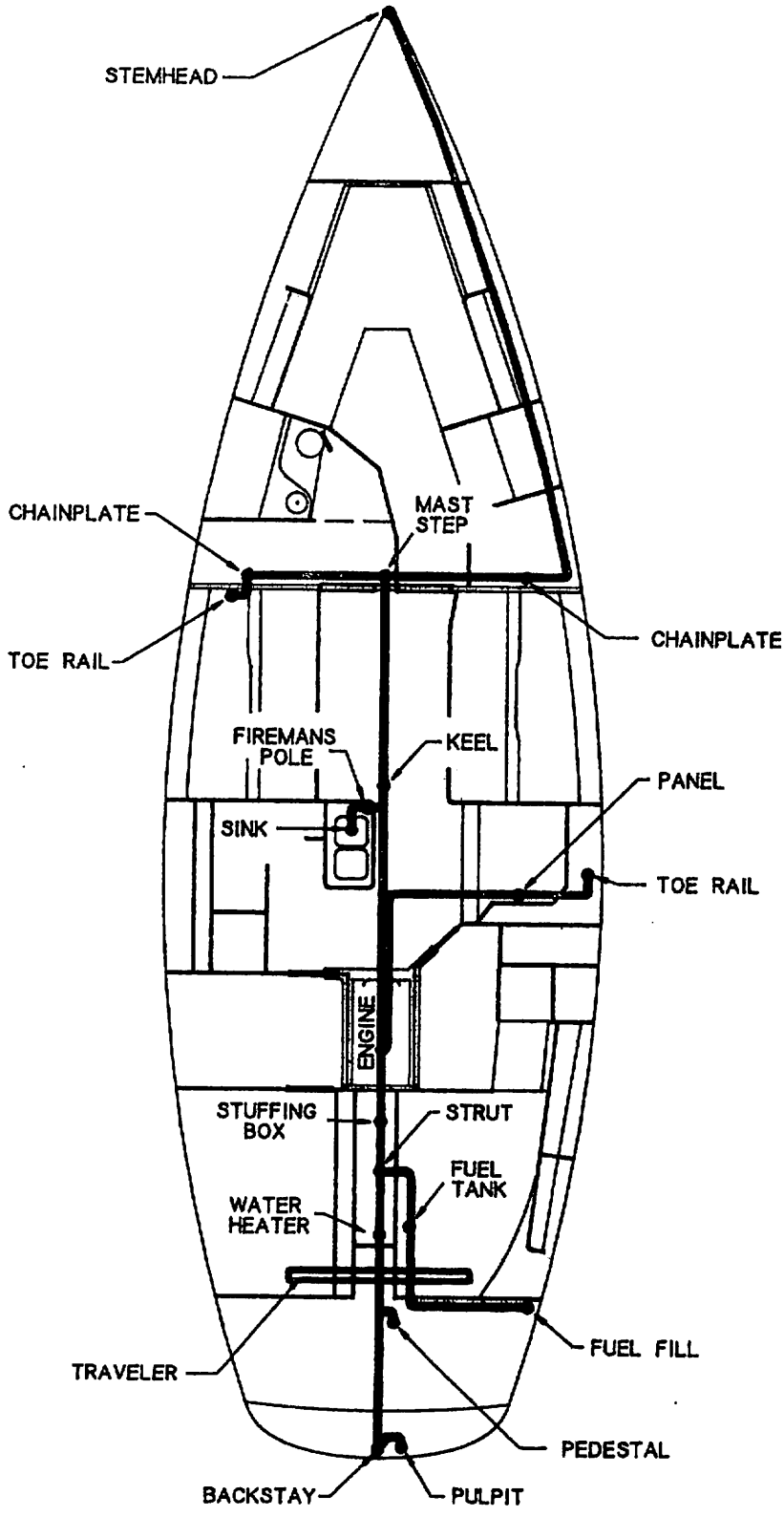
1. If possible, remain inside a closed boat during a lightning storm. Do not contact any metallic objects inside or outside the boat.

2. 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).

3. No one should be in the water during a lightning storm.

4. If the boat is struck by lightning, compasses and electrical gear should be checked to determine that no damage or change in calibration has taken place.

J/44 BONDING SYSTEM- FIG. 16



GALLEY STOVE AND OVEN PROPANE SYSTEM

The propane (LP) gas stove/oven system (FIG. 17) is engineered for the marine environment in high-grade stainless steel. It's heating is comparable to a home range.

The biggest difference is safety. While the home gas stove has a petroleum gas which is lighter than air (it disperses easily if there is a leak) the propane stove has a gas which is heavier than air, and thus, has the disconcerting property of sinking to the bottom of its enclosed compartment or area (like the bilge)....it is not as readily dispersed by overhead ventilation. Therefore,

PREVENT THE ESCAPE OF ANY LIQUIFIED PETROLEUM GASES (ESPECIALLY PROPANE) FOR WHEN MIXED WITH AIR THEY CAN EXPLODE IF IGNITED.

The **PROPANE STOVE/OVEN** is located in the galley and is of high quality stainless steel, especially designed to withstand the rigors of the marine environment. Be sure to read the manufacturer's operating manual.

The **PROPANE TANK** is located in a specially designed compartment in the stern which have ventilation holes over the side to specifically eliminate the accumulation of these potentially dangerous gases.

Tank replacement should be done with extreme care. Follow this procedure to ensure the line is devoid of gas:

1. Turn off solenoid valve switch on electrical panel first to shutoff supply of gas at the tank.
2. After flame of burner goes out, turn off knob for burner (this purges gas from lines).
3. Firmly **close manual valve on tank--DO THIS EVERY TIME!!**
4. Unscrew fuel line fitting from tank. Remove empty tank and replace with new tank. Re-attach fuel line to tank.

The **LPG GAUGE** sits atop the tank to measure the amount of pressure left in the tank.

The **SOLENOID CAP VALVE** is located on the hose in the aft propane compartment. It electronically shuts-off the flow of gas at the tank. This valve is a "normally closed" valve; therefore electrical power must be provided so gas can flow to the stove.

The **REGULATOR** is located on the hose in the aft propane compartment. It is a screw down valve which regulates the flow of propane into the system.

PROPANE LEAK TEST

Before initial use a propane leak test should be performed as part of the commissioning procedure to double-check the factory installation. This test should be conducted every time a bottle is refilled.

Test for leakage by applying a liquid detergent or soapy solution at all connections. Repeat the test for each container in a multi-container system.

Also check for leaks by watching the propane gauge. If the pressure drops while no one is cooking, then retest all connections until the leak is discovered.

NEVER USE FLAME TO CHECK FOR LEAKS

If a leak is detected, close the manual valve on the tank, temporarily seal the area of leakage with duct-tape, purge the lines of gas by blowing clean air into the stove end of the line, and then seek professional help to repair the leak.

STOVE OPERATION

Before using the stove be absolutely sure you read the stove manual in regards to all the safety procedures and what is outlined above. The following describes **typical stove operation procedures:**

1. Check all burner (including oven) knobs are off.
2. Check manual valve on tank and open.
3. Ensure battery switch is on and 12 volt power available.
4. Turn on solenoid valve switch on electrical panel.
5. Open burner valve on stove slightly and light burner. Always apply flame or sparker to burner before opening valve.

COOK TO YOUR HEARTS CONTENT--keep crew fat and happy

When cooking is complete, then;

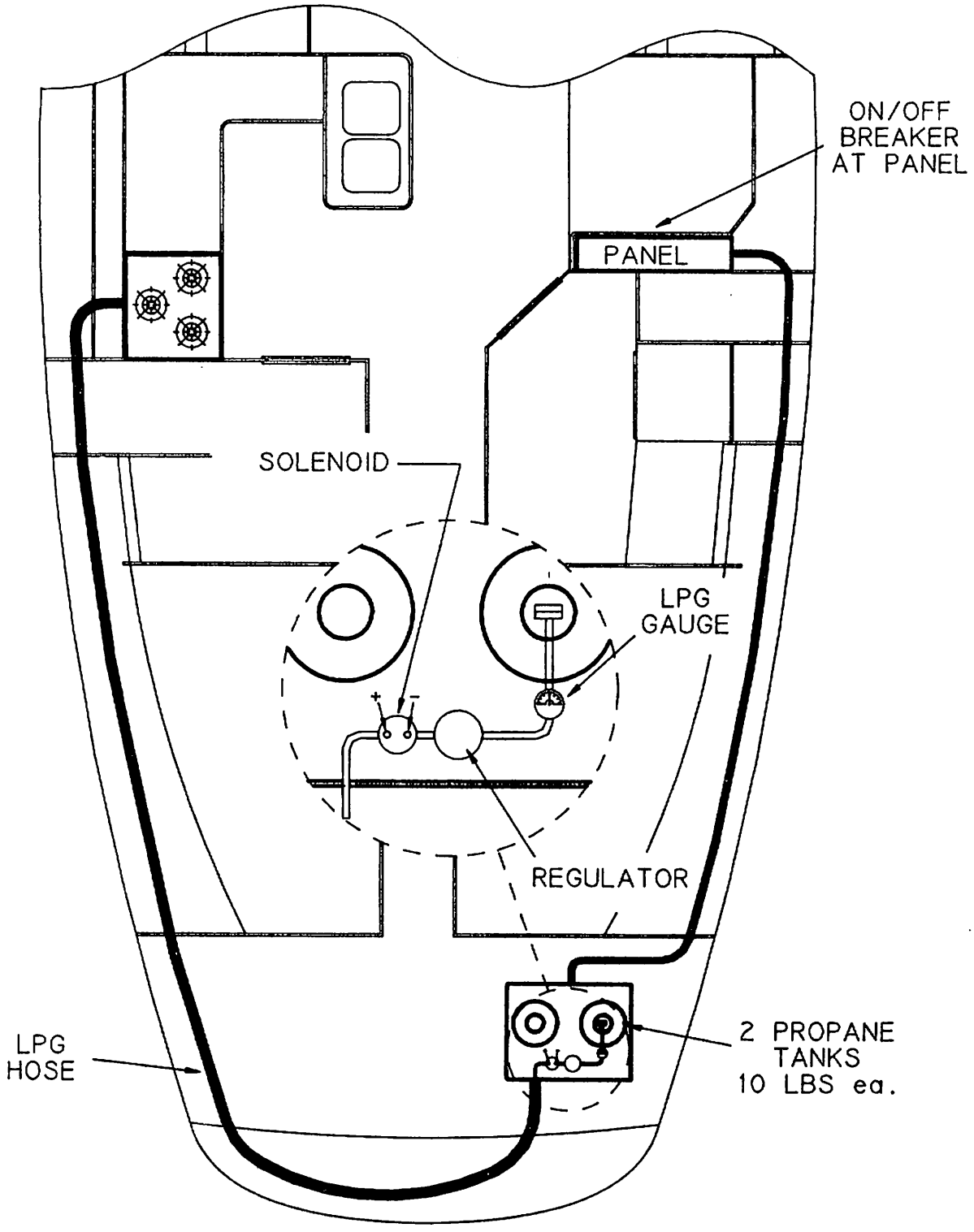
6. Turn off solenoid valve switch on electrical panel first to shut-off supply of gas at the tank.
7. After flame of burner goes out, turn off knob for burner (this purges gas from lines).
8. Firmly **close manual valve on tank--DO THIS EVERY TIME!!**

Never leave a lighted burner unattended. A gust of wind may blow out the flame and allow gas to continue to flow from burner. The heavier than air L.P. gas can then easily accumulate below and may explode.

If gas odor is observed, immediately open floorboards and vacate the boat. Do not do anything which may cause a spark. Close manual valve on tank. Open all hatches and seek aide immediately. In other words, **when in doubt, shut it down.**

IN CASE OF FIRE--TURN OFF SOLENOID ON D.C. PANEL. IF PANEL MALFUNCTIONS, TURN OFF BATTERY SWITCHAND EVACUATE VESSEL!

J/44 PROPANE SYSTEM LAYOUT (FIG. 17)



SAFETY EQUIPMENT

GENERAL

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

SAFETY EQUIPMENT

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.

FLOTATION 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.

Locate **FIRE EXTINGUISHERS** 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 primary, or storm anchor, should be stowed in the lazarette ready for use. The secondary, or "lunch hook", in the anchor locker for easier short term use.

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.

USING YOUR J/44

GENERAL

This is the application section of the manual. It is included to give you basic step-by-step procedures on how to operate your boat. If you are not already familiar with operating a boat of this size, we recommend that you enlist the help of your dealer or an experienced and licensed captain. Or if you are already experienced and wish to be refresh your knowledge, we also recommend reading the **ANNAPOLIS BOOK OF SEAMANSHIP** or **CHAPMAN'S BOOK OF PILOTING AND SEAMANSHIP.**

If in doubt, never be too proud to do a little research ahead of time. Stay ahead of the boat, tides, currents, and weather when navigating.

GETTING UNDERWAY

Central to having a wonderful sailing experience is the proper handling of your boat. By now, it is evident that all systems have been designed and engineered on this boat to facilitate this process. We hope you enjoy her. Let's take her on an imaginary voyage.

GENERAL HINTS TO AVOID PROBLEMS

1. Use one battery exclusively for engine starting. Monitor brightness of cabin lighting and charge batteries as required by running engine. Batteries are charged by either connecting it to shore power or by running the engine.

NEVER START THE ENGINE WITH SHORE POWER CONNECTED

2. **Stop engine with throttle fuel cut-off.** Use of the key ignition switch for stopping may blow the costly alternator diodes.
3. **NEVER** turn battery switch to OFF position while engine is running.
4. Remove all lines from water before starting engine. If towing dinghy, tow close to boat while maneuvering with engine.
5. **NEVER** launch dinghy from deck while boat is moving.
6. Open a small hatch or window while using propane stove or propane hot water heater.
7. Diesel exhaust exits in the transom and is hot. Avoid exhaust when using optional swim ladder.
9. Check seacocks. Ensure engine intake is open. Try to keep head seacocks closed.

ENGINE

The engine is a YANMAR 4JH-TBE 55 HP diesel.

CRUISING R.P.M. - 2400 at slightly less than hull speed.

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.

Keep engine gear shift lever in "REVERSE" position while sailing to prevent possible "free-wheeling" of shaft.

ENGINE SAFETY PRECAUTIONS

Diesel engines operate with very high exhaust temperatures. The result is that any defect or restriction of flow anywhere in the cooling water system running to the exhaust line can cause excessive heat build up. In turn, this can burn the exhaust hose. Also, 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.

PRESTART

1. Check fuel level. Running engine with no fuel or fuel shut-off will result in air lock, and requires step-by-step bleeding of air from all lines.
2. Check to see if fuel shut-off valve is open (Top of fuel tank).
3. Check oil level. Dipstick is on the starboard side of engine. Engine is under the companionway and can be accessed by removing the lower portion of the steps. Additional access is obtained by removing the covers on both sides of the engine.
4. Check transmission fluid level.
5. Check fresh water level in manifold.
6. Check stuffing box, should be damp to touch.
7. Assure that engine intake seacock to water pump is open.
8. Turn "ENGINE" battery switch to "2." Battery switch is located in the navigation station.

STARTING THE ENGINE

1. For reassurance and if installed, turn VHF and LORAN "OFF."

2. Rudder amidships.

3. Secure swim ladder.

4. All lines should be out of water.

5. Pull black knob Place throttle 1/3 open (move down).

6. 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.

7. Turn ignition key to "START" position. Release immediately after start. If it does not start in ten seconds, release key. Advance throttle slightly and after ten seconds, repeat.

8. Oil pressure light and audible alarm should go out after starting. If not, stop engine.

9. Once engine starts, set throttle at about 1,000 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.

10. Test forward and reverse at dock with docking lines in place. Shifting should be done below 850 RPM's AT ALL TIMES. Shifting at too high a speed will cause severe damage to the entire drive train.

11. Check for exhaust water from transom periodically. Engine is cooled by sea water via a heat exchange and enclosed fresh water system. Water temperature should read 165 degrees or less and water should exit from the stern at all times. Without water exhaust discharge, engine will burn up.

12. 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.

13. It is best to keep fuel tank 1/2 full (diesel #2) to avoid debris intake and air locks..

STOPPING

1. Place throttle lever in idle position (horizontal).

2. Let engine cool down.

3. Push fuel shut-off button on engine instrument panel until engine stops.

4. 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.

5. 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!

5. 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

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

1. Properly secure the boat to the dock using bow, stern and spring lines.
2. Close all hatches and ports.
3. ***DO NOT SMOKE.***
4. **SHUT OFF ALL EQUIPMENT: ENGINE, MASTER BATTERY SWITCH, STOVE, CABIN HEATER, RADIOS, LIGHTS, ETC.**
5. Remove fuel fill plug and clean threads of both plug and deck plate carefully so no dirt falls into filler opening.
6. Place the fuel hose nozzle into the fill pipe. Keep it in contact with the deck plate rim to avoid static electric charge.
7. Fill slowly. DO NOT OVERFILL. Marine fuel expands with an increase in temperature. Thus, fill only to 95% capacity.
8. If you cannot see the fuel pump, ask the attendant or a crew member to call out the total gallons.
9. If fuel tank is overfilled, fuel will leak out the tank vent located on the transom. This spillage should be cleaned up immediately.
10. 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.**
11. Open all hatches and ports to facilitate ventilation.
12. Only after you are totally satisfied that no potentially dangerous condition exists, leave the fuel dock. Be considerate of fellow yachtsmen.
13. 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.
14. **DO NOT** fuel during electrical storms.

SAILING

The J/44 is conceived as a one-design/racer/cruiser. The following explains how one might sail short-handed with more sybaritic intentions, minimizing crew anxieties and focusing on the pure pleasures of sailing "J".

The rigging and cockpit configuration enable the helmsman to completely control the boat. The large main can be infinitely shaped by vang and backstay; cunningham/tack reef; mainsheet; and traveler controls.....all within reach of the skipper.

UPWIND IN HEAVY AIR is a snap. Sail under full main only, with maximum mast bend, vang on hard, flattened main with open leech, boom over leeward edge of cockpit, helmsman managing mainsheet winches and wheel.

You can sustain 7+ knots to windward without getting the rail under by "feathering" up or easing the main instantly in puffs, or a combination with just the helmsman working.

UPWIND IN MEDIUM AIR, set a 100% jib to generate plenty of passage-making speed. Don't over trim the jib as it will stall the large main. Remember to keep the jib ***leech aimed straight aft.***

UPWIND IN LIGHT AIR can be exhilarating with a 150% genoa and full main. The boat moves best by keeping the rig "breathing." Move mainsheet traveler to windward, ease mainsheet to allow plenty of leech twist, and sheet the genoa no closer than six inches at the top spreader.

DOWNWIND IN LIGHT AIR is exciting because the boat really moves in zephyr-like conditions. When others resort to the diesel alternative, you can still barrel along.

The large main combined with the speed of the boat allows one to drive the apparent wind 30-40 degrees forward of the true wind, so the sails sustain a ventilated air flow (rather than stall). Thus, with the true wind at 130 degrees, the apparent wind is driven so far forward that the boat is sailing on a beam reach at close to 6 knots with a VMG downwind of about 4.3 knots! It is a nice refreshing angle for the crew with a boat that's stabilized and not rolling.

DOWNWIND IN MEDIUM TO HEAVY AIR is a joy because the sailplan is so efficient. For lazier cruising, use the main only as 8+ knots on beam to broad reaches is easily attainable. For greater exhilaration or passage-making speed sheet the genoa/jib out to the rail or wing it out to windward.

NOTE- IT IS PRUDENT TO CONTROL THE MAINSAIL AT ALL TIMES, ESPECIALLY WHEN GYBING. TRIM IN THE MAINSHEET DURING THE GYBE AND EASE OUT AFTER GYBING TO REDUCE THE HAZARD TO THE CREW.

MAINSAIL REEFING PROCEDURE

The mainsail controls lead to both the mast and the cockpit. Familiarize yourself with the control lines. There are primary and secondary reef lines for both the tack and clew. Practice reefing in the marina if you are unfamiliar with this procedure. Reefing procedure follows:

1. Ease mainsheet and allow mainsail to luff.
2. Ease the vang. This forces boom to rise, relieving the load on the mainsail leech.
3. Ease the main halyard until the tack reef cringle is even with the gooseneck. It is best to set a predetermined "mark" on the halyard to speed this process.
4. Tighten the tack reef line. Tighten the clew reef line.
5. Re-tighten the mainsail halyard to eliminate luff wrinkles.
6. Secure the intermediate reef points with mainsail ties where necessary .
7. Trim in the mainsheet and readjust the vang to properly set the mainsail leech twist....ie. keep upper two telltales flowing.

NOTE- To "shakeout" the reef, simply reverse the above procedure. Ease mainsheet, vang, halyard; completely ease off reef lines; raise main to eliminate wrinkles.

MANEUVERING

GO SLOW AND PLAN AHEAD. Sailboats steer quite well in forward motion and not so well in reverse. Only slight turns of the rudder are necessary in reverse. With the rudder hard over, the boat can turn in a circumference of about 2 1/2 times its length.

ANCHORING/DOCKING

When seeking a place to **anchor**, always ensure there is enough swinging room. Take into account wind shifts, forecasted weather, and tidal currents. The rule of thumb for amount of scope is 7:1 (7 feet of line to every 1 foot of depth).

Before anchoring, always double-check that anchor chain and line are securely fastened to the anchor. And once the anchor is in place and you are satisfied with the "holding ground" be sure line is lead properly and fastened tightly to the bow cleat.

When **docking** your boat always be sure to make the approach slowly. Remember, the boat has a tremendous amount of momentum. It helps to have all fenders over the side, bow and stern lines ready, and most importantly have the **SPRING LINES READY AS THEY HELP STOP THE BOAT!**

To prolong the life of your topsides we recommend that you cover your fenders with a soft "terry-like" covering. Both the fenders and the boat will look better.

USE OF ON-BOARD SYSTEMS

ICEBOX

The icebox is extremely efficient and remains cold for long periods of time. Do not keep lid off as any cold air is precious. With the refrigeration system, be sure to check the battery banks daily to ensure they are fully charged.

REFRIGERATION

The Sea Frost engine driven refrigeration system provides cold storage for off-shore cruising and racing with very short engine running times (usually under a half hour). It utilizes the "cold storage method" and is the best way to refrigerate without a continuous power source. The engine drives the compressor for extremely efficient energy transfer. The fast reaction to engine operation provides ice cubes and cold box temperatures which last the whole day. Its advantages are: 1) eliminates frequent and extended engine running; 2) cooling takes place rapidly; 3) is battery independent; 4) simple to operate and maintain; 5) highly reliable; 6) engineered to withstands the brutal demands of large charter fleets.

PROPANE STOVE/OVEN

The following procedure is for a typical propane range.

1. The propane locker is on the aft starboard quarter of cockpit. The propane valve must be open to use.
2. Turn on battery.
3. Turn on stove propane switch on control panel at navigation station.
4. Press red/white switch on stove to "ON" position (down).
5. Depress man bypass and hold, press sparker until pilot light ignites.
6. Continue to hold main bypass for 20 seconds, then release slowly.
7. If pilot remains lit, turn on burner. If not, repeat depressing main bypass and sparking.
8. To turn off stove, turn red/white switch to "OFF" (up). Then turn burner control switch "OFF", this eliminates fuel in the line.

PROPANE OVEN

1. Light top stove pilot as in "STOVE" above.
2. Turn thermostat knob (large center control knob) from "Pilot Off" to "OFF" position by depressing slightly and turning until first click.
3. Depress and hold oven safety bypass button right hand side.
4. Press "Sparker" button until oven pilot lights. Hold safety bypass button depressed for 25 seconds then slowly release. If it does not stay lit, depress bypass button again and re-spark.
5. After pilot is lit, set oven thermostat knob. Oven should light in about 25 seconds.

WATER SYSTEM

1. Fresh water system is pressurized hot and cold water, turn water pressure switch on at master electrical panel. Turn on faucet (noise heard is pressure pump). Pressure pump should not run for long periods continuously. If it does, turn off, check for empty water tanks, tank valve closed/open, air lock or leak in line.

WATER TANK

1. One hundred seventeen gallons amidships supplies the water system.
2. Water tank is filled by on deck water fill (see FIG. 10).

HEAD

1. Read the instructions on the head before using.
2. TO FLUSH- turn knob to on position and pump the handle until good water flow is obtained. This will take about 12 or more hefty strokes.

   Good water flow with each use will reduce head odor.
3. TO CLEAR TOILET- turn knob to off position and pump dry. Between uses, leave knob in off position to prevent taking of water into head while boat is heeled over.

HOLDING TANK

1. The Y-valve is located in the head. THE ARROW ON THE HANDLE POINTS TO THE CLOSED POSITION. If the arrow is pointed to "tank" then discharge is overboard and tank problems are avoided. Be sure to check U.S. Coast Guard regulations in regard to overboard discharge.
2. Never leave the Y-valve between the two positions as serious damage may result to the head.

SHOWERS

1. The head shower operates off the shower faucet. Turn on water and adjust temperature. Push button on shower head to turn-on/off water flow.

ELECTRICAL SYSTEM

1. The battery bank is located under the starboard settee berth at the aft end.
2. The two battery switches are located under the navigation station mounted on a hinged panel.
3. Use shore power when available.
4. For proper battery positioning refer to page 44 of this manual.

5. Recharging is accomplished by running the engine or by using shore power and a battery charger.

INSTRUMENTS

1. Become familiar with all navigational instruments and electronics on-board. Read manufacturer's supplied manuals for operation.
2. Instruments are turned on/off at master electrical panel.
3. It never hurts to have instruments turned off when starting engine as some are very sensitive, like Loran C.

MASTHEAD LIGHTS

1. Turn on masthead light/anchor light when at anchor.

BILGE PUMPS

1. Manual handle should be kept in nav station or in lazarette locker shelf for easy access.
2. Manual pumps are located in the cockpit and in the main cabin. Insert handle into socket and vigorously pump up and down to activate suction. Generally, 10 to 15 strokes will draw water. If not check for leaky or loose connections.
3. Electric bilge pump- switch on control panel. Use manually as needed. Otherwise, float switch will automatically activate pump.

EMERGENCY GEAR STOWAGE

1. Life jackets are best stored for ready access to crew. Best location is in the optional cockpit locker.
2. All emergency gear should be stored in readily accessible locations.
3. Post a layout of the boat in the navigation station depicting the location of important emergency gear. Items to note might be:
    1. first aid kit
    2. day/night flares
    3. fire extinguishers
    4. life jackets
    5. float cushions
    6. horseshoe ring
    7. VHF and emergency VHF antenna
    8. safety harness
    9. radar reflector

DISEMBARKING

A clean ship is always a happy and safer ship. The following is a quick guideline to help maintain your yacht in a proper and seamanlike manner.

CLEAN UP

1. Use only "softscrub" or similar non-abrasives. Strong abrasives like "Ajax" mar gelcoat finishes and varnish.

GALLEY

1. Clean out ice box, drain and wipe daily.
2. Thoroughly clean stove burners.
3. Clean sink, counter tops and dry all wood surfaces.
4. Empty trash and replace with new garbage bag.
5. Wash and dry all utensils.

CABIN SOLE

1. Wipe cabin sole with damp mop or sponge, wash up stains, dry up water.
2. Pump out bilge.

GENERAL

1. Remove all personal items from vanity cabinet in head, small shelves and drawers/lockers in main cabin, forward, and aft cabins.
2. Clean under all berth cushions.

HEAD

1. Wipe all surfaces, dry up standing water, rinse the head bilge with clean water.
2. Empty holding tank and clean if used. Pump water with chemical deodorizer into holding tank.

EXTERIOR

1. Wash deck, hull, and cockpit with brush, cleaner, hose, and water.
2. Wash windows only with sponge or paper towel and windex...**NO ABRASIVES!**
3. Avoid using a brush or anything that will scratch windows, ports, and hatches.

OTHER IMPORTANT INSTRUCTIONS

1. Check inventory.
2. Fill water, fuel, and propane tanks.
3. Shut-off propane at tank.
4. Turn battery switch off.
5. Stow snatch blocks, genoa cars, winch handles, genoa sheets.
6. Close all hatches.
7. Secure all halyards.
8. Secure wheel amidships.

TAKING CARE OF YOUR J/44

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.

EXTERIOR MAINTENANCE

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. On areas difficult to wax, like nonskid, a coating such as "Armor All" will restore its original luster.

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.

EXTERIOR TEAK

Scrub the teak down regularly with a stiff scrub brush and fresh or salt water. If left untreated, it will get "dirty" and discolor rapidly.

To maintain its beautiful warm brown hue, keep the teak clean and apply liberal coats of high quality teak oil. Be careful when applying these oils that you do not stain the gelcoat, if this happens be sure to hose off deck and top-sides thoroughly.

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 TRI-FLON, 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 USE ACETONE OR TEAK CLEANER ON PORTS AS THEY WILL MELT AND BECOME "BLURRY."

STAINLESS/CHROME

Hardware like the steering wheel and pedestal, stanchions, bow/stern pulpits, 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.

INTERIOR MAINTENANCE

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

All solid and plywood teak surfaces have been either oiled or varnished prior to delivery.

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, the factory applies three coats and additional ones can be easily applied. Consult your dealer or a professional as to the best procedures. It takes great care, time, and patience to do the job correctly.

BILGES

Bilges are painted with airdry gelcoat to prevent water permeation and the accumulation of mildew. They should be washed regularly with strong solvents to keep them smelling clean and to prevent the fouling of bilge pumps.

STAINLESS

Stainless surfaces like the galley sink and faucets in the heads can be treated with "Never-dull" or other light abrasive stainless cleansers. Toothpaste also works well as a cleanser.

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.

ANNUAL MAINTENANCE

The following list has been compiled as a guide to check critical safety related components of the boat. It is important that maintenance inspection be completed each year to assure ongoing safety. This list is not all inclusive. It is intended as a guide only.

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 AND 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.

MECHANICAL SYSTEMS

___ Check stove fuel system, hoses, clamps, and shut-offs.

ENGINE AND DRIVE TRAIN 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 heater hoses, clamps, electrical wiring.
___ Check water filters.

WINTER STORAGE

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.

BATTERIES

For conventional "wet-cell" 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 and the electrolyte level (water) is full.

For "gel-cell" batteries (those supplied with the J/44)- simply check the batteries once a month to ensure they remain fully charged. Because the "gel" is of a special composition, it does not need replenishing.

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 ensure it is also drained from between the heater and the check valve installed in the supply line. 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 and pressure 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 AND 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.

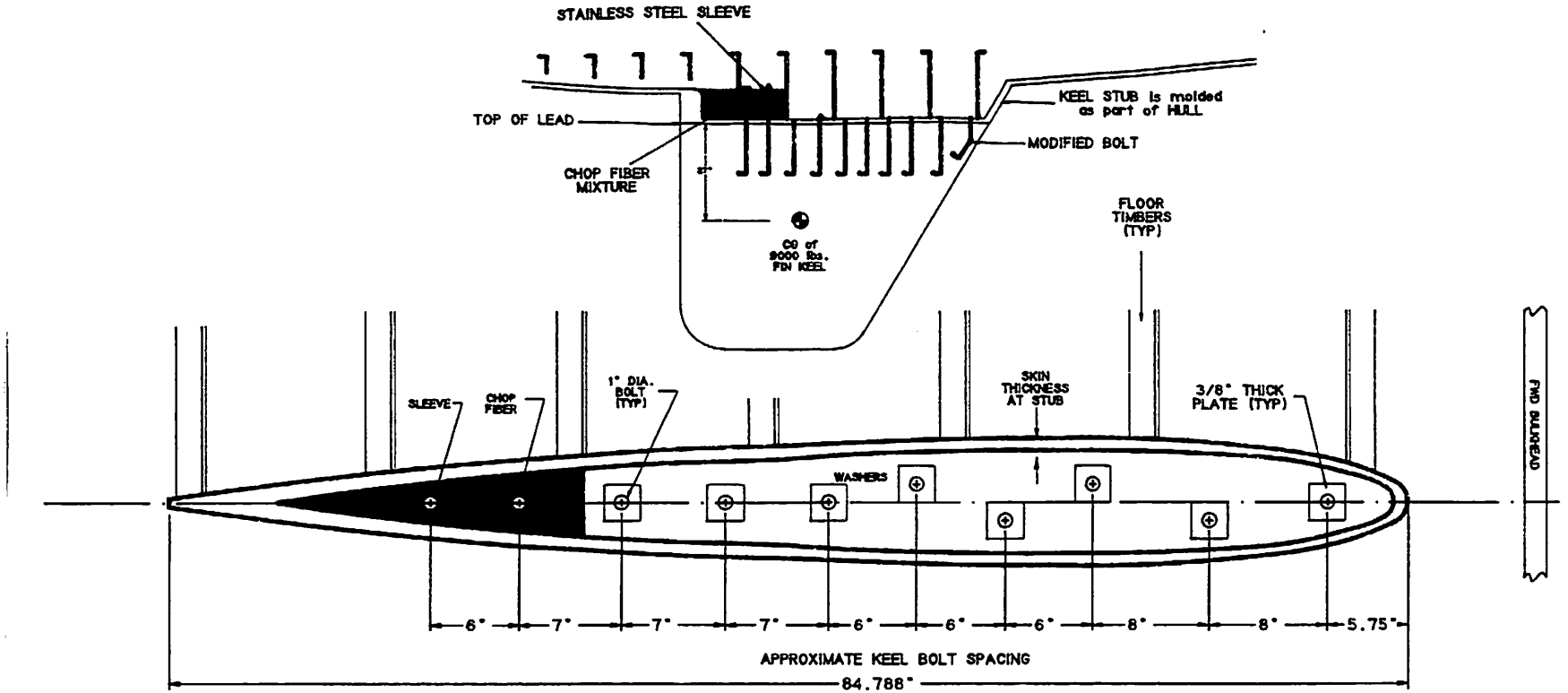
RIGGING SPECIFICATIONS

STANDING RIGGING

ITEM	SIZE	END FITTINGS
HEADSTAY	-17	HF-JAW/ STD. TURNBUCKLE
BACKSTAY	-17	MARINE EYE/ MARINE EYE
V1	-30	S.S. TIP CUP/ STD. TURNBUCKLE
V2	-22	S.S. TIP CUP/ TAPERED STEMBALL
V3-V4	-17	STEMBALL SPREADER BEND/ STEMBALL
D1	-17	STEMBALL/ STD. TURNBUCKLE
D2	-10	STEMBALL/ TIP TURNBUCKLE
D3	-8	STEMBALL/ TIP TURNBUCKLE
RUNNER	3/16"	GIBB HOOK/ FORK W/ "D" SHACKLE
CHECKSTAY	5/32"	GIBB HOOK/ HANDYLOCK TURNBUCKLE

RUNNING RIGGING

ITEM	#	DESCRIPTION
GENOA HALYD.	2	1/4" 7X19 SS SPLICED TO 1/2" XLS DACRON BRAID W/ SPARCRAFT #SS-6 SNAPSHACKLE, FLEMISH EYE
SPIN. HALYD.	2	1/2" KEVLAR/SPECTRA W/ #SS-6 SHACKLE, FLEMISH EYE
MAIN HALYD.	1	7/32" 7X19 SS SPLICED TO 1/2" XLS DACRON BRAID W/ SS CAPTIVE PIN SHACKLE, FLEMISH EYE.
POLE LIFT	1	3/8" KEVLAR W/ NICRO-FICO #11000S SHACKLE
REEF CLEW LINE	2	1/2" VLS DACRON BRAID WITH FLEMISH EYE
REEF TACK LINE	2	7/16" VLS DACRON BRAID
MAINSHEET	1	1/2" DACRON BRAID
TRAV. CONTROL	2	3/8" VLS DACRON BRAID WITH ONE EYE.
GENOA SHEETS	2	1/2" XLS SPECTRA BRAID
CHANGE SHEET	1	1/2" DACRON BRAID W/ SS-6 SNAP SHACKLE
AFTERGUY	2	1/4" 7X19 GALV. SPLICED TO 9/16" KEVLAR W/ #SS-1 SNAP SHACKLE AND DONUT GUARD.
SPIN. SHEET	2	7/16" XLS SPECTRA W/ SS-6 SNAP SHACKLE.
FOREGUY	1	3/8" DACRON BRAID
RUNNER WHIP	2	7/16" KEVLAR W/ ONE EYE, "D" SHACKLE
LT. SPIN SHEET	2	5/16" SPECTRA W/ NF#11000R SNAPSHACKLE.



J-44 KEEL MOUNTING INSTRUCTIONS

MATERIALS

#44044	10	WASHERS
#42031	10	NUTS
#48088	2	AFT KEEL BOLT SLEEVES
#29030	1	TUBE 5200 CAULKING
#48085	1	KEEL FIN
	1	KEEL BOLT TEMPLATE
#47016	1qt	EPOXY RESIN 37-139
#48003a	1	PINT EPOXY CATALYST H-31
#47018c	1-1/2	GALLON CHOPPED FIBER (W/ CATALYST)

STEP by STEP PROCEDURE

1. - FIT KEEL BOLT TEMPLATE TO KEEL (MODIFY BOLT HOLE LOCATIONS IF NECESSARY)
2. - DRILL KEEL BOLT HOLES (1-1/8" DIA)
   - SAND: BOTTOM OF KEEL SUMP
     TOP OF LEAD KEEL
3. - DRY FIT HULL TO KEEL. TOP OF LEAD SHOULD MATCH SUMP ALL AROUND PERIMETER. MAKE SURE KEEL IS SET VERTICALLY BY MEASURING FROM KEEL TIP TO SHEERLINE ON EACH SIDE
4. LIFT HULL APPROXIMATELY 5" ABOVE KEEL
5. COVER TOP OF KEEL W/ EPOXY. (SEE MIXING INSTRUCTIONS)
6. - LOWER HULL TO KEEL. EPOXY SHOULD: SQUEEZE OUT AROUND PERIMETER
   - RE-CHECK KEEL FOR VERTICALITY
7. -WHEN KEEL FITS PROPERLY INSTALL 8 FWD KEEL BOLTS. WASHERS & BED THEM IN 5200.
   -INSTALL NUTS. TIGHTEN SNUG.
8. -INSTALL KEEL BOLT SLEEVES ON AFT TWO BOLTS. BED THEM IN 5200.
   -INSTALL 2 WASHERS ON TOP OF SLEEVE THEN NUTS. TIGHTEN NUTS SNUG.
9. LET CURE 12 hrs. OVERNIGHT.
10. REMOVE THE AFT 2 NUTS & WASHERS OVER KEEL BOAT SLEEVES.
    -FILL KEEL SUMP FLUSH TO TOP OF SLEEVES WITH CHOP FIBER MIX. (SEE MIXING INSTRUCTIONS).
    -INSTALL WASHERS & NUTS TIGHTEN SNUG.
    -LET CHOP FIBER CURE.
11. TIGHTEN ALL NUTS TO 315 ft.lbs.
12. FAIR KEEL/SUMP JOINT

MIXING INSTRUCTIONS

EPOXY

- EPOXY RESIN 37-139 (1 QUART) } 2/1 MIXING RATIO
  EPOXY CATALYST H-31 (1 PINT) }
- THICKEN WITH MICROGLASS (white powder) UNTIL MIXTURE WON'T FALL OFF MIXING STICK (approximately 10 lbs.)

CHOPPED FIBER

KEEL SUMP FILLER MIX

- MIX 2 qts. OF RESIN FIBER AT A TIME WITH 7cc OF MEKP CATALYST AT 60°-70° F. (this material must be mixed well)
- REPEAT ABOVE PROCEDURE 3 TIMES FOR A TOTAL OF 6 QUARTS.