# ERICSON 32 OWNER'S MANUAL

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# ERICSON 32 OWNER'S MANUAL INTRODUCTION

The Ericson 32 is the product of the finest elements of Ericson Yachts. A heritage which represents the most well-founded concepts in sailboat design and engineering available. At a time when many others embrace planned obsolescence, you can take pride and confidence in your Ericson 32, for she has been designed, engineered and manufactured to virtually eliminate structural fatiguing.

Dating from 1966, Ericson Yachts has been a pioneer in construction techniques for fiberglass yachts. Ericson's research, developement and design has led to yachts of unparalleled excellence in integrity and sailing performance.

It is our intention at Ericson Yachts to help you, as an owner, derive the most pleasure based on a more detailed understanding of the functions of the features and sailing qualities of your Ericson 32. To accomplish this, we are going to familiarize you with topics which are not always covered in the scope of an "owner's manual". We will avoid, whenever possible, listing a heading and referring you to a "qualified mechanic, rigger, boatyard, etc.". To be sure, there may be jobs beyond the scope of your time, tools, ambitions, or maybe even your expertise, but, you can at least understand what is required to maintain the appearance and integrity of your Ericson 32 and thereby become your own "expert".

Heat, cold, ultraviolet, abrasion and corrosion, in addition the stresses and strains of wind and wave, create a harsh environment in which you store and operate your boat. All of these factors demand that a regular maintenance schedule be adhered to.

With the advent of fiberglass construction, yachts became regarded as "maintenance-free". Relative to their wooden forerunners, this is true. Refinishing exterior surfaces and rot prevention were ongoing projects on the wooden boats. While these maintenance procedures have been reduced to a minimum, technology and owner demands have produced a new generation of more sophisticated yachts with other, albeit less anduous, maintenance considerations.

Broader knowledge on the part of you, the owner-skipper, is essential in developing the self-confidence and self-sufficiency which will allow you the most return on your Ericson 32 investment.

Please read this manual completely and review it for help when a particular item needs attention. Use it for the maintenance guidelines suggested and pay particular attention to "cautions" and "notes" for safe operation.

Since suppliers change due to component availability etc., we will sometimes refer you to the specific product instruction manual which should be kept with this manual.

We hope that most of your questions will be answered by the contents of this manual, but should you have any further questions or comments, please contact your local Ericson Dealer or Ericson Yachts. As in any undertaking, there is more than one way to "skin a cat". We don't consider our pronouncements to be the last word but, rather, suggestions to lead you in the right direction. We will attempt to provide you with guidance throughout the owner's manual which we feel is the best available at the time of publication. Please temper this with your own experiences and use common sense in caring for your Ericson 32. We have tried to go "one step beyond" in

providing you with an extensive breviary on the care and maintenance of your yacht.

You have chosen one of the world's finest yachts. We hope this manual will redouble your joys of ownership.

#### 1. HULL AND DECK

1.1 Description: The hull and deck are constructed of fiberglass cloth, roying, uni-directional roving and matte, laminated by hand, to maximize strength and consistency through-out. Local reinforcement is added as additional laminate at the rudder post area, keel boss area (both the fillet-radius and fore and aft keel ends), chainplate area, and transom-hull corner. Additionally, a uniquely-engineered Tri-axial Force Grid™ (TAFG) floor structure is bonded to the interior of the hull to significantly enhance flexural rigidity.

The deck is balsa-cored on all horizontal surfaces, except where plywood is used in higher stress areas such as stanchion and winch mounts, genoa tracks, mast partner, cockpit sole and hatches. Supplemental layers of roving and undirectional roving have been applied in high stress areas such as the anchor well/foredeck area, mast partner, companionway entrance, etc.

The deck design is clean and functionally proportioned, incorporating a reasonable balance between cockpit and cabin dimensions. The cockpit is "T"-shaped to accompdate wheel steering. A molded-in, contoured helmsman's seat provides "locked-in" comfort port and starboard for upwind steering, and an excellent vantage point on center for good visibility downwind. A propane locker and lazarette storage are located beneath. All seat edges are bevelled and cockpit coaming seatbacks cambered for comfort when heeled or upright.

The cabin top has a raised center portion into which the cabin top handrails are mounted. The result is increased interior headroom while maintaining a clean profile, not distorted for the sake of interior volume.

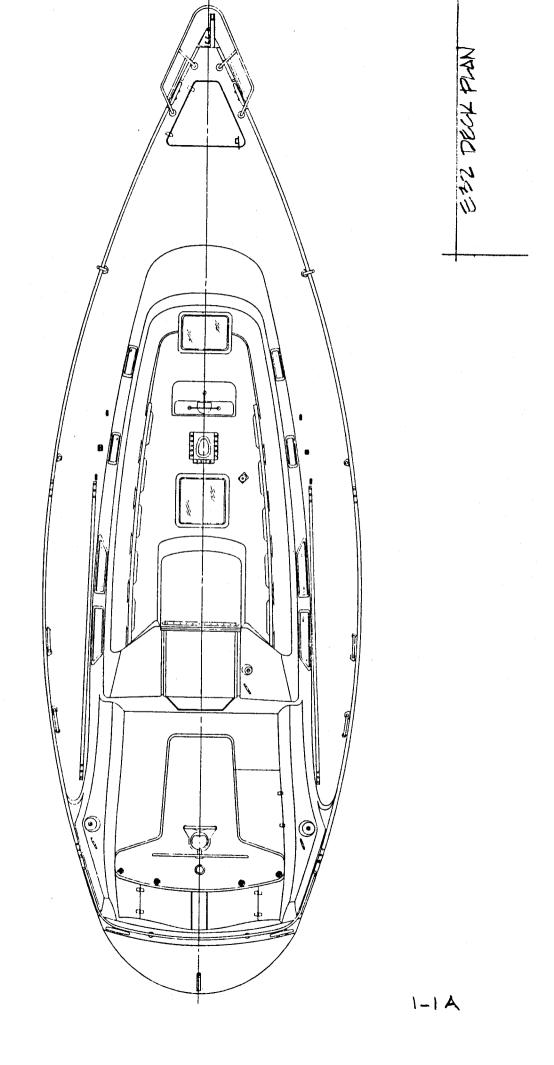
The exterior finish is a color-pigmented resin known as gelcoat, approximately 15-20 mils thick.

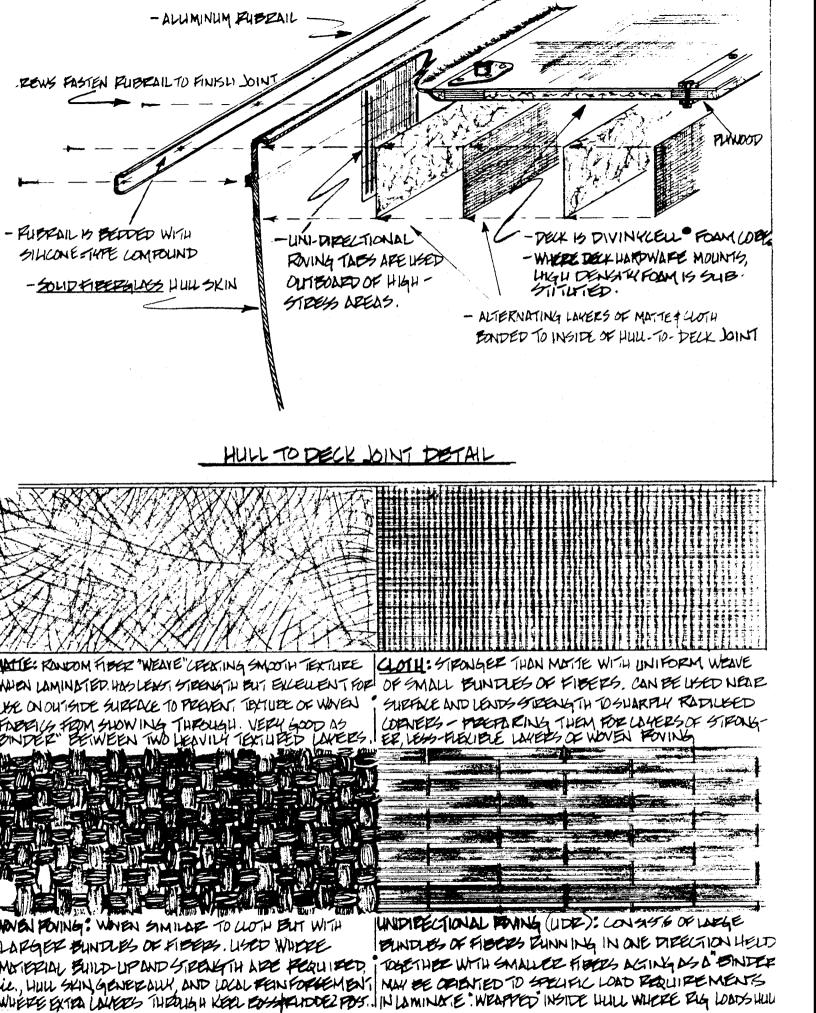
The deck is bonded to the hull using an interior fiberglass joint constructed of alternating layers of fiberglass cloth and matte. The hull-to-deck joint is finished off on the exterior with a functional aluminum rubrail. Matte and unidirectional roving are used in key stress areas, including the stem, chainplates, genoa tracks, etc.

Each Ericson 32 is identified by an individual "Hull Identification Number" (HIN), which appears on the starboard upper corner of the transom and also on top of the port engine bed near the forward end. The first three letters, "ERY", designate the manufacturer, Ericson Yachts. The next two numbers, "32", designate the model and the following three numbers are the hull number. Following the hull number is a letter which corresponds to the month of manufacture where, A=January, B=February, C=March and so forth. The first of the last three numbers is the last digit of the calendar year in which your boat was built and the last two numbers represent the model year.

1.2 Iriaxial Force Orid Floor System: The structural backbone of the Ericson 32 is the latest generation of the Ericson Yachts Tri-axial Force Orid System (TAFO). The TAFO is a hand laminated unit with multiple load-bearing, indexing and maintenance functions. Use of the TAFG provides high strength and stiffness without using core sandwich construction on the hull skin. Core material can, in some cases, provide a path for water to work its way between the inner and outer fiberglass skins of the sandwich, causing delamination. Ericson's solid fiberglass skin construction has lead to the Ericson Yachts 10-Year Hull Warranty a copy of which is contained in this manual.

The TAFG is composed of hand-laminated applications of matte, cloth, roving and uni-directional





roving with a gelcoat-finished surface, molded on its own mold and bonded to the hull skin before the hull leaves the mold. Since the TAF6 adds structural rigidity to the hull, this is the first stage of the tolerance control process. It is bonded to the hull all around its perimeter and interior cutouts with fiberglass cloth and also pressure bonded in the keel fillet area. Finally, the keel bolts are fastened through it. Since the TAF6 adds structural rigidity to the hull, this is the first stage of the tolerance control process.

Uni-directional roving (UDR), is used in the floor beams and around the chainplate terminal bosses of the TAFG to maximize the strength-to-weight ratio of the entire structure. (see the illustration on the following page for an explanation of the types of fiberglass material used in construction).

The TAFG functions in the following ways:

- stiffens the hull longitudinally
- supports mast compression loads
- accepts rig tension loads
- distributes keel loading
- provides accurate alignment and support for the engine
- locates and provides anchoring for interior bulkheads and furniture
- locates and provides conduit for plumbing and wiring
- provides baffled sumps for bilge and shower water, and containment of engine fuel and lubricants
- provides a gelcoat finished bilge surface for easier cleaning and maintenance
- provides clean and organized locker areas beneath bunks in the cabin and lockers beneath the cockpit

The overall effect of the TAFG is to enhance the sailing characteristics, simplify maintenance, and increase the durability of the Ericson 32.

Since the hull is quite stiff longitudinally and mast compression loads are transferred to the same members which take rig (shroud) tension loads, the rig can be tuned more accurately, the headstay will be more effectively tensioned, and sailing performance is improved, especially to windward. For rig tuning instructions see Section 6.2.

L.3 Keel: The keel is 4200 pounds of cast lead containing 4% antimony for hardness. It is attached to the hull at the Tri-axial Force Grid floor system by 7 stainless steel "J" bolts cast into the keel (6 are 1", 1 is 1/2"). The TAFG and keel boss fillet radius distribute the keel loading over a wide area of the hull adding to the structural integrity of the keel attachment point and minimizing the harmful effects from loadings which occur at the keel ends as a boat moves through the water or is grounded. Even though firmly attached, a small crack may appear between the keel and the keel boss on the hull. This occurs in the fairing material and may be refaired annually at haulout time if desired using polyester filler or, filler and fiberglass cloth.

Keel configurations available: Standard keel - draft 6'-2" Shoal keel - draft 4'-4"

The keels are designed to NACA section 65-012. If templates for accurate keel fairing are desired, they can be generated from the information regarding this section in <u>"The Theory of Wing Sections"</u>, a book that can be found in some libraries or, the technical or engineering section of many bookstores.

- 1.4 Rudder: The rudder is constructeed of a high-density foam core sheathed with a fiberglass skin. A stainless steel web in the rudder center attaches to a large, 3-1/2" stainless steel rudder shaft. A bronze sleeve where the rudder shaft enters the hull and a bronze flange under the cockpit sole provide support bearings for the rudder post. Orease fittings are installed in each of the bearings. For maintenance and cautions concerning the rudder, please see section 1.11.2.
- **1.5** General Exterior Maintenance: The fiberglass gelocat surface is highly resistent to the natural elements of the marine environment but, some care and maintenance is required to keep your hull and deck in a clean and attractive condition. In addition to the sun, salt and other natural elements in the air, waterbourne solvents and particulates are also present and potentially harmful to the exterior finish.

Since the gelcoat surface is somewhat porous, these substances can be absorbed, sometimes causing permanent stains. A good coat of paste wax will help prevent this from happening and provide an attractive luster to the hull. Marine fiberglass waxes are available at your local chandlery.

CAUTION: DO NOT WAX THE NON-SKID OR OTHER HORIZONTAL SURFACES ON WHICH PEOPLE WALK. IF WAXED, THE DECK WILL BECOME SLIPPERY AND DANGEROUS TO WALK ON.

Cleaning fiberglass surfaces should be done with the mildest product that will do the job. Soap and detergent are products to start with. Avoid using gritty cleaners unless absolutely necessary. Only use acetone, kerosene and other solvents when absolutely necessary. Acetone can actually work to dissolve the surface finish, especially if used excessively or allowed to puddle.

CAUTION: DO NOT USE SOLVENTS OR CLEANSERS ON THE LEXAN OR PLEXIGLASS HATCHES OR PORTLITES. ALSO, AVOID USING BRISTLE BRUSHES ON THESE SURFACES SINCE THEY MAY CAUSE SCRATCHES.

Years of exposure to sunlight and caustic substances will cause the gelcoat to oxidize. Keeping the surfaces waxed will minimize this condition. A nearly original luster may be restored by using a rubbing compound (obtained through your local marine or outo parts store), applied with a buffer or by hand. If you do use a buffer, make certain that the grade of compound is suitable for machine use. This type is usually of a finer grit than hand rubbing compound. If you are to use an electric buffer, try to undertake the project on dry land or use the utmost caution.

CAUTION: DO NOT USE ANY ELECTRIC EQUIPMENT AROUND WATER -- DANGEROUS ELECTRIC SHOCK COULD RESULT.

Do not rub any more than is necessary, especially with a machine, since the abrasive compound may rub through the gelcoat.

Apply a coat of wax immediately following the rub-out. You will see that the time and effort is well spent.

On a practical note: Red wine spills may stain the gelcoat - the alternative is up to you.

## 1.6 Repairs to Fiberglass Surfaces:

- 1.6.1 Minor Scratches: Scratches which do not penetrate the gelcoat may sometimes be removed by rubbing them out with a compound in a more concentrated manner that described for general shine restoral, described above. If this is insufficient, a rub-out with 600 grit wet-or-dry sandpaper will help "feather-in" the scratch. Follow by a rub-out with compound and a coat of wax.
- 1.6.2 Minor Scratches Penetrating the Gelcoat, and "Crazing": "Crazing" is a cosmetic condition of superficial cracks resulting from stress concentration, flexing, or impact. It is ususally found near corners but, may be found anywhere in the gelcoat. The deck of your Ericson 32 has been designed with generous curves in all corners to minimize stress concentration and, therefore, crazing.

Where crazing or a scratch has occurred, try filling with an application of gelcoat, which is available in a patch kit from your Ericson dealer or the Ericson Yachts Customer Service Department.

Gelcoat, as you receive it, is uncatalyzed. In order for it to harden and dry, a catalyst (MEK peroxide) must be added. Just a few drops per once of gelcoat, after the gelcoat is thinned, will harden it. Too much MEK will reduce working time until insufficient time remains for application. MEK peroxide can be obtained through your local chandlery.

CAUTION: USE GREAT CARE IN HANDLING BOTH GELCOAT AND CATALYST, SINCE, BOTH ARE POISONOUS AND IRRITATING TO THE SKIN.

Suggested gelcoat application and finishing techniques follow:

If a filler material is required to bring the scratch repair flush with the surface again, many good and easy-to-use polyester fillers are available for this purpose. Use a light-colored filler, if possible, since it will be easier to cover with gelcoat. A product such as "Bondo" will do nicely if a lighter-colored filler cannot be found. If the scratch is a deep one, several coats of filler may be required. A light sanding between each coat will improve both adhesion and fairness of the filler.

Many professional fiberglass repairmen will mix a combination of polyester resin, glass "beads" (a powder-like material), and ordinary talcum powder to create a polyester filler paste which is light in color and relatively easy to pigment. Pigmenting this mixture with gelcoat will provide a good color base for the gelcoat finish. Proportions in the above mixture will vary depending on personal preference but, developing a filler of a paste consistency is desired.

After the filler has "set-up" (usually requiring several hours curing time), sand until fair with 220 grit wet-or-dry sandpaper. Set-up time will vary with temperature but, usually takes several hours to cure. Do not attempt to make a repair unless the surface temperature is

approximately 65 degrees. A heat lamp will help on colder days.

# CAUTION: EXTREME CARE WHEN USING ANY ELECTRICAL TOOL OR OBJECT NEAR THE WATER. DANGEROUS ELECTRIC SHOCK MAY RESULT FROM IMPROPER USAGE

Do not heat the surface any warmer than necessary, since blistering of existing fiberglass, as well as the repair could result.

Gelcoat itself will not cure in the air. A surfacing agent (special wax) must be added or, polyvinyl alcohol (PVA) must be sprayed over the repair. Plastic food wrap, such as Saran Wrap, can also be laid directly over the top of the wet gelcoat to seal it from the air instead of wax or PVA, if the repair is just a few square inches. Using the plastic wrap will both cure and smoothen out the new gelcoat, if carefully done.

Application may be either with a brush or with a freon spray gun, such as the "Spra-Tool", found at hobby and automotive shops. If gelcoat is to be sprayed, add acetone to the gelcoat to thin it to a consistency of light oil. Add a lesser amount if it is to be brushed. Remember to thin before adding the catalyst.

After the new gelcoat has cured (usually 4–6 hours), remove the plastic covering or, wash off the PVA with water, and sand with 400 and then 600 grit wet-or-dry paper until smooth. Be careful not to sand through the edges of the patch. Follow with rubbing compound and a coat of wax.

Color matching is sometimes difficult, expecially when repairing an older boat or darker colors. Usually the patch will fade into the surrounding area with time.

1.7 <u>Teak Care and Maintenance</u>: The hatch boards and handrails are made of solid teak. Teak has an abundance of natural oil, making it one of the most durable of woods and, ideal for use in yacht applications. However, aging may cause some splitting and graying. Proper care will help prevent this and maintain a richer-looking golden brown color.

One of two methods for preserving a new looking finish may be used, each producing a different effect:

- <u>— Cleaner and Sealer</u>: A two-step treatment utilizing a cleaning and bleaching agent applied with a brush or sponge followed, after rinsing and drying, with a sealer. The sealer may be a mixture of oils and resins. This method is easiest and least laborious. **Be sure to thoroughly rinse bleach off fiberglass surfaces to avoid bleaching the gelcoat.**
- <u>- Yarnish</u>: Varnishing will produce a glossy, durable finish on teak as on most woods, but application and maintenance requires more time and care.
- 1.7.1 Cleaning and Oiling: Your Ericson 32 comes to you with the teak already sealed with several coats of oil. You may wish to supplement these by cleaning with a simple, one-part teak cleanser, such as "Teak-Brite", followed by an application of a teak finish. Many brands are available.

When cleaning, a scrub brush, sponge or plastic "3M" pad may be used. Do not use steel wool, since the filiments will break, settle on the gelcoat and cause rust stains. Scrubbing hard in the direction of the grain will remove some of the softwood in the teak so, let the chemicals do the work and scrub as lightly as possible. If scrubbing does remove the softwood, sanding will

restore smoothness to the surface. Be sure to rinse the cleaner well, allowing it to remain on the fiberglass may cause some bleaching or discoloration. Allow the wood surfaces to dry. Applying the sealer and oil finish to damp wood will not let the sealer penetrate. Application may be either with a paint brush or clean cloth. If dry spots and uneveness in texture appear after the sealer has been applied, chances are that the sealer was applied while the wood was still damp. Simply allow longer drying time and reapply the sealer or oil.

On older teak that has grayed, a stronger cleaner and bleaching asgent, such as "Te-Ka" or "Tip-Top-Teak", will probably be required. These are two-part products using cleaners and brighteners. Great care and plenty of rinse water should be used during application, but they do an excellent job of restoring weathered teak.

1.7.2 <u>Yarnishing</u>: In preparation for varnishing, any finish oil treatment should be removed with one of the two-part cleaners described above. Next, sand smooth with 120–180 grit sandpaper. Apply a varnish sealer compatable with the varnish you choose. With a good quality brush, apply 3–4 coats of varnish allowing drying time between coats as recommended on the can. Be sure to use a good quality varnish, since revarnishing time will come around soon enough (approximately every four months).

Covering the varnish work when your boat is not in use is highly recommended. You or your dealer can find a good canvas shop to make covers to fit hatch boards and just about anything else.

1.7.3 Removing Oil and Yarnish from Fiberglass: Whether varnishing or oiling your teak, try to avoid getting either substance on the fiberglass. As mentioned above, the surface is somewhat porous and a tough stain may result. Extra time spent masking the fiberglass next to the wood parts to be oiled or varnished may save on clean-up and prevent staining problems.

Teak oil is particularly troublesome if it is allowed to stain the fiberglass. If this does occur, use very small amounts of Te-Ka on the stain area with a brush, rinsing frequently. The stain should lift out. Be careful not to let any Te-Ka remain. If Te-Ka cannot be found, there are other products now available for stain removal on fiberglass, most of which have exalic acid as the common ingredient, also the active agent in the teak cleaners.

As always, refer to the instructions and cautions written on product containers, since many of the products referred to are caustic.

1.8 Rubrail Care and Maintenance: The aluminum rubrail on the Ericson 32 serves both aesthetically, in finishing the hull-to-deck joint and, functionally, protecting against the inevitable contact with a piling, seawall or another yacht.

Cleaning the aluminum is simple, since it is resistant to most cleaners, but remember that it is easy to drip cleaners onto the fiberglass. Acetone and milder cleaners are recommended. Do not use bronze wool to apply any cleaners. Corrosion can result from contact between the two materials if filiments of the bronze remain on the aluminum.

If the rubrail is severely damaged, it may be replaced with relative ease. To order a replacement, contact your dealer or Ericson Yachts.

1.9 <u>Lifelines</u>, <u>Stanchions</u> <u>and Pulpits</u>: Some of the most depended upon and, proportionately, least inspected components of deck hardware are the pulpits, stanchions and lifelines. Extra care and maintenance devoted to them could easily prevent injury or a crewmember overboard.

General care for the stanchions and pulpits is primarily cosmetic, consisting of cleaning and an occasional application of "Nevr-dul" to preserve the shiny finish of the stainless steel. Even stainless steel is subject to some rusting, especially in a salt and solvent laden environment. Nevr-dul will both clean and produce a rust inhibiting film. While applying it, you will have the opportunity to check all welds, setscrews, and parts for cracks or fractures caused by constant working from people and lines bearing against them. There have also been cases of fractured welds and damage suffered as a result of unreported collisions while the boat is moored.

Lifelines should be inspected periodically for broken strands, particularly where they enter terminal fittings. The terminal fittings themselves should be checked for cracks. Pressure caused by oxidation from moisture in the wire strands and fittings may, with age, form tiny hairline cracks. Replacing lifelines every three to four years is good preventative maintenance.

Cleaning will make cracks more visible and a magnifying glass will help too. If you are in doubt, replace the suspected weak link. Also, check lifeline turnbuckle locknuts and keeper pins to be sure they are properly secure. There are many documented cases of failed lifelines on sailboats.

Since stanchions, in particular, are subject of a variety of loads, they may, from time to time, break the caulking seal resulting in a water leak. Simply unboil them, clean off the old compound and reseal with any good pliable sealer, such as Boat-Life's "Life-Caulk" or 3M's "5200". Silicone sealants are <u>not</u> recommended for this application. Zipper access has been provided in the soft headliner on the underside of the deck to make access to nuts and bolts easy.

1.10 Iroubleshooting and Repairing Leaks: Although your Ericson 32 has been designed and engineered to prevent leaking; working, flexing, and aging of caulking compounds may produce leaks, as will happen on any yacht. Although a nuisance, the task of tracing and repairing a leak is not all that uninteresting.

Much thought has gone into the interior of the Ericson 32 to make hardware and other fastened components easily accessible for maintenance. Zippers in the headliner are just one example.

If a leak source is not immediately apparent, some helpful guidelines for tracing leaks follow.

With a hose running slowly, start at the lowest point that could contribute to the leak and allow the water to run in that area for 10-15 minutes. The time depends on how much water is noted from the leak in sailing or rainy conditions. For example, if water appears to be coming in from the area of the sheer (where the hull and deck meet), the lowest point is outboard of the aft end of the aft main portlite (window). Water could be coming from a stanchion somewhere forward or aft of this point and running to the low point. The presence of liner zippers here is particularly helpful.

NOTE: A leak at the hull to deck joint is highly unlikely.

After checking along the sheer, work inboard and to points up the cabin side. When the source of the leak is determined, remove the fitting. Carefully clean the surface of the fitting and the deck with a putty knife and, if need be, use a sparing amount of acetone.

Caulk the deck liberally so that when the fitting is bedded, some compound will squeeze out.

Also, be sure to add caulking compound to the upper threads on each fastener, otherwise water may travel down the threads. Masking tape applied to the deck surface around the perimeter of

the fitting will aid in clean-up. Acetone may be used to clean up polysulfides after excess is removed with a putty knife. Applying a cold water spray to the bead of caulking around the fitting will accelerate the skinning-over process for easier trimmming and cleaning.

Just a word of advice here - almost without exception, trying to stop a leak at a fitting without removing it and rebedding it, by caulking around its perimeter, will not be effective. The end result will be the addition of an unsightly mess to an aggravating leak.

1.11 Underbody Maintenance and Paint: Familiarization with the Ericson32 underbody and underwater components is important in knowing exactly what needs to be maintained, including the rudder, keel surfaces and thru-hulls. In the event of fouling on anchor lines, chain, mud or other types of bottoms, thorough knowledge will enable more effective action to correct the problem.

Lifting sling marks should be placed unobtrusively near the rail so that, in a yard where the operators may not be familiar with your yacht, they may get the lifting slings in the proper spot, avoiding a bent propeller shaft, etc.

1.11.1 Bottom Paint: Your boat is shipped from the factory with one coat of primer and one coat of bottom paint as standard. It is preferable to have this annual cycle occur at the beginning of each spring to maximize seasonal sailing performance.

Between annual haul-outs, cleaning by a diver will keep performance-inhibiting growth off and keep you abreast of the condition of the shaft, strut, thru-hulls and zinc. We recommend a diver's inspection every three months.

- 1.11.2 Rudder Maintenance: Rudder maintenance is a relatively simple and, obviously, essential operation at haul-out time.
- A. Check to make sure that there are no cracks or fractures in the fiberglass skin which will allow water into the foam core. If any exist, grind out the fiberglass in the area of the crack, allow moisture to dry out, and repair using fiberglass cloth and resin. Sand and follow with filler for fairest results. Water between the skin and the foam will heat up and vaporize or freeze when your Ericson 32 is in dry land winter storage and produce a large "star" crack in the outer skin. This can be repaired with light fiberglass cloth and resin.
- B. Keep the rudder shaft greased. A good waterproof wheel-bearing grease will do. A "zerk" fitting is provided on the bearing plate under the cockpit sole and at the lower sleeve. (See illustration on page 3-10A).
- C. Shaft play may increase over the years, as a function of wear. A good remedy is to disassemble the steering cables, quadrant, (or rudder post cap, if fitted with tiller steering), slide the rudder out, and fit very small shims of teflon or some equivilent material. In the future, the condition of the shims may be checked at the annual haul-out. Keeping the wheel brake engaged when the boat is not in use will reduce wear on the shaft and steering system.

An alternate system of reducing play caused by wear, is to use the method of epoxy-injection prescribed by Gougeon Brothers, Inc., using "West System Epoxy. For further information on this process contact, Ericson Yachts' Customer Service Department or, Gougeon Brothers, Inc., 706 Martin, Bay City, Michigan 48706, (517) 684-7286.

D. Check the condition of the packing in the rudder shaft packing gland and replace if necessary.

It will need replacing if water leaks in while under way and after the two bronze flanges have already been adjusted together. (See Section 3.5.8-H)

- E. Whenever your boat is hauled-out and the rudder is not being painted or worked on, it should be kept covered with cardboard or some other light-colored material which will shade and insulate it. Heat from the sunlight tends to build up inside the skin and sometimes causes blistering of the rudder's surface. If this occurs, repair with fiberglass cloth and resin as previously stated.
- 1.12 Corrosion Consideration and Zincs: Dissimilar metals develop different electrical potentials when immersed in an electrically conductive solution. For our purposes, this solution is any containing ions and minerals salt water for example. In addition to the galvanic electrical currents created by these metals, stray electrical currents from other sources such as dock power lines, generators and battery chargers on other boats, even a damaged wire on your boat, may have a corrosive eroding effect on underwater fittings. Corrosion and deterioration by stray currents is called electrolysis.

All the metallic surfaces in contact with the water, including those of your engine raw water cooling system, propeller shaft, strut, and any metal thru-hulls, are subject to electrolysis. To prevent electrolytic and galvanic destruction, a <u>zinc collar</u> should be installed on the propeller shaft.

In essence, when corrosion takes place, these metals are "giving up" electrons, undermining the integrity of the metal. This phenomenon shows up as severe pitting and, in more advanced stages, crumbling of the material. Bronze turning to a pink to pinkish-orange color is evidence that some corrosion has taken place. The zinc will give up its electrons (material), more easily than the bronze, and will corrode first. The zinc will become, and is known as, a sacrificial anode.

The standard thru-hull fittings and seacocks used by Ericson are manufactured from a material called "Zytel", a very hard, durable plastic which is impervious to corrosion.

Since the rate at which the zinc deteriorates will vary depending on many factors, it may well disappear before the annual haul-out. Therefore, it is highly recommended that its condition be checked periodically by a diver. The fee for checking and replacing a zinc would be a small fraction of what repairs from corrosion damage might be. The protection and peace of mind will be worth it.

1.13 Deck Hardware Maintenance and Installation: As the scope of your experience with your Ericson 32 widens and your particular needs are determined, you may want to install additional deck hardware and accessories. In most cases, this is easily done. Be sure to consider the requirements of the fitting loads, compatability with existing functions, and proper fasteners and backing plates.

Included in this manual are drawings suggesting additions to the standard deck layout. Shown are ideas on leading the reefing lines aft and adding spinnaker gear. A blank deck plan is also included to be copied as a worksheet for your own plans. You can also consult your dealer for help.

When installing hardware, reference to our general layout plans will give you a good idea of locating fittings where thru-bolting may be done easiest. The final location should be determined by unzipping the headliner and checking for wiring, trim or other components which

might be damaged when drilling. When drilling through in areas where the headliner cannot be pulled far enough away to avoid the risk of damaging it with the drill or other sharp object, lay a piece of firm material such as 1/4" plywood or thick cardboard between the deck and liner to protect it.

Wherever fittings are bolted through the deck (as most should be), a backing plate of aluminum or stainless steel is recommended to avoid fracturing the interior fiberglass surface. A fitting which is "backed" is less likely to flex and become a future leak or cause damage to the fiberglass and core around it. Be sure to use enough caulking compound in the manner described in section 1.10.

Oreat satisfaction can be derived from rigging your Ericson to suit your personal needs, and frustration can be avoided by consulting our layouts and your dealer. Also bear in mind that, if you anticipate future hardware additions, it is wise to take the time to sketch a master deck plan in order to avoid, as much as possible, moving existing fittings. Use the deck plan in this chapter as a guide or to make copies from.

Once installed, deck hardware is fairly simple to maintain. While winches should be taken apart and properly cleaned and lubricated, most of the hardware, (including the winches between lubrications), will benefit from a good direct rinsing with fresh water. Parking lot dust and other airborne particulates work into the bearing surfaces as well as salt residue.

A word about winch maintenance: Manuals are available from the individual winch manufacterers (Barient or Lewmar). They contain suggested maintenance schedules. In any case, for good basic performance from your winches, clean and lube them at least twice a season. Servicing them less frequently can lead to early parts replacement or winch failure, a potentially dangerous situation.

Follow the recommendations of the manufacturers but, in general, try not to overlube your winches. Use grease on gears but, <u>use oil only on the pawls</u>. If excessively applied, lubricants will run out on the deck when the winch is doused with water.

<u>Note:</u> Teflon greases are not recommended for use inside aluminum drum winches. Some Teflon greases will promote galvanic action and cause corrosion of the drum, drum bearings and spindle unless the winches are cleaned and lubed as frequently as once a week.

#### 2. INTERIOR

2.1 General Description: The interior, which consists of a forward cabin, head, main salon and galley, includes many features that enhance comfort and convenience both at sea and on the mooring, (see accommodation plan in Appendix B.1). Except for bunk tops, formica countertops and head bulkheads, all interior woodwork is solid teak or teak marine plywood. The bunk tops are firmarine plywood laminated with formica. The overhead liner is leatherette and cushion upholstery is either nylon or naugahyde.

The operation and maintenance of plumbing, electrical and mechanical systems will be treated in specific chapters elsewhere in this manual.

2.2 Ini-exial Fonce Grid Floor System: (Also see Section 1.2.) The Tri-exial Fonce Grid floor system incorporated into the construction of the Enicson 32, aside from its structural advantages, has many functions connected with the interior systems and maintenance. Of prime importance is its function as a gelcoat-finished sump for bilge water and shower water. The engine pan is also molded into the floor system, but kept separated from the bilge water to prevent any oily materials from entering the general bilge area. The floor beams act as baffles, reducing the sloshing action of any water present and aiding in its removal by providing localized sumps for bilge pump and shower drain pump pick-ups.

Attention has been paid to the usual problems associated with the bilge. The shower drains to a separate sump and is pumped directly overboard, which prevents the accumulation of bacteria in the bilge. Bacteria is the main cause of the rancid odors often associated with improperly designed bilges. Iceboxes drain overboard via the standard saltwater foot pump into the galley sink and not into the bilge area, as often found on other yachts.

**2.3** <u>Bilge Maintenance</u>: An added feature afforded by the molded floor system is its glossy gelcoat finish. Bilges may collect all types of dirt and filmy substances but, the glossy finish allows easier cleaning. Some of these contaminants can generate unpleasant odors. In some cases fumes can be generated producing an environment so corrosive that it will actually tarnish brass and chrome fixtures.

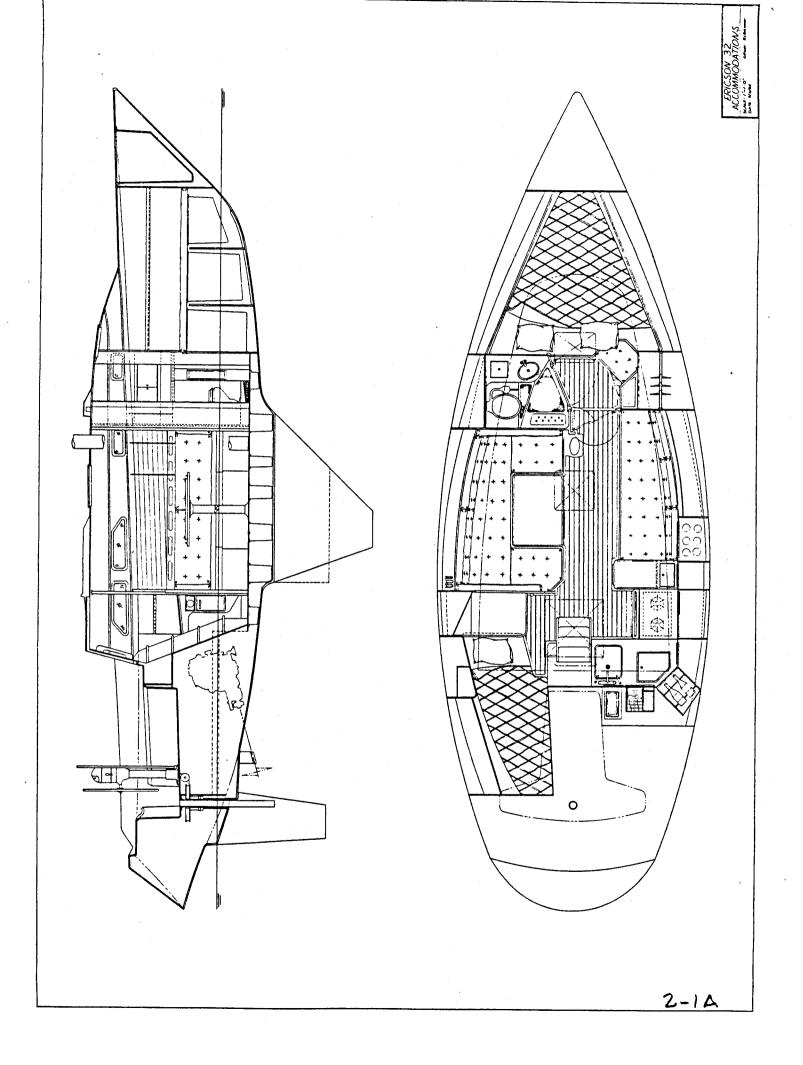
Several biodegradable liquid bilge cleaners are available that can be added to bilge water to emulsify contaminants which can then be pumped through the pump system. Adding some to the bilge before going sailing will utilize the boat's motion to help your own cleaning efforts.

#### CAUTION: DO NOT PUMP ANY OILY SUBSTANCES OVERBOARD.

You are probably aware of the aforementioned, however, to augment your conscience, the law is very explicit. A sign should appear in the engine compartment which reads:

"DISCHARGE OF OIL PROHIBITED - THE FEDERAL WATER POLLUTION CONTROL ACT PROHIBITS THE DISCHARGE OF OILY WASTE INTO OR UPON THE NAVIGABLE WATERS AND CONTIGUOUS ZONE OF THE UNITED STATES IF SUCH DISCHARGE CAUSES A FILM OR SHEEN UPON, OR DISCOLORATION OF, THE SURFACE OF THE WATER, OR CAUSES A SLUDGE OR EMULSION BENEATH THE SURFACE OF THE WATER. YIOLATORS ARE SUBJECT TO A FINE OF \$5,000."

We recommend that periodic cleaning of the engine pan consist of sponging with bilge soap, taking



the cleaning water off the boat in a bucket and disposing it in a proper manner. Many harbors have installed drums and tanks for the disposal of waste oil.

2.4 Woodwork and Cabinetry - Doors, Drawers and Floorboards: All woodwork is checked for fit, operation and finish by your dealer during the commissioning process, however, slight settling, shifting and dampness may cause doors and drawers to stick. In some cases, catches may misalign. Simply planing the sticking surface and following with a coat or two of teak oil or varnish will usually correct this situation. This may be expected since the boats are assembled in a dryer environment than they are used in.

Shelter from sun, salt, grit, etc., will mean that major cleaning of interior woodwork may never need to be undertaken to the same extent as with exterior teak. Damp sponging should handle most cleaning needs. If refinishing is desired, a light sanding with 180-220 grit sandpaper and light oiling or varnishing will suffice. The cabin sole may require varnishing at some point.

Daily removal of accumulated dust and dirt tracked in on the cabin sole is facilitated by the dustbin provided beneath the aft cabin sole hatch in the main salon.

2.5 Yentilation: A generous amount of ventilation is provided by four opening ports in the cabin, one in the quarter berth area and one Dorade-type vent forward on the cabin top. The cowl on the forward vent may be left in place while sailing, in all but "heavy conditions" since it has a water trap and the cowl is protected from the jib sheets by a handrail which acts as a vent guard. In rough conditions it is advisable to remove the vent cowl by unscrewing it and replacing it with the filler cap provided.

The opening portlites may be left open while sailing as long as conditions permit but, be sure to close them securely if there is a chance of water on the deck. Be sure to see that they are closed before washing down the deck too.

The Ericson 32 is also fitted with Lewmar 3-position "Superhatches". One is located on the cabin top above the main salon and one is located on the forward end of the cabin house. The design of the hinge system on the Lewmar hatch eliminates the need for telescoping hatch adjusters with set-screws. The hatches will open to 45, 90, and 180 degrees, (back flat on the deck). To operate the hatches, lift them firmly until you feel the hinge settle into the detent for the desired position. 45 degrees is the desired vent angle depending on the direction of any air movement. We would not advise sailing with these hatches open without exercising great caution since they are not protected from running rigging such as jib sheets, etc. A jibsheet or other line will almost surely get caught in the hatch, possibly damaging the hatch and perhaps backwinding the jib and reducing your steering control in the meantime. Be sure that, while you are sailing, the hatches are securely dogged down by checking to see that the handles are properly turned outboard parallel with the centerline of the boat and that the cams on the handles are so that they properly clamp the hatch down on its gasket.

When leaving your boat at the end of the sailing day, check to see that the opening ports are dooped closed along with the deck hatches. Adjust the forward cowl yent to pick up the prevailing breeze. This will help insure that dampness and moisture in the ambient air will not remain condensed inside the cabin. The draft inside the cabin will keep air moving within the cabin and have a drying effect on gear stowed inside. If there is detectable dampness in the cushions, tilt them on end and allow them to remain that way during the time that you are not aboard. Leaving locker and head doors open will provide good ventilation in those areas as well. Hang up all wet lines to dry; leaving them in a heap is one of the quickest ways to generate a stale mildew odor.

**2.6** <u>Cleaning Interior Upolstery and Hard Surfaces:</u> The overhead liner is vinyl and may be cleaned with many products, among which "409" is quite good. Care should be taken to avoid chafing or scraping the headliner with any sharp objects.

If cushions become wet beyond damp, remove the zippered nylon covers and allow the foam rubber to dry before reinstalling it in the cover. Thoroughly drying the cushions will prevent mildew.

Since the cushion covers are 100% nylon or equivalent, they may be spot-cleaned with soap and water using a damp cloth. Avoid soaking the fabric through to the foam rubber. Oil based stains may be removed with cleaning fluid. General cleaning with an upholstery shampoo (available at most supermarkets), can be done yearly or as required. Brushing the fabric after cleaning will raise the pile once again.

You will also find "409" and "Fantastik" to be effective cleaners for formica countertops, formica chart tables and exposed fiberglass surfaces, as in the head and shower area.

2.7 Icebox and Optional Refrigeration: Located aft in the galley is a top loading icebox, prepared for refrigeration installation if desired. The sides and bottom of the box are insulated with 4-6 inches of dense foam. The top is insulated to about 3".

The ice box drains by closing the saltwater intake thru-hull, opening the icebox drain valve located in the compartment beneath the galley sink, and using the saltwater footpump to pump the water from the icebox into the galley sink. See "Plumbing" section 4.6.

Food and dampness odors can be controlled with baking soda, much like your home refrigerator. Clean the box as required with baking soda and fresh water and pump out the drain. Take care to avoid spraying water on any refrigerator unit and make sure all power is off. When possible, leave any refrigeration unit shut off and the lid the of the box open when leaving your boat for any length of time.

- 2.8 Head and Shower: See "Plumbing" section.
- **2.9** <u>Dinette:</u> The dinette table drops down to provide extra sleeping space. To convert it to a bunk, simply loosen the setscrew on the aluminum support tube and slide the dinette down onto the teak cleats which are installed on the face of the dinette seat. A backrest cushion for the seat will fit onto the table top.

#### 3. ENGINE/MECHANICAL

Because of its safety, simplicity, dependability and efficiency, the Universal Model 25 diesel engine has been chosen as standard on the Ericson 32. Diesel engines are subject to fewer adjustments and malfunctions than gasoline engines, once they are properly set up. Fuel contaminated by water or dirt and the introduction of air into the fuel system are the most common problems associated with diesel engine operation. As you will see, these problems are easily prevented by regular maintenance and the installation of a proper fuel filter/water separator with an adequate reservoir (standard on the Ericson 32).

Complete maintenance procedures and specifications are to be found in the "Universal Atomic Diesel Operation and Maintenance Manual", which you receive with your engine, (shipped aboard with your new Ericson or found in the cover pocket of this manual). Please read it before operating your engine and refer to it periodically for specifics, since only basic guidelines for safe operation and maintenance will be considered here.

Few skippers know enough about the care and operation of their engine and associated systems. Even if you find engine mechanics complex, you will find the mechanics of the Model 25 noticeably simpler than your automobile and familiarization in this area will greatly add to your self-sufficiency and enjoyment. Remember, your engine is also your battery-charging system and hot water generator at sea.

3.1 Description: The Universal Model 25 is a 21 horsepower, 3-cylinder engine which provides adequate power for reserve, (adverse wind and wave conditions), as well as a generous amount of power for general use. It is installed with a "closed cooling system", cooled by circulation through a heat exchanger which is cooled by the raw water system, circulating water from the intake thru-hull located under the galley sink cabinet and discharging it through the engine exhaust system. The closed, (freshwater), cooling system also circulates through the water heater of the potable fresh water system which heats the water in the water heater while the engine is in use.

## 3.2 Pre-Operation Checks and Starting Procedure: Before operating your engine:

- Read the specific owner's manual.
- 2. Have the proper safety equipment aboard and know how to use it (see section 7.1 in this manual as well as U.S. Coast Guard Publications.)
- 3. Make certain that the water heater tank, located under the cockpit behind the engine, is full. (see section 4.4.5 "Bleeding the Pressure Water System")
- Open engine compartment to check for fumes from fuel.
- 5. Check engine crankcase oil and transmission fluid dipsticks for proper levels. Doing so will force you to open up the engine compartment, as well as insuring, by the most foolproof method, that proper levels of lubricants are maintained. Check beneath the engine for evidence of fluid leakage of any kind.

NOTE: BE SURE THAT THE CRANKCASE OIL LEVEL <u>DOES NOT</u> GO ABOVE THE "FULL" MARK ON THE DIPSTICK OR THE EXCESS WILL BE DISCHARGED THROUGH THE BREATHER INTO THE ENGINE PAN OR BILGE.

- 6. Check to see that the engine cooling water intake valve is open (located under the galley sink).
- 7. Check fresh water cooling level in coolant recovery tank in the starboard cockpit locker.
- 8. Check to see that the fuel valve is open.
- 9. Make sure that hoses and boat gear are clear of the propeller shaft.
- 10. If the above items are in order, run the engine compartment exhaust blower for 5 minutes prior to starting the engine. To curb excessive power drain, the blower may be shut down during the starting process or after starting.

#### Starting:

- Place shift lever in neutral position.
- 12. Push throttle forward to the one-third open position, (shorter of the two levers on the steering pedestal, with red knob).
- 13. Turn key to "on" position. This will activate fuel pump and oil pressure light. (optional oil pressure warning buzzer will sound, if installed). Be sure to lubricate the key switch regularly with light oil or WD40 to prevent it from sticking.
- 14. Hold glow plug switch in the "on" position while cranking the starter. <u>The starter will not energize unless the glow plug switch is held in at the same time that the starter switch is depressed.</u> Depress the glow plug switch for about 20 seconds before pushing the start switch when starting a cold engine.

NOTE: If engine will not start after 6 or 7 attempts, <u>DO NOT CONTINUE TO CRANK</u>
ENGINE SINCE THIS COULD LEAD TO WATER BACKUP INTO THE ENGINE. At this point, remove the drain plug at the base of the black lift can to drain it before trying again. Remember to replace the drain plug once the engine has started.

- 15. After the engine is running, the oil pressure light should go out and the ammeter should indicate a charge.
- 16. Check to see that water is coming from the exhaust thru-hull, located in the hull beneath the transom. Monitor the engine temperature, which should rise gradually to 175–185° F. If the oil pressure light remains on, or if no water is coming from the exhaust, or the temperature rises above the normal range, STOP THE ENGINE AT ONCE WITH THE STOP CABLE LOCATED JUST BELOW THE ENGINE INSTRUMENT PANEL IN THE COCKPIT. DO NOT IURN OFF THE KEY FIRST. The engine should still be in neutral. (See "Procedure for Stopping Engine").
- 17. If all indications are normal, continue to run the engine for 10 minutes, monitoring the operating performance before leaving your dock or mooring.

### To Check the Transmission Operation:

18. Check to see that the yacht is still well-tied to the berth. With the engine in idle, shift from neutral to forward and forward to neutral, then neutral to reverse and reverse to neutral.

NOTE: Do not shift directly from forward to reverse or vice versa without pausing in neutral, and always be sure that the engine is at idle speed when shifting.

NOTE: Do not "race" your engine in neutral.

19. After stopping your engine, recheck oil and water levels so you're less likely to be surprised the next time you use it.

CAUTION: COOLING SYSTEM WILL BE HOT AND UNDER PRESSURE, CHECK LEVEL IN COOLANT RECOVERY TANK IN STARBOARD COCKPIT LOCKER.

## 3.3 Procedure for Stopping Engine:

- 1. Throttle back to idle position.
- 2. Place transmission lever to neutral (center position).
- Let engine engine idle for 1 minute to cool down.
- 4. To stop engine, throttle back to the idle position and pull out the stop cable located to the right of the engine intrument panel in the cockpit. Be sure to push the stop cable back in after the engine stops if left out, it will prevent the engine from starting again.
- 5. After the engine has stopped, turn off the key to shut off the electric fuel pump.

CAUTION: DO NOT TURN OFF THE MAIN BATTERY SWITCH OR DISCONNECT THE BATTERY UNTIL THE ENGINE HAS STOPPED. DOING SO WILL LIKELY RESULT IN REGULATOR AND ALTERNATOR DAMAGE.

CAUTION: DO NOT USE THE ENGINE DECOMPRESSION LEVER TO STOP THE ENGINE. SERIOUS DAMAGE TO THE EXHAUST VALVES MAY RESULT.

When Shutting Down the Engine Under Sail:

6. To prevent excess wear on the transmission, shaft and strut bearing, and also to reduce drag for more efficient sailing, <u>be sure to place the transmission</u> in reverse after the <u>engine has been shut down while sailing</u>.

NOTE: LEAVING THE TRANSMISSION IN THE "FORWARD" POSITION WHILE SAILING, AFTER SHUTTING DOWN THE ENGINE, WILL "GLAZE" THE TRANSMISSION PLATES AND CAUSE SLIPPAGE WHEN THE ENGINE IS RUNNING IN GEAR.

When leaving your yacht, we recommend you turn off the fuel line valve (see fuel system diagram) and engine cooling raw water intake thru-hull valve. But, be sure to reopen them before restarting. Overheating by lack of raw water intake may result in damage to the pump impeller (carry a spare), or more serious engine damage. Starving the engine for fuel by leaving the fuel shut-off closed will mean that the fuel system will have to be re-bled before the engine may be restarted. (See the engine owner's manual for fuel system bleeding procedure.)

3.4 Starting the Engine with a Weak Battery: The Universal Model 25 has been fitted

with a decompression lever located on top of the forward end of the engine to aid in starting when battery cranking power is weak.

The procedure for using the decompression lever while starting, as stated in the engine manual, follows:

- 1. Set gear shift to neutral and advance throttle to 1/3 open.
- 2. Pull decompression lever to release position.
- 3. Energize glow plugs.
- 4. Turn ignition switch to "start" position to "spin" the engine.
- 5. After 3 to 5 seconds, when the engine has gained momentum, return decompression lever to its original position. Engine should now start.
- 3.5 <u>Iroubleshooting</u> and <u>Maintenance</u>: This section will deal with maintenance considerations and potential problems in these areas:
- Engine overheating
- Fuel System
- Vibration
- Propeller shaft packing gland
- Electrical corrosion protection

Of course, troubleshooting can be minimized by following a diligent maintenance program. Moreover, since we are sailors, always striving to become more proficient at our sport - maybe even looking for opportunities to demonstrate our proficiency, such as leaving and approaching slips and moorings without the engine's assistance - we could, per chance, fall into a habit of not running the engine enough. The "UNIVERSAL MOTORS OWNER'S MANUAL" states the following:

"If the boat is left affoat for periods of a month or more, the engine should be started at least every 14 days to prevent internal corrosion.

Regularly spray external unpainted surfaces and exposed, unpainted electrical equipment with a corrosion and moisture protective coating."

3.5.1 Engine Overheating: After checking that the raw water intake thru-hull is open, check the water pump impeller for excessive wear or damage. Replace if needed. If the impeller looks good, again check to be sure that the thru-hull is open and disconnect the intake hose at the thru-hull to see if water flows in at a steady rate. If not, debris (such as a plastic bag) or marine growth may be blocking the thru-hull. If underway under power, sometimes shutting the engine down to stop intake suction will allow the debris to float off the intake thru-hull. Try this and perform the thru-hull check. In other cases an engine will not show signs of overheating until underway. This is sometimes a result of hairlike growth in the area of the intake that only moves across the opening when the boat is in motion. Rigorous annual maintenance and periodic cleaning and inspection by a diver can prevent such aggravating situations.

Your Ericson 32 is also equipped with a water heater on the fresh water system (see section 4.4.3). The water heater works on a heat-exchanger principle by circulating the fresh cooling

water from the exhaust manifold side of the engine, to the water heat exchanger and back to the engine heat exhanger on the aft end of the engine.

Extra consideration may need to be given to bleeding air from both the water heater and engine cooling hoses leading to and from the water heater. Follow the instructions in "Plumbing", section 4.4, for bleeding the pressure fresh water system. To bleed the engine fresh water system, check coolant level after running the engine for the first time and add coolant as necessary. If a "bubble" develops in the cooling hose, allow the engine to cool and then complete filling of the system. Be sure to maintain the proper anti-freeze mix.

CAUTION: DO NOT ATTEMPT TO REMOYE ANY HOSES OR OPEN THE COOLING SYSTEM CAP ON THE ENGINE WHILE THE ENGINE IS HOT - THE COOLANT IS UNDER HIGH PRESSURE AND TEMPERATURE. AND CAN CAUSE INJURY. ALLOW THE ENGINE TO COOL, OR ADD COOLANT THROUGH THE RECOVERY SYSTEM IN THE STARBOARD COCKPIT SEAT LOCKER.

3.5.2 <u>Fuel System:</u> Moisture, contamination and air will all cause a diesel engine not to run and possibly damage the injector pump and injectors. To help prevent intrusion of contaminants into the engine, an in-line fuel filter is supplied as standard equipment by Ericson, in addition to the canister-type filter mounted on the engine. You should become familiar with the service procedures for both.

#### The fuel filter performs two functions:

- 1. As a filter, to remove debris and contaminants which may be introduced into the system from supply tanks where fuel is purchased, or possibly from your own tank from organisms growing between the fuel and condensation water in the boat's fuel tank. Filtering suspect fuel as it enters the tank also helps keep contaminants out of the fuel system.
- 2. As a water separator, removing moisture from condensation in any airspace inside the tank, or that which may have been introduced from your supplier's storage tank.

Rudimentary maintenance - draining water from the reservoir drain plug, and replacing the filter cartridge will help prevent inconvenient inoperation and costly engine repair.

CAUTION: EXCESS WATER ACCUMULATION IN THE FILTER CAN OVERBURDEN IT, ALLOWING WATER TO PASS INTO THE INJECTOR SYSTEM. CHECK THE FILTER FREQUENTLY.

#### Servicing the in-line fuel filter -

#### - Water removal:

Have on hand a small can which will fit under the filter, and rags to clean up any spillage. Unscrew the drain plug from the bottom of the filter canister and allow the contents to drain for a few seconds. Replace the plug and check the contents of the can for dirt and water. Water will show as globules in the bottom of the container.

#### - Changing the filter cartridge:

1. Shut off the fuel valve.

- 2. Drain fuel from canister as in above.
- 3. Unscrew the canister and remove the cartridge.
- 4. Clean the inside of the canister to remove all grit and install a new cartridge and reinstall the drain plug.
- 5. Screw the canister back into the top mount.
- 6. Remove the top vent screw and bleed the air from fuel system as recommended in the engine manual.

Consult the engine manual instructions regarding service to the engine-mounted fuel filter.

Keeping tanks nearly full will help in reducing water accumulation from condensation, but exercise care to avoid overfilling the tanks causing spillage on deck and through the tank vent.

To combat the accumulation of debris from organic growth, use one of the diesel fuel additives available from your marine fuel dealer. Follow the instructions on the can.

3.5.3 <u>Yibration</u>: While it is not unusual for a more pronounced resonance to occur at a certain RPM, this is normally consistent and confined to a narrow band which, can be avoided in practical operation by changing the throttle setting, usually only slightly. However, once the vibration characteristics of your yacht and engine are familiar to you, unusual vibration always warrants investigation to determine its source.

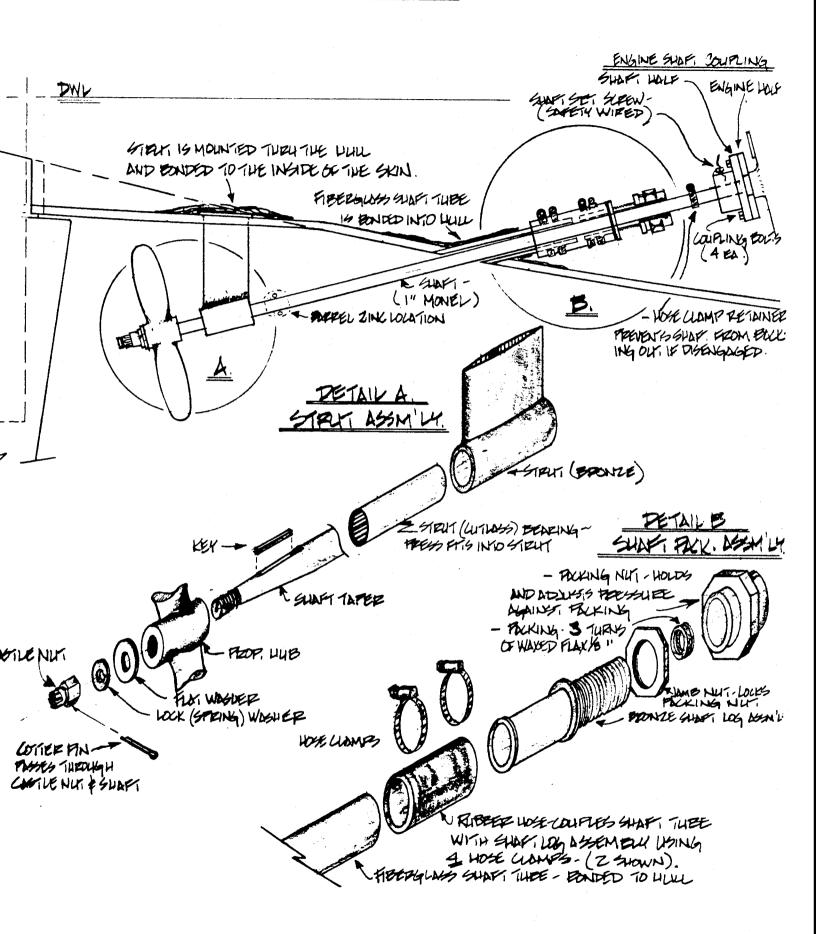
Excessive engine vibration, for whatever the cause, may lead to premature shaft, shaft bearing, strut and transmission wear. If such vibration is heard, make these preliminary checks WITH THE ENGINE STOPPED:

- See that all engine mounts are secure to the engine beds and that the nuts are all tight on the mount studs themselves.
- 2. Check the shaft coupling at the aft end of the engine for proper tightness.
- 3. Recheck the propeller shaft alignment (see section 3.5.7).
- 4. If necessary, haul out or have a diver check the propeller for bends, nicks, electrolysis excess growth, lines or fouling by other debris.
- 5. If damage is apparent, take the propeller to a propeller specialist to have it checked for pitch and balance. Removal and reinstallation may be done by a diver in the water.

CAUTION: When removing the propeller, use a proper "puller" and do not hammer on the propeller hub or you are likely to damage the propeller.

3.5.4 Propeller Shaft Packing Gland: The packing gland or "stuffing box" is mounted on a rubber coupling which is clamped to the shaft tube in the hull where the shaft passes through the hull aft of the engine. It consists of one large bronze nut inside which, are 2-3 turns of 1/8" waxed flax packing. A locknut against the gland nut holds it to the desired adjustment. The packing gland functions to seal out most of the water from entering the hull where the shaft passes through to the outside, while at the same time, allowing just enough water between the

## PROPELLER SHAFT ASSEMBLY DETAIL -



ERICAON 3/3. ENGINE-MECHANICAL

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shaft and the packing gland to lubricate and keep the shaft from heating up from the friction of the seal.

Worn packing or a poorly adjusted packing gland nut will allow too much water to enter causing a nuisance, or worse, causing the boat to sink if it is left unattended for a long time. Too little water entering will cause reduced engine efficiency and premature shaft and packing wear. Excessive shaft and packing wear will eventually make it impossible to adjust the packing nut properly.

#### Adjustment procedure:

Ideally, the propeller shaft packing gland should be adjusted so that with the engine running in gear (shaft turning), 5 or 6 drops per minute should enter from between the shaft and the packing nut. With the shaft stationary, no water should enter. However, it is not always possible to achieve a complete water stoppage with the shaft stopped. Occasional dripping is acceptable.

Access for maintenance and adjustment of the packing gland is through the starboard cockpit seat hatch by removing the fabric curtain between the seat locker area and the aft end of the engine compartment. Observe the packing gland with the shaft turning.

## If the shaft is leaking too much:

- 1. Stop the engine.
- 2. Loosen the locknut using two pair of large channel-lock pliers. Try not to squeeze too hard, it is a rather thin nut and excessive pressure may distort it.
- Tighten the packing nut by turning it 1/2 turn clockwise (if viewed from its forward end facing aft). Note that the packing nut does not have to feel tight to be properly adjusted.
- 4. While holding the packing nut in position, tighten up on the locknut until it is snug against the packing nut.
- 5. Restart the engine. Place it in gear and recheck the gland. If it is still allowing too much water in, stop the engine and readjust as necessary.

If all the adjustment is taken out of the packing nut and the shaft is still leaking excessively, especially when the shaft is not turning, the packing will need to be replaced.

### Io replace the packing

- 1. Have on hand about 12 inches of 1/8" waxed flax packing, (there will be some excess).
- 2. Loosen the locknut as described in step 2 above.
- 3. Loosen the packing nut, so that it comes all the way off the bronze threaded nipple. This should expose the packing around the shaft. If you are performing this operation in the water, a steady stream of water will now be running into the boat. This no need to be concerned since the entire changing process does not take long enough to allow a significant amount of water to enter.

Note: The hose clamp around the shaft, which is just aft of the coupling, may require removal in

order to be able to slide the packing nut far enough forward to expose the packing. Be sure to reinstall it, since it is there to prevent the shaft from backing out of the tube if the shaft should ever slip from the coupling.

4. Carefully remove all of the old packing, but do not discard yet. Keep it available in case there is some unforseen problem with the new packing material.

NOTE: The packing is installed in a series of three rings butting, rather than spiralling.

- 5. Although, in the final installation, the packing is not spiralled around the shaft inside the nut, it is easy to measure and score all the turns simultaneously by spiralling three turns and then dragging a knife blade across them as shown in the illustration. Unwrap the turns and complete the cuts to form three separate rings.
- 6. Line the rings on the shaft next to the bronze nipple. Be sure that the length of each is just the circumference of the shaft. If they are too short, they will leak where the ends butt together and, if too long, they will tend to bunch and make it difficult to reinstall and adjust the packing nut. Position the butt joints so that they do not align from one ring to the next.
- 7. With the packing in place, slide the packing nut back into position, and thread it back onto the bronze nipple.
- 8. Adjust the packing gland as described above.
- 3.5.5 <u>Propeller Shaft Strut Bearing</u>: The propeller shaft strut bearing is a bronze and rubber press-fit insert between the shaft and the shaft strut which supports the aft end of the propeller shaft. It should be inspected closely at each annual haul-out and in between by a diver, if excess vibration is experienced.

The most common cause for premature strut bearing wear is excessive vibration caused by improper alignment (see section 3.5.7) or by a bent, damaged or marine growth-fouled prop. As bearing wear increases, so does vibration.

Replacing the strut bearing is normally not a difficult task, however, time, corrosion and wear sometimes make it difficult to extract. It is also easier to remove with the shaft out of the boat — so, the job is easier done out of the water.

- 1. With the prop shaft removed, using a brass or aluminum drift or a section of tubing about the size of the outside diameter of the strut bearing, tap it out with a hammer. In some cases, fairly solid hits with the hammer will be required. Do not hit the bearing hard enough to risk damaging the strut itself. If this becomes a risk, go on to step 2.
- 2. If the bearing will not slide by the above method, use a hacksaw to score the inside of the bearing in several places. Reassemble the hacksaw blade to the saw frame with the blade running through the bearing and cut the strut bearing. BE CAREFUL NOT TO CUT DEEP ENOUGH TO SCORE THE STRUT ITSELF.
- 3. With the old bearing removed, insert the new bearing by tapping it in with a hammer and a block of wood between the bearing and the hammer. DO NOT STRIKE THE BEARING DIRECTLY WITH THE HAMMER SINCE THE BEARING SLEEVE WILL DEFORM.

BEARING DIMENSION: 1 1/4" O.D. X 3 7/8" L. for a 1" shaft

3.5.6. Propeller Shaft: The propeller shaft on the Ericson 32 is made of 1" diameter Monel. It is attached at the engine end by insertion into the shaft coupling with a key and two setscrews, which are <u>safety-wired</u> to prevent them from backing out. A periodic inspection should be make to be sure that the wire is in place and in good condition. A hose clamp should be in place on the shaft between the packing gland and the engine coupling to prevent the shaft from backing out of the shaft tube, damaging the rudder and allowing water to enter in the event the shaft slips from the coupling.

#### Shaft Removal:

Removal of the propeller shaft is a job that is best left to a well-equipped boat yard, in most cases. The propeller must be removed, requiring some type of a propeller puller. Additionally, the shaft is very difficult to remove from the coupling after time. The rudder must also be removed, necessitating removal of the steering quadrant. If long-range cruising takes you well beyond the proximity of boatyard services but, conditions require that you remove the shaft, use the following procedure:

- 1. Remove the safety wire and the shaft setscrews. Uncouple the shaft coupling from the engine half of the coupling. Remove the hose clamp from the shaft and slide the shaft back away from the engine. Try, with a wooden or plastic mallet, to tap the coupling from the shaft. If this method fails, move on to step 2.
- 2. With the coupling still separated from the engine, insert a short 1/2" diameter hex-head bolt between the center of the engine half of the coupling (which is solid) and the shaft half, which is bored through, exposing the forward end of the shaft. The hex head bolt should be as long as possible and still allow enough of the threads on the coupling bolts to go into the engine half of the coupling.
- 3. Begin to tighten all of the coupling bolts evenly. They will be quite tight, but should begin to move the shaft aft out of the coupling as the two couplings are drawn together. Longer lengths of 1/2" bolts may be required as spacers as the shaft moves back out of the coupling.

#### Shaft Reinstallation:

- 1. Slide the shaft forward into the boat. Check to see that the packing is not damaged in this process. You may want to change it as a matter of timely maintenance.
- 2. Place the key in the keyway and slide or tap the shaft coupling back onto the shaft. The fit should be fairly snug.

<u>Note:</u> We would recommend coating the forward end of the shaft with "never-seez" where it inserts into the coupling to make future shaft removal easier.

- Install the setscrews and safety wire them.
- 4. Recheck the shaft and engine alignment on recoupling of the shaft to the engine. (See Section 3.5.7)
- 3.5.7 Engine/Shaft Alignment: The importance of proper engine/shaft alignment is pointed out in Section 3.5.3 on vibration. As a result of shipping and use, the hull and components flex to some extent. Although this may not be readily discernible and, although the

Triaxial Force Grid system will minimize vibration, shaft alignment tolerances are very small (.003").

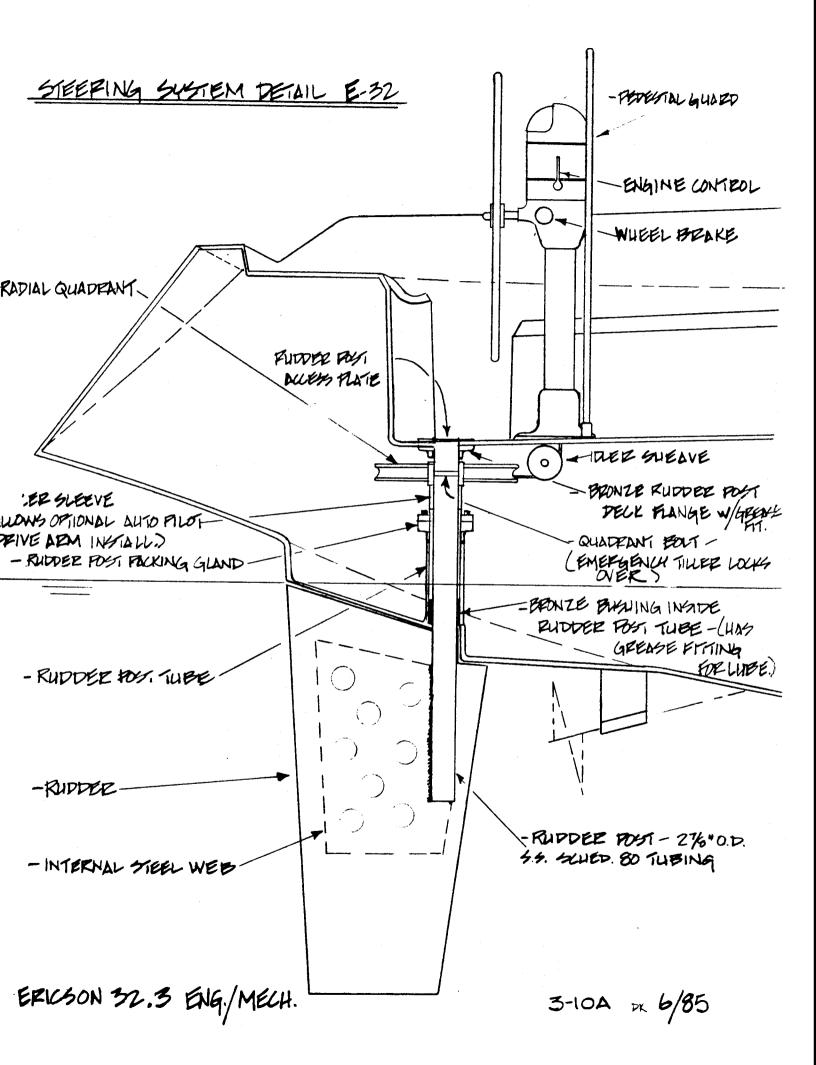
Initial engine alignment is done during the installation of the engine and components during construction and, once again, during the flotation checks and inspection in Ericson Yacht's test tank. Your dealer, again, checks alignment during the commissioning of your yacht. Afterward, alignment checks should take place annually, in the event of impact to the propeller/shaft/strut, if abnormal vibration is experienced, and every time after your yacht is launched after haulout.

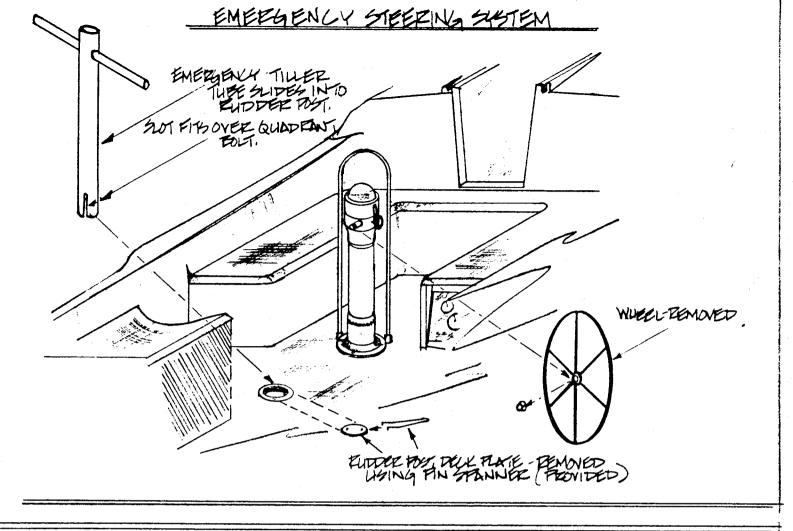
## Engine Alignments should be done in the water as follows:

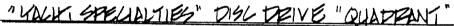
- 1. Remove the bolts holding the shaft half of the coupling flange to the engine half of the coupling flange.
- 2. Slide the shaft coupling up against the face of the engine coupling, if it has slid back at all.
- 3. Check all around the coupling joint with a feeler guage. If any thicker than .003" can be inserted between the two faces, the engine mounts must be adjusted until the face of the engine half of the coupling lines up with the shaft half and no gaps larger than .003" are found.
- 4. To adjust the engine up or down, slack the nuts on the engine mount studs. To adjust the engine sideways, loosen the lag screws holding the mount bases to the engine beds.
- 5. When the alignment checks, retighten all mount nuts and screws. Recheck to make sure that retightening did not cause any misalignment.
- 6. Now rotate the shaft and its flange 90 degrees to each fastener position and recheck the alignment. This check will determine if the coupling is sitting true on the shaft, or if the shaft is bent.
- 7. Reinstall all four coupling screws and tighten them evenly.
- 3.5.8 Engine Electrical Corrosion Protection: To protect against corrosion damage to the engine and components, Universal recommends that the zinc anode in the heat exchanger at the rear of the engine be removed and inspected approximately every six weeks. If the zinc is depleted, replace it with a "pencil zinc" cut to the proper length.
- 3.6 Steering System: Your Ericson 32 comes equipped with pedestal steering with a 36" destroyer wheel, brake, pedestal guard, and engine controls mounted on the steering pedestal. Inside the pedestal a roller chain turns over a sprocket on the wheel shaft. The chain joins a cable at each of its ends whech then runs through the cockpit sole via 2 sets of sheaves and to the rudder quadrant, which clamps and bolts onto the rudder shaft.

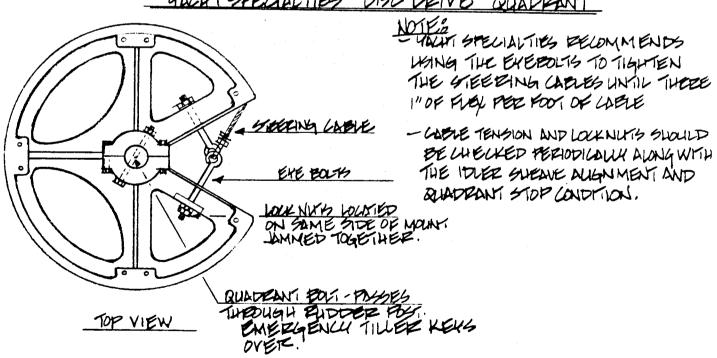
At each quadrant/cable attachment point there is an eyebolt which allows steering tension and wheel spoke centering to be done. Each eyebolt is locked into the desired tension with a set of two jamming nuts.

An <u>Emergency</u> <u>liller</u> is supplied to be used in the event of a failure of the wheel steering system. To install it, unscrew the cover plate on the cockpit sole just aft of the pedestal. This will expose the rudder post. Insert the shaft of the tiller into the rudder post and the emergency steering system is functional. Removing the wheel at this point will increase operating room.









A suggestion: although you may never need it, don't wait until you need the emergency steering system to use it. Try it and become familiar with its operation before you have to depend on it.

3.6.1 Maintenance: The wheel steering system is relatively trouble-free but, for obvious reasons, should receive critical inspection frequently. Cables may stretch and the chain will "run-in", contributing to slack in the system causing an annoying lag or "slop". Tighten the steering cables at the quadrant until the steering is positive. Overtightening the cables will cause excess friction, making steering more laborious and the feel less sensitive. Be sure to retighten the jam-nuts properly after the adjustment is completed.

#### Additional maintenance items:

- 1. Inspect the fasteners in all sheave mounts to be sure they are tight and that the sheaves are in proper alignment with the cable.
- 2. See that all of the cotter pins which secure the sheave pins are in place.
- 3. Make certain that the jam-nuts are tight on the adjustment eyebolts.
- 4. Inspect the cables for general condition. Make sure that the clamps, press fittings and thimbles are in good condition and that the cable is not stranded. If it looks worn or chafed, replace it and find out why is was damaged if other than by normal wear, since the steering cables should last years.
- 5. Inspect the chain and its terminals by turning the wheel and viewing it from both the top of the pedestal and below the cockpit sole. Lubricate the chain twice a year with light oil or a spray teflon lubricant such as "Tri-flon".
- 6. Check the brake for proper function and adjustment.
- 7. Check to see that engine control mount fasteners are all properly tight and that engine control cables are secured far enough away from the chain and sprocket so that chafing will not occur. Check to be sure that any wiring for instruments or compass light is likewise protected.
- 8. If the rudder post packing gland needs new packing, disassemble the flange, remove the old packing and install 3 turns of 1/4" waxed flax packing approximately 12" long. Use the same method as for the propeller shaft packing gland in Section 3.5.4. The quadrant may need to be removed to gain enough clearance to raise the top flange on the packing gland.
- 9. Consult Section 1.11.2 for associated rudder maintenance at haul-out time.

#### 3.7 Suggested Onboard Tool Kit:

Since a metal toolbox is prone to rusting and its sharp edges may scratch wood and fiberglass, we recommend that tools be stored in a plastic toolbox or heavy—duty plastic fishing tackle box. The tackle box may also have trays for small parts and miscellaneous spare fasteners.

At sea, a critical situation could call for the use of dependable tools —— be sure that those in your toolbox would be up to the task. "Bargain—price" tools will not only fail to get the job done but, may cause injury as well. Sear's <u>Craftsman</u> brand is one of the dependable brands available and suitable for onboard use. A suggested list of tools appears below in the general order of importance:

```
1ea - Large "Vise-Grip" (recommended brand name)
```

lea - Small "Vise-Grip"

1set - Open end Wrenches 3/8"-3/4"

lea - 12" Adjustable Wrench

1ea - 8" Adjustable Wrench

lea - Hacksaw with extra blades

lea - Awi

1ea - 3/8" (large) Blade Screwdriver

lea - 1/4" (medium) Blade Screwdriver

lea - Philips Screwdriver (large)

1ea - Philips Screwdriver (medium)

1ea - Standard Pliers

1ea - Long-nose Pliers

2ea - Large Slip-joint Pliers (to fit shaft packing gland)

lea - Hammer

1set - 3/8" Drive Sockets: 3/8" - 3/4" with universal and extensions

The above is a minimum list of tools which you should have at your disposal. Performing maintenance and outfitting your Ericson 32 with items for your personal needs will indicate to you which additional tools would be helpful, especially if extended cruising is planned. A hand drill and bits, assortment of punches, multimeter, etc., are all items which might prove helpful and bolster your self-sufficiency. It is also recommended that you carry some type of pocket knife and keep it sharp! The Swiss Army Knife is probably the handiest.

While you are assembling your tool kit, you should also consider assembling a sail repair kit of needles, thread, sail twine, sewing palm and extra dacron. These items should be stowed in a bag or pouch separate from the onboard tools. Your sailmaker can help with supplies for a sail repair kit, and some sailmakers have them preassembled.

### 4. PLUMBING

4.1 General: Plumbing on a yacht (thru-hulls, valves, hoses and clamps), receives less attention regarding operation and maintenance than it deserves. Aside from bringing water in and letting water out, a yacht's plumbing has a third critical function, which is not analogous to domestic plumbing – namely to keep water out. As with most other components and systems, plumbing is also subject to the corrosive effects of saltwater and electrolytic action (see Section 1.12).

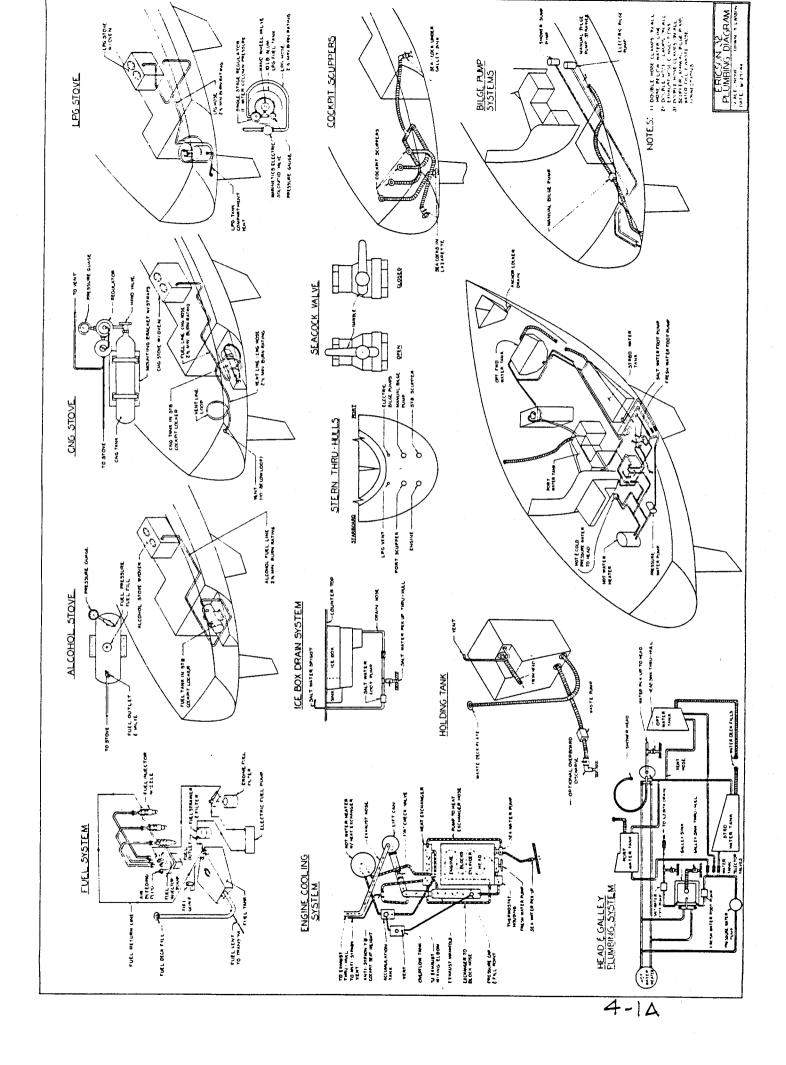
Lack of accessibility is partly the cause of neglect in many sailboats. Thru-hulls, valves and hoses are often hidden deep behind interior compartments and cabinet work. On the Ericson 32, this situation has been carefully considered and access to those fittings requiring regular and careful attention has been simplified by locating them in convenient areas. Opening a cabinet door or seat hatch provides easy exposure for anyone.

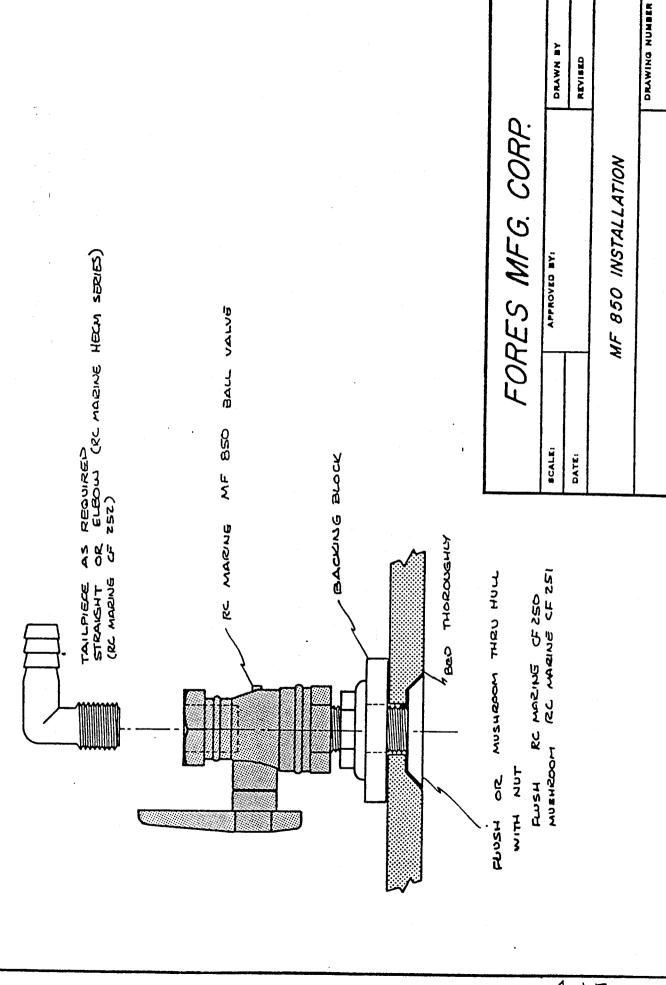
- 4.2 <u>Ihru-hulls Specifications</u>, <u>Operation and Maintenance</u>: The first step in familiarizing yourself with the Ericson 32 plumbing system is to locate all thru-hulls, know the function of each and its valve operation. Thru-hulls are located in three main areas:
- 1. Head compartment, beneath sink
- sink drain/head intake with valve
- head discharge with valve (optional)
- 2. Galley, beneath sink
- engine water intake with valve
- port and starboard middle cockpit drains lead to single thru-hull with valve
- galley sink drain
- saltwater intake to galley sink
- 3. Lazarette compartment (cockpit)
- exhaust thru-hull with valve and antisiphon cut-in
- port and starboard cockpit drains (crossed to opposite side thru-hulls, with valves).
- L.P.G. box vent without valve (above water line)
- electric bilge pump exhaust (shower and bilge pump pick-ups tee into one)
- manual bilge pump
- 4.2.1 General Practice: Shut off all thru hull valves except cockpit drains when leaving the boat for any length of time as prevention for sinking due to hose failure. In the Ericson 32, you may shut off all of the below water line thru-hulls, including the two center cockpit drains and still have ample cockpit drainage for rain, etc., since the extreme port and starboard cockpit drain thru-hulls are above the waterline. The electric bilge pump, manual bilge pump and L.P.G box drains are also above the waterline when the boat is moored.

In open a thru-hull valve, simply move the handle in line with the valve body.

Io close, move the lever perpendicular to the valve body.

- 4.2.2 Periodic Inspection and Maintenance: (Every three months)
- Check the condition of hoses and hose clamps
- Test the valve operation. it should work smoothly and freely. IF IT STICKS, <u>DO NOT</u> FORCE II, SINCE IT IS POSSIBLE TO BREAK THE STEM. If it is stuck see "Loosening a





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If the valve is working smoothly, lubricating it will help insure that it continues to do so:

- Close the valve, remove the hose and apply waterproof grease (wheel bearing variety is sufficient), to the ball inside the valve body. Teflon spray or grease will also work well.
   Work the valve several times and reattach the hose making sure the hose clamps are securely fastened.
- Check the outside appearance of the valve for abnormalities.
- Check the condition of the thru-hull from the inside and outside during a haulout. A diver is helpful for between haulout inspections.

### Loosening a Stuck Yalve:

At haulout time, remove and disassemble any valve suspected of not functioning properly. Repair or replace it as necessary. Care taken here will prevent the expense of an unscheduled haulout. In most cases, careful disassembly and lubrication, rather than replacement, will solve the problem.

NOTE: An inoperative thru-hull shutoff valve should be repaired as soon as possible, since it must be used in an emergency if damage to a hose or equipment plumbed to the thru-hull should occur.

When removing a valve, have someone outside hold the thru-hull to prevent it from turning and breaking loose the bedding compound. After the valve has been removed from the thru-hull you will notice that each end is a hex nut. The nut on the larger of the two ends, which is on the end nearest the valve stem, acts as the valve seat. Loosening that nut will allow the valve to turn so that it may be lubricated. After lubricating the ball portion of the valve, reseat the nut and check the valve operation.

### Rebedding a Thru-hull:

If the thru-hull does move, it should be removed and rebedded to save the expense of a second haulout should it leak after launching. If a boat yard is doing the thru-hull work, you do have the benefit of their responsibility for leaks, especially if you are not present when your boat is launched. When rebedding a thru-hull, use a good and pliable compound such as "Dolphinite 2005", 3M "101" or "Life-Caulk". These compounds stay flexible, adhere for years and do not crack. Use a good pipe joint compound on the threads where the valve joins the thru-hull.

- 4.3 <u>Bilge Pumps</u>: A "Whale Gusher 10" manual bilge pump and two 12 volt D.C. electric bilge pumps are standard on the Ericson 32.
- 4.3.1. Whale Gusher Manual Bilge Pump: The manual bilge pump is located on the starboard side of the cockpit between the helmsman's seat and the aft end of the starboard cockpit seat. The "Whale Gusher 10" is a very simple, reliable and effective unit which is installed so that it may be operated in the cockpit without leaving any hatches open. The pick-up is located in the bilge, under the cabin sole in the grid-formed bay just forward of the dust bin. The hose is 1-1/2" reinforced plastic with a strainer on the pick-up end. The discharge line runs aft through a delrin thru-hull beneath the cockpit lazarette.
- **Io Operate**: Insert the handle into the socket on the pump. The first several strokes will feel light as water is drawn from the bilge into the pump. Continue pumping until the strokes again feel light, indicating that there is insufficient water from the bilge to maintain suction.
- **4.3.2 The Electric Bilge and Shower Sump Pumps**: Two electric bilge pumps are provided as standard. Both are of the submersible type. One drains the shower sump and is

located in the shower sump which is accessible through a hatch in the cabin sole at the forward end of the main salon. The other, of a larger capacity, is located in the bilge sump beneath the cabin sole in the main salon.

The shower sump is isolated from the rest of the bilge in order to contain soapy, contaminated water and keep it from mixing in the main bilge. The shower sump pump should be operated whenever the shower is used. It is controlled by a three-position switch located in the head compartment mounted above the basin, allowing either manual or automatic operation. In the "automatic" position the pump is controlled by a <u>float switch</u> also located in the shower sump next to the pump. When the water reaches a level high enough for the pump to work, it automatically switches the pump on and switches it off when the sump is emptied.

The electric bilge pump in the main bilge can be switched on from the 12 volt service panel located at the Navigation station above the navigator's seat, (see Section 5.2.2). Switching on the circuit breaker at the panel activates the pump. When the bilge is emptied, it must also be switched off at the panel. Some residual water from the discharge hose will likely run back into the bilge when the pump is shut down.

To insure dependeble operation from the electric pumps, it is important to check the bilge regularly for debris which could be sucked into the pumps. This is particularly important with a new boat since it is possible that wood debris from construction could be dislodged from remote areas by motion or water.

# 4.3.3 <u>Iroubleshooting</u> the Bilge Pumps: If either the electric or the manual bilge pump fails to work:

- Check to see that debris is not covering the pick-up strainer
- Make sure all hose clamps are tight
- Check power from switch panel on the electric pump
- Check the fuse in the two-function switch for the shower sump pump
- Disassemble the top diaphram on the Whale Gusher to see if the check valves are fouled or there is any leakage in the diaphram.

Note: Prolonged dry land storage may allow the flapper valves inside the Whale Gusher to dry out and not seal properly. Filling the pump body with water or soaking the flappers should restore function.

**4.4** Fresh Water System: The fresh water system consists of several components located in different positions in the boat.

### 4.4.1 Fresh Water System Tanks: Tank locations and capacities are as follows:

Under the forward end of the starboard settee in the main cabin
 Under the port center section of the dinette settee
 Under forward vee berth (Optional)

<u>Caution</u>: To avoid damage to the fresh water tanks and other components of the fresh water system do not use high pressure when filling the tanks or jam the hose from the water source into the fill pipe.

<u>Iank selector</u> <u>valves</u> are located beneath the galley sink through the cabinet door. Turning the valve for the desired tank in line with the tubing supply line will select that tank. Turning

the valve crosswise shuts the tank off.

<u>Deck fill pipes</u> are located on the deck forward near the rails. Their are separate fill pipes for the port, starboard, and forward tanks which are marked "WATER". The holding tank service pipe is marked "WASTE" – do not confuse them.

We recommend that you carry your own R.V. type non-flavored hose for filling your tanks to prevent objectionable tastes from water sources.

<u>Iank vent</u> is located at the head sink. It consists of a spigot which also acts as a tank overflow.
<u>4.4.2 Fixtures:</u>

Galley sink

- Hot and cold pressure faucet

Cold water spigot and footpumpSalt water spigot and footpump

- Head sink

- Hot and cold pressure faucet

- Shower attachment on head sink faucet

- Water tank vent

4.4.3 Water Heater: The Raritan 6E water heater is mounted beneath the cockpit sole aft of the engine. Access is through the starboard seat hatch lifting and removing the sliding panel below the seat hatch.

Water may be heated at dockside by using the 110 volt system or, anytime by running the engine. Engine cooling fresh water circulates from the aft end of the exhaust manifold through the copper heat exchanger on the aft end of the engine, (also see Section 3.5.1).

Located on the forward side of the water heater is an automatic pressure relief valve which is labelled for identification.

The thermostat is located beneath the blue cover on the forward side of the tank, for automatic temperature control in the 110 volt mode.

CAUTION: DO NOT TURN ON THE 110 YOLT POWER TO THE TANK UNTIL IT HAS BEEN FILLED. THE HEATING ELEMENT WILL BURN OUT IF THE TANK IS DRY. IT IS FILLED BY RUNNING THE PRESSURE WATER PUMP IN THE COURSE OF PUTTING THE PRESSURE WATER SYSTEM INTO SERVICE.

4.4.4 Pressure Pump: The pressure water system pump is mounted on the starboard fore and aft bulkhead in the engine compartment beneath the galley sink. It is activated by turning on the "pressure water" breaker switch on the 12 volt D.C. electrical panel whenever the main battery switch is on.

The pump will run as long as pressure is low in the system, whether a tap is on or there is air in the system. Generally, turning on a tap will start the pump and closing it will stop the pump.

## If the pressure pump continues to run with all faucets closed:

- Check tanks to be sure they contain water. Fill or switch to a new tank, (selector valves are

under the galley sink.

- Check for leaks in any joints or fixtures.
- Rebleed the system to purge air in the lines and water heater (see Section 4.4.5)
- **4.4.5. Bleeding** the **Pressure Water System**: To insure efficient operation and to guard against needless pump wear, the following steps should be followed when putting the system into service or anytime air has been introduced into the lines:
- A. Fill tanks
- B. Close all taps in galley, head and shower
- C. Turn on pressure pump
- D. Open cold water tap in galley and run water until air is expelled. Close it. Do the same with the tap in the head sink. Follow procedure in the above order.
- E. Repeat this procedure with the hot water tap.

# CAUTION: THIS SHOULD BE DONE BEFORE THE WATER IS HEATED BY FITHER THE ENGINE OR 110 YOLT SYSTEM.

NOTE: If the system has been run completely dry and the pressure pump will not prime for some reason, use the fresh water foot pump in the galley to get water into the lines so the pressure pump will prime itself.

F. The system is ready for general service

A <u>fresh water foot pump</u> is installed as standard equipment as a backup system to the electrical pump and to conserve water and electrical power.

4.5 Salt Water System: For convenience and fresh water conservation, a salt water system, (outside fresh water, for the inland sailors), has been provided in the galley as standard equipment.

The salt water spigot is to the right of the presssure water faucet as you stand facing aft in the galley. The water is pumped from outside the hull using a foot pump at the galley plumbed to a thru-hull beneath the galley sink. The salt water pump system is also used to drain the icebox.

### Operation:

- 1. Check to see that the icebox drain valve is closed (located under the galley sink cabinet just forward of the fresh water tank selector valves.
- Open the salt water thru-hull lever valve.
- 3. Operate foot pump.
- 4.6 <u>Icebox Drain System</u>: A closed icebox drain system which operates via the salt water system has been fitted to eliminate any debris from the icebox from entering the bilge and fostering bacteria growth.

### Operation:

1. Shut the salt water thru-hull lever valve.

- 2. Open the icebox drain valve.
- 3. Pump the salt water foot pump which will pump water accumulated in the icebox into the galley sink.
- 4.7 Head System: Frustrating and unpleasant situations related to head operation and maintenance can be avoided for both owner and guests by taking time for familiarization with the system. Federal law prohibits discharging raw sewerage from any vessel into U.S. waters within the Three-mile limit. Refer to Coast Guard regulations regarding marine sanitiation systems.
- 4.7.1 Description: The basic components of the Ericson 32 head system are:
- Marine toilet
- 13 gallon holding tank located under the forward vee berth (fully removable for service if required.
- Dockside holding tank discharge receptical fitting
- Water intake thru-hull with valve
- Optional overboard discharge handpump and thru-hull with valve, (for use when cruising in waters beyond the three-mile limit).
- 4.7.2 Operation: Most common malfunctions occurring with head systems are associated with the introduction of papertowels, sanitary napkins and other foreign objects. The operation of the system is simple and will remain uncomplicated if the operating instructions are followed. Be sure to post the operating instructions supplied, doing so will aid your guests and supplement your own instructions concerning the operation of the boat.
- 4.7.3 Emptying the Holding Tank: Emptying the holding tank should be done at a waste pump-out station located at many major marinas. Pump-out is through the deck fitting marked "waste" located on the port side near the shroud chainplates.
- **4.7.4** Overboard Discharge (optional): An overboard discharge system is available to allow the holding tank to be pumped overboard when outside the U.S. territorial waters where pump-out facilities are not available.

### To operate:

- Open the discharge thru-hull located under the head basin cabinet.
- Use the hand operated pump mounted in the side of the head cabinet and pump until the tank is empty.

Remember: This is a convenience for long distance cruising and it is against the law to discharge untreated sewage into the territorial waters of the United States.

4.7.5 <u>Iroubleshooting</u>: The most common problem with the head itself is clogging with foreign objects, (see Section 4.7.2). If pumping becomes difficult when in the "flush" mode, it is usually a sign that the "joker valve", located on the head discharge line, is blocked. Continued pumping will damage the valve or pump.

Discharge water reentering a dry bowl indicates that the joker valve has been split or otherwise

damaged. The valve itself is neither expensive nor difficult to replace, but when a problem does occur, it is usually at a difficult time to perform service on the head...

Refer to the parts diagram for the specific head installed in your boat.

### To replace a joker valve on most marine heads:

- 1. Make certain head thru-hulls are closed.
- 2. Disconnect the discharge hose (larger of the two hoses) from the discharge tailpiece. Take care not to spill the contents of the hose. A bucket or small pan and rags will help.
- 3. Remove the tailpiece flange and the tailpiece.
- 4. Remove the joker valve and clear. Check and change if necessary.
- 5. To reassemble, reverse the above steps.

CAUTION: USE GREAT CARE WHEN THREADING AND TIGHTENING THE FASTENERS ON ANY OF THE HEAD COMPONENTS. IT IS QUITE EASY TO OVERTIGHTEN THEM CAUSING THEM TO STRIP OR OVERCOMPRESS. THE SEALS AND GASKETS.

### If water does not enter the bowl in the "flush" mode:

- Growth may be covering the intake thru-hull or has gotten trapped in the valve, or:
- The intake hose has somehow gotten kinked.

### Pump piston leaks:

- Try tightening the packing nut on the top of the pump where the rod enters the housing just enough to stop any leakage around it.
- Remove packing and apply a small amount of waterproof grease to it.
- Rebuild the pump with a pump rebuild kit available from your marine accessories dealer.
- To prevent future premature packing wear, give the pump piston a light coating of grease.

<u>Cleaning the head:</u> Use soap or detergent - DO NOT USE ALCOHOL, KEROSENE OR SOLVENTS IN THE SYSTEM, THEY WILL DETERIORATE THE SEALS.

### 5. ELECTRICAL SYSTEMS

5.1 General: Questions concerning the operation of electrical systems are among the most common asked by owners. Most of these questions deal with accessory installation. On the Ericson 32 the electrical systems have been organized to make maintenance and understanding easier. By using clearly marked electrical panels, conduit in hard-to-route places and color coding consistent with a basic wiring diagram, (see diagram in this chapter), accessory wiring and even trouble-shooting, should the need arise, are simplified. All wiring complies with the standards set forth by the American Boat and Yacht Council Manual.

The Ericson 32 has two distinct electrical systems: a 12-volt D.C. system and a 110-volt A.C. system. YOU SHOULD USE EXTREME CAUTION WHEN WORKING WITH EITHER SYSTEM. SINCE WORKING WITH ELECTRICITY CAN BE HAZARDOUS WHETHER 110-VOLT A.C. OR 12-VOLT D.C.

- 5.2 12 Volt D.C. System: The specifics concerning the 12-volt D.C. system (12vdc) will be described item by item under sub-headings. The power source for the system is two 85-amp heavy duty marine batteries which are normally charged by the engine alternator. Power distribution to the various functions of the system is through the 12vdc panel located in the navigation area of the aft cabin.
- 5.2.1 Batteries: Two 12 volt, 105-amp marine batteries are provided. They are located under the quarter berth strapped into the integral battery box. The batteries are joined electrically at the negative terminals by the negative cable (black), which then runs to a ground on the engine. The positive (red) lead from each battery runs directly to the main battery switch located on the 12vdc switch panel at the navigation area. Power may be drawn from either or both batteries by selecting the respective position on the main battery switch.
- 5.2.2 12vdc Panel, Main Battery Switch and Yoltmeter: The 12vdc panel is the power distribution center for the system. Located on it are the main battery switch, battery condition voltmeter, and twelve breaker-type switches.

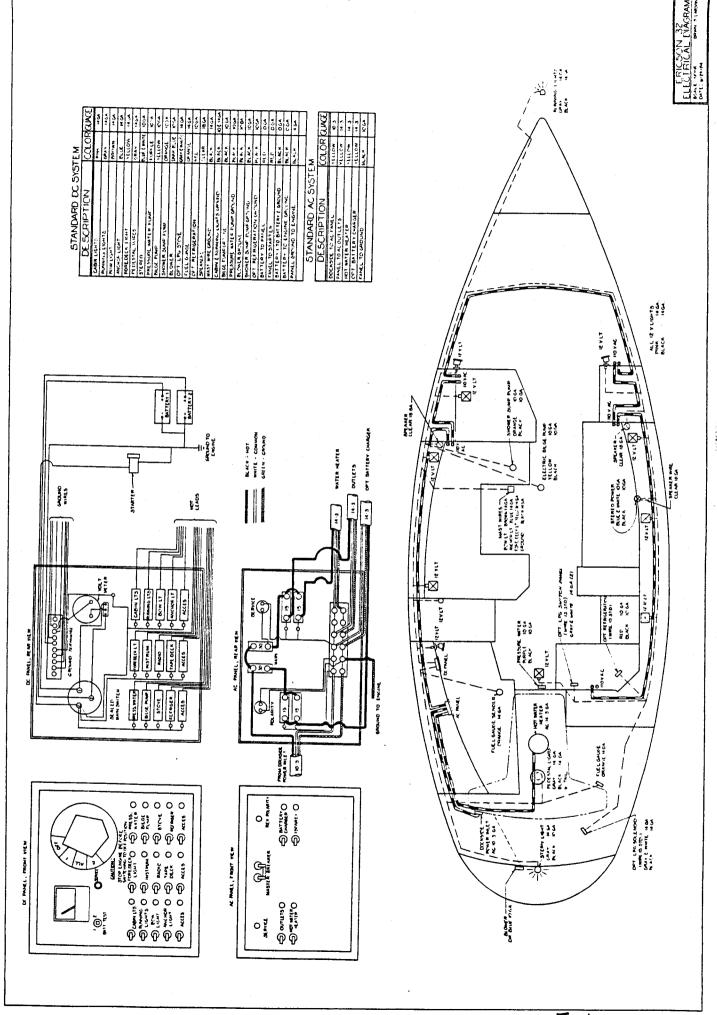
The <u>main battery switch</u> controls the entire distribution as well as charging system. It has four positions: "Battery 1", "Battery 2", "Both", and "Off". When operating any of the 12vdc systems such as cabin lights, running lights, etc., the main battery switch should be selected to either "Battery 1" or "Battery 2". In this way, if both batteries started with a good charge, there will be ample power to start the engine by switching to the stronger battery and back to the low battery for charging. Suspect dimming cabin lights as a need to recharge the battery in service. Monitor battery condition with the <u>voltmeter</u> located on the panel.

CAUTION: NEVER SWITCH THE MAIN BATTERY SWITCH TO THE "OFF" POSITION WITH THE ENGINE RUNNING. ALTERNATOR DAMAGE WILL RESULT.

To start the engine and charge the batteries using the alternator, either battery or both may be used by selection on the main battery switch. It is wise to save "Both" for starting only when neither "1" or "2" will start the engine alone. See Section 3.4 for <u>starting</u> with a weak battery.

Battery power below 11-11.5 volts indicates that the battery needs charging.

Some 12-volt accessories, particularly VHF radios, will not function correctly at lower power. Check voltage tolerances in the individual accessory owner's manuals. Keep in mind also that each running light or incandescent cabin light may draw 1-1.5 amps per hour.



<u>The 12vdc voltmeter on the panel</u> will enable you to monitor your battery voltage condition and, to some extent, the rate at which the batteries are being charged from the engine alternator. By monitoring intermittently while using accessories, you will get an idea of the rate at which power is consumed, which will help in conserving power. To use the voltmeter, hold the toggle switch toward the position of the battery to be checked as indicated on the panel. The following is a guide to indicate charge condition and also to check the condition of the alternator charge rate.

11 volts or less battery has very low charge 11-12 volts battery has low charge 12-13.5 volts correct charge

### Io check alternator charge rate with the engine above idle:

13-13.5 volts low charge rate good charge rate

15.5-above alternator, regulator overcharging

Each of the separate breaker switches on the panel functions as both a switch and as a circuit breaker to protect against damage to wiring and accessories. The amperage value of each is indicated under its respective heading in this manual. If a breaker does trip, shutting off the circuit, determine the cause before resetting it. To reset, merely push into the "on" position once again.

**A.** <u>Cabin Lights</u>: (15 amps.) - There are eleven 12 volt cabin lights plus a chart light over the nav table. The top position of this switch on the panel gives it easy reference for locating in the dark. Note that by removing the engine compartment cover aft of the companionway ladder, a cabin light located just under the companionway functions as an engine compartment light.

Be sure to check to see that all cabin lights are turned off individually, not just at the main panel. Since the power consumption of the incandescent cabin lights approaches 1.5 amps, a light left on forward or in the head with the panel breaker left on will cause significant power drain.

**B.** Running Lights: (5 amps) - Basic running lights include 1 red (port) and 1 green (starboard) 10-point light at the bow and 1 white 12-point light at the stern. In addition, the optional compass and instrument lights are wired into this circuit. Note that instrument operating power should not be wired into this circuit.

Running lights are required to be displayed from sunset to sunrise. Consult Coast Guard Publications for rules governing the use of running lights.

<u>C. Bow Light:</u> (5 amps) - The bow light is located 1/3 of the way up the mast on the forward side in combination with the deck light. Sometimes referred to as the "steaming light", the bow light must be displayed while running under engine power at night. The bow light is a 20 point white light with a power comsumption of 1.5 amps. The bulb is available from Forespar #1416.

**D.** Anchor light: (5 amps) - The anchor light is mounted on the masthead and is technically displayed only when at anchor. It is a 32-point (360 degree) light.

**E. Foredeck Light:** (5 amps) - As its name suggests, the foredeck light is used to illuminate the forward deck area when working at night. Some choose to use it to illuminate the jib to aid sail trim and steering at night. While it is a great aid when needed, use it judiciously because it will tend to cause nightblindness.

In most cases, by using white light only when necessary, night vision will develop enough until working on deck can be done with little or no light supplement. An occasional flashlight beam on the jib luff and mainsail will allow you to monitor sails close enough in all but racing conditions. Use the foredeck light sparingly, but use it if you must.

The bulb is a Forespan # 1367 on early models and an Aquasignal #904-00234 on later models.

- **E. Instruments:** (10 amps) Just below the foredeck light on the panel is the instrument power switch. Hooking instrument power to units such as windguides, depthfinders, and digital equipment to this switch and hooking instrument light wires to the running light switch will help segregate power usage.
- <u>G. Radio:</u> (20 amps) The radio circuit breaker is designed specifically for use with a YHF or other radiotelephone. Entertainment radio AM-FM/Tapedeck, is provided for on the switch below.
- **H.\_Stereo**: (20 amps) The Ericson 32 was planned with pleasure and comfort in mind. A very pleasant addition to any list of accessories is stereo radio and tapeplayer. Its installation has been made much easier by pre-wiring leads to the forward main cabin bulkheads for speakers. Consult the wiring diagram for leads.
- L. Pressure Water: (10 amps) The pressure water switch activates the pump for the pressure water system (see plumbing section 4.4.3). The switch may be left on while the boat is in use, the pressure pump has its own pressure-activator on/off demand switch. If for some reason, the main battery is left on when leaving the boat, be certain that this switch is turned off. Should a leak in the system develop, extensive battery drain and possible pump damage could result.
- <u>J. Bilge. Pump:</u> (10 amps) For convenience, an electric bilge pump has been provided. (see Section 4.3.2). Switch the pump on when needed. When the pump has removed as much water as it can, it should be switched off at the panel.
- <u>K. Stove:</u> (5 amps) The stove switch is provided for the installation of an optional LPG or propane stove shut-off solenoid. With the LPG stove, this breaker is wired to a shut-off solenoid located in the cockpit LPG tank storage lockers.
- L. Refrigeration System: (20 amps) The optional refrigeration system is wired to this switch. When using refridgeration, if time allows, we recommended that the box be cooled down in the 110 volt A.C. mode and then switched over to 12vdc just before departing the mooring.
- M. Back of Panel: Access to circuit breaker terminals, ground terminals and main battery switch terminals may be gained by unscrewing the fasteners on the face of the panel and pulling it gently away from the wood facing.

The ground terminal strip can be identified by the group of black coded wires running into it. Most accessories which you may want to add are designated as negative ground. BE SURE THAT

- YOU ARE FAMILIAR WITH THE VOLTAGE, AMPERAGE AND GROUND REQUIREMENTS FOR ANY ITEM WHICH YOU ARE PLANNING TO INSTALL. YOUR ERICSON 32 12YDC SYSTEM IS A NEGATIVE GROUND SYSTEM. BE SURE TO WIRE THE NEGATIVE (-) SIDE OF THE EQUIPMENT TO THE GROUND TERMINAL STRIP AND THE POSITIVE (+) SIDE TO THE DESIRED BREAKER SWITCH.
- On Macerator-type Head System (Optional): Whenever a macerator-type (type 1), head is installed at Ericson, it is wired directly to the "common" terminal on the main battery switch. These heads have their own switch and fuse protection systems which are located in the head compartment on the control unit. Consult the manufacturer's instructions for operation requirements for the particular head installed.
- 5.2.3 12 Yolt Electrical System Maintenance: Unless otherwise called for, maintenance on the 12vdc system in your Ericson 32 should consist of:
- A. Check to see that battery cables are tight on terminals and that the terminals are clean. If required, clean battery terminals and the inside of the clamps with sandpaper until shiny and reconnect cables tightly to the battery terminals.
- B. Check battery tiedowns to be certain that the mounts, straps and buckles are all secure and in good condition. This is a critical factor to the safety of persons and equipment. Heeling or the lurch from large wave could cause the batteries to get loose into the cabin if not properly tied down.
- C. Check connections behind the 12 volt panel for corrosion and tightness. Clean corrosion with light sandpaper (400 grit) and spray with silicone.
- D. WITH THE ENGINE OFF Check the alternator belt for proper tension (see Engine Manual) to be sure that batteries are charging efficiently (see Section 5.2.2).
- E. Check the ground connection on the engine and to the ground terminal strip behind the 12vdc panel.
- F. Check the starter solenoid connections on the engine to be sure that they have not loosened up due to vibration.
- <u>5.3 110 Yolt A.C. Electrical (Shorepower) System:</u> Also provided as standard equipment on the Ericson 32 is a 110 volt electrical system for dockside convenience. This system is controlled by a separate distribution panel located below the 12 volt D.C. panel in the nav area. Components consist of a 50 foot cord, panel with breaker switches and reverse polarity indicator, and five duplex outlets.
- 5.3.1. Power Cond: A 50 foot heavy duty power cord with twist lock weather proof fittings is provided to connect your yacht's A.C. system to a power source. Be certain that the power source does not exceed the 30 amp specification of the cord. The 30 amp plug configuration will not fit other amperages, so, if your cord will not make a proper connection, investigate to find out what the amperage of the source is. Usually amperage ratings will be marked on the receptical. The system may use lower amperage sources provided that the specifications of any appliances that you intend to use don't disallow it. "Pigtail" adapters will be required for connection to your cord so, for convenience, it is wise to call ahead to the dockmaster of any area in which you are planning to stay to find out about the facilities.

The female end of the cord plugs into the weather resistant receptical located on the port isde of the cockpit between the helmsman's seat and the port cockpit seat. When not in use, stow the cord, neatly and not hanked or kinked, in a relatively dry area to keep as much moisture and mineral build-up as possible from the end fittings.

- <u>5.3.2 110 Yolt A.C. Panel</u>: The A.C. distribution panel is located just below the D.C. panel in the nav area. Located on it are the main circuit breaker, accessory circuit breakers, service light and reverse polarity light. Individual breaker amperage values are indicated in parenthesis below.
- **A.** <u>Main Circuit Breaker (30 amp)</u>: Controls all power from the outside to the distribution panel. It must be switched to the "on" position to allow power to the accessory breaker circuits.
- **B.** Service Light: Indicates that the main breaker switch is on and that there is power to the panel.
- <u>C. Outlets (15 amp)</u>: Provides power to the six duplex outlets. Behind each outlet box is a protective cover to prevent accidental contact with terminals.
- **D.** Water Heater (15 amp): Allows operation of the fresh water heater for use in galley, vanity sink, and shower (see Section 4.4.3), when shore power is available.

# CAUTION: DO NOT OPERATE THE WATER HEATER WITHOUT WATER IN THE TANK OR DAMAGE TO THE ELEMENT WILL RESULT.

- E. Refrigerator (optional) (15 amp): Some refrigeration systems operate on both 12 volt D.C. and 110 volt A.C. power. To activate the unit on A.C. power, switch to the correct mode on the unit and switch on the A.C. breaker switch on the panel labelled "Refrigerator". (Also see section 5.2.2L).
- F. Battery Charger (optional) (15 amp): An optional automatic onboard battery charger is available. Models capable of charging 2 or more batteries are available and help maintain the 12 volt system. They may be mounted neatly out of the way.
- 6. Spare Switch Positions (no switches present): Two switch positions are left open for accessories such as electric stoves, etc.
- H. Reverse Polarity: The reverse polarity indicator light will glow whenever the hot and common (neutral) are crossed over from the shorepower source. IHE 110 YOLT SYSTEM SHOULD BE DISCONNECTED AT ONCE. OPERATION IN REVERSE POLARITY CONDITION IS HAZARDOUS.

# IN THIS CASE, DO NOT ATTEMPT THE REPAIR YOURSELF, CALL A QUALIFIED MARINE ELECTRICIAN.

**1.** Back of Panel: After disconnecting the shorepower cord, access to the back of the A.C. panel may be gained by removing the four fasteners and pulling it gently away from the wood facing. Along with the breaker terminals, you will find the common (neutral) terminal strip, identified by the white wires running into it, and the ground terminal strip, identified by the green wires running into it.

5.3.3 <u>Duplex Outlets</u>: There are four recepticals which may be used for operating any common 110 volt household appliance which does not exceed circuit specifications. These are located in the galley area, main salon above both the port and starboard settees, forward cabin, and head where there is a weather-resistant cover plate over the outlet.

NOTE: THE OUTLET RECEPTICAL IN THE HEAD IS OF THE WEATHERPROOF TYPE WITH HINGED COYERS. WHENEVER NOT IN USE THE COYERS WHOULD BE KEPT CLOSED. UNDER NO CIRCUMSTANCES SHOULD THE COYERS BE OPEN WHEN THE SHOWER IN IN USE.

**5.3.4** A.C. Wiring: All factory installed wire for the A.C. system accessory circuits is 14/3 wire. The number refers to it as having three 14 gauge wires combined into one insulated configuration. This is suitable for 15 amp service. If accessories are to be added to these existing circuits with amperage requirements in excess of 15 amps, suitable wiring and circuit breakers should be installed. Wiring requirements are as follows:

20 amps - 12-3 wire 30 amps - 10-3 wire

5.3.5 <u>Iroubleshooting</u> the A.C. <u>System:</u> Most problems, other than resetting a circuit breaker, should be handled by a qualified marine electrician. Working with 110 volts A.C. is hazardous and can require special equipment beyond the scope of the onboard tool kit.

If an excessive load demand comes onto a circuit, the breaker switch on the panel for that circuit will shut off. In most cases the cause will be:

- A. Overloading the system with appliances.
- B. Short circuit caused by the presence of moisture in one of the components, particularly at one of the shorepower cord connections.

If overloading is the problem, reduce the load and reset the tripped breaker. If a short is suspected, have a qualified marine electrician check the problem and repair it. Reloading the circuit could cause extensive damage to other wiring running next to it and possible further damage or injury. Take immediate action to have the problem repaired.

### 6. SPARS AND RIGGING

6.1 <u>Description</u>: The Ericson 32 comes equipped with a modern, efficient and sophisticated double spreader, masthead rig. The double spreader rig combines the advantages of an aerodynamically desirable spar with the support and tuning control afforded by two sets of spreaders and associated intermediate shrouds. The spar material is the highest quality aluminum extrusion. The top section of the mast is tapered to reduce weight and windage aloft. Aluminum surfaces are painted with a linear polyurethane coating. The standing and running rigging wire is stainless steel.

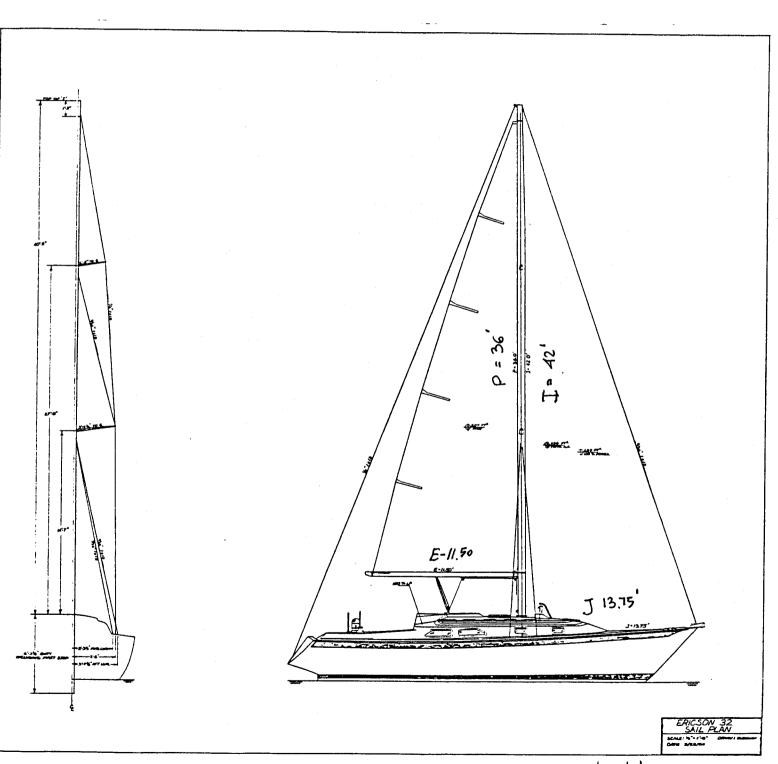
By demystifying some of the procedures of tuning the double spreader rig, we will cover some of the questions most frequently asked by owners. Although you will probably receive your Ericson 32 after commissioning, with the mast stepped and the rig tuned, there are several reasons which might require retuning or rig tension adjustment.

- 1. There will be some settling of the hull and deck components and there may be some stretching in the new rigging wire. The cumulative effect might require additional rig adjustment.
- 2. You may wish to install some optional equipment, such as turnbuckle boots etc., which might require loosening and retightening shrouds.
- 3. Lubrication and periodic maintenance of turnbuckles would require backing off and retightening turnbuckles.
- Certain situations call for the replacement of damaged rigging (a shroud, backstay, or headstay).
- **6.2** <u>Iuning</u> the <u>Mast</u>: Tuning your mast may turn out to be as rewarding of an operation to master as it is practical.

### At the Dock:

- 1. When stepping the mast be certain that care is taken to pad the mast partner so that as the mast slips in toward the step, the painted surface will not be scratched. Cardboard or thin carpet taped into place works very well. Be sure to slide the mast boot onto the mast before stepping the mast, or be prepared to install a wetsuit rubber-type boot after the mast is stepped.
- 2. After stepping the mast snug the shrouds up until the slack is out of them and tie the halyards away from it to prevent them from slapping on the aluminum. Leading headsail halyards to the pulpit and moderately tensioning them is quite satisfactory. The main halyard may be attached to a stanchion base or the aft end of the boom if installed.
- 3. <u>Block the mast at the partner</u> using the hard neoprene supplied. Position the mast in the center of the partner (the opening where the mast passes through the deck). The mast should be blocked firmly at the deck and it might be necessary to shift the mast in the partner to get the rubber blocking material to sit down properly in place. This is sometimes an arduous task but, well worth the time and effort to do it correctly.

By taking a line to the mast and turning it around a bow cleat and back to a primary winch, it may be pulled forward and compress a section of the blocking which has been inserted into the



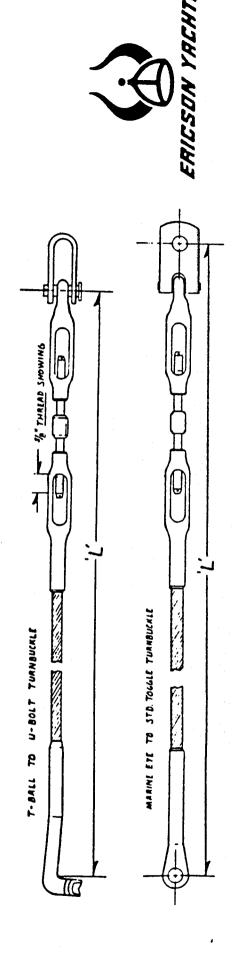
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E-32 STANDING RIGGING SPECIFICATIONS

		ן ני	DIANU SIANU	SIANDING NIGGING SPECIFICALIONS	u SPECIFIC	41 TONS				10/
	WIRE STRAND	DIAMETER	LENGTH, L	TRNBKLE MANUF.	TRNBKLE THREAD	TRNBKLE PIN DIA.	TRNBKLE Toggle	SWEDGE SWEDGE FOR MAST PIN DIA	SWEDGE PIN DIA	STD/OPT
HEADSTAY	1×19	9/32"	431-34"	NAVTEC	1/2"	1/2"	STD	HARINE EYE	1/2"	STD
BACKSTAY	1×19	1/4:1	461-3 3/4"	NAVTEC	7/16"	1/2"	STD	MARINE EYE	1/5,,	STD
BACKSTAY BRIDLES	NONE			٠						
UPPERS	1×19	1/4:1	4161/4"	NAVTEC	91/2	1/16"	U-BOLT	T-BALL		STD (2)
HITERMEDIATES	1×19	7/32"	29'-14''	NAVTEC	3/8"	3/8"	U-BOLT	T-BALL		STD (2)
FWD. LOWERS	1×19	7/32"	15'-3 1/2" NAVTEC	NAVTEC	3/8"	3/8"	U-BOLT	T-BALL		STD (2)
AFT LOWERS	1×19	7/32"	15'-10"	NAVTEC	3/8"	3/8"	U-BOLT	T-BALL		STD (2)
IN-LINE LOWERS	NONE						·			
RUNNING BACKSTAYS	1×19	3/16"	22'-0"	NONE 1	 		1	T-BALL		OPT (2)
BABYSTAY	NONE									
DECK TIE-DOVN	1×19	3/16"	5'-10''	J8b <u>n</u> §88/ Navtec	5/16"	5/16"	STD	STD TOGGLE	5/16"	STD
Y.				·						

NOTES:  $|Marine\ eye\ w/3/8"$  pin hole on bottom of running backstays.



1 Dacron Bra

<sup>2</sup>7 x 19 SS

Wire to Li

lengths as 3 ft. bury splice.

4Shackle a

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	QUANTITY	LINE DIA <sup>T</sup>	LINE LENGTH	WIRE DIA2	CUT WIRE LENGTH <sup>3</sup>	SHACKLE	STD/OPT
HAL YARDS:							
ON MAST MAIN LED AFT	ı	3/8"	- 25	3/16"	37'	5/16" Key	STD
ON MAST GENOA LED AFT	_	3/8"	521	3/16"	361	NF1 1000S	STD
CH HAST LED AFT	2	3/8"	52'	3/16"	36 t	NF11000S	OPT OPT
ON MAST STAYSAIL LED AFT	-	3/8"	41,41,	3/16"	23' 33'	NF11000S	0PT 0PT
POLE LIFT (LED AFT)	15	3/8"	111	3/16"	331	NF11000S	OPT
BOOM LIFT	-	1	8 1 1 1	9''8/1	38'	77	STD
SHEETS:							
MAIN	<b>-</b>	7/16"	,09		1 1 1 1	1	STD
GENOA	2	7/16"	451		 	:	STD
SPIN.	4	7/16"	55'		1	G188720	0PT
AFTERGUY	NONE						
MISC.:							
TRAVELER	2	3/8"	10'				STD
CENTER BOOM VANG LED AFT		3/8''8	35,	-			OPT OPT
CUNNINGHAM	-	3/8"	25'	-	1 1 1		OPT
FOREGUY	-	3/8"	50'		0 0 0 0 1	NF11000S	OPT
LEECH REEF	2	3/8" 9	(1) 45'		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		UPT
RUMNING BACK TAIL	2	3/8"	25'	-	-	3/8" screw pin	OPT
STAYSAIL SHEET	-	5/16"	351			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OPT

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Vang Line.

E-32 BLOCK & TACKLE SPECIFICATIONS

					•	•	٠
-	BLOCK	BLOCK	BLOCK	PURCHASE	LINE SIZE	LINE SIZE <sup>1</sup> LINE LENGTH	STD/OPT
BOOM VANG, CENTER	Sch. 24-59	Sch. 07-49	1 1 1	4:1	3/8"	35 '	OPT
BOOM VANG, LED AFT	Sch. 07-55	Sch. 07-49	1 1 1	4:1	3/8"	60'	OPT
CUNNINGHAM	Sch. 05-43	Sch. 22-59	1 1 1	4:1	3/8"	25'	OPT
INTERNAL OUTHAUL	(2) Ken. 2272			4:1	3/8"	25'	STD
INTERNAL BOOM LIFT	Ken. 2033			2:1	3/8"	25'	STD
MAINSHEET	Sch. 05-03	Sch. SK3542	Sch.05-13	4:1	7/16"	60'	STD
TRAVELER	RF 851	RF 852	1 1 1	2:1	3/8"	(2) 10'	STD
BACKSTAY ADJUSTER							
SPIN. CAR LIFT	(2) Sch. 404-30 (2)	(2) Sch.404-03	1 1 1	2:1	3/8"	32,2	OPT
RUNNING BACKSTAYS	(2) Sch. 09-15	1 1		1:13	3/8"	25'	OPT

NOTES:

Braided Dacron line

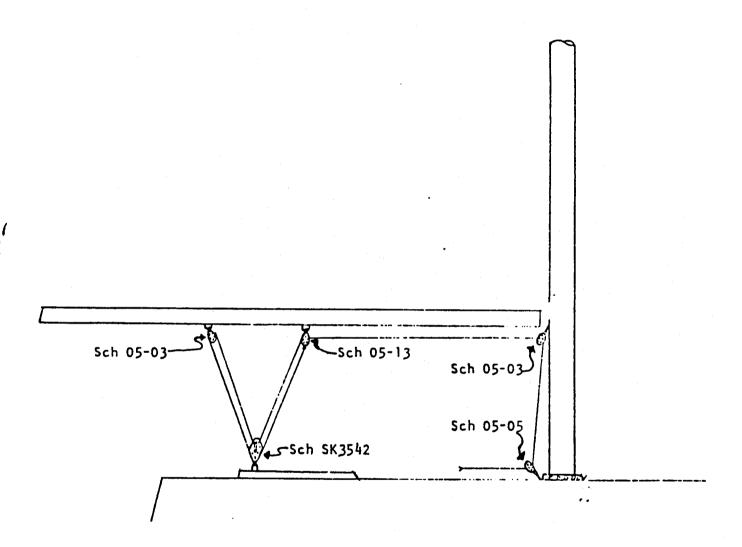
<sup>2</sup>Eye splice on one end of Spin, Car Lift Line

Running Backs let to Sheet Winches



### ERICSON 32 MAIN SHEET BLOCKS

- (1) Schaefer SK-3542: Fiddle Block W/Swivel Shackle
- (1) Schaefer 05-13: Single Block W/Becket
- (2) Schaefer 05-03: Single Blocks
- (1) Schaefer 05-05: Single Block W/Swivel Shackle



# ENCINEERING DRAWING INFORMATION TITLE: BOOM VANG TACKLES ERICSON 32 SCALE: NONE DATE: 4/4/85 DRAWING: DRAWING IN REPLACED CENTER TYPE CENTER TYPE SCH. 24-59 FIDDLE BLOKE WISHINGLE WARP SHACKLE CANCESAT & BECKET NOTE: SNAP SHACKLES TOPERMIT STOWING TACKLE DELOW DECKS

E/32 SCII. 07-55 FIDDLE ISLOCK W/ SWIVER SHACKLE & BELLET SCH. 07-49 FIDDLE BLOCK W/ SWIVER SNAP SHACKLE SCH. .07 -05 SWIVER BLOCK

EKICSON YACHTS

BOOM VANG LED AFT



forward side of the partner. Compressing the rubber will allow enough room to insert the rubber in the aft side of the partner.

NOTE: The line should be at least 7/16" in diameter and in good shape without weak spots and should be padded at the mast to guard against paint abrasion.

Another line suspended from the gooseneck and supporting the puller line will prevent the puller from creeping down the mast into the partner, and hampering the rubber installation.

Once the rubber has been installed, the watertight mast boot can slide down and be hoseclamped to the mast and the mast collar. To prevent leakage it may be necessary to use some silicone rubber on the aft side of the mast where the sail track insert joints are.

4. Check the masthead to be sure it is centered in the boat by using the main halyard or, more precisely, by hoisting a tape measure up on the main halyard (it will need to be a 50 foot tape), and measuring to the pins of the upper shrouds where they join the chainplates. Adjust by taking up on the upper shroud turnbuckle on the longer of the two sides until the two sides are even.

You can now assume that the masthead is over the centerline of the boat.

- 5. <u>Before tightening the upper shrouds</u> to what will approach sailing tension, adjust out any bend that may appear between the masthead and the deck using the lower and intermediate shrouds.
- 6. Continue tightening the upper shrouds equally by counting the turns taken on each upper shroud turnbuckle. Do not allow the mast to bow "out of column". Adjust the lower and intermediate shrouds enough to control this athwartships (sideways), bowing tendency. Final tension should allow the upper shroud to be deflected two inches when pulled laterally by hand with moderate effort (use the intermediate as a gauge approximately 5 feet above the deck). Unnecessary tensioning is unduly burdensome on the boat in general.
- 7. When tension has been reached on the upper shrouds, begin to tension the intermediate shrouds until the next lower mast panel is in line with the masthead. A "panel" describes the length of mast section between major rigging terminals; i.e., masthead to upper spreaders, upper spreaders to lower spreaders and lower spreaders to the deck (or mast partner). The area from the partner to the step is referred to as the "bury". <u>Do not</u> tension the intermediates and lowers as much as the uppers since they will stretch less when loaded.
- 8. <u>Iension the lowers</u> to bring the bottom panel of the mast in column with the upper part. The forward lowers should be slightly tighter than the aft lowers which should be just lightly firm. The forward lowers are slightly tighter in order to counter the tendency for the mainsail load to pull the mast aft when the mainsail is sheeted in hard. (More about this in Chapter 7.)
- 9. Adjust the headstay and backstay turnbuckles until the mast is leaning a few inches aft at the top. You will probably have to measure this by hanging a weighted string from the masthead and measuring aft of the trailing edge at the cabin top. The distance should be about 5". This much rake will induce some weather helm tendency in moderate air, which is essential to windward performance.

Note: check to see that the hull is floating approximately level as indicated by the bootstripe.

You may have to move some gear around, or empty the forward tank if fitted, or your plane of reference will be off. Tension the backstay until the mast just begins to bow slightly forward in the middle.

- 10. Insert cotter keys in all holes in the turnbuckle screws to lock them into position.
- 11. Adjust the deck-to-step tierod just until slack is removed. Pin the turnbuckle to prevent loosening.

### While Sailing:

When your boat is ready for sailing, the final tuning can be done in a breeze of 12-15 knots of apparent wind. Further adjustment might have to be made where sailing is done in consistently higher wind ranges, such as San Francisco Bay or South Texas. Recheck mast tune whenever sailing in stronger winds than those in which the mast was tuned.

When tensioning the shrouds, always adjust the leeward rigging, never the loaded windward side. Sight the mast when sailing closehauled with the rig loaded. If an adjustment is required, tack and make it when the former windward rigging is unloaded on the leeward side. Attempting to adjust turnbuckles under a loaded condition will damage the threads.

While sailing close-hauled, the mast should appear straight in column athwartships when sighted up the sail track on the trailing edge. A slight bend (2-4"), forward in the middle is allowable. Slight bend aft in the middle, while not dangerous is detrimental to sailing performance.

Several tacks may be required before the rig is tuned properly. Near the fine tuning stage, adjustments of 1/2 to 1 turn may make a significant difference.

Remember to replace cotter pins in the turnbuckle screws, bending and toping them to insure they will not snag sheets, sails or people.

The headstay will have about 8–10 inches of sag at its midpoint when sailing close hauled. It is impractical, if not impossible to remove all sag from the headstay. To attempt to do so compresses the mast column, effectively shortening it and promoting further sag. Doing this also unnecessarily overloads the rig and the boat. See section 7.3.2 for the effects of headstay tension on upwind performance.

For racing, increased headstay tension can be added by merely tightening up on the backstay turnbuckle if a backstay adjuster is not fitted. Sight the mast to be certain that this extra compression has had no adverse effect on the lateral tune of the mast. Back off the backstay to the previous tension after returning to the dock.

Also see the "performance Sailing" notes included in Section 7 on "Safety and Sailing".

**6.3** Mast and Boom Hardware: The addition of hardware to the mast and boom is relatively easy to do. Most blocks, cleats and pad-eyes, etc., may be tapped into the aluminum if the major load component is in shear (sideways).

To do this, locate the fitting and, with an awl or centerpunch, mark one or two fastener holes to begin with. Drill the proper size hole and thread it using a lubricant such as kerosene or WD40.

Choose fasteners that are no longer than necessary so not to foul or chafe internal lines. When the fitting is ready for mounting, coat the fasteners with a thread or bedding compound such a "Loc-Tite" (pink grade) or "Alumalastic". This will help to minimize the galvanic action between the stainless steel fasteners and the aluminum.

# CAUTION: NEVER USE BRONZE FASTENERS IN ALUMINUM.

Over time, some paint blistering may occur in the area of the new fasteners.

- **6.4** <u>Mast Electrical</u>: A channel for wire runs, (YHF cables, wind instrument wires, etc.), is extruded into the trailing edge of the mast section. It is covered by the sail track which slides up from the heel of the mast. Wires may be easily added with the mast unstepped, by removing the sail track. To add wires with the mast stepped, use the messenger line provided. Your mast comes with light wiring installed. Consult the 12 volt electrical diagram for coding.
- 6.5 Rig Cautions: There are two major causes for rig failure:
- 1. Improper most tune, allowing the most to move "out of column", even on a well engineered rig. For prevention refer back to Section 6.2 on tuning.
- 2. Failure of a shroud or stay. See following Section 6.6 on inspection.
- **6.6** <u>Inspection</u> <u>and Maintenance</u>: Periodic inspection of the mast and associated rigging is highly recommended, especially in cases where the boat may be raced actively.

### 6.6.1 Most Inspection:

- Sheaves should be checked and lubricated lightly with "Tri-flon" or similar lubricant. Spray
  type lubricants are the easiest to use and the most effective at penetrating into the sheave
  pins.
- Wing halyard chafe gear (see masthead detail) should be in good condition without sharp edges.
- Check the anchor light lens to be sure it is in good condition.
- Check the upper shroud terminals and wire condition where it goes into the swage fitting. Be sure no cracks have developed in the swage fittings. Occasionally, in order to get a good look, you will have to clean off the swage fittings with a rag or fine grit sandpaper to check them closely.
- Move down to the upper spreaders and check the pins and the general condition of the spreaders. Occasionally overbending or extreme loading caused by a collision - especially involving the backstay - may cause small cracks near the spreader base.
- Check the intermediate shroud tangs and running backstay tangs if fitted.
- Check the topping lift sheave box and mast in that area.
- Move down to the lower spreaders and inspect just as the upper spreaders. Check the spreader tips to be sure that the shrouds are in place.

- Check the lower shroud tangs.
- Check the mast in the area of the top of the spinnaker pole track and then down the pole track.
- Check the heel of the mast for general condition and seating on the step.
- <u>6.6.2 Boom Inspection:</u> In general the boom receives frequent scrutiny in the normal course of sailing, however, some components require specific inspection.
- Check all gooseneck components to be sure metal is in good shape and cotter pins holding pivot pins are installed properly.
- Check boom vang and mainsheet attachment points.
- A periodic check of the outhaul wire section should be done since any wire passing over a sheave is subject to broken strands.
- Check the condition of reef outhaul lines for chafe. Replace them or install them end-for-end if chafed.

Note: Loops incorporated into the whipping on reef outhaul lines and halyard tails will ease the operation of removing and reinstalling by providing a tag for the light messenger line to attach to. See the accompanying illustration. Once a line has been reaved back into a spar <u>Do</u>

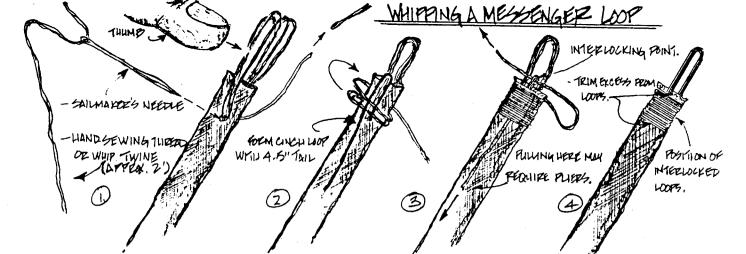
Not forget to knot the end with a figure-eight or double overhand knot to prevent it from being accidentally pulled out again.

**6.6.3** <u>Cleaning and Waxing:</u> Salt, grit, oil, and airborne solvents tend to accumulate on rig surfaces in some areas. Cleaning mast and shrouds will help reduce any corrosive effect, keep your sails clean and your boat's general appearance up.

Waxing the painted surface every 6 months will prevent contaminants from adhering to the mast, facilitating their removal with a hose or damp rag. Use a good quality automotive paste wax.

After each outing, spray fresh water as high up the rig as is practical when hosing off the hull and deck.

Wipe down the shrouds with a damp rag or with acetone if necessary. Avoid acetone contact with the painted surfaces of the mast and boom.



1 USING A NEEDLE, PASS 4-5 LOOPS OF HAND-GEWING THEEAD THROUGH THE DIAMETER OF THE LINE, ABOUT 5%" FROM THE END ON 36" LINE, HOLDING TOWNED THE END OF THE YOUR THUMB OVER THE END OF THE LINE WILL GIVE YOU D "SIZE TOMPLATE" FOR FORMING UNIFORM LOOPS. LEAVE 4-5" KILKING OLT FROM THE POINT OF ENTIEY (FULL BY THE EEG, THEOLIGH)

@ WITH THE 4-5" FORM A" CINCH OF BUTH LOOP AND BEGIN WHIPPING UP LINE WITH TIGHT WEARS WHIP TO WITHIN 16 OF THE END, DON'T PLIENTIME LOOP TAKE PLIERY TO PLILL DOWN.

(3) PLASS THE END OF THE WHIPPING THEOLIGHTHE CINCH LOOP AND PULL DOWN ONTHE TAIL (LOWER ARRAW) AND BURY THE INTERLOCKED LISING THE LONG END (AFTER PORTION OF THE LOOP AND REMOVING THE NEEDLE) WHIPPING TAIL BENEATH THE WHIPPING. IT MAY

DEEGEEFUL NO: TO PULL THE INTERLOCKED LOOPS ESCOW THE BOSTOM OF THE WHIPPING. TRIM THE EXCESS OF AS THE EDGES OF THE WHIPPING. YOU KNOW HAVE A STEDING AND SIMPLE LOOP TO DITACHMESSENGER LINES.

### 7. SAFETY AND SAILING

Many excellent books are available dealing in depth with sailing techniques for racing and cruising, seamanship, and the technical aspects of aerodynamics, hydrodynamics and meteorology. This section is an outline of some basic points dealing with the safe and efficient operation of your Ericson 32. Performance and enjoyment can be easily enhanced by avoiding a few of the fundamental mistakes which sometimes occur as you familiarize yourself with your boat.

The Ericson 32 is an outstanding performer, sensitive to efforts toward refined sailing technique and habits associated with good seamanship. Throughout, it is our most sincere wish to promote a constant awareness of safe operation.

7.1 Pre-sailing Check and Safety Gear: Before leaving the mooring be certain that all required safety gear is aboard, functional and in its place.

CONSULT THE REQUIREMENTS FOR SAFETY EQUIPMENT IN THE COAST GUARD PUBLICATION "FEDERAL REQUIREMENTS FOR RECREATIONAL BOATS", AS WELL AS, PERTINENT STATE AND LOCAL PUBLICATIONS FOR "INLAND RULES OF THE ROAD" AND SUPPLEMENTARY EQUIPMENT REQUIRED ON A REGIONAL BASIS.

Have <u>fire extinguishers</u> checked annually to be sure that they are in good working order. In fact, the law <u>requires</u> that you do this on fire extinguishers without gauges.

<u>Lifejackets</u> should be inspected to be sure that there are no leaks in the flotation material and that there is at least one for every person aboard.

**Horns** are subject to stickiness and corrosion, so check their operation periodically. There should also be one spare can of propellant aboard.

<u>Safety</u> flares can sometimes become dampened. Store them in a watertight container and replace them annually.

<u>Ihrowable</u> <u>flotation</u> <u>devices</u> are sometimes lost or abused, be sure yours is aboard, in good condition and accessible.

Pay particular attention to <u>man-overboard</u> <u>gear</u>, especially in cases where offshore cruising is undertaken. Check to see that the pole floats in the proper attitude (this check is not as strange as it sounds......), and that any attached equipment; dye marker, whistle and drogue are functioning in good order.

Consult the Coast Guard Requirement booklets from time to time since regulations sometimes change.

A boathook is also a recommended piece of safety and utility gear.

Prior to leaving the dock or mooring, observe all engine prestart procedures in Section 3.2 and the manufacturer's manual supplied. Allow the engine to warm-up for 5 minutes in order to check systems and to avoid stalling in close-in situations such as crowded marinas and moorings. A properly maintained engine on which fuel filters, oil levels, belts and water pumps have been checked will prevent stalling into embarrassing and possibly, damaging situations.

When leaving and approaching mooring areas under power, have at least one sail ready to be set, (uncovered with sail ties readily removable and a halyard attached). If the situation presents itself, the use of a sail and practiced, proficient boathandling could deliver you from an awkward situation.

Accurate maneuvering and confidence from proficiency should be developed and maintained throughout your sailing career.

Before releasing the mooring lines, carefully consider the effects of wind and current on your boat at slow speeds. For example, when backing—down is initiated, sailboats have much lower maneuvering capabilities. Check the water around the boat, pilings and moorings for swirls indicating current direction. Be especially conscious of this in harbors located on rivers or estuaries. Consult all available telltales, especially at the masthead for wind speed and direction. Also look to indicators around you for signs of approaching shifts or gusts.

Just before leaving, make absolutely certain that no other traffic is approaching. Sound a horn if visibility is obscured by breakwaters, piers or larger vessels, and proceed at a slow but effective maneuvering speed.

When backing down under power the "sidewise blade pressure" of the propeller will have a tendency to swing the stern to port on engine with right hand rotation, such as the Universals, until the boat begins to move through the water and water flows past the rudder. To reduce the effect of the propeller:

- start the boat moving in reverse
- throttle down to idle and take the engine out of gear this will reduce the effect of the propeller and allow the rudder to steer the boat.
- when the stern is moving in the desired direction, shift the engine back into reverse and add power.

Experiment and practice with the above procedure in open water and you will see how effective it is in adding rudder control at the earliest moment.

7.2 Powering and Preparing to Hoist Sails: While under power, make a habit of frequently glancing at the engine instruments. Operating your engine within RPM, temperature and lubricating level ranges recommended in the engine manual will mean more efficient fuel consumption, dependability and longer life.

At some point, speed under power will not increase proportional to increased engine RPM. It is detrimental to run the engine at a higher RPM level than is necessary to achieve a speed at which the hoat moves through the water efficiently. The physical laws dealing with displacement vessels tell us that, as speed increases, the hull begins to develop more and more resistance as it moves through the water.

Efficient cruising speed under power can be determined by either watching a knotmeter against the tachometer on the instrument panel or, in the absence of a knotmeter, the point of diminishing return can be determined by the wave and wake generated by the hull and the attitude of the bow.

When a displacement hull is moving through the water at close to "hull speed", a trough in the bow wave develops which extends to the stern at maximum hull speed. At the same time, the bow will tend to rise. Experiments in determining a general cruising speed should be carried out in

relatively flat water so that this wave is readily discernable. Adverse wind and wave conditions may sometimes dictate a higher throttle setting but, do not exceed the engine manufacturer"s recommendations. When powering and ready to hoist sails, slow the boat down to just maintain steerage way and head as directly into the wind as possible. Hoist the mainsail first.

The exception to hoisting the mainsail first might be — if engine power is lost and the boat cannot be positioned directly into the wind so that the main can be hoisted without fouling on shrouds and spreaders, hoist the jib first to gain steerage way. When the jib is hoisted, sheet it in slowly at first since, at slow speed the rig will be out—of—balance, tending to force the bow to leeward. As speed builds, sheet the jib in more and head—up toward the eye of the wind. As the jib is sheeted in, it will deflect the apparent wind aft and make hoisting the mainsail easier, even though the boat may be positioned so that it is not headed into the true wind.

When powering with sails hoisted or motorsailing, make certain that sails are full and not luffing. Allowing them to luff will add to their demise more quickly than anything else.

Setting the mainsail while powering in a light wind but wavy condition will significantly reduce the rolling motion of the boat as long as the sail is kept full with what available wind there is.

**7.2.1** <u>Hoisting:</u> As a general rule, the mainsail is hoisted first. Doing this means that the jib will not be flapping back at the mast for a long period of time. This is a particular nuisance if someone is working forward at the mast.

It is helpful to premark the main halyard for proper height of the hoist. On a quiet day on the mooring, hoist the mainsail to its full-hoist position. With a felt tip marker, place a mark on the halyard either on the wire or rope where the halyard goes onto the winch drum. If this can't be done where you can step off and get far enough from the boat to tell accurately where the mainsail headboard is relative to the upper band near the masthead, (it should just reach the bottom of the band), ask someone on another boat while out sailing. This will help attain proper sail shape and, by hoisting to the band only, the sail slides will not be overstressed when they hit the upper stop on the track and someone continues to winch against them.

After hoisting to the proper position, ease the main boom topping lift just so that it does not tighten when the mainsail is trimmed.

Before hoisting the jib, check to see that the sheets are fastened to the clew (normally just with a bowline knot), and that the jib hanks (clips), are fastened to the headstay all in the correct direction and the tack is hooked onto the proper hook on the stem fitting.

When hoisting the jib, sail slightly off the wind so the jib will luff away from the mast and any crew standing or working there.

**7.3** Setting and Irimming Sails — General: While not everyone is interested in racing, formal or informal, most everyone is interested in some measure of performance optimization and sailing efficiency. The Ericson 32 is deserving of this treatment and you, as an owner, are deserving of the pleasures derived from sailing a well-trimmed, well-designed sailing yacht. The difference between performance levels, in the basic sense, is more a matter of attention than physical exertion.

Correct tension of the luff, foot, and leech of your sails is a major part of performance optimization. Luff tensions are controlled with the halyards on the jib and the mainsail. Added control is given with an optional cunningham arrangement on the mainsail. Foot tension is

controlled by the outhaul on the mainsail and a combination of the sheet tension and fairlead position of the jib. Leech tension is controlled by the mainsheet and traveller position on the main, and again, the fairlead position and sheet tension on the jib.

**7.3.1** Mainsail: Hoist your mainsail and use the halyard to adjust the luff tension, but do not exceed your "max" mark at the band. Your sail may be fitted with a cunningham ring which acts as a sownhaul for added luff tension. The sunningham is not essential for the purely cruising or casual racing sailor. You might want to talk over built-in sail adjustment and design features with your sailmaker.

After hoisting the mainsail to its upper band, use the outhaul to tension the foot of the sail out along the boom. As a general rule, set the outhaul with enough tension to remove wrinkles in the foot in light air, and then, increase the tension as the wind strength increases and causes the draft of the sail to become deeper.

As a general rule, set the outhaul with enough tension to remove wrinkles in the foot in light air and increase the tension as the wind strength increases.

Tensioning the leech of the mainsail is accomplished with a combination of sheet tension and mainsheet traveller position. An adjustable ball-bearing traveller is standard on the Ericson 32. For casual sailing, the traveller car may be left cleated in the center position over the hatch. To improve mainsail shape when sailing to windward in light air, move the traveller to windward a foot or so and ease the mainsheet so that the end of the boom is still over the centerline of the boat. This adjustment effectively reduces leech tension. As wind strength increases, ease the traveller progressively to leeward of the centerline and tension the mainsheet to tighten the leech of the sail. As the wind strength increases further, the traveller should be let down to leeward, in combination with easing the sheet, to compensate for increased "weatherhelm", (the tendency of the boat to round up to windward – generated by heeling angle). When it is necessary to ease the sheet so that the majority of the mainsail is luffing, it is time to reef, (shorten sail). See "Reefing", Section 7.4.

7.3.2 Headsails — Jibs and Genoas: When hoisting the jib or genoa, use enough tension on the halyard to remove any scalloping effect occurring between the luff hanks on the headstay. As a rule, the scallops will reappear as the wind strength increases. The actual effect is not only to remove the scallops, but, to keep the "draft position" or deepest part of the cross-sectional shape of the sail, forward. As the wind strength increases, this shape will tend to move aft in the sail, contributing to more weather helm, heeling, and diminished windward performance.

The jib halyard is easily tensioned in the lower wind ranges even when the jib is full but, an ease of the sheet or luff to windward in heavier air will lessen the strain on both the winch and yourself.

**Jib Fairlead Position**: The jib fairlead position is properly located by tensioning the halyard for the existing wind condition, sheeting the jib in close-hauled and heading-up to windward just enough to cause the jib to luff just about 1-1 1/2 feet aft of the leading edge (luff). If the luff breaks (luffs) evenly all the way up and down, then the fairlead is in the correct position. If the luff breaks at the top first, move the lead forward, effectively tensioning the leech and upper portion of the sail. If the luff breaks at the bottom first, move the lead aft, tensioning the foot and bottom portion of the sail.

Three sets of windward/leeward wool telltales on the sail will help immeasureably in determining where the sail luffs first. Ask your sailmaker to install some for you or you may do

it yourself. Attach one piece of yarn 6-8" long to opposite sides of the jib approximately 1 foot back from the luff. It is sometimes helpful to use contrasting colors such as red and green as opposites in each set. Attach them to the sail with a one inch diameter "dot" of "sticky-back" dacron, available from your sailmaker or local chandlery.

With the sail sheeted (trimmed properly) for sailing to windward, head the boat up slightly. The telltales on the windward side of the sail should all begin to flutter evenly. If they do not, the one that flutters first will indicate where the sail is luffing first.

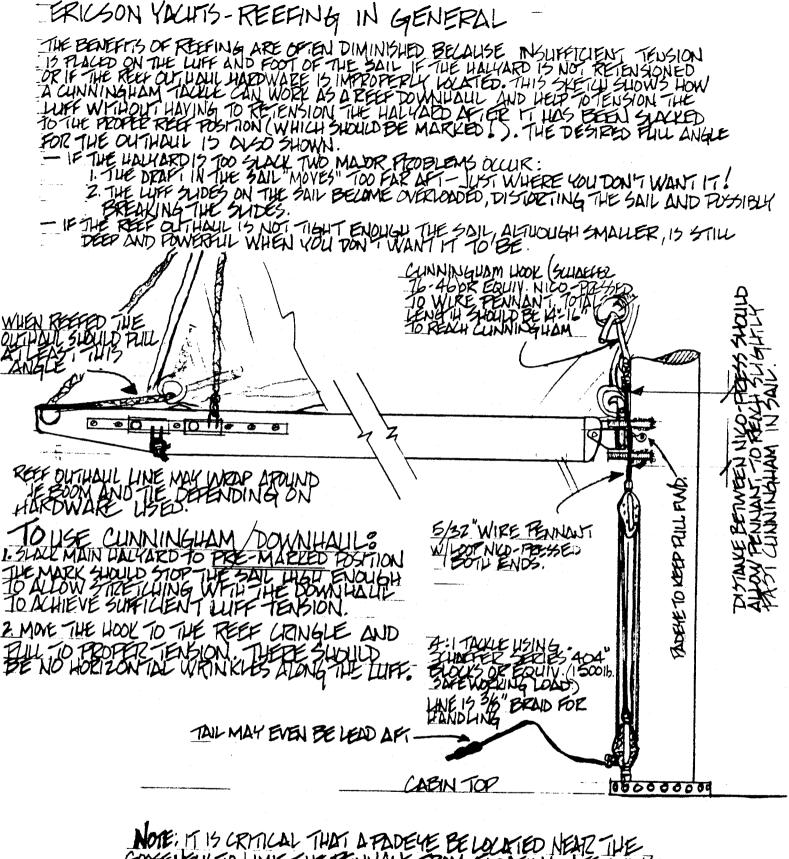
7.4 The Reefing System (optional) and Reefing Procedure: A reefing system will allow you to easily shorten the mainsail as the wind increases and weather helm and comfort become considerations. Recommended, is the slab or jiffy reefing system which is easily installed on the E32 boom. Line stoppers are standard at the forward end of the boom to jam off the reef outhaul lines when in use. Hooks provided on the gooseneck secure the reef downhaul grommet or ring in the mainsail. Consult your dealer and sailmaker about installing reef points in your mainsail. You may desire to have two or three rows installed. Ericson Yachts would be happy to provide you with some recommended hardware layouts.

# The following is list of procedures for reefing efficiently:

- ${\tt I.}$  Take most of the slack out of the main boom topping lift to keep the boom from falling when the main halyard is lowered.
- 2. Ease the mainsheet allowing the mainsail to luff fully and release the boom vang if one is fitted.
- 3. Lower the halyard until the luff reef ring may be hooked to the gooseneck or secured at the gooseneck. (an alternate system utilizing a reef downhaul system may be fitted see diagram this section).
- 4. Retension the main halyard against the forward reef ring. The main halyard is now controlling luff tension which must be fairly tight during conditions requiring reefing.
- 5. Tension the reef outhaul line, drawing the aft reef grommet to the boom. The reef outhaul should also have enough tension to act as both an outhaul and as downhaul on the leech of the sail. Be certain that there is enough halyard tension on the mainsail before tensioning the outhaul or the mainsail may be damaged. A winch will be needed to properly tension the reef outhaul lines.
- 6. Bring the jaw of the line stopper up against the reef outhaul line and ease the outhaul line until it is clamped by the stopper or camcleat.
- 7. Re-trim the mainsail and ease the topping lift if necessary.
- 8. Short lines may be used to furl the remainder of the middle of the sail.

To unreef, reverse the above steps. A word of caution: If any lines have been tied into the intermediate reef points, be absolutely sure that they are all removed before the reef outhaul is released or the sail will tear at the intermediate reef point.

**7.5** Offwind Sailing Performance: The boom vang and wisker pole are two options to the gear inventory which will increase offwind sailing performance and add a measure of



NOTE: IT IS CRITICAL THAT A FADEYE BELOVING NEATZ THE GOSENEY TO LIMIT THE FENNANT FROM FLOATING AT AND KEP THE FORWARD AS WELL AS DOWN IT CAN BE TANDKED COMPOUND ON THE TIRE ADS. EN SURE TO USE SOME BODDING

controllability.

- **7.5.1** Boom Yang: Off the wind, a boom vang will maintain sail shape and control by preventing the boom from rising as the mainsail is eased out away from the traveller car. Without it the boom will rise and the mainsail will twist excessively, inhibiting performance in two ways:
- As the boom rises, actual projected sail area is lost and wind spills off of the leech of the sail.
- Overall control during a jibe is diminished because the mainsail is more difficult to control.
   The upper part of the leech may even catch on the upper rigging on the mast.

Ericson Yachts or your dealer will be happy to supply information on boom vang installations. Installation has been made easier since several provisions for boom vang attachment have been made standard on the Ericson 32.

**7.5.2** Whisker Pole: When sailing dead-downwind (running), a whisker pole may be set to bring the jib out from behind, and hold it stabily on the opposite side of, the mainsail. Therefore, full advantage of the sail area of the jib may be taken. Setting the whisker pole also stops the jib from slatting from side to side when running.

It is recommended if a whisker pole is purchased, that it be substantial enough (3" dia.), and be the length of the "J" measurement (13'-9"). Collapsible or telescoping poles should be considered cautiously. We recommend that a substantial mast track (1-1/4" X 3/16"), with a sliding car be fitted for attachment of the inboard end of the pole to the mast. When in use, the pole should also have a topping lift and foreguy attached, to avoid dropping the outboard end into the water and to assist in handling it. If the outboard end drops into the water when the boat is moving through the water at any appreciable speed, the pole may be swept back against the shrouds, breaking it or causing injury.

The end fittings should be of the "Dip-Pole" type with a trigger-type outboard end fitting if use with a spinnaker is anticipated. The jib sheet may be snapped into the fitting and pulled through until the pole is back in its proper position for running.

**7.5.3** Spinnakers: Like the boom vang, spinnakers were once thought of as purely a racing item. The standard symmetrical spinnaker requires some light air practice and an organized crew to develop proficiency at handling it, but the effort made is usually worth it. Ericson or your dealer can supply you with recommended details on spinnaker gear installation for your Ericson 32.

The boatspeed benefits and the fun of flying a spinnaker can also be enjoyed by using a "cruising spinnaker" which, unlike the standard symmetrical spinnaker, is asymmetrical and does not require a pole to fly it. Sailmakers designed the "cruising spinnaker" to be easy to fly by a short handed crew especially in the light and moderate conditions when the extra sail area might be most desired for fast cruising. The cruising spinnaker can add .5–1.25 knots to boatspeed without a great deal of energy espended by the crew. To simplify things even further, several types of launcher/retrievers are available for setting and dousing the sail. Since designs and concepts vary somewhat, contact your local sailmaker.

**7.6** <u>Tacking</u>, <u>Jibing</u>, <u>Maneuvering</u>: You will find the Ericson 32 as responsive as any sailboat of its size, and more so than most, in standard sailing maneuvers and maneuvering in tight situations. Devote a good portion of time and effort in learning about your new boat, and you will be rewarded with proficiency and confidence, a comfort to both you and your crew.

- **7.6.1 Tacking:** Since the Ericson 32 is so responsive, the tendency to oversteer sometimes occurs in the early stages of familiarization. Practice tacking at a rate which maintains good boatspeed but does not "over-round". Over-rounding (turning the boat too far in a tack) creates a problem for crews trying to trim the jib without excessive effort and it is detrimental to windward performance. The jib fills early, before you or your crew can trim it most of the way in and your heading is below its windward optimum as well.
- 7.6.2 <u>Jibing</u>: Jibing should be practiced in light to moderate air employing these basic techniques:
- A. Make certain that the mainsheet traveller control lines are cleated.
- B. Steer downwind, then trim the mainsail toward the centerline.
- C. Continue to bear off until the boom crosses the centerline, at which time, the mainsheet should be eased rapidly, with only 1-1/2 turns on the winch, (experiment). You should hold your course momentarily until the jibe is complete.

A boom vang will help the jibing maneuver by insuring that the entire mainsail will cross with the boom simultaneously and not twist in the vertical plane.

**7.6.3** Retrieving Objects Overboard: One of the best skill and confidence builders is practice at retrieving objects dropped overboard. A fender will make a good object for practice. In addition to boat handling skills, a sharpening of judgment concerning wind and current is also a benefit.

A detailed discussion of retrieving people overboard has been covered in many magazine articles and book chapters and is beyond the scope of this manual, however a few points are basic. If someone does go overboard:

- A. Alert anyone else aboard that someone has gone overboard.
- B. Throw the flotation device and any other gear which might be attached to it (man-overboard pole, etc.), overboard as close to the person as possible. The throwable flotation device should be mounted on the stern pulpit or in some other location within reach of the helmsman.
- C. Assign someone else aboard to only watch the person in the water and not take his eyes off that person. If possible, try and read a course off the compass back to the person in the water.
- D. Jibe if possible it's quicker and will allow you to approach the person keeping him on your leeward side. A tack would probably require another jibe.
- E. Sail downwind of the person, allowing room and coasting distance for the boat to slow down. Any sharp turns will also slow the boat down. Remember, keep the person on your leeward side if possible. Try to approach so that one side of the boat is slightly leeward, in other words, do not approach so that one side of the boat is slightly leeward, in other words do not approach dead into the wind. Both sails should be out and luffing. The weight of the boom and sails and evailable crew out on one side combined with the windage of the rig and sails will mean that the leeward side will be lower, although the sails are not full.
- F. Have a line ready with a loop tied in it, and if possible, help the person around to the stern

ladder (standard on the Ericson 32). The pitching motion however, will be less toward the center of the boat. In heavy conditions the pitching of the stern may make the ladder very hard to use.

**Wear personal flotation gear.** There are many comfortable, Coast Guard Approved vests on the market. Wear safety harnesses whenever conditions dictate. This could even mean on a perfectly calm day when you are alone and under power.

- **2.7** <u>Docking:</u> The retrieval drill is also excellent for technique and judgement used in docking. Most landings are made under power with sails down.
- A. Have all sails furled and down low to provide maximum visibility. Sometimes a turn into the wind from a downwind approach will cause a jib, which is not tied down, to ride partially back up the headstay, obscuring vision at the worst possible moment.
- B. Have all necessary fenders and docklines ready. A boathook is handy for latching onto mooring lines left hanging on buoys and pilings.
- C. Approach with sufficient steerage way but don't always count on the reverse gear to operate properly and stop you from an excessively speedy approach.
- $\mbox{\bf D}.$  Consider wind and current as you did on departure from the dock. The ideal situation is to approach into both.
- E. Several factors will act to slow you; reverse gear on the engine, any sharp turns, wind forward of the beam and current if forward of the beam.
- F. When to the dock or mooring, secure any upwind or upcurrent mooring lines first.
- **7.8** Anchoring: A covered, self-draining anchor well in the foredeck and a bow roller are both standard on the Ericson 32. Together these two features make anchoring a much simpler task than on most yachts of this size and provides convenient stowage for a Danforth-type anchor and sufficient chain and rode (anchorline).

While in most cases, the anchor is easily retrievable by hand, an optional windlass may be fitted on the foredeck.

Consult the anchor manufacturer's recommendations for anchor size and chain length. A general rule for the length of the rode to be let out is 6 feet for every foot of water depth. The actual length will depend on the type of bottom and wind, wave and current conditions. Be sure that you are using nylon line, it has superior strength and shock absorptive characteristics for its size to any other material.

Anchoring is done by moving up to the desired location, waiting for the forward motion of the boat to stop, lowering the anchor over the bow roller and, once the anchor is on the bottom, backing down or drifting away from it. When a suitable length of rode has been let out, snub the line around one of the bow cleats. The motion of the boat will usually jerk the anchor enough to set it. Once that you feel that the anchor is set, check any available references so that later you may recheck your position with them to be sure that you are not dragging. Also be sure that the bitter end of the anchor rode is tied off.

Normal retrieval is by powering up toward the anchor with someone standing forward taking up

the slack as it comes into the rode until the rode angles straight down below the bow. If the anchor does not break free (most often it won't at this point), snub the line around a bow cleat and continue easily forward. Usually this is enough to break it loose. Be careful that the forward motion remains slow and controlled and that it ceases as soon as the anchor breaks loose or the whole works could foul the propeller and the rudder. If there is any wave motion, snub the line tight as the bow moves downward in a trough. Cinch it tighter on successive waves if possible and the motion of the boat will help to break the anchor loose.

In shorthanded situations or, where more advantage is required, try leading the rode back to one of the primary winches in the cockpit using the winch as a windless.

7.9 Furling and Folding Sails: It is always recommended to stow sails as neatly as possible. Modern sail fabric is extremely durable and highly not resistant however, ultraviolet light (from the sun), and fluttering from excessive luffing can quickly and significantly shorten the life of any sail. "Flake" and cover the mainsail on the boom and fold and stow away the jib in its bag or, furl it on a noller furling system if it is fitted with a cover. If the jib is wet, you may fold it, but leave it out of the bag in the well ventilated cabin.

For cruising convenience, on-deck jib bags are available which allow the jib to be left attached to the headstay. To stow the jib in the on-deck, leave the hanks attached to the headstay and pull the clew of the sail aft along the deck and fold the leech, stacking it as neatly as possible on itself. Roll the sail up, from the clew forward and cover it with the zippered bag.

Sails which have been folded will retain their shape and will look better the next time they are set. With fewer wrinkles a sail is easier to "read" in order to determine what adjustments are needed for effective setting.

7.10 Sail Care and Cleaning: With care and occasional maintenance your sails will serve you well for 10-15 years as cruising sails. Modern, quality sailcloth is highly resistent to stretch and organic rot. However, three main factors will contribute to excess wear and tear:

<u>Fluttering</u> - Powering with the sails luffing or sailing in an "overpowered" configuration requiring excess luffing to maintain control. (see section 7.2)

<u>Ultra -violet degradation</u> - Accelarated by leaving sails uncovered when not in use. Improperly installed U.V. protection on roller furling jibs and genoas and the absence of, or with an ill-fitting mainsail cover will contribute to a pronounced weakening of dacron or nylon sailcloth.

<u>Chafe and Abrasion</u> – Sharp objects on the rig or deck, untaped cotter keys and mast fittings, unprotected spreader tips, etc. will cause tears and unnecessary cloth wear. Your sailmaker can also help by installing extra reinforcement patches in areas of higher abrasion, including where spreaders and stanchions wear on the headsails.

**7.10.1** Cleaning: Day to day airborne grit and waterborne solvents and minerals can be removed by simply rinsing with fresh water. This will minimize accumulation of organic material which supports mildew growth, which while not necessarily detrimental to cloth strength, will cause odor and discoloration.

For heavier dirt and stains, a mild detergent and a soft brush will do just about all that can be done. Petroleum and rust stains are near impossible to remove without causing more harm to the sail during the removal process.

Be sure to allow sails to dry thoroughly before stowing them.

## 7.11 Leaving Your Boat:

- A. Check all mooring lines to be sure that they are secure with adequate tension on spring lines if required.
- B. Fenders should be suspended so that they hang just above the water so as not to gather growth.
- C. The main battery switch should be switched to "off" or only 1 battery. All other breakers are off. You may choose to leave an automatic bilge pump energized.
- D. Thru-hulls are closed except for the aft cockpit drains.
- E. Wet gear is stowed in a ventilated area and preferably hung up to dry. (See Section 2.5)

## 8. WINTERIZING

- **8.1 General:** If you store your boat in an area where climatic conditions subject it to freezing, special preparations, collectively referred to as "Winterizing", must be made to protect your boat and systems from potentially serious damage caused by the freezing of water remaining in any of the plumbing systems:
- -engine (raw water and closed cooling systems)
- -fresh (potable) water system
- -head
- -sink drains (head and galley)
- -ice box drains
- -salt water intake at galley
- -bilge (main and shower sump)
- -cockpit drains
- -anchor locker

Additionally, water left in a crevice where a fiberglass skin has been damaged or seam has been leaking can also cause damage by the freezing of trapped water. Following winterizing procedures, and subsequent recommissioning procedures in the spring, will provide excellent opportunity for timely maintenance of all onboard systems.

Most owners elect to haul-out and store their boats on land, however, there are other methods of guarding against the perils of winter without hauling-out. These include the use of bubblers, which circulate "warmer" water from below the surface around the outside of the boat and, in marginal freezing areas, the use of cabin or compartment heaters, heating elements and lights, to supplement anti-freeze protection of the water systems. Talk with owners and service facilites in your area, alternatives to hauling out might provide the more fanatic among you the use of your boat year around.

Frankly, if you are hauling out or not expecting to use you boat during the winter, we would suggest that you hire a good service organization to winterize your boat. You will probably find that the cost is reasonable and, should any damage result from incomplete or faulty work, they will most likely back up their work.

IN ANY CASE, YOU SHOULD REFER TO YOUR UNIVERSAL MOTORS "MARINE DIESEL OWNER'S MANUAL". FOR SPECIFIC PROCEDURES FOR YOUR ENGINE.

You will discover that the end of the season is a good time to prepare for the next season. For example, you might find it advantageous to <u>apply a coat of good paste wax</u>, buff and then apply a coat of liquid wax over it to remain, unbuffed, as a protective coating for the winter to be rubbed out in the spring.

<u>Spraying lubricant</u> on turnbuckles, latches, locks and other hardware will make recommissioning easier and reduce yard time. Use Vaseline on the threads of water tank fill plates. Be sure that <u>salt and mineral build-up is removed</u> from winches and blocks.

Label rigging components and loose parts.

Whether you perform your own winterizing procedures or, whether you hire a local service organization to do the job, suggested procedures follow:

**8.2** In-Water Storage: Marginal freezing areas, the desire for year around operation, or the use of "bubbler-type" protection would make in-water storage a practical measure for the winter season. Be sure to make other timely maintenance checks along with the winterizing procedures described below, i.e.:

Be sure that all thru-hull valves are working properly as you go through these procedures. If they are not, see Chapter 4. "Plumbing" for recommended service procedures.

- **8.2.1** Engine: Both the fresh water ("closed") cooling system and the raw ("outside") water intake system require attention. See your engine manual and plumbing diagrams in Chapter 4 of this manual for circulation diagrams.
- -Closed system: The engine fresh water system should be adequately protected if a 50/50 mixture of water-to-antifreeze (glycol) has been maintained throughout the season as prescribed in your engine manual. However, since the potable fresh water system must be freeze protected (see section 8.2.2), and putting that system in and out of service is an involved process (you will probably want it to remain out of service for the winter) and, since the engine fresh water system cannot be run through an empty water heater, the hot water heater must be bypassed in the cooling water circulation system.

Access to check or fill the system is through the cockpit seat locker in either the plastic expansion tank (boats without a water heater), or the square metal accumulator tank (boats with a water heater). If there is doubt as to the concentration the engine should be run to operating temperature and then shut down so that the concentration may be checked with a hydrometer-type device. The "Universal" manual recommends that a pure anti-freeze solution not be used. Steps in freeze-protecting the closed cooling system are as follows:

Disconnect the engine water circulation (5/8")hoses to the water heater and join them together with a short length of tubing or a double hose barb fitting. When starting the engine in preparation for treating the raw water system, Pay close attention to the temperature, since disconnecting the hoses from the water heater has put air into the system. The air should escape in the accumulation tank, however should the engine temperature exceed the normal operating range of 190°, it should be shut down, allowed to cool and the system refilled.

- -Raw water system: The anti-freeze will be purged from the raw water system each time the engine is run but, since the protection procedure is not difficult, this factor will probably not deter you from using the engine. The steps to pump anti-freeze into the engine raw water system are as follows:
- 1. Start the engine and allow it to run up to operating temperature. When operating temperature is reached, stop the engine.
- 2. Disconnect the exhaust hoses and empty the water from the exhaust can. Access to the can is through the cockpit seat locker. Reconnect the hoses after the can has been emptied.
- 3. Close the engine water intake thru-hull valve and disconnect the intake hose at the valve.
- 4. Pour approximately two gallons of glycol anti-freeze into a bucket and put the end of the hose into the bucket (it may take more, so have some extra on hand).

- 5. Turn the engine over with the starter for 10 second intervals with the decompression lever pulled to the release position. Continue until antifreeze pours from the exhaust thru-hull.
- The engine manual also recommends that the exhaust can be emptied once again to prevent any fluid from running back up into the engine, since prolonged cranking may fill the can to capacity.
- **8.2.2** Fresh (potable) water system: Treating the fresh water system is a more involved process, consequently you will probably choose to have the system remain out of service for the duration of the winter.
- 1. Run the pressure water system (standard on all most models) to pump as much water from all of the tanks as possible. Refer to Chapter 4. "Plumbing" to be sure that all tanks have been selected to be drained with the appropriate valves. Once air begins to appear at the faucets be sure to watch to flow and <u>do not allow the pressure pump to run dry or the pump may be damaged</u>.
- 2. Disconnect the fresh water lines (gray poly-butylene) from the water heater located under the cockpit and connect them together with a piece of tubing or appropriate fitting. Most of the water will probably have been drained from the water heater from the above step, however if any remains, it should now drain out and find its way to the bilge.
- 3. Non-toxic recreational vehicle-type anti-freeze should be used in the fresh water system and, generally, you should follow instructions on the container for maximum protection, however, you will need about 1-1/2 to 2 gallons per tank. Add it through the deck fill plates. (Note: we are also advised that one service facility or two uses cheap vodka, about 50 proof, with a trace of iodine added with good results. They say that it will not flavor or stain the water lines. We can not verify the effectiveness but might be worth looking into. We do not pass judgement as long as the anti-freeze is effective...)
- 4. The sink drain lines may be protected at the same time that the fresh water system is re-primed with anti-freeze. Close the valves on the thru-hulls and disconnect the hoses to allow the residual water to drain. Reattach the hoses and leave the thru-hulls closed. Be certain that the all of the hose clamps are properly fastened upon reinstallation of the hoses.
- 5. Re-prime the system with the galley footpump and turn on the pressure water system once more. If the system will not prime or if anti-freeze does not show up at the faucets in the head and at the galley, add more anti-freeze to the tanks. When it does flow from the faucets some anti-freeze will drain into the drain hoses and mix with whatever water is left in the hose fitting above the thru-hull valve.
- 8.2.3 Head System: To winterize the head system use the following procedures:
- 1. Pump the head bowl dry and have the holding tank pumped out at the appropriate service facility. As a deoderizing measure you may then wish to fill the tank about 3/4 full with fresh water, add 1 gallon of household bleach directly through the waste pump out plate and let it sit for several days before finally pumping it out again.
- 2. After emptying the holding tank, close the head intake thru hull and remove the intake hose. Place the hose in a bucket of the R.V. type anti-freeze and pump about 2-3 quarts through the head and into the holding tank. Do not pull air from the bucket into the head pump body since

you would like to have anti-freeze remain in the pump body as well as the pick-up hose. When removing the hose from the bucket, try to retain as much of the anti-freeze in the hose as possible and reattach the hose to the thru-hull valve.

- 3. Reinstall the hose clamps and be sure that they are properly tightened.
- 8.2.4 Sink and Icebox Drains: As described in section 8.2.4, step4, the sink drains may be treated at the same time that the fresh water system is done.

The ice box drains, where they drain overboard should be treated in the same manner as the sink drains with anti-freeze added into the drain inside the box.

On models where the icebox drain is connected to the saltwater footpump:

- 1. Close the saltwater intake thru-hull valve as you would to drain the ice box and open the valves on the icebox drains.
- 2. Pump any water remaining in the boxes or drain lines. You may want to catch it in a container if the sink drain lines have been treated.
- 3. Add the R.V. type anti-freeze to the icebox drains inside the box and pump the foot pump until the anti-freeze shows up at the spigot.
- 8.2.5 <u>Bilge</u>: After all of the winterizing procedures have been done to the interior systems pump-out and sponge the bilge dry. Be sure to disconnect the hoses that lead to any submersible pumps and allow them to drain into the bilge before final sponging. Water may enter the bilge through the mast, so it is important to pour two gallons of the R.V.-type anti-freeze into the bilge and into the separate shower sump.

Note: If you are planning to go sailing, any appreciable amount of heel could allow the contents of the bilge --anti-freeze and any water--to enter the compartments under the settees which could stain anything that is stowed there. You may wish to pump some of the anti-freeze out to prevent sloshing into the settee compartments.

**8.2.6** Cockpit Drains: Ice and snow accumulation in the cockpit presents the problem of blocking the cockpit drains and, in the extreme case, allowing the cockpit to fill and possibly spill water into the cabin. To prevent that from occurring, we strongly suggest that some type of cover be used, at least over the cockpit, whether the boat remains in or is hauled out of the water.

On the Ericson 32 with four cockpit drains, two exit through a thru-hull below the waterline and two above the waterline (see Chapter 4 "Plumbing") for specific locations. The below waterline thru-hull valve should be closed and anti-freeze should be added to the hoses as with all of the other drains.

- **8.2.7** Anchor Locker: To prevent water accumulation and freezing in the anchor locker, we suggest that you use a good grade of tape to cover the joint between the locker hatch and the deck.
- **8.3** <u>Dry Land Storage</u>: Most of the procedures described above for in-water winterizing should also be done for dry land storage as well. Be sure that the yard that will haul your boat is familiar with the underbody and knows the proper placement for the lifting slings where they will not slip or damage the propeller shaft or strut. Be sure to inform the yard of any

instrument transducers which might be damaged by the straps; remove knotmeter paddle wheels and replace them with plugs when possible.

In most areas of severe winter storms it is recommended that your boat be stored on land with the mast unstepped. Leaving the mast stepped with the boat stored in a cradle, and <u>especially</u> in jackstands, creates instability in the high winds generated in a storm. Be sure that the weight is properly distributed on the keel and that, if jackstands are used, that they are securely tied together to prevent creeping.

A good cover is the best method of ensuring that your boat will be in good shape early in the new season. A very effective framework can be made from inexpensive electrical conduit bent into a series of frames to be fastened to stanchions or, with stanchions removed, installed in stanchion bases. If a full cover is used, a port may be left open to provide air circulation in the cabin. There are other services available now which will essentially "shrink-wrap" your boat for the winter.

Suggestions and notes for winterizing procedures for dry land storage in addition to those noted in section 8.2 appear below:

**8.3.1** Engine: The procedures are the same as if your boat would be winterized and remain in the water (described in section 8.2.1).

In preparation for treatment of the raw water cooling system, be sure to run the engine up to operating temperature before hauling out of the water. Winterizing the raw water cooling system may be done before hauling out if the engine is not needed to move the boat under the lift. Alternatively, some yards have a funnel-type system which will allow the engine to draw water through the intake thru-hull with the boat out of the water.

The closed cooling system should be checked for the proper anti-freeze concentration. The engine will remain out of service for the winter season, so there is no need to remove the circulation hoses from the water heater, even though the water heater will be drained.

After the systems have been winterized, be sure to tape over or install a plug in the engine exhaust thru-hull to keep out cold air, nesting critters, etc.

- 8.3.2 Fresh (potable) Water System: (Refer to section 8.2.2 above)
- **8.3.3 Head:** (Refer to section 8.2.3)
- **8.3.4** Sink and Icebox Drains: Simply drain the head vanity sink, galley sink, icebox (if not plumbed to a salt water footpump or bilge pump system), and galley salt water intake line by opening the respective thru-hull valves.

Empty the iceboxes by using the saltwater footpump, as you would normally. Pump until water is out of pump body and open the thru-hull valve once again.

- 8.3.5 Bilge: (See section 8.2.5)
- **8.3.6** Cockpit Drains: Open any valves on cockpit drain thru-hulls. Note that some of the drains share a valved thru-hull with the galley sink. Refer to the "plumbing diagram" in Chapter 4 for details.

- 8.3.7 Anchor Locker: Refer to section 8.2.7
- 8.3.8 <u>Batteries</u>: Cold weather and lack of charging will drain the power from your batteries. Remove them from the boat and store them in a warm dry place.
- **8.4 De-Winterizing:** For de-winterizing and recommissioning your boat in the spring, we suggest that you use the commissioning checklist provided. If you have been hauled-out, you will probably want to apply a new coat of bottom paint and perhaps do some fairing work on the keel or underbody. If the mast has been unstepped, it is good time to lubricate or replace sheaves and halyards, check electrical connections, etc. You may wish to wax the mast and wipe down the rigging wires.

Before launching be sure to check thru-hulls and valve operation once again and check for any hoses that may have been left disconnected or hose clamps unfastened

For the first several hours of engine time pay close attention to your fuel filter since condensation is likely to have built up during the winter. Service it frequently, especially early in the season.

Commissioning checklist	HIN:	Engine S/N	page 1
Owner's name:		Boat name:	

## ERICSON YACHTS Commissioning Checklist

	item	date	initial
L	On arrival inspect for shipping damage		
2.	Wash to remove any diesel exhaust and road film		
<u>3.</u>	Note any leaks		
4.	Inventory rigging and parts box, notify Ericson immediately of any deletions		
5.	Check optional equipment list, note any discrepancies		
6.	Unwrap mast - check for damage		
<u>Z.</u>	Check mast and boom dimensions		
<u>8.</u>	install accessory thru-hulls		
9.	Paint bottom second coat (cover rudder after painting)		
10.	Check prop. nut. and cotter key		
11.	Install zinc and mark shaft coupling for prop yertical		
	Install wheel and mark rudder centerline with tape		
13.	Install accessory wiring in mast. (options, pole track, windex mount)		
	install spreaders w/fastener heads on top		
<u> 15.</u>	Install shrouds, wire into spreader tips and tape, install boots if ordered		
	Pull halvards in mast- protect tails from dirt		
17.	Check mast electrical		
<u>18.</u>	Check power to step (deck stepped mast 26, 28, 30)		
<u> 19.</u>	Install lower half of turnbuckle on chainplates, check fit		
<u> 20.</u>	Check maststep fasteners for tightness		
21.	Pad partner with cardboard or carpet before stepping mast		
	Launch boat and check all thru-hulls for leaks - valve operation		
<u>23.</u>	Slide boot onto mast		
24.	Step mast and snug up shrouds (temporily pin turnbuckles,		
	tie hayards away from mast if left overnight)		
	Block partner and install boot		
	Dock tune rig and pin turnbuckles		
	Install boom and mainsheet (with splice or bowline)		
	attach topping lift, traveler control lines etc.		
	Check interior doors, drawers, bilge access hatches, dinette		
	Check 12 volt system-		
	-Batt_level_leads tight_straps tight		

	Authorissioning checklist HIN:		page 2
Ov	wner's name:	Boat name:	
	-Cahin lights		
	-Cabin lights -Dunning lights		
	-Running lights		
	-Anchor light		
	-Bow light		· · · · · · · · · · · · · · · · · · ·
	Foredeck light		
	-Pressure water		
	-Other accessories		
	9. Fill water tanks		
30	). Check Plumbing		
	-Check hoses for kinks		
	-Check all hose clamps for number and tig	ghtness (do not overtighten )	
	-Bleed pressure water system		
	-Check shower operation		*
	-Check head vanity		
	-Check galley		
	-freshwater footpump		
	-Saltwater footpump		
	-Bilgepump		
	-Shower sump pump		
	-leahau dania		
	-Filler hose attachments		
	-Vent hoses		
31.	. Check head operation		
	Put at least 5 gals, diesel in fuel tank		
	. Check engine-		
	-Oil level		
	-Coolant level		
	-Alignment (within .003")		
	-Shift and throatle cable linkages - attach		

	nmissioning check list HIN: Engine S/N page 3
<u>Ow</u>	ner's name: Boat name:
	-"Oil Discharge" notice in place in engine compartment
34.	Start engine and run for 20 minutes (do not leave boat while engine is running)
	-Exhaust water pumping
	-Oil pressure reading
	-Temperature reading
	-Ammeter reading
	-Shift operation (be sure boat is well tied)
	-Packing gland dripping w/engine in gear (min. 6 drops/min.)
35.	Check hot water system with engine running (water should heat after 20 mins.)
	itom
<del></del> -	Check 110 volt system-
	-Polarity
	Hot water heater operation
	-Outlets operate
	-Accessories
<b>3</b> 7.	Check stove operation: (type: alcohol propane LPG /manufact: )
	-Inventory stove parts
	-Tank holds pressure and securely mounted
	-Solenoid functioning correctly (on LPG installations)
	-Check all fuel hose connections
	-Check fuel lines for chafe or chafe possibilities
:	-Check all burners
:	-Check oven operation
	Check steering system
	-Steering cables/chain interfere with compass or intsr. wires in pedestal
:	-All fasteners tight
	-Cables aligned, tensioned properly and locked
	-Brake engages properly
	Check emergency steering system
	Safety gear aboard all to be U.S.C.G. approved
=	Life jackets (no.: type: )
	Throwable flotation device

Commissioning checklist HIN:	Engine S/N	<u> page 4</u>
Owner's name:	Boat name:	
Fire extinguishers (no.		
-Bell		
Horn and extra propellent		
-Flares (no and type:	)	
-Fenders with lines (no.: )		
-Docklines (no.:		
-Anchor (type: )		
-Rode (line size and length: chain size	ze and length:	
40. Sail test:		
Engine operation		
-Sails fit - offsets OK		
-Mark max hoist on main halyard		· 200
item		date initia
-Mark jib and genoa lead positions		
-Check reef gear operation		
Rig tune: (wind strength: )		
-Mast_in_column		·
-Turnbuckles pinned and taped		
-Steering system functions correctly		
-fold sails-sail ties aboard (sailmaker shoul	d supply) .	
41. Final cleaning:		
-interior		
-bilges free of debris		
-exterior		,

Additional accessories: