

# OWNER'S MANUAL

**CAPE  
DORY  
YACHTS**

INCORPORATED



Edited by: Ed Rant January, 1999  
Catherine Monaghan, 2003

## FOREWORD AND DISCLAIMER



This is a modified version of the Cape Dory Owner's Manual included with 1981 vintage Cape Dory sailboats built by Cape Dory Yachts, Inc., a company that ceased operations in 1991. It is offered here for the use of those seeking a replacement manual for a Cape Dory Typhoon, Typhoon Weekender, CD-22, CD-25, CD-25D, CD-27, CD-28, CD-30, CD-30K or for any sailboat owner who might benefit from the useful information it contains on general sailboat maintenance and repair. It is not suggested that it be relied on implicitly, but that it act as a supplement to other sources of information currently available. References to people, companies and products mentioned within the Manual may now be obsolete; there is no longer a factory or Cape Dory Service Department to contact for support as the Manual states, no Dealers, no newsletter, etc. Also, it should be kept in mind that the information in this Manual may be not only dated, but may contain inaccuracies or omissions and that neither I nor anyone connected with the original Manual shall be held liable for any losses, injuries, or damages arising from its use. It was written as a guide for the owners of Cape Dorys specifically and its application and suitability for use with other types of boats is not expressed or implied. Further, it is meant to be distributed freely and not to be used for profit. All trademarks, logos, products and businesses appearing in the Manual are the sole property of their respective owners and they retain all rights. I have no association with and do not represent any of the products, businesses, or persons named in the Manual.

## A NOTE ON PRINTING THE MANUAL

In order for the Manual to print properly with ADOBE ACROBAT READER, set paper size to 8-1/2" X 11" and all margins to 1/2" (.5"). If any problems are encountered in printing, load the file into a word processor and print it from there. The Manual, without the illustrations in the Drawings and Plans (Chapter 5) which are provided as a separate files, is a total of 67 pages.

Ed Rant January, 1999  
Cathy Monaghan, January 2006

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## LETTER OF WELCOME

Dear Skipper,

Welcome to the Cape Dory fleet!

You have joined the select group of sailors who recognize the quality construction and traditional workmanship found in every Cape Dory yacht.

This manual has been prepared to assist you in getting to know your new yacht before setting sail for the first time. It also is a helpful guide to follow for proper care and maintenance in the future.

The Cape Dory team of managers, supervisors and quality control personnel do their very best through every step of the construction process and strive to build boats of exceptional quality which will provide their owners with many years of sailing pleasure and retain a high resale value.

Please review the material carefully. You will enjoy your new Cape Dory more if you are familiar with the designs and construction of the yacht and with the equipment used on board.

Any questions you may have can be answered by your authorized dealer as he is a knowledgeable professional and is familiar with your new boat. He will continue to be your most important contact for information about your boat and for any problems should they develop.

We appreciate your confidence in our product and assure you that with proper care, you should have many years and miles of enjoyable sailing in your new Cape Dory.

Again, welcome to the fleet. May the wind always be fair.

Sincerely,

Andrew C. Vavolotis President  
Cape Dory Yachts, Inc.

## Cape Dory Owner's Association

The Cape Dory Owner's Association was formed as the company grew from its original beginnings in 1964 as a sailing dory builder. The earliest Cape Dory owners would gather for regattas, races and picnics in summer and during the frostbite season in the winter months. Later, as the Typhoon spread in popularity, more and more activities began taking place involving that class. With the advent of the Cape Dory 25, other Cape Dory owners readily welcomed the newcomers.

Today, the Cape Dory Owners Association is national in scope, and activities are increasing in number rapidly. Several Typhoon fleets are actively established and most Cape Dory owners find the Association an excellent means of communication. The Association publishes a periodic newsletter which contains interesting as well as helpful information.

If you are a Cape Dory owner, and are not receiving the newsletter, please write to us and we'll enroll you immediately. We need to know your name, address, and the model and hull number of your Cape Dory.

[Addendum:

Cape Dory Sailboat Owners Association, Inc.: <http://www.capedory.org/>

California Cape Dory Owners Association: <http://www.toolworks.com/capedory/>

Lake Michigan Cape Dory Owners Association: <http://www.lmcdoa.org/>

End of addendum.]

## **CUSTOMER SERVICE**

The Cape Dory Yachts Customer Service Department has been established to provide technical information and a replacement parts ordering service for Cape Dory Owners.

Please do not hesitate to contact us with any questions or comments on your boat. We appreciate any suggestions that you might have to improve the product.

We suggest that you place any parts orders through your Cape Dory Dealer, but will be happy to accommodate you for special orders. Whenever you make an order, please provide the dealer or Cape Dory with your hull number and an accurate description of the part.

Situations may arise when we will be referring you to local marine stores or marine hardware manufacturers. Our intent in these cases is to provide you with the fastest and least expensive service.

Through our customer service department we strive to maintain our reputation for product quality and excellent service.

Sincerely,

Eric J. Brehm

Karla J. Johnson  
Customer Service Department



## CAPE DORY OWNER'S RECORD

Complete and save this form for your records and future reference.

Yacht Name \_\_\_\_\_ Home Port \_\_\_\_\_

Hull Identification Number\* \_\_\_\_\_

Dealer Name \_\_\_\_\_ Address \_\_\_\_\_

Salesman \_\_\_\_\_ Delivery Date \_\_\_\_\_

Date Commissioning Checklist/Warranty returned to CDY \_\_\_\_\_

\* \* \* \* \*

Owner's Name \_\_\_\_\_ Address \_\_\_\_\_

State Registration/Documentation \_\_\_\_\_

Engine Model and Serial Number \_\_\_\_\_

Head Model and Serial Number \_\_\_\_\_

Stove Model Number and Serial Number \_\_\_\_\_

Spar Number \_\_\_\_\_ Rigging Kit Number \_\_\_\_\_

\*Your Cape Dory is identified by a hull identification number (HIN) on the starboard corner of the transom. This identifies the number of the hull and supplies government officials with additional information concerning the builder, and the year of manufacture. There is also a builder's plate with the hull number. In addition, there are serial numbers on your boat's engine (see the engine manufacturer's owner's manual) and on some of the accessory equipment which you may elect to have installed.

We recommend that you record these important numbers carefully and keep copies of them both at home and aboard (see "Owner's Record" form). These numbers and an accurate description of your property, in the event of theft, could be essential to their recovery.

Marking an inconspicuous place such as the inside of a locker underside of a door or drawer of a door or drawer, or the base of the mast with your initials, social security number or other unique "brand" may also aid in the prompt identification of your property, should the need to do so ever arise.

# **CAPE DORY OWNER'S MANUAL**

## **CHAPTER 1**

### **INTRODUCTION**

The intent of this manual is to help the owner of a Cape Dory to understand and maintain his yacht. This manual should be used in conjunction with other publications to fully understand the demands and pleasures of sailing. A suggested reading list is provided and monthly periodicals such as *Sail*, *Cruising World*, *Motor Boating*, *Sailing*, *Rudder*, etc. are also recommended. Obviously, personal knowledge and skills are required to handle and maintain any boat successfully.

Cape Dory yachts are constructed in a recently remodeled building facility located in East Taunton, Massachusetts. Our boats are assembled using modern methods, equipment, and materials obtained from the most reputable suppliers.

The basic hull design of Cape Dory yachts is a traditional one which has proven itself over many years of use and thousands of miles of cruising. The long keel with attached rudder hull configuration combined with a generous but not bulbous beam provides stiffness and longitudinal stability; it also provides protection for the rudder, propeller and propeller shaft. Our sail plans are not as lofty as those used on more race oriented designs of similar size. Instead of high aspect ratio main sails, Cape Dory has continued with what it considers to be a more sensible cruising sail plan. This means that a smaller head sail is needed, that a family or few crew can handle a Cape Dory, and that the stresses on the rig and boat are less than those on high aspect ratio rigged boats under identical conditions. The interior layouts of Cape Dory yachts are designed to provide comfortable accommodations for a reasonably sized crew on boats of their size.

This manual consists of three main parts. First is a discussion of the construction of your Cape Dory; next follows an operation and maintenance section divided up by systems. Following this is a general section containing miscellaneous additional data and drawings.

## DEALER'S COMMISSIONING CHECKLIST

Model \_\_\_\_\_ Hull Number \_\_\_\_\_

Owner's Name and Address \_\_\_\_\_

Dealer \_\_\_\_\_

Date Sold \_\_\_\_\_ Date Launched \_\_\_\_\_

\*Indicates further information and/or drawings elsewhere in manual

1.1	Date	Initials	Receiving Record
1.	_____	_____	* All items on receiving checklist received in good order. Dealer should notify factory within ten (10) days of receipt, of any shortages or damaged goods.

1.2 **PRE-LAUNCH CHECKLIST**

2.	_____	_____	Visually check underwater hull surface for any damage sustained during trucking or handling.
----	-------	-------	--

3.	_____	_____	Through hulls all tight and clear of any foreign objects.
----	-------	-------	---

4.	_____	_____	* Seacocks and valves all closed. Hose clamps tight.
----	-------	-------	--

5.	_____	_____	* Check two propeller retaining nuts for tightness. Cotter pin in place and bent over (applies to 25D, 27, 28, and 30 only). Newer boats will have Perry nuts installed.
----	-------	-------	--

Record propeller information below:

Diameter \_\_\_\_\_ inches

Pitch \_\_\_\_\_ inches

Rotation \_\_\_\_\_ left or right hand

# of Blades \_\_\_\_\_ 2 or 3 (optional)

6.	_____	_____	*Rudder swings freely side to side. (on CD-30's with worm drive steerers, wheel must be turned).
----	-------	-------	--

7.	_____	_____	*Stuffing box packing adjusted (applies to 22D, 25D, 27, 28, and 30 only).
----	-------	-------	--

8.	_____	_____	*Bottom under cradle poppets or bulkheads sanded, primed, and painted.
----	-------	-------	--

9. \_\_\_\_\_ \*Bilge dry.
10. \_\_\_\_\_ \*Bilge pump connections okay and handle on board.
11. \_\_\_\_\_ Check hull for any chips in gel coat.

**POST-LAUNCH CHECKLIST:**

12. \_\_\_\_\_ Immediately after launching, check bilge for water. If water is present, check all through hulls and stuffing box.
13. \_\_\_\_\_ Open seacocks or valves one at a time and check for leaks.
14. \_\_\_\_\_ \*Check stuffing box. It should drip water slowly, approximately one drop every ten seconds while running to insure that the bearing and packing gland are lubricated by water.
15. \_\_\_\_\_ \*Check battery switch and electrical system operation.
16. \_\_\_\_\_ Check battery electrolyte and charge level.
17. \_\_\_\_\_ \*Check head operation.
18. \_\_\_\_\_ \*Check bilge pump operation.

**ENGINE START-UP CHECKLIST:(CD-22D, 25D, 27, 28, & 30 only)**

19. \_\_\_\_\_ Check engine and transmission oil level and condition.
20. \_\_\_\_\_ Check belt tension on all belt driven components.
21. \_\_\_\_\_ \*Check that cooling water intake seacock is open.
22. \_\_\_\_\_ Check to see that all clamps on exhaust hose are tight (on Yanmar engines make sure that exhaust hose enters waterlock at location marked "IN").
23. \_\_\_\_\_ Check engine mount nuts for tightness.
24. \_\_\_\_\_ \*Check shift and throttle cable connections.
25. \_\_\_\_\_ \*Check shift and throttle cable operation.
26. \_\_\_\_\_ \*While coupling is disconnected, check prop shaft alignment using feeler gauges.

27. \_\_\_\_\_ Check prop shaft set screws, and see that they are wired in place.
28. \_\_\_\_\_ Start engine according to the manufacturer's recommendations. Failure to start may be due to air in the fuel lines. Refer to manual for bleeding instructions.
29. \_\_\_\_\_ Immediately after engine starts, check to see that water is coming out of the transom exhaust port.
30. \_\_\_\_\_ Check gauges and/or warning lights.
31. \_\_\_\_\_ Check entire system for water, oil, fuel, or exhaust leaks. Note: sealers and paints may burn off as engine heats up.
32. \_\_\_\_\_ \*Check throttle and shift operation.
33. \_\_\_\_\_ \*Recheck stuffing box.
34. \_\_\_\_\_ \*Report any unusual noises or vibrations to the factory immediately. Do not continue to run engine if any are present.

#### **RIGGING CHECKLIST:**

35. \_\_\_\_\_ Check all fasteners on spars for tightness.
36. \_\_\_\_\_ \*Reeve halyards.
37. \_\_\_\_\_ \*Attach stays, shrouds, spreaders and topping lifts.
38. \_\_\_\_\_ Check all clevis pins and cotter pins for security. Tape all potential chafe points including spreader bases and ends.
39. \_\_\_\_\_ \*Check wiring of combination deck and bow light. Be sure bulbs work.
40. \_\_\_\_\_ Step Mast and rigging.

41. \_\_\_\_\_ Check all rigging for length.
  42. \_\_\_\_\_ Check all clevis and cotter pins for security. Be sure the locking nuts on the turnbuckles are secure. Tape all potential chafe points.
  43. \_\_\_\_\_ \*Tune rigging to proper tensions (including bobstay on 28 and 30).
  44. \_\_\_\_\_ \*Attach booms, sheets, blocks, oars, reefing lines topping lifts, etc.
  45. \_\_\_\_\_ Wire bow and deck lights.
- MISCELLANEOUS CHECKLIST:**
46. \_\_\_\_\_ \*Fill water tank (s) and check operation of all pumps and drains.
  47. \_\_\_\_\_ Fill alcohol tank (25D, 27, 28 and 30). Check for leaks and test operation of stove.
  48. \_\_\_\_\_ Water test ports and hatches.
  49. \_\_\_\_\_ \*Recheck all through hulls, valves, seacocks, hose clamps, hoses, and stuffing box.
  50. \_\_\_\_\_ \*Bend on sails.
  51. \_\_\_\_\_ \*Interior appointments complete.
  52. \_\_\_\_\_ Optional equipment installed and operational.
  53. \_\_\_\_\_ Owner's packet, ship's papers, and ignition key given to owner.
  54. \_\_\_\_\_ Checklist (warranty registration) ready for mailing to factory.

Owner \_\_\_\_\_ Dealer \_\_\_\_\_

Date \_\_\_\_\_ WITHIN SEVEN DAYS OF LAUNCHING,

RETURN CHECKLIST TO:  
Cape Dory Yachts, Inc.  
160 Middleboro Avenue East  
Taunton, Mass. 02718

## **CHAPTER 2**

### **CONSTRUCTION OF YOUR CAPE DORY YACHT**

#### **CONSTRUCTION**

##### **2.1 MOLDED FIBERGLASS PARTS (MAJOR)**

##### **2.2 HULL**

The hull is molded in a one piece mold which is turned from side to side as successive layers of fiberglass are applied during the laminating process. By placing the mold on its side we can place the fiberglass and work the resin more accurately than would be possible if the mold was always upright.

The exterior finish of the boat is pigmented gel coat which is sprayed into the polished mold. Next, we apply two layers of multidirectional glass strand fiber to minimize roving pattern transfer from successive layers of laminate.

Finally, alternating layers of glass strand fiber and woven roving are applied until the desired thickness has been achieved. The thickness of the hull varies depending on the structural requirements a particular area needs, with the thickness increasing as you go from the sheer to the keel area.

##### **2.3 DECK AND HEADLINER**

Like the hull, the deck is molded in a one piece mold as a single unit. All exterior surfaces, including the non-skid are pigmented gel coat molded into the deck.

The deck is laid up with glass strand fiber and woven roving incorporating a balsa core for stiffness and insulation. Where hardware and equipment are bolted through, wood blocks or solid glass replace the balsa wood.

In the highly stressed cockpit corners, unidirectional roving is utilized near the gel coat surface and on the backside of the laminate, giving high flexural strengths in these areas. This minimizes stress cracking.

The headliner is a fiberglass part used to provide a cosmetic surface to the inside of the cabin as well as providing attachment points for the major bulkheads. It also provides an effective vapor barrier and thermal insulation due to the air gap separating the deck and the headliner.

The headliner is built with glass strand fiber and woven roving. After it has been parted, key areas are filled solid so that screws may be installed later. The headliner is then bonded to the deck accurately with a polyester adhesive compound. This is done with the aid of a jig that holds the liner in place while the adhesive cures. At this point the deck is parted from the mold and sent to the deck hardware department.

## **2.4 V-BERTH, GALLEY AND SUB-FLOOR ASSEMBLY**

The v-berth area has a molded liner which starts at the main cabin bulk-head and runs all the way forward to the anchor rode locker. This is built as the other FRP parts are, utilizing various cores and laminates as required.

It is then installed in the hull where it is glassed to the hull with two layers of alternating mat and roving. In some places the liner is joined further to the hull using a polyester adhesive.

The galley area also has another separate molded liner very similar to the v-berth in concept.

The molded fiberglass sub-floor assembly is designed to fit accurately and lock to the contours of the hull. This is bonded in place and a teak and holly sole is screwed down to it. This is installed after the v-berth and galley units are in place.

Fiberglass inner liners offer three basic benefits:

1. added structural integrity
2. minimizes condensation problems
3. provides an easy-to-clean surface in storage

## **2.5 BALLAST**

The ballast is cast in two sections and mounted inside the keel cavity. The cast pieces are first prefit and their location correctly determined. The Quality Control Department accurately checks the location of every ballast and records its weight against our specifications. Next, they are lowered into and encapsulated in a mixture of special low shrink bonding resin and microspheres. Besides its shrink characteristics, the bonding resin was chosen for having some resiliency should the keel be subjected to some sharp impact loads.

The ballast is then sealed with several layers of fiberglass, securely holding the ballast into the hull. This glass is gel coated, sealing the ballast from the rest of the boat and giving a smooth clean bilge.



## **2.6 RUDDER**

The rudder assembly consists of two pre-molded fiberglass half shells completely filled with a reinforced polyester compound. This compound surrounds the pre-formed rudder shaft creating a solid rudder of exceptional strength. The blade is further reinforced by two layers of glass tape applied to the shell joints.

On the Typhoon Weekender, Typhoon Daysailer and Cape Dory 22, the rudder shaft extends to the bottom of the rudder and into the heel fitting which is attached to the foot of the keel. All Cape Dorys from the 25D to the 45 have a bronze gudgeon casting imbedded in the bottom of the rudder to accept the bronze pintle casting and stainless steel pin which is attached to the keel. The pintle is set in polysulfide bedding compound and fastened onto the hull with bronze rods passing through the solid heel portion of the keel. The entire casting is then faired with polyester putty and glassed into the keel. This eliminates the electrolysis problem commonly found when stainless steel weldments are used in seawater.

## **2.7 DIESEL AUXILIARY**

One of the more critical installations we perform is the installation of the inboard diesel engine. The diesel is installed with fully adjustable flexible mounts attached either to a heavily reinforced fiberglass engine bed or to a rugged metal weldment, coated with corrosion resistant paint. This system effectively spreads the engine load over a large portion of the hull as well as providing a drip pan to keep oil out of the bilge. This area should be pumped out regularly being careful not to discharge oil overboard.

The exhaust is a wet system consisting of an engine water injected elbow, a waterlock muffler and heavily reinforced rubber hose. The main advantage of this type of exhaust system is that it allows the cooling water to cool the exhaust gasses as they leave the engine. This system produces a quieter sound and reduces temperatures in the engine room preventing burns and minimizes a fire hazard.

The fuel system incorporates a custom aluminum fuel tank and a combination of flexible fuel lines and reinforced rubber hose. Flexible fuel lines have been chosen as they are very easily repaired in the field should a leak develop. Copper fuel lines require special tools to repair which may not be available at sea. Every installation includes a fuel filter and another fuel filter/water separator for that extra measure of safety.

## **2.8 MECHANICAL INSTALLATION**

While the carpenters are completing their joiner work, the bulk of the mechanical installations are completed. The water tank mounting pans are glassed into place and the tanks installed. The plumbing is run to the manifold located under the galley sink and then into the respective compartments where the pumps and water heater are located. The heavy wiring from the engine is run up to the electrical panel. The bonding system joining all underwater thru hulls is completed. Lightning ground and bonding are optional on the Typhoon and CD-22.

## 2.9 HULL TO DECK JOINT

When most of the major components of the interior have been installed, the hull is made ready to receive the deck. Built into the hull is an internal hull flange. (See the enclosed drawing for details of this assembly.) This internal flange is made up of the same layers of woven roving that form the topsides of the hull and also the added laminates for champlate reinforcement.

The deck is raised over the hull and the process of fitting the deck to the hull is begun. All bulkheads are carefully scribed and cut until the deck rests on the hull flange.

The flange is then prepped and coated liberally with a special polyester bonding material and the deck bonded into place. The joint is later screwed down in the case of the TY and C-22, and in all others thru-bolted on 12" centers.

We feel our deck to hull joint to be one of the best for several reasons:

1. The flange should be internal. This gives the largest possible flange area, important for flexural strength. Also, boats with external flanges are subject to damage and leakage when run hard into a dock or other immovable objects. Impact in this area starts a crack that water is sure to find its way through under normal sailing conditions.
2. We use a semi-rigid bonding compound between the hull and the deck as well as through bolts. Due to the abrupt angular discontinuity created at the hull/deck intersection, large forces can be built up while underway. It is best to prevent movement here, otherwise things start to work and leaks occur. A rigid compound used here might seem the best but they generally don't have enough impact strength and resiliency to prevent leakage over a long period of time.
3. Many builders use aluminum toe rail extrusions and thru bolt this structure every 4". This is a very difficult assembly to keep watertight because the fastener heads are exposed while our bolt heads are covered over and the toe rail screws are bunged.

## **CHAPTER 3**

### **OPERATION AND MAINTENANCE**

#### **3.1 FIBERGLASS**

Fiberglass is one of the most maintenance-free materials utilized today in boat construction. If given proper care and treatment, the gel coat surface will look new for years. If not maintained, it will eventually turn to a flat, chalky texture.

We recommend that you wash the exterior fiberglass surfaces of your boat several times each season with a mild soap and plenty of warm fresh water. Rinse liberally with fresh water. After the boat has dried, use a good quality fiberglass cleaner in paste form; follow this process with a wax or polish prepared for marine use. A fiberglass cleaner with a very gentle abrasive in it may help remove minor scratches and surface wear. Be careful, as the continued use of cleaners containing abrasives will gradually erode the gel coat surface. Marine wax will fill small scratches and provide a gloss finish. We suggest you use a wax that does not contain silicone as it gets into the gel coat and is almost impossible to remove should you want to paint the boat at a later date.

Stubborn stains may be removed with fiberglass cleaner in some instances. More difficult stains may be worked out with judicious use of a very mild abrasive powder such as Bon Ami<sup>®</sup>. Stubborn tar and petroleum stains may be removed with careful application of acetone. (Acetone is a powerful but EXTREMELY flammable solvent which is available in most paint and hardware stores)

Stress or “spider cracks” are a common occurrence on the fiberglass boats of even the most careful boatbuilders and boat owners. Most of the time, these cracks are limited to the gel coat surface and are of cosmetic considerations only, not structural. If you have any doubt about the seriousness of any crack, consult your dealer. Cosmetic repair of gel coated surfaces is not a difficult task and a reasonably handy person with a little practice and study can make adequate repairs. Structural fiberglass repairs are best left to the experts.

If for any reason you desire to apply paint to areas of the boat other than to the bottom or boot-top, seek the advice of qualified personnel at a boat yard in your area for information about the latest development in chemically-based paints for fiberglass, and the recommended surface preparation procedure.

Minor repairs of the gel coat surfaces may be done by the owner using one of the following methods:

**SURFACE IMPERFECTIONS:** On imperfections that do not penetrate the gel coat, you may sand them out with #320 wet and dry sandpaper. Finish with 400 and 600 grit paper and hand buff with a fine rubbing compound.

**DEEP SCRATCHES AND FLAWS:** (exposed fiberglass) Thoroughly clean the damaged area with acetone to remove dirt, grease, or wax. Tape off the area around the flaw with masking tape. Thicken a small amount of matching gel coat with talcum powder or cabosil to obtain a putty-like

consistency. When ready to apply the putty, thoroughly mix a small amount of hardener into the gel putty. A tablespoon quantity of gel putty will require ONE DROP of hardener to cure into a hard plastic in mild temperatures. Some experimenting will allow you to adjust the amount of hardener to suit your needs. Over-catalyzing results in a rubber-like substance, never permitting a complete cure.

Apply the gel putty with a putty knife, filling the flaw slightly above the surrounding surface. Allow to harden. Sand and buff as previously mentioned for shallow scratches. Clean up hands and tools with acetone before putty hardens.

**CAUTION:** The clear hardener should be handled with great care. Flush skin or eyes with large amounts of water if accidentally splashed.

Be careful of discarding uncured, mixed gel coat material. Once hardener is added, a chemical reaction takes place that generates heat. Large quantities can become very hot. Submerge material in water until cured for maximum safety.

**NON-SKID IMPERFECTIONS:** Repair of the non-skid is similar to that of deep imperfections only that you add trace amounts of non-skid grit and dab the gel coat on with the end of a brush with short hand movements.

**GELCOAT BLISTERS:** Below the water line it is possible for water to get beneath the gelcoat and cause it to blister. This occurrence is rare and usually takes the form of small blisters less than 1/4" in diameter. While we try to use the latest materials and techniques in combating this phenomenon, it is not within our ability to guarantee this never happening due to the very nature of the materials used. If you should find yourself with a serious case of the "measles", contact the factory for the latest recommended repair practices and advice. The successful repair is difficult and time consuming and the services of an expert repair facility is advised. To minimize the potential of blisters ever forming on your bottom, this advice is offered: Never sand your bottom gelcoat off. Do not use pumice stones or a coarse sandpaper when preparing your bottom for new bottom paint. This only deeply scratches the gelcoat surface which increases the chance for water to pass into the laminate. Gelcoat is a water proof barrier coating required to protect your boat's laminate, not merely a cosmetic coating.

The continued use of an epoxy based bottom paint is recommended.

## **3.2 STEERING**

The rudder post on all tiller-steered Cape Dory yachts extends well above the waterline, and occasionally when heeling or in a sloppy and confused chop, water will enter the cockpit through the fitting at the top of the rudder post. This is not cause for concern as the volume is minimal and will drain out the cockpit scuppers.

Maintenance of the tiller-steered Cape Dory system is simple: keep the bearing at the top of the rudder post lubricated with a good waterproof grease. Tilt the tiller upward and apply the grease to the top of the shaft and bearing. Inspect the condition of the key. Inspect the gudgeon, the heel fitting at the base of the keel where the rudder is connected. There should be very little play at that point.

If the tiller cap is removed from the head of the rudder post, be certain to re- install the tiller cap properly. Both the rudder post and the tiller cap have machined keyways in them. Be careful that the key is in the keyway. and that the tiller cap is installed correctly.

When the boat is hauled, be sure to check the condition of any play in the shaft and gudgeon as described above. Refer to the drawing for a better understanding of your steering system.

## **PEDESTAL STEERING**

The optional pedestal steering system on your Cape Dory has been carefully designed, installed and aligned here at the factory to give you excellent service with minimal maintenance.

A metal weldment comprised of the pedestal sheaves, wire turning sheaves and quadrant stop is bolted under the deck tying the entire sheave assembly into one integrated unit. This is fastened in place by the four pedestal bolts.

The quadrant stop limits the swing of the rudder to about 35 degrees port and starboard. This is especially useful when motoring in reverse, as the rudder would tend to swing completely to one side with great force resulting in possible damage to either the hull or steering system.

During installation we have replaced many of the vendor supplied nuts with self locking nuts as we have found they will otherwise loosen during road transit, engine vibration and general use.

It is imperative that the owner take the initiative to inspect the steering system for proper wire tension, wire alignment, and fastener tension during the sailing season. Periodic maintenance is also required on all moving parts. In particular, the lubrication of the bronze sheaves is critical to the smooth operation of the steering unit.

The keyway that is cut into the rudder shaft is purposely cut a little long to accept an attachment for a number of automatic pilot systems. This saves a very costly alteration from having to be performed in the field were another keyway to be cut and eliminates the need to bolt something to the shaft which would tend to weaken it.

The head of the rudder shaft above the pillow block bearing has been keyed to accept an emergency tiller. Access for this is gained by removing the bronze deck plate in the cockpit sole.

Should anything ever happen to your primary steering system, the key for the deck access plate and the emergency tiller should be readily accessible and not buried in the bottom of a locker.

Please review carefully the enclosed maintenance hints supplied by the vendor. A thorough understanding of how your steering system works is the only way you can be assured of its proper performance year after year.

### **3.3 DIESEL AUXILIARY**

The engine fitted in your Cape Dory is a marine diesel.

Parts are available at any local distributor or directly through our distributor. You will find that they stock and ship almost every part you may need to effectively repair or maintain your engine. Their name and address is in the vendor list.

The engine installation is best broken down into several systems and a description of each system follows. The systems are electrical, exhaust, hand starting, cooling, fuel, shafting, maintenance and winterization. Included in each section is our experience of what has gone wrong with other boats which might help should you encounter a problem.

### **3.4 ENGINE ELECTRICAL SYSTEM**

Due to the rapid growth and technological developments of marine diesels, Cape Dory Yachts has steadily sought to install the best possible engine for the given application in each boat. We have used the Volvo MD7B diesel in the CD-28 and CD- 30, the Yanmar YSM8 and 1 GM diesel in the CD-22D, CD-25D and CD-27 and we most recently use the Westerbeke 13 in the CD-27.

Specifications for all these engines vary but in general should a starting problem occur first check the overload fuse in the starting circuit.

The Volvo MD7B has an 1-1/4" square fuse box on the instrument panel which houses a four position fuse. The Yanmar is supplied with dual fuses on the engine. The Westerbeke has a 20 amp circuit breaker on the engine to supply the protective requirements.

Other than this another problem that can occur is a faulty ignition switch not making proper contact.

This and other problems should be corrected by a reputable serviceman or authorized dealer. The engine owner's service manual that is supplied with each boat carefully outlines many of the electrical features included in the engine.

As with all vendor supplied equipment used in the boat a thorough review of the service manual contents of each piece will insure a better knowledge of the correct usage, maintenance and repair methods required.

### **3.5 EXHAUST SYSTEM**

The exhaust gases enter a waterlock muffler on the aft side of the engine. Here they are mixed with the cooling water and forced out the transom. Little maintenance of this system is required. It is recommended that every time the engine is started you look over the transom to see if the cooling water is coming out with the exhaust. If it isn't, not only will the engine block overheat but the exhaust system will overheat as well. The routing of the exhaust hose should not be changed or problems may develop. For winterizing the exhaust system a drain plug is fitted to the exhaust muffler allowing it to be drained.

The antisiphon valve should be cleaned periodically. This valve can be found by following the small hose on the exhaust elbow back to the engine. If it occasionally spurts water most likely a small piece of dirt has lodged itself in the seat and it should be cleaned. If it is allowed to drip it will cause the engine to rust.

If at any time the engine is hard to start and a lot of cranking is required, the water injection hose to the exhaust elbow should be removed and allowed to drain into the bilge. If this precaution is not followed the muffler could become full of water and back up into the exhaust elbow and then into the cylinder head. Obviously once the engine is started this hose must be reconnected immediately or the exhaust system which is normally water cooled will overheat and burn out.

### **3.6 HAND STARTING**

Hand starting a diesel is so difficult that we do not recommend it. Such force is required that injury may result. Intelligent use of the two battery system should eliminate the need for hand starting. In our opinion it is foolhardy to rely on this feature.

### **3.7 TRANSMISSION**

When the engine is not in operation the transmission must be kept in reverse. Some transmissions overheat if allowed to free-wheel.

### **3.8 COOLING**

Some engines are raw water cooled. As previously mentioned, the cooling water is discharged into the exhaust system. The cooling water enters the hull through a screened seacock and is pumped through a Jabsco impeller type pump mounted on the engine. If the engine is started with the seacock closed or water obstructed in another way, damage to the rubber impeller will result. A spare impeller should be carried aboard at all times and is easily changed. If really hot water is desired from the hot water heater, an add-on fresh water cooling kit can be purchased and installed. The addition of the kit converts the raw water cooling to a closed fresh water system similar to that used on an automobile except that the auto's radiator is replaced by a heat exchanger on the engine which cools the fresh water loop. Sen-Dure manufactures this kit and it is available from DiPetro Kay Corp. for Volvos. Other engines may have fresh water cooling installed at the factory. Check your engine owner's manual for further details such as winterizing, etc. Fresh water cooling is not available for the Yanmar 1 GM.

### **3.9 FUEL SYSTEM**

In order to run, a diesel's only requirement is clean, water-free, air-free fuel and combustion oxygen. There are no spark plugs or ignition requirements. 95% of all diesel engine problems result from fuel

problems. The engine manual that comes with the engine describes the bleeding procedures and every owner should know how to do this. The fuel feed line must be 100% air tight or it will suck in air which eventually will reach the high pressure pump and cause the engine not to start until this air is expelled. All engines are test run here at the plant and are fully bled, however air may be introduced in trucking or launching and must be bled out once the boat is launched. The fuel system consists of rubber hoses secured with hose clamps and threaded fittings made tight with pipe dope tape or sealer. The complete fuel line from the pick-up tube in the tank to the fuel pump in the engine must be tight or air will be introduced.

All CDY engine installations incorporate two fuel filters which also must be air tight. Any time the fuel system is opened up, as when changing a fuel filter, air will be introduced into the system which must be bled out.

The only other problems that can occur are caused by dirty or water laden fuel. Water is especially harmful in that its presence in the delicate passages of the high pressure pump will cause rust which may ruin the very costly fuel injection system. The best way to avoid water in the fuel is to keep the fuel tank nearly full at all times. This reduces the air space in the tank, which cuts down on condensation. A water separator which should be periodically checked and drained when necessary, is also provided.

Diesel fuel stabilizer also works, is highly recommended, and can be obtained from your local fuel dealer.

When filling the fuel tank, care must be taken not to overfill it. This will result in excess fuel being expelled out the vent hose and into the ocean which is illegal. Care must also be taken to see that the fuel fill cap is replaced securely so that no water will leak into the tank. Fuel drawn from a cool underhood tank will expand when placed in the warmer ships fuel tank. Therefore the tank should only be filled to 95% of capacity to allow for expansion.

Diesel fuel while less volatile than gasoline is still explosive and extreme care should be taken while fueling or working on the fuel system. Never allow a mechanic to use ether as a starting aid. Ether can cause over pressurizing of the small cylinder on an auxiliary diesel.

### **3.10 SHAFTING**

All Cape Dorys from the CD-22D to the CD-36 are fitted with 1" diameter bronze "Tru Shaft" propeller shafts. The propellers require a standard tapered SAE bore and are secured with one 3/4" nut, a Perry Nut zinc and a 1/8" cotter pin. Vibration is minimized through the use of flexible engine mounts.

Alignment is very critical and should be checked carefully several times the first year and at the beginning of every season. Alignment can only be accomplished in the water, with the rig tuned. All engine mounts are adjustable up and down and athwartships. IT IS MANDATORY THAT THE FLEXIBLE COUPLING, IF FITTED, BE REMOVED WHEN CHECKING ALIGNMENT. A common problem is the installation of a zinc between the propeller and the hull which prevents the alignment from being checked. To eliminate this problem a "Perry Nut" zinc is used. This zinc is used in place of the propeller nuts and can be ordered from Perry's Boat Harbor and Drydock,



Isleton, CA 95641 916/777-6461. The nut is 3/4" with 10 threads to the inch and a 1-3/4" hub diameter.

Alignment is checked by mating the two metal coupling flanges together by hand and measuring the gap between them with a common automotive feeler gauge around the entire periphery. There should be no more than .002" gap anywhere. Once alignment is arrived at the flex coupling which has been used on the CD-33 and CD-36 and is currently used on the CD-28, should be installed and all bolts tightened. Particular attention should be paid to the engine mount nuts and bolts. These should be checked on a routine basis.

### **3.11 STUFFING BOX**

The propeller shaft, and on wheel steering boats, the rudder shaft, are fitted with stuffing boxes to control the leaking. The adjustment of the stuffing box is especially critical on the propeller shaft. If it is too tight the packing will overheat and burn and once burned, leak uncontrollably. If too loose, it will leak excessively. When new, the packing will wear in and may require frequent adjustment. The ideal is to have one or two drops of water every ten seconds or so. In practice the stuffing box is properly adjusted as long as it is permitted to leak and the leaking is not excessive.

If you are having trouble keeping the stuffing box from leaking excessively, alignment should be rechecked. Misalignment will cause the packing to wear excessively and once corrected should solve the leaking problem. All CDY stuffing boxes use 1/4" waxed flax packing. Do not use synthetic or Teflon<sup>®</sup> packing.

### **3.12 MAINTENANCE**

Owners should refer to the engine manual for recommended maintenance. Daily checks should be made on the oil levels and fuel level. Particularly important is that the engine mounts and coupling bolts be checked often to see that they remain tight. Periodically it is a good idea to go over the entire engine with a set of wrenches tightening all bolts. Care must be taken not to overtighten and strip bolts and particular care must be taken on bolts that require certain torques such as head bolts. Engine vibration loads may have been experienced during shipment over the roads. Beyond the above, the engine itself should be kept clean and dry, and the fuel fresh, water free and dust free. The oil and filter should be changed often and the two fuel filters changed at least annually.

### **3.13 WINTERIZATION**

Winterization is best left up to your storage yard. If you do it yourself, you should follow the instructions in the engine manufacturer's owner's manual. The major problem that can arise during winter layup is the danger of the engine water freezing. This can be prevented by either draining the water completely out of the engine and exhaust system, or by treating this water with antifreeze. Refer to the label for the proper mixing instructions for the degree of protection required in your

locale. If the antifreeze system is used, it is mandatory to remove the thermostat to insure that water enters all areas of the block.

### **3.14 ELECTRICAL SYSTEM**

Some Cape Dory yachts are equipped with a comprehensive electrical system designed to meet your present and future needs. The A.C. (alternating current - Shore Power) and D.C. (Direct Current - Ship's Power) wiring is plastic coated, stranded copper wire with crimped-on connectors or soldered joints as required. The electrical system is basically maintenance free, with only the batteries requiring periodic inspection.

### **3.15 D.C. 12 VOLT SYSTEM**

The D.C. system is powered by 12 volt, 75 amp hour batteries located in the cockpit seat lockers. They are enclosed in an impact resistant, noncorroding plastic case which is firmly attached to the hull. All Cape Dory yachts use standard negative ground system which must be considered when purchasing and installing additional equipment.

The batteries are controlled by means of the BATTERY SELECTOR SWITCH located on the bottom of the D.C. POWER PANEL which is in the companionway area. This switch acts as a master disconnect as well as a selector for battery #1, battery #2 or batteries #1 and #2 together. Commonly one battery is reserved for engine starting duty while the second battery supplies all other needs. (Battery switch is standard on 25D and above.)

**CAUTION: NEVER TURN THE BATTERY SWITCH TO THE OFF POSITION WHILE THE ENGINE IS RUNNING. SERIOUS DAMAGE TO THE ALTERNATOR WILL RESULT.**

The level of charge of the batteries may be checked with a BATTERY CONDITION METER located in the center of the D.C. POWER PANEL. The level of charge of the battery, alternator output, state of the voltage regulator and power draw to services can all be checked with the use of the DC voltmeter supplied on the 12 volt power panel. A voltmeter gauge is located on the engine instrument panel. Your voltmeter will indicate differently, depending on when the readings are taken. Here are a few simple guidelines. Fully charged batteries that are in a static state should read between 12.3 - 12.6 volts on the numerical scale, and just barely be touching the high end of the yellow band on the colored dial of a gauge (The term static means that the battery hasn't been charged or discharged for at least two hours) . If the pointer is in the yellow, or red low band on a gauge, or reads between 11 - 11.5 volts on a voltmeter, then the battery is about half discharged and should be charged to insure its usefulness. If the engine is started, and the needle does not move up this would indicate that no charge is being delivered to the battery.

When the battery is being charged, the pointer should be between 12.6 - 13 volts, which is approximately the center of the green band on gauge types. The pointer may move up to about the 13.7 volt range (the high end of the green band) toward the end of the charge cycle, at which time the pointer drops back to the 12.6 - 13 volt range, as voltage regulation controls this function. If the battery voltage reaches 15 volts (which is the high red band on the gauge) this indicates that the

battery is being overcharged and will damage the battery if left unchecked. The voltage regulator is most likely at fault.

When the battery is being discharged (having electrical loads placed upon it) and no charging current applied, it is normal for the pointer to indicate between 11.4 - 12.6 volts, or be in the yellow band.

A FINAL WORD: The above guidelines provided are merely to help you to establish what is normal - the usefulness of the meter will depend on your own routine observations which will spot trouble when it occurs.

The BATTERY TEST SWITCH adjacent to the meter is used to directly connect the meter to the individual batteries. The condition may then be read directly from the meter. The BATTERY SELECTOR SWITCH must NOT be in the ALL position and the engine should NOT BE RUNNING or false readings will result.

The batteries should be inspected and serviced at least once a month, more frequently when under heavy use. The terminals should be free from corrosion and tight on the battery posts and the electrolyte kept at the proper level by topping up with distilled water.

**CAUTION:** Avoid spilling battery electrolyte into the bilge and avoid getting any salt water in the battery. If this should occur, ventilate extremely well since poisonous gas will be given off.

A Red PILOT LIGHT is provided on the panel. This light is illuminated whenever the batteries are connected to the system and provides you with an additional reminder that the batteries are on and also provides enough light to read the switch panel labels at night. The PILOT LIGHT draws very little current and will not run the batteries down even when left on for long periods of time.

There are several individual circuits provided on the D.C. POWER PANEL. Each circuit is activated by a toggle switch and protected by a circuit breaker. Before adding additional electrical equipment, check the required rating of the circuit breaker. Also be certain the number and size of the batteries is sufficient for the added loads.

A tripped circuit breaker is indicated by a raised white button. The breaker is reset by first turning the toggle switch off and then depressing the white button. Before attempting to reset a tripped breaker, an effort should be made to find the cause of the overload, the most common being a short circuit in one of the fixtures or wires, or trying to operate too many devices on one circuit.

### **3.16 A.C. 110 VOLT SYSTEM (OPTIONAL)**

The A.C. system operates on 115 volt, 60 cycle current. Power is supplied from a 30 amp shore service by connecting the shore power cord to the receptacle in the cockpit well. Make sure the main circuit breaker on the A.C. POWER PANEL is in the off position when connecting the shore power cord.

**IMMEDIATELY** after connecting the shore power cable, check the 110 pilot light. If it is on and the main breaker off this indicates a live circuit from the shore power receptacle. Next check the reverse polarity indicator light. If it is on, disconnect the shore power cable **IMMEDIATELY** and determine

the source of the problem as serious electrical shock hazards may exist to persons on board or along side your yacht, even if the main circuit breaker is off. The ship's wiring has been thoroughly checked and is of the proper polarity when it leaves the factory. If the system has not been altered, the reverse polarity condition is in the shore side system and should be brought to the attention of the system operator. If the reverse polarity light does not come on, the system is safe to operate. Turn on the MAIN CIRCUIT BREAKER at the top of the panel and then select whichever branch circuit is needed.

**CAUTION:** Before turning on the hot water heater insure that the tank is full of water. Permanent damage will result from operating the heater with an empty or partially full tank. To check that it is full, simply open the hot water tap on the pressure water system and watch for continuous water flow.

On each Cape Dory that has been fitted out with a factory installed 110 volt AC system we have included or added a #8 green coated copper wire as a ground. This wire is led from the common AC ground to the engine, and is in turn tied into the boat's ground system. This ground cable is a safety feature installed to avoid serious electrical shock hazards should a connection to a faulty dockside power source be made.

Under no circumstances should this cable be disconnected irrespective of claims that a certain amount of electrolysis could be created by the addition of this wire.

### **3.17 BONDING SYSTEM**

All thru hulls and seacocks below the waterline, including the stern tube, are connected to one another, to the engine block and to the external ground plate with a continuous loop of 18 copper wire. This is done to minimize the effects of electrolysis should one fitting become "hot" for any reason. Generally, a fiberglass hull is considered to be non-conducting and as such the chance of stray electrical currents forming is minimal. (Bonding system is standard on all diesel equipped Cape Dorys.)

As more and more electrical equipment is added to a boat, it becomes increasingly important to BE ALERT TO THE THREAT OF ELECTROLYSIS. We recognize that there are various types of instrumentation available to further monitor strong currents and any potential difference between ground and the thru hulls. These instruments can all be added to the supplied ground wire system. It is highly recommended that a sacrificial zinc be installed on the shaft (see shafting section).

### **3.18 LIGHTNING GROUND SYSTEM**

Your Cape Dory is equipped with a lightning ground system installed in accordance with the American Boating and Yacht Council (A.B.Y.C.) specifications. Every shroud and stay is connected to an external ground plate by a #8 A.W.G. stranded copper wire. Other equipment requiring bonding include the engine, fuel tank, mast step and fuel fill cap. Within practical working restraints, the wires are lead directly to the ground plate. (Note - Typhoon and CD-22 have optional lightning ground systems.)

While no one can predict how lightning will react when it hits a spar, we know from actual experience that this system offers added protection.

During a lightning storm refrain from touching any metal objects such as shrouds, mast, stanchions, pulpit, etc., as these may attract lightning.

Do not paint the external ground plate with bottom paint as this prevents the plate from grounding out with the seawater.

Periodically inspect the connections in the bilge to see that they are tight and clean and free from corrosion.

### **3.19 THROUGH HULLS AND SEACOCKS**

Since some holes below the waterline are necessary, ball valves and seacocks are used to open and close those reliably. They have been in use for years aboard craft of all types, and have proven their value many times over.

The seacock is essentially a round tapered bronze shaft with a hole running along its diameter. It can be rotated from one end in a 90 degree arc within a pipe junction to the open or closed position. The seacock is least likely to jam open with seaweed or other foreign matter. Seacocks are standard on the CD-22, 25D, 27, 28 and 30. The Typhoon and CD-25 have ball valves.

Before launching, and regularly throughout the season, you should check to see that all hose clamps are tight and in good condition. Seacocks are designed to provide a positive means of stopping a flow of water into the hull, should a connection fail or hose rupture. These fittings are the single most important safety devices that affect the watertight integrity of your boat. Checking them for ease and effectiveness of operation means making certain that the handles move the full arc that they were designed for, and that sinks, toilets, and cockpits drain easily when filled.

Whenever the boat is left unattended in the water, ALL thru hull fittings should be left in the CLOSED position except for those serving the cockpit scuppers. Be certain to open the engine cooling seacock BEFORE starting a diesel engine. The water pump impeller could be damaged and/or the engine and exhaust system damaged by overheating if the engine were to be started with the seacock closed.

Routine maintenance of seacocks calls for disassembling them when the boat is out of the water, applying a waterproof grease to all friction-bearing parts and reassembling. When disassembling seacocks, do so one at a time as the components are individually fitted to each other by their manufacturer. Your dealer or marina will suggest a good grease available in your locality. Automotive water pump grease or Lubriplate may be used.

Seacocks should be worked frequently to keep corrosion from forming, causing them to jam.

To Disassemble Your Seacocks: there is a locknut on the outer end of the shaft - back it off and remove it. Next, back off the hexagonal end plate, removing it completely from the shaft. Then from the opposite end, pull the shaft out of the housing. Do not use a hammer or hard object to force the

shaft out of the barrel as you may damage the threads. After you have cleaned off the old grease - inside and out -replaced it with new grease, reverse the procedure and reassemble. Be sure that you tighten the end plate tight enough so that the seacock will not leak, but not too tight or the mechanism will not turn. A thin layer of lubricant between the end plate and locknut will facilitate tearing down next season. For obvious reasons, this procedure is to be carried out while the boat is out of the water.

Your seacocks for the cockpit drain should almost always be left open. Their primary function is to be able to shut off a flow of water should the drain hose burst or come disconnected. Because these are the least used seacocks on the boat, there is a tendency to forget that they are there. DON'T! Work them frequently, and service them annually so that they will work should an emergency arise. Leave all seacocks open when the boat is stored for the winter so there is no freezing damage.

The other seacocks should normally be left in the closed position when you leave the boat. Be sure that you establish a routine of opening and closing seacocks so that you don't overheat your engine or burst hoses in the head. Since the head bowl is near the waterline particular attention should be paid to the seacocks that serve the head. They should be shut off anytime you are asleep or off the boat. A malfunction in the head or leaving the head intake valve open could cause the boat to flood or sink if undetected. Simply closing the seacocks eliminates this hazard. Set up a routine to do this all the time.

## **3.20 FRESH WATER SYSTEM**

### **FRESH WATER TANKS**

The CD-22 and CD-27 are equipped with a 24 gallon polypropylene bow tank located under the v-berth. The water fill for the bow tank is located under the v-berth cushions. A vent/overflow hose is installed and terminated under the deck edge in the fore peak. Water is fed from these tanks to manual pump(s) at the sinks through PVC hose. The CD-25D has its tank located under the quarter berth. The CD-27 has an additional tank under the port main cabin bunk.

On the CD-28 and CD-30 there are two 30 gallon water tanks located under the main cabin bunks. The deck mounted water fill is tee'd to supply both tanks. Each tank is vented aft up under the deck edge. Water is fed from these tanks to manual pumps at the sinks through PVC hose.

A manifold joins the two tanks with each tank having its own shut off valve. Only one valve should be open at a time to avoid water from one tank siphoning to the other while sailing.

If water is left standing in tanks for an extended period of time, it may adopt an unappetizing odor and appearance. If flushing the tank does not eliminate this problem a mild solution of baking soda may be used. After letting the baking soda stand for several hours the tank and water system should be flushed thoroughly before refilling with fresh water.

Cape Dory water tanks are constructed of polypropylene. If too much water pressure is used when filling the tank it may burst or crack. To eliminate this possibility the 3" access covers should be opened while filling. This also allows you to see when the tanks are full. Care must also be taken not to overtighten the access cover.

## **PUMPS**

The hand and foot operated fresh water pumps located in the galley and head areas are self priming. If a pump fails to operate, check first to be certain that there is water in the tank, and then to see if the hose is kinked or being constricted by some heavy object. If the hose is clear and the pump still fails to operate, disassemble the pump and inspect the operation of the internal check valve.

## **PRESSURE WATER SYSTEM**

Your yacht may be equipped with an automatic demand type fresh water system. In use, it is quite similar to a typical home water system in that no switches need be turned or pedals pushed in order to get water.

The system is activated by a circuit breaker on the D.C. Panel. Once the system is switched on the pump maintains a pre-set pressure at all times. When you open one of the faucets, the slight decrease in pressure which results is sensed by the pressure regulator built into the pump. The pump starts and runs until the faucet is shut. The pressure then builds back up and the regulator shuts off the pump.

Several water tanks feed the system, and all are connected through the water system manifold. The tanks enter from above and each is fitted with a bronze shut off valve. Note: only one valve at a time should be open to prevent the syphoning of water between the port and starboard tanks in extreme conditions and to prevent air from entering the system from empty tanks.

Coming off one side of the manifold through a valve is the line leading to the manual backup galley pump. This pump is intended for use only when there is a power loss or mechanical difficulty with the electric pump. The valve at the manifold should be kept closed when the pressure pump is being used so that the electrical pump won't try to take its suction back through the hand pump and introduce air into the system and/or damage the backup pump.

Coming off the other side of the manifold is the line leading into the PARR #36400-0000 strainer and then the SURE FLOW #220-21334 pump. The water leaves the pump at 25-35 PSI and goes to a "T" fitting. Here the cold and hot water systems separate.

On the hot side of the "T" fitting there is a check valve to prevent hot water from backing into the cold water side and a manual shut off valve used to isolate the hot water system for trouble shooting and safety purposes. From here the water goes into the hot water tank and back to a "T" under the galley sink. One side of the "T" feeds the galley sink and the other the head sink with no fittings in between. The cold water leaves the first "T" and passes back to a second "T" under the sink, and then on to the two sinks with no intervening fitting between the faucets and "T".

Start-up varies depending when your boat was shipped from the factory. Boats shipped between April 15th and September 15th do not have antifreeze in them while boats shipped September 15th through April 15th do.

On boats which have antifreeze in them the valve leading into the hot water side of the system was kept closed and only the cold water side of the system was tested here at the factory. This water should be flushed out and then the hot water side filled. The antifreeze used is safe for potable water systems and made by Sudbury Laboratories here in Massachusetts. **BE CERTAIN THE HOT WATER TANK IS COMPLETELY FILLED BEFORE TURNING THE 110 VOLT HEATING**

ELEMENT ON OR IT WILL BURN OUT THE ELEMENT. Also be careful not to accidentally activate the high temperature, high pressure relief valve which projects out from the side of the tank. Once the lever arm has been pulled, the valve will not reset and it must be replaced.

To activate the water system, fill up the tanks and open one valve on the manifold. We suggest you run the pump and open the cold water side of BOTH faucets until a steady flow of water comes out. Close the faucets and repeat on the hot water side. You must be sure to eliminate any trapped air from the system or the pump will cycle rapidly or never shut off.

We hope that we have found any problems here at the plant but always check the clear hose where it goes into the pump for air bubbles flowing in the line.

If air appears you must find its source, i.e. a leaking connection, leaking strainer, faulty manifold, or an empty tank.

Also, periodically check for a leak in the pressure side of the system. One tip off that something is leaking is the pump coming on at times when no faucet was opened. This signifies a loss in pressure which a leak would cause.

### **3.21 HEAD SYSTEM**

All Cape Dory 25D, 27, 28 and 30's include as standard equipment a marine head with holding tank. The CD-28 and 30 have a 24 gallon waste tank installed under the V-berth. The other models have tanks located in the bilge.

Refer to the head manufacturer's instructions on use of the marine toilet. It is recommended that a minimum amount of flushing water be used on each cycle to maximize the capacity of the holding tank. There is a deck pump-out fitting conveniently located on deck from which your marina can pump out the tank.

All tanks have a 3" access cover on the top for inspection and clean-out. The use of deodorizing chemicals as sold for recirculating toilet systems is recommended to control odor. The tank and head should be winterized by cleaning and treating them with a Winterguard® type antifreeze. Winterguard® is a non-toxic antifreeze which can also be used to winterize your fresh water systems.

In certain sailing waters where pump-out facilities are not available it may be necessary to install onboard holding tank pump-out equipment. We recommend a 1-1/2" hose tee be placed in the line from the tank to the deck fitting and that a pump be installed from this tee. The pump can either be a WHALE GUSHER GP-10 manual diaphragm pump, WHALE URCHIN manual diaphragm pump or an electric JABSCO MACERATOR pump (model #17260-0003). The discharge from the pump can either be lead to a seacock or a hose for dockside tanks. Discharge outside the territorial waters of the United States is permissible as long as this system is valved closed when inside the territorial waters. Please refer to the latest regulations for your area to determine which system is best for your boat. A vented loop is recommended in all head discharge lines that lead overboard. See the drawings for details of head plumbing systems.



### **3.22 SCUPPER DRAINS**

The cockpit scupper drains on your Cape Dory use multi-ply wire reinforced hose throughout. The hose is 1" inside diameter on the Typhoon and 1-5/8" inside diameter on all other models. All connections are sealed with gasket sealer and secured with stainless steel hose clamps. Scupper drains and galley sink drains discharge overboard below the waterline. Protect these hoses from sharp objects and chafe. Inspect hose clamps for security regularly. Hose clamps that were tight when the boat was built may loosen in transit or due to the contraction of the rubber hose and should be checked often. A failure here could cause your yacht to sink if the seacock was left open.

### **3.23 BILGE PUMPS**

The Cape Dory 25D, 27, 28 and 30 are all equipped with a permanently installed diaphragm-type bilge pump. This type of pump is also available as optional equipment on the Cape Dory 22. The pump itself is located in the cockpit area and is operated by inserting the (removable) handle into the through deck fitting. This arrangement allows the pumping of the bilge with all hatches closed; a safety precaution should you have to pump in severe conditions.

Water is carried from the bilge to the pump by a reinforced plastic hose with a strainer at the bilge end. This strainer should be checked **FREQUENTLY** and cleaned as needed. The pump discharges water overboard through a fitting located above the waterline near the transom.

The pump is designed to pump water containing a variety of debris, but can become clogged by excessive solid matter. If the pump should fail to prime itself after several strokes check to see that the pick-up hose is positioned properly, then check the pump body for debris. The rubber diaphragm may be removed by loosening the screw which holds the stainless steel clamp. Inspect the pump body for foreign material and gently lift the intake and outlet flapper valves to determine that they are clear. Reassemble the pump and continue pumping. Another problem causing the pump to not prime could be a chafed hose. This can be checked by holding your hand over the end of the hose to see if suction is felt.

It is wise to pump the bilge before casting off and again on returning to see if the boat is taking on unusual amounts of water.

Note: If you decide to have an electric bilge pump installed, be sure to consult an expert on the wiring and plumbing of that piece of equipment.

### **3.24 MAST STEP REINFORCEMENT**

Since the masts of the Typhoon, 22, 25, 27, 28 and 30 Cape Dory Boats are stepped on deck, a reinforcement system is fitted to distribute the load safely to the hull. The Typhoon Weekender utilizes a molded-in beam to support the mast step. Cape Dory 22's, 25's, 27's, 28's and 30's use structural metal members located between the deck and the headliner to distribute rigging loads to the forward and aft bulkheads. These supports transfer the load to the cabin sole, directly beneath the

bulkhead posts. Please refer to section on tuning to avoid overstressing the mast step structure. Overtightening the tumbuckles is not necessary and can be dangerous.

The mast on the Cape Dory 25 Diesel is also stepped on deck, however this boat is fitted with a mast compression tube to direct the load to the ballast and safely distribute it through the hull. The aluminum compression tube is fitted with a machined aluminum end cap. The mast step sits flush on the end cap and is bolted through an aluminum back up plate. The bottom end of the tube is set in a putty of polyester and microspheres on the lead keel.

### **3.25 SPARS**

Masts, booms, and jib clubs on all Cape Dory yachts are made of high-grade extruded aluminum. All spars are anodized, but unfortunately anodizing is a semi-permanent process, but still the best means of protecting aluminum. After several years of hard exposure to salt spray and sun, the protective virtues may diminish and a protective paint or film may be applied to the mast. However, anodized spars have been used for many years untreated with no apparent harm.

As a general rule, aluminum masts require minimal care and maintenance. When they are removed from the boat for the winter, they should be thoroughly washed with plenty of fresh water and a mild detergent. After a complete rinsing with fresh water, and after all halyards and lifts have been neatly tied-off to prevent tangling and fouling, a thorough inspection should commence. Start at the base of the mast. Water will collect here if the drain hole in the mast step has not been kept clear. This may hasten the breakdown of the anodizing and start the corrosion process. If water has collected and caused corrosion, clear the mast step drain hole and refinish the mast base or heel. Waxing will help preserve anodizing.

Proceed up the mast noting any areas that are scratched or abraded. If these are small they may be covered with a clear lacquer of a Mast-Kote type product to keep corrosion from starting or spreading. Sometimes it is recommended that you apply to the mast a good hard wax as this helps to protect it further. As you proceed up the mast, check every cleat and fitting for tightness, and for corrosion which may have begun in the screw holes. Make certain that no bronze, brass, or iron fastenings are used on the aluminum as the two metals are incompatible and electrolytical decomposition will start at once.

Check the tang fittings of the lower shrouds and the base mounts of the spreaders as you proceed up the mast. Carefully check all tangs, straps and fittings at the masthead.

Examine the main and jib halyard sheaves for signs of wear or needed maintenance. If you see anything that looks at all unusual, ask your dealer or local boatyard for assistance. Booms and jib clubs should be inspected as carefully, with particular attention to gooseneck fittings, sheet blocks, and bails. The combination bow and stern light should also be checked. It is good-practice to change the bulbs every year as a mid-season failure is very difficult to correct. Record bulb sizes and carry spares aboard your boat.

The spreaders that support the upper shrouds should be inspected. They are designed to angle slightly upward to best support the mast in column. The inboard and outboard ends should be covered with chafe tape or spreader boots to prevent tearing sails or halyards. If any damage is

sustained during mast stepping or winter storage, replace the spreader. DO NOT sail with defective spreaders, spar or hardware. We do not recommend that a spar be left stepped all winter, especially in northern climates where the boat is used for 1/2 year. Stress chafe, abrasion, and generally the shortening of the life of the spar and its components is accelerated when left exposed on the land.

### **3.26 STANDING RIGGING**

Standing rigging consists of shrouds and stays which support the mast in an upright position. Running rigging is used to hoist or trim sails. Standing rigging requires attention, as failure could result in the loss of a mast. Most failures occur from lack of attention, poor tuning or improper maintenance rather than a structural failure.

Before stepping your mast each season, inspect all standing rigging thoroughly. Starting at the top of the mast, systematically check each upper shroud and stay tang and be certain that each clevis pin is secured with a properly placed cotter pin with its ends bent over. Wipe down each shroud and stay with bronze wool dipped in a solution of water and mild detergent. The bronze wool will catch any broken wire in the rigging, calling attention to potential trouble; use bronze wool as, unlike steel wool, it will not leave particles to rust and soil your sails. Follow the bronze wool with a piece of terrycloth sprayed with a water- dispersing agent, such as CRC<sup>®</sup> or WD-40<sup>®</sup>.

Next, see that the spreaders are firmly fastened in place, and that the upper shrouds are locked in place on the grooved end of the spreader with a short length of stainless steel wire. You should use a spreader boot or some other form of chafing gear to protect your sails from the spreader tip. Check the mast tangs, clevis pins and cotter pins for the lower shrouds as outlined above for upper shrouds and stays. The Cape Dory 30 cutter has additional fittings on the forestay to be checked. The tangs for the lower shrouds are designed to allow for some movement, so do not overtighten the tang bolt.

Prior to stepping the mast, be sure that halyards are properly reeved. Tradition indicates that the main halyard's hauling part is ways secured to the starboard side of the mast, and the jib halyard secured on the port side.

After checking each piece of standing rigging for broken wires, rust spots, and for secure clevis and cotter pins, inspect the swaged terminal fittings at the ends of each shroud and stay. These fittings should all be examined, using a magnifying glass, for any hairline cracks. These cracks sometimes develop after water has entered the body of the fitting (by following the lay of the wire) causing the wire to corrode and expand. Although this problem is more prevalent in the southern latitudes, many owners seal the space between the wire and swages with bees wax. Turnbuckle boots are also quite popular, but are not recommended by Cape Dory as they cover turnbuckles which should be inspected frequently. We DO NOT recommend oiling or greasing the swage fittings as a means of preventing water from running inside them.

Report to your dealer any fittings that you find to be defective. Wire and fittings with any of the following defects require replacement: kinked wire, wire with broken strands, cracked swage fittings, bent turnbuckles, turnbuckles with stripped threads, clevis pins with grooves worn in them, and tangs or other fittings with distorted holes. The existence of any of the aforementioned conditions should be investigated, the reasons for them determined, and corrective action taken.

After completing the above inspections, the mast may be stepped and the standing rigging secured to the chainplates. In all Cape Dory yachts the upper shrouds are attached to the chainplate in a direct line **ATHWART** to port and starboard of the mast step. Lower shrouds are attached fore and aft of the upper. The single lower shroud on the Typhoon Weekender is attached aft.

All running rigging on Cape Dory yachts is Dacron. It requires only protection from chafe and the ultraviolet rays of the sun. Stow in neat, seamanlike coils when not in use so that it will run freely without kinks or hockles when it is needed. A rinsing in fresh water at the end of the sailing season is recommended.

### **3.27 TURNBUCKLES**

Cape Dory boats are equipped with open body integral toggle turnbuckles. Prior to every sail, all turnbuckles should be checked to see that they are properly adjusted (see section on Tuning) and above all, pinned, so that they will not loosen. The two cotter pins should be inserted and spread open. The threaded sections above and below the barrels may be taped once the turnbuckles are adjusted and locked in place. Engine vibration and even wave action at mooring or slip are enough to allow an improperly pinned turnbuckle to work loose.

Occasionally, during the season, you should completely disassemble and inspect all turnbuckles. **DO NOT** attempt to do this when sea or wind conditions are placing strain on the mast. The shroud turnbuckles (upper and lower sidestays) may be disconnected and inspected **ONE AT A TIME**. The remaining shrouds will provide adequate mast support.

Prior to disconnecting headstay and backstay turnbuckles for inspection, special measures to support the mast are necessary. This can be accomplished by using the halyards as temporary stays. Attach the jib halyard to the jib tack shackle; haul it in tight and cleat it. This will temporarily replace the headstay, so that you may disassemble the turnbuckle for inspection. Lead the main halyard aft to a stern cleat and follow the above procedure to check the backstay turnbuckle. Do not use the coaming mounted genoa sheet cleats for anything other than sheeting the genoa and then only if the sheet is around the winch first. These cleats are handily mounted but may pull out of the coaming if the main tension of the sheet is not taken by the winches.

The barrel section of the turnbuckle should be backed off entirely from the top and bottom sections. All threads should be carefully inspected both for broken or worn threads as well as rust, corrosion, or breakdown of the metal itself. The threads in the barrel should be inspected as well as those on the long, threaded ends. Prior to reassemble, lightly lubricate the ends, barrel, and locking nuts with waterproof grease.

**RIGGING INSTRUCTIONS**

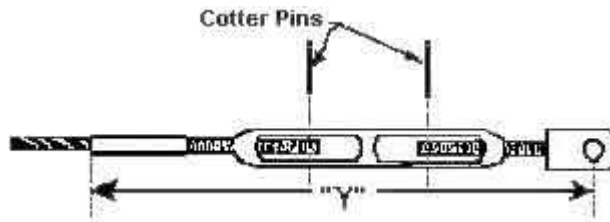
**IMPORTANT: Read instructions carefully before rigging your sailboat.**

**SPARTAN MARINE PRODUCTS INC.**

160 Middleboro Avenue  
East Taunton, Mass. 02718  
(617) 623-6776

- 1.) Hold each coil of wire firmly and carefully, unwind with extra precaution avoiding injury from retracting rigging ends that are under tension. (Take care not to crimp the wire while uncoiling).
- 2.) Leave I.D. tags on shrouds and stays to avoid confusion till completion. A helpful hint is to document wire numbers on your rigging kit list enclosed and retain in a safe place for future reference.
- 3.) Attach each piece to its respective location on the mast making sure to insert proper clevis pin and locking it with a cotter pin. (The mast lights should be checked before the mast is installed so that defective bulbs can be replaced easily.)
- 4.) When all rigging is properly located, identification tags and turnbuckles are in place, make sure again that each turnbuckle is stationed with a corresponding clevis pin and locked in place with a cotter pin.
- 5.) Take note of the maximum dimension your turnbuckle should be opened with turnbuckle barrel equally located between threaded sections.

Measuring from the center of the clevis pin to the top of the swage, the maximum "Y" dimension should be as follows:



Typhoon	All	Y = 12-1/4"	CD-30K	Lower, Miz, Upper & Lower	Y = 14-1/2"
CD-25D	Lowes	Y = 12-1/2"		Upper, Fore, Backstay	Y = 15-5/8"
	Upper, Fore, Backstay	Y = 14-1/2"	CD-30C	Lowes	Y = 14-1/2"
CD-27	Lowes	Y = 12-1/2"		Upper, Fore, Backstay	Y = 15-5/8"
	Upper, Fore, Backstay	Y = 15-1/4"		Staysail	Y = 12-1/1"
CD-28	Lowes	Y = 14-1/2"			
	Upper, Fore, Backstay	Y = 15-5/8"			

- 6.) Tighten every shroud and stay so that they have the correct tension and the mast is stayed plumb with no bends or curves in it. Insert cotter pins in the threaded studs and spread them to prevent them from falling out. Tape the cotter pins with chafe tape to prevent lines and other objects from becoming snagged on them.
- 7.) Because of the manufacturing process used in fabricating the wire used on the shrouds and stays, you will experience a certain amount of stretch in your rigging after sailing in the first rough weather of the season. Repeat the above procedure to be certain that your mast is always well tuned.
- 8.) **ATTENTION: SKIPPER**
  - a.) Please note: When rigging and mast are properly assembled and installed, avoid taking unnecessary risks that would use rigging assembly for purposes other than what it was designed for. Exercise good judgement.
  - b.) Frequent checks for excessive rigging wear and weak areas should be made to ensure maximum safety. Especially check for chafing. Sails and running rigging can be easily chafed.
  - c.) Worn rigging or any pieces that are in question should be replaced as soon as possible. (For further clarification consult your Dealer on any pieces in question.)
  - d.) Your sparsset also demands attention and periodic checks to ensure that all pieces are secure and free from wear.

### 3.28 DECK HARDWARE AND CHAINPLATES

Most deck hardware is thru-bolted and backed up where necessary. Periodically these items can leak and should be rebedded with a good brand of caulk such as Life Caulk<sup>®</sup>. Care must be taken not to overtighten the fasteners as the strength can be reduced severely. Particular attention should be paid to the chainplate fasteners as they are very critical to the safety of the rig. The chainplates were torqued at the factory and when recaulking them you should not exceed the torques listed below:

1/2" bolts -----200 inch pounds

3/8" bolts -----150 inch pounds

5/16" bolts -----90 inch pounds

### 3.29 TUNING THE STANDING RIGGING

The purpose of tuning the rig is to adjust the center of effort of the sail plan fore or aft to obtain a slight weather helm in moderate winds, and to keep it straight without hooks to port, starboard, fore or aft. Properly tuning the rig is an important process which should be attempted only by qualified personnel; consult your Cape Dory dealer.

The fore and aft alignment of your mast can be checked by comparing it to a vertical structure such as a radio tower, chimney, etc. Before checking the mast alignment in this manner, be certain that the boat is resting on her design waterline. If the mast is leaning fore or aft, ease the turnbuckle toward which the mast is leaning a few turns, and take up a corresponding number of turns of the opposite turnbuckle. (Note: when adjusting turnbuckles never use excessive force or the turnbuckle may be contorted.) Always prevent the upper threaded turnbuckle stud from turning. The Cape Dory 30 ketch has a split backstay with two turnbuckles. Headstays and backstays should never be taken up so tightly that they will not "give" an inch or so if you pull on them with moderate force.

Upper shrouds should also be tightened equally and have about an inch of "give" to them. Forward lower shrouds should have one to two inches of "give", and the aft lowers slightly more.

**UNDER NO CIRCUMSTANCES TAKE UP THE RIGGING TO BAR TIGHT TENSION.** Both the mast and the boat can be severely damaged by excessive tension.

Fine tuning of the rig can be completed after the boat has been sailed, and may have to be done again after the boat has been out in strong winds. When sailing, it is important that the mast remain straight and as nearly in column as possible at all times. While sailing close hauled, sight up the mast track and note any mast curve. Does the mast appear to be falling off to leeward at the top, or does it hook upwind? Repeat this procedure on the opposite tack.

If the masthead is falling off on both tacks, the forward lower shrouds are too tight and the upper shrouds are too loose. If the masthead hooks to windward, the upper shroud is too tight in relation to the lower on the same side. When sailing to windward, the forward lower shrouds bear a greater load than the after lower shrouds; however, the after lower shrouds on the windward side should never be

loose. All shroud tuning should be done from the leeward side. If the rig seems to be equally balanced when you begin, duplicate every half turn from side to side.

On Cape Dory boats with bowsprits, try to keep the bowsprit straight and not bowed up or down. This should be checked while sailing upwind in moderate conditions.

**CHECK TO SEE THAT ALL COTTER PINS OR RINGS ARE IN PLACE AND THAT ALL SHARP EDGES ARE TAPED.**

Rigging that has split strands of wire or cracked swage fittings should be discarded and replaced.

### **3.30 RUNNING RIGGING**

Because of the recent advances made with pre-stretched Dacron<sup>®</sup> line and the age old problem of fish hooks forming in stainless halyards after one season of use, your boat is equipped with pre-stretched halyards. They have gone around the world and received acclaim from almost every notable offshore cruising man.

Periodic inspection of the running rigging will point out any areas excessive chafe. Often the offending item causing the chafe can be corrected. Otherwise, one way to extend the life of the rigging is to either end for end it or move the shackled end of it up a foot or so every year to move the point of wear away from the sheave, winch turning block etc. Only experience will dictate when they need replacement.

Drawings are included to illustrate the correct reeving to the mainsheets for all boats and the club jib sheets on the 28 and 30. Swapping sheets end for end will extend the useful life of a sheet that has started to chafe where it passes a sheave or engages a cam cleat.

### **3.31 SAILS**

Sails should be protected from chafe by padding spreaders and other gear or by installing chafe patches on the sails themselves. Spreader and shrouds can chafe genoas and other overlapping jibs when those sails are sheeted in tightly and can chafe the mainsail when running before the wind. Topping lifts frequently chafe the leach of the mainsails.

Inspect your sails frequently and take care of chafed stitching or small tears before they become a major problem. A small ditty bag with some thread and a few sail maker's tools on board can come in handy and save you a few dollars.

Sails should also be protected from sunlight as much as is practical. Ultra violet light can break down the Dacron in the sail cloth and stitching. Sails that are left furled on booms, jib club booms and forestays without suitable covers are most susceptible to this problem. Suitable sail covers are available from Cape Dory through your dealer.

Mildew is no longer the major concern that it was in the days of natural fiber sails. Your new sails should be dry before folding if for no other reason than to prevent the unsightly growth of this dark mold.

In order to retain the shape of your sails they should be folded after each use. In the case of the mainsail, outhaul tension should be relieved before folding the sail on the boom.

After the season, sails should be inspected and if necessary, serviced by a competent sailmaker. For appearance's sake stains should be removed and the sails washed gently with a mild soap and thoroughly rinsed.

The mainsail has plastic slugs which are inserted into the track on the after side of the mast. The Typhoon uses sail slide stops to prevent the slugs from coming out of the track each time the sail is lowered. On larger Cape Dory boats a hinged mast gate is provided. After the sail slugs are inserted in the track, close the gate and install the cotter pin with ends directed away from the sail so they will not tear it. Bend the ends of the pin over and tape them. Insert plastic slugs or bolt rope at the foot of the main into the boom sail track.

Battens are thin wooden or fiberglass stiffeners inserted in the trailing edge of your boomed sails to support the outward curved leach. When inserting the batten, the thin edge goes into the batten pocket first. Battens, particularly wooden battens, can twist and warp if they are not kept flat. Keep this in mind when storing them. Battens should always be removed when the mainsail is furled.

### **3.32 REEFING**

Roller reefing is used on the Typhoon and the CD-22; "jiffy" reefing is used on the larger boats. Remember : IF YOU ARE THINKING ABOUT WHETHER OR NOT TO REEF, IT'S THE TIME TO DO IT. Being over-canvassed is hard on a crew and boat, potentially dangerous, and will not make the boat go any faster.

#### **ROLLER REEFING (TYPHOON, CAPE DORY 22)**

Hoist the mainsail to its full height, and take up the topping lift until the leach of the sail has no tension on it. Then with the crew on the main halyard, pull the outboard end of the boom toward the stern of the boat. It will move out about an inch. Hold the boom out, and as the crew slowly eases the halyard, turn the boom in a circular motion. (It makes no difference which way you turn the boom.) As the leach moves in on the boom, pull it aft to make the sail lay as flat and as evenly as possible around the boom. When you have reduced the size of the mainsail to the desired level, push the boom back in to the gooseneck fitting and have your crew take up on the halyard so that the luff is tight. Then ease the topping lift back to its position prior to tucking in the reef.

#### **JIFFY REEFING (C-25D, CD-27, CD-28, CD-30)**

"Jiffy Reefing" is the more traditional method of shortening sail. You do not have to raise the main to its full height on the mast to properly reef, but it is somewhat easier if you do as it keeps the sail out of your way.



Reeve the reefing lines through the reefing cringles. The grommets on the luff and the leach will then become your new tack and clew. Ease off the halyard and pull the tack down to the top of the boom. Make the line fast to the cleat on the mast and take up on the halyard until the luff is set with the proper tension. Next, haul on the clew line, pulling the clew down and aft. The clew line runs from a padeye up through the grommet, down to a cheek block and forward to a cleat. It is important that during a jiffy reef the main sheet and the vang, should your boat have one, be eased to allow proper tensioning along the new foot of the sail. The key to this type of reefing is to have sufficient tension on the foot of the sail. When the clew has been pulled out and the foot is tight, make the line fast around the cleat on the boom.

There are reef “points” in the mainsail of Cape Dory Yachts fitted with “jiffy” reefing. Use 18” lengths of 1/4” line and run them through each reef point. Lead the line through the reef point, under the foot of the sail and tie the reef lines in a reef knot. It is the seamanlike procedure to keep the unused sail out of the way and reduce windage.

To shake out the reef, release the lines through the reef points, stow them and release the reef line through the reefing cringle that is serving as your clew. Then release the reef line on the reefing cringle for the tack, and hoist the mainsail so that the luff is tight. Return the topping lift to its original position. Again, make sure the sheet and vang have been eased.

Generally speaking, reefing is desirable when you find yourself heeling more than 20 degrees or wish to slow the boat down to keep it manageable in heavy airs. When going off the wind, the boat will probably sail as well running under headsails alone, since the reefed main will usually blanket the headsail. You may wish to leave the mainsail reefed, furled and ready to hoist when you change direction to windward.

The enclosed explanation of “quick reefing” is from the catalogue of Schaefer Marine Products of New Bedford, Massachusetts. It is reprinted here with their permission.

### **3.33 OPTIONAL SAILS**

The first sail that you will probably want to add to the complement of working sails provided with your Cape Dory is a 150% genoa. This sail provides more power and speed in lighter wind conditions and is particularly effective going to windward. Cape Dory has genoa and genoa gear packages for all models. We also have 150% genoas for the Typhoons, CD-22 and C-25D.

If you choose to add a spinnaker or other sails to your inventory, select your equipment carefully. Your Cape Dory dealer will assist you in selecting suitable equipment and will make you aware of the optional sails and equipment that Cape Dory has available. Due to a very low demand for the spinnaker gear Cape Dory cannot supply this gear other than the gear attached to the mast. A popular sail which acts like a spinnaker and a reaching genoa is a flasher. This sail is also known as a MPS (Multy Purpose Spinnaker). It does not require a spinnaker pole and is easier to set and trim than a spinnaker. Most Cape Dory brochures show this sail.

### **3.34 BOTTOM PAINT, BOOT TOP PAINT**

Your Cape Dory was painted with anti fouling paint before it left the factory. The area under the cradle poppets and keel supports may require additional painting prior to launching. These areas should be well sanded with 120 grit paper and washed with solvent to remove wax prior to painting.

In certain geographical areas some bottom paints work much better than others. If you intend to repaint the bottom of your Cape Dory, seek the advice of your dealer or knowledgeable local boat owners on what brand of bottom paint works well in your area. CAUTION: Not all bottom paints are chemically compatible. Be sure to tell paint dealer what paint is currently on the bottom of your boat to be certain that you purchase compatible anti-fouling paint.

The boot top paint is INTERLUX DADO BROWN #246. When repainting, this area should be well sanded before applying a new coat.

### **3.35 EXTERIOR MAINTENANCE**

#### **SPAR**

It goes without saying that removing the spar and storing it inside after the sailing season is over (northern climates only) is preferable to leaving the spar stepped or outside. Regardless of where you sail, the spar should be waxed once a season and inspected carefully.

All moving parts on the spar were treated with a Teflon<sup>®</sup> lubricant when they were installed. At least once a season you should do the same.

Blocks require little maintenance except periodic washing in fresh water and a light oiling or spraying with a silicone lubricant. Check all aluminum “T” tracks for signs of lifting or loose fasteners.

#### **MAINTAINING TEAK**

Teak above deck on Cape Dory yachts has been sanded and oiled to a full golden hue before it leaves the assembly area. As it gets exposed to sunlight and drying conditions, the woods begin to take on a gray appearance that will eventually lead to surface deterioration of the wood. Teak which is ignored will eventually begin to split and grain will lift.

Contrary to what you may have heard, teak is not a miracle wood that is totally maintenance free. It is easy to maintain. There are a number of excellent teak cleaning and sealing preparations on the market. We suggest that you ask your sailing friends (who have teak you admire) for their suggestions. (Many excellent teak cleaning and sealing products are not available nationwide, so use the best available in your area.)

The teak may also be varnished; put three to six coats on initially; plan to apply another coat at midseason, and a final coat prior to winter layup. Follow manufacturer’s directions for the varnish which you purchase (use only quality marine varnish.)

### **3.36 INTERIOR MAINTENANCE**

Periodic cleaning is essential to keep the interior of your boat clean and bright. Choose sunny, breezy days for your boatkeeping chores as sun and fresh air are a great help in drying and airing interior cushions, etc. while you continue with chores below; they also contribute to your enthusiasm for the task!

### **3.37 CUSHIONS**

Cloth covered interior cushions are made from several different materials depending on which color or style you selected. We, therefore, recommend that you either have the cushions dry cleaned or clean them with an upholstery shampoo of the spray foam type.

Vinyl interior cushions and cockpit cushions should be cleaned with a commercial vinyl upholstery cleaner. Follow the manufacturer's instructions regarding the use of these products. To prevent the growth of mildew beneath vinyl cabin cushions, elevate them when leaving the boat to allow air to circulate. Remove traps on boats so equipped so lockers will be aired.

### **3.38 ICE BOX**

The ice box on your Cape Dory is designed to drain water from melted ice through scuppers into the bilge. Because small food particles, juices from meats, etc. may also drain into the bilge, it is wise to use a NAME BRAND bilge cleaner in the bilge as needed or every three to four weeks (depending on how frequently you are using the ice box). Follow the directions for use which accompany the product which you select.

Another alternative is to fit a plastic gallon jug on the end of the ice box hose. Periodically dump the melted ice out into the sink.

Food items should not be left for long periods of time in a closed ice box without ice. Spoilage, odors, mold and mildew will result. Plan to clean out your ice box (both ice and food items) at the end of each sail or cruise when you are leaving the boat for an extended period of time. Remove the ice box cover to permit thorough drying. Clean up any spillage of food in the ice box, etc. to prevent blocking of the scuppers and drainage of this material into the bilge.

Clean the fiberglass interior surfaces of your ice box periodically with a sponge dampened with a water and bleach solution (this will help prevent mildew and odors in the ice box).

### **3.39 PORTS AND HATCHES**

The Spartan ports fitted on your yacht are made of bronze, tempered glass and stainless steel. A neoprene gasket bedded in a contact adhesive is used to seal the port. (Note: Typhoon ports are non opening.)

The hinge pins and port knobs should receive a light periodic oiling to combat any build-up of salt spray that may accumulate. The glass may be cleaned with any non-abrasive household glass cleaner.

Optional port screens are available which snap into place on the outside of the port. Do not use strong solvents on the plastic portions of the screen.

Hatches made of Lexan<sup>®</sup> material should not be cleaned with any solvent or abrasive cleaner. They should be rinsed with warm water only and cleaned with an acrylic cleaner. Other soaps and detergents will cause the Lexan<sup>®</sup> to film over losing some of its clear qualities.

### **3.40 CURTAINS**

Generally the curtains supplied have a content of 77% cotton and 23% acetate and therefore should be dry cleaned.

### **3.41 SINKS**

Stainless steel sinks may be cleaned with any stainless steel cleaner according to the manufacturer's instructions or with a non-abrasive cleaner and soft cloth or sponge.

### **3.42 HEAD**

The plastic seat and vitreous china bowl of your head should be cleaned with a non-abrasive cleanser and sponge or soft cloth.

### **3.43 INTERIOR WOOD SURFACES**

Rubbing the wood periodically with a fine bronze wool when oiling will help produce a smooth satin surface. Many excellent teak oils are available as well as other household products such as Liquid Gold<sup>®</sup>.

Some finishes are in a wax base such as the Minwax<sup>®</sup> products. Repeated use of this type product builds up a finish that produces a very smooth surface. Care should be exercised, however, when using these products as oiling or varnishing at a later date may not be possible due to the layer of wax that has accumulated.

Make sure that adequate ventilation is provided when it is called for by a product's manufacturer.

### **3.44 GENERAL**

Dirt, hair, etc. should not be washed into the bilge during any cleaning process as these may plug the bilge pump strainer and prevent it from functioning when needed. Use a dust pan to collect dirt, etc. when cleaning the cabin sole of your boat.

Raise covers of lockers when leaving the boat to permit adequate ventilation and prevent mildew should these contain moisture. Remove excess moisture which may have collected in lockers with a sponge.

### **3.45 WINTERIZING**

Winterizing your yacht is a relatively simple procedure. We are assuming that the boat will be dry stored in the following instructions. If you should decide to wet store your boat, be sure to take adequate precautions against water freezing in the engine and plumbing systems on your boat.

#### **BLOCKING THE HULL**

A good boat yard is, no doubt, expert at properly supporting the hull. Check to make sure that the weight of the hull is resting on the keel. The purpose of cradle bulkhead or poppets is to balance the boat in an upright position, not to bear the weight of the boat.

Before hoisting out, show the boat yard the profile of the hull so that they will know how to position crane or straddle the hoist straps. The usual locations for the straps of a typical marine lift are just forward of the rudder heel bearing and in the hollow of the fore foot.

#### **COCKPIT SCUPPERS**

Flush with fresh water and leave seacocks in the open position so that hoses will not fill with rain water and freeze.

#### **ICE BOX**

Clean ice box thoroughly and leave open.

#### **STOVE**

Clean stove thoroughly including burners. Release pressure in fuel tank and leave tank empty.

#### **ELECTRICAL SYSTEM**

Remove batteries from boat and store in a warm dry location off a cement or stone floor. They should be completely charged before storing or left on a trickle charge.

The balance of your electrical system requires little maintenance. If you wish, each bulb can be removed and the light fixtures given a spray of water dispersant such as WD40<sup>®</sup>, CRC<sup>®</sup>, or similar products. The main switch and fuse panel can also be treated this way to minimize corrosion.

## **PROPELLER**

Examine the propeller for any damage or nicks. If evidence of either is apparent, have the propeller removed and trued.

## **HEAD**

Follow manufacturer's directions closely. Remove any water to prevent from freezing. The holding tank should be empty when the yacht is laid up for the winter. If possible, flush the tank with a mixture of non-toxic antifreeze and water prior to hauling.

## **WATER SYSTEM**

Pump tanks as dry as possible, then add a non-toxic water system winterizer that your local marine hardware store will recommend. (Caution: do not use antifreeze or other poisonous substances.) Pump this solution through the entire fresh water and drain system.

## **ENGINE**

Follow the instructions in the engine owner's manual supplied by the manufacturer and read the section in this manual. Disconnect engine cooling water intake to make sure that no water remains in the line. Reconnect line and secure hose clamps. Remove the drain plug in the muffler and drain.

## **FUEL TANKS**

The best way to store a fuel tank is empty. Partially filled tanks invite condensation. Completely filled tanks leave you with old fuel in the spring and possible gum deposits. Much has been written lately on this subject and new products are being developed to prevent gum deposits. Keep informed and consult your dealer or shipyard for recommendations.

## **STANDING RIGGING**

Standing Rigging, the fixed rigging supporting your mast, should be inspected frequently to ensure trouble-free sailing. New rigging will often form a thin layer of rust, especially at the terminal ends. This is caused by impurities surfacing when the wire is cold worked during manufacture. The oxidation should eventually stop forming and when it does the stain should be removed with an unchlorinated cleanser. If the rusting persists after several cleanings, contact your dealer.

Turnbuckles should be checked that there are sufficient threads exposed and that the cotter pins are in place and taped over.

The judicious use of a silicone-type product on sail, genoa, and traveler tracks works well to keep these running free in a salt air environment. Sheaves should be disassembled occasionally, washed, and well lubricated with a thin oil.

Check the spreaders to be certain that they are angled upward with the angle between the upper shroud and the top of the spreader the same as the angle formed by the bottom of the spreader and the shroud. The spreader tip should be securely seized to the shroud and it all protected by chafing gear.

Once a month you should go aloft and check all shrouds, tangs, masthead assembly, etc. to be certain all bolts are tight and all cotterpins are in place.

### **LIFELINES, PULPITS, AND STANCHIONS**

Lifelines, like standing rigging, should receive periodic checks. The terminal ends should be engaged properly in the barrels of the tumbuckles and the lock nuts tight. As the lines stretch, the slack should be taken up. Check all swaging for dents or cracks.

Check pulpits and stanchions for cracks, dents, and cracks in the weld. Check that the bases are tight and properly sealed.

Periodically, some of this stainless hardware shows signs of rusting as mentioned in the standing rigging section. If after a period of time the rusting continues, contact your dealer.

### **WINCHES AND BLOCKS**

The winches installed on your yacht are the finest available. Most problems occur when a proper maintenance schedule is not followed. It is important that your winches be cleaned and inspected at least twice a season or after a two or three week offshore passage. We recommend a high density grease and not an oil for the required lubrication. Check to see that all bolts holding the winch down are tight.

### **COVERING**

It is far better to store a boat under cover than to leave it open to the elements. The teak trim will fare far better during the winter and the boat will not be subject to the pressure of freezing water, a common cause of gel coat stress cracks. If your boat cover is durable, open a couple of ports to allow air to circulate below decks.

## **3.46 SAFETY**

Federal regulations REQUIRE certain safety equipment to be onboard your boat (personal and throwable floatation devices, fire extinguishers, horn, whistle, etc.). Know what equipment is required and have it aboard and properly stowed before you cast off for the first time.

In addition to the equipment requirements outlined here, the U. S. Coast Guard can provide additional information and answer your questions. It is highly recommended that, although not required, certain additional items be kept aboard. This list is not complete, you should have all USCG required gear.

1. An anchor of appropriate size and design and rode of good quality, appropriate size and length.
2. First-aid kit.
3. Compass.

4. Paddle.
5. Flashlight.
6. Up-to-date charts of the waters to be sailed.
7. Flares.

Fire extinguishers are not standard equipment on your Cape Dory; they are to be provided by you, the owner. Fire aboard any boat is a real serious hazard. It is important to take adequate precautions against fire and to be well prepared to extinguish one quickly and thoroughly should it occur. For this reason, U.S. Coast Guard approved fire extinguishers of the appropriate type and size (check U.S.C.G. regulations) should be installed immediately.

The permanent location of fire extinguishers where they are easily accessible (near areas where fires most likely are to occur - engine, fuel tanks, and galley) is important. They should not be located where fire may prevent their use. At least one extinguisher in a cockpit locker (reachable from outside the cabin) and one extinguisher installed below is a minimum.

## **CHARTS**

There is no substitute for complete and up-to-date charts. The Coast Guard is constantly making improvements on the aids to navigation which change buoy locations, numbers, configurations, etc. These changes are reported in the respective Coast Guard District's Local Notice to Mariners, and are on display at all NOAA Chart Distributors. Before embarking on any trip outside your home port, make certain that you have the latest editions of the chart, and that they are fully corrected.

## **FUELING**

Appropriate safety precautions are important before, during and after fueling. Before fueling the first time, be familiar with the instructions provided by the engine manufacturer.

1. Fuel docks should be approached at REASONABLE speed without wake. Observe posted speed limits and instructions. Be considerate of others using the docks, and watch for a dockmaster or hand who may give you instructions. Maintain control of your boat at all times and have your dock lines ready for use before you approach in the event that these are unavailable at the dock.
2. Use bow, stern and spring lines to properly secure your boat.
3. Close and secure all hatches and ports.
4. FORBID SMOKING while taking on fuel on or near fuel docks. Completely extinguish all smoking materials well in advance of approaching the docks; do not recommence until you are well clear of it after fueling and conditions aboard are safe to do so.
5. Extinguish any other open flames aboard and see that all equipment (e.g. engine, stove, cabin heater, radios, and lights - both lanterns and electrical lights, etc.) which may generate heat or sparks of any kind turned OFF...Turn off all switches for branch circuits so that there are no



live electrical circuits. MAIN SWITCH should also be turned off AFTER engine is stopped (to avoid alternator damage).

6. If possible, crew members not involved in fueling should leave the boat.
7. An adequate fire extinguisher (USCG approved for Class B fires) should be readily available in case of emergency.
8. Remove fuel fitting. Be certain that you are putting fuel in the fuel tank. Note the approximate amount required to fill the tank by either looking at the fuel level gauge if one is in the tank.
9. Be certain (double check) that you are taking on the appropriate fuel, diesel not gasoline. Errors of this type do occur and will result in serious engine damage if not immediately detected and corrected.
10. Sometimes If you are in an unfamiliar area you may want to first take a sample of the fuel you plan to pump on board for a visual and smell check to insure that it is diesel and not gasoline.
11. Maintain contact between the nozzle of the fuel hose and the fill pipe rim to prevent generation of static electricity sparks.
12. Fill slowly to about 95% of capacity; do NOT overfill. (Allowance must be made for thermal expansion of fuel without overflow.)
13. Replace and secure fill fitting after fueling. Carefully clean any spillage. Check fuel tank vents at stern for overflow. Check below decks and in the bilge for fumes or leakage. If fumes or leakage are present, adequately ventilate and clean areas completely BEFORE PROCEEDING.
14. Open all ports and hatches fully for ventilation.
15. Do not fuel during electrical storms; avoid fueling at night or in rough water, except in emergencies when extreme caution must be exercised.
16. Note the diesel fuel is flammable; handle it accordingly in a cautious manner.
17. Those Cape Dory owners with outboard engines should note that perhaps the safest fueling practice, when possible, is to remove the tank(s) from the boat before filling.

### **3.47 WEATHER FORECASTS**

The U.S. Coast Guard is in the process of discontinuing the display of weather signals at its stations and other locations along all coasts in favor of the NCAA weather broadcasts which are continuously broadcast on weather channels Wx-1 and Wx- 2 (162.40 MHz and 162.55 MHz)

Good seamanship requires attention to the weather forecast before leaving port, and while you are sailing. Tune in to VHF weather, and make it a practice to check the broadcast on a regular basis in case there are changes in the forecast.

### **3.48 BOATING SAFETY ORGANIZATIONS**

Every sailor was once a beginner. Very few were born into sailing families and learned at their parents' knees. Therefore, it is to everyone's benefit that there are several fine non-profit organizations that are ready to teach interested persons everything from basic seamanship and piloting to celestial navigation.

Two of these organizations are:

- United States Power Squadrons (U.S.P.S.)
- United States Coast Guard Auxiliary

### **3.49 STOVES**

The manufacturer of the stove includes an owner's manual with the appliance. Read it carefully and make sure that everyone who uses the stove understands its operation. Remember alcohol fires can be extinguished with water or Type B fire extinguishers. Kerosene fires must be extinguished by smothering or with Type B extinguishers.

The following precautions refer to all types of stoves. Refer to the owner's manual for specific instructions.

1. Never leave lighted stove unattended.
2. Never leave a stove while it is still hot. Remember alcohol can burn with an almost invisible flame.
3. Always release pressure in the fuel tank when leaving.
4. Close fuel valve (if applicable) in case of emergency.
5. Exercise caution when priming burners. Improper priming is one of the most common causes of galley fires.

## **CHAPTER 4**

### **GENERAL INFORMATION**

#### **4.1 COMMISSIONING**

Cape Dory dealers are chosen because they are knowledgeable professionals. Since you are bearing the launching and commissioning expenses of your new yacht you have the right to expect a thorough and professional job.

Please note that the checklist provided in this manual is to assist you and your dealer with the first launching of your boat. In subsequent years, you may wish to review this list in preparing your boat for launching.

Before your boat is launched, we strongly recommend that you read the entire manual. In particular, read and become familiar with the DEALER'S COMMISSIONING CHECKLIST as this is really a step by step set of instructions for launching your yacht.

### **WARRANTY**

#### **4.2 WARRANTY NOTIFICATION PROCEDURES**

Cape Dory Yachts is very proud of its "track record" of minimum warranty problems. After commissioning, you as an owner should not expect problems to develop. However, should you need assistance, there is only one very important thing to do...CONTACT YOUR CAPE DORY DEALER.

Your Cape Dory dealer is a knowledgeable professional who is familiar with your boat and capable of answering most of the questions which you may have. He will communicate any problems or inquiries which you may have directly to Cape Dory so that we can both work together toward an expeditious and satisfactory solution.

**YOUR DEALER IS NOT, HOWEVER, AUTHORIZED BY CAPE DORY TO CONSENT TO REPAIRS OR THE REPLACEMENT OF PARTS WITHOUT THE EXPRESS WRITTEN APPROVAL OF CAPE DORY.**

Cape Dory Yachts, like most other sailboat manufacturers, offers a written limited warranty.

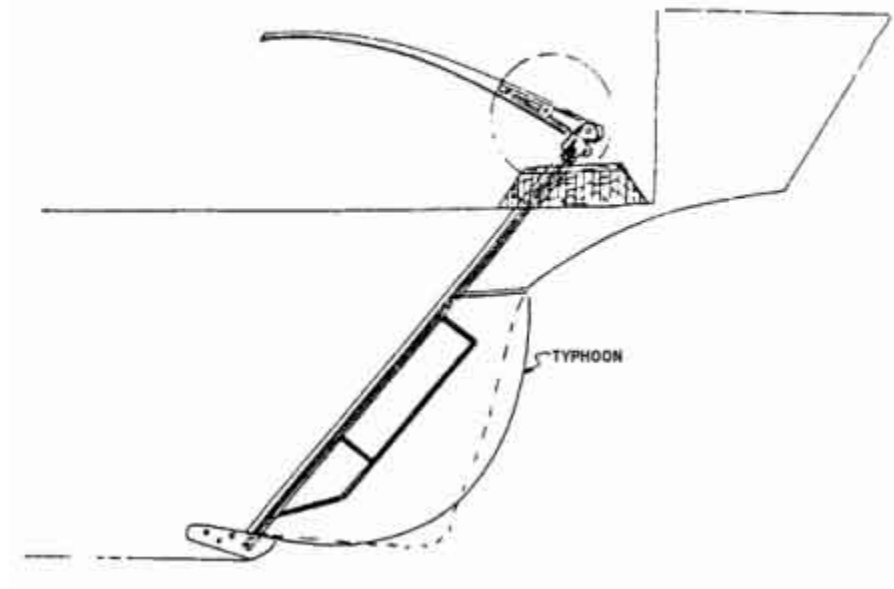
Federal law requires that a written warranty contain certain information and statements.

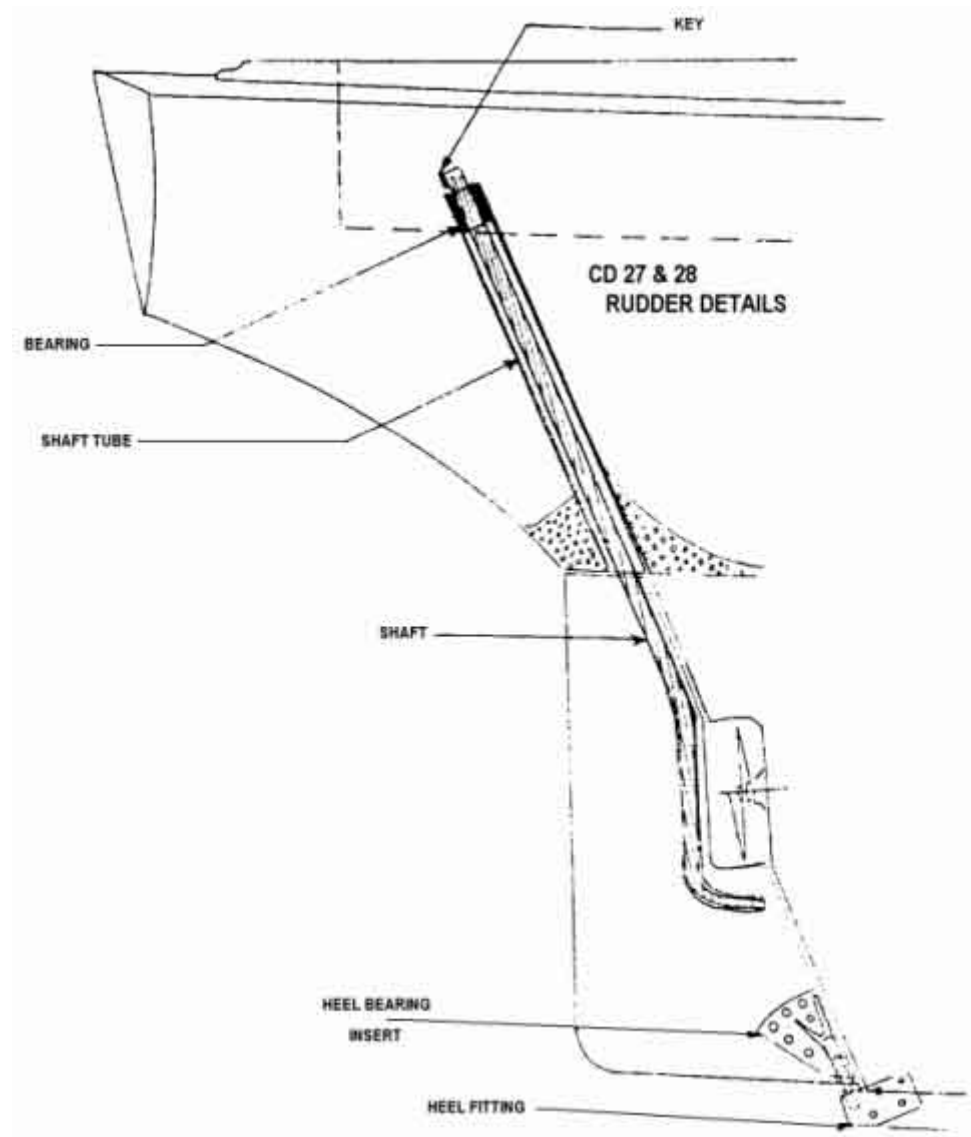
To you as an owner, we at Cape Dory Yachts pledge to provide you with a product that is as defect-free as possible. Our goal will continue to be one of standing behind our products and one of continual improvement.

## CHAPTER 5

### DRAWINGS AND PLANS

#### 5.1 RUDDER DETAILS





## PEDESTAL STEERING MAINTENANCE

To properly maintain the moving parts in the top of the pedestal, it is necessary to remove the compass and its cylinder. For proper alignment when re-installing the compass, we recommend placing three or four lengths of tape on the pedestal and compass as shown below. Silt the tape when removing compass, align the strips of tape when re-installing the compass for visual realignment. Your compass MUST then be checked out for accuracy. Lubrication of needle bearings should be done by squeezing Edson Fig 827 Teflon Lubricant into the holes located on top of the bearing housings inside the pedestal bowl. Spin the wheel when squeezing the lubricant in to make sure the entire bearing is serviced. Winch grease or water pump grease can be used as an alternative, but don't let the bearings run dry. Do not over grease as it will run onto the brake pads. Oil the chain with #30 weight motor oil. Do NOT grease chain as it does not penetrate the links.

Inspect the condition of the wire, tension of the wire and lightly oil. Edson recommends placing about five layers of "Kleenex" on the palm of your hand, squirt oil on the tissues and lightly oil the wire. This will lubricate the strands but will also "flag" a broken or hooked strand by tearing off a small section of tissue. If you do have a wire break, replace the wire immediately. See Edson Fig 775 Wire and Chain Replacement Kits. (Caution: Wire splinters can cause painful cuts.) Replace the wire after 5 years. If still good, keep the old wire on board as a spare.

### STEERING WIRE TENSION

A top quality roller chain to wire steering system can be kept in "as new" sensitivity by keeping the wire at a correct tension. To check for proper wire tension, lock the wheel in position by using the pedestal brake, or by tying off the wheel. Cable tension is best when you cannot

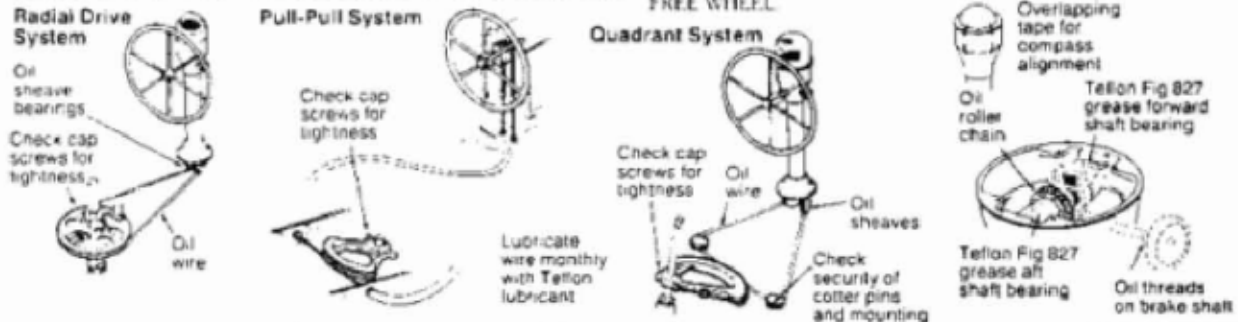
move the quadrant or drive wheel by hand with the wheel locked in place. Over tightening will greatly reduce the sensitivity of the system.

It must be emphasized that all on board must be familiar with the care and operation of the Steering System and engine controls. One person must be assigned the job of maintenance and must be thoroughly familiar with the operation and intent of all the equipment. If at any time your Steering System makes strange noises or reacts differently than it has previously, you must find the causes immediately and correct the problem.

Screws, nuts, bolts, as well as clevis and cotter pins that are part of the steering system, engine controls or pedestal accessories, must be checked regularly for tightness and wear. Failure to inspect all steering parts, engine controls and pedestal accessories may cause loss of control or failure of the engine or steering system. All boats must have an emergency tiller or its equivalent and all on board must be familiar with its location and operation. An emergency tiller drill is just as important as a man-overboard drill and must be regularly conducted.

On a new boat and at least once a year, inspect the system when under a strong load. On a calm day and under power, go away from the other boats and with the person who is assigned the maintenance watching from below, put the wheel hard over at full throttle. The maintenance man should watch carefully for all parts of the system bending, distorting, creaking, or giving any indication of failing if placed under a heavy load for a period of time. If, for any reason something did fail or needs adjusting, the day is early and you will have plenty of time.

When leaving your boat at her mooring or slip, make sure that your wheel is properly tied off. DO NOT LEAVE THE STEERING SYSTEM TO FREE WHEEL.



### CLEANING STAINLESS STEEL

Pedestal guards, steering wheels and shafts are all made from top quality stainless steel. The implication of its name "stainless steel" does not mean it is totally rustproof. All stainless steel will rust to a certain degree due to chemical reaction to air and salt water. This is mainly cosmetic and will require an occasional polishing with an abrasive type cleaner such as "Brasso" or equivalent.

### CLEANING PEDESTAL AND ACCESSORIES

Clean them with soap and water; don't use chemicals such as MEK or acetone as they break down the super finish on your Edson pedestal

system, compasses and instruments. Most manufacturers of compasses and electronic instruments suggest that they all be removed during winter storage and kept in a warm dry area. Compasses are normally tied in place by two or three slotted-head screws, placed near the top of the compass. A Fig 672 Rubber Connector will assist in removing the compass. Instruments can be removed by the screws in the Edson faceplate. Just unplug the instrument and you are all set.

**CAUTION:** When the equipment is in the tropics or in charter service, the maintenance schedule must be speeded up. Or, to put it in a few words: clean it up, oil it, inspect it, cover it. The effects of sun, salt water and inexperienced operators can be severe.

LUBRICATION RECORD							
component	lubricant	schedule	1st year	2nd year	3rd year	4th year	5th year
sheave bearings	#30 oil*	check and oil monthly	19__	19__	19__	20__	20__
pull-pull cables	Teflon Fig 827	check and grease monthly					
wire rope	#30 oil*	check and oil annually					
roller chain	#30 oil*	check and oil annually					
pedestal shaft bearings	Teflon Fig 827	check and grease annually					

\*Any light oil is suitable. We recommend #30 weight motor oil since most boat owners have it aboard.

**CAUTION:** 1) On extended voyages your steering system should be inspected each day and lubricated weekly. Carefully inspect your steering system at least one week before a vacation cruise to avoid last minute maintenance.  
2) When the boat is unattended secure the wheel with the brake or a line. In rough weather the rudder can swing violently from stop to stop causing damage.

**Edson**  
INTERNATIONAL

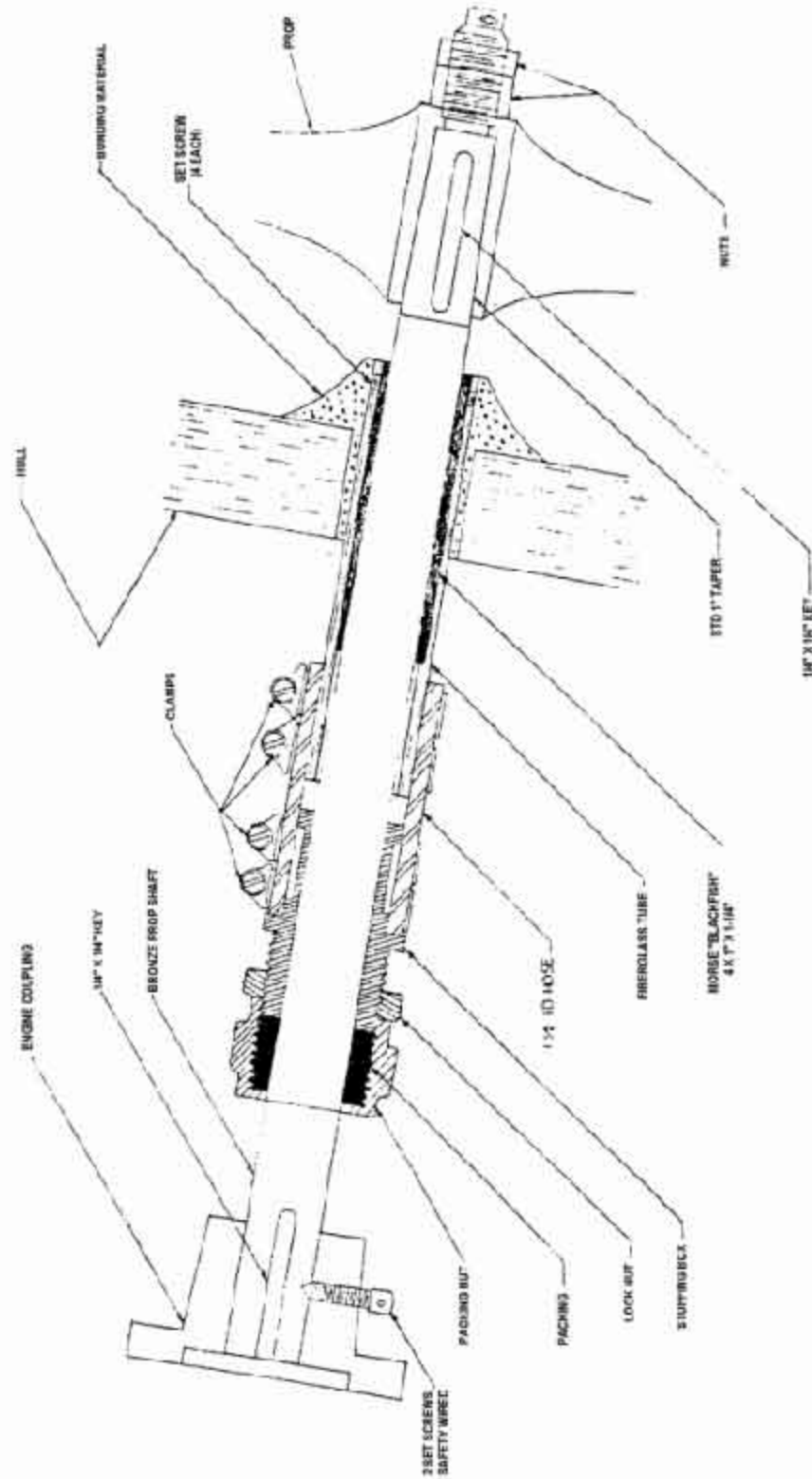
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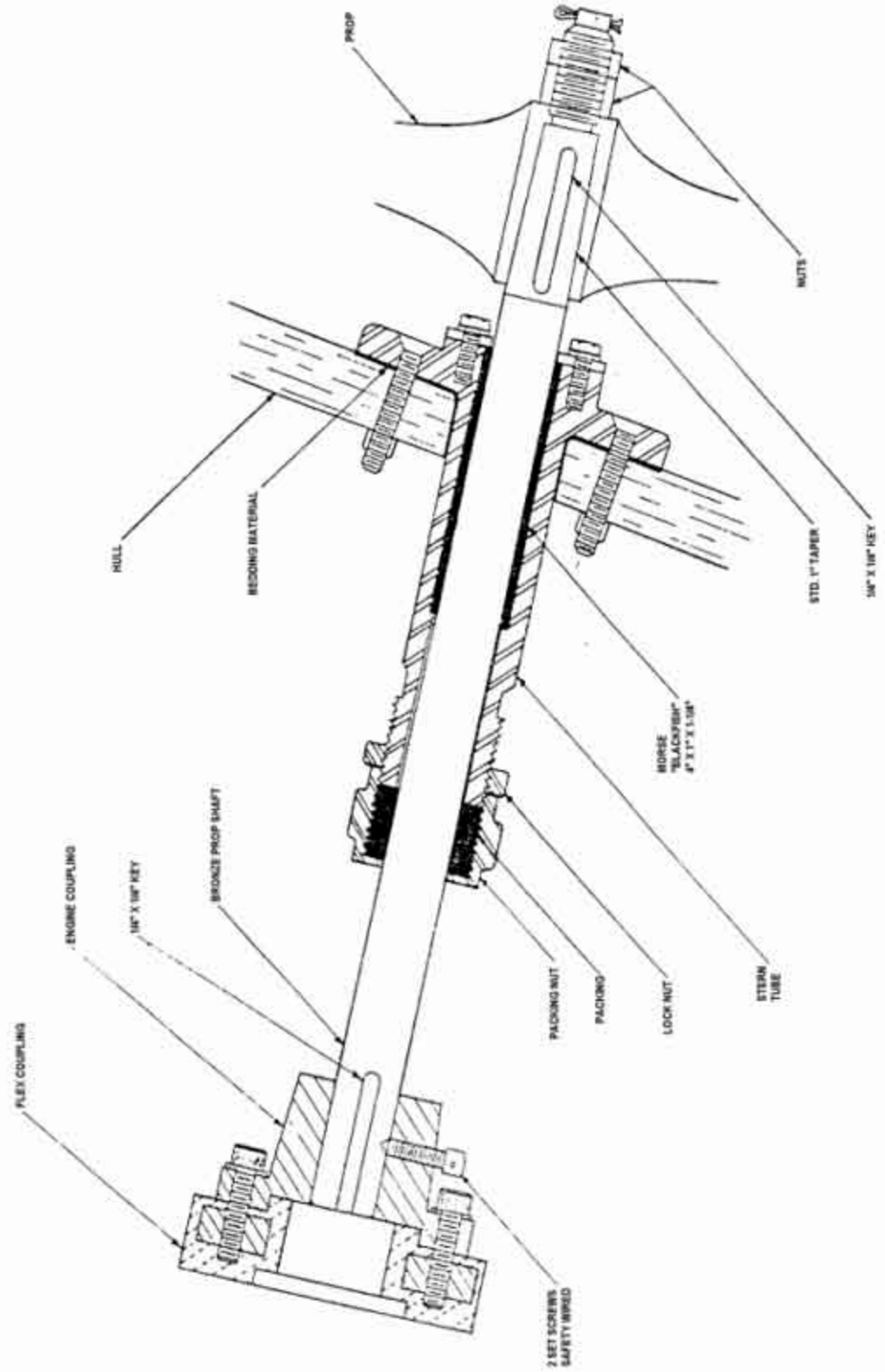
### 5.3 CD 22D, 25D, 27, 30 PROPELLOR SHAFT DETAILS

CD-27, 30 SHAFT DETAIL






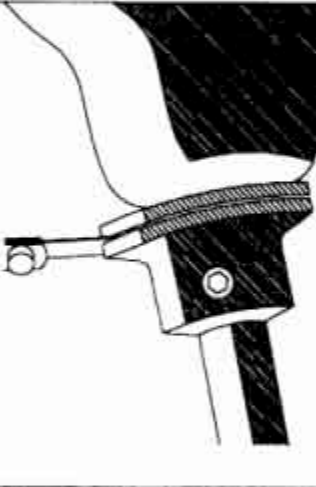

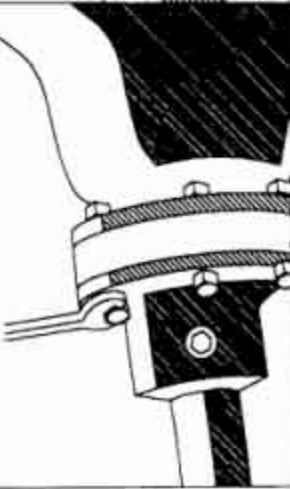
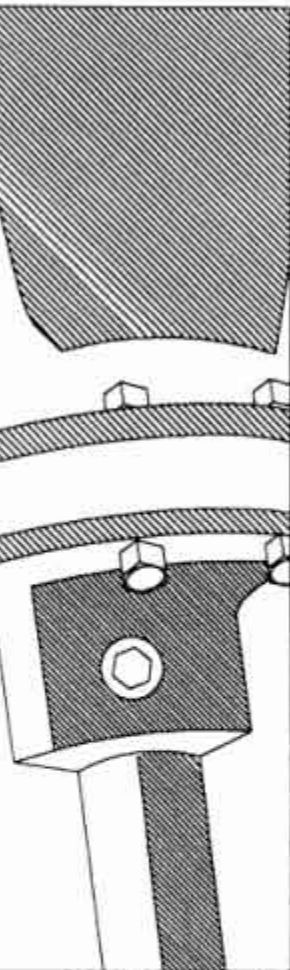
#### 5.4 PROPELLER SHAFT DETAILS



## 5.5 DRIVESAVER® AND ALIGNMENT INSTRUCTIONS

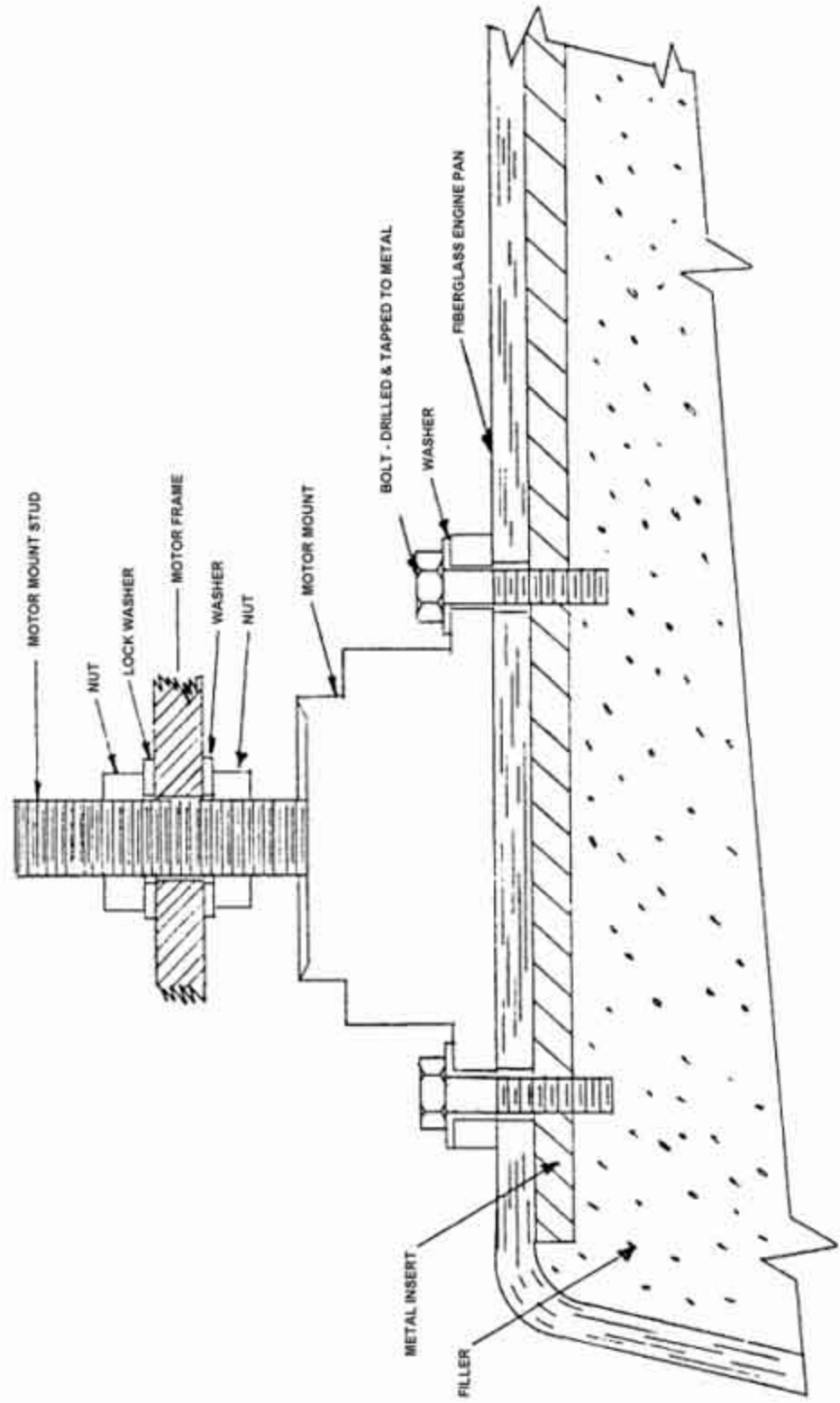
The Disc Drive flexible coupling is used on the Cape Dory 28, the Cape Dory 33 up to hull #39, and the Cape Dory 36.

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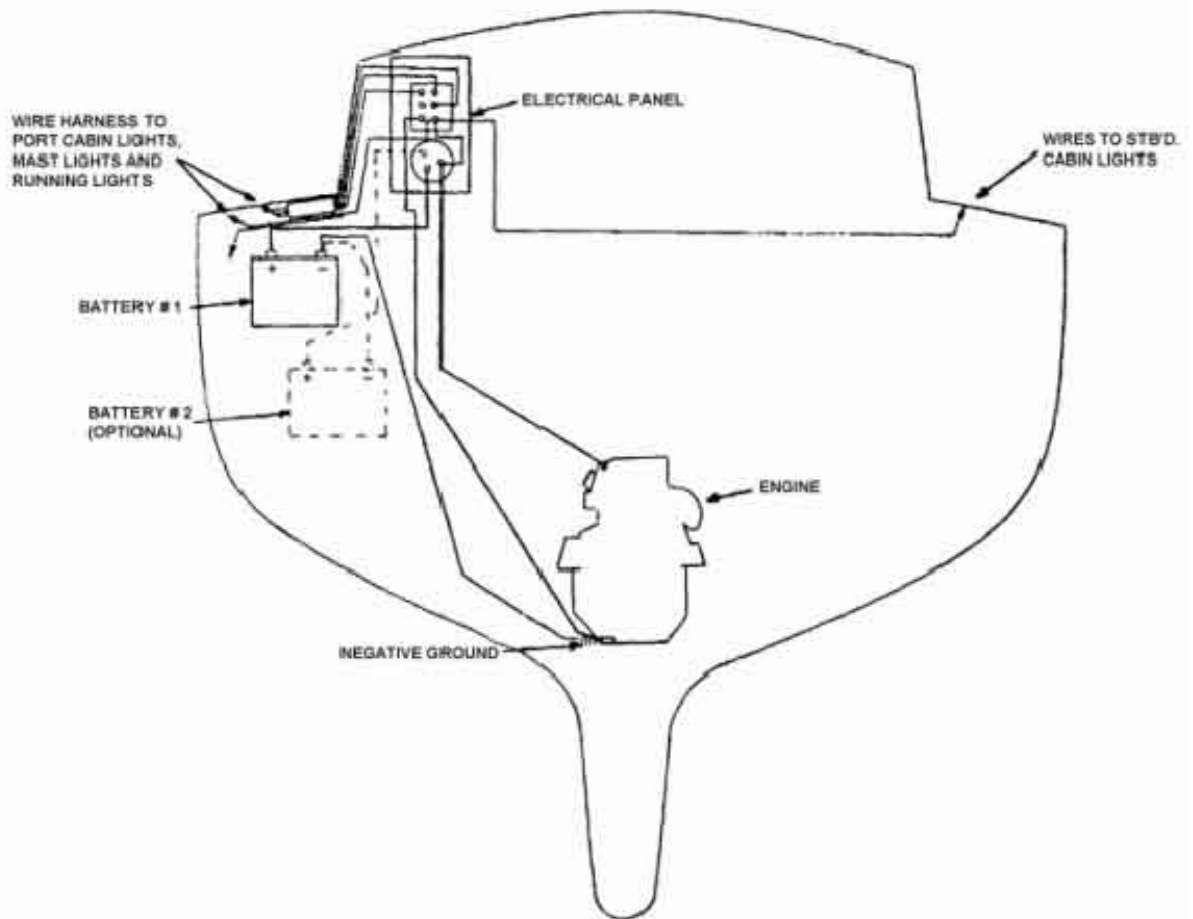
<p><b>STEP 1</b></p> <p>Disconnect reverse gear and propeller shaft flanges, being careful to support the dead weight of the propeller shaft. Leaving bolts loosely connected aids support of propeller shaft.</p> 	<p><b>STEP 2</b></p> <p>Check alignment of propeller flange to reverse gear flange by using a feeler gauge around entire perimeter of the coupling. Shim engine to compensate for any misalignment. (Industry norm for misalignment is .002").</p> 	<p><b>STEP 3</b></p> <p>Install Disc Drive (if equipped) to reverse gear flange by mating the pilots. Rotate Disc Drive to align socket head bolts with bolt holes of reverse gear flange. Install socket head bolts. Use lock washers and nuts, if necessary. Then tighten.</p> 
<p><b>STEP 4</b></p> <p>Slide propeller shaft with flange forward so pilot on the propeller flange mates with the pilot on the Disc Drive. Insert hex bolts with lock washers into threaded inserts of Disc Drive and tighten at 180 degree intervals. Do not overtighten or coupling may deform. Turn shaft by hand to determine runout. Use a dial indicator for accuracy.</p> 	<p><b>STEP 5</b></p> <p>Re-check bolt tightness after ten to fifteen hours of operation. The use of a small amount of waterproof grease on all fasteners is recommended to facilitate disassembly, when necessary.</p> <p><b>Completed Installation</b></p> 	

**NOTE:** Coupling must always be removed before aligning shaft.

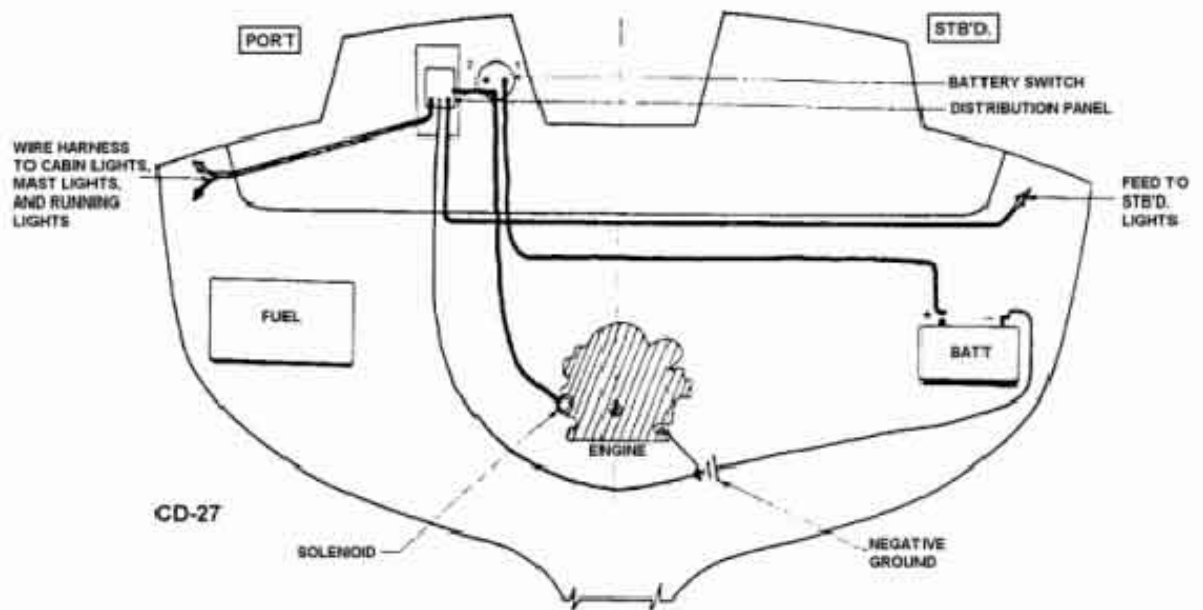
## 5.6 TYPICAL MOTOR MOUNT

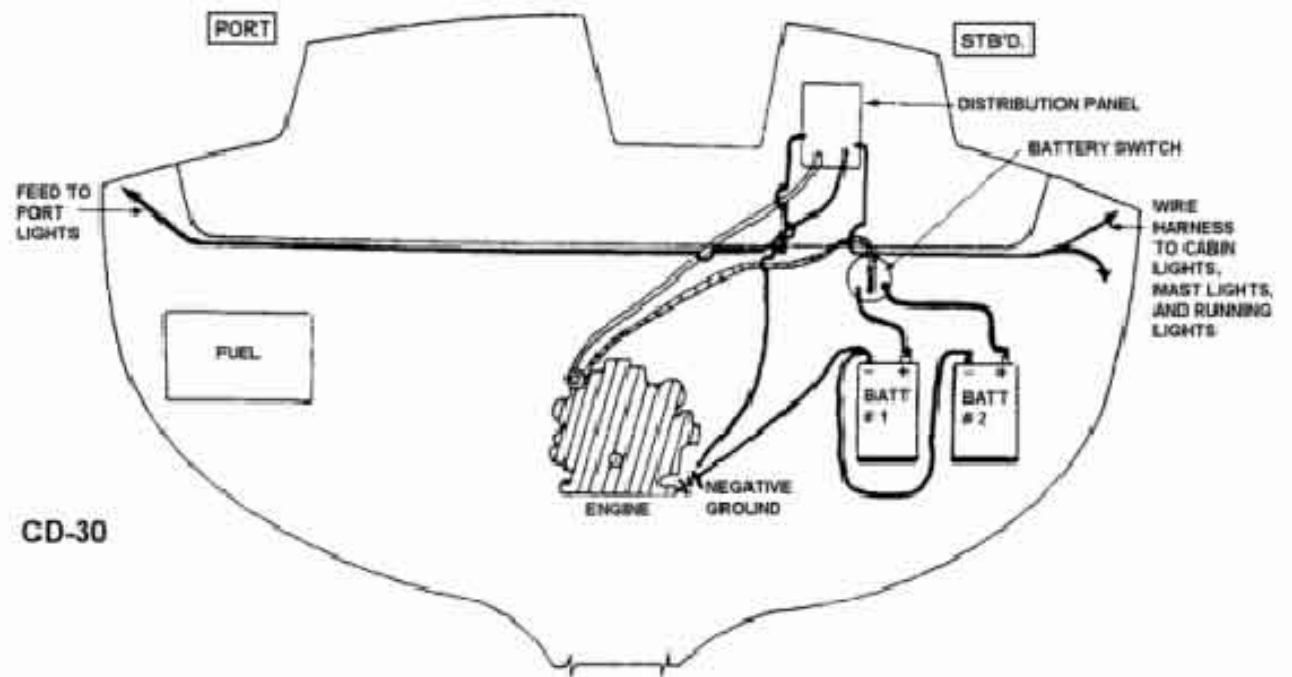
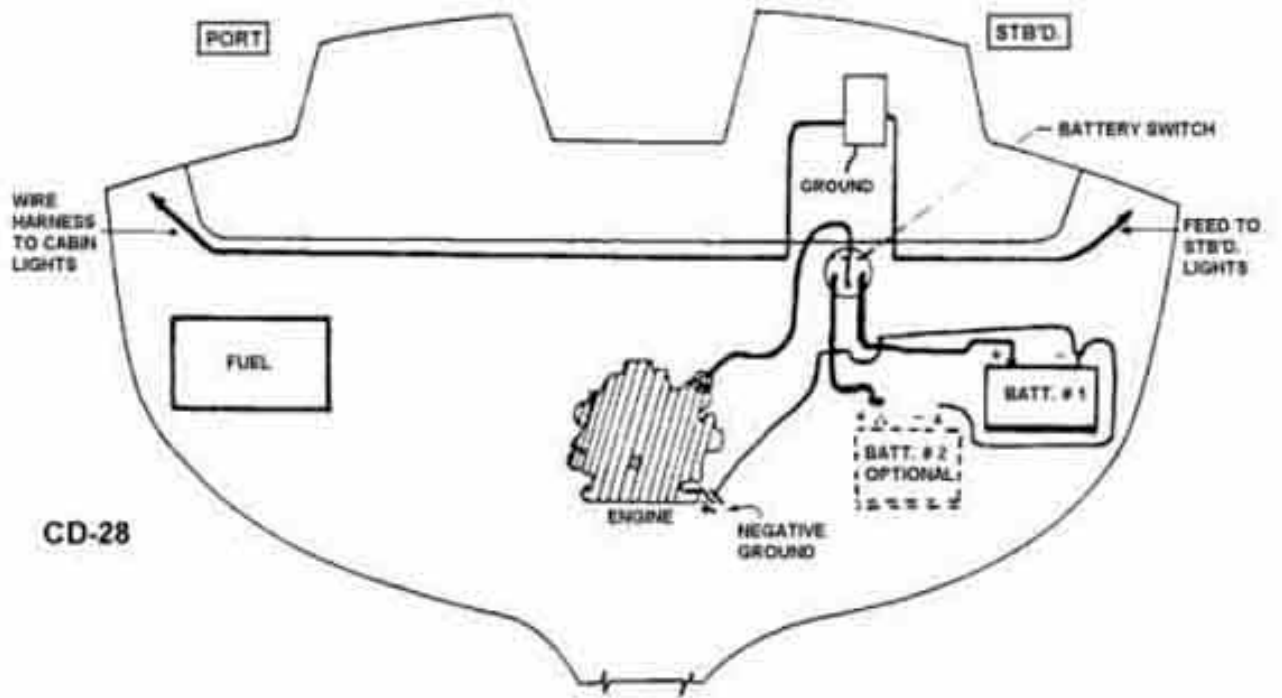


### 5.7 CD-25D BATTERY WIRING DIAGRAM



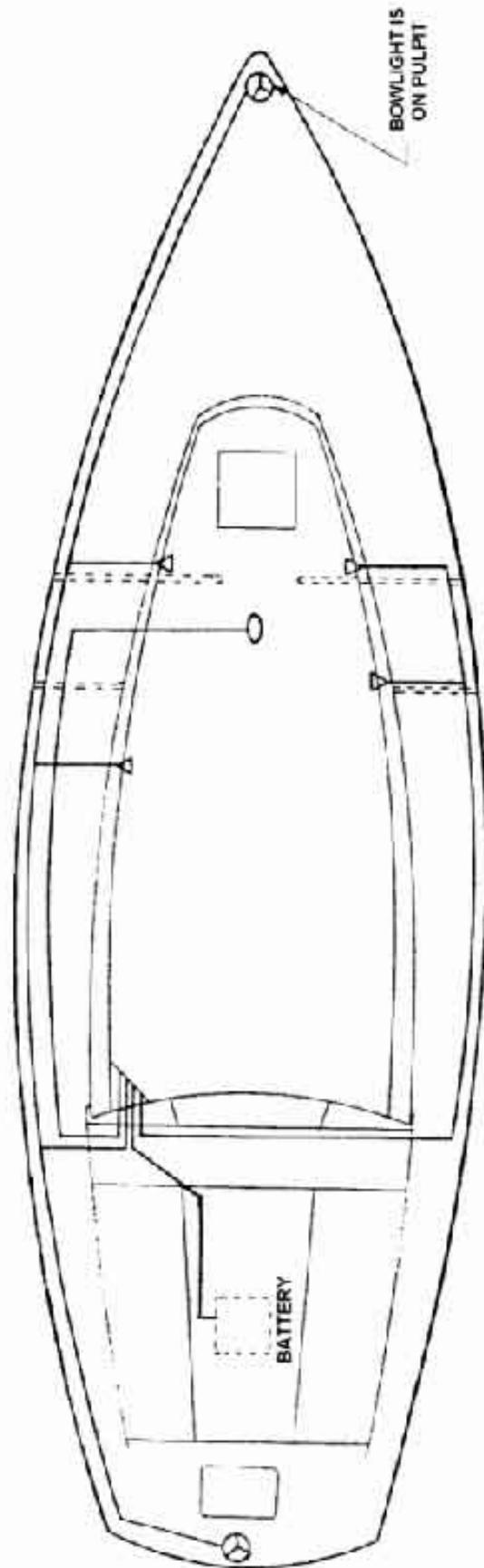
### 5.8 BATTERY WIRING DIAGRAM

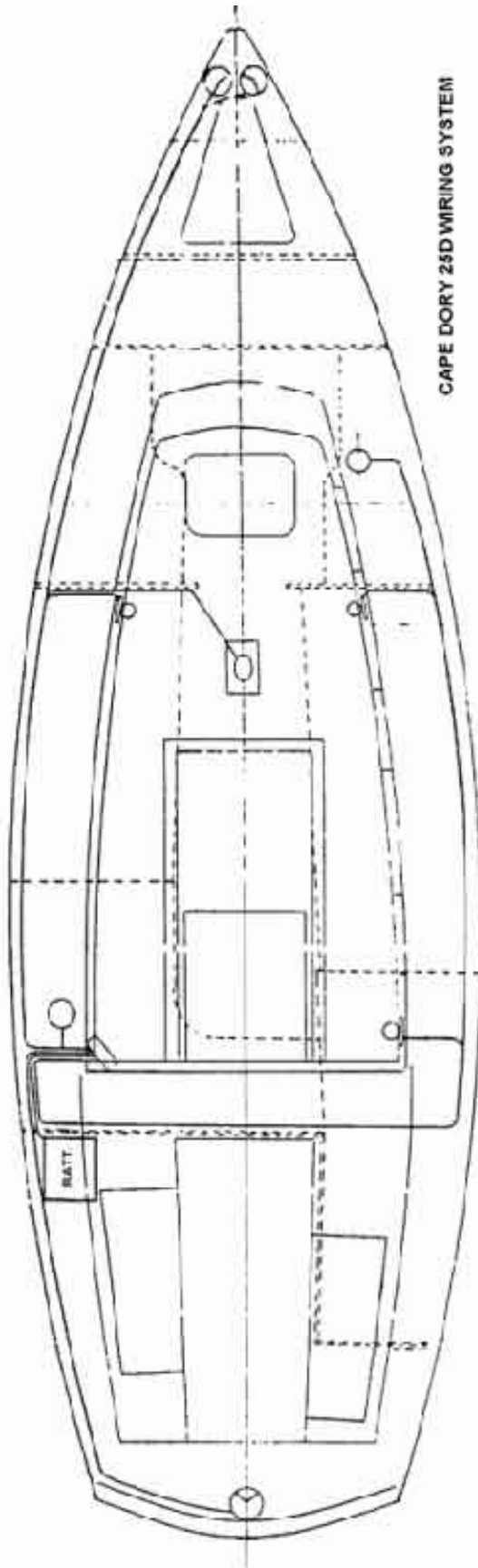




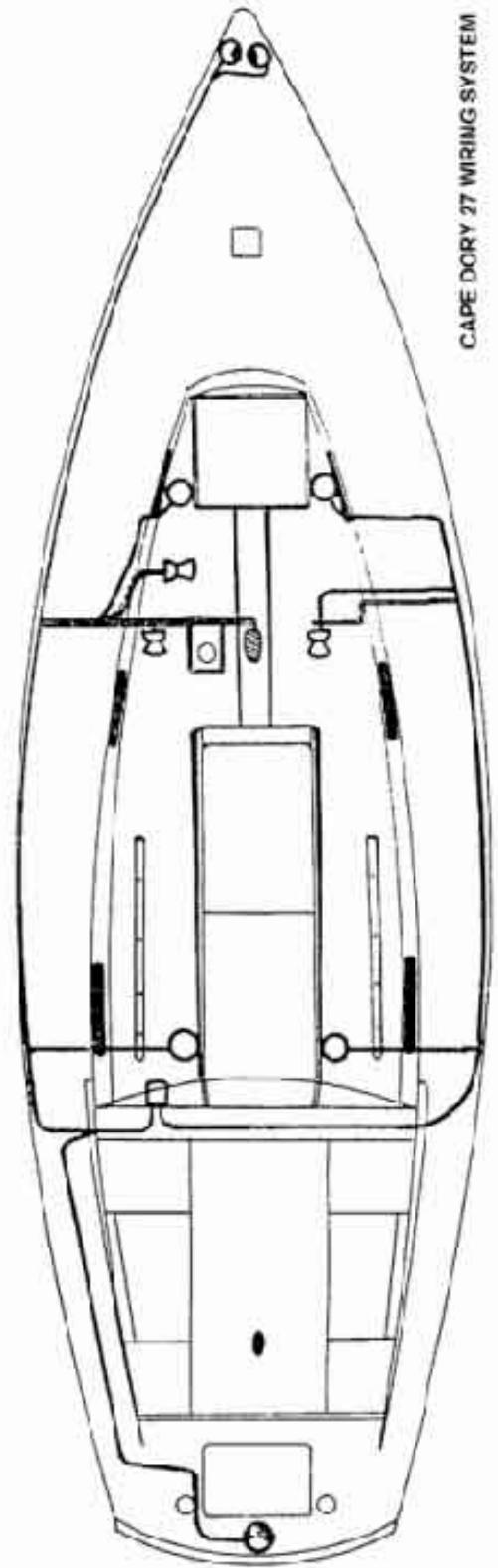


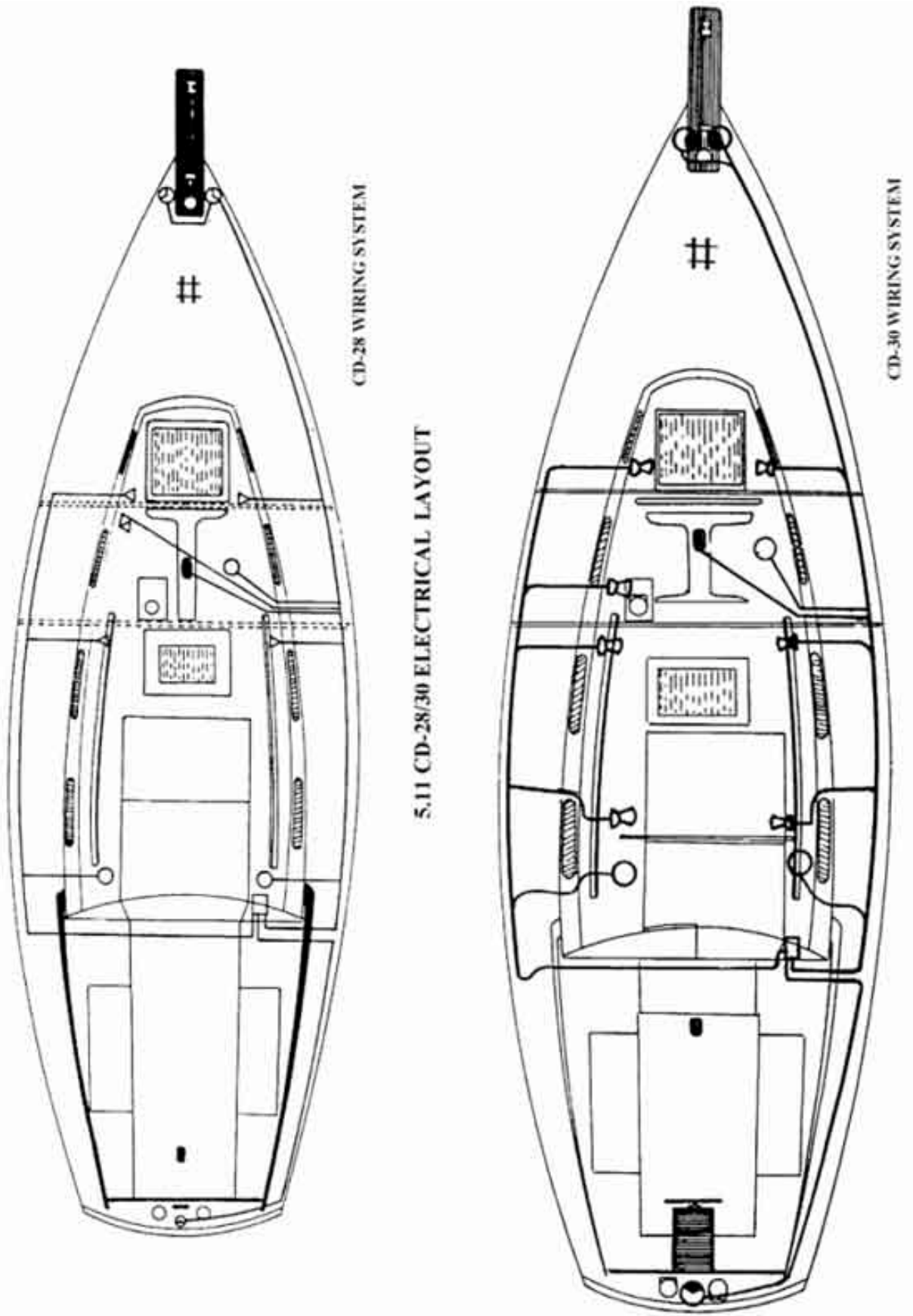
5.9 CD-22 ELECTRICAL LAYOUT





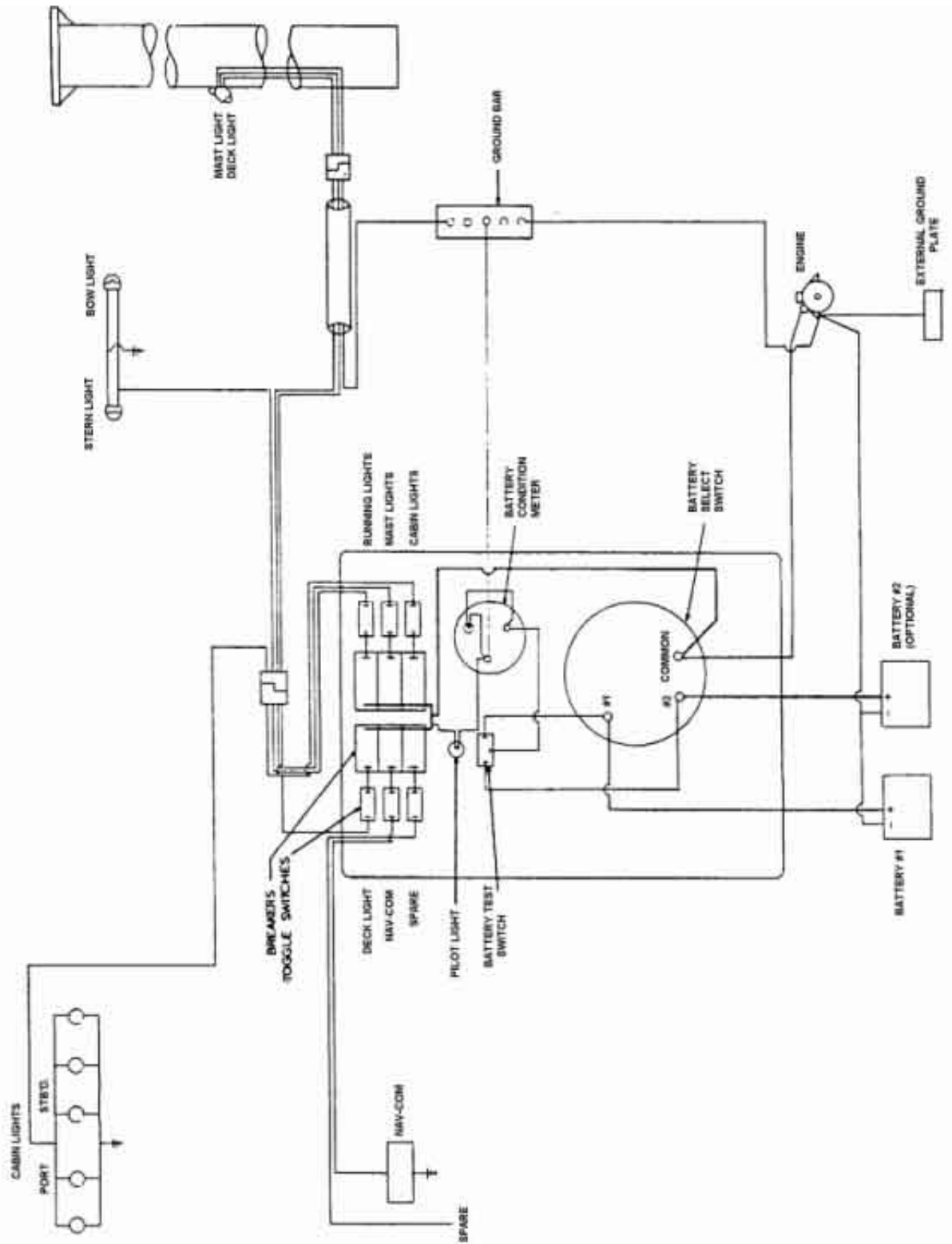
5.10 CD-25/27 ELECTRICAL LAYOUT





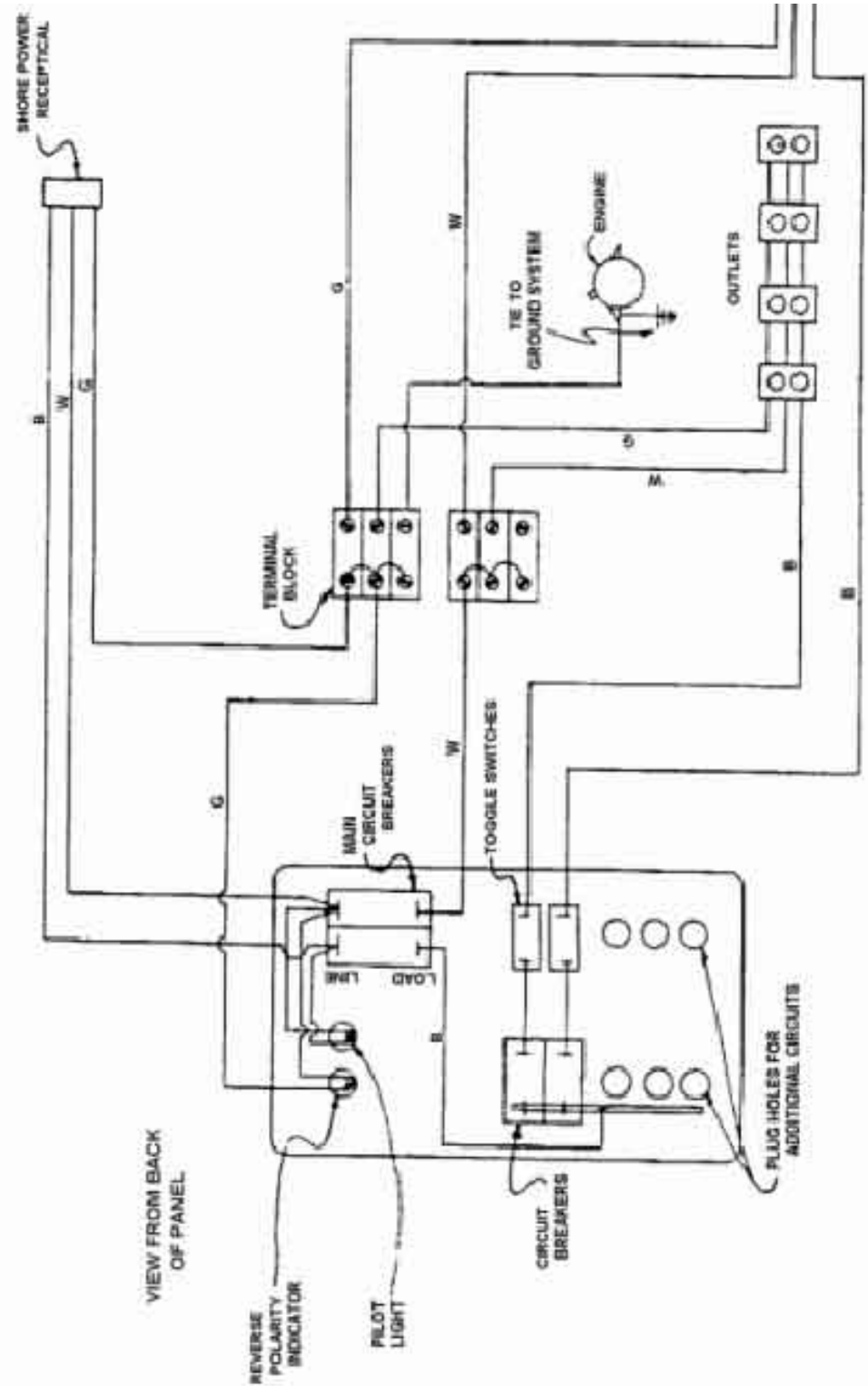


## 5.12 DC ELECTRICAL SCHEMATIC

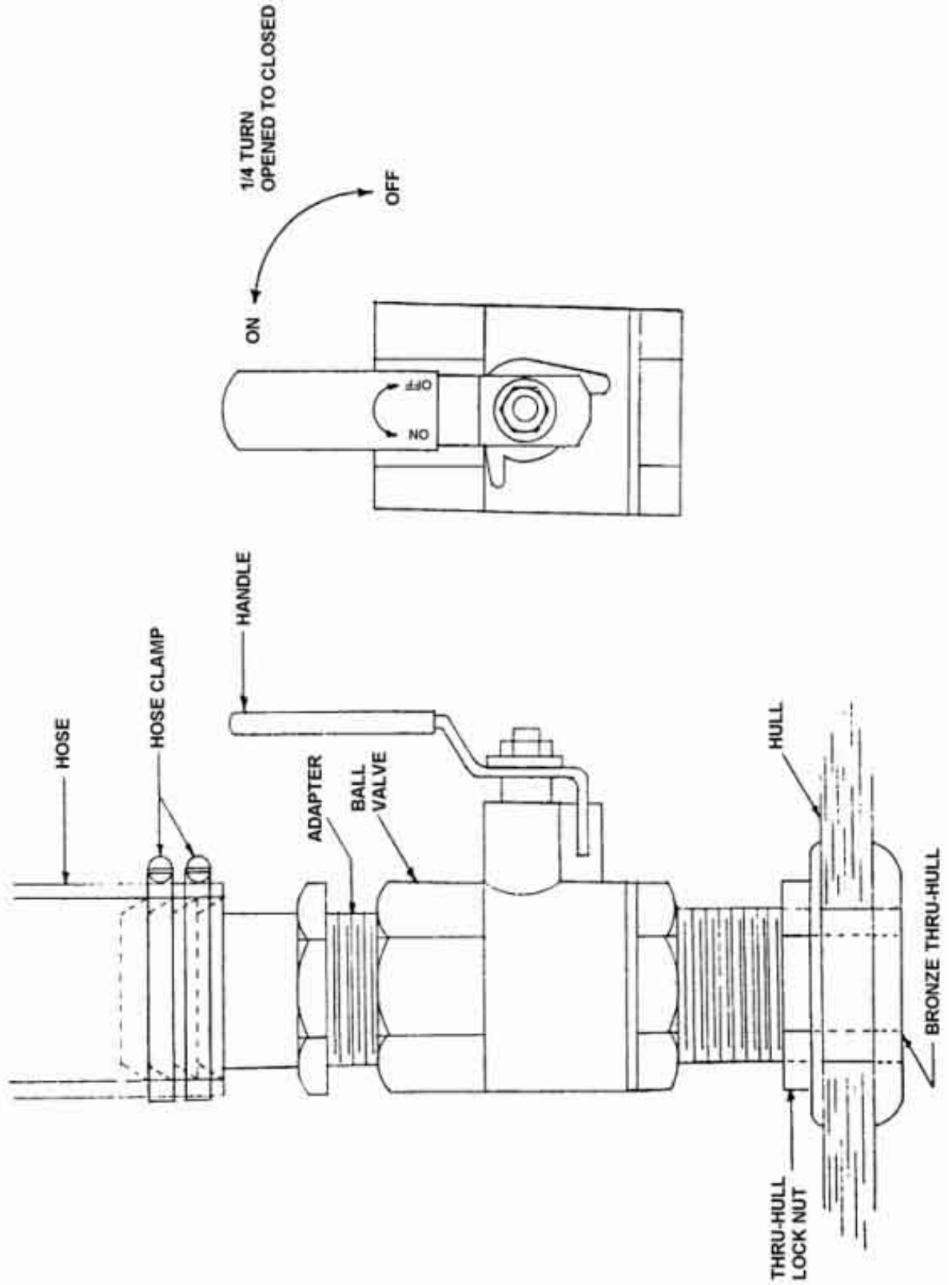


## 5.13 AC ELECTRICAL SCHEMATIC

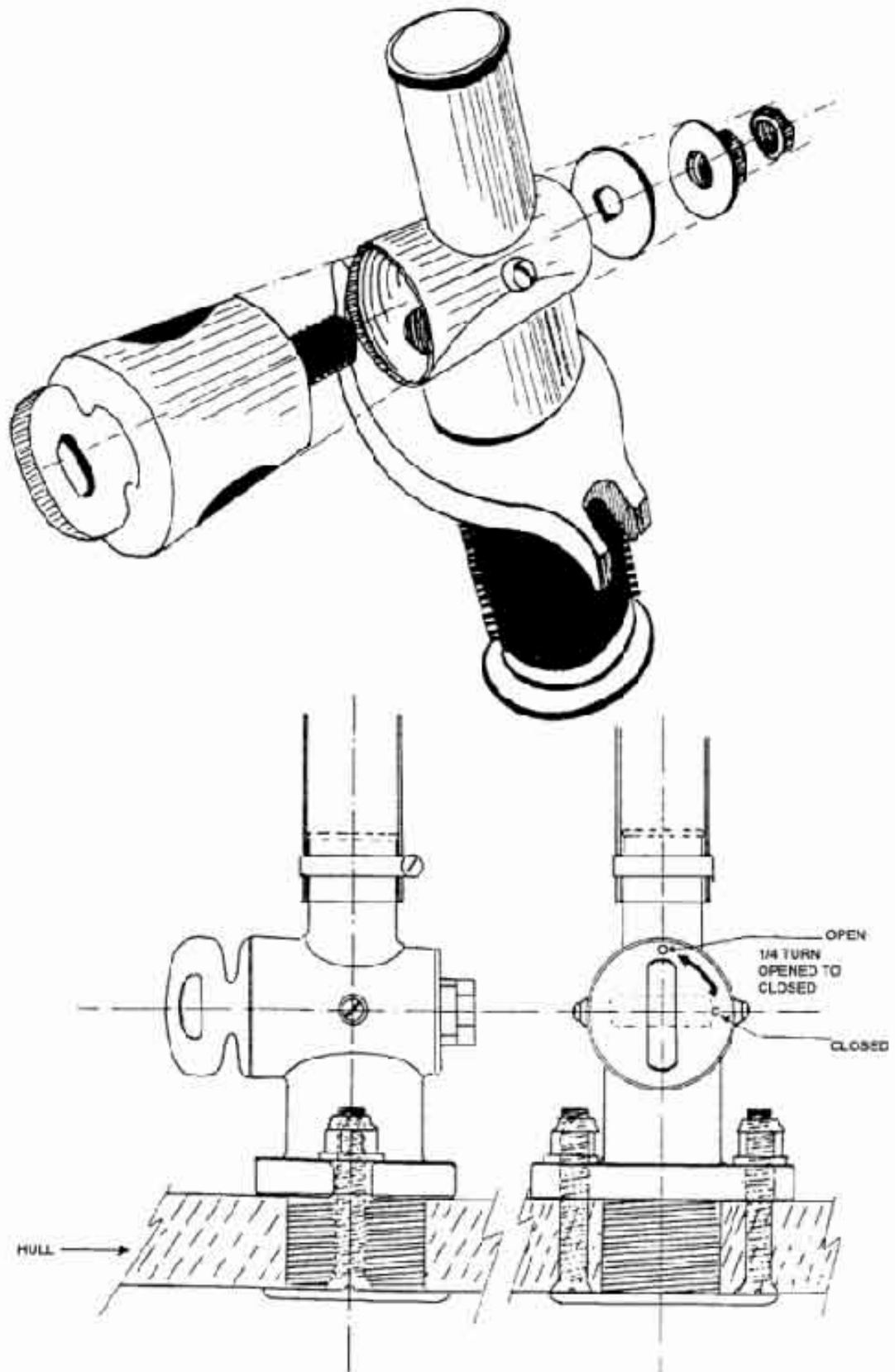
### A.C. WIRING DIAGRAM



### 5.14 BALL VALVE DETAILS

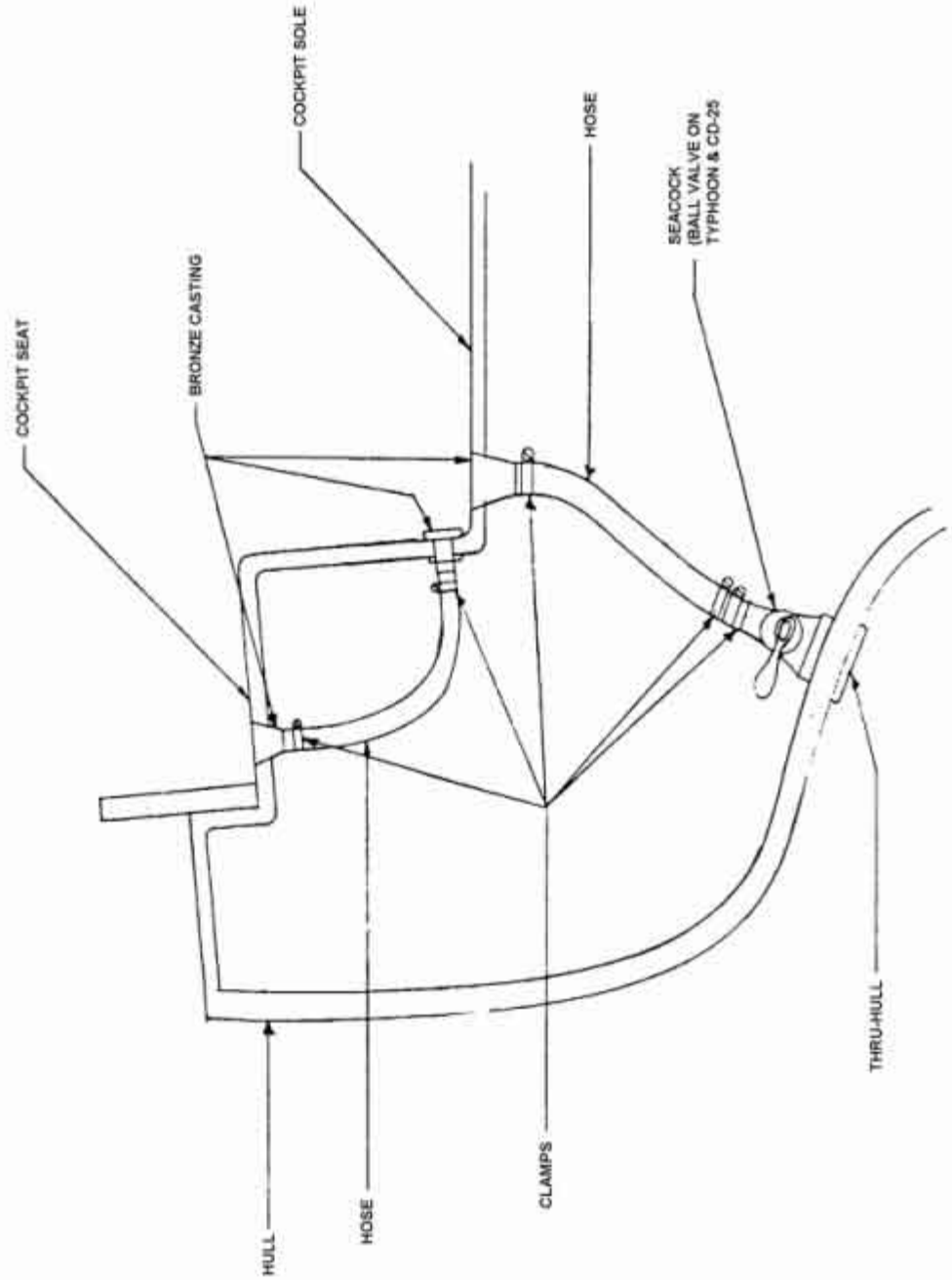


### 5.15 SEACOCK DETAILS

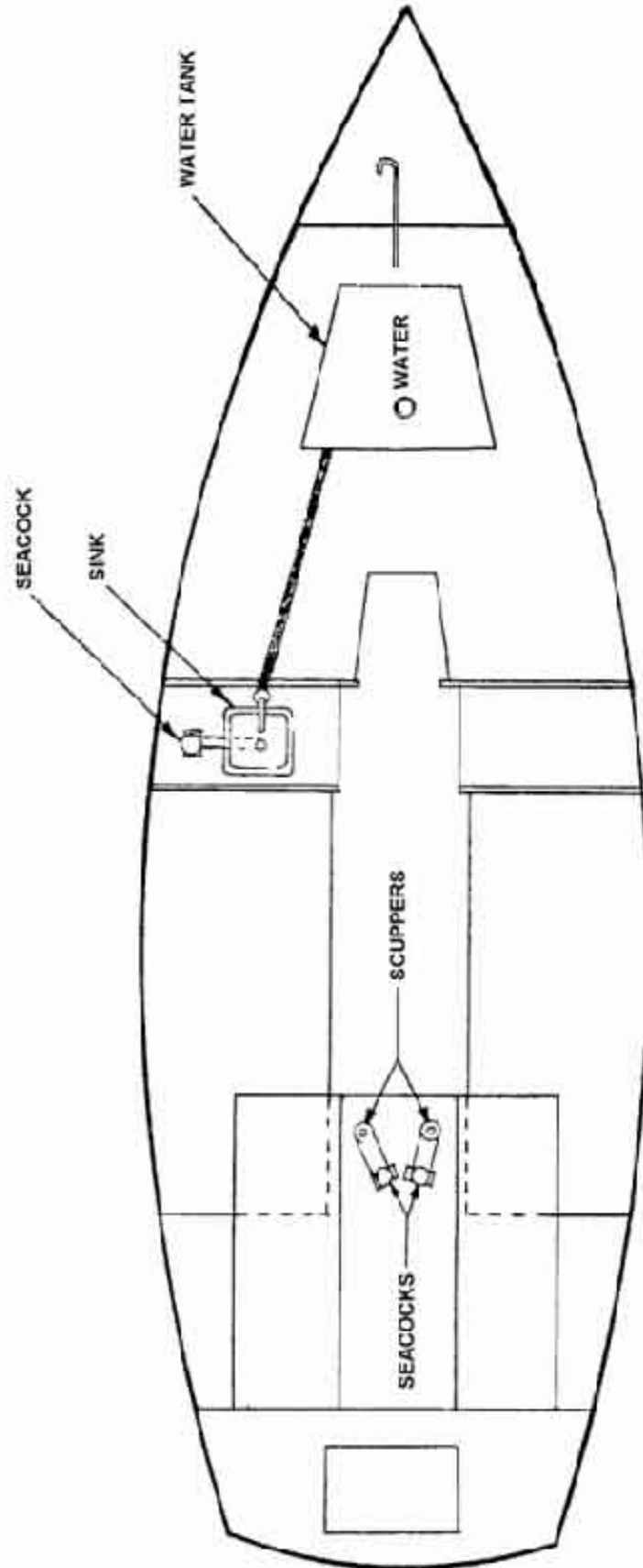


SEACOCK ASSEMBLY & INSTALLATION CD-22, 27, 28, 30

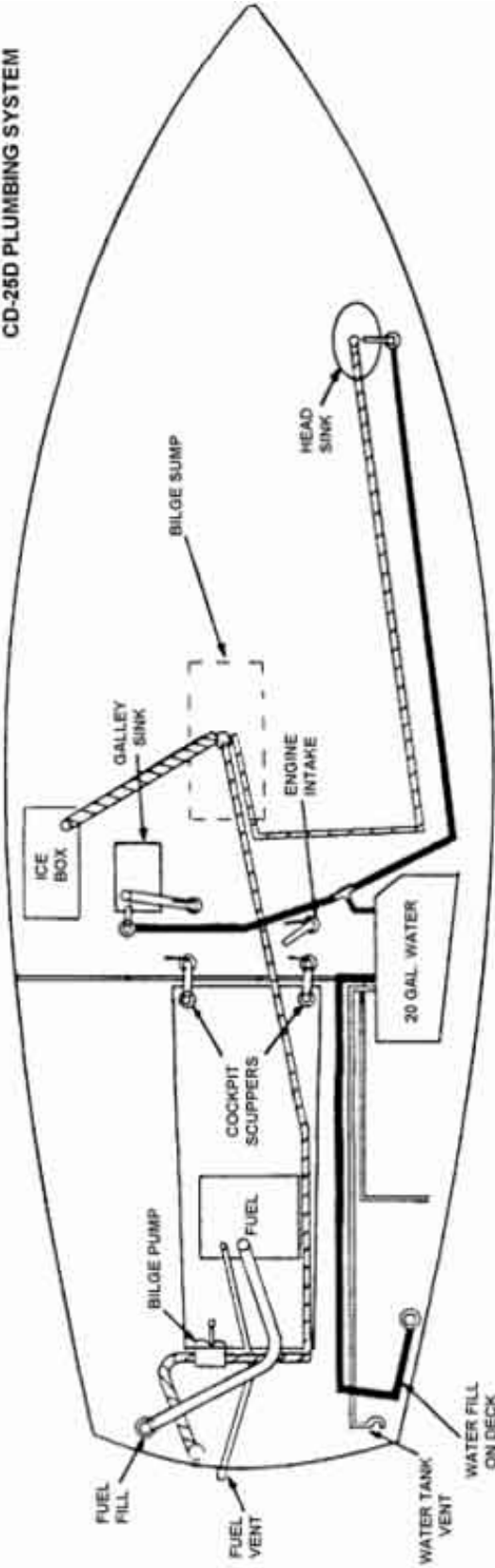
### 5.16 TYPICAL SEACOCK



### 5.17 CD-22 PLUMBING LAYOUT

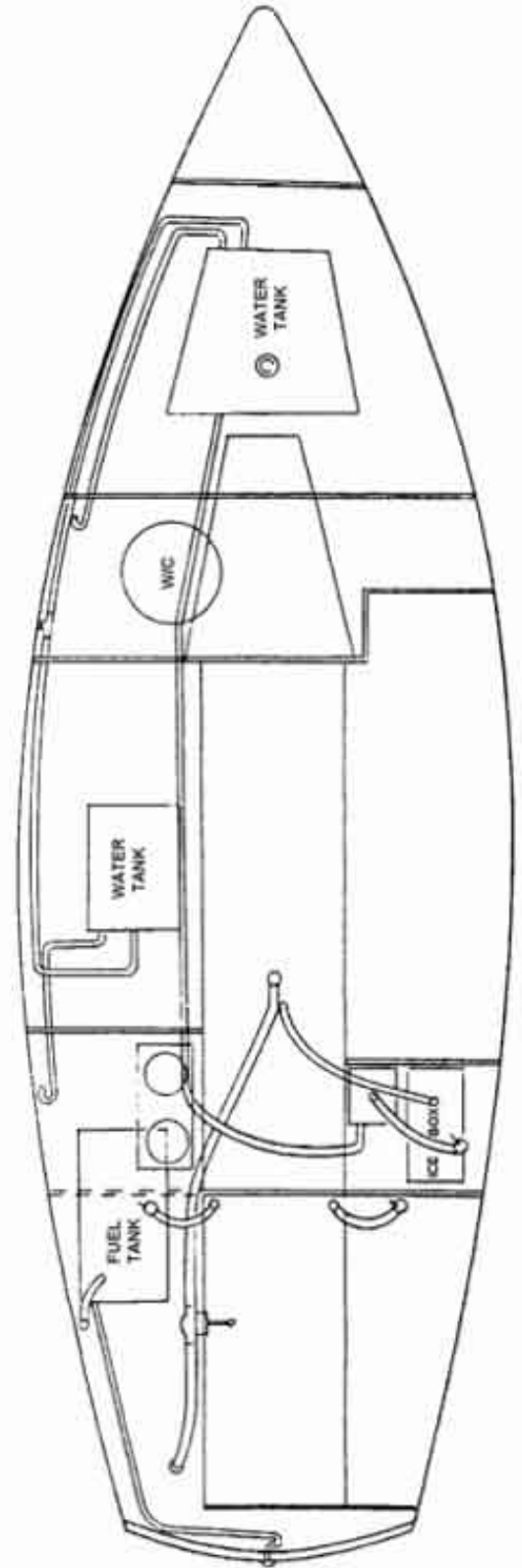


CD-25D PLUMBING SYSTEM



5.18 CD-25/27 PLUMBING LAYOUT

CD-27 PLUMBING SYSTEM

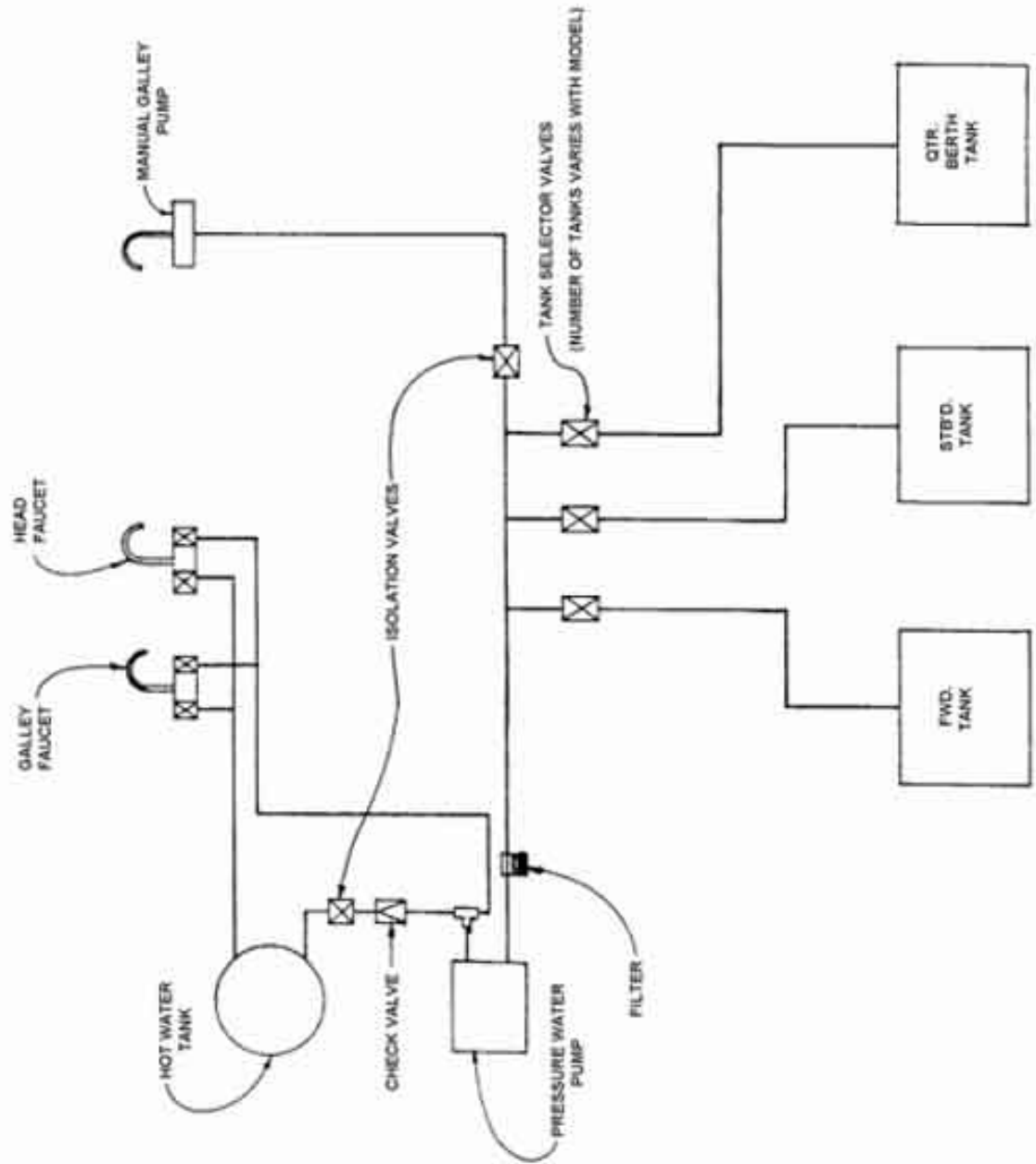




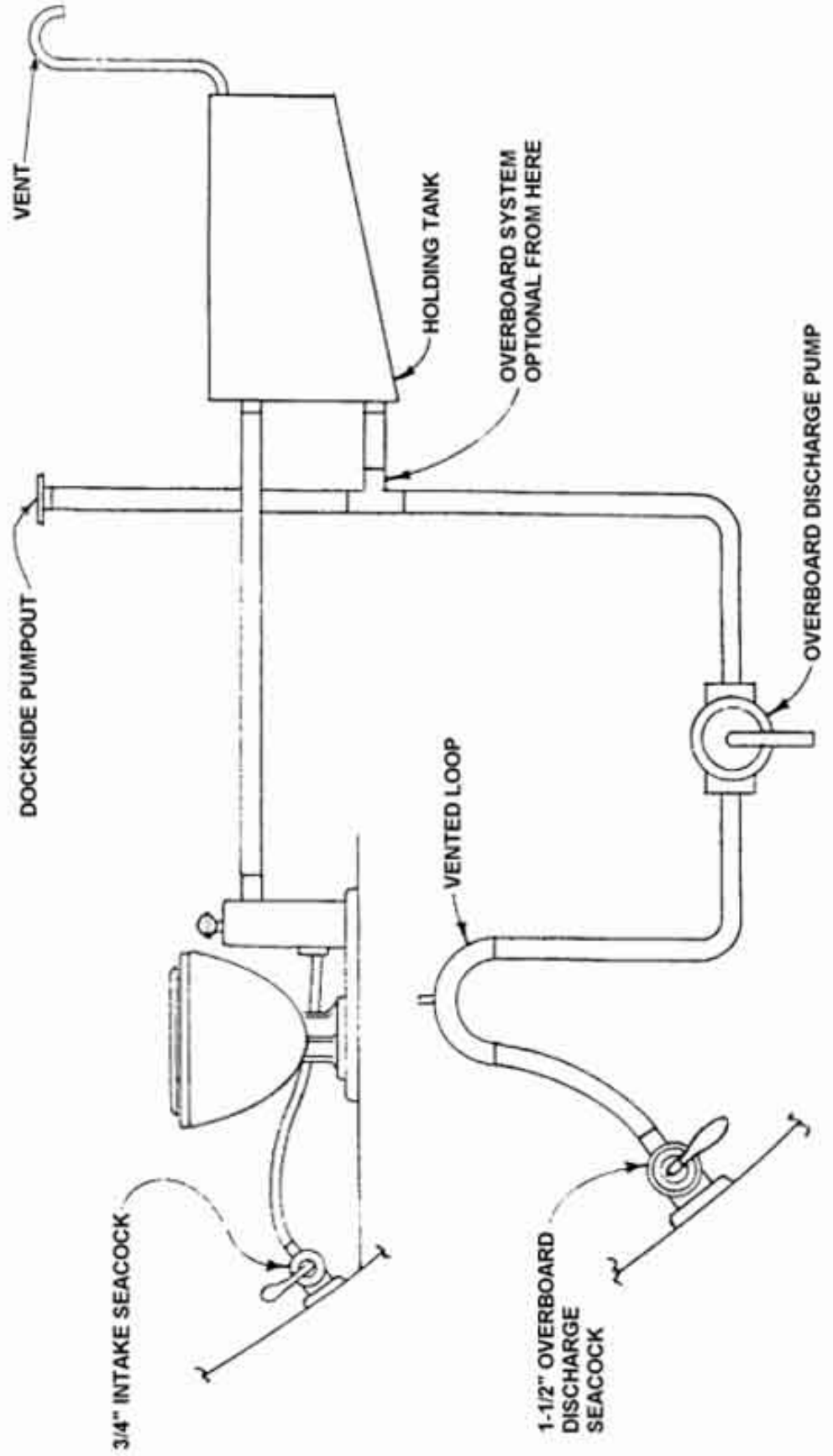


## 5.20 TYPICAL PRESSURE WATER SCHEMATIC

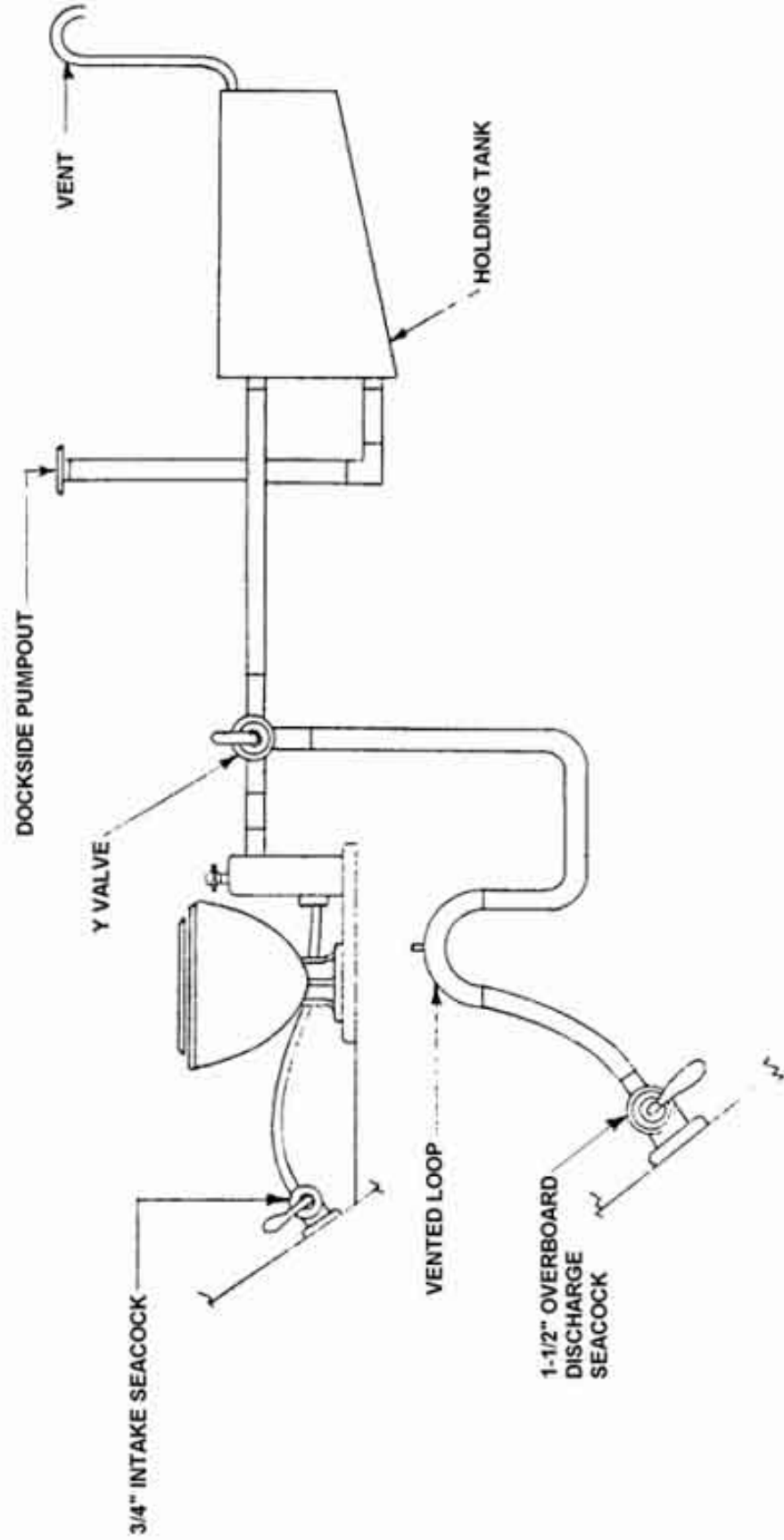
### PRESSURE WATER SYSTEM



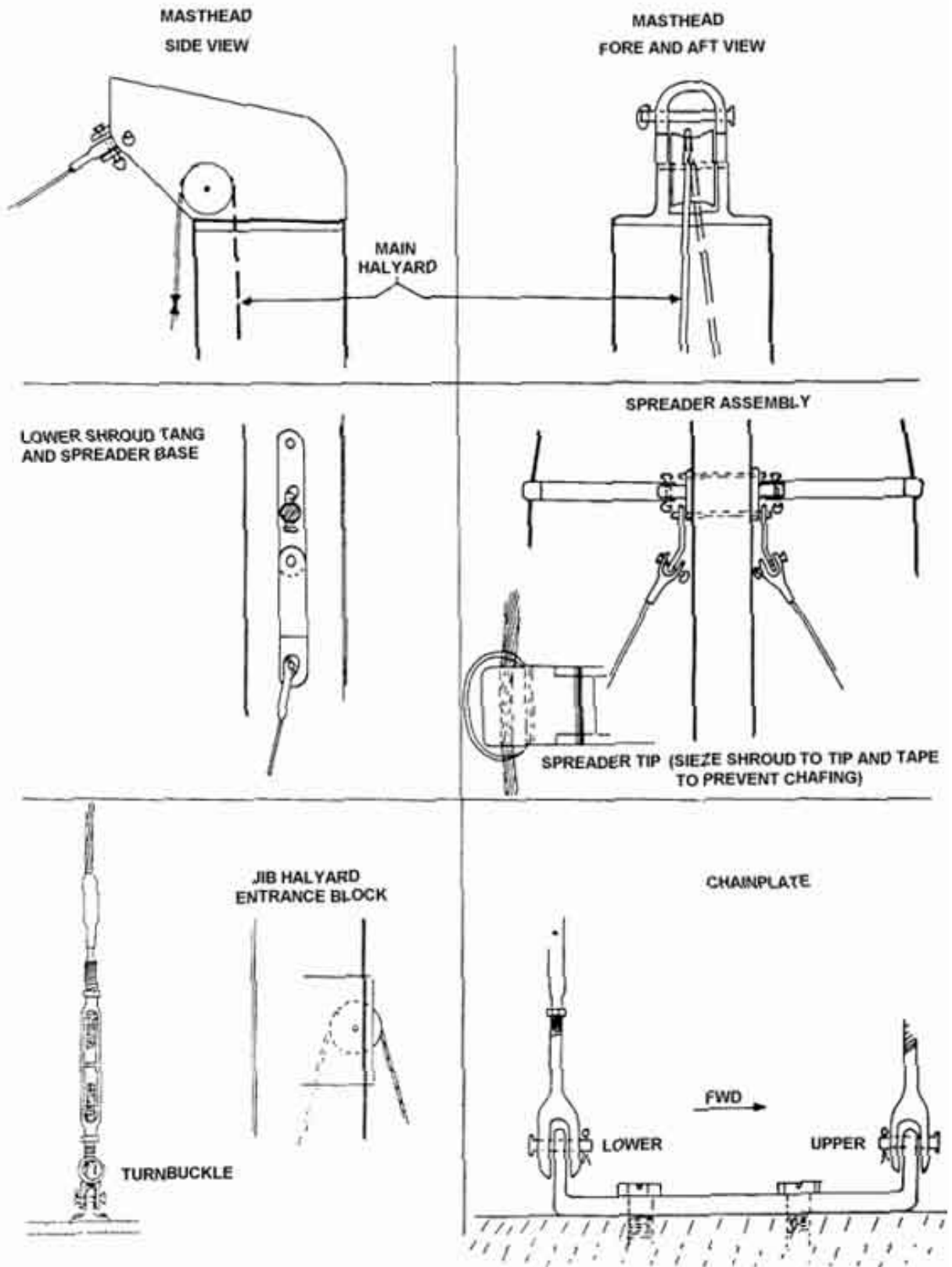
## 5.21 HEAD PLUMBING W/OPTIONAL OVERBOARD DISCHARGE



5.22 HEAD PLUMBING W/OPTIONAL Y VALVE DISCHARGE



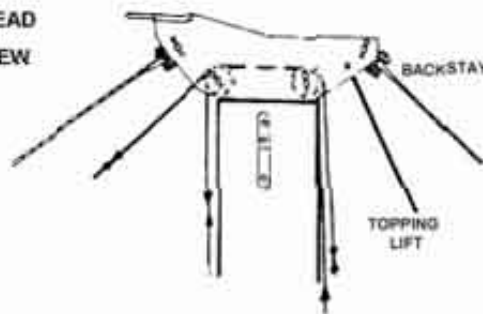
### 5.23 TYPHOON SPAR DETAILS



## 5.24 GENERAL SPAR DETAILS

CD-22, 25D, 27, 30

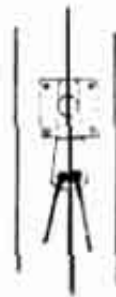
MASTHEAD  
SIDE VIEW



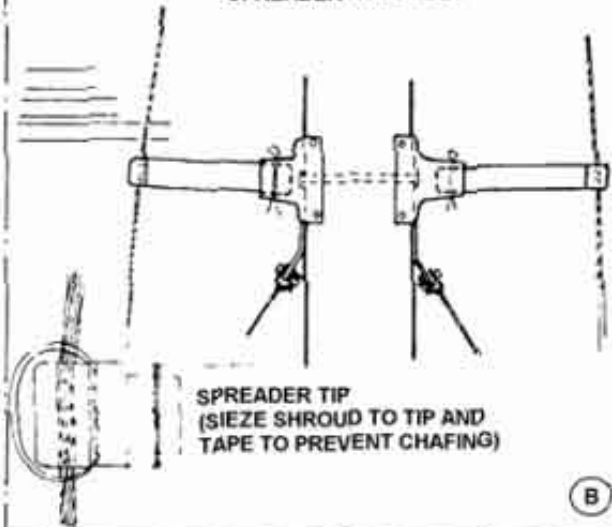
MASTHEAD  
FORE AND AFT VIEW



LOWER SHROUD TANG AND SPREADER BASE



SPREADER ASSEMBLY

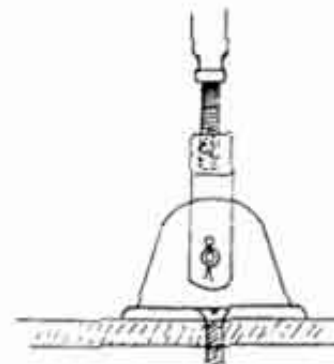


SPREADER TIP  
(SIEZE SHROUD TO TIP AND  
TAPE TO PREVENT CHAFING)

TURNBUCKLE



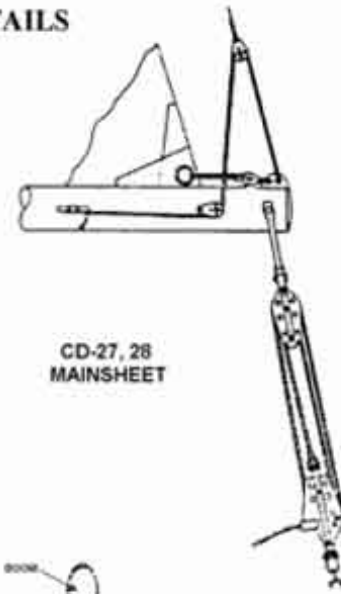
CHAINPLATE



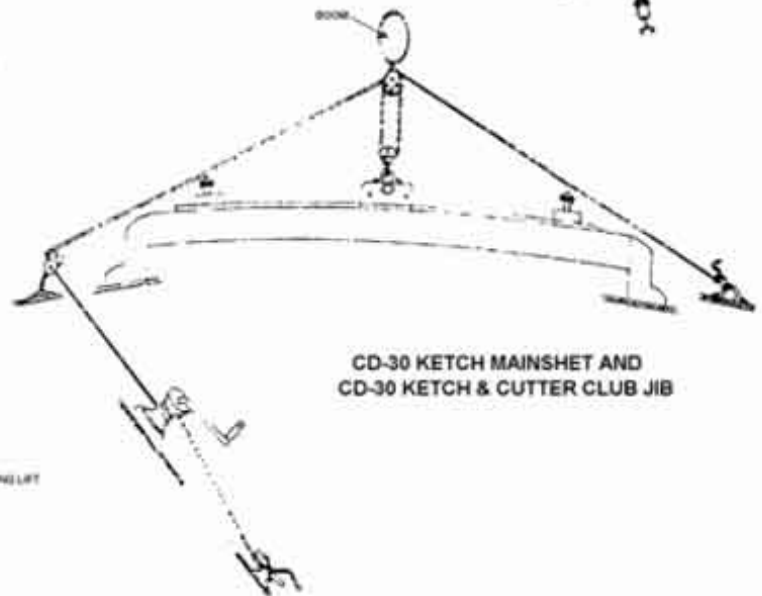
## 5.25 SHEET, REEFING DETAILS



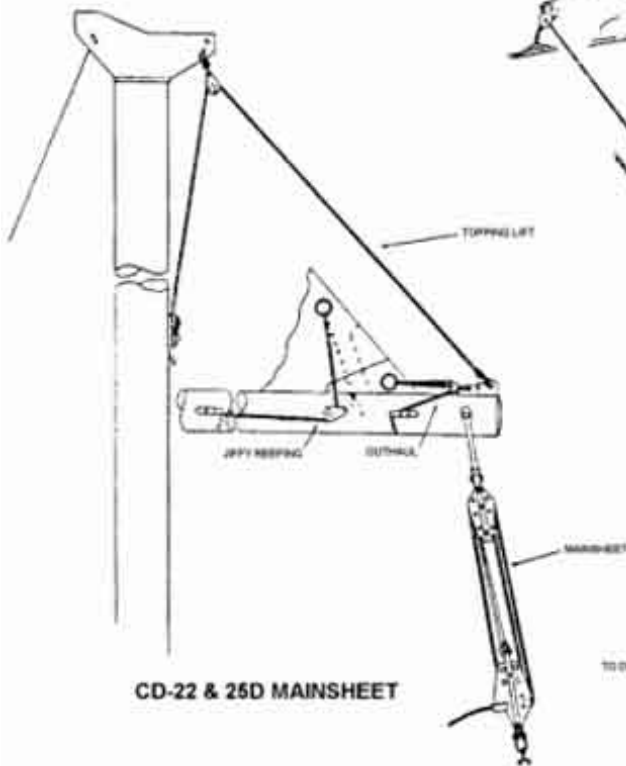
TYPHOON MAINSHEET



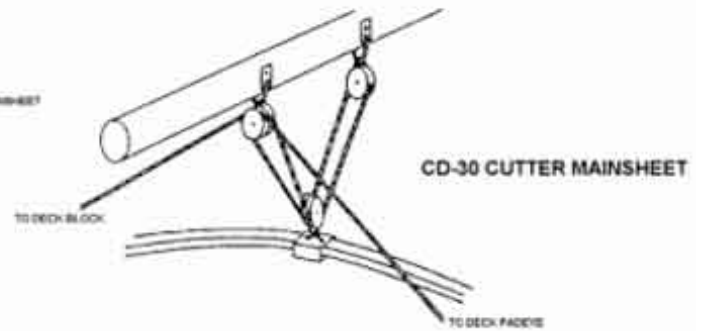
CD-27, 28  
MAINSHEET



CD-30 KETCH MAINSHET AND  
CD-30 KETCH & CUTTER CLUB JIB

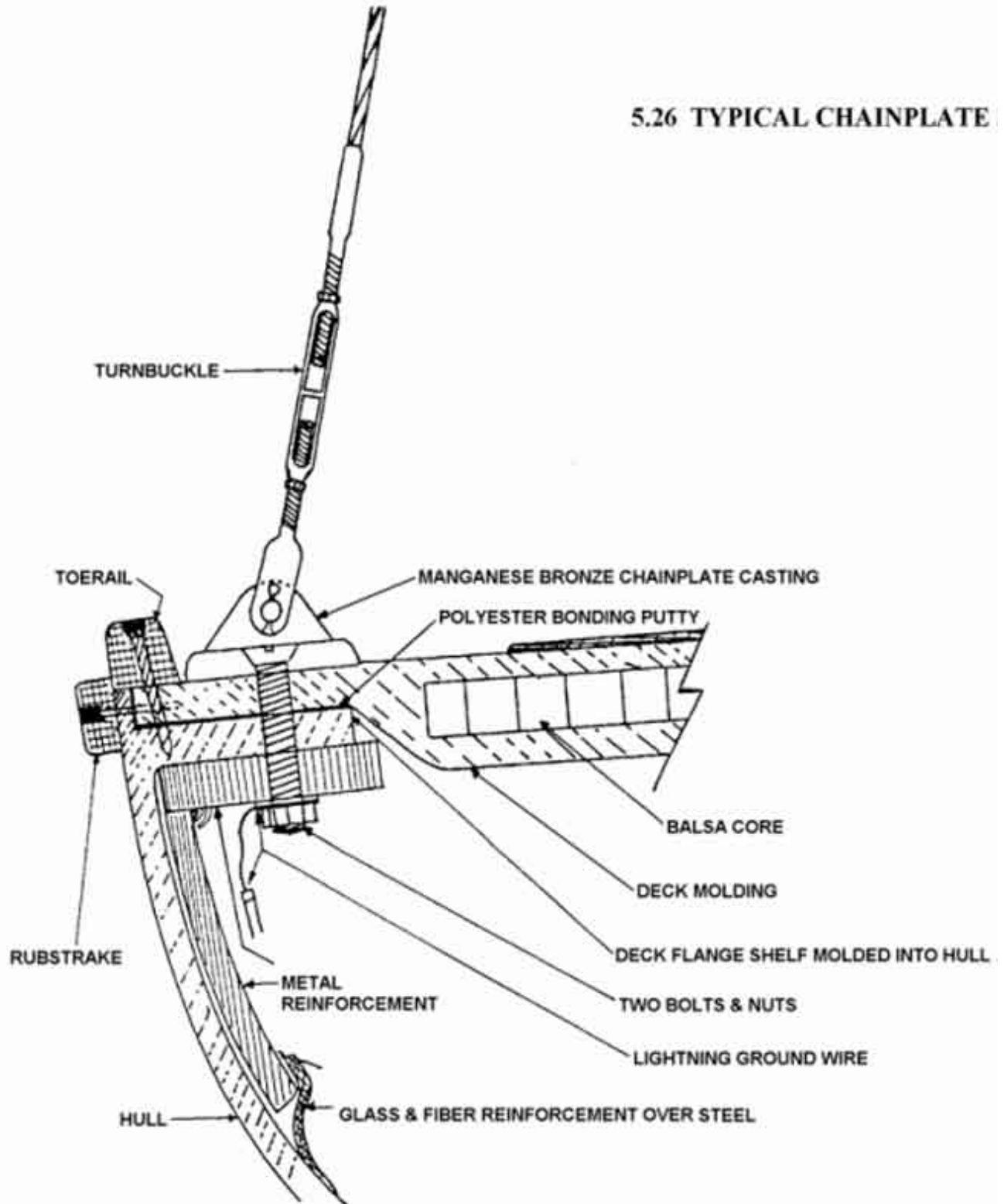


CD-22 & 25D MAINSHEET



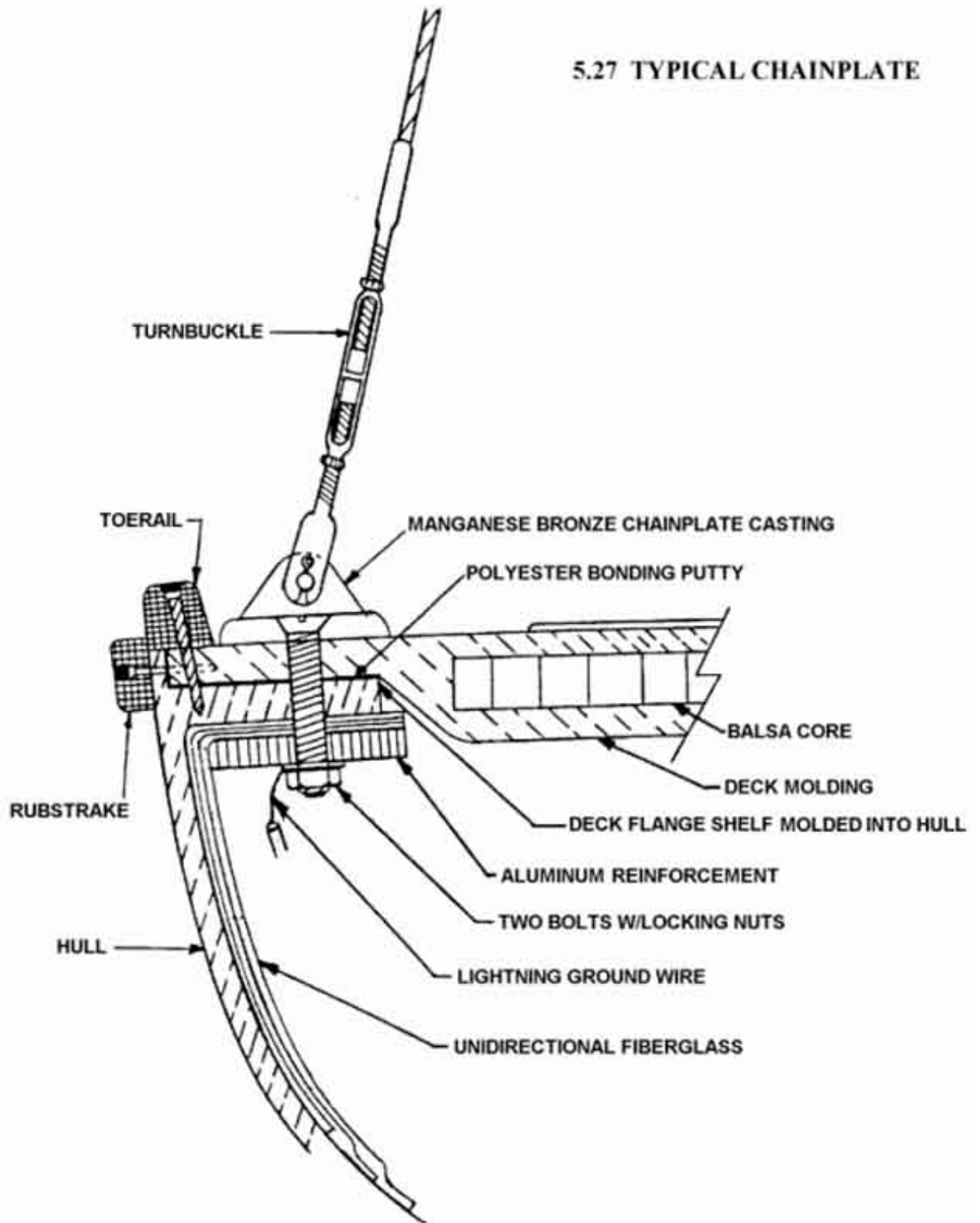
CD-30 CUTTER MAINSHEET

## 5.26 TYPICAL CHAINPLATE





### 5.27 TYPICAL CHAINPLATE





# QUICK REEFING\*

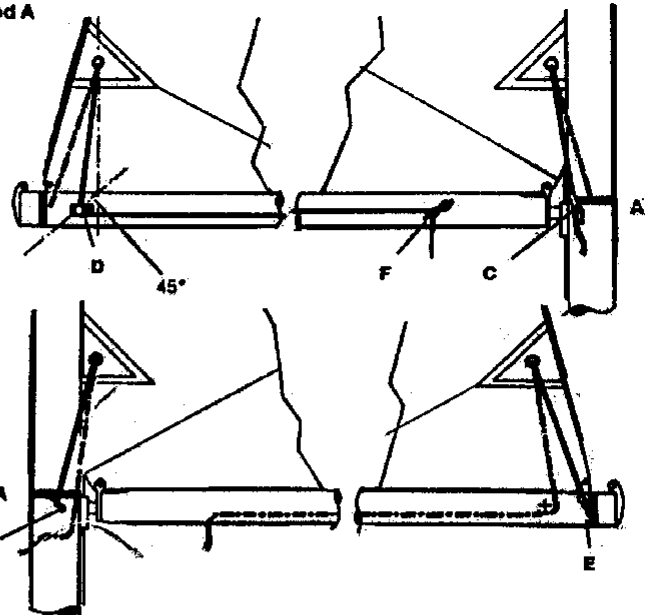
As the modern offshore racing yacht rapidly becomes more sophisticated, and offshore racing itself becomes more challenging, hardware and sail handling systems are refined and developed to make yachts faster and easier to operate. Perhaps the most important development in the area of sail handling has been Quick Reefing.

Time was when the call to reef meant a sacrifice of speed, time and lots of crewmen on deck. Quick Reefing has changed all this. It is very fast, requires few hands and retains proper sail shape.

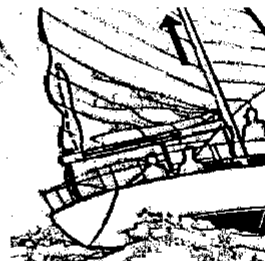
Although sophisticated refinements have been developed, the basic system is simple and effective. Installation or conversion is easy, and the benefits of this fine system are appealing to racer and cruiser alike.

\*Also known as California Reefing, Slab Reefing or Jiffy Reefing.

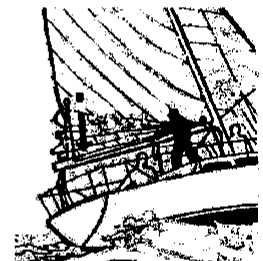
Method A



1. The halyard is released and the reef tack downhaul (A) is tightened until the reef cringle is drawn down to the gooseneck, then cleated. (Pre-marking the halyard provides a good reference when releasing)



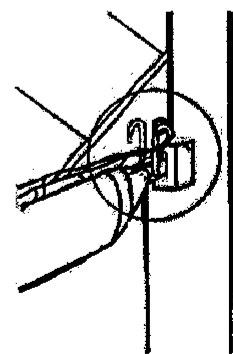
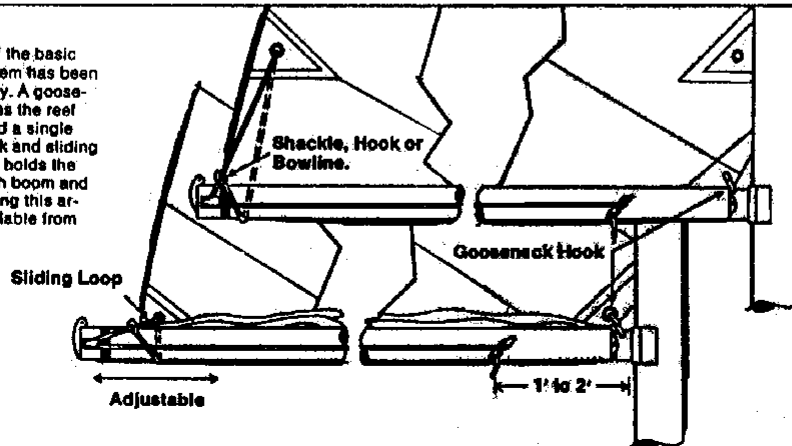
2. The main halyard is tightened up. Note: The mainsheet should be slackened only if necessary. (Usually when reaching)



3. The reef clew outhaul (B) is tightened up to the reef cringle and cleated. With practice, a Quick Reef can be executed in between 15 and 30 seconds on a boat of 40 ft. in length!

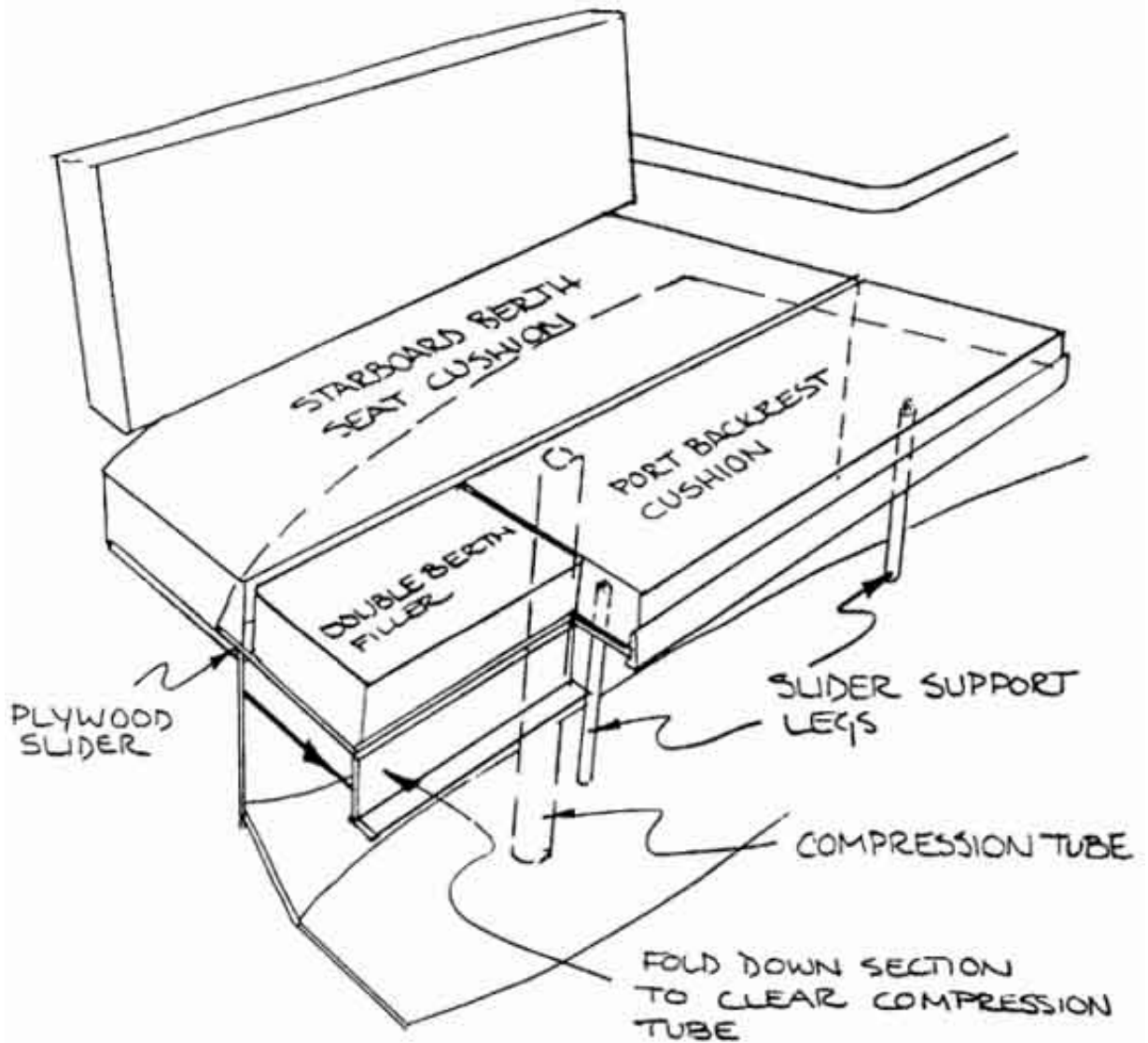
Method B

A simplification of the basic quick-reefing system has been developed recently. A gooseneck hook replaces the reef tack downhaul and a single ended cheek block and sliding loop arrangement holds the clew. A production boom and gooseneck featuring this arrangement is available from Schaefer Spars.



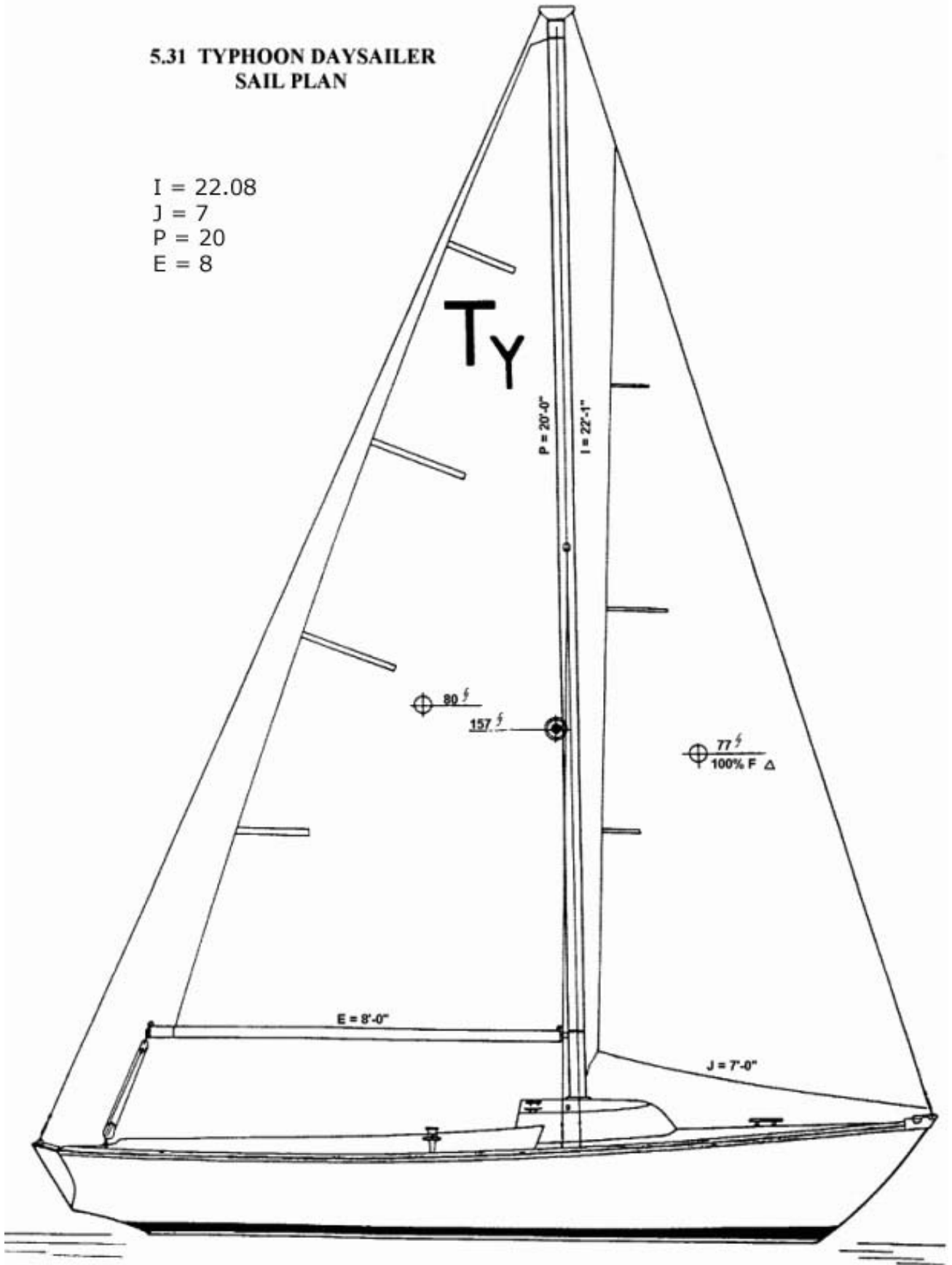
The reef tack cringle can be hooked quickly onto the gooseneck hook as the halyard is released.

### 5.30 CD-25D DOUBLE BERTH SET-UP



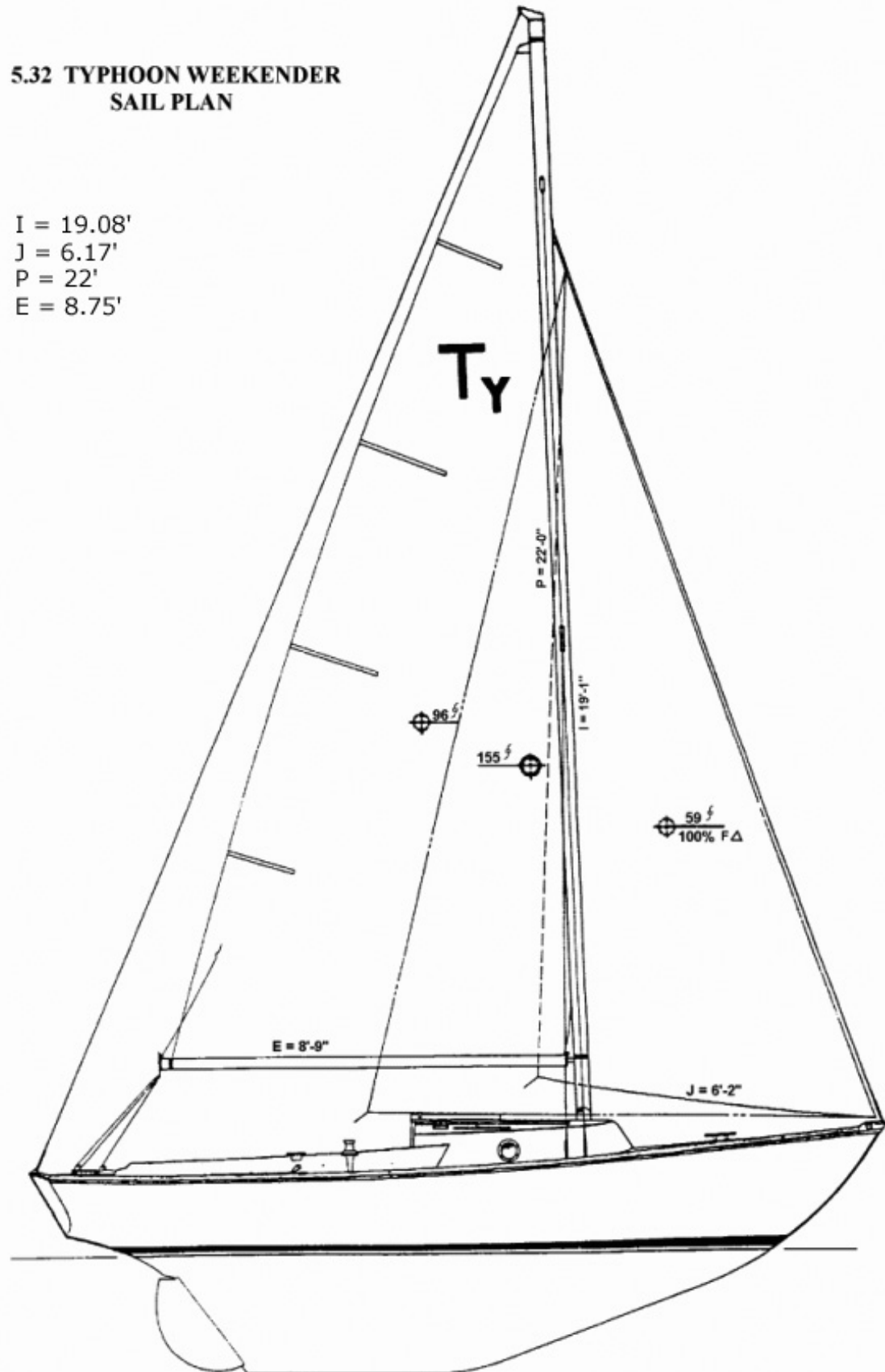
### 5.31 TYPHOON DAYSAILER SAIL PLAN

I = 22.08  
J = 7  
P = 20  
E = 8



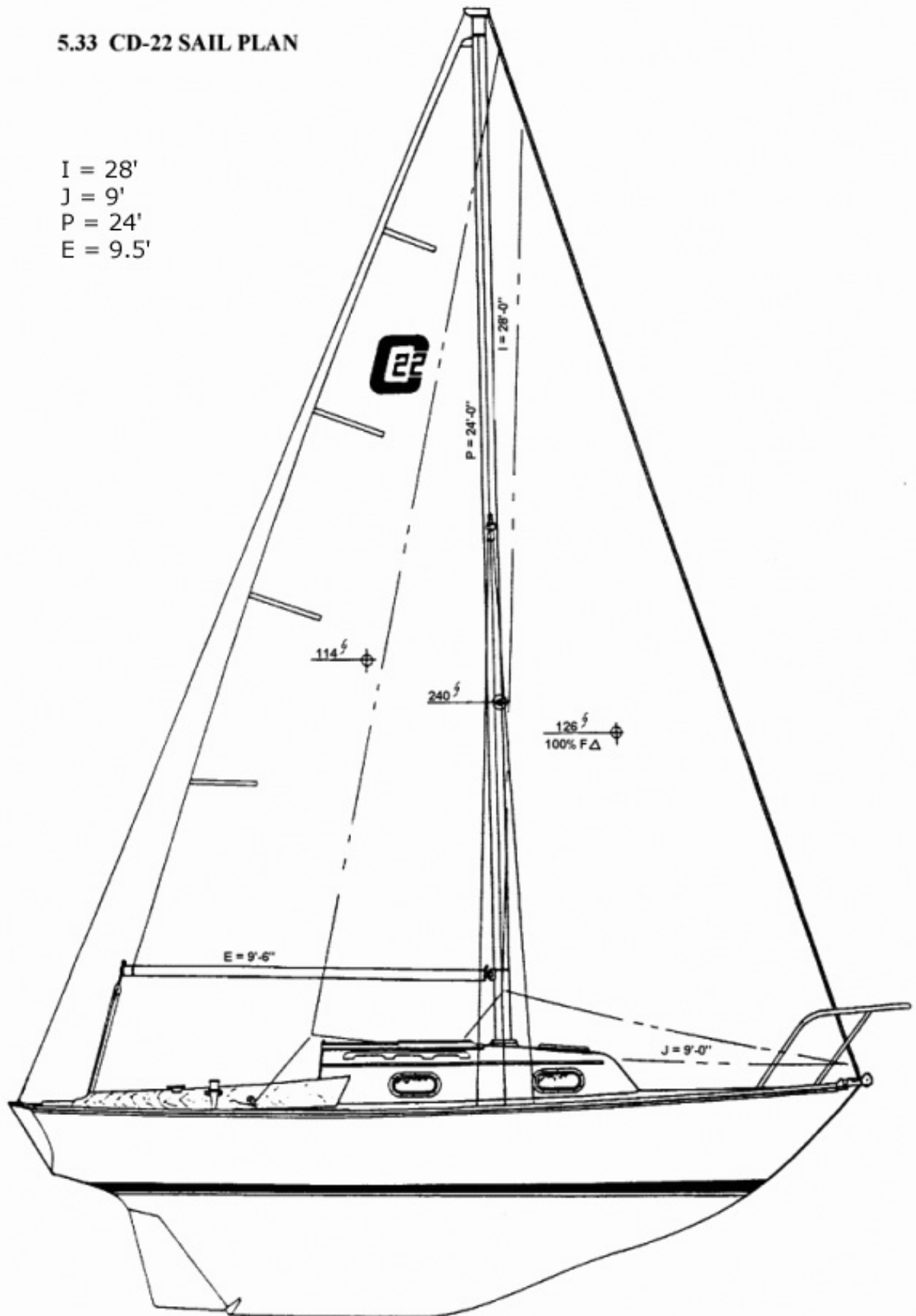
### 5.32 TYPHOON WEEKENDER SAIL PLAN

I = 19.08'  
J = 6.17'  
P = 22'  
E = 8.75'



## 5.33 CD-22 SAIL PLAN

I = 28'  
J = 9'  
P = 24'  
E = 9.5'

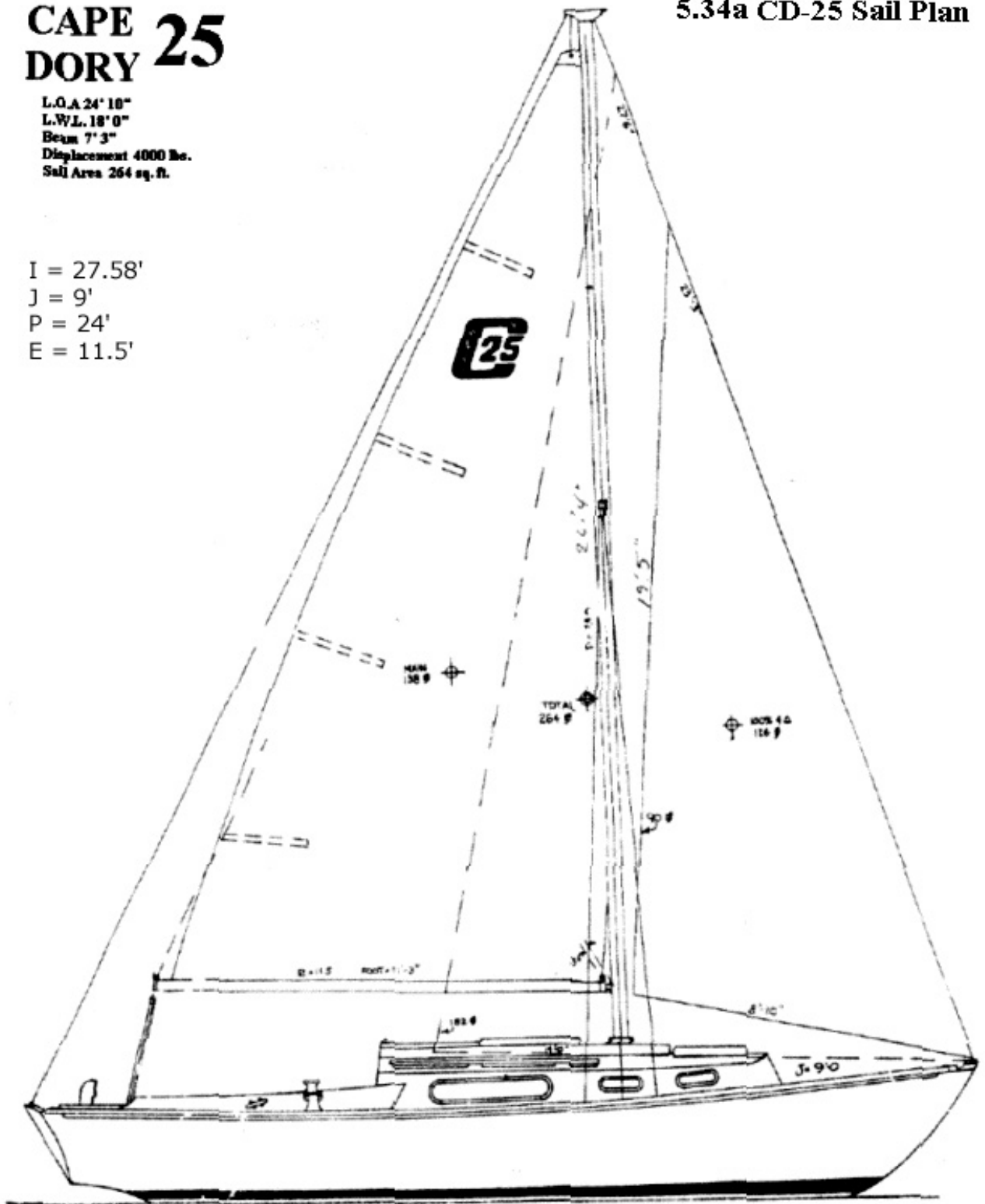


# CAPE DORY 25

L.O.A. 24' 10"  
L.W.L. 18' 0"  
Beam 7' 3"  
Displacement 4000 lbs.  
Sail Area 264 sq. ft.

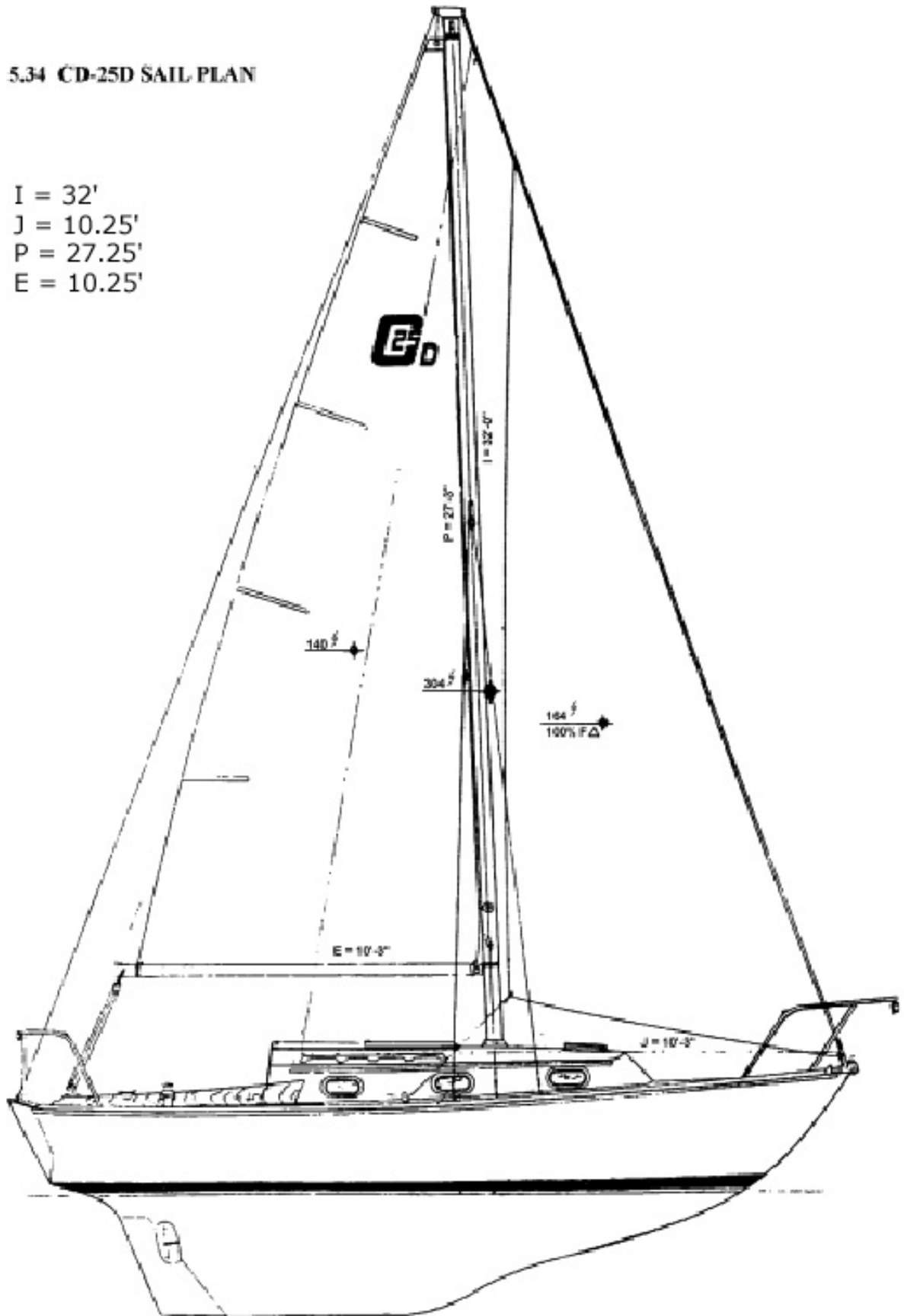
## 5.34a CD-25 Sail Plan

I = 27.58'  
J = 9'  
P = 24'  
E = 11.5'



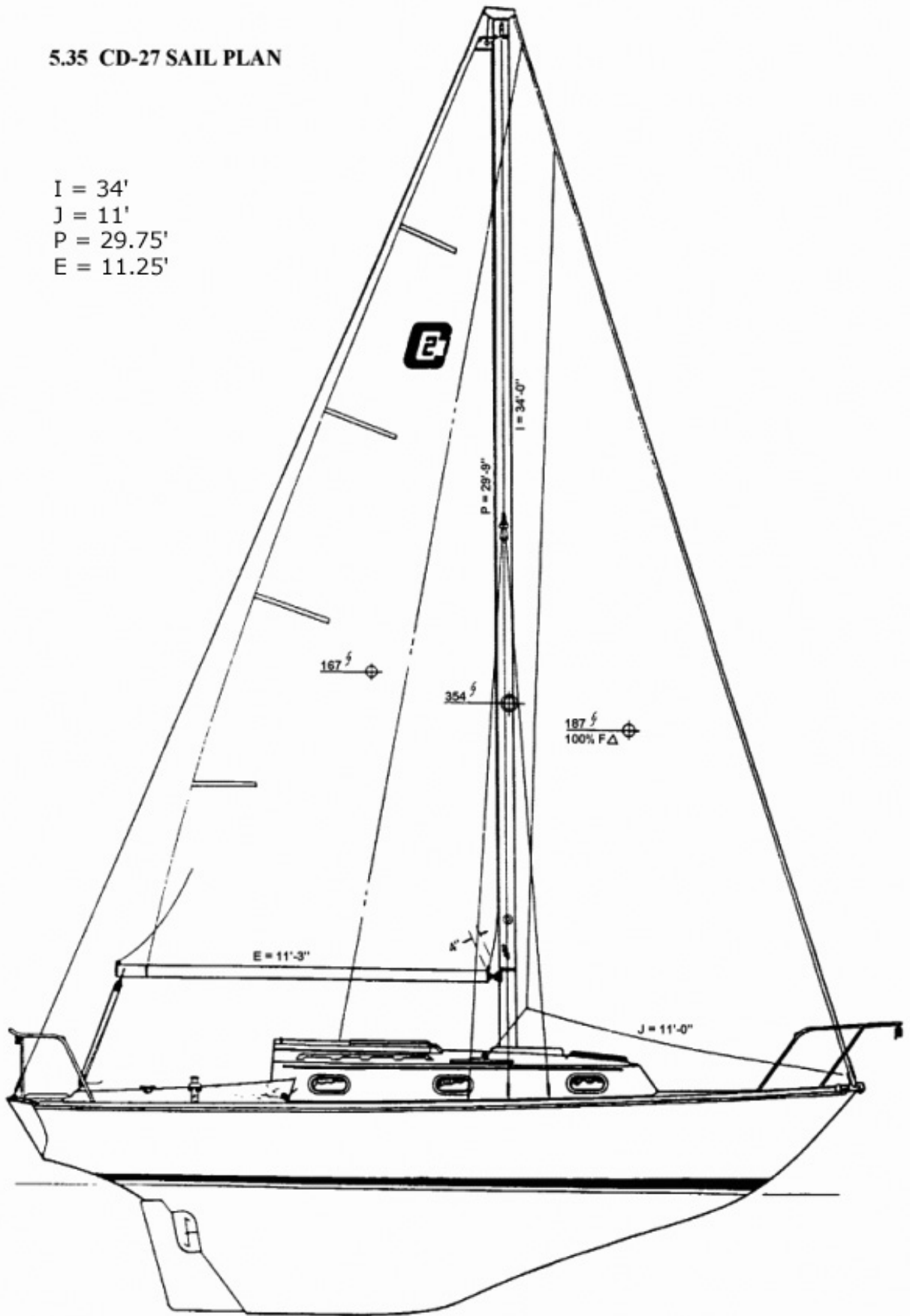
## 5.34 CD-25D SAIL PLAN

$I = 32'$   
 $J = 10.25'$   
 $P = 27.25'$   
 $E = 10.25'$



## 5.35 CD-27 SAIL PLAN

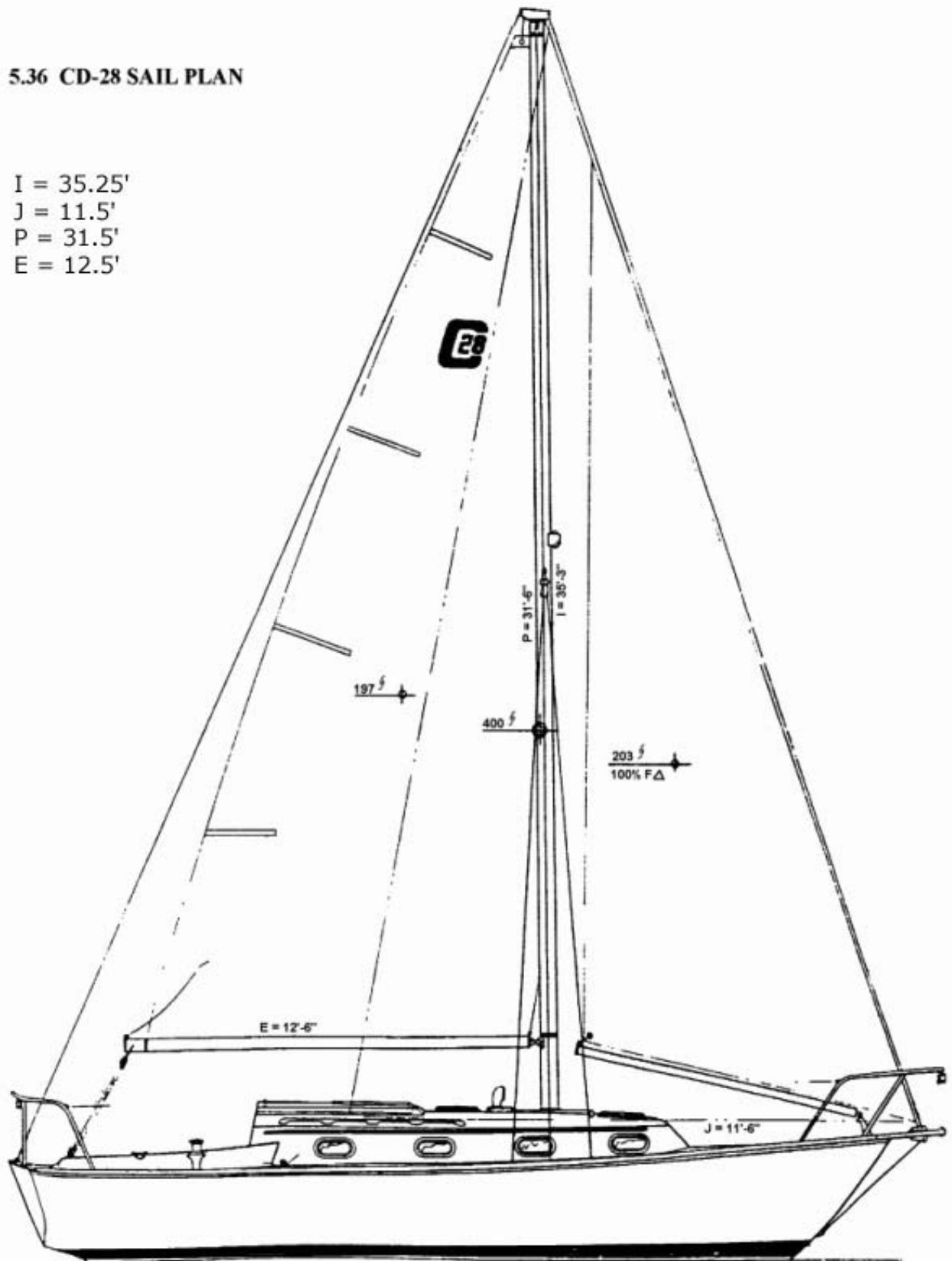
I = 34'  
J = 11'  
P = 29.75'  
E = 11.25'



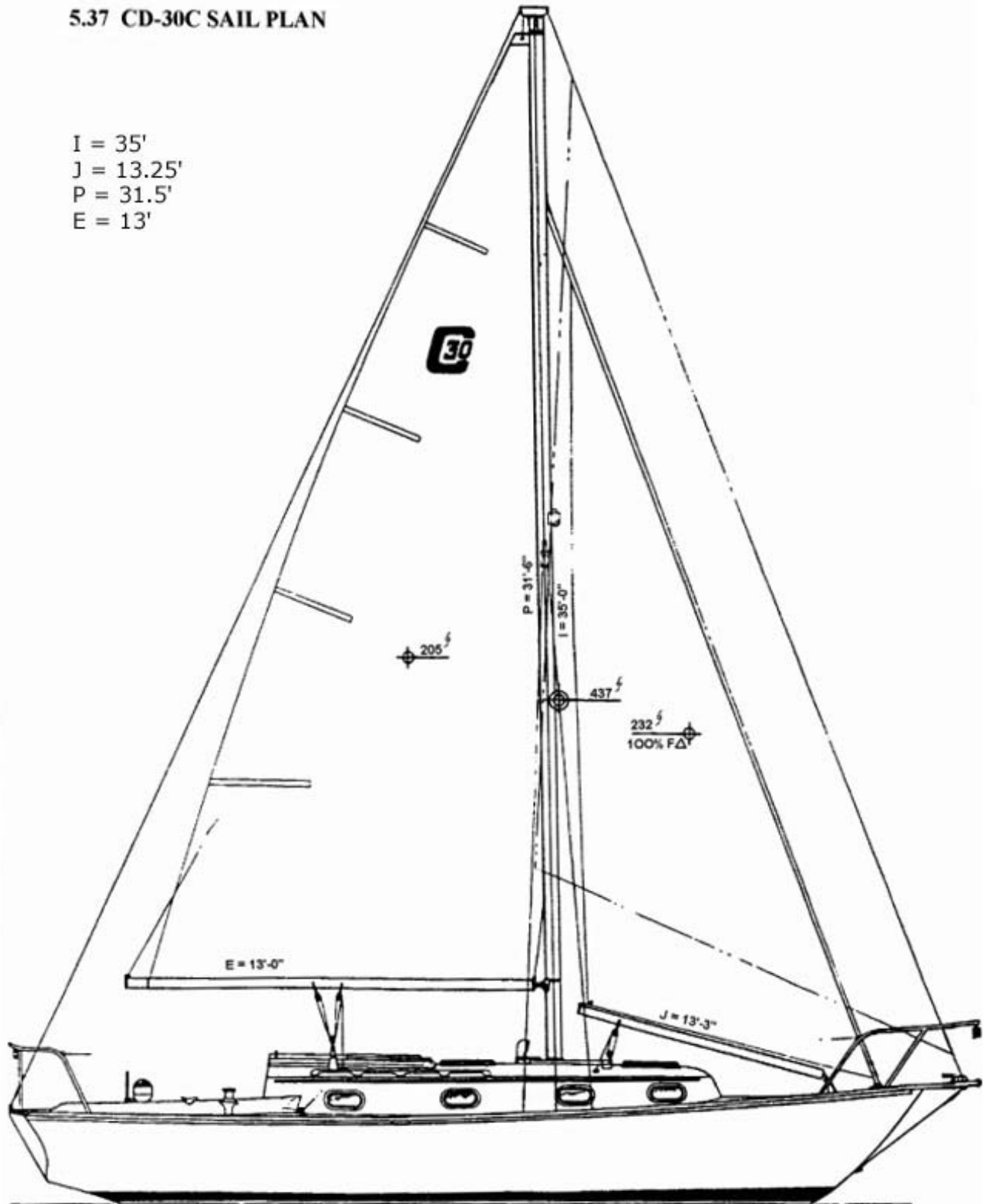


### 5.36 CD-28 SAIL PLAN

$I = 35.25'$   
 $J = 11.5'$   
 $P = 31.5'$   
 $E = 12.5'$



## 5.37 CD-30C SAIL PLAN





## TECHNICAL INFORMATION

	TYD	TYW	CD-22	CD-25D
L.O.A.	18' 6"	18' 6"	22' 4"	25' 0"
L.W.L.	13' 6"	13' 11"	16' 3"	19' 0"
Beam	6' 3-1/2"	6' 3"	7' 4"	8' 0"
Draft	2' 7"	2' 7"	3' 0"	3' 6"
Displacement(Lbs.)	1900	2000	3200	5120
Ballast(Lbs.)	900	900	1400	2050
Sail Area (Sq. Ft.) (w/100% foretriangle)	157	155	240	304
I	22' 1"	19' 1"	28' 0"	32' 0"
P	20' 0"	22' 0"	24' 0"	27' 3"
J	7' 0"	6' 2"	9' 0"	10' 3"
E	8' 0"	8' 9"	9' 6"	10' 3"
Main Luff Slug Size	1/2 Barrel	1/2 Barrel	1/2 Barrel	1/2 Barrel
Main Foot Slug Size	1/2 Barrel	1/2 Barrel	1/2 Barrel	1/2 Barrel
Main Tack Cut Back	2-1/2"	2-1/2"	2-1/2"	1-1/2"

## TECHNICAL INFORMATION

	CD-27	CD-28	CD-30C	CD-30K
L.O.A.	27' 1"	28' 1-1/4"	30' 2-1/2"	30' 2-1/2"
L.W. L.	20' 0"	22' 2-1/2"	22' 10"	22' 10"
L.O.A. (w/Bowsprit)	N/A	29' 6-3/4"	32' 2-1/2"	32' 2-1/2"
Beam	8' 6"	8' 10-1/2"	9' 0"	9' 0"
Draft	4' 0"	4' 0"	4' 2"	4' 2"
Displacement(Lbs.)	7500	9000	10,000	10,000
Ballast(Lbs.)	3000	3500	4000	4000
Sail Area (Sq. Ft.) (w/100% fore triangle)	354	400	437	434
I	34' 0"	35' 3"	35' 0"	33' 9"
P	29' 9"	31' 6"	31' 6"	30' 0"
J	11' 0"	11' 6"	13' 3"	12' 0"
E	11' 3"	12' 6"	13' 0"	11' 0"
Main Luff Slug Size	3/4" flat	3/4" flat	3/4" flat	3/4" flat
Main Foot Slug Size	1/2 barrel	1/2 barrel	1/2 barrel	1/2 barrel
Main Tack Cut Back	4"	4"	4"	4"
E.Y.	NA	NA	NA	7' 0"
P.Y.	NA	NA	NA	19' 0"
Mizzen Tack Cut Back	NA	NA	NA	2-1/2"
Mizzen Luff Slug Size	NA	NA	NA	1/2 barrel
Mizzen Foot Slug Size	NA	NA	NA	1/2 barrel

## STANDING AND RUNNING RIGGING

	TYD	TYW	CD-22	C-25D
Forestay (W)	1/8x23'6"	1/8x20'8"	3/16x28'10"	3/16x32'5"
Backstay (W)	1/8x25'	1/8x27'	3/16x30'5"	3/16x34'5"
Uppers (W)	1/8x22'9"	1/8x21'2"	3/16x28'1"	3/16x31'7"
Lowers (W)	1/8x12'	1/8x11'5"	5/32x15'2"	5/32x17'2"
Main Halyard (P)	5/16x50'	5/16x56'	3/8x60'	3/8x70'
Jib Halyard (P)	5/16x50'	5/16x48'	3/8x60'	3/8x73'
Main Sheet (D)	5/16x40'	5/16x40'	3/8x50'	7/16x66'
Jib Sheet (D)	5/16x26'	5/16x32'	3/8x50'	7/16x50'
Genoa Sheet (D)	5/16x20'	5/16x20'	3/8x30'	7/16x35'
Topping Lift (D)	1/4x45'	1/4x45'	1/4x50'	1/4x60'
Spinnaker Halyard (D)	5/16x45'	5/16x40'	3/8x60'	3/8x73'
Spinnaker Sheets (D)	5/16x30'	5/16x30'	3/8x35'	7/16x50'

Key: (W) = 1 x 19 Stainless Steel Wire  
(P) = Prestretched Dacron  
(D) = Braided Dacron

Note : All wire lengths are approximate

## STANDING AND RUNNING RIGGING

	CD-27	CD-28	CD-30C
Forestay (W)	7/32 x 35'4"	1/4 x 37'	1/4 x 37'6"
Backstay (W)	7/32 x 37'6"	1/4 x 39'8"	1/4 x 40'
Uppers (W)	7/32 x 34'1"	1/4 x 36'	1/4 x 35'11"
Lowers (W)	5/32 x 17'4"	3/16 x 18'7"	3/16 x 18'1"
Staysail Stay (W)	NA	NA	5/32 x 31'1"
Bob Stay (W)	NA	1/4 x 3'6"	1/4 x 4'
Main Halyard (P)	3/8 x 71'	7/16 x 72'	7/16 x 74'
Jib Halyard (P)	3/8 x 75'	7/16 x 76'	7/16 x 84'
Staysail Halyard (P)	NA	NA	7/16 x 60'
Main Sheet (D)	7/16 x 75'	7/16 x 75'	7/16 x 60'
Jib Sheet (D)	7/16 x 60'	7/16 x 35'	7/16 x 45'
Staysail Sheet (D)	NA	NA	7/16 x 75'
Genoa Sheet (D)	7/16 x 35'	7/16 x 35'	7/16 x 35'
Topping Lift (D)	1/4 x 46'	1/4 x 51'	1/4 x 55'
Club Lift (D)	NA	5/16 x 35'	5/16 x 35'
Clew Reef (D)	5/16 x 23'	5/16 x 26'	5/16 x 26'
Tack Reef (D)	5/16 x 12'	5/16 x 14'	5/16 x 14'
Spinnaker Halyard (D)	7/16 x 75'	7/16 x 75'	7/16 x 75'
Spinnaker Sheet (D)	7/16 x 60'	7/16 x 60'	7/16 x 60'

Note : All wire lengths are approximate.

Key: (W) = 1 x 19 Stainless Steel Wire  
(P) = Prestretched Dacron  
(D) = Braided Dacron

## VENDOR LIST

[See Note in Vendor Addresses Section. (Ed.)]

In the interest of faster and more efficient service, Cape Dory has developed a list of the more important equipment and manufacturers. We produced this list so that the Cape Dory owner will be able to go directly to the original vendor for replacement parts, but we still want you to feel free to call us here at the factory for any additional information.

ITEM DESCRIPTION	MANUFACTURER'S PART #	VENDOR
<b>BLOCKS:</b>		
Genoa Blocks (TY)	02-72	Schaefer Marine
Genoa Blocks (CD-22)	03-72	Schaefer Marine
Genoa Blocks (CD-27/28/30)	07-83	Schaefer Marine
<b>BOTTOM PAINT:</b>		
Antifouling Blue or Brown	Epoxy Cap	Rule Industries
Boot Top Dado Dark Brown	246	Interlux
Boot Top Seminole Red	593	Gloucester Paints
<b>ELECTRICAL:</b>		
Battery – 12 volts – 75 amps	5124M	Bay State Battery
Dome Lights (bulb 12v15cp)	10-1252	Bass Products
Single Swivel (bulb GE1142)	10-2162	Bass Products
Double Swivel (bulb G51142)	10-1872	Bass Products
8 watt florescent (GEFT5-CW)	10-1872	Bass Products
Panel		Lorco Marine
Port & Starboard Lights		Ahlemann & Schlatter
Stern Light (bulb 12v10w)	11790	Gem
Mast Light (G5212 & 12v6w)		Spartan Marine
<b>ENGINE:</b>		
CD28/30 Volvo MD7-B		Dipetro Kay
Water Pump Impeller	875583	Dipetro Kay
Fuel Filter	243464	Dipetro Kay
Oil Filter	834337	Dipetro Kay
Alternator	841380	Dipetro Kay
Alternator Belt	958327	Dipetro Kay
<b>Yanmar 1GM</b>		
Lube Oil Filter	134450-35100	Mack Boring
Fuel Oil Filter	104500-55710	Mack Boring
Zinc	27210-200200	Mack Boring
Belt	128170-77350	Mack Boring
Impeller	128170-42070	Mack Boring
Seal	128170-42110	Mack Boring



Seal	124240-91450	Mack Boring
Fuel Nozzle	124770-53000	Mack Boring
Thermostat	105582-49200	Mack Boring
Westerbeke W-13		Westerbeke
Zinc (2)	11885	Westerbeke
Oil Filter Element	30220	Westerbeke
Fuel Filter Element	30200	Westerbeke
O Ring	30705	Westerbeke
O Ring	30201	Westerbeke
Alternator Belt	30376	Westerbeke
Fuel Filter Element	30548	Westerbeke
Electric Fuel Pump		Westerbeke
Sea Water Pump Cover Gasket	24826	Westerbeke
Sea Water Pump Impellor	11764	Westerbeke
PORTS & HATCHES:		
Medium Hatch	139-medium	Bomar, Inc.
Small Hatch	139-small	Bomar, Inc.
Bronze Oval Ports	P-560	Spartan Marine
Bronze Round Ports		Spartan Marine
HEAD:		
CD-25D/27/28/30	HE-HTP	Gross Mechanical
HOT WATER HEATER:		
Raritan		Raritan Engineering
Spare Parts:		
Heating Element	WH1A	Raritan Engineering
Safety Valve	WH3	Raritan Engineering
Heat Exchanger	HE	Raritan Engineering
Thermostat	WH2	Raritan Engineering
PEDESTAL STEERING:		
5" Pedestal	335	Edson Corporation
Chain Assembly	775	Edson Corporation
4" Upright Single Sheave	620	Edson Corporation
4" Swivel Idler	711	Edson Corporation
8" Quadrant (CD-30)	614	Edson Corporation
8" Offset Quadrant (CD-27/28)	677	Edson Corporation
#1 Wire Take-up Eye	618	Edson Corporation
3/16" Wire Rope Clamp	665	Edson Corporation
1-1/8" Self Aligning Bearing	629A	Edson Corporation
Size 45 Shift and Throttle	816	Edson Corporation
Size 456 Brake	6897	Edson Corporation
Size 45 Guard	662	Edson Corporation
22" Wheel	Various	Edson Corporation

**PUMPS:**

Manual Bilge Pump	Whale Gusher 8	Imtra
Pressure Water Pump	36950	Parr Jabsco
Galley Foot Pump	GP-0507	Imtra
Head Foot Pump	GP-4 6A8	Imtra
Counter Top Pump	37220-0010	Parr Jabsco
Electric Sump Pump	Rule 750	C.E. Beckman
Sump Pump Switch	Rule 49	C.E. Beckman
or		
Electric Sump Pump	36251-0000	Parr Jabsco
Sump Pump Switch	44960-0002	Parr Jabsco

**TRACKS:**

3/4" T-Track (TY-22)		Spartan Marine
1" T-Track (CD-25D, 28, 30)		Spartan Marine
Traveler Bridge (CD-28, 30)	1159	Nicro Fico

**SHIFT & THROTTLE CABLES:**

8' Shift Cable (CD-27)	6400BC	Northwest Controls
8' Throttle Cable (CD-27, 28)	3300BC	Northwest Controls
6' Shift Cable (CD-28)	3300BC	Northwest Controls
11' Shift and Throttle	3300BC	Northwest Controls

Note: Be sure to check actual length on your boat before ordering

**VENTS:**

3" Low Vent	108836	Nicro Fico
3" Vent Deck Plate	10863DW	Nicro Fico
3" Vent to Hose Adapter	10863HA	Nicro Fico
3" Hi Vent	10923C	Nicro Fico
4" Hi Vent	10964C	Nicro Fico
4" Chrome Deck Plate	10864DC	Nicro Fico

**WINCHES:**

Lewmar 6, 7 10		Lewmar
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## VENDOR ADDRESSES

[Note: Vendors with \* indicates no current information could be located via Internetsearch of business addresses and telephone listings. All other addresses and telephone numbers are believed to be current as of January, 1999, but it can't be guaranteed. (Ed.)]

*Ahlemann & Schlatter/ Browning Marine	P.O. Box 806	St. Charles, IL	60174
Bass Products	50 Grove Street 978-744-7003	Salem, MA	01917
*Bay State Battery	70 Shawmut Road	Canton, MA	02021
C.E. Beckman	11-35 Commercial St. 508-994-9674	New Bedford, MA	02740
Bomar (Owned by Pompanette)	P.O. Box W 603-826-5791	Charlestown, NH	03603
*Dipetro Kay Corp	914 Cromwell Avenue	Rocky Hill, CT	06067
Edson Corporation	146 Duchaine Blvd. 508-995-9711	New Bedford, MA	02745
Essex Machine Works	50 West Avenue 860-767-8285	Essex, CT	06426
Gem Products	140 Industrial Blvd. 904-264-0173	Orange Park, FL	32073
*Gloucester Paints	P.O. Box 860	Gloucester, MA	01930
Gross Mechanical Lab.	7240 Standard Drive 410-712-4242	Hanover, MD	21076
Imtra Corp.	30 Samuel Barnet Blvd. 508-995-7000	New Bedford, MA	02155
International Paint Co. (Now Interlux/Courtaulds Coatings, Inc.)	2270 Morris 1-800-INTERLUX	Union, NJ	07083
Lewmar Marine	New Whitfield Street 1-800-362-7212	Guilford, CT	06437
*Lorco Marine Electric (Reported to be defunct)	715 Perimeter Road	Manchester, NH	03032
Mack Boring & Parts Co.	2365 US HWY 22W 908-964-0700	Union, NJ	07063
Merriman-Holbrook	301 River Street	Grand River, OH	44045
Nicro Fico (Marinco)	2655 Napa Valley Corp. Drive	Napa, CA	94558

Northwest Controls	Vernfield Village	Harleysville, PA	19438
Parr Jabsco Products (Now ITT Jabsco)	1485 Dale Way P.O. Box 2158 714-545-8251	Costa Mesa, CA	92628
Raritan Engineering Co.	530 Orange Street 954-525-0378	Millville, NJ	08332
Schaefer Marine Products	Industrial Park 158 Duchaine Blvd. 508-995-9911	New Bedford, MA	02745
Spartan Marine Hardware	HC 33 Box 1460 1-800-325-3287	Georgetown, ME	04548
Rule Industries (Owned by ITT Jabsco)	Cape Ann Industrial Park 978-281-0440	Gloucester, MA	01930
Westerbeke	41 Ledin Drive 508-588-7700	Avon, MA	02322