

# FOREWORD

*Congratulations on the acquisition of your new Catalina 34. All Catalina yachts are designed and built with care using quality materials to assure you years of sailing enjoyment with a minimum of upkeep and maintenance.*

*Before attempting maintenance or operation of your Catalina 34, please read the Catalina Yachts Limited Warranty booklet and fill out the enclosed warranty registration card.*

*The registration card enables Catalina to inform you of developments and modifications to enhance the performance or comfort of your yacht. It is also important to be able to contact owners to comply with Coast Guard defect notification requirements.*

*The launching and rigging of the Catalina 34 should be handled by experienced boat yard personnel under the direction of your authorized dealer.*

*The index page lists the contents of this manual. Warrantees and information regarding installed optional equipment have been included when available and applicable.*

*Maintaining your yacht properly can become a satisfying part of your sailing activities. A regular inspection is the best preventive maintenance. It will help keep your boat safe and in good condition while in use, and insure peace of mind when the boat is left unattended.*

*Take good care of your boat and take the time to learn and practice good seamanship.*



# PREFACE

*This manual is intended and supplied to help owners of Catalina 34's understand their boats and answer common questions about maintenance and systems design specific to the Catalina 34.*

*This manual is not intended to provide sailing instructions. It is assumed the operator will consult books written for that purpose, or take sailing lessons or courses to gain the knowledge necessary for the safe operation of the vessel.*

*The systems descriptions and illustrations in this manual apply to boats built at the time of publication. Our policy of constant improvement necessitates that changes have been made to the Catalina 34 since its introduction. Therefore, these illustrations and descriptions may not apply to boats built before the time of publication.*

*Owners of earlier hulls, who have questions not answered herein should consult with their local Catalina dealer, or write to Catalina Yachts. Please include your hull number in all correspondence.*

*The maintenance check lists contained within this manual are intended as guidelines for boats in normal service under typical conditions.*

*Climate and use will vary and may require additional or special maintenance. Consult with your local boat yard or Catalina dealer for specific maintenance and precautions recommended for your purposes and climate.*

*Caution: The aluminum and other metal parts conduct electricity. Coming in contact with or near an electrical power line or lightning can cause severe injury or death. Stay away from overhead electrical power lines when sailing and/or launching the boat.*



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INSERTS - ABYC Lightning Protection Information  
Catalina Yachts Warning Labels

EQUIPMENT MANUFACTURER'S ENCLOSURES

1. Pedestal Steering
2. Headsail Roller Furling
3. Pressure Water Pump
4. Marine Toilet
5. Compass
6. Batteries
7. Winch Manuals
8. Engine Manual
9. Knot Meter and Log
10. Galley Stove and Oven
11. Running Lights
12. Anchor Windlass
13. Fuel Filters
14. Bilge Pump
15. Galley Foot Pump
16. Engine Tachometer Calibration Instructions
17. Anti-fouling Bottom Paint
18. Blister Guard gel coat, used below the waterline on hull.

NOTE: Some manufacturers' enclosures may not be included with all manuals, depending upon optional equipment selection.

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YACHT NAME



REGISTRATION OR DOCUMENTATION NO.	PORT OF CALL
DATE OF COMMISSIONING	HULL NUMBER
OWNER'S NAME	OWNER'S ADDRESS

<p><b>LENGTH</b></p> <p>OVERALL ON DECK ..... 34'-6"</p> <p>WATERLINE ..... 29'-10"</p>	<p><b>DRAFT</b></p> <p>STANDARD ..... 5'-7"</p> <p>WING ..... 4'-3"</p>
<p><b>DISTANCE FROM WATERLINE TO MASTHEAD</b></p> <p>STANDARD RIG ..... 49'-7"</p> <p>TALL RIG ..... 51'-7"</p>	<p><b>DISPLACEMENT</b></p> <p>STANDARD ..... 11,950 LBS</p> <p>WING ..... 12,550 LBS</p>
<p><b>FRESH WATER CAPACITY</b></p> <p>AFT TANK ..... 43 GAL</p> <p>STARBOARD TANK ..... 28 GAL</p> <p>HOT WATER HEATER ..... 6 GAL</p> <p>TOTAL ..... 77 GAL</p>	<p><b>BALLAST</b></p> <p>STANDARD ..... 5,000 LBS</p> <p>WING ..... 5,600 LBS</p>
<p>WASTE TANK CAPACITY ..... 27 GAL</p>	<p>ICE BOX CAPACITY ..... 4.0 CU FT APPROX</p>
<p>FUEL CAPACITY ..... 25 GAL</p>	<p>ENGINE SERIAL NUMBER</p>
<p>BEAM ..... 11'- 9"</p>	<p>SAIL NUMBER</p>
<p><b>RATED SAIL AREA w/100% FORETRIANGLE</b></p> <p>STANDARD RIG ..... 528 SQ.FT.</p> <p>TALL RIG ..... 554 SQ.FT.</p>	<p>RADIO TELEPHONE CALL NUMBER</p>



2.0 C O M M I S S I O N I N G C H E C K L I S T

2.1 PRE-LAUNCH CHECK:

1. \_\_\_\_\_ Shaft turns freely by hand, zinc collar installed if required.
2. \_\_\_\_\_ Check intake hoses and clamps.
3. \_\_\_\_\_ Check all through hull fittings.
4. \_\_\_\_\_ Drain plugs tight, \_\_\_\_\_ engine, muffler, and exhaust line OK.
5. \_\_\_\_\_ Bottom clean, paint OK.
6. \_\_\_\_\_ Hull sides clean, gel coat OK.
7. \_\_\_\_\_ Decks clean.
8. \_\_\_\_\_ Teak cleaned and oiled.
9. \_\_\_\_\_ Interior finished, oiled, clean.
10. \_\_\_\_\_ Cushions, carpeting, curtains, clean and in place.
11. \_\_\_\_\_ Table converts to berth OK, dinette, traditional table stows OK.
12. \_\_\_\_\_ Hatch lids present and fit OK.
13. \_\_\_\_\_ Lifelines and pulpits rigged and OK.
14. \_\_\_\_\_ Spreaders taped and drilled at base end, upper shroud wired to tip end and taped.
15. \_\_\_\_\_ Standing rigging pinned to mast.
16. \_\_\_\_\_ Rigging lengths verified with check list in kit.
17. \_\_\_\_\_ Mast and boom inspected; cotter pins, sheaves, tangs, spreaders OK.
18. \_\_\_\_\_ Mast lights checked before mast stepped.
19. \_\_\_\_\_ Check overhead for electrical wires which may interfere with the space required to raise the mast to its full upright position. If there are wires of any kind anywhere near the boat, do not raise the mast. Move boat to another location away from any wires. Contact with wires can be fatal.
20. \_\_\_\_\_ Masthead sheaves lubricated and rotate freely.

2.0 COMMISSIONING CHECK LIST (CONTD):

2.2 IN WATER CHECK:

2.2.1 ELECTRICAL:

1. \_\_\_\_\_ Electrical equipment operational:  
\_\_\_\_\_ Running \_\_\_\_\_ Cabin \_\_\_\_\_ Bow \_\_\_\_\_ Anchor \_\_\_\_\_ Spreaders  
\_\_\_\_\_ Pressure \_\_\_\_\_ Water \_\_\_\_\_ Macerator pump \_\_\_\_\_ Master
2. \_\_\_\_\_ Shore power outlet OK.
3. \_\_\_\_\_ Check battery switch #1 \_\_\_\_\_ #2 \_\_\_\_\_ OK.
4. \_\_\_\_\_ Check battery fluid level.
5. \_\_\_\_\_ Check battery terminal for tightness.
6. \_\_\_\_\_ Check battery tie down straps.

2.2.2 PLUMBING:

1. \_\_\_\_\_ No leaks at through hull fittings with seacocks open.
2. \_\_\_\_\_ Fill all water tanks.
3. \_\_\_\_\_ Check all water tanks at fittings and vents for leaks.
4. \_\_\_\_\_ Test all faucets and foot pumps for leaks.
5. \_\_\_\_\_ Check for leaks at sink drain, sink drains OK.
6. \_\_\_\_\_ Put water in ice box and check for proper drainage.
7. \_\_\_\_\_ Check bilge pump operation, handle present.
8. \_\_\_\_\_ Check head by flushing and pumping.
9. \_\_\_\_\_ Check shower sump drain line.
10. \_\_\_\_\_ Check holding tank, pump vent and fitting.
11. \_\_\_\_\_ Check head and pump handle for leaks.
12. \_\_\_\_\_ Main hatch no leaks, slides freely, hatch boards fit OK.
13. \_\_\_\_\_ Cabin windows hose tested for leaks.
14. \_\_\_\_\_ Anchor locker drains OK, no leaks.
15. \_\_\_\_\_ Stove operates OK; check tank, fuel line, burner and oven.

2.0 COMMISSIONING CHECK LIST (CONTD):

2.2.3 RIGGING AND HARDWARE:

1. \_\_\_\_\_ Mast stepped.
2. \_\_\_\_\_ Pin, tape and tune standing rigging.
3. \_\_\_\_\_ Backstay adjuster, whisker pole, spinnaker gear, boom vang OK.
4. \_\_\_\_\_ Blocks, cars, cleats rigged OK.
5. \_\_\_\_\_ Test all winches, winch handles present.

2.2.4 ENGINE:

1. \_\_\_\_\_ No leaks: Shaft, rudder, stuffing box, or shaft log.
2. \_\_\_\_\_ Shaft, dimpled for set bolts at coupling; bolts wired and coupling secured.
3. \_\_\_\_\_ With fuel tanks full, no leaks at fill pipes, overflow vent, or any fuel line connections.
4. \_\_\_\_\_ With coupling disconnected, engine and shaft alignment OK. Recheck alignment after rigging tuned.
5. \_\_\_\_\_ Transmission oil level OK.
6. \_\_\_\_\_ Crank case oil level OK.
7. \_\_\_\_\_ Check fresh water/coolant level OK.
8. \_\_\_\_\_ Fuel valves open, bleed and prime lines for diesel engine.
9. \_\_\_\_\_ Check that shaft is coupled and aligned to .003 maximum tolerance.
10. \_\_\_\_\_ Engine wire OK, connections tight.
11. \_\_\_\_\_ Throttle control cable travel and brackets OK.
12. \_\_\_\_\_ Clutch control cable travel and brackets OK.
13. \_\_\_\_\_ Start engine.
14. \_\_\_\_\_ Exhaust water flow OK.
15. \_\_\_\_\_ No leaks in fuel lines at fittings, fuel filter, fuel pump, or injectors.
16. \_\_\_\_\_ No engine or oil leaks.

2.0 COMMISSIONING CHECK LIST (CONTD):

17. \_\_\_\_\_ Idling speed set \_\_\_\_\_ R.P.M.'s.
18. \_\_\_\_\_ Check choke operation, check shutoff cable for diesel engine.
19. \_\_\_\_\_ Check forward and reverse shifting.
20. \_\_\_\_\_ Check engine instruments for operation, tachometer for calibration.
21. \_\_\_\_\_ Run in gear for ten (10) minutes.
22. \_\_\_\_\_ Recheck packing gland after engine stops.
23. \_\_\_\_\_ Bilge blower and vent system OK.
24. \_\_\_\_\_ Exhaust system, check for leaks, insulation in place.

2.3 OPERATION CHECK LIST:

1. \_\_\_\_\_ Pedestal steering operation OK, compass OK.
2. \_\_\_\_\_ Sails and halyards OK.
3. \_\_\_\_\_ Boat performance under power and sail OK.

2.3.1 FINAL CHECK:

1. \_\_\_\_\_ All accessory equipment operates OK.
2. \_\_\_\_\_ All boat, engine, and accessory literature, and/or manuals aboard.
3. \_\_\_\_\_ Warranty cards completed and mailed, owner registration card attached, owner informed of warranty responsibilities.
4. \_\_\_\_\_ Engine warranty card completed and mailed.

### 3.0 MAINTENANCE GUIDE

#### 3.1. PRE-USE MAINTENANCE:

##### RIGGING:

1. \_\_\_\_\_ Inspect turnbuckles, tighten as required, inspect safety wires.
2. \_\_\_\_\_ Inspect clevis pins and cotter pins.
3. \_\_\_\_\_ Visually inspect spreader tips and other areas where sails may chafe during sailing, replace tape as necessary.
4. \_\_\_\_\_ Halyards free and not tangled.
5. \_\_\_\_\_ Inspect mast hardware attachment bolts, tighten as required.

##### HULL AND DECK INSPECTION:

1. \_\_\_\_\_ Bilges and compartments are dry.
2. \_\_\_\_\_ Through hull valves, hoses, and clamps OK.
3. \_\_\_\_\_ Check running lights.

##### ENGINE:

1. \_\_\_\_\_ Check engine oil and fuel levels.
2. \_\_\_\_\_ Packing gland OK, cooling water intake valve opens and closes OK.
3. \_\_\_\_\_ Throttle shift OK.
4. \_\_\_\_\_ Blower system OK.
5. \_\_\_\_\_ Check bilge areas for fuel before starting engine.

#### 3.2 MONTHLY MAINTENANCE:

##### RIGGING:

1. \_\_\_\_\_ Inspect chain plates, fastenings and bolts, tighten as necessary.
2. \_\_\_\_\_ Inspect blocks, shackles, cotter pins.
3. \_\_\_\_\_ Check rigging tune, rigging wire condition.
4. \_\_\_\_\_ Check turnbuckles and locking pins.

3.0 MAINTENANCE GUIDE (CONTD):

HULL AND DECK:

1. \_\_\_\_\_ Check cockpit drains, clear debris.
2. \_\_\_\_\_ Inspect hull valves open and close freely.
3. \_\_\_\_\_ Winches turn freely, lubricate as per manufacture's recommendations.
4. \_\_\_\_\_ Clean and oil exterior teak as necessary.
5. \_\_\_\_\_ Clean and wax gel coat surfaces as necessary.

ENGINE:

1. \_\_\_\_\_ Check oil and fluid levels.
2. \_\_\_\_\_ Battery: Check fluid levels and tie downs.
3. \_\_\_\_\_ Tighten all bolts and nuts to proper torque.
4. \_\_\_\_\_ Check fuel tank fittings and hose clamps.
5. \_\_\_\_\_ Disassemble and inspect cooling system anti-siphon (located under head counter near head sink).
6. \_\_\_\_\_ Check bolts.
7. \_\_\_\_\_ Check filters.

3.3 SEASONAL MAINTENANCE:

RIGGING:

1. \_\_\_\_\_ Mast head pins and sheaves turn freely.
2. \_\_\_\_\_ Halyards and shackles are in good condition.
3. \_\_\_\_\_ Spreader tips and bases, and mast fittings OK.
4. \_\_\_\_\_ All shroud terminations and swedged fittings OK, check for cracks or corrosion.
5. \_\_\_\_\_ Gooseneck assembly and boom assembly OK.
6. \_\_\_\_\_ Mast, boom and spreaders cleaned and waxed.
7. \_\_\_\_\_ Lifelines and stanchions all OK, all pins and fittings are secure, cotter rings taped. Turnbuckles, pelican hooks and connector loops OK, screw fittings checked for thread wear.

### 3.0 MAINTENANCE GUIDE (CONTD):

#### HULL, DECK AND CABIN:

1. \_\_\_\_\_ All chainplates and through bolts tight.
2. \_\_\_\_\_ Disassemble winches and lubricate bearings and pawls.
3. \_\_\_\_\_ Inspect and coat electrical system connections, battery tie downs and terminal connectors to prevent corrosion.
4. \_\_\_\_\_ Drain and flush fresh water system.
5. \_\_\_\_\_ Check head and anti-siphon valve in toilet.
6. \_\_\_\_\_ Hatch gaskets and hold down fasteners OK.
7. \_\_\_\_\_ Bottom, keel and rudder condition of anti-fouling paint OK.
8. \_\_\_\_\_ Lifelines, stanchions and pelican hooks OK.

#### ENGINE:

1. \_\_\_\_\_ Check shaft alignment, repack stuffing box if necessary.
2. \_\_\_\_\_ Clean motor thoroughly.
3. \_\_\_\_\_ Inspect fuel system.
4. \_\_\_\_\_ Tune engine as per manufacturer's recommendations.
5. \_\_\_\_\_ Exhaust system, check for leaks, or deterioration, insulation in place.

### 3.4 FIBERGLASS MAINTENANCE AND REPAIR:

One of the major benefits of a fiberglass boat is the elimination of maintenance chores required by other materials. You have only three relatively easy maintenance rules to follow to keep your boat looking like new.

1. Each year clean, buff, and wax the exterior of the boat.
2. Touch up and patch scratches, scars and small breaks.
3. Repair any major breaks as soon as possible to avoid additional damage to the hull or decks.

Most fiberglass boats are manufactured of two types of material, permanently bonded together by a chemical reaction. The outside surface is formed by a colored gel coat. This is a special resin material containing concentrated color. It provides a smooth, finished surface.

### 3.0 MAINTENANCE GUIDE (CONTD):

The second "layer" is made up of polyester resin reinforced with laminations of fiberglass mat, cloth, or woven roving. Both the gel coat and polyester resin are "cured" by a chemical catalyst which causes them to form a hard, strong mass that is highly resistant to impact and damage.

After sailing, a good hosing down with fresh water and a mild detergent will keep your boat sparkling fresh and clean. The non-skid surfaces may need to be scrubbed with detergent. Smooth glass areas may be polished with liquid wax or any good fiberglass wax to add extra luster. In the case of older boats, where some fading of the gel coat has occurred, the surface should be buffed with polishing compound and then wax finished.

When buffing the boat to restore its finish, care should be taken not to cut through the gel coat surface. This is especially true on corners and edges of the hull. A power buffer may be used or the work may be done by hand, using a lightly abrasive rubbing compound such as Mirro Glaze No. 1 for power buffers, or Dupont No. 7 for hand buffing. Any high quality paste wax may be used after buffing.



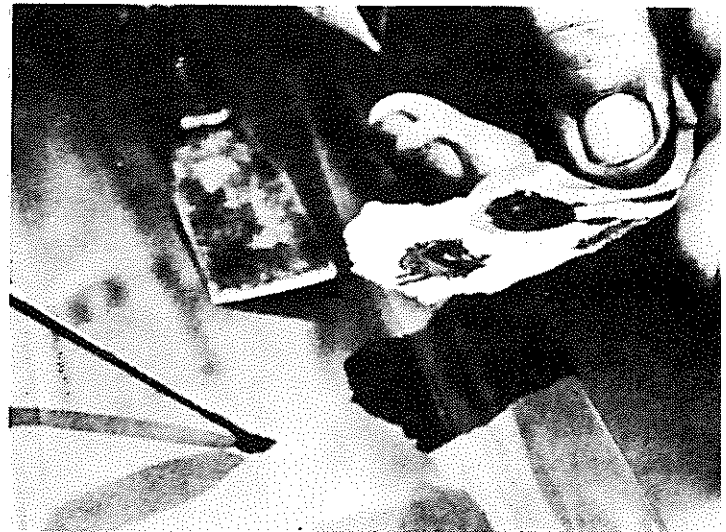
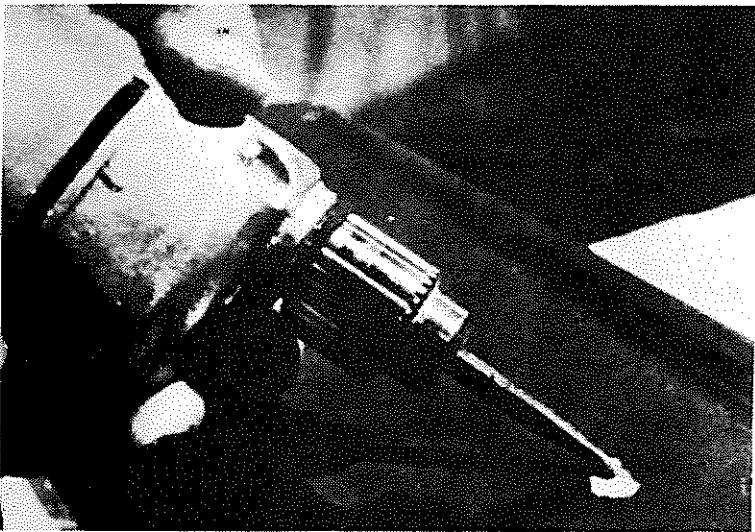
### 3.4.1 FIBERGLASS TOUCH UP AND REPAIR

#### Scratches, Shallow Nicks, Gouges, Small Holes (That do not penetrate through the hull)

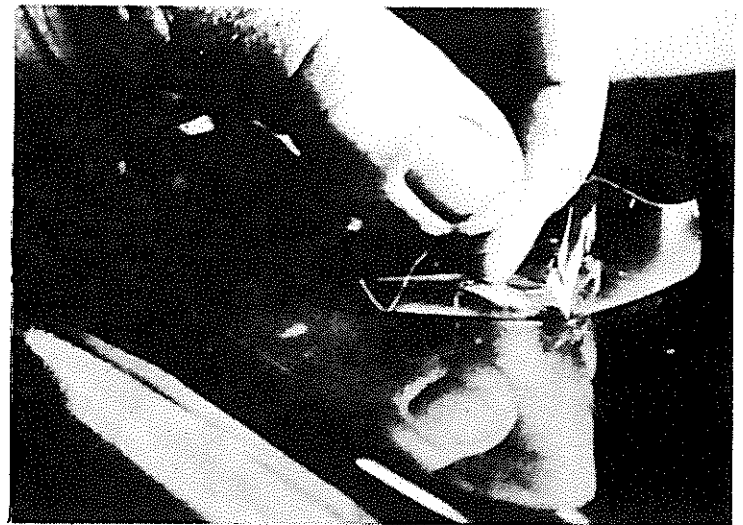
These repairs are easy because only the surface of the boat is damaged. They fall into two categories: (1) damage to the gel coat colored outer surface, and (2) holes or gouges that are deep enough to penetrate the fiber glass reinforced area of the boat. The repair operations are similar.

For damage to the gel coat surface, you will need a small can of gel coat, of the same color as your boat, and a small amount of catalyst. For deeper holes or gouges (1/8" or more) you will also need some short strands of fiber glass which can be trimmed from fiber glass mat or purchased in the form of "milled fibers." These materials can be purchased from your dealer.

- (1) Be sure the area around the damage is wiped clean and dry. Remove any wax or oil from the inside of the hole or scratch.
- (2) Using a power drill with a burr attachment, roughen the bottom and sides of the damaged area and feather the edge surrounding the scratch or gouge. Do not "undercut" this edge. (If the scratch or hole is shallow and penetrates only the color gel coat, skip to step No. 8.)
- (3) On a piece of cardboard or other non-metallic material, pour small amount of gel coat . . . just enough to fill the area being worked on. Mix an equal amount of milled fibers with this gel coat, using a putty knife or small flat stick. Then add two drops catalyst, using an eyedropper for accurate measurement. For half-dollar-size pile of gel coat, this amount of catalyst will give you 15 to 20 minutes working time before it begins to "gel." Carefully cut the catalyst into the gel coat and mix thoroughly.



- (4) Work this mixture of gel coat, fibers and catalyst into the damaged area, using the sharp point of a putty knife or knife blade to press it into the bottom of the hole and to puncture any air bubble which may occur. Fill the scratch or hole above the surrounding undamaged area about 1/16".

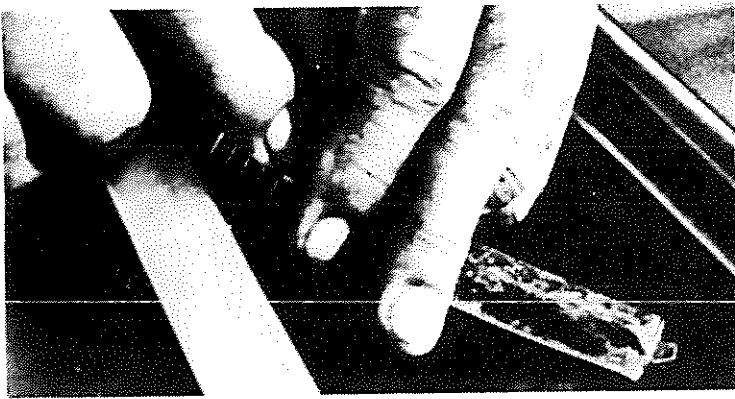


- (5) Lay a piece of cellophane or waxed paper over the repair to cut off the air and start the "cure."



(6) After 10 or 15 minutes the patch will be partially cured. When it feels rubbery to the touch, remove the cellophane and trim flush with the surface, using a sharp razor blade or knife. Replace the cellophane and allow to cure completely (30 minutes to an hour). The patch will shrink slightly below the surface as it cures.

(7) Again use the electric drill with burr attachment to rough up the bottom and edges of the hole. Feather hole into surrounding gel coat, do not undercut.

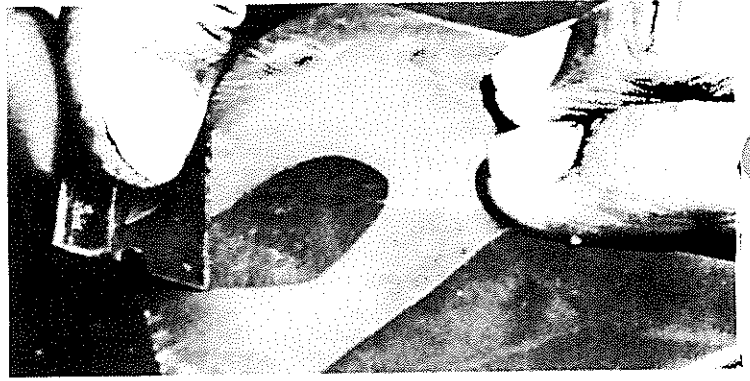


(8) Pour out a small amount of gel coat into a jar lid or on cardboard. Add a drop or two of catalyst and mix thoroughly, using a cutting motion rather than stirring. Use no fibers.

(9) Using your finger tip or the tip of a putty knife, fill the hole about 1/16" above the surrounding surface with the gel coat mixture.



10. Lay a piece of cellophane over the patch to start the curing process. Repeat step 6, trimming patch when partially cured.



11. Immediately after trimming, place another small amount of gel coat on one edge of the patch and cover with cellophane. Then, using a rubber squeegee or back of the razor blade, squeegee level with area surrounding the patch. Leave cellophane on patch for 1 to 2 hours, or overnight, for a complete cure.



12. USING A SANDING BLOCK, sand the patched area with 600 grit WET sandpaper. Finish by rubbing or buffing with a fine rubbing compound. Some slight color difference may be observed. Weathering will blend touch-up, if properly applied.

### 3.0 MAINTENANCE GUIDE (CONT'D.)

#### 3.4.2 CARE AND MAINTENANCE OF YOUR RUDDER:

The rudder is cast with blister resistant gelcoat and should be prepared and painted in the same manner as the underwater hull surfaces.

The rudder post is stainless steel and rotates in a laminated fiberglass tube, grease or lubricants are not recommended for the rudder post or tube as these will trap particulates and can actually increase friction or seize the post in the tube over a period of time. You should flush the rudderpost and rudder bearing tube with fresh water occasionally to rinse out trapped dirt.

A nylon bearing washer is fitted over the rudderpost under the retaining cap at the top rudderpost and under the hull between the rudder blade and hull which should be inspected seasonally. Replacement bearing washers are available through the Catalina parts department should these be required.

You should make periodic inspections of your rudder and look for possible damage from grounding.

The steering assembly should be inspected and maintained in accordance with the Edson maintenance guide supplied with this manual.

#### 3.5 BOTTOM PAINT PREPARATION:

All Catalina 34's built after February 1, 1988 have a blister resistant gel coat. Special precaution must be used when preparing this bottom for painting . Do not sand or reduce gel coat film thickness, use "no sand" type primer to prepare the surface for painting. Improper bottom preparation will void your Catalina Yachts Gel Coat Five Year Limited Warranty.

Anti-fouling paint should be applied to the bottom of your Catalina 34 if it is to be moored in either fresh or salt water for any length of time . There are many brands available. Anti-fouling paint prevents the growth of algae, barnacles, and other fouling organisms on underwater surfaces.

#### 3.6 TEAK MAINTANENCE:

Wood trim and parts -- most exterior wood is teak and can be kept looking good by occasional oiling with teak oil.

### 3.0 MAINTENANCE GUIDE (CONTD):

Should the teak become weathered, cleaning and bleaching with a commercially available teak cleaner and bleach will restore the color of the wood. Then oil the wood with a good grade teak oil to restore the golden color of the teak. Do not use wire or hard bristle brushes on the wood, as this will remove the softer wood between the annual rings and leave a rough surface.

Before applying oil or varnish, test it in an inconspicuous area to ensure that no discoloration will occur.

IMPORTANT: Always be sure to have adequate ventilation when working with any varnishes, cleaners, oils or paints.

### 3.7. SPAR AND RIGGING MAINTENANCE:

#### STANDING RIGGING:

Your boat is equipped with stainless steel standing rigging, and dacron running rigging, to give you years of trouble-free service. However, due to normal wear and tear, it is recommended that a periodic inspection be made on all fittings and wires. Turnbuckles should never be neglected and should be unscrewed from time to time in order that they do not seize. Every three months should be about right for the average sailor. A slightly bent turnbuckle shaft or broken wire in your shrouds should be replaced immediately.

Under most conditions, 1 X 19 standing rigging has a safe "working" life span of approximately five years: seven years under ideal conditions. Factors which reduce the life of the wire are environmental factors such as high humidity (Florida, the Caribbean, and Gulf States); high salinity (Great Lakes, Gulf States, or mooring near a sea wall with constant salt spray); extremes in temperature; and industrial pollution (pulp mills, generating plants, acid rain, and smog). High loading of the rigging as required in most racing boats also induces stress in the rigging system. Many of us have to deal with at least one of these conditions and should consider replacing standing rigging at the five year limit.

Unlike running rigging wire rope, which gives us clear signs that it is deteriorating by broken strands and "meat hooks", standing rigging may give no sign that failure is imminent. The usual point of failure of stay or shroud is approximately 1/4" inside the bottom swedged threaded stud fitting which threads into the turnbuckle barrel.

Although the stud is compressed around the wire during the swedging process, salt water and pollutants work down into the tine cavities between the wire strands and the inevitable corrosive process starts in the crevice the first time the rigging becomes wet with salt water.

A common method of visually monitoring swedge fitting conditions, employed by distance racers and cruisers, is to dab a small ring of enamel paint around the joint between the wire and the swedge fitting. This will help provide a means to see if the wire is pulling out of the fitting.

### 3.0 MAINTENANCE GUIDE (CONTD):

Another technique used to check the condition of swedge fittings is a "dye penetrant" test. This simple test will detect any cracks which may develop in the fittings due to internal pressure from the corrosive process. Inexpensive dye test kits usually are available at most welding supply stores. Dye tests usually are not required by weekend sailors, but may be done before an extended cruise or ocean passage if any doubt about the integrity of the rigging exists.

All stainless steel wire rope rigging will develop some rust film when new. This is normal.

The rust is caused by two factors. When wire rope is manufactured, the wire strands are fed over steel rollers during the process of twisting or laying the wire. Trace amounts of the ferrous steel from the rollers and dyes are transferred to the wire strands. As this small amount of steel rusts it causes a film on the new wire.

The second cause of the rust film on new wire rope is the microscopic veins of ferrous material which exist in all stainless steel. After a period of time, as the surface material veins are depleted, and the stainless steel has been cleaned several times, new rust film development will slow to a minimum.

For the average sailor, the best insurance against a rigging failure is a periodic (every six months is recommended) inspection of all rigging parts, including turnbuckles, and replacement of standing rigging as required.

IMPORTANT: If any wear or sign of broken strands is found on the running or standing rigging, it is time to replace that part. Using your boat when the rigging is worn could cause the rigging to fail when you least expect it.

#### FITTINGS:

Marine fittings today need little maintenance. Deck hardware should be hosed down with fresh water after each sail in salt water. Stainless steel fittings such as pulpits and lifeline stanchions should be cleaned and waxed periodically to maintain their appearance. Winches require occasional cleaning and lubrication. Where possible, a maintenance brochure for your winches has been included in this manual. Masthead fittings, halyard sheaves, etc., should be inspected, cleaned and lubricated periodically. Keep your equipment clean of dirt and salt.

#### SPARS:

Like all other fittings, the mast and boom suffer from salt water, air and spray. These should be kept waxed where possible, and at least always hosed down with fresh water. Always see that the halyards are tied off away from the mast. This will eliminate slapping in the wind, and subsequent marking of the mast. Keep the tack pin (which is located on front of boom) well lubricated, as the stainless steel pin can become seized in the aluminum gooseneck casting without proper lubrication.

### 3.0 MAINTENANCE GUIDE (CONTD):

Find a high pressure nozzle and shoot fresh water to the top of the mast and spreaders. This will help keep your sails clean too, as they rub on the mast and spreaders.

Inspect spreaders and spreader brackets for signs of fatigue. See that ends of spreaders are wired and well covered with tape to prevent wear on the sails.

Factory supplied painted masts are coated with Z-spar "True White" linear polyurethane, which should be touched up if damaged to prevent corrosion. The painted surface can be waxed using a good quality automotive wax.

### 3.8 SAIL MAINTENANCE:

Your sails should be protected from chafing. This can be done by either padding the areas that touch the sail or by having your sailmaker attach chafe patches to the sails themselves.

You should check your sails frequently for any signs of wear and have any tears or frayed stitches repaired immediately.

Sails should never be stored in the sun because they are susceptible to decay through exposure to too much ultraviolet light. Always keep your sails covered when they are not in use.

Sails should never be put away wet. If they are wet after sailing, leave them in loose bundles and dry them at your first opportunity.

For most problems, such as common dirt, dried or caked salt, etc., try scrubbing the surface with a soft bristled brush and liquid detergent. Avoid harsh powder detergents and stiff brushes, as they may damage the finish or stitching. This approach should work nicely for most applications. More severe stains can be taken care of by the following:

#### IMPORTANT: FOR WHITE SAILS ONLY

BLOOD: Soak the stained portion for 10 to 20 minutes in a solution of bleach (chlorox) and warm water. Generally 10 parts water to 1 part bleach. Scrub and repeat if necessary. Rinse thoroughly, particularly nylon, and dry completely.

OIL, GREASE, TAR AND WAX: Warm water, soap and elbow grease seem to be effective. On hard stains, propriety stain remover and dry cleaning fluids should do the trick. Be careful to remove all fluids, as they can soften the various resinated coatings on sailcloth.

RUST AND METALLIC STAINS: These types of stains are very often the most frustrating and difficult to remove. First scrub with soap and water, and apply acetone, M.E.K., or alcohol. As a last resort, you might try a diluted mixture (5%) of Oxalic soaked for 15 to 20 minutes. Hydrochloric Acid, 2 parts to 100 in warm water, will also work.

### 3.0 MAINTENANCE GUIDE (CONTD):

MILDEW: Hot soapy water with a little bleach will generally prevail. After scrubbing, leave the solution on the fabric for a few minutes and rinse thoroughly. When using a bleach, a residual chlorine smell may be present after rinsing. A 1% solution of Thiosulphate (photographer's Hypo) should remove all chlorine traces. Here again, rinse and dry well.

PAINT AND VARNISH: Acetone and M.E.K. should remove most common paint stains. Varnish can be easily removed with alcohol.

Temperkote or Mylar sails are still new and experimental. At this point in time, avoid most solvents, as they can damage the fabric over a period of time. Soap and diluted bleaches should take care of most stains.

Generally speaking, use all solvents with care. Always rinse and dry thoroughly. It should be emphasized that nylon ripstop spinnaker fabrics are less durable and more sensitive than their polyester counterparts. Bleaches and solvents can ruin nylon if not used properly.

Follow the above guidelines, take your sails into your sailmaker for periodic inspection, and you will have many effective seasons of racing and cruising pleasure.

### 3.9 INTERIOR CUSHION, FABRIC COVER:

#### CLEANING:

1. Regular vacuum cleaning or brushing in the direction of the pile with a soft brush.
2. Stains should, if possible, be removed at once with a damp cloth. Do not allow stains to harden and age.
3. Greasy stains can be removed with ordinary cleaning fluid.
4. For overall cleaning, use commercial types of upholstery shampoo using only the foam to protect the back padding from moisture. After a minute or so, remove foam, and when dry, vacuum or brush in the direction of the pile.
5. Do not use heat such as an iron or steam.
6. The use of some kind of fabric protector such as "Scotch Guard" is strongly recommended when the cushions are new, and after each cleaning.

#### 3.9.1 CURTAINS:

When curtains become soiled, Do not hand or machine wash, for it will weaken the material. Dry cleaning is the recommended procedure for the removal of any dirt or stains.

## 4.0 Y A C H T S Y S T E M S

### 4.1 RIGGING:

#### 4.1.1 STEPPING THE MAST:

1. Before stepping the mast check all standing rigging lengths against the checklist on Page 24.
2. Check all mast light wiring, be sure the masthead anchor light, steaming light and deck light function, the wires exiting at the base of the spar should be taped up to prevent damage when the spar is set on the step.
3. Prepare to step the mast in the following sequence:
  - a) Check all rigging lengths and inspect all end fittings.
  - b) Attach all shrouds, forestay and backstay. Tape clevis pins and spreader tips, check all halyards and tape to mast.
  - c) Check mast wiring and mast light wiring at mast step.
  - d) Slide mast collar boot over bottom end of mast and tape to mast near gooseneck.
  - e) Raise mast and guide through deck.
  - f) Before mast contacts maststep casting, slide tie down padeye into sail track on the aft side of the mast.
  - g) Attach shrouds, forestay and backstay.
  - h) Insert mast wedges between collar and mast, to center mast in collar. (4) wedges provided.
  - i) Install mast boot over deck collar and caulk with sealant.
  - j) Make electrical connections at base of mast for mast lights and check circuits.
  - k) Run halyards through turning blocks at deck collar.
  - l) Tune rigging at dock and when under sail.

#### 4.1.2 TUNING THE MAST:

Your mast is held aloft by the standing rigging (forestay, backstay, upper shrouds, fore and aft, lower shrouds). The term "tuning" refers to adjustment of the standing rigging so that the mast remains "in column" (not bent) when under load, this is accomplished by following the procedure outlined below:

##### AT THE DOCK:

1. Adjust forestay and backstay so that the mast is straight up and down. Tie a bolt to a 6 to 7 foot long piece of light line to make a quick plumb bob, and tape the free end of the line to the front of the mast as high up as you can reach. This device will help you to determine if the mast is perpendicular or not. Otherwise, sight your mast with the corner of a building.



#### 4.0 YACHT SYSTEMS (CONTD):

2. Adjust the upper shrouds so that the mast is straight up and down athwartships. That is, from side to side as opposed to bow and stern.
3. The upper shrouds should be firm but not bar tight. A 50 pound push should deflect the upper shroud about 1" at shoulder height.
4. The lower shrouds (4 of them) should be adjusted so that they are looser than the upper shrouds. While at dock, they should have no slack, but no tension either. No lower shroud, when pushed, should deflect the mast more than any other shroud when pushed equally hard. If this cannot be achieved, the upper shrouds are too tight. Back off one half turn at a time on the upper shroud turnbuckles until the tension on the lower shrouds is brought into balance.

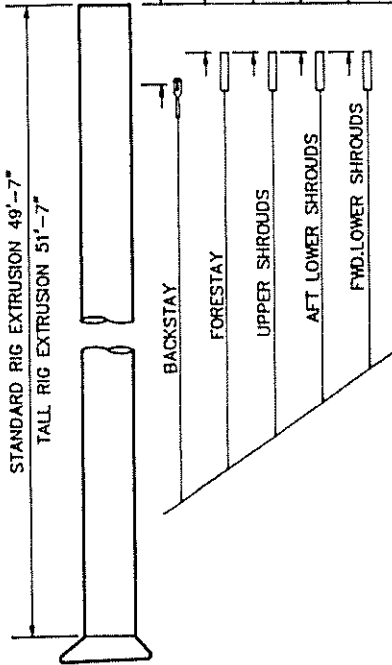
#### UNDER SAIL:

The object of fine tuning is to have the mast "in column" (not bent fore or aft or athwartships) when sailing in conditions typical for your area. This is accomplished through adjustments to the lower shroud turnbuckles. Here are some points to look for:

1. When sailing on port tack, sight up the mast from the base. If the middle (where the spreaders are) is sagging to leeward, take up equally on both port lower shrouds until the mast is "in column". Repeat this procedure on starboard tack.
2. If, when sighting up the mast while on port tack, the middle is bent forward (but not to leeward) take up a turn on the port aft lower shroud and let out a turn on the port forward lower shroud turnbuckle. Reverse these adjustments if the middle of the mast is aft of the "in column" position.
3. If a perfectly straight mast is not obtained, the mast head (top) may be curved aft and to leeward. The mast head should never be "hooked" forward nor to weather.

All rigging wire used on yachts has a tendency to stretch, especially on a new yacht and after you have sailed in heavier wind than you are normally familiar with. Therefore, you should periodically check the tension on the shrouds and stays, tightening them up if it is required. Rigging, as well as tuning, becomes all too important when setting up the mast. A knowledgeable person should oversee the rigging and tuning so as to eliminate the possibility of an eccentric load which might occur with an improperly loaded shroud. Special attention should be given to the initial stretch of the shrouds and a further gradual stretch of the wire over the first few hard outings.

STANDARD RIG EXTRUSION 49'-7"  
TALL RIG EXTRUSION 51'-7"



STANDARD	TALL	TOP FITTING	BOTTOM FITTING
17'-7"	17'-5 1/4"	EYE 5/8" PIN	FORK 5/8" PIN
5'-4 1/2"	5'-0"	EYE 5/8" PIN	5/8" STUD
5'-7 3/4"	5'-7 3/4"	EYE 1/2" PIN	1/2" STUD
5'-4 3/4"	5'-5 1/2"	EYE 1/2" PIN	1/2" STUD
5'-8 1/4"	5'-8 3/4"	EYE 1/2" PIN	1/2" STUD

**RUNNING RIGGING**

DESCRIPTION	MATERIAL	LENGTH	QTY.
TOPPING LIFT	3/32" WIRE 7x19	35' 0"	1
TOPPING LIFT TAIL	5/16" DACRON	53' 0"	1
REEFING LINE	3/8" DACRON	60' 0"	1
BOOM VANG LINE	7/16" DACRON	40' 0"	1
FOREGUY	3/8" DACRON	45' 0"	1
GENOA SHEET	7/16" DACRON	55' 0"	2
JIB SHEET	7/16" DACRON	40' 0"	2
TRAVELER CONTROL LINES	5/16" DACRON	24' 0"	2
SPINNAKER SHEET	7/16" DACRON	70' 0"	2
MAINSHEET	7/16" DACRON	60' 0"	1
2 <sup>nd</sup> REEFING LINE	3/8" DACRON	80' 0"	1

**STANDING RIGGING**

DESCRIPTION	MATERIAL	LENGTH		QTY.
		STD.	TALL	
BACKSTAY	5/16" WIRE 1x19	31'-9 1/4"	33'-11"	1
BACKSTAY BRIDLE**	1/4" WIRE 1x19	15'-0"	15'-0"	2
FORESTAY *	5/16" WIRE 1x19	43'-11 1/4"	46'-4 1/2"	1
UPPER SHROUDS	5/16" WIRE 1x19	42'-4 1/4"	44'-4 1/4"	2
AFT LOWER SHROUDS	1/4" WIRE 1x19	22'-5 3/4"	23'-5 1/4"	2
FWD LOWER SHROUDS	1/4" WIRE 1x19	22'-2 1/2"	23'-2"	2

\* For SCHAEFER furling system only

\*\* Bridle to be FORK to 3/8" STUD

**HALYARDS**

DESCRIPTION	MATERIAL	LENGTH		QTY.
		STD.	TALL	
MAINSAIL HALYARD	3/8" LOW STRETCH	115'-0"	119'-0"	1
JIB HALYARD	3/8" LOW STRETCH	115'-0"	119'-0"	2
SPINNAKER HALYARD	3/8" LOW STRETCH	115'-0"	119'-0"	1

NOTES: 1) TOLERANCES ±1/2"

2) MEASUREMENTS FROM CENTER OF EYE TO CENTER OF EYE OR END OF STUD

REV.N°	DESCRIPTION	DATE
2	TALL RIG LENGTHS	12-19-91
1	SINGLE LINE REEF	12-6-91
0	ORIGINAL ISSUE	10-15-91

*Catalina Yachts*

21200 VICTORY BLVD.  
WOODLAND HILLS, CA.  
91367-(818)884-7700

SCALE: NONE

APPROVED BY:

DRAWN BY

DATE: 10-15-91

DANIEL CASAL

TITLE:

**RIGGING LENGTH**

BOAT:

CATALINA 34

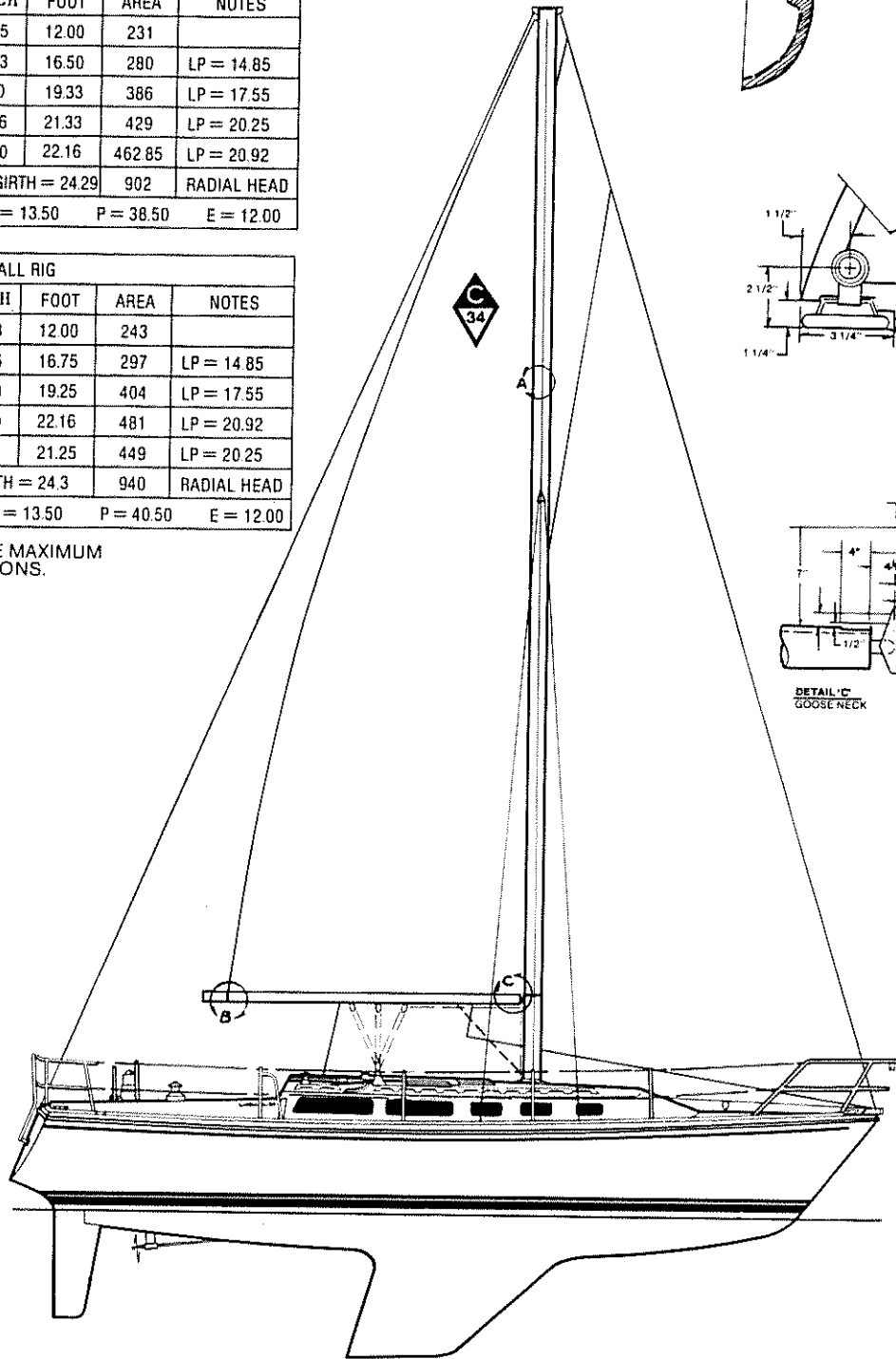
DRAWING NUMBER

340-34002/3-8

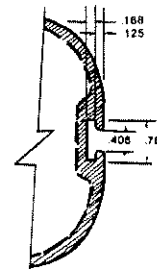
STANDARD RIG					
SAILS	LUFF	LEECH	FOOT	AREA	NOTES
MAIN	38.50	40.25	12.00	231	
110% JIB	37.83	33.83	16.50	280	LP = 14.85
130% JIB	44.00	40.00	19.33	386	LP = 17.55
150% FURL	42.33	41.66	21.33	429	LP = 20.25
155% GENOA	44.25	42.50	22.16	462.85	LP = 20.92
SPINNAKER	43.71	MAX. GIRTH = 24.29		902	RADIAL HEAD
	I = 44.0	J = 13.50	P = 38.50	E = 12.00	

TALL RIG					
SAILS	LUFF	LEECH	FOOT	AREA	NOTES
MAIN	40.50	42.33	12.00	243	
110% JIB	40.00	35.66	16.75	297	LP = 14.85
130% JIB	46.00	42.00	19.25	404	LP = 17.55
155% GENOA	46.00	44.00	22.16	481	LP = 20.92
150% FURL	44.33	43.41	21.25	449	LP = 20.25
SPINNAKER	45.54	GIRTH = 24.3		940	RADIAL HEAD
	I = 46.00	J = 13.50	P = 40.50	E = 12.00	

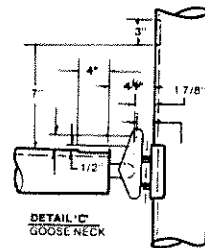
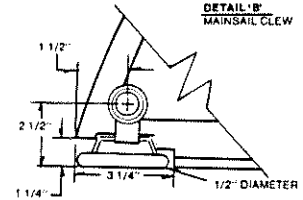
ALL SAIL DIMENSIONS ARE MAXIMUM RECOMMENDED DIMENSIONS.



DETAIL 'A'  
MAST SLOT



DETAIL 'B'  
MAINSAIL CLEW



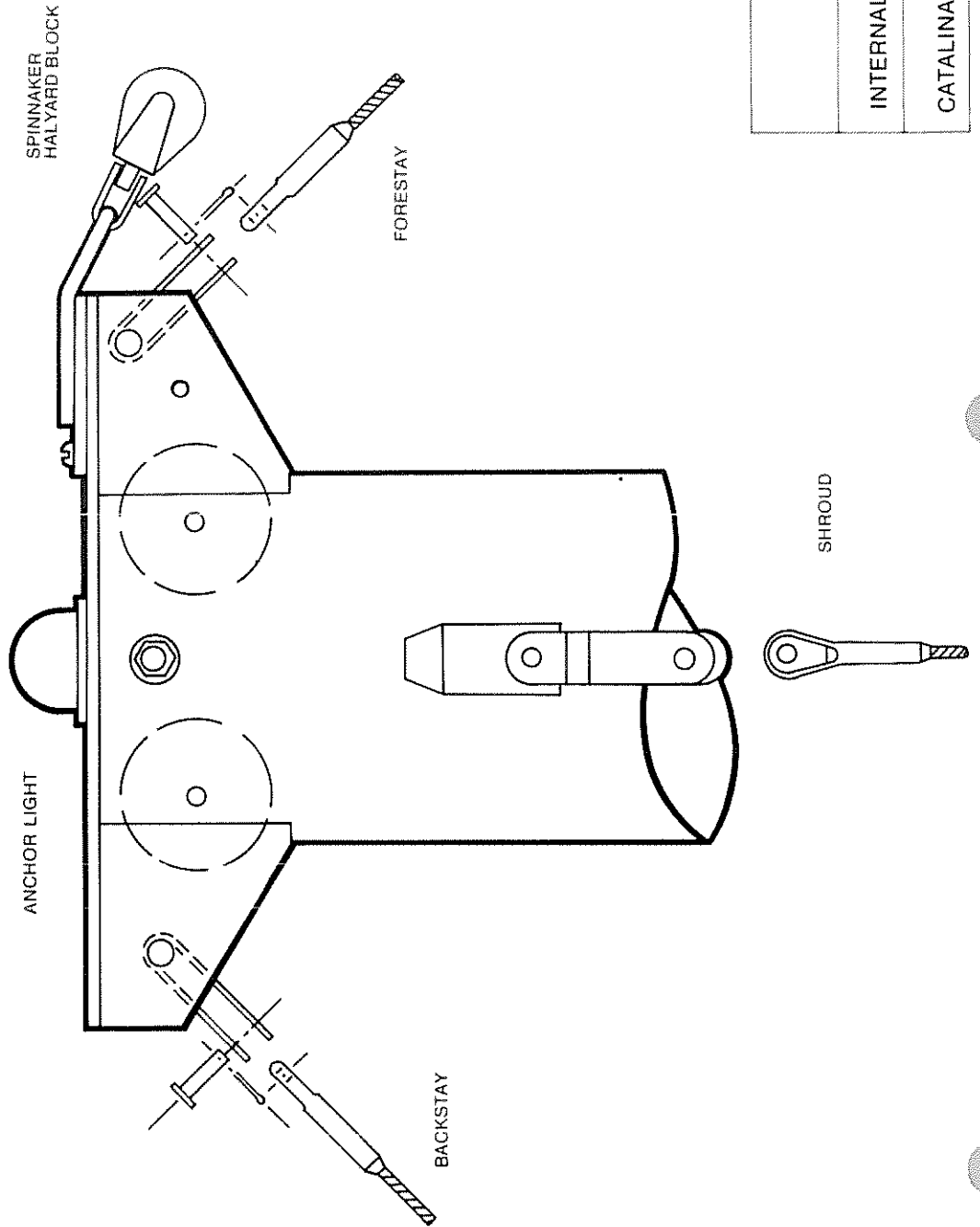
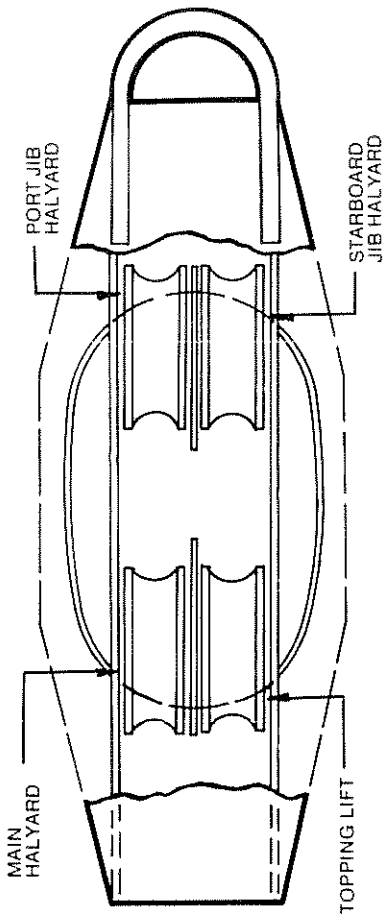
DETAIL 'C'  
GOOSE NECK

CATALINA YACHTS INC.  
21200 VICTORY BLVD.  
WOODLAND HILLS, CA

SAIL PLAN

CATALINA 34 OWNERS MANUAL

4.1.4



CATALINA YACHTS INC.  
 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

INTERNAL HALYARD MAST HEAD ASSEMBLY

CATALINA 34 OWNERS MANUAL 4.1.5

#### 4.0 YACHT SYSTEMS (CONT'D):

##### 4.1.6 MAINSAIL REEFING:

Reefing should always be done before it becomes necessary. Some sailors use the rule of thumb that if the thought of reefing occurs to you, it is time to reef. Sailing at extreme angles of heel, 25 degrees or more, is not efficient, fast or comfortable.

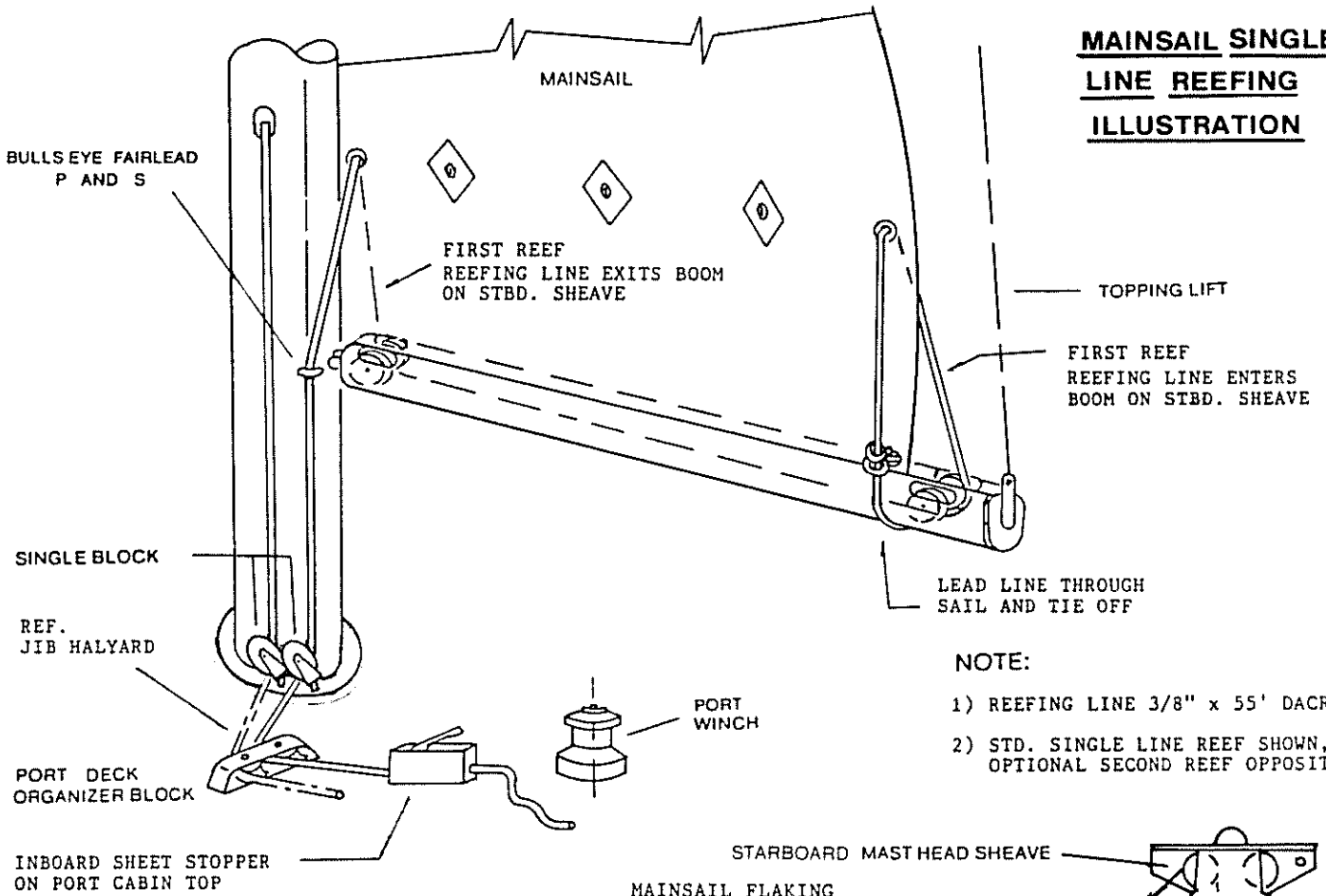
Your Catalina is equipped with single line reefing, for reefing the mainsail. The system consists of a line tied around the boom and reeved through the cringles, internal boom sheaves, and blocks as shown in the illustration. It is controlled through the port cabin top winch. A second reef line may be installed in a like manner, but to the opposite side of the boom, and led to the starboard side of the cockpit.

Tie a loop of line around the main boom with a bowline, through the cringles at the first reef and into the boom on the starboard sheave. The line exits the starboard forward sheave and through the cringle in the sail at the first reef. Lead the line to the turning block at the base of the mast, through the organizer on deck and through the sheet stopper to the winch on the port side.

##### REEFING PROCEDURE:

1. Take up the slack in the main boom topping lift, cleated to the starboard side of mast.
2. Ease the mainsheet.
3. Release the main halyard on the starboard side of the cockpit, to a predetermined point. (marking the halyard with ink or a colored thread into the line is helpful.) Recleat the halyard after lowering.
4. Pull the luff and leech cringles down to the boom by pulling the reefing line through the blocks with the port cockpit winch and cleat off.
5. Trim in the mainsheet.
6. Tie off remaining reef points with lines around boom.
7. Snug up the main halyard as required to flatten out the mainsail.
8. Ease the topping lift.

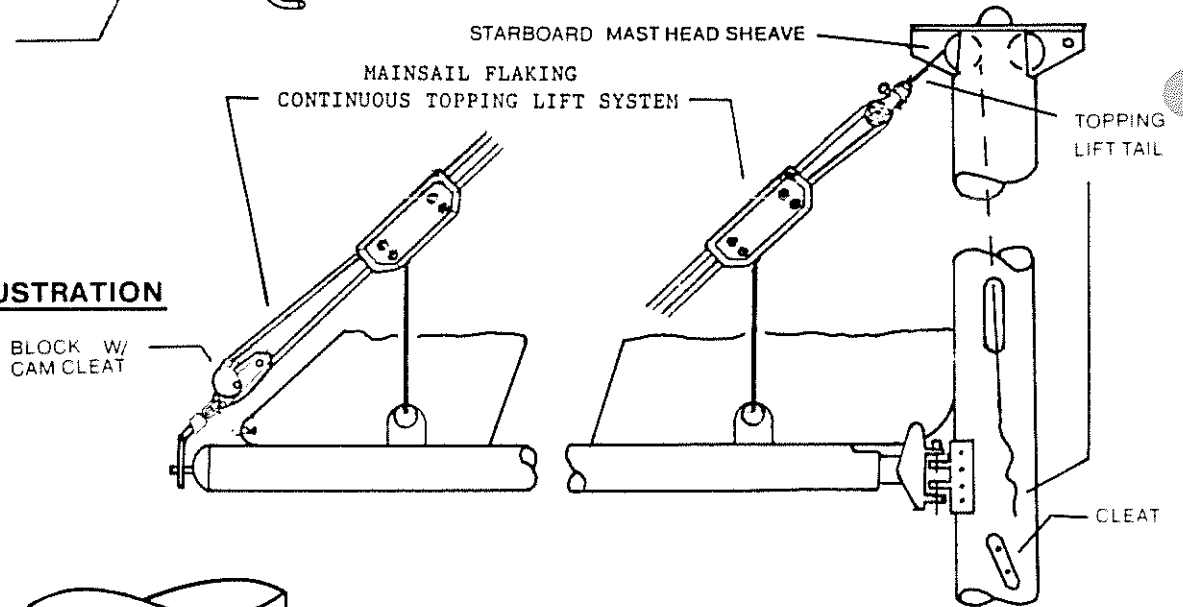
**MAINSAIL SINGLE  
LINE REEFING  
ILLUSTRATION**



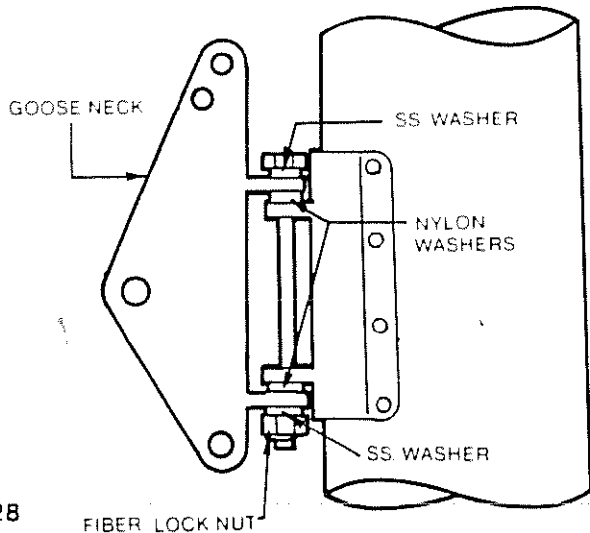
**NOTE:**

- 1) REEFING LINE 3/8" x 55' DACRON.
- 2) STD. SINGLE LINE REEF SHOWN, OPTIONAL SECOND REEF OPPOSITE SIDE

**TOPPING LIFT ILLUSTRATION**

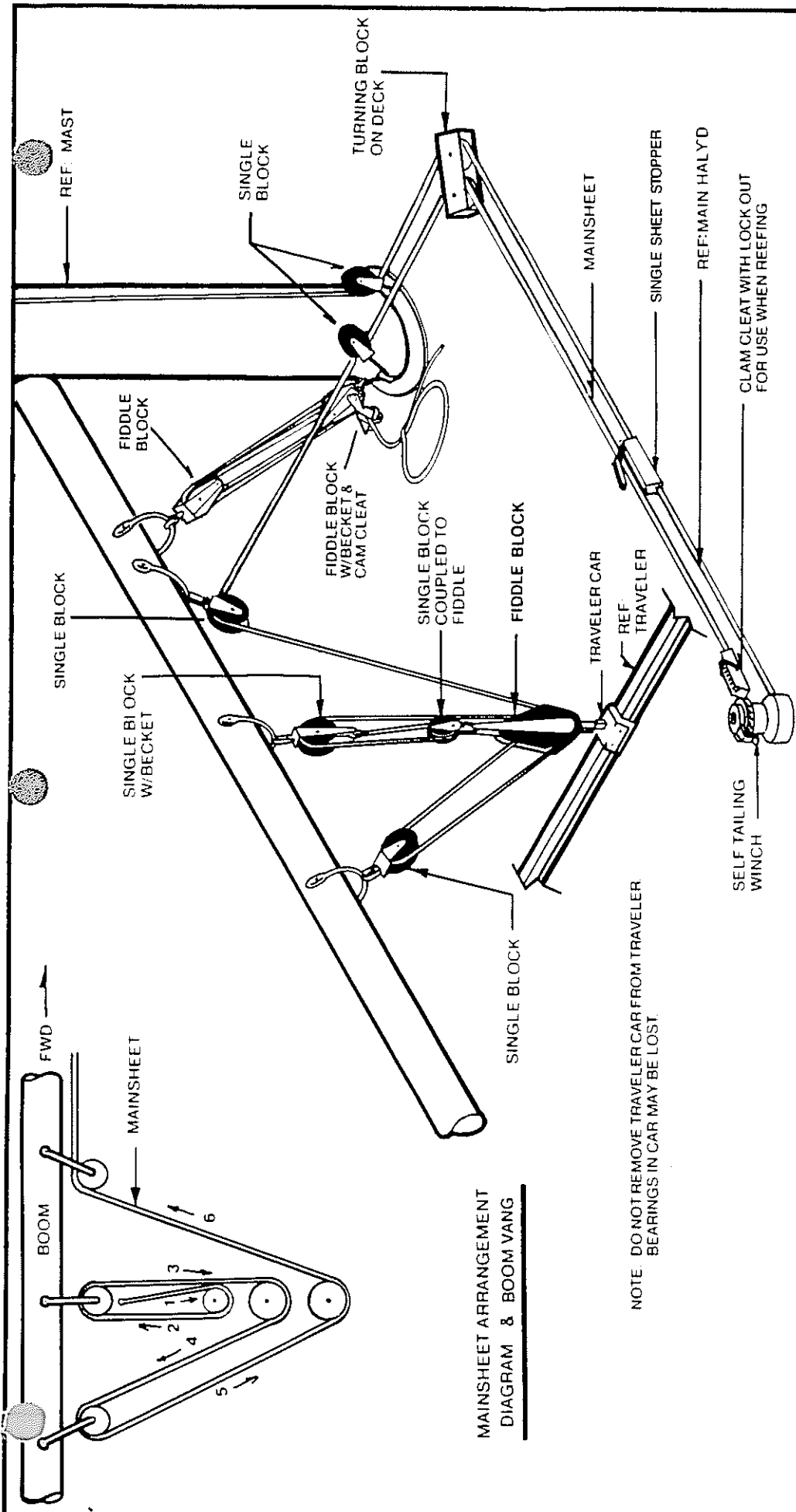


**GOOSENECK ILLUSTRATION**



\* BLOCKS ARE DRAWN OVERSIZE FOR CLARIFICATION

CATALINA YACHTS INC. 21200 VICTORY BLVD. WOODLAND HILLS, CA	
MAIN SAIL REEFING TOPPING LIFT ASSEMBLY GOOSE NECK ARRANGEMENT	
CATALINA 34 OWNERS MANUAL	1-25-92  4.1.7



**MAINSHEET ARRANGEMENT  
DIAGRAM & BOOM VANG**

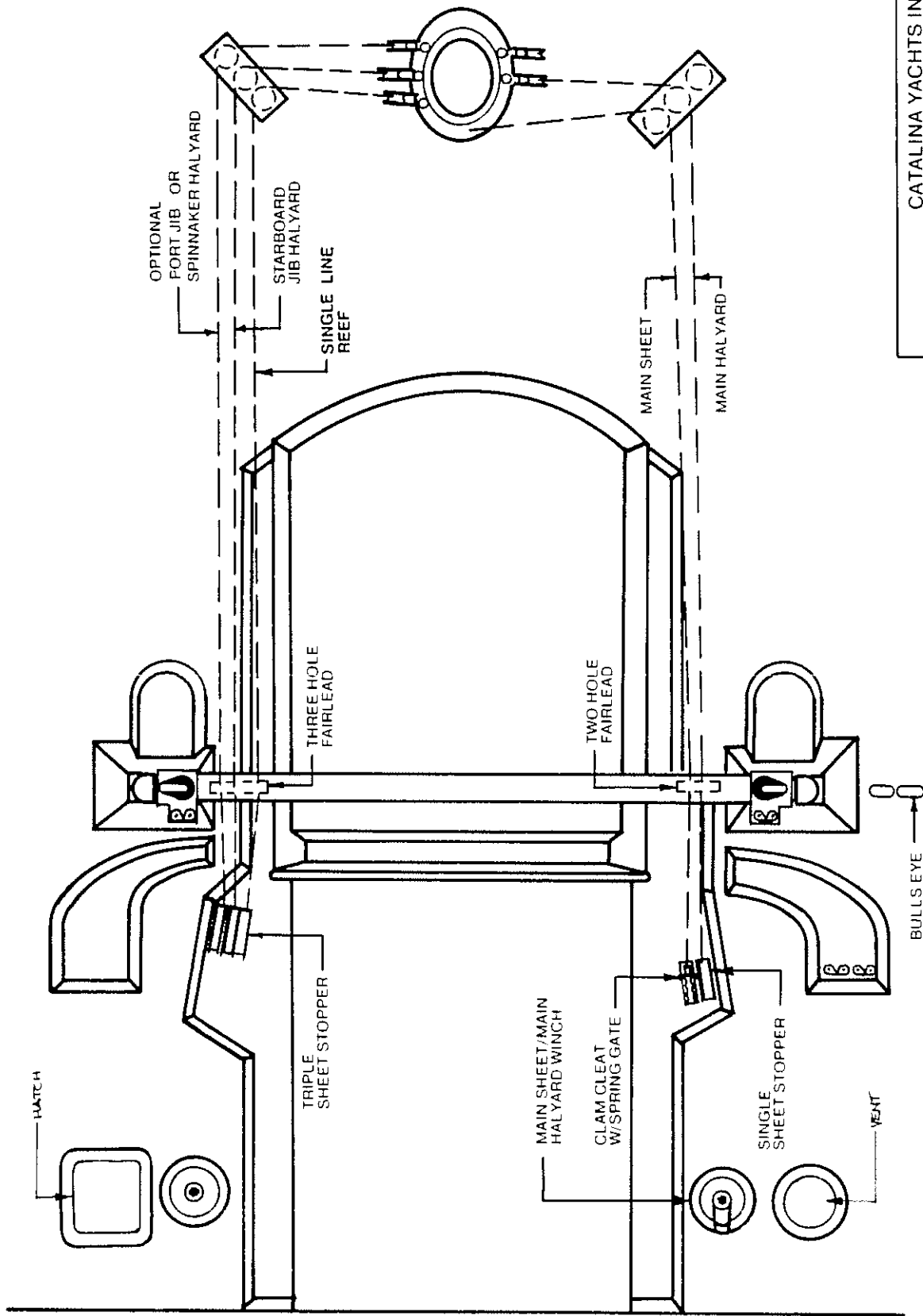
NOTE: DO NOT REMOVE TRAVELER CAR FROM TRAVELER BEARINGS IN CAR MAY BE LOST.

NOTE: DO NOT LEAD MAINSHEET THROUGH LOCK-OUT BAIL ON CAM CLEAT. THIS BAIL IS USED TO PREVENT THE MAINSHEET FROM ACCIDENTALLY ENGAGING IN CLEAT DURING NORMAL USE. USE CLEAT WHEN REEFING OR WHEN WINCH IS IN USE FOR MAIN HALYARD

CATALINA YACHTS INC.  
21200 VICTORY BLVD  
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MAINSHEET / TRAVELER ASSEMBLY  
BOOM VANG ASSEMBLY

CATALINA 34 OWNERS MANUAL 4.1.8

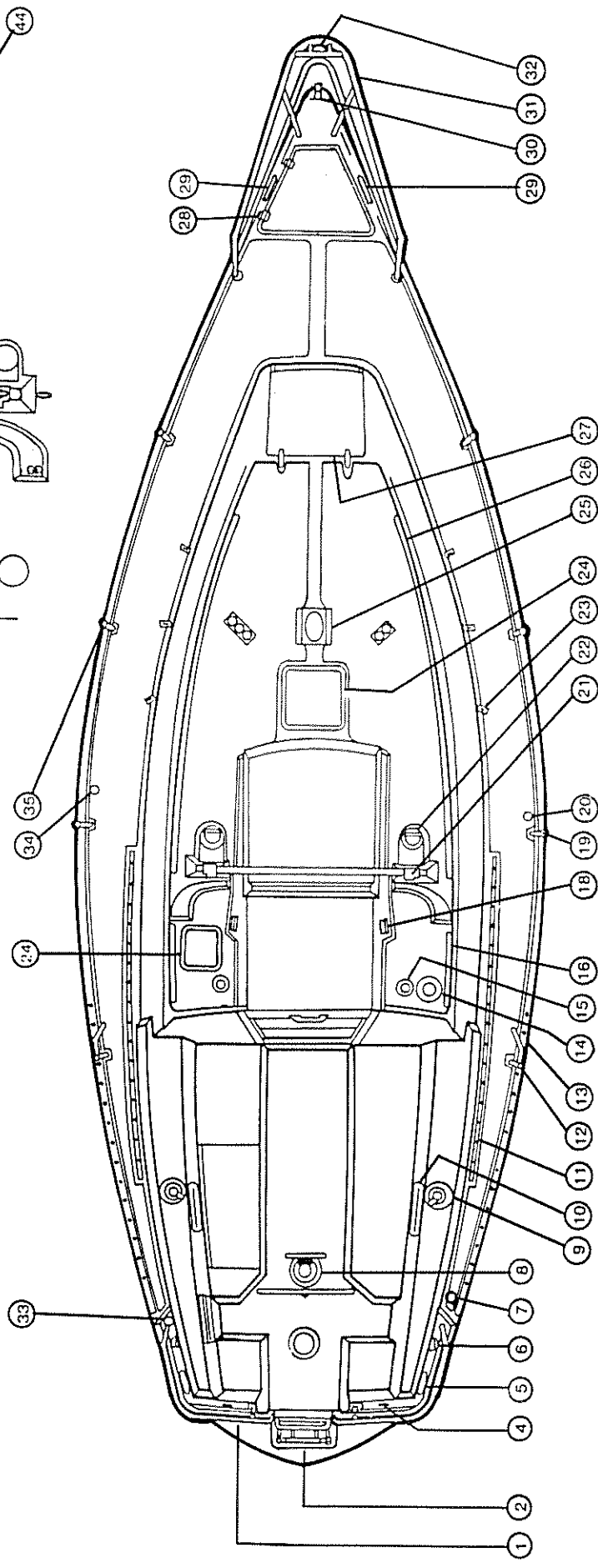
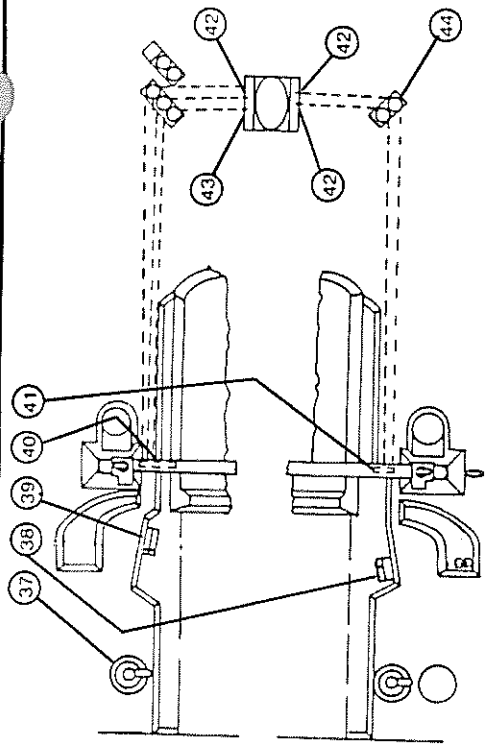


CATALINA YACHTS INC.  
 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

HALYARD ARRANGEMENT ILLUSTRATION



1. STERN PULPIT
2. STERN LADDER
3. BACKSTAY CHAINPLATES, P&S
4. 8" MOORING CLEAT, P&S
5. CLAMSHELL VENTILATOR, P&S
6. AFT WATER TANK FILL PLATE
7. FEDESTAL STEERING UNIT
8. PRIMARY WINCH, PER SCHEDULE
9. COAMING COMPARTMENT, P&S
10. SAIL TRACK
11. GATE STANCHION, P&S
12. T-RACK, P&S (STD. w/SPINN. GEAR OR SEPARATE AS OPTION)
13. LOW PROFILE DECK VENT
14. MAINSHEET/MAIN HALYARD WINCH
15. TEAK HANDRAIL, P&S
16. STERN PULPIT
17. STERN LADDER
18. SINGLE ROPE CLUTCH
19. VENTED STANCHION
20. STARBOARD WATER TANK FILL PLATE
21. TRAVELER SYSTEM, 3:1
22. COWL VENTILATOR, P&S
23. CHAIN PLATES w/COVERS
24. DECK HATCH
25. MAST STEP
26. TEAK HAND RAIL, P&S
27. FORWARD HATCH
28. ANCHOR LOCKER HINGE (4)
29. 8" MOORING CLEAT
30. STEMHEAD FITTING
31. BOW PULPIT
32. BOW LIGHT
33. FUEL FILL PLATE
34. WASTE TANK PUMP OUT (w/VENTED STANCHION)
35. STANCHION
- 36.
37. PORT HALYARD WINCH
38. CLAM CLEAT w/SPRING GATE



CATALINA YACHTS INC.  
 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

DECK HARDWARE

CATALINA 34 OWNERS MANUAL 4.1.10

#### 4.0 YACHT SYSTEMS (CONTD):

#### 4.2 ELECTRICAL:

##### 4.2.1 BATTERIES:

Your electrical system is powered by a marine grade, 12 volt, deep cycle, 90 amp hour battery. Attention should be given to maintaining the proper level of distilled water. Do not overfill. The batteries are located under the starboard settee.

The batteries are provided with a tie down to prevent tipping over at extreme angles of heel. Be sure these tie downs are fastened securely.

With proper care, the battery installed in your Catalina 34 will provide long and satisfactory service. Proper care is not difficult if a few basic points are kept in mind.

Your battery should be checked periodically for any cracks or breaks in the case or cover and any cracks in the sealing compound. If there is any damage, the battery should be repaired at once.

WARNING: The electrolyte in a battery is a solution of sulfuric acid. If any should enter the eyes, rinse immediately with large amounts of fresh water and seek medical attention. Electrolyte spilled on skin should be rinsed well with fresh water also. Even a small amount of electrolyte spilled on clothing will destroy the clothing.

##### ELECTROLYTE LEVEL:

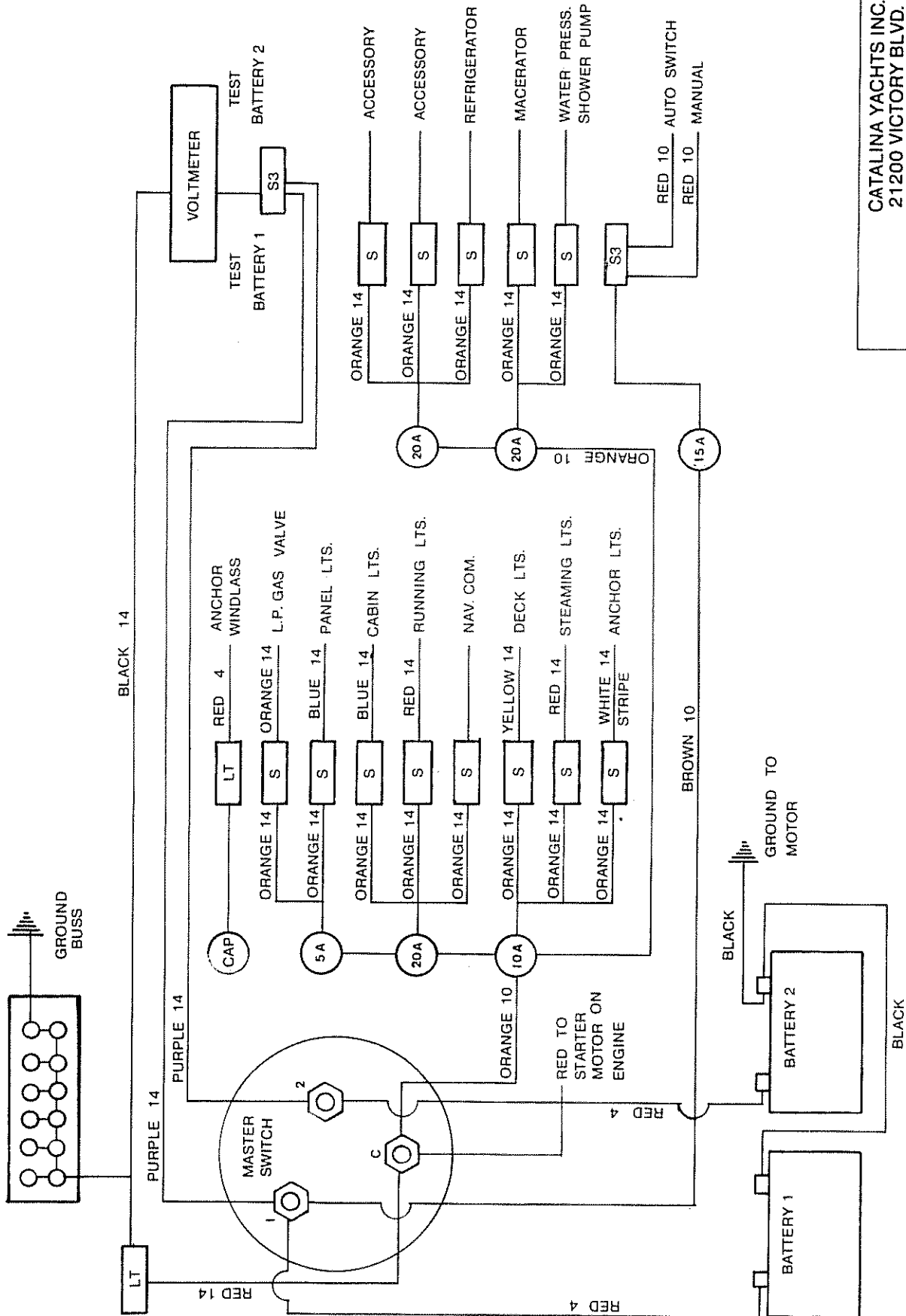
The electrolyte level in a battery should never be allowed to fall low enough to expose the plates. This not only results in a loss of battery capacity while the battery is low, but will cause hardening of the active material on the battery plates. This will result in a permanent loss of battery capacity.

CAUTION: Use only pure distilled water to replenish electrolyte levels. The water from many city water supply systems is unsatisfactory for battery use.

##### CHARGING THE BATTERY:

Before adding water, a hydrometer reading of the battery should be taken. If the reading shows the battery to be above 1.225 specific gravity, the battery has a sufficient charge. If the reading is below 1.225, the battery should be removed for bench charge.

IMPORTANT: Do not leave your batteries on charge for more than forty-eight (48) hours. If there is no rise in voltage or specific gravity in a period of two hours, further charging is useless and may damage the battery beyond repair.



CATALINA YACHTS INC.  
 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

12 V.D.C. PANEL SCHEMATIC

CATALINA 34 OWNERS MANUAL 4.2.5

NOTE:  
 USE FLANGED SPADE OR  
 RING TERMINALS - NO STRAIGHT  
 SPADE TERMINALS PER NIMMA

#### 4.0 YACHT SYSTEMS (CONTD):

Once charged, the battery should have a specific gravity of at least 1.260. If this cannot be reached, the battery should be inspected by a battery supplier.

The batteries should be checked often to ensure that they do not run down. Check that all battery cells keep an even fluid level and that the fluid is about 3/8" above the top of the separators.

If one or two cells have lower fluid levels, it is a good indicator that something is wrong with the battery, and it should be checked.

##### DISCHARGED STATE:

Leaving a battery in a discharged state for any length of time can also result in a permanent loss of capacity for the battery. Since it will freeze at relatively low temperatures, leaving it in the cold weather can destroy the battery.

##### CLEAN CONNECTIONS:

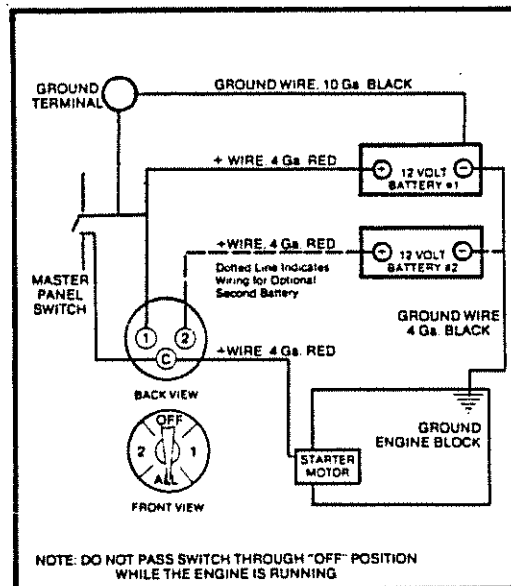
Keep battery connections clean and tight. A cupfull of strong baking soda solution and a toothbrush will clean corrosion from the terminals and neutralize any spilled acid (do not allow any of the solution to enter the battery cells). A coating of petroleum jelly on the battery terminals will inhibit corrosion.

#### 4.2.3 MAIN BATTERY SWITCH:

The circular battery switch (see illustration 4.2.4) has the markings 1, 2 and "ALL" as well as "OFF". You can selectively charge the battery with the engine alternator. Many experienced sailors use battery #1 for electrical lighting needs and keep #2 in reserve for starting the engine.

When the engine is running, never pass through the "OFF" position to charge from one battery to the other or the alternator diodes will be burned out.

If both batteries are of equal charge, keep the selector switch on "ALL" position, and use "ALL" to start the engine if both batteries are low.



MAIN BATTERY  
SWITCH SCHEMATIC

4.2.4

#### 4.0 YACHT SYSTEMS (CONTD):

##### 4.2.5 ELECTRICAL SYSTEM:

The Catalina 34 is equipped with a standard 12 volt DC system and an optional 110-115 volt AC system. The wiring is run to prevent chaffing or contact with water, where possible, and is supported as needed. We recommend that you check all the connections at least once a year for corrosion, loose fittings, etc.

##### DC - 12 VOLT SYSTEM:

The DC system is powered by two deep cycle batteries located under the settee seat forward of the galley.

##### MAIN DC CIRCUIT BREAKER:

Operating switches for lights and accessories are located on the main switch panel. The main circuit breaker will automatically trip to the OFF position in the event of an overload to the circuit. If the breaker trips to OFF, the cause should be determined and any necessary repairs should be made before repositioning the circuit breaker switch to ON.

Before purchasing any electrical accessories for your boat, ensure that they are compatible to a negative ground system.

The electrical panel is located above the chart desk on the port side. It is attached with screws which can be easily removed for maintenance access.

IMPORTANT: Be sure to disconnect the batteries and disconnect A.C. shore power cord before opening the panel, or severe injuries may result.

All wires, terminals and connections should be checked periodically for loose connections or corrosion which could cause high resistance, electrical sparks or fires. The engine accessory wiring should also be checked at this time.

##### NAVIGATION LIGHTS:

Navigation lights should be used in accordance with the rules and regulations of the waters in which you intend to sail.

Generally, navigation lights should be used from dusk to dawn in all weather conditions. It is advisable to use the navigation lights any time visibility is poor.

Your Catalina 34 is equipped with the following navigation lights:

- (a) Red and Green 112.5° combination running lights mounted on the bow pulpit.

4.0 YACHT SYSTEMS (CONTD):

- (b) White 135° stern running light mounted on the stern pulpit.
- (c) White 225° steaming light mounted on the mast.
- (d) White 360° anchor light mounted on the masthead.

(a) and (b) are wired to the running light switch on the panel.  
(c) is wired to the steaming light switch, and (d) is wired to the anchor light switch.

When underway by sail, the bow running light and stern running light must be used. When underway by power, the steaming light, bow and stern running lights must be on. At anchor, the anchor light should be on, the running (a) and (b) and steaming (c) should be off.

AC - 110-115 VOLT SYSTEM:

The 110V AC power system depends upon the boat being connected to a 110V-30 amp shore power connector. The factory option offers a 50' shore power cable which should be plugged into the 110V inlet on the boat (located in the cockpit area) and into the shore power connector on the dock.

IMPORTANT:            TO MINIMIZE SHOCK AND FIRE HAZARDS:

1. Turn off the boat's shore connection switch before connecting or disconnecting the shore power cable.
2. Connect the shore power cable at the boat first.
3. If the polarity warning indicator is activated, disconnect the cable immediately.
4. Disconnect the shore power cable at the shore outlet first.
5. Close the shore power inlet cover tightly.
6. DO NOT ALTER THE SHORE POWER CABLE CONNECTORS IN ANY WAY. SEVERE INJURY MAY OCCUR.

Care should be taken to support the shore power cable at both ends to allow sufficient slack to avoid pulling. Remember to allow for the tide.

The master breaker switch is 30 amp, two pole. There are five (5) 110V outlets. Be certain that all 110 volt appliances, other than lamps, have an adequate grounding connector. Wet feet or moist atmosphere increases the potential shock hazard.

#### 4.0 YACHT SYSTEMS (CONTD):

There is a reverse polarity indicator on the panel. With all switches off, attach the power cable to the inlet. Next, attach the power cable to the dock outlet. If the reverse polarity light comes on, DISCONNECT THE CORD IMMEDIATELY! This indicates a reverse polarity situation which is very dangerous.

WARNING: Do not open the electrical panel for any purpose with the shore power cable connected to the dock. 110 volt wiring is exposed when the panel is open. Contact with 110 volt wiring can cause electrocution. Electricity is dangerous. Even when safety devices are present, handle with care and use reasonable caution.

#### GROUND FAULT INTERRUPTER:

G.F.I. receptacles are designed to provide protection against electrical shock hazards due to line-to-ground faults. Although the G.F.I. receptacle does not limit the magnitude of the fault current, and therefore cannot prevent electrical shock, it does limit the duration of the shock to a period considered safe for normal healthy persons. G.F.I. receptacles will provide protection against ground faults only. They will not protect against overloads or short circuits. There is no known device that will guard against the electric shock hazard resulting from contact with both the 'hot' and neutral wires of the electrical circuit.

The 110V AC outlets in the Catalina 34 are protected by the G.F.I. receptacle located at the navigation desk. If there is a power failure which does not affect the fuse or breaker serving these outlets, unplug all cord-connected appliances from the protected outlets and restore power by pressing the red RESET button on the receptacle. Push the RESET back in and reconnect the appliances one at a time. Any defective appliance will trip the button and should be repaired at once.

If the appliances are all disconnected, and the RESET button will not stay in, call a qualified electrician. If the RESET button does not pop out when the blue TEST button is pressed, PROTECTION IS LOST. Do not use any of the outlets and call a qualified electrician immediately.

IMPORTANT: Your Ground Fault Interrupter Circuit should be tested regularly. Use the following steps:

1. Push the blue TEST button. The red RESET button should pop out. Power is now out at that outlet indicating that the circuit is operating properly.

4.0 YACHT SYSTEMS (CONTD):

2. If the button does not pop out when testing, do not use that outlet. Protection is lost and a qualified electrician should be called.
3. To restore power, push the RESET button.

PREVENTIVE MAINTENANCE:

This consists of periodic inspection and protection against any damage created by the elements. Electrical systems are adversely affected by moisture and a salt-air environment.

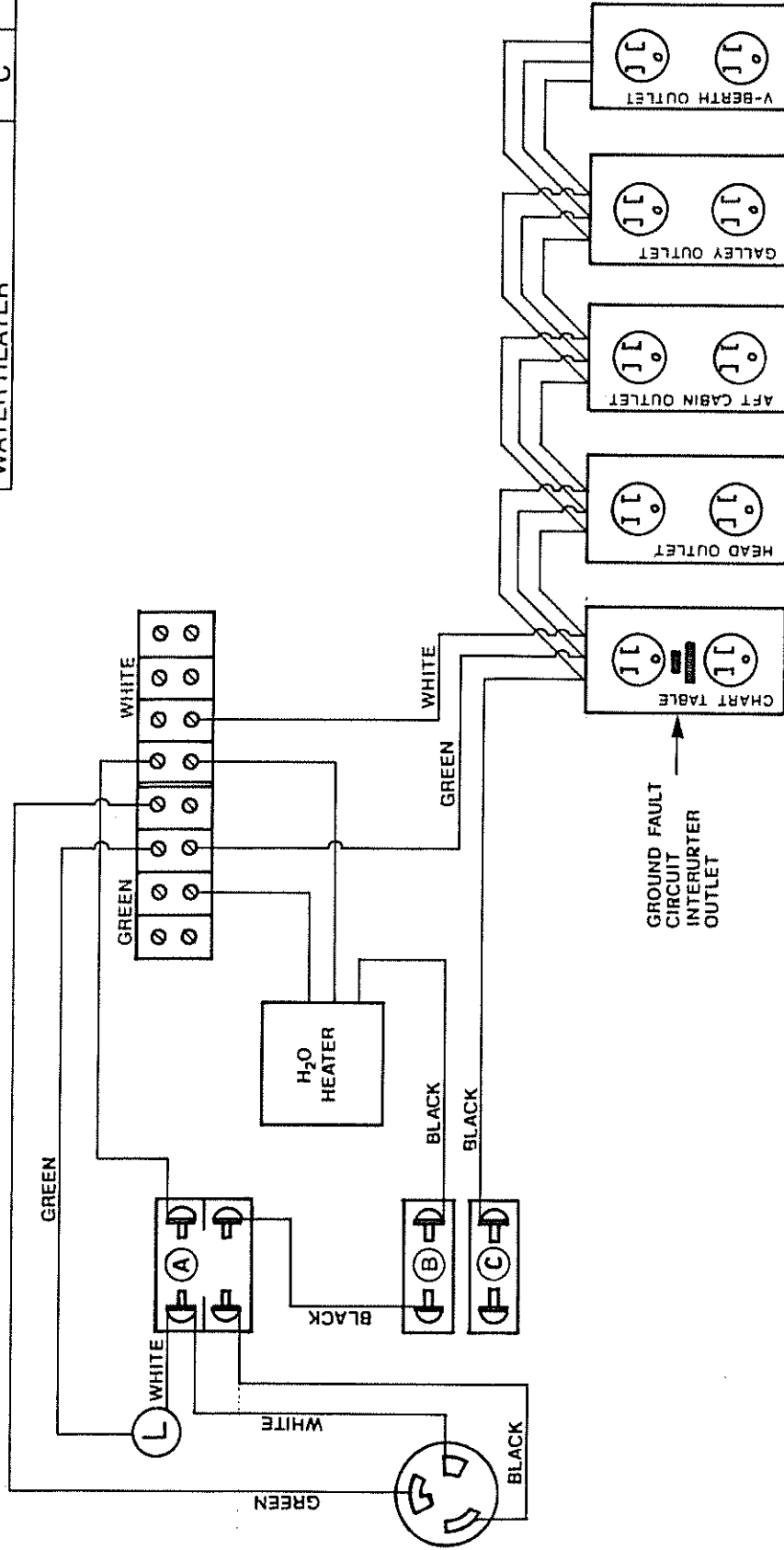
The system can be protected by the application of aerosol sprays such as WD-40 or CRC. All wire harnesses and connections should be checked periodically to ensure that fastenings are secured and that everything is clean with no sign of damage or corrosion. It is extremely important that all connections be kept clean.

WARNING:

Do not perform any maintenance or repair on a live circuit. Do not turn the main DC switch off while the engine is running. This could cause damage to the alternator.



BREAKER		AMP
MAIN A.C.	A	30
OUTLETS	B	15
WATER HEATER	C	20

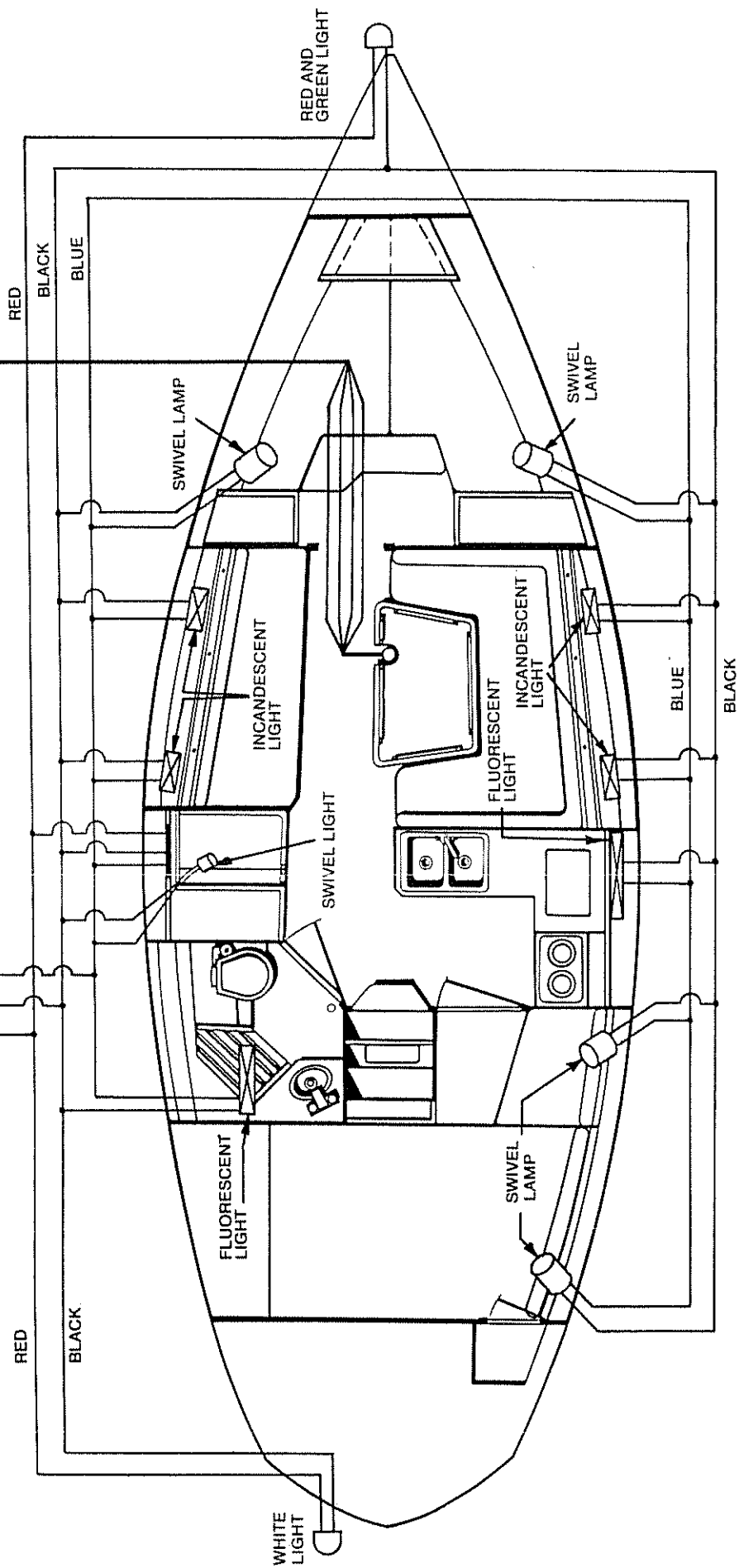


CATALINA YACHTS INC.  
 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

110 VOLT/SHORE POWER SCHEMATIC

CATALINA 34 OWNERS MANUAL 4.2.5

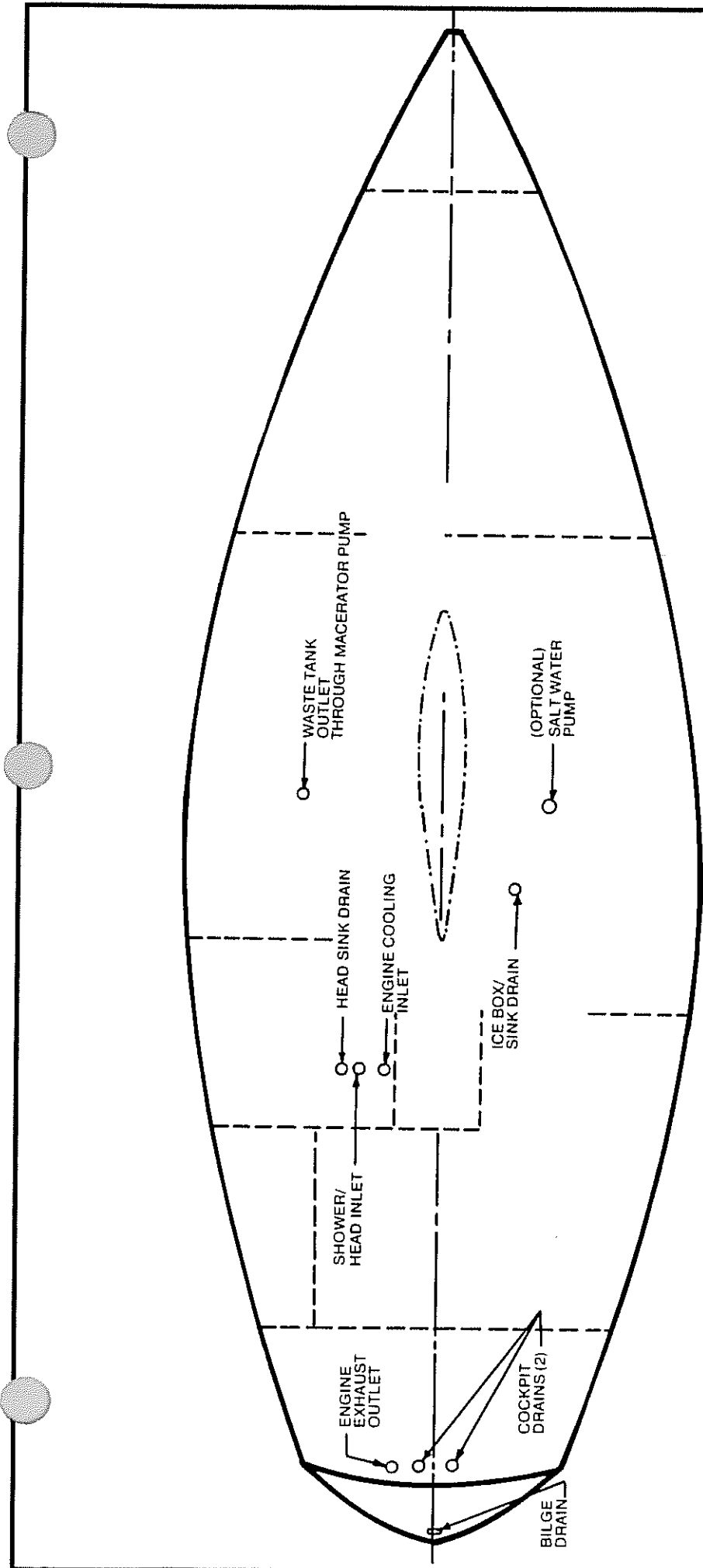
- MAST LIGHT GROUND GREEN
- ANCHOR LIGHT WHITE
- BOW LIGHT YELLOW
- SPREADER LIGHT ORANGE
- RUNNING LIGHTS RED
- GROUND BLACK
- CABIN LIGHTS BLUE



CATALINA YACHTS INC.  
 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

12 VOLT SCHEMATIC

CATALINA 34 OWNERS MANUAL 4.2.5



- CENTERLINE
- - - BULKHEADS
- · - · - KEEL OUTLINE

CATALINA YACHTS INC. 21200 VICTORY BLVD. WOODLAND HILLS, CA	
THROUGH HULL LOCATION	
CATALINA 34 OWNERS MANUAL	4.3.1

4.0 YACHT SYSTEMS (CONTD):

4.3 PLUMBING:

4.3.2 MARINE TOILET OPERATION:

USING THE HEAD:

1. Read the instructions supplied by the toilet manufacturer for operating your marine toilet. These instructions are also printed on the toilet pump housing. Be sure everyone who will be using the head is familiar with these instructions.
2. Immediately before using the head, the inlet valve "A" (see illustration 4.3.3) must be opened. This provides flushing water to the toilet. The valve should be kept closed when the head is not in use. This will prevent water from flooding the boat if the valve in the toilet pump should fail.
3. Waste will be pumped directly into the holding tank when the bowl is emptied. A minimum amount of water for every flush should be used in order to take best advantage of the tanks capacity between pump-outs.
4. The condition of the holding tank should be checked from time to time. Overfilling can cause the tank to burst.
5. To clean the head, use hot water and soap. High strength cleaners may cause damage to the valves and seals in your pump system. If there is any problem with the head, it should be corrected immediately.

EMPTYING THE TANK THROUGH THE DECK DISCHARGE PLATE:

1. The holding tank should be emptied via the deck discharge plate only at approved shore-based pump-out stations.
2. Remove the cap from the deck discharge plate. The threads on the plate cap should be periodically coated with silicone spray or petroleum jelly to ensure a good seal.
3. The pump-out station suction hose should form a seal at the deck plate.
4. Be sure inlet valve "A" is closed when the tank is being emptied.
5. After the tank is empty, you may wish to open valve "A:" and pump some water through the toilet and into the tank to dilute residual sludge and rinse the tank and lines.
6. Close all valves after the tank is emptied and recap the deck plate.

#### 4.0 YACHT SYSTEMS (CONTD):

##### EMPTYING THE TANK USING THE MACERATOR PUMP:

1. Read the macerator pump operating instructions supplied by the pump manufacturer.
2. Close the inlet valve "A".
3. Open the through hull valve "B".
4. Turn on the pump with the switch on the 12 volt panel.
5. The pump will change tone after it becomes primed. It will resume the higher pitched tone after the tank is emptied.
6. You may wish to rinse the tank, hose lines, and macerator pump by pumping clear water through the head, then repeating the procedure for emptying the tank.
7. Close valve "B" immediately after emptying the holding tank.

##### 4.3.3 MACERATOR PUMP AND TROUBLESHOOTING:

PROBLEM 1: The macerator pump motor starts then stops.

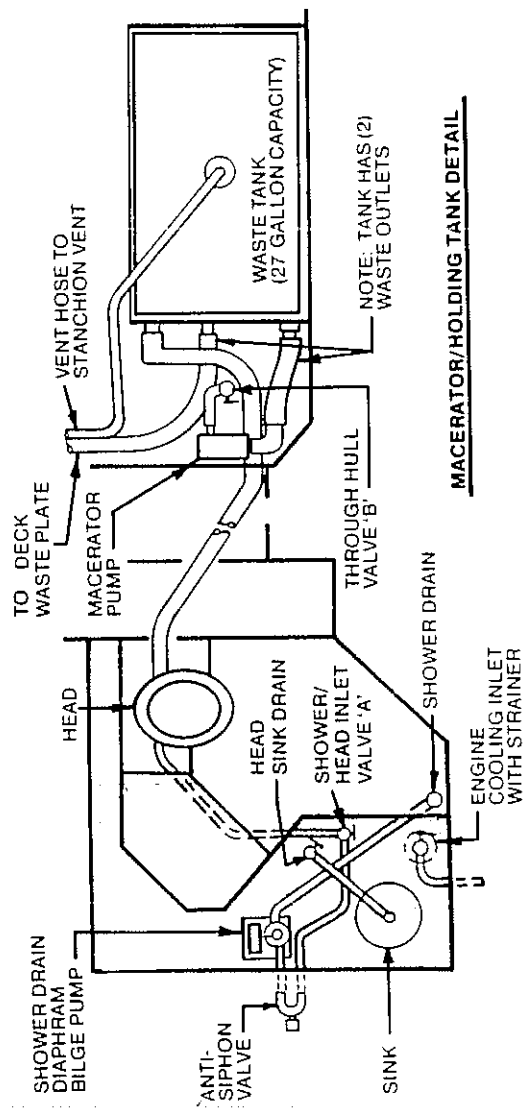
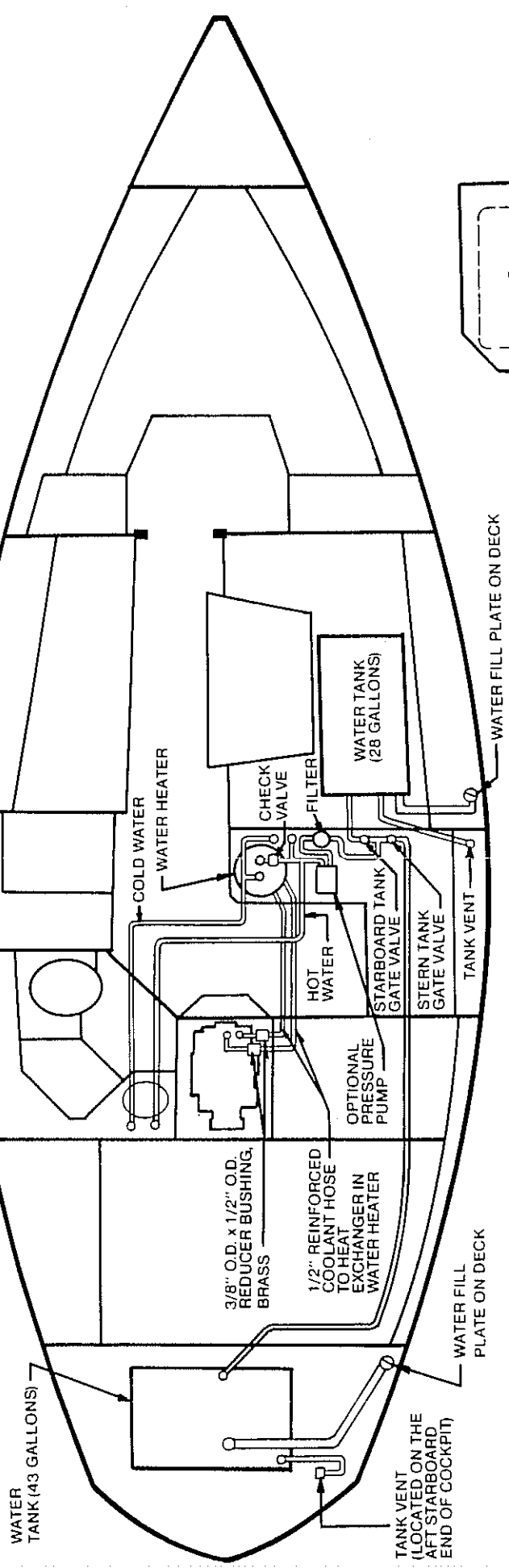
- A. Check the breaker: It should be "IN" or "ON".
- B. Check the valves: "B" valve must be open.
- C. Check the vent line. If the boat has been sailed at extreme angles of heel, fluid may be clogging the vent line. Disconnect the vent at the tank and empty the hose into a disposable container
- D. Sludge may have formed in the bottom of the tank. This should be diluted as much as possible. The tank should be emptied regularly to prevent sludge build up.

PROBLEM 2: The head toilet pump has excessive back pressure and will not evacuate the bowl.

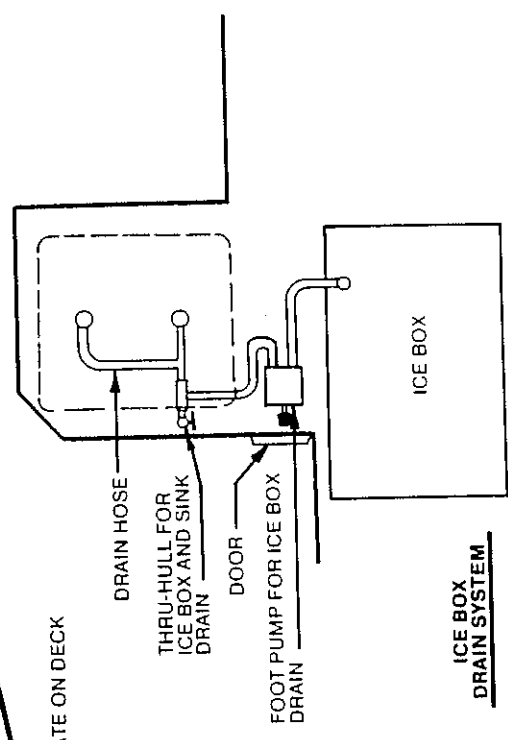
- A. Refer to the toilet manufacturer's specifications and operation instructions.

PROBLEM 3. The macerator pump, when on, makes a high -pitched sound but does not empty the tank.

- A. Impeller in macerator pump is faulty and must be replaced.
- B. The vent is clogged and the pump cannot pull a prime against the vacuum in the tank.



**MACERATOR/HOLDING TANK DETAIL**



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 21200 VICTORY BLVD.  
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HOT & COLD PRESSURE SYSTEM PLUMBING SCHEMATIC  
 HOLDING TANK/MACERATOR ILLUSTRATION  
 ICE BOX DRAIN ILLUSTRATION

CATALINA 34 OWNERS MANUAL 4.3.4

#### 4.0 YACHT SYSTEMS (CONTD):

- C. The hose into the pump may be clogged.
- D. The pump may be drawing air through the deck plate preventing a prime. Check seal at deck plate marked "waste", and lubricate threads.

##### 4.3.5 MANUAL BILGE PUMP:

The manual bilge pump is located on the aft port end of the cockpit. The handle is stored in a clip fitting just above the pump inside the locker. Insert the handle through the water tight fitting in the cockpit to operate the pump. The pump intake hose is in the stub under the main cabin sole.

##### 4.3.6 SEACOCKS:

All underwater through hull fittings are equipped with seacock 1/4 turn valves. It is good practice to close all seacock valves when leaving the boat, especially for long periods of time.

To close seacock valves, turn handle perpendicular to flow. To open, turn handle 1/4 turn to parallel.

It is good practice to operate the seacock valves at least once a month to keep the seals lubricated.

#### 4.4 AUXILIARY POWER:

##### 4.4.1 GENERAL ENGINE INFORMATION:

**WARNING:** Do not open engine compartment doors when engine is running. Contact with hot or moving engine parts can cause serious injury.

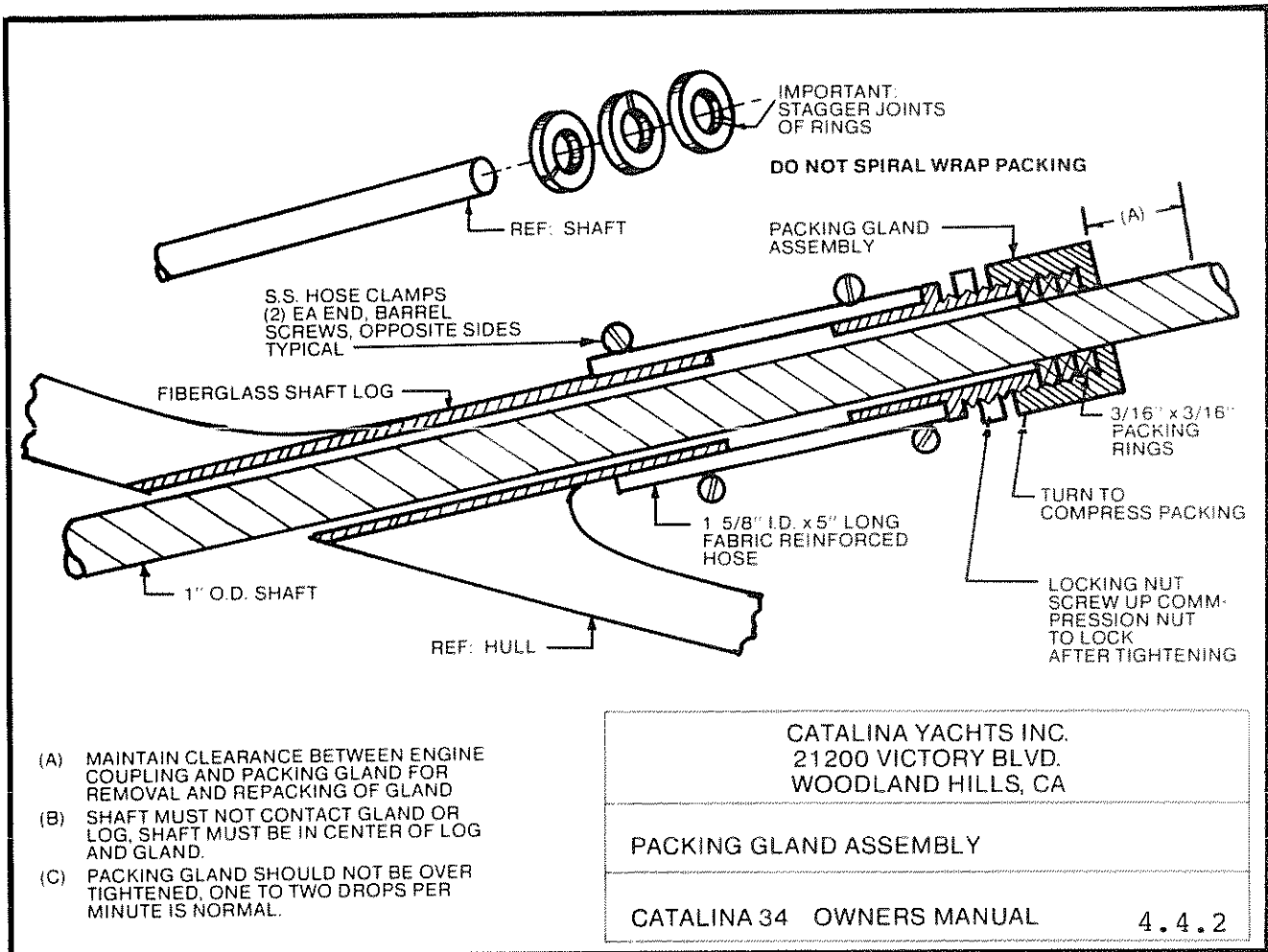
For a complete description of your engine, please consult the guide supplied by the engine manufacturer. This can be found in your owner's packet.

Two points are worth special attention. Firstly, marine engines work under conditions tougher than those conditions of automotive engines. Your marine engine faces constant torquing not encountered on the highway. For this reason, you must change your engine's crank oil as recommended in the engine manufacturer's guide. Secondly, before using your engine, the shaft coupling must be adjusted within a tolerance of .003 T.I.R. thousandths after launching. This is done during commissioning of the yacht. Be sure that your dealer has made this adjustment before using your engine.

4.0 YACHT SYSTEMS (CONTD):

Change the oil in accordance with manufacturer's recommendations. Keep spare filters and alternator belts on hand and use only 2/3 to 3/4 throttle on long passages. Keep your fuel tank full whenever possible to prevent water condensation in your fuel tank.

To retard electrolysis, we recommend installing a zinc collar immediately on the propeller shaft when the boat is to be used in salt water.





## 4.0 YACHT SYSTEMS (CONTD):

### 4.4.3 SHAFT PACKING GLAND (STUFFING BOX):

The packing gland is located aft of the engine under the aft berth.

A properly adjusted shaft packing gland should drip slightly with the engine off. Too loose an adjustment will allow too much water in the bilge and engine operation will spray water from the shaft. Too tight an adjustment will rob the engine of power, and the lack of water lubrication in the packing gland can generate enough heat to damage the gland and/or score the propeller shaft.

#### ADJUSTMENT:

1. Holding the packing nut with one wrench, use a second wrench to loosen the lock nut. Turn the lock nut far enough to keep it from interferring with the next adjustment (2 or 3 turns).
2. Tighten the packing nut to obtain 1 to 2 drops per minute. Hand tightening of the packing nut is often sufficient to obtain this adjustment. If this is not the case, an additional 1/4 to 1/2 turn with the wrench should produce the desired result.
3. Hold the packing nut in place with one wrench, and use the second wrench to bring the locking nut securely against the packing nut. Make certain that the locking nut is tight. Failure to do this could allow the packing nut to back off when the engine is operating.
4. Operate the engine at slow speeds in forward and reverse and use a light to check for excessive water at the packing nut. Shut off the engine and recheck packing for proper drip.

### 4.4.4 SHAFT ALIGNMENT:

For proper operation of the engine, the propeller shaft and engine must be aligned.

Alignment is gauged at the engine and shaft coupling. Alignment procedures must be done with the boat in the water after the mast is stepped, and the rig is tuned.

1. Remove coupling flange bolts and check propeller shaft for clearance. Adjust stuffing box so that excessive seepage is prevented, yet the shaft is allowed to spin freely.
2. Slide shaft away from engine and check coupling mating surfaces. These must be clean.

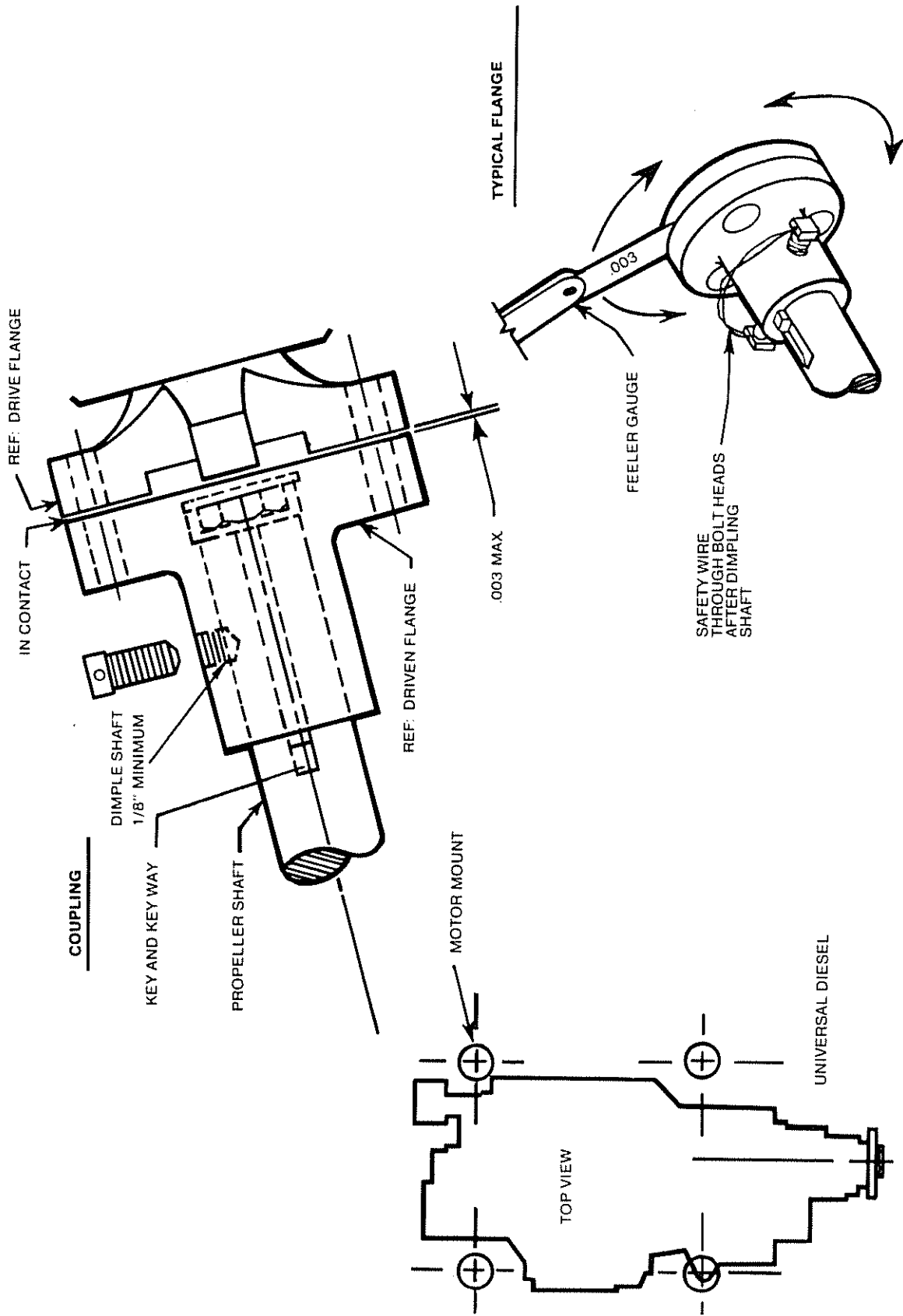
4.0 YACHT SYSTEMS (CONTD):

3. Slide shaft forward to connect coupling surfaces. Pilot on transmission flange must align with recess in shaft coupling flange. This is an indication of correct axial alignment.
4. With coupling flanges in contact, measure gap around edge of coupling flanges with .003 feeler gauge. Maximum allowable gap at any point is three thousandths of an inch. Take this measurement several times...rotating shaft 1/4 turn each time. Any gap in excess of .003 must be corrected by changing engine position, especially fore/aft tilt.

For example, excessive gap at the bottom of the coupling (see drawing) indicates engine is tilted too far aft (front too high). Using a 15/16 end wrench, loosen lock nuts on forward motor mount(s). Lower front of engine by clockwise rotation of motor mount nuts. Remeasure gap at coupling. A gap at the top of the coupling would require the exact reverse procedure.

5. Pull shaft backwards as in step 2. Again slide shaft forward, rechecking axial alignment as in step 3.
6. Repeat steps 4 and 5 until alignment within tolerance is achieved.
7. Tighten motor mount lock nuts and install coupling bolts.

NOTE: Alignment should be checked yearly, or whenever any excess vibration is noticed. The alignment can also be affected by changes in rigging tension.



MEASURE GAP BETWEEN MATING FACES OF COUPLING FLANGES. MAXIMUM ALLOWABLE GAP AT ANY POINT IS .003 WHEN ANY POINT OF COUPLING FACES ARE IN CONTACT. TAKE THIS MEASUREMENT SEVERAL TIMES, ROTATING SHAFT 1/4 TURN EACH TIME. THIS MEASUREMENT MUST BE MADE WITH COUPLING BOLTS REMOVED.

CATALINA YACHTS INC. 21200 VICTORY BLVD. WOODLAND HILLS, CA	
SHAFT ALIGNMENT ILLUSTRATION	
CATALINA 34 OWNERS MANUAL	4.4.5

## 4.0 YACHT SYSTEMS (CONTD):

### 4.4.6 FUELING:

The fuel system of a Catalina 34 is illustrated on Page 52 and consists of a 25 gallon aluminum fuel tank, fuel suction and return lines, a secondary fuel filter on the engine, and an electric fuel pump controlled by the engine key switch, a deck fill plate, and an overboard vent through the transom.

Refer to the engine manual provided for recommended fuel type. A diesel engine does not require an ignition system and is superior to a gasoline engine in dependability.

This depends on the clean fuel being supplied to the engine since the close tolerances required by the engine's fuel delivery system make it intolerant of dirt or water contamination. The engine is supplied with primary and secondary filters that prevent contaminants from reaching the engine where they could cause damage. However, a clogged filter, although providing this protection, can also stop an engine. Keeping the filters free of dirt and water is critical.

#### BEFORE FUELING:

1. Extinguish all smoking materials and check around the fueling area for other sources of spark or flame. Remove if found.
2. Shut off the engine, and any electrical accessories or devices.
3. De-energize all electrical equipment by turning the selector switch to the off position.
4. Close all hatches and ports.
5. Ensure that a fire extinguisher is readily available.
6. Ensure that the proper (diesel, not gasoline) hose is about to be used.

WARNING: Do not fuel during an electrical storm. Besides the obvious hazard of lightning, the possibility of static discharge is greatly increased at this time.

#### FUELING PROCEDURE:

1. Remove fill pipe cover using a proper tool.
2. Place nozzle of fuel hose in the fill pipe. Keep the nozzle in contact with the deck plate rim during fueling to avoid the possibility of a static spark.

#### 4.0 YACHT SYSTEMS (CONTD):

3. Fill slowly. Do not overfill. If it is not possible to see the meter on the fuel pump, the attendant or a crew member should call out the gallonage from the fuel dock. Filling the tank to only 95% of capacity will avoid overflow problems on a hot day.
4. Replace cover, clean up any spilled fuel. If any rags, etc., were used for this purpose, dispose of them ashore.
5. Check below decks for presence of fumes or fuel leakage. Check bilge, engine space, and main cabin. If fumes or evidence of leakage are found, determine the cause, correct it, and clean up any spillage before proceeding.
6. Open all hatches and ports to ventilate the boat.
7. Switch on battery.
8. The engine should be started only when it is certain that no potentially hazardous conditions exist.

#### 4.4.7 FUEL SANITATION:

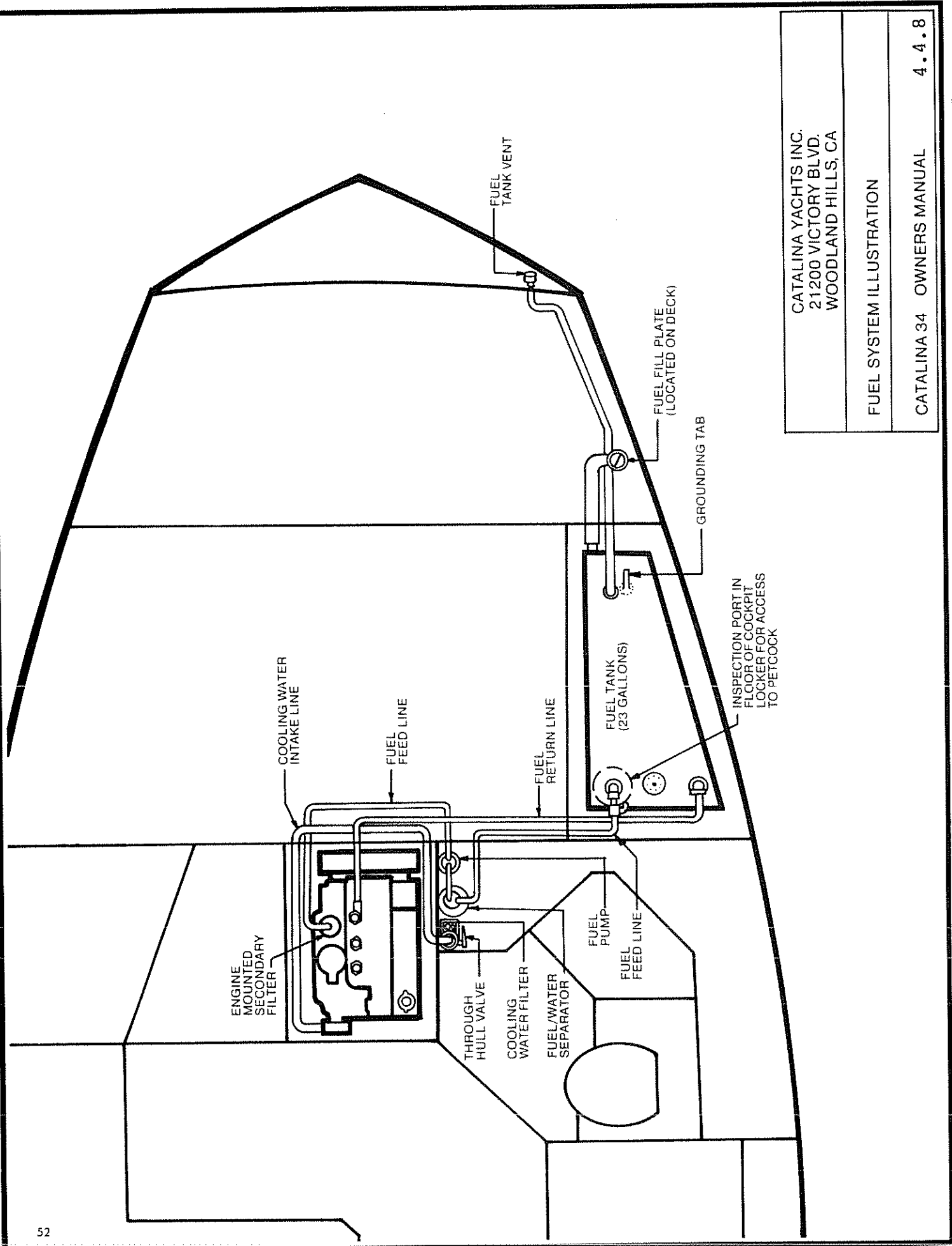
##### BACTERIAL CONTAMINATION:

Bacterial contamination of the diesel fuel can cause problems. The bacterium need both water and fuel to exist, and thrive at the fuel/water interface in a fuel tank. As they multiply, they form more water and a filter choking brown slime. Their presence will not be known until rough weather churns up the fuel tank causing clogged filters at the worst possible time.

Keeping water out of the fuel will prevent the problem entirely. However, a certain amount of water, due to normal condensation in the tank, is to be expected.

##### FUEL ADDITIVES:

Fuel additives or fungicides provide another means of combatting contamination. Additives break the water down to a molecular level, dispersing it throughout the fuel and allowing it to pass harmlessly through the fuel system. Several brands of this product are available at marine stores.



CATALINA YACHTS INC.  
 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

FUEL SYSTEM ILLUSTRATION

CATALINA 34 OWNERS MANUAL 4.4.8

## 4.0 YACHT SYSTEMS (CONTD):

### 4.4.9 EXHAUST SYTEM MAINTENANCE:

In-board engine installations on sailboats differ from engine installations on power boats. The primary difference is that the engine is usually installed below the waterline of the vessel.

The benefits of these locations are that the weight of the engine is where it will not adversely effect trim, and that the shaft is at an efficient angle for powering and minimum drag when sailing.

Engine installations below the waterline require special attention to the design of the exhaust system. The discharged cooling water must be exhausted above the waterline to avoid excessive back pressure on the engine and prevent sea water from traveling up the exhaust line and entering the engine.

To exhaust the engine above the waterline, the discharged cooling water and exhaust gas must be "lifted" to a level above the through hull fitting on the transom.

In the Catalina 34 the exhaust cooling water and exhaust gas are lifted above the waterline by an "aqua-lift" type muffler. The aqua-lift muffler performs three jobs:

1. It mixes engine gas and water to cool the gas and lower exhaust line temperature.
2. It baffles and deadens engine exhaust noise.
3. It creates pressure required to lift and expel cooling water.

As shown in illustration 4.4.10 the inlet tube into the aqua-lift is short and the outlet tube is long near the bottom of the tank.

As water accumulates in the bottom of the tank, exhaust gas pressure builds in the top of the tank. This forces the cooling water up the exit tube and through the exhaust line overboard.

The system requires exhaust pressure in the tank to function. When the starter motor is turning over, before the engine fires, water is being pumped through the cooling system by the belt driven cooling water pump. It is very important not to operate the starter motor for more than 30 seconds if the engine does not fire. Should it be necessary to operate the starter motor more than 30 seconds, water must be drained from the aqua-lift by opening the drain at the base of the aqua-lift.

The drain valve may be opened until the engine fires, if desired. All Catalina 34's are equipped with anti-siphon valves as an additional precaution to prevent cooling water from entering the engine.

#### 4.0 YACHT SYSTEMS (CONTD):

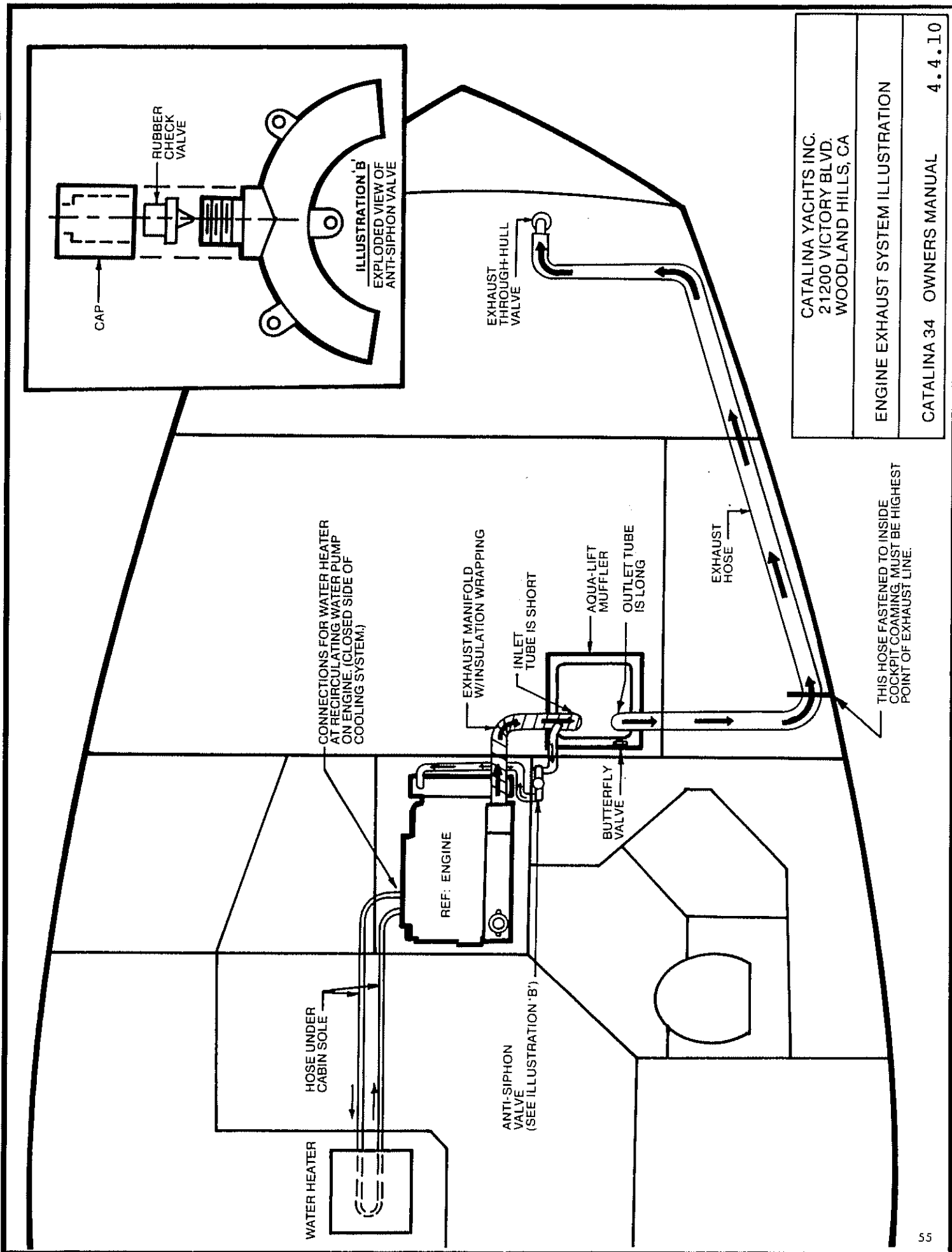
Refer to item "B" of illustration 4.4.10. The function of the anti-siphon valve is to prevent cooling water from being siphoned through the through hull valve, through the engine cooling system and into the aqua-lift muffler when the engine is not operating.

If the muffler were to fill completely with water, water would travel up the inlet tube and enter the engine block.

The Catalina 34 exhaust system is basically simple and will provide trouble free service if you perform regular maintenance and inspection. The important points to remember are:

1. Close the engine cooling water through hull valve when you are not operating the engine.
2. Do not operate the starter motor for more than 30 seconds without draining the aqua-lift muffler.
3. Periodically disassemble the anti-siphon valve. Be sure the valve is not fouled with salt deposits and that it opens freely under the cap.
4. Check the operation by removing the valve:
  - A. Put a finger over one large hole and blow through the other. Air should not escape through the cap.
  - B. If you suck through one large hole with a finger over the other, air should enter the valve through the cap.





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 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

ENGINE EXHAUST SYSTEM ILLUSTRATION

CATALINA 34 OWNERS MANUAL 4.4.10

CONNECTIONS FOR WATER HEATER  
 AT RECIRCULATING WATER PUMP  
 ON ENGINE. (CLOSED SIDE OF  
 COOLING SYSTEM)

EXHAUST MANIFOLD  
 W/INSULATION WRAPPING

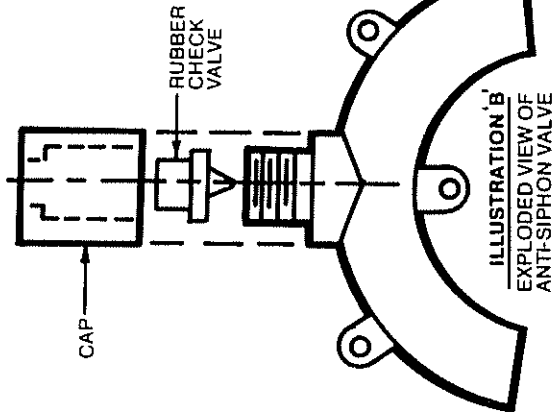
INLET  
 TUBE IS SHORT

AQUA-LIFT  
 MUFFLER

OUTLET TUBE  
 IS LONG

EXHAUST  
 HOSE

THIS HOSE FASTENED TO INSIDE  
 COCKPIT COAMING MUST BE HIGHEST  
 POINT OF EXHAUST LINE.



HOSE UNDER  
 CABIN SOLE

WATER HEATER

REF: ENGINE

BUTTERFLY  
 VALVE

ANTI-SIPHON  
 VALVE  
 (SEE ILLUSTRATION 'B')

4.0 YACHT SYSTEMS (CONTD):

4.5 STEERING:

4.5.1 EMERGENCY TILLER:

It is recommended that the skipper and crew become familiar with the emergency tiller and its use.

The emergency tiller should be stored in a convenient location, known to everyone operating the boat.

A dry run of the system will minimize confusion in an emergency:

1. Locate the emergency tiller.
2. Remove the wheel. Keeping a wrench handy for this purpose is a good idea.
3. Insert the emergency steering tiller in the rudder post cap.

NOTE: The emergency tiller moves the whole steering, including cables and quadrant. These elements must be free to move in order to steer the boat.

4.6 ACCOMMODATION:

4.6.1 GALLEY STOVE:

There is a provision for a gimballed stove with oven on the starboard side of the galley area. A two burner LPG stove with oven is a factory standard installation. It comes with an operation and maintenance booklet provided by the stove manufacturer. The standard LPG gas bottle is located in a vapor-tight container located in the lazarette. The container is fitted with a drain and vent fitting on the transom. Keep these clear at all times.

A CNG stove with oven is available as a factory option. Follow the instructions for operation carefully when using the stove. Although compressed natural gas is among the safest of cooking fuels, extreme caution should be used when cooking aboard or handling CNG fuel tanks. The CNG cylinder is located under the settee in the aft cabin. Be sure the tank is securely fastened at all times. Always turn the cylinder valve off when the stove or oven are not in use.

A few additional points of operation for the standard LPG stove are below:

#### 4.0 YACHT SYSTEMS (CONTD):

It is recommended that every time the LPG tank valve is opened for use, the operator close the valve and watch that the gauge needle remains constant. The gauge should read approximately 110 PSI. If you can detect a falling in pressure over a 15 minute period of time, there is a leak. LEAKS CAN BE DANGEROUS.

- a. If a leak occurs, check all appliance burners to see if they are in the "OFF" position.
- b. Make sure the oven control is in the "OFF" position.
- c. Check all fittings with a soap and water solution.  
NEVER USE FLAME TO CHECK FOR LEAKS.

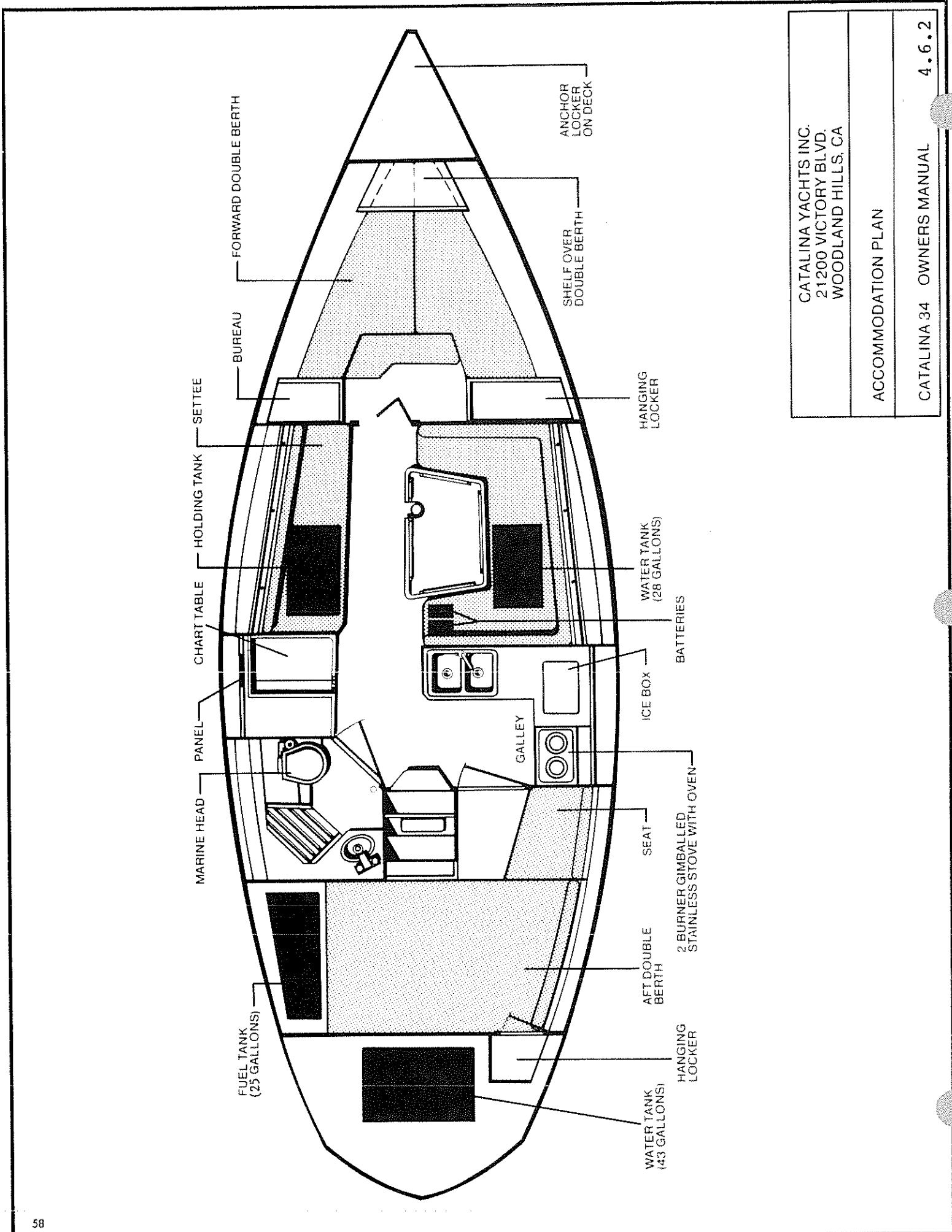
If you cannot find the leak, contact the stove manufacturer promptly.

To light the oven: Light the right front burner to bleed air from the system for at least one (1) minute. Turn the temperature control knob from the "OFF" position to the "PILOT ON" position. After this has been done, light the pilot in the oven (constant pilot).

After the oven pilot is lit, turn the oven temperature control knob to the desired temperature.

Notes on the Solenoid: The solenoid must be turned on to test gauge for leaks. Both the solenoid and the tank valve must be turned on to receive fuel. The solenoid is an electrical device for turning on or off the fuel from inside the cabin at the electrical panel.

Points to remember: All stoves have been safety tested, however, it is wise to remember to never leave the boat when oven or burners are on. Turn off the tank when you leave the boat for more than one or two days. Always blow out the pilot light when you will be away from the boat for more than one or two days, and check for leaks when you open the tank.



MARINE HEAD  
 PANEL  
 CHART TABLE  
 HOLDING TANK  
 SETTEE  
 BUREAU  
 FORWARD DOUBLE BERTH  
 FUEL TANK (25 GALLONS)  
 WATER TANK (43 GALLONS)  
 HANGING LOCKER  
 SEAT  
 2 BURNER GIMBALLED STAINLESS STOVE WITH OVEN  
 ICE BOX  
 GALLEY  
 WATER TANK (28 GALLONS)  
 BATTERIES  
 HANGING LOCKER  
 SHELF OVER DOUBLE BERTH  
 ANCHOR LOCKER ON DECK

CATALINA YACHTS INC. 21200 VICTORY BLVD. WOODLAND HILLS, CA	
ACCOMMODATION PLAN	
CATALINA 34 OWNERS MANUAL	4.6.2

## 5.0 D E C O M M I S S I O N I N G

### 5.1 WINTERIZING YOUR ENGINE:

#### LAYING UP:

In cold climates where yachts are decommissioned during the winter, your Catalina 34 may be safely stored in the water, provided adequate measures are taken to prevent ice damage to the hull. Check with your yard to determine the feasibility of storing in the water.

When the boat is to be stored on land, the mast may be left stepped on the deck. However, it is recommended that the mast be removed at the time of hauling for a thorough inspection and preparation for next season.

This allows plenty of time over the winter months to order and replace the shrouds or rigging parts needed, avoiding any delays in the spring commissioning.

Following proper lay-up procedures will minimize the effort needed to re-commission in the spring.

#### BEFORE HAULING:

1. Refer to the engine manual instructions for winterizing the engine. Some parts of the engine winterization process may be performed in the water.
2. Consult the manufacturer's instructions for winterizing any optional or owner installed equipment.
3. Inspect the cradle on which the boat will be stored. Check welds and padded poppits for condition and repair as required.
4. Lift the boat with straps at the locations illustrated.

#### AFTER HAULING:

1. Wash bottom, removing growth and loose paint.
2. Wash topsides, deck, and all other exterior fiberglass surfaces. Wax all except the nonskid surfaces.
3. Remove all sails. Follow sailmaker's instructions or instructions in Section 3.8, in regards to cleaning. Schedule any repairs required and store in a dry place.
4. Remove all sheets and lines, clean, store in a dry place.

5.0 DECOMMISSIONING (CONTD):

5. If the mast had been removed from the yacht, remove all stays and shrouds from the mast. Wash the entire stay or shroud assembly, using fresh water and a stiff brush. Dry thoroughly, and coil into large non-kinking coils. Store the coils in a dry place. Wash and wax all spars. Coil halyards into non-kinking coils, and put in a dark colored plastic bag to protect from sunlight if storing outdoors. Lash them to the mast. Store the mast either inside or outside with adequate support along its length.
6. If mast is to be left in place, remove the boom, clean and store as described before. Clean shroud/stay end fittings, toggles, etc. using fresh water and a stiff brush. Apply a light coat of silicone grease, paying particular attention to the end fittings where they connect to the stays and shrouds.
7. Clean and lubricate all deck hardware that contains moveable parts. Follow manufacturer's instructions on winches.
8. Remove all gear such as books, documents, bedding, PFD's, anything moveable that is subject to rust, corrosion or mildew.
9. Remove all food supplies from lockers or ice chest. Wash out ice chest interior with a weak solution of clorox. Leave ice chest lid open.
10. Stored batteries should be fully charged, and both positive and negative terminals should be disconnected. The batteries may be either left aboard or stored in a cool, dry place. Sub zero temperatures will not harm a fully charged battery.
11. Close all manual shutoffs for the stove fuel system.
12. Winterize the head system in accordance with the manufacturer's instructions.
  - A. Empty the holding tank, flush it out with fresh water several times. Add a holding tank chemical.
  - B. Pump all the water out of the head.
  - C. Shut off the head intake through hull.
  - D. Remove the head intake line from the through hull. Put it in a container of potable water anti-freeze and pump it through the head. (Do not use ordinary anti-freeze).
  - E. Reconnect the intake line to the through hull.
  - F. Shut the discharge through hull (if applicable).

IMPORTANT: Always follow manufacturer's instructions wherever possible for winterizing the head system.

13. Hot and cold water system:

5.0 DECOMMISSIONING (CONTD):

- A. Empty the water tanks as much as possible. (There will always be a small amount of water left.)
- B. Add a potable water anti-freeze, sold in marine and RV stores (Do not use ordinary anti-freeze, it is toxic), to your water tank and a small amount of water. Pump this water/anti-freeze mixture through the water lines to all faucets. Do not forget to pump some from both tanks, if your boat has two. Also, drain the pumps.
- C. Close the sink drain through hulls, or plug the sink, if the through hull is above the waterline.

IMPORTANT: Always follow manufacturer's instructions wherever possible for winterizing the hot and cold water system.

14. Remove all electronic gear that may require servicing during the winter.
15. Remove fire extinguishers for weighing, checking, and any necessary recharging. If an automatic fire extinguisher system is installed, return the cylinders to the yacht and reinstall as soon as possible.
16. If cushions are left aboard, bring cockpit cushions below and place all cushions on edge to encourage ventilation.
17. Leave all interior lockers open to encourage ventilation.
18. Ensure that cockpit and deck scuppers are open and free.
19. If the boat is to be covered, ensure that the cover is installed in such a way as to provide adequate ventilation, and that the cover is not permitted to chafe against the hull or deck.
20. If the boat is not to be covered, ensure that mechanisms, such as winches and steering pedestals are provided with adequate covers.
21. If the mast is to remain stepped, snug all shrouds and halyards to minimize noise and wear.

GENERAL NOTES:

We recommend the following procedures be followed when storing the yacht for prolonged winter months. Begin by consulting your authorized dealer about storing the boat in or out of water in freezing climates. If at all possible, the manufacturer recommends keeping the yacht in dry storage for severe winters.

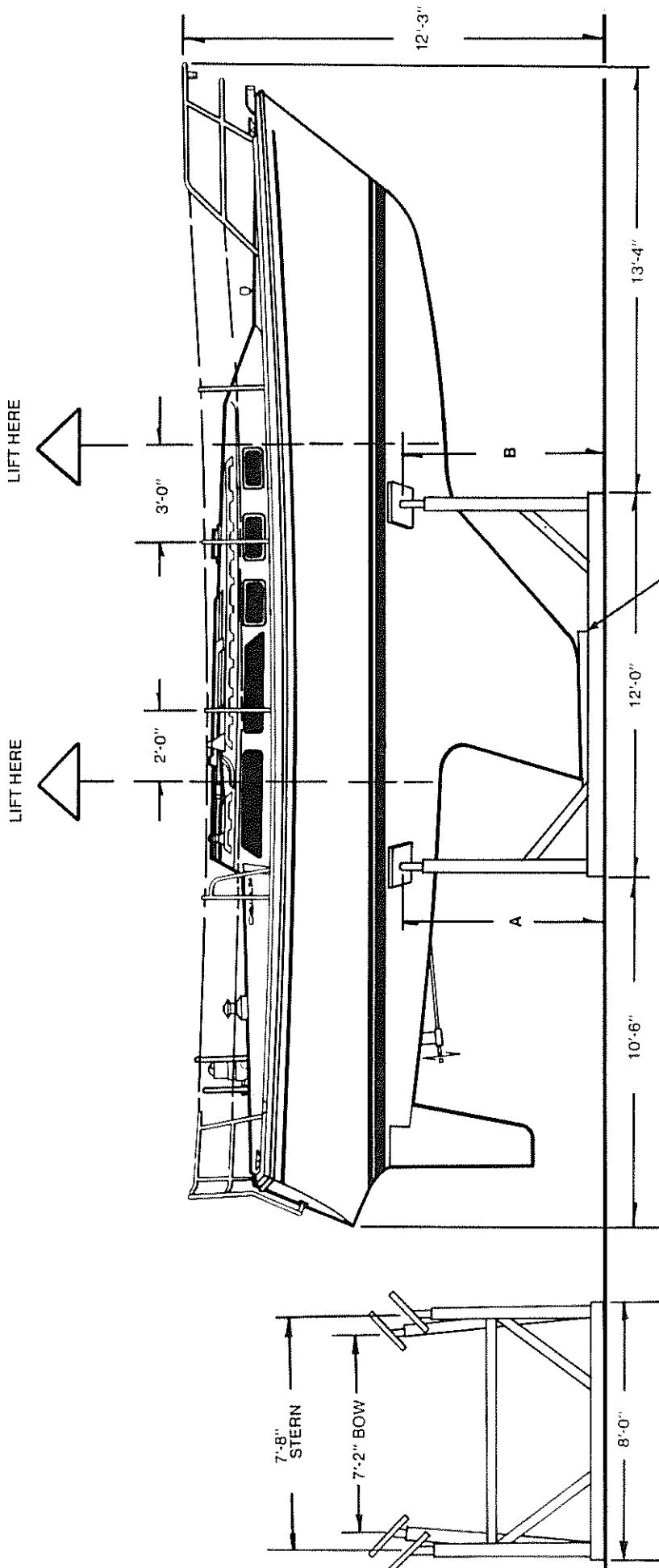
All through hull fittings should be drained and closed off. Water in the sanitation system and other tanks should be pumped out. Fill the lines and fittings with anti-freeze to prevent water from running in, freezing or expanding, and cracking the lines and fittings.

5.0 DECOMMISSIONING (CONTD):

For diesel engines, consult the manufacturer's manual for special instructions.

Unless the manufacturer's manual states otherwise, drain the block, disconnect the water intake hose from the through hull fittings, attach an additional length of hose and place the end of this hose in a bucket of anti-freeze. Run the engine until straight anti-freeze comes out of the exhaust line. Stop the engine at this point, plug or cap the exhaust line, and remove the additional hose and bucket.





\* NOTE: ALL MEASUREMENTS ARE APPROXIMATE

- NOTES:
1. STANDARD DRAFT BOAT SHOWN
  2. BE CAREFUL NOT TO PUT LIFTING SLING OVER SHAFT. THIS WILL BEND SHAFT AND DAMAGE DRIVE ASSEMBLY

	WING	FIN
A	3'-8"	4'-11"
B	4'-6"	5'-1"

CATALINA YACHTS INC.  
 21200 VICTORY BLVD.  
 WOODLAND HILLS, CA

LIFTING RECOMMENDATIONS

CATALINA 34 OWNERS MANUAL 5.2

## 6.0 OWNER - USER RESPONSIBILITY

### 6.1 GENERAL SAFETY TIPS:

1. Do not venture out when the weather conditions are unfavorable or are predicted to become so. Listen to weather forecasts, check with your Harbor Patrol office, and look out for small craft storm warnings.
2. Be especially careful in areas where there may be commercial shipping traffic. Keep well away from shipping channels. Keep a sharp look-out when crossing the shipping channels.
3. Learn the rules of the road. All other sailors will expect that you know them and abide by them. The U. S. Coast Guard (BBE-2), 400 S. Eleventh Street, S.W., Washington, D.C. 20590, will supply free literature on this. Your local branch or Harbor Patrol office may have it available.
4. If your boat has a genoa sail that obscures the helmsman's vision, have a dependable person in the crew keep a sharp look-out under the genoa sail for traffic.
5. When sailing at night, provide safety harnesses for yourself and your crew, and tie these lines to the boat. Use approved harnesses.
6. Purchase all Coast Guard required safety equipment and learn how to use it.
7. Enroll in a C.G. class or other certified boating and sailing class. You will learn a lot and enjoy sailing even more.
8. Do not take more than a safe number of persons aboard your boat when sailing.
9. Marine insurance is worth every penny you pay for it. Take out insurance from the start. See your dealer for a recommended marine agent if you do not have one.
10. Keep all seat hatches and main hatch closed during rough weather or gusty winds which could unexpectedly strike the boat and cause a knock down.
11. CAUTION! The aluminum mast, and the metal parts conduct electricity. Coming in contact with, or approaching an electrical power line can be fatal. Stay away from overhead power lines and wires of any kind, when launching, underway, or when stationary.

6.0 OWNER-USER RESPONSIBILITY (CONTD):

6.2 REQUIRED SAFETY EQUIPMENT:

FIRE EXTINGUISHER:

It is wise to locate a minimum of two, approved for marine use, fire extinguishers, one for forward of the galley and one behind the galley, preferably below the cockpit hatch. Should an alcohol stove or engine fire start, you can always reach a fire extinguisher.

For example, you do not want to locate both of your extinguishers in the bow area because if you are located in the cockpit, you would have to get by the danger area to reach them if the fire is either in the galley or engine area.

Dry chemical extinguishers should be inverted occasionally to prevent the contents from packing. Extinguishers should be recharged yearly or after each use, according to manufacturer's recommendations.

LIFE VESTS:

Keep a Coast Guard approved life vest on board for each crew member. Wear them during rough weather and night sailing. Children should wear vests at all times no matter how much they object.

HORN:

Your yacht should be equipped with a horn capable of producing a blast that can be heard for a distance of one mile.

FLARES:

The law requires that your yacht be equipped with a minimum of 3 day/night flares.

6.3 SUGGESTED SAFETY EQUIPMENT AND SAFETY PACKAGE:

MEDICAL KIT:

A basic medical kit is a wise investment for any boat owner. Suggested items include: Motion sickness pills, aspirin, bandages, etc.. We recommend that you personalize your medical supplies for you and your crew's specific needs.

TOOL KIT:

A varied arrangement of tools is again, a wise investment, to have on your boat. Tailor your tool box for the conditions that you sail. For local sailing, with professional help just a phone call away, you only need a small array of tools. However, for long range cruising, a more extensive supply of tools will be needed.

6.0 OWNER-USER RESPONSIBILITY (CONTD):

6.4 SAFETY PACKAGE, FACTORY OPTION:

PKG.		
<u>INCL.</u>		<u>DESCRIPTION</u>
1	each	Danforth 22-S Anchor
15	foot	Campbell 5/16" Galvanized PC Chain
1	each	New England 1/2" X 250 Anchor Line
2	each	Seadog 3/8" Galvanized Shackle
2	each	Taylor "Big B" 8 X 20 Fender
14	foot	New England 7/16" White Nylon Fender Line (2 X 7')
1	each	Gladding White Throwable Cushion
1	each	Holland Folding Aluminum Radar Reflector
1	each	Olin Alerter Flare Kit
1	each	Watsco MHL Freon Air Horn
1	each	Brass Bell
2	each	Kidde 10BC Fire Away Extinguisher
1	each	Healer 10210 Boat Medical Kit
1	Pkge	Union Carbide E95 BP-2 Alkaline (D Cells)
1	each	Chapman Piloting, Seamanship, Small Boat Handling
6	each	Gladding AF-300 Adult Lifejacket Type II
1	each	Fulton 93 Flashlite
2	each	New England 5/8 X 20 Dock Line

6.5 ANCHORS, ANCHORING, AND MOORING:

The manufacturer suggests an anchor in the 18 to 25 pound range to be used as a bow anchor in ordinary conditions. This anchor will only be effective with at least 6 feet of 5/16 inch or heavier gauge chain and at least 1/2 inch or heavier nylon line.

Under adverse weather conditions, a heavier bow anchor could prove necessary, and possibly a plough type anchor might be required.

Inquire in your local area about anchoring procedures relative to the place you plan to visit. Get the opinions of several experienced people. And always play it on the safe side in "making up" your anchor and in using it. Do not forget to wire all shackle pins so they cannot come loose under water.

REMEMBER:

Lighter anchors are made more effective by increasing the scope, I.E., the ratio of length of line and chain to depth of water. A 7:1 ratio is recommended. This means using 7 feet of anchor line for each foot in water depth.

6.6 LIGHTNING PRECAUTIONS:

Your yacht was not provided with a lightning protection system during construction. The reasons are as follows:

## 6.0 OWNER-USER RESPONSIBILITY (CONTD):

1. There is not a procedure for lightning protection which is proven reliable under all conditions. Yachts with elaborate lightning protection systems have sustained serious damage from a direct lightning strike.
2. If the builder were to assert that the yacht was lightning protected, it could instill a false sense of confidence in the owner or operator, leading to less-than-prudent actions when lightning threatens.
3. Lightning systems are "out of sight, out of mind", except when lightning threatens. Generally, they are not checked and maintained on a regular basis. A defect in the system (i.e., a break in a ground line) could, in some cases, increase the risk of personal harm, as well as damage to the yacht, as compared to a yacht with no protection. The reason for this is that many lightning protection systems distribute the high voltage throughout the yacht before allowing it to exit through the ground.
4. It is impossible for Catalina Yachts to control changes which you, the owner, may make to the yacht, which could affect lightning protection systems.

You, the owner, must decide whether or not you wish to equip your yacht with lightning protection. And, if so, the method of doing it. For your guidance, a copy of ABYC recommendations is attached. The following suggestions and comments are also offered:

1. Keep the system as simple as possible. This will facilitate both installation and inspection/maintenance. Perhaps a single over-size ground (battery cable) from the mast base to the engine, coupled with external shroud grounds (see 2 below), will maximize reliability.
2. ABYC recommends straight-line wire runs, which is virtually impossible within the yacht. For grounding the shrouds: A battery cable, which clips to each shroud and extends outside the yacht to the water, can minimize the number of bends required. This method has the added advantages of keeping the power surge outside the boat and allowing easy, routine inspection. The obvious disadvantage is that the clip on cables are not a permanent installation and may not be in place when an unexpected lightning strike occurs.
3. Use only top quality materials to go oversize wherever possible.
4. Keep all permanent attachment points and connections where they are readily available for inspection, yet protected from damage or inadvertant disconnection.

## 6.0 OWNER-USER RESPONSIBILITY (CONTD):

Factory installed metal tanks, 110 volt systems and major components are grounded to the engine. The engine is grounded via the shaft and propeller to the water. The purpose of internal grounding is for static charge control and accidental shorts in the internal systems -- not to provide lightning protection. However, you can incorporate the ground lines present in a lightning protection system you may wish to add.

By far, the most important consideration regarding lightning is observing common sense safety precautions when lightning threatens. The key considerations are listed in the American Boat and Yacht Council (ABYC) publication, which is printed herein.

## RECOMMENDED PRACTICES AND STANDARDS COVERING LIGHTNING PROTECTION

### PROJECT E-4

ABYC E-4-85

*Based on ABYC's assessment of the state of existing technology and the problems associated with achieving the requirements of this standard, ABYC recommends compliance with this standard by August 1, 1985.*

#### E-4.1 PURPOSE

These recommended practices and standards establish requirements for the design, construction and installation of lightning protection equipment on boats.

#### E-4.2 SCOPE

These recommended practices and standards apply to power and sailboats as indicated.

**NOTE:** *A lightning protection system offers no protection when the boat is out of water and is not intended to afford protection if any part of the boat comes in contact with power lines while afloat or ashore.*

#### E-4.3 DEFINITIONS

- a. *Air Terminal* – A metal rod that terminates in a sharp point.
- b. *Lightning Ground Plate* – A means to conduct the electrical current from a boat's conductive elements to the water in which the boat floats. A separate lightning ground plate may be used or it may also serve other purposes. (See ABYC E-4.6.g.)
- c. *Lightning Protective Mast* – A conductive structure or if non-conductive, equipped with a conductive means and an air terminal.
- d. *Zone of Protection* – An essentially cone shaped space below a grounded air terminal or mast or overhead ground wire which is substantially immune to direct strokes of lightning. (See Appendix)

#### E-4.4 REQUIREMENTS – IN GENERAL

Successful protection of persons and watercraft from lightning is dependent upon a combination of design and maintenance of equipment, and on personnel behavior. The basic guides contained in this standard shall be considered and used in designing and installing a lightning protection system. However, in view of the wide variation in structural design of boats, specific recommendations cannot be made to cover all cases.

- Design is covered in this and the following sections of this standard.
  - Maintenance of equipment is covered in the Appendix.
  - Personnel behavior is covered in the Appendix.
- a. To provide an adequately grounded conductor or lightning protective mast, the entire circuit from the top of the mast to the ground shall have a conductivity not less than that of an 8 AWG copper conductor and the path to ground followed by the conductor shall be essentially straight.
  - b. If there are large metal objects such as tanks, engines deck winches, stoves, etc. in proximity to the grounding conductor, there will be a strong tendency for sparks or sideflashes to jump from the grounding conductor to the metal object at the closest point. To prevent damage from such sideflashes, an interconnecting conductor at least equal to 8 AWG copper shall be provided at all places where they are likely to occur.
  - c. Large metallic objects which are not part of the electrical system of the boat and which are not already grounded due to their own functional or other requirements may be grounded directly to the ground plate, provided that it is not practical to interconnect with the lightning conductor or bonding systems. (See ABYC E-4.6.d.)

E-4.5. *REQUIREMENTS – MATERIALS*

- a. *Corrosion* – The material used in a lightning protective system shall be resistant to corrosion. If, as in certain installations, it is impractical to avoid a junction of dissimilar metals, the corrosion effects can be reduced by the use of suitable platings or special connectors which are available for such purposes.
- b. *Wire Conductors* –
  - (1) Wire conductors shall be stranded copper not less than 8 AWG.
  - (2) The size of any strand of a bare copper wire shall be not less than 17 AWG. Stranding of insulated copper wire shall be Type II stranding per ABYC E-8, "AC Electrical Systems" or ABYC E-9, "DC Electrical Systems Under 50 Volts".
- c. *Other Conductive Means* –
  - (1) Conductivity shall be equal to or greater than 8 AWG copper wire.
  - (2) The thickness of metal ribbon or strip shall be at least 1/32 inches.

E-4.6. *REQUIREMENTS – INSTALLATIONS*

- a. *Conductive Joints* – Conductive joints shall be made and supported in accordance with ABYC E-9, "DC Electrical Systems Under 50 Volts".
- b. *Lightning Protective Mast Height* – A lightning protective mast shall be of a height to provide the desired zone of protection in accordance with the following:
  - (1) For a mast height not exceeding 50 feet (15m) above the water, the base radius is approximately equal to the mast height. (See Figures 1 and 2)
  - (2) For mast heights in excess of 50 feet (15m) the zone of protection is based on the striking distance of the lightning stroke. Since the lightning stroke may strike any grounded object within the striking distance of the point from which final breakdown to ground occurs, the zone of protection is defined by a circular arc. (See Figure 3) The radius of the arc is the striking distance (100 feet (30m)). The arc passes through the tip of the mast and is tangent to the water. If more than one mast is used, the zone of protection is defined by arcs to all masts.
  - (3) The zone of protection afforded by any configuration of masts or other elevated, conductive, grounded objects can readily be determined graphically. Increasing the height of a mast above the striking distance will not increase the zone of protection.
- c. *Lightning Protective Mast Alternatives* –
  - (1) If the mast is of non-conducting material, the associated lightning or grounding conductor shall:
    - (a) be essentially straight,
    - (b) be securely fastened to the mast,
    - (c) extend at least 6 inches (150mm) above the mast,
    - (d) terminate in an air terminal, and
    - (e) be led as directly as practicable to the grounding connection. (See ABYC E-4.g.)



- (2) A radio antenna or outrigger may serve as a lightning protective mast provided it has conductivity equivalent to 8 AWG copper and is equipped with:
- (a) lightning arresters,
  - (b) lightning protective gaps, or
  - (c) means for grounding during electrical storms.

*NOTE: Non-conducting antenna masts with spirally wrapped conductors are not considered suitable for lightning protection purposes.*

- (3) The grounding of metal rod type radio antennas provides some protection for boats without masts and spars, provided:
- (a) Conductors in the grounding circuit of the antenna have a conductivity equivalent to 8 AWG copper in accordance with ABYC E-4.5.b.
  - (b) The top of the antenna is not more than 50 ft. (15m) above the water, and a line drawn from the top of the antenna downward toward the water at an angle of 45 degrees to the vertical does not intercept any part of the boat. (See ABYC E-4.6.b.)
  - (c) The antenna loading coil is provided with a suitable protective device for bypassing the lightning current.

*NOTE: Because a loading coil presents a high impedance to the flow of lightning current, the portion of an antenna above the bottom of a loading coil is not effective as a lightning protective mast.*

- d. *Interconnection of Metallic Masses* – Metallic masses aboard boats which are a permanent part of the boat or are permanently installed within or about the boat, and whose function would not be seriously affected by grounding, shall be made a part of the lightning-conductor system by interconnection with it. (See ABYC E-4.6.f.)

*EXCEPTION: Comparatively small size metallic masses.*

- NOTES:*
1. *The object of interconnecting the metal parts of a boat with the conductor is to prevent damage from sideflashes, especially in the case of rather extensive metal objects that are nearby. The main principle to be observed in the prevention of such damage is to identify on a boat the places where sideflashes are most likely to occur and to provide metallic paths for them.*
  2. *To minimize flow of lightning discharge current through engine bearings, it may be preferable to bond engine blocks directly to the ground plate rather than to an intermediate point on the lightning conductor.*

- e. *Exterior Bodies of Metal* – Metal situated wholly on the exterior of boats shall be electrically connected to the grounding conductor.

*NOTE: Exterior metal bodies on boats include any large masses such as horizontal guardrails, handrails on cabin tops, smokestacks from galley stoves, electric winches, davits, metal signal masts, and metallic hatches.*

- f. *Interior Bodies of Metal* – Metal situated wholly in the interior of boats and which at any point comes within 6 ft. (1.8m) of a lightning conductor shall be electrically interconnected with this lightning conductor.

*NOTE: Interior bodies of metal include engines, water and fuel tanks, and control rods for steering gear or reversing gear. It is not intended that small metal objects such as compasses, clocks, galley stoves, medicine chests, and other parts of the boat's hardware be grounded.*

(E-4.6.f.)

- (1) Metal which projects through cabin tops, decks or sides of boats above the sheer shall be bonded to the nearest lightning conductor at the point where the metal emerges from the boat and shall be grounded at its lower or extreme end within the boat.
- (2) In order to protect the radio transmitter, antenna feedlines shall be:
  - (a) equipped with means for grounding during electrical storms, or
  - (b) protected by lightning arresters or lightning protective gaps.
- g. *Lightning Ground Connection* - A lightning ground connection for a boat may consist of any metal surface which is submerged in the water and which has an area of at least 1 sq. ft. (0.093m<sup>2</sup>).
  - (1) Metallic rudder surfaces, metal centerboards and keels, or the ground plate for radio transmitters may be used for this purpose.
  - (2) A metal hull itself constitutes an adequate lightning ground plate.

**E-4.7. REQUIREMENTS - VESSELS WITH METAL HULLS**

If there is electrical continuity between metal hulls and masts or other metallic superstructure of adequate height in accordance with ABYC E-4.6., then no further protection against lightning is necessary.

**E-4.8. REQUIREMENTS - SAILBOATS WITH NON-METALLIC HULLS**

- a. Sailboats with metallic standing rigging will be adequately protected provided that all rigging is grounded so that the mast and rigging meet the requirements of ABYC E-4.5. and E-4.6.
- b. Sailboats will be adequately protected if all shrouds, back stays, preventers and continuous metallic track on the mast and boom are grounded. These shall be electrically connected at the lower or forward end and grounded to a metal plate on the hull or to a metal rudder, centerboard or keel.
- c. All stays and sail tracks shall be grounded.
- d. Grounding of other objects on sailboats shall be in accordance with ABYC E-4.6.
- e. Multihull boats shall provide a lightning ground connection in accordance with ABYC E-4.6.g. for each hull that has items to be grounded, attached, or fitted to it.

**E-4.9. REQUIREMENTS - POWER BOATS WITH NON-METALLIC HULLS**

- a. Power boats may be adequately protected by a grounded radio antenna, outrigger, or other grounded lightning protective mast in compliance with ABYC E-4.6., provided the height of the mast conforms to that described for the zone of protection.
- b. Interconnection and grounding of metallic masses shall be in accordance with ABYC E-4.6.

**E-4.10 REQUIREMENTS - SMALL BOATS**

- a. Small boats may be protected by means of a temporary lightning protective mast which may be erected when lightning conditions are observed in the distance.
- b. Grounding provisions may be made by means of a flexible copper wire and a submerged ground plate of at least 1 square foot (0.093m<sup>2</sup>) in area.

FIGURE 1 — BOAT WITH MAST NOT EXCEEDING 50 ft. (15m) ABOVE THE WATER

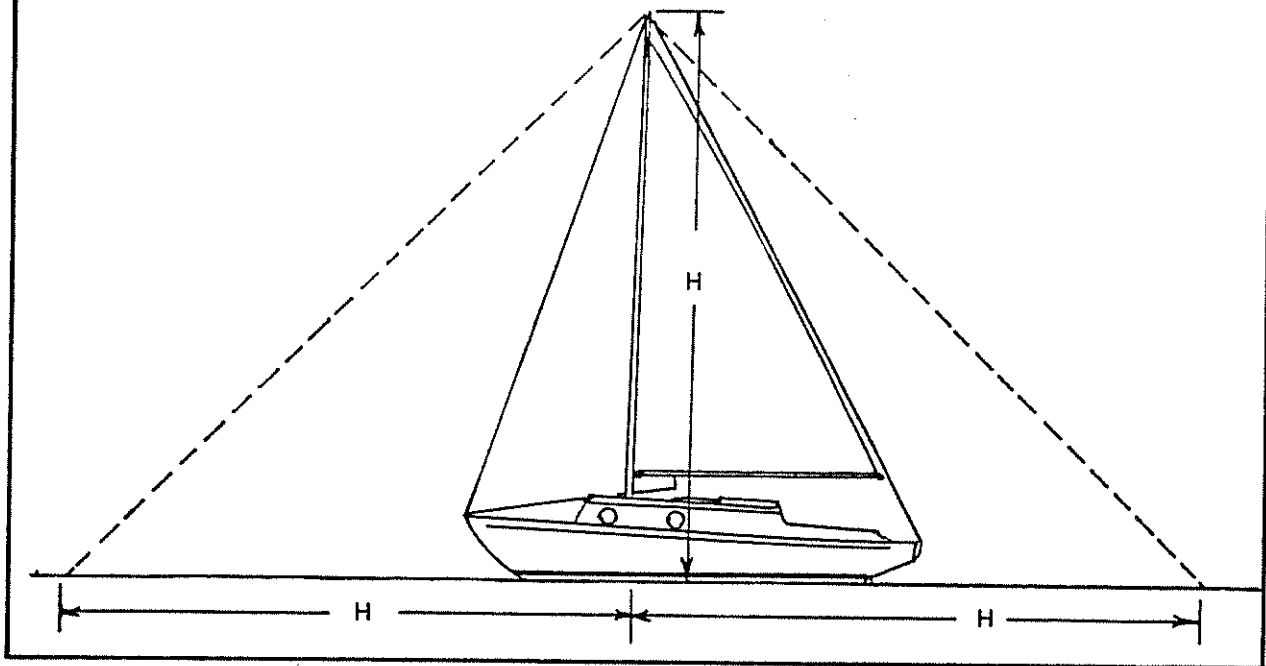


FIGURE 2 — BOAT WITH MAST NOT EXCEEDING 50 ft. (15m) ABOVE THE WATER

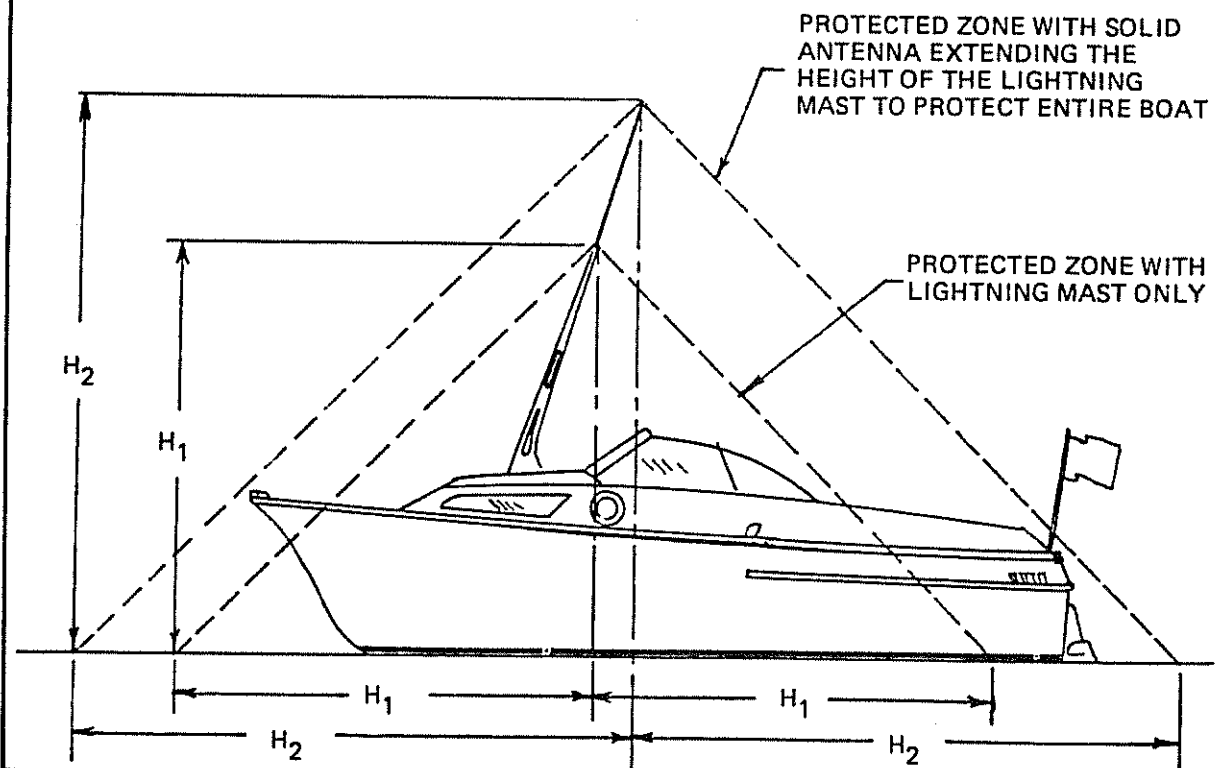
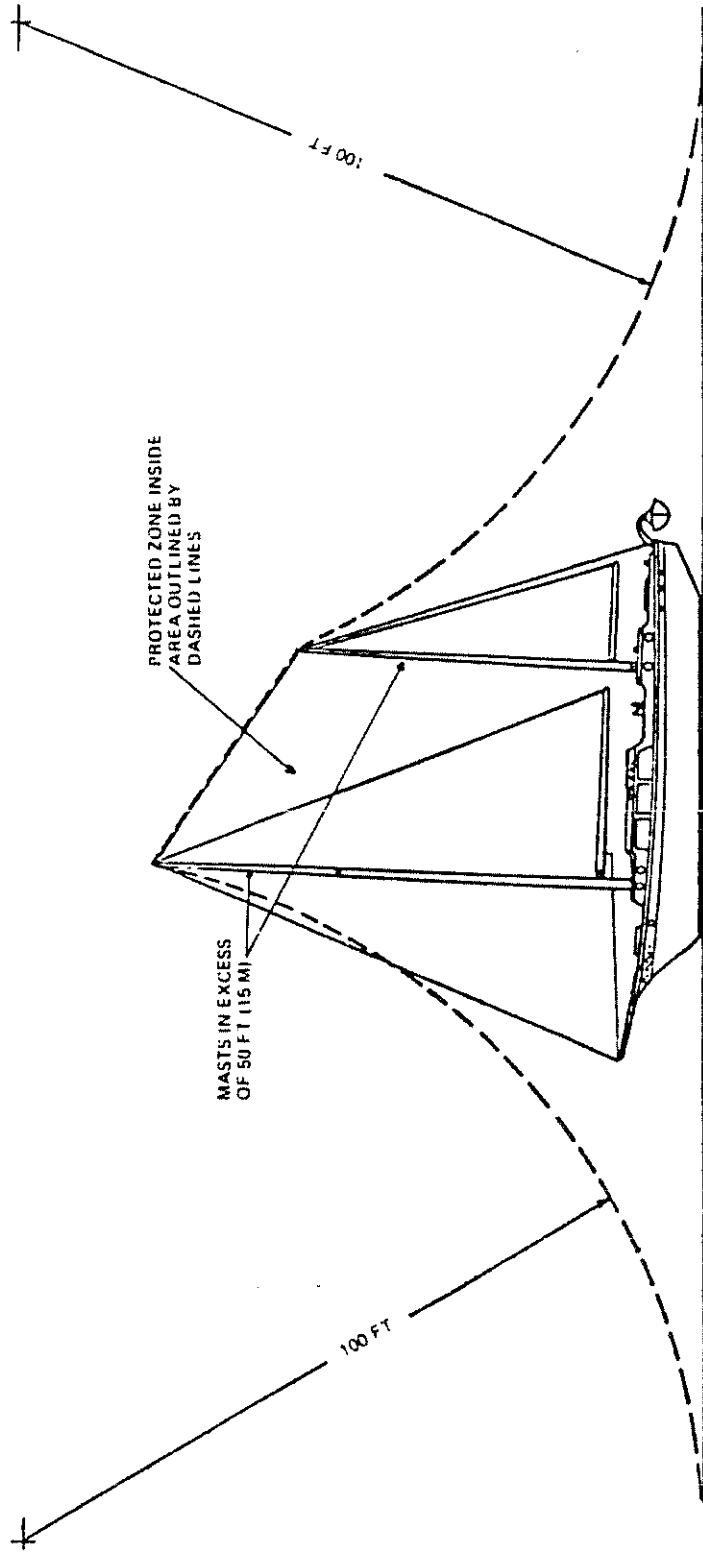


FIGURE 3 -- BOAT WITH MASTS IN EXCESS OF 50 FT. (15m) ABOVE THE WATER -- PROTECTION IS BASED ON LIGHTNING STRIKING DISTANCE OF 100 FT (30m)



## APPENDIX – LIGHTNING PROTECTION

This appendix contains additional information of a descriptive nature and recommendations pertaining to maintenance and behavior of personnel.

- E-4.Ap.1.     *Zone of Protection* – A grounded conductor, or lightning protective mast, will generally divert to itself direct hits which might otherwise fall within a cone-shaped space, the apex of which is the top of the conductor of lightning protective mast and the base a circle at the surface of the water having a radius which is related to the height of the top of the conductor or lightning protective mast.
- a.    To protect a boat of the size that renders the use of a single mast impracticable, additional lightning protective means shall be erected to form overlapping zones of protection.
  - b.    Boats with ungrounded or non-conductive objects projecting above the metal masts or superstructure may have these objects protected by a lightning ground conductor terminating in an air terminal above the object.
  - c.    Whip-type radio antennas shall not be tied down during a lightning storm if they have been designed as a part of the lightning protection system.
- E-4.Ap.2.     *Maintenance* – Lightning protection provisions are quite likely to receive scant attention after installation, and therefore their composition and assembly shall be strong and materials used shall be highly resistant to corrosion.
- a.    Grounding of metallic objects for lightning protection may increase the possibility of harmful galvanic corrosion. (See ABYC E-2, "Cathodic Protection")
  - b.    If a boat has been struck by lightning, compasses, electrical and electronic gear shall be checked to determine whether damage or changes in calibration has taken place.
  - c.    If a boat has been struck by lightning the lightning protection system shall be inspected for physical damage, system integrity and continuity to ground.
- E-4.Ap.3.     *Precautions for Personnel* – The basic purpose of protection against lightning is to ensure the safety of personnel. It is therefore appropriate that the following precautions be taken:
- a.    personnel shall remain inside a closed boat, as far as practical, during a lightning storm,
  - b.    arms and legs shall NOT be dangled in the water,
  - c.    consistent with safe handling and navigation of the boat during a lightning storm, personnel shall avoid making contact with any items connected to a lightning protection system and especially in such a way as to bridge between these items; for example it is undesirable that an operator be in contact with reversing gear levers and a spotlight control handle at the same time,
  - d.    personnel shall NOT be in the water during a lightning storm, and
  - e.    personnel shall avoid contact with metal parts of a sailboat's rigging, spars, fittings and railings.

\* \* \* \* \*



# Warning Labels

These warning labels were applied to your C-34 at the factory and contain information important for the safe operation of your boat. If any of these labels are missing, or you require replacement or additional labels, please contact the Catalina Yachts parts department.  
(818) 884-7700

**This vessel complies with U.S. Coast Guard safety standards in effect on the date of certification.**

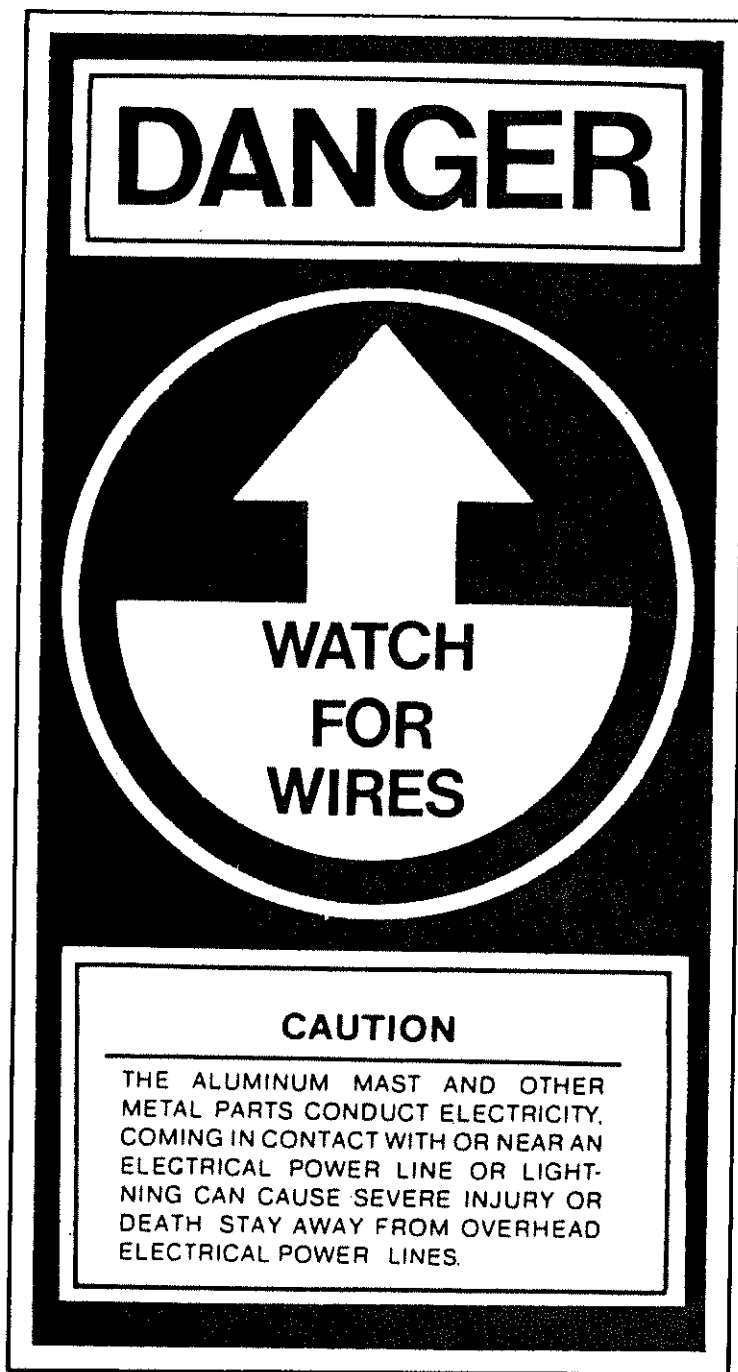
*Catalina* Yachts  
21200 VICTORY BOULEVARD  
WOODLAND HILLS, CALIF. 91367

**PART # WS1** BELOW ENGINE  
INSTRUMENT PANEL

**PART # WS2** ON FORWARD SIDE OF MAST  
1'-0" FROM BOTTOM

**IMPORTANT! IF ENGINE FAILS TO START AFTER 30 SECONDS OF STARTER MOTOR OPERATION, WATER MUST BE DRAINED FROM AQUA-LIFT MUFFLER TO PREVENT SERIOUS DAMAGE TO ENGINE FROM COOLING WATER BACK-UP.**

**PART # WS3** BELOW ENGINE  
INSTRUMENT PANEL







## **WARNING**

DO NOT OPEN  
WHEN ENGINE IS RUNNING  
CONTACT WITH HOT OR  
MOVING ENGINE PARTS CAN  
CAUSE SERIOUS INJURY

PART # WS4 ON ALL ENGINE ACCESS  
DOORS AND PANELS

## **IMPORTANT**

READ THE OWNERS MANUAL BEFORE  
USING THIS VESSEL, ADDITIONAL  
COPIES OF THE OWNERS MANUAL ARE  
AVAILABLE FROM:

***Catalina*** // *Yachts*

21200 VICTORY BLVD., WOODLAND HILLS, CA 91367

PART # WS5 IN THE COCKPIT ON DECK

## **CAUTION**

**KEEP CURTAINS  
AWAY FROM STOVE**

PART # WS6 IN HEAD NEAR ACCESS DOOR  
TO VALVES

**IMPORTANT! IMPORTANT!**  
**Close through hull valves  
each time the head is used.**

PART # WS7 ON OVERHEAD ABOVE STOVE



## DISCHARGE OF OIL PROHIBITED

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

PART # WS8 IN AFT COCKPIT SEAT

It is illegal for any vessel to dump plastic trash anywhere in the ocean or navigable waters of the United States. Annex V of the MARPOL TREATY is an International Law for a cleaner, safer marine environment. Violation of these requirements may result in civil penalty up to \$25,000, fine and imprisonment.

	3 to 12 miles	12 to 25 miles	Outside 25 miles
U.S. Lakes, Rivers, Bays, Sounds and 3 miles from shore	ILLEGAL TO DUMP Plastic Dunnage, lining & packing materials that float, also if not ground to less than one inch:	ILLEGAL TO DUMP Plastic Dunnage, lining & packing materials that float.	ILLEGAL TO DUMP Plastic
ILLEGAL TO DUMP Plastic & Garbage Paper Metal Rags Crockery Glass Dunnage Food	Paper Crockery Rags Metal Glass Food		

State and local regulations may further restrict the disposal of garbage.

PART # WS9 ON GALLEY FRONT FACE

