

CAL 31

Owner's Manual

YACHT'S NAME

HOME PORT

REGISTRATION NO.

OWNER'S NAME & ADDRESS

RADIO CALL NUMBER

SAIL NO.

HULL IDENTIFICATION NO.

KEY NO'S.

ENGINE SERIAL NO.

BANGOR PUNTA MARINE
848 AIRPORT ROAD
FALL RIVER, MA 02722
(617) 678-5291

**BANGOR
PUNTA
MARINE**

C O N G R A T U L A T I O N S

In choosing your new yacht from the Cal line, you have selected one of the best values in today's sailboat market. The design and construction of this yacht reflect over twenty years of experience and knowledge gained in the building of over 10,000 boats.

In the early 1940's, William Lapworth designed "Dasher" and the "L-36," the forerunners of today's light displacement boats. Continuing in the traditional standards of high quality and fine workmanship, Bangor Punta Marine has commissioned over twenty models of his design.

The use of aluminum, stainless steel, teak wood, and fiberglass all combine to produce a yacht that has much lower maintenance requirements than those in the past. However, it is vital that the necessary maintenance procedures be performed faithfully.

This manual is designed to familiarize you with your boat. The location and function of each system onboard will be outlined to help make any adjustments or maintenance procedures more easily undertaken.

Bangor Punta Marine reserves the right to change specifications without notice, and this manual may not reflect all such changes. Since we are always striving to improve our product, modifications

and improvements are constantly in process and, therefore, it is possible that your boat may contain features different from those enumerated in this manual. It is impractical to revise this manual for each such modification. It is our policy to make improvements whenever it is appropriate without waiting for corresponding updates in our manual.

Full information on optional equipment may not be contained herein. Contact the option manufacturer or your Cal boat dealer for more information.

Please read and understand this manual and all others included with your boat, before operating any of the boat's systems. In addition to information contained in this manual, there are certain federal, state, and local regulations pertaining to safe and legal operation of pleasure craft that you should familiarize yourself with. Local governmental agencies and boating groups can help you become aware of these regulations.

Thank you for the confidence you have shown in Cal by selecting one of our products.

Have Fun, and Good Sailing!

BANGOR PUNTA MARINE

CONTENTS

C O N T E N T S

- I GENERAL
 - Standard Boat Dimensions
 - Docking Plan
 - Sail Plan
 - Arrangement Plan
 - Dealer Responsibilities
 - Owner's Responsibilities
 - Limited Warranty
 - Authorized Service Centers

- II COMMISSIONING
 - Commissioning
 - Pre-Launch Check List
 - Post-Launch Check List
 - Commissioning Notes
 - Stepping and Tuning the Mast
 - Rigging Dimensions
 - Wire Rigging
 - Rope Rigging
 - Boat Storage

- III OPERATION
 - Engine Operating Instructions
 - Flooding of Engine with Water
 - Fuel System Engine Room Schematic
 - Fueling Procedure
 - Steering Gear (Cal 31, 35, and 39)
 - Electrical
 - Electrical System Schematic
 - Lightning Ground
 - Navigation Lights
 - Plumbing - Fresh Water System (Cal 31, 35, 39)
 - Typical Pressure Water System Schematic
 - Cooking Stoves/Propane Stove
 - Alcohol Stoves
 - Plumbing - Heads (Cal 9.2, 31, 35, and 39)
 - Thru-Hull Locations Schematic

- IV MAINTENANCE
 - Periodic Maintenance
 - Periodic Maintenance Schedule
 - Basic Rules for Battery Care and Maintenance
 - Finishes

- V MANUALS

GENERAL

CAL 31

STANDARD BOAT DIMENSIONS

HULL DIMENSIONS

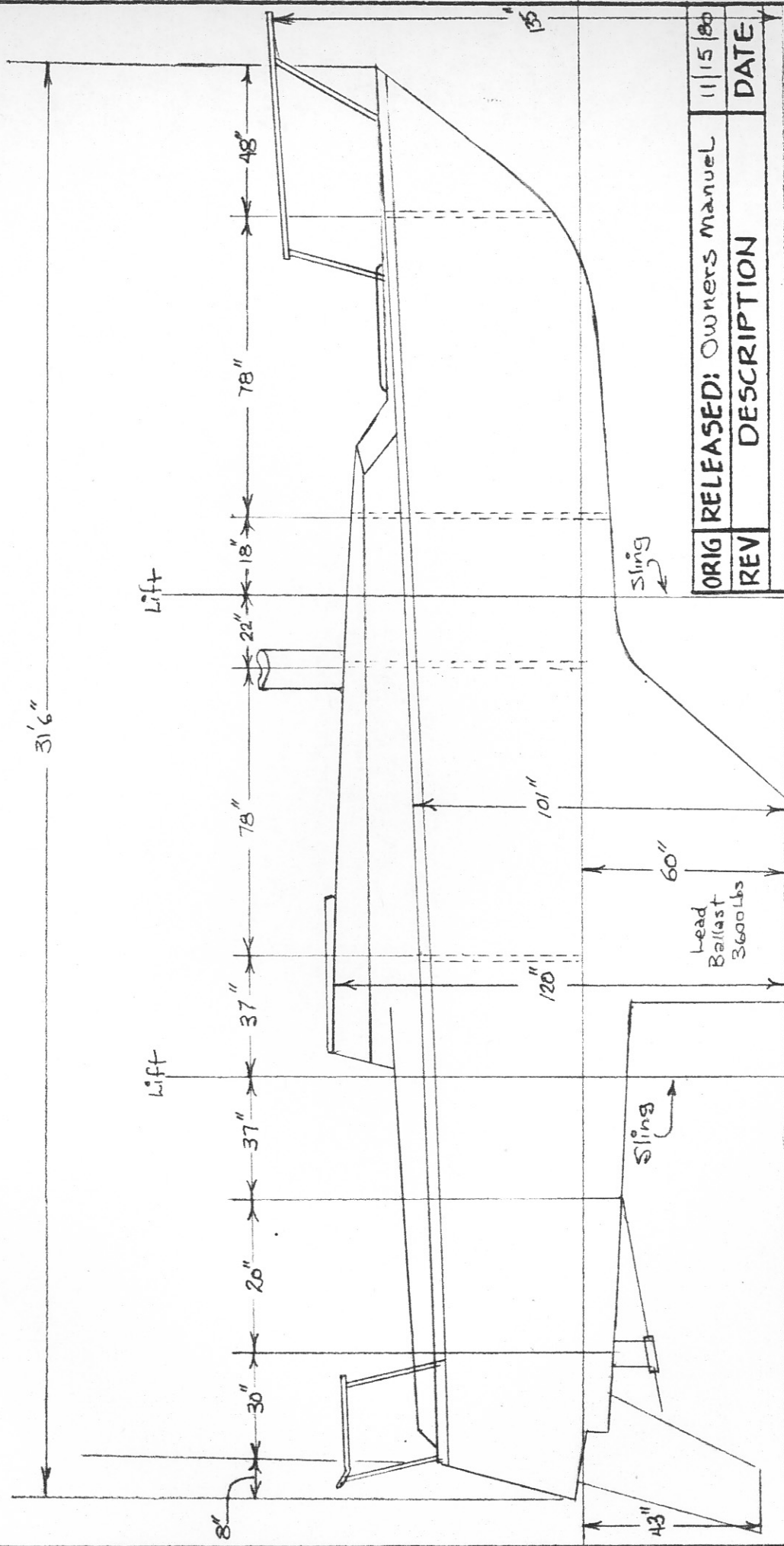
o LOA	31'6"	9.60 Meters
o LWL	25'8"	7.82 Meters
o Beam	10'0"	3.04 Meters
o Draft - Deep	5'0"	1.52 Meters
o Displacement	9,170 Lbs.	4,159 Kilograms
o Ballast	3,600 Lbs.	1,636 Kilograms

RIG DIMENSIONS

o I	41'6"	12.65 Meters
o J	13'5"	4.11 Meters
o P	35'0"	10.67 Meters
o E	12'0"	3.66 Meters
o 100% Foretrianglè	280 Sq. Ft.	26.01 Sq. Meters
o Mainsail Area	210 Sq. Ft.	19.51 Sq. Meters
o Total	490 Sq. Ft.	45.52 Sq. Meters
o Mast Height Above Water	45'5"	13.84 Meters

MISCELLANEOUS

o Berths	5	
o Fresh Water Capacity	56 Gallons	212.8 Liters
o Ice Box Capacity	8 Cubic Ft.	226.53 Liters
o Fuel Capacity	20	76.0 Liters
o Engine	Universal 16 HP, 2 cylinder, fresh water cooled diesel	



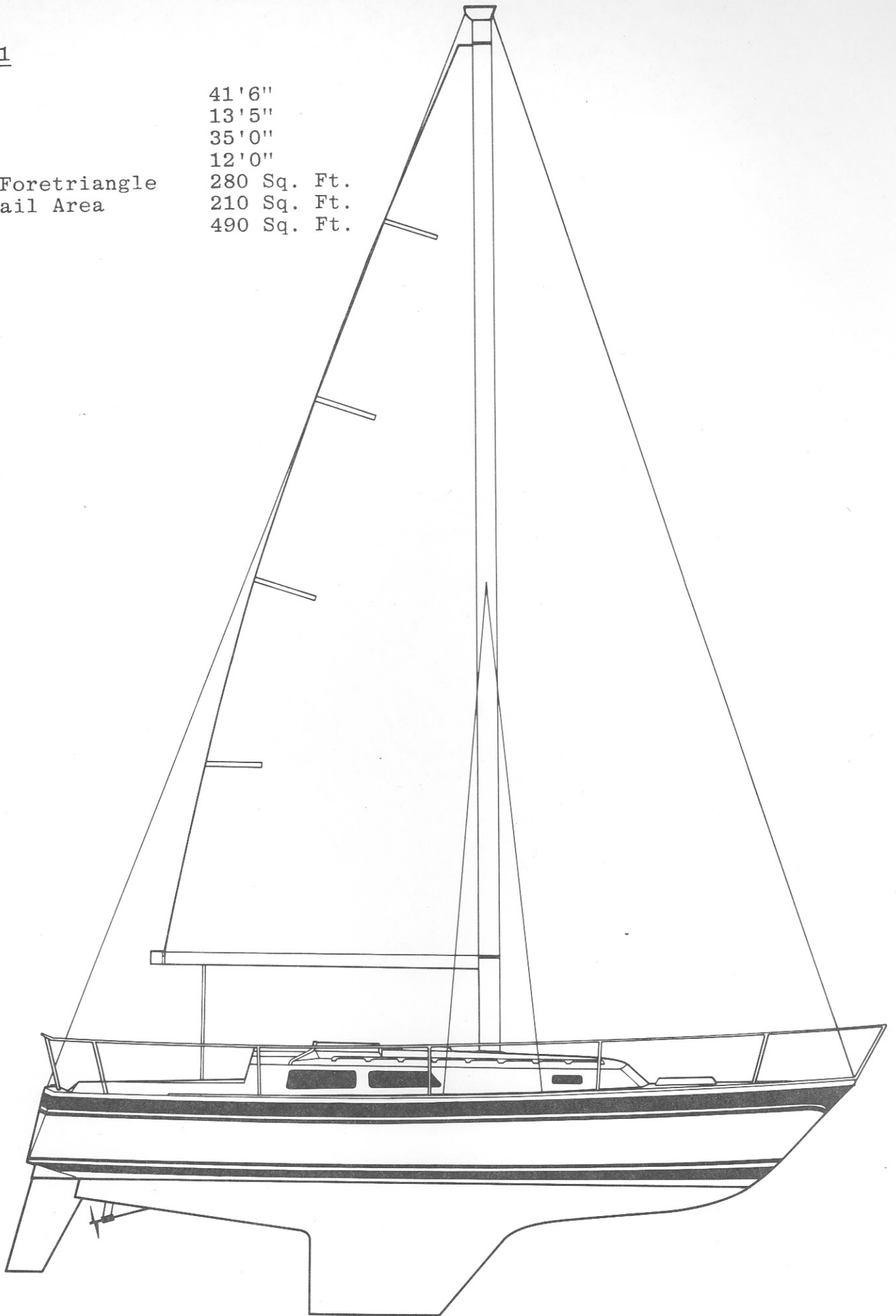
REV	DESCRIPTION	DATE
ORIG	RELEASED: Owners Manual	11/15/80

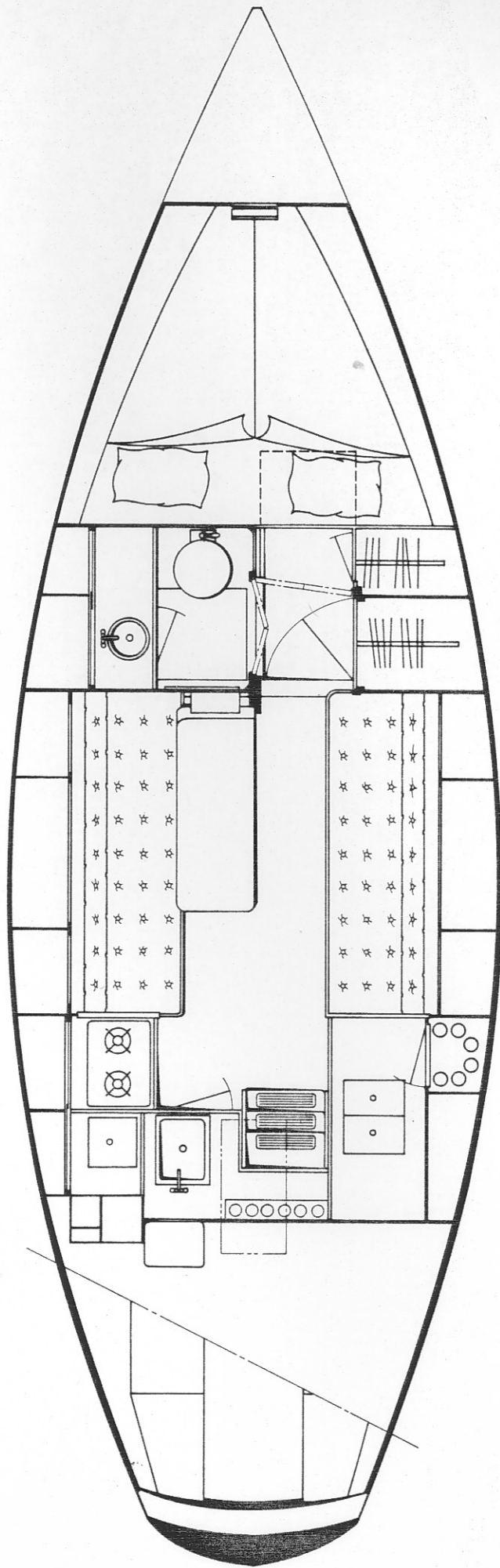
Docking Plan Dim Inches + Feet
 Cal 31
 Drawn by - Ed Edgar - RND
BANGOR PUNTA MARINE
 DWG NO SHT 1 OF 5

Max beam 10'1"
 Document Dim Length 30'10"
 Beam 10'1"
 Max Depth 10'
 Envelope Keel
 Disp 9,170 lbs

Cal 31

I	41'6"
J	13'5"
P	35'0"
E	12'0"
100% Foretriangle	280 Sq. Ft.
Mainsail Area	210 Sq. Ft.
Total	490 Sq. Ft.





DEALER RESPONSIBILITIES

Your Cal boat dealer is a professional. He can provide you with the service and expertise that will help you to enjoy your Cal. Rely on him for assistance in selecting any additional equipment you may need and in seeing that it is properly installed.

The dealer has inspected the boat upon arrival at his yard. When the boat is commissioned, he will check all the systems and equipment and correct any problems that may arise. Should there be any defects covered by the Cal warranty, the dealer will correct them as soon as possible and file any warranty claims with Bangor Punta Marine. All warranty matters must be handled by an authorized Cal dealer.

Should you need any parts for your Cal product, contact your local dealer. He can obtain quick delivery from Cal. By utilizing his assistance, you can be assured of receiving the proper parts and of proper installation as well.

Bangor Punta Marine assumes no liability for damage incurred in transit.

OWNER'S RESPONSIBILITIES

Your Cal yacht is covered by our Limited Warranty (see next page) for a period of one year after commissioning by the original retail customer, but in no event later than two years from the date of shipment by Bangor Punta Marine. Always refer to our Limited Warranty for complete warranty information. Within 30 days of taking delivery of your boat, fill out the warranty registration card and return it to Bangor Punta Marine. The U. S. Coast Guard requires that all manufacturers keep records of people who have purchased their products. This is necessary in case a defect notification or product recall is needed. The only way Bangor Punta Marine can maintain these files is to have you send in the completed card. If you have any questions or comments, please include these with the card. We will get back to you.

When you sell your Cal product, please drop us a note with the hull number, your name, and the name of the new owner.

It is important that you contact your dealer as soon as possible when product defects are noted. This will assure prompt service and prevent the problem from worsening.

Thoroughly check your ship's paper file to insure that all manuals and warranties for your optional or additional equipment are provided.

LIMITED WARRANTY

Bangor Punta Marine warrants each new Cal boat manufactured by it to be free from defects in material and workmanship, under normal noncommercial use and service, for a period of one year after commissioning by the original retail customer, but in no event later than two years from the date of shipment by Bangor Punta Marine, subject to the terms and conditions stated below.

- 1) WARRANTOR. This warranty is granted by Bangor Punta Marine, a division of Bangor Punta Corporation, 848 Airport Road, Fall River, Massachusetts 02722.
- 2) PARTIES TO WHOM WARRANTY IS EXTENDED. This warranty shall extend to any buyer (other than for purposes of resale or use in the ordinary course of the buyer's business), and any noncommercial transferee to whom such product is transferred during the warranty period and who normally uses it for personal, family or household purposes. For Cal boats used commercially, this warranty also extends but it expires thirty (30) days after commissioning by the original purchaser.
- 3) PARTS COVERED. All parts manufactured by Bangor Punta Marine, including the hull, deck, and cabinetry are covered by this warranty; the installation work performed by Bangor Punta Marine on components not manufactured by it, is also covered by this warranty.
- 4) PARTS NOT COVERED. The following parts are not covered by this warranty:
 - a) masts, plywood, teak, external finishes (which include paint and gelcoat), and upholstery; and
 - b) engines, toilets, stoves, refrigerators, batteries, ignition systems, lighting devices, blowers, propellers, and other parts and equipment manufactured by others. Bangor Punta Marine will forward the owner warranties, if any, extended by other manufacturers.
- 5) REMEDY. If within the applicable warranty period any part or installation work covered by this warranty proves to be defective in material or workmanship, then Bangor Punta Marine shall, at its sole option, repair or replace the defective part. Parts and labor shall be at the expense of Bangor Punta Marine, but not transportation costs.
- 6) PROCEDURE FOR OBTAINING PERFORMANCE UNDER THIS WARRANTY. In order to obtain performance of the obligations under this warranty, the owner must promptly (within thirty days of discovery of the defect) notify Bangor Punta Marine or an authorized Cal service center of the defect, and at Bangor Punta Marine's or the authorized Cal service center's direction, return the defective part or product to be repaired or replaced under this warranty to an authorized Cal service center. If repair or replacement by an authorized Cal service center is determined by Bangor Punta Marine to be impractical, the owner shall return the defective part or product to Bangor Punta Marine at the address stated above. All transportation costs to and from the authorized Cal service center or Bangor Punta Marine, and all haul-out, launching and rigging costs, will be at the expense of the owner.
- 7) DESIGN CHANGES. Bangor Punta Marine reserves the right to make changes in the design or material of its products without incurring any obligation to incorporate such changes in any product previously manufactured or advertised.
- 8) ENTIRE WARRANTY. This warranty may be altered only in writing signed by an officer of Bangor Punta Marine. It may not be altered or extended orally or in writing by any other person.
- 9) EXCLUSIONS AND IMPLIED WARRANTIES. This warranty does not extend to any defect due to the negligence of others, failure to operate or maintain the product in accordance with the operation and maintenance instructions furnished with each new product, unreasonable use, accidents, alterations, or ordinary wear and tear. Implied warranties, including those of merchantability, arising under state law, are limited in duration to the duration of this express warranty, where such limitation is permitted. Bangor Punta Marine shall not be responsible for loss of use of any products, loss of time, inconvenience, or other incidental or consequential damages with respect to business or property, whether as a result of breach of warranty, negligence or otherwise. Some states do not allow (a) limitations on how long an implied warranty lasts or (b) the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not be applicable. This warranty gives the owner specific legal rights, and there may also be other rights which vary from state to state.

CAL BOATS

AUTHORIZED SERVICE CENTERS

ALABAMA

Bay Nautical Supply Co.
205-928-2359

702 N. Section Street
Fairhope 36532

University Auto Sales, Inc.
DBA University Sailing Center
205-324-2594

900 8th Avenue
South Birmingham 35233

ALASKA

Northern Marine
907-337-3246

3920 Steller Drive
Anchorage 99504

CALIFORNIA

Jack Dorsee Sailboats
714-291-6313

1880 Harbor Island Drive
San Diego 92101

Gorman & Thomson, Ltd.
415-865-3662
415-865-3663

1917 Clement Ave., at Alameda Marina
Alameda 94501

Stan Miller Sailboats, Inc.
714-846-2754
213-598-9433

245 Marina Drive
Long Beach 90803

O'Neill's Yachts
408-476-5200

2222 E. Cliff Drive
Santa Cruz 95060

Stockton Yacht Sales
209-951-7572

4960 W. Brookside Road
Stockton 95209

CONNECTICUT

Milford Boat Works, Inc.
203-877-1475

One High Street
Milford 06460

FLORIDA

Atlantic Sailing Yachts of
Florida
813-823-3003

236 16th Avenue South
St. Petersburg 33701

Herbert M. Piker, DBA
ORTEGA YACHT SALES
904-388-5547
904-388-5548

3420 Lake Shore Blvd.
Jacksonville 32210

Sailboats South, Inc.
305-525-8144

1900 S. E. 15th Street
Ft. Lauderdale 33316

IOWA
Des Moines Boating Center
2100 Delaware Avenue
Ankeny 50021 515-964-4289

CAL BOATS

AUTHORIZED SERVICE CENTERS

GEORGIA

Sailing Atlanta
404-945-7245

6002 Holiday Road
Buford 30518

IDAHO

Kaliöpe
208-772-4715

Route 5, Box 762
Coeur D'Alene 83814

ILLINOIS

Chalet Marine Division
312-273-2250

Lake Avenue at Skokie Blvd.
Wilmette 60091

KANSAS

Midwest Yacht, Inc.
913-782-9860

15730 S. 169 Hiway
Olathe 66061

KENTUCKY

Eddy Creek Resort & Marina
502-388-7743

Route #1, Hwy 93
Eddyville 42038

MAINE

Harraseeket Marine Service
207-865-3181

Main Street
South Freeport 04078

MARYLAND

Lippincott Sailing Yachts
301-827-9300

Cedar Pt. Marina, Route 1, Box 545
Grasonville 21638

MASSACHUSETTS

Wells Yachts - South, Inc.
DBA: WELLS YACHTS OF HINGHAM
617-749-3025
617-749-3105

349 Lincoln Street
Hingham 02043

MICHIGAN

Hoyles, Inc.
517-686-4570

6987 West Side Saginaw Road
Bay City 48706

•Oselka's Snug Harbor Marina
616-469-2600

514 W. Water Street
New Buffalo 49117

Sail Boats, Inc.
313-468-6622

30137 S. River Road, P. O. Box 772
Mt. Clemens 48043

RHODE ISLAND
Hawkins Yachts, Inc.
Poppasquash Road
Bristol 02809 401-253-3434

CAL BOATS

AUTHORIZED SERVICE CENTERS

NEW HAMPSHIRE

Trexler's Marina, Inc.
603-253-7315

Star Rte. 62
Center Harbor 03226

NEW JERSEY

G. Winter's Sailing Center, Inc.
609-768-3737

RD 2, P. O. Box 402-C, Rt. 73
Berlin 08009

Red Witch Sailing Yachts, Inc.
201-566-7733

Viking's Marina, Route 35
Laurence Harbor 08879

NEW YORK

Bow & Stern Marine, Inc.
716-692-2316

400 River Road
No. Tonawanda 14120

Willis Marine Center
516-421-3400

Mill Dam Road, P. O. Box 579
Huntington 11743

NORTH CAROLINA

J & B Sailboats, Inc.
704-537-7693

4830 Albermarle Road
Charlotte 28205

OHIO

Sail Boat Sales, Inc.
419-729-5522

4731 Summit Street
Toledo 43611

Sailing, Inc.
216-361-2897

5401 Memorial Shoreway East
N. Marginal Road
Cleveland 44114

OREGON

I-N-I, Inc.
503-284-8860

3409 N. E. Marine Drive
Portland 97211

TENNESSEE

Rooke Sails
901-744-8500

1744 Prescott South
Memphis 38111

Sale Creek Marina Multiboating,
Inc.
615-332-6312

3900 Lee Pike
Soddy Daisy 37379

COMMISSIONING

COMMISSIONING

Your O'Day yacht dealer will supervise the commissioning and testing of your new boat. His knowledge and experience will insure that all systems and components will function properly when the boat is delivered to you.

We have included some guidelines and instructions in this section to aid you and your dealer.

PRE-LAUNCH CHECK LIST

1. All seacocks operational, closed, and tightened. _____
2. Accessory thru-hulls installed and tightened. _____
3. Diesel: Propeller in place; 2 nuts and cotter pin installed. _____
4. Zinc anodes installed on shaft. _____
5. Batteries secure, filled, and charged. _____
6. Rigging installed on spar; cotter pins spread and taped. _____
7. Masthead sheaves free to rotate; lubricated. _____
8. Mast lights working. _____
9. All required safety equipment on board. _____

NOTE: THIS IS A BASIC PRE-LAUNCH CHECK LIST.

POST-LAUNCH CHECK LIST

1. All seacocks open and water tight. _____
2. Shaft aligned to .003" tolerance. _____
3. Engine shaft packing nut tightened. (See Stuffing Box under Engine Operation Instructions.) _____
4. Engine oil levels checked. (Refer to Engine Manual.) _____
5. Fuel tank filled and system checked for leaks. _____
6. Engine operates and passes water thru exhaust. _____
7. Engine controls operate correctly and checked for tight nuts, bolts, and spread cotter pins. _____
8. Mast stepped and mast collar installed. (Collar on Cal 35 and Cal 39 only.) _____
9. Mast bolted to mast collar ears.* _____
10. Turnbuckles attached; cotter pins spread and taped. _____
11. Boom and running rigging installed. _____
12. Water tank filled. (See Note 2 - Water Heater.) _____
13. Faucets work and lines checked for leaks. _____
14. Stove fuel tank filled; system checked for leaks. (Refer to Propane Stove Instructions, if applicable.) _____
15. Electrical equipment operational. (See Note 1 for Shore-Power System.) _____
16. Steering gear operational. _____
17. Rudder shaft greased. _____
18. Bilge pump operational. _____
19. Toilets operational; hoses secure. _____
20. Deck hardware checked for leaks. _____
21. Warranties and manuals delivered to owner. _____

* = (After first light-air sail. See Instructions.)

COMMISSIONING NOTES

Note No. 1

If your Cal Yacht is supplied with a 110V AC shore-power system, it will have a control panel with a main breaker (30 amp) and separate (15 amp) breaker switches for the outlets and water heater. In addition, there are both audible (buzzer) and visual (yellow light on panel) reverse-polarity indicators. With all switches off, attach the power cable to the power inlet on the boat. Next, connect the power cable to the dockside outlet.

WARNING: IF THE POLARITY INDICATORS LIGHT AND/OR SOUND, DISCONNECT THE CORD IMMEDIATELY. THIS INDICATES A REVERSE POLARITY SITUATION WHICH IS DANGEROUS. SEVERE INJURY OR DEATH MAY RESULT. DIAGNOSE AND CORRECT THE PROBLEM BEFORE PROCEEDING.

It is recommended that any appliances used on board be wired with three-wire grounded plug.

Note No. 2

If your Cal Yacht is equipped with a water heater, it will be installed to operate off both the engine cooling system and the 110V AC electric system. Before switching the 110V system on, be sure the water-heater tank is filled. Open the valve in the inlet water line, and be sure the check valve is installed with the arrow pointed toward the water heater. Operate the pressure-water system until you get a steady stream through the hot-water faucets.

WARNING: FAILURE TO FILL THE WATER HEATER BEFORE SWITCHING ON THE 110V CIRCUIT WILL RESULT IN DAMAGE TO THE HEATING ELEMENT.

STEPPING AND TUNING THE MAST

Before stepping the mast, be sure all running and standing rigging is properly installed, cotter pins are spread, and halyard sheaves are free to rotate. The upper shroud is run through the groove in the outboard end of the spreader; on either side of the groove is a hole. Through these holes run a stainless wire. Wrap it around the stay several times in such a manner as to prevent the shroud from jumping out of groove. After the shroud is wired in place, tape over all the wire to protect the sails, and to prevent the wire from unraveling. Check the spar lights to be sure they are operational. Open all turnbuckles to their full extension.

Cal 35 and Cal 39: Refer to Separate Sheet for Mast-Collar Instructions.

Step the spar through the deck and table (if applicable), and then onto the mast step. Be careful not to pinch the mast wires during the stepping. (Cal 35 and Cal 39 - The mast step was set at the factory to provide an aft rake. If you wish to adjust this, loosen the mast-step bolts and slide the step fore or aft.)

Attach all the shrouds, tighten the headstay, backstay, and upper shrouds to a taut condition. For now, leave the lower shrouds slack. Adjust the headstay and backstay to achieve a straight spar, when sighting up the trailing edge. Next, with the boat level athwartships, tighten the upper shrouds to get the mast straight. Finally, tighten the lowers no more than hand tight.

STEPPING AND TUNING THE MAST - Continued

Final tuning must be accomplished while sailing. In a light breeze (6 - 8 knots) adjust the shrouds to achieve a straight spar on either tack. In heavier winds, any curvature should be gradual and constant from the deck to the mast head. After the initial sail, go below, and drill through the spar and install the bolt that passes through the mast collar ears and spar (Cal 35 and Cal 39). This serves to hold the deck from flexing and should not be installed until the boat has been sailed and the rig tuned, to assure proper location of the hole.

The rig will need adjustment after a few sails to compensate for the stretch in the wire. Be sure to install cotter pins in all turnbuckles and clevis pins, and tape over them to prevent injury to crew or damage to sails.

Fine tuning for the best performance will depend upon your local conditions and your sails. Consult your dealer or local sailmaker for their suggestions.

WARNING: WHEN HAULING, LAUNCHING, AND SAILING NEAR LOW OVERHEAD WIRES, CARE MUST BE TAKEN THAT THE MAST NOT COME IN CONTACT WITH SUCH WIRES. CONTACT COULD CAUSE THE MAST TO CONDUCT ELECTRICITY AND CAUSE INJURY OR DEATH.

RIGGING DIMENSIONS

The following table shows the critical dimensions and materials used for the standing and running rigging on your Cal yacht.

In the event you should need to replace any of the rigging, you can order the materials through your Cal dealer. If this is not convenient, this table will allow you or a local rigger to obtain the proper materials.

The standing rigging measurements are the overall length of the stay, from the center of the hole in the upper terminal to the end of the swaged stud. If using a different turnbuckle than supplied by Bangor Punta Marine, be sure to allow for possible length difference. We would strongly recommend actually measuring any standing rigging before replacing, to assure 100% accuracy.

All running rigging should be checked periodically for chafe or damage and replaced, when necessary. If excessive wear is noted on running rigging, check all blocks and sheaves to be sure they are free to rotate and are properly aligned.

All standing rigging should be inspected for cracks in the swages, proper installation of cotter pins, and wear on clevis pins.

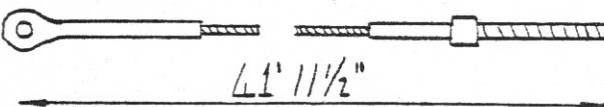
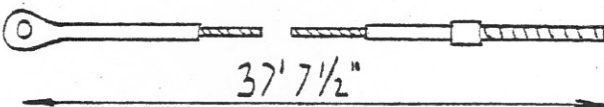
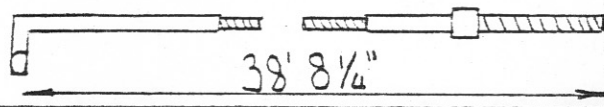
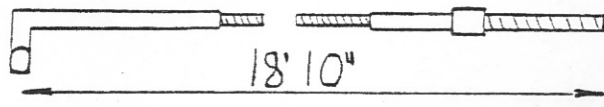
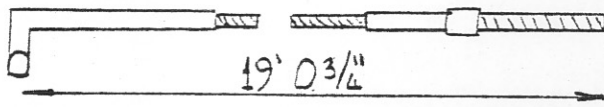
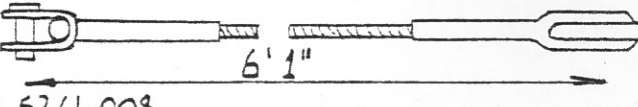
Replace any damaged or suspect rigging.

As you may have noticed on some sailboats the swaged ends of the shrouds will ooze rust, and in severe cases, the swage will split. One way to prevent this problem is to heat up the swaged section and place a bar of beeswax against the 1 x 19 stainless steel wire. As it melts, the beeswax will run into the swaged section, sealing it from the elements.

CAL 31

WIRE RIGGING

CAL 31

STD	OPT	TURNBUCKLE DESCRIPTION WIRE x BODY x PIN SIZE (IN 32 NOS OF AN INCH)	NO. PER BOAT	DESCRIPTION
✓		MAR EYE 1/4 x 1/2 PIN WIRE 1/4 1x19SS MERR STUD 8-16-16 	1	HEADSTAY PT# 77175
✓		MAR EYE 1/4 x 1/2 PIN WIRE 1/4 1x19SS MERR STUD 8-16-16 	1	BACKSTAY PT# 77176
✓		BALL TERM 1/4 WIRE 1/4 1x19SS MERR STUD 8-16-16 	2	UPPERS PT# 77177
✓		BALL TERM 7/32 WIRE 7/32 1x19SS MERR STUD 7-12-14 	2	LOWERS FWD PT# 77178
✓		BALL TERM 7/32 WIRE 7/32 1x19SS MERR STUD 7-12-14 	2	LOWERS AFT PT# 77179
✓		TOGGLE FORK 1/4 x 7/8 PIN WIRE 1/4 1x19SS FORK 1/4 x 3/8 PIN  MERR 5261-008	2	BACKSTAY BRIDLE PT# 77180

ORIG RELEASED: DRWG# AO128 WIRE RIGGING SCHEDULE

11-21-79

REV DESCRIPTION

DATE

Cal 31

Running Rigging

<u>Item</u>	<u>Length</u>	<u>Diameter</u>	<u>Material</u>	<u>Fitting</u>
Main Sheet	75'	7/16"	Yacht Braid	
Jib Sheet	45'	7/16"	Yacht Braid	
Main Halyard				
Rope	47'	7/16"	Yacht Braid	
Wire	42'6"	5/32"	7 x 19 SS Cable	Halyard Shackle
Jib Halyard				
Rope	47'4"	7/16"	Yacht Braid	
Wire	41'5"	3/16"	7 x 19 SS Cable	Snap Shackle
Reef Line				
Port	32'	3/8"	Yacht Braid	
Starboard	24'	3/8"	Yacht Braid	
Outhaul	40'	5/16"	Yacht Braid	Spliced to Block Inside Boom
Boom Topping Lift				
Mast	35'6"	1/4"	Yacht Braid - Pre-stretched	Eye Splice Upper End - Bullet Block on Lower End
Boom	12'	1/4"	Yacht Braid	Eye Splice One End
Traveler Control Lines	15'	5/16"	Yacht Braid	

NOTE: Main and Jib Halyards are spliced wire to rope.
Dimensions given are before splicing.
Splice length is 2'2".

Main sheet and halyard are blue
Jib sheet and halyard are green

BOAT STORAGE

Whenever a boat is pulled from the water, for work or storage, care must be taken to provide adequate and proper support of the hull. This is especially true of fin-keel sailboats.

It is not recommended that the weight of the boat be rested solely on the keel. Because of the small area of the keel bottom, the localized loads on the hull in the area of the keel would be severe, and could result in permanent damage to the shape or structure of the boat.

If poppets are used for support, they should be located so that the pads are under bulkheads, berth fronts or pan stringers, so that the load is dispersed (See Docking Plan). Failure to properly position the poppets could result in hull depression. Be sure to use an adequate number of supports, and locate them to prevent the boat from tipping fore or aft. A storage cradle designed for this boat is available through your Cal dealer.

When hauling any boat with a propeller shaft, be sure to disconnect the coupling before lifting the boat. This will prevent bending of the shaft as the boat changes shape when lifted.

Do not careen a fin-keel sailboat. The hull, keel, and rudder should survive any accidental groundings. However, care must be taken to keep the boat as balanced and upright as possible to prevent excessive loads.

WARNING: WHEN HAULING, LAUNCHING, AND SAILING NEAR LOW OVERHEAD WIRES, CARE MUST BE TAKEN THAT THE MAST NOT COME IN CONTACT WITH SUCH WIRES. CONTACT COULD CAUSE THE MAST TO CONDUCT ELECTRICITY AND CAUSE INJURY OR DEATH.

OPERATION

ENGINE OPERATING INSTRUCTIONS

The engine installed in your yacht has already been run and all systems tested before leaving the Cal plant.

We are not going to get into a great amount of detail in this area, for we believe the manual supplied by the engine manufacturer adequately covers the subject.

Study your engine owner's manual and get to know your engine. The knowledge could be of great assistance to you. Also, some manufacturers have clinics aimed at the customer; contact them for details.

It is advisable that you follow the engine manufacturer's procedures and recommendations on run-in and maintenance.

On yachts with propeller shafts, please use the following procedure:

Alignment of Engine to Shaft

The engine must be properly and exactly aligned with the propeller shaft. No matter what material is used to build a boat, it will be found to be somewhat flexible, and when launched, the boat hull will change its shape to a greater extent than is usually realized. It is, therefore, very important to check the engine alignment at frequent intervals and to correct any errors when they appear.

Mis-alignment between the engine and the propeller shaft is the source of troubles which are often blamed on other causes. It will create excessive bearing wear, rapid shaft wear, or leakage of transmission oil through the rear seal. A bent propeller shaft will have exactly the same effect, and it is, therefore, necessary that the propeller shaft itself be perfectly straight.

ENGINE OPERATING INSTRUCTIONS - Continued

The engine should be moved around on the bed and supported on the screw mounts until the two halves of the couplings can be brought together without using force and so that the flanges meet evenly all around.

Never attempt a final alignment with the boat on land. The boat should be in the water and have had an opportunity to assume its final water form. It is best to do the alignment with the fuel and water tank about half full and all the usual equipment on board and after the main mast has been stepped and final rigging has been accomplished.

Take plenty of time in making this alignment, and do not be satisfied with anything less than perfect results.

The alignment is correct when the shaft can be slipped backward and forward into the counterbore very easily and when a feeler gauge indicates that the flanges come exactly together at all points. The two halves of the coupling should be parallel within 0.003 inches.

In making the final check for alignment, the engine half coupling should be held in one position and the alignment with the propeller coupling checked in each of four positions, rotated 90° between each position. This test will also check whether the propeller half coupling is in exact alignment on its shaft. Then, keeping the propeller coupling in one position, the alignment should be checked, rotating the engine coupling as described above.

ENGINE OPERATING INSTRUCTIONS - Continued

The engine alignment should be re-checked after the boat has been in service for one to three weeks and, if necessary, the alignment remade. It will usually be found that the engine is no longer in alignment. This is not because the work was improperly done at first, but because the boat has taken some time to take its final shape. It may even be necessary to re-align at a further period.

The coupling should always be opened up and the bolts removed, whenever the boat is hauled out or moved from the land to the water and during storage in a cradle. The flexibility of the boat often puts a very severe strain on the shaft or the coupling or both when it is being moved.

During the alignment procedure, check the set screws which hold the propeller half coupling to the shaft. These must be tight, in contact with the shaft, and safety wired.

Stuffing Box

The stuffing box provides a seal for the propeller shaft at the inner end of the shaft log. It is connected to the shaft log with heavy wall hose, double clamped at each end. This flex hose allows the stuffing box to maintain alignment with the prop shaft without creating excessive wear of the packing, due to mis-alignment or vibration. The packing used is wax impregnated 3/16" x 3/16" square flax.

When the shaft is turning, it is normal to have a slight leakage at the seal, about one drop per 30 seconds. This acts as a coolant, as well as a lubricant, to protect the seal and shaft surface. Should excessive leakage be apparent, release the lock nut and tighten the packing nut slightly and re-tighten the lock

ENGINE OPERATING INSTRUCTIONS - Continued

nut. Re-start engine and check again with shaft turning.

When it becomes necessary to replace the packing (boat should be hauled), loosen the lock nut, back off the packing gland nut, and slide it forward on the shaft. Remove all the old packing and replace it with three rings of new packing. Stagger the ends of each ring so as not to provide a path for water to leak through. Do not wind one continuous strip spirally around prop shaft to make a seal.

Slide the packing gland back and tighten enough to create a heavy drag on the shaft. This will seat and form the packing.

Back off the packing nut until the shaft feels free and re-set the lock nut. Re-check for proper leakage when boat is returned to the water. Be sure the lock nut is secure, as operating the boat in reverse could cause the packing gland to screw off the stuffing box, allowing water into the boat.

FLOODING OF ENGINE WITH WATER

Your Cal Yacht is supplied with a water-lift (wave suppressor) type of muffler that under normal conditions, when the engine is not running, provides wave suppression and water storage to help keep water from flooding the engine.

NOTE: There is a direct path from the overboard exhaust port via the water-lift muffler to the engine and from the water pump to the muffler. Accidental conditions (sea) and operator error (prolonged starting attempts) can thus cause an excessive volume of water to fill the muffler and flood the engine.

UNDER SUCH ACCIDENTAL SEA AND/OR MISUSE CONDITIONS, ENGINE FLOODING MAY BE UNAVOIDABLE.

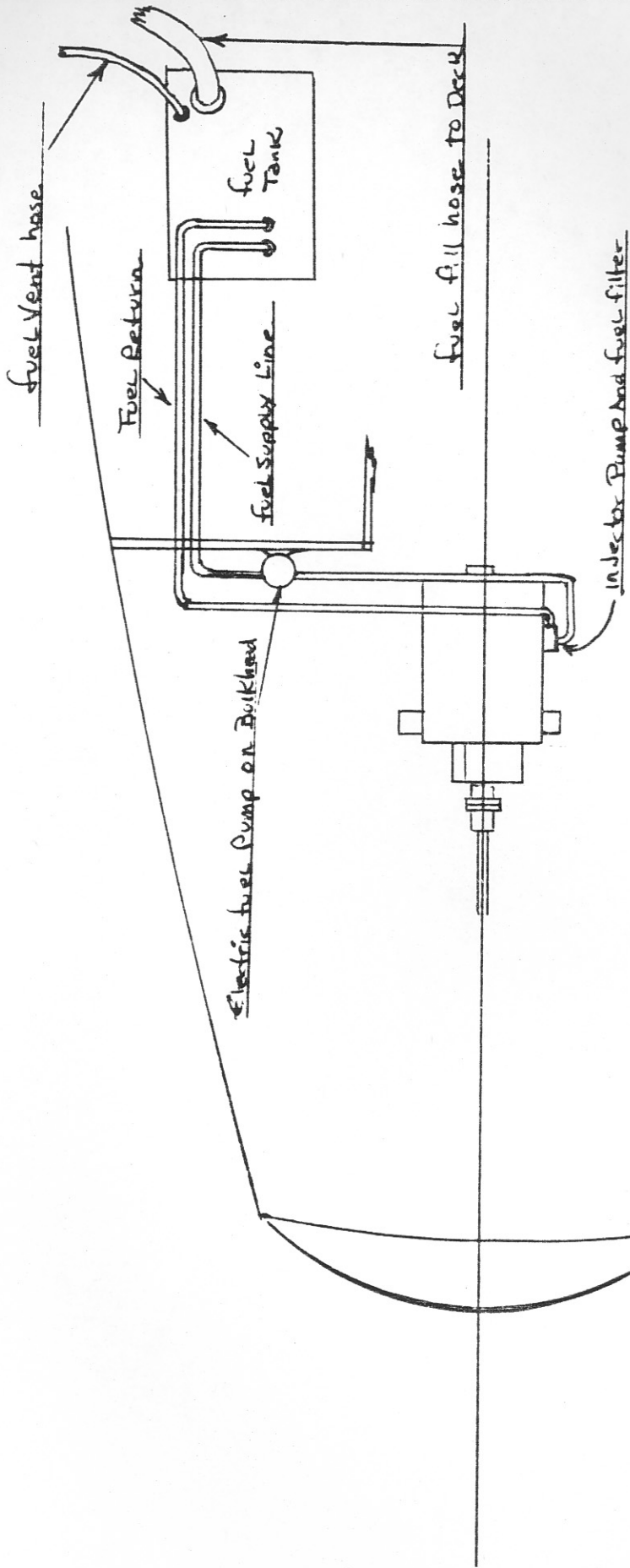
Sea Flooding:

Your Cal exhaust system is designed and installed to the highest standards, and, as stated above, could still flood under certain heavy sea conditions. The only added safety precaution you could add would be to install a rubber flap to the overboard exhaust port. This would dramatically slow the surge effect of waves hitting the port.

Operator Error:

This is a nagging source of water-in-the-engine and occurs when an operator repeatedly attempts to start an engine; i.e., he "grinds" the starter - not 2 or 3 times - but continually.

The amount of cranking time varies from engine to engine, factors being the amount of each piston's displacement, the water pump's capacity, and whether the battery is cranking a full R.P.M.



ORG RELEASED:	Owners Manual	Date
REV	Description	11/15/80
FUEL SYSTEM Engine Rm		
CAL-31 UNIVERSAL 5416		
Drawn By Ed Edger RD		
Banger Punta Marine		
Draw No	Sht 1 of 4	

FUELING PROCEDURE

When preparing to fuel your boat, the following procedures should be followed to assure safety:

- A. Properly secure the boat to the dock.
- B. Turn off the engine, stove, heater, radio, lights, etc.
- C. Turn battery switch to OFF.
- D. Close all hatches, ports, etc., to prevent entry of fumes.
- E. Maintain continuous contact between the nozzle and deck plate to prevent a static charge.
- F. Fill tank to a maximum 95% of capacity to allow for expansion.
- G. Clean any spills after replacing and tightening fuel-fill cap.
- H. Before operating the engine or turning battery switch to ON, open all hatches and check for fuel leaks. On gasoline engine, check for fumes and run the blower for 5 minutes before starting the engine.

Always be sure the fuel-fill cap is tight, to prevent water and dirt from getting into the fuel tank. Periodically check the fuel filter and water separator. Those should be drained and cleaned, as needed. The filter elements should be replaced annually.

STEERING GEAR

Cal 31, 35, and 39

Pedestal Steering. Steering gear on your boat has been selected and installed to give you smooth and reliable steering action. A basic familiarity with the steering system will help you avoid trouble. Heavy duty linked chain and sprockets in the steering pedestal control the steering cables. The cables run to a metal sheave box located under the cockpit sole and then to a steering quadrant bolted to the rudder post. Access is via the cockpit seat hatch.

Service. It is imperative that the steering system be inspected and lubricated at regular intervals. All sheaves in the system should be inspected for wear and alignment. The rudder post bearings should be lubricated with a heavy marine grease at frequent intervals. A grease fitting is provided in the rudder post assembly. The steering cable tension may be adjusted on the steering quadrant. Cable tension should be as tight as possible without causing excessive system friction. If in doubt, have a competent mechanic inspect and adjust the system. Cable tension should be checked periodically because stainless cable will stretch.

Emergency Steering Gear. The emergency tiller should be stored in a convenient and accessible place. A deck plate in the cockpit provides access to the rudder post. The emergency tiller is slotted to match the cross pin in the rudder post. It is recommended that you practice the installation procedure before an emergency arises.

Tiller Steering. If your boat comes equipped with a tiller, it is important to check the rudder head and tiller bolts regularly. The rudder post should be lubricated with a heavy marine grease at regular intervals, depending on use.

ELECTRICAL

Master AC and DC Control Panels. The master electrical control panels are located on the aft bulkhead, behind the companionway stairs. The AC master panel includes circuits for a battery charger, the water heater, and the port and starboard electrical outlets. The DC master and accessory panels handle all other electrical systems.

Circuit Breakers. Accessory loads may be selected as desired by turning on the master-control panel circuit breakers. The circuit breakers will automatically open the circuit by switching themselves to "OFF" in the event of an overload on a particular circuit. Always investigate the cause of the overload and correct any deficiencies before re-positioning the circuit breaker to "ON".

ALL WIRES, CONNECTIONS, AND TERMINALS SHOULD BE INSPECTED REGULARLY FOR LOOSE CONNECTIONS WHICH MAY CAUSE ELECTRICAL SPARKS, HIGH RESISTANCE, OR FIRES. THIS IS ESPECIALLY IMPORTANT FOR ENGINE ACCESSORY WIRING.

Battery Selector Switch

Before leaving your boat, always turn the master-battery switch to the "OFF" position to prevent power drainage. DO THIS ONLY AFTER YOU HAVE SHUT DOWN THE ENGINE, for you may burn out the alternator diodes.

CAUTION!

You may switch from one battery to another for charging, but DO NOT pass through the "OFF" position while the engine is running. This may burn out the alternator diodes. Keep the engine RPM as low as possible, when switching batteries.

Shore-Power System. The shore-power system accepts 110V AC through a three-prong male connection located in the cockpit. There are two current carrying conductors, positive and negative, as well as a grounded non-current carrying conductor. WARNING: NEVER USE AN ADAPTER THAT ELIMINATES THE GROUNDING CONDUCTOR. SEVERE SHOCK, INJURY, OR DEATH MAY RESULT.

A master-circuit breaker is provided for the shore-power system. To activate shore power, throw the circuit-breaker switch after the shore-power line is connected to dock power.

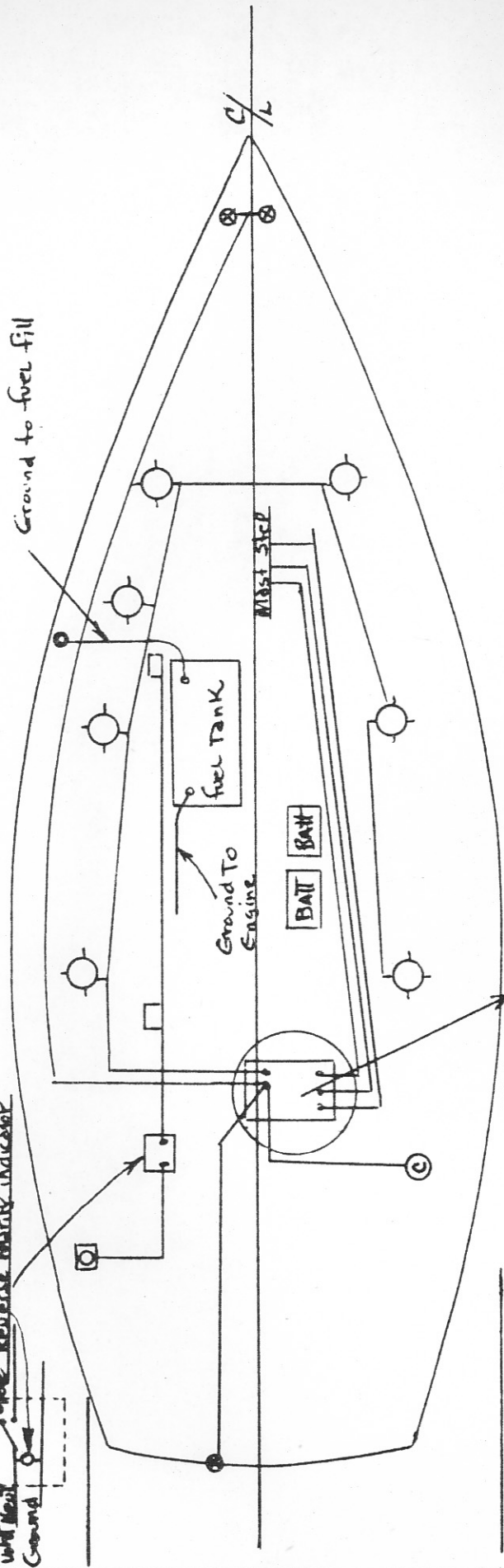
In addition, there are both audible (buzzer) and visual (yellow light on panel) reverse polarity indicators. With all switches off, attach the power cable to the inlet. Next, attach the power cable to the dockside outlet. WARNING: IF THE POLARITY INDICATOR LIGHTS AND/OR SOUNDS, DISCONNECT THE CORD IMMEDIATELY! THIS INDICATES A REVERSE POLARITY SITUATION, WHICH IS DANGEROUS. SEVERE SHOCK, INJURY, OR DEATH MAY RESULT. DIAGNOSE AND CORRECT THE PROBLEM BEFORE PROCEEDING.

If the polarity is correct, switch on the breaker for the outlets and/or hot-water tank as desired. Be sure the hot-water tank is full before turning on the circuit, or you will damage the heating element (see plumbing and commissioning sections).

It is recommended that all appliances or lights be wired with three-prong grounded plugs.

BK had
w/ 12V BATT
Ground

Thermost Switch is Amp
opide Reverse polarity indicator



Symbols

- Cabin Lights
- ⊙ Compass Lights
- ⊙ BATT Condition Gauge
- ⊙ Indicator Lamp
- ⊙ Navigation Lights
- ⊙ Shore power receptical
- AC OUT Let

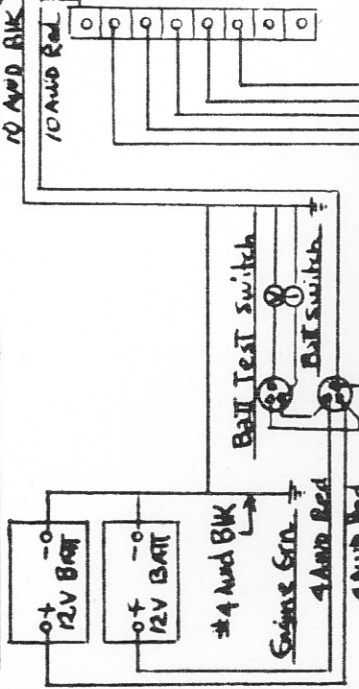
Notes

- 1 All wire from Switch Panel 16 Aug
- 2 See engine manual for engine instrument wiring All Breaker thermo Type

- Power Switch
- Cabin Lights
- NAV Lights
- Bow Light
- Anchor Light
- Directional Light (Non factory opt)
- Spare
- Spare

Live Bus bar

Std Switch Panel



To Engine Starter Ampeter
Additional Switches w/ Engine Panel

2	10
3	11
4	12
5	13
6	14
7	15
8	16

Orig Released Owners Manual	Date
Rev	11/15/80
Electrical System	
Cal - 31	
Drawn By Ed. Edgar	
Bangor Punta marine	
DWG#	sht 1 of 4

LIGHTNING GROUND

The spars and standing rigging on all Cal Yachts are grounded, in compliance with the American Boat and Yacht Council Project E-4, to attempt to minimize damage resulting from lightning and provide a measure of safety for personnel.

Each chainplate, the mast step, and all thru-hulls are attached by means of a #8 AWG solid copper wire to the engine and/or strut. In the event lightning strikes the spar, the system is designed to carry the charge by the wire to ground.

WARNING: IN AN ELECTRICAL STORM, DO NOT TOUCH THE MAST, BOOM, OR ANY STANDING RIGGING. THESE ARE ALL ELECTRICAL CONDUCTORS, WHICH WILL CARRY HIGH VOLTAGE AND CAUSE SEVERE SHOCK, INJURY, OR DEATH. IN THE EVENT OF AN ELECTRICAL STORM, THE FOLLOWING PRECAUTIONS ARE RECOMMENDED:

1. As much as possible, stay below with the hatches closed.
2. Avoid contact with any items making contact with the electrical system and with any other metallic parts of the boat.
3. Stay out of the water.
4. If the boat is struck by lightning, compasses and electrical equipment should be checked to determine that no damage or change in calibration has occurred.

NOTE: WHILE THE GROUNDING SYSTEM SPECIFIED IN THE AMERICAN BOAT AND YACHT COUNCIL PROJECT E-4 IS THE MOST WIDELY USED LIGHTNING PROTECTION SYSTEM KNOWN TO US, WE URGE YOU TO AVOID EXPOSING YOURSELF TO LIGHTNING, SINCE NO SYSTEM WILL PROVIDE COMPLETE PROTECTION TO BOAT OR OCCUPANTS IN ALL CIRCUMSTANCES.

NAVIGATION LIGHTS

Navigation lights must be in accordance with the rules and regulations of the waters in which you intend to cruise.

In general, navigation lights are to be used from sunset to sunrise in all weather conditions. It is good practice to use the lights any time visibility is reduced by inclement weather.

Your Cal Yacht is equipped with the following navigation lights:

- A) Red and green 10 point side lights mounted near the bow.
- B) White 12 point stern light.
- C) White 20 point bow light mounted on the mast.
- D) White 32 point masthead light mounted on top of the spar.

A & B are wired to the "running lights" switch on the DC panel.

C is wired to the "bow light" switch.

D is wired to the "masthead light" switch.

We recommend:

1. Underway by sail, the running lights (side lights and stern light) be on.
2. Underway by power, the running lights and bow light be on.
3. At anchor, the masthead light be on.

Plumbing

Fresh-Water System

Cal 31, 35, 39

Water Tanks

There are two fresh-water tanks, located under the main cabin settees. Each tank is filled through a separate deck plate. The tanks are connected, through selector valves, to a self-priming pressure pump. The valves are located under the companion way steps in the Cal 31 and 35, and under the galley sinks in the Cal 39. The Cal 31 and 35 tanks are plastic; the Cal 39 tanks are stainless steel.

When filling the tanks, do not fill to more than 90% of capacity, to allow for expansion. The tanks may be cleaned by flushing with a vinegar and water solution (1 pint vinegar to 5 gallons of water).

Hot-Water Heater (Standard on Cal 35 and 39; optional on Cal 31)

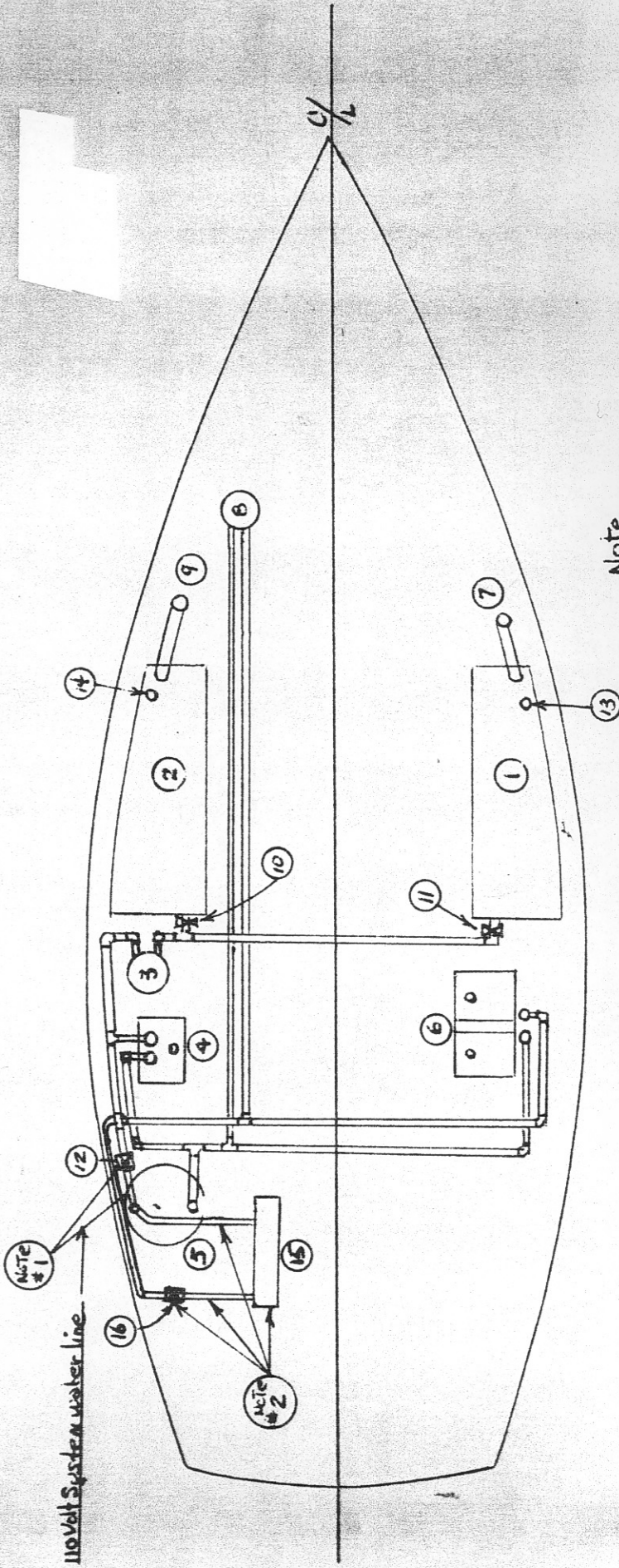
The 6 gallon hot-water heater is located in the engine compartment. It is connected to the pressure-water system by way of the pressure pump. The tank is installed to heat water through the 110 Volt AC system and through a heat exchange coil connected to the engine cooling water system.

Before operating the hot-water tank, open the inlet valve in the supply line, open the hot-water faucets and let them run until a steady stream of water flows at the galley and head. With the tank full, you may switch on the 110 volt AC breaker labeled "Water Heater". DO NOT TURN THE 110V SYSTEM WATER-HEATER BREAKER ON UNTIL THE WATER HEATER IS FULL, OR THE ELECTRIC HEATING COIL WILL BE DAMAGED.

Hot-Water Heater - Continued

To heat water off the engine, simply start the engine and let it run. Engine cooling water will automatically circulate through the water-heater coil and heat the water in the tank.

Bilge Pumps - The manual pump is located at the aft end of the cockpit. It is a flush-mount design with a socket that accepts the handle provided. The electric pump is located in the bilge sump over the keel and is activated by a switch on the master-control panel. The exhaust hoses for both pumps are plumbed to above waterline thru-hulls in the transom.



110 volt System water line

Note #1

Note #2

- 1 #1 water Tank
- 2 #2 water Tank
- 3 Pressure Pump
- 4 Head Sink
- 5 water Heater
- 6 Galley Sink
- 7 water fill
- 8 Shower Mixer
- 9 #2 water fill
- 10 Shut off Valve
- 11 Shut off Valve
- 12 Check Valve one way
- 13 Vent
- 14 Vent
- 15 Engine Heat exchanger
- 16 Check Valve one way

Note

#1 #12 Check Valve on hot water system with 110 volt water heater boats with our engine only. Boats may also have only one tank #2 Boats with engine have water from pressure pump through engine heat exchanger to hot water heater #12 is moved to #16 position and water supply is routed through heat exchanger eliminating 110 volt system water line. 110 System then receives its water supply through heat exchanger line

(This Drawing is not for System Location)

Orig	Released	Owners Manual	Date
Rev	Description		11/15/80
Typical Pressure water System On Boats			
39-6 25			
CAL-38-2 27			
31 9.2			
Drawn By G. Edgar BTD			
Bangor Punta Marine			
Dwg #	Sht 1 of 4		4

COOKING STOVES

PROPANE STOVES

The propane stove in your Cal yacht has been pressure tested at every joint with a special fluid at the plant prior to shipping, but we recommend that you have it checked by your own dealer after it has been launched, as boats go through some fairly heavy jars during overland travel. Details on the operation of the propane stove will be found in the manufacturer's instruction manual, which should be carefully reviewed.

To Operate:

1. Be sure the burner valves are in the OFF position.
2. Be sure the electric safety switch over the stove is in the OFF position.
3. Turn the valve on at tank.
4. Move the electric safety switch into the ON position.
 - a. This switch controls a Solenoid mounted between the propane tanks. In the OFF position there is no pressure anywhere inside the boat. Please refer to Marinetics Corp., Document #609.
5. Turn on the burner valve you desire and light. If the system is new, or the tanks have just been replaced, there could be a quantity of air in the supply line.
WARNING: YOU MAY GO THROUGH MORE THAN ONE MATCH, BUT DO NOT LEAVE BURNER VALVE ON WHILE GETTING ANOTHER MATCH LIT. THE GAS COULD BE COMING OUT WHILE YOU'RE GETTING THE NEXT MATCH LIT. THIS COULD CAUSE AN EXPLOSION.

When cooking has been completed, turn off the electric safety switch; and after the burner goes out, close the burner valve.

This will indicate that the electric safety valve is working and will also remove pressure from the feed line inside the boat. For added safety, the manual shut-off valve at the tanks may be closed when boat is left unattended, or overnight.

The entire system should be checked out at least once a year.

Pay particular attention to corroded or cracked fittings and supply lines.

ALCOHOL STOVES

Please refer to manufacturer's manual. They cover the operation of these stoves in detail.

WARNING:

1. THE FLAME DURING AN ALCOHOL FIRE IS QUITE OFTEN INVISIBLE.
2. DO NOT MOUNT THE FIRE EXTINGUISHER NEAR THE STOVE. DURING A FIRE, YOU MAY NOT BE ABLE TO GET TO IT.
3. WATER IS ONE OF THE BEST EXTINGUISHERS FOR ALCOHOL FIRES.

Plumbing

Heads - Cal 9.2, Cal 31, Cal 35, & Cal 39

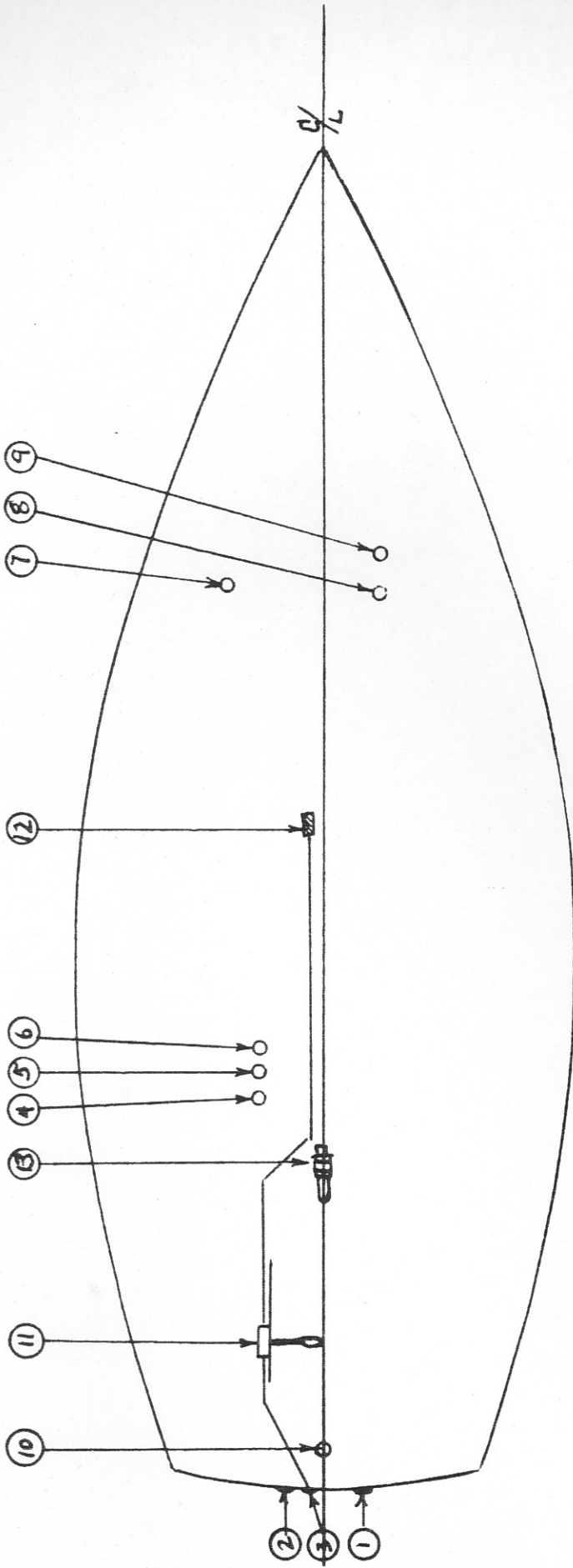
Cal has passed along the manuals which cover the operation and maintenance of the toilets installed in your yacht. You should read these and familiarize yourself and crew with their details.

The standard head is a marine toilet, connected to a collapsible rubber holding tank. This tank is discharged through a line running to a deck outlet. To empty the tank, open the deck outlet and insert a dockside pump.

The optional head installation allows the holding tank to be discharged overboard or at dockside. The choice of method is controlled by a valve system on the discharge side of the holding tank. For dockside discharge, open the dockside line and deck fitting and insert the dockside pump. For overboard discharge, close the dockside line and open the overboard line and thru-hull seacock. In the discharge line is a diaphragm pump. This will discharge the holding tank through the thru-hull. FEDERAL AND STATE LAWS AND USCG REGULATIONS SHOULD BE CONSULTED REGARDING THE DISCHARGE OF HEADS IN CONTROLLED WATERS.

When not discharging the tank, both the dockside and overboard lines should be closed. Also, be sure to close the thru-hull seacock, when not in use. It is recommended that a chemical additive, such as is used in chemical heads, be pumped into the holding tank to prevent odor permeation of the tank and plumbing.

Refer to the manufacturer's instructions for maintenance and operation of the toilet.



Orig	Released	Owners Manual	Date
Rev		Description	11/15/80
		Through Hull Location	
		Cal-31	
		Drawn by John Bravish	
		Bangor Punta marine	
		DWG# A0302	Sht 1 of 4

- 1 Cockpit Scupper Transom 9 Head Intake
- 2 " " 10 Rudder Tube
- 3 Bilge Pump Exhaust " 11 Bilge Pump Cockpit
- 4 Vanity Sink 12 Bilge Pump Pickup
- 5 Saltwater Pump opt 13 Shaft Stuffing Box
- 6 Engine Coolant Intake 14
- 7 Vanity Sink 15
- 8 Head out Let opt 16

MAINTENANCE

PERIODIC MAINTENANCE

The following list of items and their accompanying numbers is in no way intended to be all that should be done to your yacht. This is only a suggested general list and is not intended to override the individual manufacturers' manual. It also is not arranged in any special order. The numbers are in numerical order and not in priority order. Some numbers and their meanings may also seem redundant, but we feel it is better to be redundant than lax.

ALWAYS FOLLOW THE OWNER'S MANUAL THAT COMES WITH THE ENGINES, HEADS, ETC.

PERIODIC MAINTENANCE

	End of First Week	Monthly	Winterizing	Remarks
Deck Fittings	5		1,4,5	
Rudder Blade		1	1	
Rudder Post	6	1,6	1,4,5,6	
Propeller Shaft	1	1	1,4	
Stuffing Box	1,2,5	1,2	1,4	
Zinc Anode		1	1	Replace at least once a year
Propeller		1	1,4,5	
Bilges			4,7	
Cockpit Drain Hoses	2	2,5	2,4,5,7,8	7,8- Some cockpit hoses have low points that hold water
Sea Cocks	1,2,3	2	1,4,6	
Pumps	1	1,2,5	1,4,5,7,8	
Water Tanks	2	2	1,4,7	
Piping, Fresh Water	2	2	1,4,7	
Lighting			1,3,4	3=WD-40 or CRC
Battery	1	1,4	1,4,8	4=Clean with baking soda & water solution
Water Filter		1,2,4	1,4,7	
Fuel Filter	1,5	1,5	1,4,5	4=Outside Only
Air Filter	1	1,5	1,5	
Exhaust System	1,2,5	1,2,5	1,4,5,7	
Engine Mounts	1,5	1,5	1,3,5	

PERIODIC MAINTENANCE (Cont'd.)

	End of First Week	Monthly	Winterizing	Remarks
Mast, Boom	1,3	1,3,4,5	1,3,4,5,6	
Standing Rigging	1,5	1,4	1,3,4,5,6	
Running Rigging	1	1,3,4	1,3,4,5,6	
Winches	1,5	1,3,4,5	1,3,4,5	
Engine Alignment	1,2	1,4,5	1,4,5	Disconnect coupling before hauling
Hose Clamps	5	1,5	1,3,4,5	Do not overtighten
C/B models only-Centerboard & Hoist	2	1,2,4,5	1,3,4,5,6	
Chainplates	1,2,5	1,2,4,5	1,2,4,5	Rebed at least twice a year
Tiller Strap if applicable	1,3,5	1,3,4,5	1,3,4,5	
Bilges	Check daily---more often if the boat is leaking			
Stoves, Alcohol, Propane	1,5		1,4,5	Check supply hoses for deterioration every Spring. If hose cracking is evident, replace.
1. Check condition	2. Check watertightness	3.	Lubricate	
4. Clean with fresh water	5. Check tightness	6.	Grease	
7. Drain and/or anti-freeze	8. Disconnect			

BASIC RULES FOR BATTERY CARE AND MAINTENANCE

- 1) Check liquid level in all cells once every week or two. Add water as required. Bring liquid level to 3/8 inch above top of separators. It is much better to add water in small amounts frequently, than to put too much in and flood out the electrolyte, thus causing damage to adjacent wiring and equipment, plus loss of acid.

Generally, the local drinking water in the United States is safe for use in batteries; but to be sure, check with your battery supplier.

Add water only. Add no battery dopes, special liquid, or powders. These are harmful or useless.

- 2) Before adding water, take a hydrometer reading of one cell. (Don't use same cell each time; change around). If above 1.225 Specific Gravity, battery is sufficiently charged. If below 1.225 Specific Gravity, remove battery for bench charge. If level is too low to read, add water and take hydrometer reading the next day.
- 3) After adding water, examine hold-downs. Make certain battery is secure. Hold-downs should make a snug fit, but not necessarily the tightest fit, or the container may be forced out of shape.

Examine cables and terminals for tightness, corrosion, and wear. Corrosion occurs from the spilled electrolyte getting on metal, other than lead. Lead does not corrode. To remove corrosion, scrape or brush it off. Then immerse the part in

BASIC RULES FOR BATTERY CARE AND MAINTENANCE - Continued

- 3) an alkaline solution, such as baking soda, in the proportions of one pound soda to a gallon of water. One can tell when all the electrolyte is neutralized by observing when the bubbling stops. Wash with water, dry, and apply a prepared grease available from battery dealers.
- 4) Examine battery for broken or cracked covers, case, and cracks in sealing compound. If any of the above defects are present, remove battery at once and have repaired. Acid loss from any of the above defects will shorten battery life. Acid escaping through cracked covers or sealing compound will cause corrosion of terminals, cables, carrier, and adjacent parts.
- 5) Batteries should be re-charged, if hydrometer reading is below 1.225.
- 6) DO NOT LEAVE A BATTERY ON CHARGE FOR MORE THAN 48 HOURS. STOP CHARGE when two hydrometer readings recorded two hours apart show no increase, or when terminal voltage readings recorded two hours apart show no increase.

If there is no rise in voltage or specific gravity in a period of two hours, further charging is USELESS and MAY DAMAGE BATTERY BEYOND REPAIR. Have your supplier check battery for possible acid adjustment or repair.
- 7) On this bench re-charge, the specific gravity is expected to read certain values before considered serviceable for continued use. The hydrometer reading should be above 1.260.

BASIC RULES FOR BATTERY CARE AND MAINTENANCE - Continued

- 7) The full charge gravity when new was 1.270 - 1.290. If battery does not register as above, have your battery supplier inspect it. He may be able to adjust acid or make repairs.
- 8) In cold weather, do not fill cells with water and let stand without running motor long enough to allow water to mix with acid, as freezing might occur.
- 9) Spare batteries should be re-charged at least every 4 or 5 weeks, in order that the Specific Gravity may be maintained at 1.240 or above.
- 10) Use a battery with sufficient ability to carry the connected load.
- 11) Wash dirt and corrosion off top of battery to eliminate inter-cell discharge.
- 12) Neutralize corrosion in battery box by washing with solution of baking soda as recommended in No. 3; rinse with water.
- 13) The amount of water which is needed by the different cells will be a clue to other problems. For example, if each week the water, which was put in the previous week has been used, it is reasonable to expect that too much charging current has passed through the battery; hence, the voltage regulator should be checked.

BASIC RULES FOR BATTERY CARE AND MAINTENANCE - Continued

All cells in the battery should take the same amount of water. If one cell should take more than the others and does this each week, it would be expected that the container is leaking. Whether the leakage is through the bottom of the container, or from the sides of the container, can be determined by examination.

FINISHES

Gelcoat

The gelcoats used on all exterior and interior surfaces of your Yacht are the highest quality materials available for marine use. These gelcoats have the best possible color retention, gloss and resistance to weathering. However, even the best gelcoats need some maintenance to preserve their finish.

- Whenever feasible, the deck and topsides should be rinsed with fresh water.
- Wash the gelcoat surfaces with a mild detergent or car wash solution. Use a sponge or towel on smooth areas, and a soft brush on non-skid surfaces. Be careful not to use abrasive cleaners or solutions containing chlorine.
- At least once a year, apply a good coat of high-quality wax to all smooth surfaces. Buff down with a clean towel.

If the surface becomes dull, it can often be returned to a high gloss by hand buffing with an automotive buffing compound of a very fine grade. If a power buffer is used, extreme care must be exercised to prevent burning through the gelcoat surface.

This is particularly true of corners and edges. Always apply a coat of wax after compounding.

Small scratches or abrasions which do not go through the gelcoat can be removed by wet sanding with 320 grit paper, followed by wet sanding with 600 grit, compounding and waxing. For deep scratches or holes, you should rely on your dealer or local gelcoat repairman to provide a good cosmetic repair.

FINISHES - Continued

Gelcoated surfaces can be painted. However, to assure a good finish which will last, careful preparation and application is necessary. This should be done by professionals.

Teak

The interior and exterior woodwork on your Yacht is primarily teak. This unique wood will not rot and requires minimum maintenance. All the teak was treated at the factory with a high-grade teak oil.

On the interior, you should apply a new coat of oil at the beginning of each season. Use a good grade teak oil, which is available through your dealer or local marine hardware store. This will maintain the rich brown color of the wood.

The exterior teak, if left untreated, will turn a light gray, which some yachtsmen prefer. However, as the teak weathers, the grain raises, and there is a tendency for the wood to check and/or split. Periodic cleaning with a teak cleaner will remove the gray color with a minimum of labor. A good coat of teak oil will help prevent the checking and splitting.

Teak may be varnished, which will produce a beautiful finish and provide good protection. A varnished interior would normally last two seasons. However, on exterior teak, a new coat should be applied every four months. Before applying varnish, be sure the surface is dry, sand thoroughly, and wipe with acetone to remove some of the oil. Before attempting to varnish teak, you should consult your local marine paint expert.

FINISHES - Continued

Laminated Surfaces

The non-wood cabinet surfaces are either mica or polyester laminates, chosen for their durability and ease of maintenance. They should be cleaned with a mild detergent. Avoid using abrasive cleaners, as they will leave small scratches and will dull the finish. These surfaces may be coated with household waxes to mask small scratches and maintain the original lustre.

Hull Liner and Cushion Covers

The hull liner and cabin cushions are highly durable synthetic fabrics, chosen for their appearance and low maintenance. Should they be stained, clean with a sponge dampened in a mild detergent. Upholstery cleaners may be used, but try them on a small area first. DO NOT dry clean, or use dry cleaning chemicals, as they may attach the material or its backing.

Lexan and Plexiglass

The sliding doors in the cabinets and the ports are made of lexan or plexiglass. Clean these with window cleaner or a mild detergent. Do not use chemical cleaners or abrasive cleaners, as these will damage the finish.

FINISHES - Continued

Spars and Hardware

The spars on your Cal Yacht are painted with tough and durable urethane paints that withstand the harsh effects of the elements. They should be washed with fresh water whenever possible and thoroughly rinsed before being stored. All moving parts, such as sheaves, should be lubricated during the season.

In the event you should scratch or mar the surface, a touch-up kit is available through your Cal dealer.

The hardware and rigging are stainless steel, chrome-plated brass or coated aluminum. These should be rinsed with fresh water periodically. Should you experience surface staining, which looks like rust on the stainless hardware, it can be removed with metal polish and either a rag or bronze wool. Each month a light coat of lubricant should be applied to turnbuckles, blocks, and the screw or spring retaining pins on the blocks and slides to assure ease of operation and prevent sticking.

MANUALS

EDSON PEDESTAL MAINTENANCE GUIDE

This guide has been prepared to assist you in the proper maintenance of your Edson Steering System. To properly maintain the moving parts in the top of the pedestal, it is necessary to remove the compass and its cylinder. For proper alignment when re-installing the compass, we recommend placing 3 or 4 lengths of tape on the pedestal and compass as shown below. Slit the tap when removing compass, align the strips of tape when re-installing the compass for visual compass re-alignment. Your compass **MUST** then be checked for accuracy. Lubrication of needle bearings should be done by squeezing Edson Fig. #827 Teflon Lubricant into the holes located on top of the bearing housings inside the pedestal bowl. Spin the wheel when squeezing the lubricant in to make sure the entire bearing is serviced. Winch grease or water pump grease can be used as an alternative, but don't let the bearings run dry. Do not over grease as it will run onto the brake pads. Oil the chain with #30 weight motor oil. Do not grease chain as it does not penetrate the links.

Inspect the condition of the wire, tension of the wire and lightly oil. Edson recommends placing about 5 layers of "Kleenex" on the palm of your hand, squirt oil on the tissues and lightly oil the wire. This will lubricate the strands but will also "flag" a broken or hooked strand by tearing off a small section of tissue. If you do have a wire break, replace the wire immediately. See Edson Fig. 775 wire and chain replacement kits. (Caution: Wire splinters can cause painful cuts.) Replace the wire after 5 years. If still good, keep the old wire on board as a spare. To check for proper wire tension, lock the wheel in position by using the pedestal brake, or by tying off the wheel. Cable tension is best when you cannot move the quadrant or drive wheel by hand with the wheel locked in place. Over tightening will greatly reduce the sensitivity of the system.

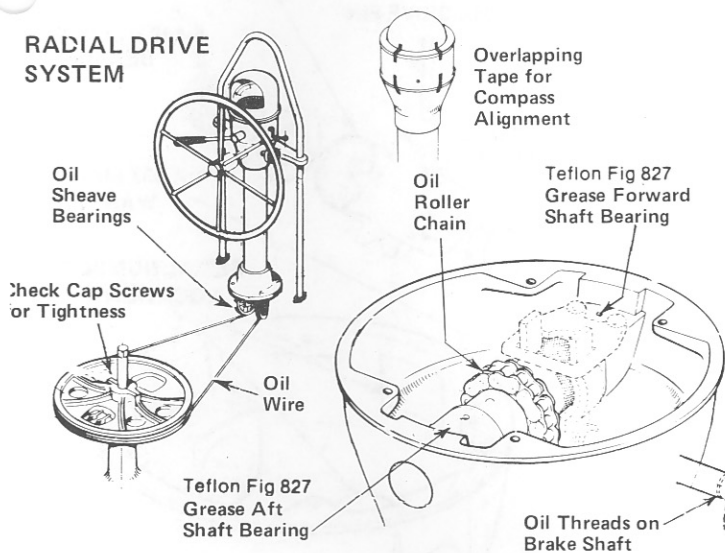
It must be emphasized that all on board must be familiar with the care and operation of the Steering System and engine controls. One person must be assigned the job of maintenance and must be thoroughly familiar with the operation and intent of all the equipment. If at any time your Steering System makes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

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

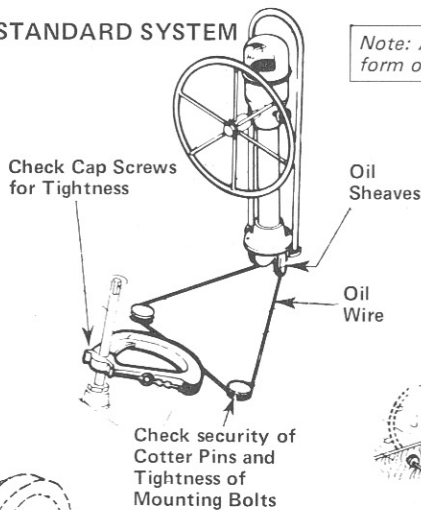
On a new boat and at least once a year, inspect the system when under a strong load. On a calm day and under power, go away from the other boats and with the person who is assigned the maintenance watching from below, put the wheel hard over at full throttle. The maintenance man should watch carefully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

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

The pedestal exterior should be cleaned with detergent and water, do not use acetone or/and any other strong solvents as they may damage the finish. Edson will be pleased to assist you. Call us or write us if we can help.

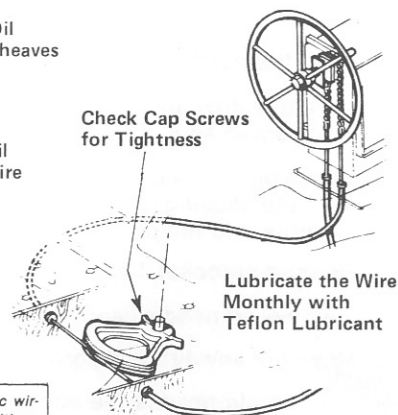


STANDARD SYSTEM



Note: All boats must have some form of emergency steering.

PULL-PULL SYSTEM



NOTE: Check any electric wiring within the Pedestal with an OHM meter to be certain the polarity is correct.

LUBRICATION RECORD

component	lubricant	schedule	first year 19__	second year 19__	third year 19__	fourth year 19__	fifth year 19__
sheave bearings	#30 oil*	check and oil monthly					
pull-pull cables	Teflon Fig 827	check and grease monthly					
wire rope	#30 oil*	check and oil annually					
roller chain	#30 oil*	check and oil annually					
pedestal shaft bearings	Teflon Fig 827	check and grease annually					

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

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

For complete maintenance information please contact

CUSTOMER SERVICE

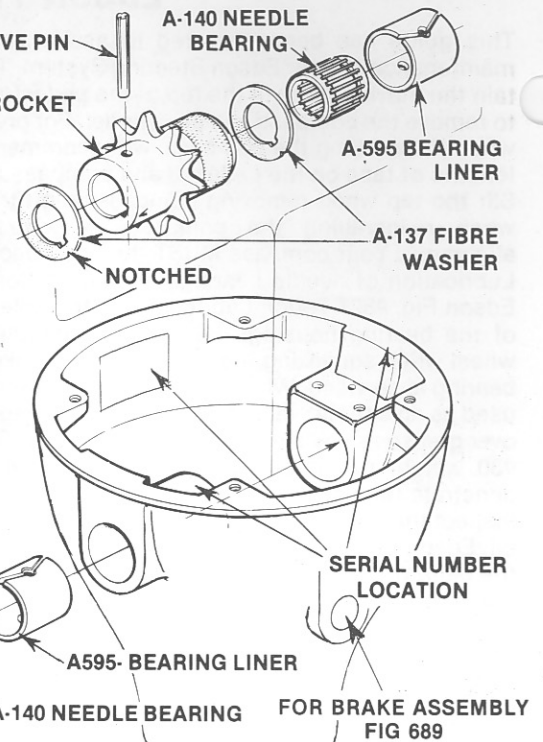
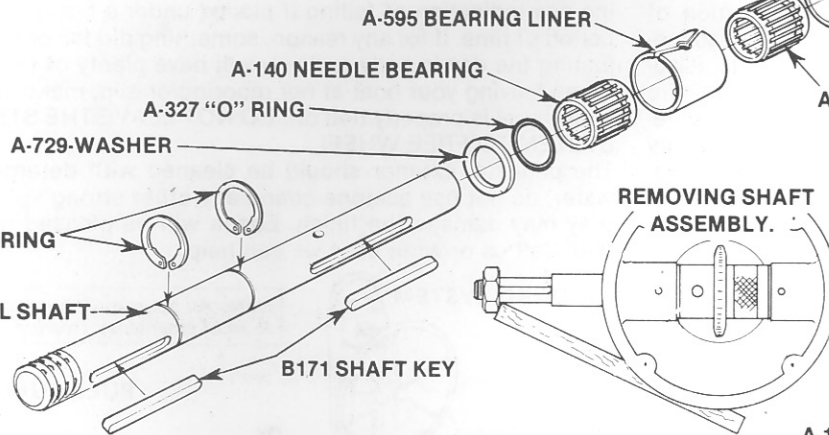
PARTS LIST / EDSON PEDESTAL STEERING ASSEMBLY

As a further service to our customers we have illustrated a parts breakdown showing the design and construction of your Edson Pedestal Steerer. These parts drawings will assist you in the proper maintenance of your steering system.

If disassembly should become necessary the following instructions will provide a simple but precise method of removing and replacing the steering shaft and its components.

DISASSEMBLY

1. With the wheel and brake assembly removed, replace the wheel nut with any standard thread $\frac{3}{4}$ " or 1" hex nut.
2. Loosen the steering cables and chain by backing off the take-up eyes at the Quadrant or Radial Driver, lift the chain off the sprocket and tie to the forward part of the bowl.

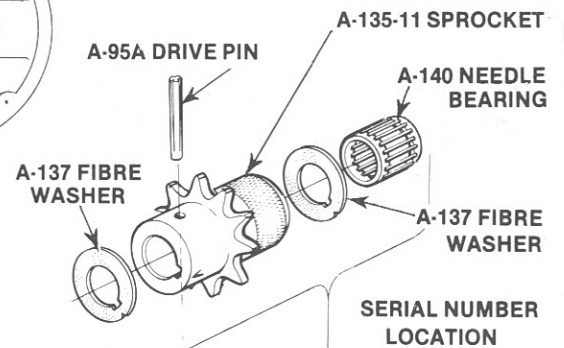


MODEL 400 PEDESTALS

3. Align the notch in the aft fibre washer with the "V" stamped on the sprocket.
4. Carefully drive the pin out of the sprocket (drive from the round end toward the grooved end).
5. With a piece of wood against the $\frac{3}{4}$ " or 1" hex nut, gently tap the wheel shaft from the housing, see illustration above, be careful not to drop the shaft components into the pedestal.
6. Remove sprocket, two fibre washers and forward needle bearing.
7. Remove aft needle bearing and washers.
8. Wipe out any dirt or old grease before reassembly.

To reassemble reverse the above procedure, do not grease the bearings until reassembly is completed.

NOTE: Check your compass for possible readjustment.



MODEL 334 & 335 PEDESTALS

ORDERING INSTRUCTIONS

When ordering spare parts give the pedestal serial number, part number, part name, and quantity. Your order will be filled promptly.

If you have any question don't hesitate to call the Edson factory. We will be pleased to assist you.

