



CAL 27

Owner's Manual

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CAL 27 MK III BOAT DIMENSIONS

HULL DIMENSIONS

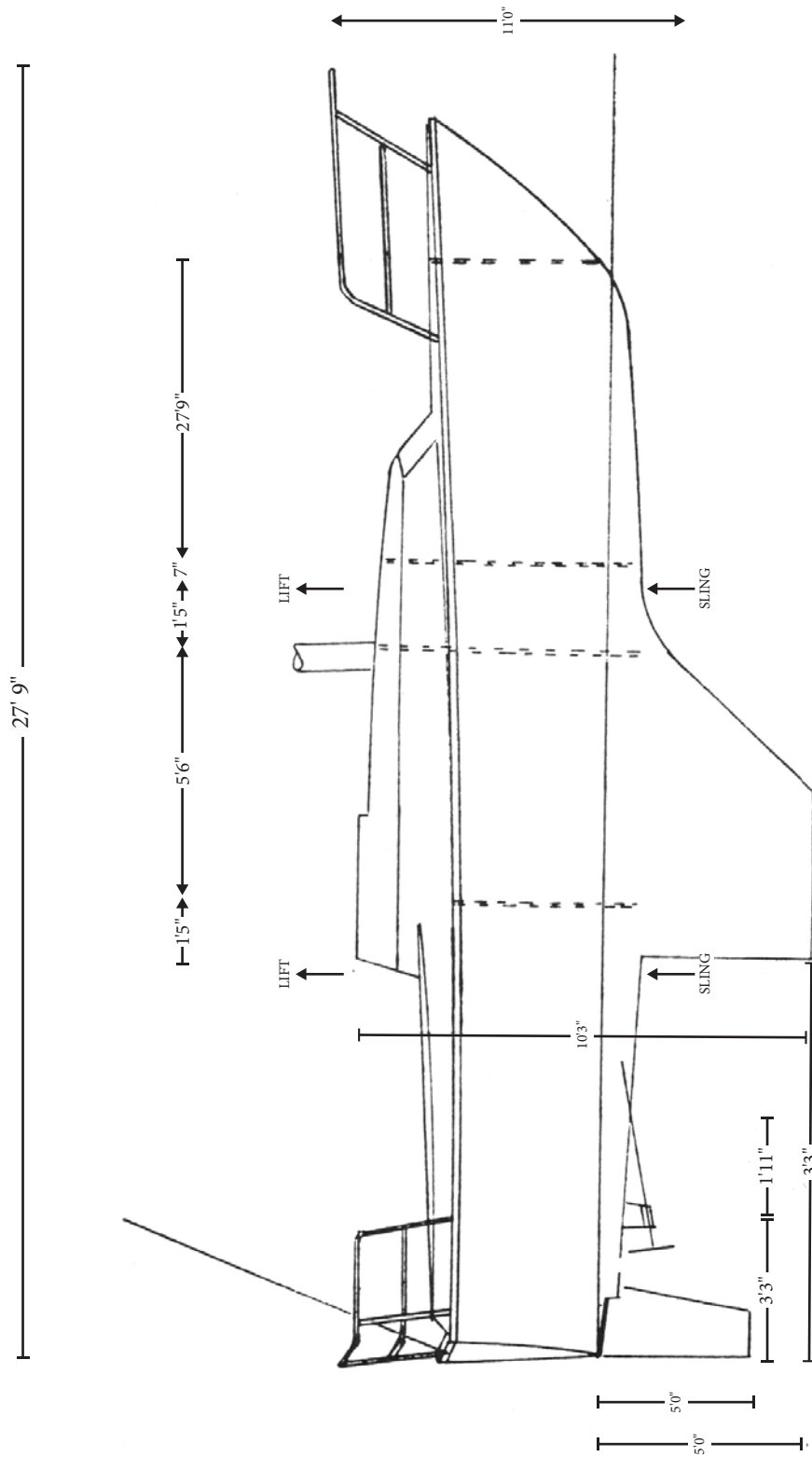
LOA	26'8"	8.1 Meters
LWL	23'3"	7.1 Meters
Beam	9'0"	2.7 Meters
Draft	5'0" or 4'0"	1.5 Meters or 1.2 Meters
Displacement	5200 Lbs.	2364 Kilograms
Ballast	2000 Lbs.	907 Kilograms

RIG DIMENSIONS

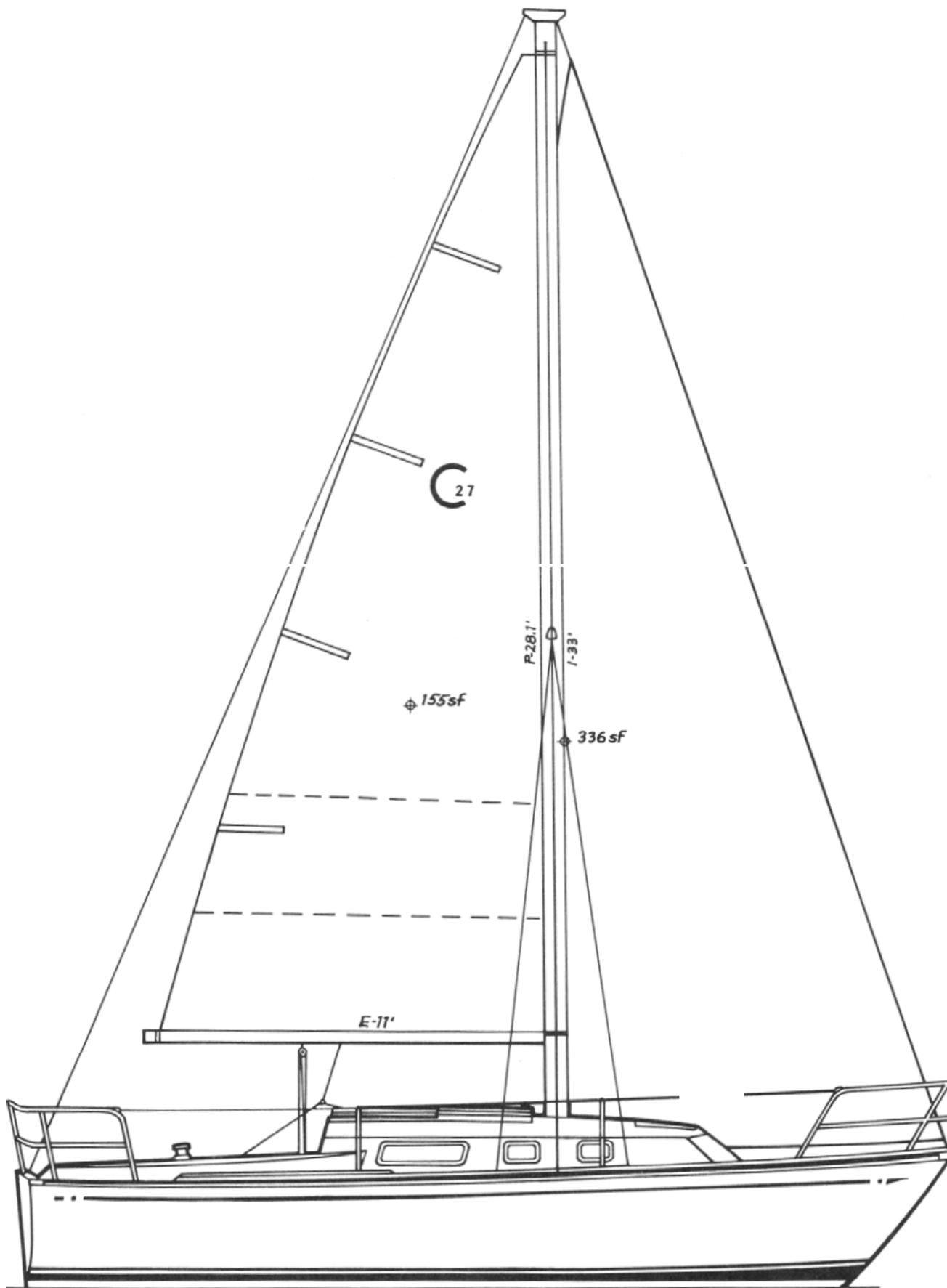
I	33'0"	10.06 Meters
J	11'0"	3.35 Meters
P	28'0"	8.53 Meters
E	11'0"	3.35 Meters
100% Foretriangle	181.5 Sq.Ft.	16.86 Sq.M.
Mainsail Area	154.0 Sq.Ft.	14.31 Sq.M.
Total	335.5 Sq.Ft.	31.17 Sq.M.
Mast Height Above Water	36'4"	11.1Meters

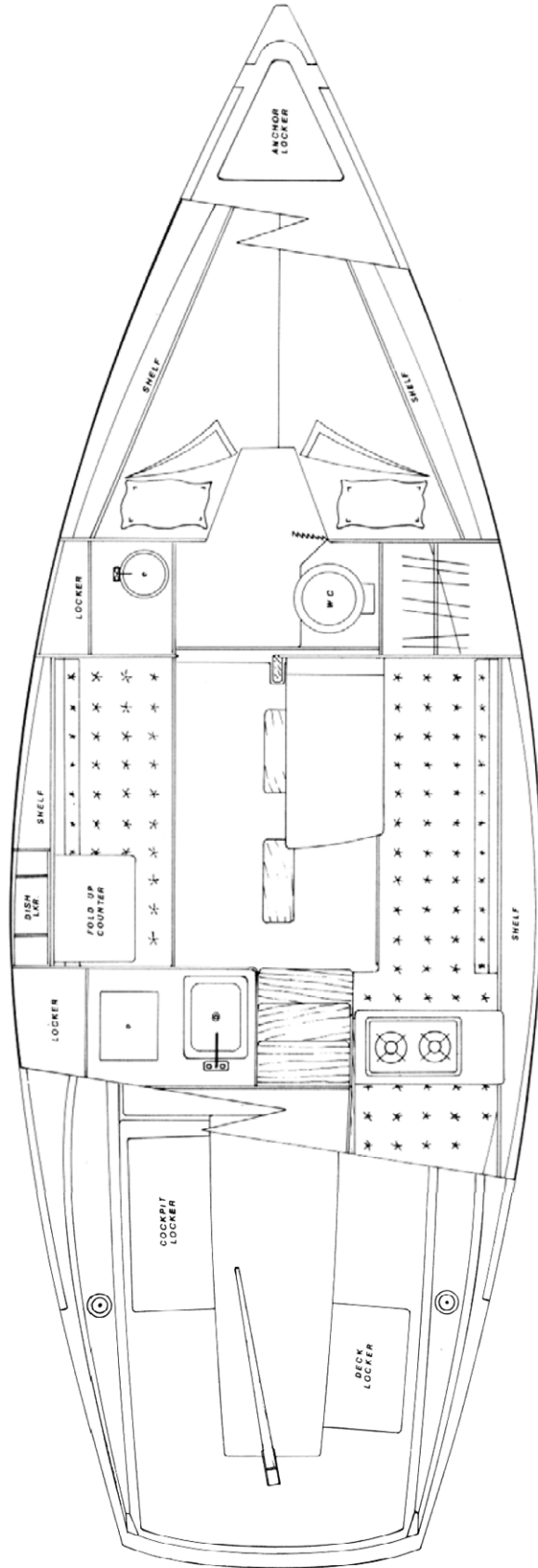
MISCELLANEOUS

Berths	5	5
Fresh Water Capacity	22 Gallons	80 Liters
Ice Box Capacity	5.4 Cubic Ft.	153 Liters
Fuel Capacity	12.5 Gallons	47.5 Liters
Engine	Diesel – Yanmar 7.5HP	



BANGOR PUNTA MARINE	
CAL 27-III	
DOCKING PLAN	
1-12-1983	JPF





BANGOR PUNTA MARINE	
CAL 27-III	
ARRANGEMENT	
10-28-1982	JPF

COMMISSIONING

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

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.

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 on to 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 athwartship, tighten the upper shrouds to get the mast straight. Finally, tighten the lowers no more than hand tight.

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 27 RUNNING RIGGING

ITEM	LENGTH	DIAMETER	MATERIAL	FITTING
Main Sheet	45'	7/16"	Yacht Braid	
Jib Sheet	37'6"	7/16"	Yacht Braid	
Main Halyard				
Rope	39'6"	3/8"	Yacht Braid	Halyard Shackle
Wire	31'5"	1/8"	7 x 19	SS Cable
Jib Halyard				
Rope	39'6"	3/8"	Yacht Braid	
Wire	36'3"	1/8"	7 x 19 SS Cable	Snap Shackle
Reef Line	20'	5/16"	Yacht Braid	
Outhaul	14'	1/4"	Yacht Braid	Eye Splice One End
Boom Topping Lift				
Mast	29'6"	1/4"	Pre-stretch Yacht Braid	Eye Splice Upper-End-Bullet Block on Lower End
Boom	10'	1/4"	Yacht Braid	Eye Splice One End
Note:	Main and Jib Halyards are wire-to-rope spliced. Dimensions given are before splicing. Splice length is 1'8".			

WIRE RIGGING

OPT	TURNBUCKLE DESCRIPTION WIRE x BODY x PIN SIZE (IN 32 NOS OF AN INCH)	NO. PER BOAT	DESCRIPTION
	MAR. EYE $\frac{3}{16}$ x $\frac{3}{8}$ PIN $\frac{3}{16}$ 1 x 19 SS MERR STUD 6-12-12 	1	<u>HEADSTAY</u> PT# 77139
	MAR. EYE $\frac{3}{16}$ x $\frac{3}{8}$ PIN $\frac{3}{16}$ 1 x 19 SS MAR. FORK $\frac{3}{16}$ x $\frac{3}{16}$ PIN 	1	<u>BACKSTAY</u> PT# 77140
	MAR FORK $\frac{5}{32}$ x $\frac{1}{4}$ PIN $\frac{5}{32}$ 1 x 19 SS MERR STUD 5-10-10 	2	<u>BACKSTAY BRIDLE</u> PT# 77141
	BALL TERM $\frac{3}{4}$ " $\frac{3}{16}$ 1 x 19 SS MERR STUD 6-12-12 	2	<u>UPPER</u> PT# 77142
	BALL TERM $\frac{5}{32}$ " $\frac{5}{32}$ 1 x 19 SS MERR STUD 5-10-10 	2	<u>FWD LOWER</u> PT# 77143
	BALL TERM $\frac{5}{32}$ " $\frac{5}{32}$ 1 x 19 SS MERR STUD 5-10-10 	2	<u>AFT LOWER</u> PT# 77144
RIG	RELEASED: DRWG # 273 RL	WIRE RIGGING SCHEDULE	
REV	DESCRIPTION		DATE

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 GROUNDING. 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.

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.

Misalignment 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.

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.

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 misalignment 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 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.

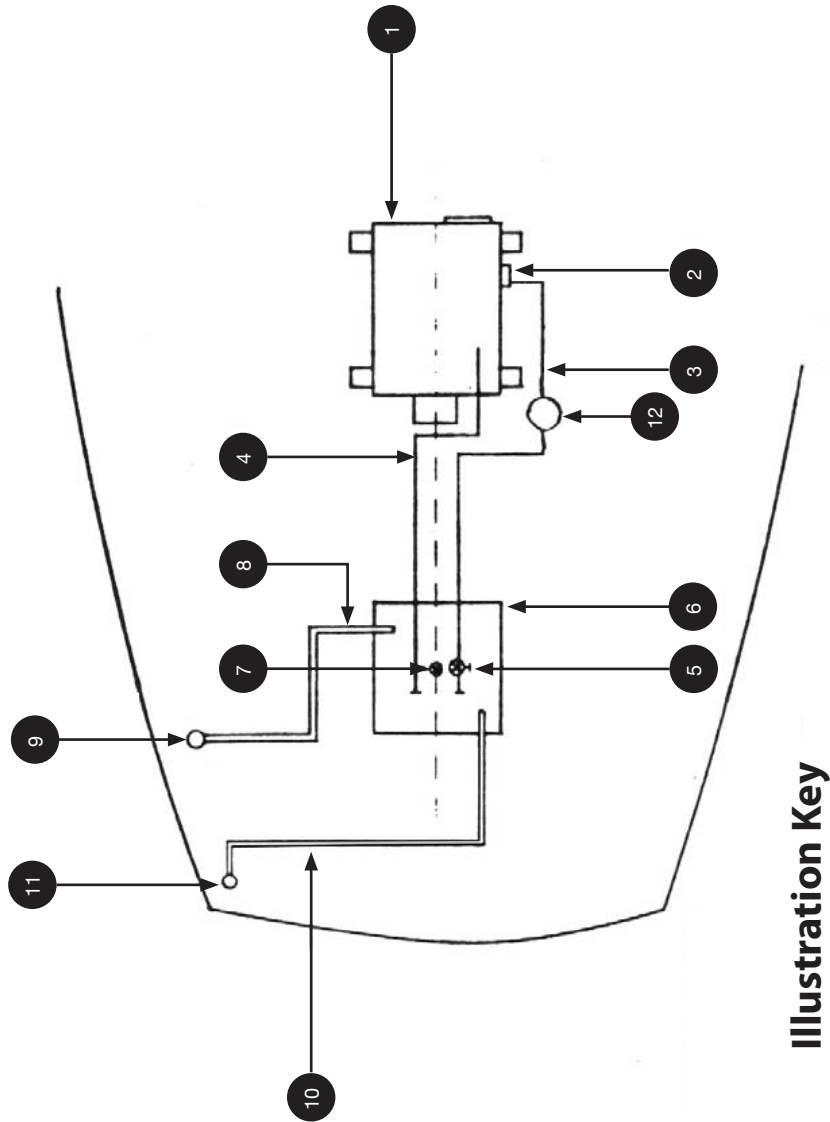


Illustration Key

- 22** Engine diesel universal
- 23** Fuel pump on engine
- 24** Fuel line
- 25** Fuel return line
- 26** Fuel shut off valve
- 27** Fuel tank 12.5 gals
- 28** Fuel level sender
- 29** Fuel fill line
- 30** Fuel fill plate (port cockpit coming side)
- 31** Fuel tank vent line
- 32** Fuel Vent (port aft cockpit coaming)
- 33** Filter

BANGOR PUNTA MARINE	
CAL 27-III	
FUEL SYSTEM (YANMAR 1 GM 7.5 HP)	
1-12-1983	JPF

FUELING PROCEDURE

- A.** When preparing to fuel your boat, the following procedures should be followed to assure safety:
- B.** Properly secure the boat to the dock.
- C.** Turn off the engine, stove, heater, radio, lights, etc.
- D.** Turn the battery switch to OFF.
- E.** Close all hatches, ports, etc., to prevent entry of fumes.
- F.** Maintain continuous contact between the nozzle and deck plate to prevent a static charge.
- G.** Fill tank to a maximum 95% of capacity to allow for expansion.
- H.** Clean any spills after replacing and tightening fuel-fill cap.

Before operating the engine or turning battery switch to ON, open all hatches and check for fuel leaks.

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.

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

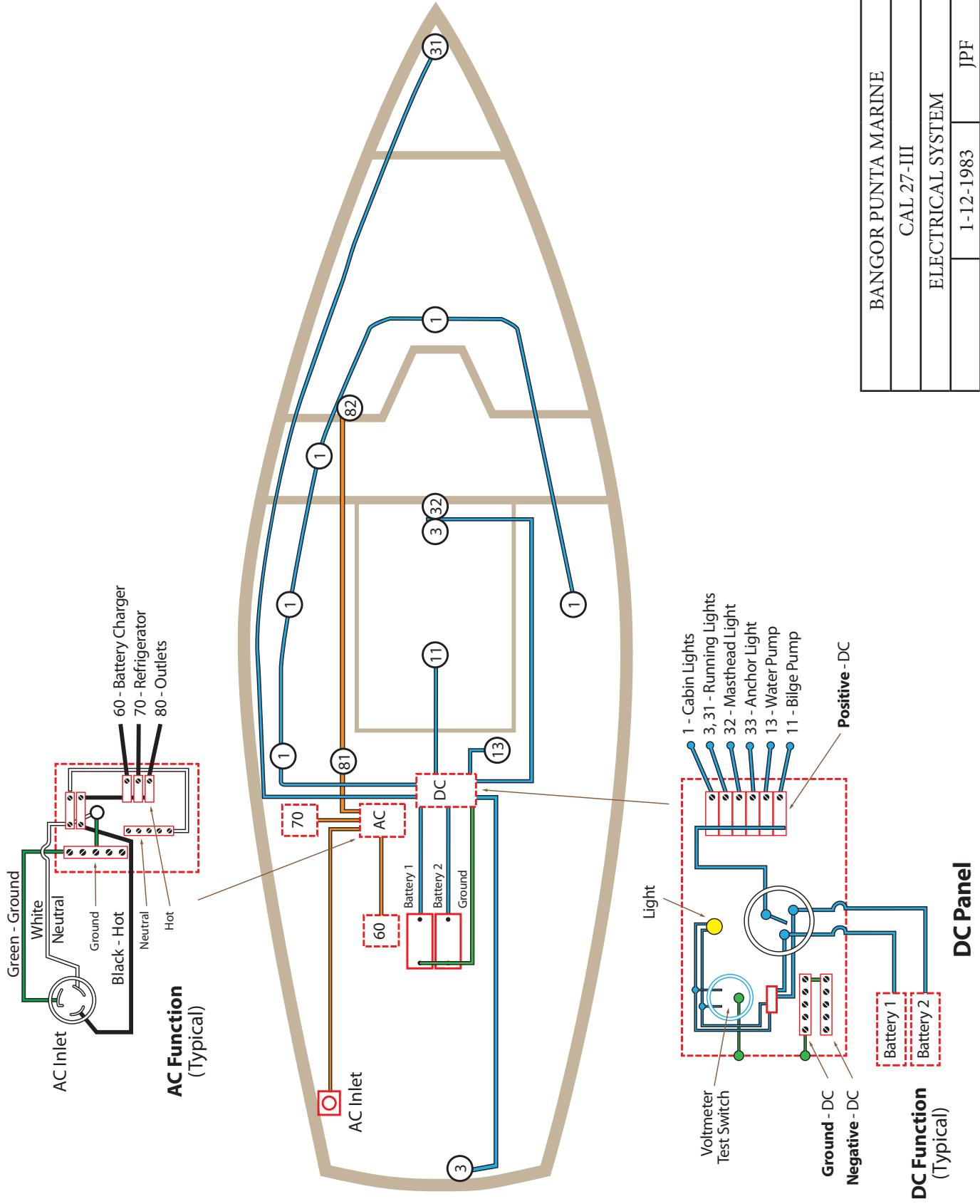
The shore-power system accepts 110V AC through a three-prong male connection located in the cockpit. There are two current carrying conductors, positive and negative, as well as a grounded non-current carrying conductor.

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.



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 to 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.

- 1) **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:
- 2) As much as possible, stay below with the hatches closed.
- 3) Avoid contact with any items making contact with the electrical system and with any other metallic parts of the boat.
- 4) Stay out of the water.

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.

- A.** 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:
- B.** Red & green 10 point side lights mounted near the bow.
- C.** White 12 point stern light.
- D.** White 20 point bow light mounted on the mast.
- E.** 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 must be on. ("A", red & green side lights and "B", white stern light)
- 2) Underway by power, the running lights and bow light must be on. ("A", "B" and "C")
- 3) At anchor, "D", the masthead light must be on.

WATER SYSTEM

Your Cal 27 uses top quality, FDA approved tubing for the fresh-water system. The tank(s) are seamless molded plastic. The standard water system has one 22 gallon tank under the starboard, main-cabin settee. It is filled through a deck plate near the starboard shrouds. Manual faucets are provided in the head and galley. An optional second 22 gallon tank is available. This tank is under the port settee and filled through a deck plate near the port shrouds. If the second tank is installed, both tanks will be connected to a selector valve under the lower companionway step. To switch from one tank to the other, move the valve handle.

NOTE: DO NOT FILL WATER TANKS TO MORE THAN 90% OF CAPACITY TO ALLOW FOR EXPANSION.

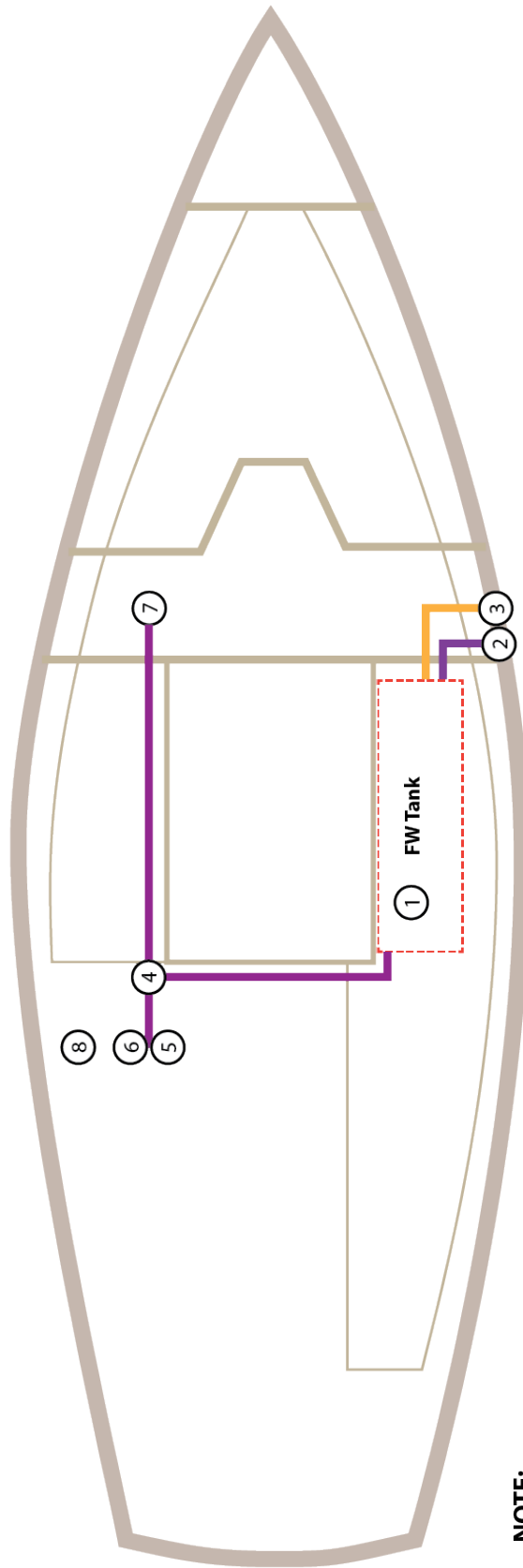
The optional pressure water-system pump is located under the companionway step, next to the tank selector valve. This is a self-priming pump. With the pressure system, a hand-held shower is included in the head. When not in use, be sure to leave the shower connected to the sink, to prevent possible seepage through the connector. If the hot-water option is installed, be sure to refer to the notes in the commissioning section.

Water tanks may be cleaned with a solution of one pint vinegar to five gallons of water.

The galley and vanity sinks drain through separate thru-hulls equipped with ball valves. Whenever the boat is left for pro-longed periods, be sure to close the seacocks (see thru-hull diagram for location of all seacocks)

Diagram Key

- 1 - FW Tank
- 2 - Deck Fill
- 3 - Vent
- 4 - Hose Tee
- 5, 6, 7 - Hand Pump
- 8 - Ice Box Drain



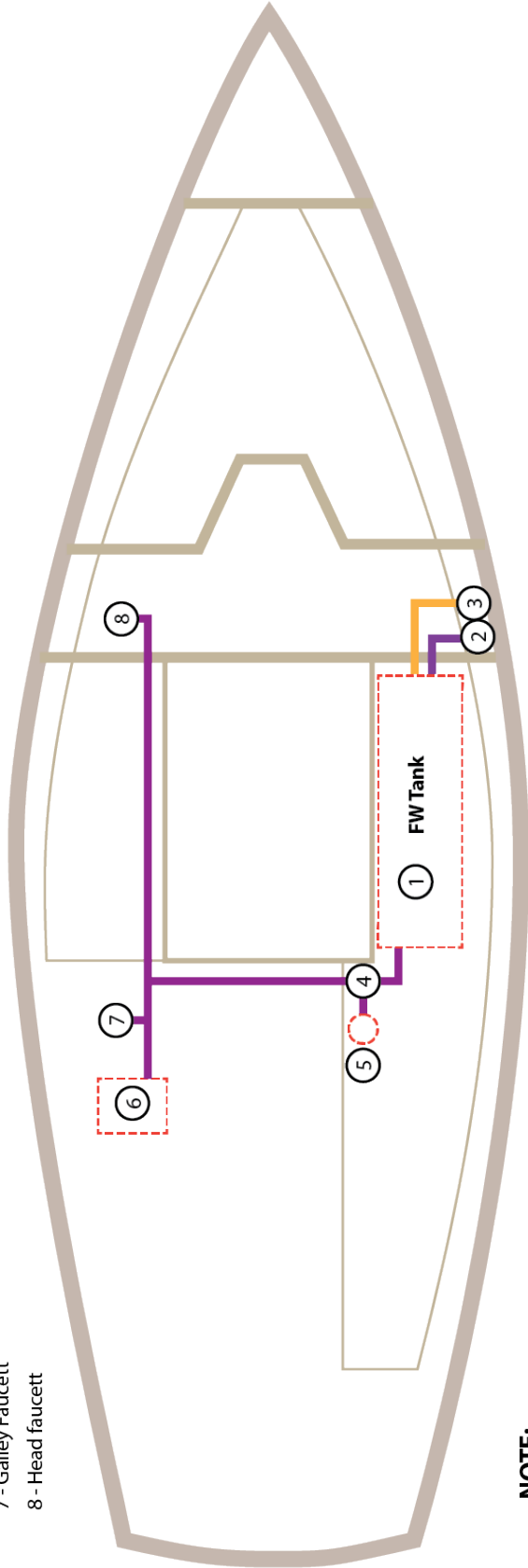
NOTE:

- A - Use 1 1/2" flex hose w/cuffs for fills.
- B - Use 1/2" white plastic hose for vents.
- C - Use qest tubing for the rest of the system.

BANGOR PUNTA MARINE	
CAL 27-III	
STANDARD WATER SYSTEM	
10-6-1982	JPF

Diagram Key

- 1 - FW Tank
- 2 - Deck Fill
- 3 - Vent
- 4 - 3-way valve
- 5 - Pressure Pump
- 6 - Water heater (opt)
- 7 - Galley Faucett
- 8 - Head faucett



NOTE:

- A - Use 1 1/2" flex hose w/cuffs for fills.
- B - Use 1/2" white plastic hose for vents.
- C - Use qest tubing for the rest of the system.

BANGOR PUNTA MARINE	
CAL 27-III	
PRESSURE WATER OPTION	
10-6-1982	JPF

COOKING STOVES & PROPANE STOVES

The propane stove in your boat 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:

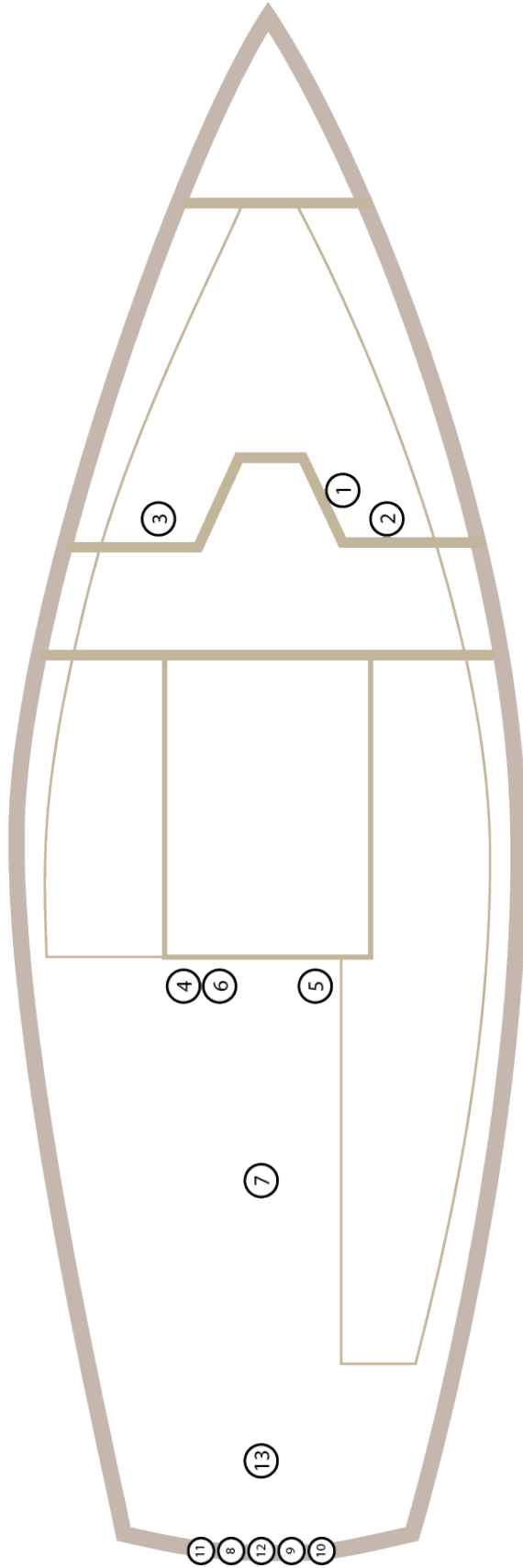
- 1) Be sure the burner valves are in the OFF position.
- 2) Be sure the electric safety switch over the stove is in the OFF position.
- 3) Turn the valve on at tank.
- 4) Move the electric safety switch into the ON position. This switch controls a Solenoid mounted between the propane tanks. In the OFF 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 the 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.

Diagram Key

- 1 - Head Intake
- 2 - Head Discharge (opt)
- 3 - Head Sink
- 4 - Galley Sink
- 5 - Engine Raw Water Intake
- 6 - Galley SW Pump (opt)
- 7 - Shaft Log
- 8,9 - Cockpit Drains
- 10 - Engine Exhaust
- 11 - Manual Bilge Pump
- 12 - Electric Bilge Pump (opt)
- 13 - Rudder Log



BANGOR PUNTA MARINE	
CAL 27-III	
THRU HULL LOCATIONS	
10-6-1982	JPF

PLUMBING

Heads—Cal 27, 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.

THRU-HULL FITTINGS

All of the underwater thru-hull fittings are equipped with shut-off valves. These shut-off valves are to prevent water incursion in the event of a hose failure. These shut-off valves will also prevent flooding of the head, if a head valve fails.

ALL THRU-HULL SHUT-OFF VALVES SHOULD BE SHUT OFF, WHEN THE THRU HULLS ARE NOT IN USE!

This will prevent any problem in case of accident. Be sure to re-open the shut-off valve on the engine before starting the engine. Following this procedure will result in a secure boat.

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.

Item	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	2	2	1,4,7	
Water				
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	
Deck Fittings	5		1,4,5	
Rudder Blade		1	1	
Rudder Post	6	1,6	1,4,5,6	

Item	End of First Week	Monthly	Winterizing	Remarks
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	2	2	1,4,7	
Water				
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	

Maintenance Key

- 1) Check condition
- 2) Check water tightness
- 3) Lubricate
- 4) Clean with fresh water Check tightness
- 5) Grease
- 6) Drain and/or anti-freeze
- 7) Disconnect

BASIC RULES FOR BATTERY CARE AND MAINTENANCE

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.

- 1) Add water only. Add no battery dopes, special liquid, or powders. These are harmful or useless. 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.
- 2) 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.
- 3) 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 an alkaline solution, such as baking soda, in the proportions of one pound soda to a gallon of water. One can tell when the electrolyte is neutralized by observing when the bubbling stops. Wash with water, dry, and apply silicone 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. **DO NOT LEAVE A BATTERY ON CHARGE FOR MORE THAN 48 HOURS.**
- 6) **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. 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. 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 gelcoat used on all exterior and interior surfaces of your Yacht is of the highest quality material available for marine use. This gelcoat has the best possible color retention, gloss, and resistance to weathering. However, even the best gelcoat needs some maintenance to preserve its 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.

Gel coated 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 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.

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 luster.

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 attack the material or its backing.

Lexan and Plexiglas

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

Spars and Hardware

The spars on your 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 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.

CAL 27

