



San Juan Yachting

"Hawthorne Bay"

A 47' Bayliner Pilothouse Motoryacht **Operating Manual**

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Section I: Introduction & General Boat Description

About this Manual

Manual Objective and Limitations

This manual is intended to introduce you to "Hawthorne Bay", its systems and features, allowing you to operate it with the confidence and self-assurance necessary to enjoy your cruising vacation to its fullest. It is not intended to replace a good basic understanding of seamanship, including navigation skills, weather interpretation or boat handling. You are expected to have an understanding of these subjects obtained through other sources, including training, seminars, reading and perhaps most important, experience.

There is no way that a small manual like this one can answer every question or give you a solution to every circumstance, foreseen or unforeseen. If you have a question which limits your understanding or handling of this vessel, ask your SJY checkout skipper or contact the office for details (you might make a list of questions as you read the manual, saving them all up to ask efficiently at one time).

How the Manual is Organized

The tab for each section defines its general purpose as shown on the front page.

You will use the Section 3, containing checklists, most of all. You should have it available so that each checklist can be used on a daily basis, even after you are familiar with the boat.

Section 5, regarding Emergency Procedures, is the most important, and you should read it, but hopefully you will never need it.

Read this Section I first to learn about this manual and the general details of your boat.

The other sections will tell you most of what you need to know to enjoy your cruise to the fullest with safety and confidence.

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General Description of this Bayliner 47' Yacht

Exterior

Hawthorne Bay, a Bayliner 47' "4788 Pilothouse Motoryacht" is a modern vessel that has many of the amenities of a megayacht, with a fiberglass hull, cabin, deck and flybridge, a fiberglass swim step, and stainless steel welded fittings and handrails. The window frames are aluminum with sliding glass panes, and the boat has Bowmar hatches for light and/or ventilation.

Of note are the walk-around forward deck and accessible side decks, which in spite of the wide salon dimensions, still enable reasonably safe, secure passage about the boat by passengers (forward) and crew (alongside the salon).

Abreast of the forward salon windows are the port and starboard fuel fills, and on the port side of the forward deck, the two water fills. The holding tank pumpout deck plate is on the starboard side by the salon windows; the shore power connections are also here just above the starboard side deck just aft of the pilothouse door. (These connections are selected by the shore power switch in the electric panel; note that when this cable is to be disconnected, the master breaker in the AC panel should first be turned to the "off" position to avoid arcing which could damage the plug contacts.)

Forward on the bow deck is the anchor windlass, with foot switches, allowing chain movement both "up" and "down" electrically. The anchor is retracted into the bow chain roller strut which hangs out over the bow slightly to give better chain clearance from the hull than otherwise possible; after passing over the winch, the chain goes below decks via a hawse pipe in the foredeck.

There fresh water wash-down faucets in the starboard side bow compartment to rinse the anchor rode with the supplied hoses/nozzle for anchor chain washing.

In front of the windshield is a cushioned lounging are.(The boat hook is now hung on the starboard rail.)



*(Above) The bow pulpit with windlass and foot switches. Bow hatch to right with washdown.
(Right) The wide walk-around side deck.*



The bow deck lounge. Hatches each side are deck equipment storage cabinets.

The cockpit (with storage lazarette beneath accessed by three floor hatches for access) is especially useful for handling the dinghy after it is launched from the boat deck. It has side storage compartments and both a hot/cold fresh water swim shower fixture and a fresh water hose bib.

In this lazarette beneath the cockpit are a number of items. The boat's two 30-amp shore power cables are 25 and 50 feet long and stay with the boat when away from its home dock. (See section 4.) The lazarette hatches also allow access to the ship's genset and several batteries in case maintenance is required.

A practical ladder leads from the cockpit to the boat deck to ease dinghy handling (although when the dinghy is stowed on its davits the crew will use the stairs from the pilothouse to the flybridge as the flybridge access, as the dinghy nearly fills the boat deck space.) The boat deck stores the yacht's dinghy, the barbecue, and the galley's propane tanks and valves. With its limited railings, this area will not normally be used by crew when at sea except for launching the tender, which is launched with a deck crane the remote control for which is stowed under the aft seat in the L-settee on the port side of the flybridge. The 12' Dinghy is equipped with an electric start/tilt outboard, with nav lights and electric bilge pump.



The cockpit to starboard. Note the ladder to the boat deck and (with the black door) one of the two cockpit cabinets.



Starboard cockpit hatch to the lazarette opened.



On the boat deck. The dinghy aft includes a 40hp Honda outboard.



The barbecue, with its propane tank aft.



The galley propane tanks are mounted on the aft side of the flybridge settee



The dinghy bow includes a console and bilge pump and light switches and gauges. The black panel is a wintertime solar charger for the dinghy battery.

Forward of the boat deck is the extraordinary flybridge, equipped with many amenities to make your stay on Hawthorne Bay as comfortable as possible.

There is substantial seating on the flybridge: A helm seat for the captain, an L-Settee to port seating three or four, plus another settee to starboard seating two or three more persons allows eight crew to enjoy themselves while above. A clip arrangement holds the door open underway.



F/B Door Clip.



Flybridge forward. L-settee is to left, helm seat and console in the middle, heavy black Plexiglass door on right covers stairs to pilothouse.

Of course here is also the upper helm station. Helm's instruments are mounted in/on the console, which also carries a complement of critical navigation gear including a multifunction display for the radar and plotter, plus sounder, etc. In the cabinet on the port side of the flybridge by the console is the flybridge entertainment system and the VHF radio.

Under the settees are storage for the ship's canvas covers (port) and the ship's life jackets (starboard); just aft of the starboard settee is a Lifesling rescue system, while aft of it is the barbecue and its propane tank.

If the flybridge enclosure side curtains are in place, be careful when raising/stowing them to avoid unnecessary scratching!



This view shows the starboard settee, the Bimini top, and in the foreground the barbecue with its canvas cover.

Swim Platform

At the aft end of the boat is a roomy swim platform/hull extension. It has access to three cabinets; holding an extra anchor and rode; shore line on a reel; crab traps, etc. Note that this storage accumulates some moisture (though not flooding) when underway, so it is not a good place for storage of items that must be in an "arid" environment.

There are three retractable cleats on the swim platform to hold fenders to protect the dinghy and for use to keep the boat close to a dock for boarding; do not use these cleats for dinghy towing: They will break!



One of the retractable cleats in the "up" position.

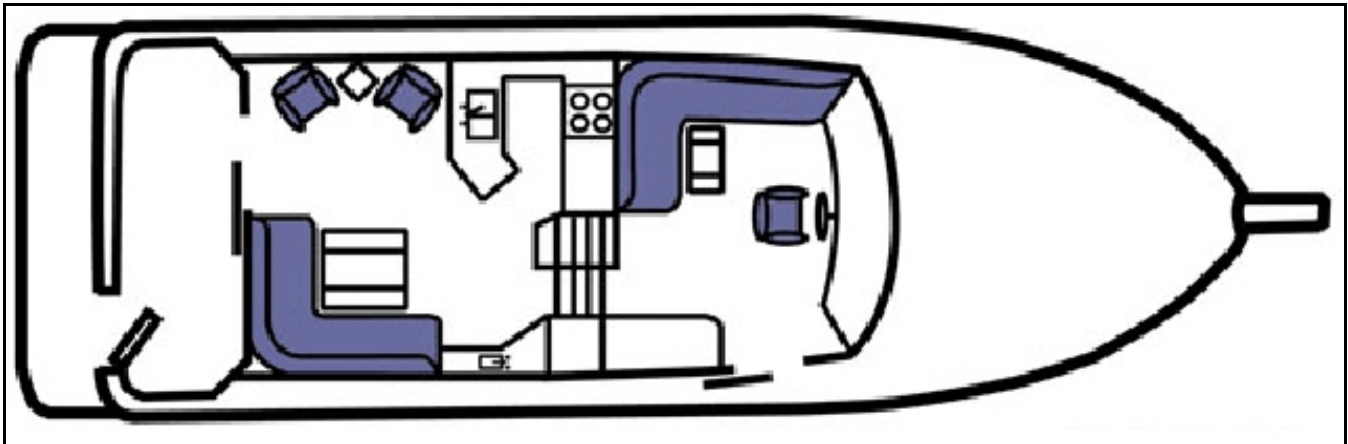


Inside the swim step center hatch.



The huge extended swim step with three hatches.

Interior Accommodations



Main Deck

The boat is entered by the main sliding door aft, or by the less-used entry direct thru a pilothouse port side door. The pilothouse door is fitted with a strong lock. Be careful to close the door when underway in heavier weather to avoid getting spray in the boat.

Be sure to close the door when starting engines to keep exhaust fumes out until the engines warm up!

Forward of the aft sliding door to starboard is, an "L" settee with storage beneath, and forward of that the refreshment bar with wet sink and an icemaker just forward of it; and then on the forward bulkhead the entertainment equipment including AM/FM/Stereo with CD and DVD players. A high-low cocktail table is in front of the settee; its leaves open up for dining.



Looking aft from inside the salon toward the cockpit. The sliding entry door is by the easy chair. The battery switch cabinet shown below is behind the easy chair by the door.



A salon view looking forward to starboard from the doorway....

Across from this settee to port are two captain's chairs and a side table to provide a very nice gathering spot after a day's cruising. Behind the aft chair is a cabinet with the ship's main battery switches.



Some of the L-Settee's storage. Battery switches...

Forward of the chairs is the galley serving counter shielding the galley itself from passenger view but allowing easy communication with crew in the galley, while in the inboard end of the galley cabinet is the large salon TV cabinet.



In this galley, it's remarkable how much storage has been provided for the ship's cooks. Numerous drawers plus a built in stove, microwave/convention oven, built in freezer and refrigerator, and

trash compactor plus lots of drawers and cabinets will keep provisions under control and handy.

Pilothouse

Up the steps from the salon is the pilothouse, a comfortable, warm and efficient control center for this yacht. Fitted with a wraparound, aircraft style control panel, the space features a Zwaardvis, Ultraleather helm chair that is adjustable for the skipper's comfort (the swivel lock is under the chair skirt starboard side.)



This is the pilothouse helm console and helm seat, with a terrific array of instruments all in easy reach...

Electronics in the pilothouse helm include GPS/Plotter, autopilot, VHF radio, radar, depth sounder, engine controls, and an integrated control for the bow and stern thrusters. All the switches for wipers, bilge pumps, defogger, nav & anchor lights, windlass and more are on the right panel. Above the console are instruments including the ship's clock, barometer, and wind indicator.

The skipper can easily reach the starboard side deck through a side door, especially useful when docking to assist with the bow line, for instance.

There is an L-settee aft on the pilothouse level, positioned for visibility and comfort while the boat is underway with a small table for casual dining/refreshments while underway. The ship's tools are under the settee's corner. Above this lounge there is a cabinet with many of the day-to-day manuals the skipper may require.



Looking aft at the pilothouse steps to the salon (on the left) and the steps from the pilothouse to the flybridge (in the center). The helm chair and part of the pilothouse settee are visible on the left. Between the settee and the steps are an electric-heater thermostat and the wireless internet receiver. The electric panel is starboard just outside this photo.



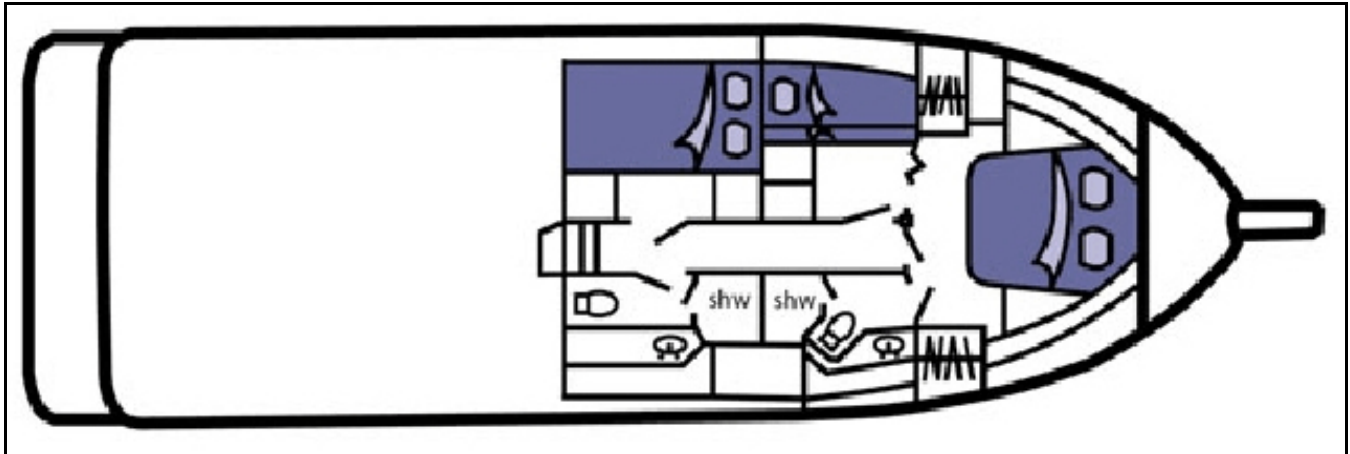
...and this is the pilothouse port & aft view! Note the port side door in the back of the picture: The removable cushions are in place. Over the settee the cabinet holds manuals and other literature.

To starboard of the pilothouse settee are the stairs to the flybridge with a secure hatch protecting the pilothouse from weather. Adjacent to these stairs a cabinet holds the AC-DC electrical panel and on its forward side.

The electrical panel, positioned as it is by the flybridge stair, makes it easily accessible to the salon, the pilothouse, and even the staterooms below.



Stateroom Deck



One of the two equipment access cabinets in the companionway.

Access to the lower deck is via the steps from the salon by the galley. At the foot of the steps to starboard are two cabinet doors opening into the utility area of the boat where head pumps and similar equipment is located. Past the first of these is the guest head compartment door; the head has vanity, toilet, stall shower and several storage cabinets.



(Above) A guest head cabinet. (Right) A portion of the guest head.



The #1 Guest S/R. To left of the door is the hanging locker, to right a bed table, and below the berth, drawers.

To port of the companionway a doorway leads into the #1 guest stateroom with a double berth, hanging locker and drawers.

Further down the companionway to port is the ship's washer-dryer behind cabinet doors; then the door to the #2 (Bunk) stateroom. A door from this stateroom allows access to the master stateroom so that if only four are aboard, the occupants of the master can use this smaller stateroom as a convenient and flexible storage or dressing area.



The #2 (Bunk) Stateroom. Behind the mirrored door are copious drawers and a hanging locker.



The forward master stateroom features an island-queen berth with plenty of storage in hanging lockers, drawers and cabinets. It has its own head, accessed by a door aft to starboard.

The Master Stateroom aboard Hawthorne Bay is sumptuous! It features a queen-size island double berth (the best arrangement for quiet nights at anchor) with hanging lockers on each side, plus drawers and cabinets on each side and under the berth's aft (foot) end. As is true throughout the vessel, lighting is excellent and well-placed.

A separate master stateroom head is accessed through a door on the starboard aft side of the stateroom. This head also has a stall shower/bathtub and lots of storage.



A portion of the M/S/R head compartment. The boat has Vacu-Flush toilets in both compartments.



Another M/S/R head view.



The Master Stateroom under-berth drawers. This boat has lots of storage!



One of the M/S/R hanging lockers. This one is to starboard.

The boat also has a central vacuum system located in the companionway access panel to starboard of the companionway. Its hose is stowed in the #1 guest stateroom, and its power is controlled by a breaker in the AC breaker panel in the pilothouse.

Engine Room:

Access to the engine room area of the vessel is through the hatch at the top of the lower stateroom companionway steps.

Engine Room lighting is turned on before entering by a breaker in the ship's DC power panel at the top of the salon-pilothouse steps.

The engine area is divided into two compartments. The forward one of these (where the hatch is), a utility compartment, contains the bow and stern thruster batteries; the water heater; and filters for the watermaker plus other miscellaneous items.



(Above) To starboard in the forward engine room compartment.
(Below) To port are filters and controls (green) for the watermaker and (red) water pump.



Looking aft through the utility compartment at the engine room. The Cummins engines are to each side, while the Westerbeke generator sound shield cabinet is all the way aft; right in front of the Westerbeke cabinet you can see the sea water hoses for the engines leading to the seacocks.

The engine room layout is conventional: Oil dipsticks and fillers are inboard forward on each engine. The coolant expansion tanks are just aft of each engine (the one for the port engine is outboard of the port engine's transmission). Aft of the engines are the "Everhot" hot water tank heated by the Diesel Furnace (to port); the transmissions and shaft seals; and the sea water strainers and, nearly on the centerline, the thru-hulls and seacocks.



The good news is that except for the engines themselves, nothing is outboard of the engines!

Lazarette: Under the lazarette hatches are the Westerbeke Generator; the ship's batteries; two folding deck/dock chairs; the Diesel Furnace; and some miscellaneous equipment.



Under the port cockpit hatch is the lazarette with the Webasto Diesel furnace, the port engine muffler, and a (grey) battery box.



The Westerbeke generator under the middle cockpit hatch, with associated equipment and the stern thruster master switch. The folding chairs are atop the genset cabinet.

Deck Equipment:

The boat has mooring lines; a stern/shore line at least 200' long; an appropriate Bruce anchor with at least 400' of all-chain anchor rode plus an emergency Fortress anchor (in the swim step) with chain and rope rode; washdown hose outlets for fresh water in the starboard bow and port cockpit cabinets; a handheld swim shower with hot and cold water in the cockpit; a supply of fenders/bumpers; an ice chest for picnics, etc; a crab pot or ring with line, float, and bait rigging; a hose for fresh water tank filling and boat washing; and two boat hooks (forward on the starboard rail and in the cockpit aft storage cubby).



The swim shower is tucked in a little cabinet in the cockpit adjacent to the transom door.

Safety Equipment:

This vessel is equipped with four fire extinguishers, one in the forward lower passageway; one under the engine room hatch; one in the pilothouse; and one in the galley/salon area. There is a ship's bell; flares in the drawer aft of the pilothouse starboard door; a "LifeSling" life preserver on the starboard side of the flybridge just aft of the settee; an appropriate supply of life jackets on the flybridge under the starboard settee; and two VHF radios. Charter Clients with children under 90 pounds should bring appropriate life jackets for them.

Hull plans showing thru-hulls, drains and wiring diagrams for the boat are in the grey "Bayliner Owner's Guide" booklets aboard the boat in a black binder in the pilothouse "everyday manual cabinet" above the pilothouse settee.

Spares and Tools:

Tools and an electric meter, and non-engine spare parts are in the corner of the L-Settee in the pilothouse. All engine-related spares, plus spare oil, antifreeze, etc., are stored aft of the starboard engine. (You may see spares in some of the photos in this manual: The pictures were taken before they were relocated.)

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Section 2: Specifications, Capacities, & Important Numbers

Important Data For This Boat

Vessel Name: Hawthorne Bay
 Vessel Official Number: 1122643
 Vessel Registration Number: N/A
 Hull ID Number: BLBA508VB101

Capacities:

Sleeps six: Two in each stateroom (recommended)
 Sleeps eight: Two in each Stateroom plus Two on the Settees
 Fuel: 444 Gallons in two 222 gallon tanks
 Fresh water: 160 Gallons in one tank and a water bladder tank
 Holding Tank: 48 Gallons in one tank

Dimensions:

Length: 47 Feet 4 Inches plus swim platform extension (54' LOA)
 Beam: 14 Feet 11Inches
 Draft: 3 Feet 4 Inches
 Displacement: 30,000 Pounds

Fluids:

Motor Fuel: #2 Diesel
 Motor Oil, mains: 15W-40 Chevron Delo Multigrade
 Transmission Oil: 30W Chevron Delo Single Grade
 Engine Coolant: 50-50 mix, ethylene glycol and water; corrosion inhibitor added

Operating Parameters:

(2250 RPM Recommended Maximum Cruising Speed!)

RPM	Speed	GPH Total Both Engines Combined	Naut. Miles/Gallon
1600	9.0	8.0	1.125
1800	12.0	11.0	.916
2000	14.0*	16	.875
2200	18.5*	22.0	.840
2400	22.0*	30.0	.733

***All figures are estimated and may vary.
 *Planing figures presume boat is placed "on plane". See discussion page 4.3.***

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Section 3: Checklists & Maneuvering Suggestions

Operating Checklists - Hawthorne Bay

First Thing Each Day:

- Check engine oil, coolant.
- Check under-engine oil pads. Okay?
- Check fuel tank levels.
- Check holding tank. Need pumping?
- Turn off anchor light if illuminated.

Starting Engines:

- All lines clear of propellers and on deck.
- Items running on AC evaluated vis-a-vis the Inverter and generator.
- Start Engines:
 - Throttles at "idle" and shifts in "Neutral"
 - Turn engine key past "on" to engage starter

Leaving Dock: (Only 3-4 minute engine warmup required!]

- Shore power breaker "off", cord removed, and stowed on board.
- Lines removed as appropriate.
- Fenders hauled aboard and stowed.
- Lines and other deck gear secure/stowed.
- Doors and hatches closed and secured as appropriate.

Underway:

- Helms person on watch at all times.
- RPM under 1400 until engines warm to 1400; RPM (Recc. Max cruise 2250 RPM).
- Wake effects always in mind.

Approaching Dock:

- Fenders out on appropriate side.
- Trim Tabs "Up" (Bow Up)
- Bow line OUTSIDE stanchions and bloused around to midships.
- Engines dead slow, wheel centered for engine-only maneuvering.
- Mate ready to secure stern first (in most circumstances).

At Dock in Marina:

- Lines secure, including spring lines.
- Trim Tabs "Up" (Bow Up)
- Step stool out, if needed.
- Water heater breaker off until Inverter current settles (see "Inverters" below).
- Shore power cord connected.
- Shore power switch "On" to appropriate shore power location.
- Shore power confirmed on meters.
- Inverter "On".
- Electric use monitored for current capacity of shore facilities.

Mooring at Buoy:

- Skipper puts starboard side gate next to buoy with mate standing by it.
- Mate loops 20' or so line, such as bow line, through buoy ring.
- Mate holds two ends together, walks up side of boat to bow of boat.
- With buoy held close to bow, line secured to each bow cleat through hawsepipe.
- Inverter "Off" unless in use or Generator is running.

Mooring at Anchor:

- Anchor is lowered from pulpit while boat is backed up slowly away from anchor.
- When desired chain length out (4:1 or 5:1 scope), windlass is stopped.
- Engines reversed "for count of five" until chain pulls up virtually straight. Note: the boat is not held in reverse against a taught anchor chain!
- Inverter "Off" unless in use or generator is running.

Overnight Checklist in Marina:

- Shore power "On".
- Trim Tabs "Up" (Bow Up)
- Inverter "On".

Overnight at Anchor or Buoy:

- Inverter "Off" to conserve batteries.
- Trim Tabs "Up" (Bow Up)
- Anchor light "On".
- DC electrical items all "Off" including radios, extra lights, etc.

Upon Arising:

- If at anchor or buoy, Inverter "On" only if necessary.
- If necessary, run generator to charge batteries if at anchor or buoy.
- Inverter "On" if shore power available or generator is running.
- Turn on heat if necessary.
- Go to top of this Hawthorne Bay checklist.

Maneuvering Suggestions

Docking & Undocking

Usually it's easier to dock bow in. Have your mate at the side rail opening, ready to step off and secure the stern line, against which you can pull to swing the bow in toward the dock. By having your mate ready to disembark when close to the dock, he/she will not have to jump to the dock, risking a turned ankle or falling overboard. It is the skipper's job to put the boat next to the dock so the mate needn't jump, but merely step off!

When approaching a dock, have the fenders out as required and have the bow line already rigged, passed through its hawse pipe, and draped back on the side of the boat between the stanchions so it can be reached from the dock. Never put a line from a cleat over a rail: the boat's weight will bend or break the rail if it pulls against the line! Then, when the mate is ashore, the line can easily be reached . . .

If dock clearance permits, spring the boat forward so that it pulls forward on the stern line. This will bring the stern close to the dock. Let the bow line out enough so that the boat can rest against the stern and midships fenders.

Maneuvering in a Harbor

With its twin screws, you'll do best if you center the rudder and steer with the engines only! The props are so large that the boat will respond well (except in high winds) just with use of the propellers in forward and/or reverse. Take your time, and keep the boat running "dead slow" so that you can plan each approach. You shouldn't need to use the throttles at all.

Filling The Fuel Tanks

With the large fuel tanks, you can fuel the boat pretty fast at the boat's side deck fill fittings using a standard hose and nozzle (like the ones on auto gas pumps). You need to fuel each tank separately. Fill both the tanks completely but do not spill fuel!

You can control the flow rate by sound, as the fill pipes make the characteristic "getting-to-the-top-of-the-bottle" pitch change when the fill pipes begin to fill when the tanks themselves are full but be careful: It's a fairly long run to the tanks from the fill pipes! (The tank vents will gurgle before the tanks are full, so when the vents begin gurgling, slow down until you hear the fill pipes' pitch change.)

Anchoring

Anchoring can be accomplished safely with a minimum of fuss if you are prepared. Or, if you are not ready, it can be stressful and dangerous for you or the boat.

Before attempting to anchor, select an anchorage with a soft bottom such as sand, mud, or gravel, if possible. Look at the charts and cruising guides for tips on good locations. Then, choose the spot in the anchorage where you have room to "swing" on the anchor without disturbing other boats. Remember, responsibility for leaving room goes to each successive boat to arrive, for the first boat has priority in the anchorage!

Here in the Northwest, because of the deep waters, all-chain rodes and small bays, we anchor a little differently than in the Gulf of Mexico or Caribbean, for example. First, except in severe weather we use anchor chain scopes of only 4-to-1 or 5-to-1. For example, in water that is 40 feet at high tide in the typical anchorage, we might use 160 feet of chain unless the weather was to be gale force or greater winds.

Second, because of the small bays and steep bottoms, we often rig a shore line from the stern of the boat to shore. The best example of this would be at Todd Inlet at Butchart Gardens. Here is a bay that can accommodate 8 - 10 boats, yet it is only about 150' wide and 200' long! Boats attach their bows to the mooring buoys or, in a few cases, anchor; and then their sterns are secured to rings provided in the steep cliffs overlooking the bay. Boats are thus perhaps only 15-20' apart, side to side.

Third, boats often will "raft" side by side in busy marinas, although this is not too common.

Fourth, courteous boaters will call vessels coming into busy bays and offer to let them raft to the same buoy, if signs on the buoys do not limit usage to only one boat depending upon length.

Anchoring safely requires two persons, one at the helm maneuvering the boat and one on the bow operating the anchor. Putting the bow of the boat over the spot where the anchor is to be placed after checking the depth on the depth sounder, the windlass foot-switches are used to lower the anchor slowly toward (but not onto) the bottom, by watching the chain markings.

When the anchor is about to reach bottom, the boat is backed away by putting the engines into reverse for 5 seconds: Eddies from the chain indicate motion. Resume lowering the anchor while drifting backwards (watch the eddies and add another burst or reverse if necessary!) until the desired amount of chain is out. Stop paying out chain. Engage reverse for five seconds at a time until the chain starts to pull straight off the bow toward the anchor. A straight chain indicates a "set" anchor!

NEVER pull on the chain for more than five seconds, and never at any engine RPM other than idle! Putting the boat's weight plus its horsepower on the chain forcefully even at idle will bend the anchor and/or damage the mooring gear!

If while checking the set, the chain rumbles and clunks, and seems to release in bursts, it means you're anchoring on a rocky bottom and the anchor is not holding. Be patient: It may not set on the first try, and you'll have to repeat the process sometimes to get a good "bight" on the bottom.

Shore Lines

When a shore line is required, anchors are set 75 - 100 feet from shore, with the boat backing toward shore during anchor-setting. The stern line is put around a tree, and brought back to the boat.

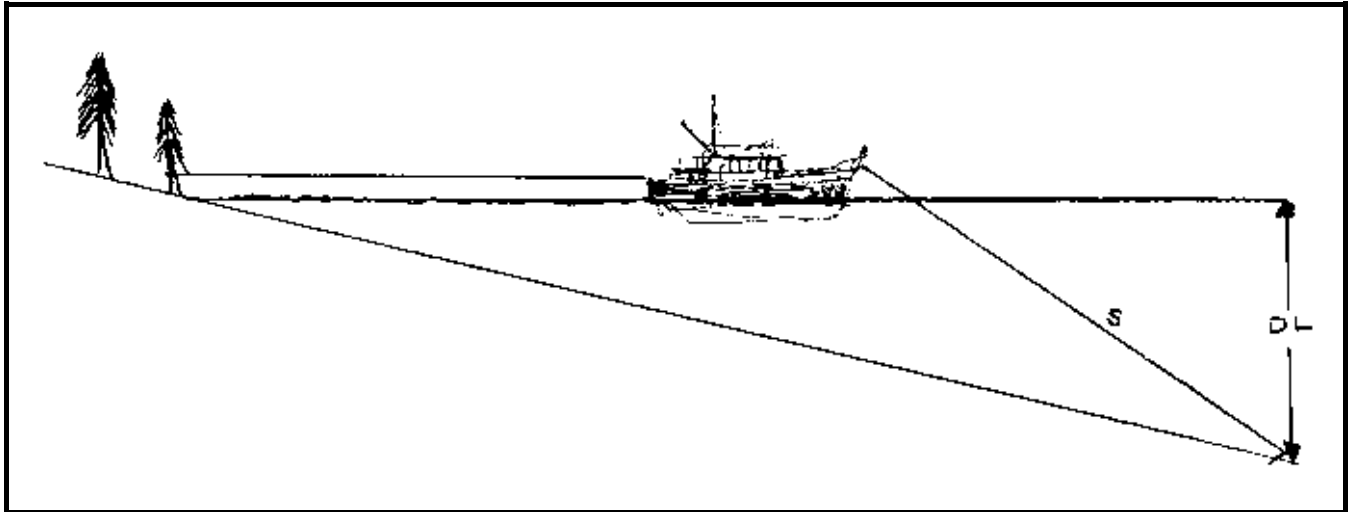
During this process, be sure to keep clear of rocks near the shore, and allow for our Northwest tides, occasionally twelve feet, and sometimes 20 feet when further north! Check the present tide, and high and low tides before beginning anchoring: No sense anchoring in 15 feet of water if you're at the "top" of a 15 foot tide!

To get to the shore, you will need to have a dinghy down, and then have your mate keep the boat's stern toward shore with short bursts of reverse gear. Sometimes a helpful boater already anchored will help you by taking your line to shore for you with his dinghy, a neat "good deed" that you might reciprocate. We've met some nice boaters this way!

The shore line is in the lazarette, and is long enough to usually allow taking it to a tree, around it, and back to the boat so you don't have to go ashore to untie when leaving. With a crew member keeping the boat in position, take the dinghy to shore pulling the end of the shore line with you. Pass it around a tree, and pull it back to the boat if you can, since then to

get away in the morning all you have to do is release the bitter end from the boat, and pull it aboard. Pull the line tight, as long as you've got over 100' total of line out: There is plenty of sag/stretch, and we want to keep the boat in its area! If necessary, put a crab pot float or fender on the line to warn others it's there!

Here is a sketch of a properly anchored boat with a shore line (in this drawing, S=Scope, which should be at least 4 x DL, the Depth at Low Tide):



Trim Tabs

The boat is fitted with a set of Bennett Trim Tabs. These are wide "flaps" attached to the aft end of the boat, under the swim step at the trailing edge of the hull, operated hydraulically under the control of the skipper by rocker switches at each helm station.

At low speeds, up to approximately six knots, the tabs do little, and should be left in the "Bow Up" position (see below). But at speeds over this range, the tabs begin to take effect and will help the operator lower the bow for more efficient cruising. However, the boat's swim step/hull extension reduces the need for these tabs to be operated!

The best way to adjust the tabs is to lower them while watching the "Speed" indicator to get the highest speed at a given throttle setting by adjusting "Bow Down". If the tabs are "Bow Down" too much, the steering will get mushy and speed may drop off a little, and the tabs should be adjusted "Bow Up" a little. Note that it will take time to make these adjustments; when the buttons are depressed, they need to be held 2-5 seconds each time for change to be felt and observed (the best way to see the effect of the tabs is by the knot meter and by observing the height of the bow relative to the horizon, most easily seen from the lower helm station).

Because the trim tabs are so large, **THEY MUST BE IN THE FULLY-BOW-UP POSITION WHENEVER THE BOAT IS TO BE OPERATED IN REVERSE**, otherwise the great water forces against the tabs may damage them severely, even tearing them off the hull!

Anchor Windlass

The anchor windlass on the bow is controlled at either helm. For it to operate, the master switch in the DC power panel, left (forward) side must be "On". Then it is controlled by foot switches just to port of the windlass.

If the windlass fails, it can be operated manually. Follow the instructions in its operating manual in this unlikely situation.



Anchor Windlass; Foot switches to left.



Windlass Master Switch.

Bow and Stern Thrusters

Hawthorne Bay has been equipped with bow and stern thrusters with Bayliner "Dock on Command" controls at each helm, and a remote control. These will assist you in getting extra close to the dock after you have put the boat within three feet or so using the engines...

The thrusters run from their own battery charged by the engines, shore power, and the generator; they are *not* designed to be used excessively without interruption, as they will overheat and/or exhaust their battery. When a thruster overheats, a thermal overload switch will open, so they will only run for a couple of minutes of intermittent use (30 seconds at a time more or less) before this switch operates to let the thruster cool *for as much as 15 minutes* before the switch closes and allows more operation!

Do not overuse the thrusters! Operating them in "jabs" of 10-15 seconds at a time should be enough.

To operate the thrusters::

Use the "D.O.C." *Dock on Command* control at either helm. Simply push the little boat-shaped button in the direction you want the boat to move, and the appropriate thruster will run, pushing water out the boat's side to move it as needed.



The little "boat" on the control is moved in the direction you want the thrusters to actually move the boat!

Section 4: Specific Discussion of Boat Systems

This section of the operating manual will discuss each of the boat's systems in turn. The systems and major components discussed are grouped and in order as follows:

- Main Engines & Sea Strainers
- Dinghy, Davit & Outboard Motor
- Fresh Water System;
- Electrical-AC, Electrical-DC, and Inverter;
- Heads and Holding Tanks;
- Heating System;
- Galley Equipment
- Navigation Equipment, Radios, and Radar.

Main Engines, Engine Controls & Sea Strainers

The main engines on the boat are two Cummins Diesels, each producing a maximum of 300 horsepower. These extraordinarily-reliable, rugged machines are the top-of-the-line, and can be expected to give you trouble-free, economical cruising.

On engine start, no long warm-up is required! Three or four minutes is sufficient, then load the engines by putting the transmissions in gear. Do not run them over 1400 RPM until the temperature gauges read at least 140 degrees Fahrenheit. Do not run the engines for long periods with the transmissions in neutral, with no load!

Daily Maintenance Procedures



The starboard engine dipstick and oil fill is the yellow T-handle just above the filter.

The engines require a regular, daily check, since once underway, you will probably not check them while in use, tucked away as they are beneath the cabin floor. Please perform this check each morning (when the engine room is cool!):



The port engine dipstick and oil fill is the yellow T-handle just aft of the forward engine mount.

CHECK THE OIL. The oil level should be between the two marks on the dipstick. The dipsticks are located on the inboard side of each engine, at the aft end of the engine itself, fairly low on the crankcase. Use a paper towel from the roll on the aft bulkhead, wipe the stick, reinsert, and take reading. You must remove, wipe, and re-dip the stick to get an accurate reading because the sticks often will be "dry" the first time they are pulled! A funnel for adding oil is by the oil changer in the engine room entrance.

The distance between the two marks is about 1.5 quarts. Add only enough oil to bring it up above the "add" mark, say a quart, using the oil provided on the boat. (If you need more oil, buy it! We will reimburse you.) The oil fill on each engine is the cap forward on the top of the engine's forward valve cover; you will need to use a funnel to add oil without spilling.

Do not overfill the crankcase (above the "full" mark), as these engines will quickly waste excessive lubricant. If oil is required often, check under the engine carefully to be sure there is no oil leak, and if there is, have it corrected promptly.

CHECK THE COOLANT LEVEL. There are plastic coolant tanks mounted just behind each engine (the port one is outboard of the transmission, so difficult to reach). If, when cool, the level is very near the bottom of the tank, add coolant. *Do not overfill! When the engines are hot, the coolant will expand and overflow if you add too much!*

If coolant is needed (this should be **rare**), determine if there is any sign of a coolant leak under the engine, and if there is, do not run the engine; if no leak, add coolant to the tank from the jug of pre-mixed antifreeze/corrosion inhibitor/water supplied on the boat. You can use the supplied siphon hose in the engine room to add coolant to the tank.

VISUALLY INSPECT THE ENGINE ROOM WHENEVER YOU'RE IN IT, asking yourself, "Does everything look right?" Look at the pads under the engines and transmissions: While some drips are normal, there shouldn't ever be substantial accumulations of any fluids!

CHECK THE SEA STRAINERS ONCE A WEEK, OR IMMEDIATELY IF EITHER ENGINE RUNS "HOT". The engine strainers and valves are in the aft end of the engine room aft of each engine: you can find them by following the big hoses. The genset sea strainer is in the lazarette. To check a strainer, shine a flashlight through it. While some "fuzziness" from trapped thin growth is normal, you should see the light clearly on the other side; if obscured, you should clean the strainer. See below.

CHECK THE TRANSMISSION OIL LEVEL once every two weeks, more often if a transmission shifts erratically. The dipstick is atop each transmission. It is unlikely that any oil will need to be added. Be sure to check under the transmission for leaks! ***Low transmission oil is a serious matter.***

With the engine idling, remove the transmission dipstick. Wipe it with a towel, reinsert it, and take a reading. If the level is below the add mark, stop the engine, add a pint of the same oil used for the engine crankcases through the plug in the top of the transmission case, and then start the engine and measure again. **DO NOT OVERFILL**, for to do so could cause the seals to "blow out".

These Cummins engines are red-lined at 2800 RPM. Maximum cruise is 2400 RPM. However, the realities of vessel hull design and powerplant engineering dictate that higher RPM operation is very inefficient on semi-displacement vessels like this one, so you will find these operating specifications to be true (gallons per hour, speeds, and nautical miles/gallon are conservative estimates):

RPM	Speed	GPH Total Both Engines Combined	Nautical Miles per Gallon
1600	9.0	8.0	1.125
1800	12.0	11.0	.916
2000	14.0*	16	.875
2200	18.5*	22.0	.840
2400	22.0*	30.0	.733

Efficiency of planing hull boats can be stated as follows: For longest range/least fuel consumption, run at displacement speeds...about 9.0 knots and 1600 RPM. From that throttle setting up just past planing speed, the fuel consumption increases rapidly, as in the table above from 1600 up through about 2000 RPM. Once the boat begins to plane, additional speeds are reached with little additional fuel.

The bottom line: Most economical setting: about 1400, but the boat will not be as comfortable as at a setting just on plane, about 2000-2150 RPM depending upon load, trim tab setting, and cleanliness of bottom.

* It is important to use a higher setting to get the boat planing, then adjust the trim tabs, then reduce power until it is just high enough to keep it on plane!

Engine Controls

The engines are controlled by Hynautic hydraulic controls at each helm. ***Do not let something interfere with the controls at the helm that is unattended!*** You will note that the flybridge canvas has “poofy” bags that go over the controls when the canvas is in place: Be sure it is clear and does not interfere with control operation.

Make throttle/power changes smoothly, and **do not shift quickly from forward to reverse: Always shift slowly through “neutral** to protect the transmission except in an extreme emergency.

You will want to be especially careful using these controls until you are comfortable with them and used to their response times; you can be confident that they will operate properly, but you will need to get used to them!

(Continued on next page)

Sea Strainer Cleaning & Seacocks

The sea strainers on this boat are secure and reliable. They protect the engine and refrigeration cooling systems from water-borne debris which might block internal equipment passages. If a sea strainer needs cleaning (see above regarding inspection) here is the procedure:

- 1) Look at the seacock near the hull. On the side is a valve lever, with a relatively long handle.

The main engine sea strainers are aft of each engine. The generator sea strainer is in the lazarette.

- 2) Turn the valve lever so it is perpendicular to the seacock (parallel to the hull).
- 3) Using a spanner from the tool kit, or (depending upon strainer model) unscrew the top of the sea strainer. Then remove the strainer by pulling it out the top of the assembly. Rinse the strainer thoroughly and, if necessary, remove any debris from the glass housing.
- 4) Reinsert the strainer, tighten the top cover with the spanner, **AND TURN THE SEACOCK VALVE BACK ON** failure to do so will overheat the engine.

This entire operation will take 5-10 minutes at most, and will assure you of cool engines.

Dinghy, Davit & Outboard Motor

Dinghy

The dinghy aboard this boat is a Zodiac 12' hard-bottom inflatable, designed to carry up to four passengers safely, with two sharing the seat behind the console, one alongside the console, and one in the bow. For safety, and compliance with U.S. rules, there should be a life jacket aboard the dinghy for each passenger aboard whenever the dinghy is at sea.

Please be careful when pulling the dinghy ashore to minimize damage and scratches to the bottom. It can be lifted by two persons if one is on each side. Don't "Ram" the beach; you can bump up to the beach gently and step ashore over the bow, pulling the dinghy a little more ashore as each person off-loads. And raise the outboard with its electric tilt before it hits bottom when landing on a beach!

The dinghy will seldom require inflation as long as the valve seals are maintained and it is not punctured. Should inflation be required, simply pump up the dinghy until it is pretty hard (thumb can deflect a tube by about «" maximum) using the pump provided on the boat.

Should the dinghy be punctured and you feel competent to make the repair, follow the instructions in the dinghy manual and use the dinghy repair kit also on the boat; otherwise, have it professionally patched at San Juan Yachting or a dealer's.

Retractable Swim Step Dinghy Fender Cleats

On the swim step are three small pop-up cleats, placed to hold the small fenders to protect the back of the boat and the dinghy when the dinghy comes abreast. Do not use the cleats to tow the dinghy...they are not strong enough!

Dinghy Davit

This boat has a high-quality Roskelley-Ohlson electric davit supporting the dinghy.

The step by step instructions are:

- 1) It's best to have the generator or an engine running to keep the batteries up during the time the davit is operated.
- 2) Lift the davit boom and lock it into the raised position.
- 3) Plug the davit control box found in the L-Settee on the flybridge.
- 4) Remove the dinghy's canvas cover and tie-downs if installed.
- 5) Raise the dinghy, swing it to starboard, and launch it (**see next page!**)
- 6) Swing the davit hook back to the boat, secure it, and tension it on the davit, to avoid damage to the yacht from a swinging davit if the boat rolls.

To retrieve the dinghy on the boat, reverse the above procedure, **being sure to tilt the motor up during hoisting so that it doesn't damage the deck when you lower the dinghy.** Then, be sure to reconnect the tie-downs!

Outboard Motor

The outboard motor for the boat is a Honda 40 horsepower four-stroke, electric start and tilt outboard. This outboard is a four-cycle motor, that is, you need not mix oil with the fuel, it uses regular gas only.

If oil is low (this should seldom happen, if ever!), a warning will appear in the sight-window just above the steering handle arm. If this warning is red, stop the motor at once and add oil.

To check the motor's oil, remove the cover by pulling out the "suitcase-style" levers on the front and rear. After these levers are released, you can lift the back of the cover and unhook it.

You will see the oil fill cap on the aft side of the engine, and the dipstick on its starboard side. (Adding oil is tricky: you may need to use a funnel to avoid spilling it.) Do not overfill! There is outboard oil stored in the starboard cockpit cabinet.



Motor with cover removed. The dipstick is near the bottom flange for the cover, while the oil fill is the yellow cap.

- ***The choke lever next to and above the shifter must be raised to start the motor.***
- ***The engine is raised and lowered while pressing a release button on the port side of the motor support assembly.***

Fresh Water System

Tanks

There is a polyethylene water tank located forward in the bow, and a bladder aft under the companionway. These are filled at two fill caps on the forward deck, the forward one filling the tank and the aft one the bladder. The two tanks are interconnected, so they will be emptied together at the same rate. The water tank monitor gauge at the bottom of the DC electric panel tells you the level in the polyethylene tank only.

Water Pump

The water line from the tanks leads to the boat's fresh water pump in the utility system area behind the cabinet door in the companionway. Provided its circuit breaker in the DC power panel in the salon is "on", this pump will run whenever its built-in pressure switch detects low water pressure. An "accumulator tank" by the pump provides a "pressure head" for the pump, so the pump doesn't need to run so often. Instead, a pump cycle will provide for several minutes of routine water use before pressure diminishes and the pump starts again.

Because the watermaker automatically flushes its membranes on a regular basis using water from the boat's tanks, ***the fresh water pump should be left on all the time to allow it to get the necessary water for that process!***

Water Heater

After the water pump, water is distributed directly to the cold water faucet lines. In addition, it goes to the boat's water heater. This heater uses either heat from the starboard engine (so you have hot water when underway and after running) or by AC from shore power or the generator; if available and the breaker is "on it does not run from the inverter power," or from the generator. The heater is insulated well enough to keep hot water overnight without power, provided you haven't wasted a lot in dishwashing!



The water heater is hard to miss in the utility room!

Waste Water

Waste water from the sinks and showers (but not from the toilets) is dumped overboard in accordance with U.S. and Canadian law. From the various drains above the waterline, the water simply flows by gravity down and out through waterline-level outlets. The two showers and the guest head sink flow into float-actuated overboard-pump systems also in the forward utility area accessed from the companionway cabinet doors. It is therefore very important that the Shower Pump breakers in the DC panel be left "on".

In the unlikely event that a sump pump fails, drain water will back up in the showers or basins. Check the switch and circuit breaker if this should happen. If this doesn't solve the problem, contact SJY.

Watermaker

The boat carries a Spectra Watermaker. This great system (which requires DC power to operate) has the following features:

- It automatically flushes itself on a regular basis to keep the filtration membranes clean and in service;
- It has automatic controls that run it for specific periods so that you need not worry about overflowing tanks and wasting water;
- It assures you that there will always be plenty of water, however it will take several hours to top off the tank under normal use.
- Note that you can use city water without filling the tanks. Simply connect the hose to the pressure water inlet fitting outside the cockpit swim door and leave the hose “on” as long as you are at the dock; this will then go directly to the boat’s faucets as needed, but not into the tanks.

Operation is entirely automatic. Simply push the button to add water to the tanks, following these provisos:

- ***Do not run the watermaker while in the harbor: You will shorten the time that the filters can be in service;***
- ***Leave the watermaker on at all times so it can monitor its own operations.***
- ***Always leave the fresh water pump breaker on so that the purge system can operate properly!***



The watermaker control is in the pilothouse above the power panel. The Link 10 monitor and speaker control for nearby speakers are below it.

DC Electrical System

Concepts

Each year it seems more folks are confused by the operation of electrical systems on yachts than by any other subject! Don't feel discouraged if something isn't clear: You've got company in your confusion. So let's try to cover some theory here first.

- Most of the equipment on any boat is run by 12 volt DC electricity from the boat's batteries. This is true because DC should always be available: We have batteries aboard even when there is no shore power! If the batteries aren't run down, everything should work, just like in the family car.
- Since the batteries are used so much, we have to replenish, or charge them. The most important way we do this is by alternators on the ship's engine(s). In most cases, one engine will provide enough electricity in most every case to run everything, and still have some energy left over to add back to the battery, that is, to charge it.
- What if the engine(s) isn't running? Then, the batteries are slowly depleted until they have "run down" and there is no more electricity in them . . . a big problem, because then we not only can't run all the stuff on the boat, we can't start an engine to get more electricity.
- So a good skipper and crew has "electrical power management" in mind whenever they turn an electrical gadget on or off!

With this in mind then we can state: If we need more electricity than the batteries alone can provide, and if a propulsion engine isn't running, we will need to get our electrical power from an alternative source! That's the most reason why we use shore power or use the generator: To keep from running down the batteries. For by using battery chargers getting their power from shore power or the genset, we can keep the batteries charged, or, at least, from getting too low.

In modern, luxury cruising boats, however, there is another important factor: Some of the "goodies" we like to have on board such as hair dryers and microwave ovens require ordinary household electricity. This is 110 volts AC. It is different from DC. So if we want to use these things when we're not at a dock, we must have another way to get 110 volts AC, and for this we use the generator or an inverter, an amazing high tech gadget that takes 12 volts DC from the ship's batteries and makes it into 110 volts DC!

So here's what we've got: A lot of stuff running on 12 volts DC from the batteries. To keep the batteries from running down, we have alternators run by the engines, and battery chargers that get their power from shore power or the genset. For the stuff that runs on 110 volts AC, we have shore power, the generator, or, for making AC out of the batteries' DC, the inverter.



Here is one of the battery boxes (for the thrusters). This one is in the utility room under the hatch at the aft end of the companionway. Other batteries are in the lazarette.

Battery Banks

The batteries on this boat are not just one, big all-purpose battery. To have redundancy, there are actually several "banks" of batteries assigned different tasks.

Two batteries are used to start the engines, one for each. Another battery starts the generator. Because these batteries only start the motors, we can't run them down playing the stereo for instance, then be unable to start an engine.

A group of batteries called "the house battery" are all tied together (paralleled); these run the inverter, all the pumps, interior and exterior lights, horns, navigation and radio gear, etc. In other words, this bank runs the boat's "house". They are also charged when there is shore power or the genset is running by the inverter, which serves as a high-capacity charger.

Another battery is for the bow and stern thrusters (this battery is in the front of the utility room under the hatch at the top of the companionway steps), and it is charged by engines or chargers.

The engine starting batteries, and the house battery, are also charged whenever either or both engines are running: DC Electricity comes from the engine alternators to a battery combiner and from it to all three batteries.

For instance, if any starting battery is run down and we can't start an engine or the genset, we can still start another and it will begin charging the deficient battery. Then we can start the engine itself that had the once-dead battery. Or we can start the generator, and let it charge all the batteries.

Since a battery works by making electricity through a chemical reaction, one component of which is water, we need to be sure the batteries have water in them; this battery servicing is normally done routinely every few weeks by the boat's owner or charter company.

The DC Electrical Panel

The nerve center of the DC electrical system is the combined AC-DC circuit breaker panel on the starboard side of the pilothouse aft of the side door. On this panel are the switches that control power to the boat's various systems.

Just as in your home, most of these switches are true "circuit breakers": They feed power to somewhere in the boat where there is another switch which, in turn, turns the item on and off. An example of this would be the circuit breakers for the spotlight or cabin lights: If the breaker is turned on, the light still won't work unless you turn its switch!

Some of the breakers also serve as the switch for the item. An example of this would be the engine room lights. ("B" means used as circuit breaker, "S" means used as switch AND breaker.)



<i>Breaker</i>			<i>Use</i>	<i>Breaker</i>			<i>Use</i>
Waste Discharge (2)		S	Push both to pump overboard	S/R Lights	B		To Switches
DC Master		S	DC Master Switch	Head Lights	B		To Switches
Ignition Power (2)	B		To Ignition Switches	Passageway Lights	B		To Switches
Horn	B		To Horn Buttons	Exterior Lights	B		To Switches
E/R Blower		S	Turns on E/R Blower	DC Stereo	B		To Stereo
Bilge Pumps (3)		S	Manually Turns B. Pumps On	TV/VCR	B		To TV/VCR Cabinet
Nav/Anchor Lt	B		To Switch	Head Blower	B		To Switches
Wiper(s) (3)	B		To Switches	RIGHT COLUMN			
Washer/Defroster	B		To Switches	Washdown Pump	B		To Pump Pressure Switch
Radar	B		To Radar	Head Pumps (2)	B		To Pump Vacuum Switches
Autopilot	B		To Autopilot	Holding Tank Discharge	B		To Waste Discharge Switches
Depth Sounder	B		To Depth Sounder	Tank Monitor		S	Turns on Tank Monitor
Electronics	B		To Other Electronics	Water Pressure	B		To Pump Pressure Switch
MIDDLE COLUMN				Shower Sump Pump	B		To Pump Float Switches
Searchlight	B		To Searchlight	Refrigerator	B		To Fridge
Engine Room Light		S	Turns on E/R Lights	Trim Tabs	B		To Trim Tab Switches
Panel Lights	B		To Panel Lights	Accessory #1	B		To F/B DC Outlet
Salon Lights& LPG	B		To Switches & Propane Sw.	Accessory #2	B		To DC Panel & Com
Galley Lights	B		To Switches	Accessory #3	B		To Head Water Pump
PH Lights	B		To Switches	Accessory #4	B		To Fuel Transfer Pump
M/S/R Lights	B		To Switches	Tub/Sink Sump Pump	B		To Accessory

METERS AND ROTARY SWITCHES ON DC SIDE OF POWER PANEL

DC Voltmeter	Reads voltage per battery selector Off-Port-Stbd-House-Gen
Port-Stbd-Generator Hours	Reads engine hours
Tankwatch	Holding tank alert: Lights show level; Red Light indicates full
Water Level Monitor	Reads Tank #2 (only) per adjacent switch

Link 10 DC Power Monitor

Above power panel is a Link 10 DC Energy Monitor. This nifty unit allows you to check DC house battery voltage, charging/use rates in amps, and approximate cumulative battery energy used.

Across the top are the green LED's that indicate the state of the batteries' charge, from "empty" (on the left) to "full" (on the right).

There are two buttons on this unit's panel, "SEL" and "SET". You will use only the "SEL" button! When pressed, it cycles the monitor through the "V", "A", "Ah" and "t" steps, illuminating the small LED's, representing "Volts", "Amps", "Amp-Hours", and "Temperature".

In the "V", "Volts" mode, the unit displays the present house battery voltage.

The "volts" mode will display between 10 and 15 volts, with 12.8 fully charged, nothing running; 14.2 or more bulk charging; 13.2 - 13.8 float charging, less than 10.0 volts, discharged.

In the "A", "Amps" mode, the unit displays the rate of charge or discharge of the house batteries; a "-" sign appears when the battery is discharging, no sign when charging.

In the "Ah", "Amp-Hours" mode, the unit is like a "fuel gauge in reverse". When the batteries are fully charged, the unit should show approximately "0". Then, as ampere-hours are used, the unit counts them, i.e., after you've used 50 amp-hours, the unit will display "-50" or so.

The amp-hours readings are approximate, and relative. When you run the boat, the number should decrease again to zero. In fact, the most useful setting for the energy monitor is the amps mode, which answers the question "Am I using up (-) or adding power to the batteries right now?"

We suggest you look at the monitor especially just before bed when at anchor, to warn you if you've left something on. You will normally see only a modest "-" current for your anchor light and perhaps the fridge. If nothing is running, voltage should be about 12.6 - 12.8, fully charged.

After you wake up, check the voltages before you start using more DC energy: You may want to charge your batteries by "going for a boat ride" or using the generator if you were at anchor.

If you take readings frequently for the first day or two of your cruise, you'll get an idea of normal system operation and power consumption rates.



Link 10 monitor (sistership photo).

The AC Electrical System

The AC Electrical System is controlled at two sites, the AC circuit breaker panel and the Inverter control panel.

These panels have the switches that control the boat's AC electric systems.

In addition, there is an AC voltmeter and AC ammeter in the AC panel. This allows the skipper to monitor power usage to determine whether the generator or shore power is needed.

Just as in the case of the DC panel, the AC panel has some circuit breakers which are also switches ("B" means used as circuit breaker, "S" means used as switch AND breaker.): room lights. ("B" means used as circuit breaker, "S" means used as switch AND breaker.) There are several switches on this panel, too; they are detailed on the next page.



Breaker		Use	Breaker		Use
Polarity Safe/Hazard		Warning Light!*	M/S/R & Head Recept	B	To Receptacles
LINE 1		<i>The next two select source:</i>	Aft S/R & Head Recept	B	To Receptacles
Dockside Master	S	Source of Line 1 OR	Microwave	B	To Microwave Outlet
Generator Master	S	Source of Line 1	Central Vac.	B	To Central Vac. Outlet
Water Heater	B	To W.H. Thermostat	Washer/Dryer	B	To W/D Outlet
Trash Compacter	B	To Trash Compacter	Accessory #3	B	To Accessory #3
Battery Charger	S	Turns on Battery Charger	Inverter Output	B	From Inverter to Receptacles
Salon/PH Receptacles	B	To Receptacles	RIGHT COLUMN		
Galley Receptacles	B	To Receptacles	Polarity Hazard/Safe		Warning Light!*
Icemaker	B	To Icemaker Outlet	Line 3		<i>The next two select source:</i>
Blender	B	To Blender	Dockside Master	S	Source of Line 3 OR
Accessory 1	B	To Accessory #1	Generator Master	S	Source of Line 3
Inverter Input	B	To Inverter	M/S/R Heater	B	To Heater-Master
MIDDLE COLUMN			Hall Heater	B	To Heater-Hallway
Polarity Safe/Hazard		Warning Light!*	Salon Heater	B	To Heater-Salon
Line 2		<i>The next two select source:</i>	PH Heater	B	To Heater-Pilothouse
Dockside Master	S	Source of Line 2 OR	Accessory #5	B	To Accessory #5
Generator Master	S	Source of Line 2			
Entertainm't Ctr/Internet	B	To Ent. Ctr & Internet Recvr.			
Refrigerator	B	To Refrigerator Outlet			

*** If the "Polarity Hazard" Light illuminates, disconnect shore power at once!**

Voltmeters & Rotary Switches on AC Side of Panel	
Voltmeter Selection	Selects Line 1-2-3 & Generator reading
Normal-Off-Line 1-2 parallel on line 1 Recept.	Allows Line 1 to Also Power Bank 2
Normal-Off-Line 1-3 parallel on line 1 Recept.	Allows Line 1 to Also Power Bank 3
Generator Start-On-Off	See Below

Connecting/Disconnecting Shore Power

The two breakers at the top left of each column select between the shore power “Dockside” line connector at side of the boat just aft of the starboard side door and the generator's power. You will see that only one can be "on" at one time! But, of course, both can be "Off".

You will want to turn "Off" the “Dockside” breaker before you connect or disconnect the boat to shore. This is true so that you do not draw an arc from the plug due to the load of the boat on the connector's pins: Such an arc will burn the contacts and eventually cause them to overheat when in use, creating a fire hazard.

Once connected to shore power, monitor the AC "line voltage" voltmeter and "line current" ammeter to be sure you have not overloaded the circuit.

With the “Normal-Off-Line Parallel” switches you can run all three switch columns off of one shore power cable if more 30-amp connections are not available at the dock. **You may need to run the generator even at the dock if you want to use a lot of AC power!** Be careful not to overload the shore power connections.

Important Note: If the house batteries are low when you first hook up to shore power, and the inverter is turned on (as it should be), the inverter will begin charging its batteries at a very high charging rate, drawing a lot of shore power current. Until this demand reduces (see "The Inverter System" below), you should turn "OFF" other high-current AC appliances such as the water heater.

You can then turn on AC appliances as needed. Watch the ammeter to be sure you don't exceed the dock's available supply, typically 30 amps.

Here are some estimates of AC power consumption for typical appliances:

Item	Amps	Item	Amps
Water Heater	15	Coffee Maker	10
Hair Dryer	12	Microwave	10
TV	1.5	Cell Phone	.3
Refrigerator/Freezer	7	Inverter (After batteries charged)	1 - 3



The shore power connectors are on the starboard side of the boat just aft of the side door. The left connector is for TV/phone, while the others are Line 1, 2, & 3.

The Inverter System

As we said, the Inverter system is used to provide AC to the boat when there is no shore power. It is useful for the inverter to run the refrigerator and freezer, to make a pot of coffee when the engines are running underway, or to watch TV in a quiet anchorage, or use a hair dryer for a few minutes. But for long-period use of AC by large appliances, the engines must be running or you must have shore power available. That's because the boat's house batteries store about 300-400 amp-hours of electricity, that is, they can produce 100 amps for four hours, more or less.

Now the microwave, for example, will draw about 100 amps of DC when using the inverter to run it, so in 15 minutes you use one-quarter of an hour at 100 amps, or 25 ampere-hours. That means that in fifteen minutes, you've consumed almost 10% of the house batteries' stored power. That's okay. But what if you want to cook a roast for 60 minutes? You use up one-quarter of your energy on that one job alone! That's too much use for the inverter! Use the generator!

For a short task, the inverter is great: No need for a generator, no noise, no fuss, the power is there. If the engines are running, use it all you wish, as long as you don't try to do two big jobs at once: The inverter can only produce 4,000 watts of energy at a time. So the inverter is only wired to certain outlets, the microwave, and the refrigerators. It will not run the water heater, boat heaters, air conditioning or battery charger. Electrical portable heaters, particularly, should never be run by the inverter!

But in addition to making AC out of DC, the inverter can do the reverse! If there is AC available from shore power, it will charge batteries! You tell what the inverter is doing by its control panel.

The inverter is behind the L-Settee in the aft wall of the salon, with vents behind the cockpit ladder.

The inverter hums when it is on. This is normal. If loads are high, it also has a cooling fan that runs as necessary that you may hear; if you do, it's an indication that all is well.

(See next page)

In summary, the inverter should be on whenever shore power is present or the generator is running, and it may also be left on when underway. It is a good idea to turn the inverter off at anchor (when the generator isn't running), turning it on only when you want to use something briefly, as above; in this way, you will avoid running down the house batteries just because someone left some AC appliance plugged in and forgotten.



STATUS LIGHTS LIT	MEANING OF STATUS LIGHTS
"INVERT"	Inverter is <i>MAKING</i> AC and consuming batteries
"STANDBY"	Inverter is on, but idling
"POWER: UTILITY/SHOREPOWER"	AC Power is coming <i>IN</i> to the Inverter.
"CHARGE"	Inverter is charging house and inverter batteries
"FAULT" or "TEMP"	There is an error condition. Press "Reset". If it doesn't clear, consult manual.
INVERTER BUTTON FUNCTION	
"ESCAPE" <i>See note below</i>	Moves up one level in the menu tree
"ENTER" <i>See note below</i>	Selects the displayed menu item
"▲" and "▼" <i>See note below</i>	Moves through selections at this menu level
"INVERTER ON/OFF"	Toggles the inverter on and off
"CHARGER ON/OFF"	Toggles the charger on and off

Note: Please consult the instruction manual before using these controls for other than meter readings!
Important! Remember the important note above under "Connecting/Disconnecting Shore Power": The inverter, if on, will draw a lot of current when bulk charging, so be careful not to overload a shore power circuit. If "AC Present" and "INV/CHRG" are both lit, and "Battery Amps" shows more than 30 amps, this higher load is being drawn from the 110-volt AC supply.

The Generator System

The ship's Westerbeke Generator provides 8,000 watts of AC power to the vessel and is mainly used for battery charging, refrigeration, cooking on the range and microwave, heating hot water, and occasional heating. Generally 1 to 3 hours of operation daily will recharge the boat's batteries.

Given that distances are short in the Pacific NW (one of its appeals!) you may only run the main engines a couple of hours on a given day. This may not be enough to recharge the batteries fully since the engine alternators are not as effective a charging source as the generator combined with the inverter. Take this into account in your power budgeting.

The generator is in the engine room at the forward center, and its oil and coolant levels are checked before each charter by the SJY staff. More important when traveling is checking the sea strainer (see previous section) to be sure it has not accumulated substantial debris while the generator was run for extended periods, particularly at anchor.

The generator stop/start controls are on the bottom of the AC panel.

Starting the Generator:

- 1) Hold down the rocker switch on the bottom left of the power panel in the "Preheat" position for 15 seconds (this energizes "glow plugs" to warm the engine's cylinders).
- 2) While still holding the "Preheat" switch, turn and hold the generator control switch in the "start" position until the engine starts. If the engine does not start in 15 seconds, repeat step one and try again. Do not repeat more than twice lest the exhaust system becomes water-locked, possibly damaging the genset!*
- 3) Check the generator exhaust under the swim platform, listening to it to confirm that cooling water is being pumped from it.
- 4) After a brief warmup of a minute or so, switch the circuit breakers in each of the three breaker columns in the AC power panel from "Dockside" to "Generator". You should see the "AC Present" pilot light go on!

** If you need to try more than twice, shut off the seacock to the generator sea water inlet so that you do not fill the exhaust system with water. Then, as soon as the generator starts, turn the seacock back on immediately!*

Stopping the Generator

- 1) Switch the "Generator" circuit breakers in each of the switch columns in the AC panel off. This removes the load for the generator and allows it to cool down.
- 2) After at least a minute to allow the generator to cool down, switch the "generator" rotary switch to "off". The generator will stop.

Generator Problems

The generator monitors its own operation! It has two fault-detection systems: one of these will detect any loss in oil pressure, the other detects overheating. If either condition occurs, the generator will shut itself off, and it then will not keep running when you try to restart it. The start switch overrides the low-oil shutdown while the oil pressure builds.

There are two generator components that are subject to charterer service: Coolant and lubricating oil. The fills for both are located within the Westerbeke sound shield through the center hatch in the lazarette. The coolant is in the heat exchanger atop the engine, while the oil is harder to service: ***The dipstick is under the muffler on the starboard side of the engine, with the oil fill adjacent.*** (You should not have to deal with these: They are difficult to service. Call San Juan Yachting.)

Do not remove the water fill cap from an overheated engine. Let it cool, then remove the cap slowly with protective clothing on in case high temperature steam escapes. If oil pressure is the problem, check the oil level and top up. However do not attempt to re-start if the oil level is normal and you have checked the cooling system including the raw water strainer if one of these is not the problem then the shutdown is protecting the engine from damage due to an internal failure.

If the generator will not keep running, call San Juan Yachting for assistance.

Heads & Holding Tanks

Head System Overview

The head system on this boat is reliable, straightforward, and easy-to-use.

First, a note about discharge of sewage:

It is forbidden to discharge untreated sewage in inland US. waters, an area that includes all US. waters in which this boat operates. The boat holding tank must only be emptied at proper pump-out stations if it is in US. waters. (With the exception of certain Canadian Harbors which are no-discharge zones, This rule does not apply in Canadian waters. However, in Canada, courteous practice dictates that the holding tank be dumped only when outside all confined marinas or bays, as we are sure the reader agrees!)

The boat is equipped with electric Vacu-Flush heads. These heads each have a separate pump which macerates waste and puts it either into a holding tank. The holding tank is emptied either of two ways: By operating an overboard macerator pump controlled at the DC power panel and by a switch and Y-valve in the engine room, or by pumping it using a shore side pump out station through the boat's side-deck pump out fitting.

The Vacu-Flush Heads

These premium heads are easy to use, odor free, and very reliable. They work with two separate vacuum pumps and vacuum accumulator tanks. A vacuum is maintained in the tank until the head is used, when the waste matter in the bowl is sucked out of the head by the vacuum, then it is pumped through the system by the head pump, which then also pumps up a vacuum again. Note that it is this rush of the head's contents caused by the accumulated vacuum that is important to the head's operation! This sudden rush causes any solid material in the waste stream to be shattered as it passes through the specially-shaped orifice in the bottom of the head. For this reason, proper head operation requires that the head pedal not be held down for long periods if time.

The head uses about a half pint of fresh water from the ship's supply with each flush.

The head is operated by a the pedal to the left of the head base (as you face the head), and operation is as follows:

1) Be sure the circuit breaker for the head on the DC Power Panel is "On".

*The switch for each head should be left on unless you have trouble with the head (see below), in which case you will turn the switch "Off". **Using a head without its switch "on" risks a clogged system!***

2) Before using the head if the waste will be solid, lift the pedal to add water to the bowl;

3) Use the head;

4) Step on the pedal just long enough to hear the "whoosh" as the head is evacuated and a small amount of water rinses the bowl - - - about five seconds!

5) Releasing the pedal, if you wish to flush again, wait at least twenty seconds or so (until you hear the head pump stop) before flushing again.

As the pedal is released, the ball-valve at the bottom of the head seals it so that the vacuum can be pumped up, the pump will then stop, and the head is again ready for use.

If the head pump runs often or steadily between flushes, it is likely that the seal at the bottom of the bowl did not seal completely: you can tell if there is no water in the bowl. The

solution is usually simple: Flush the head again and make sure the pedal comes all the way up when you remove your foot from it; then make sure the water doesn't leak out.

Only things which were eaten or drunk, or the toilet paper supplied with the boat, should be put in the heads! Facial tissues, tampons, and other foreign matter will clog the system. If these heads are used properly, they are quite reliable. Failures are virtually always due to mis-use! When it comes to tissue, usually "four squares is enough!"

In US. Waters, the Coast Guard Rules require that the valves be "secured" in the holding tank position to assure that all effluent will be kept aboard in the tank. If you turn the valves to overboard while in Canadian waters, re-secure them with the wire ties supplied and stored near the valves when you return to the U.S.! See below.

Holding Tank Level Indicator

There is a holding tank level indicator in the bottom of the DC breaker panel. It shows the level by illuminating lights as each stage is reached.

Note that the green light is lit when the tank contains effluent, but has not reached the "Low" level. It may take a minute after emptying the tank for the contacts on the empty sensor to clear.



Holding Tank Pumpout

There is a holding tank located to starboard of the companionway just forward of the engine utility room. Hawthorne Bay is equipped with a holding tank indicator in the DC power panel. A deck plate on the starboard side deck below the salon window allows pumping the tank at a shore-side waste pumpout station.

To pump the tank overboard directly into the sea where legal, you must:

1. Turn "on" the "Holding Tank Discharge" breaker in the DC panel by the salon-pilothouse steps.
2. Be sure the "Waste" seacock just forward of the starboard engine is open.
3. Operate the two rocker switches on the upper edge of the DC power panel; you must hold these as long as you wish the pump to run. Do not let the pump run dry: It will be damaged! The effluent passes through the hose to the pump and out through the thru-hull valve.
5. When you are done, re-secure the thru-hull valve with a wire tie and turn off the pilothouse DC panel "Waste Pump" breaker.

Y-Valves

There are no Y-Valves on *Hawthorne Bay*.

Heating Systems

Diesel Heater

The boat is equipped with an Webasto Diesel Circulating Hot Water Heating System. This is a very compact furnace located in the lazarette that burns the same Diesel fuel as the engines. The fuel comes from one of the engine tanks, but it uses a negligible amount of fuel, about a pint each hour it actually runs. The furnace heats hot water which is circulated throughout the boat. A “System Heat - Off” switch is the main switch; a thermostat in the salon regulates the temperature. Individual blowers, each with its own “off-low-high” switch, then force the air into each area of the boat from small heat exchangers in each area. In addition, the furnace has an “Everhot” heat exchanger that supplies hot water to the boat.



Just above the wet bar in the salon are the Diesel Furnace Thermostat and main switch (top) and an electric heater thermostat (bottom right).

To run the furnace, turn the Heater Switch adjacent above the starboard cabinet by the stereo in the salon to “System Heat”. Then, adjust the thermostat to the desired level. The furnace’s built-in computer will warm up the furnace (taking several minutes), supply heat to the boat until the thermostat senses it is warm enough, then shut off the fans while the furnace goes through a “cool-down” cycle. You need not do anything but set the thermostat with the switch “on”!

To control the balance of heat between the boat’s areas, use the individual fan control switches by each fan, or open, close, or re-direct the deflectors on the outlets.

As you can see, this furnace system is very flexible and a great addition to the boat! As long as the batteries can support the modest DC power requirement of the fans and furnace blower, you will have plenty of quiet heat. In fact, this use of the house batteries’ energy for air circulation is a good reason to limit use of the furnace to times when passengers are awake, unless the boat has shore power available.

Caution! The Diesel furnace exhaust is on the boat’s port side just forward of the stern. When the furnace is running, this is very hot! DO NOT HANG FENDERS NEAR IT, THEY MAY CATCH ON FIRE! Keep clear of wooden docks, Hawthorne Bay’s dinghy, and/or other vessels!



Diesel furnace exhaust is the large outlet in the white hull topsides.

Electric Heaters

The boat is also equipped with electric built-in heaters in each area, controlled by thermostats throughout the boat. When shore power is available **and adequate**, this is very useful! The electric heaters can also be used whenever the generator is running.

To use, be sure the appropriate Heater breaker(s) in the AC panel is/are on, then simply turn up the thermostat!

If using shore power, monitor loads carefully! Each electric heater draws around 12 amps!

Galley Equipment

The galley is fitted with a number of appliances for your convenience. Most of these (like the microwave) are easy to operate, "just like a home appliance"; nevertheless, we will spend some time discussing the stove, as it is a marine unit that does have some features that are slightly different than a home model.

Propane Stove

The boat is equipped with a *Force 10* propane stove with three top burners and a thermostatically-controlled oven and broiler.

Propane gas is heavier-than-air. Therefore it must be treated with care around a boat so that we can be absolutely sure there is no gas escaping into the atmosphere to collect in the boat's lowest spot, the enclosed bilges, to become an explosive safety hazard. For this reason, the propane tanks are above the galley on the flying bridge. Up there, if there is a leak, the gas will simply be overboard, for there is no way from there for it to be redirected into the boat, as all openings into the salon from above are sealed (otherwise they'd leak in a rainstorm!).

There are manual gas valves on the propane tanks. These are used only when exchanging/filling tanks. The gas goes from the tanks to a selector valve then to a "solenoid valve". This electric valve is controlled by a switch in the galley itself, and in this way the cook can actually shut off the propane supply to the stove at its source when it is not being used simply by throwing the switch.

In addition, each stove burner, including the oven, is fitted with a "thermocouple", a heat-sensing device that also controls the gas flow. When the gas supply is "turned on" to a burner, the gas will not flow unless (a) the burner is already on, or (b) the cook is holding the valve in the "light" position. So you can see the safety of this arrangement: If the burner goes out for any reason, the thermocouple will shut off the fuel automatically, assuring you of a safe galley.

Finally, there is a monitoring system that will warn you if gas is detected in the vicinity of the range!



(Above) The Force 10 Range (Below) The Propane monitor & solenoid control panel.



TO LIGHT A BURNER:

Lighting a burner is easy and only takes five to ten seconds:

- 1) Be sure the propane valve circuit breaker in the DC panel is on.
- 2) Turn on the remote electric propane valve on the fly bridge by pressing the button on the propane control/monitor above and to the right of the range, and you will see the red pilot light illuminate.
- 3) Turn the knob for your selected burner to "light", holding it in, and you will hear the igniter operate, lighting the burner.

Sometimes you may need to turn the knob a little further toward "high", or, if the tank has been changed, keep trying for a few seconds before fuel reaches the stove after purging air from the pipe.

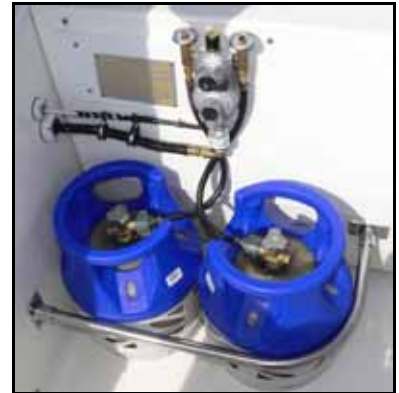
- 4) After the burner lights, continue to hold the knob in for a few seconds while the thermocouple heats up before adjusting the flame to the desired intensity.

Propane Tanks

There are two propane tanks on the flybridge that provide cooking gas to the range, and there is a changeover valve that automatically keeps the gas flowing until both tanks are empty.

Both tank valves on the tanks themselves should be *ON*.

The changeover valve handle selects the first tank to use. The valve handle points left to select the left tank first, or right to select the right tank first. (In the illustration, the right/starboard tank is in use first.) Once the first tank is selected, the valve will automatically switch to the second tank when the first is exhausted, and the indicator band just below the black cap on the top of the valve will change from green to red indicating that the second tank is now in use.



*(Above) The propane tanks, control above.
(Below) The control. Arrow points to indicator band.*

Refrigerator

The boat is equipped with an efficient Norcold electric refrigerator that runs on DC; if AC is available, it automatically switches to AC power.

Refrigeration is controlled by the thermostat in the back of the refrigerator; set as required after allowing the refrigerator to stabilize for a few hours after loading.

Because of its insulation, the fridge will stay cold a long time! If you wish, and you have kept the door closed for the preceding hour or so, you can shut the fridge off at night when at anchor to save batteries; but be sure to turn it on again in the morning!



Icemaker

Located in the cabinet next to the wet bar in the salon, this is a conventional unit. To stop its ice production, lift the arm. It is quite efficient and can produce ice within a half-hour or so. It uses fresh water from the vessel's tanks.

Trash Compactor

There is a trash compactor in the galley. Stow waste in it within a proper trash compactor bag, then operate the control to compact trash.



The compactor is simple to operate with only one control.

Barbecue

There is a Magma Barbecue on the boat deck. To use it, remove the cover, open the lid, connect the fuel hose, turn on the valve on the dedicated propane tank, then operate the valves on the barbecue itself. Be sure to disconnect the hose and turn off the tank valve when done!



Electronic Navigation & Radio Equipment

Overview

The boat is equipped with extensive electronic equipment, including VHF radios, a radar, a plotter with GPS receiver, a depth sounder, and an autopilot. The equipment has repeaters for all data on the flying bridge.

The DC power supply for this equipment is controlled by electronics circuit breakers in the DC power panel. Each unit then also has its own power switch.

This manual does not attempt to provide operating instructions for any of the electronic equipment. Instead, you are referred to the equipments' own manuals and "quick start" cards kept in the pilothouse cabinet above the settee. ***Please be sure to return the manuals and cards to this location.***

VHF Radios

The VHF radios' controls are at both helm stations, in the Pilothouse and on the flying bridge. The radios are designed for easy access to Channel 16, which is the hailing and emergency channel in the Northwest. Other buttons allow you to select different channels, weather channels, high and low power, and US/International operation. Your checkout skipper and/or the radio's own instructions will quickly familiarize you with basic operation.

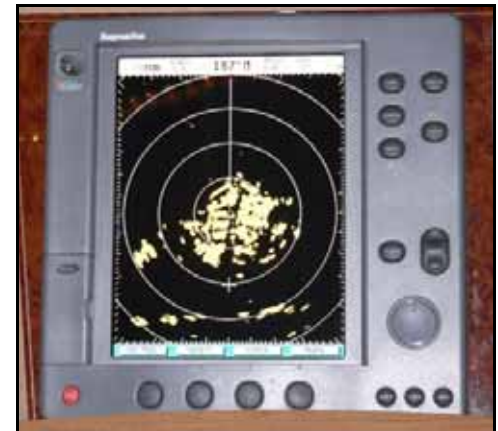
Be sure to re-check the squelch each time you turn it on.



Radar

The boat is equipped with a radar set. This can be used, combined with the electronic chart unit, for operation in restricted visibility, with the radar primarily serving as a device for collision avoidance while the chart unit provides position.

Proper and safe use of a ship's radar requires lots of practice and careful study. While you are using the boat, you can have the radar on as much as you like to get used to the way it displays images, but for detailed operating instructions we refer you to the radar's own complete manual and details bottom of next page.



Note that charterer's insurance DOES NOT PERMIT OPERATION OF THE VESSEL IN RESTRICTED VISIBILITY. You should confine your use of the radar to familiarization and training only in weather with good visibility.

GPS and Electronic Charting System

The boat is equipped with a Raytheon GPS and Electronic Charting System to make your location easily identifiable. One unit is at the lower helm and a repeater is at the upper helm. Operation is described fully in its manual on the boat and below.

It uses the same display as the radar pictured on the preceding page. It can be in the Radar Only, Radar & Plotter, or Plotter Only mode.

REMEMBER: THE ELECTRONIC CHARTING SYSTEM IS NOT A SUBSTITUTE FOR CAREFUL STUDY OF TRADITIONAL PAPER CHARTS. You are required by maritime law to use your paper charts for navigation information, especially since electronic chart technology does not always permit full cartographic details to show, especially underwater hazards. The electronic charts are for convenience only!

Raytheon Autopilot

The boat is equipped with a Raytheon "Raypilot" Autopilot. The primary control is at the lower helm. A second smaller remote control is at the upper helm on the port side of the console. The autopilot also has a rudder display at each location, but for it to work, the autopilot breaker must be on.

Here is the function of each button:

Lights

Press for 1 second to turn on the dial lights; press briefly to page through display modes.

+1, -1, +10, -10

Press to correct course by specific number of degrees. Holding will increment continuously.

Standby

Disengage the autopilot back to "standby" mode.

Auto

Engage the autopilot and steer the present course.

Track

Links the autopilot to the navigation course plotters.

Please do not use this function!



Basic operation of the autopilot is simple:

- 1) To turn on the unit, push the "Stby" button to be in the "standby" mode. The unit will do a quick self-test, then display its present heading.
- 2) To engage the autopilot, push the "Auto" button. It will hold the present heading.
- 3) To disengage the pilot, push "Standby", the unit returns to "Standby".
- 4) Pressing the standby button on either control takes control at that location. Once in control, that station stays there until the other station takes control by pressing standby.

ALWAYS MAINTAIN A CAREFUL LOOKOUT WHEN USING THE AUTOPILOT! It is an aid to comfortable cruising, not a replacement for an aware, diligent helmsperson! Remember, you can disengage it quickly at any time simply by pushing "Standby"!

Weather Instruments

Hawthorne Bay is equipped with traditional weather instruments above the pilothouse helm. These include a Barometer, Clock and Thermometer/Hygrometer.



Graphic Fishfinder/Sounder

Note: Northwest waters are rocky and depths change rapidly. You should be especially careful to study your charts, and then check them often whenever running in lesser depths, so that you don't hit a rock! Just as our islands "pop up" to heights of 50, 100, or even thousands of feet in a very small distance, so do rocky obstacles underwater!

This unit shows you a continuous plot of the sea bottom as you progress. It's helpful to see trends in depths, and is a backup to the digital sounder above.



"Backup" Depth Sounder

An additional depth sounder is supplied as well. It has a readout under the wind meter on the port side of the console in the pilothouse.

Because the depth sounder transmit their "ping" on the same frequency to receive echos from the bottom, only one sounder should be "on" at any one time. Turn off the flybridge sounder when operating from the pilothouse, and vice-versa to avoid this interference and erroneous readings!



Section 5: "What to Do If"

ANCHOR CHAIN WON'T COME OUT OF CHAIN LOCKER

The anchor chain is continuous, secured at both ends, and cannot tangle. But sometimes a pile of chain will fall over, and one loop of chain will fall through another loop. Usually you can clear this by grasping the chain where it exits the hawse pipe from the chain locker with your hands, and pulling it up or down to "jiggle" the loop out of the chain; you may have to retrieve some chain to do this, in order to have enough slack to jiggle it! It is rare when this will not clear the jam. The other solution: go below and clear the tangle in the chain locker. Caution: Turn off the windlass breaker to protect your hands when manhandling chain!

ANCHOR FOULED, CAN'T RAISE IT

This can happen if you "pull the boat to the anchor" with the windlass. You should move the boat under power until it is over the anchor, or, even better, slightly ahead of it before hauling. Usually this will clear it. Otherwise, take a line and form a fixed, loose loop around the chain. Weight the loop, and lower it down the line until it reaches the bottom, sliding down the chain. Then, using the dinghy, take the line forward past the anchor so that you can pull the anchor out, opposite the direction its flukes are pointing. This should help you to pull the anchor free.

ANCHOR WINDLASS WON'T TURN

If the motor isn't running, is the circuit breaker by the lower helm on? If the motor is running, is the clutch tight? Use the anchor windlass handle in the salon first aid cabinet. Windlasses are equipped with a shear pin to protect them: if you sheared the pin, you will have to haul the anchor by hand using the emergency handle.

BATTERIES (HOUSE) KEEP RUNNING DOWN

Have you run the engines enough? Is something left on (like the engine room or mast lights, too many electronics, etc.) that is too great a load for the time you were not charging? Are you using the inverter for big jobs? Use the stove or shore power. Have you had the inverter on whenever plugged in to shore power? You must, for the house batteries to charge!

ENGINE OVERHEATS

Is the drive belt for the water pump intact? Spare belts are in the engine room spares kit. Is the sea strainer clogged? See that section in this manual. Is the impeller shot? If sea strainer is clear and belt is good, this is likely. Change (spare in spares kit) or call a mechanic. Do not run engine if it overheats!

ENGINE WON'T START

If starter does not turn, is transmission in neutral? Try jiggling shift lever while pushing start button. Check battery, battery switches. Try starting with battery switch set to "both". If starter turns, assume fuel problem: did you bump a fuel valve on the manifold at back of engine room? Make sure all open, if one was closed, re-prime engine or call a mechanic if you can't do this (see Volvo engine manual). Remember, the starboard engine has its own battery!

FOG DELAYS RETURN

Call SJY by telephone or VHF marine operator and advise for instructions.

HEAD WON'T FLUSH

Is breaker on? Turn it on. Have you over-filled the holding tank? Pump it to allow more effluent to enter it. See the "Heads" section of this manual. If all else fails, just use only the other head.

HIT A FISH NET

Engines in Neutral: don't try to back off, you may foul the net more. Try pulling the boat back with the dinghy & outboard. Get assistance from the fisherman. You are responsible for damage you cause to a net!

HIT A LOG OR ROCK

See EMERGENCY PROCEDURES, next chapter.

PROPELLER FOULED OR DAMAGED

Best thing: Have the prop checked by a diver or dive it yourself if able. Check for vibration. Try turning shaft by hand in engine room, both should be turn-able with engine in neutral. Is shaft noisy, or does it load engine? Do not use that side or call Vessel Assist. See emergency procedures, next chapter.

WATER (FRESH) WON'T FLOW

Is there water in the tank? Is F.W. Pump breaker on? If capable, check pressure switch on pump, run manually if necessary.

Section 6: Emergency Procedures

Protect your lives first!

Put on life jackets

Contact the Coast Guard with an emergency "MAYDAY" call.

If adrift, prepare to anchor to keep the boat from drifting into danger.

If the boat is really sinking, consider "beaching it" if necessary.

Launch the dinghy and prepare to board if necessary. If an engine is available and you have time, mount the outboard engine and load its fuel tanks. Take a handheld VHF radio, if available. Be sure to wear life jackets!

Then, worry about the boat!

In a true emergency, you certainly are authorized to call for immediate commercial assistance as minimally required to assure the safety of you and the boat.

It is not an emergency, however, if neither you nor the boat are at risk. For all non-emergency assistance or mechanical repairs done by others, San Juan Yachting **MUST** give prior approval for you to be reimbursed!

If you think it may not be an emergency:

If you have any concern about your long-term safety, contact the Coast Guard, either normally or using an urgent "PAN" call. Tell them that you are calling to advise them about your situation, so they can keep in touch.

Be sure that the status and safety of the boat and crew is someone's responsibility while you sort out the boat's problem. For example, delegate your mate to keep a watch for hazards, or to operate the boat on course slowly while you deal with the difficulty.

Here is a checklist for solving the problem:

- (A) Isolate it;
- (B) Get the manuals;
- (C) Get parts;
- (D) If necessary, call San Juan Yachting for help.

Over the years, most problems with charter boats are caused by misuse! Holding tanks overflow because they aren't checked; heads clog because foreign matter (especially facial tissues and tampons) are put in them; engines fail because they run out of fuel, then must be "purged" to re-start. Use the boat carefully, and you'll avoid these problems.

Almost all problems that are not operator-caused, i.e., that are boat deficiencies, are caused by pumps that fail, hoses and belts that break, and seawater strainers that get clogged. Generally, these problems are annoyances, and usually they are inconvenient, but they still can happen. Try to stay calm, collected, and be a professional by dealing with the problem in a businesslike, calm way. It will make everyone's day a better one!

Hitting a Log, Rock, or Debris ----- Please Don't!

Hitting a log is a real risk in our Northern waters because logging, and "log rafts," are such a big part of our commerce.

If you hit a log:

Did you put a hole in the boat? Idle the engines, then think: usually, you can tell just by where the noise of the hit came from. Check the bilges (don't forget the lazarette area, where the rudder posts are) after putting the engines into idle and/or neutral, if necessary.

If you did "hole" the boat, go immediately to the "If an Emergency" on the preceding pages.

If no hole, and still idling, is the boat vibrating?

- If "yes," put each engine into neutral in turn, identify and shut down the offender. Then continue on one engine. Call San Juan Yachting after you reach the closest safe harbor. If no vibration at idle, slowly accelerate one engine at a time. Is there vibration on either?
- If "yes," run at idle or on only the good engine, to reach a close, safe harbor. Then contact San Juan Yachting.

With a twin-screw boat, the damaged running gear can't be used after hitting an object. However, if while under way on one engine the other engine's propeller shaft rotates by itself because of water passing over it's propellor, then you must let the unused engine idle in neutral so that its transmission has lubrication, and the cutless bearings on the damaged shaft are lubricated. This is still true whether the boat has dripless shaft seals or a standard shaft "log".

When running on one engine with the other idling as required, be sure that the idling engine is pumping water through its exhaust pipe.

If there is no vibration on either engine, you probably did no running gear damage. Congratulations! Our diver will check your vessel's bottom upon your return, just as after every charter.

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